

TEST REPORT

Regulation : FCC Part15 Subpart C Section 15.225

Industry Canada RSS-210 Issue 7
Industry Canada RSS-Gen Issue 2

Applicant	Testing Laboratory
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Equipment Type	ENDOSCOPE REPROCESSOR
Category	Medical Equipment
Trademark	OLYMPUS
Model (s)	OER-Pro
Serial No.	2700250
FCC ID	S8Q-GN4215
IC	4763B-GN4215
Test Result	Complied
Report Number	ESJ-107088A
Report Issue Date	November 20, 2007

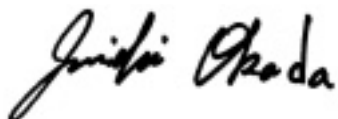
This equipment has been shown to be capable of compliance with the applicable standard(s) as indicated in the test report. I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

This test report shall not be reproduced partially, or in full, without the prior written approval of ETL SEMKO Japan K.K. The results and statements contained in this report pertain only to the equipment evaluated.

As for this report, it is the test report issued again instead of ESJ-107088.

Approved by

Tested by




Junichi Okada
[Site Manager]

Kazuo Masuda



Naoki Ikeda

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SECTION 1. GENERAL INFORMATION

TEST PERFORMED

Location	Kashima No.3 Test Site (FCC Reg. : JP5026) (IC File No. : IC 2065A-3)
EUT Received	February 20, 2007
Test Started	February 20, 2007
Test Completed	May 2, 2007
Standard Applied	FCC Part15C – Section 15.225 Industry Canada RSS-210 Issue 7 Industry Canada RSS-Gen Issue 2
Test Setup	ANSI C63.4-2003
Deviation from Standard (s)	No deviation

TEST TRACEABILITY

Traceability to national standards of test result is achieved by means of calibration traceability to national or international standards.

LIMITATIONS ON RESULTS

The test result of this report is effective for equipment under test itself and under the test configuration described on the report.

This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.

ABBREVIATIONS

AE = Associated Equipment

AMN = Artificial Mains Network

AMP = Amplifier, ATT = Attenuator

ANT = Antenna, BBA = Broadband Antenna

AVG = Average

Cal = Calibration

CDN = Coupling Decoupling Network

LCD = Liquid-Crystal Display

DIP = Dipole Antenna

DoC = Device for Declaration of Conformity

EUT = Equipment Under Test

ISN = Impedance Stabilization Network

LISN = Line Impedance Stabilization Network

PK = Peak

Q-P = Quasi-peak

SECTION 2. SUMMARY OF TEST RESULTS

This test report clearly shows that the EUT is in compliance with the
FCC Part15 SubpartC - Section 15.225 (with Industry Canada RSS-210 Issue 7)

Test	Reference < FCC >	Reference < IC >	Result
AC Conducted Emission	15.207	RSS-Gen Issue 2 7.2.2	Pass
Field Strength Emission	15.225 (a)	RSS-210 Issue 7 A2.6 (a)	Pass
Spurious Emission - Radiated	15.225 (d) 15.209 15.205	RSS-210 Issue 7 A2.6 (d) 2.7 Table 2 2.7 Table 1	Pass
Frequency Tolerance	15.225 (e)	RSS-Gen Issue 2 4.7	Pass

Note :

1. The EUT is medical equipment and therefore is applied to FCC Part15 subpart B - Exempted devices Section 15.103 (c).
2. See Section 9 for details.

SECTION 3. INFORMATION ABOUT EUT

The equipment under test (EUT) consisted of the following equipment.

3.1 List of System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer	Notes	FCC ID
A1	ENDOSCOPE REPROCESSOR	OER-Pro	2700250	OLYMPUS MEDICAL SYSTEMS CORP.	EUT	S8Q-GN4215
A2	RFID Module (Antenna Unit)	TR3-CA004C	None	Takaya Corporation	EUT	
A3	RFID Module (R/W Unit)	TR3-L301	None	Takaya Corporation	EUT	
A4	RFID Module (I/F Unit)	TR3-CIF001	None	Takaya Corporation	EUT	
Power Ratings of EUT : AC 120V, 60Hz, 700W						
Power Supply : AC 120V, 60 Hz						
Condition of Equipment		Prototype				
Type		Floor-Standing Type				

Note : A2, A3, and A4 are internal module of A1.

3.2 Overview of EUT :

Carrier Frequency	13.56 MHz
Modulation Method	Transmitting – Amplitude Shift Keying
RF Output Power	67.9 dBuV/m (at 3.0m : Measurement value)

3.3 Oscillator(s) / Crystal (s) :

Oscillator	Operating Frequency	Board Name	Notes
10.0 MHz	10.0 MHz	RFID Board	
13.56 MHz	13.56 MHz	RFID Board	
16.0 MHz	16.0 MHz	CPU Board	
18.432 MHz	36 kHz	US Board	(Highest)

3.4 Port(s)/Connector(s) :

Port Name	Connector Type	Connector Pin	Notes
RS-232C	D-sub	9pin	for Maintenance

3.5 Frequency Range of Measurements

AC Conducted Emission	0.15 – 30 MHz
Spurious Emission - Radiated (Magnetic Field)	0.009 – 30 MHz
Spurious Emission - Radiated (Electric Field)	30 – 1000 MHz

SECTION 4. SUPPORT EQUIPMENT(S)

The EUT was supported by the following equipment during the test.

Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID / DoC
B	Scope ID master card	GT210400	None	OLYMPUS MEDICAL SYSTEMS CORP.	N.A.

Note : Scope ID master card (The RF Tags) are not self powered.

SECTION 5. USED CABLE (S)

The following cable(s) was used for the test.

