Certificate

Issue Date: September 23, 2019
Ref. Report No. ISL-19LE512FB-MA

Product Name	:	PCIe CFexpress
Model(s)	:	PV130-CFX
Brand	:	Apacer
Applicant	:	Apacer Technology Inc.
Address	:	1F., No.32, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan , R.O.C.

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

The sample ISL received which bearing the trade name and model specified above has 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). And Our laboratories is the accredited laboratories and are approved according to ISO/IEC 17025.

Standards:

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

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.
The determination of the test results is determined by customer agreement, regulations or standard document specifications.
The Laboratory evaluates measurement inaccuracies based on regulatory or standard document specifications and is listed in the report for reference. The quantitative project part judges the conformity of the test results based on the evaluation results of the standard cited uncertainty, and the qualitative project does not temporarily evaluate the measurement uncertainty.

Bert Chen

Bert Chen / Director

International Standards Laboratory Corp.
☐ **LT LAB:**
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

Supplier's Declaration of Conformity

This device complies with Part 15 of the FCC Rules. The test result has been shown in the ISL test report with number ISL-19LE512FB-MA. 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.

Product Name:	PCIe CFexpress
Model(s):	PV130-CFX
Brand:	Apacer
Name of Responsible Party:	Apacer Technology Inc.
Address of Responsible Party:	1F., No.32, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan , R.O.C.
Contact Person:	Sheng-Wei Yu
Phone No.:	886-2-2267-8000
Fax No.:	886-2-2267-2261

We, Apacer Technology Inc., hereby declare that the equipment bearing the trade name and model number specified above was tested conforming to the applicable FCC Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the Commissions requirements.

Sheng-Wei Yu
Apacer Technology Inc.
Issue Date: September 23, 2019

Remarks: 1) The responsible party for Supplier's Declaration of Conformity must be located within the United States, 2) The above is a sample of SDoC, one should modify it to meet remark 1 requirement.

FCC TEST REPORT

of

CFR 47 Part 15 Subpart B Class B

Application Type: Supplier's Declaration of Conformity

Product : **PCIe CFexpress**

Model(s): **PV130-CFX**

Brand: **Apacer**

Applicant: **Apacer Technology Inc.**

Address: **1F., No.32, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan , R.O.C.**

TESTING
NVLAP LAB CODE 200234-0

Test Performed by:
International Standards Laboratory Corp.
<LT LAB>
*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-19LE512FB-MA**
Issue Date : **September 23, 2019**

This report totally contains 27 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.
A test report bearing the term and/or symbol shall include a statement that the report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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 4
1.5 I/O Cable Condition of EUT and Support Units 5
2. Power Line Conducted Emissions 6
2.1 Test Setup and Procedure 6
2.1.1 Test Setup 6
2.1.2 Test Procedure 6
2.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested) 6
2.2 Conduction Test Data: Configuration 1 7
2.3 Test Setup Photo 9
3. Radiated Emissions 11
3.1 Test Setup and Procedure 11
3.1.1 Test Setup 11
3.1.2 Test Procedure 14
3.1.3 Spectrum Analyzer Configuration (for the frequencies tested) 14
3.2 Radiation Test Data: Configuration 1 15
3.3 Test Setup Photo 19
4. Appendix 21
4.1 Appendix A: Warning Labels 21
4.2 Appendix B: Warning Statement 22
4.3 Appendix C: Test Equipment 23
4.3.1 Test Equipment List 23
4.3.2 Software for Controlling Spectrum/Receiver and Calculating Test Data 24
4.4 Appendix D: Uncertainty of Measurement 24
4.5 Appendix E: Photographs of EUT Please refer to the File of ISL-19LE512P-MA 25

1. General

1.1 Certification of Accuracy of Test Data

Standards:	FCC CFR Title 47 Part 15 Subpart B: Section 15.107 and 15.109 ANSI C63.4-2014 Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 6: 2016 Class B
Equipment Tested:	PCIe CFexpress
Model:	PV130-CFX
Brand:	Apacer
Applicant:	Apacer Technology Inc.
Sample received Date:	August 20, 2019
Final test Date:	refer to the date of test data
Test Site:	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:	Cheryl Tung
Test Engineer:	Juanwei Wu
Approved By:	Angus. Chu / Director

1.2 Description of EUT

EUT

This report test data using the report number 19LE512FB

Description	PCIe CFexpress
Condition	Pre-Production
Model	PV130-CFX
Serial Number	N/A
Power	From Personal Computer Supply
Control IC	PS5008
PCB Number	Q023008GF004801E
Memory Capacity	480GB
Highest working frequency	5GHz

The memory capacities listed below is chosen by the applicant to be the representative configuration for testing in this report.

Test configurations:

Configuration	Control IC	PCB Number	Memory Capacity
1	PS5008	Q023008GF004801E	480GB

EMI Noise Source:

Refer to the photo	Crystal	Point
EUT-7	25MHz	Y1

EMI Solution:
NA

1.3 Description of Support Equipment

No	Unit	Model / Serial No.	Brand	Power Cord	FCC ID
1	LCD Monitor	P2416D S/N: N/A	DELL	Non-shielded	FCC DOC
2	PS/2 Keyboard	Y-S0002 S/N: N/A	Logitch	N/A	FCC DOC
3	PS/2 Mouse	M-SBM96B S/N: N/A	Logitch	N/A	FCC DOC
4	Printer	C930 S/N: N/A	HP	Non-shielded	FCC DOC
5	Modem	DM1414 S/N: N/A	Aceex	Non-shielded	FCC DOC
6	Personal Computer	HP ProDesk 400 G3 MT S/N: N/A	HP	Non-shielded	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. PC running Winthrax.exe to read and write the EUT.
2. Send signal to the Printer through PC USB Port.
3. Send signal to the Modem through PC Serial Port.
4. Send H Pattern to the LCD Monitor through PC D-SUB Port.
5. Repeat the above steps.

