

DICOM Conformance Statement

Product Name: ACUSON P Family
Ultrasound System

Release:
ACUSON P500™ – VA10

Date: March 2015

1 CONFORMANCE STATEMENT OVERVIEW

This Conformance Statement applies to the following ACUSON P Family products and versions:

Product	Product Version	<Software ID>	<Product Name> in (0018,1020)
ACUSON P500	VA10	1.0.xxx	P500

For all DICOM image files generated by the above mentioned ACUSON P Family 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 ACUSON P Family 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 P Family"

The **ACUSON P Family Ultrasound System** supports the following DICOM Application Entities:

- Verification
 - o Verification AE
- Transfer
 - o Storage AE
 - o Storage Commitment AE
- Workflow Management
 - o Worklist 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
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

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
WORKFLOW MANAGEMENT		
Worklist AE		
Modality Worklist	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
Worklist AE		
Modality Worklist	1.2.840.10008.5.1.4.31	Workflow Management

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3 INTRODUCTION

This document describes the conformance to the ACR-NEMA DICOM 3.0 Standard by the ACUSON P Family 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 P Family 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 5: in this document.

3.1 Revision History

Revision Date	Applicable Product Releases
	ACUSON P500
March 2015	VA10

3.2 Audience

This document is written for the people that need to understand how the ACUSON P Family 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 P Family Ultrasound System and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

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

- The comparison of different Conformance Statements is 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: MR Image IOD, CT Image 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., USB)

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.

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

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

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

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

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

3.5 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 initial 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 specifies a number of network services and types of information objects, each of which is called an *Abstract Syntax* for the Negotiation. DICOM also specifies 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 and transfer of image objects and analyses (structured reports). 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 <http://medical.nema.org/>

4 NETWORKING

This section contains the ACUSON P Family system networking related services.

4.1 Implementation Model

P Family 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 insure that patient images and data are safely committed. Measurements from exams can be exported as DICOM SR Objects.

4.1.1 Application Data Flow

Figure 1 provides a functional overview of the P Family 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).

