



DICOM Conformance Statement

Swift DEXA Ver. 1.01

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Rev 1.0

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Conformance Statement Overview

This product, Swift DEXA, receives DICOM images from an imaging system, creates a secondary capture image, and saves the secondary capture image to a network storage device or storage media. Swift DEXA implements the DICOM services required to save the secondary capture image.

Table 1 provides an overview of the network services supported by Swift DEXA.

Table 1
Network Services

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Verification		
Verification	Yes	No
Transfer		
Secondary Capture Image Storage	Yes	No

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1. Introduction

1.1 Revision History

Document Version	Date of Issue	Software Version	Description
1.0	March 9, 2026	1.01	Create new

1.2 Audience

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

1.3 Remarks

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

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

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

1.4 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	Application Entity
DICOM	Digital Imaging and Communications in Medicine
IOD	Information Object Definition
IPv4	Internet Protocol version 4
ISO	International Organization for Standardization
MPPS	Modality Performed Procedure Step
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
UID	Unique Identifier
VR	Value Representation

1.5 References

NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available free at <http://medical.nema.org/>

2. Networking

2.1 Implementation Model

2.1.1 Application Data Flow

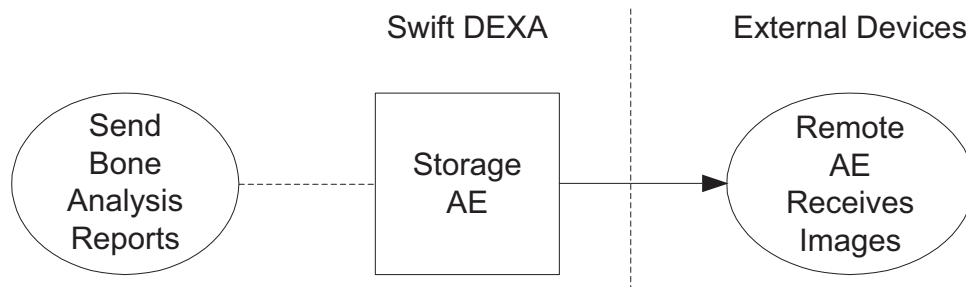


Figure 2.1-1
Application Data Flow Diagram

- The Storage Application Entity sends Bone Analysis Reports to a remote AE. It is associated with the local real-world activity “Send Bone Analysis Reports”. “Send Bone Analysis Reports” are performed upon user request for each study completed or for specific images selected. When activated by user’s settings (auto-send), each analyzed set of reports can be immediately stored to a preferred destination whenever a Study is closed by the user.

2.1.2 Functional Definition of 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 reports 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. The Storage AE will not initiate another association for this send-job.

2.1.3 Sequencing of Real-World Activities

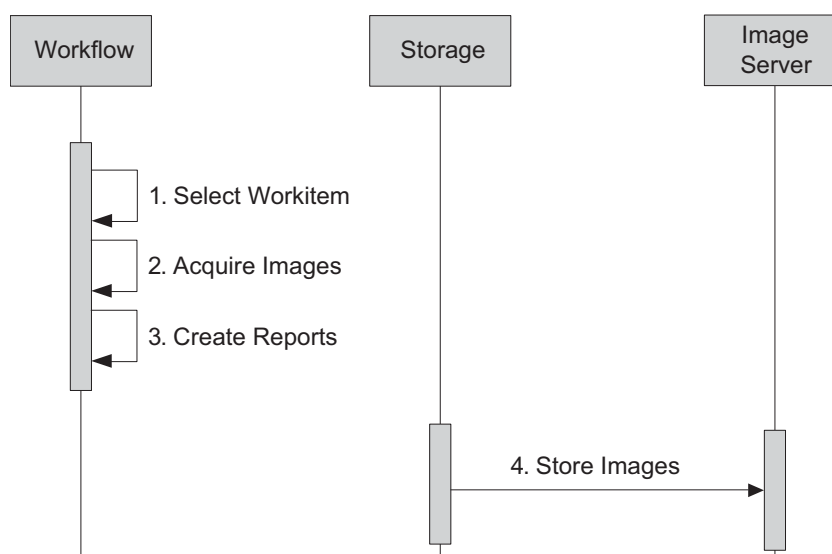


Figure 2.1-2
Sequencing Constraints

Under normal workflow conditions the sequencing constraints illustrated in Figure 2.1-2 apply:

1. Select Workitem
2. Acquire Images
3. Create Bone Analysis Reports
4. Store Images

2.2 AE Specifications

2.2.1 Storage Application Entity Specification

2.2.1.1 SOP Classes

Swift DEXA provides Standard Conformance to the following SOP Classes:

Table 2.2-1
SOP Classes for AE Storage

SOP Class Name	SOP Class UID	SCU	SCP
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
Verification	1.2.840.10008.1.1	Yes	No

2.2.1.2 Association Policies

2.2.1.2.1 General

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

Table 2.2-2
DICOM Application Context for AE Storage

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

2.2.1.2.2 Number of Associations

Swift DEXA initiates one Association at a time.

