

TOSHIBA

DICOM CONFORMANCE STATEMENT
FOR CTport
FOR
TOSHIBA WHOLE-BODY X-RAY CT SCANNER
A-SERIES
MODEL CGPS-007A, CGPS-008A
CGPM-009A, CGPM-010A
CGPM-012A

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1 Introduction

This document is a DICOM Conformance Statement for Toshiba A-series CTport. It is intended to provide the reader with the knowledge of how to integrate this product within a DICOM compliant hospital network. It details the DICOM Service Classes, Information Objects, and Communication Protocols which are supported by this product.

If the reader is unfamiliar with DICOM, it is recommended that they read the DICOM Specification (referenced below) prior to reading this conformance statement. Also note that this document is formatted according to the DICOM Specification, Part 2: Conformance.

1.1 References

- ACR-NEMA Digital Imaging and Communications in Medicine, DICOM V3.0.

1.2 Definitions

- **Association Establishment** - An Association Establishment is the first phase of communication between two DICOM Application Entities. The AEs use the Association Establishment to negotiate how data will be encoded and the type of data to be exchanged.
- **Called Application Entity Title** - The Called AE Title defines the intended receiver of an Association.
- **Calling Application Entity Title** - The Calling AE Title defines the requestor of an Association.
- **DICOM Message Service Element (DIMSE)** - A DIMSE defines the services and protocols utilized by an Application Entity to exchange messages.
- **Information Object Definition (IOD)** - An IOD is a data model which is an abstraction of real-world information. This data model defines the nature and attributes relevant to the class of real-world objects represented.
- **Service Class Provider (SCP)** - A Service Class Provider plays the "server" role to perform operations and invoke notifications during an Association. An example of a Storage Service Class Provider would be an image storage device. In this case, the image storage device is storing the image that was sent by a Service Class User.
- **Service Class User (SCU)** - A Service Class User plays the "client" role to invoke operations and perform notifications during an Association. An example of a Storage Service Class User would be an image acquisition device. In this case, the image acquisition device will create and send a DICOM image by requesting that a Service Class Provider store that image.
- **Service/Object Pair (SOP) Class** - A SOP Class is defined by the union of an Information Object Definition and a set of DIMSE Services. A DICOM Application Entity may support one or more SOP Classes. Each SOP Class is uniquely identified by a SOP Class UID.
- **SOP Instance** - A specific occurrence of a Information Object.
- **Transfer Syntax** - The Transfer Syntax is a set of encoding rules that allow DICOM Application Entities to negotiate the encoding techniques (e.g. data element structure, byte ordering, compression) they are able to support. The Transfer Syntax is negotiated during Association Negotiation.
- **Unique Identifier (UID)** - A Unique Identifier is a globally unique, ISO compliant, ASCII-numeric string. It guarantees uniqueness across multiple countries, sites, vendors and equipment.

1.3 Acronyms, Abbreviations and Symbols

- ACC American College of Cardiology
- ACR American College of Radiology
- ASCII American Standard Code for Information Interchange
- AE Application Entity
- ANSI American National Standards Institute
- CEN TC251 Comite Europeen de Normalisation - Technical Committee 251 - Medical Informatics
- DICOM Digital Imaging and Communications in Medicine
- DIMSE DICOM Message Service Element
- DIMSE-C DICOM Message Service Element - Composite
- DIMSE-N DICOM Message Service Element - Normalized
- HIS Hospital Information System
- HL7 Health Level 7
- IE Information Entity
- IOD Information Object Definition
- ISO International Standards Organization
- JIRA Japan Industries Association of Radiological Systems
- NEMA National Electrical Manufacturers Association
- OSI Open Systems Interconnection
- PDU Protocol Data Unit
- RIS Radiology Information System
- SCP Service Class Provider
- SCU Service Class User
- SOP Service-Object Pair
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

2 Implementation Model

2.1 Application Data Flow Diagram

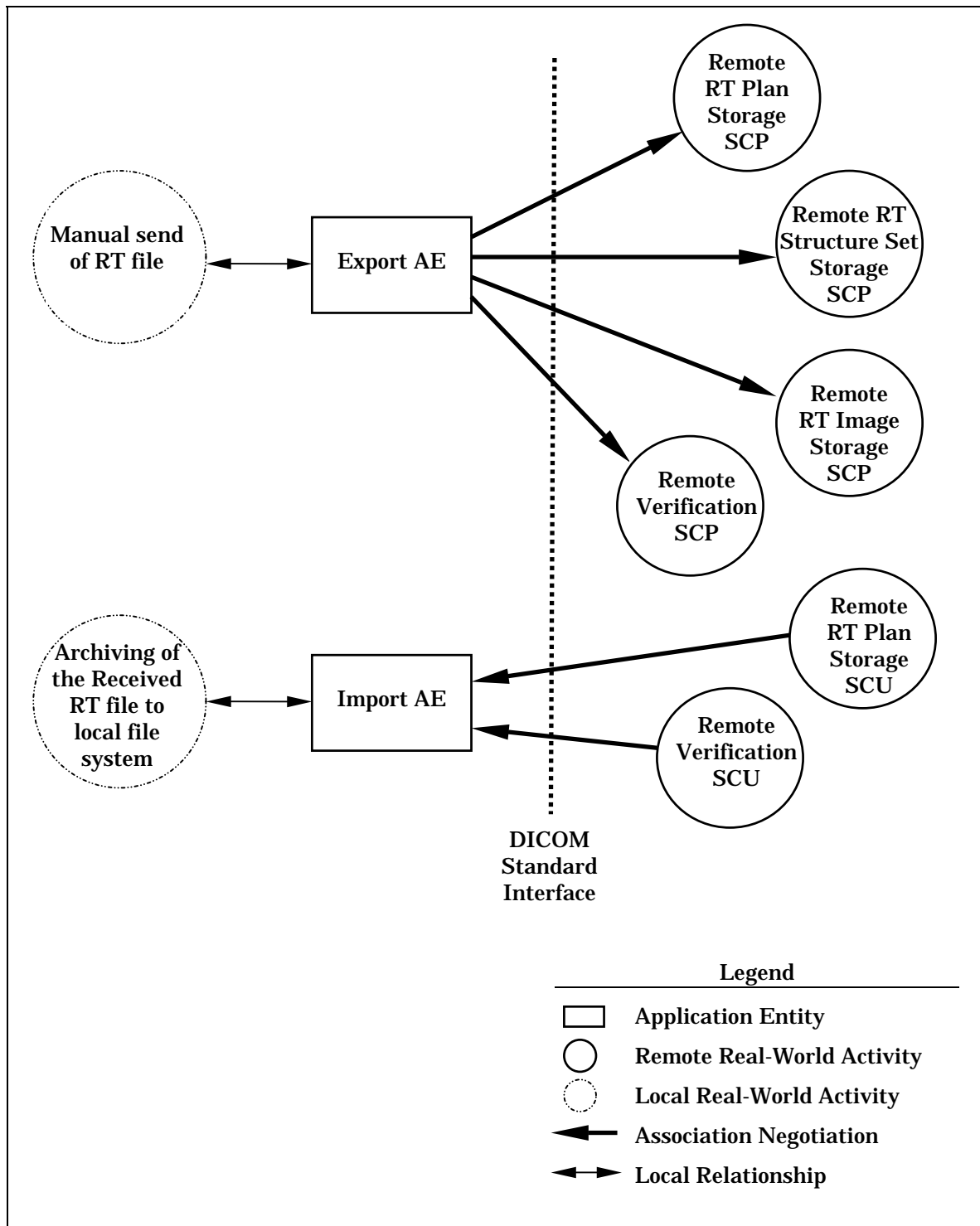


Figure 1

2.2 Functional Definitions of AE's

2.2.1 Export AE

Export AE is used to verify that a remote DICOM device is active on the network, and to transmit files to a remote DICOM device. It therefore performs the following tasks:

