



FCC RF Test Report

APPLICANT : Lemobile Information Technology (Beijing) Co., Ltd.
EQUIPMENT : Mobile phone
BRAND NAME : LeEco
MODEL NAME : LEX727
FCC ID : 2AFWMLEX727
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Aug. 30, 2016 and testing was completed on Sep. 27, 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.

Prepared by: James Huang / Manager

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Product Feature of Equipment Under Test	5
1.4 Product Specification of Equipment Under Test	6
1.5 Modification of EUT	7
1.6 Testing Location	7
1.7 Applicable Standards	8
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	9
2.1 Carrier Frequency and Channel	9
2.2 Test Mode	10
2.3 Connection Diagram of Test System	11
2.4 Support Unit used in test configuration and system	12
2.5 EUT Operation Test Setup	12
2.6 Measurement Results Explanation Example	12
3 TEST RESULT	13
3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement	13
3.2 Maximum Conducted Output Power Measurement	16
3.3 Power Spectral Density Measurement	17
3.4 Unwanted Emissions Measurement	20
3.5 AC Conducted Emission Measurement	25
3.6 Frequency Stability Measurement	29
3.7 Automatically Discontinue Transmission	30
3.8 Antenna Requirements	31
4 LIST OF MEASURING EQUIPMENT	32
5 UNCERTAINTY OF EVALUATION	33
APPENDIX A. CONDUCTED TEST RESULTS	
APPENDIX B. RADIATED SPURIOUS EMISSION	
APPENDIX C. DUTY CYCLE PLOTS	
APPENDIX D. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR683002F	Rev. 01	Initial issue of report	Oct. 10, 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) &15.209(a)	Pass	Under limit 3.60 dB at 30.970 MHz
3.5	15.207	RSS-Gen 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 7.09 dB at 0.167 MHz
3.5.5	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

Lemobile Information Technology (Beijing) Co., Ltd.

Wenhuaying North (No.1, Linkong 2nd St), Gaoliying, Shunyi District, Beijing

1.2 Manufacturer

Lemobile Information Technology (Beijing) Co., Ltd.

Wenhuaying North (No.1, Linkong 2nd St), Gaoliying, Shunyi District, Beijing

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile phone
Brand Name	LeEco
Model Name	LEX727
FCC ID	2AFWMLEX727
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+(16QAM uplink is not supported)/DC-HSDPA/LTE/NFC WLAN2.4GHz 802.11b/g/n HT20 WLAN5GHz 802.11a/n HT20/HT40 WLAN5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE Bluetooth v4.2 LE
IMEI Code	Conducted: 862524030000208 Conduction: 862524030000471 Radiation: 862524030000471
HW Version	HW_1.0.0
SW Version	zl1_cert_fcc
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		<5745 MHz ~ 5825 MHz> <Ant. 1> 802.11a : 14.28 dBm / 0.0268 W 802.11n HT20 : 14.15 dBm / 0.0260 W 802.11n HT40 : 14.13 dBm / 0.0259 W 802.11ac VHT20: 14.14 dBm / 0.0259 W 802.11ac VHT40: 14.17 dBm / 0.0261 W 802.11ac VHT80: 14.26 dBm / 0.0267 W MIMO <Ant. 1 + 2> 802.11n HT20 : 15.06 dBm / 0.0321 W 802.11n HT40 : 14.91 dBm / 0.0310 W 802.11ac VHT20: 14.42 dBm / 0.0277 W 802.11ac VHT40: 15.08 dBm / 0.0322 W 802.11ac VHT80: 14.64 dBm / 0.0291 W										
99% Occupied Bandwidth		802.11a : 16.78 MHz 802.11n HT20 : 17.78 MHz 802.11ac VHT40 : 35.96 MHz 802.11ac VHT80 : 74.93 MHz										
Type of Modulation		802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)										
Antenna Type / Gain		Ant. 1 : IFA Antenna with gain -2.00 dBi Ant. 2 : IFA Antenna with gain -4.00 dBi										
Antenna Function Description		<table><tr><td></td><td>Ant. 1</td><td>Ant. 2</td></tr><tr><td>802.11 a/n/ac</td><td>V</td><td>-</td></tr><tr><td>802.11 n/ac MIMO</td><td>V</td><td>V</td></tr></table>			Ant. 1	Ant. 2	802.11 a/n/ac	V	-	802.11 n/ac MIMO	V	V
	Ant. 1	Ant. 2										
802.11 a/n/ac	V	-										
802.11 n/ac MIMO	V	V										

Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

1.5 Modification of EUT

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

1.6 Testing Location

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

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.	
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755- 3320-2398	
Test Site No.	Sporton Site No.	FCC/IC Registration No.
	03CH03-SZ	565805/4086F

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



1.7 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 v01r03
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ 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)
5745-5825 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155 [#]	5775	165	5825

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "[#]" were 802.11ac VHT80.

2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

Single Antenna

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

MIMO Antenna

Modulation	Data Rate
802.11n HT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

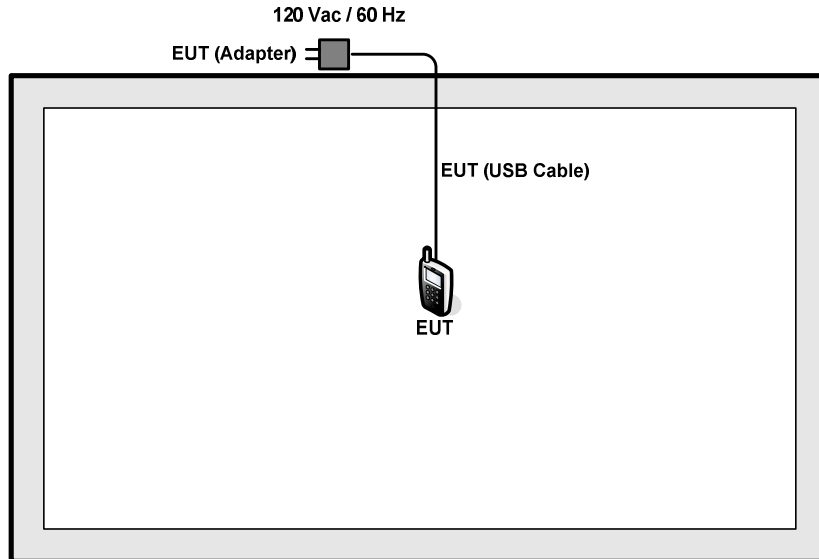
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter)
------------------------------	--

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

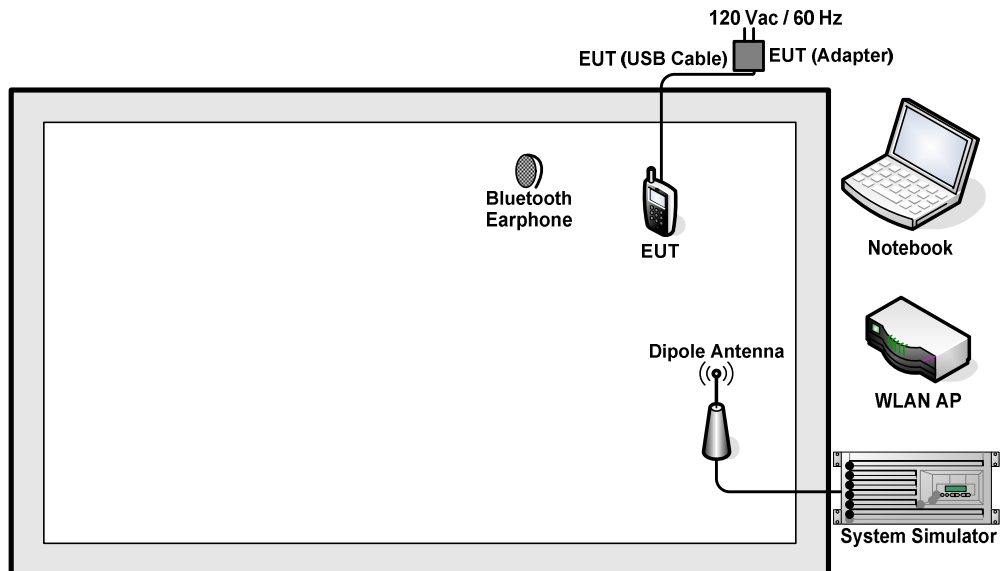
Ch. #		Band IV : 5725-5850 MHz	
		802.11ac VHT40	802.11ac VHT80
L	Low	151	-
M	Middle	-	155
H	High	159	-

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	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	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A

2.5 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.

2.6 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 7.5dB.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 7.5 \text{ (dB)} \end{aligned}$$

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.

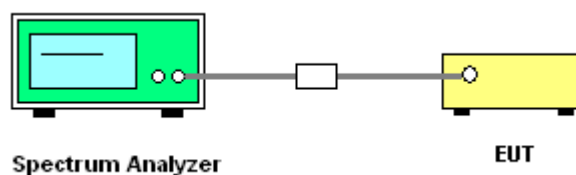
3.1.2 Measuring Instruments

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 v01r03.
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.