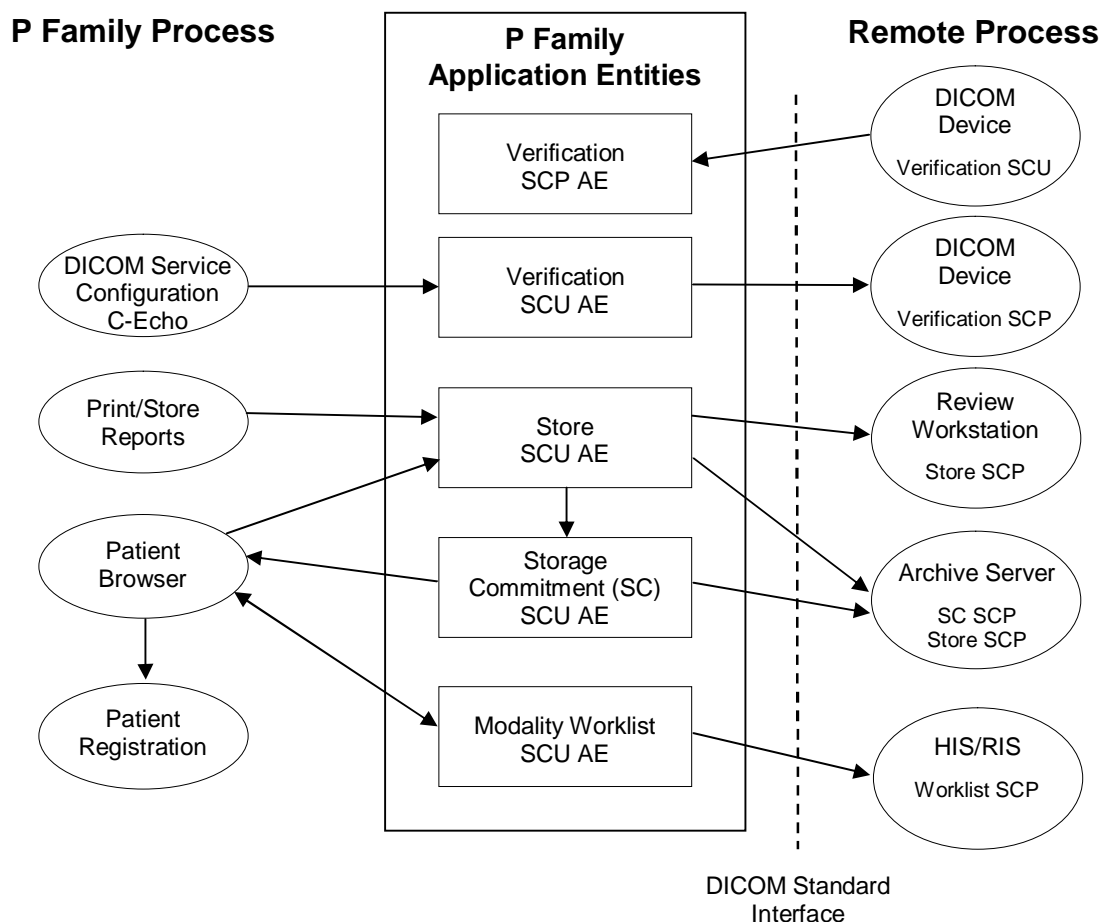


Figure 1. Implementation Model

4.1.1.1 Verification

Verification is a part of the DICOM configuration located on the 'Network' page of the 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 - Successfully contacted system".
- If the verification fails: "DICOM - Unable to communicate with system".

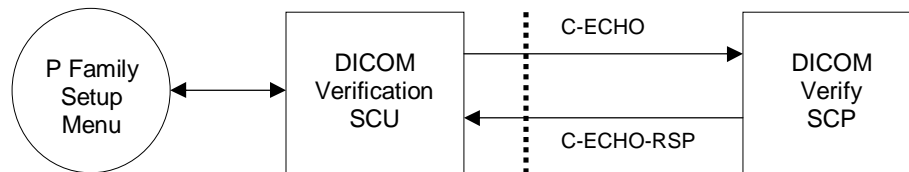


Figure 2. Verification Model

4.1.1.2 DICOM Store

When requested, the ACUSON P Family system 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.

Queueing images and structured reports for transfer:

ACUSON P Family systems can be configured to automatically queue up images and structured reports for transfer as they are being created. "Auto Store to DICOM" option in Configuration – Network screen has 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.

ACUSON P Family systems support 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 "Close Study" 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 ACUSON P Family system is busy performing another DICOM Store operation.

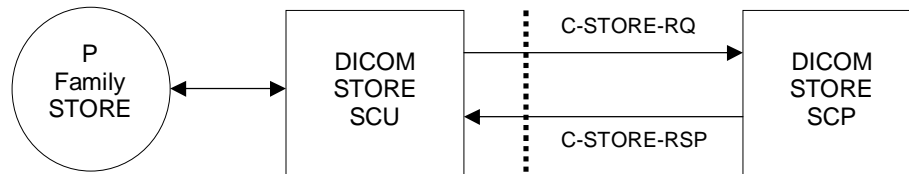


Figure 3. Store Model

4.1.1.3 Storage Commitment

The user can exercise the Storage Commitment option by configuring and selecting a Storage Commitment server from the Configuration - Network menu. The ACUSON P Family system 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'.

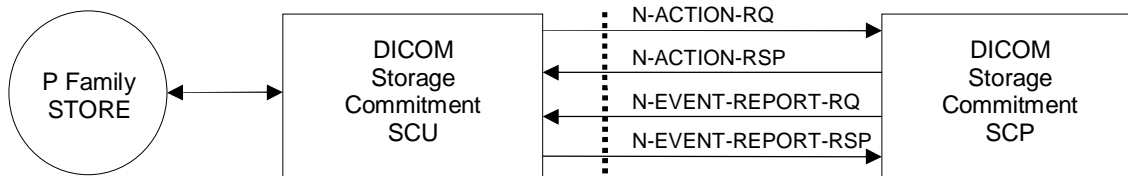


Figure 4. Storage Commitment Model

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 query screen. The Worklist query 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 Query 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 than 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 Last Name
- Patient First Name
- Patient Middle Name
- Patient ID
- Accession number

- Physician Last Name
- Physician First Name
- Physician Middle Name
- Exam start date/time range
- Requested Procedure ID
- US/All modalities
- Scheduled station AE title