No.	Name	Length (m)	Shield	Connector Type	Ferrite Core
1	RS-232C cable	1.5 m	Yes	Metal	
2	Power cable for EUT	3.5 m	No	-	

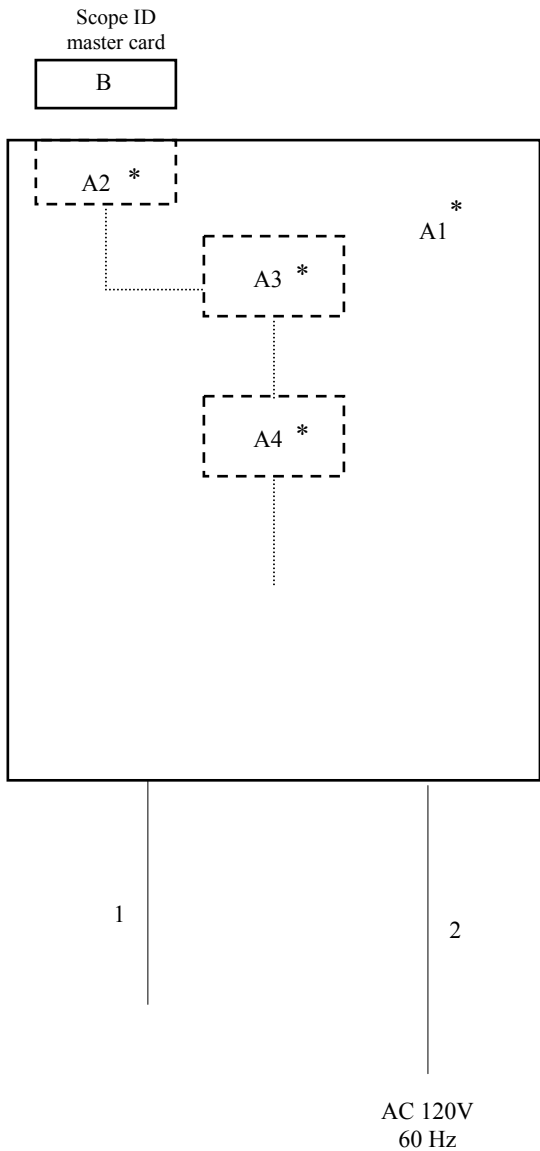
Note : No.1 cable (RS-232C) is for maintenance.

SECTION 6. CONSTRUCTION OF EQUIPMENT

6.1 AC Conducted Emission
Field Strength Emission
Spurious Emission - Radiated

System configuration

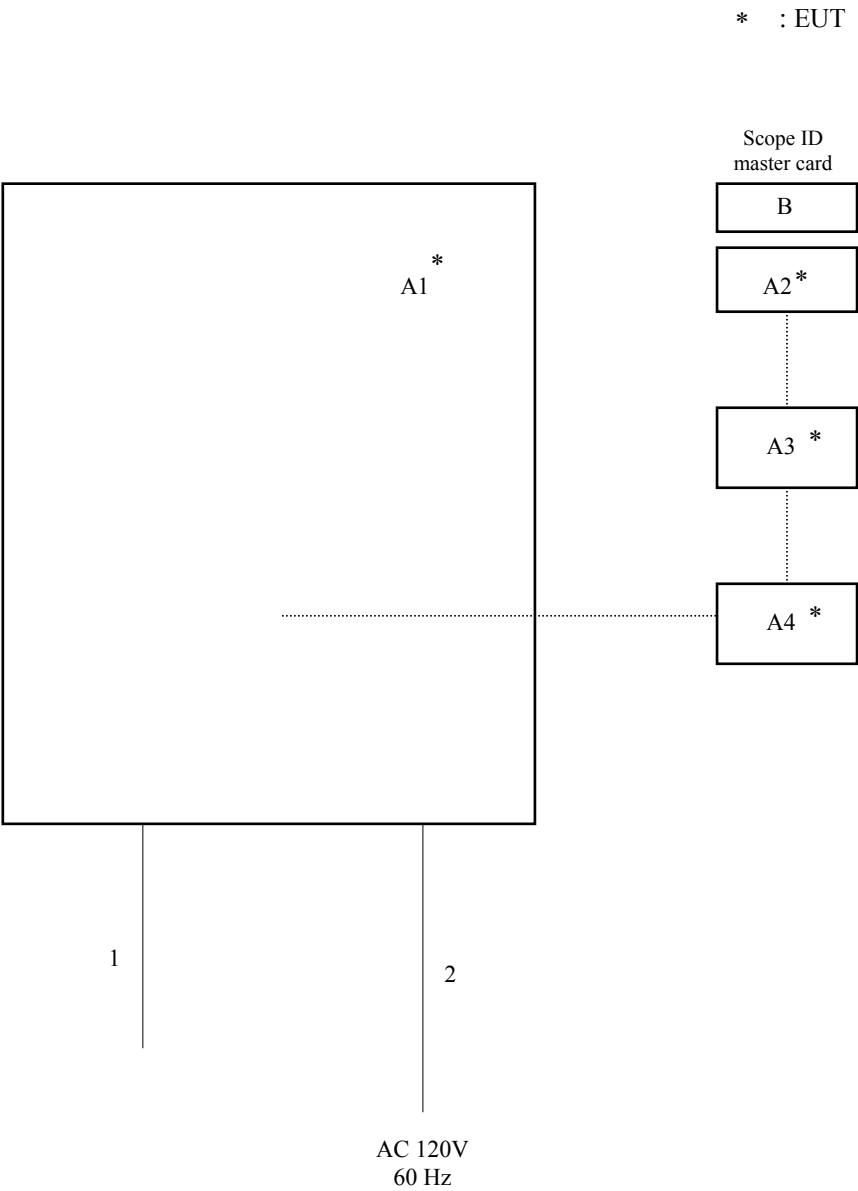
* : EUT



The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

6.2 Frequency Tolerance

System configuration



The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

The EUT was operated under the following conditions during the test.

7.1 Operating Condition

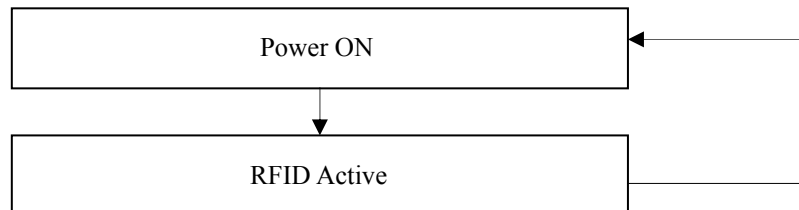
The test was carried out under RFID Active mode.

EUT was examined in the operating conditions that had maximum emissions.

7.2 Operating Flow [RFID Active mode]

Following operations were performed continuously.

