TEST REPORT

Product	:	L400, S400, S500, TS-400, IP400
Trade mark	:	AIPTEK/iBeamBLOCK/hp
Model/Type reference	:	L400 PAD
Serial Number	:	N/A
Report Number	:	EED32I00318002
FCC ID	:	2AHTC-IBBL4
Date of Issue	:	Jul. 14, 2017
Test Standards	:	47 CFR Part 15Subpart C
Test result	:	PASS

Prepared for:

Global Aiptek Corporation
5F, No. 550, Xianzheng 2nd Rd., Zhubei City, Hsinchu County, Taiwan

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Tested By:	Tom chen (Test Project)	Compiled by:	Kevin Ian(Project Engineer)
Reviewed by:	Kevin yang (Reviewer)	Approved by:	Sheek Luo (Lab supervisor)
Date:	Jul. 14, 2017		Check No.:2402615206

CENTRE TESTING INTERNATIONAL GROUP CO.,LTD. Report Seal

2 Version

Version No.	Date	Description
00	Jul. 14, 2017	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15Subpart C Section 15.207	ANSI C63.10-2013	PASS
Conducted Peak Output Power	47 CFR Part 15Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013/ KDB 558074 D01v04	PASS
6dB Occupied Bandwidth	47 CFR Part 15Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013/ KDB 558074 D01v04	PASS
Power Spectral Density	47 CFR Part 15Subpart C Section 15.247 (e)	ANSI C63.10-2013/ KDB 558074 D01v04	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15Subpart C Section 15.247(d)	ANSI C63.10-2013/ KDB 558074 D01v04	PASS
RF Conducted Spurious Emissions	47 CFR Part 15Subpart C Section 15.247(d)	ANSI C63.10-2013/ KDB 558074 D01v04	PASS
Radiated Spurious Emissions	47 CFR Part 15Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

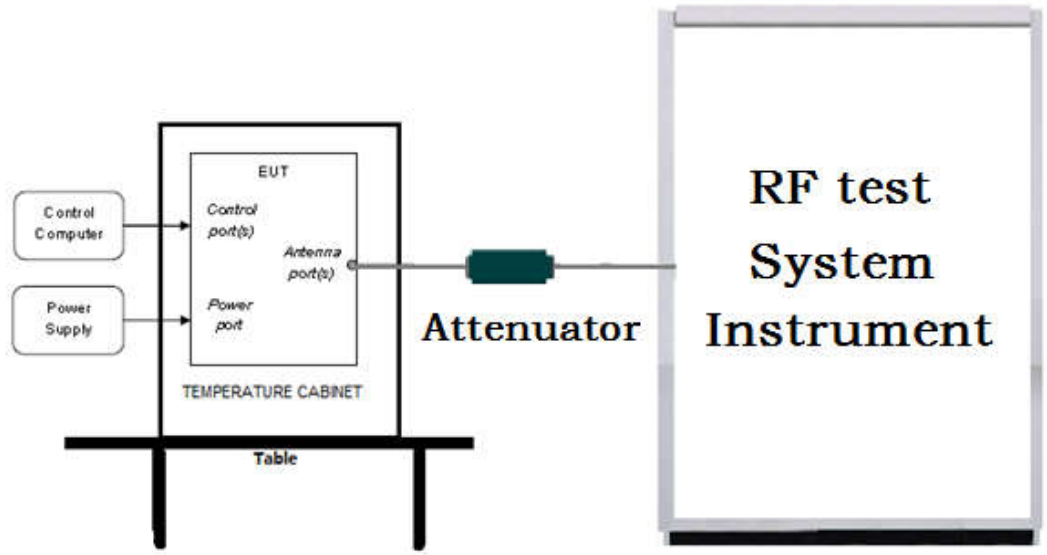
The tested sample(s) and the sample information are provided by the client.

4 Content

5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

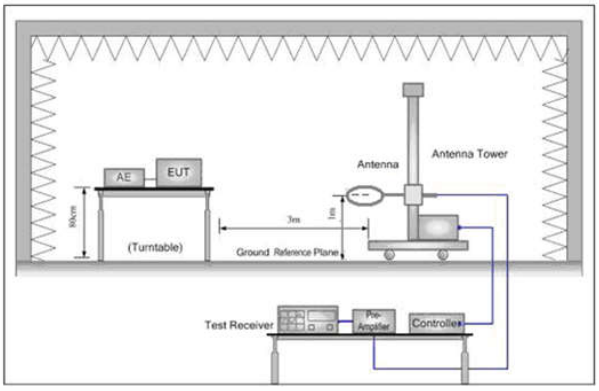


Figure 1. Below 30MHz

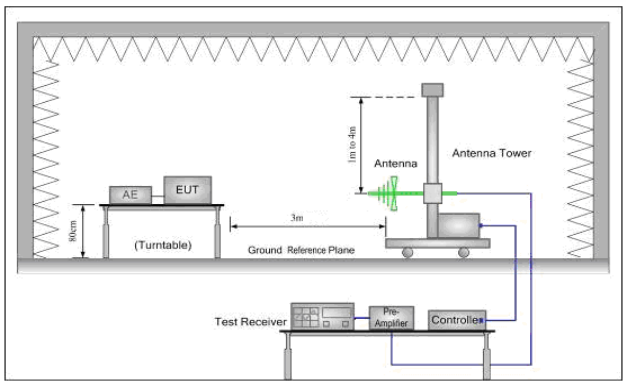


Figure 2. 30MHz to 1GHz

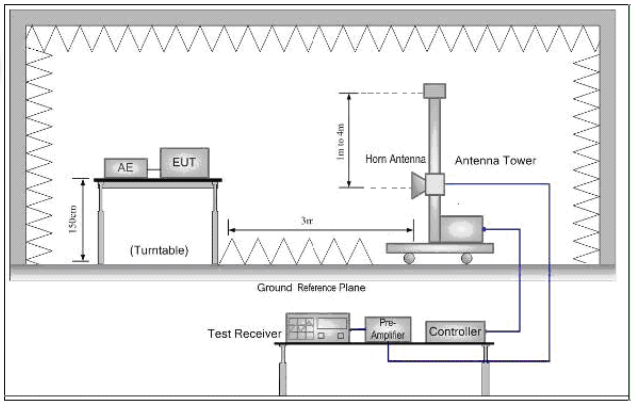
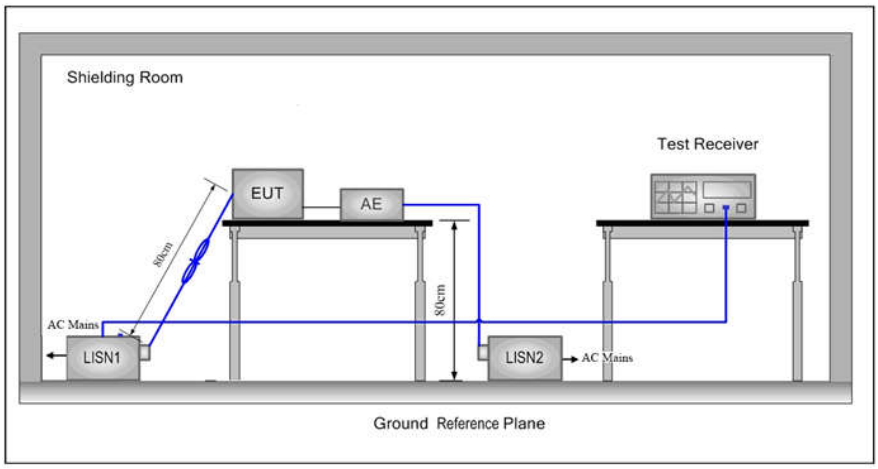


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	53 % RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
GFSK	2402MHz ~2480 MHz	Channel 1	Channel 20	Channel 40
		2402MHz	2440MHz	2480MHz
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.			

