



FCC TEST REPORT

FCC ID: 2A5O3-SN31

Product Name	:	Vibrator
Model Name	:	SN31 SN09 SN19
Brand Name	:	ONLY MISS YOU
Report No.	:	PTC22021702002E-FC01
Sample ID	:	PTC22021702002E-01#
Prepared for		
Dongguan Sini Electronic Technology Co., Ltd		
301, No. 14, Chuangxing Road, Shangsha community, Chang'an Town, Dongguan, Guangdong		
Prepared by		
Precise Testing & Certification Co., Ltd.		
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China		



1 TEST RESULT CERTIFICATION

Applicant's name : Dongguan Sini Electronic Technology Co., Ltd
Address : 301, No. 14, Chuangxing Road, Shangsha community, Chang'an Town, Dongguan, Guangdong
Manufacture's name : Dongguan Sini Electronic Technology Co., Ltd
Address : 301, No. 14, Chuangxing Road, Shangsha community, Chang'an Town, Dongguan, Guangdong
Product name : Vibrator
Model name : SN31 SN09 SN19
Standards : FCC CFR47 Part 15 Section 15.249
Test procedure : ANSI C63.10:2013
Test Date : Mar. 19, 2022 to Apr. 10, 2022
Date of Issue : Apr. 11, 2022
Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:

A handwritten signature in black ink that reads "Leo Yang".

Leo Yang / Engineer

Technical Manager:

A handwritten signature in black ink that appears to read "Ronnie Liu".

Ronnie Liu / Manager



Contents

	Page
1 TEST RESULT CERTIFICATION.....	2
2 TEST SUMMARY.....	5
3 TEST FACILITY.....	6
4 GENERAL INFORMATION.....	7
4.1 GENERAL DESCRIPTION OF E.U.T.....	7
4.2 TEST MODE.....	8
5 EQUIPMENT DURING TEST.....	9
5.1 EQUIPMENTS LIST.....	9
5.2 MEASUREMENT UNCERTAINTY.....	11
5.3 DESCRIPTION OF SUPPORT UNITS.....	12
6 CONDUCTED EMISSION.....	13
6.1 E.U.T. OPERATION.....	13
6.2 EUT SETUP.....	13
6.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	14
6.4 MEASUREMENT PROCEDURE:.....	14
6.5 CONDUCTED EMISSION LIMIT.....	14
6.6 MEASUREMENT DESCRIPTION.....	14
6.7 CONDUCTED EMISSION TEST RESULT.....	14
7 FIELD STRENGTH OF FUNDAMENTAL EMISSION AND RADIATED SPURIOUS EMISSIONS.....	15
7.1 EUT OPERATION.....	16
7.2 TEST SETUP.....	16
7.3 SPECTRUM ANALYZER SETUP.....	18
7.4 TEST PROCEDURE.....	19
7.5 SUMMARY OF TEST RESULTS.....	20
8 BAND EDGE EMISSION.....	24
8.1 TEST PROCEDURE.....	24
8.2 TEST SETUP.....	24
8.3 TEST RESULTS.....	25



9 20 DB BANDWIDTH MEASUREMENT.....	29
9.1 TEST PROCEDURE.....	29
9.2 TEST RESULT.....	29
10 ANTENNA REQUIREMENT.....	31
11 TEST PHOTOS.....	32
12 EUT PHOTOS.....	33



2 Test Summary

Test Items	Test Requirement	Result
AC Power Conducted Emission	15.207	N/A
20dB Bandwidth	15.215(c)	PASS
Band edge	15.249 15.205	PASS
Field Strength of Fundamental Emissions	15.249(a)	PASS
Radiated Spurious Emissions	15.205(a) 15.249(a) (d)	PASS
Antenna Requirement	15.203	PASS

Remark:

N/A: Not Applicable

The EUT is power battery.



Report No.: PTC22021702002E-FC01

3 TEST FACILITY

Precise Testing & Certification Co., Ltd

Address: Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A

Designation Number: CN1219



4 General Information

4.1 General Description of E.U.T.

Product Name	: Vibrator
Model Name	: SN31 SN09 SN19
Operating frequency	: 2.420-2.465GHZ
Numbers of Channel	: 46
Channel Space	: 1MHz
Antenna Type:	: Wire Antenna
Antenna Gain:	: 0dBi
Type of Modulation	: GFSK
Power supply	: DC3V Battery

4.2 Test Mode

For Radiated: The EUT's antenna was pre-tested under the following modes:

Test Mode	Description
Mode A	X-Y axis
Mode B	Y-Z axis
Mode C	X-Z axis

From the above modes, the worst case was found in Mode A, Therefore only the test data of the mode was recorded in this report.

Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2420	16	2435	31	2450	46	2465
2	2421	17	2436	32	2451		
3	2422	18	2437	33	2452		
4	2423	19	2438	34	2453		
5	2424	20	2439	35	2454		
6	2425	21	2440	36	2454		
7	2426	22	2441	37	2456		
8	2427	23	2442	38	2457		
9	2428	24	2443	39	2458		
10	2429	25	2444	40	2459		
11	2430	26	2445	41	2460		
12	2431	27	2446	42	2461		
13	2432	28	2447	43	2462		
14	2433	29	2448	44	2463		
15	2434	30	2449	45	2464		

The 3 channels of lower, middle and higher were chosen for test.

