

FCC 15B Test Report

Equipment : 802.11 b/g/n WLAN, Bluetooth & BLE Module
w/Integrated MCU

Model No. : **Sterling™ – EWB**

Brand Name : Laird Connectivity

Applicant : Laird Connectivity, Inc

Address : W66N220 Commerce Court, Cedarburg,
Wisconsin 53012, USA


Standard : FCC Part 15, Subpart B, Class B
ICES-003 Issue 6, Class B
ANSI C63.4:2014

Received Date : Mar. 14, 2019

Tested Date : Apr. 03 ~ Apr. 08, 2019

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Peter Lin / Supervisor

Approved by:


Kent Chen / Assistant Manager



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Release Record

Report No.	Version	Description	Issued Date
FD931402	Rev. 01	Initial issue	Jul. 10, 2019

Summary of Test Results

FCC Part 15, Subpart B Emission Tests				
Ref. Std. Clause	Test Standard	Test Items	Measured	Result
15.107	FCC Part 15, Subpart B, Class B	Conducted Emissions	-19.59dB QP@ 4.525MHz.	Pass
15.109	FCC Part 15, Subpart B, Class B	Radiated Emissions	-9.44dB PK@ 46.49MHz.	Pass

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
Laird Connectivity	Sterling™ – EWB	802.11 b/g/n WLAN, Bluetooth & BLE Module w/Integrated MCU	With Printed PCB Antenna
			With Connector Type Antenna

1.1.2 Feature of Equipment under Test (EUT)

Power Supply Type	3.3Vdc from host
Highest Frequency of the Internal Sources	2.4GHz

1.1.3 Accessories

N/A

1.1.4 Antenna Details

Ant. No.	Brand	Model	Laird Part Number	Type	Connector	Gain (dBi)	Remark
1	ACX	AT3216-A2R4PAA	AT3216-A2R4PAA	Chip	N/A	1.5	Printed PCB Antenna
2	Laird	001 -0001	001 -0001	Dipole	R-SMA	2	Connector Type Antenna
3	Laird	001-0014	001-0014	FlexPIFA	U.FL	2	Connector Type Antenna
4	Laird	001-0015	001-0015	FlexNotch	U.FL	2	Connector Type Antenna
5	Laird	001-0030	001-0030	PIFA	UFL	2	Connector Type Antenna
6	Laird	NanoBlue	EBL2400A1-10MH4L	PCB Dipole	UFL	2	Connector Type Antenna

1.2 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Apr. 03, 2019				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Jan. 08, 2019	Jan. 07, 2020
LISN	R&S	ENV216	101579	Mar. 08, 2019	Mar. 07, 2020
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-666	Nov. 29, 2018	Nov. 28, 2019
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 23, 2018	Oct. 23, 2019
50 ohm terminal (Support Unit)	NA	50	04	May. 22, 2018	May. 21, 2019
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission below 1GHz				
Test Site	966 chamber 2 / (03CH02-WS)				
Tested Date	Apr. 08, 2019				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	Agilent	N9038A	MY53290044	Sep. 17, 2018	Sep. 16, 2019
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 09, 2018	Nov. 08, 2019
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-523	Dec. 03, 2018	Dec. 02, 2019
Preamplifier	EMC	EMC02325	980194	Sep. 18, 2018	Sep. 17, 2019
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160501	Oct. 22, 2018	Oct. 21, 2019
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Oct. 22, 2018	Oct. 21, 2019
LF cable 10M	EMCC	CFD400-E	CFD400-001	Oct. 22, 2018	Oct. 21, 2019
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission above 1GHz				
Test Site	966 chamber 2 / (03CH02-WS)				
Tested Date	Apr. 08, 2019				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	Agilent	N9010A	MY53400091	Nov. 07, 2018	Nov. 06, 2019
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Sep. 22, 2018	Sep. 21, 2019
Preamplifier	Agilent	83017A	MY39501309	Sep. 25, 2018	Sep. 24, 2019
RF Cable	EMC	EMC105-SM-SM-80 00	180512	Oct. 22, 2018	Oct. 21, 2019
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Oct. 22, 2018	Oct. 21, 2019
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

FCC Part 15, Subpart B, Class B
ICES-003 Issue 6, Class B
ANSI C63.4:2014

1.4 Deviation from Test Standard and Measurement Procedure

None

1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

Measurement Uncertainty		
Test Item	Frequency	Uncertainty
Conducted Emissions	150kHz ~ 30MHz	± 2.92 dB
Radiated Emissions	30MHz ~ 1GHz	± 4.32 dB
	Above 1GHz	± 4.57 dB

Note: The results of measurements of emissions shall reference the measurement uncertainty considerations contained in CISPR 16-4-2.

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	23°C / 65%	Akun Chung
Radiated Emissions	03CH02-WS	22°C / 63%	Brad Wu

