



## FAXITRON SR - FAXITRON SPECIMEN RADIOGRAPHY SYSTEM

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### DICOM® Connectivity Framework



**LAUREL BRIDGE**

Providing DICOM Connectivity for the Medical Community


### DICOM Conformance Statement

<b>Part Number:</b>	5082-0003
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## 1. CONFORMANCE STATEMENT OVERVIEW

This product FAXITRON SPECIMEN SR implements the necessary DICOM services to download work lists from an information system, save acquired images and associated Presentation States to a network storage device or print to a networked hardcopy device.

As an image display device for DICOM images it may also display PS 3.10 files loaded from the local file system.

Table 1-1 provides an overview of the network services supported by FAXITRON SPECIMEN SR.

**Table 1-1  
NETWORK SERVICES**

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
<b>Transfer</b>		
Digital X-Ray Image Storage (DX)	Yes	No
Mammography Image Storage (MG)	Yes	No
Grayscale Softcopy Presentation State	No	No
<b>Workflow Management</b>		
Modality Worklist	Yes	No
Storage Commitment Push Model	No	No
Modality Performed Procedure Step	No	No
<b>Print Management</b>		
Basic Grayscale Print Management	Yes	No
Presentation LUT	Yes	No

Table 1-2 provides an overview of the Media Storage Application Profiles supported by Faxitron Specimen SR.

**Table 1-2  
MEDIA SERVICES**

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
<b>Compact Disk – Recordable</b>		
General Purpose CD-R	No	No
<b>DVD</b>		
General Purpose DVD-RAM	No	No

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### 3. INTRODUCTION

#### 3.1. REVISION HISTORY

Document Version	Date of Issue	Author	Description
0.20	10 May 2006	BRH	Initial Draft
0.30	12 September 2006	BRH	Updated with implementation details for Faxitron SR.
0.40	5 October 2006	STM	Updated with tag details for Faxitron SR.
0.50	10 October 2006	STM	Updated Faxitron headers and table definitions.
0.60	23 July 2007	TRK	Updated DICOM tables.
0.70	3 March 2008	TRK	Dosage and other shot attribute changes.
0.80	25 March 2008	TRK	LLC.
0.90	20 November 2008	CRH	Updated DICOM tables to include new additions.
1.00	26 November 2008	CRH	Software version(s), Detector Manufacturer Name updated. Out of date tags removed from tables, DX and MG tables updated accordingly.
1.10	9 January 2009	CRH	Added the View Code Sequence table of enumerated values, as well as updated the values designated as type 1 values for MG.
1.20	3 February 2009	CRH	Updated View Code Sequence table. Added Detector Manufacturer's Model Name.

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### 3.2. AUDIENCE

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

### 3.3. REMARKS


DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with FAXITRON and other vendors' Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

- The comparison of different conformance statements is the first step towards assessing interconnectivity between Faxitron and non- FAXITRON equipment.
- Test procedures should be defined to validate the desired level of connectivity.
- The DICOM standard will evolve to meet the users' future requirements. FAXITRON is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

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### 3.4. DEFINITIONS, TERMS AND ABBREVIATIONS

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard.

Abbreviations and terms are as follows:

AE	DICOM Application Entity
AET	Application Entity Title
ASCE	Association Control Service Element
CD-R	Compact Disk Recordable
CSE	Customer Service Engineer
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
GSDF	Grayscale Standard Display Function
GSPP	Grayscale Softcopy Presentation State
IOD	(DICOM) Information Object Definition
ISO	International Standard Organization
MPPS	Modality Performed Procedure Step
MSPS	Modality Scheduled Procedure Step
R	Required Key Attribute
O	Optional Key Attribute
PDU	DICOM Protocol Data Unit
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM server)
SOP	DICOM Service-Object Pair
U	Unique Key Attribute

### 3.5. REFERENCES

[DICOM]Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-3.18, 2006

See: <http://medical.nema.org/dicom/2006/>

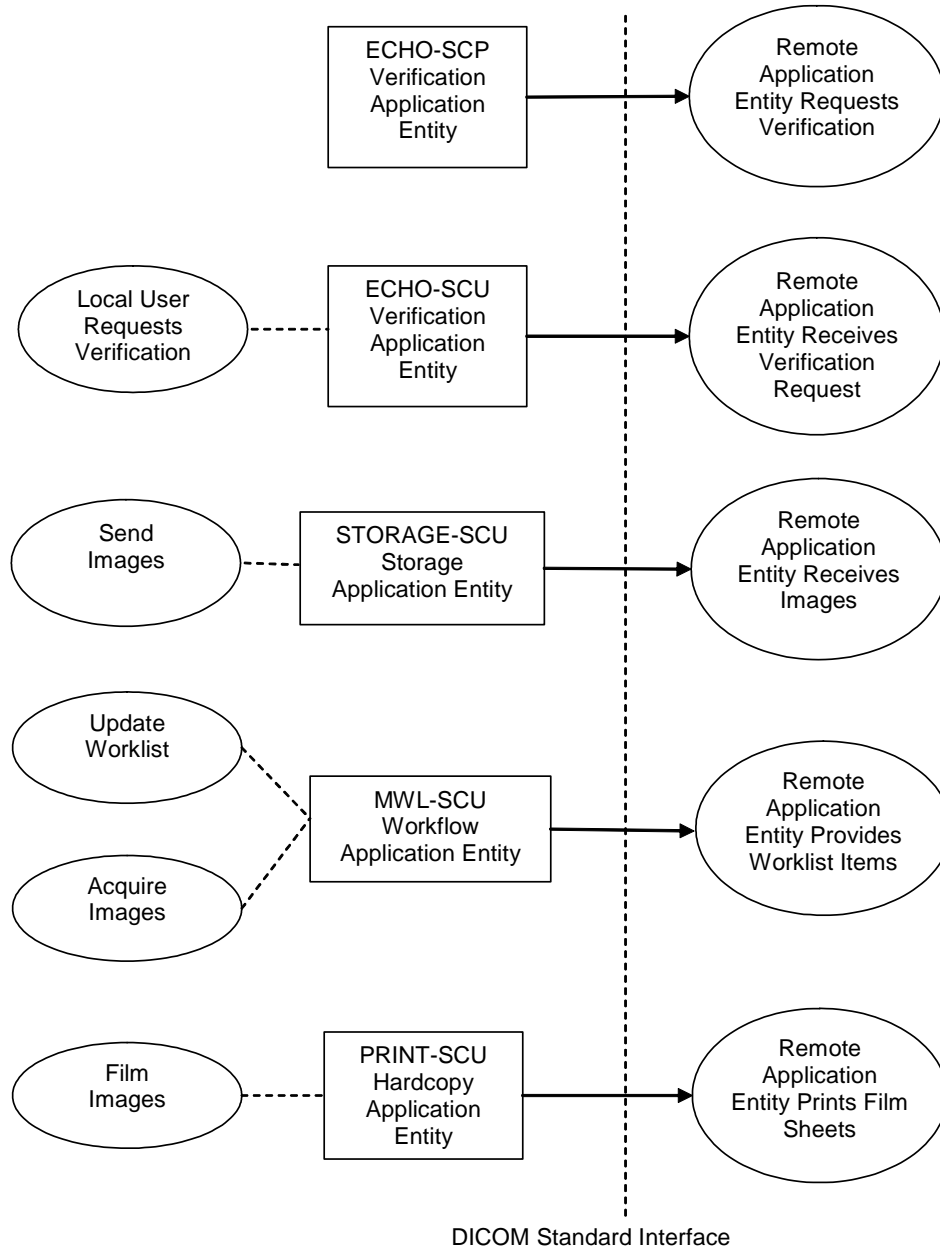



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## 4. NETWORKING

### 4.1. IMPLEMENTATION MODEL

#### 4.1.1. Application Data Flow



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**Figure 4.1-1  
APPLICATION DATA FLOW DIAGRAM**

- ECHO-SCP, which responds to verification requests from a remote AE.  
The Echo Application Entity is associated with the local real-world activity “DICOM Ping”. It is used to test that DICOM communication exists from another DICOM device to this DICOM device.
- ECHO-SCU, which sends verification requests to a remote AE.  
The Echo Application Entity is associated with the local real-world activity “DICOM Ping”. It is used to test that DICOM communication exists from this device to another DICOM device.
- STORAGE-SCU, which sends outbound images and other composite instances to a remote AE.  
The Storage Application Entity (AE) sends images to a remote AE. It is associated with the local real-world activity “Send Images”. “Send Images” is performed upon user request for each study completed or for specific images selected. When activated by user’s settings (auto-send), each marked set of images can be immediately stored to a preferred destination whenever a Patient/Study is closed by the user. If the remote AE is configured as an archive device the Storage AE will request Storage Commitment and if a commitment is successfully obtained will record this information in the local database.
- MWL-SCU, which receives Worklist information from a remote AE.  
The Workflow Application Entity receives Worklist information from and sends MPPS information to a remote AE. It is associated with the local real-world activities “Update Worklist” and “Acquire Images”. When the “Update Worklist” local real-world activity is performed the Workflow Application Entity queries a remote AE for worklist items and provides the set of worklist items matching the query request. “Update Worklist” is performed as a result of an operator request or can be performed automatically at specific time intervals. When the “Acquire Images” local real-world activity is performed the Workflow Application Entity creates and updates Modality Performed Procedure Step instances managed by a remote AE. Acquisition of images will result in automated creation of an MPPS Instance. Completion of the MPPS is performed as the result of an operator action.
- PRINT-SCU, which prints images on a remote AE.  
The Hardcopy Application Entity prints images on a remote AE (Printer). It is associated with the local real-world activity “Film Images”. “Film Images” creates a print-job within the print queue containing one or more virtual film sheets composed from images selected by the user.

#### **4.1.2. Functional Definition of AEs**

##### **4.1.2.1. Functional Definition of Echo SCP – Verification AE**


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

##### **4.1.2.2. Functional Definition of Echo SCU – Verification AE**

ECHO-SCU waits in the background for connections, will accept associations with Presentation Contexts for SOP Class of the Verification Service Class, and will respond successfully to echo requests.

##### **4.1.2.3. Functional Definition of Store SCU - Storage AE**

The existence of a send-job queue entry with associated network destination will activate the Storage AE. An association request is sent to the destination AE and upon successful negotiation of a Presentation Context the image transfer is started. If the association cannot be opened, the related send-job is set to an error state and can be restarted by the user via job control interface. By default, the Storage AE will

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not try to initiate another association for this send-job automatically. However, an automatic retry (retry-timer, retrycount) can be configured by a CSE.

**4.1.2.4. Functional Definition of MWL SCU – Workflow AE**

Worklist Update attempts to download a Worklist from a remote node. If the Workflow AE establishes an Association to a remote AE, it will transfer all worklist items via the open Association. During receiving the worklist response items are counted and the query processing is canceled if the configurable limit of items is reached. The results will be displayed in a separate list, which will be cleared with the next Worklist Update.

The Workflow AE performs the creation of a MPPS Instance automatically whenever images are acquired. Further updates on the MPPS data can be performed interactively from the related MPPS user interface. The MPPS “Complete” or “Discontinued” states can only be set from the user interface.

