



TEST REPORT

**STANDARD : FCC Part15C
RSS-210 Issue 9**

Applicant	Testing Laboratory
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Equipment Type	ENDOSCOPE REPROCESSOR
Trademark	OLYMPUS
Model(s)	OER-Elite
Serial No.	No.12
Equipment Authorization	Certification
FCC ID	S8Q-RU2020
ISED CN and UPN	4763B-RU2020
Test Result	Complied
Report Number	16050270JKA-002
Original Issue Date	September 19, 2017

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Approved by

Hideaki Kosemura
[Technical Manager]

Tested by

Koichi Wagatsuma
[Engineer]



VLAC-008-1

Responsible Party of Test Item (Product)

Responsible Party	:
Add.	:
Tel.	:
Fax.	:
Contact Person	:

TABLE OF CONTENTS

	Page
SECTION 1. GENERAL INFORMATION	3
SECTION 2. SUMMARY OF TEST RESULTS	4
SECTION 3. EQUIPMENT UNDER TEST	5
SECTION 4. SUPPORT EQUIPMENT	6
SECTION 5. USED CABLE(S)	7
SECTION 6. TEST CONFIGURATION	8
SECTION 7. OPERATING CONDITION	9
SECTION 8. UNCERTAINTY	10
SECTION 9. EVALUATION OF TEST RESULTS	11
SECTION 10. LIST OF MEASURING INSTRUMENTS	22
ANNEX	24

APPENDIX PHOTOGRAPHS OF MAXIMUM EMISSION SET-UP

SECTION 1. GENERAL INFORMATION

Test Performed

EUT Received	July 08, 2016
Date of Test	From July 11, 2016 to July 12, 2016
Standard Applied	FCC Part15C RSS-210 Issue 9
Test methods	ANSI C63.10-2013
Deviation from Standard(s)	None

Qualifications of Testing Laboratory

Accreditation	Scope	Lab. Code	Remarks
VLAC	EMC Testing	VLAC-008-1	JAPAN
BSMI	EMC Testing	SL2-IN-E-6008	TAIWAN
Filing			
VCCI	EMC Testing	A-0126	JAPAN
FCC	EMC Testing	JP0008	USA
IC	EMC Testing	2042K-3, 2042Q-12	CANADA
CB-Scheme	EMC Testing	TL222	IECEE
SAUDI ARABIA	EMC Testing	N/A	

Abbreviations

EUT	Equipment Under Test	DoC	Declaration of Conformity
AMN	Artificial Mains Network	ISN	Impedance Stabilization Network
LISN	Line Impedance Stabilization Network	Q-P	Quasi-peak
AMP	Amplifier	AVG	Average
ATT	Attenuator	PK	Peak
ANT	Antenna	Cal	Calibration
BBA	Broadband Antenna	N/A	Not applicable or Not available
DIP	Dipole Antenna	LCD	Liquid-Crystal Display
AE	Associated Equipment	HDMI	High-Definition Multimedia Interface
OBW	Occupied Bandwidth		

SECTION 2. SUMMARY OF TEST RESULTS

See Section9 for the detailed result.

Emission Tests

Standard Applied	FCC Part15C (15.207, 15.225, 15.209) RSS-210 Issue 9 (B.6)	
Test Item	Minimum margin	Remarks
Conducted disturbance at mains terminals	40.5 dB (0.9230 MHz) [Q-P]	
Radiated disturbance (IN band)	33.9 dB (13.5670 MHz)	
Radiated disturbance (OUT band)	4.0 dB (214.65 MHz)	

Standard Applied	FCC Part15C (15.225) RSS-210 Issue 9 (B.6)	
Test Item	Result	Remarks
Frequency Tolerance	PASS	

Standard Applied	FCC Part15C(15.215(c)) RSS-Gen Issue 4 (6.6)	
Test Item	Result	Remarks
20dB OBW 99%OBW	N/A	See Note

Note : None Limit (for reporting purposes only)

SECTION 3. EQUIPMENT UNDER TEST

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

3.1 System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer	Remarks
A	ENDOSCOPE REPROCESSOR	OER-Elite	No.12	OLYMPUS MEDICAL SYSTEMS CORP.	
Rated Power : AC 120V±10% 60Hz / 660VA					
Supplied Power : AC 120V, 60Hz					
Condition of Equipment		Pre-Production			
Type		Floor standing			
Suppression Devices		No Modifications by the laboratory were made to the device			

3.2 Overview of EUT

Frequency Ranges	13.56 MHz
Modulation Method	Transmitting – Amplitude Shift Keying

3.3 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
Portable memory port	USB type A	4 pin	
Bar code reader port	USB type A	4 pin	
Printer communication port(RS232C)	D-Sub	9 pin	
100BASE-TX terminal	RJ-45	8 pin	

3.4 Highest Frequency Generated / Used

Operating Frequency	Operating mode	Remarks
240 MHz	RFID Active mode	

SECTION 4. SUPPORT EQUIPMENT

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

Symbol	Item	Model No.	Serial No.	Manufacturer	Remarks	FCC ID
B	Portable Memory	MAJ-1925	16B3	OLYMPUS MEDICAL SYSTEMS CORP.		N/A
C	PRINTER	MAJ-2144	00103	OLYMPUS MEDICAL SYSTEMS CORP.		N/A
D	AC Adapter	BLS-120W(M AJ-2144)	82-31-299-1234	OLYMPUS MEDICAL SYSTEMS CORP.		N/A
E	Scope ID master card	GT970700	None	OLYMPUS MEDICAL SYSTEMS CORP.		N/A
F	BARCODE READER	MAJ-2130	16067	OLYMPUS MEDICAL SYSTEMS CORP.		N/A

SECTION 5. USED CABLE(S)

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

No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	RS232 Cable(GT8040)	1.8	Yes	Yes	
2	LAN Cable	1.0	No	No	
3	USB Cable	1.5	Yes	Yes	
4	Power Cable for PRINTER (DC)	1.3	No	No	Fixed x 1
5	Power Cable for EUT(AC)(RL5450)	3.4	No	No	Fixed x 1
6	Power for PRINTER (AC)	1.7	No	No	

Note :

No.4 cable is supplied together with PRINTER (C)

