FCC Test Report (BLE)

FCC ID	:	**2AIV5CWELL001**
Applicant	:	**CWELL INTERNATIONAL CO.,LTD.** Room 2810-2814, Building A, Qunxing Plaza, Huaqiang North Rd, Futian District, Shenzhen, 518031,China .
Sample Description		
Product Name	:	**Rugged Smartphone**
Model No.	:	HG06
Trademark	:	AngelLira
Receipt Date	:	2016-06-26
Test Date	:	2016-06-27 to 2016-07-05
Issue Date	:	2016-07-06
Test Standard(s)	:	**FCC CFR Title 47 Part 15 Subpart C Section 15.247**
Conclusions	:	**PASSED***

*In the configuration tested, the EUT complied with the standards specified above.

Test/Witness Engineer : Jason Deng

Approved & Authorized : Frank Zhang

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

Contents

1. General Information

1.1. Client Information

Applicant	:	CWELL INTERNATIONAL CO.,LTD.
Address	:	Room 2810-2814, Building A, Qunxing Plaza, Huaqiang North Rd, Futian District, Shenzhen, 518031,China .
Manufacturer	:	CWELL INTERNATIONAL CO.,LTD.
Address	:	Room 2810-2814, Building A, Qunxing Plaza, Huaqiang North Rd, Futian District, Shenzhen, 518031,China .

1.2. General Description of EUT (Equipment Under Test)

Product Name	:	Rugged Smartphone	
Models No.	:	HG06	
Difference	:	N/A	
Trademark	:	AngelLira	
Product Description	:	Operation Frequency:	2402MHz~2480MHz
		Transfer Rate:	1 Mbits/s
		Number of Channel:	40 Channels
		Modulation Type:	GFSK
		Modulation Technology:	FHSS
		Antenna Type:	Integral PCB Antenna
		Antenna Gain:	2.0dBi
Power Supply	:	3.7V (Internal rechargeable battery) or DC 5V by external power	

Note:

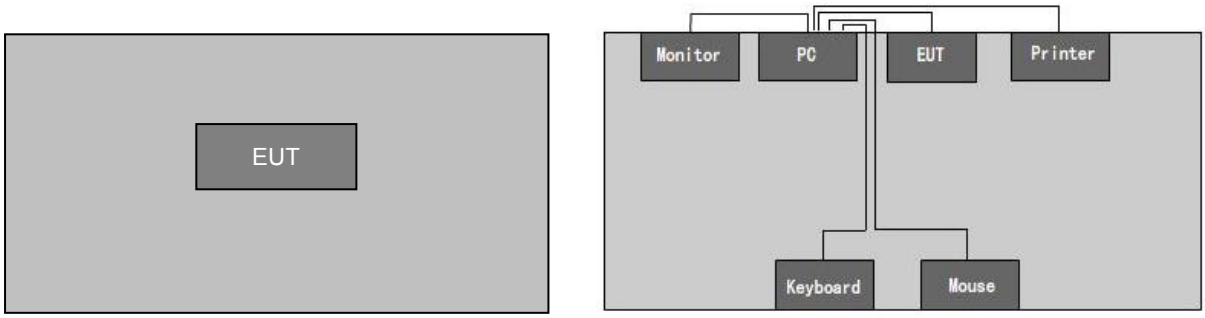
(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468

06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		
Remark: Channel 0, 20 & 39 selected for GFSK.					

1.3. Block Diagram Showing The Configuration of System Tested



1.4. Description of Support Units

Name	Model	Serial Number	Manufacturer
Printer	HP1020	CNCJ410726	HP
LCD Monitor	G205HV	10306738385	ACER
PC	ASPIREM1830	PTSF90C00305005CAC3000	ACER
Keyboard	SK-9625	KBUSB1580500037E0100	ACER
Mouse	MS.11200.014	M-UAY-ACR2	ACER
Adapter	TRAVEL	N/A	N/A

1.5. External I/O Cable

Cable Description	Length(m)	From/ Port	To
Shielding Detachable USB Cable	1.5	Host PC	Mouse
Shielding Detachable K/B Cable	1.5	Host PC	Keyboard
Shielding Detachable serial Cable	1.5	Host PC	Printer
Shielding Detachable VGA Cable	1.5	Host PC	LCD Monitor

Unshielding Detachable USB&AV Cable	0.5	EUT	Host PC

1.6. Description of Test Mode

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

Test Mode	Description
Charging & BT mode	Keep the EUT in Charging& BT mode
Transmitting mode	Keep the EUT in Transmitting mode

Remark: The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

1.7. Test Instruments List

	Test Equipment	Manufacturer	Model No.	Cal. Date	Cal. Due date
1	Bilog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	May 22, 2016	May 21, 2017
2	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	May 27, 2016	May 26, 2017
3	Coaxial Cable	N/A	N/A	Mar. 28, 2016	Mar. 27, 2017
4	Coaxial Cable	N/A	N/A	Mar. 29, 2016	Mar. 29, 2017
5	Coaxial cable	N/A	N/A	Mar. 29, 2016	Mar. 29, 2017
6	Coaxial Cable	N/A	N/A	Mar. 29, 2016	Mar. 29, 2017
7	Coaxial Cable	N/A	N/A	Mar. 29, 2016	Mar. 29, 2017
8	Amplifier (10kHz-1.3GHz)	HP	8447D	Mar. 29, 2016	Mar. 29, 2017
9	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	Jun. 06, 2016	Mar. 29, 2017
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	Mar. 29, 2016	Mar. 29, 2017
11	Horn Antenna	ETS-LINDGREN	3160	Mar. 27, 2016	Mar. 27, 2017

12	Positioning Controller	UC	UC3000	N/A	N/A
13	Spectrum analyzer 9kHz-30GHz	Rohde & Schwarz	FSP	May 26, 2016	May 27, 2017
14	EMI Test Receiver	Rohde & Schwarz	ESPI	Mar. 29, 2016	Mar. 30, 2017
15	Loop antenna	Laplace instrument	RF300	May 22,, 2016	May 23, 2017
16	Universal radio communication tester	Rhode & Schwarz	CMU200	May 26, 2016	May 27, 2017
17	Signal Analyzer	Rohde & Schwarz	FSIQ3	May 26, 2016	May 27, 2017
18	L.I.S.N.#1	Rohde & Schwarz	NSLK8126	May 26, 2016	May 27, 2017
19	L.I.S.N.#2	Rohde & Schwarz	ENV216	May 26, 2016	May 27, 2017
20	Power Meter	Anritsu	ML2495A	May 26, 2016	May 27, 2017
21	Power sensor	Anritsu	ML2491A	May 26, 2016	May 27, 2017