	Filename	Issued Date
EUT	Winthrax.exe	06/14/2005
LCD Monitor	IntelEMC	04/11/2007
Printer	IntelEMC	04/11/2007
Modem	IntelEMC	04/11/2007

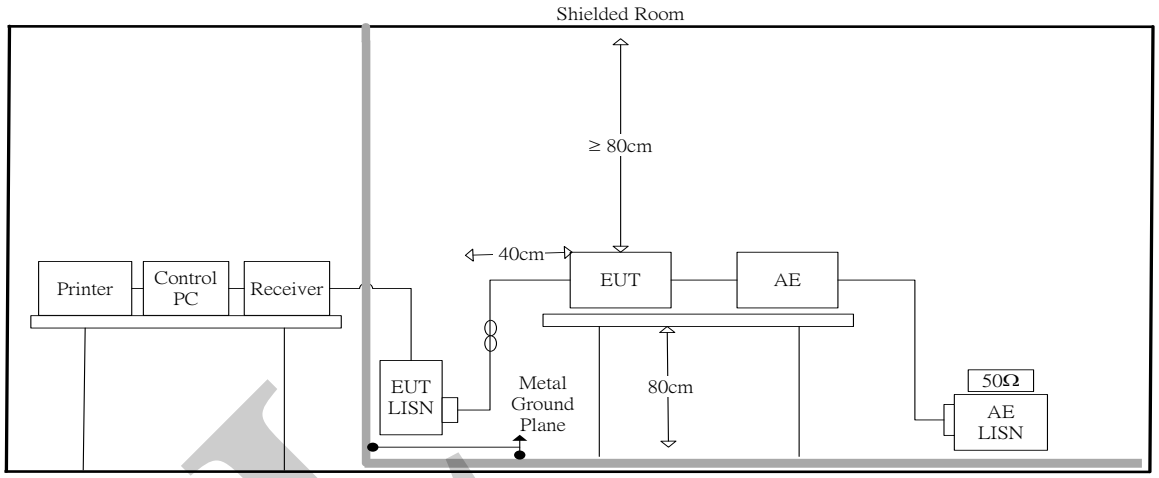
1.5 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type
AC Power Cable	110V (~240V) to PC SPS	1.8m	Non-shielded
Monitor Data Cable	Monitor D-SUB Port to PC D-SUB Port	1.8m	Shielded (with core)
Keyboard Data Cable	PS/2 Keyboard to PC PS/2 Port	1.8m	Shielded
Mouse Data Cable	PS/2 Mouse to PC PS/2 Port	1.8m	Shielded
Printer Data Cable	Printer to PC USB Port	1.8m	Shielded
Modem Data Cable	Modem to PC Serial Port	1.8m	Shielded

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 shielded room 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.

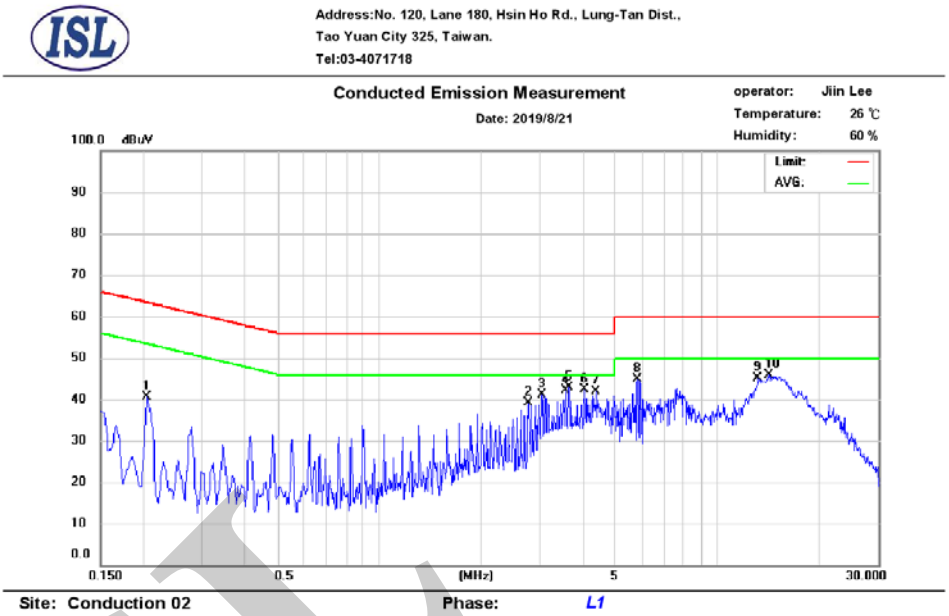
The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

