



FCC RF Test Report

APPLICANT : BlackBerry Ltd.
EQUIPMENT : GSM Quad-band/HSPA-UMTS Penta-band/ LTE
Deca-band mobile phone
BRAND NAME : BlackBerry
MODEL NAME : BBA100-1
MARKETING : DTEK60
NAME
FCC ID : L6ABBA1001
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jul. 20, 2016 and testing was completed on Aug. 17, 2016. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR672002F	Rev. 01	Initial issue of report	Aug. 23, 2016



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	RSS-247 Section 6	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	RSS-247 Section 6	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	RSS-247 Section 6	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	RSS-247 Section 6	Unwanted Emissions	15.407(b)(4)(i) ≤ -17, -27 dBm/MHz & 15.209(a)	Pass	Under limit 3.36 dB at 30.000 MHz
3.5	15.207	RSS-Gen 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 3.91 dB at 0.529 MHz
3.6	15.407(g)	-	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	RSS-247 6.4(2)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	N/A	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

BlackBerry Ltd.

2200 University Ave E., Waterloo, ON, CAN. N2K0A7

1.2 Manufacturer

TCL Communication Ltd

5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	GSM Quad-band/HSPA-UMTS Penta-band/ LTE Deca-band mobile phone
Brand Name	BlackBerry
Model Name	BBA100-1
Marketing Name	DTEK60
FCC ID	L6ABBA1001
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/NFC/ WLAN 2.4GHz 802.11b/g/n HT20/ WLAN 5GHz 802.11a/n HT20/HT40/ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v3.0+EDR/ Bluetooth v4.0 LE/ Bluetooth v4.2 LE
IMEI Code	Conducted: 004402243144338 Radiation: 004402243143843/004402243144411 Conduction: 004402243144106/004402243144346
HW Version	PIO
SW Version	AAF884
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power	802.11a : 16.24 dBm / 0.0421 W 802.11n HT20 : 16.11 dBm / 0.0408 W 802.11n HT40 : 16.36 dBm / 0.0433 W 802.11ac VHT20: 16.26 dBm / 0.0423 W 802.11ac VHT40: 16.45 dBm / 0.0442 W 802.11ac VHT80: 16.22 dBm / 0.0419 W
99% Occupied Bandwidth	802.11a : 16.78 MHz 802.11n HT20 : 17.73 MHz 802.11n HT40 : 36.06 MHz 802.11ac VHT20 : 17.73 MHz 802.11ac VHT40 : 35.96 MHz 802.11ac VHT80 : 74.81 MHz
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Antenna Type	LDS Antenna
Antenna Gain	0.40 dBi

1.5 Specification of Accessory

Specification of Accessory				
AC Adapter 1	Brand Name	N/A	Model Name	QC10US
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc, 2000mA/9Vdc, 1670mA		
	Manufacturer	BYD	S/N	CBA0060AGHC1
AC Adapter 2	Brand Name	N/A	Model Name	QC10EU
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc, 2000mA/9Vdc, 1670mA		
	Manufacturer	BYD	S/N	CBA0060AAHC1
AC Adapter 3	Brand Name	N/A	Model Name	QC10UK
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc, 2000mA/9Vdc, 1670mA		
	Manufacturer	BYD	S/N	CBA0060ABHC1
AC Adapter 4	Brand Name	N/A	Model Name	QC10AU
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc, 2000mA/9Vdc, 1670mA		
	Manufacturer	BYD	S/N	CBA0060ACHC1
Battery 1	Brand Name	N/A	Model Name	TLp030F2
	Power Rating	3.84Vdc, 3000mAh		
	Manufacturer	SCUD	S/N	CAC3000027C2
Battery 2	Brand Name	N/A	Model Name	TLp030F1
	Power Rating	3.84Vdc, 3000mAh		
	Manufacturer	BYD	S/N	CAC3000026C1
USB Cable	Brand Name	N/A	Model Name	CDA0000078CF
	Signal Line Type	1.00m shielded without core		
Earphone	Brand Name	N/A	Model Name	CCB0045A16C3
	Signal Line Type	1.24m non-shielded without core		

1.6 Modification of EUT

No modifications are made to the EUT during all test items.

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-3273456 FAX: +886-3-3284978	
Test Site No.	Sporton Site No.	FCC/IC Registration No.
	03CH10-HY	TW1098/4086H

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	Sporton Site No.	
	TH01-KS	CO01-KS

Note: The test site complies with ANSI C63.4 2014 requirement.



1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02
- ♦ ANSI C63.10-2013
- ♦ IC RSS-247 Issue 1
- ♦ IC RSS-Gen Issue 4

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.



2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151	5755	159	5795
	153	5765	161	5805
	155	5775	165	5825

Note: The above Frequency and Channel in boldface were 802.11n HT40.



2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test in the following tables.

WLAN 5GHz 802.11a Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps								
CH 149	5745	15.93	CH 157	15.96	15.98	15.95	15.92	16.17	16.18	14.37
CH 157	5785	16.24					16.19			
CH 165	5825	16.19					16.15			

WLAN 5GHz 802.11n-HT20 Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0								
CH 149	5745	15.94	CH 165	15.81	15.92	16.08	15.93	16.02	14.46	13.58
CH 157	5785	16.04					16.03			
CH 165	5825	16.11					16.09			

WLAN 5GHz 802.11n-HT40 Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0								
CH 151	5755	16.25	CH 159	16.35	16.30	16.29	16.21	16.22	14.43	13.55
CH 159	5795	16.36					16.33			

WLAN 5GHz 802.11ac VHT20 Average Power (dBm)											
Power vs. Channel			Power vs. Data Rate								
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
		MCS0									
CH 149	5745	16.10	CH 165	15.80	15.86	16.06	16.05	16.17	14.49	13.44	12.62
CH 157	5785	16.18					16.16				
CH 165	5825	16.26					16.19				

WLAN 5GHz 802.11ac VHT40 Average Power (dBm)												
Power vs. Channel			Power vs. Data Rate									
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
		MCS0										
CH 151	5755	16.31	CH 159	16.42	16.40	16.29	16.33	16.22	14.46	13.61	12.57	12.56
CH 159	5795	16.45						16.35				

WLAN 5GHz 802.11n-HT80 Average Power (dBm)												
Power vs. Channel			Power vs. Data Rate									
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
		MCS0										
CH 155	5775	16.22	CH 155	16.16	16.12	16.15	16.16	16.13	14.33	13.47	12.43	12.35

2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

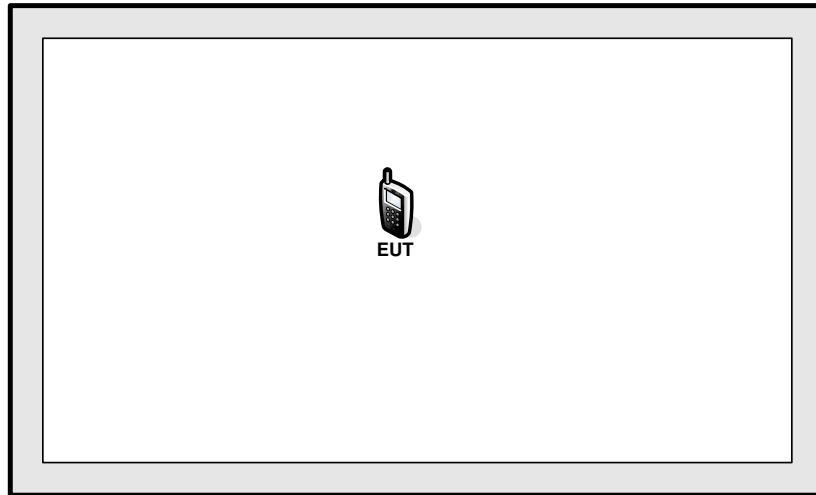
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable (Charging from Adapter) + Battery 1
	Mode 2 : GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable (Charging from Adapter) + Battery 2
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.	

Ch. #		Band IV : 5725-5850 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	149	149	151
M	Middle	157	157	-
H	High	165	165	159

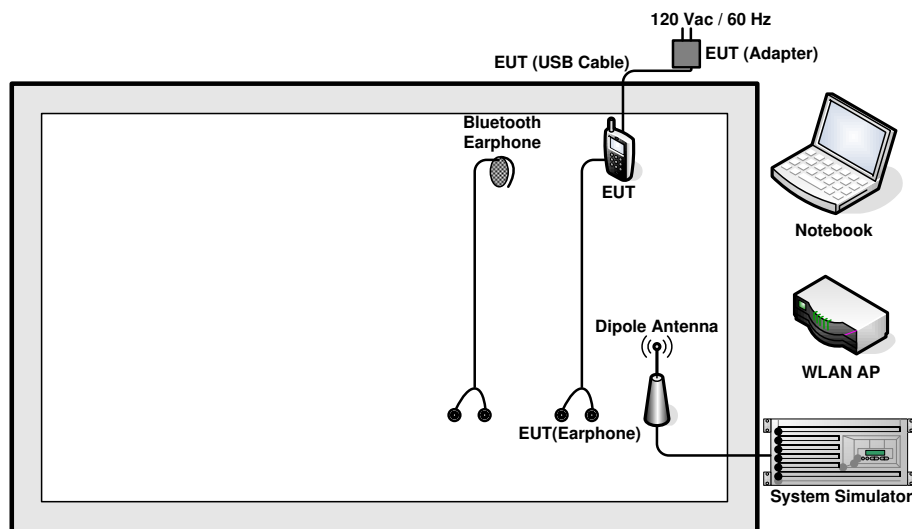
Ch. #		Band IV : 5725-5850 MHz		
		802.11ac VHT20	802.11ac VHT40	802.11ac VHT80
L	Low	149	151	-
M	Middle	157	-	155
H	High	165	159	-

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritus	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the Notebook under large package sizes transmission.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 7.0 dB.

Offset (dB) = RF cable loss(dB).
= 7.0 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

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

26dB and 99% Occupied bandwidth are reporting only.

