DICOM Conformance Statement

Product Name: ACUSON Juniper™
Ultrasound System
Release: VB11

Date: August 2022

www.siemens.com/DICOM

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1 CONFORMANCE STATEMENT OVERVIEW

This Conformance Statement applies to the following Juniper products and versions:

Product	Product Version	<Software ID>	<Product Name>
ACUSON Juniper	VB11	VB11x	Juniper

For all DICOM image files generated by the above mentioned Juniper products, the following attribute values are applicable:

Software Versions (0018,1020)	Set to "<Software ID>"
Manufacturer's Model Name (0008,1090)	Set to "ACUSON <Product Name>"

For all DICOM Comprehensive Structured Reports generated by the above mentioned Juniper products, the following attribute values are applicable:

Software Versions (0018,1020)	Set to "SR1.0_<Software ID>_<Product Name>"
Manufacturer's Model Name (0008,1090)	Set to "ACUSON <Product Name>"

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

- Verification
  - Verification AE
- Transfer
  - Storage AE
  - Storage Commitment AE
- Query / Retrieve
  - Query AE
  - Retrieve AE
- Workflow Management
  - Worklist AE
  - MPPS AE
- Print Management
  - Print AE

Table 1: Network Services

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
VERIFICATION		
Verification AE		
Verification	Yes	Yes
TRANSFER		
Storage AE		
Ultrasound Image Storage (Retired)	Yes	Yes

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
Ultrasound Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage (Retired)	Yes	Yes
Ultrasound Multi-frame Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Comprehensive SR	Yes	No
Storage Commitment AE		
Storage Commitment Push Model	Yes	No
QUERY / RETRIEVE		
Query AE		
Study Root Query/Retrieve Information Model - FIND	Yes	No
Retrieve AE		
Study Root Query/Retrieve Information Model - MOVE	Yes	No
WORKFLOW MANAGEMENT		
Worklist AE		
Modality Worklist	Yes	No
MPPS AE		
Modality Performed Procedure Step	Yes	No
PRINT MANAGEMENT		
Print AE		
Basic Grayscale Print Management Meta SOP Class	Yes	No
Basic Color Print Management Meta SOP Class	Yes	No
Basic Grayscale Image Box SOP Class	Yes	No
Basic Color Image Box SOP Class	Yes	No
Print Job SOP Class	Yes	No

Table 2: UID Values

SOP Class Name	SOP Class UID	Category
Verification AE		
Verification	1.2.840.10008.1.1	Verification
Storage AE		
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Transfer
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Transfer
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Transfer
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Transfer
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Transfer
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Transfer
Storage Commitment AE		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Transfer
Query AE		
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Query / Retrieve

SOP Class Name	SOP Class UID	Category
Retrieve AE		
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Query / Retrieve
Worklist AE		
Modality Worklist	1.2.840.10008.5.1.4.31	Workflow Management
MPPS AE		
Modality Performed Procedure Step	1.2.840.10008. 3.1.2.3.3	Workflow Management
Print AE		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Print Management
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Print Management
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Print Management
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Print Management
Print Job SOP Class	1.2.840.10008.5.1.1.14	Print Management

Table 3: MEDIA Services

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
DVD—Recordable		
STD-US-ID-SF-DVD STD-US-ID-MF-DVD	Yes	Yes
STD-US-SC-SF-DVD STD-US-SC-MF-DVD	Yes	No
Compact Disk—Recordable		
STD-US-ID-SF-CDR STD-US-ID-MF-CDR	Yes	Yes
STD-US-SC-SF-CDR STD-US-SC-MF-CDR	Yes	No

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3 INTRODUCTION

This document describes the conformance to the ACR-NEMA DICOM 3.0 Standard by the ACUSON Juniper™ Ultrasound System software from Siemens Medical Solutions USA, Inc. Ultrasound Division. It shall establish the conformance specifications for this system only and does not apply to other products offered by Siemens Medical Solutions USA, Inc., or its affiliates.

The ACUSON Juniper™ Ultrasound System is a device that generates ultrasound images and structured reports that can be sent using DICOM standard protocols and definitions to other DICOM compliant devices that support SOP classes as defined in Table 4: in this document.

3.1 Revision History

Revision Date	Applicable Product Releases
	ACUSON Juniper
August 2022	VB11

3.2 Audience

This document is written for the people that need to understand how the ACUSON Juniper™ Ultrasound System will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who need to have a detailed understanding of the DICOM features of the product. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

3.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between the Juniper and other DICOM products. The Conformance Statement should be read and understood in conjuntion 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 just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
- 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.

3.4 Terms and Definitions

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

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 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.

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

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

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).

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: US Image IOD, MR Image IOD, CT Image IOD, Print Job IOD.

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

Media Application Profile – the specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs)

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.

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 ultrasound 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.

3.5 Basics of DICOM Communication

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in *italics* below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two *Application Entities* (devices) that want to communicate with each other over a network using DICOM protocol must first agree on several things during an intial network "handshake". One of the two devices must initiate an *Association* (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (*Negotiation*).

DICOM specifes a number of network services and types of information objects, each of which is called an *Abstract Syntax* for the Negotiation. DICOM also specifes a variety of methods for encoding data, denoted *Transfer Syntaxes*. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called *Presentation Contexts.* The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on *Roles* – which one is the *Service Class User* (SCU - client) and which is the *Service Class Provider* (SCP - server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The Association Negotiation finally enables exchange of maximum network packet (*PDU*) size, security information, and network service options (called *Extended Negotiation* information).

The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports) and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate *Information Object Definition* and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a *Response Status* indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no Association Negotiation possible, they both use a *Media Application Profile* that specifies "pre-negotiated" exchange media format, Abstract Syntax, and Transfer Syntax.

3.6 Abbreviations

AE	Application Entity
AET	Application Entity Title
CD-R	Compact Disk Recordable
DICOM	Digital Imaging and Communications in Medicine
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
IHE	Integrating the Healthcare Enterprise
IOD	Information Object Definition
ISO	International Organization for Standards
JPEG	Joint Photographic Experts Group
LUT	Look-up Table
MPPS	Modality Performed Procedure Step
MSPS	Modality Scheduled Procedure Step
MWL	Modality Worklist
O	Optional (Key Attribute)
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
R	Required (Key Attribute)
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
SPS	Scheduled Procedure Step
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
U	Unique (Key Attribute)
US	Ultrasound
VR	Value Representation

3.7 References

NEMA PS3	Digital Imaging and Communications in Medicine (DICOM) Standard, available free at www.dicomstandard.org

4 NETWORKING

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

4.1 Implementation Model

ACUSON Juniper™ Ultrasound System users can store images directly on the system hard drive. Images can also be transferred to DICOM workstations and archive servers on a network. Storage Commitment can be used to ensure that patient images and data are safely committed. Measurements from exams can be exported as DICOM SR Objects. The system has a capable of printing images and reports. Performed procedure status and other procedure information can be returned to the HIS/ RIS using Modality Performed Procedure Step (MPPS).

4.1.1 Application Data Flow

Figure 1 provides a functional overview of the Juniper Ultrasound System's Application Entities (AE). Relationships are shown between user-invoked activities (in the circles at the left of the AEs) and the associated real-world activities provided by DICOM service providers (in the circles at the right of the AEs).

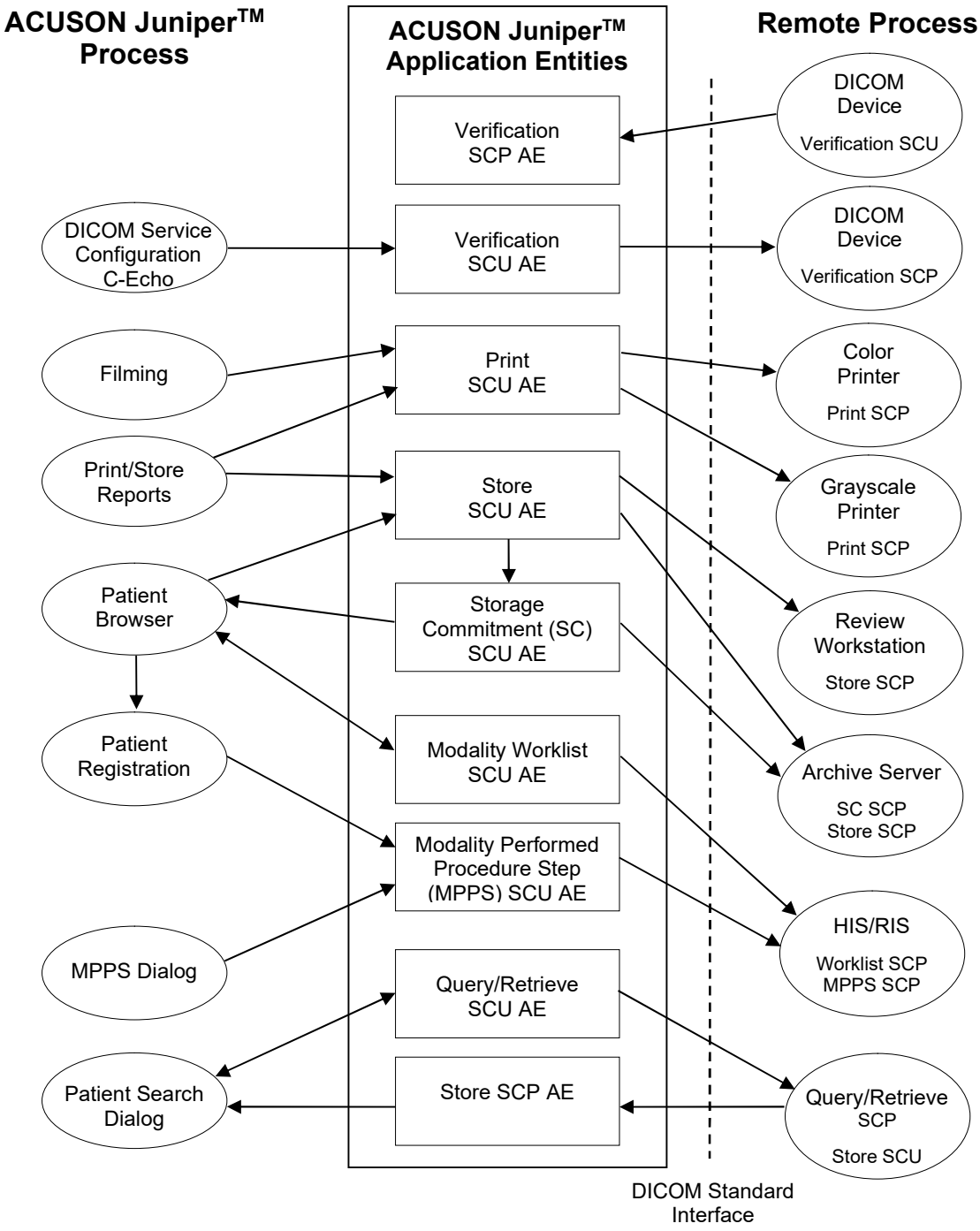


Figure 1. Implementation Model

4.1.1.1 Verification

Verification is a part of the DICOM configuration located on the 'Network' page of the System Configuration. Verification can be used to send a DICOM Verification request to a remote Application Entity (AE) and listen for a response.

When used as a diagnostic tool, Verification returns the following messages to the user:

- If the verification succeeds: “DICOM – C Echo succeeded”.
- If the verification fails: “DICOM – C Echo failed”.

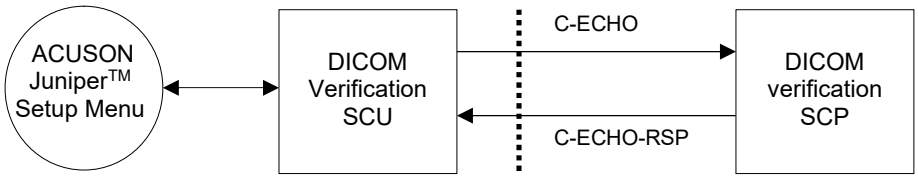


Figure 2. Verification Model

4.1.1.2 DICOM Store

When requested, the Juniper sends images and/or structured reports to the preconfigured DICOM Storage server.

DICOM Store can be seen as two sub-operations:

- Queueing images and/or structured reports for transfer.
- Transferring images and/or structured reports to the storage server.

Queuing images and structured reports for transfer:

The Juniper can be configured to automatically queue up images and structured reports for transfer as they are being created. “Auto Store to DICOM” option in Network configuration is to be set for this.

Alternatively, user can select exams or individual images and manually queue them up from Review mode. When an exam is selected for DICOM store all images and structured reports (generally zero or one) will be queued. Structured reports can’t be selected individually for store, the entire exam must be stored.

Transfer of images and structured reports to the storage server:

Further, once images and/or structured reports are queued they may be immediately transferred or delayed till the end of study using the transfer storage configuration.

The Juniper supports two storage configurations: “Store At End of Exam” and “Store During Exam”.

If the storage configuration is set to “Store At End of Exam” transfer attempts begin when the user selects “End Exam” or “New Patient”.

If the storage configuration is set to “Store during Exam”, transfer attempts to destination devices begin immediately after they are queued.

For both “Store At End of Exam” and “Store During Exam” settings, image and/or structured report transfer will be delayed if the Juniper is busy performing another DICOM Store operation.

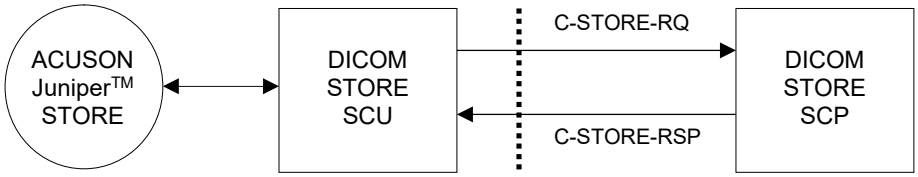


Figure 3. Store Model

4.1.1.3 Storage Commitment

The user can exercise the Storage Commitment option by configuring and selecting a Storage Commit server from the Network Configuration menu. The Juniper requests commitment of images and structured reports (if any exist) and upon successful acknowledgment from the Storage server marks the study on the system hard drive as ‘Archived’.

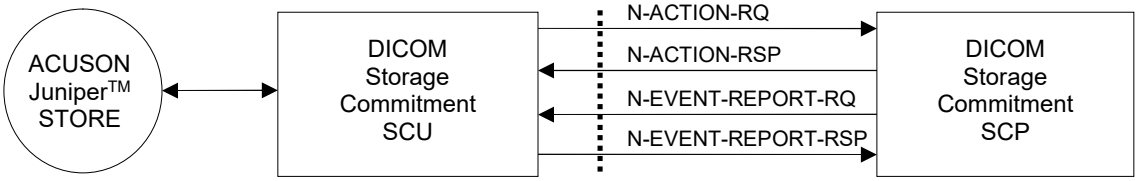


Figure 4. Storage Commitment Model

4.1.1.4 Modality Worklist

Patient registration can be automated by using the 'Worklist' Real World Activity. Pressing the 'New Patient' key on the keyboard initiates the patient data registration process and closes the previous active study. Pressing the 'Worklist' button on the patient data display screen invokes the Worklist screen. The Worklist screen can also be initiated from the Patient browser screen.

Pressing the 'Search' button will attempt to find all matching patient data using the information entered on the Worklist screen. Patient name fields that are partially filled or empty will be treated as though an implicit wildcard was appended at the end of each field. Patient ID, Requested Procedure ID and Accession number will be exact match only. If no matches are found, a message will be presented to the operator indicating so. If more that one matching patient is found, a pick list of patient procedures will be presented to the user to select from. Each of the fields will be sortable in ascending and descending order.

The pick list of patient procedures will be limited to a number of preset entries. If more than this number of matching records are found in the query, the search will terminate and the user will be notified. The search list criteria will contain:

- Patient name
- Patient ID
- Accession number
- Exam start date/time range
- Requested Procedure ID
- Physician name
- US/All modalities
- Scheduled station AE title

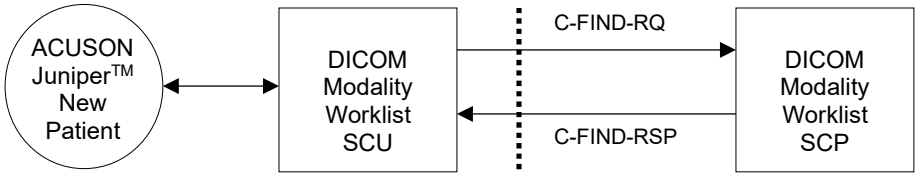


Figure 5. Modality Worklist Model

Once a Worklist query is initiated, a “Retrieving the worklist…” dialog will be presented to the user. The user will only have one option, “Cancel,” which will abort the query operation.

The following data fields in Worklist Screen are initially populated from the New Patient Screen, if filled in, and can be used for query:

Attribute Name	Tag
Patient’s Name (Last name)	(0010,0010)
Patient ID	(0010,0020)
Scheduled station AE title	(0040,0001)

The following data fields will be populated on the worklist screen for each return:

Attribute Name	Tag
Patient’s Full Name	(0010,0010)
Patient ID	(0010,0020)
Accession Number	(0008,0050)
Exam Start Date/Time	(0040,0002), (0040,0003)
Scheduled Procedure Step Sequence	(0040,0100)*
>Scheduled Procedure Step Description	(0040,0007)
>Scheduled Protocol Code Sequence	(0040,0008)
>>Code Value	(0008,0100)
Requested Procedure Description	(0032,1060)
Study Description	(0008,1030)**
*<code1>, …,<codeN>: <sched1>,…,<schedn> where: code<i> = Sequence item code value(0008,0100) for a given sequence or value multiplicity sched<i> = Scheduled procedure step(0040,0007) for a given sequence or value multiplicity	
**if a value exists for (0008,1030). Otherwise, Study Description is set to value of Scheduled procedure step (0040,0007). If (0040,0007) is also empty, Study Description is set to Requested procedure Description (0032,1060) if it exists.	

The user will have the option to select a patient procedure step, or cancel the operation. Selection of a procedure step from the list will cause demographic information for the patient to be loaded into the patient data fields.

The following data fields will be populated on the patient data screen:

Attribute Name	Tag
Patient Name	(0010,0010)
Patient ID	(0010,0020)
Accession number	(0008,0050)
DOB	(0010,0030)
Sex	(0010,0040)
Weight	(0010,1030)
Height	(0010,1020)
Physician	(0008,0090)
Indication	(0080,1080)
LMP	(0010,21D0)

4.1.1.5 Modality Performed Procedure Step

The Juniper supports reporting of Modality Performed Procedure Step (MPPS) orders when the patient registration process utilizes the 'Worklist' Real World Activity. Procedure steps are presented to the operator after successful query of a server that supports the MPPS option. A detail window allows the operator access to individual scheduled procedure steps. Pressing the 'Mpps' push button on the Patient browser Screen actualizes the detail window when multiple procedure steps are listed for the patient.

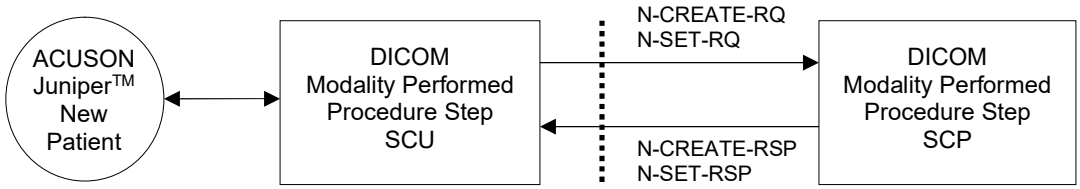


Figure 6. MPPS Model

4.1.1.6 Query / Retrieve

The query/retrieve service class defines an application-level class of services which facilitates the management of images and patient data against the well-defined information model of DICOM and allows a DICOM AE to retrieve images from a remote DICOM node or to request a remote DICOM AE to initiate a transfer of images to another DICOM AE. The Juniper DICOM query/retrieve application supports the query/retrieve services to act as SCU.

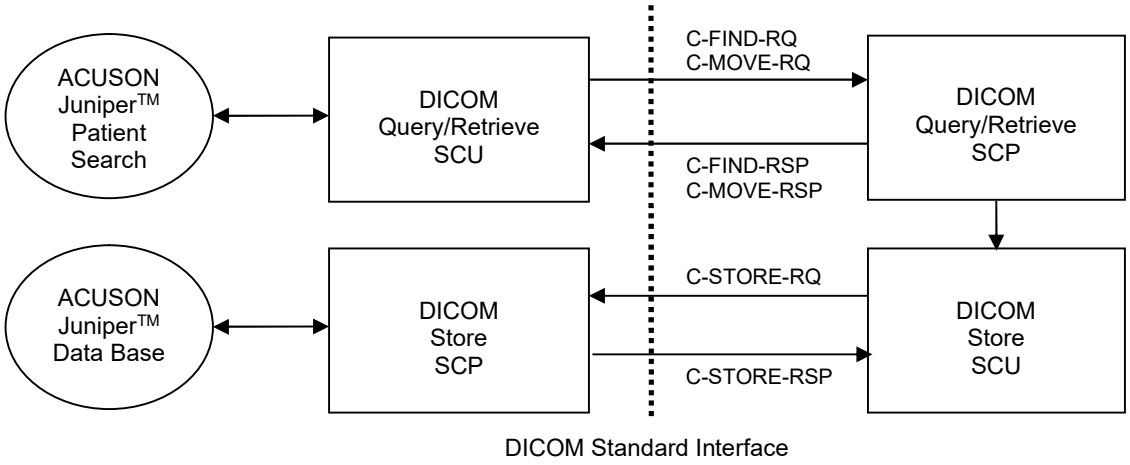


Figure 7. Query / Retrieve Model

4.1.1.7 DICOM Print

The Juniper has a capable of grayscale (B/W) and color printing.

When requested, single frame images will be printed to a pre-configured DICOM network printer.

DICOM Print can be seen as two sub-operations:

- paging images for transfer
- transferring pages to printer

Paging images for transfer:

The Juniper can be configured to automatically queue up images to be printed on B/W Printer and/or Color printer as they are being created.

Alternatively, user can select exams or individual images and manually queue them up from Review mode for print.

Every image queued up is added into a page in the respective printer layout (DICOM B/W Printer Layout or DICOM Color Printer Layout).

Transfer of pages to the Printer:

Further, pages may be immediately transferred to the printer or delayed until the end of study based on the transfer configuration.

The Juniper support two configurations: “Print at end exam” and “Print when page is full”.

If the configuration is set to “Print at end exam,” transfer attempts of all pages to the destination DICOM printer begin as a batch when the user ends the exam.

If the configuration is set to “Print when page is full”, transfer attempt of a page to the destination DICOM printer begins as soon as it becomes full.

For both “Print at end exam” and “Print when page is full” settings, page transfer will be delayed if the Juniper is busy performing another DICOM Print operation.

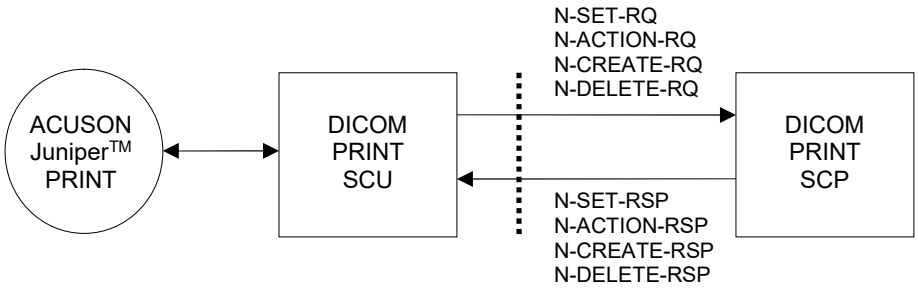


Figure 8. Print Model

4.1.1.8 Removable Media Storage

The Juniper can perform DICOM operations to its standard on-board 120mm CD/DVD disk and USB drive.

The Juniper performs the File Set Creator and File Set Reader Roles for CD,DVD disks and USB drive. The File Set Reader functionality does not support import of DICOM Structured Reports or measurements of imported images. Both limitations are overcome when DICOM and TIFF/AVI format is exported to CD/DVD/USB. A DICOM conforming CD/DVD/USB media is created when the user saves studies in DICOM format to the CD/DVD/USB. A DICOM 3.0 conforming DICOMDIR file is created together with the directory structures, image files and structured reports (if any exist).

4.1.2 Functional Description of AEs

4.1.2.1 Verification Real-World Activities

The Juniper Verification AE performs Verification Service Class as an SCU and SCP allowing the operator to verify the ability of an application on a remote device to receive DICOM messages and allowing the operator of a remote DICOM device to verify the Juniper's ability to receive DICOM messages. (C-ECHO DIMSE)

4.1.2.2 Store Real-World Activities

The Juniper Store AE performs all of the functions to transmit ultrasound images, structured reports and associated data to network servers or workstations. The Juniper Store AE supports the Ultrasound Image, Ultrasound Multi-Frame Image, Ultrasound Image (Retired), Ultrasound Multi-Frame (Retired), and Secondary Capture storage SOP classes as an SCU.

The Juniper Store AE also supports Structured Reports, for Obstetric-GYN, Vascular, and Cardiac studies, using the Comprehensive SR SOP Class as an SCU.

The Juniper Store AE initiates an association for C-STORE Requests to store providers when the user invokes "DICOM Store". The association may be used to store multiple images, clips, and structured reports and is closed when no images, clips, or structured reports are available to be stored to the remote device for five seconds.

4.1.2.3 Storage Commitment – Push Model Real-World Activities

The Juniper Storage Commitment AE supports Storage Commitment Push Model SOP class to inform servers when all the store operations for a study have been completed. The Storage Commitment SCU uses the N-ACTION primitive to request safekeeping of a set of SOP Instances. The Storage Commitment SCU also processes the N-EVENT-REPORT primitives that are received from the SCP

indicating ‘successful’ or ‘non-successful’ commitment status. The N-EVENT-REPORT information is used to mark a study as being successfully archived to a DICOM SCP.

The successful commit status and archival indication on the Juniper does not ensure permanent archival of the images and Structured Reports. The operations performed by the SCP are dependent on its capabilities and configuration.

