DICOM Conformance Statement
for
Kodak QC 2.2, 2.3, 2.4, 2.4.2

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Revision History

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Revision History

Date	Rev	Editor	Comments
Aug 21, 2005	1.0	Arnon Dukeman	Initial Release
May 25, 2006	2.0	Arnon Dukeman	Updated for KodakQC version 2.2.0.0
Sep 25, 2005	3.0	Arnon Dukeman	Updated for KodakQC versions 2.3.0.0 and 2.4.0.0

Acronyms, Abbreviations and Symbols

ACC	American College of Cardiology
ACR	American College of Radiology
ASCII	American Standard Code for Information Interchange
AE	Application Entity
ANSI	American National Standards Institute
CD	Compact Disc
CR	Computed Radiography
DICOM	Digital Imaging and COmmunications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DICOM Message Service Element-Composite
DIMSE-N	DICOM Message Service Element-Normalized
HD	Hard Disc
HIS	Hospital Information System
HL7	Health Level 7
IE	Information Entity
IOD	Information Object Definition
ISO	International Standard Organization
MOD	Magneto Optical Disk
MWL	Modality Worklist
MWM	Modality Worklist Management
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
RIS	Radiology Information System
SC	Secondary Capture
S.COMM	Storage Commitment
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier

1.Introduction

This document is a DICOM Conformance Statement for the KodakQC system.

This document is intended to provide the reader with the knowledge of how to integrate this product within a DICOM compliant hospital network. It details DICOM Service Classes and Communication Protocols that are supported in KodakQC.

KodakQC supports following service classes:

- Storage Service Class (SCU)
- Modality Worklist Management Service Class (SCU)

If reader is unfamiliar with DICOM, it is recommended to read the DICOM Specification (referenced in section 1.2) prior to reading this conformance statement.

1.1. Overview

This document contains 10 sections (including this Section 1 – Introduction).

Section 2 presents the DICOM implementation model of the KodakQC, supported by detailed application data flow diagrams.

Section 3 provides definition of the Image Transfer Application Entity (AE) that is part of KodakQC. Details are given in the AE Specification.

Section 4 provides definition of the Modality Worklist AE that is part of KodakQC. Details are given in the AE Specification.

Communication Profiles are discussed in section 7, and configuration required by KodakQC is provided in Section 8. Section 9 indicates support for Extended Character Sets.

Annex A provides Information Object Definitions for the modalities supported by KodakQC.

1.2.References

ACR-NEMA Digital Imaging and Communications in Medicine, DICOM V3.0, 1999-2000.

1.3.Definitions

- **Association Establishment** - An Association Establishment is the first phase of communication between two DICOM Application Entities. The AEs use the Association Establishment to negotiate how data will be encoded and the type of data to be exchanged.
- **Called Application Entity Title** - The Called AE Title defines the intended receiver of an Association.
- **Calling Application Entity Title** - The Calling AE Title defines the requestor of an Association.
- **DICOM Message Service Element (DIMSE)** - A DIMSE defines the services and protocols utilized by an Application Entity to exchange messages.
- **Information Object Definition (IOD)** - An IOD is a data model, which is an abstraction of real-world information. This data model defines the nature and attributes relevant to the class of real-world objects represented.

- **Service Class Provider (SCP)** - A Service Class Provider plays the "server" role to perform operations and invoke notifications during an Association. An example of a Storage Service Class Provider would be an image storage device. In this case, the image storage device is storing the image that was sent by a Service Class User.

- **Service Class User (SCU)** - A Service Class User plays the "client" role to invoke operations and perform notifications during an Association. An example of a Storage Service Class User would be an image acquisition device. In this case, the image acquisition device will create and send a DICOM image by requesting that a Service Class Provider store that image.

- **Service/Object Pair (SOP) Class** - A SOP Class is defined by the union of an Information Object Definition and a set of DIMSE Services. A DICOM Application Entity may support one or more SOP Classes. Each SOP Class is uniquely identified by a SOP Class UID.

- **SOP Instance** - A specific occurrence of an Information Object.

- **Transfer Syntax** - The Transfer Syntax is a set of encoding rules that allow DICOM Application Entities to negotiate the encoding techniques (e.g. data element structure, byte ordering, compression) they are able to support. The Transfer Syntax is negotiated during Association Negotiation.

- **Unique Identifier (UID)** - A Unique Identifier is a globally unique, ISO compliant, ASCII-numeric string. It guarantees uniqueness across multiple countries, sites, vendors and equipment.

- **DICOM File** – A DICOM File is a File with a content of formatted according to the requirements of Part 10 of the DICOM standard.

