

Vision Rel. 6.5

DICOM Conformance Statement



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1. Introduction

1.1 Purpose

This conformance statement specifies the conformance of the Varian's Vision 6.5 products with the DICOM V 3.0 standard. The Vision product family is a comprehensive suite of integrated applications, which cover all aspects of radiotherapy. This includes especially Treatment Planning, Virtual Simulation, Simulation, electronic Chart, Treatment Delivery, Electronic Portal Imaging and Treatment Review. To support those functions, the most important diagnostic Imaging modalities as well as all radiotherapy objects defined by the DICOM standard are supported.

The DICOM standard in the current version evolved in 1993 with DICOM 3.0. The definition of DICOM standard for radiotherapy data started in 1994 and has now reached a productive state. Nowadays DICOM is the primary choice for exchanging data with an open standard protocol for the majority of vendors and institutions.

Varian Medical Systems is committed to this notion of standard-based cross-vendor interoperability as well as making use of the DICOM protocol among it's own products.

For diagnostic and planning purposes, Vision products supports several diagnostic imaging modalities. In radiotherapy, Varian supports the full range of radiotherapy objects (Plan, RT Image, Structure Set, Dose, Treatment Record) for both Import and Export of those data.

1.2 Scope

The scope and format of this document from chapter 2 onwards are defined by Part 2 of the DICOM V3.0 standard. Some sections defined in the standard that are not applicable to the software described herein are left out for clarity.

This Conformance Statement is applicable for all Vision Applications Rel. 6.5 (Build 7.1 starting from 7.1.35).

1.3 Intended Audience

The intended audience is:

- Customers, who want to use DICOM with Vision Applications
- Marketing and Sales persons
- System Integrators of medical equipment
- Other vendors offering interfacing via DICOM

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

1.4 Definitions

This section provides the definitions of terms, acronyms, and abbreviations, which are used throughout the document.

AE	Application Entity
DB	Vision application database
DICOM	Digital Imaging and Communications in Medicine, a standard on image communications in medical applications
DIMSE	DICOM Message Service element
FSC	File-set Creator
FSR	File-set Reader
IE	Information Entity
IOD	Information Object Definition
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
SCU	Service Class User
SCP	Service Class Provider
SOP	Service-Object-Pair, a definition of an information object (like an image) and of a service (like storage) that can be performed for the object
TCP/IP	Transmission Control Protocol / Internet Protocol, a widely used computer networking protocol
VR	Value Representation, a data encoding method in DICOM
Multi-frame Image	Image that contains multiple two-dimensional pixel planes
UID	Unique Identifier used to identify an object by a worldwide unique identifier

1.5 Related Documents

- [1] Digital Imaging and Communications in Medicine (DICOM), Parts 1-14 (2003), National Electrical Manufacturers Association (NEMA)
Rosslyn, VA
United States of America

2. Implementation Model

2.1 Application Data Flow Diagram

Two diagrams illustrating the application model, one for the SCU Role (Figure 1) and one for the SCP Role (Figure 2), are shown below.

2.1.1 SCU Role Application Data Flow Diagram

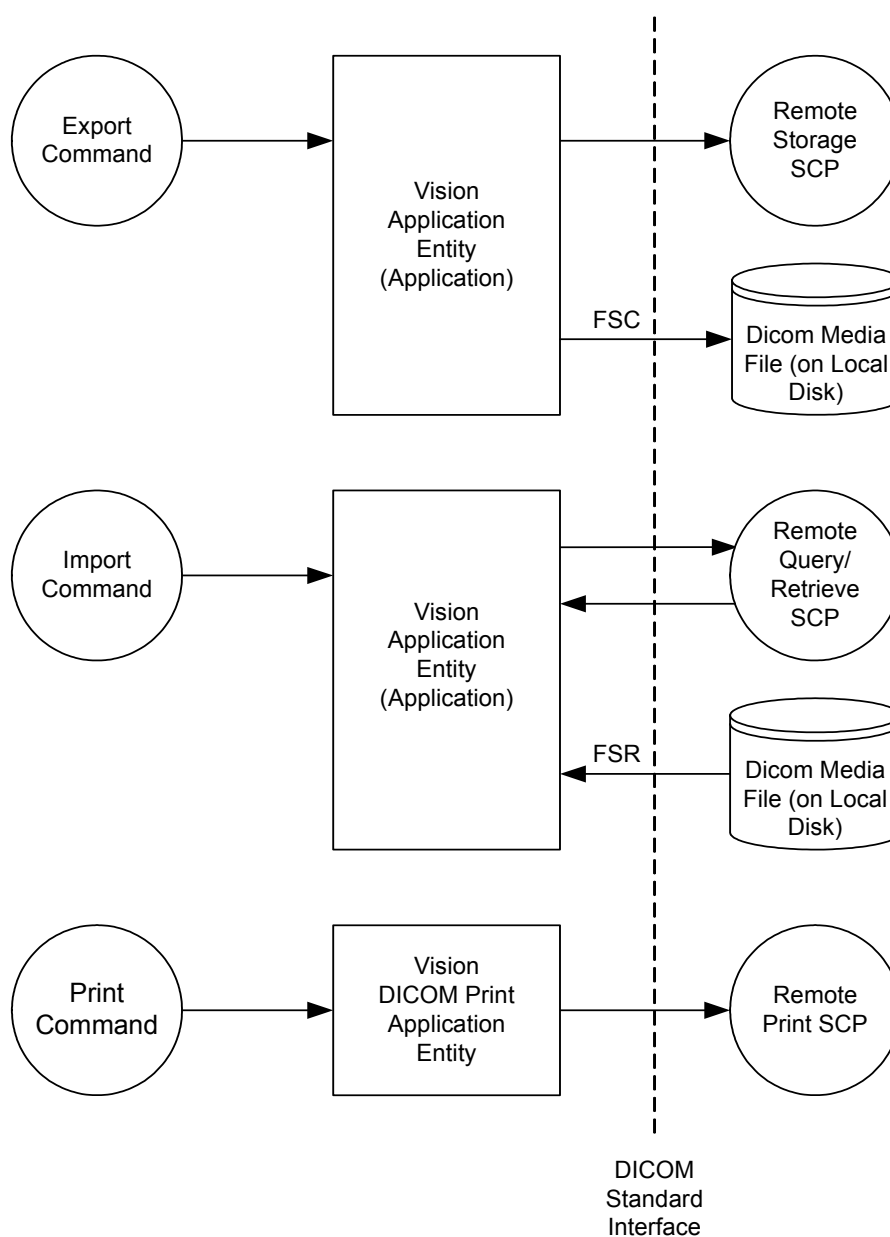


Figure 1: SCU Role Application Data Flow Diagram

2.1.2 SCP Role Application Data Flow Diagram

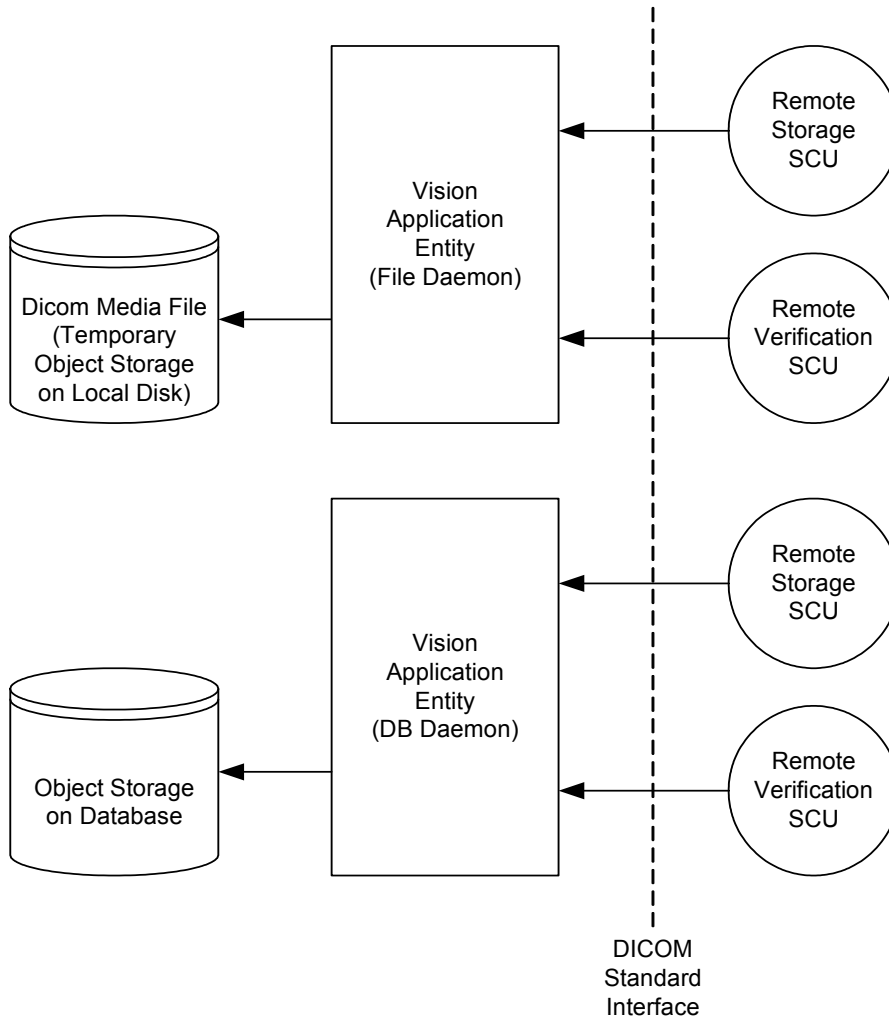


Figure 2: SCP Role Application Data Flow Diagram

2.2 Functional Definition of AE's

The Vision Application Entity is responsible for the DICOM file import, file export, transfer of DICOM objects to other systems and Query/Retrieve of DICOM objects from other systems. Those functions are operated by the user invoking the Import/Export functions in a Vision Application.

The Vision DICOM Print Application Entity is responsible for communication with a DICOM Print SCP. Printing on DICOM printers is activated by the user in a Vision Application.

The File Daemon resp. DB Daemon Vision Application Entity is running continuously as a service and is responsible for the communication to other Application Entities. It accepts storage requests of the service classes specified below. When receiving data, the objects are either stored in separate intermediate files, from which they can be imported to the database via the Vision application's Import function later on (File Daemon), or they are stored directly to the database (DB Daemon).

The Verification Service allows validation of proper DICOM connectivity. The C-ECHO messages to the Verification SCP are responded to with a C-ECHO response.

2.3 Sequencing of Real-World Activities

Not applicable.

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3. AE Specifications

3.1 Vision Application Entity Specification

The Vision Application Entity provides standard conformance to the following DICOM V3.0 SOP classes:

SOP Class Name	SCU/SCP Role	SOP Class UID
Verification (Echo)	- / SCP	1.2.840.10008.1.1
CR Image Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.1
CT Image Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.2
MR Image Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.4
Ultrasound Image Storage (*)	SCU* / SCP	1.2.840.10008.5.1.4.1.1.6.1
Secondary Capture Image Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.7
X-Ray Angiographic Image Storage (*)	SCU* / SCP	1.2.840.10008.5.1.4.1.1.12.1
Positron Emission Image Storage (*)	SCU* / SCP	1.2.840.10008.5.1.4.1.1.128
RT Image Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.481.3
RT Plan Storage	SCU / SCP	1.2.840.10008.5.1.4.1.1.481.5
Study Root Query/Retrieve information model- FIND	SCU / SCP	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve information model- MOVE	SCU / SCP	1.2.840.10008.5.1.4.1.2.2.2
Basic Grayscale Print Management	SCU / -	1.2.840.10008.5.1.1.9

Table 1: Supported SCU/SCP SOP Classes for Vision Application Entity

Note: For (*) see section 3.1.3.3.3 SOP specific conformance for all image storage SOP classes on page 13.

3.1.1 Association Establishment Policies

3.1.1.1 General

The maximum PDU length of the AE is 32768 bytes.

The AE does not support any SOP class extended negotiations. The user information item sent by this AE only contains the maximum PDU length and the Implementation UID.

3.1.1.2 Number of Associations

The Vision Application Entity accepts any number of simultaneous associations. Note however, that multiple associations at a time affect the response time of the system, and may thus cause time-outs on the association initiator side.

3.1.1.3 Asynchronous Nature

Asynchronous operation is not supported.

3.1.1.4 Implementation Identifying Information

The Implementation Class UIDs of the application entity are:

Application Entity	Implementation UID
Echo SCU	1.2.246.352.70.2.1.1
Echo SCP	1.2.246.352.70.2.1.2
Storage SCU	1.2.246.352.70.2.1.3
Storage SCP	1.2.246.352.70.2.1.4
Query/Retrieve SCU	1.2.246.352.70.2.1.5
Query/Retrieve SCP	1.2.246.352.70.2.1.6
Media File	1.2.246.352.70.2.1.7
Print SCU	1.2.246.352.70.2.1.8

3.1.2 Association Initiation Policy

The Vision Application Entity initiates associations with remote SCPs in two different cases:

- The operator selects a DICOM Storage Service Filter in a Vision application.
- The operator selects the DICOM Query/Retrieve Import Filter in a Vision application.

3.1.2.1 Storage SCU

3.1.2.1.1 Associated Real-World Activity

The operator selects the Export command and then selects an export destination (remote Storage SCP) that is configured to use a DICOM Storage Service Filter. The service class used depends on the type of the object that the user has selected before the Export command.

3.1.2.1.2 Presentation Context Table

Vision Application Entity will propose the following presentation contexts:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM 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	DICOM 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	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 2: Proposed Presentation Contexts for Export to Remote Storage SCP

3.1.2.1.3 SOP Specific Conformance

3.1.2.1.3.1 SOP specific conformance for all storage SOP classes

In a case of successful C-STORE operation, the program does not display any information to the user but returns to its normal state. All C-STORE-responses with a warning or unsuccessful status causes the program to display warning messages to the user.

3.1.2.2 Query/Retrieve SCU

3.1.2.2.1 Associated Real-World Activity

The operator selects the Import command and an import source that has been configured to use the DICOM Query/Retrieve service class connecting to a remote Query/Retrieve SCP.

To support the MOVE command from the remote Q/R SCP, a temporary Application Entity, which supports Storage service as SCP, is instantiated. The received objects are stored by this AE to temporary files within a specified transfer directory. When the retrieval of all objects is complete, the objects are automatically read by the application and they can be stored directly in the database in the context of the patient.

3.1.2.2.2 Presentation Context Table

Vision Application Entity will propose the following presentation contexts:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Study Root Query/Retrieve information model- FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/Retrieve information model- MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 3: Proposed Presentation Contexts for Import from Remote Query/Retrieve SCP

3.1.2.2.3 SOP Specific Conformance

3.1.2.2.3.1 SOP specific conformance for the Query/Retrieve SOP class

Wild card matching (*) is used.

Priority processing is not used.

No relational queries are used.

For the C-STORE sub-operations generated in the C-MOVE all SOP classes as listed in Table 4 on page 12 are supported.

3.1.3 Association Acceptance Policy

The Vision Application Entity accepts all association requests that request one of the supported service classes. It does not place any limitations on the number of concurrent associations or on who may connect to it, unless the 'Trusted Application Only' option is enabled in the DICOM Daemon settings. If enabled, only the defined Application Entities will be granted access to the Daemon.

3.1.3.1 Storage SCP

3.1.3.1.1 Associated Real-World Activity

When objects are sent to the Vision Application Entity, the DICOM Daemon will take the DICOM object for further storage. Depending on the kind of daemon the storage is like follows:

File Daemon:

This daemon stores the objects to media storage files on a configurable location. The user may later on activate the Import command in any Vision application to read the objects and store them to the database.

DB Daemon:

This daemon will store the object directly to the database. If a relation to an object is needed on the database, which is not available in DICOM (like Course) a default relation is created.

3.1.3.1.2 Presentation Context Table

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Ultrasound Image Storage (*)	1.2.840.10008.5.1.4.1.1.6.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
X-Ray Angiographic Image Storage (*)	1.2.840.10008.5.1.4.1.1.12.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Positron Emission Image Storage (*)	1.2.840.10008.5.1.4.1.1.128	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

Table 4: Acceptable Presentation Contexts for Storage SCP

Note: For (*) see section 3.1.3.3.3 SOP specific conformance for all image storage SOP classes on page 13.

3.1.3.2 Query/Retrieve SCP

3.1.3.2.1 Associated Real-World Activity

The operator on the remote system selects a DICOM Query/Retrieve application.

The DB Daemon receives a MOVE command from the remote Q/R SCU. The Daemon will send the objects to the Application Entity as specified in the MOVE command.

3.1.3.2.2 Presentation Context Table

Vision Application Entity will propose the following presentation contexts:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Study Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Study Root Query/ Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

Table 5: Acceptable Presentation Contexts for Query/Retrieve SCP

3.1.3.2.3 SOP Specific Conformance

3.1.3.2.3.1 SOP specific conformance for the Query/Retrieve SOP class

Mainly unique and required keys are supported for matching. Wild card matching (*) is used.

Priority processing is not supported.

For the C-STORE sub-operations generated in the C-MOVE all SOP classes as listed in Table 2 on page 9 are supported.

3.1.3.3 SOP Specific Conformance

3.1.3.3.1 General conformance characteristics

Unless otherwise stated, Vision Application Entity conforms to all storage service classes at level 0 (local). Therefore it is guaranteed that at least all type 1 attributes are stored in the database. Other types attributes are mainly supported but may be discarded in certain cases.

A successful C-STORE operation means that the object has been received and either saved to the database (DB Daemon) or to a temporary file, which can then be read in to the Vision database by the user (File Daemon). The successful termination of the association does not imply that the image data is either syntactically or semantically correct.

3.1.3.3.2 SOP specific conformance for the verification SOP class

Vision Application Entity provides standard conformance to the DICOM Verification Service Class.

3.1.3.3.3 SOP specific conformance for all image storage SOP classes

Vision Application Entity conforms to the image storage service classes at level 0 (local) for all SOPs, which are not marked with (*) in Table 1: Supported SCU/SCP SOP Classes for Vision Application Entity on page 7 and the following tables about accepted presentation context (e.g. CT, CR, MR, US, SC, and RT Image modalities).

However, for images SOPs marked with (*) the Vision Application Entity accepts the SOP, but may discard even type 1 attributes when storing those object to the database. To preserve consistency, in those cases the images are stored as SC modality to a Series of modality OT and the UID is exchanged.

Vision Application Entity does not support BitsStored (0028,0101) greater than 16, even where the standard would allow more.

3.1.3.3.4 SOP specific conformance for the RT Structure Set storage SOP class

In Vision the constructed 3D patient model has constant plane separation. If the image slices are not scanned using a constant slice separation, the constructed patient model has planes which are interpolated and do not represent an actual scanned slice.

In Vision contours representing volumes are always defined on the planes of the 3D patient model and not on the planes of the actual scanned slices. This means that exported structure set might have ROI contours, which do not reference a slice at all, contours were defined on an interpolated image plane. The image slices used to construct the 3D patient model are

referenced in the Contour Image Sequence of Structure Set module even if the slice does not have any contours defined.

Respectively in the import of the RT structure set, the 3D patient model is constructed from the slices referenced in the Contour Image Sequence of Structure Set module. All the ROI contours representing volumes are ignored if they do not lie on the planes of the constructed 3d patient model. Reference from ROI contour to image slice is not needed in the ROI Contour module.

Before the structure set can be imported in Vision Applications, the corresponding CT or MR image set has to be sent to the system and it has to be read in to the program, this can also happen on the same import session as the structure set import. Structure set import is not possible if the system cannot reference slices.

3.1.3.3.5 SOP specific conformance for the RT Plan storage SOP class

In general, import of RT Plan data requires an identification of the treatment machine specification in the RT Plan against the treatment machines configured in the database. Machine IDs may be mapped from external IDs to IDs used by Vision Applications through the configuration of the Import filter.

BeamLimitingDevice data will be only stored in case of successful verification of the imported treatment machine together with the BeamLimitingDevice (verification criteria see Appendix). The same applies for the imported Wedge, Block and Applicator data. The object storage is rejected if verification fails.

Two collimators (symmetric or asymmetric in any combination, suppose that the machine is configured accordingly) or a collimator in one direction and an MLC in the other direction must be defined. For MLCs and other Accessories, the combination of energy and technique as retrieved from the RT Plan data must be configured to be valid for those MLCs and Accessories.

In Vision the beam itself can have asymmetrical or symmetrical collimator jaw modes in X and Y directions. E.g. beam can have symmetrical jaw mode in X direction even if the physical collimator jaws in X direction support asymmetry, vice versa is not possible. This collimator mode form the beam is exported in RT Beam Limiting Device Type (300A, 00B8). Other implementations may require that the RT Beam Limiting Device Type represents the physical capabilities of the collimator jaws; in these cases the asymmetrical jaw mode should be selected for the beams before export.

Beam energy changes, table parameter changes and rotation direction changes in the control points are not supported. Therefore import of RT Plans with such behavior will be rejected.

Storage of dynamic MLC RT Plan is supported.

Maximum 2 wedges per field are supported. Wedge position changes are only supported for static technique (motorized wedge).

Maximum 1 MLC per field is supported.

If the RT Plan has a Bolus, the corresponding Structure Set has to be imported in advance.

Setup fields are exported, but imported as treatment or planning fields according to the application's task, where the import is invoked. Planning tasks create planning fields, while other task create treatment fields.

Only the first Fraction Group sequence (300A, 0070) is read. The others are discarded.

All Beam Dose Specification Points (300A,0082) must have the same values.

Fluencies of IMRT plans can be exported as compensators. Compensator Type (300A, 00EE) is OPTIMAL for optimal fluence and TOTAL ACTUAL for actual fluence. Values of Compensator Transmission Data (300A, 00EB) are not limited between 0 and 1. Compensator Thickness Data (300A, 00EC) is not used.

RT structure set must be imported before the RT plan otherwise isocenter and connection to the structure set are lost.

In export by default every beam has separate Referenced Patient Setup Number (300C, 006A). It is also possible to configure the export filter to export the plan using only a single Patient Setup, which every beam in the plan references.

Because the size of a verification image to be taken is not known in advance a width and height of zero pixels is assumed in the "Planned Verification Image Sequence" of an RT Plan IOD. Therefore for the "RT Image Position" tag the position of the image receptors center is used on plan export and expected on plan import instead. This is because these coordinates are the same as those of the upper left hand corner of an image with zero number of pixels in x and y directions.

3.1.3.3.6 SOP specific conformance of the RT Dose

Import of 16 and 32 bit doses are supported (Bits Allocated (0028, 0100)). Export of 32 bit dose is supported.

Import of PLAN, FRACTION and BEAM doses is supported (Dose Summation Type (3004, 000A)). Export of FRACTION and BEAM doses are supported.

3D dose is exported as a 3D array of dose data using DICOM Multi-Frame module not, as a set of 2D dose planes. 3D dose import as a set of 2D dose planes is not supported, only a single dose plane from the set will be imported. 3D dose import is supported only through the DICOM Multi-Frame module.

If Grid Frame Offset Vector (3004, 000C) is present, coordinates in it must have equal spacing, otherwise the dose is rejected.

Import of PLAN and FRACTION dose supports Dose Units (3004, 0002) RELATIVE and GY. Export of FRACTION dose supports Dose Units RELATIVE and GY.

Import of BEAM dose supports only RELATIVE Dose Units. Only a single beam reference is allowed in Referenced Beam Sequence (300C, 0004).

BEAM doses are exported using RELATIVE Dose Units, where 100% = 1.0. Every BEAM dose references only a single beam. When the BEAM doses are exported also the FRACTION dose is exported, but without the Image Pixel module. If the FRACTION dose has Dose Units GY, then the Dose Grid Scaling (3004, 000E) tells how the **sum** of the relative BEAM doses can be converted to absolute values. E.g. value 2 would mean that 100% maps to 2 Gy.

RT DVH module is supported on export, but ignored on import.

3.1.3.3.7 SOP specific conformance for the RT Image storage SOP class

If the RT image references the RT Plan and RT Beam, the referenced RT Plan has to be imported before the image to preserve the association. On import of the RT Image no plans and fields are created.

Vision Application Entity supports the image types DRR, PORTAL, and SIMULATOR.

RT Images of image type PORTAL are also used to represent portal dose based on DICOM standard Part 3, section A.17.3 (RT Image IOD Module Table), Notes 2. The conversion between portal image pixel values and portal dose is defined by the Modality LUT module through Rescale Slope and Intercept. The unit depends on the Rescale Type. The following 2 types of portal doses are distinguished by the image type:

Image Type	Meaning
DERIVED\SECONDARY\PORTAL\CALCULATED_DOSE	Portal dose predicted by a treatment planning system, i.e. an estimate of the

	dose that will be perceived by the portal imaging device.
ORIGINALPRIMARYPORTALACQUIRED_D OSE	Portal dose actually measured by the portal imaging device based on its calibration.

3.1.3.4 Presentation Context Acceptance Criterion

Vision Application Entity will accept the presentation contexts listed in Table 3 Proposed Presentation Contexts for Import from Remote Query/Retrieve SCP.

3.1.3.5 Transfer Syntax Selection Policies

Vision Application Entity will accept the DICOM default transfer syntax (implicit VR Little Endian) and explicit VR Little Endian.

3.2 Vision DICOM Print Application Entity Specification

Vision DICOM Print Application Entity provides standard conformance as a Print Management SCU to the following DICOM V3.0 SOP classes:

SOP Class Name	SOP Class UID
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
>Printer SOP Class	1.2.840.10008.5.1.1.16

Table 6: Supported SCU SOP Classes for Vision DICOM Print Application Entity

3.2.1 Association Establishment Policies

3.2.1.1 General

The maximum PDU length of the AE is 32768 bytes. The user information item sent by this AE only contains the maximum PDU length and the Implementation UID.

3.2.1.2 Number of associations

The Vision DICOM Print Application Entity acts as an Association-requester i.e. the AE establishes one single association to any remote AE at any time.

3.2.1.3 Asynchronous nature

Asynchronous operation is not supported.

3.2.1.4 Implementation Identifying Information

The Implementation Class UID of the Print Management application entity is:

1.2.246.352.70.2.1.8

No implementation version information is given.

3.2.2 Association Initiation Policy

The Vision DICOM Print Application Entity initiates associations when the user selects the DICOM Print command in a Vision application.

3.2.2.1 Associated Real-World Activity

The Vision DICOM Print Application Entity initiates associations when the user selects the DICOM Print command and then selects a configured printer, which understands DICOM. The Application Entity allows the user to set print parameters and to transmit images for printing.

3.2.2.2 Proposed Presentation Contexts

The Vision DICOM Print Application Entity supports following Abstract Syntaxes and Transfer Syntaxes as a Print Management SCU:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Printer SOP Class	1.2.840.10008.5.1.1.16	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 7: Proposed Presentation Contexts for Print to Remote Print SCP

3.2.2.3 SOP Specific Conformance for Meta SOP Class: Basic Grayscale Print Management

The Meta SOP Class is defined by the following set of supported SOP Classes.

- Basic Film Session SOP Class
- Basic Film Box SOP Class
- Basic Grayscale Image Box SOP Class
- Printer SOP Class

On the Vision Application side the user may select between different image layouts (one, two or four images per page and a free to define N times M layout). Structures and additional information (like measurements, labels, etc.) will always be burned in. Finally the Vision Application will compose one single image for every page to be printed. The Vision DICOM Print Application Entity always sends this single image to the printer. It will be automatically scaled to fit the size of the print media.

3.2.2.3.1 SOP Specific conformance for SOP Class: Basic Film Session

Vision DICOM Print Application Entity supports the following Attributes of the N-CREATE DIMSE Service:

Attribute Name	Tag
Number of Copies	(2000,0010)
Medium Type	(2000,0030)
Film Session Label	(2000,0050)

3.2.2.3.2 SOP Specific conformance for SOP Class: Basic Film Box

Vision DICOM Print Application Entity supports the following Attributes of the N-CREATE DIMSE Service:

Attribute Name	Tag
Image Display Format	(2010,0010)
Referenced Film Session Sequence	(2010,0500)
Film Orientation	(2010,0040)
Film Size ID	(2010,0050)

3.2.2.3.3 SOP Specific conformance for SOP Class: Basic Grayscale Image Box

Vision DICOM Print Application Entity supports the following Attributes of the N-SET DIMSE Service:

Attribute Name	Tag	Range
Image Position	(2020,0010)	
Preformatted Grayscale Image Sequence	(2020,0110)	
>Samples Per Pixel	(0028,0002)	1
>Photometric Interpretation	(0028,0004)	MONOCHROME1 or 2
>Rows	(0028,0010)	Depending on image
>Columns	(0028,0011)	Depending on image
>Pixel Aspect Ratio	(0028,0034)	Depending on image
>Bits Allocated	(0028,0100)	16 / 8
>Bits Stored	(0028,0101)	12 / 8
>High Bit	(0028,0102)	11 / 7
>Pixel Representation	(0028,0103)	unsigned integer
>Pixel Data	(7FE0,0010)	

3.2.3 Association Acceptance Policy

The Vision DICOM Print Application Entity does not accept any association from a remote AE.

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4. Communication profiles

4.1 Supported communications stacks

Vision Application Entity provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 (part 8 of the DICOM V3.0 standard).

4.1.1 TCP/IP stack

Vision Application Entity uses the TCP/IP stack of Microsoft Windows Operating Systems (Winsock), which is the operating system platform of the Vision applications.

4.1.1.1 Physical media support

Vision Application Entity can run on any physical network media that is supported by the underlying hardware and operating system (i.e. standard PCs and Windows NT 4, Windows 2000). These include, but are not limited to: thin, thick, and twisted-pair Ethernet, token ring network and FDDI.

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5. Configuration

Vision Application Entity is configured through the import/export filter configurations dialog under the Tools menu in the Vision applications. Vision DICOM Print Application Entity is configured there as well.

The configuration for the DICOM Daemons is done by a separate configuration program for the daemons (DICOM Service Daemon Configuration Wizard).

5.1 AE Title/Presentation Address Mapping

Each import/export filter (beside the Media Format filters) and daemon configuration provides a mapping of an Application Entity Title to a Presentation Address. A Presentation Address consists of a filter name, a calling (local) and called (destination) AE title, a destination IP address or hostname, and a port number.

5.2 Configurable Parameters

5.2.1 Vision Application Entity

The configurable parameters of Vision Application Entity are:

- For the Storage service class SCU the TCP/IP address, called AE title and port number of the destination are configurable as well as the calling AE title of the local. Multiple filter configurations can exist in the system at the same time.
- For the Query/Retrieve service class SCU the TCP/IP address, called AE title and port number of the provider are configurable. The calling AE title of the local application, which is also the Move Destination AE title, is configurable too. The configurable Transfer Directory Path is the directory where the temporary objects are stored in. The local port is the port of the temporary Storage service class SCP for receiving the data. Multiple configurations can exist in the system at the same time.
- For the Storage service class SCP (daemons) the AE Title, port number and the location of the temporary object storage are configurable. Calling AE title verification is configurable. The Vision Application Entity will respond to any calling AE with the configured AE title. The TCP/IP address of the host computer is used. Multiple configurations can exist in the system at the same time.
- The TCP/IP port number of the Storage service class SCP can be configured to any number that is acceptable for TCP/IP.
- Log files are produced by the Vision Application Entity. These log files should be read in case of warnings or failures and contain information about the cause of the problem. The location of these log files can be configured.

5.2.2 Vision DICOM Print Application Entity

The configurable parameters of Vision DICOM Print Application Entity are:

- For the print service class SCU the TCP/IP address, calling and called AE title and port number of the destination are configurable. Multiple configurations can exist in the system at the same time.
- By default no debug log is produced by the Vision DICOM Print Application Entity. It can be configured to produce an ASCII log of its actions.

6. Support of Extended Character Sets

Extended character sets are not supported.

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Appendix A: IOD Specific Implementation Details

A 1 Matching Criteria

Item	DICOM Tag	Matching Criteria on Vision Application Side	Remarks
Patient	Patient ID (0010,0020)	Patient ID 1	
	Patient's Name (0010,0010)	Patient Last Name, Patient First Name	Used only if Patient ID was not found in Vision Application.
	Patient's Birth Date (0010,0030)	Patient Birth Date	
	Other Patient IDs (0010,1000)	Patient ID 2	
Machine	Treatment Machine Name (300A,00B2)	Machine ID	
	Manufacturer (0008,0070)		These three attributes have to match if Treatment Machine Name was not found in Vision Application.
	Manufacturer's Model Name (0018,1090)		
	Device Serial Number (0018,1000)		
Applicator	Applicator ID (300A,0108)	Applicator ID	
Bolus	n/a	n/a	Is created from DICOM data during Import.
Compensator	n/a	n/a	Is created from DICOM data during Import.
MLC	RT Beam Limiting Device Type (300A,00B8)	MLC Rotation	MLCX = Rotation 0 deg MLCY = Rotation 90 deg
	Number of Leaf/Jaw Pairs (300A,00BC)	Number of Leaves / 2	
	Leaf Position Boundaries (300A,00BE)	Leaf Width	
Wedge	Wedge Type (300A,00D3)	Wedge Type, Motorized Flag	Wedge Type to distinguish between STANDARD or DYNAMIC, Motorized Flag for MOTORIZED
	Wedge Angle (300A,00D5)	Wedge Angle	
	Wedge Orientation (300A,00D8)	Wedge Direction	

Item	DICOM Tag	Matching Criteria on Vision Application Side	Remarks
	Wedge ID (300A,00D4)	Wedge ID	This attribute is only used if more than one wedge is found where all other attributes match.

A 2 Module Tables

A 2.1 Image IOD Modules

A 2.1.1 CR Image IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	General Series	C.7.3.1	M	
	CR Series	C.8.1.1	M	Export only
	Clinical Trial Series	C.7.3.2	U	Not supported
Equipment	General Equipment	C.7.5.1	M	
Image	General Image	C.7.6.1	M	
	Image Pixel	C.7.6.3	M	
	Contrast/Bolus	C.7.6.4	C	Not supported
	CR Image	C.8.1.2	M	
	Overlay Plane	C.9.2	U	Not supported
	Curve	C.10.2	U	
	Modality Lut	C.11.1	U	Import only
	VOI LUT	C.11.2	U	
	SOP Common	C.12.1	M	

A 2.1.2 CT Image IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported

IE	Module	Reference	Usage	Remarks
Series	General Series	C.7.3.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Frame of Reference	Frame of Reference	C.7.4.1	M	
Equipment	General Equipment	C.7.5.1	M	
Image	General Image	C.7.6.1	M	
	Image Plane	C.7.6.2	M	
	Image Pixel	C.7.6.3	M	
	Contrast/Bolus	C.7.6.4	C	Not supported
	CT Image	C.8.2.1	M	
	Overlay Plane	C.9.2	U	Not supported
	VOI LUT	C.11.2	U	
	SOP Common	C.12.1	M	

A 2.1.3 MR Image IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	General Series	C.7.3.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Frame of Reference	Frame of Reference	C.7.4.1	M	
Equipment	General Equipment	C.7.5.1	M	
Image	General Image	C.7.6.1	M	
	Image Plane	C.7.6.2	M	
	Image Pixel	C.7.6.3	M	
	Contrast/Bolus	C.7.6.4	C	Not supported
	MR Image	C.8.3.1	M	
	Overlay Plane	C.9.2	U	Not supported
	VOI LUT	C.11.2	U	
	SOP Common	C.12.1	M	

A 2.1.4 PET Image IOD Modules

Only import of this IOD is supported.

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported

IE	Module	Reference	Usage	Remarks
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	General Series	C.7.3.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
	PET Series	C.8.9.1	M	Partially supported
	PET Isotope	C.8.9.2	M	Not supported
	PET Multi-gated Acquisition	C.9.9.3	C	Not supported
	NM/PET Patient Orientation	C.8.4.6	M	Not supported
Frame of Reference	Frame of Reference	C.7.4.1	M	
Equipment	General Equipment	C.7.5.1	M	
Image	General Image	C.7.6.1	M	
	Image Plane	C.7.6.2	M	
	Image Pixel	C.7.6.3	M	
	PET Image	C.8.9.4	M	Partially supported
	Overlay Plane	C.9.2	U	Not supported
	VOI LUT	C.11.2	U	
	SOP Common	C.12.1	M	

A 2.1.5 SC Image IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	General Series	C.7.3.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Equipment	General Equipment	C.7.5.1	U	
	SC Equipment	C.8.6.1	M	
Image	General Image	C.7.6.1	M	
	Image Pixel	C.7.6.3	M	
	SC Image	C.8.6.2	M	
	Overlay Plane	C.9.2	U	Not supported
	Modality Lut	C.11.1	U	Import only
	VOI LUT	C.11.2	U	
	SOP Common	C.12.1	M	

A 2.1.6 US Image IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	General Series	C.7.3.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Frame of Reference	Frame of Reference	C.7.4.1	M	
	US Frame of Reference	C.8.5.4	C	Not supported
	Synchronization	C.7.4.2	U	Not supported
Equipment	General Equipment	C.7.5.1	M	
Image	General Image	C.7.6.1	M	
	Image Pixel	C.7.6.3	M	
	Contrast/Bolus	C.7.6.4	C	Not supported
	Palette Color Lookup Table	C.7.9	C	Not supported
	US Region Calibration	C.8.5.5	U	Not supported
	US Image	C.8.5.6	M	Not supported
	Overlay Plane	C.9.2	U	Not supported
	VOI LUT	C.11.2	U	
	SOP Common	C.12.1	M	
Curve	Curve Identification	C.10.1	M	Not supported
	Curve	C.10.2	M	Not supported
	Audio	C.10.3	U	Not supported
	SOP Common	C.12.1	M	Not supported

A 2.1.7 X-Ray Angiographic Image IOD Modules

Only import of this IOD is supported.