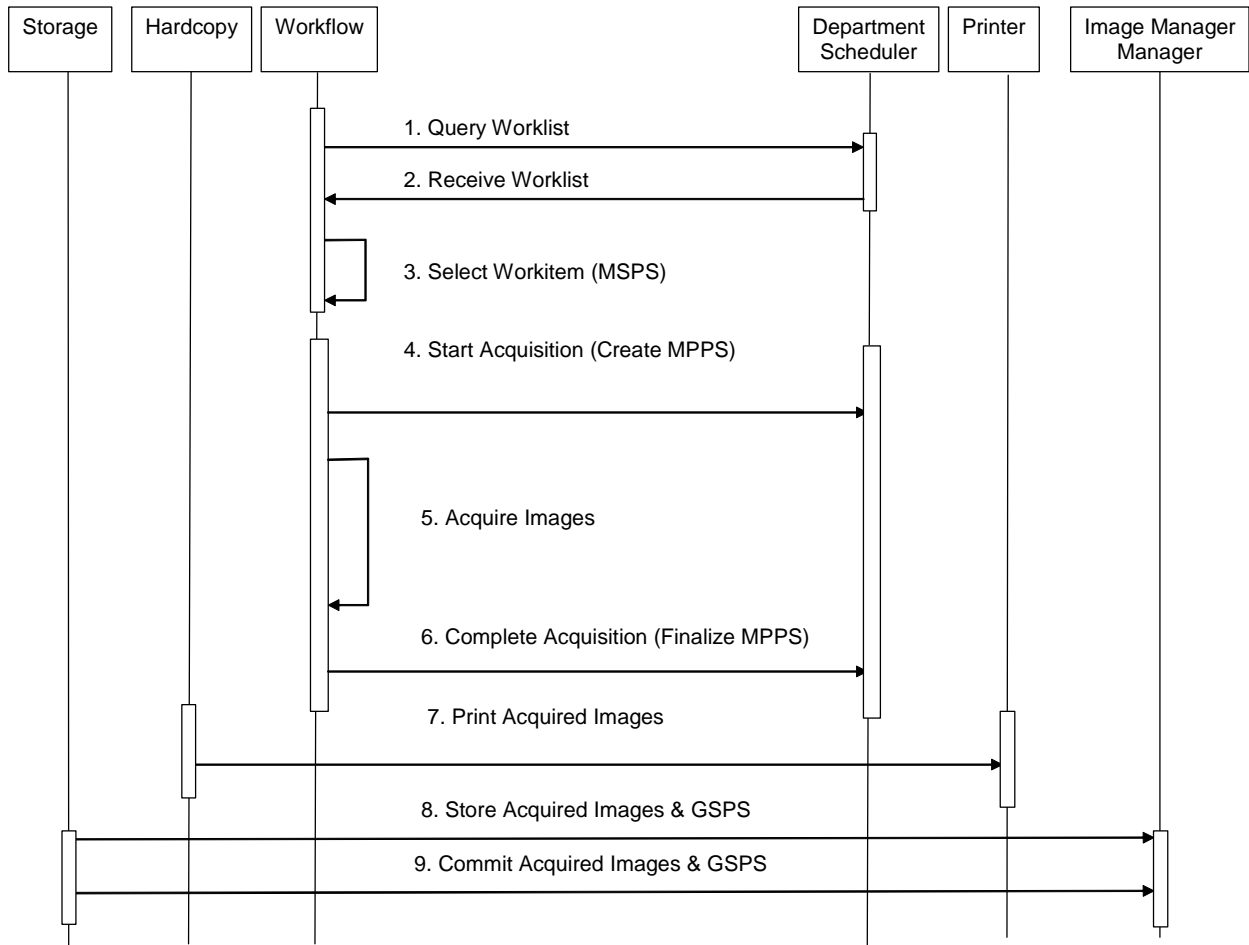
**4.1.2.5. Functional Definition of Print SCU - Hardcopy AE**

The existence of a print-job in the print queue will activate the Hardcopy AE. An association is established with the printer and the printer’s status determined. If the printer is operating normally, the film sheets described within the print-job will be printed. Changes in printer status will be detected (e.g. out of film) and reported to the user. If the printer is not operating normally, the print-job will set to an error state and can be restarted by the user via the job control interface.

### 4.1.3 Sequencing of Real-World Activities

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

All Echo SCU activities are initiated in the user interface and are not dependent on any sequencing.



**Figure 4.1-2  
SEQUENCING CONSTRAINTS**

Under normal scheduled workflow conditions the sequencing constraints illustrated in Figure 4.1-2 apply:

1. Query Worklist
2. Receive Worklist of Modality Scheduled Procedure Steps (MSPS)
3. Select Workitem (MSPS) from Worklist
4. Start acquisition and create MPPS
5. Acquire Images

6. Complete acquisition and finalize MPPS
7. Print acquired images (optional step)
8. Store acquired images and any associated Grayscale Softcopy Presentation State (GSPS) instances.
9. If the Image Manager is configured as an archive device the Storage AE will request Storage Commitment for the images and associated GSPS instances.

Other workflow situations (e.g. unscheduled procedure steps) will have other sequencing constraints. Printing could equally take place after the acquired images have been stored. Printing could be omitted completely if no printer is connected or hardcopies are not required.

## 4.2. AE SPECIFICATIONS

### 4.2.1. ECHO-SCP

#### 4.2.1.1. SOP Classes

ECHO-SCP provide Standard Conformance to the following SOP Class(es):

**Table 4-1  
SOP CLASSES SUPPORTED BY ECHO-SCP**

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	No	Yes

#### 4.2.1.2. Association Policies

##### 4.2.1.2.1. General

ECHO-SCP accepts but never initiates associations.

**Table 4-2  
MAXIMUM PDU SIZE RECEIVED AS A SCP FOR ECHO-SCP**

Maximum PDU size received	Unlimited
---------------------------	-----------

##### 4.2.1.2.2. Number of Associations

**Table 4-3  
NUMBER OF ASSOCIATIONS AS A SCP FOR ECHO-SCP**

Maximum number of simultaneous associations	Unlimited
---	-----------

##### 4.2.1.2.3. Asynchronous Nature

ECHO-SCP will only allow a single outstanding operation on an Association. Therefore, ECHO-SCP will not perform asynchronous operations window negotiation.

#### 4.2.1.2.4. Implementation Identifying Information

**Table 4-4  
DICOM IMPLEMENTATION CLASS AND VERSION FOR ECHO-SCP**

Implementation Class UID	1.2.840.114089.1.0.0.3.1.8
Implementation Version Name	DCF 3.1.8b

#### 4.2.1.3. Association Initiation Policy

ECHO-SCP does not initiate associations.

#### 4.2.1.4. Association Acceptance Policy

When ECHO-SCP accepts an association, it will respond to echo requests. If the Called AE Title does not match the pre-configured AE Title shared by all the SCPs of the application, the association will be rejected.

##### 4.2.1.4.1. Activity – Receive Echo Request

##### 4.2.1.4.1.1. Description and Sequencing of Activities

##### 4.2.1.4.1.2. Accepted Presentation Contexts

**Table 4-5  
ACCEPTABLE PRESENTATION CONTEXTS FOR ECHO-SCP AND RECEIVE ECHO REQUEST**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None

##### 4.2.1.4.1.2.1. Extended Negotiation


No extended negotiation is performed.

##### 4.2.1.4.1.3. SOP Specific Conformance

##### 4.2.1.4.1.3.1. SOP Specific Conformance to Verification SOP Class

The Echo-SCP Verification AE provides standard conformance to the Verification SOP Class as an SCP.

- If the C-ECHO request was successfully received, a 0000 (Success) status code will be returned in the C-ECHO response.
- Otherwise, a C000 (Error – Cannot Understand) status code will be returned in the C-ECHO response.

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#### 4.2.1.4.1.3.2. Presentation Context Acceptance Criterion

ECHO-SCP will always accept any Presentation Context for the supported SOP Classes with the supported Transfer Syntaxes. More than one proposed Presentation Context will be accepted for the same Abstract Syntax if the Transfer Syntax is supported, whether or not it is the same as another Presentation Context.

#### 4.2.1.4.1.3.3. Transfer Syntax Selection Policies

ECHO-SCP prefers explicit Transfer Syntaxes. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priority to the choice of Transfer Syntax:

- a. first encountered explicit Transfer Syntax,
- b. default Transfer Syntax.

ECHO-SCP will accept duplicate Presentation Contexts, that is, if it is offered multiple Presentation Contexts, each of which offers acceptable Transfer Syntaxes, it will accept all Presentation Contexts, applying the same priority for selecting a Transfer Syntax for each.

### 4.2.2. Storage Application Entity Specification

#### 4.2.2.1. SOP Classes

FAXITRON SPECIMEN SR provides Standard Conformance to the following SOP Classes:


**Table 4-6  
SOP CLASSES FOR AE STORAGE**

SOP Class Name	SOP Class UID	SCU	SCP
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	No
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	No
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	No
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	No	No
Storage Commitment Push Model	1.2.840.10008.1.20.1	No	No

#### 4.2.2.2. Association Policies

##### 4.2.2.2.1. General

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

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**Table 4-7  
DICOM APPLICATION CONTEXT FOR AE STORAGE**

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

**4.2.2.2. Number of Associations**

FAXITRON SPECIMEN SR initiates one Association at a time for each destination to which a transfer request is being processed in the active job queue list. Only one job will be active at a time, the others remain pending until the active job is completed or failed.

**Table 4-8  
NUMBER OF ASSOCIATIONS INITIATED FOR AE STORAGE**

Maximum number of simultaneous Associations	1 (configurable)
---	------------------

**4.2.2.3. Implementation Identifying Information**

The implementation information for this Application Entity is:

**Table 4-9  
DICOM IMPLEMENTATION CLASS AND VERSION FOR AE STORAGE**

Implementation Class UID	1.2.840.114089.1.0.0.2.8.9
Implementation Version Name	DCF 2.8.9a

**4.2.2.3. Association Initiation Policy**

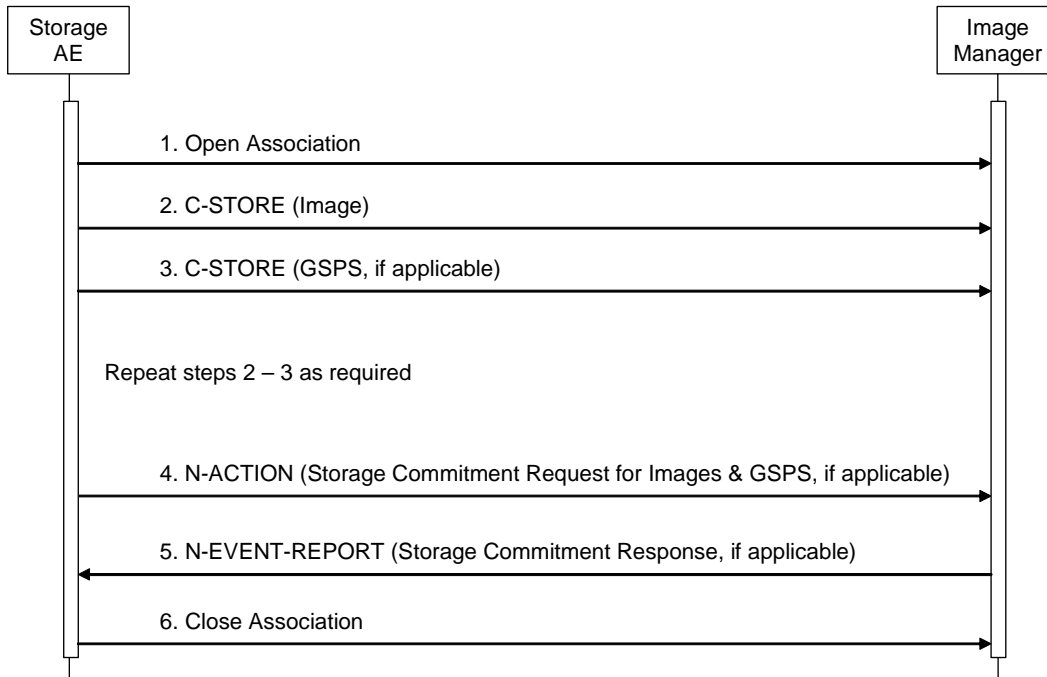
**4.2.2.3.1. Activity – Send Images**

**4.2.2.3.1.1. Description and Sequencing of Activities**

A user can select images and presentation states and request them to be sent to a destination. Each request is processed individually.

