

Elekta Oncology Systems Ltd

DICOM Conformance Statement

for

Elekta PrecisePLAN rtServer System

Release 1.00

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1. Introduction

This chapter provides general information about the purpose, scope and content of this Conformance Statement.

1.1 Scope and field of application

The scope of this DICOM Conformance Statement is to facilitate data exchange with equipment of Elekta Oncology Systems. This document specifies the compliance to the DICOM standard (formally called the NEMA PS 3.X-1993 standards). It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntax's.

The field of application is the integration of the Elekta Oncology Systems equipment into an environment of medical devices.

This Conformance Statement should be read in conjunction with the DICOM standard and its addenda.

1.2 Intended audience

This Conformance Statement is intended for:

- (potential) customers,
- system integrators of medical equipment,
- marketing staff interested in system functionality,
- software designers implementing DICOM interfaces.

It is assumed that the reader is familiar with the DICOM standard.

1.3 Contents and structure

The DICOM Conformance Statement is contained in chapter 2 through 6 and follows the contents and structuring requirements of DICOM PS 3.2-1998. Additionally, the appendixes following chapter 6 specify the details of the applied IODs.

1.4 Used definitions, terms and abbreviations

- DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see the DICOM Standard 1998.
- The word Elekta in this document refers to Elekta Oncology Systems Ltd.
- The word rtServer in this document refers to the Elekta rtServer DICOM-RT Server for PrecisePLAN.
- The term "local database" in this document is used to refer to an rtServer database accessed directly by the local rtServer application software (irrespective of whether the database itself is physically stored on the local machine or on another network server).

• The term "remote database" in this document is used to refer to a database accessed during the DICOM protocol.

1.5 References

[DICOM] The Digital Imaging and Communications in Medicine (DICOM) standard: DICOM PS 3.X (X refers to the part 1-13) and Supplements. National Electrical Manufacturers Association (NEMA) Publication Sales 1300 N. 17th Street, Suite 1847 Rosslyn, VA 22209, USA.

1.6 Important note to the reader

This Conformance Statement by itself does not guarantee successful interoperability of Elekta equipment with non-Elekta equipment. The user (or user's agent) should be aware of the following issues:

Scope

The goal of DICOM is facilitate interconnectivity rather than interoperability. Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a networked environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Elekta equipment with non-Elekta equipment. It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Elekta equipment with non-Elekta equipment.

• Validation

Elekta equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement. Where Elekta equipment is linked to non-Elekta equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

• New versions of the DICOM Standard

The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Elekta is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Elekta reserves the right to make changes to its products or to discontinue its delivery. The user should ensure that any non-Elekta provider linking to Elekta equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Elekta equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

2. Implementation Model

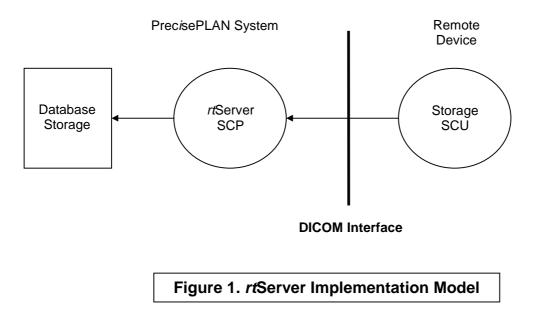
The rtServer is a DICOM-RT Server for use with the Prec*i*sePLAN Treatment Planning System. It provides the following features:

- Responding to DICOM Echo Request for verification of connectivity.
- Receiving CT images from a remote database, which are then stored into a local database.
- Receiving RT Plans and Structures from a remote database, which are then stored into a local database.

The remote database access and image transfer functions are implemented using the DICOM Storage Services.

2.1 Application Data Flow Diagram

The rtServer application behaves as a single Application Entity (AE). The related Implementation Model is shown in Figure 1.



2.2 Functional definition of Application Entities

The rtServer Application Entity acts as a Service Class Provider for Verification and Storage Service Classes. The application is active when the Prec*i*sePLAN system is powered up.

