

Customer Information Bulletin

Title

DICOM Conformance Statement

Scope

Oncentra RT Viewer v1.0

Target Group

Customers and Third Parties

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1 Document History

Revision	Who	Reason for Change	Changes
00	HB	Oncentra RT Viewer v1.0	N/A

2 Introduction

2.1 General

This document specifies the DICOM conformance of the Oncentra RT Viewer (ORTV) system for visualizing RT objects.

Note:

Oncentra RT Viewer does not support usage of private attributes intended to store information relevant only for own usage of other Nucletron's applications or any other vendor's applications.

2.2 Purpose

This DICOM Conformance Statement specifies the Oncentra RT Viewer compliance to the DICOM standard. It describes in detail the DICOM SOP Classes and roles that are supported by this product.

Note:

For a better overview, the attributes that are not used by ORTV have been printed in grey instead of black.

2.3 Intended Audience

This document is intended for system developers, system integrators, and users or potential users of the Oncentra RT Viewer system (or their agents).

It is assumed that the reader of this document is familiar with the DICOM standard.

2.4 Important Notes

The document itself does not guarantee successful DICOM communication between Nucletron's Oncentra RT Viewer and non-Nucletron applications which claim conformance to DICOM. It is, however, the user's (or the user's agent) responsibility to address at least the issues in the following sections.

2.4.1 Interoperability

Integration in terms of interoperability of modalities claiming conformance to DICOM goes beyond the standard. Neither the DICOM standard itself nor the Conformance Statements of the concerned applications will guarantee interoperability, even if the DICOM communication may work.

Users or their agents are encouraged to examine carefully how information contained in the DICOM objects is interpreted by the communicating applications. The responsibility to analyze the application requirements and to design a solution that integrates such applications is the user's responsibility. The user is strongly advised to ensure that such integration analysis is correctly performed.

2.4.2 Validation

The DICOM applications referred to in this document have been carefully tested to assure compliance with DICOM and with the applications' DICOM Conformance Statement. However, connectivity and proper functionality with other vendors' products has to be verified prior to clinical use of the applications.

It is the responsibility of the user (or the user's agent) to verify DICOM connectivity within the environment in which the Oncentra RT Viewer applications shall be used. In this respect Nucletron will assist the user as far as possible.

2.4.3 Evolution of the DICOM standard

It is expected that the DICOM standard will be further developed to meet future requirements. Nucletron is actively contributing to these developments. It is therefore natural that Nucletron will adapt or may discontinue its products due to changes in the DICOM standard.

The user is encouraged to make sure that any product from another vendor is also continuously adapted to revisions of DICOM. Ignoring this will increase the risk of losing connectivity and/or interoperability.

2.5 References

The Digital Imaging and Communications in Medicine (DICOM) Standard: NEMA PS 3.1-3.16 (2006). National Electrical Manufacturers Association, 1300 N. 17th Street, Suite 1847, Rosslyn, Virginia 22209, USA.

2.6 Definitions

ACR	American College of Radiology
AE	DICOM Application Entity.
Association	A (DICOM) association represents one entire communication session between two image devices. An association is initiated by a Service Class User application. The association may be terminated by either the Service Class User or the Service Class Provider application.
DICOM	Digital Imaging and Communications in Medicine. A standard developed by the American College of Radiology (ACR) and the National Electrical Manufacturers

	Association (NEMA) for the electronic transfer of digital images and associated information.
IE	Information Entity
IOD	DICOM Information Object Definition.
NEMA	National Electrical Manufacturers Association
ORTV	Oncentra RT Viewer, technical abbreviation
SOP	DICOM Service/Object Pair e.g. CT Image Storage.
TCP/IP	Transmission Control Protocol/Internet Protocol. The suite of commonly used network protocols adopted by DICOM as the basis for network communications.
UID	DICOM Unique Identifier.

3 Query/Retrieve (Q/R)

3.1 Implementation Model

Oncentra RT Viewer 1.0 has an implementation of a DICOM Service Class user (SCU), which can send DICOM queries and moves the requests to its DICOM Storage SCP.

3.1.1 Application Data Flow Diagram

Oncentra RT Viewer 1.0 is implemented as a Windows application and plays the following roles:

- SCU for C-FIND DICOM Service
- SCU for C-MOVE DICOM Service
- SCP for C-STORE DICOM Service

3.1.2 Functional Definitions of Application Entities

Oncentra RT Viewer 1.0 allows querying for and retrieving DICOM objects. It allows the user to enter various query attributes through the graphical user interface. The application establishes an association with the remote DICOM device. If a Find request is sent, it will wait for Find responses. If a Move or Get request is sent, it will wait for a Move or Get response and for an association as a Storage Service Class Provider. All communication and image transfer with the remote application is accomplished using the DICOM protocol over a network using the TCP/IP protocol stack.

3.2 Application Entity Specification

3.2.1 DICOM AEs Specification

Oncentra RT Viewer 1.0 acts as a single Application Entity and provides Standard Conformance to the following DICOM v3.0 Query/Retrieve SOP Classes as SCU:

SOP Class Name	SOP Class UID
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2

3.3 Association Establishment Policies

3.3.1 General

Oncentra RT Viewer 1.0 initiates an association as a Query/Retrieve SCU when the local operator requests to query or retrieve images. Oncentra RT Viewer 1.0 will wait for an association as a Storage SCP after having sent a move request. The default maximum PDU length for this AE is 16384.

3.3.2 Number of Associations

Oncentra RT Viewer 1.0 opens only one association at a time for query/retrieve requests. Only one find or move request is sent over an open association. It accepts only one association at a time to receive images.

3.3.3 Asynchronous Nature

Oncentra RT Viewer 1.0 allows only a single outstanding transaction on any association.

3.3.4 Implementation identifying Information

The implementation class unique identifier (UID) for the Oncentra RT Viewer 1.0 is 1.2.826.0.1.3680043.2.440.0.1.1.6.1.1. The implementation version name is TMDTK161.

3.3.5 Calling Title

Oncentra RT Viewer 1.0 uses can be configured. Default value used is AET.

3.4 Association Initiation Policy

Oncentra RT Viewer 1.0 initiates an association for the appropriate Query/Retrieve Service Class that corresponds to the operation to be performed. The association is closed when the remote DICOM network node has processed all queries or moves or when an error or timeout occurred. The operator is also able to initiate an abort request.

3.4.1 Real-World Activity – Query

Oncentra RT Viewer 1.0 initiates an association to do C-FIND operations with the Patient Root or Study Root Information Models. The association is closed when all queries have been processed or when an error or timeout occurred.

3.4.1.1 Associated Real-World Activity – Query

Once the association has been established, the Oncentra RT Viewer 1.0 sends a C-FIND request and waits for C-FIND responses.

3.4.1.2 SOP Specific Conformance – Patient Root

The following tables describe search keys used by Oncentra RT Viewer 1.0 Query/Retrieve SCU for the supported query levels.

Patient level attributes:

Attribute Name	Tag	Type
Patient Name	(0010,0010)	R
Patient ID	(0010,0020)	U
Patient's Birth Date	(0010,0030)	O
Patient's Sex	(0010,0040)	O

Study level attributes:

Attribute Name	Tag	Type
Study Instance UID	(0020,000D)	U
Study ID	(0020,0010)	R
Study Date	(0020,0020)	R
Study Time	(0020,0030)	R
Accession Number	(0020,0050)	R
Study Description	(0008,1030)	O

Series level attributes:

Attribute Name	Tag	Type
Series Instance UID	(0020,000E)	U
Series Number	(0020,0011)	R
Modality	(0008,0060)	R
Series Date	(0008,0021)	O
Series Time	(0008,0031)	O
Series Description	(0008,103E)	O

Image level attributes:

Attribute Name	Tag	Type
SOP Instance UID	(0008,0018)	U
Image Number	(0020,0013)	R

3.4.2 Real-World Activity – Move

Oncentra RT Viewer 1.0 initiates an association to do C-MOVE operations with the Patient Root Information Model. The association is closed when all moves have been processed or when an error or timeout occurred.

3.4.3 Associated Real-World Activity – Move

Once the association has been established, the Oncentra RT Viewer 1.0 sends a C-MOVE request to receive images. The images are received over a second association initiated by the Query/Retrieve Service Class Provider.

4 IOD Specific Implementation Details

4.1 General

4.1.1 Date and Time Attributes

Imported objects will be interpreted as using local time in DA and TM fields. If the Timezone Offset From UTC (0008,0201) is specified for an imported object, this will be used to create a local time representation for display/copy via the UTC time.

Example: An object is created at 9:00 2006-02-18 (local time) with UTC offset +0800 (Beijing). It is exported and carried over a few time zones into a zone with UTC offset –05:00 (New York). The creation time displayed in New York will then be 20:00 2006-02-17.

The Patient module will NOT be interpreted in this way (i.e. the patient's birth date or time will not be interpreted via UTC offset), it will always be interpreted as local date and time.

4.1.2 Detailed IOD Specifications

In the sections below the details for all DICOM object types supported by Oncentra RT Viewer are listed. This includes tables of all the individual attributes for each object, with information about whether or not Oncentra RT Viewer provides or uses those individual attributes.

4.2 CT Image Information Object Implementation

Oncentra RT Viewer can import CT images.

4.2.1 CT Image IOD Module Table

IE	Module	Reference	DICOM Usage	Notes
Patient	Patient	C.7.1.1	M	
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not used
Series	General Series	C.7.3.1	M	
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 Required if contrast media was used in this image	Not used
	CT Image	C.8.2.1	M	
	Overlay Plane	C.9.2	U	Not used
	VOI LUT	C.11.2	U	Not used
	SOP Common	C.12.1	M	

4.2.2 Patient Module

Attribute Name	Tag	Type	Notes
Patient name	(0010,0010)	2	Used
Patient ID	(0010,0020)	2	Used
Patient's Birth Date	(0010,0030)	2	Used
Patient's Sex	(0010,0040)	2	Used
Referenced Patient Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Patient's Birth Time	(0010,0032)	3	Not used
Other Patient Ids	(0010,1000)	3	Not used
Other Patient Names	(0010,1001)	3	Not used
Ethnic Group	(0010,2160)	3	Not used
Patient Comments	(0010,4000)	3	Not used

4.2.3 General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0020,000D)	1	Used
Study Date	(0008,0020)	2	Used
Study Time	(0008,0030)	2	Not used

Referring Physician's Name	(0008,0090)	2	Used if provided
Study ID	(0020,0010)	2	Not used
Accession Number	(0008,0050)	2	Used if provided
Study Description	(0008,1030)	3	Used if provided
Physician(s) of Record	(0008,1048)	3	Not used
Name of Physician(s) Reading Study	(0008,1060)	3	Not used
Referenced Study Sequence	(0008,1110)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Procedure Code Sequence	(0008,1032)	3	Not used