Channel	Frequency(MHz)
low	2420
Middle	2442
High	2465



5 Equipment During Test

5.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period
MXA Signal Analyzer	Agilent	N9020A	MY56070279	Aug. 21, 2021	Aug. 20, 2022	1 year
Coaxial Cable	CDS	79254	46107086	Aug. 21, 2021	Aug. 20, 2022	1 year
Power Meter	Anritsu	ML2495A	0949003	Aug. 21, 2021	Aug. 20, 2022	1 year
Power Sensor	Anritsu	MA2411B	0917017	Aug. 21, 2021	Aug. 20, 2022	1 year
Spectrum Analyzer	Rohde&Schwarz	FSU26	1166.1660.26	Aug. 21, 2021	Aug. 20, 2022	1 year

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Radiated Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	Aug. 21, 2021	Aug. 20, 2022	1 year
Loop Antenna	Schwarzbeck	FMZB 1519	012	Aug. 21, 2021	Aug. 20, 2022	1 year
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	Aug. 21, 2021	Aug. 20, 2022	1 year
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	Aug. 21, 2021	Aug. 20, 2022	1 year
Cable	Schwarzbeck	PLF-100	549489	Aug. 21, 2021	Aug. 20, 2022	1 year
Spectrum Analyzer	Agilent	E4407B	MY45109572	Aug. 21, 2021	Aug. 20, 2022	1 year
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	Aug. 21, 2021	Aug. 20, 2022	1 year
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	Aug. 21, 2021	Aug. 20, 2022	1 year
Horn Antenna	SCHWARZBECK	BBHA 9170	9170-181	Aug. 21, 2021	Aug. 20, 2022	1 year
Amplifier	SCHWARZBECK	BBV 9721	9721-205	Aug. 21, 2021	Aug. 20, 2022	1 year
Cable	H+S	CBL-26	N/A	Aug. 21, 2021	Aug. 20, 2022	1 year



Report No.: PTC22021702002E-FC01

RF Cable	R&S	R204	R21X	Aug. 21, 2021	Aug. 20, 2022	1 year
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Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	Aug. 21, 2021	Aug. 20, 2022	1 year
Artificial Mains Network	Rohde&Schwarz	L2-16B	000WX31025	Aug. 21, 2021	Aug. 20, 2022	1 year
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	Aug. 21, 2021	Aug. 20, 2022	1 year



5.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(9KHz~30MHz)	$\pm 2.54\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~25GHz)	$\pm 4.74\text{dB}$
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	



Report No.: PTC22021702002E-FC01

5.3 Description of Support Units

Equipment	Model No.	Series No.

6 Conducted Emission

Test Requirement:	: FCC CFR 47 Part 15 Section 15.207
Test Method:	: ANSI C63.10:2013
Test Result:	: PASS
Frequency Range:	: 150kHz to 30MHz
Class/Severity:	: Class B
Detector:	: Peak for pre-scan (9kHz Resolution Bandwidth)

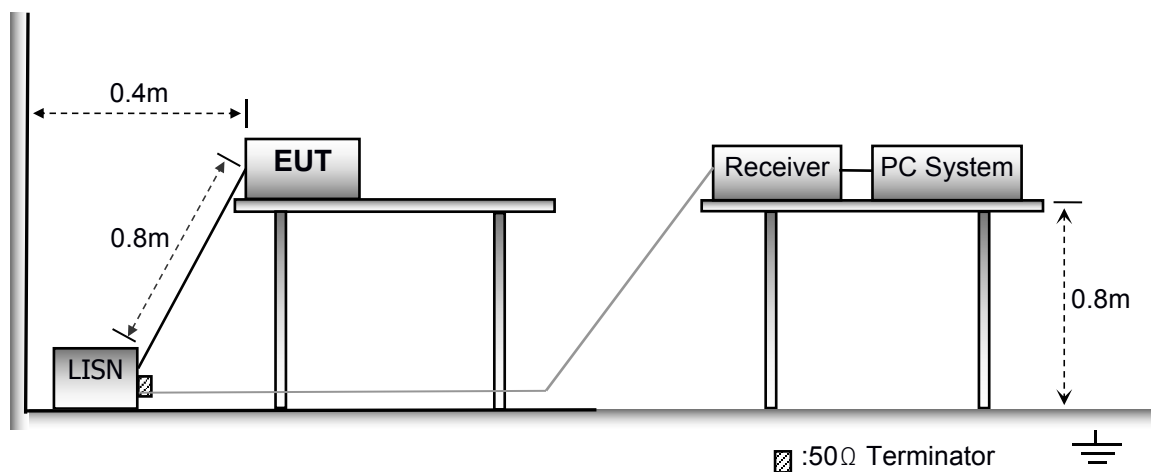
6.1 E.U.T. Operation

Operating Environment :

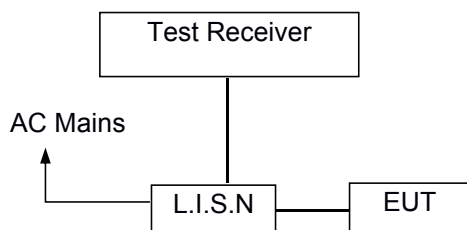
Temperature:	: 25.5 °C
Humidity:	: 51 % RH
Atmospheric Pressure:	: 101.2kPa
EUT Operation :	: Refer to section 3.3
Test Voltage	: AC 120V/60Hz

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2013



6.3 Test SET-UP (Block Diagram of Configuration)



6.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

6.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

6.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.7 Conducted Emission Test Result

N/A

EUT is power battery.



7 Field Strength of Fundamental Emission and Radiated Spurious Emissions

Test Requirement: : FCC CFR47 Part 15 Section 15.209 & 15.247
 Test Method: : ANSI C63.10:2013
 Test Result: : PASS
 Measurement Distance: : 3m
 Limit: : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

Note: 1. Emission level in dBuV/m= $20 \log (\text{uV/m})$

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

The field strength of emission from intentional radiators operated within these frequency bands shall comply with the following:

Frequency(MHz)	Filed Strength of Fundamental(at 3m)		Filed Strength of Harmonics(at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
902-928	114	94	74.0	54.0
2400-2483.5	114	94	74.0	54.0
5725-5875	114	94	74.0	54.0
24000-24250	128	108	88.0	68.0