- Builds DICOM RT Plan, RT Structure Set or RT Image Information Objects
- Establishes DICOM Association with remote DICOM device
- Performs storage of DICOM RT Plan, RT Structure Set or RT Image Information Objects to remote DICOM device
- Performs verification of remote DICOM device's presence on network

2.2.2 Import AE

Import AE is used to respond to requests to verify that the CTport is present and active on the network, to receive RT Plan Information Objects from remote DICOM device.

2.3 Sequencing of Real World Activities

2.3.1 Features

2.3.1.1 Manual Send of RT File

- Operator requests to send RT file after selecting the RT file to be transferred from the study list, the series list or the image list.

2.3.1.2 Archiving of the Received RT File to Local File System

- The CTport receives RT file from remote DICOM devices.
- The CTport archives the received RT file to local file system.

2.3.2 Operation

2.3.2.1 Manual Send of RT File

The operation for sending files is described below:

- Step-1: Planning using CTport after CT scan and create plan file.
- Step-2 Also create structure set file and DRR images (RT images), if necessary.
- Step-3: Select these files, the series or the studies to be sent.
- Step-4: Select the destination of files sending
- Step-5: Request sending.

2.3.2.2 Archiving of the Received RT File to Local File System

This is no specific operation.

3 AE Specifications

3.1 Export Specification

Export AE provides Standard Conformance to the following DICOM SOP Classes as an SCU:

Table 1

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5

3.1.1 Export Association Establishment Policies

3.1.1.1 Export General

Export AE will utilize and understand the following Application Context Name:

Table 2

DICOM V3.0 Application Context	1.2.840.10008.3.1.1.1
--------------------------------	-----------------------

Export AE supports a minimum PDU size of 16 Kbytes and a maximum PDU size of 16Kbytes.

The default value is set to 16 Kbytes.

3.1.1.2 Export Number of Associations

Export AE can only establish one association at a time, independent of the number of destinations chosen.

3.1.1.3 Export Asynchronous Nature

Export AE allows a single outstanding operation on any association. Therefore, Export AE does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

3.1.1.4 Export Implementation Identifying Information

Export AE will specify the following Implementation Identifying Information:

- Implementation Class UID 1.2.392.200036.9116.2.2.2.100
- Implementation Version Name TM_CT_CMW_V2.00

3.1.2 Export Association Initiation by Real-World Activity

Export AE initiates an association when the following activity is chosen by the operator:

- “Manual send of RT file”
 - Verification- Verify that a remote DICOM device is present on the network
 - Storage - Create and store a RT file to a remote DICOM device

Verification is initiated automatically at the “Manual send of RT File”

3.1.2.1 Export Real-World Activity - Verification

3.1.2.1.1 Export Associated Real-World Activity - Verification

Export AE performs Verification automatically before performing a file transfer request. This feature can be turned off in the configuration, should the destination device not support the Verification Service.

3.1.2.1.2 Export Proposed Presentation Contexts - Verification

Export AE proposes the following Presentation Context shown below:

Table 3

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

3.1.2.2 Export Real-World Activity - Storage

3.1.2.2.1 Export Associated Real-World Activity - Storage

Storage is executed by the CTport after the operator's RT file transfer requests are queued.

3.1.2.2.2 Export Proposed Presentation Contexts - Storage

Export AE proposes the following Presentation Contexts shown below:

Table 4

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

3.1.2.2.2.1 Export SOP Specific Conformance - Storage

Export AE operation involves the following sequence of steps for each RT file transfer.

- (1) Association establishment (requestor only)
- (2) Data transfer (SCU only)
- (3) Association release (requestor only)

Export AE judges that the transfer of one plan file succeeded when the result of (2) "Data transfer" is "Success" even if the result of (3) "Association release" is "Failure".

RT Image, RT Structure Set and RT Plan Information Object Definition is described in chapter 8.

3.1.3 Export Association Acceptance Policy

Export AE does not accept any associations generated by remote applications.

3.2 Import Specification

Import AE provides Standard Conformance to the following DICOM SOP Class as an SCP:

Table 5

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5

3.2.1 Import Association Establishment Policies

3.2.1.1 Import General

Import AE will utilize and understand the following Application Context Name:

Table 6

DICOM V3.0 Application Context	1.2.840.10008.3.1.1.1
--------------------------------	-----------------------

Export AE supports a minimum PDU size of 16 Kbytes and maximum PDU size of 16 Kbytes. The default value is set to 16 Kbytes.

3.2.1.2 Import Number of Associations

Import AE supports up to three associations at a time.

3.2.1.3 Import Asynchronous Nature

Import AE allows a single outstanding operation on any association. Therefore, Import AE does not support asynchronous operations window negotiation, other than the default as specified by the specification.

3.2.1.4 Import Implementation Identifying Information

Import AE will specify the following Implementation Identifying Information:

- Implementation Class UID 1.2.392.200036.9116.2.2.2.100
- Implementation Version Name TM_CT_CMW_V2.00

3.2.2 Import Association Initiation by Real-World Activity

Import AE never initiates an association.

3.2.3 Import Association Acceptance Policy

When Import AE receives an association request, it will allow the following activities to be performed during that association:

- Verification - Allow a remote DICOM device to verify that the CTport is active on the DICOM network
- Storage - Allow a remote DICOM device to send a RT Plan to the CTport.

3.2.3.1 Import Real-World Activity - Verification

3.2.3.1.1 Import Associated Real-World Activity - Verification

The CTport responds to Verification made by a remote Verification SCU.

3.2.3.1.2 Import Presentation Context Table - Verification

Import AE accepts the Presentation Contexts shown below:

Table 7

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

3.2.3.1.2.1 Import SOP Specific Conformance - Verification

Import AE responds with the following status code in response to a C-ECHO request.

Table 8

Service Status	Further Meaning	Protocol Codes	Description
Success	Success	0x0000	Operation performed properly

3.2.3.1.3 Import Presentation Context Acceptance Criterion - Verification

Import AE accepts the Presentation Contexts listed in the Presentation Context Table (Table 7).