6 General Information

6.1 Client Information

Applicant:	Global Aiptek Corporation
Address of Applicant:	5F, No. 550, Xianzheng 2nd Rd., Zhubei City, Hsinchu County, Taiwan
Manufacturer:	Global Aiptek Corporation
Address of Manufacturer:	5F, No. 550, Xianzheng 2nd Rd., Zhubei City, Hsinchu County, Taiwan
Factory:	Shenzhen ACT Industrial Co., Ltd
Address of Factory:	1~8F, No. 5 Building, Beishan Industrial Park, No. 146 Beishan Avenue, Yantian District, Shenzhen City

6.2 General Description of EUT

Product Name:	L400, S400, S500, TS-400, IP400
Model No.(EUT):	L400 PAD
Trade mark:	AIPTEK/iBeamBLOCK/hp
EUT Supports Radios application:	WIFI 2.4GHz 802.11b/g/n(HT20), BT4.0 Dual mode
AC adapter:	MODEL: DSA-42PFB-12 1 120350; Input: 100-240V~50/60Hz, 1.2A; Output: 12V⎓3.5A
Sample Received Date:	Dec. 16, 2016
Sample tested Date:	Dec. 16, 2016 to Jun. 23, 2017

6.3 Product Specification subjective to this standard

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	4.0
Modulation Technique:	DSSS
Modulation Type:	GFSK
Number of Channel:	40
Sample Type:	mobile production
Test Power Grade:	N/A
Test Software of EUT:	N/A
Antenna Type and Gain:	PIFA Antenna and -4.5dBi
Test Voltage:	AC 120V/60Hz

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	11	2422MHz	21	2442MHz	31	2462MHz
2	2404MHz	12	2424MHz	22	2444MHz	32	2464MHz
3	2406MHz	13	2426MHz	23	2446MHz	33	2466MHz
4	2408MHz	14	2428MHz	24	2448MHz	34	2468MHz
5	2410MHz	15	2430MHz	25	2450MHz	35	2470MHz
6	2412MHz	16	2432MHz	26	2452MHz	36	2472MHz
7	2414MHz	17	2434MHz	27	2454MHz	37	2474MHz
8	2416MHz	18	2436MHz	28	2456MHz	38	2476MHz
9	2418MHz	19	2438MHz	29	2458MHz	39	2478MHz
10	2420MHz	20	2440MHz	30	2460MHz	40	2480MHz

6.4 Description of Support Units

The EUT has been tested with associated equipment below.

Associated equipment name		Manufacture	model	Supplied by
AE1	Projector	Global Aiptek Corporation	L400	Client
AE2	Mobile Power	Global Aiptek Corporation	PB-TS02	Client

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.31dB (30MHz-1GHz)
		0.57dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	2.8%
7	DC power voltages	0.025%

7 Equipment List

RF test system					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Signal Generator	Keysight	E8257D	MY53401106	03-14-2017	03-13-2018
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-14-2017	03-13-2018
Signal Generator	Keysight	N5182B	MY53051549	03-14-2017	03-13-2018
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	TTF20120439	01-11-2017	01-10-2018
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	003	01-11-2017	01-10-2018
DC Power	Keysight	E3642A	MY54436035	03-14-2017	03-13-2018
power meter & power sensor	R&S	OSP120	101374	03-14-2017	03-13-2018
RF control unit	JS Tonscend	JS0806-2	158060006	03-14-2017	03-13-2018

Conducted disturbance Test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Receiver	R&S	ESCI	100009	06-14-2017	06-13-2018
Temperature/ Humidity Indicator	TAYLOR	1451	1905	05-08-2017	05-07-2018
LISN	R&S	ENV216	100098	06-13-2017	06-12-2018
LISN	schwarzbeck	NNLK8121	8121-529	06-13-2017	06-12-2018
Current Probe	R&S	EZ17	100106	06-13-2017	06-12-2018
ISN	TESEQ GmbH	ISN T800	30297	02-23-2017	02-22-2018

3M Semi/full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	TTE20130797	06-05-2016	06-05-2019
TRILOG Broadband Antenna	SCHWARZBECK	VULB9163	9163-484	05-23-2017	05-22-2018
Microwave Preamplifier	Agilent	8449B	3008A02425	02-16-2017	02-15-2018
Horn Antenna	ETS-LINDGREN	3117	00057407	07-20-2015	07-18-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Microwave Preamplifier	A.H.SYSTEMS	PAP-1840-60	6041.6042	06-30-2015	06-28-2018
Horn Antenna	A.H.SYSTEMS	SAS-574 374	374	06-30-2015	06-28-2018
Spectrum Analyzer	R&S	FSP40	100416	06-13-2017	06-12-2018
Receiver	R&S	ESCI	100435	06-14-2017	06-13-2018
LISN	schwarzbeck	NNBM8125	81251547	06-13-2017	06-12-2018
LISN	schwarzbeck	NNBM8125	81251548	06-13-2017	06-12-2018
Signal Generator	Agilent	E4438C	MY45095744	03-14-2017	03-13-2018
Signal Generator	Keysight	E8257D	MY53401106	03-14-2017	03-13-2018
Temperature/ Humidity Indicator	TAYLOR	1451	1905	05-08-2017	05-07-2018
Cable line	Fulai(7M)	SF106	5219/6A	01-11-2017	01-10-2018
Cable line	Fulai(6M)	SF106	5220/6A	01-11-2017	01-10-2018
Cable line	Fulai(3M)	SF106	5216/6A	01-11-2017	01-10-2018
Cable line	Fulai(3M)	SF106	5217/6A	01-11-2017	01-10-2018
Communication test set	R&S	CMW500	152394	03-14-2017	03-13-2018
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	TTF20120439	01-11-2017	01-10-2018
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	003	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX01CA09 CL12-0395-001	TTF20120434	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX01CA08 CL12-0393-001	TTF20120435	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX02CA04 CL12-0396-002	TTF20120436	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX02CA03 CL12-0394-001	TTF20120437	01-11-2017	01-10-2018

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicesed Wireless Devices

Test Results List:

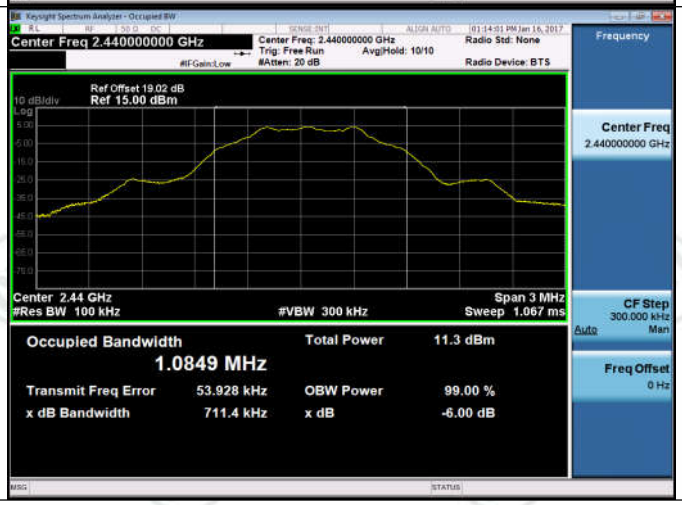
Test Requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (a)(2)	ANSI C63.10/KDB 558074	6dB Occupied Bandwidth	PASS	Appendix A)
Part15C Section 15.247 (b)(3)	ANSI C63.10/KDB 558074	Conducted Peak Output Power	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10/KDB 558074	Band-edge for RF Conducted Emissions	PASS	Appendix C)
Part15C Section 15.247(d)	ANSI C63.10/KDB 558074	RF Conducted Spurious Emissions	PASS	Appendix D)
Part15C Section 15.247 (e)	ANSI C63.10/KDB 558074	Power Spectral Density	PASS	Appendix E)
Part15C Section 15.203/15.247 (c)	ANSI C63.10	Antenna Requirement	PASS	Appendix F)
Part15C Section 15.207	ANSI C63.10	AC Power Line Conducted Emission	PASS	Appendix G)
Part15C Section 15.205/15.209	ANSI C63.10	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix H)
Part15C Section 15.205/15.209	K ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix I)