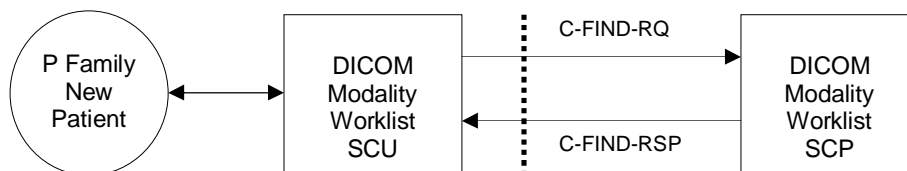


Figure 5. Modality Worklist Model

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

Attribute Name	Tag
Patient's Full Name	(0010,0010)
Patient ID	(0010,0020)
Accession Number	(0008,0050)

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)
Exam Type	(0008,1030)**
*<code1>, ..., <codeN>: <sched1>, ..., <schedn> where: code<i> = Sequence item code value(0008,0100) for a given sequence or value multiplicity	

Attribute Name	Tag
sched<i> = Scheduled procedure step(0040,0007) for a given sequence or value multiplicity	
**if a value exists for (0008,1030). Otherwise, Exam Type is set to value of Scheduled procedure step (0040,0007). If (0040,0007) is also empty, Exam Type 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 in to the patient data fields.

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

Attribute Name	Tag
Patient Name (first,middle,last)	(0010,0010)
Patient ID	(0010,0020)
Accession number	(0008,0050)
Exam start date/time	(0040,0002), (0040,0003)
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 Removable Media Storage

The ACUSON P Family system can perform DICOM operations to a USB disk drive. CD and DVD media are not support in VA10.

The ACUSON P Family system performs the File Set Creator and File Set Reader Roles for USB disks. 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 USB. A DICOM conforming USB media is created when the user saves studies in DICOM format to the 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 ACUSON P Family 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 ACUSON P Family system's ability to receive DICOM messages. (C-ECHO DIMSE)

4.1.2.2 Store Real-World Activities

The ACUSON P Family Store AE performs all of the functions to transmit ultrasound images, structured reports and associated data to network servers or workstations. The ACUSON P Family 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 ACUSON P Family Store AE also supports Structured Reports, for Obstetric-GYN and Vascular using the Comprehensive SR SOP Class as an SCU.

The ACUSON P Family 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 ACUSON P Family 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 P Family system 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 ACUSON P Family 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 ACUSON P Family Modality Worklist AE issues a C-CANCEL-RQ request.

4.1.2.5 Removable Media Storage Real-World Activities

The ACUSON P Family Store AE provides a standard implementation of DICOM Store to USB. The ACUSON P Family Store AE selects one or more studies and exports the same to USB. ACUSON P Family Store AE creates a DICOM File Format Image File for every image, clip and structured report in each of the selected studies. CD and DVD media are not supported in VA10.

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

Store, Echo, Worklist and Storage Commit 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 Store Status UI 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.

4.2 AE Specifications

4.2.1 SOP Classes

The ACUSON P Family AEs provides conformance to the following DICOM Service SOP Classes as an SCU.

Table 3: Supported DICOM Service SOP Classes as an SCU

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
Modality Worklist Information Model C- FIND	1.2.840.10008.5.1.4.31
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 ACUSON P Family system 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 an ACUSON P Family system is:

- Maximum PDU Offered: 28672

4.2.2.2 Association Establishment Order

An ACUSON P Family system initiates each C-Store Request one at a time, one for each transfer request being processed.

Image format on an ACUSON P Family system can be set to one of "Automatic", "Original Image", or "Secondary Capture".

For the “Automatic” setting, an ACUSON P Family system 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, an ACUSON P Family system proposes Ultrasound Multi-Frame Image (Retired), Ultrasound Image (Retired), Secondary Capture, and Comprehensive SR Image to be negotiated sequentially.

For the “Secondary Capture” setting, an ACUSON P Family system 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 ACUSON P Family system.

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 P Family systems and older M3 systems

4.2.3 Association Initiation by Real-World Activities

4.2.3.1 Real World Activity – Verification

The ACUSON P Family system is capable of supporting Verification service class as SCU or SCP. Verification can be initiated as a singular event from the Systems Presets menu to any configured SCP that supports Verification.