- FCC Designation No.: TW1073
- FCC site registration No.: 933633

2.2 The Worst Case Measurement Configuration

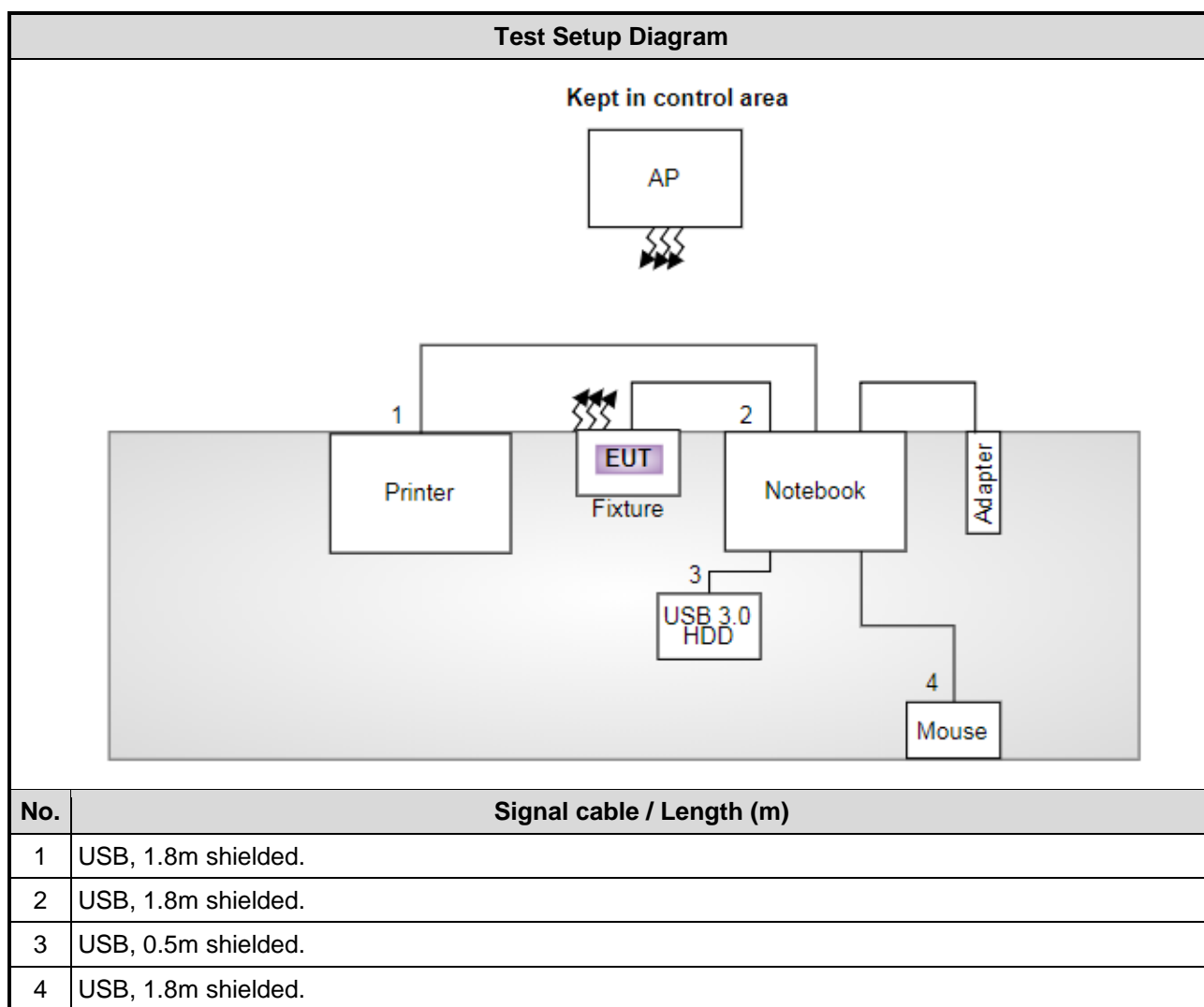
Radiation Pretest Mode	
Pretest Mode	Operating Description
1	WiFi Link, EUT orientation: Z-axis, Ant: AT3216-A2R4PAA, with Notebook
2	WiFi Link, EUT orientation: Z-axis, Ant: 001 -0001, with Notebook
3	WiFi Link, EUT orientation: Z-axis, Ant: 001-0014, with Notebook
4	WiFi Link, EUT orientation: Z-axis, Ant: 001-0015, with Notebook
5	WiFi Link, EUT orientation: Z-axis, Ant: 001-0030, with Notebook
6	WiFi Link, EUT orientation: Z-axis, Ant: NanoBlue, with Notebook
7	BT Tx, EUT orientation: Z-axis, Ant: 001 -0001, with Notebook
For Pretest Mode 2 is the worst case and only its data was record in this test report.	

The Determined Worst Case Configurations	
Conducted Emissions	
Test Mode	Operating Description
1	WiFi Link, EUT orientation: Z-axis, Ant: 001 -0001, with Notebook
Radiated Emissions	
Test Mode ≤ 1GHz	Operating Description
1	WiFi Link, EUT orientation: Z-axis, Ant: 001 -0001, with Notebook
Test Mode > 1GHz	Operating Description
1	WiFi Link, EUT orientation: Z-axis, Ant: 001 -0001, with Notebook

2.3 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	S/N	Remarks
1	Notebook	DELL	Latitude E5430	764RWW1	---
2	Printer	EPSON	XP-30	QSDK002410	---
3	USB 3.0 HDD	WD	WDBKXH5000 ABK	WX31AB210213	---
4	Mouse	DELL	MS111-L	2C3-00MM	---
5	Wireless AP	D-LINK	DIR-850L	RZ1Q4G6000261	---
6	Fixture	---	---	---	Provided by applicant.

2.4 Test Setup Chart



2.5 Test Software and Operating Condition

- a. The EUT consumes power from support notebook via USB cable.
- b. The support notebook executed "WinEMC.exe" to send "H" patterns to its monitor and the monitor displayed them.
- c. The support notebook executed "WinEMC.exe" to send "H" patterns to the printer.
- d. The support notebook executed "WinEMC.exe" to read and write data from USB 3.0 HDD.
- e. The support notebook executed "WICED-Studio" and "putty" for Wifi link to support AP.

3 Emission Tests Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

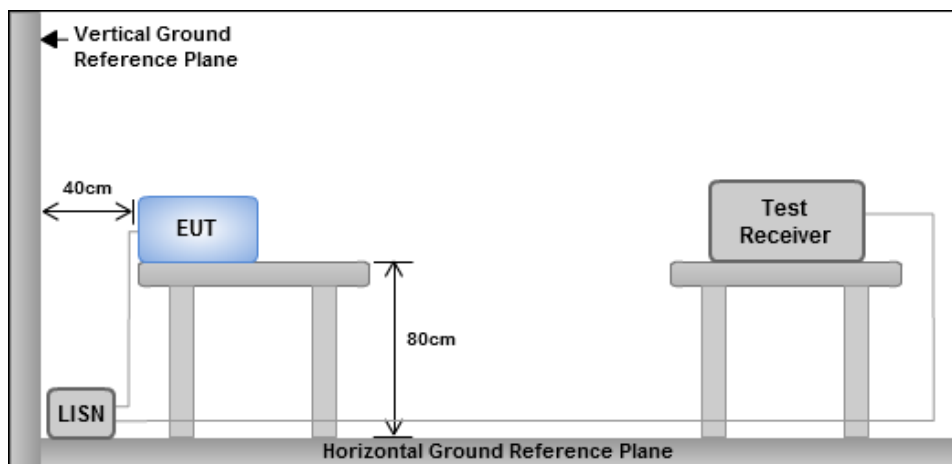
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0,15 to 0,5	66 - 56 *	56 - 46 *
0,5 to 5	56	46
5 to 30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Test Procedures

- The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
- The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
- AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.

