

Certificate

Issue Date: August 2, 2017
Ref. Report No. ISL-17LE479FA

Product Name : Display Module
Model(s) : Display Module
Brand : WINSTAR
Applicant : WINSTAR DISPLAY CO., LTD.
Address : Central Taiwan Science Park
5F., No. 31, Keya Rd., Daya Dist., Taichung City 428, Taiwan.

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: 2016- Section 15.107 and 15.109
ANSI C63.4-2014
Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 6: 2016
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

Bert Chen
Bert Chen / Director

☐ Hsi-Chih LAB:

No. 65, Gu Dai Keng Street, Hsi-Chih Dist.,
New Taipei City 221, Taiwan
Tel: 886-2-2646-2550; Fax: 886-2-2646-4641



☒ Lung-Tan LAB:

No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist.,
Tao Yuan City 325, Taiwan
Tel: 886-3-407-1718; Fax: 886-3407-1738



FCC TEST REPORT

of

CFR 47 Part 15 Subpart B Class A

Product : **Display Module**

Model(s): **Display Module**

Brand: **WINSTAR**

Applicant: **WINSTAR DISPLAY CO., LTD.**

Address: **Central Taiwan Science Park
5F., No. 31, Keya Rd., Daya Dist.,
Taichung City 428, Taiwan**



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-11440, T-1676, <Conduction 03>C-2845,
T-1464, <Conduction 04>C-4778, T-2295, <Chamber 02>R-1435, G-17,
<Chamber 12>R-2598, G-16, <Chamber 14>G-211,

*Address:

No. 120, Lane 180, Hsin Ho Rd.,

Lung-Tan Dist., Tao Yuan City 325, Taiwan

*Tel: 886-3-407-1718; Fax: 886-3-407-1738

Report No.: **ISL-17LE479FA**

Issue Date : **August 2, 2017**

This report totally contains 24 pages including this cover page and contents page.

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.

This report must not be used to claim product endorsement by NVLAP, NIST or any other Government agency.

This test report shall not be reproduced except in full, without the written approval of International Standards Laboratory.

Contents of Report

1.	General	1
1.1	Certification of Accuracy of Test Data	1
1.2	Description of EUT	2
1.3	Description of Support Equipment	3
1.4	Software for Controlling Support Unit	3
1.5	I/O Cable Condition of EUT and Support Units	3
2.	Power Line Conducted Emissions	4
2.1	Test Setup and Procedure	4
2.1.1	Test Setup	4
2.1.2	Test Procedure	4
2.1.3	EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)	4
2.2	Conduction Test Data: Configuration 1	5
2.3	Test Setup Photo	7
3.	Radiated Emissions	9
3.1	Test Setup and Procedure	9
3.1.1	Test Setup	9
3.1.2	Test Procedure	11
3.1.3	Spectrum Analyzer Configuration (for the frequencies tested)	11
3.2	Radiation Test Data: Configuration 1	12
3.3	Test Setup Photo	16
4.	Appendix	18
4.1	Appendix A: Warning Labels	18
4.2	Appendix B: Warning Statement	19
4.3	Appendix C: Test Equipment	20
4.3.1	Test Equipment List	20
4.3.2	Software for Controlling Spectrum/Receiver and Calculating Test Data	21
4.4	Appendix D: Uncertainty of Measurement	22

1. General

1.1 Certification of Accuracy of Test Data

Standards: FCC CFR Title 47 Part 15 Subpart B: 2016- Section 15.107 and 15.109
ANSI C63.4-2014
Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 6: 2016
Class A

Equipment Tested: Display Module

Model: Display Module

Brand: WINSTAR

Applicant: WINSTAR DISPLAY CO., LTD.

Sample received Date: July 19, 2017

Final test Date: refer to the date of test data

Test Site: International Standards Laboratory
Chamber 12; Chamber 14; Conduction 02

Test Distance: 10M; 3M (above 1GHz)

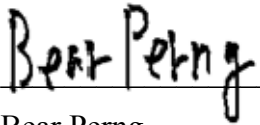
Temperature: refer to each site test data


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: Cheryl Tung

Test Engineer: 
Bear Perng

Approved By: 
Angus Chu / Director

1.2 Description of EUT

EUT

Description	Display Module
Condition	Pre-Production
Model	Display Module
Serial Number	N/A
Highest working frequency: 165MHz The radiation test should be tested till 2GHz	

The devices can be installed inside the EUT are listed below:

Components	Vendor	Model Name
LCD Panel	WINSTAR Display Co., Ltd.	WF50BTIFGDHGX#
		WF50BTIFGDHTX#
		WF50BTIFGDHNX#

The I/O ports of EUT are listed below:

I/O Port Type	Quantity
HDMI Port	1
Micro USB Port	1

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

Test configuration:

Configuration	LCD Panel
1	WF50BTIFGDHNX#

EMI Noise Source:

Please refer to the technical documentation for details

EMI Solution:

Please refer to the technical documentation for details

1.3 Description of Support Equipment

No	Unit	Model / Serial No.	Brand	Power Cord	FCC ID
1	AC Adapter	ADP-10AW S/N: N/A	Lenovo	N/A	N/A
2	Control Personal Computer	RASPBERRY PI 3 MODEL B S/N: N/A	Raspberry Pi Foundation	N/A	N/A

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 EUT through EUT HDMI Port..
2. Repeat the above steps.