3.2.3.1.4 Import Transfer Syntax Selection Policies - Verification

Import AE supports only the Implicit VR Little Endian transfer syntax. It rejects any proposed Presentation Context which does not specify the default Implicit VR Little Endian transfer syntax.

3.2.3.2 Import Real-World Activity - Storage

3.2.3.2.1 Import Associated Real-World Activity - Storage

The CTport receives RT Plan data sent by a remote Storage SCU, archives it to local file system and responds to the remote Storage SCU.

3.2.3.2.2 Import Presentation Context Table - Storage

Import AE accepts the Presentation Contexts shown below:

Table 9

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

3.2.3.2.2.1 Import SOP Specific Conformance - Storage

Import AE responds with the following status code in response to a C-STORE request.

Table 10

Service Status	Further Meaning	Protocol Codes	Description
Success	Success	0x0000	Operation performed properly
Error	Data set does not match SOP Class	0xA900	SOP Class UID does not match SOP Class
	Cannot understand	0xC000	Invalid data set, or not supported extended character sets. (see chapter 7 'Support of Extended Character sets')
Refused	Out of Resources	0xA700	Local resource is insufficient.

If the service status response is "Refused" then check the CTport for one of the following situations:

- 1) Out of free local storage space
- 2) Busy processes/applications that are draining CPU resources

Import AE is Level 0 Conformance as described in Section B.4.1 of Part 4 of DICOM V3.0 Standard document.

RT Plan Information Object Definitions for Storage SCP are described in chapter 9.

3.2.3.2.3 Import Presentation Context Acceptance Criterion - Storage

Import AE accepts the Presentation Contexts listed in the Presentation Context (Table9).

3.2.3.2.4 Import Transfer Syntax Selection Policies - Storage

Import AE supports only the Implicit VR Little Endian transfer syntax. It rejects any proposed Presentation Context which does not specify the default Implicit VR Little Endian transfer syntax.

4 Communication Profiles

4.1 Supported Communication Stacks

This product provides DICOM TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2 OSI Stack

Not applicable to this product.

4.3 TCP/IP Stack

This product inherits its TCP/IP stack from the computer system upon which it executes.

4.3.1 API

Not applicable to this product.

4.3.2 Physical Media Support

This product is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it executes.

4.4 Point-to-Point Stack

Not applicable to this product.

5 Extensions/Specializations/Privatizations

5.1 Standard Extended/Specialized/Private SOPs

CTport supports the standard extended SOP Class for RT Plan Storage.

The following table lists the Curve Module that are used to transfer of treatment field generated.

Refer to 8.2.17 RT Beams Module, 9.2.9 RT Beams Module.

Table 11

Attribute Name	Tag	Type	Attribute Description
Curve Dimensions	(50xx,0005)	3	Number of dimensions for these data. The dimensions may be any number from 1 to n.
Number of Points	(50xx,0010)	3	Number of data points in this Curve.
Type of Data	(50xx,0020)	3	Type of data in this curve.
Data Value Representation	(50xx,0103)	3	Data representation of the curve data points.
Curve Data	(50xx,3000)	3	Curve Data.
Curve Description	(50xx,0022)	3	User-defined comments about the Curve.
Axis Unit	(50xx,0030)	3	Units of measure for the axes.

6 Configuration

For the CTport, the configuration can be set using the DICOM Online Setup interface.

Note: Settings is performed by Toshiba Service Personnel at the time of installation of the CTport.

6.1 AE Title/Presentation Address Mapping

Mapping from the AE titles to the presentation addresses are as follows:

- One port number and one AE title can be described for one host name.
- Each AE title is mapped to one port number.
- The CTport has following default values:

Local Port No.	2700
Local AE Title	TM_CT_CMW_V2.00

6.2 Configurable Parameters

6.2.1 Time-out Value, Retry Count, Retry Interval

The time-out value, retry count, and retry interval in each status are shown below.

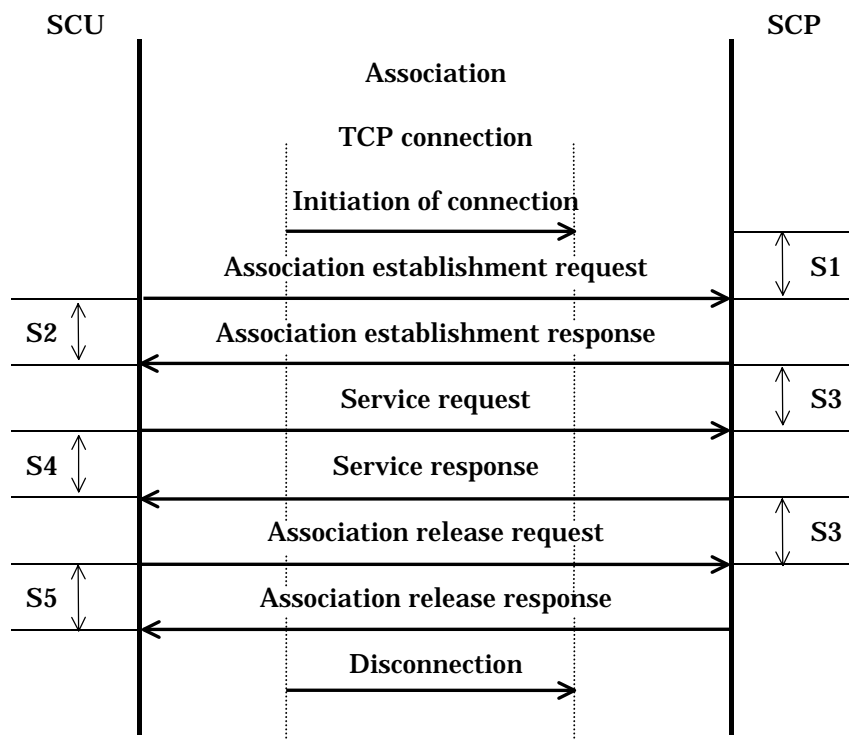


Figure 2

Table 12

Status	Item	Time-out value	Retry count	Retry interval	Remarks
S1	Association establishment request waiting time	default: 30 seconds range: 1 to 999999	Not set	Not set	Only one parameter can be set in the CTport.
S2	Association establishment response waiting time	default: 30 seconds range: 1 to 999999	default: Once range: 0 to 999999	default: 30 seconds range: 0 to 999999	Only one parameter can be set in the CTport.
S3	Service request waiting time	default: 180 seconds range: 1 to 999999	Not set	Not set	Only one parameter can be set in the CTport.
S4	Service response waiting time	default: 180 seconds range: 1 to 999999	Not set	Not set	Can be set for each provided service
S5	Association release response waiting time	default: 5 seconds range: 1 to 999999	Not set	Not set	Only one parameter can be set in the CTport.

6.2.2 Warning Status Criteria

The warning status criteria can be set for each station and each service, for Export AE.

6.2.2.1 RT Image Storage

If SUCCESS is set, the CTport judges that the RT image file transfer succeeded.

