

DICOM Conformance Statement  
for  
TRC-NW400

Ver.1  
February 1, 2014  
TOPCON Corporation  
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## 1. CONFORMANCE STATEMENT OVERVIEW

This document declares conformance to DICOM V3.0 for TRC-NW400. TRC-NW400 works as an Acquisition Modality and allows acquisition and storage of acquisition data.

The following table indicates DICOM SOP Classes which TRC-NW400 supports.

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
<b>VERIFICATION</b>		
Verification	Yes	No
<b>TRANSFER</b>		
Ophthalmic Photography 8bit Image Storage	Yes	No
VL Photographic Image Storage	Yes	No
Secondary Capture Image Storage	Yes	No
<b>WORKFLOW MANAGEMENT</b>		
Modality Worklist Information Model - FIND	Yes	No
Modality Performed Procedure Step SOP Class	Yes	No
Storage Commitment Push Model SOP Class	Yes	No
<b>QUERY / RETRIEVE</b>		
Patient Root Query / Retrieve Information Model – FIND	Yes	No

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### 3. INTRODUCTION

#### 3.1. REVISION HISTORY

Document Version	Date of Issue	Author	Description
v1.00	February 1, 2014	Tomoya Obama	Initial Release

#### 3.2. AUDIENCE

This document is intended for hospital staffs, health system integrators, software engineers, service staffs who have a basic knowledge of DICOM.

#### 3.3. ABBREVIATIONS

- ACR American College of Radiology
- ASCII American Standard Code for Information Interchange
- AE Application Entity
- ANSI American National Standards Institute
- DICOM Digital Imaging and Communication in Medicine
- DIMSE DICOM Message Service Element
- DIMSE-C DICOM Message Service Element-Composite
- DIMSE-N DICOM Message Service Element-Normalized
- IE Information Entity
- IOD Information Object Definition
- ISO International Standards Organization
- NEMA National Electrical Manufacture Association
- OSI Open Systems Interconnection
- PDU Protocol Data Unit
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object-Pair
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

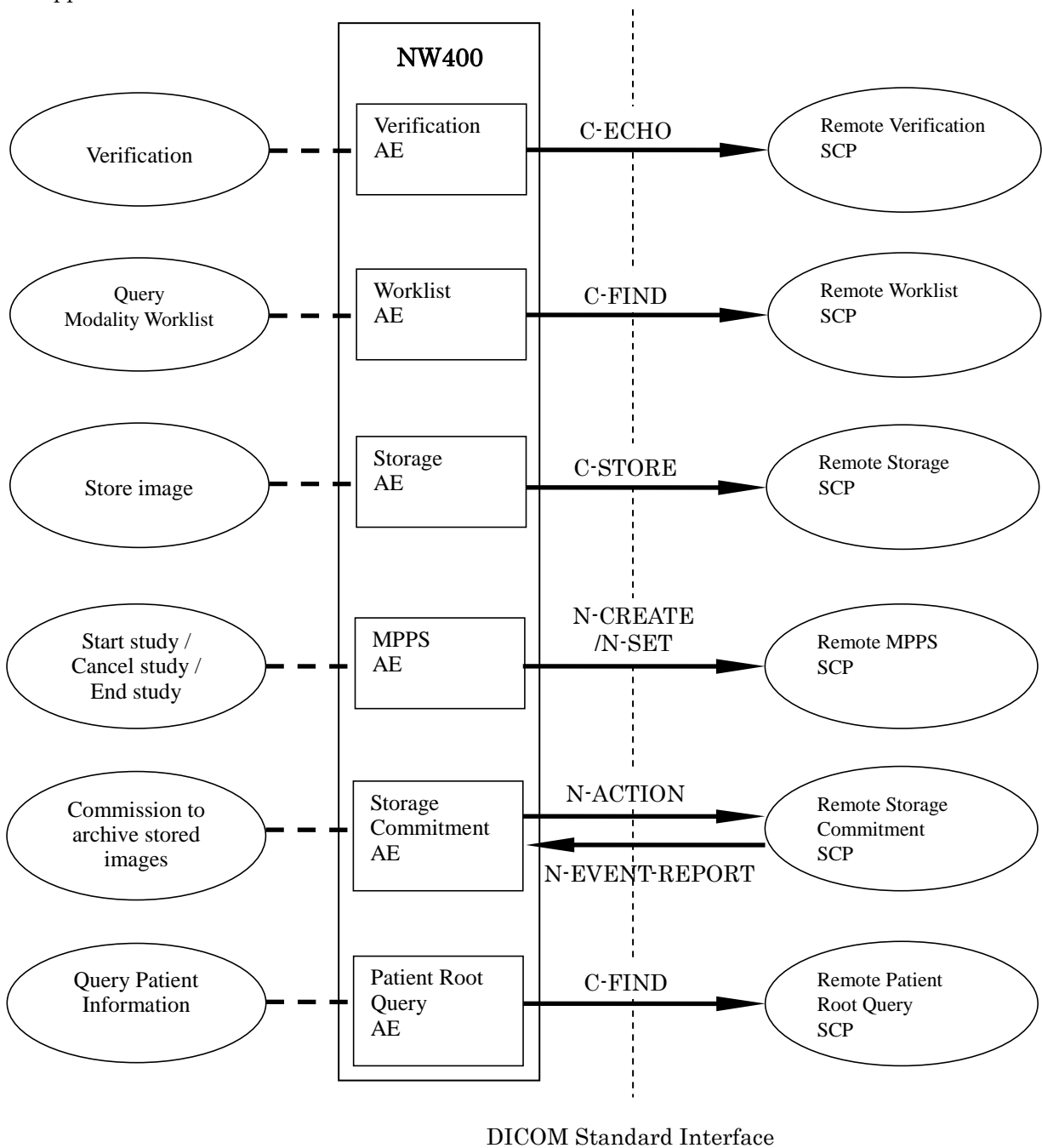
#### 3.4. REFERENCES

- ACR-NEMA DICOM (Digital Imaging and Communication in Medicine)

## 4. NETWORKING

### 4.1. IMPLEMENTATION MODEL

#### 4.1.1. Application Data Flow



#### 4.1.2. Function Definitions of AE's

##### 4.1.2.1. Function Definitions of Verification Entity

The verification AE checks the connection settings of DICOM by sending a C-ECHO request message to a remote verification AE.

