FCC Part 15C Test Report
FCC ID:2BQJPKS2504

Applicant:	K-Star Plastic Mold (shenzhen) Co.,LTD
Address:	Floor 1-4, Building 2, Dongwangyang Industrial Zone, Huangtian Community, Hangcheng Subdistrict, Baoan District, Shenzhen City, Guangdong Province, China
Manufacturer:	K-Star Plastic Mold (shenzhen) Co.,LTD
Address:	Floor 1-4, Building 2, Dongwangyang Industrial Zone, Huangtian Community, Hangcheng Subdistrict, Baoan District, Shenzhen City, Guangdong Province, China
EUT:	Aromatherapy diffuser
Trade Mark:	N/A
Model Number:	KS2504, KS2504-01, KS2504-02, KS2504-03, KS2504-04, KS2504-05, KS2504-06
Date of Receipt:	Nov. 20, 2025
Test Date:	Nov. 24, 2025 - Dec. 02, 2025
Date of Report:	Dec. 02, 2025
Prepared By:	Shenzhen DL Testing Technology Co., Ltd.
Address:	101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China
Applicable Standards:	FCC PART 15 C 15.247 ANSI C63.10:2020
Test Result:	Pass
Report Number:	DLE-251124024R

Prepared (Test Engineer):	Pxing Huang
Reviewer (Supervisor):	Jack Bu
Approved (Manager):	Jade Yang

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

Table of Contents **Page**

1.1 MEASUREMENT UNCERTAINTY 4
1.2 TEST FACILTY 4
2. GENERAL INFORMATION 5
2.1 GENERAL DESCRIPTION OF EUT 5
2.2 DESCRIPTION OF TEST MODES 6
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED 6
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE) 6
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS 7
3. EMC EMISSION TEST 8
3.1 CONDUCTED EMISSION MEASUREMENT 8
3.2 POWER LINE CONDUCTED EMISSION Limits 8
3.3TEST PROCEDURE 8
3.4 DEVIATION FROM TEST STANDARD 8
3.5 TEST SETUP 9
3.6 EUT OPERATING CONDITIONS 9
3.7 TEST RESULTS 9
4. RADIATED EMISSION MEASUREMENT 12
4.1 RADIATED EMISSION LIMITS 12
4.2 TEST PROCEDURE 13
4.3 DEVIATION FROM TEST STANDARD 13
4.4 TEST SETUP 13
4.5 EUT OPERATING CONDITIONS 14
4.6 TEST RESULTS 14
5. RADIATED BAND EMISSION MEASUREMENT 18
5.1 TEST REQUIREMENT: 18
5.2 TEST PROCEDURE 18
5.3 DEVIATION FROM TEST STANDARD 18
5.4 TEST SETUP 19
5.5 EUT OPERATING CONDITIONS 19
5.6 TEST RESULT 20
6.1 APPLIED PROCEDURES / LIMIT 21
6.2 TEST PROCEDURE 21
6.3 DEVIATION FROM STANDARD 21
6.4 TEST SETUP 21
6.5 EUT OPERATION CONDITIONS 21
6.6 TEST RESULTS 21
7. POWER SPECTRAL DENSITY TEST 22

Table of Contents **Page**

7.1 APPLIED PROCEDURES / LIMIT 22
7.2 TEST PROCEDURE 22
7.3 DEVIATION FROM STANDARD 22
7.4 TEST SETUP 22
7.5 EUT OPERATION CONDITIONS 22
7.6 TEST RESULTS 22

8. 6DB BANDWIDTH TEST 23

8.1 APPLIED PROCEDURES / LIMIT 23
8.2 TEST PROCEDURE 23
8.3 DEVIATION FROM STANDARD 23
8.4 TEST SETUP 23
8.5 EUT OPERATION CONDITIONS 23
8.6 TEST RESULTS 23

9. OUT OF BAND EMISSIONS TEST 24

9.1 APPLIED PROCEDURES / LIMIT 24
9.2 TEST PROCEDURE 24
9.3 DEVIATION FROM STANDARD 24
9.4 TEST SETUP 24
9.5 EUT OPERATION CONDITIONS 24
9.6 TEST RESULTS 24

10. SPURIOUS RF CONDUCTED EMISSION 25

10.1 APPLIED PROCEDURES / LIMIT 25
10.2 TEST PROCEDURE 25
10.3 DEVIATION FROM STANDARD 25
10.4 TEST SETUP 25
10.5 EUT OPERATION CONDITIONS 25
10.6 TEST RESULTS 25

11. ANTENNA REQUIREMENT 26

11.1 STANDARD REQUIREMENT 26

11.2 EUT ANTENNA 26

12. TEST SEUUP PHOTO AND EUT PHOTO 27

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(c)	Radiated Spurious Emission	PASS	
15.205	Band Edge Emission	PASS	
15.247(b)(3)	Peak Output Power	PASS	
15.247(a)(2)	6dB Bandwidth	PASS	
15.247(e)	Power Spectral Density	PASS	
15.247(d)	Band edge measurements	PASS	
15.247(d)	Conducted Spurious Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2** ·providing a level of confidence of approximately **95** % 。

No.	Item	Uncertainty
1	Conducted Emission Test	±2.56dB
2	RF power,conducted	±0.42dB
3	Spurious emissions,conducted	±2.76dB
4	All emissions,radiated(<1G)	±3.65dB
5	All emissions,radiated(>1G)	±4.89dB
6	Bandwidth	± 1.5 x 10^{-6}
7	Power Spectral Density	±0.2dB
8	Temperature	±0.5°C
9	Humidity	±2%