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	General Series	C.7.3.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Equipment	General Equipment	C.7.5.1	U	

IE	Module	Reference	Usage	Remarks
Image	General Image	C.7.6.1	M	
	Image Pixel	C.7.6.3	M	
	Contrast/Bolus	C.7.6.4	C	Not supported
	Cine	C.7.6.5	C	Not supported
	Multi Frame	C.7.6.6	C	Not supported
	Frame Pointers	C.7.6.9	U	Not supported
	Mask	C.7.6.10	C	Not supported
	Display Shutter	C.7.6.11	U	Not supported
	Device	C.7.6.12	U	Not supported
	Therapy	C.7.6.13	U	Not supported
	X-Ray Image	C.8.7.1	M	
	X-Ray Acquisition	C.8.7.2	M	Not supported
	X-Ray Collimator	C.8.7.3	U	Not supported
	X-Ray Table	C.8.7.4	C	Not supported
	XA Positioner	C.8.7.5	M	Not supported
	Overlay Plane	C.9.2	U	Not supported
	Multi Frame Overlay	C.9.3	U	Not supported
	Curve	C.10.2	U	
	Modality LUT	C.11.1	C / U	
	VOI LUT	C.11.2	U	
SOP Common	C.12.1	M		

A 2.2 RT IOD Modules

A 2.2.1 RT Beams Treatment Record IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	RT Series	C.8.8.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Equipment	General Equipment	C.7.5.1	M	Export only
Treatment Record	RT General Treatment Record	C.8.8.17	M	
	RT Patient Setup	C.8.8.12	U	Not supported

IE	Module	Reference	Usage	Remarks
	RT Treatment Machine Record	C.8.8.18	M	
	Measured Dose Reference Record	C.8.8.19	U	Not supported
	Calculated Dose Reference Record	C.8.8.20	U	Not supported
	RT Beams Session Record	C.8.8.21	M	
	RT Treatment Summary Record	C.8.8.23	U	Not supported
	Curve	C.10.2	U	Not supported
	SOP Common	C.12.1	M	

A 2.2.2 RT Dose IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	RT Series	C.8.8.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Frame of Reference	Frame of Reference	C.7.4.1	M	
Equipment	General Equipment	C.7.5.1	M	Export only
Dose	General Image	C.7.6.1	C	Export only
	Image Plane	C.7.6.2	C	
	Image Pixel	C.7.6.3	C	
	Multi-Frame	C.7.6.6	C	Export only
	Overlay Plane	C.9.2	U	Not supported
	Multi-Frame Overlay	C.9.3	U	Not supported
	Modality LUT	C.11.1	U	Not supported
	RT Dose	C.8.8.3	M	
	RT DVH	C.8.8.4	U	Export only
	Structure Set	C.8.8.5	C	Not supported
	ROI Contour	C.8.8.6	C	Not supported
	RT Dose ROI	C.8.8.7	C	Not supported
	Audio	C.10.3	U	Not supported
SOP Common	C.12.1	M		

A 2.2.3 RT Image IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	RT Series	C.8.8.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Frame of Reference	Frame of Reference	C.7.4.1	U	
Equipment	General Equipment	C.7.5.1	M	
Image	General Image	C.7.6.1	M	
	Image Pixel	C.7.6.3	M	
	Contrast/Bolus	C.7.6.4	C	Not supported
	Cine	C.7.6.5	C	Not supported
	Multi Frame	C.7.6.6	C	Not supported
	RT Image	C.8.8.2	M	
	Modality LUT	C.11.1	U	
	VOI LUT	C.11.2	U	
	Approval	C.8.8.16	U	
	Curve	C.10.2	U	
	Audio	C.10.3	U	Not supported
	SOP Common	C.12.1	M	

A 2.2.4 RT Plan IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	RT Series	C.8.8.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Frame of Reference	Frame of Reference	C.7.4.1	U	Not supported
Equipment	General Equipment	C.7.5.1	M	Export only
Plan	RT General Plan	C.8.8.9	M	
	RT Prescription	C.8.8.10	U	
	RT Tolerance Tables	C.8.8.11	U	
	RT Patient Setup	C.8.8.12	U	

IE	Module	Reference	Usage	Remarks
	RT Fraction Scheme	C.8.8.13	U	
	RT Beams	C.8.8.14	C	
	RT Brachy Application Setups	C.8.8.15	C	
	Approval	C.8.8.16	U	
	Audio	C.10.3	U	Not supported
	SOP Common	C.12.1	M	

A 2.2.5 RT Structure Set IOD Modules

IE	Module	Reference	Usage	Remarks
Patient	Patient	C.7.1.1	M	
	Clinical Trial Subject	C.7.1.3	U	Not supported
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not supported
	Clinical Trial Study	C.7.2.3	U	Not supported
Series	RT Series	C.8.8.1	M	
	Clinical Trial Series	C.7.3.2	U	Not supported
Equipment	General Equipment	C.7.5.1	M	Export only
Structure Set	Structure Set	C.8.8.5	M	
	ROI Contour	C.8.8.6	M	
	RT ROI Observations	C.8.8.8	M	
	Approval	C.8.8.16	U	Not supported
	Audio	C.10.3	U	Not supported
	SOP Common	C.12.1	M	

A 3 Tag Tables

The chapter titles contain the chapter number of the module definition within the DICOM Standard.

A 3.1 Patient

A 3.1.1 Patient – C.7.1.1

Attribute Name	Tag	T	Description	Mapping
Patient's Name	(0010,0010)	2	Patient's full name.	Patient.LastName + Patient.FirstName + Patient.MiddleName + Patient.Honorific + Patient.NameSuffix
Patient ID	(0010,0020)	2	Primary hospital identification number or code for the patient.	Read from or written to Id in a Patient
Patient's Birth Date	(0010,0030)	2	Birth date of the patient.	Read from or written to DateOfBirth in a Patient
Patient's Sex	(0010,0040)	2	Sex of the named patient.Enumerated Values: M = male F = female O = other	Patient.SexImport: F: 'Female', M: 'Male', O: 'Other'Export: 'Female': F, 'Male': M, else: O
Referenced Patient Sequence	(0008,1120)	3	A sequence that provides reference to a Patient SOP Class/Instance pair. Only a single Item shall be permitted in this Sequence.	Not Implemented
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Patient Sequence (0008,1120) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Patient Sequence (0008,1120) is sent.	Not Implemented
Patient's Birth Time	(0010,0032)	3	Birth time of the Patient.	Read from or written to DateOfBirth in a Patient
Other Patient IDs	(0010,1000)	3	Other identification numbers or codes used to identify the patient.	Read from or written to PatientId2 in a Patient

Attribute Name	Tag	T	Description	Mapping
Other Patient Names	(0010,1001)	3	Other names used to identify the patient.	Not Implemented
Ethnic Group	(0010,2160)	3	Ethnic group or race of the patient.	Read from or written to Race in a Patient
Patient Comments	(0010,4000)	3	User-defined additional information about the patient.	Read from or written to Comment in a Patient

A 3.2 Study

A 3.2.1 General Study – C.7.2.1

Attribute Name	Tag	T	Description	Mapping
Study instance UID	(0020,000D)	1	Unique identifier for the Study.	Read from or written to StudyUID in a Study
Study Date	(0008,0020)	2	Date the Study started.	Read from or written to CreationDate in a Study
Study Time	(0008,0030)	2	Time the Study started.	Read from or written to CreationDate in a Study
Referring Physician's Name	(0008,0090)	2	Name of the patient's referring physician	Read from or written to ReferringPhysicianName in a Study
Referring Physician Identification Sequence	(0008,0096)	3	Identification of the patient's referring physician. Only a single item shall be permitted in this sequence.	Not Implemented
> Person Identification Code Sequence	(0040,1101)	1	A coded entry which identifies a person. The Code Meaning attribute, though it will be encoded with a VR of LO, may be encoded according to the rules of the PN VR (e.g. caret '^' delimiters shall separate name components), except that a single component (i.e. the whole name unseparated by caret delimiters) is not permitted. Name component groups for use with multi-byte character sets are permitted, as long as they fit within the 64 characters (the length of the LO VR). One or more items may be permitted in this Sequence.	Not Implemented

Appendix A: IOD Specific Implementation Details

Attribute Name	Tag	T	Description	Mapping
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Person's Address	(0040,1102)	3	Person's mailing address	Not Implemented
> Person's Telephone Numbers	(0040,1103)	3	Person's telephone number(s)	Not Implemented
> Institution Name	(0008,0080)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Code Sequence (0008,0082) is present.	Not Implemented
> Institution Address	(0008,0081)	3	Mailing address of the institution or organization to which the identified individual is responsible or accountable.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Institution Code Sequence	(0008,0082)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Name (0008,0080) is present. Only a single item shall be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Study ID	(0020,0010)	2	User or equipment generated Study identifier.	Read from or written to Id in a Study
Accession Number	(0008,0050)	2	A RIS generated number that identifies the order for the Study.	Read from or written to AccessionNumber in a Study
Study Description	(0008,1030)	3	Institution-generated description or classification of the Study (component) performed.	Read from or written to Comment in a Study

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Attribute Name	Tag	T	Description	Mapping
Physician(s) of Record	(0008,1048)	3	Names of the physician(s) who are responsible for overall patient care at time of Study (see Section C.7.3.1 for Performing Physician)	Names of all Doctors associated to Patient which owns this Study object.
Physician(s) of Record Identification Sequence	(0008,1049)	3	Identification of the physician(s) who are responsible for overall patient care at time of Study. One or more items shall be included in this sequence. If more than one item, the number and order shall correspond to the value of Physician(s) of Record (0008,1048), if present.	Not Implemented
> Person Identification Code Sequence	(0040,1101)	1	A coded entry which identifies a person. The Code Meaning attribute, though it will be encoded with a VR of LO, may be encoded according to the rules of the PN VR (e.g. caret '^' delimiters shall separate name components), except that a single component (i.e. the whole name unseparated by caret delimiters) is not permitted. Name component groups for use with multi-byte character sets are permitted, as long as they fit within the 64 characters (the length of the LO VR). One or more Items may be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Person's Address	(0040,1102)	3	Person's mailing address	Not Implemented
> Person's Telephone Numbers	(0040,1103)	3	Person's telephone number(s)	Not Implemented
> Institution Name	(0008,0080)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Code Sequence (0008,0082) is present.	Not Implemented
> Institution Address	(0008,0081)	3	Mailing address of the institution or organization to which the identified individual is responsible or accountable.	Not Implemented
> Institution Code Sequence	(0008,0082)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Name (0008,0080) is present. Only a single Item shall be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Name of Physician(s) Reading Study	(0008,1060)	3	Names of the physician(s) reading the Study.	Not Implemented
Physician(s) Reading Study Identification Sequence	(0008,1062)	3	Identification of the physician(s) reading the Study. One or more items shall be included in this sequence. If more than one item, the number and order shall correspond to the value of Name of Physician(s) Reading Study (0008,1060), if present.	Not Implemented
> Person Identification Code Sequence	(0040,1101)	1	A coded entry which identifies a person. The Code Meaning attribute, though it will be encoded with a VR of LO, may be encoded according to the rules of the PN VR (e.g. caret '^' delimiters shall separate name components), except that a single component (i.e. the whole name unseparated by caret delimiters) is not permitted. Name component groups for use with multi-byte character sets are permitted, as long as they fit within the 64 characters (the length of the LO VR). One or more items may be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Person's Address	(0040,1102)	3	Person's mailing address	Not Implemented
> Person's Telephone Numbers	(0040,1103)	3	Person's telephone number(s)	Not Implemented
> Institution Name	(0008,0080)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Code Sequence (0008,0082) is present.	Not Implemented
> Institution Address	(0008,0081)	3	Mailing address of the institution or organization to which the identified individual is responsible or accountable.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Institution Code Sequence	(0008,0082)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Name (0008,0080) is present. Only a single item shall be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Referenced Study Sequence	(0008,1110)	3	A sequence that provides reference to a Study SOP Class/Instance pair. The sequence may have zero or more items.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Study Sequence (0008,1110) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Study Sequence (0008,1110) is sent.	Not Implemented
Procedure Code Sequence	(0008,1032)	3	A Sequence that conveys the type of procedure performed. One or more items may be included in this Sequence.	Not Implemented
> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

A 3.3 Series

A 3.3.1 General Series – C.7.3.1

Attribute Name	Tag	T	Description	Mapping
Modality	(0008,0060)	1	Type of equipment that originally acquired the data used to create the images in this Series. See C.7.3.1.1.1 for Defined Terms.	Read from or written to SeriesModality in a Series
Series instance UID	(0020,000E)	1	Unique identifier of the Series.	Read from or written to SeriesUID in a Series
Series Number	(0020,0011)	2	A number that identifies this Series.	Read from or written to SeriesNumber in a Series
Laterality	(0020,0060)	2C	<p>Laterality of (paired) body part examined.</p> <p>Required if the body part examined is a paired structure and Image Laterality (0020,0062) is not sent. Enumerated Values: R = right L = left</p> <p>Note: Some IODs support Image Laterality (0020,0062) at the Image level, which can provide a more comprehensive mechanism for specifying the laterality of the body part(s) being examined.</p>	Not Implemented
Series Date	(0008,0021)	3	Date the Series started.	Read from or written to CreationDate in a Series
Series Time	(0008,0031)	3	Time the Series started.	Read from or written to CreationDate in a Series
Performing Physician's Name	(0008,1050)	3	Name of the physician(s) administering the Series.	Not Implemented
Performing Physician Identification Sequence	(0008,1052)	3	Identification of the physician(s) administering the Series. One or more items shall be included in this sequence. If more than one item, the number and order shall correspond to the value of Performing Physicians' Name (0008,1050), if present.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Person Identification Code Sequence	(0040,1101)	1	A coded entry which identifies a person. The Code Meaning attribute, though it will be encoded with a VR of LO, may be encoded according to the rules of the PN VR (e.g. caret '^' delimiters shall separate name components), except that a single component (i.e. the whole name unseparated by caret delimiters) is not permitted. Name component groups for use with multi-byte character sets are permitted, as long as they fit within the 64 characters (the length of the LO VR). One or more items may be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Person's Address	(0040,1102)	3	Person's mailing address	Not Implemented
> Person's Telephone Numbers	(0040,1103)	3	Person's telephone number(s)	Not Implemented
> Institution Name	(0008,0080)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Code Sequence (0008,0082) is present.	Not Implemented
> Institution Address	(0008,0081)	3	Mailing address of the institution or organization to which the identified individual is responsible or accountable.	Not Implemented
> Institution Code Sequence	(0008,0082)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Name (0008,0080) is present. Only a single item shall be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Protocol Name	(0018,1030)	3	User-defined description of the conditions under which the Series was performed. Note: This attribute conveys series-specific protocol identification and may or may not be identical to the one presented in the Performed Protocol Code Sequence (0040,0260).	Not Implemented
Series Description	(0008,103E)	3	User provided description of the Series	Read from or written to Comments in a Series
Operators' Name	(0008,1070)	3	Name(s) of the operator(s) supporting the Series.	Not Implemented
Operator Identification Sequence	(0008,1072)	3	Identification of the operator(s) supporting the Series. One or more items shall be included in this sequence. If more than one item, the number and order shall correspond to the value of Operators' Name (0008,1070), if present.	Not Implemented
> Person Identification Code Sequence	(0040,1101)	1	A coded entry which identifies a person. The Code Meaning attribute, though it will be encoded with a VR of LO, may be encoded according to the rules of the PN VR (e.g. caret '^' delimiters shall separate name components), except that a single component (i.e. the whole name unseparated by caret delimiters) is not permitted. Name component groups for use with multi-byte character sets are permitted, as long as they fit within the 64 characters (the length of the LO VR). One or more items may be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Person's Address	(0040,1102)	3	Person's mailing address	Not Implemented
> Person's Telephone Numbers	(0040,1103)	3	Person's telephone number(s)	Not Implemented
> Institution Name	(0008,0080)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Code Sequence (0008,0082) is present.	Not Implemented
> Institution Address	(0008,0081)	3	Mailing address of the institution or organization to which the identified individual is responsible or accountable.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Institution Code Sequence	(0008,0082)	1C	Institution or organization to which the identified individual is responsible or accountable. Shall not be present if Institution Name (0008,0080) is present. Only a single item shall be permitted in this Sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Referenced Study Component Sequence	(0008,1111)	3	Uniquely identifies the Performed Procedure Step SOP Instance to which the Series is related (e.g. a Modality or General-Purpose Performed Procedure Step SOP Instance or Study Component SOP Instance). The Sequence shall have zero or one Item.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Performed Procedure Step Sequence (0008,1111) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Performed Procedure Step Sequence (0008,1111) is sent.	Not Implemented
Body Part Examined	(0018,0015)	3	Text description of the part of the bodyexamined. Defined Terms: SKULL, CSPINE, TSPINE, LSPINE, SSPINE, COCCYX, CHEST, CLAVICLE, BREAST, ABDOMEN, PELVIS, HIP, SHOULDER, ELBOW, KNEE, ANKLE, HAND, FOOT, EXTREMITY, HEAD, HEART, NECK, LEG, ARM, JAW Note: Some IODs support the Anatomic Region Sequence (0008,2218), which can provide a more comprehensive mechanism for specifying the body part being examined.	Series.BodyPartExamined Value JAW is not supported
Patient Position	(0018,5100)	2C	Patient position descriptor relative to the equipment. Required for CT and MR images; shall not be present if Patient Orientation Code Sequence (0054,0410) is present; may be present otherwise. See C.7.3.1.1.2. for Defined Terms and further explanation.	Read from or written to PatientOrientation in a Series
Smallest Pixel Value in Series	(0028,0108)	3	The minimum value of all images in this Series.	Not Implemented
Largest Pixel Value in Series	(0028,0109)	3	The maximum value of all images in this Series.	Not Implemented
Request Attributes Sequence	(0040,0275)	3	Sequence that contains attributes from the Imaging Service Request. The sequence may have one or more Items.	Not Implemented
> Requested Procedure ID	(0040,1001)	1C	Identifier that identifies the Requested Procedure in the Imaging Service Request. Required if Sequence Item is present.	Not Implemented
> Scheduled Procedure Step ID	(0040,0009)	1C	Identifier that identifies the Scheduled Procedure Step. Required if Sequence Item is present.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Scheduled Procedure Step Description	(0040,0007)	3	Institution-generated description or classification of the Scheduled Procedure Step to be performed.	Not Implemented
> Scheduled Protocol Code Sequence	(0040,0008)	3	Sequence describing the Scheduled Protocol following a specific coding scheme. This sequence contains one or more items.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Performed Procedure Step ID	(0040,0253)	3	User or equipment generated identifier of that part of a Procedure that has been carried out within this step.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Performed Procedure Step Start Date	(0040,0244)	3	Date on which the Performed Procedure Step started.	Not Implemented
Performed Procedure Step Start Time	(0040,0245)	3	Time on which the Performed Procedure Step started.	Not Implemented
Performed Procedure Step Description	(0040,0254)	3	Institution-generated description or classification of the Procedure Step that was performed.	Not Implemented
Performed Protocol Code Sequence	(0040,0260)	3	Sequence describing the Protocol performed for this Procedure Step. One or more Items may be included in this Sequence.	Not Implemented
> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Comments on the Performed Procedure Step	(0040,0280)	3	User-defined comments on the Performed Procedure Step. Notes: 1. If the Modality or General Purpose Performed Procedure Step SOP Class is supported as an SCU by a Storage SCU, the SCU is strongly encouraged to support the attribute Referenced Performed Procedure Step Sequence (0008,1111). This attribute references the Performed Procedure Step SOP Instance, and extraction of this Attribute from a Composite Instance may allow retrieval of the Performed Procedure Step SOP Instance. 2. If the Storage SCU does not conform to the Modality or General Purpose Performed Procedure Step SOP Class, it is still advisable to include the attributes Performed Procedure Step Start Date (0040,0244), Performed Procedure Step Start Time (0040,0245) and Performed Procedure Step Description (0040,0254) into the Composite Instances.	Not Implemented

A 3.3.2 PET Series – C.8.9.1

Attribute Name	Tag	T	Description	Mapping
Series Date	(0008,0021)	1	Date the Series started. See C.8.9.1.1.2 for specialization.	(Defined in General Series Module)
Series Time	(0008,0031)	1	Time the Series started. See C.8.9.1.1.2 for specialization.	(Defined in General Series Module)
Units	(0054,1001)	1	Pixel value units. See C.8.9.1.1.3 for explanation. Defined terms: CNTS, NONE, CM2, PCNT, CPS, BQML, MGINMML, UMOLMINML, MLMING, MLG, 1CM, UMOLML, PROPCNTS, PROPCPS, MLMINML, MLML, GML, STDDEV	Import only: Image.StoredUnits

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Attribute Name	Tag	T	Description	Mapping
Counts Sources	(0054,1002)	1	The primary source of counts. The primary source leads to the underlying image Units (0054, 1001), as opposed to secondary sources which are used during reconstruction correction. Enumerated Values: EMISSION TRANSMISSION	Not Used
Series Type	(0054,1000)	1	A multi-valued indicator of the type of Series. See C.8.9.1.1.4 for explanation. Value 1 Enumerated Values: STATIC DYNAMIC GATED WHOLE BODY Value 2 Enumerated Values: IMAGE REPROJECTION	Not Used
Reprojection Method	(0054,1004)	2C	Method for projecting volumetric data onto planar projection. Required if Series Type (0054,1000), Value 2 is REPROJECTION. Defined terms: SUM MAX PIXEL	Not Used
Number of R-R Intervals	(0054,0061)	1C	The maximum number of R-R Intervals that may exist in this Series. Required if Series Type (0054, 1000), Value 1 is GATED.	Not Used
Number of Time Slots	(0054,0071)	1C	The maximum number of Time Slots that may exist in this Series. Required if Series Type (0054,1000), Value 1 is GATED.	Not Used
Number of Time Slices	(0054,0101)	1C	The maximum number of Time Slices that may exist in this Series. Required if Series Type (0054,1000), Value 1 is DYNAMIC.	Not Used
Number of Slices	(0054,0081)	1	The maximum number of Slices that may exist in this Series.	Not Used
Corrected Image	(0028,0051)	2	A value that indicates which, if any, corrections have been applied to the images in this series. Defined terms: DECAY=decay corrected ATTN=attenuation corrected SCAT=scatter corrected DTIM=dead time corrected MOTN=gantry motion corrected (e.g. wobble, clamshell) PMOT=patient motion corrected CLN=count loss normalization (correction for count loss in gated Time Slots). RAN=randoms corrected RADL=non-uniform radial sampling corrected DCAL=sensitivity calibrated using dose calibrator NORM=detector normalization	Not Used

Attribute Name	Tag	T	Description	Mapping
Randoms Correction Method	(0054,1100)	3	Type of randoms correction processing. Defined terms: NONE = no randoms correction DLYD = delayed event subtraction SING = singles estimation	Not Implemented
Attenuation Correction Method	(0054,1101)	3	A textual description of the attenuation correction processing. e.g. measured vs. calculated, transmission source type (ring, line, point), assumed patient geometry (polygon, ellipse, segmented, attenuation coefficient, skull thickness), post-injection transmission, smoothing.	Not Implemented
Scatter Correction Method	(0054,1105)	3	A textual description of the scatter correction processing. e.g. convolutionsubtraction, dual energy window, modelbased, use of attenuation data.	Not Implemented
Decay Correction	(0054,1102)	1	The real-world event to which images in this Series were decay corrected. See C.8.9.1.1.5 for explanation. Defined terms: NONE = no decay correction START= acquisition start time ADMIN = radiopharmaceutical administration time	Not Used
Reconstruction Diameter	(0018,1100)	3	Diameter, in mm, of the region within which the data was used in creating the reconstruction of the image. Data may exist outside this region and portions of the patient may exist outside this region.	Not Implemented
Convolution Kernel	(0018,1210)	3	Textual description of the convolution kernel(s) used to reconstruct the data (e.g. name, cutoff, radial/axial/angular, mathematical form, DC handling)	Not Implemented
Reconstruction Method	(0054,1103)	3	Textual description of reconstruction processing, e.g. 2D filtered backprojection, 2D iterative, 3D PROMIS, 3D FAVOR, 3D iterative.	Not Implemented
Detector Lines of Response Used	(0054,1104)	3	Textual description of which detector lines of response were used, masked, or otherwise processed during tomographic reconstruction.	Not Implemented
Acquisition Start Condition	(0018,0073)	3	Description of how the data collection was started. Defined terms: DENS = density (counts/sec) RDD = relative density difference (change in counts/sec) MANU = manual TIME = time AUTO = automatic, when ready TRIG = physiological trigger See C.8.9.1.1.6 for explanation.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Acquisition Start Condition Data	(0018,0074)	3	Count density, change in count density, or physiological triggers causing data collection to start.	Not Implemented
Acquisition Termination Condition	(0018,0071)	3	Description of how the data collection for the series was stopped. Defined terms: CNTS = counts DENS = density (counts/sec) RDD = relative density difference (change in counts/sec) MANU = manual OVFL = data overflow TIME = time TRIG = physiological trigger See C.8.4.9.1.3 for explanation.	Not Implemented
Acquisition Termination Condition Data	(0018,0075)	3	Number of counts, count density, change in count density, or physiological triggers causing the termination.	Not Implemented
Field of View Shape	(0018,1147)	3	Shape of the field of view of the PETcamera. Defined Terms: CYLINDRICAL RING HEXAGONAL MULTIPLE PLANAR	Not Implemented
Field of View Dimension(s)	(0018,1149)	3	Dimensions of the field of view, in mm. Transverse detector diameter followed by axial width.	Not Implemented
Gantry/Detector Tilt	(0018,1120)	3	Angle of tilt in degrees of the gantry. See C.8.9.1.1.7 for explanation.	Not Implemented
Gantry/Detector Slew	(0018,1121)	3	Angle of slew in degrees of the gantry. Positive slew is moving the gantry on the patient's left toward the patient's superior, when the patient is supine.	Not Implemented
Type of Detector Motion	(0054,0202)	3	Describes the detector motion during acquisition. Defined Terms: NONE = stationary gantry STEP ANDSHOOT = STEP ANDInterrupted motion, acquire only while stationary CONTINUOUS = Gantry motion and acquisition are simultaneous and continuous WOBBLE = wobble motion CLAMSHELL = clamshell motion	Not Implemented

Attribute Name	Tag	T	Description	Mapping
Collimator Type	(0018,1181)	2	Collimator Type. Defined Terms: NONE = no collimator RING = transverse septa	Not Implemented
Collimator/Grid Name	(0018,1180)	3	Label describing the collimator used.	Not Implemented
Axial Acceptance	(0054,1200)	3	Maximum axial angle accepted, in degrees.	Not Implemented
Axial Mash	(0054,1201)	3	Number of adjacent axial lines of response mashed together. See C.8.9.1.1.8 for explanation.	Not Implemented
Transverse Mash	(0054,1202)	3	Number of adjacent transverse lines of response mashed together. See C.8.9.1.1.9 for explanation.	Not Implemented
Detector Element Size	(0054,1203)	3	Size of an individual detector element, in mm. Transverse dimension followed by axial dimension. For a discrete crystal, this is the crystal size. For a continuous detector, this is the pixel bin size.	Not Implemented
Coincidence Window Width	(0054,1210)	3	The width of the coincidence timing window, in nsec. The maximum time difference accepted between two single events.	Not Implemented
Energy Window Range Sequence	(0054,0013)	3	Sequence of Repeating Items that describes the energy windows used for this Series. This sequence may contain zero or more items. See C.8.9.1.1.10 for explanation.	Not Implemented
> Energy Window Lower Limit	(0054,0014)	3	The lower limit of the energy window, in KeV.	Not Implemented
> Energy Window Upper Limit	(0054,0015)	3	The upper limit of the energy window, in KeV.	Not Implemented
Secondary Counts Type	(0054,1220)	3	Array defining the type of additional counts accumulated during acquisition. Defined terms: DLYD=delayed events SCAT=scattered events in secondary window SING=singles DTIM=events lost due to deadline	Not Implemented

A 3.3.3 PET Isotope – C.8.9.2

Attribute Name	Tag	T	Description	Mapping
Radiopharmaceutical Information Sequence	(0054,0016)	2	Sequence of items that describe isotope information. This sequence may contain one or more items.	Not Implemented
> Radionuclide Code Sequence	(0054,0300)	2	Sequence that identifies the radionuclide. This sequence shall contain exactly one item.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Radionuclide Route	(0018,1070)	3	Route of administration.	Not Implemented
> Administration Route Code Sequence	(0054,0302)	3	Sequence that identifies the administration route of the radiopharmaceutical. This sequence shall contain exactly one item.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Radionuclide Volume	(0018,1071)	3	Volume of administered radiopharmaceutical in cubic cm.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Radionuclide Start Time	(0018,1072)	3	Time of start of administration. The actual time of radiopharmaceutical administration to the patient for imaging purposes, using the same time base as Series Time (0008,0031).	Not Implemented
> Radionuclide Stop Time	(0018,1073)	3	Time of end of administration. The actual ending time of radiopharmaceutical administration to the patient for imaging purposes, using the same time base as Series Time (0008,0031).	Not Implemented
> Radionuclide Total Dose	(0018,1074)	3	The radiopharmaceutical dose administered to the patient measured in Becquerels (Bq) at the Radiopharmaceutical Start Time (0018,1072).	Not Implemented
> Radionuclide Half Life	(0018,1075)	3	The radionuclide half life, in seconds, that was used in the correction of this image.	Not Implemented
> Radionuclide Positron Fraction	(0018,1076)	3	The radionuclide positron fraction (fraction of decays that are by positron emission) that was used in the correction of this image.	Not Implemented
> Radiopharmaceutical Specific Activity	(0018,1077)	3	The activity per unit mass of the radiopharmaceutical, in Bq/micromole, at the Radiopharmaceutical Start Time (0018,1072).	Not Implemented
> Radiopharmaceutical	(0018,0031)	3	Name of the radiopharmaceutical.	Not Implemented
> Radiopharmaceutical Code Sequence	(0054,0304)	3	Sequence that identifies the radiopharmaceutical. This sequence shall contain exactly one item.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Intervention Drug Information Sequence	(0018,0026)	3	Sequence of Repeating Items that describes the intervention drugs used. Zero or more items may be included in this sequence.	Not Implemented
> Intervention Drug Name	(0018,0034)	3	Name of the intervention drug.	Not Implemented
> Intervention Drug Code Sequence	(0018,0029)	3	Sequence that identifies the intervention drug name.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Intervention Drug Start Time	(0018,0035)	3	Time of administration of the intervention drug, using the same time base as for the Series Time (0008,0031).	Not Implemented
> Intervention Drug Stop Time	(0018,0027)	3	Time of completion of administration of the intervention drug, using the same time base as for the Series Time (0008,0031).	Not Implemented
> Intervention Drug Dose	(0018,0028)	3	Intervention drug dose, in mg.	Not Implemented

A 3.4 Frame of Reference

A 3.4.1 Frame of Reference – C.7.4.1

Attribute Name	Tag	T	Description	Mapping
Frame of Reference UID	(0020,0052)	1	Uniquely identifies the frame of reference for a Series. See C.7.4.1.1.1 for further explanation.	Images: Slice.FrameOfReferenceUID Portal Dose: Export only: DoseMatrix.FrameOfReferenceUID RT Dose: DoseMatrix.FrameOfReferenceUID
Position Reference Indicator	(0020,1040)	2	Part of the patient's anatomy used as a reference, such as the iliac crest, orbitalmedial, sternal notch, symphysis pubis, xiphoid, lower coastal margin, external auditory meatus. See C.7.4.1.1.2 for further explanation.	Not Used

A 3.5 Equipment

A 3.5.1 General Equipment – C.7.5.1

Attribute Name	Tag	T	Description	Mapping
Manufacturer	(0008,0070)	2	Manufacturer of the equipment that produced the composite instances.	Substring of Slice.ReferingEquipment Import: Used to find machine Export: If Slice.ReferingEquipment is empty then Machine.Manufacturer
Institution Name	(0008,0080)	3	Institution where the equipment that produced the composite instances is located.	Export only: If Slice.ReferingEquipment is empty then Hospital.Id
Institution Address	(0008,0081)	3	Mailing address of the institution where the equipment that produced the composite instances is located.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Station Name	(0008,1010)	3	User defined name identifying the machine that produced the composite instances.	Import: Images: Machine.Id Other objects: not used Export: Images: Machine.Id Other objects: Id of Workstation from where object is being exported
Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment that produced the composite instances is located.	Export only: Department.Id
Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that produced the composite instances.	Substring of Slice.ReferingEquipment Import: Used to find machine Export: If Slice.ReferingEquipment is empty then Machine.MachineModel
Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that produced the composite instances.	Substring of Slice.ReferingEquipment Import: Used to find machine Export: If Slice.ReferingEquipment is empty then Machine.ManufacturerSerNo
Software Version(s)	(0018,1020)	3	Manufacturer's designation of software version of the equipment that produced the composite instances.	Export only: Images: If Slice.ReferingEquipment is empty then Machine.SoftwareVersion Other objects: Version of the Vision software
Spatial Resolution	(0018,1050)	3	The inherent limiting resolution in mm of the acquisition equipment for high contrast objects for the data gathering and reconstruction technique chosen. If variable across the images of the series, the value at the image center.	Not Used

Attribute Name	Tag	T	Description	Mapping
Date of Last Calibration	(0018,1200)	3	Date when the image acquisition device calibration was last changed in any way. Multiple entries may be used for additional calibrations at other times. See C.7.5.1.1.1 for further explanation.	Not Used
Time of Last Calibration	(0018,1201)	3	Time when the image acquisition device calibration was last changed in any way. Multiple entries may be used. See C.7.5.1.1.1 for further explanation.	Not Used
Pixel Padding Value	(0028,0120)	3	Value of pixels added to non-rectangular image to pad to rectangular format. See C.7.5.1.1.2 for further explanation. Note: The Value Representation of this Attribute is determined by the value of Pixel Representation (0028,0103).	Import only

A 3.5.2 SC Equipment – C.8.6.1

Attribute Name	Tag	T	Description	Mapping
Conversion Type	(0008,0064)	1	Describes the kind of image conversion. Defined Terms : DV = Digitized Video DI = Digital Interface DF = Digitized Film WSD = Workstation SD = Scanned Document SI = Scanned Image DRW = Drawing SYN = Synthetic Image	Slice->ConversionType
Modality	(0008,0060)	3	Source equipment for the image. This type definition shall override the definition in the General Series Module. See C.7.3.1.1.1 for Enumerated Values.	(Defined in General Series)
Secondary Capture Device ID	(0018,1010)	3	User defined identification of the device that converted the image	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Secondary Capture Device Manufacturer	(0018, 1016)	3	Manufacturer of the Secondary Capture Device	Not Implemented
Secondary Capture Device Manufacturer's Model Name	(0018, 1018)	3	Manufacturer's model number of the Secondary Capture Device	Not Implemented
Secondary Capture Device Software Version(s)	(0018, 1019)	3	Manufacturer's designation of software version of the Secondary Capture Device	Not Implemented
Video Image Format Acquired	(0018, 1022)	3	Original format of the captured video image (e.g. NTSC, PAL, Videomed-H)	Not Implemented
Digital Image Format Acquired	(0018, 1023)	3	<p>Additional information about digital interface used to acquire the image</p> <p>Notes:</p> <ol style="list-style-type: none"> The Attributes specified in the General equipment Module (see Table C.7-6) describe the equipment which created the image being captured. The Attributes of the SC Equipment Module define the equipment that captured the image. The following table illustrates typical scenarios for different conversion types: Conversion Type (0008,0064) General Equipment Secondary Capture Equipment Digitized Video (DV) The equipment generating the video signal. The equipment digitizing the video signal. Digital Interface (DI) The equipment on the sending side of the digital interface. The equipment on the receiving side of the digital interface. Digitized Film (DF) The equipment which created the film. The equipment digitizing the film. Workstation (WSD) Application dependent, but often the equipment which placed the image on the workstation screen, or created the modified image. The equipment which captured the image from the screen, or which placed the modified image into a DICOM SOP Instance. Scanned Document (SD) The equipment which created the document. The equipment digitizing the document. 	Not Implemented

