RF TEST REPORT

Report No.:	SET2015-08708
Product Name:	Bluetooth Low Energy Module
FCC ID:	ZLZTDBTSE
IC:	9726A-TDBTSE
Model No. :	Panlink2
Applicant:	Shenzhen Mindray Bio-Medical Electronics Co.,Ltd.
Address:	Mindray Buiding,Keji 12th Road South,High-tech Industrial Park,Nanshan,Shenzhen,P.R.China
Dates of Testing:	06/15/2015 — 06/19/2015
Issued by:	CCIC-SET
Lab Location:	Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055, P. R. China **Tel:** 86 755 26627338 **Fax:** 86 755 26627238

Test Report

Product Name ..... :	Bluetooth Low Energy Module
Brand Name ..... :	Mindray
Trade Name ..... :	mindray 迈瑞
Applicant ..... :	Shenzhen Mindray Bio-Medical Electronics Co.,Ltd.
Applicant Address ..... :	Mindray Buiding,Keji 12th Road South,High-tech Industrial Park,Nanshan,Shenzhen,P.R.China
Manufacturer ..... :	Shenzhen Mindray Bio-Medical Electronics Co.,Ltd.
Manufacturer Address ..... :	Mindray Buiding,Keji 12th Road South,High-tech Industrial Park,Nanshan,Shenzhen,P.R.China
Test Standards ..... :	47 CFR Part 15 Subpart C：Radio Frequency Devices RSS-247 Issue 1, May 2015 Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
Test Result ..... :	PASS
Tested by ..... :	2015.06.19 Lu Lei， Test Engineer
Reviewed by..... :	2015.06.19 Zhu Qi, Senior Egineer
Approved by ..... :	2015.06.19 Wu Li'an，Manager

TABLE OF CONTENTS

1. GENERAL INFORMATION 4

1.1. EUT Description 4

1.2. Test Standards and Results 6

1.3. Description of test environment test modes 7

1.4. Test Facilities 8

2. 47 CFR PART 15C REQUIREMENTS 9

2.1. Antenna requirement 9

2.2. Peak Output Power 10

2.3. Bandwidth 12

2.3.7. Conducted Band Edges and Spurious Emissions 16

2.4. Power spectral density (PSD) 21

2.5. Conducted Emission 24

2.6. Radiated Band Edge and Spurious Emission 28

3. LIST OF MEASURING EQUIPMENT 50

Change History		
Issue	Date	Reason for change
1.0	2015.06.19	First edition

1. General Information

1.1. EUT Description

EUT Type	Bluetooth Low Energy Module
Hardware Version	01-01-/
Software Version	1.0
Power Supply	3.0V DC
Temperature operating range	-20~70℃
EUT supports Radios application	Bluetooth V4.0 BLE
Frequency Range	2402MHz~2480MHz
Channel Number	40
Bit Rate of Transmitter	1Mbps
Modulation Type	GFSK
Antenna Type	Antenna 1: FPC Antenna Antenna 2: Dipole Antenna Antenna 3: FPC Antenna
Antenna Gain	Antenna 1: 2dBi Antenna 2: 3.5dBi Antenna 3: 1dBi

Note 1: The EUT is a Bluetooth Low Energy Module, it contain Bluetooth 4.0 LTE Module operating at 2.4GHz ISM band; the frequencies allocated for the Bluetooth 4.0 LTE is F(MHz)=2402+2*n (0<=n<=39). The lowest, middle, highest channel numbers of the Bluetooth Module used and tested in this report are separately 0 (2402MHz), 20(2442MHz) and 39 (2480MHz).

Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Antenna 1

Antenna 2

Antenna 3

1.2. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C (Bluetooth, 2.4GHz ISM band radiators) for the EUT FCC Certification:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart C 2013	Radio Frequency Devices
2	ANSI C63.10 2013	American National Standard for Testing Unlicensed Wireless Devices
3	RSS-GEN: Issue 4,November 2014:	General Requirements and Information for the Certification of Radio Apparatus
4	RSS-247:Issue 1,December2015:	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Standard(s) Section		Description	Result
	FCC	IC		
1	15.203	8.3	Antenna Requirement	PASS
2	15.247(b)(3)	RSS-247 Issue1 - 5.4(4)	Peak Output Power	PASS
3	15.247(a)(2)	RSS-247 Issue1 - 5.2(1)	Bandwidth – 6dB bandwidth	PASS
4	/	RSS Gen clause - 4.6.1	99% Occupied Bandwidth	PASS
5	15.247(d)	RSS-247 Issue1 - 5.5	Conducted Spurious Emission	PASS
6	15.247(e)	RSS-247 Issue1 - 5.2(2)	Power spectral density (PSD)	PASS
7	15.205 15.247(d)	RSS-247 Issue1 - 5.5 RSS - Gen	Band Edge	PASS
8	15.209(a)	RSS-GEN	Spurious emissions radiated below 30MHz	PASS
9	15.247(d) 15.109	RSS-247 Issue1 - 5.5 RSS-Gen	Spurious emissions radiated 30 MHz to 1GHz and above 1GHz	PASS
10	15.107(a), 15.20(c)	RSS-GEN	Conducted Emission	PASS

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013.

These RF tests were performed according to the method of measurements prescribed in KDB558074 D01 V03r02.

1.3. Description of test environment test modes

40 channels are provided for Bluetooth LE 4.0

Channel	Frequency(MHz)	Channel	Frequency(MHz)
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

Operating Environment	
Temperature	24℃
Humidity	57 % RH
Atmospheric Pressure	1010 mbar
Test mode：	
Continuously transmitting mode	Keeps the EUT in 100% duty cycle transmitting, duty cycle factor is not required.

Bluetooth LE 4.0	Test channel	Modulation Type	Data Rate(Mbps)
	0/20/39	GFSK	1.0

1.4. Test Facilities

CNAS-Lab Code: L1659

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8*6.8*6.4 (m) fully anechoic chamber was used for the radiated spurious emissions test.

FCC-Registration No.: 406086

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 406086, valid time is until October 28, 2017.

IC-Registration No.: 11185A-1

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on July. 15, 2013, valid time is until July. 15, 2016.

2. 47 CFR Part 15C Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

And according to FCC 47 CFR Section 15.247(c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

2.1.2. Antenna Information

Antenna Category: External antenna

This device uses a unique antenna coupling to the device, which is designed by the responsible party based on the fillings you submitted.

Antenna General Information:

No.	EUT Model	Ant. Cat.	Ant. Type	Gain(dBi)
1	Bluetooth Low Energy Module	External	FPC	2
2	Bluetooth Low Energy Module	External	Dipole	3.5
3	Bluetooth Low Energy Module	External	FPC	1

2.1.3. Result: comply

The module contain a unique antenna connector, and be marketed and operated only with specific antenna(s).

2.2. Peak Output Power

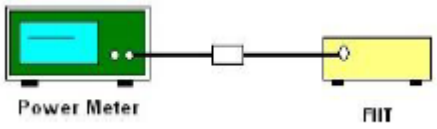
2.2.1. Requirement

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Setup



2.2.4. Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r02.

2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. Measure the conducted output power and record the results in the test report.

2.2.5. Test Result

Antenna Type	Channel	Frequency (MHz)	RF Power(dBm)	Gain(dBi) Calculated	Radiated power (dBm)	Limit (dBm)	Verdict
			GFSK/1Mbps		GFSK/1Mbps		
Antenna 1	0	2402	1.96	2	3.96	30	PASS
	20	2442	1.24		3.24		PASS
	39	2480	1.35		3.35		PASS

Antenna Type	Channel	Frequency (MHz)	RF Power(dBm)	Gain(dBi) Calculated	Radiated power (dBm)	Limit (dBm)	Verdict
			GFSK/1Mbps		GFSK/1Mbps		
Antenna 2	0	2402	1.96	3.5	5.46	30	PASS
	20	2442	1.24		4.74		PASS
	39	2480	1.35		4.85		PASS

Antenna Type	Channel	Frequency (MHz)	RF Power(dBm)	Gain(dBi) Calculated	Radiated power (dBm)	Limit (dBm)	Verdict
			GFSK/1Mbps		GFSK/1Mbps		
Antenna 3	0	2402	1.96	1	2.96	30	PASS
	20	2442	1.24		2.24		PASS
	39	2480	1.35		2.35		PASS

2.3. Bandwidth

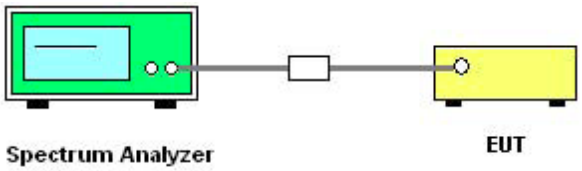
2.3.1. Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Setup



2.3.4. Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz.

5. For 99% Bandwidth Measurement, the testing follows ANSI C63.10:2013 Section 6.9.3, the spectrum analyzer's RBW is set 30 kHz and set the VBW=100 kHz.

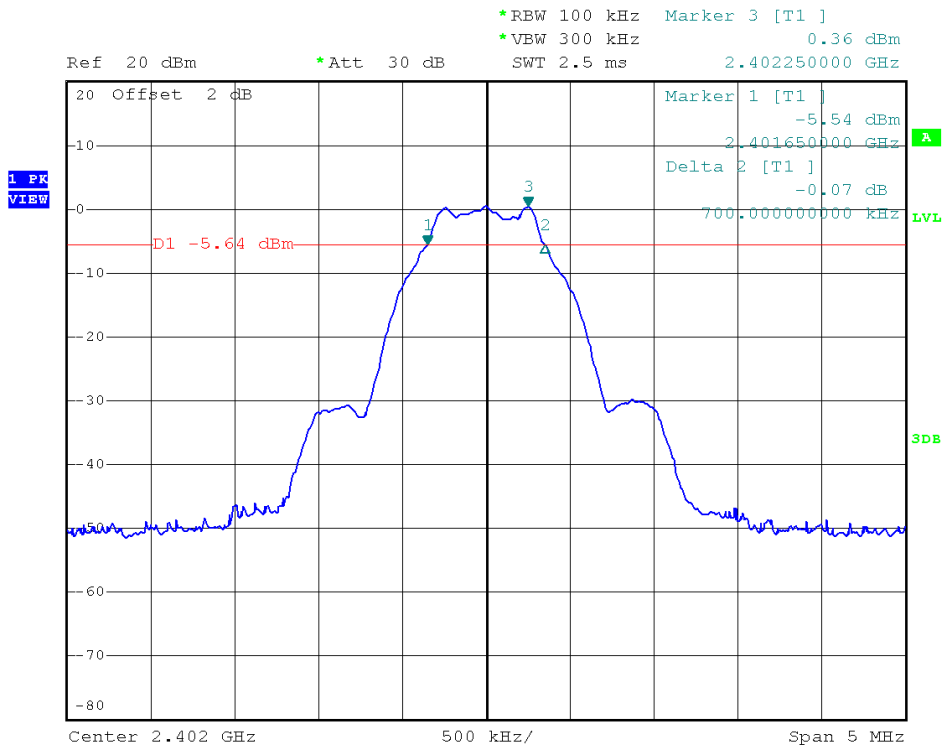
6. Measure and record the results in the test report.