1.2 TEST FACILTY

Shenzhen DL Testing Technology Co., Ltd.
Add.: 101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China

FCC Test Firm Registration Number: 854456
Designation Number: CN1307
IC Registtered No.: CN0118

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name:	Aromatherapy diffuser
Model No.:	KS2504
Serial No.:	KS2504-01, KS2504-02, KS2504-03, KS2504-04, KS2504-05, KS2504-06
Model Difference:	All the same except the model number and the colour.
Sample No.:	251120B001#
Operation Frequency:	BLE: 2402~2480 MHz
Channel Numbers:	40 Channels for BLE
Channel Separation:	2MHz for BLE
Modulation Type:	GFSK for BLE
Antenna Type:	PCB Antenna
Antenna Gain:	2.499 dBi
Power Supply:	DC 5V from Adapter

Note:

1.For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.The EUT's all information provided by client.

3.Channel List

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	19	2440	29	2460	39	2480

2.2 DESCRIPTION OF TEST MODES

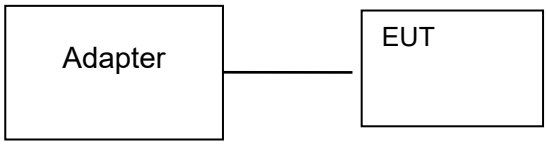
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description for BLE
	GFSK
Mode 1	2402MHz
Mode 2	2440MHz
Mode 3	2480MHz
Mode 4	Link Mode

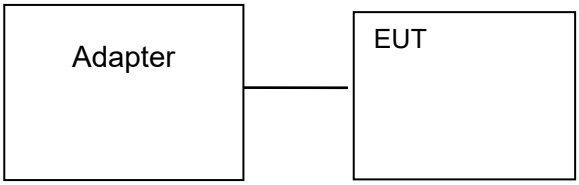
Remark: N/A

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Conducted Spurious Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Model/Type No.	Series No.	Note
1	Notebook	B40-80	MP07F6JD	AE
2	Adapter	RD0502000	228MG	AE

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation test, Band-edge test and 6db bandwidth test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Oct. 25, 2025	Oct. 24, 2026
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Oct. 25, 2025	Oct. 24, 2026
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Oct. 25, 2025	Oct. 24, 2026
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Oct. 25, 2025	Oct. 24, 2026
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Oct. 25, 2025	Oct. 24, 2026
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Oct. 25, 2025	Oct. 24, 2026
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Oct. 25, 2025	Oct. 24, 2026
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Oct. 25, 2025	Oct. 24, 2026
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Oct. 25, 2025	Oct. 24, 2026
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Oct. 25, 2025	Oct. 24, 2026
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Oct. 25, 2025	Oct. 24, 2026
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Oct. 25, 2025	Oct. 24, 2026
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Oct. 25, 2025	Oct. 24, 2026
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Oct. 25, 2025	Oct. 24, 2026
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Oct. 25, 2025	Oct. 24, 2026
16	D.C. Power Supply	LongWei	PS-305D	010964729	Oct. 25, 2025	Oct. 24, 2026

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	YIHENG	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
2	EMI Receiver	R&S	ESR	101421	Oct. 25, 2025	Oct. 24, 2026
3	LISN	R&S	ENV216	102417	Oct. 25, 2025	Oct. 24, 2026
4	843 Cable 1#	ChengYu	CE Cable	001	Oct. 25, 2025	Oct. 24, 2026

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ_EMC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ_EMC	FA-03A2
3	RF test system	MAIWEI	MTS8310	2.0.0.0
4	RF communication test system	MAIWEI	MTS8200	2.0.0.0

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.2 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.3TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

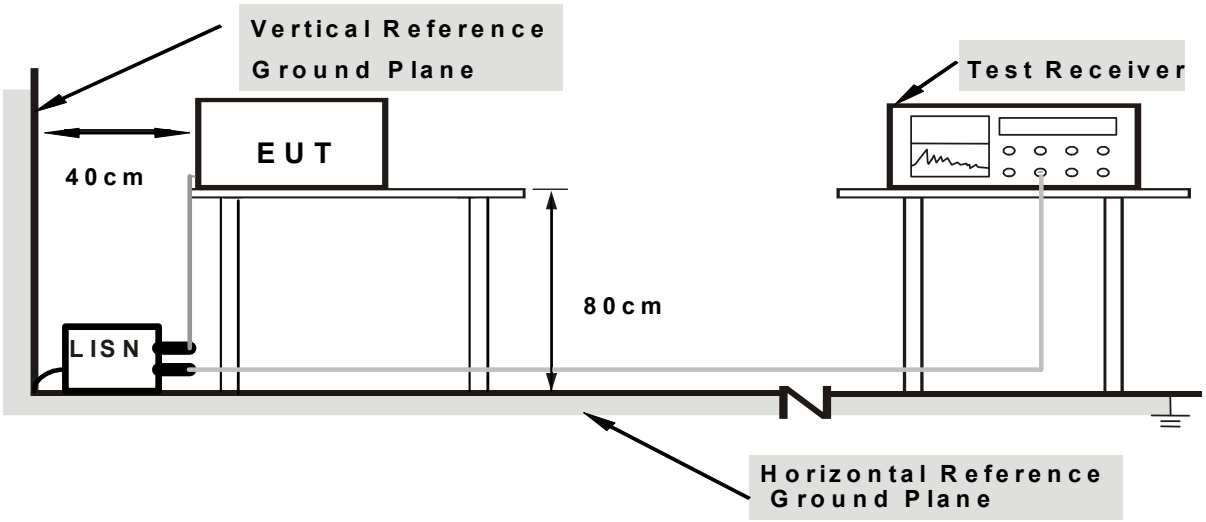
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.4 DEVIATION FROM TEST STANDARD