Table 2.2-3
Number of Associations Initiated for AE Storage

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

2.2.1.2.3 Asynchronous Nature

Swift DEXA does not support asynchronous communication.

Table 2.2-4
Asynchronous Nature as a SCU for AE Storage

Maximum number of outstanding asynchronous transactions	1
---	---

2.2.1.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

Table 2.2-5
DICOM Implementation Class and Version for AE Storage

Implementation Class UID	1.2.392.200046.100.24.xxxxx ^{*1}
Implementation Version Name	Swift DEXA xxxxx ^{*1}

^{*1} xxxxx: Actually replaced by the version number. It is expressed as a 3 or 4-digit decimal number.

2.2.1.3 Association Initiation Policy

2.2.1.3.1 Activity – Verify

2.2.1.3.1.1 Description and Sequencing of Activities

The request for a verification is initiated by user interaction, and the result is displayed on user interface.

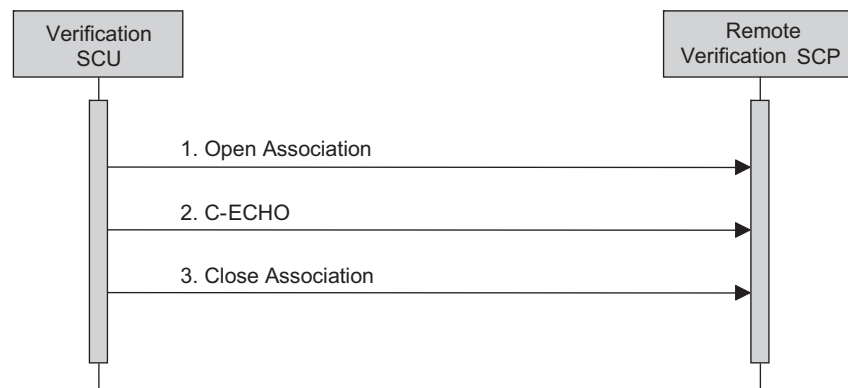


Figure 2.2-1
Sequencing of Activity – verify

1. The Verification SCU opens an association with the Remote Verification SCP.
2. Verification is transmitted to the Remote Verification SCP using a C-ECHO request and the Remote Verification SCP replies with a C-ECHO response (status success).
3. The Verification SCU closes the association with the Remote Verification SCP.

2.2.1.3.1.2 Proposed Presentation Contexts

Swift DEXA is capable of proposing the Presentation Contexts as shown in the following table:

Table 2.2-6
Proposed Presentation Context for Connectivity Verification

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.2.1.3.1.3 SOP Specific Conformance Verification SOP Class

Swift DEXA provides standard conformance to the DICOM Verification Service Class as SCU. The status code for the C-ECHO is as follows:

Table 2.2-7
C-ECHO Response Status Handling Behavior

Code	Status	Meaning
0000	Success	The C-ECHO request is accepted.
Any other status code.	*	The Association is released using A-RELEASE and the failure is reported to the user.

2.2.1.3.2 Activity – Send Images

2.2.1.3.2.1 Description and Sequencing of Activities

The Storage AE attempts to initiate a new Association in order to issue a Storage request (C-STORE). The Storage AE output a bone analysis report as secondary capture image.