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

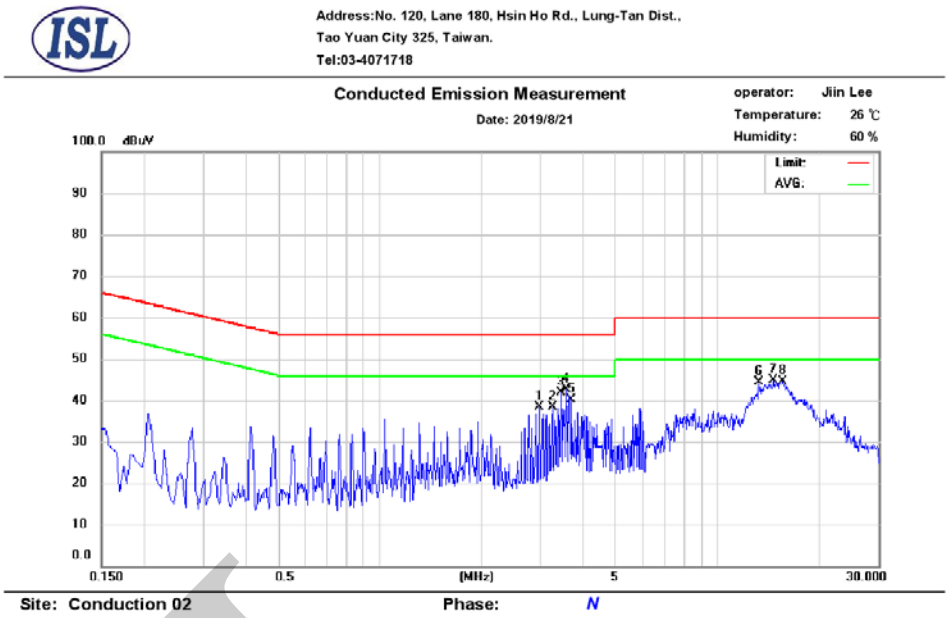
- Line



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	0.206	29.20	26.64	9.62	38.82	63.37	-24.55	36.26	53.37	-17.11
2	2.770	28.00	20.48	9.71	37.71	56.00	-18.29	30.19	46.00	-15.81
3	3.038	33.59	26.73	9.72	43.31	56.00	-12.69	36.45	46.00	-9.55
4	3.578	37.79	27.37	9.73	47.52	56.00	-8.48	37.10	46.00	-8.90
5	3.646	38.71	27.19	9.73	48.44	56.00	-7.56	36.92	46.00	-9.08
6	4.050	34.03	24.30	9.74	43.77	56.00	-12.23	34.04	46.00	-11.96
7	4.386	31.94	25.82	9.74	41.68	56.00	-14.32	35.56	46.00	-10.44
8	5.806	33.15	26.57	9.77	42.92	60.00	-17.08	36.34	50.00	-13.66
9	13.226	31.30	26.70	9.88	41.18	60.00	-18.82	36.58	50.00	-13.42
10	14.266	31.71	26.33	9.88	41.59	60.00	-18.41	36.21	50.00	-13.79

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



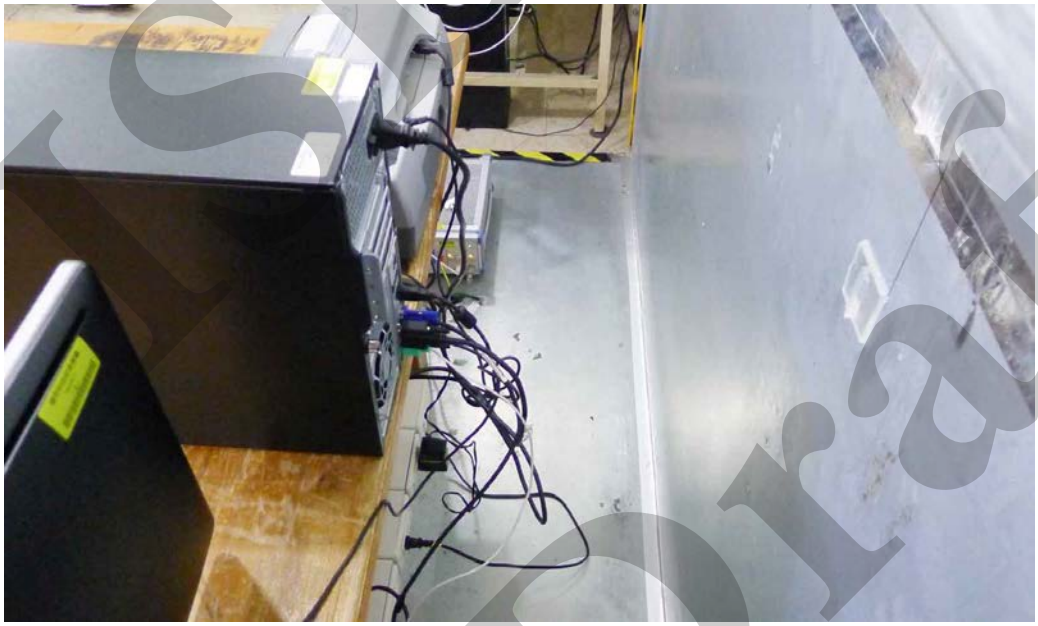
No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	2.970	32.94	26.66	9.73	42.67	56.00	-13.33	36.39	46.00	-9.61
2	3.242	31.94	23.44	9.74	41.68	56.00	-14.32	33.18	46.00	-12.82
3	3.442	36.67	29.04	9.75	46.42	56.00	-9.58	38.79	46.00	-7.21
4	3.578	37.69	27.36	9.75	47.44	56.00	-8.56	37.11	46.00	-8.89
5	3.714	36.04	25.65	9.75	45.79	56.00	-10.21	35.40	46.00	-10.60
6	13.298	30.73	25.70	9.93	40.66	60.00	-19.34	35.63	50.00	-14.37
7	14.686	30.60	25.42	9.95	40.55	60.00	-19.45	35.37	50.00	-14.63
8	15.686	30.48	25.48	9.97	40.45	60.00	-19.55	35.45	50.00	-14.55