No deviation

3.5 TEST SETUP



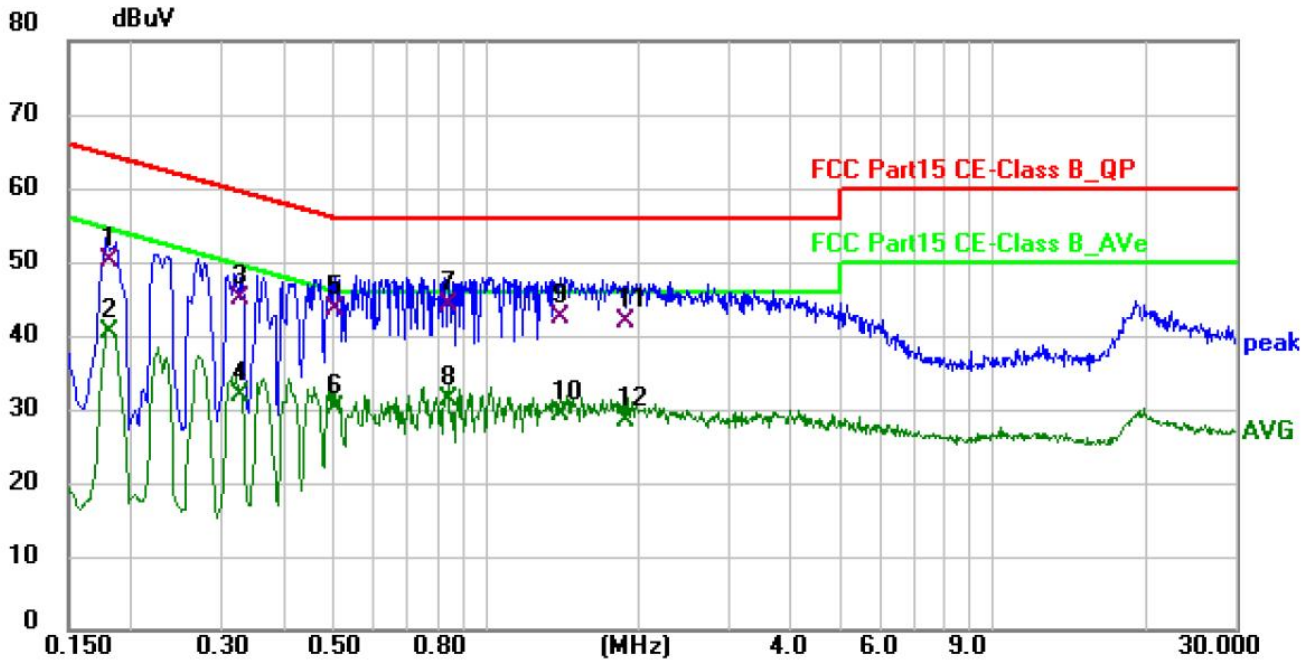
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.7 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4