2.Implementation Model

KodakQC is a medical acquisition system that supports Computed Radiography (CR). KodakQC encompasses the following DICOM Application Entities:

- KODAKQC IMAGE TRANSFER AE - to exchange images with other Application Entities by the means of DICOM network exchange. It implements the following Service Class:
  - Storage as SCU

- KODAKQC STORAGE COMMITMENT AE - to ask for safe storage approval of images that where already sent to other Application Entities in previous associations by the means of DICOM network exchange. It implements the following Service Class:
  - Storage Commitment as SCU

- KODAKQC MWL AE - to fetch modality worklists from a worklist manager. It implements the following Service Class:
  - DICOM Modality Worklist SCU

- KODAKQC PRINT AE - to exchange print pages with other Application Entities by the means of DICOM network exchange. It implements the following Service Class:
  - Print as SCU

2.1.Image Transfer

KODAKQC IMAGE TRANSFER AE is implemented as a single application entity and performs the following services:
- sends/exports images to remote DICOM storage devices (acts as Storage SCU)

2.1.1.Application Data Flow

Figure 1 illustrates the following scenarios:

- Send a **STORE Request** to a remote DICOM AE in case of automatic or manual sending request.

Figure 1: Image Transfer Data Flow Diagram

2.1.2. Functional Definitions of Application Entities

The KODAKQC IMAGE TRANSFER AE component operates as a service. The startup sequence of the KodakQC system initiates its execution. The service is NOT shut down when the KodakQC application is closed

2.1.3. Sequencing of Real-World Activities

- Automatic sending of images - When an Image is accepted in the scan mode and a default DICOM store SCP (like PACS etc.) is configured than the image is being sent to it.
- Manual sending of images - the user can enter the Archive tool and select images to be sent to the storage device.

2.2. Storage Commitment

KODAKQC Storage Commitment AE is implemented as a single application entity and performs the following services:
- sends/exports N_ACTION requests to remote DICOM storage device (acts as S.Comm SCU).
- receives N_EVENT_REPORT requests from storage device

2.2.1. Application Data Flow

Figure 1 illustrates the following scenarios:

- Send an **N_ACTION request** to a remote DICOM AE in case the preceding image transfer request was successful and associated to the storage commitment destination.

Figure 1: Storage Commitment Data Flow Diagram

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2.2.2.Functional Definitions of Application Entities

The KODAKQC S.COMM AE component operates as a service. The startup sequence of the KodakQC system initiates its execution. The service is NOT shut down when the KodakQC application is closed

2.2.3.Sequencing of Real-World Activities

- After a successful transfer of image (as described at 2.1.3) to a device with S.Comm SCP capability then the AE initiates a new association for sending N_ACTION request using above image SOP Class/Instance UID pair.
- The service always listens (waits for association, on local port 104) to a different association initiated by the S.Comm SCP to receive the outcome of the commitment requests (N_EVENT_REPORT) and updates its as Success/Failure in the KodakQC database.

2.3.Modality Worklist

2.3.1.Application Data Flow
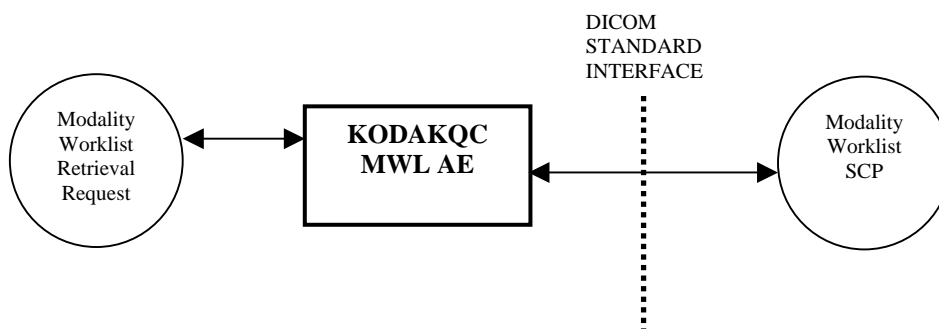
Figure 2: Modality Worklist Data Flow Diagram

2.3.2.Functional Definitions of Application Entities

KODAKQC MWL AE is used to query modality worklist information from a remote DICOM device. It therefore performs the following tasks:

- Establishes a DICOM Association with a remote DICOM device.
- Issues a request for a worklist to a remote DICOM device.
- Retrieves Modality Worklist from a remote DICOM device.

KODAKQC MWL AE component operates as part of the KodakQC application. It is shut down when the application terminates.

2.3.3.Sequencing of Real-World Activities

Not applicable.