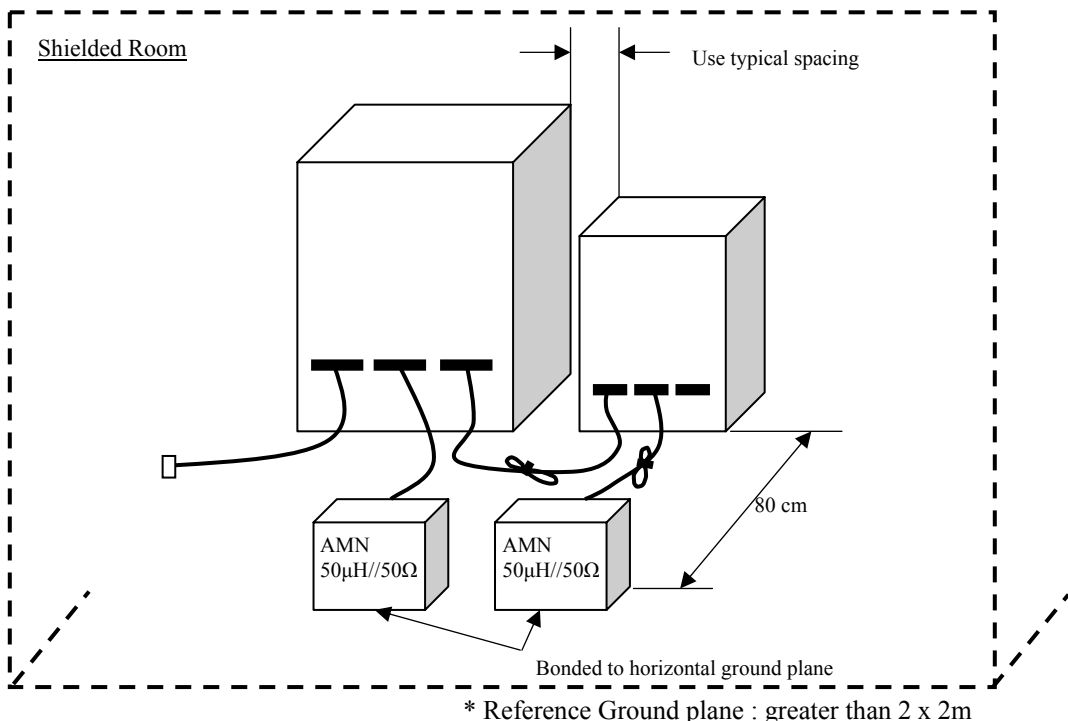
7.2.1 RFID Active mode



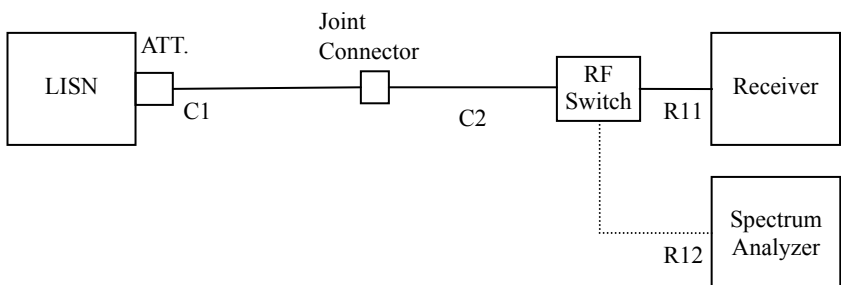
SECTION 8. TEST PROCEDURE(S)

Test was carried out under the following conditions.

AC Conducted Emission



Schema for the AC conducted emission measurement



[Instrument Setup]

Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
0.15 – 30	Receiver	Quasi Peak	10 kHz	N.A.
		Average	10 kHz	N.A.

[Preliminary Measurement]

EUT is tested on all operating conditions.

The spectrum analyzer is controlled by the computer program to sweep the frequency range to be measured, then spectrum chart are plotted out to find the worst emission conditions in operating mode and/or configuration decision for the final test.

All leads other than safety ground are tested.

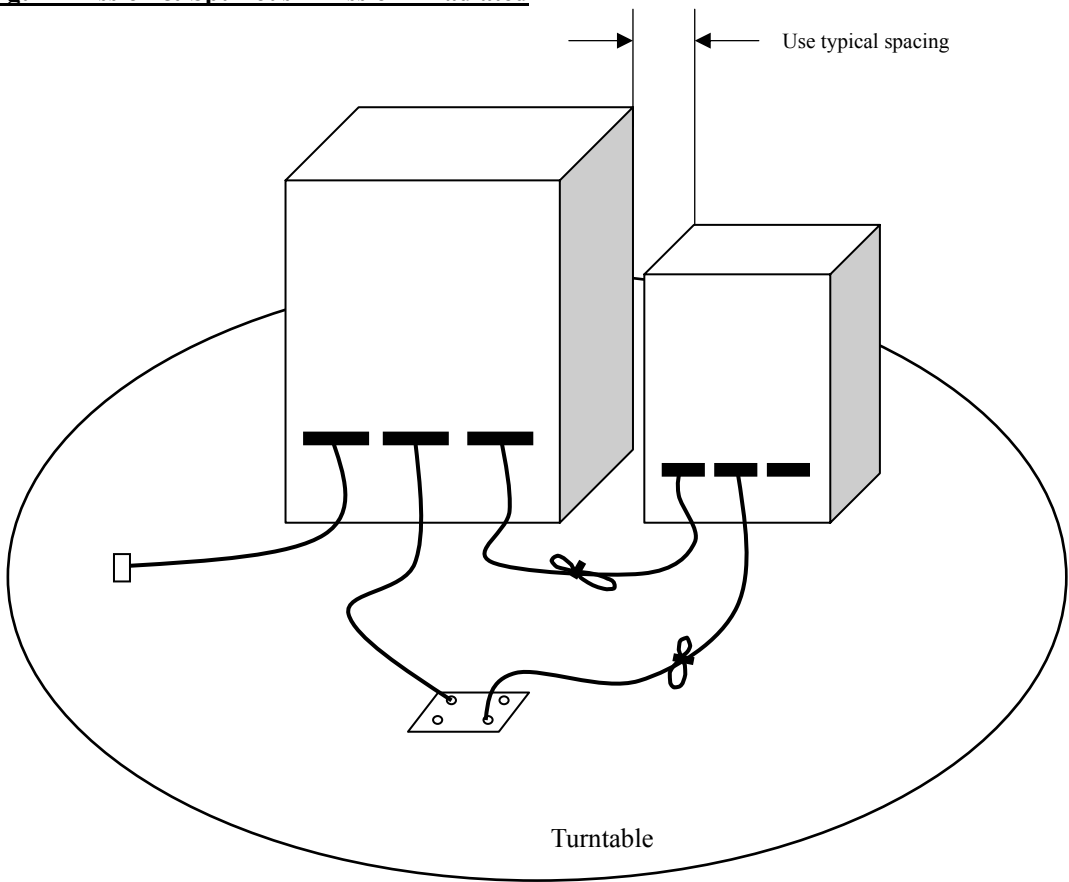
[Final Measurement]