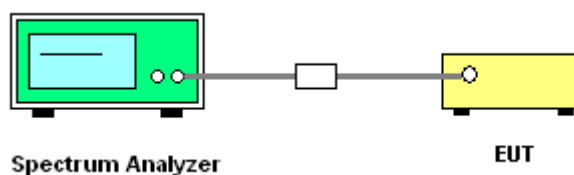
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

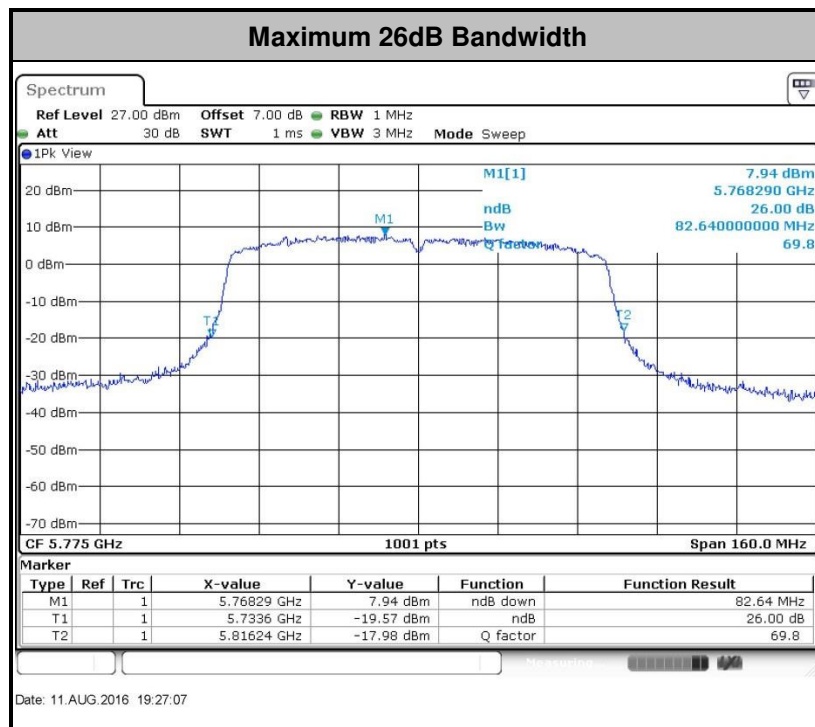
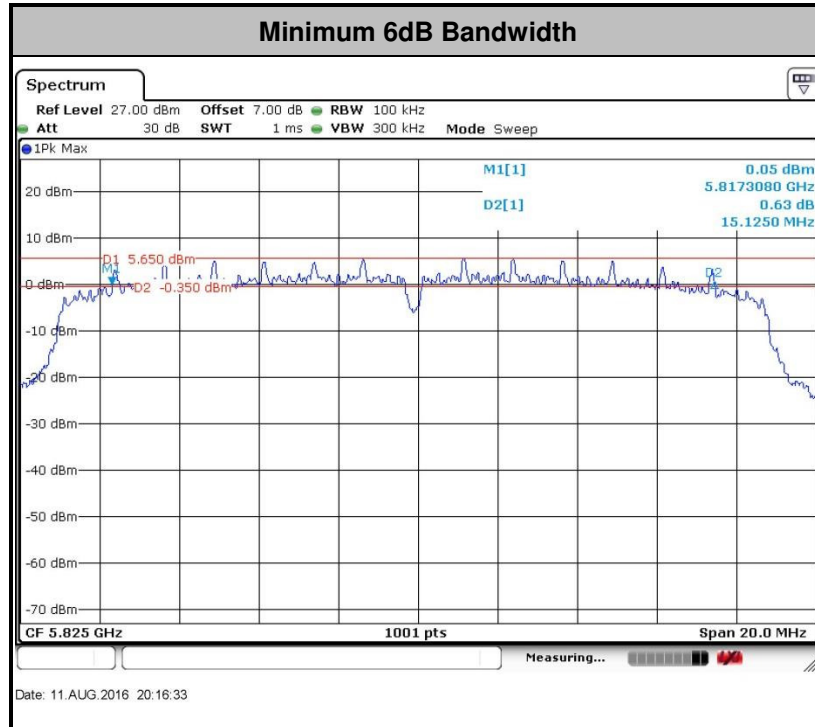
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

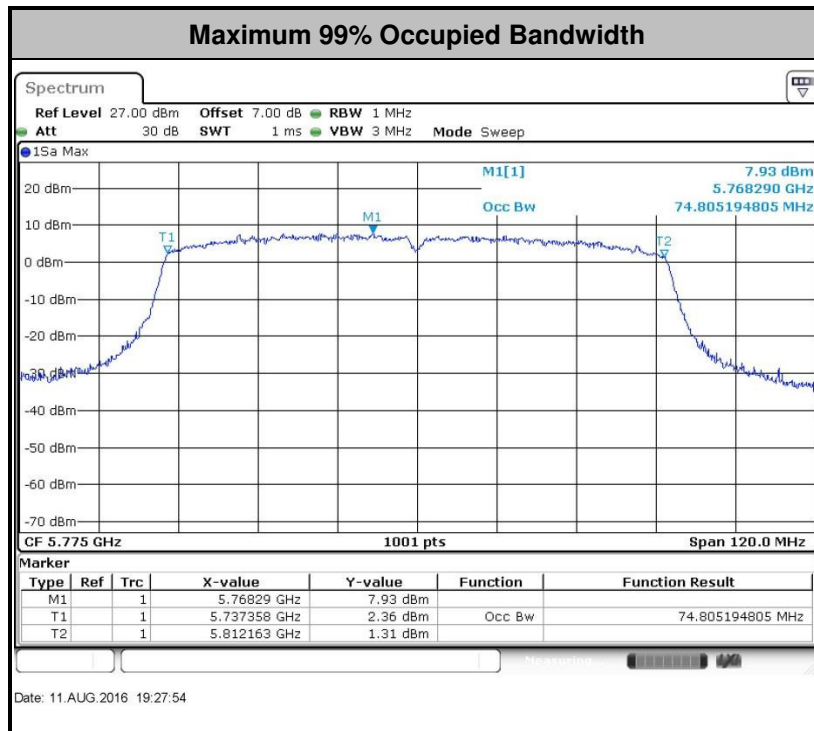
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.





Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

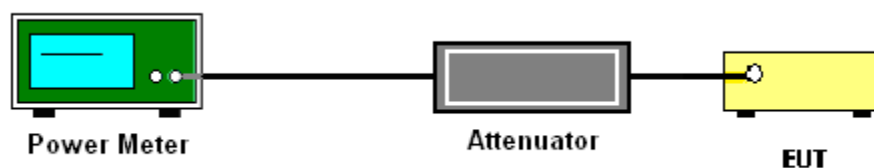
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.
Section F) Maximum power spectral density.

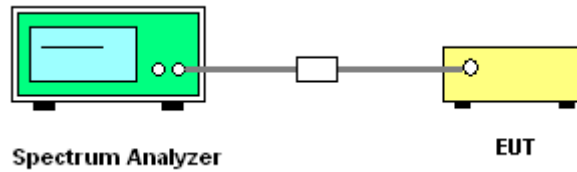
Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.
 - Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 300 kHz.
 - Set VBW $\geq$ 1 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(500\text{kHz}/\text{RBW})$ to the test result.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

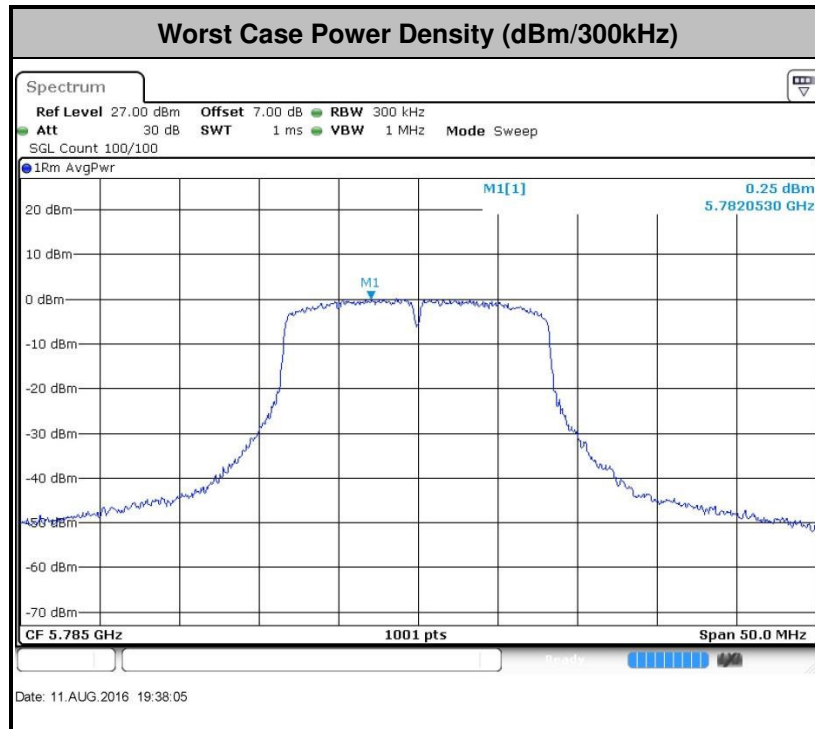
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \text{ } \mu\text{V/m, where P is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
-27	68.3

- (3) KDB 789033 D02 General UNII Test Procedures New Rules v01r02 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.



3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.

Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

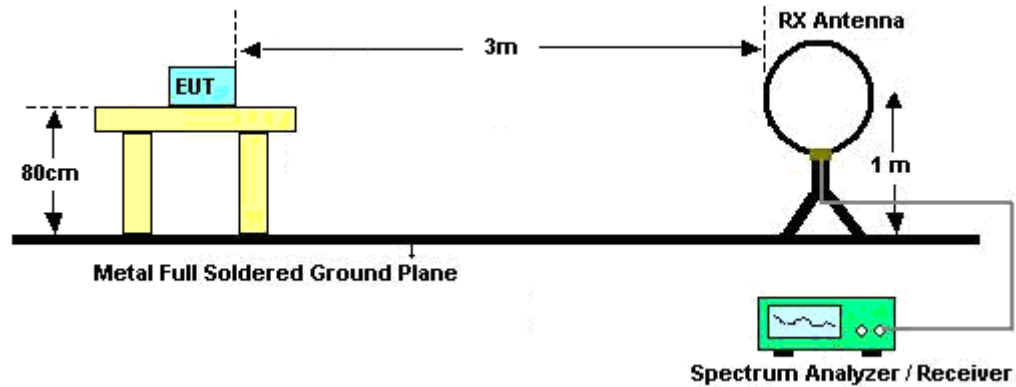
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