	Filename	Issued Date
EUT Monitor	Omplayer	06/05/2016

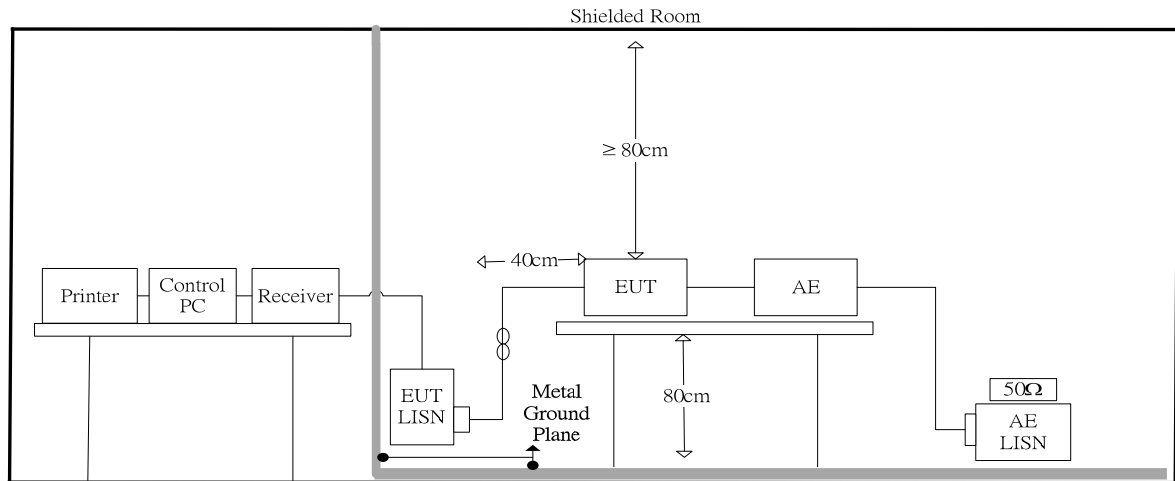
1.5 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type
USB Power Cable	AC Adapter USB port to Control Personal Computer Micro USB Port	1.0m	Shielded
HDMI Data Cable	EUT HDMI Port to Control Personal Computer HDMI Port	1.8m	Shielded (With core)

2. Power Line 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.

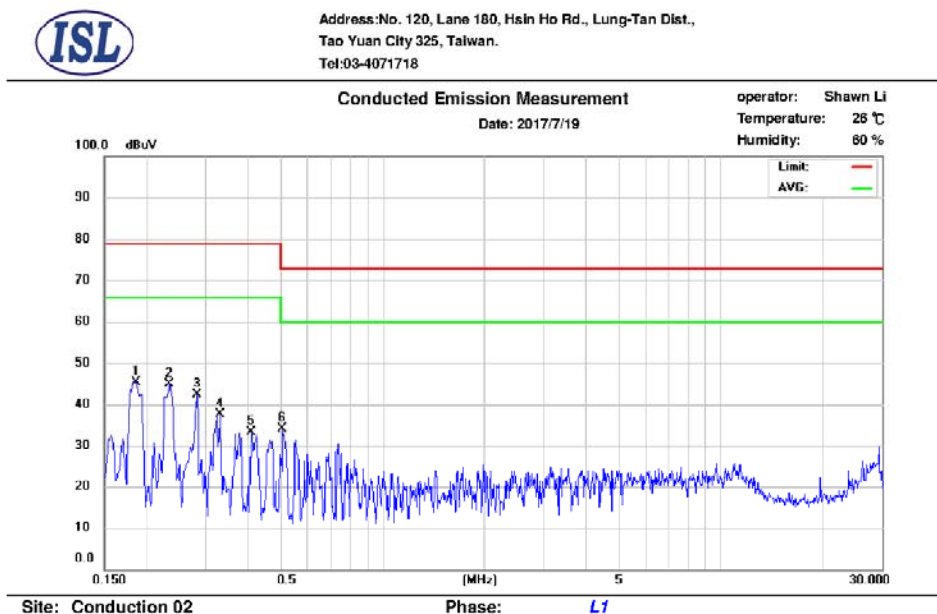
The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

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

- Line



No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	0.186	41.65	30.57	9.74	51.39	79.00	-27.61	40.31	66.00	-25.69
2	0.234	36.61	27.96	9.76	46.37	79.00	-32.63	37.72	66.00	-28.28
3	0.282	30.73	18.94	9.75	40.48	79.00	-38.52	28.69	66.00	-37.31
4	0.330	25.04	10.62	9.75	34.79	79.00	-44.21	20.37	66.00	-45.63
5	0.410	21.34	8.60	9.75	31.09	79.00	-47.91	18.35	66.00	-47.65
6	0.506	21.75	14.89	9.75	31.50	73.00	-41.50	24.64	60.00	-35.36

Note:

Margin = QP/AVG Emission - Limit

QP/AVG Emission = QP_R/AVG_R + Correct Factor

Correct Factor = LISN Loss + Cable Loss

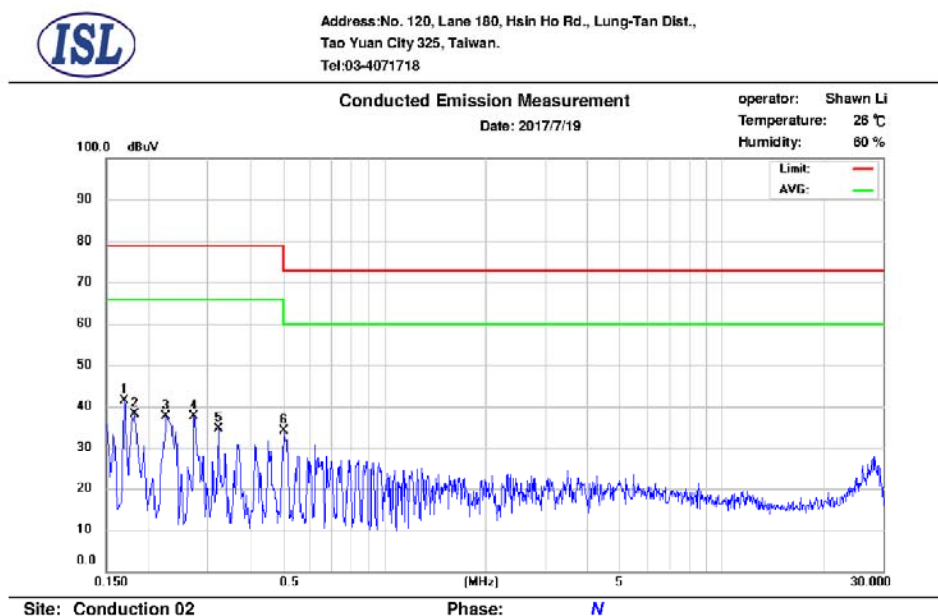
A margin of -8dB means that the emission is 8dB below the limit

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.

- Neutral



No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	0.170	16.76	-0.73	9.71	26.47	79.00	-52.53	8.98	66.00	-57.02
2	0.182	40.44	21.50	9.71	50.15	79.00	-28.85	31.21	66.00	-34.79
3	0.226	34.19	17.60	9.71	43.90	79.00	-35.10	27.31	66.00	-38.69
4	0.274	31.11	16.94	9.70	40.81	79.00	-38.19	26.64	66.00	-39.36
5	0.322	27.91	14.57	9.69	37.60	79.00	-41.40	24.26	66.00	-41.74
6	0.506	24.71	18.07	9.70	34.41	73.00	-38.59	27.77	60.00	-32.23

Note:

Margin = QP/AVG Emission - Limit

QP/AVG Emission = QP_R/AVG_R + 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.

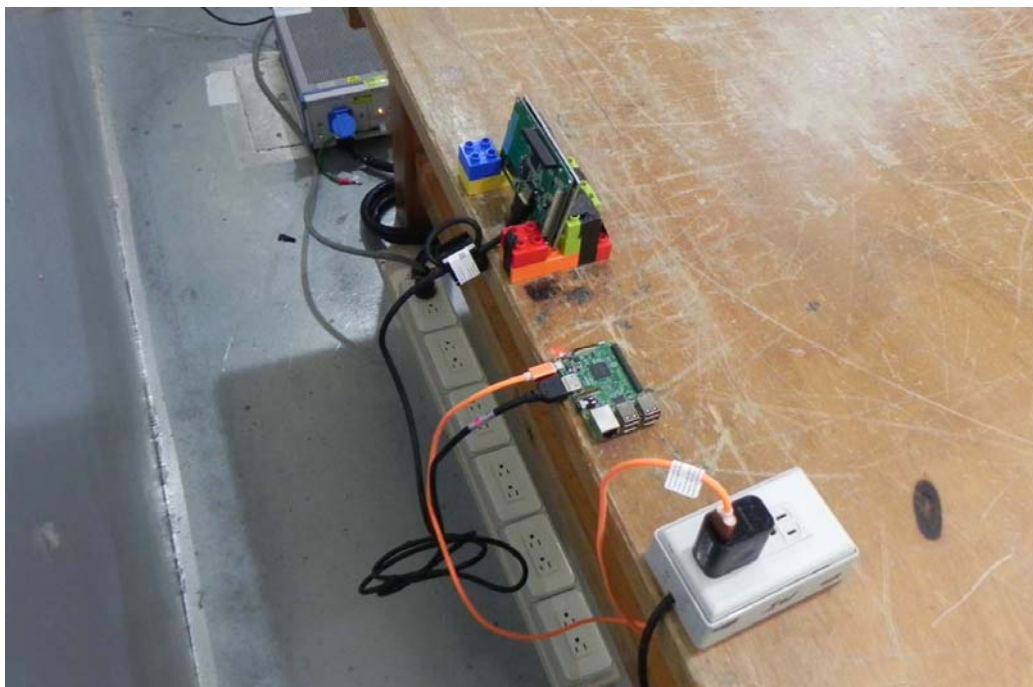
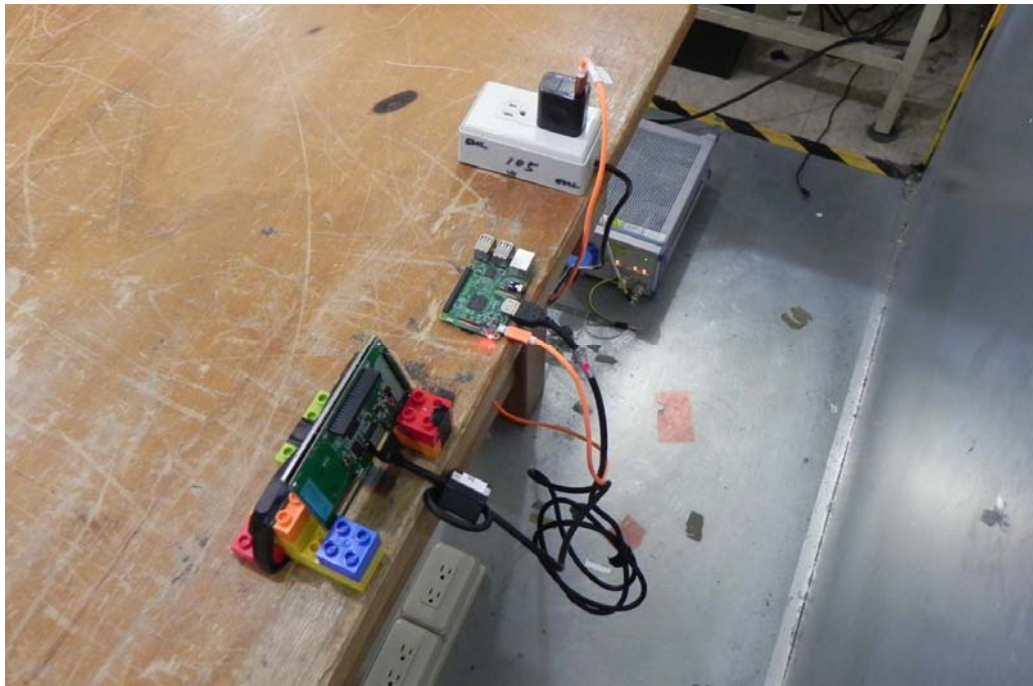
The CISPR 22 limits would be applied to all FCC Part 15 devices.