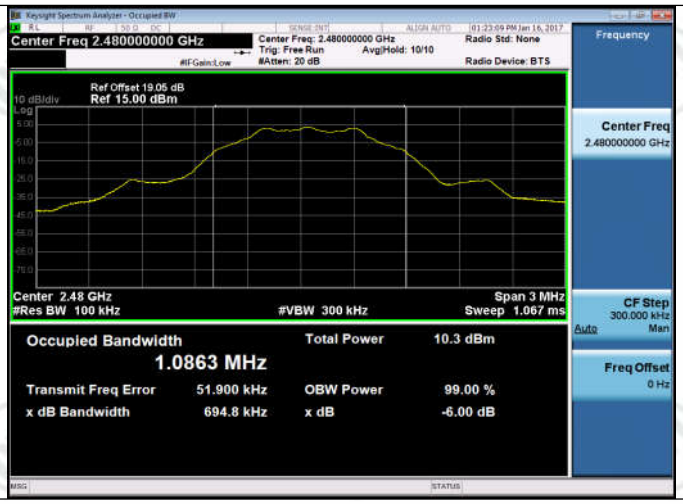
Appendix A): 6dB Occupied Bandwidth

Test Result

Mode	Channel	6dB Bandwidth [MHz]	99% OBW[MHz]	Verdict	Remark
BLE	LCH	0.7062	1.0837	PASS	Peak detector
BLE	MCH	0.7114	1.0849	PASS	
BLE	HCH	0.6948	1.0863	PASS	

Test Graphs

Graphs		
LCH		
MCH		

HCH	

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 19.05 dB
10 dB/div
Ref 15.00 dBm
Log
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1.067 ms
CF Step
300.000 kHz
Auto
Man
Occupied Bandwidth
1.0863 MHz
Total Power
10.3 dBm
Freq Offset
0 Hz
Transmit Freq Error
51.900 kHz
OBW Power
99.00 %
x dB Bandwidth
694.8 kHz
x dB
-6.00 dB
MSG
STATUS

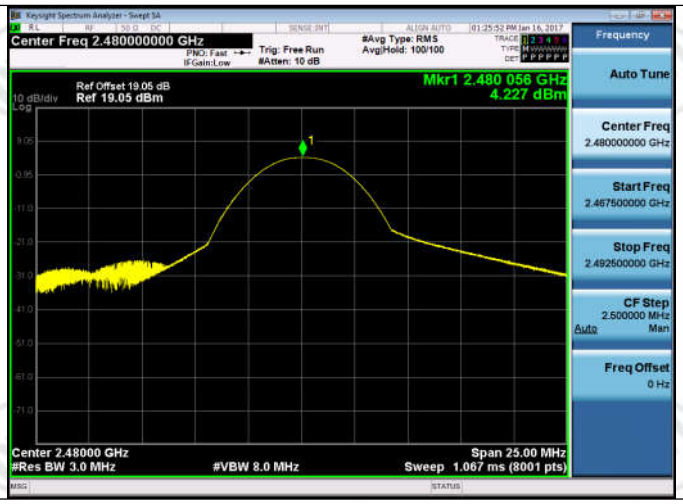
Appendix B): Conducted Peak Output Power

Test Result

Mode	Channel	Conduct Peak Power[dBm]	Verdict
BLE	LCH	2.749	PASS
BLE	MCH	4.896	PASS
BLE	HCH	4.227	PASS

Test Graphs

Graphs		
LCH		
MCH		

HCH	

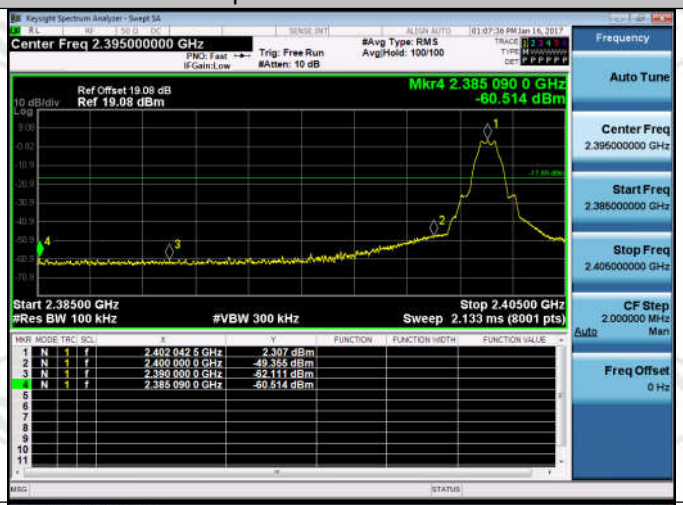
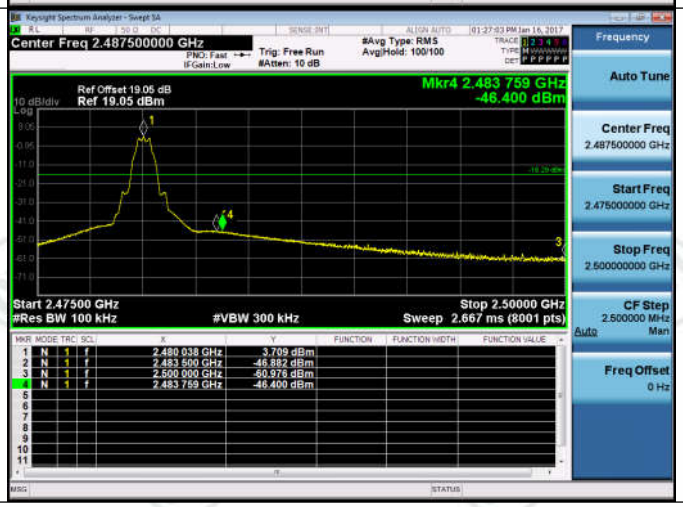
Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 100/100
01:25:52 PM Jan 16, 2017
Ref Offset 19.05 dB
10 dB/div
Ref 19.05 dBm
Log
Mkr1 2.480 056 GHz
4.227 dBm
Center 2.48000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 25.00 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.467500000 GHz
Stop Freq
2.492500000 GHz
CF Step
2.500000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

Appendix C): Band-edge for RF Conducted Emissions

Result Table

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BLE	LCH	2.307	-60.514	-17.69	PASS
BLE	HCH	3.709	-46.400	-16.29	PASS

Test Graphs

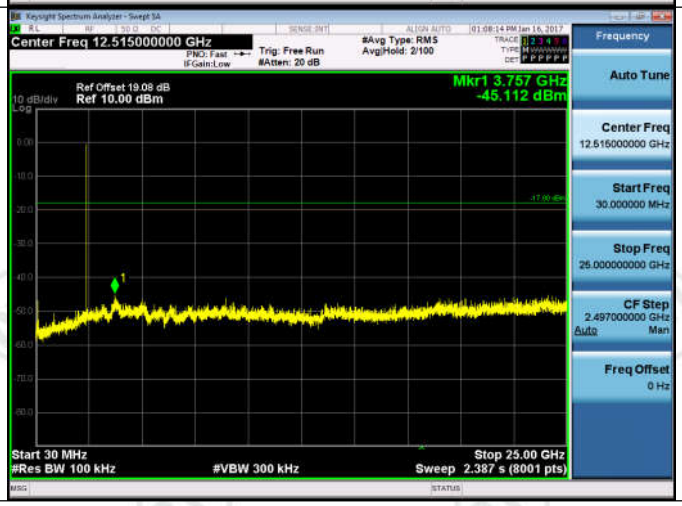
Graphs		
LCH		
HCH		

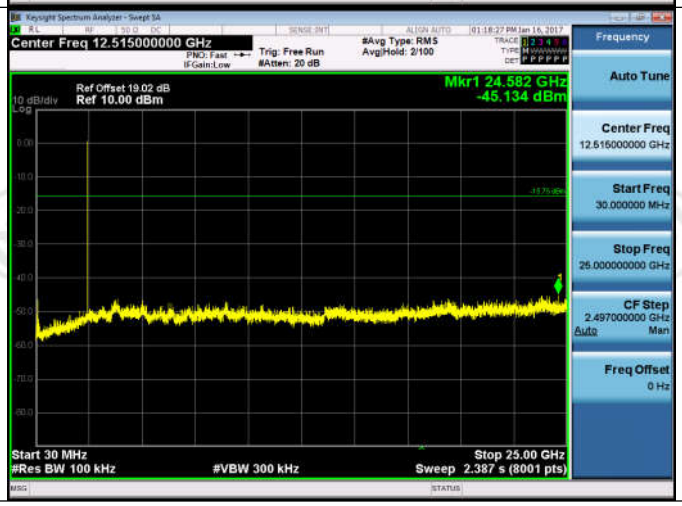
Appendix D): RF Conducted Spurious Emissions