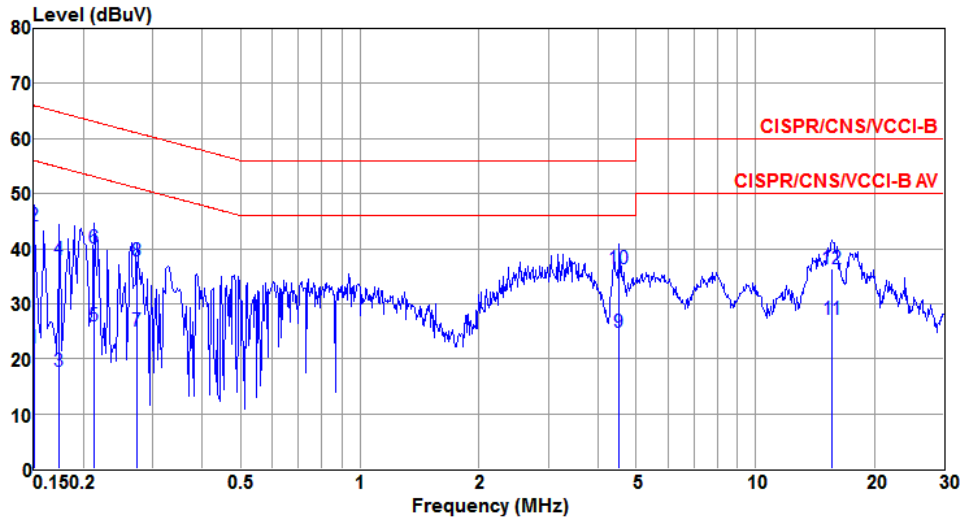
3.1.3 Test Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Power Phase	Line	Test Mode	1
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	Freq MHz	Level dBuV	Limit dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	21.97	56.00	-34.03	12.39	9.53	0.05	Average
2	0.150	44.08	66.00	-21.92	34.50	9.53	0.05	QP
3	0.174	17.60	54.77	-37.17	8.00	9.54	0.06	Average
4	0.174	38.07	64.77	-26.70	28.47	9.54	0.06	QP
5	0.213	25.92	53.10	-27.18	16.31	9.54	0.07	Average
6	0.213	40.24	63.10	-22.86	30.63	9.54	0.07	QP
7	0.273	25.14	51.03	-25.89	15.52	9.55	0.07	Average
8	0.273	37.66	61.03	-23.37	28.04	9.55	0.07	QP
9	4.525	24.85	46.00	-21.15	14.93	9.62	0.30	Average
10*	4.525	36.41	56.00	-19.59	26.49	9.62	0.30	QP
11	15.635	27.26	50.00	-22.74	17.03	9.66	0.57	Average
12	15.635	36.44	60.00	-23.56	26.21	9.66	0.57	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Neutral	Test Mode	1
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Freq	Level	Limit	Over	Read	LISN	cable	Remark	
MHz	dBuV	dBuV	dB	dBuV	dB	dB		
1	0.156	18.19	55.69	-37.50	8.57	9.57	0.05	Average
2	0.156	43.79	65.69	-21.90	34.17	9.57	0.05	QP
3	0.180	21.10	54.50	-33.40	11.46	9.58	0.06	Average
4	0.180	41.91	64.50	-22.59	32.27	9.58	0.06	QP
5	1.753	23.62	46.00	-22.38	13.82	9.65	0.15	Average
6	1.753	35.84	56.00	-20.16	26.04	9.65	0.15	QP
7	4.430	23.63	46.00	-22.37	13.66	9.67	0.30	Average
8	4.430	33.98	56.00	-22.02	24.01	9.67	0.30	QP
9	15.470	27.32	50.00	-22.68	16.99	9.77	0.56	Average
10*	15.470	40.25	60.00	-19.75	29.92	9.77	0.56	QP
11	17.755	25.92	50.00	-24.08	15.55	9.79	0.58	Average
12	17.755	35.47	60.00	-24.53	25.10	9.79	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 Radiated Emissions

3.2.1 Limit of Radiated Emissions

According to FCC Part 15, Subpart B §15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Note: According to FCC Part 15, Subpart B §15.33: For an unintentional radiator is shown in the table above.

3.2.2 Test Procedures

Measuring below 1 GHz:

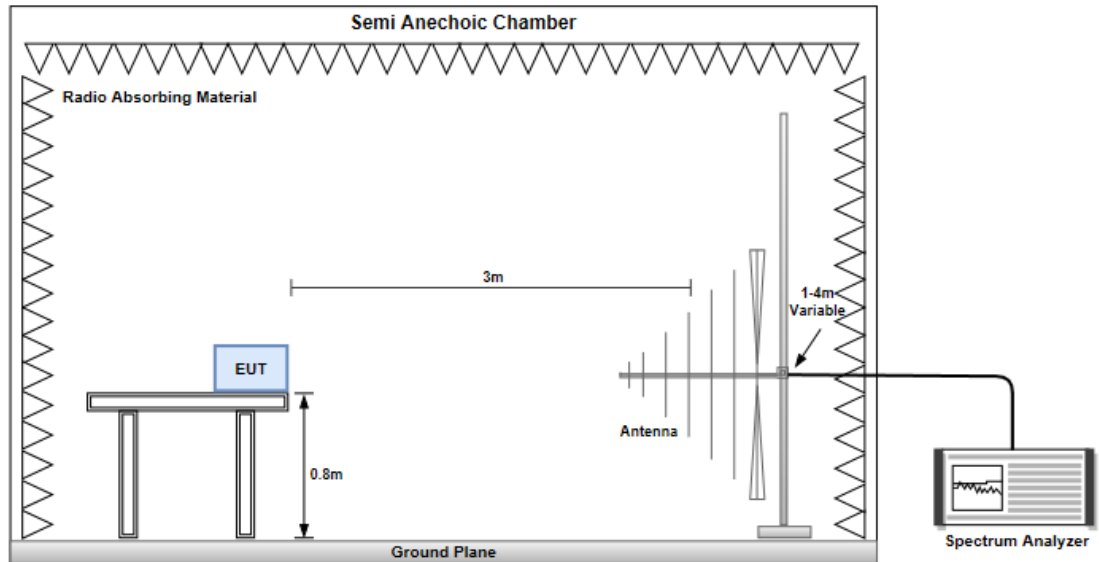
- a. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
- b. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
- c. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Measuring above 1 GHz:

