

# DICOM Conformance Statement

Product Name: ACUSON Bonsai™  
Ultrasound System

Release: VA11

Date: January 2019

## 1 CONFORMANCE STATEMENT OVERVIEW

This document describes the conformance to the ACR-NEMA DICOM 3.0 Standard by the ultrasound system of ACUSON Bonsai™. We specify ultrasound system generally refer to the products above in this document. The ultrasound system implements the necessary DICOM services to download worklists from an information system, save acquired Ultrasound (US) images and associated Structured Reports to a network storage device and/or removable media, print to a networked hardcopy device, query and retrieve the US images from a networked storage system, and inform the information system about the works actually done. Table 1 provides an overview of the supported network services, Table 2 lists the supported Media Storage Application Profiles, and Table 3 lists the supported Structured Report Templates.

The **ACUSON Bonsai™ Ultrasound System** supports the following DICOM Application Entities:

**Table 1**  
**NETWORK SERVICES**

| SOP Classes                                        | User of Service (SCU) | Provider of Service (SCP) |
|----------------------------------------------------|-----------------------|---------------------------|
| <b>Transfer (Storage)</b>                          |                       |                           |
| Verification                                       | Yes                   | Yes                       |
| Ultrasound Image Storage                           | Yes                   | Yes                       |
| Ultrasound Multi-frame Image Storage               | Yes                   | Yes                       |
| Secondary Capture Image Storage                    | Yes                   | Yes                       |
| Encapsulated PDF Storage                           | Yes                   | Yes                       |
| Raw Data Storage                                   | Yes                   | Yes                       |
| Enhanced US Volume Storage                         | Yes                   | No                        |
| <b>Query/Retrieve</b>                              |                       |                           |
| Study Root Query/Retrieve Information Model – FIND | Yes                   | No                        |
| Study Root Query/Retrieve Information Model – MOVE | Yes                   | No                        |

| SOP Classes                                   | User of Service (SCU) | Provider of Service (SCP) |
|-----------------------------------------------|-----------------------|---------------------------|
| <b>Workflow Management</b>                    |                       |                           |
| Modality Worklist Information Model – Find    | Yes                   | No                        |
| Modality Performed Procedure Step             | Yes                   | No                        |
| Storage Commitment Push Model                 | Yes                   | No                        |
| <b>Print Management</b>                       |                       |                           |
| Basic Color Print Management                  | Yes                   | No                        |
| Basic Grayscale Print Management              | Yes                   | No                        |
| <b>Notes, Reports, Measurements, Transfer</b> |                       |                           |
| Comprehensive SR Storage                      | Yes                   | Yes                       |

**Table 2**  
**MEDIA SERVICES**

| Media Storage Application Profile                                                             | Write Files (FSC / FSU) | Read Files (FSR) |
|-----------------------------------------------------------------------------------------------|-------------------------|------------------|
| <b>Compact Disk - Recordable</b>                                                              |                         |                  |
| STD-US-SC-SF&MF-CDR                                                                           | Yes / Yes <sup>1</sup>  | Yes              |
| <b>DVD</b>                                                                                    |                         |                  |
| STD-US-SC-SF&MF-DVD<br>STD-US-SC-SF&MF-DVD-RAM                                                | Yes / Yes <sup>1</sup>  | Yes              |
| <b>USB Devices</b>                                                                            |                         |                  |
| STD-GEN-USB-JPEG<br>for Ultrasound images, Structured Reports<br>and Encapsulated PDF Storage | Yes / Yes <sup>1</sup>  | Yes              |

Note:

1 Only acts as a FSU for media that may be written to multiple times.

**Table 3**  
**STRUCTURED REPORTS**

| Concept Name                       | Supported |
|------------------------------------|-----------|
| Echocardiography Procedure Report  | Yes       |
| Vascular Ultrasound Report         | Yes       |
| OB-GYN Ultrasound Procedure Report | Yes       |

## 2 TABLE OF CONTENTS

|         |                                                         |    |
|---------|---------------------------------------------------------|----|
| 1       | CONFORMANCE STATEMENT OVERVIEW .....                    | 2  |
| 2       | TABLE OF CONTENTS .....                                 | 5  |
| 3       | INTRODUCTION .....                                      | 11 |
| 3.1     | Audience .....                                          | 11 |
| 3.2     | Remarks .....                                           | 11 |
| 3.3     | Terms and Definitions .....                             | 11 |
| 3.4     | Acronyms, Abbreviations, and Symbols .....              | 13 |
| 3.5     | References .....                                        | 14 |
| 4       | NETWORKING .....                                        | 15 |
| 4.1     | Implementation Model .....                              | 15 |
| 4.1.1   | Application Data Flow .....                             | 15 |
| 4.1.2   | Functional Definition of AEs .....                      | 16 |
| 4.1.2.1 | Verification AE .....                                   | 16 |
| 4.1.2.2 | Storage AE .....                                        | 16 |
| 4.1.2.3 | Storage Commitment AE .....                             | 18 |
| 4.1.2.4 | Print AE .....                                          | 18 |
| 4.1.2.5 | Worklist AE .....                                       | 19 |
| 4.1.2.6 | MPPS AE .....                                           | 20 |
| 4.1.2.7 | Query/Retrieve AE .....                                 | 20 |
| 4.1.3   | Sequencing of Real-World Activities .....               | 20 |
| 4.2     | AE Specifications .....                                 | 21 |
| 4.2.1   | Modality AE .....                                       | 21 |
| 4.2.1.1 | SOP Classes .....                                       | 21 |
| 4.2.1.2 | Association Establishment Policies .....                | 21 |
| 4.2.1.3 | Association Initiation Policy .....                     | 22 |
| 4.2.1.4 | Association Acceptance Policy .....                     | 72 |
| 4.3     | Network Interfaces .....                                | 77 |
| 4.3.1   | Supported Communications Stacks .....                   | 77 |
| 4.3.2   | TCP/IP Stack .....                                      | 77 |
| 4.3.3   | Physical Network Interface .....                        | 77 |
| 4.3.4   | Additional Protocols .....                              | 78 |
| 4.4     | Configuration .....                                     | 78 |
| 4.4.1   | AE Title/Presentation Address Mapping .....             | 78 |
| 4.4.2   | Configurable Parameters .....                           | 78 |
| 5       | MEDIA INTERCHANGE .....                                 | 82 |
| 5.1     | Implementation Model .....                              | 82 |
| 5.1.1   | Application Data Flow .....                             | 82 |
| 5.1.2   | Functional Definition of AE's .....                     | 82 |
| 5.1.2.1 | Functional Definition of Media Application Entity ..... | 82 |
| 5.1.3   | Sequencing of Real-World Activities .....               | 82 |
| 5.1.4   | File Meta Information Options .....                     | 82 |

|         |                                                         |    |
|---------|---------------------------------------------------------|----|
| 5.2     | AE Specifications.....                                  | 83 |
| 5.2.1   | Media Application Entity Specification.....             | 83 |
| 5.2.1.1 | File Meta Information for the Application Entity.....   | 83 |
| 5.2.1.2 | Real-World Activities .....                             | 83 |
| 5.3     | Media Storage Application Profile .....                 | 85 |
| 5.3.1   | DICOMDIR Attributes .....                               | 85 |
| 5.4     | Augmented and Private Application Profiles.....         | 88 |
| 5.5     | Media Configuration.....                                | 88 |
| 6       | SUPPORT OF CHARACTER SETS .....                         | 88 |
| 6.1     | Character Sets for ACUSON Bonsai™ System.....           | 88 |
| 7       | SECURITY.....                                           | 88 |
| 7.1     | Security Profiles.....                                  | 88 |
| 7.2     | Association Level Security .....                        | 88 |
| 7.3     | Application Level Security .....                        | 88 |
| 8       | ANNEXES.....                                            | 89 |
| 8.1     | IOD Contents .....                                      | 89 |
| 8.1.1   | Created SOP Instances.....                              | 89 |
| 8.1.2   | Usage of attributes from received IOD's .....           | 89 |
| 8.1.3   | Attribute Mapping .....                                 | 89 |
| 8.1.4   | Coerced/Modified fields.....                            | 89 |
| 8.2     | Data Dictionary of private attributes .....             | 89 |
| 8.3     | Coded terminology and templates.....                    | 89 |
| 8.4     | Grayscale Image Consistency.....                        | 89 |
| 8.5     | Standard extended/specialized/private sop Classes ..... | 89 |
| 8.6     | Private Transfer Syntaxes.....                          | 89 |
| 9       | APPENDICES.....                                         | 90 |
| 9.1     | OB – GYN structured reporting template .....            | 90 |
|         | TID (300) Measurement.....                              | 90 |
|         | TID 1008 Subject Context, Fetus .....                   | 90 |
|         | TID (5000) OB-GYN Ultrasound Procedure Report .....     | 90 |
|         | TID (SELFTMP-1) Fetal Cardiac Measurement Group .....   | 92 |
|         | TID (SELFTMP-2) Fetal ZScore .....                      | 92 |
|         | TID (1001) OBSERVATION CONTEXT.....                     | 92 |
|         | TID (5001) OB-GYN Patient Characteristics .....         | 93 |
|         | TID (5002) OB-GYN Procedure Summary .....               | 93 |
|         | TID (5003) OB-GYN Fetus Summary .....                   | 94 |

|                                                                     |     |
|---------------------------------------------------------------------|-----|
| TID (FINDING_1) Fetal Description .....                             | 95  |
| TID (FINDING_2 ) Fetus Limbs .....                                  | 95  |
| TID (FINDING_3) Fetal Cardiology .....                              | 96  |
| TID (FINDING_4) Fetal Brain.....                                    | 96  |
| TID (FINDING_5) Spine.....                                          | 96  |
| TID (FINDING_6) Fetal Environment .....                             | 97  |
| TID (FINDING_7) Maternal Description .....                          | 97  |
| TID (5004)Fetal Biometry Ratio Section .....                        | 97  |
| TID (5005) Fetal Biometry Section.....                              | 98  |
| TID (5006) Fetal Long Bones Section.....                            | 98  |
| TID (5007) Fetal Cranium Section .....                              | 99  |
| TID (5008) Fetal Biometry Group.....                                | 99  |
| TID (5009) Fetal Biophysical Profile Section.....                   | 99  |
| TID (5010) Amniotic Sac Section.....                                | 100 |
| TID (5011) Early Gestation Section .....                            | 101 |
| TID (5012) Ovaries Section .....                                    | 101 |
| TID (5013) Follicles Section.....                                   | 103 |
| TID (5014) Follicle Measurement Group.....                          | 104 |
| TID (5015) Pelvis And Uterus Section .....                          | 104 |
| TID (5025) OB-GYN Fetus Vascular Ultrasound Measurement Group ..... | 106 |
| TID (5026) OB-GYN Pelvic Vascular Ultrasound Measurement Group..... | 106 |
| CID (228) Equation or Table .....                                   | 107 |
| CID (244) Laterality .....                                          | 107 |
| CID (3627) Measurement Type .....                                   | 107 |
| CID (12005) Fetal Biometry Measurements.....                        | 107 |
| CID (12006) Fetal Long Bones Measurements.....                      | 108 |
| CID (12007) Fetal Cranium.....                                      | 108 |
| CID (12009) Early Gestation Biometry Measurements.....              | 109 |
| CID (12013) Gestational Age Equations and Tables.....               | 109 |
| CID (12014) Fetal Body Weight .....                                 | 111 |
| CID (12015) Fetal Growth Equations and Tables.....                  | 112 |
| CID (12119) Vascular Ultrasound Property.....                       | 114 |
| CID (12120) Blood Velocity Measurements .....                       | 114 |

|                                                                |     |
|----------------------------------------------------------------|-----|
| CID (12121) Vascular Indices and Ratios .....                  | 114 |
| CID (12122) Other Vascular Properties .....                    | 114 |
| CID (12140) Pelvic Vasculature Anatomical Location .....       | 115 |
| CID (12141) Fetal Vasculature Anatomical Location.....         | 115 |
| CID (SELCID-1) Fetal Z-Score .....                             | 115 |
| Mapping between Modality measurements and DICOM Concepts. .... | 116 |
| OB-GYN Measurements .....                                      | 116 |
| Vasculature Anatomic Location .....                            | 120 |
| OB-GYN Vascular Measurements .....                             | 120 |
| OB-GYN Cardiac Measurements.....                               | 121 |
| Biophysical Profile Measurements.....                          | 122 |
| 9.2 Cardiac Structured Reporting Template .....                | 123 |
| TID (5200) Echocardiography Procedure Report.....              | 124 |
| TID(1001) Observation Context .....                            | 126 |
| TID (5201) Echocardiography Patient Characteristics .....      | 127 |
| TID (SELFTMP-2) Echo Procedure Summary Section.....            | 127 |
| TID (5202) Echo Section .....                                  | 128 |
| TID (5203) Echo Measurement.....                               | 129 |
| CID (12200) Echocardiography Left Ventricle.....               | 129 |
| CID (12201 ) Left Ventricle Linear .....                       | 129 |
| CID (12202) Left Ventricle Volume .....                        | 130 |
| CID (12203) Left Ventricle Other .....                         | 130 |
| CID (12204) Echocardiography Right Ventricle .....             | 130 |
| CID (12205) Echocardiography Left Atrium .....                 | 130 |
| CID (12206) Echocardiography Right Atrium .....                | 131 |
| CID (12207) Echocardiography Mitral Valve .....                | 131 |
| CID (12208) Echocardiography Tricuspid Valve .....             | 132 |
| CID (12209) Echocardiography Pulmonic Valve .....              | 132 |
| CID (12210) Echocardiography Pulmonary Artery .....            | 132 |
| CID (12211) Echocardiography Aortic Valve.....                 | 132 |
| CID (12212) Echocardiography Aorta.....                        | 132 |
| CID (12214) Echocardiography Pulmonary Veins.....              | 133 |
| CID (12215) Echocardiography Vena Cavae .....                  | 133 |
| CID (12216) Echocardiography Hepatic Veins.....                | 133 |
| CID (12217) Echocardiography Cardiac Shunt.....                | 133 |



|                                                                |     |
|----------------------------------------------------------------|-----|
| CID (12218) Echocardiography Congenital.....                   | 134 |
| CID (12220) Echocardiography Common Measurements.....          | 134 |
| CID (12221) Flow Direction .....                               | 134 |
| CID (12222) Orifice Flow Properties .....                      | 134 |
| CID (12224) Ultrasound Image Modes .....                       | 135 |
| CID (12226) Echocardiography Image View .....                  | 135 |
| CID (12227) Echocardiography Measurement Method .....          | 135 |
| CID (12228) Volume Methods .....                               | 135 |
| CID (12229) Area Methods.....                                  | 136 |
| CID (12230) Gradient Methods.....                              | 136 |
| CID (12231) Volume Flow Methods.....                           | 136 |
| CID (12232) Myocardium Mass Methods.....                       | 136 |
| CID (12233) Cardiac Phase.....                                 | 136 |
| CID (12234) Respiration Phase .....                            | 136 |
| CID (12239) Cardiac Output Properties .....                    | 136 |
| CID (12240) Left Ventricle Area.....                           | 137 |
| CID (90000) Pericardial disease .....                          | 137 |
| Mapping between Modality measurements and DICOM Concepts ..... | 137 |
| Left Ventricle Measurements .....                              | 137 |
| Right Ventricle Measurements.....                              | 156 |
| Left Atrium Measurements.....                                  | 157 |
| Right Atrium Measurements .....                                | 157 |
| Aortic Valve Measurements .....                                | 157 |
| Mitral Valve Measurements .....                                | 159 |
| Pulmonic Valve Measurements .....                              | 162 |
| Tricuspid Valve Measurements.....                              | 164 |
| Aorta Measurements.....                                        | 165 |
| Pulmonary Artery Measurements .....                            | 166 |
| Vena Cava Measurements .....                                   | 166 |
| Pulmonary Venous Structure Measurements .....                  | 167 |
| Cardiac Shunt Study Measurements .....                         | 167 |
| Congenital Anomaly of Cardiovascular System Measurements.....  | 167 |
| Pericardial Disease Measurements .....                         | 168 |
| Heart Rate Measurements.....                                   | 168 |
| 9.3 Vascular Structured Reporting Template .....               | 168 |
| TID (5100) Vascular Ultrasound Report.....                     | 169 |
| TID (1001) Observation Context.....                            | 174 |
| TID (5101) Vascular Patient Characteristics .....              | 174 |
| TID (5102) Vascular Procedure Summary Section .....            | 175 |

|                                                                |     |
|----------------------------------------------------------------|-----|
| TID (5103) Vascular Ultrasound Section.....                    | 176 |
| TID (5104) Vascular Ultrasound Measurement Group .....         | 177 |
| CID (12104) Extracranial Arteries .....                        | 177 |
| CID (12105) Intracranial Cerebral Vessels.....                 | 177 |
| CID (12106) Intracranial Cerebral Vessels (unilateral) .....   | 177 |
| CID (12107) Upper Extremity Arteries .....                     | 178 |
| CID (SELFCID-2) Upper Extremity Arteries(unilateral).....      | 178 |
| CID (12108) Upper Extremity Veins.....                         | 178 |
| CID (12109) Lower Extremity Arteries .....                     | 178 |
| CID (12110) Lower Extremity Veins.....                         | 179 |
| CID (12112) Abdominal Arteries (unilateral) .....              | 179 |
| CID (12114) Abdominal Veins (unilateral).....                  | 179 |
| CID (12115) Renal Vessels .....                                | 180 |
| CID (12116) Vessel Segment Modifiers.....                      | 180 |
| Mapping between Modality measurements and DICOM Concepts ..... | 181 |
| Vascular Measurements .....                                    | 181 |
| Extracranial Arteries.....                                     | 182 |
| Intracranial Cerebral Vessels.....                             | 182 |
| Intracranial Cerebral Vessels (unilateral).....                | 183 |
| Upper Extremity Arteries.....                                  | 183 |
| Upper Extremity Arteries(unilateral).....                      | 183 |
| Upper Extremity Veins .....                                    | 183 |
| Lower Extremity Arteries .....                                 | 183 |
| Lower Extremity Veins .....                                    | 183 |
| Abdominal Arteries (unilateral).....                           | 184 |
| Abdominal Veins (unilateral) .....                             | 184 |
| Renal Vessels .....                                            | 184 |

## 3 INTRODUCTION

### 3.1 Audience

This document is intended for potential customers, system integrators of medical equipment, marketing staff interested in system functionality and software designers implementing DICOM interfaces. It is assumed that the readers of this document are familiar with the DICOM Standard and with the terminology and concept which are used in the Standard. If readers are unfamiliar with DICOM terminology they should read the DICOM Standard, prior to reading this DICOM Conformance Statement document.

### 3.2 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between SIEMENS Products and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is the first step towards assessing interconnectivity and interoperability between SIEMENS medical equipment and other DICOM conformant equipments.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.
- The DICOM standard will evolve to meet the user's growing requirements. SIEMENS is actively involved in the development of the DICOM standard. Therefore, SIEMENS reserves the right to make changes to its products or to discontinue its delivery.

The Ultrasound System follows the IHE SWF, PDI, ED Profiles.

### 3.3 Terms and Definitions

**Abstract Syntax** – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

**Application Context** – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

**Application Entity (AE)** – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

**Application Entity Title** – the externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network. The Called AE Title defines the intended receiver of an Association. Nevertheless, the Calling AE Title defines the requestor of an Association.

**Application Profile** - A Media Storage Application Profile defines a selection of choices at the various layers of the DICOM Media Storage Model which are applicable to a specific need or context in which the media interchange is intended to be performed.

**Association** – a network communication channel set up between *Application Entities*.

**Association Establishment** - an Association Establishment is the first phase of communication between two DICOM Application Entities. The AEs use the Association Establishment to negotiate how data will be encoded and the type of data to be exchanged.

**Attribute** – a unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

**DICOM File Format** - the DICOM File Format provides a means to encapsulate in a File the Data Set representing a SOP Instance related to a DICOM Information Object.

**DICOM Message Service Element (DIMSE)** – a DIMSE defines the services and protocols utilized by an Application Entity to exchange messages.

**File** - a File is an ordered string of zero or more bytes, where the first byte is at the beginning of the file and the last byte is at the end of the File. Files are identified by an unique File ID and may be written, read, or deleted.

**File Meta Information** - the File Meta Information includes identifying information on the encapsulated Data Set. It is a mandatory header at the beginning of every DICOM File.

**Information Object Definition (IOD)** - the specified set of *Attributes* that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The *Attributes* may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: Print Job IOD.

**Joint Photographic Experts Group (JPEG)** – a set of standardized image compression techniques, available for use by DICOM applications.

**Module** – a set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

**Negotiation** – first phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.

**Physical Media** - a piece of material with recording capabilities for streams of bits. Characteristics of a Physical Media include form factor, mechanical characteristics, recording properties and rules for recording and organizing bit streams in accessible structures.

**Presentation Context** – the set of DICOM network services used over an *Association*, as negotiated between *Application Entities*; includes *Abstract Syntaxes* and *Transfer Syntaxes*.

**Protocol Data Unit (PDU)** – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.

**Security Profile** – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data

**Service Class Provider (SCP)** – role of an *Application Entity* that provides a DICOM network service;

typically, a server that performs operations requested by another *Application Entity (Service Class User)*. Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).

**Service Class User (SCU)** – role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)

**Service/Object Pair (SOP) Class** – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.

**Service/Object Pair (SOP) Instance** – an information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.

**Tag** – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]

**Transfer Syntax** – the encoding used for exchange of DICOM information objects and messages. Examples: *JPEG* compressed (images), little endian explicit value representation.

**Unique Identifier (UID)** – a globally unique “dotted decimal” string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

**Value Representation (VR)** – the format type of an individual DICOM data element, such as text, an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

### 3.4 Acronyms, Abbreviations, and Symbols

The following acronyms and abbreviations are used in this document.

|         |                                                |
|---------|------------------------------------------------|
| ACR     | American College of Radiology                  |
| AE      | Application Entity                             |
| CDR     | Compact Disk Recordable                        |
| DICOM   | Digital Imaging and Communications in Medicine |
| DIMSE   | DICOM Message Service Element                  |
| DIMSE-C | DICOM Message Service Element-Composite        |
| FSC     | File-Set Creator                               |
| FSR     | File-Set Reader                                |
| FSU     | File-Set Updater                               |
| HIS     | Hospital Information System                    |
| IHE     | Integrating the Healthcare Enterprise          |
| IOD     | Information Object Definition                  |

|          |                                                 |
|----------|-------------------------------------------------|
| ISO      | International Standard Organization             |
| JPEG     | Joint Photographic Experts Group                |
| MODALITY | Ultrasound System                               |
| MPPS     | Modality Performed Procedure Step               |
| MWL      | Modality Worklist                               |
| NEMA     | National Electrical Manufacturers Association   |
| O        | Optional (Key Attribute)                        |
| PACS     | Picture Archiving and Communication System      |
| PDU      | Protocol Data Unit                              |
| R        | Required (Key Attribute)                        |
| RIS      | Radiology Information System                    |
| SCP      | Service Class Provider                          |
| SCU      | Service Class User                              |
| SOP      | Service Object Pair                             |
| SR       | Structured Reporting                            |
| TCP/IP   | Transmission Control Protocol/Internet Protocol |
| U        | Unique (Key Attribute)                          |
| UL       | Upper Layer                                     |
| VR       | Value Representation                            |
| US       | Ultrasound                                      |
| UID      | Unique Identifier                               |

### 3.5 References

DICOM® Standards Publication, PS 3.1 – PS 3.18, © NEMA. The DICOM Standard is under continuous maintenance. The current official version is available at [www.dicomstandard.org](http://www.dicomstandard.org).

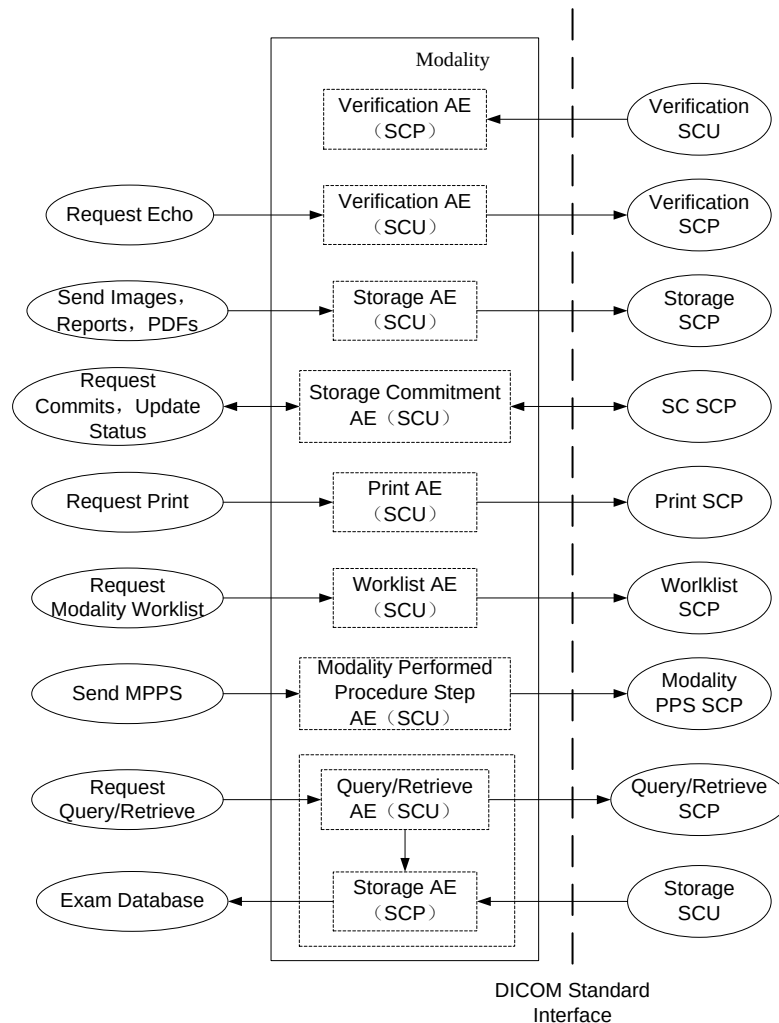
IHE Technical Framework, available free at <http://www.ihe.net/>

## 4 NETWORKING

This section contains the ACUSON Bonsai™ system networking related services.

### 4.1 Implementation Model

#### 4.1.1 Application Data Flow



**Figure 1**  
**Implementation Model**

Note: Storage AE (SCP) can only be used in Query/Retrieve

This application entity provides a user interface, internal database and network listener that spawns additional threads as necessary to handle incoming connections.

Conceptually, the network services may be modeled as the following AE's, however, in fact all the AE's share a single (configurable) AE Title:

Verification AE (as SCU and SCP)  
Storage AE (as SCU and SCP)

Storage Commitment AE (SCU)  
Print AE (as SCU)  
Worklist AE (as SCU)  
MPPS AE (as SCU)  
Query/Retrieve AE (as SCU)

## **4.1.2 Functional Definition of AEs**

### **4.1.2.1 Verification AE**

The ultrasound system supports the Verification service as a SCU and SCP.

As a SCU, verification is activated when the verify button is selected on the dicom service configuration page where the verification results will also be showed to the user.

As a SCP, verification AE waits in the background for connections, will accept associations with Presentation Contexts for SOP Class of the Verification Service Class, and will respond successfully to echo requests.

### **4.1.2.2 Storage AE**

As a SCU, the Storage AE originates associations for the transfer of DICOM Ultrasound single frame images, multi-frame images, secondary capture images, comprehensive structured reports ,and Encapsulated PDFs to remote AE (selected from a pre-configured list)..

The system supports automatic and manual storage.

The operations for automatic storage service are described below:

#### **Operation 1**

Step 1: Enable "Send or printing after End Exam" in the user preset.

Step 2: End Exam, the ended exam (maybe include images, SRs, PDFs) would automatically send to the default storage service SCPs which are set to be default in the DICOM service preset dialog.

#### **Operation 2**

Step 1: Open the system preset dialog and switch to the "key config" tab page.

Step 2: Set the shortcut key which means saving image to hard disk and combines the key with the function of sending image to the default DICOM storage SCPs.

Step 3: During the examining, the user can press the Send key to send image to default DICOM storage service SCPs.

The operations for manual storage service are described below:

#### **Operation 1**

Step 1: Select the images from thumbnail menu in main UI.

Step 2: Press "Send to" button and select DICOM Storage service SCPs.

Step 3: Send the images to the DICOM Storage service SCPs.



#### Operation 2

Step 1: Select exams in the iStation Dialog.

Step 2: Press "Send Exam" and select DICOM Storage service SCPs.

Step 3: Send the selected exams (maybe include images, SRs, PDFs) to the DICOM Storage service SCPs.

#### Operation 3

Step 1: Select thumbnail in the iStation Dialog.

Step 2: Press "Send to" button and select DICOM Storage service SCPs.

Step 3: Send the image to the DICOM Storage service SCPs.

#### Operation 4

Step 1: Open the review dialog and select the images.

Step 2: Press the "Send To" button to choose the storage SCPs.

Step 3: Send the images to the DICOM Storage service SCPs.

The SR only could be sent in the circumstance as below:

The exam type is obstetric, gynecology, cardiac or vascular.

The exam type is cardiac or vascular.

The SR Key for the exam type must be installed in option preset UI.

Exam is the unit to send.

The status of the exam is "End", "Paused" or "Cancelled". SR would not be sent when an active exam is selected.

The DICOM storage service SCPs should be set as "Attach SR when Store Images" or "Only Store SR".

The Encapsulated PDF only could be sent in the circumstance as below:

Exam is the unit to send.

The status of the exam is "End", "Paused" or "Cancelled". Encapsulated PDF would not be sent when an active exam is selected.

The "Encapsulated PDF" should be enabled in DICOM storage service preset.

3D/4D images could send as pre-configuration form:

**Table4**  
**3D/4D Transfer Option**

| 3D/4D Option | SOP Class | SOP Class UID |
|--------------|-----------|---------------|
|--------------|-----------|---------------|

| 3D/4D Option | SOP Class                   | SOP Class UID               |
|--------------|-----------------------------|-----------------------------|
| Normal       | US Image Storage            | 1.2.840.10008.5.1.4.1.1.6.1 |
|              | US Multiframe Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 |
| Volume       | Enhanced US Volume Storage  | 1.2.840.10008.5.1.4.1.1.6.2 |
| Rawdata      | Raw Data Storage            | 1.2.840.10008.5.1.4.1.1.66  |

Transfer with Rawdata form is mainly used for 4DViewer to get the raw data of the image. The Storage SCP received the image could not review it because the image information is coded in private form. 4DViewer or Diagnostic Ultrasound System could retrieve the file and review it.

In the event that the ultrasound system is taken off the network as a portable system or when a network failure occurs during a background store, the Storage SCU maintains a queue of failed C-STORE requests. If pre-configured on Preset UI, the failed C-Store requests will be automatically retried specified times. If no pre-configuration, the user can also retry the failed requests manually.

As a SCP, the Storage AE could only be used in Query/Retrieve, otherwise couldn't.

#### **4.1.2.3 Storage Commitment AE**

The Storage Commitment AE originates associations to ensure the reliable storage of DICOM composite information objects on remote DICOM device after sending DICOM Storage Service to the device.

The Storage Commitment service will be executed automatically in the circumstance as below:

The Storage Commitment Service is set to associate with the Storage Service in DICOM storage service preset dialog and the associated Storage Service is executed.

Exam is the unit to send.

The status of the exam is "End". It would not be executed when an "Active", "Paused" or "Cancelled" exam is selected.

#### **4.1.2.4 Print AE**

As a SCU, the Print AE originates associations for the print of DICOM Ultrasound single frame images and secondary capture images to remote AE (selected from a pre-configured list).

The system is capable of grayscale (B/W) and color print supporting with automatic and manual print functions.

The operations for automatic print service are described below:

##### **Operation 1**

Step 1: Enable "Send or printing after End Exam" in the user preset.

Step 2: End Exam, the single frame images and secondary capture images of ended exam would automatically send to the default print service SCPs which are set to be default in the DICOM service preset dialog.

Notes: This operation associates with the "Display Format" of the DICOM print preset, the DICOM print will be not active until one page is filled with the images or the exam end. For example, if the "Display Format" has been set to "STANDARD\2,3", the DICOM print will be not active until the shortcut key has been pressed 6 times. However, when the exam end, the DICOM print will be active even if one page is not filled.

##### **Operation 2**

Step 1: Open the system preset dialog and switch to the "key config" tab page.

Step 2: Set the shortcut key which means saving image to hard disk and combines the key with the function of sending image to the default DICOM print SCPs.

Step 3: During the examining, the user can press the print key to send image to default DICOM print service SCPs.

The operations for manual print service are described below:

#### Operation 1

Step 1: Select the images from thumbnail menu in main UI.

Step 2: Press "Send to" button and select DICOM print service SCPs.

Step 3: Send the images to the DICOM print service SCPs.

#### Operation 2

Step 1: Select exams in the iStation Dialog.

Step 2: Press "Send Exam" and select DICOM print service SCPs.

Step 3: Send the single frame images and secondary capture images of the selected exams to the DICOM print service SCPs.

#### Operation 3

Step 1: Select thumbnail in the iStation Dialog.

Step 2: Press "Send to" button and select DICOM print service SCPs.

Step 3: Send the image to the DICOM print service SCPs.

#### Operation 4

Step 1: Open the review dialog and select the images.

Step 2: Press the "Send To" button to choose the print SCPs.

Step 3: Send the images to the DICOM print service SCPs.

### 4.1.2.5 Worklist AE

The Worklist AE is activated through the Worklist UI when the user selects a remote AE to query (from a pre-configured list). The system supports automatic and manual query depending on its configuration on Preset UI. The system supports fuzzy query using "?" and "\*\*".

- If set one and only one remote AE to be default status. The system can initiate a query with default rules when show the Worklist UI. The Worklist Server is the default server. The Modality Type is US, the Exam Date is today, and the Scheduled Station AE Title is blank.
- Alternatively if the default status is no, the user can specify query rules on Worklist UI. Such as Patient ID, Patient Name, Accession Number, Requested Procedure ID, Worklist Server, Exam Date, Modality Type and Scheduled Station AE Title.

If no matches are found, a dialogue will be presented to the user to indicate so. The possible reasons for this failure are listed to help trouble shooting.

If more than one matching patients found, user can discover lists number on the UI. The user can also change query rules for another query, or for further filter in local database to locate the patients quickly. And the lists can be sorted in ascending or descending order.

#### **4.1.2.6 MPPS AE**

MPPS AE sends event transactions that facilitate the transfer of exam procedure status from the ultrasound system to the information system.

MPPS messages are sent from the system under the following circumstances:

MPPS N-Create, Status = IN PROGRESS. Starting a new exam or reactive an exam result in automated creation of an MPPS Instance managed by a remote AE.

MPPS N-Set, Status = COMPLETE. Completion of the MPPS is performed as the result of an operator action of ending the exam.

MPPS N-Set, Status = DISCONTINUED. "Cancel Exam" causes the "Discontinued" status to be sent. User can select various reasons from the "Reason of cancel Exam" UI when need to cancel an exam.

#### **4.1.2.7 Query/Retrieve AE**

The Query/Retrieve AE supports the Query/Retrieve services as an SCU.

As a Query SCU, the system initiates a C-Find request to the remote SCP if pre-configured on the Preset UI, and then query is invoked directly by the user. The system supports fuzzy query using "?" and "\*".

For remote AE, no matter what the default status is, the user can specify query rules on Query/Retrieve UI. Such as Patient ID, Patient Name, Accession Number, Exam Date and select Search Key. If no matches are found, a dialogue will be presented to the user to indicate so. The user can also change query rules for another query, or for further filter in local database to locate the patients quickly.

As a Move SCU, the system supports the Study Root Query Model. The system can only retrieve ultrasound images or structured reports, whose modality attributes are "US" or "SR", but will leap all the other ones. Furthermore, the retrieval destination is only local host.

The system initiates a C-MOVE request to the remote Retrieve SCP when user selects items to retrieve. The remote Retrieve SCP in turn starts C-STORE sub operations to the ultrasound system.

User can discover lists number for queried items, as well as retrieval items. And the lists can be sorted in ascending or descending order.

The system can retrieve the 3D/4D images that have sent to PACS or other Storage SCP in rawdata form. After retrieveing, the system can convert it to the identifiable format and review it.

### **4.1.3 Sequencing of Real-World Activities**

All SCP activities are performed asynchronously in the background and not dependent on any sequencing.

All SCU activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed.

## 4.2 AE Specifications

### 4.2.1 Modality AE

#### 4.2.1.1 SOP Classes

The ultrasound system provides Standard Conformance to the following SOP Class:

**Table5**  
**SOP Class for Modality AE**

| SOP Class Name                                     | SOP Class UID                 | SCU | SCP              |
|----------------------------------------------------|-------------------------------|-----|------------------|
| Verification SOP Class                             | 1.2.840.10008.1.1             | Yes | Yes              |
| US Image Storage                                   | 1.2.840.10008.5.1.4.1.1.6.1   | Yes | Yes <sup>1</sup> |
| US Multiframe Image Storage                        | 1.2.840.10008.5.1.4.1.1.3.1   | Yes | Yes <sup>1</sup> |
| Secondary Capture Image Storage                    | 1.2.840.10008.5.1.4.1.1.7     | Yes | Yes <sup>1</sup> |
| Comprehensive Structured Report Storage            | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | Yes <sup>1</sup> |
| Encapsulated PDF Storage                           | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | Yes <sup>1</sup> |
| Enhanced US Volume Storage                         | 1.2.840.10008.5.1.4.1.1.6.2   | Yes | No               |
| Raw Data Storage                                   | 1.2.840.10008.5.1.4.1.1.66    | Yes | Yes              |
| Storage Commitment Push Model                      | 1.2.840.10008.1.20.1          | Yes | No               |
| Basic Grayscale Print Management Meta              | 1.2.840.10008.5.1.1.9         | Yes | No               |
| Basic Color Print Management Meta SOP Class        | 1.2.840.10008.5.1.1.18        | Yes | No               |
| Basic Film Session SOP Class                       | 1.2.840.10008.5.1.1.1         | Yes | No               |
| Basic Film Box SOP Class                           | 1.2.840.10008.5.1.1.2         | Yes | No               |
| Basic Grayscale Image Box SOP Class                | 1.2.840.10008.5.1.1.4         | Yes | No               |
| Printer SOP Class                                  | 1.2.840.10008.5.1.1.16        | Yes | No               |
| Print Job SOP Class                                | 1.2.840.10008.5.1.1.14        | Yes | No               |
| Modality Worklist Information Model-Find           | 1.2.840.10008.5.1.4.31        | Yes | No               |
| Modality Performed Procedure Step SOP Class        | 1.2.840.10008.3.1.2.3.3       | Yes | No               |
| Study Root Query/Retrieve Information Model - Find | 1.2.840.10008.5.1.4.1.2.2.1   | Yes | No               |
| Study Root Query/Retrieve Information Model - Move | 1.2.840.10008.5.1.4.1.2.2.2   | Yes | No               |

Note : 1 Yes only used in Query/Retrieve, otherwise No.

#### 4.2.1.2 Association Establishment Policies

##### General

The DICOM standard application context name for DICOM 3.0 is always proposed:

**Table6**  
**DICOM Application Context for Modality AE**

|                          |                       |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

The PDU size is configurable with a minimum size of 16,384 and a maximum size of 65,536. The default PDU size is 32,768.

### Number of Associations

The system initiates one Association at a time for each destination to which a transfer request is being processed in the active job queue list. Since Storage and Print tasks are executed within a same thread, when they are selected simultaneously, only one job will be active at a time, the other(s) remain pending until the active job is successful or failed.

**Table7**

#### Number of Associations as an Association Initiator

|                                             |   |
|---------------------------------------------|---|
| Maximum number of simultaneous associations | 1 |
|---------------------------------------------|---|

**Table8**

#### Number of Associations as an Association Acceptor

|                                             |   |
|---------------------------------------------|---|
| Maximum number of simultaneous associations | 1 |
|---------------------------------------------|---|

### Asynchronous Nature

The ultrasound system will only allow a single outstanding operation on an association.

### Implementation Identifying Information

**Table9**

#### DICOM Implementation Class and Version for Modality AE

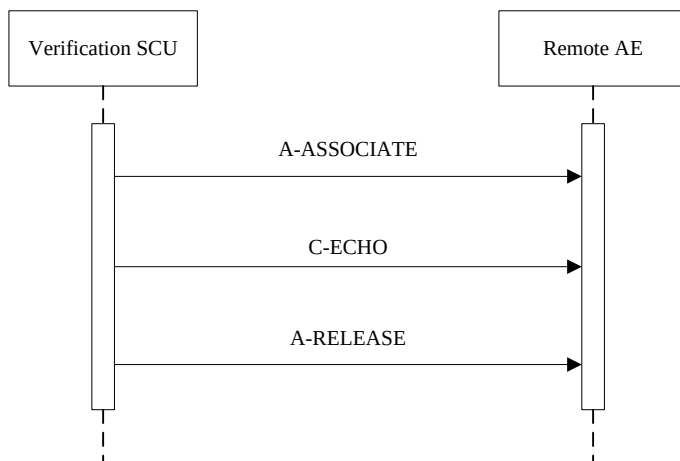
|                             |                               |
|-----------------------------|-------------------------------|
| Implementation Class UID    | 1.2.156.112536.1.2116.0.1.0.1 |
| Implementation Version Name | SIEMENS_V1.1                  |

#### 4.2.1.3 Association Initiation Policy

### Activity – Request Echo

#### Description and Sequencing of Activities

The user can verify the existence of a DICOM server on the hospitals network, through a button in the 'DICOM Service' screen. When the user presses this button, the ultrasound system will initiate the association.



**Figure2**  
**Sequencing of Activity – Send Echo Request**

### Proposed Presentation Contexts

The Verification AE (as SCU) supports the following Presentation Contexts for Verification.

**Table10**  
**Presentation Contexts for Verification**

| PROPOSED PRESENTATION CONTEXTS |                   |                           |                     |      |           |
|--------------------------------|-------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax                |                   | Transfer Syntax           |                     | Role | Ext. Neg. |
| Name                           | UID               | Name                      | UID                 |      |           |
| Verification                   | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCU  | None      |
|                                |                   | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU  | None      |
|                                |                   | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCU  | None      |

### SOP Specific Conformance

It summarizes the behavior of Ultrasound System when receiving status codes in a C-ECHO response.

**Table 11**  
**Verification C-Echo Response Status Handling Behavior**

| Service Status | Further Meaning   | Error Code            | Behavior (as SCU)                          |
|----------------|-------------------|-----------------------|--------------------------------------------|
| Success        | Success           | 0000                  | Device Status is set to: Verify Successful |
| Refused        | Out of Resources  | A7XX                  | Device Status is set to: Verify Failed     |
| Failed         | Unable to process | CXXX                  | Device Status is set to: Verify Failed     |
| *              | *                 | Any other status code | Device Status is set to: Verify Failed     |

## Activity – Store images, SRs, PDFs, 3D/4D images

### Description and Sequencing of Activities

For each exam, image selected from the user interface to be transferred, an attempt will be made to transfer it to the selected remote AE. When the storage fails, not only the failed task will automatically retry specific times if configured on Preset UI, but also user can restart the failed task by pressing “Retry” Button on the ultrasound task management dialog. Besides that, in the event that the ultrasound system is taken off the network or when a network failure occurs during a background store, the Storage SCU maintains a queue of failed C-STORE requests. Once the network is restored, the system will retry automatically.

Structured Reports will contain a part of common used measurements and calculations created by ultrasound system, and custom measurements or calculations will also be sent in SR

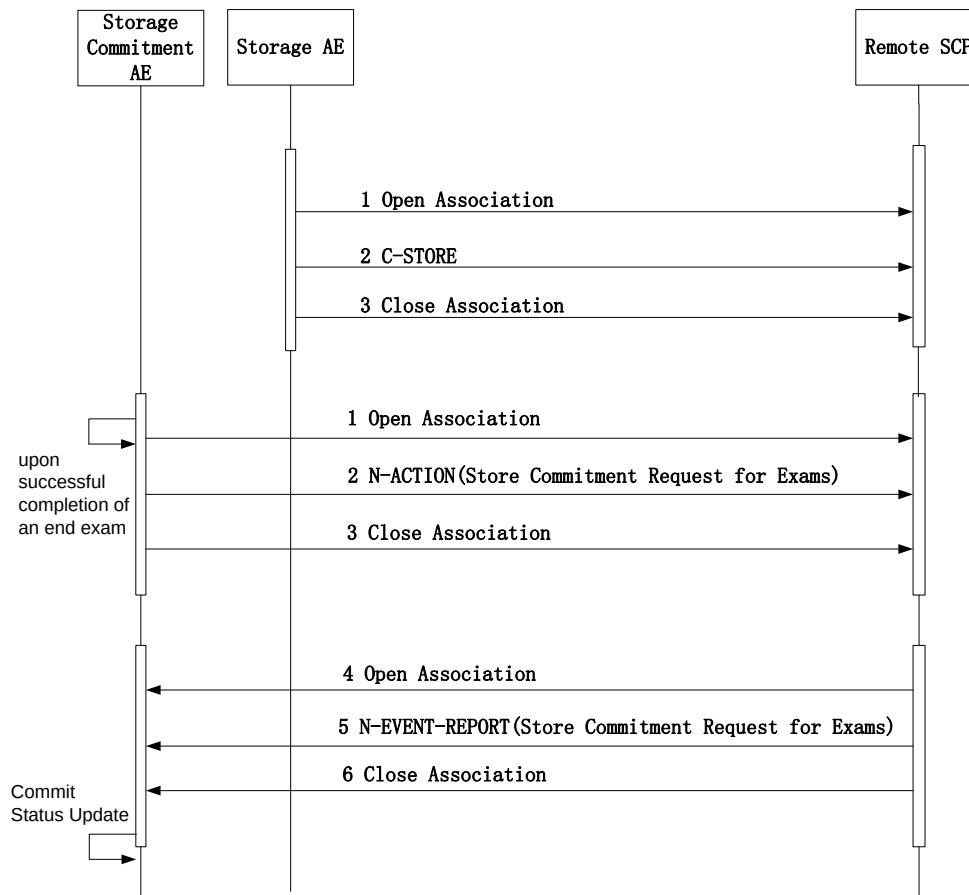
If custom measurements or calculations were defined, all custom measurements or calculations will be contained in private elements(M-99999,MRUS, "custom-measurement-name") in SR, where " custom-measurement-name " means the name of user custom measurement in the ultrasound system.

The Adult Card exam type creates Adult Echocardiography Reports.

The Abd, Uro and Vas exam types create Vascular Reports.

The OB and Gyn exam types create OB-GYN Ultrasound Procedure Reports.





**Figure3**  
**Sequencing of Activity – Send Storage Request**

### Proposed Presentation Contexts

If Storage AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the C-STORE operation. As to Compress Transfer Syntaxes, it will apply the user configured one.

**Table12**  
**Proposed Presentation Contexts for Storage**

| PROPOSED PRESENTATION CONTEXTS |                             |                                                                 |                        |      |           |
|--------------------------------|-----------------------------|-----------------------------------------------------------------|------------------------|------|-----------|
| Abstract Syntax                |                             | Transfer Syntax                                                 |                        | Role | Ext. Neg. |
| Name                           | UID                         | Name                                                            | UID                    |      |           |
| US Image Storage               | 1.2.840.10008.5.1.4.1.1.6.1 | Implicit VR Little Endian                                       | 1.2.840.10008.1.2      | SCU  | None      |
|                                |                             | Explicit VR Little Endian                                       | 1.2.840.10008.1.2.1    | SCU  | None      |
|                                |                             | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1) | 1.2.840.10008.1.2.4.50 | SCU  | None      |

|                                 |                             |                                                                                          |                        |     |      |
|---------------------------------|-----------------------------|------------------------------------------------------------------------------------------|------------------------|-----|------|
|                                 |                             | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCU | None |
|                                 |                             | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCU | None |
|                                 |                             | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCU | None |
|                                 |                             | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCU | None |
|                                 |                             | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCU | None |
| US Multiframe Image Storage     | 1.2.840.10008.5.1.4.1.1.3.1 | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCU | None |
|                                 |                             | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCU | None |
|                                 |                             | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCU | None |
|                                 |                             | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCU | None |
|                                 |                             | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCU | None |
|                                 |                             | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCU | None |
|                                 |                             | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCU | None |
|                                 |                             | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCU | None |
|                                 |                             |                                                                                          |                        |     |      |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7   | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCU | None |
|                                 |                             | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCU | None |
|                                 |                             | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCU | None |
|                                 |                             | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCU | None |
|                                 |                             | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCU | None |
|                                 |                             | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCU | None |
|                                 |                             | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCU | None |
|                                 |                             | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCU | None |
|                                 |                             |                                                                                          |                        |     |      |
| Comprehensive                   | 1.2.840.1                   | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCU | None |

|                            |                               |                                                                                          |                        |     |      |
|----------------------------|-------------------------------|------------------------------------------------------------------------------------------|------------------------|-----|------|
| Structured Report Storage  | 0008.5.1.4.1.1.88.3.3         | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCU | None |
|                            |                               | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCU | None |
|                            |                               | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCU | None |
|                            |                               | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCU | None |
|                            |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCU | None |
|                            |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCU | None |
|                            |                               | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCU | None |
| Encapsulated PDF Storage   | 1.2.840.10008.5.1.4.1.1.104.1 | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCU | None |
|                            |                               | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCU | None |
|                            |                               | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCU | None |
|                            |                               | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCU | None |
|                            |                               | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCU | None |
|                            |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCU | None |
|                            |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCU | None |
| Enhanced US Volume Storage | 1.2.840.10008.5.1.4.1.1.6.2   | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCU | None |
|                            |                               | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCU | None |
|                            |                               | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCU | None |
|                            |                               | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCU | None |
|                            |                               | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCU | None |
|                            |                               | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCU | None |
|                            |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCU | None |
|                            |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCU | None |
|                            |                               |                                                                                          |                        |     |      |
|                            |                               |                                                                                          |                        |     |      |
|                            |                               |                                                                                          |                        |     |      |
|                            |                               |                                                                                          |                        |     |      |
|                            |                               |                                                                                          |                        |     |      |
|                            |                               |                                                                                          |                        |     |      |

|                  |                            |                                                                                          |                        |     |      |
|------------------|----------------------------|------------------------------------------------------------------------------------------|------------------------|-----|------|
|                  |                            | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCU | None |
| Raw Data Storage | 1.2.840.10008.5.1.4.1.1.66 | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCU | None |
|                  |                            | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCU | None |
|                  |                            | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCU | None |
|                  |                            | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCU | None |
|                  |                            | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCU | None |
|                  |                            | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCU | None |
|                  |                            | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCU | None |
|                  |                            | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCU | None |

### SOP Specific Conformance

Storage AE provides Standard Conformance to the Storage Service Class.

Storage AE will behave as described in the Table below in response to the status returned in the C-STORE response command message.

**Table13**  
**Storage C-STORE Response Status Handling Behavior**

| Service Status | Further Meaning                   | Error Code | Behavior                                                                                                                                                                                                    |
|----------------|-----------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success                           | 0000       | Image transmission is successful, The status code is logged and the task success is reported to the user via task management.                                                                               |
| Refused        | Out of Resources                  | A7xx       | The association is aborted using A-ABORT and the send task is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management. |
| Error          | Data Set does not match SOP Class | A9xx       | The association is aborted using A-ABORT and the send task is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management. |
| Error          | Cannot Understand                 | Cxxx       | The association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.  |
| Failure        | Any other failure                 | xxxx       | The association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.  |

|         |                                   |      |                                                                                                                                                                           |
|---------|-----------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Warning | Coercion of Data Elements         | B000 | Image transmission is considered successful but the status meaning is logged.                                                                                             |
|         | Data Set does not match SOP Class | B007 | Image transmission is considered successful but the status meaning is logged.                                                                                             |
|         | Elements Discarded                | B006 | Image transmission is considered successful but the status meaning is logged.                                                                                             |
|         | Any other status code.            | xxxx | The Association is aborted using A-ABORT and the send job is marked as failed. The status code is logged and the job failure is reported to the user via task management. |

The behavior during communication failure is summarized in the Table below:

**Table 14**  
**Storage Communication Failure Behavior**

| Exception                                        | Behavior                                                                                                                                                             |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Timeout                                          | The Association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and the job failure is reported to the user via task management. |
| Association aborted by the SCP or network layers | The send job is marked as failed. The reason is logged and the job failure is reported to the user via task management.                                              |

The following tables provide the list of attributes requested in the Storage.