4.1.2.4 Modality Worklist Real-World Activities

The Juniper Modality Worklist AE supports the DICOM Basic Worklist Management Service as an SCU. The AE initiates an association to the active Worklist server when a Worklist query is selected (via the “Worklist” button). The association is closed upon the completion of each query. A preset maximum number of matching results is accepted, at which point, the Juniper Modality Worklist AE issues a C-CANCEL-RQ request.

4.1.2.5 Modality Performed Procedure Step Real-World Activities

The Juniper Modality Performed Procedure Step AE supports Modality Performed Procedure Step (MPPS) in the role of SCU. The Juniper has a capable of displaying scheduled procedure steps via the User Interface (UI) for Modality Performed Procedure Step. The operator can select a single PPS. The operator can notify the MPPS server that a MPPS is ‘In Progress’, ‘Discontinued’ or ‘Completed’. The user is also allowed to append procedure steps to existing or previously completed procedure steps.

4.1.2.6 Query / Retrieve Real-World Activities

The query/retrieve service class defines an application-level class of services which facilitates the management of images and patient data against the well-defined information model of DICOM and allows a DICOM AE to retrieve images from a remote DICOM node or to request a remote DICOM AE to initiate a transfer of images to another DICOM AE. The Juniper DICOM query/retrieve application supports the query/retrieve services as an SCU.

The Query SCU initiates a C-FIND request to the remote SCP and is invoked directly by the user, using the query parameters entered in the Query/Retrieve screen. The remote SCP returns a list of responses with defined data, which are displayed to the user. The user can decide to start retrieval or to issue another query.

The Juniper supports

- Study Root Query Model.

As the Move SCU, the system initiates a C-MOVE request to the remote Retrieve SCP. The remote Retrieve SCP in turn starts C-STORE sub-operations to the Storage SCP.

- Retrieve only <Product Name> images
- SR not supported

4.1.2.7 Print Real-World Activities

The Juniper Print AE provides all aspects of the Print Management SCU. The Juniper AE initiates an association to the printer when the user invokes “DICOM Print”. The association may be used to print multiple pages and is closed when no pages are available to be printed to the remote device for five seconds.

4.1.2.8 Removable Media Storage Real-World Activities

The Juniper Store AE provides a standard implementation of DICOM Store to CD, DVD or USB.. The Juniper Store AE selects one or more studies and exports the same to CD, DVD or USB. The Juniper Store AE creates a DICOM File Format Image File for every image, clip and structured report in each of the selected studies.

A DICOMDIR file is created along with the files.

Measurements are not supported on imported images unless TIFF/AVI format is exported.

The DICOM SR cannot be imported from media unless the TIFF/AVI format is exported along with the DICOM SR.

4.1.3 Sequencing of Real-World Activities

Print, Store, Echo, Worklist, Storage Commit and MPPS commands can be transmitted simultaneously within the limits described below.

Storage Commit

The Storage Commitment command (if enabled) is sent in the following situations:

a. On series close, when all images have previously stored successfully.

b. The series is closed before all images are stored successfully, all previous stores have succeeded and the last image stores successfully.

c. The series is closed before all images are stored successfully, at least one store has succeeded, at least one store has failed and the last store with non-zero retry count fails or succeeds.

d. A series has been partially committed as in c. Later, due to "Retry Job" button press on the Queue screen the store jobs are retried. Another Storage Commit is sent when at least one store has succeeded and the last store with non-zero retry count fails or succeeds.

MPPS

The MPPS command (if enabled) is sent in the following situations:

a. N-CREATE command is sent whenever a new procedure step is selected or an unscheduled procedure is created on the system. The state of the MPPS command is set to “In-Progress”.

b. N-SET command is sent when the Procedure Step is closed by the user pressing either the Completed or Discontinued button on the Close Procedure dialog. The state of the MPPS command is set, according to the state (Completed or Discontinued) set by the user.

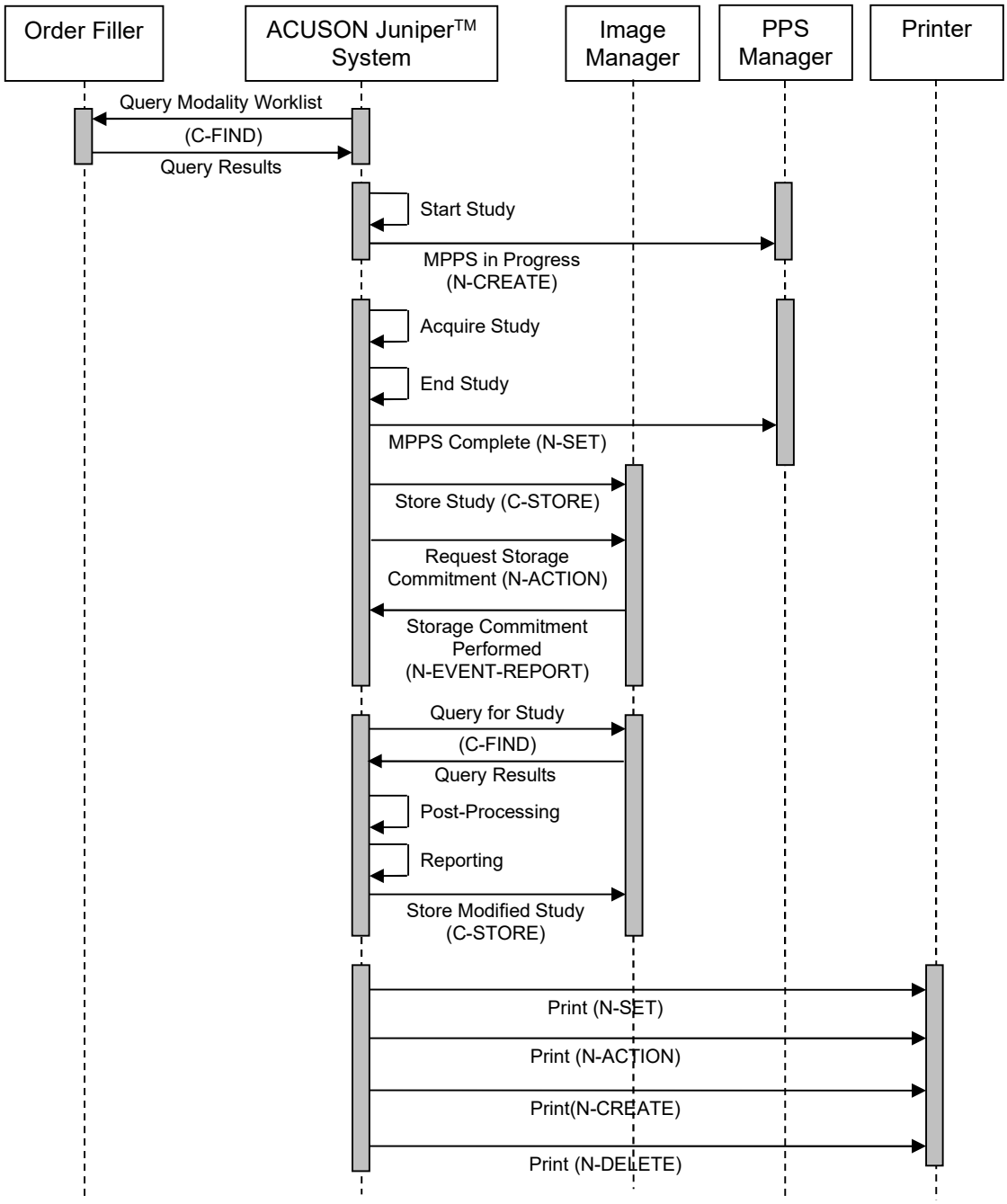


Figure 9. Sequence Diagram for Real-World Activities

4.2 AE Specifications

4.2.1 SOP Classes

The Juniper AEs provides conformance to the following DICOM Service SOP Classes as an SCU.

Table 4: Supported SOP Classes

Service SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Storage Commitment - Push Model	1.2.840.10008.1.20.1
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1
Printer SOP Class	1.2.840.10008.5.1.1.16
Modality Worklist Information Model C- FIND	1.2.840.10008.5.1.4.31
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33

4.2.2 Association Establishment Policies

4.2.2.1 General

The Juniper utilizes TCP/IP. The Maximum Length PDU negotiation is included in all association establishment requests. The maximum length PDU offered for an association initiated by the Juniper is:

- Maximum PDU Offered: 28672

4.2.2.2 Association Establishment Order

The Juniper initiates each C-Store Request one at a time, one for each transfer request being processed.

Image format on the Juniper can be set to one of “Automatic”, “Original Image”, or “Secondary Capture”.

For the “Automatic” setting, the Juniper proposes Ultrasound Multi-Frame Image, Ultrasound Image, Ultrasound Multi-Frame Image (Retired), Ultrasound Image (Retired), Secondary Capture Image, and Comprehensive SR sequentially.

For the “Original Image” setting, the Juniper proposes Ultrasound Multi-Frame Image (Retired), Ultrasound Image (Retired), Secondary Capture, and Comprehensive SR Image to be negotiated sequentially.

For the “Secondary Capture” setting, the Juniper proposes Secondary Capture Image and Comprehensive SR to be negotiated sequentially.

4.2.2.3 Asynchronous Nature

All associations use the default synchronous mode of operation. Asynchronous Operations Window negotiations are not supported on the Juniper.

4.2.2.4 Implementation Identifying Information

- Implementation Class UID: “1.3.12.2.1107.5.5.5” (See below).
- Implementation Version Name: “MergeCOM3_370”

Siemens has provided registration for all Siemens Medical Solutions Groups. This unique Class UID is defined as:

“1.3.12.2.1107.5.5.product”

Where the interpretation is:

1. = International Standards Organization (ISO)

3. = International branch of ISO

12.2.1107.5. = Assigned to Siemens-UB MED

5. = Ultrasound Modality (SMS-UG)

Product = 5 - DICOM implementation for Juniper

4.2.3 Association Initiation by Real-World Activities

4.2.3.1 Real World Activity – Verification

The Juniper has a capable of supporting Verification service class as SCU or SCP. Verification can be initiated as a singular event from the Systems Configuration menu to any configured SCP that supports Verification.

Proposed Presentation Contexts – Verification

The Juniper will propose Presentation Contexts as shown in the table below.

Table 5: VerificationPresentationContext

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
Verification	1.2.840.10008.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU/SCP	None
Verification	1.2.840.10008.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU/SCP	None

4.2.3.2 Real World Activity – Store

The Juniper facilitates users to store images and structured reports as they are being created or later in review mode.

Queuing images during acquisition

“Autostore to DICOM” option in Network configuration menu has to be set. One or more of “Print Store 1”, “Print Store 2” and “Clip Store” keys on the control panel can be configured for Store (Image Store, Clip Store). When the user presses one of the configured keys, an image or clip is acquired, stored on the

hard disk and queued up to be transferred to the storage server. Structured reports, if any, will be stored automatically after the study is closed and each time the report is modified after study close.

Queueing images and structured reports in Review mode

User can select one or more closed studies and queue them up for Storage. The Send button with DICOM Store option is available in Patient browser for this operation. All images and structured reports (if any) are stored. The study must be closed to generate a structured report.

Transfer of images to the storage server

See section 4.1.1.2.

Associated Real World Activities

When images and/or structured reports are transferred from the hard disk to a DICOM Store SCP, the system establishes an association between the Juniper AE and the configured DICOM device. The association may be used to store multiple images and/or structured reports and is closed when no images or structured reports are available to be stored to the remote device for five seconds.

Proposed Presentation Context

The following Presentation Contexts are presented to the SCP in an A-ASSOCIATE-RQ for DIMSE C-STORE storage services. The storage services utilize C-STORE services, as defined by the DICOM Standard. The table below represents all “Store” presentation contexts.

Table 6: Store Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50	SCU	None
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

The Juniper always acts as an SCU for store and is the client in a client-server model.

Stress-Echo multi-frame images are only stored using Ultrasound Multi-Frame Image Storage with Lossy JPEG 8 Bit Image Compression. All other single and mullti-frame images can be stored using other SOP classes and transfer syntaxes as described above.

SOP Specific Conformance to Storage Service SOP Classes

The Store Real World Activity provides standard extended conformance as an SCU for the following standard Storage Service Class SOP:

Table 7: Supported SOP Classes

Service SOP Class Name	SOP Class UID	Conformance Level
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Standard Extended
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Standard Extended
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Standard Extended
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Standard Extended
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Standard Extended
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Standard Extended

This is accomplished using the DIMSE C-STORE Service. The SCU issues a service request with a SOP instance that meets the requirements of the desired ultrasound, secondary capture, or structured report IOD.

The following Structured Report Templates are supported by the ACUSON Juniper™ system:

- TID 5000 “OB-GYN Ultrasound Procedure Report”
- TID 5100 “Vascular Ultrasound Procedure Report”
- TID 5200 “Adult Echocardiography Ultrasound Procedure Report”

The following table denotes the attributes included in the Ultrasound Image Object as implemented on the Juniper. Attributes not listed are not used.

Table 8: Ultrasound Image and Ultrasound Retired Image IOD Attributes

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2015_17_54_43 = Apr. 3, 2015 at 5:54:43 PM). Populated from Modality Worklist if used.
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O = Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by Juniper otherwise
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\OB\0001 Value 1: ORIGINAL or DERIVED Value 2: PRIMARY or SECONDARY Value 3: Set to value by exam type Value 4: It is constructed as a modality bit map to allow for a description of multi-modality displays. In using this bit map, the sum of the values of the various modalities will unambiguously Determine the constituent modalities. 0001 = 2D Imaging 0002 = M-Mode 0004 = CW Doppler

Module	Attribute	Tag	Notes
			0008 = PW Doppler 0010 = Color Doppler 0020 = Color M-Mode 0040 = 3D Rendering 0100 = Color Power Mode
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by Juniper
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008,1030), Scheduled Procedure Step Description (0040,0007), Requested Procedure Description (0032,1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen – Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to “US”
	Series Instance UID	(0020,000E)	Generated by Juniper
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	(b)Series Date	(0008,0021)	Date the series started.
	(b)Series Time	(0008,0031)	Time the series started.
	(b)Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	Body Part Examined	(0018, 0015)	The exam type of the most recent image stored in a particular series. If no images are stored for a series then the value is set to “Ultrasound”.
	Protocol Name	(0018,1030)	Value is set to “NONE”
	(b)Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040, 0007) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040, 0008) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.

Module	Attribute	Tag	Notes
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query
	>(b)Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040, 0009) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040, 1001) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	(b)Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	(b)Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	(b)Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040, 0009) if provided by Modality Worklist.
	(b)Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	(b)Performed Procedure Protocol Code Sequence	(0040,0260)	Populated with Scheduled Protocol Code Sequence (0040,0008) if provided by Modality Worklist.
	(b)Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS Healthineers”
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Configuration – Institution Name field.
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer’s Model Name	(0008,1090)	Set to “ACUSON <Product Name>”
General Image	Acquisition Date	(0008,0022)	The date of the acquisition of data. Can influence sort order in browser and review
	Acquisition Time	(0008,0032)	The time of the acquisition of data. Can influence sort order in browser and review
	Content Date	(0008,0023)	Image creation date <yyyymmdd>
	Content Time	(0008,0033)	Image creation time <hhmmss.ffffff>. The ffffff component (fractional part of a second), if present, shall contain 1 to 6 digits.
	Instance Number	(0020,0013)	Image number in study (1 – n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute

Module	Attribute	Tag	Notes
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB images.
	Photometric Interpretation	(0028,0004)	Set to “MONOCHROME2“or “RGB“
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RGB pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	This value may be from 240 and 864.
	Columns	(0028,0011)	This value may be from 320 and up to 1152.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0
	Pixel Data	(7FE0,0010)	
US Image	Heart Rate	(0018,1088)	Only provided if heart rate is > 0
	Lossy Image Compression	(0028,2110)	“00”
	Transducer Data	(0018,5010)	An array of values associated with transducer information, sequence of data is contained as <TransducerName>, <TransducerSerialNumber>, <TransducerVendor>.
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.6.1 or 1.2.840.10008.5.1.4.1.1.6
	SOP Instance UID	(0008,0018)	Generated by Juniper
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document.
Image Plane	Pixel Spacing	(0028,0030)	Pixel Spacing information is only provided for single, full screen, 2D image types (2D image types are B-mode, B-mode with color, B-mode with power).
Region Calibration	(c)Sequence of Ultrasound Regions	(0018,6011)	
	>(c)Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	>(c)Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)

Module	Attribute	Tag	Notes
	>(c)Region Flags	(0018,6016)	1st Bit (LSB) = 1 (All images acquired are transparent) 2nd Bit = 1 (All images acquired are automatically scaled) 3rd Bit = 1 for frequency scale 3rd Bit = 0 for velocity scale. The value of the 3rd bit is undefined for any mode other than Doppler. The value for 3rd bit is undefined if both frequency and velocity scales are selected on the Doppler image. 4th Bit is Reserved and value is always 0
	>(c)Region Location Min X0	(0018,6018)	
	>(c)Region Location Min Y0	(0018,601A)	
	>(c)Region Location Max X1	(0018,601C)	
	>(c)Region Location Max Y1	(0018,601E)	
	>(c)Physical Units X direction	(0018,6024)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0004H (seconds) Spectral (CW/PW) Doppler = 0004H (seconds)
	>(c)Physical Units Y direction	(0018,6026)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0003H (cm) Spectral (CW/PW) Doppler = 0007H (cm/sec)
	>(c)Physical Delta X	(0018,602C)	
	>(c)Physical Delta Y	(0018,602E)	
	>(c)Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	>(c)Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions
	>(c)Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	>(c)Reference Pixel Physical Value Y	(0018,602A)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
Private Attributes	(a)Private Creator	(0011,0010)	Reserves tags 0011,1000 through 0011,10FF for use as private tags.
	(a)Siemens Medical Solutions Model Name	(0011,1010)	Always set to “<Product Name>”.
	(a)PIMS Software Version	(0011,1011)	Set to version of PIMS software installed.
	(a)Private Data	(0011,1020)	For internal Juniper use only.
	(a)Private Data	(0011,1021)	For internal Juniper use only.
	(a)Private Creator	(0013,0010)	Reserves tags 0013, 1000 through 0013, 10FF for use as private tags.
	(a)Siemens Medical Solutions Model Name	(0013,1010)	Always set to “<Product Name>”.

Module	Attribute	Tag	Notes
Private Attributes	[a]PIMS Software Version	(0013,1011)	Set to version of PIMS software installed.
	[a]Private Data	(0013,1020)	For internal Juniper use only.
	[a]Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015, 1000 through 0015, 10FF for use as private tags.
	[a]Siemens Medical Solutions Model Name	(0015,1010)	Always set to “<Product Name>”.
	[a]PIMS Software Version	(0015,1011)	Set to version of PIMS software installed.
	[a]Private Data	(0015,1020)	For internal Juniper use only.
	[a]Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017, 1000 through 0017, 10FF for use as private tags.
	[a]Siemens Medical Solutions Model Name	(0017,1010)	Always set to “<Product Name>”.
	[a]PIMS Software Version	(0017,1011)	Set to version of PIMS software installed.
	[a]Private Data	(0017,1020)	For internal Juniper use only.
	Private Creator	(0019,0010)	Reserves tags 0019, 1000 through 0019, 10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to “O” or “C” or “CO” if Obstetric or cardiac SR options was purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import measurements from SR.

[a] The Attribute is only provided if the image is written to media.

[b] The Attribute is only provided if the procedure step is queried from the MWL server.

[c] Region Calibration is provided only for 2D (B-Mode), M-Mode, and Spectral Doppler Regions. Region Calibration is not supported on Ultrasound RETIRED images, Screen Captures, and post-processed images. Region Calibration is not supported for M-Mode or Spectral Doppler still images taken from Live Imaging.

Table 9: Ultrasound MultiFrame and Ultrasound MultiFrame Retired Image IOD Attributes

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today’s date & time (e.g., 03_04_2015_17_54_43 = Apr. 3, 2015 at 5:54:43 PM). Populated from Modality Worklist if used.

Module	Attribute	Tag	Notes
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O= Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by Juniper otherwise.
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\OB\0001 Value 1: ORIGINAL or DERIVED Value 2: PRIMARY or SECONDARY Value 3: Set to value by exam type Value 4: It is constructed as a modality bit map to allow for a description of multi-modality displays. In using this bit map, the sum of the values of the various modalities will unambiguously determine the constituent modalities. 0001 = 2D Imaging 0002 = M-Mode 0004 = CW Doppler 0008 = PW Doppler 0010 = Color Doppler 0020 = Color M-Mode 0040 = 3D Rendering
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.

Module	Attribute	Tag	Notes
	Study ID	(0020,0010)	Generated by Juniper
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008, 1030), Scheduled Procedure Step Description (0040, 0007), Requested Procedure Description (0032, 1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen – Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to “US”
	Series Instance UID	(0020,000E)	Generated by Juniper
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	(b)Series Date	(0008,0021)	Date the series started.
	(b)Series Time	(0008,0031)	Time the series started.
	(b)Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	Body Part Examined	(0018, 0015)	The exam type of the most recent image stored in a particular series. If no images are stored for series then the value is set to “Ultrasound”.
	Protocol Name	(0018,1030)	In case of Stress Echo image, value is set to procotol name, and in case of other images, value is set to “NONE”
	(b)Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040, 0007) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040, 0008) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040, 0009) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040, 1001) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.

Module	Attribute	Tag	Notes
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query
	(b)Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	(b)Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	(b)Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040,0009) if provided by Modality Worklist.
	(b)Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	(b)Performed Procedure Protocol Code Sequence	(0040,0260)	Populated with Scheduled Protocol Code Sequence (0040,0008) if provided by Modality Worklist.
	(b)Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS Healthineers”
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Configuration – Institution Name field.
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer’s Model Name	(0008,1090)	Set to “ACUSON <Product Name>”.
General Image	Acquisition Date	(0008,0022)	The date of the acquisition of data. Can influence sort order in browser and review
	Acquisition Time	(0008,0032)	The time of the acquisition of data. Can influence sort order in browser and review
	Content Date	(0008,0023)	Image creation date <yyyymmdd>
	Content Time	(0008,0033)	Image creation time <hhmmss.ffffff>. The ffffff component (fractional part of a second), if present, shall contain 1 to 6 digits.
	Instance Number	(0020,0013)	Image number in study (1 - n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB and YBR_FULL_422 images.
	Photometric Interpretation	(0028,0004)	“YBR_FULL_422” if sent compressed, “RGB” or “MONOCHROME2“ if sent uncompressed.

Module	Attribute	Tag	Notes
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	This value may be from 240 and 864.
	Columns	(0028,0011)	This value may be from 320 and up to 1152.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0.
	Pixel Data	(7FE0, 0010)	
US Image	Image Type	(0008,0008)	Sent as a 0 length attribute.
	Heart Rate	(0018,1088)	Only provided if heart rate is > 0
	Lossy Image Compression	(0028,2110)	Always set to “01”
	[(a)]Stage Name	(0008,2120)	
	[(a)]Stage Number	(0008,2122)	
	[(a)]Number of Stages	(0008,2124)	
	[(a)]View Names	(0008,2127)	
	[(a)]View Number	(0008,2128)	
	[(a)]Number of Views in Stage	(0008,212A)	
	[(a)]Transducer Type	(0018,6031)	
	[(a)]R Wave Time Vector	(0018,6060)	
	[(a)]Mechanical Index	(0018,5022)	
	[(a)]Depth Of Scan Field	(0018,5050)	2D FOV depth in mm unit
	[(a)]Number Of Event Timers	(0018,2129)	The number of event timers used at the time of acquisition of a Multi-frame image.
	[(a)]Event Elapsed Time(s)	(0018,2130)	An array of values associated with each event timer. Units in milliseconds.
	[(a)]Event Timer Name(s)	(0018,2132)	Name that identifies the event timer.
	Transducer Data	(0018,5010)	An array of values associated with transducer information, sequence of data is contained as <TransducerName>, <TransducerSerialNumber>, <TransducerVendor>.
WaveForm	[(a)]Waveform Sequence	(5400,0100)	
	>Acquisition DateTime	(0008,002A)	
	>Trigger Time Offset	(0018,1069)	
	>Waveform Originality	(003A,0004)	ORIGINAL
	>Number of Waveform Channels	(003A,0005)	1
	>Number of Waveform Samples	(003A,0010)	
	>Sampling Frequency	(003A,001A)	

Module	Attribute	Tag	Notes
	>Channel Definition Sequence	(003A,0200)	
	>>Channel Source Sequence	(003A,0208)	
	>>>Include 'Code Sequence Macro'		
	>>Channel Sensitivity	(003A,0210)	
	>>Channel Sensitivity Units Sequence	(003A,0211)	
	>>>Include 'Code Sequence Macro'		
	>>Waveform Bits Stored	(003A,021A)	
	>Waveform Bits Allocated	(5400,1004)	
	>Waveform Sample Interpretation	(5400,1006)	
	>Waveform Data	(5400,1010)	
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.3.1 or 1.2.840.10008.5.1.4.1.1.3
	SOP Instance UID	(0008,0018)	Generated by Juniper
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document
	[(a)]Instance Creation Date	(0008,0012)	Created
	[(a)]Instance Creation Time	(0008,0013)	Created
Image Plane	Pixel Spacing	(0028,0030)	Pixel Spacing information is only provided for single, full screen, 2D image types (2D image types are B-Mode, B-Mode Color, B-Mode with power).
Cine	Frame Time Vector	(0018,1065)	
Multi-Frame	Number of Frames	(0028,0008)	
	Frame Increment Pointer	(0028,0009)	00181065H
Region Calibration	[(c)]Sequence of Ultrasound Regions	(0018,6011)	
	>[(c)]Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	>[(c)]Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)
	>[(c)]Region Flags	(0018,6016)	1st Bit (LSB) = 1 (All images acquired are transparent) 2nd Bit = 1 (All images acquired are automatically scaled) 3rd Bit = 1 for frequency scale 3rd Bit = 0 for velocity scale. The value of the 3rd bit is undefined for any mode other than Doppler. The value for 3rd bit is undefined if both frequency and velocity scales are selected on the Doppler image. 4th Bit is Reserved and value is always 0
	>[(c)]Region Location Min X0	(0018,6018)	

Module	Attribute	Tag	Notes
	>(c)Region Location Min Y0	(0018,601A)	
	>(c)Region Location Max X1	(0018,601C)	
	>(c)Region Location Max Y1	(0018,601E)	
	>(c)Physical Units X direction	(0018,6024)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0004H (seconds) Spectral (CW/PW) Doppler = 0004H (seconds)
	>(c)Physical Units Y direction	(0018,6026)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0003H (cm) Spectral (CW/PW) Doppler = 0007H (cm/sec)
	>(c)Physical Delta X	(0018,602C)	
	>(c)Physical Delta Y	(0018,602E)	
	>(c)Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	>(c)Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions
	>(c)Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	>(c)Reference Pixel Physical Value Y	(0018,602A)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
Private Attributes	(d)Private Creator	(0011,0010)	Reserves tags 0011, 1000 through 0011, 10FF for use as private tags.
	(d)Siemens Medical Solutions Model Name	(0011,1010)	Always set to “<Product Name>”.
	(d)PIMS Software Version	(0011,1011)	Set to version of PIMS software installed.
	(d)Private Data	(0011,1020)	For internal Juniper use only.
	(d)Private Data	(0011,1021)	For internal Juniper use only.
	(d)Private Creator	(0013,0010)	Reserves tags 0013, 1000 through 0013, 10FF for use as private tags.
	(d)Siemens Medical Solutions Model Name	(0013,1010)	Always set to “<Product Name>”.
	(d)PIMS Software Version	(0013,1011)	Set to version of PIMS software installed.
	(d)Private Data	(0013,1020)	For internal Juniper use only.
	(d)Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015, 1000 through 0015,10FF for use as private tags.
	(d)Siemens Medical Solutions Model Name	(0015,1010)	Always set to “<Product Name>”.
	(d)PIMS Software Version	(0015,1011)	Set to version of PIMS software installed.
	(d)Private Data	(0015,1020)	For internal Juniper use only.
	(d)Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017, 1000 through 0017,10FF for use as private tags.