7.1 EUT Operation

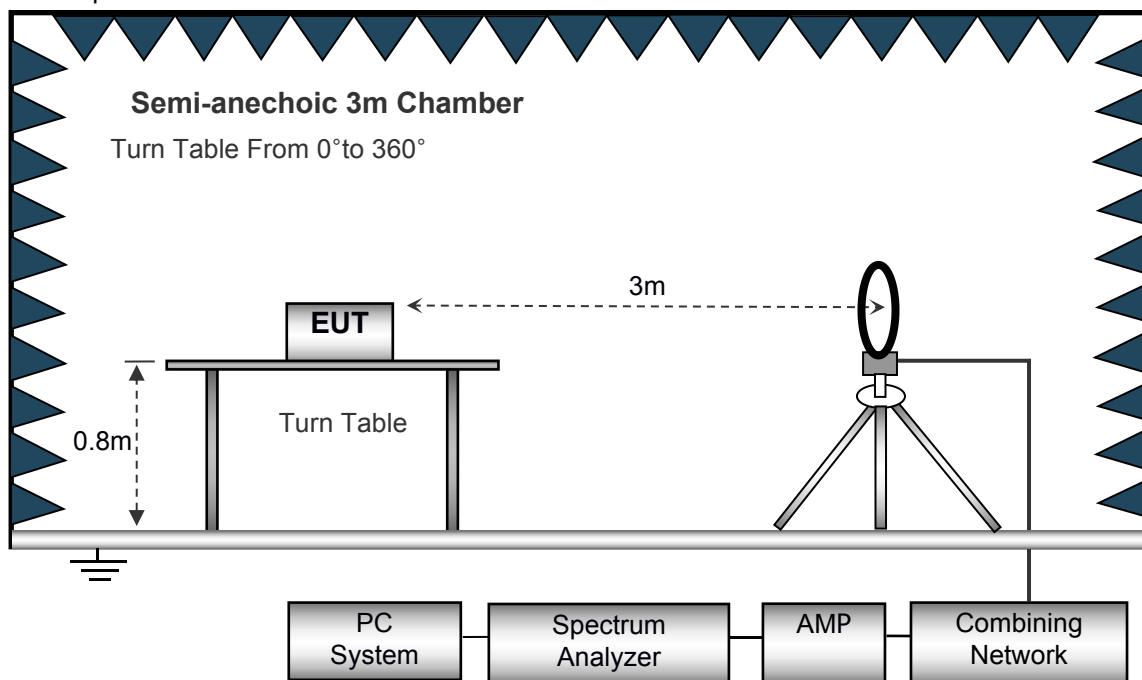
Operating Environment :

Temperature:	: 23.5 °C
Humidity:	: 51.1 % RH
Atmospheric Pressure:	: 101.2kPa
EUT Operation :	: Refer to section 3.3
Test Voltage	: DC 3V

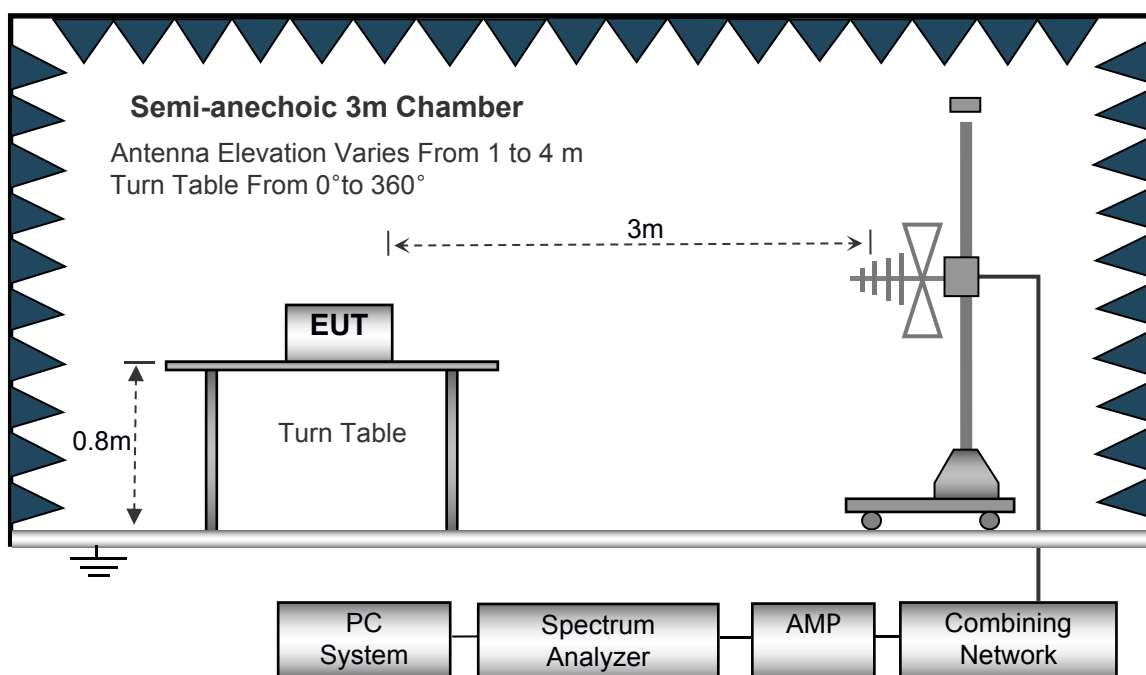
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