**Table 15**  
**US Image IOD**

| IE        | Module                |
|-----------|-----------------------|
| Patient   | Patient               |
| Study     | General Study         |
|           | Patient Study         |
| Series    | General Series        |
| Equipment | General Equipment     |
| Image     | General Image         |
|           | Image Pixel           |
|           | US Region Calibration |
|           | US Image              |
|           | VOI LUT               |
|           | SOP Common            |

**Table 16**  
**US Multi-Frame Image IOD**

| IE        | Module                |
|-----------|-----------------------|
| Patient   | Patient               |
| Study     | General Study         |
|           | Patient Study         |
| Series    | General Series        |
| Equipment | General Equipment     |
| Image     | General Image         |
|           | Image Pixel           |
|           | Cine                  |
|           | Multi-frame           |
|           | US Region Calibration |
|           | US Image              |
|           | VOI LUT               |
|           | SOP Common            |

**Table 17**  
**SC Image IOD**

| IE        | Module            |
|-----------|-------------------|
| Patient   | Patient           |
| Study     | General Study     |
|           | Patient Study     |
| Series    | General Series    |
| Equipment | General Equipment |
|           | SC Equipment      |
| Image     | General Image     |
|           | Image Pixel       |
|           | SC Image          |
|           | VOI LUT           |
|           | SOP Common        |

**Table 18**  
**Encapsulated PDF IOD**

| IE                    | Module                |
|-----------------------|-----------------------|
| Patient               | Patient               |
| Study                 | General Study         |
|                       | Patient Study         |
| Series                | Encapsulated Document |
| Equipment             | General Equipment     |
|                       | SC Equipment          |
| Encapsulated Document | Encapsulated Document |
|                       | SOP Common            |

**Table 19**  
**Raw Data IOD**

| IE        | Module              |
|-----------|---------------------|
| Patient   | Patient             |
| Study     | General Study       |
|           | Patient Study       |
| Series    | General Series      |
| Equipment | General Equipment   |
| Raw Data  | Acquisition Context |
|           | Raw Data            |
|           | SOP Common          |

**Table 20**  
**Enhanced US Volume IOD**

| IE                 | Module                        |
|--------------------|-------------------------------|
| Patient            | Patient                       |
| Study              | General Study                 |
|                    | Patient Study                 |
| Series             | General Series                |
|                    | Enhanced US Series            |
| Frame of Reference | Frame of Reference            |
|                    | Ultrasound Frame of Reference |
|                    | Synchronization               |

| IE        | Module                        |
|-----------|-------------------------------|
| Equipment | General Equipment             |
|           | Enhanced General Equipment    |
| Image     | General Image                 |
|           | Image Pixel                   |
|           | Multi-frame Functional Groups |
|           | Multi-frame Dimension         |
|           | Acquisition Context           |
|           | Enhanced US Image             |
|           | SOP Common                    |

**Table 21**  
**Patient Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME       | VALUE(S) AND COMMENTS                   |
|-------------|----|------|----------------------|-----------------------------------------|
| (0010,0010) | PN | 2    | Patient's Name       | MWL/USER                                |
| (0010,0020) | LO | 2    | Patient ID           | MWL/USER                                |
| (0010,0030) | DA | 2    | Patient's Birth Date | MWL/USER, default is set to zero length |
| (0010,0040) | CS | 2    | Patient's Sex        | MWL/USER, default is set to zero length |
| (0010,1000) | LO | 3    | Other Patient IDs    | MWL/USER                                |
| (0010,2160) | SH | 3    | Ethnic Group         | MWL                                     |
| (0010,4000) | LT | 3    | Patient Comments     | MWL/USER                                |

**Table 22**  
**General Study Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME             | VALUE(S) AND COMMENTS                   |
|-------------|----|------|----------------------------|-----------------------------------------|
| (0008,0020) | DA | 2    | Study Date                 | AUTO                                    |
| (0008,0030) | TM | 2    | Study Time                 | AUTO                                    |
| (0008,0050) | SH | 2    | Accession Number           | MWL/USER, default is set to zero length |
| (0008,0090) | PN | 2    | Referring Physician's Name | MWL/USER, default is set to zero length |
| (0008,1030) | LO | 3    | Study Description          | MWL/USER, default is set to zero length |
| (0008,1032) | SQ | 3    | Procedure Code Sequence    | MWL                                     |
| (0020,000D) | UI | 1    | Study Instance UID         | MWL/AUTO                                |
| (0020,0010) | SH | 2    | Study ID                   | AUTO                                    |

**Table 23**  
**Patient Study Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                  | VALUE(S) AND COMMENTS |
|-------------|----|------|---------------------------------|-----------------------|
| (0008,1080) | LO | 3    | Admitting Diagnoses Description | MWL                   |



| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME             | VALUE(S) AND COMMENTS                                                                                               |
|-------------|----|------|----------------------------|---------------------------------------------------------------------------------------------------------------------|
| (0010,1010) | AS | 3    | Patient's Age              | MWL/USER, default is set to zero length<br>If the user set Patient Birth Date, it will be calculated automatically. |
| (0010,1020) | DS | 3    | Patient's Size             | MWL/USER, default is set to zero length                                                                             |
| (0010,1030) | DS | 3    | Patient's Weight           | MWL/USER, default is set to zero length                                                                             |
| (0010,21B0) | LT | 3    | Additional Patient History | MWL                                                                                                                 |

**Table 24**  
**General Series Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                       | VALUE(S) AND COMMENTS                   |
|-------------|----|------|--------------------------------------|-----------------------------------------|
| (0008,0021) | DA | 3    | Series Date                          | AUTO                                    |
| (0008,0031) | TM | 3    | Series Time                          | AUTO                                    |
| (0008,0060) | CS | 1    | Modality                             | "US"                                    |
| (0008,103E) | LO | 3    | Series Description                   | MWL/USER                                |
| (0008,1050) | PN | 3    | Performing Physician's Name          | MWL/USER, default is set to zero length |
| (0008,1070) | PN | 3    | Operators' Name                      | MWL/USER, default is set to zero length |
| (0018,1030) | LO | 3    | Protocol Name                        | AUTO – set to ExamType                  |
| (0018,5100) | CS | 2C   | Patient Position                     | Set to zero length                      |
| (0020,000E) | UI | 1    | Series Instance UID                  | AUTO                                    |
| (0020,0011) | IS | 2    | Series Number                        | AUTO                                    |
| (0020,0060) | CS | 2C   | Laterality                           | Set to zero length                      |
| (0040,0244) | DA | 3    | Performed Procedure Step Start Date  | MPPS                                    |
| (0040,0245) | TM | 3    | Performed Procedure Step Start Time  | MPPS                                    |
| (0040,0254) | LO | 3    | Performed Procedure Step Description | MPPS                                    |
| (0040,0260) | SQ | 3    | Performed Protocol Code Sequence     | MPPS                                    |

**Table 25**  
**Encapsulated Document Series Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME               | VALUE(S) AND COMMENTS |
|-------------|----|------|------------------------------|-----------------------|
| (0008,0060) | CS | 1    | Modality                     | "US"                  |
| (0020,000E) | UI | 1    | Series Instance UID          | AUTO                  |
| (0020,0011) | IS | 1    | Series Number                | AUTO                  |
| (0008,103E) | LO | 3    | Series Description           | MWL/USER              |
| (0040,0275) | SQ | 3    | Request Attributes Sequence  | MWL                   |
| (0040,1001) | SH | 1C   | >Requested Procedure ID      | MWL                   |
| (0040,0009) | SH | 1C   | >Scheduled Procedure Step ID | MWL                   |

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                            | VALUE(S) AND COMMENTS |
|-------------|----|------|-------------------------------------------|-----------------------|
| (0040,0007) | LO | 3    | >Scheduled Procedure Step MWL Description | MWL                   |
| (0040,0008) | SQ | 3    | >Scheduled Protocol Code Sequence         | MWL                   |
| (0008,0100) | SH | 1C   | >>Code Value                              | MWL                   |
| (0008,0102) | SH | 1C   | >>Coding Scheme designator                | MWL                   |
| (0008,0103) | SH | 1C   | >>Coding Scheme Version                   | MWL                   |
| (0008,0104) | LO | 1C   | >>Code Meaning                            | MWL                   |

**Table 26**  
**Enhanced US Series Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                               | VALUE(S) AND COMMENTS |
|-------------|----|------|----------------------------------------------|-----------------------|
| (0008,0060) | CS | 1    | Modality                                     | "US"                  |
| (0008,1111) | SQ | 1C   | Referenced Performed Procedure Step Sequence | MPPS                  |
| (0040,0260) | SQ | 1C   | Performed Protocol Code Sequence             | MWL                   |

**Table 27**  
**Frame of Reference Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME               | VALUE(S) AND COMMENTS |
|-------------|----|------|------------------------------|-----------------------|
| (0020,0052) | UI | 1    | Frame of Reference UID       | AUTO                  |
| (0020,1040) | LO | 2    | Position Reference Indicator | Set to zero length    |

**Table 28**  
**Ultrasound Frame of Reference Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                   | VALUE(S) AND COMMENTS                                                                                                                                                               |
|-------------|----|------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (0020,9312) | UI | 1    | Volume Frame of Reference UID    | AUTO                                                                                                                                                                                |
| (0020,9307) | CS | 1    | Ultrasound Acquisition Geometry  | "APEX"                                                                                                                                                                              |
| (0020,9308) | FD | 1C   | Apex Position                    | Position of the apex (or phase center) of the acquisition geometry, encoded as xA, yA, and zA in mm units in the Volume Frame of Reference.                                         |
| (0020,9309) | FD | 1    | Volume Transducer Mapping Matrix | A 4x4 homogeneous transformation matrix that maps the Volume Frame of Reference coordinate system (XV, YV, ZV) to the Transducer Frame of Reference coordinate system (XX, YX, ZX). |

**Table 29**  
**Synchronization Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                         | VALUE(S) AND COMMENTS                                                                                              |
|-------------|----|------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| (0020,0200) | UI | 1    | Synchronization Frame of Reference UID | "1.2.840.10008.15.1.1"                                                                                             |
| (0018,106A) | CS | 1    | Synchronization Trigger                | "EXTERNAL": System is synchronized to the international standard UTC.<br>"NO TRIGGER": System is not synchronized. |
| (0018,1800) | CS | 1    | Acquisition Time Synchronized          | "Y": Time Synchronized service is enabled.<br>"N": Time Synchronized service is not enabled.                       |
| (0018,1802) | CS | 3    | Time Distribution Protocol             | "SNTP": Time Synchronized service is enabled.<br>Set to zero length: Time Synchronized service is not enabled.     |

**Table 30**  
**General Equipment Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                   | VALUE(S) AND COMMENTS         |
|-------------|----|------|----------------------------------|-------------------------------|
| (0008,0070) | LO | 2    | Manufacturer                     | "SIEMENS"                     |
| (0008,0080) | LO | 3    | Institution Name                 | CONFIG                        |
| (0008,1010) | SH | 3    | Station Name                     | CONFIG                        |
| (0008,1040) | LO | 3    | Institutional<br>Department Name | CONFIG                        |
| (0018,1000) | LO | 3    | Device Serial Number             | The Ethernet card Mac Address |
| (0018,1020) | LO | 3    | Software Version(s)              | AUTO                          |

**Table 31**  
**SC Equipment Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                                              | VALUE(S) AND COMMENTS |
|-------------|----|------|-------------------------------------------------------------|-----------------------|
| (0008,0060) | CS | 3    | Modality                                                    | "US"                  |
| (0008,0064) | CS | 1    | Conversion Type                                             | "WSD"                 |
| (0018,1016) | LO | 3    | Secondary Capture<br>Device Manufacturer                    | "SIEMENS"             |
| (0018,1018) | LO | 3    | Secondary Capture<br>Device<br>Manufacturer's Model<br>Name | "ACUSON Bonsai™"      |
| (0018,1019) | LO | 3    | Secondary Capture<br>Device Software<br>Version(s)          | AUTO                  |

**Table 32**  
**Enhanced General Equipment Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME               | VALUE(S) AND COMMENTS         |
|-------------|----|------|------------------------------|-------------------------------|
| (0008,0070) | LO | 1    | Manufacturer                 | "SIEMENS"                     |
| (0008,1090) | LO | 1    | Manufacturer's Model<br>Name | "ACUSON Bonsai™"              |
| (0018,1000) | LO | 1    | Device Serial Number         | The Ethernet card Mac Address |
| (0018,1020) | LO | 3    | Software Versions            | AUTO                          |

**Table 33**  
**General Image Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME         | VALUE(S) AND COMMENTS                 |
|-------------|----|------|------------------------|---------------------------------------|
| (0008,0023) | DA | 2C   | Content Date           | AUTO                                  |
| (0008,0033) | TM | 2C   | Content Time           | AUTO                                  |
| (0008,2111) | ST | 3    | Derivation Description | CONFIG, default is set to zero length |
| (0020,0013) | IS | 2    | Instance Number        | AUTO                                  |
| (0020,0020) | CS | 2C   | Patient Orientation    | Set to zero length                    |
| (0020,4000) | LT | 3    | Image Comments         | Set to zero length                    |
| (0028,0301) | CS | 3    | Burned In Annotation   | "YES"                                 |

**Table 34**  
**US Image Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                | VALUE(S) AND COMMENTS                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|----|------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (0008,0008) | CS | 2    | Image Type                    | "ORIGINAL/PRIMARY"                                                                                                                                                                                                                                                                                                                                                                               |
| (0018,5010) | LO | 3    | Transducer Data               | USER                                                                                                                                                                                                                                                                                                                                                                                             |
| (0018,5020) | LO | 3    | Processing Function           | USER                                                                                                                                                                                                                                                                                                                                                                                             |
| (0028,0002) | US | 1    | Samples per Pixel             | 1 or 3                                                                                                                                                                                                                                                                                                                                                                                           |
| (0028,0004) | CS | 1    | Photometric Interpretation    | "RGB", for color images;<br>"MONOCHROME2", if the image is grayscale;<br>"YBR_FULL_422", if the image is sent using JPEG.<br>"RGB", if the image is sent using JPEG Lossless.<br>"YBR_FULL", if the image is sent using RLE Lossless.<br>"YBR_ICT", if the image is sent using JPEG 2000 Image Compression.<br>"YBR_RCT", if the image is sent using JPEG 2000 Image Compression (Lossless Only) |
| (0028,0006) | US | 1C   | Planar Configuration          | 1, if the image is sent using RLE Lossless<br>0, otherwise.                                                                                                                                                                                                                                                                                                                                      |
| (0028,0009) | AT | 1C   | Frame Increment Pointer       | Frame Time                                                                                                                                                                                                                                                                                                                                                                                       |
| (0028,0014) | US | 3    | Ultrasound Color Data Present | 0 or 1                                                                                                                                                                                                                                                                                                                                                                                           |
| (0028,0100) | US | 1    | Bits Allocated                | 0x0008                                                                                                                                                                                                                                                                                                                                                                                           |
| (0028,0101) | US | 1    | Bits Stored                   | 0x0008                                                                                                                                                                                                                                                                                                                                                                                           |
| (0028,0102) | US | 1    | High Bit                      | 0x0007                                                                                                                                                                                                                                                                                                                                                                                           |
| (0028,0103) | US | 1    | Pixel Representation          | 0x0000                                                                                                                                                                                                                                                                                                                                                                                           |
| (0028,2110) | CS | 1C   | Lossy Image Compression       | Not used if image is uncompressed;<br>support JPEG baseline,<br>JPEG Lossless,RLE Lossless,JPEG 2000 Image Compression,JPEG 2000 Image Compression (Lossless Only)<br>process1 and set it to "01"                                                                                                                                                                                                |

**Table 35**  
**SC Image Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME            | VALUE(S) AND COMMENTS |
|-------------|----|------|---------------------------|-----------------------|
| (0018,1012) | DA | 3    | Date of Secondary Capture | AUTO                  |
| (0018,1014) | TM | 3    | Time of Secondary Capture | AUTO                  |

**Table 36**  
**Image Pixel Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME     | VALUE(S) AND COMMENTS |
|-------------|----|------|--------------------|-----------------------|
| (0028,0010) | US | 1    | Rows               | CONFIG                |
| (0028,0011) | US | 1    | Columns            | CONFIG                |
| (0028,0034) | IS | 1c   | Pixel Aspect Ratio | Set to zero length    |
| (7FE0,0010) | OW | 1    | Pixel Data         |                       |

**Table 37**  
**VOI LUT Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME | VALUE(S) AND COMMENTS |
|-------------|----|------|----------------|-----------------------|
| (0028,1050) | DS | 1C   | Window Center  | AUTO                  |
| (0028,1051) | DS | 1C   | Window Width   | AUTO                  |

**Table 38**  
**SOP Common Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME         | VALUE(S) AND COMMENTS |
|-------------|----|------|------------------------|-----------------------|
| (0008,0005) | CS | 1C   | Specific Character Set | AUTO                  |
| (0008,0012) | DA | 3    | Instance Creation Date | AUTO                  |
| (0008,0013) | TM | 3    | Instance Creation Time | AUTO                  |
| (0008,0016) | UI | 1C   | SOP Class UID          | AUTO                  |
| (0008,0018) | UI | 1C   | SOP Instance UID       | AUTO                  |

**Table 39**  
**US Region Calibration Module**

| ATTRIBUTE    | VR | TYPE | ATTRIBUTE NAME                 | VALUE(S) AND COMMENTS |
|--------------|----|------|--------------------------------|-----------------------|
| (0018,6011)  | SQ | 1    | Sequence of Ultrasound Regions |                       |
| >(0018,6012) | US | 1    | Region Spatial Format          | Set by the system     |
| >(0018,6014) | US | 1    | Region Data Type               | Set by the system     |
| >(0018,6016) | UL | 1    | Region Flags                   | Set by the system     |
| >(0018,6018) | UL | 1    | Region Location Min X0         | Set by the system     |
| >(0018,6020) | UL | 1    | Reference Pixel x0             | Set by the system     |
| >(0018,6022) | UL | 1    | Reference Pixel y0             | Set by the system     |
| >(0018,6028) | UL | 1    | Ref. Pixel Physical Value X    | Set by the system     |
| >(0018,602A) | UL | 1    | Ref. Pixel Physical Value Y    | Set by the system     |
| >(0018,601A) | UL | 1    | Region Location Min Y0         | Set by the system     |

| ATTRIBUTE    | VR | TYPE | ATTRIBUTE NAME             | VALUE(S) AND COMMENTS |
|--------------|----|------|----------------------------|-----------------------|
| >(0018,601C) | UL | 1    | Region Location Max X1     | Set by the system     |
| >(0018,601E) | UL | 1    | Region Location Max Y1     | Set by the system     |
| >(0018,6024) | US | 1    | Physical Units X Direction | Set by the system     |
| >(0018,6026) | US | 1    | Physical Units Y Direction | Set by the system     |
| >(0018,602C) | FD | 1    | Physical Delta X           | Set by the system     |
| >(0018,602E) | FD | 1    | Physical Delta Y           | Set by the system     |

**Table 40**

**Cine Module Used for US Multi-Frame Images Only**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                 | VALUE(S) AND COMMENTS |
|-------------|----|------|--------------------------------|-----------------------|
| (0008,2142) | IS | 3    | Start Trim                     | Set by the system     |
| (0008,2143) | IS | 3    | Stop Trim                      | Set by the system     |
| (0008,2144) | IS | 3    | Recommended Display Frame Rate | Set by the system     |
| (0018,0040) | IS | 3    | Cine Rate                      | CONFIG                |
| (0018,0072) | DS | 3    | Effective Duration             | Set by the system     |
| (0018,1063) | DS | 1C   | Frame Time                     | Set by the system     |
| (0018,1065) | DS | 1C   | Frame Time Vector              | Set by the system     |
| (0018,1066) | DS | 3    | Frame Delay                    | Set by the system     |
| (0018,1242) | IS | 3    | Actual Frame Duration          | Set by the system     |
| (0018,1244) | US | 3    | Preferred Playback Sequencing  | Set by the system     |

**Table 41**

**Multi-Frame Module Used for US Multi-Frame Images Only**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME          | VALUE(S) AND COMMENTS  |
|-------------|----|------|-------------------------|------------------------|
| (0028,0008) | IS | 1    | Number of Frames        | AUTO                   |
| (0028,0009) | AT | 1    | Frame Increment Pointer | 0018 1063 = Frame Time |

**Table 42**

**SC Equipment Module Used for Second Capture Images Only**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                        | VALUE(S) AND COMMENTS |
|-------------|----|------|---------------------------------------|-----------------------|
| (0008,0060) | CS | 3    | Modality                              | "US"                  |
| (0008,0064) | CS | 1    | Conversion Type                       | "WSD"                 |
| (0018,1010) | LO | 3    | Secondary Capture Device ID           | "ACUSON Bonsai™"      |
| (0018,1016) | LO | 3    | Secondary Capture Device Manufacturer | "SIEMENS"             |

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                                     | VALUE(S) AND COMMENTS |
|-------------|----|------|----------------------------------------------------|-----------------------|
| (0018,1018) | LO | 3    | Secondary Capture Device Manufacturer's Model Name | "ACUSON Bonsai™"      |
| (0018,1019) | LO | 3    | Secondary Capture Device Software Version(s)       | AUTO                  |

**Table 43**  
**SC Image Module Used for Second Capture Images Only**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME            | VALUE(S) AND COMMENTS |
|-------------|----|------|---------------------------|-----------------------|
| (0018,1012) | DA | 3    | Date of Secondary Capture | AUTO                  |
| (0018,1014) | TM | 3    | Time of Secondary Capture | AUTO                  |

**Table 44**  
**Encapsulated Document Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                     | VALUE(S) AND COMMENTS                                                                                                                                                                                                |
|-------------|----|------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (0020,0013) | IS | 1    | Instance Number                    | AUTO                                                                                                                                                                                                                 |
| (0008,0023) | DA | 2    | Content Date                       | AUTO                                                                                                                                                                                                                 |
| (0008,0033) | TM | 2    | Content Time                       | AUTO                                                                                                                                                                                                                 |
| (0008,002A) | DT | 2    | Acquisition DateTime               | AUTO                                                                                                                                                                                                                 |
| (0028,0301) | CS | 1    | Burned Annotation In               | "YES"                                                                                                                                                                                                                |
| (0042,0010) | ST | 2    | Document Title                     | The Title of the Document                                                                                                                                                                                            |
| (0040,A043) | SQ | 2    | Concept Name Code Sequence         | Set to zero length                                                                                                                                                                                                   |
| (0040,A493) | CS | 3    | Verification Flag                  | AUTO.<br>"UNVERIFIED" = Not attested by a legally accountable person.<br>"VERIFIED" = Attested to (signed) by a Verifying Observer or Legal Authenticator named in the document, who is accountable for its content. |
| (0042,0012) | LO | 1    | MIME Type of Encapsulated Document | "application/pdf"                                                                                                                                                                                                    |
| (0042,0011) | OB | 1    | Encapsulated Document              | The PDF Document                                                                                                                                                                                                     |



**Table 45**  
**Acquisition Context Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME               | VALUE(S) AND COMMENTS |
|-------------|----|------|------------------------------|-----------------------|
| (0040,0555) | SQ | 2    | Acquisition Context Sequence | Set to zero length    |

**Table 46**  
**Raw Data Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                  | VALUE(S) AND COMMENTS |
|-------------|----|------|---------------------------------|-----------------------|
| (0020,0013) | SQ | 2    | Instance Number                 | Set to zero length    |
| (0008,0023) | DA | 1    | Content Date                    | AUTO                  |
| (0008,0033) | TM | 1    | Content Time                    | AUTO                  |
| (0008,9123) | UI | 1    | Creator-Version UID             | AUTO                  |
| (5001,0010) |    |      | : private mapped to (5001,00FF) | "SIEMENSRawData"      |
| (5001,1011) |    |      | : private mapped to (5001,FF11) |                       |
| (5001,1013) |    |      | : private mapped to (5001,FF13) |                       |

**Table 47**  
**Multi-frame Functional Groups Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                       | VALUE(S) AND COMMENTS |
|-------------|----|------|--------------------------------------|-----------------------|
| (5200,9229) | SQ | 2    | Shared Functional Groups Sequence    |                       |
| (0028,9132) | SQ | 1    | > Frame VOI LUT Sequence             |                       |
| (0028,1050) | DS | 1    | >>Window Center                      | Set by the system     |
| (0028,1051) | DS | 1    | >>Window Width                       | Set by the system     |
| (0020,930F) | SQ | 1    | >Plane Orientation (Volume) Sequence |                       |
| (0020,9302) | FD | 1    | >>Image Orientation (Volume)         | Set by the system     |
| (0018,9806) | SQ | 1    | >US Image Description Sequence       |                       |
| (0008,9007) | CS | 1    | >>Frame Type                         | "ORIGINAL\PRIMARY"    |
| (0008,9206) | CS | 1    | >>Volumetric Properties              | "VOLUME"              |
| (0008,9207) | CS | 1    | >>Volume                             | "NONE"                |

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                       | VALUE(S) AND COMMENTS                                         |
|-------------|----|------|--------------------------------------|---------------------------------------------------------------|
|             |    |      | Based Calculation Technique          |                                                               |
| (5200,9230) | SQ | 1    | Per-frame Functional Groups Sequence |                                                               |
| (0020,9111) | SQ | 1    | >Frame Content Sequence              |                                                               |
| (0018,9151) | DT | 1C   | >>Frame Reference DateTime           | Set by the system                                             |
| (0018,9074) | DT | 1C   | >>Frame Acquisition DateTime         | Set by the system                                             |
| (0018,9220) | FD | 1C   | >>Frame Acquisition Duration         | Set by the system                                             |
| (0020,9157) | UL | 1C   | >>Dimension Index Values             | Set by the system                                             |
| (0020,930E) | SQ | 1    | >Plane Position (Volume) Sequence    |                                                               |
| (0020,9301) | FD | 1    | >>Image Position (Volume)            | Set by the system                                             |
| (0020,9310) | SQ | 1    | >Temporal Position Sequence          |                                                               |
| (0020,930D) | FD | 1    | >>Temporal Position Offset           | Set by the system                                             |
| (0018,9807) | SQ | 1    | >Image Data Type Sequence            |                                                               |
| (0018,9808) | CS | 1    | >>Data Type                          | Set by the system<br>"TISSUE_INTENSITY" or<br>"FLOW_VELOCITY" |
| (0018,980B) | CS | 1    | >>Aliased Data Type                  | "NO"                                                          |
| (0020,0013) | IS | 1    | Instance Number                      | AUTO                                                          |
| (0008,0023) | DA | 1    | Content Date                         | AUTO                                                          |
| (0008,0033) | TM | 1    | Content Time                         | AUTO                                                          |
| (0028,0008) | IS | 1    | Number of Frames                     | AUTO                                                          |

**Table 48**  
**Multi-frame Dimension Module**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                  | VALUE(S) AND COMMENTS |
|-------------|----|------|---------------------------------|-----------------------|
| (0020,9221) | SQ | 1    | Dimension Organization Sequence |                       |

|             |    |    |                                 |                                                             |
|-------------|----|----|---------------------------------|-------------------------------------------------------------|
| (0020,9164) | UI | 1  | >Dimension<br>Organization UID  | AUTO                                                        |
| (0020,9222) | SQ | 1  | Dimension Index<br>Sequence     | Including 3 items.                                          |
| (0020,9165) | AT | 1  | >Dimension Index<br>Pointer     | Item1: 0x0020930d<br>Item2: 0x00209301<br>Item3: 0x00189808 |
| (0020,9167) | AT | 1C | >Functional Group<br>Pointer    | Item1: 0x00209310<br>Item2: 0x0020930e<br>Item3: 0x00189807 |
| (0020,9164) | UI | 1C | >Dimension<br>Organization UID  | Item1, Item2, Item3: AUTO                                   |
| (0020,9421) | LO | 3  | >Dimension<br>Description Label | Item1: Time<br>Item2: Image position(Z)<br>Item3: Data type |

**Table 49**  
**Enhanced US Image Module**

| ATTRIBUTE    | VR | TYPE | ATTRIBUTE NAME                        | VALUE(S) AND COMMENTS  |
|--------------|----|------|---------------------------------------|------------------------|
| (0008,0008)  | CS | 1    | Image Type                            | "ORIGINAL/PRIMARY"     |
| (0028,0002)  | US | 1    | Samples Per Pixel                     | "1"                    |
| (0028,0004)  | CS | 1    | Photometric Interpretation            | "MONOCHROME2"          |
| (0028,0100)  | US | 1    | Bits Allocated                        | "8"                    |
| (0028,0101)  | US | 1    | Bits Stored                           | "8"                    |
| (0028,0102)  | US | 1    | High Bit                              | "7"                    |
| (0028,0103)  | US | 1    | Pixel Representation                  | "0"                    |
| (0020,9311)  | CS | 1    | Dimension Organization Type           | "3D" or "3D_TEMPORAL": |
| (0008,002A)  | DT | 1    | Acquisition Datetime                  | AUTO                   |
| (0018,9073)  | FD | 1    | Acquisition Duration                  | Set by the system      |
| (0028,0030)  | DS | 1    | Pixel Spacing                         | Set by the system      |
| (0018,980C)  | CS | 1C   | Position Measuring Device Used        | "FREEHAND"             |
| (2050,0020)  | CS | 1    | Presentation LUT Shape                | "IDENTITY"             |
| (0028,1052)  | DS | 1    | Rescale Intercept                     | "0"                    |
| (0028,1053)  | DS | 1    | Rescale Slope                         | "1"                    |
| (0028,0301)  | CS | 1    | Burned Annotation In                  | "NO"                   |
| (0018,9809)  | SQ | 1    | Transducer Scan Pattern Code Sequence |                        |
| >(0008,0100) | SH | 1    | Code Value                            | "125242"               |
| >(0008,0102) | SH | 1    | Coding Scheme Designator              | "DCM"                  |

| ATTRIBUTE    | VR | TYPE | ATTRIBUTE NAME                         | VALUE(S) AND COMMENTS                   |
|--------------|----|------|----------------------------------------|-----------------------------------------|
| >(0008,0103) | SH | 1    | Coding Scheme Version                  | "20090409"                              |
| >(0008,0104) | LO | 1    | Code Meaning                           | "Volume scan pattern"                   |
| (0018,980D)  | SQ | 1    | Transducer Geometry Code Sequence      |                                         |
| >(0008,0100) | SH | 1    | Code Value                             | "125254"                                |
| >(0008,0102) | SH | 1    | Coding Scheme Designator               | "DCM"                                   |
| >(0008,0103) | SH | 1    | Coding Scheme Version                  | "20090409"                              |
| >(0008,0104) | LO | 1    | Code Meaning                           | "Sector ultrasound transducer geometry" |
| (0018,980E)  | SQ | 1    | Transducer Beam Steering Code Sequence |                                         |
| >(0008,0100) | SH | 1    | Code Value                             | "125258"                                |
| >(0008,0102) | SH | 1    | Coding Scheme Designator               | "DCM"                                   |
| >(0008,0103) | SH | 1    | Coding Scheme Version                  | "20090409"                              |
| >(0008,0104) | LO | 1    | Code Meaning                           | "Mechanical beam steering"              |
| (0018,980F)  | SQ | 1    | Transducer Application Code Sequence   |                                         |
| >(0008,0100) | SH | 1    | Code Value                             | "125261"                                |
| >(0008,0102) | SH | 1    | Coding Scheme Designator               | "DCM"                                   |
| >(0008,0103) | SH | 1    | Coding Scheme Version                  | "20090409"                              |
| >(0008,0104) | LO | 1    | Code Meaning                           | "External Transducer"                   |
| (0018,5022)  | DS | 1    | Mechanical Index                       | Set by the system                       |
| (0018,5024)  | DS | 1    | Bone Thermal Index                     | Set by the system                       |
| (0018,5026)  | DS | 1    | Cranial Thermal Index                  | Set by the system                       |
| (0018,5027)  | DS | 1    | Soft Tissue Thermal Index              | Set by the system                       |
| (0018,9801)  | FD | 1    | Depth(s) of Focus                      | Set by the system                       |
| (0018,5050)  | IS | 1    | Depth of Scan Field                    | Set by the system                       |

Conventions used for the Value(s) and Comments section are:

MWL – the attribute value source is from Modality WORKLIST

USER – the attribute value source is from User's input

AUTO – automatically generated by the MODALITY system

CONFIG - the attribute value source is a configurable parameter

## Activity – Film Images

### Description and Sequencing of Activities

A user composes images onto film sheets and requests them to be sent to a specific hardcopy device. The user can select the desired film format and number of copies. Each print-job is forwarded to the job queue and processed individually.

The system is invoked by the user on “Send to” UI if the print remote AE is pre-configured. Status of the print-job is reported through task management UI. If pre-configured on Preset UI, the failed print task will be automatically retried specified times. If no pre-configuration, the user can also retry manually. Only one task will be active at a time for each separate hardcopy device. The same as Storage, the system could retry automatically the failed task caused by network failure, when the network is restored.

A typical sequence of DIMSE messages sent over an association between Print AE and a Printer is illustrated in Figure4:

Print AE opens an association with the Printer.

N-GET on the Printer SOP Class is used to obtain current printer status information.

N-CREATE on the Film Session SOP Class creates a Film Session.

N-CREATE on the Film Box SOP Class creates a Film Box linked to the Film Session. A single Image Box will be created as the result of this operation (Print AE default uses the format STANDARD\1.1, but user can change it on Preset UI).

N-SET on the Image Box SOP Class transfers the contents of the film sheet to the printer.

N-ACTION on the Film Box SOP Class instructs the printer to print the Film Box.

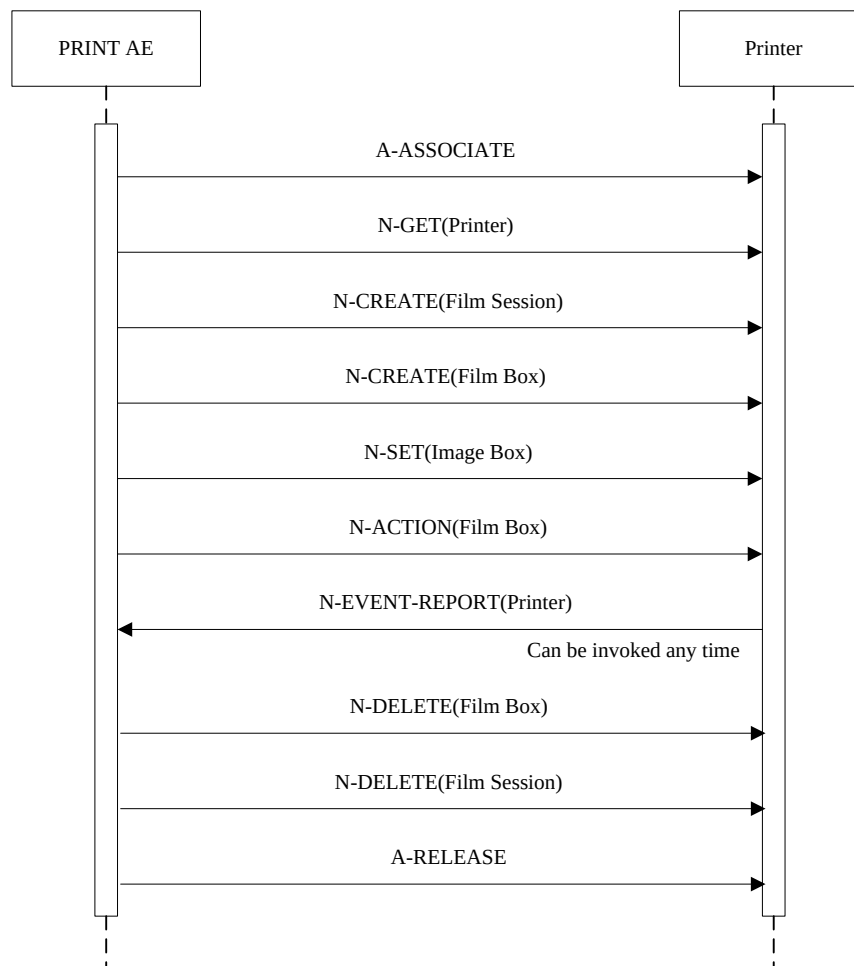
The Printer prints the requested number of film sheets.

The Printer asynchronously reports its status via N-EVENT-REPORT notification (Printer SOP Class). The Printer can send this message at any time. Print AE does not require the N-EVENT-REPORT to be sent. Print AE is capable of receiving an N-EVENT-REPORT notification at any time during an association.

N-DELETE on the Film Box SOP Class deletes the complete Film box SOP Instance hierarchy.

N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.

Print AE closes the association with the Printer.



**Figure4**  
**Sequencing of Activity – Film Images**

### Proposed Presentation Contexts

Print AE is capable of proposing the Presentation Contexts shown in the Table below:

**Table50**  
**Proposed Presentation Contexts for Activity Film Images**

| Presentation Context Table |                       |                           |                   |      |           |
|----------------------------|-----------------------|---------------------------|-------------------|------|-----------|
| Abstract Syntax            |                       | Transfer Syntax           |                   | Role | Ext. Neg. |
| Name                       | UID                   | Name List                 | UID List          |      |           |
| Basic Grayscale Print      | 1.2.840.10008.5.1.1.9 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None      |

|                                   |                        |                           |                     |     |      |
|-----------------------------------|------------------------|---------------------------|---------------------|-----|------|
| Management Meta                   |                        | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
|                                   |                        | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCU | None |
| Basic Color Print Management Meta | 1.2.840.10008.5.1.1.18 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCU | None |
|                                   |                        | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
|                                   |                        | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCU | None |

### Common SOP Specific Conformance for all Print SOP Classes

The general behavior of Print AE during communication failure is summarized in the Table below. This behavior is common for all SOP Classes supported by Print AE.

**Table51**  
**Print AE Communication Failure Behavior**

| Exception                                        | Behavior                                                                                             |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Timeout                                          | The association is aborted using A-ABORT and the print-job is marked as failed.                      |
| Association aborted by the SCP or network layers | The print-job is marked as failed. The reason is logged and the job failure is reported to the user. |

Recommended abbreviations to be used for the tables are:

VNAP Value Not Always Present (attribute sent zero length if no value is present)

ANAP Attribute Not Always Present

ALWAYS Always Present with a value

EMPTY Attribute is sent without a value

Recommended abbreviations to be used for the source of the data values in the tables are:

USER the attribute value source is from User input

AUTO the attribute value is generated automatically

CONFIG the attribute value source is a configurable parameter

PRINTER the attribute value is provided by printer

## SOP Specific Conformance for the Printer SOP Class

Print AE supports the following DIMSE operations and notifications for the Printer SOP Class:

- N-GET
- N-EVENT-REPORT

Details of the supported attributes and status handling behavior are described in the following subsections.

### *Printer SOP Class Operations (N-GET)*

Print AE uses the Printer SOP Class N-GET operation to obtain information about the current printer status. The attributes excepted via N-GET are listed in the Table below:

**Table52**  
**Printer SOP Class N-GET Request Attribute Identifier List**

| Attribute Name           | Tag         |
|--------------------------|-------------|
| Printer Status           | (2110,0010) |
| Printer Status Info      | (2110,0020) |
| Printer Name             | (2110,0030) |
| Manufacturer             | (0008,0070) |
| Manufacturer Model Name  | (0008,1090) |
| Device Serial Number     | (0018,1000) |
| Software Version(s)      | (0018,1020) |
| Date of Last Calibration | (0018,1200) |
| Time of Last Calibration | (0018,1201) |

The behavior of Print AE when encountering status codes in a N-GET response is summarized in the Table below:

**Table53**  
**Printer SOP Class N-GET Response Status Handling Behavior**

| Service Status | Further Meaning | Error Code | Behavior                                                                                                                               |
|----------------|-----------------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success         | 0000       | The request to get printer status information was success.                                                                             |
| Warning        | any warning     | xxxx       | The print-job continues to be printed.                                                                                                 |
| Failure        | any failure     | xxxx       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |

### *Printer SOP Class Notifications (N-EVENT-REPORT)*

Print AE is capable of receiving an N-EVENT-REPORT request at any time during an association. The behavior of Print AE when receiving Event Types within the N-EVENT-REPORT is summarized in the Table 54.

**Table 54**  
**Printer SOP Class N-Event-Report Behavior**

| Event Type Name | Event Type ID | Behavior                                                                                                                                |
|-----------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Normal          | 1             | The print-job continues to be printed.                                                                                                  |
| Warning         | 2             | The print-job continues to be printed. The contents of Printer Status Info (2110, 0020) is logged and reported to the user via the job- |



|         |   |                                                                                                                                                         |
|---------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |   | control application.                                                                                                                                    |
| Failure | 3 | The print-job is marked as failed. The contents of Printer Status Info (2110, 0020) is logged and reported to the user via the job-control application. |
| *       | * | An invalid Event Type ID will cause a status code of 0113H to be returned in a N-EVENT-REPORT response.                                                 |

The reasons for returning specific status codes in a N-EVENT-REPORT response are summarized in the Table below:

**Table 55**

**Printer SOP Class N-EVENT-REPORT Response Status Reasons**

| Service Status | Further Meaning    | Error Code | Reasons                                                                                                                                              |
|----------------|--------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success            | 0000       | The notification event has been successfully received.                                                                                               |
| Failure        | No Such Event Type | 0113H      | An invalid Event Type ID was supplied in the N-EVENT-REPORT request.                                                                                 |
| Failure        | Processing Failure | 0110H      | An internal error occurred during processing of the N-EVENT-REPORT. A short description of the error will be returned in Error Comment (0000, 0902). |

**SOP Specific Conformance for the Film Session SOP Class**

Print AE supports the following DIMSE operations for the Film Session SOP Class:

- N-CREATE
- N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

*Film Session SOP Class Operations (N-CREATE)*

The attributes supplied in an N-CREATE Request are listed in the Table below:

**Table56**

**Film Session SOP Class N-CREATE Request Attributes**

| Attribute Name   | Tag         | VR | Value                        | Presence of Value | Source |
|------------------|-------------|----|------------------------------|-------------------|--------|
| Number of Copies | (2000,0010) | IS | [1, 100]                     | ALWAYS            | CONFIG |
| Print Priority   | (2000,0020) | CS | LOW, MED,HIGH                | ALWAYS            | CONFIG |
| Medium Type      | (2000,0030) | CS | BLUE FILM, CLEAR FILM, PAPER | ALWAYS            | CONFIG |
| Film Destination | (2000,0040) | CS | MAGAZINE, PROCESSOR          | ALWAYS            | CONFIG |

The behavior of Print AE when encountering status codes in a N-CREATE response is summarized in the Table below:

**Table57**

**Film Session SOP Class N-CREATE Response Status Handling Behavior**

| Service Status | Further Meaning | Error Code | Behavior                                          |
|----------------|-----------------|------------|---------------------------------------------------|
| Success        | Success         | 0000       | The SCP has completed the operation successfully. |

| Service Status | Further Meaning                 | Error Code | Behavior                                                                                                                               |
|----------------|---------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Warning        | Memory allocation not supported | B600       | The N-CREATE operation is considered successful.                                                                                       |
| Warning        | any warning                     | xxxx       | The N-CREATE operation is considered successful.                                                                                       |
| Failure        | any failure                     | xxxx       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |

*Film Session SOP Class Operations (N-DELETE)*

The behavior of Print AE when encountering status codes in a N-DELETE response is summarized in the Table below:

**Table58**  
**Printer SOP Class N-DELETE Response Status Handling Behavior**

| Service Status | Further Meaning | Error Code | Behavior                                                                                                                               |
|----------------|-----------------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success         | 0000       | The SCP has completed the operation successfully.                                                                                      |
| Warning        | Any warning     | xxxx       | The N-DELETE operation is considered successful.                                                                                       |
| Failure        | Any failure     | xxxx       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |

**SOP Specific Conformance for the Film Box SOP Class**

Print AE supports the following DIMSE operations for the Film Box SOP Class:

- N-CREATE
- N-ACTION
- N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

*Film Box SOP Class Operations (N-CREATE)*

The attributes supplied in an N-CREATE Request are listed in the Table below:

**Table59**  
**Film Box SOP Class N-CREATE Request Attributes**

| Attribute Name       | Tag         | VR | Value                                                                                                                                     | Presence of Value | Source |
|----------------------|-------------|----|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------|
| Image Display Format | (2010,0010) | CS | PORTRAIT:<br>STANDARD\1,1<br>STANDARD\1,2<br>STANDARD\1,3<br>STANDARD\2,1<br>STANDARD\2,2<br>STANDARD\2,3<br>STANDARD\2,4<br>STANDARD\3,3 | ALWAYS            | CONFIG |

| Attribute Name | Tag | VR | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Presence of Value | Source |
|----------------|-----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------|
|                |     |    | STANDARD\3,4<br>STANDARD\3,5<br>STANDARD\3,6<br>STANDARD\4,4<br>STANDARD\4,5<br>STANDARD\4,6<br>STANDARD\4,7<br>STANDARD\4,8<br>STANDARD\5,5<br>STANDARD\5,6<br>STANDARD\5,7<br>STANDARD\5,8<br>STANDARD\6,6<br>STANDARD\6,7<br>STANDARD\6,8<br>STANDARD\6,9<br>STANDARD\6,10<br>STANDARD\7,7<br>STANDARD\7,8<br>STANDARD\7,9<br>STANDARD\7,10<br>STANDARD\8,8<br>STANDARD\8,9<br>STANDARD\8,10<br><br>LANDSCAPE:<br>STANDARD\1,1<br>STANDARD\2,1<br>STANDARD\3,1<br>STANDARD\1,2<br>STANDARD\2,2<br>STANDARD\3,2<br>STANDARD\4,2<br>STANDARD\3,3<br>STANDARD\4,3<br>STANDARD\5,3<br>STANDARD\6,3<br>STANDARD\4,4<br>STANDARD\5,4<br>STANDARD\6,4<br>STANDARD\7,4<br>STANDARD\8,4<br>STANDARD\5,5<br>STANDARD\6,5<br>STANDARD\7,5<br>STANDARD\8,5<br>STANDARD\6,6<br>STANDARD\7,6<br>STANDARD\8,6<br>STANDARD\9,6 |                   |        |

| Attribute Name                   | Tag         | VR | Value                                                                                                                                      | Presence of Value | Source |
|----------------------------------|-------------|----|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------|
|                                  |             |    | STANDARD\10,6<br>STANDARD\7,7<br>STANDARD\8,7<br>STANDARD\9,7<br>STANDARD\10,7<br>STANDARD\8,8<br>STANDARD\9,8<br>STANDARD\10,8            |                   |        |
| Referenced Film Session Sequence | (2010,0500) | SQ |                                                                                                                                            | ALWAYS            | AUTO   |
| >Referenced SOP Class UID        | (0008,1150) | UI | 1.2.840.10008.5.1.1.1                                                                                                                      | ALWAYS            | AUTO   |
| >Referenced SOP Instance UID     | (0008,1155) | UI | From created Film Session SOP Instance                                                                                                     | ALWAYS            | AUTO   |
| Film Orientation                 | (2010,0040) | CS | PORTRAIT or LANDSCAPE                                                                                                                      | ALWAYS            | CONFIG |
| Film Size ID                     | (2010,0050) | CS | 8INX10IN<br>8_5INX11IN<br>10INX12IN<br>10INX14IN<br>11INX14IN<br>11INX17IN<br>14INX14IN<br>14INX17IN<br>24CMX24CM<br>24CMX30CM<br>A4<br>A3 | ALWAYS            | CONFIG |
| Magnification Type               | (2010,0060) | CS | REPLICATE, BILINEAR, CUBIC or NONE                                                                                                         | ALWAYS            | CONFIG |
| Max Density                      | (2010,0130) | US | 0 .. 65535                                                                                                                                 | ANAP              | CONFIG |
| Min Density                      | (2010,0120) | US | 0 .. 65535                                                                                                                                 | ANAP              | CONFIG |
| Trim                             | (2010,0140) | CS | YES or No                                                                                                                                  | ALWAYS            | CONFIG |
| Configuration Information        | (2010,0150) | ST | User defined text                                                                                                                          | ANAP              | USER   |

The behavior of Print AE when encountering status codes in a N-CREATE response is summarized in the Table below:

**Table60**  
**Film Box SOP Class N-CREATE Response Status Handling Behavior**

| Service Status | Further Meaning                                                                                                                                                                                    | Error Code | Behavior                                                                                                                                                    |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success                                                                                                                                                                                            | 0000       | The SCP has completed the operation successfully.                                                                                                           |
| Warning        | Requested Min Density or Max Density outside of printer's operating range                                                                                                                          | B605H      | The N-CREATE operation is considered successful.                                                                                                            |
| Warning        | Any other warning                                                                                                                                                                                  | xxxx       | The N-CREATE operation is considered successful.                                                                                                            |
| Failure        | There is an existing Film Box that has not been printed and N-ACTION at the Film Session level is not supported. A new Film Box will not be created when a previous Film Box has not been printed. | C616H      | C The association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and the job failure is reported to the user. |
| Failure        | Any failure                                                                                                                                                                                        | xxxx       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.                      |

*Film Box SOP Class Operations (N-ACTION)*

An N-ACTION Request is issued to instruct the Print SCP to print the contents of the Film Box. The Action Reply argument in an N-ACTION response is not evaluated.

The behavior of Print AE when encountering status codes in a N-ACTION response is summarized in the Table below:

**Table61**  
**Film Box SOP Class N-ACTION Response Status Handling Behavior**

| Service Status | Further Meaning                                                                                          | Error Code | Behavior                                                                                   |
|----------------|----------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------|
| Success        | Success                                                                                                  | 0000       | The SCP has completed the operation successfully. The film has been accepted for printing. |
| Warning        | Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page)                    | B603H      | The N-ACTION operation is considered successful.                                           |
| Warning        | Image size is larger than Image Box size. The image has been demagnified.                                | B604H      | The N-ACTION operation is considered successful.                                           |
| Warning        | Image size is larger than Image Box size. The image has been cropped to fit.                             | B609H      | The N-ACTION operation is considered successful.                                           |
| Warning        | Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image | B60AH      | The N-ACTION operation is considered successful.                                           |

| Service Status | Further Meaning                                               | Error Code | Behavior                                                                                                                               |
|----------------|---------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
|                | has been decimated to fit.                                    |            |                                                                                                                                        |
| Warning        | Any other warning                                             | xxxx       | The N-ACTION operation is considered successful.                                                                                       |
| Failure        | Unable to create Print Job SOP Instance; print queue is full. | C602       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |
| Failure        | Image size is larger than Image Box size.                     | C603       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |
| Failure        | Combined Print Image Size is larger than Image Box size.      | C613       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |
| Failure        | Any other failure                                             | xxxx       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |

*Film Session SOP Class Operations (N-DELETE)*

The behavior of Print AE when encountering status codes in a N-DELETE response is summarized in the Table below:

**Table62**  
**Printer SOP Class N-DELETE Response Status Handling Behavior**

| Service Status | Further Meaning   | Error Code | Behavior                                                                                                                               |
|----------------|-------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success           | 0000       | The SCP has completed the operation successfully.                                                                                      |
| Warning        | Any warning       | xxxx       | The N-DELETE operation is considered successful.                                                                                       |
| Failure        | Any other failure | xxxx       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |

**SOP Specific Conformance for the Image Box SOP Class**

Print AE supports the following DIMSE operations for the Image Box SOP Class:

- N-SET

Details of the supported attributes and status handling behavior are described in the following subsections.

*Image Box SOP Class Operations (N-SET)*

The attributes supplied in an N-SET Request are listed in the Table below:

**Table63**  
**Image Box SOP Class N-SET Request Attributes**

| Attribute Name                 | Tag         | VR | Value                         | Presence Value                              | of Source |
|--------------------------------|-------------|----|-------------------------------|---------------------------------------------|-----------|
| Image Position                 | (2020,0010) | US | [1, num_image1]               | ALWAYS                                      | AUTO      |
| Basic Grayscale Image Sequence | (2020,0111) | SQ |                               | If the service is configured as MONOCHROME2 | AUTO      |
| >Samples Per Pixel             | (0028,0002) | US | 1                             | ALWAYS                                      | AUTO      |
| >Photometric Interpretation    | (0028,0004) | CS | MONOCHROME2                   | ALWAYS                                      | CONFIG    |
| >Rows                          | (0028,0010) | US | Depends on film size          | ALWAYS                                      | AUTO      |
| >Columns                       | (0028,0011) | US | Depends on film size          | ALWAYS                                      | AUTO      |
| Pixel Aspect Ratio             | (0028,0034) | IS | Set to zero length            | VNAP                                        | AUTO      |
| >Bits Allocated                | (0028,0100) | US | 8                             | ALWAYS                                      | AUTO      |
| >Bits Stored                   | (0028,0101) | US | 8                             | ALWAYS                                      | AUTO      |
| >High Bit                      | (0028,0102) | US | 7                             | ALWAYS                                      | AUTO      |
| >Pixel Representation          | (0028,0103) | US | 0                             | ALWAYS                                      | AUTO      |
| >Pixel Data                    | (7FE0,0010) | OB | Pixels of rendered film sheet | ALWAYS                                      | AUTO      |
| Basic Color Image Sequence     | (2020,0111) | SQ |                               | If the service is configured as RGB         | AUTO      |
| >Samples Per Pixel             | (0028,0002) | US | 3                             | ALWAYS                                      | AUTO      |
| >Photometric Interpretation    | (0028,0004) | CS | RGB                           | ALWAYS                                      | CONFIG    |
| >Planar Configuration          | (0028,0006) | US | 1                             | ALWAYS                                      | AUTO      |
| >Rows                          | (0028,0010) | US | Depends on film size          | ALWAYS                                      | AUTO      |
| >Columns                       | (0028,0011) | US | Depends on film size          | ALWAYS                                      | AUTO      |
| Pixel Aspect Ratio             | (0028,0034) | IS | Set to zero length            | VNAP                                        | AUTO      |
| >Bits Allocated                | (0028,0100) | US | 8                             | ALWAYS                                      | AUTO      |

| Attribute Name        | Tag         | VR | Value                         | Presence Value | of Source |
|-----------------------|-------------|----|-------------------------------|----------------|-----------|
| >Bits Stored          | (0028,0101) | US | 8                             | ALWAYS         | AUTO      |
| >High Bit             | (0028,0102) | US | 7                             | ALWAYS         | AUTO      |
| >Pixel Representation | (0028,0103) | US | 0                             | ALWAYS         | AUTO      |
| >Pixel Data           | (7FE0,0010) | OB | Pixels of rendered film sheet | ALWAYS         | AUTO      |

Note : 1 If the attribute of Image Display Format is (STANDARD\m, n), num\_image is m\*n.

The behavior of Print AE when encountering status codes in a N-SET response is summarized in the Table below:

**Table64**  
**Image Box SOP Class N-SET Response Status Handling Behavior**

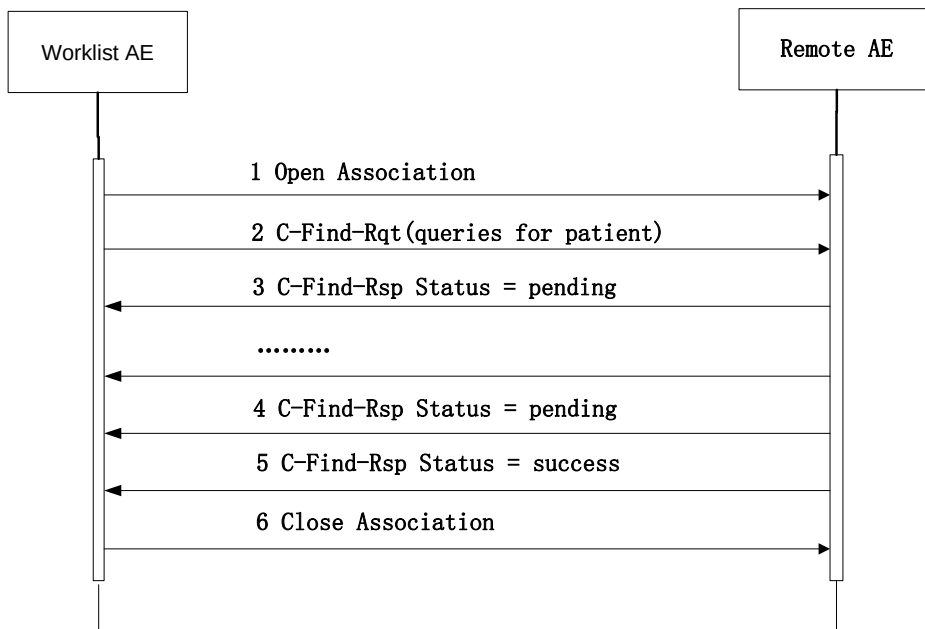
| Service Status | Further Meaning                                                                                                                     | Error Code | Behavior                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success                                                                                                                             | 0000       | Image print is successful, The status code is logged and the task success is reported to the user via task management.                 |
| Warning        | Image size is larger than Image Box size. The image has been demagnified.                                                           | B604H      | The N-SET operation is considered successful.                                                                                          |
| Warning        | Requested Min Density or Max Density outside of printer's operating range.                                                          | B605H      | The N-SET operation is considered successful.                                                                                          |
| Warning        | Image size is larger than Image Box size. The image has been cropped to fit.                                                        | B609H      | The N-SET operation is considered successful.                                                                                          |
| Warning        | Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image has been decimated to fit. | B60AH      | The N-SET operation is considered successful.                                                                                          |
| Warning        | Any other warning                                                                                                                   | xxxx       | The N-SET operation is considered successful.                                                                                          |
| Failure        | Image size is larger than Image Box size.                                                                                           | C603       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |
| Failure        | Insufficient memory in printer to store the image.                                                                                  | C605       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |



| Service Status | Further Meaning                                          | Error Code | Behavior                                                                                                                               |
|----------------|----------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Failure        | Combined Print Image Size is larger than Image Box size. | C613       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |
| Failure        | Any other failure                                        | xxxx       | The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user. |

## Activity – Send Find Request

### Description and Sequencing of Activities



**Figure5**  
**Sequencing of Activity – Send FIND Request**

A possible sequence of interactions between the Worklist AE and a remote AE (e.g. a system such as a RIS or HIS; or a PACS) is illustrated in the Figure below:

The Worklist AE opens an association with the remote AE

The Worklist AE sends a C-FIND request to the remote AE containing the Query attributes.

The remote AE returns a C-FIND response containing the requested attributes of the first matching Item.

The remote AE returns another C-FIND response containing the requested attributes of the second matching Item. And then another one.

When the remote AE returns all the C-FIND responses with status Success indicating that no further matching Items exist.

The C-Find AE closes the association with the remote AE.

### Proposed Presentation Contexts

**Table65**  
**Proposed Presentation Contexts for Worklist AE**

| Presentation Context Table               |                        |                 |    |        |                     |      |                      |
|------------------------------------------|------------------------|-----------------|----|--------|---------------------|------|----------------------|
| Abstract Syntax                          |                        | Transfer Syntax |    |        |                     | Role | Extended Negotiation |
| Name                                     | UID                    | Name            |    | UID    |                     |      |                      |
| Modality Worklist Information Model—Find | 1.2.840.10008.5.1.4.31 | Implicit Endian | VR | Little | 1.2.840.10008.1.2   | SCU  | None                 |
|                                          |                        | Explicit Endian | VR | Little | 1.2.840.10008.1.2.1 | SCU  | None                 |
|                                          |                        | Explicit Endian | VR | Big    | 1.2.840.10008.1.2.2 | SCU  | None                 |

Worklist AE will propose Presentation Contexts for the SOP Classes listed above. For these SOP Class, Worklist AE will propose multiple Presentation Contexts, one for each of the supported Transfer Syntaxes.

