



FCC RF Test Report

APPLICANT : Plume Design Inc
EQUIPMENT : Plume Pod
BRAND NAME : Plume Design Inc
MODEL NAME : A2A
MARKETING NAME : PLUME ADAPTIVE WIFI
FCC ID : 2AG7G-A2A
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jun. 28, 2018 and testing was completed on Oct. 25, 2018. 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.

This report contains data that were produced under subcontract by Laboratory SPORTON INTERNATIONAL INC.

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.

Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

***No. 1098, Pengxi North Road, Kunshan Economic Development Zone,
Jiangsu Province 215335, China***



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR860502D	Rev. 01	Initial issue of report	Oct. 30, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 1.04 dB at 11650.000 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 5.19 dB at 0.375 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Plume Design Inc

290 California Ave, Suite 200, Palo Alto, CA 94306, USA

1.2 Manufacturer

Plume Design Inc

290 California Ave, Suite 200, Palo Alto, CA 94306, USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Plume Pod
Brand Name	Plume Design Inc
Model Name	A2A
Marketing Name	Plume Adaptive WiFi
FCC ID	2AG7G-A2A
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth LE
HW Version	N/A
SW Version	N/A
EUT Stage	Production Unit

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 <CDD Modes>		<Ant. 1> 802.11a : 12.93 dBm / 0.0196 W 802.11n HT20 : 14.16 dBm / 0.0261 W 802.11n HT40 : 16.56 dBm / 0.0453 W 802.11ac VHT80: 18.40 dBm / 0.0692 W MIMO <Ant. 1+2> 802.11a : 13.58 dBm / 0.0228 W 802.11n HT20 : 15.55 dBm / 0.0359 W 802.11n HT40 : 15.96 dBm / 0.0394 W 802.11ac VHT80: 21.03 dBm / 0.1268 W	
Maximum Output Power <Beamforming Modes>		MIMO <Ant. 1+2> 802.11a : 13.54 dBm / 0.0226 W 802.11n HT20 : 13.80 dBm / 0.0240 W 802.11n HT40 : 16.86 dBm / 0.0485 W 802.11ac VHT80: 22.33 dBm / 0.1710 W	
99% Occupied Bandwidth <CDD Modes>		<Ant. 1> 802.11a : 17.13 MHz 802.11n HT20 : 18.18 MHz 802.11n HT40 : 36.06 MHz 802.11ac VHT80 : 75.88 MHz MIMO <Ant. 1+2> 802.11a : 17.28 MHz 802.11n HT20 : 18.48 MHz 802.11n HT40 : 36.36 MHz 802.11ac VHT80 : 76.00 MHz	
99% Occupied Bandwidth <Beamforming Modes>		MIMO <Ant. 1+2> 802.11a : 17.28 MHz 802.11n HT20 : 18.43 MHz 802.11n HT40 : 36.36 MHz 802.11ac VHT80 : 76.00 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> : Loop Antenna with gain 0.91 dBi <Ant. 2> : Loop Antenna with gain 1.52 dBi	
Antenna Function Description			
		Ant. 1	Ant. 2
		802.11 a/n/ac	-
		802.11 a/n/ac MIMO	V

Note:

1. MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.
2. For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing is assessed only 802.11n HT20/ HT40 by referring to their higher conducted power.



1.5 Modification of EUT

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

1.6 Testing Location

SPORTON INTERNATIONAL INC. is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and under the FCC-recognized accredited testing laboratories by Mutual Recognition Agreement (MRA) in FCC Test.

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: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton Site No.		
	CO05-HY		

Note: Test data subcontracted: Conducted Emission in section 3.5 of this report.

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0).

Test Site	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : 86-512-57900158 FAX : 86-512-57900958		
Test Site No.	Sporton Site No.	FCC designation No.	FCC Test Firm Registration No.
	TH01-KS 03CH04-KS/03CH02-KS	CN5013	630927



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 v02r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

- a. 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: conduction emission (150 kHz to 30 MHz), radiation 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 were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

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:

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

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

MIMO Mode

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

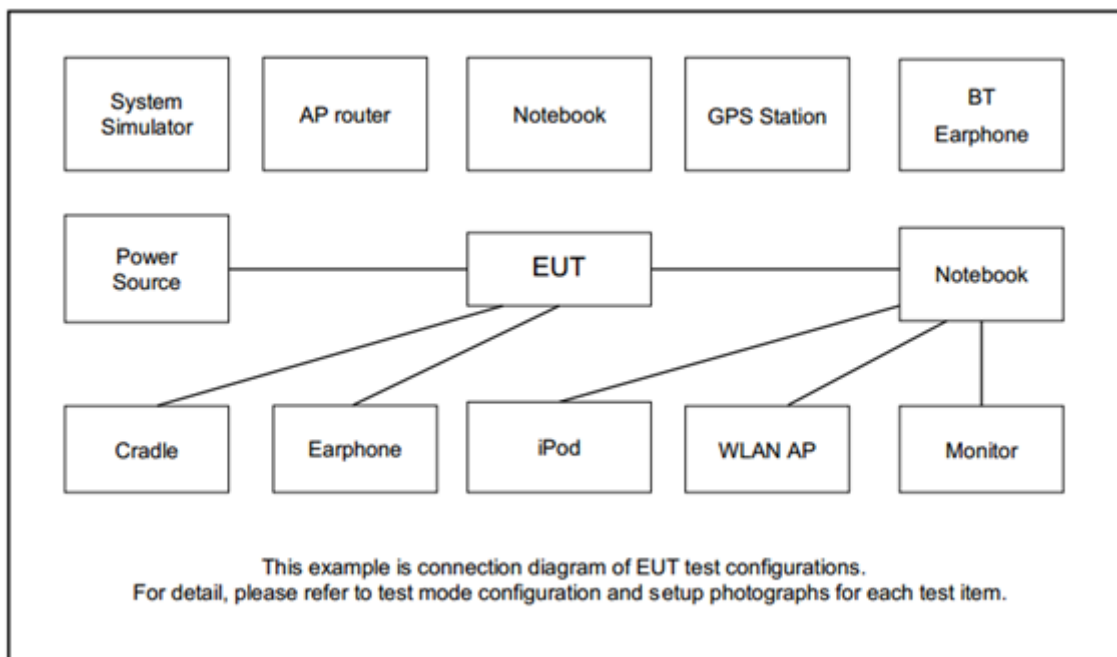
TXBF Mode

Modulation	Data Rate
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT80	MCS0

AC Conducted Emission	Mode 1 : WLAN Link(5G) + Bluetooth Link + Lan Link(Ping) Mode 2 : WLAN Link(5G) + Bluetooth Link + Lan Link(TX)
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.	

Ch. #		Band IV : 5745-5825 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Dell	E5570	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Notebook	Dell	E3340	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD MONITOR	Asus	PB27UQ	FCC DoC	Shielded, 1.6m	Unshielded 1.8m
4.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0m	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 6.1 dB.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 6.1 \text{ (dB)}\end{aligned}$$

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.

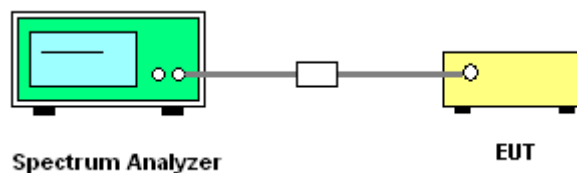
3.1.2 Measuring Instruments

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 v02r01.
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

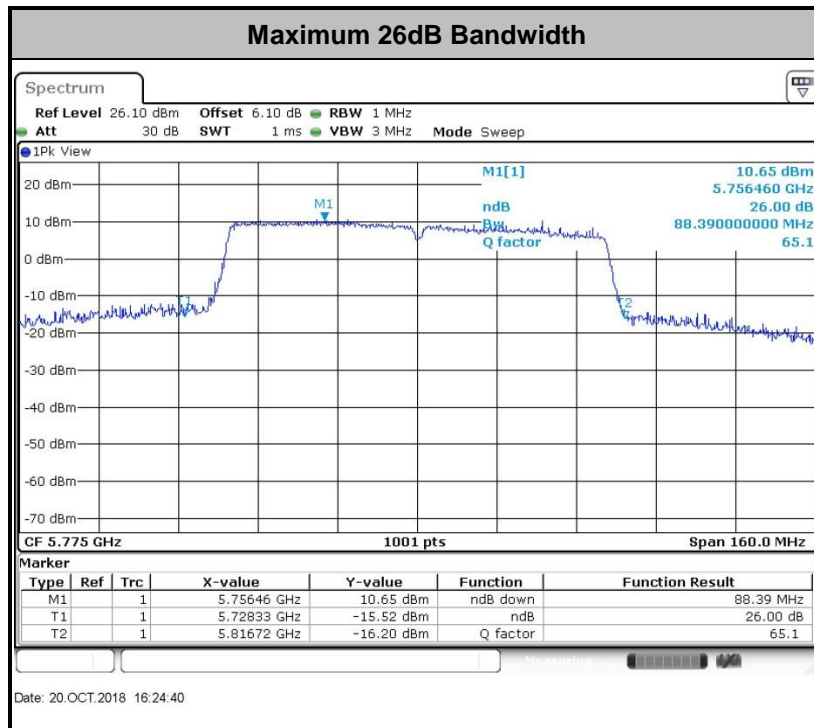
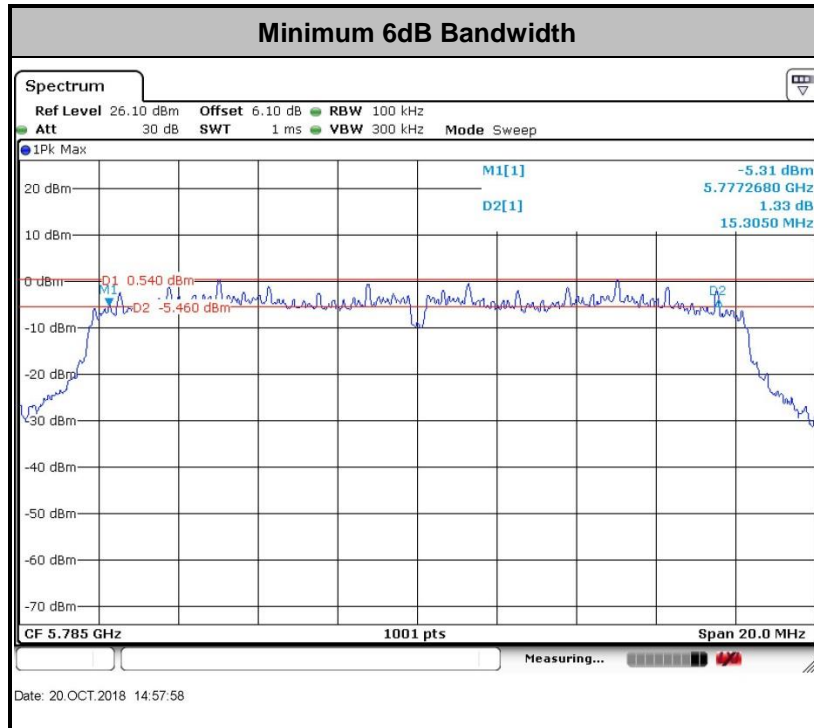


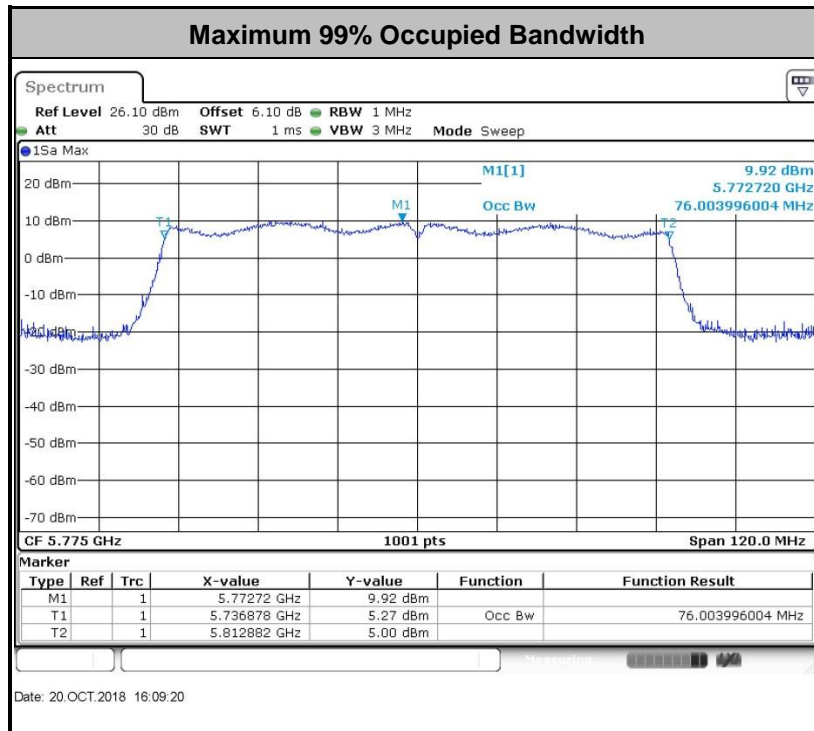
3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.