4.2.4 General Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	Used, supported: 'CT'
Series Instance UID	(0020,000E)	1	Used to validate series contents.
Series Number	(0020,0011)	2	Used for display only.
Laterality	(0020,0060)	2C	Not used
Series Date	(0008,0021)	3	Not used
Series Time	(0008,0031)	3	Not used
Performing Physicians' Name	(0008,1050)	3	Not used
Protocol Name	(0018,1030)	3	Not used
Series Description	(0008,103E)	3	Not used
Operators' Name	(0008,1070)	3	Not used
Referenced Study Component Sequence	(0008,1111)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Body Part Examined	(0018,0015)	3	Not used
Patient Position	(0018,5100)	2C	Required
Smallest Pixel Value in Series	(0028,0108)	3	Not used
Largest Pixel Value in Series	(0028,0109)	3	Not used
Request Attributes Sequence	(0040,0275)	3	Not used
>Requested Procedure ID	(0040,1001)	1C	Not used
>Scheduled Procedure Step ID	(0040,0009)	1C	Not used
>Scheduled Procedure Step Description	(0040,0007)	3	Not used
>Scheduled Action Item Code Sequence	(0040,0008)	3	Not used
Performed Procedure Step ID	(0040,0253)	3	Not used
Performed Procedure Step Start Date	(0040,0244)	3	Not used
Performed Procedure Step Start Time	(0040,0245)	3	Not used

Performed Procedure Step Description	(0040,0254)	3	Not used
Performed Action Item Sequence	(0040,0260)	3	Not used

4.2.5 Frame of Reference Module

Attribute Name	Tag	Type	Notes
Frame of Reference UID	(0020,0052)	1	Required, used to verify references between RT objects
Position Reference Indicator	(0020,1040)	2	Not used

4.2.6 General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Used
Institution Name	(0008,0080)	3	Not used
Institution Address	(0008,0081)	3	Not used
Station Name	(0008,1010)	3	Not used
Institutional Department Name	(0008,1040)	3	Not used
Manufacturer's Model Name	(0008,1090)	3	Not used
Device Serial Number	(0018,1000)	3	Not used
Software Versions	(0018,1020)	3	Not used
Spatial Resolution	(0018,1050)	3	Not used
Date of Last Calibration	(0018,1200)	3	Not used
Time of Last Calibration	(0018,1201)	3	Not used
Pixel Padding Value	(0028,0120)	3	Used

4.2.7 General Image Module

Attribute Name	Tag	Type	Notes
Instance Number	(0020,0013)	2	Not used
Patient Orientation	(0020,0020)	2C	Not used
Content Date	(0008,0023)	2C	Not used
Content Time	(0008,0033)	2C	Not used
Image Type	(0008,0008)	1	Used
Acquisition Number	(0020,0012)	3	Not used
Acquisition Date	(0008,0022)	3	Not used
Acquisition Time	(0008,0032)	3	Not used
Acquisition Datetime	(0008,002A)	3	Not used
Referenced Image Sequence	(0008,1140)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Referenced Frame Number	(0008,1160)	3	Not used
Derivation Description	(0008,2111)	3	Not used
Source Image Sequence	(0008,2112)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used

>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Referenced Frame Number	(0008,1160)	3	Not used
Images in Acquisition	(0020,1002)	3	Not used
Image Comments	(0020,4000)	3	Not used
Quality Control Image	(0028,0300)	3	Not used
Burned In Annotation	(0028,0301)	3	Not used
Lossy Image Compression	(0028,2110)	3	Not used
Lossy Image Compression Ratio	(0028,2112)	3	Not used

4.2.8 Image Plane Module

Attribute Name	Tag	Type	Notes
Pixel Spacing	(0028,0030)	1	Used
Image Orientation (Patient)	(0020,0037)	1	Used
Image Position (Patient)	(0020,0032)	1	Used
Slice Thickness	(0018,0050)	2	Not used
Slice Location	(0020,1041)	3	Not used

4.2.9 Image Pixel Module

Attribute Name	Tag	Type	Notes
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used, must be 'MONOCHROME2'
Rows	(0028,0010)	1	Used
Columns	(0028,0011)	1	Used
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1	Used
Pixel Representation	(0028,0103)	1	Used
Pixel Data	(7FE0,0010)	1	Used The Hounsfield values used in the internal algorithms of RT Viewer will be limited to the range [-1000, 3095]. If MasterPlan encounters values below -1000, these are replaced with -1000 and values above 3095 will be replaced with 3095.
Planar Configuration	(0028,0006)	1C	Not used
Pixel Aspect Ratio	(0028,0034)	1C	Not used
Smallest Image Pixel Value	(0028,0106)	3	Not used
Largest Image Pixel Value	(0028,0107)	3	Not used
Red Palette Color Lookup Table Descriptor	(0028,1101)	1C	Not used
Green Palette Color Lookup Table Descriptor	(0028,1102)	1C	Not used
Blue Palette Color Lookup Table Descriptor	(0028,1103)	1C	Not used
Red Palette Color Lookup Table Data	(0028,1201)	1C	Not used
Green Palette Color Lookup Table Data	(0028,1202)	1C	Not used

Blue Palette Color Lookup Table Data	(0028,1203)	1C	Not used
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4.2.10 CT Image Module

Attribute Name	Tag	Type	Notes
Image Type	(0008,0008)	1	Used
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used must be 'MONOCHROME2'
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1	Used
Rescale Intercept	(0028,1052)	1	Used
Rescale Slope	(0028,1053)	1	Used
KVP	(0018,0060)	2	Not used
Acquisition Number	(0020,0012)	2	Not used
Scan Options	(0018,0022)	3	Not used
Data Collection Diameter	(0018,0090)	3	Not used
Reconstruction Diameter	(0018,1100)	3	Not used
Distance Source to Detector	(0018,1110)	3	Not used
Distance Source to Patient	(0018,1111)	3	Not used
Gantry/Detector Tilt	(0018,1120)	3	Not used
Table Height	(0018,1130)	3	Used
Rotation Direction	(0018,1140)	3	Not used
Exposure Time	(0018,1150)	3	Not used
X-ray Tube Current	(0018,1151)	3	Not used
Exposure	(0018,1152)	3	Not used
Exposure in μ As	(0018,1153)	3	Not used
Filter Type	(0018,1160)	3	Not used
Generator Power	(0018,1170)	3	Not used
Focal Spot	(0018,1190)	3	Not used
Convolution Kernel	(0018,1210)	3	Not used

4.2.11 SOP Common Module

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	Used, supported value '1.2.840.10008.5.1.4.1.1.2'.
SOP Instance UID	(0008,0018)	1	Used
Specific Character Set	(0008,0005)	1C	Not used
Instance Creation Date	(0008,0012)	3	Not used
Instance Creation Time	(0008,0013)	3	Not used
Instance Creator UID	(0008,0014)	3	Not used

4.3 MR Image Information Object Implementation

Oncentra RT Viewer can import MR images.

4.3.1 MR Image IOD Module Table

IE	Module	Reference	DICOM Usage	Notes
Patient	Patient	C.7.1.1	M	
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not used
Series	General Series	C.7.3.1	M	
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 Required if contrast media was used in this image	Not used
	MR Image	C.8.3.1	M	
	Overlay Plane	C.9.2	U	Not used
	VOI LUT	C.11.2	U	Not used
	SOP Common	C.12.1	M	

4.3.2 Patient Module

Attribute Name	Tag	Type	Notes
Patient name	(0010,0010)	2	Used
Patient ID	(0010,0020)	2	Used
Patient's Birth Date	(0010,0030)	2	Used
Patient's Sex	(0010,0040)	2	Used
Referenced Patient Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Patient's Birth Time	(0010,0032)	3	Not used
Other Patient Ids	(0010,1000)	3	Not used
Other Patient Names	(0010,1001)	3	Not used
Ethnic Group	(0010,2160)	3	Not used
Patient Comments	(0010,4000)	3	Not used

4.3.3 General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0020,000D)	1	Used to validate study/series contents.
Study Date	(0008,0020)	2	Not used
Study Time	(0008,0030)	2	Not used
Referring Physician's Name	(0008,0090)	2	Used if provided
Study ID	(0020,0010)	2	Not used
Accession Number	(0008,0050)	2	Used if provided
Study Description	(0008,1030)	3	Used if provided
Physician(s) of Record	(0008,1048)	3	Not used
Name of Physician(s) Reading Study	(0008,1060)	3	Not used
Referenced Study Sequence	(0008,1120)	3	Not used

>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Procedure Code Sequence	(0008,1032)	3	Not used

4.3.4 General Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	Used, supported: 'MR'
Series Instance UID	(0020,000E)	1	Used to validate series contents
Series Number	(0020,0011)	2	Used for display only.
Laterality	(0020,0060)	2C	Not used
Series Date	(0008,0021)	3	Not used
Series Time	(0008,0031)	3	Not used
Performing Physicians' Name	(0008,1050)	3	Not used
Protocol Name	(0018,1030)	3	Not used
Series Description	(0008,103E)	3	Not used
Operators' Name	(0008,1070)	3	Not used
Referenced Study Component Sequence	(0008,1111)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Body Part Examined	(0018,0015)	3	Not used
Patient Position	(0018,5100)	2C	Required
Smallest Pixel Value in Series	(0028,0108)	3	Not used
Largest Pixel Value in Series	(0028,0109)	3	Not used
Request Attributes Sequence	(0040,0275)	3	Not used
>Requested Procedure ID	(0040,1001)	1C	Not used
>Scheduled Procedure Step ID	(0040,0009)	1C	Not used
>Scheduled Procedure Step Description	(0040,0007)	3	Not used
>Scheduled Action Item Code Sequence	(0040,0008)	3	Not used
Performed Procedure Step ID	(0040,0253)	3	Not used
Performed Procedure Step Start Date	(0040,0244)	3	Not used
Performed Procedure Step Start Time	(0040,0245)	3	Not used
Performed Procedure Step Description	(0040,0254)	3	Not used
Performed Action Item Sequence	(0040,0260)	3	Not used

4.3.5 Frame of Reference Module

Attribute Name	Tag	Type	Notes
Frame of Reference UID	(0020,0052)	1	Used to verify reference from RT Structure Set if RT Structure Set is imported.
Position Reference Indicator	(0020,1040)	2	Not used

4.3.6 General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Used. [See Manufacturer SCU.]
Institution Name	(0008,0080)	3	Not used
Institution Address	(0008,0081)	3	Not used
Station Name	(0008,1010)	3	Not used
Institutional Department Name	(0008,1040)	3	Not used
Manufacturer's Model Name	(0008,1090)	3	Not used
Device Serial Number	(0018,1000)	3	Not used
Software Versions	(0018,1020)	3	Not used
Spatial Resolution	(0018,1050)	3	Not used
Date of Last Calibration	(0018,1200)	3	Not used
Time of Last Calibration	(0018,1201)	3	Not used
Pixel Padding Value	(0028,0120)	3	Used

4.3.7 General Image Module

Attribute Name	Tag	Type	Notes
Instance Number	(0020,0013)	2	Not used.
Patient Orientation	(0020,0020)	2C	Not used
Content Date	(0008,0023)	2C	Not used
Content Time	(0008,0033)	2C	Not used
Image Type	(0008,0008)	1	Used
Acquisition Number	(0020,0012)	3	Not used
Acquisition Date	(0008,0022)	3	Not used
Acquisition Time	(0008,0032)	3	Not used
Acquisition Datetime	(0008,002A)	3	Not used
Referenced Image Sequence	(0008,1140)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Referenced Frame Number	(0008,1160)	3	Not used
Derivation Description	(0008,2111)	3	Not used
Source Image Sequence	(0008,2112)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Referenced Frame Number	(0008,1160)	3	Not used
Images in Acquisition	(0020,1002)	3	Not used