Module	Attribute	Tag	Notes
Private Attributes	[d]Siemens Medical Solutions Model Name	(0017,1010)	Always set to "<Product Name>".
	[d]PIMS Software Version	(0017,1011)	Set to version of PIMS software installed.
	[d]Private Data	(0017,1020)	For internal Juniper use only.
	Private Creator	(0019,0010)	Reserves tags 0019, 1000 through 0019, 10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to "O" or "C" or "CO" if SR options were purchased and SR generation was configured. Otherwise set to "No". Instructs SCP that it should attempt to import measurements from SR.
	[a]B-mode Tint Index(used for routing the image to B&W or Color printer)	(0019,102D)	
	Private Creator	(7FDF,0010)	Reserved tags 7FDF,1000 through 7FDF,FE00 for use as private tags
	Private Creator	(7FDF,0011)	
	Microseconds in unit timestamp	(7FDF,1083)	Set to 20 microsecond
	Acoustic Frame Timestamp	(7FDF,1085)	Time corresponding to the end of ultrasound data collection at the end of each acoustic frame.
	[a]Private Creator	(0119,0010)	Set to "SIEMENS Ultrasound Juniper"
	[a]Stage Timer Time	(0119,1011)	
	[a]Stop Watch Time	(0119,1012),	

[a] The Attribute is provided for Stress Echo Images, the waveform sequence attribute is provided for single layout images with physio stream, too.

[b] The Attribute is only provided if the procedure step is queried from the MWL server.

[c] Region Calibration is provided only for 2D (B-Mode), M-Mode and Spectral Doppler Regions. Region Calibration is not supported on Ultrasound Retired images, Screen Captures and post-processed images. Region Calibration is not supported for M-Mode or Spectral Doppler still images taken from Live Imaging.

[d] The Attribute is only provided if the image is written to media.

This table denotes the attributes included in the Ultrasound Multi-Frame Image IOD as implemented on the Juniper, when used for 3D volumetric data sets. Each frame represents a single slice from the 3D volume.

Table 10: Ultrasound MultiFrame IOD Attributes – 3D Volumetric Data

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.

Module	Attribute	Tag	Notes
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2003_17_54_43 = Apr. 3, 2003 at 5:54:43 PM). Populated from Modality Worklist if used.
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O= Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by Juniper otherwise.
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\OB\0001 Value 1: ORIGINAL or DERIVED Value 2: PRIMARY or SECONDARY Value 3: Set to value by exam type Value 4: It is constructed as a modality bit map to allow for a description of multi-modality displays. In using this bit map, the sum of the values of the various modalities will unambiguously determine the constituent modalities. 0001 = 2D Imaging 0002 = M-Mode 0004 = CW Doppler 0008 = PW Doppler 0010 = Color Doppler 0020 = Color M-Mode 0040 = 3D Rendering

Module	Attribute	Tag	Notes
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by Juniper
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008, 1030), Scheduled Procedure Step Description (0040, 0007), Requested Procedure Description (0032, 1060). If Modality Worklist was not used or none of the attributes contains a valid value QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen – Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to “US”
	Series Instance UID	(0020,000E)	Generated by Juniper
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	(b)Series Date	(0008,0021)	Date the series started.
	(b)Series Time	(0008,0031)	Time the series started.
	(b)Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	Protocol Name	(0018,1030)	Value is set to “NONE”
	(b)Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040, 0007) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040, 0008) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040, 0009) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040, 1001) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query

Module	Attribute	Tag	Notes
	(b)Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	(b)Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	(b)Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040,0009) if provided by Modality Worklist.
	(b)Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	(b)Performed Procedure Protocol Code Sequence	(0040,0260)	Populated with Scheduled Protocol Code Sequence (0040,0008) if provided by Modality Worklist.
	(b)Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS Healthineers”
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Configuration – Institution Name field.
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer’s Model Name	(0008,1090)	Set to “ACUSON <Product Name>”.
General Image	Instance Number	(0020,0013)	Image number in study (1 - n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB and YBR_FULL_422 images.
	Photometric Interpretation	(0028,0004)	“YBR_FULL_422” if sent compressed, “RGB” or “MONOCHROME2“ if sent uncompressed.
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	This value may be from 240 and 864.
	Columns	(0028,0011)	This value may be from 320 and up to 1152.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0.
	Pixel Data	(7FE0, 0010)	
US Image	Image Type	(0008,0008)	Sent as a 0 length attribute.

Module	Attribute	Tag	Notes
	Heart Rate	(0018,1088)	Only provided if heart rate is > 0
	Lossy Image Compression	(0028,2110)	Always set to “01”
	(a)Stage Name	(0008,2120)	
	(a)Stage Number	(0008,2122)	
	(a)Number of Stages	(0008,2124)	
	(a)View Names	(0008,2127)	
	(a)View Number	(0008,2128)	
	(a)Number of Views in Stage	(0008,212A)	
	(a)Transducer Type	(0018,6031)	
	(a)R Wave Time Vector	(0018,6060)	
	(a)Mechanical Index	(0018,5022)	
	(a)Depth Of Scan Field	(0018,5050)	2D FOV depth in mm unit
	(a)Number Of Event Timers	(0018,2129)	The number of event timers used at the time of acquisition of a Multi-frame image.
	(a)Event Elapsed Time(s)	(0018,2130)	An array of values associated with each event timer. Units in milliseconds.
	(a)Event Timer Name(s)	(0018,2132)	Name that identifies the event timer.
WaveForm	(a)Waveform Sequence	(5400,0100)	
	>Acquisition DateTime	(0008,002A)	
	>Trigger Time Offset	(0018,1069)	
	>Waveform Originality	(003A,0004)	ORIGINAL
	>Number of Waveform Channels	(003A,0005)	1
	>Number of Waveform Samples	(003A,0010)	
	>Sampling Frequency	(003A,001A)	
	>Channel Definition Sequence	(003A,0200)	
	>>Channel Source Sequence	(003A,0208)	
	>>>Include ‘Code Sequence Macro’		
	>>Channel Sensitivity	(003A,0210)	
	>>Channel Sensitivity Units Sequence	(003A,0211)	
	>>>Include ‘Code Sequence Macro’		
	>>Waveform Bits Stored	(003A,021A)	
	>Waveform Bits Allocated	(5400,1004)	
	>Waveform Sample Interpretation	(5400,1006)	
	>Waveform Data	(5400,1010)	
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.3.1 or 1.2.840.10008.5.1.4.1.1.3
	SOP Instance UID	(0008,0018)	Generated by Juniper
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document
	(a)Instance Creation Date	(0008,0012)	Created
	(a)Instance Creation Time	(0008,0013)	Created

Module	Attribute	Tag	Notes
Image Plane	Pixel Spacing	(0028,0030)	Pixel Spacing information is only provided for single, full screen, 2D image types (2D image types are B-Mode, B-Mode Color, B-Mode with power).
Cine	Frame Time Vector	(0018,1065)	
Multi-Frame	Number of Frames	(0028,0008)	
	Frame Increment Pointer	(0028,0009)	00181065H
Region Calibration	(c)Sequence of Ultrasound Regions	(0018,6011)	
	>(c)Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	>(c)Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)
	>(c)Region Flags	(0018,6016)	1st Bit (LSB) = 1 (All images acquired are transparent) 2nd Bit = 1 (All images acquired are automatically scaled) 3rd Bit = 1 for frequency scale 3rd Bit = 0 for velocity scale. The value of the 3rd bit is undefined for any mode other than Doppler. The value for 3rd bit is undefined if both frequency and velocity scales are selected on the Doppler image. 4th Bit is Reserved and value is always 0.
	>(c)Region Location Min X0	(0018,6018)	
	>(c)Region Location Min Y0	(0018,601A)	
	>(c)Region Location Max X1	(0018,601C)	
	>(c)Region Location Max Y1	(0018,601E)	
	>(c)Physical Units X direction	(0018,6024)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0004H (seconds) Spectral (CW/PW) Doppler = 0004H (seconds)
	>(c)Physical Units Y direction	(0018,6026)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0003H (cm) Spectral (CW/PW) Doppler = 0007H (cm/sec)
	>(c)Physical Delta X	(0018,602C)	
	>(c)Physical Delta Y	(0018,602E)	
	>(c)Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	>(c)Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions

Module	Attribute	Tag	Notes
	>[c]Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	>[c]Reference Pixel Physical Value Y	(0018,602A)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	>[a,c]Transducer Frequency	(0018,6030)	
	>[a,c]Pulse Repetition Frequency	(0018,6032)	
	>[a,c]Doppler Correction Angle	(0018,6034)	
Private Attributes	[d]Private Creator	(0011,0010)	Reserves tags 0011, 1000 through 0011, 10FF for use as private tags.
	[d]Siemens Medical Solutions Model Name	(0011,1010)	Always set to “<Product Name>”.
	[d]PIMS Software Version	(0011,1011)	Set to version of PIMS software installed.
	[d]Private Data	(0011,1020)	For internal Juniper use only.
	[d]Private Data	(0011,1021)	For internal Juniper use only.
	[d]Private Creator	(0013,0010)	Reserves tags 0013, 1000 through 0013, 10FF for use as private tags.
	[d]Siemens Medical Solutions Model Name	(0013,1010)	Always set to “<Product Name>”.
	[d]PIMS Software Version	(0013,1011)	Set to version of PIMS software installed.
	[d]Private Data	(0013,1020)	For internal Juniper use only.
	[d]Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015, 1000 through 0015,10FF for use as private tags.
	[d]Siemens Medical Solutions Model Name	(0015,1010)	Always set to “<Product Name>”.
	[d]PIMS Software Version	(0015,1011)	Set to version of PIMS software installed.
	[d]Private Data	(0015,1020)	For internal Juniper use only.
	[d]Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017, 1000 through 0017,10FF for use as private tags.
	[d]Siemens Medical Solutions Model Name	(0017,1010)	Always set to “<Product Name>”.
	[d]PIMS Software Version	(0017,1011)	Set to version of PIMS software installed.
	[d]Private Data	(0017,1020)	For internal Juniper use only.
	Private Creator	(0019,0010)	Reserves tags 0019, 1000 through 0019, 10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to “O” or “C” or “CO” if SR options were purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import measurements from SR.
	[a]B-mode Tint Index(used for routing the image to B&W or Color printer)	(0019,102D)	
	Private Creator	(7FDF,0010)	Reserved tags 7FDF,1000 through 7FDF,FE00 for use as private tags

Module	Attribute	Tag	Notes
	Private Creator	(7FDF,0011)	
	Microseconds in unit timestamp	(7FDF,1083)	Set to 20 microsecond
	Acoustic Frame Timestamp	(7FDF,1085)	Time corresponding to the end of ultrasound data collection at the end of each acoustic frame.
	[a]Private Creator	(0119,0010)	Set to “SIEMENS Ultrasound Juniper”
	[a]Stage Timer Time	(0119,1011)	
	[a]Stop Watch Time	(0119,1012),	

Table 11: 3D Bookmark Data

Module	Attribute	Tag	Notes
Private Attributes	Private Creator	(0039,0010)	SIEMENS MED SMS USG Antares 3D VOLUME
	Release Version	(0039,1000)	3.0.3
	VolumeRawDataType	(0039,1004)	Data Type (Cartesian/Scan-Converted/PreScanConverted Format
	ScanType	(0039,1005)	
	ZlateralMin	(0039,1006)	Minimum span along the depth (wobble min.)
	ZlateralSpan	(0039,1007)	Span along the depth (wobble span)
	ZRadiusOfCurvature	(0039,1008)	Radius of curvature, in (wobble)
	WobbleCorrection	(0039,1009)	Wobbling shear correction factor (0.0 to 1.0)
	ScaleAlongWidth	(0039,1010)	Width scaling mm/pixel
	ScaleAlongHeight	(0039,1011)	Height scaling mm/pixel
	ScaleAlongDepth	(0039,1012)	Depth scaling mm/pixel
	BufferSize	(0039,1013)	
	AcquisitionRate	(0039,1014)	Time required to acquire one volume
	DepthMinCm	(0039,1015)	The min/start depth for the BImage
	IsLeftRightFlippedEn	(0039,1016)	Whether the acquired images were Left/Right flipped
	IsUpDownFlippedEn	(0039,1017)	Whether the acquired images were up/down flipped
	IsVolumeGeomAccurate	(0039,1018)	Is the volume passed is geometrically accurate (In order to display ruler)
	BByteMaskOffset	(0039,1019)	Bytemasks is the offset fro Mask data which is used for space leaping optimization in renderer
	BByteMaskSize	(0039,1020)	Size of the byte mask data
	DepthMaxCm	(0039,1021)	The max/end depth for the BImage

Module	Attribute	Tag	Notes
Private Attributes	AcqPlaneRotationDeg	(0039,1022)	Angle by which the volume is to be rotated around, normal to the Aquisition plane (Z axis) (in degrees)
	BeamAxialSpan	(0039,1023)	beam span, in mm
	BeamLateralMin	(0039,1024)	Min lateral angle
	BeamLateralSpan	(0039,1025)	Angular span
	BeamAxialMin	(0039,1026)	Axial min or radius of curvature in 2d
	NumDisplaySamples	(0039,1027)	Number of actual samples along each beam
	DVolumeWidth	(0039,1028)	Volume Width of the Power/Doppler Volume
	DVolumeDepth	(0039,1029)	Volume Depth of the Power/Doppler Volume
	DVolumeHeight	(0039,1030)	Volume Height of the Power/Doppler Volume
	DVolumePosX	(0039,1031)	
	DVolumePosY	(0039,1032)	
	DVolumePosZ	(0039,1033	
	DBeamAxialMin	(0039,1034)	Axial min or radius of curvature in 2d for Power/Doppler
	DBeamAxialSpan	(0039,1035)	
	DBeamLateralMin	(0039,1036)	Min lateral angle for Power/Doppler
	DBeamLateralSpan	(0039,1037)	Angular span from Power/Doppler
	NumOfVolumesInSequence	(0039,1038)	Number Of Volumes In Sequence
	DByteMaskOffset	(0039,1039)	Bytemasks is the offset for the mask data which is used for space leaping optimization in renderer when in Power/Doppler
	DByteMaskSize	(0039,1040)	Size of the byte mask data when in Power/Doppler
	PrivateCreatorVersionOfBookmark	(0039,1050)	3.6.0
	BCutPlaneEnable	(0039,1051)	Cut-plane volume rendering for B data
	BMprColorMapIndex	(0039,1052)	Index of the tint colormap for MPR B data
	BMprDynamicRangeDb	(0039,1053)	dB value of dynamic range curve for MPR B data
	BMprGrayMapIndex	(0039,1054)	Index of the image enhancement LUT for the MPR B data
	BVolumeRenderMode	(0039,1055)	Volume rendering mode for B data
	BVrBrightness	(0039,1056)	Brightness value for the volume rendered B data
	BVrContrast	(0039,1057)	Contrast value for the volume rendered B data
	BVrColorMapIndex	(0039,1058)	Index of the tint colormap for the volume rendered B data
	BVrDynamicRangeDb	(0039,1059)	dB value of dynamic range curve for the volume rendered B data

Module	Attribute	Tag	Notes
Private Attributes	BVrGrayMapIndex	(0039,105a)	Index of the image enhancement LUT for the volume rendered B data
	BVrOpacity	(0039,105b)	Opacity percentage of the opacity curve used for the volume rendered B data
	BVrThresholdHigh	(0039,105c)	High threshold of the opacity curve used for the volume rendered B data
	BVrThresholdLow	(0039,105d)	Low threshold of the opacity curve used for the volume rendered B data
	BPreProcessFilterMix	(0039,105e)	Mix percentage used for mixing filtered data for the volume rendered B data
	CCutPlaneEnable	(0039,105f)	Cut-plane volume rendering for B data
	CFrontClipMode	(0039,1060)	Flag indicating whether Niche and Parallel Cut edit operation will clip power data.
	CMprColorMapIndex	(0039,1061)	Index of the tint colormap for MPR power data
	CMprColorFlowPriorityIndex	(0039,1062)	Threshold representing amount of power data cut from the MPR power data
	CVolumeRenderMode	(0039,1063)	Volume rendering mode for power data
	CVrColorMapIndex	(0039,1064)	Index of the tint colormap for the volume rendered power data
	CVrColorFlowPriorityIndex	(0039,1065)	Threshold representing amount of power data cut from the volume rendered power data
	CVrOpacity	(0039,1066)	Opacity percentage of the opacity curve used for the volume rendered power data
	CVrThresholdHigh	(0039,1067)	High threshold of the opacity curve used for the volume rendered power data
	CVrThresholdLow	(0039,1068)	Low threshold of the opacity curve used for the volume rendered power data
	VoiMode	(0039,1069)	Flag indicating whether VOI is on or off
	VoiRotationOffsetDeg	(0039,106a)	Fixed rotation applied to VOI
	VoiSizeRatioX	(0039,106b)	Width of VOI in relative units
	VoiSizeRatioY	(0039,106c)	Length of VOI in relative units
	VoiSizeRatioZ	(0039,106d)	Height of VOI in relative units
	VoiSyncPlane	(0039,106e)	Plane synced to the VOI
	VoiViewMode	(0039,106f)	Type indicating whether the rendering is synced to the front or back of the VOI
	VrOrientationA	(0039,1070)	Matrix representing the oritentation of the volume rendered image
	MprOrientationA	(0039,1071)	Matrix representing the oritentation of the MPRs
	VrOffsetVector	(0039,1072	Vector representing the vertical and horizontal offset of the volume on the display
	BlendingRatio	(0039,1073)	Value indicating the amount of blending between B and power data when blend is on

Module	Attribute	Tag	Notes
Private Attributes	FusionBlendMode	(0039,1074)	Mode for fusing in one display power and B volume rendered data
	QualityFactor	(0039,1075)	Factor determining the volume rendering quality
	RendererType	(0039,1076)	Type of the rendererer engine used
	SliceMode	(0039,1077)	Mode for displaying the textured map MPRs in the 3D quadrant
	ActiveQuad	(0039,1078)	Value indicating which quadrant in the display is active
	ScreenMode	(0039,1079)	Value indicating which screen layout is applied
	CutPlaneSide	(0039,107a)	Value indicating which half space of the cut-plane is used for volume rendering
	WireframeMode	(0039,107b)	Flag indicating whether wireframe around rendered data is on or off
	CrossmarkMode	(0039,107c)	Flag indicating whether crossmark is shown on the display
	MprDisplayType	(0039,107d)	Value indicating whether B or power or B+power data are displayed in the MPRs
	VolumeDisplayType	(0039,107e)	Value indicating whether B or power or B+power data are displayed in the volume rendered image
	LastReset	(0039,107f)	Value indicating the last reset
	LastNonFullScreenMode	(0039,1080)	Value indicating the last active quadrant before entering full screen
	MprToolIndex	(0039,1081)	Index indicating which tool (rotation, pan, resizing) is used on the MPRs
	VoiToolIndex	(0039,1082)	Index indicating which tool (rotation, pan, resizing) is used on the volume rendered image when VOI is on
	ToolLoopMode	(0039,1083)	Value indicating in which loop
	VolumeArbMode	(0039,1084)	Index indicating whether volume or MPR rotation is active on the 3D display window
	MprZoomEn	(0039,1085)	Flag indicating whether zoom is enabled in the MPR
	IsVolumeZoomEn	(0039,1086)	Flag indicating whether zoom is enabled in the rendered volume
	ZoomLevelMpr	(0039,1087)	Value indicating the amount of zoom (in relative units) applied in the MPR
	ZoomLevelVolume	(0039,1088)	Value indicating the amount of zoom (in relative units) applied in the rendered volume
	IsAutoRotateEn	(0039,1089)	Flag indicating whether animation is enabled
	AutoRotateAxis	(0039,108a)	Value indicating the axis of rotation for the animation
	AutoRotateRangeIndex	(0039,108b)	Value indicating the total angle range for the animation

Module	Attribute	Tag	Notes
Private Attributes	AutoRotateSpeedIndex	(0039,108c)	Value indicating the speed (in relative units) for the animation
	CVrBrightness	(0039,108d)	Brightness value for the volume rendered power data
	CFlowStateIndex	(0039,108e)	Index for flow state of power data (low, medium, high)
	BSubmodeIndex	(0039,108f)	Index for indicating the B submode (THI, B, etc...)
	CSubmodeIndex	(0039,1090)	Index for indicating the C submode
	DICOMAttrNameCutPlane	(0039,1091	Quadrant used to cut volume when colume cut enabled
	BookmarkChunkId	(0039,1092)	Index of Bookmark
	SequenceMinChunkId	(0039,1093)	Begin range index of volume sequence
	SequenceMaxChunkId	(0039,1094)	End range index of volume sequence
	VolumeRateHz	(0039,1095)	Rate at which volumes are rendered
	VoiPositionOffsetX	(0039,109a)	Offset in the x dimension between the center of the VOI and center of volume in relative units
	VoiPositionOffsetY	(0039,109b)	Offset in the y dimension between the center of the VOI and center of volume in relative units
	VoiPositionOffsetZ	(0039,109c)	Offset in the z dimension between the center of the VOI and center of volume in relative units
	VrToolIndex	(0039,109d)	Index indicating which tool (rotation, pan, resizing) is used on the volume rendered image
	ShadingPercent	(0039,109e)	Value indicating the amount of shading in the volume rendered image
	VolumeType	(0039,109f)	Value indicating the type of volume (B or B and Power)
	VolumeRateHz	(0039,1095)	Rate at which volumes are rendered
	DICOMAttrNameVrQuadDisplayType	(0039,10a0)	The type of display to show in the volume quadrant
	DICOMAttrNameMprCenterLocation	(0039,10a1)	Offset location of slice centerpoint with respect to quadrant center
	DICOMAttrNameSliceMode	(0039,1077)	Value indicating that system in multislice mode
	DICOMAttrNameSliceRangeType	(0039,10e0)	Value indicating type of slice mode (horizontal/vertical)
	DICOMAttrNameSliceMPRPlane	(0039,10e1)	Value indicating selected MPR for slice mode (Acquisition/Elevation/Coronal)
	DICOMAttrNameSliceLayout	(0039,10e2)	Selected layout for slice mode (2x2, 3x3, 4x4, 6x6)
	DICOMAttrNameSliceSpacing	(0039,10e3)	Value indicates the spacing between MPR slices
	DICOMAttrNameVoiPivotX	(0039,10e6)	Curved TOP VOI pivot x
	DICOMAttrNameVoiPivotY	(0039,10e7)	Curved TOP VOI pivot y

Module	Attribute	Tag	Notes
	DICOMAttrNameVoiPivotZ	(0039,10e8)	Curved TOP VOI pivot z
	DICOMAttrNameCTopVoiQuad	(0039,10e9)	Curved TOP VOI Quad

Table 12: Secondary Capture Image IOD Attributes

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2015_17_54_43 = Apr. 3, 2015 at 5:54:43 PM). Populated from Modality Worklist if used.
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O= Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by Juniper otherwise.
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by Juniper
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.