2.3 Sequencing of Real-World Activities

Within a single association rtServer will (from Revision 2.1.h) tolerate any sequence of object types. However, for an RTPLAN or RTSTRUCT object to be accepted it must be accompanied with at least one axial image within a single association. Further, the associated RTSTRUCT objects must be received in the same association as the RTPLAN objects.

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3. AE Specifications

3.1 rtServer AE Specification

The rtServer Application Entity provides Standard Conformance to the following DICOM 3.0 SOP Classes as an SCP.

Table 1. Storage SOP Classes supported by rtServer as SCP

SOP Class Name	UID
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3

3.1.1 Association Establishment Policies

3.1.1.1 General

The maximum PDU size for rtServer is configurable from a minimum of 2048 bytes. There is no upper limit. It is limited by the available system resources. The default value is 16 Kbytes.

3.1.1.2 Number of Associations

rtServer will accept one association at a time. The number of simultaneous pending association is 5.

3.1.1.3 Asynchronous Nature

rtServer does not support asynchronous operations and will not perform asynchronous window negotiation.

3.1.1.4 Implementation Identifying Information

Implementation Class UID:2.840.1015.15.1.2.1Implementation Version Name:rtServer 2.1.j

3.1.2 Association Initiation Policy

rtServer awaits association from a remote application and does not initiate an association

3.1.3 Association Acceptance Policy

rtServer accepts associations for following purposes:

- To allow remote applications to store images and radiotherapy data into the local rtServer database (see section 3.1.3.1 below).
- To allow remote applications to verify application level communication with rtServer (see section 3.1.3.2 below).

3.1.3.1 Store Images into rtServer Local Database

3.1.3.1.1 Associated Real World Activity

rtServer accepts associations from remote systems that wish to send images for storage into a local rtServer database.

3.1.3.1.2 Presentation Context Table

Any of the presentation contexts shown in Table 2 below are acceptable:

Table 2. Acceptable Presentation Contexts for rtServer Image Storage

	Presentation Context Table						
	Abstract Syntax	Transfer Syntax		Role	Ext.		
Name	UID	Name List	UID List	Rule	Neg.		
		Implicit VR Little Endian	1.2.840.10008.1.2				
CT Image 1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None			
Slorage		Explicit VR Big Endian	1.2.840.10008.1.2.2				

Table 3. Acceptable Presentation Contexts for rtServer Radiotherapy Object Storage

	Presentation Context Table						
Abstract Syntax		Transfer	Role	Ext.			
Name	UID	Name List	UID List	Role	Neg.		
DT Dian	RT Plan Storage 1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian	1.2.840.10008.1.2				
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None		
Sillaye		Explicit VR Big Endian	1.2.840.10008.1.2.2				
		Implicit VR Little Endian	1.2.840.10008.1.2				
Set Storage	RT Structure 1.2.840.10008.5.1.4.1.1.481.3	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None		
Ser Storage		Explicit VR Big Endian	1.2.840.10008.1.2.2				

3.1.3.1.3 C-STORE SCP Conformance

rtServer provides standard conformance.

The AE is a Conformance Level 0 Storage SCP: not all DICOM Type 1 and 2 attribute are stored. The attributes that are stored for internal use of rtServer are listed in Appendices. All other received attributes will be discarded. The SOP Instance UIDs are discarded when the images and RT data are committed to main rtServer database.

For safety reasons, incoming images are stored into a local database dedicated to DICOM Import. An rtServer function allows the subsequent interactive relocation of the images into the main rtServer clinical database at the rtServer operators discretion. All RT-Plan and RT-Structure-set data is purged that is received during an incomplete or failed association. Image files are not purged. Plan files are stored with an identification number that increments from the highest pre-existing plan number for that patient. Up to 16 plan files may be received in a single association. Used CT_SIM plan files should be purged periodically by the user. The datafile corresponding to each plan file that contains the selected machine is purged on receipt of a new corresponding plan file. (These are the so-called MACH_IDS files).

For successful receipt of RT-Plan and RT-Structure-set data these objects must be received with at least one axial CT image in the same association. This is required in order to extract the coordinate frame from the CT image. A difference introduced with Revision 2.1.h is that the CT image, RT-Plan and RT-Structure-set objects may now be received in any order.

The duration of image storage is determined by the operator of the PrecisePLAN system.