Image Comments	(0020,4000)	3	Not used
Quality Control Image	(0028,0300)	3	Not used
Burned In Annotation	(0028,0301)	3	Not used
Lossy Image Compression	(0028,2110)	3	Not used
Lossy Image Compression Ratio	(0028,2112)	3	Not used

4.3.8 Image Plane Module

Attribute Name	Tag	Type	Notes
Pixel Spacing	(0028,0030)	1	Used
Image Orientation (Patient)	(0020,0037)	1	Used
Image Position (Patient)	(0020,0032)	1	Used
Slice Thickness	(0018,0050)	2	Not used
Slice Location	(0020,1041)	3	Not used

4.3.9 Image Pixel Module

Attribute Name	Tag	Type	Notes
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used, must be 'MONOCHROME2'
Rows	(0028,0010)	1	Used
Columns	(0028,0011)	1	Used
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1	Used
Pixel Representation	(0028,0103)	1	Used
Pixel Data	(7FE0,0010)	1	Used
Planar Configuration	(0028,0006)	1C	Not used
Pixel Aspect Ratio	(0028,0034)	1C	Not used
Smallest Image Pixel Value	(0028,0106)	3	Not used
Largest Image Pixel Value	(0028,0107)	3	Not used
Red Palette Color Lookup Table Descriptor	(0028,1101)	1C	Not used
Green Palette Color Lookup Table Descriptor	(0028,1102)	1C	Not used
Blue Palette Color Lookup Table Descriptor	(0028,1103)	1C	Not used
Red Palette Color Lookup Table Data	(0028,1201)	1C	Not used
Green Palette Color Lookup Table Data	(0028,1202)	1C	Not used
Blue Palette Color Lookup Table Data	(0028,1203)	1C	Not used

4.3.10 MR Image Module

Attribute Name	Tag	Type	Notes
Image Type	(0008,0008)	1	Used
Samples per Pixel	(0028,0002)	1	Used

Photometric Interpretation	(0028,0004)	1	Used, must be 'MONOCHROME2'
Bits Allocated	(0028,0100)	1	Used
Scanning Sequence	(0018,0020)	1	Not used
Sequence Variant	(0018,0021)	1	Not used
Scan Options	(0018,0022)	2	Not used
MR Acquisition Type	(0018,0023)	2	Not used
Repetition Time	(0018,0080)	2C	Not used
Echo Time	(0018,0081)	2	Not used
Echo Train Length	(0018,0091)	2	Not used
Inversion Time	(0018,0082)	2C	Not used
Trigger Time	(0018,1060)	2C	Not used
Sequence Name	(0018,0024)	3	Not used
Angio Flag	(0018,0025)	3	Not used
Number of Averages	(0018,0083)	3	Not used
Imaging Frequency	(0018,0084)	3	Not used
Imaged Nucleus	(0018,0085)	3	Not used
Echo Number	(0018,0086)	3	Not used
Magnetic Field Strength	(0018,0087)	3	Not used
Spacing Between Slices	(0018,0088)	3	Not used
Number of Phase Encoding Steps	(0018,0089)	3	Not used
Percent Sampling	(0018,0093)	3	Not used
Percent Phase Field of View	(0018,0094)	3	Not used
Pixel Bandwidth	(0018,0095)	3	Not used
Nominal Interval	(0018,1062)	3	Not used
Beat Rejection Flag	(0018,1080)	3	Not used
Low R-R Value	(0018,1081)	3	Not used
High R-R Value	(0018,1082)	3	Not used
Intervals Acquired	(0018,1083)	3	Not used
Intervals Rejected	(0018,1084)	3	Not used
PVC Rejection	(0018,1085)	3	Not used
Skip Beats	(0018,1086)	3	Not used
Heart Rate	(0018,1088)	3	Not used
Cardiac Number of Images	(0018,1090)	3	Not used
Trigger Window	(0018,1094)	3	Not used
Reconstruction Diameter	(0018,1100)	3	Not used
Receiving Coil	(0018,1250)	3	Not used
Transmitting Coil	(0018,1251)	3	Not used
Acquisition Matrix	(0018,1310)	3	Not used
Phase Encoding Direction	(0018,1312)	3	Not used
Flip Angle	(0018,1314)	3	Not used
SAR	(0018,1316)	3	Not used
Variable Flip Angle Flag	(0018,1315)	3	Not used
dB/dt	(0018,1318)	3	Not used
Temporal Position Identifier	(0020,0100)	3	Not used
Number of Temporal Positions	(0020,0105)	3	Not used
Temporal Resolution	(0020,0110)	3	Not used

4.3.11 SOP Common Module

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	Used, supported value '1.2.840.10008.5.1.4.1.1.4'.
SOP Instance UID	(0008,0018)	1	Used
Specific Character Set	(0008,0005)	1C	Not used
Instance Creation Date	(0008,0012)	3	Not used
Instance Creation Time	(0008,0013)	3	Not used
Instance Creator UID	(0008,0014)	3	Not used

4.4 PET Image Object Implementation

Oncentra MasterPlan can import PET images.

4.4.1 PET Image IOD Module Table

IE	Module	Reference	DICOM Usage	Notes
Patient	Patient	C.7.1.1	M	
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not used
Series	General Series	C.7.3.1	M	
	PET Series	C.8.9.1	M	Not used
	PET Isotope	C.8.9.2	M	Not used
	PET Multi-gated Acquisition	C.8.9.3	C - Required if Series Type (0054,1000) Value 1 is GATED.	Not used
	NM/PET Patient Orientation	C.8.4.6	M	Not used
Frame of Reference	Frame of Reference	C.7.4.1	M	
Equipment	General Equipment	C.7.5.1	M	Not used
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	
	Overlay Plane	C.9.2	U	Not used
	VOI LUT	C.11.2	U	Not used
	SOP Common	C.12.1	M	

4.4.2 Patient Module

Attribute Name	Tag	Type	Notes
Patient Name	(0010,0010)	2	Used
Patient ID	(0010,0020)	2	Used
Patient's Birth Date	(0010,0030)	2	Used
Patient's Sex	(0010,0040)	2	Used
Referenced Patient Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Patient's Birth Time	(0010,0032)	3	Not used
Other Patient Ids	(0010,1000)	3	Not used
Other Patient Names	(0010,1001)	3	Not used
Ethnic Group	(0010,2160)	3	Not used
Patient Comments	(0010,4000)	3	Not used

4.4.3 General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0020,000D)	1	Used to validate study/series contents
Study Date	(0008,0020)	2	Not used
Study Time	(0008,0030)	2	Not used
Referring Physician's Name	(0008,0090)	2	Used if provided
Study ID	(0020,0010)	2	Not used
Accession Number	(0008,0050)	2	Used if provided
Study Description	(0008,1030)	3	Used if provided
Physician(s) of Record	(0008,1048)	3	Not used
Name of Physician(s) Reading Study	(0008,1060)	3	Not used
Referenced Study Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Procedure Code Sequence	(0008,1032)	3	Not used

4.4.4 General Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	Used, supported: 'PT'
Series Instance UID	(0020,000E)	1	Used to validate series contents
Series Number	(0020,0011)	2	Not used
Laterality	(0020,0060)	2C	Not used
Series Date	(0008,0021)	3	Not used
Series Time	(0008,0031)	3	Not used
Performing Physicians' Name	(0008,1050)	3	Not used
Protocol Name	(0018,1030)	3	Not used
Series Description	(0008,103E)	3	Not used
Operators' Name	(0008,1070)	3	Not used
Referenced Study Component Sequence	(0008,1111)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Body Part Examined	(0018,0015)	3	Not used
Patient Position	(0018,5100)	2C	Not used.
Smallest Pixel Value in Series	(0028,0108)	3	Not used
Largest Pixel Value in Series	(0028,0109)	3	Not used
Request Attributes Sequence	(0040,0275)	3	Not used
>Requested Procedure ID	(0040,1001)	1C	Not used
>Scheduled Procedure Step ID	(0040,0009)	1C	Not used

>Scheduled Procedure Step Description	(0040,0007)	3	Not used
>Scheduled Action Item Code Sequence	(0040,0008)	3	Not used
Performed Procedure Step ID	(0040,0253)	3	Not used
Performed Procedure Step Start Date	(0040,0244)	3	Not used
Performed Procedure Step Start Time	(0040,0245)	3	Not used
Performed Procedure Step Description	(0040,0254)	3	Not used
Performed Action Item Sequence	(0040,0260)	3	Not used

4.4.5 PET Series Module

Attribute Name	Tag	Type	Notes
Series Date	(0008,0021)	1	Not used
Series Time	(0008,0031)	1	Not used
Units	(0054,1001)	1	Not used
Counts Source	(0054,1002)	1	Not used
Series Type	(0054,1000)	1	Not used
Reprojection Method	(0054,1004)	2C	Not used
Number of R-R Intervals	(0054,0061)	1C	Not used
Number of Time Slots	(0054,0071)	1C	Not used
Number of Time Slices	(0054,0101)	1C	Not used
Number of Slices	(0054,0081)	1	Not used
Corrected Image	(0028,0051)	2	Not used
Randoms Correction Method	(0054,1100)	3	Not used
Attenuation Correction Method	(0054,1101)	3	Not used
Scatter Correction Method	(0054,1105)	3	Not used
Decay Correction	(0054,1102)	1	Not used
Reconstruction Diameter	(0018,1100)	3	Not used
Convolution Kernel	(0018,1210)	3	Not used
Reconstruction Method	(0054,1103)	3	Not used
Detector Lines of Response Used	(0054,1104)	3	Not used
Acquisition Start Condition	(0018,0073)	3	Not used
Acquisition Start Condition Data	(0018,0074)	3	Not used
Acquisition Termination Condition	(0018,0071)	3	Not used
Acquisition Termination Condition Data	(0018,0075)	3	Not used
Field of View Shape	(0018,1147)	3	Not used
Field of View Dimensions	(0018,1149)	3	Not used
Gantry/Detector Tilt	(0018,1120)	3	Not used
Gantry/Detector Slew	(0018,1121)	3	Not used
Type of Detector Motion	(0054,0202)	3	Not used
Collimator Type	(0018,1181)	2	Not used
Collimator/Grid Name	(0018,1180)	3	Not used
Axial Acceptance	(0054,1200)	3	Not used

Axial Mash	(0054,1201)	3	Not used
Transverse Mash	(0054,1202)	3	Not used
Detector Element Size	(0054,1203)	3	Not used
Coincidence Window Width	(0054,1210)	3	Not used
Energy Window Range Sequence	(0054,0013)	3	Not used
>Energy Window Lower Limit	(0054,0014)	3	Not used
>Energy Window Upper Limit	(0054,0015)	3	Not used
Secondary Counts Type	(0054,1220)	3	Not used

