RF TEST REPORT

Report No.:	SET2016-03802
Product Name:	WCDMA/GSM（GPRS） Dual-Mode Digital Mobile Phone
FCC ID:	SRQ-ZTEL5PLUS
Model No. :	ZTE Blade L5 Plus/Blade L5 Plus/ZTE L5 Plus/ZTE BLADE L0510/ ZTE BLADE L5 PLUS
Applicant:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Shenzhen, China
Dates of Testing:	09/23/2016 — 10/25/2016
Issued by:	CCIC-SET
Lab Location:	Building 28/29, East of Shigu, Xili Industrial Zone, Xili Road, Nanshan District, Shenzhen, Guangdong, China **Tel:** 86 755 26627338 **Fax:** 86 755 26627238

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Test Report

Product Name ..... :	WCDMA/GSM（GPRS） Dual-Mode Digital Mobile Phone
Brand Name ..... :	ZTE
Trade Name ..... :	ZTE
Applicant ..... :	ZTE Corporation
Applicant Address ..... :	ZTE Plaza, Keji Road South, Shenzhen, China
Manufacturer ..... :	ZTE Corporation
Manufacturer Address ..... :	ZTE Plaza, Keji Road South, Shenzhen, China
Test Standards ..... :	47 CFR Part 15 Subpart C：Radio Frequency Devices ANSI C63.10-2013：American National Standard for Testing Unlicensed Wireless Devices KDB 558074D01 v03r04
Test Result ..... :	PASS
Tested by ..... :	Fly Fan 2016.10.26 Fly Fan， Test Engineer
Reviewed by..... :	Zhu Qi 2016.10.26 Zhu Qi, Senior Egineer
Approved by ..... :	Wu Lian 2016.10.26 Wu Li'an, Manager

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Change History		
Issue	Date	Reason for change
1.0	2016.10.26	First edition

1. General Information

1.1. EUT Description

EUT Type	WCDMA/GSM（GPRS） Dual-Mode Digital Mobile Phone	
Hardware Version	W19A_MAIN_PCB_V2.0	
Software Version	ZTE-CN-QB18D-P680A20V1.0.0	
EUT supports Radios application	GSM/GPRS /WCDMA/HSPA WLAN2.4GHz 802.11b/g/n (HT20/HT40) Bluetooth V3.0+EDR / Bluetooth V4.0LE	
Frequency Range	Bluetooth LE 4.0	2402MHz~2480MHz
Channel Number	Bluetooth LE 4.0	40
Bit Rate of Transmitter	Bluetooth LE 4.0	1Mbps
Modulation Type	Bluetooth LE 4.0	GFSK
Antenna Type	PIFA Antenna	
Antenna Gain	2dBi	

Note 1: The EUT is a Mobile Phone, 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), 19(2440MHz) 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.

Note 3: The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

Note 4: The EUT is a Mobile Phone，it contains 5 models，they are ZTE Blade L5 Plus/Blade L5 Plus/ZTE L5 Plus/ZTE BLADE L0510/ZTE BLADE L5 PLUS. They have the same size, appearance and internal structure, and the only difference is the model number.

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 2016	Radio Frequency Devices
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

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

No.	Section in CFR 47	Description	Result
1	15.203	Antenna Requirement	PASS
2	15.247(b)	Peak Output Power	PASS
3	15.247(a)	Bandwidth	PASS
4	15.247(d)	Conducted Band Edges and Spurious Emission	PASS
5	15.247(e)	Power spectral density (PSD)	PASS
6	15.207	Conducted Emission	PASS
7	15.209 15.247(d)	Radiated Band Edges and Spurious 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 KDB 558074D01 v03r04.

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

	Test Items	Modulation	Channel
Bluetooth LE 4.0	Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Conducted and Spurious Emission Radiated and Spurious Emission	GFSK	0/19/39
	Band Edge	GFSK	0/39

1.3. Table for Supporting Units

No.	Equipment	Brand Name	Model Name	Manufacturer	Serial No.	Note
1	Notebook	DELL	PP11L	DELL	H5914A03	FCC DOC

1.4. Facilities and Accreditations

1.4.1. 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 Aug. 04, 2016, valid time is until Aug. 03, 2019.

1.4.2. Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15°C - 35°C
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

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: Internal antenna

An Internal antenna was soldered to the antenna port of EUT via an adaptor cable, can't be removed.

Antenna General Information:

No.	EUT	Ant. Type	Gain(dBi)
1	WCDMA/GSM（GPRS） Dual-Mode Digital Mobile Phone	PIFA	2

2.1.3. Result: comply

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Peak Output Power

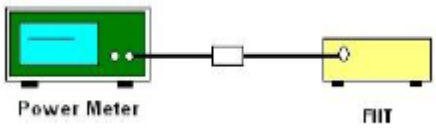
2.2.1. Limit of Peak Output Power

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 558074D01 v03r04.

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

Channel	Frequency (MHz)	RF Power(dBm)	Limit (dBm)	Verdict
		GFSK/1Mbps		
0	2402	-2.83	30	PASS
19	2440	-2.43		PASS
39	2480	-3.04		PASS

2.3. 6dB Bandwidth

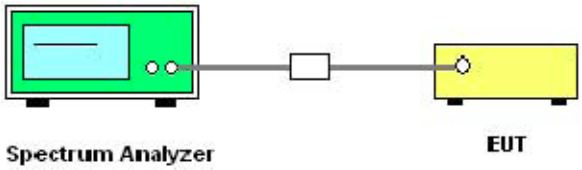
2.3.1. Limit of 6dB Bandwidth

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 558074D01 v03r04.

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 spectrum analyzer's resolution bandwidth (RBW) is set 30 kHz and set the Video bandwidth (VBW) = 100 kHz.

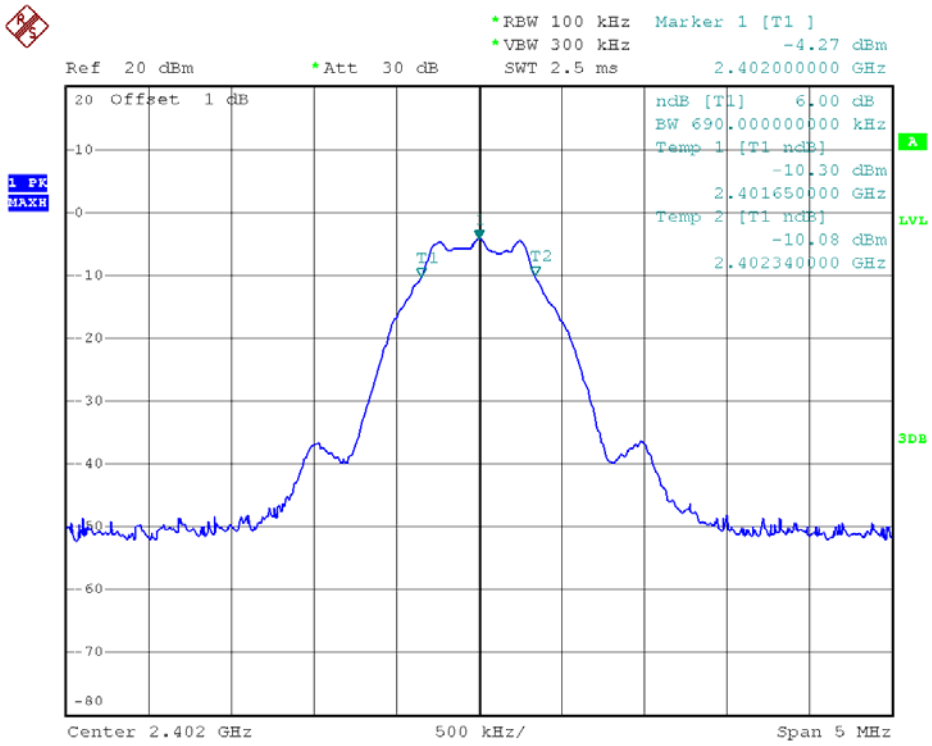
6. Measure and record the results in the test report.

2.3.5. Test Results of 6dB Bandwidth

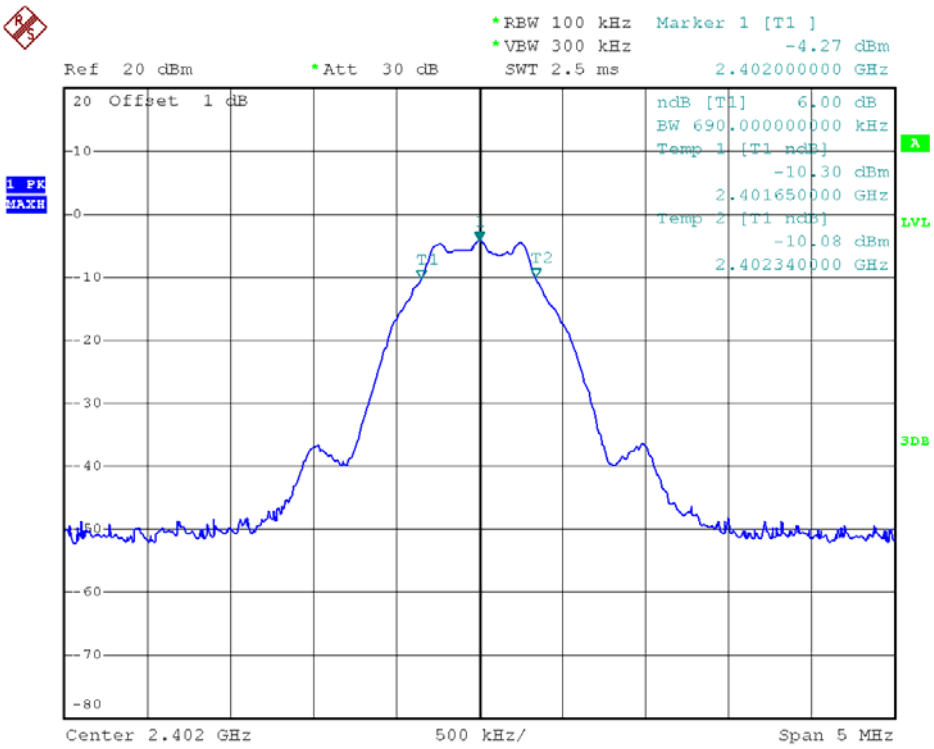
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (MHz)	Result
0	2402	0.69	≥0.5	PASS
19	2440	0.69	≥0.5	PASS
39	2480	0.69	≥0.5	PASS