Proposed Presentation Contexts – Verification

The ACUSON P Family system will propose Presentation Contexts as shown in the table below.

Table 4: Verification Presentation Context

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

ACUSON P Family system facilitates users to store images and structured reports as they are being created or later in review mode.

Queuing images during acquisition

“Auto store to DICOM” option in Configuration-Network screen 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 (Disk Store, Clip capture). 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 DICOM Store button 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 ACUSON P Family 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 5: 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

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
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
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 ACUSON P Family system always acts as an SCU for store and is the client in a client-server model.

All single and multi-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 6: Storage 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 P Family system:

- TID 5000 "OB-GYN Ultrasound Procedure Report"
- TID 5100 "Vascular Ultrasound Procedure Report"

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

Table 7: 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_03_2015_17_54_43 = Mar. 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 P Family system otherwise
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\TEE\0001 Value 1: ORIGINAL or DERIVED Value 2: PRIMARY or SECONDARY Value 3:

Module	Attribute	Tag	Notes
			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 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 P Family system
	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 Description 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 P Family system
	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

Module	Attribute	Tag	Notes
			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.
	>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.
General Equipment	^(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.
	Manufacturer	(0008,0070)	Set to "SIEMENS"
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Presets – Organization Name field.
General Image	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer's Model Name	(0008,1090)	Set to "ACUSON <Product Name>"
Image Pixel	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.

Module	Attribute	Tag	Notes
	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)	Set to 480 for NTSC; 547 for PAL. For post-processed images and screen captures, this value may be up to 600.
	Columns	(0028,0011)	Set to 640 for NTSC; 692 for PAL. For post-processed images and screen captures, this value may be up to 800.
	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"
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 P Family system
	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	^(cb) Sequence of Ultrasound Regions	(0018,6011)	
	> ^(cb) Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	> ^(cb) Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)
	> ^(cb) 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

Module	Attribute	Tag	Notes
	> ^(cb) Region Location Min X0	(0018,6018)	
	> ^(cb) Region Location Min Y0	(0018,601A)	
	> ^(cb) Region Location Max X1	(0018,601C)	
	> ^(cb) Region Location Max Y1	(0018,601E)	
	> ^(cb) 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)
	> ^(cb) 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)
	> ^(cb) Physical Delta X	(0018,602C)	
	> ^(cb) Physical Delta Y	(0018,602E)	
	> ^(cb) Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	> ^(cb) Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions
	> ^(cb) Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	> ^(cb) 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 P Family use only.
	^(a) Private Data	(0011,1021)	For internal P Family 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 P Family 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 P Family use only.

Module	Attribute	Tag	Notes
Private Attributes	^(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 P Family 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 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.

This table denotes the attributes included in the Ultrasound Multi-Frame Image IOD as implemented on the ACUSON P Family system.

Table 8: 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_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.

Module	Attribute	Tag	Notes
	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 P Family system otherwise.
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\TEE\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.
	Study ID	(0020,0010)	Generated by P Family system
	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

Module	Attribute	Tag	Notes
			Description 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 P Family system
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	^(a) Series Date	(0008,0021)	Date the series started.
	^(a) Series Time	(0008,0031)	Time the series started.
	^(a) Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	^(a) 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".
	^(a) Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	> ^(a) 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.
	> ^(a) 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.
	> ^(a) 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.
	> ^(a) 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
	^(a) Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	^(a) Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	^(a) Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040,0009) if provided by Modality Worklist.
	^(a) Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	^(a) Performed Procedure Protocol Code	(0040,0260)	Populated with Scheduled Protocol Code

Module	Attribute	Tag	Notes
	Sequence		Sequence (0040,0008) if provided by Modality Worklist.
	^(a) 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"
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Presets – Organization 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)	Set to 480 for NTSC; 547 for PAL. This value may be up to 600.
	Columns	(0028,0011)	Set to 640 for NTSC; 692 for PAL. This value may be up to 800.
	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"
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 P Family system
	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 Color,

