Certificate

Issue Date: June 28, 2013
Ref. Report No. ISL-13LE238FA

Product Name	:	Fanless, Extended-temp Embedded Computing System
Model(s)	:	ECS-7xxx; ECS-7000-6GDE(R); ECS-7000-6GD610QW; ECS-7000-6GDE610QW; ECS-7000-6R610QW
Applicant	:	Vecow Co.,Ltd
Address	:	12F., No. 111, Zhongcheng Rd., Tucheng Dist., New Taipei City 23674 Taiwan (R.O.C)

We, **International Standards Laboratory**, hereby certify that:

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified. (refer to Test Report if any modifications were made for compliance).

Standards:

FCC CFR Title 47 Part 15 Subpart B: 2010- Section 15.107 and 15.109
ANSI C63.4-2009
Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 5: 2012

Class A

I attest to the accuracy of data and 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.

International Standards Laboratory

Jim Chu / Director

☒ **Lung-Tan LAB**:
No. 120, Lane 180, San Ho Tsuen, Hsin Ho Rd.
Lung-Tan Hsiang, Tao Yuan County 325, Taiwan
Tel: 886-3-407-1718; Fax: 886-3407-1738

FCC TEST REPORT

of

CFR 47 Part 15 Subpart B Class A

Product : **Fanless, Extended-temp Embedded Computing System**

Model(s): **ECS-7xxx; ECS-7000-6GDE(R); ECS-7000-6GD610QW; ECS-7000-6GDE610QW; ECS-7000-6R610QW**

Applicant: **Vecow Co.,Ltd**

Address: **12F., No. 111, Zhongcheng Rd., Tucheng Dist., New Taipei City 23674 Taiwan (R.O.C)**

Test Performed by:

International Standards Laboratory
<Lung-Tan LAB>
*Site Registration No.
BSMI: SL2-IN-E-0013; SL2-R1/R2-E-0013; TAF: 0997
FCC: TW1036; IC: IC4067B-1; NEMKO: ELA 113B
VCCI: <Conduction 02>C-1440, T-1676, <Conduction 03>C-2845, T-1464, <Chamber 02>R-1435, G-17, <Chamber 12>R-2598,G-16, <Chamber 14>G-211,
*Address:
No. 120, Lane 180, San Ho Tsuen, Hsin Ho Rd.
Lung-Tan Hsiang, Tao Yuan County 325, Taiwan
*Tel: 886-3-407-1718; Fax: 886-3-407-1738

Report No.: **ISL-13LE238FA**
Issue Date : **June 28, 2013**

This report totally contains 25 pages including this cover page and contents page.

Contents of Report

1. General

1.1 Certification of Accuracy of Test Data

Standards:	FCC CFR Title 47 Part 15 Subpart B: 2010- Section 15.107 and 15.109 ANSI C63.4-2009 Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 5: 2012
Equipment Tested:	Fanless, Extended-temp Embedded Computing System
Model:	ECS-7xxx; ECS-7000-6GDE(R); ECS-7000-6GD610QW; ECS-7000-6GDE610QW; ECS-7000-6R610QW
Applicant:	Vecow Co.,Ltd
Sample received Date:	May 16, 2013
Final test Date:	refer to the date of test data
Test Site:	International Standards Laboratory Chamber 02; Chamber 14; Conduction 02
Test Distance:	10M; 3M (above1GHz)
Temperature:	refer to each site test data
Humidity:	refer to each site test data
Input power:	Conduction input power: AC 120 V / 60 Hz Radiation input power: AC 120 V / 60 Hz
Test Result:	**PASS**
Report Engineer:	Jayla Lu
Test Engineer:	James Kuo
Approved By:	Jim Chu / Director

1.2 Description of EUT

EUT

Description: Fanless, Extended-temp Embedded Computing System
Condition: Pre-Production
Model: ECS-7xxx; ECS-7000-6GDE(R); ECS-7000-6GD610QW; ECS-7000-6GDE610QW; ECS-7000-6R610QW
Serial Number: N/A

Components	Vendor	Model Number
Main Board	VECOW	ECS-7000
CPU	Intel	Core™ i7-3610QE Processor 3.3GHz
Memory	DIMM Memory: Vecow M340S-W28M1 DDR3 2GB PC3-1333/1600MHz or DDR3 4GB PC3-1333/1600MHz or DDR3 8GB PC3-1333/1600MHz	
SSD m-SATA	MemoRight	32GB(Model: D150Q)
		8GB(Model: BT-25)
	A+cpi	32GB(Model: SED25-M)
Power adaptor	Seasonic	Model: SSA-1201-24

The I/O ports of EUT are listed below:

I/O Port/Cable Type	Quantity
DC IN Port	Three
Isolated DIO Port	one
USB3.0 Port	four
USB2.0 Port	two
Serial Port	four
Display Port	two
DVI-D Port	one
VGA Port	one
LAN Port (10M/100M/1000Mbps)	six
Line-In	one
Line-Out	one
Mic-In	one

All the devices listed below are chosen by the applicant to be the representative configuration for testing in this report.