##### 4.1.2.2. Function Definitions of Worklist Application Entity

The worklist AE receives a study order list by sending a search condition with a C-FIND request message to a remote worklist AE. And the study order list is displayed on the TRC-NW400.

##### 4.1.2.3. Function Definitions of Storage Application Entity

The storage AE sends a captured image with a C-STORE request message to a remote storage AE. The storage AE corresponds to OP, VL and SC modality.

##### 4.1.2.4. Function Definitions of MPPS Application Entity

The MPPS AE sends a study start message, a study cancel message or a study completion message with a N-CREATE / N-SET request message to a remote MPPS AE.

##### 4.1.2.5. Function Definitions of Storage Commitment Application Entity

The storage commitment AE sends a storage commitment message with a N-ACTION request message to a remote storage commitment AE. After a remote storage commitment AE completes the requested process, a storage commitment AE receives the result of the storage commitment with a N-EVENT-REPORT message from a remote storage commitment AE.

##### 4.1.2.6. Function Definitions of Patient Root Query Application Entity

The patient root query AE receives a patient list by sending a condition of query with a C-FIND request message to a remote patient root query AE. And the patient list is displayed on the TRC-NW400.

## 4.2. AE SPECIFICATIONS

### 4.2.1. Verification AE

The verification AE provides Standard Conformance to the following DICOM V3.0 SOP class as a SCU.

#### 4.2.1.1. SOP Class

SOP Class Name	SOP Class UID	Role
Verification	1.2.840.10008.1.1	SCU

#### 4.2.1.2. Association Policies

##### 4.2.1.2.1. General

The Application Context Name for DICOM 3.0 is the only Application Context proposed.

Application Context Name	1.2.840.10008.3.1.1.1
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##### 4.2.1.2.2. Number of Associations

The verification AE can establish only one association simultaneously.

##### 4.2.1.2.3. Asynchronous Nature

The verification AE allows only a single operation for an association. Therefore an asynchronous operation is not supported.

##### 4.2.1.2.4. Implementation Identifying Information

The verification AE specifies the following implementation identifying information.

Implementation Class UID	1.2.392.200106.1641.1.5
Implementation Version Name	TP_VER_NW400_100

##### 4.2.1.2.5. Association Initiation Policy

###### 4.2.1.2.5.1. Description and Sequencing Activities

After the verification AE establishes a new association to check the connection settings, it sends a verification request message to a remote verification AE by using a C-ECHO service of DIMSE-C.

###### 4.2.1.2.5.2. Proposed Presentation Contexts

The verification AE is capable of proposing the Presentation Contexts shown in the following table.

Presentation Context					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

#### 4.2.1.2.5.3. SOP Specific Conformance for Verification SOP Class

When the result of data communications is successful, the verification AE judges that verification is successful even if the release of an association fails.

#### 4.2.1.2.6. A receiving policy of association

The verification AE does not accept any association requests.



#### 4.2.2. Worklist AE

The worklist AE provides Standard Conformance to the following DICOM V3.0 SOP class as a SCU.

##### 4.2.2.1. SOP Class

SOP Class Name	SOP Class UID	Role
Modality Worklist Information Model-FIND	1.2.840.10008.5.1.4.31	SCU

##### 4.2.2.2. Association Policies

###### 4.2.2.2.1. General

The Application Context Name for DICOM 3.0 is the only Application Context proposed.

Application Context Name	1.2.840.10008.3.1.1.1
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###### 4.2.2.2.2. Number of Associations

The worklist AE can establish only one association simultaneously.

###### 4.2.2.2.3. Asynchronous Nature

The worklist AE allows only a single operation for an association. Therefore an asynchronous operation is not supported.

###### 4.2.2.2.4. Implementation Identifying Information

The worklist AE specifies the following implementation identifying information.

Implementation Class UID	1.2.392.200106.1641.1.1
Implementation Version Name	TP_MWL_NW400_100

###### 4.2.2.2.5. Activity

###### 4.2.2.2.5.1. Description and Sequencing Activities

After the worklist AE establishes a new association to receive a study order list, it sends a search condition to a remote worklist AE by using a C-FIND service of DIMSE-C.

###### 4.2.2.2.5.2. Proposed Presentation Contexts

The worklist AE is capable of proposing the Presentation Contexts shown in the following table.

Presentation Context					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Information Model-FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

#### 4.2.2.2.5.3. SOP Specific Conformance for Worklist SOP Class

When the result of data communications is successful, the worklist AE judges that the acquisition of a study order list is successful even if the release of an association fails.