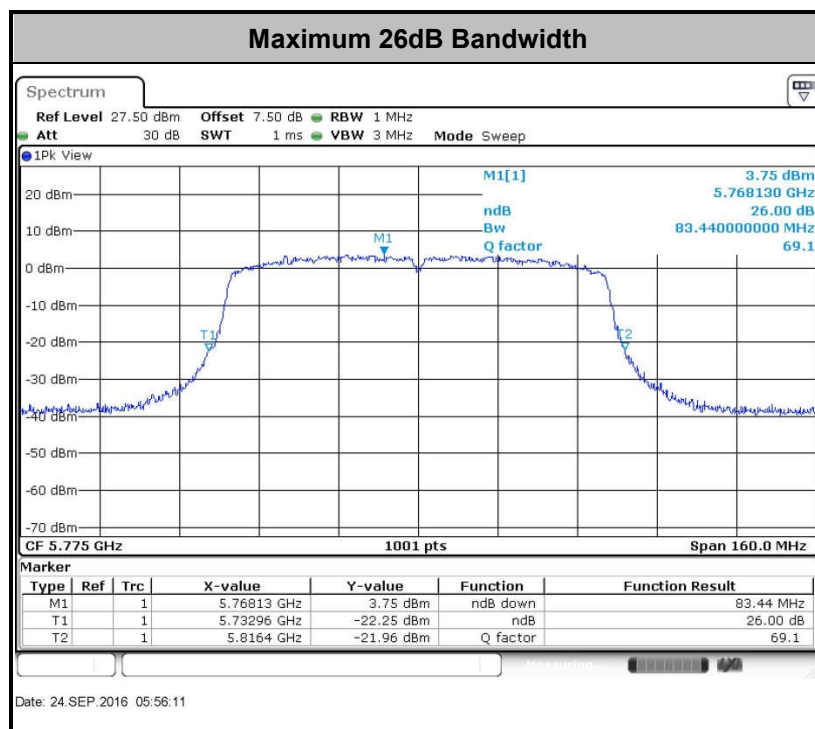
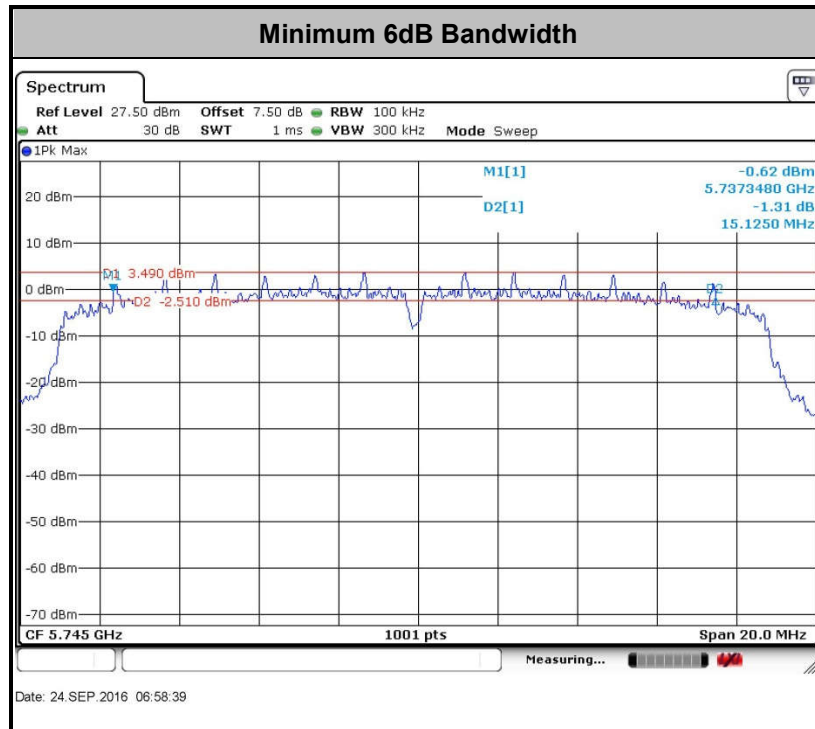
3.1.4 Test Setup

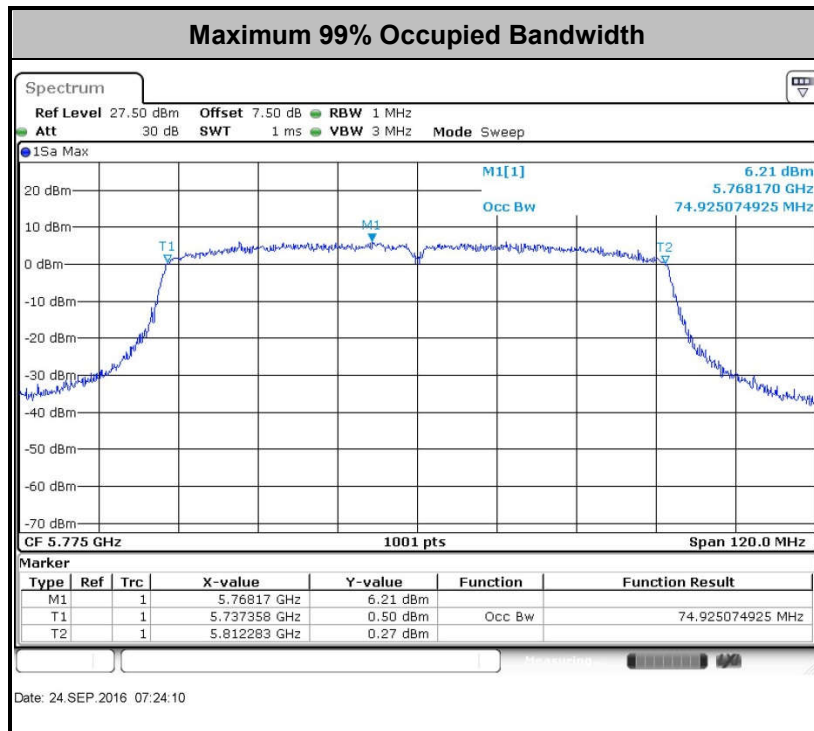




3.1.5 Test Result of 6dB Bandwidth

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.

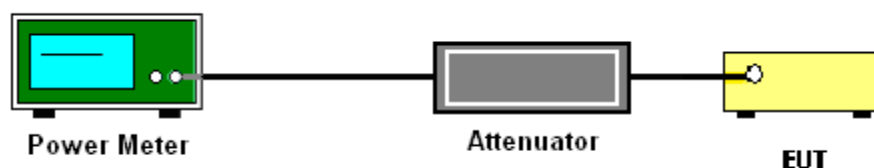
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

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 v01r03.
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).

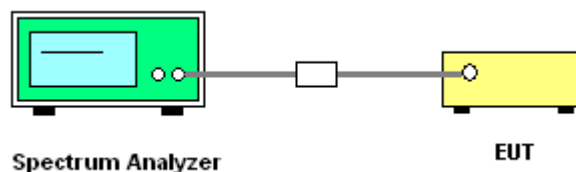
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW \geq 1 MHz.
- Number of points in sweep \geq 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(500\text{kHz}/\text{RBW})$ 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.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (c): Measure and add $10 \log(N_{\text{ANT}})$ dB.

With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(N_{\text{ANT}})$ dB is added to each spectrum value before comparing to the emission limit. The addition of $10 \log(N_{\text{ANT}})$ dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{\text{ANT}}^{\text{th}}$ of the PSD limit.

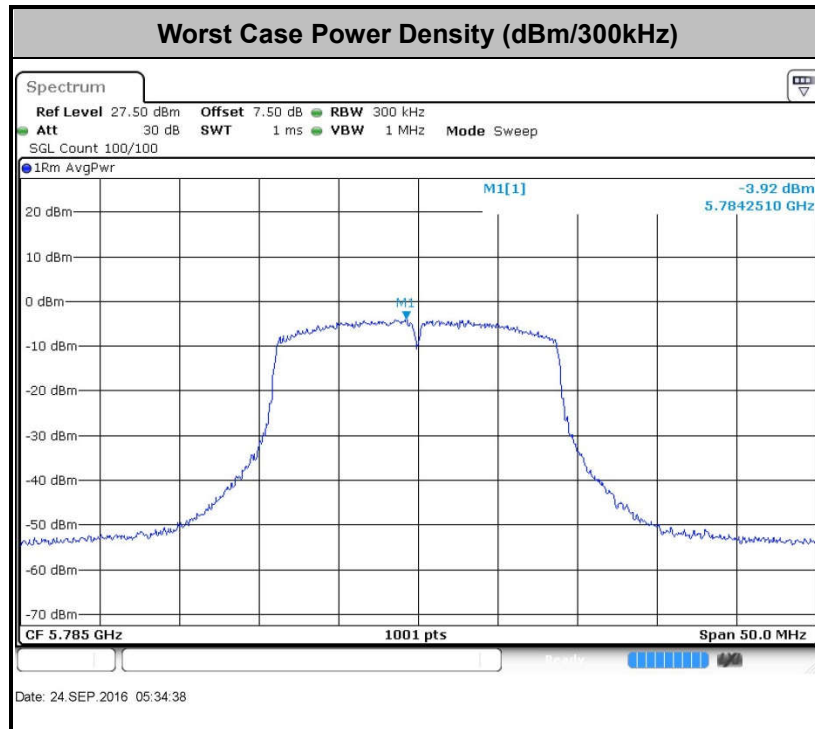
3.3.4 Test Setup





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 Part15.205.

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 Part15.205 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.

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

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

- (3) KDB 789033 D02 General UNII Test Procedures New Rules v01r03 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.

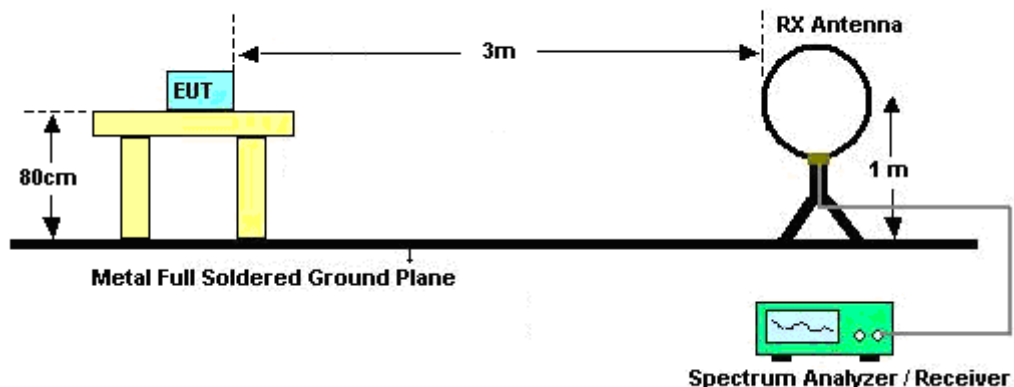
3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. 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.

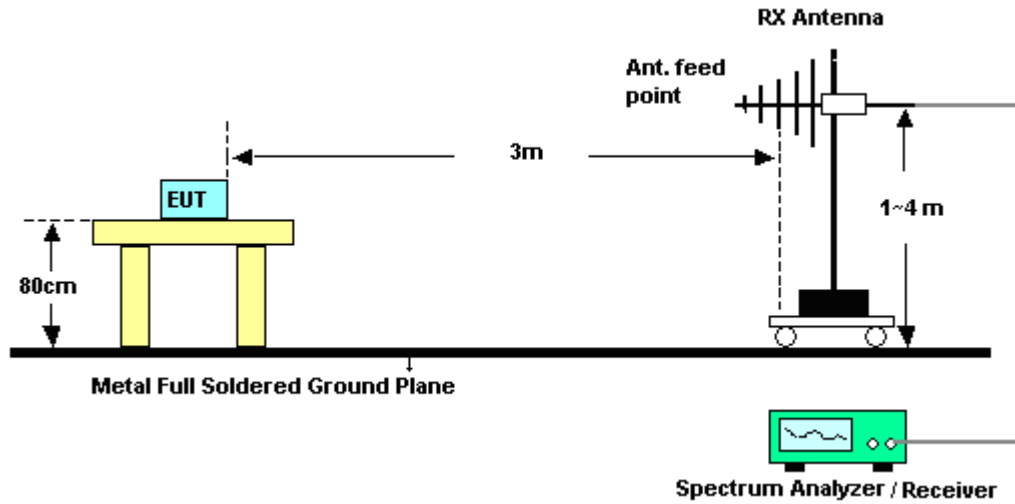
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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