The Storage AE is invoked by the job control interface that is responsible for processing network archival tasks. The job consists of data describing the instances marked for storage and the destination. An internal daemon process triggered by a job for a specific network destination initiates a C-STORE request to store images. If the process successfully establishes an Association to a remote Application Entity, it will transfer each marked instance one after another via the open Association. Status of the transfer is reported through the job control interface. Only one job will be active at a time. If the C-STORE Response from the remote Application contains a status other than Success or Warning, the Association is aborted and the related Job is switched to a failed state. It can be restarted any time by user interaction or, if configured, by automated retry.

The Storage AE attempts to initiate a new Association in order to issue a C-STORE request. If the job contains multiple images then multiple C-STORE requests will be issued over the same Association.




**Figure 4.2-1  
SEQUENCING OF ACTIVITY – SEND IMAGES**

**\* Note: 4) N-ACTION and 5) N-EVENT are not supported by Faxitron SR**

A possible sequence of interactions between the Storage AE and an Image Manager (e.g. a storage or archive device supporting the Storage and Storage Commitment SOP Classes as an SCP) is illustrated in Figure 4.2-1:

1. The Storage AE opens an association with the Image Manager
2. An acquired image is transmitted to the Image Manager using a C-STORE request and the Image Manager replies with a C-STORE response (status success).
3. If applicable, a GSPS instance is transmitted to the Image Manager using a C-STORE request and the Image Manager replies with a C-STORE response (status success).
4. Another acquired image is transmitted to the Image Manager using a C-STORE request and the Image Manager replies with a C-STORE response (status success).
5. If applicable, a nother GSPS instance is transmitted to the Image Manager using a C-STORE request and the Image Manager replies with a C-STORE response (status success).
6. If applicable, an N-ACTION request is transmitted to the Image Manager to obtain storage commitment of previously transmitted images and GSPS instances. The Image Manager replies with a N-ACTION response indicating the request has been received and is being processed.
7. If applicable, the Image Manager immediately transmits an N-EVENT-REPORT request notifying the Storage AE of the status of the Storage Commitment Request (sent in step 6 using the N-ACTION message). The Storage AE replies with a N-EVENT-REPORT response confirming

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receipt. The Image Manager could send this message at any time or omit it entirely in favor of transmitting the N-EVENT-REPORT over a separate dedicated association (see note).

8. The Storage AE closes the association with the Image Manager.

NOTE: Many other message sequences are possible depending on the number of images and GSPS instances to be stored, support for Storage Commitment, and when the SCP sends the N-EVENT-REPORT. The N-EVENT-REPORT can also be sent over a separate association initiated by the Image Manager (see Section 4.2.1.4.1 on Activity – Receive Storage Commitment Response).

#### 4.2.2.3.1.2. Proposed Presentation Contexts

FAXITRON SPECIMEN SR is capable of proposing the Presentation Contexts shown in the following table:

**Table 4-10  
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY SEND IMAGES**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

Presentation Contexts will only be proposed if the Send Job contains instances for the SOP Classes.

#### 4.2.2.3.1.3. SOP Specific Conformance Image & Pres State Storage SOP Classes

All Image & Presentation State Storage SOP Classes supported by the Storage AE exhibit the same behavior, except where stated, and are described together in this section.

If Digital X-Ray Image or Digital Mammography X-Ray Image Storage SOP Instances are included in the Send Job and a corresponding Presentation Context is not accepted then the Association is aborted using AP-ABORT and the send job is marked as failed. The job failure is logged and reported to the user via the job control application.

The behavior of Storage AE when encountering status codes in a C-STORE response is summarized in the Table below:

**Table 4-11  
STORAGE C-STORE RESPONSE STATUS HANDLING BEHAVIOR**


Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has successfully stored the SOP Instance. If all SOP Instances in a send job have status success then the job is marked as complete.
Refused	Out of Resources	A700-A7FF	The Association is aborted using A-ABORT and the send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. This is a transient failure.
Error	Data Set does not match SOP Class	A900-A9FF	The Association is aborted using A-ABORT and the send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application.
Error	Cannot Understand	C000-CFFF	The Association is aborted using A-ABORT and the send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application.
Warning	Coercion of Data Elements	B000	Image transmission is considered successful but the status meaning is logged.
Warning	Data Set does not match SOP Class	B007	Image transmission is considered successful but the status meaning is logged.
Warning	Elements Discarded	B006	Image transmission is considered successful but the status meaning is logged.
*	*	Any other status code.	The Association is aborted using A-ABORT and the send job is marked as failed. The status code is logged and the job failure is reported to the user via the job control application.

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

**Table 4-12  
STORAGE COMMUNICATION FAILURE BEHAVIOR**

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

A failed send job can be restarted by user interaction. The system can be configured to automatically resend failed jobs if a transient status code is received. The delay between resending failed jobs and the number of retries is also configurable.

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The contents of Digital X-Ray Image or Digital Mammography X-Ray Image Storage SOP Instances created by FAXITRON SPECIMEN SR conform to the relevant DICOM Image IOD definition and are described in section 8.1.

**4.2.2.3.1.4. SOP Specific Conformance for Storage Commitment SOP Class**

**4.2.2.3.1.4.1. Storage Commitment Operations (N-ACTION)**

Not supported by Faxitron SR

**4.2.2.4. Association Acceptance Policy**

**4.2.2.4.1. Activity – Receive Storage Commitment Response**

**4.2.2.4.1.1. Description and Sequencing of Activities**

Not supported by Faxitron SR

**4.2.3. Workflow Application Entity Specification**

**4.2.3.1. SOP Classes**

FAXITRON SPECIMEN SR provides Standard Conformance to the following SOP Classes:

**Table 4-13  
SOP CLASSES FOR AE WORKFLOW**

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	No	No

**4.2.3.2. Association Policies**

**4.2.3.2.1. General**


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

**Table 4-14  
DICOM APPLICATION CONTEXT FOR AE WORKFLOW**

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

**4.2.3.2.2. Number of Associations**

FAXITRON SPECIMEN SR initiates one Association at a time for a Worklist request.

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**Table 4-15  
NUMBER OF ASSOCIATIONS INITIATED FOR AE WORKFLOW**

Maximum number of simultaneous Associations	1
---	---

**4.2.3.2.3. Asynchronous Nature**

FAXITRON SPECIMEN SR does not support asynchronous communication (multiple outstanding transactions over a single Association).

**4.2.3.2.4. Implementation Identifying Information**

The implementation information for this Application Entity is:

**Table 4-16  
DICOM IMPLEMENTATION CLASS AND VERSION FOR AE WORKFLOW**

Implementation Class UID	1.2.840.114089.1.0.0.3.1.8
Implementation Version Name	DCF 3.1.8b

**4.2.3.3. Association Initiation Policy**

**4.2.3.3.1. Activity – Worklist Update**

**4.2.3.3.1.1. Description and Sequencing of Activities**

The request for a Worklist Update is initiated by user interaction, i.e. pressing the “Worklist Query” button at the patient data screen. With “Patient Worklist Query” dialog, the user is able to enter search criteria which is opened and the proper patient information can be selected.


The interactive Patient Worklist Query will display a dialog for entering data as search criteria. When the Query is started on user request, only the data from the dialog will be inserted as matching keys into the query.

Upon initiation of the request, the FAXITRON SPECIMEN SR will build an Identifier for the C-FIND request, will initiate an Association to send the request and will wait for Worklist responses. After retrieval of all responses, FAXITRON SPECIMEN SR will access the local database to add or update patient demographic data. During receiving the worklist response items are counted and the query processing is canceled by issuing a C-FIND-CANCEL if the configurable limit of items is reached. The results will be displayed in a separate list, which will be cleared with the next worklist update.

FAXITRON SPECIMEN SR will initiate an Association in order to issue a C-FIND request according to the Modality Worklist Information Model.

A possible sequence of interactions between the Workflow AE and a Departmental Scheduler (e.g. a device such as a RIS or HIS which supports the Modality Worklist SOP Class as an SCP):

1. The Worklist AE opens an association with the Departmental Scheduler
2. The Worklist AE sends a C-FIND request to the Departmental Scheduler containing the Worklist Query attributes.

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3. The Departmental Scheduler returns a C-FIND response containing the requested attributes of the first matching Worklist Item.
4. The Departmental Scheduler returns another C-FIND response containing the requested attributes of the second matching Worklist Item.
5. The Departmental Scheduler returns another C-FIND response with status Success indicating that no further matching Worklist Items exist. This example assumes that only 2 Worklist items match the Worklist Query.
6. The Worklist AE closes the association with the Departmental Scheduler.
7. The user selects a Worklist Item from the Worklist and prepares to acquire new images.

#### 4.2.3.3.1.2. Proposed Presentation Contexts

FAXITRON SPECIMEN SR will propose Presentation Contexts as shown in the following table:

**Table 4-17  
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY WORKLIST UPDATE**


Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1	SCU	None

#### 4.2.3.3.1.3. SOP Specific Conformance for Modality Worklist

The behavior of FAXITRON SPECIMEN SR when encountering status codes in a Modality Worklist C-FIND response is summarized in the Table below. If any other SCP response status than "Success" or "Pending" is received by FAXITRON SPECIMEN SR, a message "query failed" will appear on the user interface.

**Table 4-18  
MODALITY WORKLIST C-FIND RESPONSE STATUS HANDLING BEHAVIOR**

Service Status	Further Meaning	Error Code	Behavior
Success	Matching is complete	0000	The SCP has completed the matches. Worklist items are available for display or further processing.
Refused	Out of Resources	A700	The Association is aborted using A-ABORT and the worklist query is marked as failed. The status meaning is logged and reported to the user if an interactive query. Any additional error information in the Response will be logged.
Failed	Identifier does not match SOP Class	A900	The Association is aborted using A-ABORT and the worklist query is marked as failed. The status meaning is logged and reported to the user if an interactive query. Any additional error information in the Response will be logged.

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Failed	Unable to Process	C000 – CFFF	The Association is aborted using A-ABORT and the worklist query is marked as failed. The status meaning is logged and reported to the user if an interactive query. Any additional error information in the Response will be logged.
Cancel	Matching terminated due to Cancel request	FE00	If the query was cancelled due to too many worklist items then the SCP has completed the matches. Worklist items are available for display or further processing. Otherwise, the Association is aborted using A-ABORT and the worklist query is marked as failed. The status meaning is logged and reported to the user if an interactive query.
Pending	Matches are continuing	FF00	The worklist item contained in the Identifier is collected for later display or further processing.
Pending	Matches are continuing – Warning that one or more Optional Keys were not supported	FF01	The worklist item contained in the Identifier is collected for later display or further processing. The status meaning is logged only once for each C-FIND operation.
*	*	Any other status code.	The Association is aborted using A-ABORT and the worklist is marked as failed. The status meaning is logged and reported to the user if an interactive query. Any additional error information in the Response will be logged.