Result Table

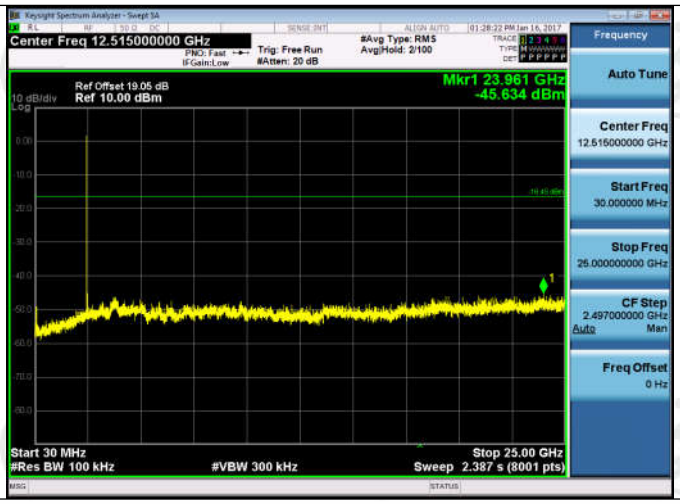
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
BLE	LCH	2.102	<Limit	PASS
BLE	MCH	4.25	<Limit	PASS
BLE	HCH	3.553	<Limit	PASS

Test Graphs

BLE_LCH_Graphs		
Pref/BLE/LCH		
Puw/BLE/LCH		

BLE_MCH_Graphs		
Pref/BLE/MCH		
Puw/BLE/MCH		

BLE_HCH_Graphs		
Pref/BLE/HCH		

Puw/BLE/H CH		

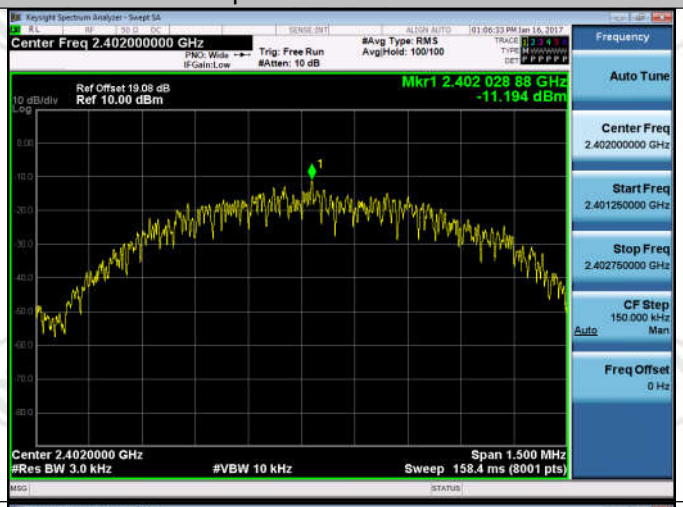
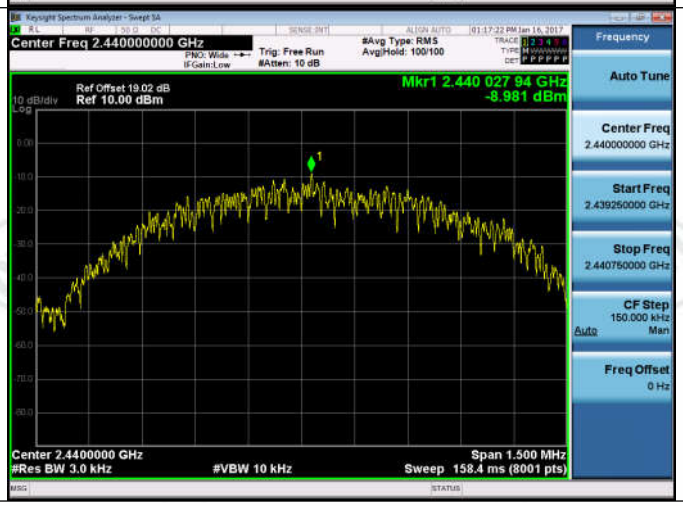
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 2/100
Ref Offset 19.05 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.961 GHz
-45.634 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz

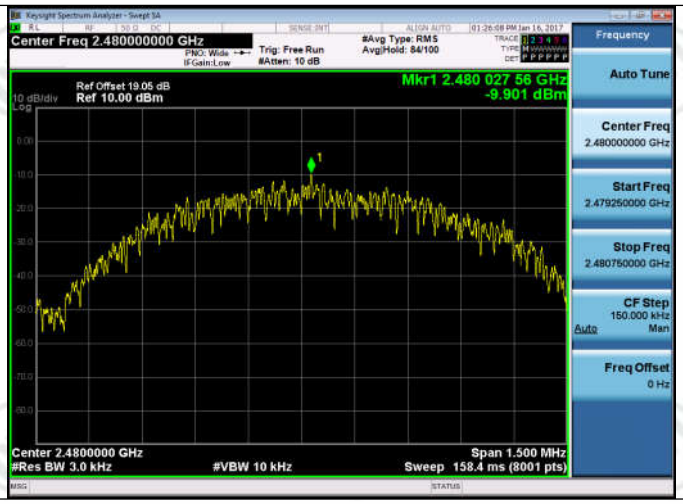
Appendix E): Power Spectral Density

Result Table

Mode	Channel	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
BLE	LCH	-11.194	8	PASS
BLE	MCH	-8.981	8	PASS
BLE	HCH	-9.901	8	PASS

Test Graphs

Graphs				
LCH				
MCH				

HCH	

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 84/100
01:26:08 PM Jan 16, 2017
Frequency
Ref Offset 19.05 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.480 027 56 GHz
-9.901 dBm
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479250000 GHz
Stop Freq
2.480750000 GHz
CF Step
150.000 kHz
Auto
Man
Freq Offset
0 Hz
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.500 MHz
Sweep 158.4 ms (8001 pts)
MSG
STATUS

Appendix F): Antenna Requirement

15.203 requirement:

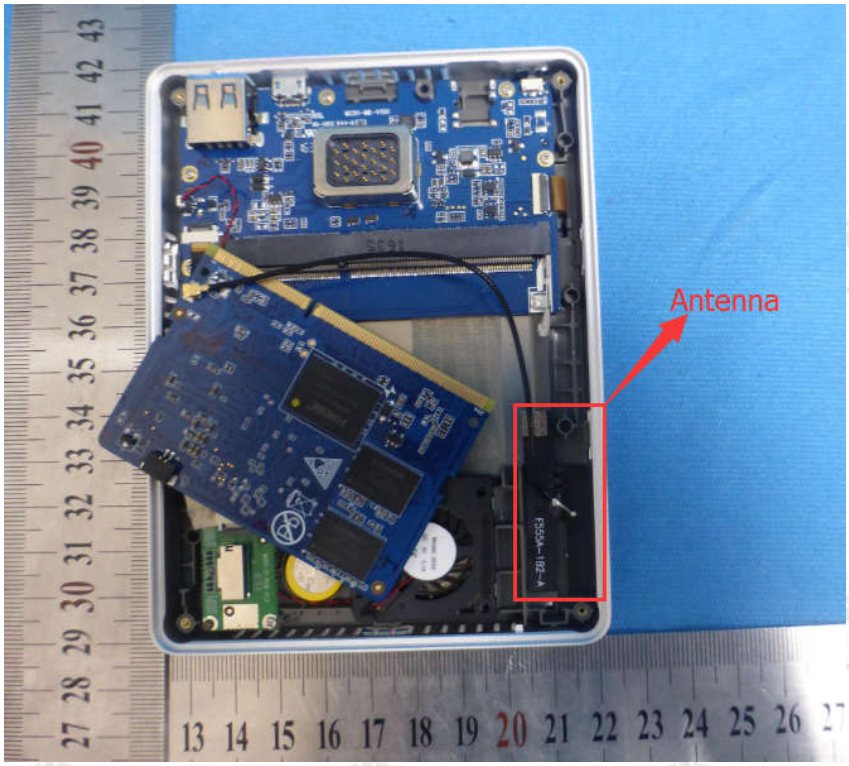
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the inner shell and no consideration of replacement. The best case gain of the antenna is -4.5dBi.