If FAIL is set, the CTport judges that the RT image file transfer failed.

Table 13

Warning response	Default	Parameter setting range
Coercion of Data Elements	FAIL	SUCCESS or FAIL
Data Set does not match SOP Class	FAIL	SUCCESS or FAIL
Elements discarded	FAIL	SUCCESS or FAIL

6.2.2.2 RT Structure Set Storage

If SUCCESS is set, the CTport judges that the RT structure set file transfer succeeded.

If FAIL is set, the CTport judges that the RT structure set transfer failed.

Table 14

Warning response	Default	Parameter setting range
Coercion of Data Elements	FAIL	SUCCESS or FAIL
Data Set does not match SOP Class	FAIL	SUCCESS or FAIL
Elements discarded	FAIL	SUCCESS or FAIL

6.2.2.3 RT Plan Storage

If SUCCESS is set, the CTport judges that the RT plan file transfer succeeded.

If FAIL is set, the CTport judges that the RT plan file transfer failed.

Table 15

Warning response	Default	Parameter setting range
Coercion of Data Elements	FAIL	SUCCESS or FAIL
Data Set does not match SOP Class	FAIL	SUCCESS or FAIL
Elements discarded	FAIL	SUCCESS or FAIL

6.3 Implementation Information and Maximum Reception PDU Size

The default values for the CTport are used for the Implementation Class UID, the Implementation Version name, and the Maximum length received. They cannot be changed.

Table 16

Parameter	Default
Implementation Class UID	1.2.392.200036.9116.2.2.2.100
Implementation Version Name	TM_CT_CMW_V2.00
Maximum length received	0x4000 (16Kbytes)

6.4 Default Transfer Syntax

Default = "Implicit VR Little Endian"

7 Support of Extended Character Sets

This product supports the following character sets:

- ISO-IR 6 (default) ISO 646
- ISO-IR 100 (Latin Alphabet
No.1) Supplementary set of ISO 8859
- ISO-IR 13 (Japanese) JIS X 0201 (Katakana)
- ISO-IR 87 (Japanese) JIS X 0208 (Kanji)

8 Information Object Definition - Storage SCU

8.1 Entity Module Definitions

The information modules for the CTport are defined below.

8.1.1 RT Image IOD Modules

Table 17

Information Entity	Module	Reference	Usage ¹
Patient	Patient Module	8.2.1 Table 20	M
Study	General Study Module	8.2.2 Table 21	M
	Patient Study Module	8.2.3 Table 22	U
Series	RT Series Module	8.2.4 Table 23	M
Frame of Reference	Frame of Reference Module	8.2.5 Table 24	U
Equipment	General Equipment Module	8.2.6 Table 25	M
Image	General Image Module	8.2.7 Table 26	M
	Image Pixel Module	8.2.8 Table 27	M
	RT Image Module	8.2.9 Table 28	M
	VOI LUT Module	8.2.10 Table 29	U
	Curve Module	8.2.11 Table 30	U
	SOP Common Module	8.2.18 Table 37	M

¹: M=Mandatory, C=Conditional, U=User option

8.1.2 RT Structure Set IOD Modules

Table 18

Information Entity	Module	Reference	Usage ¹
Patient	Patient Module	8.2.1 Table 20	M
Study	General Study Module	8.2.2 Table 21	M
	Patient Study Module	8.2.3 Table 22	U
Series	RT Series Module	8.2.4 Table 23	M
Equipment	General Equipment Module	8.2.6 Table 25	M
Structure Set	Structure Set Module	8.2.12 Table 31	M
	ROI Contour Module	8.2.13 Table 32	M
	RT ROI Observations Module	8.2.14 Table 33	M
	SOP Common Module	8.2.18 Table 37	M

¹: M=Mandatory, C=Conditional, U=User option

8.1.3 RT Plan IOD Modules

Table 19

Information Entity	Module	Reference	Usage ¹
Patient	Patient Module	8.2.1 Table 20	M
Study	General Study Module	8.2.2 Table 21	M
	Patient Study Module	8.2.3 Table 22	U
Series	RT Series Module	8.2.4 Table 23	M
Frame of Reference	Frame of Reference Module	8.2.5 Table 24	U
Equipment	General Equipment Module	8.2.6 Table 25	M
Plan	RT General Plan Module	8.2.15 Table 34	M
	RT Patient Setup Module	8.2.16 Table 35	U
	RT Beams Module	8.2.17 Table 36	C - Required if RT Fraction Scheme Module exists and Number of Beams (300A,0080) is greater than zero for one or more fraction groups
	SOP Common Module	8.2.18 Table 37	M

¹: M=Mandatory, C=Conditional, U=User option

8.2 Information Object Definitions

8.2.1 Patient Module

Table 20

Attribute Name	Tag	Type	Attribute Description
Patient's Name	(0010,0010)	2	Always set.
Patient ID	(0010,0020)	2	Always set.
Patient's Birth Date	(0010,0030)	2	Length=0 when no entry is made.
Patient's Sex	(0010,0040)	2	Length=0 when no entry is made.
Patient Comments	(0010,4000)	3	Not set when no entry is made.

8.2.2 General Study Module

Table 21

Attribute Name	Tag	Type	Attribute Description
Study Instance UID	(0020,000D)	1	Always set.
Study Date	(0008,0020)	2	Always set.
Study Time	(0008,0030)	2	Always set.
Referring Physician's Name	(0008,0090)	2	Length=0 when no entry is made.
Study ID	(0020,0010)	2	Always set.
Accession Number	(0008,0050)	2	Length=0 when no entry is made.
Study Description	(0008,1030)	3	Not set when no entry is made.

8.2.3 Patient Study Module

Table 22

Attribute Name	Tag	Type	Attribute Description
Admitting Diagnoses Description	(0008,1080)	3	Not set when no entry is made.
Patient's Age	(0010,1010)	3	Not set when no entry is made.
Patient's Size	(0010,1020)	3	Not set when no entry is made.
Patient's Weight	(0010,1030)	3	Not set when no entry is made.

8.2.4 RT Series Module

Table 23

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	Always set ("RTPLAN", "RTSTRUCT", "RTIMAGE").
Series Instance UID	(0020,000E)	1	Always set.
Series Number	(0020,0011)	2	Always set.
Series Description	(0008,103E)	3	Not set when no entry is made.

8.2.5 Frame of Reference Module

Table 24

Attribute Name	Tag	Type	Attribute Description
Frame of Reference UID	(0020,0052)	1	Always set.
Position Reference Indicator	(0020,1040)	2	Always length=0.

8.2.6 General Equipment Module

Table 25

Attribute Name	Tag	Type	Attribute Description
Manufacturer	(0008,0070)	2	Length=0 when no entry is made.
Institution Name	(0008,0080)	3	Not set when no entry is made.
Station Name	(0008,1010)	3	Not set when no entry is made.
Institutional Department Name	(0008,1040)	3	Not set when no entry is made.
Manufacturer's Model Name	(0008,1090)	3	Not set when no entry is made.
Device Serial Number	(0018,1000)	3	Not set when no entry is made.
Software Versions	(0018,1020)	3	Not set when no entry is made.