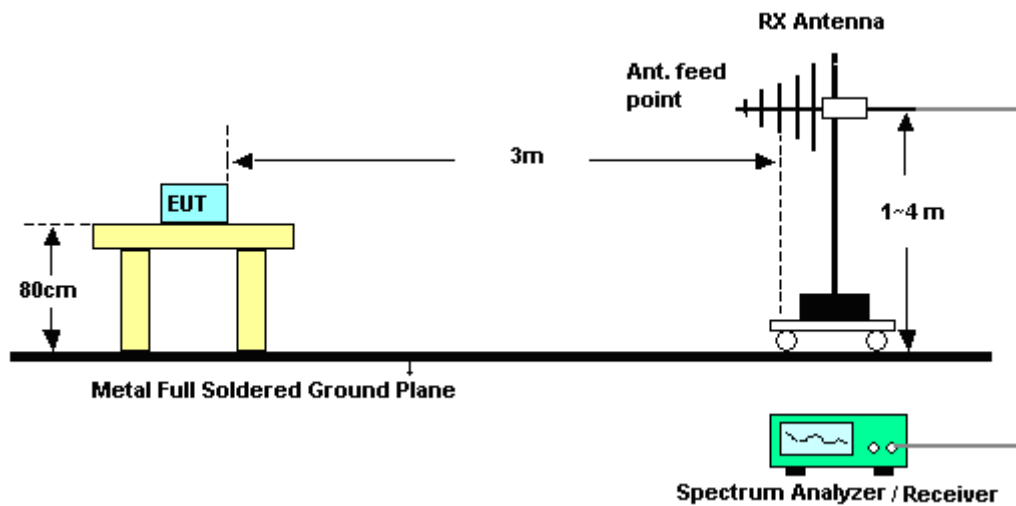
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

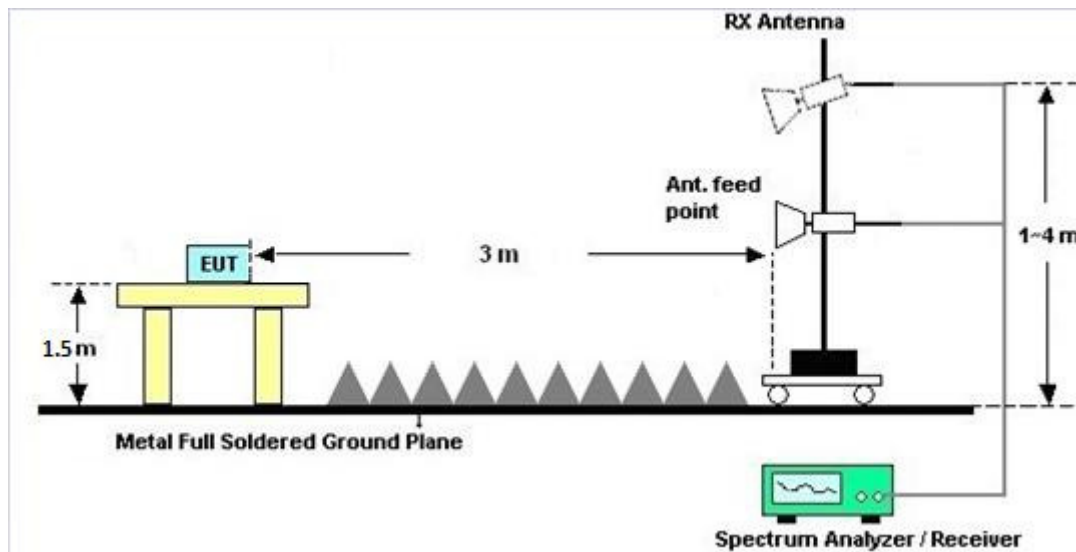
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

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

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix B.

3.4.7 Duty Cycle

Please refer to Appendix C.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC 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 of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

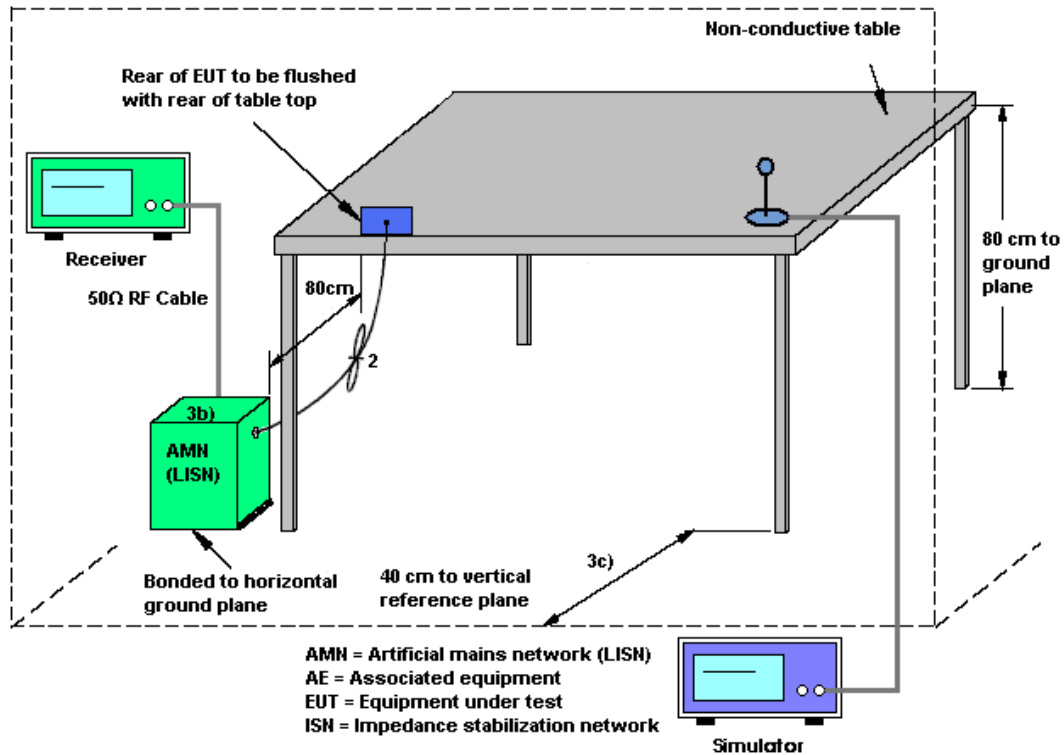
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 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 with Maximum Hold Mode.

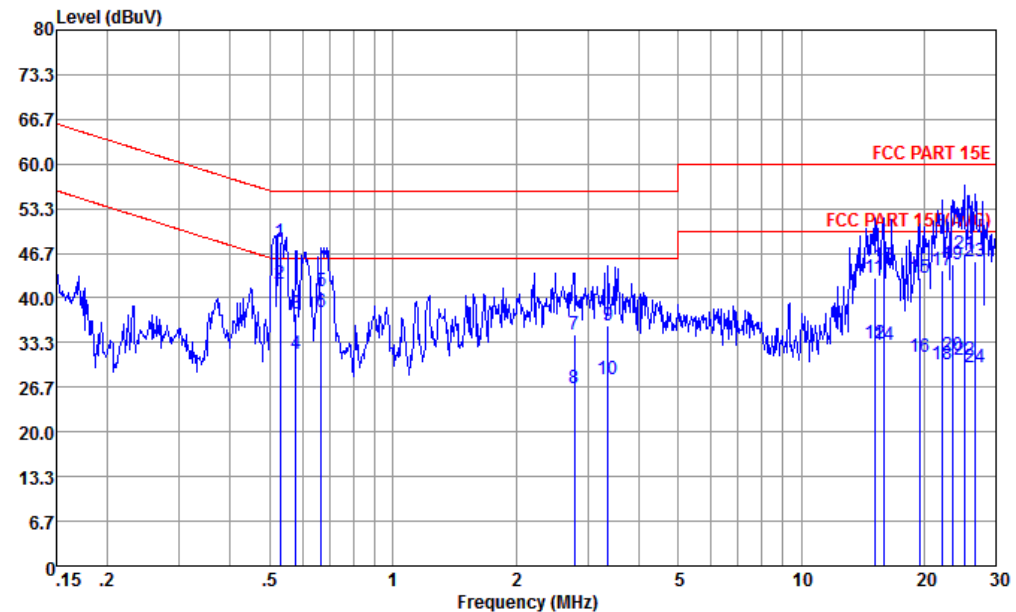
3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	22~24℃
Test Engineer :	Amos Zhang	Relative Humidity :	44~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable (Charging from Adapter) + Battery 2		



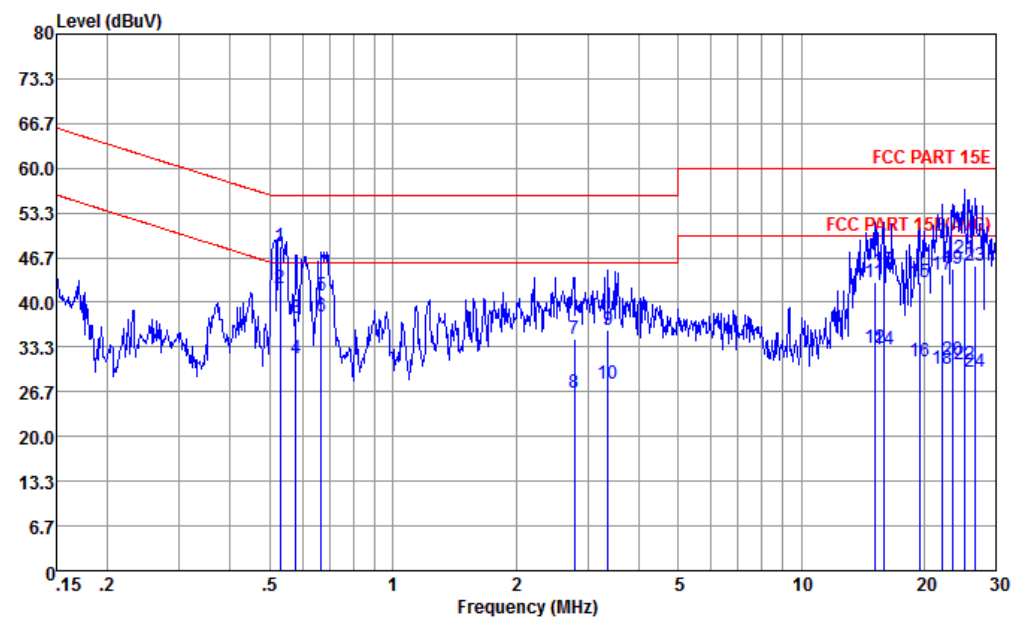
Site : CO01-KS
Condition : FCC PART 15E LISN-L-20151024 LINE

mode : Mode 2
: 004402243144346 #15

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.529	48.29	-7.71	56.00	37.90	0.23	10.16	QP
2 *	0.529	42.09	-3.91	46.00	31.70	0.23	10.16	Average
3	0.579	37.69	-18.31	56.00	27.30	0.23	10.16	QP
4	0.579	31.69	-14.31	46.00	21.30	0.23	10.16	Average
5	0.668	40.99	-15.01	56.00	30.60	0.24	10.15	QP
6	0.668	37.99	-8.01	46.00	27.60	0.24	10.15	Average
7	2.779	34.63	-21.37	56.00	24.30	0.18	10.15	QP
8	2.779	26.53	-19.47	46.00	16.20	0.18	10.15	Average
9	3.364	35.94	-20.06	56.00	25.59	0.19	10.16	QP
10	3.364	27.84	-18.16	46.00	17.49	0.19	10.16	Average
11	15.146	42.95	-17.05	60.00	32.30	0.26	10.39	QP
12	15.146	33.25	-16.75	50.00	22.60	0.26	10.39	Average
13	15.885	44.87	-15.13	60.00	34.20	0.26	10.41	QP
14	15.885	32.87	-17.13	50.00	22.20	0.26	10.41	Average
15	19.532	42.99	-17.01	60.00	32.20	0.27	10.52	QP
16	19.532	31.09	-18.91	50.00	20.30	0.27	10.52	Average
17	22.180	44.15	-15.85	60.00	33.30	0.25	10.60	QP