Tag Description	Tag	Matching	Display
<b>Scheduled Procedure Step</b>			
Scheduled Procedure Step Sequence	(0040,0100)		
>Scheduled Station AE Title	(0040,0001)	S+	
>Scheduled Procedure Step Start Date	(0040,0002)	S	×
>Scheduled Procedure Step Start Time	(0040,0003)		
>Modality	(0008,0060)	S+	
>Scheduled Performing Physicians Name	(0040,0006)		
>Scheduled Procedure Step Description	(0040,0007)		
>Scheduled Procedure Step Location	(0040,0011)		
>Scheduled Action Item Code Sequence	(0040,0008)		
>>Code Value	(0008,0100)		
>>Coding Scheme Designator	(0008,0102)		
>>Coding Meaning	(0008,0104)		
>Scheduled Procedure Step ID	(0040,0009)		
<b>Requested Procedure</b>			
Requested Procedure ID	(0040,1001)		
>Requested Procedure Description	(0032,1060)		
>Requested Procedure Code Sequence	(0032,1064)		
>Code Value	(0008,0100)		
>Coding Scheme Designator	(0008,0102)		
>Coding Meaning	(0008,0104)		
Study Instance UID	(0020,000D)		
Referenced Study Sequence	(0008,1110)		
<b>Imaging Service Request</b>			
Accession Number	(0008,0050)		×
Requesting Physician	(0032,1032)		
Referring Physician's Name	(0008,0090)		
<b>Visit Status</b>			
Current Patient Location	(0038,0300)		
<b>Patient Identification</b>			
Patient's Name	(0010,0010)	*	×
Patient ID	(0010,0020)	*	×
<b>Patient Demographic</b>			
Patients Birth Date	(0010,0030)		
Patient's Sex	(0010,0040)		
Patient's Weight	(0010,1030)		

Tag : Tag Number

Matching : Search key for updating the worklist. 'S' provides an attribute for a single inspection inspection. '+' indicates a configurable item in the setting page.

\* indicates a wildcard search is available.

Display : '×' indicates the items that TRC-NW400 can display on the monitor screen.

#### 4.2.2.2.6. A receiving policy of association

The worklist AE does not accept any association requests.

### 4.2.3. Storage AE

The storage AE provides Standard Conformance to the following DICOM V3.0 SOP class as a SCU.

#### 4.2.3.1. SOP Classes

SOP Class Name	SOP Class UID	Role
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	SCU
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	SCU
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	SCU

#### 4.2.3.2. Association Policies

##### 4.2.3.2.1. General

The Application Context Name for DICOM 3.0 is the only Application Context proposed.

Application Context Name	1.2.840.10008.3.1.1.1
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##### 4.2.3.2.2. Number of Associations

The storage AE can establish only one association simultaneously.

##### 4.2.3.2.3. Asynchronous Nature

The storage AE allows only a single operation for an association. Therefore an asynchronous operation is not supported.

##### 4.2.3.2.4. Implementation Identifying Information

The storage AE specifies the following implementation identifying information.

Implementation Class UID	1.2.392.200106.1641.1.2
Implementation Version Name	TP_STO_NW400_100

##### 4.2.3.2.5. Activity

###### 4.2.3.2.5.1. Description and Sequencing Activities

After the storage AE establishes a new association to store an image, it sends an image to a remote storage AE by using a C-STORE service of DIMSE-C.

###### 4.2.3.2.5.2. Proposed Presentation Contexts

The store AE is capable of proposing the Presentation Contexts shown in the following table.

Presentation Context					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

		JPEG Baseline Lossy Compression (*)	1.2.840.10008.1.2.4.50	SCU	None
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Baseline Lossy Compression (*)	1.2.840.10008.1.2.4.50	SCU	None
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Baseline Lossy Compression (*)	1.2.840.10008.1.2.4.50	SCU	None

(\*) JPEG Baseline(Process 1)

#### 4.2.3.2.5.3. SOP Specific Conformance for Storage SOP Class

When the result of data communications is successful, the storage AE judges that the storing of an image is successful even if the release of an association fails.

The details of IODs which is sent by storage AE are described in ANNEX A.

#### 4.2.3.2.6. A receiving policy of association

The store AE does not accept any association requests.

#### 4.2.4. MPPS AE

The MPPS AE provides Standard Conformance to the following DICOM V3.0 SOP class as a SCU.

##### 4.2.4.1. SOP Class

SOP Class Name	SOP Class UID	Role
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	SCU

##### 4.2.4.2. Association Policies

###### 4.2.4.2.1. General

The Application Context Name for DICOM 3.0 is the only Application Context proposed.

Application Context Name	1.2.840.10008.3.1.1.1
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###### 4.2.4.2.2. Number of Associations

The MPPS AE can establish only one association simultaneously.

###### 4.2.4.2.3. Asynchronous Nature

The MPPS AE allows only a single operation for an association. Therefore an asynchronous operation is not supported.

###### 4.2.4.2.4. Implementation Identifying Information

The MPPS AE specifies the following implementation identifying information.

Implementation Class UID	1.2.392.200106.1641.1.3
Implementation Version Name	TP_MPP_NW400_100

###### 4.2.4.2.5. Activity

###### 4.2.4.2.5.1. Description and Sequencing Activities

After the MPPS AE establishes a new association to send a notification message of a modality status, it sends a request message to a remote MPPS AE by using a N-CREATE / N-SET service of DIMSE-N.

###### 4.2.4.2.5.2. Proposed Presentation Contexts

The MPPS AE is capable of proposing the Presentation Contexts shown in the following table.

Presentation Context					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

#### 4.2.4.2.5.3. SOP Specific Conformance for MPPS SOP Class

When the result of data communications is successful, the MPPS AE judges that a status notification of MPPS is successful even if the release of an association fails.