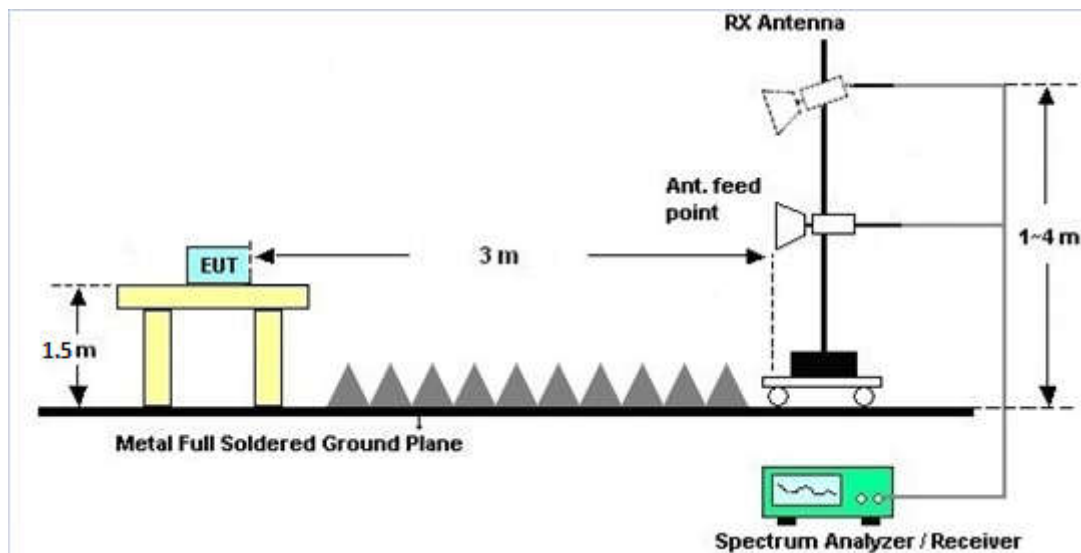
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.4.5 Test Results of Radiated Spurious 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 Spurious at Band Edges

Please refer to Appendix B.

3.4.7 Duty Cycle

Please refer to Appendix C.

3.4.8 Test Result of Radiated Spurious Emissions (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.

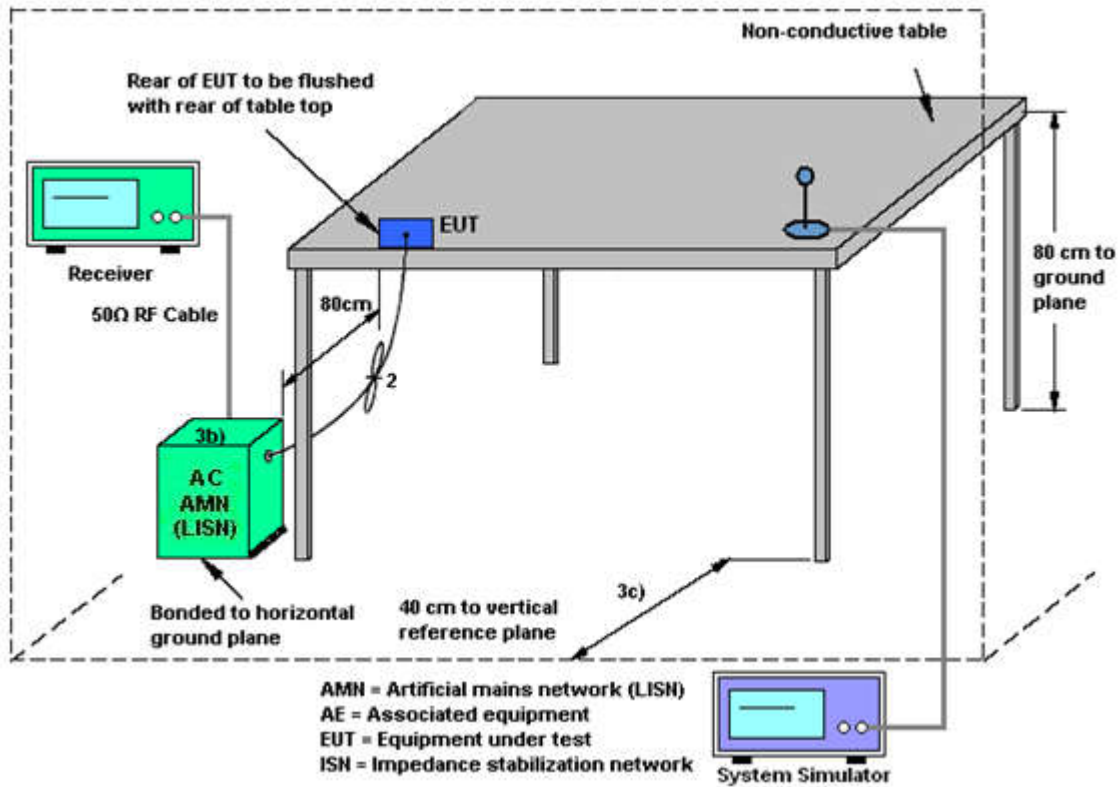
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

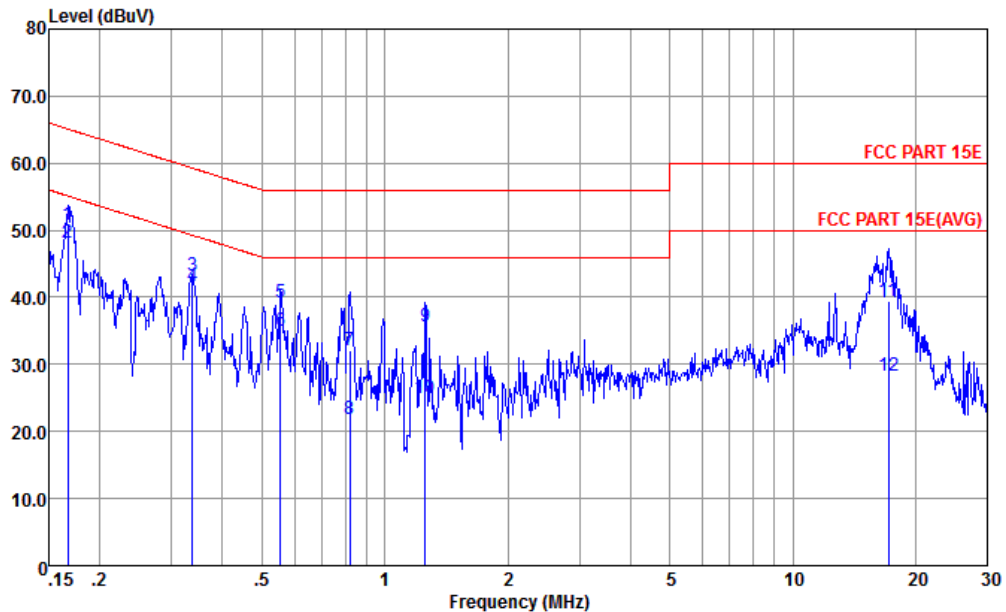
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 1	Temperature :	22~24℃
Test Engineer :	Morris Li	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter)		

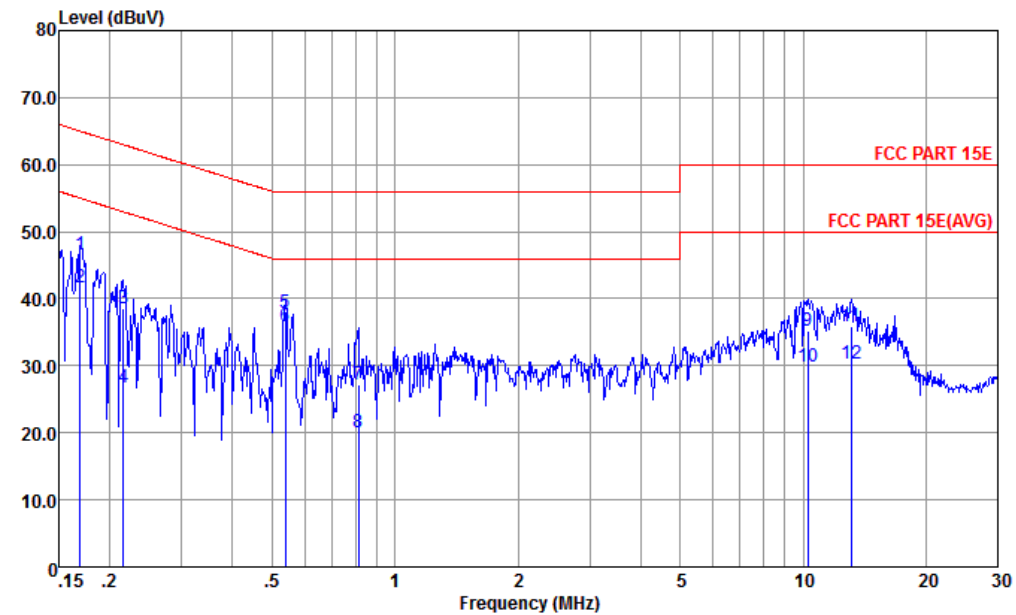


Site : CO01-KS
Condition : FCC PART 15E LISN-L-20151024 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.167	50.73	-14.39	65.12	40.20	0.41	10.12	QP
2 *	0.167	48.03	-7.09	55.12	37.50	0.41	10.12	Average
3	0.337	43.18	-16.09	59.27	32.79	0.23	10.16	QP
4	0.337	41.58	-7.69	49.27	31.19	0.23	10.16	Average
5	0.555	39.19	-16.81	56.00	28.80	0.23	10.16	QP
6	0.555	34.89	-11.11	46.00	24.50	0.23	10.16	Average
7	0.822	31.99	-24.01	56.00	21.61	0.24	10.14	QP
8	0.822	21.89	-24.11	46.00	11.51	0.24	10.14	Average
9	1.255	35.56	-20.44	56.00	25.19	0.23	10.14	QP
10	1.255	25.06	-20.94	46.00	14.69	0.23	10.14	Average
11	17.199	39.42	-20.58	60.00	28.71	0.26	10.45	QP
12	17.199	28.32	-21.68	50.00	17.61	0.26	10.45	Average



Test Mode :	Mode 1	Temperature :	22~24℃
Test Engineer :	Morris Li	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter)		



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

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.169	46.62	-18.37	64.99	36.20	0.30	10.12	QP
2	0.169	41.72	-13.27	54.99	31.30	0.30	10.12	Average
3	0.216	38.64	-24.32	62.96	28.20	0.31	10.13	QP
4	0.216	26.74	-26.22	52.96	16.30	0.31	10.13	Average
5	0.538	37.99	-18.01	56.00	27.51	0.32	10.16	QP
6 *	0.538	35.89	-10.11	46.00	25.41	0.32	10.16	Average
7	0.813	27.20	-28.80	56.00	16.70	0.35	10.15	QP
8	0.813	20.10	-25.90	46.00	9.60	0.35	10.15	Average
9	10.288	35.25	-24.75	60.00	24.69	0.28	10.28	QP
10	10.288	29.85	-20.15	50.00	19.29	0.28	10.28	Average
11	13.127	35.82	-24.18	60.00	25.21	0.27	10.34	QP
12	13.127	30.22	-19.78	50.00	19.61	0.27	10.34	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.