Module	Attribute	Tag	Notes
			B-Mode with power).
Cine	Frame Time	(0018,1063)	
Multi-Frame	Number of Frames	(0028,0008)	
	Frame Increment Pointer	(0028,0009)	00181063H
Region Calibration	^(b) Sequence of Ultrasound Regions	(0018,6011)	
	> ^(b) Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	> ^(b) Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)
	> ^(b) 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.
	> ^(b) Region Location Min X0	(0018,6018)	
	> ^(b) Region Location Min Y0	(0018,601A)	
	> ^(b) Region Location Max X1	(0018,601C)	
	> ^(b) Region Location Max Y1	(0018,601E)	
	> ^(b) 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)
	> ^(b) 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)
	> ^(b) Physical Delta X	(0018,602C)	
	> ^(b) Physical Delta Y	(0018,602E)	
	> ^(b) Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	> ^(b) Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions
	> ^(b) Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	> ^(b) Reference Pixel Physical Value Y	(0018,602A)	Attribute only set for Spectral Doppler

Module	Attribute	Tag	Notes
			Regions When provided, value is always 0.
	> ^(b) Transducer Frequency	(0018,6030)	
	> ^(b) Pulse Repetition Frequency	(0018,6032)	
	> ^(b) Doppler Correction Angle	(0018,6034)	
Private Attributes	^(c) Private Creator	(0011,0010)	Reserves tags 0011, 1000 through 0011, 10FF for use as private tags.
	^(c) Siemens Medical Solutions Model Name	(0011,1010)	Always set to "<Product Name>".
	^(c) PIMS Software Version	(0011,1011)	Set to version of PIMS software installed.
	^(c) Private Data	(0011,1020)	For internal P Family use only.
	^(c) Private Data	(0011,1021)	For internal P Family use only.
	^(c) Private Creator	(0013,0010)	Reserves tags 0013, 1000 through 0013, 10FF for use as private tags.
	^(c) Siemens Medical Solutions Model Name	(0013,1010)	Always set to "<Product Name>".
	^(c) PIMS Software Version	(0013,1011)	Set to version of PIMS software installed.
	^(c) Private Data	(0013,1020)	For internal P Family use only.
	^(c) 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.
	^(c) Siemens Medical Solutions Model Name	(0015,1010)	Always set to "<Product Name>".
	^(c) PIMS Software Version	(0015,1011)	Set to version of PIMS software installed.
	^(c) Private Data	(0015,1020)	For internal P Family use only.
	^(c) 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.
	^(c) Siemens Medical Solutions Model Name	(0017,1010)	Always set to "<Product Name>".
	^(c) PIMS Software Version	(0017,1011)	Set to version of PIMS software installed.
	^(c) Private Data	(0017,1020)	For internal P Family 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.
	Private Creator	(7FDF,0010)	Reserved tags 7FDF,1000 through 7FDF,FE00 for use as private tags
	Private Creator	(7FDF,0011)	
Private Attributes	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) The Attribute is only provided if the procedure step is queried from the MWL server.
- (b) 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.
- (c) The Attribute is only provided if the image is written to media.

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

Table 9: 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.
	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'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 P Family system 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 P Family system

Module	Attribute	Tag	Notes
	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 Description 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 P Family system
	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.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS”
	Institution Name	(0008,0080)	System Presets – Organization Name field.
	Software Versions	(0018,1020)	Set to “SR1.0_<Software ID>_<Product Name>” where <Software ID> and <Product Name> are specific to each P Family Ultrasound System release.
	Manufacturer's Model Name	(0008,1090)	Set to “ACUSON P Family”
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 3.3-2011 for 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 P Family system.
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document.

Module	Attribute	Tag	Notes
	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 ACUSON P Family AE, which a SCP may return following the SCU's C-STORE-RSP command.

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

Table 10: 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 ACUSON P Family system 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 Store Status page to complete the C-STORE operation.

All image and Structured Report storage on the ACUSON P Family system hard drive is temporary in nature. If an attempt is made to store images on a full ACUSON P Family system hard drive, the system will attempt to delete studies archived to DICOM. If no deletable data exists, a "DISK FULL" message is displayed on the ACUSON P Family system display. 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 Store Status UI 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 ACUSON P Family system 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 ACUSON P Family system waits for the N-EVENT REPORT from the SCP for at most 48 hours. The ACUSON P Family system is 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.