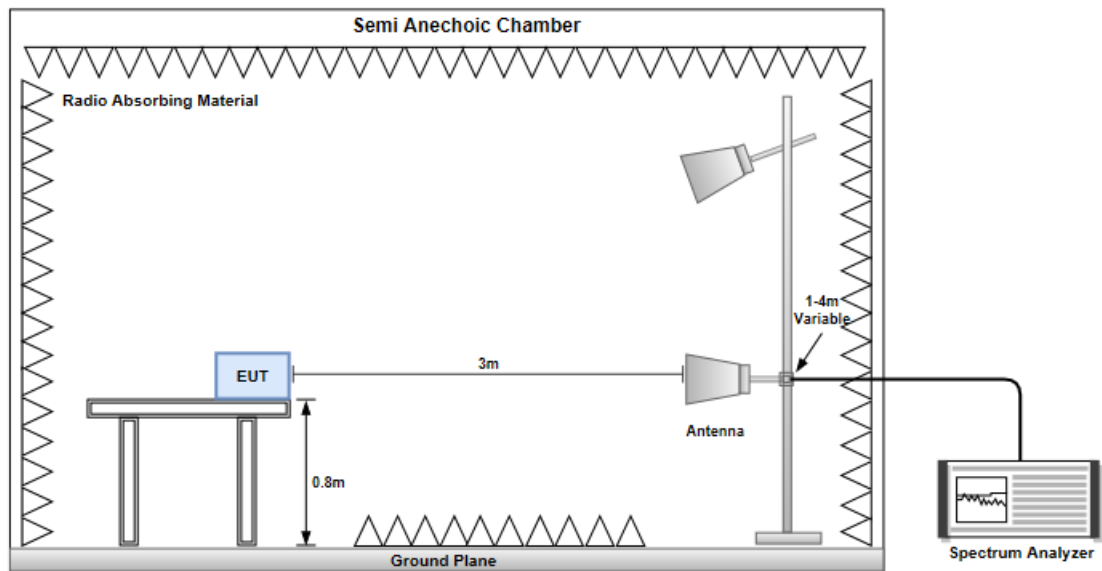
- a. Same test set up as below 1GHz radiated testing.
- b. The EUT was set 3 meters from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
- c. There should be absorber placed between the EUT and Antenna and its located size should let the test site meet CISPR16-1-4 requirement.
- d. The table was rotated 360 degrees to determine the position of the highest radiation.
- e. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- f. Set the Horn Antenna at 1m height, then run the turn table to get the maximum noise reading from Horizontal and Vertical polarity separately.
- g. When EUT locating on the turn-table, the Horn Antenna must be raised up and descended down, then turning around the turn-table to get the maximum noise reading of the Horizontal and Vertical polarity separately. Note the maximum raise up height is same as the top of EUT.
- h. If emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.2.3 Test Setup

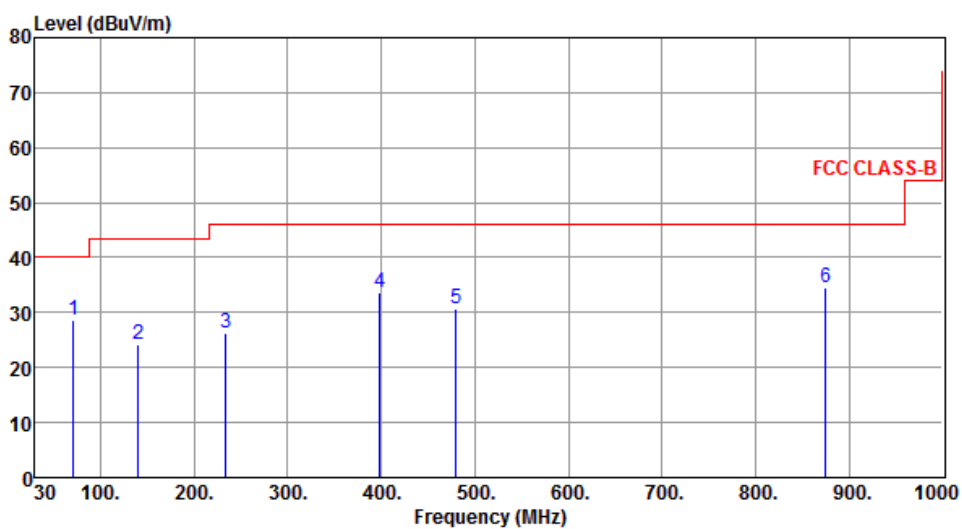
Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



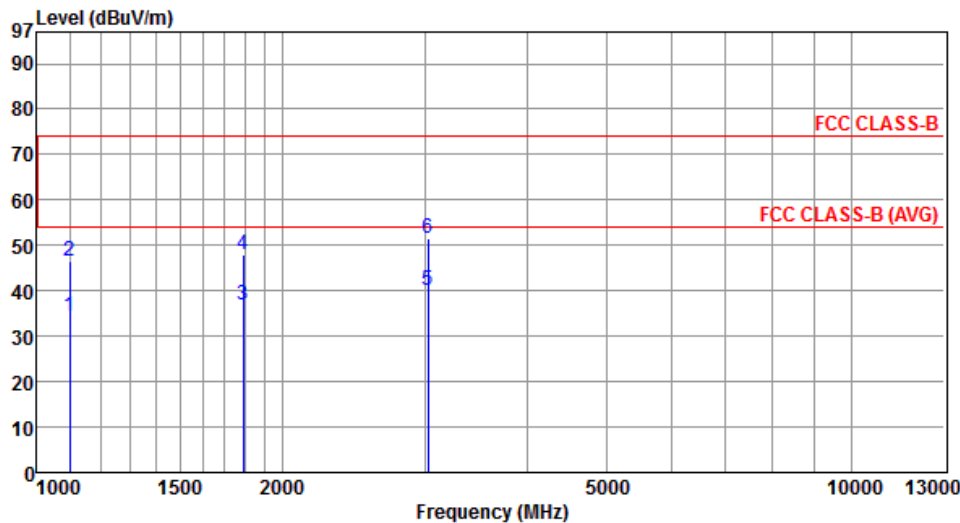
3.2.4 Radiated Emissions (Below 1GHz)