2.3.6. Test Results (plots) of 6dB Bandwidth

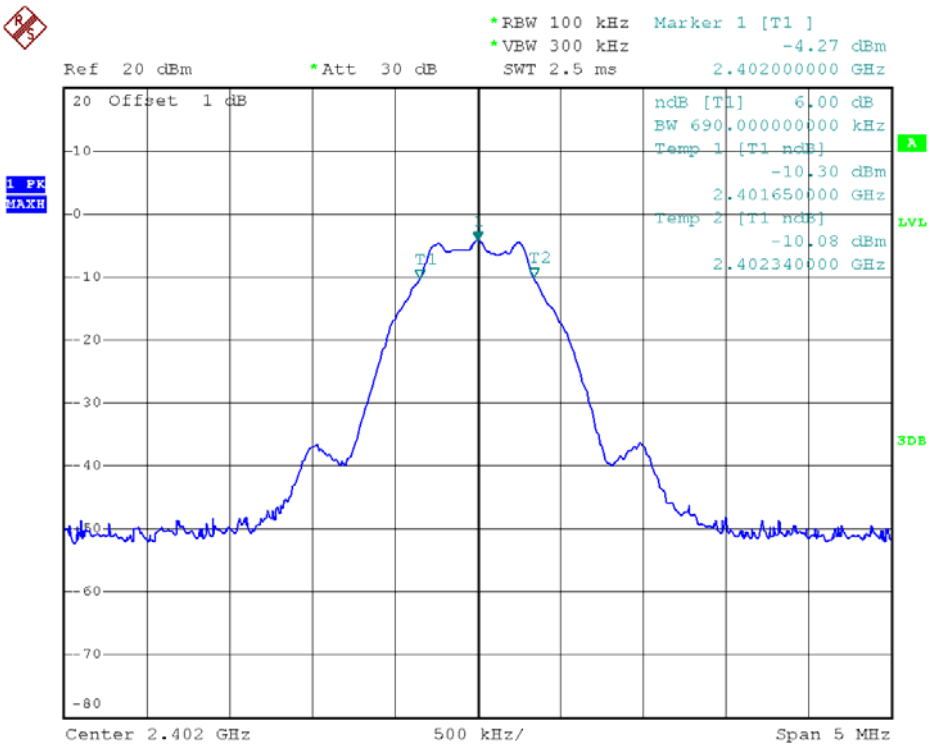
6 dB Bandwidth Plot on channel 0



6 dB Bandwidth Plot on channel 19



6 dB Bandwidth Plot on channel 39



2.4. Conducted Band Edges and Spurious Emissions

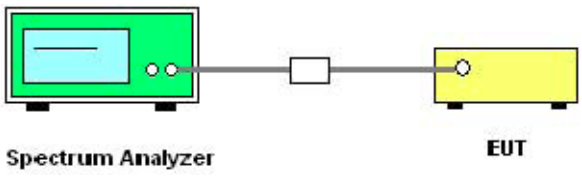
2.4.1. Limit of Conducted Band Edges and Spurious Emissions

