

TEST REPORT

FCC ID: 2A0OFS401

Product: Translating Machine

Model No.: DOSMONO S401

Additional Model No.: -

Trade Mark: DOSMONO

Report No.: TCT180521E001

Issued Date: May 16, 2018

Issued for:

Shenzhen Two Monkey technology co. Ltd.

Room 612, Building D, SDG Information Port, No.2 Kefeng Road, Nanshan District, Shenzhen, Guangdong, China

Issued By:

Shenzhen Tongce Testing Lab.

1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

FAX: +86-755-27673332

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Appendix A: Photographs of Test Setup

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1. Test Certification

Product:	Translating Machine
Model No.:	DOSMONO S401
Additional Model No.:	-
Trade Mark:	DOSMONO
Applicant:	Shenzhen Two Monkey technology co. Ltd.
Address:	Room 612, Building D, SDG Information Port, No.2 Kefeng Road, Nanshan District, Shenzhen, Guangdong, China
Manufacturer:	Shenzhen Two Monkey technology co. Ltd.
Address:	Room 612, Building D, SDG Information Port, No.2 Kefeng Road, Nanshan District, Shenzhen, Guangdong, China
Date of Test:	Apr. 18, 2018 - May 15, 2018
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2017 ANSI C63.10-2013 KDB789033 D02 General U-NII Test Procedures New Rules v02

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:



Brews Xu

Date:

April 17, 2018

Reviewed By:



Beryl Zhao

Date:

May 16, 2018

Approved By:



Yomsin

Date:

May 16, 2018

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a) §2.1046	PASS
6dB Emission Bandwidth	§15.407(a) §2.1049	PASS
26dB Emission Bandwidth& 99% Occupied Bandwidth	§15.407(a) §2.1049	PASS
Power Spectral Density	§15.407(a)	PASS
Band edge	§15.407(a)	PASS
Radiated Emission	§15.407(a) §2.1053	PASS
Frequency Stability	§15.407(g) §2.1055	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

3. EUT Description

Product:	Translating Machine
Model No.:	DOSMONO S401
Additional Model No.:	-
Trade Mark:	DOSMONO
Operation Frequency:	Band I: 5180MHz-5240MHz; 5190MHz-5230MHz Band IV: 5745MHz-5825MHz; 5755MHz-5795MHz
Channel Bandwidth:	802.11a/n(HT20)/ac(HT20): 20MHz 802.11n(HT40)/ac(HT40): 40MHz
Modulation Technology:	Orthogonal Frequency Division Multiplexing(OFDM)
Modulation Type	BPSK, QPSK, 16QAM, 64QAM
Antenna Type:	1 Transmit, 1 Receive
Antenna Gain:	1.0 dBi
Power Supply:	DC 3.7V for internal battery
Adapter:	Model:JHD-AP015U-050300BA-C Input: 100-240V a.c., 50/60Hz, 0.45A Output: 5V d.c., 3000mA

Operation Frequency each of channel

20MHz		40MHz	
Channel	Frequency	Channel	Frequency
36	5180	38	5190
40	5200	46	5230
44	5220	151	5755
48	5240	159	5795
149	5745		
153	5765		
157	5785		
161	5805		
165	5825		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11a/n (HT20)/ac (HT20)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	149	Low	5745
44	Mid	5220	157	Mid	5785
48	High	5240	165	High	5825

For 802.11n (HT40)/ac (HT40)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	151	Low	5755
46	High	5230	159	High	5795

4. Genera Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 100%)
The sample was placed 0.8m/1.5m for blow/above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11a	6 Mbps
802.11n(HT20)/ac(HT20)	MCS0
802.11n(HT40)/ac(HT40)	MCS0

Final Test Mode:

Operation mode:	Keep the EUT in continuous transmitting with modulation
-----------------	---

4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

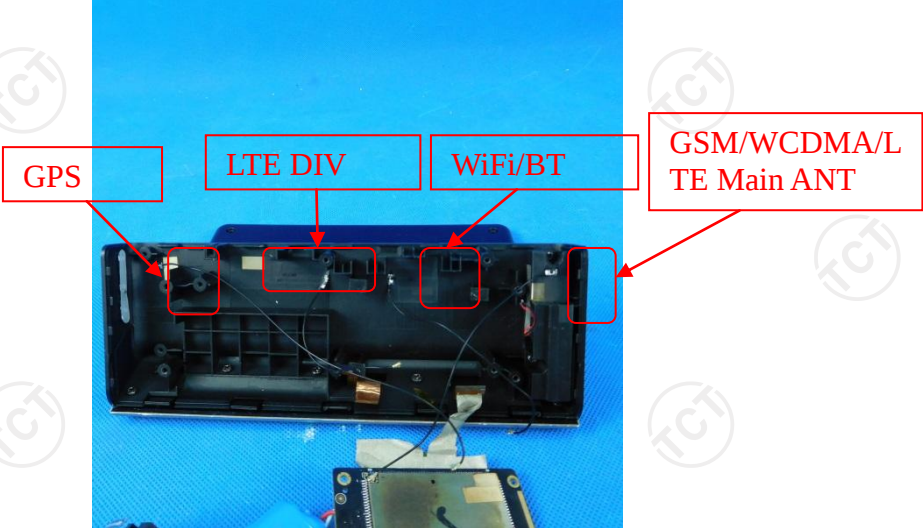
5.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.12\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.92\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^{\circ}\text{C}$
7	Humidity	$\pm 1.0\%$

6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.	
	

