Certificate

Issue Date: November 22, 2021
Ref. Report No. ISL-21LE900FCCIC

Product Name	:	Mainboard
Model(s)	:	3I110BW
Brand	:	LEX
Applicant	:	LEX COMPUTECH CO.,LTD.
Address	:	3F.No.77, LI DE St. Chung Ho District 235 New Taipei City, Taiwan

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 7: 2020
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.
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.

Angus Chu

Angus Chu / Sr. Manager

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No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan

TEST REPORT

of

CFR 47 Part 15 Subpart B Class A
&
Industry Canada Interference-Causing Equipment Standard ICES-003 Class A

Application Type: Supplier's Declaration of Conformity

Product :	**Mainboard**
Model(s):	**3I110BW**
Brand:	**LEX**
Applicant:	**LEX COMPUTECH CO.,LTD.**
Address:	**3F.No.77, LI DE St. Chung Ho District 235 New Taipei City, Taiwan**

Test Performed by:

International Standards Laboratory Corp. LT Lab.
TEL: +886-3-263-8888 FAX: +886-3-263-8899
No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan

Report No.: **ISL-21LE900FCCIC**
Issue Date : **November 22, 2021**

Contents of Report

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 7: 2020 Class A
Equipment Tested:	Mainboard
Model:	3I110BW
Brand:	LEX
Applicant:	LEX COMPUTECH CO.,LTD.
Sample received Date:	November 15, 2021
Final test Date:	refer to the date of test data
Test Site:	Chamber 02; Chamber 14; Conduction 04
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:	Helena Tsai
Test Engineer:	Lawrence Wang Lawrence Wang
Approved By:	Benson Chen Benson Chen / Manager

1.2 Description of EUT

EUT

Description	Mainboard
Model	3I110BW
Condition	Pre-Production
Serial Number	N/A
Maximum display resolution	1920*1080/ 60Hz
Highest working frequency	1.8GHz

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

Component	Vendor	Description
CPU	INTEL	Core i7-1185GRE 1.80GHz

The I/O ports of EUT are listed below:

I/O Port Type	Quantity
DC INPUT Port	1
VGA Port	1
HDMI Port	1
USB 2.0 Port	4
COM Port	4
LAN Port (10Mbps/100Mbps/1Gbps)	3
DIO Port (For Engineer Use)	1

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

For test configuration:

Configuration	1
CPU	Core i7-1185GRE 1.80GHz
Mother Board	3I110BW
Memory	32G DDR4 SODRAMx1, 266MHz, 1.2V
SSD	M.2 SSD(S42mm),64GB
Power Supplier	FSP (Model: FSP084-DHAN3)
Display resolution	HDMI +VGA 1920*1080/ 60Hz

Support Unit:

Component	Vendor	Description
RAM	DSL	32G DDR4 SODRAMx1, 266MHz, 1.2V
M.2	MEMXPRO	M.2 SSD(S42mm),64GB
Adapter	FSP	FSP084-DHAN3

EMI Noise Source:
Please refer to technical document

EMI Solution:
Please refer to technical document

1.3 Description of Support Equipment

For test configuration, Support unit

No	Unit	Model / Serial No.	Brand	Power Cord	FCC ID
1	USB Keyboard	SK-8175 S/N: N/A	DELL	N/A	FCC DOC
2	USB Mouse	MOCZUL S/N: N/A	DELL	N/A	FCC DOC
3	External HDD	SK2-U31AS-AKT S/N: N/A	AKiTiO	N/A	FCC DOC
4	External HDD	SK2-U31AS-AKT S/N: N/A	AKiTiO	N/A	FCC DOC
5	24” LCD Monitor*1	UP2414Qt S/N: N/A	DELL	Non-shielded	FCC DOC
6	24” LCD Monitor*1	P2416D S/N: N/A	DELL	Non-shielded	FCC DOC
7	Personal Computer	RW7 S/N: N/A	Lenovo	Non-shielded	FCC DOC
8	Modem	DM1414 S/N: N/A	Aceex	Non-shielded	FCC DOC
9	Modem	DM1414 S/N: N/A	Aceex	Non-shielded	FCC DOC
10	Modem	DM1414 S/N: N/A	Aceex	Non-shielded	FCC DOC
11	Modem	DM1414 S/N: N/A	Aceex	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:

For test configuration :

1. Send H pattern to the LCD Monitor through HDMI Port.
2. Send H pattern to the LCD Monitor through VGA Port.
3. Read and write data through EUT SSD.
4. Read and write data Modem through EUT COM Port.
5. Read and write External HDD through EUT USB 2.0 Port.
6. Receive and transmit packet of EUT to the Personal Computer through LAN Port.
7. Repeat the above steps.

	File	Version
LCD Monitor	Intel EMC	1.1
EUT SSD	Intel EMC	1.1
External HDD	Intel EMC	1.1
Modem	Intel EMC	1.1
LAN	Ping	

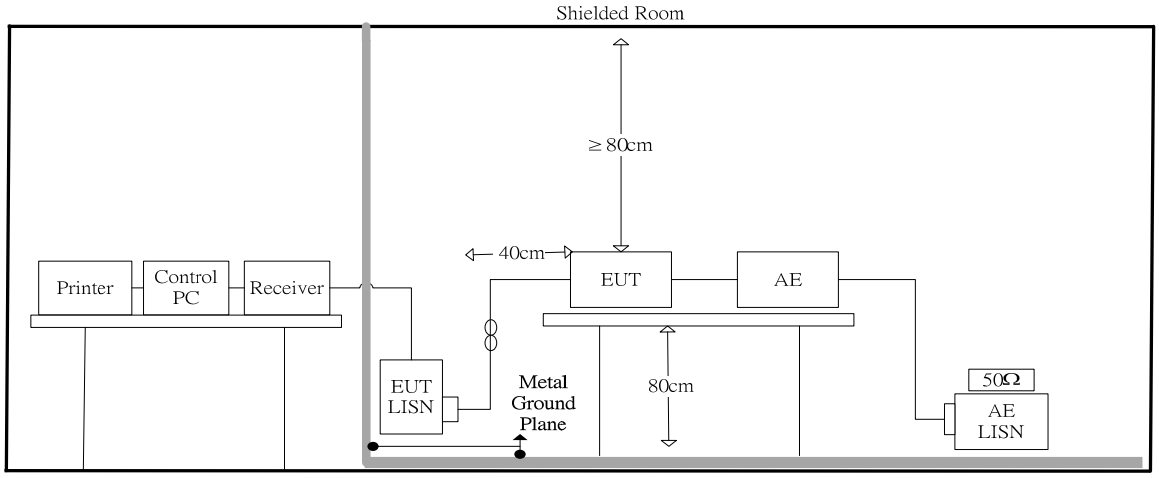
1.5 I/O Cable Condition of EUT and Support Units