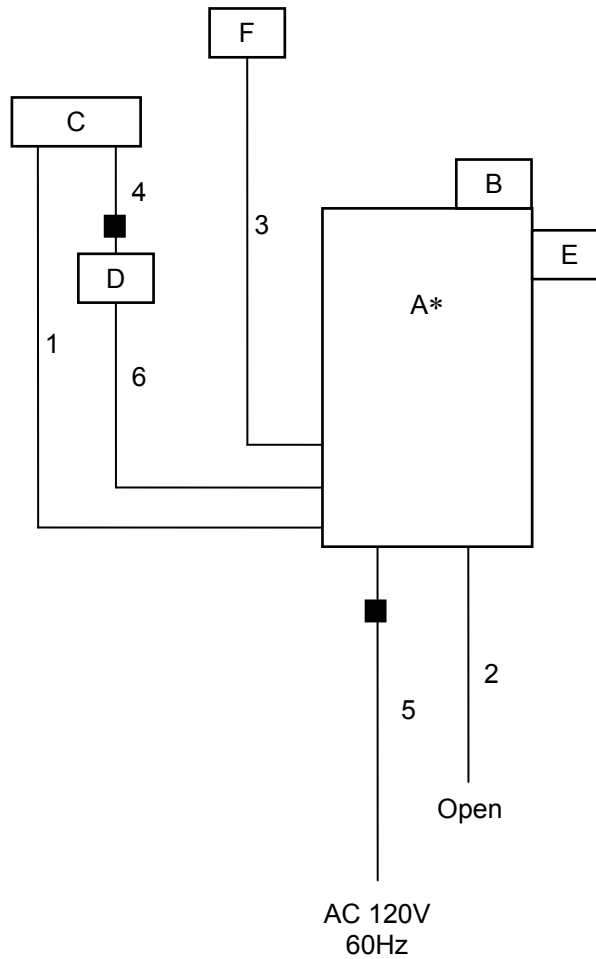
No.5 cable is supplied together with EUT(A)

SECTION 6. TEST CONFIGURATION

6.1 Conducted disturbance at mains terminals Tests and Radiated disturbance tests

* : EUT

■: Ferrite core



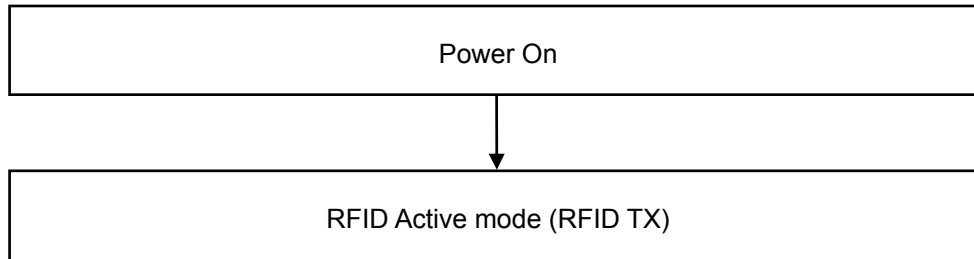
The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

The test was carried out under the following mode.

7.1 RFID Active mode

Cycle time for operation: Continuity



SECTION 8. UNCERTAINTY

Traceability to national standard in SI units is ensured with these values.

Compliance with the limits in this standard are determined without in consideration of the measurement uncertainty of the measurement instrumentation.

8.1 Emission tests

Radiated disturbance at 3m	U_{lab} [k = 2]	U_{cispr}
30 MHz – 1000 MHz	+/- 4.05 dB	6.3 dB
CISPR22	+/- 4.79 dB	5.2 dB
Above 1 GHz	+/- 4.80 dB	Nil
ANCI 63.4		
Radiated disturbance at 10m		
30 MHz – 1000 MHz	+/- 4.32 dB	6.3 dB
Above 1 GHz	+/- 4.79 dB	Nil
Radiated disturbance at 30m		
	N/A	Nil
Radiated Magnetic disturbance at 3m		
9 kHz – 30 MHz	+/- 2.16 dB	Nil
Conducted disturbance at mains terminals		
9 kHz – 150 kHz	+/- 1.73 dB	3.8 dB
150 kHz – 30 MHz	+/- 1.85 dB	3.4 dB
Conducted disturbance at telecommunication ports (ISN)		
150 kHz – 30 MHz	+/- 4.77 dB	5.0 dB
Conducted disturbance at telecommunication ports (Capacitive Voltage Probe)		
150 kHz – 30 MHz	+/- 2.92 dB	3.9 dB
Conducted disturbance at telecommunication ports (Current Probe)		
150 kHz – 30 MHz	+/- 1.69 dB	2.9 dB
Conducted disturbance at terminals		
150 kHz – 30 MHz	+/- 1.51 dB	2.9 dB
Disturbance power		
30 MHz – 300 MHz	+/- 1.91 dB	4.5 dB
Conducted power on antenna port		
30 MHz – 1000 MHz	+/- 2.90 dB	Nil
Above 1 GHz	+/- 1.60 dB	
Frequency Tolerance		
	+/- 2.79 Hz	Nil

The above expanded instrumentation uncertainty, U_{lab}, is estimated in accordance with CISPR 16-4-2:2011.

SECTION 9. EVALUATION OF TEST RESULTS

9.1 Emission tests

9.1.1 Conducted disturbance at mains terminals

Location	Kashima No.12 Test Site
Test Engineer	Koichi Wagatsuma

Frequency Range of Measurements

Required Measurement Frequency Range	Measured Frequency Range
0.15 – 30 MHz	0.15 – 30 MHz

Test Procedure

Item	Document number
Conducted disturbance at mains terminals	LEN-RJP-TE003

Setting for the Measuring instruments

Instrument	Detector	Resolution Bandwidth	Video Bandwidth
Receiver	Quasi Peak	10 kHz	N/A
	Average	10 kHz	N/A

< Measurement data correction >

Emission Level = Meter Reading + Factor

Margin = Limit- Emission Level

Factor = LISN Factor + Cable Loss + Attenuator

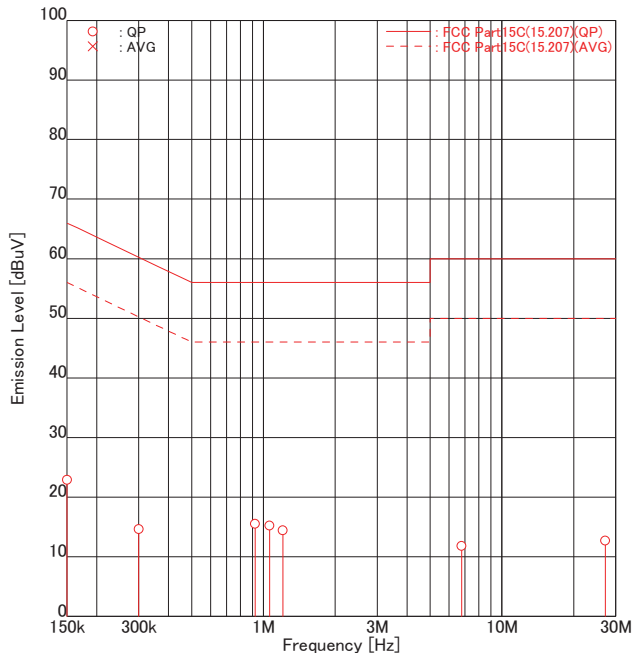
Result of Conducted disturbance at mains terminals