Attribute Name	Tag	T	Description	Mapping
			<p>Scanned Image (SI) The equipment which created the image that was digitized. The equipment digitizing the image. Drawing (DRW) The equipment which created the drawing. The equipment digitizing (or rasterizing) the drawing. Synthetic Image (SYN) The equipment creating the original images from which the synthetic image was derived. The equipment creating the synthetic image.</p> <p>2. The Attribute Modality (0008,0060) specified in the General Series Module (see Table C.7-4) has been specialized by this Module and is defined as a Type 3 Attribute.</p>	

A 3.6 Image

A 3.6.1 General Image – C.7.6.1

Attribute Name	Tag	T	Description	Mapping
Instance Number	(0020,0013)	2	<p>A number that identifies this image.</p> <p>Note: This Attribute was named Image Number in earlier versions of this Standard.</p>	<p>Image and Acquired Dose: Slice.SliceNumber</p> <p>Calculated Dose: not used</p>
Patient Orientation	(0020,0020)	2C	<p>Patient direction of the rows and columns of the image. Required if image does not require Image Orientation (Patient) (0020,0037) and Image Position (Patient) (0020,0032). See C.7.6.1.1 for further explanation.</p>	<p>Image and Acquired Dose: Image.PatientOrientation</p> <p>Calculated Dose: not used</p>
Image Date	(0008,0023)	2C	<p>The date the image pixel data creation started. Required if image is part of a series in which the images are temporally related.</p> <p>Note: This Attribute was formerly known as Image Date.</p>	<p>Slice.CreationDate</p> <p>Portal Dose: Export only: DoseMatrix.CreationDate</p>

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Attribute Name	Tag	T	Description	Mapping
Image Time	(0008,0033)	2C	The time the image pixel data creation started. Required if image is part of a series in which the images are temporally related.	Slice.CreationDate
Image Type	(0008,0008)	3	Image identification characteristics. See C.7.6.1.1.2 for Defined Terms and further explanation.	Portal Dose: Export only: DoseMatrix.CreationDate
Acquisition Number	(0020,0012)	3	A number identifying the single continuous gathering of data over a period of time that resulted in this image.	Used only for CT Images: SliceCT.AcquisitionNumber
Acquisition Date	(0008,0022)	3	The date the acquisition of data that resulted in this image started	Not Implemented
Acquisition Time	(0008,0032)	3	The time the acquisition of data that resulted in this image started	Not Implemented
Acquisition Datetime	(0008,002A)	3	The date and time that the acquisition of data that resulted in this image started. Note: The synchronization of this time with an external clock is specified in the Synchronization Module in Acquisition Time Synchronized (0018, 1800).	Not Implemented
Referenced Image Sequence	(0008,1140)	3	A sequence that references other images significantly related to this image (e.g. post-localizer CT image or Mammographic biopsy or partial view images).	Not Implemented
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Image Sequence (0008,1140) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Image Sequence (0008,1140) is sent.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Referenced Frame Number	(0008,1160)	3	References one or more image frames of a Multi-frame Image SOP Instance, identifying which frames are significantly related to this image, and the reference is not to all frames. Note: If this Attribute is not present, all frames of the SOP Instance are referenced.	Not Implemented
> Purpose of Reference Code Sequence	(0040,A170)	3	Describes the purpose for which the reference is made.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Derivation Description	(0008,2111)	3	A text description of how this image was derived. See C.7.6.1.1.3 for further explanation.	Not Implemented
Derivation Code Sequence	(0008,9215)	3	A coded description of how this image was derived. See C.7.6.1.1.3 for further explanation.	Not Implemented
> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
Source Image Sequence	(0008,2112)	3	A Sequence that identifies the set of Image SOP Class/Instance pairs of the Images that were used to derive this Image. Zero or more Items may be included in this Sequence. See C.7.6.1.1.4 for further explanation.	Not Implemented
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Source Image Sequence (0008,2112) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Source Image Sequence (0008,2112) is sent.	Not Implemented
> Referenced Frame Number	(0008,1160)	3	References one or more image frames of a Multi-frame Image SOP Instance, identifying which frames were used to derive this image, and the reference is not to all frames. Note: If this Attribute is not present, all frames of the SOP Instance are referenced.	Not Implemented
> Purpose of Reference Code Sequence	(0040,A170)	3	Describes the purpose for which the reference is made, that is what role the source image or frame(s) played in the derivation of this image.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Referenced Waveform Sequence	(0008,113A)	3	References to waveforms acquired in conjunction with this image. These Waveforms may or may not be temporally synchronized with this image. One or more Items may be included in this Sequence.	Not Implemented
> Study instance UID	(0020,000D)	1	Unique identifier for the Study	Not Implemented
> Referenced Series Sequence	(0008,1115)	1	Sequence of Repeating Items where each Item includes the Attributes of a Series containing referenced Composite Object(s). One or more Items may be included in this sequence	Not Implemented
>> Series instance UID	(0020,000E)	1	Unique identifier of a Series that is part of this Study and contains the referenced Composite Object(s).	Not Implemented
>> Retrieve AE Title	(0008,0054)	3	Title of the DICOM Application Entity where the Composite Object(s) may be retrieved on the network.	Not Implemented
>> Storage Media File-set ID	(0088,0130)	3	The user or implementation specific human readable identifier that identifies the Storage Media on which the Composite Object (s) reside.	Not Implemented
>> Storage Media File-set UID	(0088,0140)	3	Uniquely identifies the Storage Media on which the Composite Object (s) reside.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Referenced SOP Sequence	(0008,1199)	1	References to Composite Object SOP Class/SOP Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E). One or more Items may be included in this sequence	Not Implemented
>>> Referenced SOP Class UID	(0008,1150)	1	Uniquely identifies the referenced SOP Class.	Not Implemented
>>> Referenced SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.	Not Implemented
> Purpose of Reference Code Sequence	(0040,A170)	1	Code describing the purpose of the reference to the waveform(s). Only a single Item shall be permitted in this sequence.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Images in Acquisition	(0020,1002)	3	Number of images that resulted from this acquisition of data	Not Implemented
Image Comments	(0020,4000)	3	User-defined comments about the image	PortalDose: DoseMatrix.CreationNote Other images: Image.Comment
Quality Control Image	(0028,0300)	3	Indicates whether or not this image is a quality control or phantom image.Enumerated Values: YES NO If this Attribute is absent, then the image may or may not be a quality control or phantom image.	Not Implemented
Burned In Annotation	(0028,0301)	3	Indicates whether or not image contains sufficient burned in annotation to identify the patient and date the image was acquired .Enumerated Values: YES NO If this Attribute is absent, then the image may or may not contain burned in annotation.	Not Implemented
Lossy Image Compression	(0028,2110)	3	Specifies whether an Image has undergone lossy compression.Enumerated Values: 00 = Image has NOT been subjected to lossy compression. 01 = Image has been subjected to lossy compression. See C.7.6.1.1.5	Export only for Portal Dose: 00

Attribute Name	Tag	T	Description	Mapping
Lossy Image Compression Ratio	(0028,2112)	3	Describes the approximate lossy compression ratio(s) that have been applied to this image. See C.7.6.1.1.5 for further explanation. May be multivalued if successive lossy compression steps have been applied. Notes: 1. For example, a compression ratio of 30:1 would be described in this Attribute with a single value of 30. 2. For historical reasons, the lossy compression ratio should also be described in Derivation Description (0008,2111).	Not Implemented
Icon Image Sequence	(0088,0200)	3	This icon image is representative of the Image. > Image Pixel Module See C.7.6.1.1.6 for further explanation.	Not Implemented
> Group 0 length	(0000,0000)	3	Image Pixel Module See C.7.6.1.1.6 for further explanation.	Not Implemented
Presentation LUT Shape	(2050,0020)	3	When present, specifies an identity transformation for the Presentation LUT such that the output of all grayscale transformations, if any, are defined to be in P-Values. Enumerated Values are: IDENTITY - output is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME2 or any color photometric interpretation. INVERSE - output after inversion is in PValues - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME1. When this attribute is used with a color photometric interpretation then the luminance component is in P-Values.	Not Implemented

A 3.6.2 Image Plane – C.7.6.2

Attribute Name	Tag	T	Description	Mapping
Pixel Spacing	(0028,0030)	1	Physical distance in the patient between the center of each pixel, specified by a numeric pair - adjacent row spacing (delimiter) adjacent column spacing in mm.	Image: Image -> Slice.ResolutionXY RT Dose: DoseMatrix.XRes/Yres

Attribute Name	Tag	T	Description	Mapping
Image Orientation (Patient)	(0020,0037)	1	The direction cosines of the first row and the first column with respect to the patient. See C.7.6.2.1.1 for further explanation.	Image: Slice.Transformation RT Dose: Import: DoseMatrix.Rotation Export: Result of calculation based on DoseMatrix Voxel coordinate system
Image Position (Patient)	(0020,0032)	1	The x, y, and z coordinates of the upper left hand corner (center of the first voxel transmitted) of the image, in mm. See C.7.6.2.1.1 for further explanation.	Image: Import: Image.Translation Export: Result of calculations based on Slice.Transformation RT Dose: Import: DoseMatrix.Translation Export: Result of calculation based on DoseMatrix Voxel coordinate system
Slice Thickness	(0018,0050)	2	Nominal slice thickness, in mm.	Used for CT Images only: SliceCT.Thickness
Slice Location	(0020,1041)	3	Relative position of exposure expressed in mm. C.7.6.2.1.2 for further explanation.	Image2D -> Slice.Position

A 3.6.3 Image Pixel – C.7.6.3

Attribute Name	Tag	T	Description	Mapping
Samples per Pixel	(0028,0002)	1	Number of samples (planes) in this image. See C.7.6.3.1.1 for further explanation.	Import: For Portal Dose and RT Dose warning, if value is not 1 Export: 1
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. See C.7.6.3.1.2 for further explanation.	Slice.PhotometricRepresentation Import: Warning if value is not MONOCHROME2 Export: MONOCHROME2

Attribute Name	Tag	T	Description	Mapping
Rows	(0028,0010)	1	Number of rows in the image.	Portal Dose, RT Dose: DoseMatrix.YSize Other images: Image.YSize
Columns	(0028,0011)	1	Number of columns in the image	Portal Dose, RT Dose: DoseMatrix.XSize Other images: Image.XSize
Bits Allocated	(0028,0100)	1	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. See PS 3.5 for further explanation.	Images: Slice.BitsAllocated Portal Dose: 16 RT Dose: 32
Bits Stored	(0028,0101)	1	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. See PS 3.5 for further explanation.	Images: Slice.BitsStored Portal Dose, RT Dose: Export: The same value as Bits Allocated
High Bit	(0028,0102)	1	Most significant bit for pixel sample data. Each sample shall have the same high bit. See PS 3.5 for further explanation.	Images: slice.HighBit Portal Dose, RT Dose: Bits Allocated - 1
Pixel Representation	(0028,0103)	1	Data representation of the pixel samples. Each sample shall have the same pixelrepresentation. Enumerated Values: 0000H = unsigned integer. 0001H = 2's complement	Import: Import of Portal Dose or RT Dose is rejected if value is other than 0000H. Export: Both values supported, but for RT Image, Portal Dose and RT Dose it is always 0000H
Pixel Data	(7FE0,0010)	1	A data stream of the pixel samples that comprise the image. See C.7.6.3.1.4 for further explanation.	Images: Image.OriginVolume Portal Dose, RT Dose: DoseMatrix.Volume
Planar Configuration	(0028,0006)	1C	Indicates whether the pixel data are sent color-by-plane or color-by-pixel. Required if Samples per Pixel (0028,0002) has a value greater than 1. See C.7.6.3.1.3 for further explanation.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Pixel Aspect Ratio	(0028,0034)	1C	Ratio of the vertical size and horizontal size of the pixels in the image specified by a pair of integer values where the first value is the vertical pixel size, and the second value is the horizontal pixel size. Required if the aspect ratio is not 1\1 and the Image Plane Module is not applicable to this Image. See C.7.6.3.1.7.	Export only: Images: Slice.ResolutionX, Slice.ResolutionY Portal Dose, RT Dose: DoseMatrix.XRes, DoseMatrix.YRes Values exported are not correct currently.
Smallest Image Pixel Value	(0028,0106)	3	The minimum actual pixel value encountered in this image.	Not Implemented
Largest Image Pixel Value	(0028,0107)	3	The maximum actual pixel value encountered in this image.	Not Implemented
Red Palette Color Lookup Table Descriptor	(0028,1101)	1C	Specifies the format of the Red Palette Color Lookup Table Data (0028,1201) Required if Photometric Interpretation (0028,0004) has a value of PALETTE COLOR. See C.7.6.3.1.5 for further explanation.	Not Implemented
Green Palette Color Lookup Table Descriptor	(0028,1102)	1C	Specifies the format of the Green Palette Color Lookup Table Data (0028,1202) Required if Photometric Interpretation (0028,0004) has a value of PALETTE COLOR. See C.7.6.3.1.5 for further explanation.	Not Implemented
Blue Palette Color Lookup Table Descriptor	(0028,1103)	1C	Specifies the format of the Blue Palette Color Lookup Table Data (0028,1203) Required if Photometric Interpretation (0028,0004) has a value of PALETTE COLOR. See C.7.6.3.1.5 for further explanation.	Not Implemented
Red Palette Color Lookup Table Data US or	(0028,1201)	1C	Red Palette Color Lookup Table Data. Required if Photometric Interpretation (0028,0004) has a value of PALETTE COLOR. See C.7.6.3.1.6 for further explanation.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
Green Palette Color Lookup Table Data US or	(0028,1202)	1C	Green Palette Color Lookup Table Data. Required if Photometric Interpretation (0028,0004) has a value of PALETTE COLOR. See C.7.6.3.1.6 for further explanation.	Not Implemented
Blue Palette Color Lookup Table Data US or	(0028,1203)	1C	Blue Palette Color Lookup Table Data. Required if Photometric Interpretation (0028,0004) has a value of PALETTE COLOR. See C.7.6.3.1.6 for further explanation.	Not Implemented

A 3.6.4 Multi Frame – C.7.6.6

Attribute Name	Tag	T	Description	Mapping
Number of Frames	(0028,0008)	1	Number of frames in a Multi-frame Image. See C.7.6.6.1.1 for further explanation.	Supported only for RT Dose: DoseMatrix.ZSize
Frame Increment Pointer	(0028,0009)	1	Contains the Data Element Tag of the attribute that is used as the frame increment in Multi-frame pixel data. See C.7.6.6.1.1 for further explanation.	Export only for RT Dose: Grid Frame Offset Vector tag (3004, 000C)

A 3.6.5 CR Image – C.8.1.2

Attribute Name	Tag	T	Description	Mapping
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. Shall have one of the following Enumerated Values: MONOCHROME1 MONOCHROME2	(Defined in Image Pixel Module)
KVP	(0018,0060)	3	Peak kilo voltage output of the x-ray generator used	Not Implemented
Plate ID	(0018,1004)	3	The ID or serial number of the sensing plate upon which the image was acquired	Not Implemented
Distance Source to Detector	(0018,1110)	3	Distance in mm from source to detector center	Not Implemented
Distance Source to Patient	(0018,1111)	3	Distance in mm from source to isocenter (center of field of view)	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Exposure Time	(0018,1150)	3	Time of x-ray exposure in msec	Not Implemented
X-ray Tube Current	(0018,1151)	3	X-ray Tube Current in mA.	Not Implemented
Exposure	(0018,1152)	3	The exposure expressed in mAs, for example calculated from Exposure Time and X-ray Tube Current.	Not Implemented
Exposure in uAs	(0018,1153)	3	The exposure expressed in uAs, for example calculated from Exposure Time and X-ray Tube Current.	Not Implemented
Imager Pixel Spacing	(0018,1164)	3	Physical distance measured at the front plane of the Image Receptor housing between the center of each pixel. Specified by a numeric pair - row spacing value (delimiter) column spacing value - in mm. In the case of CR, the front plane is defined to be the external surface of the CR plate closest to the patient and radiation source.	Not Implemented
Generator Power	(0018,1170)	3	Power in kW to the x-ray generator.	Not Implemented
Acquisition Device Processing Description	(0018,1400)	3	Describes device-specific processing associated with the image (e.g. Organ Description)	Not Implemented
Acquisition Device Processing Code	(0018,1401)	3	Code representing the device-specific processing associated with the image (e.g. CR Organ Filtering code)	Not Implemented
Cassette Orientation	(0018,1402)	3	Orientation of cassette, used to properly position the image for display. Enumerated Values: LANDSCAPE PORTRAIT	Not Implemented
Cassette Size	(0018,1403)	3	Size of cassette. Defined Terms: 18CMX24CM 8INX10IN 24CMX30CM 10INX12IN 30CMX35CM 30CMX40CM 11INX14IN 35CMX35CM 14INX14IN 35CMX43CM 14INX17IN	Not Implemented
Exposures on Plate	(0018,1404)	3	Total number of x-ray exposures that have been made on the plate identified in Plate ID (0018,1004)	Not Implemented
Relative X-ray Exposure	(0018,1405)	3	Relative x-ray exposure on the plate. Meaning of values is implementation specific. May be used to adjust the dynamic range of the plate digitizer (scanner).	Not Implemented
Sensitivity	(0018,6000)	3	Read out sensitivity.	Not Implemented

A 3.6.6 CT Image – C.8.2.1

Attribute Name	Tag	T	Description	Mapping
Image Type	(0008,0008)	1	Image identification characteristics. See C.8.2.1.1.1 for specialization.	(Defined in General Image Module)
Samples per Pixel	(0028,0002)	1	Number of samples (planes) in this image. See C.8.2.1.1.2 for specialization.	(Defined in Image Pixel Module)
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. See C.8.2.1.1.3 for specialization.	(Defined in Image Pixel Module)
Bits Allocated	(0028,0100)	1	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. See C.8.2.1.1.4 for specialization.	(Defined in Image Pixel Module)
Bits Stored	(0028,0101)	1	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. See C.8.2.1.1.5 for specialization.	(Defined in Image Pixel Module)
High Bit	(0028,0102)	1	Most significant bit for pixel sample data. Each sample shall have the same high bit. See C.8.2.1.1.6 for specialization.	(Defined in Image Pixel Module)
Rescale Intercept	(0028,1052)	1	The value b in relationship between stored values (SV) and Hounsfield (HU). $HU = m \cdot SV + b$	Read from or written to RescaleIntercept in a SliceCT
Rescale Slope	(0028,1053)	1	m in the equation specified in Rescale Intercept (0028,1052).	Read from or written to RescaleSlope in a SliceCT
KVP	(0018,0060)	2	Peak kilo voltage output of the x-ray generator used	Read from or written to KVP in a SliceCT
Acquisition Number	(0020,0012)	2	A number identifying the single continuous gathering of data over a period of time which resulted in this image	Used only for CT Images: SliceCT.AcquisitionNumber
Scan Options	(0018,0022)	3	Parameters of scanning sequence.	Read from or written to ScanOption in a SliceCT
Data Collection Diameter	(0018,0090)	3	The diameter in mm of the region over which data were collected	Read from or written to DataCollectionDiameter in a SliceCT
Reconstruction Diameter	(0018,1100)	3	Diameter in mm of the region from within which data were used in creating the reconstruction of the image. Data may exist outside this region and portions of the patient may exist outside this region.	Read from or written to ReconstructionDiameter in a SliceCT

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Attribute Name	Tag	T	Description	Mapping
Distance Source to Detector	(0018,1110)	3	Distance in mm from source to detector center	Read from or written to SourceDetectorDist in a SliceCT
Distance Source to Patient	(0018,1111)	3	Distance in mm from source to isocenter (center of field of view)	Read from or written to SourcePatientDist in a SliceCT
Gantry/Detector Tilt	(0018,1120)	3	Nominal angle of tilt in degrees of the scanning gantry. Not intended for mathematical computations.	Read from or written to GantryTilt in a SliceCT
Table Height	(0018,1130)	3	The distance in mm of the top of the patient table to the center of rotation; below the center is positive.	Read from or written to TableHeight in a SliceCT
Rotation Direction	(0018,1140)	3	Direction of rotation of the source when relevant, about nearest principal axis of equipment.Enumerated Values: CW = clockwise CC = counter clockwise	Read from or written to RotationDirection in a SliceCT
Exposure Time	(0018,1150)	3	Time of x-ray exposure in msec	Read from or written to ExposureTime in a SliceCT
X-ray Tube Current	(0018,1151)	3	X-ray Tube Current in mA.	Read from or written to XRayTubeCurrent in a SliceCT
Exposure	(0018,1152)	3	The exposure expressed in mAs, for example calculated from Exposure Time and X-ray Tube Current.	Read from or written to Exposure in a SliceCT
Exposure in uAs	(0018,1153)	3	The exposure expressed in uAs, for example calculated from Exposure Time and X-ray Tube Current.	Not Implemented
Filter Type	(0018,1160)	3	Label for the type of filter inserted into the x-ray beam.	Read from or written to FilterType in a SliceCT
Generator Power	(0018,1170)	3	Power in kW to the x-ray generator.	Read from or written to GeneratorPower in a SliceCT
Focal Spot(s)	(0018,1190)	3	Size of the focal spot in mm. For devices with variable focal spot or multiple focal spots, small dimension followed by large dimension.	Read from or written to FocalSpot in a SliceCT
Convolution Kernel	(0018,1210)	3	A label describing the convolution kernel or algorithm used to reconstruct the data	Read from or written to ConvolutionKernel in a SliceCT

A 3.6.7 MR Image – C.8.3.1

Attribute Name	Tag	T	Description	Mapping
Image Type	(0008,0008)	1	Image identification characteristics. See C.8.3.1.1.1 for specialization.	(Defined in General Image Module)
Samples per Pixel	(0028,0002)	1	Number of samples (planes) in this image. See C.8.3.1.1.2 for specialization.	(Defined in Image Pixel Module)
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. See C.8.3.1.1.3 for specialization.	(Defined in Image Pixel Module)
Bits Allocated	(0028,0100)	1	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. See C.8.3.1.1.4 for specialization.	(Defined in Image Pixel Module)
Scanning Sequence	(0018,0020)	1	Description of the type of data taken. Enumerated Values: SE = Spin Echo IR = Inversion Recovery GR = Gradient Recalled EP = Echo Planar RM = Research Mode Note: Multi-valued, but not all combinations are valid (e.g. SE/GR, etc.).	Read from or written to ScanningSequence in a SliceMR
Sequence Variant	(0018,0021)	1	Variant of the Scanning Sequence. Defined Terms: SK = segmented k-space MTC = magnetization transfer contrast SS = steady state TRSS = time reversed steady state SP = spoiled MP = MAG prepared OSP = oversampling phase NONE = no sequence variant	Read from or written to SequenceVariant in a SliceMR

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Attribute Name	Tag	T	Description	Mapping
Scan Options	(0018,0022)	2	Parameters of scanning sequence. Defined Terms: PER = Phase Encode Reordering RG = Respiratory Gating CG = Cardiac Gating PPG = Peripheral Pulse Gating FC = Flow Compensation PFF = Partial Fourier - Frequency PFP = Partial Fourier - Phase SP = Spatial Presaturation FS = Fat Saturation	Not Used
MR Acquisition Type	(0018,0023)	2	Identification of data encoding scheme. Enumerated Values: 2D = frequency x phase 3D = frequency x phase x phase	Not Used
Repetition Time	(0018,0080)	2C	The period of time in msec between the beginning of a pulse sequence and the beginning of the succeeding (essentially identical) pulse sequence. Required except when Scanning Sequence (0018,0020) is EP and Sequence Variant (0018,0021) is not SK.	Not Used
Echo Time	(0018,0081)	2	Time in ms between the middle of the excitation pulse and the peak of the echo produced (kx=0). In the case of segmented k-space, the TE(eff) is the time between the middle of the excitation pulse to the peak of the echo that is used to cover the center of k-space (i.e. -kx=0, ky=0).	Not Used
Echo Train Length	(0018,0091)	2	Number of lines in k-space acquired per excitation per image.	Not Used
Inversion Time	(0018,0082)	2C	Time in msec after the middle of inverting RF pulse to middle of excitation pulse to detect the amount of longitudinal magnetization. Required if Scanning Sequence (0018,0020) has values of IR.	Not Used

Attribute Name	Tag	T	Description	Mapping
Trigger Time	(0018,1060)	2C	Time, in msec, between peak of the R wave and the peak of the echo produced. In the case of segmented k-space, the TE(eff) is the time between the peak of the echo that is used to cover the center of kspace. Required for Scan Options (0018,0022) which include heart gating (e.g. CG, PPG, etc.)	Not Used
Sequence Name	(0018,0024)	3	User defined name for the Scanning Sequence (0018,0020) and Sequence Variant (0018,0021) combination.	Not Implemented
Angio Flag	(0018,0025)	3	Angio Image Indicator. Primary image forAngio processing. Enumerated Values: Y = Image is Angio N = Image is not Angio	Not Implemented
Number of Averages	(0018,0083)	3	Number of times a given pulse sequence is repeated before any parameter is changed	Not Implemented
Imaging Frequency	(0018,0084)	3	Precession frequency in MHz of the nucleus being addressed	Not Implemented
Imaged Nucleus	(0018,0085)	3	Nucleus that is resonant at the imaging frequency. Examples: 31P, 1H	Not Implemented
Echo Number(s)	(0018,0086)	3	The echo number used in generating this image. In the case of segmented k-space, it is the effective Echo Number.	Not Implemented
Magnetic Field Strength	(0018,0087)	3	Nominal field strength of MR magnet, in Tesla	Not Implemented
Spacing Between Slices	(0018,0088)	3	Spacing between slices, in mm. The spacing is measured from the center-to-center of each slice.	Not Implemented
Number of Phase Encoding Steps	(0018,0089)	3	Total number of lines in k-space in the 'y' direction collected during acquisition.	Not Implemented
Percent Sampling	(0018,0093)	3	Fraction of acquisition matrix lines acquired, expressed as a percent.	Not Implemented
Percent Phase Field of View	(0018,0094)	3	Ratio of field of view dimension in phase direction to field of view dimension in frequency direction, expressed as a percent.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Pixel Bandwidth	(0018,0095)	3	Reciprocal of the total sampling period, in hertz per pixel.	Not Implemented
Nominal Interval	(0018,1062)	3	Average R-R interval used for the scans, in msec	Not Implemented
Beat Rejection Flag	(0018,1080)	3	Beat length sorting has been applied.Enumerated Values: Y = yes N = No	Not Implemented
Low R-R Value	(0018,1081)	3	R-R interval low limit for beat rejection, in msec	Not Implemented
High R-R Value	(0018,1082)	3	R-R interval high limit for beat rejection, in msec	Not Implemented
Intervals Acquired	(0018,1083)	3	Number of R-R intervals acquired.	Not Implemented
Intervals Rejected	(0018,1084)	3	Number of R-R intervals rejected.	Not Implemented
PVC Rejection	(0018,1085)	3	Description of type of PVC rejection criteria used.	Not Implemented
Skip Beats	(0018,1086)	3	Number of beats skipped after a detected arrhythmia.	Not Implemented
Heart Rate	(0018,1088)	3	Beats per minute.	Not Implemented
Cardiac Number of Images	(0018,1090)	3	Number of images per cardiac cycle.	Not Implemented
Trigger Window	(0018,1094)	3	Percent of R-R interval, based on Heart Rate (0018,1088), prescribed as a window for a valid/usable trigger.	Not Implemented
Reconstruction Diameter	(0018,1100)	3	Diameter in mm. of the region from within which data were used in creating the reconstruction of the image. Data may exist outside this region and portions of the patient may exist outside this region.	Not Implemented
Receiving Coil	(0018,1250)	3	Receive coil used.	Not Implemented
Transmitting Coil	(0018,1251)	3	Transmit coil used.	Not Implemented
Acquisition Matrix	(0018,1310)	3	Dimensions of the acquired frequency /phase data before reconstruction. Multi-valued: frequency rows/frequency columns\phase rows\phase columns.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
Phase Encoding Direction	(0018,1312)	3	The axis of phase encoding with respect to the image. Enumerated Values: ROW = phase encoded in rows. COL = phase encoded in columns.	Not Implemented
Flip Angle	(0018,1314)	3	Steady state angle in degrees to which the magnetic vector is flipped from the magnetic vector of the primary field.	Not Implemented
SAR	(0018,1316)	3	Calculated whole body Specific Absorption Rate in watts/kilogram.	Not Implemented
Variable Flip Angle Flag	(0018,1315)	3	Flip angle variation applied during image acquisition. Enumerated Values: Y = yes N = no	Not Implemented
dB/dt	(0018,1318)	3	The rate of change of the gradient coil magnetic flux density with time (T/s).	Not Implemented
Temporal Position Identifier	(0020,0100)	3	Temporal order of a dynamic or functional set of Images.	Not Implemented
Number of Temporal Positions	(0020,0105)	3	Total number of temporal positions prescribed.	Not Implemented
Temporal Resolution	(0020,0110)	3	Time delta between Images in a dynamic of functional set of Images.	Not Implemented

A 3.6.8 SC Image – C.8.6.2

Attribute Name	Tag	T	Description	Mapping
Date of Secondary Capture	(0018,1012)	3	The date the Secondary Capture Image was captured.	Not Implemented
Time of Secondary Capture	(0018,1014)	3	The time the Secondary Capture Image was captured. Note: The Attributes specified in the General Image Module (see Table C.7-7) describe this image (ie. the secondary capture image). For example, Instance Number (0020,0013) is the image number of the secondary capture image. Source Image Sequence (0008,2112) may reference the DICOM image from which this image was generated.	Not Implemented

A 3.6.9 X-Ray Image – C.8.7.1

Attribute Name	Tag	T	Description	Mapping
Frame Increment Pointer	(0028,0009)	1C	Required if Multi-Frame Image. Contains the Data Element Tag of the attribute which is used as the Frame increment in Multi-frame image pixel data (See C.7.6.6). Specialized for X-Ray as Enumerated Value: 00181063H = Frame Time (0018,1063); 00181065H = Frame Time Vector (0018,1065).	Not Implemented
Lossy Image Compression	(0028,2110)	1C	Specifies whether an Image has undergone lossy compression. Enumerated Values: 00 = Image has NOT been subjected to lossy compression. 01 = Image has been subjected to lossy compression. See C.7.6.1.1.5 Required if Lossy Compression has been performed on the Image.	(Defined in General Image Module)
Image Type	(0008,0008)	1	Image identification characteristics. See C.8.7.1.1.1 for specialization.	(Defined in General Image Module)

Attribute Name	Tag	T	Description	Mapping
Pixel Intensity Relationship	(0028,1040)	1	The relationship between the Pixel sample values and the X-Ray beam intensity. See Section C.8.7.1.1.2.	Warning if value is other than LIN
Samples per Pixel	(0028,0002)	1	Number of samples (color planes) in this image shall have a value of 1.	(Defined in Image Pixel Module)
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. Only MONOCHROME2 may be used.	(Defined in Image Pixel Module)
Bits Allocated	(0028,0100)	1	Number of bits allocated for each pixel sample. See Section C.8.7.1.1.6.	(Defined in Image Pixel Module)
Bits Stored	(0028,0101)	1	Number of bits stored for each pixel sample. See Section C.8.7.1.1.7.	(Defined in Image Pixel Module)
High Bit	(0028,0102)	1	Most significant bit for pixel sample data. See Section C.8.7.1.1.8.	(Defined in Image Pixel Module)
Pixel Representation	(0028,0103)	1	Data representation of the pixel samples. Shall have the value: 0000H = Unsigned Integer.	Not Implemented
Scan Options	(0018,0022)	3	Parameters of scanning sequence. See Section C.8.7.1.1.4.	Not Implemented
Anatomic Region Sequence	(0008,2218)	3	Sequence of one item that identifies the anatomic region of interest in this image (i.e. external anatomy, surface anatomy, or general region of the body). This anatomic region is placed on the table for examination. See C.8.7.1.1.10.	Not Implemented
> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Anatomic Region Modifier Sequence	(0008,2220)	3	Sequence of one or more items that modifies the anatomic region of interest in this image (i.e. prone, supine, decubitus right). May be present only if Anatomic Region Sequence (0008,2218) is sent. See C.8.7.1.1.10.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Primary Anatomical Structure Sequence	(0008,2228)	3	Sequence of one or more items that identifies the primary anatomic structure of interest in this image. See C.8.7.1.1.11.	Not Implemented
> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Primary Anatomic Structure Modifier Sequence	(0008,2230)	3	Sequence of one or more items that modifies the primary anatomic structure of interest in this image. May be present only if Primary Anatomic Structure Sequence (0008,2228) is sent. See C.8.7.1.1.11.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
R Wave Pointer	(0028,6040)	3	Marks the location(s) of the R Wave in the cardiac cycles by referencing frame numbers; frame numbers begin with 1.	Not Implemented
Referenced Image Sequence	(0008,1140)	1C	A sequence which provides reference to a set of Image SOP Class/Instance identifying other images significantly related to this image. Shall be used to relate each plane to the corresponding plane if Image Type (0008,0008) Value 3 is BIPLANE A or BIPLANE B. When relating to the corresponding plane of a Biplane acquisition, only a single item shall be present.	Not Implemented
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Image Sequence (0008,1140) is present.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Image Sequence (0008,1140) is present.	Not Implemented
Derivation Description	(0008,2111)	3	A text description of how this image was derived. See C.8.7.1.1.5 for further explanation.	Not Implemented
Acquisition Device Processing Description	(0018,1400)	3	Indicates any visual processing performed on the images prior to exchange. See Section C.8.7.1.1.3.	Not Implemented
Calibration Image	(0050,0004)	3	Indicates whether a reference object (phantom) of known size is present in the image and was used for calibration. Enumerated Values: YES NO Device is identified using the Device module. See C.7.6.12.	Not Implemented

A 3.6.10 RT Image – C.8.8.2

Attribute Name	Tag	T	Description	Mapping
Samples per Pixel	(0028,0002)	1	Number of samples (planes) in this image. See C.8.2.6.1 for specialization.	(Defined in Image Pixel Module)
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. See C.8.2.6.2 for specialization.	(Defined in Image Pixel Module)
Bits Allocated	(0028,0100)	1	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. See C.8.2.6.3 for specialization.	(Defined in Image Pixel Module)

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Attribute Name	Tag	T	Description	Mapping
Bits Stored	(0028,0101)	1	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. See C.8.8.2.6.4 for specialization.	(Defined in Image Pixel Module)
High Bit	(0028,0102)	1	Most significant bit for each pixel sample. Each sample shall have the same high bit. See C.8.8.2.6.5 for specialization.	(Defined in Image Pixel Module)
Pixel Representation	(0028,0103)	1	Data representation of the pixel samples. Each sample shall have the same pixel representation. See C.8.8.2.6.6 for specialization.	(Defined in Image Pixel Module)
RT Image Label	(3002,0002)	1	User-defined label for RT Image.	Image.Id or DoseMatrix.Id
RT Image Name	(3002,0003)	3	User-defined name for RT Image.	Image.Name or DoseMatrix.Name
RT Image Description	(3002,0004)	3	User-defined description of RT Image.	Read from or written to AcqNote in a Slice
Operators' Name	(0008,1070)	2	Name of operator(s) acquiring or creating RT Image.	Slice.CreationUserName or DoseMatrix.CreationUserName
Image Type	(0008,0008)	1	Image identification characteristics (see Section C.7.6.1.1.2). RT Images shall use one of the following Defined Terms for Value 3: DRR = digitally reconstructed radiograph PORTAL = digital portal image or portal film image SIMULATOR = conventional simulator image RADIOGRAPH = radiographic image BLANK = image pixels set to background value	(Defined in General Image Module)
Conversion Type	(0008,0064)	2	Describes the kind of image conversion. Defined Terms: DV = Digitized Video DI = Digital Interface DF = Digitized Film WSD = Workstation	Read from or written to ConversionType in a Slice

Attribute Name	Tag	T	Description	Mapping
Reported Values Origin	(3002,000A)	2C	Describes the origin of the parameter values reported in the image. Required if Value 3 of Image Type (0008,0008) is SIMULATOR or PORTAL. Enumerated Values: OPERATOR = manually entered by operator PLAN = planned parameter values ACTUAL = electronically recorded	Read from or written to ReportedValuesOrigin in a SliceRT
RT Image Plane	(3002,000C)	1	Describes whether or not image plane is normal to beam axis. Enumerated Values: NORMAL = image plane normal to beam axis NON_NORMAL = NON_image plane non-normal to beam axis	Import: Only NORMAL is allowed Export: Always NORMAL
X-Ray Image Receptor Translation	(3002,000D)	3	Position in (x,y,z) coordinates of origin of IEC X-RAY IMAGE RECEPTOR System in the IEC GANTRY coordinate system (mm). See Note 2.	
X-Ray Image Receptor Angle	(3002,000E)	2	X-Ray Image Receptor Angle i.e. orientation of IEC X-RAY IMAGE RECEPTOR coordinate system with respect to IEC GANTRY coordinate system (degrees). See C.8.8.2.2.	Read from or written to IDURtn in a SliceRT
RT Image Orientation	(3002,0010)	2C	The direction cosines of the first row and the first column with respect to the IEC XRAY IMAGE RECEPTOR coordinate system. Required if RT Image Plane (3002,000C) is NON_NORMAL.	Not Implemented
Image Plane Pixel Spacing	(3002,0011)	2	Physical distance (in mm) between the center of each image pixel, specified by a numeric pair - adjacent row spacing (delimiter) adjacent column spacing. See C.8.8.2.3.	Image: Import: Image.Res Export: Slice.ResolutionX, Slice.ResolutionY Calculated Dose: DoseMatrix.X/YRes * SID / SAD Acquired Dose: Slice.X/YRes * SID / SAD