In addition, if TRC-NW400 acquires an image without getting a study order from MWL, MPPS request messages are not sent to remote MPPS AE.

Attribute Name	Tag	Req. Type N-CREATE / N-SET	Attribute Description
<b>Modality Performed Procedure Step Relations</b>			
Patient's Name	(0010,0010)	2/-	[N-CREATE] A value acquired from MWL, a value acquired from PACS, a value generated by TRC-NW400 or empty.  [N-SET] No tag
Patient ID	(0010,0020)	2/-	[N-CREATE] A value acquired from MWL, a value acquired from PACS or a value generated by TRC-NW400.  [N-SET] No tag
Patient's Birth Date	(0010,0030)	2/-	[N-CREATE] A value acquired from MWL, a value acquired from PACS, a value generated by TRC-NW400 or empty.  [N-SET] No tag
Patient's Sex	(0010,0040)	2/-	[N-CREATE] A value acquired from MWL, a value acquired from PACS, a value generated by TRC-NW400 or empty.  [N-SET] No tag
Referenced Patient Sequence	(0008,1120)	2/-	[N-CREATE] Empty  [N-SET] No tag
Scheduled Step Attribute Sequence	(0040,0270)	1/-	[N-CREATE] –  [N-SET] No tag
>Study Instance UID	(0020,000D)	1/-	[N-CREATE] A value acquired from MWL or a value generated by TRC-NW400.  [N-SET] No tag

>Referenced Study Sequence	(0008,1110)	2/-	[N-CREATE] Empty  [N-SET] No tag
>Accession Number	(0008,0050)	2/-	[N-CREATE] A value acquired from MWL or empty.  [N-SET] No tag
>Placer Order Number/Imaging Service Request	(0040,2016)	3/-	[N-CREATE] A value acquired from MWL or empty.  [N-SET] No tag
>Filler Order Number/Imaging Service Request	(0040,2017)	3/-	[N-CREATE] A value acquired from MWL or empty.  [N-SET] No tag
>Requested Procedure ID	(0040,1001)	2/-	[N-CREATE] A value acquired from MWL or empty.  [N-SET] No tag
>Requested Procedure Description	(0032,1060)	2/-	[N-CREATE] A value acquired from MWL or empty.  [N-SET] No tag
>Scheduled Procedure Step ID	(0040,0009)	2/-	[N-CREATE] A value acquired from MWL or empty.  [N-SET] No tag
>Scheduled Procedure Step Description	(0040,0007)	2/-	[N-CREATE] A value acquired from MWL or empty.  [N-SET] No tag
>Scheduled Protocol Code Sequence	(0040,0008)	2/-	[N-CREATE] Empty  [N-SET] No tag
<b>Modality Performed Procedure Step Information</b>			
Performed Station AE Title	(0040,0241)	1/-	[N-CREATE] A preset value.  [N-SET] No tag
Performed Station Name	(0040,0242)	2/-	[N-CREATE]

			A preset value. [N-SET] No tag
Performed Procedure Step Start Date	(0040,0244)	1/-	[N-CREATE] A value generated by TRC-NW400. [N-SET] No tag
Performed Procedure Step Start Time	(0040,0245)	1/-	[N-CREATE] A value generated by TRC-NW400. [N-SET] No tag
Performed Procedure Step ID	(0040,0253)	1/-	[N-CREATE] A value acquired from MWL or a value generated by TRC-NW400. [N-SET] No tag
Performed Location	(0040,0243)	2/-	[N-CREATE] Empty [N-SET] No tag
Performed Procedure Step End Date	(0040,0250)	2/3	[N-CREATE] Empty [N-SET] A value generated by TRC-NW400.
Performed Procedure Step End Time	(0040,0251)	2/3	[N-CREATE] Empty [N-SET] A value generated by TRC-NW400.
Performed Procedure Step Status	(0040,0252)	1/3	[N-CREATE] IN PROGRESS [N-SET] COMPLETED or DISCONTINUED
Performed Procedure Step Description	(0040,0254)	2/-	[N-CREATE] Empty [N-SET] No tag
Performed Procedure Type Description	(0040,0255)	2/-	[N-CREATE] Empty [N-SET] No tag
Procedure Code Sequence	(0008,1032)	2/-	[N-CREATE] A value acquired from MWL or empty.



			[N-SET] No tag
>Code Value	(0008,0100)	1/-	[N-CREATE] A value acquired from MWL.  [N-SET] No tag
>Coding Scheme Designator	(0008,0102)	1/-	[N-CREATE] A value acquired from MWL.  [N-SET] No tag
>Coding Scheme Version	(0008,0103)	3/-	[N-CREATE] A value acquired from MWL.  [N-SET] No tag
>Code Meaning	(0008,0104)	1/-	[N-CREATE] A value acquired from MWL.  [N-SET] No tag
<b>Image Collection Results</b>			
Modality	(0008,0060)	1/-	[N-CREATE] A value generated by TRC-NW400.  [N-SET] No tag
Study ID	(0020,0010)	2/-	[N-CREATE] A value generated by TRC-NW400 or empty.  [N-SET] No tag
Performed Protocol Code Sequence	(0040,0260)	2/3	[N-CREATE] -  [N-SET] -
>Code Value	(0008,0100)	1/1	[N-CREATE] A value generated by TRC-NW400.  [N-SET] A value generated by TRC-NW400.
>Coding Scheme Designator	(0008,0102)	1/1	[N-CREATE] A value generated by TRC-NW400.  [N-SET] A value generated by TRC-NW400.
>Code Meaning	(0008,0104)	3/3	[N-CREATE] A value generated by TRC-NW400.