1.8. Laboratory Location

Shenzhen TOBY technology Co.,Ltd

Address: 1 A/F., Bldg.6, Yusheng Industrial Zone The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, 518057, China

At the time of testing, the Laboratory is accredited. It is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

Tel:0086-755-26509301 Fax: 0086-755-26509195

2. Test Summary

Standard Section	Test Item	Judgment
15.203/15.247(c)	Antenna Requirement	PASSED
15.207	Conducted Emission	PASSED
15.247(b)(3)	Conducted Peak Output Power	PASSED
15.247(a)(2)	6dB Occupied Bandwidth	PASSED
15.247(e)	Power Spectral Density	PASSED
15.205/15.209	Spurious Emission	PASSED
15.247(d)	Band Edge	PASSED
Remark: "N/A" is an abbreviation for Not Applicable.		

3. Antenna Requirement

3.1. Standard Requirement

3.1.1 Test standard

FCC Part15 Section 15.203 /247(c)

3.1.2 Requirement

1) 15.203 requirement:

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

2) 15.247(c) (1)(i) requirement:

Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

3.2. Antenna Connected Construction

The Bluetooth antenna is an integral antenna which permanently attached, and the best case gain of the antenna is 2.0dBi. It complies with the standard requirement.

4. Conducted Emission Test

4.1. Test Standard and Limit

4.1.1 Test Standard

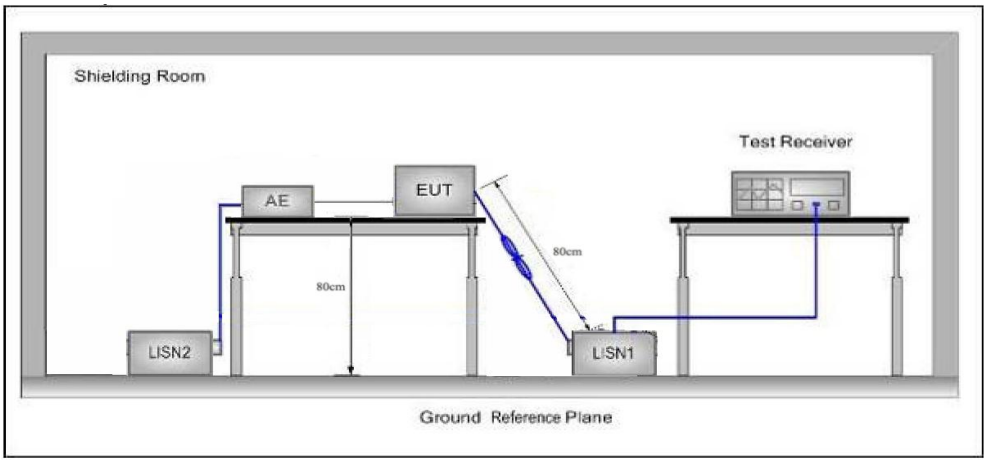
FCC Part15 Section 15.207

4.1.2 Test Limit

Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50
Remark: (1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequencies.		

4.2. Test Setup



4.3. Test Procedure

1) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

2) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.

The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal

ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

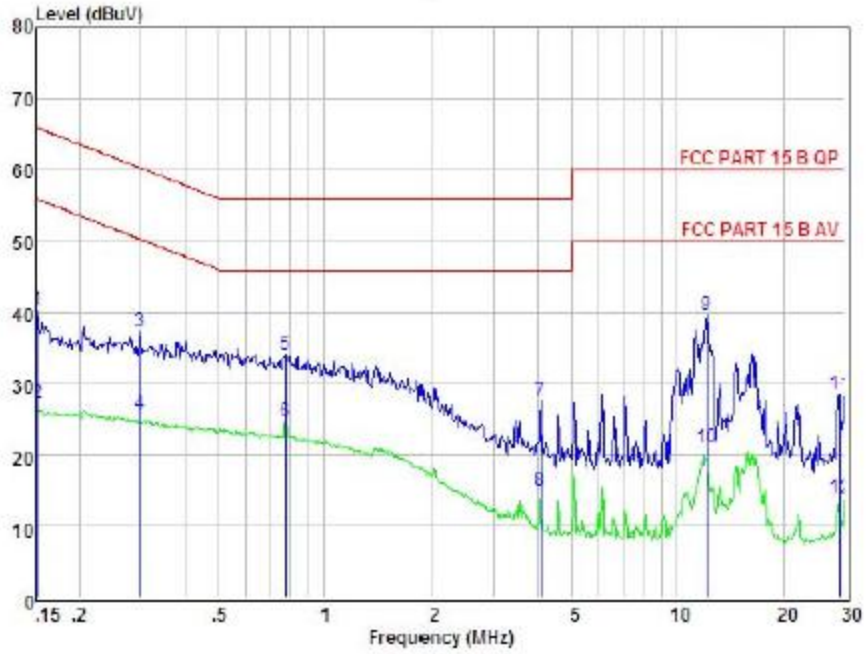
The Test Receiver setup: RBW=9kHz, VBW=30kHz, Sweep time= auto

4.4. Test Data

Please to see the following pages

Conducted Emission Test Data

EUT:	Rugged Smartphone	M/N: HG06
Operating Condition:	Charging & BT mode	
Test Site:	Shielded room	
Operator:	Jason	
Test Specification:	AC120V/60Hz	
Polarization:	Line	
Note	Tem:25℃	Hum:50%