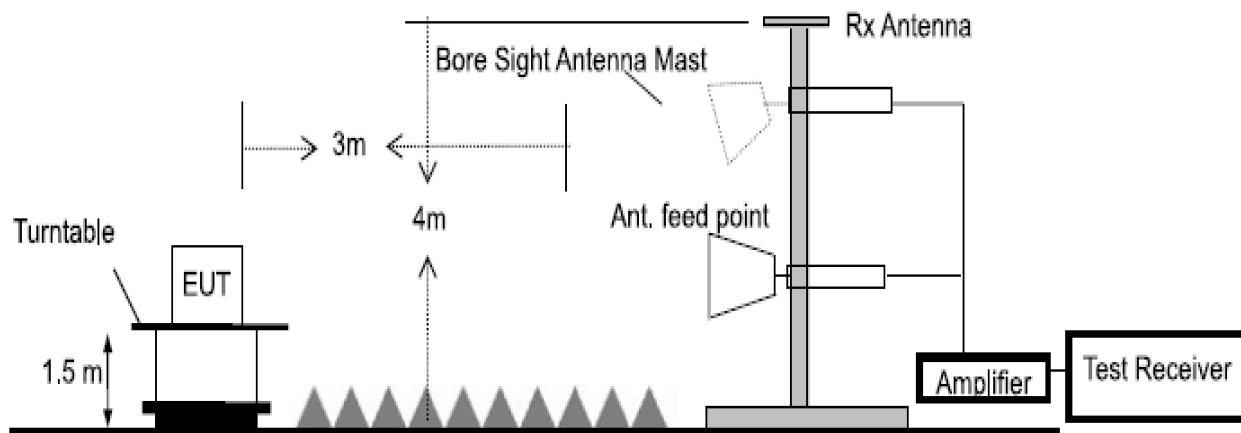
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.





7.3 Spectrum Analyzer Setup

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
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



7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
 - 1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
 - 2) Change the antenna polarization and repeat 1) with vertical polarization.
 - 3) Make a hardcopy of the spectrum.
 - 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
 - 5) Change the analyser mode to Clear/ Write and found the cone of emission.
 - 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.
 - 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
 - 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.



7.5 Summary of Test Results

Test Frequency: Below 30MHz

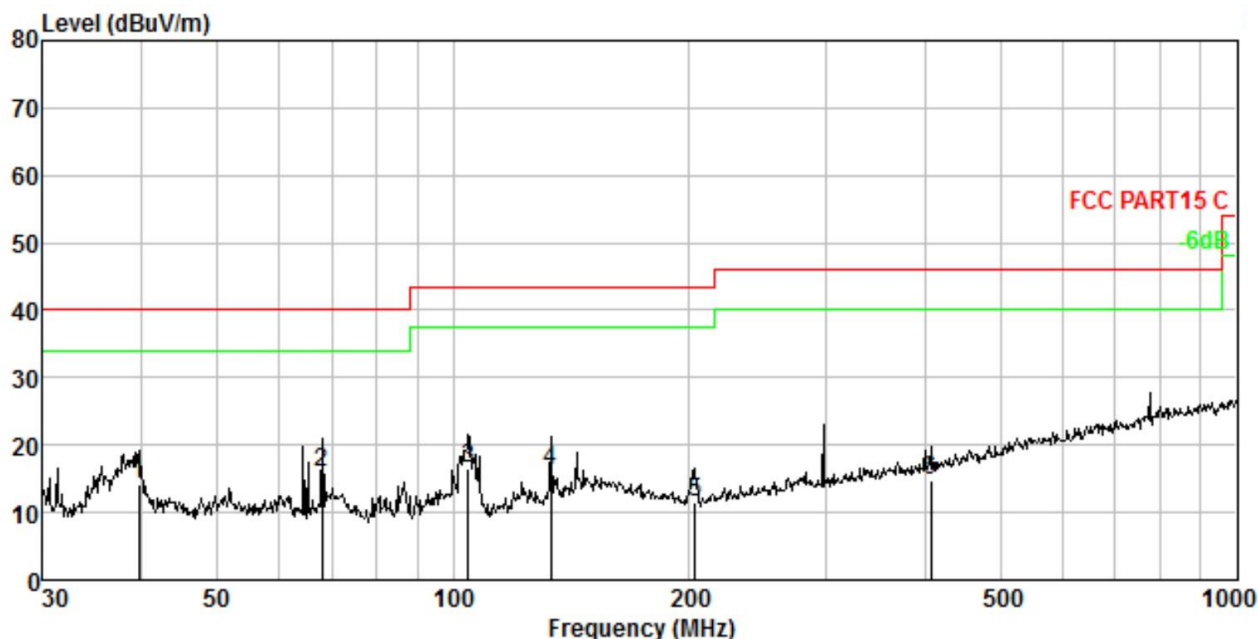
The measurements were more than 20 dB below the limit and not reported.

The low frequency, which started from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Test Frequency: 30MHz ~ 1GHz

Remark: all model are tested and the worst low channel (GFSK 2420MHz) data were reported.