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

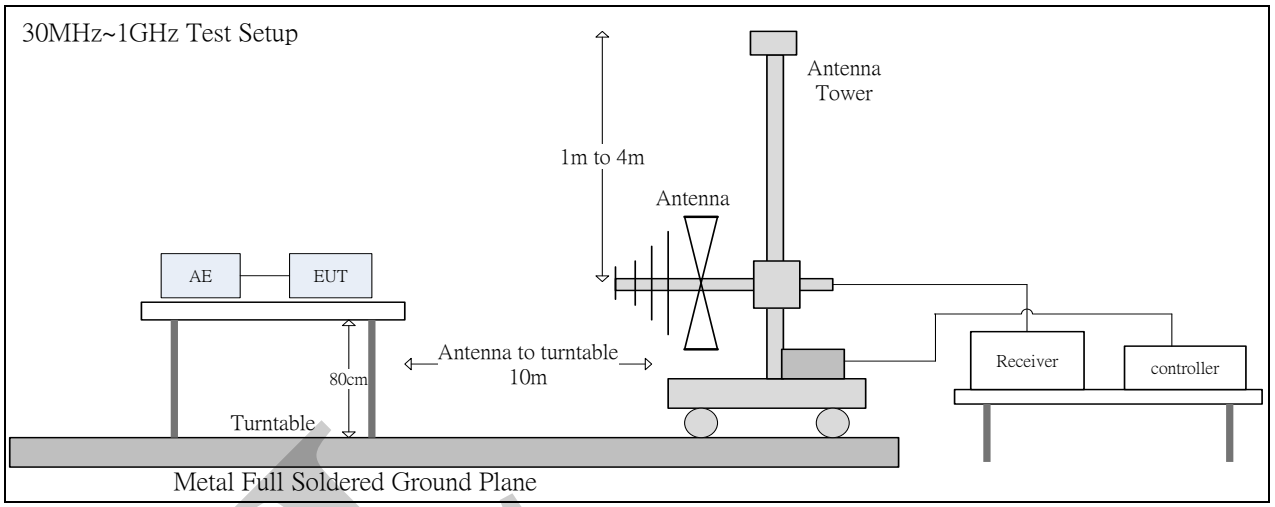
Back View

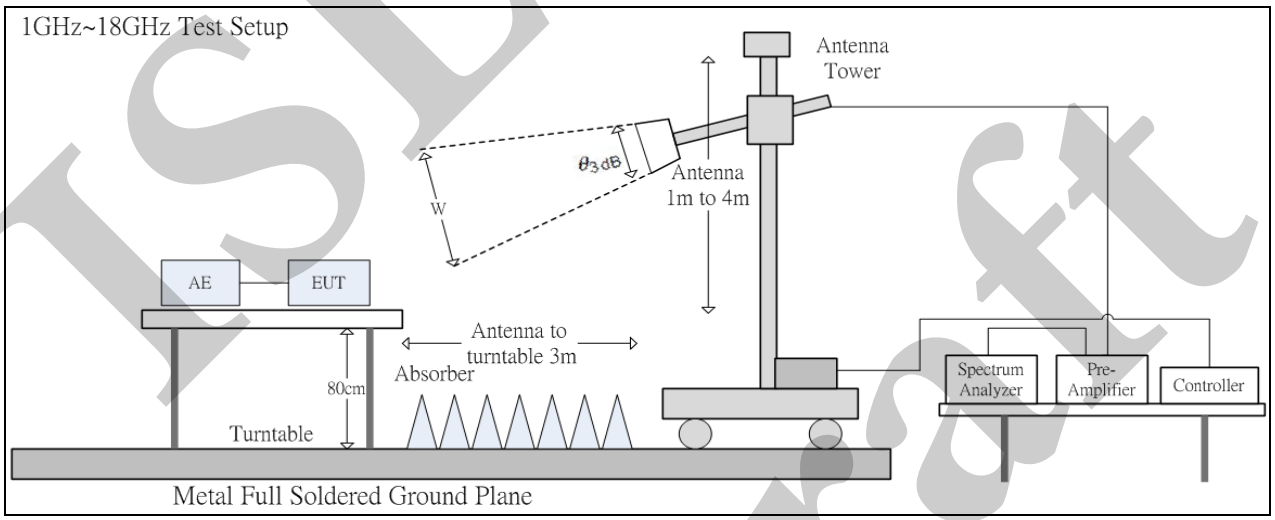


3. Radiated Emissions

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	$\theta_{3\,dB}$ (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
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	$\theta_{3\,dB}$ (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	$\theta_{3\,dB}$(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.