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Attribute Name	Tag	T	Description	Mapping
RT Image Position	(3002,0012)	2	The x and y coordinates (in mm) of the upper left hand corner (first pixel transmitted) of the image, in the IEC XRAY IMAGE RECEPTOR coordinate system.	Import: A processed value is stored in SliceRT.IDUPosLat and SliceRT.IDUPosLng Export: Values are computed from Image.XSize, Image.YSize, Slice.ResolutionX, Slice.ResolutionY, SID and SAD
Radiation Machine Name	(3002,0020)	2	User-defined name identifying radiation machine used in acquiring or computing image (i.e. name of conventional simulator, electron accelerator, X-ray device, or machine modeled when calculating DRR).	Not Used
Primary Dosimeter Unit	(300A,00B3)	2	Measurement unit of machine dosimeter.Enumerated Values: MU = Monitor Unit MINUTE = minute	Read from or written to PrimaryDosimeterUnit in a SliceRT
Radiation Machine SAD	(3002,0022)	2	Radiation source to Gantry rotation axis distance of radiation machine used in acquiring or computing image (mm).	Read from or written to SAD in a SliceRT
Radiation Machine SSD	(3002,0024)	3	Source to patient surface distance (in mm) of radiation machine used in acquiring or computing image.	Not Implemented
RT Image SID	(3002,0026)	2	Distance from radiation machine source to image plane (in mm) along radiation beam axis. See C.8.8.2.3.	Read from or written to IDUSID in a SliceRT
Source to Reference Object Distance	(3002,0028)	3	Source to reference object distance (in mm), as used for magnification calculation of RADIOGRAPH and SIMULATOR images.	Not Implemented
Referenced RT Plan Sequence	(300C,0002)	3	Introduces sequence of one Class/Instance pair describing RT Plan associated with image. Only a single item shall be permitted in this sequence.	
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced RT Plan Sequence (300C,0002) is sent.	1.2.840.10008.5.1.4.1.1.481.5

Attribute Name	Tag	T	Description	Mapping
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced RT Plan Sequence (300C,0002) is sent.	Instance UID of plan object (PlanConceptCorrelation.PlanUID) if image is associated to a field.
Referenced Beam Number	(300C,0006)	3	Uniquely identifies the corresponding Nsegment treatment beam specified by Beam Number (300A,00C0) within Beam Sequence in RT Beams Module within the RT Plan referenced in Referenced RT Plan Sequence (300C,0002).	Field.FieldGroupNumber of associated field
Referenced Fraction Group Number	(300C,0022)	3	Identifier of Fraction Group within RT Plan referenced in Referenced RT Plan Sequence (300C,0002).	Field.FieldGroupNumber of associated field
Fraction Number	(3002,0029)	3	Fraction Number of fraction during which image was acquired, within Fraction Group referenced by Referenced Fraction Group Number (300C,0022) within RT Plan referenced in Referenced RT Plan Sequence (300C,0002).	Read from or written to FractionNumber in an Image
Start Cumulative Meterset Weight	(300C,0008)	3	Cumulative Meterset Weight within Beam referenced by Referenced Beam Number (300C,0006) at which image acquisition starts.	SliceRT.AcqAdjustment Only imported, if Related Referenced Beam Number is not given.
End Cumulative Meterset Weight	(300C,0009)	3	Cumulative Meterset Weight within Beam referenced by Referenced Beam Number (300C,0006) at which image acquisition ends.	Not Implemented
Exposure Sequence	(3002,0030)	3	Introduces sequence of Exposure parameter sets, corresponding to exposures used in generating the image. One or more items may be included in this sequence. See C.8.8.2.4.	Only 1 item supported
> Referenced Frame Number	(0008,1160)	1C	Identifies corresponding image frame in multi-frame image. Required if Exposure Sequence (3002,0030) is sent, there is more than one item in Exposure Sequence (3002,0030), and image is a multi-frame image.	Not Implemented
> KVP	(0018,0060)	2C	Peak kilo voltage output (kV) of X-ray generator used to acquire image. Required if Value 3 of Image Type (0008,0008) is PORTAL, SIMULATOR or RADIOGRAPH and Exposure Sequence (3002,0030) is sent.	Read from or written to Energy in a SliceRT

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Attribute Name	Tag	T	Description	Mapping
> X-ray Tube Current	(0018,1151)	2C	Imaging device X-ray Tube Current (mA). Required if Value 3 of Image Type (0008,0008) is SIMULATOR or RADIOGRAPH and Exposure Sequence (3002,0030) is sent.	Not Implemented
> Exposure Time	(0018,1150)	2C	Time of X-ray exposure (msec). Required if Value 3 of Image Type (0008,0008) is SIMULATOR or RADIOGRAPH and Exposure Sequence (3002,0030) is sent.	Not Implemented
> Meterset Exposure	(3002,0032)	2C	Treatment machine Meterset duration over which image has been acquired, specified in Monitor units (MU) or minutes as defined by Primary Dosimeter Unit (300A,00B3). Required if Value 3 of Image Type (0008,0008) is PORTAL and Exposure Sequence (3002,0030) is sent.	Read from or written to MetersetExposure in a SliceRT
> Diaphragm Position	(3002,0034)	3	Positions of diaphragm jaw pairs (in mm) in IEC BEAM LIMITING DEVICE coordinate axis in the IEC order X1, X2, Y1, Y2.	SliceRT.BladeX1 SliceRT.BladeX2 SliceRT.BladeY1 SliceRT.BladeY2
> Beam Limiting Device Sequence	(300A,00B6)	3	Introduces sequence of beam limiting device (collimator) jaw or leaf (element) positions for given exposure. One or more items may be included in this sequence.	

Attribute Name	Tag	T	Description	Mapping
>> RT Beam Limiting Device Type	(300A,00B8)	1C	Type of beam limiting device (collimator). Required if Beam Limiting Device Sequence (300A,00B6) is sent.Enumerated Values: X = symmetric jaw pair in IEC X direction Y = symmetric jaw pair in IEC Y direction ASYMX = asymmetric jaw pair in IEC X direction ASYMY = asymmetric pair in IEC Y direction MLCX = multileaf (multi-element) jaw pair in IEC X direction MLCY = multileaf (multi-element) jaw pair in IEC Y direction	Supported values: X, Y, ASYMX, ASYMY
>> Source to Beam Limiting Device Distance	(300A,00BA)	3	Radiation source to beam limiting device (collimator) distance (mm).	Not Used
>> Number of Leaf/Jaw Pairs	(300A,00BC)	1C	Number of leaf (element) or jaw pairs (equal to 1 for standard beam limiting device jaws). Required if Beam Limiting Device Sequence (300A,00B6) is sent.	1 (see Leaf/Jaw Positions below)
>> Leaf Position Boundaries	(300A,00BE)	2C	Boundaries (in mm) of beam limiting device (collimator) leaves (elements) in IEC BEAM LIMITING DEVICE coordinate axis appropriate to RT Beam Limiting Device Type (300A,00B8), i.e. X-axis for MLCY, Y-axis for MLCX. Contains N+1 values, where N is the Number of Leaf/Jaw Pairs (300A,00BC), starting from Leaf (Element) Pair 1. Required if RT Beam Limiting Device Type (300A,00B8) is MLCX or MLCY.	Not Used
>> Leaf/Jaw Positions	(300A,011C)	1C	Positions of beam limiting device (collimator) leaf or jaw (element) pairs (in mm) in IEC BEAM LIMITING DEVICE coordinate axis appropriate to RT Beam Limiting Device Type (300A,00B8), e.g. Xaxis for MLCX, Y-axis for MLCY). Contains 2N values, where N is the Number of Leaf/Jaw Pairs (300A,00BC), in IEC leaf (element) subscript order 101, 102, ... 1N, 201, 202, ... 2N. Required if Beam Limiting Device Sequence (300A,00B6) is sent.	SliceRT.CollX1 SliceRT.CollX2 SliceRT.CollY1 SliceRT.CollY2

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Attribute Name	Tag	T	Description	Mapping
> Applicator Sequence	(300A,0107)	3	Introduces sequence of Applicators associated with Beam. Only a single item shall be permitted in this sequence.	Not Implemented
>> Applicator ID	(300A,0108)	1C	User or machine supplied identifier for Applicator. Required if Applicator Sequence (300A,0107) is sent.	Not Implemented
>> Applicator Type	(300A,0109)	1C	Type of Applicator. Required if Applicator Sequence (300A,0107) is sent. Defined Terms: ELECTRON_SQUARE = ELECTRON_square electron applicator ELECTRON_RECT = ELECTRON_rectangular electron applicator ELECTRON_CIRC = ELECTRON_circular electron applicator ELECTRON_SHORT = ELECTRON_short electron applicator ELECTRON_OPEN = ELECTRON_open (dummy) electron applicator INTRAOPERATIVE = intraoperative (custom) applicator STEREOTACTIC = stereotactic applicator	Not Implemented
>> Applicator Description	(300A,010A)	3	User-defined description for Applicator.	Not Implemented
> Number of Blocks	(300A,00F0)	1C	Number of shielding blocks associated with Beam. Required if Exposure Sequence (3002,0030) is sent.	Value is always set to 0 (Zero)
> Block Sequence	(300A,00F4)	2C	Introduces sequence of blocks associated with Beam. Required if Number of Blocks (300A,00F0) is non-zero. One or more items may be included in this sequence.	Not Implemented
>> Block Tray ID	(300A,00F5)	3	User-supplied identifier for block tray.	Not Implemented
>> Source to Block Tray Distance	(300A,00F6)	2C	Radiation Source to attachment edge of block tray assembly (mm). Required if Block Sequence (300A,00F4) is sent.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Block Type	(300A,00F8)	1C	Type of block. Required if Block Sequence (300A,00F4) is sent. Enumerated Values: SHIELDING = blocking material is inside contour APERTURE = blocking material is outside contour	Not Implemented
>> Block Divergence	(300A,00FA)	2C	Indicates presence or otherwise of geometrical divergence. Required if Block Sequence (300A,00F4) is sent. Enumerated Values: PRESENT = block edges are shaped for beam divergence ABSENT = block edges are not shaped for beam divergence	Not Implemented
>> Block Mounting Position	(300A,00FB)	3	Indicates on which side of the Block Tray the block is mounted. Enumerated Values; PATIENT_SIDE = the block is mounted on the side of the Block Tray which is towards the patient. SOURCE_SIDE = the block is mounted on the side of the Block Tray which is towards the radiation source.	Not Implemented
>> Block Number	(300A,00FC)	1C	Identification Number of the Block. The value of Block Number (300A,00FC) shall be unique within the Beam in which it is created. Required if Block Sequence (300A,00F4) is sent.	Not Implemented
>> Block Name	(300A,00FE)	3	User-defined name for block.	Not Implemented
>> Material ID	(300A,00E1)	2C	User-supplied identifier for material used to manufacture Block. Required if Block Sequence (300A,00F4) is sent.	Not Implemented
>> Block Thickness	(300A,0100)	3	Physical thickness of block (in mm) parallel to radiation beam axis.	Not Implemented
>> Block Number of Points	(300A,0104)	2C	Number of (x,y) pairs defining the block edge. Required if Block Sequence (300A,00F4) is sent.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Block Data	(300A,0106)	2C	A data stream of (x,y) pairs which comprise the block edge. The number of pairs shall be equal to Block Number of Points (300A,0104), and the vertices shall be interpreted as a closed polygon. Coordinates are projected onto the machine isocentric plane in the IEC BEAM LIMITING DEVICE coordinate system (mm). Required if Block Sequence (300A,00F4) is sent.	Not Implemented
Gantry Angle	(300A,011E)	3	Treatment machine gantry angle, i.e. orientation of IEC GANTRY coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees).	Read from or written to GantryAngle in a SliceRT
Beam Limiting Device Angle	(300A,0120)	3	Treatment machine beam limiting device (collimator) angle, i.e. orientation of IEC BEAM LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees).	Read from or written to CollRtn in a SliceRT
Patient Support Angle	(300A,0122)	3	Patient Support angle, i.e. orientation of IEC PATIENT SUPPORT coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees).	Read from or written to PatientSupportAngle in a Slice
Table Top Eccentric Axis Distance	(300A,0124)	3	Distance (positive) from the IEC PATIENT SUPPORT vertical axis to the IEC TABLE TOP ECCENTRIC vertical axis (mm).	Not Implemented
Table Top Eccentric Angle	(300A,0125)	3	Table Top (non-isocentric) angle, i.e. orientation of IEC TABLE TOP ECCENTRIC coordinate system with respect to IEC PATIENT SUPPORT system (degrees).	Read from or written to TableTopEccentricAngle in a Slice
Table Top Vertical Position	(300A,0128)	3	Table Top Vertical position in IEC TABLE TOP coordinate system (mm).	Read from or written to CouchVrt in a Slice
Table Top Longitudinal Position	(300A,0129)	3	Table Top Longitudinal position in IEC TABLE TOP coordinate system (mm).	Read from or written to CouchLng in a Slice

Attribute Name	Tag	T	Description	Mapping
Table Top Lateral Position	(300A,012A)	3	<p>Table Top Lateral position in IEC TABLE TOP coordinate system (mm).</p> <p>Notes:</p> <ol style="list-style-type: none"> The numeric beam data parameters recorded with the RT Image correspond to the parameters as they were known at the time the image was created or taken. The parameters may or may not correspond to an actual RT Plan instance that is created for a patient. If the Reported Values Origin (3002,000A) has an enumerated value of OPERATOR or ACTUAL and there is an RT Plan reference present, the numeric beam data parameters may or may not be the same in the two objects. The Z coordinate of the X-Ray Image Receptor Translation (3002,000D) will be equal to the Radiation Machine SAD (3002,0022) minus the RT Image SID (3002,0026). If the image receptor is further from the beam source than the machine isocenter, the Z coordinate will be negative (see IEC 61217). 	Read from or written to CouchLat in a Slice

A 3.6.11 Approval – C.8.8.16

Attribute Name	Tag	T	Description	Mapping
Approval Status	(300E,0002)	1	<p>Approval status at the time the SOP Instance was created. Enumerated Values:</p> <p>APPROVED = Reviewer recorded that object met an implied criterion</p> <p>UNAPPROVED = No review of object has been recorded</p> <p>REJECTED = Reviewer recorded that object failed to meet an implied criterion</p>	

Attribute Name	Tag	T	Description	Mapping
Review Date	(300E,0004)	2C	Date on which object was reviewed. Required if Approval Status (300E,0002) is APPROVED or REJECTED.	Import of plan: PlanSetup.StatusDate and PlanConceptCorrelation.StatusDate Export of plan: PlanSetup.StatusDate Import of image: Image.ApprovalDate Export of image: Image.ApprovalDate
Review Time	(300E,0005)	2C	Time at which object was reviewed. Required if Approval Status (300E,0002) is APPROVED or REJECTED.	Import: Not used Export of plan: PlanSetup.StatusDate Export of image: Image.ApprovalDate
Reviewer Name	(300E,0008)	2C	Name of person who reviewed object. Required if Approval Status (300E,0002) is APPROVED or REJECTED.	Import of plan: PlanSetup.StatusUserName and PlanConceptCorrelation.StatusUserName Import of plan: PlanSetup.StatusUserName and PlanConceptCorrelation.StatusUserName Import of image: Image.ApprovalUserName Export of image: Image.ApprovalUserName

A 3.6.12 PET Image – C.8.9.4

Attribute Name	Tag	T	Description	Mapping
Image Type	(0008,0008)	1	Image identification characteristics. See C.8.9.4.1.1 for specialization.	Not Implemented
Samples per Pixel	(0028,0002)	1	Number of samples (planes) in this image. This value shall be 1.	Not Implemented
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. See C.8.9.4.1.2 for specialization.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
Bits Allocated	(0028,0100)	1	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. Enumerated values: 16.	Not Implemented
Bits Stored	(0028,0101)	1	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. The value shall be the same as the value in Bits Allocated (0028,0100).	Not Implemented
High Bit	(0028,0102)	1	Most significant bit for pixel sample data. Each sample shall have the same high bit. Shall be one less than the value in Bits Stored (0028,0101).	Not Implemented
Rescale Intercept	(0028,1052)	1	The value b in relationship between stored values (SV) and pixel value units (U) defined in Units (0054,1001): $U = m \cdot SV + b$. The Rescale Intercept is always zero for PET images.	Import only: Value must be 0, otherwise import will be rejected.
Rescale Slope	(0028,1053)	1	m in the equation specified in Rescale Intercept (0028,1052).	Import only: Slice.PixelSlope
Frame Reference Time	(0054,1300)	1	The time that the pixel values in the image occurred. Frame Reference Time is the offset, in msec, from the Series reference time. See explanation in C.8.9.4.1.5.	Not Implemented
Trigger Time	(0018,1060)	1C	Time interval, in msec, from the start of the trigger to the beginning of data acquisition for this image. Required if Series Type (0054,1000), Value 1 is GATED.	Not Implemented
Frame Time	(0018,1063)	1C	Nominal duration per individual frame, in msec. Required if Series Type (0054,1000), Value 1 is GATED. See C.8.9.4.1.3 for explanation.	Not Implemented
Low R-R Value	(0018,1081)	1C	R-R interval lower limit for beat rejection, in msec. Required if Series Type (0054,1000), Value 1 is GATED and Beat Rejection Flag (0018,1080) is Y.	Not Implemented
High R-R Value	(0018,1082)	1C	R-R interval upper limit for beat rejection, in msec. Required if Series Type (0054,1000), Value 1 is GATED and Beat Rejection Flag (0018,1080) is Y.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
Lossy Image Compression	(0028,2110)	1C	Specifies whether an Image has undergone lossy compression. Enumerated values: 00 = Image has NOT been subjected to lossy compression. 01 = Image has been subjected to lossy compression. See C.7.6.1.1.5. Required if Lossy Compression has been performed on the image.	Not Implemented
Image Index	(0054,1330)	1	An index identifying the position of this image within a PET Series. See C.8.9.4.1.9 for explanation.	Not Implemented
Acquisition Date	(0008,0022)	2	The date the acquisition of data that resulted in this image started. See C.8.9.4.1.4 for specialization.	Not Implemented
Acquisition Time	(0008,0032)	2	The time the acquisition of data that resulted in this image started. See C.8.9.4.1.4 for specialization.	Not Implemented
Actual Frame Duration	(0018,1242)	2	Elapsed time of the data acquisition for this image, in msec. See C.8.9.4.1.6 for explanation.	Not Implemented
Nominal Interval	(0018,1062)	3	Average duration of accepted beats, in msec, of the R-R interval.	Not Implemented
Intervals Acquired	(0018,1083)	3	Number of heartbeats that fall within Low R-R Value (0018,1081) and High R-R Value (0018,1082), and were therefore accepted and contribute coincidence events to this R-R Interval.	Not Implemented
Intervals Rejected	(0018,1084)	3	Number of heartbeats that fall outside Low R-R Value (0018,1081) and High R-R Value (0018,1082), and do not contribute coincidence events to this R-R Interval. However, they may contribute coincidence events to other R-R Intervals.	Not Implemented
Primary (Prompts) Counts Accumulated	(0054,1310)	3	The sum of events that occur in the primary event channel. The counts include Trues +Scatter+ Randoms if Randoms Correction Method (0054,1100) is NONE; otherwise the counts are Trues +Scatter.	Not Implemented
Secondary Counts Accumulated	(0054,1311)	3	Sum of counts accumulated in secondary channels. See C.8.9.4.1.7 for explanation.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
Slice Sensitivity Factor	(0054,1320)	3	The slice-to-slice sensitivity correction factor that was used to correct this image. The value shall be one if no slice sensitivity correction was applied.	Not Implemented
Decay Factor	(0054,1321)	1C	The decay factor that was used to scale this image. Required if Decay Correction (0054,1102) is other than NONE. If decay correction is applied, all images in the Series shall be decay corrected to the same time.	Not Implemented
Dose Calibration Factor	(0054,1322)	3	Factor that was used to scale this image from counts/sec to Bq/ml using a dose calibrator. The value shall be one if no dose calibration was applied. See C.8.9.4.1.8 for explanation.	Not Implemented
Scatter Fraction Factor	(0054,1323)	3	An estimate of the fraction of acquired counts that were due to scatter and were corrected in this image. The value shall be zero if no scatter correction was applied.	Not Implemented
Dead Time Factor	(0054,1324)	3	The average dead time correction factor that was applied to this image. The value shall be one if no dead time correction was applied.	Not Implemented
Referenced Overlay Sequence	(0008,1130)	3	A sequence which provides reference to a set of SOP Class/Instance pairs which are related independent Overlays. Uniquely identifies Overlays significantly related to this Image. Zero or more Items may be included in this sequence.	Not Implemented
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Overlay Sequence (0008,1130) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Overlay Sequence (0008,1130) is sent.	Not Implemented
Referenced Curve Sequence	(0008,1145)	3	A sequence which provides reference to a set of SOP Class/Instance pairs which are related independent Curves. Uniquely identifies Curves significantly related to this Image. Zero or more Items may be included in this sequence.	Not Implemented
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Curve Sequence (0008,1145) is sent.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Curve Sequence (0008,1145) is sent.	Not Implemented
Anatomic Region Sequence	(0008,2218)	3	Sequence of one item that identifies the anatomic region of interest in this image (i.e. external anatomy, surface anatomy, or general region of the body). See Section C.8.4.9.1.5.	Not Implemented
> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Anatomic Region Modifier Sequence	(0008,2220)	3	Sequence of one or more items that modify the anatomic region of interest in this image (i.e. prone, supine, decubitus right). See Section C.8.4.9.1.5.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
Primary Anatomic Structure Sequence	(0008,2228)	3	Sequence of one or more items that identifies the primary anatomic structure of interest in this image. See Section C.8.4.9.1.6.	Not Implemented
> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Primary Anatomic Structure Modifier Sequence	(0008,2230)	3	Sequence of one or more items that modify the primary anatomic structure of interest in this image. See Section C.8.4.9.1.6.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented

A 3.6.13 Curve – C.10.2

Attribute Name	Tag	T	Description	Mapping
Curve Dimensions	(50XX,0005)	1	Number of dimensions for these data. The dimensions may be any number from 1 to n.	Only 2 dimensions supported. Import: Warning if value is not 2 Export: 2
Number of Points	(50XX,0010)	1	Number of data points in this Curve	Import: Number of contour points Export: Contour: Contour.NPoints Label: 1
Type of Data	(50XX,0020)	1	Type of data in this curve. See C.10.2.1.1 for Defined Terms.	Contour: ROI, POLY Label: LABEL

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Attribute Name	Tag	T	Description	Mapping
Data Value Representation	(50XX,0103)	1	Data representation of the curve data points. See C.10.2.2 for Enumerated Values and further explanation.	Import: All values are supported Export: 0003H (floating point double)
Curve Data	(50XX,3000)	1	Curve data. See C.10.2.1.4 for further explanation.	
Curve Description	(50XX,0022)	3	User-defined comments about the Curve	Structure.Name or Label.LabelText, depending on Type of Data.
Axis Units	(50XX,0030)	3	Units of measure for the axes. See C.10.2.1.3 for Defined Terms.	Supports only: PIXEL,PIXL
Axis Labels	(50XX,0040)	3	Text labels for each axis. One label for each axis.	Related Structure Type.Id
Minimum Coordinate Value	(50XX,0104)	3	The minimum value in the set of data. One value for each dimension.	Not Implemented
Maximum Coordinate Value	(50XX,0105)	3	The maximum value in the set of data. One value for each dimension.	Not Implemented
Curve Range	(50XX,0106)	3	A minimum-maximum pair for each dimension for defining the range of the curve representation, in the same units as Axis Units.	Not Implemented
Curve Data Descriptor	(50XX,0110)	1C	Specifies the format of the Curve Data. Required if any dimensions of the data are described by interval spacing. See C.10.2.1.5 for further explanation.	Not Implemented
Coordinate Start Value	(50XX,0112)	1C	The starting point of a one dimensional data list. Required if Curve Data Descriptor is used. One value for each dimension. The Value Representation is given in Data Value Representation (50xx,0103).	Not Implemented
Coordinate Step Value	(50XX,0114)	1C	The interval spacing between two successive points. Required if Curve Data Descriptor is used. One value for each dimension. The Value Representation is given in Data Value Representation (50xx,0103).	Not Implemented
Curve Label	(50XX,2500)	3	A user defined text string which may be used to label or name this curve.	Read from or written to Id in a Structure
Referenced Overlay Sequence	(50XX,2600)	3	A Sequence which provides reference to a set of related overlays used to generate this curve.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Overlay Sequence (50xx,2600) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Overlay Sequence (50xx,2600) is sent.	Not Implemented
> Referenced Overlay Group	(50XX,2610)	1C	The Group number of the related overlay. Required if Referenced Overlay Sequence (50xx,2600) is sent.	Not Implemented

A 3.6.14 Modality LUT – C.11.1

Attribute Name	Tag	T	Description	Mapping
Modality LUT Sequence	(0028,3000)	1C	Defines a sequence of Modality LUTs. Only one item may be present. Shall not be present if Rescale Intercept (0028,1052) is present.	Not Used currently. Only linear mappings are supported
> LUT Descriptor	(0028,3002)	1C	Specifies the format of the LUT Data in this Sequence. See C.11.1.1 for further explanation. Required if the Modality LUT Sequence (0028,3000) is sent.	Not Implemented
> LUT Explanation	(0028,3003)	3	Free form text explanation of the meaning of the LUT.	Not Implemented
> Modality LUT Type	(0028,3004)	1C	Specifies the output values of this Modality LUT. See C.11.1.1.2 for further explanation. Required if the Modality LUT Sequence (0028,3000) is sent.	Not Implemented
> LUT Data	(0028,3006)	1C	LUT Data in this Sequence. Required if the Modality LUT Sequence (0028,3000) is sent.	Not Implemented
Rescale Intercept	(0028,1052)	1C	The value b in relationship between stored values (SV) and the output units specified in Rescale Type (0028,1054). Output units = m*SV + b. Required if Modality LUT Sequence (0028,3000) is not present. Shall not be present otherwise.	Image: Slice.PixelOffset Portal Dose: DoseMatrix.Offset

Attribute Name	Tag	T	Description	Mapping
Rescale Slope	(0028,1053)	1C	m in the equation specified by Rescale Intercept (0028,1052). Required if Rescale Intercept is present.	Image: Slice.PixelSlope Portal Dose: DoseMatrix.Scaler
Rescale type	(0028,1054)	1C	Specifies the output units of Rescale Slope (0028,1053) and Rescale Intercept (0028,1052). See C.11.1.1.2 for further explanation. Required if Rescale Intercept is present.	

A 3.6.15 VOI LUT – C.11.2

Attribute Name	Tag	T	Description	Mapping
VOI LUT Sequence	(0028,3010)	3	Defines a sequence of VOI LUTs.	Not Implemented
> LUT Descriptor	(0028,3002)	1C	Specifies the format of the LUT Data in this Sequence. See C.11.2.1.1 for further explanation. Required if the VOI LUT Sequence (0028,3010) is sent.	Not Implemented
> LUT Explanation	(0028,3003)	3	Free form text explanation of the meaning of the LUT.	Not Implemented
> LUT Data	(0028,3006)	1C	LUT Data in this Sequence. Required if the VOI LUT Sequence (0028,3010) is sent.	Not Implemented
Window Center	(0028,1050)	3	Window Center for display. See C.11.2.1.2 for further explanation.	Slice.AcqLevel Import: Only the first value is used, further values are ignored. Export: Only one value is written.
Window Width	(0028,1051)	1C	Window Width for display. See C.11.2.1.2 for further explanation. Required if Window Center (0028,1050) is sent.	Slice.AcqWindow Import: Only the first value is used, further values are ignored. Export: Only one value is written.

Attribute Name	Tag	T	Description	Mapping
Window Center & Width Explanation	(0028,1055)	3	Free form explanation of the meaning of the Window Center and Width. Multiple values correspond to multiple Window Center and Width values.	Not Implemented

A 3.7 Dose

A 3.7.1 RT Dose – C.8.8.3

Attribute Name	Tag	T	Description	Mapping
Samples per Pixel	(0028,0002)	1C	Number of samples (planes) in this image. See C.8.3.4.1 for specialization. Required if Pixel Data (7FE0,0010) is present.	(Defined in Image Pixel Module)
Photometric Interpretation	(0028,0004)	1C	Specifies the intended interpretation of the pixel data. See C.8.3.4.2 for specialization. Required if Pixel Data (7FE0,0010) is present.	(Defined in Image Pixel Module)
Bits Allocated	(0028,0100)	1C	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. See C.8.3.4.3 for specialization. Required if Pixel Data (7FE0,0010) is present.	(Defined in Image Pixel Module)
Bits Stored	(0028,0101)	1C	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. See C.8.3.4.4 for specialization. Required if Pixel Data (7FE0,0010) is present.	(Defined in Image Pixel Module)
High Bit	(0028,0102)	1C	Most significant bit for each pixel sample. Each sample shall have the same high bit. See C.8.3.4.5 for specialization. Required if Pixel Data (7FE0,0010) is present.	(Defined in Image Pixel Module)
Pixel Representation	(0028,0103)	1C	Data representation of the pixel samples. Each sample shall have the same pixel representation. See C.8.3.4.6 for specialization. Required if Pixel Data (7FE0,0010) is present.	(Defined in Image Pixel Module)
Dose Units	(3004,0002)	1	Units used to describe dose. Enumerated Values: GY = Gray RELATIVE = dose relative to implicit reference value	Read from or written to DoseUnit in a DoseMatrix

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Attribute Name	Tag	T	Description	Mapping
Dose Type	(3004,0004)	1	Type of dose. Defined Terms: PHYSICAL = physical dose EFFECTIVE = physical dose after correction for biological effect using userdefined modeling technique ERROR = difference between desired and planned dose	Import: Not used Export: PHYSICAL
Instance Number	(0020,0013)	3	A number that identifies this object instance.	(Defined in General Image Module)
Dose Comment	(3004,0006)	3	User-defined comments for dose data.	Not Used
Normalization Point	(3004,0008)	3	Coordinates (x, y, z) of normalization point in the patient based coordinate system described in C.7.6.2.1.1 (mm). See C.8.8.3.1.	Not Implemented
Dose Summation Type	(3004,000A)	1	Type of dose summation. Defined Terms: PLAN = dose calculated for entire RT Plan FRACTION = dose calculated for a single Fraction Group within RT Plan BEAM = dose calculated for one or more Beams within RT Plan BRACHY = dose calculated for one or more Brachy Application Setups within RT Plan	Import: BEAM, FRACTION, PLAN Export: BEAM, FRACTION
Referenced RT Plan Sequence	(300C,0002)	1C	Introduces sequence of one Class/Instance pair describing RT Plan associated with dose. Required if Dose Summation Type (3004,000A) is PLAN, FRACTION, BEAM, or BRACHY. Only a single item shall be permitted in this sequence. See Note 1.	
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced RT Plan Sequence (300C,0002) is sent.	Import: Ignored Export: 1.2.840.10008.5.1.4.1.1.481.5
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced RT Plan Sequence (300C,0002) is sent.	On Export: PlanUID of PlanConceptCorrelation, which could be found as (parent of) the primary context object of the DoseMatrix.