Configuration	1
CPU	Intel Core™ i7-3610QE Processor 3.3GHz
Motherboard	ECS-7000
Memory	Vecow-8GB PC3-1333MHz
SSD m-SATA	MemoRight 32GB(Model: D150Q)
Power adaptor	Seasonic (Model: SSA-1201-24)
Resolution	DVI-D & Display*2 1920*1200 60Hz

Different Model list:

Model	Market
ECS-7xxx	Different customer
ECS-7000-6GDE(R)	
ECS-7000-6GD610QW	
ECS-7000-6GDE610QW	
ECS-7000-6R610QW	

EMI Noise Source:
Crystal:

Crystal	Point
25MHz	X1
25MHz	X2
32.768KHz	X3
25MHz	X4
25MHz	X5
25MHz	X6
25MHz	X7
25MHz	X8

EMI Solution:
N/A

1.3 Description of Support Equipment

No	Unit	Model / Serial No.	Brand	Power Cord	FCC ID
1	USB Mouse	MS111-P S/N:N/A	DELL	N/A	FCC DOC
2	USB Keyboard	KB4021 S/N:N/A	DELL	N/A	FCC DOC
3	24” LCD Monitor	U2412Mb S/N:N/A	DELL	Non-shielded	FCC DOC
4	24” LCD Monitor	U2412Mb S/N:N/A	DELL	Non-shielded	FCC DOC
5	24” LCD Monitor	LT2452pwC S/N:N/A	LENOVO	Non-shielded	FCC DOC
6	WD Hard Disk Case(3.0)	WDBACY5000ABK-00 S/N: N/A	Western Digital	N/A	FCC DOC
7	WD Hard Disk Case(3.0)	WDBACY5000ABK-00 S/N: N/A	Western Digital	N/A	FCC DOC
8	WD Hard Disk Case(3.0)	WDBACY5000ABK-00 S/N: N/A	Western Digital	N/A	FCC DOC
9	WD Hard Disk Case(3.0)	WDBACY5000ABK-00 S/N: N/A	Western Digital	N/A	FCC DOC
10	Notebook Personal Computer	Latitude D620 S/N:N/A	DELL	Non-shielded	FCC DOC
11	Notebook Personal Computer	Latitude D620 S/N:N/A	DELL	Non-shielded	FCC DOC
12	Notebook Personal Computer	Latitude D620 S/N:N/A	DELL	Non-shielded	FCC DOC
13	Notebook Personal Computer	Latitude D620 S/N:N/A	DELL	Non-shielded	FCC DOC
14	Notebook Personal Computer	Latitude D620 S/N:N/A	DELL	Non-shielded	FCC DOC
15	Notebook Personal Computer	Latitude D620 S/N:N/A	DELL	Non-shielded	FCC DOC
16	Aceex Modem	DM1414 S/N: 0301000557	Aceex	Non-shielded	FCC DOC
17	Aceex Modem	DM1414 S/N: 0301000557	Aceex	Non-shielded	FCC DOC
18	Aceex Modem	DM1414 S/N: 0301000557	Aceex	Non-shielded	FCC DOC
19	Aceex Modem	DM1414 S/N: 0301000557	Aceex	Non-shielded	FCC DOC
20	Microphone and Headset	ET-E200 S/N: N/A	Ergotech	N/A	FCC DOC
21	Coson radio cassette player	C-2087 S/N: N/A	Coson	N/A	FCC DOC

1.4 Software for Controlling Support Unit

Test programs exercising various part of EUT were used. The programs were executed as follows:

1. Send H pattern to the LCD monitor.
2. Read and write data through EUT SSD m-SATA.
3. Read and write data the WD Hard Disk Case(3.0) through EUT USB 3.0 port.
4. Receive audio signal from Coson radio cassette player through Line-In Port.
5. Send audio signal to the Microphone and Headset (Headset) through Headset Port.
6. Receive audio signal form Microphone and Headset (Microphone) through Microphone Port.
7. Receive and transmit package of EUT to the NB through LAN port.
8. Repeat the above steps.

	File	Issue Date
24” LCD Monitor	BurnIn.exe	2011/7/2
SSD m-SATA	BurnIn.exe	2011/7/2
WD Hard Disk Case(3.0)	BurnIn.exe	2011/7/2
Microphone and HeadSet (HeadSet)	BurnIn.exe	2011/7/2
Aceex Modem	IntelEMC.exe	04/11/2007
LAN	BurnIn.exe	2011/7/2