The behavior of FAXITRON SPECIMEN SR during communication failure is summarized in the Table below.


**Table 4-19  
MODALITY WORKLIST COMMUNICATION FAILURE BEHAVIOR**

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

Acquired images will always use the Study Instance UID specified for the Scheduled Procedure Step (if available). If an acquisition is unscheduled, a Study Instance UID will be generated locally.

The Table below provides a description of the FAXITRON SPECIMEN SR Worklist Request Identifier and specifies the attributes that are copied into the images. Unexpected attributes returned in a C-FIND response are ignored.

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

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**Table 4-20  
WORKLIST REQUEST IDENTIFIER**


Module Name Attribute Name	Tag	VR	M	R	Q	D	IOD
SOP Common Specific Character Set	(0008,0005)	CS		x			
Scheduled Procedure Step Scheduled Procedure Step Sequence	(0040,0100)	SQ		x			
> Scheduled Station AET	(0040,0001)	AE	(S)			x	
> Scheduled Procedure Step Start Date	(0040,0002)	DA	S			x	
> Scheduled Procedure Step Start Time	(0040,0003)	TM		x		x	
> Modality	(0008,0060)	CS	S	x			
> Scheduled Performing Physician's Name	(0040,0006)	PN		x	x	x	x
> Scheduled Procedure Step Description	(0040,0007)	LO		x		x	x
> Scheduled Station Name	(0040,0010)	SH		x			
> Scheduled Procedure Step Location	(0040,0011)	SH		x			
> Scheduled Protocol Code Sequence	(0040,0008)	SQ		x			x
> Scheduled Procedure Step ID	(0040,0009)	SH		x		x	x
Requested Procedure Requested Procedure ID	(0040,1001)	SH		x	x	x	x
Requested Procedure Description	(0032,1060)	LO		x		x	x
Study Instance UID	(0020,000D)	UI		x			x
Requested Procedure Priority	(0040,1003)	SH		x			
Patient Transport Arrangements	(0040,1004)	LO		x			
Referenced Study Sequence	(0008,1110)	SQ		x			x
Requested Procedure Code Sequence	(0032,1064)	SQ		x			x
Imaging Service Request Accession Number	(0008,0050)	SH		x	x	x	x
Requesting Physician	(0032,1032)	PN		x		x	x
Referring Physician's Name	(0008,0090)	PN		x	x	x	x
Visit Status Current Patient Location	(0038,0300)	LO		x	x		
Patient Identification Patient Name	(0010,0010)	PN		x	x	x	x
Patient ID	(0010,0020)	LO		x	x	x	x
Patient Demographic Patient's Birth Date	(0010,0030)	DA		x	x	x	x
Patient's Sex	(0010,0040)	CS		x	x	x	x
Patient Medical Patient State	(0038,0500)	LO		x		x	

The above table should be read as follows:

Module Name: The name of the associated module for supported worklist attributes.

Attribute Name: Attributes supported to build an FAXITRON SPECIMEN SR Worklist Request Identifier.

Tag: DICOM tag for this attribute.

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- VR: DICOM VR for this attribute.
- M: Matching keys for (automatic) Worklist Update. A "S" will indicate that FAXITRON SPECIMEN SR will supply an attribute value for Single Value Matching, a "R" will indicate Range Matching and a "\*" will denote wildcard matching. It can be configured if "Scheduled Station AE Title" is additionally supplied "(S)" and if Modality is set to DX or MG.
- R: Return keys. An "x" will indicate that FAXITRON SPECIMEN SR will supply this attribute as Return Key with zero length for Universal Matching. The FAXITRON SPECIMEN SR will support retired date format (yyyy.mm.dd) for "Patient's Birth Date" and "Scheduled Procedure Step Start Date" in the response identifiers. For "Scheduled Procedure Step Start Time" also retired time format as well as unspecified time components are supported.
- Q: Interactive Query Key. An "x" will indicate that FAXITRON SPECIMEN SR will supply this attribute as matching key, if entered in the Query Patient Worklist dialog. For example, the Patient Name can be entered thereby restricting Worklist responses to Procedure Steps scheduled for the patient.
- D: Displayed keys. An "x" indicates that this worklist attribute is displayed to the user during a patient registration dialog. For example, Patient Name will be displayed when registering the patient prior to an examination.
- IOD: An "x" indicates that this Worklist attribute is included into all Object Instances created during performance of the related Procedure Step.

The default Query Configuration can be set in the settings panel for any of the user-required fields.

#### 4.2.4. Hardcopy Application Entity Specification

##### 4.2.4.1. SOP Classes

FAXITRON SPECIMEN SR provides Standard Conformance to the following SOP Classes:

**Table 4-21  
SOP CLASSES FOR AE HARDCOPY**

SOP Class Name	SOP Class UID	SCU	SCP
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Yes	No
Presentation LUT	1.2.840.10008.5.1.1.23	No	No


##### 4.2.4.2. Association Policies

###### 4.2.4.2.1. General

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

**Table 4-22  
DICOM APPLICATION CONTEXT FOR AE HARDCOPY**

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

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#### 4.2.4.2.2. Number of Associations

FAXITRON SPECIMEN SR initiates one Association at a time for each configured hardcopy device. Multiple hardcopy devices can be configured.

**Table 4-23  
NUMBER OF ASSOCIATIONS INITIATED FOR AE HARDCOPY**

Maximum number of simultaneous Associations	(number of configured hardcopy devices)
---	---

#### 4.2.4.2.3. Asynchronous Nature

FAXITRON SPECIMEN SR does not support asynchronous communication (multiple outstanding transactions over a single Association).

#### 4.2.4.2.4. Implementation Identifying Information

The implementation information for this Application Entity is:

**Table 4-24  
DICOM IMPLEMENTATION CLASS AND VERSION FOR AE HARDCOPY**

Implementation Class UID	1.2.840.114089.1.0.0.3.1.8
Implementation Version Name	DCF 3.1.8b

#### 4.2.4.3. Association Initiation Policy

##### 4.2.4.3.1. Activity – Film Images


##### 4.2.4.3.1.1. Description and Sequencing of Activities

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

The Hardcopy AE is invoked by the job control interface that is responsible for processing network tasks. The job consists of data describing the images and graphics to be printed as well as the requested layout and other parameters. The film sheet is internally processed, converted to a STANDARD/1,1 page and then the page image is sent. If no association to the printer can be established, the print-job is switched to a failed state and the user informed.

A typical sequence of DIMSE messages sent over an association between Hardcopy AE and a Printer is described below:

1. Hardcopy AE opens an association with the Printer
2. N-GET on the Printer SOP Class is used to obtain current printer status information. If the Printer reports a status of FAILURE, the print-job is switched to a failed state and the user informed.

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3. N-CREATE on the Film Session SOP Class creates a Film Session.
4. N-CREATE on the Presentation LUT SOP Class creates a Presentation LUT (if supported by the printer and included in the DICOM file).
5. N-CREATE on the Film Box SOP Class creates a Film Box linked to the Film Session. A single Image Box will be created as the result of this operation (Hardcopy AE only uses the format STANDARD\1,1)
6. N-SET on the Image Box SOP Class transfers the contents of the film sheet to the printer. If the printer does not support the Presentation LUT SOP Class, the image data will be passed through a printer-specific correction LUT before being sent.
7. N-ACTION on the Film Box SOP Class instructs the printer to print the Film Box
8. The printer prints the requested number of film sheets
9. The Printer asynchronously reports its status via N-EVENT-REPORT notification (Printer SOP Class). The printer can send this message at any time. Hardcopy AE does not require the N-EVENT-REPORT to be sent. Hardcopy AE is capable of receiving an N-EVENT-REPORT notification at any time during an association. If the Printer reports a status of FAILURE, the print-job is switched to a failed state and the user informed.
10. N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.
11. Hardcopy AE closes the association with the Printer

Status of the print-job is reported through the job control interface. Only one job will be active at a time for each separate hardcopy device. If any Response from the remote Application contains a status other than Success or Warning, the Association is aborted and the related Job is switched to a failed state. It can be restarted any time by user interaction or, if configured, by automated retry.

#### 4.2.4.3.1.2. Proposed Presentation Contexts


FAXITRON SPECIMEN SR is capable of proposing the Presentation Contexts shown in the Table below:

**Table 4-25  
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY FILM IMAGES**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1	SCU	None

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

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

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**Table 4-26  
HARDCOPY COMMUNICATION FAILURE BEHAVIOR**

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

#### 4.2.4.3.1.4. SOP Specific Conformance for the Printer SOP Class

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

- N-GET
- N-EVENT-REPORT

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

##### 4.2.4.3.1.4.1. Printer SOP Class Operations (N-GET)

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


**Table 4-27  
PRINTER SOP CLASS N-GET REQUEST ATTRIBUTES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Printer Status	(2110,0010)	CS	Provided by Printer	ALWAYS	Printer
Printer Status Info	(2110,0020)	CS	Provided by Printer	ALWAYS	Printer

The Printer Status information is evaluated as follows:

1. If Printer status (2110,0010) is NORMAL, the print-job continues to be printed.
2. If Printer status (2110,0010) is FAILURE, the print-job is marked as failed. The contents of Printer Status Info (2110,0020) is logged and reported to the user via the job control application.
3. If Printer status (2110,0010) is WARNING, the print-job continues to be printed. The contents of Printer Status Info (2110,0020) is logged and reported to the user via the job control application.

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

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**Table 4-28  
PRINTER SOP CLASS N-GET RESPONSE STATUS HANDLING BEHAVIOR**

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The request to get printer status information was success.
*	*	Any other status code.	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

#### 4.2.4.3.1.4.2. Printer SOP Class Notifications (N-EVENT-REPORT)

Hardcopy AE is capable of receiving an N-EVENT-REPORT request at any time during an association.

The behavior of Hardcopy AE when receiving Event Types within the N-EVENT-REPORT is summarized in the Table below:

**Table 4-29  
PRINTER SOP CLASS N-EVENT-REPORT BEHAVIOUR**

Event Type Name	Event Type ID	Behavior
Normal	1	The print-job continues to be printed.
Warning	2	The print-job continues to be printed. The contents of Printer Status Info (2110,0020) is logged and reported to the user via the job-control application.
Failure	3	The print-job is marked as failed. The contents of Printer Status Info (2110,0020) is logged and reported to the user via the job-control application.
*	*	An invalid Event Type ID will cause a status code of 0113H to be returned in a N-EVENT-REPORT response.

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


**Table 4-30  
PRINTER SOP CLASS N-EVENT-REPORT RESPONSE STATUS REASONS**

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

#### 4.2.4.3.1.5. SOP Specific Conformance for the Film Session SOP Class

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

— N-CREATE

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— N-DELETE

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

#### 4.2.4.3.1.5.1. Film Session SOP Class Operations (N-CREATE)

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

**Table 4-31  
FILM SESSION SOP CLASS N-CREATE REQUEST ATTRIBUTES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Number of Copies	(2000,0010)	IS	1 .. 10	ALWAYS	User
Medium Type	(2000,0030)	CS	BLUE FILM, CLEAR FILM or PAPER	ALWAYS	User
Film Destination	(2000,0040)	CS	MAGAZINE or PROCESSOR	ALWAYS	User


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

**Table 4-32  
FILM SESSION SOP CLASS N-CREATE RESPONSE STATUS HANDLING BEHAVIOR**

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Attribute Value Out of Range	0116H	The N-CREATE operation is considered successful but the status meaning is logged. Additional information in the Response identifying the attributes out of range will be logged (i.e. Elements in the Modification List/Attribute List)
Warning	Attribute List Error	0107H	The N-CREATE operation is considered successful but the status meaning is logged. Additional information in the Response identifying the attributes will be logged (i.e. Elements in the Attribute Identifier List)
*	*	Any other status code.	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

#### 4.2.4.3.1.5.2. Film Session SOP Class Operations (N-DELETE)

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

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**Table 4-33  
PRINTER SOP CLASS N-DELETE RESPONSE STATUS HANDLING BEHAVIOR**

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
*	*	Any other status code.	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

#### 4.2.4.3.1.6. SOP Specific Conformance for the Presentation LUT SOP Class

Note that Faxitron SR does not create images with the Presentation LUT SOP Class, but will transmit the Presentation LUT of images from other modalities.