Attribute Name	Tag	T	Description	Mapping
> Referenced Fraction Group Sequence	(300C,0020)	1C	Introduces sequence of one Fraction Group containing beams or brachy application setups contributing to dose. Required if Dose Summation Type (3004,000A) is FRACTION, BEAM, or BRACHY. Only a single item shall be permitted in this sequence. See Note 1.	
>> Referenced Fraction Group Number	(300C,0022)	1C	Uniquely identifies Fraction Group specified by Fraction Group Number (300A,0071) in Fraction Group Sequence of RT Fraction Scheme Module within RT Plan referenced in Referenced RT Plan Sequence (300C,0002). Required if Referenced Fraction Group Sequence (300C,0020) is sent.	Import: Value ignored Export: Always 1
>> Referenced Beam Sequence	(300C,0004)	1C	Introduces sequence of Beams in current Fraction Group contributing to dose. Required if Dose Summation Type (3004,000A) is BEAM. One or more items may be included in this sequence.	Only 1 item is supported
>>> Referenced Beam Number	(300C,0006)	1C	Uniquely identifies Beam specified by Beam Number (300A,00C0) in Beam Sequence of RT Beams Module within RT Plan referenced in Referenced RT Plan Sequence (300C,0002). Required if Referenced Beam Sequence (300A,0004) is sent.	Import: Sets the primary context to the PlanningField with corresponding FieldGroupNumber. Export: Field.FieldGroupNumber of the primary context (if field).
>> Referenced Brachy Application Setup Sequence	(300C,000A)	1C	Introduces sequence of Brachy Application Setups in current Fraction Group contributing to dose. Required if Dose Summation Type (3004,000A) is BRACHY. One or more items may be included in this sequence.	Not supported: Import rejected if present.
>>> Referenced Brachy Application Setup Number	(300C,000C)	1C	Uniquely identifies Brachy Application Setup specified by Brachy Application Setup Number (300A,0234) in Brachy Application Setup Sequence (300A,0230) of RT Brachy Application Setups Module within RT Plan referenced in Referenced RT Plan Sequence (300C,0002). Required if Referenced Brachy Application Setup Sequence (300C,000A) is sent.	Not Used

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Attribute Name	Tag	T	Description	Mapping
Grid Frame Offset Vector	(3004,000C)	1C	An array which contains the z coordinates (in mm) of the image frames in a multiframe dose. Required if multi-frame pixel data are present and Frame Increment Pointer (0028,0009) points to Grid Frame Offset Vector (3004,000C). See C.8.8.3.2.	For import frames must be equally-spaced in z direction.
Dose Grid Scaling	(3004,000E)	1	Scaling factor that when multiplied by the dose grid data found in the Pixel Data (7FE0,0010) attribute of the Image Pixel Module, yields grid doses in the dose units as specified by Dose Units (3004,0002). Note: In order to prevent misrepresentation of dose summation components, if the Dose Summation Type (3004,000A) is PLAN then only a single instance of RT Plan is referenced (i.e. component fraction groups are not referenced). Similarly, if the Dose Summation Type (3004,000A) is FRACTION then only a single instance of RT Plan and a single Fraction Group are referenced (i.e. component beams or brachy application setups are not referenced).	Read from or written to Scaler in a DoseMatrix

A 3.7.2 RT DVH – C.8.8.4

Attribute Name	Tag	T	Description	Mapping
Referenced Structure Set Sequence	(300C,0060)	1	Introduces sequence of one class/instance pair describing Structure Set containing structures which are used to calculate Dose-Volume Histograms (DVHs). Only a single item shall be permitted in this sequence. See C.8.8.4.1.	Export only
> Referenced SOP Class UID	(0008,1150)	1	Uniquely identifies the referenced SOP Class.	1.2.840.10008.5.1.4.1.1.481.3
> Referenced SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.	PlanSetup -> Image.StructureSetUID
DVH Normalization Point	(3004,0040)	3	Coordinates (x, y, z) of common DVH normalization point in the patient based coordinate system described in C.7.6.2.1.1 (mm).	Not Used
DVH Normalization Dose Value	(3004,0042)	3	Dose Value at DVH Normalization Point (3004,0040) used as reference for individual DVHs when Dose Units (3004,0002) is RELATIVE.	Not Used
DVH Sequence	(3004,0050)	1	Introduces sequence of DVHs. One or more items may be included in this sequence.	Export only
> DVH Referenced ROI Sequence	(3004,0060)	1	Introduces sequence of referenced ROIs used to calculate DVH.	Only one item in this sequence
>> Referenced ROI Number	(3006,0084)	1	Uniquely identifies ROI used to calculate DVH specified by ROI Number (3006,0022) in Structure Set ROI Sequence (3006,0020) in Structure Set Module within RT Structure Set referenced by referenced RT Plan in Referenced RT Plan Sequence (300C,0002) in RT Dose Module.	Read from or written to DicomSeqNumber in a Structure
>> DVH ROI Contribution Type	(3004,0062)	1	Specifies whether volume within ROI is included or excluded in DVH. See C.8.8.4.2. Enumerated Values: INCLUDED, EXCLUDED.	Only INCLUDED is supported
> DVH Type	(3004,0001)	1	Type of DVH. Enumerated Values: DIFFERENTIAL = differential dose-volume histogram CUMULATIVE = cumulative dose-volume histogram	Depends on user selection from export wizard page

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Attribute Name	Tag	T	Description	Mapping
> Dose Units	(3004,0002)	1	Dose axis units.Enumerated Values: GY = Gray RELATIVE = dose relative to reference value specified in DVH Normalization Dose Value (3004,0042)	Depends on user selection from export wizard page
> Dose Type	(3004,0004)	1	Type of dose. Defined Terms: PHYSICAL = physical dose EFFECTIVE = physical dose after correction for biological effect using userdefined modeling technique ERROR = difference between desired and planned dose	Only PHYSICAL is supported
> DVH Dose Scaling	(3004,0052)	1	Scaling factor that when multiplied by the dose bin widths found in DVH Data (3004,0058), yields dose bin widths in the dose units as specified by Dose Units (3004,0002).	Only 1.0 is supported
> DVH Volume Units	(3004,0054)	1	Volume axis units. Defined Terms: CM3 = cubic centimeters PERCENT = percent	Depends on user selection from export wizard page
> DVH Number of Bins	(3004,0056)	1	Number of bins n used to store DVH Data (3004,0058).	Calculated value
> DVH Data	(3004,0058)	1	A data stream describing the dose bin widths Dn and associated volumes Vn in the order D1V1, D2V2, ... DnVn.	Calculated value
> DVH Minimum Dose	(3004,0070)	3	Minimum calculated dose to ROI(s) described by DVH Referenced ROI Sequence (3004,0060).	Calculated value
> DVH Maximum Dose	(3004,0072)	3	Maximum calculated dose to ROI(s) described by DVH Referenced ROI Sequence (3004,0060).	Calculated value
> DVH Mean Dose	(3004,0074)	3	Mean calculated dose to ROI(s) described by DVH Referenced ROI Sequence (3004,0060).	Calculated value

A 3.8 Structure Set

A 3.8.1 Structure Set – C.8.8.5

Attribute Name	Tag	T	Description	Mapping
Structure Set Label	(3006,0002)	1	User-defined label for Structure Set.	Read from or written to StructureSetLabel in a Structure
Structure Set Name	(3006,0004)	3	User-defined name for Structure Set.	Not Used
Structure Set Description	(3006,0006)	3	User-defined description for Structure Set.	Not Used
Instance Number	(0020,0013)	3	A number that identifies this object instance.	Not Implemented
Structure Set Date	(3006,0008)	2	Date at which Structure Set was last modified.	Not Used
Structure Set Time	(3006,0009)	2	Time at which Structure Set was last modified.	Not Used
Referenced Frame of ReferenceSequence	(3006,0010)	3	Introduces sequence of items describing Frames of Reference in which the ROIs are defined. One or more items may be included in this sequence. See C.8.8.5.1.	
> Frame of Reference UID	(0020,0052)	1C	Uniquely identifies Frame of Reference within Structure Set. Required if Referenced Frame of Reference Sequence (3006,0010) is sent.	Read from or written to FrameOfReferencedUID in a Slice
> Frame of Reference Relationship Sequence	(3006,00C0)	3	Introduces sequence of transforms that relate other Frames of Reference to this Frame of Reference.	Not Used
>> Related Frame of Reference UID	(3006,00C2)	1C	Frame of Reference Coordinate System to be transformed to the current Frame of Reference. Required if Frame of Reference Relationship Sequence (3006,00C0) is sent.	Not Used
>> Frame of Reference Transformation Type	(3006,00C4)	1C	Type of Transformation. Required if Frame of Reference Relationship Sequence (3006,00C0) is sent. Defined Terms: HOMOGENEOUS	Not Used

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Attribute Name	Tag	T	Description	Mapping
>> Frame of Reference Transformation Matrix	(3006,00C6)	1C	Four-by-four transformation Matrix from Related Frame of Reference to current Frame of Reference. Matrix elements shall be listed in row-major order. Required if Frame of Reference Relationship Sequence (3006,00C0) is sent. See C.8.5.2.	Not Used
>> Frame of Reference Transformation Comment	(3006,00C8)	3	Comment regarding the transformation between the related and current Frames of Reference.	Not Used
> RT Referenced Study Sequence	(3006,0012)	3	Introduces sequence of Studies containing series to be referenced. One or more items may be included in this sequence.	
>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if RT Referenced Study Sequence (3006,0012) is sent.	1.2.840.10008.3.1.2.3.2 (Study Component Management SOP Class)
>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if RT Referenced Study Sequence (3006,0012) is sent.	Read from or written to StudyUID in a Study
>> RT Referenced Series Sequence	(3006,0014)	1C	Introduces sequence of items describing series of images within the referenced study which are used in defining the Structure Set. Required if RT Referenced Study Sequence (3006,0012) is sent. One or more items may be included in this sequence.	
>>> Series instance UID	(0020,000E)	1C	Unique identifier for the series containing the images. Required if RT Referenced Series Sequence (3006,0014) is sent.	Read from or written to SeriesUID in a Series
>>> Contour Image Sequence	(3006,0016)	1C	Introduces sequence of items describing images in a given series used in defining the Structure Set (typically CT or MR images). Required if RT Referenced Series Sequence (3006,0014) is sent. One or more items may be included in this sequence.	
>>>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced image SOP Class. Required if Contour Image Sequence (3006,0016) is sent.	Any image SOP Class UID
>>>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced image SOP Instance. Required if Contour Image Sequence (3006,0016) is sent.	Read from or written to SliceUID in a Slice

Attribute Name	Tag	T	Description	Mapping
>>> Referenced Frame Number	(0008,1160)	3	Identifies image frame if a multi-frame image is referenced.	Not Used
Structure Set ROI Sequence	(3006,0020)	3	Introduces sequence of ROIs for current Structure Set. One or more items may be included in this sequence.	
> ROI Number	(3006,0022)	1C	Identification number of the ROI. The value of ROI Number (3006,0022) shall be unique within the Structure Set in which it is created. Required if Structure Set ROI Sequence (3006,0020) is sent.	Read from or written to DicomSeqNumber in a Structure
> Referenced Frame of Reference UID	(3006,0024)	1C	Uniquely identifies Frame of Reference in which ROI is defined, specified by Frame of Reference UID (0020,0052) in Referenced Frame of Reference Sequence (3006,0010). Required if Structure Set ROI Sequence (3006,0020) is sent.	Read from or written to FrameOfReferenceUID in a Slice
> ROI Name	(3006,0026)	2C	User-defined name for ROI. Required if Structure Set ROI Sequence (3006,0020) is sent.	Read from or written to Id in a Structure
> ROI Description	(3006,0028)	3	User-defined description for ROI.	Read from or written to Comment in a Structure
> ROI Volume	(3006,002C)	3	Volume of ROI (cubic centimeters).	Not Used
> ROI Generation Algorithm	(3006,0036)	2C	Type of algorithm used to generate ROI. Required if Structure Set ROI Sequence (3006,0020) is sent. Defined Terms: AUTOMATIC = calculated ROI SEMIAUTOMATIC = ROI calculated with user assistance MANUAL = user-entered ROI	Read from or written to GenerationAlgorithm in a Structure
> ROI Generation Description	(3006,0038)	3	User-defined description of technique used to generate ROI.	Not Used
> Overlapping Status	(3263,1000)	2		Import: Value maps to Structure.SegmentIndex Export: Depends on Structure.StructureTypeIndex and Structure.SegmentIndex

A 3.8.2 ROI Contour – C.8.8.6

Attribute Name	Tag	T	Description	Mapping
ROI Contour Sequence	(3006,0039)	1	Introduces sequence of Contour Sequences defining ROIs. One or more items may be included in this sequence.	
> Referenced ROI Number	(3006,0084)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020).	Read from or written to DicomSeqNumber in a Structure
> ROI Display Color	(3006,002A)	3	RGB triplet color representation for ROI, specified using the range 0-255.	Color2D of Material associated to Structure Import: Color is used to search for matching Material. If none is found, a new Material with given color will be created.
> Contour Sequence	(3006,0040)	3	Introduces sequence of Contours defining ROI. One or more items may be included in this sequence.	
>> Contour Number	(3006,0048)	3	Identification number of the contour. The value of Contour Number (3006,0048) shall be unique within the Contour Sequence (3006,0040) in which it is defined. No semantics or ordering shall be inferred from this attribute.	Not Implemented
>> Attached Contours	(3006,0049)	3	List of Contour Number (3006,0048) defining lower-numbered contour(s) to which the current contour is connected.	Not Implemented
>> Contour Image Sequence	(3006,0016)	3	Introduces sequence of images containing the contour. One or more items may be included in this sequence.	
>>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced image SOP Class of the image containing the Contour, if it exists. Required if Contour Image Sequence (3006,0016) is sent.	SOP Class UID of image
>>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced image SOP Instance of the image containing the Contour, if it exists. Required if Contour Image Sequence (3006,0016) is sent.	Import: Used to search for image slice on database by matching with Slice.SliceUID Export: Slice.SliceUID
>>> Referenced Frame Number	(0008,1160)	1C	Identifies image frame if a multi-frame image is referenced. Required if referenced image is a multi-frame image.	Not Used

Attribute Name	Tag	T	Description	Mapping
>> Contour Geometric Type	(3006,0042)	1C	Geometric type of contour. Required if Contour Sequence (3006,0040) is sent. See C.8.8.6.1.Enumerated Values: POINT = single point OPEN_PLANAR = OPEN_open contour containing coplanar points OPEN_NONPLANAR = OPEN_open contour containing non-coplanar points CLOSED_PLANAR = CLOSED_closed contour (polygon) containing coplanar points	
>> Contour Slab Thickness	(3006,0044)	3	Thickness of slab (in mm) represented by contour, where the Contour Data (3006,0050) defines a plane in the center of the slab, offset by the Contour Offset Vector (3006,0045) if it is present. See C.8.8.6.2.	Not Used
>> Contour Offset Vector	(3006,0045)	3	Vector (x,y,z) in the the patient based coordinate system described in C.7.6.2.1.1 which is normal to plane of Contour Data (3006,0050), describing direction and magnitude of the offset (in mm) of each point of the central plane of a contour slab from the corresponding original point of Contour Data (3006,0050). See C.8.8.6.2.	Not Used
>> Number of Contour Points	(3006,0046)	1C	Number of points (triplets) in Contour Data (3006,0050). Required if Contour Sequence (3006,0040) is sent.	
>> Contour Data	(3006,0050)	1C	Sequence of (x,y,z) triplets defining a contour in the patient based coordinate system described in C.7.6.2.1.1 (mm). Required if Contour Sequence (3006,0040) is sent. See C.8.8.6.1.	Read from or written to Points in a Contour

A 3.8.3 RT ROI Observations – C.8.8.8

Attribute Name	Tag	T	Description	Mapping
RT ROI Observations Sequence	(3006,0080)	1	Introduces sequence of observations related to ROIs defined in the ROI Module. One or more items may be included in this sequence.	

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Attribute Name	Tag	T	Description	Mapping
> Observation Number	(3006,0082)	1	Identification number of the Observation. The value of Observation Number (3006,0082) shall be unique within the RT ROI Observations Sequence (3006,0080).	Increasing unique number, starting with 1.
> Referenced ROI Number	(3006,0084)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020).	Read from or written to DicomSeqNumber in a Structure
> ROI Observation Label	(3006,0085)	3	User-defined label for ROI Observation.	Import: PatientVolume.Id and PatientVolume.Name Export: PatientVolume.Id
> ROI Observation Description	(3006,0088)	3	User-defined description for ROI Observation.	Read from or written to Comment in a PatientVolume
> RT Related ROI Sequence	(3006,0030)	3	Introduces sequence of significantly related ROIs, e.g. CTVs contained within a PTV. One or more items may be included in this sequence.	Not Used
>> Referenced ROI Number	(3006,0084)	1C	Uniquely identifies the related ROI described in the Structure Set ROI Sequence (3006,0020). Required if RT Related ROI Sequence (3006,0030) is sent.	Not Used
>> RT ROI Relationship	(3006,0033)	3	Relationship of referenced ROI with respect to referencing ROI. Defined Terms: SAME = ROIs represent the same entity ENCLOSED = referenced ROI completely encloses referencing ROI ENCLOSING = referencing ROI completely encloses referenced ROI	Not Used
> RT ROI Identification Code Sequence	(3006,0086)	3	Introduces sequence containing Code used to identify ROI. If this sequence is included, only one item shall be present. Baseline Context ID Number = 96. See Section 5.3 for further explanation.	
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Read from or written to VolumeCode in a VolumeCode
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Read from or written to VolumeCodeTable in a VolumeCode

Attribute Name	Tag	T	Description	Mapping
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	VolumeCode:Description Import: Warning, if it does not match with object found on database.
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Related RT ROI Observations Sequence	(3006,00A0)	3	Introduces sequence of related ROI Observations. One or more items may be included in this sequence.	Not Used
>> Observation Number	(3006,0082)	1C	Uniquely identifies a related ROI Observation. Required if Related RT ROI Observations Sequence (3006,00A0) is sent.	Not Used

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Attribute Name	Tag	T	Description	Mapping
> RT ROI Interpreted Type	(3006,00A4)	2	<p>Type of ROI. See C.8.8.1. Defined Terms: EXTERNAL = external patient contour PTV = Planning Target Volume (as defined in ICRU50) CTV = Clinical Target Volume (as defined in ICRU50) GTV = Gross Tumor Volume (as defined in ICRU50) TREATED_VOLUME = TREATED_Treated Volume (as defined in ICRU50) IRRAD_VOLUME = IRRAD_Irradiated Volume (as defined in ICRU50) BOLUS = patient bolus to be used for external beam therapy AVOIDANCE = region in which dose is to be minimized ORGAN = patient organ MARKER = patient marker REGISTRATION = registration ROI ISOCENTER = treatment isocenter to be used for external beam therapy CONTRAST_AGENT = CONTRAST_volume into which a contrast agent has been injected CAVITY = patient anatomical cavity BRACHY_CHANNEL = BRACHY_brachytherapy channel BRACHY_ACCESSORY = BRACHY_brachytherapy accessory device BRACHY_SRC_APP = BRACHY_SRC_brachytherapy source applicator BRACHY_CHNL_SHLD = BRACHY_CHNL_brachytherapy channel shield</p>	<p>Import: Mapped to Structure.StructureType Export: Set according to value of VolumeType.DicomType related to PatientVolume or Structure.StructureTypeIndex</p>
> ROI Interpreter	(3006,00A6)	2	Name of person performing the interpretation.	Not Used

Attribute Name	Tag	T	Description	Mapping
> Material ID	(300A,00E1)	3	User-supplied identifier for ROI material.	Not Used
> ROI Physical Properties Sequence	(3006,00B0)	3	Introduces sequence describing physical properties associated with current ROI interpretation. One or more items may be included in this sequence.	Import: Only if ROI Physical Property has value RES_MASS_DENSITY Export: If Structure.MaterialCTValue is defined
>> ROI Physical Property	(3006,00B2)	1C	Physical property specified by ROI Physical Property Value (3006,00B4). Required if ROI Physical Properties Sequence (3006,00B0) is sent. Defined Terms: REL_MASS_DENSITY = REL_MASS_mass density relative to water REL_ELEC_DENSITY = REL_ELEC_electron density relative to water EFFECTIVE_Z = EFFECTIVE_effective atomic number EFF_Z_PER_A = EFF_Z_PER_effective ratio of atomic number to mass (AMU-1)	Only RES_MASS_DENSITY is supported, other values are ignore.
>> ROI Physical Property Value	(3006,00B4)	1C	User-assigned value for physical property. Required if ROI Physical Properties Sequence (3006,00B0) is sent.	Contains HU value relative to water. Import: HU = 1000 * Value - 1000 Export: Value = 1 + HU / 1000

A 3.9 Plan

A 3.9.1 RT General Plan – C.8.8.9

Attribute Name	Tag	T	Description	Mapping
RT Plan Label	(300A,0002)	1	User-defined label for treatment plan.	Read from or written to PlanId in a PlanSetup
RT Plan Name	(300A,0003)	3	User-defined name for treatment plan.	Read from or written to Name in a PlanSetup
RT Plan Description	(300A,0004)	3	User-defined description of treatment plan.	Read from or written to Comment in a PlanSetup
Instance Number	(0020,0013)	3	A number that identifies this object instance.	Not Implemented
Operators' Name	(0008,1070)	2	Name of operator(s) creating treatment plan.	PlanSetup.CreationUserName Import: If more than one name is supplied then the last one will be used.
RT Plan Date	(300A,0006)	2	Date treatment plan was last modified.	Import: PlanSetup.CreationDate Export: PlanSetup.HstryDate Time
RT Plan Time	(300A,0007)	2	Time treatment plan was last modified.	Import: PlanSetup.CreationDate Export: PlanSetup.HstryDate Time
Treatment Protocols	(300A,0009)	3	Planned treatment protocols.	Not Implemented
Treatment Intent	(300A,000A)	3	Intent of this course of treatment. Defined Terms: CURATIVE PALLIATIVE PROPHYLACTIC	CURATIVE, PALLIATIVE map to Course.Intent VERIFICATION maps to PlanSetup.UsageType Export: If plan is a verification plan, value VERIFICATION is exported independent of Course status
Treatment Sites	(300A,000B)	3	Planned treatment sites.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
RT Plan Geometry	(300A,000C)	1	Describes whether RT Plan is based on patient or treatment device geometry. See C.8.8.9.1. Defined Terms: PATIENT = RT Structure Set exists TREATMENT_DEVICE = TREATMENT_RT Structure Set does not exist	Export only: Take PATIENT, when a structure set can be identified for Export as defined in (300A,0060).
Referenced Structure Set Sequence	(300C,0060)	1C	Introduces sequence of one Class/Instance pair describing instance of RT Structure Set on which the RT Plan is based. Only a single item shall be permitted in this sequence. Required if RT Plan Geometry (300A,000C) is PATIENT.	
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Structure Set Sequence (300C,0060) is sent.	1.2.840.10008.5.1.4.1.1.481.3
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Structure Set Sequence (300C,0060) is sent.	Read from or written to StructureSetUID in an Image
Referenced Dose Sequence	(300C,0080)	3	Introduces sequence of related SOP Class/Instance pairs describing related instances of RT Dose (for grids and named/unnamed point doses). One or more items may be included in this sequence. See Note 1.	Not Implemented
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced RT Dose Sequence (300C,0080) is sent.	Not Implemented
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced RT Dose Sequence (300C,0080) is sent.	Not Implemented
Referenced RT Plan Sequence	(300C,0002)	3	Introduces sequence of related SOP Class/Instance pairs describing related instances of RT Plan. One or more items may be included in this sequence.	Only one item is supported in this sequence
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced RT Plan Sequence (300C,0002) is sent.	1.2.840.10008.5.1.4.1.1.481.5
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced RT Plan Sequence (300C,0002) is sent.	Read from or written to PredecessorPlanUID in a PlanConceptCorrelation

Attribute Name	Tag	T	Description	Mapping
> RT Plan Relationship	(300A,0055)	1C	<p>Relationship of referenced plan with respect to current plan. Required if Referenced RT Plan Sequence (300C,0002) is sent. Defined Terms:</p> <p>PRIOR = plan delivered prior to current treatment</p> <p>ALTERNATIVE = alternative plan prepared for current treatment</p> <p>PREDECESSOR = plan used in derivation of current plan</p> <p>Note:</p> <p>An RT Dose IOD referenced within the Referenced Dose Sequence (300C,0080) can be used for storing grid-based (pixel) data, individual dose points (with optional dose point names), isodose curves, and DVH's.</p>	Only value PREDECESSOR is supported.

A 3.9.2 RT Prescription – C.8.8.10

Attribute Name	Tag	T	Description	Mapping
Prescription Description	(300A,000E)	3	User-defined description of treatment prescription.	Not Used
Dose Reference Sequence	(300A,0010)	3	Introduces sequence of Dose References. One or more items may be included in this sequence.	
> Dose Reference Number	(300A,0012)	1C	Identification number of the Dose Reference. The value of Dose Reference Number (300A,0012) shall be unique within the RT Plan in which it is created. Required if Dose Reference Sequence (300A,0012) is sent.	Read from or written to DicomSeqNumber in a DoseContribution

Attribute Name	Tag	T	Description	Mapping
> Dose Reference Structure Type	(300A,0014)	1C	Structure type of Dose Reference. Required if Dose Reference Sequence (300A,0010) is sent. Defined Terms: POINT = dose reference point specified as ROI VOLUME = dose reference volume specified as ROI COORDINATES = point specified by Dose Reference Point Coordinates (300A,0018) SITE = dose reference clinical site	Import: Supported values: COORDINATES, SITE. Item is ignored if value is POINT or VOLUME. Export: COORDINATE: If RefPointLocation exists in the Image which has context to the plan SITE: Otherwise
> Dose Reference Description	(300A,0016)	3	User-defined description of Dose Reference.	Read from or written to Id in a RefPoint
> Referenced ROI Number	(3006,0084)	1C	Uniquely identifies ROI representing the dose reference specified by ROI Number (3006,0022) in Structure Set ROI Sequence (3006,0020) in Structure Set Module within RT Structure Set in Referenced Structure Set Sequence (300C,0060) in RT General Plan Module. Required if Dose Reference Structure Type (300A,0014) is POINT or VOLUME and Dose Reference Sequence (300A,0010) is sent.	Not Used
> Dose Reference Point Coordinates	(300A,0018)	1C	Coordinates (x,y,z) of Reference Point in the patient based coordinate system described in C.7.6.2.1.1 (mm). Required if Dose Reference Structure Type (300A,0014) is COORDINATES and Dose Reference Sequence (300A,0010) is sent.	Read from or written to RefPointLocation in a RefPoint
> Nominal Prior Dose	(300A,001A)	3	Dose (in Gy) from prior treatment to this Dose Reference (e.g. from a previous course of treatment).	Not Used
> Dose Reference Type	(300A,0020)	1C	Type of Dose Reference. Required if Dose Reference Sequence (300A,0010) is sent. Defined Terms: TARGET = treatment target (corresponding to GTV, PTV, or CTV in ICRU50) ORGAN_AT_RISK = ORGAN_AT_Organ at Risk (as defined in ICRU50)	Import: TARGET is mapped to 'PTV' ORGAN_AT_RISK is mapped to 'AVOIDANCE'. Export: If PatientVolume.Type is 'PTV', 'CTV' or 'GTV' then TARGET else ORGAN_AT_RISK.

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Attribute Name	Tag	T	Description	Mapping
> Constraint Weight	(300A,0021)	3	Relative importance of satisfying constraint, where high values represent more important constraints.	Not Implemented
> Delivery Warning Dose	(300A,0022)	3	The dose (in Gy) which when reached or exceeded should cause some action to be taken.	Not Used
> Delivery Maximum Dose	(300A,0023)	3	The maximum dose (in Gy) which can be delivered to the dose reference.	Import: If Dose Reference Type is neither TARGET nor ORGAN_AT_RISK then RefPoint.TotalDoseLimit, otherwise ignored. Export: RefPoint.TotalDoseLimit
> Target Minimum Dose	(300A,0025)	3	Minimum permitted dose (in Gy) to Dose Reference if Dose Reference Type (300A,0020) is TARGET.	Not Implemented
> Target Prescription Dose	(300A,0026)	3	Prescribed dose (in Gy) to Dose Reference if Dose Reference Type (300A,0020) is TARGET.	Total planned dose
> Target Maximum Dose	(300A,0027)	3	Maximum permitted dose (in Gy) to Dose Reference if Dose Reference Type (300A,0020) is TARGET.	RefPoint.TotalDoseLimit Used only if Dose Reference Type is TARGET.
> Referenced Patient Volume Id	(3267,1000)	3		Id of PatientVolume associated to RefPoint
> Target Underdose Volume Fraction	(300A,0028)	3	Maximum permitted fraction (in percent) of Target to receive less than the Target Prescription Dose if Dose Reference Type (300A,0020) is TARGET and Dose Reference Structure Type (300A,0014) is VOLUME. See C.8.8.10.1.	Not Implemented
> Organ at Risk Full-volume Dose	(300A,002A)	3	Maximum dose (in Gy) to entire Dose Reference if Dose Reference Type (300A,0020) is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) is VOLUME.	Not Implemented
> Organ at Risk Limit Dose	(300A,002B)	3	Maximum permitted dose (in Gy) to any part of Dose Reference if Dose Reference Type (300A,0020) is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) is VOLUME.	Not Used

Attribute Name	Tag	T	Description	Mapping
> Organ at Risk Maximum Dose	(300A,002C)	3	Maximum dose (in Gy) to non-overdosed part of Dose Reference if Dose Reference Type (300A,0020) is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) is VOLUME.	RefPoint.TotalDoseLimit Imported only if Dose Reference Type is ORGAN_AT_RISK Exported only if Dose Reference Type is not TARGET
> Organ at Risk Overdose Volume Fraction	(300A,002D)	3	Maximum permitted fraction (in percent) of the Organ at Risk to receive more than the Organ at Risk Maximum Dose if Dose Reference Type (300A,0020) is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) is VOLUME.	Not Used

A 3.9.3 RT Tolerance Tables – C.8.8.11

Attribute Name	Tag	T	Description	Mapping
Tolerance Table Sequence	(300A,0040)	3	Introduces sequence of tolerance tables to be used for delivery of treatment plan. One or more items may be included in this sequence. See Note 1.	
> Tolerance Table Number	(300A,0042)	1C	Identification number of the Tolerance Table. The value of Tolerance Table Number (300A,0042) shall be unique within the RT Plan in which it is created. Required if Tolerance Table Sequence (300A,0040) is sent.	Import: Matched against Referenced Tolerance Table Number in RT Beams Module
> Tolerance Table Label	(300A,0043)	3	User-defined label for Tolerance Table.	Read from or written to Id in a Tolerance
> Gantry Angle Tolerance	(300A,0044)	3	Maximum permitted difference (in degrees) between planned and delivered Gantry Angle.	Taken from ToleranceLimit where ParameterName = 'GantryRtn'
> Beam Limiting Device Angle Tolerance	(300A,0046)	3	Maximum permitted difference (in degrees) between planned and delivered Beam Limiting Device Angle.	Taken from ToleranceLimit where ParameterName = 'CollRtn'
> Beam Limiting Device Tolerance Sequence	(300A,0048)	3	Introduces sequence of beam limiting device (collimator) tolerances. One or more items may be included in this sequence.	

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Attribute Name	Tag	T	Description	Mapping
>> RT Beam Limiting Device Type	(300A,00B8)	1C	Type of beam limiting device (collimator). Required if Beam Limiting Device Tolerance Sequence (300A,0040) is sent. Enumerated Values: X = symmetric jaw pair in IEC X direction Y = symmetric jaw pair in IEC Y direction ASYMX = asymmetric jaw pair in IEC X direction ASYMY = asymmetric pair in IEC Y direction MLCX = multileaf (multi-element) jaw pair in IEC X direction MLCY = multileaf (multi-element) jaw pair in IEC Y direction	All values are supported.
>> Beam Limiting Device Position Tolerance	(300A,004A)	1C	Maximum permitted difference (in mm) between planned and delivered leaf (element) or jaw positions for current beam limiting device (collimator). Required if Beam Limiting Device Tolerance Sequence (300A,0040) is sent.	
> Patient Support Angle Tolerance	(300A,004C)	3	Maximum permitted difference (in degrees) between planned and delivered Patient Support Angle.	Taken from ToleranceLimit where ParameterName = 'PatientSupportAngle'
> Table Top Eccentric Angle Tolerance	(300A,004E)	3	Maximum permitted difference (in degrees) between planned and delivered Table Top Eccentric Angle.	Taken from ToleranceLimit where ParameterName = 'TableTopEccentricAngle'
> Table Top Vertical Position Tolerance	(300A,0051)	3	Maximum permitted difference (in mm) between planned and delivered Table Top Vertical Position.	Taken from ToleranceLimit where ParameterName = 'CouchVrt'
> Table Top Longitudinal Position Tolerance	(300A,0052)	3	Maximum permitted difference (in mm) between planned and delivered Table Top Longitudinal Position.	Taken from ToleranceLimit where ParameterName = 'CouchLng'

Attribute Name	Tag	T	Description	Mapping
> Table Top Lateral Position Tolerance	(300A,0053)	3	<p>Maximum permitted difference (in mm) between planned and delivered Table Top Lateral Position.</p> <p>Note: Tolerance Tables may be used to compare planned with delivered machine parameters. If the absolute difference between the planned and delivered values exceeds the Tolerance Table value, treatment may be inhibited or the operator may be warned.</p>	Taken from ToleranceLimit where ParameterName = 'CouchLat'

A 3.9.4 RT Patient Setup – C.8.8.12

Attribute Name	Tag	T	Description	Mapping
Patient Setup Sequence	(300A,0180)	1	Introduces sequence of patient setup data for current plan. One or more items may be included in this sequence.	
> Patient Setup Number	(300A,0182)	1	Identification number of the Patient Setup. The value of Patient Setup Number (300A,0182) shall be unique within the RT Plan in which it is created.	Import: Required to find related beam Export: FieldGroupNumber of related beam
> Patient Position	(0018,5100)	1C	Patient position descriptor relative to the equipment. Required if Patient Additional Position (300A,0184) is not present. See Section C.7.3.1.1.2 for Defined Terms and further explanation.	PlanSetup.TreatmentOrientation Only plans having the same Patient Position for all beams are accepted for import.
> Patient Additional Position	(300A,0184)	1C	User-defined additional description of patient position. Required if Patient Position (0018,5100) is not present.	Not Implemented
> Fixation Device Sequence	(300A,0190)	3	Introduces sequence of Fixation Devices used in Patient Setup. One or more items may be included in this sequence.	Not Implemented
>> Fixation Device Type	(300A,0192)	1C	Type of Fixation Device used during in Patient Setup. Required if Fixation Device Sequence (300A,0190) is sent. Defined Terms: BITEBLOCK HEADFRAME MASK MOLD CAST HEADREST BREAST_BOARD	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Fixation Device Label	(300A,0194)	2C	User-defined label identifier for Fixation Device. Required if Fixation Device Sequence (300A,0190) is sent.	Not Implemented
>> Fixation Device Description	(300A,0196)	3	User-defined description of Fixation Device.	Not Implemented
>> Fixation Device Position	(300A,0198)	3	Position/Notch number of Fixation Device.	Not Implemented
> Shielding Device Sequence	(300A,01A0)	3	Introduces sequence of Shielding Devices used in Patient Setup. One or more items may be included in this sequence.	Not Implemented
>> Shielding Device Type	(300A,01A2)	1C	Type of Shielding Device used in Patient Setup. Required if Shielding Device Sequence (300A,01A0) is sent. Defined Terms: GUM EYE GONAD	Not Implemented
>> Shielding Device Label	(300A,01A4)	2C	User-defined label for Shielding Device. Required if Shielding Device Sequence (300A,01A0) is sent.	Not Implemented
>> Shielding Device Description	(300A,01A6)	3	User-defined description of Shielding Device.	Not Implemented
>> Shielding Device Position	(300A,01A8)	3	Position/Notch number of Shielding Device.	Not Implemented
> Setup Technique	(300A,01B0)	3	Setup Technique used in Patient Setup. Defined Terms: ISOCENTRIC FIXED_SSD TBI BREAST_BRIDGE SKIN_POSITION	Not Implemented
> Setup Technique Description	(300A,01B2)	3	User-defined description of Setup Technique.	Read from or written to Note in a Field
> Setup Device Sequence	(300A,01B4)	3	Introduces sequence of devices used for patient alignment in Patient Setup. One or more items may be included in this sequence.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Setup Device Type	(300A,01B6)	1C	Type of Setup Device used for Patient alignment. Required if Setup Device Sequence (300A,01B4) is sent. Defined Terms: LASER_POINTER DISTANCE_METER TABLE_HEIGHT MECHANICAL_PTR_ARC	Not Implemented
>> Setup Device Label	(300A,01B8)	2C	User-defined label for Setup Device used for patient alignment. Required if Setup Device Sequence (300A,01B4) is sent.	Not Implemented
>> Setup Device Description	(300A,01BA)	3	User-defined description for Setup Device used for patient alignment.	Not Implemented
>> Setup Device Parameter	(300A,01BC)	2C	Setup Parameter for Setup Device in appropriate IEC 61217 coordinate system. Units shall be mm for distances and angles for degrees. Required if Setup Device Sequence (300A,01B4) is sent.	Not Implemented
>> Setup Reference Description	(300A,01D0)	3	User-defined description of Setup Reference used for patient alignment.	Not Implemented
> Table Top Vertical Setup Displacement	(300A,01D2)	3	Vertical Displacement in IEC TABLE TOP coordinate system (in mm) relative to initial Setup Position, i.e. vertical offset between patient positioning performed using setup and treatment position.	Not Implemented
> Table Top Longitudinal Setup Displacement	(300A,01D4)	3	Longitudinal Displacement in IEC TABLE TOP coordinate system (in mm) relative to initial Setup Position, i.e. longitudinal offset between patient positioning performed using setup and treatment position.	Not Implemented
> Table Top Lateral Setup Displacement	(300A,01D6)	3	Lateral Displacement in IEC TABLE TOP coordinate system (in mm) relative to initial Setup Position, i.e. lateral offset between patient positioning performed using setup and treatment position.	Not Implemented

A 3.9.5 RT Fraction Scheme – C.8.8.13

Attribute Name	Tag	T	Description	Mapping
Fraction Group Sequence	(300A,0070)	1	Introduces sequence of Fraction Groups in current Fraction Scheme. One or more items may be included in this sequence.	Import: Only the first item is imported, further ones will be ignored. Export: Always only one item.
> Fraction Group Number	(300A,0071)	1	Identification number of the Fraction Group. The value of Fraction Group Number (300A,0071) shall be unique within the RT Plan in which it is created.	Read from or written to DicomSeqNumber in a Fractionation
> Referenced Patient Setup Number	(300C,006A)	3	Uniquely identifies Patient Setup specified by Patient Setup Number (300A,0182) within Patient Setup Sequence (300A,0180) in RT Patient Setup Module.	Not Implemented
> Referenced Dose Sequence	(300C,0080)	3	Introduces sequence of related SOP Class/Instance pairs describing related instances of RT Dose (for grids, isodose curves and named/unnamed point doses). One or more items may be included in this sequence. See Note 1.	Not Implemented
>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Dose Sequence (300C,0080) is sent.	Not Implemented
>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Dose Sequence (300C,0080) is sent.	Not Implemented
> Referenced Dose Reference Sequence	(300C,0050)	3	Introduces sequence of Dose References for the current Fraction Group. One or more items may be included in this sequence.	Not Implemented
>> Referenced Dose Reference Number	(300C,0051)	1C	Uniquely identifies Dose Reference specified by Dose Reference Number (300A,0012) within Dose Reference Sequence (300A,0010) in RT Prescription Module. Required if Referenced Dose Reference Sequence (300C,0050) is sent.	Not Implemented
>> Constraint Weight	(300A,0021)	3	Relative importance of satisfying constraint, where high values represent more important constraints.	Not Implemented
>> Delivery Warning Dose	(300A,0022)	3	The dose (in Gy) which when reached or exceeded should cause some action to be taken.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Delivery Maximum Dose	(300A,0023)	3	The maximum dose (in Gy) which can be delivered to the dose reference.	Not Implemented
>> Target Minimum Dose	(300A,0025)	3	Minimum permitted dose (in Gy) to Dose Reference if Dose Reference Type (300A,0020) of referenced Dose Reference is TARGET.	Not Implemented
>> Target Prescription Dose	(300A,0026)	3	Prescribed dose (in Gy) to Dose Reference if Dose Reference Type (300A,0020) of referenced Dose Reference is TARGET.	Not Implemented
>> Target Maximum Dose	(300A,0027)	3	Maximum permitted dose (in Gy) to Dose Reference if Dose Reference Type (300A,0020) of referenced Dose Reference is TARGET.	Not Implemented
>> Target Underdose Volume Fraction	(300A,0028)	3	Maximum permitted fraction (in percent) of Target to receive less than the Target Prescription Dose (300A,0027) if Dose Reference Type (300A,0020) of referenced Dose Reference is TARGET and Dose Reference Structure Type (300A,0014) of referenced Dose Reference is VOLUME.	Not Implemented
>> Organ at Risk Full-volume Dose	(300A,002A)	3	Maximum dose (in Gy) to entire Dose Reference if Dose Reference Type (300A,0020) of referenced Dose Reference is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) of referenced Dose Reference is VOLUME.	Not Implemented
>> Organ at Risk Limit Dose	(300A,002B)	3	Maximum permitted dose (in Gy) to any part of Dose Reference if Dose Reference Type (300A,0020) of referenced Dose Reference is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) of referenced Dose Reference is VOLUME.	Not Implemented
>> Organ at Risk Maximum Dose	(300A,002C)	3	Maximum dose (in Gy) to non-overdosed part of Dose Reference if Dose Reference Type (300A,0020) of referenced Dose Reference is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) of referenced Dose Reference is VOLUME.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
>> Organ at Risk Overdose Volume Fraction	(300A,002D)	3	Maximum permitted fraction (in percent) of Organ at Risk to receive more than the Organ at Risk Maximum Dose if Dose Reference Type (300A,0020) of referenced Dose Reference is ORGAN_AT_RISK and Dose Reference Structure Type (300A,0014) of referenced Dose Reference is VOLUME.	Not Implemented
> Number of Fractions Planned	(300A,0078)	2	Total number of treatments (Fractions) prescribed for current Fraction Group.	Read from or written to NoFractions in a Fractionation
> Number of Fractions Per Day	(300A,0079)	3	Number of digits in Fraction Pattern (300A,007B) used to represent one day. See Note 2.	Read from or written to FractionPerDay in a Fractionation
> Repeat Fraction Cycle Length	(300A,007A)	3	Number of weeks needed to describe treatment pattern. See Note 2.	Not Used
> Fraction Pattern	(300A,007B)	3	String of 0's (no treatment) and 1's (treatment) describing treatment pattern. Length of string is 7 x Number of Fraction Pattern Digits Per Day x Repeat Fraction Cycle Length. Pattern shall start on a Monday. See Note 2.	Not Used
> Number of Beams	(300A,0080)	1	Number of Beams in current Fraction Group. If Number of Beams is greater than zero, Number of Brachy Application Setups (300A,00A0) shall equal zero.	Number of items in Referenced Beam Sequence
> Referenced Beam Sequence	(300C,0004)	1C	Introduces sequence of treatment beams in current Fraction Group. Required if Number of Beams (300A,0080) is greater than zero. One or more items may be included in this sequence.	Export: One item for every treatment field belonging to the current plan
>> Referenced Beam Number	(300C,0006)	1C	Uniquely identifies Beam specified by Beam Number (300A,00C0) within Beam Sequence (300A,00B0) in RT Beams Module. Required if Referenced Beam Sequence (300C,0004) is sent.	Read from or written to FieldGroupNumber in a Field
>> Beam Dose Specification Point	(300A,0082)	3	Coordinates (x,y,z) of point at which Beam Dose is specified in the patient based coordinate system described in C.7.6.2.1.1 (mm). See Note 3.	Field.BeamDosePointLocation Coordinates of the primary RefPoint
>> Beam Dose	(300A,0084)	3	Dose (in Gy) at Beam Dose Specification Point (300A,0082) due to current Beam.	FieldRefPoint.FieldDose Dose per fraction