2.3 Test Setup Photo

Front View



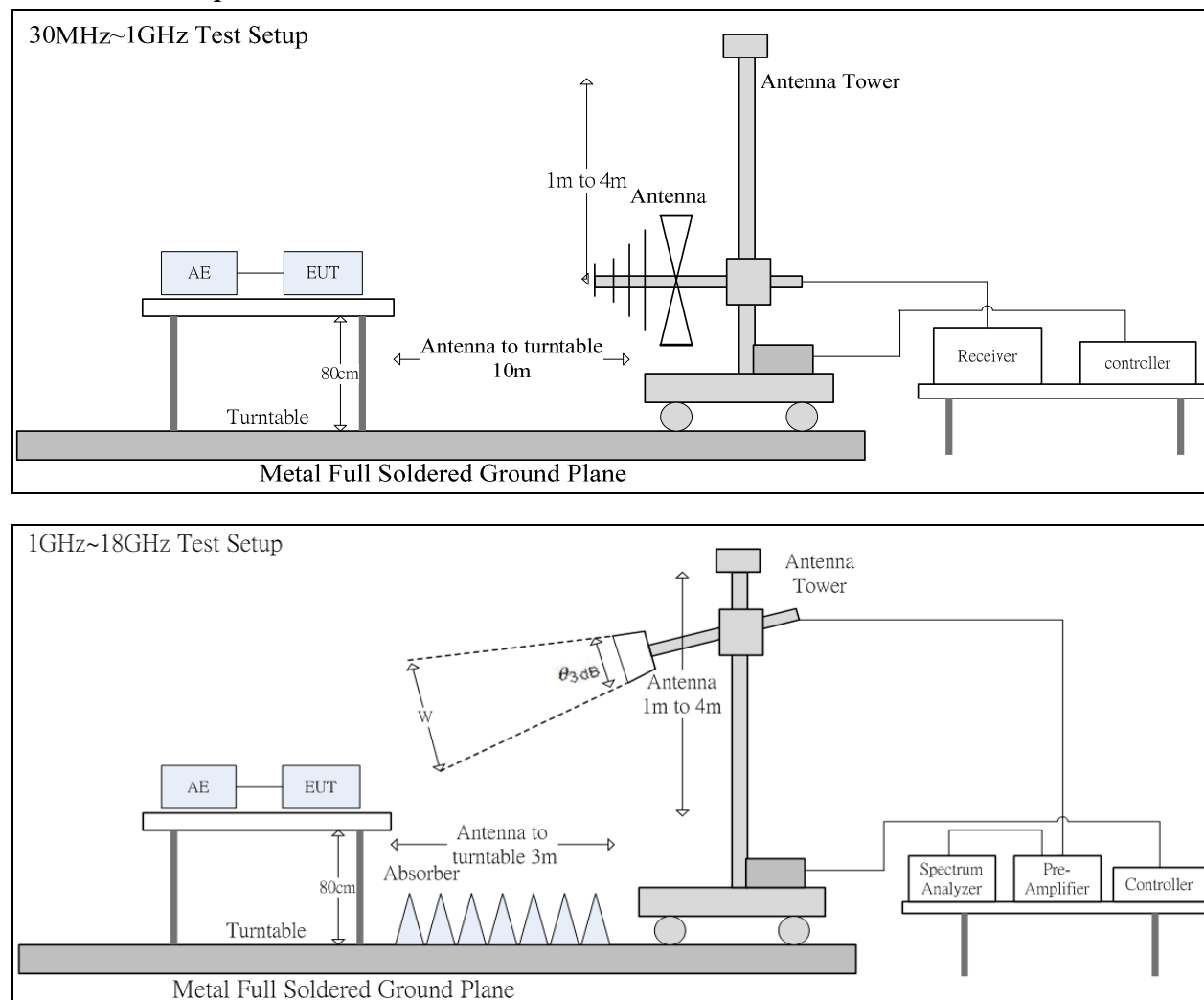
Back View



3. Radiated Emissions

3.1 Test Setup and Procedure

3.1.1 Test Setup



The 3dB beam width of the horn antenna used for the test is as shown in the table below.