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

2.4.2. Measuring Instruments

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

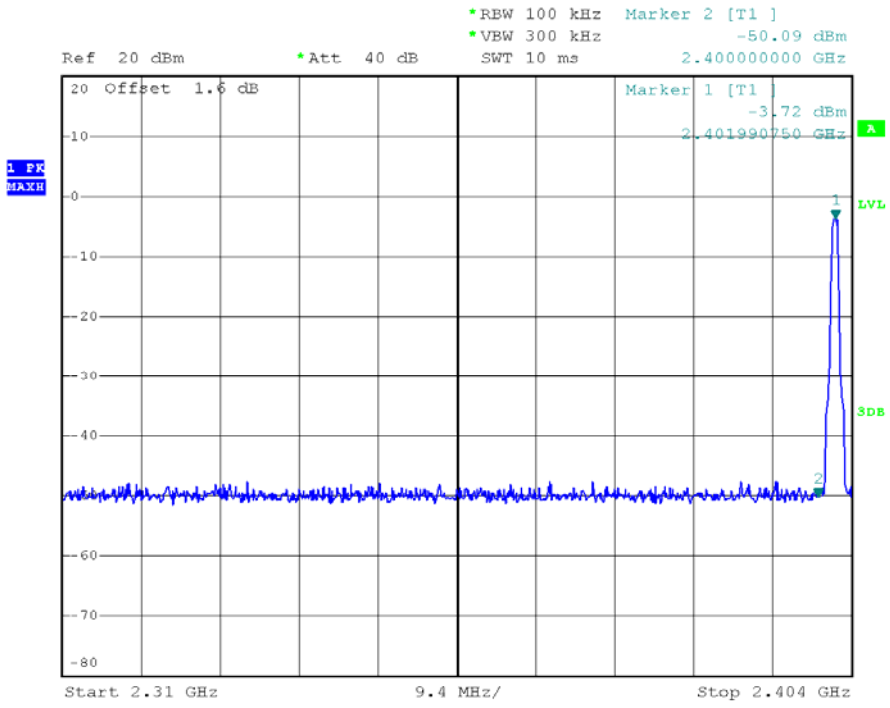
2.4.3. Test Setup



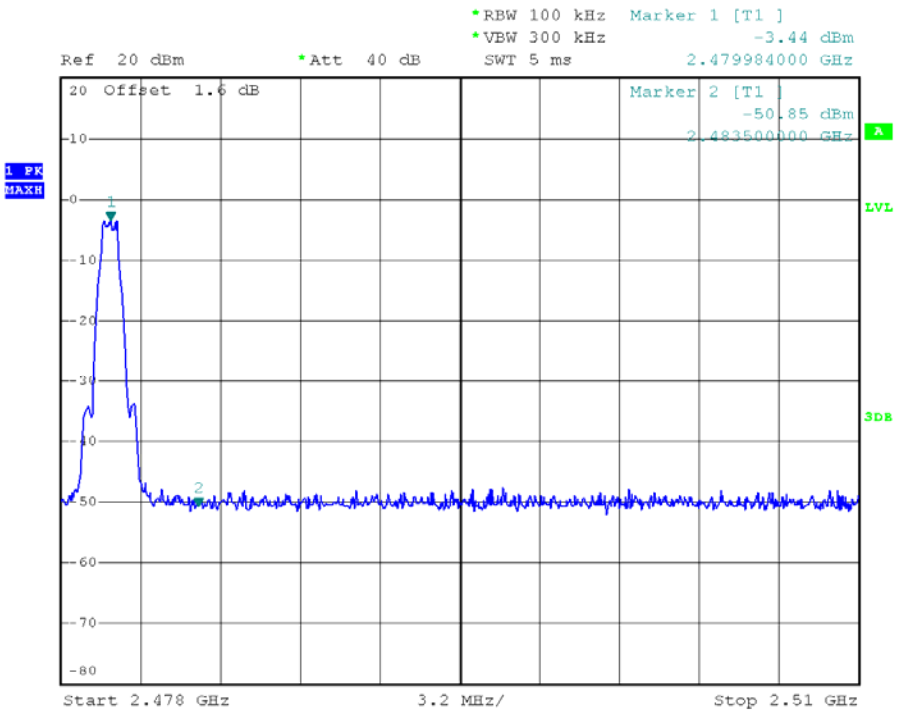
2.4.4. Test Procedure

1. The testing follows FCC KDB 558074D01 v03r04.
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.

2.4.5. Test Results of Conducted Band Edges



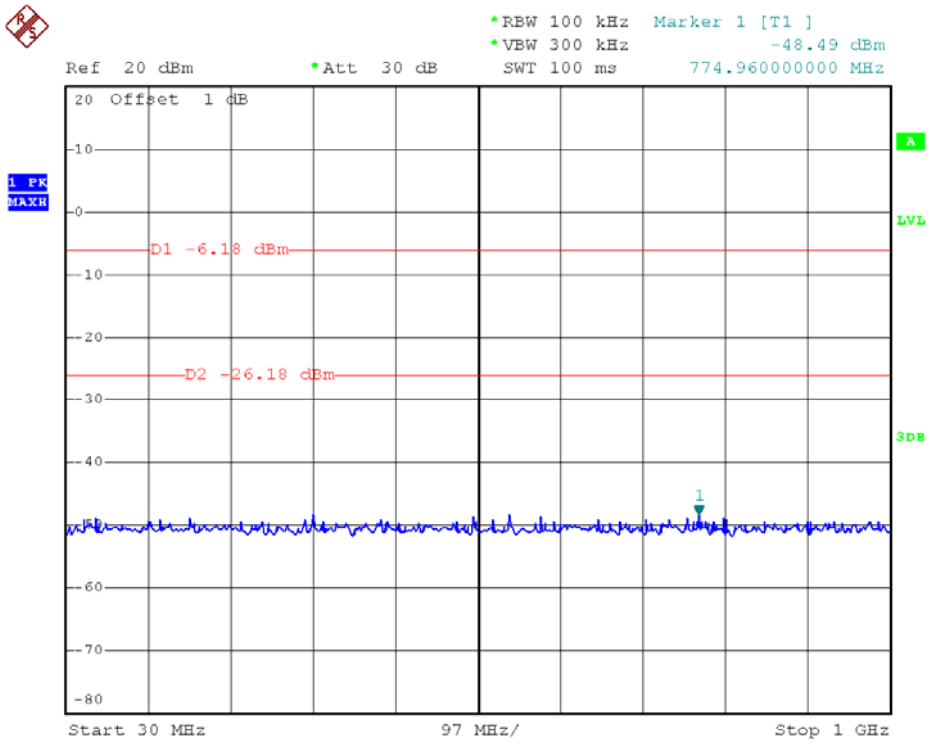
Low Band Edge Plot on Channel 0



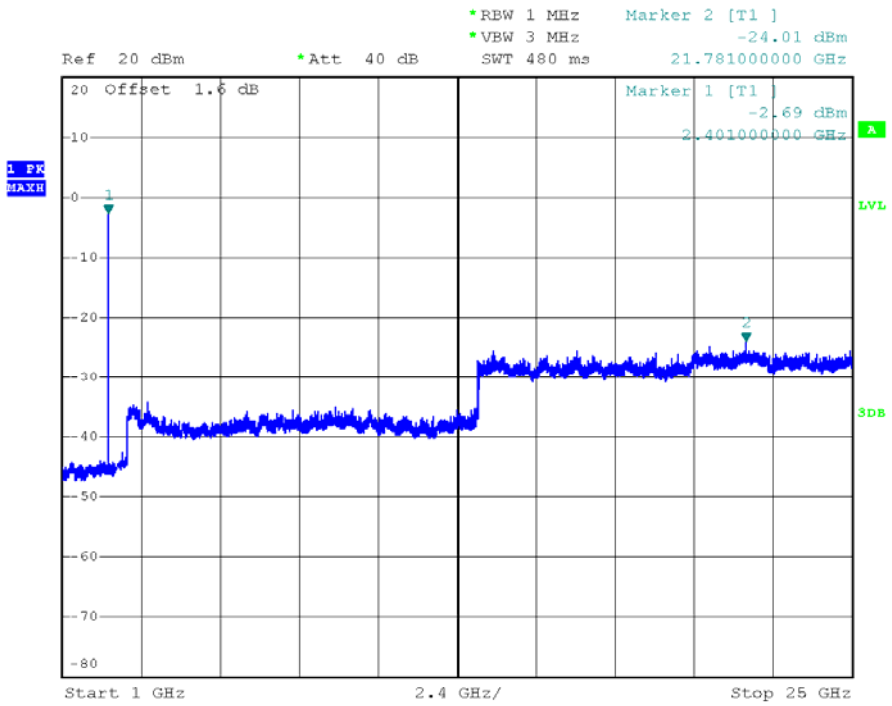
High Band Edge Plot on Channel 39

2.4.6. Test Result of Conducted Spurious Emission

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

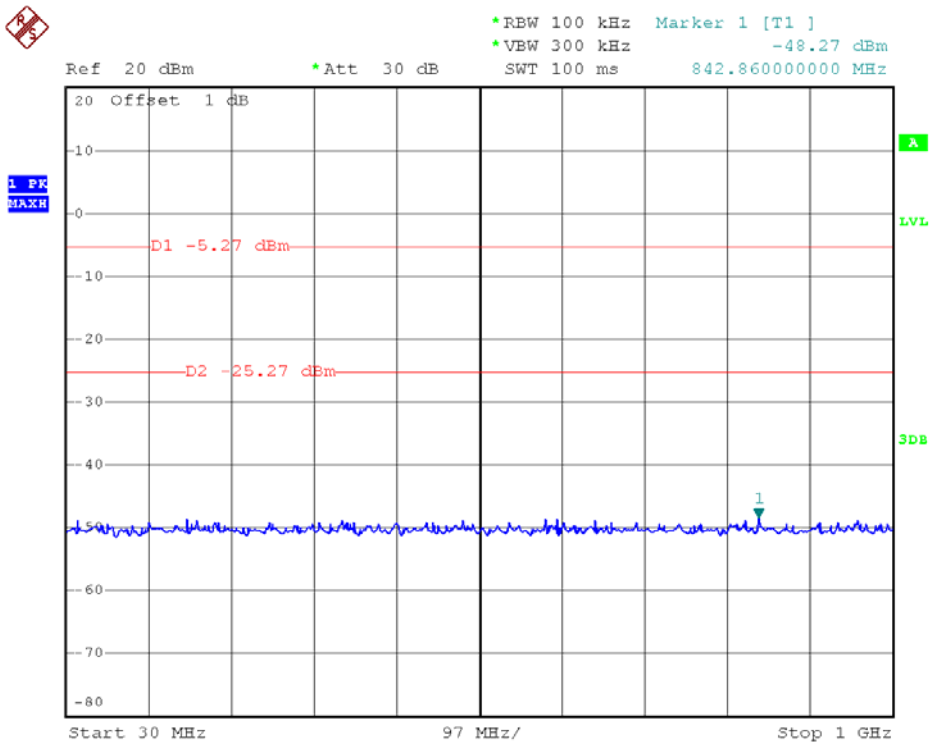


Channel = 0, 30MHz to 1GHz

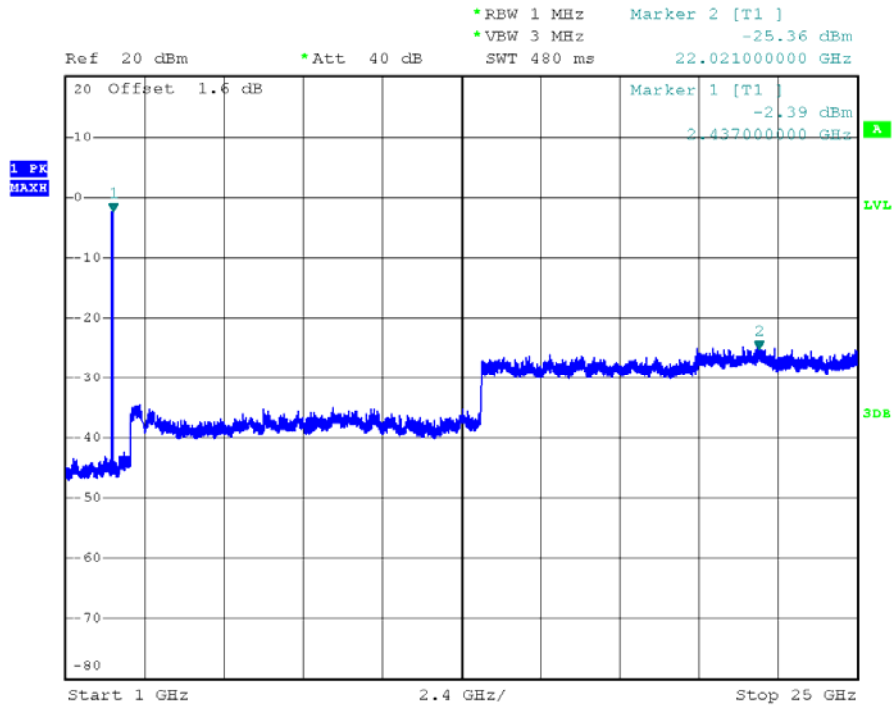


Channel = 0, 1GHz to 25GHz

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

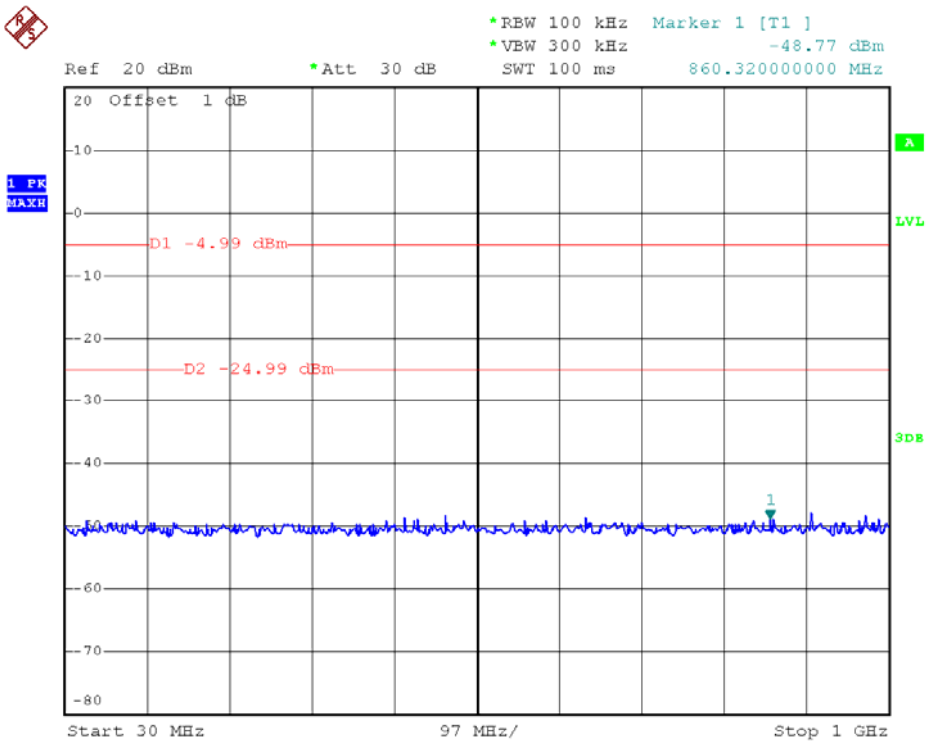


Channel = 19, 30MHz to 1GHz

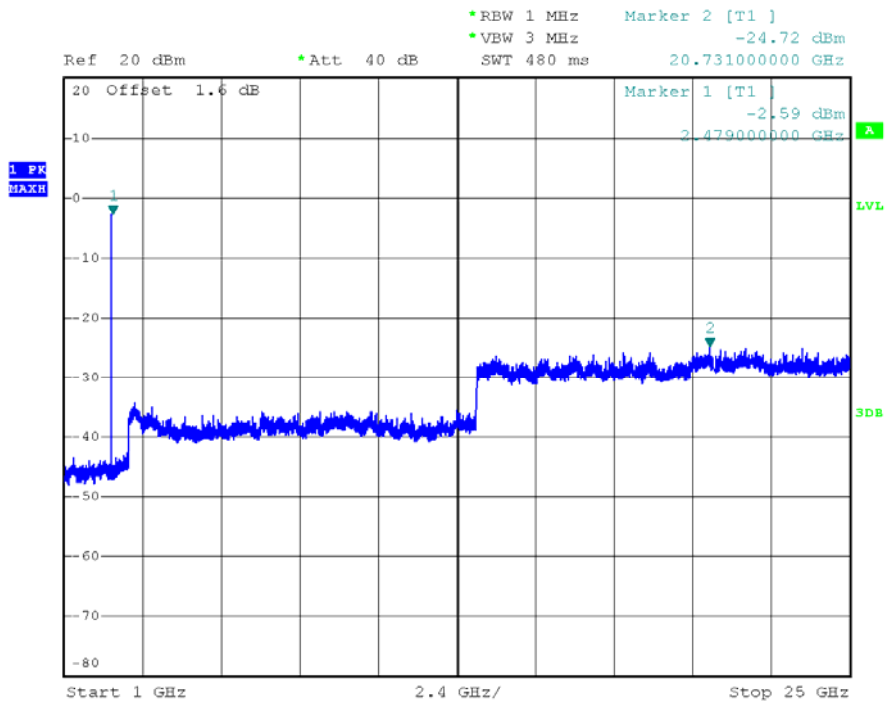


Channel = 19, 1GHz to 25GHz

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps



Channel = 39, 30MHz to 1GHz



Channel = 39, 1GHz to 25GHz

2.5. Power spectral density (PSD)

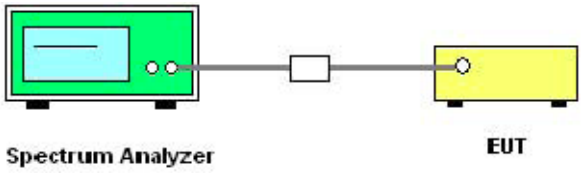
2.5.1. Limit of Power Spectral Density

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

2.5.2. 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 testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB 558074D01 v03r04.

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.

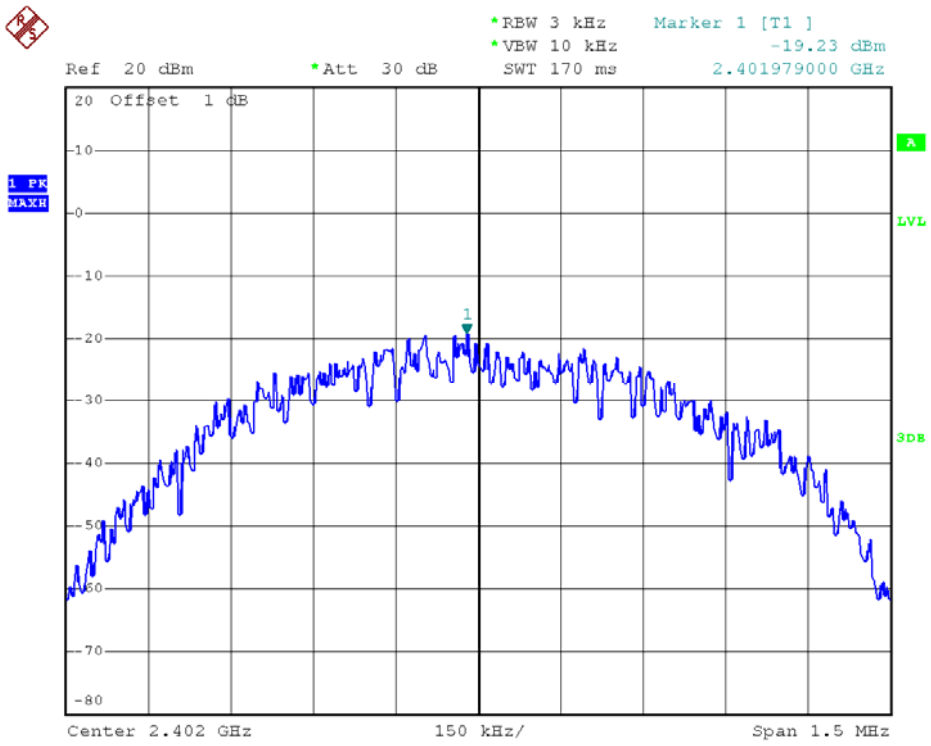
2.5.5. Test Results of Power spectral density

Spectral power density (dBm)				
Channel	Frequency (MHz)	PSD/3kHz (dBm)	Limit (dBm/3kHz)	Verdict
0	2402	-19.23	8	PASS
19	2440	-18.81	8	PASS
39	2480	-19.45	8	PASS
Measurement uncertainty: ±1.3dB				

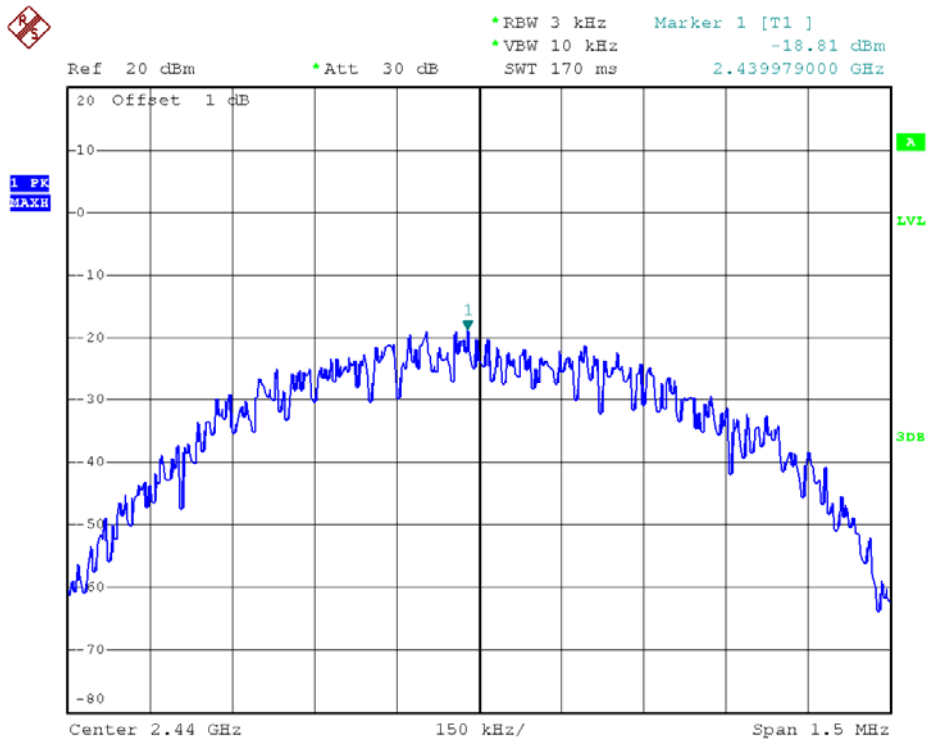
Note:

1. Measured power density (dBm) has offset with cable loss.

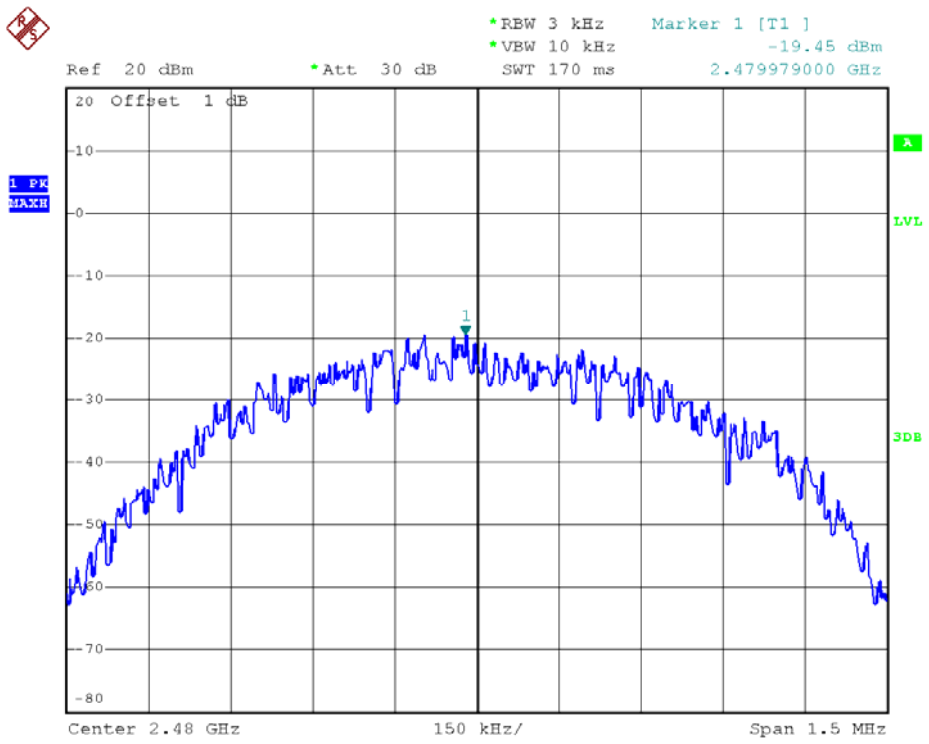
2.5.6. Test Results (plots) of Power spectral density



PSD Plot on Channel 0



PSD Plot on Channel 19



PSD Plot on Channel 39

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.