3.1.3.1.4 Presentation Context Acceptance Criterion

rtServer accepts all contexts in the intersection of the proposed and acceptable presentation contexts. There is no check for duplicate contexts. Duplicate contexts are accepted.

3.1.3.1.5 Transfer Syntax Selection Policies

rtServer prefers its native byte ordering (Big Endian), and will prefer explicit over implicit VR for Little Endian byte ordering.

3.1.3.2 Verify Application Level Communication

3.1.3.2.1 Associated Real World Activity

rtServer accepts associations from systems that wish to verify the application level communication using the C-ECHO command.

3.1.3.2.2 Presentation Context Table

Any of the presentation contexts shown in Table 4 below are acceptable:

Table 4. Acceptable Presentation Contexts for Verification

	Presentation Context Table						
	Abstract Syntax	Transfer Syntax		Role	Ext.		
Name	UID	Name List	UID List	Role	Neg.		
		Implicit VR Little Endian	1.2.840.10008.1.2				
Verification 1.2.840.10008.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None			
		Explicit VR Big Endian	1.2.840.10008.1.2.2				

3.1.3.2.3 C-ECHO SCP Conformance

rtServer provides standard conformance.

3.1.3.2.4 Presentation Context Acceptance Criterion

rtServer accepts all contexts in the intersection of the proposed and acceptable presentation contexts. There is no check for duplicate contexts. Duplicate contexts are accepted.

3.1.3.2.5 Transfer Syntax Selection Policies

rtServer prefers its native byte ordering (Big Endian), and will prefer explicit over implicit VR for Little Endian byte ordering.

4. Communication Profiles

4.1 Supported Communication Stacks

The rtServer application provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2 TCP/IP Stack

rtServer inherits its TCP/IP stack from the operating system upon which it executes.

4.3 Physical Media Support

rtServer supports Ethernet ISO.8802-3.

On Elekta supplied hardware platforms the connection types provided are 10BASE2 (BNC), 10BASE5 (Standard AUI) and 10BASE-T (RJ45 twisted pair).

5. Extensions/Specialisations/Privatisations

Not applicable.

6. Configuration

The configuration of an rtServer system is done by means of setting environment variables either from the startup or login script file. Configuration changes are not effective until the rtServer system is restarted. The environment variable names and default values are listed below. Default value is used if a variable is not explicitly set.

Configuration maintenance should be done by Elekta service engineers only.

Variable Name	Default	Notes
rtServer_PORT	104	TCP/IP listening port
rtServer_MAX_PDU_LEN	16*1024	In bytes, minimum value is 4 Kbyte.
rtServer_ARTIM_TIMEOUT	60	In seconds
rtServer_READ_TIMEOUT	45	In seconds
rtServer_WRITE_TIMEOUT	15	In seconds
rtServer_ACCEPT_SCU	Accept all	By default, all devices are allowed to connect, regardless of Calling and Called AE Title. If this setting is used, then both AE Titles are enforced. Multiple Calling AE Titles in the environment string should be separated by a comma. e.g., SCU_A, scu B, Another SCU.

Table 5. Configurable parameters

6.1 AE Title/Presentation Address mapping

6.1.1 Local AE Titles and Presentation Addresses

The local Application Entity Title is derived from the rtServer Workstation Name, which is configurable. Only printable ASCII characters are used. All other characters are replaced with underscore. Resultant string is truncated to 16 characters, if needed, to conform to the standard. A message is logged, if the AE Title is different from the hostname. The listen port number is configurable.

6.1.2 Remote AE Titles and Presentation Addresses

Not applicable.

6.2 Configurable Parameters

The Maximum PDU size is configurable.

The AE can be configured either to accept or reject association requests offering an incorrect Called and Calling AE title.

DICOM Upper Layer Timeouts are configurable.

APPENDIX A Mapping of RT Structure Set IOD

The modules of RT Structure Set IOD are listed in Table 6 below Please refer to the DICOM Standard 1998 for complete definition of the entities, modules and attributes.