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Kashima No.12 Test Site

Conducted Voltages on Mains Port

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Elite
SERIAL NO. : No.12
TEST MODE : RF-ID Active mode
POWER SOURCE : AC120 V, 60 Hz
DATE TESTED : Jul 11 2016
FILE NO. : -
REGULATION : FCC Part15C(15.207)
TEST METHOD : ANSI C63.10-2013
TEMPERATURE : 22.3 [degC]
HUMIDITY : 48.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

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	QP	<u>12.7</u>	10.8	10.2	10.2	<u>22.9</u>	21.0	66.0	<u>43.1</u>	45.0
2	0.3000	QP	<u>4.4</u>	4.1	10.2	10.2	<u>14.6</u>	14.3	60.2	<u>45.6</u>	45.9
3	0.9230	QP	<u>5.2</u>	4.4	10.3	10.3	<u>15.5</u>	14.7	56.0	<u>40.5</u>	41.3
4	1.0605	QP	<u>4.9</u>	3.6	10.3	10.3	<u>15.2</u>	13.9	56.0	<u>40.8</u>	42.1
5	1.2060	QP	<u>4.1</u>	3.9	10.3	10.3	<u>14.4</u>	14.2	56.0	<u>41.6</u>	41.8
6	6.7800	QP	1.0	1.0	10.8	10.8	11.8	11.8	60.0	48.2	48.2
7	27.1200	QP	1.0	<u>1.0</u>	11.4	11.7	12.4	<u>12.7</u>	60.0	47.6	<u>47.3</u>

Higher six points are underlined.
Other frequencies : Below the FCC Part15C(15.207) limit
Emission Level = Read + Factor(LISN,Pad,Cable)

emiT 3, 0, 0, 0

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9.1.2 Radiated disturbance (IN band and OUT band)

Location	Kashima No.12
Test Engineer	Koichi Wagatsuma

Frequency Range of Measurements

Operating mode	Required Frequency Range	Measured Frequency Range
RF-ID Active mode	30 – 2000 MHz	30 – 2000 MHz

Test Procedure

Item	Document number
Radiated disturbance	LEN-RJP-TE003

Setting for the Measuring instruments

Frequency [MHz]	Instrument	Detector	Resolution Bandwidth	Video Bandwidth
0.009 - 30	Receiver	AVG : 0.009 - 0.090 MHz QP : 0.090 - 0.110 MHz AVG : 0.110 - 0.490 MHz QP : 0.490 - 30 MHz	200 Hz : 0.009 - 0.15 MHz 10 kHz : 0.15 – 30 MHz	N/A
30 – 1000	Receiver	Quasi Peak	120 kHz	N/A
Above 1000	Receiver	Peak	1 MHz	N/A
		Average	1 MHz	N/A

< Measurement data correction >

Emission Level = Meter Reading + Factor

Margin = Limit - Emission Level

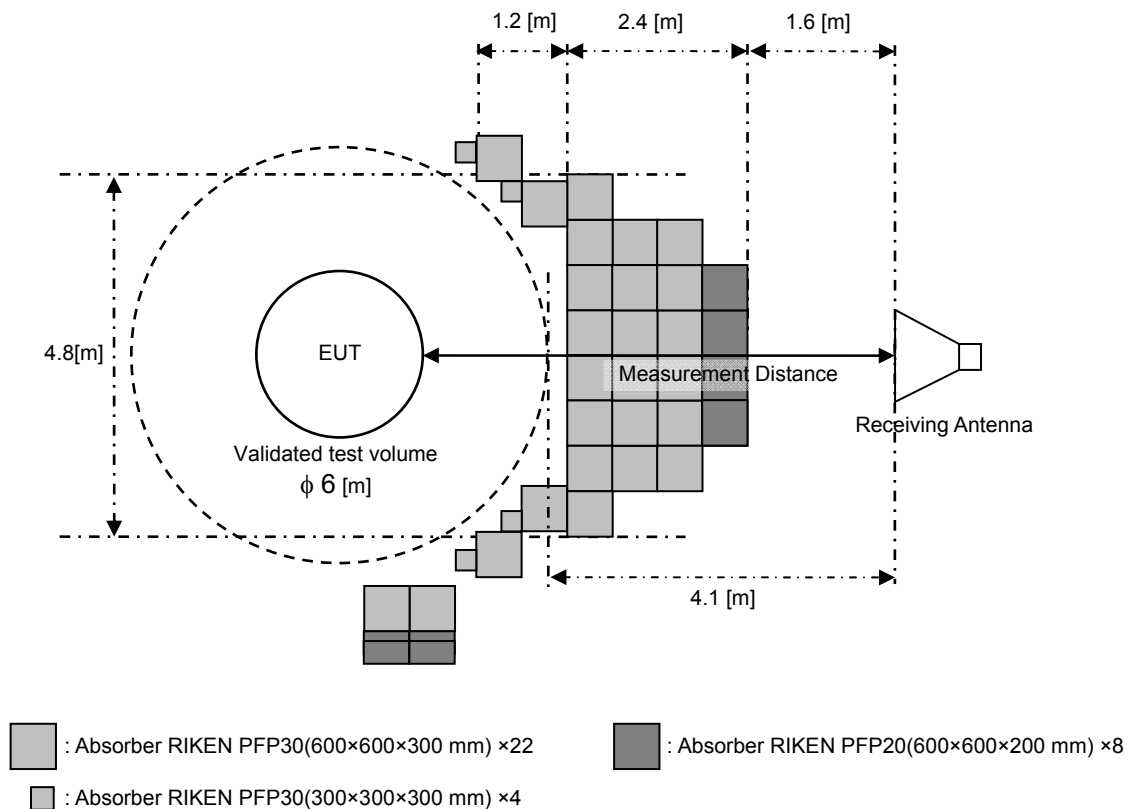
Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator (+ Distance Conversion Factor)*

* For other than Standard distance:

Distance Conversion Factor = $20 \log (\text{Measurement distance} / \text{Standard distance})$

Operating Condition	Frequency Range	Measurement distance
RF-ID Active mode	0.009 -1000 MHz	3 m
	Above 1 GHz	6.65 m