Test plot for Horizontal: 2420MHz

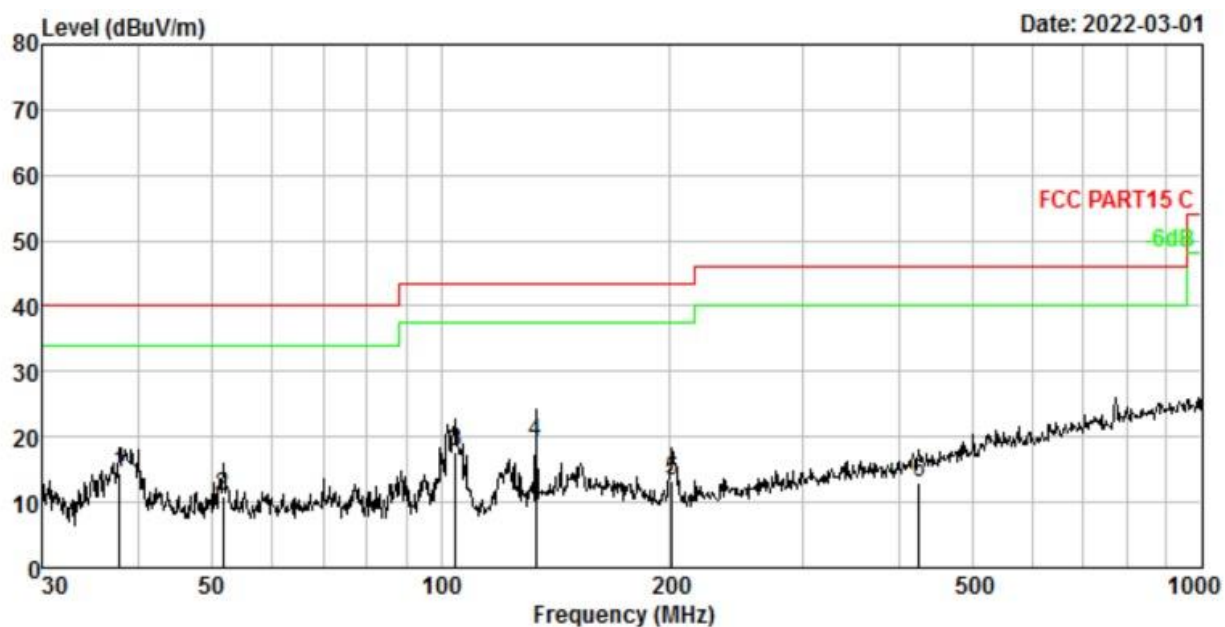


Env. / Ins. : Temp.:24.5°C Humi.:52% Press.:101.3 kPa

No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	39.715	1.69	12.11	30.30	29.91	14.19	40.00	-25.81	QP
2.	68.151	2.61	10.43	32.95	29.95	16.04	40.00	-23.96	QP
3.	104.536	3.35	10.16	32.93	29.99	16.45	43.50	-27.05	QP
4.	133.151	3.77	12.88	29.67	30.01	16.31	43.50	-27.19	QP
5.	203.523	4.49	11.12	25.88	30.05	11.44	43.50	-32.06	QP
6.	407.515	5.69	14.97	24.76	30.72	14.70	46.00	-31.30	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Test plot for Vertical: 2420MHz



Env./Ins. : Temp.:24.5°C Humi.:52% Press.:101.3 kPa

No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	37.812	1.60	12.14	30.60	29.90	14.44	40.00	-25.56	QP
2.	51.662	2.14	12.10	26.66	29.92	10.98	40.00	-29.02	QP
3.	104.536	3.35	10.16	34.19	29.99	17.71	43.50	-25.79	QP
4.	133.151	3.77	12.88	32.59	30.01	19.23	43.50	-24.27	QP
5.	201.393	4.47	11.05	27.92	30.04	13.40	43.50	-30.10	QP
6.	425.028	5.76	15.37	22.48	30.75	12.86	46.00	-33.14	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor



Test Frequency: From 1GHz to 25GHz

All model are pre-scanned and high channel is worst case for record.

Operation Mode: GFSK (CH46: 2465MHz)

Freq. (MHz)	Ant. Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
2465(F)	V	89.33	81.42	114	94	-24.67	-12.58
4930	V	64.15	46.36	74	54	-9.85	-7.64
7395	V	63.22	45.25	74	54	-10.78	-8.75
9860	V	62.05	44.22	74	54	-11.95	-9.78
12325	V	61.48	43.62	74	54	-12.52	-10.38
14790	V	60.26	42.15	74	54	-13.74	-11.85
17255	V	58.43	41.69	74	54	-15.57	-12.31
2465(F)	H	90.32	80.24	114	94	-23.68	-13.76
4930	H	65.26	45.62	74	54	-8.74	-8.38
7395	H	64.15	44.15	74	54	-9.85	-9.85
9860	H	63.05	43.62	74	54	-10.95	-10.38
12325	H	62.07	42.05	74	54	-11.93	-11.95
14790	H	61.59	41.92	74	54	-12.41	-12.08
17255	H	60.35	40.66	74	54	-13.65	-13.34

Note:

1. The testing has been conformed to $10 \times 2465\text{MHz} = 24650\text{MHz}$.
2. All other emissions more than 30dB below the limit.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
4. X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.

Test Frequency: From 18GHz to 25GHz

The measurements were more than 20dB below the limit and not reported.

8 BAND EDGE EMISSION

8.1 TEST PROCEDURE

The EUT was placed on a styrofoam table which is 1.5m above ground plane.

The measurement procedure at the band edges was simplified by performing the measurement in just one plot. Both, the in-band-emission and the unwanted emission were encompassed by the span. After trace stabilization, the maximum peak was determined by a peak detector and the value was marked by an appropriate limit line. The second limit line, which is 20dB below the first, marks the limit for the emissions in the unrestricted band. A maximum-peak-detector marks the highest emission in the unrestricted band next to the band edge.

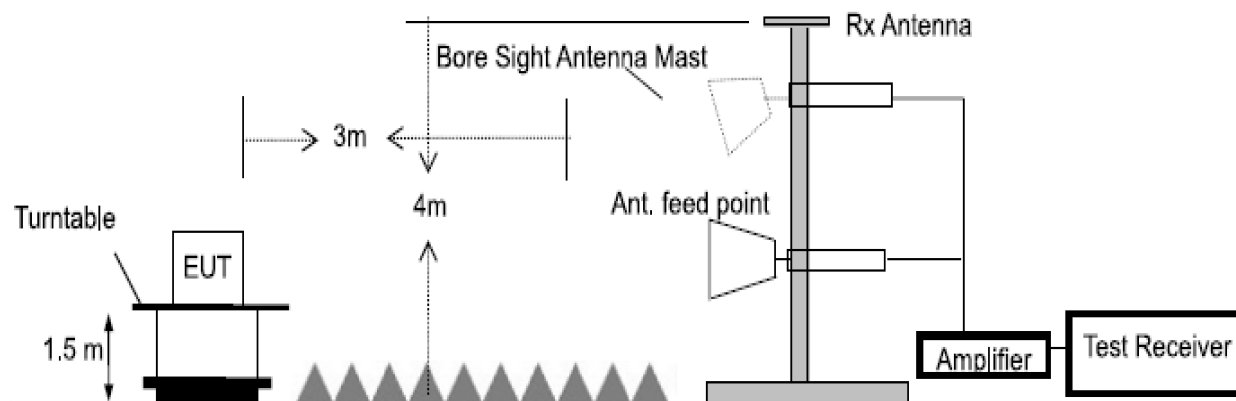
The measurements were performed at the lower end of the 2.4GHz band.