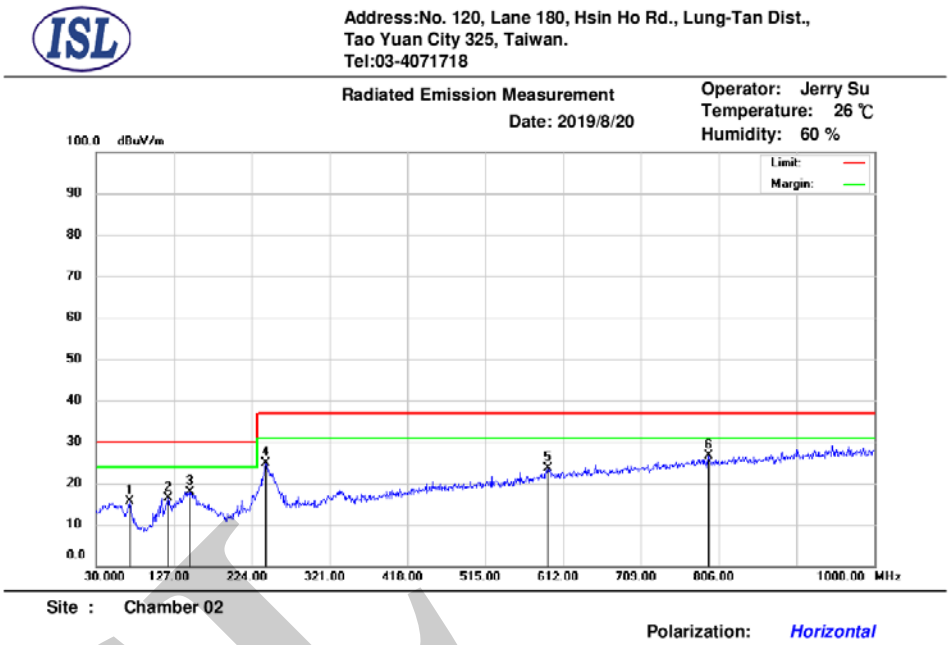
The highest internal source of the EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency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

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)



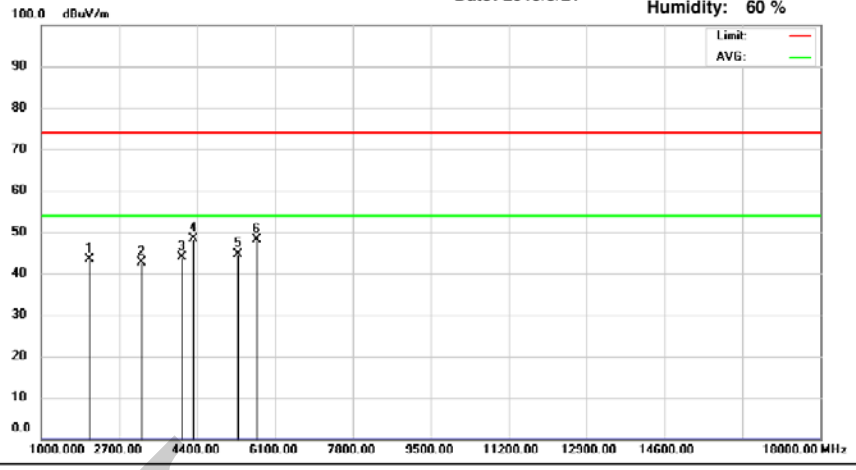
Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	71.71	35.00	-19.25	15.75	30.00	-14.25	400	118	QP
2	120.21	35.14	-18.67	16.47	30.00	-13.53	400	122	QP
3	146.40	34.14	-16.21	17.93	30.00	-12.07	400	142	QP
4	241.46	41.87	-16.99	24.88	37.00	-12.12	300	166	QP
5	593.57	31.64	-7.98	23.66	37.00	-13.34	100	360	QP
6	793.39	31.15	-4.52	26.63	37.00	-10.37	100	130	QP

* 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
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: 2019/8/21

Operator: Juanwei
Temperature: 26 ℃
Humidity: 60 %



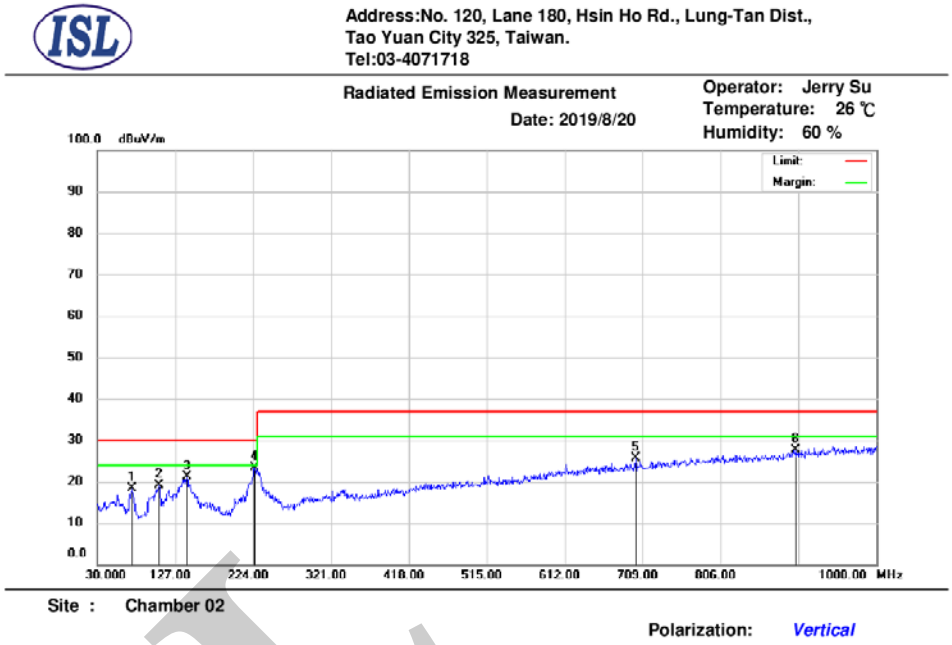
Site : Chamber 14

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	2054.00	55.81	-12.54	43.27	74.00	-30.73	200	144	peak
2	3176.00	53.26	-10.69	42.57	74.00	-31.43	150	165	peak
3	4060.00	53.75	-9.92	43.83	74.00	-30.17	100	179	peak
4	4315.00	58.67	-10.23	48.44	74.00	-25.56	200	147	peak
5	5301.00	53.95	-9.32	44.63	74.00	-29.37	100	201	peak
6	5692.00	57.05	-8.97	48.08	74.00	-25.92	100	187	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
Antenna Distance: 3 meters
No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.
Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.