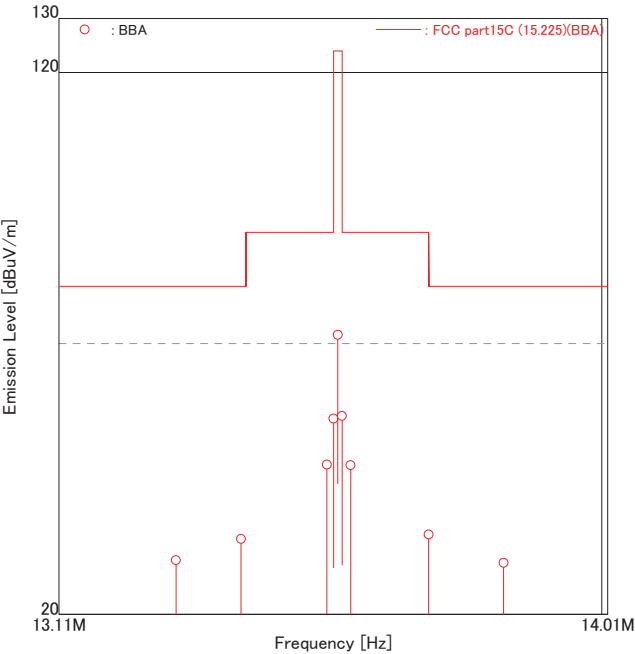
Absorber placement and Receive Antenna location in Radiated disturbance above 1 GHz



Result of Radiated disturbances
9.1.2.1 IN band

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Kashima No.12 Test Site
Field Strength Emission Test

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Elite
SERIAL NO. : No.12
TEST MODE : RF-ID Active mode
POWER SOURCE : AC 120V/60Hz
DATE TESTED : Jul 11 2016
FILE NO. : -
REGULATION : FCC part15C (15.225)
TEST METHOD : ANSI C63.10 :2013
DISTANCE : 3.00 [m]
TEMPERATURE : 20.9 [degC]
HUMIDITY : 49.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

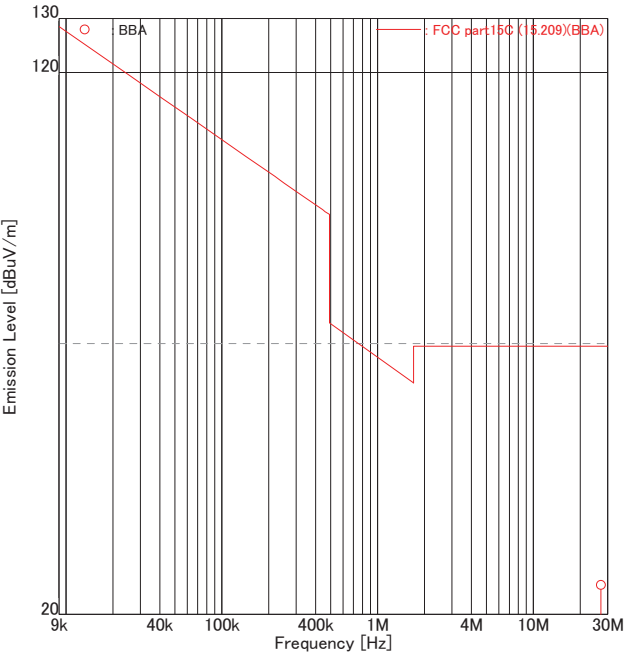
FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	13.2969	4.0	2.8	26.0	26.0	30.0	28.8	80.5	50.5	51.7
2	13.4020	<u>7.9</u>	6.8	26.0	26.0	<u>33.9</u>	32.8	80.5	<u>46.6</u>	47.7
3	13.5420	<u>21.6</u>	20.3	26.0	26.0	<u>47.6</u>	46.3	90.5	<u>42.9</u>	44.2
4	13.5530	<u>30.1</u>	29.5	26.0	26.0	<u>56.1</u>	55.5	90.5	<u>34.4</u>	35.0
5	13.5600	45.6	43.8	26.0	26.0	71.6	69.8	124.0	52.4	54.2
6	13.5670	<u>30.6</u>	30.6	26.0	26.0	<u>56.6</u>	56.6	90.5	<u>33.9</u>	33.9
7	13.5810	<u>21.5</u>	20.2	26.0	26.0	<u>47.5</u>	46.2	90.5	<u>43.0</u>	44.3
8	13.7100	<u>8.7</u>	7.5	26.0	26.0	<u>34.7</u>	33.5	80.5	<u>45.8</u>	47.0
9	13.8348	3.5	2.7	26.0	26.0	29.5	28.7	80.5	51.0	51.8

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.225) limit
Emission Level = Read + Factor(Antenna,Cable,Preamp)

9.1.2.2 Out band
0.009 – 30 MHz

Intertek Japan K.K.
Kashima No.12 Test Site
Spurious Emissions - Radiated Test

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Elite
SERIAL NO. : No.12
TEST MODE : RF-ID Active mode
POWER SOURCE : AC 120V/60Hz
DATE TESTED : Jul 11 2016
FILE NO. : -
REGULATION : FCC part15C (15.209)
TEST METHOD : ANSI C63.10-2013
DISTANCE : 3.00 [m]
TEMPERATURE : 20.9 [degC]
HUMIDITY : 49.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	27.1700	<u>-1.4</u>	-1.6	26.8	26.8	<u>25.4</u>	25.2	69.5	<u>44.1</u>	44.3

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

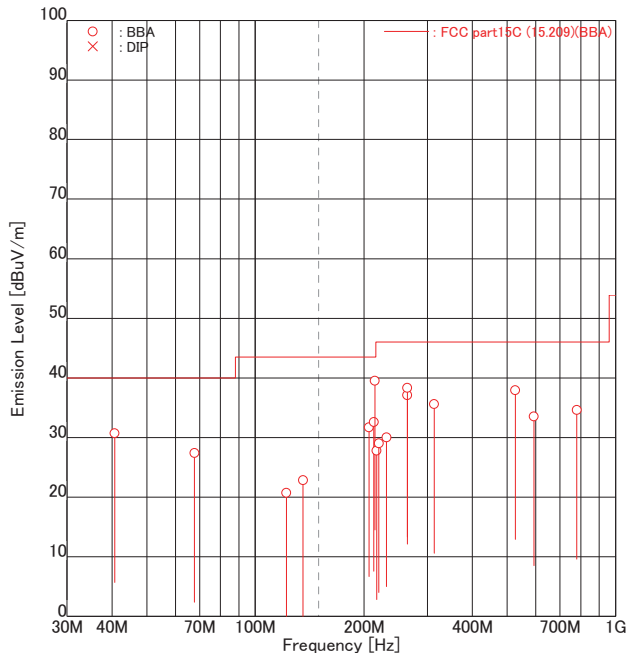
30 – 1000 MHz

Intertek Japan K.K.