Polarization	Horizontal			Test Mode			1																																																																																												
<div><div><div>Level (dBuV/m)</div><div></div></div><table><tr><th></th><th>Freq.</th><th>Emission</th><th>Limit</th><th>Margin</th><th>SA</th><th>Factor</th><th>Remark</th><th>ANT</th><th>Turn</th></tr><tr><th></th><th>MHz</th><th>level</th><th></th><th></th><th>reading</th><th></th><th></th><th>High</th><th>Table</th></tr><tr><th></th><th></th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB</th><th></th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>70.74</td><td>28.69</td><td>40.00</td><td>-11.31</td><td>39.59</td><td>-10.90</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>2</td><td>140.58</td><td>24.34</td><td>43.50</td><td>-19.16</td><td>32.99</td><td>-8.65</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>3</td><td>233.70</td><td>26.32</td><td>46.00</td><td>-19.68</td><td>36.23</td><td>-9.91</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>4</td><td>398.60</td><td>33.57</td><td>46.00</td><td>-12.43</td><td>38.44</td><td>-4.87</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>5</td><td>480.08</td><td>30.69</td><td>46.00</td><td>-15.31</td><td>33.69</td><td>-3.00</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>6</td><td>874.87</td><td>34.64</td><td>46.00</td><td>-11.36</td><td>30.36</td><td>4.28</td><td>Peak</td><td>---</td><td>---</td></tr></table></div>											Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn		MHz	level			reading			High	Table			dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg	1	70.74	28.69	40.00	-11.31	39.59	-10.90	Peak	---	---	2	140.58	24.34	43.50	-19.16	32.99	-8.65	Peak	---	---	3	233.70	26.32	46.00	-19.68	36.23	-9.91	Peak	---	---	4	398.60	33.57	46.00	-12.43	38.44	-4.87	Peak	---	---	5	480.08	30.69	46.00	-15.31	33.69	-3.00	Peak	---	---	6	874.87	34.64	46.00	-11.36	30.36	4.28	Peak	---	---
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn																																																																																										
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<div>Note 1: Emission level (dBuV/m) = SA reading (dBuV) + Factor (dB) 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m)</div>																																																																																																			

Polarization	Vertical	Test Mode	1																																																																																										
<div><div><div>Level (dBuV/m)</div><div><div><div><div><div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div><div><div><div><div><div>30</div><div>100.</div><div>200.</div><div>300.</div><div>400.</div><div>500.</div><div>600.</div><div>700.</div><div>800.</div><div>900.</div><div>1000</div></div><div><div><div><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div></div><div><div><div><div><div><div>30.56</div><div>28.02</div><div>32.30</div><div>32.33</div><div>32.67</div><div>34.17</div></div><div><div><div><div><div><div>40.00</div><div>43.50</div><div>46.00</div><div>46.00</div><div>46.00</div><div>46.00</div></div><div><div><div><div><div><div>-9.44</div><div>-15.48</div><div>-13.70</div><div>-13.67</div><div>-13.33</div><div>-11.83</div></div><div><div><div><div><div><div>38.79</div><div>36.49</div><div>36.32</div><div>35.33</div><div>31.55</div><div>30.60</div></div><div><div><div><div><div><div>-8.23</div><div>-8.47</div><div>-4.02</div><div>-3.00</div><div>1.12</div><div>3.57</div></div><div><div><div><div><div><div>Peak</div><div>Peak</div><div>Peak</div><div>Peak</div><div>Peak</div><div>Peak</div></div><div><div><div><div><div><div>---</div><div>---</div><div>---</div><div>---</div><div>---</div><div>---</div></div><div><div><div><div><div><div>---</div><div>---</div><div>---</div><div>---</div><div>---</div><div>---</div></div></div></div></div></div></div><div><div><div><div><div><div>FCC CLASS-B</div></div></div></div></div></div></div><div><div><div><div><div>Frequency (MHz)</div></div></div></div></div></div><table><tr><td></td><td>Freq.</td><td>Emission</td><td>Limit</td><td>Margin</td><td>SA</td><td>Factor</td><td>Remark</td><td>ANT</td><td>Turn</td></tr><tr><td></td><td>MHz</td><td>level</td><td>dBuV/m</td><td>dB</td><td>reading</td><td>dB</td><td></td><td>High</td><td>Table</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td>dBuV</td><td></td><td></td><td>cm</td><td>deg</td></tr><tr><td>1</td><td>46.49</td><td>30.56</td><td>40.00</td><td>-9.44</td><td>38.79</td><td>-8.23</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>2</td><td>144.46</td><td>28.02</td><td>43.50</td><td>-15.48</td><td>36.49</td><td>-8.47</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>3</td><td>430.61</td><td>32.30</td><td>46.00</td><td>-13.70</td><td>36.32</td><td>-4.02</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>4</td><td>480.08</td><td>32.33</td><td>46.00</td><td>-13.67</td><td>35.33</td><td>-3.00</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>5</td><td>676.99</td><td>32.67</td><td>46.00</td><td>-13.33</td><td>31.55</td><td>1.12</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>6</td><td>824.43</td><td>34.17</td><td>46.00</td><td>-11.83</td><td>30.60</td><td>3.57</td><td>Peak</td><td>---</td><td>---</td></tr></table></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>					Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn		MHz	level	dBuV/m	dB	reading	dB		High	Table						dBuV			cm	deg	1	46.49	30.56	40.00	-9.44	38.79	-8.23	Peak	---	---	2	144.46	28.02	43.50	-15.48	36.49	-8.47	Peak	---	---	3	430.61	32.30	46.00	-13.70	36.32	-4.02	Peak	---	---	4	480.08	32.33	46.00	-13.67	35.33	-3.00	Peak	---	---	5	676.99	32.67	46.00	-13.33	31.55	1.12	Peak	---	---	6	824.43	34.17	46.00	-11.83	30.60	3.57	Peak	---	---
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn																																																																																				
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3.2.5 Radiated Emissions (Above 1GHz)

Polarization	Horizontal		Test Mode		1				
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	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1096.00	34.23	54.00	-19.77	43.87	-9.64	Average	114	25
2	1096.00	46.52	74.00	-27.48	56.16	-9.64	Peak	114	25
3	1790.00	36.73	54.00	-17.27	42.99	-6.26	Average	100	126
4	1790.00	48.13	74.00	-25.87	54.39	-6.26	Peak	100	126
5	3016.00	40.15	54.00	-13.85	41.11	-0.96	Average	124	51
6	3016.00	51.72	74.00	-22.28	52.68	-0.96	Peak	124	51