2.3.5. Test Results of 6dB Bandwidth and 99% Bandwidth

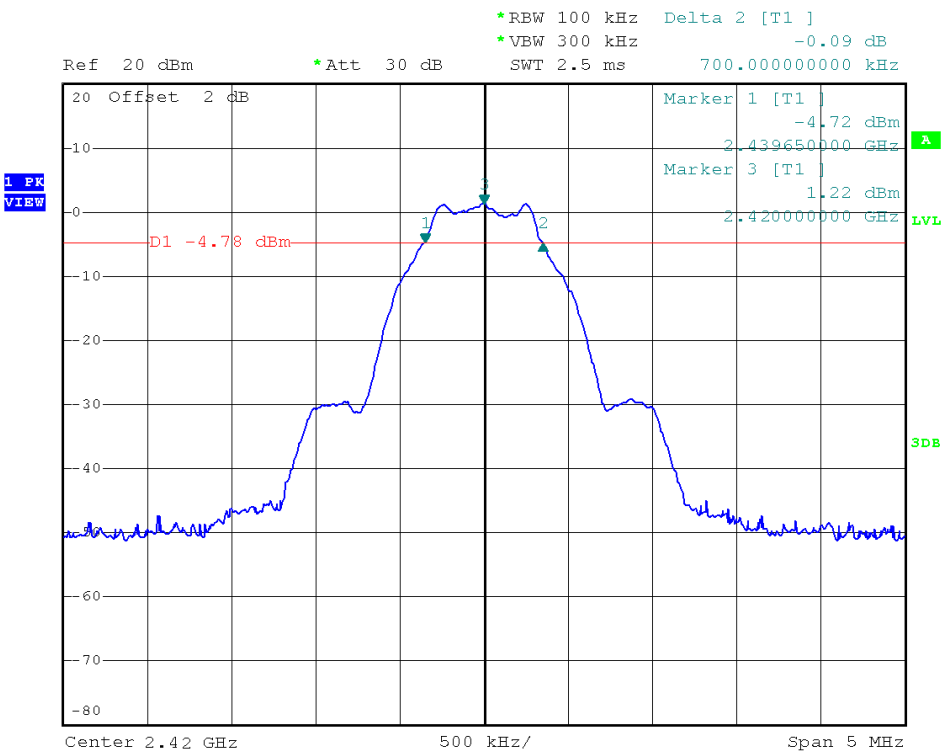
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limits (MHz)	Result
0	2402	0.70	1.02	≥0.5	PASS
20	2442	0.70	1.02	≥0.5	PASS
39	2480	0.70	1.02	≥0.5	PASS

2.3.6. Test Results (plots) of 6dB Bandwidth

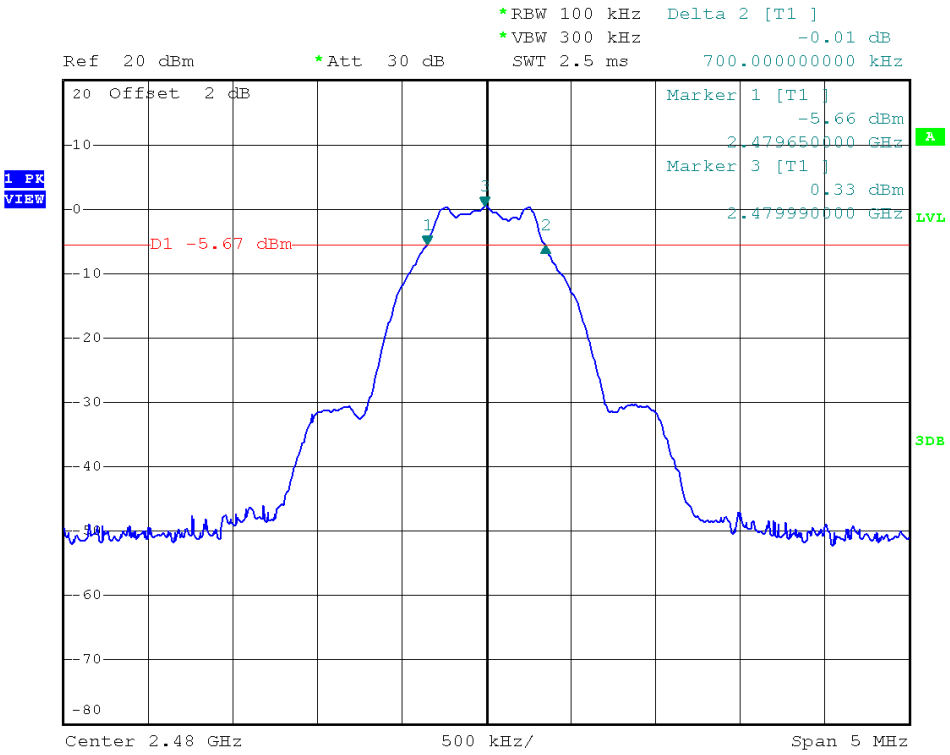
6 dB Bandwidth Plot on channel 0



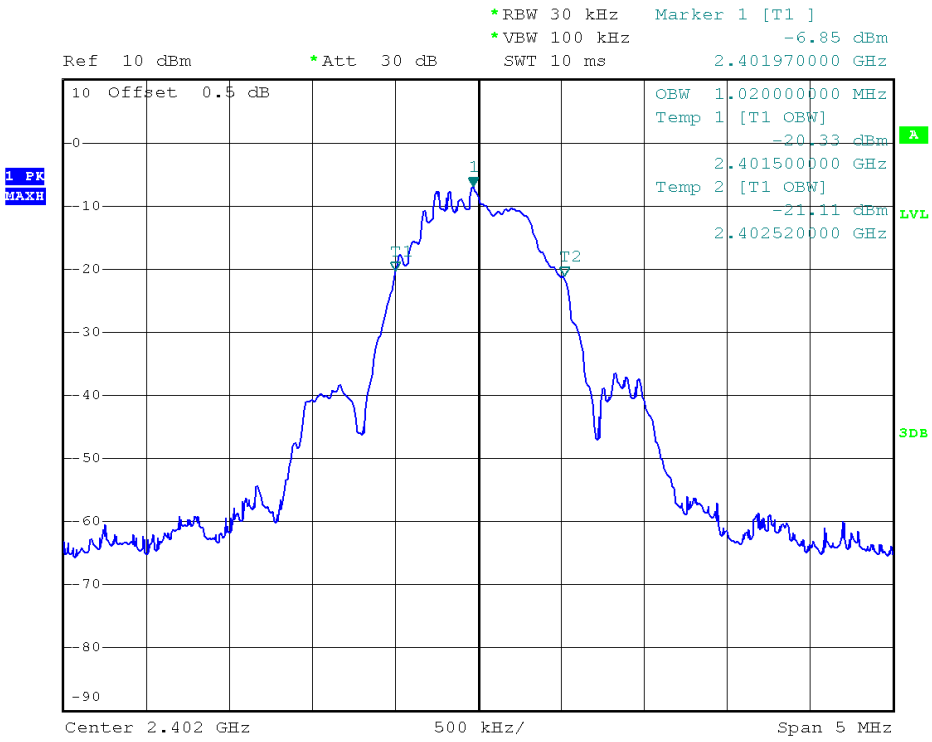
6 dB Bandwidth Plot on channel 20



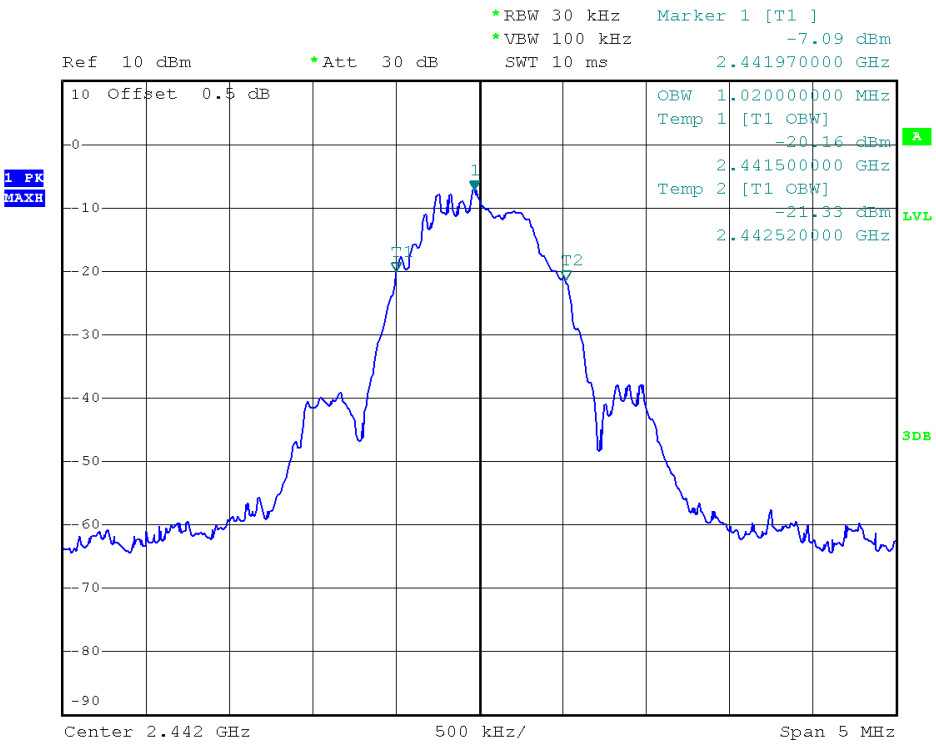
6 dB Bandwidth Plot on channel 39



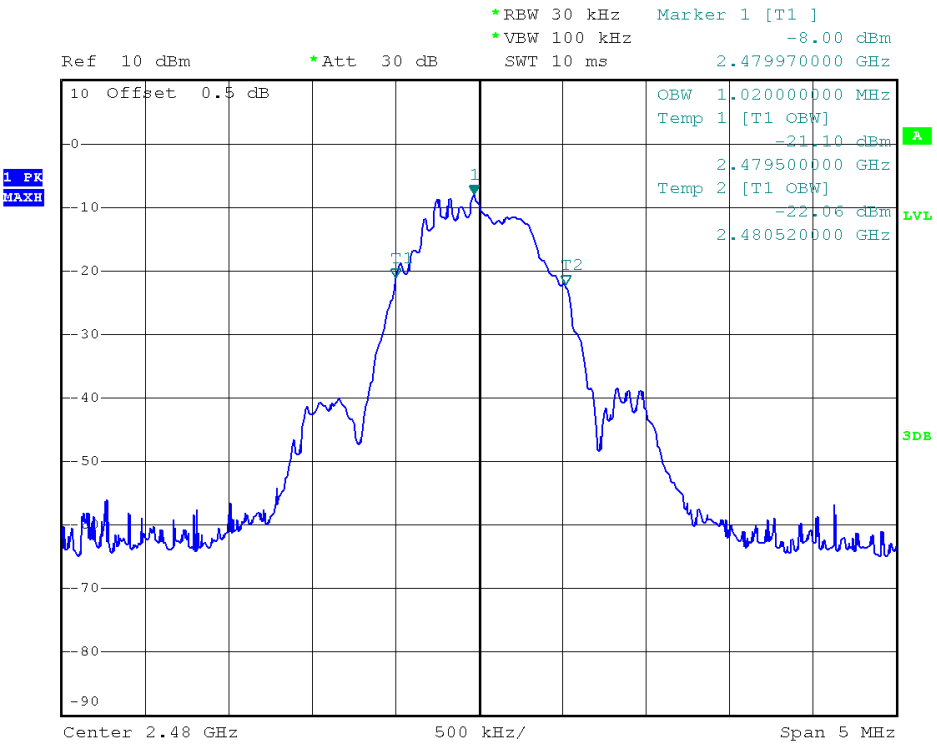
99% Bandwidth Plot on channel 0



99% Bandwidth Plot on channel 20



99% Bandwidth Plot on channel 39



2.3.7. Conducted Band Edges and Spurious Emissions

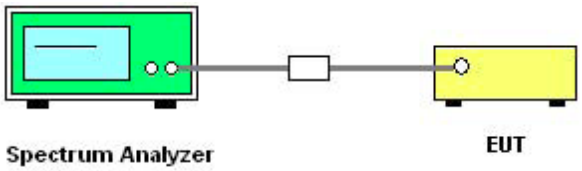
2.3.8. Limit of Conducted Band Edges and Spurious Emissions

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

2.3.9. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.10. Test Setup



2.3.11. Test Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

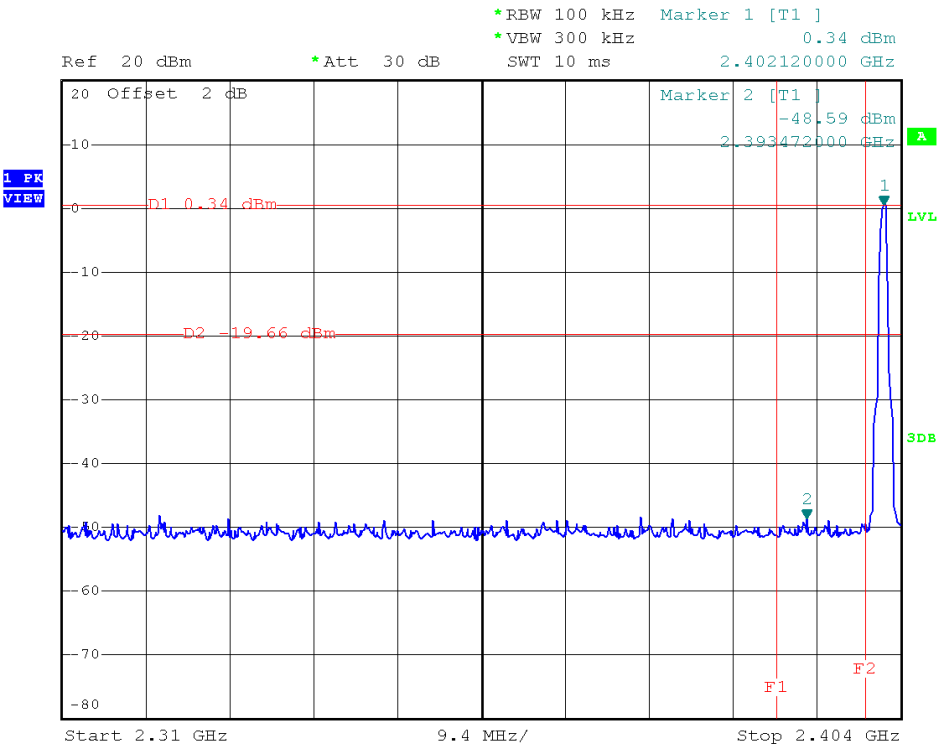
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).