-Radiated Emissions (Vertical)



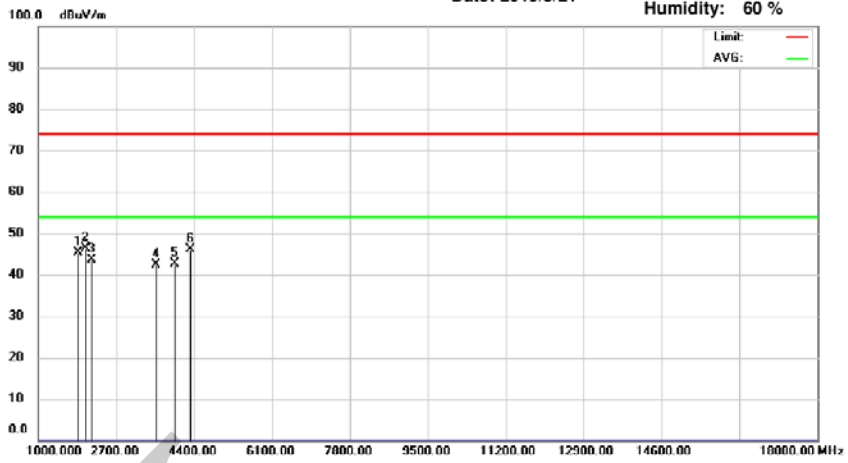
Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	73.65	38.16	-19.75	18.41	30.00	-11.59	300	29	QP
2	106.63	39.24	-20.04	19.20	30.00	-10.80	400	66	QP
3	141.55	37.63	-16.54	21.09	30.00	-8.91	100	0	QP
4	225.94	42.12	-18.78	23.34	30.00	-6.66	100	17	QP
5	700.27	31.80	-6.23	25.57	37.00	-11.43	300	99	QP
6	900.09	30.93	-3.19	27.74	37.00	-9.26	200	251	QP

* 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
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

Operator: Juanwei
Temperature: 26 ℃
Date: 2019/8/21
Humidity: 60 %



Site : Chamber 14

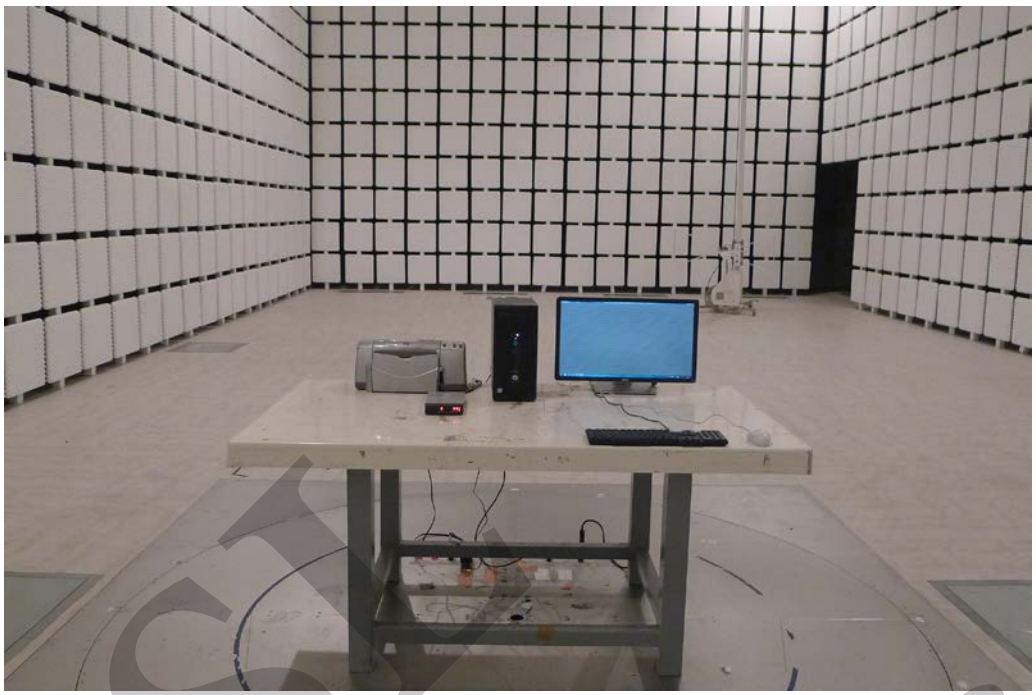
Polarization: *Vertical*

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	1867.00	58.40	-13.03	45.37	74.00	-28.63	100	157	peak
2	2020.00	58.96	-12.55	46.41	74.00	-27.59	200	154	peak
3	2156.00	56.56	-12.88	43.68	74.00	-30.32	150	66	peak
4	3567.00	52.17	-9.86	42.31	74.00	-31.69	100	360	peak
5	3975.00	52.51	-9.84	42.67	74.00	-31.33	100	199	peak
6	4315.00	56.34	-10.23	46.11	74.00	-27.89	150	190	peak