6.2. Conducted Emission

6.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	Reference Plane 40cm 80cm E.U.T AC power LISN Filter AC power EMI Receiver Test table/Insulation plane Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	Tx Mode														
Test Procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.														
Test Result:	PASS														

6.2.2. Test Instruments

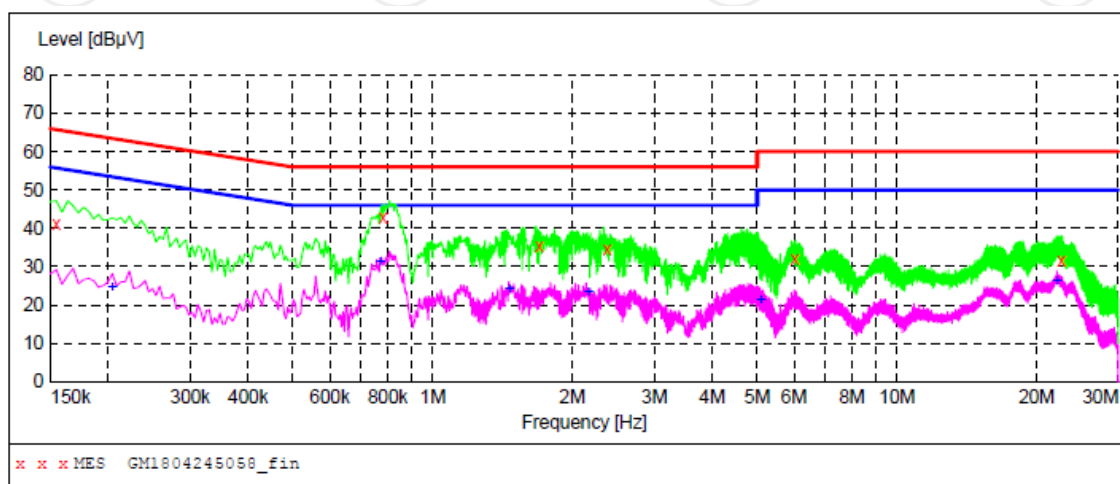
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	R&S	ESPI	101401	Jun. 12, 2018
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 27, 2018
Coax cable (9KHz-30MHz)	TCT	CE-05	N/A	Sep. 27, 2018
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line



MEASUREMENT RESULT: "GM1804245058_fin"

4/24/2018 5:41PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154500	41.10	10.0	66	24.7	QP	L1	GND
0.780000	42.80	10.0	56	13.2	QP	L1	GND
1.693500	35.50	10.1	56	20.5	QP	L1	GND
2.373000	34.50	10.1	56	21.5	QP	L1	GND
6.022500	32.00	10.2	60	28.0	QP	L1	GND
22.614000	31.80	10.7	60	28.2	QP	L1	GND

MEASUREMENT RESULT: "GM1804245058_fin2"

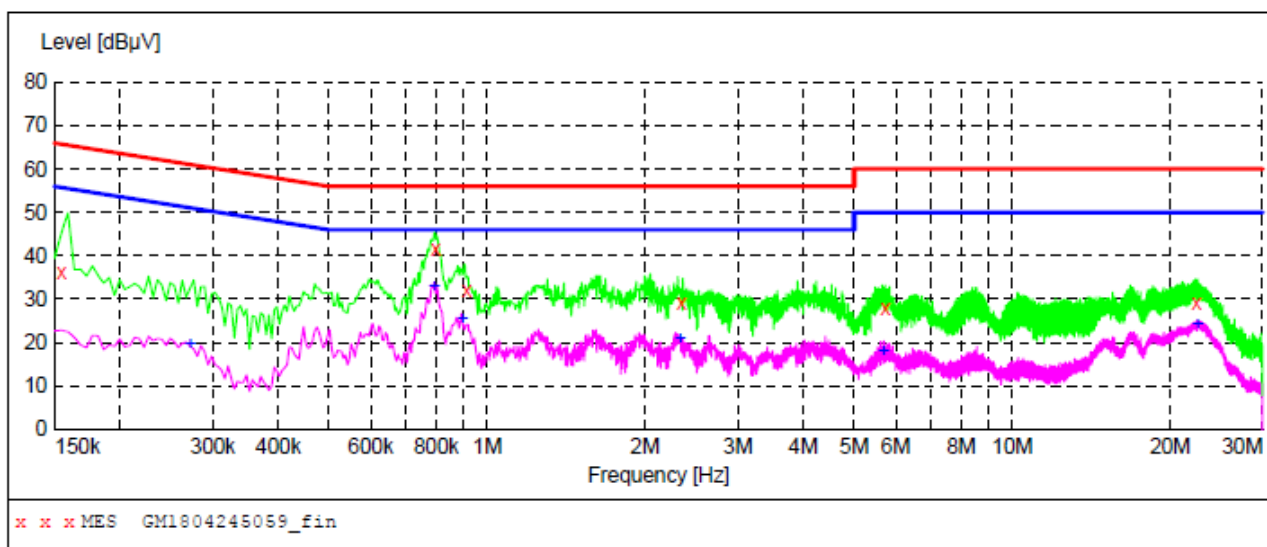
4/24/2018 5:41PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.204000	24.70	9.9	53	28.7	AV	L1	GND
0.771000	31.40	10.0	46	14.6	AV	L1	GND
1.464000	24.00	10.1	46	22.0	AV	L1	GND
2.166000	23.40	10.1	46	22.6	AV	L1	GND
5.091000	21.30	10.2	50	28.7	AV	L1	GND
22.119000	26.30	10.7	50	23.7	AV	L1	GND