Entity Name	Module Name	Usage	Reference
Patient	Patient	М	Table 7
Study	General Study	М	Table 8
	Patient Study	U	Not used
Series	RT Series	М	Table 9
Equipment	General Equipment	М	Not used
Structure Set	Structure Set	М	Table 10
	ROI Contour	М	Table 11
	RT ROI Observations	М	Not used
	Approval	U	Not used
	Audio	U	Not used
	SOP Common	М	Table 12

Table 6. RT Structure Set Information Object Definitions

Table 7. Patient Module

Attribute Name	Tag	Туре	Mapping and Notes
Patient Name	(0010,0010)	2	AsPlanHdr.patName, truncated to 24 chars
Patient ID	(0010,0020)	2	AsPlanHdr.patId, truncated to 24 chars

Table 8. General Study Module

Attribute Name	Tag	Туре	Mapping and Notes
Study Instance UID	(0020,000D)	1	AsPlanHdr.ctStudyUid, truncated to 24 chars

Table 9. RT Series Module

Attribute Name	Tag	Туре	Mapping and Notes
Modality	(0008,0060)	1	Checked for the value of 'RTSTRUCT'

Table 10. Structure Set Module

Attribute Name	Tag	Туре	Mapping and Notes
Structure Set Label	(3006,0002)	1	AsPlanHdr.planName
Structure Set ROI Sequence	(3006,0020)	3	Checked for presence and further processing
> ROI Number	(3006,0022)	1C	Used for cross referencing ROI Contour Sequence
> ROI Name	(3006,0026)	2C	AsStructure.name, truncated to 128 chars

Table 11. ROI Contour Module

Attribute Name	Tag	Туре	Mapping and Notes
ROI Contour Sequence	(3006,0039)	1	Checked for presence and further processing
> Referenced ROI Number	(3006,0084)	1	Used for cross referencing Structure Set ROI
			Sequence
> ROI Display Color	(3006,002A)	3	AsStructure.color, RGB values are mapped to
			internal constants
> Contour Sequence	(3006,0039)	1	Checked for presence and further processing
>> Contour Image Sequence	(3006,0016)	3	Not processed. Instead, the CT Images and
>>> Referenced SOP Class UID	(0008,1150)	1C	Contours are linked by Z coordinate in Contour
>>> Referenced SOP Instance UID	(0008,1155)	1C	Data (3006,0050) and Slice Location (0020,1041)
>> Contour Geometric Type	(3006,0042)	1C	Only 'CLOSED_PLANAR' (structures) and 'POINT'
			(markers) are processed. All others ignored.
>> Contour Slab Thickness	(3006,0044)	3	Not processed, i.e., structure thickness is treated
			as infinitesimal.
>> Number of Contour Points	(3006,0046)	1C	Truncated to 600 points.
>> Contour Data	(3006,0050)	1C	X,Y values are used for defining a planar structure.
			Z value is used for location. Non coplanar or tilted
			(i.e. variation in Z value) contours are ignored. If
			number of points exceeds 599, the contour is
			truncated and closed.
			Markers are accepted without any restrictions.

Note: A limit of 20 structures and a limit of 400 total contours per structure is applied.

Table 12. SOP Common Module

Attribute Name	Tag	Туре	Mapping and Notes
SOP Class UID	(0008,0016)	1	Used for verification of incoming data
SOP Instance UID	(0008,0018)	1	AsStructure.sopInstUid, saved for cross reference to RT PLAN

APPENDIX B Mapping of RT Plan IOD

The modules of RT Structure Set IOD are listed in Table 13 below Please refer to the DICOM Standard 1998 for complete definition of the entities, modules and attributes.

Entity Name	Module Name	Usage	Reference
Patient	Patient	M	Table 7
Study	General Study	Μ	Table 8
_	Patient Study	U	Not used
Series	RT Series	Μ	Table 14
Equipment	General Equipment	Μ	Not used
Plan	RT General Plan	Μ	Table 15
	RT Prescription	U	Not used
	RT Tolerance Tables	U	Not used
	RT Patient Setup	U	Table 16
	RT Fraction Scheme	U	Not used
	RT Beam	С	Table 17
	RT Brachy App Setup	С	Not used
	Approval	U	Not used
	Audio	U	Not used
	SOP Common	Μ	