Hardcopy AE supports the following DIMSE operations for the Presentation LUT SOP Class:

— N-CREATE

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

##### 4.2.4.3.1.6.1. Presentation LUT SOP Class Operations (N-CREATE)

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


**Table 4-34  
PRESENTATION LUT SOP CLASS N-CREATE REQUEST ATTRIBUTES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Presentation LUT Shape	(2050,0020)	CS	IDENTITY	ALWAYS	Auto

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

**Table 4-35  
PRESENTATION LUT SOP CLASS N-CREATE RESPONSE STATUS HANDLING BEHAVIOR**

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Requested Min Density or Max Density outside of printer's operating range	B605H	The N-CREATE operation is considered successful but the status meaning is logged.
*	*	Any other status code.	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Service Status	Further Meaning	Error Code	Behavior

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Success	Success	0000	The SCP has completed the operation successfully.

#### 4.2.4.3.1.7. SOP Specific Conformance for the Film Box SOP Class

Hardcopy AE supports the following DIMSE operations for the Presentation LUT SOP Class:

- N-CREATE
- N-ACTION


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

#### 4.2.4.3.1.7.1. Film Box SOP Class Operations (N-CREATE)

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

**Table 4-36  
FILM BOX SOP CLASS N-CREATE REQUEST ATTRIBUTES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Display Format	(2010,0010)	CS	STANDARD\1,1	ALWAYS	Auto
Referenced Film Session Sequence	(2010,0500)	SQ		ALWAYS	Auto
>Referenced SOP Class UID	(0008,1150)	UI	1.2.840.10008.5.1.1.1	ALWAYS	Auto
>Referenced SOP Instance UID	(0008,1155)	UI	From created Film Session SOP Instance	ALWAYS	Auto
Film Orientation	(2010,0040)	CS	PORTRAIT or LANDSCAPE	ALWAYS	User
Film Size ID	(2010,0050)	CS	14INX17IN, 14INX14IN, 11INX14IN, 11INX11IN, 85INX11IN, 8INX10IN	ALWAYS	User
Magnification Type	(2010,0060)	CS	REPLICATE, BILINEAR, CUBIC or NONE	ALWAYS	User
Border Density	(2010,0100)	CS	BLACK or WHITE	ALWAYS	User
Max Density	(2010,0130)	US	0 .. 310	ALWAYS	Auto
Min Density	(2010,0120)	US	0 .. 50	ALWAYS	Auto
Illumination	(2010,015E)	US	0 .. 5000	ALWAYS	User

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Attribute Name	Tag	VR	Value	Presence of Value	Source
Reflective Ambient Light	(2010,0160)	US	0 .. 100	ALWAYS	User
Referenced Presentation LUT Sequence	(2050,0500)	SQ	Only sent if Presentation LUT SOP Class has been negotiated.	ANAP	Auto
>Referenced SOP Class UID	(0008,1150)	UI	1.2.840.10008.5.1.1.23	ALWAYS	Auto
>Referenced SOP Instance UID	(0008,1155)	UI	From created Presentation LUT SOP Instance	ALWAYS	Auto

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

**Table 4-37  
FILM BOX SOP CLASS N-CREATE RESPONSE STATUS HANDLING BEHAVIOR**

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Requested Min Density or Max Density outside of printer's operating range	B605H	The N-CREATE operation is considered successful but the status meaning is logged.
*	*	Any other status code.	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.


#### 4.2.4.3.1.7.2. Film Box SOP Class Operations (N-ACTION)

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

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

**Table 4-38  
FILM BOX SOP CLASS N-ACTION RESPONSE STATUS HANDLING BEHAVIOR**

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully. The film has been accepted for printing.
Warning	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page)	B603H	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged

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			and reported to the user.
Warning	Image size is larger than Image Box size. The image has been demagnified.	B604H	The N-ACTION operation is considered successful but the status meaning is logged.
Warning	Image size is larger than Image Box size. The image has been cropped to fit.	B609H	The N-ACTION operation is considered successful but the status meaning is logged.
Warning	Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image has been decimated to fit.	B60AH	The N-ACTION operation is considered successful but the status meaning is logged.
Failure	Unable to create Print Job SOP Instance; print queue is full.	C602	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Image size is larger than Image Box size.	C603	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Combined Print Image Size is larger than Image Box size.	C613	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
*	*	Any other status code.	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

#### 4.2.4.3.1.8. SOP Specific Conformance for the Image Box SOP Class

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

— N-SET

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

##### 4.2.4.3.1.8.1. Image Box SOP Class Operations (N-SET)

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

**Table 4-39  
IMAGE BOX SOP CLASS N-SET REQUEST ATTRIBUTES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Position	(2020,0010)	US	1	ALWAYS	Auto
Basic Grayscale Image	(2020,0110)	SQ		ALWAYS	Auto


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Sequence					
>Samples Per Pixel	(0028,0002)	US	1	ALWAYS	Auto
>Photometric Interpretation	(0028,0004)	CS	MONOCHROME1	ALWAYS	Auto
>Rows	(0028,0010)	US	Depends on film size	ALWAYS	Auto
>Columns	(0028,0011)	US	Depends on film size	ALWAYS	Auto
>Pixel Aspect Ratio	(0028,0034)	IS	1\1	ALWAYS	Auto
>Bits Allocated	(0028,0100)	US	8 or 16	ALWAYS	Auto
>Bits Stored	(0028,0101)	US	8, 12 or 14 depending on camera and user settings	ALWAYS	Auto
>High Bit	(0028,0102)	US	7, 11 or 13 depending on camera and user settings	ALWAYS	Auto
>Pixel Representation	(0028,0103)	US	0	ALWAYS	Auto
>Pixel Data	(7FE0,0010)	OB	Pixels of rendered film sheet	ALWAYS	Auto

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

**Table 4-40  
IMAGE BOX SOP CLASS N-SET RESPONSE STATUS HANDLING BEHAVIOR**


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

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

#### 4.2.4.4. Association Acceptance Policy

The Hardcopy Application Entity does not accept Associations.

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### 4.3. NETWORK INTERFACES

#### 4.3.1. Physical Network Interface

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

**Table 4-41  
SUPPORTED PHYSICAL NETWORK INTERFACES**

Ethernet 1000Base-T (Gigabit Ethernet)
Ethernet 100 Base-T (Faster Ethernet)
Ethernet 10 Base-T (Ethernet)

#### 4.3.2. Additional Protocols

FAXITRON SPECIMEN SR conforms to the System Management Profiles listed in the Table below. All requested transactions for the listed profiles and actors are supported. Support for optional transactions are listed in the Table below:

**Table 4-42  
SUPPORTED SYSTEM MANAGEMENT PROFILES**


Profile Name	Actor	Protocols Used	Optional Transactions	Security Support
Network Address Management	DHCP Client	DHCP	N/A	N/A
	DNS Client	DNS	N/A	N/A
Time Synchronization	NTP Client	NTP	Find NTP Server	N/A
	DHCP Client	DHCP	N/A	N/A

##### 4.3.2.1. DHCP

DHCP can be used to obtain TCP/IP network configuration information. The network parameters obtainable via DHCP are shown in the Table below. The Default Value column of the table shows the default used if the DHCP server does not provide a value. Values for network parameters set in the Service/Installation Utility take precedence over values obtained from the DHCP server. Support for DHCP can be configured via the Service/Installation Utility. The Service/Installation Utility can be used to configure the machine name. If DHCP is not in use, TCP/IP network configuration information can be manually configured via the Service/Installation Utility.

**Table 4-43  
SUPPORTED DHCP PARAMETERS**

DHCP Parameter	Default Value
IP Address	None
Hostname	Requested machine name
List of NTP servers	Empty list
List of DNS servers	Empty list
Routers	Empty list
Static routes	None

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DHCP Parameter	Default Value
Domain name	None
Subnet mask	Derived from IP Address (see service manual)
Broadcast address	Derived from IP Address (see service manual)
Default router	None
Time offset	Site configurable (from Timezone)
MTU	Network Hardware Dependent
Auto-IP permission	No permission

If the DHCP server refuses to renew a lease on the assigned IP address all active DICOM Associations will be aborted.

#### 4.3.2.2. DNS

DNS can be used for address resolution. If DHCP is not in use or the DHCP server does not return any DNS server addresses, the identity of a DNS server can be configured via the Service/Installation Utility. If a DNS server is not in use, local mapping between hostname and IP address can be manually configured via the Service/Installation Utility.

#### 4.3.2.3. NTP

The NTP client implements the optional Find NTP Server Transaction. The NTP client will issue an NTP broadcast to identify any local NTP servers. If no local servers can be found via NTP broadcast, the NTP Servers identified by DHCP will be used as time references. Additionally, one or more NTP Servers can be configured via the Service/Installation Utility. If no NTP Servers are identified then the local clock will be used as a time reference and a warning written to the system log files.

### 4.4. CONFIGURATION

#### 4.4.1. AE Title/Presentation Address Mapping

##### 4.4.1.1. Local AE Titles

All local applications use the AE Titles and TCP/IP Ports configured via the Service/Installation Utility. The Field Service Engineer can configure the TCP Port via the Service/Installation Utility. No Default AE Titles are provided. The AE Titles must be configured during installation. The local AE Title used by each individual application can be configured independently of the AE Title used by other local applications. If so configured, all local AEs are capable of using the same AE Title.

**Table 4-44  
AE TITLE CONFIGURATION TABLE**

Application Entity	Default AE Title	Default TCP/IP Port
Storage	No Default	104
Workflow	No Default	Not Applicable
Hardcopy	No Default	Not Applicable

##### 4.4.1.2. Remote AE Title/Presentation Address Mapping

The AE Title, host names and port numbers of remote applications are configured using the FAXITRON SPECIMEN SR Service/Installation Utility.

#### 4.4.1.2.1. Storage

The FAXITRON SPECIMEN SR Service/Installation Utility must be used to set the AE Titles, port-numbers, host-names and capabilities for the remote Storage SCPs. Associations will only be accepted from known AE Titles and associations from unknown AE Titles will be rejected (an AE Title is known if it can be selected within the Service/Installation Utility). Multiple remote Storage SCPs can be defined. Any Storage SCP can be configured to be an “Archive” device causing storage commitment to be requested for images or presentation states transmitted to the device.

#### 4.4.1.2.2. Workflow

The FAXITRON SPECIMEN SR Service/Installation Utility must be used to set the AE Title, port-number, host-name and capabilities of the remote Modality Worklist SCP. Only a single remote Modality Worklist SCP can be defined.

