

Siemens Medical Solutions USA, Inc.  
Ultrasound Division

**SONOLINE Adara™ / SONOLINE Omnia™**  
**Ultrasound Systems**  
**Media Storage**  
**DICOM Conformance Statement**

Revision 02, 2003 August

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## 1. Purpose

This DICOM Conformance Statement is written to part PS 3.2 of the DICOM Standard version 3.0

The SONOLINE Adara™ and SONOLINE Omnia™ ultrasound systems generate ultrasound images that can be saved to MOD (Magneto-Optical Disk) media using DICOM standard protocols and definitions. The applications described refer to the Adara/Omnia systems' DICOM off-line media storage implementation acting as a File Set Creator (FSC) and File Set Updater (FSU) for the specific application profiles and the related SOP Class instances.

### 1.1 Scope

This DICOM Conformance Statement refers to the SONOLINE Adara/Omnia systems. The following table relates software names to Siemens SONOLINE Adara/Omnia systems.

Table 1.1 SONOLINE Product Software

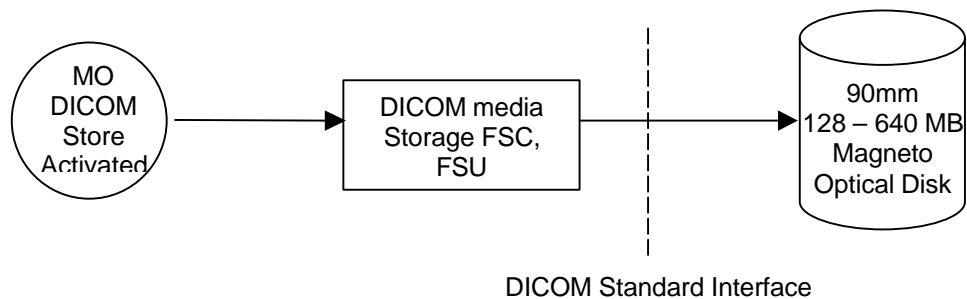
Software Name	Product
Version 2.0	SONOLINE Omnia System
Version 2.0	SONOLINE Adara System

## 2. Implementation Model

SONOLINE Adara/Omnia system users can store images directly on the system MO disk.

### 2.1 Application Data Flow Diagram

Figure 2.1 illustrates the SONOLINE Adara/Omnia system's Application Entity (AE) Data Flow Diagram. All relationships between user invoked activities and the associated real-world activities provided by the DICOM archive application are depicted.



**Figure 2.1 - Application Data Flow Diagram**

### 2.2 AE Functional Definition

The SONOLINE Adara/Omnia systems' DICOM offline media storage application consists of the DICOM Archive application entity serving all interfaces to access offline media. The DICOM application is capable of:

- Creating a new File set onto an unwritten medium.
- Updating an existing File set by writing new SOP Instances onto the medium.

#### 2.2.1 Export to Local Archive Media - Real-World Activity

The Adara/Omnia system application acts as an FSU (for media with existing DICOM file-set) or FSC (media not initialized) using the interchange option when requested to store SOP Instances to the local archive media (MOD).

### 3. AE Specifications

The following specifications apply to the AE as depicted in Figure 2.1.

#### 3.1 Adara/Omnia Systems AE Specification

The Adara/Omnia systems' AE provides conformance to the following DICOM Service SOP Classes as an SCU:

Table 3.1-1 Supported SOP Classes

Service SOP Class Name	SOP Class UID
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Directory Storage	1.2.840.10008.1.3.10

#### 3.2 Implementation Identifying Information

- Adara System Implementation Class UID: "1.3.12.2.1107.5.5.3"
- Adara System Implementation Version Name: "SMSUG-vY2.0"
  
- Omnia System Implementation Class UID: "1.3.12.2.1107.5.5.4"
- Omnia System Implementation Version Name: "SMSUG-vX2.0"

Table 3.1-2 US Image IOD Attributes used

Module	Attribute	Tag	Notes
SOP Common	SOP Class UID	(0008,0016)	US Image – 1.2.840.10008.5.1.4.1.1.6.1
	SOP Instance UID	(0008,0018)	
Patient	Patient's Name	(0010,0010)	
	Patient ID	(0010,0020)	
	Patient's Birth Date	(0010,0030)	
	Patient's Sex	(0010,0040)	
General Study	Study Instance UID	(0020,000D)	
	Study Date	(0008,0020)	
	Study Time	(0008,0030)	
	Referring Physician's Name	(0008,0090)	
	Study ID	(0020,0010)	
	Accession Number	(0008,0050)	
General Series	Modality	(0008,0060)	"US"
	Series Instance UID	(0020,000E)	
	Series Number	(0020,0011)	"1"
General Equipment	Manufacturer	(0008,0070)	"Siemens Ultrasound"
	Modality	(0008,0060)	"US"
General Image	Image Number	(0020,0013)	Image number (1 – n)
	Patient Orientation	(0020,0020)	
Image Pixel	Samples per Pixel	(0028,0002)	Monochrome2 = 1, RGB = 3.
	Rows	(0028,0010)	512
	Columns	(0028,0011)	512
	Pixel Aspect Ratio	(0028,0034)	86356\100000
	Bits Allocated	(0028,0100)	8
	Bits Stored	(0028,0101)	8
	High Bit	(0028,0102)	7
	Pixel Data	(7FE0, 0010)	
	Planar Configuration	(0028,0006)	Color-by-pixel. Only set if Samples per Pixel is greater than 1.
	Photometric Interpretation	(0028,0004)	RGB – for color images Monochrome2 – for grayscale.
	Pixel Representation	(0028,0103)	0
US Image	Image Type	(0008,0008)	ORIGINAL/PRIMARY

#### 4. MEDIA STORAGE APPLICATION PROFILE

The SONOLINE Adara/Omnia systems conform to the STD-US-ID-SF-MOD230 and STD-US-ID-SF-MOD640 profiles. The following SOP Classes will be supported as an FSC and FSU.

Table 4.1 Supported SOP Classes

IOD	SOP Class UID	Transfer Syntax and UID	FSC	FSU
US Image	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1	Yes	Yes
Directory Storage	1.2.840.10008.1.3.10	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1	Yes	Yes

The following Photometric Interpretations are supported:

- MONOCHROME2 (Adara and Omnia)
- RGB (Omnia only)

#### 5. EXTENSIONS/PRIVATIZATIONS/SPECIALIZATIONS

None

#### 6. SUPPORT OF EXTENDED CHARACTER SETS

The SONOLINE Omnia / Adara systems support the default ISO-IR6 character set.

## Glossary

**ACR-NEMA** = American College of Radiology - National Electrical Manufacturer's Association

**AE** = Application Entity

**Conformance Statement** = A formal statement associated with a specific implementation of the DICOM Standard. It specifies the Service Classes, Information Objects, Communications Protocols and Media Storage Application Profiles supported by the implementation

**DICOM 3.0** = Digital Imaging and Communications in Medicine, Version 3.0.

**FSC**= File Set Creator

**FSU**=File Set Updater

**IOD** = Information Object Definition

**MO** = Magneto-Optical

**MOD** = Magneto-Optical Disk

**RWA** = Real-World Activity

**SCP** = Service Class Provider

**SCU** = Service Class User

**SOP** = Service-Object Pairs

**UID** = Unique identifier