The EUT is operated in the worst emission condition found by the preliminary test.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

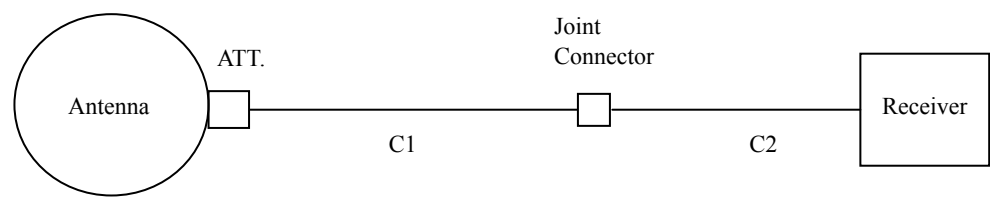
At least six highest spectrum are measured in quasi-peak and average (if necessary) using the test receiver.

Field Strength Emission & Spurious Emission - Radiated



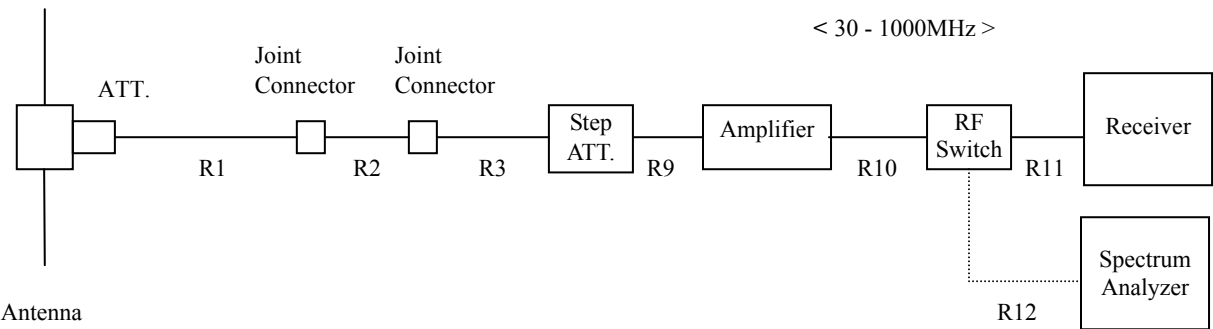
Schema for the field strength emission & spurious emission radiated magnetic field measurement

< Below 30MHz >



Schema for the spurious emission radiated electric field measurement

< 30 - 1000MHz >



< Below 30MHz >

[Instrument Setup]

Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
0.009 to 0.15	Receiver	Quasi Peak	200Hz	N.A
0.15 to 30	Receiver	Quasi Peak	10 kHz	N.A.

[Preliminary Measurement]

EUT is tested on all operating conditions.

The Loop antenna is used for Magnetic field measurements on the frequency range 0.009 – 30 MHz.

The antenna mast is attachable to the Loop antenna and antenna's center height is set 1 meter above the ground.

Antenna angle is adjustable 0 to 360 degree and antenna polarization is also changed. (vertical and horizontal)

The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree. Then spectrum chart are plotted out to find the worst emission conditions in configuration, operating mode, or ambient noise notation.

[Final Measurement]

The EUT operated in the worst emission condition found by the preliminary test.

The turntable azimuth (EUT direction) and antenna angle are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

Higher spectrum is measured by the test receiver (quasi-peak).

< 30 - 1000MHz >

[Instrument Setup]

Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	Receiver	Quasi Peak	120 kHz	N.A.

[Preliminary Measurement]

EUT is tested on all operating conditions.

The broadband Tri-Log antenna is used for Electric field measurements on the frequency range 30 – 1000 MHz.

The antenna mast is attachable to the broadband Tri-Log and antenna height is adjustable 1 to 4 meters continuously, and antenna polarization is also changed. (vertical and horizontal)

The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree. Then spectrum chart are plotted out to find the worst emission conditions in configuration, operating mode, or ambient noise notation.

[Final Measurement]

The EUT operated in the worst emission condition found by the preliminary test.

The turntable azimuth (EUT direction) and antenna height (1 to 4 meters) are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured.

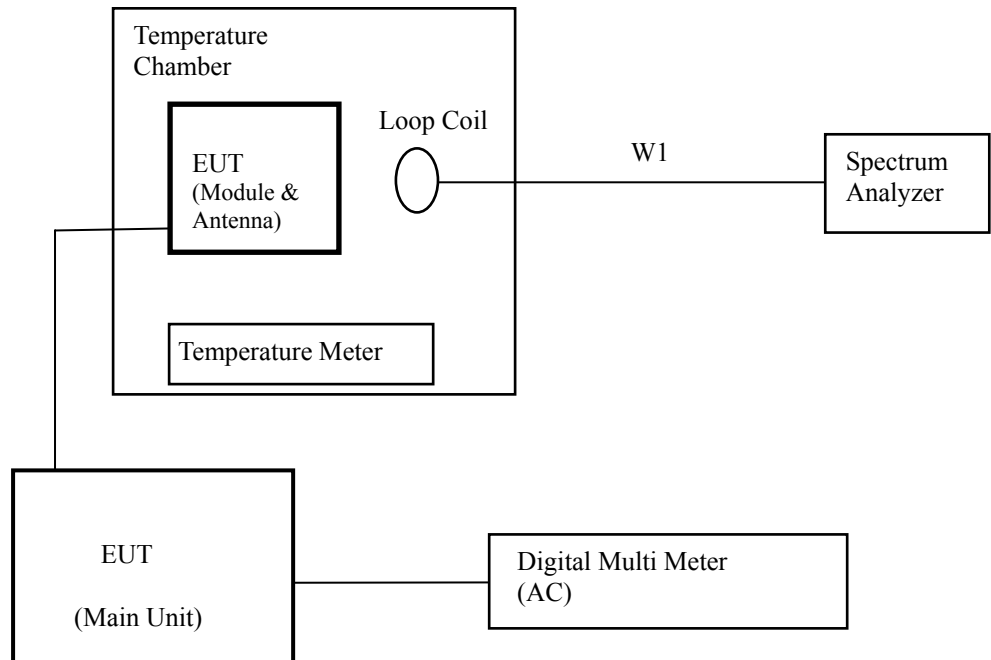
The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

At least six highest spectrum are measured by the test receiver (quasi-peak).