5. Measure and record the results in the test report.

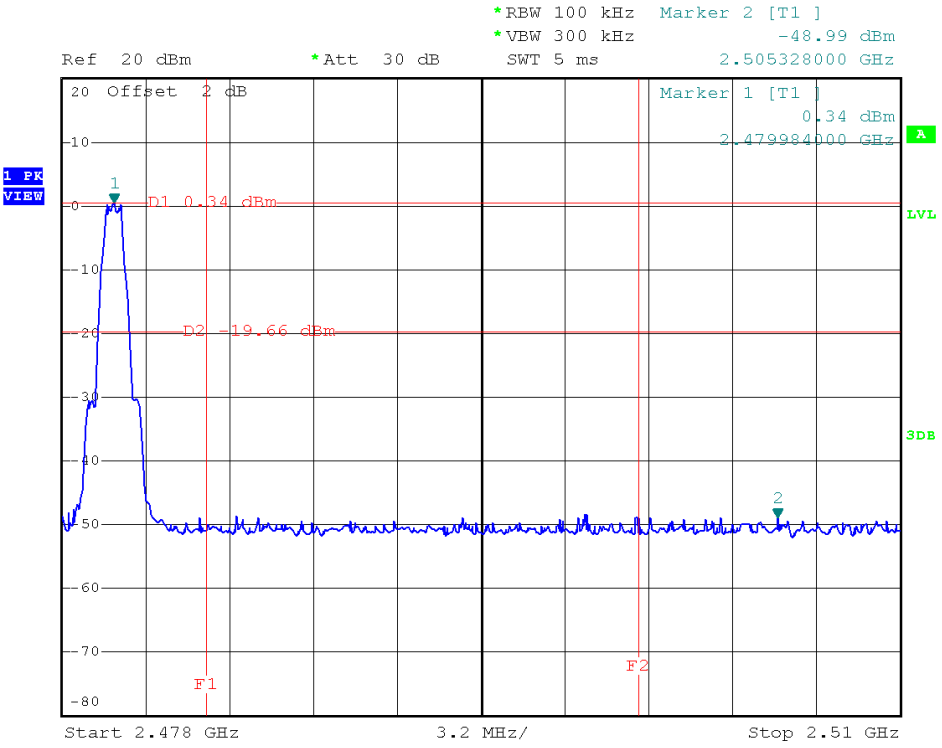
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

2.3.12. Test Result (Plots) of Conducted Band Edges

Low Band Edge Plot on Channel 0



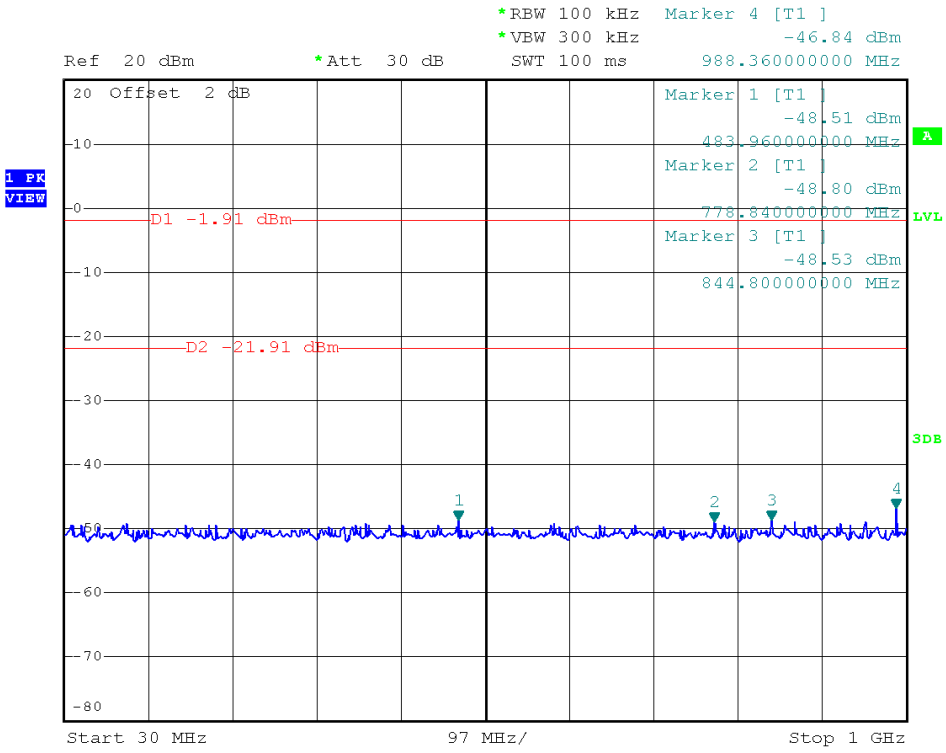
High Band Edge Plot on Channel 39



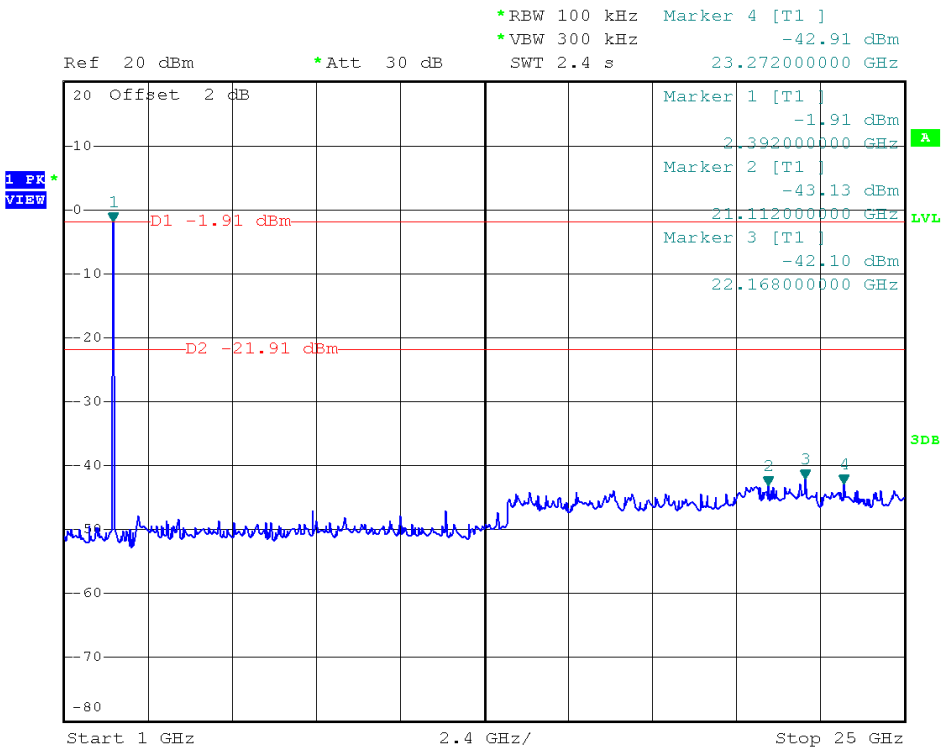
2.3.13. Test Result (Plots) of Conducted Spurious Emission

Note：For 9kHz to 30MHz the amplitude of conducted spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