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2.4. Print

KODAKQC PRINT AE is implemented as a single application entity and performs the following services:

- sends/exports print film boxes to remote DICOM Print device as laser imagers etc. (acts as Print SCU)

2.4.1. Application Data Flow

Figure 1 illustrates the following scenarios:

- Send a **PRINT Request** to a remote DICOM AE in case of automatic or manual printing request.
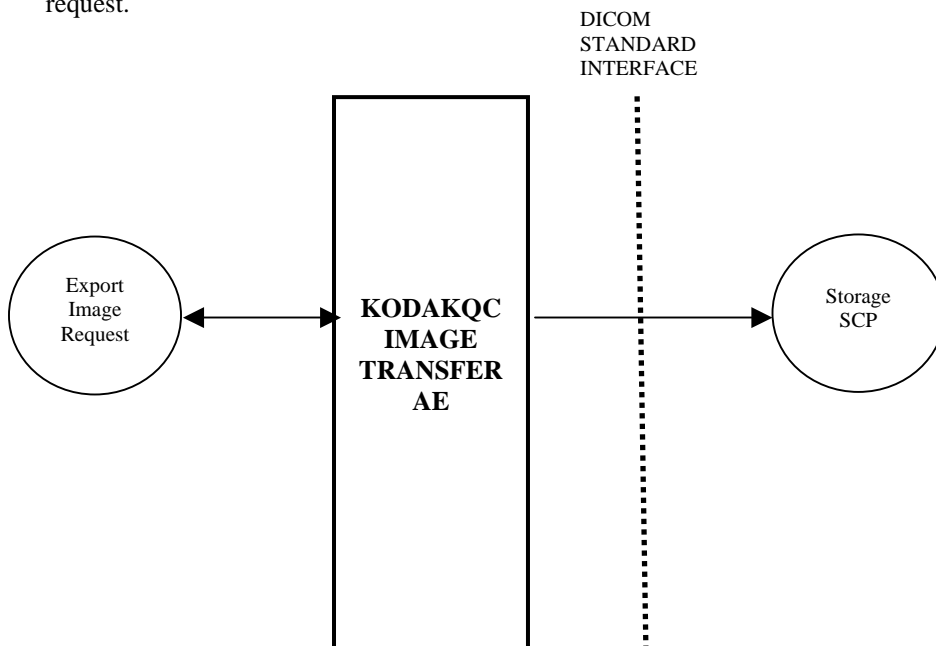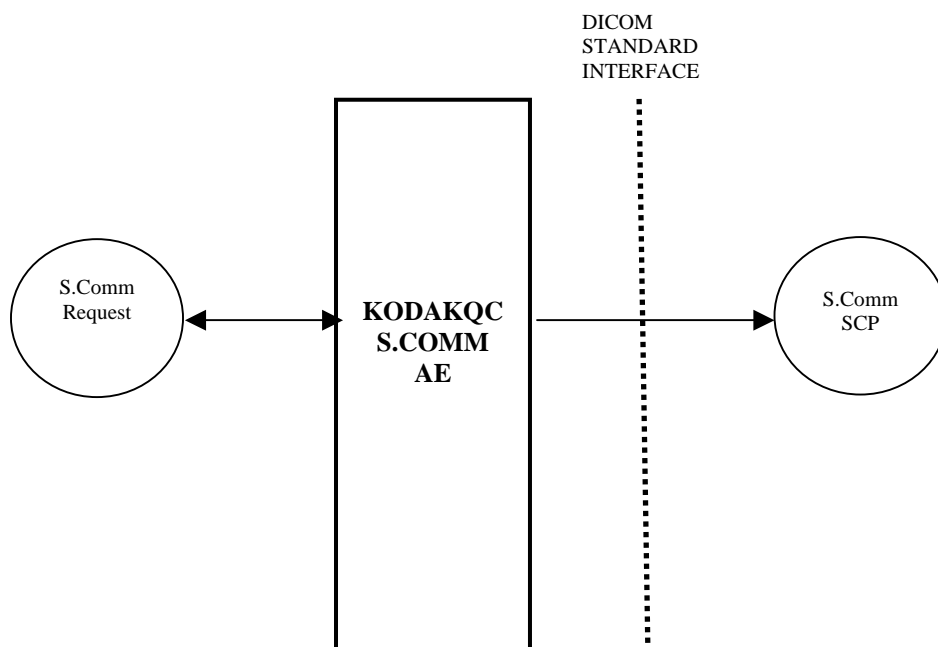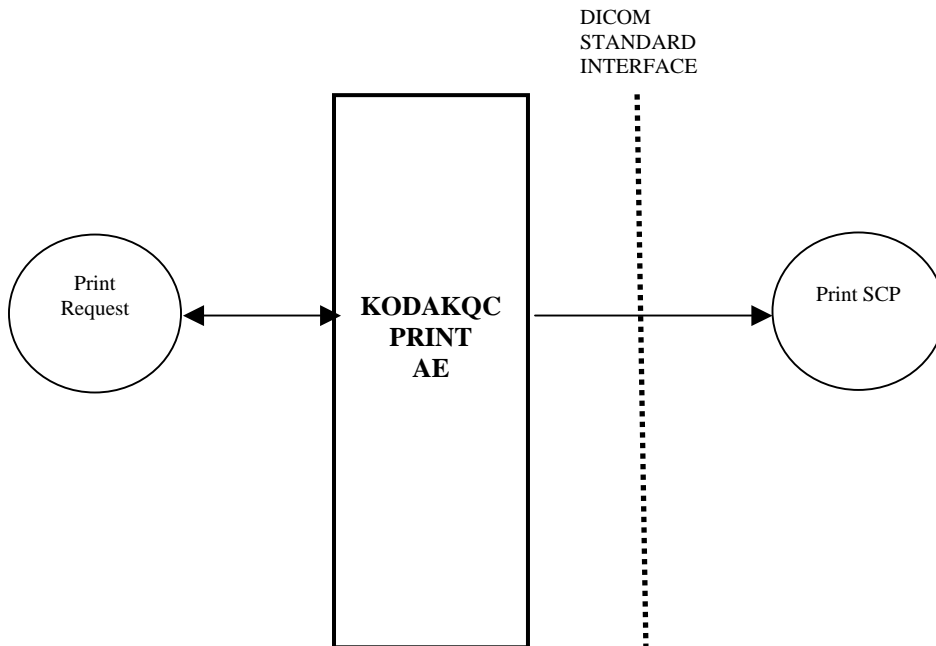
Figure 1: Print Data Flow Diagram