<CDD Mode>

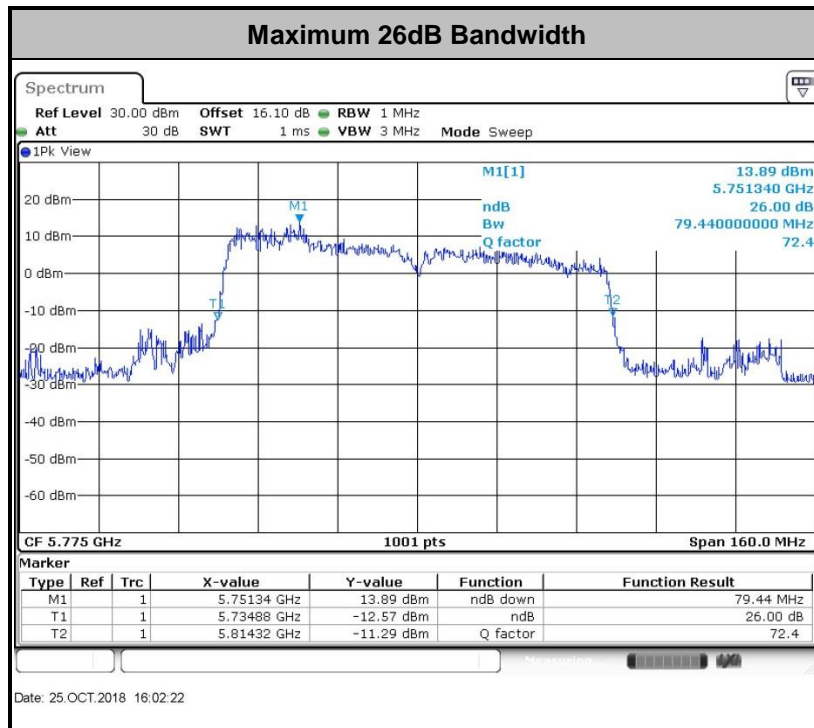
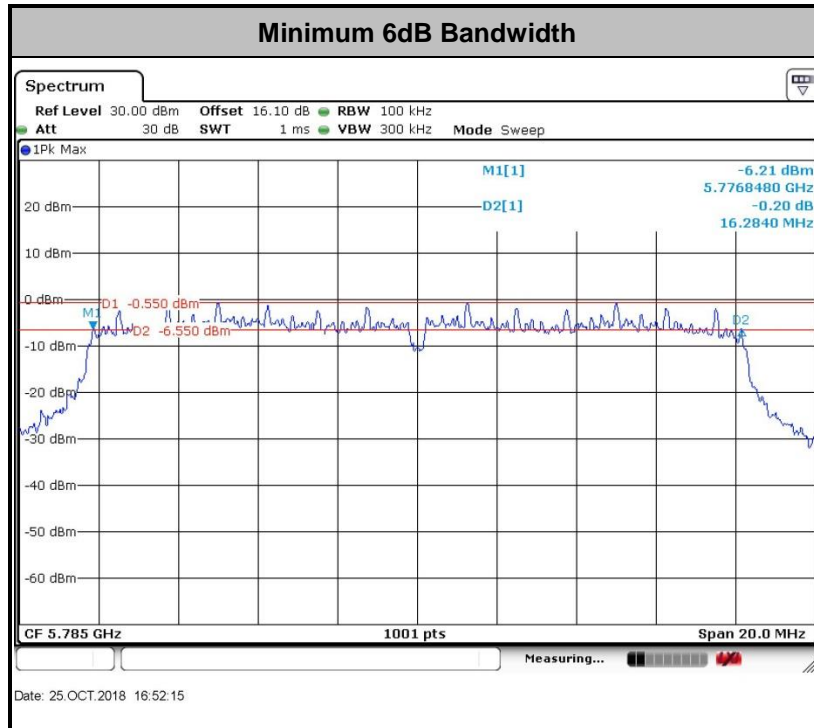


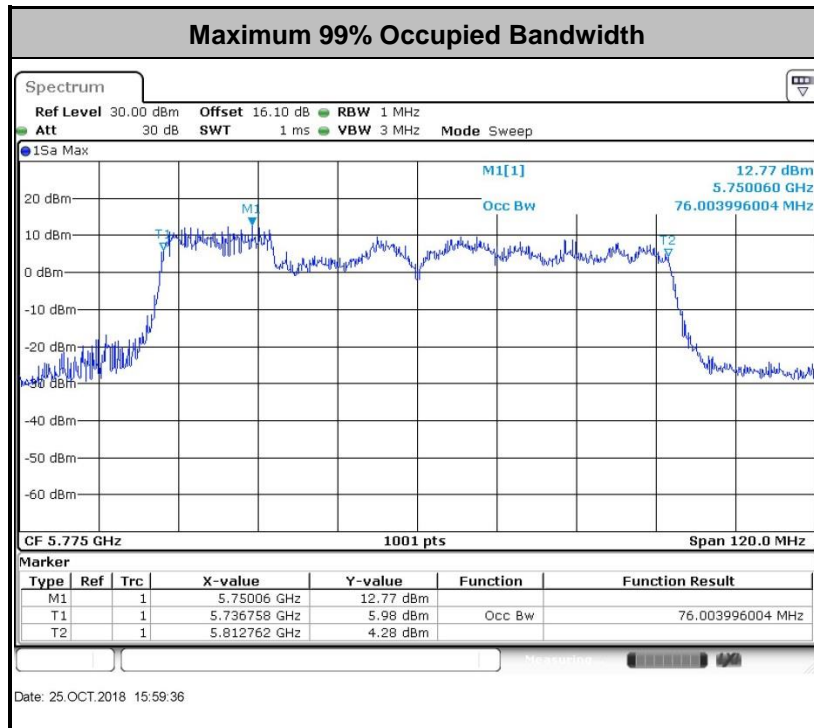


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



<TXBF Modes>





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

<CDD Modes>

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

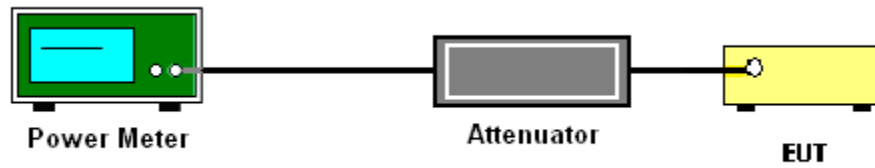
<TXBF Modes>

The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 for TXBF modes.

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

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 v02r01.
Section F) Maximum power spectral density.

<CDD/TXBF Modes>

Method SA-2

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

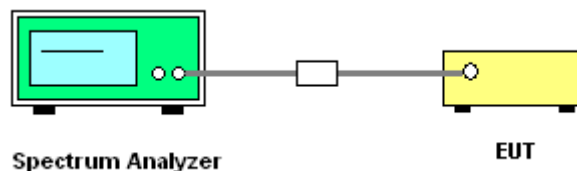
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW \geq 1 MHz.
- Number of points in sweep \geq 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(500\text{kHz}/\text{RBW})$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

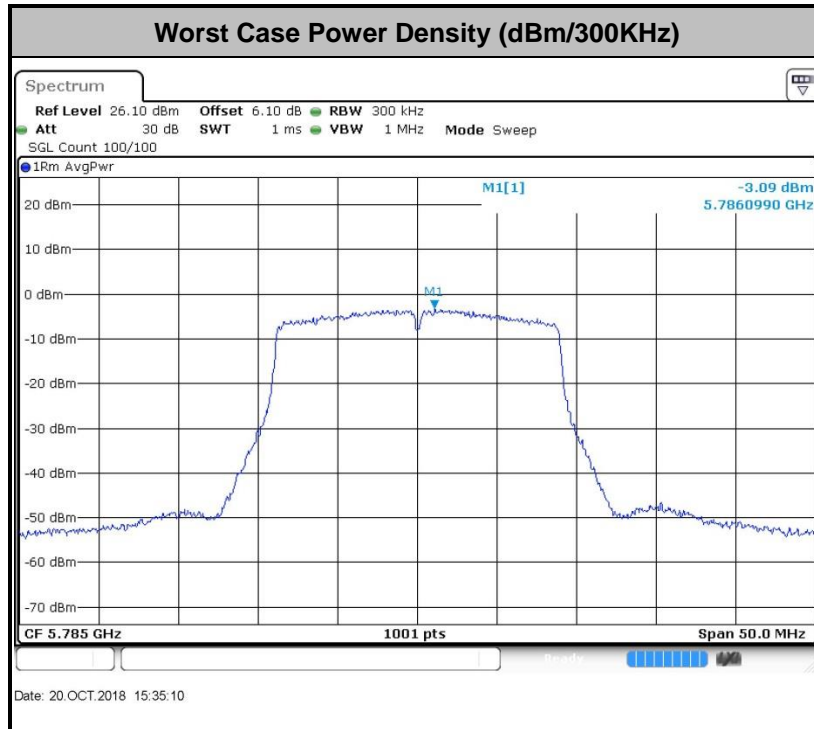




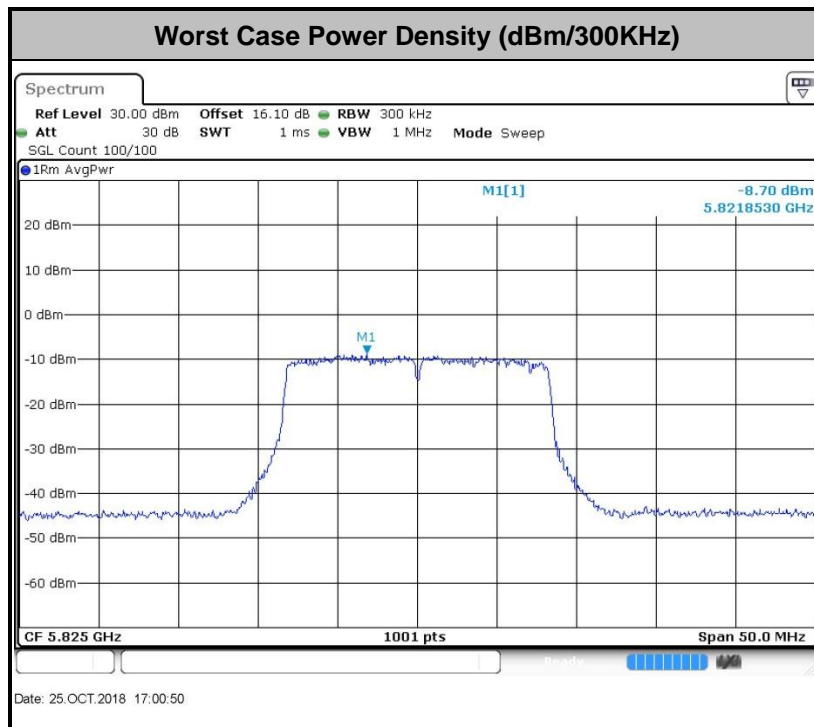
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

<CDD Modes>



<TXBF Modes>



3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

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 shall comply with the general field strength limits 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

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

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

$$\text{EIRP} = E_{\text{Meas}} + 20\log(d_{\text{Meas}}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

3.4.2 Measuring Instruments

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

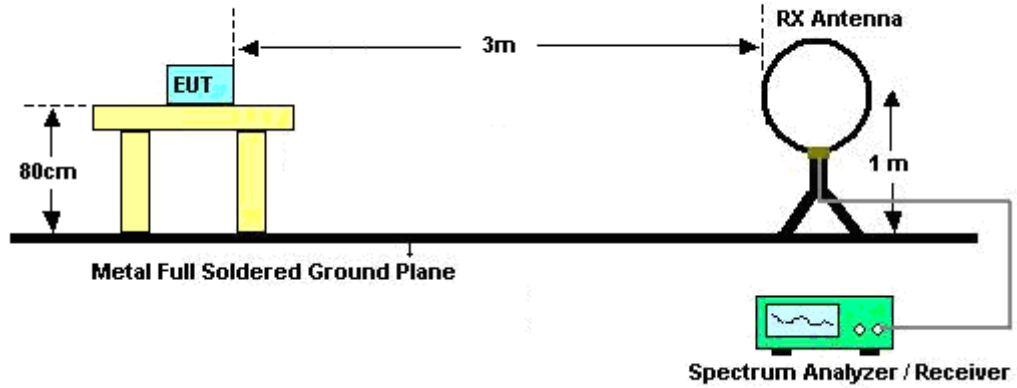


3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
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.