If Worklist AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the C-FIND operation.

### SOP Specific Conformance

**Table66**  
**C\_FIND Response Status Handling Behavior**

| Service Status | Further Meaning                                                                                                              | Error Code | Behavior (as SCU)                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------|
| Refused        | Out of resources                                                                                                             | A700       | The association is aborted using A-ABORT and a notify message is displayed: Some errors happen when query worklist server. |
| Failed         | Identifier Does Not Match SOP Class                                                                                          | A900       |                                                                                                                            |
| Failed         | Unable to process                                                                                                            | Cxxx       |                                                                                                                            |
| Cancel         | Matching terminated due to Cancel request                                                                                    | FE00       | /                                                                                                                          |
| Success        | Matching is complete - No final Identifier is supplied.                                                                      | 0000       | Patient lists show on the UI                                                                                               |
| Pending        | Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys. | FF00       | The worklist item contained in the Identifier is collected for later display or further processing.                        |

| Service Status | Further Meaning                                                                                                                                                                                                             | Error Code             | Behavior (as SCU)                                                                                                          |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Pending        | Matches are continuing - Warning that one or more Optional Keys were not supported for existence for this Identifier.                                                                                                       | FF01                   | The worklist item contained in the Identifier is collected for later display or further processing.                        |
| *              | The Association is aborted using A-ABORT and the query is marked as failed. The status meaning is logged and reported to the user if an interactive query. Any additional error information in the Response will be logged. | Any other status code. | The association is aborted using A-ABORT and a notify message is displayed: Some errors happen when query worklist server. |

Worklist AE provides Standard Conformance to the Storage Service Class.

Worklist AE will behave as described in the Table66 in response to the status returned in the C-FIND response command message.

The behavior of Ultrasound System during communication failure is summarized in the Table below.

**Table 67**  
**COMMUNICATION FAILURE BEHAVIOR FOR WORKLIST AE**

| Exception                                        | Behavior                                                                                                                                        |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Timeout                                          | The Association is aborted using A-ABORT and the query marked as failed. The reason is logged and reported to the user if an interactive query. |
| Association aborted by the SCP or network layers | The query is marked as failed. The reason is logged and reported to the user if an interactive query.                                           |

The Table below provides a description of the Ultrasound system Query Request Identifier and specifies the attributes that are copied into the images. Unexpected attributes returned in a C-FIND response are ignored.

Requested return attributes not supported by the SCP are set to have no value. Non-matching responses returned by the SCP due to unsupported optional matching keys are ignored. No attempt is made it filter out possible duplicate entries.

**Table 68**  
**Worklist Request Identifier**

| ATTRIBUTE                                        | VR | ATTRIBUTE NAME    | MATCHING KEYS | RETURN KEYS |
|--------------------------------------------------|----|-------------------|---------------|-------------|
| <b>Module: Patient Identification Module (M)</b> |    |                   |               |             |
| (0010,0010)                                      | PN | Patient's Name    | configurable  | X ( DI )    |
| (0010,0020)                                      | LO | Patient ID        | configurable  | X( DI )     |
| (0010,1000)                                      | LO | Other Patient IDs |               | X ( DI )    |

| ATTRIBUTE                                          | VR | ATTRIBUTE NAME                                                  | MATCHING KEYS                                  | RETURN KEYS |
|----------------------------------------------------|----|-----------------------------------------------------------------|------------------------------------------------|-------------|
| <b>Module: Patient Demographic Module (M)</b>      |    |                                                                 |                                                |             |
| (0010,0030)                                        | DA | Patient's Birth Date                                            |                                                | X ( DI )    |
| (0010,0032)                                        | TM | Patient's Birth Time                                            |                                                | X ( DI )    |
| (0010,0040)                                        | CS | Patient's Sex                                                   |                                                | X ( DI )    |
| (0010,1020)                                        | DS | Patient's Size                                                  |                                                | X ( DI )    |
| (0010,1030)                                        | DS | Patient's Weight                                                |                                                | X ( DI )    |
| (0010,2160)                                        | SH | Ethnic Group                                                    |                                                | X ( DI )    |
| (0010,4000)                                        | LT | Patient Comments                                                |                                                | X ( DI )    |
| (0040,3001)                                        | LO | Confidentiality<br>constraint on<br>patient data<br>Description |                                                | X ( DI )    |
| <b>Module: Patient Medical Module (M)</b>          |    |                                                                 |                                                |             |
| (0010,2000)                                        | LO | Medical Alerts                                                  |                                                | X ( DI )    |
| (0010,2110)                                        | LO | Contrast Allergies                                              |                                                | X ( DI )    |
| (0010,21B0)                                        | US | Additional Patient's<br>History                                 |                                                | X ( DI )    |
| (0010,21C0)                                        | US | Pregnancy Status                                                |                                                | X ( DI )    |
| (0010,21D0)                                        | DA | Last Menstrual Date                                             |                                                | X ( DI )    |
| (0038, 0050)                                       | LO | Special Needs                                                   |                                                | X ( DI )    |
| (0038, 0500)                                       | LO | Patient State                                                   |                                                | X ( DI )    |
| <b>Module: Visit Relationship Module (M)</b>       |    |                                                                 |                                                |             |
| (0008,1120)                                        | SQ | Referenced Patient<br>Sequence                                  |                                                | X ( DI )    |
| <b>Module: Visit Identification Module (M)</b>     |    |                                                                 |                                                |             |
| (0038,0010)                                        | LO | Admission ID                                                    |                                                | X ( DI )    |
| <b>Module: Visit Status Module (M)</b>             |    |                                                                 |                                                |             |
| (0038,0300)                                        | LO | Current Patient<br>Location                                     |                                                | X ( DI )    |
| <b>Module: Visit Admission Module (M)</b>          |    |                                                                 |                                                |             |
| (0008,1080)                                        | LO | Admitting Diagnosis<br>Description                              |                                                | X ( DI )    |
| <b>Module: Scheduled Procedure Step Module (M)</b> |    |                                                                 |                                                |             |
| (0040,0100)                                        | SQ | Scheduled Procedure<br>Step Sequence                            |                                                | X ( DI )    |
| >(0008,0060)                                       | CS | Modality                                                        | Configurable and the<br>default is set to "US" |             |
| >(0032,1070)                                       | LO | Requested Contrast<br>Agent                                     |                                                | X ( DI )    |

| ATTRIBUTE                                     | VR | ATTRIBUTE NAME                           | MATCHING KEYS                                       | RETURN KEYS |
|-----------------------------------------------|----|------------------------------------------|-----------------------------------------------------|-------------|
| >(0040,0001)                                  | AE | Scheduled Station AE Title               | configurable                                        | X ( DI )    |
| >(0040,0002)                                  | DA | Scheduled Procedure Step Start Date      | configurable and the default is set to today's date | X( DI )     |
| >(0040,0003)                                  | TM | Scheduled Procedure Step Start Time      |                                                     | X ( DI )    |
| >(0040,0004)                                  | DA | Scheduled Procedure Step End Date        |                                                     | X ( DI )    |
| >(0040,0005)                                  | TM | Scheduled Procedure Step End Time        |                                                     | X ( DI )    |
| >(0040,0006)                                  | PN | Scheduled Performing Physician's Name    |                                                     | X ( DI )    |
| >(0040,0007)                                  | LO | Scheduled Procedure Step Description     |                                                     | X( DI )     |
| >(0040,0008)                                  | SQ | Scheduled Protocol Code Sequence         |                                                     | X ( DI )    |
| > >(0008,0100)                                | SH | Code Value                               |                                                     | X ( DI )    |
| > >(0008,0102)                                | SH | Coding Scheme Designator                 |                                                     | X ( DI )    |
| > >(0008,0103)                                | SH | Coding Scheme Version                    |                                                     | X ( DI )    |
| > >(0008,0104)                                | LO | Code Meaning                             |                                                     | X ( DI )    |
| >(0040,0009)                                  | SH | Scheduled Procedure Step ID              |                                                     | X ( DI )    |
| >(0040,0010)                                  | SH | Scheduled Station Name                   |                                                     | X ( DI )    |
| >(0040,0011)                                  | SH | Scheduled Procedure Step Location        |                                                     | X ( DI )    |
| >(0040,0012)                                  | LO | Pre-Medication                           |                                                     | X ( DI )    |
| > (0040,0020)                                 | CS | Scheduled Procedure Step Status          |                                                     | X ( DI )    |
| > (0040,0400)                                 | LT | Comments on the Scheduled Procedure Step |                                                     | X ( DI )    |
| <b>Module: Requested Procedure Module (M)</b> |    |                                          |                                                     |             |
| (0008,1110)                                   | SQ | Referenced Study Sequence                |                                                     | X ( DI )    |
| > (0008,1150)                                 | UI | Referenced SOP Class UID                 |                                                     | X ( DI )    |
| > (0008,1155)                                 | UI | Referenced SOP                           |                                                     | X ( DI )    |

| ATTRIBUTE                                         | VR | ATTRIBUTE NAME                    | MATCHING KEYS | RETURN KEYS |
|---------------------------------------------------|----|-----------------------------------|---------------|-------------|
|                                                   |    | Instance UID                      |               |             |
| (0020,000D)                                       | UI | Study Instance UID                |               | X ( DI )    |
| (0032,1060)                                       | LO | Requested Procedure Description   |               | X ( DI )    |
| (0032,1064)                                       | SQ | Requested Procedure Code Sequence |               | X ( DI )    |
| > (0008,0100)                                     | SH | Code Value                        |               | X ( DI )    |
| > (0008,0102)                                     | SH | Coding Scheme Designator          |               | X ( DI )    |
| >(0008,0103)                                      | SH | Coding Scheme Version             |               | X ( DI )    |
| >(0008,0104)                                      | LO | Code Meaning                      |               | X ( DI )    |
| (0040,1001)                                       | SH | Requested Procedure ID            | configurable  | X ( DI )    |
| (0040,1003)                                       | SH | Requested Procedure Priority      |               | X ( DI )    |
| (0040,1004)                                       | LO | Patient Transport Arrangements    |               | X ( DI )    |
| (0040,1400)                                       | LT | Requested Procedure Comments      |               | X ( DI )    |
| <b>Module: Imaging Service Request Module (M)</b> |    |                                   |               |             |
| (0008,0050)                                       | SH | Accession Number                  | configurable  | X ( DI )    |
| (0008,0090)                                       | PN | Referring Physician's Name        |               | X ( DI )    |
| (0032,1032)                                       | PN | Requesting Physician              |               | X ( DI )    |
| (0032,1033)                                       | LO | Requesting Service                |               | X ( DI )    |
| (0040,2400)                                       | LT | Imaging Service Request Comments  |               | X ( DI )    |
| <b>Module: SOP Common Module (M)</b>              |    |                                   |               |             |
| (0008,0005)                                       | CS | Specific Character Set            |               | X ( DI )    |
| <b>Module: Additional Attributes Module (M)</b>   |    |                                   |               |             |
| (0008,0032)                                       | TM | Acquisition Time                  |               | X ( DI )    |

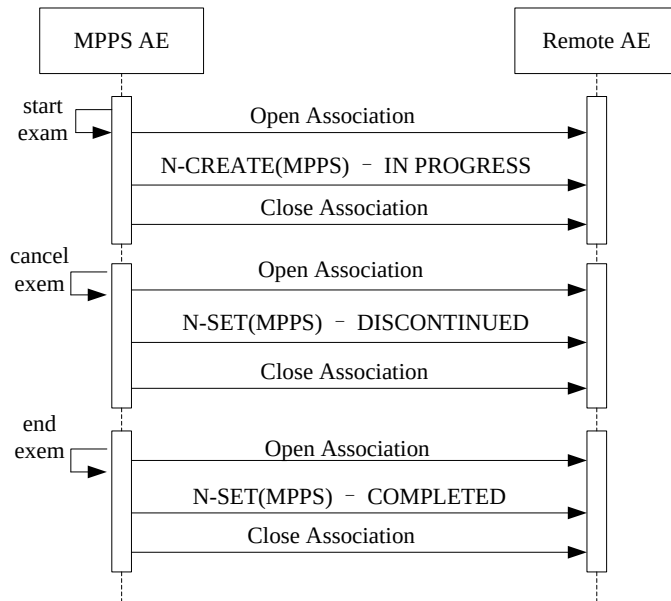
The convention used for Matching Keys is:

X - Return keys. An " X " indicates that MODALITY supplies this attribute as a Return Key with zero length for Universal Matching.

DI – Display to the user.

## Activity – Send MPPS Request

### Description and Sequencing of Activities



**Figure6**  
**Sequencing of Activity – MPPS progress**

A possible sequence of interactions between the MPPS AE and a Remote AE (Departmental Scheduler, e.g. a device such as a RIS or HIS which supports the MPPS SOP Class as an SCP) is illustrated in Figure B.4.2-4:

The MPPS AE opens an association with the Remote AE.

The MPPS AE sends an N-CREATE request to the Remote AE to create an MPPS instance with status of "IN PROGRESS" and create all necessary attributes. The Remote AE acknowledges the MPPS creation with an N-CREATE response (status success).

The MPPS AE closes the association with the Remote AE.

All images are acquired and stored in the local database.

The MPPS AE opens an association with the Remote AE.

The MPPS AE sends an N-SET request to the Remote AE to update the MPPS instance with status of "COMPLETED" and set all necessary attributes. The Departmental Scheduler acknowledges the MPPS update with an N-SET response (status success).

The MPPS AE closes the association with the Remote AE.

Note: The Cancel and End Exam commands are mutually exclusive. They are both represented here for illustration purposes only. Actual workflow uses one or the other for a given exam.

For each exam step transfer, an attempt will be made to transmit it to the selected remote AE. If it fails, it will automatically retry specific times if configured on Preset UI.

## Proposed Presentation Contexts

**Table69**  
**Proposed Presentation Contexts for MPPS AE**

| Presentation Context Table                  |                         |                           |                     |      |                      |
|---------------------------------------------|-------------------------|---------------------------|---------------------|------|----------------------|
| Abstract Syntax                             |                         | Transfer Syntax           |                     | Role | Extended Negotiation |
| Name                                        | UID                     | Name                      | UID                 |      |                      |
| Modality Performed Procedure Step SOP Class | 1.2.840.10008.3.1.2.3.3 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCU  | None                 |
|                                             |                         | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU  | None                 |
|                                             |                         | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCU  | None                 |

MPPS-SCU will propose Presentation Contexts for the SOP Classes listed above. For these SOP Class, MPPS-SCU will propose multiple Presentation Contexts, one for each of the supported Transfer Syntaxes.

If MPPS AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the MPPS AE operation.

### SOP Specific Conformance

MPPS AE provides Standard Conformance to the MPPS Service Class.

MPPS-SCU will behave as described in the Table below in response to the status returned in the N-Create or N-Set response command message.

**Table 70**  
**MPPS N-CREATE / N-SET Response Status Handling Behavior**

| Service Status | Further Meaning                                                               | Error Code | Behavior                                                                                                                                                                                                                            |
|----------------|-------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success                                                                       | 0000       | The SCP has completed the operation successfully.                                                                                                                                                                                   |
| Failure        | Processing Failure – Performed Procedure Step Object may no longer be updated | 0110       | The Association is aborted using A-ABORT and the MPPS is marked as failed. The status meaning and Additional information in the Response is logged (i.e. Error Comment and Error ID).                                               |
| Warning        | Attribute Value Out of Range                                                  | 0116H      | The MPPS operation is considered successful but the status meaning is logged. Additional information in the Response identifying the attributes out of range will be logged (i.e. Elements in the Modification List/Attribute List) |



| Service Status | Further Meaning | Error Code             | Behavior                                                                                                 |
|----------------|-----------------|------------------------|----------------------------------------------------------------------------------------------------------|
| *              | *               | Any other status code. | The Association is aborted using A-ABORT and the MPPS is marked as failed. The status meaning is logged. |

The behavior of MPPS AE during communication failure is summarized in the Table below:

**Table 71**  
**MPPS COMMUNICATION FAILURE BEHAVIOR**

| Exception                                        | Behavior                                                                                  |
|--------------------------------------------------|-------------------------------------------------------------------------------------------|
| Timeout                                          | The Association is aborted using A-ABORT and MPPS marked as failed. The reason is logged. |
| Association aborted by the SCP or network layers | The MPPS is marked as failed. The reason is logged.                                       |

Table below provides a description of the MPPS N-CREATE and N-SET request identifiers sent by ultrasound system. Empty cells in the N-CREATE and N-SET columns indicate that the attribute is not sent. An “x” indicates that an appropriate value will be sent. A “Zero length” attribute will be sent with zero length.

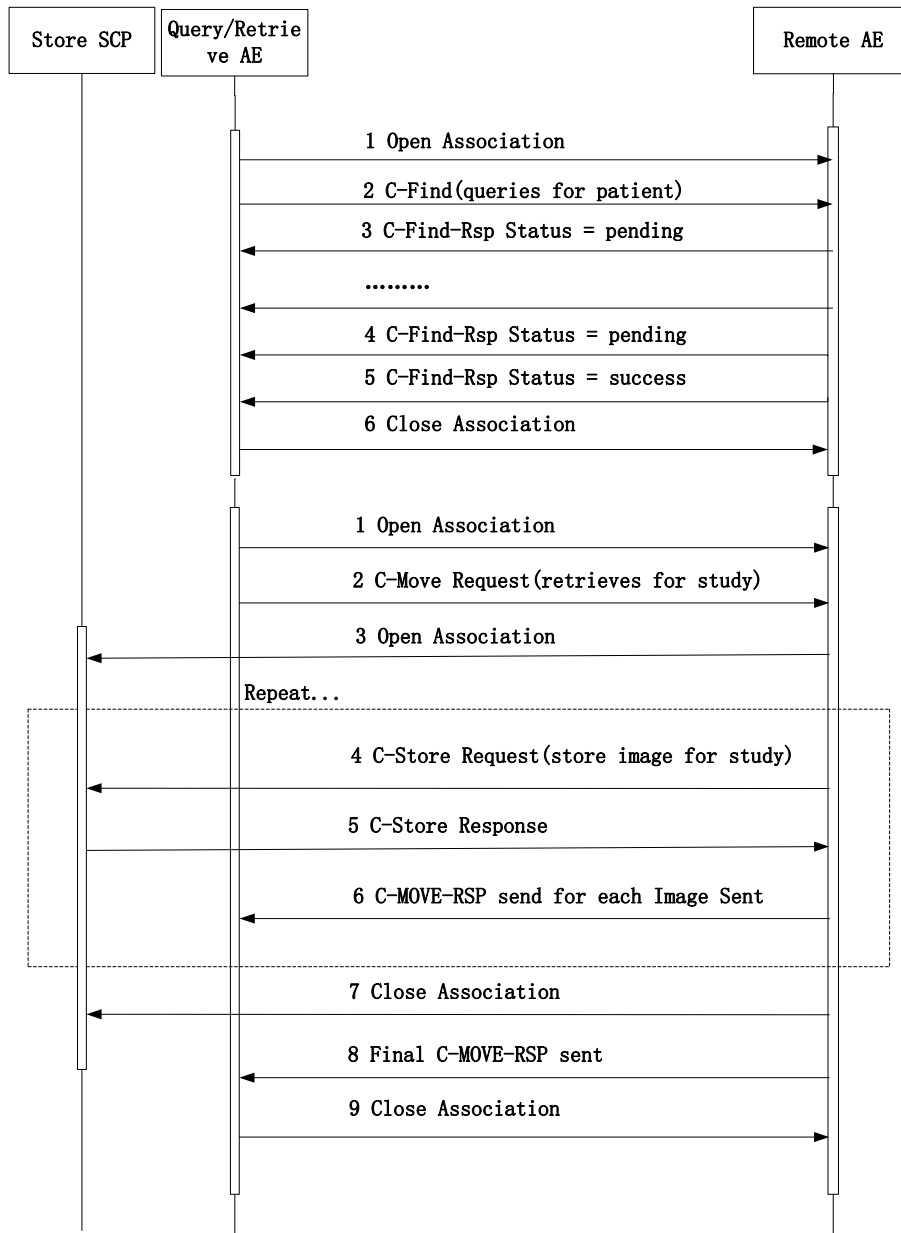
**Table 72**  
**MPPS N-CREATE / N-SET Request Identifier**

| Attribute Name                                                  | Tag         | Req. N-CREATE                 | Type | Req. N-SET  | Type |
|-----------------------------------------------------------------|-------------|-------------------------------|------|-------------|------|
| <b>Module: Performed Procedure Step Relationship Module (M)</b> |             |                               |      |             |      |
| Referenced Patient Sequence                                     | (0008,1120) | 2<br>(Default is set to null) |      | Not allowed |      |
| Patient's Name                                                  | (0010,0010) | 2                             |      | Not allowed |      |
| Patient ID                                                      | (0010,0020) | 2                             |      | Not allowed |      |
| Patient's Birth Date                                            | (0010,0030) | 2                             |      | Not allowed |      |
| Patient's Sex                                                   | (0010,0040) | 2                             |      | Not allowed |      |
| Scheduled Step Attribute Sequence                               | (0040,0270) | 1                             |      | Not allowed |      |
| >Accession Number                                               | (0008,0050) | 2                             |      | Not allowed |      |
| >Referenced Study Sequence                                      | (0008,1110) | 2                             |      | Not allowed |      |
| >Study Instance UID                                             | (0020,000D) | 1                             |      | Not allowed |      |
| >Requested Procedure Description                                | (0032,1060) | 2                             |      | Not allowed |      |
| >Scheduled Procedure Step Description                           | (0040,0007) | 2                             |      | Not allowed |      |
| >Scheduled Protocol Code Sequence                               | (0040,0008) | 2                             |      | Not allowed |      |
| >Scheduled Procedure Step ID                                    | (0040,0009) | 2                             |      | Not allowed |      |
| >Requested Procedure ID                                         | (0040,1001) | 2                             |      | Not allowed |      |
| <b>Module: Image Acquisition Results Module (M)</b>             |             |                               |      |             |      |
| Modality                                                        | (0008,0060) | 1                             |      | Not allowed |      |
| Study ID                                                        | (0020,0010) | 2                             |      | Not allowed |      |

| Attribute Name                                                 | Tag         | Req. N-CREATE                                                     | Type | Req. N-SET  | Type |
|----------------------------------------------------------------|-------------|-------------------------------------------------------------------|------|-------------|------|
| Performed Protocol Code Sequence                               | (0040,0260) | 2<br>(Default is set to null)                                     |      | 3           |      |
| Performed Series Sequence                                      | (0040,0340) | 2                                                                 |      | 3           |      |
| >Retrieve AE Title                                             | (0008,0054) | 2<br>(Default is set to null)                                     |      | 2           |      |
| >Series Description                                            | (0008,103E) | 2<br>(Default is set to null)                                     |      | 2           |      |
| >Performing Physician's Name                                   | (0008,1050) | 2                                                                 |      | 2           |      |
| >Operators' Name                                               | (0008,1070) | 2                                                                 |      | 2           |      |
| >Referenced Image Sequence                                     | (0008,1140) | 2                                                                 |      | 2           |      |
| >Protocol Name                                                 | (0018,1030) | 1                                                                 |      | 1           |      |
| >Series Instance UID                                           | (0020,000E) | 1                                                                 |      | 1           |      |
| >Referenced Non-Image Composite SOP Instance Sequence          | (0040,0220) | 2<br>(Default is set to null)                                     |      | 2           |      |
| <b>Module: Billing And Material Management Code Module (M)</b> |             |                                                                   |      |             |      |
| Billing Procedure Step Sequence                                | (0040,0320) | 3                                                                 |      | 3           |      |
| Film Consumption Sequence                                      | (0040,0321) | 3                                                                 |      | 3           |      |
| Billing Supplies and Devices Sequence                          | (0040,0324) | 3                                                                 |      | 3           |      |
| <b>Module: Performed Procedure Step Information Module (M)</b> |             |                                                                   |      |             |      |
| Procedure Code Sequence                                        | (0008,1032) | 2 (Default is set to null)                                        |      | 3           |      |
| Performed Station AE Title                                     | (0040,0241) | 1                                                                 |      | Not allowed |      |
| Performed Station Name                                         | (0040,0242) | 2 (Default is set to null)                                        |      | Not allowed |      |
| Performed Location                                             | (0040,0243) | 2 (Default is set to null)                                        |      | Not allowed |      |
| Performed Procedure Step Start Date                            | (0040,0244) | 1                                                                 |      | Not allowed |      |
| Performed Procedure Step Start Time                            | (0040,0245) | 1                                                                 |      | Not allowed |      |
| Performed Procedure Step End Date                              | (0040,0250) | 2 (Default is set to null)                                        |      | 3           |      |
| Performed Procedure Step End Time                              | (0040,0251) | 2                                                                 |      | 3           |      |
| Performed Procedure Step Status                                | (0040,0252) | 1                                                                 |      | 3           |      |
| Performed Procedure Step ID                                    | (0040,0253) | 1                                                                 |      | Not allowed |      |
| Performed Procedure Step Description                           | (0040,0254) | 2 (Default is set to null)                                        |      | 3           |      |
| Performed Procedure Type Description                           | (0040,0255) | 2 (Default is set to null)                                        |      | 3           |      |
| Performed Procedure Step Discontinuation Reason Code Sequence  | (0040,0281) | 3                                                                 |      | 3           |      |
| <b>Module: SOP Common Module (M)</b>                           |             |                                                                   |      |             |      |
| Specific Character Set                                         | (0008,0005) | 1C (Required if an extended or replacement character set is used) |      | Not allowed |      |

## Activity – Query/Retrieve from Remote AE

### Description and Sequencing of Activities for SCU



**Figure7**  
**Sequencing of Activity – Query/Retrieve progress**

The associated Real-World activity is a C-Find request initiated by the user. The user specifies some attributes the system should use to query its database. If the query user successfully establishes an association to the remote AE, it will send a C-Find request (according to the query model) and will then return the results to the application.

The C-MOVE-RQs are used to retrieve the referenced instances. The Query/Retrieve AE supports the Study Root Information Model.

### Proposed Presentation Contexts

**Table73**  
**Proposed Presentation Contexts for Query/Retrieve AE**

| Presentation Context Table                                  |                             |                           |                     |      |                      |  |
|-------------------------------------------------------------|-----------------------------|---------------------------|---------------------|------|----------------------|--|
| Abstract Syntax                                             |                             | Transfer Syntax           |                     | Role | Extended Negotiation |  |
| Name                                                        | UID                         | Name                      | UID                 |      |                      |  |
| Study Root<br>Query/Retrieve<br>Information<br>Model - Find | 1.2.840.10008.5.1.4.1.2.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCU  | None                 |  |
|                                                             |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU  | None                 |  |
|                                                             |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCU  | None                 |  |
| Study Root<br>Query/Retrieve<br>Information<br>Model - Move | 1.2.840.10008.5.1.4.1.2.2.2 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCU  | None                 |  |
|                                                             |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU  | None                 |  |
|                                                             |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCU  | None                 |  |

### SOP Specific Conformance

The ultrasound system provides Standard Conformance to the DICOM Query/Retrieve Class.

#### Response Status

Query/Retrieve AE will behave as described in the Table below in response to the status returned in the C-Find response command message.

**Table74**  
**C-Find Response Status Handling Behavior**

| Service Status | Meaning                                                                                                                     | Protocol Codes | Related Fields             | Behavior (as SCU)                                                                                    |
|----------------|-----------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------|------------------------------------------------------------------------------------------------------|
| Refused        | Refused Out of Resources                                                                                                    | A700           | (0000,0902)                | The association is aborted using A-ABORT and a notify message is displayed: The remote server error. |
| Failed         | Identifier does not match SOP Class                                                                                         | A900           | (0000,0901)<br>(0000,0902) |                                                                                                      |
|                | Unable to process                                                                                                           | CXXX           | (0000,0901)<br>(0000,0902) |                                                                                                      |
| Canceling      | Matching terminated due to Cancel request                                                                                   | FE00           | None                       | Patient lists show on the UI                                                                         |
| Success        | Matching is complete - No final Identifier is supplied                                                                      | 0000           | None                       |                                                                                                      |
| Pending        | Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys | FF00           | Identifier                 | /                                                                                                    |

| Service Status | Meaning                                                                                                                              | Protocol Codes | Related Fields | Behavior (as SCU) |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|-------------------|
|                | Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier | FF01           | Identifier     | /                 |

The ultrasound system supports the following query levels:

- Study

The Query/Retrieve AE interprets the following status codes:

**Table75**  
**C-Move Response Status Handling Behavior**

| Service Status | Meaning                                                                                                                              | Protocol Codes | Related Fields             | Behavior (as SCU)                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------|------------------------------------------------------------------------------------------------------|
| Refused        | Refused Out of Resources                                                                                                             | A700           | (0000,0902)                | The association is aborted using A-ABORT and a notify message is displayed: The remote server error. |
| Failed         | Identifier does not match SOP Class                                                                                                  | A900           | (0000,0901)<br>(0000,0902) |                                                                                                      |
|                | Unable to process                                                                                                                    | CXXX           | (0000,0901)<br>(0000,0902) |                                                                                                      |
| Canceling      | Matching terminated due to Cancel request                                                                                            | FE00           | None                       |                                                                                                      |
| Success        | Matching is complete - No final Identifier is supplied                                                                               | 0000           | None                       | Image retrieve is successful, Patient lists show on the UI                                           |
| Pending        | Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys          | FF00           | Identifier                 | /                                                                                                    |
|                | Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier | FF01           | Identifier                 | /                                                                                                    |

#### *Study Root Query/Retrieve Attributes*

##### *Supported Matching*

Following are the types of matching that can be request by the implementation:

- Single Value matching
- Universal Matching
- Wild Card Matching
- Range of date, Range of Time

The user can filter the downloaded C-FIND result, to view a limited set of the result.

##### *Study Level*

This section defines the keys at the Study Level of the Study Root Query/Retrieve Information Model that are supported by this implementation.

**Table 76**  
**Study Level Attributes**

| <b>MODULE: STUDY ROOT INFORMATION MODEL (M)</b> |           |             |                                        |              |                      |
|-------------------------------------------------|-----------|-------------|----------------------------------------|--------------|----------------------|
| <b>Attribute</b>                                | <b>VR</b> | <b>Type</b> | <b>Attribute Name</b>                  | <b>Value</b> | <b>Matching keys</b> |
| <b>Module: Study Root Information Model (M)</b> |           |             |                                        |              |                      |
| (0008,0020)                                     | DA        | R           | Study Date                             |              | DA(SK)               |
| (0008,0030)                                     | TM        | R           | Study Time                             |              | N                    |
| (0010,0010)                                     | PN        | R           | Patient's Name                         |              | *(SK)                |
| (0010,0020)                                     | LO        | R           | Patient ID                             |              | S(SK)                |
| (0008,0050)                                     | SH        | R           | Accession Number                       |              | *(SK)                |
| (0010,0030)                                     | DA        | O           | Patient's Birth Date                   |              | S(SK)                |
| (0010,0040)                                     | CS        | O           | Patient's Sex                          |              | S(SK)                |
| (0020,0010)                                     | SH        | R           | Study ID                               |              | S(SK)                |
| (0020,000D)                                     | UI        | U           | Study Instance UID                     |              | N                    |
| (0008,0061)                                     | CS        | O           | Modalities in Study                    | US           | N                    |
| (0008,0090)                                     | PN        | O           | Referring Physician's Name             |              | N                    |
| (0008,1030)                                     | LO        | O           | Study Description                      |              | N                    |
| (0008,1032)                                     | SQ        | O           | Procedure Code Sequence                |              | N                    |
| (0008,1060)                                     | PN        | O           | Name of Physician(s)<br>Reading Study  |              | N                    |
| (0008,1080)                                     | LO        | O           | Admitting Diagnoses<br>Description     |              | N                    |
| (0008,1110)                                     | SQ        | O           | Referenced Study Sequence              |              | N                    |
| (0008,1120)                                     | SQ        | O           | Referenced Patient<br>Sequence         |              | N                    |
| (0010,0021)                                     | LO        | O           | Issuer of Patient ID                   |              | N                    |
| (0010,0032)                                     | TM        | O           | Patient's Birth Time                   |              | N                    |
| (0010,1000)                                     | LO        | O           | Other Patient IDs                      |              | N                    |
| (0010,1001)                                     | PN        | O           | Other Patient Names                    |              | N                    |
| (0010,1010)                                     | AS        | O           | Patient's Age                          |              | N                    |
| (0010,1020)                                     | DS        | O           | Patient's Size                         |              | N                    |
| (0010,1030)                                     | DS        | O           | Patient's Weight                       |              | N                    |
| (0010,2160)                                     | SH        | O           | Ethnic Group                           |              | N                    |
| (0010,2180)                                     | SH        | O           | Occupation                             |              | N                    |
| (0010,21B0)                                     | LT        | O           | Additional Patient History             |              | N                    |
| (0010,4000)                                     | LT        | O           | Patient Comments                       |              | N                    |
| (0020,1070)                                     | IS        | O           | Other Study Numbers                    |              | N                    |
| (0020,1200)                                     | IS        | O           | Number of Patient Related<br>Studies   |              | N                    |
| (0020,1202)                                     | IS        | O           | Number of Patient Related<br>Series    |              | N                    |
| (0020,1204)                                     | IS        | O           | Number of Patient Related<br>Instances |              | N                    |
| (0020,1206)                                     | IS        | O           | Number of Study Related<br>Series      |              | N                    |
| (0020,1208)                                     | IS        | O           | Number of Study Related<br>Instances   |              | N                    |
| (4008,010C)                                     | PN        | O           | Interpretation Author                  |              | N                    |

| Module: Additional Attributes Module (O) |    |   |                      |  |   |
|------------------------------------------|----|---|----------------------|--|---|
| (0008,0062)                              | UN | O | SOP Classes in Study |  | N |

#### Series Level Attributes

**Table 77**  
**Series Level Attributes**

| ATTRIBUTE                                       | VR | TYPE | ATTRIBUTE NAME                     | VALUE | MATCHING KEYS |
|-------------------------------------------------|----|------|------------------------------------|-------|---------------|
| <b>Module: Study Root Information Model (M)</b> |    |      |                                    |       |               |
| (0020,000D)                                     | UI | U    | Study Instance UID                 |       | S             |
| (0020,000E)                                     | UI | U    | Series Instance UID                |       | N             |
| (0008,0060)                                     | CS | R    | Modality                           |       | N             |
| (0020,0011)                                     | IS | R    | Series Number                      |       | N             |
| (0020,1209)                                     | IS | O    | Number of Series Related Instances |       | N             |
| <b>Module: Additional Attributes Module (O)</b> |    |      |                                    |       |               |
| (0008,0021)                                     | DA | O    | Series Date                        |       | N             |
| (0008,0031)                                     | TM | O    | Series Time                        |       | N             |

#### Composite Object Instance Level

**Table 78**  
**Composite Object Instance Level Attributes**

| ATTRIBUTE                                       | VR | TYPE | ATTRIBUTE NAME                     | VALUE | MATCHING KEYS |
|-------------------------------------------------|----|------|------------------------------------|-------|---------------|
| <b>Module: Study Root Information Model (M)</b> |    |      |                                    |       |               |
| (0020,000D)                                     | UI | U    | Study Instance UID                 |       | S             |
| (0020,000E)                                     | UI | U    | Series Instance UID                |       | S             |
| (0008,0018)                                     | UI | U    | SOP Instance UID                   |       | N             |
| (0020,0013)                                     | IS | R    | Instance Number                    |       | N             |
| <b>Module: Additional Attributes Module (O)</b> |    |      |                                    |       |               |
| (0008,0016)                                     | UI | O    | SOP Class UID                      |       | N             |
| (0008,001A)                                     | UI | O    | Related General SOP Class UID      |       | N             |
| (0008,3001)                                     | SQ | O    | Alternate Representation Sequence  |       | N             |
| >(0008,1150)                                    | UI | O    | Referenced SOP Class UID           |       | N             |
| >(0008,1155)                                    | UI | O    | Referenced SOP Instance UID        |       | N             |
| >(0020,000E)                                    | UI | O    | Series Instance UID                |       | N             |
| >(0040,A170)                                    | SQ | O    | Purpose of Reference Code Sequence |       | N             |
| >>(0008,0100)                                   | SH | O    | Code Value                         |       | N             |
| >>(0008,0102)                                   | SH | O    | Coding Scheme Designator           |       | N             |
| >>(0008,0103)                                   | SH | O    | Coding Scheme Version              |       | N             |

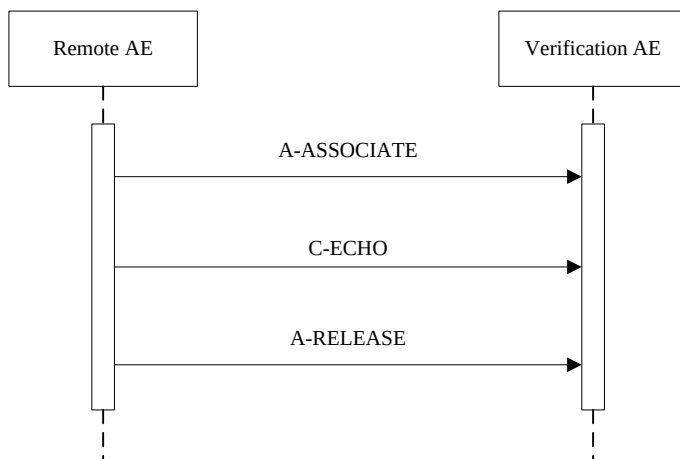
| ATTRIBUTE     | VR | TYPE | ATTRIBUTE NAME             | VALUE | MATCHING KEYS |
|---------------|----|------|----------------------------|-------|---------------|
| >>(0008,0104) | LO | O    | Code Meaning               |       | N             |
| (0040,A043)   | SQ | O    | Concept Name Code Sequence |       | N             |
| >(0008,0100)  | SH | O    | Code Value                 |       | N             |
| >(0008,0102)  | SH | O    | Coding Scheme Designator   |       | N             |
| >(0008,0103)  | SH | O    | Coding Scheme Version      |       | N             |
| >(0008,0104)  | LO | O    | Code Meaning               |       | N             |
| (0040,A504)   | SQ | O    | Content Template Sequence  |       | N             |
| >(0008,0105)  | CS | O    | Mapping Resource           |       | N             |
| >(0040,DB00)  | CS | O    | Template Identifier        |       | N             |

#### 4.2.1.4 Association Acceptance Policy

##### Activity – Receive Echo Request

##### Description and Sequencing of Activities

The Verification AE (as SCP) accepts associations only if they have valid Presentation Contexts. If Verification AE (as SCP) receives an echo (C-ECHO) request then the response will be sent over the same association used to send the C-ECHO-RQ.



**Figure8**  
**Sequencing of Activity – Receive Echo Request**

##### Accepted Presentation Contexts

It will accept Presentation Contexts as shown in the following table:

**Table79**  
**Proposed Presentation Contexts for Activity Verification**

| Presentation Context Table |                   |                           |                   |      |                      |
|----------------------------|-------------------|---------------------------|-------------------|------|----------------------|
| Abstract Syntax            |                   | Transfer Syntax           |                   | Role | Extended Negotiation |
| Name                       | UID               | Name                      | UID               |      |                      |
| Verification               | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP  | None                 |



|  |  |                           |                     |     |      |
|--|--|---------------------------|---------------------|-----|------|
|  |  | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
|  |  | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP | None |

### SOP Specific Conformance

The Application conforms to the definition of a Verification SCP in accordance with the DICOM Standard.

### Activity – Receive Storage

#### Description and Sequencing of Activities

The system could act as Storage SCP in Query/Retrieve, otherwise couldn't. A possible sequence of interactions between the Storage AE (as SCP) and a remote AE is illustrated in the Figure7.

#### Accepted Presentation Contexts

The Storage AE (as SCP) will accept Presentation Contexts as shown in the Table below.

**Table80**  
**Proposed Presentation Contexts for Storage**

| PROPOSED PRESENTATION CONTEXTS |                             |                                                                                          |                        |      |           |
|--------------------------------|-----------------------------|------------------------------------------------------------------------------------------|------------------------|------|-----------|
| Abstract Syntax                |                             | Transfer Syntax                                                                          |                        | Role | Ext. Neg. |
| Name                           | UID                         | Name                                                                                     | UID                    |      |           |
| US Image Storage               | 1.2.840.10008.5.1.4.1.1.6.1 | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCP  | None      |
|                                |                             | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCP  | None      |
|                                |                             | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCP  | None      |
|                                |                             | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCP  | None      |
|                                |                             | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCP  | None      |
|                                |                             | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCP  | None      |
|                                |                             | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCP  | None      |
|                                |                             | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCP  | None      |
| US Multiframe Image Storage    | 1.2.840.10008.5.1.4.1.1.3.1 | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCP  | None      |
|                                |                             | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCP  | None      |
|                                |                             | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCP  | None      |
|                                |                             | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCP  | None      |
|                                |                             | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCP  | None      |

|                                         |                               |                                                                                          |                        |     |      |
|-----------------------------------------|-------------------------------|------------------------------------------------------------------------------------------|------------------------|-----|------|
|                                         |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCP | None |
|                                         |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCP | None |
|                                         |                               | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCP | None |
| Secondary Capture Image Storage         | 1.2.840.10008.5.1.4.1.1.7     | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCP | None |
|                                         |                               | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCP | None |
|                                         |                               | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCP | None |
|                                         |                               | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCP | None |
|                                         |                               | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCP | None |
|                                         |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCP | None |
|                                         |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCP | None |
|                                         |                               | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCP | None |
|                                         |                               |                                                                                          |                        |     |      |
| Comprehensive Structured Report Storage | 1.2.840.10008.5.1.4.1.1.88.33 | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCP | None |
|                                         |                               | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCP | None |
|                                         |                               | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCP | None |
|                                         |                               | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCP | None |
|                                         |                               | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCP | None |
|                                         |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCP | None |
|                                         |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCP | None |
|                                         |                               | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCP | None |
|                                         |                               |                                                                                          |                        |     |      |
| Encapsulated PDF Storage                | 1.2.840.10008.5.1.4.1.1.104.1 | Implicit VR Little Endian                                                                | 1.2.840.10008.1.2      | SCP | None |
|                                         |                               | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    | SCP | None |
|                                         |                               | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 | SCP | None |
|                                         |                               | Explicit VR Big Endian                                                                   | 1.2.840.10008.1.2.2    | SCP | None |
|                                         |                               | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 | SCP | None |
|                                         |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    | SCP | None |
|                                         |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 | SCP | None |
|                                         |                               | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 | SCP | None |
|                                         |                               |                                                                                          |                        |     |      |

|  |  |                             |                        |     |      |
|--|--|-----------------------------|------------------------|-----|------|
|  |  | Only)                       |                        |     |      |
|  |  | JPEG 2000 Image Compression | 1.2.840.10008.1.2.4.91 | SCP | None |

Note : The system could not support to browse the Encapsulated PDF.

### SOP Specific Conformance

The Application conforms to the definition of a Storage SCP in accordance with the DICOM Standard.

### Activity – Receive Storage Commitment

#### Description and Sequencing of Activities

A possible sequence of interactions between the Storage Commitment AE and a remote AE is illustrated in the Sequencing of Activity – Send Storage Request. Figure 3

#### Accepted Presentation Contexts

The Storage Commitment AE will accept Presentation Contexts as shown in the Table below.

**Table 81**  
**Acceptable Presentation Contexts for**  
**Activity Receive Storage Commitment Response**

| Presentation Context Table    |                      |                           |                     |      |           |
|-------------------------------|----------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax               |                      | Transfer Syntax           |                     | Role | Ext. Neg. |
| Name                          | UID                  | Name List                 | UID List            |      |           |
| Storage Commitment Push Model | 1.2.840.10008.1.20.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCU  | None      |
|                               |                      | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU  | None      |
|                               |                      | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCU  | None      |

The Storage Commitment AE will only accept the SCU role within a Presentation Context for the Storage Commitment Push Model SOP Class.

### SOP Specific Conformance

#### Storage Commitment Operations (N-ACTION)

The Storage Commitment AE will request storage commitment for the configured device.

The behavior of Storage Commitment AE when receiving N-Action response status codes is summarized in the Table below:

**Table 82**  
**Storage Commitment N-ACTION Response Status Handling Behavior**

| Service Status | Further Meaning | Error Code             | Behavior                                                                                                                           |
|----------------|-----------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success         | 0000                   | The request for storage comment is considered successfully sent. The ultrasound system waits for the N-EVENT-REPORT in background. |
| *              | *               | Any other status code. | The request for storage comment is failed.                                                                                         |

The behavior of Storage Commitment AE during communication failure is summarized in the Table below:

**Table 83**  
**Storage Commitment Communication Failure Behavior**

| Exception                                        | Behavior                                                                       |
|--------------------------------------------------|--------------------------------------------------------------------------------|
| Timeout                                          | The Association is aborted using A-ABORT and the send job is marked as failed. |
| Association aborted by the SCP or network layers | The send job is marked as failed.                                              |

*Storage Commitment Tags (N-ACTION)*

The Storage Commitment AE will request storage commitment using the following tags

NOTE: Storage Commitment may only be automatically requested upon successful completion of an end exam storage task,

**Table 84**  
**Storage Commitment N-Action-Request Message Contents**

| Action Type Name                         | Event Type ID | Attribute                    | Tag         |
|------------------------------------------|---------------|------------------------------|-------------|
| N-ACTION-RQ (M)                          | 1             | Requested SOP Class UID      | (0000,0003) |
|                                          |               | Requested SOP Instance UID   | (0000,1001) |
| Module: Additional Attributes Module (O) | 3             | Instance Creation Date       | (0008,0012) |
|                                          |               | Instance Creation Time       | (0008,0013) |
| Request Storage Commitment               | 1             | Transaction UID              | (0008,1195) |
|                                          |               | Referenced SOP Sequence      | (0008,1199) |
|                                          |               | >Referenced SOP Class UID    | (0008,1150) |
|                                          |               | >Referenced SOP Instance UID | (0008,1155) |

*Storage Commitment Notifications (N-EVENT-REPORT)*

The reasons for returning specific status codes in a N-EVENT-REPORT response are summarized in the Table below.

**Table 85**

**Storage Commitment N-EVENT-REPORT Response Status Reasons**

| Service Status | Further Meaning                         | Error Code |
|----------------|-----------------------------------------|------------|
| Success        | N-EVENT-REPORT message operate success. | 0000       |
| Failed         | N-EVENT-REPORT message operate failed.  | 0110       |

*Storage Commitment Tags (N-EVENT- REPORT)*

Tags supported for receiving an N-Event-Report message.

**Table 86**

**Storage Commitment N-Event-Report Message Contents**

| EVENT TYPE NAME                                      | EVENT TYPE ID | ATTRIBUTE                    | TAG         | REQUIREMENT TYPE SCP |
|------------------------------------------------------|---------------|------------------------------|-------------|----------------------|
| Storage Commitment Request Successful                | 1             | Transaction UID              | (0008,1195) | 1                    |
|                                                      |               | Referenced SOP Sequence      | (0008,1199) | 1                    |
|                                                      |               | >Referenced SOP Class UID    | (0008,1150) | 1                    |
|                                                      |               | >Referenced SOP Instance UID | (0008,1155) | 1                    |
| Storage Commitment Request Complete – Failures Exist | 2             | Transaction UID              | (0008,1195) | 1                    |
|                                                      |               | Referenced SOP Sequence      | (0008,1199) | 1                    |
|                                                      |               | >Referenced SOP Class UID    | (0008,1150) | 1                    |
|                                                      |               | >Referenced SOP Instance UID | (0008,1155) | 1                    |
|                                                      |               | Failed SOP Sequence          | (0008,1198) | 1                    |
|                                                      |               | >Referenced SOP Class UID    | (0008,1150) | 1                    |
|                                                      |               | >Referenced SOP Instance UID | (0008,1155) | 1                    |
|                                                      |               | >Failure Reason              | (0008,1197) | 1                    |

## 4.3 Network Interfaces

### 4.3.1 Supported Communications Stacks

Modality DICOM AEs provide DICOM 3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

### 4.3.2 TCP/IP Stack

Modality DICOM AEs inherit their TCP/IP stack from the Windows 7 Operating System upon which they execute.

### 4.3.3 Physical Network Interface

Modality supports a single network interface. One of the following physical network interfaces will be available depending on installed hardware options:

**Table87**  
**Supported Physical Network Interfaces**

|                    |
|--------------------|
| ETHERNET 1000BASET |
| Ethernet 100baseT  |
| Ethernet 10baseT   |

#### 4.3.4 Additional Protocols

Modality does not support additional protocols.

### 4.4 Configuration

The Configuration Utility allows the service engineer to set and maintain configuration parameters of local and remote DICOM application entities.

#### 4.4.1 AE Title/Presentation Address Mapping

This mapping (including IP and port numbers) is defined during the system Network Configuration procedure.

#### 4.4.2 Configurable Parameters

##### Localhost DICOM Service Property(Including SCU and SCP):

AE Title  
Port  
PDU

##### Server Setting:

Device  
IP address

##### Storage:

Device, Service name, AE Title and Port.  
Timeout.  
Maximum retries. (default value is 3)  
Interval Time (In this version, this parameter is not usable.)  
Compression Mode, Compression Ratio.  
Color Mode (Color, Mixed, or Gray).  
Cine Zoom Mode (original, 640\*480, 800\*600 or 1024\*768)  
Allow Multiframe(Enable or not )  
Max Framerate(options(25, 30, 35, full), or other inputed valid value)  
3D/4D(Normal, Rawdata or Volume)  
SR Storage Option("Attach SR When Store Images", "Only Store SR", and "Not Store SR")

Encapsulated PDF(Enable or not )

Storage Mode("Parallel file", "Parallel frame",and "Serial file")

Default Service Status (Y/N)

**Print:**

Device, Service name, AE Title and Port .

Timeout.

Maximum retries. (default value is 3)

Interval Time (In this version, this parameter is not usable.)

Media Type: PAPER, CLEAR FILM, or BLUE FILM

Film Size:

8INX10IN

8\_5INX11IN

10INX12IN

10INX14IN

11INX14IN

11INX17IN

14INX14IN

14INX17IN

24CMX24CM

24CMX30CM

A4

A3

Copies:1-100

Max Density: 0-65535

Min Density:0-65535

Settings: RGB or MONOCHROME2

Display Format:

PORTRAIT:

STANDARD\1,1

STANDARD\1,2

STANDARD\1,3

STANDARD\2,1

STANDARD\2,2

STANDARD\2,3

STANDARD\2,4

STANDARD\3,3

STANDARD\3,4

STANDARD\3,5

STANDARD\3,6

STANDARD\4,4

STANDARD\4,5

STANDARD\4,6

STANDARD\4,7

STANDARD\4,8

STANDARD\5,5

STANDARD\5,6  
STANDARD\5,7  
STANDARD\5,8  
STANDARD\6,6  
STANDARD\6,7  
STANDARD\6,8  
STANDARD\6,9  
STANDARD\6,10  
STANDARD\7,7  
STANDARD\7,8  
STANDARD\7,9  
STANDARD\7,10  
STANDARD\8,8  
STANDARD\8,9  
STANDARD\8,10

LANDSCAPE:

STANDARD\1,1  
STANDARD\1,1  
STANDARD\2,1  
STANDARD\3,1  
STANDARD\1,2  
STANDARD\2,2  
STANDARD\3,2  
STANDARD\4,2  
STANDARD\3,3  
STANDARD\4,3  
STANDARD\5,3  
STANDARD\6,3  
STANDARD\4,4  
STANDARD\5,4  
STANDARD\6,4  
STANDARD\7,4  
STANDARD\8,4  
STANDARD\5,5  
STANDARD\6,5  
STANDARD\7,5  
STANDARD\8, 5  
STANDARD\6,6  
STANDARD\7,6  
STANDARD\8,6  
STANDARD\9,6  
STANDARD\10,6  
STANDARD\7,7  
STANDARD\8,7  
STANDARD\9,7  
STANDARD\10,7  
STANDARD\8,8  
STANDARD\9,8  
STANDARD\10,8

Destination: MAGAZINE or PROCESSOR

Film Orientation: LANDSCAPE or PORTRAIT



Priority: HIGH, MED, or LOW

Configuration Info

Magnification Type: NONE, CUBIC, REPLICATE, or BILINEAR

Trim: Yes/Not

Default Status (Y/N)

**WORKLIST:**

Device, Service name, AE Title and Port .

Timeout.

Maximum retries, Interval Time (In this version, these two parameters are not usable.)

Default Status (Y/N)

**MPPS:**

Device, Service name, AE Title and Port.

Timeout,

Maximum retries (default value is 3)

Interval Time (In this version, this parameter is not usable.)

Default Status (Y/N)

**Storage Commitment:**

Device, Service name, AE Title and Port.

Timeout.

Maximum retries, Interval Time (In this version, these two parameters are not usable.)

Associated Storage Service

Default Status (Not available)

**Query/Retrieve**

Device, Service name, AE Title and Port.

Timeout.

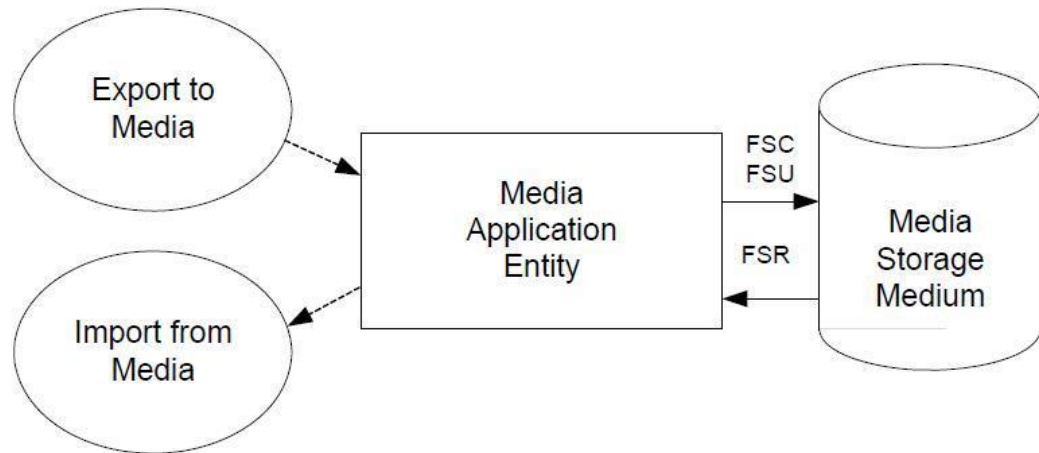
Maximum retries, Interval Time (In this version, these two parameters are not usable.)

Default Status (Y/N)

## 5 MEDIA INTERCHANGE

### 5.1 Implementation Model

#### 5.1.1 Application Data Flow



**Figure9**  
**Application Data Flow Diagram for Media Storage**

The Media Application Entity exports Images and Structured Reports to a removable storage medium. It is associated with the local real-world activity “Backup” using the configured export selection parameters for selected patients’ data (images and / or Structured Reports).

#### 5.1.2 Functional Definition of AE’s

##### 5.1.2.1 Functional Definition of Media Application Entity

Using “Export” will pass the currently selected patients’ exams or individually selected images to the Media Application Entity. The contents of each export job will be written to the selected media destination. The size of the selected media is used to determine and display the number of media required for the export. When a device is filled to capacity, the system will prompt the user for addition media and continue.