When the uncertain result was obtained, the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

Frequency Tolerance

Schema for the voltage variation & temperature measurement



[Preliminary Measurement]

EUT is tested on all operating conditions.

Set the temperature 20 degrees C.

The power supply voltage to the EUT was varied from 85% to 115% of the normal value measured at the input to the EUT.

[Final Measurement]

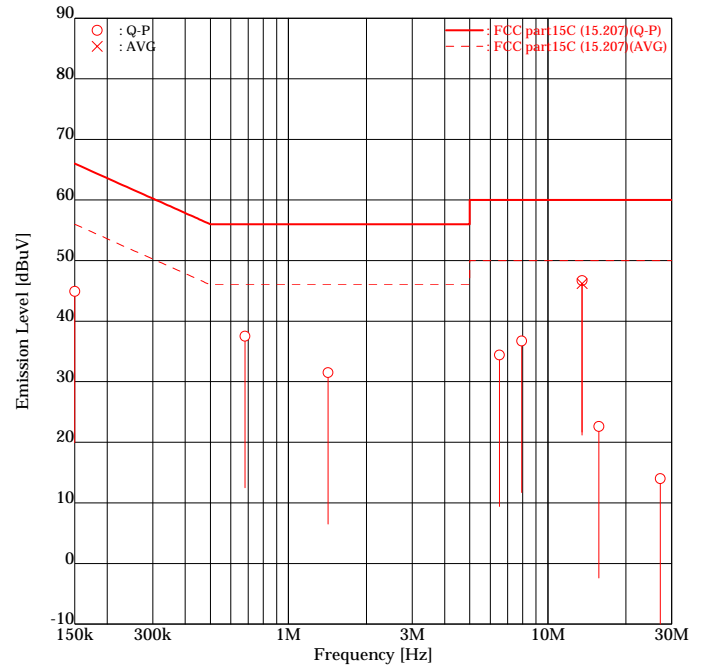
Set the temperature - 20 degrees C.

Leave the EUT for 1 hour after it became the temperature that was set up.

Set the temperature 50 degrees C by 10 degrees C.

SECTION 9. EVALUATION OF TEST RESULTS**9.1 AC Conducted Emission Test****9.1.1 RFID Active mode****ETL SEMKO Japan K.K.****Kashima No.3 Test Site****AC Conducted Emission Test**

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
 EUT NAME : ENDOSCOPE REPROCESSOR
 MODEL NO. : OER-Pro
 SERIAL NO. : 2700250
 TEST MODE : RF-ID Active mode
 POWER SOURCE : AC120V/60Hz
 DATE TESTED : May 01 2007
 FILE NO. : ESJ-107088
 REGULATION : FCC part15C (15.207)
 TEST METHOD : ANSI C63.4-2003
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 40.0 [%]
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1500	Q-P	<u>38.8</u>	36.8	6.1	6.1	<u>44.9</u>	42.9	66.0	<u>21.1</u>	23.1
2	0.6800	Q-P	30.7	<u>31.3</u>	6.3	6.2	37.0	<u>37.5</u>	56.0	19.0	<u>18.5</u>
3	1.4210	Q-P	<u>25.2</u>	24.6	6.3	6.3	<u>31.5</u>	30.9	56.0	<u>24.5</u>	25.1
4	6.5072	Q-P	26.0	27.9	6.6	6.5	32.6	34.4	60.0	27.4	25.6
5	7.9251	Q-P	29.5	<u>30.1</u>	6.6	6.6	36.1	<u>36.7</u>	60.0	23.9	<u>23.3</u>
6	13.5600	Q-P	<u>39.9</u>	39.5	6.8	6.7	<u>46.7</u>	46.2	60.0	<u>13.3</u>	13.8
7	13.5600	AVG	<u>39.4</u>	39.4	6.8	6.7	<u>46.2</u>	46.1	50.0	<u>3.8</u>	3.9
8	15.7299	Q-P	15.8	9.8	6.8	6.7	22.6	16.5	60.0	37.4	43.5
9	27.1200	Q-P	5.4	7.1	6.7	6.9	12.1	14.0	60.0	47.9	46.0

Higher six points are underlined.
 Other frequencies : Below the FCC part15C (15.207) limit
 Emission Level = Read + Factor(LISN,Pad,Cable)

9.2 Field Strength Emission

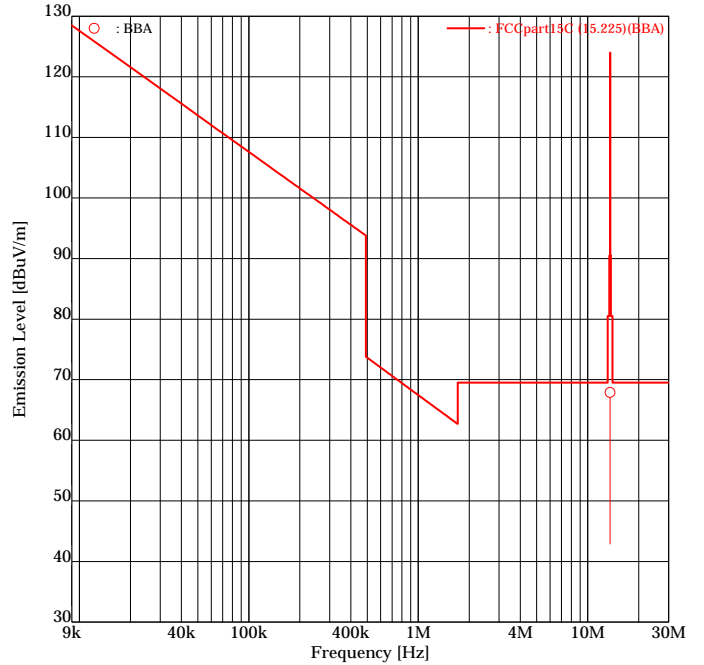
9.2.1 RFID Active mode

ETL SEMKO Japan K.K.