The ACUSON P Family system allows the user to configure a Storage Commitment Server which may be different from the Storage Server. Thus, the Storage Commitment SCP must wait for an appropriate time for the stored images to arrive from the Storage server.

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

Storage Commitment of Structured Reports is supported.

Table 11: 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 ACUSON P Family system 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 12: Storage Commitment Supported SOP Classes

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

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

Table 13: Storage Commitment Request Attributes in N-ACTION REQUEST

Attribute	Tag	Notes
Transaction UID	(0008,1195)	Generated by P Family system

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 Store Queue page 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.

Table 14: 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 ACUSON P Family system 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 15: 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 16: 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)*

Attribute Name	Tag
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)
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.

5 REMOVABLE MEDIA INTERCHANGE SPECIFICATIONS

CD and DVD media are not support in VA10.

5.1 Supported Application Profiles

ACUSON P Family system provides standard conformance to the following Ultrasound Application Profiles. A DICOM 3.0 conformant DICOMDIR file is created together with the directory structures and image files.

Table 17: Application Profiles, Real-World Activities, and Roles

Supported AP	Real-World Activity	Roles	SC Option
STD-GEN-USB	Export to USB	FSC, FSU	Interchange
STD-GEN-USB	Import from USB	FSR	

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 18: Supported SOP Classes and Transfer Syntaxes

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 ACUSON P Family system in addition to the attributes listed in Table 7:.

**Table 19: US Image Attributes Used
(Refer to Table 7: 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

Attribute Name	Tag	Notes
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 ACUSON P Family system in addition to the attributes listed in Table 8:

Table 20: USMF Image Attributes Used
(Refer to Table 8: 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 ACUSON P Family system in addition to the attributes listed in Table 9:

Table 21: Comprehensive SR 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 Comprehensive SR 1.2.840.10008.5.1.4.1.1.88.33
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)	

6 COMMUNICATION PROFILES

All ACUSON P Family system 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 ACUSON P Family system'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 ACUSON P Family 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 ACUSON P Family AE in Vascular Structured Reports. All private concept names use the Coding Scheme Designator "99SIEMENS".

7 CONFIGURATION

ACUSON P Family system Networking and DICOM parameters can be configured through the ACUSON P Family System Configuration screens. The following configurations are supported:

- General system
- Network (local and remote)
- DICOM Store
- DICOM Storage Commitment
- DICOM Modality Worklist

7.1 General System Configuration

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

- Hospital Name

7.1.1 Hospital Name

The user can enter the organization (i.e. hospital, clinic, etc.) as a text string in the Hospital 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 ACUSON P Family device and remote DICOM service class providers through the System Configuration - Network Menu.

7.2.1 Local

The ACUSON P Family local network parameters are configurable. The following network parameters can be configured for an ACUSON P Family 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 presets. 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 ACUSON P Family 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 all images as Monochrome" is selected, single-frame images with no significant color content will be stored as MONOCHROME2. When "Store all 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 ACUSON P Family system 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 ACUSON P Family system supports Modality Worklist to the remote device as Modality Worklist.

When the "Simple 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.

7.3 External Equipment Configuration

The ACUSON P Family user can configure "Hard Key" to "Output Device" mapping through the System Presets - Customize 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 Disk Store.
- **Print/Store 1** – This key can be assigned to any configured USB Printer, DICOM Store, OEM printer, Multi-frame Store, or Disk Store.
- **Print/Store 2** – This key can be assigned to any configured USB Printer, DICOM Store, OEM printer, Multi-frame Store, or Disk Store.
- **Foot Switch** – The foot switch can be assigned to any configured OEM printer, Multi-frame Store, or Disk Store.

7.4 Support of Extended Character Sets

The "ISO-IR 100" character set is supported by the ACUSON P Family system based on the following language selections:

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

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 ACUSON P Family computer system's networking has been configured to significantly reduce the possibility of virus and hacking vulnerabilities. On the P Family computer system, 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 P Family egress network footprint.