1GHz~18GHz

Frequency GHz	E-plane	H-plane	θ_{3dB} (min)	d= 3 m
				w (m)
1	88°	147°	88°	5.79
2	68°	119°	68°	4.04
3	73°	92°	73°	4.44
4	70°	89°	70°	4.20
5	55°	60°	55°	3.12
6	63°	62°	62°	3.60
7	48°	49°	48°	2.67
8	39°	46°	39°	2.12
9	32°	42°	32°	1.72
10	30°	39	30°	1.61

Frequency GHz	E-plane	H-plane	$\theta_{3\text{dB}}(\text{min})$	d= 3 m
				w (m)
11	32°	35°	32°	1.72
12	35°	32°	35°	1.89
13	34°	31°	31°	1.66
14	32°	27°	27°	1.44
15	36°	26°	26°	1.39
16	40°	28°	28°	1.50
17	43°	26°	26°	1.39
18	41°	22°	22°	1.17

18 GHz~26.5 GHz

Frequency GHz	E-plane	H-plane	$\theta_{3\text{dB}}(\text{min})$	d= 1 m	d= 3 m
				w (m)	w (m)
18	11.4°	12.7°	11.4°	0.199	0.598
19	10.9°	12.4°	10.9°	0.190	0.572
20	10.8°	12.4°	10.8°	0.189	0.567
21	9.8°	12°	9.8°	0.171	0.514
22	9.7°	11°	9.7°	0.169	0.509
23	10°	11.8°	10°	0.174	0.524
24	9°	11°	9°	0.157	0.472
25	10°	12.3°	10°	0.174	0.524
26	9.9°	11.1°	9.9°	0.173	0.519
26.5	9.4°	11.3°	9.4°	0.164	0.493

26 GHz~40 GHz

Frequency GHz	E-plane	H-plane	$\theta_{3\text{dB}}(\text{min})$	d= 1 m	d= 3 m
				w (m)	w (m)
26	12°	12.2°	12°	0.210	0.631
27	13°	10.5°	10.5°	0.184	0.551
28	13.2°	12.3°	12.3°	0.216	0.647
29	11.5°	12.8°	11.5°	0.201	0.604
30	12°	8°	8°	0.140	0.420
31	11.5°	10.1°	10.1°	0.177	0.530
32	11.8°	10°	10°	0.175	0.525
33	11.8°	9.5°	9.5°	0.166	0.499
34	11.6°	10°	10°	0.175	0.525
35	10.9°	9.8°	9.8°	0.171	0.514
36	11.8°	8.6°	8.6°	0.150	0.451
37	12.9°	10.5°	10.5°	0.184	0.551
38	12°	10.3°	10.3°	0.180	0.541
39	11.8°	9.8°	9.8°	0.171	0.514
40	12.5°	11.2°	11.2°	0.196	0.588

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.

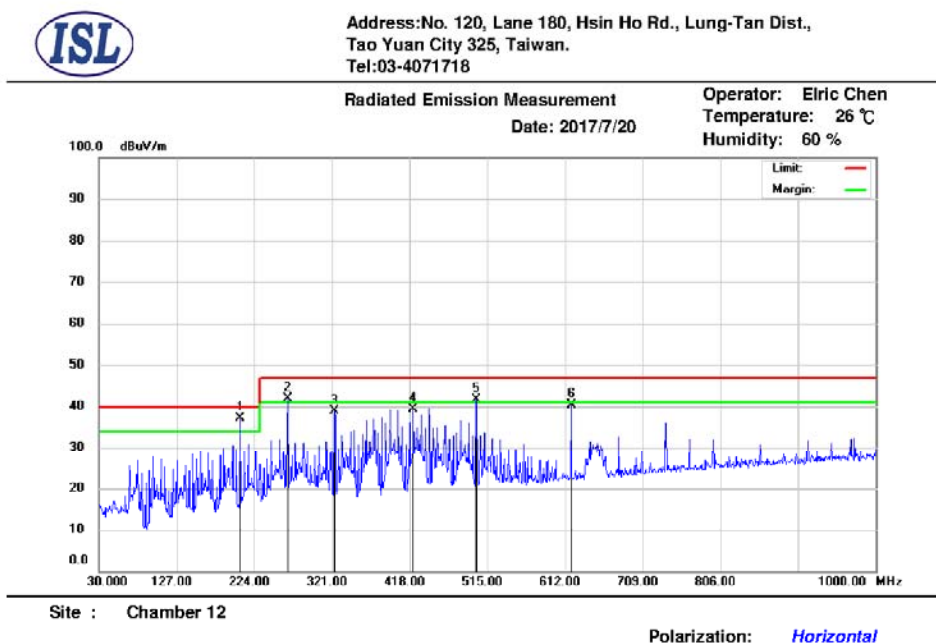
The highest internal source of the EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency 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 - Radiated Emissions (Horizontal)



Mk.	Frequency (MHz)	RX_F (dBuV)	Correct Factor (dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	206.54	56.15	-18.93	37.22	40.00	-2.78	345	172	peak
2	265.71	58.00	-16.16	41.84	47.00	-5.16	275	217	peak
3	323.91	53.12	-14.20	38.92	47.00	-8.08	292	62	peak
4	422.85	50.89	-11.44	39.45	47.00	-7.55	313	49	peak
5	501.42	51.54	-9.80	41.74	47.00	-5.26	305	53	peak
6	619.76	47.95	-7.47	40.48	47.00	-6.52	100	258	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

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.