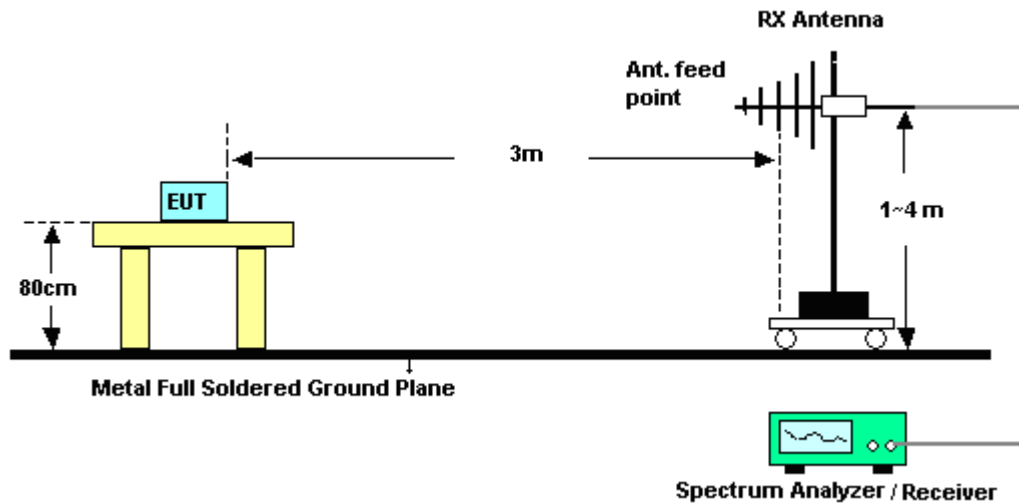
3.4.4 Test Setup

For radiated emissions below 30MHz

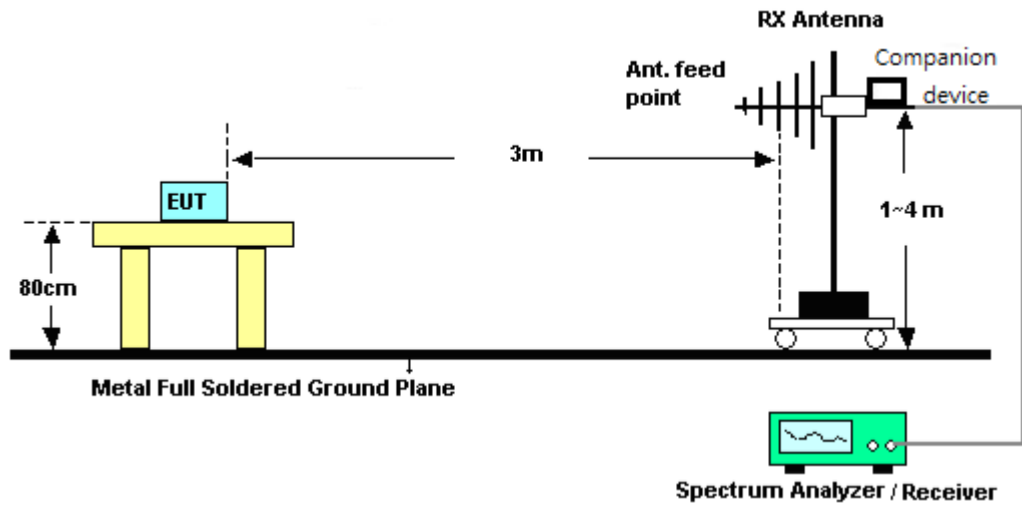


For radiated emissions from 30MHz to 1GHz

<CDD Mode>

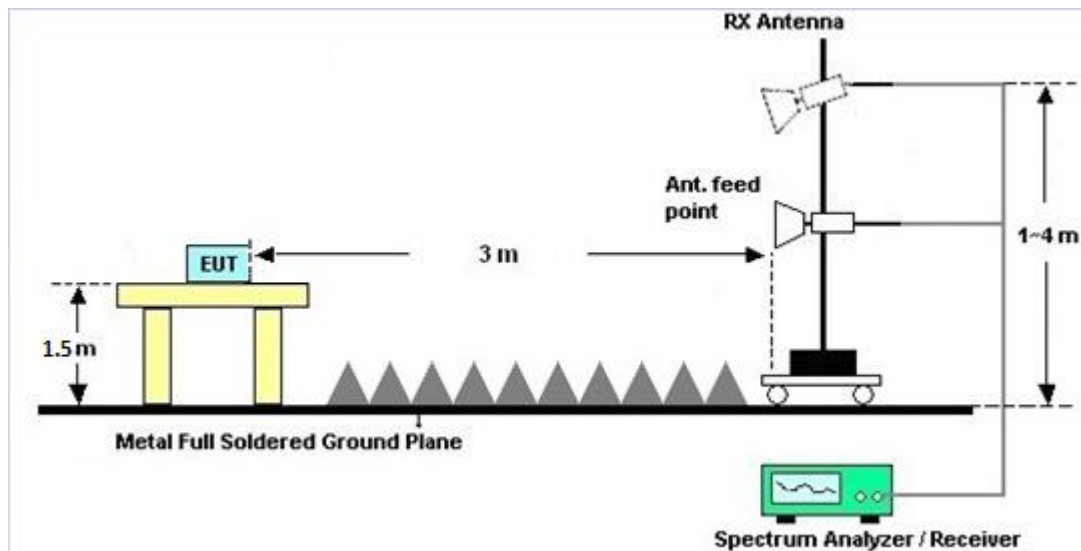


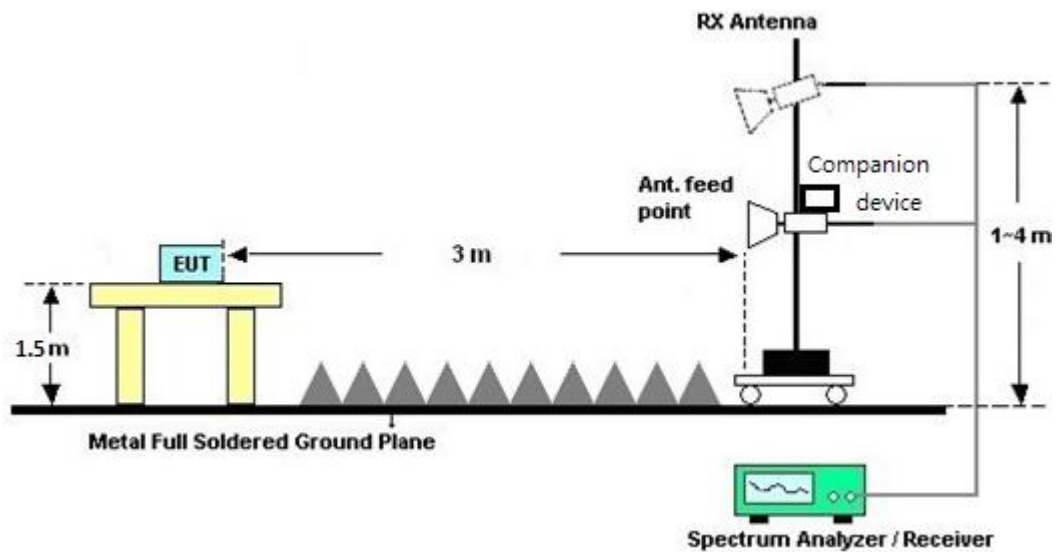
<TXBF Modes>



For radiated emissions above 1GHz

<CDD Mode>



<TXBF Modes>

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 was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C.

3.4.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix C.

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.

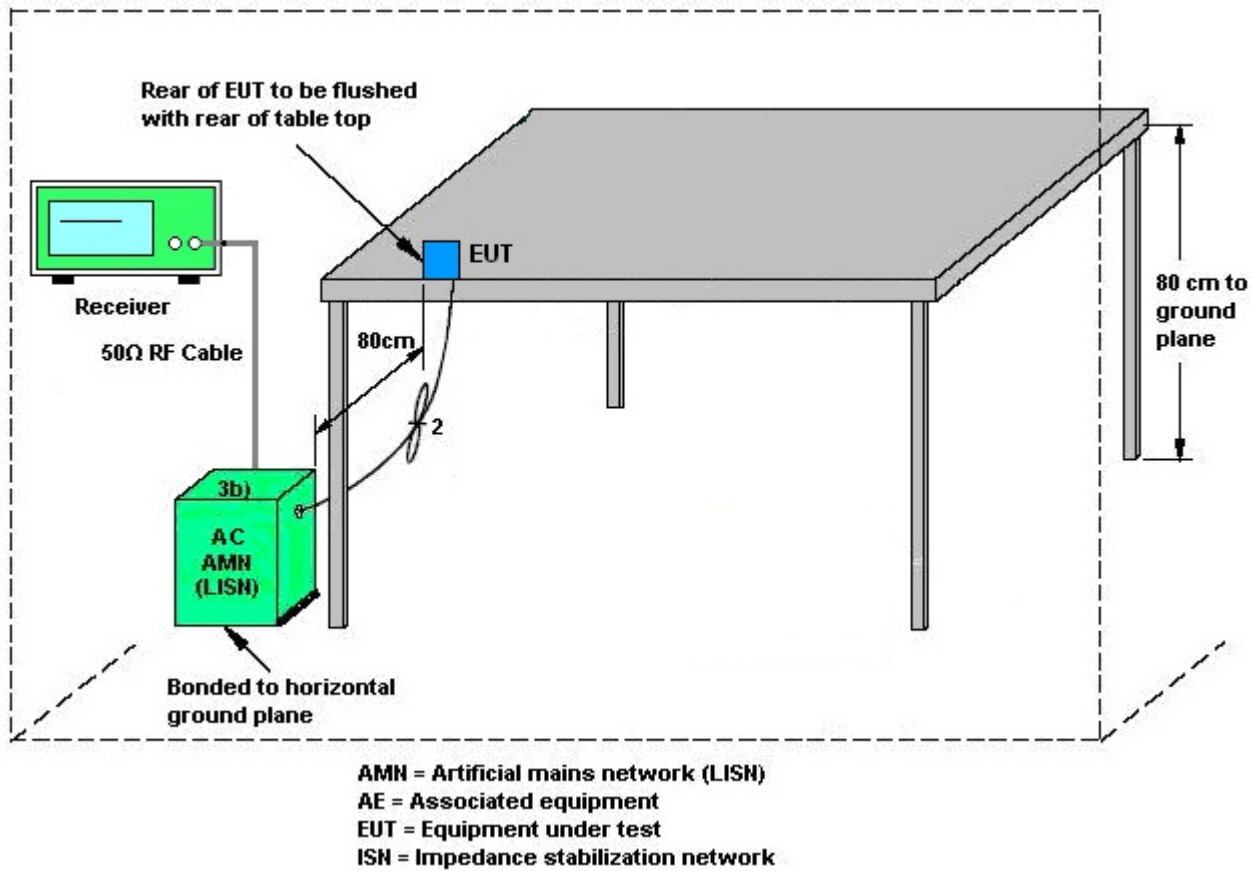
3.5.2 Measuring Instruments

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

Please refer to Appendix B.



3.6 Automatically Discontinue Transmission

3.6.1 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.

3.6.2 Measuring Instruments

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

3.6.3 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.

3.7 Antenna Requirements

3.7.1 Standard Applicable

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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

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

Array Gain = $10 \log(\text{NANT}/\text{NSS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

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

Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT 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.

<CDD Modes>						
			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 1 (dBi)	Ant. 2 (dBi)				
Band IV	0.91	1.52	1.52	4.23	0.00	0.00

$\text{Power Limit Reduction} = \text{DG(Power)} - 6\text{dBi}, (\text{min} = 0)$

$\text{PSD Limit Reduction} = \text{DG(PSD)} - 6\text{dBi}, (\text{min} = 0)$

TXBF modes

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;
 G_k is the gain in dBi of the k th antenna.

The EUT supports beamforming for 802.11ac modes.

The directional gain calculation is following F)2)e)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	DG	Power	PSD
			for	for	Limit	Limit
	Ant 1	Ant 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	0.91	1.52	4.23	4.23	0.00	0.00

$Power\ Limit\ Reduction = DG(Power) - 6dBi, (min = 0)$

$PSD\ Limit\ Reduction = DG(PSD) - 6dBi, (min = 0)$



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. 07, 2018	Oct. 20, 2018~ Oct. 25, 2018	Aug. 06, 2019	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 18, 2018	Oct. 20, 2018~ Oct. 25, 2018	Jan. 17, 2019	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 18, 2018	Oct. 20, 2018~ Oct. 25, 2018	Jan. 17, 2019	Conducted (TH01-KS)
USB RFPower Sensor	Dare	RPR3006W	15I00041S NO93	50MHz~6GHz , -50dBm~ +10dBm	Jan. 18, 2018	Oct. 20, 2018~ Oct. 25, 2018	Jan. 17, 2019	Conducted (TH01-KS)
USB RFPower Sensor	Dare	RPR3006W	15I00041S NO94	50MHz~6GHz , -50dBm~ +10dBm	Jan. 18, 2018	Oct. 20, 2018~ Oct. 25, 2018	Jan. 17, 2019	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Ma x 30dBm	Aug. 07, 2018	Oct. 09, 2018~ Oct. 10, 2018	Aug. 06, 2019	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2017	Oct. 09, 2018~ Oct. 10, 2018	Oct. 21, 2018	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz~2GHz	Jan. 29, 2018	Oct. 09, 2018~ Oct. 10, 2018	Jan. 28, 2019	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz~1GHz	Aug. 06, 2018	Oct. 09, 2018~ Oct. 10, 2018	Aug. 05, 2019	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002 473	N/A	NCR	Oct. 09, 2018~ Oct. 10, 2018	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Oct. 09, 2018~ Oct. 10, 2018	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Oct. 09, 2018~ Oct. 10, 2018	NCR	Radiation (03CH02-KS)
EMI Test Receiver	Keysight	N9038A	MY564000 23	3Hz~8.5GHz;M ax 30dBm	Oct. 19, 2017	Oct. 09, 2018~ Oct. 10, 2018	Oct. 18, 2018	Radiation (03CH04-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY553705 28	10Hz~44GHz	Oct. 14, 2017	Oct. 09, 2018~ Oct. 10, 2018	Oct. 13, 2018	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1648	1GHz~18GHz	Dec. 16, 2017	Oct. 09, 2018~ Oct. 10, 2018	Dec 15, 2018	Radiation (03CH04-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA1702 49	15GHz~40GHz	Feb. 07, 2018	Oct. 09, 2018~ Oct. 10, 2018	Feb. 06, 2019	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY532702 03	500MHz~26.5G Hz	Dec. 16, 2017	Oct. 09, 2018~ Oct. 10, 2018	Dec. 15, 2018	Radiation (03CH04-KS)
Amplifier	MITEQ	TTA1840-35- HG	2014749	18~40GHz	Feb. 08, 2018	Oct. 09, 2018~ Oct. 10, 2018	Feb. 07, 2019	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F1040900 04	N/A	NCR	Oct. 09, 2018~ Oct. 10, 2018	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Oct. 09, 2018~ Oct. 10, 2018	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Oct. 09, 2018~ Oct. 10, 2018	NCR	Radiation (03CH04-KS)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	NCR	Jul. 11, 2018	NCR	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	3.6GHz	Dec. 08, 2017	Jul. 11, 2018	Dec. 07, 2018	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Mar. 06, 2018	Jul. 11, 2018	Mar. 05, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Jul. 11, 2018	Nov. 29, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 08, 2017	Jul. 11, 2018	Dec. 07, 2018	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	NCR	Jul. 11, 2018	NCR	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Jul. 11, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Jul. 11, 2018	Jan. 02, 2019	Conduction (CO05-HY)

NCR: No Calibration Required

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz) for CO05-HY

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.7dB
-------------------------------------------------------------------------	-------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz) for 03CH02-KS

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8dB
-------------------------------------------------------------------------	-------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz) for 03CH04-KS

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

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz) for 03CH04-KS

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



Appendix A. Conducted Test Results

Report Number : FR860502D

Test Engineer:	Smile Wang	Temperature:	21~25	°C
Test Date:	2018/10/20~2018/10/25	Relative Humidity:	51~54	%

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

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	17.08		20.73		16.30		0.5	0.5	Pass
11a	6Mbps	1	157	5785	17.13		20.68		16.30		0.5	0.5	Pass
11a	6Mbps	1	165	5825	17.13		20.43		16.32		0.5	0.5	Pass
HT20	MCS0	1	149	5745	18.18		21.63		17.52		0.5	0.5	Pass
HT20	MCS0	1	157	5785	18.18		21.68		17.54		0.5	0.5	Pass
HT20	MCS0	1	165	5825	18.18		21.53		17.54		0.5	0.5	Pass
HT40	MCS0	1	151	5755	36.06		40.55		35.09		0.5	0.5	Pass
HT40	MCS0	1	159	5795	36.06		40.55		35.09		0.5	0.5	Pass
VHT80	MCS0	1	155	5775	75.88		83.60		75.68		0.5	0.5	Pass
11a	6Mbps	2	149	5745	17.28	16.98	20.63	20.53	16.32	16.32	0.5		Pass
11a	6Mbps	2	157	5785	16.93	17.13	20.68	20.53	15.31	16.32	0.5		Pass
11a	6Mbps	2	165	5825	16.98	17.13	20.53	20.48	15.72	16.32	0.5		Pass
HT20	MCS0	2	149	5745	18.48	18.18	21.73	21.43	17.52	17.52	0.5		Pass
HT20	MCS0	2	157	5785	17.88	18.18	21.18	21.58	15.68	17.54	0.5		Pass
HT20	MCS0	2	165	5825	18.28	18.28	21.68	21.48	17.56	17.56	0.5		Pass
HT40	MCS0	2	151	5755	36.36	35.96	40.64	40.01	32.57	35.05	0.5		Pass
HT40	MCS0	2	159	5795	36.26	36.06	40.37	40.19	34.37	35.05	0.5		Pass
VHT80	MCS0	2	155	5775	76.00	76.00	83.76	88.39	75.68	75.68	0.5		Pass

TEST RESULTS DATA
Average Power Table
CDD Modes

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	0.12		12.60			30.00	30.00	0.91	1.52	Pass
11a	6Mbps	1	157	5785	0.12		12.93			30.00	30.00	0.91	1.52	Pass
11a	6Mbps	1	165	5825	0.12		12.88			30.00	30.00	0.91	1.52	Pass
HT20	MCS0	1	149	5745	0.05		13.29			30.00	30.00	0.91	1.52	Pass
HT20	MCS0	1	157	5785	0.05		13.03			30.00	30.00	0.91	1.52	Pass
HT20	MCS0	1	165	5825	0.05		14.16			30.00	30.00	0.91	1.52	Pass
HT40	MCS0	1	151	5755	0.10		15.27			30.00	30.00	0.91	1.52	Pass
HT40	MCS0	1	159	5795	0.10		16.56			30.00	30.00	0.91	1.52	Pass
VHT80	MCS0	1	155	5775	0.24		18.40			30.00	30.00	0.91	1.52	Pass
11a	6Mbps	2	149	5745	0.12	0.12	9.99	10.80	13.43	30.00		1.52		Pass
11a	6Mbps	2	157	5785	0.12	0.12	10.05	10.40	13.24	30.00		1.52		Pass
11a	6Mbps	2	165	5825	0.12	0.12	10.33	10.80	13.58	30.00		1.52		Pass
HT20	MCS0	2	149	5745	0.05	0.05	11.36	12.54	15.00	30.00		1.52		Pass
HT20	MCS0	2	157	5785	0.05	0.05	12.30	12.77	15.55	30.00		1.52		Pass
HT20	MCS0	2	165	5825	0.05	0.05	11.37	12.14	14.78	30.00		1.52		Pass
HT40	MCS0	2	151	5755	0.13	0.13	12.49	13.36	15.96	30.00		1.52		Pass
HT40	MCS0	2	159	5795	0.13	0.13	12.31	13.09	15.73	30.00		1.52		Pass
VHT80	MCS0	2	155	5775	0.22	0.24	17.73	18.29	21.03	30.00		1.52		Pass