If an LDAP server is available, the Service/Installation Utility will search for suitable remote Modality Worklist SCPs and present these for selection. Remote AEs will only be available for selection if they support the Modality Worklist SOP Class as an SCP. If a remote AE is attached to a device containing a dicomDeviceType attribute with value “DSS” (Department System Scheduler) it will be presented as the preferred selection.

The FAXITRON SPECIMEN SR Service/Installation Utility must be used to set the AE Title, port-number, host-name and capabilities of the remote MPPS SCP. Only a single remote MPPS SCP can be defined.

#### 4.4.1.2.3. Hardcopy

The FAXITRON SPECIMEN SR Service/Installation Utility must be used to set the AETsAE Titles, port-numbers, host-names, IPaddresses and capabilities for the remote Print SCPs.

Multiple remote Print SCPs can be defined.


#### 4.4.2. Parameters

A large number of parameters related to acquisition and general operation can be configured using the Service/Installation Utility. The Table below only shows those configuration parameters relevant to DICOM communication. See the FAXITRON SPECIMEN SR Service Manual for details on general configuration capabilities.


**Table 4-45  
CONFIGURATION PARAMETERS TABLE**

Parameter	Configurable (Yes/No)	Default Value
<b>General Parameters</b>		
Max PDU Receive Size	Yes	65536 Bytes (64 KB)
Max PDU Send Size (larger PDUs will never be sent, even if the receiver supports a larger Max PDU Receive Size. If the receiver supports a smaller Max PDU Receive Size then the Max PDU Send Size will be reduced accordingly for the duration of the Association. Max PDU Receive Size information is exchanged during DICOM Association Negotiation in the Maximum Length Sub-Item of the A-ASSOCIATION-RQ and A-ASSOCIATE-AC)	No	65536 Bytes (64 KB)
Time-out waiting for a acceptance or rejection response to an Association Request (Application Level Timeout)	Yes	15 s

Parameter	Configurable (Yes/No)	Default Value
Time-out waiting for a response to an Association release request (Application Level Timeout)	Yes	30 s
Time-out waiting for completion of a TCP/IP connect request (Low-level timeout)	Yes	15 s
Time-out awaiting a Response to a DIMSE Request (Low-Level Timeout)	Yes	360 s
Time-out for waiting for data between TCP/IP-packets (Low Level Timeout)	Yes	30 s
<b>Storage Parameters</b>		
Storage SCU time-out waiting for a response to a C-STORE-RQ	Yes	120 s
Number of times a failed send job may be retried	Yes	0 (Failed send jobs are not retried)
Delay between retrying failed send jobs	Yes	60 s
Maximum number of simultaneously initiated Associations by the Storage AE	Yes	1
Supported Transfer Syntaxes (separately configurable for each remote AE)	Yes	Implicit VR Little Endian Explicit VR Little Endian
<b>Modality Worklist Parameters</b>		
Modality Worklist SCU time-out waiting for the final response to a C-FIND-RQ	Yes	600 s
Maximum number of Worklist Items	Yes	100
Supported Transfer Syntaxes for Modality Worklist	Yes	Implicit VR Little Endian Explicit VR Little Endian
Delay between automatic Worklist Updates	Yes	10 mins
Query Worklist for specific Scheduled Station AE Title	Yes	EXINTMOD_WFL
Query Worklist for specific Modality Value	Yes	DX
<b>Print Parameters</b>		
Print SCU time-out waiting for a response to a N-CREATE-RQ	Yes	60 s
Print SCU time-out waiting for a response to a N-SET-RQ	Yes	30 s
Print SCU time-out waiting for a response to a N-ACTION-RQ	Yes	360s
Supported Transfer Syntaxes (separately configurable for each remote printer)	Yes	Implicit VR Little Endian Explicit VR Little Endian
Number of times a failed print-job may be retried	Yes	0 (Failed send jobs are not retried)
Delay between retrying failed print-jobs	Yes	60 s


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Parameter	Configurable (Yes/No)	Default Value
Printer correction LUT (separately configurable for each remote printer)	Yes	Identity LUT

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## 5. MEDIA INTERCHANGE

FAXITRON SPECIMEN SR DICOM does not support MEDIA INTERCHANGE.

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## 6. SUPPORT OF CHARACTER SETS

All FAXITRON SPECIMEN SR DICOM applications support the ISO\_IR 100 (ISO 8859-1:1987 Latin Alphabet No. 1 supplementary set)

The Defined Terms for Specific Character Set in Table G.6.2-1 are supported:

**Table 6-1  
Supported Specific Character Set Defined Terms**

Character Set Description	Defined Term
Latin alphabet No. 1	ISO_IR 100

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## 7. SECURITY

FAXITRON SPECIMEN SR does not support any specific security measures.

It is assumed that FAXITRON SPECIMEN SR is used within a secured environment. It is assumed that a secured environment includes at a minimum:

- a. Firewall or router protections to ensure that only approved external hosts have network access to FAXITRON SPECIMEN SR.
- b. Firewall or router protections to ensure that FAXITRON SPECIMEN SR only has network access to approved external hosts and services.
- c. Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels (e.g. such as a Virtual Private Network (VPN))

Other network security procedures such as automated intrusion detection may be appropriate in some environments. Additional security features may be established by the local security policy and are beyond the scope of this conformance statement.

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## 8. ANNEXES

### 8.1. IOD CONTENTS

#### 8.1.1. Created SOP Instances

Examples of images created by FAXITRON SPECIMEN SR can be downloaded from:

<http://www.faxitron.com>

Table 8-1 specifies the attributes of a Digital X-Ray Image Image transmitted by the FAXITRON SPECIMEN SR storage application.

Table 8-34 specifies the attributes of a Digital Mammography X-Ray Image transmitted by the FAXITRON SPECIMEN SR storage application.

The following tables use a number of abbreviations. The abbreviations used in the “Presence of ...” column are:

VNAP	Value Not Always Present (attribute sent zero length if no value is present)
ANAP	Attribute Not Always Present
ALWAYS	Always Present
EMPTY	Attribute is sent without a value


The abbreviations used in the “Source” column:

MWL	the attribute value source Modality Worklist
USER	the attribute value source is from User input
AUTO	the attribute value is generated automatically
MPPS	the attribute value is the same as that use for Modality Performed Procedure Step
CONFIG	the attribute value source is a configurable parameter
DEVICE	the attribute value source is from the device

NOTE: All dates and times are encoded in the local configured calendar and time. Date, Time and Time zone are configured using the Service/Installation Utility.

NOTE: Some module tables listed in the IOD definition are intentionally left blank to show the existence of the module within the IOD.

NOTE: Acquisition Device Processing Description is in text form:  
S=SharpenSetting, C=ContrastSetting, WL=WindowLevelAlgorithm(center,value)  
SharpenSetting = 0, 1, 2, 3 or 4  
ContrastSetting = Off or L{level}B{bits}S{tilesize}G{graylevels}

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NOTE: Derivation Description is in text form:

Annotation header added.

If only the annotation header has been added to the image.

Graphic overlay layers added.

If only the graphic overlay layers were added to the image.

Annotation and graphic overlay layers added.

If both the annotation header and any graphic overlay layers were added to the image.

NOTE: Patient Position for a Digital X-Ray Module is in text form:

HFP = Head First-Prone

HFS = Head First-Supine

HFDR = Head First-Decubitus Right

HFDL = Head First-Decubitus Left

FFDR = Feet First-Decubitus Right

FFDL = Feet First-Decubitus Left

FFP = Feet First-Prone

FFS = Feet First-Supine

NOTE: Exposure Control Mode Description is in text form:

AecScout(ExposureKV, ExposureMS)

if Exposure Control Mode is AUTOMATIC otherwise blank or not present.

NOTE: View Code Sequence: The table below shows the values for those attribute required in View Code Sequence according to the modality type.

	Mammography (MG)	Digital X-Ray (DX)
Code Value	G-8310	G-8300
Code Meaning	tissue specimen from breast	Tissue specimen
Coding Scheme Designator	SRT	SRT

**Digital X-Ray Image IOD**

**Table 8-1  
IOD OF CREATED DX SOP INSTANCES**

<b>IE</b>	<b>Module</b>	<b>Reference</b>	<b>Presence of Module</b>
Patient	Patient	Table 8-2	ALWAYS
	Specimen Identification		ANAP
	Clinical Trial Subject		ANAP
Study	General Study	Table 8-5	ALWAYS
	Patient Study		ANAP
	Clinical Trial Study		ANAP
Series	General Series	Table 8-8	ALWAYS
	Clinical Trial Series		ANAP
	DX Series	Table 8-10	ALWAYS
Frame of Reference	Frame of Reference		ANAP
Equipment	General Equipment	Table 8-12	ALWAYS
Image	General Image	Table 8-13	ALWAYS
	Image Pixel	Table 8-14	ALWAYS
	Contrast/Bolus		ANAP
	Display Shutter		ANAP
	Device		ANAP
	Intervention		ANAP
	DX Anatomy Imaged	Table 8-19	ALWAYS
	DX Image	Table 8-20	ALWAYS
	DX Detector	Table 8-21	ALWAYS
	X-Ray Collimator		ANAP
	DX Positioning		ANAP
	X-Ray Tomo Acquisition		ANAP
	X-Ray Acquisition		ANAP
	X-Ray Generation		ANAP
	X-Ray Filtration		ANAP
X-Ray Grid		ANAP	

IE	Module	Reference	Presence of Module
	Overlay Plane		ANAP
	VOI LUT	Table 8-30	ALWAYS
	Image Histogram		ANAP
	Acquisition Context	Table 8-32	ALWAYS
	SOP Common	Table 8-33	ALWAYS

### 8.1.1.1. Common Modules

**Table 8-2  
PATIENT MODULE OF CREATED SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Name	(0010,0010)	PN	From Modality Worklist or user input. Values supplied via Modality Worklist will be entered as received. Values supplied via user input will contain all 5 components (some possibly empty). . Maximum 64 characters.	VNAP	MWL/ USER
Patient ID	(0010,0020)	LO	From Modality Worklist, user input or automatically generated. Maximum 64 characters.	VNAP	MWL/ USER/ AUTO
Patient's Birth Date	(0010,0030)	DA	From Modality Worklist or user input	VNAP	MWL/ USER
Patient's Sex	(0010,0040)	CS	From Modality Worklist or user input	VNAP	MWL/ USER
Patient Comments	(0010,4000)	LT	From User Input. Maximum 1024 characters.	VNAP	USER

**Table 8-3  
SPECIMEN IDENTIFICATION MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-4  
CLINICAL TRIAL SUBJECT MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-5  
GENERAL STUDY MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Instance UID	(0020,000D)	UI	From Modality Worklist or generated by device.	ALWAYS	MWL/AUTO
Study Date	(0008,0020)	DA	<yyyymmdd>	ALWAYS	AUTO
Study Time	(0008,0030)	TM	<hhmmss>	ALWAYS	AUTO
Referring Physician's Name	(0008,0090)	PN	From Modality Worklist	VNAP	MWL
Study ID	(0020,0010)	SH	Requested Procedure ID from Modality Worklist or user input	VNAP	MWL/USER
Accession Number	(0008,0050)	SH	From Modality Worklist or user input	VNAP	MWL/USER
Study Description	(0008,1030)	LO	Comment text box in study list. Maximum 1024 characters.	VNAP	USER