Kashima No.3 Test Site

Radiated Magnetic Field

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Pro
SERIAL NO. : 2700250
TEST MODE : RF-ID Active mode
POWER SOURCE : AC120V/60Hz
DATE TESTED : May 01 2007
FILE NO. : ESJ-107088
REGULATION : FCCpart15C (15.225)
TEST METHOD : ANSI C63.4 :2003
DISTANCE : 3.00 [m]
TEMPERATURE : 21.0 [degC]
HUMIDITY : 40.0 [%]
NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	13.5590	55.1	<u>61.5</u>	6.4	6.4	61.5	<u>67.9</u>	124.0		62.5	<u>58.1</u>

Higher six points are underlined.
Other frequencies : Below the FCCpart15C (15.225) limit
Emission Level = Read + Factor(Antenna,Pad,Cable)

9.3 Spurious Emission – Radiated

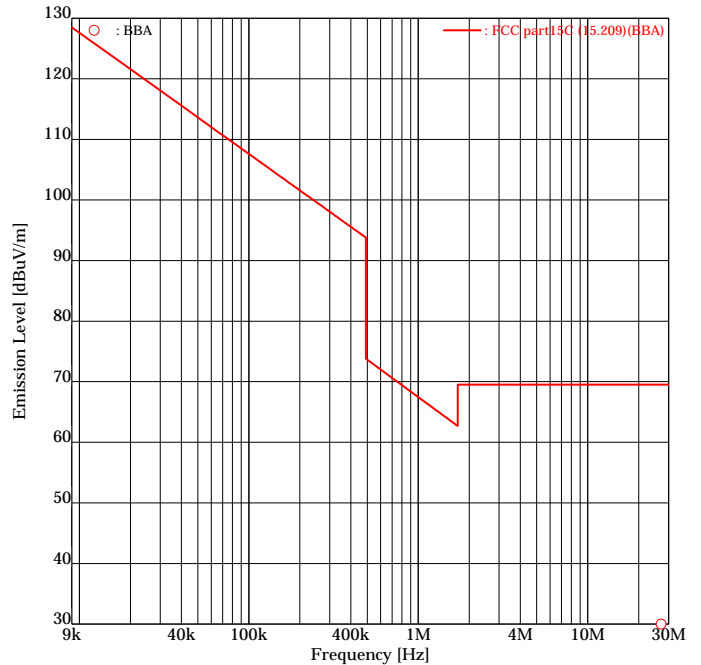
9.3.1 RFID Active mode (9k – 30MHz)

ETL SEMKO Japan K.K.

Kashima No.3 Test Site

Spurious Emission - Radiated Test

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Pro
SERIAL NO. : 2700250
TEST MODE : RF-ID Active mode
POWER SOURCE : AC120V/60Hz
DATE TESTED : May 01 2007
FILE NO. : ESJ-107088
REGULATION : FCC part15C (15.209)
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 21.0 [degC]
HUMIDITY : 40.0 [%]
NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	27.1201	18.0	<u>21.0</u>	9.0	9.0	27.0	<u>30.0</u>	69.5	42.5	<u>39.5</u>	

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209) limit
Emission Level = Read + Factor(Antenna,Pad,Cable)

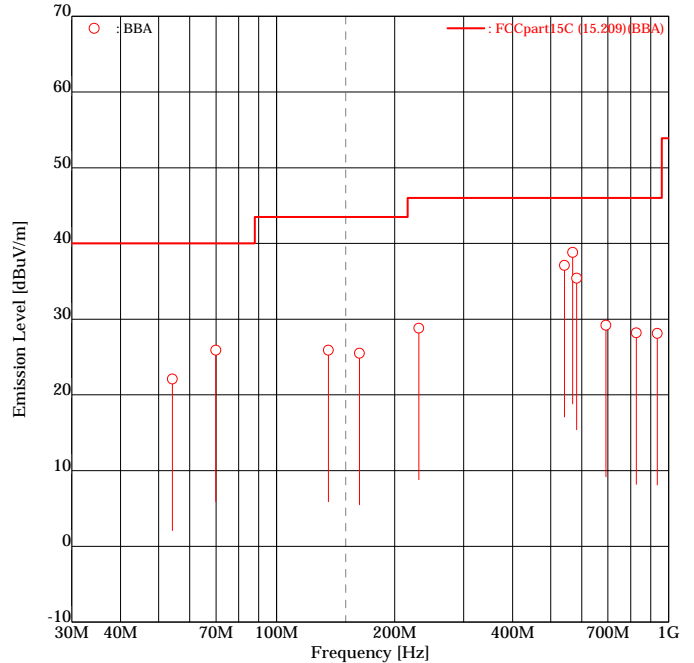
9.3.2 RFID Active mode (30 – 1000MHz)

ETL SEMKO Japan K.K.

Kashima No.3 Test Site

Spurious Emissions - Radiated Test

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Pro
SERIAL NO. : 2700250
TEST MODE : RF-ID Active mode
POWER SOURCE : AC120V/60Hz
DATE TESTED : May 01 2007
FILE NO. : ESJ-107088
REGULATION : FCCpart15C (15.209)
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 21.0 [degC]
HUMIDITY : 40.0 [%]
NOTE :