Module	Attribute	Tag	Notes
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008,1030), Scheduled Procedure Step Description (0040,0007), Requested Procedure Description (0032,1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to “US”
	Series Instance UID	(0020,000E)	Generated by Juniper
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	(b)Series Date	(0008,0021)	Date the series started.
	(b)Series Time	(0008,0031)	Time the series started.
	(b)Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	(b)Protocol Name	(0018,1030)	The exam type of the most recent image stored in a particular series. If no images are stored for a series then the value is set to “Ultrasound”.
	(b)Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040,0007) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040,0008) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040,0009) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040,1001) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query
	(b)Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	(b)Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	(b)Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step

Module	Attribute	Tag	Notes
			ID (0040,0009) if provided by Modality Worklist.
	[b]Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	[b]Performed Procedure Protocol Code Sequence	(0040,0260)	Populated with Scheduled Protocol Code Sequence (0040,0008) if provided by Modality Worklist.
	[b]Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
SC Equipment Module	Conversion Type	(0008,0064)	Set to “WSD”
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS Healthineers”
	Institution Name	(0008,0080)	System Configuration – Institution Name field.
	Station Name	(0008, 1010)	Station AE title
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer’s Model Name	(0008,1090)	Set to “ACUSON <Product Name>”.
General Image	Instance Number	(0020,0013)	Image number in study (1 – n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute.
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB images.
	Photometric Interpretation	(0028,0004)	“RGB” or “MONOCHROME2“
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	This value may be from 240 and 864.
	Columns	(0028,0011)	This value may be from 320 and up to 1152.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0.
	Pixel Data	(7FE0,0010)	
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.7
	SOP Instance UID	(0008,0018)	Generated by Juniper
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document
Private	[a]Private Creator	(0011,0010)	Reserves tags 0011, 1000 through

Module	Attribute	Tag	Notes
Attributes			0011,10FF for use as private tags.
	[a]Siemens Medical Solutions Model Name	(0011,1010)	Always set to “<Product Name>”.
	[a]PIMS Software Version	(0011,1011)	Set to version of PIMS software installed.
	[a]Private Data	(0011,1020)	For internal Juniper use only.
	[a]Private Data	(0011,1021)	For internal Juniper use only.
	[a]Private Creator	(0013,0010)	Reserves tags 0013,1000 through 0013,10FF for use as private tags.
	[a]Siemens Medical Solutions Model Name	(0013,1010)	Always set to “<Product Name>”.
	[a]PIMS Software Version	(0013,1011)	Set to version of PIMS software installed.
	[a]Private Data	(0013,1020)	For internal Juniper use only.
	[a]Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015,1000 through 0015,10FF for use as private tags.
	[a]Siemens Medical Solutions Model Name	(0015,1010)	Always set to “<Product Name>”.
	[a]PIMS Software Version	(0015,1011)	Set to version of PIMS software installed.
	[a]Private Data	(0015,1020)	For internal Juniper use only.
	[a]Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017,1000 through 0017,10FF for use as private tags.
	[a]Siemens Medical Solutions Model Name	(0017,1010)	Always set to “<Product Name>”.
	[a]PIMS Software Version	(0017,1011)	Set to version of PIMS software installed.
	[a]Private Data	(0017,1020)	For internal Juniper use only.
	Private Creator	(0019,0010)	Reserves tags 0019,1000 through 0019,10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to “O” if Obstetric SR options were purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import Obstetric measurements from SR.

[a] The Attribute is only provided if the image is written to media.

[b] The Attribute is only provided if the procedure step is queried from the MWL server.

The following table denotes the attributes included in the Comprehensive SR Object as implemented on the Juniper. Attributes not listed are not used.

Table 13: Comprehensive SR IOD Attributes

Module	Attribute	Tag	Notes
Patient	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.

Module	Attribute	Tag	Notes
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2015_17_54_43 = Apr. 3, 2015 at 5:54:43 PM). Populated from Modality Worklist if used.
	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O = Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by Juniper otherwise
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by Juniper
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008,1030), Scheduled Procedure Step Description (0040,0007), Requested Procedure Description (0032,1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen – Exam/QuickSet name is used.
SR Document Series	Modality	(0008,0060)	Always set to "SR"
	Series Instance UID	(0020,000E)	Generated by Juniper
	Series Number	(0020,0011)	Series Number in study (2-n).
	Series Date	(0008,0021)	Date the series started.
	Series Time	(0008,0031)	Time the series started.

Module	Attribute	Tag	Notes
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS Healthineers”
	Institution Name	(0008,0080)	System Configuration – Institution Name field.
	Software Versions	(0018,1020)	Set to “SR1.0_<DICOM Software Version>_<Product Name>” where <Product Name> and <DICOM Software Version> are specific to each Juniper Ultrasound System release.
	Manufacturer’s Model Name	(0008,1090)	Set to “ACUSON Juniper”
SR Document General	Content Date	(0008,0023)	Date the report was created
	Content Time	(0008,0033)	Time the report was created
	Instance Number	(0020,0013)	Always set to 0.
	Completion Flag	(0040,A491)	Always set to “PARTIAL”
	Verification Flag	(0040,A493)	Always set to “UNVERIFIED”
	Predecessor Documents Sequence	(0040,A360)	Supplied if a previous SR was generated for the study. Populated with SOP Class UID and SOP Instance UID of the previous Obstetric SRs for the study, if any. See table C17-2 in PS 3.3-2011 for sequence definition.
	Performed Procedure Code Sequence	(0040,A372)	Populated with contents of Procedure Code Sequence from Modality Worklist if available, empty otherwise. See table C17-2 in PS 3.3-2011 for sequence definition.
	Current Requested Procedure Evidence Sequence	(0040,A375)	Lists all images and clips in the study. See table C17-2 in PS 3.3-2011for sequence definition.
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.88.33
	SOP Instance UID	(0008,0018)	Generated by Juniper.
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document.
	Instance Creation Date	(0008,0012)	Date the SOP Instance was created.
	Instance Creation Time	(0008,0013)	Time the SOP Instance was created.
	Instance Creator UID	(0008,0014)	
Private Attributes	Private Creator	(0019,0010)	Reserves tags 0019,1000 through 0019,10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to “O” or “C” or “CO” if SR options were purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import measurements from SR.

Error Handling

The following table indicates the response status codes that are handled by the Juniper AE, which a SCP may return following the SCU's C-STORE-RSP command.

A successful C-STORE operation will allow the Juniper AE to continue to the next action desired by the user.

Table 14: C-STORE Status Responses

Service Status	Further Meaning	Protocol Codes	Related Fields
Refused	Out of resources.	A7xx	None
Error	Data set does not match SOP Class. Cannot understand.	A9xx Cxxx	None
Warning	Coercion of data Elements. Data set does not match SOP Class. Elements discarded.	B000 B007 B006	None
Success		0000	None

If the C-STORE operation is not successful, the image(s) and Structured Report(s), if any, are spooled on the Juniper hard drive. A user-configured number of additional attempts are made to store the image(s) and Structured Report(s). If these attempts fail, the user must select the job and press "Retry Job" on the Queue Screen to complete the C-STORE operation.

All image and Structured Report storage on the Juniper hard drive is temporary in nature. If an attempt is made to store images on a full Juniper hard drive, the system will attempt to delete studies archived to CD/DVD/USB or DICOM. If no delete able data exists, a "DISK FULL" message is displayed on the Juniper display device. The user must then delete studies not archived in order to store additional images.

4.2.3.3 Real-World Activity – Storage Commitment

This operation allows the AE to create an instance of the Storage Commitment SOP Class and to provide information about a specific Real World Activity that is under the control of the SCU. The AE invokes a request for safekeeping of images by the N-ACTION REQUEST. Referenced in the N-ACTION Request are the SOP class UID(s) and SOP instance UID(s) for all STORE Class objects requesting commitment by the SCU.

Storage Commit

The Storage Commitment (if enabled) command is sent in the following situations:

a. On series close, when all images and Structured Reports have previously stored successfully.

b. The series was previously closed, all previous stores have succeeded and the last image or Structured Report stores successfully.

c. The series was previously closed, at least one store has succeeded, at least one store has failed and the last store with non-zero retry count fails or succeeds.

d. A series has been partially committed as in c. Later, due to "Retry Job" button press on the DICOM screen the store jobs are retried. Another Storage Commit is sent when at least one store has succeeded and the last store with non-zero retry count fails or succeeds.

The Juniper waits for the return of a successful N-ACTION RESPONSE Status Code applicable for the associated request indicating whether the commitment request was successful or a failure. The Juniper waits for the N-EVENT REPORT from the SCP for at most 48 hours. The Juniper has a capable of

accepting the N-EVENT REPORT on the association it initiates for the N-ACTION or one initiated by the SCP. Studies with all SOP instances marked as 'successful' in the N-EVENT REPORT will be eligible for deletion from the system hard drive.

Image-By-Image and Batch Storage Commitment are supported as specified in "Vista DICOM Conformance Requirements for Image Modalities in radiology, Cardiology, Dental, Ophthalmology and other specialities" (Version 2.3).

Storage Commitment of Structured Reports is supported.

Proposed Presentation Context

Table 15: Storage Commitment Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
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

The Juniper will act as an SCU in the 'Push Model" Storage Commitment SOP Class.

SOP Specific Conformance to Storage Commitment SOP Class

The Storage Commitment AE provides conformance to the following DICOM Service SOP Class as an SCU at a standard level of conformance.

Table 16: Supported SOP Class

Supported SOP Class Name	SOP Class UID	Conformance Level
Storage Commitment Push Model	1.2.840.10008.1.20.1	Standard

Storage Commitment to Storage Media (External media like CD/DVD or USB) is not supported.

The following table provides the list of attributes supported by the AE in the implementation of Storage Commitment SOP Class:

Table 17: Storage Commitment Request Attributes in N-ACTION REQUEST

Attribute	Tag	Notes
Transaction UID	(0008,1195)	Generated by Juniper
Referenced SOP Sequence	(0008,1199)	
>Referenced SOP Class UID	(0008,1150)	
>Referenced SOP Instance UID	(0008,1155)	

Error Handling

If the storage commitment operation is not successful, a user-configured number of additional attempts are made. If these attempts fail, the user must select the job and press "Retry Job" on the DICOM Screen to complete the storage commitment operation

4.2.3.4 Real World Activity – Modality Worklist

A separate Network association is established by the AE for each Worklist query operation, with only one active query at a time. The association is closed at completion of the query.

Proposed Presentation Context

Table 18: Worklist Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

The Juniper will always act as an SCU and as the client in a client-server model.

SOP Specific Conformance to Modality Worklist Service SOP Classes

The Worklist AE provides conformance to the following DICOM Service SOP Classes as an SCU all at a standard extended level of conformance:

Table 19: Worklist Supported SOP Classes

Supported SOP Class Name	SOP Class UID	Conformance Level
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Standard Extended

The following table provides the list of attributes requested in the Modality Worklist Query.

Table 20: Modality Worklist Information Model Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Accession number	(0008,0050)*
Referring Physician's Name	(0008,0090)
Study Description	(0008,1030)
Admitting Diagnoses Description	(0008,1030)
Referenced Study Sequence	(0008,1110)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Patient's Name	(0010,0010)*
Patient ID	(0010,0020)*
Patient's Birth Date	(0010,0030)
Patient's Sex	(0010,0040)
Patient's Size	(0010,1020)
Patient's Weight	(0010,1030)
Medical Alerts	(0010,2000)
Contrast Allergies	(0010,2110)
Pregnancy Status	(0010,21C0)
Last Menstrual Date	(0010,21D0)
Patient Comments	(0010,4000)
Study Instance UID	(0020,000D)
Requesting Physician	(0032,1032)
Requested Procedure Description	(0032,1060)

Attribute Name	Tag
Requested Procedure Code Sequence	(0040,0008)
>Code Value	(0008,0100)
>Coding Scheme Designator	(0008,0102)
>Coding Scheme Version	(0008,0103)
>Code Meaning	(0008,0104)
Special Needs	(0038,0050)
Patient State	(0038,0500)
Scheduled Procedure Step Sequence	(0040,0100)
>Modality	(0008,0060)
>Scheduled Station AE Title	(0040,0001)*
>Scheduled Procedure Step Start Date	(0040,0002)
>Scheduled Procedure Step Start Time	(0040,0003)
>Scheduled Performing Physician's Name	(0040,0006)
>Scheduled Procedure Step Description	(0040,0007)
>Scheduled Protocol Code Sequence	(0040,0008)
>>Code Value	(0008,0100)
>>Coding Scheme Designator	(0008,0102)
>>Coding Scheme Version	(0008,0103)
>>Code Meaning	(0008,0104)
>Scheduled Procedure Step ID	(0040,0009)
>Comments on the Scheduled Procedure Step	(0040,0400)
Requested Procedure ID	(0040,1001)*
Reason for the Requested Procedure	(0040,1002)

*Indicates parameter may be populated for query.

4.2.3.5 Real World Activity – Modality Performed Procedure Step

This operation allows the AE to create an instance of the Modality Performed Procedure Step SOP Class (MPPS) and provide information about a specific real world Performed Procedure Step that is under control of the SCU. This operation is invoked through the DIMSE N-CREATE and N-SET services.

The Juniper conforms to the IHE Scheduled Workflow use case.

A list of scheduled procedures and procedure steps will be accessible from the Worklist and Procedure screens. The Performed Procedure Step User Interface allows the operator to set the status of the performed procedure step. The system shall establish an association for N-CREATE and N-SET, if another N-CREATE or N-SET is available within 5 seconds, it will be sent using the same association.

Starting a Performed Procedure Step

When the user depresses the 'OK' button on the New Patient Screen a performed procedure SOP Class instance will be created using the N-CREATE DIMSE service for the selected scheduled procedure.

Ending a Performed Procedure Step

When the user selects 'Completed' or 'Discontinued' from the MPPS User Interface, the performed procedure step will be closed using the N-SET DIMSE service.

New Patient Request

If the 'New Patient' button is selected and there are opened performed procedure steps, the user shall be prompted for a closure status for the opened procedure step by the MPPS User Interface. Any opened procedure steps must be closed before any 'new patient' data can be entered.

System Shutdown

If the user requests 'System Shutdown' and there is an open performed procedure step, the user will be prompted for a closure status for the open procedure step. All procedure steps should be closed before the system can be shutdown. Failure to close a procedure step will result in the procedure step being set to Discontinued.

Error Handling

If the MPPS operation is not successful, the MPPS command is spooled on the ACUSON Juniper™ system hard drive. A user-configured number of additional attempts are made to complete the MPPS Commands. If these attempts fail, the user must select this job and press "Retry Job" on the DICOM Screen to complete the MPPS operation.

Proposed Presentation Context

Table 21: MPPS Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

The Juniper will always act as an SCU and be the client in a client – server model.

SOP Specific Conformance to Modality Performed Procedure Step SOP Classes

The Modality Performed Procedure Step AE provides a conforming implementation of the following DICOM Service SOP Class as an SCU at a standard extended level of conformance.

Table 22: Supported SOP Class

Supported SOP Class Name	SOP Class UID	Conformance Level
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Standard Extended

The following tables provide the list of attributes supported by the AE in the implementation of MPPS SOP Class including N-CREATE, N-SET and Final State attributes. The Juniper sends N-SET only at final state.

Table 23: Modality Performed Procedure Step Attributes in N-CREATE

Attribute	Tag	Notes
Specific Character Set	(0008,0005)	Created from values as defined in Section 7.4 of this document or as received from MWL
Scheduled Step Attribute Sequence	(0040,0270)	
>Study Instance UID	(0020,000D)	Value obtained from Modality WorkList; generated by Juniper in some cases

Attribute	Tag	Notes
>Referenced Study Sequence	(0008,1110)	Populated with contents of Referenced Study Sequence from Modality Worklist if used, created otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>>Referenced SOP Class UID	(0008,1150)	Populated with contents of Referenced Study Sequence from Modality Worklist if used, created otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>>Referenced SOP Instance UID	(0008,1155)	Populated with contents of Referenced Study Sequence from Modality Worklist if used, created otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>Accession Number	(0008,0050)	Value obtained from Modality WorkList or user input
>Requested Procedure ID	(0040,1001)	Value obtained from Modality WorkList or created
>Requested Procedure Description	(0032,1060)	From Modality WorkList or zero length
>Scheduled Procedure Step ID	(0040,0009)	From Modality WorkList or zero length
>Scheduled Procedure Step Description	(0040,0007)	From Modality WorkList or zero length
>Scheduled Protocol Code Sequence	(0040,0008)	From Modality WorkList or zero length
>>Code Value	(0008,0100)	
>>Coding Scheme Designator	(0008,0102)	
>>Coding Scheme Version	(0008,0103)	
>>Code Meaning	(0008,0104)	Value obtained from Modality WorkList
Patient's Name	(0010,0010)	Value obtained from Modality WorkList or user input
Patient ID	(0010,0020)	Value obtained from Modality WorkList or user input
Patient's Birth Date	(0010,0030)	Value obtained from Modality WorkList or user input
Patient's Sex	(0010,0040)	Value obtained from Modality WorkList or user input
Referenced Patient Sequence	(0008,1120)	Zero length
>Referenced SOP Class UID	(0008,1150)	
>Referenced Instance UID	(0008,1155)	
Performed Station Name	(0040,0242)	Own hostname
Performed Location	(0040,0243)	From institution name
Performed Procedure Step Start Date	(0040,0244)	The start date of the performed procedure step.
Performed Procedure Step Start Time	(0040,0245)	The start time of the performed procedure step.
Performed Procedure Step Status	(0040,0252)	Always set to "In-Progress".
Performed Procedure Step Description	(0040,0254)	Value obtained from Modality WorkList or sent as zero length

Attribute	Tag	Notes
Performed Procedure Type Description	(0040,0255)	sent as zero length
Procedure Code Sequence	(0008,1032)	Populated with contents of Requested Procedure Code Sequence from Modality Worklist if used, empty otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>Code Value	(0008,0100)	-
>Coding Scheme Designator	(0008,0102)	-
>Coding Scheme Version	(0008,0103)	-
>Code Meaning	(0008,0104)	-
Performed Procedure Step End Date	(0040,0250)	Always sent as 0 length attribute
Performed Procedure Step End Time	(0040,0251)	Always sent as 0 length attribute
Modality	(0008,0060)	Always set to US
Study ID	(0020,0010)	Populated from Requested Procedure ID (0040,1001) if Modality Worklist is used; created by Juniper otherwise
Performed Protocol Code Sequence	(0040,0260)	Obtained from Scheduled Action Item Code Sequence (MWL query) or sent as zero length
Performed Series Sequence	(0040,0340)	Always empty
Performed Series Sequence	(0040,0340)	
>Performing Physician's Name	(0008,1050)	From MWL or user input
>Protocol Name	(0018,1030)	Set to exam type
>Operators' Name	(0008,1070)	Zero length
>Series Instance UID	(0020,000E)	Created
>Series Description	(0008,103E)	Zero length
>Retrieve AE Title	(0008,0054)	Zero length
>Referenced Image Sequence	(0008,1140)	Zero length
>>Referenced SOP Class UID	(0008,1150)	-
>>Referenced SOP Instance UID	(0008,1155)	-
>Referenced Standalone SOP Instance Sequence	(0040,0220)	Zero length

Table 24: Modality Performed Procedure Step Attributes in N-SET

Attribute	Tag	Notes
Performed Procedure Step Status	(0040,0252)	Set to "Discontinued" or "Completed" based on user selection.
Performed Procedure Step End Date	(0040,0250)	Date the procedure step was completed
Performed Procedure Step End Time	(0040,0251)	Time the procedure step was completed

Attribute	Tag	Notes
Performed Action Item Code Sequence	(0040,0260)	From Scheduled Action Item Code Sequence
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Coding Scheme Version	(0008,0103)	
>Code Meaning	(0008,0104)	
Performed Series Sequence	(0040,0340)	Shall contain only one series
>Performing Physician's Name	(0008,1050)	Zero length
>Protocol Name	(0008,1030)	Exam type specified by the operator.
>Operator's Name	(0008,1070)	Zero length
>Series Instance UID	(0020,000E)	The Instance UID of the series to which the procedure belongs.
>Series Description	(0008,103E)	Always sent as 0 length attribute
>Retrieve AE Title	(0008,0054)	Always sent as 0 length attribute
>Referenced Image Sequence	(0008,1140)	List of all the images in the series.
>>Referenced SOP Class UID	(0008,1150)	The SOP class UID can be one of: Ultrasound Multi-Frame Image Storage 1.2.840.10008.5.1.4.1.1.3.1 Ultrasound Multi-Frame Image Storage (Retired) 1.2.840.10008.5.1.4.1.1.3 Ultrasound Image Storage 1.2.840.10008.5.1.4.1.1.6.1 Ultrasound Image Storage (Retired) 1.2.840.10008.5.1.4.1.1.6 Secondary Capture Image Storage 1.2.840.10008.5.1.4.1.1.7
>>Referenced SOP Instance UID	(0008,1155)	The SOP instance UID of the image.
> Referenced Standalone SOP Instance Sequence	(0040,0220)	Always empty

4.2.3.6 Real World Activity – Query / Retrieve

The query user interface will request the query-data from user and triggers one C-FIND request to the selected remote node. The response data will be displayed in the query UI for further data navigation.

When requesting Import of related items the browser requests the retrieve application to send a C-MOVE request to the related remote node. Images will then be received by the Storage SCP as described in the related section.

4.2.3.6.1 Real World Activity - Find SCU

Associated Real-World Activity - Find SCU "Search"

The associated Real-World activity is to fill out a query form with search data and pass it as query to the network application which issues a C-FIND over a previously built association. The remote SCP will respond with related data-entries that will be passed to a browser application. When data transfer is finished the association is closed.

Proposed Presentation Contexts - Find SCU

The Juniper DICOM application will propose Presentation Contexts as shown in the following table.

Table 25: Query C-FIND Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Study Root Query/Retrieve Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The C-FIND SCU will use the Study Root Model for all C-FIND requests.

SOP Specific Conformance - Find SCU

The Juniper DICOM Query/Retrieve SCU supports hierarchical queries with all mandatory search keys. The interactive querying of attributes on IMAGE level is not supported by the Query SCU. Though, retrieval of individual Objects is possible. The following table describes the search keys for the different query models that the SCU supports. Matching is either wildcard, which means that the user can supply a string containing wildcards, or universal, which means that the attribute is requested as return value.

Table 26: Query C-FIND Search Keys

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
Study Level					
Patient Name	(0010,0010)	R	Wildcard[(a)]	enter value	yes
Patient ID	(0010,0020)	R	Wildcard[(a)]	enter value	yes
Patient's Birth date	(0010,0030)	O	universal (Null)		yes
Patient's Sex	(0010,0040)	O	universal (Null)	enter value	yes
Study Instance UID	(0020,000D)	U	universal (Null)		no
Study ID	(0020,0010)	R	universal (Null)		yes
Study Date	(0008,0020)	R	universal (Null)	enter value	yes
Study Time	(0008,0030)	R	universal (Null)	-	yes
Accession Number	(0008,0050)	R	universal (Null)	enter value	yes
Study Description	(0008,1030)	O	universal (Null)		yes
Referring Physician's Name	(0008,0090)	O	universal (Null)	enter value	yes
Name of Physician Reading Study	(0008,1060)	O	universal (Null)		yes
Modalities in Study	(0008,0061)	O	universal (Null)	enter value	yes
Storage Media File-Set ID	(0008,0130)	O	universal (Null)		no
Retrieve AE Title	(0008,0054)	O	universal (Null)		no
Number of Study related Series	(0020,1206)	O	universal (Null)		yes[a]
Number of Study related Instances	(0020,1208)	O	universal (Null)		no
Series Level					

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
Series Instance UID	(0020,000E)	U	universal (Null)		no
Series Number	(0020,0011)	R	universal (Null)		yes
Modality	(0008,0060)	R	universal (Null)	enter value	yes
Series Description	(0008,103E)	O	universal (Null)	enter value	yes
Body Part Examined	(0018,0015)	O	universal (Null)	enter value	yes
Performing Physician	(0008,1050)	O	universal (Null)	enter value	yes
Storage Media File-Set ID	(0008,0130)	O	universal (Null)		yes
Retrieve AE Title	(0008,0054)	O	universal (Null)		yes
Protocol Name	(0018,1030)	O	universal (Null)		no
Perf. Procedure Step Start Date	(0040,0244)	O	universal (Null)		yes
Perf. Procedure Step Start Time	(0040,0245)	O	universal (Null)		yes
Requested Attribute Sequence	(0040,0275)	O	universal (Null)		yes
> Requested Procedure ID	(0040,1001)	O	universal (Null)		yes
> Scheduled Procedure ID	(0040,0009)	O	universal (Null)		yes
Number of Series related Instances	(0020,1209)	O	universal (Null)		yes
Image Level					
SOP Instance UID	(0008,0018)	U	single value		no
Image Number	(0020,0013)	R	universal (Null)		yes
Storage Media File-Set ID	(0008,0130)	O	universal (Null)		no
Retrieve AE Title	(0008,0054)	O	universal (Null)		no
Instance Date	(0008,0023)	O	universal (Null)		no
Instance Time	(0008,0033)	O	universal (Null)		no
Number of Frames	(0028,0008)	O	universal (Null)		yes
Content Date	(0008,0023)	O	single value, range matching, universal	enter value	yes
Content Time	(0008,0033)	O	single value, range matching, universal	enter value	yes
Referenced Request Sequence	(0040,A370)	O	sequence matching		yes
>Accession Number	0008,0050)	O	single value, universal		yes
>Requested Procedure ID	(0040,1000)	O	single value, universal		yes
Concept Name Code Sequence	(0040,A043)	O	sequence matching	enter value	yes
>Code Value	(0008,0100)	O	single value, universal, wildcard		yes

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
>Coding Scheme Designator	(0008,0102)	O	single value, universal, wildcard		yes
>Coding Scheme Version	(0008,0103)	O	single value, universal, wildcard		yes
>Code Meaning	(0008,0104)	O	single value, universal, wildcard		yes
Template Identifier	(0040,DB00)	O	single value, universal, wildcard		yes
Completion Flag	(0040,A491)	O	single value, universal, wildcard	enter value	yes
Verification Flag	(0040,A493)	O	single value, universal, wildcard	enter value	yes
Verifying Observer Sequence	(0040,A073)	O	sequence matching	enter value	yes
>Verifying Organization	(0040,A027)	O	single value, universal, wildcard		yes
>Verifying DateTime	(0040,A030)	O	single value, range matching, universal	enter value	yes
>Verifying Observer Name	(0040,A075)	O	single value, universal, wildcard	enter value	yes
>Verifying Observer Identification Code Sequence	(0040,A088)	O	sequence matching		yes
>>Code Value	(0008,0100)	O	single value, universal, wildcard		yes
>>Coding Scheme Designator	(0008,0102)	O	single value, universal, wildcard		yes
>>Coding Scheme Version	(0008,0103)	O	single value, universal, wildcard		yes
>>Code Meaning	(0008,0104)	O	single value, universal, wildcard		yes

Note:
(a) A '*" is always appended to the user-supplied string

Error Handling

Table 27: Query C-FIND Status Responses

Service Status	Meaning	Protocol Codes	Related Fields
Refused	Out of Resources	A700	(0000,0902)
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)
	Unable to process	CXX	(0000,0901) (0000,0902)
Cancel	Matching terminated due to Cancel request	FE00	None
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
	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Identifier

4.2.3.6.2 Real-World Activity – Move SCU

Associated Real-World Activity - Move SCU "Import"

When an entry is selected in the Query UI and activate the "Import" function, a retrieval request is passed via a C-MOVE service according to the Patient Root or Study Root query model.

C-MOVE operation on Patient Level is not supported by the Query UI.