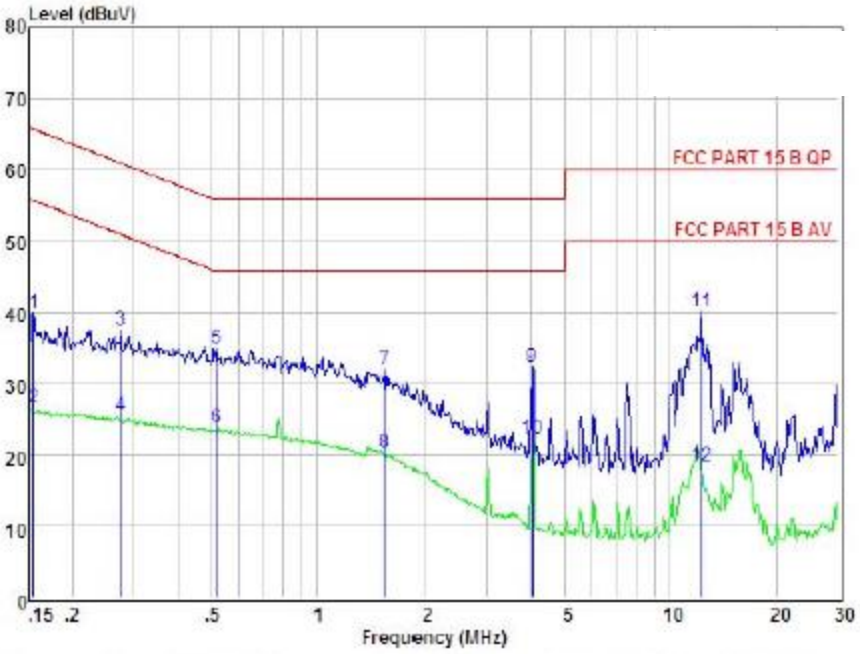
Condition : FCC PART 15 B QP POL: LINE Temp: 20.1 ℃ Hum: 45 %

Item	Freq	Read Level	LISN Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.152	30.65	0.03	-9.52	0.10	40.30	65.91	-25.61	QP
2	0.152	17.69	0.03	-9.52	0.10	27.34	55.91	-28.57	Average
3	0.297	27.55	0.03	-9.56	0.10	37.24	60.32	-23.08	QP
4	0.297	16.00	0.03	-9.56	0.10	25.69	50.32	-24.63	Average
5	0.775	24.38	0.00	-9.60	0.10	34.08	56.00	-21.92	QP
6	0.775	15.02	0.00	-9.60	0.10	24.72	46.00	-21.28	Average
7	4.070	17.65	0.08	-9.88	0.12	27.73	56.00	-28.27	QP
8	4.070	4.87	0.08	-9.88	0.12	14.95	46.00	-31.05	Average
9	12.124	29.25	0.26	-9.90	0.22	39.63	60.00	-20.37	QP
10	12.124	10.72	0.26	-9.90	0.22	21.10	50.00	-28.90	Average
11	29.061	17.66	0.48	-9.86	0.61	28.61	60.00	-31.39	QP
12	29.061	2.93	0.48	-9.86	0.61	13.86	50.00	-36.12	Average

Remark: Level = Read Level + LISN Factor - Preamp Factor + Cable Loss

Conducted Emission Test Data

EUT:	Rugged Smartphone	M/N: HG06
Operating Condition:	Charging & BT mode	
Test Site:	Shielded room	
Operator:	Jason	
Test Specification:	AC 120V/60Hz	
Polarization:	Neutral	
Note	Tem:25℃ Hum:50%	



Condition : FCC PART 15 B QP POL: NEUTRAL Temp: 20.1 ℃ Hum: 45 %

Item	Freq	Read Level	LISN Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.155	30.20	0.03	-9.52	0.10	39.85	65.74	-25.89	QP
2	0.155	17.00	0.03	-9.52	0.10	26.65	55.74	-29.09	Average
3	0.274	27.78	0.03	-9.56	0.10	37.47	60.98	-23.51	QP
4	0.274	15.91	0.03	-9.56	0.10	25.60	50.98	-25.38	Average
5	0.516	25.16	0.03	-9.58	0.10	34.87	56.00	-21.13	QP
6	0.516	14.13	0.03	-9.58	0.10	23.84	46.00	-22.16	Average
7	1.552	22.07	0.05	-9.69	0.10	31.91	56.00	-24.09	QP
8	1.552	10.52	0.05	-9.69	0.10	20.36	46.00	-25.64	Average
9	4.027	22.36	0.08	-9.88	0.12	32.44	56.00	-23.56	QP
10	4.027	12.23	0.08	-9.88	0.12	22.31	46.00	-23.69	Average
11	12.253	29.81	0.25	-9.90	0.22	40.18	60.00	-19.82	QP
12	12.253	8.16	0.25	-9.90	0.22	18.53	50.00	-31.47	Average

Remark: Level = Read Level + LISN Factor - Preamp Factor + Cable Loss

5. Conducted Peak Output Power Test

5.1. Test Standard and Limit

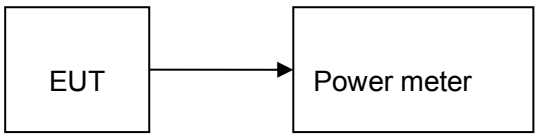
5.1.1 Test Standard

FCC Part15 C Section 15.247 (b)(3); KDB558074

5.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range (MHz)
Peak Output Power	30dBm	2400~2483.5

5.2. Test Setup



5.3. Test Procedure

(1) The EUT was directly connected to peak power meter and antenna output port as show in the block diagram above.

(2) Measure out each mode and each bands peak output power of EUT.

(3) The EUT was set to continuously transmitting in the max power during the test.

5.4. Test Data

Channel Number	Channel Frequency (MHz)	Test Result (dBm)	Limit (dBm)	Judgment
CH 00	2402	-2.712	30	PASSED
CH 19	2440	-3.512	30	PASSED
CH 39	2480	-3.404	30	PASSED