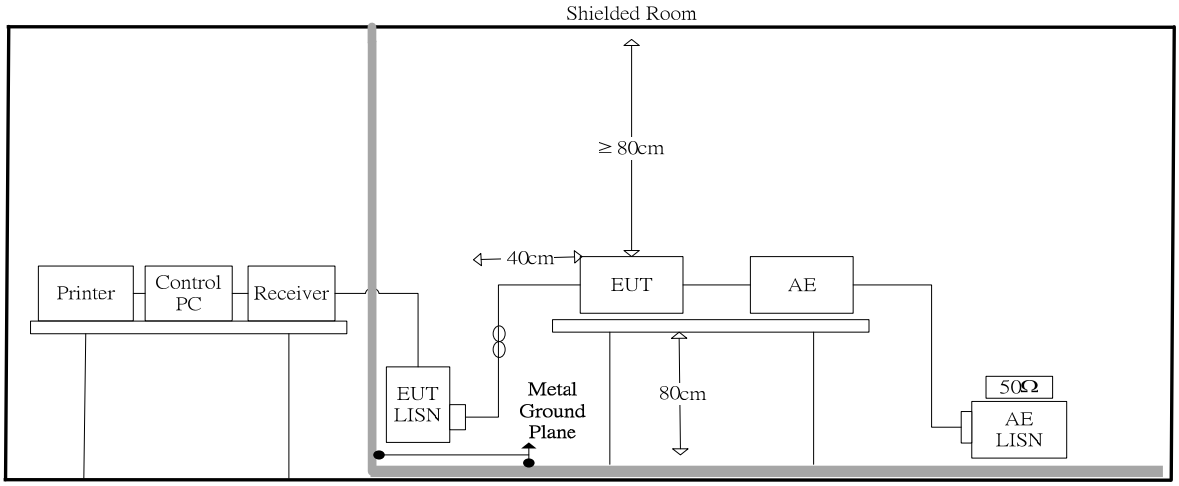
1.5 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type	Connector Type
AC Power cable	100V~240V to SPS	1.8M	Non-shielded	Plastic Head
Display data cable*2	24” LCD Monitor to EUT Display port	1.8M	Shielded	Metal Head
DVI-D data cable	24” LCD Monitor to EUT DVI-D port	1.8M	Shielded	Metal Head
USB Keyboard	USB Keyboard to EUT USB2.0 port	1.8M	Non-shielded	Metal Head
USB Mouse	USB Mouse to EUT USB2.0 port	1.8M	Non-shielded	Metal Head
Audio data cable	Microphone and HeadSet to EUT microphone port and line out port	1.8M	Non-shielded	Metal Head
Audio Data Cable	Coson radio cassette player to EUT Line In Port	1.8M	Non-shielded	Metal Head
USB data cable*4	WD Hard Disk Case(3.0) to EUT USB 3.0 port	1.27M	Shielded	Metal Head
LAN data cable*6	Support NB(Latitude D620) LAN port to EUT LAN port	33 feet	Non-shielded	Plastic Head
Modem Data Cable*4	Modem to EUT Serial Port	1.8M	Shielded	Metal Head
Isolated DIO Data Cable	Isolated DIO Data Cable with Dummy	1.8M	Shielded	Metal Head

2. Powerline Conducted Emissions

2.1 Test Setup and Procedure

2.1.1 Test Setup



2.1.2 Test Procedure

The measurements are performed in a 3.5m x 3.4m x 2.5m shielded room, which referred as Conduction 01 test site, or a 3m x 3m x 2.3m test site, which referred as Conduction 02 test site. The EUT was placed on non-conduction 1.0m x 1.5m table, which is 0.8 meters above an earth-grounded.

Power to the EUT was provided through the LISN which has the Impedance (50ohm/50uH) vs. Frequency Characteristic in accordance with the standard. Power to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

The interconnecting cables were arranged and moved to get the maximum measurement. Both the line of power cord, hot and neutral, were measured. All of the interface cables were manipulated according to ANSI C63.4 requirements.

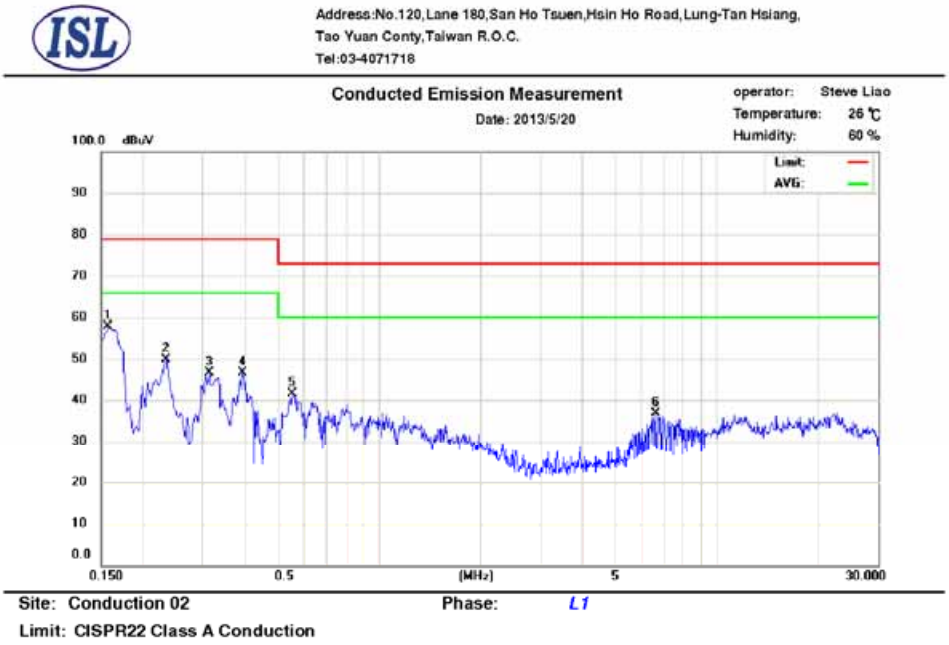
The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

2.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range:	150KHz~30MHz
Detector Function:	Quasi-Peak / Average Mode
Resolution Bandwidth:	9KHz