Description	Path	Length	Shielding	Core	Remark
AC Power Cord	100~240V to EUT Adapter SPS	1.8m	No	No	
HDMI Cable	24” LCD Monitor to EUT HDMI Port	1.8m	Yes	No	
VGA Cable	24” LCD Monitor to EUT VGA Port	1.8m	Yes	Yes	
USB Keyboard Cable	USB Keyboard to EUT USB 2.0 Port	1.8m	Yes	No	
USB Mouse Cable	USB Mouse to EUT USB 2.0 Port	1.8m	Yes	No	
USB Cable*2	External HDD to EUT USB 2.0 Port.	1.27m	Yes	No	
DATA Cable*4	Modem to EUT COM Port	1.8m	Yes	Yes	
LAN Cable*3	Personal Computer to EUT LAN Port	10m	No	No	Cat 5e

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

2.1.4 Limit

Conducted emissions limits of Class_A equipment. (AC mains power terminals):

Frequency range (MHz)	Quasi-peak (dBμV)	Average (dBμV)
0.15-0.50	79	66
0.50-5.0	73	60
5.0-30	73	60

Note 1: Conducted emissions limits of FCC CFR Title 47 Part 15 Subpart B & Industry Canada Interference-Causing Equipment Standard ICES-003 are same.
Note2: The more stringent limit applies at transition frequencies.

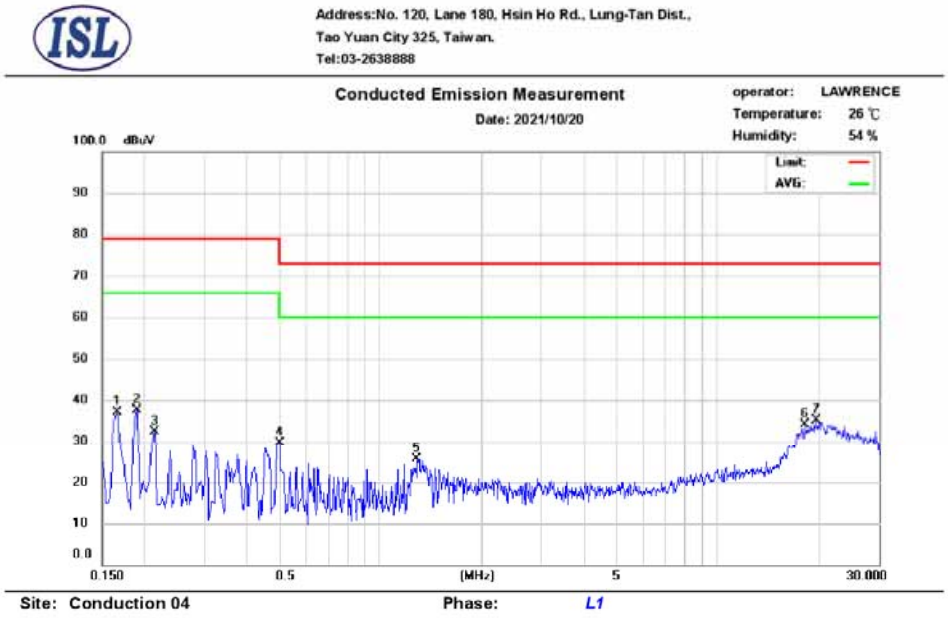
Conducted emissions limits of Class_B equipment. (AC mains power terminals):

Frequency range (MHz)	Quasi-peak (dBμV)	Average (dBμV)
0.15-0.50	66 to 56*	56-46*
0.50-5.0	56	46
5.0-30	60	50
*The limit level in dBμV decreases linearly with the logarithm of frequency.		

Note 1: Conducted emissions limits of FCC CFR Title 47 Part 15 Subpart B & Industry Canada Interference-Causing Equipment Standard ICES-003 are same.
Note2: The more stringent limit applies at transition frequencies.

2.2 Conduction Test Data: Configuration 1

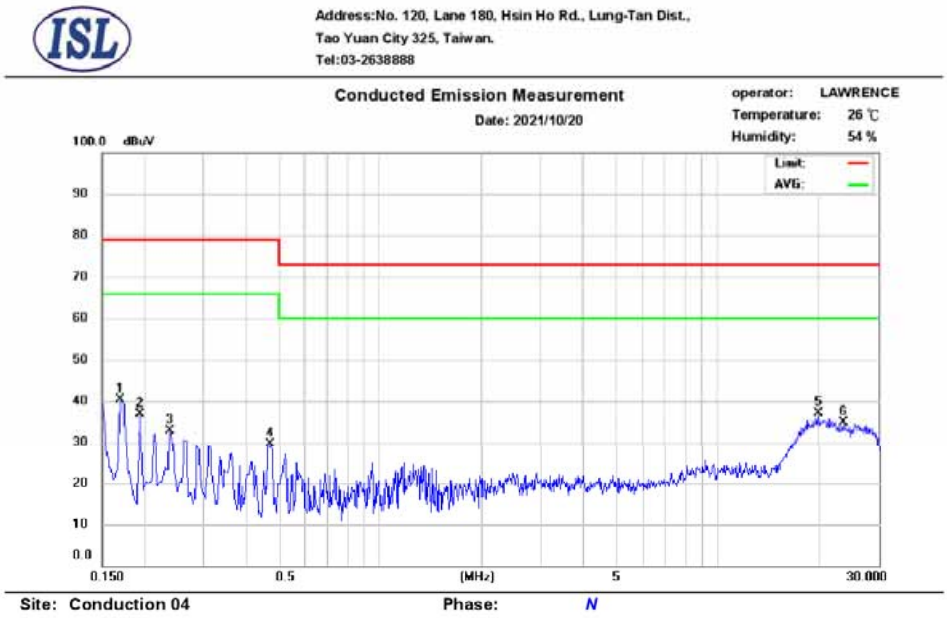
- Line



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	0.166	31.19	10.29	9.66	40.85	79.00	-38.15	19.95	66.00	-46.05
2	0.190	29.71	11.55	9.65	39.36	79.00	-39.64	21.20	66.00	-44.80
3	0.214	20.47	3.80	9.65	30.12	79.00	-48.88	13.45	66.00	-52.55
4	0.502	9.82	0.41	9.68	19.50	73.00	-53.50	10.09	60.00	-49.91
5	1.286	11.20	6.45	9.70	20.90	73.00	-52.10	16.15	60.00	-43.85
6	18.218	17.10	11.56	10.00	27.10	73.00	-45.90	21.56	60.00	-38.44
7	19.590	18.34	12.78	10.02	28.36	73.00	-44.64	22.80	60.00	-37.20