Proposed Presentation Contexts - Move SCU

The Juniper DICOM application will propose Presentation Contexts as shown in the following table.

Table 28: Retrieve C-MOVE Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Study Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

SOP Specific Conformance - Move SCU "Import"

At association establishment the C-MOVE presentation context shall be negotiated. The C-STORE sub-operations must be done on a different association to transfer images to the Storage Service Class SCP.

The Move SCU interprets following status codes.

Table 29: Retrieve C-MOVE Status Responses

Service Status	Meaning	Protocol Codes	Related Fields
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)
	Unable to process	CXX	(0000,0901) (0000,0902)

Service Status	Meaning	Protocol Codes	Related Fields
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

4.2.3.7 Real World Activity – Print

The Juniper facilitates user to print images as they are being created or later in review mode.

Paging images during acquisition

One or more of “Print Store 1” and “Print Store 2” keys on the control panel can be configured for Print (DICOM B/W Print and/or DICOM Color Print). When the user presses one of the configured keys on the control panel, the image is acquired, stored on the hard disk and placed in a page under the respective printer layout (DICOM B/W Printer Layout or DICOM Color Printer Layout).

Paging images in Review mode

User can select either individual images from open or closed studies, or one or more closed studies and queue them up for print. DICOM B/W Printer and DICOM Color Printer buttons are available in Patient browser for this operation. When a study is selected for print, all single-frame images belonging to the study will be printed.

Transfer of pages to the Printer

Pages may be immediately transferred or delayed till the end of study using the transfer configuration.

The Juniper supports two configurations: “Print at end exam” and “Print when page ss full”.

If the configuration is set to “Print at end exam”, all pages queued to destination devices will be transferred as a batch when the user selects “End Exam” or “New Patient”.

If the configuration is set to “Print when page is full”, a page is transferred to destination devices immediately after it is full.

For both “Print at end Exam”, and “Print when page is full” settings, image transfer will be delayed if the Juniper is busy to perform another DICOM Command (Store/Print/Echo).

Associated Real World Activities

An association is established when the user initiates a “B/W Print” or “Color Print” operation from the Patient browser. Individual images or entire exams can be transferred to the selected DICOM Print device. The association is closed no pages are available to be printed for five seconds. An association may also be opened after a network outage or when the system is powered-on if images are queued to be printed.

Proposed Presentation Context to a Grayscale Print Server

Table 30: Grayscale Print Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

SOP Specific Conformance to Basic Grayscale Print Management Meta SOP Class

The Juniper AE provides standard conformance of the Grayscale Meta SOP classes as an SCU. Specifically, with respect to the Basic Grayscale Print Management Meta SOP Class this means conformance to the underlying SOP classes:

Table 31: Conformance to Grayscale Print Meta SOP Class

SOP Class Name	SOP Class UID	Conformance Level
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Standard
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Standard
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Standard
Printer SOP Class	1.2.840.10008.5.1.1.16	Standard

All mandatory elements of these classes are supported.

Specific Conformance to Basic Film Session SOP Class

DICOM specified usage - M = Mandatory; U = User Option

Table 32: Supported DIMSE Services for Basic Film Session SOP Class

Name	Usage	Description
N-Create	M	Creates the Film Session.
N-Set	U	Not used.
N-Delete	U	Deletes the Film Session.
N-Action	U	Not used.

SOP Specific Conformance to Basic Film Box SOP Class

Table 33: Supported DIMSE Services for Basic Film Box SOP Class

Name	Usage	Description
N-Create	M	Creates the Film Box.
N-Set	U	Not used.
N-Delete	U	Deletes the Film Box. Issued after each film is printed.
N-Action	M	PRINT. Sent after each Film Box is filled, and at the end of the exam to force a print of partially filled Film Box.

Table 34: Attributes set for the Basic Film Box SOP Class

Attribute Name	Attribute Tag	Usage	Range	Description
Image Display Format	(2010,0010)	M	STANDARD\ X,Y	Where X, Y can be configured/ selected as 1*1, 1*2, 2*2, 2*3, 3*2, 3*3, 3*5, 4*5, 4*6, 5*6
Film Orientation	(2010,0040)	U	PORTRAIT LANDSCAPE	Range may be limited by print server/printer.
Film Size ID	(2010,0050)	U	8INX10IN 8.5INX11IN 10INX12IN 10INX14IN 11INX14IN 11INX17IN 14INX14IN 14INX17IN 24CMX24CM 24CMX30CM A3 A4	Range may be limited by print server/printer.
Magnification Type	(2010,0060)	U	REPLICATE BILINEAR CUBIC NONE	
Min. Density	(2010,0120)	U	0-999	Printer specific
Max Density	(2010,0130)	U	0-999	Printer specific
Configuration Information	(2010,0150)	U		Printer specific
Smoothing Type	(2010,0080)	U		Printer specific
Border Density	(2010,0100)	U	BLACK WHITE	
Empty Image Density	(2010,0110)	U	BLACK WHITE	
Trim	(2010,0140)	U	YES NO	

SOP Specific Conformance to Basic Grayscale Image Box SOP Class

Table 35: Supported DIMSE Services for the Basic Grayscale Image Box SOP

Name	Usage	Description
N-Set	M	The SCP for each potential image of the film box creates an image box instance. Only those instances, which actually contain images, will be updated with the N-SET message.

Table 36: Attributes set for the Basic Grayscale Image Box SOP Class

Name	Attribute	Range	Description
Image Position	(2020,0010)	1-30	Value according to Image Display Format
Polarity	(2020,0020)	NORMAL, REVERSE	Intensity mapping between display and print

Table 37: Supported DIMSE Services for the Printer SOP

Name	Usage	Description
N-Event-Report	M	Ignored and not handled.
N-Get	U	May be issued by this device at any time to get printer status.

Table 38: Supported Printer SOP Class Element

Name	Usage	Range	Description
Printer Status	U	WARNING FAILURE	During a “Failure”, the Print job will be displayed as “Failed”.
Printer Status Information	U	Vendor specific	Reported to user if printer status = WARNING or FAILURE.

Proposed Presentation Context to a Color Print Server

Table 39: Color Print Server Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

SOP Specific Conformance to Basic Color Print Management Meta SOP Class

The Juniper Print AE provides standard conformance to the color printing Meta SOP classes as an SCU. Specifically, with respect to the Basic Color Print Management Meta SOP Class this means conformance to the underlying SOP classes:

Table 40: Conformance to Color Print Meta SOP Class

SOP Class Name	SOP Class UID	Conformance Level
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Standard
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Standard
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Standard
Printer SOP Class	1.2.840.10008.5.1.1.16	Standard

SOP Specific Conformance to Basic Color Image Box SOP Class

The Basic Color Print Management Meta SOP Class makes identical use of the *Basic Film Session SOP Class, Basic Film Box SOP Class* and *Printer SOP Class* elements, which have been previously described for grayscale image printing. Therefore, these will not be described again in this section on color printing. However, it should be noted that certain attributes, such as Medium Type which is defined in the Basic Film Session SOP Class, are highly likely to require printer/print server specific media.

Table 41: Supported DIMSE Services for the Basic Color Image Box SOP Class

Name	Usage	Description
N-Set	M	The SCP for each potential image of the film box creates an image box instance. Only those instances, which actually contain images, will be updated with the N-SET message.

Table 42: Attributes set for the Basic Color Image Box SOP Class

Name	Attribute	Range	Description
Planar Configuration	(0028,0006)	0 – color by pixel 1 – color by plane	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.

The Printer SOP Class behavior is identical to that used for grayscale printing.

Error Handling

The Juniper Print AE supports the following error codes and reports failures to the user.

Table 43: Supported Error Codes for Printer Classes

Service Status	Further Meaning	Protocol Codes
Success	Film accepted for Printing	0000
Warning	Film accepted for Printing, one or more settings ignored.	107,116,B600,B605
Failure	Printing not successful	C602, C603, C613

If the print operation is not successful, the image(s) are spooled on the ACUSON Juniper™ system hard drive. A user-configured number of additional attempts are made to print the image(s). If these attempts fail, the user must select the job and press “Retry Job” on the DICOM Screen to complete the print operation.

5 REMOVABLE MEDIA INTERCHANGE SPECIFICATIONS

This implementation supports 120mm CD/DVD medium and USB.

5.1 Supported Application Profiles

The Juniper provides standard conformance to the following four Ultrasound Application Profiles. A DICOM 3.0 conformant DICOMDIR file is created together with the directory structures and image files.

Table 44: Application Profiles, Real-World Activities, and Roles

Supported AP	Real-World Activity	Roles	SC Option
STD-US-ID-SF-CDR	Create CD-R	FSC, FSR	Interchange
STD-US-ID-MF-CDR	Create CD-R	FSC, FSR	Interchange
STD-US-SC-SF-CDR	Create CD-R	FSC	Interchange
STS-US-SC-MF-CDR	Create CD-R	FSC	Interchange
STD-US-ID-SF-DVD	Create DVD	FSC, FSR	Interchange
STD-US-ID-MF-DVD	Create DVD	FSC, FSR	Interchange
STD-US-SC-SF-DVD	Create DVD	FSC	Interchange
STS-US-SC-MF-DVD	Create DVD	FSC	Interchange
STD-GEN-USB	Export to USB	FSC, FSU	Interchange
STD-GEN-USB	Import from USB	FSR	Interchange

5.2 Supported SOP Classes

5.2.1 Supported SOP Classes and Transfer Syntaxes

This implementation provides standard conformance to the following DICOM 3.0 SOP Classes.

Table 45: Transfer Syntaxes for Media Interchange

Service SOP Class Name	SOP Class UID	Transfer Syntax Name	Transfer Syntax UID List
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1

5.3 Information Object Definition and DICOMDIR Keys

5.3.1 DICOM File Meta Information

The following table denotes the attributes included in the Ultrasound Image Object as implemented on the Juniper in addition to the attributes listed in Table 8: .

Table 46: US Image Attributes Used
(Refer to Table 8: for additional attributes used)

Attribute Name	Tag	Notes
File Preamble	No Tag or Length fields	All bytes are set to 00H
DICOM Prefix	No Tag or Length fields	Set to DICOM Prefix “DICM”
Group length	(0002,0000)	
File Meta Information Version	(0002,0001)	Always set to 0001H
Media Storage SOP Class UID	(0002,0002)	Always Ultrasound Image 1.2.840.10008.5.1.4.1.1.6.1
Media Storage SOP Instance UID	(0002,0003)	
Transfer Syntax UID	(0002,0010)	Always Explicit VR Little Endian 1.2.840.10008.1.2.1
Implementation Class UID	(0002,0012)	Always set to 1.3.12.2.1107.5.5.5
Implementation Version Name	(0002,0013)	Always set to MergeCOM3_370

The following table denotes the attributes included in the Ultrasound Multi-Frame Image Object as implemented on the Juniper in addition to the attributes listed in Table 9: .

Table 47: USMF Image Attributes Used
(Refer to Table 9: for additional attributes used)

Attribute	Tag	Notes
File Preamble	No Tag or Length fields	All bytes are set to 0
DICOM Prefix	No Tag or Length fields	Set to “DICM”
Group length	(0002,0000)	
File Meta Information Version	(0002,0001)	Always set to 0001H
Media Storage SOP Class UID	(0002,0002)	Always Ultrasound Multi-Frame Image 1.2.840.10008.5.1.4.1.1.3.1
Media Storage SOP Instance UID	(0002,0003)	
Transfer Syntax UID	(0002,0010)	Always Lossy JPEG 8 Bit Compression 1.2.840.10008.1.2.4.50
Implementation Class UID	(0002,0012)	Always set to 1.3.12.2.1107.5.5.5
Implementation Version Name	(0002,0013)	Always set to MergeCOM3_370

The following table denotes the attributes included in the Comprehensive SR Object as implemented on the Juniper in addition to the attributes listed in Table 13: .

Table 48: Comprehensive SR Attributes Used
(Refer to Table 13: for additional attributes used)

Attribute	Tag	Notes
File Preamble	No Tag or Length fields	All bytes are set to 0
DICOM Prefix	No Tag or Length fields	Set to “DICM”
Group length	(0002,0000)	
File Meta Information Version	(0002,0001)	Always set to 0001H
Media Storage SOP Class UID	(0002,0002)	Always Comprehensive SR 1.2.840.10008.5.1.4.1.1.88.33

Attribute	Tag	Notes
Media Storage SOP Instance UID	(0002,0003)	
Transfer Syntax UID	(0002,0010)	Always Explicit VR Little Endian 1.2.840.10008.1.2.1
Implementation Class UID	(0002,0012)	Always set to 1.3.12.2.1107.5.5.5
Implementation Version Name	(0002,0013)	Always set to MergeCOM3_370

5.3.2 Basic Directory Information Object Definitions – File-set Identification Module

Attribute	Tag	Notes
File-Set ID	(0004,1130)	Set to serial number + YYMMDD + 3 digit counter. Volume Label has this same value.

5.3.3 Basic Directory Information Object Definitions – Directory Identification Module

Attribute	Tag	Notes
Offset of the First Directory Record of the Root Directory Entry	(0004,1200)	
Offset of the Last Directory Record of the Root Directory Entry	(0004,1202)	
File-set Consistency Flag	(0004,1212)	
Directory Record Sequence	(0004,1220)	
>Offset of the Next Directory Record	(0004,1400)	
>Record In-use Flag	(0004,1410)	
>Offset of Referenced Lower-Level Directory Entity	(0004,1420)	
>Directory Record Type	(0004,1430)	
>Referenced File ID	(0004,1500)	
>Referenced SOP Class UID in File	(0004,1510)	
>Referenced SOP Instance UID in File	(0004,1511)	

5.3.4 Physical Storage Media and Media Formats

The physical storage media supported are 120mm CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, and DVD+RW medium.

6 COMMUNICATION PROFILES

All Juniper application entities utilize the DICOM 3.0 TCP/IP communication support as defined in PS3.8 (Part 8) of the DICOM 3.0 Standard.

6.1 TCP/IP Stack Supported

Each process inherits its TCP/IP stack from the Juniper's operating systems TCP/IP stack. The local AE Port number is always set to 104.

6.2 Physical Media Supported

Standard representations of IEEE 802.3 10BaseT/100BaseT/1000BaseT ("twisted pair") is supported

6.3 Chapter Extensions/Specializations/Privatizations

Pixel Spacing information is only provided for single, full screen, and 2D image types (B-mode, B-mode with color, and B-mode with power).

Appendix A lists the DICOM SR mappings used by the Juniper AE in Obstetric and Gynecology Structured Reports. All private concept names use the Coding Scheme Designator "99SIEMENS".

Appendix B lists the DICOM SR mappings used by the Juniper AE in Vascular Structured Reports. All private concept names use the Coding Scheme Designator "99SIEMENS".

Appendix C lists the DICOM SR mappings used by the Juniper AE in Adult Echocardiography Structured Reports. All private concept names use the Coding Scheme Designator "99SIEMENSUS".

7 CONFIGURATION

The Juniper Networking and DICOM parameters can be configured through the System Configuration screen. The following configurations are supported:

- General system
- Network (local and remote)
- DICOM Store
- DICOM Storage Commitment
- DICOM Modality Worklist
- DICOM Modality Performed Procedure Step
- DICOM Query/Retrieve
- DICOM Print

7.1 General System Configuration

The following system parameter can be configured via the System Configuration - General 1 Menu screens. This parameter is mapped to a DICOM image attribute:

- Institution Name

7.1.1 Hospital Name

The user can enter the organization (i.e. hospital, clinic, etc.) as a text string in the Institution Name field of the System Configuration - General 1 menu. The Organization Name field is transferred to DICOM devices as Institution Name - DICOM data element (0008,0080).

7.2 DICOM Network Configuration

DICOM and networking parameters can be configured for both the local Juniper device and remote DICOM service class providers through the System Configuration – Network menu.

7.2.1 Local

The Juniper local network parameters are configurable. The following network parameters can be configured for the Juniper device:

- Host Name
- IP address
- Subnet IP mask
- Default Gateway
- DICOM Application Entity Title

7.2.2 Remote

Multiple DICOM service class providers can be configured through the system configuration. The following network parameters can be configured for each remote device:

- Alias
- DICOM Device Application Entity Title
- IP Address

- Port Number
- Timeout in seconds
- Number of times to retry failure
- Seconds between each retry
- Write timeout in seconds
- Connect timeout in seconds

7.2.2.1 DICOM Store Configuration

Several configuration settings are provided in addition to those described in Section 7.2.2.

The Image Format setting provides control over the Presentation Contexts proposed during Association negotiation. This is documented in Section 4.2.2.2 Association Establishment Order.

Configuration options are provided to control the Photometric Interpretation of grayscale images stored to a DICOM Store SCP. Grayscale images can be stored as RGB, YBR-FULL-422 or MONOCHROME2.

Many Juniper B-Mode and M-Mode images contain no significant color, the only color is in the Acuson 'a' transducer position marker and the ECG trace, if used. When "Store grayscale images as Monochrome" is selected, single-frame images with no significant color content will be stored as MONOCHROME2. When "Store grayscale images as Monochrome" is selected, all multi-frame images are stored as RGB or YBR-FULL-422. When "Store grayscale images and clips as Monochrome" is selected, B-Mode and M-Mode single- and multi-frame images with no significant color content will be stored as MONOCHROME2.

7.2.2.2 DICOM Storage Commitment Configuration

Configuration of DICOM Storage Commitment remote devices must be performed with DICOM Store Configuration. The Juniper supports Storage Commitment to the same remote device as Store.

7.2.2.3 DICOM Modality Worklist Configuration

Configuration of DICOM Modality Worklist remote devices must be performed from the DICOM Modality Worklist configuration. The Juniper supports Modality Worklist to the remote device as Modality Worklist.

When the "Streamlined Search" option is enabled, the system automatically searches all procedures on the Modality Worklist server when the Worklist screen is entered for the next 24 hours.

When the "Strict Verification" option is enabled, the system verifies the DICOM standard tags on each study list retrieved from the Modality Worklist server.

The user can enter the "Maximum number of Worklist items" which specifies the number of search results to display on the worklist screen.

7.2.2.4 DICOM Modality Performed Procedure Step Configuration

Configuration of DICOM Modality Performed Procedure Step remote devices must be performed separately from DICOM Modality Worklist Configuration. The ACUSON Juniper™ system supports MPPS to the same remote device as Modality Worklist or to a different device.

The "Store Image Format" setting controls the Referenced SOP Class UID (0008,1150) in the Referenced Image Sequence (0008,1140) of the MPPS N-SET sent by the ACUSON Juniper™ system. Due to the Juniper's ability to select from multiple Presentation Contexts during Association Negotiation, it is necessary to use this setting.

In the majority of installations the "Store Image Format" should be left at the default setting of "New Ultrasound". There are two cases when the "Store Image Format" must be set to "Original Image" or "Secondary Capture":

- When the active Storage Server “Image Format” is set to “Original Image” or “Secondary Capture”.
- When the active Storage Server “Image Format” is set to “Automatic”, but the Storage Server does not support US Image and US Multi-frame Image.

In both cases the correct setting can be determined by reviewing the DICOM Conformance Statement of the Storage Server and following the instructions below. DICOM Conformance Statements are usually available on the manufacturer’s Web site.

- If at least one of US Image and US Multi-frame Image are listed in the DICOM Conformance Statement and the active Storage Server “Image Format” is set to “Automatic” then “New Ultrasound” is the correct setting for “Store Image Format”.
- If the above is not true and at least one of US Image (Retired) and US Multi-frame Image (Retired) are listed in the DICOM Conformance Statement then “Original Image” is the correct setting for “Store Image Format”.
- If neither of the above are true then “Secondary Capture” is the correct setting for “Store Image Format”.

7.2.2.5 DICOM Query / Retrieve

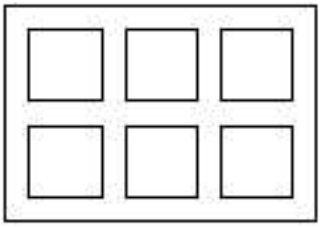
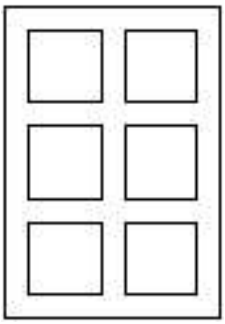
There are no specific Query/Retrieve configurable parameters.

7.2.2.6 DICOM Print Configuration

For each DICOM Print server, the following data is configurable by the user using the System Presets DICOM Print User Interface. The effect of changing parameters of the DICOM Print server will be seen at the next created film sheet. The current film sheet is not affected by changing these parameters.

Table 49: User-Configurable Printer Parameters

Parameter	Description
Printer Type	Color or Black and White - depends on printer
Film Size	Select the size of the film - 8x10 inches, 8.5x11 inches, 10x12 inches, 10x14 inches, 11x14 inches, 11x17 inches, 14x14 inches, 14x17 inches, 24x24 centimeters, 24x30 centimeters, A3, or A4.
Film Orientation	Select from Portrait:  or Landscape: 

Parameter	Description
Display Format	You must supply the number of rows and columns of images on the printed sheet. For example, a 6 on 1 print with Landscape mode should have 3 columns and 2 rows: 
	A 6 on 1 with Portrait mode would have 2 columns and 3 rows: 
Print Priority	HIGH, MEDIUM or LOW
Medium Type	PAPER, CLEAR FILM, BLUE FILM, TRANSPARENCY or CURRENT (to use the currently loaded media)
Film Destination	MAGAZINE, PROCESSOR or CURRENT
Max. Density	Used to define the Black value - printer specific
Min. Density	Used to define the White value - printer specific
Smoothing Type	Printer specific value
Border Density	BLACK or WHITE
Empty Image Density	BLACK or WHITE
Trim	YES/NO to having a border around each image
Polarity	Normal/reverse. Normal means black is printed as black. Reverse means the grayscale is inverted so that black comes out as white and white as black.
Magnification	Replicate, Bilinear, Cubic, None
Configuration Information	Printer Specific values

7.3 External Equipment Configuration

The Juniper user can configure “Hard Key” to “Output Device” mapping through the System Configuration - Custom Keys. Print images are acquired and sent to the assigned device when the user presses the associated key. The following key assignments are supported:

- **Clip Store** – This key can be assigned to Multi-frame Store or Image Store.
- **Print Store 1** – This key can be assigned to any configured DICOM Printer, DICOM Store, OEM printer or Image Store.
- **Print Store 2** – This key can be assigned to any configured DICOM Printer, DICOM Store, OEM printer or Image Store.
- **Foot Switch** – The foot switch can be assigned to any configured OEM printer, Multi-frame Store, or Image Store.

7.4 Support of Extended Character Sets

The “ISO-IR 100”, "GB18030", "ISO_IR 144" character sets are supported by the Juniper based on the following language selections:

English, French, Italian, German, Spanish: "ISO_IR 100"

Chinese: "GB18030"

Russian: "ISO_IR 144"

8 SECURITY

8.1 Security Profiles

None supported.

8.2 Association Level Security

None supported.

8.3 Application Level Security

None supported.

8.4 Virus Protection

The Juniper computer system's networking has been configured to significantly reduce the possibility of virus and hacking vulnerabilities. On the Juniper, all ingress TCP and UDP ports are closed and/or absent of any type of server. The only exception to this is due to the necessity of a DICOM server available at ingress TCP port 104. Additionally, all non-essential computer services and components are disabled to minimize Juniper egress network footprint.

Outside of some minimal network exchanges required by the Juniper’s commercial computer operating system, the only network connections initiated by the Juniper are for DICOM connectivity and network-share export function.

9 APPENDICES

9.1 Appendix A: OB-GYN Structured Report Measurements

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

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16-2011 of the DICOM Standard. The “Label” column identifies the on-screen Report label associated with a Concept Name. All private code values use the Coding Scheme Designator “99SIEMENS”.

The OB-GYN Report mappings follow the DICOM SR Template TID 5000: OB-GYN Ultrasound Procedure Report. Individual measurement values are shown on the Worksheet pages. Mean values are shown on the Report pages.

When a Concept Name has associated authors, the authors are listed in the next rows with

- the Label column as the author name on the Report page,
- the Code Meaning column as the author reference code, and
- the Modifiers column as the Normal Range Limits for Fetal Biometry Ratios or Population Statistical Descriptors, if available.