2.2 Conduction Test Data: Configuration 1

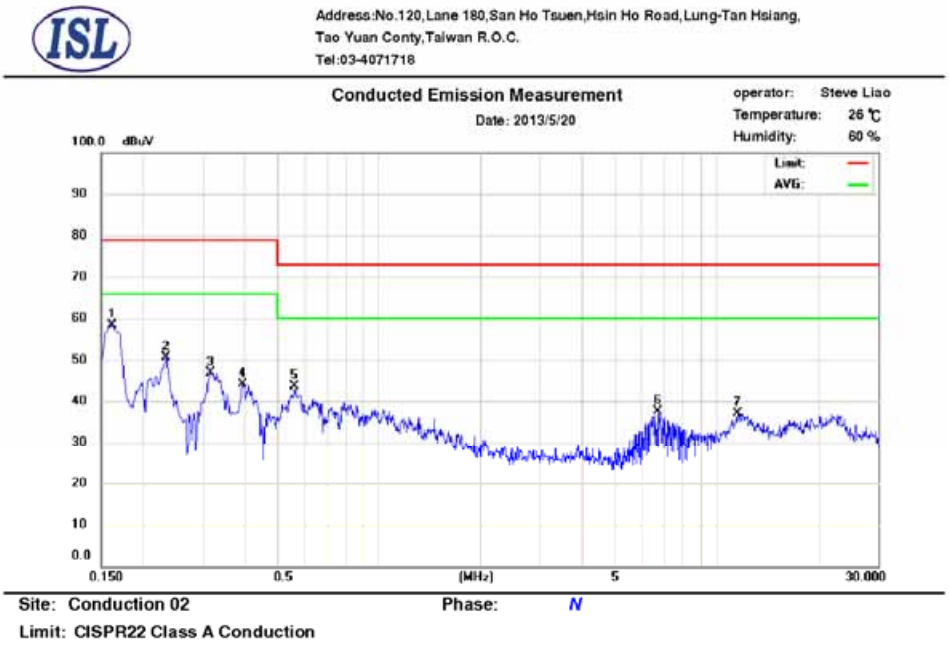
Table 2.2.1 Power Line Conducted Emissions (Line)



No.	Frequency (MHz)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)	Note
1	0.16	9.63	56.15	79.00	-22.85	53.10	66.00	-12.90	
2	0.23	9.64	47.77	79.00	-31.23	46.74	66.00	-19.26	
3	0.31	9.64	43.33	79.00	-35.67	36.92	66.00	-29.08	
4	0.39	9.64	41.12	79.00	-37.88	33.85	66.00	-32.15	
5	0.55	9.65	38.92	73.00	-34.08	31.17	60.00	-28.83	
6	6.61	9.82	32.68	73.00	-40.32	27.94	60.00	-32.06	

Note:
Margin = QP/AVG Emission - Limit
QP/AVG Emission = Receiver Reading + Correct Factor
Correct Factor = LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.
If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.
The CISPR 22 limits would be applied to all FCC Part 15 devices.

Table 2.2.2 Power Line Conducted Emissions (Neutral)



No.	Frequency (MHz)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)	Note
1	0.16	9.61	56.34	79.00	-22.66	52.28	66.00	-13.72	
2	0.23	9.62	47.76	79.00	-31.24	46.45	66.00	-19.55	
3	0.32	9.63	44.82	79.00	-34.18	39.41	66.00	-26.59	
4	0.39	9.63	41.95	79.00	-37.05	35.67	66.00	-30.33	
5	0.56	9.64	40.13	73.00	-32.87	33.05	60.00	-26.95	
6	6.67	9.81	24.63	73.00	-48.37	19.91	60.00	-40.09	
7	11.54	9.88	30.24	73.00	-42.76	24.67	60.00	-35.33	

Note:
Margin = QP/AVG Emission - Limit
QP/AVG Emission = Receiver Reading + Correct Factor
Correct Factor = LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.
If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.
The CISPR 22 limits would be applied to all FCC Part 15 devices.