6. Occupy Bandwidth Test

6.1. Test Standard and Limit

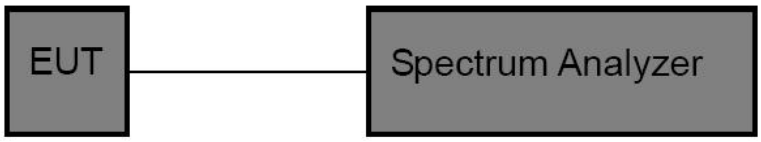
6.1.1 Test Standard

FCC Part15 C Section 15.247 (a)(2); KDB558074

6.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	>500kHz	2400~2483.5

6.2. Test Setup

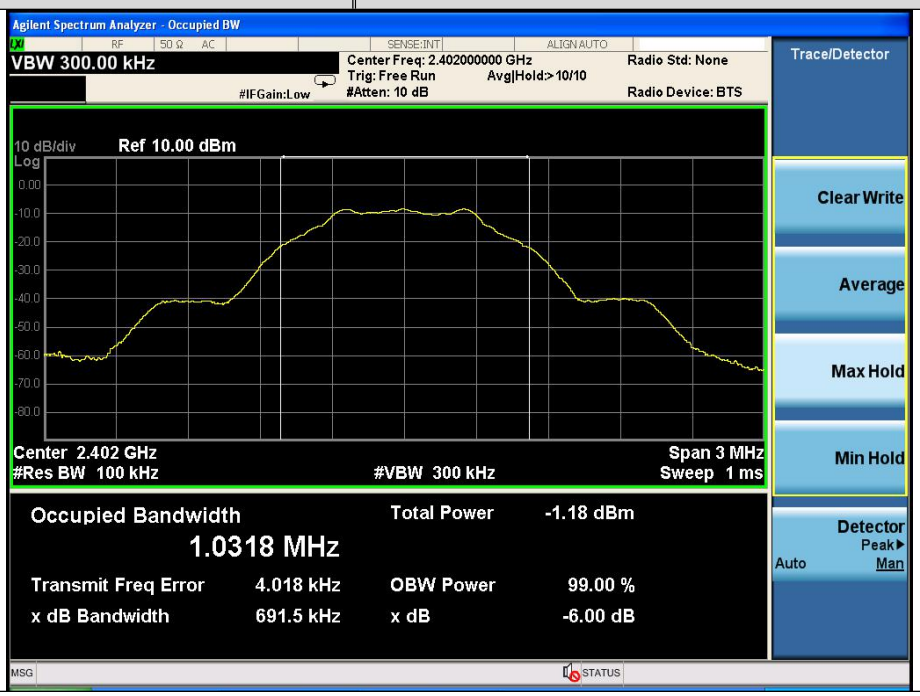


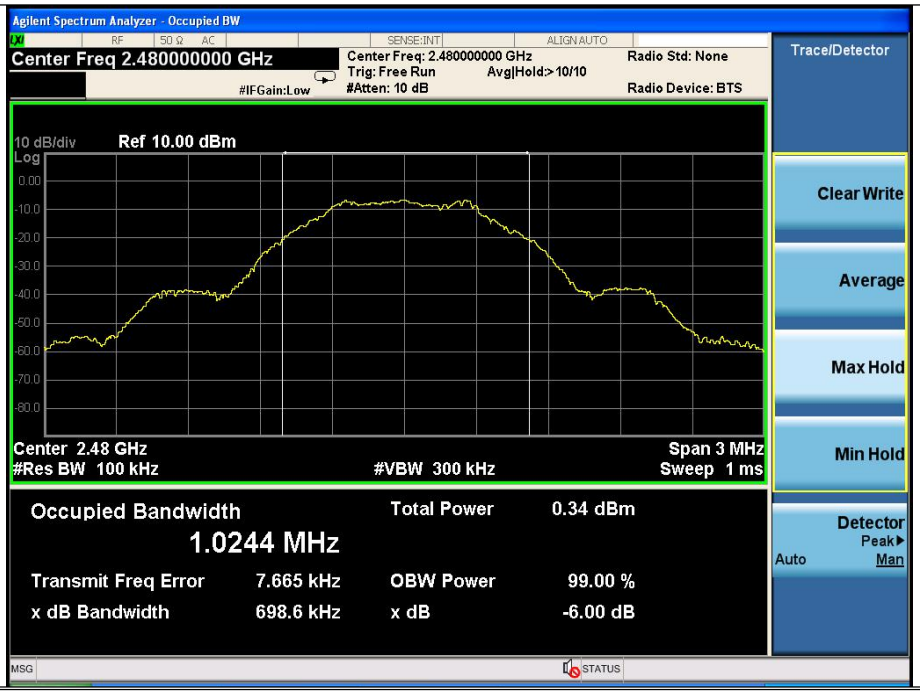
6.3. Test Procedure

Refer to KDB558074 v03r01 (DTS Measure Guidance) Section 8.0

6.4. Test Data

Channel Number	Channel Frequency	6dB Bandwidth (MHz)	Limit(kHz)	Judgment
CH 00	2402(MHz)	0.692	>500	PASSED
CH 19	2440(MHz)	0.694	>500	PASSED
CH 39	2480(MHz)	0.699	>500	PASSED
Remark: Test plot as follows				

6dB EBW Modulation mode	GFSK mode
2402MHz	
2442MHz	

2480MHz		

Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
#IFGain:Low
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
Trace/Detector
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1 ms
Occupied Bandwidth
1.0244 MHz
Total Power
0.34 dBm
Transmit Freq Error
7.665 kHz
OBW Power
99.00 %
x dB Bandwidth
698.6 kHz
x dB
-6.00 dB
Clear Write
Average
Max Hold
Min Hold
Detector
Peak
Auto
Man
MSG
STATUS

7. Power Spectral Density Test

7.1. Test Standard and Limit

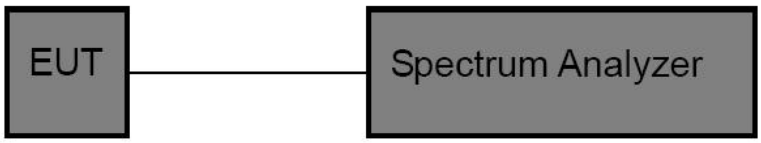
7.1.1 Test Standard

FCC Part15 C Section 15.247 (e); KDB558074

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Section	Test Item	Limit
15.247(e)	Power Spectral Density Test	8dBm