Kashima No.12 Test Site

Spurious Emissions - Radiated Test

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Elite
SERIAL NO. : No.12
TEST MODE : RF-ID Active mode
POWER SOURCE : AC120 V, 60 Hz
DATE TESTED : Jul 11 2016
FILE NO. : -
REGULATION : FCC part15C (15.209)
TEST METHOD : ANSI C63.10-2013
DISTANCE : 3.00 [m]
TEMPERATURE : 21.6 [degC]
HUMIDITY : 59.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	FREQ [MHz]	ANT.	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	40.67	BBA	28.7	<u>32.8</u>	-2.1	-2.1	26.6	<u>30.7</u>	40.0	13.4	<u>9.3</u>
2	67.80	BBA	25.9	29.8	-2.4	-2.4	23.5	27.4	40.0	16.5	12.6
3	122.04	BBA	23.7	20.8	-3.0	-3.0	20.7	17.8	43.5	22.8	25.7
4	135.60	BBA	24.5	22.7	-1.7	-1.7	22.8	21.0	43.5	20.7	22.5
5	206.69	BBA	-	34.4	-2.7	-2.7	-	31.7	43.5	-	11.8
6	213.33	BBA	-	35.0	-2.4	-2.4	-	32.6	43.5	-	10.9
7	214.65	BBA	41.7	<u>41.8</u>	-2.3	-2.3	39.4	<u>39.5</u>	43.5	4.1	<u>4.0</u>
8	216.96	BBA	29.7	30.0	-2.2	-2.2	27.5	27.8	46.0	18.5	18.2
9	220.20	BBA	-	31.0	-2.0	-2.0	-	29.0	46.0	-	17.0
10	231.20	BBA	31.3	31.5	-1.5	-1.5	29.8	30.0	46.0	16.2	16.0
11	264.20	BBA	-	<u>37.0</u>	0.1	0.1	-	<u>37.1</u>	46.0	-	<u>8.9</u>
12	264.20	BBA	<u>38.2</u>	-	0.1	0.1	<u>38.3</u>	-	46.0	<u>7.7</u>	-
13	313.34	BBA	<u>33.5</u>	32.1	2.1	2.1	<u>35.6</u>	34.2	46.0	<u>10.4</u>	11.8
14	526.66	BBA	-	<u>29.3</u>	8.6	8.6	-	<u>37.9</u>	46.0	-	<u>8.1</u>
15	593.34	BBA	23.1	-	10.4	10.4	33.5	-	46.0	12.5	-
16	780.02	BBA	20.5	-	14.1	14.1	34.6	-	46.0	11.4	-

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209) limit
Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

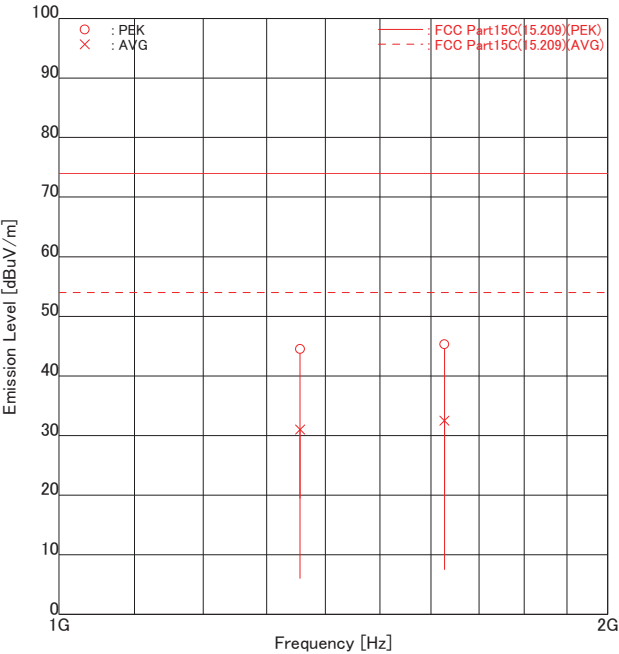
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1000 – 2000 MHz

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Kashima No.12 Test Site
Radiated Electric Field

APPLICANT : OLYMPUS MEDICAL SYSTEMS CORP.
EUT NAME : ENDOSCOPE REPROCESSOR
MODEL NO. : OER-Elite
SERIAL NO. : No.12
TEST MODE : RF-ID Active mode
POWER SOURCE : AC120 V, 60 Hz
DATE TESTED : Jul 11 2016
FILE NO. : -
REGULATION : FCC Part15C(15.209)
TEST METHOD : ANSI C63.10-2013
DISTANCE : 6.65 [m]
TEMPERATURE : 22.0 [degC]
HUMIDITY : 48.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	MODE [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	1356.00	PEK	<u>41.6</u>	41.4	2.9	2.9	<u>44.5</u>	44.3	74.0		<u>29.5</u>	29.7
2	1356.00	AVG	<u>28.1</u>	28.1	2.9	2.9	<u>31.0</u>	31.0	54.0		<u>23.0</u>	23.0
3	1627.20	PEK	<u>41.3</u>	41.2	4.0	4.0	<u>45.3</u>	45.2	74.0		<u>28.7</u>	28.8
4	1627.20	AVG	<u>28.5</u>	28.1	4.0	4.0	<u>32.5</u>	32.1	54.0		<u>21.5</u>	21.9

Higher six points are underlined.
Other frequencies : Below the FCC Part15C(15.209) limit
Emission Level = Read + Factor
Factor = Ant.Factor + Cable Loss - Amp. Gain + ATT - Dist. Conversion

9.2 Frequency Tolerance (Temperature Variation and Voltage Variation)

Location	Kashima No.1
Test date	July 12, 2016
Test Engineer	Koichi Wagatsuma
Test Procedure	LEN-RJP-TE003