Test Mode :	Mode 2	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	44~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable (Charging from Adapter) + Battery 2		



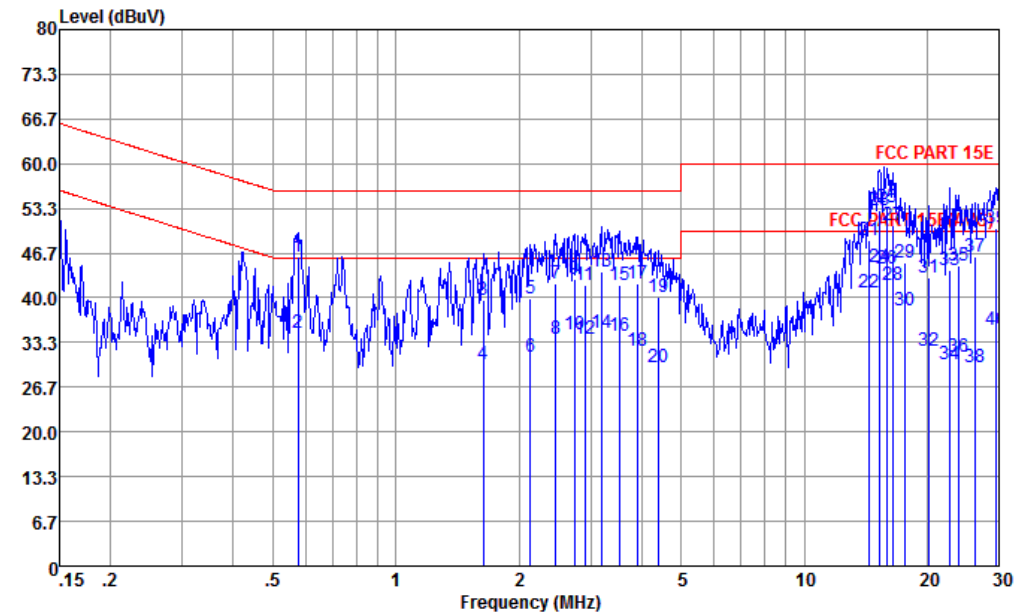
Site : CO01-KS
Condition : FCC PART 15E LISN-L-20151024 LINE

mode : Mode 2
: 004402243144346 #15

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	22.180	30.15	-19.85	50.00	19.30	0.25	10.60	Average
19	23.511	45.08	-14.92	60.00	34.21	0.23	10.64	QP
20	23.511	31.48	-18.52	50.00	20.61	0.23	10.64	Average
21	25.055	46.51	-13.49	60.00	35.60	0.22	10.69	QP
22	25.055	30.81	-19.19	50.00	19.90	0.22	10.69	Average
23	26.558	45.57	-14.43	60.00	34.61	0.22	10.74	QP
24	26.558	29.57	-20.43	50.00	18.61	0.22	10.74	Average



Test Mode :	Mode 2	Temperature :	22~24℃
Test Engineer :	Amos Zhang	Relative Humidity :	44~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable (Charging from Adapter) + Battery 2		



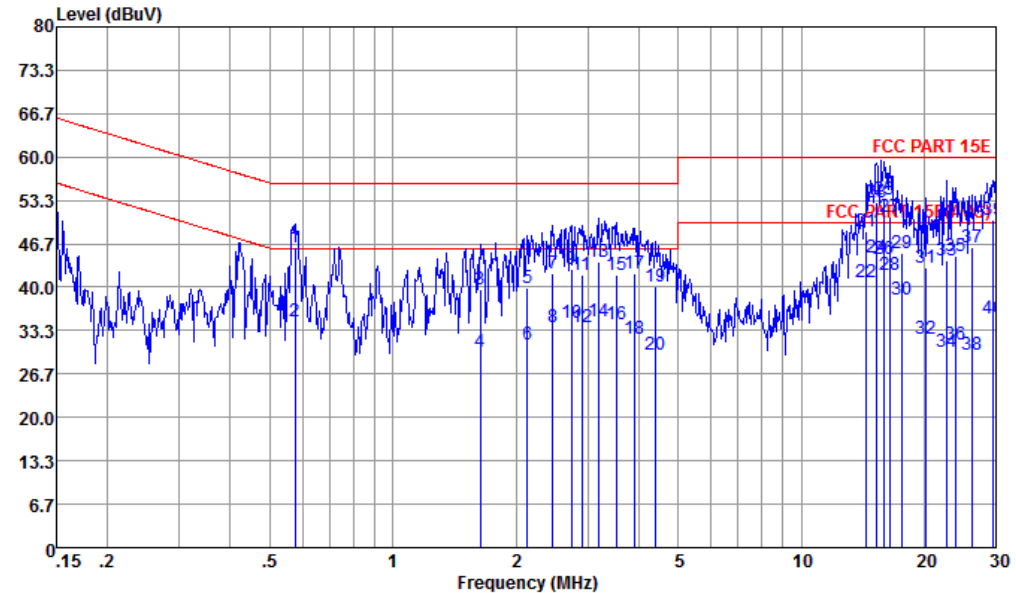
Site : CO01-KS
Condition : FCC PART 15E LISN-N-20151024 NEUTRAL

mode : Mode 2
: 004402243144346 #15

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.576	46.09	-9.91	56.00	35.60	0.33	10.16	QP
2	0.576	34.79	-11.21	46.00	24.30	0.33	10.16	Average
3	1.636	39.72	-16.28	56.00	29.20	0.38	10.14	QP
4	1.636	30.12	-15.88	46.00	19.60	0.38	10.14	Average
5	2.133	39.82	-16.18	56.00	29.30	0.38	10.14	QP
6	2.133	31.12	-14.88	46.00	20.60	0.38	10.14	Average
7	2.461	42.12	-13.88	56.00	31.59	0.38	10.15	QP
8	2.461	33.82	-12.18	46.00	23.29	0.38	10.15	Average
9	2.736	42.82	-13.18	56.00	32.30	0.37	10.15	QP
10	2.736	34.62	-11.38	46.00	24.10	0.37	10.15	Average
11	2.900	41.82	-14.18	56.00	31.30	0.37	10.15	QP
12	2.900	33.82	-12.18	46.00	23.30	0.37	10.15	Average
13	3.190	43.83	-12.17	56.00	33.30	0.37	10.16	QP
14	3.190	34.73	-11.27	46.00	24.20	0.37	10.16	Average
15	3.528	41.83	-14.17	56.00	31.30	0.37	10.16	QP
16	3.528	34.43	-11.57	46.00	23.90	0.37	10.16	Average
17	3.922	42.13	-13.87	56.00	31.60	0.37	10.16	QP



Test Mode :	Mode 2	Temperature :	22~24℃
Test Engineer :	Amos Zhang	Relative Humidity :	44~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable (Charging from Adapter) + Battery 2		



Site : CO01-KS
Condition : FCC PART 15E LISN-N-20151024 NEUTRAL

mode : Mode 2
: 004402243144346 #15

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	3.922	32.03	-13.97	46.00	21.50	0.37	10.16	Average
19	4.407	40.14	-15.86	56.00	29.61	0.36	10.17	QP
20	4.407	29.74	-16.26	46.00	19.21	0.36	10.17	Average
21	14.440	48.54	-11.46	60.00	37.90	0.27	10.37	QP
22	14.440	40.84	-9.16	50.00	30.20	0.27	10.37	Average
23	15.307	52.96	-7.04	60.00	42.29	0.27	10.40	QP
24 *	15.307	44.56	-5.44	50.00	33.89	0.27	10.40	Average
25	15.885	53.58	-6.42	60.00	42.90	0.27	10.41	QP
26	15.885	44.28	-5.72	50.00	33.60	0.27	10.41	Average
27	16.486	50.89	-9.11	60.00	40.20	0.26	10.43	QP
28	16.486	41.99	-8.01	50.00	31.30	0.26	10.43	Average
29	17.661	45.33	-14.67	60.00	34.60	0.26	10.47	QP
30	17.661	38.03	-11.97	50.00	27.30	0.26	10.47	Average
31	20.162	43.09	-16.91	60.00	32.30	0.25	10.54	QP
32	20.162	32.09	-17.91	50.00	21.30	0.25	10.54	Average
33	22.775	44.16	-15.84	60.00	33.30	0.24	10.62	QP
34	22.775	30.16	-19.84	50.00	19.30	0.24	10.62	Average
35	23.888	44.80	-15.20	60.00	33.91	0.24	10.65	QP
36	23.888	31.20	-18.80	50.00	20.31	0.24	10.65	Average
37	26.278	46.17	-13.83	60.00	35.20	0.24	10.73	QP
38	26.278	29.57	-20.43	50.00	18.60	0.24	10.73	Average
39	29.527	50.39	-9.61	60.00	39.30	0.24	10.85	QP
40	29.527	35.19	-14.81	50.00	24.10	0.24	10.85	Average

3.6 Frequency Stability Measurement

3.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

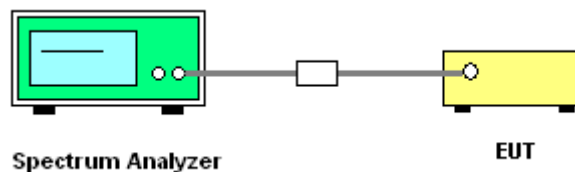
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.