8.2.7 General Image Module

Table 26

Attribute Name	Tag	Type	Attribute Description
Image Number	(0020,0013)	2	Always set.
Patient Orientation	(0020,0020)	2C	Always length=0.
Image Date	(0008,0023)	2C	Always set.
Image Time	(0008,0033)	2C	Always set.
Image Type	(0008,0008)	3	Always set ("DERIVED ∇ PRIMARY ∇ DRR", "DERIVED ∇ SECONDARY ∇ DRR").
Image Comments	(0020,4000)	3	Not set when no entry is made.

8.2.8 Image Pixel Module

Table 27

Attribute Name	Tag	Type	Attribute Description
Samples per Pixel	(0028,0002)	1	Always set (0x0001).
Photometric Interpretation	(0028,0004)	1	Always set ("MONOCHROME2").
Rows	(0028,0010)	1	Always set (0x0200).
Columns	(0028,0011)	1	Always set (0x0200).
Bits Allocated	(0028,0100)	1	Always set (0x0010).
Bits Stored	(0028,0101)	1	Always set (0x0010).
High Bit	(0028,0102)	1	Always set (0x000F).
Pixel Representation	(0028,0103)	1	Always set (0x0000).
Pixel Data	(7FE0,0010)	1	Always set.

8.2.9 RT Image Module

Table 28

Attribute Name	Tag	Type	Attribute Description
Samples per Pixel	(0028,0002)	1	Always set (0x0001).
Photometric Interpretation	(0028,0004)	1	Always set ("MONOCHROME2").
Bits Allocated	(0028,0100)	1	Always set (0x0010).
Bits Stored	(0028,0101)	1	Always set (0x0010).
High Bit	(0028,0102)	1	Always set (0x000F).
Pixel Representation	(0028,0103)	1	Always set (0x0000).
RT Image Label	(3002,0002)	1	Always set.
RT Image Name	(3002,0003)	3	Always set ("BEV", "H", "V").
RT Image Description	(3002,0004)	3	Always set.
Operators' Name	(0008,1070)	2	Length=0 when no entry is made.
Image Type	(0008,0008)	1	Always set ("DERIVEDPRIMARYDRR", "DERIVEDSECONDARYDRR").
Conversion Type	(0008,0064)	2	Always set ("WSD").
RT Image Plane	(3002,000C)	1	Always set ("NORMAL").
X-Ray Image Receptor Angle	(3002,000E)	2	Always set ("0")
RT Image Orientation	(3002,0010)	2C	Always set ("100010")
Image Plane Pixel Spacing	(3002,0011)	2	Always set.
RT Image Position	(3002,0012)	2	Always set.
Radiation Machine Name	(3002,0020)	2	Always set.
Primary Dosimeter Unit	(300A,00B3)	2	Always length=0.
Radiation Machine SAD	(3002,0022)	2	Always set.
RT Image SID	(3002,0026)	2	Always set.
Referenced RT Plan Sequence	(300C,0002)	3	Not set when no entry is made.
>Referenced SOP Class UID	(0008,1150)	1C	Always set.

>Referenced SOP Instance UID	(0008,1155)	1C	Always set.
Referenced Beam Number	(300C,0006)	3	Always set.
Exposure Sequence	(3002,0030)	3	Always set if viewed from radiation source.
>Beam Limiting Device Sequence	(300A,00B6)	3	Always set in Exposure Sequence (3002,0030). (Number of sequence items 2 or 3)
>>RT Beam Limiting Device Type	(300A,00B8)	1C	Always set in Beam Limiting Device Sequence (300A,00B6). ("X", "Y", "ASYMX", "ASYMY", "MLCX")
>>Number of Leaf/Jaw Pairs	(300A,00BC)	1C	Always set in Beam Limiting Device Sequence (300A,00B6). (maximum 81)
>>Leaf Position Boundaries	(300A,00BE)	2C	Always set when RT Beam Limiting Device Type (300A,00B8) is "MLCX" or "MLCY".
>> Leaf/Jaw Positions	(300A,011C)	1C	Always set in Beam Limiting Device Sequence (300A,00B6).
>Number of Blocks	(300A,00F0)	1C	Always set ("0") in Exposure Sequence (3002,0030).
Gantry Angle	(300A,011E)	3	Always set.
Beam Limiting Device Angle	(300A,0120)	3	Always set if viewed from radiation source.
Patient Support Angle	(300A,0122)	3	Always set.

8.2.10 VOI LUT Module

Table 29

Attribute Name	Tag	Type	Attribute Description
Window Center	(0028,1050)	3	Always set.
Window Width	(0028,1051)	1C	Always set.

8.2.11 Curve Module

Table 30

Attribute Name	Tag	Type	Attribute Description
Curve Dimensions	(50xx,0005)	1	Always set (0x0002).
Number of Points	(50xx,0010)	1	Always set.
Type of Data	(50xx,0020)	1	Always set ("ROI")
Data Value Representation	(50xx,0103)	1	Always set (0x0002).
Curve Data	(50xx,3000)	1	Always set treatment field, i.e. x and y coordinates of IEC X-RAY IMAGE RECEPTOR coordinate system with respect to IEC GANTRY coordinate system. (mm)
Curve Description	(50xx,0022)	3	Always set ("TREATMENT_FIELD")
Axis Unit	(50xx,0030)	3	Always set ("MM¥MM")

8.2.12 Structure Set Module

Table 31

Attribute Name	Tag	Type	Attribute Description
Structure Set Label	(3006,0002)	1	Always set.
Structure Set Name	(3006,0004)	3	Always set ("RTSTRUCT#"). # is RT Plan Label (300A,0002).
Structure Set Date	(3006,0008)	2	Always set.
Structure Set Time	(3006,0009)	2	Always set.
Referenced Frame of Reference Sequence	(3006,0010)	3	Always set.
>Frame of Reference UID	(0020,0052)	1C	Always set.
>RT Referenced Study Sequence	(3006,0012)	3	Always set.
>>Referenced SOP Class UID	(0008,1150)	1C	Always set.
>>Referenced Study Instance UID	(0008,1155)	1C	Always set.
>>RT Referenced Series Sequence	(3006,0014)	1C	Always set.
>>>Series Instance UID	(0020,000E)	1C	Always set.
>>>Contour Image Sequence	(3006,0016)	1C	Always set.
>>>>Referenced SOP Class UID	(0008,1150)	1C	Always set.
>>>>Referenced SOP Instance UID	(0008,1155)	1C	Always set.
Structure Set ROI Sequence	(3006,0020)	3	Always set.
>ROI Number	(3006,0022)	1C	Always set.
>Referenced Frame of Reference UID	(3006,0024)	1C	Always set.
>ROI Name	(3006,0026)	2C	Length=0 when no entry is made.
>ROI Generation Algorithm	(3006,0036)	2C	Always set ("MANUAL", "SEMIAUTOMATIC").
>ROI Generation Description	(3006,0038)	3	Not set when no entry is made.