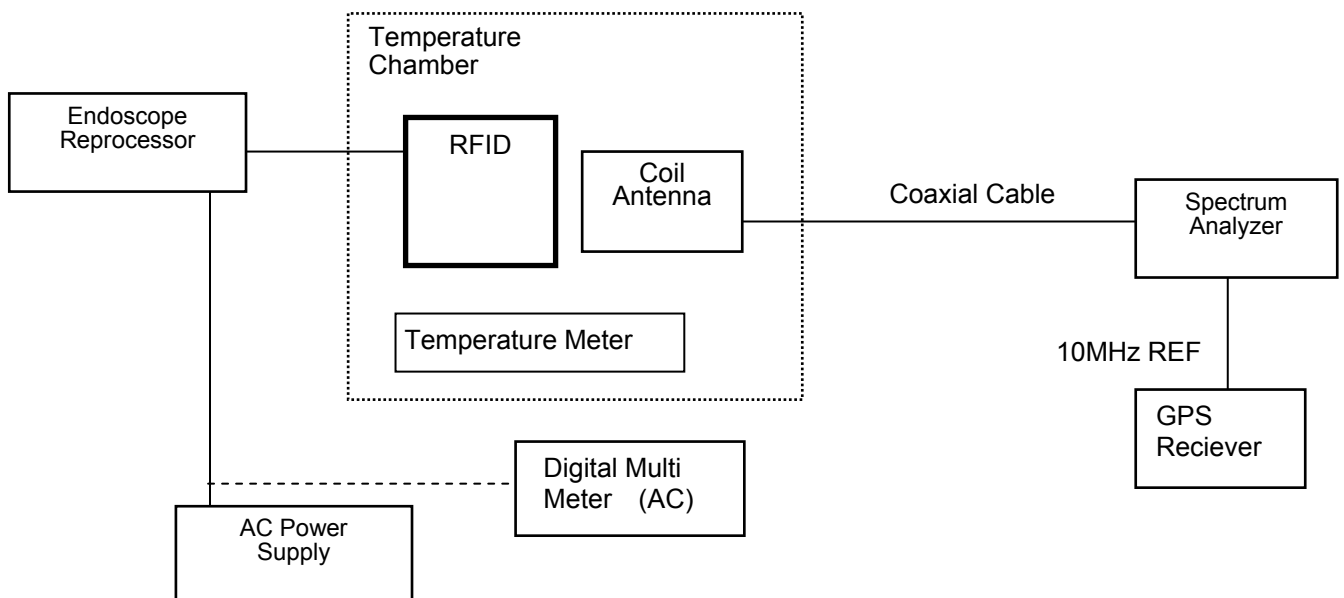
Test Procedure

Frequency Tolerance (Temperature Variation)

1. The EUT and test equipment were set up as shown on the following page.
2. Set the temperature -30 degrees C.
3. Leave the EUT for 1 hour after it became the temperature that was set up.
4. Make the EUT the transmitting.
5. Measure the output frequency. (Startup, 2min, 5min and 10min)
6. Set the temperature -20 degrees C to +50 degrees C.
7. Repeat test procedure 4 to 6

Frequency Tolerance (Voltage Variation)

1. The EUT and test equipment (Set the Supply Voltage 100%) were set up as shown on the following page.
2. Set the temperature +20 degrees C.
3. Leave the EUT for 1 hour after it became the temperature that was set up.
4. Make the EUT the transmitting.
5. Measure the output frequency.
6. Set the Supply Voltage 85% and 115%.
7. Repeat test procedure 4 to 6



Result of Frequency Tolerance (Temperature Variation and Voltage Variation)

9.2.1 Temperature Variation

Reference Frequency: 13.560000 MHz (FCC Stability) /13.560085 MHz (RSS Stability)

Temperature (Degree C)	Voltage (%)	Frequency (MHz)				Deviation (ppm)								Limit (+/-) (ppm)
						StartUP		2min		5min		10min		
		StartUP	2min	5min	10min	FCC	RSS	FCC	RSS	FCC	RSS	FCC	RSS	
-30	100	13.560001	13.560010	13.560015	13.560017	0.09	-6.18	0.77	-5.50	1.11	-5.16	1.25	-5.01	100.0
-20	100	13.560064	13.560073	13.560077	13.560079	4.72	-1.55	5.38	-0.88	5.68	-0.59	5.83	-0.44	100.0
-10	100	13.560102	13.560107	13.560109	13.560110	7.52	1.25	7.89	1.62	8.04	1.77	8.11	1.84	100.0
0	100	13.560115	13.560115	13.560114	13.560114	8.48	2.21	8.48	2.21	8.41	2.14	8.41	2.14	100.0
10	100	13.560105	13.560102	13.560099	13.560098	7.74	1.47	7.52	1.25	7.30	1.03	7.23	0.96	100.0
20	100	13.560085	13.560079	13.560075	13.560072	6.27	0.00	5.83	-0.44	5.53	-0.74	5.31	-0.96	100.0
30	100	13.560053	13.560047	13.560044	13.560042	3.91	-2.36	3.47	-2.80	3.24	-3.02	3.10	-3.17	100.0
40	100	13.560019	13.560016	13.560014	13.560012	1.40	-4.87	1.18	-5.09	1.03	-5.24	0.88	-5.38	100.0
50	100	13.559998	13.559997	13.559996	13.559995	-0.15	-6.42	-0.22	-6.49	-0.29	-6.56	-0.37	-6.64	100.0

9.2.2 Voltage Variation

Reference Frequency: 13.560000 MHz (FCC Stability) /13.560085 MHz (RSS Stability)

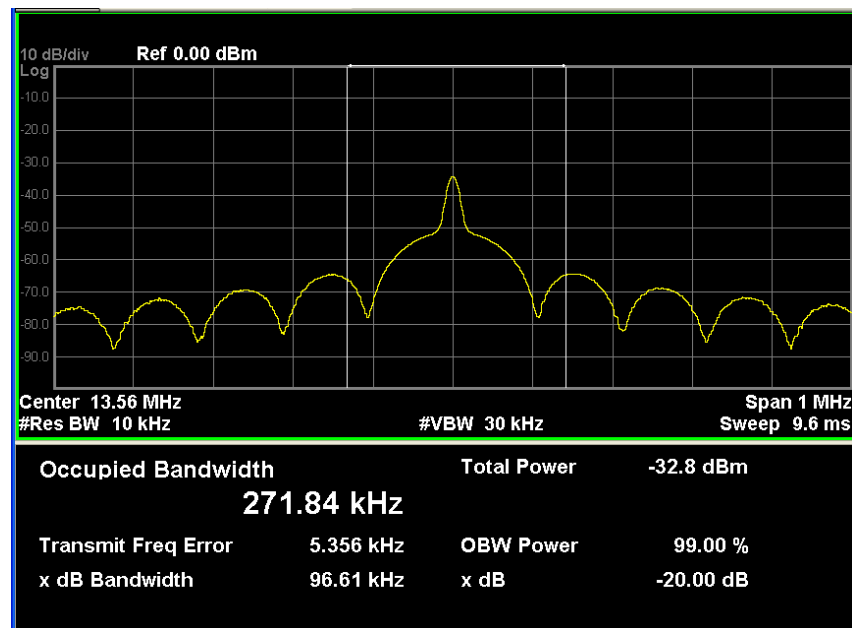
Temperature (Degree C)	Voltage (%)	Frequency	Deviation (ppm)		Supply Voltage	Limit (+/-) (ppm)
			FCC	RSS		
20	85	13.560083	6.12	-0.15	102V 60Hz	100.0
	100	13.560085	6.27	0.00	120V 60Hz	100.0
	115	13.560084	6.19	-0.07	138V 60Hz	100.0

9.3 20dB OBW , 99% OBW

Location	Kashima No.1
Test date	July 12, 2016
Test Engineer	Koichi Wagatsuma
Test Procedure	LEN-RJP-TE003

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Adjust the test instrument for the following setting:
RBW : 1 % to 5 % of the Necessary bandwidth
VBW : at least 3 times the RBW
Detector : Peak
Sweep Time : Auto
Trace mode : Max Hold
- 3 Allow trace to fully stabilize.
- 4 Use "Occupied Bandwidth Measurement" function to measure the Occupied Bandwidth.



