

DICOM 3.0 RT Image IOD for Multi-Institutional RT Clinical Trials

Advanced Technology Consortium

for Clinical Trials Quality Assurance

John W. Matthews, D.Sc.

Conformance Statement RT Image Constraints for DRRs

- DRRs provide a prescription image for a treatment beam
- Quantitative analysis of port films to evaluate treatment delivery requires a “*calibrated*” prescription image that is used to “*calibrate*” the port film
 - DRRs may be “*calibrated*” with:
 - specific geometric definitions (pixel size, SID, rotation, etc.), or
 - Field shape or fiducial grid “*burned-in*” image allowing geometry to be determined from treatment plan and image data

RT Image Module Conformance Statement Attribute Constraints

Field	Tag	Type	Comment
RT Image Plane	(3002,000C)	1	Must be NORMAL for DRRs.
X-Ray Image Receptor Translation	(3002,000D)	3	Required* for DRRs with translated image center
X-Ray Image Receptor Angle	(3002,000E)	2	Required* for DRRs with image rotated apart from collimators
RT Image Orientation	(3002,0010)	2C	
Image Plane Pixel Spacing	(3002,0011)	2	Value required if Image Type (0008,0008) is DRR*
RT Image Position	(3002,0012)	2	Value required if Image Type (0008,0008) is DRR and image is not centered on central ray*
Radiation Machine Name	(3002,0020)	2	

* Required for DRRs without geometry information in image

RT Image Module Conformance Statement Attribute Constraints

Field	Tag	Type	Comment
Primary Dosimeter Unit	(300A,00B3)	2	
Radiation Machine SAD	(3002,0022)	2	
RT Image SID	(3002,0026)	2	Value required if Image Type (0008,0008) is DRR*
Referenced RT Plan Sequence	(300C,0002)	3	Value required if Image Type (0008,0008) is DRR, SIMULATOR or PORTAL.
>Referenced SOP Class UID	(0008,1150)	1C	
>Referenced SOP Instance UID	(0008,1155)	1C	
Referenced Beam Number	(300C,0006)	3	Value required if Image Type (0008,0008) is DRR, SIMULATOR or PORTAL.

* Required for DRRs without geometry information in image