4.4.6 PET Isotope Module

Attribute Name	Tag	Type	Notes
Radiopharmaceutical Information Sequence	(0054,0016)	2	Not used
>Radionuclide Code Sequence	(0054,0300)	2	Not used
>Radiopharmaceutical Route	(0018,1070)	3	Not used
>Administration Route Code Sequence	(0054,0302)	3	Not used
>Radiopharmaceutical Volume	(0018,1071)	3	Not used
>Radiopharmaceutical Start Time	(0018,1072)	3	Not used
>Radiopharmaceutical Stop Time	(0018,1073)	3	Not used
>Radionuclide Total Dose	(0018,1074)	3	Not used
>Radionuclide Half Life	(0018,1075)	3	Not used
>Radionuclide Positron Fraction	(0018,1076)	3	Not used
>Radiopharmaceutical Specific Activity	(0018,1077)	3	Not used
>Radiopharmaceutical Code Sequence	(0018,0031)	3	Not used
>Radiopharmaceutical Code Sequence	(0054,0304)	3	Not used
Intervention Drug Information Sequence	(0018,0026)	3	Not used
>Intervention Drug Name	(0018,0034)	3	Not used
>Intervention Drug Code Sequence	(0018,0029)	3	Not used
>Intervention Drug Start Time	(0018,0035)	3	Not used
>Intervention Drug Stop Time	(0018,0027)	3	Not used
>Intervention Drug Dose	(0018,0028)	3	Not used

4.4.7 PET Multi-gated Acquisition Module

Attribute Name	Tag	Type	Notes
Beat Rejection Flag	(0018,1080)	2	Not used
Trigger Source or Type	(0018,1061)	3	Not used

PVC Rejection	(0018,1085)	3	Not used
Skip Beats	(0018,1086)	3	Not used
Heart Rate	(0018,1088)	3	Not used
Framing Type	(0018,1064)	3	Not used

4.4.8 NM/PET Patient Orientation

Attribute Name	Tag	Type	Notes
Patient Orientation Code Sequence	(0054,0410)	2	Not used
> Patient Orientation Modifier Code Sequence	(0054,0412)	2C	Not used
Patient Gantry Relationship Code Sequence	(0054,0414)	2	Not used

4.4.9 Frame of Reference

Attribute Name	Tag	Type	Notes
Frame of Reference UID	(0020,0052)	1	Used to verify reference from RT Structure Set if RT Structure Set is imported.
Position Reference Indicator	(0020,1040)	2	Not used

4.4.10 General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Not used
Institution Name	(0008,0080)	3	Not used
Institution Address	(0008,0081)	3	Not used
Station Name	(0008,1010)	3	Not used
Institutional Department Name	(0008,1040)	3	Not used
Manufacturer's Model Name	(0008,1090)	3	Not used
Device Serial Number	(0018,1000)	3	Not used
Software Versions	(0018,1020)	3	Not used
Spatial Resolution	(0018,1050)	3	Not used
Date of Last Calibration	(0018,1200)	3	Not used
Time of Last Calibration	(0018,1201)	3	Not used
Pixel Padding Value	(0028,0120)	3	Used

4.4.11 General Image Module

Attribute Name	Tag	Type	Notes
Instance Number	(0020,0013)	2	Not used
Patient Orientation	(0020,0020)	2C	Not used
Content Date	(0008,0023)	2C	Not used
Content Time	(0008,0033)	2C	Not used
Image Type	(0008,0008)	3	Used
Acquisition Number	(0020,0012)	3	Not used
Acquisition Date	(0008,0022)	3	Not used
Acquisition Time	(0008,0032)	3	Not used
Acquisition Datetime	(0008,002A)	3	Not used

Referenced Image Sequence	(0008,1140)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Referenced Frame Number	(0008,1160)	3	Not used
Derivation Description	(0008,2111)	3	Not used
Source Image Sequence	(0008,2112)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Referenced Frame Number	(0008,1160)	3	Not used
Images in Acquisition	(0020,1002)	3	Not used
Image Comments	(0020,4000)	3	Not used
Quality Control Image	(0028,0300)	3	Not used
Burned In Annotation	(0028,0301)	3	Not used
Lossy Image Compression	(0028,2110)	3	Not used
Lossy Image Compression Ratio	(0028,2112)	3	Not used

4.4.12 Image Plane

Attribute Name	Tag	Type	Notes
Pixel Spacing	(0028,0030)	1	Used
Image Orientation (Patient)	(0020,0037)	1	Used
Image Position (Patient)	(0020,0032)	1	Used
Slice Thickness	(0018,0050)	2	Not used
Slice Location	(0020,1041)	3	Not used

4.4.13 Image Pixel

Attribute Name	Tag	Type	Notes
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used, must be 'MONOCHROME2'
Rows	(0028,0010)	1	Used
Columns	(0028,0011)	1	Used
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1	Used
Pixel Representation	(0028,0103)	1	Used
Pixel Data	(7FE0,0010)	1	Used
Planar Configuration	(0028,0006)	1C	Not used
Pixel Aspect Ratio	(0028,0034)	1C	Not used
Smallest Image Pixel Value	(0028,0106)	3	Not used
Largest Image Pixel Value	(0028,0107)	3	Not used
Red Palette Color Lookup Table Descriptor	(0028,1101)	1C	Not used

Green Palette Color Lookup Table Descriptor	(0028,1102)	1C	Not used
Blue Palette Color Lookup Table Descriptor	(0028,1103)	1C	Not used
Red Palette Color Lookup Table Data	(0028,1201)	1C	Not used
Green Palette Color Lookup Table Data	(0028,1202)	1C	Not used
Blue Palette Color Lookup Table Data	(0028,1203)	1C	Not used

4.4.14 PET Image Module

Attribute Name	Tag	Type	Notes
Image Type	(0008,0008)	3	Used
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used, must be 'MONOCHROME2'
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1	Used
Rescale Intercept	(0028,1052)	1	Not used
Rescale Slope	(0028,1053)	1	Not used
Frame Reference Time	(0054,1300)	1	Not used
Trigger Time	(0018,1060)	1C	Not used
Frame Time	(0018,1063)	1C	Not used
Low R-R Value	(0018,1081)	1C	Not used
High R-R Value	(0018,1082)	1C	Not used
Lossy Image Compression	(0028,2110)	1C	Not used
Image Index	(0054,1330)	1	Not used
Acquisition Date	(0008,0032)	2	Not used
Acquisition Time	(0008,0032)	2	Not used
Actual Frame Duration	(0018,1242)	2	Not used
Nominal Interval	(0018,1062)	3	Not used
Intervals Acquired	(0018,1083)	3	Not used
Intervals Rejected	(0018,1084)	3	Not used
Primary (Prompts) Counts Accumulated	(0054,1310)	3	Not used
Secondary Counts Accumulated	(0054,1311)	3	Not used
Slice Sensitivity Factor	(0054,1320)	3	Not used
Decay Factor	(0054,1321)	1C	Not used
Dose Calibration Factor	(0054,1322)	3	Not used
Scatter Fraction Factor	(0054,1323)	3	Not used
Dead Time Factor	(0054,1324)	3	Not used
Referenced Overlay Sequence	(0008,1130)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Referenced Curve Sequence	(0008,1145)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used

Anatomic Region Sequence	(0008,2218)	3	Not used
>Anatomic Region Modifier Sequence	(0008,2220)	3	Not used
Primary Anatomic Structure Sequence	(0008,2228)	3	Not used
>Primary Anatomic Structure Modifier	(0008,2228)	3	Not used
>Primary Anatomic Structure Modifier Sequence	(0008,2230)	3	Not used

4.4.15 SOP Common

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	Used, supported value '1.2.840.10008.5.1.4.1.1.128'.
SOP Instance UID	(0008,0018)	1	Not used
Specific Character Set	(0008,0005)	1C	Used
Instance Creation Date	(0008,0012)	3	Not used
Instance Creation Time	(0008,0013)	3	Not used
Instance Creator UID	(0008,0014)	3	Not used

4.5 RT Structure Set Information Object Implementation

Oncentra RT Viewer can import RT Structures.

A structure set that is to be used in external treatment planning must have contours of type EXTERNAL for all slices in the reference image series (the series used as dose plan basis).

4.5.1 RT Structure Set IOD Module Table

IE	Module	Reference	DICOM Usage	Notes
Patient	Patient	C.7.1.1	M	
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not used
Series	RT Series	C.8.8.1	M	
Equipment	General Equipment	C.7.5.1	M	
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	Used
	Audio	C.10.3	U	Not used
	SOP Common	C.12.1	M	

4.5.2 Patient Module

Attribute Name	Tag	Type	Notes
Patient Name	(0010,0010)	2	Used.
Patient ID	(0010,0020)	2	Used
Patient's Birth Date	(0010,0030)	2	Used.
Patient's Sex	(0010,0040)	2	Used
Referenced Patient Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used

>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Patient's Birth Time	(0010,0032)	3	Not used
Other Patient Ids	(0010,1000)	3	Not used
Other Patient Names	(0010,1001)	3	Not used
Ethnic Group	(0010,2160)	3	Not used
Patient Comments	(0010,4000)	3	Not used

4.5.3 General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0020,000D)	1	Used to validate study/series contents.
Study Date	(0008,0020)	2	Not used
Study Time	(0008,0030)	2	Not used
Referring Physician's Name	(0008,0090)	2	Not used
Study ID	(0020,0010)	2	Not used
Accession Number	(0008,0050)	2	Not used
Study Description	(0008,1030)	3	Not used
Physician(s) of Record	(0008,1048)	3	Not used
Name of Physician(s) Reading Study	(0008,1060)	3	Not used
Referenced Study Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Procedure Code Sequence	(0008,1032)	3	Not used

4.5.4 RT Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	Used, supported: 'RTSTRUCT'
Series Instance UID	(0020,000E)	1	Required
Series Number	(0020,0011)	2	Not used
Series Description	(0008,103E)	3	Not used
Referenced Study Component Sequence	(0008,1111)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used

4.5.5 General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Used
Institution Name	(0008,0080)	3	Not used
Institution Address	(0008,0081)	3	Not used
Station Name	(0008,1010)	3	Not used
Institutional Department Name	(0008,1040)	3	Not used
Manufacturer's Model Name	(0008,1090)	3	Not used

Device Serial Number	(0018,1000)	3	Not used
Software Versions	(0018,1020)	3	Not used
Spatial Resolution	(0018,1050)	3	Not used
Date of Last Calibration	(0018,1200)	3	Not used
Time of Last Calibration	(0018,1201)	3	Not used
Pixel Padding Value	(0028,0120)	3	Not used

4.5.6 Structure Set Module

Attribute Name	Tag	Type	Notes
Structure Set Label	(3006,0002)	1	Required
Structure Set Name	(3006,0004)	3	Not used
Structure Set Description	(3006,0006)	3	Not used
Instance Number	(0020,0013)	3	Not used
Structure Set Date	(3006,0008)	2	Not used
Structure Set Time	(3006,0009)	2	Not used
Referenced Frame of Reference Sequence	(3006,0010)	3	Required
>Frame of Reference UID	(0020,0052)	1C	Required
>Frame of Reference Relationship Sequence	(3006,00C0)	3	Used
>>Related Frame of Reference UID	(3006,00C2)	1C	Required if Frame of Reference Relationship Sequence (3006,00C0) is provided.
>>Frame of Reference Transformation Type	(3006,00C4)	1C	Required if Frame of Reference Relationship Sequence (3006,00C0) is provided. Supported value "HOMOGENEOUS"
>>Frame of Reference Transformation Matrix	(3006,00C6)	1C	Required if Frame of Reference Relationship Sequence (3006,00C0) is provided.
>>Frame of Reference Transformation Comment	(3006,00C8)	3	Not used
>RT Referenced Study Sequence	(3006,0012)	3	Required
>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>Referenced SOP Instance UID	(0008,1155)	1C	Required
>>RT Referenced Series Sequence	(3006,0014)	1C	Required
>>>Series Instance UID	(0020,000E)	1C	Required
>>>Contour Image Sequence	(3006,0016)	1C	Not used
>>>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>>>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>>>>Referenced Frame Number	(0008,1160)	3	Not used
Structure Set ROI Sequence	(3006,0020)	3	Required
>ROI Number	(3006,0022)	1C	Required
>Referenced Frame of Reference UID	(3006,0024)	1C	Required
>ROI Name	(3006,0026)	2C	Used if available
>ROI Description	(3006,0028)	3	Not used
>ROI Volume	(3006,002C)	3	Not used
>ROI Generation Algorithm	(3006,0036)	2C	Not Used