**Table 8-6  
PATIENT STUDY MODULE OF CREATED SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-7  
CLINICAL TRIAL STUDY MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-8  
GENERAL SERIES MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	DX	ALWAYS	AUTO
Series Instance UID	(0020,000E)	UI	Generated by device	ALWAYS	AUTO
Series Number	(0020,0011)	IS	Generated by device	ALWAYS	AUTO
Series Date	(0008,0021)	DA	<yyyymmdd>	ALWAYS	AUTO
Series Time	(0008,0031)	TM	<hhmmss>	ALWAYS	AUTO
Series Description	(0008,103E)	LO	Organ from Study list. Maximum 512 characters.	VNAP	USER
Operator's Name	(0008,1070)	PN	Operator field in Study list. Maximum 64 characters.	VNAP	USER

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**Table 8-9  
CLINICAL TRIAL SERIES MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-10  
DX SERIES MODULE OF CREATED SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source
Presentation Intent Type	(0008,0068)	CS	From Advanced Configuration: Either "FOR PRESENTATION" if Storage Type is "Presentation", or "FOR PROCESSING" if Storage Type is "Processing"	ALWAYS	CONFIG

**Table 8-11  
FRAME OF REFERENCE MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-12  
GENERAL EQUIPMENT MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008,0070)	LO	FAXITRON X-Ray LLC	ALWAYS	AUTO
Institution Name	(0008,0080)	LO	From Configuration	VNAP	CONFIG
Station Name	(0008,1010)	SH	From Configuration	ALWAYS	CONFIG
Manufacturer's Model Name	(0008,1090)	LO	From X-Ray Generator	ALWAYS	DEVICE
Device Serial Number	(0018,1000)	LO	From Configuration	ALWAYS	DEVICE
Software Version	(0018,1020)	LO	Application Software Version \ Generator Model/Firmware Version \ Camera;Driver;Library Version	ALWAYS	DEVICE
Private Creator	(0FA7,0010)	LO	FaxitronSR	ANAP	AUTO
Date of last Calibration	(0018,1200)	DA	Last time the device was calibrated.	ANAP	AUTO

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8.1.1.2. Digital X-Ray Image Modules

**Table 8-13  
GENERAL IMAGE MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS	Generated by device	ALWAYS	AUTO
Content Date	(0008,0023)	DA	<yyyymmdd>	ALWAYS	AUTO
Content Time	(0008,0033)	TM	<hhmmss>	ALWAYS	AUTO
Image Comments	(0020,4000)	LT	From user input. Maximum 1024 characters.	VNAP	USER

**Table 8-14  
IMAGE PIXEL MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Pixel Data	(7FE0,0010)	OW	The Pixel Data itself does not contain any burned-in annotation.	ALWAYS	AUTO

**Table 8-15  
CONTRAST BOLUS MODULE OF CREATED DX SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-16  
DISPLAY SHUTTER MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-17  
DEVICE MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-18  
INTERVENTION MODULE OF CREATED DX SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-19  
DX ANATOMY IMAGED MODULE OF CREATED DX SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Laterality	(0020,0062)	CS	Enumerated Values: R = Right, L = Left, B = Both, U = Unpaired	ALWAYS	USER
View Code Sequence	(0054,0220)	SQ	See Notes on View Code Sequence	ALWAYS	AUTO
➤ Code Value	(0008,0100)	SH	See Notes on View Code Sequence	ALWAYS	AUTO
➤ Coding Scheme Designator	(0008,0102)	SH	See Notes on View Code Sequence	ALWAYS	AUTO
➤ Code Meaning	(0008,0104)	LO	See Notes on View Code Sequence	ALWAYS	AUTO

**Table 8-20  
DX IMAGE MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Type	(0008,0008)	CS	ORIGINAL\PRIMARY\ For original image without burned in annotation header or burned in overlay layers or DERIVED\PRIMARY\ For images that contain burned in annotation header and/or burned in overlay layers	ALWAYS	AUTO
Image ID	(0054,0400)	SH	Generated by device	ALWAYS	AUTO
Samples per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	MONOCHROME1 normally, MONOCHROME2 if user inverts image	ALWAYS	AUTO/ USER
Bits Allocated	(0028,0100)	US	16	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	14	ALWAYS	AUTO
High Bit	(0028,0102)	US	13	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	Enumerated Value:	ALWAYS	AUTO

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			0000H = Unsigned Integer		
Pixel Intensity Relationship	(0028,1040)	CS	LIN	ALWAYS	AUTO
Pixel Intensity Relationship Sign	(0028,1041)	SS	1	ALWAYS	AUTO
Rescale Intercept	(0028,1052)	DS	0	ALWAYS	AUTO
Rescale Slope	(0028,1053)	DS	1	ALWAYS	AUTO
Rescale Type	(0028,1054)	DS	US	ALWAYS	AUTO
Presentation LUT Shape	(2050,0020)	CS	INVERSE normally, IDENTITY if user inverts image	ALWAYS	AUTO/ USER
Lossy Image Compression	(0028,2110)	CS	00	ALWAYS	AUTO
Acquisition Device Processing Description	(0018,1400)	LO	See Notes on Acquisition Device Processing Description	ANAP	
Derivation Description	(0008,2111)	ST	See Notes on Derivation Description	ANAP	AUTO
Source Image Sequence	(0008,2112)	SQ		ANAP	AUTO
➤ Referenced SOP Class UID	(0008,1150)	UI	From referenced image	ALWAYS	AUTO
➤ Referenced SOP Instance UID	(0008,1155)	UI	From referenced image	ALWAYS	AUTO
Burned In Annotation	(0028,0301)	CS	NO For original image without burned in annotation header or YES For images that contain burned in annotation header	ALWAYS	AUTO
Window Center	(0028,1050)	DS	Auto-generated or set by user.	ALWAYS	AUTO/ USER
Window Width	(0028,1051)	DS	Auto-generated or set by user.	ALWAYS	AUTO/ USER

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**Table 8-21  
DX DETECTOR MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Detector Type	(0018,7004)	CS	From Camera Driver	ALWAYS	AUTO
Imager Pixel Spacing	(0018,1164)	DS	From Camera Driver	ALWAYS	AUTO
Pixel Spacing	(0028,0030)	DS	0.05/0.05 or 0.02/0.02 depending on camera	ALWAYS	AUTO
Pixel Aspect Ratio	(0028,0034)	IS	1\1	ALWAYS	AUTO
Rows	(0028,0010)	US	From Camera Driver	ALWAYS	AUTO
Columns	(0028,0011)	US	From Camera Driver	ALWAYS	AUTO
Field of View Origin	(0018,7030)	DS	00	ALWAYS	AUTO
Field of View Rotation	(0018,7032)	DS	0, 90, 180, 270	ALWAYS	AUTO
Field of View Horizontal Flip	(0018,7034)	CS	No	ALWAYS	AUTO
Detector Manufacturer Name	(0018,702A)	LO	From Camera Driver	ALWAYS	DEVICE
Detector Manufacturer's Model Name	(0018,702B)	LO	From Camera Driver	ALWAYS	DEVICE

**Table 8-22  
X-RAY COLIMINATOR MODULE OF CREATED DX SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-23  
DX POSITIONING MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient Position	(0018,5100)	CS	See Notes on Patient Position	ANAP	USER

**Table 8-24  
X-RAY TOMO ACQUISITION MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-25  
X-RAY ACQUISITION DOSE MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-26  
X-RAY GENERATION MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
KVP	(0018,0060)	DS	From Device	ALWAYS	DEVICE
Exposure Time	(0018,1150)	IS	From Device	ALWAYS	DEVICE
Exposure Control Mode	(0018,7060)	CS	MANUAL or AUTOMATIC	ALWAYS	USER/ AUTO
Exposure Control Mode Description	(0018,7062)	LT	See Notes on Exposure Control Mode Description	ALWAYS	AUTO

**Table 8-27  
X-RAY FILTRATION MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-28  
X-RAY GRID MODULE OF CREATED DX SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-29  
OVERLAY PLANE MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-30  
VOI LUT MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Window Center	(0028,1050)	DS	0...16383	ALWAYS	AUTO

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Window Width	(0028,1051)	DS	1...16384	ALWAYS	AUTO
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**Table 8-31  
IMAGE HISTOGRAM MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-32  
ACQUISITION CONTEXT MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source


**Table 8-33  
SOP COMMON MODULE OF CREATED DX SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Specific Character Set	(0008,0005)	CS	"ISO_IR 100" or "ISO_IR 144"	ALWAYS	CONFIG
SOP Class UID	(0008,0016)	UI	1.2.840.10008.5.1.4.1.1.12.2	ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI	Generated by device	ALWAYS	AUTO

### 8.1.1.3. Digital Mammography X-Ray Image IOD

**Table 8-34  
IOD OF CREATED MG SOP INSTANCES**

IE	Module	Reference	Presence of Module
Patient	Patient	Table 8-35	ALWAYS
	Specimen Identification		ANAP
	Clinical Trial Subject		ANAP
Study	General Study	Table 8-38	ALWAYS
	Patient Study		ANAP
	Clinical Trial Study		ANAP
Series	General Series	Table 8-41	ALWAYS
	Clinical Trial Series		ANAP
	MG Series	Table 8-43	ALWAYS
Frame of Reference	Frame of Reference		ANAP
Equipment	General Equipment	Table 8-45	ALWAYS
Image	General Image	Table 8-46	ALWAYS
	Image Pixel	Table 8-47	ALWAYS
	Contrast/Bolus		ANAP
	Display Shutter		ANAP
	Device		ANAP
	Intervention		ANAP
	MG Anatomy Imaged	Table 8-52	ALWAYS
	MG Image	Table 8-53	ALWAYS
	MG Detector	Table 8-54	ALWAYS
	X-Ray Collimator		ANAP
	MG Positioning	Table 8-56	ANAP
	X-Ray Tomo Acquisition		ANAP
	X-Ray Acquisition		ANAP
	X-Ray Generation		ANAP
	X-Ray Filtration		ANAP
X-Ray Grid		ANAP	

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IE	Module	Reference	Presence of Module
	Overlay Plane		ANAP
	VOI LUT	Table 8-63	ALWAYS
	Image Histogram		ANAP
	Acquisition Context	Table 8-65	ALWAYS
	SOP Common	Table 8-66	ALWAYS

#### 8.1.1.4. Common Modules

**Table 8-35  
PATIENT MODULE OF CREATED SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Name	(0010,0010)	PN	From Modality Worklist or user input. Values supplied via Modality Worklist will be entered as received. Values supplied via user input will contain all 5 components (some possibly empty). . Maximum 64 characters.	VNAP	MWL/ USER
Patient ID	(0010,0020)	LO	From Modality Worklist, user input or automatically generated. Maximum 64 characters.	VNAP	MWL/ USER/ AUTO
Patient's Birth Date	(0010,0030)	DA	From Modality Worklist or user input	VNAP	MWL/ USER
Patient's Sex	(0010,0040)	CS	From Modality Worklist or user input	VNAP	MWL/ USER
Patient Comments	(0010,4000)	LT	From User Input. Maximum 1024 characters.	VNAP	USER

**Table 8-36  
SPECIMEN IDENTIFICATION MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-37  
CLINICAL TRIAL SUBJECT MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-38  
GENERAL STUDY MODULE OF CREATED SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Instance UID	(0020,000D)	UI	From Modality Worklist or generated by device	ALWAYS	MWL/AUTO
Study Date	(0008,0020)	DA	<yyyymmdd>	ALWAYS	AUTO
Study Time	(0008,0030)	TM	<hhmmss>	ALWAYS	AUTO
Referring Physician's Name	(0008,0090)	PN	From Modality Worklist	VNAP	MWL
Study ID	(0020,0010)	SH	Requested Procedure ID from Modality Worklist or User Input	VNAP	MWL/USER
Accession Number	(0008,0050)	SH	From Modality Worklist or user input	VNAP	MWL/USER
Study Description	(0008,1030)	LO	Comment text box in study list. Maximum 1024 characters.	VNAP	USER