TEST RESULTS DATA
Power Spectral Density
CDD Modes

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	0.12		2.22	2.22	-1.39			30.00	30.00	0.91	1.52	Pass
11a	6Mbps	1	157	5785	0.12		2.22	2.22	-1.05			30.00	30.00	0.91	1.52	Pass
11a	6Mbps	1	165	5825	0.12		2.22	2.22	-0.85			30.00	30.00	0.91	1.52	Pass
HT20	MCS0	1	149	5745	0.05		2.22	2.22	-0.97			30.00	30.00	0.91	1.52	Pass
HT20	MCS0	1	157	5785	0.05		2.22	2.22	-0.68			30.00	30.00	0.91	1.52	Pass
HT20	MCS0	1	165	5825	0.05		2.22	2.22	0.40			30.00	30.00	0.91	1.52	Pass
HT40	MCS0	1	151	5755	0.10		2.22	2.22	-1.50			30.00	30.00	0.91	1.52	Pass
HT40	MCS0	1	159	5795	0.10		2.22	2.22	-0.03			30.00	30.00	0.91	1.52	Pass
VHT80	MCS0	1	155	5775	0.24		2.22	2.22	-1.48			30.00	30.00	0.91	1.52	Pass
11a	6Mbps	2	149	5745	0.12	0.12	2.22				0.27	30.00		4.23		Pass
11a	6Mbps	2	157	5785	0.12	0.12	2.22				-0.06	30.00		4.23		Pass
11a	6Mbps	2	165	5825	0.12	0.12	2.22				0.40	30.00		4.23		Pass
HT20	MCS0	2	149	5745	0.05	0.05	2.22				1.46	30.00		4.23		Pass
HT20	MCS0	2	157	5785	0.05	0.05	2.22				2.19	30.00		4.23		Pass
HT20	MCS0	2	165	5825	0.05	0.05	2.22				0.94	30.00		4.23		Pass
HT40	MCS0	2	151	5755	0.13	0.13	2.22				0.05	30.00		4.23		Pass
HT40	MCS0	2	159	5795	0.13	0.13	2.22				-0.62	30.00		4.23		Pass
VHT80	MCS0	2	155	5775	0.22	0.24	2.22				2.00	30.00		4.23		Pass

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

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	2	149	5745	17.28	17.08	20.58	20.53	16.32	16.32	0.5		Pass
11a	6Mbps	2	157	5785	17.03	17.18	20.78	20.68	16.28	16.32	0.5		Pass
11a	6Mbps	2	165	5825	17.08	17.08	20.53	20.43	16.30	16.32	0.5		Pass
HT20	MCS0	2	149	5745	18.43	18.18	21.98	21.53	17.16	17.52	0.5		Pass
HT20	MCS0	2	157	5785	18.33	18.23	21.93	21.58	17.56	17.54	0.5		Pass
HT20	MCS0	2	165	5825	18.18	18.18	21.33	21.48	17.54	16.90	0.5		Pass
HT40	MCS0	2	151	5755	36.26	36.16	39.74	39.65	30.33	34.45	0.5		Pass
HT40	MCS0	2	159	5795	36.26	36.36	39.83	40.01	33.17	35.68	0.5		Pass
VHT80	MCS0	2	155	5775	75.64	76.00	79.44	79.28	66.89	75.60	0.5		Pass

TEST RESULTS DATA
Average Power Table
Beamforming Modes

Band IV													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	149	5745	11.06	9.49	13.36	30.00		4.23			Pass
11a	6Mbps	2	157	5785	10.45	9.08	12.83	30.00		4.23			Pass
11a	6Mbps	2	165	5825	11.18	9.76	13.54	30.00		4.23			Pass
HT20	MCS0	2	149	5745	11.07	9.35	13.30	30.00		4.23			Pass
HT20	MCS0	2	157	5785	11.37	10.11	13.80	30.00		4.23			Pass
HT20	MCS0	2	165	5825	11.09	9.97	13.58	30.00		4.23			Pass
HT40	MCS0	2	151	5755	14.77	12.68	16.86	30.00		4.23			Pass
HT40	MCS0	2	159	5795	13.65	12.36	16.06	30.00		4.23			Pass
VHT80	MCS0	2	155	5775	19.77	18.82	22.33	30.00		4.23			Pass

TEST RESULTS DATA
Power Spectral Density
Beamforming Modes

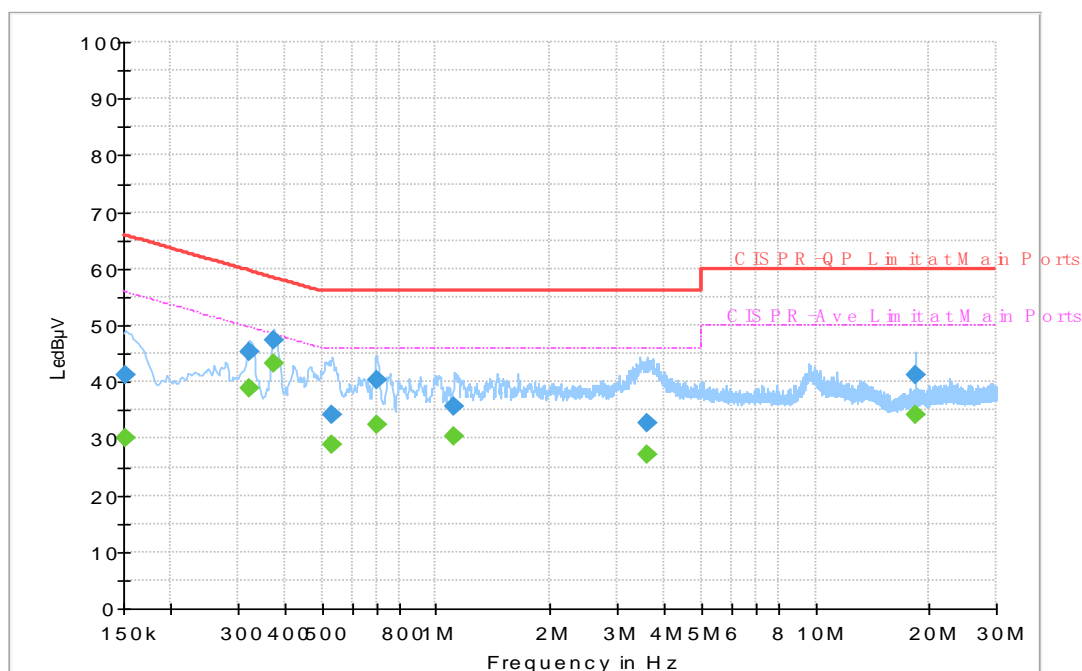
Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	0.33	0.36	2.22					-3.15	30.00	4.23		Pass
11a	6Mbps	2	157	5785	0.33	0.36	2.22					-3.37	30.00	4.23		Pass
11a	6Mbps	2	165	5825	0.33	0.36	2.22					-3.14	30.00	4.23		Pass
HT20	MCS0	2	149	5745	0.45	0.42	2.22					-4.41	30.00	4.23		Pass
HT20	MCS0	2	157	5785	0.45	0.42	2.22					-3.75	30.00	4.23		Pass
HT20	MCS0	2	165	5825	0.45	0.42	2.22					-4.42	30.00	4.23		Pass
HT40	MCS0	2	151	5755	0.41	0.42	2.22					-5.99	30.00	4.23		Pass
HT40	MCS0	2	159	5795	0.41	0.42	2.22					-7.81	30.00	4.23		Pass
VHT80	MCS0	2	155	5775	0.36	0.36	2.22					-7.47	30.00	4.23		Pass



Appendix B. AC Conducted Emission Test Results

Test Engineer :	Kai-Chun Chu	Temperature :	25~26°C
		Relative Humidity :	52~54%
Test Voltage :	120Vac / 60Hz	Phase :	Line

Full Spectrum



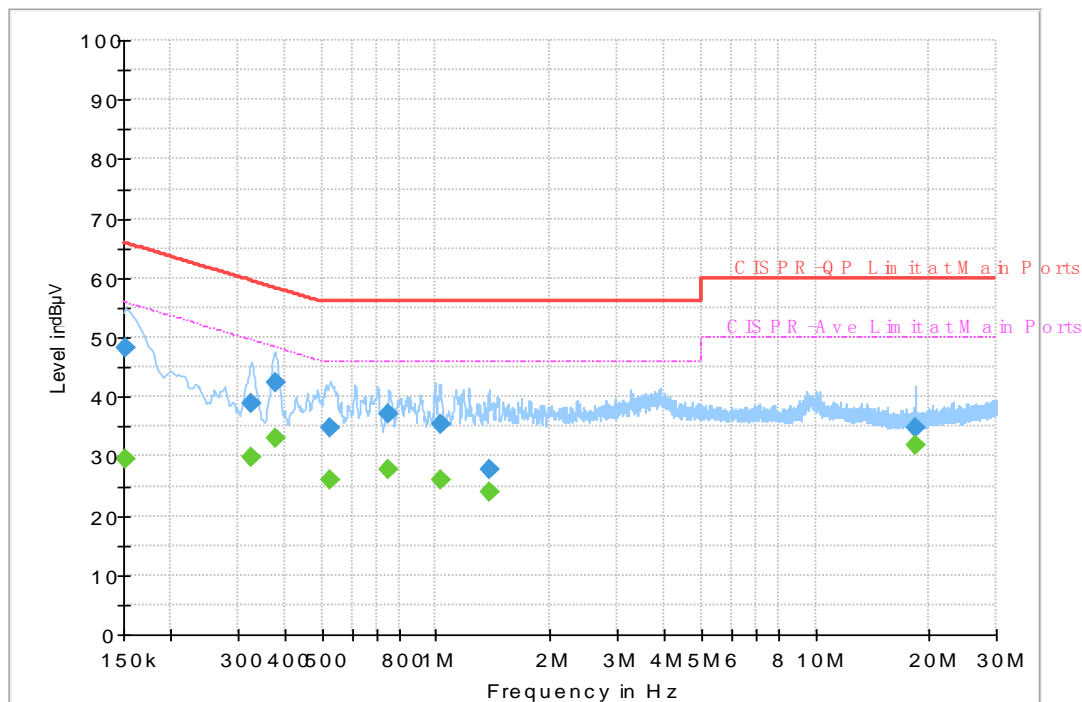
Final Result

Frequency (MHz)	Quasi-Peak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	30.24	55.88	25.64	L1	OFF	19.5
0.152250	41.09	---	65.88	24.79	L1	OFF	19.5
0.323250	---	38.88	49.62	10.74	L1	OFF	19.5
0.323250	45.36	---	59.62	14.26	L1	OFF	19.5
0.375000	---	43.20	48.39	5.19	L1	OFF	19.5
0.375000	47.37	---	58.39	11.02	L1	OFF	19.5
0.532500	---	29.04	46.00	16.96	L1	OFF	19.5
0.532500	34.11	---	56.00	21.89	L1	OFF	19.5
0.696750	---	32.50	46.00	13.50	L1	OFF	19.6
0.696750	40.26	---	56.00	15.74	L1	OFF	19.6
1.119750	---	30.35	46.00	15.65	L1	OFF	19.6
1.119750	35.56	---	56.00	20.44	L1	OFF	19.6
3.599250	---	27.16	46.00	18.84	L1	OFF	19.7
3.599250	32.82	---	56.00	23.18	L1	OFF	19.7
18.431250	---	34.28	50.00	15.72	L1	OFF	20.2
18.431250	41.36	---	60.00	18.64	L1	OFF	20.2



Test Engineer :	Kai-Chun Chu	Temperature :	25~26°C
		Relative Humidity :	52~54%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral

Full Spectrum



Final Result

Frequency (MHz)	Quasi-Peak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	29.59	55.88	26.29	N	OFF	19.5
0.152250	48.12	---	65.88	17.76	N	OFF	19.5
0.325500	---	29.85	49.57	19.72	N	OFF	19.5
0.325500	39.02	---	59.57	20.55	N	OFF	19.5
0.377250	---	32.90	48.34	15.44	N	OFF	19.5
0.377250	42.54	---	58.34	15.80	N	OFF	19.5
0.528000	---	26.17	46.00	19.83	N	OFF	19.5
0.528000	34.94	---	56.00	21.06	N	OFF	19.5
0.750750	---	27.83	46.00	18.17	N	OFF	19.6
0.750750	37.03	---	56.00	18.97	N	OFF	19.6
1.025250	---	26.14	46.00	19.86	N	OFF	19.6
1.025250	35.24	---	56.00	20.76	N	OFF	19.6
1.378500	---	23.91	46.00	22.09	N	OFF	19.6
1.378500	27.64	---	56.00	28.36	N	OFF	19.6
18.431250	---	31.94	50.00	18.06	N	OFF	20.3
18.431250	34.73	---	60.00	25.27	N	OFF	20.3