7.2. Test Setup

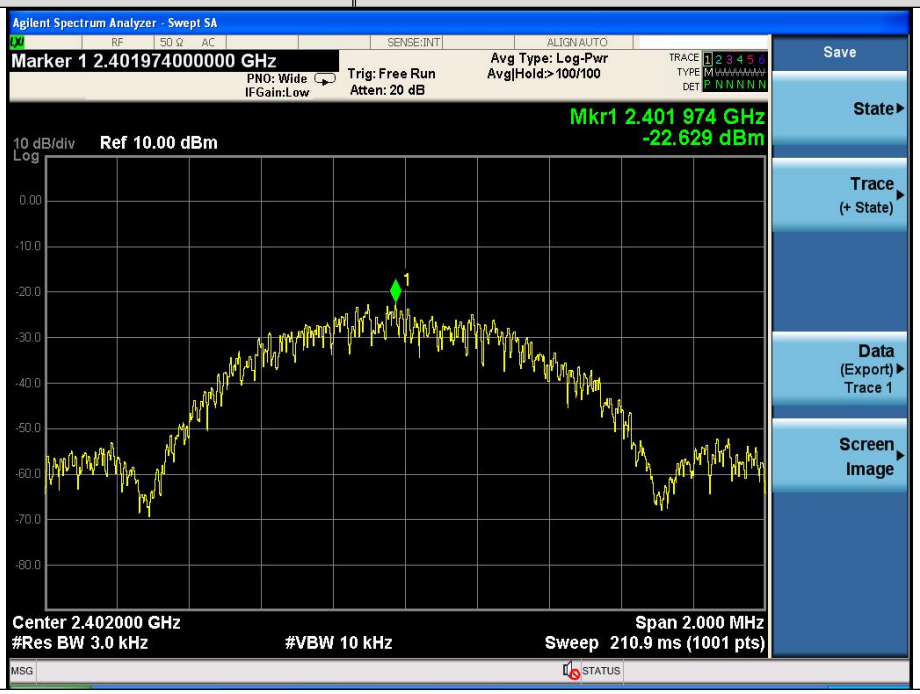
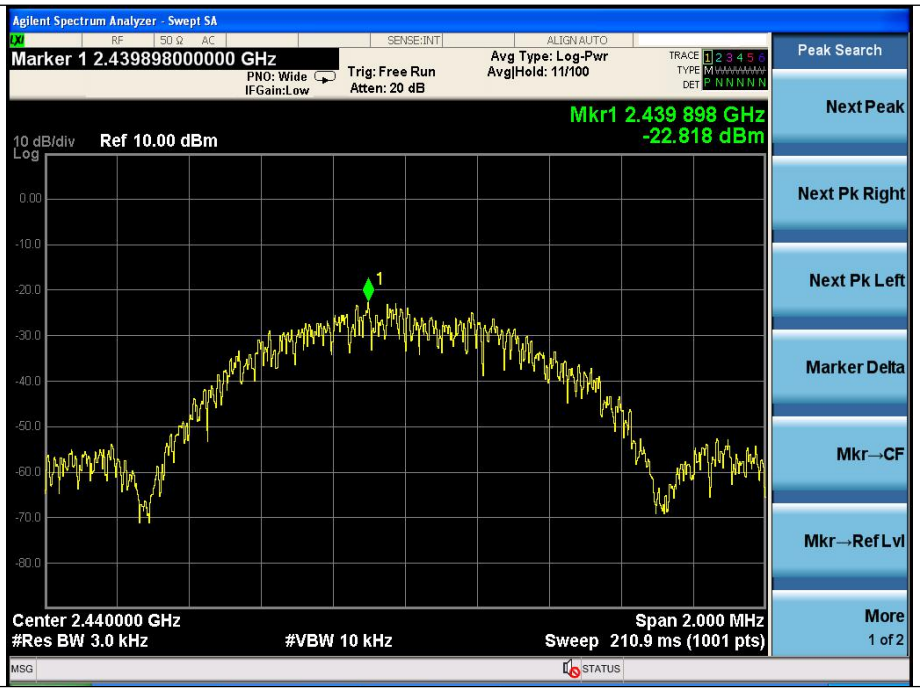


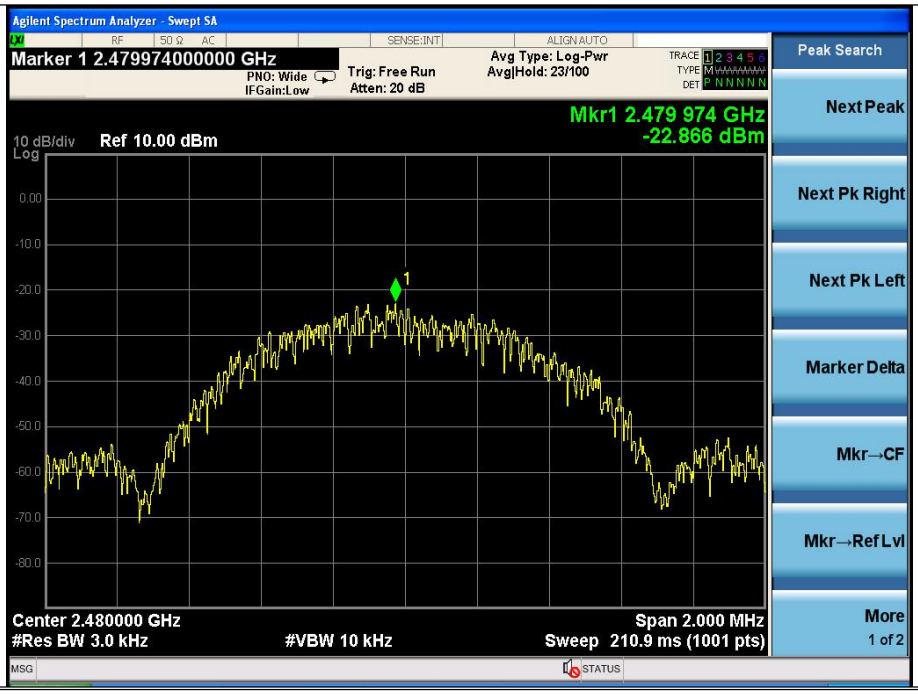
7.3. Test Procedure

Refer to KDB558074 v03r01 (DTS Measure Guidance) Section 10.0

7.4. Test Data

Channel Number	Channel Frequency	Power Spectral Density (dBm/3KHz)	Limit (dBm/KHz)	Judgment
CH 00	2402(MHz)	-22.629	8.0	PASSED
CH 19	2440(MHz)	-22.818	8.0	PASSED
CH 39	2480(MHz)	-22.866	8.0	PASSED
Remark: Test plot as follows				

Modulation mode		GFSK mode
2402MHz		
2440MHz		

2480MHz		

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
Marker 1 2.479974000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 23/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.479 974 GHz
-22.866 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.480000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 2.000 MHz
Sweep 210.9 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