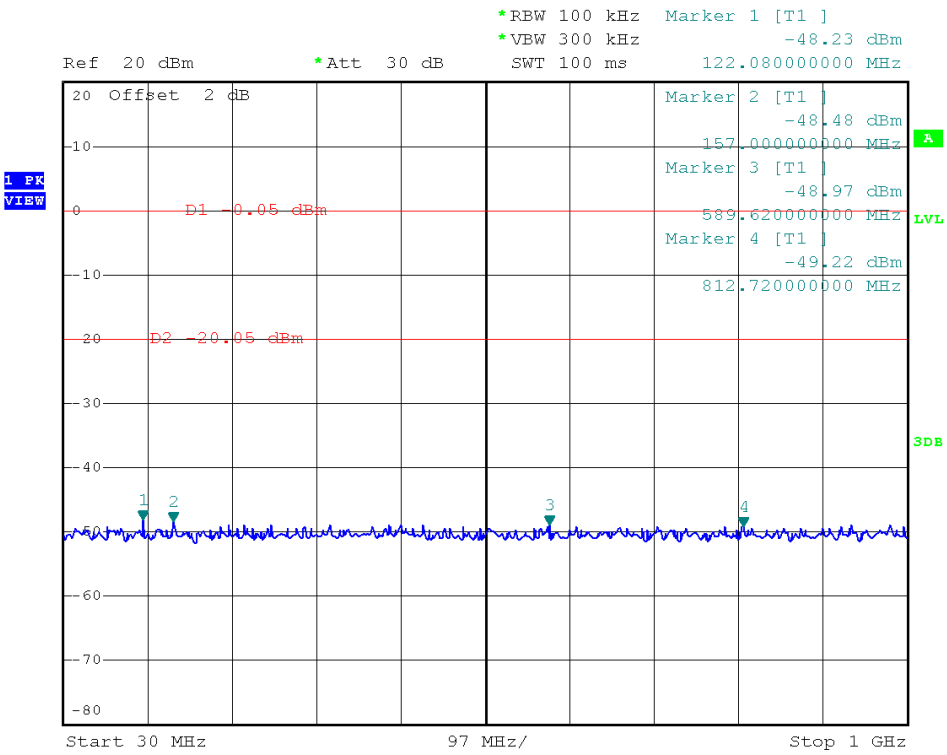


Channel = 0, 30MHz to 1GHz

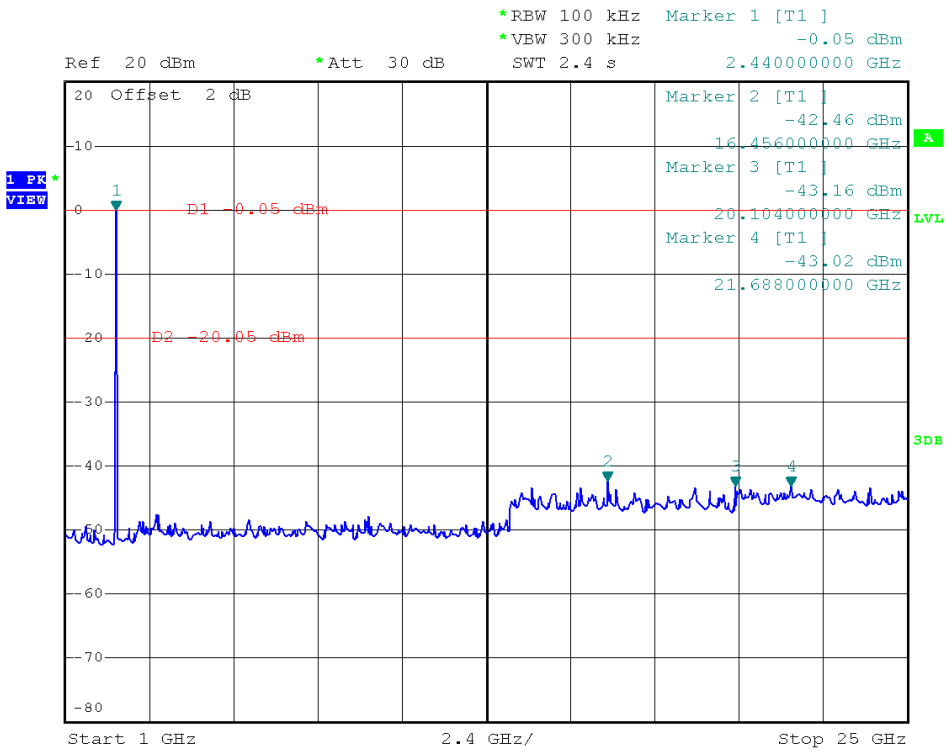


Channel = 0, 1GHz to 25GHz

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

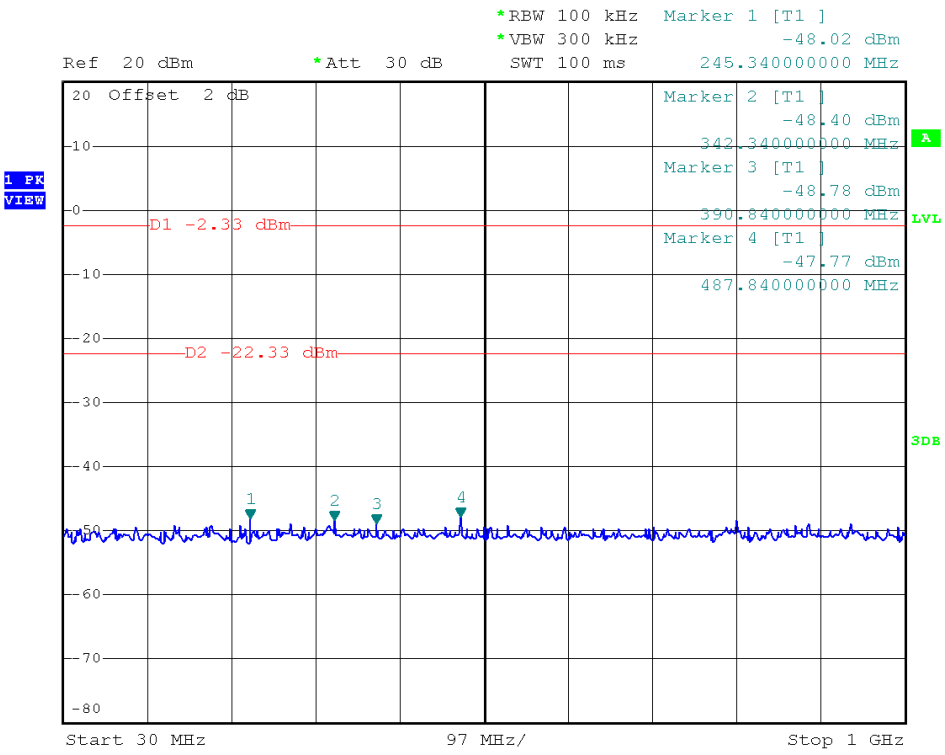


Channel = 20, 30MHz to 1GHz

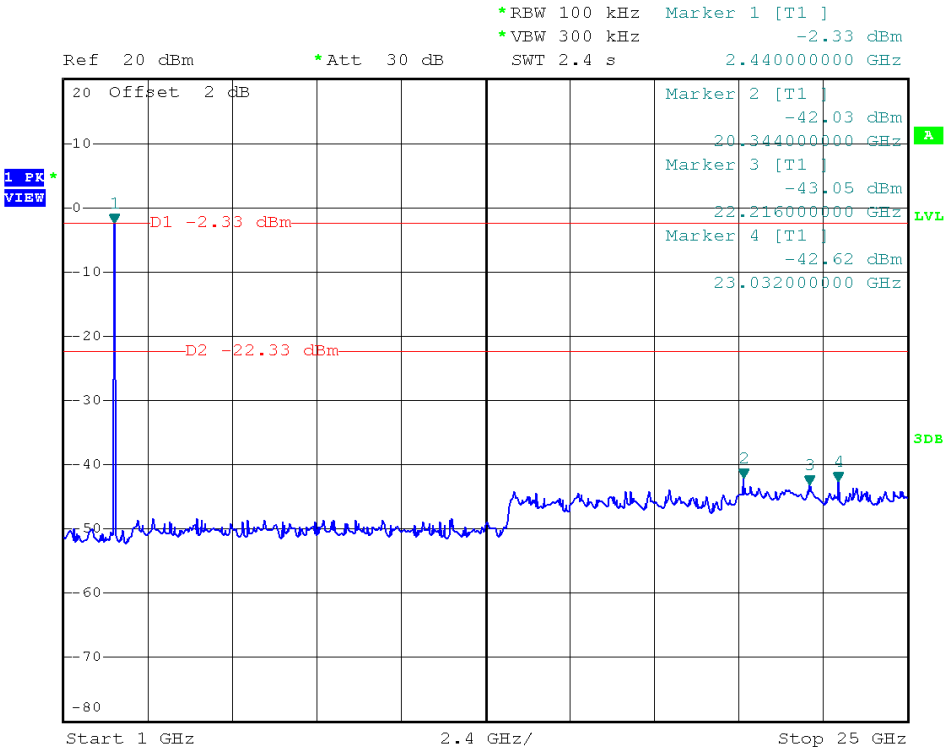


Channel = 20, 1GHz to 25GHz

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps



Channel = 39, 30MHz to 25GHz



Channel = 39, 30MHz to 25GHz

2.4. Power spectral density (PSD)

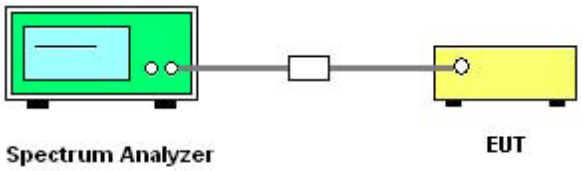
2.4.1. Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3. Test Setup



2.4.4. Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No.558074 D01 DTS Meas. Guidance v03r02

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)

5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.

6. Measure and record the results in the test report.

7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

2.4.5. Test Results of Power spectral density

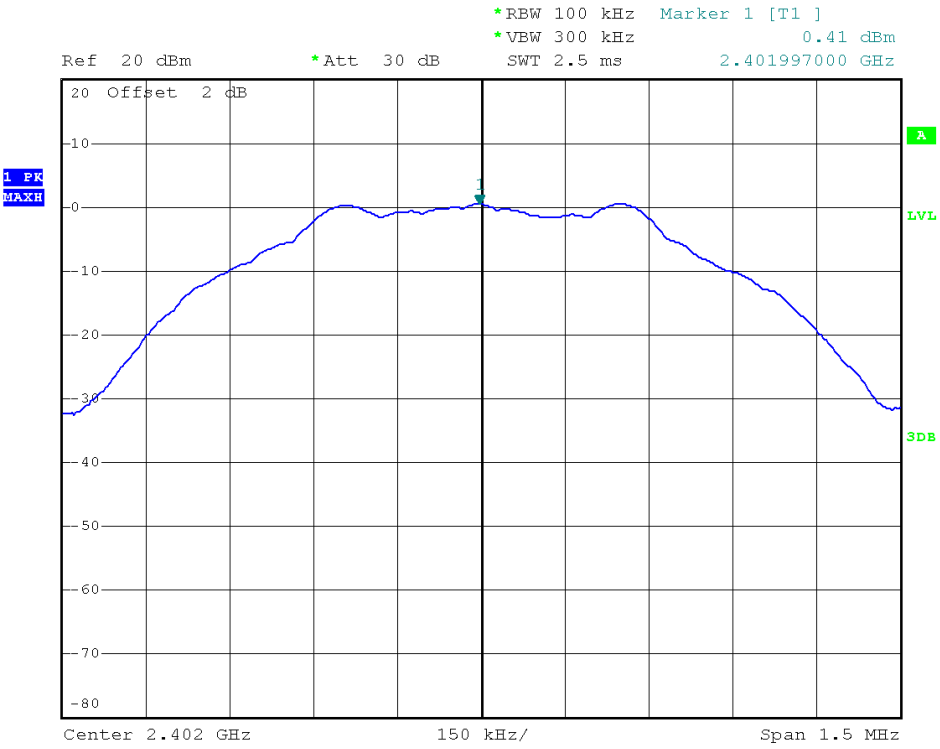
Spectral power density (dBm)					
Channel	Frequency (MHz)	PSD/100kHz (dBm)	PSD/3kHz (dBm)	Limit (dBm/3kHz)	Verdict
0	2402	0.41	-14.79	8	PASS
20	2442	1.06	-14.14	8	PASS
39	2480	0.39	-14.81	8	PASS
Measurement uncertainty: ±1.3dB					

Note:

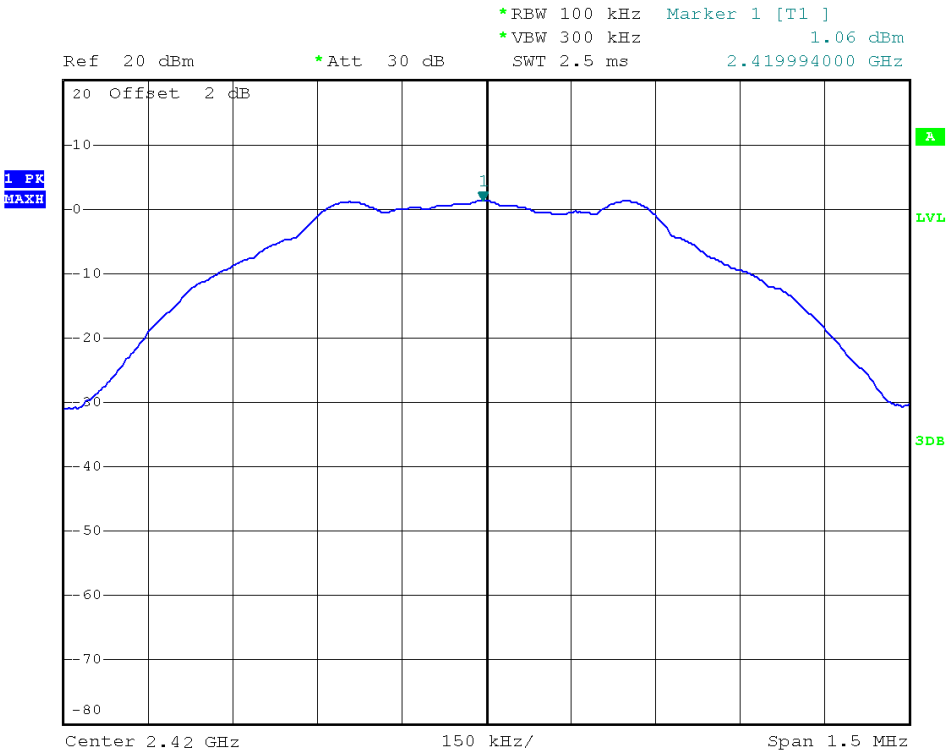
1. Measured power density (dBm) has offset with cable loss.
2. Bandwidth correction: 10log(3kHz/100kHz)=-15.2dB