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



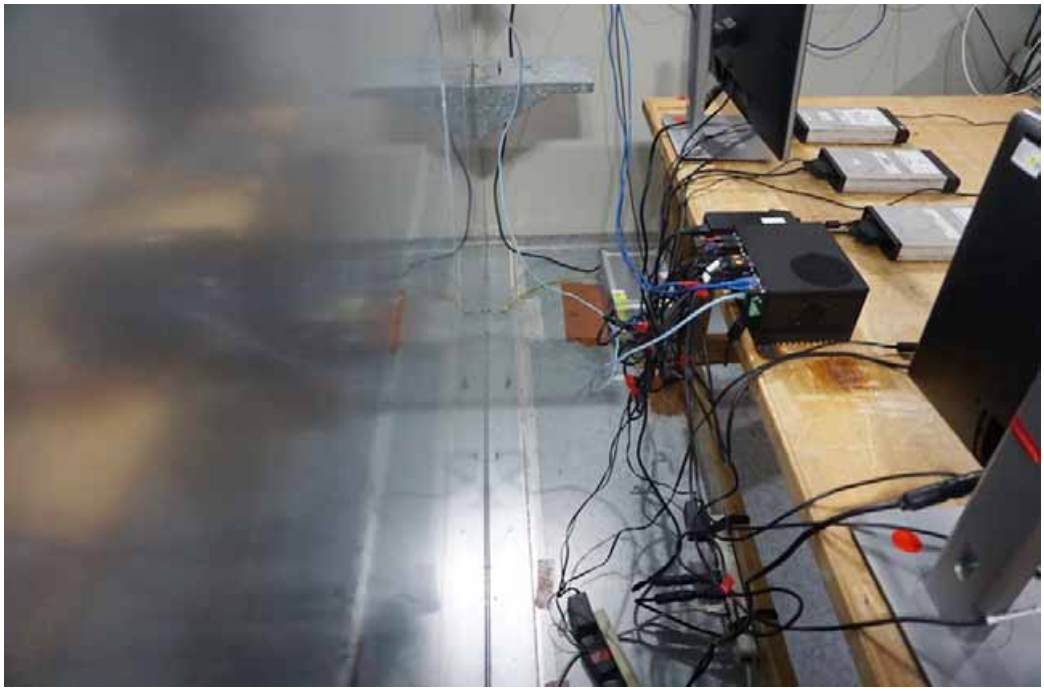
No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	0.170	22.76	7.13	9.65	32.41	79.00	-46.59	16.78	66.00	-49.22
2	0.194	19.90	1.09	9.64	29.54	79.00	-49.46	10.73	66.00	-55.27
3	0.238	16.12	4.19	9.64	25.76	79.00	-53.24	13.83	66.00	-52.17
4	0.474	17.35	9.67	9.66	27.01	79.00	-51.99	19.33	66.00	-46.67
5	20.038	20.18	14.23	10.13	30.31	73.00	-42.69	24.36	60.00	-35.64
6	23.746	21.22	16.46	10.16	31.38	73.00	-41.62	26.62	60.00	-33.38