8. Band Edge Requirement (Conducted Emission Method)

8.1. Test Standard and Limit

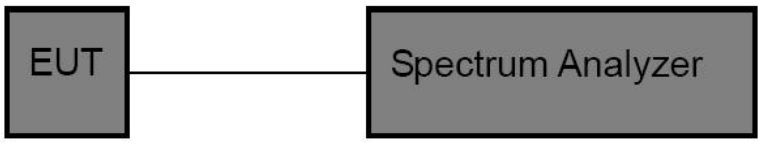
8.1.1 Test Standard

FCC Part15 C Section 15.247 (d); KDB558074

8.1.2 Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

8.2. Test Setup

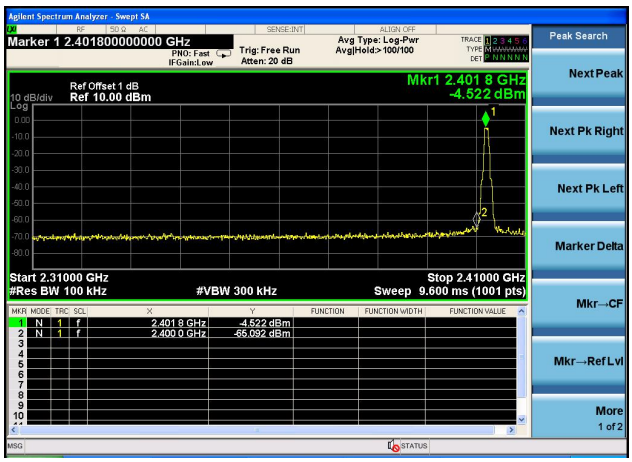
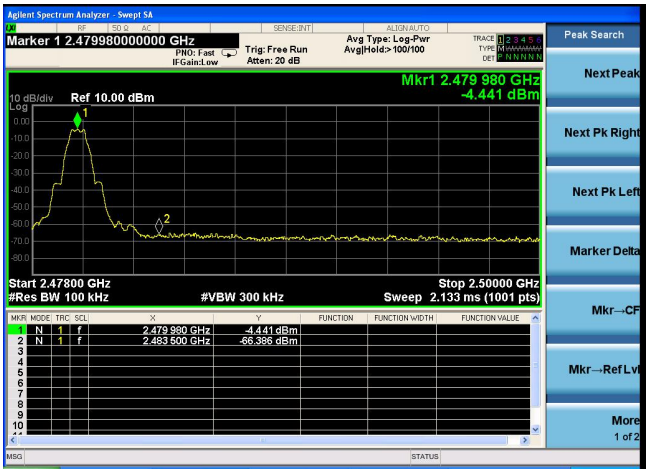


8.3. Test Procedure

Refer to KDB558074 v03r01 (DTS Measure Guidance) Section 12.0

8.4. Test Data

Test plot as follows

Modulation mode	GFSK
	
Lowest	Highest

9. Band Edge Requirement (Radiated Emission Method)

9.1. Test Standard and Limit

9.1.1 Test Standard

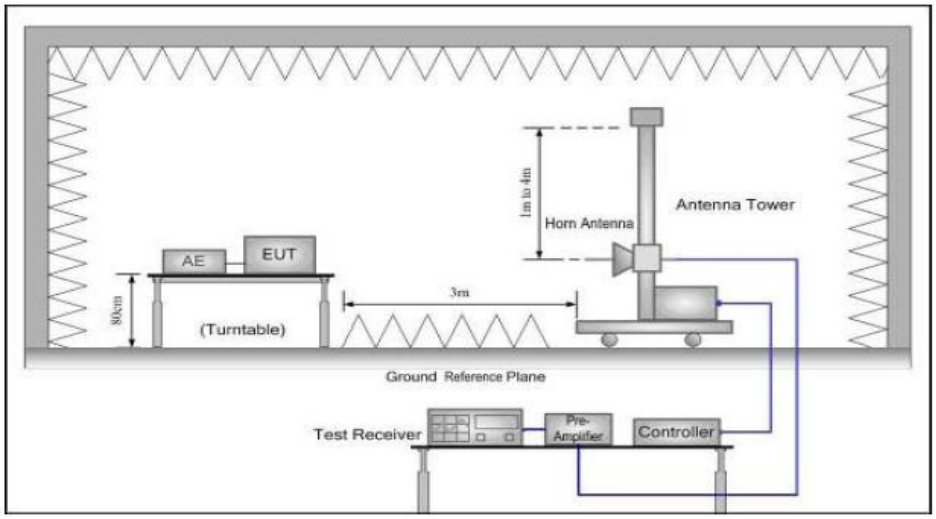
FCC Part15 C Section 15.209 and 15.205

9.1.2 Test Limit

Radiated Emission Test Limit

Frequency	Limit (dBμV/m @3m)	Remark
Above 1GHz	54.00	Average value
	74.00	Peak value

9.2. Test Setup



9.3. Test Procedure

1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
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) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
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. Peak Value: RBW=1MHz, VBW=3MHz; Average value: RBW=1MHz, VBW=10Hz

6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

9.4. Test Data

Remark:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.

Test mode: GFSK					Test channel: Lowest				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
2400.00	22.54	27.58	5.67	0	55.79	74	-18.21	H	PEAK
2400.00	23.35	27.58	5.67	0	56.6	74	-17.4	V	PEAK
2400.00	12.93	27.58	5.67	0	46.18	54	-7.82	H	AVG.
2400.00	13.09	27.58	5.67	0	46.34	54	-7.66	V	AVG.
Test mode: GFSK					Test channel: Highest				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
2483.50	24.09	27.52	5.7	0	57.31	74	-16.69	H	PEAK
2483.50	23.22	27.52	5.7	0	56.44	74	-17.56	V	PEAK
2483.50	15.95	27.52	5.7	0	49.17	54	-4.83	H	AVG.
2483.50	15.23	27.52	5.7	0	48.45	54	-5.55	V	AVG.

Remark:

1. Final Level = Read Level + Antenna Factor + Cable Loss - Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

10. Spurious Emission

10.1. Test Standard and Limit

10.1.1 Test Standard

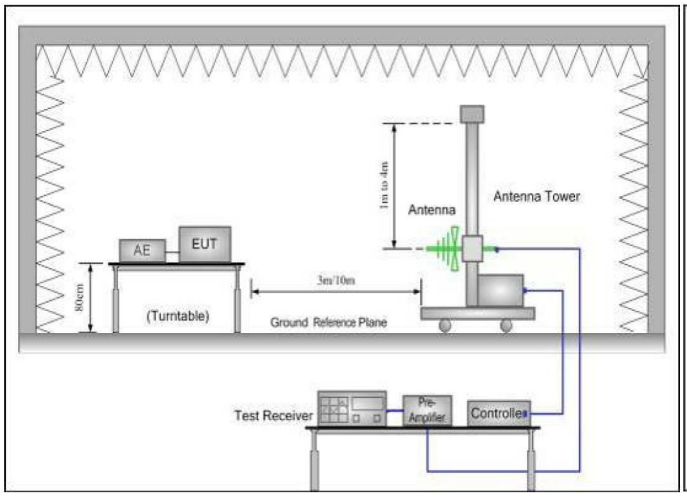
FCC Part15 C Section 15.209 and 15.205

10.1.2 Test Limit

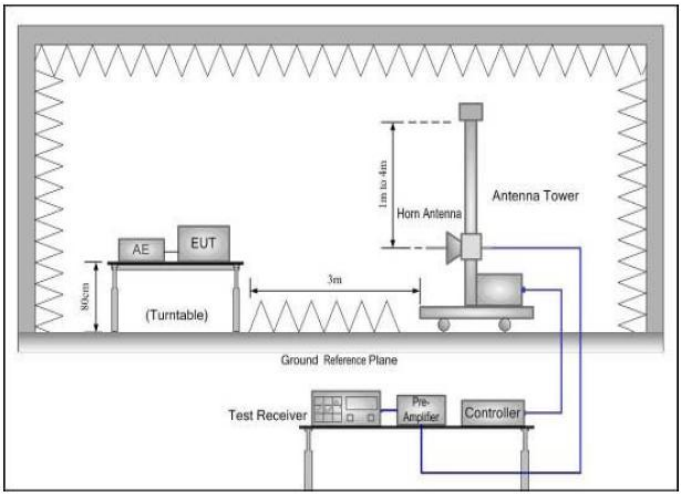
Frequency (MHz)	Limit (dBμV/m) At 3m Distance	
30MHz~88MHz	40	Quasi-peak
88MHz~216MHz	43.5	Quasi-peak
216MHz~960MHz	46	Quasi-peak
960MHz~1000MHz	54	Quasi-peak
Above 1000MHz	54	Average
	74	Peak
Remark: 1. The lower limit shall apply at the transition frequency.		

10.2. Test Setup

Below 1GHz



Above 1GHz



10.3. Test Procedure

1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
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) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set

to make the measurement.

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.

Peak value: RBW=1MHz, VBW=3MHz;

Average value: RBW=1MHz, VBW=10Hz;

QP Value: RBW=120kHz, VBW=300kHz

6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

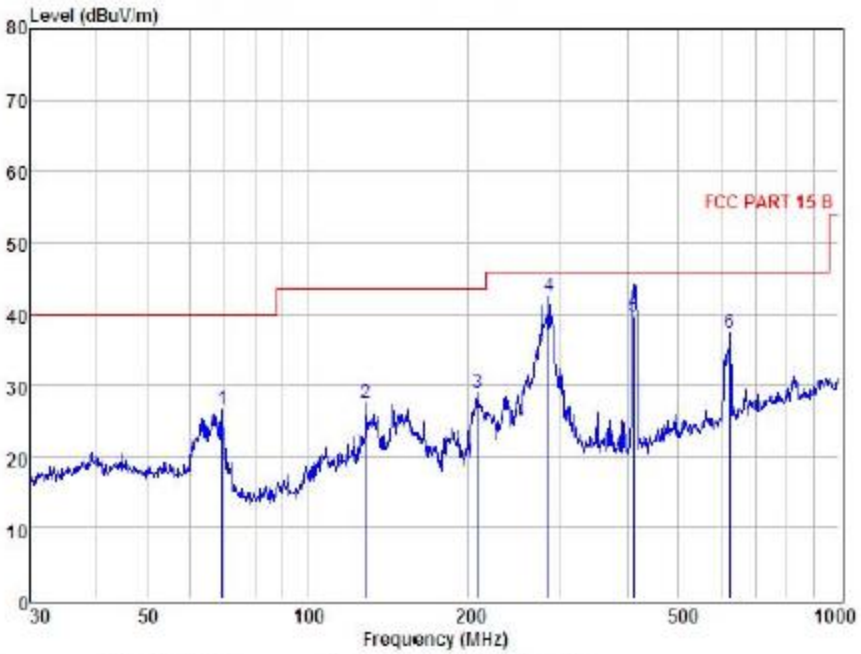
10.4. Test Data

Remark:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.
2. 9 kHz to 30 MHz is noise floor, so only shows the data of above 30MHz in this report.

Radiated Emission Test Data (Below 1GHz)

EUT:	Rugged Smartphone	M/N: HG06
Operating Condition:	Bluetooth TX mode	
Test Site:	3m chamber	
Operator:	Jason	
Test Specification:	AC120V/60Hz	
Polarization:	Horizontal	
Note	Tem:23℃ Hum:50%	



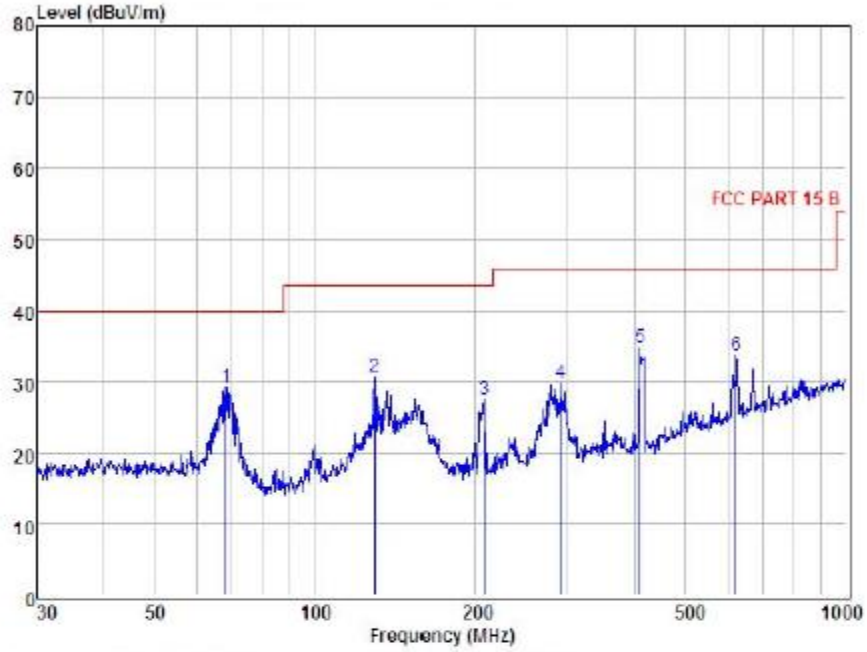
Condition : FCC PART 15 B 3m POL: HORIZONTAL