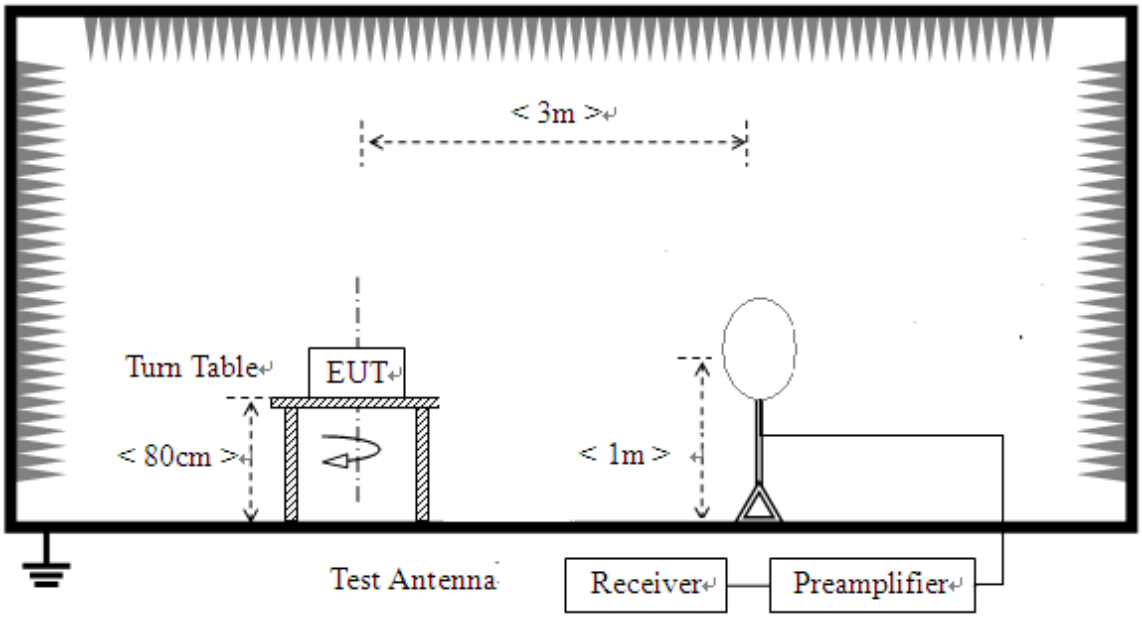
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

2.6.2. Measuring Instruments

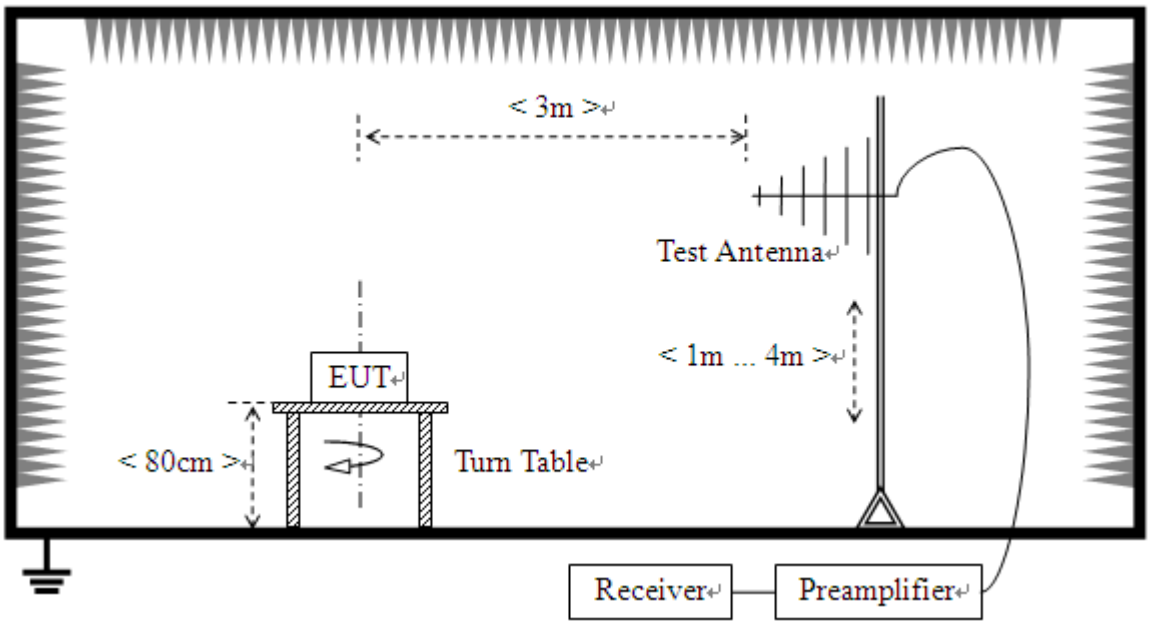
The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Setup

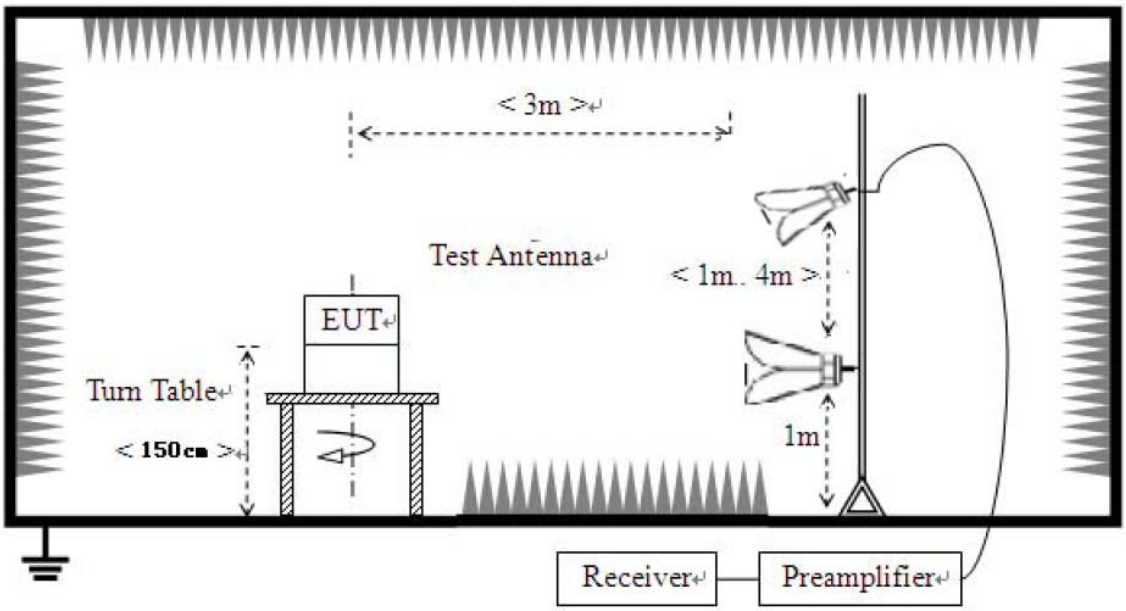
For radiated emissions from 9 kHz to 30 MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.6.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8 meters for below 1GHz and 1.5 meters for above 1GHz on 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.
7. For the radiated emission test above 1GHz:
   Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

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 radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