Appendix G): AC Power Line Conducted Emission

Test Procedure:	Test frequency range :150KHz-30MHz 1)The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
Limit:	

Frequency range (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

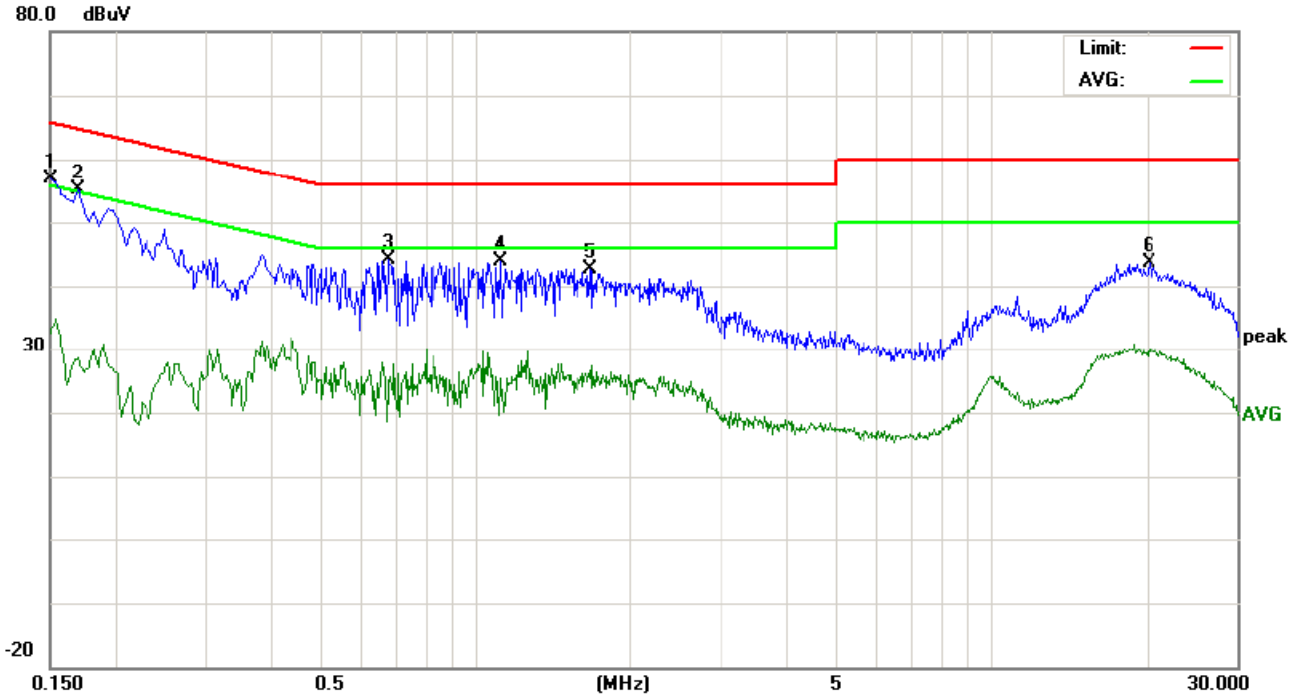
NOTE : The lower limit is applicable at the transition frequency

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

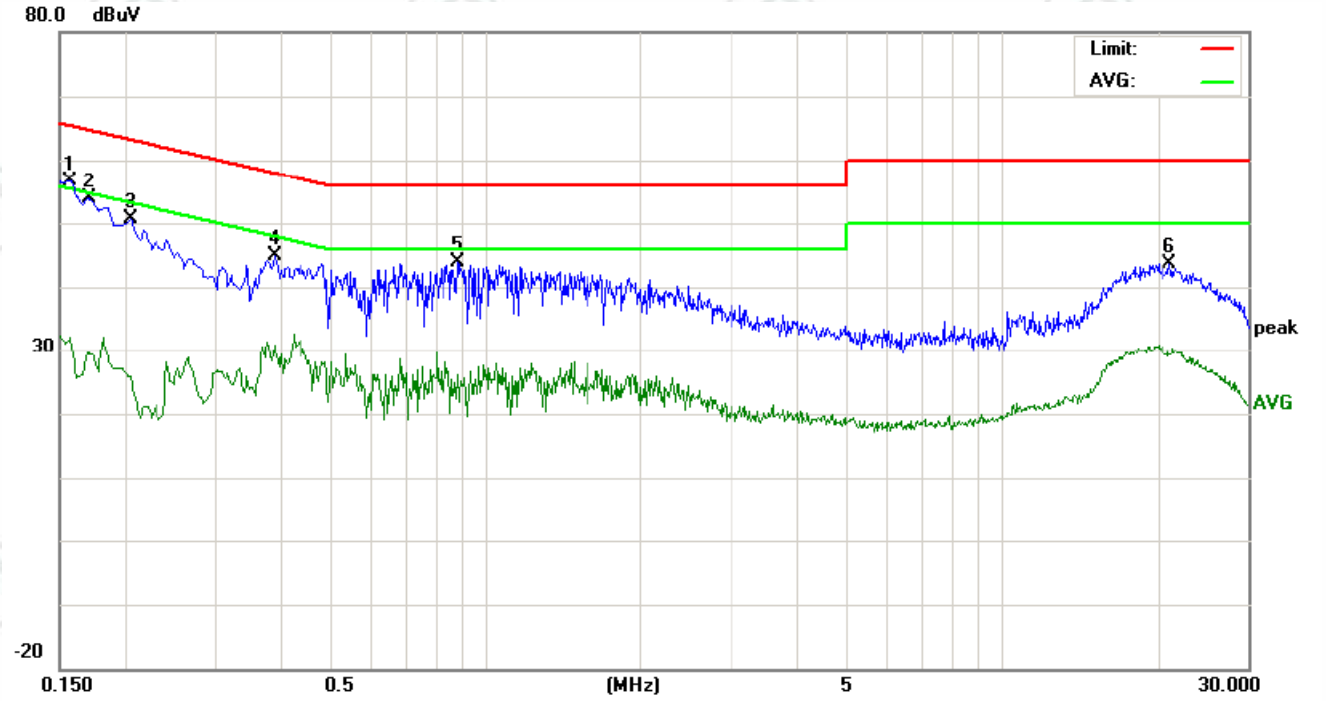
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live line:



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1500	47.15	41.21	23.60	9.77	56.92	50.98	33.37	65.99	55.99	-15.01	-22.62	P	
2	0.1700	45.32	37.03	16.47	9.74	55.06	46.77	26.21	64.96	54.96	-18.19	-28.75	P	
3	0.6780	34.29	30.25	15.43	9.75	44.04	40.00	25.18	56.00	46.00	-16.00	-20.82	P	
4	1.1220	34.20	28.56	13.54	9.63	43.83	38.19	23.17	56.00	46.00	-17.81	-22.83	P	
5	1.6740	33.02	26.47	15.35	9.69	42.71	36.16	25.04	56.00	46.00	-19.84	-20.96	P	
6	20.3260	33.42	26.37	17.98	10.16	43.58	36.53	28.14	60.00	50.00	-23.47	-21.86	P	

Neutral line:



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1580	46.94	39.05	19.49	9.76	56.70	48.81	29.25	65.56	55.56	-16.75	-26.31	P	
2	0.1722	46.78	37.64	16.73	9.74	56.52	47.38	26.47	64.85	54.85	-17.47	-28.38	P	
3	0.2060	40.81	35.43	13.30	9.71	50.52	45.14	23.01	63.36	53.36	-18.22	-30.35	P	
4	0.3899	35.04	30.69	19.49	9.75	44.79	40.44	29.24	58.06	48.06	-17.62	-18.82	P	
5	0.8860	34.10	29.59	14.11	9.75	43.85	39.34	23.86	56.00	46.00	-16.66	-22.14	P	
6	21.1980	33.50	26.22	18.18	10.16	43.66	36.38	28.34	60.00	50.00	-23.62	-21.66	P	