Address: No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist.,
Tao Yuan City 325, Taiwan.
Tel: 03-4071718

Radiated Emission Measurement

Date: 2017/7/24

Operator: Shawn LI

Temperature: 26 °C

Humidity: 60 %



Site : Conduction 02

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	1034.00	54.68	-15.87	38.81	79.50	-40.69	339	257	peak
2	1136.00	54.62	-15.81	38.81	79.50	-40.69	169	209	peak
3	1374.00	54.86	-15.66	39.20	79.50	-40.30	202	99	peak
4	1578.00	53.16	-14.94	38.22	79.50	-41.28	100	145	peak
5	1646.00	55.80	-14.39	41.41	79.50	-38.09	100	233	peak
6	1765.00	56.96	-13.42	43.54	79.50	-35.96	213	251	peak

* Note:

Margin = Emission – Limit

Emission = Radiated Amplitude + Correct Factor

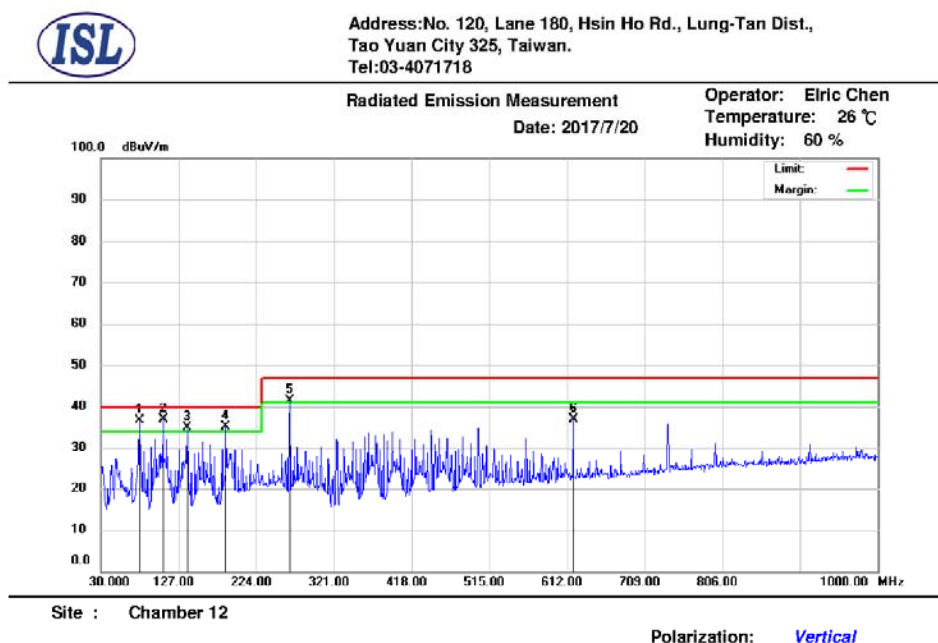
Correct Factor = Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit

Horn Antenna Distance: 3 meters

Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.

-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	78.50	57.26	-20.72	36.54	40.00	-3.46	236	149	peak
2	107.60	56.87	-19.96	36.91	40.00	-3.09	390	315	peak
3	137.67	51.75	-16.84	34.91	40.00	-5.09	212	262	peak
4	186.17	53.10	-17.89	35.21	40.00	-4.79	100	124	peak
5	265.71	57.55	-16.16	41.39	47.00	-5.61	129	176	peak
6	619.76	44.41	-7.47	36.94	47.00	-10.06	364	357	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

BILOG Antenna Distance: 10 meters

The CISPR 22 limits would be applied to all FCC Part 15 devices.

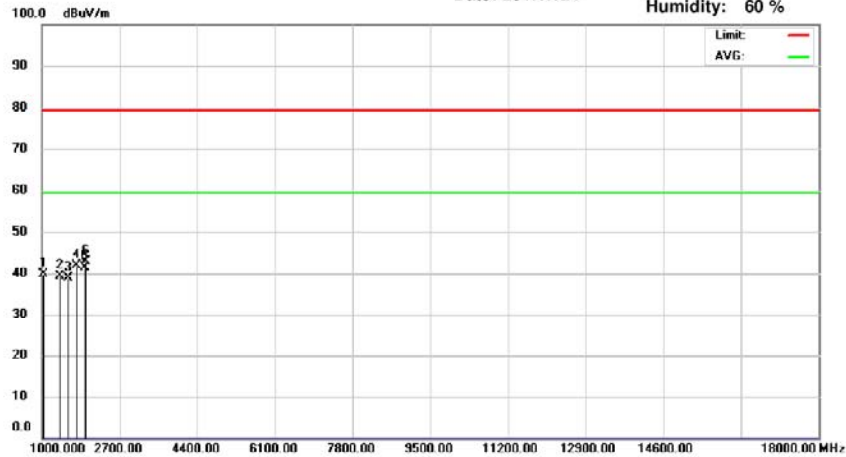
Below 1GHz test, if the peak measured value meets the QP limit, it is unnecessary to perform the QP measurement.