>ROI Generation Description	(3006,0038)	3	Not used
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4.5.7 ROI Contour Module

Attribute Name	Tag	Type	Notes
ROI Contour Sequence	(3006,0039)	1	Used
>Referenced ROI Number	(3006,0084)	1	Used
>ROI Display Color	(3006,002A)	3	Used for display purposes if provided.
>Contour Sequence	(3006,0040)	3	Required
>>Contour Number	(3006,0048)	3	Not used
>>Attached Contours	(3006,0049)	3	Not used
>>Contour Image Sequence	(3006,0016)	3	Required
>>>Referenced SOP Class UID	(0008,1150)	1C	Required
>>>Referenced SOP Instance UID	(0008,1155)	1C	Required
>>>Referenced Frame Number	(0008,1160)	1C	Not used
>>Contour Geometric Type	(3006,0042)	1C	Required.
>>Contour Slab Thickness	(3006,0044)	3	Not used
>>Contour Offset Vector	(3006,0045)	3	Not used
>>Number of Contour Points	(3006,0046)	1C	Required
>>Contour Data	(3006,0050)	1C	Required.

4.5.8 RT ROI Observations Module

Attribute Name	Tag	Type	Notes
RT ROI Observations Sequence	(3006,0080)	1	Used
>Observation Number	(3006,0082)	1	Used
>Referenced ROI Number	(3006,0084)	1	Used
>ROI Observation Label	(3006,0085)	3	Not used
>ROI Observation Description	(3006,0088)	3	Not used
>RT Related ROI Sequence	(3006,0030)	3	Not used
>>Referenced ROI Number	(3006,0084)	1C	Not used
>>RT ROI Relationship	(3006,0033)	3	Not used
>RT ROI Identification Code Sequence	(3006,0086)	3	Not used
>>Code Value	(0008,0100)	1C	Not used
>>Coding Scheme Designator	(0008,0102)	1C	Not used
>>Code Meaning	(0008,0104)	3	Not used
>Related RT ROI Observations Sequence	(3006,00A0)	3	Not used
>>Observation Number	(3006,0082)	1C	Not used
>RT ROI Interpreted Type	(3006,00A4)	2	Used if provided

>ROI Interpreter	(3006,00A6)	2	Not used
>Material ID	(300A,00E1)	3	Not used
>ROI Physical Properties Sequence	(3006,00B0)	3	Used if provided.
>>ROI Physical Property	(3006,00B2)	1C	Used if provided
>>ROI Physical Property Value	(3006,00B4)	1C	Used if provided If the value is <= 0.0 the physical property is silently ignored.

4.5.9 Approval Module

Attribute Name	Tag	Type	Notes
Approval Status	(300E,0002)	1	Used
Review Date	(300E,0004)	2C	Used
Review Time	(300E,0005)	2C	Used
Reviewer Name	(300E,0008)	2C	Used

4.5.10 SOP Common Module

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	Used, supported value '1.2.840.10008.5.1.4.1.1.481.3'
SOP Instance UID	(0008,0018)	1	Used
Specific Character Set	(0008,0005)	1C	Not used
Instance Creation Date	(0008,0012)	3	Not used
Instance Creation Time	(0008,0013)	3	Not used
Instance Creator UID	(0008,0014)	3	Not used

4.6 RT Plan Information Object Implementation

Oncentra RT Viewer can import RT Plan objects.

RT Plans can reference an RT Structure Set, which in turn can reference one or many image series.

4.6.1 RT Plan IOD Module Table

IE	Module	Reference	DICOM Usage	Notes
Patient	Patient	C.7.1.1	M	
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not used
Series	RT Series	C.8.8.1	M	
Frame of Reference	Frame of Reference	C.7.4.1	U	Used
Equipment	General Equipment	C.7.5.1	M	
Plan	RT General Plan	C.8.8.9	M	
	RT Prescription	C.8.8.10	U	Used
	RT Tolerance Tables	C.8.8.11	U	Not used
	RT Patient Setup	C.8.8.12	U	Not used
	RT Fraction Scheme	C.8.8.13	U	Used
	RT Beams	C.8.8.14	C - Required if RT Fraction Scheme Module exists and Number of Beams (300A,0080) is greater than zero for one or more fraction groups	Used
	RT Brachy Application Setups	C.8.8.15	C	Not used
	Approval	C.8.8.16	U	Used

	Audio	C.10.3	U	Not used
	SOP Common	C.12.1	M	

4.6.2 Patient Module

Attribute Name	Tag	Type	Notes
Patient Name	(0010,0010)	2	Used
Patient ID	(0010,0020)	2	Used
Patient's Birth Date	(0010,0030)	2	Used
Patient's Sex	(0010,0040)	2	Used
Referenced Patient Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Patient's Birth Time	(0010,0032)	3	Not used
Other Patient Ids	(0010,1000)	3	Not used
Other Patient Names	(0010,1001)	3	Not used
Ethnic Group	(0010,2160)	3	Not used
Patient Comments	(0010,4000)	3	Not used

4.6.3 General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0020,000D)	1	Used to validate study/series contents.
Study Date	(0008,0020)	2	Not used
Study Time	(0008,0030)	2	Not used
Referring Physician's Name	(0008,0090)	2	Not used
Study ID	(0020,0010)	2	Not used
Accession Number	(0008,0050)	2	Not used
Study Description	(0008,1030)	3	Not used
Physician(s) of Record	(0008,1048)	3	Not used
Name of Physician(s) Reading Study	(0008,1060)	3	Not used
Referenced Study Sequence	(0008,1120)	3	Required
>Referenced SOP Class UID	(0008,1150)	1C	Required
>Referenced SOP Instance UID	(0008,1155)	1C	Required
Procedure Code Sequence	(0008,1032)	3	Not used

4.6.4 RT Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	Used, supported: 'RTPLAN'
Series Instance UID	(0020,000E)	1	Used
Series Number	(0020,0011)	2	Not used
Series Description	(0008,103E)	3	Not used
Referenced Study Component Sequence	(0008,1111)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used

>Referenced SOP Instance UID	(0008,1155)	1C	Not used
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4.6.5 Frame of Reference Module

Attribute Name	Tag	Type	Notes
Frame of Reference UID	(0020,0052)	1	Used if present
Position Reference Indicator	(0020,1040)	2	Not used

4.6.6 General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Not used
Institution Name	(0008,0080)	3	Not used
Institution Address	(0008,0081)	3	Not used
Station Name	(0008,1010)	3	Not used
Institutional Department Name	(0008,1040)	3	Not used
Manufacturer's Model Name	(0008,1090)	3	Not used
Device Serial Number	(0018,1000)	3	Not used
Software Versions	(0018,1020)	3	Not used
Spatial Resolution	(0018,1050)	3	Not used
Date of Last Calibration	(0018,1200)	3	Not used
Time of Last Calibration	(0018,1201)	3	Not used
Pixel Padding Value	(0028,0120)	3	Not used

4.6.7 RT General Plan Module

Attribute Name	Tag	Type	Notes
RT Plan Label	(300A,0002)	1	Used
RT Plan Name	(300A,0003)	3	Not used
Operators' Name	(0008,1070)	2	Not used
RT Plan Date	(300A,0006)	2	Not used
RT Plan Time	(300A,0007)	2	Not used
Treatment Protocols	(300A,0009)	3	Not used
Treatment Intent	(300A,000A)	3	Not used
Treatment Sites	(300A,000B)	3	Not used
RT Plan Geometry	(300A,000C)	1	Used
Referenced Structure Set Sequence	(300C,0060)	1C	Required if RT Plan Geometry (300A,000C) is 'PATIENT'.
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Required
Referenced Dose Sequence	(300C,0080)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Referenced RT Plan Sequence	(300C,0002)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used

>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>RT Plan Relationship	(300A,0055)	1C	Not used

4.6.8 RT Prescription Module

Attribute Name	Tag	Type	Notes
Prescription Description	(300A,000E)	3	Not used
Dose Reference Sequence	(300A,0010)	3	Used if provided
>Dose Reference Number	(300A,0012)	1C	Not used
>Dose Reference UID	(300A,0013)	3	Not used
>Dose Reference Structure Type	(300A,0014)	1C	Used if provided
>Dose Reference Description	(300A,0016)	3	Used if provided Used to describe the type of constraint/objective used for optimization. One of the following values: UNIFORM_DOSE MIN_DOSE MAX_DOSE MIN_DVH MAX_DVH UNIFORMITY_CONSTRAINT MIN_DOSE_CONSTRAINT MAX_DOSE_CONSTRAINT MIN_DVH_CONSTRAINT MAX_DVH_CONSTRAINT MAX_DOSE_SURFACE MIN_DOSE_SURFACE
>Referenced ROI Number	(3006,0084)	1C	Used if provided
>Dose Reference Point Coordinates	(300A,0018)	1C	Not used
>Nominal Prior Dose	(300A,001A)	3	Not used
>Dose Reference Type	(300A,0020)	1C	Used if provided.
>Constraint Weight	(300A,0021)	3	Used if provided
>Delivery Warning Dose	(300A,0022)	3	Not used
>Delivery Maximum Dose	(300A,0023)	3	Not used
>Target Minimum Dose	(300A,0025)	3	Used If provided
>Target Prescription Dose	(300A,0026)	3	Used If provided
>Target Maximum Dose	(300A,0027)	3	Used If provided
>Target Underdose Volume Fraction	(300A,0028)	3	Used If provided
>Organ at Risk Full-volume Dose	(300A,002A)	3	Used If provided
>Organ at Risk Limit Dose	(300A,002B)	3	Used If provided
>Organ at Risk Maximum Dose	(300A,002C)	3	Used If provided
>Organ at Risk Overdose Volume Fraction	(300A,002D)	3	Used If provided