Outside of some minimal network exchanges required by the P Family's commercial computer operating system, the only network connections initiated by the P Family system 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 P Family 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>
	Williams	Equation: FWP by GA, Williams 1982 (LN, 33184-3)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	FHR	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: LVW/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: TCD/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: CTAR	Cardiothoracic Area Ratio (99SIEMENS, CTAR)	
	Measurement: A	CTAR Cardiac Area (99SIEMENS, CTARCardiacArea)	
	Measurement: 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: ASD, <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: AXT, <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: CorBPD, <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: FT, <Author Label>, <Gestational Age> \pm <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> \pm <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 RAP, <Value>	Left Kidney thickness (LN, 11853-9)	
X	Measurement: Left RL, <Value>	Left Kidney length (LN, 11834-9)	
X	Measurement: OFD, <Author Label>, <Gestational Age> \pm <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 RAP, <Value>	Right Kidney thickness (LN, 11855-4)	
X	Measurement: Right RL, <Value>	Right Kidney length (LN, 11836-4)	
X	Measurement: FTA, <Author Label>, <Gestational Age> \pm <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: TCD, <Value>	Trans Cerebellar Diameter (LN, 11863-8)	
X	Measurement: TTD, <Value>	Transverse Thoracic Diameter (LN, 11864-6)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: ATD, <Author Label>, <Gestational Age>, <Value>	Transverse 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: CL, <Author Label>, <Gestational Age> \pm <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> \pm <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)
X	Measurement: HL, <Author Label>, <Gestational Age> \pm <Population Statistical Descriptor>, <Value>	Humerus length (LN, 11966-9)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
		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: TL, <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: UL, <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: Ant CV, <Value>	Anterior Horn Lateral ventricular width (LN, 33197-5)	
X	Measurement: Cist Magna, <Value>	Cisterna Magna length (LN, 11860-4)	
X	Measurement: LVW, <Value>	Lateral Ventricular width (LN, 12171-5)	
X	Measurement: NF, <Value>	Nuchal Fold thickness (LN, 12146-7)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: BN, <Author Label>, <Gestational Age> \pm <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: Post CV, <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> \pm <Population Statistical Descriptor>, <Value>	Crown Rump Length (LN, 11957-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	ASUM	Equation: CRL, ASUM 2000 (LN, 33090-2)	No Population Statistical Descriptors

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	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: GS, <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: MSD, <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: NT, <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: Uterus Depth	Uterus Height (LN, 11859-6)	
	2D Mode: Uterus Length	Uterus Length (LN, 11842-2)	
	2D Mode: Uterus Volume	Uterus Volume (LN, 33192-6)	
	2D Mode: Uterus 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: Lt Ovary Depth	Left Ovary Height (LN, 11857-0)	
	2D Mode: Lt Ovary Length	Left Ovary Length (LN, 11840-6)	
	2D Mode: Lt Ovary Volume	Left Ovary Volume (LN, 12164-0)	

	2D Mode: Lt Ovary Width	Left Ovary Width (LN, 11829-9)	
		Container: Ovary (SRT, T-87000)	
	2D Mode: Rt Ovary Depth	Right Ovary Height (LN, 11858-8)	
	2D Mode: Rt Ovary Length	Right Ovary Length (LN, 11841-4)	
	2D Mode: Rt Ovary Volume	Right Ovary Volume (LN, 12165-7)	
	2D Mode: Rt Ovary Width	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, Lt or Rt Follicle: #<n>	Area (SRT, G-A166)	
	Follicle Measurement, Lt or Rt Follicle: #<n>	Circumference (SRT, M-02560)	
	Follicle Measurement, Lt or Rt Follicle: #<n> [1 distance]	Follicle diameter (LN, 11793-7)	
X	Follicle Measurement, Lt or Rt Follicle: #<n> [2 distances]	Follicle diameter (LN, 11793-7)	
X	Follicle Measurement, Lt or Rt Follicle: #<n> [3 distances]	Follicle diameter (LN, 11793-7)	
	Follicle Measurement, Lt or Rt 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	Diastole	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	Systole	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 Artery	Container: Ovarian Artery (SRT, T-46980)	Laterality: Left (SRT, G-A101)
X	Diastole	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	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Right Ovarian Artery	Container: Ovarian Artery (SRT, T-46980)	Laterality: Right (SRT, G-A100)
X	Diastole	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	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Left Uterine Artery	Container: Uterine Artery (SRT, T-46820)	Laterality: Left (SRT, G-A101)
	Diastole	End Diastolic Velocity (LN, 11653-3)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Right Uterine Artery	Container: Uterine Artery (SRT, T-46820)	Laterality: Right (SRT, G-A100)
	Diastole	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)	
	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler: Umb A	Container: Umbilical Artery (SRT, T-F1810)	
X	Diastole	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	Systole	Peak Systolic Velocity (LN, 11726-7)	
X	Doppler: Umb VD	Container: Umbilical Vein (SRT, T-F1820) 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 P Family DICOM SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16-20011 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)
Diastole	End Diastolic Velocity (LN, 11653-3)
%Stenosis or %Steno	Lumen Area Stenosis (SRT, R-101BA)
%Stenosis or %Steno	Lumen Diameter Stenosis (SRT, R-101BB)
Systole	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)
Systole	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)