			[N-SET] A value generated by TRC-NW400.
Performed Series Sequence	(0040,0340)	2/3	[N-CREATE] Empty  [N-SET] -
>Performing Physician's Name	(0008,1050)	-/2	[N-CREATE] No tag  [N-SET] Empty
>Series Instance UID	(0020,000E)	-/1	[N-CREATE] No tag  [N-SET] A value generated by TRC-NW400.
>Protocol name	(0018,1030)	-/1	[N-CREATE] No tag  [N-SET] A value generated by TRC-NW400.
>Operator's Name	(0008,1070)	-/2	[N-CREATE] No tag  [N-SET] Empty
>Series Description	(0008,103E)	-/2	[N-CREATE] No tag  [N-SET] Empty
>Retrieve AE Title	(0008,0054)	-/2	[N-CREATE] No tag  [N-SET] Empty
>Referenced Image Sequence	(0008,1140)	-/2	[N-CREATE] No tag  [N-SET] Empty
>>Referenced SOP Class UID	(0008,1150)	-/1	[N-CREATE] No tag  [N-SET] A value generated by TRC-NW400.
>>Referenced SOP Instance UID	(0008,1155)	-/1	[N-CREATE] No tag  [N-SET] A value generated by TRC-NW400.
>Referenced Non-Image Composite SOP Instance	(0040,0220)	-/2	[N-CREATE] No tag

Sequence			[N-SET] Empty
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4.2.4.2.6. A receiving policy of association

The MPPS AE does not accept any association requests.

#### 4.2.5. Storage Commitment AE

The storage commitment AE provides Standard Conformance to the following DICOM V3.0 SOP class as a SCU.

##### 4.2.5.1. SOP Class

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

##### 4.2.5.2. Association Policies

###### 4.2.5.2.1. General

The Application Context Name for DICOM 3.0 is the only Application Context proposed.

Application Context Name	1.2.840.10008.3.1.1.1
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###### 4.2.5.2.2. Number of Associations

The storage commitment AE can establish only one association simultaneously.

###### 4.2.5.2.3. Asynchronous Nature

The storage commitment AE allows only a single operation for an association. Therefore an asynchronous operation is not supported.

###### 4.2.5.2.4. Implementation Identifying Information

The storage commitment AE specifies the following implementation identifying information.

Implementation Class UID	1.2.392.200106.1641.1.4
Implementation Version Name	TP_COM_NW400_100

###### 4.2.5.2.5. Activity

###### 4.2.5.2.5.1. Description and Sequencing Activities

After the storage commitment AE establishes a new association to ask to save an image enduringly, it sends a storage commitment request message to a remote storage commitment AE by using a N-ACTION service of DIMSE-N. Then, when a remote AE completes a process of a storage commitment request, it sends a result of storage commitment to the storage commitment AE by using a N-EVENT-REPORT service of DICOM-N. Therefore, the storage commitment AE accepts a transmission request of a result in the association which was established for N-ACTION. However, if the association already is released at that time, a remote storage commitment AE establishes a new association to send a transmission request of a result.

###### 4.2.5.2.5.2. Proposed Presentation Contexts

The storage commitment AE is capable of proposing the Presentation Contexts shown in the following table.

Presentation Context			
Abstract Syntax	Transfer Syntax	Role	Extended

Name	UID	Name List	UID List		Negotiation
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

#### 4.2.5.2.5.3. SOP Specific Conformance for Storage Commitment SOP Class

When the result of data communications is successful, the storage commitment AE judges that a request of saving an image enduringly is successful even if the release of an association fails.

Attribute Name	Tag	Type	Attribute Description
<b>Storage Commitment Request</b>			
Transaction UID	(0008,1195)	1	A value created by TRC-NW400.
Referenced SOP Sequence	(0008,1199)	1	A value acquired from Storage data.
>Referenced SOP Class UID	(0008,1150)	1	A value acquired from Storage data.
>Referenced SOP Instance UID	(0008,1155)	1	A value acquired from Storage data.

#### 4.2.5.2.6. A receiving policy of association

The storage commitment AE accepts the following association request which is requested from a remote storage commitment AE.

- A notification request of a result of a storage commitment

#### 4.2.6. Patient Root Query AE

The patient root query AE provides Conformance to the following DICOM V3.0 SOP class as a SCU.

##### 4.2.6.1. SOP Class

SOP Class Name	SOP Class UID	Role
Patient Root Query / Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	SCU

##### 4.2.6.2. Association Policies

###### 4.2.6.2.1. General

The Application Context Name for DICOM 3.0 is the only Application Context proposed.

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

###### 4.2.6.2.2. Number of Associations

The patient root query AE can establish only one association simultaneously.

###### 4.2.6.2.3. Asynchronous Nature

The patient root query AE allows only a single operation for an association. Therefore an asynchronous operation is not supported.

###### 4.2.6.2.4. Implementation Identifying Information

Implementation Class UID	1.2.392.200106.1641.1.6
Implementation Version Name	TP_QUE_NW400_100

###### 4.2.6.2.5. Activity

###### 4.2.6.2.5.1. Description and Sequencing Activities

After the patient root query AE establishes a new association to receive a patient information list from PACS, it sends a search condition to a remote patient root query AE by using a C-FIND service of DIMSE-C.

###### 4.2.6.2.5.2. Proposed Presentation Contexts

The patient root query AE is capable of proposing the Presentation Contexts shown in the following table.