Appendix C. Radiated Spurious Emission

For CDD Modes

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	Preamplifier 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		5629.2	52.14	-16.16	68.3	41.75	35.01	8.56	33.18	335	71	P	H
		5668.4	52.02	-29.93	81.95	41.65	34.97	8.57	33.17	335	71	P	H
		5704.8	52.28	-54.37	106.65	41.93	34.94	8.58	33.17	335	71	P	H
		5720.8	51.28	-61.44	112.72	40.95	34.92	8.58	33.17	335	71	P	H
		5742	98.6	-	-	88.27	34.91	8.59	33.17	335	71	P	H
		5742	91.06	-	-	80.73	34.91	8.59	33.17	335	71	A	H
		5632	52.96	-15.34	68.3	42.57	35.01	8.56	33.18	285	34	P	V
		5699.6	52.31	-52.7	105.01	41.96	34.95	8.57	33.17	285	34	P	V
		5701.2	52.97	-52.67	105.64	42.62	34.94	8.58	33.17	285	34	P	V
		5720.1	52.37	-58.76	111.13	42.04	34.92	8.58	33.17	285	34	P	V
		5750	101.89	-	-	91.56	34.91	8.59	33.17	285	34	P	V
		5750	94.8	-	-	84.47	34.91	8.59	33.17	285	34	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 165 5825MHz		5822	98.93	-	-	88.66	34.83	8.61	33.17	301	72	P	H
		5822	91.29	-	-	81.02	34.83	8.61	33.17	301	72	A	H
		5852.4	51.42	-65.41	116.83	41.16	34.82	8.61	33.17	301	72	P	H
		5868	53.65	-53.61	107.26	43.4	34.8	8.62	33.17	301	72	P	H
		5877.6	51.86	-51.51	103.37	41.62	34.8	8.62	33.18	301	72	P	H
		5960	52.98	-15.32	68.3	42.74	34.81	8.65	33.22	301	72	P	H
		5824	102.68	-	-	92.41	34.83	8.61	33.17	290	35	P	V
		5824	95.03	-	-	84.76	34.83	8.61	33.17	290	35	A	V
		5851.6	51.3	-67.35	118.65	41.04	34.82	8.61	33.17	290	35	P	V
		5857.6	53.52	-56.65	110.17	43.27	34.8	8.62	33.17	290	35	P	V
		5880	52.29	-49.3	101.59	42.05	34.8	8.62	33.18	290	35	P	V
		5941.6	53.08	-15.22	68.3	42.84	34.81	8.64	33.21	290	35	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	53.56	-20.44	74	66.71	39.29	12.91	65.35	100	97	P	H
		11490	45.22	-8.78	54	58.37	39.29	12.91	65.35	100	97	A	H
		11490	58.35	-15.65	74	71.5	39.29	12.91	65.35	365	330	P	V
		11490	52.66	-1.34	54	65.81	39.29	12.91	65.35	365	330	A	V
802.11a CH 157 5785MHz		11570	53.85	-20.15	74	67.08	39.37	12.84	65.44	100	360	P	H
		11570	45.8	-8.2	54	59.03	39.37	12.84	65.44	100	360	A	H
		11570	57.92	-16.08	74	71.15	39.37	12.84	65.44	388	333	P	V
		11570	52.46	-1.54	54	65.69	39.37	12.84	65.44	388	333	A	V
802.11a CH 165 5825MHz		11650	51.82	-22.18	74	65.14	39.44	12.78	65.54	100	360	P	H
		11650	46.89	-7.11	54	60.21	39.44	12.78	65.54	100	360	A	H
		11650	56.03	-17.97	74	69.35	39.44	12.78	65.54	100	360	P	V
		11650	52.16	-1.84	54	65.48	39.44	12.78	65.54	381	320	A	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		5610	53.62	-14.68	68.3	43.22	35.03	8.55	33.18	385	75	P	H
		5654.4	52.62	-18.95	71.57	42.24	34.98	8.57	33.17	385	75	P	H
		5705.2	52.31	-54.45	106.76	41.96	34.94	8.58	33.17	385	75	P	H
		5724.8	52.01	-69.83	121.84	41.68	34.92	8.58	33.17	385	75	P	H
		5748	99.04	-	-	88.71	34.91	8.59	33.17	385	75	P	H
		5748	91.65	-	-	81.32	34.91	8.59	33.17	385	75	A	H
		5610.4	52.74	-15.56	68.3	42.34	35.03	8.55	33.18	282	54	P	V
		5698.4	54.04	-50.08	104.12	43.69	34.95	8.57	33.17	282	54	P	V
		5710.8	54.47	-53.86	108.33	44.12	34.94	8.58	33.17	282	54	P	V
		5722.8	54.04	-63.24	117.28	43.71	34.92	8.58	33.17	282	54	P	V
		5744	102.84	-	-	92.51	34.91	8.59	33.17	282	54	P	V
		5744	95.17	-	-	84.84	34.91	8.59	33.17	282	54	A	V
802.11n HT20 CH 165 5825MHz		5822	99.57	-	-	89.3	34.83	8.61	33.17	397	65	P	H
		5822	92.63	-	-	82.36	34.83	8.61	33.17	397	65	A	H
		5853.6	51.64	-62.45	114.09	41.39	34.8	8.62	33.17	397	65	P	H
		5858	52.51	-57.55	110.06	42.26	34.8	8.62	33.17	397	65	P	H
		5881.2	53.04	-47.65	100.69	42.8	34.8	8.62	33.18	397	65	P	H
		5975.2	53.2	-15.1	68.3	42.97	34.81	8.65	33.23	397	65	P	H
		5822	103.97	-	-	93.7	34.83	8.61	33.17	286	33	P	V
		5822	95.98	-	-	85.71	34.83	8.61	33.17	286	33	A	V
		5850.4	53.88	-67.51	121.39	43.62	34.82	8.61	33.17	286	33	P	V
		5855.1	52.96	-57.91	110.87	42.71	34.8	8.62	33.17	286	33	P	V
		5902.8	51.66	-33.03	84.69	41.41	34.8	8.63	33.18	286	33	P	V
		5960.4	52.99	-15.31	68.3	42.75	34.81	8.65	33.22	286	33	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		11490	54.87	-19.13	74	68.02	39.29	12.91	65.35	100	360	P	H
HT20		11490	47.86	-6.14	54	61.01	39.29	12.91	65.35	100	360	A	H
CH 149		11490	57.88	-16.12	74	71.03	39.29	12.91	65.35	362	320	P	V
5745MHz		11490	52.31	-1.69	54	65.46	39.29	12.91	65.35	362	320	A	V
802.11n		11570	54.13	-19.87	74	67.36	39.37	12.84	65.44	100	360	P	H
HT20		11570	46.98	-7.02	54	60.21	39.37	12.84	65.44	100	360	A	H
CH 157		11570	56.36	-17.64	74	69.59	39.37	12.84	65.44	100	360	P	V
5785MHz		11570	52.26	-1.74	54	65.49	39.37	12.84	65.44	362	332	A	V
802.11n		11650	54.33	-19.67	74	67.65	39.44	12.78	65.54	100	360	P	H
HT20		11650	46.89	-7.11	54	60.21	39.44	12.78	65.54	100	360	A	H
CH 165		11650	56.71	-17.29	74	70.03	39.44	12.78	65.54	362	332	P	V
5825MHz		11650	52.39	-1.61	54	65.71	39.44	12.78	65.54	362	332	A	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 HT40 (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 HT40 CH 151 5755MHz		5603.6	52.54	-15.76	68.3	42.14	35.03	8.55	33.18	330	73	P	H
		5698.8	53.15	-51.27	104.42	42.8	34.95	8.57	33.17	330	73	P	H
		5714.8	55.48	-53.97	109.45	45.13	34.94	8.58	33.17	330	73	P	H
		5724.4	56.84	-64.09	120.93	46.51	34.92	8.58	33.17	330	73	P	H
		5748	97.94	-	-	87.61	34.91	8.59	33.17	330	73	P	H
		5748	90.74	-	-	80.41	34.91	8.59	33.17	330	73	A	H
		5852	51.11	-66.63	117.74	40.85	34.82	8.61	33.17	330	73	P	H
		5856	52.35	-58.27	110.62	42.1	34.8	8.62	33.17	330	73	P	H
		5884	51.68	-46.94	98.62	41.44	34.8	8.62	33.18	330	73	P	H
		5948	51.81	-16.49	68.3	41.57	34.81	8.64	33.21	330	73	P	H
		5625.6	53.75	-14.55	68.3	43.36	35.01	8.56	33.18	375	43	P	V
		5699.2	57.85	-46.86	104.71	47.5	34.95	8.57	33.17	375	43	P	V
		5718.4	59.71	-50.74	110.45	49.38	34.92	8.58	33.17	375	43	P	V
		5723.2	59.67	-58.53	118.2	49.34	34.92	8.58	33.17	375	43	P	V
		5762	103.27	-	-	92.96	34.89	8.59	33.17	375	43	P	V
		5762	93.97	-	-	83.66	34.89	8.59	33.17	375	43	A	V
		5853.6	51.99	-62.1	114.09	41.74	34.8	8.62	33.17	375	43	P	V
		5874.4	51.48	-53.99	105.47	41.24	34.8	8.62	33.18	375	43	P	V
		5878	52.95	-50.12	103.07	42.71	34.8	8.62	33.18	375	43	P	V
		5960.4	52.47	-15.83	68.3	42.23	34.81	8.65	33.22	375	43	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 HT40 CH 159 5795MHz		5614	52.71	-15.59	68.3	42.31	35.03	8.55	33.18	307	71	P	H
		5697.2	51.97	-51.27	103.24	41.62	34.95	8.57	33.17	307	71	P	H
		5715.6	53.58	-56.09	109.67	43.23	34.94	8.58	33.17	307	71	P	H
		5724.4	52.28	-68.65	120.93	41.95	34.92	8.58	33.17	307	71	P	H
		5788	99.35	-	-	89.06	34.86	8.6	33.17	307	71	P	H
		5788	91.9	-	-	81.61	34.86	8.6	33.17	307	71	A	H
		5851.2	53.4	-66.16	119.56	43.14	34.82	8.61	33.17	307	71	P	H
		5855.1	54.18	-56.69	110.87	43.93	34.8	8.62	33.17	307	71	P	H
		5905.2	53.48	-29.43	82.91	43.23	34.81	8.63	33.19	307	71	P	H
		5966.8	51.85	-16.45	68.3	41.61	34.81	8.65	33.22	307	71	P	H
		5609.6	52.29	-16.01	68.3	41.89	35.03	8.55	33.18	298	32	P	V
		5670.4	52.52	-30.92	83.44	42.15	34.97	8.57	33.17	298	32	P	V
		5715.6	54.59	-55.08	109.67	44.24	34.94	8.58	33.17	298	32	P	V
		5722.4	53.93	-62.44	116.37	43.6	34.92	8.58	33.17	298	32	P	V
		5788	101.96	-	-	91.67	34.86	8.6	33.17	298	32	P	V
		5788	94.75	-	-	84.46	34.86	8.6	33.17	298	32	A	V
		5853.2	58.99	-56.01	115	48.73	34.82	8.61	33.17	298	32	P	V
		5855.1	56.4	-54.47	110.87	46.15	34.8	8.62	33.17	298	32	P	V
		5878	52.16	-50.91	103.07	41.92	34.8	8.62	33.18	298	32	P	V
		5949.2	51.84	-16.46	68.3	41.6	34.81	8.64	33.21	298	32	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 HT40 (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		11510	52.78	-21.22	74	65.92	39.3	12.9	65.34	100	360	P	H
HT40		11510	45.07	-8.93	54	58.21	39.3	12.9	65.34	100	360	A	H
CH 151		11510	56.45	-17.55	74	69.59	39.3	12.9	65.34	362	330	P	V
5755MHz		11510	52.35	-1.65	54	65.49	39.3	12.9	65.34	362	330	A	V
802.11n		11590	53.58	-20.42	74	66.84	39.39	12.82	65.47	100	360	P	H
HT40		11590	45.95	-8.05	54	59.21	39.39	12.82	65.47	100	360	A	H
CH 159		11590	58.02	-15.98	74	71.28	39.39	12.82	65.47	362	330	P	V
5795MHz		11590	52.69	-1.31	54	65.95	39.39	12.82	65.47	362	330	A	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		5641.2	60.96	-7.34	68.3	50.57	35	8.56	33.17	382	74	P	H
		5699.99	68.82	-36.47	105.29	58.47	34.95	8.57	33.17	382	74	P	H
		5713.6	72.53	-36.58	109.11	62.18	34.94	8.58	33.17	382	74	P	H
		5722.4	72.97	-43.4	116.37	62.64	34.92	8.58	33.17	382	74	P	H
		5762	98.12	-	-	87.81	34.89	8.59	33.17	382	74	P	H
		5762	90.95	-	-	80.64	34.89	8.59	33.17	382	74	A	H
		5853.2	68.29	-46.71	115	58.03	34.82	8.61	33.17	382	74	P	H
		5860.4	68.21	-41.18	109.39	57.96	34.8	8.62	33.17	382	74	P	H
		5874.8	63.68	-41.68	105.36	53.44	34.8	8.62	33.18	382	74	P	H
		5929.6	52.83	-15.47	68.3	42.58	34.81	8.64	33.2	382	74	P	H
		5640.4	60.36	-7.94	68.3	49.97	35	8.56	33.17	375	31	P	V
		5695.2	70.26	-31.5	101.76	59.91	34.95	8.57	33.17	375	31	P	V
		5719.6	74.08	-36.71	110.79	63.75	34.92	8.58	33.17	375	31	P	V
		5722.8	75.03	-42.25	117.28	64.7	34.92	8.58	33.17	375	31	P	V
		5770	101.62	-	-	91.31	34.88	8.6	33.17	375	31	P	V
		5770	94.11	-	-	83.8	34.88	8.6	33.17	375	31	A	V
		5852.8	68.34	-47.58	115.92	58.08	34.82	8.61	33.17	375	31	P	V
		5855.2	70.27	-40.57	110.84	60.02	34.8	8.62	33.17	375	31	P	V
		5874.8	63.73	-41.63	105.36	53.49	34.8	8.62	33.18	375	31	P	V
		5934.8	56.81	-11.49	68.3	46.56	34.81	8.64	33.2	375	31	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	53.78	-20.22	74	67	39.35	12.85	65.42	100	360	P	H
VHT80		11550	47	-7	54	60.22	39.35	12.85	65.42	100	360	A	H
CH 155		11550	57.78	-16.22	74	71	39.35	12.85	65.42	374	330	P	V
5775MHz		11550	52.9	-1.1	54	66.12	39.35	12.85	65.42	374	330	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (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 VHT80 LF		30.97	21.93	-18.07	40	29.29	23.93	0.61	31.9	-	-	P	H
		265.71	27.12	-18.88	46	37.37	19.13	1.76	31.14	-	-	P	H
		427.7	23.91	-22.09	46	30.07	22.05	2.08	30.29	-	-	P	H
		578.05	26.16	-19.84	46	29	24.05	2.54	29.43	-	-	P	H
		710.94	30.85	-15.15	46	32	24.73	2.67	28.55	100	129	P	H
		773.02	30.11	-15.89	46	30	25.47	2.8	28.16	-	-	P	H
		30	22.58	-17.42	40	29.38	24.5	0.61	31.91	-	-	P	V
		262.8	27.91	-18.09	46	38.09	19.21	1.76	31.15	-	-	P	V
		539.25	29.83	-16.17	46	33.39	23.63	2.45	29.64	-	-	P	V
		726.46	31.96	-14.04	46	32.81	24.91	2.69	28.45	-	-	P	V
		773.02	32.34	-13.66	46	32.23	25.47	2.8	28.16	100	214	P	V
		820.55	29.55	-16.45	46	28.55	25.92	2.91	27.83	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5623.2	52.31	-15.99	68.3	41.92	35.01	8.56	33.18	280	236	P	H
		5681.6	52.95	-38.77	91.72	42.58	34.97	8.57	33.17	280	236	P	H
		5706	53.43	-53.55	106.98	43.08	34.94	8.58	33.17	280	236	P	H
		5722.4	52.5	-63.87	116.37	42.17	34.92	8.58	33.17	280	236	P	H
		5744	105.92	-	-	95.59	34.91	8.59	33.17	280	236	P	H
		5744	97.25	-	-	86.92	34.91	8.59	33.17	280	236	A	H
		5618	51.78	-16.52	68.3	41.39	35.01	8.56	33.18	303	183	P	V
		5654	51.73	-19.54	71.27	41.35	34.98	8.57	33.17	303	183	P	V
		5702	53.54	-52.32	105.86	43.19	34.94	8.58	33.17	303	183	P	V
		5720.8	51.21	-61.51	112.72	40.88	34.92	8.58	33.17	303	183	P	V
		5740	102.76	-	-	92.43	34.91	8.59	33.17	303	183	P	V
		5740	94.37	-	-	84.04	34.91	8.59	33.17	303	183	A	V
802.11a CH 165 5825MHz		5826	104.37	-	-	94.1	34.83	8.61	33.17	304	242	P	H
		5826	96.95	-	-	86.68	34.83	8.61	33.17	304	242	A	H
		5850	51.7	-70.6	122.3	41.44	34.82	8.61	33.17	304	242	P	H
		5865.2	52.88	-55.16	108.04	42.63	34.8	8.62	33.17	304	242	P	H
		5901.2	52.85	-33.02	85.87	42.6	34.8	8.63	33.18	304	242	P	H
		5963.6	51.99	-16.31	68.3	41.75	34.81	8.65	33.22	304	242	P	H
		5820	102.14	-	-	91.87	34.83	8.61	33.17	302	175	P	V
		5820	94.8	-	-	84.53	34.83	8.61	33.17	302	175	A	V
		5850.8	50.54	-69.94	120.48	40.28	34.82	8.61	33.17	302	175	P	V
		5866.4	51.84	-55.87	107.71	41.59	34.8	8.62	33.17	302	175	P	V
		5907.2	52.41	-29.03	81.44	42.16	34.81	8.63	33.19	302	175	P	V
		5959.2	51.84	-16.46	68.3	41.6	34.81	8.65	33.22	302	175	P	V