Attribute Name	Tag	T	Description	Mapping
>> Beam Meterset	(300A,0086)	3	Machine setting to be delivered for current Beam, specified in Monitor Units (MU) or minutes as defined by Primary Dosimeter Unit (300A,00B3) (in RT Beams Module) for referenced Beam. See Note 4.	Import: If Beam Dose > 0 then Field.MUpGy = Beam Meterset / Beam Dose. Otherwise Field.MU = Beam Meterset. Export: MU per Gy * Dose per Fraction
>> Maximum Treatment Time	(3249,1000)	3	The maximum treatment time, which should not be exceeded. This item serves as a secondary safety limit besides the Beam Meterset value (300A,0086) itself. Units in [min].	Read from or written to TreatmentTime in a TreatmentField
> Number of Brachy Application Setups	(300A,00A0)	1	Number of Brachy Application Setups in current Fraction Group. If Number of Brachy Application Setups is greater than zero, Number of Beams (300A,0080) shall equal zero.	
> Referenced Brachy Application Setup Sequence	(300C,000A)	1C	Introduces sequence of treatment Brachy Application Setups in current Fraction Group. Required if Number of Brachy Application Setups (300A,00A0) is greater than zero. One or more items may be included in this sequence.	
>> Referenced Brachy Application Setup Number	(300C,000C)	1C	Uniquely identifies Brachy Application Setup specified by Brachy Application Setup Number (300A,0234) within Brachy Application Setup Sequence (300A,0230) in RT Brachy Application Setups Module. Required if Referenced Brachy Application Setup Sequence (300C,000A) is sent.	Sequential numbers starting from 1
>> Brachy Application Setup Dose Specification Point	(300A,00A2)	3	Coordinates (x,y,z) of point in the patient based coordinate system described in C.7.6.2.1.1 at which Brachy Application Setup Dose (300A,00A4) is specified (mm).	Not Used
>> Brachy Application Setup Dose	(300A,00A4)	3	Dose (in Gy) at Brachy Application Setup Dose Specification Point (300A,00A2) due to current Brachy Application Setup. Notes: 1. An RT Dose IOD referenced within the Referenced Dose Sequence (300C,0080) can be used for storing grid-based (pixel) data, isodose curves, and/or individual dose points	Not Used

Attribute Name	Tag	T	Description	Mapping
		T	<p>(with optional dose point names) for the current Fraction Group.</p> <p>2. The fractionation pattern does not indicate the actual start of treatment, or the order or timing of fraction delivery. If treatment does not commence as outlined in the pattern, it is the application's responsibility to make any necessary adjustments. Examples of Fractionation Pattern Schemes:</p> <p>a) 1 fraction group, 1 fraction per day (Monday to Friday): Number of Fraction Pattern Digits per Day = 1, Repeat Fraction Cycle Length = 1, Fraction Pattern = 1111100 b) 2 fraction groups, 1 fraction per day, first fraction group Monday, Wednesday, and Friday, second fraction group Tuesday and Thursday: Fraction Group 1: Number of Fraction Pattern Digits Per Day = 1, Repeat Fraction Cycle Length = 1, Fraction Pattern = 1010100 Fraction Group 2: Number of Fraction Pattern Digits Per Day = 1, Repeat Fraction Cycle Length = 1, Fraction Pattern = 0101000 c) 2 fraction groups, 1 fraction per day, alternating fraction groups every day of treatment (Monday to Friday): Fraction Group 1: Number of Fraction Pattern Digits Per Day = 1, Repeat Fraction Cycle Length = 2, Fraction Pattern = 10101000101000 Fraction Group 2: Number of Fraction Pattern Digits Per Day = 1, Repeat Fraction Cycle Length = 2, Fraction Pattern = 0101000101000 d) 1 fraction group, 2 fractions per day (Monday to Friday): Fraction Group 1: Number of Fraction Pattern Digits Per Day = 2, Repeat Fraction Cycle Length = 1, Fraction Pattern = 111111110000 e) 2 fraction groups, 2 fractions per day, alternating fraction groups every treatment (Monday to Friday): Fraction Group 1: Number of Fraction Pattern Digits Per Day = 1, Repeat Fraction Cycle Length = 1, Fraction Pattern = 1111100 Fraction Group 2: Number of Fraction Pattern Digits Per Day = 2, Repeat Fraction Cycle Length = 1, Fraction Pattern = 111111110000</p> <p>3. The Beam Dose Specification Point (300A,0082) and Brachy Application Setup Dose Specification Point (300A,00A2) contain the coordinates of the single point used for dose normalization. This point is distinct from the</p>	

Attribute Name	Tag	T	Description	Mapping
			<p>Referenced Dose Reference Sequence (300C,0050) in the RT Beams module and the Brachy Referenced Dose Reference Sequence (300A,0055) in the RT Brachy Application Setups module, which are used for plan evaluation and dose tracking.</p> <p>4. The Meterset at a given Control Point (see RT Beams Module) is equal to the Beam Meterset (300A,0086) multiplied by the Cumulative Meterset Weight (300A,0134) for the Control Point, divided by the Final Cumulative Meterset Weight (300A,010E).</p>	

A 3.9.6 RT Beams – C.8.8.14

Attribute Name	Tag	T	Description	Mapping
Beam Sequence	(300A,00B0)	1	Introduces sequence of treatment beams for current RT Plan. One or more items may be included in this sequence.	
> Beam Number	(300A,00C0)	1	Identification number of the Beam. The value of Beam Number (300A,00C0) shall be unique within the RT Plan in which it is created. See Note 1.	Treatment Beams: Field.FieldGroupName Port Film: Unique number that is higher than those of treatment beams.
> Beam Name	(300A,00C2)	3	User-defined name for Beam. See Note 1.	Field.FieldId Port Film: Value of related beam
Beam Secondary Name	(3243,1009)	3	User-defined secondary name for Beam.	Field.FieldName Port Film: Value of related beam

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Attribute Name	Tag	T	Description	Mapping
> Beam Description	(300A,00C3)	3	User-defined description for Beam. See Note 1.	Field.Comment Port Film: Value of related beam
> Beam Type	(300A,00C4)	1	Motion characteristic of Beam. See Note 5. Enumerated Values: STATIC = All Control Point Sequence (300A,0111) attributes remain unchanged between consecutive pairs of control points with changing Cumulative Meterset Weight (300A,0134). DYNAMIC = One or more Control Point Sequence (300A,0111) attributes change between one or more consecutive pairs of control points with changing Cumulative Meterset Weight (300A,0134).	Treatment Beams: Import: Used in deciding value for Field.Technique. Export: Depends on Field.Technique and control point parameters. Port Film: STATIC
> Radiation Type	(300A,00C6)	2	Particle type of Beam. Defined Terms: PHOTON ELECTRON NEUTRON PROTON	Treatment Beams: Field.EnergyMode: PHOTON = X ELECTRON = E NEUTRON is not supported PROTON = P Port Film: PHOTON
> High Dose Technique Type	(300A,00C7)	1C	Type of high-dose treatment technique. Defined Terms: NORMAL = Standard treatment TBI = Total Body Irradiation HDR = High Dose Rate Required if treatment technique requires a dose that would normally require overriding of treatment machine safety controls.	Treatment Beams: Field.Technique, if Technique is TOTAL / TBI or HTDSE / HDR Port Film: NORMAL if High-Dose Technique of related beam is defined.

Attribute Name	Tag	T	Description	Mapping
> Technique	(3243,1006)	1C	Treatment Technique of this Beam for PROTON beams. Defined Terms: DOUBLESATTERING SINGLESATTERING UNIFORM_SCANNING MODULAT_SCANNING STATIC Note, that the definition of DYNAMIC in (300A,00C4) is completely independent from the definitions in here.Required if RadiationType (300A,00C6) is PROTON	Read from or written to Technique in a Field
> Treatment Machine Name	(300A,00B2)	2	User-defined name identifying treatment machine to be used for beam delivery. See Note 2.	Machine.Machineld Port Film: Value of related beam
> Manufacturer	(0008,0070)	3	Manufacturer of the equipment to be used for beam delivery.	Machine.ManufacturerName Port Film: Value of related beam
> Institution Name	(0008,0080)	3	Institution where the equipment is located that is to be used for beam delivery.	Export only: Hospital.Id Port Film: Value of related beam
> Institution Address	(0008,0081)	3	Mailing address of the institution where the equipment is located that is to be used for beam delivery.	Not Implemented
> Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment is located that is to be used for beam delivery.	Export only: Department.Id Port Film: Value of related beam

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Attribute Name	Tag	T	Description	Mapping
> Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that is to be used for beam delivery.	Machine.MachineModel Port Film: Value of related beam
> Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that is to be used for beam delivery.	Machine.ManufacturerSerNo Port Film: Value of related beam
> Primary Dosimeter Unit	(300A,00B3)	3	Measurement unit of machine dosimeter. See C.8.8.14.1.Enumerated Values: MU = Monitor Unit MINUTE = minute	Export: MU for any External Beam Import:If machine found is an External Beam device then check if it is MU. Port Film: Value of related beam
> Referenced Tolerance Table Number	(300C,00A0)	3	Uniquely identifies Tolerance Table specified by Tolerance Table Number (300A,0042) within Tolerance Table Sequence in RT Tolerance Tables Module. These tolerances are to be used for verification of treatment machine settings.	
> Source-Axis Distance	(300A,00B4)	3	Radiation source to Gantry rotation axis distance of the equipment that is to be used for beam delivery (mm).	Export: ExternalBeam.SAD Import: Check against ExternalBeam.SAD Port Film: Value of related beam
> Snout ID	(3243,1008)	3	Id of the snout of a proton machine installed at the nozzle of the gantry.	Read from or written to Id in a MSnout
> Beam Modifier Set	(3243,1010)	2C	A string denoting the set of beam modifiers needed to be present for this beam. Required, if Radiation Type (300A,00C6) is PROTON.	PlanningFieldProton.BeamModifiersSet or TreatmentFieldProton.BeamModifiersSet
> Distal End Energy	(3243,1002)	3	Distal range of the field [g/cm^2]	PlanningFieldProton.DistanlEndEnergy or TreatmentFieldProton.DistalEndEnergy

Attribute Name	Tag	T	Description	Mapping
> Proximal End Energy	(3243,1003)		Proximal range of the field [g/cm^2]	PlanningFieldProton.ProximalEndEnergy or TreatmentFieldProton.ProximalEndEnergy
> Beam Limiting Device Sequence	(300A,00B6)	1	Introduces sequence of beam limiting device (collimator) jaw or leaf (element) sets. One or more items may be included in this sequence.	
>> RT Beam Limiting Device Type	(300A,00B8)	1	Type of beam limiting device (collimator).Enumerated Values: X = symmetric jaw pair in IEC X direction Y = symmetric jaw pair in IEC Y direction ASYMX = asymmetric jaw pair in IEC X direction ASYMY = asymmetric pair in IEC Y direction MLCX = multileaf (multi-element) jaw pair in IEC X direction MLCY = multileaf (multi-element) jaw pair in IEC Y direction	Import: only one mlc is supported If Type is MLCX -> Rotation of mlc must be 0 If Type is MLCY -> Rotation of mlc must be 90 Port Film: Value of related beam
>> Source to Beam Limiting Device Distance	(300A,00BA)	3	Radiation source to beam limiting device (collimator) distance of the equipment that is to be used for beam delivery (mm).	Only for MLC: Export: MLCLevel.SourceToLevelDst Import: compare with MLCLevel.SourceToLevelDst Port Film: Value of related beam
>> Number of Leaf/Jaw Pairs	(300A,00BC)	1	Number of leaf (element) or jaw pairs (equal to 1 for standard beam limiting device jaws).	Export: MLC: MLCBank.NumberOfLeaves Collimator: 1 Import: Used for selecting right MLC Port Film: Value of related beam

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Attribute Name	Tag	T	Description	Mapping
>> Leaf Position Boundaries	(300A,00BE)	2C	Boundaries of beam limiting device (collimator) leaves (in mm) in IEC BEAM LIMITING DEVICE coordinate axis appropriate to RT Beam Limiting Device Type (300A,00B8), i.e. X-axis for MLCY, Yaxis for MLCX. Contains N+1 values, where N is the Number of Leaf/Jaw Pairs (300A,00BC), starting from Leaf (Element) Pair 1. Required if Beam Limiting Device Sequence (300A,00B6) is sent and RT Beam Limiting Device Type (300A,00B8) is MLCX or MLCY. See Note 3.	
> Referenced Patient Setup Number	(300C,006A)	3	Uniquely identifies Patient Setup to be used for current beam, specified by Patient Setup Number (300A,0182) within Patient Setup Sequence of RT Patient Setup Module.	Import: used to retrieve an item of Patient Setup Sequence Export: Field.FieldGroupName Port Film: Value of related beam
> Referenced Reference Image Sequence	(300C,0042)	3	Introduces sequence of reference images used for validation of current beam. One or more items may be included in this sequence.	
>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Reference Image Sequence (300C,0042) is sent.	Class UID of Image Port Film: Value of related beam
>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Reference Image Sequence (300C,0042) is sent.	Export: Instance UID of field -> GetReferencedImageInUse Import: ignored Export: unique number starting from 1 Import: ignored Port Film: Value of related beam
>> Reference Image Number	(300A,00C8)	1C	Uniquely identifies Reference Image within Referenced Reference Image Sequence (300A,0042). Required if Referenced Reference Image Sequence (300A,0042) is sent.	Export: unique number starting from 1 Import: ignored Port Film: Value of related beam
>> Start Cumulative Meterset Weight	(300C,0008)	3	Cumulative Meterset Weight within current Beam at which image acquisition starts.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> End Cumulative Meterset Weight	(300C,0009)	3	Cumulative Meterset Weight within current Beam at which image acquisition ends.	Not Implemented
> Planned Verification Image Sequence	(300A,00CA)	3	Introduces sequence of planned verification images to be acquired during current beam. One or more items may be included in this sequence. See C.8.8.14.2.	Import: Only 1 item is taken. If more items are present a warning will be generated.
>> Start Cumulative Meterset Weight	(300C,0008)	3	Cumulative Meterset Weight within current Beam at which image acquisition will start.	Export only: SequenceImage. AcqAdjustment * (Final Cumulative Meterset Weight) Port Film: Not Used
>> Meterset Exposure	(3002,0032)	3	Meterset duration over which image is to be acquired, specified in Monitor units (MU) or minutes as defined by Primary Dosimeter Unit (300A,00B3).	Not Implemented
>> End Cumulative Meterset Weight	(300C,0009)	3	Cumulative Meterset Weight within current Beam at which image acquisition will end.	Not Implemented
>> RT Image Plane	(3002,000C)	3	Describes whether or not image plane is normal to beam axis.Enumerated Values: NORMAL = image plane normal to beam axis NON_NORMAL = NON_image plane non-normal to beam axis	Export: NORMAL Import: Generate warning if not NORMAL.
>> X-Ray Image Receptor Angle	(3002,000E)	3	X-Ray Image Receptor Angle i.e. orientation of IEC X-RAY IMAGE RECEPTOR coordinate system with respect to IEC GANTRY coordinate system (degrees). See C.8.8.14.3.	Import: If value is not 0.0 then generate warning.Field.IDURtn is set to 0.0 Export: 0.0
>> RT Image Orientation	(3002,0010)	3	The direction cosines of the first row and the first column with respect to the IEC XRAY IMAGE RECEPTOR coordinate system.	Not Implemented
>> RT Image Position	(3002,0012)	3	The x and y coordinates (in mm) of the upper left hand corner (first pixel transmitted) of the image, in the IEC XRAY IMAGE RECEPTOR coordinate system.	Field.IDUPosLat (X) Field.IDUPosLng (Y) Port Film: Value of related beam

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Attribute Name	Tag	T	Description	Mapping
>> RT Image SID	(3002,0026)	3	Radiation machine source to image plane distance (mm).	Import: Field.IDUPosVrt = SAD - SID Export: SID = SAD - Field.IDUPosVrt Port Film: Value of related beam
>> Imaging Device-Specific Acquisition Parameters	(300A,00CC)	3	User-specified device-specific parameters which describe how the imager will acquire the image.	Export only: SequenceImage.ImageDeviceSpecificAcquisitionParameters
>> Referenced Reference Image Number	(300C,0007)	3	Uniquely identifies Reference Image to which planned verification image is related, specified by Reference Image Number (300A,00C8) within Referenced Reference Image Sequence (300A,0042).	Not Implemented
> Treatment Delivery Type	(300A,00CE)	3	Delivery Type of treatment. Defined Terms: TREATMENT = normal patient treatment OPEN_PORTFILM = OPEN_portal image acquisition with open field TRMT_PORTFILM = TRMT_portal image acquisition with treatment port CONTINUATION = continuation of interrupted treatment	Import: Only TREATMENT, otherwise beam is ignored. Export: TREATMENT Port Film: OPEN_PORTFILM or TRMT_PORTFILM
> Referenced Dose Sequence	(300C,0080)	3	Introduces sequence of related SOP Class/Instance pairs describing related instances of RT Dose (for grids, isodose curves, and named/unnamed point doses). One or more items may be included in this sequence.	Not Used
>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Dose Sequence (300C,0080) is sent.	Not Used
>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Dose Sequence (300C,0080) is sent.	Not Used
> Number of Wedges	(300A,00D0)	1	Number of wedges associated with current Beam.	Port Film: 0. Whole wedge sequence is not used.

Attribute Name	Tag	T	Description	Mapping
> Wedge Sequence	(300A,00D1)	1C	Introduces sequence of treatment wedges. Required if Number of Wedges (300A,00D0) is non-zero. One or more items may be included in this sequence.	
>> Wedge Number	(300A,00D2)	1C	Identification number of the Wedge. The value of Wedge Number (300A,00D2) shall be unique within the Beam in which it is created. Required if Wedge Sequence (300A,00D1) is sent.	Read from or written to DicomSeqNumber in a FieldAddOn
>> Wedge Type	(300A,00D3)	2C	Type of wedge (if any) defined for Beam. Required if Wedge Sequence (300A,00D1) is sent. Defined Terms: STANDARD = standard (static) wedge DYNAMIC = moving beam limiting device (collimator) jaw simulating wedge MOTORIZED = single wedge which can be removed from beam remotely	STANDARD if it is a standard wedge type with StandardWedge.MotorizedFlag cleared MOTORIZED if it is a standard wedge type with StandardWedge.MotorizedFlag set DYNAMIC if it is a dynamic wedge type
>> Wedge ID	(300A,00D4)	3	User-supplied identifier for Wedge.	Read from or written to Id in a Wedge
>> Wedge Angle	(300A,00D5)	2C	Nominal wedge angle (degrees). Required if Wedge Sequence (300A,00D1) is sent.	Read from or written to WedgeAngle in a Wedge
>> Wedge Factor	(300A,00D6)	2C	Nominal wedge factor under machine calibration conditions at the beam energy specified by the Nominal Beam Energy (300A,0114) of the first Control Point of the Control Point Sequence (300A,0111). Required if Wedge Sequence (300A,00D1) is sent.	Import: ignored Export: depends on Energy Mode and Add-On Material
>> Wedge Orientation	(300A,00D8)	2C	Orientation of wedge, i.e. orientation of IEC WEDGE FILTER coordinate system with respect to IEC BEAM LIMITING DEVICE coordinate system (degrees). Required if Wedge Sequence (300A,00D1) is sent.	Read from or written to WedgeDirection in a Wedge
>> Source to Wedge Tray Distance	(300A,00DA)	3	Radiation source to wedge tray attachment edge distance (in mm) for current wedge.	Read from or written to SourceSlotDist in a Slot

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Attribute Name	Tag	T	Description	Mapping
> Number of Compensators	(300A,00E0)	1	Number of compensators associated with current Beam.	Port Film: 0. Whole compensator sequence is not used.
> Total Compensator Tray Factor	(300A,00E2)	3	Compensator Tray transmission factor (between 0 and 1), at the beam energy specified by the Nominal Beam Energy (300A,0114) of the first Control Point of the Control Point Sequence (300A,0111).	Import: ignored Export: depends on Energy Mode and Add-On Material
> Compensator Sequence	(300A,00E3)	1C	Introduces sequence of treatment compensators. Required if Number of Compensators (300A,00E0) is non-zero. One or more items may be included in this sequence.	
>> Compensator Number	(300A,00E4)	1C	Identification number of the Compensator. The value of Compensator Number (300A,00E4) shall be unique within the Beam in which it is created. Required if Number of Compensators (300A,00E0) is non-zero.	Import: Not used Export: Number unique within sequence, starting from 1.
>> Compensator Type	(300A,00EE)	3	Type of compensator (if any). Defined Terms: STANDARD = physical (static) Compensator DYNAMIC = moving Beam Limiting Device (collimator) simulating physical compensator	Varian defined terms for fluence matrices: OPTIMAL TOTAL ACTUAL Import: DYNAMIC compensators are ignored. Export: Supported types are STANDARD, OPTIMAL and TOTAL ACTUAL.
>> Material ID	(300A,00E1)	2C	User-supplied identifier for material used to manufacture Compensator. Required if Number of Compensators (300A,00E0) is non-zero.	AddOnMaterial. Id
>> Compensator ID	(300A,00E5)	3	User-supplied identifier for compensator.	Read from or written to Id in a MetallicCompensator
>> Source to Compensator Tray Distance	(300A,00E6)	2C	Radiation source to compensator tray attachment edge distance (in mm) for current compensator. Required if Compensator Sequence (300A,00E3) is sent.	Read from or written to SourceSlotDist in a Slot

Attribute Name	Tag	T	Description	Mapping
>> Compensator Divergence	(300A,02E0)	3	Indicates presence or absence of geometrical divergence of the compensator. Enumerated Values: PRESENT = the compensator is shaped according to the beam geometrical divergence. ABSENT = the compensator is not shaped according to the beam geometrical divergence.	Not Used
>> Compensator Mounting Position	(300A,02E1)	3	Indicates on which side of the Compensator Tray the compensator is mounted. Enumerated Values: PATIENT_SIDE = PATIENT_the compensator is mounted on the side of the Compensator Tray which is towards the patient. SOURCE_SIDE = SOURCE_the compensator is mounted on the side of the Compensator Tray which is towards the radiation source. DOUBLE_SIDED = DOUBLE_the compensator has a shaped (i.e. non-flat) surface on both sides of the Compensator Tray.	Export only for proton beams: always SOURCE_SIDE
>> Compensator Rows	(300A,00E7)	1C	Number of rows in the compensator. Required if Compensator Sequence (300A,00E3) is sent.	Read from or written to YSize in a TransmissionMatrix
>> Compensator Columns	(300A,00E8)	1C	Number of columns in the compensator. Required if Compensator Sequence (300A,00E3) is sent.	Read from or written to XSize in a TransmissionMatrix
>> Compensator Pixel Spacing	(300A,00E9)	1C	Physical distance (in mm) between the center of each pixel projected onto machine isocentric plane. Specified by a numeric pair - adjacent row spacing (delimiter) adjacent column spacing. Required if Compensator Sequence (300A,00E3) is sent.	Read from or written to Res in a TransmissionMatrix
>> Compensator Position	(300A,00EA)	1C	The x and y coordinates of the upper left hand corner (first pixel transmitted) of the compensator, projected onto the machine isocentric plane in the IEC BEAM LIMITING DEVICE coordinate system (mm). Required if Compensator Sequence (300A,00E3) is sent.	Position of voxel (0/0/0) of the compensator thickness matrix in object space coordinates.

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Attribute Name	Tag	T	Description	Mapping
>> Compensator Transmission Data	(300A,00EB)	1C	A data stream of the pixel samples which comprise the compensator, expressed as broad-beam transmission values (between 0 and 1) along a ray line passing through the pixel, at the beam energy specified by the Nominal Beam Energy (300A,0114) of the first Control Point of the Control Point Sequence (300A,0111). The order of pixels sent is left to right, top to bottom, i.e., the upper left pixel is sent first followed by the remainder of the first row, then the remainder of the 2nd row and so on) when viewed from the radiation source. Required if Compensator Sequence (300A,00E3) is sent and Material ID (300A,00E1) is zero length.	Transmission data of MetallicCompensator. TransmissionMatrix. Volume
>> Compensator Thickness Data	(300A,00EC)	1C	A data stream of the pixel samples which comprise the compensator, expressed as thicknesses (in mm). The order of pixels sent is left to right, top to bottom, i.e., the upper left pixel is sent first followed by the remainder of the first row, followed by the first pixel of the 2nd row, then the remainder of the 2nd row and so on) when viewed from the radiation source. Required if Compensator Sequence (300A,00E3) is sent and Material ID (300A,00E1) is nonzero length. See C.8.8.14.9.	Thickness data of MetallicCompensator. TransmissionMatrix. Volume
>> Source to Compensator Distance	(300A,02E2)	1C	A data stream of the pixel samples which comprise the distance from the radiation source to the compensator surface closest to the radiation source (in mm). The order of pixels sent is left to right, top to bottom (upper left pixel, followed by the remainder of row 1, followed by the remainder of the columns). Required if Compensator Sequence (300A,00E3) is sent, Material ID (300A,00E1) is non-zero length, and Compensator Mounting Position (300A,02E1) is DOUBLE_SIDED. See C.8.8.14.9.	Not Used
> Number of Boli	(300A,00ED)	1	Number of boli associated with current Beam.	Port Film: 0. Whole bolus sequence is not used.
> Referenced Bolus Sequence	(300C,00B0)	1C	Introduces sequence of boli associated with Beam. Required if Number of Boli (300A,00ED) is non-zero. One or more items may be included in this sequence.	

Attribute Name	Tag	T	Description	Mapping
>> Referenced ROI Number	(3006,0084)	1C	Uniquely identifies ROI representing the Bolus specified by ROI Number (3006,0022) in Structure Set ROI Sequence (3006,0020) in Structure Set Module within RT Structure Set in Referenced Structure Set Sequence (300C,0060) in RT General Plan Module. Required if Referenced Bolus Sequence (300A,00B0) is sent.	Read from or written to Number in a Bolus
> Number of Blocks	(300A,00F0)	1	Number of shielding blocks associated with Beam.	Port Film: 0. Whole block sequence is not used.
> Total Block Tray Factor	(300A,00F2)	3	Total block tray transmission for all block trays (between 0 and 1) at the beam energy specified by the Nominal Beam Energy (300A,0114) of the first Control Point of the Control Point Sequence (300A,0111).	Import: ignored Export: Depends on Energy Mode and Add-On Material of tray.
> Block Sequence	(300A,00F4)	1C	Introduces sequence of blocks associated with Beam. Required if Number of Blocks (300A,00F0) is non-zero. One or more items may be included in this sequence.	
>> Block Tray ID	(300A,00F5)	3	User-supplied identifier for block tray.	Block -> Tray.Id
>> Source to Block Tray Distance	(300A,00F6)	2C	Radiation Source to attachment edge of block tray assembly (mm). Required if Block Sequence (300A,00F4) is sent.	Block -> Slot.SourceSlotDist
>> Block Type	(300A,00F8)	1C	Type of block. Required if Block Sequence (300A,00F4) is sent. See C.8.8.14.4.Enumerated Values: SHIELDING = blocking material is inside contour APERTURE = blocking material is outside contour	Read from or written to BlockType in a Block
>> Block Divergence	(300A,00FA)	2C	Indicates presence or otherwise of geometrical divergence. Required if Block Sequence (300A,00F4) is sent.Enumerated Values: PRESENT = block edges are shaped for beam divergence ABSENT = block edges are not shaped for beam divergence	Read from or written to DivergingFlag in a Block

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Attribute Name	Tag	T	Description	Mapping
>> Block Mounting Position	(300A,00FB)	3	Indicates on which side of the Block Tray the block is mounted. Enumerated Values: PATIENT_SIDE = the block is mounted on the side of the Block Tray which is towards the patient. SOURCE_SIDE = the block is mounted on the side of the Block Tray which is towards the radiation source.	Export only for proton beams: SOURCE_SIDE
>> Block Number	(300A,00FC)	1C	Identification number of the Block. The value of Block Number (300A,00FC) shall be unique within the Beam in which it is created. Required if Block Sequence (300A,00F4) is sent.	Read from or written to DicomSeqNumber in a Block
>> Block Name	(300A,00FE)	3	User-defined name for block.	Read from or written to BlockId in a Block
>> Material ID	(300A,00E1)	2C	User-supplied identifier for material used to manufacture Block. Required if Block Sequence (300A,00F4) is sent.	Read from or written to Id in a AddOnMaterial
>> Block Thickness	(300A,0100)	2C	Physical thickness of block (in mm) parallel to radiation beam axis. Required if Block Sequence (300A,00F4) is sent and Material ID (300A,00E1) is non-zero length. See C.8.8.14.4.	Read from or written to Thickness in a AddOnMaterial
>> Block Transmission	(300A,0102)	2C	Transmission through the block (between 0 and 1) at the beam energy specified by the Nominal Beam Energy (300A,0114) of the first Control Point of the Control Point Sequence (300A,0111). Required if Block Sequence (300A,00F4) is sent and Material ID (300A,00E1) is zero length. See C.8.8.14.4.	Export only: depends on Energy Mode and Add-On Material
>> Block Number of Points	(300A,0104)	2C	Number of (x,y) pairs defining the block edge. Required if Block Sequence (300A,00F4) is sent.	Export only: Contour.NPoints
>> Block Data	(300A,0106)	2C	A data stream of (x,y) pairs which comprise the block edge. The number of pairs shall be equal to Block Number of Points (300A,0104), and the vertices shall be interpreted as a closed polygon. Coordinates are projected onto the machine isocentric plane in the IEC BEAM LIMITING DEVICE coordinate system (mm). Required if Block Sequence (300A,00F4) is sent. See Note 4.	Read from or written to Points in a Contour

Attribute Name	Tag	T	Description	Mapping
> Applicator Sequence	(300A,0107)	3	Introduces sequence of Applicators associated with Beam. Only a single item shall be permitted in this sequence.	Port Film: Whole applicator sequence is not used.
>> Applicator ID	(300A,0108)	1C	User or machine supplied identifier for Applicator. Required if Applicator Sequence (300A,0107) is sent.	Read from or written to Id in a AddOn
>> Applicator Type	(300A,0109)	1C	Type of Applicator. Required if Applicator Sequence (300A,0107) is sent. Defined Terms: ELECTRON_SQUARE = ELECTRON_square electron applicator ELECTRON_RECT = ELECTRON_rectangular electron applicator ELECTRON_CIRC = ELECTRON_circular electron applicator ELECTRON_SHORT = ELECTRON_short electron applicator ELECTRON_OPEN = ELECTRON_open (dummy) electron applicator INTRAOPERATIVE = intraoperative (custom) applicator STEREOTACTIC = stereotactic applicator	Export only: ELECTRON_SQUARE if RectangularFlag is set ELECTRON_RECT if RectangularFlag is set and FieldSizeX <> FieldSizeY ELECTRON_CIRC if RectangularFlag is set and FieldSizeX is defined ELECTRON_OPEN in all other cases
>> Applicator Description	(300A,010A)	3	User-defined description for Applicator.	Export only: AddOn.Comment
> Final Cumulative Meterset Weight	(300A,010E)	1C	Value of Cumulative Meterset Weight (300A,0134) for final Control Point in Control Point Sequence (300A,0111). Required if Cumulative Meterset Weight is non-null in Control Points specified within Control Point Sequence (300A,0111). See C.8.8.14.1.	Import: used for consistency checks Export: MetersetWeight from last control point of field
> Number of Control Points	(300A,0110)	1	Number of control points in Beam.	Port Film: 2
> Control Point Sequence	(300A,0111)	1	Introduces sequence of machine configurations describing treatment beam. Two or more items may be included in this sequence. See C.8.8.14.5 and C.8.8.14.6.	

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Attribute Name	Tag	T	Description	Mapping
>> Control Point Index	(300A,0112)	1C	Index of current Control Point, starting at 0 for first Control Point. Required if Control Point Sequence (300A, 0111) is sent.	Treatment Beams: Incrementing starting with 0 Port Film: First control point: 0 Last control point: 1
>> Cumulative Meterset Weight	(300A,0134)	2C	Cumulative weight to current control point. Cumulative Meterset Weight for the first item in Control Point Sequence shall always be zero. Cumulative Meterset Weight for the final item in Control Point Sequence shall always be equal to Final Cumulative Meterset Weight. Required if Control Point Sequence (300A,0111) is sent. See C.8.8.14.1.	ControlPoint.MetersetWeight Port Film: First control point: 0 Last control point: 100
>> Referenced Dose Reference Sequence	(300C,0050)	3	Introduces a sequence of Dose References for current Beam. One or more items may be included in this sequence.	Port Film: Value of first control point of related beam
>>> Referenced Dose Reference Number	(300C,0051)	1C	Uniquely identifies Dose Reference specified by Dose Reference Number (300A,0012) in Dose Reference Sequence (300A,0010) in RT Prescription Module. Required if Referenced Dose Reference Sequence (300C,0050) is sent.	DoseContribution.DicomSeqNumber Port Film: Value of first control point of related beam
>>> Cumulative Dose Reference Coefficient	(300A,010C)	2C	Coefficient used to calculate cumulative dose contribution from this Beam to the referenced Dose Reference at the current Control Point. Required if Referenced Dose Reference Sequence (300C,0050) is sent. See C.8.8.14.7.	
>> Nominal Beam Energy	(300A,0114)	3	Nominal Beam Energy at control point (MV/MeV).	EnergyMode.Energy Port Film: SequenceImage.DevEnergy if defined, else if related beam is a photon beam then value of related beam else default energy of ExternalBeam.

Attribute Name	Tag	T	Description	Mapping
>> Dose Rate Set	(300A,0115)	3	Dose Rate to be set on treatment machine for segment beginning at current control point (e.g. MU/min).	Field.DoseRate Port Film: SequenceImage.DevDoseRate if defined, else if related beam is a photon beam then value of related beam else default dose rate of ExternalBeam.
>> Wedge Position Sequence	(300A,0116)	3	Introduces sequence of Wedge positions for current control point. One or more items may be included in this sequence.	
>>> Referenced Wedge Number	(300C,00C0)	1C	Uniquely references Wedge described by Wedge Number (300A,00D2) in Wedge Sequence (300A,00D1). Required if Wedge Position Sequence (300A,0116) is sent.	
>>> Wedge Position	(300A,0118)	1C	Position of Wedge at current Control Point. Required if Wedge Position Sequence (300A,0116) is sent.Enumerated Values: IN OUT	
>> Beam Limiting Device Position Sequence	(300A,011A)	1C	Introduces sequence of beam limiting device (collimator) jaw or leaf (element) positions. Required for first item of Control Point Sequence, or if Beam Limiting Device changes during Beam. One or more items may be included in this sequence.	