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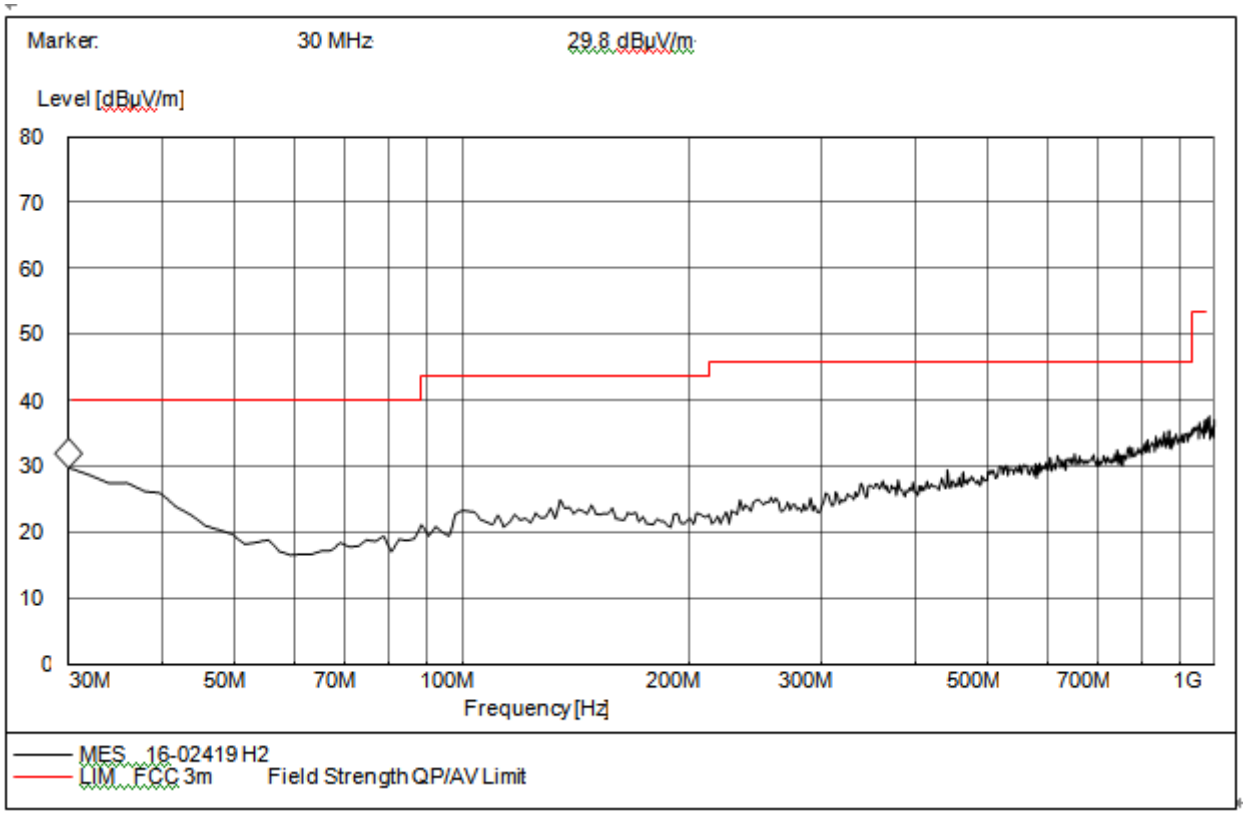
2.6.5. Test Results of Radiated Band Edge and Spurious Emission

For 9 kHz to 30MHz

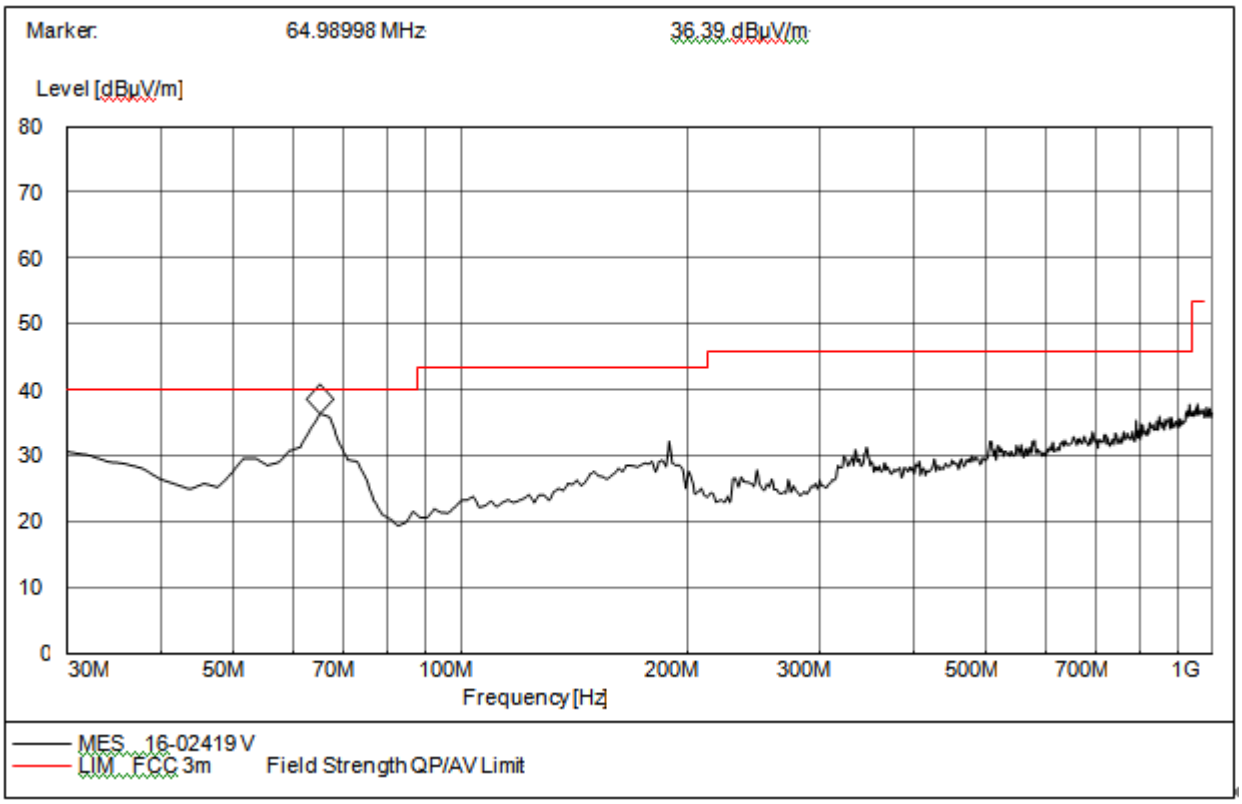
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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)	Margin (dB)	Cable Loss(dB)	ANT. Factor(dB)	Verdict
30.31	26.41	120.000	108.0	40.0	13.59	0.5	28.6	Pass
100.45	21.39	120.000	108.0	43.5	22.11	0.5	28.6	Pass
135.49	31.84	120.000	108.0	43.5	11.66	0.6	28.7	Pass
442.84	28.34	120.000	108.0	46	17.66	0.8	28.7	Pass
858.96	34.14	120.000	108.0	46	11.86	1.2	28.9	Pass
985.45	36.01	120.000	108.0	46	9.99	1.2	29.2	Pass



Plot B: 30MHz to 1GHz, Antenna Horizontal

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)	Cable Loss(dB)	ANT. Factor(dB)	Verdict
52.36	26.45	120.000	108.0	40.0	13.55	0.5	28.6	Pass
65.08	33.41	120.000	108.0	40	6.59	0.5	28.6	Pass
189.31	31.05	120.000	108.0	43.5	12.45	0.6	28.8	Pass
335.05	30.19	120.000	108.0	46	15.81	0.8	28.9	Pass
347.04	31.08	120.000	108.0	46	14.92	0.8	28.9	Pass
955.47	36.23	120.000	108.0	46	9.77	1.2	29.2	Pass

For 1GHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（GFSK-2402MHz）												
No.	Fre. (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	1101.42	47.56	PK	74.00	-26.44	1.50 H	128	48.36	1.5	29.6	31.9	-0.8
2	1101.42	33.88	AV	54.00	-20.12	1.50 H	128	34.68	1.5	29.6	31.9	-0.8
3	2129.31	48.56	PK	74.00	-25.44	1.50 H	240	49.16	2.8	28.7	32.1	-0.6
4	2129.30	34.60	AV	54.00	-19.4	1.50 H	240	35.2	2.8	28.7	32.1	-0.6
5	2390.00	57.10	PK	74.00	-16.9	1.50 H	155	55.8	5.2	28.6	32.5	1.3
6	2390.00	43.60	AV	54.00	-10.4	1.50 H	155	42.3	5.2	28.6	32.5	1.3
7	3682.21	47.40	PK	74.00	-26.6	1.50 H	128	42.55	6.3	30.05	31.5	4.85
8	3682.21	33.21	AV	54.00	-20.79	1.50 H	128	28.36	6.3	30.05	31.5	4.85
9	4804.00	48.10	PK	74.00	-25.9	1.50 H	155	41.7	7.4	30.4	31.4	6.4
10	4804.00	36.78	AV	54.00	-17.22	1.50 H	155	30.38	7.4	30.4	31.4	6.4
11	6045.81	55.53	PK	74.00	-18.47	1.50 H	0	46.73	9.9	31	32.1	8.8
12	6045.81	40.38	AV	54.00	-13.62	1.50 H	0	31.58	9.9	31	32.1	8.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（GFSK-2402MHz）												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	1101.42	46.44	PK	74.00	-27.56	1.50 V	128	47.24	1.5	29.6	31.9	-0.8
2	1101.42	33.17	AV	54.00	-20.83	1.50 V	128	33.97	1.5	29.6	31.9	-0.8
3	2129.31	47.35	PK	74.00	-26.65	1.50 V	240	47.95	2.8	28.7	32.1	-0.6
4	2129.30	33.81	AV	54.00	-20.19	1.50 V	240	34.41	2.8	28.7	32.1	-0.6
5	2390.00	56.70	PK	74.00	-17.3	1.50 V	155	55.4	5.2	28.6	32.5	1.3
6	2390.00	44.40	AV	54.00	-9.6	1.50 V	155	43.1	5.2	28.6	32.5	1.3
7	3682.21	47.55	PK	74.00	-26.45	1.50 V	128	42.7	6.3	30.05	31.5	4.85
8	3682.21	33.37	AV	54.00	-20.63	1.50 V	128	28.52	6.3	30.05	31.5	4.85
9	4804.00	48.18	PK	74.00	-25.82	1.50 V	155	41.78	7.4	30.4	31.4	6.4
10	4804.00	36.86	AV	54.00	-17.14	1.50 V	155	30.46	7.4	30.4	31.4	6.4
11	6045.81	53.18	PK	74.00	-20.82	1.50 V	0	44.38	9.9	31	32.1	8.8
12	6045.81	38.01	AV	54.00	-15.99	1.50 V	0	29.21	9.9	31	32.1	8.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（GFSK-2440MHz）												
No.	Fre. (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	1216.41	48.65	PK	74.00	-25.35	1.50 H	120	49.25	1.8	29.5	31.9	-0.6
2	1216.41	36.00	AV	54.00	-18	1.50 H	120	36.6	1.8	29.5	31.9	-0.6
3	2147.51	47.89	PK	74.00	-26.11	1.50 H	200	48.49	2.8	28.7	32.1	-0.6
4	2147.50	35.65	AV	54.00	-18.35	1.50 H	200	36.25	2.8	28.7	32.1	-0.6
5	3074.05	47.09	PK	74.00	-26.91	1.50 H	88	42.24	6.3	30.05	31.5	4.85
6	3074.05	34.33	AV	54.00	-19.67	1.50 H	88	29.48	6.3	30.05	31.5	4.85
7	4880.00	49.09	PK	74.00	-24.91	1.50 H	128	42.69	7.4	30.4	31.4	6.4
8	4880.00	36.76	AV	54.00	-17.24	1.50 H	128	30.36	7.4	30.4	31.4	6.4
9	5910.56	50.12	PK	74.00	-23.88	1.50 H	100	41.32	9.9	31	32.1	8.8
10	5910.50	36.80	AV	54.00	-17.2	1.50 H	100	28	9.9	31	32.1	8.8
11	8579.18	54.38	PK	74.00	-19.62	1.50 H	0	42.68	12.5	31.2	32	11.7
12	8579.18	40.12	AV	54.00	-13.88	1.50 H	0	28.42	12.5	31.2	32	11.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（GFSK-2440MHz）												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	1216.41	48.71	PK	74.00	-25.29	1.50 V	120	49.31	1.8	29.5	31.9	-0.6
2	1216.41	35.41	AV	54.00	-18.59	1.50 V	120	36.01	1.8	29.5	31.9	-0.6
3	2147.51	47.77	PK	74.00	-26.23	1.50 V	200	48.37	2.8	28.7	32.1	-0.6
4	2147.50	35.42	AV	54.00	-18.58	1.50 V	200	36.02	2.8	28.7	32.1	-0.6
5	3074.05	47.38	PK	74.00	-26.62	1.50 V	88	42.63	6.2	30.05	31.5	4.75
6	3074.05	34.60	AV	54.00	-19.4	1.50 V	88	29.85	6.2	30.05	31.5	4.75
7	4880.00	48.19	PK	74.00	-25.81	1.50 V	128	41.79	7.4	30.4	31.4	6.4
8	4880.00	36.80	AV	54.00	-17.2	1.50 V	128	30.4	7.4	30.4	31.4	6.4
9	5910.56	49.92	PK	74.00	-24.08	1.50 V	100	41.12	9.9	31	32.1	8.8
10	5910.50	36.54	AV	54.00	-17.46	1.50 V	100	27.74	9.9	31	32.1	8.8
11	8579.18	53.01	PK	74.00	-20.99	1.50 V	0	41.31	12.5	31.2	32	11.7
12	8579.18	38.92	AV	54.00	-15.08	1.50 V	0	27.22	12.5	31.2	32	11.7