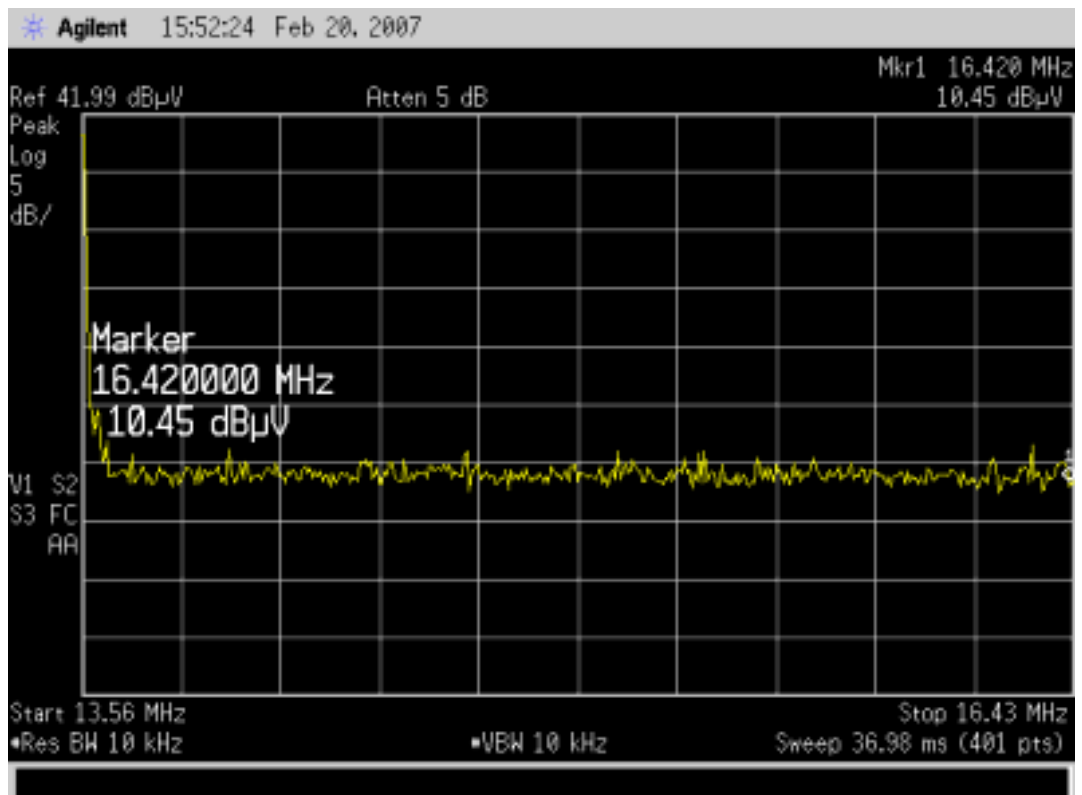
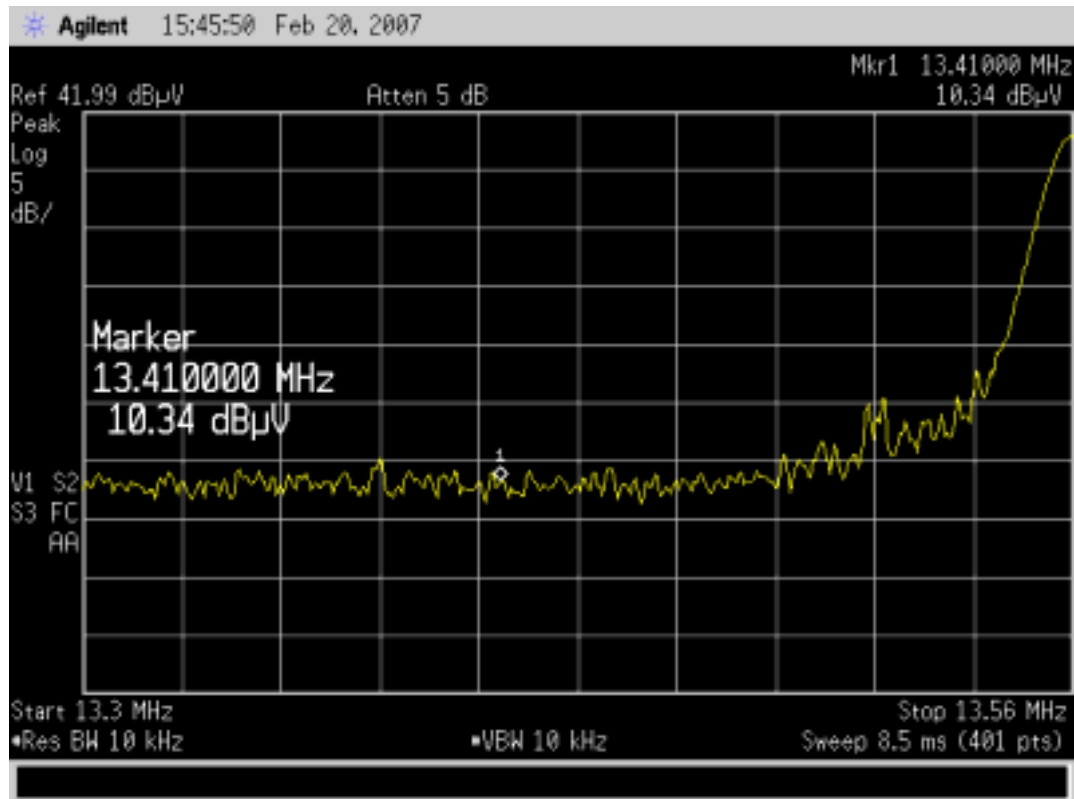
ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	54.24	-	25.1	-3.0	-3.0	-	22.1	40.0	40.0	-	17.9
2	69.92	-	<u>30.4</u>	-4.5	-4.5	-	<u>25.9</u>	40.0	40.0	-	<u>14.1</u>
3	135.59	-	28.4	-2.5	-2.5	-	25.9	43.5	43.5	-	17.6
4	162.71	-	27.3	-1.8	-1.8	-	25.5	43.5	43.5	-	18.0
5	230.51	-	<u>32.0</u>	-3.2	-3.2	-	<u>28.8</u>	46.0	46.0	-	<u>17.2</u>
6	542.38	26.5	<u>30.1</u>	7.0	7.0	33.5	<u>37.1</u>	46.0	46.0	12.5	<u>8.9</u>
7	569.50	23.6	<u>31.1</u>	7.7	7.7	31.3	<u>38.8</u>	46.0	46.0	14.7	<u>7.2</u>
8	583.06	-	<u>27.2</u>	8.2	8.2	-	<u>35.4</u>	46.0	46.0	-	<u>10.6</u>
9	691.54	-	<u>19.9</u>	9.3	9.3	-	<u>29.2</u>	46.0	46.0	-	<u>16.8</u>
10	827.14	-	15.5	12.7	12.7	-	28.2	46.0	46.0	-	17.8
11	935.62	-	13.4	14.7	14.7	-	28.1	46.0	46.0	-	17.9

Higher six points are underlined.
Other frequencies : Below the FCCpart15C (15.209) limit
Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

9.4 Restricted bands of operation

9.4.1 RFID Active mode



9.5 Frequency Tolerance

9.5.1 RFID Active mode

Tested Date : February 21, 2007

Limit : 0.01%(100[ppm]) = 13.561084 [MHz]

: -0.01%(100[ppm]) = 13.558372 [MHz]