#### 5.1.3 Sequencing of Real-World Activities

At least one image must exist and be selected before the Media Application Entity can be invoked. The operator can insert new media at any time. The Media Application Entity will wait indefinitely for media to be inserted before starting to write to the device.

#### 5.1.4 File Meta Information Options

The implementation information written to the File Meta Header in each file is:

**Table88**

**DICOM Implementation Class and Version for Media Storage**

|                          |                               |
|--------------------------|-------------------------------|
| Implementation Class UID | 1.2.156.112536.1.2123.0.1.0.1 |
|--------------------------|-------------------------------|

|                             |              |
|-----------------------------|--------------|
| Implementation Version Name | SIEMENS_V1.1 |
|-----------------------------|--------------|

## 5.2 AE Specifications

### 5.2.1 Media Application Entity Specification

The Media Application Entity provides standard conformance to the Media Storage Service Class. The Application Profiles and roles are listed below: The available physical media is CD-R, CD-RW, DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, and USB devices.

**Table89**  
**Application Profiles, Activities and Roles**

| Application Profiles Supported | Real World Activity | Role                 |
|--------------------------------|---------------------|----------------------|
| STD-GEN-USB-JPEG               | Export Exam         | FSC/FSU <sup>1</sup> |
| STD-US-SC-SF&MF-CDR            | Read Exam           | FSR                  |
| STD-US-SC-SF&MF-DVD            | Import Exam         | FSR                  |
| STD-US-SC-SF&MF-DVD-RAM        |                     |                      |

Note: 1 functionality requires DVD+RW, DVD-RW, or USB

#### 5.2.1.1 File Meta Information for the Application Entity

The File Meta Header does not include the Source Application Entity Title.

#### 5.2.1.2 Real-World Activities

##### Activity-FSC-Export exams

When system user exports exams, images, SR, or Encapsulated PDF to a media upon which no DICOM data resides, it creates a DICOM file set and writes this DICOM File Set to this media.

The Media Application Entity acts as an FSC using the interchange option when requested to export SOP Instances from the local database to media upon which no DICOM data resides.

##### Activity-FSR-Import exams

When system user presents the directory of the media, presses "Restore" button and the selected exams are transferred from the media to the system for review. Objects transferred to the system retain their original SOP Instance UIDs.

The Media Application Entity acts as an FSR using the interchange option when requested to import SOP Instances from media to the local database.

##### Activity-FSU-Export exams

The system user selects exams from the system's directory for transfer to media that already contains data. The DICOMDIR is updated allowing access to original and new data.

The Media Application Entity acts as an FSU using the interchange option when requested to export SOP Instances from the local database to media upon which DICOM data already resides.

### Media Storage Application Profiles

See Table89 for supported Application Profiles.

*Options*

The Media Application Entity supports the SOP Classes and Transfer Syntaxes listed in the Table below:

**Table90**  
**IODs, SOP Classes and Transfer Syntaxes**

| Information Object Definition        | SOP Class UID               | Transfer Syntax                                                                          | Transfer Syntax UID    |
|--------------------------------------|-----------------------------|------------------------------------------------------------------------------------------|------------------------|
| DICOM Media Storage Directory        | 1.2.840.10008.1.3.10        | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |
| Ultrasound Image Storage             | 1.2.840.10008.5.1.4.1.1.6.1 | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |
|                                      |                             | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 |
|                                      |                             | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 |
|                                      |                             | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    |
|                                      |                             | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 |
|                                      |                             | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 |
| Ultrasound Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |
|                                      |                             | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 |
|                                      |                             | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 |
|                                      |                             | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    |
|                                      |                             | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 |

| Information Object Definition   | SOP Class UID                 | Transfer Syntax                                                                          | Transfer Syntax UID    |
|---------------------------------|-------------------------------|------------------------------------------------------------------------------------------|------------------------|
|                                 |                               | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7     | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |
|                                 |                               | JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)                          | 1.2.840.10008.1.2.4.50 |
|                                 |                               | JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]) | 1.2.840.10008.1.2.4.70 |
|                                 |                               | RLE Lossless                                                                             | 1.2.840.10008.1.2.5    |
|                                 |                               | JPEG 2000 Image Compression (Lossless Only)                                              | 1.2.840.10008.1.2.4.90 |
|                                 |                               | JPEG 2000 Image Compression                                                              | 1.2.840.10008.1.2.4.91 |
| Comprehensive SR Storage        | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |
| Encapsulated PDF Storage        | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |
| Enhanced US Volume Storage      | 1.2.840.10008.5.1.4.1.1.6.2   | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |
| Raw Data Storage                | 1.2.840.10008.5.1.4.1.1.66    | Explicit VR Little Endian                                                                | 1.2.840.10008.1.2.1    |

### 5.3 Media Storage Application Profile

See Table89 for supported Application Profiles.

#### 5.3.1 DICOMDIR Attributes

The DICOMDIR file will contain the following attributes.

**Table 91**  
**Common Directory Information Module Attributes**

| ATTRIBUTE    | VR | TYPE | ATTRIBUTE NAME                                                    | VALUE(S) AND COMMENTS |
|--------------|----|------|-------------------------------------------------------------------|-----------------------|
| (0004,1130)  | CS | 2    | File-set ID                                                       | AUTO                  |
| (0004,1200)  | UL | 1    | Offset of the First Directory Record of the Root Directory Entity | AUTO                  |
| (0004,1202)  | UL | 1    | Offset of the Last Directory Record of the Root Directory Entity  | AUTO                  |
| (0004,1212)  | US | 1    | File-set Consistency Flag                                         | 0xFFFF                |
| (0004,1220)  | SQ | 2    | Directory Record Sequence                                         |                       |
| >(0004,1400) | UL | 1    | Offset of the Next Directory Record                               | AUTO                  |
| >(0004,1410) | US | 1    | Record In-use Flag                                                | 0xFFFF                |
| >(0004,1420) | UL | 1    | Offset of Referenced Lower-Level Directory Entity                 | AUTO                  |
| >(0004,1142) | CS | 2    | Specific Character Set of File-set Descriptor File                | ISO_IR 100            |

**Table 92**  
**Patient Directory Record**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME        | VALUE(S) AND COMMENTS |
|-------------|----|------|-----------------------|-----------------------|
| (0004,1430) | CS | 1    | Directory Record Type | PATIENT               |
| (0010,0020) | LO | 1    | Patient ID            | MWL/USER              |
| (0010,0010) | PN | 2    | Patient's Name        | MWL/USER              |
| (0010,0030) | DA | 3    | Patient's Birth Date  | MWL/USER              |
| (0010,0040) | CS | 3    | Patient's Sex         | MWL/USER              |
| (0010,1000) | LO | 3    | Other Patient IDs     | MWL/USER              |

**Table 93**  
**Study Directory Record**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME        | VALUE(S) AND COMMENTS |
|-------------|----|------|-----------------------|-----------------------|
| (0004,1430) | CS | 1    | Directory Record Type | STUDY                 |
| (0008,0020) | DA | 1    | Study Date            | AUTO                  |
| (0008,0030) | TM | 1    | Study Time            | AUTO                  |
| (0020,0010) | SH | 1    | Study ID              | AUTO                  |
| (0020,000D) | UI | 1C   | Study Instance UID    | AUTO                  |

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME             | VALUE(S) AND COMMENTS                                                                                     |
|-------------|----|------|----------------------------|-----------------------------------------------------------------------------------------------------------|
| (0008,0050) | SH | 2    | Accession Number           | MWL/USER                                                                                                  |
| (0008,1030) | LO | 2    | Study Description          | If it is a scheduled exam, the value is mapped from Scheduled Procedure Step Description;<br>If not, USER |
| (0008,0090) | PN |      | Referring Physician's Name | MWL/USER                                                                                                  |

**Table 94**  
**Series Directory Record**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME              | VALUE(S) AND COMMENTS                                                                                                                       |
|-------------|----|------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| (0004,1430) | CS | 1    | Directory Record Type       | SERIES                                                                                                                                      |
| (0008,0060) | CS | 1    | Modality                    | US                                                                                                                                          |
| (0020,000E) | UI | 1    | Series Instance UID         | AUTO                                                                                                                                        |
| (0020,0011) | IS | 1    | Series Number               | AUTO                                                                                                                                        |
| (0008,0021) | DA | 3    | Series Date                 | AUTO                                                                                                                                        |
| (0008,0031) | TM | 3    | Series Time                 | AUTO                                                                                                                                        |
| (0008,103e) | LO |      | Series Description          | If it is a scheduled exam, the value is mapped from Scheduled Procedure Step Description;<br>If not, same as the value of Study Description |
| (0008,1050) | PN |      | Performing Physician's Name | MWL/USER                                                                                                                                    |

**Table 95**  
**Image Directory Record**

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME                         | VALUE(S) AND COMMENTS |
|-------------|----|------|----------------------------------------|-----------------------|
| (0004,1430) | CS | 1    | Directory Record Type                  | IMAGE                 |
| (0004,1500) | CS | 1C   | Referenced File ID                     | AUTO                  |
| (0004,1510) | UI | 1C   | Referenced SOP Class UID in File       | AUTO                  |
| (0004,1511) | UI | 1C   | Referenced SOP Instance UID in File    | AUTO                  |
| (0004,1512) | UI | 1C   | Referenced Transfer Syntax UID in File | AUTO                  |
| (0020,0013) | IS | 1    | Instance Number                        | AUTO                  |

| ATTRIBUTE   | VR | TYPE | ATTRIBUTE NAME   | VALUE(S) AND COMMENTS                 |
|-------------|----|------|------------------|---------------------------------------|
| (0028,0008) | IS | 3    | Number of Frames | AUTO(Only used for mutil-frame image) |

## 5.4 Augmented and Private Application Profiles

No augmented/private profile is supported.

## 5.5 Media Configuration

None.

# 6 SUPPORT OF CHARACTER SETS

## 6.1 Character Sets for ACUSON Bonsai™ System

In addition to the default character repertoire, the Defined Terms for Specific Character Set in Table96 are supported:

**Table96**  
Supported Specific Character Set Defined Terms

| Character Set Description | Defined Term | System Language                                                                                       |
|---------------------------|--------------|-------------------------------------------------------------------------------------------------------|
| ISO 8859-1                | ISO_IR 100   | English, French, German, Italian, Portuguese, Spanish, Finnish, Danish, Icelandic, Norwegian, Swedish |
| ISO 8859-5                | ISO_IR 144   | Russian                                                                                               |
| ISO-8859-2                | ISO_IR 101   | Polish, Czech, Serbian                                                                                |
| Chinese                   | GB18030      | Chinese                                                                                               |

If the system language is configured for one of above languages, the corresponding Character Set will be used automatically. Whether or not characters are displayed correctly depends on the operating system. For example, if the system is configured for Polish, the characters of Polish could display correctly.

# 7 SECURITY

## 7.1 Security Profiles

None supported.

## 7.2 Association Level Security

None supported.

Any Calling AE Titles and/or IP addresses may open an Association.

## 7.3 Application Level Security

None supported.



## **8 ANNEXES**

### **8.1 IOD Contents**

#### **8.1.1 Created SOP Instances**

None.

#### **8.1.2 Usage of attributes from received IOD's**

No SOP Class specific fields are required.

The local database makes use of the conventional identification attributes to distinguish patients, studies, series and instances. In particular, if two patients have the same value for Patient ID, Patient's Name and Patient's Sex, they will be treated as the same in the browser and the local database.

#### **8.1.3 Attribute Mapping**

Not applicable.

#### **8.1.4 Coerced/Modified fields**

No coercion is performed.

### **8.2 Data Dictionary of private attributes**

No private attributes are defined.

### **8.3 Coded terminology and templates**

The value for Code Meaning will be displayed for all code sequences. No local lexicon is provided to look up alternative code meanings.

### **8.4 Grayscale Image Consistency**

Modality does not support the Grayscale Standard Display Function.

### **8.5 Standard extended/specialized/private sop Classes**

None.

### **8.6 Private Transfer Syntaxes**

None.

## 9 APPENDICES

### 9.1 OB – GYN structured reporting template

This appendix lists the DICOM Structured Report (SR) mappings used in the Obstetric and Gynecologic Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The OB-GYN Report mappings follow the DICOM SR Template TID 5000: OB-GYN Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

#### TID (300) Measurement

This Template provides a general structure for a numeric measurement, together with evaluations of its normality and/or significance, and the inference source(s) for its value.

| NO | NL | Relation with Parent | Value Type | Concept Name                           | Used in MODALITY | Condition | Value Set Constraint  |
|----|----|----------------------|------------|----------------------------------------|------------------|-----------|-----------------------|
| 1  |    |                      | NUM        | \$Measurement                          | √                |           | Units = \$Units       |
| 2  | >  | HAS CONCEPT MOD      | CODE       | EV (G-C036, SRT, "Measurement Method") | √                |           | \$Method              |
| 3  | >  | HAS CONCEPT MOD      | CODE       | EV (121401, DCM, "Derivation")         | √                |           | \$Derivation          |
| 4  | >  | HAS CONCEPT MOD      | CODE       | EV (G-C0E3, SRT, "Finding Site")       | √                |           | \$TargetSite          |
| 5  | >> | HAS CONCEPT MOD      | CODE       | EV (G-C171, SRT, "Laterality")         | √                |           | DCID (244) Laterality |
| 6  | >  | HAS PROPERTIE S      | CODE       | EV (121404, DCM, "Selection Status")   | √                |           |                       |
| 7  | >  | INFERRED FROM        | CODE       | DCID (228) Equation or Table           | √                |           |                       |
| 8  | >> | HAS PROPERTIE S      | NUM        |                                        | √                |           |                       |

#### TID 1008 Subject Context, Fetus

| NO | NL | Relation with Parent | Value Type | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint |
|----|----|----------------------|------------|---------------------------------------|------------------|-----------|----------------------|
| 1  |    |                      | PNAME      | EV (121036,DCM, "Mother of fetus")    |                  |           |                      |
| 2  |    |                      | UIDREF     | EV (121028,DCM, "Subject UID")        |                  |           |                      |
| 3  |    |                      | TEXT       | EV (121030,DCM, "Subject ID")         |                  |           |                      |
| 4  |    |                      | TEXT       | EV (11951-1, LN, "Fetus ID")          | √                |           |                      |
| 5  |    |                      | NUM        | EV (11878-6, LN, "Number of Fetuses") | √                |           |                      |

#### TID (5000) OB-GYN Ultrasound Procedure Report

This is the template for the root of the content tree for the OB-GYN ultrasound procedure report.

| NO | NL | Relation with Parent | Value Type | Concept Name                                           | Used in MODALITY | Condition | Value Set Constraint                                                                                          |
|----|----|----------------------|------------|--------------------------------------------------------|------------------|-----------|---------------------------------------------------------------------------------------------------------------|
| 1  |    |                      | CONTAINER  | EV (125000, DCM, "OB-GYN Ultrasound Procedure Report") | √                |           |                                                                                                               |
| 2  | >  | HAS CONCEPT MOD      | INCLUDE    | DTID (1204) Language of Content Item and Descendants   |                  |           |                                                                                                               |
| 3  | >  | HAS OBS CONTEXT      | INCLUDE    | DTID (1001) Observation Context                        | √                |           |                                                                                                               |
| 4  | >  | CONTAINS             | INCLUDE    | DTID (5001) Patient Characteristics                    | √                |           |                                                                                                               |
| 5  | >  | CONTAINS             | CONTAINER  | DT (111028, DCM, "Image Library")                      | √                |           |                                                                                                               |
| 6  | >> | CONTAINS             | IMAGE      | No purpose of reference                                | √                |           |                                                                                                               |
| 7  | >  | CONTAINS             | INCLUDE    | DTID (5002) OB-GYN Procedure Summary Section           | √                |           |                                                                                                               |
| 8  | >  | CONTAINS             | INCLUDE    | DTID (5004) Fetal Biometry Ratio Section               | √                |           |                                                                                                               |
| 9  | >  | CONTAINS             | INCLUDE    | DTID (5005) Fetal Biometry Section                     | √                |           |                                                                                                               |
| 10 | >  | CONTAINS             | INCLUDE    | DTID (5006) Long Bones Section                         | √                |           |                                                                                                               |
| 11 | >  | CONTAINS             | INCLUDE    | DTID (5007) Fetal Cranium Section                      | √                |           |                                                                                                               |
| 12 | >  | CONTAINS             | INCLUDE    | DTID (5009) Fetal Biophysical Profile Section          | √                |           |                                                                                                               |
| 13 | >  | CONTAINS             | INCLUDE    | DTID (5011) Early Gestation Section                    | √                |           |                                                                                                               |
| 14 | >  | CONTAINS             | INCLUDE    | DTID (5010) Amniotic Sac Section                       | √                |           |                                                                                                               |
| 15 | >  | CONTAINS             | INCLUDE    | DTID (5015) Pelvis and Uterus Section                  | √                |           |                                                                                                               |
| 16 | >  | CONTAINS             | INCLUDE    | DTID (5012) Ovaries Section                            | √                |           |                                                                                                               |
| 17 | >  | CONTAINS             | INCLUDE    | DTID (5013) Follicles Section                          | √                |           | \$Laterality = EV (G-A101, SRT, "Left")<br>\$Number = EV (11879-4, LN, "Number of follicles in left ovary")   |
| 18 | >  | CONTAINS             | INCLUDE    | DTID (5013) Follicles Section                          | √                |           | \$Laterality = EV (G-A100, SRT, "Right")<br>\$Number = EV (11880-2, LN, "Number of follicles in right ovary") |
| 19 | >  | CONTAINS             | CONTAINER  | EV (121070, DCM, "Findings")                           | √                |           |                                                                                                               |
| 20 | >> | HAS CONCEPT MOD      | CODE       | EV (G-C0E3, SRT, "Finding Site")                       | √                |           | EV (T-F6800, SRT, "Embryonic Vascular Structure")                                                             |
| 21 | >> | CONTAINS             | INCLUDE    | DTID (5025) OB-GYN Fetal Vascular Measurement Group    | √                |           | \$AnatomyGroup = DCID (12141) Fetal Vasculature                                                               |
| 22 | >  | CONTAINS             | CONTAINER  | EV (121070, DCM, "Findings")                           | √                |           |                                                                                                               |
| 23 | >> | HAS CONCEPT MOD      | CODE       | EV (G-C0E3, SRT, "Finding Site")                       | √                |           | EV (T-D6007, SRT, "Pelvic Vascular Structure")                                                                |
| 24 | >> | CONTAINS             | INCLUDE    | DTID (5026) OB-GYN Pelvic Vascular Measurement Group   | √                |           | \$AnatomyGroup = DCID (12140) Pelvic Vasculature Anatomical Location                                          |
| 25 | >  | CONTAINS             | INCLUDE    | DTID (SELFTMP-1)                                       | √                |           |                                                                                                               |

|    |   |          |      |                                                 |   |  |  |
|----|---|----------|------|-------------------------------------------------|---|--|--|
| 26 | > | CONTAINS | TEXT | (20121120,MRUS, "self-defined-Measurementfile") | √ |  |  |
|----|---|----------|------|-------------------------------------------------|---|--|--|

## TID (SELFTMP-1) Fetal Cardiac Measurement Group

This is a private template referenced by TID (5000).

| NO | NL | Relation with Parent | Value Type | Concept Name                       | Used in MODALITY | Condition | Value Set Constraint                                                                       |
|----|----|----------------------|------------|------------------------------------|------------------|-----------|--------------------------------------------------------------------------------------------|
| 1  |    |                      | CONTAINER  | EV(T0001,MRUS,Fetal Cardiac)       | √                |           |                                                                                            |
| 2  | >  | HAS OBS CONTEXT      | INCLUDE    | DTID (1008) Subject Context, Fetus | √                |           |                                                                                            |
| 3  | >  | CONTAINS             | INCLUDE    | DTID (SELFTMP-2) Fetal ZSCORE      | √                |           | \$MeasType = DCID (SELFCID-1) Fetal Z-Score<br>\$Derivation = DCID (3627) Measurement Type |

## TID (SELFTMP-2) Fetal ZScore

This is a private template referenced by TID (5000).

| NO | NL | Relation with Parent | Value Type | Concept Name                                               | Used in MODALITY | Condition | Value Set Constraint                                  |
|----|----|----------------------|------------|------------------------------------------------------------|------------------|-----------|-------------------------------------------------------|
| 1  |    | CONTAINS             | INCLUDE    | DTID (300) Measurement                                     | √                |           |                                                       |
| 2  |    | CONTAINS             | NUM        | EV (C12017-1, MRUS, "Z-Score by Femur Length")             | √                |           | calculated by \$MeasType and Femur Length             |
| 3  |    | CONTAINS             | NUM        | EV (C12017-2, MRUS, "Z-Score by Biparietal Diameter")      | √                |           | calculated by \$MeasType and Biparietal Diameter      |
| 4  |    | CONTAINS             | NUM        | EV (C12017-3, MRUS, "Z-Score by Clinical Gestational Age") | √                |           | calculated by \$MeasType and Clinical Gestational Age |

## TID (1001) OBSERVATION CONTEXT

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

| NO | NL | Relation with Parent | Value Type | Concept Name                                                   | Used in MODALITY | Condition | Value Set Constraint                                            |
|----|----|----------------------|------------|----------------------------------------------------------------|------------------|-----------|-----------------------------------------------------------------|
| 1  | >  | HAS OBS CONTEXT      | CODE       | EV (121005,DCM, "Observer Type")                               | √                |           | (121006,DCM, "Person")                                          |
| 2  | >  | HAS OBS CONTEXT      | PNAME      | EV (121008,DCM, "Person Observer Name")                        | √                |           | Operator from Info                                              |
| 3  | >  | HAS OBS CONTEXT      | TEXT       | EV (121009,DCM, " Person Observer's Organization Name")        | √                |           | Institution Name (0008,0080) of the General Equipment Module    |
| 4  | >  | HAS OBS CONTEXT      | CODE       | EV (121010,DCM, " Person Observer's Role in the Organization") | √                |           | (121093, DCM, "Sonographer")                                    |
| 5  | >  | HAS OBS CONTEXT      | CODE       | EV (121024, DCM, "Subject Class")                              | √                |           | (121025, DCM, "Patient")                                        |
| 6  | >  | HAS OBS CONTEXT      | PNAME      | EV (121029,DCM, "Subject Name")                                | √                |           | value of Patient's Name (0010,0010) in Patient Module           |
| 7  | >  | HAS OBS CONTEXT      | DATE       | EV (121031,DCM, "Subject Birth Date")                          | √                |           | value of Patient's Birth Date (0010,0030) in Patient Module     |
| 8  | >  | HAS OBS CONTEXT      | CODE       | EV (121032,DCM, "Subject Sex")                                 | √                |           | value equivalent to Patient's Sex (0010,0040) in Patient Module |

|   |   |                 |     |                                 |   |  |                                                            |
|---|---|-----------------|-----|---------------------------------|---|--|------------------------------------------------------------|
| 9 | > | HAS OBS CONTEXT | NUM | EV (121033, DCM, "Subject Age") | √ |  | value of Patient's Age (0010,1010) in Patient Study Module |
|---|---|-----------------|-----|---------------------------------|---|--|------------------------------------------------------------|

### TID (5001) OB-GYN Patient Characteristics

| NO | NL | Relation with Parent | Value Type | Concept Name                                | Used in MODALITY | Condition | Value Set Constraint |
|----|----|----------------------|------------|---------------------------------------------|------------------|-----------|----------------------|
| 1  |    |                      | CONTAINER  | EV (121118, DCM, "Patient Characteristics") | √                |           |                      |
| 2  | >  | CONTAINS             | TEXT       | EV (121106, DCM, "Comment")                 |                  |           |                      |
| 3  | >  | CONTAINS             | NUM        | EV (8302-2, LN, "Patient Height")           |                  |           |                      |
| 4  | >  | CONTAINS             | NUM        | EV (29463-7, LN, "Patient Weight")          |                  |           |                      |
| 5  | >  | CONTAINS             | NUM        | EV (11996-6, LN, "Gravida")                 | √                |           | from info            |
| 6  | >  | CONTAINS             | NUM        | EV (11977-6, LN, "Para")                    | √                |           | from info            |
| 7  | >  | CONTAINS             | NUM        | EV (11612-9, LN, "Aborta")                  | √                |           | from info            |
| 8  | >  | CONTAINS             | NUM        | EV (33065-4, LN, "Ectopic Pregnancies")     | √                |           | from info(Ectopic)   |

### TID (5002) OB-GYN Procedure Summary

| NO | NL | Relation with Parent | Value Type | Concept Name                                     | Used in MODALITY | Condition | Value Set Constraint                                               |
|----|----|----------------------|------------|--------------------------------------------------|------------------|-----------|--------------------------------------------------------------------|
| 1  |    |                      | CONTAINER  | DT (121111, DCM, "Summary")                      | √                |           |                                                                    |
| 2  | >  | CONTAINS             | DATE       | ( 11778-8, LN, "EDD" )                           | √                |           | from info                                                          |
| 3  | >  | CONTAINS             | DATE       | (11779-6, LN, "EDD from LMP")                    | √                |           | from info                                                          |
| 4  | >  | CONTAINS             | DATE       | (11781-2, LN, "EDD from average ultrasound age") | √                |           |                                                                    |
| 5  | >  | CONTAINS             | DATE       | ( 11780-4, LN, "EDD from ovulation date" )       | √                |           | from info                                                          |
| 6  | >  | CONTAINS             | DATE       | (11955-2, LN, "LMP" )                            | √                |           | from info                                                          |
| 7  | >  | CONTAINS             | DATE       | ( 33066-2, LN, "Estimated LMP by EDD" )          | √                |           | from info                                                          |
| 8  | >  | CONTAINS             | DATE       | ( 11976-8, LN, "Ovulation date" )                | √                |           | from info                                                          |
| 9  | >  | CONTAINS             | DATE       | (I12003-01, MRUS, "IVF")                         | √                |           | from info                                                          |
| 10 | >  | CONTAINS             | DATE       | (C12003-01, MRUS, "EDD from IVF")                | √                |           | from info                                                          |
| 11 | >  | CONTAINS             | DATE       | (I12003-02, MRUS, "PRV")                         | √                |           | from info                                                          |
| 12 | >  | CONTAINS             | DATE       | (C12003-02, MRUS, "EDD from PRV")                | √                |           | from info                                                          |
| 13 | >  | CONTAINS             | INCLUDE    | DTID (300) Measurement                           | √                |           | \$Measurement = (11886-9, LN, "Gestational Age by ovulation date") |
| 14 | >  | CONTAINS             | TEXT       | EV (121106, DCM, "Comment")                      | √                |           | from info                                                          |
| 15 | >  | CONTAINS             | TEXT       | (I12101-01, MRUS, "Primary Indications")         | √                |           | from info                                                          |
| 16 | >  | CONTAINS             | TEXT       | (I12101-02, MRUS, "Secondary Indications")       | √                |           | from info                                                          |

|    |    |          |         |                                         |   |  |                           |
|----|----|----------|---------|-----------------------------------------|---|--|---------------------------|
| 17 | >  | CONTAINS | TEXT    | (I12101-03, MRUS, "CPT4 Code")          | √ |  | from info                 |
| 18 | >  | CONTAINS | TEXT    | (I12101-04, MRUS, "CPT4 Description")   | √ |  | from info                 |
| 19 | >  | CONTAINS | NUM     | (8302-2, MRUS, "Patient Height")        | √ |  | from info                 |
| 20 | >  | CONTAINS | NUM     | (29463-7, MRUS, "Patient Weight")       | √ |  | from info                 |
| 21 | >  | CONTAINS | TEXT    | EV (121106, DCM, "Comment")             | √ |  | report interface Comments |
| 22 | >  | CONTAINS | TEXT    | (I12101-05, MRUS, "Prompt")             | √ |  | report interface Prompt   |
| 23 | >  | CONTAINS | TEXT    | (I121071, DCM, "Findings")              | √ |  | report interface Findings |
| 24 | >> |          | INCLUDE | DTID (320) Image or Spatial Coordinates |   |  |                           |
| 25 | >  | CONTAINS | INCLUDE | FINDING_7                               | √ |  |                           |
| 26 | >  | CONTAINS | INCLUDE | BTID (5003) OB-GYN Fetus Summary        | √ |  |                           |

### TID (5003) OB-GYN Fetus Summary

|    | NL | Rel with Parent | VT        | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint                                        |
|----|----|-----------------|-----------|---------------------------------------|------------------|-----------|-------------------------------------------------------------|
| 1  |    |                 | CONTAINER | DT (125008, DCM, "Fetus Summary")     | √                |           |                                                             |
| 2  | >  | HAS OBS CONTEXT | TEXT      | EV (11951-1, LN, "Fetus ID")          | √                |           |                                                             |
| 3  | >  | HAS OBS CONTEXT | NUM       | EV (11878-6, LN, "Number of Fetuses") | √                |           |                                                             |
| 4  | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (18185-9, LN, "Gestational Age")            |
| 5  | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (11888-5, LN, "Composite Ultrasound Age")   |
| 6  | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (11885-1, LN, "Gestational Age by LMP")     |
| 7  | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (11727-5, LN, "Estimated Weight")           |
| 8  | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (11767-1, LN, "EFW percentile rank")        |
| 9  | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (11948-7, LN, "Fetal Heart Rate")           |
| 10 | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (C12019-01, MRUS, "Gestational Age by IVF") |
| 11 | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (I12019-01, MRUS, "GA of Previous Exam")    |
| 12 | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (C12019-02, MRUS, "Gestational Age by PRV") |
| 13 | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (C12019-03, MRUS, "Gestational Age by EDD") |
| 14 | >  | CONTAINS        | INCLUDE   | DTID Measurement (300)                | √                |           | \$Measurement = (C12019-4, MRUS, "Gestational Age by EFW")  |

|    | NL | Rel with Parent | VT      | Concept Name           | Used in MODALITY | Condition | Value Set Constraint                                                                 |
|----|----|-----------------|---------|------------------------|------------------|-----------|--------------------------------------------------------------------------------------|
| 15 | >  | CONTAINS        | INCLUDE | DTID Measurement (300) | √                |           | \$Measurement = (C12019-4, MRUS, "Gestational Age by mean Gestational Sac Diameter") |
| 16 | >  | CONTAINS        | INCLUDE | FINDING_1              | √                |           |                                                                                      |
| 17 | >  | CONTAINS        | INCLUDE | FINDING_2              | √                |           |                                                                                      |
| 18 | >  | CONTAINS        | INCLUDE | FINDING_3              | √                |           |                                                                                      |
| 19 | >  | CONTAINS        | INCLUDE | FINDING_4              | √                |           |                                                                                      |
| 20 | >  | CONTAINS        | INCLUDE | FINDING_5              | √                |           |                                                                                      |
| 21 | >  | CONTAINS        | INCLUDE | FINDING_6              | √                |           |                                                                                      |

## TID (FINDING\_1) Fetal Description

This is a private template referenced by TID (5003).

|    | NL | Rel with Parent | VT        | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint |
|----|----|-----------------|-----------|---------------------------------------|------------------|-----------|----------------------|
| 1  |    | CONTAINS        | CONTAINER | (FG12019-01,MRUS,"Fetal Description") | √                |           |                      |
| 2  | >  | CONTAINS        | TEXT      | (FG12018-02,MRUS,"Fetal Lie")         | √                |           |                      |
| 3  | >  | CONTAINS        | TEXT      | (FG7455-01,MRUS,"Gender")             | √                |           |                      |
| 4  | >  | CONTAINS        | TEXT      | (FG7160-01,MRUS,"3 Vessel Cord")      | √                |           |                      |
| 5  | >  | CONTAINS        | TEXT      | (T-D1200,SNM3,"Face")                 | √                |           |                      |
| 6  | >  | CONTAINS        | TEXT      | (FG4-01,MRUS,"Nose Lips")             | √                |           |                      |
| 7  | >  | CONTAINS        | TEXT      | (FG12011-01,MRUS,"Cord insertion")    | √                |           |                      |
| 8  | >  | CONTAINS        | TEXT      | (T-57000,SNM3,"Stomach")              | √                |           |                      |
| 9  | >  | CONTAINS        | CONTAINER | (T-71000,SRT,"Kidney")                | √                |           |                      |
| 10 | >> | CONTAINS        | TEXT      | (G-A100,SNM3,"Left")                  | √                |           |                      |
| 11 | >> | CONTAINS        | TEXT      | (G-A101,SNM3,"Right")                 | √                |           |                      |
| 12 | >  | CONTAINS        | TEXT      | (T-74000,SRT,"Bladder")               | √                |           |                      |
| 13 | >  | CONTAINS        | TEXT      | (T-63000,SRT,"Gall bladder")          | √                |           |                      |
| 14 | >  | CONTAINS        | TEXT      | (T-62000,SRT,"Liver")                 | √                |           |                      |
| 15 | >  | CONTAINS        | TEXT      | (T-D3400,SRT," Diaphragm ")           |                  |           |                      |
| 16 | >  | CONTAINS        | TEXT      | (FG4031-02,MRUS,"Fetal Bowel")        | √                |           |                      |

## TID (FINDING\_2 ) Fetus Limbs

This is a private template referenced by TID (5003).

|  | NL | Rel with Parent | VT | Concept Name | Used in MODALITY | Condition | Value Set Constraint |
|--|----|-----------------|----|--------------|------------------|-----------|----------------------|
|--|----|-----------------|----|--------------|------------------|-----------|----------------------|

|   | NL | Rel with Parent | VT        | Concept Name                         | Used in MODALITY | Condition | Value Set Constraint |
|---|----|-----------------|-----------|--------------------------------------|------------------|-----------|----------------------|
| 1 |    | CONTAINS        | CONTAINER | (FG4031-03,MRUS,"Fetus Limbs")       | √                |           |                      |
| 2 | >  | CONTAINS        | TEXT      | (FG4031-04,MRUS,"Upper Extremities") | √                |           |                      |
| 3 | >  | CONTAINS        | TEXT      | (FG4031-05,MRUS,"Lower Extremities") | √                |           |                      |

## TID (FINDING\_3) Fetal Cardiology

This is a private template referenced by TID (5003).

|    | NL | Rel with Parent | VT        | Concept Name                                 | Used in MODALITY | Condition | Value Set Constraint |
|----|----|-----------------|-----------|----------------------------------------------|------------------|-----------|----------------------|
| 1  |    | CONTAINS        | CONTAINER | (FG4031-06,MRUS,"Fetal Cardiology")          | √                |           |                      |
| 2  | >  | CONTAINS        | TEXT      | (FG12239-01,MRUS,"Cardiac Activity")         | √                |           |                      |
| 3  | >  | CONTAINS        | TEXT      | (FG4031-07,MRUS,"4C HEART")                  | √                |           |                      |
| 4  | >  | CONTAINS        | TEXT      | (T-42000,SNM3,"Aorta")                       | √                |           |                      |
| 5  | >  | CONTAINS        | TEXT      | (T-44000,SNM3,Pulmonary Artery)              | √                |           |                      |
| 6  | >  | CONTAINS        | TEXT      | (FG3010-02,MRUS,Ascending Aorta)             | √                |           |                      |
| 7  | >  | CONTAINS        | TEXT      | (FG3010-01,MRUS,"ARCH")                      | √                |           |                      |
| 8  | >  | CONTAINS        | TEXT      | (FG3010-03,MRUS," Decrease ARCH ")           | √                |           |                      |
| 9  | >  | CONTAINS        | TEXT      | (T-32650,SRT,Left Ventricular Outflow Tract) | √                |           |                      |
| 10 | >  | CONTAINS        | TEXT      | (T-32550,SRT,Right Ventricle Outflow Tract)  | √                |           |                      |

## TID (FINDING\_4) Fetal Brain

This is a private template referenced by TID (5003).

|   | NL | Rel with Parent | VT        | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---------------------------------------|------------------|-----------|----------------------|
| 1 |    | CONTAINS        | CONTAINER | (FG4030-01,MRUS,"Fetal Brain")        | √                |           |                      |
| 2 | >  | CONTAINS        | TEXT      | (FG4030-02,MRUS,"Lateral Ventricles") | √                |           |                      |
| 3 | >  | CONTAINS        | TEXT      | (11860-4,LN,"Cisterna Magna")         | √                |           |                      |
| 4 | >  | CONTAINS        | TEXT      | (T-A600A,SNM3,"Cerebellum")           | √                |           |                      |
| 5 | >  | CONTAINS        | TEXT      | (FG4030-03,MRUS,"CSP")                | √                |           |                      |

## TID (FINDING\_5) Spine

This is a private template referenced by TID (5003).

|   | NL | Rel with Parent | VT        | Concept Name                    | Used in MODALITY | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---------------------------------|------------------|-----------|----------------------|
| 1 |    | CONTAINS        | CONTAINER | (T-11500,SRT,"Spine")           | √                |           |                      |
| 2 | >  | CONTAINS        | TEXT      | (T-11501,SNM3,"Cervical Spine") | √                |           |                      |
| 3 | >  | CONTAINS        | TEXT      | (T-11502,SNM3,"Thoracic Spine") | √                |           |                      |
| 4 | >  | CONTAINS        | TEXT      | (T-11503,SNM3,"Lumbar Spine")   | √                |           |                      |
| 5 | >  | CONTAINS        | TEXT      | (FG4031-08,MRUS,"Sacral Spine") | √                |           |                      |



## TID (FINDING\_6) Fetal Environment

This is a private template referenced by TID (5003).

|   | N<br>L | Rel with<br>Parent | VT        | Concept Name                           | Used in<br>MODALITY | Conditio<br>n | Value Set<br>Constraint |
|---|--------|--------------------|-----------|----------------------------------------|---------------------|---------------|-------------------------|
| 1 |        | CONTAINS           | CONTAINER | (FG12019-03,MRUS,"Fetal Environment")  | √                   |               |                         |
| 2 | >      | CONTAINS           | TEXT      | (FG12011-01,MRUS,"Placental Location") | √                   |               |                         |
| 3 | >      | CONTAINS           | TEXT      | (FG12011-02,MRUS,"Amniotic Fluid")     | √                   |               |                         |
| 4 | >      | CONTAINS           | TEXT      | (FG12011-03,MRUS,"Placental Grade")    | √                   |               |                         |

## TID (FINDING\_7) Maternal Description

This is a private template referenced by TID (5003).

|    | NL | Rel with Parent | VT        | Concept Name                            | Used in MODALITY | Condition | Value Set<br>Constraint |
|----|----|-----------------|-----------|-----------------------------------------|------------------|-----------|-------------------------|
| 1  |    | CONTAINS        | CONTAINER | (FG6088-01,MRUS,"Maternal Description") | √                |           |                         |
| 2  | >  | CONTAINS        | CONTAINER | (FG12011-03,MRUS,"Adnexa")              | √                |           |                         |
| 3  | >> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |           |                         |
| 4  | >> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |           |                         |
| 5  | >  | CONTAINS        | CONTAINER | (T-87000,SRT,"Ovary")                   | √                |           |                         |
| 6  | >> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |           |                         |
| 7  | >> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |           |                         |
| 8  | >  | CONTAINS        | CONTAINER | (T-71000,SRT,Kidney)                    | √                |           |                         |
| 9  | >> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |           |                         |
| 10 | >> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |           |                         |
| 11 | >  | CONTAINS        | TEXT      | (FG4031-01,MRUS,"LUS")                  | √                |           |                         |
| 12 | >  | CONTAINS        | TEXT      | (T-83200,SRT,Cervix)                    | √                |           |                         |

## TID (5004)Fetal Biometry Ratio Section

|   | N<br>L | Rel with Parent    | VT        | Concept Name                              | Used in<br>MODALITY | Condition | Value Set<br>Constraint |
|---|--------|--------------------|-----------|-------------------------------------------|---------------------|-----------|-------------------------|
| 1 |        |                    | CONTAINER | DT (125001, DCM, "Fetal Biometry Ratios") | √                   |           |                         |
| 2 | >      | HAS OBS<br>CONTEXT | INCLUDE   | EV (11951-1, LN, "Fetus ID")              | √                   |           |                         |
| 3 | >      | HAS OBS<br>CONTEXT | NUM       | EV (11878-6, LN, "Number of Fetuses")     | √                   |           |                         |
| 4 | >      | CONTAINS           | NUM       | ( 11947-9, LN, "HC/AC" )                  | √                   |           |                         |
| 5 | >      | CONTAINS           | NUM       | ( 11871-1, LN, "FL/AC" )                  | √                   |           |                         |
| 6 | >      | CONTAINS           | NUM       | ( 11872-9, LN, "FL/BPD" )                 | √                   |           |                         |

|    | N<br>L | Rel with Parent | VT  | Concept Name                              | Used in<br>MODALITY | Condition | Value Set<br>Constraint |
|----|--------|-----------------|-----|-------------------------------------------|---------------------|-----------|-------------------------|
| 7  | >      | CONTAINS        | NUM | (11823-2, LN, "Cephalic Index")           | √                   |           |                         |
| 8  | >      | CONTAINS        | NUM | (11873-7, LN, "FL/HC")                    | √                   |           |                         |
| 9  | >      | CONTAINS        | NUM | (C12004-01, MRUS, HrtC/TC)                | √                   |           |                         |
| 10 | >      | CONTAINS        | NUM | (C12004-02, MRUS, "TCD/AC")               | √                   |           |                         |
| 11 | >      | CONTAINS        | NUM | (C12004-03, MRUS, LVW/HW)                 | √                   |           |                         |
| 12 | >      | CONTAINS        | NUM | (C12004-04, MRUS, "Cephalic Index by HC") | √                   |           |                         |

### TID (5005) Fetal Biometry Section

|   | NL | Rel with Parent    | VT        | Concept Name                          | Used in<br>MODALITY | Condition | Value Set<br>Constraint                                              |
|---|----|--------------------|-----------|---------------------------------------|---------------------|-----------|----------------------------------------------------------------------|
| 1 |    |                    | CONTAINER | DT (125002, DCM, "Fetal Biometry")    | √                   |           |                                                                      |
| 2 | >  | HAS OBS<br>CONTEXT | TEXT      | EV (11951-1, LN, "Fetus ID")          | √                   |           |                                                                      |
| 3 | >  | HAS OBS<br>CONTEXT | NUM       | EV (11878-6, LN, "Number of Fetuses") | √                   |           |                                                                      |
| 4 | >  | CONTAINS           | INCLUDE   | DTID (5008) Fetal Biometry Group      | √                   |           | \$BiometryType = MemberOf {DCID (12005) Fetal Biometry Measurements} |

### TID (5006) Fetal Long Bones Section

|   | NL | Rel with Parent    | VT        | Concept Name                          | Used in<br>MODALITY | Condition | Value Set<br>Constraint                                                         |
|---|----|--------------------|-----------|---------------------------------------|---------------------|-----------|---------------------------------------------------------------------------------|
| 1 |    |                    | CONTAINER | DT (125003, DCM, "Fetal Long Bones")  | √                   |           |                                                                                 |
| 2 | >  | HAS OBS<br>CONTEXT | TEXT      | EV (11951-1, LN, "Fetus ID")          | √                   |           |                                                                                 |
| 3 | >  | HAS OBS<br>CONTEXT | NUM       | EV (11878-6, LN, "Number of Fetuses") | √                   |           |                                                                                 |
| 4 | >  | CONTAINS           | INCLUDE   | DTID (5008) Fetal Biometry Group      | √                   |           | \$BiometryType = MemberOf {DCID (12006) Fetal Long Bones Biometry Measurements} |

## TID (5007) Fetal Cranium Section

|   | NL | Rel with Parent | VT        | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint                                   |
|---|----|-----------------|-----------|---------------------------------------|------------------|-----------|--------------------------------------------------------|
| 1 |    |                 | CONTAINER | DT (125004, DCM, "Fetal Cranium")     | √                |           |                                                        |
| 2 | >  | HAS OBS CONTEXT | TEXT      | EV (11951-1, LN, "Fetus ID")          | √                |           |                                                        |
| 3 | >  | HAS OBS CONTEXT | NUM       | EV (11878-6, LN, "Number of Fetuses") | √                |           |                                                        |
| 4 | >  | CONTAINS        | INCLUDE   | DTID (5008) Fetal Biometry Group      | √                |           | \$BiometryType = MemberOf {DCID (12007) Fetal Cranium} |

## TID (5008) Fetal Biometry Group

|   | NL | Relation with Parent | Value Type | Concept Name                                  | Used in MODALITY | Condition | Value Set Constraint                              |
|---|----|----------------------|------------|-----------------------------------------------|------------------|-----------|---------------------------------------------------|
| 1 |    |                      | CONTAINER  | DT(125005, DCM, "Biometry Group")             | √                |           |                                                   |
| 2 | >  | CONTAINS             | INCLUDE    | DTID (300) Measurement                        | √                |           | \$Measurement = \$BiometryType                    |
|   |    |                      |            |                                               |                  |           | \$Derivation = DCID (3627) Measurement Type       |
| 3 | >  | CONTAINS             | NUM        | EV (18185-9, LN, "Gestational Age")           | √                |           | Units= EV (d, UCUM, days)                         |
| 4 | >> | INFERRED FROM        | CODE       | DCID (228) Equation or Table                  | √                |           | DCID (12013) Gestational Age Equations and Tables |
| 5 | >> | R-INFERRED FROM      | NUM        |                                               |                  |           |                                                   |
| 6 | >> | HAS PROPERTIES       | NUM        | DCID (226) Population Statistical Descriptors |                  |           |                                                   |
| 7 | >  | CONTAINS             | NUM        | (DCM, 125012, "Growth Percentile Rank")       | √                |           |                                                   |
| 8 | >> | INFERRED FROM        | CODE       | DCID (228) Equation or Table                  | √                |           |                                                   |

## TID (5009) Fetal Biophysical Profile Section

|  | NL | Relation with Parent | Value Type | Concept Name | Used in Modality | Condition | Value Set Constraint |
|--|----|----------------------|------------|--------------|------------------|-----------|----------------------|
|--|----|----------------------|------------|--------------|------------------|-----------|----------------------|

|    |    |                 |           |                                                   |   |  |                                         |
|----|----|-----------------|-----------|---------------------------------------------------|---|--|-----------------------------------------|
| 1  |    |                 | CONTAINER | DT (125006, DCM, "Biophysical Profile")           | √ |  |                                         |
| 2  | >  | HAS OBS CONTEXT | INCLUDE   | EV (11951-1, LN, "Fetus ID")                      | √ |  |                                         |
| 3  | >  | HAS OBS CONTEXT | NUM       | EV (11878-6, LN, "Number of Fetuses")             | √ |  |                                         |
| 4  | >  | CONTAINS        | NUM       | EV (11631-9, LN, "Gross Body Movement")           | √ |  | Units = DT ("{0:2}", UCUM, "range 0:2") |
| 5  | >> | HAS PROPERTIES  | TEXT      | (121106, DCM, "Comment")                          | √ |  |                                         |
| 6  | >  | CONTAINS        | NUM       | EV (11632-7, LN, "Fetal Breathing")               | √ |  | Units = DT ("{0:2}", UCUM, "range 0:2") |
| 7  | >> | HAS PROPERTIES  | TEXT      | (121106, DCM, "Comment")                          | √ |  |                                         |
| 8  | >  | CONTAINS        | NUM       | EV (11635-0, LN, "Fetal Tone")                    | √ |  | Units = DT ("{0:2}", UCUM, "range 0:2") |
| 9  | >> | HAS PROPERTIES  | TEXT      | (121106, DCM, "Comment")                          | √ |  |                                         |
| 10 | >  | CONTAINS        | NUM       | EV (11635-5, LN, "Fetal Heart Reactivity")        | √ |  | Units = DT ("{0:2}", UCUM, "range 0:2") |
| 11 | >> | HAS PROPERTIES  | TEXT      | (121106, DCM, "Comment")                          | √ |  |                                         |
| 12 | >  | CONTAINS        | NUM       | EV (11630-1, LN, "Amniotic Fluid Volume")         | √ |  | Units = DT ("{0:2}", UCUM, "range 0:2") |
| 13 | >> | HAS PROPERTIES  | TEXT      | (121106, DCM, "Comment")                          | √ |  |                                         |
| 14 | >  | CONTAINS        | NUM       | DT (11634-3, LN, "Biophysical Profile Sum Score") | √ |  |                                         |
| 15 | >> | HAS PROPERTIES  | TEXT      | (121106, DCM, "Comment")                          | √ |  |                                         |

## TID (5010) Amniotic Sac Section

|   | N L | Rel with Parent | VT        | Concept Name                     | Used in MODALITY | Condition | Value Set Constraint                             |
|---|-----|-----------------|-----------|----------------------------------|------------------|-----------|--------------------------------------------------|
| 1 |     |                 | CONTAINER | DT (121070, DCM, "Findings")     | √                |           |                                                  |
| 2 | >   | HAS CONCEPT MOD | CODE      | EV (G-C0E3, SRT, "Finding Site") | √                |           | DT (T-F1300, SRT, "Amniotic Sac")                |
| 3 | >   | CONTAINS        | INCLUDE   | DTID (300) Measurement           | √                |           | \$Measurement = DT (11627-7, LN, "Amniotic Fluid |

|   |   |          |         |                        |   |  |                                                           |
|---|---|----------|---------|------------------------|---|--|-----------------------------------------------------------|
|   |   |          |         |                        |   |  | Index")                                                   |
| 4 | > | CONTAINS | INCLUDE | DTID (300) Measurement | √ |  | \$Measurement = (11624-4, LN, "First Quadrant Diameter"), |
| 5 | > | CONTAINS | INCLUDE | DTID (300) Measurement | √ |  | \$Measurement = (11626-9, LN, "Second Quadrant Diameter") |
| 6 | > | CONTAINS | INCLUDE | DTID (300) Measurement | √ |  | \$Measurement = (11625-1, LN, "Third Quadrant Diameter")  |
| 7 | > | CONTAINS | INCLUDE | DTID (300) Measurement | √ |  | \$Measurement = (11623-6, LN, "Fourth Quadrant Diameter") |
| 8 | > | CONTAINS | INCLUDE | DTID (300) Measurement | √ |  | \$Measurement = (M12008-01, MRUS, "Amniotic Fluid")       |

### TID (5011) Early Gestation Section

|   | NL | Relation with Parent | Value Type | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint                                                           |
|---|----|----------------------|------------|---------------------------------------|------------------|-----------|--------------------------------------------------------------------------------|
| 1 |    |                      | CONTAINER  | DT (125009, DCM, "Early Gestation")   | √                |           |                                                                                |
| 2 | >  | HAS OBS CONTEXT      | TEXT       | EV (11951-1, LN, "Fetus ID")          | √                |           |                                                                                |
| 3 | >  | HAS OBS CONTEXT      | NUM        | EV (11878-6, LN, "Number of Fetuses") | √                |           |                                                                                |
| 4 | >  | CONTAINS             | INCLUDE    | DTID (5008) Fetal Biometry Group      | √                |           | \$BiometryType= Member of {DCID (12009) Early Gestation Biometry Measurements} |

### TID (5012) Ovaries Section

|   | NL | Relation with Parent | Value Type | Concept Name                     | Used in MODALITY | Condition | Value Set Constraint       |
|---|----|----------------------|------------|----------------------------------|------------------|-----------|----------------------------|
| 1 |    |                      | CONTAINER  | DT (121070, DCM, "Findings")     | √                |           |                            |
| 2 | >  | HAS CONCEPT MOD      | CODE       | EV (G-C0E3, SRT, "Finding Site") | √                |           | DT (T-87000, SRT, "Ovary") |

|    |    |                 |         |                                         |   |  |                                                                                                 |
|----|----|-----------------|---------|-----------------------------------------|---|--|-------------------------------------------------------------------------------------------------|
| 3  | >  | CONTAINS        | INCLUDE | EV (T-87000, SRT, "Ovary")              | √ |  | \$Measurement = EV (T-87000, SRT, "Ovary")                                                      |
| 4  | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (11829-9, LN, "Left Ovary Width")                                            |
| 5  | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (11840-6, LN, "Left Ovary Length")                                           |
| 6  | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (11857-0, LN, "Left Ovary Height")                                           |
| 7  | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (12164-0, LN, "Left Ovary Volume")                                           |
| 8  | >  | CONTAINS        | INCLUDE | EV (T-87000, SRT, "Ovary")              | √ |  | \$GroupName = EV (T-87000, SRT, "Ovary")                                                        |
| 9  | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (11830-7, LN, "Right Ovary Width")                                           |
| 10 | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (11841-4, LN, "Right Ovary Length")                                          |
| 11 | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (11858-8, LN, "Right Ovary Height")                                          |
| 12 | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (12165-7, LN, "Right Ovary Volume")                                          |
| 13 | >  | CONTAINS        | INCLUDE | EV (T-87000, MRUS, "Ovarian Cyst")      | √ |  | \$Measurement = EV (T-87000, MRUS, "Ovarian Cyst")                                              |
| 14 | >> | HAS CONCEPT MOD | INCLUDE | EV (G-C171, SRT, "Laterality")          | √ |  | \$SectionLaterality = DCID (244) Laterality                                                     |
| 15 | >> | HAS CONCEPT MOD | INCLUDE | EV (112050, DCM, "Anatomic Identifier") | √ |  |                                                                                                 |
| 16 | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (T-87000-1, MRUS, Ovarian Cyst1 Length")<br>\$Laterality=\$SectionLaterality |
| 17 | >> | CONTAINS        | INCLUDE | DTID (300) Measurement                  | √ |  | \$Measurement = EV (T-87000-2, MRUS, Ovarian Cyst1 Width")<br>\$Laterality=\$SectionLaterality  |

|    |    |          |         |                           |   |  |                                                                                               |
|----|----|----------|---------|---------------------------|---|--|-----------------------------------------------------------------------------------------------|
| 18 | >> | CONTAINS | INCLUDE | DTID (300)<br>Measurement | √ |  | \$Measurement = EV (T-87000-3,MRUS,Ovarian Cyst1 Height")<br>\$Laterality=\$SectionLaterality |
| 19 | >> | CONTAINS | INCLUDE | DTID (300)<br>Measurement | √ |  | \$Measurement = EV (T-87000-4,MRUS,Ovarian Cyst2 Length")<br>\$Laterality=\$SectionLaterality |
| 20 | >> | CONTAINS | INCLUDE | DTID (300)<br>Measurement | √ |  | \$Measurement = EV (T-87000-5,MRUS,Ovarian Cyst2 Width")<br>\$Laterality=\$SectionLaterality  |
| 21 | >> | CONTAINS | INCLUDE | DTID (300)<br>Measurement | √ |  | \$Measurement = EV (T-87000-6,MRUS,Ovarian Cyst2 Height")<br>\$Laterality=\$SectionLaterality |
| 22 | >> | CONTAINS | INCLUDE | DTID (300)<br>Measurement | √ |  | \$Measurement = EV (T-87000-7,MRUS,Ovarian Cyst3 Length")<br>\$Laterality=\$SectionLaterality |
| 23 | >> | CONTAINS | INCLUDE | DTID (300)<br>Measurement | √ |  | \$Measurement = EV (T-87000-8,MRUS,Ovarian Cyst3 Width")<br>\$Laterality=\$SectionLaterality  |
| 24 | >> | CONTAINS | INCLUDE | DTID (300)<br>Measurement | √ |  | \$Measurement = EV (T-87000-9,MRUS,Ovarian Cyst3 Height")<br>\$Laterality=\$SectionLaterality |

### TID (5013) Follicles Section

|   | NL | Relation with Parent | Value Type | Concept Name                                                                                                                                               | Used in MODALITY | Condition | Value Set Constraint                  |
|---|----|----------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------|---------------------------------------|
| 1 |    |                      | CONTAINER  | DT (121070, DCM, "Findings")                                                                                                                               | √                |           |                                       |
| 2 | >  | HAS CONCEPT MOD      | CODE       | EV (G-C0E3, SRT, "Finding Site")                                                                                                                           | √                |           | DT (T-87600, SRT, "Ovarian Follicle") |
| 3 | >  | HAS CONCEPT MOD      | CODE       | EV (G-C171, SRT, "Laterality")                                                                                                                             | √                |           | \$Laterality                          |
| 4 | >  | CONTAINS             | NUM        | EV (11879-4, LN, "Number of follicles in left ovary")<br>OR<br>EV (11880-2, LN, "Number of follicles in right ovary")<br>Number of follicles in the ovary. | √                |           |                                       |
| 5 | >  | CONTAINS             | INCLUDE    | DTID (5014) Follicle Measurement Group                                                                                                                     | √                |           |                                       |