8.2.13 ROI Contour Module

Table 32

Attribute Name	Tag	Type	Attribute Description
ROI Contour Sequence	(3006,0039)	1	Always set.
>Referenced ROI Number	(3006,0084)	1	Always set.
>ROI Display Color	(3006,002A)	3	Always set.
>Contour Sequence	(3006,0040)	3	Always set
>>Contour Image Sequence	(3006,0016)	3	Always set
>>>SOP Class UID	(0008,1150)	1C	Always set
>>>SOP Instance UID	(0008,1155)	1C	Always set
>>Contour Geometric Type	(3006,0042)	1C	Always set ("CLOSED_PLANAR").
>>Number of Contour Points	(3006,0046)	1C	Always set.
>>Contour Data	(3006,0050)	1C	Always set.

8.2.14 RT ROI Observations Module

Table 33

Attribute Name	Tag	Type	Attribute Description
RT ROI Observations Sequence	(3006,0080)	1	Always set.
>Observation Number	(3006,0082)	1	Always set.
>Referenced ROI Number	(3006,0084)	1	Always set.
>ROI Observation Label	(3006,0085)	3	Not set when no entry is made.
>RT Related ROI Sequence	(3006,0030)	3	Not set when no entry is made.
>>Referenced ROI Number	(3006,0084)	1C	Always set in RT Related ROI Sequence (3006,0030).
>>RT ROI Relationship	(3006,0033)	3	Always set ("ENCLOSED", "ENCLOSING") in RT Related ROI Sequence (3006,0030).
>Related RT ROI Observations Sequence	(3006,00A0)	3	Not set when no entry is made.
>>Observation Number	(3006,0082)	1C	Always set in Related RT ROI Observations Sequence (3006,00A0).
>RT ROI Interpreted Type	(3006,00A4)	2	Always set ("PTV", "GTV", "ORGAN").
>ROI Interpreter	(3006,00A6)	2	Always length=0.

8.2.15 RT General Plan Module

Table 34

Attribute Name	Tag	Type	Attribute Description
RT Plan Label	(300A,0002)	1	Always set.
RT Plan Name	(300A,0003)	3	Always set ("RTPLAN#"). # is RT Plan Label (300A,0002).
Operator's Name	(0008,1070)	2	Length=0 when no entry is made.
RT Plan Date	(300A,0006)	2	Always set.
RT Plan Time	(300A,0007)	2	Always set.
Treatment Sites	(300A,000B)	3	Not set when no entry is made.
RT Plan Geometry	(300A,000C)	1	Always set ("TREATMENT_DEVICE", "PATIENT").
Referenced Structure Set Sequence	(300C,0060)	1C	Not set when RT Plan Geometry (300A,000C) is "TREATMENT_DEVICE".
>Referenced SOP Class UID	(0008,1150)	1C	Always set in Referenced Structure Set Sequence (300C,0060).
>Referenced SOP Instance UID	(0008,1155)	1C	Always set in Referenced Structure Set Sequence (300C,0060).

8.2.16 RT Patient Setup Module

Table 35

Attribute Name	Tag	Type	Attribute Description
Patient Setup Sequence	(300A,0180)	1	Always set.
>Patient Setup Number	(300A,0182)	1	Always set
>Patient Position	(0018,5100)	1C	Always set ("HFP", "HFS", "HFDR", "HFDL", "FFP", "FFS", "FFDR", "FFDL").
>Setup Technique	(300A,01B0)	3	Always set ("SKIN_APPOSITION").
>Setup Device Sequence	(300A,01B4)	3	Always set when reference point marking.
>>Setup Device Type	(300A,01B6)	1C	Always set ("LASER_POINTER").
>>Setup Device Label	(300A,01B8)	2C	Always set ("X", "Y", "Z")
>>Setup Device Parameter	(300A,01BC)	2C	A point of reference. (Laser Pointer Position)
>Table Top Vertical Setup Displacement	(300A,01D2)	3	Always set when reference point and isocenter are sets.
>Table Top Longitudinal Setup Displacement	(300A,01D4)	3	Always set when reference point and isocenter are sets.
>Table Top Lateral Setup Displacement	(300A,01D6)	3	Always set when reference point and isocenter are sets.

8.2.17 RT Beams Module

Table 36

Attribute Name	Tag	Type	Attribute Description
Beam Sequence	(300A,00B0)	1	Always set.
>Beam Number	(300A,00C0)	1	Always set.
>Beam Name	(300A,00C2)	3	Not set when no entry is made.
>Beam Description	(300A,00C3)	3	Not set when no entry is made.
>Beam Type	(300A,00C4)	1	Always set ("STATIC", "DYNAMIC").
>Radiation Type	(300A,00C6)	2	Always set ("PHOTON")
>Treatment Machine Name	(300A,00B2)	2	Always set.
>Manufacturer	(0008,0070)	3	Not set when no entry is made.
>Manufacturer's Model Name	(0008,1090)	3	Not set when no entry is made.
>Primary Dosimeter Unit	(300A,00B3)	3	Always set ("MU").
>Source-Axis Distance	(300A,00B4)	3	Always set.
>Beam Limiting Device Sequence	(300A,00B6)	1	Always set. (Number of sequence items 2 or 3)
>>RT Beam Limiting Device Type	(300A,00B8)	1	Always set. ("X", "Y", "ASYMX", "ASYMY", "MLCX")
>>Number of Leaf/Jaw Pairs	(300A,00BC)	1	Always set. (maximum 81)
>>Leaf Position Boundaries	(300A,00BE)	2C	Always set when RT Beam Limiting Device Type (300A,00B8) is "MLCX" or "MLCY".
>Referenced Patient Setup Number	(300C,006A)	3	Always set.
>Referenced Reference Image Sequence	(300C,0042)	3	Not set when no entry is made.
>>Referenced SOP Class UID	(0008,1150)	1C	Always set in Referenced Reference Image Sequence (300C,0042).
>>Referenced SOP Instance UID	(0008,1155)	1C	Always set in Referenced Reference Image Sequence (300C,0042).
>>Reference Image Number	(300A,00C8)	1C	Always set in Referenced Reference Image Sequence (300C,0042).
>Planned Verification Image Sequence	(300A,00CA)	3	Always set if DRR Image generated.
>>RT Image SID	(3002,0026)	3	Always set in Planned Verification Image Sequence (300A,00CA).
>>Referenced Reference Image Number	(300C,0007)	3	Always set in Planned Verification Image Sequence (300A,00CA).
>Treatment Delivery Type	(300A,00CE)	3	Always Set ("TREATMENT")
>Number of Wedges	(300A,00D0)	1	Always set ("0").
>Number of Compensators	(300A,00E0)	1	Always set ("0").
>Number of Boli	(300A,00ED)	1	Always set (maximum "6").
>Referenced Bolus Sequence	(300C,00B0)	1C	Not set when Number of Boli (300A,00ED) is "0".
>>Referenced ROI Number	(3006,0084)	1C	Always set in Referenced Bolus Sequence (300C,00B0) .
>Number of Blocks	(300A,00F0)	1	Always set ("0").