4.6.9 RT Patient Setup Module

Attribute Name	Tag	Type	Notes
Patient Setup Sequence	(300A,0180)	1	Used
>Patient Setup Number	(300A,0182)	1	Used
>Patient Position	(0018,5100)	1C	Used. Supported terms: HFS, HFP, FFS, FFP, must be same in all items in the Sequence.
>Patient Additional Position	(300A,0184)	1C	Not used
>Fixation Device Sequence	(300A,0190)	3	Not used
>>Fixation Device Type	(300A,0192)	1C	Not used
>>Fixation Device Label	(300A,0194)	2C	Not used
>>Fixation Device Description	(300A,0196)	3	Not used
>>Fixation Device Position	(300A,0198)	3	Not used
>Shielding Device Sequence	(300A,01A0)	3	Not used
>>Shielding Device Type	(300A,01A2)	1C	Not used
>>Shielding Device Label	(300A,01A4)	2C	Not used
>>Shielding Device Description	(300A,01A6)	3	Not used
>>Shielding Device Position	(300A,01A8)	3	Not used
>Setup Technique	(300A,01B0)	3	Not used
>Setup Technique Description	(300A,01B2)	3	Not used
>Setup Device Sequence	(300A,01B4)	3	Not used
>>Setup Device Type	(300A,01B6)	1C	Not used
>>Setup Device Label	(300A,01B8)	2C	Not used
>>Setup Device Description	(300A,01BA)	3	Not used
>>Setup Device Parameter	(300A,01BC)	2C	Not used
>>Setup Reference Description	(300A,01D0)	3	Not used
>Table Top Vertical Setup Displacement	(300A,01D2)	3	Not used
>Table Top Longitudinal Setup Displacement	(300A,01D4)	3	Not used
>Table Top Lateral Setup Displacement	(300A,01D6)	3	Not used

4.6.10 RT Fraction Scheme Module

Attribute Name	Tag	Type	Notes
Fraction Group Sequence	(300A,0070)	1	Used
>Fraction Group Number	(300A,0071)	1	Used
>Referenced Patient Setup Number	(300C,006A)	3	Not used
>Referenced Dose Sequence	(300C,0080)	3	Not used

>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Referenced Dose Reference Sequence	(300C,0050)	3	Not used
>>Referenced Dose Reference Number	(300C,0051)	1C	Not used
>>Constraint Weight	(300A,0021)	3	Not used
>>Delivery Warning Dose	(300A,0022)	3	Not used
>>Delivery Maximum Dose	(300A,0023)	3	Not used
>>Target Minimum Dose	(300A,0025)	3	Not used
>>Target Prescription Dose	(300A,0026)	3	Not used
>>Target Maximum Dose	(300A,0027)	3	Not used
>>Target Underdose Volume Fraction	(300A,0028)	3	Not used
>>Organ at Risk Full-volume Dose	(300A,002A)	3	Not used
>>Organ at Risk Limit Dose	(300A,002B)	3	Not used
>>Organ at Risk Maximum Dose	(300A,002C)	3	Not used
>>Organ at Risk Overdose Volume Fraction	(300A,002D)	3	Not used
>Number of Fractions Planned	(300A,0078)	2	Used if provided.
>Number of Fractions Per Day	(300A,0079)	3	Not used
>Repeat Fraction Cycle Length	(300A,007A)	3	Not used
>Fraction Pattern	(300A,007B)	3	Not used
>Number of Beams	(300A,0080)	1	Used
>Referenced Beam Sequence	(300C,0004)	1C	Used
>>Referenced Beam Number	(300C,0006)	1C	Used
>>Beam Dose Specification Point	(300A,0082)	3	Used if provided
>>Beam Dose	(300A,0084)	3	Used if provided
>>Beam Meterset	(300A,0086)	3	Used if provided.
>Number of Brachy Application Setups	(300A,00A0)	1	Not used
>Referenced Brachy Application Setup Sequence	(300C,000A)	1C	Not used
>>Referenced Brachy Application Setup Number	(300C,000C)	1C	Not used
>>Brachy Application Setup Dose Specification Point	(300A,00A2)	3	Not used
>>Brachy Application Setup Dose	(300A,00A4)	3	Not used

4.6.11 RT Beams Module

Attribute Name	Tag	Type	Notes
Beam Sequence	(300A,00B0)	1	Used
>Beam Number	(300A,00C0)	1	Used
>Beam Name	(300A,00C2)	3	Used if provided.
>Beam Description	(300A,00C3)	3	Not used.
>Beam Type	(300A,00C4)	1	Used (Dynamic beam type supported for Gantry ARCs only. All other dynamic rotations are not supported, Dynamic IMRT is not supported.)
>Radiation Type	(300A,00C6)	2	Required Supported terms 'PHOTON' or 'ELECTRON'
>Treatment Machine Name	(300A,00B2)	2	Required
>Manufacturer	(0008,0070)	3	Not used
>Institution Name	(0008,0080)	3	Not used
>Institution Address	(0008,0081)	3	Not used
>Institutional Department Name	(0008,1040)	3	Not used
>Manufacturer's Model Name	(0008,1090)	3	Not used
>Device Serial Number	(0018,1000)	3	Not used
>Primary Dosimeter Unit	(300A,00B3)	3	Required if Beam Meterset (300A,0086) provided
>Referenced Tolerance Table Number	(300C,00A0)	3	Not used
>Source-Axis Distance	(300A,00B4)	3	Used if provided
>Beam Limiting Device Sequence	(300A,00B6)	1	Used
>>RT Beam Limiting Device Type	(300A,00B8)	1	Used
>>Source to Beam Limiting Device Distance	(300A,00BA)	3	Not used
>>Number of Leaf/Jaw Pairs	(300A,00BC)	1	Used
>>Leaf Position Boundaries	(300A,00BE)	2C	Required
>Referenced Patient Setup Number	(300C,006A)	3	Used
>Referenced Reference Image Sequence	(300C,0042)	3	Not used
>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>>Reference Image Number	(300A,00C8)	1C	Not used
>>Start Cumulative Meterset Weight	(300C,0008)	3	Not used
>>End Cumulative Meterset Weight	(300C,0009)	3	Not used
>Planned Verification Image Sequence	(300A,00CA)	3	Not used
>>Start Cumulative Meterset Weight	(300C,0008)	3	Not used
>>Meterset Exposure	(3002,0032)	3	Not used
>>End Cumulative Meterset Weight	(300C,0009)	3	Not used
>>RT Image Plane	(3002, 000C)	3	Not used

>>X-Ray Image Receptor Angle	(3002,000E)	3	Not used
>>RT Image Orientation	(3002,0010)	3	Not used
>>RT Image Position	(3002,0012)	3	Not used
>>RT Image SID	(3002,0026)	3	Not used
>>Imaging Device-Specific Acquisition Parameters	(300A,00CC)	3	Not used
>>Referenced Reference Image Number	(300C,0007)	3	Not used
>Treatment Delivery Type	(300A,00CE)	3	Not used
>Referenced Dose Sequence	(300C,0080)	3	Not used
>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>Number of Wedges	(300A,00D0)	1	Used, supported: 0 or 1
>Wedge Sequence	(300A,00D1)	1C	Required
>>Wedge Number	(300A,00D2)	1C	Required
>>Wedge Type	(300A,00D3)	2C	Used Supported values: STANDARD DYNAMIC MOTORIZED
>>Wedge ID	(300A,00D4)	3	Required
>>Wedge Angle	(300A,00D5)	2C	Required
>>Wedge Factor	(300A,00D6)	2C	Not used
>>Wedge Orientation	(300A,00D8)	2C	Required
>>Source to Wedge Tray Distance	(300A,00DA)	3	Not used
>Number of Compensators	(300A,00E0)	1	Not used
>Total Compensator Tray Factor	(300A,00E2)	3	Not used
>Compensator Sequence	(300A,00E3)	1C	Not used
>>Compensator Number	(300A,00E4)	1C	Not used
>>Material ID	(300A,00E1)	2C	Not used
>>Compensator ID	(300A,00E5)	3	Not used
>>Source to Compensator Tray Distance	(300A,00E6)	2C	Not used
>>Compensator Rows	(300A,00E7)	1C	Not used
>>Compensator Columns	(300A,00E8)	1C	Not used
>>Compensator Pixel Spacing	(300A,00E9)	1C	Not used
>>Compensator Position	(300A,00EA)	1C	Not used
>>Compensator Transmission Data	(300A,00EB)	1C	Not used
>>Compensator Thickness Data	(300A,00EC)	1C	Not used
>Number of Boli	(300A,00ED)	1	Required
>Referenced Bolus Sequence	(300C,00B0)	1C	Required if Number of Boli (300A, 00ED) is greater than 0.

>>Referenced ROI Number	(3006,0084)	1C	Required if Number of Boli (300A, 00ED) is greater than 0.
>Number of Blocks	(300A,00F0)	1	Required
>Total Block Tray Factor	(300A,00F2)	3	Used if available
>Block Sequence	(300A,00F4)	1C	Required if Number of Blocks (300A, 00F0) is > 0.
>>Block Tray ID	(300A,00F5)	3	Not used
>>Source to Block Tray Distance	(300A,00F6)	2C	Not used
>>Block Type	(300A,00F8)	1C	Used
>>Block Divergence	(300A,00FA)	2C	Not used
>>Block Mounting Position	(300A,00FB)	3	Not used
>>Block Number	(300A,00FC)	1C	Required if Number of Blocks (300A,00F0) is > 0.
>>Block Name	(300A,00FE)	3	Used for display
>>Material ID	(300A,00E1)	2C	Used
>>Block Thickness	(300A,0100)	2C	Required if Material ID (300A,00E1) is provided.
>>Block Transmission	(300A,0102)	2C	Used
>>Block Number of Points	(300A,0104)	2C	Required if Number of Blocks (300A,00F0) is > 0; a minimum of 3 points is required.
>>Block Data	(300A,0106)	2C	Required if Number of Blocks (300A,00F0) is > 0.
>Applicator Sequence	(300A,0107)	3	Not used
>>Applicator ID	(300A,0108)	1C	Not used
>>Applicator Type	(300A,0109)	1C	Not used
>>Applicator Description	(300A,010A)	3	Not used
>Final Cumulative Meterset Weight	(300A,010E)	1C	Used
>Number of Control Points	(300A,0110)	1	Used
>Control Point Sequence	(300A,0111)	1	Used
>>Control Point Index	(300A,0112)	1C	Required
>>Cumulative Meterset Weight	(300A,0134)	2C	Used
>>Referenced Dose Reference Sequence	(300C,0050)	3	Not used
>>>Referenced Dose Reference Number	(300C,0051)	1C	Not used
>>>Cumulative Dose Reference Coefficient	(300A,010C)	2C	Not used
>>Nominal Beam Energy	(300A,0114)	3	Used
>>Dose Rate Set	(300A,0115)	3	Not used
>>Wedge Position Sequence	(300A,0116)	3	Used if provided
>>>Referenced Wedge Number	(300C,00C0)	1C	Required
>>>Wedge Position	(300A,0118)	1C	Required
>>Beam Limiting Device Position Sequence	(300A,011A)	1C	Required
>>>RT Beam Limiting Device Type	(300A,00B8)	1C	Required
>>>Leaf/Jaw Positions	(300A,011C)	1C	Required
>>Gantry Angle	(300A,011E)	1C	Required
>>Gantry Rotation Direction	(300A,011F)	1C	Required for ARC beams
>>Beam Limiting Device Angle	(300A,0120)	1C	Required
>>Beam Limiting Device Rotation Direction	(300A,0121)	1C	Supported value 'NONE'.
>>Patient Support Angle	(300A,0122)	1C	Required

>>Patient Support Rotation Direction	(300A,0123)	1C	Supported value 'NONE'.
>>Table Top Eccentric Axis Distance	(300A,0124)	3	Not used
>>Table Top Eccentric Angle	(300A,0125)	1C	Not used
>>Table Top Eccentric Rotation Direction	(300A,0126)	1C	Not used
>>Table Top Vertical Position	(300A,0128)	2C	Not used
>>Table Top Longitudinal Position	(300A,0129)	2C	Not used
>>Table Top Lateral Position	(300A,012A)	2C	Not used
>>Isocenter Position	(300A,012C)	2C	Required
>>Surface Entry Point	(300A,012E)	3	Not used
>>Source to Surface Distance	(300A,0130)	3	Not used

4.6.12 Approval Module

Attribute Name	Tag	Type	Notes
Approval Status	(300E,0002)	1	Used
Review Date	(300E,0004)	2C	Used
Review Time	(300E,0005)	2C	Used
Reviewer Name	(300E,0008)	2C	Used

4.6.13 SOP Common Module

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	Used, supported value '1.2.840.10008.5.1.4.1.1.481.5'
SOP Instance UID	(0008,0018)	1	Used
Specific Character Set	(0008,0005)	1C	Not used
Instance Creation Date	(0008,0012)	3	Not used
Instance Creation Time	(0008,0013)	3	Not used
Instance Creator UID	(0008,0014)	3	Not used

4.7 RT Image Information Object Implementation

Oncentra RT Viewer can import RT Image objects.