Presentation Context					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query / Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little	1.2.840.10008.1.2.1	SCU	None

		Endian		
--	--	--------	--	--

4.2.6.2.5.3. SOP Specific Conformance for Patient Root Query SOP Class

When the result of data communications is successful, the patient root query AE judges that the acquisition of a patient information list is successful even if the release of an association fails.

And the value of Query / Retrieve level is fixed to 'PATIENT'.

Tag Description	Tag	Matching	Display
<b>Patient Level</b>			
Patient's Name	(0010,0010)	*	×
Patient ID	(0010,0020)	*	×
Patients Birth Date	(0010,0030)		
Patient's Sex	(0010,0040)		
Ethnic Group	(0010,2160)		

Tag : Tag Number

Matching : Search key for updating the patient list. "\*" indicates a wildcard search is available.

Display : '×' indicates the items that TRC-NW400 can display on the monitor screen.

4.2.6.2.6. A receiving policy of association

The patient root query AE does not accept any association requests.

### 4.3. NETWORK INTERFACES

TRC-NW400 supports DICOM TCP/IP network communication which is defined in PS 3.8 of DICOM Standard. In addition, TRC-NW400 supports the TCP/IP protocol stack of Linux system.

#### 4.3.1. Physical Network Interface

TRC-NW400 supports a single network interface. One of the following physical network interfaces will be available.

Ethernet 1000base T
Ethernet 100base T

#### 4.3.2. IPv4 and IPv6 Support

TRC-NW400 only supports IPv4 connections.

### 4.4. DATA DICTIONARY OF PRIVATE ATTRIBUTES

TRC-NW400 does not support any Private Attributes.

### 4.5. STANDARD EXTENDED / SPECIALIZED / PRIVATE SOP CLASSES

TRC-NW400 does not support any Extended, Specialized or Private SOP Classes.

### 4.6. PRIVATE TRANSFER SYNTAXES

TRC-NW400 does not support any Private Transfer Syntaxes.



## 4.7. CONFIGURATION

### 4.7.1. AE Title / Presentation Address Mapping

TRC-NW400 uses the AE titles and TCP/IP ports which are specified in the setting page.

### 4.7.2. Parameters

Many parameters for the general operations can be specified by using a configuration user interface.

The following table shows the configurable parameters for DICOM communication.

<b>SCU</b>		
Items	Parameters	Descriptions
TRC-NW400	IP Address	Default : None
	Port Number	Default : 64001
	AE Title	Default : TP_AM_NW400_001
<b>SCP</b>		
Items	Parameters	Descriptions
Modality Worklist	IP Address	Default : None
	Port Number	Default : 0
	AE Title	Default : None
Storage	IP Address	Default : None
	Port Number	Default : 0
	AE Title	Default : None
	Modality	Default : SC The following values are available. - OP - VL - SC
	SC Modality	Default : SC The following values are available. - SC - OP - XC - OT
	Transfer Syntax	Default : Implicit VR Little Endian The following values are available. - Implicit VR Little Endian, - Explicit VR Little Endian, - JPEG Baseline Lossy Compression
MPPS	IP Address	Default : None
	Port Number	Default : 0
	AE Title	Default : None
Storage Commitment	IP Address	Default : None
	Port Number	Default : 0
	AE Title	Default : None
Patient Query Root	IP Address	Default : None
	Port Number	Default : 0
	AE Title	Default : None

## 5. MEDIA INTERCHANGE

TRC-NW400 does not support Media Interchange.

## 6. SUPPORT OF CHARACTER SETS

TRC-NW400 supports the following character sets.

- ISO\_IR 6
- ISO\_IR 13
- ISO 2022 IR 87
- ISO 2022 IR 13

## ANNEX A

### A.1 IODs of the Storage AE

When the storage AE sends an image, after generating an IOD which conforms to one of the following SOP classes, the storage AE sends it.

#### A.1.1 Ophthalmic Photography 8 Bit Image IOD

Information Entity	Module	Reference	Usage*1
Patient	Patient	A.2.1	M
Study	General Study	A.2.2	M
Series	General Series	A.2.3	M
	Ophthalmic Photography Series	A.2.4	M
Frame Of Reference	Synchronization	A.2.5	M
Equipment	General Equipment	A.2.6	M
Image	General Image	A.2.7	M
	Image Pixel	A.2.8	M
	Cine	A.2.14	C
	Multi Frame	A.2.15	M
	Ophthalmic Photography Image	A.2.16	M
	Ocular Region Imaged	A.2.17	M
	Ophthalmic Photography Acquisition Parameters	A.2.18	M
	Ophthalmic Photographic Parameters	A.2.19	M
SOP Common	A.2.10	M	

\*1: M=Mandatory, C=Conditional, U=User option

#### A.1.2 VL Photographic Image IOD

Information Entity	Module	Reference	Usage*1
Patient	Patient	A.2.1	M
Study	General Study	A.2.2	M
Series	General Series	A.2.3	M
Equipment	General Equipment	A.2.6	M
Image	General Image	A.2.7	M
	Image Pixel	A.2.8	M
	Acquisition Context	A.2.9	M
	VL Image	A.2.12	M
	SOP Common	A.2.10	M

\*1: M=Mandatory, C=Conditional, U=User option

#### A.1.3 Secondary Capture Image IOD

Information Entity	Module	Reference	Usage*1
Patient	Patient	A.2.1	M
Study	General Study	A.2.2	M
Series	General Series	A.2.3	M
Equipment	General Equipment	A.2.6	U
	SC Equipment	A.2.11	M
Image	General Image	A.2.7	M
	Image Pixel	A.2.8	M

	SC Image	A.2.13	M
	SOP Common	A.2.10	M

\*1: M=Mandatory, C=Conditional, U=User option

## A.2 Module lists of IODs

### A.2.1 Patient Module

Attribute Name	Tag	Type	Attribute Description
Patient's Name	(0010,0010)	2	A value acquired from MWL, a value acquired from PACS, a value generated by TRC-NW400 or empty.
Patient ID	(0010,0020)	2	A value acquired from MWL, a value acquired from PACS or a value generated by TRC-NW400.
Patient's Birth Date	(0010,0030)	2	A value acquired from MWL or a value acquired from PACS.
Patient's Sex	(0010,0040)	2	A value acquired from MWL or a value acquired from PACS.