9.2.1 Patient Characteristics

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Patient Characteristics	Container: Patient Characteristics (DCM, 121118)	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
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 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 VA [Cerebro Vascular]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L1]	

9.2.3 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)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
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 VA [Cerebro Vascular]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L1]	

9.2.4 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) [Measurements List: L2]	
Left CFA [Peripheral Vascular]	Container: Common Femoral Artery (SRT, T-47400) [Measurements List: L2]	
Left CIA [Peripheral Vascular]	Container: Common Iliac Artery (SRT, T-46710) [Measurements List: L2]	
Left DPA [Peripheral Vascular]	Container: Dorsalis Pedis Artery (SRT, T-47741) [Measurements List: L2]	
Left EIA [Peripheral Vascular]	Container: External Iliac Artery (SRT, T-46910) [Measurements List: L2]	
Left PER A [Peripheral Vascular]	Container: Peroneal Artery (SRT, T-47630) [Measurements List: L2]	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Left POP A [Peripheral Vascular]	Container: Popliteal Artery (SRT, T-47500) [Measurements List: L2]	
Left PTA [Peripheral Vascular]	Container: Posterior Tibial Artery (SRT, T-47600) [Measurements List: L2]	
Left PFA [Peripheral Vascular]	Container: Profunda Femoris Artery (SRT, T-47440) [Measurements List: L2]	
Left SFA [Peripheral Vascular]	Container: Superficial Femoral Artery (SRT, T-47403)	
SFA Dist	[Measurements List: L2]	Topographical modifier: Distal (SRT, G-A119)
SFA Mid	[Measurements List: L2]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
SFA Prox	[Measurements List: L2]	Topographical modifier: Proximal (SRT, G-A118)
Left TRUNK [Peripheral Vascular]	Container: Tibioperoneal Trunk (SRT, T-4704A) [Measurements List: L2]	

9.2.5 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) [Measurements List: L2]	
Right CFA [Peripheral Vascular]	Container: Common Femoral Artery (SRT, T-47400) [Measurements List: L2]	
Right CIA [Peripheral Vascular]	Container: Common Iliac Artery (SRT, T-46710) [Measurements List: L2]	
Right DPA [Peripheral Vascular]	Container: Dorsalis Pedis Artery (SRT, T-47741) [Measurements List: L2]	
Right EIA [Peripheral Vascular]	Container: External Iliac Artery (SRT, T-46910) [Measurements List: L2]	
Right PER A [Peripheral Vascular]	Container: Peroneal Artery (SRT, T-47630) [Measurements List: L2]	
Right POP A [Peripheral Vascular]	Container: Popliteal Artery (SRT, T-47500) [Measurements List: L2]	
Right PTA [Peripheral Vascular]	Container: Posterior Tibial Artery (SRT, T-47600) [Measurements List: L2]	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Right PFA [Peripheral Vascular]	Container: Profunda Femoris Artery (SRT, T-47440) [Measurements List: L2]	
Right SFA [Peripheral Vascular]	Container: Superficial Femoral Artery (SRT, T-47403)	
SFA Dist	[Measurements List: L2]	Topographical modifier: Distal (SRT, G-A119)
SFA Mid	[Measurements List: L2]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
SFA Prox	[Measurements List: L2]	Topographical modifier: Proximal (SRT, G-A118)
Right TRUNK [Peripheral Vascular]	Container: Tibioperoneal Trunk (SRT, T-4704A) [Measurements List: L2]	