**Table 8-39  
PATIENT STUDY MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-40  
CLINICAL TRIAL STUDY MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-41  
GENERAL SERIES MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	MG	ALWAYS	AUTO
Series Instance UID	(0020,000E)	UI	Generated by device	ALWAYS	AUTO
Series Number	(0020,0011)	IS	Generated by device	ALWAYS	AUTO
Series Date	(0008,0021)	DA	<yyyymmdd>	ALWAYS	AUTO
Series Time	(0008,0031)	TM	<hhmmss>	ALWAYS	AUTO
Series Description	(0008,103E)	LO	Organ from Study list. Maximum 512 characters.	VNAP	USER
Operator's Name	(0008,1070)	PN	Operator field in Study list. Maximum 64 characters.	VNAP	USER
Performed Procedure Step ID	(0040,0253)	SH	Supplied by Worklist Server	VNAP	MWL

**Table 8-42  
CLINICAL TRIAL SERIES MODULE OF CREATED SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-43  
MG SERIES MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Presentation Intent Type	(0008,0068)	CS	From Advanced Configuration: Either "FOR PRESENTATION" if Storage Type is "Presentation", or "FOR PROCESSING" if Storage Type is "Processing"	ALWAYS	CONFIG

**Table 8-44  
FRAME OF REFERENCE MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-45  
GENERAL EQUIPMENT MODULE OF CREATED SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008,0070)	LO	FAXITRON X-Ray LLC	ALWAYS	AUTO
Institution Name	(0008,0080)	LO	From Configuration	VNAP	CONFIG
Station Name	(0008,1010)	SH	From Configuration	ALWAYS	CONFIG
Manufacturer's Model Name	(0008,1090)	LO	From X-Ray Generator	ALWAYS	DEVICE
Device Serial Number	(0018,1000)	LO	From Configuration	ALWAYS	DEVICE
Software Version	(0018,1020)	LO	Application Software Version \ Generator Model/Firmware Version \ Camera;Driver;Library Version	ALWAYS	DEVICE
Private Creator	(0FA7,0010)	LO	FaxitronSR	ANAP	AUTO
Date of last Calibration	(0018,1200)	DA	Last time the device was calibrated.	ANAP	AUTO


#### 8.1.1.5. Digital X-Ray Image Modules

**Table 8-46  
GENERAL IMAGE MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS	Generated by device	ALWAYS	AUTO
Content Date	(0008,0023)	DA	<yyyymmdd>	ALWAYS	AUTO
Content Time	(0008,0033)	TM	<hhmmss>	ALWAYS	AUTO
Image Comments	(0020,4000)	LT	From user input. Maximum 1024 characters.	VNAP	USER

**Table 8-47  
IMAGE PIXEL MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Pixel Data	(7FE0,0010)	OW	The Pixel Data itself does not contain any burned-in annotation.	ALWAYS	AUTO

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**Table 8-48  
CONTRAST BOLUS MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-49  
DISPLAY SHUTTER MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-50  
DEVICE MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-51  
INTERVENTION MODULE OF CREATED MG SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-52  
MG ANATOMY IMAGED MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Positioner Type	(0018,1508)	CS	NONE	ALWAYS	AUTO
Image Laterality	(0020,0062)	CS	Enumerated Values: R = Right, L = Left. B = Both (e.g. cleavage)	ALWAYS	USER
Organ Exposed	(0040,0318)	CS	BREAST	ALWAYS	AUTO
View Code Sequence	(0054,0220)	SQ	See Notes on View Code Sequence	ALWAYS	AUTO
➤ Code Value	(0008,0100)	SH	See Notes on View Code Sequence	ALWAYS	AUTO
➤ Coding Scheme Designator	(0008,0102)	SH	See Notes on View Code Sequence	ALWAYS	AUTO
➤ Code Meaning	(0008,0104)	LO	See Notes on View Code Sequence	ALWAYS	AUTO

**Table 8-53  
MG IMAGE MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Type	(0008,0008)	CS	ORIGINAL\PRIMARY\ For original image without burned in annotation header or burned in overlay layers or DERIVED\PRIMARY\ For images that contain burned in annotation header and/or burned in overlay layers	ALWAYS	AUTO
Image ID	(0054,0400)	SH	Generated by device	ALWAYS	AUTO
Samples per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	MONOCHROME1 normally, MONOCHROME2 if user inverts image	ALWAYS	AUTO/ USER
Bits Allocated	(0028,0100)	US	16	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	14	ALWAYS	AUTO
High Bit	(0028,0102)	US	13	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	Enumerated Value: 0000H = Unsigned Integer	ALWAYS	AUTO
Pixel Intensity Relationship	(0028,1040)	CS	LIN	ALWAYS	AUTO
Pixel Intensity Relationship Sign	(0028,1041)	SS	1	ALWAYS	AUTO
Rescale Intercept	(0028,1052)	DS	0	ALWAYS	AUTO
Rescale Slope	(0028,1053)	DS	1	ALWAYS	AUTO
Rescale Type	(0028,1054)	DS	US	ALWAYS	AUTO
Presentation LUT Shape	(2050,0020)	CS	INVERSE normally, IDENTITY if user inverts image	ALWAYS	AUTO/ USER
Lossy Image Compression	(0028,2110)	CS	00	ALWAYS	AUTO
Acquisition Device Processing Description	(0018,1400)	LO	See Notes on Acquisition Device Processing Description	ANAP	
Derivation Description	(0008,2111)	ST	See Notes on Derivation Description	ANAP	AUTO
Source Image Sequence	(0008,2112)	SQ		ANAP	AUTO
➤ Referenced SOP Class UID	(0008,1150)	UI	From referenced image	ALWAYS	AUTO
➤ Referenced SOP Instance UID	(0008,1155)	UI	From referenced image	ALWAYS	AUTO
Burned In Annotation	(0028,0301)	CS	NO For original image without burned in	ALWAYS	AUTO

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			annotation header or YES For images that contain burned in annotation header		
Window Center	(0028,1050)	DS	Auto-generated or set by user.	ALWAYS	AUTO/USER
Window Width	(0028,1051)	DS	Auto-generated or set by user.	ALWAYS	AUTO/USER

**Table 8-54  
MG DETECTOR MODULE OF CREATED MG SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source
Detector Type	(0018,7004)	CS	From Camera Driver	ALWAYS	AUTO
Imager Pixel Spacing	(0018,1164)	DS	From Camera Driver	ALWAYS	AUTO
Field of View Origin	(0018,7030)	DS	00	ALWAYS	AUTO
Field of View Rotation	(0018,7032)	DS	0, 90, 180, 270	ALWAYS	AUTO
Field of View Horizontal Flip	(0018,7034)	CS	No	ALWAYS	AUTO
Pixel Spacing	(0028,0030)	DS	0.05/0.05 or 0.02/0.02 depending on camera	ALWAYS	AUTO
Detector Manufacturer Name	(0018,702A)	LO	From Camera Driver	ALWAYS	DEVICE
Detector Manufacturer's Model Name	(0018,702B)	LO	From Camera Driver	ALWAYS	DEVICE

**Table 8-55  
X-RAY COLIMINATOR MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-56  
MG POSITIONING MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-57  
X-RAY TOMO ACQUISITION MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-58  
X-RAY ACQUISITION DOSE MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-59  
X-RAY GENERATION MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
KVP	(0018,0060)	DS	From Device	ALWAYS	DEVICE
Exposure Time	(0018,1150)	IS	From Device	ALWAYS	DEVICE
Exposure Control Mode	(0018,7060)	CS	MANUAL or AUTOMATIC	ALWAYS	USER/ AUTO
Exposure Control Mode Description	(0018,7062)	LT	See Notes on Exposure Control Mode Description	ALWAYS	AUTO

**Table 8-60  
X-RAY FILTRATION MODULE OF CREATED MG SOP INSTANCES**


Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-61  
X-RAY GRID MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-62  
OVERLAY PLANE MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

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**Table 8-63  
VOI LUT MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Window Center	(0028,1050)	DS	0...1023	ALWAYS	AUTO
Window Width	(0028,1051)	DS	1...1024	ALWAYS	AUTO

**Table 8-64  
IMAGE HISTOGRAM MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-65  
ACQUISITION CONTEXT MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source

**Table 8-66  
SOP COMMON MODULE OF CREATED MG SOP INSTANCES**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Specific Character Set	(0008,0005)	CS	"ISO_IR 100" or "ISO_IR 144"	ALWAYS	CONFIG
SOP Class UID	(0008,0016)	UI	1.2.840.10008.5.1.4.1.1.12.2	ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI	Generated by device	ALWAYS	AUTO

### Used Fields in received IOD by application


The FAXITRON SPECIMEN SR storage application does not receive SOP Instances. The usage of attributes received via Modality Worklist is described in section 4.2.2.3.1.3.

### 8.1.2. Attribute mapping

The relationships between attributes received via Modality Worklist, stored in acquired images and communicated via MPPS are summarized in Table 8.1-31. The format and conventions used in Table 8.1-31 are the same as the corresponding table in DICOM Part 4, Annex M.6 [DICOM].

**Table 8-67  
ATTRIBUTE MAPPING BETWEEN MODALITY WORKLIST, IMAGE AND MPPS**

Modality Worklist	Image IOD
Patient Name	Patient Name
Patient ID	Patient ID
Patient's Birth Date	Patient's Birth Date
Patient's Sex	Patient's Sex
Patient's Weight	Patient's Weight
Referring Physician's Name	Referring Physician's Name
----	----
Study Instance UID	Study Instance UID
Referenced Study Sequence	Referenced Study Sequence
Accession Number	Accession Number
----	Request Attributes Sequence
Requested Procedure ID	>Requested Procedure ID
Requested Procedure Description	
Scheduled Procedure Step ID	>Scheduled Procedure Step ID
Scheduled Procedure Step Description	>Scheduled Procedure Step Description
Scheduled Protocol Code Sequence	>Scheduled Protocol Code Sequence
----	Performed Protocol Code Sequence
----	Study ID
----	Performed Procedure Step ID
----	Performed Procedure Step Start Date
----	Performed Procedure Step Start Time
----	Performed Procedure Step Description
----	Comments on the Performed Procedure Step
----	----
Scheduled Performing Physician's Name	Performing Physician's Name
Requested Procedure Code Sequence	----
----	Referenced Study Component Sequence
----	>Referenced SOP Class UID
----	>Referenced SOP Instance UID

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Modality Worklist	Image IOD
----	Protocol Name

### 8.1.3. Coerced/Modified Fields

The Modality Worklist AE will truncate attribute values received in the response to a Modality Worklist Query if the value length is longer than the maximum length permitted by the attribute's VR.

### 8.2. DATA DICTIONARY OF PRIVATE ATTRIBUTES

No Private Attributes are added to created SOP Instances.

### 8.3. GRAYSCALE IMAGE CONSISTENCY

Not Applicable.

### 8.4. STANDARD EXTENDED / SPECIALIZED / PRIVATE SOP CLASSES

No Specialized or Private SOP Classes are supported.

### 8.5. PRIVATE TRANSFER SYNTAXES

No Private Transfer Syntaxes are supported.

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