SECTION 10. LIST OF MEASURING INSTRUMENTS

Test instruments are calibrated according to Quality Manual and Calibration Rules of Intertek Japan K.K.
 All measurements equipment used for the measurement is calibrated based on standard.
 Each measurement result is traceable to national or international standards.
 Antenna used for the measurement is calibrated based on the ANSI C63.5.

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
Conducted disturbance at mains terminals					
LISN	ESH2-Z5	890484/001	ROHDE & SCHWARZ	1 Y	Nov. 30, 2016
10 dB Attenuator	CFA-01	None(KSR00240)	TAMAGAWA	1 Y	Nov. 30, 2016
Coaxial cable	RG-5A/U(14.0 m)	R2	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable	10D-2W(7.0 m)	R4	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable	RG-5A/U(4.0 m)	R6	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable	RG-5A/U(0.6 m)	R7	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable	5D-2W(1.2m)	R10	FUJIKURA	1 Y	Feb. 28, 2017
RF Switch	ACX-150	None(A12301501)	Intertek	1 Y	Feb. 28, 2017
EMI Test receiver	N9038A (Firmware Version A.13.58)	MY51210201	Agilent	1 Y	Sep. 30, 2016
Radiated disturbance					
Loop antenna	HFH2-Z2	892665/009	ROHDE & SCHWARZ	1 Y	Oct. 31, 2016
6 dB Attenuator	6806.17.B	4692	HUBER-SUHNER	1 Y	Jan. 31, 2017
Coaxial cable(M1)	5D-2W(8.0 m)	None(KSR00312)	FUJIKURA	1 Y	May 31, 2017
Broad Band antenna	Tri-Log VULB9168WP	288	Schwarzbeck	1 Y	Aug. 31, 2016
6 dB Attenuator	UFA-01	None(A00040805)	TAMAGAWA	1 Y	Feb. 28, 2017
Amplifier	ZX60-3018G	005	Intertek	1 Y	Feb. 28, 2017
Coaxial cable(R11)	5D-2W(8.7 m)	R11	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable(R1)	5D-2W(8.0 m)	R1	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable(R3)	10D-2W(7.0 m)	R3	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable(R5)	RG-5A/U(4.0 m)	R5	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable(R7)	RG-5A/U(0.6 m)	R7	FUJIKURA	1 Y	Feb. 28, 2017
Coaxial cable(R10)	5D-2W(1.2 m)	R10	FUJIKURA	1 Y	Feb. 28, 2017
RF Switch	ACX-150	None(A12301501)	Intertek	1 Y	Feb. 28, 2017
EMI Test receiver	N9038A (Firmware Version A.13.58)	MY51210201	Agilent	1 Y	Sep.30, 2016
Site Attenuation				1 Y	Feb. 28, 2017
Double Ridged antenna	3115	5045	Schwarzbeck	1 Y	Mar. 31, 2017
3 dB Attenuator	6803.17.B	KSR00089	SUHNER	1 Y	Feb. 28, 2017
Amplifier (1-18 GHz)	TPA0118-30	0402	TOYO	1 Y	Feb. 28, 2017
Coaxial cable(G1)	SUCOFLEX 104(1.0 m)	229603/4(R14)	SUHNER	1 Y	Feb. 28, 2017
Coaxial cable(G2)	5B-048-98-98-5000(5.0m)	111130(R15)	Candox	1 Y	Feb. 28, 2017
SVSWR				1 Y	Oct. 31, 2016
Common					
Testing Software	emiT (Version 3,0,0,0)				

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
Frequency Tolerance and OBW					
Spectrum Analyzer	N9000A	MY51260520	Agilent	1 Y	May 31, 17
Digital Multi Meter	8846A	9642018	FLUKE	1 Y	Jul. 31, 16
Temperature Chamber	PL-3F	5103661	Tabai	-	None
Temperature Meter	PC-5000TRH-II	A11999972	Sato	1 Y	Nov. 30, 16
Coil antenna	None	None	Intertek Japan	-	None
GPS Receiver	HP Z3801A	3542A02414	Hewlett Packard	-	None
Coaxial Cable	3D-2V	KSR00100	Daiyu Densen	1 Y	Jan. 31, 17

ANNEX

A. TEST PROCEDURE(S)

Test was carried out under the following conditions.

Conducted disturbance at mains terminals

Test setup as per standard

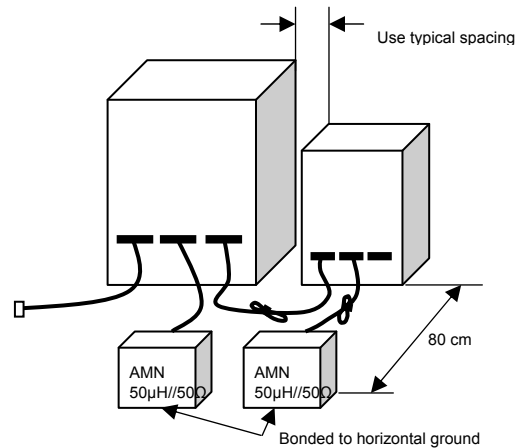
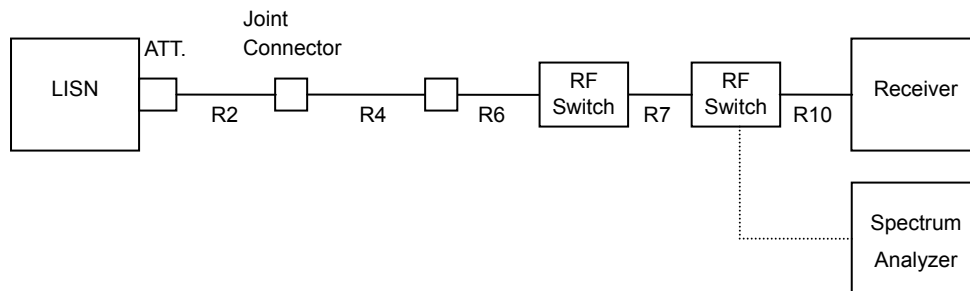


Diagram of the measuring instruments



[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 is 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.

EUT was placed in transmission mode then tested for conducted emissions per 15.207 to ensure the device complies with 15.207 outside the transmitter fundamental emissions band.

After, with a dummy load in lieu of the antenna from the EUT and only the fundamental emission band was measured to show that the fundamental emission band is in compliance with the 15.207 limits.

*In accordance with "174176 D01 Line Conducted FAQ v01r01"

[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.