Use the following spectrum analyzer settings:

When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 3MHz:

EMI Test Receiver	Setting
Attenuation	Auto
RBW	1MHz
VBW	3MHz
Detector	Peak
Trace	Max hold

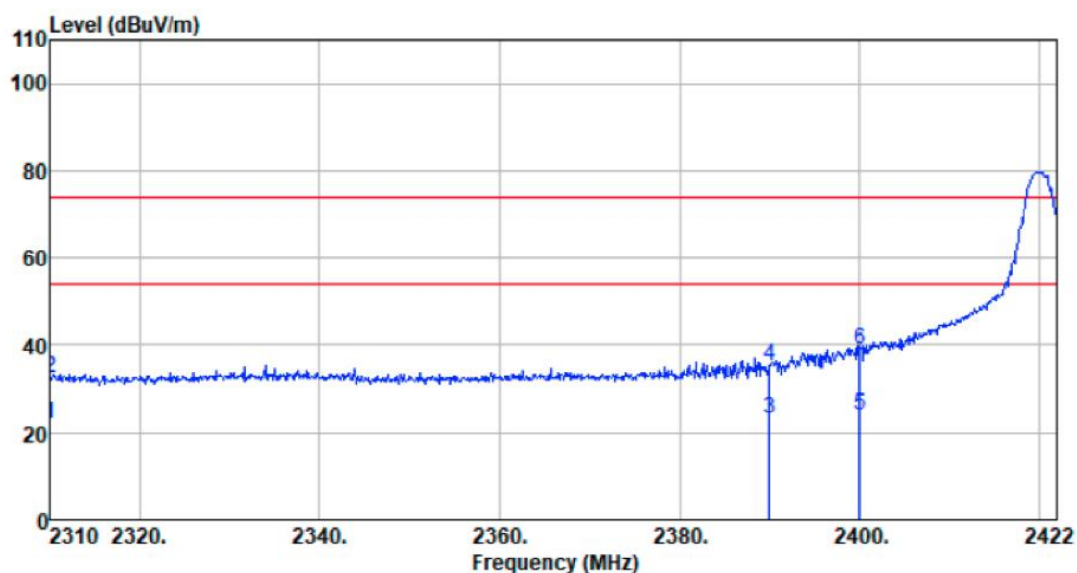
8.2 TEST SETUP



8.3 TEST RESULTS

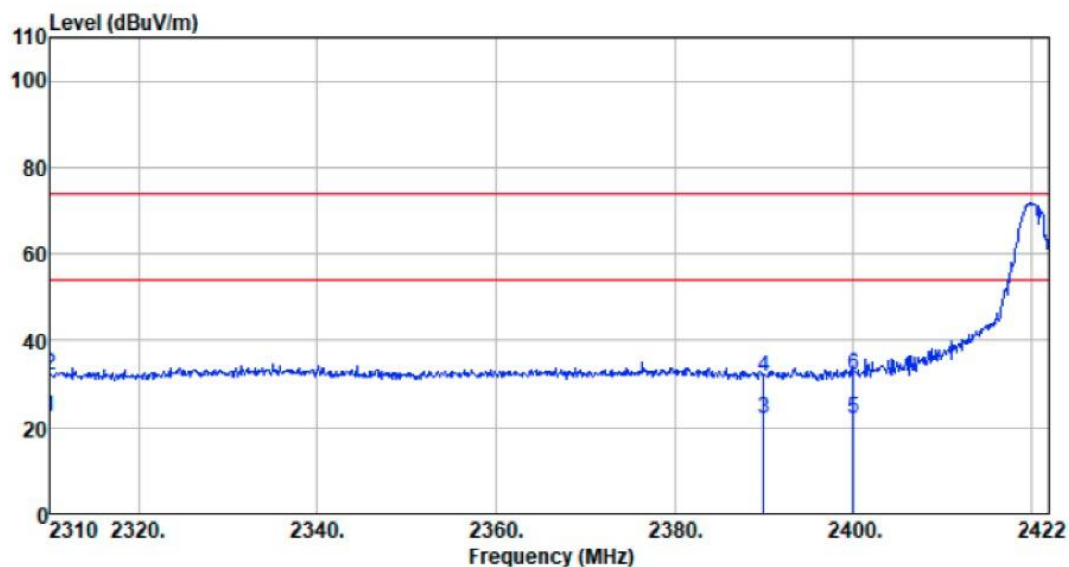
Low channel

Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	30.58	27.14	2.81	38.64	21.89	54.00	-32.11	Average
2310.000	41.33	27.14	2.81	38.64	32.64	74.00	-41.36	Peak
2390.000	31.69	27.37	2.91	38.84	23.13	54.00	-30.87	Average
2390.000	43.84	27.37	2.91	38.84	35.28	74.00	-38.72	Peak
2400.000	32.48	27.41	2.91	38.86	23.94	54.00	-30.06	Average
2400.000	47.33	27.41	2.91	38.86	38.79	74.00	-35.21	Peak