Notation:

< … > indicates that the description is not the actual text displayed
[…] is additional information

9.1.1 Patient Characteristics

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Patient Characteristics		Container: Patient Characteristics (DCM, 121118)	
	AB	Aborta (LN, 11612-9)	
	Ectopic	Ectopic Pregnancies (LN, 33065-4)	
	Gravida	Gravida (LN, 11996-6)	
	Para	Para (LN, 11977-6)	
	Height	Patient Height (LN, 8302-2)	
	Weight	Patient Weight (LN, 29463-7)	

9.1.2 OB-GYN Procedure Summary

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
OB-GYN Procedure Summary		Container: Summary (DCM, 121111)	
	LMP	LMP (LN, 11955-2)	

9.1.3 Fetus Summary

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetus Summary		Container: Fetus Summary (DCM, 125008)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
	Clinical MA	Gestational Age (LN, 18185-9)	
	US MA, MA Based ON (AVERAGE)	Composite Ultrasound Age (LN, 11888-5)	
	US MA, MA Based ON (<Author Label>)	Composite Ultrasound Age (LN, 11888-5)	<Author Information>
	(Hadlock1) BPD, HC	Equation: Ultrasound MA Hadlock1 (99SIEMENS, USMAHadlock1)	
	(Hadlock2) BPD, AC	Equation: Ultrasound MA Hadlock2 (99SIEMENS, USMAHadlock2)	
	(Hadlock3) BPD, FL	Equation: Ultrasound MA Hadlock3 (99SIEMENS, USMAHadlock3)	
	(Hadlock4) HC, AC	Equation: Ultrasound MA Hadlock4 (99SIEMENS, USMAHadlock4)	
	(Hadlock5) HC, FL	Equation: Ultrasound MA Hadlock5 (99SIEMENS, USMAHadlock5)	
	(Hadlock6) AC, FL	Equation: Ultrasound MA Hadlock6 (99SIEMENS, USMAHadlock6)	
	(Hadlock7) BPD, HC, AC	Equation: Ultrasound MA Hadlock7 (99SIEMENS, USMAHadlock7)	
	(Hadlock8) BPD, HC, FL	Equation: Ultrasound MA Hadlock8 (99SIEMENS, USMAHadlock8)	
	(Hadlock9) BPD, AC, FL	Equation: Ultrasound MA Hadlock9 (99SIEMENS, USMAHadlock9)	
	(Hadlock10) HC, AC, FL	Equation: Ultrasound MA Hadlock10 (99SIEMENS, USMAHadlock10)	
	(Hadlock11) BPD, HC, AC, FL	Equation: Ultrasound MA Hadlock11 (99SIEMENS, USMAHadlock11)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	Estimated Fetal Weight: EFW1 or EFW2, <Author Label>, <Value> ±<Population Statistical Descriptor>, <Gestational Age>	Estimated Weight (LN, 11727-5)	<Author Information>
	HADLOCK1 (AC, FL)	Equation: EFW by AC, FL, Hadlock 1984 (LN, 11750-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HADLOCK2 (BPD, AC, FL)	Equation: EFW by AC, BPD, FL, Hadlock 1985 (LN, 11735-8)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HADLOCK3 (HC, AC, FL)	Equation: EFW by AC, FL, HC, Hadlock 1985 (LN, 11746-5)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HADLOCK4 (BPD, HC, AC, FL)	Equation: EFW by AC, BPD, FL, HC, Hadlock 1985 (LN, 11732-5)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HANSMANN (BPD, ATD)	Equation: EFW by BPD, TTD, Hansmann 1986 (LN, 33139-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM (AXT) (BPD, APTD, TTD, FL)	Equation: EFW JSUM AXT (99SIEMENS, EFWJSUMAXT)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	JSUM (BPD, AC, FL)	Equation: EFW JSUM (99SIEMENS, EFWJSUM)	No Population Statistical Descriptors
	MERZ (BPD, AC)	Equation: EFW Merz (99SIEMENS, EFWMerz)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA (BPD, FTA, FL)	Equation: EFW by BPD, FTA, FL, Osaka 1990 (LN, 33140-5)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	SHEPARD (BPD, AC)	Equation: EFW by AC and BPD, Shepard 1982 (LN, 11739-0)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TOKYO (BPD, APTD, TTD, FL)	Equation: EFW by BPD, APAD, TAD, FL, Tokyo 1987 (LN, 33144-7)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	Estimated Fetal Weight: EFW1 or EFW2, <Author Label>, <Value> ±<Population Statistical Descriptor>, <Gestational Age>	Gestational Age (LN, 18185-9)	<Author Information>
	JSUM (BPD, AC, FL)	Equation: EFW1 MA JSUM (99SIEMENS, MAEFW1JSUM) Equation: EFW2 MA JSUM (99SIEMENS, MAEFW2JSUM)	No Population Statistical Descriptors
	OSAKA (BPD, FTA, FL)	Equation: EFW1 MA Osaka (99SIEMENS, MAEFW1Osaka) Equation: EFW2 MA Osaka (99SIEMENS, MAEFW2Osaka)	No Population Statistical Descriptors
	TOKYO (BPD, APTD, TTD, FL)	Equation: EFW1 MA Tokyo (99SIEMENS, MAEFW1Tokyo) Equation: EFW2 MA Tokyo (99SIEMENS, MAEFW2Tokyo)	No Population Statistical Descriptors
	<Author Label> EFW%: EFW1 or EFW2	EFW percentile rank (LN, 11767-1)	<Author Information>

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	Williams	Equation: FWP by GA, Williams 1982 (LN, 33184-3)	
X	Fetal HR	Fetal Heart Rate (LN, 11948-7)	

9.1.4 Fetal Biometry Ratios

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Biometry Ratios		Container: Fetal Biometry Ratios (DCM, 125001)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
	Ratio: CI, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	Cephalic Index (LN, 11823-2)	<Author Information>
	HADLOCK	Equation: CI Ratio Hadlock (99SIEMENS, CIHadlock)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	CHITTY	Equation: CI Ratio Chitty (99SIEMENS, CIChitty)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: FL/AC, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	FL/AC (LN, 11871-1)	<Author Information>
	HADLOCK	Equation: FL/AC Hadlock (99SIEMENS, FLACHadlock)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: FL/BPD, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	FL/BPD (LN, 11872-9)	<Author Information>
	HOHLER	Equation: FL/BPD Hohler (99SIEMENS, FLBPDHohler)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: HC/AC, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	HC/AC (LN, 11947-9)	<Author Information>
	CAMPBELL	Equation: HC/AC by GA, Campbell 1977 (LN, 33182-7)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	NICOLAIDES	Equation: HC/AC Nicolaides (99SIEMENS, HCACNicolaides)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: Lat Vent/HW, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	LVW/HC (99SIEMENS, LVWOverHC)	<Author Information>
	JOHNSON	Equation: LVW/HW Johnson (99SIEMENS, LVWHWJohnson)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	Ratio: Cerebellum / AC, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	TCD/AC (99SIEMENS, TCDOverAC)	<Author Information>
	MEYER	Equation: TCD/AC Meyer (99SIEMENS, TCDACMeyer)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	NICOLAIDES	Equation: TCD/AC Nicolaides (99SIEMENS, TCDACNicolaides)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Measurement: CTR Area	Cardiothoracic Area Ratio (99SIEMENS, CTAR)	
	Measurement: CTAR A	CTAR Cardiac Area (99SIEMENS, CTARCardiacArea)	
	Measurement: CTAR B	CTAR Thoracic Area (99SIEMENS, CTARThoracicArea)	

9.1.5 Fetal Biometry

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Biometry		Container: Fetal Biometry (DCM, 125002)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Measurement: AC, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Abdominal Circumference (LN, 11979-2)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HADLOCK	Equation: AC, Hadlock 1984 (LN, 11892-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: AC MA JSUM (99SIEMENS, ACMAJSUM)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	LASSER	Equation: AC MA Lasser (99SIEMENS, ACMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	MERZ	Equation: AC, Mertz 1988 (LN, 33075-3)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: APAD, <Author Label>, <Gestational Age>, <Value>	Anterior-Posterior Abdominal Diameter (LN, 11818-2)	
		Gestational Age (LN, 18185-9)	<Author Information>
	MERZ	Equation: ASD MA Merz (99SIEMENS, ASDMAMerz)	No Population Statistical Descriptors
X	Measurement: APTD, <Value>	Anterior-Posterior Trunk Diameter (LN, 11819-0)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	Measurement: APTD x TTD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	APAD * TAD (LN, 33191-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	TOKYO	Equation: AXT MA Tokyo (99SIEMENS, MAAXTTokyo)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Measurement: BPD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Biparietal Diameter (LN, 11820-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	ASUM	Equation: BPD, ASUM 1989 (LN, 33079-5)	No Population Statistical Descriptors
	HADLOCK	Equation: BPD, Hadlock 1984 (LN, 11902-4)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: BPD MA JSUM (99SIEMENS, BPDMAJSUM)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	LASSER	Equation: BPD MA Lasser (99SIEMENS, BPDMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	MERZ	Equation: BPD, Mertz 1988 (LN, 33081-1)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: BPD, Osaka 1989 (LN, 33082-9)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	REMPEN	Equation: BPD, Rempen 1991 (LN, 33083-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TOKYO	Equation: BPD, Tokyo 1986 (LN, 33085-2)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	Measurement: BPDa, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	BPD area corrected (LN, 11824-0)	
		Gestational Age (LN, 18185-9)	<Author Information>
	USMA	Equation: BPD area corrected MA (99SIEMENS, UsmaCorBPD)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: Facial Angle, <Value>	Facial Angle (99SIEMENS, FacialAngle)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: Foot, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Foot length (LN, 11965-1)	
		Gestational Age (LN, 18185-9)	<Author Information>
	MERCER	Equation: Foot Length, Mercer 1987 (LN, 11926-3)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: HC, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Head Circumference (LN, 11984-2)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HADLOCK	Equation: HC, Hadlock 1984 (LN, 11932-1)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	LASSER	Equation: HC MA Lasser (99SIEMENS, HCMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	MERZ	Equation: HC Merz, 1988 (LN, 33115-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: Left Kidney AP, <Value>	Left Kidney thickness (LN, 11853-9)	
X	Measurement: Left Kidney Length, <Value>	Left Kidney length (LN, 11834-9)	
X	Measurement: OFD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Occipital-Frontal Diameter (LN, 11851-3)	
		Gestational Age (LN, 18185-9)	<Author Information>
	ASUM	Equation: OFD, ASUM 2000 (LN, 33119-9)	No Population Statistical Descriptors
X	Measurement: Right Kidney AP, <Value>	Right Kidney thickness (LN, 11855-4)	
X	Measurement: Right Kidney Length, <Value>	Right Kidney length (LN, 11836-4)	
X	Measurement: FTA, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Thoracic Area (LN, 33068-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	OSAKA	Equation: FTA MA Osaka (99SIEMENS, FTAMAOsaka)	No Population Statistical Descriptors
X	Measurement: TC, <Value>	Thoracic Circumference (LN, 11988-3)	
X	Measurement: Cerebellum, <Value>	Trans Cerebellar Diameter (LN, 11863-8)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: TTD, <Value>	Transverse Thoracic Diameter (LN, 11864-6)	
X	Measurement: TAD, <Author Label>, <Gestational Age>, <Value>	Tranverse Abdominal Diameter (LN, 11862-0)	
		Gestational Age (LN, 18185-9)	<Author Information>
	MERZ	Equation: ATD MA Merz (99SIEMENS, ATDMAMerz)	No Population Statistical Descriptors

9.1.6 Fetal Long Bones

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Long Bones		Container: Fetal Long Bones (DCM, 125003)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Measurement: Clavicle, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Clavicle length (LN, 11962-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	YARKONI	Equation: Clavicle length,Yarkoni 1985 (LN, 33088-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: FL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Femur Length (LN, 11963-6)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HADLOCK	Equation: FL, Hadlock 1984 (LN, 11920-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JEANTY	Equation: FL, Jeanty 1984 (LN, 11923-0)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: FL MA JSUM (99SIEMENS, FLMAJSUM)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	MERZ	Equation: FL, Merz 1988 (LN, 33542-2)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: FL, Osaka 1989 (LN, 33101-7)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	TOKYO	Equation: FL, Tokyo 1986 (LN, 33103-3)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: HL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Humerus length (LN, 11966-9)	
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: Humerus, Jeanty 1984 (LN, 11936-2)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: Humerus Length, Osaka 1989 (LN, 33117-3)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Measurement: Tibia, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Tibia length (LN, 11968-5)	
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: Tibia, Jeanty 1984 (LN, 11941-2)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: Ulna, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Ulna length (LN, 11969-3)	
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: Ulna, Jeanty 1984 (LN, 11944-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)

9.1.7 Fetal Cranium

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Cranium		Container: Fetal Cranium (DCM, 125004)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Measurement: LV-A, <Value>	Anterior Horn Lateral ventricular width (LN, 33197-5)	
X	Measurement: Cist Magna, <Value>	Cisterna Magna length (LN, 11860-4)	
X	Measurement: Lat Vent, <Value>	Lateral Ventrical width (LN, 12171-5)	
X	Measurement: Nuchal Thickness, <Value>	Nuchal Fold thickness (LN, 12146-7)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: Binoc D, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Outer Orbital Diameter (LN, 11629-3)	
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: BN MA Jeanty (99SIEMENS, BNMAJeanty)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TONGSONG	Equation: BN MA Tongsong (99SIEMENS, BNMATongsong)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: LV-P, <Value>	Posterior Horn Lateral ventricular width (LN, 33196-7)	
X	Measurement: HW, <Value>	Width of Hemisphere (LN, 12170-7)	

9.1.8 Fetal Biophysical Profile

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Biophysical Profile		Container: Biophysical Profile (DCM, 125006)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
	AFV	Amniotic Fluid Volume (LN, 11630-1)	
	Total	Biophysical Profile Sum Score (LN, 11634-3)	
	Breathing	Fetal Breathing (LN, 11632-7)	
	Tone	Fetal Tone (LN, 11635-0)	
	Movement	Gross Body Movement (LN, 11631-9)	

9.1.9 Early Gestation

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Early Gestation		Container: Early Gestation (DCM, 125009)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Early OB: CRL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Crown Rump Length (LN, 11957-8)	
		Gestational Age (LN, 18185-9)	<Author Information>

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	ASUM	Equation: CRL, ASUM 2000 (LN, 33090-2)	No Population Statistical Descriptors
	HADLOCK	Equation: CRL, Hadlock 1992 (LN, 11910-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HANSMANN	Equation: CRL, Hansmann 1986 (LN, 33540-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: CRL MA JSUM (99SIEMENS, CRLMAJSUM)	No Population Statistical Descriptors
	LASSER	Equation: CRL MA Lasser (99SIEMENS, CRLMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: CRL, Osaka 1989 (LN, 33093-6)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	ROBINSON	Equation: CRL, Robinson 1975 (LN, 11914-9)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TOKYO	Equation: CRL, Tokyo 1986 (LN, 33096-9)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Early OB: GSD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Gestational Sac Diameter (LN, 11850-5)	
		Gestational Age (LN, 18185-9)	<Author Information>
	OSAKA	Equation: GS MA Osaka (99SIEMENS, GSMAOsaka)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	TOKYO	Equation: GS, Tokyo 1986 (LN, 33108-2)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Measurement: Mean Sac Diam, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Gestational Sac Diameter (LN, 11850-5)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HELLMAN	Equation: GS, Hellman 1969 (LN, 11928-9)	No Population Statistical Descriptors
	REMPEN	Equation: GS, Rempen 1991 (LN, 11929-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: Nuchal Translucency, <Value>	Nuchal Translucency (LN, 33069-6)	
X	Measurement: Yolk Sac, <Value>	Yolk Sac length (LN, 11816-6)	

9.1.10 Amniotic Sac

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Amniotic Sac		Container: Findings (DCM, 121070)	Finding Site: Amniotic Sac (SRT, T-F1300)
	Measurement: AFI	Amniotic Fluid Index (LN, 11627-7)	
X	Measurement: Q1	First Quadrant Diameter (LN, 11624-4)	
X	Measurement: Q2	Second Quadrant Diameter (LN, 11626-9)	
X	Measurement: Q3	Third Quadrant Diameter (LN, 11625-1)	
X	Measurement: Q4	Fourth Quadrant Diameter (LN, 11623-6)	

9.1.11 Pelvis and Uterus

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pelvis and Uterus		Container: Pelvis and Uterus (DCM, 125011)	
X	Measurement: Cervix Len [OB]	Cervix Length (LN, 11961-0)	
X	2D Mode: Cervix [Gyn]	Cervix Length (LN, 11961-0)	
	2D Mode: Endometrium	Endometrium Thickness (LN, 12145-9)	
		Container: Uterus (SRT, T-83000)	
	2D Mode: Uterine AP	Uterus Height (LN, 11859-6)	
	2D Mode: Uterine Length	Uterus Length (LN, 11842-2)	
	2D Mode: Uterine Volume	Uterus Volume (LN, 33192-6)	
	2D Mode: Uterine Width	Uterus Width (LN, 11865-3)	

9.1.12 Ovaries

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Ovary		Container: Findings (DCM, 121070)	Finding Site: Ovary (SRT, T-87000)
		Container: Ovary (SRT, T-87000)	
	2D Mode: Left Ovary AP (EV) or Ovary AP (TA)	Left Ovary Height (LN, 11857-0)	

	2D Mode: Left Ovary Length (EV) or Ovary Length (TA)	Left Ovary Length (LN, 11840-6)	
	2D Mode: Left Ovary Volume (EV) or Ovary Volume (TA)	Left Ovary Volume (LN, 12164-0)	
	2D Mode: Left Ovary Width (EV) or Ovary Width (TA)	Left Ovary Width (LN, 11829-9)	
		Container: Ovary (SRT, T-87000)	
	2D Mode: Right Ovary AP (EV) or Ovary AP (TA)	Right Ovary Height (LN, 11858-8)	
	2D Mode: Right Ovary Length (EV) or Ovary Length (TA)	Right Ovary Length (LN, 11841-4)	
	2D Mode: Right Ovary Volume (EV) or Ovary Volume (TA)	Right Ovary Volume (LN, 12165-7)	
	2D Mode: Right Ovary Width (EV) or Ovary Width (TA)	Right Ovary Width (LN, 11830-7)	

9.1.13 Follicles

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Ovarian Follicle <n> = 1 to 15		Container: Findings (DCM, 121070)	Finding Site: Ovarian Follicle (SRT, T-87600) Laterality: Left (SRT, G-C171) or Laterality: Right (SRT, G-C171)
		Container: Measurement Group	Text: Identifier (DCM, 125010) [Value = “Left Follicle <n>” or “Right Follicle <n>”]
	Follicle Measurement, Left or Right Follicle: #<n>	Area (SRT, G-A166)	
	Follicle Measurement, Left or Right Follicle: #<n>	Circumference (SRT, M-02560)	
	Follicle Measurement, Left or Right Follicle: #<n> [1 distance]	Follicle diameter (LN, 11793-7)	
X	Follicle Measurement, Left or Right Follicle: #<n> [2 distances]	Follicle diameter (LN, 11793-7)	
X	Follicle Measurement, Left or Right Follicle: #<n> [3 distances]	Follicle diameter (LN, 11793-7)	

	Follicle Measurement, Left or Right Follicle: #<n>	Volume (SRT, G-D705)	

9.1.14 Embryonic Vascular Structure

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Embryonic Vascular Structure [One vessel per Findings instance]		Container: Findings (DCM, 121070)	Finding Site: Embryonic Vascular Structure (SRT, T-F6800)
	Doppler: MCA	Container: Middle Cerebral Artery (SRT, T-45600)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	ED	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	PS	Peak Systolic Velocity (LN, 11726-7)	

9.1.15 Pelvic Vascular Structure

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pelvic Vascular Structure [One vessel per Findings instance]		Container: Findings (DCM, 121070)	Finding Site: Pelvic Vascular Structure (SRT, T-D6007)
	Doppler Mode: Left Ovarian A	Container: Ovarian Artery (SRT, T-46980)	Laterality: Left (SRT, G-A101)
X	ED	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	PS	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Right Ovarian A	Container: Ovarian Artery (SRT, T-46980)	Laterality: Right (SRT, G-A100)
X	ED	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	PS	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Left Uterine A	Container: Uterine Artery (SRT, T-46820)	Laterality: Left (SRT, G-A101)
	ED	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
	PS	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Right Uterine A	Container: Uterine Artery (SRT, T-46820)	Laterality: Right (SRT, G-A100)
	ED	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
	PS	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Umb A	Container: Umbilical Artery (SRT, T-F1810)	
X	ED	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	PS	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Umb V Diam	Container: Umbilical Vein (SRT, T-F1820)	
X		Vessel lumen diameter (SRT, G-0364)	

9.2 Appendix B: Vascular Structured Report

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

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16-2011 of the DICOM Standard. The “Label” column identifies the on-screen label associated with a measurement. All private code values use the Coding Scheme Designator “99SIEMENS”.

The Vascular Report mappings follow the DICOM SR Template TID 5100: Vascular Ultrasound Report.

Notation:
[…] is additional information

Measurements List 1 [L1]

Label	Code Meaning (Coding Scheme Designator, Code Value)
ED	End Diastolic Velocity (LN, 11653-3)
%Stenosis or %Steno [TCD]	Lumen Area Stenosis (SRT, R-101BA)
%Stenosis or %Steno [TCD]	Lumen Diameter Stenosis (SRT, R-101BB)
PS	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)
S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)

Measurements List 2 [L2]

Label	Code Meaning (Coding Scheme Designator, Code Value)
PS	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)

Measurements List 3 [L3]

Label	Code Meaning (Coding Scheme Designator, Code Value)
TCD Acceleration Measurements	Acceleration Index (LN, 20167-3)
TCD Measurements	Distance (DCM, 121206)
ED	End Diastolic Velocity (LN, 11653-3)
TCD Velocity Measurements	Flow Velocity (DCM, 110828)
%Stenosis or %Steno [TCD]	Lumen Area Stenosis (SRT, R-101BA)
%Stenosis or %Steno [TCD]	Lumen Diameter Stenosis (SRT, R-101BB)
PS	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)
S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)
TCD Flow Volume Measurements: FV	Volume Flow by Area (99SIEMENS, VolFByArea)
TCD Flow Volume Measurements: FV	Volume Flow by Diameter (99SIEMENS, VolFByDiam)

Measurements List 4 [L4]

Label	Code Meaning (Coding Scheme Designator, Code Value)
ED	End Diastolic Velocity (LN, 11653-3)
PS	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)
S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)
Volume Flow	Volume Flow (LN, 33878-0)
Area of Volume Flow	Area of Volume Flow (99SIEMENS, VolFArea)
Diameter of Volume Flow	Diameter of Volume Flow (99SIEMENS, VolFDiam)

Measurements List 5 [L5]

Label	Code Meaning (Coding Scheme Designator, Code Value)
ED	End Diastolic Velocity (LN, 11653-3)
PS	Peak Systolic Velocity (LN, 11726-7)

PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)
S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)

9.2.1 Patient Characteristics

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Patient Characteristics	Container: Patient Characteristics (DCM, 121118)	
BP	Diastolic Blood Pressure (SRT, F-008ED)	
Age	Subject Age (DCM, 121033)	
Sex	Subject Sex (DCM, 121032)	
BP	Systolic Blood Pressure (SRT, F-008EC)	

9.2.2 Blood Vessel of Head (Left Intracranial Cerebral Vessels)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Blood Vessel of Head (Left Intracranial Cerebral Vessels)	Finding Site: Blood Vessel of Head (SRT, T-40501)	Laterality: Left (SRT, G-A101)
TCD Doppler Ratio Measurements: Left MCA/ICA-Siphon [TCD]	MCA/ICA-Siphon Time averaged peak velocity ratio (99SIEMENS, McalcaSRatio)	
Left ACA A1 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Left ACA A2 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Left ICA-Siphon [TCD]	Container: Carotid Siphon (SRT, T-45308) [Measurements List: L3]	
Left MCA [TCD]	Container: Middle Cerebral Artery (SRT, T-45600) [Measurements List: L3]	
Left PCA [TCD]	Container: Posterior Cerebral Artery (SRT, T-45900) [Measurements List: L3]	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Left PCA P1 [TCD]	Container: Posterior Cerebral Artery P1 Segment (SRT, R-10253) [Measurements List: L3]	
Left PCA P2 [TCD]	Container: Posterior Cerebral Artery P2 Segment (SRT, R-10255) [Measurements List: L3]	

9.2.3 Blood Vessel of Head (Right Intracranial Cerebral Vessels)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Blood Vessel of Head (Right Intracranial Cerebral Vessels)	Finding Site: Blood Vessel of Head (SRT, T-40501)	Laterality: Right (SRT, G-A100)
TCD Doppler Ratio Measurements: Right MCA/ICA-Siphon [TCD]	MCA/ICA-Siphon Time averaged peak velocity ratio (99SIEMENS, McalcaSRatio)	
Right ACA A1 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Right ACA A2 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Right ICA-Siphon [TCD]	Container: Carotid Siphon (SRT, T-45308) [Measurements List: L3]	
Right MCA [TCD]	Container: Middle Cerebral Artery (SRT, T-45600) [Measurements List: L3]	
Right PCA [TCD]	Container: Posterior Cerebral Artery (SRT, T-45900) [Measurements List: L3]	
Right PCA P1 [TCD]	Container: Posterior Cerebral Artery P1 Segment (SRT, R-10253) [Measurements List: L3]	
Right PCA P2 [TCD]	Container: Posterior Cerebral Artery P2 Segment (SRT, R-10255) [Measurements List: L3]	

9.2.4 Blood Vessel of Head (Unilateral Intracranial Cerebral Vessels)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Blood Vessel of Head (Unilateral Intracranial Cerebral Vessels)	Finding Site: Blood Vessel of Head (SRT, T-40501)	Laterality: Unilateral (SRT, G-A103)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
ACoA [TCD]	Container: Anterior Communicating Artery (SRT, T-45530) [Measurements List: L3]	
Basilar A [TCD]	Container: Basilar Artery (SRT, T-45800) [Measurements List: L3]	
PCoA [TCD]	Container: Posterior Communicating Artery (SRT, T-45320) [Measurements List: L3]	

9.2.5 Artery of Neck (Left Extracranial Arteries, Carotid Ratios)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Neck (Left Extracranial Arteries, Carotid Ratios)	Finding Site: Artery of neck (SRT, T-45005)	Laterality: Left (SRT, G-A101)
Ratio, Left: ICA/CCA (d) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: End Diastole (SRT, F-32011)
Ratio, Left: ICA/CCA (s) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: Peak Systolic (SRT, F-32021)
Left CCA [Cerebro Vascular]	Container: Common Carotid Artery (SRT, T-45100)	
CCA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
CCA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
CCA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Left ECA [Cerebro Vascular]	Container: External Carotid Artery (SRT, T-45200) [Measurements List: L1]	
Left ICA [Cerebro Vascular]	Container: Internal Carotid Artery (SRT, T-45300)	
ICA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
ICA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
ICA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Left Vert A [Cerebro Vascular]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L1]	
Left Vert A [TCD]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L3]	

9.2.6 Artery of Neck (Right Extracranial Arteries, Carotid Ratios)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Neck (Right Extracranial Arteries, Carotid Ratios)	Finding Site: Artery of neck (SRT, T-45005)	Laterality: Right (SRT, G-A100)
Ratio, Right: ICA/CCA (d) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: End Diastole (SRT, F-32011)
Ratio, Right: ICA/CCA (s) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: Peak Systolic (SRT, F-32021)
Right CCA [Cerebro Vascular]	Container: Common Carotid Artery (SRT, T-45100)	
CCA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
CCA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
CCA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Right ECA [Cerebro Vascular]	Container: External Carotid Artery (SRT, T-45200) [Measurements List: L1]	
Right ICA [Cerebro Vascular]	Container: Internal Carotid Artery (SRT, T-45300)	
ICA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
ICA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
ICA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Right Vert A [Cerebro Vascular]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L1]	
Right Vert A [TCD]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L3]	