2.3 Test Setup Photo

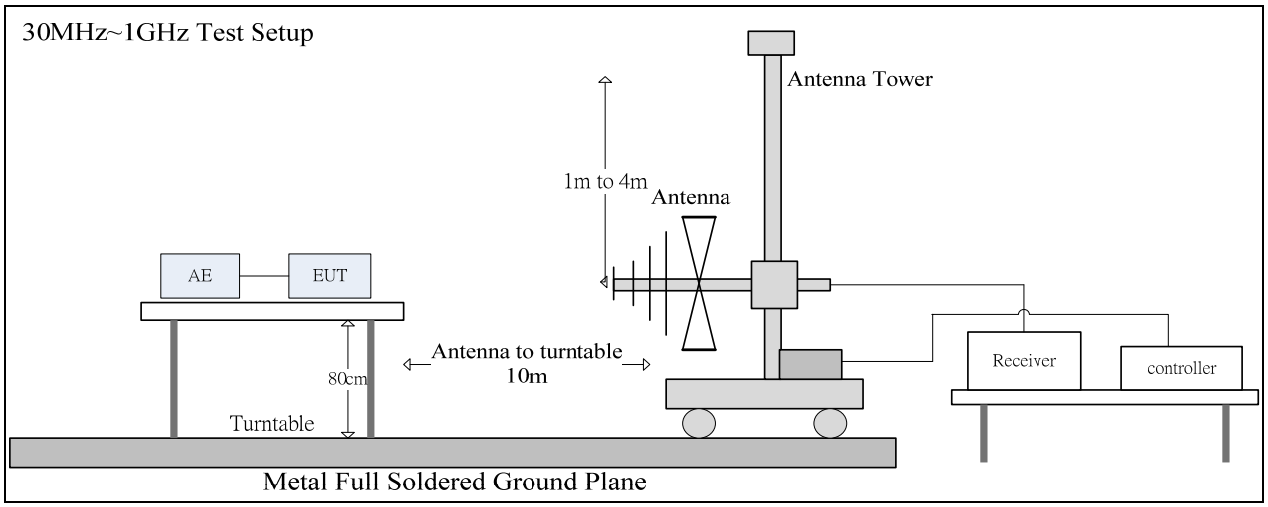
Front View

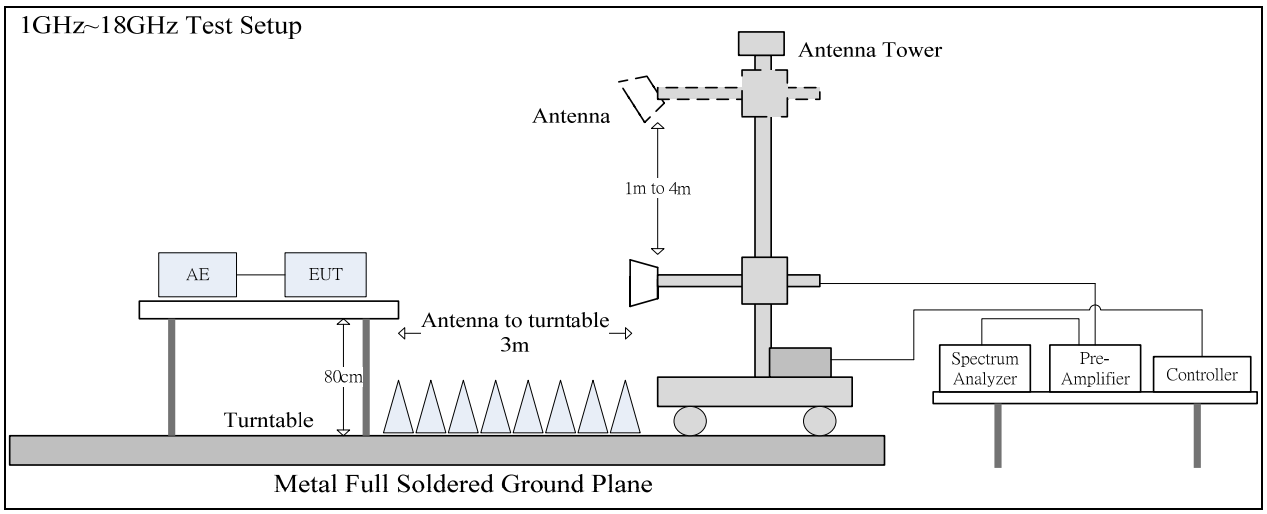
Back View

3. Radiated Emissions

3.1 Test Setup and Procedure

3.1.1 Test Setup





3.1.2 Test Procedure

The radiated emissions test will then be repeated on the open site or chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipment are set up on the turntable of one of 10 meter open field sites or 10 meter chamber. Desktop EUT are set up on a wooden stand 0.8 meter above the ground or floor-standing arrangement shall be placed on the horizontal ground reference plane. The test volume for a height of up to 30 cm may be obstructed by absorber placed on the ground plane.

For the initial measurements, the receiving antenna is varied from 1-4 meter height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. The highest emissions between 30 MHz to 1000 MHz were analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of the emissions. The highest emissions between 1 GHz to 40 GHz were analyzed in details by operating the spectrum analyzer in peak and average mode to determine the precise amplitude of the emissions.

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the antenna in the cone of radiation from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response. At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum measurement. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings. All of the interface cables were manipulated according to ANSI C63.4 requirements.

The highest internal source of the EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less. Spectrum Analyzer Configuration (for the frequencies tested).

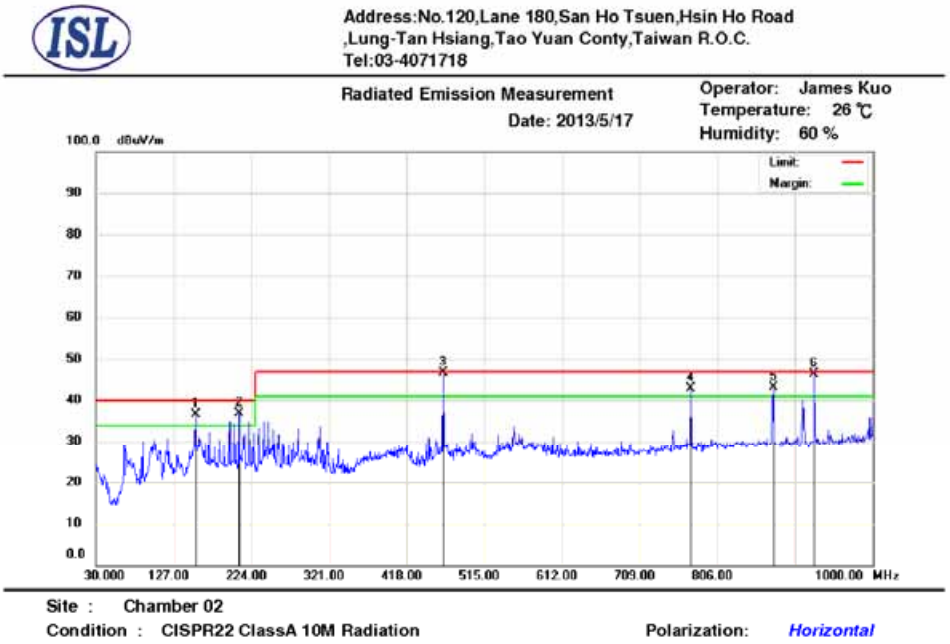
3.1.3 Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range:	30MHz--1000MHz
Detector Function:	Quasi-Peak Mode
Resolution Bandwidth:	120KHz

Frequency Range:	Above 1000MHz
Detector Function:	Peak/Average Mode
Resolution Bandwidth:	1MHz

3.2 Radiation Test Data: Configuration 1

Table 3.2.1 Radiated Emissions (Horizontal)



Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	154.1600	24.36	12.37	36.73	40.00	-3.27	112	134	peak
2	208.4800	24.73	12.04	36.77	40.00	-3.23	100	132	peak
3	463.5430	25.54	21.07	46.61	47.00	-0.39	187	140	QP
4	773.0200	17.55	25.34	42.89	47.00	-4.11	236	95	peak
5	875.8400	16.68	26.44	43.12	47.00	-3.88	100	285	peak
6	927.0820	19.45	26.89	46.34	47.00	-0.66	100	23	QP

* Note:
Margin = Emission – Limit
Emission = Radiated Amplitude + Correct Factor
Correct Factor = Antenna Correction Factor + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meters
The CISPR 22 limits would be applied to all FCC Part 15 devices.
Below 1GHz test, if the peak measured value meets the QP limit, it is unnecessary to perform the QP measurement. measurement.