Engineer : Naoki Ikeda

Degree C	Supply Voltage [v]		Time after stabilization [min]	Operation Frequency [MHz]	Frequency Shift [%]	Result
50	100%	120	startup	13.559615	-0.001	Pass
			2	13.559614	-0.001	Pass
			5	13.559614	-0.001	Pass
			10	13.559613	-0.001	Pass
40	100%	120	startup	13.559641	-0.001	Pass
			2	13.559640	-0.001	Pass
			5	13.559640	-0.001	Pass
			10	13.559641	-0.001	Pass
30	100%	120	startup	13.559710	0.000	Pass
			2	13.559702	0.000	Pass
			5	13.559702	0.000	Pass
			10	13.559701	0.000	Pass
20	85%	102	startup	13.559751	0.000	Pass
			2	13.559733	0.000	Pass
			5	13.559730	0.000	Pass
			10	13.559728	0.000	Pass
	100%	120	startup	13.559728	0.000	Reference
			2	13.559727	0.000	Pass
			5	13.559727	0.000	Pass
			10	13.559727	0.000	Pass
	115%	138	startup	13.559750	0.000	Pass
			2	13.559733	0.000	Pass
			5	13.559731	0.000	Pass
			10	13.559729	0.000	Pass
10	100%	120	startup	13.559768	0.000	Pass
			2	13.559768	0.000	Pass
			5	13.559774	0.000	Pass
			10	13.559775	0.000	Pass
0	100%	120	startup	13.559807	0.001	Pass
			2	13.559804	0.001	Pass
			5	13.559803	0.001	Pass
			10	13.559803	0.001	Pass
-10	100%	120	startup	13.559822	0.001	Pass
			2	13.559821	0.001	Pass
			5	13.559821	0.001	Pass
			10	13.559821	0.001	Pass
-20	100%	120	startup	13.559817	0.001	Pass
			2	13.559816	0.001	Pass
			5	13.559811	0.001	Pass
			10	13.559809	0.001	Pass

SECTION 10. LIST OF MEASURING INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Cal. Date	Calibration Expired
LISN (EUT)	ESH2-Z5	879675/014	Rohde & Schwarz	Sep. 29, 06	Sep. 30, 07
6dB Attenuator	CFA-01	None	TME	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (7.2 m)	C1	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (4.0 m)	C2	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (1.1 m)	R11	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (1.0 m)	R12	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Loop Antenna	HFH2-Z2	882964/17	Rohde & Schwarz	Jul. 03, 06	Jul. 31, 07
Tri-Log Antenna	VULB9168	107	Schwarzbeck	Jul. 28, 06	Jul. 31, 07
6dB Attenuator	MP721B	M56993	Anritsu	Feb. 08, 07	Feb. 29, 08
Step Attenuator	8494B	2406A09036	Hewlett Packard	Feb. 08, 07	Feb. 29, 08
Amplifier	ZX60-3018G	003	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (12.3 m)	R1	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	23D 4AF(10.0 m)	R2	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (1.8 m)	R3	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (0.2 m)	R9	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (0.4 m)	R10	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (1.1 m)	R11	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Coaxial cable	RG-5A/U (1.0 m)	R12	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Site Attenuation				Feb. 28, 07	Feb. 29, 08
Test receiver	ESH2	880370/043	Rohde & Schwarz	Oct. 30, 06	Oct. 31, 07
Test receiver	ESS (Firmware Version 1.07)	842123/005	Rohde & Schwarz	Oct. 30, 06	Oct. 31, 07
RF Switch	ACX-150-3	None	ETL SEMKO	Feb. 08, 07	Feb. 29, 08
Testing Software : emiT (Version 2.0.0.0)					
Temperature Chamber	PL-3L	5103661	Hewlett Packard	None	None
Temperature Meter	PC-5000TRH-II	A11999972	Sato	Mar. 22, 07	Mar. 31, 08
Digital Multimeter	CD721	3215593	Sanwa	May 15, 06	May 31, 07
Spectrum Analyzer	E4407B	MY45102460	Agilent	Oct. 03, 06	Oct. 31, 07
Coaxial cable	RG-58C/U (1.5 m)	W1	Pacific custom	Aug. 01, 06	Aug. 31, 07

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of ETL SEMKO Japan.

SECTION 11. MEASUREMENT UNCERTAINTY

The uncertainty of the measurements performed for this report lies:

Radiated Electric Field at 3m		
9 kHz – 30 MHz	± 3.1 dB	
Radiated Electric Field at 3m		
30 MHz – 1000 MHz	± 4.2 dB	
Above 1 GHz	± 4.3 dB	
Radiated Electric Field at 10m		
30 MHz – 1000 MHz	± 5.1 dB	
Above 1 GHz	± 4.3 dB	
Radiated Electric Field at 30m		
Under consideration		
Radiated Effective Power		
11.7 GHz – 12.7 GHz	± 3.8 dB	
Conducted Voltages on Mains Port		
9 kHz – 30 MHz	± 3.0 dB	
Conducted Voltages on Telecommunication Port		
9 kHz – 30 MHz	± 3.4 dB	
Conducted Current on Telecommunication Port		
9 kHz – 30 MHz	± 1.3 dB	
Conducted Voltages on Terminals		
150 kHz – 30 MHz	± 1.0 dB	
Radiated Power		
30 MHz – 300 MHz	± 4.9 dB	
Frequency Stability		
-20 – +50 deg. C	± 0.02 ppm	

Note on Radiated Electric Field measurement uncertainty

The following items are not included in the calculations in spite of their own uncertainty components because it is impracticable to find the value.

It is our problem awaiting solution in future.

(1) Repeatability of measurement

It is not possible to calculate repeatability since the measurement was carried out only one time.

(2) Antenna factor variation

The definition of measured (radiated electric field strength) is not completed on the referred standard(s).




(3) Loss of EUT radiation propagation





It is certainly one of the uncertainty components, however is not able to calculate.

Please note that these uncertainties are not reflected to the compliance judgment of the test results in this report.

SECTION 12. DESCRIPTION OF TEST LABORATORY

ETL SEMKO is a division of Intertek plc (LSE: ITRK), a global leader in testing, inspection and certification services, operating in 273 laboratories and 521 offices in 100 countries throughout the world. The ETL SEMKO division of Intertek provides access to global markets through its local services, which include product safety testing and certification, EMC testing and performance testing for customers in such industries as wireless technology, security, appliances, HVAC, cables and wiring accessories, industrial machinery, medical devices, telecommunications, lighting, automotive, semiconductor, building products and electronics.

ACCREDITATION	SCOPE	LAB. CODE
 NVLAP USA	EMC Testing	100290-0
 VLAC JAPAN	EMC Testing	VLAC-008-1
 BSMI TAIWAN	EMC Testing	SL2-IN-E-6008

FILING	SCOPE	LAB. CODE
 VCCI JAPAN	EMC Testing	-
 Federal Communications Commission FCC USA	EMC Testing	Registration Number 934283
 Industry Canada IC CANADA	EMC Testing Telecom Testing	IC 2065
 SASO SAUDI ARABIA	EMC Testing	-