2.4.6. Test Results (plots) of Power spectral density

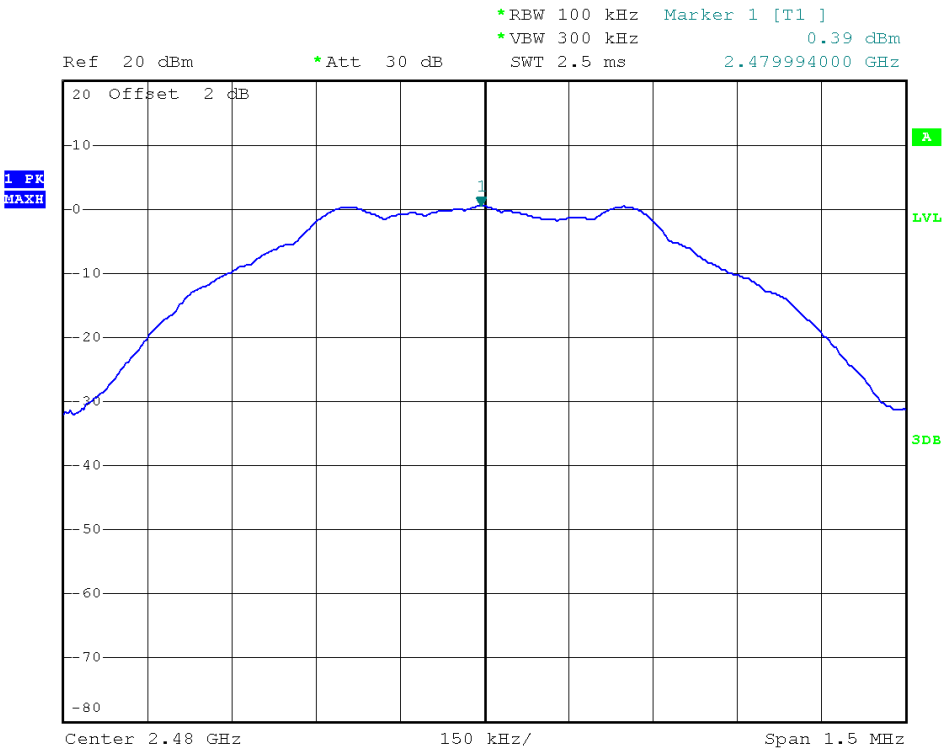
PSD Plot on Channel 0



PSD Plot on Channel 20



PSD Plot on Channel 39



2.5. Conducted Emission

2.5.1. Limit of Conducted Emission

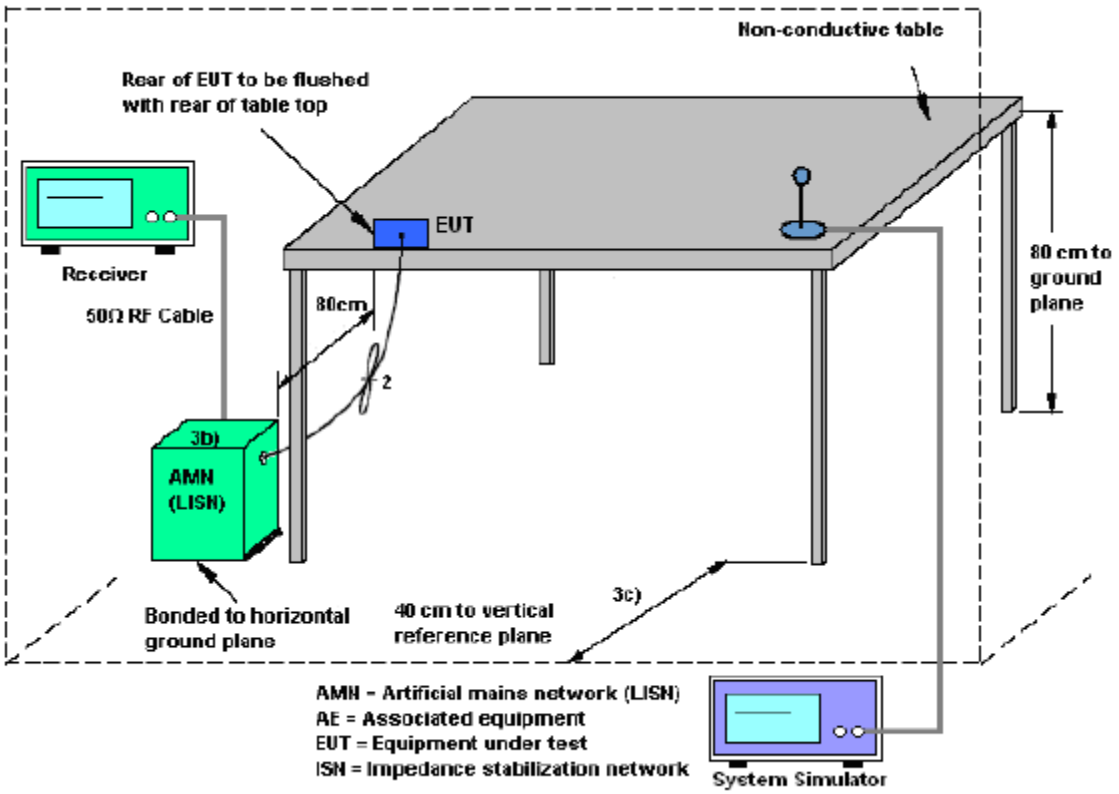
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Setup



2.5.4. Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.

2. Connect EUT to the power mains through a line impedance stabilization network (LISN).

3. All the support units are connecting to the other LISN.

4. The LISN provides 50 ohm coupling impedance for the measuring instrument.

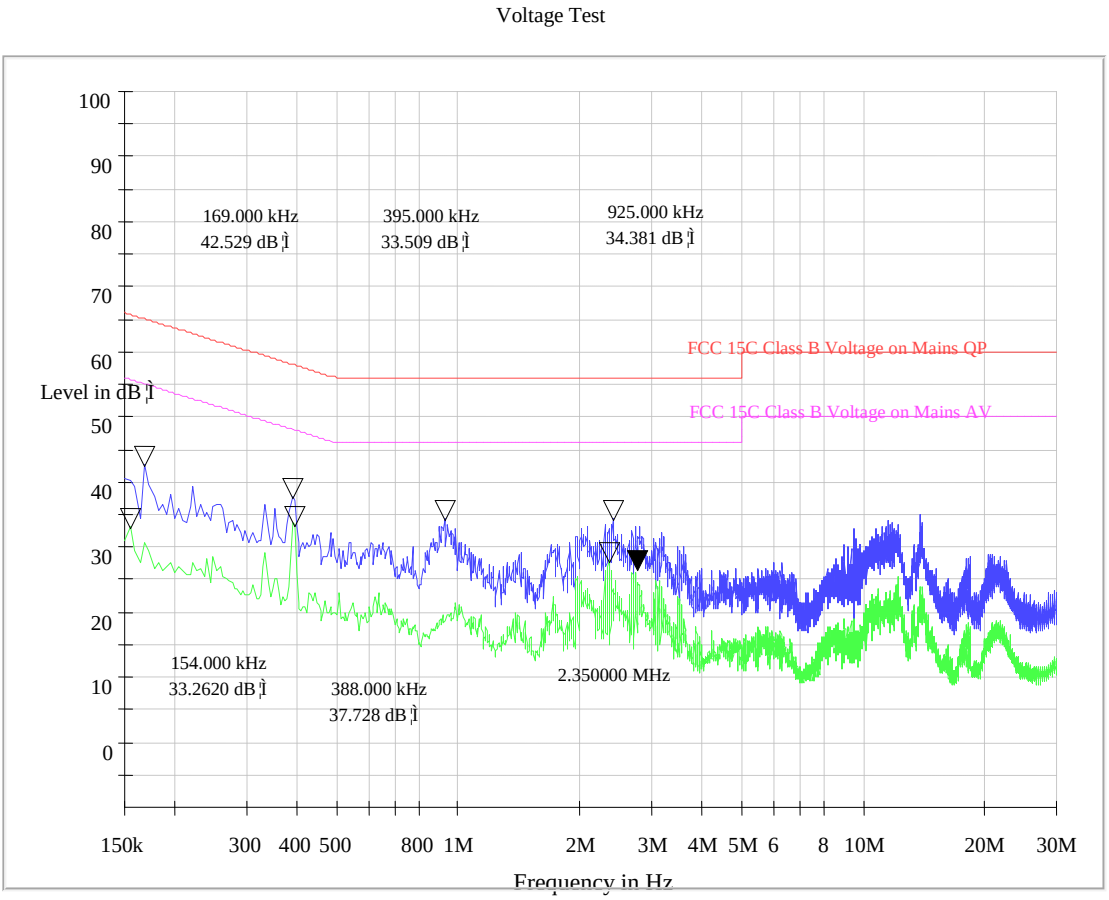
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.

6. Both sides of AC line were checked for maximum conducted interference.

7. The frequency range from 150 kHz to 30 MHz was searched.

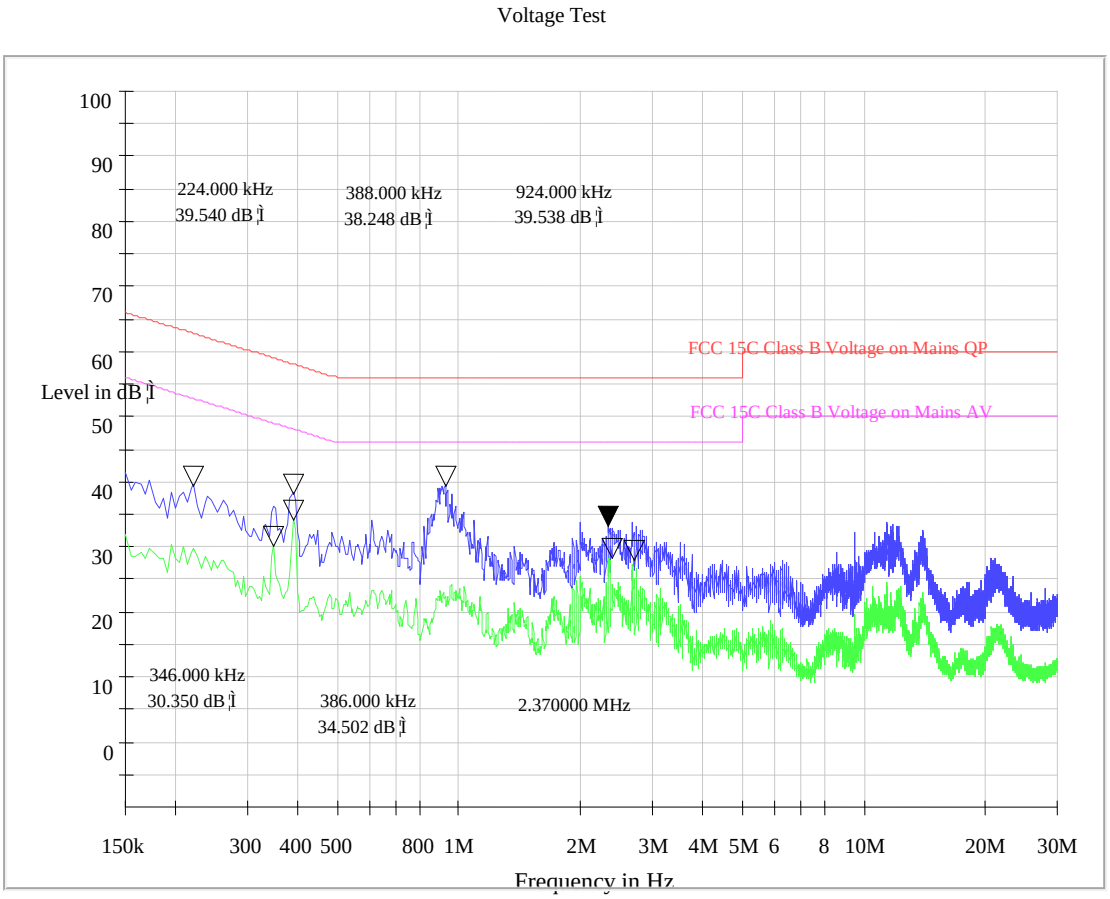
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

2.5.5. Test Result



(Plot A: L Phase)

Conducted Disturbance at Mains Terminals					
L Test Data					
QP			AV		
Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)
0.169	65.1	42.53	0.154	55.7	33.26
0.395	58.0	33.51	0.388	48.1	37.73
0.925	56.0	34.38	2.350	46.0	27.91
2.409	56.0	34.43	2.767	46.0	26.85



(Plot B: N Phase)

Conducted Disturbance at Mains Terminals					
N Test Data					
QP			AV		
Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)	Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)
0.224	62.7	39.54	0.346	49.0	30.35
0.388	58.1	38.25	0.386	48.1	34.50
0.924	56.0	39.54	2.370	46.0	28.60
2.341	56.0	33.52	2.719	46.0	28.12

Test Result: PASS

2.6. Radiated Band Edge and Spurious Emission

2.6.1. Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Note: Wireless charger configuration was evaluated.

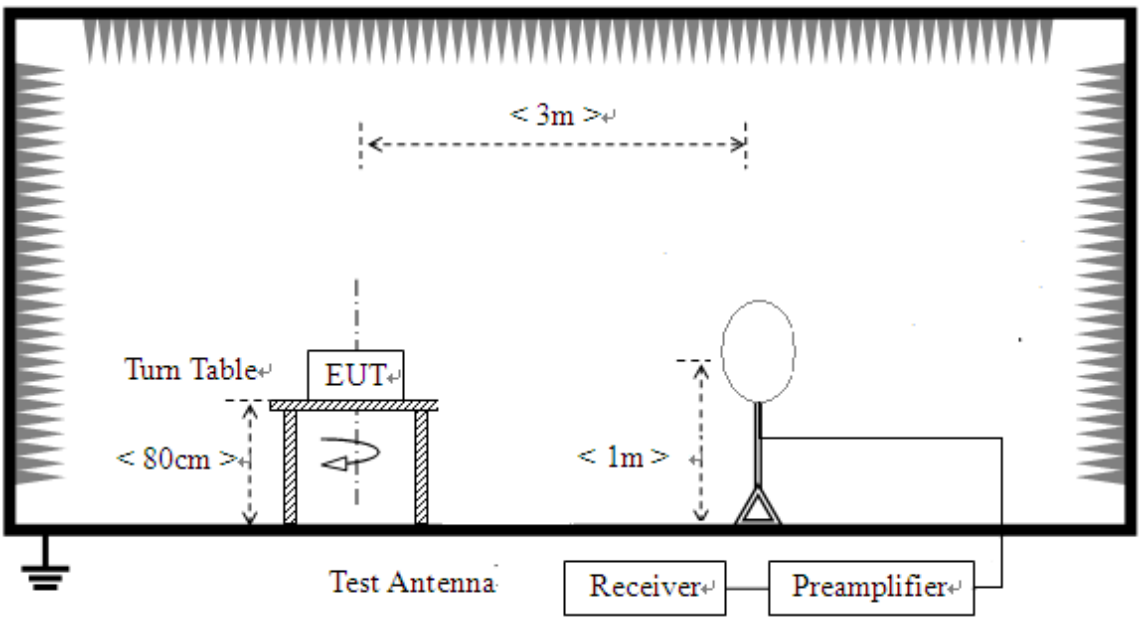
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