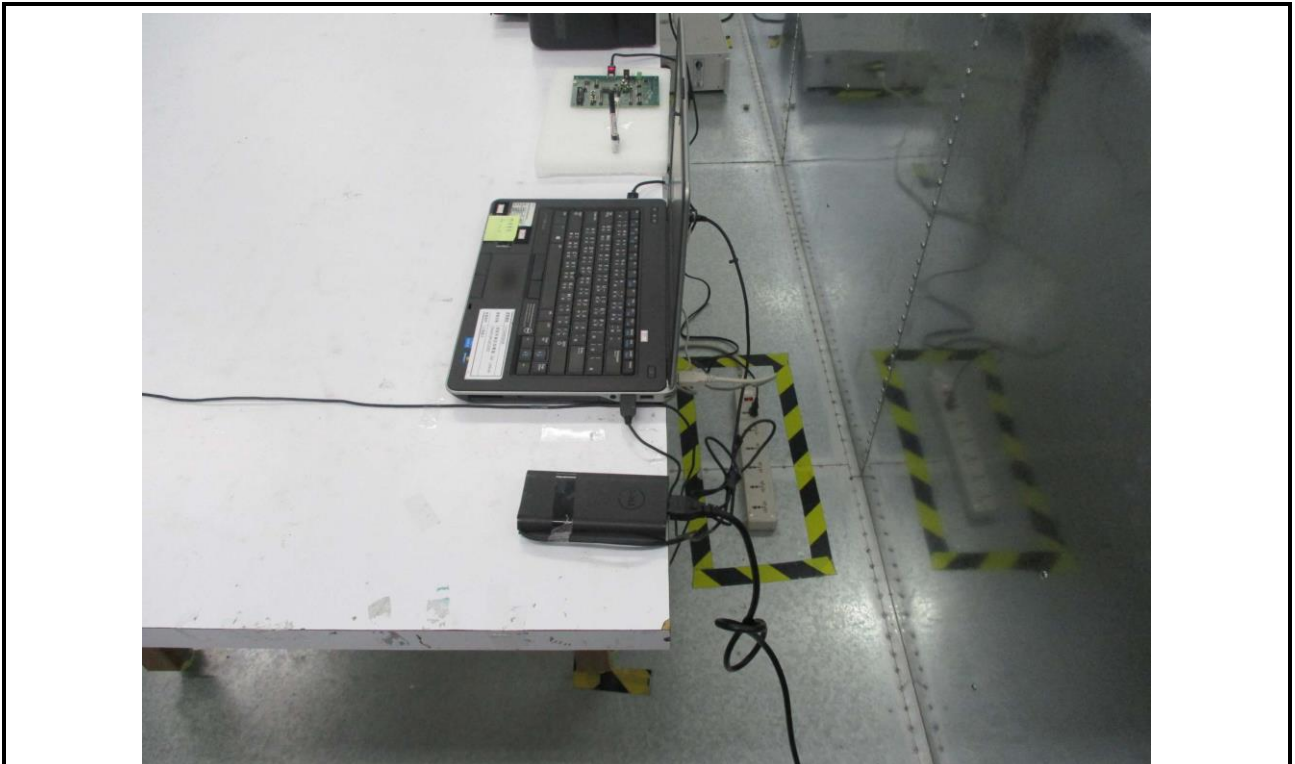
Note 1: Emission level (dBuV/m) = SA reading (dBuV) + Factor (dB)

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m)