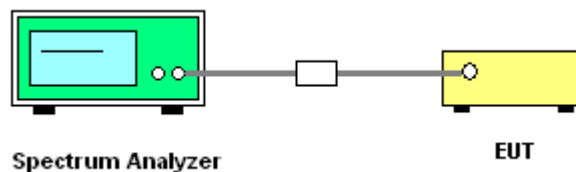
3.6.2 Measuring Instruments

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

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant 1 (dBi)	Ant 2 (dBi)				
Band IV	-2.00	-4.00	-2.00	0.07	0.00	0.00

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 6dBi, (min = 0)



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	Aug. 09, 2016	Sep. 24, 2016	Aug. 08, 2017	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 20, 2016	Sep. 24, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Sep. 24, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 24, 2015	Sep. 24, 2016	Oct. 23, 2016	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 29, 2016	Sep. 13, 2016	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 24, 2015	Sep. 13, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 24, 2015	Sep. 13, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 24, 2015	Sep. 13, 2016	Oct. 23, 2016	Conduction (CO01-KS)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	May 07, 2016	Sep. 07, 2016~Sep. 27, 2016	May 06, 2017	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz	May 07, 2016	Sep. 07, 2016~Sep. 27, 2016	May 06, 2017	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 07, 2016	Sep. 07, 2016~Sep. 27, 2016	May 06, 2017	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	May 21, 2016	Sep. 07, 2016~Sep. 27, 2016	May 20, 2017	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	May 07, 2016	Sep. 07, 2016~Sep. 27, 2016	May 06, 2017	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Aug. 10, 2016	Sep. 07, 2016~Sep. 27, 2016	Aug. 09, 2017	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz~3000MHz	Oct. 20, 2015	Sep. 07, 2016~Sep. 27, 2016	Oct. 19, 2016	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 20, 2015	Sep. 07, 2016~Sep. 27, 2016	Oct. 19, 2016	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Jan. 12, 2016	Sep. 07, 2016~Sep. 27, 2016	Jan. 11, 2017	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 16, 2016	Sep. 07, 2016~Sep. 27, 2016	Jul. 15, 2017	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Sep. 07, 2016~Sep. 27, 2016	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Sep. 07, 2016~Sep. 27, 2016	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Sep. 07, 2016~Sep. 27, 2016	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3 dB
--	--------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
--	--------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
--	--------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
--	--------



Appendix A. Conducted Test Results

Report Number : FR683002F

Test Engineer:	Ivan Zhang	Temperature:	24~25	°C
Test Date:	2016/9/24	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)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	16.78	-	20.58	-	15.35	-	0.5	0.5	Pass
11a	6Mbps	1	157	5785	16.73	-	20.53	-	15.31	-	0.5	0.5	Pass
11a	6Mbps	1	165	5825	16.73	-	20.33	-	15.33	-	0.5	0.5	Pass
HT20	MCS0	1	149	5745	17.68	-	21.63	-	15.13	-	0.5	0.5	Pass
HT20	MCS0	1	157	5785	17.68	-	21.43	-	15.15	-	0.5	0.5	Pass
HT20	MCS0	1	165	5825	17.68	-	21.53	-	15.13	-	0.5	0.5	Pass
VHT40	MCS0	1	151	5755	35.96	-	41.81	-	35.09	-	0.5	0.5	Pass
VHT40	MCS0	1	159	5795	35.96	-	41.72	-	35.09	-	0.5	0.5	Pass
VHT80	MCS0	1	155	5775	74.93	-	82.96	-	75.13	-	0.5	0.5	Pass
HT20	MCS0	2	149	5745	17.68	17.78	21.48	21.38	15.13	15.13	0.5		Pass
HT20	MCS0	2	157	5785	17.68	17.73	21.73	21.38	15.13	15.13	0.5		Pass
HT20	MCS0	2	165	5825	17.73	17.78	21.43	21.13	15.13	15.13	0.5		Pass
VHT40	MCS0	2	151	5755	35.96	35.96	41.63	41.63	35.09	35.05	0.5		Pass
VHT40	MCS0	2	159	5795	35.96	35.86	41.81	41.27	35.13	35.05	0.5		Pass
VHT80	MCS0	2	155	5775	74.93	74.69	83.44	81.84	75.05	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
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	0.21	-	14.28	-		30.00	30.00	-2.00	-4.00	Pass
11a	6Mbps	1	157	5785	0.21	-	14.08	-		30.00	30.00	-2.00	-4.00	Pass
11a	6Mbps	1	165	5825	0.21	-	13.71	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	1	149	5745	0.21	-	14.15	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	1	157	5785	0.21	-	13.91	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	1	165	5825	0.21	-	13.64	-		30.00	30.00	-2.00	-4.00	Pass
VHT40	MCS0	1	151	5755	0.41	-	14.17	-		30.00	30.00	-2.00	-4.00	Pass
VHT40	MCS0	1	159	5795	0.41	-	13.89	-		30.00	30.00	-2.00	-4.00	Pass
VHT80	MCS0	1	155	5775	0.64	-	14.26	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	2	149	5745	0.23	0.22	11.94	11.93	14.95	30.00		-2.00		Pass
HT20	MCS0	2	157	5785	0.23	0.22	12.00	12.09	15.06	30.00		-2.00		Pass
HT20	MCS0	2	165	5825	0.23	0.22	11.48	11.55	14.53	30.00		-2.00		Pass
VHT40	MCS0	2	151	5755	0.47	0.47	12.03	12.10	15.08	30.00		-2.00		Pass
VHT40	MCS0	2	159	5795	0.47	0.47	11.85	12.03	14.95	30.00		-2.00		Pass
VHT80	MCS0	2	155	5775	0.66	0.64	12.08	11.12	14.64	30.00		-2.00		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV																
Mod.	Data Rate	NTX	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
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	0.21	-	2.22	2.22	0.84	-		30.00	30.00	-2.00	-4.00	Pass
11a	6Mbps	1	157	5785	0.21	-	2.22	2.22	0.73	-		30.00	30.00	-2.00	-4.00	Pass
11a	6Mbps	1	165	5825	0.21	-	2.22	2.22	0.14	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	1	149	5745	0.21	-	2.22	2.22	0.36	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	1	157	5785	0.21	-	2.22	2.22	0.41	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	1	165	5825	0.21	-	2.22	2.22	0.01	-		30.00	30.00	-2.00	-4.00	Pass
VHT40	MCS0	1	151	5755	0.41	-	2.22	2.22	-2.25	-		30.00	30.00	-2.00	-4.00	Pass
VHT40	MCS0	1	159	5795	0.41	-	2.22	2.22	-2.67	-		30.00	30.00	-2.00	-4.00	Pass
VHT80	MCS0	1	155	5775	0.64	-	2.22	2.22	-4.73	-		30.00	30.00	-2.00	-4.00	Pass
HT20	MCS0	2	149	5745	0.23	0.22	2.22				1.26	30.00		0.07		Pass
HT20	MCS0	2	157	5785	0.23	0.22	2.22				1.54	30.00		0.07		Pass
HT20	MCS0	2	165	5825	0.23	0.22	2.22				0.91	30.00		0.07		Pass
VHT40	MCS0	2	151	5755	0.47	0.47	2.22				-1.66	30.00		0.07		Pass
VHT40	MCS0	2	159	5795	0.47	0.47	2.22				-1.91	30.00		0.07		Pass
VHT80	MCS0	2	155	5775	0.66	0.64	2.22				-4.49	30.00		0.07		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	6Mbps	1	149	5745	5744.875	-0.125	-21.76	50	3.85	
11a	6Mbps	1	149	5745	5744.925	-0.075	-13.05	-30	3.85	
11a	6Mbps	1	149	5745	5744.875	-0.125	-21.76	20	4.35	
11a	6Mbps	1	149	5745	5744.875	-0.125	-21.76	20	3.7	
11a	6Mbps	1	149	5745	5744.875	-0.125	-21.76	20	3.85	