2.6.2. Measuring Instruments

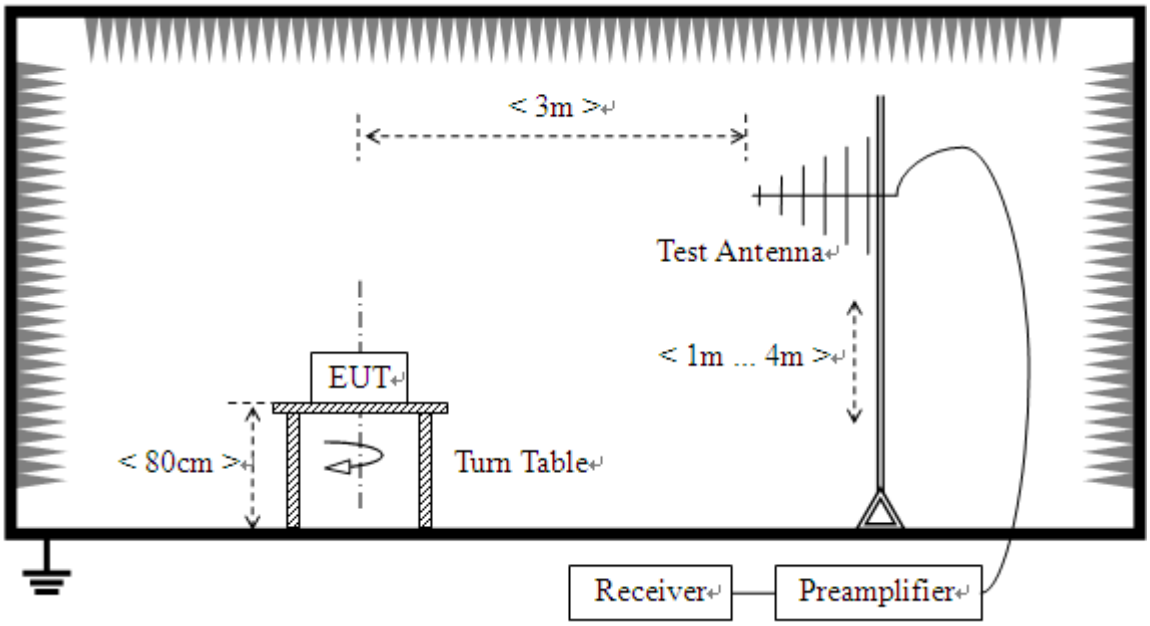
The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Setup

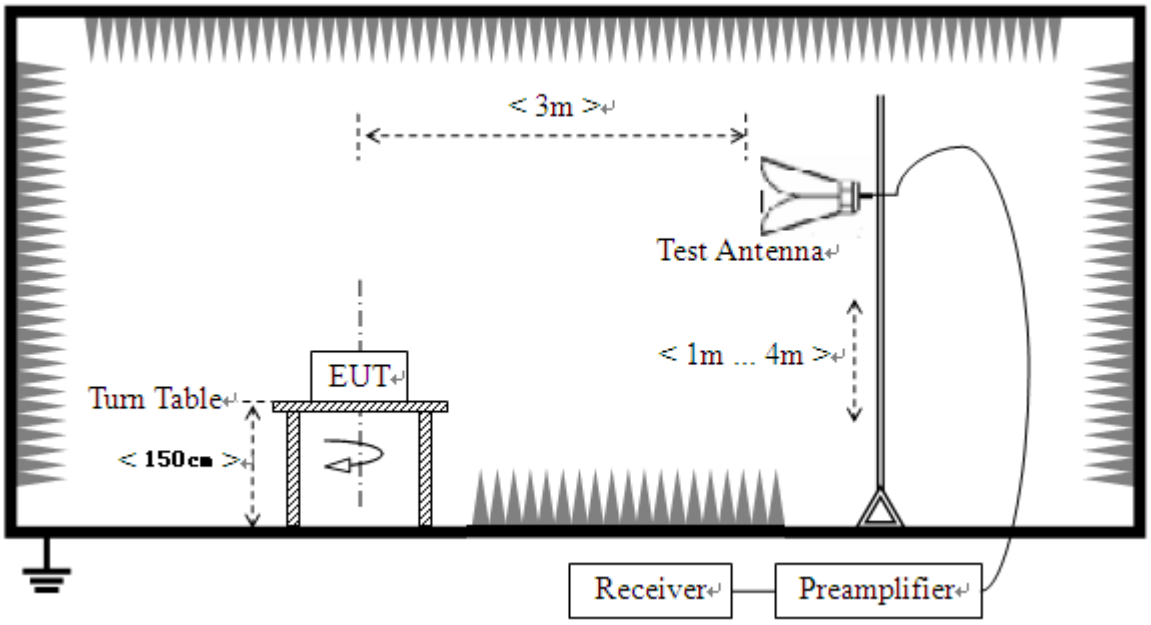
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



2.6.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8/1.5 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

3. Height of receiving antenna 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.

4. 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 table was turned from 0 degrees to 360 degrees to find the maximum reading.

5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

6. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported.

Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.

2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is≥ 1/T (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.

4. All modes of operation were investigated and the worst-case emissions are reported.

2.6.5. Sequence of testing

1. Sequence of testing 9kHz to 30MHz

Setup

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter (see ANSI C 63.4) – see each test details.
- The EUT was set into operation.

Premeasurement

- The turntable rotates form 0° to 315° using 45° steps.
- The antenna height is 1.5 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axces (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK (QPK / see ANSI C 63.4) detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2. Sequence of testing 30MHz to 1GHz

Setup

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 10 or 3 meter (see ANSI C 63.4) – see each test details.
- The EUT was set into operation.

Premeasurement

- The turntable rotates form 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal
- The antenna height changes from 1 to 3 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (±45°) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP (Quasi-Peak / see ANSI C 63.4) detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

3. Sequence of testing 1GHz to 12.75GHz

Setup

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter (see ANSI C 63.4) – see each test details.
- The EUT was set into operation.

Premeasurement

- The turntable rotates form 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal
- The antenna height changes from 1 .5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement

- The final measurement will be performed with minimum the six highest peaks according the requirements of the ANSI C 63.4.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by rotating the turntable position (0° to 360°). This measurement is repeated for different EUT-table positions (0° to 150° in 30° -steps). This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with peak and RMS (RMS / see ANSI C63.4) detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT- table position , antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4. Sequence of testing above 12.75GHz

Setup

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 0.5 meter (see ANSI C 63.4) – see each test details.
- The EUT was set into operation.

Premeasurement

- The antenna is moved spherical over the EUT in different polarizations of the antenna.

Final measurement

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with peak and RMS (RMS / see ANSI C63.4) detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

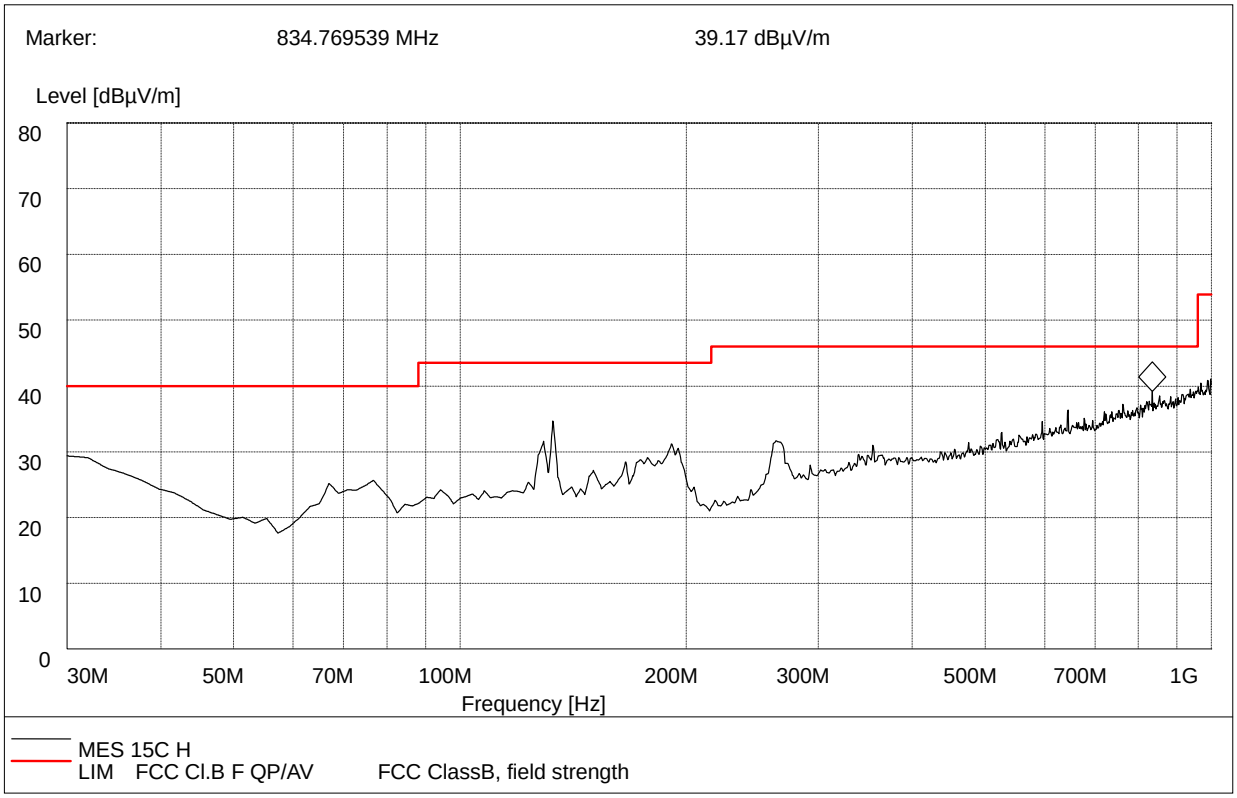
2.6.6. Test Results of Radiated Band Edge and Spurious Emission

Antenna 1

For 9KHz to 30MHz

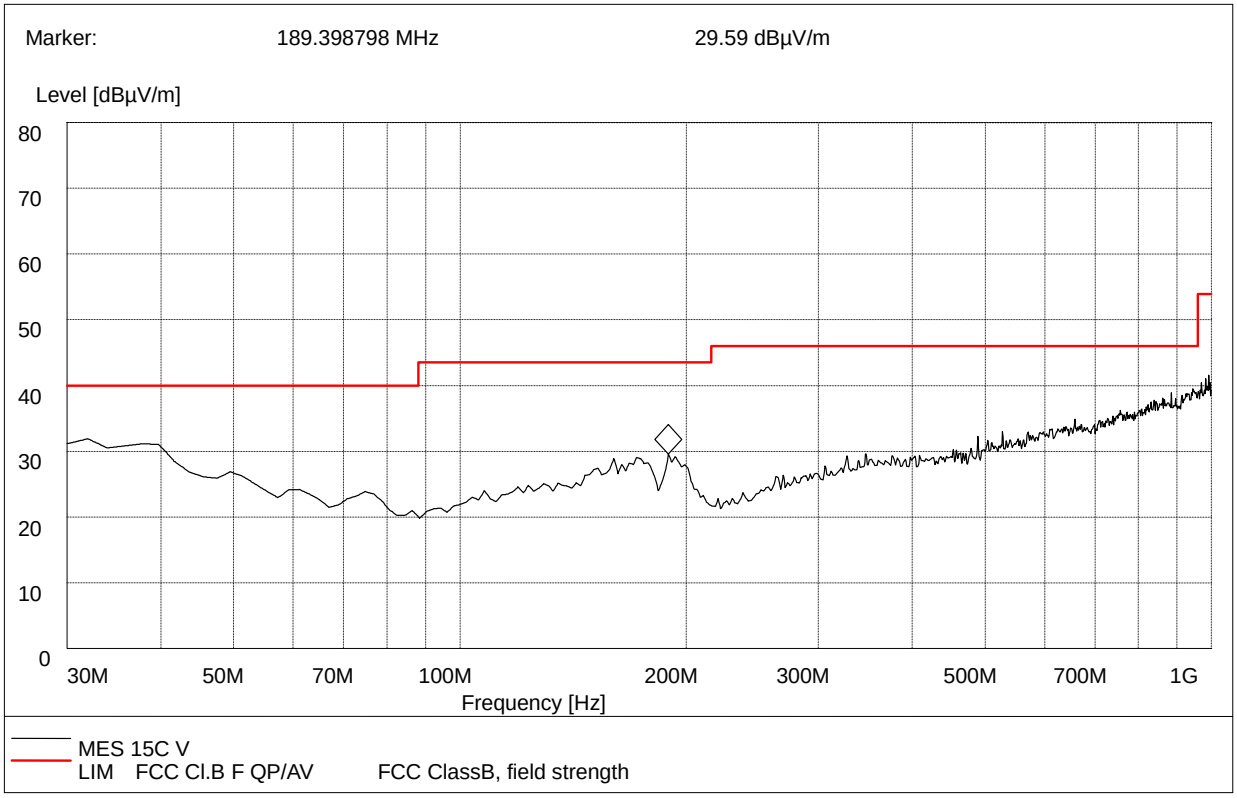
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



(Plot A: 30MHz to 1GHz, Antenna Horizontal)

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Antenna	Verdict
133.7200	33.17	120.000	100.0	43.5	Horizontal	Pass
834.7695	39.17	120.000	100.0	46.0	Horizontal	Pass



(Plot B: 30MHz to 1GHz, Antenna Vertical)