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

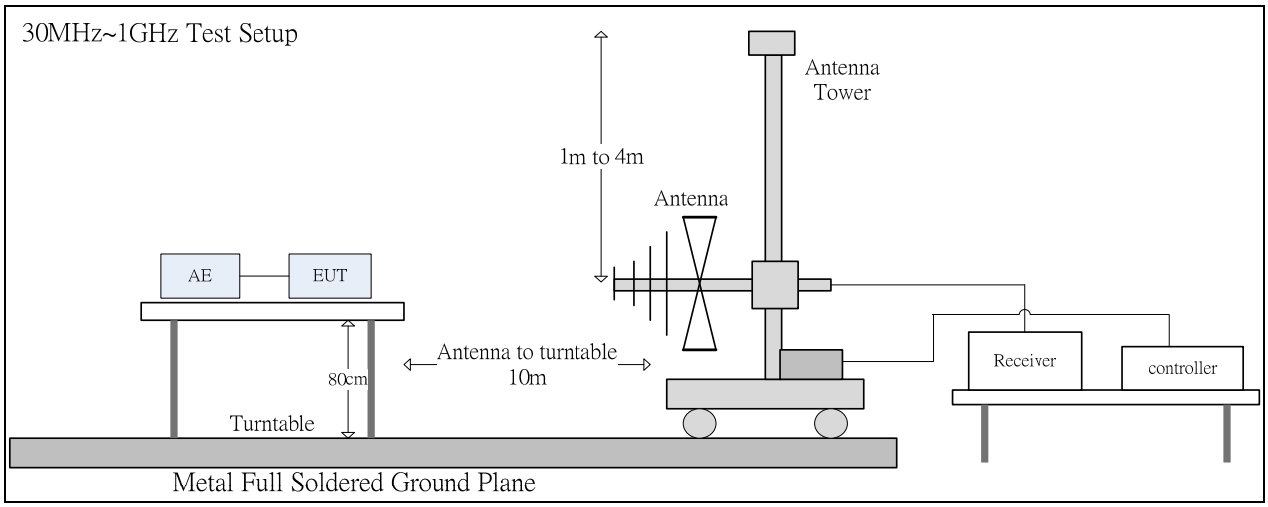
Back View

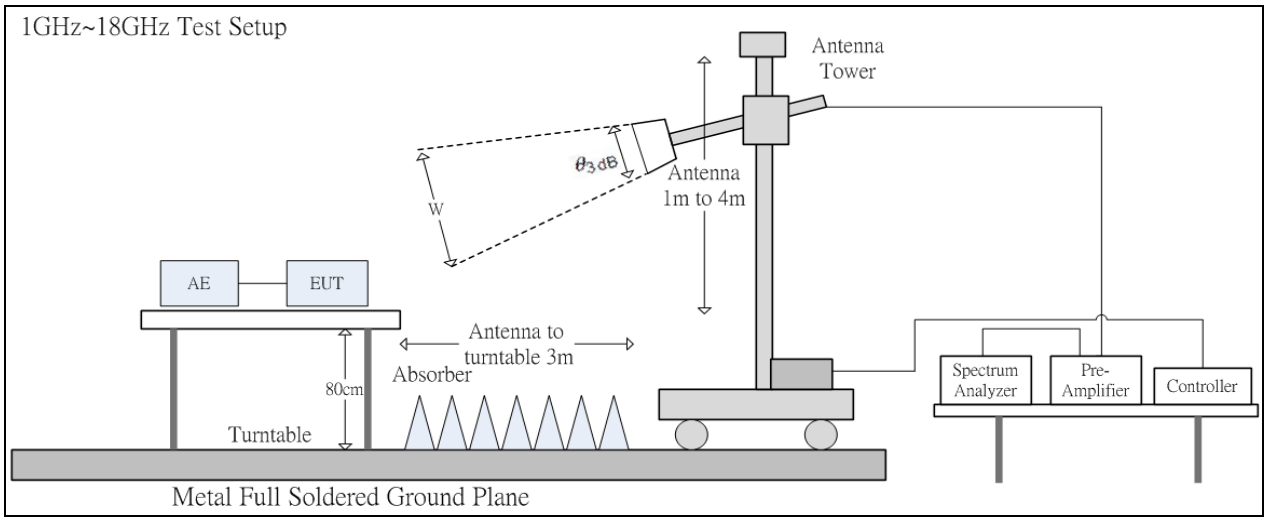


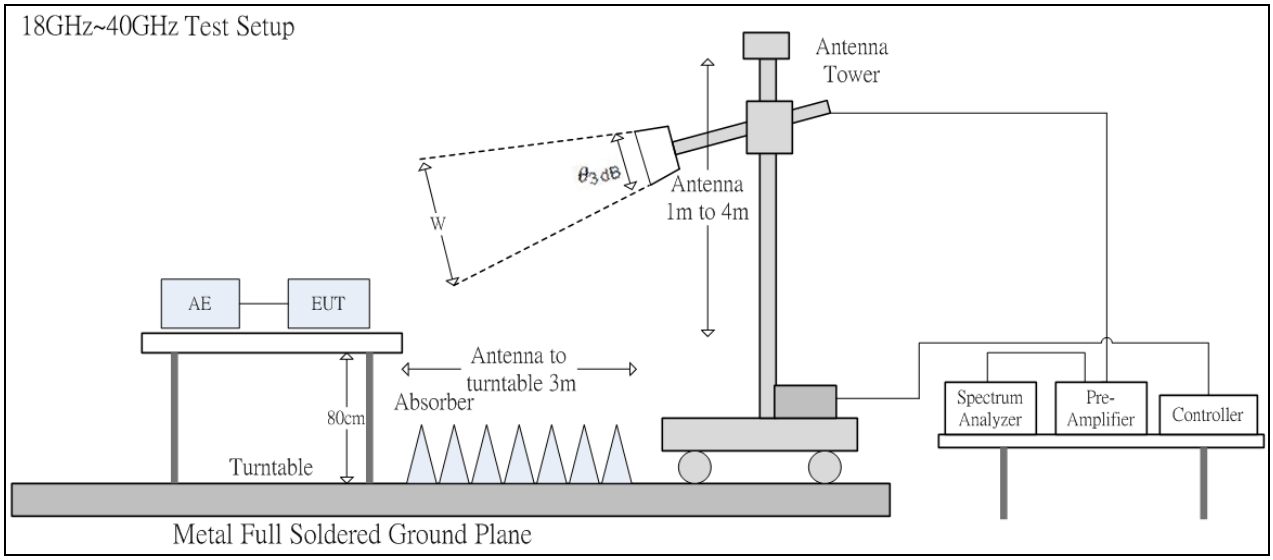
3. Radiated Emissions

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 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 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

3.1.4 Limit

Radiated emissions limits of Class_A equipment. (30 MHz to 1 GHz)

Frequency range (MHz)	FCC Part 15 Subpart B 15.109(g)	ICES-003
	at 10 m distance Quasi-peak (dBμV/m)	at 10 m distance Quasi-peak (dBμV/m)
30-88	40	40.0
88-216	40	43.5
216-230	40	46.4
230-960	47	47.0
960-1000	47	49.5

Note 1: The test limit in this report is based on FCC CFR Title 47 Part 15 Subpart B 15.109(g).
Note 2: The more stringent limit applies at transition frequencies.
Note 3: Test data in this report has been taken against the FCC CFR Title 47 Part 15 Subpart B 15.109(g) limit as it is the most stringent limit. By complying with the more restrictive Part 15 Subpart B 15.109(g) limit compliance with the Industry Canada Interference-Causing Equipment Standard ICES-003 limit is also demonstrated.

Radiated emission limits of Class_A equipment at 3 m distance (at and above 1 GHz)

Frequency range (GHz)	Average dB(μV/m)	Peak dB(μV/m)
1 – 40G	60	80

Note 1: Radiated emissions limits of FCC CFR Title 47 Part 15 Subpart B & Industry Canada Interference-Causing Equipment Standard ICES-003 are same.