Table 13. RT Plan Information Object Definitions

Table 14. RT Series Module

Attribute Name	Tag	Туре	Mapping and Notes
Modality	(0008,0060)	1	Checked for the value of 'RTPLAN'

Table 15. RT General Plan Module

Attribute Name	Tag	Туре	Mapping and Notes
RT Plan Label	(300A,0002)	1	AsPlanHdr.planName, truncated to 24 chars
Ref. Structure Set Sequence	(300C,0060)	1C	Checked for presence and further processing
> Referenced SOP Class UID	(0008,1150)	1C	Checked for value of '1.2.840.10008.5.1.4.1.1.481.3'
> Referenced SOP Instance UID	(0008,1155)	1C	Used for referencing Structures and Markers

Table 16. Patient Setup Module

Attribute Name	Tag	Туре	Mapping and Notes
Patient Setup Sequence	(300A,0180)	1	Only Patient Position (0018,5100) sent as part of CT
> Patient Setup Number	(300A,0182)	1	Images is processed
> Patient Position	(0018,5100)	1C	

Table 17. RT Beam Module

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Attribute Name	Tag	Туре	Mapping and Notes
Beam Sequence	(300A,00B0)	1 1	Checked for presence and further processing
> Beam Number	(300A,00C0)	1	AsBeam.id, numerical value is extracted from string
> Beam Name	(300A,00C2)	3	AsBeam.name, truncated to 24 chars
> Beam Type	(300A,00C4)	1	Only 'STATIC' processed. All others ignored.
> Radiation Type	(300A,00C4)	2	Only 'PHOTON' and 'ELECTRON' processed. All
> Radiation Type	(300A,0000)	2	others set to unknown.
> Treatment Machine Name	(300A,00B2)	2	AsBeam.AsMachine.id, truncated to 24 chars
> Source Axis Distance	(300A,00B4)	3	AsBeam.AsMachine.sad
> Beam Limiting Device Sequence	(300A,00B6)	1	Checked for presence and further processing
>> RT Beam Limiting Device Type	(300A,00B8)	1	AsBeam.AsCollimator.type
>> Number of Leaf/Jaw Pairs	(300A,00BC)	1	AsBeam.AsMachine.AsMLC.numLeaves
>> Leaf Position Boundaries	(300A,00BE)	2C	AsBeam.AsMachine.AsMLC.leafWidth. Only MLC
>> Lear Position Doundaries	(300A,00BL)	20	with constant width of leaves are processed.
> Referenced Patient Setup	(300C,006A)	3	Not processed
Number	(3000,000A)	5	Not processed
> Number of Blocks	(300A,00F0)	1	Not processed, value computed from number of
			blocks processed successfully.
> Block Sequence	(300A,00F6)	1C	Checked for presence and further processing
>> Block Type	(300A,00F8)	10 1C	Only 'SHIELDING' and 'APERTURE' processed. All
>> Block Type	(0007,001.0)	10	others set to unknown
>> Block Name	(300A,00FE)	3	AsBlockData.name, truncated to 24 chars
>> Block Number of Points	(300A,0104)	2C	AsBlockData.numVertices, limited to 128
>> Block Data	(300A,0106)	2C	AsBlockData.x and AsBlockData.y. If number of
			points exceeds 127, the contour is truncated and
			closed.
> Control Point Sequence	(300A,0111)	1	Checked for presence and further processing
>> Beam Limiting Device Position	(300A,011A)	1C	Checked for presence and further processing
Sequence			1 1 3
>>> Beam Limiting Device Type	(300A,00B8)	1C	'X', 'Y', 'ASYMX', 'ASYMY', 'MLCX' and 'MLCY'
	(,	_	processed, all others ignored
>>> Leaf/Jaw Positions	(300A,011C)	1C	Processing depends upon value in Beam Limiting
			Device Type (300A,00B8)
>> Gantry Angle	(300A,011E)	1C	AsBeam.AsBeamCoordinate.gantryAngleInit,
, 3			gantryAngleFinal
>> Beam Limiting Device Angle	(300A,0120)	1C	AsBeam.AsBeamCoordinate.collAngle
>> Patient Support Rotation	(300A,0123)	1C	AsBeam.AsBeamCoordinate.couchAngle
Direction	, ,,	-	0
>> Isocenter Position	(300A,012C)	2C	AsBeam.AsBeamCoordinate.isoX,isoY,isoZ

APPENDIX C Mapping of CT Image IOD

The modules of CT Image IOD are listed in Table 18 below. Please refer to the DICOM Standard 1998 for complete definition of the entities, modules and attributes.