Band 4 5725~5850MHz

WIFI 802.11a (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)
802.11a CH 149 5745MHz		11490	57.75	-16.25	74	70.9	39.29	12.91	65.35	289	114	P	H
		11490	52.89	-1.11	54	66.04	39.29	12.91	65.35	289	114	A	H
		11490	55.93	-18.07	74	69.08	39.29	12.91	65.35	134	166	P	V
		11490	51.77	-2.23	54	64.92	39.29	12.91	65.35	134	166	A	V
802.11a CH 157 5785MHz		11570	57.59	-16.41	74	70.82	39.37	12.84	65.44	290	115	P	H
		11570	52.8	-1.2	54	66.03	39.37	12.84	65.44	290	115	A	H
		11570	55.62	-18.38	74	68.85	39.37	12.84	65.44	141	163	P	V
		11570	51.29	-2.71	54	64.52	39.37	12.84	65.44	141	163	A	V
802.11a CH 165 5825MHz		11650	56.42	-17.58	74	69.74	39.44	12.78	65.54	291	113	P	H
		11650	52.96	-1.04	54	66.28	39.44	12.78	65.54	291	113	A	H
		11650	56.35	-17.65	74	69.67	39.44	12.78	65.54	100	360	P	V
		11650	50.96	-3.04	54	64.28	39.44	12.78	65.54	132	158	A	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		5625.6	52.69	-15.61	68.3	42.3	35.01	8.56	33.18	100	117	P	H
		5663.6	54.23	-24.17	78.4	43.85	34.98	8.57	33.17	100	117	P	H
		5704	55.49	-50.93	106.42	45.14	34.94	8.58	33.17	100	117	P	H
		5722.8	57.42	-59.86	117.28	47.09	34.92	8.58	33.17	100	117	P	H
		5742	106.15	-	-	95.82	34.91	8.59	33.17	100	117	P	H
		5742	99.01	-	-	88.68	34.91	8.59	33.17	100	117	A	H
		5629.2	53.2	-15.1	68.3	42.81	35.01	8.56	33.18	100	117	P	V
		5699.2	52.97	-51.74	104.71	42.62	34.95	8.57	33.17	100	117	P	V
		5710	54.2	-53.9	108.1	43.85	34.94	8.58	33.17	100	117	P	V
		5720.4	54.48	-57.33	111.81	44.15	34.92	8.58	33.17	100	117	P	V
		5744	104.26	-	-	93.93	34.91	8.59	33.17	100	117	P	V
		5744	97.18	-	-	86.85	34.91	8.59	33.17	100	117	A	V
802.11n HT20 CH 165 5825MHz		5826	106.37	-	-	96.1	34.83	8.61	33.17	303	242	P	H
		5826	98.29	-	-	88.02	34.83	8.61	33.17	303	242	A	H
		5851.2	51.75	-67.81	119.56	41.49	34.82	8.61	33.17	303	242	P	H
		5862.4	54.22	-54.61	108.83	43.97	34.8	8.62	33.17	303	242	P	H
		5917.2	52.43	-21.62	74.05	42.18	34.81	8.63	33.19	303	242	P	H
		5928	52.59	-15.71	68.3	42.34	34.81	8.64	33.2	303	242	P	H
		5830	104	-	-	93.73	34.83	8.61	33.17	393	177	P	V
		5830	96.4	-	-	86.13	34.83	8.61	33.17	393	177	A	V
		5852	53	-64.74	117.74	42.74	34.82	8.61	33.17	393	177	P	V
		5870	53.19	-53.51	106.7	42.94	34.8	8.62	33.17	393	177	P	V
		5875.2	51.66	-53.49	105.15	41.42	34.8	8.62	33.18	393	177	P	V
		5944	52.03	-16.27	68.3	41.79	34.81	8.64	33.21	393	177	P	V



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		11490	59.75	-14.25	74	72.9	39.29	12.91	65.35	302	118	P	H
HT20		11490	52.36	-1.64	54	65.51	39.29	12.91	65.35	302	118	A	H
CH 149		11490	59.97	-14.03	74	73.12	39.29	12.91	65.35	134	162	P	V
5745MHz		11490	52.89	-1.11	54	66.04	39.29	12.91	65.35	134	162	A	V
802.11n		11570	57.82	-16.18	74	71.05	39.37	12.84	65.44	310	114	P	H
HT20		11570	52.63	-1.37	54	65.86	39.37	12.84	65.44	310	114	A	H
CH 157		11570	57.91	-16.09	74	71.14	39.37	12.84	65.44	152	169	P	V
5785MHz		11570	52.55	-1.45	54	65.78	39.37	12.84	65.44	152	169	A	V
802.11n		11645	64.22	-9.78	74	77.54	39.44	12.78	65.54	287	115	P	H
HT20		11645	52.93	-1.07	54	66.25	39.44	12.78	65.54	287	115	A	H
CH 165		11650	66.26	-7.74	74	79.58	39.44	12.78	65.54	131	165	P	V
5825MHz		11650	52.36	-1.64	54	65.68	39.44	12.78	65.54	131	165	A	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 HT40 (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 HT40 CH 151 5755MHz		5627.2	53.46	-14.84	68.3	43.07	35.01	8.56	33.18	278	243	P	H
		5674.8	53.93	-32.76	86.69	43.56	34.97	8.57	33.17	278	243	P	H
		5717.6	57.85	-52.38	110.23	47.52	34.92	8.58	33.17	278	243	P	H
		5724	61.95	-58.07	120.02	51.62	34.92	8.58	33.17	278	243	P	H
		5746	104.83	-	-	94.5	34.91	8.59	33.17	278	243	P	H
		5746	96.89	-	-	86.56	34.91	8.59	33.17	278	243	A	H
		5854	51.87	-61.31	113.18	41.62	34.8	8.62	33.17	278	243	P	H
		5866.8	51.34	-56.25	107.59	41.09	34.8	8.62	33.17	278	243	P	H
		5890	52.41	-41.76	94.17	42.16	34.8	8.63	33.18	278	243	P	H
		5994.8	51.64	-16.66	68.3	41.39	34.82	8.66	33.23	278	243	P	H
		5631.6	52.64	-15.66	68.3	42.25	35.01	8.56	33.18	330	186	P	V
		5698.4	53.23	-50.89	104.12	42.88	34.95	8.57	33.17	330	186	P	V
		5718.8	56.57	-53.99	110.56	46.24	34.92	8.58	33.17	330	186	P	V
		5722.4	56.69	-59.68	116.37	46.36	34.92	8.58	33.17	330	186	P	V
		5748	102.92	-	-	92.59	34.91	8.59	33.17	330	186	P	V
		5748	94.22	-	-	83.89	34.91	8.59	33.17	330	186	A	V
		5853.2	50.74	-64.26	115	40.48	34.82	8.61	33.17	330	186	P	V
		5867.2	52.02	-55.46	107.48	41.77	34.8	8.62	33.17	330	186	P	V
		5885.6	52.53	-44.9	97.43	42.29	34.8	8.62	33.18	330	186	P	V
		5951.2	51.71	-16.59	68.3	41.47	34.81	8.64	33.21	330	186	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 HT40 CH 159 5795MHz		5640.8	55.13	-13.17	68.3	44.74	35	8.56	33.17	292	238	P	H
		5674.8	54.49	-32.2	86.69	44.12	34.97	8.57	33.17	292	238	P	H
		5702.4	54.15	-51.82	105.97	43.8	34.94	8.58	33.17	292	238	P	H
		5722	53.77	-61.69	115.46	43.44	34.92	8.58	33.17	292	238	P	H
		5786	105.22	-	-	94.93	34.86	8.6	33.17	292	238	P	H
		5786	96.85	-	-	86.56	34.86	8.6	33.17	292	238	A	H
		5854.4	50.62	-61.65	112.27	40.37	34.8	8.62	33.17	292	238	P	H
		5863.2	52.08	-56.52	108.6	41.83	34.8	8.62	33.17	292	238	P	H
		5879.6	53.17	-48.71	101.88	42.93	34.8	8.62	33.18	292	238	P	H
		5957.6	51.97	-16.33	68.3	41.73	34.81	8.65	33.22	292	238	P	H
		5644.8	52.88	-15.42	68.3	42.49	35	8.56	33.17	293	182	P	V
		5671.2	52.23	-31.8	84.03	41.86	34.97	8.57	33.17	293	182	P	V
		5711.6	51.39	-57.16	108.55	41.04	34.94	8.58	33.17	293	182	P	V
		5721.6	52.23	-62.32	114.55	41.9	34.92	8.58	33.17	293	182	P	V
		5798	102.09	-	-	91.8	34.86	8.6	33.17	293	182	P	V
		5798	94.01	-	-	83.72	34.86	8.6	33.17	293	182	A	V
		5853.2	51.29	-63.71	115	41.03	34.82	8.61	33.17	293	182	P	V
		5860	50.95	-58.55	109.5	40.7	34.8	8.62	33.17	293	182	P	V
		5922.4	51.8	-18.42	70.22	41.55	34.81	8.64	33.2	293	182	P	V
		5956.8	51.9	-16.4	68.3	41.66	34.81	8.65	33.22	293	182	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 HT40 (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		11505	62.44	-11.56	74	75.58	39.3	12.9	65.34	294	113	P	H
HT40		11505	52.86	-1.14	54	66	39.3	12.9	65.34	294	113	A	H
CH 151		11510	61.24	-12.76	74	74.38	39.3	12.9	65.34	106	164	P	V
5755MHz		11510	51.7	-2.3	54	64.84	39.3	12.9	65.34	106	164	A	V
802.11n		11595	63.52	-10.48	74	76.78	39.39	12.82	65.47	303	113	P	H
HT40		11595	52.94	-1.06	54	66.2	39.39	12.82	65.47	303	113	A	H
CH 159		11585	61.09	-12.91	74	74.35	39.39	12.82	65.47	144	164	P	V
5795MHz		11585	51.42	-2.58	54	64.68	39.39	12.82	65.47	144	164	A	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		5634	59.33	-8.97	68.3	48.94	35	8.56	33.17	281	240	P	H
		5697.2	71.17	-32.07	103.24	60.82	34.95	8.57	33.17	281	240	P	H
		5713.2	72.07	-36.93	109	61.72	34.94	8.58	33.17	281	240	P	H
		5720.8	69.21	-43.51	112.72	58.88	34.92	8.58	33.17	281	240	P	H
		5754	104.22	-	-	93.91	34.89	8.59	33.17	281	240	P	H
		5754	96.49	-	-	86.18	34.89	8.59	33.17	281	240	A	H
		5852.8	63.42	-52.5	115.92	53.16	34.82	8.61	33.17	281	240	P	H
		5855.6	63.82	-46.91	110.73	53.57	34.8	8.62	33.17	281	240	P	H
		5874.8	58.09	-47.27	105.36	47.85	34.8	8.62	33.18	281	240	P	H
		5974.4	52.34	-15.96	68.3	42.11	34.81	8.65	33.23	281	240	P	H
		5638.8	56.08	-12.22	68.3	45.69	35	8.56	33.17	300	185	P	V
		5698	65.94	-37.89	103.83	55.59	34.95	8.57	33.17	300	185	P	V
		5719.2	70.84	-39.84	110.68	60.51	34.92	8.58	33.17	300	185	P	V
		5722	68.81	-46.65	115.46	58.48	34.92	8.58	33.17	300	185	P	V
		5760	101.23	-	-	90.92	34.89	8.59	33.17	300	185	P	V
		5760	93.5	-	-	83.19	34.89	8.59	33.17	300	185	A	V
		5854	60.05	-53.13	113.18	49.8	34.8	8.62	33.17	300	185	P	V
		5855.6	60.86	-49.87	110.73	50.61	34.8	8.62	33.17	300	185	P	V
		5875.2	55.79	-49.36	105.15	45.55	34.8	8.62	33.18	300	185	P	V
		5963.2	52.42	-15.88	68.3	42.18	34.81	8.65	33.22	300	185	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		11545	61.4	-12.6	74	74.59	39.33	12.87	65.39	295	114	P	H
VHT80		11545	52.57	-1.43	54	65.76	39.33	12.87	65.39	295	114	A	H
CH 155		11550	60.34	-13.66	74	73.56	39.35	12.85	65.42	100	125	P	V
5775MHz		11550	50.68	-3.32	54	63.9	39.35	12.85	65.42	100	125	A	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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a LF		30	22.56	-17.44	40	29.36	24.5	0.61	31.91	-	-	P	H
		134.76	21.34	-22.16	43.5	34.4	17.43	1.18	31.67	-	-	P	H
		265.71	31.34	-14.66	46	41.59	19.13	1.76	31.14	-	-	P	H
		329.73	24.88	-21.12	46	34.05	19.78	1.87	30.82	-	-	P	H
		710.94	34.22	-11.78	46	35.37	24.73	2.67	28.55	100	0	P	H
		773.02	34.15	-11.85	46	34.04	25.47	2.8	28.16	-	-	P	H
		30	22.08	-17.92	40	28.88	24.5	0.61	31.91	-	-	P	V
		165.8	22.36	-21.14	43.5	36.98	15.63	1.31	31.56	-	-	P	V
		265.71	27.87	-18.13	46	38.12	19.13	1.76	31.14	-	-	P	V
		578.05	28.91	-17.09	46	31.75	24.05	2.54	29.43	-	-	P	V
		710.94	29.23	-16.77	46	30.38	24.73	2.67	28.55	-	-	P	V
		773.02	33.18	-12.82	46	33.07	25.47	2.8	28.16	100	67	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