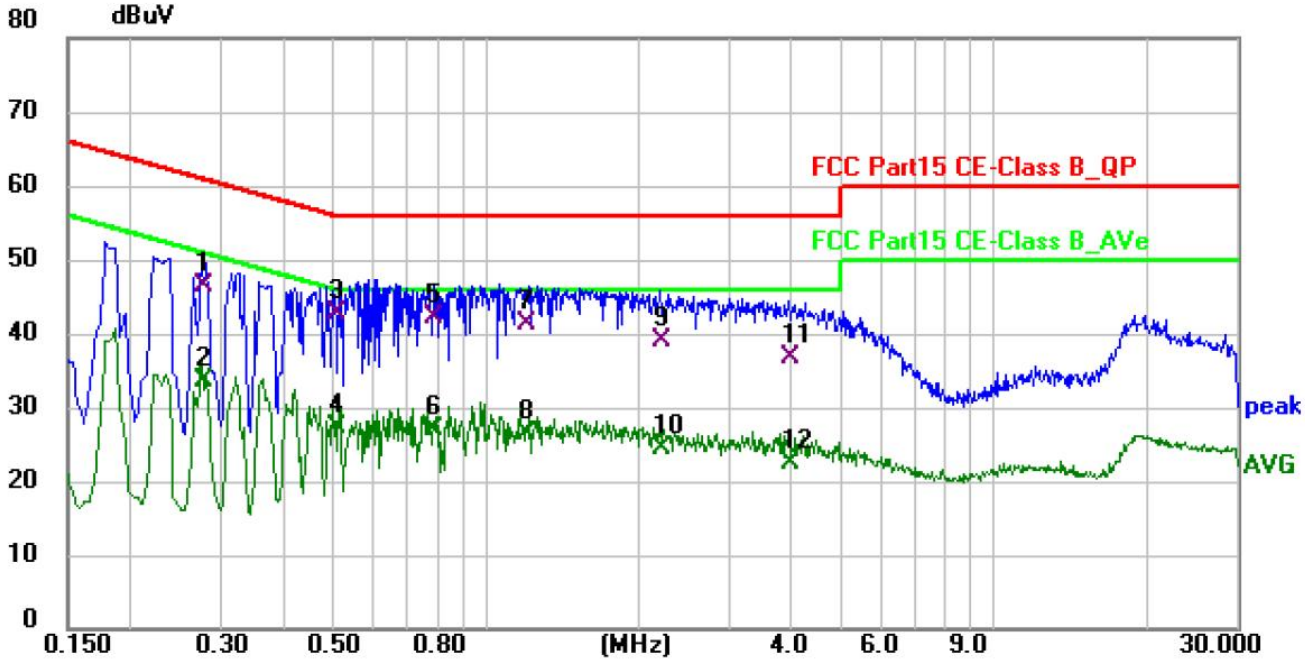


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1809	30.57	19.49	50.06	64.44	-14.38	QP	P
2	0.1809	20.80	19.49	40.29	54.44	-14.15	AVG	P
3	0.3260	25.53	19.43	44.96	59.55	-14.59	QP	P
4	0.3260	12.55	19.43	31.98	49.55	-17.57	AVG	P
5	0.5044	23.95	19.48	43.43	56.00	-12.57	QP	P
6	0.5044	10.59	19.48	30.07	46.00	-15.93	AVG	P
7 *	0.8458	24.64	19.62	44.26	56.00	-11.74	QP	P
8	0.8458	11.79	19.62	31.41	46.00	-14.59	AVG	P
9	1.4011	22.86	19.44	42.30	56.00	-13.70	QP	P
10	1.4011	9.82	19.44	29.26	46.00	-16.74	AVG	P
11	1.8792	22.34	19.38	41.72	56.00	-14.28	QP	P
12	1.8792	9.04	19.38	28.42	46.00	-17.58	AVG	P

Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

Temperature:	25 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2784	26.97	19.52	46.49	60.86	-14.37	QP	P
2	0.2784	13.97	19.52	33.49	50.86	-17.37	AVG	P
3 *	0.5116	23.36	19.47	42.83	56.00	-13.17	QP	P
4	0.5116	7.79	19.47	27.26	46.00	-18.74	AVG	P
5	0.7916	22.53	19.52	42.05	56.00	-13.95	QP	P
6	0.7916	7.42	19.52	26.94	46.00	-19.06	AVG	P
7	1.2092	21.79	19.55	41.34	56.00	-14.66	QP	P
8	1.2092	6.93	19.55	26.48	46.00	-19.52	AVG	P
9	2.2136	19.54	19.54	39.08	56.00	-16.92	QP	P
10	2.2136	5.02	19.54	24.56	46.00	-21.44	AVG	P
11	3.9440	17.19	19.53	36.72	56.00	-19.28	QP	P
12	3.9440	2.83	19.53	22.36	46.00	-23.64	AVG	P

Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

4. RADIATED EMISSION MEASUREMENT

4.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	25GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.2 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table 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 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

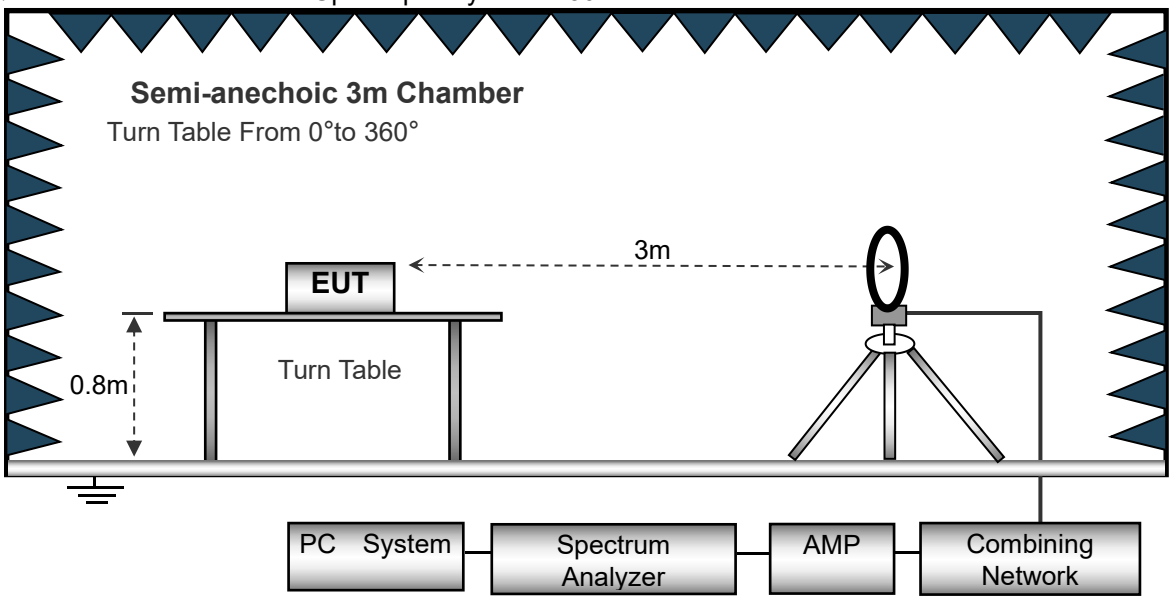
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