3.7 Automatically Discontinue Transmission

3.7.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



3.8 Antenna Requirements

3.8.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2), if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.8.3 Antenna Gain

The antenna gain is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Sep. 10, 2015	Aug. 08, 2016~ Aug. 11, 2016	Sep. 09, 2016	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 20, 2016	Aug. 08, 2016~ Aug. 11, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Aug. 08, 2016~ Aug. 11, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Aug. 08, 2016~ Aug. 15, 2016	Sep. 01, 2016	Radiation (03CH10-HY)
Bilog Antenna	TESEQ	CBL 6111D	35413	30MHz~1GHz	Jan. 13, 2016	Aug. 08, 2016~ Aug. 15, 2016	Jan. 12, 2017	Radiation (03CH10-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1325	1GHz ~ 18GHz	Sep. 30, 2015	Aug. 08, 2016~ Aug. 15, 2016	Sep. 29, 2016	Radiation (03CH10-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz ~ 40GHz	Apr. 15, 2016	Aug. 08, 2016~ Aug. 15, 2016	Apr. 14, 2017	Radiation (03CH10-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Nov. 16, 2015	Aug. 08, 2016~ Aug. 15, 2016	Nov. 15, 2016	Radiation (03CH10-HY)
Preamplifier	Keysight	83017A	MY53270078	1GHz~26.5GHz	Nov. 13, 2015	Aug. 08, 2016~ Aug. 15, 2016	Nov. 12, 2016	Radiation (03CH10-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2016	Aug. 08, 2016~ Aug. 15, 2016	Feb. 14, 2017	Radiation (03CH10-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	N/A	Mar. 10, 2016	Aug. 08, 2016~ Aug. 15, 2016	Mar. 09, 2017	Radiation (03CH10-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200485	10Hz ~ 44GHz	Oct. 15, 2015	Aug. 08, 2016~ Aug. 15, 2016	Oct. 14, 2016	Radiation (03CH10-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Aug. 08, 2016~ Aug. 15, 2016	N/A	Radiation (03CH10-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Aug. 08, 2016~ Aug. 15, 2016	N/A	Radiation (03CH10-HY)
Turn Table	EMEC	TT 2200	N/A	0~360 Degree	N/A	Aug. 08, 2016~ Aug. 15, 2016	N/A	Radiation (03CH10-HY)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 29, 2016	Aug. 17, 2016	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 24, 2015	Aug. 17, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 24, 2015	Aug. 17, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 24, 2015	Aug. 17, 2016	Oct. 23, 2016	Conduction (CO01-KS)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.6dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.9dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2dB
--	-------



Appendix A. Conducted Test Results

Report Number : FR672002F

Test Engineer:	Ivan Chen	Temperature:	24~25	°C
Test Date:	2016/8/08 ~ 2016/8/11	Relative Humidity:	54~55	%

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	6 dB Bandwidth (MHz)	6dB Bandwidth min. Limit (MHz)	Pass/Fail
11a	6M bps	1	149	5745	16.73	20.68	15.15	0.5	Pass
11a	6Mbps	1	157	5785	16.78	20.58	15.35	0.5	Pass
11a	6Mbps	1	165	5825	16.78	20.38	15.31	0.5	Pass
HT20	MCS 0	1	149	5745	17.73	21.73	15.15	0.5	Pass
HT20	MCS 0	1	157	5785	17.68	21.53	15.15	0.5	Pass
HT20	MCS 0	1	165	5825	17.73	21.53	15.13	0.5	Pass
HT40	MCS 0	1	151	5755	36.06	41.54	35.09	0.5	Pass
HT40	MCS 0	1	159	5795	36.06	41.63	35.09	0.5	Pass
VHT20	MCS 0	1	149	5745	17.73	21.48	15.15	0.5	Pass
VHT20	MCS 0	1	157	5785	17.73	21.68	15.15	0.5	Pass
VHT20	MCS 0	1	165	5825	17.73	21.58	15.13	0.5	Pass
VHT40	MCS 0	1	151	5755	35.96	41.63	35.09	0.5	Pass
VHT40	MCS 0	1	159	5795	35.96	41.63	35.09	0.5	Pass
VHT80	MCS 0	1	155	5775	74.81	82.64	75.05	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6M bps	1	149	5745	0.28	15.93	30.00	0.40		Pass
11a	6Mbps	1	157	5785	0.28	16.24	30.00	0.40		Pass
11a	6Mbps	1	165	5825	0.28	16.18	30.00	0.40		Pass
HT20	MCS 0	1	149	5745	0.25	15.94	30.00	0.40		Pass
HT20	MCS 0	1	157	5785	0.25	16.04	30.00	0.40		Pass
HT20	MCS 0	1	165	5825	0.25	16.11	30.00	0.40		Pass
HT40	MCS 0	1	151	5755	0.43	16.25	30.00	0.40		Pass
HT40	MCS 0	1	159	5795	0.43	16.36	30.00	0.40		Pass
VHT20	MCS 0	1	149	5745	0.24	16.10	30.00	0.40		Pass
VHT20	MCS 0	1	157	5785	0.24	16.18	30.00	0.40		Pass
VHT20	MCS 0	1	165	5825	0.24	16.26	30.00	0.40		Pass
VHT40	MCS 0	1	151	5755	0.44	16.31	30.00	0.40		Pass
VHT40	MCS 0	1	159	5795	0.44	16.45	30.00	0.40		Pass
VHT80	MCS 0	1	155	5775	0.65	16.22	30.00	0.40		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	10log (500kHz /RBW) Factor (dB)	Average Power Density (dBm/500kHz)	Average PSD Limit (dBm/500kHz)	DG (dBi)	Pass/Fail
11a	6M bps	1	149	5745	0.28	2.22	2.52	30.00	0.40	Pass
11a	6Mbps	1	157	5785	0.28	2.22	2.75	30.00	0.40	Pass
11a	6Mbps	1	165	5825	0.28	2.22	2.74	30.00	0.40	Pass
HT20	MCS 0	1	149	5745	0.25	2.22	2.18	30.00	0.40	Pass
HT20	MCS 0	1	157	5785	0.25	2.22	2.31	30.00	0.40	Pass
HT20	MCS 0	1	165	5825	0.25	2.22	2.35	30.00	0.40	Pass
HT40	MCS 0	1	151	5755	0.43	2.22	-0.49	30.00	0.40	Pass
HT40	MCS 0	1	159	5795	0.43	2.22	-0.24	30.00	0.40	Pass
VHT20	MCS 0	1	149	5745	0.24	2.22	2.10	30.00	0.40	Pass
VHT20	MCS 0	1	157	5785	0.24	2.22	2.44	30.00	0.40	Pass
VHT20	MCS 0	1	165	5825	0.24	2.22	2.31	30.00	0.40	Pass
VHT40	MCS 0	1	151	5755	0.44	2.22	-0.09	30.00	0.40	Pass
VHT40	MCS 0	1	159	5795	0.44	2.22	-0.29	30.00	0.40	Pass
VHT80	MCS 0	1	155	5775	0.65	2.22	-3.06	30.00	0.40	Pass

TEST RESULTS DATA
Frequency Stability

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6M bps	1	149	5745	5744.875	-0.125	-21.76	20	3.6	
11a	6M bps	1	149	5745	5744.875	-0.125	-21.76	20	4.35	
11a	6M bps	1	149	5745	5744.875	-0.125	-21.76	20	3.8	
11a	6M bps	1	149	5745	5744.975	-0.025	-4.35	-30	3.8	
11a	6M bps	1	149	5745	5744.875	-0.125	-21.76	50	3.8	