9.2.7 Artery of Upper Extremity (Left Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Upper Extremity (Left Side)	Container : Findings (DCM, 121070)	Finding Site: Artery Of Upper Extremity (SRT, T-47020) Laterality: Left (SRT, G-A101)
Axillary Artery	Container : Axillary Artery (SRT, T-47100)	
Left Axillary A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Axillary A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Left Axillary A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Brachial Artery	Container : Brachial Artery (SRT, T-47160)	
Left Brachial A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Brachial A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Left Brachial A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Radial Artery	Container : Radial Artery (SRT, T-47300)	
Left Radial A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Radial A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Left Radial A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Subclavian Artery	Container : Subclavian Artery (SRT, T-46100)	
Left Subclav A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Subclav A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Left Subclav A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Ulnar Artery	Container : Ulnar Artery (SRT, T-47200)	
Left Ulnar A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Ulnar A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Left Ulnar A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Deep Brachial Artery	Container : Deep Brachial Artery (99SIEMENS, DeepBrachialA)	
Left Deep Brachial A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Deep Brachial A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Left Deep Brachial A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),

9.2.8 Artery of Upper Extremity (Right Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Upper Extremity (Right Side)	Container : Findings (DCM, 121070)	Finding Site: Artery Of Upper Extremity (SRT, T-47020) Laterality: Right (SRT, G-A100)
Axillary Artery	Container : Axillary Artery (SRT, T-47100)	
Right Axillary A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Axillary A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Right Axillary A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Brachial Artery	Container : Brachial Artery (SRT, T-47160)	
Right Brachial A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Brachial A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Right Brachial A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Radial Artery	Container : Radial Artery (SRT, T-47300)	
Right Radial A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Radial A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Right Radial A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Subclavian Artery	Container : Subclavian Artery (SRT, T-46100)	
Right Subclav A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Subclav A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Right Subclav A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Ulnar Artery	Container : Ulnar Artery (SRT, T-47200)	
Right Ulnar A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Ulnar A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),
Right Ulnar A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),
Deep Brachial Artery	Container : Deep Brachial Artery (99SIEMENS, DeepBrachialA)	
Right Deep Brachial A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Deep Brachial A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188),

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Right Deep Brachial A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119),

9.2.9 Artery of Lower Extremity (Left Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Lower Extremity (Left Side)	Finding Site: Artery of Lower Extremity (SRT, T-47040)	Laterality: Left (SRT, G-A101)
Left ATA [Peripheral Vascular]	Container: Anterior Tibial Artery (SRT, T-47700)	
ATA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
ATA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
ATA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left CFA [Peripheral Vascular]	Container: Common Femoral Artery (SRT, T-47400)	
CFA Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
CFA Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
CFA Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Left DFA [Peripheral Vascular]	Container: Profunda Femoris Artery (SRT, T-47440)	
DFA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
DFA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
DFA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left CIA [Peripheral Vascular]	Container: Common Iliac Artery (SRT, T-46710) [Measurements List: L4]	
Left DPA [Peripheral Vascular]	Container: Dorsalis Pedis Artery (SRT, T-47741) [Measurements List: L4]	
Left EIA [Peripheral Vascular]	Container: External Iliac Artery (SRT, T-46910)	
EIA Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
EIA Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
EIA Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Left Peroneal A [Peripheral Vascular]	Container: Peroneal Artery (SRT, T-47630)	
Peroneal A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
Peroneal A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Peroneal A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Pop A [Peripheral Vascular]	Container: Popliteal Artery (SRT, T-47500)	
Pop A Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
Pop A Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
Pop A Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Left PTA [Peripheral Vascular]	Container: Posterior Tibial Artery (SRT, T-47600)	
PTA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
PTA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
PTA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left SFA [Peripheral Vascular]	Container: Superficial Femoral Artery (SRT, T-47403)	
SFA Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
SFA Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
SFA Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Left T-P Trunk [Peripheral Vascular]	Container: Tibioperoneal Trunk (SRT, T-4704A) [Measurements List: L2]	

9.2.10 Artery of Lower Extremity (Right Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Lower Extremity (Right Side)	Finding Site: Artery of Lower Extremity (SRT, T-47040)	Laterality: Right (SRT, G-A100)
Right ATA [Peripheral Vascular]	Container: Anterior Tibial Artery (SRT, T-47700)	
ATA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
ATA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
ATA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right CFA [Peripheral Vascular]	Container: Common Femoral Artery (SRT, T-47400)	
CFA Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
CFA Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
CFA Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Right DFA [Peripheral Vascular]	Container: Profunda Femoris Artery (SRT, T-47440)	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
DFA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
DFA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
DFA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right CIA [Peripheral Vascular]	Container: Common Iliac Artery (SRT, T-46710) [Measurements List: L4]	
Right DPA [Peripheral Vascular]	Container: Dorsalis Pedis Artery (SRT, T-47741) [Measurements List: L4]	
Right EIA [Peripheral Vascular]	Container: External Iliac Artery (SRT, T-46910)	
EIA Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
EIA Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
EIA Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Right Peroneal A [Peripheral Vascular]	Container: Peroneal Artery (SRT, T-47630)	
Peroneal A Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
Peroneal A Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
Peroneal A Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Pop A [Peripheral Vascular]	Container: Popliteal Artery (SRT, T-47500)	
Pop A Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
Pop A Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
Pop A Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Right PTA [Peripheral Vascular]	Container: Posterior Tibial Artery (SRT, T-47600)	
PTA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
PTA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
PTA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right SFA [Peripheral Vascular]	Container: Superficial Femoral Artery (SRT, T-47403)	
SFA Dist	[Measurements List: L5]	Topographical modifier: Distal (SRT, G-A119)
SFA Mid	[Measurements List: L5]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
SFA Prox	[Measurements List: L5]	Topographical modifier: Proximal (SRT, G-A118)
Right T-P Trunk [Peripheral Vascular]	Container: Tibioperoneal Trunk (SRT, T-4704A) [Measurements List: L2]	

9.2.11 Vascular Structure of Kidney (Left Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Kidney	Container : Findings (DCM, 121070)	Finding Site: Vascular Structure of Kidney (SRT, T-71019) Laterality: Left (SRT, G-A101)
Arcuate Artery of the Kidney	Container : Arcuate Artery of the Kidney (SRT, T-4668A)	
Left Arcuate A Sup	[Measurements List: L4]	Vessel Branch: Superior (SRT, G-A116)
Left Arcuate A Mid	[Measurements List: L4]	Vessel Branch: Medial (SRT, G-A109)
Left Arcuate A Inf	[Measurements List: L4]	Vessel Branch: Inferior (SRT, G-A115)
Renal Artery	Container : Renal Artery (SRT, T-46600)	
Left Main RA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Left Main RA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
Left Main RA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
Segmental Artery	Container : Segmental Artery (SRT, T-46659)	
Left Segmental A Sup	[Measurements List: L4]	Vessel Branch: Superior (SRT, G-A116)
Left Segmental A Mid	[Measurements List: L4]	Vessel Branch: Medial (SRT, G-A109)
Left Segmental A Inf	[Measurements List: L4]	Vessel Branch: Inferior (SRT, G-A115)

9.2.12 Vascular Structure of Kidney (Right Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Kidney	Container : Findings (DCM, 121070)	Finding Site: Vascular Structure of Kidney (SRT, T-71019) Laterality: Right (SRT, G-A100)
Arcuate Artery of the Kidney	Container : Arcuate Artery of the Kidney (SRT, T-4668A)	
Right Arcuate A Sup	[Measurements List: L4]	Vessel Branch: Superior (SRT, G-A116)
Right Arcuate A Mid	[Measurements List: L4]	Vessel Branch: Medial (SRT, G-A109)
Right Arcuate A Inf	[Measurements List: L4]	Vessel Branch: Inferior (SRT, G-A115)
Renal Artery	Container : Renal Artery (SRT, T-46600)	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Right Main RA Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Right Main RA Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
Right Main RA Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
Segmental Artery	Container : Segmental Artery (SRT, T-46659)	
Right Segmental A Sup	[Measurements List: L4]	Vessel Branch: Superior (SRT, G-A116)
Right Segmental A Mid	[Measurements List: L4]	Vessel Branch: Medial (SRT, G-A109)
Right Segmental A Inf	[Measurements List: L4]	Vessel Branch: Inferior (SRT, G-A115)

9.2.13 Artery of Abdomen (Unilateral)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aorta	Container : Findings (DCM, 121070)	Finding Site: Artery of Abdomen (SRT, T-46002) Laterality: Unilateral (SRT, G-A103)
Aorta	Container : Aorta (SRT, T-42000)	
Aorta Prox	[Measurements List: L4]	Topographical modifier: Proximal (SRT, G-A118)
Aorta Mid	[Measurements List: L4]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
Aorta Dist	[Measurements List: L4]	Topographical modifier: Distal (SRT, G-A119)
Aorta AP Prox	Diameter (SRT, M-02550)	Topographical modifier: Proximal (SRT, G-A118) Measurement Orientation: Anterior-Posterior (DCM, 122675)
Aorta AP Mid	Diameter (SRT, M-02550)	Topographical modifier: Mid-longitudinal (SRT, G-A188) Measurement Orientation: Anterior-Posterior (DCM, 122675)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aorta AP Dist	Diameter (SRT, M-02550)	Topographical modifier: Distal (SRT, G-A119) Measurement Orientation: Anterior-Posterior (DCM, 122675)
Aorta Width Prox	Diameter (SRT, M-02550)	Topographical modifier: Proximal (SRT, G-A118) Measurement Orientation: Transverse (SRT, G-A117)
Aorta Width Mid	Diameter (SRT, M-02550)	Topographical modifier: Mid-longitudinal (SRT, G-A188) Measurement Orientation: Transverse (SRT, G-A117)
Aorta Width Dist	Diameter (SRT, M-02550)	Topographical modifier: Distal (SRT, G-A119) Measurement Orientation: Transverse (SRT, G-A117)

9.2.14 Liver

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Liver	Container : Findings (DCM, 121070)	Finding Site: Liver (SRT, T-62000)
Liver Length	Length (SRT, G-A22A)	
Lesion #<n> = 1 to 4	Container : Mass (SRT, M-03000)	
Velocity	Shear Wave Velocity (99SIEMENS, ShearVelocity)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Elasticity	Elasticity (99SIEMENS, Elasticity)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Depth (Velocity)	Shear Wave Velocity ROI Depth (99SIEMENS, VsROIDepth)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Median(Velocity)	Shear Wave Velocity Median (99SIEMENS, VsMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Mean (Velocity)	Shear Wave Velocity Mean (99SIEMENS, VsMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
StdDev(Velocity)	Standard Deviation of Shear Wave Velocity (99SIEMENS, VsStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR (Velocity)	Shear Wave Velocity Interquartile Range (99SIEMENS, VsIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR/Median(Velocity)	Shear Wave Velocity IQR/Median Ratio (99SIEMENS, VsIQRMRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Depth (Elasticity)	Elasticity ROI Depth (99SIEMENS, ElastROIDepth)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Median (Elasticity)	Elasticity Median (99SIEMENS, ElasticityMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Mean (Elasticity)	Elasticity Mean (99SIEMENS, EMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
StdDev (Elasticity)	Standard Deviation of Elasticity (99SIEMENS, EStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR (Elasticity)	Elasticity Interquartile Range (99SIEMENS, EIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR/Median (Elasticity)	Elasticity IQR/Median Ratio (99SIEMENS, EIQRMRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Segment #<n> = 1,2,3,4A,4B,5,6,7,8	Container : Liver Segment (SRT, T-D053F)	
Velocity	Shear Wave Velocity (99SIEMENS, ShearVelocity)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Elasticity	Elasticity (99SIEMENS, Elasticity)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Depth (Velocity)	Shear Wave Velocity ROI Depth (99SIEMENS, VsROIDepth)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Median(Velocity)	Shear Wave Velocity Median (99SIEMENS, VsMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Mean (Velocity)	Shear Wave Velocity Mean (99SIEMENS, VsMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
StdDev(Velocity)	Standard Deviation of Shear Wave Velocity (99SIEMENS, VsStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR (Velocity)	Shear Wave Velocity Interquartile Range (99SIEMENS, VsIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR/Median(Velocity)	Shear Wave Velocity IQR/Median Ratio (99SIEMENS, VsIQRMRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Depth (Elasticity)	Elasticity ROI Depth (99SIEMENS, ElastROIDepth)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Median (Elasticity)	Elasticity Median (99SIEMENS, ElasticityMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Mean (Elasticity)	Elasticity Mean (99SIEMENS, EMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
StdDev (Elasticity)	Standard Deviation of Elasticity (99SIEMENS, EStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR (Elasticity)	Elasticity Interquartile Range (99SIEMENS, EIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR/Median (Elasticity)	Elasticity IQR/Median Ratio (99SIEMENS, EIQRMRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Site #<n> = 1 to 4	Container : Site (SRT, G-A165)	
Velocity	Shear Wave Velocity (99SIEMENS, ShearVelocity)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Elasticity	Elasticity (99SIEMENS, Elasticity)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Depth (Velocity)	Shear Wave Velocity ROI Depth (99SIEMENS, VsROIDepth)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Median(Velocity)	Shear Wave Velocity Median (99SIEMENS, VsMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Mean (Velocity)	Shear Wave Velocity Mean (99SIEMENS, VsMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
StdDev(Velocity)	Standard Deviation of Shear Wave Velocity (99SIEMENS, VsStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR (Velocity)	Shear Wave Velocity Interquartile Range (99SIEMENS, VsIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR/Median(Velocity)	Shear Wave Velocity IQR/Median Ratio (99SIEMENS, VsIQRMRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Depth (Elasticity)	Elasticity ROI Depth (99SIEMENS, ElastROIDepth)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Median (Elasticity)	Elasticity Median (99SIEMENS, ElasticityMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Mean (Elasticity)	Elasticity Mean (99SIEMENS, EMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
StdDev (Elasticity)	Standard Deviation of Elasticity (99SIEMENS, EStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR (Elasticity)	Elasticity Interquartile Range (99SIEMENS, EIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
IQR/Median (Elasticity)	Elasticity IQR/Median Ratio (99SIEMENS, EIQRMRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Velocity Median	Overall Shear Velocity Median (99SIEMENS, OVsMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Velocity Mean	Overall Shear Velocity Mean (99SIEMENS, OVsMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Velocity StdDev	Overall Shear Velocity Standard Deviation (99SIEMENS, OVsStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Velocity IQR	Overall Shear Velocity Interquartile Range (99SIEMENS, OVsIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Velocity IQR/Median	Overall Shear Velocity IQR/Median Ratio (99SIEMENS, OVsIQRMednRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Elasticity Median	Overall Shear Velocity Median (99SIEMENS, OVsMedian)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Elasticity Mean	Overall Shear Velocity Mean (99SIEMENS, OVsMean)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Elasticity StdDev	Overall Shear Velocity Standard Deviation (99SIEMENS, OVsStdDev)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)
Overall Statistics : Elasticity IQR	Overall Shear Velocity Interquartile Range (99SIEMENS, OVsIQR)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Overall Statistics : Elasticity IQR/Median	Overall Shear Velocity IQR/Median Ratio (99SIEMENS, OVsIQRMednRatio)	Measurement Method : Point Shear Wave Elastography (99SIEMENS, pSWE)

9.2.15 Gall Bladder

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Gall Bladder	Container : Findings (DCM, 121070)	Finding Site: Gallbladder (SRT, T-63000)
GB Wall Thickness	Gallbladder Wall Thickness (99SIEMENS, GBWallThk)	
Common Bile Duct	Container : Common Bile Duct (SRT, T-64500)	
CBD	Distance (DCM, 121206)	

9.2.16 Kidney (Left Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Kidney	Container : Findings (DCM, 121070)	Finding Site: Kidney (SRT, T-71000) Laterality: Left (SRT, G-A101)
Left Kidney AP	Height (DCM, 121207)	
Left Kidney Length	Length (SRT, G-A22A)	
Left Kidney Width	Width (SRT, G-A220)	
Left Kidney Volume	Volume (SRT, G-D705)	

9.2.17 Kidney (Right Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Kidney	Container : Findings (DCM, 121070)	Finding Site: Kidney (SRT, T-71000) Laterality: Right (SRT, G-A100)
Right Kidney AP	Height (DCM, 121207)	
Right Kidney Length	Length (SRT, G-A22A)	
Right Kidney Width	Width (SRT, G-A220)	
Right Kidney Volume	Volume (SRT, G-D705)	

9.2.18 Spleen

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Spleen	Container : Findings (DCM, 121070)	Finding Site: Spleen (SRT, T-C3000)
Spleen AP	Height (DCM, 121207)	
Spleen Length	Length (SRT, G-A22A)	
Spleen Width	Width (SRT, G-A220)	
Spleen Volume	Volume (SRT, G-D705)	

9.2.19 Bladder

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Bladder	Container : Findings (DCM, 121070)	Finding Site: Bladder (SRT, T-74000)
Micturated Volume	Micturated Volume (99SIEMENS, MicturatedVol)	
Prior to voiding	Container : Prior to voiding (DCM, 109134)	
PreVoid Bladder AP	Height (DCM, 121207)	
PreVoid Bladder Length	Length (SRT, G-A22A)	
PreVoid Bladder Width	Width (SRT, G-A220)	
PreVoid Bladder Vol	Volume (SRT, G-D705)	
Post voiding	Container : Post voiding (DCM, 109135)	
PostVoid Bladder AP	Height (DCM, 121207)	
PostVoid Bladder Length	Length (SRT, G-A22A)	
PostVoid Bladder Width	Width (SRT, G-A220)	
PostVoid Bladder Vol	Volume (SRT, G-D705)	

9.2.20 Prostate

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Prostate	Container : Findings (DCM, 121070)	Finding Site: Prostate (SRT, T-92000)
Prostate V1 AP	Prostate Height (LN, 15301-5)	
Prostate V1 Length	Prostate Length (LN, 15303-1)	
Prostate V1 Trans	Prostate Width (LN, 15302-3)	
Prostate V1	Prostate Volume derived from height, width and length (LN, 15308-0)	

9.2.21 Thyroid

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Thyroid	Container : Findings (DCM, 121070)	Finding Site: Thyroid (SRT, T-B6000)
Lobe of Thyroid Gland	Container : Lobe of Thyroid Gland (SRT, T-B6070)	Laterality: Left (SRT, G-A101)
Left Thyroid Lobe AP	Height (DCM, 121207)	
Left Thyroid Lobe SAG	Length (SRT, G-A22A)	
Left Thyroid Lobe TRV	Width (SRT, G-A220)	
Left Thyroid Lobe Volume	Volume (SRT, G-D705)	
Lobe of Thyroid Gland	Container : Lobe of Thyroid Gland (SRT, T-B6070)	Laterality: Right (SRT, G-A100)
Left Thyroid Lobe AP	Height (DCM, 121207)	
Left Thyroid Lobe SAG	Length (SRT, G-A22A)	
Left Thyroid Lobe TRV	Width (SRT, G-A220)	
Left Thyroid Lobe Volume	Volume (SRT, G-D705)	
Thyroid Isthmus	Container : Thyroid Isthmus (SRT, T-B6300)	
Isthmus AP	Distance (DCM, 121206)	

9.2.22 Testis (Left Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Testis	Container : Findings (DCM, 121070)	Finding Site: Testis (SRT, T-94000) Laterality: Left (SRT, G-A101)
Left Testicle AP	Height (DCM, 121207)	
Left Testicle Length	Length (SRT, G-A22A)	
Left Testicle Width	Width (SRT, G-A220)	
Left Testicle Volume	Volume (SRT, G-D705)	
Epididymis	Container : Epididymis (SRT, T-95000)	
Left Epididymis AP	Height (DCM, 121207)	
Left Epididymis Length	Length (SRT, G-A22A)	
Left Epididymis Width	Width (SRT, G-A220)	
Left Epididymis Volume	Volume (SRT, G-D705)	
Scrotal Wall	Container : Scrotal Wall (SRT, T-98009)	
Left Scrotal Wall	Distance (DCM, 121206)	

9.2.23 Testis (Right Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Testis	Container : Findings (DCM, 121070)	Finding Site: Testis (SRT, T-94000) Laterality: Right (SRT, G-A100)
Right Testicle AP	Height (DCM, 121207)	
Right Testicle Length	Length (SRT, G-A22A)	
Right Testicle Width	Width (SRT, G-A220)	
Right Testicle Volume	Volume (SRT, G-D705)	
Epididymis	Container : Epididymis (SRT, T-95000)	
Right Epididymis AP	Height (DCM, 121207)	
Right Epididymis Length	Length (SRT, G-A22A)	
Right Epididymis Width	Width (SRT, G-A220)	
Right Epididymis Volume	Volume (SRT, G-D705)	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Scrotal Wall	Container : Scrotal Wall (SRT, T-98009)	
Right Scrotal Wall	Distance (DCM, 121206)	

9.3 Appendix C: Adult Echocardiography Structured Report

This appendix lists the DICOM Structured Report (SR) mappings used in the Echocardiography Structured Reports of Juniper DICOM SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16-2011 of the DICOM Standard. The “Label” column identifies the on-screen label associated with a measurement and consists of the “Grouping Heading: Measurement Label”. All private code values use the Coding Scheme Designator “99SIEMENSUS”.

Measurements from private measurement packages are identified by the concept modifier:

HAS CONCEPT MOD (MeasPackage, 99SIEMENSUS, “Measurement Package Membership”)

The Adult Echocardiography Report mappings follow the DICOM SR Template TID 5200: Echocardiography Procedure Report, except where noted.

Notation:

< … > indicates that the description is not the actual text displayed
[…] is additional information

9.3.1 Patient Characteristics

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Patient Characteristics	Container: Patient Characteristics (DCM, 121118)	
Blood Pressure SYS:	Systolic Blood Pressure (SRT, F-008EC)	
DIA:	Diastolic Blood Pressure (SRT, F-008ED)	
BSA	Body Surface Area (LN, 8277-6)	[Based on BSA (DuBois) = 0.007184*WT^0.425*HT^0.725]