2.4.2. Functional Definitions of Application Entities

The KODAKQC PRINT AE component operates as a service. The startup sequence of the KodakQC system initiates its execution. The service is NOT shut down when the KodakQC application is closed

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KODAKQC PRINT AE uses a configuration file that contains information used to describe both local as well as remote Application Entities.

2.4.3.Sequencing of Real-World Activities

- Automatic sending of single image print page - When an Image is accepted in the scan mode and a default DICOM Print SCP is configured than the print pafe of the image is being sent to it.
- Manual printing of images - the user can enter the Viewer tool and select images to be printed.

3.KODAKQC IMAGE TRANSFER AE Specification

KODAKQC IMAGE TRANSFER AE provides Standard Conformance to the following DICOM SOP Class as an SCU:

SOP Class Name	SOP Class UID
CR Image Storage	1.2.840.10008.5.1.4.1.1.1

3.1.Association Establishment Policy

3.1.1.General

The maximum length of PDU that the KODAKQC IMAGE TRANSFER AE will receive is 16384.

3.1.2.Number of Associations

The KODAKQC IMAGE TRANSFER AE can initiate one association concurrently..

3.1.3.Asynchronous nature

The KODAKQC IMAGE TRANSFER AE allows a single outstanding operation on any association. Therefore, KodakQC AE does not support asynchronous operations and will not perform asynchronous window negotiation, other than the default as specified by the DICOM specification.

3.1.4.Implementation Identifying Information

The KODAKQC IMAGE TRANSFER AE is identified by the following ids:
Implementation Class UID: 1.2.3
Implementation Version Name: ver 1

3.2.Association Initiation by Real World Activity

This section details the action of the KODAKQC IMAGE TRANSFER AE SCU component as a result of user initiated activity on the KodakQC Application User Interface.

3.2.1.Export Image Request

3.2.1.1.Associated Real World Activity

Automatic export:

The user configures the KodakQC application to automatically export a study after it has been performed. The user sets up the default destination and no further intervention on the user part is required. The KODAKQC IMAGE TRANSFER AE transfers the images in the background.

3.2.1.2.Proposed Presentation Contexts

Presentation Context Table

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Abstract Syntax		Transfer Syntax			Extended
Name	UID	Name List	UID List	Role	Negotiation
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

3.2.1.3.SOP-Specific Conformance

This implementation supports transfers as an SCU as described in NEMA PS3.4 (2000) Annex B.

The Information Object attributes that are encapsulated in a dataset and sent with the C-STORE request are specified in Annex A of this document.

3.3.Association Acceptance Policy

NA.