Appendix B. Radiated Spurious Emission

For Battery 1

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5645.8	48.78	-19.42	68.2	40.66	32.48	8.27	32.63	100	117	P	H
		5699.2	52.94	-51.67	104.61	44.78	32.51	8.3	32.65	100	117	P	H
		5719.8	55.91	-54.83	110.74	47.74	32.53	8.3	32.66	100	117	P	H
		5723.4	59.36	-59.19	118.55	51.16	32.53	8.33	32.66	100	117	P	H
	*	5746	110.26	-	-	102.06	32.54	8.33	32.67	100	117	P	H
	*	5746	102.81	-	-	94.61	32.54	8.33	32.67	100	117	A	H
		5638	47.56	-20.64	68.2	39.48	32.48	8.23	32.63	100	96	P	V
		5697.6	49.6	-53.83	103.43	41.44	32.51	8.3	32.65	100	96	P	V
		5717.8	52.61	-57.57	110.18	44.44	32.53	8.3	32.66	100	96	P	V
		5723.2	55.33	-62.77	118.1	47.13	32.53	8.33	32.66	100	96	P	V
	*	5746	104.82	-	-	96.62	32.54	8.33	32.67	100	96	P	V
	*	5746	98.65	-	-	90.45	32.54	8.33	32.67	100	96	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5622.6	48.05	-20.15	68.2	39.97	32.47	8.23	32.62	100	115	P	H
		5696.6	49.48	-53.21	102.69	41.32	32.51	8.3	32.65	100	115	P	H
		5715.2	49.48	-59.98	109.46	41.32	32.52	8.3	32.66	100	115	P	H
		5720.6	50.93	-61.24	112.17	42.76	32.53	8.3	32.66	100	115	P	H
	*	5788	109.5	-	-	101.25	32.58	8.35	32.68	100	115	P	H
	*	5788	102.96	-	-	94.71	32.58	8.35	32.68	100	115	A	H
		5853.2	48.2	-66.7	114.9	39.86	32.61	8.43	32.7	100	115	P	H
		5856.8	48.24	-62.06	110.3	39.89	32.62	8.43	32.7	100	115	P	H
		5908.6	48.07	-32.23	80.3	39.67	32.65	8.47	32.72	100	115	P	H
		5944.4	47.77	-20.43	68.2	39.33	32.67	8.51	32.74	100	115	P	H
		5638.4	47.59	-20.61	68.2	39.51	32.48	8.23	32.63	100	97	P	V
		5695	47.63	-53.88	101.51	39.47	32.51	8.3	32.65	100	97	P	V
		5716.4	48.16	-61.63	109.79	40	32.52	8.3	32.66	100	97	P	V
		5724.8	48.68	-73.06	121.74	40.48	32.53	8.33	32.66	100	97	P	V
	*	5783	106.46	-	-	98.22	32.57	8.35	32.68	100	97	P	V
	*	5783	99.44	-	-	91.2	32.57	8.35	32.68	100	97	A	V
		5852.6	47.14	-69.13	116.27	38.8	32.61	8.43	32.7	100	97	P	V
		5860.6	47	-62.23	109.23	38.66	32.62	8.43	32.71	100	97	P	V
		5885.6	47.7	-49.63	97.33	39.32	32.63	8.47	32.72	100	97	P	V
		5931.8	48.01	-20.19	68.2	39.57	32.66	8.51	32.73	100	97	P	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz	*	5827	109.44	-	-	101.14	32.6	8.39	32.69	217	117	P	H
	*	5827	102.77	-	-	94.47	32.6	8.39	32.69	217	117	A	H
		5850.4	57.61	-63.68	121.29	49.27	32.61	8.43	32.7	217	117	P	H
		5856.2	54.74	-55.72	110.46	46.39	32.62	8.43	32.7	217	117	P	H
		5878.6	49.78	-52.75	102.53	41.43	32.63	8.43	32.71	217	117	P	H
		5928	48.83	-19.37	68.2	40.39	32.66	8.51	32.73	217	117	P	H
	*	5824	106.03	-	-	97.73	32.6	8.39	32.69	100	88	P	V
	*	5824	100.08	-	-	91.78	32.6	8.39	32.69	100	88	A	V
		5851.2	55.62	-63.84	119.46	47.28	32.61	8.43	32.7	100	88	P	V
		5855.2	53.71	-57.03	110.74	45.36	32.62	8.43	32.7	100	88	P	V
		5881.8	50.27	-49.88	100.15	41.88	32.63	8.47	32.71	100	88	P	V
		5947.4	46.86	-21.34	68.2	38.42	32.67	8.51	32.74	100	88	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	50.07	-23.93	74	48.68	40.01	12.58	51.2	100	0	P	H
		17235	50.78	-17.42	68.2	46.22	41.05	15.66	52.15	100	0	P	H
		11490	50.9	-23.1	74	49.51	40.01	12.58	51.2	100	0	P	V
		17232	50.83	-17.37	68.2	46.32	41.05	15.61	52.15	100	0	P	V
802.11a CH 157 5785MHz		11570	50.04	-23.96	74	48.7	39.88	12.66	51.2	100	0	P	H
		17355	50.29	-17.91	68.2	45.29	41.38	15.79	52.17	100	0	P	H
		11570	49.96	-24.04	74	48.62	39.88	12.66	51.2	100	0	P	V
		17355	50.68	-17.52	68.2	45.68	41.38	15.79	52.17	100	0	P	V
802.11a CH 165 5825MHz		11650	50.47	-23.53	74	49.19	39.75	12.73	51.2	100	0	P	H
		17475	50.77	-17.43	68.2	45.32	41.71	15.93	52.19	100	0	P	H
		11650	50.92	-23.08	74	49.64	39.75	12.73	51.2	100	0	P	V
		17475	50.73	-17.47	68.2	45.28	41.71	15.93	52.19	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 149 5745MHz		5648.4	49.88	-18.32	68.2	41.76	32.48	8.27	32.63	218	116	P	H
		5691.4	50.63	-48.23	98.86	42.47	32.51	8.3	32.65	218	116	P	H
		5720	55.64	-55.16	110.8	47.47	32.53	8.3	32.66	218	116	P	H
		5723.4	61.07	-57.48	118.55	52.87	32.53	8.33	32.66	218	116	P	H
	*	5747	108.72	-	-	100.52	32.54	8.33	32.67	218	116	P	H
	*	5747	101.68	-	-	93.48	32.54	8.33	32.67	218	116	A	H
		5649.6	47.81	-20.39	68.2	39.68	32.49	8.27	32.63	100	89	P	V
		5693.2	49.85	-50.34	100.19	41.69	32.51	8.3	32.65	100	89	P	V
		5719.6	54.62	-56.07	110.69	46.45	32.53	8.3	32.66	100	89	P	V
		5724.6	56.34	-64.95	121.29	48.14	32.53	8.33	32.66	100	89	P	V
	*	5747	106.59	-	-	98.39	32.54	8.33	32.67	100	89	P	V
	*	5747	98.74	-	-	90.54	32.54	8.33	32.67	100	89	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 157 5785MHz		5619.8	47.8	-20.4	68.2	39.72	32.47	8.23	32.62	214	116	P	H
		5697.2	49.21	-53.93	103.14	41.05	32.51	8.3	32.65	214	116	P	H
		5715.8	49.12	-60.51	109.63	40.96	32.52	8.3	32.66	214	116	P	H
		5724.8	49.93	-71.81	121.74	41.73	32.53	8.33	32.66	214	116	P	H
	*	5787	108.52	-	-	100.27	32.58	8.35	32.68	214	116	P	H
	*	5787	102.01	-	-	93.76	32.58	8.35	32.68	214	116	A	H
		5850.6	48.93	-71.9	120.83	40.59	32.61	8.43	32.7	214	116	P	H
		5873.8	47.68	-57.86	105.54	39.33	32.63	8.43	32.71	214	116	P	H
		5886.2	48.51	-48.37	96.88	40.13	32.63	8.47	32.72	214	116	P	H
		5943.8	47.19	-21.01	68.2	38.75	32.67	8.51	32.74	214	116	P	H
		5636	47.76	-20.44	68.2	39.68	32.48	8.23	32.63	100	90	P	V
		5686.4	47.52	-47.65	95.17	39.36	32.51	8.3	32.65	100	90	P	V
		5719.6	47.69	-63	110.69	39.52	32.53	8.3	32.66	100	90	P	V
		5722	47.09	-68.27	115.36	38.89	32.53	8.33	32.66	100	90	P	V
	*	5787	106.19	-	-	97.94	32.58	8.35	32.68	100	90	P	V
	*	5787	99.04	-	-	90.79	32.58	8.35	32.68	100	90	A	V
		5853.6	46.92	-67.07	113.99	38.57	32.62	8.43	32.7	100	90	P	V
		5856.6	46.52	-63.83	110.35	38.17	32.62	8.43	32.7	100	90	P	V
		5888.6	48.19	-46.91	95.1	39.8	32.64	8.47	32.72	100	90	P	V
		5926	47.49	-20.71	68.2	39.05	32.66	8.51	32.73	100	90	P	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 165 5825MHz	*	5824	109.95	-	-	101.65	32.6	8.39	32.69	218	120	P	H
	*	5824	102.83	-	-	94.53	32.6	8.39	32.69	218	120	A	H
		5851.2	57.37	-62.09	119.46	49.03	32.61	8.43	32.7	218	120	P	H
		5857.4	55.62	-54.51	110.13	47.27	32.62	8.43	32.7	218	120	P	H
		5875.2	50.5	-54.55	105.05	42.15	32.63	8.43	32.71	218	120	P	H
		5938.6	47.23	-20.97	68.2	38.79	32.67	8.51	32.74	218	120	P	H
	*	5823	106.23	-	-	97.93	32.6	8.39	32.69	100	95	P	V
	*	5823	99.18	-	-	90.88	32.6	8.39	32.69	100	95	A	V
		5852	53.38	-64.26	117.64	45.04	32.61	8.43	32.7	100	95	P	V
		5857.6	50.5	-59.57	110.07	42.15	32.62	8.43	32.7	100	95	P	V
		5893.8	49.14	-42.11	91.25	40.75	32.64	8.47	32.72	100	95	P	V
		5925	48.41	-19.79	68.2	39.97	32.66	8.51	32.73	100	95	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11490	50.58	-23.42	74	49.19	40.01	12.58	51.2	100	0	P	H
VHT20		17235	50.89	-17.31	68.2	46.33	41.05	15.66	52.15	100	0	P	H
CH 149		11490	50.75	-23.25	74	49.36	40.01	12.58	51.2	100	0	P	V
5745MHz		17235	50.57	-17.63	68.2	46.01	41.05	15.66	52.15	100	0	P	V
802.11ac		11570	50.82	-23.18	74	49.48	39.88	12.66	51.2	100	0	P	H
VHT20		17355	50.1	-18.1	68.2	45.1	41.38	15.79	52.17	100	0	P	H
CH 157		11570	50.15	-23.85	74	48.81	39.88	12.66	51.2	100	0	P	V
5785MHz		17355	50.2	-18	68.2	45.2	41.38	15.79	52.17	100	0	P	V
802.11ac		11650	49.65	-24.35	74	48.37	39.75	12.73	51.2	100	0	P	H
VHT20		17475	50.47	-17.73	68.2	45.02	41.71	15.93	52.19	100	0	P	H
CH 165		11650	50.21	-23.79	74	48.93	39.75	12.73	51.2	100	0	P	V
5825MHz		17475	50.66	-17.54	68.2	45.21	41.71	15.93	52.19	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 151 5755MHz		5647.6	53.97	-14.23	68.2	45.85	32.48	8.27	32.63	224	119	P	H
		5681.4	55.17	-36.3	91.47	47.05	32.5	8.27	32.65	224	119	P	H
		5718.8	59.46	-51	110.46	51.29	32.53	8.3	32.66	224	119	P	H
		5724.99	61.41	-60.77	122.18	53.21	32.53	8.33	32.66	224	119	P	H
	*	5757	107.19	-	-	98.97	32.56	8.33	32.67	224	119	P	H
	*	5757	99.64	-	-	91.42	32.56	8.33	32.67	224	119	A	H
		5850.8	47.44	-72.94	120.38	39.1	32.61	8.43	32.7	224	119	P	H
		5856.8	48.44	-61.86	110.3	40.09	32.62	8.43	32.7	224	119	P	H
		5880	52.11	-49.38	101.49	43.76	32.63	8.43	32.71	224	119	P	H
		5929	46.6	-21.6	68.2	38.16	32.66	8.51	32.73	224	119	P	H
		5611.4	53.35	-14.85	68.2	45.28	32.46	8.23	32.62	100	96	P	V
		5657.2	53.89	-19.66	73.55	45.77	32.49	8.27	32.64	100	96	P	V
		5712.6	57.53	-51.2	108.73	49.37	32.52	8.3	32.66	100	96	P	V
		5724.4	58.31	-62.52	120.83	50.11	32.53	8.33	32.66	100	96	P	V
	*	5753	103.87	-	-	95.65	32.56	8.33	32.67	100	96	P	V
	*	5753	96.89	-	-	88.67	32.56	8.33	32.67	100	96	A	V
		5850.6	55.01	-65.82	120.83	46.67	32.61	8.43	32.7	100	96	P	V
		5872	49.47	-56.57	106.04	41.12	32.63	8.43	32.71	100	96	P	V
		5888.6	48.36	-46.74	95.1	39.97	32.64	8.47	32.72	100	96	P	V
		5941.4	46.3	-21.9	68.2	37.86	32.67	8.51	32.74	100	96	P	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 159 5795MHz		5618.6	48.91	-19.29	68.2	40.83	32.47	8.23	32.62	221	120	P	H
		5673.2	51.55	-33.86	85.41	43.42	32.5	8.27	32.64	221	120	P	H
		5718.2	51.24	-59.06	110.3	43.07	32.53	8.3	32.66	221	120	P	H
		5721.2	49.63	-63.91	113.54	41.46	32.53	8.3	32.66	221	120	P	H
	*	5797	106.53	-	-	98.28	32.58	8.35	32.68	221	120	P	H
	*	5797	99.72	-	-	91.47	32.58	8.35	32.68	221	120	A	H
		5850.01	56.06	-66.12	122.18	47.72	32.61	8.43	32.7	221	120	P	H
		5857.4	53.64	-56.49	110.13	45.29	32.62	8.43	32.7	221	120	P	H
		5910.8	54.44	-24.24	78.68	46.05	32.65	8.47	32.73	221	120	P	H
		5945.8	53.65	-14.55	68.2	45.21	32.67	8.51	32.74	221	120	P	H
		5628.4	52.38	-15.82	68.2	44.31	32.47	8.23	32.63	100	97	P	V
		5699	46.99	-57.47	104.46	38.83	32.51	8.3	32.65	100	97	P	V
		5706.6	48.76	-58.29	107.05	40.6	32.52	8.3	32.66	100	97	P	V
		5720.8	51.03	-61.59	112.62	42.86	32.53	8.3	32.66	100	97	P	V
	*	5797	102.29	-	-	94.04	32.58	8.35	32.68	100	97	P	V
	*	5797	96.04	-	-	87.79	32.58	8.35	32.68	100	97	A	V
		5853.8	51.94	-61.6	113.54	43.59	32.62	8.43	32.7	100	97	P	V
		5855.8	51.36	-59.22	110.58	43.01	32.62	8.43	32.7	100	97	P	V
		5906.4	50.73	-31.2	81.93	42.33	32.65	8.47	32.72	100	97	P	V
		5935.8	48.1	-20.1	68.2	39.67	32.66	8.51	32.74	100	97	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11ac VHT40 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11510	50.59	-23.41	74	49.21	40	12.58	51.2	100	0	P	H
VHT40		17265	50.53	-17.67	68.2	45.87	41.15	15.66	52.15	100	0	P	H
CH 151		11510	50.42	-23.58	74	49.04	40	12.58	51.2	100	0	P	V
5755MHz		17265	50.88	-17.32	68.2	46.22	41.15	15.66	52.15	100	0	P	V
802.11ac		11590	50.78	-23.22	74	49.48	39.84	12.66	51.2	100	0	P	H
VHT40		17385	50.29	-17.91	68.2	45.21	41.47	15.79	52.18	100	0	P	H
CH 159		11590	50.35	-23.65	74	49.05	39.84	12.66	51.2	100	0	P	V
5795MHz		17385	50.39	-17.81	68.2	45.31	41.47	15.79	52.18	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5650	52.65	-15.55	68.2	44.52	32.49	8.27	32.63	221	119	P	H
		5697.4	58.95	-44.33	103.28	50.79	32.51	8.3	32.65	221	119	P	H
		5716	63	-46.68	109.68	54.84	32.52	8.3	32.66	221	119	P	H
		5723.8	63.66	-55.8	119.46	55.46	32.53	8.33	32.66	221	119	P	H
	*	5777	103.28	-	-	95.03	32.57	8.35	32.67	221	119	P	H
	*	5777	96.57	-	-	88.32	32.57	8.35	32.67	221	119	A	H
		5853	60.43	-54.93	115.36	52.09	32.61	8.43	32.7	221	119	P	H
		5856.4	60.24	-50.17	110.41	51.89	32.62	8.43	32.7	221	119	P	H
		5878.4	55.52	-47.15	102.67	47.17	32.63	8.43	32.71	221	119	P	H
		5931	49.01	-19.19	68.2	40.57	32.66	8.51	32.73	221	119	P	H
		5639.4	51.49	-16.71	68.2	43.41	32.48	8.23	32.63	100	96	P	V
		5697.6	56.62	-46.81	103.43	48.46	32.51	8.3	32.65	100	96	P	V
		5718.4	58.77	-51.58	110.35	50.6	32.53	8.3	32.66	100	96	P	V
		5724.6	63.05	-58.24	121.29	54.85	32.53	8.33	32.66	100	96	P	V
	*	5773	100.54	-	-	92.29	32.57	8.35	32.67	100	96	P	V
	*	5773	93.65	-	-	85.4	32.57	8.35	32.67	100	96	A	V
		5850.6	56.03	-64.8	120.83	47.69	32.61	8.43	32.7	100	96	P	V
		5858.2	54.97	-54.93	109.9	46.63	32.62	8.43	32.71	100	96	P	V
		5876.6	51.38	-52.63	104.01	43.03	32.63	8.43	32.71	100	96	P	V
		5934.2	46.36	-21.84	68.2	37.92	32.66	8.51	32.73	100	96	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11ac VHT80 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11550	50.32	-23.68	74	48.99	39.91	12.62	51.2	100	0	P	H
VHT80		17325	50.33	-17.87	68.2	45.45	41.29	15.75	52.16	100	0	P	H
CH 155		11550	50.42	-23.58	74	49.09	39.91	12.62	51.2	100	0	P	V
5775MHz		17325	50.4	-17.8	68.2	45.52	41.29	15.75	52.16	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