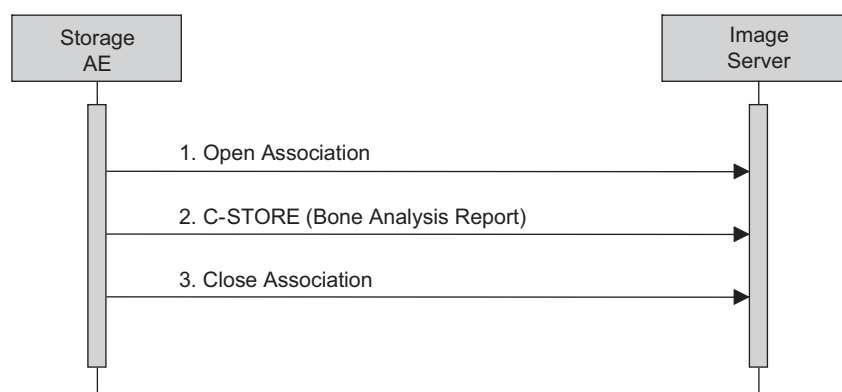


Figure 2.2-2
Sequencing of Activity – Send Images

1. The Storage AE opens an association with the Image Server.
2. An acquired image is transmitted to the Image Manager using a C-STORE request and the Image Server replies with a C-STORE response (status success).
3. The Storage AE closes the association with the Image Server.

2.2.1.3.2.2 Proposed Presentation Contexts

Swift DEXA is capable of proposing the Presentation Contexts shown in the following table:

Table 2.2-8
Proposed Presentation Contexts for Connectivity Verification

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None

2.2.1.3.2.3 SOP Specific Conformance Verification SOP Classes

Swift DEXA provides standard conformance to the DICOM Verification Service Class as SCU. The status code for the C-ECHO is as follows:

Table 2.2-9
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 released using A-RELEASE 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 released using A-RELEASE 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 released using A-RELEASE 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. The status meaning is logged and the job warning is reported to the user via the job control application.
Warning	Elements Discarded	B006	Image transmission is considered successful. The status meaning is logged and the job warning is reported to the user via the job control application.
Warning	Data Set does not match SOP Class	B007	Image transmission is considered successful. The status meaning is logged and the job warning is reported to the user via the job control application.
*	*	Any other status code.	The Association is released using A-RELEASE 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 Comment (0000,0902) and Error ID (0000,0903) are reported to the user via additional information on error dialog.

2.2.1.4 Association Acceptance Policy

No AEs act as an SCP for any service. They do not accept associations.

2.3 Network Interfaces

2.3.1 Physical Network Interface

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

Table 2.3-1
Supported Physical Network Interfaces

Ethernet 1000baseT
Ethernet 100base-TX
Ethernet 10baseT

2.3.2 Additional Protocols

Not supported.

2.3.3 IPv4 and IPv6 Support

Only IPv4 connections.

2.4 Configuration

2.4.1 AE Title / Presentation Address Mapping

2.4.1.1 Local AE Titles

Swift DEXA uses the AE Title configured via the Settings menu.

Table 2.4-1
AE Title Configuration Table

Application Entity	Default AE Title	Default TCP / IP Port
Storage	Blank	Not Applicable

2.4.1.2 Remote AE Title / Presentation Address Mapping

Swift DEXA Settings menu 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 Settings user interface). Multiple remote Storage SCPs can be defined.

2.4.2 Parameters

A large number of parameters related to acquisition and general operation can be configured using the Configuration file. The Table below only shows those configuration parameters relevant to DICOM communication. See the Swift DEXA Service Manual for details on general configuration capabilities.

Table 2.4-2
Configuration Parameters Table

Parameter	Configurable (Yes / No)	Default Value
Supported Transfer Syntaxes (separately configurable for each remote AE)	Yes	JPEG Baseline
Max PDU Length	Yes	16384 Bytes
ARTIM time-out	Yes	30 s
Send time-out	Yes	60 s
Receive time-out	Yes	60 s

3. Media Interchange

Not supported.

4. Support of Character Sets

Swift DEXA DICOM applications support the following character sets in addition to the default:

ISO 2022 IR 6 (ISO 646)

ISO_IR 100 (ISO 8859-1: Latin Alphabet No.1 supplementary set)

ISO_IR 101 (ISO 8859-2: Latin Alphabet No.2 supplementary set)

ISO_IR 110 (ISO 8859-4: Latin Alphabet No.4 supplementary set)

ISO_IR 126 (ISO 8859-7: Greek)

ISO_IR 138 (ISO 8859-8:Hebrew)

ISO_IR 144 (ISO 8859-5: Cyrillic)

ISO_IR 148 (ISO 8859-9: Latin Alphabet No.5 supplementary set)

ISO_IR 166 (TIS 620-2533(1990):Thai)

ISO 2022 IR 13 (JIS X 0201: Romaji, Katakana)

ISO 2022 IR 87 (JIS X 0208: Kanji)

ISO 2022 IR 149(KS X 1001:Hangul and Hanja)

GB18030

ISO_IR 192 (Unicode in UTF-8)

5. Security

Swift DEXA does not support any specific security measures.