Note:

In Oncentra RT Viewer, RT Image objects with the beam settings are not provided by (e.g.) the beam limiting device sequence, instead detailed beam settings must be extracted from the corresponding RT Plan object.

4.7.1 RT Image IOD Module Table

IE	Module	Reference	DICOM Usage	Notes
Patient	Patient	C.7.1.1	M	
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not used
Series	RT Series	C.8.8.1	M	
Frame of Reference	Frame of Reference	C.7.4.1	U	Not used

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-Required if contrast media was used in this image.	Not used
	Cine	C.7.6.5	C - Required if multi-frame image is a cine image.	Not used
	Multi-Frame	C.7.6.6	C - Required if pixel data is multi-frame data.	Not used
	RT Image	C.8.8.2	M	
	Modality LUT	C.11.1	U	Not used
	VOI LUT	C.11.2	U	Used
	Approval	C.8.8.16	U	Not used
	Curve	C.10.2	U	Not used
	Audio	C.10.3	U	Not used
	SOP Common	C.12.1	M	

4.7.2 Patient Module

Attribute Name	Tag	Type	Notes
Patient Name	(0010,0010)	2	Used
Patient ID	(0010,0020)	2	Used
Patient's Birth Date	(0010,0030)	2	Used
Patient's Sex	(0010,0040)	2	Used
Referenced Patient Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Patient's Birth Time	(0010,0032)	3	Not used
Other Patient Ids	(0010,1000)	3	Not used
Other Patient Names	(0010,1001)	3	Not used
Ethnic Group	(0010,2160)	3	Not used
Patient Comments	(0010,4000)	3	Not used

4.7.3 General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0020,000D)	1	Used to validate study/series contents.
Study Date	(0008,0020)	2	Not used
Study Time	(0008,0030)	2	Not used
Referring Physician's Name	(0008,0090)	2	Not used
Study ID	(0020,0010)	2	Not used
Accession Number	(0008,0050)	2	Not used
Study Description	(0008,1030)	3	Not used
Physician(s) of Record	(0008,1048)	3	Not used
Name of Physician(s) Reading Study	(0008,1060)	3	Not used
Referenced Study Sequence	(0008,1110)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used

Procedure Code Sequence	(0008,1032)	3	Not used
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4.7.4 RT Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	Supported value 'RTIMAGE'
Series Instance UID	(0020,000E)	1	Used
Series Number	(0020,0011)	2	Required
Series Description	(0008,103E)	3	Not used
Referenced Study Component Sequence	(0008,1111)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used

4.7.5 Frame of Reference Module

Attribute Name	Tag	Type	Notes
Frame of Reference UID	(0020,0052)	1	Used if present
Position Reference Indicator	(0020,1040)	2	Not used

4.7.6 General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Used
Institution Name	(0008,0080)	3	Not used
Institution Address	(0008,0081)	3	Not used
Station Name	(0008,1010)	3	Not used
Institutional Department Name	(0008,1040)	3	Not used
Manufacturer's Model Name	(0008,1090)	3	Not used
Device Serial Number	(0018,1000)	3	Not used
Software Versions	(0018,1020)	3	Not used
Spatial Resolution	(0018,1050)	3	Not used
Date of Last Calibration	(0018,1200)	3	Not used
Time of Last Calibration	(0018,1201)	3	Not used
Pixel Padding Value	(0028,0120)	3	Not used

4.7.7 General Image Module

Attribute Name	Tag	Type	Notes
Instance Number	(0020,0013)	2	Used
Patient Orientation	(0020,0020)	2C	Not used
Image Date	(0008,0023)	2C	Not used
Image Time	(0008,0033)	2C	Not used
Image Type	(0008,0008)	3	Used
Acquisition Number	(0020,0012)	3	Not used
Acquisition Date	(0008,0022)	3	Not used
Acquisition Time	(0008,0032)	3	Not used
Referenced Image Sequence	(0008,1140)	3	Not used

>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Derivation Description	(0008,2111)	3	Not used
Source Image Sequence	(0008,2112)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Images in Acquisition	(0020,1002)	3	Not used
Image Comments	(0020,4000)	3	Not used

4.7.8 Image Pixel Module

Attribute Name	Tag	Type	Notes
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used
Rows	(0028,0010)	1	Used
Columns	(0028,0011)	1	Used
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1	Used
Pixel Representation	(0028,0103)	1	Used
Pixel Data	(7FE0,0010)	1	Used
Planar Configuration	(0028,0006)	1C	Not used
Pixel Aspect Ratio	(0028,0034)	1C	Not used
Smallest Image Pixel Value	(0028,0106)	3	Not used
Largest Image Pixel Value	(0028,0107)	3	Not used
Red Palette Color Lookup Table Descriptor	(0028,1101)	1C	Not used
Green Palette Color Lookup Table Descriptor	(0028,1102)	1C	Not used
Blue Palette Color Lookup Table Descriptor	(0028,1103)	1C	Not used
Red Palette Color Lookup Table Data	(0028,1201)	1C	Not used
Green Palette Color Lookup Table Data	(0028,1202)	1C	Not used
Blue Palette Color Lookup Table Data	(0028,1203)	1C	Not used

4.7.9 RT Image Module

Attribute Name	Tag	Type	Notes
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1	Used
Pixel Representation	(0028,0103)	1	Used
RT Image Label	(3002,0002)	1	Not used

RT Image Name	(3002,0003)	3	Not used
RT Image Description	(3002,0004)	3	Not used
Operators' Name	(0008,1070)	2	Not used
Image Type	(0008,0008)	1	Required
Conversion Type	(0008,0064)	2	Not used
Reported Values Origin	(3002,000A)	2C	Not used
RT Image Plane	(3002, 000C)	1	Not used
X-Ray Image Receptor Translation	(3002,000D)	3	Not used
X-Ray Image Receptor Angle	(3002,000E)	2	Not used
RT Image Orientation	(3002,0010)	2C	Not used
Image Plane Pixel Spacing	(3002,0011)	2	Not used
RT Image Position	(3002,0012)	2	Not used
Radiation Machine Name	(3002,0020)	2	Not used
Primary Dosimeter Unit	(300A,00B3)	2	Not used
Radiation Machine SAD	(3002,0022)	2	Not used
Radiation Machine SSD	(3002,0024)	3	Not used
RT Image SID	(3002,0026)	2	Not used
Source to Reference Object Distance	(3002,0028)	3	Not used
Referenced RT Plan Sequence	(300C,0002)	3	Used
>Referenced SOP Class UID	(0008,1150)	1C	Used
>Referenced SOP Instance UID	(0008,1155)	1C	Used
Referenced Beam Number	(300C,0006)	3	Used
Referenced Fraction Group Number	(300C,0022)	3	Not used
Fraction Number	(3002,0029)	3	Not used
Start Cumulative Meterset Weight	(300C,0008)	3	Not used
End Cumulative Meterset Weight	(300C,0009)	3	Not used
Exposure Sequence	(3002,0030)	3	Not used
>Referenced Frame Number	(0008,1160)	1C	Not used
>KVP	(0018,0060)	2C	Not used
>X-Ray Tube Current	(0018,1151)	2C	Not used
>Exposure Time	(0018,1150)	2C	Not used
>Meterset Exposure	(3002,0032)	2C	Not used
>Beam Limiting Device Sequence	(300A,00B6)	3	Not used
>>RT Beam Limiting Device Type	(300A,00B8)	1C	Not used
>>Source to Beam Limiting Device Distance	(300A,00BA)	3	Not used
>>Number of Leaf/Jaw Pairs	(300A,00BC)	1C	Not used
>>Leaf Position Boundaries	(300A,00BE)	2C	Not used
>>Leaf/Jaw Positions	(300A,011C)	1C	Not used
>Applicator Sequence	(300A,0107)	3	Not used
>>Applicator ID	(300A,0108)	1C	Not used

>>Applicator Type	(300A,0109)	1C	Not used
>>Applicator Description	(300A,010A)	3	Not used
>Number of Blocks	(300A,00F0)	1C	Not used
>Block Sequence	(300A,00F4)	2C	Not used
>>Block Tray ID	(300A,00F5)	3	Not used
>>Source to Block Tray Distance	(300A,00F6)	2C	Not used
>>Block Type	(300A,00F8)	1C	Not used
>>Block Divergence	(300A,00FA)	2C	Not used
>>Block Number	(300A,00FC)	1C	Not used
>>Block Name	(300A,00FE)	3	Not used
>>Material ID	(300A,00E1)	2C	Not used
>>Block Thickness	(300A,0100)	3	Not used
>>Block Number of Points	(300A,0104)	2C	Not used
>>Block Data	(300A,0106)	2C	Not used
Gantry Angle	(300A,011E)	3	Not used
Beam Limiting Device Angle	(300A,0120)	3	Not used
Patient Support Angle	(300A,0122)	3	Not used
Table Top Eccentric Axis Distance	(300A,0124)	3	Not used
Table Top Eccentric Angle	(300A,0125)	3	Not used
Table Top Vertical Position	(300A,0128)	3	Not used
Table Top Longitudinal Position	(300A,0129)	3	Not used
Table Top Lateral Position	(300A,012A)	3	Not used

4.7.10 VOI LUT Module

Attribute Name	Tag	Type	Notes
VOI LUT Sequence	(0028,3010)	3	Not used
>LUT Descriptor	(0028,3002)	1C	Not used
>LUT Explanation	(0028,3003)	3	Not used
>LUT Data	(0028,3006)	1C	Not used
Window Center	(0028,1050)	3	Used
Window Width	(0028,1051)	1C	Used

4.7.11 SOP Common Module

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	Used
SOP Instance UID	(0008,0018)	1	Used
Specific Character Set	(0008,0005)	1C	Used
Instance Creation Date	(0008,0012)	3	Not used
Instance Creation Time	(0008,0013)	3	Not used
Instance Creator UID	(0008,0014)	3	Not used

4.8 RT Dose Information Object Implementation

RT Dose object, can be imported to Oncentra RT Viewer only as a part of RT objects set, created in the DICOM explorer (DE).