Appendix B. Radiated Spurious Emission

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 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)
802.11a CH 149 5745MHz		5644.8	47.76	-20.54	68.3	38.31	35.29	7.65	33.49	151	115	P	H
		5668.2	49.79	-32.02	81.81	40.28	35.34	7.67	33.5	151	115	P	H
		5715.8	51.38	-58.35	109.73	41.83	35.39	7.68	33.52	151	115	P	H
		5724.2	53.98	-66.5	120.48	44.41	35.41	7.68	33.52	151	115	P	H
		5745	103.5	-	-	93.85	35.44	7.74	33.53	151	115	P	H
		5745	95.68	-	-	86.03	35.44	7.74	33.53	151	115	A	H
		5636.2	48.26	-20.04	68.3	38.81	35.29	7.65	33.49	150	85	P	V
		5699.8	49.37	-55.78	105.15	39.83	35.37	7.68	33.51	150	85	P	V
		5716.2	52.14	-57.7	109.84	42.59	35.39	7.68	33.52	150	85	P	V
		5721.6	52.12	-62.43	114.55	42.55	35.41	7.68	33.52	150	85	P	V
		5745	101.42	-	-	91.77	35.44	7.74	33.53	150	85	P	V
		5745	94.3	-	-	84.65	35.44	7.74	33.53	150	85	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		5636.2	48.21	-20.09	68.3	38.76	35.29	7.65	33.49	152	117	P	H
		5698.4	48.12	-56	104.12	38.58	35.37	7.68	33.51	152	117	P	H
		5706.2	48.34	-58.7	107.04	38.79	35.39	7.68	33.52	152	117	P	H
		5723.4	47.63	-71.02	118.65	38.06	35.41	7.68	33.52	152	117	P	H
		5785	104.01	-	-	94.26	35.49	7.8	33.54	152	117	P	H
		5785	95.95	-	-	86.2	35.49	7.8	33.54	152	117	A	H
		5850.4	47.68	-73.71	121.39	37.79	35.58	7.87	33.56	152	117	P	H
		5855.8	48.98	-61.7	110.68	39.06	35.61	7.87	33.56	152	117	P	H
		5887.6	50.1	-45.85	95.95	40.1	35.66	7.91	33.57	152	117	P	H
		5944	47.84	-20.46	68.3	37.74	35.73	7.95	33.58	152	117	P	H
		5606.6	47.92	-20.38	68.3	38.52	35.24	7.65	33.49	158	86	P	V
		5699.6	48.29	-56.72	105.01	38.75	35.37	7.68	33.51	158	86	P	V
		5705.6	48.47	-58.4	106.87	38.92	35.39	7.68	33.52	158	86	P	V
		5724.4	48.27	-72.66	120.93	38.7	35.41	7.68	33.52	158	86	P	V
		5785	102.39	-	-	92.64	35.49	7.8	33.54	158	86	P	V
		5785	94.01	-	-	84.26	35.49	7.8	33.54	158	86	A	V
		5851	48.75	-71.27	120.02	38.86	35.58	7.87	33.56	158	86	P	V
		5874.4	49.04	-56.43	105.47	39.1	35.63	7.87	33.56	158	86	P	V
		5876.2	49.89	-54.52	104.41	39.95	35.63	7.87	33.56	158	86	P	V
		5946.6	48.67	-19.63	68.3	38.57	35.73	7.95	33.58	158	86	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		5825	105.13	-	-	95.28	35.56	7.84	33.55	156	116	P	H
		5825	96.34	-	-	86.49	35.56	7.84	33.55	156	116	A	H
		5850.8	53.04	-67.44	120.48	43.15	35.58	7.87	33.56	156	116	P	H
		5862.4	51.21	-57.62	108.83	41.29	35.61	7.87	33.56	156	116	P	H
		5914.4	50.15	-25.97	76.12	40.14	35.68	7.91	33.58	156	116	P	H
		5947.2	48.55	-19.75	68.3	38.45	35.73	7.95	33.58	156	116	P	H
		5825	101.68	-	-	91.83	35.56	7.84	33.55	153	96	P	V
		5825	93.88	-	-	84.03	35.56	7.84	33.55	153	96	A	V
		5851.6	51.49	-67.16	118.65	41.6	35.58	7.87	33.56	153	96	P	V
		5856	51.85	-58.77	110.62	41.93	35.61	7.87	33.56	153	96	P	V
		5886.2	49.41	-47.57	96.98	39.44	35.63	7.91	33.57	153	96	P	V
		5938	48.41	-19.89	68.3	38.34	35.7	7.95	33.58	153	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 802.11a (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	48.87	-25.13	74	58.33	39.19	11.1	59.75	145	265	P	H
		17235	56.41	-11.89	68.3	58.1	41.67	14.89	58.25	174	321	P	H
		11490	48.25	-25.75	74	57.71	39.19	11.1	59.75	145	265	P	V
		17235	54.95	-13.35	68.3	56.64	41.67	14.89	58.25	174	321	P	V
802.11a CH 157 5785MHz		11570	48.79	-25.21	74	58.21	39.24	11.17	59.83	105	198	P	H
		17355	56.14	-12.16	68.3	57.3	41.86	14.78	57.8	189	185	P	H
		11570	48.8	-25.2	74	58.22	39.24	11.17	59.83	105	198	P	V
		17355	56.31	-11.99	68.3	57.47	41.86	14.78	57.8	189	185	P	V
802.11a CH 165 5825MHz		11650	49.46	-24.54	74	58.85	39.28	11.23	59.9	146	347	P	H
		17475	56.54	-11.76	68.3	57.17	42.05	14.67	57.35	100	360	P	H
		11650	49.89	-24.11	74	59.28	39.28	11.23	59.9	146	347	P	V
		17475	57.23	-11.07	68.3	57.86	42.05	14.67	57.35	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11n HT20 (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)
802.11n HT20 CH 149 5745MHz		5633	49.17	-19.13	68.3	39.72	35.29	7.65	33.49	163	117	P	H
		5696.4	49.34	-53.31	102.65	39.8	35.37	7.68	33.51	163	117	P	H
		5705.6	51.82	-55.05	106.87	42.27	35.39	7.68	33.52	163	117	P	H
		5721	52.94	-60.24	113.18	43.37	35.41	7.68	33.52	163	117	P	H
		5745	103.18	-	-	93.53	35.44	7.74	33.53	163	117	P	H
		5745	94.81	-	-	85.16	35.44	7.74	33.53	163	117	A	H
		5641.4	47.31	-20.99	68.3	37.86	35.29	7.65	33.49	153	259	P	V
		5688.6	48.17	-48.72	96.89	38.63	35.37	7.68	33.51	153	259	P	V
		5716	49.37	-60.41	109.78	39.82	35.39	7.68	33.52	153	259	P	V
		5722.8	49.77	-67.51	117.28	40.2	35.41	7.68	33.52	153	259	P	V
		5745	99.95	-	-	90.3	35.44	7.74	33.53	153	259	P	V
		5745	89.85	-	-	80.2	35.44	7.74	33.53	153	259	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)
802.11n HT20 CH 157 5785MHz		5620.8	47.72	-20.58	68.3	38.29	35.27	7.65	33.49	151	127	P	H
		5691.6	48.15	-50.96	99.11	38.61	35.37	7.68	33.51	151	127	P	H
		5716.8	49.6	-60.41	110.01	40.05	35.39	7.68	33.52	151	127	P	H
		5724.2	49.15	-71.33	120.48	39.58	35.41	7.68	33.52	151	127	P	H
		5785	103.26	-	-	93.51	35.49	7.8	33.54	151	127	P	H
		5785	94.78	-	-	85.03	35.49	7.8	33.54	151	127	A	H
		5850.8	48.38	-72.1	120.48	38.49	35.58	7.87	33.56	151	127	P	H
		5864.6	49.05	-59.16	108.21	39.13	35.61	7.87	33.56	151	127	P	H
		5891.4	48.94	-44.19	93.13	38.94	35.66	7.91	33.57	151	127	P	H
		5926.8	48.75	-19.55	68.3	38.68	35.7	7.95	33.58	151	127	P	H
		5604.6	49.39	-18.91	68.3	40	35.24	7.64	33.49	150	273	P	V
		5691.2	49.47	-49.34	98.81	39.93	35.37	7.68	33.51	150	273	P	V
		5708.6	47.96	-59.75	107.71	38.41	35.39	7.68	33.52	150	273	P	V
		5720.4	47.32	-64.49	111.81	37.75	35.41	7.68	33.52	150	273	P	V
		5785	100.09	-	-	90.34	35.49	7.8	33.54	150	273	P	V
		5785	90.73	-	-	80.98	35.49	7.8	33.54	150	273	A	V
		5853.2	47.6	-67.4	115	37.71	35.58	7.87	33.56	150	273	P	V
		5856.8	49.07	-61.33	110.4	39.15	35.61	7.87	33.56	150	273	P	V
		5896.4	48.61	-40.82	89.43	38.61	35.66	7.91	33.57	150	273	P	V
		5935.2	48.47	-19.83	68.3	38.4	35.7	7.95	33.58	150	273	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)
802.11n HT20 CH 165 5825MHz		5825	103.49	-	-	93.64	35.56	7.84	33.55	150	123	P	H
		5825	94	-	-	84.15	35.56	7.84	33.55	150	123	A	H
		5850.4	51.66	-69.73	121.39	41.77	35.58	7.87	33.56	150	123	P	H
		5855.8	51.07	-59.61	110.68	41.15	35.61	7.87	33.56	150	123	P	H
		5875.2	49.7	-55.45	105.15	39.76	35.63	7.87	33.56	150	123	P	H
		5928	48.05	-20.25	68.3	37.98	35.7	7.95	33.58	150	123	P	H
		5825	100.95	-	-	91.1	35.56	7.84	33.55	150	274	P	V
		5825	90.99	-	-	81.14	35.56	7.84	33.55	150	274	A	V
		5854.8	49.82	-61.54	111.36	39.9	35.61	7.87	33.56	150	274	P	V
		5859.2	50.17	-59.55	109.72	40.25	35.61	7.87	33.56	150	274	P	V
		5875.8	48.84	-55.87	104.71	38.9	35.63	7.87	33.56	150	274	P	V
		5940.8	49.06	-19.24	68.3	38.96	35.73	7.95	33.58	150	274	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11n HT20 (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)
802.11n HT20 CH 149 5745MHz		11490	48.69	-25.31	74	58.15	39.19	11.1	59.75	145	265	P	H
		17235	55.16	-13.14	68.3	56.85	41.67	14.89	58.25	174	321	P	H
		11490	49.37	-24.63	74	58.83	39.19	11.1	59.75	145	265	P	V
		17235	54.72	-13.58	68.3	56.41	41.67	14.89	58.25	174	321	P	V
802.11n HT20 CH 157 5785MHz		11570	48.61	-25.39	74	58.03	39.24	11.17	59.83	105	198	P	H
		17355	55.96	-12.34	68.3	57.12	41.86	14.78	57.8	189	185	P	H
		11570	48.71	-25.29	74	58.13	39.24	11.17	59.83	105	198	P	V
		17355	55.64	-12.66	68.3	56.8	41.86	14.78	57.8	189	185	P	V
802.11n HT20 CH 165 5825MHz		11650	49.61	-24.39	74	59	39.28	11.23	59.9	146	347	P	H
		17475	56.85	-11.45	68.3	57.48	42.05	14.67	57.35	100	360	P	H
		11650	49.85	-24.15	74	59.24	39.28	11.23	59.9	146	347	P	V
		17475	57.18	-11.12	68.3	57.81	42.05	14.67	57.35	100	360	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		5639.6	49.07	-19.23	68.3	39.62	35.29	7.65	33.49	151	124	P	H
		5692.4	56.9	-42.8	99.7	47.36	35.37	7.68	33.51	151	124	P	H
		5718.8	56.95	-53.61	110.56	47.38	35.41	7.68	33.52	151	124	P	H
		5722.4	56.48	-59.89	116.37	46.91	35.41	7.68	33.52	151	124	P	H
		5755	100.74	-	-	91.07	35.46	7.74	33.53	151	124	P	H
		5755	92.24	-	-	82.57	35.46	7.74	33.53	151	124	A	H
		5853.8	49.12	-64.52	113.64	39.2	35.61	7.87	33.56	151	124	P	H
		5870.8	49.32	-57.15	106.47	39.38	35.63	7.87	33.56	151	124	P	H
		5901.2	49.05	-36.82	85.87	39.05	35.66	7.91	33.57	151	124	P	H
		5928.2	49.15	-19.15	68.3	39.08	35.7	7.95	33.58	151	124	P	H
		5626.6	47.24	-21.06	68.3	37.81	35.27	7.65	33.49	177	259	P	V
		5677	47.75	-40.57	88.32	38.24	35.34	7.67	33.5	177	259	P	V
		5713.6	54.21	-54.9	109.11	44.66	35.39	7.68	33.52	177	259	P	V
		5721.6	52.38	-62.17	114.55	42.81	35.41	7.68	33.52	177	259	P	V
		5755	95.64	-	-	85.97	35.46	7.74	33.53	177	259	P	V
		5755	87.22	-	-	77.55	35.46	7.74	33.53	177	259	A	V
		5850.6	48.11	-72.82	120.93	38.22	35.58	7.87	33.56	177	259	P	V
		5857.8	48.39	-61.72	110.11	38.47	35.61	7.87	33.56	177	259	P	V
		5900.6	49.36	-36.96	86.32	39.36	35.66	7.91	33.57	177	259	P	V
		5925.2	49.17	-19.13	68.3	39.14	35.7	7.91	33.58	177	259	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		5611.2	47.59	-20.71	68.3	38.19	35.24	7.65	33.49	152	122	P	H
		5678.4	50.34	-39.02	89.36	40.83	35.34	7.67	33.5	152	122	P	H
		5711.4	49.96	-58.53	108.49	40.41	35.39	7.68	33.52	152	122	P	H
		5720.6	48.91	-63.36	112.27	39.34	35.41	7.68	33.52	152	122	P	H
		5795	101.95	-	-	92.18	35.51	7.8	33.54	152	122	P	H
		5795	93.64	-	-	83.87	35.51	7.8	33.54	152	122	A	H
		5854.2	50.93	-61.79	112.72	41.01	35.61	7.87	33.56	152	122	P	H
		5858.6	58.09	-51.8	109.89	48.17	35.61	7.87	33.56	152	122	P	H
		5893.4	53.45	-38.2	91.65	43.45	35.66	7.91	33.57	152	122	P	H
		5949.2	49.24	-19.06	68.3	39.14	35.73	7.95	33.58	152	122	P	H
		5619.8	46.95	-21.35	68.3	37.52	35.27	7.65	33.49	152	259	P	V
		5681.4	47.65	-43.92	91.57	38.15	35.34	7.67	33.51	152	259	P	V
		5704.4	47.5	-59.03	106.53	37.94	35.39	7.68	33.51	152	259	P	V
		5720	46.98	-63.92	110.9	37.41	35.41	7.68	33.52	152	259	P	V
		5795	95.29	-	-	85.52	35.51	7.8	33.54	152	259	P	V
		5795	87.28	-	-	77.51	35.51	7.8	33.54	152	259	A	V
		5852	47.3	-70.44	117.74	37.41	35.58	7.87	33.56	152	259	P	V
		5863.4	48.91	-59.64	108.55	38.99	35.61	7.87	33.56	152	259	P	V
		5890.6	48.73	-44.99	93.72	38.73	35.66	7.91	33.57	152	259	P	V
		5947.6	49.27	-19.03	68.3	39.17	35.73	7.95	33.58	152	259	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	48.73	-25.27	74	58.19	39.2	11.1	59.76	100	360	P	H
VHT40		17265	55	-13.3	68.3	56.55	41.73	14.85	58.13	100	360	P	H
CH 151		11510	49.2	-24.8	74	58.66	39.2	11.1	59.76	100	360	P	V
5755MHz		17265	54.76	-13.54	68.3	56.31	41.73	14.85	58.13	100	360	P	V
802.11ac		11590	48.75	-25.25	74	58.18	39.25	11.17	59.85	100	300	P	H
VHT40		17385	55.36	-12.94	68.3	56.38	41.91	14.74	57.67	100	200	P	H
CH 159		11590	49	-25	74	58.43	39.25	11.17	59.85	100	300	P	V
5795MHz		17385	55.68	-12.62	68.3	56.7	41.91	14.74	57.67	100	200	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		5640	52.73	-15.57	68.3	43.28	35.29	7.65	33.49	160	117	P	H
		5694.8	55.11	-46.36	101.47	45.57	35.37	7.68	33.51	160	117	P	H
		5716	61.54	-48.24	109.78	51.99	35.39	7.68	33.52	160	117	P	H
		5724	60.76	-59.26	120.02	51.19	35.41	7.68	33.52	160	117	P	H
		5775	99.25	-	-	89.49	35.49	7.8	33.53	160	117	P	H
		5775	90.01	-	-	80.25	35.49	7.8	33.53	160	117	A	H
		5850.6	56.17	-64.76	120.93	46.28	35.58	7.87	33.56	160	117	P	H
		5857.4	54.29	-55.94	110.23	44.37	35.61	7.87	33.56	160	117	P	H
		5890	53.57	-40.6	94.17	43.57	35.66	7.91	33.57	160	117	P	H
		5938.6	51	-17.3	68.3	40.9	35.73	7.95	33.58	160	117	P	H
		5642.6	51.66	-16.64	68.3	42.21	35.29	7.65	33.49	152	101	P	V
		5694.4	53.25	-47.92	101.17	43.71	35.37	7.68	33.51	152	101	P	V
		5717.4	56.97	-53.2	110.17	47.42	35.39	7.68	33.52	152	101	P	V
		5722.8	61.21	-56.07	117.28	51.64	35.41	7.68	33.52	152	101	P	V
		5775	97.37	-	-	87.61	35.49	7.8	33.53	152	101	P	V
		5775	88.4	-	-	78.64	35.49	7.8	33.53	152	101	A	V
		5853.8	53.17	-60.47	113.64	43.25	35.61	7.87	33.56	152	101	P	V
		5856	55.02	-55.6	110.62	45.1	35.61	7.87	33.56	152	101	P	V
		5881.4	53.55	-47	100.55	43.61	35.63	7.87	33.56	152	101	P	V
		5925	48.88	-19.42	68.3	38.85	35.7	7.91	33.58	152	101	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	48.46	-25.54	74	57.91	39.23	11.13	59.81	250	0	P	H
VHT80		17328	53.92	-14.38	68.3	55.26	41.81	14.78	57.93	150	0	P	H
CH 155		11550	47.88	-26.12	74	57.33	39.23	11.13	59.81	250	0	P	V
5775MHz		17328	55.57	-12.73	68.3	56.91	41.81	14.78	57.93	150	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 802.11n HT20 (Band Edge @ 3m)**