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（GFSK _2480MHz）												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	1042.78	47.89	PK	74.00	-26.11	1.50 H	161	48.69	1.5	29.6	31.9	-0.8
2	1042.78	36.74	AV	54.00	-17.26	1.50 H	161	37.54	1.5	29.6	31.9	-0.8
3	2051.13	48.07	PK	74.00	-25.93	1.50 H	207	48.67	2.8	28.7	32.1	-0.6
4	2051.13	36.80	AV	54.00	-17.2	1.50 H	207	37.4	2.8	28.7	32.1	-0.6
5	2483.50	49.99	PK	74.00	-24.01	1.50 H	82	47.39	5.7	28.7	31.8	2.6
6	2483.50	37.01	AV	54.00	-16.99	1.50 H	82	34.41	5.7	28.7	31.8	2.6
7	4561.12	48.77	PK	74.00	-25.23	1.50 H	106	42.37	7.4	30.4	31.4	6.4
8	4561.12	36.82	AV	54.00	-17.18	1.50 H	106	30.42	7.4	30.4	31.4	6.4
9	4960.00	48.81	PK	74.00	-25.19	1.50 H	18	42.11	7	31.2	31.5	6.7
10	4960.00	37.46	AV	54.00	-16.54	1.50 H	18	30.76	7	31.2	31.5	6.7
11	5980.46	52.43	PK	74.00	-21.57	1.50 H	100	43.63	9.9	31	32.1	8.8
12	5980.46	38.98	AV	54.00	-15.02	1.50 H	100	30.18	9.9	31	32.1	8.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（GFSK _2480MHz）												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	1042.78	47.08	PK	74.00	-26.92	1.50 V	161	47.88	1.5	29.6	31.9	-0.8
2	1042.78	36.11	AV	54.00	-17.89	1.50 V	161	36.91	1.5	29.6	31.9	-0.8
3	2051.13	47.50	PK	74.00	-26.5	1.50 V	207	48.1	2.8	28.7	32.1	-0.6
4	2051.13	36.11	AV	54.00	-17.89	1.50 V	207	36.71	2.8	28.7	32.1	-0.6
5	2483.50	49.99	PK	74.00	-24.01	1.50 V	82	47.39	5.7	28.7	31.8	2.6
6	2483.50	37.01	AV	54.00	-16.99	1.50 V	82	34.41	5.7	28.7	31.8	2.6
7	4561.12	48.12	PK	74.00	-25.88	1.50 V	106	41.72	7.4	30.4	31.4	6.4
8	4561.12	36.50	AV	54.00	-17.5	1.50 V	106	30.1	7.4	30.4	31.4	6.4
9	4960.00	49.49	PK	74.00	-24.51	1.50 V	18	42.79	7	31.2	31.5	6.7
10	4960.00	37.45	AV	54.00	-16.55	1.50 V	18	30.75	7	31.2	31.5	6.7
11	5980.46	51.77	PK	74.00	-22.23	1.50 V	100	42.97	9.9	31	32.1	8.8
12	5980.46	38.77	AV	54.00	-15.23	1.50 V	100	29.97	9.9	31	32.1	8.8

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.
6. The radiated emission was up to 25GHz, and only provides some worst-case results here

2.7. Conducted Emission

2.7.1. Limit of Conducted Emission

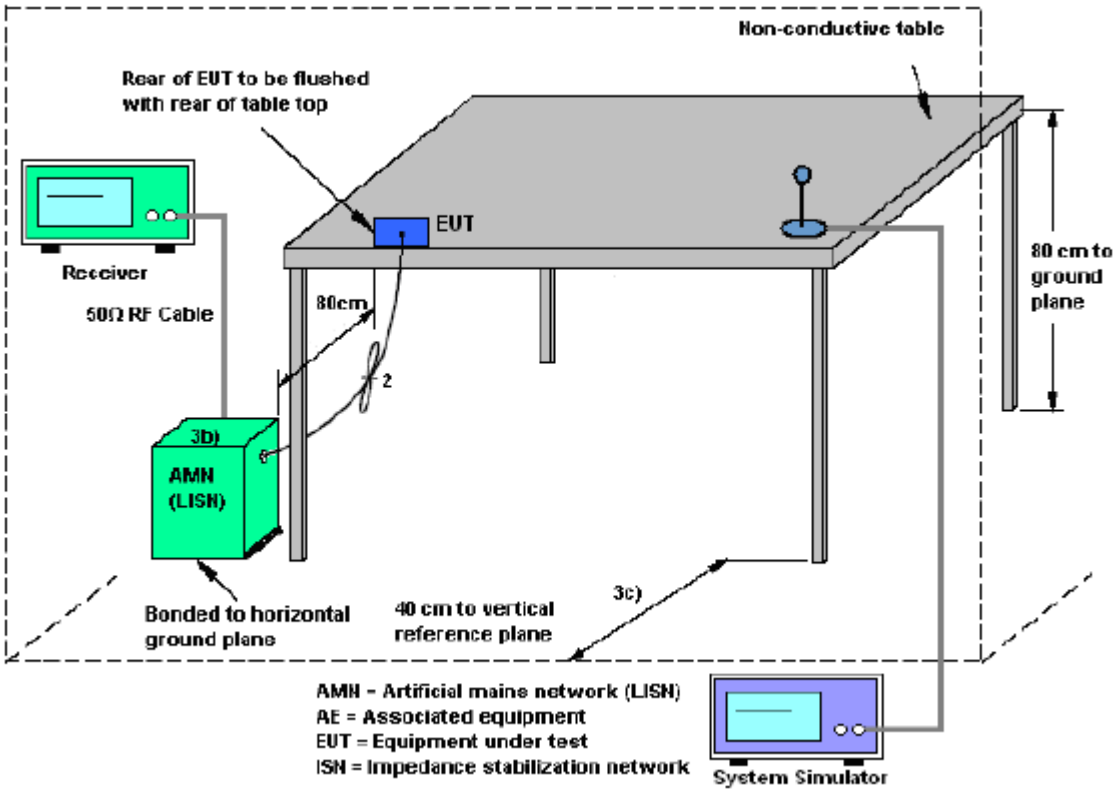
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