>Final Cumulative Meterset Weight	(300A,010E)	1C	Always set ("100").
>Number of Control Points	(300A,0110)	1	Always set (from "2" to "180")
>Control Point Sequence	(300A,0111)	1	Always set.
>>Control Point Index	(300A,0112)	1C	Always set.
>>Cumulative Meterset Weight	(300A,0134)	2C	Always set.
>>Nominal Beam Energy	(300A,0114)	3	Not set when no entry is made. (MV)
>>Dose Rate Set	(300A,0115)	3	Not set when no entry is made. (MU/min)
>>Beam Limiting Device Position Sequence	(300A,011A)	1C	Always set in first item of Control Point Sequence (300A,0111), or if Beam Limiting Device changes during beam. (Number of sequence items "2" or "3")
>>>RT Beam Limiting Device Type	(300A,00B8)	1C	Always set. ("X", "Y", "ASYMX", "ASYMY", "MLCX").
>>> Leaf/Jaw Positions	(300A,011C)	1C	Always set in Beam Limiting Device Position Sequence (300A,011A).
>> Gantry Angle	(300A,011E)	1C	Always set in first item of Control Point Sequence (300A,0111), or if Gantry Angle changes during beam.
>> Gantry Rotation Direction	(300A,011F)	1C	Always set ("NONE", "CW") in first item of Control Point Sequence (300A,0111).
>> Beam Limiting Device Angle	(300A,0120)	1C	Always set in first item of Control Point Sequence (300A,0111).
>> Beam Limiting Device Rotation Direction	(300A,0121)	1C	Always set ("NONE") in first item of Control Point Sequence (300A,0111).
>> Patient Support Angle	(300A,0122)	1C	Always set in first item of Control Point Sequence (300A,0111).
>> Patient Support Rotation Direction	(300A,0123)	1C	Always set ("NONE") in first item of Control Point Sequence (300A,0111).
>> Table Top Eccentric Angle	(300A,0125)	1C	Always set ("0") in first item of Control Point Sequence (300A,0111).
>> Table Top Eccentric Rotation Direction	(300A,0126)	1C	Always set ("NONE") in first item of Control Point Sequence (300A,0111).
>> Table Top Vertical Position	(300A,0128)	2C	Always length 0 in first item of Control Point Sequence (300A,0111).
>> Table Top Longitudinal Position	(300A,0129)	2C	Always length 0 in first item of Control Point Sequence (300A,0111).
>> Table Top Lateral Position	(300A,012A)	2C	Always length 0 in first item of Control Point Sequence (300A,0111).
>> Isocenter Position	(300A,012C)	2C	Always set in first item of Control Point Sequence (300A,0111).
>>Curve Dimensions	(50xx,0005)	3	Always set (0x0002) if treatment field generated.
>>>Number of Points	(50xx,0010)	3	Always set if Curve Dimensions (50xx,0005) is sent.
>>>Type of Data	(50xx,0020)	3	Always set ("ROI") if Curve Dimensions (50xx,0005) is sent.
>>>Data Value Representation	(50xx,0103)	3	Always set (0x0002) if Curve Dimensions (50xx,0005) is sent.

>>Curve Data	(50xx,3000)	3	Treatment field, i.e. x and y coordinates of IEC X-RAY IMAGE RECEPTOR coordinate system with respect to IEC GANTRY coordinate system. (mm) Always set treatment field if Curve Dimensions (50xx,0005) is sent.
>>Curve Description	(50xx,0022)	3	Always set ("TREATMENT_FIELD") if Curve Dimensions (50xx,0005) is sent.
>>Axis Unit	(50xx,0030)	3	Always set ("MM¥MM") if Curve Dimensions (50xx,0005) is sent.

8.2.18 SOP Common Module

Table 37

Attribute Name	Tag	Type	Attribute Description
SOP Class UID	(0008,0016)	1	Always set.
SOP Instance UID	(0008,0018)	1	Always set.
Specific Character Set	(0008,0005)	1C	Always set when an expanded or replacement character set is used.

9 Information Object Definition - Storage SCP

9.1 Entity Module Definitions

The information modules for the CTport are defined below.

9.1.1 RT Plan IOD Modules

Table 38

Information Entity	Module	Reference	Usage ¹
Patient	Patient Module	9.2.1 Table 39	M
Study	General Study Module	9.2.2 Table 40	M
	Patient Study Module	9.2.3 Table 41	U
Series	RT Series Module	9.2.4 Table 42	M
Frame of Reference	Frame of Reference Module	9.2.5 Table 43	U
Equipment	General Equipment Module	9.2.6 Table 44	M
Plan	RT General Plan Module	9.2.7 Table 45	M
	RT Patient Setup Module	9.2.8 Table 46	U
	RT Beams Module	9.2.9 Table 47	C - Required if RT Fraction Scheme Module exists and Number of Beams (300A,0080) is greater than zero for one or more fraction groups
	SOP Common Module	9.2.10 Table 48	M

¹: M=Mandatory, C=Conditional, U=User option

9.2 Information Object Definitions

9.2.1 Patient Module

Table 39

Attribute Name	Tag	Type	Attribute Description
Patient's Name	(0010,0010)	2	Required same Patient's Name with referenced image. If not, will be rejected.
Patient ID	(0010,0020)	2	Required same Patient ID with referenced image. If not, will be rejected.
Patient's Birth Date	(0010,0030)	2	Not used.
Patient's Sex	(0010,0040)	2	Not used.
Patient Comments	(0010,4000)	3	Not used.

9.2.2 General Study Module

Table 40

Attribute Name	Tag	Type	Attribute Description
Study Instance UID	(0020,000D)	1	Required same Study Instance UID with referenced image. If different study, must set Referenced Study Component Sequence (8,1111).
Study Date	(0008,0020)	2	Not used.
Study Time	(0008,0030)	2	Not used.
Referring Physician's Name	(0008,0090)	2	
Accession Number	(0008,0050)	2	
Study Description	(0008,1030)	3	

9.2.3 Patient Study Module

Table 41

Attribute Name	Tag	Type	Attribute Description
Admitting Diagnoses Description	(0008,1080)	3	
Patient's Age	(0010,1010)	3	Not used.
Patient's Size	(0010,1020)	3	
Patient's Weight	(0010,1030)	3	

9.2.4 RT Series Module

Table 42

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	
Series Instance UID	(0020,000E)	1	
Series Number	(0020,0011)	2	Not used.
Series Description	(0008,103E)	3	
Referenced Study Component Sequence	(0008,1111)	3	Required if the RT Plan and referenced images are different study.
>Referenced SOP Class	(0008,1150)	1C	"1.2.840.10008.3.1.2.3.2"
>Referenced SOP Instance UID	(0008,1155)	1C	Must equal the Study Instance UID of the reference images.