4.3 DEVIATION FROM TEST STANDARD

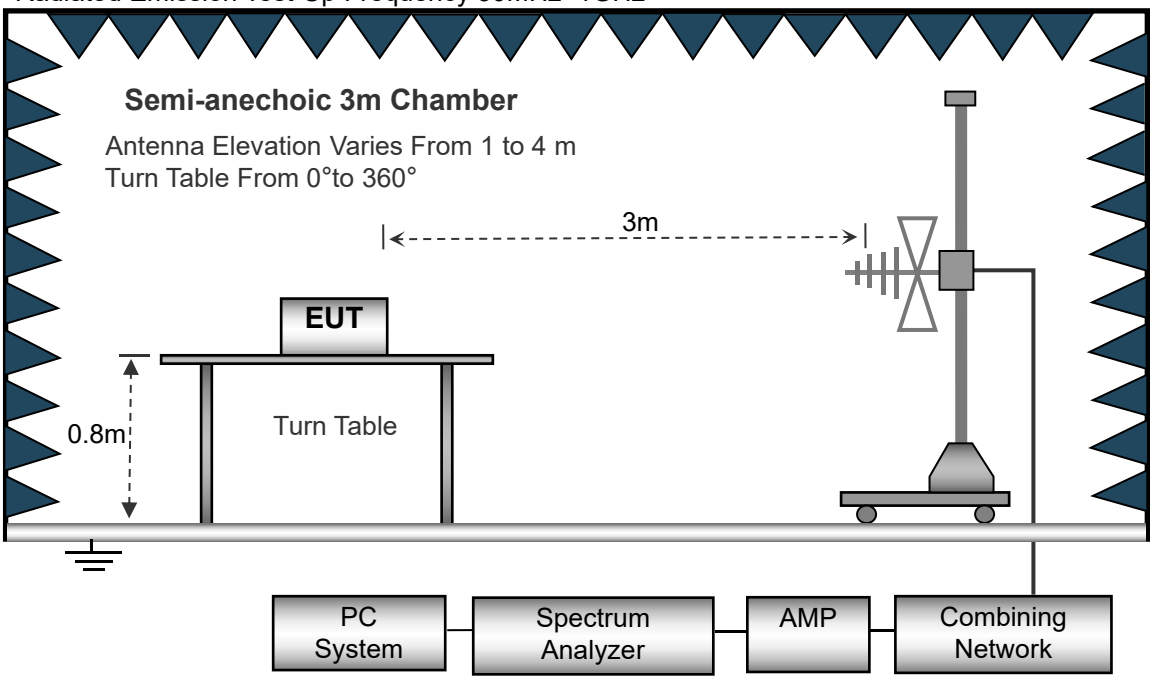
No deviation

4.4 TEST SETUP

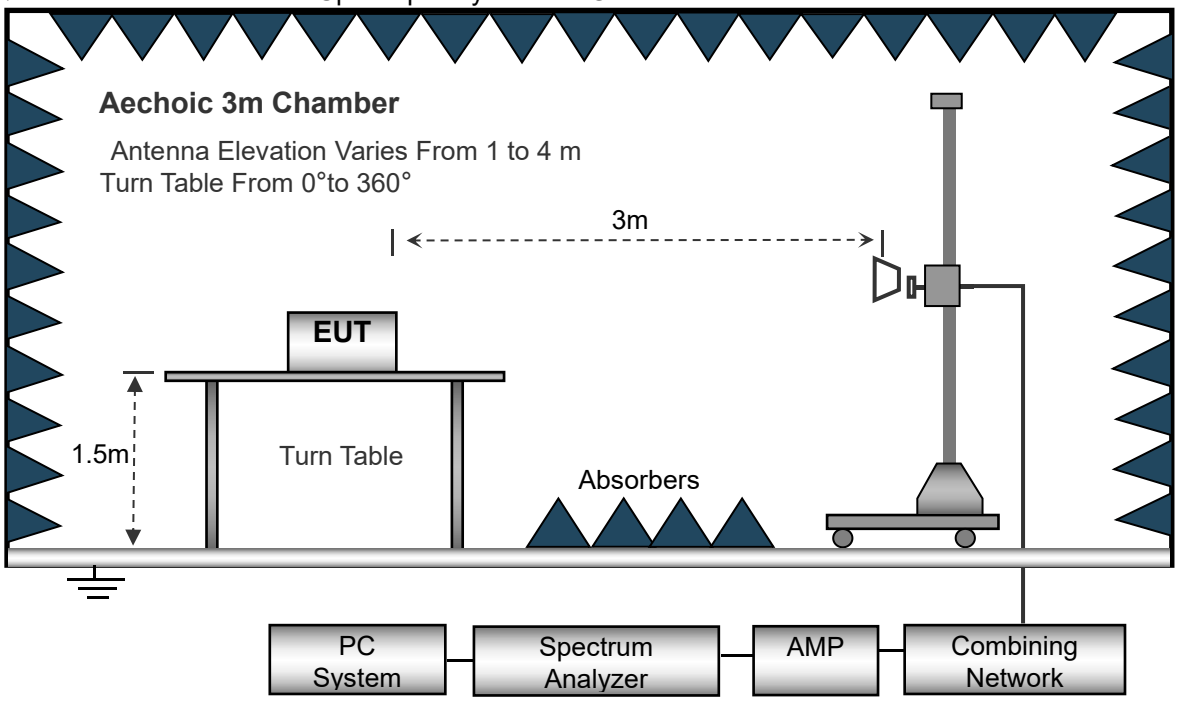
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