For Beamforming Modes

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 149 5745MHz		5640.4	52.13	-16.17	68.3	41.74	35	8.56	33.17	296	62	P	H
		5697.6	52.26	-51.27	103.53	41.91	34.95	8.57	33.17	296	62	P	H
		5702	52.23	-53.63	105.86	41.88	34.94	8.58	33.17	296	62	P	H
		5724.8	54.72	-67.12	121.84	44.39	34.92	8.58	33.17	296	62	P	H
		5746	100.5	-	-	90.17	34.91	8.59	33.17	296	62	P	H
		5746	92.04	-	-	81.71	34.91	8.59	33.17	296	62	A	H
		5621.6	52.65	-15.65	68.3	42.26	35.01	8.56	33.18	100	242	P	V
		5697.2	53.48	-49.76	103.24	43.13	34.95	8.57	33.17	100	242	P	V
		5701.2	54.09	-51.55	105.64	43.74	34.94	8.58	33.17	100	242	P	V
		5720	53.15	-57.75	110.9	42.82	34.92	8.58	33.17	100	242	P	V
		5738	104.91	-	-	94.58	34.91	8.59	33.17	100	242	P	V
		5738	95.98	-	-	85.65	34.91	8.59	33.17	100	242	A	V
802.11n HT20 CH 165 5825MHz		5828	101.55	-	-	91.28	34.83	8.61	33.17	248	266	P	H
		5828	93	-	-	82.73	34.83	8.61	33.17	248	266	A	H
		5850.8	51.79	-68.69	120.48	41.53	34.82	8.61	33.17	248	266	P	H
		5860.4	52.56	-56.83	109.39	42.31	34.8	8.62	33.17	248	266	P	H
		5882	51.88	-48.22	100.1	41.64	34.8	8.62	33.18	248	266	P	H
		5941.2	52.32	-15.98	68.3	42.08	34.81	8.64	33.21	248	266	P	H
		5824	106.1	-	-	95.83	34.83	8.61	33.17	286	217	P	V
		5824	97	-	-	86.73	34.83	8.61	33.17	286	217	A	V
		5853.6	52.61	-61.48	114.09	42.36	34.8	8.62	33.17	286	217	P	V
		5870.4	53.2	-53.39	106.59	42.95	34.8	8.62	33.17	286	217	P	V
		5921.6	53.47	-17.34	70.81	43.22	34.81	8.64	33.2	286	217	P	V
		5994.4	51.99	-16.31	68.3	41.74	34.82	8.66	33.23	286	217	P	V



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		11490	51.88	-22.12	74	65.03	39.29	12.91	65.35	100	360	P	H
HT20		11490	49.07	-4.93	54	62.22	39.29	12.91	65.35	100	264	A	H
CH 149		11490	62.1	-11.9	74	75.25	39.29	12.91	65.35	300	8	P	V
5745MHz		11490	52.5	-1.5	54	65.65	39.29	12.91	65.35	300	8	A	V
802.11n		11570	52.45	-21.55	74	65.68	39.37	12.84	65.44	100	360	P	H
HT20		11570	47.78	-6.22	54	61.01	39.37	12.84	65.44	100	360	A	H
CH 157		11570	56.98	-17.02	74	70.21	39.37	12.84	65.44	300	6	P	V
5785MHz		11570	52.38	-1.62	54	65.61	39.37	12.84	65.44	300	6	A	V
802.11n		11650	52.62	-21.38	74	65.94	39.44	12.78	65.54	100	360	P	H
HT20		11650	48.45	-5.55	54	61.77	39.44	12.78	65.54	100	360	A	H
CH 165		11650	56.1	-17.9	74	69.42	39.44	12.78	65.54	321	6	P	V
5825MHz		11650	52.1	-1.9	54	65.42	39.44	12.78	65.54	321	6	A	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 HT40 (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 HT40 CH 151 5755MHz		5639.2	52.9	-15.4	68.3	42.51	35	8.56	33.17	397	68	P	H
		5665.6	52.41	-27.47	79.88	42.03	34.98	8.57	33.17	397	68	P	H
		5712.8	58.83	-50.06	108.89	48.48	34.94	8.58	33.17	397	68	P	H
		5722.8	53.93	-63.35	117.28	43.6	34.92	8.58	33.17	397	68	P	H
		5750	101.17	-	-	90.84	34.91	8.59	33.17	397	68	P	H
		5750	94.9	-	-	84.57	34.91	8.59	33.17	397	68	A	H
		5852.8	50.61	-65.31	115.92	40.35	34.82	8.61	33.17	397	68	P	H
		5862.4	52.15	-56.68	108.83	41.9	34.8	8.62	33.17	397	68	P	H
		5879.6	51.39	-50.49	101.88	41.15	34.8	8.62	33.18	397	68	P	H
		5990	52.69	-15.61	68.3	42.44	34.82	8.66	33.23	397	68	P	H
		5606.4	53.44	-14.86	68.3	43.04	35.03	8.55	33.18	356	218	P	V
		5697.6	55.09	-48.44	103.53	44.74	34.95	8.57	33.17	356	218	P	V
		5719.99	62.06	-48.84	110.9	51.73	34.92	8.58	33.17	356	218	P	V
		5723.2	65.11	-53.09	118.2	54.78	34.92	8.58	33.17	356	218	P	V
		5764	105.58	-	-	95.27	34.89	8.59	33.17	356	218	P	V
		5764	97.31	-	-	87	34.89	8.59	33.17	356	218	A	V
		5850	53.85	-68.45	122.3	43.59	34.82	8.61	33.17	356	218	P	V
		5874.4	52.27	-53.2	105.47	42.03	34.8	8.62	33.18	356	218	P	V
		5879.2	52.13	-50.05	102.18	41.89	34.8	8.62	33.18	356	218	P	V
		5927.2	52.14	-16.16	68.3	41.89	34.81	8.64	33.2	356	218	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 HT40 CH 159 5795MHz		5614.4	52.44	-15.86	68.3	42.04	35.03	8.55	33.18	397	75	P	H
		5696.4	52.37	-50.28	102.65	42.02	34.95	8.57	33.17	397	75	P	H
		5702.8	52.77	-53.32	106.09	42.42	34.94	8.58	33.17	397	75	P	H
		5724.4	52.21	-68.72	120.93	41.88	34.92	8.58	33.17	397	75	P	H
		5802	94.75	-	-	84.46	34.86	8.6	33.17	397	75	A	H
		5802	99.6	-	-	89.31	34.86	8.6	33.17	397	75	P	H
		5852.4	50.66	-66.17	116.83	40.4	34.82	8.61	33.17	397	75	P	H
		5865.2	51.91	-56.13	108.04	41.66	34.8	8.62	33.17	397	75	P	H
		5913.2	51.94	-25.06	77	41.69	34.81	8.63	33.19	397	75	P	H
		5991.2	51.92	-16.38	68.3	41.67	34.82	8.66	33.23	397	75	P	H
		5641.2	54	-14.3	68.3	43.61	35	8.56	33.17	300	196	P	V
		5662.4	53.97	-23.54	77.51	43.59	34.98	8.57	33.17	300	196	P	V
		5700.1	53.44	-51.89	105.33	43.09	34.95	8.57	33.17	300	196	P	V
		5723.2	52.58	-65.62	118.2	42.25	34.92	8.58	33.17	300	196	P	V
		5800	104.11	-	-	93.82	34.86	8.6	33.17	300	196	P	V
		5800	96	-	-	85.71	34.86	8.6	33.17	300	196	A	V
		5854.8	50.99	-60.37	111.36	40.74	34.8	8.62	33.17	300	196	P	V
		5855.2	51.85	-58.99	110.84	41.6	34.8	8.62	33.17	300	196	P	V
		5875.2	51.96	-53.19	105.15	41.72	34.8	8.62	33.18	300	196	P	V
		5962.4	52.14	-16.16	68.3	41.9	34.81	8.65	33.22	300	196	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 HT40 (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		11510	51.03	-22.97	74	64.17	39.3	12.9	65.34	100	360	P	H
HT40		11510	46.07	-7.93	54	59.21	39.3	12.9	65.34	100	360	A	H
CH 151		11510	57.07	-16.93	74	70.21	39.3	12.9	65.34	300	2	P	V
5755MHz		11510	52.37	-1.63	54	65.51	39.3	12.9	65.34	300	2	A	V
802.11n		11590	52.52	-21.48	74	65.78	39.39	12.82	65.47	100	360	P	H
HT40		11590	51.39	-2.61	54	64.65	39.39	12.82	65.47	100	360	A	H
CH 159		11590	57.4	-16.6	74	70.66	39.39	12.82	65.47	100	360	P	V
5795MHz		11590	52.43	-1.57	54	65.69	39.39	12.82	65.47	300	2	A	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		5642	55.18	-13.12	68.3	44.79	35	8.56	33.17	277	255	P	H
		5682.8	62.6	-30.01	92.61	52.23	34.97	8.57	33.17	277	255	P	H
		5719.99	69.18	-41.72	110.9	58.85	34.92	8.58	33.17	277	255	P	H
		5722.8	67.45	-49.83	117.28	57.12	34.92	8.58	33.17	277	255	P	H
		5762	100.92	-	-	90.61	34.89	8.59	33.17	277	255	P	H
		5762	98.04	-	-	87.73	34.89	8.59	33.17	277	255	A	H
		5853.6	58.7	-55.39	114.09	48.45	34.8	8.62	33.17	277	255	P	H
		5855.2	56.27	-54.57	110.84	46.02	34.8	8.62	33.17	277	255	P	H
		5890.8	54.15	-39.42	93.57	43.9	34.8	8.63	33.18	277	255	P	H
		5940.8	51.42	-16.88	68.3	41.18	34.81	8.64	33.21	277	255	P	H
		5648	63.73	-4.57	68.3	53.34	35	8.56	33.17	248	59	P	V
		5697.6	64.07	-39.46	103.53	53.72	34.95	8.57	33.17	248	59	P	V
		5704	67.84	-38.58	106.42	57.49	34.94	8.58	33.17	248	59	P	V
		5724.4	67.87	-53.06	120.93	57.54	34.92	8.58	33.17	248	59	P	V
		5738	105.82	-	-	95.49	34.91	8.59	33.17	248	59	P	V
		5738	102.6	-	-	92.27	34.91	8.59	33.17	248	59	A	V
		5850.8	60.28	-60.2	120.48	50.02	34.82	8.61	33.17	248	59	P	V
		5856.8	58.49	-51.91	110.4	48.24	34.8	8.62	33.17	248	59	P	V
		5887.6	56.98	-38.97	95.95	46.73	34.8	8.63	33.18	248	59	P	V
		5928.4	53.67	-14.63	68.3	43.42	34.81	8.64	33.2	248	59	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	52.27	-21.73	74	65.49	39.35	12.85	65.42	100	360	P	H
VHT80		11550	47.8	-6.2	54	61.02	39.35	12.85	65.42	100	360	A	H
CH 155		11550	57	-17	74	70.22	39.35	12.85	65.42	100	360	P	V
5775MHz		11550	51	-3	54	64.22	39.35	12.85	65.42	100	360	A	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 HT20 (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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11n HT20 LF		31.94	22.08	-17.92	40	30.01	23.36	0.61	31.9	-	-	P	H
		165.8	22.48	-21.02	43.5	37.1	15.63	1.31	31.56	-	-	P	H
		265.71	30.93	-15.07	46	41.18	19.13	1.76	31.14	-	-	P	H
		672.14	32.68	-13.32	46	34.37	24.52	2.6	28.81	-	-	P	H
		710.94	34.61	-11.39	46	35.76	24.73	2.67	28.55	-	-	P	H
		773.02	35.12	-10.88	46	35.01	25.47	2.8	28.16	110	20	P	H
		30	22.45	-17.55	40	29.25	24.5	0.61	31.91	-	-	P	V
		162.89	21.46	-22.04	43.5	36.02	15.71	1.3	31.57	-	-	P	V
		258.92	28.25	-17.75	46	38.47	19.2	1.75	31.17	-	-	P	V
		334.58	25.96	-20.04	46	34.98	19.91	1.87	30.8	-	-	P	V
		710.94	32.81	-13.19	46	33.96	24.73	2.67	28.55	100	124	P	V
		773.02	32.18	-13.82	46	32.07	25.47	2.8	28.16	-	-	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)

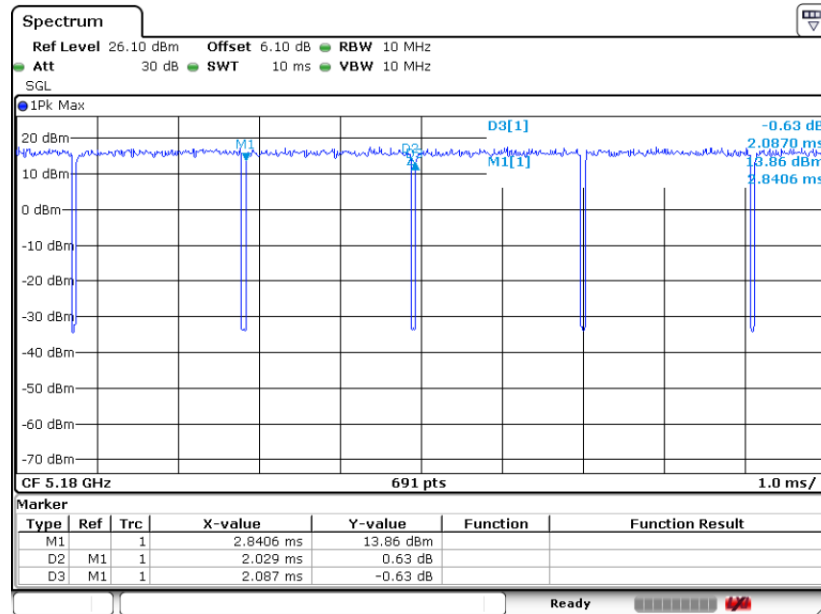
Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix D. Duty Cycle Plots

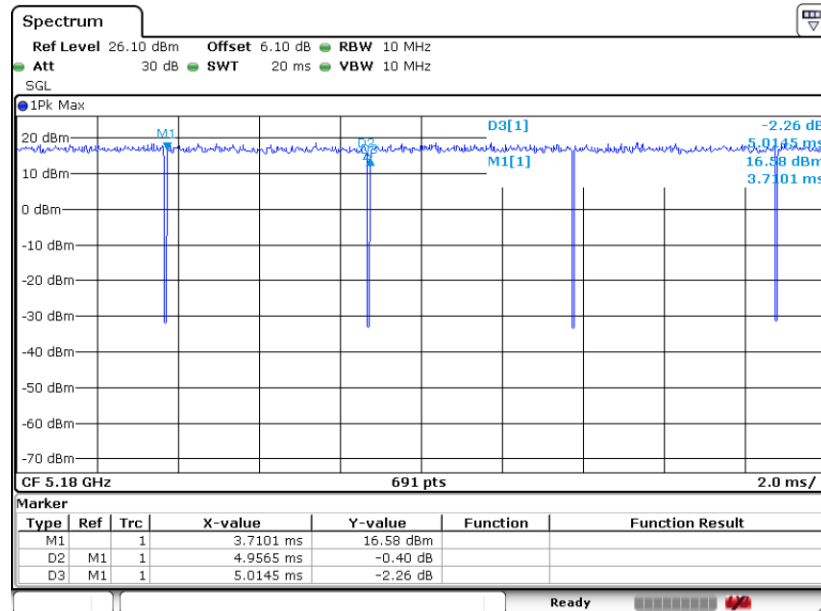
For CDD Modes

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	802.11a	97.22	2.029	0.493	0.51KHz
1	802.11n HT20	98.84	-	-	10Hz
1	802.11n HT40	97.66	2.420	0.413	0.43KHz
1	802.11ac VHT80	94.58	1.138	0.879	0.91KHz
1+2	802.11a	97.22	2.029	0.493	0.51KHz
1+2	802.11n HT20	98.85	-	-	10Hz
1+2	802.11n HT40	97.07	2.406	0.416	0.43KHz
1+2	802.11ac VHT80	94.55	1.130	0.885	0.91KHz