Address:No.120,Lane 180,San Ho Tsuen,Hsin Ho Road
,Lung-Tan Hsiang,Tao Yuan Conty,Taiwan R.O.C.
Tel:03-4071718

Radiated Emission Measurement
Date: 2013/5/21

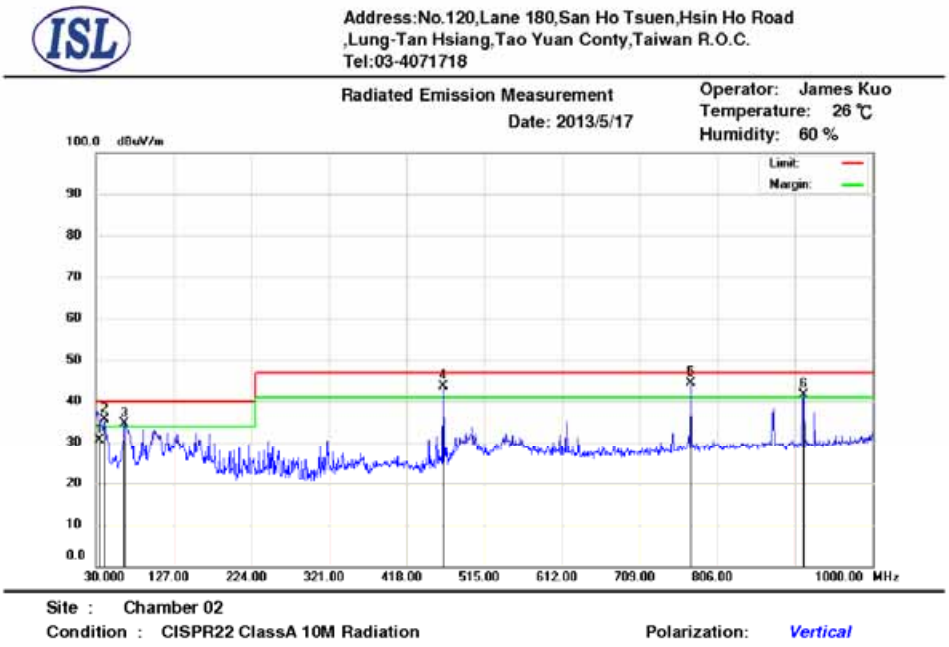
Operator: Jerry
Temperature: 26 ℃
Humidity: 60 %

Site : Chamber 14
Condition : FCC Class A Radiation(Peak)
Polarization: *Horizontal*

Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	1081.62	65.77	-16.08	49.69	59.50	-9.81	100	249	AVG
2	1085.00	72.42	-16.08	56.34	79.50	-23.16	100	162	peak
3	1493.00	68.29	-15.85	52.44	79.50	-27.06	100	105	peak
4	1500.00	63.46	-15.84	47.62	59.50	-11.88	113	332	AVG
5	1850.00	66.03	-13.21	52.82	79.50	-26.68	394	185	peak
6	1854.07	59.66	-13.17	46.49	59.50	-13.01	104	339	AVG
7	2003.00	68.63	-12.08	56.55	79.50	-22.95	189	234	peak
8	2008.62	66.63	-12.06	54.57	59.50	-4.93	149	31	AVG
9	2317.76	55.55	-11.44	44.11	59.50	-15.39	146	37	AVG
10	2326.00	67.00	-11.43	55.57	79.50	-23.93	100	47	peak
11	3000.21	60.21	-10.01	50.20	59.50	-9.30	134	29	AVG
12	3006.00	62.30	-10.01	52.29	79.50	-27.21	336	84	peak

* Note:
Margin = Emission – Limit
Emission = Radiated Amplitude + Correct Factor
Correct Factor = Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
Horn Antenna Distance: 3 meters
The CISPR 22 limits would be applied to all FCC Part 15 devices.
Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.

Table 3.2.2 Radiated Emissions (Vertical)



Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	33.8841	12.94	17.74	30.68	40.00	-9.32	100	207	QP
2	40.6700	21.75	13.79	35.54	40.00	-4.46	308	117	peak
3	65.8900	26.67	7.95	34.62	40.00	-5.38	378	338	peak
4	463.5900	22.67	21.07	43.74	47.00	-3.26	256	324	peak
5	772.5520	19.11	25.34	44.45	47.00	-2.55	268	337	QP
6	913.6700	14.84	26.75	41.59	47.00	-5.41	161	355	peak

* Note:
Margin = Emission – Limit
Emission = Radiated Amplitude + Correct Factor
Correct Factor = Antenna Correction Factor + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meters
The CISPR 22 limits would be applied to all FCC Part 15 devices.
Below 1GHz test, if the peak measured value meets the QP limit, it is unnecessary to perform the QP measurement. measurement.