4.KODAKQC STORAGE COMMITMENT AE Specification

KODAKQC S.COMM AE provides Standard Conformance to the following DICOM SOP Class as an SCU:

SOP Class Name	SOP Class UID
Storage Commitment Push Model Class	1.2.840.10008.1.20.1

4.1.Association Establishment Policy

4.1.1.General
The maximum length of PDU that the KODAKQC S.COMM AE will receive is 16384.

4.1.2.Number of Associations
The KODAKQC S.COMM AE can initiate one association concurrently..

4.1.3.Asynchronous nature
The KODAKQC S.COMM AE allows a single outstanding operation on any association. Therefore, KodakQC AE does not support asynchronous operations and will not perform asynchronous window negotiation, other than the default as specified by the DICOM specification.

4.1.4.Implementation Identifying Information
The KODAKQC S.COMM AE is identified by the following ids:
Implementation Class UID: 1.2.3
Implementation Version Name: ver 1

4.2.Association Initiation by Real World Activity
This section details the action of the KODAKQC S.COMM AE SCU component as a result of user initiated activity on the KodakQC Application User Interface.

4.2.1.Storage commitment Request

4.2.1.1.Associated Real World Activity
Automatic N_ACTION requests after sending images to storage device

4.2.1.2.Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**			**Exten ded**
Name	**UID**	**Name List**	**UID List**	**Role**	**Negoti ation**
Storage Commitment Push Model Class	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.1.3.SOP-Specific Conformance
This implementation supports transfers as an SCU as described in NEMA PS3.4 (2000) Annex B.

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4.3.Association Acceptance Policy

The KODAKQC S.COMM AE accepts Associations on port 104 for N_EVENT _REPORT requests as an SCU and C_ECHO requests as an SCP.

5.KODAKQC MWL AE Specification

5.1.Association Establishment Policy

5.1.1.General

When KodakQC Application issues a request to retrieve a Modality Worklist, it initiates an association to the Modality Worklist SCP through the KODAKQC MWL AE Component.

5.1.2.Number of Associations

KODAKQC MWL AE initiates one association with the default remote Modality Worklist SCP. The association is released once the worklist has been fetched.

5.1.3.Asynchronous nature

This release does not support asynchronous operations and will not perform asynchronous window negotiation.

5.1.4.Implementation Identifying Information

The KODAKQC MWL AE is identified by the following ids:
Implementation Class UID: 1.2.840.113564.3.2
Implementation Version Name: not specified

5.2.Association Initiation by Real World Activity

5.2.1.Modality Worklist Retrieval Request

5.2.1.1.Associated Real World Activity

The user of the KodakQC Application selects the Retrieve Worklist operation button on the user interface.

5.2.1.2.Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended
Name	UID	Name	UID		Negotiation
Modality Worklist Model FIND	1.2.840.10008.5.1.4.31	Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None

5.3.Association Acceptance Policy

The KODAKQC MWL AE does not accept association requests.

6.KODAKQC PRINT AE Specification

KODAKQC S.COMM AE provides Standard Conformance to the following DICOM SOP Class as an SCU:

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	1.2.840.100008.5.1.1.1
Basic Film Box SOP Class	1.2.840.100008.5.1.1.2
Basic Grayscale Image Box SOP Class	1.2.840.100008.5.1.1.4
Printer SOP Class	1.2.840.100008.5.1.1.16

6.1.Association Establishment Policy

6.1.1.General

The maximum length of PDU that the KODAKQC PRINT AE will receive is 16384.

6.1.2.Number of Associations

The KODAKQC PRINT AE can initiate one association concurrently..

6.1.3.Asynchronous nature

The KODAKQC PRINT AE allows a single outstanding operation on any association. Therefore, KodakQC AE does not support asynchronous operations and will not perform asynchronous window negotiation, other than the default as specified by the DICOM specification.

6.1.4.Implementation Identifying Information

The KODAKQC PRINT AE is identified by the following ids:
Implementation Class UID: 1.2.3
Implementation Version Name: ver 1

6.2.Association Initiation by Real World Activity

This section details the action of the KODAKQC PRINT AE SCU component as a result of user initiated activity on the KodakQC Application User Interface.