9.3.2 Left Ventricle

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Left Ventricle	Finding Site: Left Ventricle (SRT, T-32600)	
Aortic Valve: CI	Cardiac Index (SRT, F-32110)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Cubed: CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: CI	Cardiac Index (SRT, F-32110)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz CI	Cardiac Index (SRT, F-32110)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: CI4	Cardiac Index (SRT, F-32110)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: CI	Cardiac Index (SRT, F-32110)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: CI2	Cardiac Index (SRT, F-32110)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: CI	Cardiac Index (SRT, F-32110)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Aortic Valve: CO	Cardiac Output (SRT, F-32100)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)
Mitral Valve: CO	Cardiac Output (SRT, F-32100)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: CO	Cardiac Output (SRT, F-32100)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Teichholz: CO	Cardiac Output (SRT, F-32100)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: CO4	Cardiac Output (SRT, F-32100)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: CO	Cardiac Output (SRT, F-32100)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: CO2	Cardiac Output (SRT, F-32100)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: CO	Cardiac Output (SRT, F-32100)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Aortic Valve: LVOT diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650)
Bi-Plane: HR	Heart Rate (LN, 8867-4)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Single Plane: HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
Teichholz: HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: HR	Heart Rate (LN, 8867-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: HR	Heart Rate (LN, 8867-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: HR	Heart Rate (LN, 8867-4)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: HR	Heart Rate (LN, 8867-4)	Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Cubed: IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Cubed: IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Cubed: IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV Mass A-L: LVL	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode: 2D mode (SRT, G-03A2)
Single Plane: LVLd apical	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
LV Mass A-L: A Sax Epi	Left Ventricle Epicardial Diastolic Area, psax pap view (SRT, G-0379)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)
LV Mass T-E: A Sax Epi	Left Ventricle Epicardial Diastolic Area, psax pap view (SRT, G-0379)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Bi-Plane: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Bi-Plane: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Teichholz: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV Mass A-L: LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)
LV Mass A-L: LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)
Cubed: LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Cubed: LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Index: Body Surface Area (LN, 8277-6) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Teichholz: LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Index: Body Surface Area (LN, 8277-6) Measurement Method: Teichholz (DCM, 125209)
LV Mass T-E: LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Index: Body Surface Area (LN, 8277-6) Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
LV Mass T-E: LV Mass	Left Ventricle Mass (LN, 18087-7)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Cubed: LV Mass-c	Left Ventricle Mass corrected (99SIEMENSUS, CA_LV_MASSc)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LV Mass-c	Left Ventricle Mass corrected (99SIEMENSUS, CA_LV_MASSc)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Cubed: LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Teichholz: LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Cubed: LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV Mass T-E: a	Left Ventricle Semi-major Axis Diastolic Dimension (SRT, G-0377)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Single Plane: LVAs apical	Left Ventricle Systolic Area (SRT, G-0374)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
Single Plane: LVLs apical	Left Ventricle systolic major axis (LN, 18076-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
LV Mass T-E: d	Left Ventricle Truncated Semi-major Axis Diastolic Dimension (SRT, G-0378)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Bi-Plane: LVAd apical	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Bi-Plane: LVAd sxMV	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Method: Area-Length Biplane (DCM, 125204)
LV Mass A-L: A Sax Endo	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode: 2D mode (SRT, G-03A2) Image View: Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Single Plane: LVAd apical	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
LV Mass T-E: A Sax Endo	Left Ventricular Diastolic Area (SRT, G-0375)	Image View: Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Bi-Plane: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: EF4	Left Ventricular Ejection Fraction (LN, 18043-0)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: EF2	Left Ventricular Ejection Fraction (LN, 18043-0)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: EF (BP)	Left Ventricular Ejection Fraction (LN, 18043-0)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Bi-Plane: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Single Plane: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Teichholz: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: LV 4ch EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: EDV2	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks,Biplane (DCM, 125207)
Simpson BP: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Bi-Plane: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Single Plane: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
Teichholz: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP:LV 4ch ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Simpson BP:LV 2ch ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP:ESV (BP)	Left Ventricular End Systolic Volume (LN, 18148-7)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Cubed: FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Tei Index:LV MPI	Left Ventricular Index of Myocardial Performance (SRT, G-037F)	
Aortic Valve: IVRT Mitral Valve: IVRT	Left Ventricular Isovolumic Relaxation Time (LN, 18071-1)	
DTI:Lat E' Vel	Left Ventricular Peak Early Diastolic Tissue Velocity (SRT, G-037A)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:Med E' Vel	Left Ventricular Peak Early Diastolic Tissue Velocity (SRT, G-037A)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI:Lat S Vel	Left Ventricular Peak Systolic Tissue Velocity (SRT, G-037D)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:Med S Vel	Left Ventricular Peak Systolic Tissue Velocity (SRT, G-037D)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
Bi-Plane: LVAs apical	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Bi-Plane: LVAs sxMV	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Method: Area-Length Biplane (DCM, 125204)
Simpson BP:diffD (2ch)	LV Difference (99SIEMENSUS, CA_LV_DIF)	Cardiac Cycle Point: End Diastole (SRT, F-32011) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP:diffS (2ch)	LV Difference (99SIEMENSUS, CA_LV_DIF)	Cardiac Cycle Point: F-32011, SRT, End Systole Measurement Method: Method of Disks, Biplane (DCM, 125207)
DTI:Lat A' Vel	LV Peak Diastolic Tissue Velocity During Atrial Systole (SRT, G-037C)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
DTI:Med A' Vel	LV Peak Diastolic Tissue Velocity During Atrial Systole (SRT, G-037C)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
Aortic Valve: LVOT PGmean	Mean Gradient (LN, 20256-4)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: LVOT Vmean	Mean Velocity (LN, 20352-1)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
DTI:Lat Accel Rate	Mitral Valve DTI acceleration rate of Ea (99SIEMENSUS, CA_MV_ARa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:Med Accel Rate	Mitral Valve DTI acceleration rate of Ea (99SIEMENSUS, CA_MV_ARa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI:Lat Accel Time	Mitral Valve DTI acceleration time of Ea (99SIEMENSUS, CA_MV_ATa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:Med Accel Time	Mitral Valve DTI acceleration time of Ea (99SIEMENSUS, CA_MV_ATa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI:Lat Decel Rate	Mitral Valve DTI deceleration rate of Ea (99SIEMENSUS, CA_MV_DRa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:Med Decel Rate	Mitral Valve DTI deceleration rate of Ea (99SIEMENSUS, CA_MV_DRa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI:Lat Decel Time	Mitral Valve DTI deceleration time of Ea (99SIEMENSUS, CA_MV_DTa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:Med Decel Time	Mitral Valve DTI deceleration time of Ea (99SIEMENSUS, CA_MV_DTa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI:E'/A' (Lat)	Mitral Valve DTI Ea to Aa Ratio (99SIEMENSUS, CA_MV_Ea2Aa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:E'/A' (Med)	Mitral Valve DTI Ea to Aa Ratio (99SIEMENSUS, CA_MV_Ea2Aa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
LV Mass A-L: t	Myocard. thickn. calc. from short axis epicard. & cavity areas (99SIEMENSUS, CA_LV_MyoTh)	Image Mode: 2D mode (SRT, G-03A2)
LV Mass T-E: t	Myocard. thickn. calc. from short axis epicard. & cavity areas (99SIEMENSUS, CA_LV_MyoTh)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Aortic Valve: LVOT PGmax	Peak Gradient (LN, 20247-3)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: VSD PGmax	Peak Gradient (LN, 20247-3)	Finding Site: Ventricular Septal Defect (SRT, D4-31150)
Aortic Valve: LVOT Vmax	Peak Systolic Velocity (LN, 11726-7)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: VSD Vmax	Peak Systolic Velocity (LN, 11726-7)	Finding Site: Ventricular Septal Defect (SRT, D4-31150)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
DTI:E/E' (Lat) Mitral Valve:E/E' (Lat)	Ratio of MV Peak Velocity to LV Peak Tissue Velocity E-Wave (SRT, G-037B)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI:E/E' (Med) Mitral Valve:E/E' (Med)	Ratio of MV Peak Velocity to LV Peak Tissue Velocity E-Wave (SRT, G-037B)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
LV Mass T-E: b	Short axis radius calculated from short axis cavity area (99SIEMENSUS, CA_LV_RadSAX)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Aortic Valve: SI	Stroke Index (SRT, F-00078)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: SI	Stroke Index (SRT, F-00078)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: SI	Stroke Index (SRT, F-00078)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: SI	Stroke Index (SRT, F-00078)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: SI	Stroke Index (SRT, F-00078)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: SI	Stroke Index (SRT, F-00078)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: SI4	Stroke Index (SRT, F-00078)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: SI	Stroke Index (SRT, F-00078)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: SI2	Stroke Index (SRT, F-00078)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: SI	Stroke Index (SRT, F-00078)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Aortic Valve: SV	Stroke Volume (SRT, F-32120)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mitral Valve: SV	Stroke Volume (SRT, F-32120)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: SV	Stroke Volume (SRT, F-32120)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed: SV	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: SV	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: SV	Stroke Volume (SRT, F-32120)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: SV	Stroke Volume (SRT, F-32120)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: SV4	Stroke Volume (SRT, F-32120)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: SV	Stroke Volume (SRT, F-32120)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: SV2	Stroke Volume (SRT, F-32120)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: SV	Stroke Volume (SRT, F-32120)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Cubed: mVcf	systolic index (99SIEMENSUS, CA_LF_VCF)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Teichholz: mVcf	systolic index (99SIEMENSUS, CA_LF_VCF)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Aortic Valve: LVOT VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
Bullet: HR	Heart Rate (LN, 8867-4)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Bullet: LVLd apical	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: LVLs apical	Left Ventricle systolic major axis (LN, 18076-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: LVAd sxMV	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: LVAs sxMV	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Gibson: CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Gibson: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: SI	Stroke Index (SRT, F-00078)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: SV	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson: CI	Cardiac Index (SRT, F-32110)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: CO	Cardiac Output (SRT, F-32100)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Gibson: HR	Heart Rate (LN, 8867-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method : Left Ventricle Mass corrected by M-Mode (99SIEMENSUS, MethodMassASEcor) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Index: Body Surface Area (LN, 8277-6) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: LV Mass-c	Left Ventricle Mass corrected (99SIEMENSUS, CA_LV_MASSc)	Image Mode: M-Mode (SRT, G-0394) Measurement Method = Left Ventricle Mass corrected by M-Mode (99SIEMENSUS, MethodMassASEcor) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Gibson: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: SI	Stroke Index (SRT, F-00078)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: SV	Stroke Volume (SRT, F-32120)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Gibson: mVcf	systolic index (99SIEMENSUS, CA_LF_VCF)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
Simpson MOD: CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: HR	Heart Rate (LN, 8867-4)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: LVLd apical	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: LVLs apical	Left Ventricle systolic major axis (LN, 18076-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Simpson MOD: LVAd sxMV	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: LVAd sxPM	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: LVAs sxMV	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: LVAs sxPM	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: SI	Stroke Index (SRT, F-00078)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Simpson MOD: SV	Stroke Volume (SRT, F-32120)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Qp/Qs:COs	Cardiac Output (SRT, F-32100)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: Systemic diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Image Mode : 2D mode (SRT, G-03A2) Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: HR	Heart Rate (LN, 8867-4)	Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: SVs	Stroke Volume (SRT, F-32120)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode : Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: Systemic VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Teichholz:RWT	Left Ventricle Relative Wall Thickness (99SIEMENSUS, CA_LVRelWallThick)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Gibson:RWT	Left Ventricle Relative Wall Thickness (99SIEMENSUS, CA_LVRelWallThick)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership : MMode Gibson Package (99SIEMENSUS, MPMMode)
Cubed:RWT	Left Ventricle Relative Wall Thickness (99SIEMENSUS, CA_LVRelWallThick)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)

9.3.3 Right Ventricle

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Right Ventricle	Finding Site: Right Ventricle (SRT, T-32500)	
Pulmonary Valve: CI	Cardiac Index (SRT, F-32110)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Pulmonary Valve: CO	Cardiac Output (SRT, F-32100)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Qp/Qs: COp	Cardiac Output (SRT, F-32100)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Pulmonary Valve: PV diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Image Mode: 2D mode (SRT, G-03A2)
Qp/Qs: Pulmonic diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Cubed: RVAWd	Right Ventricle Anterior Wall Diastolic Thickness (LN, 18153-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz: RVAWd	Right Ventricle Anterior Wall Diastolic Thickness (LN, 18153-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Gibson: RVAWd	Right Ventricular Anterior Wall Diastolic Thickness (LN, 18153-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership : 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Tei Index:RV MPI	Right Ventricular Index of Myocardial Performance (SRT, G-0381)	
RV: RV diam	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	
Cubed: RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Gibson: RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership : 2D Gibson Package (99SIEMENSUS, MP2DGIB)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Teichholz: RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Cubed: RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Gibson: RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership : MMode Gibson Package (99SIEMENSUS, MPMMode)
Teichholz: RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
AO/LA:RV Diam	Right Ventricular Internal Diastolic Dimension at AV/LA (99SIEMENSUS, CA_RV_INTD_AVLA)	
AO/LA:RV Diam	Right Ventricular Internal Diastolic Dimension at AV/LA (99SIEMENSUS, CA_RV_INTD_AVLA)	Image Mode: M-Mode (SRT, G-0394)
TR: RVSP	Right Ventricular Peak Systolic Pressure (SRT, G-0380)	
Pulmonary Valve: SI	Stroke Index (SRT, F-00078)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Pulmonary Valve: SV	Stroke Volume (SRT, F-32120)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Qp/Qs: SVp	Stroke Volume (SRT, F-32120)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: Pulmonic VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
RV:TAPSE	Tricuspid Annular Plane Systolic Excursion (99SIEMENSUS, CA_TAPSE)	Image Mode: M-Mode (SRT, G-0394)

9.3.4 Left Atrium

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Left Atrium	Finding Site: Left Atrium (SRT, T-32300)	
AO/LA:AOd/LAs	Aortic Root Diameter (Dia) to Left Atrium Diameter (Sys) Ratio (99SIEMENSUS, CA_LA_AOd2LAs)	
AO/LA:AOd/LAs	Aortic Root Diameter (Dia) to Left Atrium Diameter (Sys) Ratio (99SIEMENSUS, CA_LA_AOd2LAs)	Image Mode: M-Mode (SRT, G-0394)
AO/LA:LAd Diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Diastole (SRT, F-32010)
AO/LA:LAd Diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Diastole (SRT, F-32010) Image Mode: M-Mode (SRT, G-0394)
AO/LA:LAs Diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Systole (SRT, F-32020)
AO/LA:LAs Diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Systole (SRT, F-32020) Image Mode: M-Mode (SRT, G-0394)
LA Vol AL:LA Vol (A-L)	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
LA Vol AL:LA Vol-I (A-L)	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Area-Length Biplane (DCM, 125204)
LA Vol Simp:LA Vol-I	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol Simp:LA 4ch ESV	Left Atrial ES Volume (DCM, 122408)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
LA Vol Simp: LA 4ch EDV	Left Atrial ED Volume (DCM, 122407)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
LA Vol Simp:LA 2ch ESV	Left Atrial ES Volume (DCM, 122408)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
LA Vol Simp: LA 2ch EDV	Left Atrial ED Volume (DCM, 122407)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Single Plane (DCM, 125208)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LA Vol Simp:LA EF2	Left Atrium Ejection Fraction (99SIEMENSUS, CA_LA_EF)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
LA Vol Simp:LA EF4	Left Atrium Ejection Fraction (99SIEMENSUS, CA_LA_EF)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
LA Vol Simp:LA EF (BP)	Left Atrium Ejection Fraction (99SIEMENSUS, CA_LA_EF)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol Simp:LA ESV (BP)	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol Simp:LA EDV (BP)	Left Atrial ES Volume (DCM, 122407)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol Simp:LA diffD(2ch)	LA difference (99SIEMENSUS, CA_LA_DIF)	Cardiac Cycle Point: End Diastole (SRT, F-32011) Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol Simp:LA diffS(2ch)	LA difference (99SIEMENSUS, CA_LA_DIF)	Cardiac Cycle Point: F-32011, SRT, End Systole Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol Simp:LA diffD(4ch)	LA difference (99SIEMENSUS, CA_LA_DIF)	Cardiac Cycle Point: End Diastole (SRT, F-32011) Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol Simp:LA diffS(4ch)	LA difference (99SIEMENSUS, CA_LA_DIF)	Cardiac Cycle Point: F-32011, SRT, End Systole Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol AL:A1-A4C	Left Atriuim Systolic Area (LN, 17977-0)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Cardiac Cycle Point: Systole (SRT, F-32020)
LA Vol AL:A2-A2C	Left Atriuim Systolic Area (LN, 17977-0)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Cardiac Cycle Point: Systole (SRT, F-32020)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LA Vol AL:L	Left Atrium Antero-posterior Systolic Dimension (LN, 29469-4)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020)
AO/LA:LAs/AOd	Left Atrium Diameter (Sys) to Aortic Root Diameter (Dia) Ratio (99SIEMENSUS, CA_LA_LAs2AOd)	
AO/LA:LAs/AOd	Left Atrium Diameter (Sys) to Aortic Root Diameter (Dia) Ratio (99SIEMENSUS, CA_LA_LAs2AOd)	Image Mode: M-Mode (SRT, G-0394)

9.3.5 Right Atrium

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Right Atrium	Finding Site: Right Atrium (SRT, T-32200)	
RA Vol AL:A1-A4C	Right Atrium Systolic Area (LN, 17988-7)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Cardiac Cycle Point: Systole (SRT, F-32020)
RA Vol AL:A2-A2C	Right Atrium Systolic Area (LN, 17988-7)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Cardiac Cycle Point: Systole (SRT, F-32020)
RA Vol AL:L	Right Atrium Systolic Dimension (99SIEMENSUS, CA_RA_DIA)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020)
PR:RAP select TR:RAP select or not shown on report	Right Atrium Systolic Pressure (LN, 18070-3)	
RA Vol AL:RA Vol (A-L)	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020) Measurement Method = Area-Length Biplane (DCM, 125204)
RA Vol AL:RA Vol-I (A-L)	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method = Area-Length Biplane (DCM, 125204)
RA Vol Simp:2CH	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Cardiac Cycle Point: Systole (SRT, F-32020)
RA Vol Simp:4CH	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Cardiac Cycle Point: Systole (SRT, F-32020)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
RA Vol Simp:RA Vol (Simp)	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020) Measurement Method: Method of Disks, Biplane (DCM, 125207)
RA Vol Simp:RA Vol-I (Simp)	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Method of Disks, Biplane (DCM, 125207)

9.3.6 Aortic Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aortic Valve	Finding Site: Aortic Valve (SRT, T-35400)	
AR: AR Duration	Aortic Regurgitation Duration (99SIEMENSUS, CA_AR_DUR)	
AO/LA:ACS	Aortic Valve Cusp Separation (LN, 17996-0)	Image Mode: 2D mode (SRT, G-03A2)
AO/LA:ACS	Aortic Valve Cusp Separation (LN, 17996-0)	Image Mode: M-Mode (SRT, G-0394)
Aortic Valve:LV ET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
AO/LA:LV ET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394)
Teichholz:LV ET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Gibson:LV ET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership : MMode Gibson Package (99SIEMENSUS, MPMMode)
Cubed:LV ET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Aortic Valve:LV STI	Aortic Valve Pre-ejection Period to Ejection Time (99SIEMENSUS, CA_AV_PEP2ET)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
AO/LA:LV STI	Aortic Valve Pre-ejection Period to Ejection Time (99SIEMENSUS, CA_AV_PEP2ET)	Image Mode: M-Mode (SRT, G-0394)
Aortic Valve:AVA (Vmax)	Cardiovascular Orifice Area (SRT, G-038E)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Continuity Equation by Peak Velocity (DCM, 125214);
Aortic Valve:AVA (VTI)	Cardiovascular Orifice Area (SRT, G-038E)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Continuity Equation by Velocity Time Integral (DCM, 125215)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aortic Valve:AV Area	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Planimetry (DCM, 125220)
AR:AR Decel Rate	Deceleration Slope (LN, 20216-8)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
AR:AR Decel Slope	Deceleration Slope (LN, 20216-8)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
AR:AR Decel Time	Deceleration Time (LN, 20217-6)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
AR: AR V ed	End Diastolic Velocity (LN, 11653-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Aortic Valve: HR	Heart Rate (LN, 8867-4)	Finding Site: Aortic Valve (SRT, T-35400)
Aortic Valve: LVOT/AV VTI	Left Ventricle Outflow Tract VTI to Aortic Valve VTI Ratio (99SIEMENSUS, CA_LVOT2AV_VTI)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
AR: AR Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Aortic Valve: AV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: AV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: AV PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
AR: AR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Aortic Valve: AV Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve:LV PEP	Pre-Ejection Period (LN, 18068-7)	
AO/LA:LV PEP	Pre-Ejection Period (LN, 18068-7)	Image Mode: M-Mode (SRT, G-0394)
AR:AR PHT	Pressure Half-Time (LN, 20280-4)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
Aortic Valve: AV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)

9.3.7 Mitral Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mitral Valve	Finding Site: Mitral Valve (SRT, T-35300)	
Mitral Valve:CA amp	Amplitude A Wave Mmode (99SIEMENSUS, CA_MV_AWaveAmpl)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve:DE amp	Amplitude D-E Wave Mmode (99SIEMENSUS, CA_MV_DEWaveAmpl)	Image Mode: M-Mode (SRT, G-0394)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mitral Valve:CE amp	Amplitude E Wave Mmode (99SIEMENSUS, CA_MV_EWaveAmpl)	Image Mode: M-Mode (SRT, G-0394)
PISA (MS):MS Angle	Angle measured at Mitral Valve Stenosis (99SIEMENSUS, CA_MS_Angle)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Tei Index:LV ET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve: CI	Cardiac Index (SRT, F-32110)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219)
Mitral Valve:MV Area	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Planimetry (DCM, 125220);
Mitral Valve:MVA (PHT)	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
Mitral Valve:MVA (VTI)	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Continuity Equation (DCM, 125212)
PISA (MR):MR EO Area	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA (MS):MS MVA	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: MV diam	Cardiovascular Orifice Diameter (SRT, G-038F)	
Mitral Valve:MV Decel Slope	Deceleration Slope (LN, 20216-8)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve: MV DT	Deceleration Time (LN, 20217-6)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
MR: dt	Deceleration Time (LN, 20217-6)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
PISA (MS):MS Radius	Dome Radius (99SIEMENSUS, CA_DOME)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
PISA (MR):MR Radius	Dome Radius (99SIEMENSUS, CA_DOME)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: HR	Heart Rate (LN, 8867-4)	
Mitral Valve: MV Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
PISA(MS): MS Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: MV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
Mitral Valve: MV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PISA (MS):MS Aliasing Vel	Mean Velocity (LN, 20252-1)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216) Derivation: Estimated (DCM, 121427)
PISA (MR):MR Aliasing Vel	Mean Velocity (LN, 20252-1)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216) Derivation: Estimated (DCM, 121427)
MR:LV dP/dt	Mitral Regurg. dP/dt derived from Mitral Regurg. velocity (LN, 18035-6)	
Mitral Valve:CA/CE	Mitral Valve A to E Ratio (99SIEMENSUS, CA_MV_A2E)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve: A/E	Mitral Valve A to E Ratio (99SIEMENSUS, CA_MV_A2E)	
Mitral Valve: A Dur	Mitral Valve A-Wave Duration (SRT, G-0385)	
Mitral Valve:MV Peak A vel	Mitral Valve A-Wave Peak Velocity (LN, 17978-8)	
Tei Index:MV C-O Time	Mitral Valve Closure to Opening Time (SRT, G-0387)	
Mitral Valve:DE excursion	Mitral Valve D-E Excursion (LN, 17997-8)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve: MV PGmax	Mitral Valve Diastolic Peak Instantaneous Gradient (LN, 18057-0)	
Mitral Valve: E/A	Mitral Valve E to A Ratio (LN, 18038-0)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve(M): EF Slope	Mitral Valve E-F Slope by M-Mode (LN, 18040-6)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve: EPSS	Mitral Valve EPSS, E wave (LN, 18036-4)	Image Mode: 2D mode (SRT, G-03A2)
Mitral Valve: EPSS	Mitral Valve EPSS, E wave (LN, 18036-4)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve:MV Decel Time	Mitral Valve E-Wave Deceleration Time (SRT, G-0384)	
Mitral Valve: E Dur	Mitral Valve E-Wave Duration (99SIEMENSUS, CA_MV_DURe)	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mitral Valve:MV Peak E vel	Mitral Valve E-Wave Peak Velocity (LN, 18037-2)	
PISA(MS): MS PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
MR: MR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
PISA (MS):MS Flow Rate	Peak Instantaneous Flow Rate (LN, 34141-2)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA (MR):MR Flow Rate	Peak Instantaneous Flow Rate (LN, 34141-2)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
MR: MR Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
PISA(MR): MR Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: MV PHT	Pressure Half-Time (LN, 20280-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
Mitral Valve: SI	Stroke Index (SRT, F-00078)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve: MV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
PISA(MS): MS VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MR): MR VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MS): Flow Vol	Volume Flow (LN, 33878-0)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MR): Flow Vol	Volume Flow (LN, 33878-0)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve:MAPSE	Mitral Annular Plane Systolic Excursion (99SIEMENSUS, CA_MAPSE)	Image Mode: M-Mode (SRT, G-0394)

9.3.8 Pulmonary Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pulmonary Valve	Finding Site: Pulmonary Valve (SRT, T-35200)	
Pulmonary Valve:RV Accel Time	Acceleration Time (LN, 20168-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR:PR V ed	End Diastolic Velocity (LN, 11653-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: HR	Heart Rate (LN, 8867-4)	
PR: PR Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: PV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: PV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: PV PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: PV Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
Pulmonary Valve:RV ET Tricuspid Valve: RVET Tei Index:RV ET	Pulmonic Valve Ejection Time (LN, 18042-2)	
Pulmonary Valve:RV STI	Pulmonic Valve Pre-ejection Period to Ejection Time (99SIEMENSUS, CA_PV_PEP2ET)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Pulmonary Valve: RV Acc T/ET	Ratio of Pulmonic Valve Acceleration Time to Ejection Time (SRT, G-0388)	Flow Direction: Antegrade Flow (SRT, R-42047)
Pulmonary Valve:RVPEP	Right Ventricle Pre-Ejection Period (LN, 20301-8)	Image Mode: M-Mode (SRT, G-0394)
Pulmonary Valve: PV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)

9.3.9 Tricuspid Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Tricuspid Valve	Finding Site: Tricuspid Valve (SRT, T-35100)	
Tricuspid Valve: TV Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
Tricuspid Valve: TV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
TR: TR PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Tricuspid Valve: TV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
TR: TR Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Tricuspid Valve: TV PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
TR: TR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
TR: TR Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Tricuspid Valve: TV A pt	Tricuspid Valve A Wave Peak Velocity (LN, 18030-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
Tei Index:TV C-O Time	Tricuspid Valve Closure to Opening Time (SRT, G-0389)	
Tricuspid Valve: E/A	Tricuspid Valve E to A Ratio (LN, 18039-8)	Flow Direction: Antegrade Flow (SRT, R-42047)
Tricuspid Valve: TV E pt	Tricuspid Valve E Wave Peak Velocity (LN, 18031-5)	Flow Direction: Antegrade Flow (SRT, R-42047)
Tricuspid Valve: TV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
TR: TR VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)

9.3.10 Aorta

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aorta	Finding Site: Aorta (SRT, T-42000)	
AO/LA:AOd	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Diastole (SRT, F-32010)
AO/LA:AOd	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Diastole (SRT, F-32010) Image Mode: M-Mode (SRT, G-0394)
AO/LA:AOs	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Systole (SRT, F-32020)
AO/LA:AOs	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Systole (SRT, F-32020) Image Mode: M-Mode (SRT, G-0394)
Aortic Valve: Ao Arch PGmean	Mean Gradient (LN, 20256-4)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch Vmean	Mean Velocity (LN, 20352-1)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch PGmax	Peak Gradient (LN, 20247-3)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch Vmax	Peak Systolic Velocity (LN, 11726-7)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)

9.3.11 Pulmonary Artery

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pulmonary Artery	Finding Site: Pulmonary Artery (SRT, T-44000)	
Pulmonary Valve:PV Accel Time	Acceleration Time (LN, 20168-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PAEDP	Pulmonary Artery Pressure (SRT, F0212C)	Cardiac Cycle Point: End Diastole (SRT, F-32011)

9.3.12 Pulmonary Venous Structure

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pulmonary Venous Structure	Finding Site: Pulmonary Veins (SRT, T-48581)	
Pulmonary Vein:PVd Decel	Deceleration Time (LN, 20217-6)	Cardiac Cycle Point: Diastole (SRT, F-32010)
Pulmonary Vein: PVa Dur	Pulmonary Vein A-Wave Duration (SRT, G-038B)	
Pulmonary Vein: PVa Vel	Pulmonary Vein Atrial Contraction Reversal Peak Velocity (LN, 29453-8)	Cardiac Cycle Point: Diastole (SRT, F-32010)
Pulmonary Vein: PVd VTI	Pulmonary Vein D-Wave Velocity Time Integral (SRT, G-038D)	
Pulmonary Vein: PVd Vel	Pulmonary Vein Diastolic Peak Velocity (LN, 29451-2)	Cardiac Cycle Point: Diastole (SRT, F-32010)
Pulmonary Vein: PVs VTI	Pulmonary Vein S-Wave Velocity Time Integral (SRT, G-038C)	
Pulmonary Vein: Sys Fraction	Pulmonary Vein Systolic Fraction (99SIEMENSUS, CA_PVE_SF)	
Pulmonary Vein: PVs1 Vel	Pulmonary Vein Systolic Peak Velocity (LN, 29450-4)	Topographical Modifier: Peak1 (99SIEMENSUS, Peak1)
Pulmonary Vein: PVs2 Vel	Pulmonary Vein Systolic Peak Velocity (LN, 29450-4)	Topographical Modifier: Peak2 (99SIEMENSUS, Peak2)
Pulmonary Vein: PVs2/PVd	Pulmonary Vein Systolic to Diastolic Ratio (LN, 29452-0)	

9.3.13 Cardiac Shunt Study

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Cardiac Shunt Study	Finding Site: Cardiac Shunt Study (SRT, P5-30031)	
Qp/Qs: Qp/Qs	Pulmonary-to-Systemic Shunt Flow Ratio (LN, 29462-9)	Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)