Address:No.120,Lane 180,San Ho Tsuen,Hsin Ho Road
,Lung-Tan Hsiang,Tao Yuan Conty,Taiwan R.O.C.
Tel:03-4071718

Radiated Emission Measurement
Date: 2013/5/21

Operator: Jerry
Temperature: 26 ℃
Humidity: 60 %

Site : Chamber 14
Condition : FCC Class A Radiation(Peak) Polarization: *Vertical*

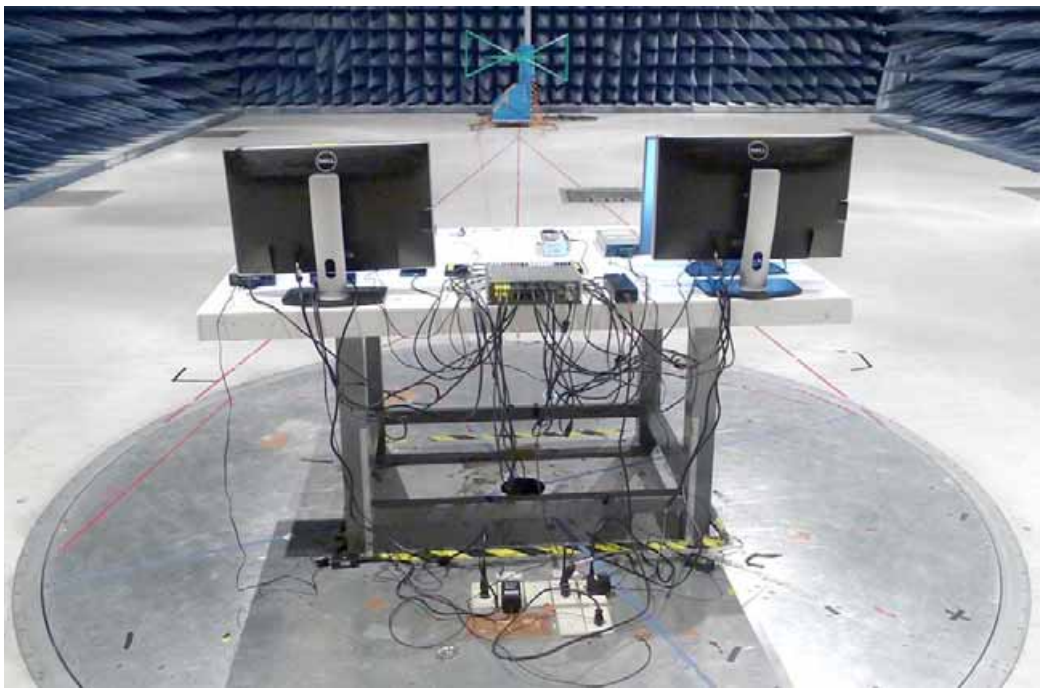
Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	1081.65	69.71	-16.08	53.63	59.50	-5.87	167	330	AVG
2	1085.00	75.15	-16.08	59.07	79.50	-20.43	343	40	peak
3	1850.00	69.46	-13.21	56.25	79.50	-23.25	100	197	peak
4	1854.09	64.20	-13.17	51.03	59.50	-8.47	176	124	AVG
5	2003.00	70.32	-12.08	58.24	79.50	-21.26	172	316	peak
6	2008.63	68.32	-12.06	56.26	59.50	-3.24	172	7	AVG
7	2309.00	68.73	-11.47	57.26	79.50	-22.24	123	152	peak
8	2317.72	62.32	-11.44	50.88	59.50	-8.62	130	52	AVG
9	2472.26	55.43	-11.13	44.30	59.50	-15.20	137	48	AVG
10	2479.00	64.39	-11.12	53.27	79.50	-26.23	184	293	peak
11	3000.24	61.30	-10.01	51.29	59.50	-8.21	150	141	AVG
12	3006.00	63.40	-10.01	53.39	79.50	-26.11	235	327	peak

* Note:
Margin = Emission – Limit
Emission = Radiated Amplitude + Correct Factor
Correct Factor = Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
Horn Antenna Distance: 3 meters
The CISPR 22 limits would be applied to all FCC Part 15 devices.
Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.