6.2.1.Print Request

6.2.1.1.Associated Real World Activity

Automatic N_ACTION requests after sending images to storage device

6.2.1.2.Proposed Presentation Contexts

Presentation Context Table

Abstract Syntax		Transfer Syntax			Extended
Name	UID	Name List	UID List	Role	Negotiation
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

6.2.1.3.SOP-Specific Conformance for Basic Film Session SOP Class

Attribute	SCU Usage	Tag	Possible Values
Number of Copies	U	(2000,0010)	1
Print Priority	U	(2000,0020)	MED
Medium Type	U	(2000,0030)	PAPER, CLEAR FILM, BLUE FILM.
Film Destination	U	(2000,0040)	MAGAZINE, PROCESSOR, BIN_n (where n=1 to 5)

6.2.1.4.SOP-Specific Conformance for Basic Film box SOP Class

Attribute	SCU Usage	Tag	Possible Values
Image Display Format	M	(2010,0010)	STANDARD\C,R
Referenced Film Session Sequence	M	(2010,0500)	
>Referenced SOP Class UID	M	(0008,1150)	1.2.840.10008.5.1.1.1
>Referenced SOP Instance UID	M	(0008,1155)	
Film Orientation	U	(2010,0040)	PORTRAIT, LANDSCAPE
Film Size ID	M	(2010,0050)	8INX10IN, 10INX12IN, 11INX14IN,14INX14IN, 14INX17IN,24CMX30CM
Magnification Type	U	(2010,0060)	REPLICATE, BILINEAR, CUBIC, NONE
Border Density	U	(2010,0100)	BLACK, WHITE, 0-400
Empty Image Density	U	(2010,0110)	BLACK, WHITE, 0-400
Min Density	U	(2010,0120)	0-400
Max Density	U	(2010,0130)	0-400
Trim	U	(2010,0140)	YES, NO
Configuration Information	U	(2010,0150)	User defined
Smoothing Type	U	(2010,0080)	Valid only for Magnification

			Type CUBIC.

6.2.1.5.SOP-Specific Conformance for Basic Image Box SOP Class

Attribute	SCU Usage	Tag	Possible Values
Image Position	M	(2020,0010)	within the range of Image Display Format
Preformatted Grayscale Image Sequence	M	(2020,0110)	
>Samples Per Pixel	M	(0028,0002)	1
>Photometric Interpretation	M	(0028,0004)	MONOCHROME2
>Rows	M	(0028,0010)	Number of rows
>Columns	M	(0028,0011)	Number of Columns
>Pixel Aspect Ratio	MC	(0028,0034)	1\1
>Bits Allocated	M	(0028,0100)	16
>Bits Stored	M	(0028,0101)	12
>High Bit	M	(0028,0102)	11
>Pixel Representation	M	(0028,0103)	0000H (unsigned integer)
>Pixel Data	M	(7FE0,0010)	Image Data
Polarity		(2020,0020)	NORMAL
Requested Image Size	U	(2020,0030)	Row length in mm
Requested Decimate/Crop Behavior		(2020,0040)	CROP

6.3.Association Acceptance Policy

NA.

7.Communications Profiles

7.1. Supported Communication Stacks

The DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard is supported.

7.2. OSI Stack

Not applicable to this product.

7.3. TCP/IP Stack

7.3.1.API

The KODAKQC IMAGE TRANSFER AE KODAKQC MWL AE implementations use Berkeley style sockets.

7.3.2. Physical Media Support

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

7.4. Point to Point Stack

Not applicable to this product.

8.Configuration

8.1.KODAKQC IMAGE TRANSFER AE Configuration

KodakQC Service Manual, supplied with the product, defines the available configuration parameters.

Application entity host names can be specified as either IP address or host name.

8.2.KODAKQC STORAGE COMMIMENT AE Configuration

KodakQC Service Manual, supplied with the product, defines the available configuration parameters.

Application entity host names can be specified as either remote IP address or host name. It will receive association requests only on local port 104.

8.3.KODAKQC MWL AE Configuration

KodakQC Service Manual, supplied with the product, defines the available configuration parameters.

Local AE title can be set.

Parameters of the remote MWL SCP can be set (i.e., AE title, host name or IP address)

8.4.KODAKQC PRINT AE Configuration

KodakQC Service Manual, supplied with the product, defines the available configuration parameters.

Application entity host names can be specified as either IP address or host name.

9.Support of Extended Character Sets

- ISO_IR 100 (European Languages)
- GB18030 (Chinese)
- \ISO 2022 IR 87 (Japanese for Kanji, full **only** Katakana, Hiragana).
- ISO 2022 IR 13\ISO 2022 IR 87 (Japanese for Kanji, **full and half** Katakana, Hiragana).
- ISO_IR 144 (Cyrillic – Russian).
- ISO_IR 148(Turkish).

10.Annex A - Information Object Definitions

The Information Object Definitions for Digital Computed Radiography (CR) image is described in this section.

10.1.Computed Radiography (CR) Information Object Definition

KodakQC supports sending of CR images.