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Attribute Name	Tag	T	Description	Mapping
>>> RT Beam Limiting Device Type	(300A,00B8)	1C	Type of beam limiting device (collimator). The value of this attribute shall correspond to RT Beam Limiting Device Type (300A,00B8) defined in an item of Beam Limiting Device Sequence (300A,00B6). Required if Beam Limiting Device Position Sequence (300A,011A) is sent.Enumerated Values: X = symmetric jaw pair in IEC X direction Y = symmetric jaw pair in IEC Y direction ASYMX = asymmetric jaw pair in IEC X direction ASYMY = asymmetric pair in IEC Y direction MLCX = multileaf (multi-element) jaw pair in IEC X direction MLCY = multileaf (multi-element) jaw pair in IEC Y direction	Collimator: Type X / Y or ASYMX / ASYMY depending on value of Field.CollMode MLC: MLCX if MLC.Rotation = 0 MLCY if MLC.Rotation = 90
>>> Leaf/Jaw Positions	(300A,011C)	1C	Positions of beam limiting device (collimator) leaf (element) or jaw pairs (in mm) in IEC BEAM LIMITING DEVICE coordinate axis appropriate to RT Beam Limiting Device Type (300A,00B8), e.g. Xaxis for MLCX, Y-axis for MLCY. Contains 2N values, where N is the Number of Leaf/Jaw Pairs (300A,00BC) in Beam Limiting Device Sequence (300A,00B6). Values shall be listed in IEC leaf (element) subscript order 101, 102, ... 1N, 201, 202, ... 2N. Required if Beam Limiting Device Position Sequence (300A,011A) is sent. See Note 2.	
>> Gantry Angle	(300A,011E)	1C	Gantry angle of radiation source, i.e. orientation of IEC GANTRY coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees). Required for first item of Control Point Sequence, or if Gantry Angle changes during Beam.	

Attribute Name	Tag	T	Description	Mapping
>> Gantry Rotation Direction	(300A,011F)	1C	Direction of Gantry Rotation when viewing gantry from isocenter, for segment following Control Point. Required for first item of Control Point Sequence, or if Gantry Rotation Direction changes during Beam. See C.8.8.14.8.Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	Field.GantryRtnDirection Value must not change between control points. Port Film: NONE
>> Beam Limiting Device Angle	(300A,0120)	1C	Beam Limiting Device angle, i.e. orientation of IEC BEAM LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, or if Beam Limiting Device Angle changes during Beam.	Field.CollRtn IT Daemon export: If values are not defined then "IT undefined value" (88888888) will be sent. Port Film: Value of first control point of related beam
>> Beam Limiting Device Rotation Direction	(300A,0121)	1C	Direction of Beam Limiting Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	Export only: NONE Value must not change between control points. Port Film: Value of first control point of related beam
>> Patient Support Angle	(300A,0122)	1C	Patient Support angle, i.e. orientation of IEC PATIENT SUPPORT (turntable) coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees). Required for first item of Control Point Sequence, or if Patient Support Angle changes during Beam.	Field.PatientSupportAngle Value must not change between control points. Port Film: Value of first control point of related beam

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Attribute Name	Tag	T	Description	Mapping
>> Patient Support Rotation Direction	(300A,0123)	1C	Direction of Patient Support Rotation when viewing table from above, for segment following Control Point. Required for first item of Control Point Sequence, or if Patient Support Rotation Direction changes during Beam. See C.8.8.14.8.Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	Export only: NONE Value must not change between control points. IT Daemon export: If values are not defined then "IT undefined value" (88888888) will be sent. Port Film: Value of first control point of related beam
>> Table Top Eccentric Axis Distance	(300A,0124)	3	Distance (positive) from the IEC PATIENT SUPPORT vertical axis to the IEC TABLE TOP ECCENTRIC vertical axis (mm).	ExternalBeam.TableTopEccentricDistance must not change between control points. Port Film: Value of first control point of related beam
>> Table Top Eccentric Angle	(300A,0125)	1C	Table Top (non-isocentric) angle, i.e. orientation of IEC TABLE TOP ECCENTRIC coordinate system with respect to IEC PATIENT SUPPORT coordinate system (degrees). Required for first item of Control Point Sequence, or if Table Top Eccentric Angle changes during Beam.	Field.TableTopEccentricAngleValue must not change between control points. Port Film: Value of first control point of related beam
>> Table Top Eccentric Rotation Direction	(300A,0126)	1C	Direction of Table Top Eccentric Rotation when viewing table from above, for segment following Control Point. Required for first item of Control Point Sequence, or if Table Top Eccentric Rotation Direction changes during Beam. See C.8.8.14.8.Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	Export only: NONE Value must not change between control points. Port Film: Value of first control point of related beam

Attribute Name	Tag	T	Description	Mapping
>> Table Top Vertical Position	(300A,0128)	2C	Table Top Vertical position in IEC TABLE TOP coordinate system (mm). Required for first item of Control Point Sequence, or if Table Top Vertical Position changes during Beam. See C.8.8.14.6.	Field.CouchVrt Value must not change between control points. Port Film: Value of first control point of related beam
>> Table Top Longitudinal Position	(300A,0129)	2C	Table Top Longitudinal position in IEC TABLE TOP coordinate system (mm). Required for first item of Control Point Sequence, or if Table Top Longitudinal Position changes during Beam. See C.8.8.14.6.	Field.CouchLng Value must not change between control points. Port Film: Value of first control point of related beam
>> Table Top Lateral Position	(300A,012A)	2C	Table Top Lateral position in IEC TABLE TOP coordinate system (mm). Required for first item of Control Point Sequence, or if Table Top Lateral Position changes during Beam. See C.8.8.14.6.	Field.CouchLat Value must not change between control points. Port Film: Value of first control point of related beam
>> Virtual SAD	(3243,101A)	3	The virtual SAD for this control point. This SAD denotes the physical focus of the beam if it is different than the nominal Source Axis Distance (300A,00B4).	MPlanFieldProton.VirtualSAD or MTreatFieldProton.VirtualSAD Value must not change between control points.
>> Table Top Roll Angle	(3243,1016)	3	Table Top Roll Angle. Not yet part of the IEC system.	Not Used
>> Table Top Pitch Angle	(3243,1017)	3	Table Top Pitch Angle. Not yet part of the IEC system.	Not Used
>> Isocenter Position	(300A,012C)	2C	Isocenter coordinates (x,y,z) in the patient based coordinate system described in C.7.6.2.1.1 (mm). Required for first item of Segment Control Point Sequence, or if Segment Isocenter Position changes during Beam.	

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Attribute Name	Tag	T	Description	Mapping
>> Surface Entry Point	(300A,012E)	3	<p>Patient surface entry point coordinates (x,y,z) in the patient based coordinate system described in C.7.6.2.1.1 (mm).</p>	Not Implemented
>> Source to Surface Distance	(300A,0130)	3	<p>Source to Patient Surface distance (mm).</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. Beam Number (300A,00C0) is provided to link related information across modules, and its value should not be required to have any real-world interpretation. Beam Name (300A, 00C2), a Type 3 attribute, is intended to store the primary beam identifier (often referred to as "field identifier"). Beam Description (300A,00C3), a Type 3 attribute, is intended to store additional beam identifying information (often referred to as "field name"). Equipment supporting both these attributes should state this clearly in the Conformance Statement. 2. The DICOM standard does not support the transmission of treatment unit modeling information such as depth doses and beam profiles. 3. Implementors should take note that Leaf Position Boundaries (300A,00BE) are the positions of the mechanical boundaries (projected to the isocentric plane) between beam limiting device (collimator) leaves, fixed for a given beam limiting device (collimator). Leaf/Jaw Positions (300A,011C) are values specific to a given beam control point, specifying the beam limiting device (collimator) leaf (element) openings. 4. Block coordinates may not be transmitted when such data is not available from the transmitting system. However, the receiving system may not have internal mechanisms to use or store such data. For example, a plan sent from an treatment planning system to a Record and Verify (R&V) system will contain the block data for blocked beams. Subsequent transfer of beam data from the R&V system may omit this data since the R&V system may not have stored it. 	<p>Field.SSD</p> <p>Value must not change between control points.</p>

Attribute Name	Tag	T	Description	Mapping
>> Machine Settings Data Length	(3243,1012)	1C	5. Refer to C.8.8.14.5 for examples of STATIC and DYNAMIC Beam Type. Note that beams having Wwedge Type = DYNAMIC as the only moving parameter are not considered DYNAMIC according to the definition of Beam Type (300A,00C4). The length in bytes of the binary data stream in the tag Machine Settings Data (3243,1013). Required, if Machine Settings Data (3243,1013) is sent.	
>> Machine Settings Data	(3243,1013)	1C	A binary data stream, which is used by the delivery machine to define the machine specific parameters needed at this control point. Required if RadiationType (300A,00C6) is PROTON	Read from or written to MachineBinData in a ControlPoint

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Attribute Name	Tag	T	Description	Mapping
Brachy Treatment Technique	(300A,0200)	1	Type of brachytherapy treatmenttechnique. Enumerated Values: INTRALUMENARY INTRACAVITARY INTERSTITIAL CONTACT INTRAVASCULAR PERMANENT See C.8.8.15.1.	Read from or written to TreatmentTechnique in a PlanSetup
Brachy Treatment Type	(300A,0202)	1	Type of brachytherapy treatment. Defined Terms: MANUAL = manually positioned HDR = High dose rate MDR = Medium dose rate LDR = Low dose rate PDR = Pulsed dose rate	BrachyUnit.DoseRateMode unless BrachyUnit.MachineModel is MANUAL
Treatment Machine Sequence	(300A,0206)	1	Introduces single item sequence describing treatment machine to be used for treatment delivery. Only one item may be included in this sequence.	

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Attribute Name	Tag	T	Description	Mapping
> Treatment Machine Name	(300A,00B2)	2	User-defined name identifying treatment machine to be used for treatment delivery.	Read from or written to ID in a BrachyUnit
> Manufacturer	(0008,0070)	3	Manufacturer of the equipment to be used for treatment delivery.	Read from or written to ManufacturerName in a BrachyUnit
> Institution Name	(0008,0080)	3	Institution where the equipment is located that is to be used for treatment delivery.	Read from or written to ID in a Hospital
> Institution Address	(0008,0081)	3	Mailing address of the institution where the equipment is located that is to be used for treatment delivery.	Read from or written to HospitalLocation in a Hospital
> Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment is located that is to be used for treatment delivery.	Not Used
> Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that is to be used for treatment delivery.	Read from or written to MachineModel in a BrachyUnit
> Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that is to be used for treatment delivery.	Read from or written to ManufacturerSerNo in a BrachyUnit
Source Sequence	(300A,0210)	1	Introduces sequence of Sources to be used within Application Setups. One or more items may be included in this sequence.	All unique RadioActiveSource connected to BrachyFields in the PlanSetup
> Source Number	(300A,0212)	1	Identification number of the Source. The value of Source Number (300A,0212) shall be unique within the RT Plan in which it is created.	
> Source Type	(300A,0214)	1	Type of Source. Defined Terms: POINT LINE CYLINDER SPHERE	Read from or written to SourceType in a RadioactiveSourceModel
> Source Manufacturer	(300A,0216)	3	Manufacturer of Source.	Read from or written to Manufacturer in a RadioactiveSourceModel
> Active Source Diameter	(300A,0218)	3	Diameter of active Source (mm).	RadioactiveSourceModel.ActiveSize.x
> Active Source Length	(300A,021A)	3	Length of active Source (mm).	RadioactiveSourceModel.ActiveSize.z
> Material ID	(300A,00E1)	3	User-supplied identifier for encapsulation material of active Source.	Not Used

Attribute Name	Tag	T	Description	Mapping
> Source Encapsulation Nominal Thickness	(300A,0222)	3	Nominal thickness of wall of encapsulation (mm).	
> Source Encapsulation Nominal Transmission	(300A,0224)	3	Nominal transmission through wall of encapsulation (between 0 and 1).	
> Source Isotope Name	(300A,0226)	1	Name of Isotope.	Import: RadioactiveSource.RadioactiveSourceModelName Export: RadioactiveSource.Id
> Source Isotope Half Life	(300A,0228)	1	Half-life of Isotope (days).	Read from or written to HalfTime in a RadioactiveSourceModel
> Reference Air Kerma Rate	(300A,022A)	1	Air Kerma Rate in air of Isotope specified at Air Kerma Rate Reference Date (300A,022C) and Air Kerma Rate Reference Time (300A,022E) (in 'Gy h-1 at 1 m).	Read from or written to SourceStrength in a RadioactiveSource
> Air Kerma Rate Reference Date	(300A,022C)	1	Reference date of Reference Air Kerma Rate (300A,022A) of Isotope.	Read from or written to TreatmentTime in a BrachyField
> Air Kerma Rate Reference Time	(300A,022E)	1	Reference time of Air Kerma Rate (300A,022A) of Isotope.	Read from or written to TreatmentTime in a BrachyField
Application Setup Sequence	(300A,0230)	1	Introduces sequence of Application Setups for current RT Plan. One or more items may be included in this sequence.	
> Application Setup Type	(300A,0232)	1	Type of Application Setup. Defined Terms: FLETCHER_SUIT DELCLOS BLOEDORN JOSLIN_FLYNN CHANDIGARH MANCHESTER HENSCHKE NASOPHARYNGEAL OESOPHAGEAL ENDOBRONCHIAL SYED_NEBLETT ENDORECTAL PERINEAL	PlanSetup.ApplicationSetupType Additional Varian defined term: UNDEFINED
> Application Setup Number	(300A,0234)	1	Identification number of the Application Setup. The value of Application Setup Number (300A,0234) shall be unique within the RT Plan in which it is created.	1

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Attribute Name	Tag	T	Description	Mapping
> Application Setup Name	(300A,0236)	3	User-defined name for Application Setup.	Read from or written to Id in a BrachyField
> Application Setup Manufacturer	(300A,0238)	3	Manufacturer of Application Setup.	Empty string
> Template Number	(300A,0240)	3	Identification number of the Template. The value of Template Number (300A,0240) shall be unique within the Application Setup in which it is created.	Not Used
> Template Type	(300A,0242)	3	User-defined type for Template Device.	Not Used
> Template Name	(300A,0244)	3	User-defined name for Template Device.	Not Used
> Referenced Reference Image Sequence	(300C,0042)	3	Introduces sequence of reference images used for validation of current Application Setup. One or more items may be included in this sequence.	
>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Reference Image Sequence (300C,0042) is sent.	
>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Reference Image Sequence (300C,0042) is sent.	
> Total Reference Air Kerma	(300A,0250)	1	Total Reference Air Kerma for current Application Setup, i.e. the product of Air Kerma Rate of all Sources in all Channels with their respective Channel Times (µGy at 1 m).	Total of all RadioactiveSourceStrengths multiplied with dwell times
> Brachy Accessory Device Sequence	(300A,0260)	3	Introduces sequence of Brachy Accessory Devices associated with current Application Setup. One or more items may be included in this sequence.	Not Used
>> Brachy Accessory Device Number	(300A,0262)	2C	Identification number of the Brachy Accessory Device. The value of Brachy Accessory Device Number (300A,0262) shall be unique within the Application Setup in which it is created. Required if Brachy Accessory Device Sequence (300A,0260) is sent.	Not Used

Attribute Name	Tag	T	Description	Mapping
>> Brachy Accessory Device ID	(300A,0263)	2C	User or machine supplied identifier for Brachy Accessory Device. Required if Brachy Accessory Device Sequence (300A,0260) is sent.	Not Used
>> Brachy Accessory Device Type	(300A,0264)	1C	Type of Brachy Accessory Device. Required if Brachy Accessory Device Sequence (300A,0260) is sent. Defined Terms: SHIELD DILATATION MOLD PLAQUE FLAB	Not Used
>> Brachy Accessory Device Name	(300A,0266)	3	User-defined name for Brachy Accessory Device.	Not Used
>> Material ID	(300A,00E1)	3	User-supplied identifier for material of Brachy Accessory Device. See Note.	Not Used
>> Brachy Accessory Device Nominal Thickness	(300A,026A)	3	Nominal thickness of Brachy Accessory Device (mm).	Not Used
>> Brachy Accessory Device Nominal Transmission	(300A,026C)	3	Nominal Transmission through Brachy Accessory Device (between 0 and 1).	Not Used
>> Referenced ROI Number	(3006,0084)	2C	Uniquely identifies ROI representing the Brachy Accessory specified by ROI Number (3006,0022) in Structure Set ROI Sequence (3006,0020) in Structure Set Module within RT Structure Set referenced by Referenced RT Structure Set Sequence (300C,0060) in RT General Plan Module. Required if Brachy Accessory Device Sequence (300A,0260) is sent. See C.8.8.15.2.	Not Used
> Channel Sequence	(300A,0280)	1	Introduces sequence of Channels for current Application Setup. One or more items may be included in this sequence.	
>> Channel Number	(300A,0282)	1	Identification number of the Channel. The value of Channel Number (300A,0282) shall be unique within the Application Setup in which it is created.	Read from or written to ChannelNumber in a BrachyField

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Attribute Name	Tag	T	Description	Mapping
>> Channel Length	(300A,0284)	2	Length of Channel (mm). See C.8.8.15.3.	Read from or written to ApplicatorLength in a BrachyField
>> Channel Total Time	(300A,0286)	1	Total amount of time between first and final Control Points of the Brachy Control Point Sequence (300A,02D0) for current Channel (sec). Channel Total Time calculation is based upon the Reference Air Kerma Rate (300A,022A) of the Referenced Source Number (300C,000E).	Total time of dwells
>> Source Movement Type	(300A,0288)	1	Type of Source movement. See C.8.8.15.4. Defined Terms: STEPWISE FIXED OSCILLATING UNIDIRECTIONAL	Read from or written to SourceMovementType in a BrachyUnit
>> Number of Pulses	(300A,028A)	1C	Number of Pulses per fraction for current Channel. Required if Brachy Treatment Type (300A,0202) is PDR.	Read from or written to NumberOfFractions in a Fractionation
>> Pulse Repetition Interval	(300A,028C)	1C	Pulse repetition interval (sec) for current Channel. Required if Brachy Treatment Type (300A,0202) is PDR.	Read from or written to PulseInterval in a BrachyUnit
>> Source Applicator Number	(300A,0290)	3	Identification number of the Source Applicator. The value of Source Applicator Number (300A,0290) shall be unique within the Channel in which it is created.	1
>> Source Applicator ID	(300A,0291)	2C	User or machine supplied identifier for Source Applicator. Required if Source Applicator Number (300A,0290) is sent.	Read from or written to ID in a BrachyField
>> Source Applicator Type	(300A,0292)	1C	Type of Source Applicator. Required if Source Applicator Number (300A,0290) is sent. Defined Terms: FLEXIBLE RIGID	BrachyApplicator.BrachyApplicatorType if BrachyField has BrachyApplicator otherwise RIGID
>> Source Applicator Name	(300A,0294)	3	User-defined name for Source Applicator.	Read from or written to Name in a BrachyField
>> Source Applicator Length	(300A,0296)	1C	Length of Source Applicator (mm), defined as the distance between the connector of the applicator and the distal-most position of the source. Required if Source Applicator Number (300A,0290) is sent.	Read from or written to ApplicatorLength in a BrachyField
>> Source Applicator Manufacturer	(300A,0298)	3	Manufacturer of Source Applicator.	Not Used

Attribute Name	Tag	T	Description	Mapping
>> Material ID	(300A,00E1)	3	User-supplied identifier for material of Source Applicator wall. See Note.	Not Used
>> Source Applicator Wall Nominal Thickness	(300A,029C)	3	Nominal Thickness of Source Applicator wall (mm).	Not Used
>> Source Applicator Wall Nominal Transmission	(300A,029E)	3	Nominal Transmission through Source Applicator wall (between 0 and 1).	Not Used
>> Source Applicator Step Size	(300A,02A0)	1C	Distance of path along channel (in mm) between adjacent (potential) dwell positions. Required if Source Movement Type (300A,0288) is STEPWISE.	Read from or written to StepSize in a BrachyField
>> Referenced ROI Number	(3006,0084)	2C	Uniquely identifies ROI representing the Source Applicator specified by ROI Number (3006,0022) in Structure Set ROI Sequence (3006,0020) in Structure Set Module within RT Structure Set referenced by Referenced RT Structure Set Sequence (300C,0060) in RT General Plan Module. Required if Source Applicator Number (300A,0290) is sent. See C.8.8.15.2.	DicomSeqNumber of associated Structure object
>> Transfer Tube Number	(300A,02A2)	2	Identification number of the Transfer Tube. The value of Transfer Tube Number (300A,02A2) shall be unique within the Channel in which it is created.	Not Used
>> Transfer Tube Length	(300A,02A4)	2C	Length of Transfer Tube of current afterloading Channel (mm). Required if value Transfer Tube Number (300A,02A2) is non-null.	Not Used
>> Channel Shield Sequence	(300A,02B0)	3	Introduces sequence of Channel Shields associated with current Channel. One or more items may be included in this sequence. See C.8.8.15.5.	Not Used
>>> Channel Shield Number	(300A,02B2)	1C	Identification number of the Channel Shield. The value of Channel Shield Number (300A,02B2) shall be unique within the Channel in which it is created. Required if Channel Shield Sequence (300A,02B0) is sent.	Not Used

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Attribute Name	Tag	T	Description	Mapping
>>> Channel Shield ID	(300A,02B3)	2C	User or machine supplied identifier for Channel Shield. Required if Channel Shield Sequence (300A,02B0) is sent.	Not Used
>>> Channel Shield Name	(300A,02B4)	3	User-defined name for Channel Shield.	Not Used
>>> Material ID	(300A,00E1)	3	User-supplied identifier for material of Channel Shield. See Note.	Not Used
>>> Channel Shield Nominal Thickness	(300A,02B8)	3	Nominal Thickness of Channel Shield (mm).	Not Used
>>> Channel Shield Nominal Transmission	(300A,02BA)	3	Nominal Transmission of Channel Shield (between 0 and 1).	Not Used
>>> Referenced ROI Number	(3006,0084)	2C	Uniquely identifies ROI representing the Channel Shield specified by ROI Number (3006,0022) in Structure Set ROI Sequence (3006,0020) in Structure Set Module within RT Structure Set referenced by Referenced RT Structure Set Sequence (300C,0060) in RT General Plan Module. Required if Channel Shield Sequence (300A,02B0) is sent. See C.8.8.15.2.	Not Used
>> Referenced Source Number	(300C,000E)	1	Uniquely identifies the referenced Source within the Source Sequence (300A,0210) for current Application Setup.	Import: RadioactiveSource.SourceNumber Export: 1
>> Number of Control Points	(300A,0110)	1	Number of control points in Channel. For an N-segment Channel there will be 2N (stepwise movement) or N+1 (continuous movement) control points.	2 * BrachyField.NumberOfSources
>> Final Cumulative Time Weight	(300A,02C8)	1C	Value of Cumulative Time Weight (300A,02D6) for final Control Point in Brachy Control Point Sequence (300A,02D0). Required if Cumulative Time Weight (300A,02D6) is non-null in Control Points specified within Brachy Control Point Sequence (300A,02D0). See C.8.8.15.6.	Cumulative dwell time in BrachyField

Attribute Name	Tag	T	Description	Mapping
>> Brachy Control Point Sequence	(300A,02D0)	1	Introduces sequence of machine configurations describing this Channel. Two or more items may be included in this sequence. See C.8.8.15.7.	
>>> Control Point Index	(300A,0112)	1	Index of current Control Point, starting at 0 for first Control Point.	
>>> Cumulative Time Weight	(300A,02D6)	2	Cumulative time weight to current Control Point (where the weighting is proportional to time values delivered). Cumulative Time Weight for first item in Brachy Control Point Sequence (300A,02D0) is always zero. See C.8.8.15.6 and C.8.8.15.8.	Cumulative dwell time before current control point
>>> Control Point Relative Position	(300A,02D2)	1	Distance between current Control Point Position and the distal-most possible Source position in current Channel (mm). See C.8.8.15.9.	Read from or written to SourcePosition in a BrachyField
>>> Control Point 3D Position	(300A,02D4)	3	Coordinates (x, y, z) of Control Point in the patient based coordinate system described in C.7.6.2.1.1 (mm). See C.8.8.15.10.	Current center of source position in DICOM space
>>> Brachy Referenced Dose Reference Sequence	(300C,0055)	3	Introduces a sequence of Dose References for current Channel. One or more items may be included in this sequence.	Not Used
>>>> Referenced Dose Reference Number	(300C,0051)	1C	Uniquely identifies Dose Reference described in Dose Reference Sequence. (300A,0010) within RT Prescription Module of current RT Plan. Required if Brachy Referenced Dose Reference Sequence (300C,0055) is sent.	Not Used
>>>> Cumulative Dose Reference Coefficient	(300A,010C)	1C	Coefficient used to calculate cumulative dose contribution from this Source to the referenced Dose Reference at the current Control Point. Required if Brachy Referenced Dose Reference Sequence (300C,0055) is sent. See C.8.8.15.11. Note: Material ID (300A,00E1) may also be specified within a referenced ROI, if an ROI is used to describe the object.	Not Used

A 3.10 Treatment Record

A 3.10.1 RT General Treatment Record – C.8.8.17

Attribute Name	Tag	T	Description	Mapping
Instance Number	(0020,0013)	1	Instance number identifying this particular instance of the object.	1
Treatment Date	(3008,0250)	2	Date when current fraction was delivered, or Date last fraction was delivered in case of RT Treatment Summary Record IOD. See Note.	Read from or written to TreatmentDate Time in a TreatmentFieldHistory
Treatment Time	(3008,0251)	2	Time when current fraction was delivered (begun), or Time last fraction was delivered (begun) in case of RT Treatment Summary Record IOD. See Note.	Read from or written to TreatmentDate Time in a TreatmentFieldHistory
Referenced RT Plan Sequence	(300C,0002)	2	A sequence which provides reference to a RT Plan SOP Class/Instance pair. Only a single item shall be permitted in this Sequence.	Plan to which this treatment record belongs
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced RT Plan Sequence (300C,0002) is sent.	Import: If this tag does not contain the RT Plan Storage UID then a warning will be generated
> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced RT Plan Sequence (300C,0002) is sent.	Read from or written to PlanUID in a PlanConceptCorrelation
Referenced Treatment Record Sequence	(3008,0030)	3	A sequence which provides reference to RT Treatment Record SOP Class/Instance pairs to which the current RT Treatment Record is significantly related. The sequence may contain one or more items.	Not Used
> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Treatment Record Sequence (3008,0030) is sent.	Not Used

Attribute Name	Tag	T	Description	Mapping
> Referenced SOP Instance UID	(0008,1155)	1C	<p>Uniquely identifies the referenced SOP Instance. Required if Referenced Treatment Record Sequence (3008,0030) is sent.</p> <p>Note: Treatment Date (3008,0250) and Treatment Time (3008,0251) can be used to chronologically order a sequence of treatments, where each treatment is represented by an instance of a RT Beams Treatment Record or RT Brachy Treatment Record. In the case of a RT Treatment Summary Record, it can be used to identify the period for which the treatment summary is valid. Therefore, implementers are strongly advised to include values for these attributes whenever possible.</p>	Not Used

A 3.10.2 RT Treatment Machine Record – C.8.8.18

Attribute Name	Tag	T	Description	Mapping
Treatment Machine Sequence	(300A,0206)	1	Introduces sequence describing treatment machine used for treatment delivery. Only a single item shall be permitted in this Sequence.	
> Treatment Machine Name	(300A,00B2)	2	User-defined name identifying treatment machine used for treatment delivery.	Machine.Id of associated treatment machine
> Manufacturer	(0008,0070)	2	Manufacturer of the equipment used for treatment delivery.	Read from or written to ManufacturerName in a Machine
> Institution Name	(0008,0080)	2	Institution where the equipment is located that was used for treatment delivery.	Read from or written to Id in a Hospital
> Institution Address	(0008,0081)	3	Mailing address of the institution where the equipment is located that was used for treatment delivery.	Not Implemented
> Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment is located that was used for treatment delivery.	Read from or written to Id in a Department
> Manufacturer's Model Name	(0008,1090)	2	Manufacturer's model name of the equipment used for treatment delivery.	Read from or written to MachineModel in a Machine

Attribute Name	Tag	T	Description	Mapping
> Device Serial Number	(0018,1000)	2	Manufacturer's serial number of the equipment used for treatment delivery.	Read from or written to ManufacturerSerNo in a Machine

A 3.10.3 RT Beams Session Record – C.8.8.21

Attribute Name	Tag	T	Description	Mapping
Operators' Name	(0008,1070)	2	Name of operator administering treatment session.	Read from or written to UserName1 in a TreatmentFieldHistory
Referenced Fraction Group Number	(300C,0022)	3	Identifier of Fraction Group within referenced RT Plan.	Read from or written to DicomSeqNumber in a Fractionation
Number of Fractions Planned	(300A,0078)	2	Total number of treatments (Fractions) planned for current Fraction Group.	Import: TreatmentFieldHistory.NoOfFractions Export: Fractionation.NoFractions
Primary Dosimeter Unit	(300A,00B3)	1	Measurement unit of machine dosimeter.Enumerated Values: MU = Monitor Unit MINUTE = minute	MINUTE if external beam type (ExternalBeam.ExternalBeamType) is 'Cobalt', MU otherwise.
Treatment Session Beam Sequence	(3008,0020)	1	Introduces sequence of Beams administered during treatment session. The sequence may contain one or more items.	
> Referenced Beam Number	(300C,0006)	3	References Beam specified by Beam Number (300A,00C0) in Beam Sequence (300A,00B0) in RT Beams Module within referenced RT Plan.	Read from or written to FieldGroupNumber in a TreatmentFieldHistory
> Treatment Session Beam extended interface	(3261,102A)		XML blob for the RT Beams Session Record Extended interface	Contains information in XML format about dose overrides, tray specifications and additional override user names.
> Beam Name	(300A,00C2)	3	User-defined name for delivered Beam.	Read from or written to FieldId in a TreatmentFieldHistory
> Beam Secondary Name	(3243,1009)		User-defined secondary name for delivered Beam.	Read from or written to FieldName in a TreatmentFieldHistory

Attribute Name	Tag	T	Description	Mapping
> Beam Description	(300A,00C3)	3	User-defined description for delivered Beam.	Read from or written to HistoryNote in a TreatmentFieldHistory
> Beam Type	(300A,00C4)	1	Motion characteristic of delivered Beam.Enumerated Values: STATIC = all beam parameters remain unchanged during delivery DYNAMIC = one or more beam parameters changes during delivery	
> Radiation Type	(300A,00C6)	1	Particle type of delivered Beam. Defined Terms: PHOTON, ELECTRON, NEUTRON, PROTON.	TreatmentFieldHistory.EnergyMode PHOTON = 'X' ELECTRON = 'E' PROTON = 'P'
> High Dose Technique Type	(300A,00C7)	1C	Type of high-dose treatment technique. Defined Terms: NORMAL = Standard treatment TBI = Total Body Irradiation HDR = High Dose Rate Required if treatment technique requires a dose that would normally require overriding of treatment machine safety controls.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Technique	(3243,1006)	3	Treatment Technique of this Beam for PROTON beams. Defined Terms: DOUBLESCATTERING SINGLESCATTERING UNIFORM_SCANNING MODULAT_SCANNING STATIC Note, that the definition of DYNAMIC in (300A,00C4) is completely independent from the definitions in here. Required if RadiationType (300A,00C6) is PROTON	Read from or written to Technique in a TreatmentFieldHistory
> Referenced Verification Image Sequence	(300C,0040)	3	Introduces sequence of verification images obtained during delivery of current beam. The sequence may contain one or more items.	Number of items in this sequence is assigned to TreatmentFieldHstry.NoOfImage
>> Referenced SOP Class UID	(0008,1150)	1C	Uniquely identifies the referenced SOP Class. Required if Referenced Verification Image Sequence (300C,0040) is sent.	Not Used
>> Referenced SOP Instance UID	(0008,1155)	1C	Uniquely identifies the referenced SOP Instance. Required if Referenced Verification Image Sequence (300C,0040) is sent.	Not Used
>> Start Meterset	(3008,0078)	3	Cumulative Meterset Weight within Beam referenced by Referenced Beam Number at which image acquisition starts.	Not Implemented
>> End Meterset	(3008,007A)	3	Cumulative Meterset Weight within Beam referenced by Referenced Beam Number at which image acquisition ends.	Not Implemented
> Referenced Measured Dose Reference Sequence	(3008,0080)	3	Introduces sequence of doses measured during treatment delivery for current Beam. The sequence may contain one or more items.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Referenced Dose Reference Number	(300C,0051)	1C	Uniquely references Dose Reference specified by Dose Reference Number (300A,0012) in Dose Reference Sequence (300A,0010) in RT Prescription Module of referenced RT Plan. Required if Referenced Measured Dose Reference Sequence (3008,0080) is sent and Referenced Measured Dose Reference Number (3008,0082) is not sent. It shall not be present otherwise.	Not Implemented
>> Referenced Measured Dose Reference Number	(3008,0082)	1C	Uniquely references Measured Dose Reference specified by Measured Dose Reference Number (3008,0064) in Measured Dose Reference Sequence (3008,0010). Required if Referenced Measured Dose Reference Sequence (3008,0080) is sent and Referenced Dose Reference Number (300C, 0051) is not sent. It shall not be present otherwise.	Not Implemented
>> Measured Dose Value	(3008,0016)	1C	Measured Dose in units specified by Dose Units (3004,0002) in sequence referenced by Measured Dose Reference Sequence (3008,0010) or Dose Reference Sequence (300A,0010) in RT Prescription Module of referenced RT Plan as defined above. Required if Referenced Measured Dose Reference Sequence (3008,0080) is sent.	Not Implemented
> Referenced Calculated Dose Reference Sequence	(3008,0090)	3	Introduces sequence of doses estimated for each treatment delivery. The sequence may contain one or more items.	
>> Referenced Dose Reference Number	(300C,0051)	1C	Uniquely identifies Dose Reference specified by Dose Reference Number (300A, 0012) in Dose Reference Sequence (300A, 0010) in RT Prescription Module of referenced RT Plan. Required if Referenced Calculated Dose Reference Sequence (3008,0090) is sent and Referenced Calculated Dose Reference Number (3008,0092) is not sent.	DoseContribution.DicomSeqNumber Dose Contribution object of the reference point of the plan this treatment record is referencing.

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Attribute Name	Tag	T	Description	Mapping
>> Referenced Calculated Dose Reference Number	(3008,0092)	1C	Uniquely identifies Calculated Dose Reference specified by Calculated Dose Reference Number (3008,0072) within Calculated Dose Reference Sequence (3008,0070). Required if Referenced Calculated Dose Reference Sequence (3008,0090) is sent and Referenced Dose Reference Number (300C,0051) is not sent.	Not Implemented
>> Calculated Dose Reference Dose Value	(3008,0076)	1C	Calculated Dose (Gy). Required if Referenced Calculated Dose Reference Sequence (3008,0090) is sent.	Read from or written to ActualDose in a RefPointHistory
> Source-Axis Distance	(300A,00B4)	3	Radiation source to gantry rotation axis distance of the equipment that was used for beam delivery (mm).	Read from or written to SAD in a ExternalBeam
> Beam Limiting Device Leaf Pairs Sequence	(3008,00A0)	1	Introduces sequence of beam limiting device (collimator) jaw or leaf (element) leaf pair values. The sequence may contain one or more items.	
>> RT Beam Limiting Device Type	(300A,00B8)	1	Type of beam limiting device (collimator). Enumerated Values: X = symmetric jaw pair in IEC X direction Y = symmetric jaw pair in IEC Y direction ASYMX = asymmetric jaw pair in IEC X direction ASYMY = asymmetric pair in IEC Y direction MLCX = multileaf (multi-element) jaw pair in IEC X direction MLCY = multileaf (multi-element) jaw pair in IEC Y direction	Import: only one mic is supported If Type is MLCX -> Rotation of mlc must be 0 If Type is MLCY -> Rotation of mlc must be 90
>> Number of Leaf/Jaw Pairs	(300A,00BC)	1	Number of leaf (element) or jaw pairs (equal to 1 for standard beam limiting device jaws).	Export of MLC: Bank.NumberOfLeaves of MLC object
> Referenced Patient Setup Number	(300C,006A)	3	Uniquely identifies Patient Setup used within current beam, specified by Patient Setup Number (300A, 0182) within Patient Setup Sequence (300A, 0180) of RT Treatment Record.	Not Used

Attribute Name	Tag	T	Description	Mapping
> Number of Wedges	(300A,00D0)	1	Number of wedges associated with current delivered Beam.	
> Recorded Wedge Sequence	(3008,00B0)	1C	Introduces sequence of treatment wedges present during delivered Beam. Required if Number of Wedges (300A,00D0) is nonzero. The sequence may contain one or more items.	
>> Wedge Number	(300A,00D2)	3	Identification number of the Wedge. The value of Wedge Number (300A,00D2) shall be unique within the wedge sequence.	TreatmentFieldHistory.WedgeNumber1 or TreatmentFieldHistory.WedgeNumber2
>> Wedge Type	(300A,00D3)	2C	Type of wedge defined for delivered Beam. Required if Recorded Wedge Sequence (3008,00B0) is sent. Defined Terms: STANDARD = standard (static) wedge DYNAMIC = moving Beam Limiting Device (collimator) jaw simulating wedge MOTORIZED = single wedge which can be removed from beam remotely	TreatmentFieldHstry.AddOnSubType<n>
>> Wedge ID	(300A,00D4)	3	User-supplied identifier for wedge.	TreatmentFieldHistory.AddOnId<n>
>> Wedge Angle	(300A,00D5)	3	Nominal wedge angle delivered (degrees).	TreatmentFieldHistory.WedgeAngle, TreatmentFieldHistory.WedgeAngle2
>> Wedge Orientation	(300A,00D8)	3	Orientation of wedge, i.e. orientation of IEC WEDGE FILTER coordinate system with respect to IEC BEAM LIMITING DEVICE coordinate system (degrees).	TreatmentFieldHistory.WedgeDirection, TreatmentFieldHistory.WedgeDirection2
> Number of Compensators	(300A,00E0)	2	Number of compensators associated with current delivered Beam.	
> Recorded Compensator Sequence	(3008,00C0)	3	Introduces sequence of treatment compensators associated with current Beam. The sequence may contain one or more items.	