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

Appendix H): Restricted bands around fundamental frequency (Radiated)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel

Above 1GHz test procedure as below:

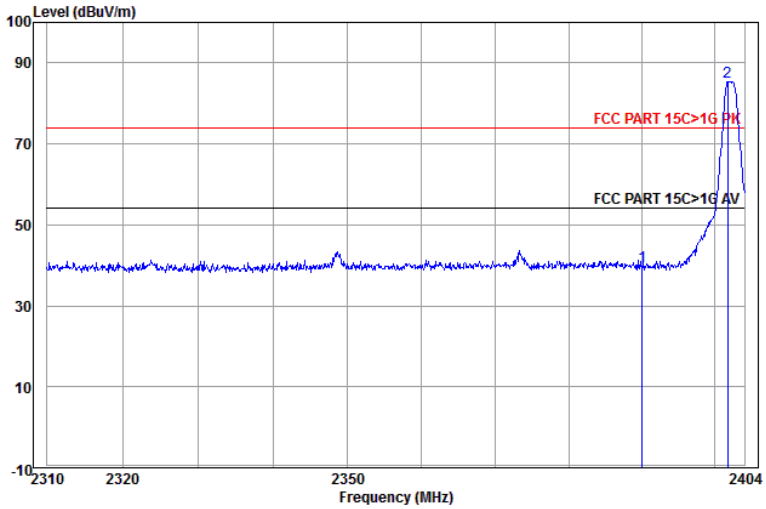
g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
h. . Test the EUT in the lowest channel , the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

Frequency	Limit (dBμV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

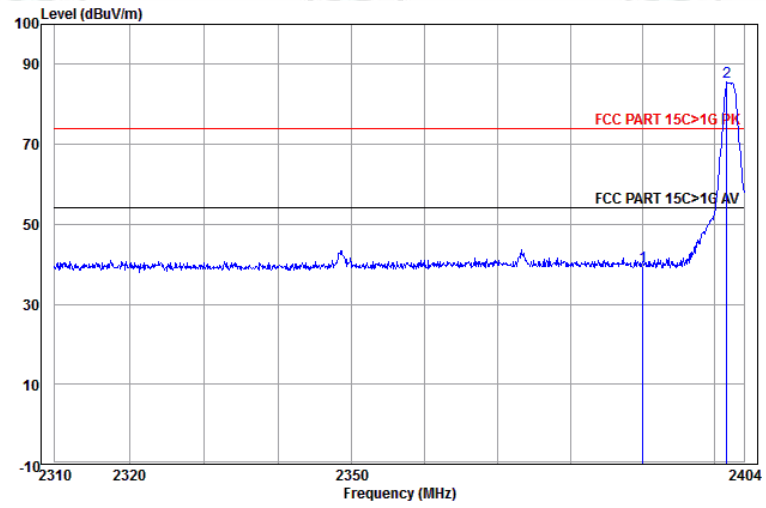
Test plot as follows:

Worse case mode:	GFSK		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



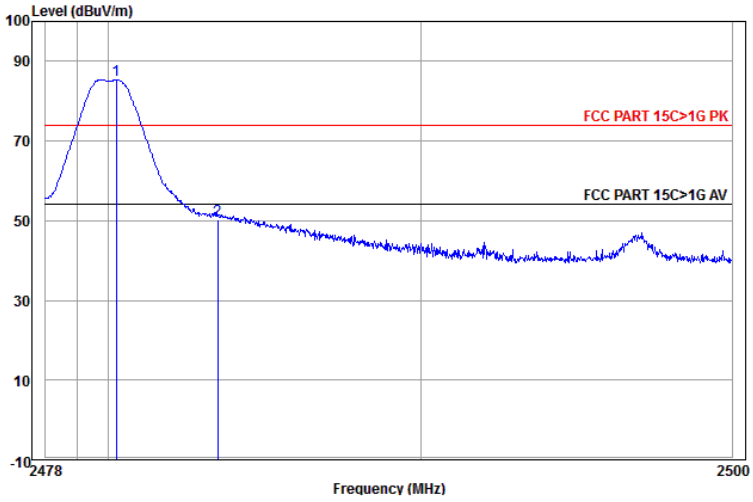
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	44.03	46.95	39.73	74.00	-34.27	Horizontal	
2 pp	2401.700	32.56	4.31	44.04	92.61	85.44	74.00	11.44	Horizontal	

Worse case mode:	GFSK		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



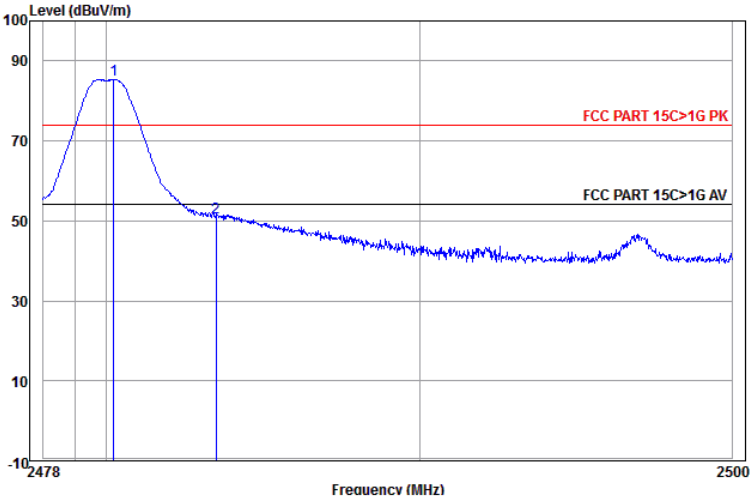
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	44.03	46.81	39.59	74.00	-34.41	Vertical	
2 pp	2401.604	32.56	4.31	44.04	92.70	85.53	74.00	11.53	Vertical	

Worse case mode:	GFSK		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.257	32.71	4.50	44.14	92.37	85.44	74.00	11.44	Horizontal	
2	2483.500	32.71	4.51	44.14	57.08	50.16	74.00	-23.84	Horizontal	

Worse case mode:	GFSK		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.235	32.71	4.50	44.14	92.28	85.35	74.00	11.35	Vertical	
2	2483.500	32.71	4.51	44.14	57.78	50.86	74.00	-23.14	Vertical	

Note:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading -Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix I) Radiated Spurious Emissions