10.1.1.Information Object Definitions For CR Image IOD

10.1.1.1.Patient Module

Attribute Name	Tag	Type	Attribute Assignment
Patient's Name	(0010, 0010)	2	From User or MWL
Patient ID	(0010, 0020)	2	From User or MWL
Patient's Birth Date	(0010, 0030)	2	From User or MWL
Patient's Sex	(0010, 0040)	2	From User or MWL
Referenced Patient Sequence	(0008,1120)	3	Not set
>Referenced SOP Class UID	(0008,1150)	1C	Required if Referenced Patient Sequence is set
>Referenced SOP Class Instance UID	(0008,1155)	1C	Required if Referenced Patient Sequence is set

10.1.1.2. General Study Module

Attribute Name	Tag	Type	Attribute Assignment
Study Instance UID	(0020, 000D)	1	Auto generated or from MWL
Study Date	(0008, 0020)	2	Always set
Study Time	(0008, 0030)	2	Always set
Referring Physician's Name	(0008, 0090)	2	From User or MWL
Study ID	(0020, 0010)	2	Length=0
Accession Number	(0008, 0050)	2	From User or MWL
Study Description	(0008,1030)	3	From User or MWL
Physician(s) of Record	(0008,1048)	3	Not set
Name of Physician(s) Reading Study	(0008,1060)	3	Not set
Referenced Study Sequence	(0008,1110)	3	Not set
>Referenced SOP Class UID	(0008,1150)	1C	Required Referenced Study Sequence is set
>Referenced SOP Class Instance UID	(0008,1155)	1C	Required Referenced Study Sequence is set
Procedure Code Sequence	(0008,1032)	3	Not set
>Code Value	(0008,0100)	1C	Required if Procedure Code Sequence

			present
>Coding Scheme Designator	(0008,0102)	1C	Required if Procedure Code Sequence present
>Coding Scheme Version	(0008,0103)	1C	Required if Procedure Code Sequence present and its value is available
>Code Meaning	(0008,0104)	1C	Required if Procedure Code Sequence present

10.1.1.3. Patient Study Module

Attribute Name	Tag	Type	Attribute Assignment
Admitting Diagnoses Description	(0008,1080)	3	Not set
Patient's Age	(0010, 1010)	3	Not set
Patient's Size	(0010,1020)	3	Not set
Patient's Weight	(0010,1030)	3	Not set
Occupation	(0010,2180)	3	Not set
Additional Patient's History	(0010,21B0)	3	Not set

10.1.1.4. General Series Module

Attribute Name	Tag	Type	Attribute Assignment
Modality	(0008, 0060)	1	CR
Series Instance UID	(0020, 000E)	1	Always set
Series Number	(0020, 0011)	2	Always set
Laterality	(0020,0060)	2C	Length=0
Series Date	(0008,0021)	3	Not set
Series Time	(0008,0031)	3	Not set
Performing Physician's Name	(0008,1050)	3	Not set
Protocol Name	(0018,1030)	3	Not set
Series Description	(0018,103E)	3	Not set
Operator's Name	(0008,1070)	3	Not set
Referenced Study Component Sequence	(0008,1111)	3	Not set
>Referenced SOP Class UID	(0008,1150)	1C	Set if Referenced Study Component Sequence is present
>Referenced SOP Instance UID	(0008,1155)	1C	Set if Referenced Study Component Sequence is present
Body Part Examined	(0018,0015)	2	Always set
Patient Position	(0018,5100)	2	Length=0
Smallest Pixel Value in Series	(0028,0108)	3	Not set

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Largest Pixel Value in Series	(0028,0109)	3	Not set
Request Attributes Sequence	(0040,0275)	3	Not set
>Requested Procedure ID	(0040,1001)	1C	Set if Request Attributes Sequence is present
>Scheduled Procedure Step ID	(0040,0009)	1C	Set if Request Attributes Sequence is present
>Scheduled Procedure Step Description	(0040,0007)	1C	Set if Request Attributes Sequence is present and the value is available
>Scheduled Action Item Code Sequence	(0040,0008)	3	Not set
>>Code Value	(0008,0100)	1C	Required if Scheduled Action Item Code Sequence is present
>>Coding Scheme Designator	(0008,0102)	1C	Required if Scheduled Action Item Code Sequence is present
>>Coding Scheme Version	(0008,0103)	1C	Required if Scheduled Action Item Code Sequence is present and its value is available
>>Code Meaning	(0008,0104)	1C	Required if Scheduled Action Item Code Sequence is present
Performed Procedure Step ID	(0040,0253)	3	Not set
Performed Procedure Step Start Date	(0040,0244)	3	Not set
Performed Procedure Step Start Time	(0040,0245)	3	Not set
Performed Procedure Step Description	(0040,0254)	3	Not set
Performed Action Item Code Sequence	(0040,0260)	3	Not set
>Code Value	(0008,0100)	1C	Required if Performed Action Item Code Sequence is present
>Coding Scheme Designator	(0008,0102)	1C	Required if Performed Action Item Code Sequence is present
>Coding Scheme Version	(0008,0103)	1C	Required if Performed Action Item Code Sequence is present and its value is available
>Code Meaning	(0008,0104)	1C	Required if Performed Action Item Code Sequence is present