## TID (5014) Follicle Measurement Group

|   | NL | Relation with Parent | Value Type | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint                                       |
|---|----|----------------------|------------|---------------------------------------|------------------|-----------|------------------------------------------------------------|
| 1 |    |                      | CONTAINER  | EV (125007, DCM, "Measurement Group") | √                |           |                                                            |
| 2 | >  | HAS OBS CONTEXT      | TEXT       | EV (12510, DCM, "Identifier")         | √                |           | Unique among all groups of same laterality                 |
| 3 | >  | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = EV (G-D705, SRT, "Volume")                 |
| 4 | >  | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = EV (M11793-02, MRUS, "Follicle Length")    |
| 5 | >  | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = EV (M11793-01, LN, "Follicle Width")       |
| 6 | >  | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = EV (M11794-01, MRUS, "Follicle Thickness") |
| 7 | >  | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = EV (11793-7, LN, "Follicle Diameter")      |

## TID (5015) Pelvis And Uterus Section

|   | NL | Relation with Parent | Value Type | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint                                                     |
|---|----|----------------------|------------|---------------------------------------|------------------|-----------|--------------------------------------------------------------------------|
| 1 |    |                      | CONTAINER  | DT (125011, DCM, "Pelvis and Uterus") | √                |           |                                                                          |
| 2 | >  | CONTAINS             | CONTAINER  | \$GroupName                           | √                |           | \$GroupName = EV (T-83000, SRT, "Uterus")                                |
| 3 | >> | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = \$Width<br>\$Width = EV (11865-3, LN, "Uterus Width")    |
| 4 | >> | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = \$Length<br>\$Length = EV (11842-2, LN, "Uterus Length") |
| 5 | >> | CONTAINS             | INCLUDE    | DTID (300) Measurement                | √                |           | \$Measurement = \$Height<br>\$Height = EV (11859-6, LN, "Uterus Height") |



|    |    |          |           |                           |   |  |                                                                             |
|----|----|----------|-----------|---------------------------|---|--|-----------------------------------------------------------------------------|
| 6  | >> | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement = \$Volume<br>\$Volume = EV (33192-6,<br>LN, "Uterus Volume") |
| 7  | >  | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>EV(LN,11961-0,Cervix<br>Length)                          |
| 8  | >  | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>EV(LN,12145-<br>9,Endometrium Thickness)                 |
| 9  | >  | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-01,Cervix<br>Height)                        |
| 10 | >  | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-02,Cervix<br>Width)                         |
| 11 | >  | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,C12011-03,Uterus<br>Body)                          |
| 12 | >  | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,C12011-<br>04,UT_L/CX_L)                           |
| 13 | >  | CONTAINS | INCLUDE   | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-03,Matrix<br>Kidney Length)                 |
| 14 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>EV(MRUS,M12011-<br>04,Fibroid1 Length)                   |
| 15 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-05,Fibroid1<br>Width)                       |
| 16 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-06,Fibroid1<br>Height)                      |
| 17 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-07,Fibroid2<br>Length)                      |
| 18 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-08,Fibroid2<br>Width)                       |
| 19 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-09,Fibroid2<br>Height)                      |
| 20 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-10,Fibroid3<br>Length)                      |
| 21 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-11,Fibroid3<br>Width)                       |
| 22 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-<br>012,Fibroid3 Height)                    |
| 23 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-13,Lesion1<br>Length)                       |
| 24 | >  | CONTAINS | CONTAINER | DTID (300)<br>Measurement | √ |  | \$Measurement =<br>(MRUS,M12011-14,Lesion1<br>Width)                        |

|    |   |          |           |                        |   |  |                                                 |
|----|---|----------|-----------|------------------------|---|--|-------------------------------------------------|
| 25 | > | CONTAINS | CONTAINER | DTID (300) Measurement | √ |  | \$Measurement = (MRUS,M12011-15,Lesion1 Height) |
| 26 | > | CONTAINS | CONTAINER | DTID (300) Measurement | √ |  | \$Measurement = (MRUS,M12011-16,Lesion2 Length) |
| 27 | > | CONTAINS | CONTAINER | DTID (300) Measurement | √ |  | \$Measurement = (MRUS,M12011-17,Lesion2 Width)  |
| 28 | > | CONTAINS | CONTAINER | DTID (300) Measurement | √ |  | \$Measurement = (MRUS,M12011-18,Lesion2 Height) |
| 29 | > | CONTAINS | CONTAINER | DTID (300) Measurement | √ |  | \$Measurement = (MRUS,M12011-19,Lesion3 Length) |
| 30 | > | CONTAINS | CONTAINER | DTID (300) Measurement | √ |  | \$Measurement = (MRUS,M12011-20,Lesion3 Width)  |
| 31 | > | CONTAINS | CONTAINER | DTID (300) Measurement | √ |  | \$Measurement = (MRUS,M12011-21,Lesion3 Height) |

### TID (5025) OB-GYN Fetus Vascular Ultrasound Measurement Group

|   | NL | Rel with Parent | VT        | Concept Name                          | Used in MODALITY | Condition | Value Set Constraint                                                                                  |
|---|----|-----------------|-----------|---------------------------------------|------------------|-----------|-------------------------------------------------------------------------------------------------------|
| 1 |    |                 | CONTAINER | \$AnatomyGroup                        | √                |           |                                                                                                       |
| 2 | >  | HAS OBS CONTEXT | TEXT      | EV (11951-1, LN, "Fetus ID")          | √                |           |                                                                                                       |
| 3 | >  | HAS OBS CONTEXT | NUM       | EV (11878-6, LN, "Number of Fetuses") | √                |           |                                                                                                       |
| 4 | >  | HAS CONCEPT MOD | CODE      | EV (G-C171, SRT "Laterality")         | √                |           | DCID (244) Laterality                                                                                 |
| 5 | >  | CONTAINS        | INCLUDE   | DTID (300) Measurement                | √                |           | \$MeasType = DCID (12119) Vascular Ultrasound Property<br>\$Derivation = DCID (3627) Measurement Type |

### TID (5026) OB-GYN Pelvic Vascular Ultrasound Measurement Group

|   | NL | Rel with Parent | VT        | Concept Name   | Used in MODALITY | Condition | Value Set Constraint |
|---|----|-----------------|-----------|----------------|------------------|-----------|----------------------|
| 1 |    |                 | CONTAINER | \$AnatomyGroup | √                |           |                      |

|   |   |                       |         |                                            |   |  |                                                                                                                |
|---|---|-----------------------|---------|--------------------------------------------|---|--|----------------------------------------------------------------------------------------------------------------|
| 2 | > | HAS<br>CONCEPT<br>MOD | CODE    | EV (G-C171,<br>SRT,<br>“Laterality”)       | √ |  | DCID (244) Laterality                                                                                          |
| 3 | > | HAS<br>CONCEPT<br>MOD | TEXT    | (112050, DCM,<br>“Anatomic<br>Identifier”) | √ |  |                                                                                                                |
| 4 | > | CONTAIN<br>S          | INCLUDE | DTID (300)<br>Measurement                  | √ |  | \$MeasType = DCID<br>(12119) Vascular<br>Ultrasound Property<br>\$Derivation = DCID<br>(3627) Measurement Type |

### CID (228) Equation or Table

| CSD | CV     | Code Meaning             |
|-----|--------|--------------------------|
| DCM | 121420 | Equation                 |
| DCM | 121421 | Equation Citation        |
| DCM | 121424 | Table of Values          |
| DCM | 121422 | Table of Values Citation |
| DCM | 121423 | Method Citation          |

### CID (244) Laterality

| CSD | CV     | Code Meaning   |
|-----|--------|----------------|
| SRT | G-A100 | Right          |
| SRT | G-A101 | Left           |
| SRT | G-A102 | Right and left |
| SRT | G-A103 | Unilateral     |

### CID (3627) Measurement Type

| CSD | CV      | Code Meaning             |
|-----|---------|--------------------------|
| SRT | R-002E1 | Best value               |
| SRT | R-00317 | Mean                     |
| SRT | R-00319 | Median                   |
| SRT | R-0032E | Mode                     |
| SRT | R-00355 | Point source measurement |
| SRT | R-00353 | Peak to peak             |
| SRT | R-41D27 | Visual estimation        |
| SRT | R-10260 | Estimated                |
| SRT | R-41D2D | Calculated               |
| SRT | R-41D41 | Measured                 |

### CID (12005) Fetal Biometry Measurements

| CSD | CV      | Code Meaning            |
|-----|---------|-------------------------|
| LN  | 11979-2 | Abdominal Circumference |

| CSD  | CV        | Code Meaning                          |
|------|-----------|---------------------------------------|
| LN   | 11818-2   | Anterior-Posterior Abdominal Diameter |
| LN   | 11819-0   | Anterior-Posterior Trunk Diameter     |
| LN   | 11820-8   | Biparietal Diameter                   |
| LN   | 11860-4   | Cisterna Magna                        |
| LN   | 11963-6   | Femur Length                          |
| LN   | 11965-1   | Foot length                           |
| LN   | 11984-2   | Head Circumference                    |
| LN   | 11851-3   | Occipital-Frontal Diameter            |
| LN   | 11988-3   | Thoracic Circumference                |
| LN   | 33068-8   | Thoracic Area                         |
| LN   | 11862-0   | Tranverse Abdominal Diameter          |
| LN   | 11863-8   | Trans Cerebellar Diameter             |
| LN   | 11864-6   | Transverse Thoracic Diameter          |
| LN   | 33191-8   | APAD * TAD                            |
| MRUS | M12005-04 | Facial angle                          |
| MRUS | M12005-05 | Fetal Kidney length                   |
| MRUS | M12005-01 | Thoracic Diameter                     |
| MRUS | M12005-02 | Heart Circumference                   |
| MRUS | M12011-01 | Placental Thickness                   |
| MRUS | M12005-03 | Heart Area                            |
| MRUS | C12005-01 | Abdominal Circumference c             |
| MRUS | C12005-06 | Mean Abdominal Diameter               |

## CID (12006) Fetal Long Bones Measurements

| CSD | CV      | Code Meaning    |
|-----|---------|-----------------|
| LN  | 11966-9 | Humerus length  |
| LN  | 11967-7 | Radius length   |
| LN  | 11969-3 | Ulna length     |
| LN  | 11968-5 | Tibia length    |
| LN  | 11964-4 | Fibula length   |
| LN  | 11962-8 | Clavicle length |
| LN  | 11963-6 | Femur Length    |

## CID (12007) Fetal Cranium

| CSD | CV      | Code Meaning              |
|-----|---------|---------------------------|
| LN  | 12171-5 | Lateral Ventricular width |
| LN  | 11860-4 | Cisterna Magna length     |

| CSD  | CV        | Code Meaning              |
|------|-----------|---------------------------|
| LN   | 12146-7   | Nuchal Fold thickness     |
| LN   | 33070-4   | Inner Orbital Diameter    |
| LN   | 11629-3   | Outer Orbital Diameter    |
| LN   | 11863-8   | Trans Cerebellar Diameter |
| LN   | 33069-6   | Nuchal Translucency       |
| LN   | 12170-7   | Width of Hemisphere       |
| MRUS | M12007-01 | Ear Length                |
| MRUS | M12007-02 | Middle Phalanx Length     |
| MRUS | M12007-03 | Orbit                     |
| MRUS | M12007-04 | OFDHC                     |
| MRUS | C12007-01 | HCC                       |

### **CID (12009) Early Gestation Biometry Measurements**

| CSD  | CV        | Code Meaning                  |
|------|-----------|-------------------------------|
| LN   | 11957-8   | Crown Rump Length             |
| LN   | 11850-5   | Gestational Sac Diameter      |
| LN   | 33071-2   | Spine Length                  |
| LN   | 11816-6   | Yolk Sac length               |
| LN   | 33069-6   | Nuchal Translucency           |
| MRUS | C12009-01 | Mean Gestational Sac Diameter |
| MRUS | M12009-01 | Gestational Sac Diameter1     |
| MRUS | M12009-02 | Gestational Sac Diameter2     |
| MRUS | M12009-03 | Gestational Sac Diameter3     |

### **CID (12013) Gestational Age Equations and Tables**

| CSD | CV      | Code Meaning                  |
|-----|---------|-------------------------------|
| LN  | 11885-1 | Gestational Age by LMP        |
| LN  | 11892-7 | AC, Hadlock 1984              |
| LN  | 11893-5 | AC, Jeanty 1984               |
| LN  | 33148-8 | AC by GA, Merz 1988           |
| LN  | 11902-4 | BPD, Hadlock 1984             |
| LN  | 11903-2 | BPD, Hansmann 1985            |
| LN  | 11905-7 | BPD, Jeanty 1984              |
| LN  | 33082-9 | BPD, Osaka 1989               |
| LN  | 33083-7 | BPD, Rempen 1991              |
| LN  | 11906-5 | BPD, Kurtz 1980               |
| LN  | 33088-6 | Clavical length, Yarkoni 1985 |
| LN  | 33091-0 | CRL, Daya 1993                |
| LN  | 11910-7 | CRL, Hadlock 1992             |
| LN  | 11911-5 | CRL, Hansmann 1985            |
| LN  | 11917-2 | CRL, Jeanty 1984              |
| LN  | 11913-1 | CRL, Nelson 1981              |

| <b>CSD</b> | <b>CV</b> | <b>Code Meaning</b>                          |
|------------|-----------|----------------------------------------------|
| LN         | 33094-4   | CRL, Rempen 1991                             |
| LN         | 11914-9   | CRL, Robinson 1975                           |
| LN         | 33138-9   | Fetal Trunk Cross-Sectional Area, Osaka 1989 |
| LN         | 11920-6   | FL, Hadlock 1984                             |
| LN         | 11922-2   | FL, Hohler 1982                              |
| LN         | 11923-0   | FL, Jeanty 1984                              |
| LN         | 11929-7   | GS, Rempen 1991                              |
| LN         | 11932-1   | HC, Hadlock 1984                             |
| LN         | 33112-4   | HC, Hansmann 1985                            |
| LN         | 11934-7   | HC, Jeanty 1984                              |
| LN         | 33111-6   | HC derived, Chitty 1997                      |
| LN         | 11936-2   | Humerus, Jeanty 1984                         |
| LN         | 33544-8   | OFD, Hansmann 1985                           |
| LN         | 33134-8   | TCD, Hill 1990                               |
| MRUS       | F12013-01 | AC, ASUM 2001                                |
| MRUS       | F12013-02 | AC, Nicolaides 1994                          |
| MRUS       | F12013-03 | BPD, ASUM 2001                               |
| MRUS       | F12013-04 | BPD, Merz 1991                               |
| MRUS       | F12013-05 | BPD, Tokyo 1989                              |
| MRUS       | F12013-06 | BPD-oo, Chitty 1994                          |
| MRUS       | F12013-07 | CRL, ASUM 2001                               |
| MRUS       | F12013-08 | CRL, Tokyo 1989                              |
| MRUS       | F12013-23 | EFW, Tokyo 1989                              |
| MRUS       | F12013-09 | FL, ASUM 2001                                |
| MRUS       | F12013-10 | FL, Chitty 1997                              |
| MRUS       | F12013-11 | FL, Merz 1991                                |
| MRUS       | F12013-12 | FL, Tokyo 1989                               |
| MRUS       | F12013-13 | FL, Warda, 1985                              |
| MRUS       | F12013-14 | GS, Tokyo 1986                               |
| MRUS       | F12013-16 | HC derived, Chitty 1994                      |
| MRUS       | F12013-15 | HC, ASUM 2001                                |
| MRUS       | F12013-17 | HC, Nicolaides 1994                          |
| MRUS       | F12013-18 | Humerus Length, ASUM 2001                    |
| MRUS       | F12013-19 | OFD, ASUM 2001                               |
| MRUS       | F12013-20 | OFD, Nicolaides 1994                         |
| MRUS       | F12013-21 | OOD, Jeanty 1984                             |
| MRUS       | F12013-22 | TCD, Nicolaides 1994                         |
| MRUS       | F12013-24 | THD, Hansmann 1985                           |
| MRUS       | F12013-25 | GS, Hansmann 1985                            |
| MRUS       | F12013-26 | FL, Hansmann 1995                            |

| CSD  | CV        | Code Meaning                |
|------|-----------|-----------------------------|
| MRUS | F12013-43 | EFW, Hadlock 1991           |
| MRUS | F12013-44 | Mean Sac Diameter Daya 1991 |
| MRUS | F12013-45 | GS,China 1997               |
| MRUS | F12013-46 | CRL,China 1997              |
| MRUS | F12013-47 | BPD,China 1997              |
| MRUS | F12013-48 | BPD,Nicolaides 1994         |
| MRUS | F12013-49 | FL,China 1997               |
| MRUS | F12013-50 | FL,Nicolaides 1994          |
| MRUS | F12013-52 | AC,Hansmann1986             |
| MRUS | F12013-53 | AC,CFEF Crequat2000         |
| MRUS | F12013-54 | AC,Chitty ( plotted ) 1994  |
| MRUS | F12013-55 | CRL,Robinson hp BMUS 1975   |
| MRUS | F12015-22 | FL,Osaka 1989               |
| LN   | 11926-3   | Foot Length,Mercer 1987     |
| LN   | 11944-6   | Ulna, Jeanty 1984           |
| LN   | 11941-2   | Tibia, Jeanty 1984          |
| MRUS | F12013-56 | MSD,Hellman 1969            |
| MRUS | F12013-57 | OFD, Jeanty 1984            |
| MRUS | F12013-58 | RAD, Jeanty 1984            |
| MRUS | F12013-59 | FIB, Jeanty 1984            |

## **CID (12014) Fetal Body Weight**

| CSD  | CV        | Code Meaning                          |
|------|-----------|---------------------------------------|
| LN   | 11739-0   | EFW by AC and BPD, Shepard 1982       |
| LN   | 11756-4   | EFW by AC, Campbell 1975              |
| LN   | 33144-7   | EFW by BPD, APAD, TAD, FL, Tokyo 1987 |
| LN   | 11735-8   | EFW by AC, BPD, FL, Hadlock 1985      |
| LN   | 11732-5   | EFW by AC, BPD, FL, HC, Hadlock 1985  |
| LN   | 11751-5   | EFW by AC, FL, Hadlock 1985           |
| LN   | 11746-5   | EFW by AC, FL, HC, Hadlock 1985       |
| LN   | 11884-4   | Average Ultrasound Age                |
| MRUS | F12013-27 | CUA by BPD, Hadlock 1984              |
| MRUS | F12013-28 | CUA by AC, Hadlock 1984               |
| MRUS | F12013-29 | CUA by HC, Hadlock 1984               |
| MRUS | F12013-30 | CUA by FL, Hadlock 1984               |
| MRUS | F12013-31 | CUA by BPD, HC, Hadlock 1984          |
| MRUS | F12013-32 | CUA by BPD, AC, Hadlock 1984          |
| MRUS | F12013-33 | CUA by BPD, FL, Hadlock 1984          |
| MRUS | F12013-34 | CUA by HC, AC, Hadlock 1984           |

| CSD  | CV        | Code Meaning                         |
|------|-----------|--------------------------------------|
| MRUS | F12013-35 | CUA by HC, FL, Hadlock 1984          |
| MRUS | F12013-36 | CUA by AC, FL, Hadlock 1984          |
| MRUS | F12013-37 | CUA by BPD, HC, AC, Hadlock 1984     |
| MRUS | F12013-38 | CUA by BPD, HC, FL, Hadlock 1984     |
| MRUS | F12013-39 | CUA by BPD, AC, FL, Hadlock 1984     |
| MRUS | F12013-40 | CUA by HC, AC, FL, Hadlock 1984      |
| MRUS | F12013-41 | CUA by BPD, HC, AC, FL, Hadlock 1984 |
| MRUS | F12014-01 | EFW by AC,BPD,Merz 1991              |
| MRUS | F12014-02 | EFW by AC,Merz 1991                  |
| MRUS | F12014-03 | EFW by BPD, TTD, Hansmann 1995       |
| MRUS | F12014-04 | EFW by BPD, FTA, FL, Osaka 1983      |
| MRUS | F12014-05 | EFW by AC,HC,FL,Schild 2004          |
| MRUS | F12014-06 | EFW by BPD,FL,MAD,Persson 1996       |

## **CID (12015) Fetal Growth Equations and Tables**

| CSD  | CV        | Code Meaning                    |
|------|-----------|---------------------------------|
| LN   | 33146-2   | AC by GA, Hadlock 1984          |
| LN   | 33546-3   | AC (derived) by GA, Chitty 1994 |
| LN   | 33198-3   | BPD by GA, Hadlock 1984         |
| LN   | 33152-0   | outer-outer by GA, Chitty 1994  |
| LN   | 33155-3   | BPD by GA, Rempen 1991          |
| LN   | 33160-3   | CRL by GA, Rempen1991           |
| LN   | 33166-0   | FL by GA, Hadlock 1984          |
| LN   | 33167-8   | FL by GA, Chitty 1994           |
| LN   | 33171-0   | GS by GA, Rempen 1991           |
| LN   | 33173-6   | HC by GA, Hadlock 1984          |
| LN   | 33174-4   | HC derived by GA, Chitty 1994   |
| LN   | 33181-9   | TCD by GA Goldstein 1987        |
| LN   | 33097-7   | Fibula, Jeanty 1983             |
| LN   | 33126-4   | Radius, Jeanty 1983             |
| MRUS | F12015-01 | AC by GA, ASUM 2001             |
| MRUS | F12015-02 | AC by GA, Merz 1991             |
| MRUS | F12015-03 | AC, Jeanty 1984                 |
| MRUS | F12015-04 | APAD,Merz 1991                  |
| MRUS | F12015-05 | BPD by GA, ASUM 2001            |
| MRUS | F12015-06 | BPD, Hansmann 1985              |
| MRUS | F12015-07 | BPD by GA, Merz 1988            |
| MRUS | F12015-08 | BPD,Kurtz,1980                  |
| MRUS | F12015-09 | BPD,Sabbagha 1978               |
| MRUS | F12015-10 | BPD, Tokyo 1989                 |



| CSD  | CV        | Code Meaning                    |
|------|-----------|---------------------------------|
| MRUS | F12015-12 | Clavical length,Yarkoni 1985    |
| MRUS | F12015-13 | CRL by GA ASUM 2001             |
| MRUS | F12015-14 | CRL, Hansmann 1985              |
| MRUS | F12015-15 | CRL, Robinson 1975              |
| MRUS | F12015-16 | CRL, Tokyo 1989                 |
| MRUS | F12015-17 | EFW by GA, Hadlock 1984         |
| MRUS | F12015-18 | FL by GA, ASUM 2001             |
| MRUS | F12015-19 | FL, Hansmann 1995               |
| MRUS | F12015-20 | FL by GA, Merz 1991             |
| MRUS | F12015-21 | FL, O'Brien,1981                |
| MRUS | F12015-22 | FL, Osaka 1989                  |
| MRUS | F12015-23 | FL, Tokyo, 1989                 |
| MRUS | F12015-24 | FL,Warda,1985                   |
| MRUS | F12015-25 | FIB,Merz,1991                   |
| MRUS | F12015-26 | FTA, Osaka 1989                 |
| MRUS | F12015-27 | HC by GA, ASUM 2001             |
| MRUS | F12015-28 | HC, Hansmann 1985               |
| MRUS | F12015-29 | HC by GA, Merz 1991             |
| MRUS | F12015-30 | Humerus Length by GA, ASUM 2001 |
| MRUS | F12015-31 | OFD by GA, ASUM 2001            |
| MRUS | F12015-32 | OFD, Hansmann 1985              |
| MRUS | F12015-33 | OFD,Merz 1991                   |
| MRUS | F12015-34 | OFD,Nicolaides 1994             |
| MRUS | F12015-35 | RAD,Merz 1991                   |
| MRUS | F12015-36 | TAD,Merz 1991                   |
| MRUS | F12015-37 | TCD,Hill 1990                   |
| MRUS | F12015-38 | THD, Hansmann 1985              |
| MRUS | F12015-39 | Tibia,Merz 1991                 |
| MRUS | F12015-40 | Ulna,Merz 1991                  |
| MRUS | F12015-41 | EFW by GA, Hansmann 1995        |
| MRUS | F12015-42 | FL, Jeanty1984                  |
| MRUS | F12015-43 | HC, Jeanty 1984                 |
| MRUS | F12015-44 | OFD, Jeanty 1984                |
| MRUS | F12015-45 | HUM, Jeanty 1984                |
| MRUS | F12015-46 | ULNA, Jeanty 1984               |
| MRUS | F12015-47 | TIBIA, Jeanty 1984              |
| MRUS | F12015-48 | BPD,CFEF Crequat 2000           |
| MRUS | F12015-49 | HC,CFEF Crequat 2000            |
| MRUS | F12015-50 | FL,CFEF Crequat 2000            |
| MRUS | F12015-51 | TAD,CFEF Crequat 2000           |

| CSD  | CV        | Code Meaning          |
|------|-----------|-----------------------|
| MRUS | F12015-52 | OOD, Jeanty 1982      |
| MRUS | F12015-53 | AC, CFEF Crequat 2000 |

## CID (12119) Vascular Ultrasound Property

| CSD                                           | CV | Code Meaning |
|-----------------------------------------------|----|--------------|
| INCLUDE CID 12120 Blood Velocity Measurements |    |              |
| INCLUDE CID 12121 Vascular Indices and Ratios |    |              |
| INCLUDE CID 12122 Other Vascular Properties   |    |              |

## CID (12120) Blood Velocity Measurements

| CSD | CV      | Code Meaning                |
|-----|---------|-----------------------------|
| LN  | 11653-3 | End Diastolic Velocity      |
| LN  | 11665-7 | Minimum Diastolic Velocity  |
| LN  | 11726-7 | Peak Systolic Velocity      |
| LN  | 11726-7 | Peak Velocity               |
| LN  | 20352-1 | Time averaged mean velocity |
| LN  | 11692-1 | Time averaged peak velocity |

## CID (12121) Vascular Indices and Ratios

| CSD  | CV        | Code Meaning                                  |
|------|-----------|-----------------------------------------------|
| LN   | 12008-9   | Pulsatility Index                             |
| LN   | 12023-8   | Resistivity Index                             |
| LN   | 12144-2   | Systolic to Diastolic Velocity Ratio          |
| MRUS | M12119-04 | Diastolic to Systolic Velocity Ratio          |
| MRUS | C12121-1  | Systolic to Atrial Contraction Velocity Ratio |
| MRUS | M12120-1  | Peak Early Diastolic Velocity                 |
| MRUS | C12121-2  | Peak velocity index for the vein              |
| MRUS | M12119-11 | Reflux time                                   |

## CID (12122) Other Vascular Properties

| CSD | CV      | Code Meaning            |
|-----|---------|-------------------------|
| LN  | 20168-1 | Acceleration Time       |
| LN  | 20217-6 | Deceleration Time       |
| SRT | R-1025C | Vessel Intimal Diameter |
| LN  | 20247-3 | Peak Gradient           |
| LN  | 20256-4 | Mean Gradient           |
| LN  | 20354-7 | Velocity Time Integral  |
| LN  | 11948-7 | Fetal Heart Rate        |

|      |           |                                      |
|------|-----------|--------------------------------------|
| LN   | 8867-4    | Heart rate                           |
| MRUS | M12119-02 | Angle                                |
| MRUS | M12119-01 | Mean Velocity Mean Pressure Gradient |
| MRUS | M12119-06 | Vol Flow(TAMAX&VAS_AREA)             |
| MRUS | M12119-07 | Vol Flow(TAMEAN&VAS_AREA)            |
| SRT  | G-0366    | Vessel lumen cross-sectional area    |

### **CID (12140) Pelvic Vasculature Anatomical Location**

| CSD | CV      | Code Meaning   |
|-----|---------|----------------|
| SRT | T-46980 | Ovarian Artery |
| SRT | T-46820 | Uterine Artery |

### **CID (12141) Fetal Vasculature Anatomical Location**

| CSD  | CV        | Code Meaning                   |
|------|-----------|--------------------------------|
| SRT  | T-42000   | Aorta                          |
| SRT  | T-D0765   | Descending Aorta               |
| SRT  | T-42100   | Ascending Aorta                |
| SRT  | T-32650   | Left Ventricular Outflow Tract |
| SRT  | T-32550   | Right Ventricle Outflow Tract  |
| SRT  | T-45600   | Middle Cerebral Artery         |
| MRUS | V12141-01 | Ductus Venosus                 |
| SRT  | T-F1810   | Umbilical Artery               |
| SRT  | T-F1820   | Umbilical Vein                 |
| SRT  | T-F1412   | Vitelline Artery of Placenta   |

### **CID (SELFCID-1) Fetal Z-Score**

| CSD  | CV        | Code Meaning                                                  |
|------|-----------|---------------------------------------------------------------|
| LN   | 18015-8   | Aortic Root Diameter                                          |
| LN   | 18012-5   | Ascending Aortic Diameter                                     |
| LN   | 18013-3   | Descending Aortic Diameter                                    |
| LN   | 18019-0   | Left Pulmonary Artery Diameter                                |
| LN   | 18021-6   | Right Pulmonary Artery Diameter                               |
| LN   | 18020-8   | Main Pulmonary Artery Diameter                                |
| LN   | 18154-5   | Interventricular Septum Diastolic Thickness                   |
| LN   | 18158-6   | Interventricular Septum Systolic Thickness                    |
| MRUS | M18015-8  | Aortic Root Diameter(Z Score)                                 |
| MRUS | M18020-8  | Main Pulmonary Artery Diameter(Z Score)                       |
| MRUS | C12201-06 | Left Ventricular Diameter/Right Ventricular Diameter          |
| MRUS | C12201-07 | Left Ventricular Diameter/Right Ventricular Diameter(Z Score) |

|      |           |                                                                |
|------|-----------|----------------------------------------------------------------|
| MRUS | C12205-03 | Left Atrium Diameter / Right Atrium Diameter                   |
| MRUS | C12205-04 | Left Atrium Diameter / Aorta Diameter                          |
| MRUS | C12205-05 | Left Atrium Diameter / Aorta Diameter(Z Score)                 |
| MRUS | C12212-01 | Aorta Diameter/Main Pulmonary Artery Diameter                  |
| MRUS | C12212-03 | Aorta Diameter/Main Pulmonary Artery Diameter(Z Score)         |
| MRUS | M12201-01 | Left ventricular short-axis diameter at end diastole           |
| MRUS | M12201-08 | Left ventricular short-axis diameter at end diastole(Z Score)  |
| MRUS | M12201-02 | Left ventricular short-axis diameter at end systole            |
| MRUS | M12201-03 | Left ventricular Diameter                                      |
| MRUS | M12201-09 | Left ventricular Diameter(Z Score)                             |
| MRUS | M12201-04 | interventricular septal thickness                              |
| MRUS | M12201-05 | Left Ventricular Outflow Tract Diameter                        |
| MRUS | M12204-01 | Right ventricular short-axis diameter at end diastole          |
| MRUS | M12204-07 | Right ventricular short-axis diameter at end diastole(Z Score) |
| MRUS | M12204-02 | Right ventricular short-axis diameter at end systole           |
| MRUS | M12204-03 | Right ventricular Diameter                                     |
| MRUS | M12204-08 | Right ventricular Diameter(Z Score)                            |
| MRUS | M12204-09 | Right ventricular area(Z Score)                                |
| MRUS | M12204-04 | Right ventricular area                                         |
| MRUS | M12206-01 | Right Atrium Diameter                                          |
| MRUS | M12204-05 | Right Ventricular Outflow Tract Diameter                       |
| MRUS | M12205-01 | Left Atrium Diameter                                           |
| MRUS | M12205-02 | Left Atrium area                                               |
| MRUS | M12206-02 | Right Atrium area                                              |
| MRUS | M12240-01 | Left ventricular area                                          |
| MRUS | M12240-02 | Left ventricular area(Z Score)                                 |
| MRUS | M12209-1  | Pulmonary Valve Diameter(Z Score)                              |
| MRUS | M12215-1  | Inferior Vene Cava Diameter(Z Score)                           |
| MRUS | M12212-1  | Duct Aorta Diameter(Z Score)                                   |
| MRUS | M12208-1  | Tricuspid Valve Diameter(Z Score)                              |
| MRUS | M12207-1  | Mitral Valve Diameter(Z Score)                                 |

## Mapping between Modality measurements and DICOM Concepts.

### OB-GYN Measurements

| <b>MODALITY<br/>Label</b> | <b>DICOM Mapping</b>          |
|---------------------------|-------------------------------|
| FHR                       | 11948-7, LN, Fetal Heart Rate |
| HC/AC                     | 11947-9, LN, HC/AC            |
| FL/AC                     | 11871-1, LN, FL/AC            |

| <b>MODALITY<br/>Label</b> | <b>DICOM Mapping</b>                               |
|---------------------------|----------------------------------------------------|
| FL/BPD                    | 11872-9, LN, FL/BPD                                |
| CI                        | 11823-2, LN, Cephalic Index                        |
| FL/HC                     | 11873-7, LN, FL/HC                                 |
| HrtC/TC                   | C12004-01, MRUS, HrtC/TC                           |
| TCD/AC                    | C12004-02, MRUS, TCD/AC                            |
| LVW/HW                    | C12004-03, MRUS, LVW/HW                            |
| CIHC                      | C12004-04, MRUS, Cephalic Index by HC              |
| AC                        | 11979-2, LN, Abdominal Circumference               |
| BPD                       | 11820-8, LN, Biparietal Diameter                   |
| FL                        | 11963-6, LN, Femur Length                          |
| HC                        | 11984-2, LN, Head Circumference                    |
| OFD                       | 11851-3, LN, Occipital-Frontal Diameter            |
| APAD                      | 11818-2, LN, Anterior-Posterior Abdominal Diameter |
| TC                        | 11988-3, LN, Thoracic Circumference                |
| TAD                       | 11862-0, LN, Transverse Abdominal Diameter         |
| TTD                       | 11864-6, LN, Transverse Thoracic Diameter          |
| APTD                      | 11819-0, LN, Anterior-Posterior Trunk Diameter     |
| FTA                       | 33068-8, LN, Thoracic Area                         |
| TCD                       | 11863-8, LN, Trans Cerebellar Diameter             |
| Foot                      | 11965-1, LN, Foot length                           |
| Cist Magna                | 11860-4, LN, Cisterna Magna                        |
| AXT                       | 33191-8, LN, APAD * TAD                            |
| F-kidney                  | M12005-05, MRUS, Fetal Kidney length               |
| THD                       | M12005-01, MRUS, Thoracic Diameter                 |
| HrtC                      | M12005-02, MRUS, Heart Circumference               |
| HUM                       | 11966-9, LN, Humerus length                        |
| RAD                       | 11967-7, LN, Radius length                         |
| Ulna                      | 11969-3, LN, Ulna length                           |
| Tibia                     | 11968-5, LN, Tibia length                          |
| FIB                       | 11964-4, LN, Fibula length                         |
| CLAV                      | 11962-8, LN, Clavicle length                       |
| LVW                       | 12171-5, LN, Lateral Ventricular width             |
| NF                        | 12146-7, LN, Nuchal Fold thickness                 |
| IOD                       | 33070-4, LN, Inner Orbital Diameter                |
| OOD                       | 11629-3, LN, Outer Orbital Diameter                |
| TCD                       | 11863-8, LN, Trans Cerebellar Diameter             |
| NT                        | 33069-6, LN, Nuchal Translucency                   |
| HW                        | 12170-7, LN, Width of Hemisphere                   |
| Ear                       | M12007-01, MRUS, Ear Length                        |

| <b>MODALITY<br/>Label</b> | <b>DICOM Mapping</b>                                           |
|---------------------------|----------------------------------------------------------------|
| MP                        | M12007-02,MRUS,Middle Phalanx Length                           |
| Orbit                     | M12007-03,MRUS,Orbit                                           |
| OFD(HC)                   | M12007-04,MRUS,OFDHC                                           |
| HC(c)                     | C12007-01,MRUS,HCC                                             |
| AF1                       | 11624-4,LN,First Quadrant Diameter                             |
| AF2                       | 11626-9,LN,Second Quadrant Diameter                            |
| AF3                       | 11625-1,LN,Third Quadrant Diameter                             |
| AF4                       | 11623-6,LN,Fourth Quadrant Diameter                            |
| AF                        | M12008-01,MRUS,Amniotic Fluid                                  |
| CRL                       | 11957-8,LN,Crown Rump Length                                   |
| GS                        | 11850-5,LN,Gestational Sac Diameter                            |
| Vertebrae                 | 33071-2,LN,Spine Length                                        |
| YS                        | 11816-6,LN,Yolk Sac length                                     |
| NT                        | 33069-6,LN,Nuchal Translucency                                 |
| Mean Sac Diam             | C12009-01,MRUS,Mean Gestational Sac Diameter                   |
| Cervix L                  | 11961-0,LN,Cervix Length                                       |
| Cervix L                  | 11961-0,LN,Cervix Length                                       |
| Endo                      | 12145-9,LN,Endometrium Thickness                               |
| Cervix H                  | M12011-01,MRUS,Cervix Height                                   |
| Cervix W                  | M12011-02,MRUS,Cervix Width                                    |
| Uterus Body               | C12011-03,MRUS,Uterus Body                                     |
| UT-L/CX-L                 | C12011-04,MRUS,UT_L/CX_L                                       |
| Mat Kidney                | M12011-03,MRUS,Matrix Kindney Length                           |
| AFI                       | 11627-7,LN,Amniotic Fluid Index                                |
| Ovary W                   | 11829-9, LN, Left Ovary Width;11830-7, LN, Right Ovary Width   |
| Ovary L                   | 11840-6, LN, Left Ovary Length;11841-4, LN, Right Ovary Length |
| Ovary H                   | 11857-0, LN, Left Ovary Height;11858-8, LN, Right Ovary Height |
| Ovary Vol                 | 12164-0, LN, Left Ovary Volume;12165-7, LN, Right Ovary Volume |
| Follicle L                | M11793-02, MRUS, Follicle Length                               |
| UT W                      | 11865-3,LN,Uterus Width                                        |
| UT L                      | 11842-2,LN,Uterus Length                                       |
| UT H                      | 11859-6,LN,Uterus Height                                       |
| UT Vol                    | 33192-6,LN,Uterus Volume                                       |
| Follicle W                | M11793-01,MRUS,Follicle Width                                  |
| Follicle1 Thick           | M11794-01,MRUS,Follicle Thickness                              |
| Follicle Vol              | G-D705,SRT,Volume                                              |
| Follicle Diam             | 11793-7,LN,Follicle Diameter                                   |
| EFW1                      | 11727-5,LN,Estimated Weight                                    |
| EFW2                      | 11727-5,LN,Estimated Weight                                    |

| <b>MODALITY<br/>Label</b> | <b>DICOM Mapping</b>                       |
|---------------------------|--------------------------------------------|
| CP                        | 11767-1, LN , EFW percentile rank          |
| UP                        | 11767-1, LN , EFW percentile rank          |
| CP                        | 11767-1, LN , EFW percentile rank          |
| UP                        | 11767-1, LN , EFW percentile rank          |
| EFW(Campbell)             | 11727-5, LN, Estimated Weight              |
| EFW(Hadlock1)             | 11727-5, LN, Estimated Weight              |
| EFW(Hadlock2)             | 11727-5, LN, Estimated Weight              |
| EFW(Hadlock3)             | 11727-5, LN, Estimated Weight              |
| EFW(Hadlock4)             | 11727-5, LN, Estimated Weight              |
| EFW(Hansmann)             | 11727-5, LN, Estimated Weight              |
| EFW(Merz1)                | 11727-5, LN, Estimated Weight              |
| EFW(Merz2)                | 11727-5, LN, Estimated Weight              |
| EFW(Osaka)                | 11727-5, LN, Estimated Weight              |
| EFW(Shepard)              | 11727-5, LN, Estimated Weight              |
| EFW(Tokyo)                | 11727-5, LN, Estimated Weight              |
| PL Thickness              | M12011-01, MRUS, Placental Thickness       |
| HrtA                      | M12005-03, MRUS, Heart Area                |
| Facial angle              | M12005-04, MRUS, Facial angle              |
| Sac Diam1                 | M12009-01, MRUS, Gestational Sac Diameter1 |
| Sac Diam2                 | M12009-02, MRUS, Gestational Sac Diameter2 |
| Sac Diam3                 | M12009-03, MRUS, Gestational Sac Diameter3 |
| MAD                       | C12005-06, MRUS, Mean Abdominal Diameter   |
| Fibroid1 d1               | M12011-04, MRUS, Fibroid1 Length           |
| Fibroid1 d2               | M12011-05, MRUS, Fibroid1 Width            |
| Fibroid1 d3               | M12011-06, MRUS, Fibroid1 Height           |
| Fibroid2 d1               | M12011-07, MRUS, Fibroid2 Length           |
| Fibroid2 d2               | M12011-08, MRUS, Fibroid2 Width            |
| Fibroid2 d3               | M12011-09, MRUS, Fibroid2 Height           |
| Fibroid3 d1               | M12011-10, MRUS, Fibroid3 Length           |
| Fibroid3 d2               | M12011-11, MRUS, Fibroid3 Width            |
| Fibroid3 d3               | M12011-12, MRUS, Fibroid3 Height           |
| GYN Lesion1 d1            | M12011-13, MRUS, Lesion1 length            |
| GYN Lesion1 d2            | M12011-14, MRUS, Lesion1 Width             |
| GYN Lesion1 d3            | M12011-15, MRUS, Lesion1 Height            |
| GYN Lesion2 d1            | M12011-16, MRUS, Lesion2 length            |
| GYN Lesion2 d2            | M12011-17, MRUS, Lesion2 Width             |
| GYN Lesion2 d3            | M12011-18, MRUS, Lesion2 Height            |
| GYN Lesion3 d1            | M12011-19, MRUS, Lesion3 length            |
| GYN Lesion3 d2            | M12011-20, MRUS, Lesion3 Width             |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>           |
|-----------------------|--------------------------------|
| GYN Lesion3 d3        | M12011-21,,MRUS,Lesion3 Height |

## Vasculature Anatomic Location

| <b>MODALITY Vasculature Anatomic Location</b> | <b>DICOM Mapping</b>                       |
|-----------------------------------------------|--------------------------------------------|
| Ovarian A                                     | T-46980, SRT, Ovarian Artery               |
| Ut A                                          | T-46820, SRT, Uterine Artery               |
| Fetal Ao                                      | T-42000, SRT, Aorta                        |
| Desc Aorta                                    | T-D0765, SRT, Descending Aorta             |
| Asc Aorta                                     | T-42100,SRT,Ascending Aorta                |
| RVOT                                          | T-32550,SRT,Right ventricle outflow tract  |
| LVOT                                          | T-32650,SRT,Left ventricle outflow tract   |
| MCA                                           | T-45600, SRT, Middle Cerebral Artery       |
| Duct Venos                                    | V12141-01, MRUS, Ductus Venos              |
| Umb A                                         | T-F1810, SRT, Umbilical Artery             |
| Umb V                                         | T-F1820, SRT, Umbilical Vein               |
| Placenta A                                    | T-F1412, SRT, Vitelline Artery of Placenta |

## OB-GYN Vascular Measurements

| <b>MODALITY Label</b>                    | <b>DICOM Mapping</b>                                  |
|------------------------------------------|-------------------------------------------------------|
| <Vasculature Anatomic Location> ED       | 11653-3, LN, End Diastolic Velocity                   |
| <Vasculature Anatomic Location> MD       | 11665-7 , LN, Minimum Diastolic Velocity              |
| <Vasculature Anatomic Location> PS       | 11726-7, LN, Peak Systolic Velocity                   |
| <Vasculature Anatomic Location> TAMEAN   | 20352-1, LN, Time averaged mean velocity              |
| <Vasculature Anatomic Location> TAMAX    | 11692-1, LN, Time averaged peak velocity              |
| <Vasculature Anatomic Location> PV       | 11726-7, LN, Peak Velocity                            |
| <Vasculature Anatomic Location> PI       | 12008-9, LN, Pulsatility Index                        |
| <Vasculature Anatomic Location> RI       | 12023-8, LN, Resistivity Index                        |
| <Vasculature Anatomic Location> S/D      | 12144-2, LN, Systolic to Diastolic Velocity Ratio     |
| <Vasculature Anatomic Location> D/S      | M12119-04, MRUS, Diastolic to SystolicVelocity Ratio  |
| <Vasculature Anatomic Location> AT       | 20168-1, LN, Acceleration Time                        |
| <Vasculature Anatomic Location> DT       | 20217-6, LN, Deceleration Time                        |
| <Vasculature Anatomic Location> PPG      | 20247-3, LN, Peak Gradient                            |
| <Vasculature Anatomic Location> MPG      | 20256-4, LN, Mean Gradient                            |
| <Vasculature Anatomic Location> MMPG     | M12119-01, MRUS, Mean Velocity Mean Pressure Gradient |
| <Vasculature Anatomic Location> VTI      | M12119-02, MRUS,Velocity-Time Integral                |
| <Vasculature Anatomic Location> HR       | 11948-7, LN, Fetal Heart Rate                         |
| <Vasculature Anatomic Location> $\theta$ | M12119-03, MRUS, Angle                                |
| <Vasculature Anatomic Location> VD       | R-1025C, SRT, Vessel Intimal Diameter                 |



| <b>MODALITY Label</b>                          | <b>DICOM Mapping</b>                         |
|------------------------------------------------|----------------------------------------------|
| <Vasculature Anatomic Location> VolFlow        | M12119-06, MRUS, Vol Flow(TAMAX&VAS_AREA)    |
| <Vasculature Anatomic Location> VolFlow.TAMEAN | M12119-07, MRUS, Vol Flow(TAMEAN&VAS_AREA)   |
| <Vasculature Anatomic Location> Area           | G-0366,SRT,Vessel lumen cross-sectional area |

## OB-GYN Cardiac Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                                            |
|-----------------------|---------------------------------------------------------------------------------|
| Ao Diam               | 18015-8, LN, Aortic Root Diameter                                               |
| <Z.Scores> Ao Diam    | M18015-8, MRUS, Aortic Root Diameter(Z Score)                                   |
| Ao.Asc.Diam           | 18012-5, LN, Ascending Aortic Diameter                                          |
| Ao.Desc.Diam          | 18013-3, LN, Descending Aortic Diameter                                         |
| <Z.Scores>PV.Diam     | M12209-1, MRUS, Pulmonary Valve Diameter(Z Score)                               |
| <Z.Scores>IVC.Diam    | M12215-1, MRUS, Inferior Vene Cava Diameter(Z Score)                            |
| MPA Diam              | Main Pulmonary Artery Diameter                                                  |
| <Z.Scores> MPA Diam   | M18020-8, MRUS, Main Pulmonary Artery Diameter(Z Score)                         |
| LPA.Diam              | 18019-0, LN, Left Pulmonary Artery Diameter                                     |
| RPA.Diam              | 18021-6, LN, Right Pulmonary Artery Diameter                                    |
| <Z.Scores>Duct.Art    | M12212-1, MRUS, Duct Aorta Diameter(Z Score)                                    |
| <Z.Scores>TV.Diam     | M12208-1, MRUS, Tricuspid Valve Diameter(Z Score)                               |
| <Z.Scores>MV.Diam     | M12207-1, MRUS, Mitral Valve Diameter(Z Score)                                  |
| IVSd                  | 18154-5, LN, Interventricular Septum Diastolic Thickness                        |
| IVSs                  | 18158-6, LN, Interventricular Septum Systolic Thickness                         |
| LVD/RVD               | C12201-06, MRUS, Left Ventricular Diameter/Right Ventricular Diameter           |
| <Z.Scores> LVD/RVD    | C12201-07, MRUS, Left Ventricular Diameter/Right Ventricular Diameter(Z Score)  |
| LAD/RAD               | C12205-03, MRUS, Left Atrium Diameter / Right Atrium Diameter                   |
| LAD/AoD               | C12205-04, MRUS, Left Atrium Diameter / Aorta Diameter                          |
| <Z.Scores> LAD/AoD    | C12205-05, MRUS, Left Atrium Diameter / Aorta Diameter(Z Score)                 |
| AoD/MPAD              | C12212-01, MRUS, Aorta Diameter/Main Pulmonary Artery Diameter                  |
| <Z.Scores> AoD/MPAD   | C12212-03, MRUS, Aorta Diameter/Main Pulmonary Artery Diameter(Z Score)         |
| LVIDd                 | M12201-01, MRUS, Left ventricular short-axis diameter at end diastole           |
| <Z.Scores> LVIDd      | M12201-08, MRUS, Left ventricular short-axis diameter at end diastole(Z Score)  |
| LVIDs                 | M12201-02, MRUS, Left ventricular short-axis diameter at end systole            |
| LV Diam               | M12201-03, MRUS, Left ventricular Diameter                                      |
| <Z.Scores> LV Diam    | M12201-09, MRUS, Left ventricular Diameter(Z Score)                             |
| IVS                   | M12201-04, MRUS, interventricular septal thickness                              |
| LVOT Diam             | M12201-05, MRUS, Left Ventricular Outflow Tract Diameter                        |
| RVIDd                 | M12204-01, MRUS, Right ventricular short-axis diameter at end diastole          |
| <Z.Scores> RVIDd      | M12204-07, MRUS, Right ventricular short-axis diameter at end diastole(Z Score) |

|                    |                                                                     |
|--------------------|---------------------------------------------------------------------|
| RVIDs              | M12204-02,MRUS,Right ventricular short-axis diameter at end systole |
| RV Diam            | M12204-03,MRUS,Right ventricular Diameter                           |
| <Z.Scores> RV Diam | M12204-08,MRUS,Right ventricular Diameter(Z Score)                  |
| RA Diam            | M12206-01,MRUS,Right Atrium Diameter                                |
| RV Area            | M12204-04,MRUS,Right ventricular area                               |
| <Z.Scores> RV Area | M12204-09,MRUS,Right ventricular area(Z Score)                      |
| RVOT Diam          | M12204-05,MRUS,Right Ventricular Outflow Tract Diameter             |
| LA Diam            | M12205-01,MRUS,Left Atrium Diameter                                 |
| LA Area            | M12205-02,MRUS,Left Atrium area                                     |
| RA Area            | M12206-02,MRUS,Right Atrium area                                    |
| LV Area            | M12240-01,MRUS,Left ventricular area                                |
| <Z.Scores> LV Area | M12240-02,MRUS,Left ventricular area(Z Score)                       |
| ZScoreFL           | C12017-1,MRUS,Z-Score by Femur Length                               |
| ZScoreBPD          | C12017-2,MRUS,Z-Score by Biparietal Diameter                        |
| ZScoreClinicalGA   | C12017-3,MRUS,Z-Score by Clinical Gestational Age                   |

## Biophysical Profile Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                     |
|-----------------------|------------------------------------------|
| FM                    | 11631-9,LN,Gross Body Movement           |
| FBM                   | 11632-7,LN,Fetal Breathing               |
| FT                    | 11635-0,LN,Fetal Tone                    |
| FHR                   | 11635-5,LN,Fetal Heart Reactivity        |
| AF                    | 11630-1,LN,Amniotic Fluid Volume         |
| Total Score           | 11634-3,LN,Biophysical Profile Sum Score |
| Fetal Lie             | FG12018-02,MRUS,Fetal Lie                |
| Gender                | FG7455-01,MRUS,Gender                    |
| 3 Vessel Cord         | FG7160-01,MRUS,3 Vessel Cord             |
| Face                  | T-D1200,SNM3,Face                        |
| Nose Lips             | FG4-01,MRUS,Nose Lips                    |
| Cord insertion        | FG12011-01,MRUS,Cord insertion           |
| LUS                   | FG4031-02,MRUS,LUS                       |
| Stomach               | T-57000,SNM3,Stomach                     |
| Left Kidney           | T-71000,SRT,Kidney                       |
| Right Kidney          | T-71000,SRT,Kidney                       |
| Bladder               | T-74000,SRT,Bladder                      |
| Gall Bladder          | T-63000,SRT,Gall bladder                 |
| Liver                 | T-62000,SRT,Liver                        |
| Fetal Bowel           | FG4031-03,MRUS,Fetal Bowel               |
| Upper Extremities     | FG4031-05,MRUS,Upper Extremities         |
| Lower Extremities     | FG4031-06,MRUS,Lower Extremities         |
| Cardiac Activity      | FG12239-01,MRUS,Cardiac Activity         |

|                    |                                            |
|--------------------|--------------------------------------------|
| 4C HEART           | FG4031-08,MRUS,4C HEART                    |
| Aorta              | T-42000,SNM3,Aorta                         |
| Pulmonary Artery   | T-44000,SNM3,Pulmonary Artery              |
| ARCH               | FG3010-01,MRUS,ARCH                        |
| LVOT               | T-32650,SRT,Left Ventricular Outflow Tract |
| RVOT               | T-32550,SRT,Right Ventricle Outflow Tract  |
| Lateral Ventricles | FG4030-02,MRUS,Lateral Ventricles          |
| Cisterna Magna     | 11860-4,LN,Cisterna Magna                  |
| Cerebellum         | T-A600A,SNM3,Cerebellum                    |
| CSP                | FG4030-03,MRUS,CSP                         |
| Cervical Spine     | T-11501,SNM3,Cervical Spine                |
| Thoracic Spine     | T-11502,SNM3,Thoracic Spine                |
| Lumbar Spine       | T-11503,SNM3,Lumbar Spine                  |
| Sacral Spine       | FG4031-,MRUS,Sacral Spine                  |
| Placental Location | FG12011-01,MRUS,Placental Location         |
| Amniotic Fluid     | FG12011-02,MRUS,Amniotic Fluid             |
| Placental Grade    | FG12011-03,MRUS,Placental Grade            |
| Adnexa             | FG12011-03,MRUS,Adnexa                     |
| Ovaries            | T-87000,SRT,Ovary                          |
| Kidney             | T-71000,SRT,Kidney                         |
| Cervix             | T-83200,SRT,Cervix                         |
| Ovarian Cyst1 d1   | T-87000-1,MRUS,Ovarian Cyst1 Length        |
| Ovarian Cyst1 d2   | T-87000-2,MRUS,Ovarian Cyst2 Width         |
| Ovarian Cyst1 d3   | T-87000-3,MRUS,Ovarian Cyst3 Height        |
| Ovarian Cyst2 d1   | T-87000-4,MRUS,Ovarian Cyst4 Length        |
| Ovarian Cyst2 d2   | T-87000-5,MRUS,Ovarian Cyst5 Width         |
| Ovarian Cyst2 d3   | T-87000-6,MRUS,Ovarian Cyst6 Height        |
| Ovarian Cyst3 d1   | T-87000-7,MRUS,Ovarian Cyst 7 Lenght       |
| Ovarian Cyst3 d2   | T-87000-8,MRUS,Ovarian Cyst8 Width         |
| Ovarian Cyst3 d3   | T-87000-9,MRUS,Ovarian Cyst9 Height        |

## 9.2 Cardiac Structured Reporting Template

This appendix lists the DICOM Structured Report (SR) mappings used in the Cardiac Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Cardiac Report mappings follow the DICOM SR Template TID 5200: Cardiac Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

## TID (5200) Echocardiography Procedure Report

This template forms the top of a content tree that allows an ultrasound system to describe the results of an adult echocardiography imaging procedure.