Radiated disturbance
Test setup as per standard

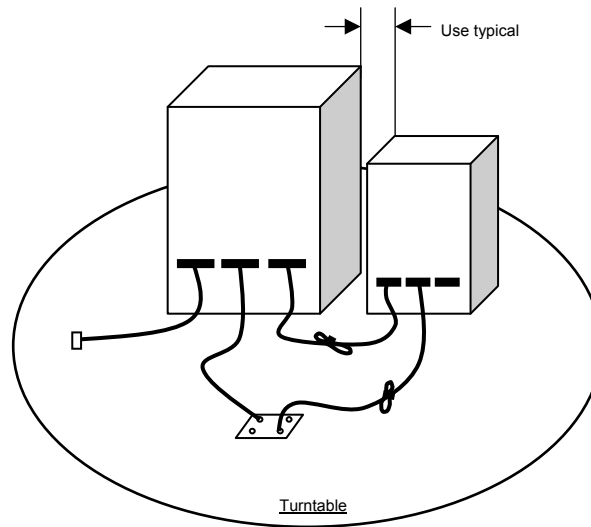
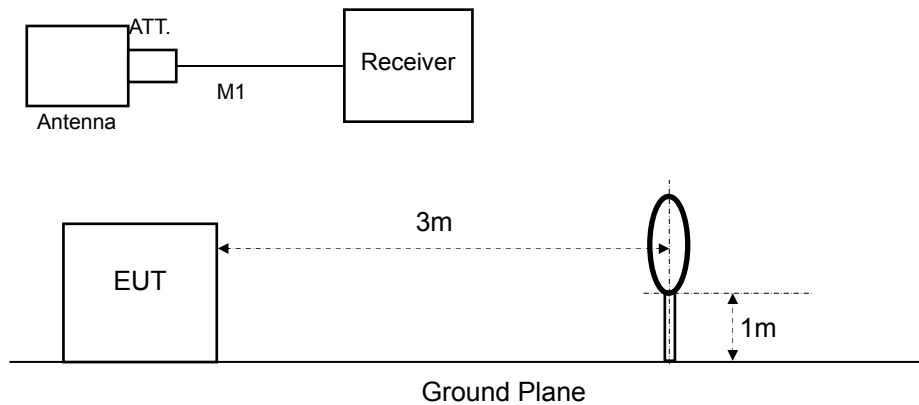
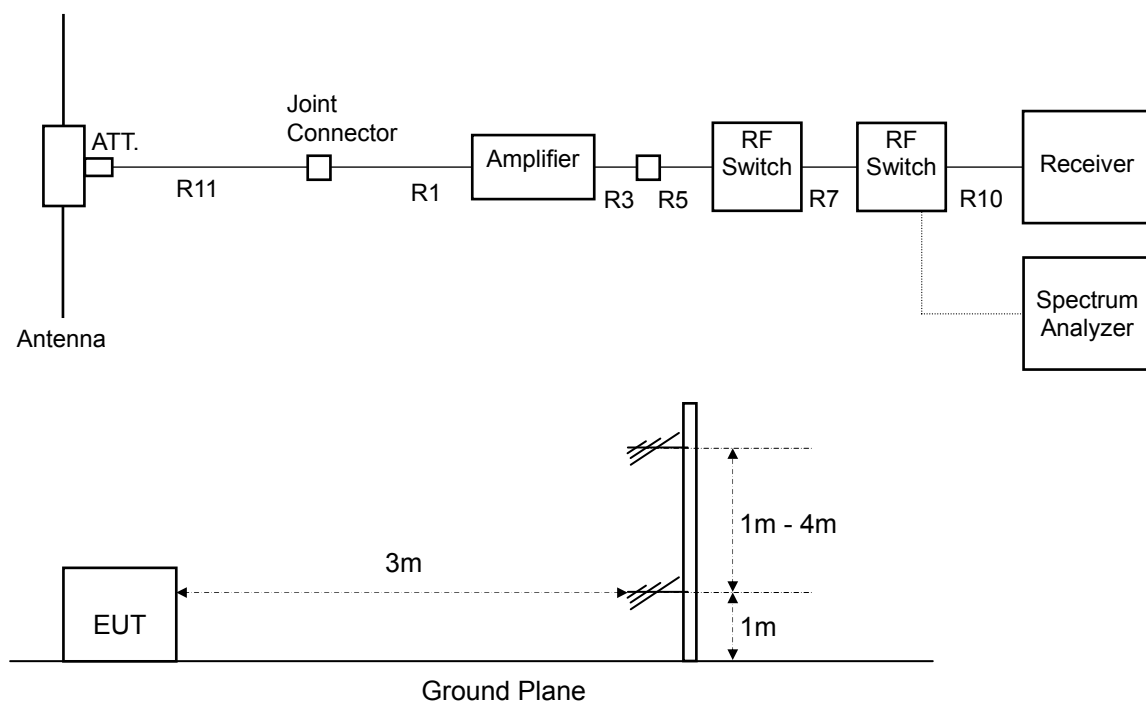


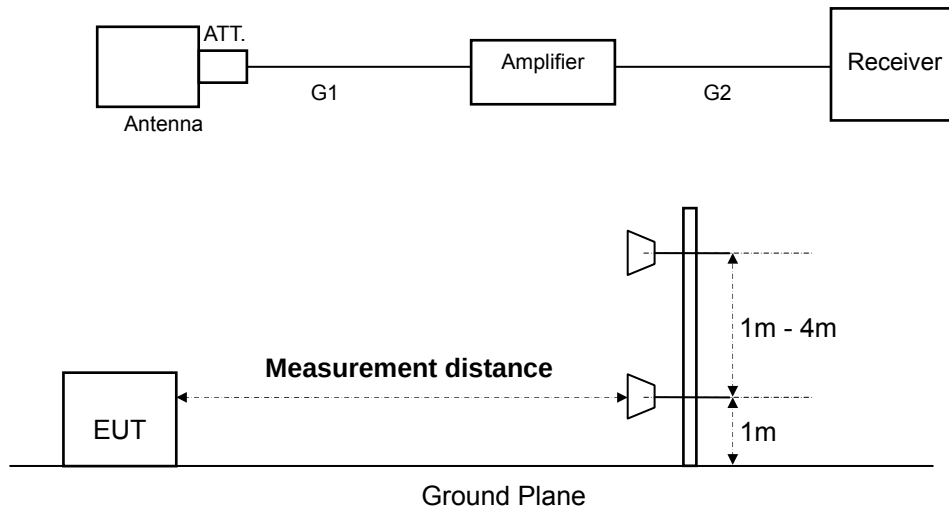
Diagram of the measuring instruments (Below 30MHz)



30-1000MHz



Above 1GHz



***Measurement distance : See Section 9.1.2**

[Preliminary Measurement]

EUT is tested on all operating conditions.

The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree,
And 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 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 spectrums are measured by the test receiver (quasi-peak) and spectrum analyzer (peak and average). When the uncertain result was obtained (30 – 1000 MHz), the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.