Address: No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist.,
Tao Yuan City 325, Taiwan.
Tel: 03-4071718

Radiated Emission Measurement
Date: 2017/7/24

Operator: Shawn Li
Temperature: 26 °C
Humidity: 60 %



Site : Conduction 02

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	1034.00	55.65	-15.87	39.78	79.50	-39.72	200	78	peak
2	1391.00	55.08	-15.66	39.42	79.50	-40.08	208	22	peak
3	1578.00	53.74	-14.94	38.80	79.50	-40.70	291	63	peak
4	1765.00	55.32	-13.42	41.90	79.50	-37.60	100	76	peak
5	1935.00	53.36	-12.03	41.33	79.50	-38.17	168	26	peak
6	1969.00	54.52	-11.75	42.77	79.50	-36.73	100	39	peak

* Note:

Margin = Emission – Limit

Emission = Radiated Amplitude + Correct Factor

Correct Factor = Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain

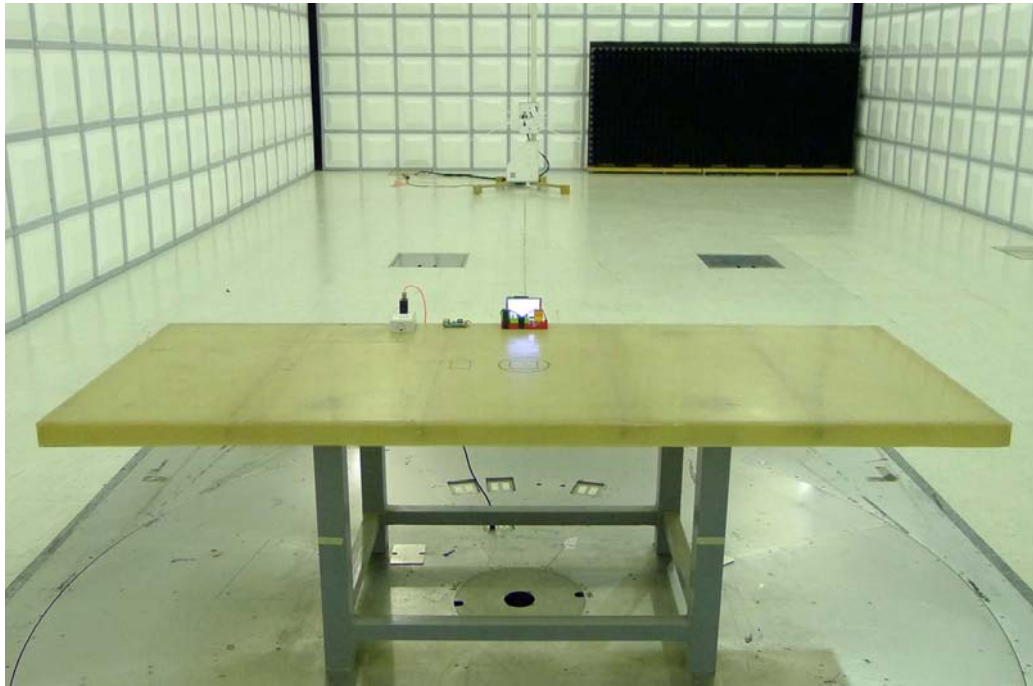
A margin of -8dB means that the emission is 8dB below the limit

Horn Antenna Distance: 3 meters

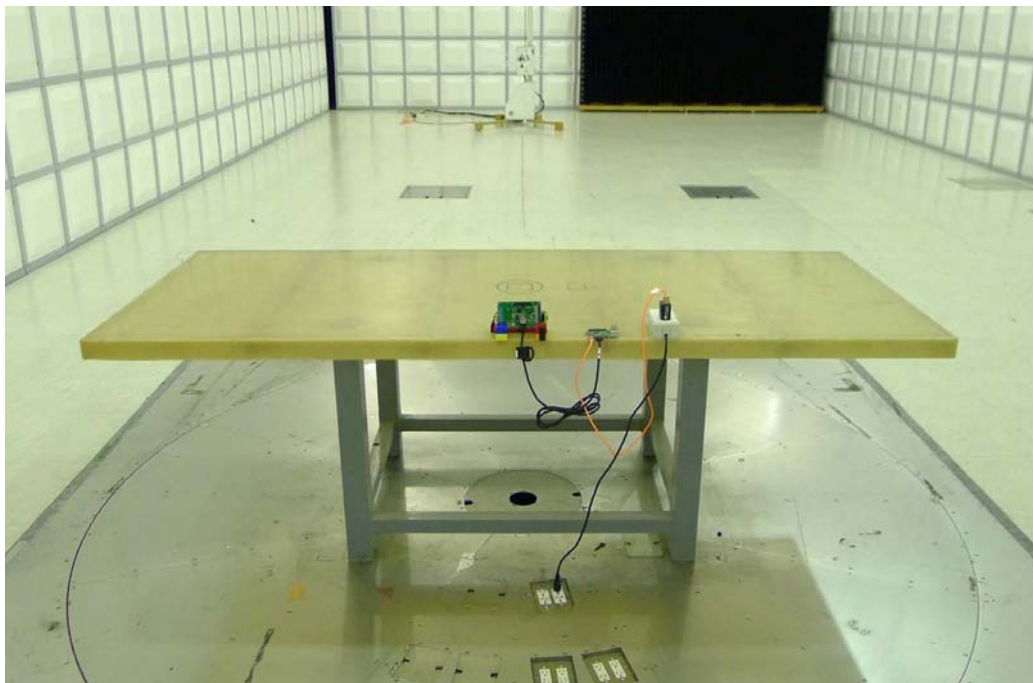
Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.