802.11a Antenna 1

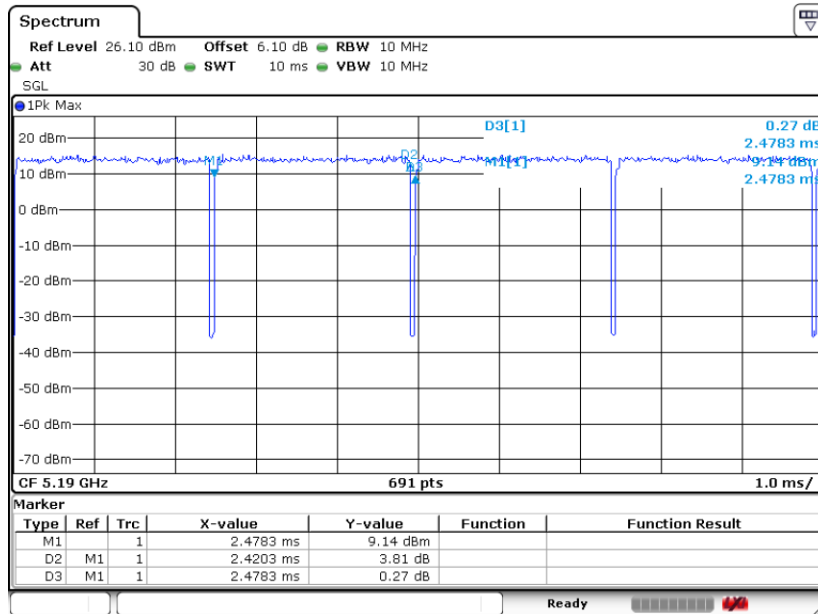


802.11n HT20 Antenna 1

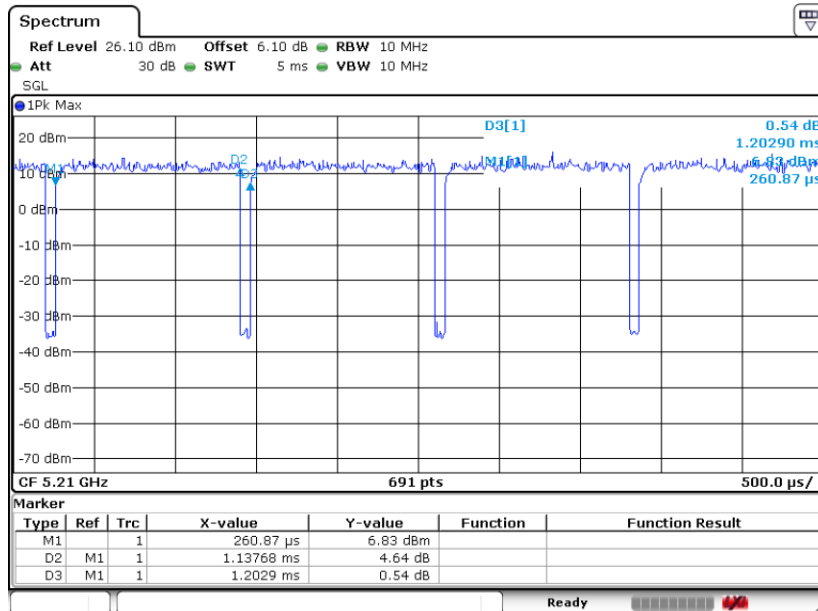




802.11n HT40 Antenna 1

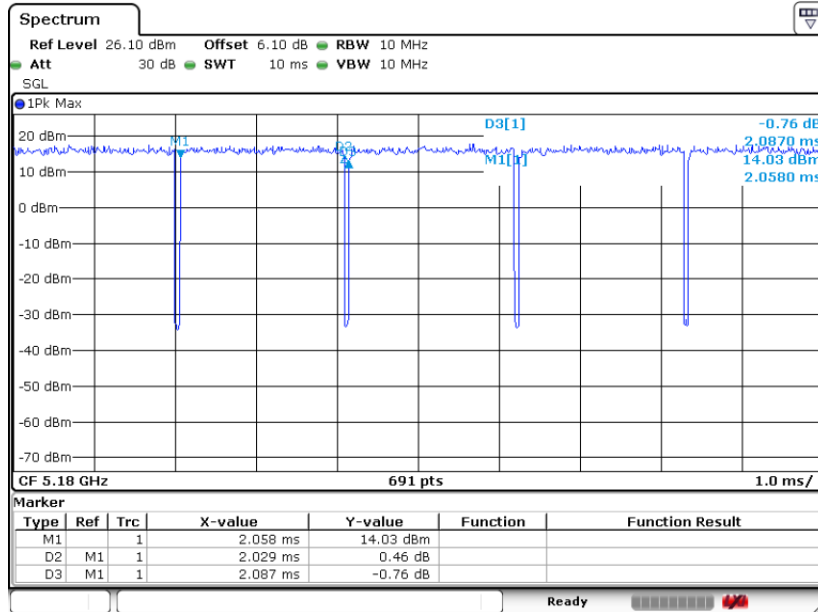


802.11ac VHT80 Antenna 1

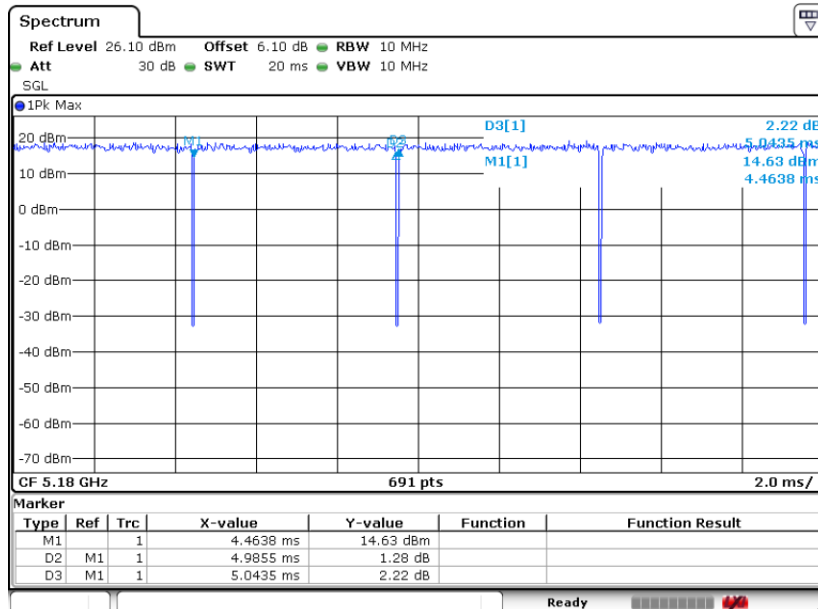




802.11a Antenna 1+2

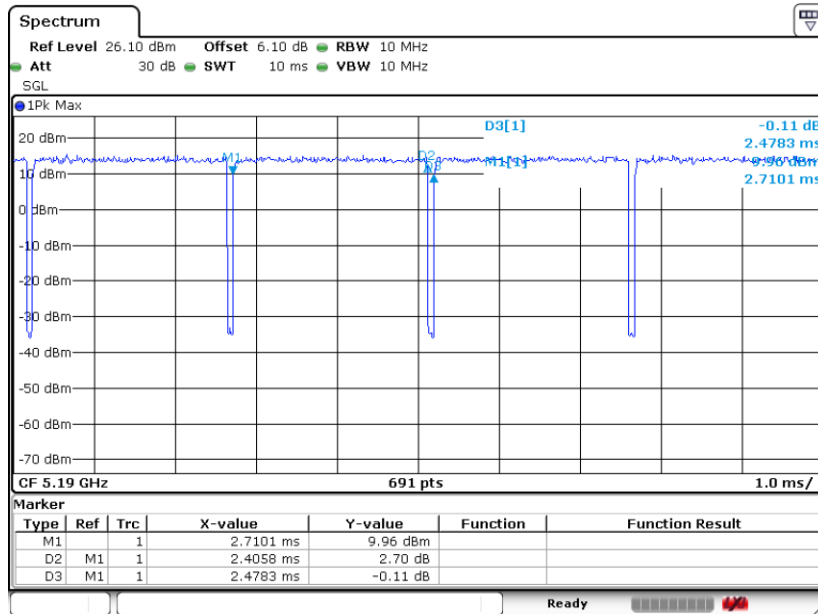


802.11n HT20 Antenna 1+2

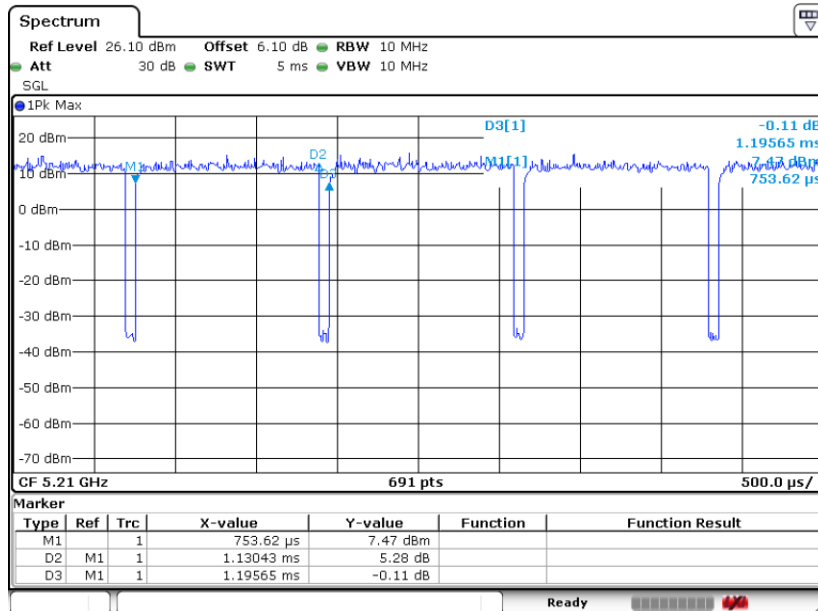




802.11n HT40 Antenna 1+2



802.11ac VHT80 Antenna 1+2

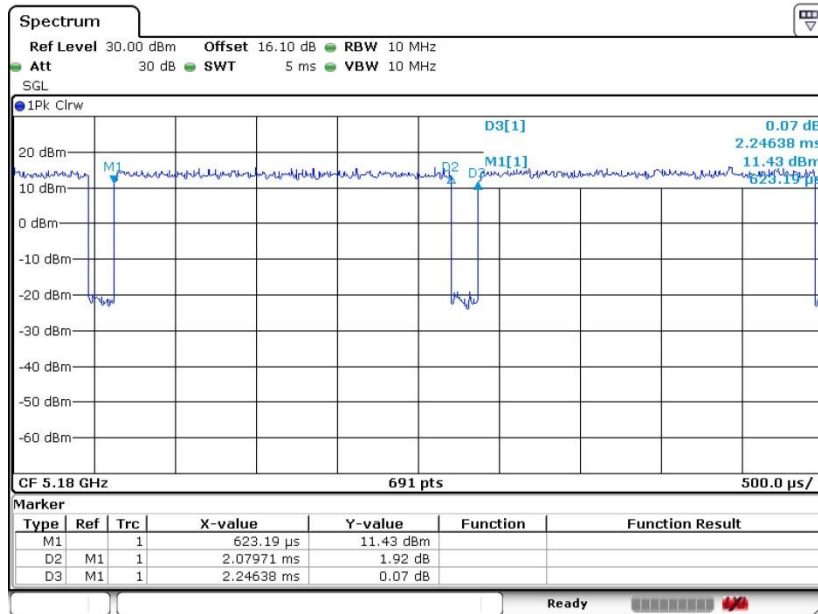


**For Beamforming Modes**

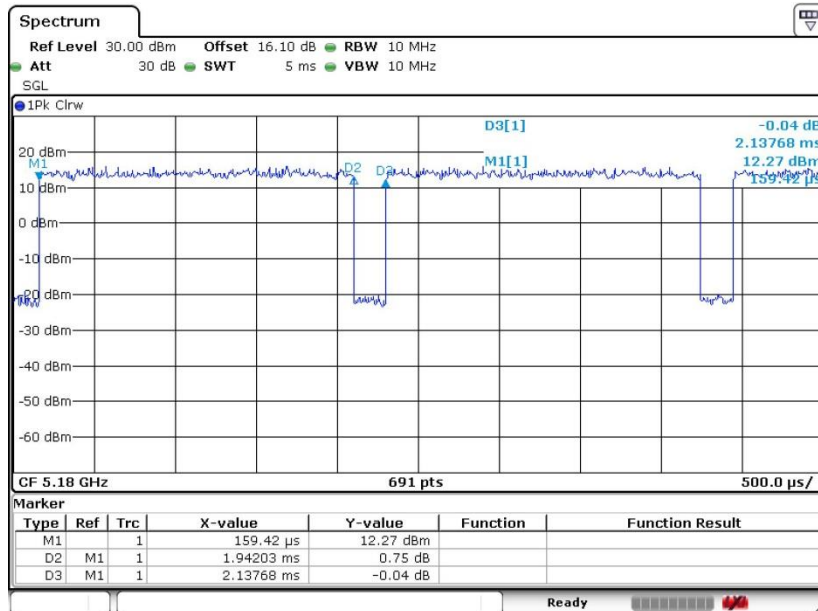
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11a	92.581	2.077	0.481	0.51KHz
1+2	802.11n HT20	90.848	1.942	0.515	0.51KHz
1+2	802.11n HT40	90.910	1.884	0.531	0.56KHz
1+2	802.11ac VHT80	92.124	1.949	0.513	0.56KHz



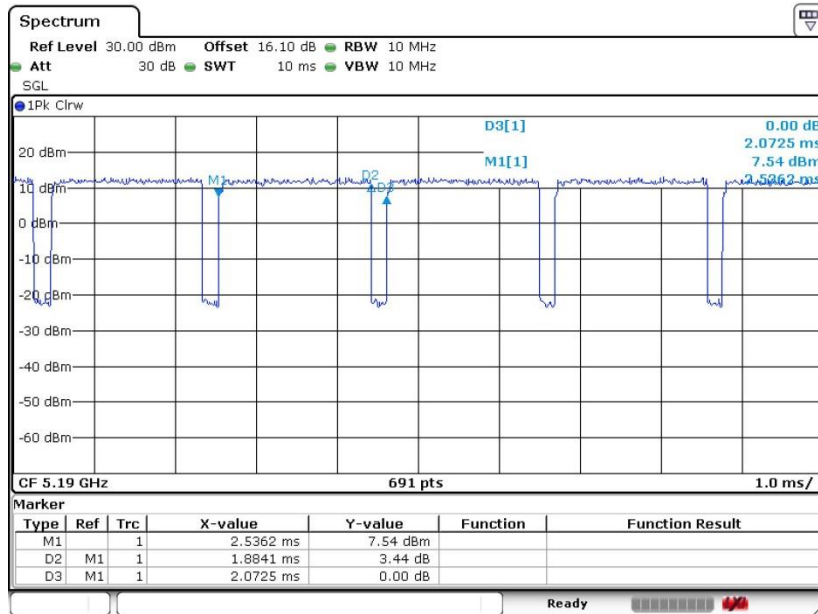
802.11a Antenna 1+2



802.11n HT20 Antenna 1+2



802.11n HT40 Antenna 1+2



802.11ac VHT80 Antenna 1+2