Frequency (MHz)	QuasiPeak (dBµ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµ V/m)	Antenna	Verdict
32.4900	32.41	120.000	100.0	40.0	Vertical	Pass
189.1500	29.43	120.000	100.0	43.5	Vertical	Pass

For 1GHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（0CH_2402MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.70	PK	74.0	-17.30	1.01 H	228	24.50	32.20
2	2390.00	43.90	AV	54.0	-10.10	1.01 H	228	11.70	32.20
3	*2402.00	109.40	PK	/	/	1.03 H	112	77.20	32.20
4	*2402.00	105.00	AV	/	/	1.03 H	112	72.80	32.20
5	4804.00	51.80	PK	74.00	-22.20	1.00 H	254	46.50	5.30
6	4804.00	45.60	AV	54.00	-8.40	1.00 H	254	40.30	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（0CH_2402MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.00.	PK	74.0	-17.00	1.11 V	228	24.80	32.20
2	2390.00	44.20	AV	54.0	-9.80	1.11 V	228	12.00	32.20
3	*2402.00	108.10	PK	/	/	1.09 V	112	75.90	32.20
4	*2402.00	103.60	AV	/	/	1.03 V	112	71.40	32.20
5	4804.00	54.40	PK	74.00	-19.60	1.21 V	254	49.10	5.30
6	4804.00	44.30	AV	54.00	-9.70	1.21 V	254	39.00	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（20CH_2442MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2442.00	107.30	PK	/	/	1.01 H	210	75.10	32.20
2	*2442.00	104.10	AV	/	/	1.01 H	210	71.90	32.20
3	4884.00	53.80	PK	74.00	-20.2	1.03 H	272	48.50	5.30
4	4884.00	46.20	AV	54.00	-7.8	1.03 H	272	40.90	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（20CH_2442MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2442.00	109.00	PK	/	/	1.09 V	112	76.80	32.20
2	*2442.00	105.30	AV	/	/	1.09 V	112	73.10	32.20
3	4884.00	55.80	PK	74.00	-18.2	1.21 V	254	50.50	5.30
4	4884.00	46.50	AV	54.00	-7.5	1.21 V	254	41.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（39CH_2480MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	109.20	PK	/	/	1.05 V	215	76.90	32.30
2	*2480.00	103.30	AV	/	/	1.05 V	215	71.00	32.30
3	2483.50	57.30	PK	74.0	-16.70	1.05 V	211	24.90	32.40
4	2483.50	45.00	AV	54.0	-9.00	1.05 V	211	12.60	32.40
5	4960.00	52.40	PK	74.0	-11.60	1.45 V	320	46.90	5.50
6	4960.00	45.30	AV	54.0	-8.70	1.45 V	320	39.80	5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（39CH_2480MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	110.30	PK	/	/	1.05 V	174	78.00	32.30
2	*2480.00	104.80	AV	/	/	1.05 V	174	72.50	32.30
3	2483.50	55.50	PK	74.0	-18.5	1.05 V	177	23.10	32.40
4	2483.50	45.70	AV	54.0	-8.3	1.05 V	177	13.30	32.40
5	4960.00	55.90	PK	74.0	-18.1	1.45 V	201	50.40	5.50
6	4960.00	46.90	AV	54.0	-7.1	1.45 V	201	41.40	5.50

REMARKS:

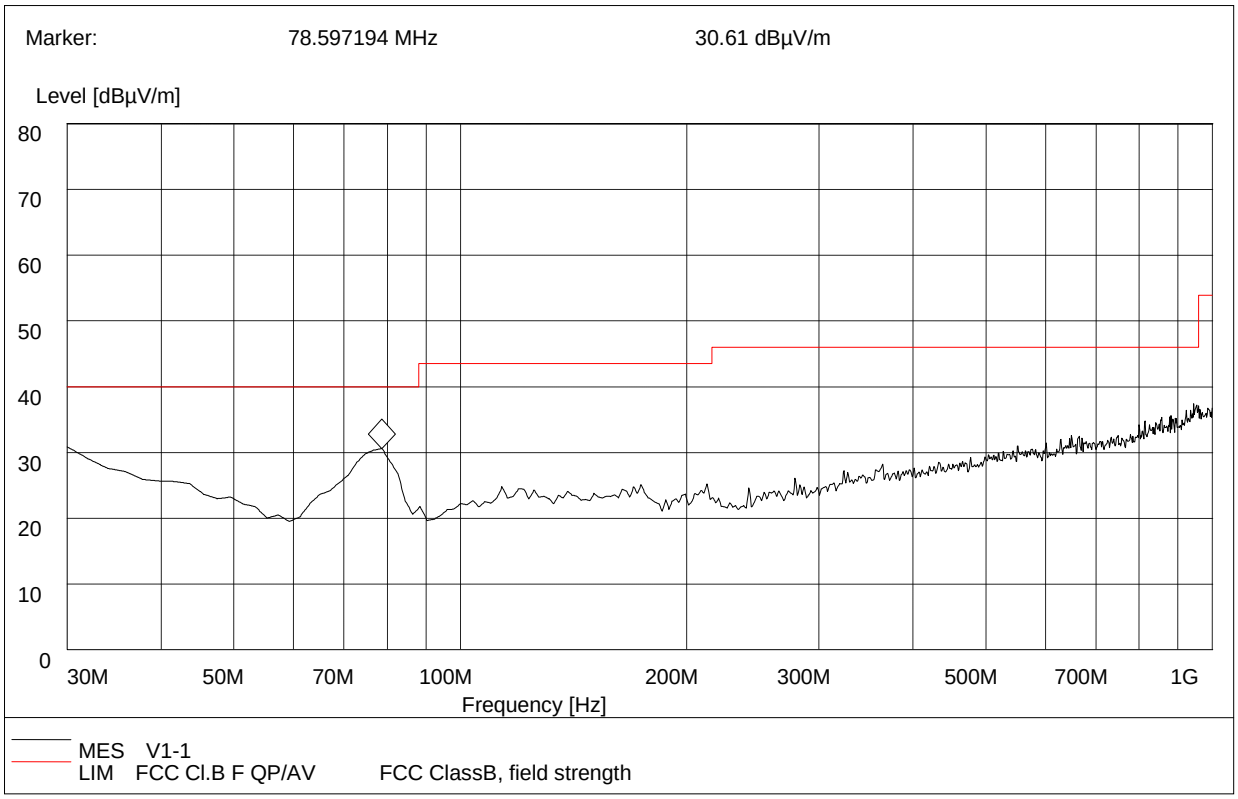
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) － Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level － Limit value
5. " * ": Fundamental frequency.

Antenna 2

For 9kHz to 30MHz

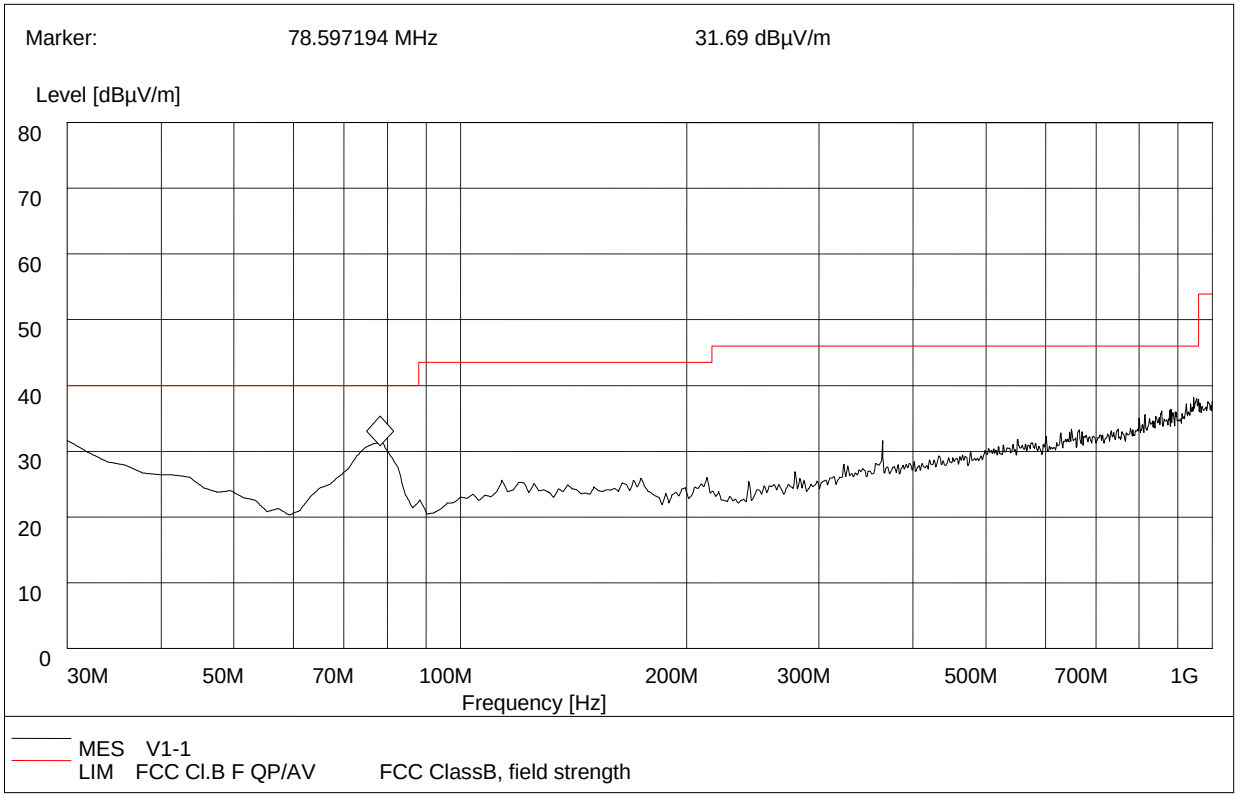
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



Plot A: 30MHz to 1GHz, Antenna Vertical

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Antenna	Verdict
30.000	30.49	120.000	100.0	40.00	Vertical	Pass
78.597	30.61	120.000	100.0	40.00	Vertical	Pass



Plot B: 30MHz to 1GHz, Antenna Horizontal

Frequency (MHz)	QuasiPeak (dBµ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµ V/m)	Antenna	Verdict
30.000	31.22	120.000	100.0	40.00	Horizontal	Pass
78.597	31.69	120.000	100.0	40.0	Horizontal	Pass
364.150	31.46	120.000	100.0	46.0	Horizontal	Pass

For 1GHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（0CH_2402MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.10	PK	74.0	-16.90	1.01 H	228	24.90	32.20
2	2390.00	43.60	AV	54.0	-10.40	1.01 H	228	11.40	32.20
3	*2402.00	107.70	PK	/	/	1.03 H	112	75.50	32.20
4	*2402.00	103.90	AV	/	/	1.03 H	112	71.70	32.20
5	4804.00	51.60	PK	74.00	-22.40	1.00 H	254	46.30	5.30
6	4804.00	45.80	AV	54.00	-8.20	1.00 H	254	40.50	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（0CH_2402MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.70	PK	74.0	-17.30	1.11 V	228	24.50	32.20
2	2390.00	44.40	AV	54.0	-9.60	1.11 V	228	12.20	32.20
3	*2402.00	109.10	PK	/	/	1.09 V	112	76.90	32.20
4	*2402.00	104.60	AV	/	/	1.03 V	112	72.40	32.20
5	4804.00	53.40	PK	74.00	-19.60	1.21 V	254	48.10	5.30
6	4804.00	44.70	AV	54.00	-9.30	1.21 V	254	39.40	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（20CH_2442MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2442.00	108.60	PK	/	/	1.01 H	210	76.40	32.20
2	*2442.00	104.80	AV	/	/	1.01 H	210	72.60	32.20
3	4884.00	53.50	PK	74.00	-20.50	1.03 H	272	48.20	5.30
4	4884.00	45.90	AV	54.00	-8.10	1.03 H	272	40.60	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（20CH_2442MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2442.00	108.60	PK	/	/	1.09 V	112	76.40	32.20
2	*2442.00	103.70	AV	/	/	1.09 V	112	71.50	32.20
3	4884.00	54.80	PK	74.00	-19.20	1.21 V	254	49.50	5.30
4	4884.00	42.50	AV	54.00	-8.50	1.21 V	254	40.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（39CH_2480MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	108.80	PK	/	/	1.05 V	215	76.50	32.30
2	*2480.00	104.70	AV	/	/	1.05 V	215	72.40	32.30
3	2483.50	56.90	PK	74.0	-17.10	1.05 V	211	24.50	32.40
4	2483.50	44.60	AV	54.0	-9.40	1.05 V	211	12.20	32.40
5	4960.00	52.20	PK	74.0	-11.80	1.45 V	320	46.70	5.50
6	4960.00	46.90	AV	54.0	-7.10	1.45 V	320	41.40	5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（39CH_2480MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	107.40	PK	/	/	1.05 V	174	75.10	32.30
2	*2480.00	103.80	AV	/	/	1.05 V	174	71.50	32.30
3	2483.50	56.80	PK	74.0	-17.20	1.05 V	177	24.40	32.40
4	2483.50	45.40	AV	54.0	-8.60	1.05 V	177	13.00	32.40
5	4960.00	55.60	PK	74.0	-18.40	1.45 V	201	50.10	5.50
6	4960.00	45.60	AV	54.0	-8.40	1.45 V	201	40.10	5.50