### A.2.2 General Study Module

Attribute Name	Tag	Type	Attribute Description
Study Instance UID	(0020,000D)	1	A value acquired from MWL or a value generated by TRC-NW400.
Study Date	(0008,0020)	2	A value generated by TRC-NW400.
Study Time	(0008,0030)	2	A value generated by TRC-NW400 or empty.
Referring Physician's Name	(0008,0090)	2	A value acquired from MWL or empty.
Study ID	(0020,0010)	2	A value acquired from MWL or empty.
Accession Number	(0008,0050)	2	A value acquired from MWL or empty.
Study Description	(0008,1030)	3	fundus photo
Referenced Study Sequence	(0008,1110)	3	-
>Referenced SOP Class UID	(0008,1150)	1	SOP Class UID
>Referenced SOP Instance UID	(0008,1155)	1	SOP Instance UID
Procedure Code Sequence	(0008,1032)	3	-
> Code Value	(0008,0100)	2	A value generated by TRC-NW400.
> Coding Scheme Designator	(0008,0102)	2	A value generated by TRC-NW400.
> Code Meaning	(0008,0104)	2	A value generated by TRC-NW400.

### A.2.3 General Series Module

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	VL or SC
Series Instance UID	(0020,000E)	1	A value generated by TRC-NW400.
Series Number	(0020,0011)	2	A value generated by TRC-NW400.
Laterality	(0020,0060)	2C	R or L. In case of OP, this tag does not exist in an IOD.
Series Description	(0008,103E)	3	color
Series Date	(0008,0021)	3	A value generated by TRC-NW400.
Series Time	(0008,0031)	3	A value generated by TRC-NW400.
Referenced Performed Procedure Step Sequence	(0008,1111)	3	-
>Referenced SOP Class UID	(0008,1150)	1	SOP Class UID of MPPS
>Referenced SOP Instance UID	(0008,1155)	1	SOP Instance UID of MPPS
Request Attributes Sequence	(0040,0275)	3	-

>Requested Procedure ID	(0040,1001)	1C	A value acquired from MWL.
>Scheduled Procedure Step ID	(0040,0009)	1C	A value acquired from MWL.
> Scheduled Procedure Step Description	(0040,0007)	3	A value acquired from MWL.
> Scheduled Protocol Code Sequence	(0040,0008)	3	-
>>Code Value	(0008,0100)	2	A value acquired from MWL.
>>Coding Scheme Designator	(0008,0102)	2	A value acquired from MWL.
>>Code Meaning	(0008,0104)	2	A value acquired from MWL.

#### A.2.4 Ophthalmic Photography Series Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	OP

#### A.2.5 Synchronization Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Synchronization Frame of Reference UID	(0020,0200)	1	A value generated by TRC-NW400.
Synchronization Trigger	(0018,106A)	1	NO TRIGGER
Acquisition Time Synchronized	(0018,1800)	1	N

#### A.2.6 General Equipment Module

Attribute Name	Tag	Type	Attribute Description
Manufacturer	(0008,0070)	2	A preset value
Manufacturer's Model Name	(0008,1090)	3	TRC-NW400
Device Serial Number	(0008,1090)	3	Device Serial Number
Software Versions	(0018,1020)	3	Software Version

#### A.2.7 General Image Module

Attribute Name	Tag	Type	Attribute Description
Instance Number	(0020,0013)	2	A value generated by TRC-NW400.
Patient Orientation	(0020,0020)	2C	LYF
Content Date	(0008,0023)	2C	A value generated by TRC-NW400.
Content Time	(0008,0033)	2C	A value generated by TRC-NW400.
Image Type	(0008,0008)	3	ORIGINAL <del>Y</del> PRIMARY
Acquisition Number	(0020,0012)	3	A value generated by TRC-NW400. In case of OP, this tag exists in an IOD.
Acquisition Date	(0008,0022)	3	Same as Content Date.
Acquisition Time	(0008,0032)	3	Same as Content Time.
Acquisition Date Time	(0008,002A)	3	A value generated from Content Date and Content Time. In case of OP, this tag exists in an IOD.
Burned In Annotation	(0028,0301)	3	NO
Lossy Image Compression	(0028,2110)	3	00 or 01

#### A.2.8 Image Pixel Module

Attribute Name	Tag	Type	Attribute Description
Sample per Pixel	(0028,0002)	1	A value generated by TRC-NW400.
Photometric Interpretation	(0028,0004)	1	A value generated by TRC-NW400.
Rows	(0028,0010)	1	A value generated by TRC-NW400.
Columns	(0028,0011)	1	A value generated by TRC-NW400.
Bits Allocated	(0028,0100)	1	A value generated by TRC-NW400.
Bits Stored	(0028,0101)	1	A value generated by TRC-NW400.
High Bit	(0028,0102)	1	A value generated by TRC-NW400.
Pixel Representation	(0028,0103)	1	A value generated by TRC-NW400.
Pixel Data	(7FE0,0010)	1C	A value generated by TRC-NW400.
Planar Configuration	(0028,0006)	1C	A value generated by TRC-NW400.