Radiated emissions limits of Class_B equipment. (30 MHz to 1 GHz)

Frequency range (MHz)	FCC Part 15 Subpart B 15.109(g)	ICES-003
	at 10 m distance Quasi-peak (dBμV/m)	at 10 m distance Quasi-peak (dBμV/m)
30-88	30	30.0
88-216	30	33.1
216-230	30	35.6
230-960	37	37.0
960-1000	37	43.5

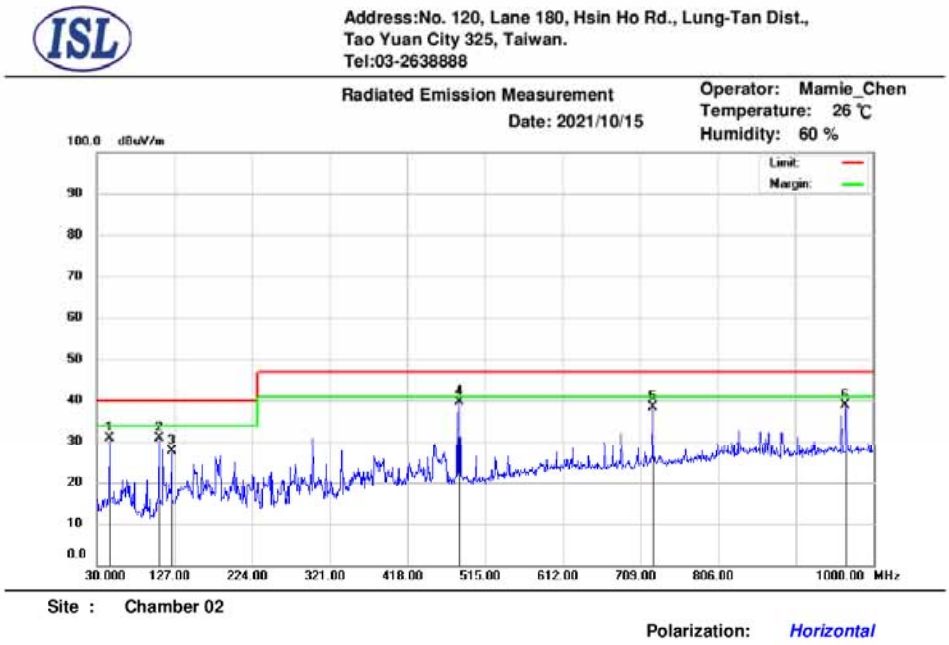
Note 1: The test limit in this report is based on FCC CFR Title 47 Part 15 Subpart B 15.109(g).
Note 2: The more stringent limit applies at transition frequencies.
Note 3: Test data in this report has been taken against the FCC CFR Title 47 Part 15 Subpart B 15.109(g) limit as it is the most stringent limit. By complying with the more restrictive Part 15 Subpart B 15.109(g) limit compliance with the Industry Canada Interference-Causing Equipment Standard ICES-003 limit is also demonstrated.

Radiated emission limits of Class_B equipment at 3 m distance (at and above 1 GHz)

Frequency range (GHz)	Average dB(μV/m)	Peak dB(μV/m)
1 – 40G	54	74

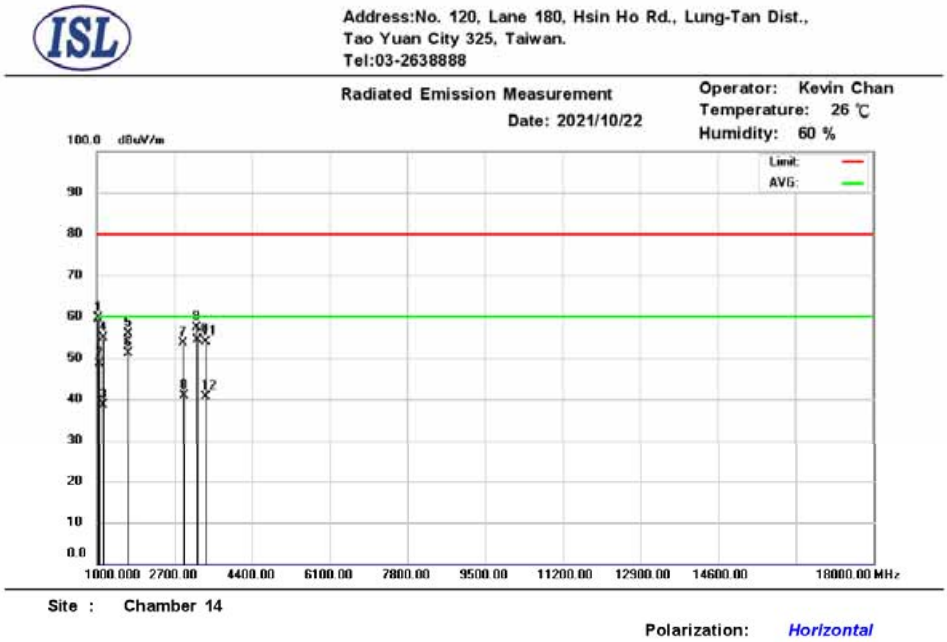
Note 1: Radiated emissions limits of FCC CFR Title 47 Part 15 Subpart B & Industry Canada Interference-Causing Equipment Standard ICES-003 are same.

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	45.52	47.51	-16.70	30.81	40.00	-9.19	400	185	peak
2	107.60	50.50	-19.58	30.92	40.00	-9.08	400	252	peak
3	123.12	45.91	-18.27	27.64	40.00	-12.36	400	252	peak
4	482.99	48.66	-8.99	39.67	47.00	-7.33	250	112	peak
5	724.52	42.80	-4.31	38.49	47.00	-8.51	150	99	peak
6	966.05	39.98	-1.00	38.98	47.00	-8.02	250	31	peak