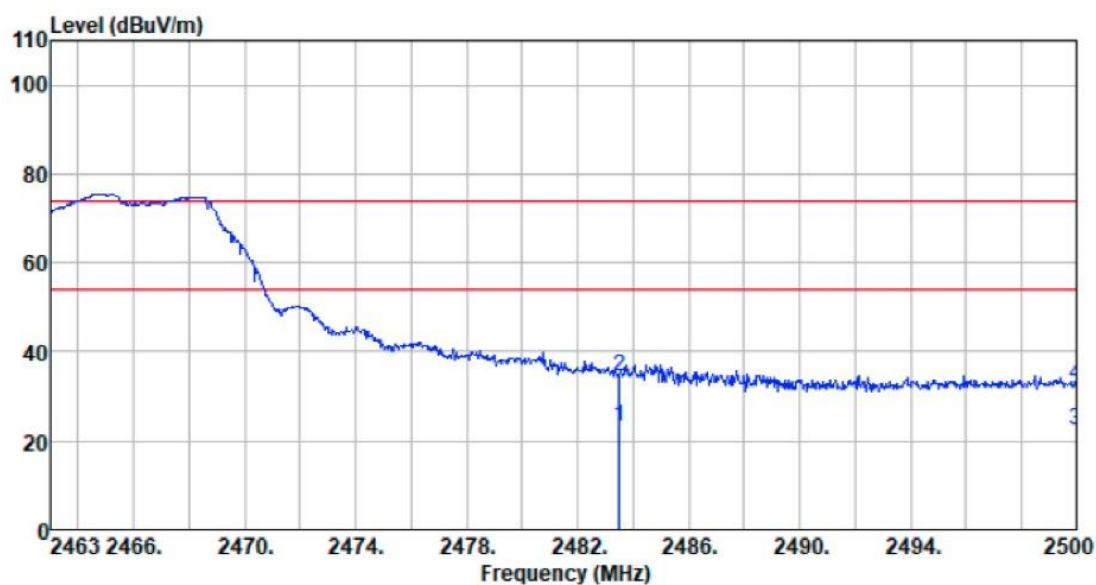
vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamplifier factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	30.89	27.14	2.81	38.64	22.20	54.00	-31.80	Average
2310.000	40.65	27.14	2.81	38.64	31.96	74.00	-42.04	Peak
2390.000	30.49	27.37	2.91	38.84	21.93	54.00	-32.07	Average
2390.000	40.32	27.37	2.91	38.84	31.76	74.00	-42.24	Peak
2400.000	30.45	27.41	2.91	38.86	21.91	54.00	-32.09	Average
2400.000	40.53	27.41	2.91	38.86	31.99	74.00	-42.01	Peak

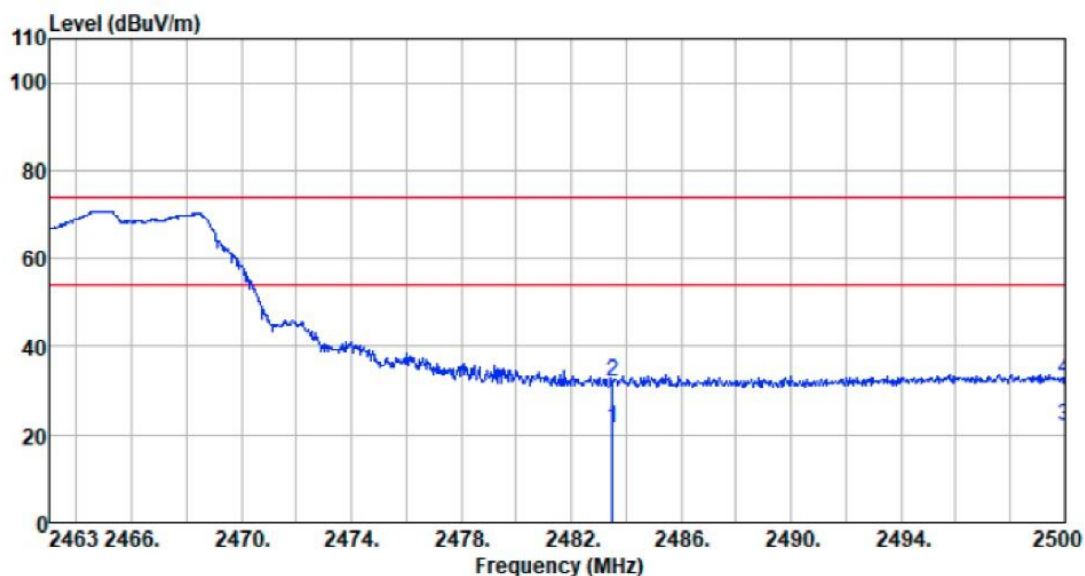
High channel

Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	31.69	27.66	2.99	39.06	23.28	54.00	-30.72	Average
2483.500	43.06	27.66	2.99	39.06	34.65	74.00	-39.35	Peak
2500.000	30.57	27.70	3.01	39.10	22.18	54.00	-31.82	Average
2500.000	41.04	27.70	3.01	39.10	32.65	74.00	-41.35	Peak

Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	30.12	27.66	2.99	39.06	21.71	54.00	-32.29	Average
2483.500	40.32	27.66	2.99	39.06	31.91	74.00	-42.09	Peak
2500.000	30.37	27.70	3.01	39.10	21.98	54.00	-32.02	Average
2500.000	40.87	27.70	3.01	39.10	32.48	74.00	-41.52	Peak

Remark:

1. Final Level=Receiver Read level+Antenna Factor+Cable Loss-Preamplifier factor



9 20 dB Bandwidth Measurement

Test Requirement : FCC Part 15C Section 15.215(c)/Part 2 J Section 2.1049

Test Method : ANSI C63.10:2013

Test Mode : Refer to section 3.3

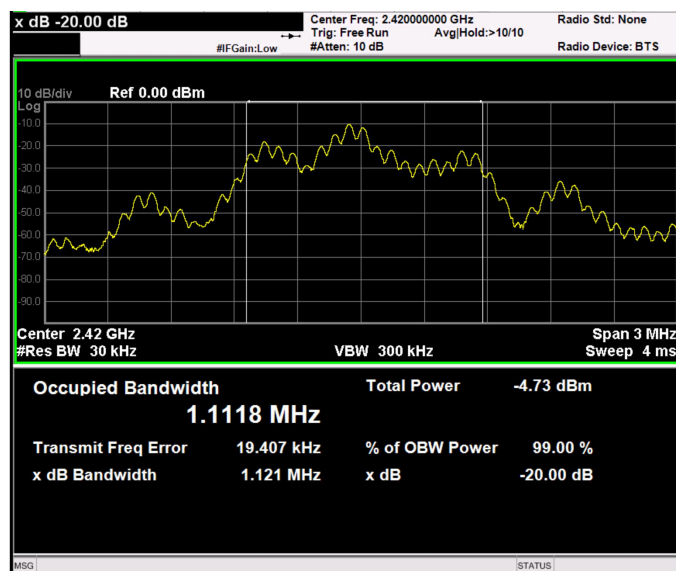
9.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 30kHz, VBW = 100kHz