9.2.5 Frame of Reference Module

Table 43

Attribute Name	Tag	Type	Attribute Description
Frame of Reference UID	(0020,0052)	1	If present, the RT Plan and the referenced images are different the Frame of Reference UID, will be rejected.

9.2.6 General Equipment Module

Table 44

Attribute Name	Tag	Type	Attribute Description
Manufacturer	(0008,0070)	2	
Institution Name	(0008,0080)	3	
Station Name	(0008,1010)	3	
Institutional Department Name	(0008,1040)	3	
Manufacturer's Model Name	(0008,1090)	3	Not used.
Device Serial Number	(0018,1000)	3	
Software Versions	(0018,1020)	3	

9.2.7 RT General Plan Module

Table 45

Attribute Name	Tag	Type	Attribute Description
RT Plan Label	(300A,0002)	1	
RT Plan Name	(300A,0003)	3	Displayed to user.
Operator's Name	(0008,1070)	2	
RT Plan Date	(300A,0006)	2	
RT Plan Time	(300A,0007)	2	
Treatment Sites	(300A,000B)	3	
RT Plan Geometry	(300A,000C)	1	
Referenced Structure Set Sequence	(300C,0060)	1C	
>Referenced SOP Class UID	(0008,1150)	1C	
>Referenced SOP Instance UID	(0008,1155)	1C	

9.2.8 RT Patient Setup Module

Table 46

Attribute Name	Tag	Type	Attribute Description
Patient Setup Sequence	(300A,0180)	1	Number of sequence items of 4 and under. If not, will be rejected.
>Patient Setup Number	(300A,0182)	1	
>Patient Position	(0018,5100)	1C	Required same Patient Position with referenced image. If different, will be rejected.
>Table Top Vertical Setup Displacement	(300A,01D2)	3	
>Table Top Longitudinal Setup Displacement	(300A,01D4)	3	
>Table Top Lateral Setup Displacement	(300A,01D6)	3	

9.2.9 RT Beams Module

Table 47

Attribute Name	Tag	Type	Attribute Description
Beam Sequence	(300A,00B0)	1	Number of sequence items of 48 and under. If not, will be rejected.
>Beam Number	(300A,00C0)	1	
>Beam Name	(300A,00C2)	3	
>Beam Description	(300A,00C3)	3	
>Beam Type	(300A,00C4)	1	
>Radiation Type	(300A,00C6)	2	
>Treatment Machine Name	(300A,00B2)	2	Must be same Treatment Machine Name in Beam Sequence (300A,B0). If not, will be rejected.
>Manufacturer	(0008,0070)	3	
>Manufacturer's Model Name	(0008,1090)	3	
>Primary Dosimeter Unit	(300A,00B3)	3	
>Source-Axis Distance	(300A,00B4)	3	
>Beam Limiting Device Sequence	(300A,00B6)	1	Number of sequence items of 2 or 3. If not, will be rejected.
>>RT Beam Limiting Device Type	(300A,00B8)	1	Must be following types. "X", "Y", "ASYMX", "ASYMY", "MLCX"
>>Number of Leaf/Jaw Pairs	(300A,00BC)	1	Must be 1 to 81. If not, will be rejected.
>>Leaf Position Boundaries	(300A,00BE)	2C	
>Referenced Patient Setup Number	(300C,006A)	3	
>Planned Verification Image Sequence	(300A,00CA)	3	
>>RT Image SID	(3002,0026)	3	
>Number of Wedges	(300A,00D0)	1	
>Number of Compensators	(300A,00E0)	1	
>Number of Boli	(300A,00ED)	1	
>Number of Blocks	(300A,00F0)	1	
>Final Cumulative Meterset Weight	(300A,010E)	1C	
>Number of Control Points	(300A,0110)	1	Must be 2 to 181. If not, will be rejected.
>Control Point Sequence	(300A,0111)	1	
>>Control Point Index	(300A,0112)	1C	
>>Nominal Beam Energy	(300A,0114)	3	
>>Dose Rate Set	(300A,0115)	3	
>>Beam Limiting Device Position Sequence	(300A,011A)	1C	Number of sequence items 2 or 3. If not, will be rejected.
>>>RT Beam Limiting Device Type	(300A,00B8)	1C	Must be following types. "X", "Y", "ASYMX", "ASYMY", "MLCX".

>>> Leaf/Jaw Positions	(300A,011C)	1C	
>> Gantry Angle	(300A,011E)	1C	
>> Gantry Rotation Direction	(300A,011F)	1C	Must be "NONE" or "CW" in first item of Control Point Sequence (300A,0111).
>> Beam Limiting Device Angle	(300A,0120)	1C	Must set in first item of Control Point Sequence (300A,0111).
>> Beam Limiting Device Rotation Direction	(300A,0121)	1C	Must be "NONE" in first item of Control Point Sequence (300A,0111), and must not changes during beam.
>> Patient Support Angle	(300A,0122)	1C	Must set in first item of Control Point Sequence (300A,0111).
>> Patient Support Rotation Direction	(300A,0123)	1C	Must be "NONE" in first item of Control Point Sequence (300A,0111), and must not changes during beam.
>> Table Top Eccentric Angle	(300A,0125)	1C	Must be zero in first item of Control Point Sequence (300A,0111).
>> Table Top Eccentric Rotation Direction	(300A,0126)	1C	Must be "NONE" in first item of Control Point Sequence (300A,0111), and must not changes during beam.
>> Table Top Vertical Position	(300A,0128)	2C	Must not changes during beam.
>> Table Top Longitudinal Position	(300A,0129)	2C	Must not changes during beam.
>> Table Top Lateral Position	(300A,012A)	2C	Must not changes during beam.
>> Isocenter Position	(300A,012C)	2C	Must set in first item of Control Point Sequence (300A,0111), and must not changes during beam. If no exist, will be rejected.
>>Curve Dimensions	(50xx,0005)	3	Expect (0x0002)
>>Number of Points	(50xx,0010)	3	Expect under 512.
>>Type of Data	(50xx,0020)	3	Expect ("ROI")
>>Data Value Representation	(50xx,0103)	3	Expect ("FL")
>>Curve Data	(50xx,3000)	3	Expect the Treatment Field. Treatment field, i.e. x and y coordinates of IEC X-RAY IMAGE RECEPTOR coordinate system with respect to IEC GANTRY coordinate system. (mm)
>>Curve Description	(50xx,0022)	3	Expect ("TREATMENT_FIELD")
>>Axis Unit	(50xx,0030)	3	Expect ("MM¥MM")

9.2.10 SOP Common Module

Table 48

Attribute Name	Tag	Type	Attribute Description
SOP Class UID	(0008,0016)	1	
SOP Instance UID	(0008,0018)	1	
Specific Character Set	(0008,0005)	1C	