WIFI Ant. 1+2	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)
802.11n HT20 CH 149 5745MHz		5603.8	49.92	-18.38	68.3	40.53	35.24	7.64	33.49	250	124	P	H
		5699.6	52.06	-52.95	105.01	42.52	35.37	7.68	33.51	250	124	P	H
		5706	50.87	-56.11	106.98	41.32	35.39	7.68	33.52	250	124	P	H
		5724.8	54.63	-67.21	121.84	45.06	35.41	7.68	33.52	250	124	P	H
		5745	106.93	-	-	97.28	35.44	7.74	33.53	250	124	P	H
		5745	97.66	-	-	88.01	35.44	7.74	33.53	250	124	A	H
		5649.2	48.18	-20.12	68.3	38.71	35.29	7.67	33.49	151	271	P	V
		5697	48.43	-54.66	103.09	38.89	35.37	7.68	33.51	151	271	P	V
		5707.2	49.27	-58.05	107.32	39.72	35.39	7.68	33.52	151	271	P	V
		5723.2	48.57	-69.63	118.2	39	35.41	7.68	33.52	151	271	P	V
		5745	98.19	-	-	88.54	35.44	7.74	33.53	151	271	P	V
		5745	89.67	-	-	80.02	35.44	7.74	33.53	151	271	A	V



WIFI Ant. 1+2	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)
802.11n HT20 CH 157 5785MHz		5608.6	49.4	-18.9	68.3	40	35.24	7.65	33.49	250	125	P	H
		5693.6	48.32	-52.26	100.58	38.78	35.37	7.68	33.51	250	125	P	H
		5718.4	48.8	-61.65	110.45	39.23	35.41	7.68	33.52	250	125	P	H
		5724.6	48.57	-72.82	121.39	39	35.41	7.68	33.52	250	125	P	H
		5785	106.79	-	-	97.04	35.49	7.8	33.54	250	125	P	H
		5785	97.79	-	-	88.04	35.49	7.8	33.54	250	125	A	H
		5853.2	49.77	-65.23	115	39.88	35.58	7.87	33.56	250	125	P	H
		5861.2	49.14	-60.02	109.16	39.22	35.61	7.87	33.56	250	125	P	H
		5891	49.9	-43.53	93.43	39.9	35.66	7.91	33.57	250	125	P	H
		5930.6	48.89	-19.41	68.3	38.82	35.7	7.95	33.58	250	125	P	H
		5628.4	47.44	-20.86	68.3	38.01	35.27	7.65	33.49	152	273	P	V
		5689	47.59	-49.6	97.19	38.05	35.37	7.68	33.51	152	273	P	V
		5716	47.19	-62.59	109.78	37.64	35.39	7.68	33.52	152	273	P	V
		5720.6	48.78	-63.49	112.27	39.21	35.41	7.68	33.52	152	273	P	V
		5785	98.41	-	-	88.66	35.49	7.8	33.54	152	273	P	V
		5785	89.88	-	-	80.13	35.49	7.8	33.54	152	273	A	V
		5851.6	48.19	-70.46	118.65	38.3	35.58	7.87	33.56	152	273	P	V
		5863.4	48.66	-59.89	108.55	38.74	35.61	7.87	33.56	152	273	P	V
		5889.6	48.06	-46.4	94.46	38.06	35.66	7.91	33.57	152	273	P	V
		5942.4	48.36	-19.94	68.3	38.26	35.73	7.95	33.58	152	273	P	V