10.1.1.5. CR Series Module

Attribute Name	Tag	Type	Attribute Assignment
Body Part Examined	(0018, 0015)	2	Always set
View Position	(0018,5101)	2	Always set
Filter Type	(0018,1160)	3	Not set
Colimator/grid Name	(0018,1180)	3	Not set
Focal Spot	(0018, 1190)	3	Not set
Plate Type	(0018, 1260)	3	Not set
Phosphor Type	(0018, 1261)	3	Not set

10.1.1.6.General Equipment Module

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

10.1.1.7.General Image Module

Attribute Name	Tag	Type	Attribute Assignment
Instance Number	(0020, 0013)	2	Always set
Patient Orientation	(0020,0020)	2C	Length=0
Content Date	(0008, 0023)	2C	Not set
Content Time	(0008, 0033)	2C	Not set
Image Type	(0008, 0008)	3	Not set
Image Comments	(0020,4000)	3	Not set
Derivation Description	(0008, 2111)	3	Not set
Pixel Spacing	(0028, 0030)	3	Always set
Lossy Image Compression	(0028, 2110)	3	Not set

10.1.1.8. Image Pixel Module

Attribute Name	Tag	Type	Attribute Assignment
Samples per Pixel	(0028, 0002)	1	1
Photometric Interpretation	(0028, 0004)	1	MONOCHROME2
Rows	(0028, 0010)	1	Always set
Columns	(0028, 0011)	1	Always set
Bits Allocated	(0028, 0100)	1	Always set (16)
Bits Stored	(0028, 0101)	1	Always set (12)
High Bit	(0028, 0102)	1	Always set (11)

Pixel Representation	(0028, 0103)	1	Always set (0)
Pixel Data	(7FE0, 0010)	1	Always set
Planar Configuration	(0028, 0006)	1C	Not set
Pixel Aspect Ratio	(0028, 0034)	1C	Always set (1\1)
Smallest Image Pixel Value	(0028, 0106)	3	
Largest Image Pixel Value	(0028, 0107)	3	

10.1.1.9.CR Image Module

Attribute Name	Tag	Type	Attribute Assignment
KVP	(0018, 0060)	3	Set in Grayling mode
Plate ID	(0018,1004)	3	Always set
Distance Source to Detector	(0018,1110)	3	Set in Grayling mode
X-Ray Tube Current	(0018, 1151)	3	Not set
Exposure Time	(0018,1150)	3	Not set
Exposure	(0018,1152)	3	Not set
Exposure in uAs	(0018,1153)	3	Set in Grayling mode
Image Area Dose Product	(0018,115E)	3	Set in Grayling mode
Focal Spot	(0018,1190)	3	Not set
Relative X-Ray Exposure	(0018,1405)	3	Always set

10.1.1.10.Modality LUT Module

Attribute Name	Tag	Type	Attribute Assignment
Modality LUT Sequence	(0028, 3000)	1C	Not set
>LUT Descriptor	(0028,3002)	1C	Not set
>LUT Explanation	(0028,3003)	3	Not set
>Modality LUT Type	(0028,3004)	1C	Not set
>LUT Data	(0028,3006)	1C	Not set
Rescale Intercept	(0028,1052)	1C	Always set (0)
Rescale Slope	(0028,1053)	1C	Always set (1)
Rescale Type	(0028, 1054)	1C	Always US

10.1.1.11.VOI LUT Module

Attribute Name	Tag	Type	Attribute Assignment
VOI LUT Sequence	(0028,3010)	3	Not set
>LUT Descriptor	(0028,3002)	1C	Not set
>LUT Explanation	(0028,3003)	1C	Not set

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>LUT Data	(0028,3006)	1C	Not set
Window Center	(0028,1050)	1C	Always set
Window Width	(0028,1051)	1C	Always set

10.1.1.12.SOP Common Module

Attribute Name	Tag	Type	Attribute Assignment
SOP Class UID	(0008, 0016)	1	Always set
SOP Instance UID	(0008, 0018)	1	Always set
Specific Character Set	(0008, 0005)	1C	As in Support of Extended Character Sets