|    | NL | Rel with Parent | VT        | Concept Name                                                | Used Modality in | Condition | Value Constraint Set                                                                                                     |
|----|----|-----------------|-----------|-------------------------------------------------------------|------------------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 1  |    |                 | CONTAINER | EV (125200, DCM, "Adult Echocardiography Procedure Report") | √                |           |                                                                                                                          |
| 2  | >  | HAS CONCEPT MOD | INCLUDE   | DTID (1204) Language of Content Item and Descendants        |                  |           |                                                                                                                          |
| 3  | >  | HAS OBS CONTEXT | INCLUDE   | DTID (1001) Observation Context                             | √                |           |                                                                                                                          |
| 4  | >  | CONTAINS        | INCLUDE   | DTID (5201) Echocardiography Patient Characteristics        | √                |           |                                                                                                                          |
| 5  | >  | CONTAINS        | CONTAINER | (111028, DCM, "Image Library")                              |                  |           |                                                                                                                          |
| 6  | >> | CONTAINS        | IMAGE     | No purpose of reference                                     |                  |           |                                                                                                                          |
| 7  | >  | CONTAINS        | INCLUDE   | DTID(SELFTEM-2)Echo Procedure Summary Section               | √                |           |                                                                                                                          |
| 8  | >  | CONTAINS        | INCLUDE   | DTID (5202) Echo Section                                    | √                |           | \$SectionSubject = EV (T-32600, SRT, "Left Ventricle")<br>\$MeasType = DCID (12200)<br>Echocardiography Left Ventricle   |
| 9  | >  | CONTAINS        | INCLUDE   | DTID (5202) Echo Section                                    | √                |           | \$SectionSubject = EV (T-32500, SRT, "Right Ventricle")<br>\$MeasType = DCID (12204)<br>Echocardiography Right Ventricle |
| 10 | >  | CONTAINS        | INCLUDE   | DTID (5202) Echo Section                                    | √                |           | \$SectionSubject = EV (T-32300, SRT, "Left Atrium")<br>\$MeasType = DCID (12205)<br>Echocardiography Left Atrium         |
| 11 | >  | CONTAINS        | INCLUDE   | DTID (5202) Echo Section                                    | √                |           | \$SectionSubject = EV (T-32200, SRT, "Right Atrium")<br>\$MeasType = DCID (12206)<br>Echocardiography Right Atrium       |

|    | NL | Rel with Parent | VT      | Concept Name             | Used in Modality | Condition | Value Set Constraint                                                                                                                |
|----|----|-----------------|---------|--------------------------|------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 12 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-35400, SRT, "Aortic Valve")<br>\$MeasType = DCID (12211)<br>Echocardiography Aortic Valve                  |
| 13 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-35300, SRT, "Mitral Valve")<br>\$MeasType = DCID (12207)<br>Echocardiography Mitral Valve                  |
| 14 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-35200, SRT, "Pulmonic Valve")<br>\$MeasType = DCID (12209)<br>Echocardiography Pulmonic Valve              |
| 15 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-35100, SRT, "Tricuspid Valve")<br>\$MeasType = DCID (12208)<br>Echocardiography Tricuspid Valve            |
| 16 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-42000, SRT, "Aorta")<br>\$MeasType= DCID (12212)<br>Echocardiography Aorta                                 |
| 17 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-44000, SRT, "Pulmonary artery")<br>\$MeasType DCID (12210) =<br>Echocardiography Pulmonary Artery          |
| 18 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-48600, SRT, "Vena Cava")<br>\$MeasType = DCID (12215)<br>Echocardiography Vena Cavae                       |
| 19 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (T-48581, SRT, "Pulmonary Venous Structure")<br>\$MeasType = DCID (12214)<br>Echocardiography Pulmonary Veins |
| 20 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section | √                |           | \$SectionSubject = EV (P5-30031, SRT, "Cardiac Shunt Study") \$MeasType = DCID (12217)<br>Echocardiography                          |

|    | NL | Rel with Parent | VT      | Concept Name                                    | Used Modality in | Condition | Value Set Constraint                                                                                                                          |
|----|----|-----------------|---------|-------------------------------------------------|------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|    |    |                 |         |                                                 |                  |           | Cardiac Shunt                                                                                                                                 |
| 21 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section                        | √                |           | \$SectionSubject = EV (D4-30000, SRT, "Congenital Anomaly of Cardiovascular System")<br>\$MeasType = DCID (12218) Echocardiography Congenital |
| 22 | >  | CONTAINS        | INCLUDE | DTID (5204) Wall Motion Analysis                |                  |           |                                                                                                                                               |
| 23 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section                        | √                |           | \$SectionSubject = EV (D3-90000, SRT, "Pericardial disease")<br>\$MeasType = DCID (90000) Pericardial disease                                 |
| 24 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section                        | √                |           | \$SectionSubject = EV (T-48720, SRT, "Hepatic Vein")<br>\$MeasType = DCID (12216) Echocardiography Hepatic Veins                              |
| 25 | >  | CONTAINS        | INCLUDE | DTID (5202) Echo Section                        | √                |           | \$SectionSubject = EV (8867-4, SRT, "Heart rate")<br>\$MeasType = DCID (12220) Echocardiography Common Measurements                           |
| 26 | >  | CONTAINS        | TEXT    | (20121120,MRUS, "self-defined-Measurementfile") | √                |           |                                                                                                                                               |

### TID(1001) Observation Context

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

|   | NL | Rel with Parent | VT    | Concept Name                                            | Used Modality in | Condition | Value Set Constraint                                         |
|---|----|-----------------|-------|---------------------------------------------------------|------------------|-----------|--------------------------------------------------------------|
| 1 | >  | HAS OBS CONTEXT | CODE  | EV (121005,DCM, "Observer Type")                        | √                |           | (121006,DCM, "Person")                                       |
| 2 | >  | HAS OBS CONTEXT | PNAME | EV (121008,DCM, "Person Observer Name")                 | √                |           | Operator from Info                                           |
| 3 | >  | HAS OBS CONTEXT | TEXT  | EV (121009,DCM, " Person Observer's Organization Name") | √                |           | Institution Name (0008,0080) of the General Equipment Module |

|   |   |                 |       |                                                                |   |  |                                                                 |
|---|---|-----------------|-------|----------------------------------------------------------------|---|--|-----------------------------------------------------------------|
| 4 | > | HAS OBS CONTEXT | CODE  | EV (121010,DCM, " Person Observer's Role in the Organization") | √ |  | (121093, DCM, "Sonographer")                                    |
| 5 | > | HAS OBS CONTEXT | CODE  | EV (121024, DCM, "Subject Class")                              | √ |  | (121025, DCM, "Patient")                                        |
| 6 | > | HAS OBS CONTEXT | PNAME | EV (121029,DCM, "Subject Name")                                | √ |  | value of Patient's Name (0010,0010) in Patient Module           |
| 7 | > | HAS OBS CONTEXT | DATE  | EV (121031,DCM, "Subject Birth Date")                          | √ |  | value of Patient's Birth Date (0010,0030) in Patient Module     |
| 8 | > | HAS OBS CONTEXT | CODE  | EV (121032,DCM, "Subject Sex")                                 | √ |  | value equivalent to Patient's Sex (0010,0040) in Patient Module |
| 9 | > | HAS OBS CONTEXT | NUM   | EV (121033,DCM, "Subject Age")                                 | √ |  | value of Patient's Age (0010,1010) in Patient Study Module      |

### TID (5201) Echocardiography Patient Characteristics

|    | N L | Rel with Parent | VT        | Concept Name                                      | Used in Modality | Value Set Constraint                         | Comments              |
|----|-----|-----------------|-----------|---------------------------------------------------|------------------|----------------------------------------------|-----------------------|
| 1  |     |                 | CONTAINER | EV (121118, DCM, "Patient Characteristics")       | √                |                                              |                       |
| 2  | >   | CONTAINS        | NUM       | EV (121033, DCM, "Subject Age")                   | √                | Units = DCID (7456) Units of Measure for Age | from Info             |
| 3  | >   | CONTAINS        | CODE      | EV (121032, DCM, "Subject Sex")                   | √                | DCID (7455) Sex                              | from worklist or Info |
| 4  | >   | CONTAINS        | NUM       | EV (8867-4, LN, "Heart Rate")                     | √                |                                              | from Info             |
| 5  | >   | CONTAINS        | NUM       | EV (F-008EC, SRT, "Systolic Blood Pressure")      | √                |                                              | from Info             |
| 6  | >   | CONTAINS        | NUM       | EV (F-008ED, SRT, "Diastolic Blood Pressure")     | √                |                                              | from Info             |
| 7  | >   | CONTAINS        | NUM       | EV(18070-3, LN, "Right Atrium Systolic Pressure") | √                |                                              | from Info             |
| 8  | >   | CONTAINS        | NUM       | EV (8302-2, LN, "Patient Height")                 | √                |                                              | from worklist or Info |
| 9  | >   | CONTAINS        | NUM       | EV (29463-7, LN, "Patient Weight")                | √                |                                              | from worklist or Info |
| 10 | >   | CONTAINS        | NUM       | EV (8277-6, LN, "Body Surface Area")              | √                |                                              | from Info             |
| 11 | >>  | INFERRED FROM   | CODE      | EV (8278-4, LN, "Body Surface Area Formula")      | √                | BCID (3663) Body Surface Area Equations      |                       |

### TID (SELFTMP-2) Echo Procedure Summary Section

This is a private template referenced by TID(5200).

|   | NL | Rel with Parent | VT        | Concept Name                             | Used in Modality | Value Constraint Set | Comment                       |
|---|----|-----------------|-----------|------------------------------------------|------------------|----------------------|-------------------------------|
| 1 |    |                 | CONTAINER | DT(12111,DCM,"Summary")                  | √                |                      |                               |
| 2 | >  | CONTAINS        | TEXT      | EV(121106,DCM,"Comment")                 | √                |                      | from Info                     |
| 3 | >  | CONTAINS        | TEXT      | (I12101-01,MRUS,"Primary Indications")   | √                |                      | from Info                     |
| 4 | >  | CONTAINS        | TEXT      | (I12101-02,MRUS,"Secondary Indications") | √                |                      | from Info                     |
| 5 | >  | CONTAINS        | TEXT      | (I12101-03,MRUS,"CPT4 Code")             | √                |                      | from Info                     |
| 6 | >  | CONTAINS        | TEXT      | (I12101-04,MRUS,"CPT4 Description")      | √                |                      | from Info                     |
| 7 | >  | CONTAINS        | TEXT      | EV (121106, DCM, "Comment")              | √                |                      | from interface report Comment |
| 8 | >  | CONTAINS        | TEXT      | (I12101-05,MRUS,"Prompt")                | √                |                      | from interface report Comment |
| 9 | >  | CONTAINS        | TEXT      | (121071,DCM,"Findings")                  | √                |                      | from interface report Comment |

### TID (5202) Echo Section

|   | NL | Rel with Parent | VT        | Concept Name                           | Used in Modality | Value Constraint Set                                                                                                             | Comment |
|---|----|-----------------|-----------|----------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------|---------|
| 1 |    |                 | CONTAINER | EV (121070, DCM, "Findings")           | √                |                                                                                                                                  |         |
| 2 | >  | HAS CONCEPT MOD | CODE      | EV (G-C0E3, SRT, "Finding Site")       | √                | \$SectionSubject = EV (T-32600, SRT, "Left Ventricle")                                                                           |         |
| 3 | >  | CONTAINS        | CONTAINER | DT (125007, DCM, "Measurement Group")  | √                |                                                                                                                                  |         |
| 4 | >> | HAS CONCEPT MOD | CODE      | EV (G-0373, SRT,"Image Mode" )         |                  | BCID (12224) Ultrasound Image Modes                                                                                              |         |
| 5 | >> | HAS CONCEPT MOD | CODE      | DT (125203,DCM,"Acquisition Protocol") |                  |                                                                                                                                  |         |
| 6 | >> | CONTAINS        | INCLUDE   | DTID (5203) Echo Measurement           | √                | \$Measurement=\$MeasType = DCID (12200) Echocardiography Left Ventricle \$Method=CID (12227) Echocardiography Measurement Method |         |



## TID (5203) Echo Measurement

|   | NL | Relation with Parent | Value Type | Concept Name                                 | Used in Modality | Value Set Constraint                                                                                                                                                               | Comment |
|---|----|----------------------|------------|----------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1 |    |                      | INCLUDE    | DTID (300) Measurement                       | √                | \$Measurement = \$Measurement<br>\$Method = \$Method<br>\$TargetSite = BCID (12236) Echo Anatomic Sites<br>\$TargetSiteMod = BCID (12237) Echocardiography Anatomic Site Modifiers |         |
| 2 | >  | HAS CONCEPT MOD      | CODE       | EV(G-C036,SRT,"Measurement Method")          | √                | This row is used only if the measurement or calculation this template is invoked with mandates it. Otherwise this row is not used. The values are taken from the BCID 12227        |         |
| 3 | >  | HAS CONCEPT MOD      | CODE       | EV (G-C048, SRT, "Flow Direction")           | √                | BCID (12221) Flow Direction                                                                                                                                                        |         |
| 4 | >  | HAS CONCEPT MOD      | CODE       | EV (R-40899, SRT, "Respiratory Cycle Point") |                  | DCID (12234) Respiration State                                                                                                                                                     |         |
| 5 | >  | HAS CONCEPT MOD      | CODE       | EV (R-4089A, SRT, "Cardiac Cycle Point")     | √                | DCID (12233) Respiration State                                                                                                                                                     |         |
| 6 | >  | HAS ACQ CONTEXT      | CODE       | EV (G-0373, SRT, "Image Mode")               | √                | DCID (12224) Ultrasound Image Modes                                                                                                                                                |         |
| 7 | >  | HAS ACQ CONTEXT      | CODE       | EV (111031, DCM, "Image View")               | √                | BCID (12226) Echocardiography Image View                                                                                                                                           |         |

## CID (12200) Echocardiography Left Ventricle

|                                                        |
|--------------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |
| INCLUDE CID 12201 Left Ventricle Linear                |
| INCLUDE CID 12240 Left Ventricle Area                  |
| INCLUDE CID 12202 Left Ventricle Volume                |
| INCLUDE CID 12222 Orifice Flow Properties              |
| INCLUDE CID 12203 Left Ventricle Other                 |
| INCLUDE CID 12239 Cardiac Output Properties            |

## CID (12201 ) Left Ventricle Linear

| CSD | CV      | Code Meaning                                              |
|-----|---------|-----------------------------------------------------------|
| LN  | 29436-3 | Left Ventricle Internal End Diastolic Dimension           |
| LN  | 29438-9 | Left Ventricle Internal Systolic Dimension                |
| LN  | 18051-3 | Left Ventricular Fractional Shortening                    |
| LN  | 18154-5 | Interventricular Septum Diastolic Thickness               |
| LN  | 18155-2 | Interventricular Septum to Posterior Wall Thickness Ratio |
| LN  | 18054-7 | Interventricular Septum % Thickening                      |
| LN  | 18158-6 | Interventricular Septum Systolic Thickness                |

|      |           |                                                           |
|------|-----------|-----------------------------------------------------------|
| LN   | 18053-9   | Left Ventricle Posterior Wall % Thickening                |
| LN   | 18077-8   | Left Ventricle diastolic major axis                       |
| LN   | 18076-0   | Left Ventricle systolic major axis                        |
| LN   | 18156-0   | Left Ventricle Posterior Wall Systolic Thickness          |
| LN   | 18152-9   | Left Ventricle Posterior Wall Diastolic Thickness         |
| MRUS | M12201-01 | Left ventricular Major                                    |
| MRUS | M12201-02 | Left ventricular Minor                                    |
| MRUS | C12201-01 | Mean Velocity of Circumferential Fiber Shortening         |
| MRUS | M12201-03 | A Distance                                                |
| MRUS | M12201-04 | B Distance                                                |
| MRUS | M12201-05 | Left ventricular internal diameter to BSA Ratio           |
| MRUS | M12201-05 | Left ventricular mean circumference Fractional Shortening |

### CID (12202) Left Ventricle Volume

| CSD  | CV        | Code Meaning                          |
|------|-----------|---------------------------------------|
| LN   | 18026-5   | Left Ventricular End Diastolic Volume |
| LN   | 18148-7   | Left Ventricular End Systolic Volume  |
| LN   | 18043-0   | Left Ventricular Ejection Fraction    |
| MRUS | C12202-01 | Left Ventricular EDV index            |
| MRUS | C12202-02 | Left Ventricular ESV index            |

### CID (12203) Left Ventricle Other

| CSD  | CV        | Code Meaning                                              |
|------|-----------|-----------------------------------------------------------|
| LN   | 18087-7   | Left Ventricle Mass                                       |
| LN   | 18071-1   | Left Ventricular Isovolumic Relaxation Time               |
| SRT  | G-037E    | Left Ventricular Isovolumic Contraction Time              |
| SRT  | G-037F    | Left Ventricular Index of Myocardial Performance          |
| MRUS | M12203-01 | Left Ventricle Pre-Ejection Period                        |
| MRUS | M12203-02 | Left Ventricle Ejection Time                              |
| MRUS | C12203-01 | Left ventricular Mass Weight Index                        |
| MRUS | C12203-02 | Left Ventricle Pre-Ejection Period to Ejection Time Ratio |

### CID (12204) Echocardiography Right Ventricle

| CSD                                                    | CV        | Code Meaning                                               |
|--------------------------------------------------------|-----------|------------------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                                            |
| INCLUDE CID 12222 Orifice Flow Properties              |           |                                                            |
| INCLUDE CID 12239 Cardiac Output Properties            |           |                                                            |
| LN                                                     | 20304-2   | Right Ventricular Internal Diastolic Dimension             |
| LN                                                     | 20305-9   | Right Ventricular Internal Systolic Dimension              |
| SRT                                                    | G-0381    | Right Ventricular Index of Myocardial Performance          |
| SRT                                                    | G-0380    | Right Ventricular Peak Systolic Pressure                   |
| LN                                                     | 18153-7   | Right Ventricular Anterior Wall Diastolic Thickness        |
| LN                                                     | 18157-8   | Right Ventricular Anterior Wall Systolic Thickness         |
| MRUS                                                   | M12204-01 | Right ventricular Major                                    |
| MRUS                                                   | M12204-02 | Right ventricular Minor                                    |
| MRUS                                                   | M12204-03 | Right ventricular Area at end-diastole                     |
| MRUS                                                   | M12204-04 | Right ventricular Area at end-systole                      |
| MRUS                                                   | M12204-05 | Right Ventricle Pre-Ejection Period                        |
| MRUS                                                   | M12204-06 | Right Ventricle Ejection Time                              |
| MRUS                                                   | C12204-01 | Right Ventricle Pre-Ejection Period to Ejection Time Ratio |
| MRUS                                                   | C12204-03 | Right Ventricular Fractional Area Change                   |

### CID (12205) Echocardiography Left Atrium

| CSD                                                    | CV      | Code Meaning                                    |
|--------------------------------------------------------|---------|-------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |         |                                                 |
| LN                                                     | 29469-4 | Left Atrium Antero-posterior Systolic Dimension |

| CSD  | CV        | Code Meaning                     |
|------|-----------|----------------------------------|
| LN   | 17985-3   | Left Atrium to Aortic Root Ratio |
| LN   | 17977-0   | Left Atrium Systolic Area        |
| SRT  | G-0383    | Left Atrium Systolic Volume      |
| MRUS | M12205-01 | Left atrium Major                |
| MRUS | M12205-02 | Left atrium Minor                |
| MRUS | C12205-01 | Aortic Root to Left Atrium Ratio |
| MRUS | C12205-02 | Left Atrium Volume index         |

## CID (12206) Echocardiography Right Atrium

| CSD                                                    | CV        | Code Meaning               |
|--------------------------------------------------------|-----------|----------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                            |
| LN                                                     | 17988-7   | Right Atrium Systolic Area |
| MRUS                                                   | M12206-01 | Right atrium Major         |
| MRUS                                                   | M12206-02 | Right atrium Minor         |
| MRUS                                                   | M12206-03 | Right atrium Volume        |
| MRUS                                                   | M12206-04 | Right atrium Volume index  |

## CID (12207) Echocardiography Mitral Valve

| CSD                                                    | CV        | Code Meaning                                                 |
|--------------------------------------------------------|-----------|--------------------------------------------------------------|
| SRT                                                    | F-32120   | Stroke Volume                                                |
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                                              |
| INCLUDE CID 12222 Orifice Flow Properties              |           |                                                              |
| INCLUDE CID 12239 Cardiac Output Properties            |           |                                                              |
| LN                                                     | 17978-8   | Mitral Valve A-Wave Peak Velocity                            |
| LN                                                     | 18037-2   | Mitral Valve E-Wave Peak Velocity                            |
| LN                                                     | 18038-0   | Mitral Valve E to A Ratio                                    |
| SRT                                                    | G-0386    | Mitral Valve AT/DT Ratio                                     |
| LN                                                     | 18040-6   | Mitral Valve E-F Slope by M-Mode                             |
| LN                                                     | 18036-4   | Mitral Valve EPSS, E wave                                    |
| SRT                                                    | G-0385    | Mitral Valve A-Wave Duration                                 |
| SRT                                                    | G-0387    | Mitral Valve Closure to Opening Time                         |
| LN                                                     | 18035-6   | Mitral Regurgitation dP/dt derived from Mitral Reg. velocity |
| MRUS                                                   | M12207-01 | Mitral valve cusp separate distance                          |
| MRUS                                                   | M12207-02 | Mitral Valve D-E Slope                                       |
| MRUS                                                   | M12207-03 | Amplitude of the A wave                                      |
| MRUS                                                   | M12207-04 | Amplitude of the E wave                                      |
| MRUS                                                   | M12207-05 | Amplitude from D point to E point                            |
| MRUS                                                   | M12207-06 | Mitral Valve E-wave Pressure Gradient                        |
| MRUS                                                   | M12207-07 | Mitral Valve A-wave Pressure Gradient                        |
| MRUS                                                   | M12207-08 | E wave Velocity Time Integral                                |
| MRUS                                                   | M12207-9  | A wave Velocity Time Integral                                |
| MRUS                                                   | M12207-10 | Mitral Valve E-Wave Duration                                 |
| MRUS                                                   | M12207-11 | Systolic Velocity of the Mitral Annulus(medial)              |
| MRUS                                                   | M12207-12 | Early diastolic velocity of the mitral annulus(medial)       |
| MRUS                                                   | M12207-13 | Late diastolic velocity of the mitral annulus(medial)        |
| MRUS                                                   | M12207-14 | Early diastolic velocity to Late diastolic velocity Ratio    |
| MRUS                                                   | M12207-15 | Acceleration Time of Early diastolic velocity                |
| MRUS                                                   | M12207-16 | Acceleration Rate of Early diastolic velocity                |
| MRUS                                                   | M12207-17 | Deceleration Time of Early diastolic velocity                |
| MRUS                                                   | M12207-18 | Deceleration Rate of Early diastolic velocity                |
| MRUS                                                   | M12207-19 | Systolic Velocity of the Mitral Annulus(lateral)             |
| MRUS                                                   | M12207-20 | Early diastolic velocity of the mitral annulus(lateral)      |
| MRUS                                                   | M12207-21 | Late diastolic velocity of the mitral annulus(lateral)       |
| MRUS                                                   | M12207-22 | Early diastolic velocity to Late diastolic velocity Ratio    |
| MRUS                                                   | M12207-23 | Acceleration Time of Early diastolic velocity                |
| MRUS                                                   | M12207-24 | Acceleration Rate of Early diastolic velocity                |
| MRUS                                                   | M12207-25 | Deceleration Time of Early diastolic velocity                |

| CSD  | CV        | Code Meaning                                  |
|------|-----------|-----------------------------------------------|
| MRUS | M12207-26 | Deceleration Rate of Early diastolic velocity |
| MRUS | M12207-27 | Mitral Stenosis Radius                        |
| MRUS | M12207-28 | Mitral Stenosis Aliasing Velocity             |
| MRUS | M12207-29 | Mitral Stenosis Maximum Velocity              |
| MRUS | M12207-30 | Mitral Stenosis Area                          |
| MRUS | M12207-31 | Mitral Stenosis Area                          |
| MRUS | M12207-32 | Mitral Stenosis Maximum Pressure Gradient     |
| MRUS | M12207-33 | Mitral Valve A-C Slope                        |
| MRUS | M12207-34 | A Wave Amplitude to C Wave Amplitude Ratio    |
| MRUS | C12207-01 | Mitral Stenosis Maximum Pressure Gradient     |
| MRUS | M12207-35 | MV E/Ea medial                                |
| MRUS | M12207-36 | MV E/Ea lateral                               |
| MRUS | M12207-37 | MV E/Ea medial lateral                        |
| MRUS | M12207-38 | Mitral Valve A-C Interval                     |
| MRUS | M12207-39 | Mitral Annular Plane Systolic Excursion       |

### CID (12208) Echocardiography Tricuspid Valve

| CSD                                                    | CV        | Code Meaning                               |
|--------------------------------------------------------|-----------|--------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                            |
| INCLUDE CID 12222 Orifice Flow Properties              |           |                                            |
| LN                                                     | 18031-5   | Tricuspid Valve E Wave Peak Velocity       |
| LN                                                     | 18030-7   | Tricuspid Valve A Wave Peak Velocity       |
| LN                                                     | 18039-8   | Tricuspid Valve E to A Ratio               |
| LN                                                     | 20296-0   | Time from Q wave to Tricuspid Valve Opens  |
| SRT                                                    | G-0389    | Tricuspid Valve Closure to Opening Time    |
| MRUS                                                   | M12208-01 | Tricuspid Valve E-Wave Duration            |
| MRUS                                                   | M12208-02 | Tricuspid Valve E Wave Pressure Gradient   |
| MRUS                                                   | M12208-03 | Tricuspid Valve A Wave Pressure Gradient   |
| MRUS                                                   | M12208-04 | Tricuspid Annular Plane Systolic Excursion |

### CID (12209) Echocardiography Pulmonic Valve

|                                                        |  |  |
|--------------------------------------------------------|--|--|
| INCLUDE CID 12220 Echocardiography Common Measurements |  |  |
| INCLUDE CID 12222 Orifice Flow Properties              |  |  |

### CID (12210) Echocardiography Pulmonary Artery

| CSD                                                    | CV        | Code Meaning                            |
|--------------------------------------------------------|-----------|-----------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                         |
| LN                                                     | 18020-8   | Main Pulmonary Artery Diameter          |
| LN                                                     | 18021-6   | Right Pulmonary Artery Diameter         |
| LN                                                     | 18019-0   | Left Pulmonary Artery Diameter          |
| SRT                                                    | G-038A    | Main Pulmonary Artery Peak Velocity     |
| MRUS                                                   | M12210-01 | Posterior ductal Diameter               |
| MRUS                                                   | C12210-01 | Pulmonary Artery End Diastolic Pressure |

### CID (12211) Echocardiography Aortic Valve

| CSD                                                    | CV      | Code Meaning                                             |
|--------------------------------------------------------|---------|----------------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |         |                                                          |
| INCLUDE CID 12222 Orifice Flow Properties              |         |                                                          |
| LN                                                     | 17996-0 | Aortic Valve Cusp Separation                             |
| SRT                                                    | G-0382  | Ratio of Aortic Valve Acceleration Time to Ejection Time |

### CID (12212) Echocardiography Aorta

| CSD | CV | Code Meaning |
|-----|----|--------------|
|-----|----|--------------|

| CSD                                                    | CV        | Code Meaning                                             |
|--------------------------------------------------------|-----------|----------------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                                          |
| LN                                                     | 18015-8   | Aortic Root Diameter                                     |
| LN                                                     | 18011-7   | Aortic Arch Diameter                                     |
| LN                                                     | 18012-5   | Ascending Aortic Diameter                                |
| LN                                                     | 18014-1   | Aortic Isthmus Diameter                                  |
| LN                                                     | 18013-3   | Descending Aortic Diameter                               |
| MRUS                                                   | M12212-01 | Aortic Sinotubular junction Diameter                     |
| MRUS                                                   | M12212-02 | Aortic Sinus Diameter                                    |
| MRUS                                                   | M12212-03 | Ductus Artery Diameter                                   |
| MRUS                                                   | M12212-04 | Previous Ductal Diameter                                 |
| MRUS                                                   | M12212-05 | Left Coronary Artery Diameter                            |
| MRUS                                                   | M12212-06 | Right Coronary Artery Diameter                           |
| MRUS                                                   | C12212-02 | Aortic Sinotubular junction Diameter/Aorta Root Diameter |

### CID (12214) Echocardiography Pulmonary Veins

| CSD                                                    | CV        | Code Meaning                                               |
|--------------------------------------------------------|-----------|------------------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                                            |
| SRT                                                    | G-038B    | Pulmonary Vein A-Wave Duration                             |
| SRT                                                    | G-038D    | Pulmonary Vein D-Wave Velocity Time Integral/              |
| SRT                                                    | G-038C    | Pulmonary Vein S-Wave Velocity Time Integral               |
| MRUS                                                   | M12214-01 | Pulmonary Vein S wave flow Velocity                        |
| MRUS                                                   | M12214-02 | Pulmonary Vein D-wave flow Velocity                        |
| MRUS                                                   | M12214-03 | Pulmonary Vein A-wave flow Velocity                        |
| MRUS                                                   | M12214-04 | Pulmonary Vein Deceleration Time                           |
| MRUS                                                   | M12214-05 | Pulmonary Vein Ratio of S-Wave velocity to D-wave velocity |
| MRUS                                                   | M12214-06 | Pulmonary Vein Systolic fraction                           |

### CID (12215) Echocardiography Vena Cavae

| CSD                                                    | CV        | Code Meaning                               |
|--------------------------------------------------------|-----------|--------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                            |
| LN                                                     | 18006-7   | Inferior Vena Cava Diameter                |
| MRUS                                                   | M12215-01 | Superior Vena Cava Diameter                |
| MRUS                                                   | C12215-03 | Collapsible index of inferior vena cava    |
| MRUS                                                   | C12215-04 | Distensibility index of inferior vena cava |
| MRUS                                                   | C12215-05 | Collapsible index of superior vena cava    |
| MRUS                                                   | C12215-06 | Distensibility index of superior vena cava |

### CID (12216) Echocardiography Hepatic Veins

| CSD                                                    | CV      | Code Meaning                                           |
|--------------------------------------------------------|---------|--------------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |         |                                                        |
| LN                                                     | 29471-0 | Hepatic Vein Systolic Peak Velocity                    |
| LN                                                     | 29472-8 | Hepatic Vein Diastolic Peak Velocity                   |
| LN                                                     | 29473-6 | Hepatic Vein Systolic to Diastolic Ratio               |
| LN                                                     | 29474-4 | Hepatic Vein Atrial Contraction Reversal Peak Velocity |
| MRUS                                                   | 29473-0 | Hepatic Vein Systolic Pressure Gradient                |
| MRUS                                                   | 29473-1 | Hepatic Vein Diastolic Pressure Gradient               |

### CID (12217) Echocardiography Cardiac Shunt

| CSD                                                    | CV        | Code Meaning                                 |
|--------------------------------------------------------|-----------|----------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                              |
| INCLUDE CID 12239 Cardiac Output Properties            |           |                                              |
| LN                                                     | 29462-9   | Pulmonary-to-Systemic Shunt Flow Ratio       |
| MRUS                                                   | M12217-01 | Pulmonary-sub-Systemic Shunt Flow Difference |

## CID (12218) Echocardiography Congenital

| CSD                                                    | CV        | Code Meaning                                     |
|--------------------------------------------------------|-----------|--------------------------------------------------|
| INCLUDE CID 12220 Echocardiography Common Measurements |           |                                                  |
| INCLUDE CID 12222 Orifice Flow Properties              |           |                                                  |
| MRUS                                                   | M12218-01 | Patent Ductus Arteriosus Diameter                |
| MRUS                                                   | M12218-02 | Patent Foramen Ovale Diameter                    |
| MRUS                                                   | M12218-03 | Patent Ductus Arteriosus Diastolic Velocity      |
| MRUS                                                   | M12218-04 | Patent Ductus Arteriosus Systolic Velocity       |
| MRUS                                                   | M12218-05 | Coarctation of Pre-Ductus Velocity               |
| MRUS                                                   | M12218-06 | Coarctation of Post-Ductus Velocity              |
| MRUS                                                   | M12218-07 | Patent Ductus Arteriosus Diastolic Peak Gradient |
| MRUS                                                   | M12218-08 | Patent Ductus Arteriosus Systolic Peak Gradient  |
| MRUS                                                   | M12218-09 | Coarctation of Pre-Ductus Peak Gradient          |
| MRUS                                                   | M12218-10 | Coarctation of Post-Ductus Peak Gradient         |

## CID (12220) Echocardiography Common Measurements

| CSD | CV     | Code Meaning |
|-----|--------|--------------|
| LN  | 8867-4 | Heart rate   |

## CID (12221) Flow Direction

| CSD | CV      | Code Meaning     |
|-----|---------|------------------|
| SRT | R-42047 | Antegrade Flow   |
| SRT | R-42E61 | Regurgitant Flow |

## CID (12222) Orifice Flow Properties

| CSD  | CV        | Code Meaning                        |
|------|-----------|-------------------------------------|
| SRT  | G-038E    | Cardiovascular Orifice Area         |
| SRT  | G-038F    | Cardiovascular Orifice Diameter     |
| SRT  | G-0390    | Regurgitant Fraction                |
| LN   | 11726-7   | Peak Velocity                       |
| LN   | 20352-1   | Mean Velocity                       |
| LN   | 20247-3   | Peak Gradient                       |
| LN   | 20256-4   | Mean Gradient                       |
| LN   | 20354-7   | Velocity Time Integral              |
| LN   | 20168-1   | Acceleration Time                   |
| LN   | 11653-3   | End Diastolic Velocity              |
| LN   | 20280-4   | Pressure Half-Time                  |
| LN   | 20217-6   | Deceleration Time                   |
| LN   | 33878-0   | Volume Flow                         |
| LN   | 34141-2   | Peak Instantaneous Flow Rate        |
| LN   | 20216-8   | Deceleration Slope                  |
| MRUS | M12222-05 | Aliasing Velocity                   |
| MRUS | M12222-04 | Time                                |
| MRUS | M12222-02 | Acceleration Slope                  |
| MRUS | M12222-06 | Flow Radius                         |
| MRUS | M12222-01 | Angle                               |
| MRUS | M12222-08 | Pressure Gradient at end-Diastole   |
| MRUS | M12222-07 | Acceleration Time/Deceleration Time |

## CID (12224) Ultrasound Image Modes

| CSD  | CV         | Code Meaning            |
|------|------------|-------------------------|
| SRT  | G-03A2     | 2D mode                 |
| SRT  | G-0394     | M mode                  |
| SRT  | R-409E2    | Doppler Color Flow      |
| SRT  | G-0394     | M mode                  |
| SRT  | R-409E4    | Doppler Pulsed          |
| SRT  | R-409E3    | Doppler Continuous Wave |
| DCM  | 125230     | Power Doppler           |
| DCM  | 125231     | 3D mode                 |
| MRUS | IM12224-01 | Tissue Doppler Imaging  |

## CID (12226) Echocardiography Image View

| CSD | CV     | Code Meaning                                             |
|-----|--------|----------------------------------------------------------|
| SRT | G-A19B | Apical two chamber                                       |
| SRT | G-A19C | Apical four chamber                                      |
| SRT | G-0395 | Apical long axis                                         |
| SRT | G-0396 | Parasternal long axis                                    |
| SRT | G-0397 | Parasternal short axis                                   |
| SRT | G-0398 | Parasternal short axis at the aortic valve level         |
| SRT | G-0399 | Parasternal short axis at the level of the mitral chords |
| SRT | G-039A | Parasternal short axis at the Mitral Valve level         |
| SRT | G-039B | Parasternal short axis at the Papillary Muscle level     |
| SRT | G-039C | Right Ventricular Inflow Tract View                      |
| SRT | G-039D | Right Ventricular Outflow Tract View                     |
| SRT | G-039E | Subcostal long axis                                      |
| SRT | G-039F | Subcostal short axis                                     |
| SRT | G-03A0 | Suprasternal long axis                                   |
| SRT | G-03A1 | Suprasternal short axis                                  |

## CID (12227) Echocardiography Measurement Method

|                                                   |
|---------------------------------------------------|
| INCLUDE CID 12228 Echocardiography Volume Methods |
| INCLUDE CID 12229 Echocardiography Area Methods   |
| INCLUDE CID 12231 Volume Flow Methods             |
| INCLUDE CID 12232 Myocardium Mass Methods         |

## CID (12228) Volume Methods

| CSD  | CV         | Code Meaning                  |
|------|------------|-------------------------------|
| DCM  | 125204     | Area-Length Biplane           |
| DCM  | 125205     | Area-Length Single Plane      |
| DCM  | 125211     | Biplane Ellipse               |
| DCM  | 125226     | Single Plane Ellipse          |
| DCM  | 125206     | Cube Method                   |
| DCM  | 125207     | Method of Disks, Biplane      |
| DCM  | 125208     | Method of Disks, Single Plane |
| DCM  | 125209     | Teichholz                     |
| MRUS | VM12228-01 | Bullet                        |
| MRUS | VM12228-02 | Method of Disks, Simpson      |
| MRUS | VM12228-03 | Gibson                        |

## CID (12229) Area Methods

| CSD | CV     | Code Meaning                                  |
|-----|--------|-----------------------------------------------|
| DCM | 125210 | Area by Pressure Half-Time                    |
| DCM | 125212 | Continuity Equation                           |
| DCM | 125213 | Continuity Equation by Mean Velocity          |
| DCM | 125214 | Continuity Equation by Peak Velocity          |
| DCM | 125215 | Continuity Equation by Velocity Time Integral |
| DCM | 125216 | Proximal Isovelocity Surface Area             |
| DCM | 125220 | Planimetry                                    |

## CID (12230) Gradient Methods

| CSD | CV     | Code Meaning         |
|-----|--------|----------------------|
| DCM | 125217 | Full Bernoulli       |
| DCM | 125218 | Simplified Bernoulli |

## CID (12231) Volume Flow Methods

| CSD | CV     | Code Meaning                      |
|-----|--------|-----------------------------------|
| DCM | 125219 | Doppler Volume Flow               |
| DCM | 125216 | Proximal Isovelocity Surface Area |

## CID (12232) Myocardium Mass Methods

| CSD | CV     | Code Meaning                             |
|-----|--------|------------------------------------------|
| DCM | 125221 | Left Ventricle Mass by M-mode            |
| DCM | 125222 | Left Ventricle Mass by Truncated Ellipse |

## CID (12233) Cardiac Phase

| CSD | CV      | Code Meaning |
|-----|---------|--------------|
| SRT | F-32020 | Systole      |
| SRT | F-32010 | Diastole     |
| SRT | F-32011 | End Diastole |
| DCM | 109070  | End Systole  |

## CID (12234) Respiration Phase

| CSD | CV      | Code Meaning       |
|-----|---------|--------------------|
| SRT | F-20010 | During Inspiration |
| SRT | F-20020 | During Expiration  |

## CID (12239) Cardiac Output Properties

| CSD | CV      | Code Meaning      |
|-----|---------|-------------------|
| SRT | F-32120 | Stroke Volume     |
| SRT | F-32100 | Cardiac Output    |
| SRT | F-32110 | Cardiac Index     |
| SRT | F-00078 | Stroke Index      |
| SRT | F-04FD8 | RV Stroke Volume  |
| SRT | F-04FE5 | RV Stroke Index   |
| SRT | F-04FA5 | RV Cardiac Output |
| SRT | F-04F84 | RV Cardiac Index  |



## CID (12240) Left Ventricle Area

| CSD  | CV        | Code Meaning                                             |
|------|-----------|----------------------------------------------------------|
| SRT  | G-0374    | Left Ventricular Systolic Area                           |
| SRT  | G-0375    | Left Ventricular Diastolic Area                          |
| SRT  | G-0379    | Left Ventricle Epicardial Diastolic Area, psax pap view  |
| MRUS | M12240-01 | Left Ventricle Endocardial Diastolic Area, psax pap view |
| STR  | G-0376    | Left Ventricular Fractional Area Change                  |

## CID (90000) Pericardial disease

| CSD  | CV        | Code Meaning                      |
|------|-----------|-----------------------------------|
| MRUS | C90000-01 | Pericard Effusion at end-diastole |
| MRUS | C90000-02 | Pericard Effusion at end-systole  |

## Mapping between Modality measurements and DICOM Concepts

### Left Ventricle Measurements

| MODALITY Label          | DICOM Mapping                                                | Optional Modifiers                                                                      |
|-------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| LVOT HR                 | 8867-4, LN, Heart rate                                       |                                                                                         |
| LVIDd(2D)               | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-03A2, SRT, 2D mode;                                                       |
| LVIDd Cube(2D)          | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-03A2, SRT, 2D mode;<br>Method = 125206, DCM, Cube Method                  |
| LVIDd Teich(2D)         | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-03A2, SRT, 2D mode;<br>Method = 125209, DCM, Teichholz                    |
| LVIDd Gibson(2D)        | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-03A2, SRT, 2D mode;<br>Method = VM12228-03, MRUS, Gibson                  |
| LVIDd Gibson(M)         | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-0394, SRT, M Mode;<br>Method = VM12228-03, MRUS, Gibson                   |
| LVIDd Cube(M)           | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-0394, SRT, M Mode;<br>Method = 125206, DCM, Cube Method                   |
| LVIDd Teich(M)          | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-0394, SRT, M Mode;<br>Method = 125209, DCM, Teichholz                     |
| LVIDd LV Mass(Cube)(2D) | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-03A2, SRT, 2D mode;                                                       |
| LVIDd LV Mass(Cube)(M)  | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-0394, SRT, M Mode;<br>Method = 125221, DCM, Left Ventricle Mass by M-mode |
| LVIDd(BP Ellipse)       | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-03A2, SRT, 2D mode;<br>Method = 125211, DCM, Biplane Ellipse              |

|                       |                                                              |                                                                        |
|-----------------------|--------------------------------------------------------------|------------------------------------------------------------------------|
| LVIDd(M)              | 29436-3, LN, Left Ventricle Internal End Diastolic Dimension | ImageMode = G-0394, SRT, M Mode;                                       |
| LVIDs(2D)             | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-03A2, SRT, 2D mode;                                      |
| LVIDs Cube(2D)        | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-03A2, SRT, 2D mode; Method =125206, DCM, Cube Method     |
| LVIDs Teich(2D)       | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-03A2, SRT, 2D mode; Method =125209, DCM, Teichholz       |
| LVIDs Gibson(2D)      | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-03A2, SRT, 2D mode; Method =VM12228-03, MRUS, Gibson     |
| LVIDs Cube(M)         | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-0394, SRT, M Mode; Method =125206, DCM, Cube Method      |
| LVIDs Teich(M)        | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-0394, SRT, M Mode; Method =125209, DCM, Teichholz        |
| LVIDs Gibson(M)       | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-0394, SRT, M Mode; Method =VM12228-03, MRUS, Gibson      |
| LVIDs(BP Ellipse)     | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-03A2, SRT, 2D mode; Method =125211, DCM, Biplane Ellipse |
| LVIDs(M)              | 29438-9, LN, Left Ventricle Internal Systolic Dimension      | ImageMode = G-0394, SRT, M Mode;                                       |
| FS(Cube-M)            | 18051-3, LN, Left Ventricular Fractional Shortening          | ImageMode = G-0394, SRT, M Mode; Method =125206, DCM, Cube Method      |
| FS(Teich-M)           | 18051-3, LN, Left Ventricular Fractional Shortening          | ImageMode = G-0394, SRT, M Mode; Method =125209, DCM, Teichholz        |
| FS(Gibson-M)          | 18051-3, LN, Left Ventricular Fractional Shortening          | ImageMode = G-0394, SRT, M Mode; Method =VM12228-03, MRUS, Gibson      |
| FS(Cube-2D)           | 18051-3, LN, Left Ventricular Fractional Shortening          | ImageMode = G-03A2, SRT, 2D mode; Method =125206, DCM, Cube Method     |
| FS(Teich-2D)          | 18051-3, LN, Left Ventricular Fractional Shortening          | ImageMode = G-03A2, SRT, 2D mode; Method =125209, DCM, Teichholz       |
| FS(Gibson-2D)         | 18051-3, LN, Left Ventricular Fractional Shortening          | ImageMode = G-03A2, SRT, 2D mode; Method =VM12228-03, MRUS, Gibson     |
| IVSd(2D)              | 18154-5, LN, Interventricular Septum Diastolic Thickness     | ImageMode = G-03A2, SRT, 2D mode;                                      |
| IVSd(LV Mass Cube-2D) | 18154-5, LN, Interventricular Septum Diastolic Thickness     | ImageMode = G-03A2, SRT, 2D mode;                                      |

|                 |      |                                                                        |                                                                                         |
|-----------------|------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| IVSd(LV Cube-M) | Mass | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-0394, SRT, M Mode;<br>Method = 125221, DCM, Left Ventricle Mass by M-mode |
| IVSd(M)         |      | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-0394, SRT, M Mode;<br>Method =                                            |
| IVSd Teich(2D)  |      | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-03A2, SRT, 2D mode;<br>Method = 125209, DCM, Teichholz                    |
| IVSd Teich(M)   |      | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-0394, SRT, M Mode;<br>Method = 125209, DCM, Teichholz                     |
| IVSd Cube(2D)   |      | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-03A2, SRT, 2D mode;<br>Method = 125206, DCM, Cube Method                  |
| IVSd Cube(M)    |      | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-0394, SRT, M Mode;<br>Method = 125206, DCM, Cube Method                   |
| IVSd Gibson(2D) |      | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-03A2, SRT, 2D mode;<br>Method = VM12228-03, MRUS, Gibson                  |
| IVSd Gibson(M)  |      | 18154-5, LN, Interventricular Septum Diastolic Thickness               | ImageMode = G-0394, SRT, M Mode;<br>Method = VM12228-03, MRUS, Gibson                   |
| IVSd/LVPWd(2D)  |      | 18155-2, LN, Interventricular Septum to Posterior Wall Thickness Ratio | CardiacCyclePoint = F-32011, SRT, End Diastole;<br>ImageMode = G-03A2, SRT, 2D mode;    |
| IVSs/LVPWs(2D)  |      | 18155-2, LN, Interventricular Septum to Posterior Wall Thickness Ratio | CardiacCyclePoint = 109070, SRT, End Systole;<br>ImageMode = G-03A2, SRT, 2D mode;      |
| IVSd/LVPWd(M)   |      | 18155-2, LN, Interventricular Septum to Posterior Wall Thickness Ratio | CardiacCyclePoint = F-32011, SRT, End Diastole;<br>ImageMode = G-0394, SRT, M Mode;     |
| IVSs/LVPWs(M)   |      | 18155-2, LN, Interventricular Septum to Posterior Wall Thickness Ratio | CardiacCyclePoint = 109070, SRT, End Systole;<br>ImageMode = G-0394, SRT, M Mode;       |
| IVS%(2D)        |      | 18054-7, LN, Interventricular Septum % Thickening                      | ImageMode = G-03A2, SRT, 2D mode;                                                       |
| IVS%(M)         |      | 18054-7, LN, Interventricular Septum % Thickening                      | ImageMode = G-0394, SRT, M Mode;                                                        |
| IVSs(2D)        |      | 18158-6, LN, Interventricular Septum Systolic Thickness                | ImageMode = G-03A2, SRT, 2D mode;                                                       |
| IVSs(M)         |      | 18158-6, LN, Interventricular Septum Systolic Thickness                | ImageMode = G-0394, SRT, M Mode;                                                        |

|                            |                                                         |                                                                                                                                    |
|----------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| IVSs Teich(2D)             | 18158-6, LN, Interventricular Septum Systolic Thickness | ImageMode = G-03A2, SRT, 2D mode; Method =125209, DCM, Teichholz                                                                   |
| IVSs Teich(M)              | 18158-6, LN, Interventricular Septum Systolic Thickness | ImageMode = G-0394, SRT, M Mode; Method =125209, DCM, Teichholz                                                                    |
| IVSs Cube(2D)              | 18158-6, LN, Interventricular Septum Systolic Thickness | ImageMode = G-03A2, SRT, 2D mode; Method =125206, DCM, Cube Method                                                                 |
| IVSs Cube(M)               | 18158-6, LN, Interventricular Septum Systolic Thickness | ImageMode = G-0394, SRT, M Mode; Method =125206, DCM, Cube Method                                                                  |
| IVSs Gibson(2D)            | 18158-6, LN, Interventricular Septum Systolic Thickness | ImageMode = G-03A2, SRT, 2D mode; Method =VM12228-03, MRUS, Gibson                                                                 |
| IVSs Gibson(M)             | 18158-6, LN, Interventricular Septum Systolic Thickness | ImageMode = G-0394, SRT, M Mode; Method =VM12228-03, MRUS, Gibson                                                                  |
| LVPW%(2D)                  | 18053-9, LN, Left Ventricle Posterior Wall % Thickening | ImageMode = G-03A2, SRT, 2D mode;                                                                                                  |
| LVPW%(M)                   | 18053-9, LN, Left Ventricle Posterior Wall % Thickening | ImageMode = G-0394, SRT, M Mode;                                                                                                   |
| LVLd apical                | 18077-8, LN, Left Ventricle diastolic major axis        | ImageMode = G-03A2, SRT, 2D mode;                                                                                                  |
| LVLd apical(Mod. Simpsons) | 18077-8, LN, Left Ventricle diastolic major axis        | ImageMode = G-03A2, SRT, 2D mode; Method =VM12228-02, MRUS, Method of Disks, Simpson                                               |
| LVLd(A2C)                  | 18077-8, LN, Left Ventricle diastolic major axis        | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19B, SRT, Apical two chamber; Method =125208, DCM, Method of Disks, Single Plane  |
| LVLd(A4C)                  | 18077-8, LN, Left Ventricle diastolic major axis        | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19C, SRT, Apical four chamber; Method =125208, DCM, Method of Disks, Single Plane |
| LVLd apical(SP Ellipse)    | 18077-8, LN, Left Ventricle diastolic major axis        | ImageMode = G-03A2, SRT, 2D mode; Method =125226, DCM, Single Plane Ellipse                                                        |
| LVLd apical(Bullet)        | 18077-8, LN, Left Ventricle diastolic major axis        | ImageMode = G-03A2, SRT, 2D mode; Method =VM12228-01, MRUS, Bullet                                                                 |
| LVLd apical(LV Mass A-L)   | 18077-8, LN, Left Ventricle diastolic major axis        | ImageMode = G-03A2, SRT, 2D mode; Method =125205, DCM, Area-Length Single Plane                                                    |

|                            |                                                               |                                                                                                                                |
|----------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| LVLd2i                     | 18077-8, LN, Left Ventricle diastolic major axis              | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19B, SRT, Apical two chamber; Method = 125207, DCM, Method of Disks, Biplane  |
| LVLd4i                     | 18077-8, LN, Left Ventricle diastolic major axis              | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19C, SRT, Apical four chamber; Method = 125207, DCM, Method of Disks, Biplane |
| LVLs apical                | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode;                                                                                              |
| LVLs apical (Mod. Simpson) | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode;                                                                                              |
| LVLs (A2C)                 | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19B, SRT, Apical two chamber; Method = 125226, DCM, Single Plane Ellipse      |
| LVLs (A4C)                 | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19C, SRT, Apical four chamber; Method = 125226, DCM, Single Plane Ellipse     |
| LVLs apical (SP Ellipse)   | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode;                                                                                              |
| LVLs apical (Bullet)       | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode;                                                                                              |
| LVLs2i                     | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19B, SRT, Apical two chamber; Method = 125207, DCM, Method of Disks, Biplane  |
| LVLs4i                     | 18076-0, LN, Left Ventricle systolic major axis               | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19C, SRT, Apical four chamber; Method = 125207, DCM, Method of Disks, Biplane |
| LVPWs (2D)                 | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness | ImageMode = G-03A2, SRT, 2D mode;                                                                                              |
| LVPWs (M)                  | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness | ImageMode = G-0394, SRT, M Mode;                                                                                               |
| LVPWs Cube (2D)            | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness | ImageMode = G-03A2, SRT, 2D mode; Method = 125206, DCM, Cube Method                                                            |
| LVPWs Cube (M)             | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness | ImageMode = G-0394, SRT, M Mode; Method = 125206, DCM, Cube Method                                                             |



|                   |                                                                    |                                                                                     |
|-------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| LVPWs Teich(2D)   | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness      | ImageMode = G-03A2, SRT, 2D mode; Method =125209, DCM, Teichholz                    |
| LVPWs Teich(M)    | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness      | ImageMode = G-0394, SRT, M Mode; Method =125209, DCM, Teichholz                     |
| LVPWs Gibson(2D)  | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness      | ImageMode = G-03A2, SRT, 2D mode; Method =VM12228-03, MRUS, Gibson                  |
| LVPWs Gibson(M)   | 18156-0, LN, Left Ventricle Posterior Wall Systolic Thickness      | ImageMode = G-0394, SRT, M Mode; Method =VM12228-03, MRUS, Gibson                   |
| LVPWd(2D)         | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-03A2, SRT, 2D mode;                                                   |
| LVPWd(LV Mass-2D) | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-03A2, SRT, 2D mode;                                                   |
| LVPWd(LV Mass-M)  | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-0394, SRT, M Mode; Method =125221, DCM, Left Ventricle Mass by M-mode |
| LVPWd(M)          | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-0394, SRT, M Mode;                                                    |
| LVPWd Cube(2D)    | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-03A2, SRT, 2D mode; Method =125206, DCM, Cube Method                  |
| LVPWd Cube(M)     | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-0394, SRT, M Mode; Method =125206, DCM, Cube Method                   |
| LVPWd Teich(2D)   | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-03A2, SRT, 2D mode; Method =125209, DCM, Teichholz                    |
| LVPWd Teich(M)    | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-0394, SRT, M Mode; Method =125209, DCM, Teichholz                     |
| LVPWd Gibson(2D)  | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-03A2, SRT, 2D mode; Method =VM12228-03, MRUS, Gibson                  |
| LVPWd Gibson(M)   | 18152-9, LN, Left Ventricle Posterior Wall Diastolic Thickness     | ImageMode = G-0394, SRT, M Mode; Method =VM12228-03, MRUS, Gibson                   |
| LV Major          | M12201-01, MRUS, Left ventricular Major                            | ImageMode = G-03A2, SRT, 2D mode;                                                   |
| LV Minor          | M12201-02, MRUS, Left ventricular Minor                            | ImageMode = G-03A2, SRT, 2D mode;                                                   |
| MVCF(Cube-M)      | C12201-01, MRUS, Mean Velocity of Circumferential Fiber Shortening | ImageMode = G-0394, SRT, M Mode; Method =125206, DCM, Cube Method                   |
| MVCF(Teich-M)     | C12201-01, MRUS, Mean Velocity of Circumferential Fiber Shortening | ImageMode = G-0394, SRT, M Mode; Method =125209, DCM, Teichholz                     |

|                 |                                                                  |                                                                                                                            |
|-----------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| MVCF(Gibson-M)  | C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening | ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson                                                              |
| MVCF(Cube-2D)   | C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening | ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method                                                             |
| MVCF(Teich-2D)  | C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening | ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz                                                               |
| MVCF(Gibson-2D) | C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening | ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson                                                             |
| a               | M12201-03,MRUS,A Distance                                        | ImageMode = G-03A2,SRT,2D mode;                                                                                            |
| d               | M12201-04,MRUS,B Distance                                        | ImageMode = G-03A2,SRT,2D mode;                                                                                            |
| LVIDd Index(M)  | M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio   | CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-0394,SRT,M Mode;                                                |
| LVIDs Index(M)  | M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio   | CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-0394,SRT,M Mode;                                                  |
| LVIDd Index(2D) | M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio   | CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode;                                               |
| LVIDs Index(2D) | M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio   | CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode;                                                 |
| LV Area(s)      | G-0374,SRT,Left Ventricular Systolic Area                        | ImageMode = G-03A2,SRT,2D mode;                                                                                            |
| LVA's apical    | G-0374,SRT,Left Ventricular Systolic Area                        | ImageMode = G-03A2,SRT,2D mode; ImageView = G-0395,SRT,Apical long axis;                                                   |
| LVA's sax MV    | G-0374,SRT,Left Ventricular Systolic Area                        | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level;                    |
| LVA's sax PM    | G-0374,SRT,Left Ventricular Systolic Area                        | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level;                |
| LVA's(A2C)      | G-0374,SRT,Left Ventricular Systolic Area                        | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane |

|                        |                                                    |                                                                                                                                            |
|------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| LVA(A4C)               | G-0374,SRT,Left Ventricular Systolic Area          | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane                |
| LVA sax MV(BP Ellipse) | G-0374,SRT,Left Ventricular Systolic Area          | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =125211,DCM,Biplane Ellipse |
| LVA sax MV(Bullet)     | G-0374,SRT,Left Ventricular Systolic Area          | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =VM12228-01,MRUS,Bullet     |
| LVA apical(BP Ellipse) | G-0374,SRT,Left Ventricular Systolic Area          | ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse                                                                          |
| LV Area(d)             | G-0375,SRT,Left Ventricular Diastolic Area         | ImageMode =G-03A2,SRT,2D mode;                                                                                                             |
| FAC                    | G-0376,SRT,Left Ventricular Fractional Area Change | ImageMode=G-03A2,SRT,2D mode ;                                                                                                             |
| LVAd apical            | G-0375,SRT,Left Ventricular Diastolic Area         | ImageMode =G-03A2,SRT,2D mode; ImageView = G-0395,SRT,Apical long axis;                                                                    |
| LVAd sax MV            | G-0375,SRT,Left Ventricular Diastolic Area         | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level;                                    |
| LVAd sax PM            | G-0375,SRT,Left Ventricular Diastolic Area         | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level;                                |
| LVAd(A2C)              | G-0375,SRT,Left Ventricular Diastolic Area         | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane                 |
| LVAd(A4C)              | G-0375,SRT,Left Ventricular Diastolic Area         | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane                |



|                            |                                                                         |                                                                                                                                                                         |
|----------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LVAd sax MV(BP Ellipse)    | G-0375,SRT,Left Ventricular Diastolic Area                              | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =125211,DCM,Biplane Ellipse                              |
| LVAd sax MV(Bullet)        | G-0375,SRT,Left Ventricular Diastolic Area                              | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =VM12228-01,MRUS,Bullet                                  |
| LVAd apical(BP Ellipse)    | G-0375,SRT,Left Ventricular Diastolic Area                              | ImageMode =G-03A2,SRT,2D mode; ImageView = G-0395,SRT,Apical long axis; Method =125211,DCM,Biplane Ellipse                                                              |
| LVAd sax Epi(LV Mass T-E)  | G-0379,SRT,Left Ventricle Epicardial Diastolic Area, psax pap view      | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125222,DCM,Left Ventricle Mass by Truncated Ellipse |
| LVAd sax Epi(LV Mass A-L)  | G-0379,SRT,Left Ventricle Epicardial Diastolic Area, psax pap view      | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125205,DCM,Area-Length Single Plane                 |
| LVAd sax Endo(LV Mass T-E) | M12240-01,MRUS,Left Ventricle Endocardiac Diastolic Area, psax pap view | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125222,DCM,Left Ventricle Mass by Truncated Ellipse |
| LVAd sax Endo(LV Mass A-L) | M12240-01,MRUS,Left Ventricle Endocardiac Diastolic Area, psax pap view | ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125205,DCM,Area-Length Single Plane                 |
| EDV(SP Ellipse)            | 18026-5,LN,Left Ventricular End Diastolic Volume                        | ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse                                                                                                  |
| EDV(BP Ellipse)            | 18026-5,LN,Left Ventricular End Diastolic Volume                        | ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse                                                                                                       |

|                       |                                                  |                                                                                                                             |
|-----------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| EDV(Bullet)           | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet                                                               |
| EDV(Mod.Simpson)      | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson                                              |
| EDV(BP)               | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks,Biplane                                                   |
| EDV(A2C)              | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane  |
| EDV(A4C)              | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane |
| EDV(Cube-M)           | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-0394,SRT,M Mode; Method =125206,DCM,Cube Method                                                                |
| EDV(Teich-M)          | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz                                                                  |
| EDV(Gibson-M)         | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson                                                                |
| EDV(Cube-2D)          | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method                                                               |
| EDV(Teich-2D)         | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz                                                                 |
| EDV(Gibson-2D)        | 18026-5,LN,Left Ventricular End Diastolic Volume | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson                                                               |
| EDV Index(SP Ellipse) | C12202-02,MRCS,Left Ventricular EDV index        | ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse                                                      |
| EDV Index(BP Ellipse) | C12202-02,MRCS,Left Ventricular EDV index        | ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse                                                           |
| EDV Index (Bullet)    | C12202-02,MRCS,Left Ventricular EDV index        | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet                                                               |

|                         |                           |             |              |                                                                                                                             |
|-------------------------|---------------------------|-------------|--------------|-----------------------------------------------------------------------------------------------------------------------------|
| EDV Index (Mod.Simpson) | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson                                              |
| EDV Index (BP)          | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks,Biplane                                                   |
| EDV Index (A2C)         | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane  |
| EDV Index (A4C)         | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane |
| EDV Index (Cube-M)      | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-0394,SRT,M Mode; Method =125206,DCM,Cube Method                                                                |
| EDV Index (Teich-M)     | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz                                                                  |
| EDV Index (Gibson-M)    | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson                                                                |
| EDV Index (Cube-2D)     | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method                                                               |
| EDV Index (Teich-2D)    | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz                                                                 |
| EDV Index (Gibson-2D)   | C12202-02,MRCS,Left index | Ventricular | EDV          | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson                                                               |
| ESV(SP Ellipse)         | 18148-7,LN,Left Volume    | Ventricular | End Systolic | ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse                                                      |
| ESV(BP Ellipse)         | 18148-7,LN,Left Volume    | Ventricular | End Systolic | ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse                                                           |
| ESV(Bullet)             | 18148-7,LN,Left Volume    | Ventricular | End Systolic | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet                                                               |
| ESV(Mod.Simpson)        | 18148-7,LN,Left Volume    | Ventricular | End Systolic | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson                                              |

|                       |                                                   |                                                                                                                                         |
|-----------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| ESV(BP)               | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125207, DCM, Method of Disks, Biplane                                                       |
| ESV(A2C)              | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-03A2, SRT, 2D mode;<br>ImageView = G-A19B, SRT, Apical two chamber;<br>Method =125208, DCM, Method of Disks, Single Plane  |
| ESV(A4C)              | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-03A2, SRT, 2D mode;<br>ImageView = G-A19C, SRT, Apical four chamber;<br>Method =125208, DCM, Method of Disks, Single Plane |
| ESV(Cube-M)           | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-0394, SRT, M Mode;<br>Method =125206, DCM, Cube Method                                                                     |
| ESV(Teich-M)          | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-0394, SRT, M Mode;<br>Method =125209, DCM, Teichholz                                                                       |
| ESV(Gibson-M)         | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-0394, SRT, M Mode;<br>Method =VM12228-03, MRUS, Gibson                                                                     |
| ESV(Cube-2D)          | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125206, DCM, Cube Method                                                                    |
| ESV(Teich-2D)         | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125209, DCM, Teichholz                                                                      |
| ESV(Gibson-2D)        | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-03A2, SRT, 2D mode;<br>Method =VM12228-03, MRUS, Gibson                                                                    |
| ESV(Simp SP-A4C)      | 18148-7, LN, Left Ventricular End Systolic Volume | ImageMode =G-03A2, SRT, 2D mode;<br>ImageView = G-A19C, SRT, Apical four chamber;<br>Method =125208, DCM, Method of Disks, Single Plane |
| ESV Index(SP Ellipse) | C12202-01, MRCS, Left Ventricular ESV index       | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125226, DCM, Single Plane Ellipse                                                           |
| ESV Index(BP Ellipse) | C12202-01, MRCS, Left Ventricular ESV index       | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125211, DCM, Biplane Ellipse                                                                |
| ESV Index (Bullet)    | C12202-01, MRCS, Left Ventricular ESV index       | ImageMode =G-03A2, SRT, 2D mode;<br>Method =VM12228-01, MRUS, Bullet                                                                    |

|                         |                           |                               |     |                                                                                                                             |
|-------------------------|---------------------------|-------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------|
| ESV Index (Mod.Simpson) | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson                                              |
| ESV Index (BP)          | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks,Biplane                                                   |
| ESV Index (A2C)         | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane  |
| ESV Index (A4C)         | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane |
| ESV Index (Cube-M)      | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-0394,SRT,M Mode; Method =125206,DCM,Cube Method                                                                |
| ESV Index (Teich-M)     | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz                                                                  |
| ESV Index (Gibson-M)    | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson                                                                |
| ESV Index (Cube-2D)     | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method                                                               |
| ESV Index (Teich-2D)    | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz                                                                 |
| ESV Index (Gibson-2D)   | C12202-01,MRCS,Left index | Ventricular                   | ESV | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson                                                               |
| EF(SP Ellipse)          | 18043-0,LN,Left           | Ventricular Ejection Fraction |     | ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse                                                      |
| EF(BP Ellipse)          | 18043-0,LN,Left           | Ventricular Ejection Fraction |     | ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse                                                           |
| EF(Bullet)              | 18043-0,LN,Left           | Ventricular Ejection Fraction |     | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet                                                               |
| EF(Mod.Simpson )        | 18043-0,LN,Left           | Ventricular Ejection Fraction |     | ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson                                              |



|                     |                                                 |                                                                                                                                         |
|---------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| EF(A2C)             | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125208, DCM, Method of Disks, Single Plane                                                  |
| EF(BP)              | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125207, DCM, Method of Disks, Biplane                                                       |
| EF(Cube-M)          | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-0394, SRT, M Mode;<br>Method =125206, DCM, Cube Method                                                                     |
| EF(Teich-M)         | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-0394, SRT, M Mode;<br>Method =125209, DCM, Teichholz                                                                       |
| EF(Gibson-M)        | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-0394, SRT, M Mode;<br>Method =VM12228-03, MRUS, Gibson                                                                     |
| EF(Cube-2D)         | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125206, DCM, Cube Method                                                                    |
| EF(Teich-2D)        | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-03A2, SRT, 2D mode;<br>Method =125209, DCM, Teichholz                                                                      |
| EF(Gibson-2D)       | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-03A2, SRT, 2D mode;<br>Method =VM12228-03, MRUS, Gibson                                                                    |
| EF(A4C)             | 18043-0, LN, Left Ventricular Ejection Fraction | ImageMode =G-03A2, SRT, 2D mode;<br>ImageView = G-A19C, SRT, Apical four chamber;<br>Method =125208, DCM, Method of Disks, Single Plane |
| LVOT Area           | G-038E, SRT, Cardiovascular Orifice Area        | ImageMode =G-03A2, SRT, 2D mode;                                                                                                        |
| LVOT Diam(2D)       | G-038F, SRT, Cardiovascular Diameter            | ImageMode =G-03A2, SRT, 2D mode;                                                                                                        |
| LVOT Diam(M)        | G-038F, SRT, Cardiovascular Diameter            | ImageMode =G-0394, SRT, M Mode;                                                                                                         |
| LVOT Diam(MVA VTI)  | G-038F, SRT, Cardiovascular Diameter            | ImageMode =G-03A2, SRT, 2D mode;                                                                                                        |
| LVOT Diam(AVA VTI)  | G-038F, SRT, Cardiovascular Diameter            | ImageMode =G-03A2, SRT, 2D mode;                                                                                                        |
| LVOT Diam(AVA Vmax) | G-038F, SRT, Cardiovascular Diameter            | ImageMode =G-03A2, SRT, 2D mode;                                                                                                        |
| LVOT Vmax           | 11726-7, LN, Peak Velocity                      |                                                                                                                                         |
| LVOT Vmax(LVOT VTI) | 11726-7, LN, Peak Velocity                      |                                                                                                                                         |
| LVOT Vmean          | 20352-1, LN, Mean Velocity                      |                                                                                                                                         |
| LVOT PGmax          | 20247-3, LN, Peak Gradient                      |                                                                                                                                         |

|                            |                                                                  |                                                                                                            |
|----------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| LVOT<br>PGmax(LVOT<br>VTI) | 20247-3, LN, Peak Gradient                                       |                                                                                                            |
| LVOT PGmean                | 20256-4, LN, Mean Gradient                                       |                                                                                                            |
| LVOT VTI                   | 20354-7, LN, Velocity Time Integral                              |                                                                                                            |
| LVOT VTI(MVA<br>VTI)       | 20354-7, LN, Velocity Time Integral                              |                                                                                                            |
| LVOT VTI(AVA<br>VTI)       | 20354-7, LN, Velocity Time Integral                              |                                                                                                            |
| LVOT AccT                  | 20168-1, LN, Acceleration Time                                   |                                                                                                            |
| LVOT $\theta$              | M12222-01, MRUS, Angle                                           |                                                                                                            |
| LVOT Acc Slope             | M12222-02, MRUS, Acceleration Slope                              |                                                                                                            |
| LV Mass(Cube-<br>M)        | 18087-7, LN, Left Ventricle Mass                                 | ImageMode =G-0394, SRT, M<br>Mode;<br>Method<br>=125221, DCM, Left Ventricle<br>Mass by M-mode             |
| LV Mass(T-E)               | 18087-7, LN, Left Ventricle Mass                                 | ImageMode =G-03A2, SRT, 2D<br>mode;<br>Method<br>=125222, DCM, Left Ventricle<br>Mass by Truncated Ellipse |
| LV Mass(A-L)               | 18087-7, LN, Left Ventricle Mass                                 | ImageMode =G-03A2, SRT, 2D<br>mode;<br>Method<br>=125205, DCM, Area-Length<br>Single Plane                 |
| LV Mass(Cube-<br>2D)       | 18087-7, LN, Left Ventricle Mass                                 | ImageMode =G-03A2, SRT, 2D<br>mode;                                                                        |
| IVRT                       | 18071-1, LN, Left Ventricular Isovolumic<br>Relaxation Time      |                                                                                                            |
| IVCT                       | G-037E, SRT, Left Ventricular Isovolumic<br>Contraction Time     |                                                                                                            |
| LVIMP(M)                   | G-037F, SRT, Left Ventricular Index of<br>Myocardial Performance | ImageMode =G-0394, SRT, M<br>Mode;                                                                         |
| LVIMP(Doppler)             | G-037F, SRT, Left Ventricular Index of<br>Myocardial Performance |                                                                                                            |
| LVPEP(M)                   | M12203-01, MRUS, Left Ventricle Pre-<br>Ejection Period          | ImageMode =G-0394, SRT, M<br>Mode;                                                                         |
| LVPEP(Doppler)             | M12203-01, MRUS, Left Ventricle Pre-<br>Ejection Period          |                                                                                                            |
| LVET(M)                    | M12203-02, MRUS, Left Ventricle Ejection<br>Time                 | ImageMode =G-0394, SRT, M<br>Mode;                                                                         |
| LVET(Doppler)              | M12203-02, MRUS, Left Ventricle Ejection<br>Time                 |                                                                                                            |
| LVET LVIMP(M)              | M12203-02, MRUS, Left Ventricle Ejection<br>Time                 | ImageMode =G-0394, SRT, M<br>Mode;                                                                         |
| LVET<br>LVIMP(Doppler)     | M12203-02, MRUS, Left Ventricle Ejection<br>Time                 |                                                                                                            |

|                    |                                                               |             |      |                                                                                                                                        |
|--------------------|---------------------------------------------------------------|-------------|------|----------------------------------------------------------------------------------------------------------------------------------------|
| LV Mass-I(Cube-M)  | C12203-01,MRUS,Left<br>Weight Index                           | ventricular | Mass | ImageMode =G-0394,SRT,M<br>Mode;<br>Method<br>=125221,DCM,Left<br>Ventricle<br>Mass by M-mode                                          |
| LV Mass-I(T-E)     | C12203-01,MRUS,Left<br>Weight Index                           | ventricular | Mass | ImageMode =G-03A2,SRT,2D<br>mode;<br>Method<br>=125222,DCM,Left<br>Ventricle<br>Mass by Truncated Ellipse                              |
| LV Mass-I(A-L)     | C12203-01,MRUS,Left<br>Weight Index                           | ventricular | Mass | ImageMode =G-03A2,SRT,2D<br>mode;<br>Method<br>=125205,DCM,Area-Length<br>Single Plane                                                 |
| LV Mass-I(Cube-2D) | C12203-01,MRUS,Left<br>Weight Index                           | ventricular | Mass | ImageMode =G-03A2,SRT,2D<br>mode;                                                                                                      |
| LVPEP/ET(M)        | C12203-02,MRUS,Left<br>Ejection Period to Ejection Time Ratio | Ventricle   | Pre- | ImageMode =G-0394,SRT,M<br>Mode;                                                                                                       |
| LVPEP/ET(Doppler)  | C12203-02,MRUS,Left<br>Ejection Period to Ejection Time Ratio | Ventricle   | Pre- |                                                                                                                                        |
| LVOT SV            | F-32120,SRT,Stroke Volume                                     |             |      |                                                                                                                                        |
| SV(SP Ellipse)     | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode =G-03A2,SRT,2D<br>mode;<br>Method<br>=125226,DCM,Single<br>Plane<br>Ellipse                                                  |
| SV(BP Ellipse)     | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode =G-03A2,SRT,2D<br>mode;<br>Method<br>=125211,DCM,Biplane<br>Ellipse                                                          |
| SV(Bullet)         | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode =G-03A2,SRT,2D<br>mode;<br>Method =VM12228-<br>01,MRUS,Bullet                                                                |
| SV(Mod.Simpson )   | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode =G-03A2,SRT,2D<br>mode;<br>Method =VM12228-<br>02,MRUS,Method<br>of<br>Disks,Simpson                                         |
| SV(A2C)            | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode = G-03A2,SRT,2D<br>mode;<br>Method<br>=125208,DCM,Method of Disks,<br>Single Plane                                           |
| SV(BP)             | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode = G-03A2,SRT,2D<br>mode;<br>ImageView = G-<br>A19C,SRT,Apical two chamber;<br>Method =125207,DCM,Method of<br>Disks, Biplane |
| SV(Cube-M)         | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode = G-0394,SRT,M<br>Mode;<br>Method<br>=125206,DCM,Cube Method                                                                 |
| SV(Teich-M)        | F-32120,SRT,Stroke Volume                                     |             |      | ImageMode = G-0394,SRT,M<br>Mode;<br>Method<br>=125209,DCM,Teichholz                                                                   |



|                  |                            |                                                                                                                                    |
|------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| SV(Gibson-M)     | F-32120,SRT,Stroke Volume  | ImageMode = G-0394,SRT,M Mode;<br>Method =VM12228-03,MRUS,Gibson                                                                   |
| SV(Cube-2D)      | F-32120,SRT,Stroke Volume  | ImageMode = G-03A2,SRT,2D mode;<br>Method =125206,DCM,Cube Method                                                                  |
| SV(Teich-2D)     | F-32120,SRT,Stroke Volume  | ImageMode = G-03A2,SRT,2D mode;<br>Method =125209,DCM,Teichholz                                                                    |
| SV(Gibson-2D)    | F-32120,SRT,Stroke Volume  | ImageMode = G-03A2,SRT,2D mode;<br>Method =VM12228-03,MRUS,Gibson                                                                  |
| SV(A4C)          | F-32120,SRT,Stroke Volume  | ImageMode = G-03A2,SRT,2D mode;<br>ImageView = G-A19C,SRT,Apical four chamber;<br>Method =125208,DCM,Method of Disks, Single Plane |
| LVOT CO          | F-32100,SRT,Cardiac Output |                                                                                                                                    |
| CO(SP Ellipse)   | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D mode;<br>Method =125226,DCM,Single Plane Ellipse                                                         |
| CO(BP Ellipse)   | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D mode;<br>Method =125211,DCM,Biplane Ellipse                                                              |
| CO(Bullet)       | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D mode;<br>Method =VM12228-01,MRUS,Bullet                                                                  |
| CO(Mod.Simpson ) | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D mode;<br>Method =VM12228-02,MRUS,Method of Disks,Simpson                                                 |
| CO(A2C)          | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D mode;<br>ImageView = G-A19C,SRT,Apical two chamber;<br>Method =125208,DCM,Method of Disks, Single Plane  |
| CO(BP)           | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D mode;<br>Method =125207,DCM,Method of Disks, Biplane                                                     |
| CO(Cube-M)       | F-32100,SRT,Cardiac Output | ImageMode = G-0394,SRT,M Mode;<br>Method =125206,DCM,Cube Method                                                                   |
| CO(Teich-M)      | F-32100,SRT,Cardiac Output | ImageMode = G-0394,SRT,M Mode;<br>Method =125209,DCM,Teichholz                                                                     |
| CO(Gibson-M)     | F-32100,SRT,Cardiac Output | ImageMode = G-0394,SRT,M Mode;<br>Method =VM12228-03,MRUS,Gibson                                                                   |

|                 |                            |                                                                                                                                           |
|-----------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| CO(Cube-2D)     | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D<br>mode; Method<br>=125206,DCM,Cube Method                                                                      |
| CO(Teich-2D)    | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D<br>mode; Method<br>=125209,DCM,Teichholz                                                                        |
| CO(Gibson-2D)   | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D<br>mode; Method =VM12228-<br>03,MRUS,Gibson                                                                     |
| CO(A4C)         | F-32100,SRT,Cardiac Output | ImageMode = G-03A2,SRT,2D<br>mode; ImageView = G-<br>A19C,SRT,Apical four chamber;<br>Method =125208,DCM,Method of<br>Disks, Single Plane |
| LVOT CI         | F-32110,SRT,Cardiac Index  |                                                                                                                                           |
| CI(SP Ellipse)  | F-32110,SRT,Cardiac Index  | ImageMode = G-03A2,SRT,2D<br>mode; Method<br>=125226,DCM,Single Plane<br>Ellipse                                                          |
| CI(BP Ellipse)  | F-32110,SRT,Cardiac Index  | ImageMode = G-03A2,SRT,2D<br>mode; Method<br>=125211,DCM,Biplane Ellipse                                                                  |
| CI(Bullet)      | F-32110,SRT,Cardiac Index  | ImageMode = G-03A2,SRT,2D<br>mode; Method =VM12228-<br>01,MRUS,Bullet                                                                     |
| CI(Mod.Simpson) | F-32110,SRT,Cardiac Index  | ImageMode = G-03A2,SRT,2D<br>mode; Method =VM12228-<br>02,MRUS,Method of<br>Disks,Simpson                                                 |
| CI(A2C)         | F-32110,SRT,Cardiac Index  | ImageMode = G-03A2,SRT,2D<br>mode; ImageView = G-<br>A19C,SRT,Apical two chamber;<br>Method =125208,DCM,Method of<br>Disks, Single Plane  |
| CI(BP)          | F-32110,SRT,Cardiac Index  | ImageMode = G-03A2,SRT,2D<br>mode; Method<br>=125207,DCM,Method of Disks,<br>Biplane                                                      |
| CI(Cube-M)      | F-32110,SRT,Cardiac Index  | ImageMode = G-0394,SRT,M<br>Mode; Method<br>=125206,DCM,Cube Method                                                                       |
| CI(Teich-M)     | F-32110,SRT,Cardiac Index  | ImageMode = G-0394,SRT,M<br>Mode; Method<br>=125209,DCM,Teichholz                                                                         |
| CI(Gibson-M)    | F-32110,SRT,Cardiac Index  | ImageMode = G-0394,SRT,M<br>Mode; Method =VM12228-<br>03,MRUS,Gibson                                                                      |
| CI(Cube-2D)     | F-32110,SRT,Cardiac Index  | ImageMode = G-03A2,SRT,2D<br>mode; Method<br>=125206,DCM,Cube Method                                                                      |

|                 |                           |                                                                                                                                    |
|-----------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| CI(Teich-2D)    | F-32110,SRT,Cardiac Index | ImageMode = G-03A2,SRT,2D mode;<br>Method =125209,DCM,Teichholz                                                                    |
| CI(Gibson-2D)   | F-32110,SRT,Cardiac Index | ImageMode = G-03A2,SRT,2D mode;<br>Method =VM12228-03,MRUS,Gibson                                                                  |
| CI(A4C)         | F-32110,SRT,Cardiac Index | ImageMode = G-03A2,SRT,2D mode;<br>ImageView = G-A19C,SRT,Apical four chamber;<br>Method =125208,DCM,Method of Disks, Single Plane |
| LVOT SI         | F-00078,SRT,Stroke Index  |                                                                                                                                    |
| SI(SP Ellipse)  | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>Method =125226,DCM,Single Plane Ellipse                                                         |
| SI(BP Ellipse)  | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>Method =125211,DCM,Biplane Ellipse                                                              |
| SI(Bullet)      | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>Method =VM12228-01,MRUS,Bullet                                                                  |
| SI(Mod.Simpson) | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>Method =VM12228-02,MRUS,Method of Disks,Simpson                                                 |
| SI(A2C)         | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>ImageView = G-A19C,SRT,Apical two chamber;<br>Method =125208,DCM,Method of Disks, Single Plane  |
| SI( BP)         | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>Method =125207,DCM,Method of Disks, Biplane                                                     |
| SI(Cube-M)      | F-00078,SRT,Stroke Index  | ImageMode = G-0394,SRT,M Mode;<br>Method =125206,DCM,Cube Method                                                                   |
| SI(Teich-M)     | F-00078,SRT,Stroke Index  | ImageMode = G-0394,SRT,M Mode;<br>Method =125209,DCM,Teichholz                                                                     |
| SI(Gibson-M)    | F-00078,SRT,Stroke Index  | ImageMode = G-0394,SRT,M Mode;<br>Method =VM12228-03,MRUS,Gibson                                                                   |
| SI(Cube-2D)     | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>Method =125206,DCM,Cube Method                                                                  |
| SI(Teich-2D)    | F-00078,SRT,Stroke Index  | ImageMode = G-03A2,SRT,2D mode;<br>Method =125209,DCM,Teichholz                                                                    |

|               |                          |                                                                                                                                    |
|---------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| SI(Gibson-2D) | F-00078,SRT,Stroke Index | ImageMode = G-03A2,SRT,2D mode;<br>Method =VM12228-03,MRUS,Gibson                                                                  |
| SI(A4C)       | F-00078,SRT,Stroke Index | ImageMode = G-03A2,SRT,2D mode;<br>ImageView = G-A19C,SRT,Apical four chamber;<br>Method =125208,DCM,Method of Disks, Single Plane |

## Right Ventricle Measurements

| MODALITY Label       | DICOM Mapping                                                             | Optional Modifiers                                                                |
|----------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| RVDd(2D)             | 20304-2,LN,Right Ventricular Internal Diastolic Dimension                 | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RVDd(M)              | 20304-2,LN,Right Ventricular Internal Diastolic Dimension                 | ImageMode = G-0394,SRT,M Mode;                                                    |
| RVDs(2D)             | 20305-9,LN,Right Ventricular Internal Systolic Dimension                  | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RVDs(M)              | 20305-9,LN,Right Ventricular Internal Systolic Dimension                  | ImageMode = G-0394,SRT,M Mode;                                                    |
| RVIMP                | G-0381,SRT,Right Ventricular Index of Myocardial Performance              |                                                                                   |
| RVSP                 | G-0380,SRT,Right Ventricular Peak Systolic Pressure                       |                                                                                   |
| RVAWd(2D)            | 18153-7,LN,Right Ventricular Anterior Wall Diastolic Thickness            | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RVAWd(M)             | 18153-7,LN,Right Ventricular Anterior Wall Diastolic Thickness            | ImageMode = G-0394,SRT,M Mode;                                                    |
| RVAWs(2D)            | 18157-8,LN,Right Ventricular Anterior Wall Systolic Thickness             | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RVAWs(M)             | 18157-8,LN,Right Ventricular Anterior Wall Systolic Thickness             | ImageMode = G-0394,SRT,M Mode;                                                    |
| RV Major             | M12204-01,MRUS,Right ventricular Major                                    | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RV Minor             | M12204-02,MRUS,Right ventricular Minor                                    | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RV Area(d)           | M12204-03,MRUS,Right ventricular Area at end-diastole                     | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RV Area(s)           | M12204-04,MRUS,Right ventricular Area at end-systole                      | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RV FAC               | C12204-03,MRUS,Right Ventricular Fractional Area Change                   | ImageMode = G-03A2,SRT,2D mode;<br>Method=VM12228-02,MRUS,Method of Disks,Simpson |
| RVPEP(M)             | M12204-05,MRUS,Right Ventricle Pre-Ejection Period                        | ImageMode = G-0394,SRT,M Mode;                                                    |
| RVPEP(Doppler)       | M12204-05,MRUS,Right Ventricle Pre-Ejection Period                        |                                                                                   |
| RVET(M)              | M12204-06,MRUS,Right Ventricle Ejection Time                              | ImageMode = G-0394,SRT,M Mode;                                                    |
| RVET(RVIMP)          | M12204-06,MRUS,Right Ventricle Ejection Time                              |                                                                                   |
| RVET(Doppler)        | M12204-06,MRUS,Right Ventricle Ejection Time                              |                                                                                   |
| RVPEP/ET(M)          | C12204-01,MRUS,Right Ventricle Pre-Ejection Period to Ejection Time Ratio | ImageMode = G-0394,SRT,M Mode;                                                    |
| RVPEP/ET(Doppler)    | C12204-01,MRUS,Right Ventricle Pre-Ejection Period to Ejection Time Ratio |                                                                                   |
| RVOT HR              | 8867-4,LN,Heart rate                                                      |                                                                                   |
| RVOT Diam(2D)        | G-038F,SRT,Cardiovascular Orifice Diameter                                | ImageMode = G-03A2,SRT,2D mode;                                                   |
| RVOT Diam(M)         | G-038F,SRT,Cardiovascular Orifice Diameter                                | ImageMode = G-0394,SRT,M Mode;                                                    |
| RVOT Vmax            | 11726-7,LN,Peak Velocity                                                  |                                                                                   |
| RVOT Vmax(RVOT VTI)  | 11726-7,LN,Peak Velocity                                                  |                                                                                   |
| RVOT Vmean           | 20352-1,LN,Mean Velocity                                                  |                                                                                   |
| RVOT PGmax           | 20247-3,LN,Peak Gradient                                                  |                                                                                   |
| RVOT PGmax(RVOT VTI) | 20247-3,LN,Peak Gradient                                                  |                                                                                   |
| RVOT PGmean          | 20256-4,LN,Mean Gradient                                                  |                                                                                   |
| RVOT VTI             | 20354-7,LN,Velocity Time Integral                                         |                                                                                   |
| RVOT $\theta$        | M12222-01,MRUS,Angle                                                      |                                                                                   |

## Left Atrium Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                         | <b>Optional Modifiers</b>                                                                                                           |
|-----------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| LA Diam(2D)           | 29469-4, LN, Left Atrium Antero-posterior Systolic Dimension | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| LA Diam(M)            | 29469-4, LN, Left Atrium Antero-posterior Systolic Dimension | ImageMode = G-0394, SRT, M Mode;                                                                                                    |
| LA Diam(LA Vol A-L)   | 29469-4, LN, Left Atrium Antero-posterior Systolic Dimension | ImageMode = G-03A2, SRT, 2D mode; Method = 125205, DCM, Area-Length Single Plane                                                    |
| LA Diam(LA/Ao-2D)     | 29469-4, LN, Left Atrium Antero-posterior Systolic Dimension | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| LA Diam(LA/Ao-M)      | 29469-4, LN, Left Atrium Antero-posterior Systolic Dimension | ImageMode = G-0394, SRT, M Mode;                                                                                                    |
| LA/Ao(2D)             | 17985-3, LN, Left Atrium to Aortic Root Ratio                | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| LA/Ao(M)              | 17985-3, LN, Left Atrium to Aortic Root Ratio                | ImageMode = G-0394, SRT, M Mode;                                                                                                    |
| LA Area               | 17977-0, LN, Left Atrium Systolic Area                       | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| LAA(A2C)              | 17977-0, LN, Left Atrium Systolic Area                       | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19B, SRT, Apical two chamber; Method = 125205, DCM, Area-Length Single Plane       |
| LAA(A4C)              | 17977-0, LN, Left Atrium Systolic Area                       | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19C, SRT, Apical four chamber; Method = 125205, DCM, Area-Length Single Plane      |
| LA Vol(A-L)           | G-0383, SRT, Left Atrium Systolic Volume                     | ImageMode = G-03A2, SRT, 2D mode; Method = 125205, DCM, Area-Length Single Plane                                                    |
| LA Vol(A2C)           | G-0383, SRT, Left Atrium Systolic Volume                     | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19B, SRT, Apical two chamber; Method = 125208, DCM, Method of Disks, Single Plane  |
| LA Vol(A4C)           | G-0383, SRT, Left Atrium Systolic Volume                     | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19C, SRT, Apical four chamber; Method = 125208, DCM, Method of Disks, Single Plane |
| LA Major              | M12205-01, MRUS, Left atrium Major                           | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| LA Minor              | M12205-02, MRUS, Left atrium Minor                           | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| LeftA.AR/LA.M         | C12205-01, MRUS, Aortic Root to Left Atrium Ratio            |                                                                                                                                     |

## Right Atrium Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                        | <b>Optional Modifiers</b>                                                                                                           |
|-----------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| RAP                   | 18070-3, LN, Right Atrium Systolic Pressure |                                                                                                                                     |
| RA Area               | 17988-7, LN, Right Atrium Systolic Area     | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| RA Major              | M12206-01, MRUS, Right atrium Major         | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| RA Minor              | M12206-02, MRUS, Right atrium Minor         | ImageMode = G-03A2, SRT, 2D mode;                                                                                                   |
| RA Vol(A4C)           | M12206-03, MRUS, Right atrium Volume        | ImageMode = G-03A2, SRT, 2D mode; ImageView = G-A19C, SRT, Apical four chamber; Method = 125208, DCM, Method of Disks, Single Plane |

## Aortic Valve Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                                  | <b>Optional Modifiers</b>         |
|-----------------------|-----------------------------------------------------------------------|-----------------------------------|
| ACS(2D)               | 17996-0, LN, Aortic Valve Cusp Separation                             | ImageMode = G-03A2, SRT, 2D mode; |
| ACS(M)                | 17996-0, LN, Aortic Valve Cusp Separation                             | ImageMode = G-0394, SRT, M Mode;  |
| AV AccT/ET            | G-0382, SRT, Ratio of Aortic Valve Acceleration Time to Ejection Time |                                   |
| AV HR                 | 8867-4, LN, Heart rate                                                |                                   |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                         | <b>Optional Modifiers</b>                                                                                                                              |
|-----------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| AR Flow               | 33878-0, LN, Volume Flow                     | Flow Direction = R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| AR Flow Rate          | 34141-2, LN, Peak Instantaneous Flow Rate    | Flow Direction = R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area |
| AVA                   | G-038E, SRT, Cardiovascular Orifice Area     | Flow Direction = R-42047, SRT, Antegrade Flow; ImageMode = G-03A2, SRT, 2D mode; Method = 125220, DCM, Planimetry                                      |
| AVA(VTI)              | G-038E, SRT, Cardiovascular Orifice Area     | Flow Direction = R-42047, SRT, Antegrade Flow; Method = 125215, DCM, Continuity Equation by Velocity Time Integral                                     |
| AV Diam(2D)           | G-038F, SRT, Cardiovascular Orifice Diameter | ImageMode = G-03A2, SRT, 2D mode;                                                                                                                      |
| AV Diam(Qp/Qs)        | G-038F, SRT, Cardiovascular Orifice Diameter | ImageMode = G-03A2, SRT, 2D mode;                                                                                                                      |
| AR Fraction           | G-0390, SRT, Regurgitant Fraction            | Flow Direction = R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| AR Ved                | 11653-3, LN, End Diastolic Velocity          | Flow Direction = R-42E61, SRT, Regurgitant Flow                                                                                                        |
| AV Vmax               | 11726-7, LN, Peak Velocity                   | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AR Vmax               | 11726-7, LN, Peak Velocity                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AR Vmax(AR VTI)       | 11726-7, LN, Peak Velocity                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AR Vmax(AR PHT)       | 11726-7, LN, Peak Velocity                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AR Vmax(PISA AR)      | 11726-7, LN, Peak Velocity                   | Flow Direction = R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| AV Vmax(AV VTI)       | 11726-7, LN, Peak Velocity                   | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AV Vmean              | 20352-1, LN, Mean Velocity                   | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AR Vmean              | 20352-1, LN, Mean Velocity                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AV PGmax              | 20247-3, LN, Peak Gradient                   | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AR PGmax              | 20247-3, LN, Peak Gradient                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AV PGmax(AV VTI)      | 20247-3, LN, Peak Gradient                   | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AR PGmax(AR VTI)      | 20247-3, LN, Peak Gradient                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AR PGmax(AR PHT)      | 20247-3, LN, Peak Gradient                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AV PGmean             | 20256-4, LN, Mean Gradient                   | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AR PGmean             | 20256-4, LN, Mean Gradient                   | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AV VTI                | 20354-7, LN, Velocity Time Integral          | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AR VTI                | 20354-7, LN, Velocity Time Integral          | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| AV VTI(Qp/Qs)         | 20354-7, LN, Velocity Time Integral          | Flow Direction = R-42047, SRT, Antegrade Flow;                                                                                                         |
| AR VTI(PISA AR)       | 20354-7, LN, Velocity Time Integral          | Flow Direction = R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |



| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                | <b>Optional Modifiers</b>                                                                      |
|-----------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------|
| AV VTI(AVA VTI)       | 20354-7, LN, Velocity Time Integral                 | Flow Direction = R-42047, SRT, Antegrade Flow;                                                 |
| AR PHT                | 20280-4, LN, Pressure Half-Time                     | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                               |
| AV AccT               | 20168-1, LN, Acceleration Time                      | Flow Direction = R-42047, SRT, Antegrade Flow;                                                 |
| AV DecT               | 20217-6, LN, Deceleration Time                      | Flow Direction = R-42047, SRT, Antegrade Flow;                                                 |
| AR DcT                | 20217-6, LN, Deceleration Time                      | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                               |
| AR DecT               | 20217-6, LN, Deceleration Time                      | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                               |
| AV Dec Slope          | 20216-8, LN, Deceleration Slope                     | Flow Direction = R-42047, SRT, Antegrade Flow;                                                 |
| AR Dec Slope          | 20216-8, LN, Deceleration Slope                     | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                               |
| AV Acc Slope          | M12222-02, MRUS, Acceleration Slope                 | Flow Direction = R-42047, SRT, Antegrade Flow;                                                 |
| AR Rad                | M12222-06, MRUS, Flow Radius                        | Flow Direction = R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; |
| AR Als.Vel            | M12222-05, MRUS, Aliasing Velocity                  | Flow Direction = R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; |
| AR Time               | M12222-04, MRUS, Time                               | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                               |
| AR DcR                | M12222-03, MRUS, Deceleration Rate                  | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                               |
| AV $\theta$           | M12222-01, MRUS, Angle                              | Flow Direction = R-42047, SRT, Antegrade Flow;                                                 |
| AR $\theta$           | M12222-01, MRUS, Angle                              | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                               |
| AV SV                 | F-32120, SRT, Stroke Volume                         |                                                                                                |
| AV CO                 | F-32100, SRT, Cardiac Output                        |                                                                                                |
| AV CI                 | F-32110, SRT, Cardiac Index                         |                                                                                                |
| AV SI                 | F-00078, SRT, Stroke Index                          |                                                                                                |
| PISA                  | M12222-09, MRUS, Effective Regurgitant Orifice Area |                                                                                                |

## Mitral Valve Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                               | <b>Optional Modifiers</b>          |
|-----------------------|----------------------------------------------------|------------------------------------|
| MV A Vel              | 17978-8<br>LN<br>Mitral Valve A-Wave Peak Velocity | Image Mode = G-0394, SRT, M Mode   |
| MV A Vel              | 17978-8, LN, Mitral Valve A-Wave Peak Velocity     |                                    |
| MV A Vel(MV A VTI)    | 17978-8, LN, Mitral Valve A-Wave Peak Velocity     |                                    |
| MV A Vel(MV E/A)      | 17978-8, LN, Mitral Valve A-Wave Peak Velocity     |                                    |
| MV E Vel              | 18037-2, LN, Mitral Valve E-Wave Peak Velocity     |                                    |
| MV E Vel(MV E VTI)    | 18037-2, LN, Mitral Valve E-Wave Peak Velocity     |                                    |
| MV E Vel(MV E/A)      | 18037-2, LN, Mitral Valve E-Wave Peak Velocity     |                                    |
| MV E/A                | 18038-0, LN, Mitral Valve E to A Ratio             |                                    |
| MV E/A(MV E/A)        | 18038-0, LN, Mitral Valve E to A Ratio             |                                    |
| MV AccT/DecT          | G-0386, SRT, Mitral Valve AT/DT Ratio              |                                    |
| MV E-F Slope          | 18040-6, LN, Mitral Valve E-F Slope by M-Mode      | ImageMode = G-0394, SRT, M Mode ;  |
| EPSS(2D)              | 18036-4, LN, Mitral Valve EPSS, E wave             | ImageMode = G-03A2, SRT, 2D mode ; |
| EPSS(M)               | 18036-4, LN, Mitral Valve EPSS, E wave             | ImageMode = G-0394, SRT, M Mode ;  |
| MV A Dur              | G-0385, SRT, Mitral Valve A-Wave Duration          |                                    |
| MV C-O dur(M)         | G-0387, SRT, Mitral Valve Closure to Opening Time  | ImageMode = G-0394, SRT, M Mode ;  |
| MV C-O dur(Doppler)   | G-0387, SRT, Mitral Valve Closure to Opening Time  |                                    |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                                       | <b>Optional Modifiers</b>                                                                             |
|-----------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| dP/dt                 | 18035-6, LN, Mitral Regurgitation Dp/dt derived from Mitral Reg. velocity  | Flow Direction = R-42E61, SRT, Regurgitant Flow;                                                      |
| MCS(2D)               | M12207-01, MRUS, Mitral valve cusp separate distance                       | ImageMode = G-03A2, SRT, 2D mode ;                                                                    |
| MCS(M)                | M12207-01, MRUS, Mitral valve cusp separate distance                       | ImageMode = G-0394, SRT, M Mode ;                                                                     |
| MV D-E Slope          | M12207-02, MRUS, Mitral Valve D-E Slope                                    | ImageMode = G-0394, SRT, M Mode ;                                                                     |
| MV A Amp              | M12207-03, MRUS, Amplitude of the A wave                                   | ImageMode = G-0394, SRT, M Mode ;                                                                     |
| MV E Amp              | M12207-04, MRUS, Amplitude of the E wave                                   | ImageMode = G-0394, SRT, M Mode ;                                                                     |
| MV DE                 | M12207-05, MRUS, Amplitude from D Point to E Point                         | ImageMode = G-0394, SRT, M Mode ;                                                                     |
| MV E PG               | M12207-06, MRUS, Mitral Valve E-wave Pressure Gradient                     |                                                                                                       |
| MV A PG               | M12207-07, MRUS, Mitral Valve A-wave Pressure Gradient                     |                                                                                                       |
| MV E VTI              | M12207-08, MRUS, E wave Velocity Time Integral                             | Flow Direction = R-42047, SRT, Antegrade Flow;                                                        |
| MV A VTI              | M12207-09, MRUS, A wave Velocity Time Integral                             | Flow Direction = R-42047, SRT, Antegrade Flow;                                                        |
| MV E Dur              | M12207-10, MRUS, Mitral Valve E-Wave Duration                              |                                                                                                       |
| Sa(medial)            | M12207-11, MRUS, Systolic Velocity of the Mitral Annulus(medial)           | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ea(medial)            | M12207-12, MRUS, Early diastolic velocity of the mitral annulus(medial)    | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Aa(medial)            | M12207-13, MRUS, Late diastolic velocity of the mitral annulus(medial)     | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ea/Aa(medial)         | M12207-14, MRUS, Early diastolic velocity to Late diastolic velocity Ratio | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ata(medial)           | M12207-15, MRUS, Acceleration Time of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ara(medial)           | M12207-16, MRUS, Acceleration Rate of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Dta(medial)           | M12207-17, MRUS, Deceleration Time of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Dra(medial)           | M12207-18, MRUS, Deceleration Rate of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Sa(lateral)           | M12207-19, MRUS, Systolic Velocity of the Mitral Annulus(lateral)          | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ea(lateral)           | M12207-20, MRUS, Early diastolic velocity of the mitral annulus(lateral)   | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Aa(lateral)           | M12207-21, MRUS, Late diastolic velocity of the mitral annulus(lateral)    | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ea/Aa(lateral)        | M12207-22, MRUS, Early diastolic velocity to Late diastolic velocity Ratio | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ata(lateral)          | M12207-23, MRUS, Acceleration Time of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Ara(lateral)          | M12207-24, MRUS, Acceleration Rate of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Dta(lateral)          | M12207-25, MRUS, Deceleration Time of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| Dra(lateral)          | M12207-26, MRUS, Deceleration Rate of Early diastolic velocity             | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging;                                                 |
| MS Rad                | M12207-27, MRUS, Mitral Stenosis Radius                                    | ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area |
| MS Als.Vel            | M12207-28, MRUS, Mitral Stenosis Aliasing Velocity                         | ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area |
| MS Vmax               | M12207-29, MRUS, Mitral Stenosis Maximum Velocity                          |                                                                                                       |
| MS Vmax(PISA MS)      | M12207-29, MRUS, Mitral Stenosis Maximum Velocity                          | Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| MS Area               | M12207-30, MRUS, Mitral Stenosis Area                                      | Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |



| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                     | <b>Optional Modifiers</b>                                                                                                                         |
|-----------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| MS Pgmax              | C12207-01,MRUS,Mitral Stenosis Maximum Pressure Gradient |                                                                                                                                                   |
| MV HR                 | 8867-4,LN,Heart rate                                     |                                                                                                                                                   |
| MR Flow               | 33878-0,LN,Volume Flow                                   | Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area                                               |
| MR Flow Rate          | 34141-2,LN,Peak Instantaneous Flow Rate                  | Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area |
| MVA                   | G-038E,SRT,Cardiovascular Orifice Area                   | Flow Direction =R-42047,SRT,Antegrade Flow; ImageMode = G-03A2,SRT,2D mode; Method = 125220,DCM,Planimetry                                        |
| MVA(PHT)              | G-038E,SRT,Cardiovascular Orifice Area                   | Flow Direction =R-42047,SRT,Antegrade Flow; Method = 125210,DCM,Area by Pressure Half-Time                                                        |
| MVA(VTI)              | G-038E,SRT,Cardiovascular Orifice Area                   | Flow Direction =R-42047,SRT,Antegrade Flow; Method = 125215,DCM,Continuity Equation by Velocity Time Integral                                     |
| MV Diam               | G-038F,SRT,Cardiovascular Orifice Diameter               | Flow Direction =R-42047,SRT,Antegrade Flow; ImageMode = G-03A2,SRT,2D mode;                                                                       |
| MR Fraction           | G-0390,SRT,Regurgitant Fraction                          | Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area                                               |
| MV Vmax               | 11726-7,LN,Peak Velocity                                 | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MR Vmax               | 11726-7,LN,Peak Velocity                                 | Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = G-03A2,SRT,2D mode;                                                                     |
| MV Vmax(MV PHT)       | 11726-7,LN,Peak Velocity                                 | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MV Vmax(MV VTI)       | 11726-7,LN,Peak Velocity                                 | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MR Vmax(MR VTI)       | 11726-7,LN,Peak Velocity                                 | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                                                                                     |
| MR Vmax(PISA MR)      | 11726-7,LN,Peak Velocity                                 | Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area                                               |
| MV Vmean              | 20352-1,LN,Mean Velocity                                 | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MR Vmean              | 20352-1,LN,Mean Velocity                                 | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                                                                                     |
| MV Pgmax              | 20247-3,LN,Peak Gradient                                 | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MR Pgmax              | 20247-3,LN,Peak Gradient                                 | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                                                                                     |
| MV Pgmean             | 20256-4,LN,Mean Gradient                                 | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MR Pgmean             | 20256-4,LN,Mean Gradient                                 | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                                                                                     |
| MV VTI                | 20354-7,LN,Velocity Time Integral                        | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MR VTI                | 20354-7,LN,Velocity Time Integral                        | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                                                                                     |
| MV VTI(MVA VTI)       | 20354-7,LN,Velocity Time Integral                        | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |
| MR VTI(PISA MR)       | 20354-7,LN,Velocity Time Integral                        | Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area                                               |
| MV PHT                | 20280-4,LN,Pressure Half-Time                            | Flow Direction =R-42047,SRT, Antegrade Flow;                                                                                                      |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                     | <b>Optional Modifiers</b>                                                                     |
|-----------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| MV AccT               | 20168-1, LN, Acceleration Time                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                 |
| MV DecT               | 20217-6, LN, Deceleration Time                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                 |
| MV Dec Slope          | 20216-8, LN, Deceleration Slope                          | Flow Direction =R-42047, SRT, Antegrade Flow;                                                 |
| MV Acc Slope          | M12222-02, MRUS, Acceleration Slope                      | Flow Direction =R-42047, SRT, Antegrade Flow;                                                 |
| dt                    | M12222-04, MRUS, Time                                    | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                               |
| MR Rad                | M12222-06, MRUS, Flow Radius                             | Flow Direction =R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; |
| MR Als.Vel            | M12222-05, MRUS, Aliasing Velocity                       | Flow Direction =R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; |
| MV $\theta$           | M12222-01, MRUS, Angle                                   | Flow Direction =R-42047, SRT, Antegrade Flow;                                                 |
| MR $\theta$           | M12222-01, MRUS, Angle                                   | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                               |
| MV SV                 | F-32120, SRT, Stroke Volume                              |                                                                                               |
| MV CO                 | F-32100, SRT, Cardiac Output                             |                                                                                               |
| MV CI                 | F-32110, SRT, Cardiac Index                              |                                                                                               |
| MV SI                 | F-00078, SRT, Stroke Index                               |                                                                                               |
| E/Ea                  | M12207-35, MRUS, MV E/Ea                                 |                                                                                               |
| PISA                  | M12222-09, MRUS, Effective Regurgitant Orifice Area      |                                                                                               |
| MAPSE                 | M12207-39, MRUS, Mitral Annular Plane Systolic Excursion | ImageMode = G-0394, SRT, M Mode                                                               |
| MV E/Ea (medial)      | M12207-35, MRUS, MV E/Ea medial                          | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging                                          |
| MV E/Ea (lateral)     | M12207-36, MRUS, MV E/Ea lateral                         | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging                                          |
| MV E/Ea               | M12207-37, MRUS, MV E/Ea medial lateral                  | ImageMode = IM12224-01, MRUS, Tissue Doppler Imaging                                          |

## Pulmonic Valve Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                         | <b>Optional Modifiers</b>                                                                                                                             |
|-----------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| PV $\theta$           | M12222-01, MRUS, Angle                       | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| PR $\theta$           | M12222-01, MRUS, Angle                       | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| PV HR                 | 8867-4, LN, Heart rate                       |                                                                                                                                                       |
| PR Flow               | 33878-0, LN, Volume Flow                     | Flow Direction =R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| PR Flow Rate          | 34141-2, LN, Peak Instantaneous Flow Rate    | Flow Direction =R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area |
| PV Diam               | G-038F, SRT, Cardiovascular Orifice Diameter | Flow Direction =R-42047, SRT, Antegrade Flow; ImageMode = G-03A2, SRT, 2D mode;                                                                       |
| PV Diam(Qp/Qs)        | G-038F, SRT, Cardiovascular Orifice Diameter | Flow Direction =R-42047, SRT, Antegrade Flow; ImageMode = G-03A2, SRT, 2D mode;                                                                       |
| PR Fraction           | G-0390, SRT, Regurgitant Fraction            | Flow Direction =R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| PR Ved                | 11653-3, LN, End Diastolic Velocity          | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| PR Ved(PAEDP)         | 11653-3, LN, End Diastolic Velocity          | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                             | <b>Optional Modifiers</b>                                                                   |
|-----------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------|
| PV Vmax               | 11726-7,LN,Peak Velocity                         | Flow Direction =R-42047,SRT, Antegrade Flow;                                                |
| PR Vmax               | 11726-7,LN,Peak Velocity                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV Vmax(PV VTI)       | 11726-7,LN,Peak Velocity                         | Flow Direction =R-42047,SRT, Antegrade Flow;                                                |
| PR Vmax(PR VTI)       | 11726-7,LN,Peak Velocity                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PR Vmax(PR PHT)       | 11726-7,LN,Peak Velocity                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PR Vmax(PISA PR)      | 11726-7,LN,Peak Velocity                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV Vmean              | 20352-1,LN,Mean Velocity                         | Flow Direction =R-42047,SRT, Antegrade Flow;                                                |
| PR Vmean              | 20352-1,LN,Mean Velocity                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV PGmax              | 20247-3,LN,Peak Gradient                         | Flow Direction =R-42047,SRT,Antegrade Flow;                                                 |
| PR PGmax              | 20247-3,LN,Peak Gradient                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV PGmax(PV VTI)      | 20247-3,LN,Peak Gradient                         | Flow Direction =R-42047,SRT, Antegrade Flow;                                                |
| PR PGmax(PR VTI)      | 20247-3,LN,Peak Gradient                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PR PGmax(PR PHT)      | 20247-3,LN,Peak Gradient                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV PGmean             | 20256-4,LN,Mean Gradient                         | Flow Direction =R-42047,SRT,Antegrade Flow;                                                 |
| PR PGmean             | 20256-4,LN,Mean Gradient                         | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV VTI                | 20354-7,LN,Velocity Time Integral                | Flow Direction =R-42047,SRT,Antegrade Flow;                                                 |
| PR VTI                | 20354-7,LN,Velocity Time Integral                | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV VTI(Qp/Qs)         | 20354-7,LN,Velocity Time Integral                | Flow Direction =R-42047,SRT,Antegrade Flow;                                                 |
| PR VTI(PISA PR)       | 20354-7,LN,Velocity Time Integral                | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PR PHT                | 20280-4,LN,Pressure Half-Time                    | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV AccT               | 20168-1,LN,Acceleration Time                     | Flow Direction =R-42047,SRT,Antegrade Flow;                                                 |
| PR DecT               | 20217-6,LN,Deceleration Time                     | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PR Dec Slope          | 20216-8,LN,Deceleration Slope                    | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV Acc Slope          | M12222-02,MRUS,Acceleration Slope                | Flow Direction =R-42047,SRT,Antegrade Flow;                                                 |
| PR Rad                | M12222-06,MRUS,Flow Radius                       | Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; |
| PR Als.Vel            | M12222-05,MRUS,Aliasing Velocity                 | Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; |
| PR PGed               | M12222-08,MRUS,Pressure Gradient at end-Diastole | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PR PGed(PAEDP)        | M12222-08,MRUS,Pressure Gradient at end-Diastole | Flow Direction =R-42E61,SRT,Regurgitant Flow;                                               |
| PV SV                 | F-32120,SRT,Stroke Volume                        |                                                                                             |
| PV CO                 | F-32100,SRT,Cardiac Output                       |                                                                                             |
| PV CI                 | F-32110,SRT,Cardiac Index                        |                                                                                             |
| PV SI                 | F-00078,SRT,Stroke Index                         |                                                                                             |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                               | <b>Optional Modifiers</b> |
|-----------------------|----------------------------------------------------|---------------------------|
| PISA                  | M12222-09,MRUS, Effective Regurgitant Orifice Area |                           |