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

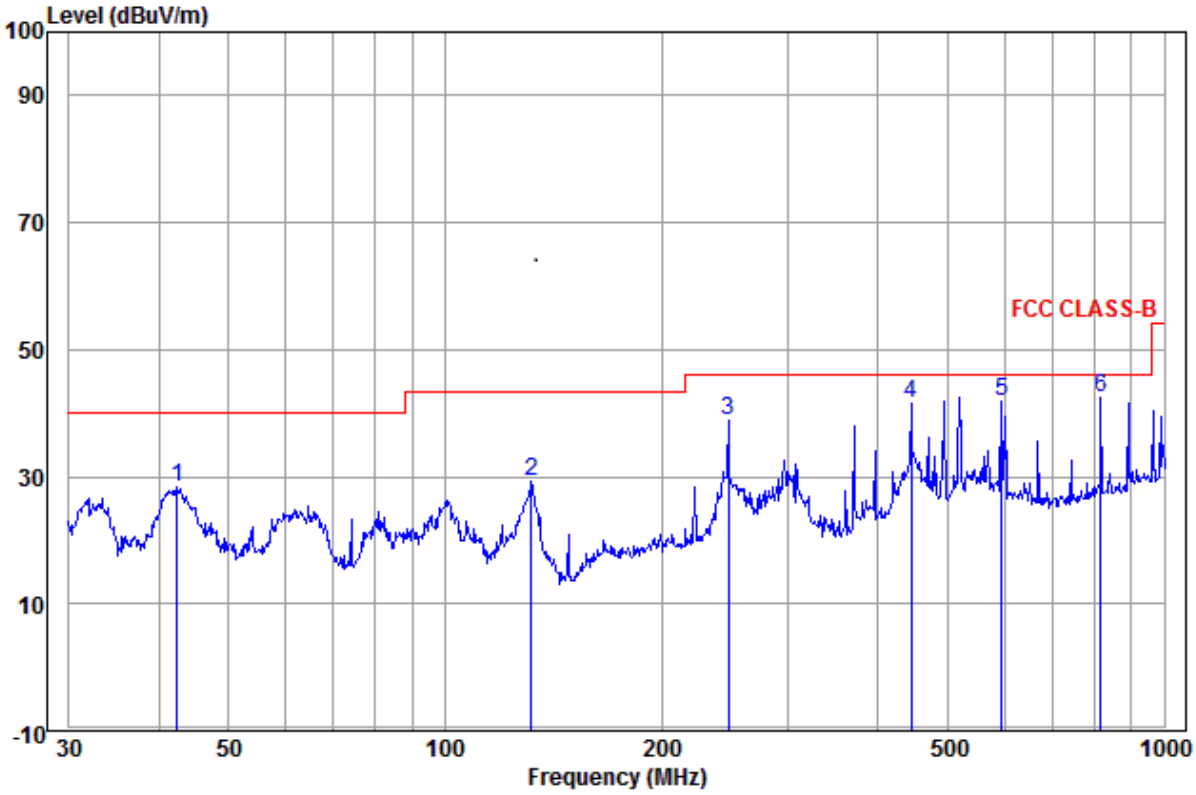
Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Radiated Spurious Emissions test Data:

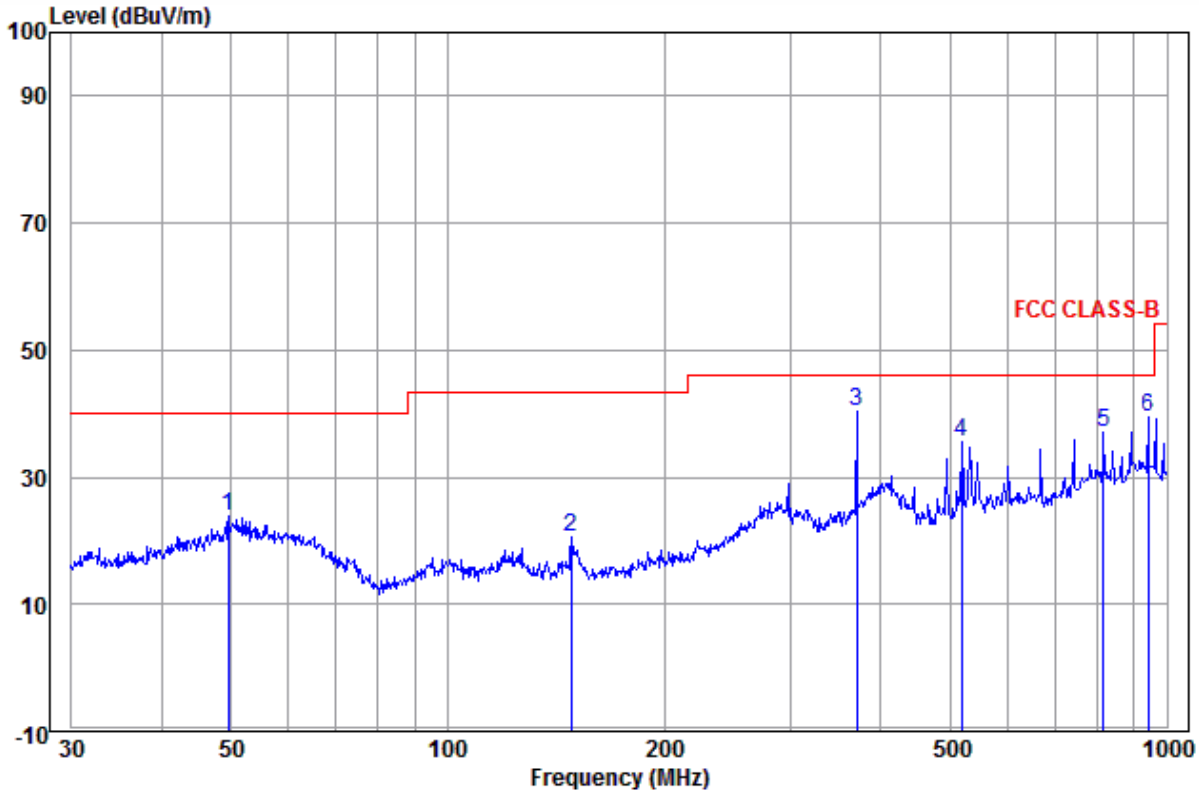
Radiated Emission below 1GHz

30MHz~1GHz (QP)		
Test mode:	Transmitting	Vertical



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	42.451	12.64	0.07	15.51	28.22	40.00	-11.78	Vertical	
2	131.758	8.86	0.60	19.79	29.25	43.50	-14.25	Vertical	
3	247.682	11.96	1.33	25.49	38.78	46.00	-7.22	Vertical	
4	444.851	16.22	1.46	23.84	41.52	46.00	-4.48	Vertical	
5	595.133	18.82	1.80	21.20	41.82	46.00	-4.18	Vertical	
6 pp	815.968	20.97	2.46	19.08	42.51	46.00	-3.49	Vertical	

Test mode:	Transmitting	Horizontal



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	49.533	13.26	0.11	10.60	23.97	40.00	-16.03	Horizontal	
2	148.441	7.89	0.61	11.93	20.43	43.50	-23.07	Horizontal	
3 pp	370.702	14.93	1.32	24.15	40.40	46.00	-5.60	Horizontal	
4	519.065	17.51	1.53	16.46	35.50	46.00	-10.50	Horizontal	
5	815.968	20.97	2.46	13.51	36.94	46.00	-9.06	Horizontal	
6	942.131	22.42	2.37	14.59	39.38	46.00	-6.62	Horizontal	

Transmitter Emission above 1GHz

Worse case mode:		GFSK		Test channel:		Lowest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1333.284	30.53	2.66	44.20	57.25	46.24	74.00	-27.76	Pass	H
1706.700	31.24	3.01	43.77	56.04	46.52	74.00	-27.48	Pass	H
4804.000	34.69	5.11	44.60	44.81	40.01	74.00	-33.99	Pass	H
6315.233	36.07	7.11	44.53	46.80	45.45	74.00	-28.55	Pass	H
7206.000	36.42	6.66	44.77	44.11	42.42	74.00	-31.58	Pass	H
9608.000	37.88	7.73	45.58	43.88	43.91	74.00	-30.09	Pass	H
1483.727	30.84	2.81	44.02	56.42	46.05	74.00	-27.95	Pass	V
3738.129	32.99	5.48	44.62	47.72	41.57	74.00	-32.43	Pass	V
4804.000	34.69	5.11	44.60	46.71	41.91	74.00	-32.09	Pass	V
5880.782	35.81	7.17	44.51	47.86	46.33	74.00	-27.67	Pass	V
7206.000	36.42	6.66	44.77	45.63	43.94	74.00	-30.06	Pass	V
9608.000	37.88	7.73	45.58	49.17	49.20	74.00	-24.80	Pass	V

Worse case mode:		GFSK		Test channel:		Middle	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1483.727	30.84	2.81	44.02	57.12	46.75	74.00	-27.25	Pass	H
4278.055	33.49	5.32	44.60	45.82	40.03	74.00	-33.97	Pass	H
4880.000	34.85	5.08	44.60	43.67	39.00	74.00	-35.00	Pass	H
6283.164	36.05	7.14	44.53	45.35	44.01	74.00	-29.99	Pass	H
7320.000	36.43	6.77	44.87	43.67	42.00	74.00	-32.00	Pass	H
9760.000	38.05	7.60	45.55	42.40	42.50	74.00	-31.50	Pass	H
1483.727	30.84	2.81	44.02	56.29	45.92	74.00	-28.08	Pass	V
3757.208	32.97	5.48	44.62	47.86	41.69	74.00	-32.31	Pass	V
4880.000	34.85	5.08	44.60	43.98	39.31	74.00	-34.69	Pass	V
6283.164	36.05	7.14	44.53	46.85	45.51	74.00	-28.49	Pass	V
7320.000	36.43	6.77	44.87	44.53	42.86	74.00	-31.14	Pass	V
9760.000	38.05	7.60	45.55	43.25	43.35	74.00	-30.65	Pass	V