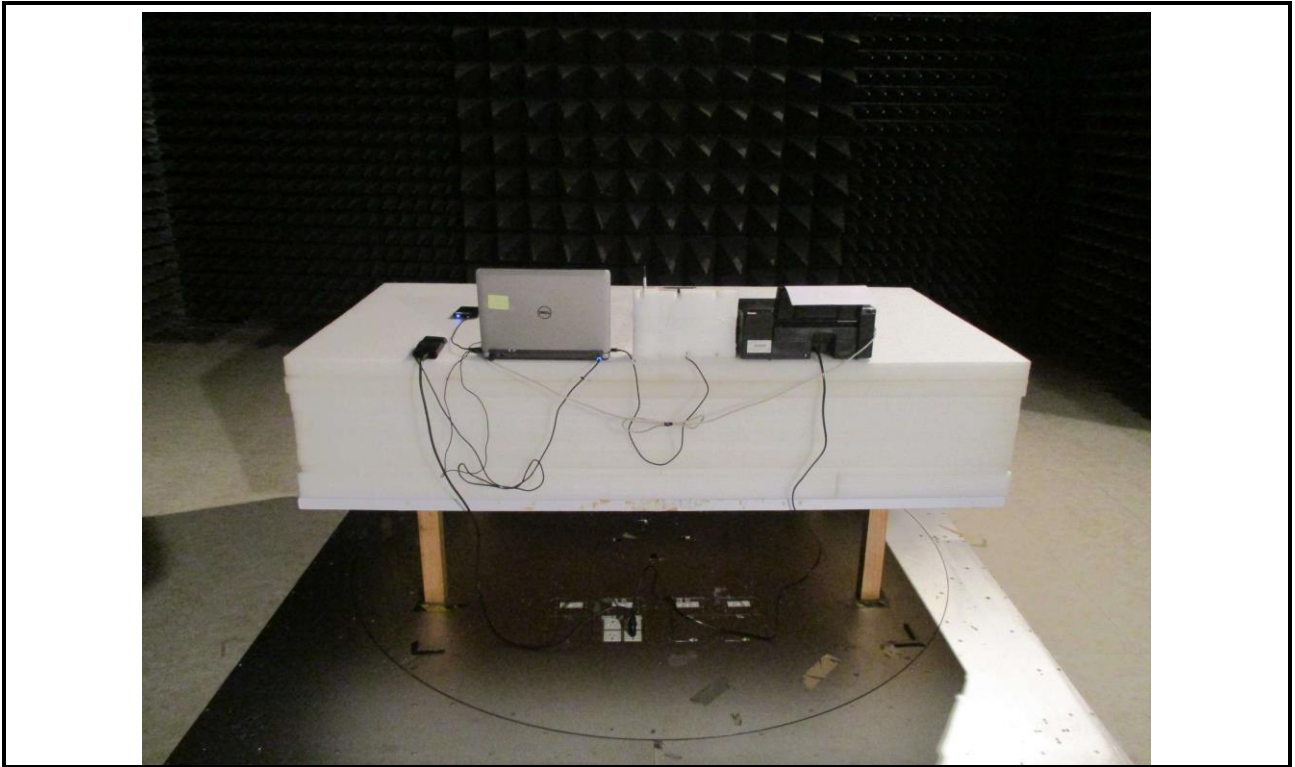
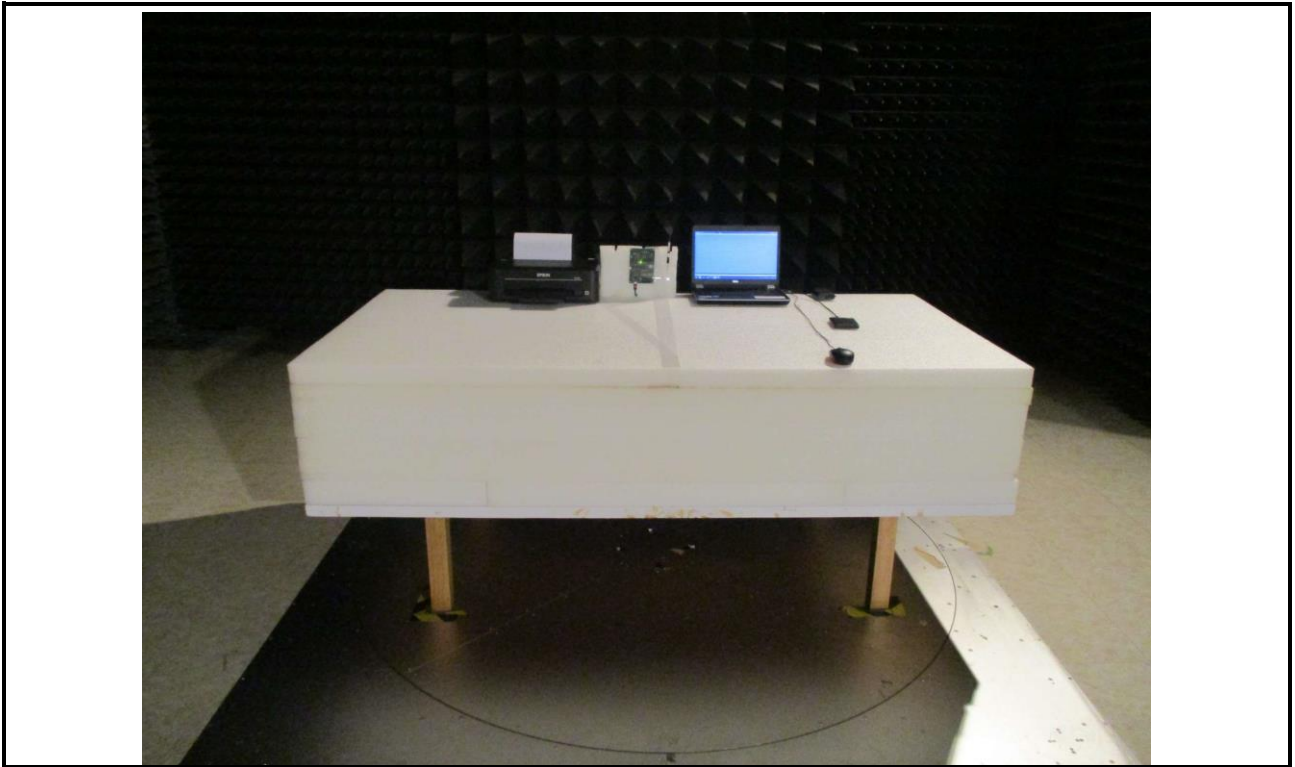
Polarization	Vertical	Test Mode	1																																																																						
<div><div><div>Level (dBuV/m)</div><div><div><div><div><div><div>97</div><div>90</div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div><div><div><div><div>1000</div><div>1500</div><div>2000</div><div>5000</div><div>10000</div><div>13000</div></div><div>Frequency (MHz)</div></div><div><div><div><div><div>2</div><div>4</div><div>6</div></div><div><div>1</div><div>3</div><div>5</div></div></div><div><div><div>FCC CLASS-B</div><div>FCC CLASS-B (AVG)</div></div></div></div></div><table><tr><th></th><th>Freq. MHz</th><th>Emission level dBuV/m</th><th>Limit dBuV/m</th><th>Margin dB</th><th>SA reading dBuV</th><th>Factor dB</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr><tr><td>1</td><td>1481.00</td><td>38.85</td><td>54.00</td><td>-15.15</td><td>45.47</td><td>-6.62</td><td>Average</td><td>100</td><td>124</td></tr><tr><td>2</td><td>1481.00</td><td>53.96</td><td>74.00</td><td>-20.04</td><td>60.58</td><td>-6.62</td><td>Peak</td><td>100</td><td>124</td></tr><tr><td>3</td><td>2190.00</td><td>38.63</td><td>54.00</td><td>-15.37</td><td>41.23</td><td>-2.60</td><td>Average</td><td>100</td><td>235</td></tr><tr><td>4</td><td>2190.00</td><td>50.18</td><td>74.00</td><td>-23.82</td><td>52.78</td><td>-2.60</td><td>Peak</td><td>100</td><td>235</td></tr><tr><td>5</td><td>3131.00</td><td>40.58</td><td>54.00</td><td>-13.42</td><td>41.10</td><td>-0.52</td><td>Average</td><td>115</td><td>48</td></tr><tr><td>6</td><td>3131.00</td><td>53.26</td><td>74.00</td><td>-20.74</td><td>53.78</td><td>-0.52</td><td>Peak</td><td>115</td><td>48</td></tr></table></div></div></div></div></div></div></div>					Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg	1	1481.00	38.85	54.00	-15.15	45.47	-6.62	Average	100	124	2	1481.00	53.96	74.00	-20.04	60.58	-6.62	Peak	100	124	3	2190.00	38.63	54.00	-15.37	41.23	-2.60	Average	100	235	4	2190.00	50.18	74.00	-23.82	52.78	-2.60	Peak	100	235	5	3131.00	40.58	54.00	-13.42	41.10	-0.52	Average	115	48	6	3131.00	53.26	74.00	-20.74	53.78	-0.52	Peak	115	48
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4 Photographs of the Test Configuration