4.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

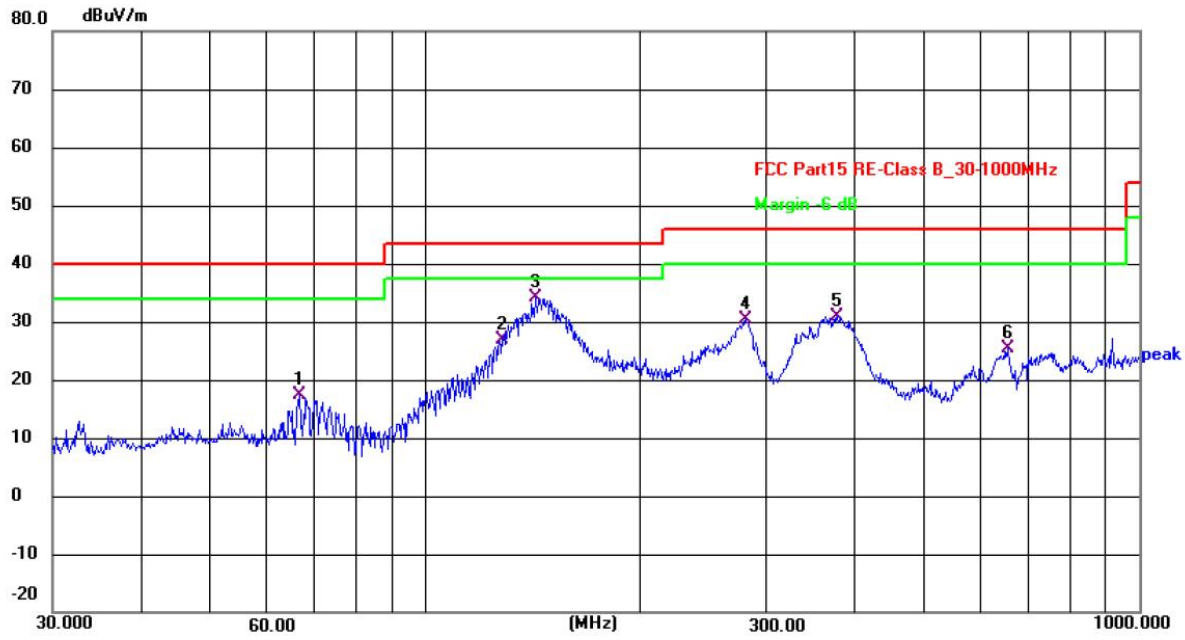
4.6 TEST RESULTS

Note: 1. All modes were Pre tested, and only worst mode 1was reported in the report.

2. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “Z axis” position was the worst, and test data recorded in this report.

Below 1GHz Test Results

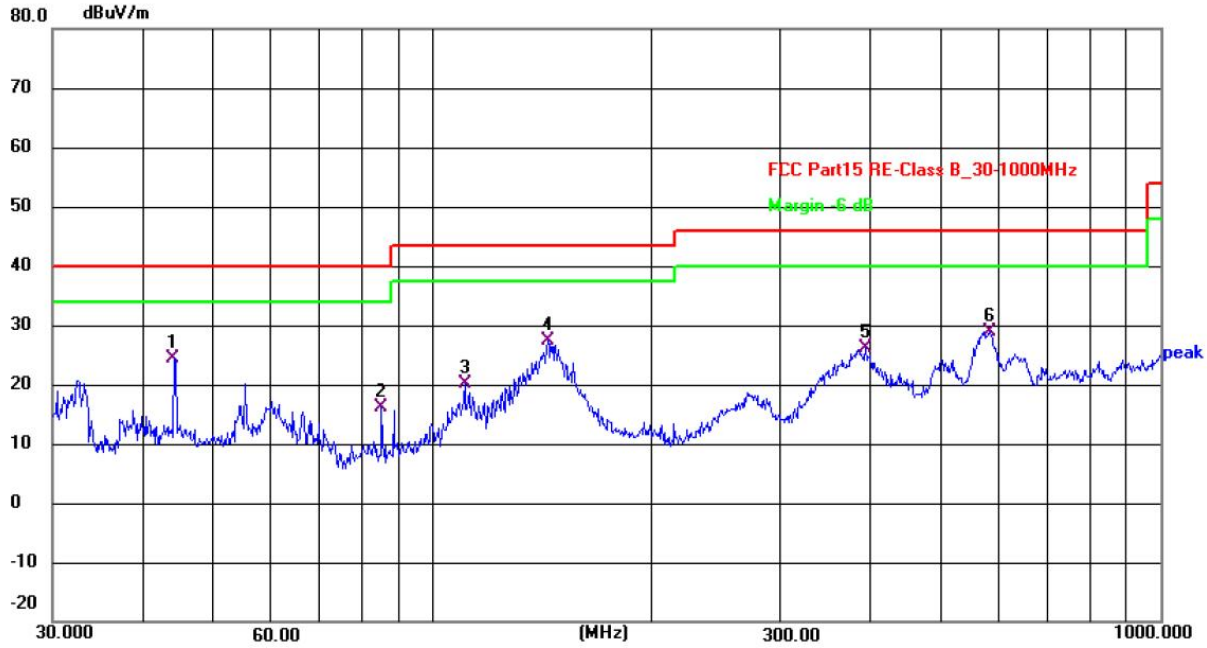
Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 5V from adapter		
Test Mode :	Mode 1		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	66.4990	34.37	-17.02	17.35	40.00	-22.65	QP
2	128.1130	45.52	-18.65	26.87	43.50	-16.63	QP
3	142.3243	53.59	-19.41	34.18	43.50	-9.32	QP
4	281.0074	44.36	-13.90	30.46	46.00	-15.54	QP
5	377.2590	42.93	-11.95	30.98	46.00	-15.02	QP
6	654.2318	32.53	-7.25	25.28	46.00	-20.72	QP