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

2.7.2. Measuring Instruments

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

2.7.3. Test Setup



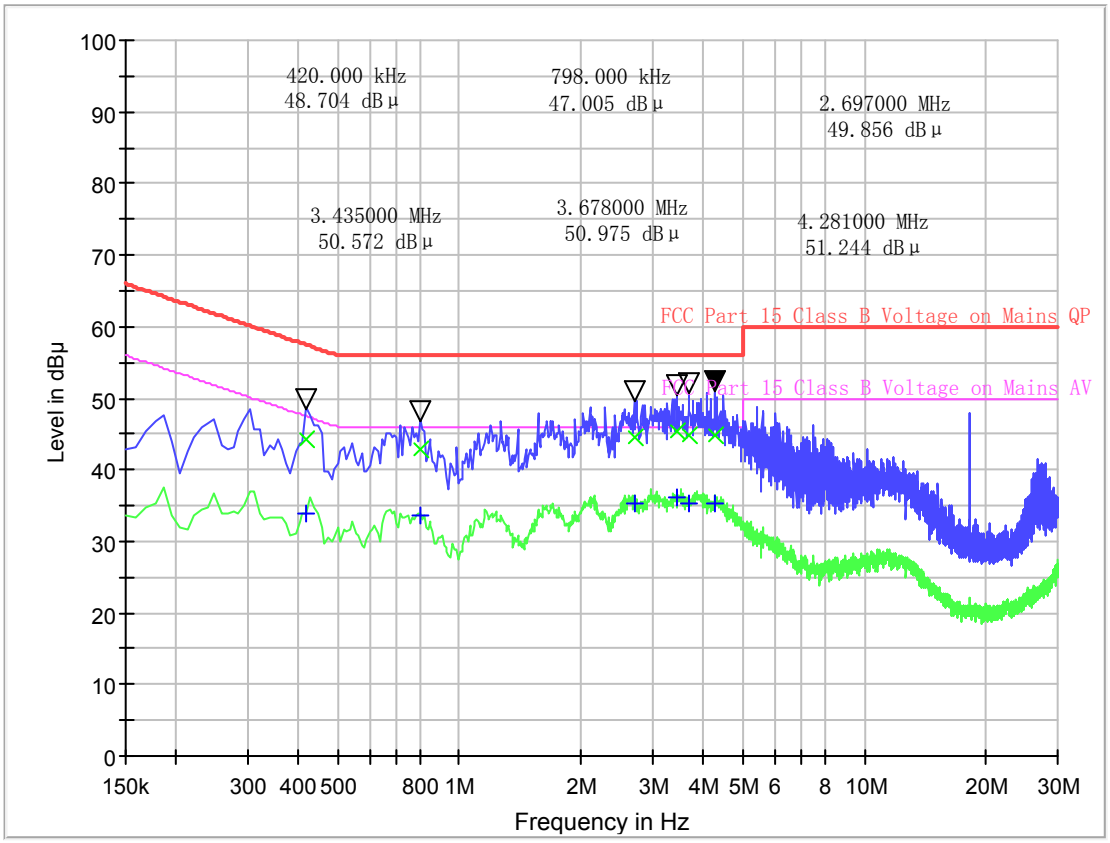
2.7.4. Test Procedures

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.

2.7.5. Test Result

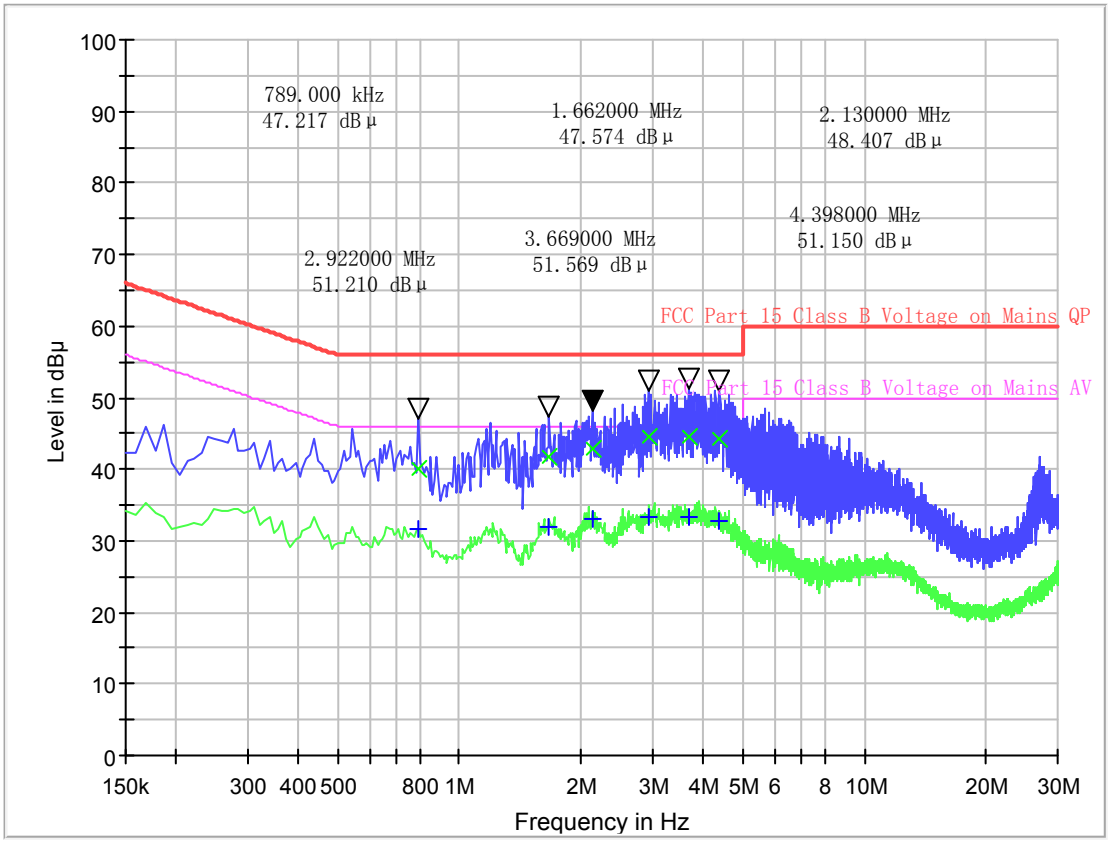
1. The EUT configuration of the emission tests is Bluetooth Link + USB Cable (Charging from Adapter) + Earphone.
2. The power adapter support (100~240V AC, 50/60Hz), the EUT was tested at the both available voltages (120, 240V AC), and 60Hz. Only the worst-case mode (120V/60Hz) was record in this report.

FCC Part 15 Class B Voltage Test



(Plot A: L Phase)

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit - QPK (dBµ)	Limit - AVG (dBµ)	Line	Corr. (dB)	Margin - QPK (dB)	Margin - AVG
0.420000	44.22	33.87	57.4	47.4	L1	10.0	13.23	13.53
0.798000	42.97	33.66	56.0	46.0	L1	10.0	13.03	12.34
2.697000	44.64	35.25	56.0	46.0	L1	9.9	11.36	10.75
3.435000	45.41	36.00	56.0	46.0	L1	9.9	10.59	10
3.678000	44.95	35.41	56.0	46.0	L1	9.9	11.05	10.59
4.281000	44.70	35.22	56.0	46.0	L1	9.9	11.30	10.78



(Plot B: N Phase)

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit - QPK (dBµ)	Limit - AVG (dBµ)	Line	Corr. (dB)	Margin - QPK (dB)	Margin - AVG
0.789000	40.15	31.68	56.0	46.0	N1	10.0	15.85	14.32
1.662000	41.67	31.99	56.0	46.0	N1	10.0	14.33	14.01
2.130000	42.89	32.94	56.0	46.0	N1	9.9	13.11	13.06
2.922000	44.46	33.22	56.0	46.0	N1	9.9	11.54	12.78
3.669000	44.59	33.35	56.0	46.0	N1	9.9	11.41	12.65
4.398000	44.25	32.91	56.0	46.0	N1	9.9	11.75	13.09

Test Result: PASS

3. List of measuring equipment

Description	Manufacturer	Model	Serial No.	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESIB26	A0304218	2016.06.02	2017.06.01	Radiation
Full-Anechoic Chamber	Albatross	12.8m*6.8m *6.4m	A0412372	2016.06.02	2017.06.01	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2016.06.02	2017.06.01	Radiation
Bilog Antenna	Schwarzbeck	VULB 9163	9163-274	2016.06.02	2017.06.01	Radiation
Double ridge horn antenna	R&S	HF906	100150	2016.06.02	2017.06.01	Radiation
Ultra-wideband antenna	R&S	HL562	100089	2016.06.02	2017.06.01	Radiation
Test Antenna – Horn (18-26.5GHz)	ETS	3160-09	A0902607	2016.06.02	2017.06.01	Radiation
Amplifier 20M~3GHz	R&S	PAP-0203H	22018	2016.06.02	2017.06.01	Radiation
Ampilier 1G~18GHz	R&S	MITEQ AFS42-0010 1800	25-S-42	2016.06.02	2017.06.01	Radiation
Ampilier 18G~40GHz	R&S	JS42-180026 00-28-5A	12111.0980.00	2016.06.02	2017.06.01	Radiation
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2016.07.07	2017.07.06	Conducted
Power Meter	R&S	NRP2	1020.1809.02	2016.06.02	2017.06.01	Conducted
Power Sensor	R&S	NRP-Z81	823.3618.03	2016.06.02	2017.06.01	Conducted
LISN	ROHDE&SCHWARZ	ESH2-Z5	A0304221	2016.06.02	2017.06.01	Conducted
Test Receiver	R&S	ESCS30	A0304260	2016.06.02	2017.06.01	Conducted
Cable	SUNHNER	SUCOFLEX 100	/	2016.06.02	2017.06.01	Radiation
Cable	SUNHNER	SUCOFLEX 104	/	2016.06.02	2017.06.01	Radiation

4. Uncertainty of Evaluation

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.35dB
Radiated emissions	30MHz~1000MHz	2.45dB
	1G~18GHz	2.21dB
	18G~40GHz	1.96dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

** END OF REPORT **