3.3 Test Setup Photo

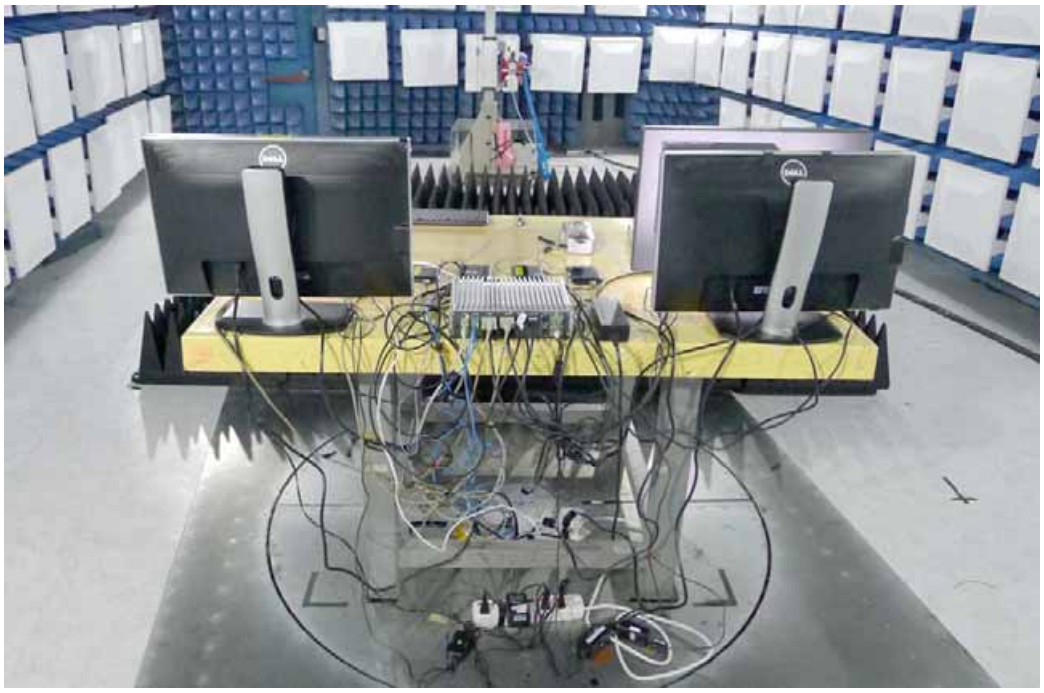
Front View

Back View



Front View (above 1GHz)

Back View (above 1GHz)



4. Appendix

4.1 Appendix A: Warning Labels

Label Requirements

A Class A digital device subject to certification by the FCC shall carry a warning label which includes the following statement:

*** * * W A R N I N G * * ***

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

4.2 Appendix B: Warning Statement

Statement Requirements

The operators' manual for a Class A digital device shall contain the following statements or their equivalent:

*** * * W A R N I N G * * ***

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates, uses, and can radiate radio frequency energy and, if not installed and uses in accordance with the instruction manual, may cause harmful interference to radio communications Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equivalent.

* * * * * * * * *

If the EUT was tested with special shielded cables the operators manual for such product shall also contain the following statements or their equivalent:

Shielded interface cables and/or AC power cord, if any, must be used in order to comply with the emission limits.

4.3 Appendix C: Test Equipment

4.3.1 Test Equipment List

Location Con02	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conduction 02	LISN 15	R&S	ENV216	101335	09/08/2012	09/08/2013
Conduction 02	LISN 06	ROHDE&SCHWARZ	ESH3/Z5	828874/009	01/22/2013	01/22/2014
Conduction 02	Conduction 02-1 Cable	WOKEN	CFD 300-NL	Conduction 02 -1	06/28/2012	06/28/2013
Conduction 02	EMI Receiver 14	ROHDE& SCHWARZ	ESCI	101034	02/19/2013	02/19/2014

Location Chamber02	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Radiation (Chamber02)	BILOG Antenna 15	Teseq GmbH	CBL6112D	27622	01/10/2013	01/10/2014
Radiation (Chamber02)	Coaxial Cable Chmb 02-10M-02	MIYAZAK	8D-FB	Chmb 02-10M-02	10/08/2012	10/08/2013
Radiation (Chamber02)	EMI Receiver 12	ROHDE & SCHWARZ	ESCI	100804	07/19/2012	07/19/2013

Location Chmb14	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Rad. Above 1GHz	Spectrum Analyzer 24 (1G~26.5GHz)	Agilent	N9010A	MY49060537	07/17/2012	07/17/2013
Rad. Above 1GHz	Spectrum Analyzer 22(chamber12)	R&S	FSU43	100143	05/03/2013	05/03/2014
Rad. Above 1GHz	Horn Antenna 06 (1G~18G)	ETS	3117	00066665	10/15/2012	10/15/2013
Rad. Above 1GHz	Horn Antenna 04 (18G~26G)	Com-Power	AH-826	081-001	05/14/2013	05/14/2015
Rad. Above 1GHz	Horn Antenna 05 (26G~40G)	Com-Power	AH-640	100A	01/09/2013	01/09/2015
Rad. Above 1GHz	Microwave Cable 20 (1G~18G)	HUBER SUHNER	Sucoflex 106	67618/6 and 67619/6	02/06/2013	02/06/2014
Rad. Above 1GHz	Preamplifier 13	MITEQ	JS44-00101800-25-10P-44	1329256	07/23/2012	07/23/2013
Rad. Above 1GHz	Preamplifier 23 (18G~40G)	EMC I	EMC184045B	980158	06/02/2013	06/02/2014
Rad. Above 1GHz	Microwave Cable-01_2010	HUBER SUHNER	Sucoflex 102	35145/2	09/07/2012	09/07/2013
Rad. Above 1GHz	Microwave Cable-08	HUBER SUHNER	Sucoflex 102	35633/2	09/07/2012	09/07/2013

4.3.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

Site	Filename	Version	Issue Date
Conduction/Radiation	EZ EMC	ISL-03A2	3/6/2013

4.4 Appendix D: Uncertainty of Measurement

The measurement uncertainty refers to CISPR 16-4-2:2003. The coverage factor k = 2 yields approximately a 95 % level of confidence.

<Conduction 02>
AMN: ±3.29dB
ISN: ±4.43dB

<Chamber 02 (10M)>
Horizontal
30MHz~200MHz: ±3.93dB
200MHz~1000MHz: ±4.05dB
Vertical
30MHz~200MHz: ±4.21dB
200MHz~1000MHz: ±4.04dB

<Chamber 14 (3M)>
1GHz~6GHz: ±4.72dB
1GHz~18GHz: ±4.98dB
18GHz~26.5GHz: ±3.63dB
26.5GHz~40GHz: ±3.58dB