9.2 Test Result

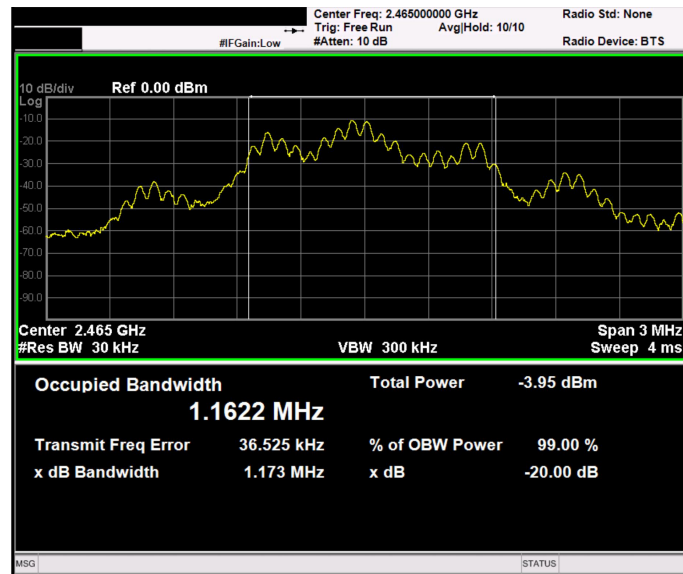
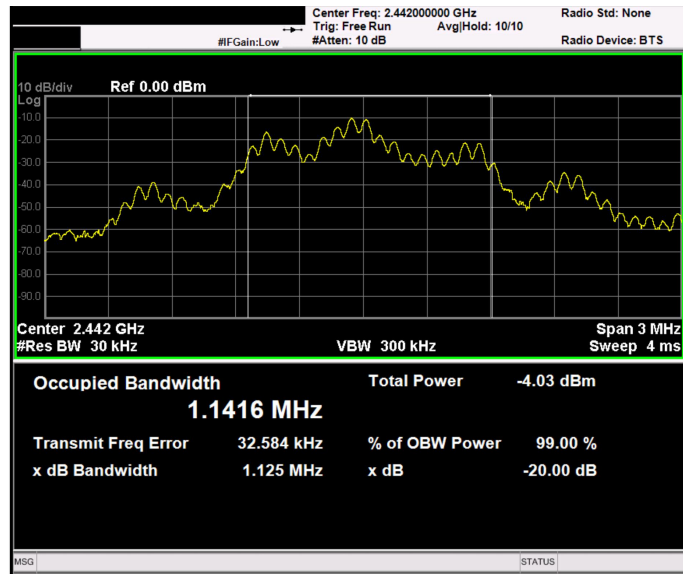
Test Mode: (GFSK/(1Mbps)Mode)

Channel number	Channel frequency (MHz)	20dB Down BW(MHz)
low	2420	1.121
Middle	2442	1.125
high	2465	1.173





Report No.: PTC22021702002E-FC01

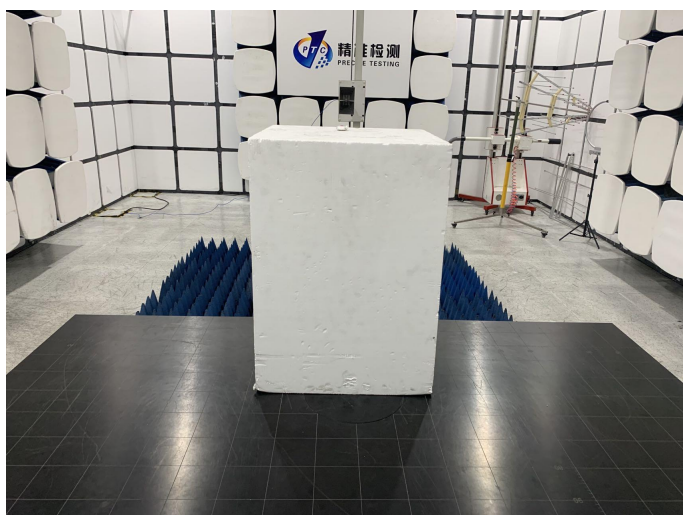
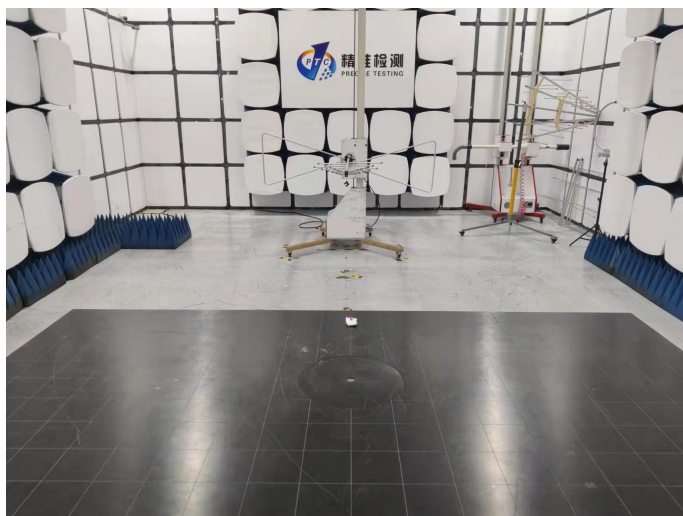




10 Antenna Requirement

According to the FCC part15.203, a transmitter can only be sold or operated with antennas with which it was approved. This product has an wire Antenna and the antenna's gain is 0dBi it meet the requirement of this section.

11 TEST PHOTOS





Report No.: PTC22021702002E-FC01

12 EUT PHOTOS

Please reference “EUT photos”

*****THE END REPORT*****