## Tricuspid Valve Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                 | <b>Optional Modifiers</b>                                                                                                                             |
|-----------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| TV E Vel              | 18031-5, LN, Tricuspid Valve E Wave Peak Velocity    |                                                                                                                                                       |
| TV E Vel(TV E/A)      | 18031-5, LN, Tricuspid Valve E Wave Peak Velocity    |                                                                                                                                                       |
| TV A Vel              | 18030-7, LN, Tricuspid Valve A Wave Peak Velocity    |                                                                                                                                                       |
| TV A Vel(TV E/A)      | 18030-7, LN, Tricuspid Valve A Wave Peak Velocity    |                                                                                                                                                       |
| TV E/A                | 18039-8, LN, Tricuspid Valve E to A Ratio            |                                                                                                                                                       |
| TV E/A(TV E/A)        | 18039-8, LN, Tricuspid Valve E to A Ratio            |                                                                                                                                                       |
| TV C-O dur            | G-0389, SRT, Tricuspid Valve Closure to Opening Time |                                                                                                                                                       |
| TV $\theta$           | M12222-01, MRUS, Angle                               | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| TR $\theta$           | M12222-01, MRUS, Angle                               | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| TV HR                 | 8867-4, LN, Heart rate                               |                                                                                                                                                       |
| TR Flow               | 33878-0, LN, Volume Flow                             | Flow Direction =R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| TR Flow Rate          | 34141-2, LN, Peak Instantaneous Flow Rate            | Flow Direction =R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area |
| TVA                   | G-038E, SRT, Cardiovascular Orifice Area             | Flow Direction =R-42047, SRT, Antegrade Flow; ImageMode = G-03A2, SRT, 2D mode; Method = 125220, DCM, Planimetry                                      |
| TVA(PHT)              | G-038E, SRT, Cardiovascular Orifice Area             | Flow Direction =R-42047, SRT, Antegrade Flow; Method = 125210, DCM, Area by Pressure Half-Time                                                        |
| TV Diam               | G-038F, SRT, Cardiovascular Orifice Diameter         | Flow Direction =R-42047, SRT, Antegrade Flow; ImageMode = G-03A2, SRT, 2D mode;                                                                       |
| TR Fraction           | G-0390, SRT, Regurgitant Fraction                    | Flow Direction =R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| TV Vmax               | 11726-7, LN, Peak Velocity                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| TR Vmax               | 11726-7, LN, Peak Velocity                           | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| TV Vmax(TV PHT)       | 11726-7, LN, Peak Velocity                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| TV Vmax(TV VTI)       | 11726-7, LN, Peak Velocity                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| TR Vmax(TR VTI)       | 11726-7, LN, Peak Velocity                           | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| TR Vmax(PISA TR)      | 11726-7, LN, Peak Velocity                           | Flow Direction =R-42E61, SRT, Regurgitant Flow; Method = 125216, DCM, Proximal Isovelocity Surface Area                                               |
| TR Vmax(RVSP)         | 11726-7, LN, Peak Velocity                           | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| TV Vmean              | 20352-1, LN, Mean Velocity                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| TR Vmean              | 20352-1, LN, Mean Velocity                           | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                                                                       |
| TV PGmax(TV PHT)      | 20247-3, LN, Peak Gradient                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| TV PGmax(TV VTI)      | 20247-3, LN, Peak Gradient                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |
| TV PGmax              | 20247-3, LN, Peak Gradient                           | Flow Direction =R-42047, SRT, Antegrade Flow;                                                                                                         |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                      | <b>Optional Modifiers</b>                                                                              |
|-----------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| TR PGmax              | 20247-3, LN, Peak Gradient                                | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TR PGmax(TR VTI)      | 20247-3, LN, Peak Gradient                                | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TR PGmax(RVSP)        | 20247-3, LN, Peak Gradient                                | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TV PGmean             | 20256-4, LN, Mean Gradient                                | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TR PGmean             | 20256-4, LN, Mean Gradient                                | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TV VTI                | 20354-7, LN, Velocity Time Integral                       | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TR VTI                | 20354-7, LN, Velocity Time Integral                       | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TR VTI(PISA TR)       | 20354-7, LN, Velocity Time Integral                       | Flow Direction =R-42E61, SRT, Regurgitant Flow; Method =125216, DCM, Proximal Isovelocity Surface Area |
| TV PHT                | 20280-4, LN, Pressure Half-Time                           | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TV AccT               | 20168-1, LN, Acceleration Time                            | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TV DecT               | 20217-6, LN, Deceleration Time                            | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TV Dec Slope          | 20216-8, LN, Deceleration Slope                           | Flow Direction =R-42E61, SRT, Regurgitant Flow;                                                        |
| TV A Dur              | M12208-01, MRUS, Tricuspid Valve E-Wave Duration          | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TV E PG               | M12208-02, MRUS, Tricuspid Valve E Wave Pressure Gradient | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TV A PG               | M12208-03, MRUS, Tricuspid Valve A Wave Pressure Gradient | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TV Acc Slope          | M12222-02, MRUS, Acceleration Slope                       | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TV AccT/DecT          | M12222-07, MRUS, Acceleration Time/Deceleration Time      | Flow Direction =R-42047, SRT, Antegrade Flow;                                                          |
| TR Rad                | M12222-06, MRUS, Flow Radius                              | Flow Direction =R-42E61, SRT, Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;          |
| TR Als.Vel            | M12222-02, MRUS, Aliasing Velocity                        | ImageMode = R-409E2, SRT, Doppler Color Flow;                                                          |
| TV SV                 | F-32120, SRT, Stroke Volume                               |                                                                                                        |
| TV CO                 | F-32100, SRT, Cardiac Output                              |                                                                                                        |
| TV CI                 | F-32110, SRT, Cardiac Index                               |                                                                                                        |
| TV SI                 | F-00078, SRT, Stroke Index                                |                                                                                                        |
| PISA                  | M12222-09, MRUS, Effective Regurgitant Orifice Area       |                                                                                                        |

## Aorta Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                    | <b>Optional Modifiers</b>         |
|-----------------------|-----------------------------------------|-----------------------------------|
| Ao Diam(2D)           | 18015-8, LN, Aortic Root Diameter       | ImageMode = G-03A2, SRT, 2D mode; |
| Ao Diam(M)            | 18015-8, LN, Aortic Root Diameter       | ImageMode = G-0394, SRT, M Mode;  |
| Ao Diam(LA/Ao-2D)     | 18015-8, LN, Aortic Root Diameter       | ImageMode = G-03A2, SRT, 2D mode; |
| Ao Diam(LA/Ao-M)      | 18015-8, LN, Aortic Root Diameter       | ImageMode = G-0394, SRT, M Mode;  |
| Ao Arch Diam(2D)      | 18011-7, LN, Aortic Arch Diameter       | ImageMode = G-03A2, SRT, 2D mode; |
| Ao Arch Diam(M)       | 18011-7, LN, Aortic Arch Diameter       | ImageMode = G-0394, SRT, M Mode;  |
| Ao Asc Diam(2D)       | 18012-5, LN, Ascending Aortic Diameter  | ImageMode = G-03A2, SRT, 2D mode; |
| Ao Asc Diam(M)        | 18012-5, LN, Ascending Aortic Diameter  | ImageMode = G-0394, SRT, M Mode;  |
| Ao Isthmus(2D)        | 18014-1, LN, Aortic Isthmus Diameter    | ImageMode = G-03A2, SRT, 2D mode; |
| Ao Isthmus(M)         | 18014-1, LN, Aortic Isthmus Diameter    | ImageMode = G-0394, SRT, M Mode;  |
| Ao Desc Diam(2D)      | 18013-3, LN, Descending Aortic Diameter | ImageMode = G-03A2, SRT, 2D mode; |
| Ao Desc Diam(M)       | 18013-3, LN, Descending Aortic Diameter | ImageMode = G-0394, SRT, M Mode;  |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                | <b>Optional Modifiers</b>       |
|-----------------------|-----------------------------------------------------|---------------------------------|
| Ao st junct(2D)       | M12212-01,MRUS,Aortic Sinotubular junction Diameter | ImageMode = G-03A2,SRT,2D mode; |
| Ao st junct(M)        | M12212-01,MRUS,Aortic Sinotubular junction Diameter | ImageMode = G-0394,SRT,M Mode;  |
| Ao Sinus Diam(2D)     | M12212-02,MRUS,Aortic Sinus Diameter                | ImageMode = G-03A2,SRT,2D mode; |
| Ao Sinus Diam(M)      | M12212-02,MRUS,Aortic Sinus Diameter                | ImageMode = G-0394,SRT,M Mode;  |
| Duct Art Diam         | M12212-03,MRUS,Ductus Artery Diameter               | ImageMode = G-03A2,SRT,2D mode; |
| Pre Ductal            | M12212-04,MRUS,Previous Ductal Diameter             | ImageMode = G-03A2,SRT,2D mode; |
| LCA                   | M12212-05,MRUS,Left Coronary Artery Diameter        | ImageMode = G-03A2,SRT,2D mode; |
| RCA                   | M12212-06,MRUS,Right Coronary Artery Diameter       | ImageMode = G-03A2,SRT,2D mode; |
| AAo Vmax              | 11726-7,LN,Peak Velocity                            |                                 |
| DAo Vmax              | 11726-7,LN,Peak Velocity                            |                                 |
| AAo PGmax             | 20247-3,LN,Peak Gradient                            |                                 |
| DAo PGmax             | 20247-3,LN,Peak Gradient                            |                                 |

## Pulmonary Artery Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                   | <b>Optional Modifiers</b>      |
|-----------------------|--------------------------------------------------------|--------------------------------|
| MPA Diam(2D)          | 18020-8,LN,Main Pulmonary Artery Diameter              | ImageMode =G-03A2,SRT,2D mode; |
| MPA Diam(M)           | 18020-8,LN,Main Pulmonary Artery Diameter              | ImageMode =G-0394,SRT,M Mode;  |
| RPA Diam(2D)          | 18021-6,LN,Right Pulmonary Artery Diameter             | ImageMode =G-03A2,SRT,2D mode; |
| RPA Diam(M)           | 18021-6,LN,Right Pulmonary Artery Diameter             | ImageMode =G-0394,SRT,M Mode;  |
| LPA Diam(2D)          | 18019-0,LN,Left Pulmonary Artery Diameter              | ImageMode =G-03A2,SRT,2D mode; |
| LPA Diam(M)           | 18019-0,LN,Left Pulmonary Artery Diameter              | ImageMode =G-0394,SRT,M Mode;  |
| MPA Vmax              | G-038A,SRT,Main Pulmonary Artery Peak Velocity         |                                |
| Post Ductal           | M12210-01,MRUS,Posterior ductal Diameter               | ImageMode =G-03A2,SRT,2D mode; |
| PAEDP                 | C12210-01,MRUS,Pulmonary Artery End Diastolic Pressure |                                |
| LPA Vmax              | 11726-7,LN,Peak Velocity                               |                                |
| RPA Vmax              | 11726-7,LN,Peak Velocity                               |                                |
| MPA PGmax             | 20247-3,LN,Peak Gradient                               |                                |
| LPA PGmax             | 20247-3,LN,Peak Gradient                               |                                |
| RPA PGmax             | 20247-3,LN,Peak Gradient                               |                                |

## Vena Cava Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                | <b>Optional Modifiers</b>                                                      |
|-----------------------|-----------------------------------------------------|--------------------------------------------------------------------------------|
| IVC Diam(Insp)        | 18006-7,LN,Inferior Vena Cava Diameter              | RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode =G-03A2,SRT,2D mode; |
| IVC Diam(Expir)       | 18006-7,LN,Inferior Vena Cava Diameter              | RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode =G-03A2,SRT,2D mode;  |
| SVC Diam(Insp)        | M12215-01,MRUS,Superior Vena Cava Diameter          | RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode =G-03A2,SRT,2D mode; |
| SVC Diam(Expir)       | M12215-01,MRUS,Superior Vena Cava Diameter          | RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode =G-03A2,SRT,2D mode;  |
| IVC Vel(Insp)         | M12215-02,MRUS,Inferior Vena Cava Velocity          | RespiratoryCyclePoint=F-20010,SRT, Inspiration;                                |
| IVC Vel(Expir)        | M12215-02,MRUS,Inferior Vena Cava Velocity          | RespiratoryCyclePoint=F-20020,SRT, Expiration;                                 |
| SVC Vel(Insp)         | M12215-03,MRUS,Superior Vena Cava Velocity          | RespiratoryCyclePoint=F-20010,SRT, Inspiration;                                |
| SVC Vel(Expir)        | M12215-03,MRUS,Superior Vena Cava Velocity          | RespiratoryCyclePoint=F-20020,SRT, Expiration;                                 |
| IVC Inspiration PG    | C12215-01,MRUS,Inferior Vena Cava Pressure Gradient | RespiratoryCyclePoint=F-20010,SRT, Inspiration;                                |
| IVC Expiration PG     | C12215-01,MRUS,Inferior Vena Cava Pressure Gradient | RespiratoryCyclePoint=F-20020,SRT, Expiration;                                 |



| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                      | <b>Optional Modifiers</b>                       |
|-----------------------|-----------------------------------------------------------|-------------------------------------------------|
| SVC Inspiration PG    | C12215-02,MRUS,Superior Vena Cava Pressure Gradient       | RespiratoryCyclePoint=F-20010,SRT, Inspiration; |
| SVC Expiration PG     | C12215-02,MRUS,Superior Vena Cava Pressure Gradient       | RespiratoryCyclePoint=F-20020,SRT, Expiration;  |
| IVC-CI                | C12215-03,MRUS,Collapsible index of inferior vena cava    | ImageMode =SRT,G-03A2,2D mode                   |
| IVC-DI                | C12215-04,MRUS,Distensibility index of inferior vena cava | ImageMode =SRT,G-03A2,2D mode                   |
| SVC-CI                | C12215-05,MRUS,Collapsible index of superior vena cava    | ImageMode =SRT,G-03A2,2D mode                   |
| SVC-DI                | C12215-06,MRUS,Distensibility index of superior vena cava | ImageMode =SRT,G-03A2,2D mode                   |

## Pulmonary Venous Structure Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                                      | <b>Optional Modifiers</b> |
|-----------------------|---------------------------------------------------------------------------|---------------------------|
| PVein A Dur           | G-038B,SRT,Pulmonary Vein A-Wave Duration                                 |                           |
| PVein D VTI           | G-038D,SRT,Pulmonary Vein D-Wave Velocity Time Integral                   |                           |
| PVein S VTI           | G-038C,SRT,Pulmonary Vein S-Wave Velocity Time Integral                   |                           |
| PVein S Vel           | M12214-01,MRUS,Pulmonary Vein S wave flow Velocity                        |                           |
| PVein D Vel           | M12214-02,MRUS,Pulmonary Vein D-wave flow Velocity                        |                           |
| PVein A Vel           | M12214-03,MRUS,Pulmonary Vein A-wave flow Velocity                        |                           |
| PVein DecT            | M12214-04,MRUS,Pulmonary Vein Deceleration Time                           |                           |
| PVein S/D             | M12214-05,MRUS,Pulmonary Vein Ratio of S-Wave velocity to D-wave velocity |                           |
| PVein SF              | M12214-06,MRUS,Pulmonary Vein Systolic fraction                           |                           |

## Cardiac Shunt Study Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                        | <b>Optional Modifiers</b> |
|-----------------------|-------------------------------------------------------------|---------------------------|
| Qp/Qs                 | 29462-9,LN,Pulmonary-to-Systemic Shunt Flow Ratio           |                           |
| Qp-Qs                 | M12217-01,MRUS,Pulmonary-sub-Systemic Shunt Flow Difference |                           |
| PV HR(Qp/Qs)          | 8867-4,LN,Heart rate                                        |                           |
| AV HR(Qp/Qs)          | 8867-4,LN,Heart rate                                        |                           |
| PV SV(Qp/Qs)          | F-32120,SRT,Stroke Volume                                   |                           |
| PV CO(Qp/Qs)          | F-32100,SRT,Cardiac Output                                  |                           |
| AV SV(Qp/Qs)          | F-32120,SRT,Stroke Volume                                   |                           |
| AV CO(Qp/Qs)          | F-32100,SRT,Cardiac Output                                  |                           |

## Congenital Anomaly of Cardiovascular System Measurements

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                                                | <b>Optional Modifiers</b>      |
|-----------------------|---------------------------------------------------------------------|--------------------------------|
| PDA Diam              | M12218-01,MRUS,Patent Ductus Arteriosus Diameter                    | ImageMode =G-03A2,SRT,2D mode; |
| PFO Diam              | M12218-02,MRUS,Patent Foramen Ovale Diameter                        | ImageMode =G-03A2,SRT,2D mode; |
| PDA Vel(d)            | M12218-03,MRUS,Patent Ductus Arteriosus Diastolic Velocity          |                                |
| PDA Vel(s)            | M12218-04,MRUS,Patent Ductus Arteriosus Systolic Velocity           |                                |
| Coarc Pre-Duct        | M12218-05,MRUS,Coarctation of Pre-Ductus Velocity                   |                                |
| Coarc Post-Duct       | M12218-06,MRUS,Coarctation of Post-Ductus Velocity                  |                                |
| PDA Dias PG           | M12218-07,MRUS,Patent Ductus Arteriosus Diastolic Pressure Gradient |                                |
| PDA Sys PG            | M12218-08,MRUS,Patent Ductus Arteriosus Systolic Pressure Gradient  |                                |
| Coarc Pre-Duct PG     | M12218-09,MRUS,Coarctation of Pre-Ductus Pressure Gradient          |                                |
| Coarc Post-Duc PG     | M12218-10,MRUS,Coarctation of Post-Ductus Pressure Gradient         |                                |

|           |                                            |                                |
|-----------|--------------------------------------------|--------------------------------|
| VSD Diam  | G-038F,SRT,Cardiovascular Orifice Diameter | ImageMode =G-03A2,SRT,2D mode; |
| ASD Diam  | G-038F,SRT,Cardiovascular Orifice Diameter | ImageMode =G-03A2,SRT,2D mode; |
| VSD Vmax  | 11726-7,LN,Peak Velocity                   |                                |
| ASD Vmax  | 11726-7,LN,Peak Velocity                   |                                |
| VSD PGmax | 20247-3,LN,Peak Gradient                   |                                |
| ASD PGmax | 20247-3,LN,Peak Gradient                   |                                |

## Pericardial Disease Measurements

| <i>MODALITY Label</i> | <i>DICOM Mapping</i>                             | <i>Optional Modifiers</i>      |
|-----------------------|--------------------------------------------------|--------------------------------|
| PEd(2D)               | C90000-01,MRUS,Pericard Effusion at end-diastole | ImageMode =G-03A2,SRT,2D mode; |
| PEd(M)                | C90000-01,MRUS,Pericard Effusion at end-diastole | ImageMode =G-0394,SRT,M Mode;  |
| PEs(2D)               | C90000-02,MRUS,Pericard Effusion at end-systole  | ImageMode =G-03A2,SRT,2D mode; |
| PEs(M)                | C90000-02,MRUS,Pericard Effusion at end-systole  | ImageMode =G-0394,SRT,M Mode;  |

## Heart Rate Measurements

| <i>MODALITY Label</i> | <i>DICOM Mapping</i>   | <i>Optional Modifiers</i>                        |
|-----------------------|------------------------|--------------------------------------------------|
| HR                    | 8867-4, LN, Heart rate | Image Mode = G-0394,SRT,M Mode                   |
| HRSP.Ellipse          | 8867-4, LN, Heart rate | Method =125226,DCM,Single Plane Ellipse          |
| HRBP.Ellipse          | 8867-4, LN, Heart rate | Method=125211,DCM,Biplane Ellipse                |
| HRBullet              | 8867-4, LN, Heart rate | Method =VM12228-01,MRUS,Bullet                   |
| HRMod.Simp            | 8867-4, LN, Heart rate | Method= VM12228-02,MRUS,Method of Disks,Simpson  |
| HRSimp.SP             | 8867-4, LN, Heart rate | Method= 125208,DCM,Method of Disks, Single Plane |
| HRSimp.SP.A4C         | 8867-4, LN, Heart rate | Method= 125208,DCM,Method of Disks, Single Plane |
| HRSimp.BP             | 8867-4, LN, Heart rate | Method= 125207,DCM,Method of Disks, Biplane      |
| HRTeich.2D            | 8867-4, LN, Heart rate | Method= 125209,DCM,Teichholz                     |
| HRTeich.M             | 8867-4, LN, Heart rate | Method= 125209,DCM,Teichholz                     |
| HRCube.2D             | 8867-4, LN, Heart rate | Method= 125206,DCM,Cube Metho                    |
| HRCube.M              | 8867-4, LN, Heart rate | Method= 125206,DCM,Cube Method                   |
| HRGibson.2D           | 8867-4, LN, Heart rate | Method= VM12228-03,MRUS,Gibson                   |
| HRGibson.M            | 8867-4, LN, Heart rate | Method= VM12228-03,MRUS,Gibson                   |

## 9.3 Vascular Structured Reporting Template

This appendix lists the DICOM Structured Report (SR) mappings used in the Vascular Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Vascular Report mappings follow the DICOM SR Template TID 5100: Vascular Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".



## TID (5100) Vascular Ultrasound Report

This is the template for the root the content tree for the vascular ultrasound procedure report.

|    | NL | Rel with Parent | VT        | Concept Name                                                | Used in Modality | Value Set                                                                                                                                                               | Comment |
|----|----|-----------------|-----------|-------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1  |    |                 | CONTAINER | EV (125100, DCM, "Vascular Ultrasound Procedure Report")    | √                |                                                                                                                                                                         |         |
| 2  | >  | HAS OBS CONTEXT | CODE      | EV (R-40FB8, SRT, "Temporal periods Relating to Procedure") |                  | DCID (12102) Temporal Periods Relating To Procedure or Therapy                                                                                                          |         |
| 3  | >  | HAS CONCEPT MOD | INCLUDE   | DTID (1204) Language of Content Item and Descendants        |                  |                                                                                                                                                                         |         |
| 4  | >  | HAS OBS CONTEXT | INCLUDE   | DTID (1001) Observation Context                             | √                |                                                                                                                                                                         |         |
| 5  | >  | CONTAINS        | INCLUDE   | DTID (5101) Vascular Patient Characteristics                | √                |                                                                                                                                                                         |         |
| 6  | >  | CONTAINS        | CONTAINER | EV (111028, DCM, "Image Library")                           | √                |                                                                                                                                                                         |         |
| 7  | >> | CONTAINS        | IMAGE     | No purpose of reference                                     | √                |                                                                                                                                                                         |         |
| 8  | >  | CONTAINS        | INCLUDE   | DTID (5102) Vascular Procedure Summary Section              | √                |                                                                                                                                                                         |         |
| 9  | >  | CONTAINS        | INCLUDE   | DTID (5103) Vascular Ultrasound Section                     | √                | \$SectionScope = DT (T-40501, SRT, "Blood Vessel of Head")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12105) Intracranial Cerebral Vessels  |         |
| 10 | >  | CONTAINS        | INCLUDE   | DTID (5103) Vascular Ultrasound Section                     | √                | \$SectionScope = DT (T-40501, SRT, "Blood Vessel of Head")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12105) Intracranial Cerebral Vessels |         |

|    | NL | Rel with Parent | VT      | Concept Name                            | Used in Modality | Value Set Constraint                                                                                                                                                                                                         | Comment |
|----|----|-----------------|---------|-----------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 11 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-40501, SRT, "Blood Vessel of Head")<br>\$SectionLaterality = EV (G-A103, SRT, "Unilateral")<br>\$Anatomy = DCID (12106) Intracranial Cerebral Vessels (unilateral)                                    |         |
| 12 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-45005, SRT, "Artery of neck")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12104) Extracranial Arteries<br>\$AnatomyRatio = DCID (12123) Carotid Ratios                     |         |
| 13 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-45005, SRT, "Artery of neck")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12104) Extracranial Arteries<br>\$AnatomyRatio = DCID (12123) Carotid Ratios                    |         |
| 14 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-47040, SRT, "Artery of Lower Extremity")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12109) Lower Extremity Arteries<br>\$AnatomyRatio = 8581-1, LN, Tibial/brachial index |         |

|    | NL | Rel with Parent | VT      | Concept Name                            | Used in Modality | Value Set Constraint                                                                                                                                                                                                          | Comment |
|----|----|-----------------|---------|-----------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 15 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-47040, SRT, "Artery of Lower Extremity")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12109) Lower Extremity Arteries<br>\$AnatomyRatio = 8581-1, LN, Tibial/brachial index |         |
| 16 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-49403, SRT, "Vein of Lower Extremity")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12110) Lower Extremity Veins                                                             |         |
| 17 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-49403, SRT, "Vein of Lower Extremity")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12110) Lower Extremity Veins                                                            |         |
| 18 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-47020, SRT, "Artery Of Upper Extremity")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12107) Upper Extremity Arteries                                                        |         |
| 19 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-47020, SRT, "Artery Of Upper Extremity")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12107) Upper Extremity Arteries                                                       |         |

|    | NL | Rel with Parent | VT      | Concept Name                            | Used in Modality | Value Set Constraint                                                                                                                                                                        | Comment |
|----|----|-----------------|---------|-----------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 20 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-47020, SRT, "Artery Of Upper Extremity")<br>\$SectionLaterality = EV (G-A100, SRT, "Unilateral")<br>\$Anatomy = DCID (SELCID-2) Upper Extremity Arteries(unilateral) |         |
| 21 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-49103, SRT, "Vein Of Upper Extremity")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12108) Upper Extremity Veins                           |         |
| 22 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-49103, SRT, "Vein Of Upper Extremity")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12108) Upper Extremity Veins                          |         |
| 23 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section |                  | \$SectionScope = DT (T-46002, SRT, "Artery of Abdomen")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12111) Abdominal Arteries (lateral)                          |         |
| 24 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section |                  | \$SectionScope = DT (T-46002, SRT, "Artery of Abdomen")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12111) Abdominal Arteries (lateral)                         |         |
| 25 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section | √                | \$SectionScope = DT (T-46002, SRT, "Artery of Abdomen")<br>\$SectionLaterality = EV (G-A103, SRT, "Unilateral")<br>\$Anatomy = DCID (12112) Abdominal Arteries (unilateral)                 |         |

|    | NL | Rel with Parent | VT      | Concept Name                                    | Used in Modality | Value Set Constraint                                                                                                                                                   | Comment |
|----|----|-----------------|---------|-------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 26 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section         |                  | \$SectionScope = DT (T-487A0, SRT, "Vein of Abdomen")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12113) Abdominal Veins (lateral)          |         |
| 27 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section         |                  | \$SectionScope = DT (T-487A0, SRT, "Vein of Abdomen")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12113) Abdominal Veins (lateral)         |         |
| 28 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section         | √                | \$SectionScope = DT (T-487A0, SRT, "Vein of Abdomen")<br>\$SectionLaterality = EV (G-A103, SRT, "Unilateral")<br>\$Anatomy = DCID (12114) Abdominal Veins (unilateral) |         |
| 29 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section         | √                | \$SectionScope = DT (T-71019, SRT, "Vascular Structure Of Kidney")<br>\$SectionLaterality = EV (G-A101, SRT, "Left")<br>\$Anatomy = DCID (12115) Renal Vessels         |         |
| 30 | >  | CONTAINS        | INCLUDE | DTID (5103) Vascular Ultrasound Section         | √                | \$SectionScope = DT (T-71019, SRT, "Vascular Structure Of Kidney")<br>\$SectionLaterality = EV (G-A100, SRT, "Right")<br>\$Anatomy = DCID (12115) Renal Vessels        |         |
| 31 | >  | CONTAINS        | INCLUDE | DTID (5105) Ultrasound Graft Section            |                  |                                                                                                                                                                        |         |
| 32 | >  | CONTAINS        | TEXT    | (20121120,MRUS, "self-defined-Measurementfile") | √                |                                                                                                                                                                        |         |

## TID (1001) Observation Context

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

|   | NL | Rel with Parent | VT    | Concept Name                                                   | Used in Modality | Value Constraint Set                                            | Comment |
|---|----|-----------------|-------|----------------------------------------------------------------|------------------|-----------------------------------------------------------------|---------|
| 1 | >  | HAS OBS CONTEXT | CODE  | EV (121005,DCM, "Observer Type")                               | √                | (121006,DCM, "Person")                                          |         |
| 2 | >  | HAS OBS CONTEXT | PNAME | EV (121008,DCM, "Person Observer Name")                        | √                | Operator from Info                                              |         |
| 3 | >  | HAS OBS CONTEXT | TEXT  | EV (121009,DCM, " Person Observer's Organization Name")        | √                | Institution Name (0008,0080) of the General Equipment Module    |         |
| 4 | >  | HAS OBS CONTEXT | CODE  | EV (121010,DCM, " Person Observer's Role in the Organization") | √                | (121093, DCM, "Sonographer")                                    |         |
| 5 | >  | HAS OBS CONTEXT | CODE  | EV (121024, DCM, "Subject Class")                              | √                | (121025, DCM, "Patient")                                        |         |
| 6 | >  | HAS OBS CONTEXT | PNAME | EV (121029,DCM, "Subject Name")                                | √                | value of Patient's Name (0010,0010) in Patient Module           |         |
| 7 | >  | HAS OBS CONTEXT | DATE  | EV (121031,DCM, "Subject Birth Date")                          | √                | value of Patient's Birth Date (0010,0030) in Patient Module     |         |
| 8 | >  | HAS OBS CONTEXT | CODE  | EV (121032,DCM, "Subject Sex")                                 | √                | value equivalent to Patient's Sex (0010,0040) in Patient Module |         |
| 9 | >  | HAS OBS CONTEXT | NUM   | EV (121033,DCM, "Subject Age")                                 | √                | value of Patient's Age (0010,1010) in Patient Study Module      |         |

## TID (5101) Vascular Patient Characteristics

|   | NL | Rel with Parent | VT        | Concept Name                                | Used in Modality | Value Constraint Set                         | Comment |
|---|----|-----------------|-----------|---------------------------------------------|------------------|----------------------------------------------|---------|
| 1 |    |                 | CONTAINER | EV (121118, DCM, "Patient Characteristics") |                  |                                              |         |
| 2 | >  | CONTAINS        | NUM       | EV (121033, DCM, "Subject Age")             | √                | Units = DCID (7456) Units of Measure for Age |         |
| 3 | >  | CONTAINS        | CODE      | EV (121032, DCM, "Subject Sex")             | √                | DCID (7455) Sex                              |         |
| 4 | >  | CONTAINS        | NUM       | EV (8867-4, LN, "Heart Rate")               |                  |                                              |         |

|   |   |          |     |                                               |   |  |  |
|---|---|----------|-----|-----------------------------------------------|---|--|--|
| 5 | > | CONTAINS | NUM | EV (F-008EC, SRT, "Systolic Blood Pressure")  | √ |  |  |
| 6 | > | CONTAINS | NUM | EV (F-008ED, SRT, "Diastolic Blood Pressure") | √ |  |  |

### TID (5102) Vascular Procedure Summary Section

|    | NL  | Rel with Parent | VT        | Concept Name                             | Used in Modality | Value Constraint | Set | COMMENT                        |
|----|-----|-----------------|-----------|------------------------------------------|------------------|------------------|-----|--------------------------------|
| 1  |     |                 | CONTAINER | DT (121111, DCM, "Summary")              |                  |                  |     |                                |
| 2  | >   | CONTAINS        | TEXT      | DCID (12101) Vascular Summary            | √                |                  |     | from Info comment              |
| 3  | >   | CONTAINS        | TEXT      | (I12101-01,MRUS,"Primary Indications")   | √                |                  |     | from Info                      |
| 4  | >   | CONTAINS        | TEXT      | (I12101-02,MRUS,"Secondary Indications") | √                |                  |     | from Info                      |
| 5  | >   | CONTAINS        | TEXT      | (I12101-03,MRUS,"CPT4 Code")             | √                |                  |     | from Info                      |
| 6  | >   | CONTAINS        | TEXT      | (I12101-04,MRUS,"CPT4 Description")      | √                |                  |     | from Info                      |
| 7  | >   | CONTAINS        | TEXT      | EV (121106, DCM, "Comment")              | √                |                  |     | From report interface Comment  |
| 8  | >   | CONTAINS        | TEXT      | (I12101-05,MRUS,"Prompt")                | √                |                  |     | From report interface Prompt   |
| 9  | >   | CONTAINS        | TEXT      | (121071,DCM,"Findings")                  | √                |                  |     | From report interface Findings |
| 10 | >   | CONTAINS        | CONTAINER | (T-45100, SNM3, Common carotid artery)   | √                |                  |     |                                |
| 11 | >>  | CONTAINS        | CONTAINER | (FG3495-01, MRUS, Plaque Description)    | √                |                  |     |                                |
| 12 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                      | √                |                  |     |                                |
| 13 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                       | √                |                  |     |                                |
| 14 | >>  | CONTAINS        | CONTAINER | (FG3495-02, MRUS, Plaque Area)           | √                |                  |     |                                |
| 15 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                      | √                |                  |     |                                |
| 16 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                       | √                |                  |     |                                |
| 17 | >   | CONTAINS        | CONTAINER | (T-45160,SRT,Carotid Bifurcation)        | √                |                  |     |                                |
| 18 | >>  | CONTAINS        | CONTAINER | (FG3495-01, MRUS, Plaque Description)    | √                |                  |     |                                |
| 19 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                      | √                |                  |     |                                |
| 20 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                       | √                |                  |     |                                |
| 21 | >>  | CONTAINS        | CONTAINER | (FG3495-02, MRUS, Plaque Area)           | √                |                  |     |                                |
| 22 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                      | √                |                  |     |                                |

|    | NL  | Rel with Parent | VT        | Concept Name                            | Used in Modality | Value Constraint | Set | COMMENT |
|----|-----|-----------------|-----------|-----------------------------------------|------------------|------------------|-----|---------|
| 23 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |                  |     |         |
| 24 | >   | CONTAINS        | CONTAINER | (T-45300, SRT, Internal Carotid Artery) | √                |                  |     | ICA     |
| 25 | >>  | CONTAINS        | CONTAINER | (FG3495-01, MRUS, Plaque Description)   | √                |                  |     |         |
| 26 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |                  |     |         |
| 27 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |                  |     |         |
| 28 | >>  | CONTAINS        | CONTAINER | (FG3495-02, MRUS, Plaque Area)          | √                |                  |     |         |
| 29 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |                  |     |         |
| 30 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |                  |     |         |
| 31 | >   | CONTAINS        | CONTAINER | (T-45200,SRT,External Carotid Artery)   | √                |                  |     | ECA     |
| 32 | >>  | CONTAINS        | CONTAINER | (FG3495-01, MRUS, Plaque Description)   | √                |                  |     |         |
| 33 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |                  |     |         |
| 34 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |                  |     |         |
| 35 | >>  | CONTAINS        | CONTAINER | (FG3495-02, MRUS, Plaque Area)          | √                |                  |     |         |
| 36 | >>> | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |                  |     |         |
| 37 | >>> | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |                  |     |         |
| 38 | >   | CONTAINS        | CONTAINER | (T-45700 ,SRT ,Vertebral Artery)        | √                |                  |     |         |
| 39 | >>  | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |                  |     |         |
| 40 | >>  | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |                  |     |         |
| 41 | >   | CONTAINS        | CONTAINER | (T-46100,SRT,Subclavian Artery)         | √                |                  |     |         |
| 42 | >>  | CONTAINS        | TEXT      | (G-A100,SNM3,Right)                     | √                |                  |     |         |
| 43 | >>  | CONTAINS        | TEXT      | (G-A101,SNM3,Left)                      | √                |                  |     |         |
| 44 | >   | CONTAINS        | TEXT      | (T-46010,SRT,Brachiocephalic trunk)     | √                |                  |     |         |

### TID (5103) Vascular Ultrasound Section

|   | NL | Rel with Parent | VT        | Concept Name                           | Used in Modality | Value Constraint                                                       | Set | Comment |
|---|----|-----------------|-----------|----------------------------------------|------------------|------------------------------------------------------------------------|-----|---------|
| 1 |    |                 | CONTAINER | DT (121070, DCM, "Findings")           | √                |                                                                        |     |         |
| 2 | >  | HAS CONCEPT MOD | CODE      | EV (G-C0E3, SRT, "Finding Site")       | √                | \$SectionScope                                                         |     |         |
| 3 | >  | HAS CONCEPT MOD | CODE      | EV (G-C171, SRT, "Laterality")         | √                | \$SectionLaterality                                                    |     |         |
| 4 | >  | CONTAINS        | INCLUDE   | DTID (5104) Vascular Measurement Group | √                | \$AnatomyGroup = \$Anatomy= DCID (12105) Intracranial Cerebral Vessels |     |         |



|   |   |          |         |                        |   |                                |                         |
|---|---|----------|---------|------------------------|---|--------------------------------|-------------------------|
| 5 | > | CONTAINS | INCLUDE | DTID (300) Measurement | √ | \$Measurement = \$AnatomyRatio | Only for Artery of neck |
|---|---|----------|---------|------------------------|---|--------------------------------|-------------------------|

### TID (5104) Vascular Ultrasound Measurement Group

|   | NL | Rel with Parent | VT        | Concept Name                                           | Used in Modality | Value Constraint Set                                                                                     | Comment |
|---|----|-----------------|-----------|--------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------|---------|
| 1 |    |                 | CONTAINER | \$AnatomyGroup                                         | √                |                                                                                                          |         |
| 2 | >  | HAS CONCEPT MOD | CODE      | EV (G-A1F8, SRT, "Topographical Modifier")             | √                | DCID (12116) Vessel Segment Modifiers                                                                    |         |
| 3 | >  | HAS CONCEPT MOD | CODE      | EV (125101, DCM, "Vessel Branch")                      |                  | DCID (12117) Vessel Branch Modifiers                                                                     |         |
| 4 | >  | CONTAINS        | INCLUDE   | DTID (300) Measurement                                 | √                | \$Measurement = DCID (12119) Vascular Ultrasound Property<br>\$Derivation = DCID (3627) Measurement Type |         |
| 5 | >> | HAS CONCEPT MOD | CODE      | EV (R-4089A, SRT, "Cardiac Cycle Point")               |                  | DCID (12233) Cardiac Phase                                                                               |         |
| 6 | >> | HAS CONCEPT MOD | CODE      | EV (R-41FFC, SRT, "Temporal period related to eating") |                  | DT (G-A491, SRT, "Post-prandial")                                                                        |         |

### CID (12104) Extracranial Arteries

| CSD | CV      | Code Meaning            |
|-----|---------|-------------------------|
| SRT | T-45170 | Carotid Bulb            |
| SRT | T-45100 | Common Carotid Artery   |
| SRT | T-45200 | External Carotid Artery |
| SRT | T-45300 | Internal Carotid Artery |
| SRT | T-46100 | Subclavian Artery       |
| SRT | T-45700 | Vertebral Artery        |

### CID (12105) Intracranial Cerebral Vessels

| CSD | CV      | Code Meaning                   |
|-----|---------|--------------------------------|
| SRT | T-45540 | Anterior Cerebral Artery       |
| SRT | T-45600 | Middle Cerebral Artery         |
| SRT | T-45900 | Posterior Cerebral Artery      |
| SRT | T-45320 | Posterior Communicating Artery |

### CID (12106) Intracranial Cerebral Vessels (unilateral)

| CSD | CV      | Code Meaning   |
|-----|---------|----------------|
| SRT | T-45800 | Basilar Artery |

| CSD  | CV        | Code Meaning                  |
|------|-----------|-------------------------------|
| SRT  | T-45530   | Anterior Communicating Artery |
| MRUS | V12106-01 | Basilar Vein                  |

### CID (12107) Upper Extremity Arteries

| CSD | CV      | Code Meaning      |
|-----|---------|-------------------|
| SRT | T-47100 | Axillary Artery   |
| SRT | T-47160 | Brachial Artery   |
| SRT | T-47300 | Radial Artery     |
| SRT | T-46100 | Subclavian Artery |
| SRT | T-47200 | Ulnar Artery      |

### CID (SELF CID-2) Upper Extremity Arteries(unilateral)

| CSD | CV      | Code Meaning      |
|-----|---------|-------------------|
| SRT | T-46010 | Innominate Artery |

### CID (12108) Upper Extremity Veins

| CSD | CV      | Code Meaning    |
|-----|---------|-----------------|
| SRT | T-49110 | Axillary vein   |
| SRT | T-48052 | Basilic vein    |
| SRT | T-49350 | Brachial vein   |
| SRT | T-49240 | Cephalic vein   |
| SRT | T-49340 | Radial vein     |
| SRT | T-48330 | Subclavian vein |
| SRT | T-49330 | Ulnar vein      |

### CID (12109) Lower Extremity Arteries

| CSD  | CV        | Code Meaning               |
|------|-----------|----------------------------|
| SRT  | T-46710   | Common Iliac Artery        |
| SRT  | T-47700   | Anterior Tibial Artery     |
| SRT  | T-47400   | Common Femoral Artery      |
| SRT  | T-47741   | Dorsalis Pedis Artery      |
| SRT  | T-46910   | External Iliac Artery      |
| SRT  | T-46740   | Internal Iliac Artery      |
| SRT  | T-47630   | Peroneal Artery            |
| SRT  | T-47500   | Popliteal Artery           |
| SRT  | T-47600   | Posterior Tibial Artery    |
| SRT  | T-47440   | Profunda Femoris Artery    |
| SRT  | T-47403   | Superficial Femoral Artery |
| MRUS | V12109-01 | TP Trunk Artery            |

### CID (12110) Lower Extremity Veins

| CSD  | CV        | Code Meaning             |
|------|-----------|--------------------------|
| SRT  | T-49630   | Anterior Tibial Vein     |
| SRT  | G-035B    | Common Femoral Vein      |
| SRT  | T-48920   | Common Iliac Vein        |
| SRT  | T-48930   | External Iliac Vein      |
| SRT  | T-4942D   | Gastrocnemius vein       |
| SRT  | T-49530   | Great Saphenous Vein     |
| SRT  | T-49550   | Lesser Saphenous Vein    |
| SRT  | T-49650   | Peroneal Vein            |
| SRT  | T-49640   | Popliteal Vein           |
| SRT  | T-49620   | Posterior Tibial Vein    |
| SRT  | T-49660   | Profunda Femoris Vein    |
| SRT  | G-036B    | Soleal vein              |
| SRT  | G-035A    | Superficial Femoral Vein |
| SRT  | T-48940   | Internal iliac vein      |
| SRT  | T-49410   | Femoral vein             |
| MRUS | V12110-01 | TP Trunk Vein            |

### CID (12112) Abdominal Arteries (unilateral)

| CSD | CV      | Code Meaning               |
|-----|---------|----------------------------|
| SRT | T-42000 | Aorta                      |
| SRT | T-46400 | Celiac Axis                |
| SRT | T-46421 | Common Hepatic Artery      |
| SRT | T-46422 | Proper Hepatic Artery      |
| SRT | T-46460 | Splenic Artery             |
| SRT | T-46510 | Superior Mesenteric Artery |
| SRT | T-46520 | Inferior Mesenteric Artery |

### CID (12114) Abdominal Veins (unilateral)

| CSD  | CV        | Code Meaning             |
|------|-----------|--------------------------|
| SRT  | T-48720   | Hepatic Vein             |
| SRT  | T-48726   | Middle Hepatic Vein      |
| SRT  | T-48810   | Portal Vein              |
| SRT  | T-48710   | Inferior Vena Cava       |
| SRT  | T-48890   | Splenic Vein             |
| SRT  | T-48840   | Superior Mesenteric Vein |
| MRUS | V12114-01 | Main Portal Vein         |
| MRUS | SRT       | Inferior Mesenteric Vein |

### CID (12115) Renal Vessels

| CSD  | CV        | Code Meaning                 |
|------|-----------|------------------------------|
| SRT  | T-46600   | Renal Artery                 |
| SRT  | T-48740   | Renal Vein                   |
| SRT  | T-46659   | Segmental Artery             |
| SRT  | T-4668A   | Arcuate Artery of the Kidney |
| SRT  | T-4667D   | Interlobar Artery of Kidney  |
| MRUS | V12115-01 | Main Renal Artery            |

### CID (12116) Vessel Segment Modifiers

| CSD | CV      | Code Meaning               |
|-----|---------|----------------------------|
| SRT | G-A119  | Distal                     |
| SRT | G-A188  | Mid-longitudinal           |
| SRT | G-036A  | Origin of vessel           |
| SRT | G-A118  | Proximal                   |
| SRT | R-1025B | Dilated portion of segment |
| SRT | R-40775 | None                       |

## Mapping between Modality measurements and DICOM Concepts

### Vascular Measurements

| <i>MODALITY Label</i>                          | <i>DICOM Mapping</i>                                  |  |
|------------------------------------------------|-------------------------------------------------------|--|
| <Vasculature Anatomic Location> ED             | 11653-3, LN, End Diastolic Velocity                   |  |
| <Vasculature Anatomic Location> MD             | 11665-7, LN, Minimum Diastolic Velocity               |  |
| <Vasculature Anatomic Location> PS             | 11726-7, LN, Peak Systolic Velocity                   |  |
| <Vasculature Anatomic Location> TAMEAN         | 20352-1, LN, Time averaged mean velocity              |  |
| <Vasculature Anatomic Location> TAMAX          | 11692-1, LN, Time averaged peak velocity              |  |
| <Vasculature Anatomic Location> PV             | 11726-7, LN, Peak Velocity                            |  |
| <Vasculature Anatomic Location> PI             | 12008-9, LN, Pulsatility Index                        |  |
| <Vasculature Anatomic Location> RI             | 12023-8, LN, Resistivity Index                        |  |
| <Vasculature Anatomic Location> S/D            | 12144-2, LN, Systolic to Diastolic Velocity Ratio     |  |
| <Vasculature Anatomic Location> D/S            | M12119-04, MRUS, Diastolic to Systolic Velocity Ratio |  |
| <Vasculature Anatomic Location> AT             | 20168-1, LN, Acceleration Time                        |  |
| <Vasculature Anatomic Location> DT             | 20217-6, LN, Deceleration Time                        |  |
| <Vasculature Anatomic Location> PPG            | 20247-3, LN, Peak Gradient                            |  |
| <Vasculature Anatomic Location> MPG            | 20256-4, LN, Mean Gradient                            |  |
| <Vasculature Anatomic Location> MMPG           | M12119-01, MRUS, Mean Velocity Mean Pressure Gradient |  |
| <Vasculature Anatomic Location> VTI            | M12119-02, MRUS, Velocity-Time Integral               |  |
| <Vasculature Anatomic Location> HR             | 8867-4, LN, Heart Rate                                |  |
| <Vasculature Anatomic Location> $\theta$       | M12119-03, MRUS, Angle                                |  |
| <Vasculature Anatomic Location> VD             | R-1025C, SRT, Vessel Intimal Diameter                 |  |
| <Vasculature Anatomic Location> VolFlow        | M12119-06, MRUS, Vol Flow(TAMAX)                      |  |
| <Vasculature Anatomic Location> VolFlow.TAMEAN | M12119-07, MRUS, Vol Flow(TAMEAN)                     |  |

| <b>MODALITY Label</b>                           | <b>DICOM Mapping</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <Vasculature Anatomic Location>Reflux time      | M12119-11,MRUS,Reflux time       | C.Iliac V Reflux time;<br>Ex.Iliac V Reflux time;<br>IIV Reflux time;<br>Femoral V Reflux time;<br>CFV Reflux time;<br>DFV Reflux time;<br>SFV Reflux time;<br>Popliteal V Reflux time;<br>TP Trunk V Reflux time;<br>Sural V Reflux time;<br>Soleal V Reflux time;<br>Peroneal V Reflux time;<br>P.Tib. V Reflux time;<br>Saph V Reflux time;<br>SSV Reflux time;<br>IVC Reflux time;<br>A.Tib. V Reflux time; |
| <Vasculature Anatomic Location> Splenic V Diam  | M12119-12,MRUS,Splenic V Diam    | Splenic Vein                                                                                                                                                                                                                                                                                                                                                                                                    |
| <Vasculature Anatomic Location> Splenic A Diam  | M12119-13,MRUS,Splenic A Diam    | Splenic Arteries                                                                                                                                                                                                                                                                                                                                                                                                |
| <Vasculature Anatomic Location> Aorta Sten D    | C12119-1,MRUS,Aorta Sten D       | Abdominal Arteries                                                                                                                                                                                                                                                                                                                                                                                              |
| <Vasculature Anatomic Location> Aorta Sten A    | C12119-2,MRUS,Aorta Sten A       | Abdominal Arteries                                                                                                                                                                                                                                                                                                                                                                                              |
| <Vasculature Anatomic Location> Aneurysm Length | M12119-14,MRUS,Aneurysm Length   | Abdominal Arteries                                                                                                                                                                                                                                                                                                                                                                                              |
| <Vasculature Anatomic Location> Aneurysm Height | M12119-15,MRUS,Aneurysm Height   | Abdominal Arteries                                                                                                                                                                                                                                                                                                                                                                                              |
| <Vasculature Anatomic Location> Aneurysm Width  | M12119-16,MRUS,Aneurysm Width    | Abdominal Arteries                                                                                                                                                                                                                                                                                                                                                                                              |
| <Vasculature Anatomic Location> Aorta Diam H    | M12119-17,MRUS,Aorta Diam Heith  | Abdominal Arteries                                                                                                                                                                                                                                                                                                                                                                                              |
| <Vasculature Anatomic Location> Aorta Diam W    | M12119-18, MRUS,Aorta Diam Width | Abdominal Arteries                                                                                                                                                                                                                                                                                                                                                                                              |

## Extracranial Arteries

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                |
|-----------------------|-------------------------------------|
| Bulb                  | T-45170,SRT,Carotid Bulb            |
| CCA                   | T-45100,SRT,Common Carotid Artery   |
| ECA                   | T-45200,SRT,External Carotid Artery |
| ICA                   | T-45300,SRT,Internal Carotid Artery |
| Subclav A             | T-46100,SRT,Subclavian Artery       |
| Vert A                | T-45700,SRT,Vertebral Artery        |

## Intracranial Cerebral Vessels

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                  |
|-----------------------|---------------------------------------|
| ACA                   | T-45540,SRT,Anterior Cerebral Artery  |
| MCA                   | T-45600,SRT,Middle Cerebral Artery    |
| PCA                   | T-45900,SRT,Posterior Cerebral Artery |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                         |
|-----------------------|----------------------------------------------|
| PCoM A                | T-45320, SRT, Posterior Communicating Artery |

## Intracranial Cerebral Vessels (unilateral)

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                        |
|-----------------------|---------------------------------------------|
| BA                    | T-45800, SRT, Basilar Artery                |
| ACoM A                | T-45530, SRT, Anterior Communicating Artery |
| Ba V                  | V12106-01, MRUS, Basilar Vein               |

## Upper Extremity Arteries

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>            |
|-----------------------|---------------------------------|
| Axill A               | T-47100, SRT, Axillary Artery   |
| Brachial              | T-47160, SRT, Brachial Artery   |
| Radial A              | T-47300, SRT, Radial Artery     |
| Subclav               | T-46100, SRT, Subclavian Artery |
| Ulnar A               | T-47200, SRT, Ulnar Artery      |

## Upper Extremity Arteries(unilateral)

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>            |
|-----------------------|---------------------------------|
| Innom A               | T-46010, SRT, Innominate Artery |

## Upper Extremity Veins

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>          |
|-----------------------|-------------------------------|
| Axill V               | T-49110, SRT, Axillary vein   |
| Basilic V             | T-48052, SRT, Basilic vein    |
| Brachial V            | T-49350, SRT, Brachial vein   |
| Cephalic V            | T-49240, SRT, Cephalic vein   |
| Radial V              | T-49340, SRT, Radial vein     |
| Subclav V             | T-48330, SRT, Subclavian vein |
| Ulnar V               | T-49330, SRT, Ulnar vein      |

## Lower Extremity Arteries

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                     |
|-----------------------|------------------------------------------|
| C.Iliac A             | T-46710, SRT, Common Iliac Artery        |
| A.Tib A               | T-47700, SRT, Anterior Tibial Artery     |
| CFA                   | T-47400, SRT, Common Femoral Artery      |
| Dors.Ped A            | T-47741, SRT, Dorsalis Pedis Artery      |
| Ex.Iliac A            | T-46910, SRT, External Iliac Artery      |
| IIA                   | T-46740, SRT, Internal Iliac Artery      |
| Peroneal A            | T-47630, SRT, Peroneal Artery            |
| Pop A                 | T-47500, SRT, Popliteal Artery           |
| P.Tib A               | T-47600, SRT, Posterior Tibial Artery    |
| PFA                   | T-47440, SRT, Profunda Femoris Artery    |
| SFA                   | T-47403, SRT, Superficial Femoral Artery |
| TP Trunk A            | V12109-01, MRUS, TP Trunk Artery         |

## Lower Extremity Veins

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>               |
|-----------------------|------------------------------------|
| A.Tib V               | T-49630, SRT, Anterior Tibial Vein |
| CFV                   | G-035B, SRT, Common Femoral Vein   |
| C.Iliac V             | T-48920, SRT, Common Iliac Vein    |
| Ex.Iliac V            | T-48930, SRT, External Iliac Vein  |
| Sural V               | T-4942D, SRT, Gastrocnemius vein   |
| Saph V                | T-49530, SRT, Great Saphenous Vein |

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                |
|-----------------------|-------------------------------------|
| SSV                   | T-49550,SRT,Lesser Saphenous Vein   |
| Peroneal V            | T-49650,SRT,Peroneal Vein           |
| Pop V                 | T-49640,SRT,Popliteal Vein          |
| P.Tib V               | T-49620,SRT,Posterior Tibial Vein   |
| PFV                   | T-49660,SRT,Profunda Femoris Vein   |
| Soleal V              | G-036B,SRT,Soleal vein              |
| SFV                   | G-035A,SRT,Superficial Femoral Vein |
| IIV                   | T-48940,SRT,Internal iliac vein     |
| Femoral V             | T-49410,SRT,Femoral vein            |
| TP Trunk V            | V12110-01,MRUS,TP Trunk Vein        |

## Abdominal Arteries (unilateral)

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                    |
|-----------------------|-----------------------------------------|
| Abdominal Aorta       | T-42000,SRT,Aorta                       |
| Celiac Axis           | T-46400,SRT,Celiac Axis                 |
| C Hepatic A           | T-46421,SRT,Common Hepatic Artery       |
| Hepatic A             | T-46422,SRT,Proper Hepatic Artery       |
| Splenic A             | T-46460,SRT,Splenic Artery              |
| SMA                   | T-46510,SRT,Superior Mesenteric Artery  |
| IMA                   | T-46520, SRT,Inferior Mesenteric Artery |

## Abdominal Veins (unilateral)

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                 |
|-----------------------|--------------------------------------|
| Hepatic V             | T-48720,SRT,Hepatic Vein             |
| Left Hepatic V        | T-48727,SRT,Left Hepatic Vein        |
| Right Hepatic V       | T-48725,SRT,Right Hepatic Vein       |
| M Hepatic V           | T-48726,SRT,Middle Hepatic Vein      |
| Portal V              | T-48810,SRT,Portal Vein              |
| IVC                   | T-48710,SRT,Inferior Vena Cava       |
| Splenic V             | T-48890,SRT,Splenic Vein             |
| SMV                   | T-48840,SRT,Superior Mesenteric Vein |
| M Portal V            | V12114-01,MRUS,Main Portal Vein      |
| IMV                   | T-48910,SRT,Inferior Mesenteric Vein |

## Renal Vessels

| <b>MODALITY Label</b> | <b>DICOM Mapping</b>                       |
|-----------------------|--------------------------------------------|
| Ren A Org             | T-46600,SRT,Renal Artery                   |
| Renal A               | T-46600,SRT,Renal Artery                   |
| Renal V               | T-48740,SRT,Renal Vein                     |
| Segment A             | T-46659, SRT, Segmental Artery             |
| Arcuate A             | T-4668A, SRT, Arcuate Artery of the Kidney |
| Interlobar A          | T-4667D, SRT, Interlobar Artery of Kidney  |
| M Renal A             | V12115-01, MRUS, Main Renal Artery         |