3.3 Test Setup Photo

Front View (30MHz~1GHz)



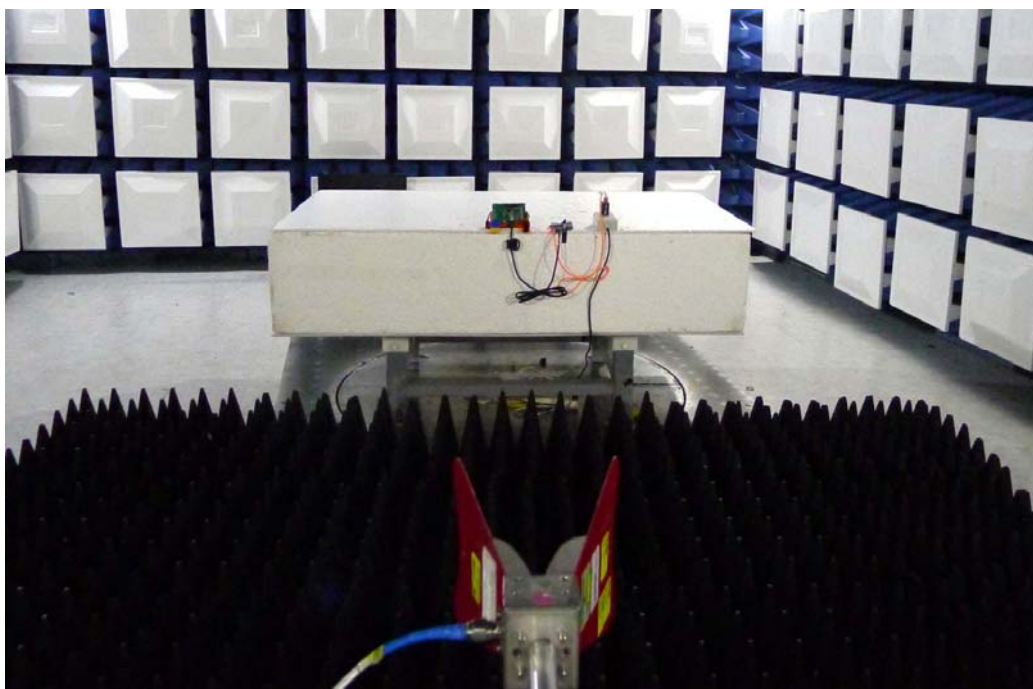
Back View (30MHz~1GHz)



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 Verification of 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 used 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 equipment.

* * * * *

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 20	R&S	ENV216	101477	07/15/2017	07/15/2018
Conduction 02	LISN 23	FCC	FCC-LISN-50-25-2-01	07038	12/30/2016	12/30/2017
Conduction 02	Conduction 02-1 Cable	WOKEN	CFD 300-NL	Conduction 02 -1	08/29/2016	08/29/2017
Conduction 02	EMI Receiver 14	ROHDE & SCHWARZ	ESCI	101034	06/06/2017	06/06/2018

Location Chmb12	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Radiation (Chamber12)	BILOG Antenna 18	Schwarzbeck	Schwarzbeck VULB 9168+EMCI-N-6-05	646	01/05/2017	01/05/2018
Radiation (Chamber12)	Preamplifier 26	EMCI	EMC9135	980297	12/27/2016	12/27/2017
Radiation (Chamber12)	Coaxial Cable Chmb 12-10M-01	PEWC	CFD400-NL	Chmb 12-10M-01	10/13/2016	10/13/2017
Radiation (Chamber12)	EMI Receiver 10	ROHDE & SCHWARZ	ESCI	100567	08/11/2016	08/11/2017

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	08/11/2016	08/11/2017
Rad. Above 1GHz	Horn Antenna 06 (1G~18G)	ETS	3117	00066665	11/30/2016	11/30/2017
Rad. Above 1GHz	Preamplifier 13 (1G~18G)	MITEQ	JS44-00101800-25-10P-44	1329256	08/12/2016	08/12/2017
Rad. Above 1GHz	Microwave Cable 24	HUBER SUHNER	EMC104-NM-S M-800	140905	09/26/2016	09/26/2017
Rad. Above 1GHz	Microwave Cable 29	EMC Instruments	EMC104-NM-S M-6000	170107	02/23/2017	02/23/2018

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 16-4-2:2011. The coverage factor $k = 2$ yields approximately a 95 % level of confidence.

<Conduction 02>

AMN: $\pm 2.88\text{dB}$

<Chamber 12 (10M)>

Horizontal

30MHz~200MHz: $\pm 3.93\text{dB}$

200MHz~1000MHz: $\pm 4.09\text{dB}$

Vertical

30MHz~200MHz: $\pm 4.58\text{dB}$

200MHz~1000MHz: $\pm 3.99\text{dB}$

<Chamber 14 (3M)>

1GHz~18GHz: $\pm 4.38\text{dB}$