#### A.2.9 Acquisition Context Module

In case of 'VL Photographic Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Acquisition Context Sequence	(0040,0555)	2	Empty

#### A.2.10 SOP Common Module

Attribute Name	Tag	Type	Attribute Description
SOP Class UID	(0008,0016)	1	A value generated by TRC-NW400.
SOP Instance UID	(0008,0018)	1	A value generated by TRC-NW400.
Specific Character Set	(0008,0005)	1C	In case of using Japanese, this tag is used.
Instance Creation Date	(0008,0012)	3	A value generated by TRC-NW400.
Instance Creation Time	(0008,0013)	3	A value generated by TRC-NW400.

#### A.2.11 SC Equipment Module

In case of 'Secondary Capture Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Conversion Type	(0008,0064)	1	DF

#### A.2.12 VL Image Module

In case of 'VL Photographic Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Image Type	(0008,0008)	1	ORIGINAL $\neq$ PRIMARY
Photometric Interpretation	(0028,0004)	1	A value generated by TRC-NW400.
Bits Allocated	(0028,0100)	1	A value generated by TRC-NW400.
Bits Stored	(0028,0101)	1	A value generated by TRC-NW400.
High Bit	(0028,0102)	1	A value generated by TRC-NW400.
Pixel Representation	(0028,0103)	1	A value generated by TRC-NW400.
Sample per Pixel	(0028,0002)	1	A value generated by TRC-NW400.
Planar Configuration	(0028,0006)	1C	A value generated by TRC-NW400.
Content Time	(0008,0033)	1C	A value generated by TRC-NW400.
Lossy Image Compression	(0028,2110)	2	00 or 01
Anatomic Region Sequence	(0008,2218)	1C	-
> Code Value	(0008,0100)	2	A value defined in CID 4040.
> Coding Scheme Designator	(0008,0102)	2	A value defined in CID 4040.
> Code Meaning	(0008,0104)	2	A value defined in CID 4040.
Pixel Data	(7FE0,0010)	1	A value generated by TRC-NW400.
Pixel Spacing	(0028,0030)	3	A value generated by TRC-NW400.

#### A.2.13 SC Image Module

In case of 'Secondary Capture Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Pixel Spacing	(0028,0030)	1C	A value generated by TRC-NW400.

#### A.2.14 Cine Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Frame Time	(0018,1063)	1C	0

#### A.2.15 Multi Frame Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Number of Frames	(0028,0008)	1	1
Frame Increment Pointer	(0028,0009)	1	(0018,1063)

#### A.2.16 Ophthalmic Photography Image Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Image Type	(0008,0008)	1	ORIGINAL <del>Y</del> PRIMARY <del>Y</del> COLOR
Instance Number	(0020,0013)	1	A value generated by TRC-NW400.
Samples per Pixel	(0028,0002)	1	A value generated by TRC-NW400.
Photometric Interpretation	(0028,0004)	1	A value generated by TRC-NW400.
Pixel Representation	(0028,0103)	1	A value generated by TRC-NW400.
Planar Configuration	(0028,0006)	1C	A value generated by TRC-NW400.
Pixel Spacing	(0028,0030)	1C	A value generated by TRC-NW400.
Content Time	(0008,0033)	1	A value generated by TRC-NW400.
Content Date	(0008,0023)	1	A value generated by TRC-NW400.
Acquisition Date Time	(0008,002A)	1C	A value generated by TRC-NW400.
Lossy Image Compression	(0028,2110)	1	00 or 01
Burned In Annotation	(0028,0301)	1	NO

#### A.2.17 Ocular Region Imaged Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Image Laterality	(0020,0062)	1	R, L or B. In case of OP, this tag exists in an IOD.
Anatomic Region Sequence	(0008,2218)	1	-
> Code Value	(0008,0100)	2	A value defined in ID 4209.
> Coding Scheme Designator	(0008,0102)	2	A value defined in ID 4209.
> Code Meaning	(0008,0104)	2	A value defined in ID 4209.

#### A.2.18 Ophthalmic Photography Acquisition Parameters Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Patient Eye Movement Commanded	(0022,0005)	2	Empty
Refractive State Sequence	(0022,001B)	2	Empty
Emmetropic Magnification	(0022,000A)	2	A value generated by TRC-NW400.
Intra Ocular Pressure	(0022,000B)	2	Empty

Pupil Dilated	(0022,000D)	2	Empty
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#### A.2.19 Ophthalmic Photographic Parameters Module

In case of 'Ophthalmic Photography 8 Bit Image', this module is used.

Attribute Name	Tag	Type	Attribute Description
Acquisition Device Type Code Sequence	(0022,0015)	1	-
> Code Value	(0008,0100)	2	A value defined in CID 4202.
> Coding Scheme Designator	(0008,0102)	2	A value defined in CID 4202.
> Code Meaning	(0008,0104)	2	A value defined in CID 4202.
Detector Type	(0022,0016)	2	Empty
Light Path Filter Type Stack Code Sequence	(0022,0017)	2	Empty
Image Path Filter Type Stack Code Sequence	(0022,0018)	2	Empty
Lenses Code Sequence	(0022,0019)	2	Empty
Detector Type	(0018,7004)	2	Empty

End of report.