5GHz WIFI 802.11n VHT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11n VHT40 LF		30.27	27.34	-12.66	40	33.41	26.1	0.65	32.82	100	53	P	H
		211.98	23.23	-20.27	43.5	38.06	16.28	1.62	32.73	-	-	P	H
		247.62	20.37	-25.63	46	32.79	18.55	1.76	32.73	-	-	P	H
		500.2	23.81	-22.19	46	30.2	24.2	2.33	32.92	-	-	P	H
		701.8	27.11	-18.89	46	30.93	26.35	2.82	32.99	-	-	P	H
		953.1	32.02	-13.98	46	30.46	30	3.29	31.73	-	-	P	H
		30	36.64	-3.36	40	42.71	26.1	0.65	32.82	100	22	P	V
		208.74	24.52	-18.98	43.5	39.38	16.25	1.62	32.73	-	-	P	V
		273.54	19.59	-26.41	46	31.2	19.36	1.76	32.73	-	-	P	V
		479.2	24.03	-21.97	46	30.85	23.78	2.3	32.9	-	-	P	V
		677.3	27.46	-18.54	46	31.63	26.16	2.67	33	-	-	P	V
		957.3	31.02	-14.98	46	29.41	30	3.29	31.68	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



For Battery 2

Band 4 5725~5850MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 151 5755MHz		5639.6	48.55	-19.65	68.2	40.47	32.48	8.23	32.63	100	117	P	H
		5681.8	56.36	-35.41	91.77	48.21	32.5	8.3	32.65	100	117	P	H
		5719.6	61.87	-48.82	110.69	53.7	32.53	8.3	32.66	100	117	P	H
		5721.8	64.03	-50.87	114.9	55.83	32.53	8.33	32.66	100	117	P	H
	*	5757	106.44	-	-	98.22	32.56	8.33	32.67	100	117	P	H
	*	5757	99.77	-	-	91.55	32.56	8.33	32.67	100	117	A	H
		5854	48.28	-64.8	113.08	39.93	32.62	8.43	32.7	100	117	P	H
		5872.2	47.71	-58.27	105.98	39.36	32.63	8.43	32.71	100	117	P	H
		5910	53.74	-25.53	79.27	45.35	32.65	8.47	32.73	100	117	P	H
		5938.2	47.79	-20.41	68.2	39.36	32.66	8.51	32.74	100	117	P	H
		5641.6	46.78	-21.42	68.2	38.66	32.48	8.27	32.63	100	114	P	V
		5658.2	56.36	-17.93	74.29	48.24	32.49	8.27	32.64	100	114	P	V
		5714.8	58.59	-50.76	109.35	50.43	32.52	8.3	32.66	100	114	P	V
		5723	61.46	-56.18	117.64	53.26	32.53	8.33	32.66	100	114	P	V
	*	5757	103.49	-	-	95.27	32.56	8.33	32.67	100	114	P	V
	*	5757	96.42	-	-	88.2	32.56	8.33	32.67	100	114	A	V
		5851.6	47.68	-70.87	118.55	39.34	32.61	8.43	32.7	100	114	P	V
		5864.4	46.88	-61.29	108.17	38.54	32.62	8.43	32.71	100	114	P	V
		5908.8	48.64	-31.51	80.15	40.25	32.65	8.47	32.73	100	114	P	V
		5925	46.86	-21.34	68.2	38.42	32.66	8.51	32.73	100	114	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11ac VHT40 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11510	48.98	-25.02	74	47.6	40	12.58	51.2	100	0	P	H
VHT40		17268	50.35	-17.85	68.2	45.69	41.15	15.66	52.15	100	0	P	H
CH 151		11510	49.74	-24.26	74	48.36	40	12.58	51.2	100	0	P	V
5755MHz		17268	50.26	-17.94	68.2	45.6	41.15	15.66	52.15	100	0	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

5GHz WIFI 802.11ac VHT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT40 LF		30.81	23.61	-16.39	40	30.24	25.54	0.65	32.82	-	-	P	H
		58.89	16.26	-23.74	40	35.76	12.32	0.93	32.75	-	-	P	H
		172.02	22.02	-21.48	43.5	37.17	16.07	1.48	32.7	-	-	P	H
		552	40.09	-5.91	46	46.06	24.54	2.47	32.98	100	0	P	H
		566.7	35.08	-10.92	46	40.67	24.83	2.57	32.99	-	-	P	H
		941.9	32.19	-13.81	46	30.95	29.8	3.29	31.85	-	-	P	H
		30	23.73	-16.27	40	29.8	26.1	0.65	32.82	-	-	P	V
		57.81	28.67	-11.33	40	47.86	12.64	0.93	32.76	100	0	P	V
		73.74	19.23	-20.77	40	37.94	13.07	0.93	32.71	-	-	P	V
		506.5	24.1	-21.9	46	30.46	24.24	2.33	32.93	-	-	P	V
		832.7	30.22	-15.78	46	31.41	28.43	3.07	32.69	-	-	P	V
		951	31.78	-14.22	46	30.24	30	3.29	31.75	-	-	P	V
Remark	3. No other spurious found.												
	4. All results are PASS against limit line.												

Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

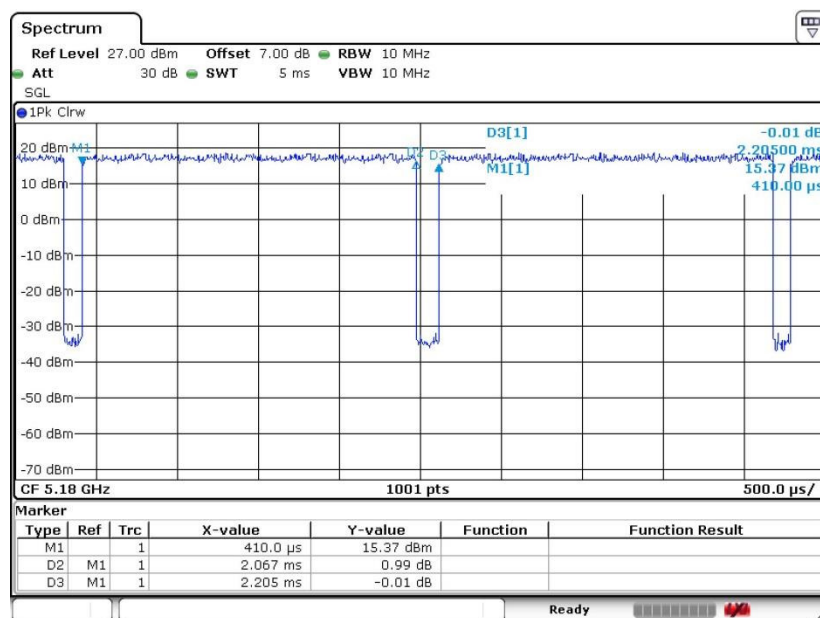
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	93.74	2.07	0.48	1kHz
802.11n HT20	94.44	1.92	0.52	1kHz
802.11n HT40	90.59	0.94	1.06	3kHz
802.11ac VHT20	94.70	1.93	0.52	1kHz
802.11ac VHT40	90.29	0.95	1.05	3kHz
802.11ac VHT80	86.08	0.60	1.67	3kHz

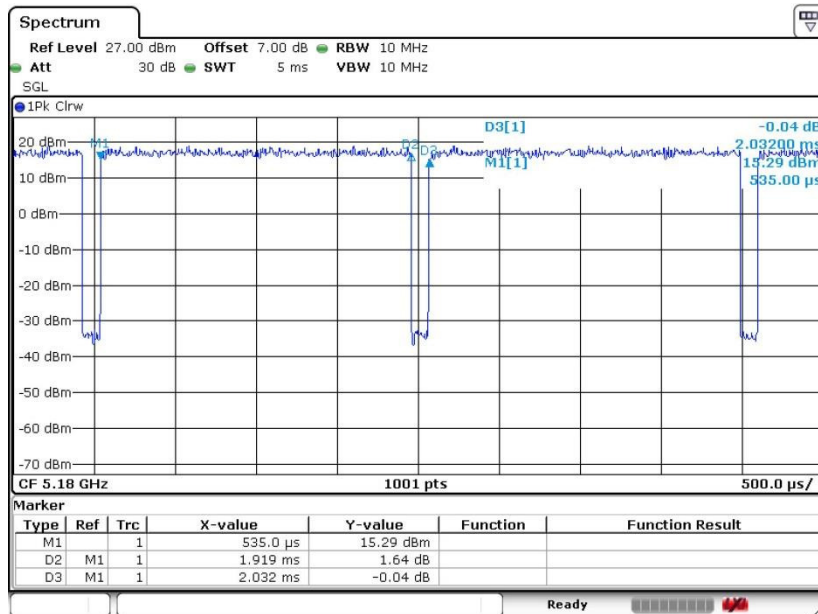
802.11a



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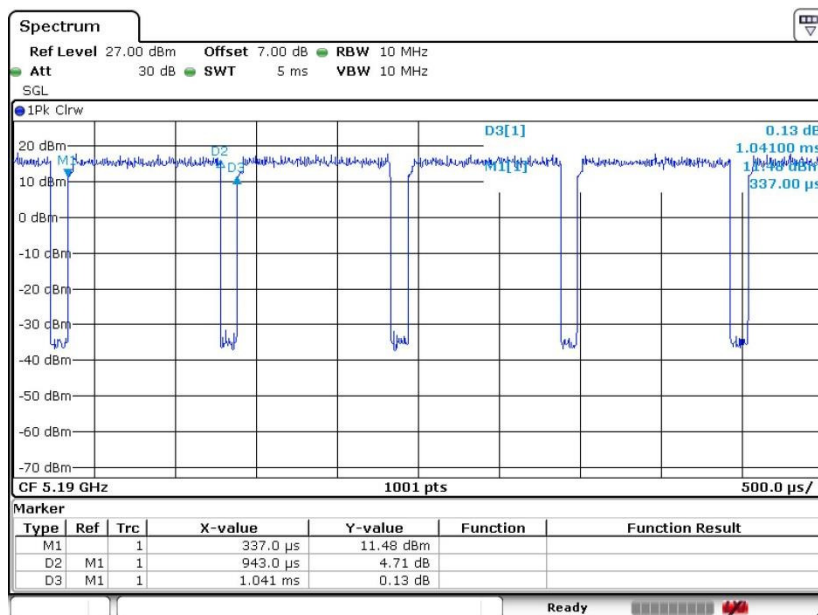


802.11n HT20



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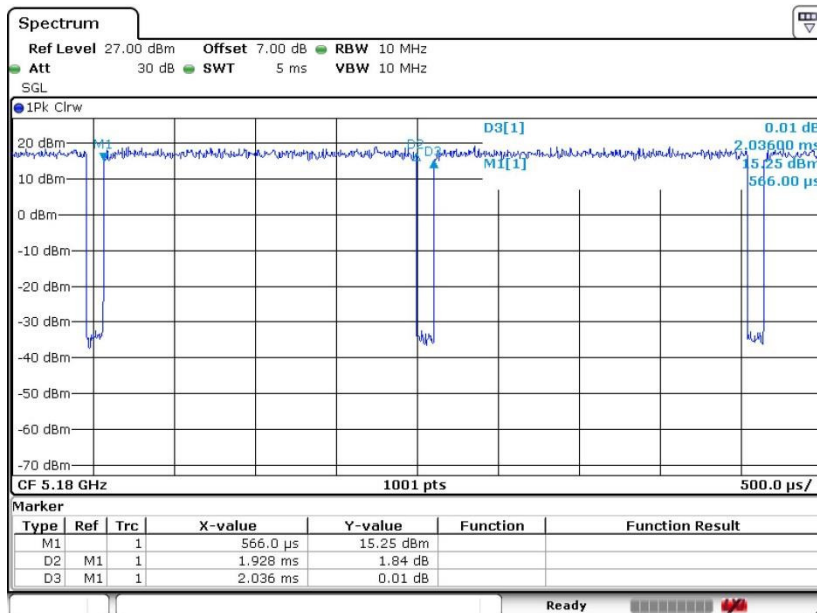
802.11n HT40



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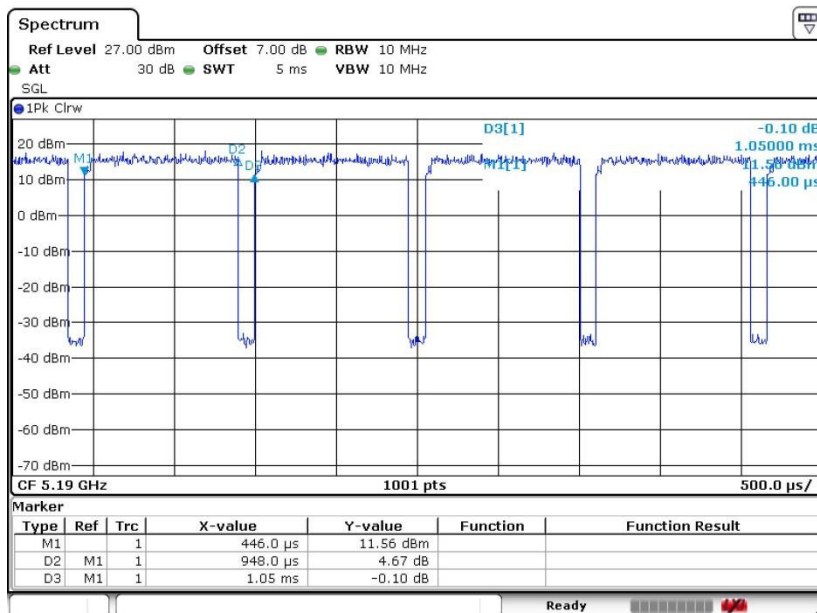


802.11ac VHT20



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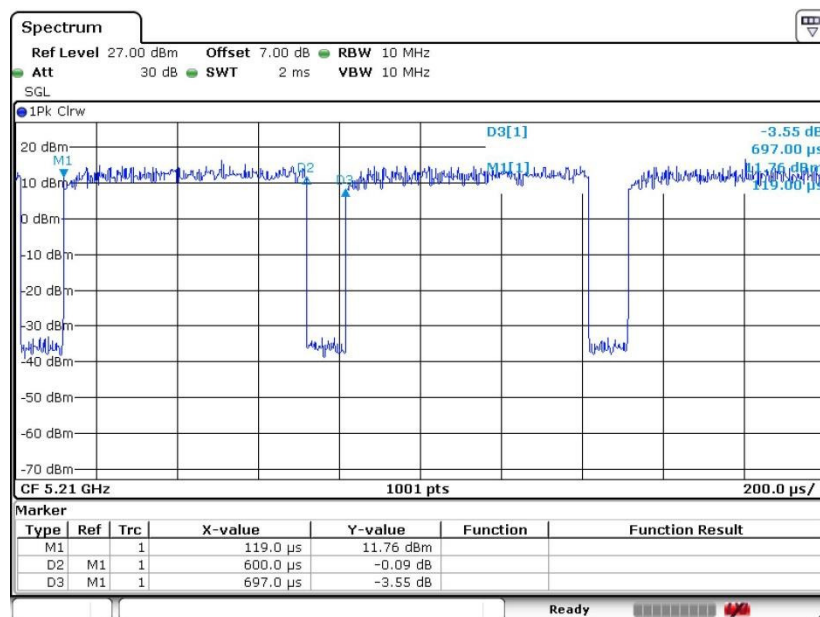
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802.11ac VHT80



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