Worse case mode:		GFSK		Test channel:		Highest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1514.252	30.90	2.84	43.98	47.08	36.84	74.00	-37.16	Pass	H
4117.785	33.10	5.39	44.60	45.53	39.42	74.00	-34.58	Pass	H
4960.000	35.02	5.05	44.60	43.07	38.54	74.00	-35.46	Pass	H
6561.030	36.19	6.87	44.56	45.37	43.87	74.00	-30.13	Pass	H
7440.000	36.45	6.88	44.97	43.83	42.19	74.00	-31.81	Pass	H
9920.000	38.22	7.47	45.52	43.85	44.02	74.00	-29.98	Pass	H
1706.700	31.24	3.01	43.77	54.39	44.87	74.00	-29.13	Pass	V
3883.622	32.88	5.46	44.61	47.42	41.15	74.00	-32.85	Pass	V
4960.000	35.02	5.05	44.60	42.26	37.73	74.00	-36.27	Pass	V
6203.700	36.01	7.22	44.52	46.06	44.77	74.00	-29.23	Pass	V
7440.000	36.45	6.88	44.97	43.13	41.49	74.00	-32.51	Pass	V
9920.000	38.22	7.47	45.52	43.35	43.52	74.00	-30.48	Pass	V

Note:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

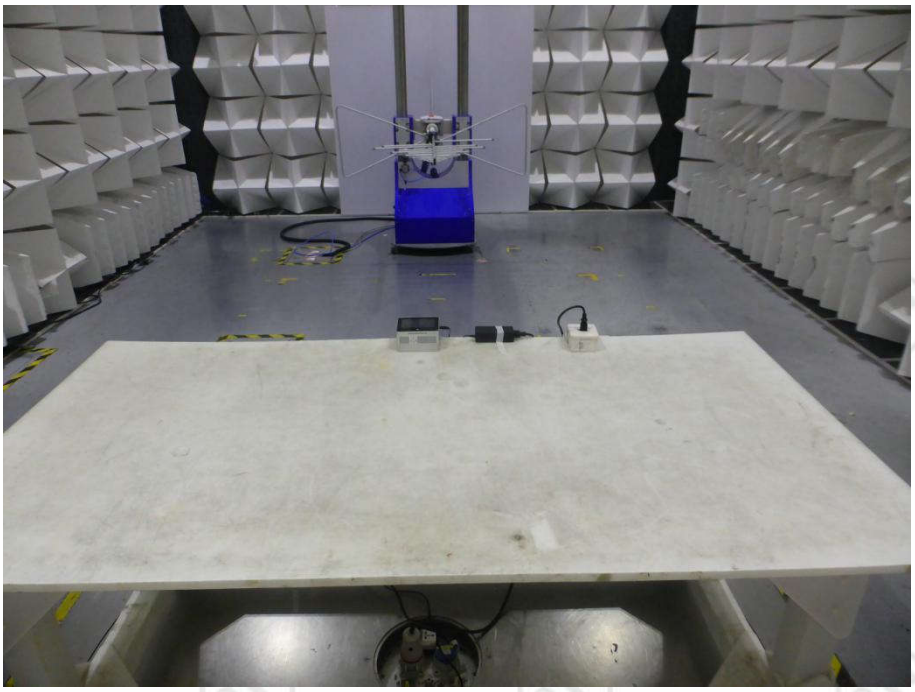
Final Test Level =Receiver Reading -Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

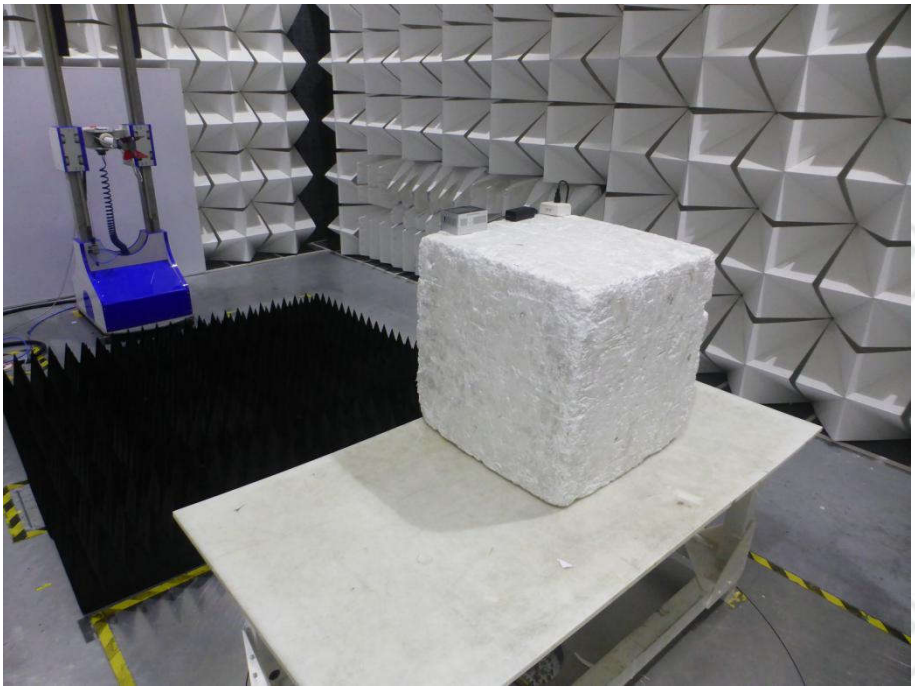
2) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

PHOTOGRAPHS OF TEST SETUP

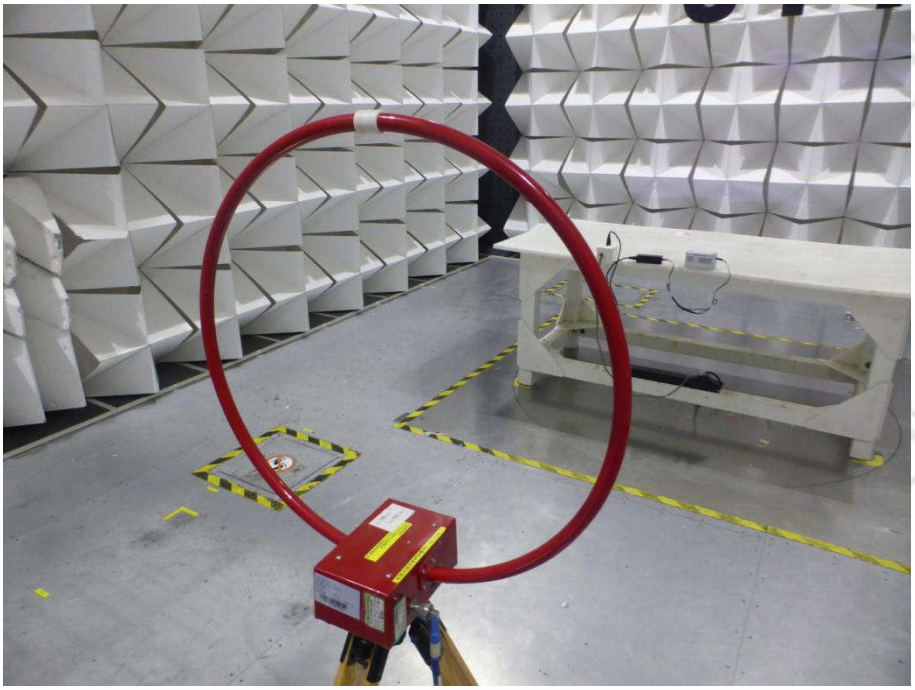
Test model No.: L400 PAD



Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)



Radiated spurious emission Test Setup-3(9KHz-30MHz)

Conducted Emissions Test Setup

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32I00318001 for EUT external and internal photos.

*** End of Report ***