WIFI Ant. 1+2	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)
802.11n HT20 CH 165 5825MHz		5825	106.29	-	-	96.44	35.56	7.84	33.55	250	119	P	H
		5825	97.97	-	-	88.12	35.56	7.84	33.55	250	119	A	H
		5850	52.1	-70.2	122.3	42.21	35.58	7.87	33.56	250	119	P	H
		5860.2	50.92	-58.52	109.44	41	35.61	7.87	33.56	250	119	P	H
		5887.2	49.31	-46.93	96.24	39.34	35.63	7.91	33.57	250	119	P	H
		5942.8	48.55	-19.75	68.3	38.45	35.73	7.95	33.58	250	119	P	H
		5825	98.62	-	-	88.77	35.56	7.84	33.55	151	271	P	V
		5825	89.88	-	-	80.03	35.56	7.84	33.55	151	271	A	V
		5852	49.08	-68.66	117.74	39.19	35.58	7.87	33.56	151	271	P	V
		5867.8	50.49	-56.82	107.31	40.57	35.61	7.87	33.56	151	271	P	V
		5875.4	49.16	-55.84	105	39.22	35.63	7.87	33.56	151	271	P	V
		5936.8	48.64	-19.66	68.3	38.57	35.7	7.95	33.58	151	271	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2	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)
802.11n HT20 CH 149 5745MHz		11490	48.62	-25.38	74	58.08	39.19	11.1	59.75	145	265	P	H
		17235	54.38	-13.92	68.3	56.07	41.67	14.89	58.25	174	321	P	H
		11490	48.6	-25.4	74	58.06	39.19	11.1	59.75	145	265	P	V
		17235	54.98	-13.32	68.3	56.67	41.67	14.89	58.25	174	321	P	V
802.11n HT20 CH 157 5785MHz		11570	48.89	-25.11	74	58.31	39.24	11.17	59.83	105	198	P	H
		17355	55.71	-12.59	68.3	56.87	41.86	14.78	57.8	189	185	P	H
		11570	48.95	-25.05	74	58.37	39.24	11.17	59.83	105	198	P	V
		17355	55.65	-12.65	68.3	56.81	41.86	14.78	57.8	189	185	P	V
802.11n HT20 CH 165 5825MHz		11650	49.13	-24.87	74	58.52	39.28	11.23	59.9	146	347	P	H
		17475	56.47	-11.83	68.3	57.1	42.05	14.67	57.35	100	360	P	H
		11650	48.9	-25.1	74	58.29	39.28	11.23	59.9	146	347	P	V
		17475	56.92	-11.38	68.3	57.55	42.05	14.67	57.35	100	360	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+2	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		5612.4	47.92	-20.38	68.3	38.52	35.24	7.65	33.49	250	118	P	H
		5699.2	50.73	-53.98	104.71	41.19	35.37	7.68	33.51	250	118	P	H
		5713.6	56.19	-52.92	109.11	46.64	35.39	7.68	33.52	250	118	P	H
		5724.4	55.85	-65.08	120.93	46.28	35.41	7.68	33.52	250	118	P	H
		5755	102.5	-	-	92.83	35.46	7.74	33.53	250	118	P	H
		5755	94.74	-	-	85.07	35.46	7.74	33.53	250	118	A	H
		5854	48.46	-64.72	113.18	38.54	35.61	7.87	33.56	250	118	P	H
		5857.6	48.3	-61.87	110.17	38.38	35.61	7.87	33.56	250	118	P	H
		5904.6	48.16	-35.2	83.36	38.14	35.68	7.91	33.57	250	118	P	H
		5936	48.82	-19.48	68.3	38.75	35.7	7.95	33.58	250	118	P	H
		5628.2	47.26	-21.04	68.3	37.83	35.27	7.65	33.49	156	279	P	V
		5698.4	47.69	-56.43	104.12	38.15	35.37	7.68	33.51	156	279	P	V
		5719	50.24	-60.38	110.62	40.67	35.41	7.68	33.52	156	279	P	V
		5724.6	51.03	-70.36	121.39	41.46	35.41	7.68	33.52	156	279	P	V
		5755	95.81	-	-	86.14	35.46	7.74	33.53	156	279	P	V
		5755	87.68	-	-	78.01	35.46	7.74	33.53	156	279	A	V
		5852.6	47.28	-69.09	116.37	37.39	35.58	7.87	33.56	156	279	P	V
		5864.6	48.74	-59.47	108.21	38.82	35.61	7.87	33.56	156	279	P	V
		5917	49.59	-24.61	74.2	39.58	35.68	7.91	33.58	156	279	P	V
		5936.4	48.15	-20.15	68.3	38.08	35.7	7.95	33.58	156	279	P	V



WIFI Ant. 1+2	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		5619.8	47.77	-20.53	68.3	38.34	35.27	7.65	33.49	250	114	P	H
		5689.2	50.78	-46.56	97.34	41.24	35.37	7.68	33.51	250	114	P	H
		5706.4	54.54	-52.55	107.09	44.99	35.39	7.68	33.52	250	114	P	H
		5722	54.94	-60.52	115.46	45.37	35.41	7.68	33.52	250	114	P	H
		5795	103.4	-	-	93.63	35.51	7.8	33.54	250	114	P	H
		5795	94.83	-	-	85.06	35.51	7.8	33.54	250	114	A	H
		5854.4	51.53	-60.74	112.27	41.61	35.61	7.87	33.56	250	114	P	H
		5871.6	49.23	-57.02	106.25	39.29	35.63	7.87	33.56	250	114	P	H
		5877.4	49.36	-54.16	103.52	39.42	35.63	7.87	33.56	250	114	P	H
		5936.6	47.98	-20.32	68.3	37.91	35.7	7.95	33.58	250	114	P	H
		5612.2	48.35	-19.95	68.3	38.95	35.24	7.65	33.49	190	299	P	V
		5670.4	48.05	-35.39	83.44	38.54	35.34	7.67	33.5	190	299	P	V
		5710.6	48.05	-60.22	108.27	38.5	35.39	7.68	33.52	190	299	P	V
		5724.2	47.21	-73.27	120.48	37.64	35.41	7.68	33.52	190	299	P	V
		5795	94.98	-	-	85.21	35.51	7.8	33.54	190	299	P	V
		5795	87.45	-	-	77.68	35.51	7.8	33.54	190	299	A	V
		5854.8	48.09	-63.27	111.36	38.17	35.61	7.87	33.56	190	299	P	V
		5856.4	48.37	-62.14	110.51	38.45	35.61	7.87	33.56	190	299	P	V
		5883	48.26	-51.1	99.36	38.32	35.63	7.87	33.56	190	299	P	V
		5932.6	48.53	-19.77	68.3	38.46	35.7	7.95	33.58	190	299	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+2	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		11510	49.41	-24.59	74	58.87	39.2	11.1	59.76	100	360	P	H
		17265	55.84	-12.46	68.3	57.39	41.73	14.85	58.13	100	360	P	H
		11510	49.13	-24.87	74	58.59	39.2	11.1	59.76	100	360	P	V
		17265	55.7	-12.6	68.3	57.25	41.73	14.85	58.13	100	360	P	V
802.11ac VHT40 CH 159 5795MHz		11590	49.15	-24.85	74	58.58	39.25	11.17	59.85	100	300	P	H
		17385	55.25	-13.05	68.3	56.27	41.91	14.74	57.67	100	200	P	H
		11590	49.46	-24.54	74	58.89	39.25	11.17	59.85	100	300	P	V
		17385	56.45	-11.85	68.3	57.47	41.91	14.74	57.67	100	200	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+2	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		5638	51.84	-16.46	68.3	42.39	35.29	7.65	33.49	153	114	P	H
		5699.6	53.4	-51.61	105.01	43.86	35.37	7.68	33.51	153	114	P	H
		5718.6	58.04	-52.47	110.51	48.47	35.41	7.68	33.52	153	114	P	H
		5724.8	58.22	-63.62	121.84	48.65	35.41	7.68	33.52	153	114	P	H
		5775	100.53	-	-	90.77	35.49	7.8	33.53	153	114	P	H
		5775	90.78	-	-	81.02	35.49	7.8	33.53	153	114	A	H
		5850.4	54.77	-66.62	121.39	44.88	35.58	7.87	33.56	153	114	P	H
		5863	53.99	-54.67	108.66	44.07	35.61	7.87	33.56	153	114	P	H
		5879.2	53.01	-49.17	102.18	43.07	35.63	7.87	33.56	153	114	P	H
		5928	50.02	-18.28	68.3	39.95	35.7	7.95	33.58	153	114	P	H
		5630.4	49.46	-18.84	68.3	40.03	35.27	7.65	33.49	151	114	P	V
		5679	50.68	-39.12	89.8	41.17	35.34	7.67	33.5	151	114	P	V
		5707.8	54.38	-53.11	107.49	44.83	35.39	7.68	33.52	151	114	P	V
		5725	57.12	-65.18	122.3	47.55	35.41	7.68	33.52	151	114	P	V
		5775	96.03	-	-	86.27	35.49	7.8	33.53	151	114	P	V
		5775	87.79	-	-	78.03	35.49	7.8	33.53	151	114	A	V
		5853	50.82	-64.64	115.46	40.93	35.58	7.87	33.56	151	114	P	V
		5863.6	52	-56.49	108.49	42.08	35.61	7.87	33.56	151	114	P	V
		5893.6	50.55	-40.95	91.5	40.55	35.66	7.91	33.57	151	114	P	V
		5930	49.13	-19.17	68.3	39.06	35.7	7.95	33.58	151	114	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+2	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	47.92	-26.08	74	57.37	39.23	11.13	59.81	250	0	P	H
VHT80		17328	54.68	-13.62	68.3	56.02	41.81	14.78	57.93	150	0	P	H
CH 155		11550	48.28	-25.72	74	57.73	39.23	11.13	59.81	250	0	P	V
5775MHz		17328	54.72	-13.58	68.3	56.06	41.81	14.78	57.93	150	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 802.11a (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 802.11a LF		30.97	26.13	-13.87	40	31.01	26.28	0.62	31.78	-	-	P	H
		82.38	23.3	-16.7	40	38.01	16.12	0.83	31.66	-	-	P	H
		149.31	31.22	-12.28	43.5	43.67	17.82	1.15	31.42	100	0	P	H
		328.76	27.37	-18.63	46	37.22	19.85	1.6	31.3	-	-	P	H
		431.58	31.28	-14.72	46	35.3	25.3	1.89	31.21	-	-	P	H
		975.75	32.09	-21.91	54	30.24	29.92	3.19	31.26	-	-	P	H
		30.97	36.4	-3.6	40	41.28	26.28	0.62	31.78	100	0	P	V
		98.87	28.79	-14.71	43.5	40.68	18.7	0.99	31.58	-	-	P	V
		171.62	31.59	-11.91	43.5	44.8	16.85	1.28	31.34	-	-	P	V
		550.89	29.95	-16.05	46	34.02	25	2.13	31.2	-	-	P	V
		912.7	31.6	-14.4	46	31.38	28.73	2.77	31.28	-	-	P	V
		992.24	33.3	-20.7	54	31.12	30.25	3.19	31.26	-	-	P	V
Remark	1. No other spurious found. 2. 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)

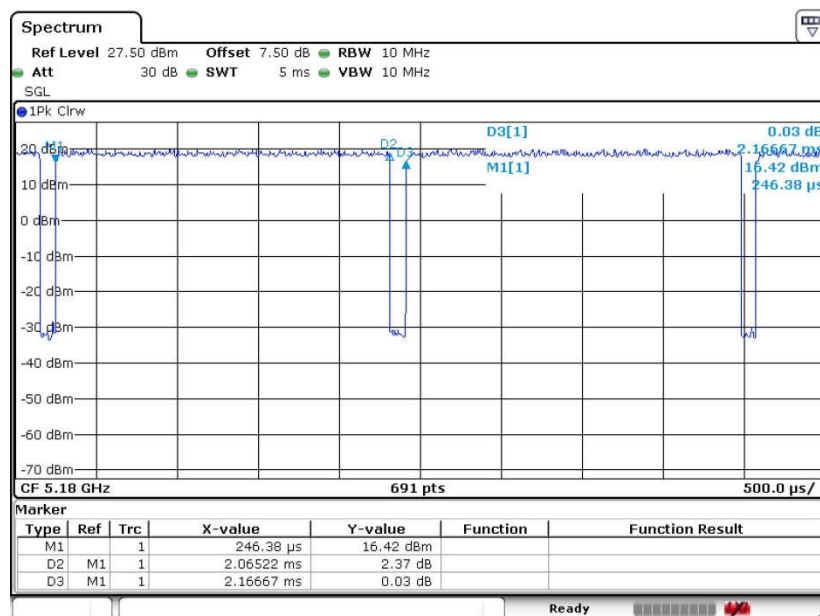
Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	802.11a	95.32	2.07	0.48	1KHz
1	802.11n HT20	95.34	1.93	0.52	1KHz
1	802.11ac VHT40	91.03	0.96	1.05	3KHz
1	802.11ac VHT80	82.26	0.46	2.16	3KHz
1+2	802.11n HT20	94.97	1.92	0.52	1KHz
1+2	802.11ac VHT40	89.83	0.96	1.05	3KHz
1+2	802.11ac VHT80	82.73	0.47	2.15	3KHz