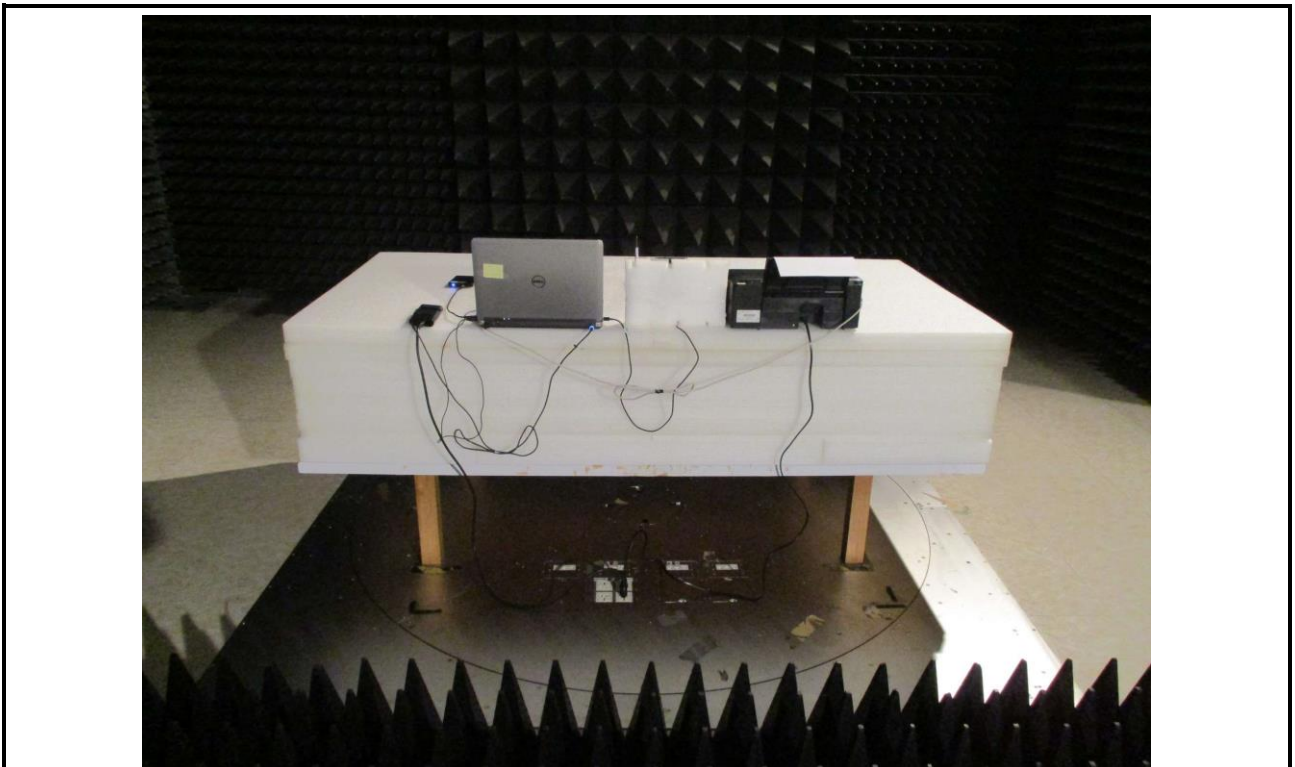
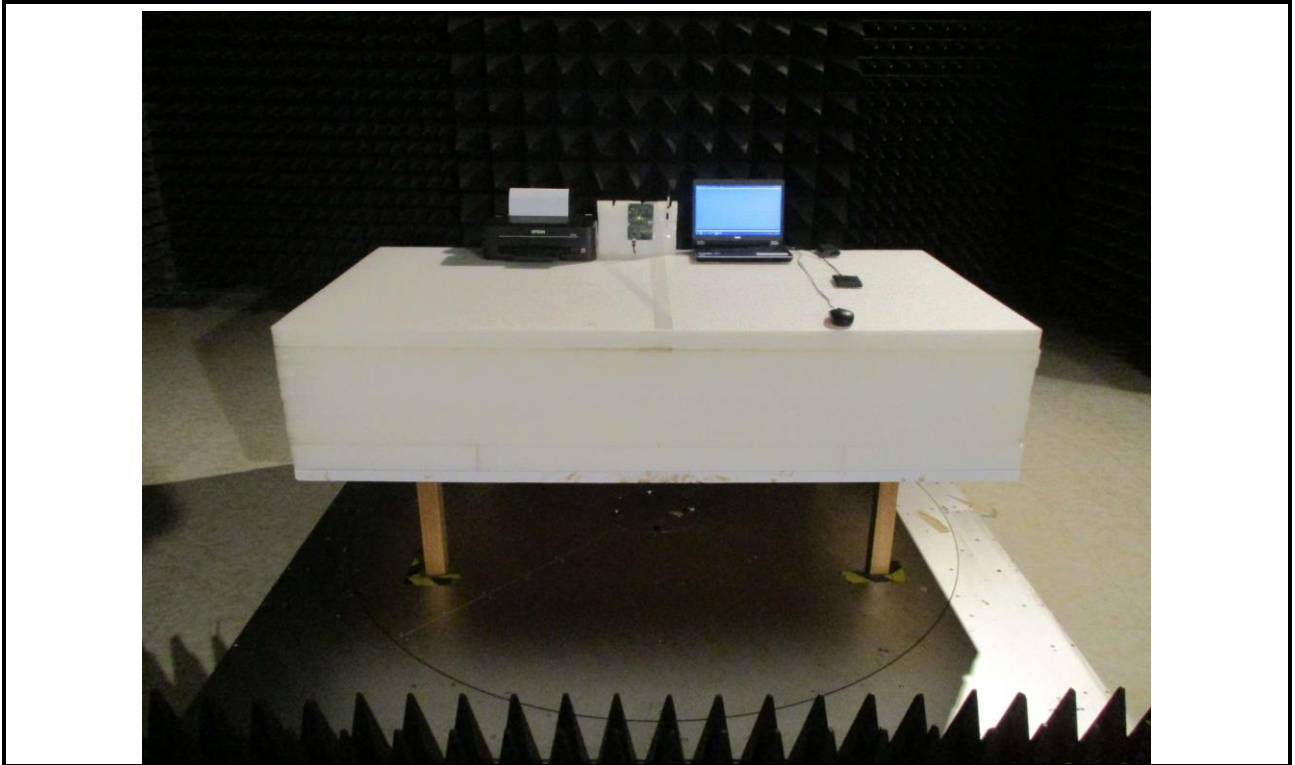
Conducted Emission Test



Radiated Emission Below 1GHz Test



Radiated Emission Above 1GHz Test



5 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan,
R.O.C.

Kwei Shan

Tel: 886-3-271-8666

No. 3-1, Lane 6, Wen San 3rd
St., Kwei Shan District, Tao Yuan
City 333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan District, Tao Yuan
City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==