Remark:
Correct Factor = Cable loss + Antenna factor – Preamplifier;
Level = Reading Level + Correct Factor; Margin = Limit – Level;

Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 5V from adapter		
Test Mode :	Mode 1		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.1200	38.93	-14.45	24.48	40.00	-15.52	QP
2	84.9993	35.18	-19.17	16.01	40.00	-23.99	QP
3	110.5686	35.90	-15.78	20.12	43.50	-23.38	QP
4	143.8295	46.72	-19.38	27.34	43.50	-16.16	QP
5	393.4723	37.77	-11.66	26.11	46.00	-19.89	QP
6	582.7423	37.75	-8.86	28.89	46.00	-17.11	QP

Remark:
Correct Factor = Cable loss + Antenna factor – Preamplifier;
Level = Reading Level + Correct Factor; Margin = Limit – Level;

Above 1GHz Test Results

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Mode 1: 2402MHz									
V	4804.00	75.35	52.12	2.73	27.38	53.34	74.00	-20.66	PK
V	4804.00	64.54	52.12	2.73	27.38	42.53	54.00	-11.47	AV
V	7206.00	74.97	52.16	2.78	27.41	53.00	74.00	-21.00	PK
V	7206.00	63.15	52.16	2.78	27.41	41.18	54.00	-12.82	AV
H	4804.00	64.24	52.12	2.73	27.38	42.23	74.00	-31.77	PK
H	4804.00	54.88	52.12	2.73	27.38	32.87	54.00	-21.13	AV
H	7206.00	64.14	52.16	2.78	27.41	42.17	74.00	-31.83	PK
H	7206.00	55.27	52.16	2.78	27.41	33.30	54.00	-20.70	AV
Mode 2: 2440MHz									
V	4880.00	75.03	52.23	2.86	27.44	53.10	74.00	-20.90	PK
V	4880.00	63.61	52.23	2.86	27.44	41.68	54.00	-12.32	AV
V	7320.00	74.91	52.26	2.88	27.49	53.02	74.00	-20.98	PK
V	7332.00	63.14	52.26	2.88	27.49	41.25	54.00	-12.75	AV
H	4880.00	64.96	52.23	2.86	27.44	43.03	74.00	-30.97	PK
H	4880.00	52.17	52.23	2.86	27.44	30.24	54.00	-23.76	AV
H	7320.00	64.15	52.26	2.88	27.49	42.26	74.00	-31.74	PK
H	7320.00	52.19	52.26	2.88	27.49	30.30	54.00	-23.70	AV
Mode 3: 2480MHz									
V	4960.00	60.92	51.74	3.08	31.25	43.51	74.00	-30.49	PK
V	4960.00	44.54	51.74	3.08	31.25	27.13	54.00	-26.87	AV
V	7440.00	67.91	49.98	7.16	36.63	61.72	74.00	-12.28	PK
V	7440.00	42.50	49.98	7.16	36.63	36.31	54.00	-17.69	AV
H	4960.00	61.38	51.74	3.08	31.25	43.97	74.00	-30.03	PK
H	4960.00	44.96	51.74	3.08	31.25	27.55	54.00	-26.45	AV
H	7440.00	66.96	49.98	7.16	36.63	60.77	74.00	-13.23	PK
H	7440.00	42.25	49.98	7.16	36.63	36.06	54.00	-17.94	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-Amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

5. RADIATED BAND EMISSION MEASUREMENT

5.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520MHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter 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 rota table 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.

g. Test the EUT in the lowest channel,the Highest channel

Note:

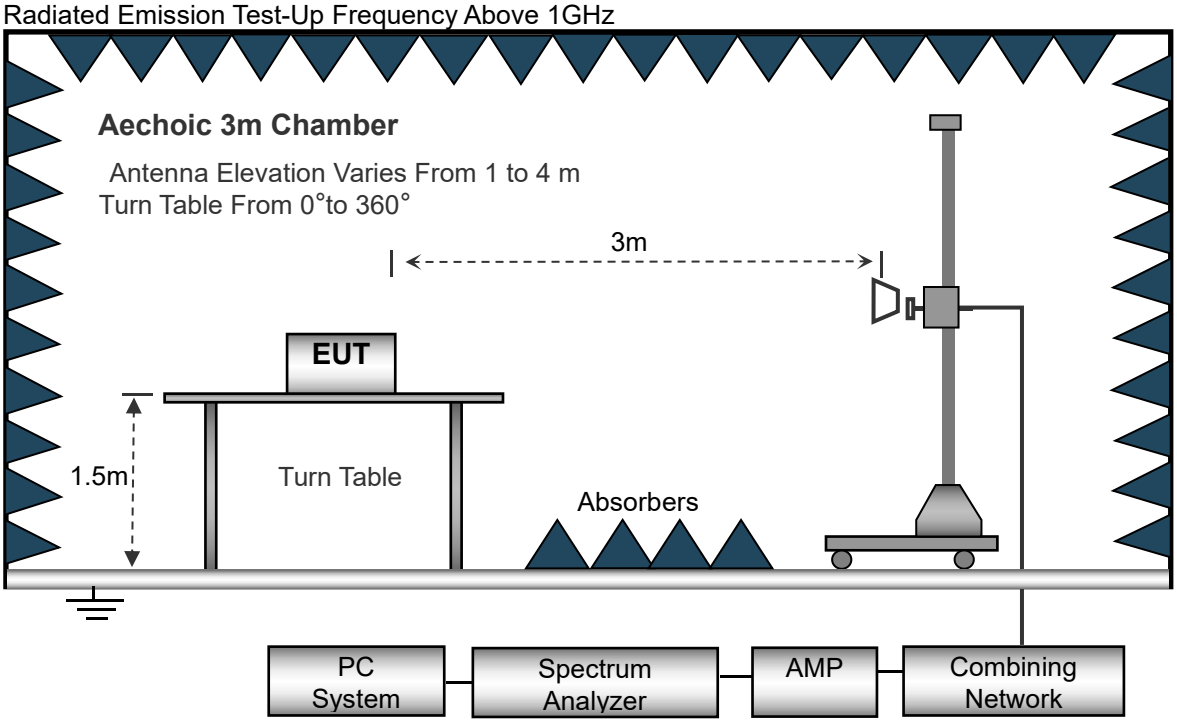
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