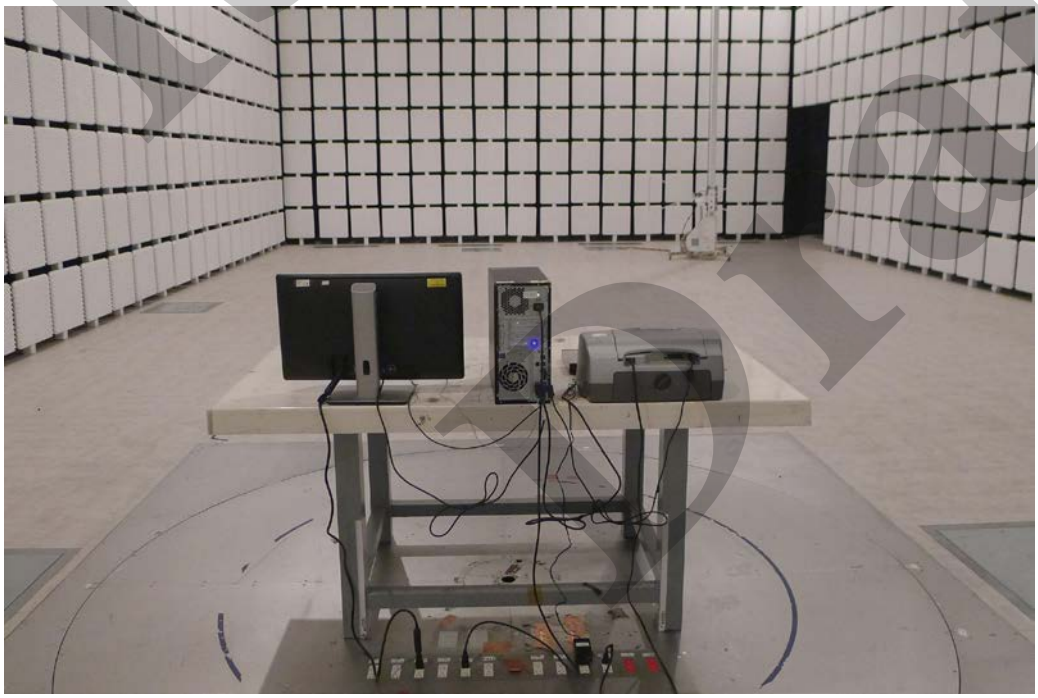
* Note:
Margin = Emission – Limit
Emission = Radiated Amplitude + Correct Factor
Correct Factor = Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
Antenna Distance: 3 meters
No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.
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

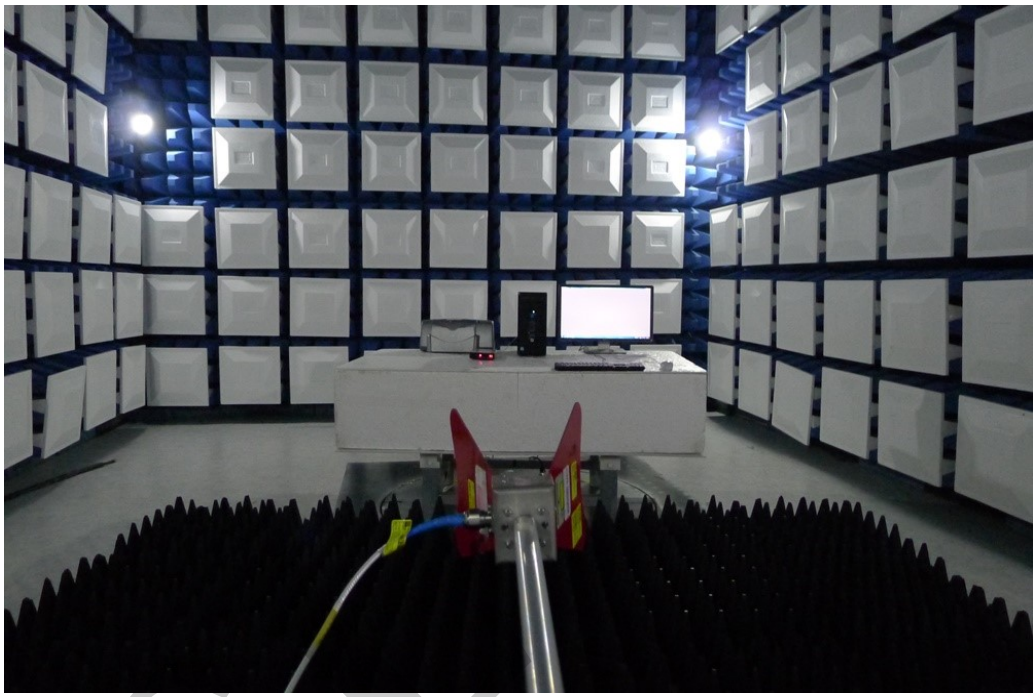
Front View (30MHz~1GHz)