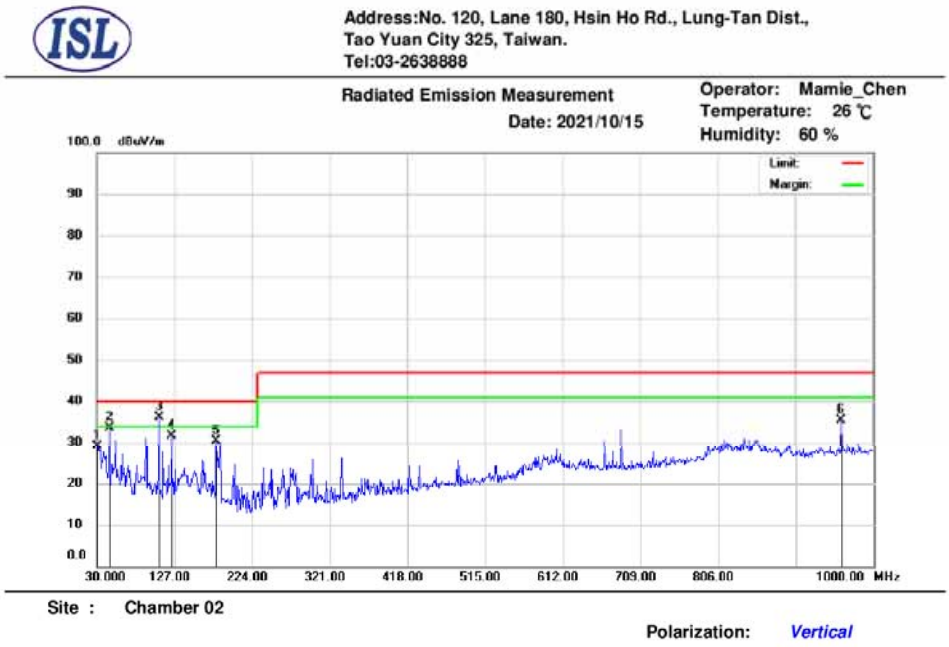
* Note:
Margin = Emission – Limit
Emission = Radiated Amplitude + Correct Factor
Correct Factor = Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
Antenna Distance: 10 meters
The CISPR 22 limits would be applied to all FCC Part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



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	76.12	-16.54	59.58	80.00	-20.42	150	242	peak
2	1046.56	65.25	-16.58	48.67	60.00	-11.33	150	242	AVG
3	1126.95	55.02	-16.32	38.70	60.00	-21.30	149	157	AVG
4	1136.00	71.15	-16.24	54.91	80.00	-25.09	150	154	peak
5	1680.00	70.91	-15.03	55.88	80.00	-24.12	150	315	peak
6	1690.54	66.14	-14.92	51.22	60.00	-8.78	149	318	AVG
7	2887.00	64.48	-10.88	53.60	80.00	-26.40	200	245	peak
8	2898.07	51.69	-10.80	40.89	60.00	-19.11	201	248	AVG
9	3193.00	67.38	-10.10	57.28	80.00	-22.72	150	240	peak
10	3199.82	64.37	-10.09	54.28	60.00	-5.72	151	242	AVG
11	3380.00	64.31	-10.40	53.91	80.00	-26.09	100	191	peak
12	3381.14	51.02	-10.40	40.62	60.00	-19.38	101	195	AVG

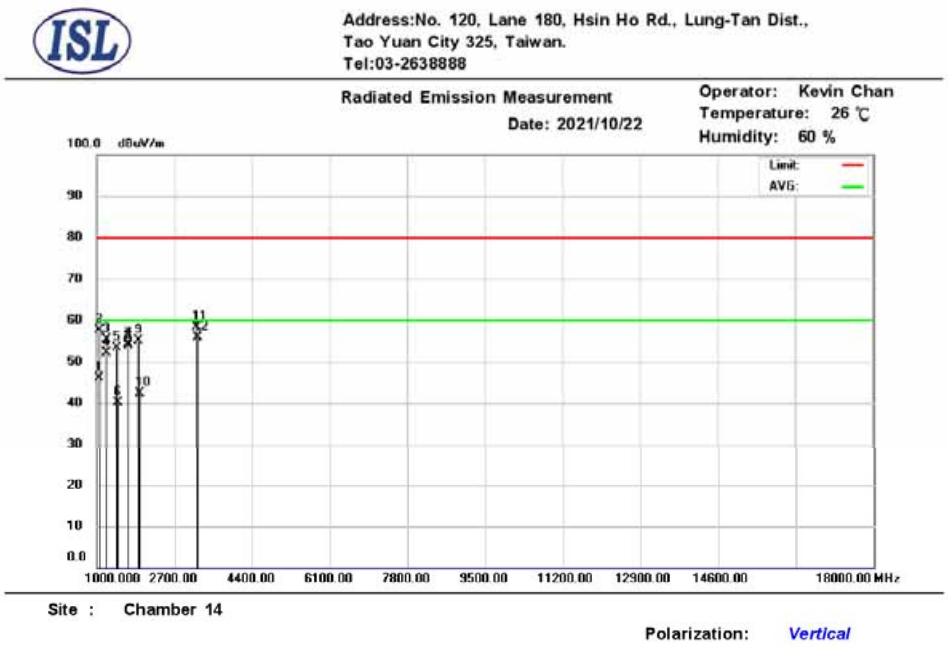
* Note:
Margin = Emission – Limit
Emission = Radiated Amplitude + Correct Factor
Correct Factor = Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
Antenna Distance: 3 meters
Above 1GHz test, if the peak measured value meets the 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	30.00	47.90	-18.73	29.17	40.00	-10.83	100	353	QP
2	45.52	50.41	-16.70	33.71	40.00	-6.29	100	329	peak
3	107.80	55.67	-19.58	36.09	40.00	-3.91	100	357	QP
4	123.12	49.99	-18.27	31.72	40.00	-8.28	100	331	peak
5	179.38	47.07	-16.77	30.30	40.00	-9.70	100	324	peak
6	960.23	36.32	-0.88	35.44	47.00	-11.56	400	93	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: 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.