4.8.1 RT Dose IOD Module Table

IE	Module	Reference	DICOM Usage	Notes
Patient	Patient	C.7.1.1	M	
Study	General Study	C.7.2.1	M	
	Patient Study	C.7.2.2	U	Not used
Series	RT Series	C.8.8.1	M	
Frame of Reference	Frame of Reference	C.7.4.1	M	
Equipment	General Equipment	C.7.5.1	M	
Dose	General Image	C.7.6.1	C-Required if dose data contains grid-based doses.	
	Image Plane	C.7.6.2	C-Required if dose data contains grid-based doses.	
	Image Pixel	C.7.6.3	C-Required if dose data contains grid-based doses.	
	Multi-Frame	C.7.6.6	C - Required if dose data contains grid-based doses and pixel data is multi-frame data.	Used multi-frame beam dose
	Overlay Plane	C.9.2	U	Not used
	Multi-Frame Overlay	C.9.3	U	Not used
	Modality LUT	C.11.1	U	Not used
	RT Dose	C.8.8.3	M	
	RT DVH	C.8.8.4	U	Not used
	Structure Set	C.8.8.5	C-Required if dose data contains dose points or isodose curves.	Isodose curves not supported
	ROI Contour	C.8.8.6	C-Required if dose data contains dose points or isodose curves.	Isodose curves not supported
	RT Dose ROI	C.8.8.7	C-Required if dose data contains dose points or isodose curves.	Isodose curves not supported
	Audio	C.10.3	U	Not used
	SOP Common	C.12.1	M	

4.8.2 Patient Module

Attribute Name	Tag	Type	Notes
Patient Name	(0010,0010)	2	Used
Patient ID	(0010,0020)	2	Used
Patient's Birth Date	(0010,0030)	2	Used
Patient's Sex	(0010,0040)	2	Used
Referenced Patient Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Patient's Birth Time	(0010,0032)	3	Not used
Other Patient Ids	(0010,1000)	3	Not used
Other Patient Names	(0010,1001)	3	Not used
Ethnic Group	(0010,2160)	3	Not used
Patient Comments	(0010,4000)	3	Not used

4.8.3 General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0020,000D)	1	Used to validate study/series contents.
Study Date	(0008,0020)	2	Not used
Study Time	(0008,0030)	2	Not used
Referring Physician's Name	(0008,0090)	2	Not used
Study ID	(0020,0010)	2	Not used
Accession Number	(0008,0050)	2	Not used
Study Description	(0008,1030)	3	Not used
Physician(s) of Record	(0008,1048)	3	Not used
Name of Physician(s) Reading Study	(0008,1060)	3	Not used
Referenced Study Sequence	(0008,1120)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Procedure Code Sequence	(0008,1032)	3	Not used

4.8.4 RT Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	Supported value 'RTDOSE'
Series Instance UID	(0020,000E)	1	Used
Series Number	(0020,0011)	2	Required
Series Description	(0008,103E)	3	Not used
Referenced Study Component Sequence	(0008,1111)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used

4.8.5 Frame of Reference Module

Attribute Name	Tag	Type	Notes
Frame of Reference UID	(0020,0052)	1	Required
Position Reference Indicator	(0020,1040)	2	Not used

4.8.6 General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Used
Institution Name	(0008,0080)	3	Not used
Institution Address	(0008,0081)	3	Not used
Station Name	(0008,1010)	3	Not used
Institutional Department Name	(0008,1040)	3	Not used
Manufacturer's Model Name	(0008,1090)	3	Used for identification of a dose created with a non-Nucletron application

Device Serial Number	(0018,1000)	3	Not used
Software Versions	(0018,1020)	3	Not used
Spatial Resolution	(0018,1050)	3	Not used
Date of Last Calibration	(0018,1200)	3	Not used
Time of Last Calibration	(0018,1201)	3	Not used
Pixel Padding Value	(0028,0120)	3	Not used

4.8.7 General Image Module

Attribute Name	Tag	Type	Notes
Instance Number	(0020,0013)	2	Used
Patient Orientation	(0020,0020)	2C	Not used
Content Date	(0008,0023)	2C	Not used
Content Time	(0008,0033)	2C	Not used
Image Type	(0008,0008)	3	Used
Acquisition Number	(0020,0012)	3	Not used
Acquisition Date	(0008,0022)	3	Not used
Acquisition Time	(0008,0032)	3	Not used
Referenced Image Sequence	(0008,1140)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Derivation Description	(0008,2111)	3	Not used
Source Image Sequence	(0008,2112)	3	Not used
>Referenced SOP Class UID	(0008,1150)	1C	Not used
>Referenced SOP Instance UID	(0008,1155)	1C	Not used
Images in Acquisition	(0020,1002)	3	Not used
Image Comments	(0020,4000)	3	Not used

4.8.8 Image Plane Module

Attribute Name	Tag	Type	Notes
Pixel Spacing	(0028,0030)	1	Required
Image Orientation (Patient)	(0020,0037)	1	Required
Image Position (Patient)	(0020,0032)	1	Required
Slice Thickness	(0018,0050)	2	Not used
Slice Location	(0020,1041)	3	Not used

4.8.9 Image Pixel Module

Attribute Name	Tag	Type	Notes
Samples per Pixel	(0028,0002)	1	Required
Photometric Interpretation	(0028,0004)	1	Required
Rows	(0028,0010)	1	Required
Columns	(0028,0011)	1	Required
Bits Allocated	(0028,0100)	1	Required
Bits Stored	(0028,0101)	1	Required
High Bit	(0028,0102)	1	Required
Pixel Representation	(0028,0103)	1	Required

Pixel Data	(7FE0,0010)	1	Required
Planar Configuration	(0028,0006)	1C	Not used
Pixel Aspect Ratio	(0028,0034)	1C	Not used
Smallest Image Pixel Value	(0028,0106)	3	Not used
Largest Image Pixel Value	(0028,0107)	3	Not used
Red Palette Color Lookup Table Descriptor	(0028,1101)	1C	Not used
Green Palette Color Lookup Table Descriptor	(0028,1102)	1C	Not used
Blue Palette Color Lookup Table Descriptor	(0028,1103)	1C	Not used
Red Palette Color Lookup Table Data	(0028,1201)	1C	Not used
Green Palette Color Lookup Table Data	(0028,1202)	1C	Not used
Blue Palette Color Lookup Table Data	(0028,1203)	1C	Not used

4.8.10 Multi-Frame Module

Attribute Name	Tag	Type	Notes
Number of Frames	(0028,0008)	1	Used
Frame Increment Pointer	(0028,0009)	1	Used

4.8.11 RT Dose Module

Attribute Name	Tag	Type	Notes
Samples per Pixel	(0028,0002)	1	Used
Photometric Interpretation	(0028,0004)	1	Used
Bits Allocated	(0028,0100)	1	Used
Bits Stored	(0028,0101)	1	Used
High Bit	(0028,0102)	1C	Required
Pixel Representation	(0028,0103)	1C	Required
Dose Units	(3004,0002)	1	Used
Dose Type	(3004,0004)	1	Used (Supported only PHYSICAL)
Dose Comment	(3004,0006)	3	Not used
Normalization Point	(3004,0008)	3	Not used
Dose Summation Type	(3004,000A)	1	Used (Supported PLAN, FRACTION, BEAM)
Referenced RT Plan Sequence	(300C,0002)	1C	Required
>Referenced SOP Class UID	(0008,1150)	1C	Required
>Referenced SOP Instance UID	(0008,1155)	1C	Required
>Referenced Fraction Group Sequence	(300C,0020)	1C	Required
>>Referenced Fraction Group Number	(300C,0022)	1C	Required (Only a single fraction group is supported)
>>Referenced Beam Sequence	(300C,0004)	1C	Required
>>>Referenced Beam Number	(300C,0006)	1C	Required

>>Referenced Brachy Application Setup Sequence	(300C,000A)	1C	Not used
>>>Referenced Brachy Application Setup Number	(300C,000C)	1C	Not used
Grid Frame Offset Vector	(3004,000C)	1C	Required
Dose Grid Scaling	(3004,000E)	1	Used
Tissue Heterogeneity Correction	(3004,0014)	3	Used The defined term IMAGE is always interpreted as ROI_OVERRIDE

4.8.12 Structure Set Module

Attribute Name	Tag	Type	Notes
Structure Set Label	(3006,0002)	1	Required
Structure Set Name	(3006,0004)	3	Not used
Structure Set Description	(3006,0006)	3	Not used
Instance Number	(0020,0013)	3	Not used
Structure Set Date	(3006,0008)	2	Not used
Structure Set Time	(3006,0009)	2	Not used
Referenced Frame of Reference Sequence	(3006,0010)	3	Not used
>Frame of Reference UID	(0020,0052)	1C	Not used
>Frame of Reference Relationship Sequence	(3006,00C0)	3	Not used
>>Related Frame of Reference UID	(3006,00C2)	1C	Not used
>>Frame of Reference Transformation Type	(3006,00C4)	1C	Not used
>>Frame of Reference Transformation Matrix	(3006,00C6)	1C	Not used
>>Frame of Reference Transformation Comment	(3006,00C8)	3	Not used
>RT Referenced Study Sequence	(3006,0012)	3	Not used
>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>>RT Referenced Series Sequence	(3006,0014)	1C	Not used
>>>Series Instance UID	(0020,000E)	1C	Not used
>>>Contour Image Sequence	(3006,0016)	1C	Not used
>>>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>>>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>>>>Referenced Frame Number	(0008,1160)	3	Not used
Structure Set ROI Sequence	(3006,0020)	3	Required
>ROI Number	(3006,0022)	1C	Required

>Referenced Frame of Reference UID	(3006,0024)	1C	Required
>ROI Name	(3006,0026)	2C	Used if available
>ROI Description	(3006,0028)	3	Not used
>ROI Volume	(3006,002C)	3	Not used
>ROI Generation Algorithm	(3006,0036)	2C	Used if provided
>ROI Generation Description	(3006,0038)	3	Not used

4.8.13 ROI Contour Module

Attribute Name	Tag	Type	Notes
ROI Contour Sequence	(3006,0039)	1	Used
>Referenced ROI Number	(3006,0084)	1	Used
>ROI Display Color	(3006,002A)	3	Not used
>Contour Sequence	(3006,0040)	3	Required
>>Contour Number	(3006,0048)	3	Not used
>>Attached Contours	(3006,0049)	3	Not used
>>Contour Image Sequence	(3006,0016)	3	Not used
>>>Referenced SOP Class UID	(0008,1150)	1C	Not used
>>>Referenced SOP Instance UID	(0008,1155)	1C	Not used
>>>Referenced Frame Number	(0008,1160)	1C	Not used
>>Contour Geometric Type	(3006,0042)	1C	Required
>>Contour Slab Thickness	(3006,0044)	3	Not used
>>Contour Offset Vector	(3006,0045)	3	Not used
>>Number of Contour Points	(3006,0046)	1C	Required
>>Contour Data	(3006,0050)	1C	Required.

4.8.14 RT Dose ROI Module

Attribute Name	Tag	Type	Notes
RT Dose ROI Sequence	(3004,0010)	1	Required
>Referenced ROI Number	(3006,0084)	1	Required
>Dose Units	(3004,0002)	1	Required
>Dose Value	(3004,0012)	1	Required

4.8.15 SOP Common Module

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	Used
SOP Instance UID	(0008,0018)	1	Used
Specific Character Set	(0008,0005)	1C	Used
Instance Creation Date	(0008,0012)	3	Not used
Instance Creation Time	(0008,0013)	3	Not used
Instance Creator UID	(0008,0014)	3	Not used