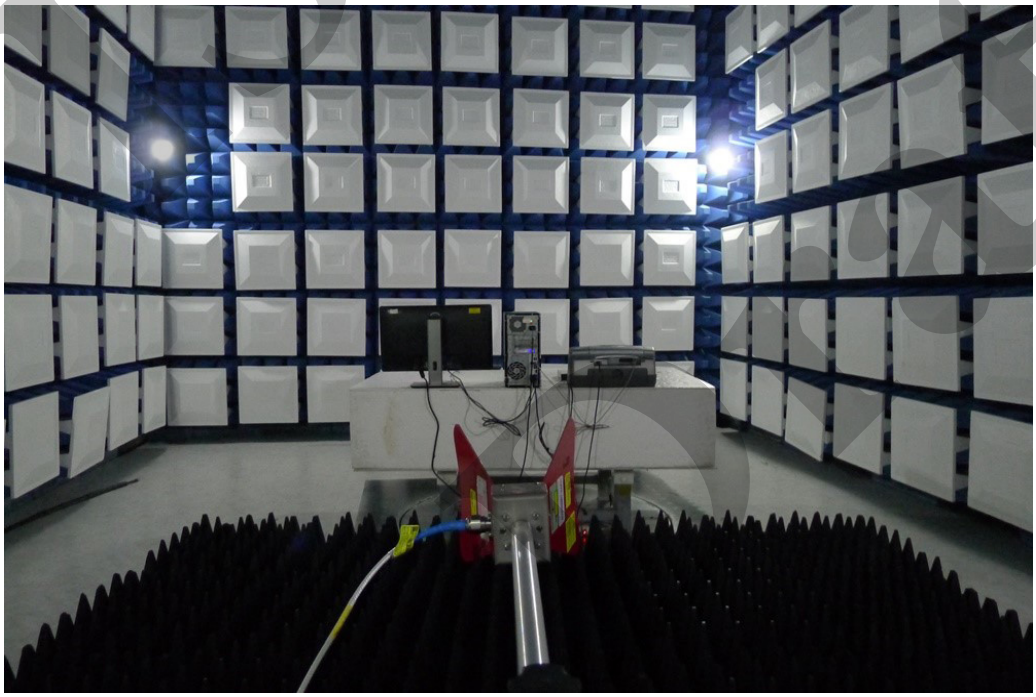
Back View (30MHz~1GHz)



Front View (above 1GHz)



Back View (above 1GHz)



4. Appendix

4.1 Appendix A: Warning Labels

Label Requirements

A Class B digital device subject to authorization under Supplier's Declaration of Conformity of FCC shall carry a 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.

Devices subject to authorization under Supplier's Declaration of Conformity may be labeled with FCC logo on a voluntary basis as a visual indication that the product complies with the applicable FCC requirements

The sample label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.

When the device is so small or for such use that it is impracticable to label it with the statement specified under (§15.19 Labeling requirements) paragraph (a) of this section in a font that is four-point or larger, and the device does not have a display that can show electronic labeling, then the information required by this paragraph shall be placed in the user manual and must also either be placed on the device packaging or on a removable label attached to the device.

4.2 Appendix B: Warning Statement

Statement Requirements

The operators' manual for a Class B 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 B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

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 operator's 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 26	R&S	ENV216	102378	11/21/2018	11/21/2019
Conduction 02	LISN 23	R&S	ENV216	101477	07/31/2019	07/31/2020
Conduction 02	Conduction 02-1 Cable	WOKEN	CFD 300-NL	Conduction 02 -1	08/23/2019	08/23/2020
Conduction 02	EMI Receiver 14	ROHDE& SCHWARZ	ESCI	101034	05/31/2019	05/31/2020

Location Chamber02	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Radiation (Chamber02)	BILOG Antenna 17	Schwarzbeck	Schwarzbeck VULB 9168+EMCI-N -6-05	645	03/06/2019	03/06/2020
Radiation (Chamber02)	Preamplifier 25	EMCI	EMC9135	980295	02/27/2019	02/27/2020
Radiation (Chamber02)	Coaxial Cable Chmb 02-10M-02	EMC	RG214U	Chmb 02-10M-02	08/23/2019	08/23/2020
Radiation (Chamber02)	EMI Receiver 12	ROHDE & SCHWARZ	ESCI	100804	08/14/2019	08/14/2020

Location Chmb14	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Rad. Above 1GHz	Spectrum Analyzer 25	R&S	FSV 40	101499	11/03/2018	11/03/2019
Rad. Above 1GHz	Spectrum Analyzer 24 (1G~26.5GHz)	Agilent	N9010A	MY49060537	08/29/2018	08/29/2019
Rad. Above 1GHz	Horn Antenna 06	ETS-Lindgren	3117	00066665	10/31/2018	10/31/2019
Rad. Above 1GHz	Preamplifier 13	MITEQ	JS44-00101800-25-10P-44	1329256	11/21/2018	11/21/2019
Rad. Above 1GHz	Microwave Cable 35	WOKEN	WCBA-WCA04NM.SM6	Chamber 14-1	01/31/2019	01/31/2020
Rad. Above 1GHz	Microwave Cable 36	WOKEN	WCBA-WCA04NM.SM0.8	Chamber 14-2	01/31/2019	01/31/2020

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 laboratory measurement uncertainty accordance with refers to CISPR 16-4-2. If Ulab is less than or equal to Ucispr in Table 1, then the test report may either state the value of Ulab or state that Ulab is less than Ucispr.
The coverage factor k = 2 yields approximately a 95 % level of confidence.

<Conduction 02>
AMN: ±2.90dB
ISN T2: ±3.04dB
ISN T4: ±3.05dB
ISN T8: ±3.05dB
CVP: ±3.62dB
CP: ±2.88dB

<Chamber 02 (10M)>
Horizontal
30MHz~200MHz: ±4.69dB
200MHz~1000MHz: ±4.30dB
Vertical
30MHz~200MHz: ±4.65dB
200MHz~1000MHz: ±4.35dB

<Chamber 14 (3M)>
1GHz~18GHz: ±4.66dB
18GHz~26.5GHz: ±4.48dB
26.5GHz~40GHz: ±4.58dB

4.5 Appendix E: Photographs of EUT

Please refer to the File of **ISL-*19LE512*P-MA**