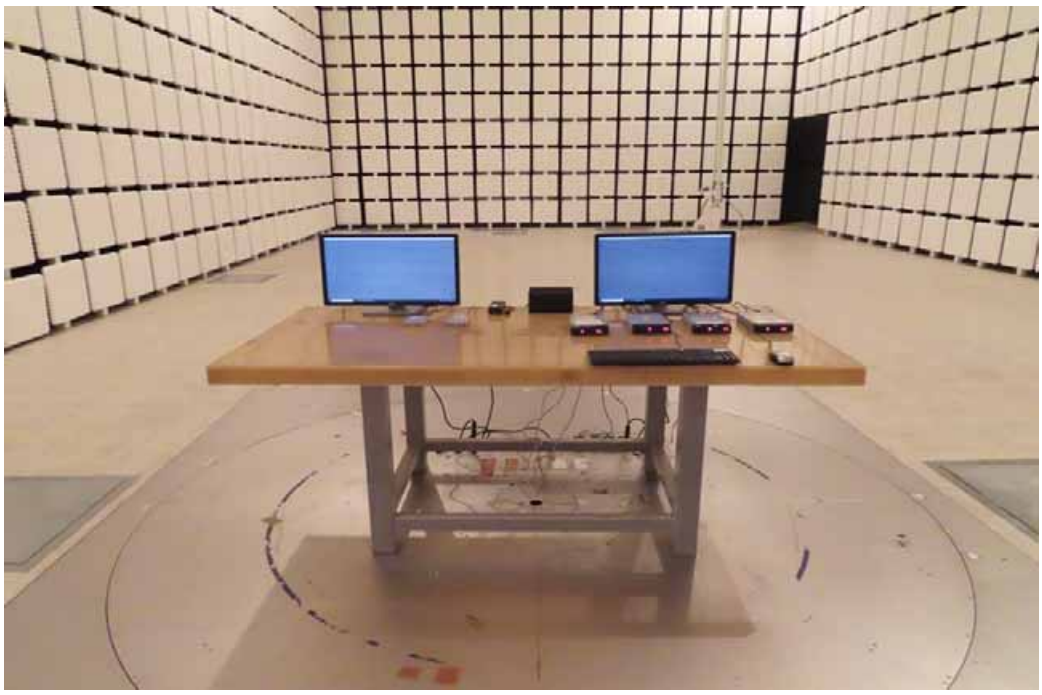
Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	1046.47	62.77	-16.58	46.19	60.00	-13.81	152	282	AVG
2	1051.00	74.28	-16.58	57.70	80.00	-22.30	151	284	peak
3	1204.00	71.41	-15.92	55.49	80.00	-24.51	200	237	peak
4	1207.50	68.11	-15.95	52.16	60.00	-7.84	201	234	AVG
5	1442.00	69.57	-16.21	53.36	80.00	-26.64	200	189	peak
6	1448.94	56.34	-16.26	40.08	60.00	-19.92	200	187	AVG
7	1680.00	69.51	-15.03	54.48	80.00	-25.52	100	246	peak
8	1690.54	68.86	-14.92	53.94	60.00	-6.06	101	248	AVG
9	1918.00	68.23	-13.12	55.11	80.00	-24.89	100	246	peak
10	1932.02	55.36	-13.05	42.31	60.00	-17.69	101	243	AVG
11	3193.00	68.59	-10.10	58.49	80.00	-21.51	151	124	peak
12	3199.77	66.03	-10.09	55.94	60.00	-4.06	150	122	AVG

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

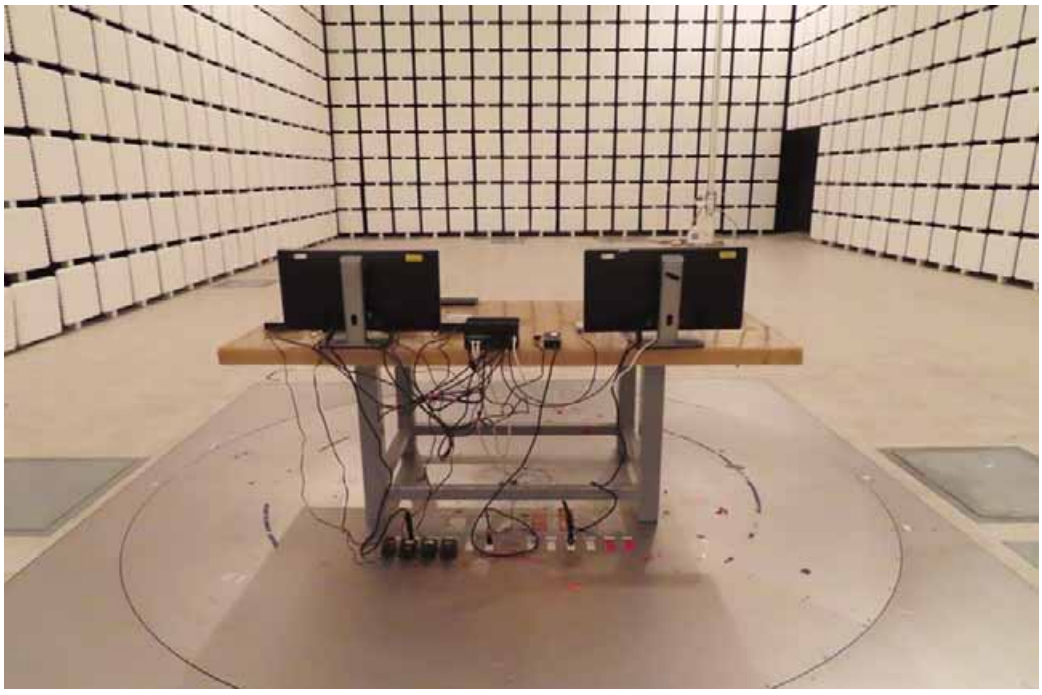
*

3.3 Test Setup Photo

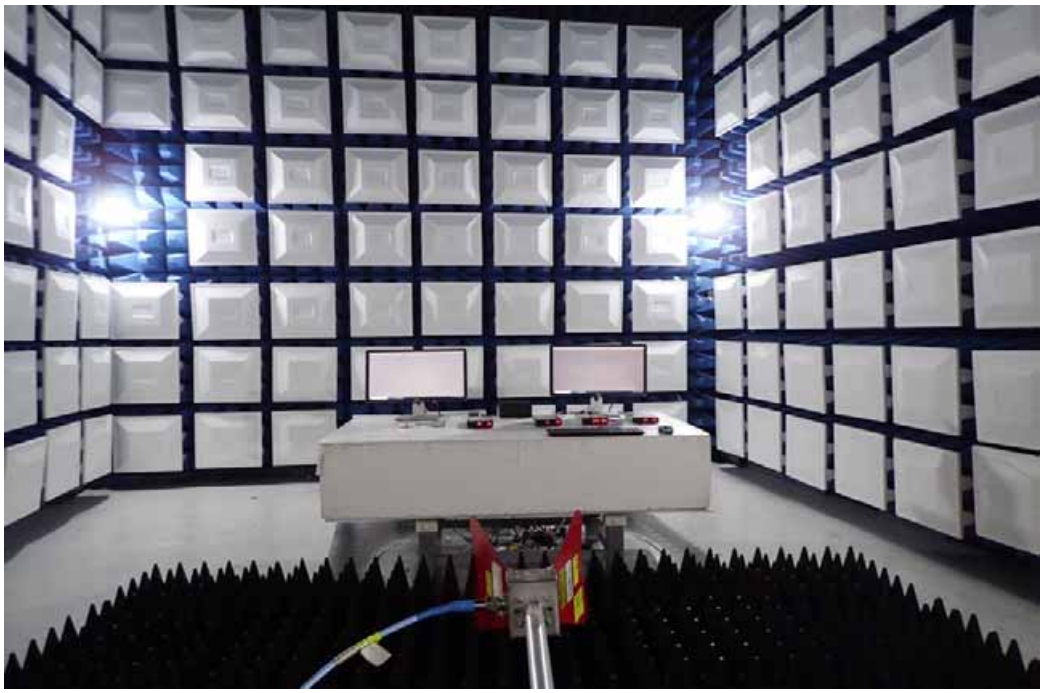
Front View (30MHz~1GHz)