It is assumed that Swift DEXA 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 Swift DEXA.
- b) Firewall or router protections to ensure that Swift DEXA 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.

5.1 SECURITY PROFILES

Not supported.

5.2 ASSOCIATION LEVEL SECURITY

Calling AE Title is checked when determining whether to accept Association Open Requests in the following cases:

- Associations in order to receive C-ECHO request.

Only association requests from the configured Calling AE Titles will be accepted.

5.3 APPLICATION LEVEL SECURITY

Not supported.

6. Annexes

6.1 IOD Contents

6.1.1 Created SOP Instances

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 MPPS
CONFIG	the attribute value source is a configurable parameter
DXIMG	the attribute value source is from Imaging Modality

NOTE: All dates and times are encoded in the local configured calendar and time. Date, Time and Time zone are configured using the Windows Date and Time. For details on Imaging Modality, refer to the DICOM CS of each Imaging Modality software.

6.1.1.1 Secondary Capture Image IOD

Table 6.1-1
IOD of Created SC Image SOP Instances

IE	Module	Reference	Presence of Module
Patient	Patient	Table 6.1-2	ALWAYS
Study	General Study	Table 6.1-3	ALWAYS
	Patient Study	Table 6.1-4	ANAP
Series	General Series	Table 6.1-5	ALWAYS
Equipment	General Equipment	Table 6.1-6	ALWAYS
	SC Equipment	Table 6.1-7	ALWAYS
Image	General Image	Table 6.1-8	ALWAYS
	Image Pixel	Table 6.1-9	ALWAYS
	SOP Common	Table 6.1-10	ALWAYS

6.1.1.2 Modules

**Table 6.1-2
Patient**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Name	(0010,0010)	PN	From input dicom image header or user input	VNAP	DXIMG/USER
Patient ID	(0010,0020)	LO	From input dicom image header or user input	ALWAYS	DXIMG/USER
Patient's Birth Date	(0010,0030)	DA	From input dicom image header or user input	VNAP	DXIMG/USER
Patient's Sex	(0010,0040)	CS	From input dicom image header or user input	VNAP	DXIMG/USER
Patient Comments	(0010,4000)	LT	From input dicom image header	ANAP	DXIMG

**Table 6.1-3
General Study**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Date	(0008,0020)	DA	<yyyymmdd>	ALWAYS	DXIMG
Study Time	(0008,0030)	TM	<hhmmss.fff>	ALWAYS	DXIMG
Accession Number	(0008,0050)	SH	From input dicom image header	VNAP	DXIMG
Referring Physician's Name	(0008,0090)	PN	From input dicom image header	VNAP	DXIMG
Study Description	(0008,1030)	LO	From input dicom image header	ANAP	DXIMG
Study Instance UID	(0020,000D)	UI	From input dicom image header	ALWAYS	DXIMG
Study ID	(0020,0010)	SH	From input dicom image header	VNAP	DXIMG

**Table 6.1-4
Patient Study**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Age	(0010,1010)	AS	From input dicom image header or user input	VNAP	DXIMG/USER
Patient's Size	(0010,1020)	DS	From input dicom image header or user input	ANAP	DXIMG/USER
Patient's Weight	(0010,1030)	DS	From input dicom image header or user input	ANAP	DXIMG/USER

**Table 6.1-5
General Series**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	"BMD"	ALWAYS	AUTO
Body Part Examined	(0018,0015)	CS	Defined Terms are in PS3.16 Annex L.	ALWAYS	DXIMG
Series Instance UID	(0020,000E)	UI	From input dicom image header	ALWAYS	DXIMG
Series Number	(0020,0011)	IS	From input dicom image header	ALWAYS	DXIMG
Laterality	(0020,0060)	CS	"L", "R"	ALWAYS	DXIMG
Performed Procedure Step Start Date	(0040,0244)	DA	<yyyymmdd>	ANAP	AUTO
Performed Procedure Step Start Time	(0040,0245)	TM	<hhmmss.fff>	ALWAYS	DXIMG
Performed Procedure Step ID	(0040,0253)	SH	From input dicom image header	ALWAYS	DXIMG