REMARKS:

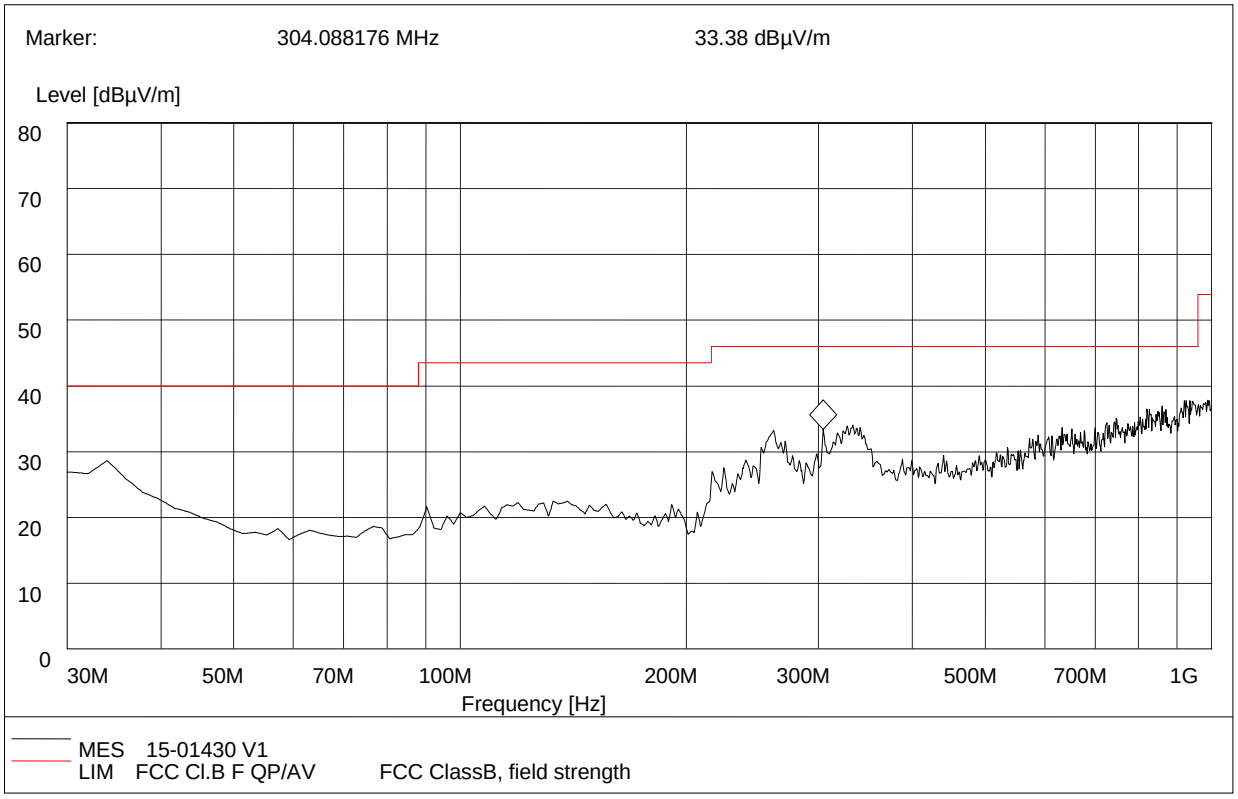
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) － Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level － Limit value
5. " * ": Fundamental frequency.

Antenna 3

For 9KHz to 30MHz

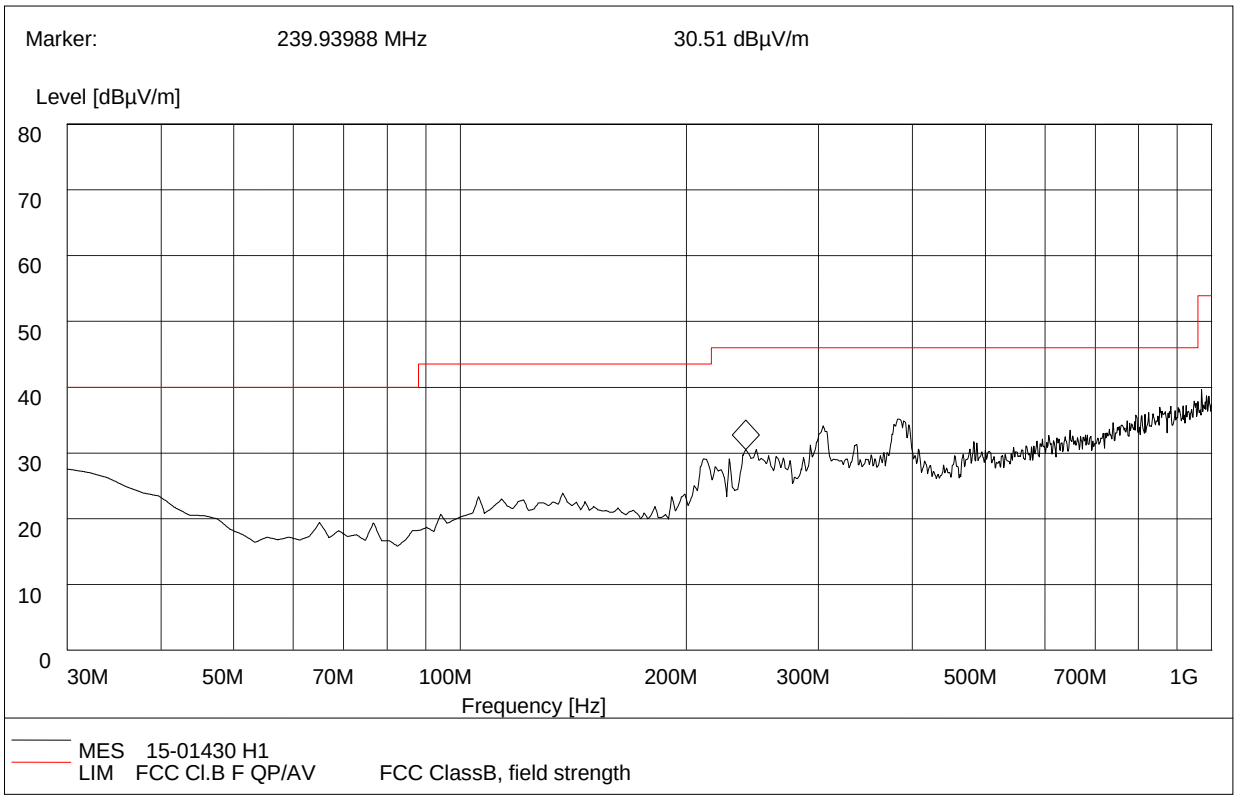
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



Plot A: 30MHz to 1GHz, Antenna Vertical

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Antenna	Verdict
33.160	37.49	120.000	100.0	40.00	Vertical	Pass
261.340	31.56	120.000	100.0	46.00	Vertical	Pass
304.088	33.38	120.000	100.0	46.00	Vertical	Pass



Plot B: 30MHz to 1GHz, Antenna Horizontal

Frequency (MHz)	QuasiPeak (dBµ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµ V/m)	Antenna	Verdict
30.000	28.22	120.000	100.0	40.00	Horizontal	Pass
239.940	30.51	120.000	100.0	46.0	Horizontal	Pass
304.150	33.16	120.000	100.0	46.0	Horizontal	Pass
383.260	33.67	120.000	100.0	46.0	Horizontal	Pass

For 1GHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（0CH_2402MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.10	PK	74.0	-17.90	1.01 H	228	23.90	32.20
2	2390.00	43.00	AV	54.0	-11.00	1.01 H	228	10.80	32.20
3	*2402.00	107.80	PK	/	/	1.03 H	112	75.60	32.20
4	*2402.00	105.10	AV	/	/	1.03 H	112	72.90	32.20
5	4804.00	53.40	PK	74.00	-20.60	1.00 H	254	48.10	5.30
6	4804.00	44.70	AV	54.00	-9.30	1.00 H	254	39.40	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（0CH_2402MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.30	PK	74.0	-17.70	1.11 V	228	24.10	32.20
2	2390.00	43.50	AV	54.0	-10.50	1.11 V	228	11.30	32.20
3	*2402.00	108.60	PK	/	/	1.09 V	112	76.40	32.20
4	*2402.00	103.60	AV	/	/	1.03 V	112	71.40	32.20
5	4804.00	53.00	PK	74.00	-21.00	1.21 V	254	47.70	5.30
6	4804.00	44.20	AV	54.00	-9.80	1.21 V	254	38.90	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（20CH_2442MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2442.00	107.90	PK	/	/	1.01 H	210	75.70	32.20
2	*2442.00	104.60	AV	/	/	1.01 H	210	72.40	32.20
3	4884.00	54.00	PK	74.00	-20.00	1.03 H	272	48.70	5.30
4	4884.00	44.90	AV	54.00	-9.10	1.03 H	272	39.60	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（20CH_2442MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2442.00	108.40	PK	/	/	1.09 V	112	76.20	32.20
2	*2442.00	105.20	AV	/	/	1.09 V	112	73.00	32.20
3	4884.00	54.40	PK	74.00	-19.60	1.21 V	254	49.10	5.30
4	4884.00	45.50	AV	54.00	-8.50	1.21 V	254	40.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（39CH_2480MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	108.20	PK	/	/	1.05 V	215	75.90	32.30
2	*2480.00	104.00	AV	/	/	1.05 V	215	71.70	32.30
3	2483.50	57.30	PK	74.0	-16.70	1.05 V	211	24.90	32.40
4	2483.50	44.60	AV	54.0	-9.40	1.05 V	211	12.50	32.40
5	4960.00	53.90	PK	74.0	-20.10	1.45 V	320	48.40	5.50
6	4960.00	45.90	AV	54.0	-8.10	1.45 V	320	40.40	5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（39CH_2480MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	108.10	PK	/	/	1.05 V	174	75.80	32.30
2	*2480.00	104.60	AV	/	/	1.05 V	174	72.30	32.30
3	2483.50	57.60	PK	74.0	-16.40	1.05 V	177	25.20	32.40
4	2483.50	45.20	AV	54.0	-8.80	1.05 V	177	12.80	32.40
5	4960.00	54.70	PK	74.0	-19.30	1.45 V	201	49.20	5.50
6	4960.00	45.60	AV	54.0	-8.40	1.45 V	201	40.10	5.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) － Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level － Limit value
5. " * ": Fundamental frequency.

3. List of measuring equipment

Description	Manufacturer	Model	Serial No.	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESIB26	A0304218	2015.06.02	2016.06.02	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2015.06.02	2016.06.02	Radiation
Bilog Antenna	Schwarzbeck	VULB 9163	9163-274	2015.06.02	2016.06.02	Radiation
Double ridge horn antenna	R&S	HF960	100150	2015.06.02	2016.06.02	Radiation
Ultra-wideband antenna	R&S	HL562	100089	2015.06.02	2016.06.02	Radiation
Test Antenna – Horn (18-25GHz)	ETS	UG-596A/U	A0902607	2015.06.02	2016.06.02	Radiation
Amplifier 20M~3GHz	R&S	PAP-0203H	22018	2015.06.02	2016.06.02	Radiation
Ampilier 1G~18GHz	R&S	MITEQ AFS42-00101800	25-S-42	2015.06.02	2016.06.02	Radiation
Ampilier 18G~40GHz	R&S	JS42-18002600-28-5A	12111.0980.00	2015.06.02	2016.06.02	Radiation
Full-Anechoic Chamber	Albatross	12.8m*6.8m*6.4m	A0412372	2015.01.05	2016.01.05	Radiation
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2015.07.07	2016.07.07	Conducted
Power Meter	R&S	NRVS	1020.1809.02	2015.06.02	2016.06.02	Conducted
Power Sensor	R&S	NRV-Z4	823.3618.03	2015.06.02	2016.06.02	Conducted
Test Receiver	R&S	ESCS30	A0304260	2015.06.02	2016.06.02	Conducted
LISN	ROHDE&SCHWARZ	ESH2-Z5	A0304221	2015.06.02	2016.06.02	Conducted
Cable	SUNHNER	SUCOFLEX 100	/	2015.06.02	2016.06.02	Radiation
Cable	SUNHNER	SUCOFLEX 104	/	2015.06.02	2016.06.02	Radiation

** END OF REPORT **