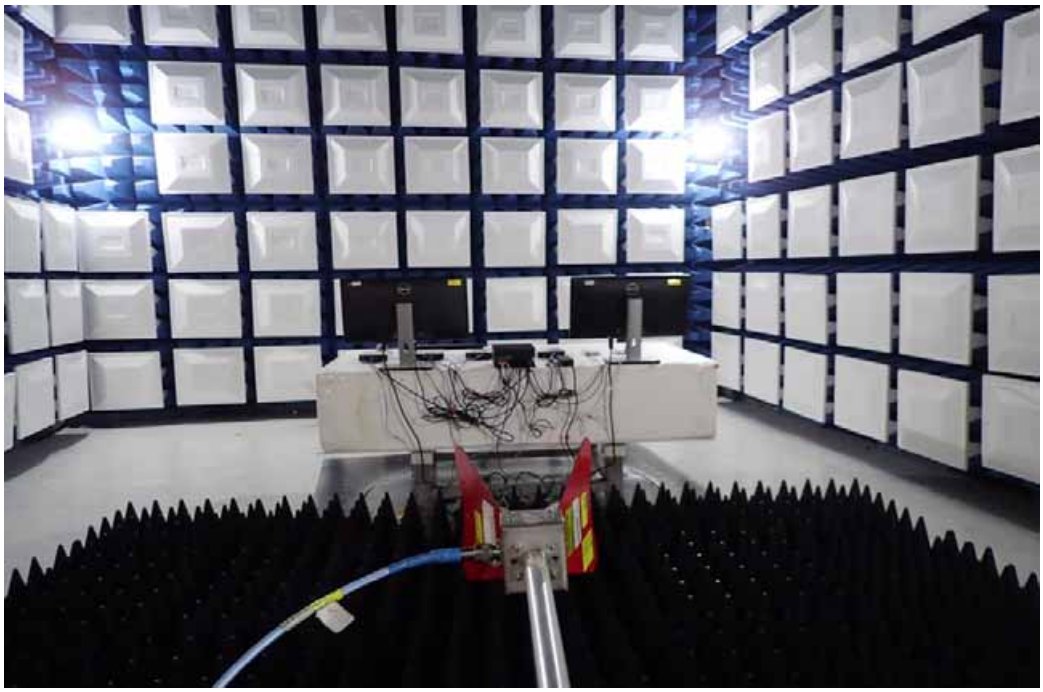
Back View (30MHz~1GHz)



Front View (above 1GHz)



Back View (above 1GHz)



4. Appendix

4.1 Appendix A: (FCC)Warning Labels

Label Requirements

A Class A 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: (FCC)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 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: (Canada ISED) Labelling and user manual requirements

The requirements specified in ICES-Gen shall apply. An example ISED compliance label, to be placed on each unit of an equipment model (or in the user manual, if allowed), is given below:

CAN ICES-003(*) / NMB-003(*)

* Insert either “A” or “B”, but not both, to identify the applicable Class of the device used for compliance verification.

The above label is only an example. The specific format is left to the manufacturer to decide, as long as the label includes the required information, in accordance with ICES-Gen.

4.4 Appendix D: Test Equipment

4.4.1 Test Equipment List

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conduction 04	EMI Receiver 18	ROHDE&SCHWARZ	ESCI	101392	06/08/2021	06/08/2022
Conduction 04	Conduction 04-03 Cable	WOKEN	CFD 300-NL	Conduction 04-03	10/13/2021	10/13/2022
Conduction 04	LISN 18	ROHDE & SCHWARZ	ENV216	101424	06/27/2021	06/27/2022
Conduction 04	LISN 03	R&S	ESH3-Z5	828874/010	11/11/2021	11/11/2022

Location Chamber02	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Radiation	BILOG Antenna 17 (30MHz~1GHz)	Schwarzbeck	Schwarzbeck VULB 9168+EMCI-N-6-05	645	04/13/2021	04/13/2022
Radiation	Preamplifier 25	EMCI	EMC9135	980295	04/03/2021	04/03/2022
Radiation	Coaxial Cable Chmb 02-10M-02	EMC	RG214U	Chmb 02-10M-02	10/13/2021	10/13/2022
Radiation	EMI Receiver 12	ROHDE & SCHWARZ	ESCI	100804	08/04/2021	08/04/2022

ocation Chmb14	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Rad. Above 1GHz	Spectrum Analyzer 25	R&S	FSV 40	101499	10/29/2021	10/29/2022
Rad. Above 1GHz	Horn Antenna 06	ETS-Lindgren	3117	00066665	12/01/2020	12/01/2021
Rad. Above 1GHz	Preamplifier 20	EMC INSTRUMENT	EMC051845	980084	11/19/2020	11/19/2021
Rad. Above 1GHz	Microwave Cable-11	HUBER SUHNER	SUCOFLEX 106	78034/6	03/02/2021	03/02/2022
Rad. Above 1GHz	Microwave Cable-26	EMCI	EMC104-NM-SM-800	141112	03/02/2021	03/02/2022

4.4.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

Site	Filename	Version
Conduction/Radiation	EZ EMC	ISL-03A2

4.5 Appendix E: 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 04>
AMN: ±2.90dB

<Chamber 02 (10m)>
Horizontal
30MHz~200MHz: ±4.52dB
200MHz~1000MHz: ±4.42dB
Vertical
30MHz~200MHz: ±4.51dB
200MHz~1000MHz: ±4.70dB

<Chamber 14 (3m)>

1GHz~18GHz: ±4.48dB

4.6 Appendix F: Photographs of EUT

Please refer to the File of **ISL-21LE900P**

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