**Table 6.1-6
General Equipment**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008,0070)	LO	"Swift DEXA: Canon Inc."	ALWAYS	CONFIG
Institution Name	(0008,0080)	LO	From Configuration	VNAP	CONFIG
Institution Address	(0008,0081)	LO	From Configuration	VNAP	CONFIG
Institutional Department Name	(0008,1040)	LO	From Configuration	VNAP	CONFIG
Station Name	(0008,1010)	SH	From Configuration	VNAP	CONFIG
Manufacturer's Model Name	(0008,1090)	LO	"MRAD"	ALWAYS	CONFIG
Software Version	(0018,1020)	LO	Swift DEXA Version	ALWAYS	AUTO

**Table 6.1-7
SC Equipment**

Attribute Name	Tag	VR	Value	Presence of Value	Source
Conversion Type	(0008,0064)	CS	"WSD"	ALWAYS	AUTO

Table 6.1-8
General Image

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS	From input dicom image header	ALWAYS	DXIMG
Patient Orientation	(0020,0020)	CS	Blank	VNAP	AUTO
Content Date	(0008,0023)	DA	<yyyymmdd>	ALWAYS	AUTO
Content Time	(0008,0033)	TM	<hhmmss>	ALWAYS	AUTO
Image Type	(0008,0008)	CS	"DERIVED \ PRIMARY"	ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS	"00", "01"	ALWAYS	AUTO

Table 6.1-9
Image Pixel

Attribute Name	Tag	VR	Value	Presence of Value	Source
Samples per Pixel	(0028,0002)	US	"3"	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	"RGB"	ALWAYS	AUTO
Rows	(0028,0010)	US	Vertical pixel number	ALWAYS	AUTO
Columns	(0028,0011)	US	Horizontal pixel number	ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	"8"	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	"8"	ALWAYS	AUTO
High Bit	(0028,0102)	US	"7"	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	"0"	ALWAYS	AUTO
Pixel Data	(7FE0,0010)	OB	Generated by device	ALWAYS	AUTO
Planar Configuration	(0028,0006)	US	"0"	ALWAYS	AUTO
Pixel Aspect Ratio	(0028,0034)	US	"1:1"	ALWAYS	AUTO

Table 6.1-10
SOP Common

Attribute Name	Tag	VR	Value	Presence of Value	Source
SOP Class UID	(0008,0016)	CS	"1.2.840.10008.5.1.4.1.1.7"	ALWAYS	DXIMG
SOP Instance UID	(0008,0018)	UI	Generated by device	ALWAYS	DXIMG
Specific Character Set	(0008,0005)	UI	From Configuration	ALWAYS	CONFIG
Longitudinal Temporal Information Modified	(0028,0303)	CS	"UNMODIFIED"	ALWAYS	AUTO
Referenced SOP Instance UID	(0008,1155)	UI	Generated by device	ALWAYS	DXIMG

6.1.2 Used Fields in Received IOD by Application

Swift DEXA does not receive attributes via the Modality Worklist.

6.1.3 Attribute Mapping

The relationships between the attributes received from the input DICOM image header and the attributes stored in the acquired image is summarized in Table 6.1-11.

Table 6.1-11
Attribute Mapping

Input DICOM image header	Image IOD
Patient Name	Patient Name
Patient ID	Patient ID
Patient's Birth Date	Patient's Birth Date
Patient's Age	Patient's Age *
Patient's Sex	Patient's Sex
Patient's Size	Patient's Size
Patient's Weight	Patient's Weight
Patient Comments	Patient Comments
Study Instance UID	Study Instance UID
Study Date	Study Date
Study Time	Study Time
Referring Physician's Name	Referring Physician's Name
Study ID	Study ID
Accession Number	Accession Number
Study Description	Study Description
----	Modality
Series Instance UID	Series Instance UID
Series Number	Series Number
Image Laterality	Laterality
----	Performed Procedure Step ID
Study Date	Performed Procedure Step Start Date
Study Time	Performed Procedure Step Start Time
Body Part Examined	Body Part Examined
----	SOP Class UID
----	SOP Instance UID
SOP Instance UID	Referenced SOP Instance UID

* If the Patient's Birth Date attribute has a value, the Patient's Age attribute value is not used and is calculated from the Patient's Birth Date.

6.2 Data Dictionary of Private Attributes

Swift DEXA does not support private attribute.

6.3 Coded Terminology and Templates

Not applied.

6.4 Grayscale Image Consistency

Not supported.

6.5 Standard Extended / Specialized / Private SOP Classes

Not defined.

6.6 Private Transfer Syntaxes

Not supported.



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