5.3 DEVIATION FROM TEST STANDARD

No deviation

5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULT

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Mode 1: 2402MHz									
V	2390.00	60.47	51.77	3.03	31.34	43.07	74.00	-30.93	PK
V	2390.00	45.29	51.77	3.03	31.34	27.89	54.00	-26.11	AV
V	2400.00	67.78	50.02	7.24	36.63	61.63	74.00	-12.37	PK
V	2400.00	41.87	50.02	7.24	36.63	35.72	54.00	-18.28	AV
H	2390.00	58.13	51.53	11.34	41.52	59.46	74.00	-14.54	PK
H	2390.00	41.50	51.77	3.03	31.34	24.10	54.00	-29.90	AV
H	2400.00	65.22	51.77	3.03	31.34	47.82	74.00	-26.18	PK
H	2400.00	36.27	50.02	7.24	36.63	30.12	54.00	-23.88	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Mode 3: 2480MHz									
V	2483.50	60.08	51.69	3.05	31.39	42.83	74.00	-31.17	PK
V	2483.50	43.96	51.69	3.05	31.39	26.71	54.00	-27.29	AV
V	2500.00	68.00	50.11	7.25	36.58	61.72	74.00	-12.28	PK
V	2500.00	42.39	50.11	7.25	36.58	36.11	54.00	-17.89	AV
H	2483.50	47.13	51.53	11.34	41.52	48.46	74.00	-25.54	PK
H	2483.50	39.64	51.69	3.05	31.39	22.39	54.00	-31.61	AV
H	2500.00	54.20	51.69	3.05	31.39	36.95	74.00	-37.05	PK
H	2500.00	38.28	50.11	7.25	36.58	32.00	54.00	-22.00	AV

Remark:

1. Emission Level = Reading Level+Antenna Factor+Cable loss-Preamp Factor.
2.Over Limit= Absolute Level – Limit.
3.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.
4.EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report (Z orientation)

6. Peak Output Power

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,

b. Spectrum Setting:

RBW > the 20 dB bandwidth of the emission being measured
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP

6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

Please see the Appendix for the BLE data

7. POWER SPECTRAL DENSITY TEST

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW ≥ 3kHz
VB	VBW ≥ 3RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

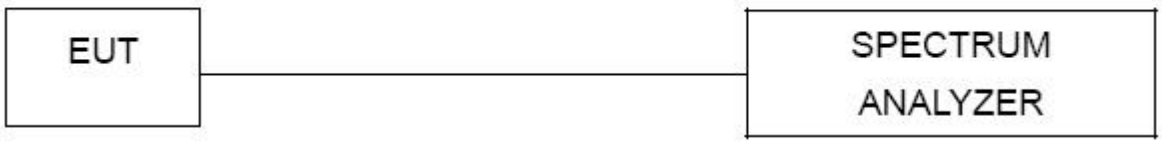
7.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

Please see the Appendix for the BLE data

8. 6DB BANDWIDTH TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range(MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz	2400-2483.5	PASS

8.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP

8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULTS

Please see the Appendix for the BLE data

9. OUT OF BAND EMISSIONS TEST

9.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

9.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP

9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

Please see the Appendix for the BLE data

10. SPURIOUS RF CONDUCTED EMISSION

10.1 APPLIED PROCEDURES / LIMIT

1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.
3.For below 30MHz,For 9KHz-150kHz,150K-10MHz,We use the RBW 1KHz,10KHz, So the limit need to calculated by “10lg(BW1/BW2)“. for example For9KHz-150kHz,RBW 1KHz, The Limit= the highest emission level-20-10log(100/1)= the highest emission level-40.

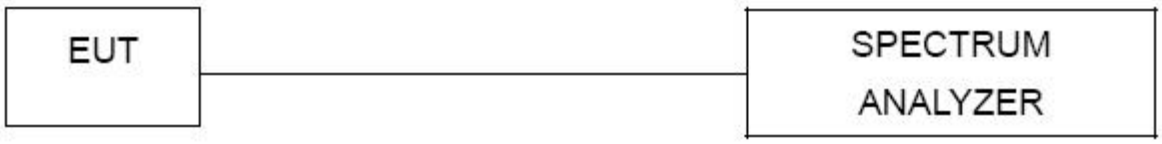
10.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.

10.3 DEVIATION FROM STANDARD

No deviation.

10.4 TEST SETUP



10.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

10.6 TEST RESULTS

Please see the Appendix for the BLE data

11. ANTENNA REQUIREMENT

11.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

11.2 EUT ANTENNA

The EUT antenna is PCB Antenna . It comply with the standard requirement.reference to the attachment photo for details.

12. TEST SEUUP PHOTO AND EUT PHOTO

Please see the attachment for details.

※※※※※ **END OF REPORT** ※※※※※