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Attribute Name	Tag	T	Description	Mapping
>> Referenced Compensator Number	(300C,00D0)	1C	Uniquely identifies compensator specified by Compensator Number (300A,00E4) within Beam referenced by Referenced Beam Number (300C,0006). Required if Recorded Compensator Sequence (3008,00C0) is sent.	Used to find compensator. Matched with Compensator.DicomSeqNumber.
>> Compensator Type	(300A,00EE)	2C	Type of compensator (if any). Required if Recorded Compensator Sequence (3008,00C0) is sent. Defined Terms: STANDARD = physical (static) compensator DYNAMIC = moving Beam Limiting Device (collimator) simulating compensator	Read from or written to AddOnSubType in a TreatmentFieldHistory
>> Compensator ID	(300A,00E5)	3	User-supplied identifier for compensator.	TreatmentFieldHstry.AddOnId<n>
> Number of Boli	(300A,00ED)	2	Number of boli used with current Beam.	
> Referenced Bolus Sequence	(300C,00B0)	3	Introduces sequence of boli associated with Beam. The sequence may contain one or more items.	Not Used
>> Referenced ROI Number	(3006,0084)	1C	Uniquely identifies ROI representing the bolus specified by ROI Number (3006,0022) in Structure Set ROI Sequence (3006,0020) in Structure Set Module within RT Structure Set IOD referenced by referenced RT Plan in Referenced RT Plan Sequence (300C,0002) in RT General Treatment Record Module. Required if Referenced Bolus Sequence (300C,00B0) is sent.	Not Used
> Number of Blocks	(300A,00F0)	2	Number of shielding blocks or Electron Inserts associated with Beam.	
> Recorded Block Sequence	(3008,00D0)	3	Introduces sequence of blocks associated with current Beam. The sequence may contain one or more items.	Import: Id of found block is saved to TreatmentFieldHistory.AddOnId<n>
>> Block Tray ID	(300A,00F5)	3	User-supplied identifier for block tray or Electron Insert.	Used for searching block; is matched to AddOn.Id
>> Referenced Block Number	(300C,00E0)	3	Uniquely identifies block specified by Block Number (300A,00FC) within Beam referenced by Referenced Beam Number (300C,0006).	Used for searching block; is matched to Block.DicomSeqNumber

Attribute Name	Tag	T	Description	Mapping
>> Block Name	(300A,00FE)	2C	User-defined name for block. Required if Recorded Block Sequence (3008,00D0) is sent.	Import: Used for searching block; is matched to Block.Id Export: TreatmentFieldHistory.AddOnId<n>
> Applicator Sequence	(300A,0107)	3	Introduces sequence of Applicators associated with Beam. Only a single item shall be permitted in this sequence.	
>> Applicator ID	(300A,0108)	1C	User or machine supplied identifier for Applicator. Required if Applicator Sequence (300A,0107) is sent.	TreatmentFieldHistory.AddOnId<n>
>> Applicator Type	(300A,0109)	1C	Type of Applicator. Required if Applicator Sequence (300A,0107) is sent. Defined Terms: ELECTRON_SQUARE = ELECTRON_square electron applicator ELECTRON_RECT = ELECTRON_rectangular electron applicator ELECTRON_CIRC = ELECTRON_circular electron applicator ELECTRON_SHORT = ELECTRON_short electron applicator ELECTRON_OPEN = ELECTRON_open (dummy) electron applicator INTRAOPERATIVE = intraoperative (custom) applicator STEREOTACTIC = stereotactic applicator	TreatmentFieldHistory.AddOnSubType<n>
>> Applicator Description	(300A,010A)	3	User-defined description for Applicator.	Not Used
> Current Fraction Number	(3008,0022)	2	Fraction number for this beam administration.	Read from or written to FractionNumber in a TreatmentFieldHistory

Appendix A: IOD Specific Implementation Details

Attribute Name	Tag	T	Description	Mapping
> Treatment Delivery Type	(300A,00CE)	2	Delivery Type of treatment. Defined Terms: TREATMENT = normal patient treatment OPEN_PORTFILM = OPEN_portal image acquisition with open field TRMT_PORTFILM = TRMT_portal image acquisition with treatment port CONTINUATION = continuation of interrupted treatment	TreatmentFieldHistory.ContinuationFlag Mapping: TREATMENT: 0 CONTINUATION: 1 OPEN_PORTFILM: 2 TRMT_PORTFILM: 3
> Related Referenced Beam Number	(3243,1028)	3	Only allowed, if Treatment Delivery Type (300A,00CE) id OPEN_PORTFILM or TRMT_PORTFILM	Beam number of related beam for which this image has been taken.
> Treatment Termination Status	(3008,002A)	1	Conditions under which treatment was terminated. Enumerated Values: NORMAL = treatment terminated normally OPERATOR = operator terminated treatment MACHINE = machine terminated treatment UNKNOWN = status at termination unknown	Read from or written to TerminationStatus in a TreatmentFieldHistory
> Treatment Termination Code	(3008,002B)	3	Treatment machine termination code. This code is dependent upon the particular application and equipment.	Read from or written to BeamOffCode in a TreatmentFieldHistory
> Treatment Machine Note	(3251,1000)	3	A textual description which can be supplied by the treatment machine for describe technical details.	Read from or written to MachineNote in a TreatmentFieldHistory
> Treatment Verification Status	(3008,002C)	2	Conditions under which treatment was verified by a verification system. Enumerated Values: VERIFIED = treatment verified VERIFIED_OVR = VERIFIED_treatment verified with at least one out-of-range value overridden NOT_VERIFIED = NOT_treatment verified manually	
> Specified Primary Meterset	(3008,0032)	3	Desired machine setting of primary meterset.	Not Used

Attribute Name	Tag	T	Description	Mapping
> Specified Secondary Meterset	(3008,0033)	3	Desired machine setting of secondary meterset.	Not Used
> Delivered Primary Meterset	(3008,0036)	3	Machine setting actually delivered as recorded by primary meterset.	Read from or written to ActualIMU in a TreatmentFieldHstry
> Delivered Secondary Meterset	(3008,0037)	3	Machine setting actually delivered as recorded by secondary meterset.	Not Used
> Specified Treatment Time	(3008,003A)	3	Treatment Time set (sec).	Not Implemented
> Delivered Treatment Time	(3008,003B)	3	Treatment Time actually delivered (sec).	Read from or written to TreatmentTime in a TreatmentFieldHistory
> Number of Control Points	(300A,0110)	1	Number of control points delivered.	
> Control Point Delivery Sequence	(3008,0040)	1	Introduces sequence of beam control points for current treatment beam. The sequence may contain one or more items. See C.8.8.21.1.	Export: Generally only the first and last control point is included, if a motorized wedge is present then four control points are included.
>> Referenced Control Point Index	(300C,00F0)	3	Uniquely identifies Control Point specified by Control Point Index (300A,0112) within Beam referenced by Referenced Beam Number (300C,0006).	
>> Treatment Control Point Date	(3008,0024)	1	Date administration of treatment beam began.	TreatmentFieldHistory. TreatmentDateTime Import: Value of control point with index = 0. Export: Value set to all control points.
>> Treatment Control Point Time	(3008,0025)	1	Time administration of treatment beam began.	TreatmentFieldHistory. TreatmentDateTime Import: Value of control point with index = 0. Export: Value set to all control points.

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Attribute Name	Tag	T	Description	Mapping
>> Specified Meterset	(3008,0042)	2	Desired machine setting for current control point.	
>> Delivered Meterset	(3008,0044)	1	Machine setting actually delivered at current control point.	Import: TreatmentFieldHistory.ActualMU = Delivered Meterset of first control point - Delivered Meterset of last control point Export: First control point: 0 Remaining control points: Minimum of Specified Meterset and TreatmentFieldHistory.ActualMU
>> Dose Rate Set	(300A,0115)	2	Dose Rate set on treatment machine for segment beginning at current control point (meterset/min).	Field.DoseRate of associated field
>> Dose Rate Delivered	(3008,0048)	2	Dose Rate actually delivered for segment beginning at current control point (meterset/min).	TreatmentFieldHistory.DoseRate Import: Value of control point with index 0.
>> Nominal Beam Energy	(300A,0114)	3	Nominal Beam Energy at control point.	Part of TreatmentFieldHistory.EnergyMode Import: Value of control point with index 0.
>> Nominal Beam Energy Unit	(300A,0015)	1C	Units used for Nominal Beam Energy (300A,0114). Required if Nominal Beam Energy (300A,0114) is sent. Defined Terms: MV = Megavolt MEV = Mega electron-Volt If Radiation Type (300A,00C6) is PHOTON, Nominal Beam Energy Unit (300A,0115) shall be MV. If Radiation Type (300A,00C6) is ELECTRON, Nominal Beam Energy Unit (300A,0115) shall be MEV.	Value is part of TreatmentFieldHistory.EnergyMode
>> Wedge Position Sequence	(300A,0116)	3	Introduces sequence of Wedge positions for current control point. The sequence may contain one or more items.	

Attribute Name	Tag	T	Description	Mapping
>>> Referenced Wedge Number	(300C,00C0)	1C	Uniquely identifies wedge specified by Wedge Number (300A,00D2) within Beam referenced by Referenced Beam Number (300C,0006). Required if Wedge Position Sequence (300A,0116) is sent.	TreatmentFieldHistory.WedgeNumber1 or TreatmentFieldHistory.WedgeNumber2
>>> Wedge Position	(300A,0118)	1C	Position of Wedge at current control point. Required if Wedge Position Sequence (300A,0116) is sent.Enumerated Values: IN, OUT.	
>> Beam Limiting Device Position Sequence	(300A,011A)	1C	Introduces sequence of beam limiting device (collimator) jaw or leaf (element) positions. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if beam limiting device (collimator) changes during beam administration. The sequence may contain one or more items.	
>>> RT Beam Limiting Device Type	(300A,00B8)	1C	Type of beam limiting device. The value of this attribute shall correspond to RT Beam Limiting Device Type (300A,00B8) defined in an element of Beam Limiting Device Leaf Pairs Sequence (3008,00A0). Required if Beam Limiting Device Position Sequence (300A,011A) is sent.Enumerated Values: X = symmetric jaw pair in IEC X direction Y = symmetric jaw pair in IEC Y direction ASYMX = asymmetric jaw pair in IEC X direction ASYMY = asymmetric pair in IEC Y direction MLCX = multileaf (multi-element) jaw pair in IEC X direction MLCY = multileaf (multi-element) jaw pair in IEC Y direction	

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Attribute Name	Tag	T	Description	Mapping
>>> Leaf/Jaw Positions	(300A,011C)	1C	Positions of beam limiting device (collimator) leaf (element) or jaw pairs (mm) in IEC BEAM LIMITING DEVICE coordinate axis appropriate to RT Beam Limiting Device Type (300A,00B8), e.g. X-axis for MLCX, Y-axis for MLCY. Contains 2N values, where N is the Number of Leaf/Jaw Pairs (300A,00BC) defined in element of Beam Limiting Device Leaf Pairs Sequence (3008,00A0). Values shall be in IEC leaf subscript order 101, 201, 102, 202, ... 1N, 2N. Required if Beam Limiting Device Position Sequence (300A,011A) is sent.	
>> Gantry Angle	(300A,011E)	1C	Treatment machine gantry angle, i.e. orientation of IEC GANTRY coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees). Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Gantry Angle changes during beam administration.	
>> Gantry Rotation Direction	(300A,011F)	1C	Direction of Gantry Rotation when viewing gantry from isocenter, for segment beginning at current Control Point. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040), or if Gantry Rotation Direction changes during beam administration. Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	TreatmentFieldHistory.GantryRtnDirection Import: Value of control point 0.
>> Beam Stopper Position	(3008,0230)	3	Position of Beam Stopper during beam administration. Enumerated Values: EXTENDED = Beam Stopper extended RETRACTED = Beam Stopper retracted UNKNOWN = Position unknown	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Beam Limiting Device Angle	(300A,0120)	1C	Beam Limiting Device (collimator) angle, i.e. orientation of IEC BEAM LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if beam limiting device (collimator) angle changes during beam delivery.	TreatmentFieldHistory.CollRtn Import: Value of control point with index 0.
>> Beam Limiting Device Rotation Direction	(300A,0121)	1C	Direction of Beam Limiting Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment beginning at current Control Point. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Beam Limiting Device Rotation Direction changes during beam administration. Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	Import: Warning if value of control point with index 0 is not NONE. Export: NONE.
>> Patient Support Angle	(300A,0122)	1C	Patient Support angle, i.e. orientation of IEC PATIENT SUPPORT (turntable) coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees). Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Patient Support Angle changes during beam administration.	TreatmentFieldHistory.PatientSupportAngle Import: Value of control point with index 0.
>> Patient Support Rotation Direction	(300A,0123)	1C	Direction of Patient Support Rotation when viewing table from above, for segment beginning at current Control Point. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040), or if Patient Support Rotation Direction changes during beam administration. Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	Import: Warning if value of control point with index 0 is not NONE. Export: NONE.

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Attribute Name	Tag	T	Description	Mapping
>> Table Top Eccentric Axis Distance	(300A,0124)	3	Distance (positive) from the IEC PATIENT SUPPORT vertical axis to the IEC TABLE TOP ECCENTRIC vertical axis (mm).	ExternalBeam.TableTopEccentricDist Import: Warning if value in control point with index 0 is not equal to the value of the external beam. Export: 0.0
>> Table Top Eccentric Angle	(300A,0125)	1C	Table Top (non-isocentric) angle, i.e. orientation of IEC TABLE TOP ECCENTRIC coordinate system with respect to IEC PATIENT SUPPORT coordinate system (degrees). Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Table Top Eccentric Angle changes during beam administration.	Import: Warning if not 0.0 Export: 0.0
>> Table Top Eccentric Rotation Direction	(300A,0126)	1C	Direction of Table Top Eccentric Rotation when viewing table from above, for segment beginning at current Control Point. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Table Top Eccentric Rotation Direction changes during beam administration. Enumerated Values: CW = clockwise CC = counter-clockwise NONE = no rotation	Import: Warning if value of control point with index 0 is not NONE. Export: NONE.
>> Table Top Vertical Position	(300A,0128)	2C	Table Top Vertical position in IEC TABLE TOP coordinate system (mm). This value is interpreted as an absolute, rather than relative, Table setting. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Table Top Vertical Position changes during beam administration.	Read from or written to CouchVrt in a TreatmentFieldHistory
>> Table Top Longitudinal Position	(300A,0129)	2C	Table Top Longitudinal position in IEC TABLE TOP coordinate system (mm). This value is interpreted as an absolute, rather than relative, Table setting. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Table Top Longitudinal Position changes during beam administration.	Read from or written to CouchLng in a TreatmentFieldHistory

Attribute Name	Tag	T	Description	Mapping
>> Table Top Lateral Position	(300A,012A)	2C	Table Top Lateral position in IEC TABLE TOP coordinate system (mm). This value is interpreted as an absolute, rather than relative, Table setting. Required for Control Point 0 of Control Point Delivery Sequence (3008,0040) or if Table Top Lateral Position changes during beam administration.	Read from or written to CouchLat in a TreatmentFieldHistory
>> Table Top Roll Angle	(3243,1016)	3	Table Top Roll Angle (ot yet part of the IEC system).	Read from or written to CouchRoll in a TreatmentFieldHstry
>> Table Top Pitch Angle	(3243,1017)	3	Table Top Pitch Angle (not yet part of the IEC system).	Read from or written to CouchPitch in a TreatmentFieldHstry
>> Machine Settings Data Length	(3243,1012)	1C	The length in bytes of the binary data stream in the tag Machine Settings Data (3243.1013). Required, if Machine Settings Data (3243.1013) is sent.	
>> Machine Settings Data	(3243,1013)	3	A binary data stream, which is used by the delivery machine to define the machine specific parameters needed at this control point.	Import: TreatmentFieldHistory.MachineBinData if proton beam technique is Double Scattering. Export: TreatmentFieldHistory.MachineBinData if proton beam technique is Double Scattering.
>> Override Sequence	(3008,0060)	3	Introduces sequence of parameters which were overridden during the administration of the beam segment immediately prior to the current control point. The sequence may contain one or more items.	ControlPoint.MachineBinData if proton beam technique is Wobbling.
>>> Override Parameter Pointer	(3008,0062)	2C	Contains the Data Element Tag of the attribute which was overridden. Required if Override Sequence (3008,0060) is sent.	Import: TreatmentFieldHistory.<Parameter>Overri deFlag are set according to this value. Export: Values are set according to which TreatmentFieldHistory.<Parameter>Overri deFlag is set.

Attribute Name	Tag	T	Description	Mapping
>>> Operators' Name	(0008,1070)	2C	Name of operator who authorized override. Required if Override Sequence (3008,0060) is sent.	Import: TreatmentFieldHistory.Approav\UserName Export: The name from TreatmentFieldHistory.UserName2 and the first four names of TreatmentFieldHistory.UserName3
>>> Override Reason	(3008,0066)	3	User-defined description of reason for override of parameter specified by Override Parameter Pointer (3008,0062).	Not Used

A 3.11 SOP Common

A 3.11.1 SOP Common – C.12.1

Attribute Name	Tag	T	Description	Mapping
SOP Class UID	(0008,0016)	1	Uniquely identifies the SOP Class. See PS 3.4.	
SOP instance UID	(0008,0018)	1	Uniquely identifies the SOP Instance. See PS 3.4.	
Specific Character Set	(0008,0005)	1C	Character Set that expands or replaces the Basic Graphic Set. Required if an expanded or replacement character set is used. See C.12.1.1.2 for Defined Terms.	Not Used
Instance Creation Date	(0008,0012)	3	Date the SOP Instance was created.	The date the DICOM file was created.
Instance Creation Time	(0008,0013)	3	Time the SOP Instance was created.	The time the DICOM file was created.
Instance Creator UID	(0008,0014)	3	Uniquely identifies device which created the SOP Instance.	Not Used
Coding Scheme Identification Sequence	(0008,0110)	3	Sequence of items that map values of Coding Scheme Designator (0008,0102) to an external coding system registration, or to a private or local coding scheme. One or more items may be present in the sequence.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Coding Scheme Designator	(0008,0102)	1	The value of a Coding Scheme Designator, used in this SOP Instance, which is being mapped.	Not Implemented
> Coding Scheme Registry	(0008,0112)	1C	The name of the external registry where further definition of the identified coding scheme may be obtained. Required if coding scheme is registered. Defined term: HL7	Not Implemented
> Coding Scheme UID	(0008,010C)	1C	The coding scheme UID identifier. Required if coding scheme is identified by an ISO 8824 object identifier compatible with the UI VR.	Not Implemented
> Coding Scheme External ID	(0008,0114)	2C	The coding scheme identifier as defined in an external registry. Required if coding scheme is registered and Coding Scheme UID (0008,010C) is not present.	Not Implemented
> Coding Scheme Name	(0008,0115)	3	The coding scheme full common name	Not Implemented
> Coding Scheme Version	(0008,0103)	3	The coding scheme version associated with the Coding Scheme Designator (0008,0102).	Not Implemented
> Responsible Organization	(0008,0116)	3	Name of the organization responsible for the Coding Scheme. May include organizational contact information.	Not Implemented
Timezone Offset From UTC	(0008,0201)	3	Contains the offset from UTC to the timezone for all DA and TM Attributes present in this SOP Instance. Encoded as an ASCII string in the format "&ZZZZ". The components of this string, from left to right, are & = "+", "-", and ZZZZ = Hours and Minutes of offset. Notes: 1. This encoding is the same as described in PS 3.5 for the DT Value Representation. 2. This Attribute does not apply to values with a DT Value Representation, which may contain an explicitly encoded timezone. 3. The corrected time may cross a 24 hour boundary. For example, if Local Time = 1.00 a.m. and Offset = +0200, then UTC = 11.00 p.m. (23:00) the day before. 4. The "+" sign may not be omitted. Time earlier than UTC	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
			is expressed as a negative offset. Note: For example: UTC = 5.00 a.m. Local Time = 3.00 a.m. Offset = -0200 The local timezone offset is undefined if this Attribute is absent.	
Contributing Equipment Sequence	(0018,A001)	3	Sequence of Items containing descriptive attributes of related equipment which has contributed to the acquisition, creation or modification of the composite instance. One or more Items may be included in this Sequence. See C.12.1.1.5 for further explanation.	Not Implemented
> Purpose of Reference Code Sequence	(0040,A170)	1	Describes the purpose for which the related equipment is being reference. See C.12.1.1.5 for further explanation.	Not Implemented
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Not Implemented
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Not Implemented
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	Not Implemented
>> Context Identifier	(0008,010F)	3	See Section 8.6.	Not Implemented
>> Mapping Resource	(0008,0105)	1C	See Section 8.4. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Version	(0008,0106)	1C	See Section 8.5. Required if Context Identifier (0008,010F) is present.	Not Implemented
>> Context Group Extension Flag	(0008,010B)	3	Indicates whether the Code Value/Coding Scheme/Code Meaning is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7 of this Part. Enumerated Values: 'Y', 'N'	Not Implemented

Attribute Name	Tag	T	Description	Mapping
>> Context Group Local Version	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
>> Context Group Extension Creator UID	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is 'Y'.	Not Implemented
> Manufacturer	(0008,0070)	1	Manufacturer of the equipment that contributed to the composite instance.	Not Implemented
> Institution Name	(0008,0080)	3	Institution where the equipment that contributed to the composite instance is located.	Not Implemented
> Institution Address	(0008,0081)	3	Address of the institution where the equipment that contributed to the composite instance is located.	Not Implemented
> Station Name	(0008,1010)	3	User defined name identifying the machine that contributed to the composite instance.	Not Implemented
> Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment that contributed to the composite instance is located.	Not Implemented
> Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that contributed to the composite instance.	Not Implemented
> Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that contributed to the composite instance.	Not Implemented
> Software Version(s)	(0018,1020)	3	Manufacturer's designation of the software version of the equipment that contributed to the composite instance.	Not Implemented
> Spatial Resolution	(0018,1050)	3	The inherent limiting resolution in „ of the acquisition equipment for high contrast objects for the data gathering and reconstruction technique chosen. If variable across the images of the series, the value at the image center.	Not Implemented
> Date of Last Calibration	(0018,1200)	3	Date when the image acquisition device calibration was last changed in any way. Multiple entries may be used for additional calibrations at other times. See C.7.5.1.1.1 for further explanation.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Time of Last Calibration	(0018,1201)	3	Time when the image acquisition device calibration was last changed in any way. Multiple entries may be used. See C.7.5.1.1.1 for further explanation.	Not Implemented
> Contribution Date/Time	(0018,A002)	3	The Date & Time when the equipment contributed to the composite instance.	Not Implemented
> Contribution Description	(0018,A003)	3	Description of the contribution the equipment made to the composite instance.	Not Implemented
Instance Number	(0020,0013)	3	A number that identifies this Composite object instance.	Not Implemented
SOP Instance Status	(0100,0410)	3	A flag that indicates the storage status of the SOP Instance. Not Specified (NS) implies that this SOP Instance has no special storage status, and hence no special actions need be taken. Original (OR) implies that this is the primary SOP instance for the purpose of storage, but that it has not yet been authorized for diagnostic use. Authorized Original (AO) implies that this is the primary SOP instance for the purpose of storage, which has been authorized for diagnostic use. Any copies of an Authorized Original should be given the status of Authorized Copy. Authorized Copy (AC) implies that this is a copy of an Authorized Original SOP Instance. Enumerated Values: NS, OR, AO, AC Note: Proper use of these flags is specified in Security Profiles. Implementations that do not conform to such Security Profiles may not necessarily handle these flags properly.	Not Implemented
SOP Authorization Date and Time	(0100,0420)	3	The date and time when the SOP Instance Status (0100,0410) was set to AO.	Not Implemented
SOP Authorization Comment	(0100,0424)	3	Any comments associated with the setting of the SOP Instance Status (0100,0410) to AO.	Not Implemented
Authorization Equipment Certification Number	(0100,0426)	3	The certification number issued to the Application Entity that set the SOP Instance Status (0100,0410) to AO.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
MAC Parameters Sequence	(4FFE,0001)	3	A sequence of one or more items that describe the parameters used to calculate a MAC for use in Digital Signatures.	Not Implemented
> MAC ID Number	(0400,0005)	1	A number used to identify this MAC Parameters Sequence item.	Not Implemented
> MAC Calculation Transfer Syntax UID	(0400,0010)	1	The Transfer Syntax UID used to encode the values of the Data Elements included in the MAC calculation. Only Transfer Syntaxes that explicitly include the VR and use Little Endian encoding shall be used. Notes: Certain Transfer Syntaxes, particularly those that are used with compressed data, allow the fragmentation of the pixel data to change. If such fragmentation changes, Digital Signatures generated with such Transfer Syntaxes could become invalid.	Not Implemented
> MAC Algorithm	(0400,0015)	1	The algorithm used in generating the MAC to be encrypted to form the Digital Signature. Defined Terms: RIPEMD160 MD5 SHA1. Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	Not Implemented
> Data Elements Signed	(0400,0020)	1	A list of Data Element Tags in the order they appear in the Data Set which identify the Data Elements used in creating the MAC for the Digital Signature. See Section C.12.1.1.3.1.1.	Not Implemented
Digital Signatures Sequence	(FFFA,FFFA)	3	Sequence holding one or more Digital Signatures.	Not Implemented
> MAC ID Number	(0400,0005)	1	A number used to identify which MAC Parameters Sequence item was used in the calculation of this Digital Signature.	Not Implemented
> Digital Signature UID	(0400,0100)	1	A UID that can be used to uniquely reference this signature.	Not Implemented

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Attribute Name	Tag	T	Description	Mapping
> Digital Signature DateTime	(0400,0105)	1	The date and time the Digital Signature was created. The time shall include an offset (i.e., time zone indication) from Coordinated Universal Time. Note: This is not a certified timestamp, and hence is not completely verifiable. An application can compare this date and time with those of other signatures and the validity date of the certificate to gain confidence in the veracity of this date and time.	Not Implemented
> Certificate Type	(0400,0110)	1	The type of certificate used in (0400,0115). Defined Term: X509_1993_SIG Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	Not Implemented
> Certificate of Signer	(0400,0115)	1	A certificate that holds the identity of the entity producing this Digital Signature, that entity's public key or key identifier, and the algorithm and associated parameters with which that public key is to be used. Algorithms allowed are specified in Digital Signature Security Profiles (see PS 3.15). Notes: 1. As technology advances, additional encryption algorithms may be allowed in future versions. Implementations should take this possibility into account. 2. When symmetric encryption is used, the certificate merely identifies which key was used by which entity, but not the actual key itself. Some other means (e.g., a trusted third party) must be used to obtain the key.	Not Implemented
> Signature	(0400,0120)	1	The MAC generated as described in Section 12.2.1.1 and encrypted using the algorithm, parameters, and private key associated with the Certificate of the Signer (0400,0115). See Section C.12.1.1.3.1.2.	Not Implemented

Attribute Name	Tag	T	Description	Mapping
> Certified Timestamp Type	(0400,0305)	1C	The type of certified timestamp used in the Certified Timestamp (0400,0310) Attribute. Required if Certified Timestamp (0400,0310) is present. Defined Terms: CMS_TSP ü Internet X.509 Public Key Infrastructure Time Stamp Protocol Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	Not Implemented
> Certified Timestamp	(0400,0310)	3	A certified timestamp of the Digital Signature (0400,0120) Attribute Value, which shall be obtained when the Digital Signature is created. See Section C.12.1.1.3.1.3.	Not Implemented
Encrypted Attributes Sequence	(0400,0500)	1C	Sequence of Items containing encrypted DICOM data. One or more Items shall be present. Required if application level confidentiality is needed and certain recipients are allowed to decrypt all or portions of the Encrypted Attributes Data Set. See C.12.1.1.4.1.	Not Implemented
> Encrypted Content Transfer Syntax UID	(0400,0510)	1	Transfer Syntax used to encode the encrypted content. Only Transfer Syntaxes that explicitly include the VR and use Little Endian encoding shall be used.	Not Implemented
> Encrypted Content	(0400,0520)	1	Encrypted data. See C.12.1.1.4.2.	Not Implemented

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Appendix B: Query/Retrieve

B 1 Study Root SOP Class Group

Table 8 shows the supported values for the tag Query/Retrieve Level (0008,0052):

Query/Retrieve Level		Value in (0008,0052)
Study Information		STUDY
Series Information		SERIES
Composite Object Instance Information		IMAGE
Composite Object Instance Information (Varian private extensions)	Plan Information	PLAN
	Dose Information	DOSE
	Treatment Record Information	TREATMENTRECORD
	Treatment Summary Record Information	TREATMENTSUMMARYRECORD

Table 8: Supported Query/Retrieve Levels for Query/Retrieve SCU

In addition to the value IMAGE for Composite object instance Level to query/retrieve any image or RT object, Varian supports the following values for querying/retrieving RT Plan, RT Dose, RT Beams Treatment Record, RT Treatment Summary Record respectively:

- PLAN
- DOSE
- TREATMENTRECORD
- TREATMENTSUMMARYRECORD.

They may be used when the SCU wants to use some more object specific keys according to the key sets listed in section B 1.1 Supported Keys.

Note: The value IMAGE nevertheless is supported to query/retrieve any object as defined by the DICOM standard.

B 1.1 Supported Keys

The tables in the following sub sections show which keys are supported by the SCU and the SCP. A check mark in the SCU resp. SCP column indicates that the SCU resp. SCP supports this key. A "M" in the SCP column indicates that the SCP uses this key for matching if a value is defined for it.

B 1.1.1 Study Level

Description	Tag	Type	SCU	SCP
Query Level	(0008,0052)	R	✓	✓
Study Date	(0008,0020)	R	✓	M
Study Time	(0008,0030)	R	✓	M
Accession Number	(0008,0050)	R	✓	M

Patient's Name	(0010,0010)	R	✓	M
Patient ID	(0010,0020)	R	✓	M
Study ID	(0020,0010)	R	✓	M
Study Instance UID	(0020,000D)	U	✓	M

B 1.1.2 Series Level

Description	Tag	Type	SCU	SCP
Query Level	(0008,0052)	R	✓	✓
Modality	(0008,0060)	R	✓	M
Series Number	(0020,0011)	R	✓	M
Series Instance UID	(0020,000E)	U	✓	M
Study Instance UID	(0020,000D)	U	✓	M

B 1.1.3 Composite Object Instance Level

B 1.1.3.1.1 Image

Description	Tag	Type	SCU	SCP
Query Level	(0008,0052)	R	✓	✓
Image Number	(0020,0013)	R	✓	M
SOP Instance UID	(0008,0018)	U	✓	M
Series Instance UID	(0020,000E)	U	✓	M
Study Instance UID	(0020,000D)	U	✓	M
Image Type	(0008,0008)	O	✓	M
Image Date	(0008,0023)	O	✓	M
Image Time	(0008,0033)	O	✓	M
Referenced SOP Class UID	(0008,1150)	O	✓	✓
Referenced SOP Instance UID	(0008,1155)	O	✓	✓
Referenced Beam Number	(300C,0006)	O	✓	✓
Patient ID	(0010,0020)	O	✓	
Field Type	(3257,1000)	O	✓	

B 1.1.3.1.2 Plan

Description	Tag	Type	SCU	SCP
Query Level	(0008,0052)	R	✓	✓
SOP Instance UID	(0008,0018)	U	✓	M
Series Instance UID	(0020,000E)	U	✓	M
Study Instance UID	(0020,000D)	U	✓	M
Patient's Name	(0010,0010)	O	✓	M
Patient ID	(0010,0020)	O	✓	M

Plan Label	(300A,0002)	O	✓	M
Plan Date	(300A,0006)	O	✓	M
Plan Time	(300A,0007)	O	✓	✓
Number of Beams	(300A,0080)	O	✓	✓
Referenced RT Plan Sequence	(300C,0002)	O	✓	✓
>Referenced SOP Class UID	(0008,1150)	O	✓	✓
>Referenced SOP Instance UID	(0008,1155)	O	✓	✓
>RT Plan Relationship	(300A,0055)	O	✓	✓
Field Type	(3257,1000)	O	✓	
Plan Type	(3257,1001)	O		✓

B 1.1.3.1.3 Dose

Description	Tag	Type	SCU	SCP
Query Level	(0008,0052)	R	✓	✓
SOP Instance UID	(0008,0018)	U	✓	M
Series Instance UID	(0020,000E)	U	✓	M
Study Instance UID	(0020,000D)	U	✓	M
Referenced SOP Class UID	(0008,1150)	O	✓	M
Referenced SOP Instance UID	(0008,1155)	O	✓	M
Referenced Beam Number	(300C,0006)	O	✓	✓
Number of Frames	(0028,0008)	O	✓	M

B 1.1.3.1.4 Treatment Record

Description	Tag	Type	SCU	SCP
Query Level	(0008,0052)	R	✓	✓
SOP Instance UID	(0008,0018)	U	✓	M
Series Instance UID	(0020,000E)	U	✓	M
Study Instance UID	(0020,000D)	U	✓	M
Referenced SOP Class UID	(0008,1150)	O	✓	M
Referenced SOP Instance UID	(0008,1155)	O	✓	M
Treatment Date	(3008,0250)	O	✓	M
Treatment Time	(3008,0251)	O	✓	M
Referenced Fraction Group Number	(300C,0022)	O	✓	✓
Treatment Session Beam Sequence	(3008,0020)	O	✓	✓
>Referenced Beam Number	(300C,0006)	O	✓	✓
>Treatment Delivery Type	(300A,00CE)	O	✓	✓
>Treatment Termination Status	(3008,002A)	O	✓	✓
>Delivered Primary Meterset	(3008,0036)	O	✓	✓
>Current Fraction Number	(3008,0022)	O	✓	✓

>Treatment Date	(3008,0250)	O	✓	✓
>Treatment Time	(3008,0251)	O	✓	✓
>Referenced Calculated Dose Reference Sequence	(3008,0090)	O	✓	✓
>>Referenced Dose Reference Number	(300C,0051)	O	✓	✓
>>Calculated Dose Reference Value	(3008,0076)	O	✓	✓
>Control Point Delivery Sequence	(3008,0040)	O	✓	✓
>>Referenced Control Point Index	(300C,00F0)	O	✓	✓
>>Specified Meterset	(3008,0042)	O	✓	✓
>>Override Sequence	(3008,0060)	O	✓	✓
>>>Override Parameter Pointer	(3008,0062)	O	✓	✓
>> Gantry Angle	(300A,011E)	O	✓	✓

B 1.1.3.1.5 Treatment Summary Record

Description	Tag	Type	SCU	SCP
Query Level	(0008,0052)	R	✓	✓
Referenced SOP Class UID	(0008,1150)	O	✓	M
Referenced SOP Instance UID	(0008,1155)	O	✓	M
Current Treatment Status	(3008,0200)	O	✓	✓
Number of Fractions Delivered	(3008,005A)	O	✓	✓
Treatment Summary Calculated Dose Reference Sequence	(3008,0050)	O	✓	✓
>Referenced Dose Reference Number	(300C,0051)	O	✓	✓
>Dose Reference Description	(300A,0016)	O	✓	✓
>Cumulative Dose to Dose Reference	(3008,0052)	O	✓	✓