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	69.36	47.23	10.82	31.72	0.24	26.57	40.00	-13.43	Peak
2	129.47	45.61	12.68	31.27	0.44	27.46	43.50	-16.04	Peak
3	208.58	49.23	10.04	30.92	0.57	28.92	43.50	-14.58	Peak
4	283.98	59.92	12.46	30.61	0.64	42.40	46.00	-3.60	Peak
5	410.39	53.99	14.99	30.33	0.93	39.58	46.00	-6.42	QP
6	622.89	46.92	18.73	29.38	1.11	37.38	46.00	-8.62	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Radiated Emission Test Data (Below 1GHz)

EUT:	Rugged Smartphone	M/N: HG06
Operating Condition:	Bluetooth TX mode	
Test Site:	3m chamber	
Operator:	Jason	
Test Specification:	AC120V/60Hz	
Polarization:	Vertical	
Note	Tem:23℃ Hum:50%	



Condition : FCC PART 15 B 3m POL: VERTICAL

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	68.89	49.48	11.21	31.72	0.30	29.27	40.00	-10.73	Peak
2	130.38	48.63	12.79	31.27	0.44	30.59	43.50	-12.91	Peak
3	207.85	47.76	10.04	30.92	0.49	27.37	43.50	-16.13	Peak
4	290.02	47.27	12.56	30.59	0.54	29.80	46.00	-16.20	Peak
5	408.95	49.12	14.94	30.35	0.97	34.68	46.00	-11.32	Peak
6	620.71	43.31	16.69	29.39	1.02	33.63	46.00	-12.37	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Radiated Emission Test Data (Above 1GHz)

Test mode: GFSK					Test channel: Lowest				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
4804.00	59.48	31.53	8.9	40.24	59.67	74.00	-14.33	V	PEAK
7206.00	51.19	36.47	10.59	41.24	57.01	74.00	-16.99	V	PEAK
9608.00	*					74.00		V	PEAK
12010.00	*					74.00		V	PEAK
14412.00	*					74.00		V	PEAK
16814.00	*					74.00		V	PEAK
4804.00	58.98	31.53	8.9	40.24	59.17	74.00	-14.83	H	PEAK
7206.00	52.08	36.47	10.59	41.24	57.9	74.00	-16.1	H	PEAK
9608.00	*					74.00		H	PEAK
12010.00	*					74.00		H	PEAK
14412.00	*					74.00		H	PEAK
16814.00	*					74.00		H	PEAK
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
4804.00	48.12	31.53	8.9	40.24	48.31	54.00	-5.69	V	AVG.
7206.00	40.27	36.47	10.59	41.24	46.09	54.00	-7.91	V	AVG.
9608.00	*					54.00		V	AVG.
12010.00	*					54.00		V	AVG.
14412.00	*					54.00		V	AVG.
16814.00	*					54.00		V	AVG.
4804.00	46.52	31.53	8.9	40.24	46.71	54.00	-7.29	H	AVG.
7206.00	39.64	36.47	10.59	41.24	45.46	54.00	-8.54	H	AVG.
9608.00	*					54.00		H	AVG.
12010.00	*					54.00		H	AVG.
14412.00	*					54.00		H	AVG.
16814.00	*					54.00		H	AVG.

Remark:

1. Final Level = Read Level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Radiated Emission Test Data (Above 1GHz)

Test mode: GFSK					Test channel: Middle				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
4884.00	56.53	31.58	8.98	40.15	56.94	74.00	-17.06	V	PEAK
7326.00	52	36.47	10.69	41.15	58.01	74.00	-15.99	V	PEAK
9768.00	*					74.00		V	PEAK
12210.00	*					74.00		V	PEAK
14652.00	*					74.00		V	PEAK
17094.00	*					74.00		V	PEAK
4884.00	58.17	31.58	8.98	40.15	58.58	74.00	-15.42	H	PEAK
7326.00	52.74	36.47	10.69	41.15	58.75	74.00	-15.25	H	PEAK
9768.00	*					74.00		H	PEAK
12210.00	*					74.00		H	PEAK
14652.00	*					74.00		H	PEAK
17094.00	*					74.00		H	PEAK
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
4884.00	45.69	31.58	8.98	40.15	46.1	54.00	-7.9	V	AVG.
7326.00	42.91	36.47	10.69	41.15	48.92	54.00	-5.08	V	AVG.
9768.00	*					54.00		V	AVG.
12210.00	*					54.00		V	AVG.
14652.00	*					54.00		V	AVG.
17094.00	*					54.00		V	AVG.
4884.00	47.17	31.58	8.98	40.15	47.58	54.00	-6.42	H	AVG.
7326.00	42.27	36.47	10.69	41.15	48.28	54.00	-5.72	H	AVG.
9768.00	*					54.00		H	AVG.
12210.00	*					54.00		H	AVG.
14652.00	*					54.00		H	AVG.
17094.00	*					54.00		H	AVG.

Remark:

1. Final Level = Read Level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Radiated Emission Test Data (Above 1GHz)

Test mode: GFSK					Test channel: Highest				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
4960.00	58.17	31.69	9.08	40.03	58.91	74.00	-15.09	V	PEAK
7440.00	49.62	36.6	10.8	41.05	55.97	74.00	-18.03	V	PEAK
9920.00	*					74.00		V	PEAK
12400.00	*					74.00		V	PEAK
14880.00	*					74.00		V	PEAK
17360.00	*					74.00		V	PEAK
4960.00	57.59	31.69	9.08	40.03	58.33	74.00	-15.67	H	PEAK
7440.00	49.08	36.6	10.8	41.05	55.43	74.00	-18.57	H	PEAK
9920.00						74.00		H	PEAK
12400.00	*					74.00		H	PEAK
14880.00	*					74.00		H	PEAK
17360.00	*					74.00		H	PEAK
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Level
4960.00	48.17	31.69	9.08	40.03	48.91	54.00	-5.09	V	AVG.
7440.00	40.19	36.6	10.8	41.05	46.54	54.00	-7.46	V	AVG.
9920.00	*					54.00		V	AVG.
12400.00	*					54.00		V	AVG.
14880.00	*					54.00		V	AVG.
17360.00	*					54.00		V	AVG.
4960.00	48.63	31.69	9.08	40.03	49.37	54.00	-4.63	H	AVG.
7440.00	37.63	36.6	10.8	41.05	43.98	54.00	-10.02	H	AVG.
9920.00	*					54.00		H	AVG.
12400.00	*					54.00		H	AVG.
14880.00	*					54.00		H	AVG.
17360.00	*					54.00		H	AVG.

Remark:

1. Final Level = Read Level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.