Entity Name	Module Name	Usage	Reference
Patient	Patient	Μ	Table 19
Study	General Study	Μ	Table 20
	Patient Study	U	Not used
Series	General Series	Μ	Table 21
Frame of Reference	Frame of Reference	Μ	Table 22
Equipment	General Equipment	Μ	Table 23
Image	General Image	Μ	Not used
	Image Plane	Μ	Table 24
	Image Pixel	Μ	Table 25
	Contrast/Bolus	С	Not used
	CT Image	Μ	Table 26
	Overlay Plane	U	Not used
	VOI LUT	U	Not used
	SOP Common	Μ	Table 27

Table 18. CT Image Information Object Definitions

Table 19. Patient Module

Attribute Name	Tag	Туре	Mapping and Notes
Patient Name	(0010,0010)	2	Required as default patient name
Patient ID	(0010,0020)	2	Required as default patient id

Table 20. General Study Module

Attribute Name	Tag	Туре	Mapping and Notes
Study Instance UID	(0020,000D)	1	Ignored
Study Id	(0020,0010)	1	Required

Table 21. General Series Module

Attribute Name	Тад	Туре	Mapping and Notes
Modality	(0008,0060)	1	Checked for the value of 'CT'
Series Instance UID	(0020,000E)	1	Ignored
Series Number	(0020,0011)	2	Required
Patient Position	(0018,5100)	1C	Required

Table 22. Frame of Reference

Attribute Name	Tag	Туре	Mapping and Notes
Frame of Reference UID	(0020,0052)	1	Required. User as base frame of reference for
			export.

Table 23. General Equipment Module

Attribute Name	Tag	Туре		Mapping and Notes
Manufacturer	(0008,0070)	2	Required.	
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Table 24. Image Plane Module

Attribute Name	Тад	Туре	Mapping and Notes
Pixel Spacing	(0028,0030)	1	Required.
Image Orientation (Patient)	(0020,0037)	1	Required. Total Z component must be less than
			.175mm to assure transverse slices.
Image Position (Patient)	(0020,0032)	1	Required. X and Y coordinate must be same for
			all images.
Slice Location	(0020,1041)	3	Required if RTSTRUCT is sent. Used to map
			contours to CT slices.

Table 25. Image Pixel Module

Attribute Name	Tag	Туре	Mapping and Notes
Rows	(0028,0010)	1	Required.
Columns	(0028,0011)	1	Required.
Pixel Representation	(0028,0103)	1	Required.
Pixel Data	(7FE0,0010)	1	Required.

Table 26. CT Image Module

Attribute Name	Tag	Туре	Mapping and Notes
Image Type	(0008,0008)	1	Ignored.
Samples Per Pixel	(0028,0002)	1	Must be 1
Photometric Interpretation	(0028,0004)	1	Ignored. MONOCHROME2 assumed.
Bits Allocated	(0028,0100)	1	Must be 16
Bits Stored	(0028,0101)	1	All 16 bits assumed. i.e. embedded overlays not
			permitted.
High Bit	(0028,0102)	1	Assumed to be 15
Rescale intercept	(0028,1052)	1	Required.
Rescale slope	(0028,1053)	1	Required.
KVP	(0018,0060)	2	Required.
Acquisition Number	(0020,0012)	2	Optional. Defaults to 0 if not set.
Reconstruction Diameter	(0018,1100)	3	If sent must match product of pixelSpacing.x and
			number of columns within 3mm.
Gantry/Detector Tilt	(0018,1120)	3	If sent must be less than 1 degree from zero

Table 27. SOP Common Module

Attribute Name	Тад	Туре	Mapping and Notes
SOP Class UID	(0008,0016)	1	Used for verification of incoming data
SOP Instance UID	(0008,0018)	1	Saved for cross reference to RTSTRUCT if
			RTSTRUCT is sent