<Ant.1>

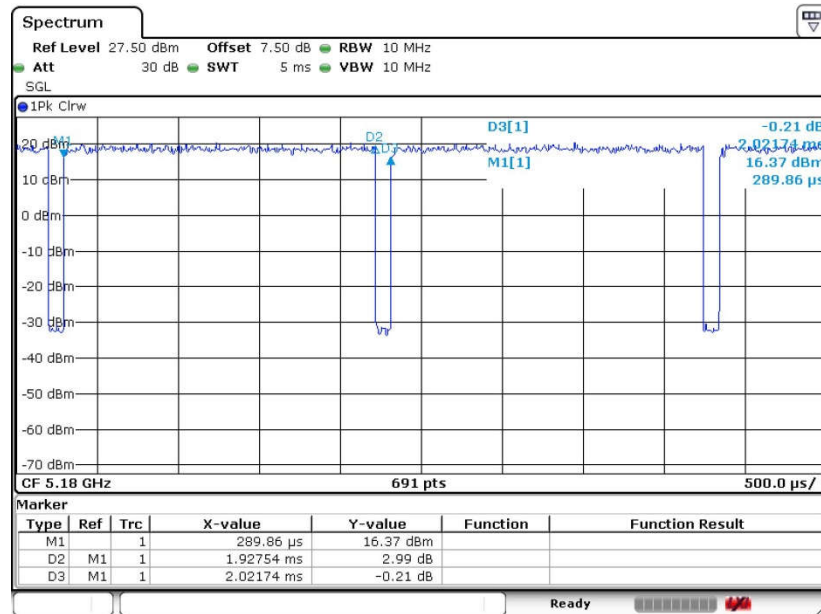
802.11a



Date: 7.SEP.2016 17:37:35

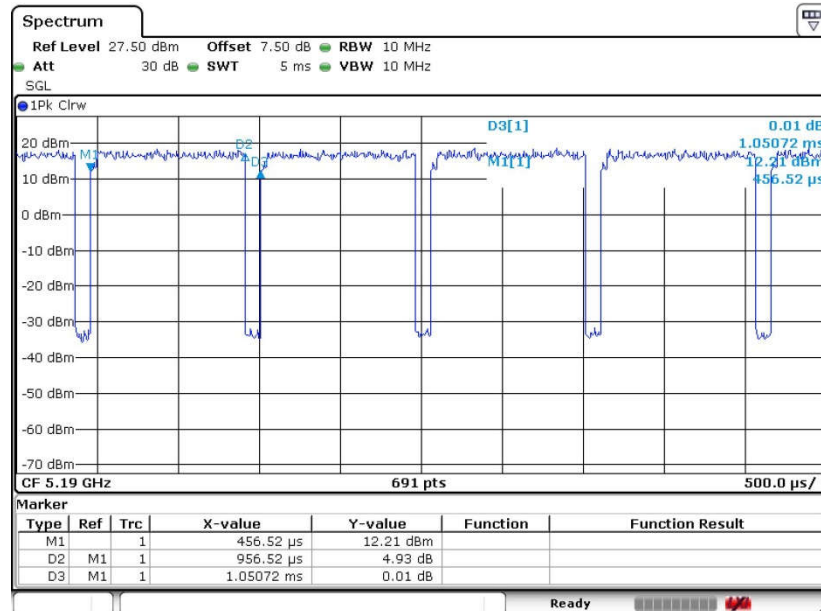


802.11n HT20



Date: 7.SEP.2016 17:38:22

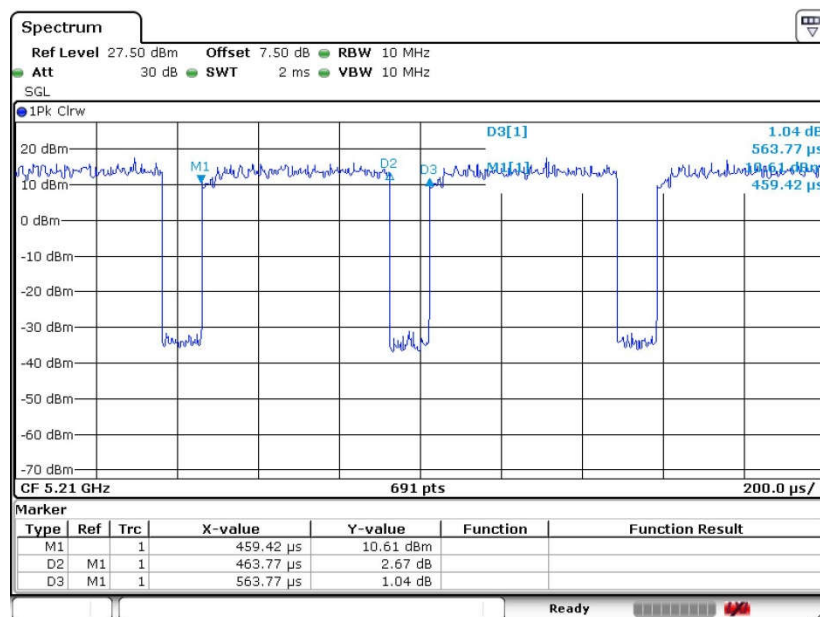
802.11ac VH40



Date: 7.SEP.2016 17:46:40



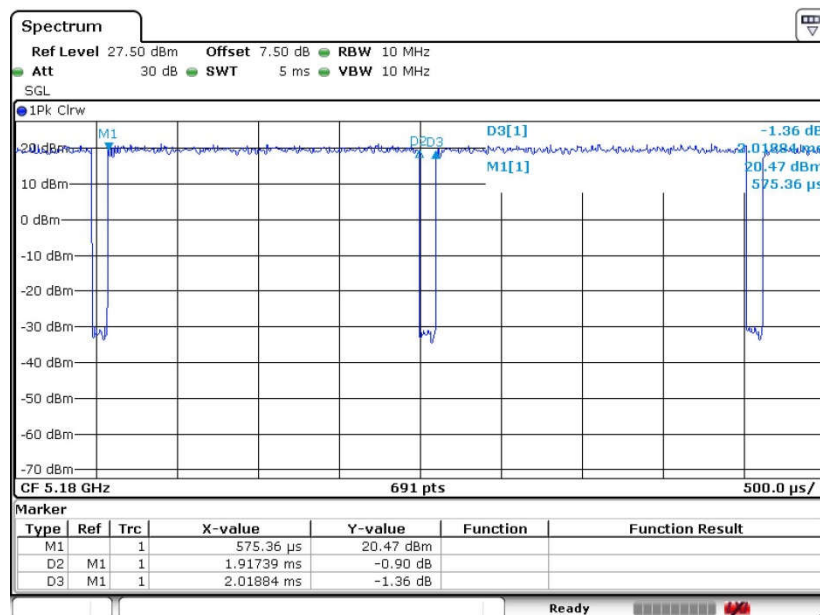
802.11ac VHT80



Date: 7.SEP.2016 17:47:39

<Ant.1+2>

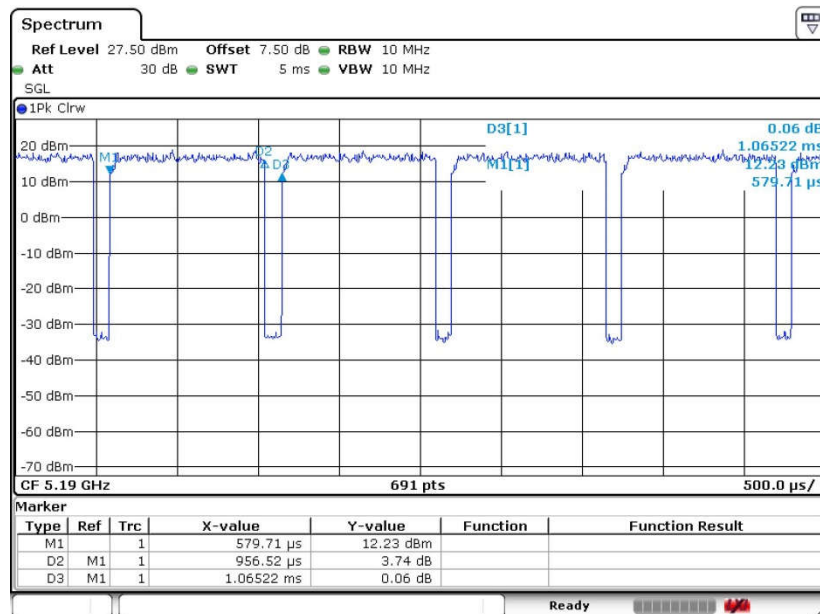
802.11n HT20



Date: 7.SEP.2016 17:59:45

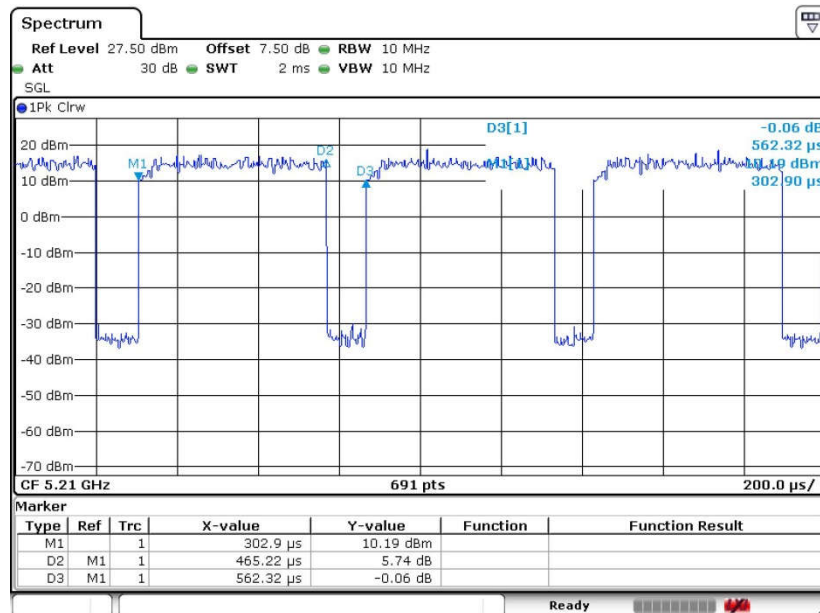


802.11ac VH40



Date: 7.SEP.2016 18:36:03

802.11ac VHT80



Date: 7.SEP.2016 18:25:31