Remark:

Transd = Cable lose+ PULSE LIMITER factor + ARTIFICIAL MAINS factor; Margin= Limit - Level

Conducted Emission on Neutral Terminal of the power line



MEASUREMENT RESULT: "GM1804245059_fin"

4/24/2018 5:57PM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.154500	36.10	10.0	66	29.7	QP	N	GND
0.798000	41.60	10.0	56	14.4	QP	N	GND
0.915000	31.90	10.0	56	24.1	QP	N	GND
2.341500	29.30	10.1	56	26.7	QP	N	GND
5.725500	27.90	10.2	60	32.1	QP	N	GND
22.402500	29.00	10.7	60	31.0	QP	N	GND

MEASUREMENT RESULT: "GM1804245059_fin2"

4/24/2018 5:57PM

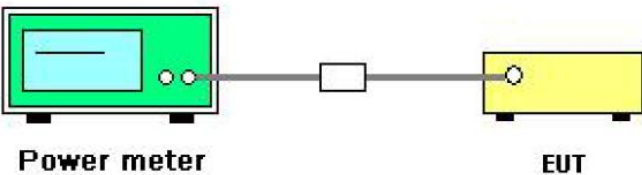
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.271500	19.60	9.9	51	31.5	AV	N	GND
0.793500	32.90	10.0	46	13.1	AV	N	GND
0.897000	25.50	10.0	46	20.5	AV	N	GND
2.328000	20.80	10.1	46	25.2	AV	N	GND
5.676000	17.90	10.2	50	32.1	AV	N	GND
22.542000	24.00	10.7	50	26.0	AV	N	GND

Remark:

Transd = Cable lose+ PULSE LIMITER factor + ARTIFICIAL MAINS factor; Margin= Limit - Level

6.3. Maximum Conducted Output Power

6.3.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407(a)& Part 2 J Section 2.1046	
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02 Section E	
Limit:	Frequency Band (MHz)	Limit
	5150-5250	250mW for client devices
	5725-5850	1 W
	Note: For those cases where it is specified that the conducted output power be reduced by the amount in dB that the directional gain of the transmitting antenna exceeds 6 dBi, the output power effective limit shall be calculated as follows in Equation: $P_{out} = P_{Limit} - (\text{directional gain} - 6)$	
Test Setup:	 The diagram illustrates the test setup. On the left is a green box labeled 'Power meter'. A cable connects it to a small white box labeled 'Attenuator'. Another cable connects the attenuator to a yellow box labeled 'EUT' (Equipment Under Test).	
Test Mode:	Transmitting mode with modulation	
Test Procedure:	1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02 Section E, 3, a 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 5. Measure the conducted output power and record the results in the test report.	
Test Result:	PASS	
Remark:	Conducted output power= measurement power +10log(1/x) X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power	

6.3.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
Power Meter	Agilent	N1911A	MY45101557	Sep. 27, 2018
Power Sensor	Agilent	N1922A	MY44124432	Sep. 27, 2018
RF Cable (9KHz-40GHz)	TCT	RE-03	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-03	N/A	Sep. 27, 2018

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.3.3. Test Data

Configuration Band I (5150 - 5250 MHz)				
Mode	Test channel	Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	Result
11a	CH36	16.23	24	PASS
11a	CH40	16.33	24	PASS
11a	CH48	16.10	24	PASS
11n(HT20)	CH36	15.03	24	PASS
11n(HT20)	CH40	15.03	24	PASS
11n(HT20)	CH48	14.47	24	PASS
11ac(HT20)	CH36	14.45	24	PASS
11ac(HT20)	CH40	14.50	24	PASS
11ac(HT20)	CH48	14.27	24	PASS
11n(HT40)	CH38	13.87	24	PASS
11n(HT40)	CH46	13.73	24	PASS
11ac(HT40)	CH38	13.51	24	PASS
11ac(HT40)	CH46	13.47	24	PASS

Configuration Band IV (5725 - 5850 MHz)

Mode	Test channel	Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	Result
11a	CH149	13.81	30	PASS
11a	CH157	13.89	30	PASS
11a	CH165	14.42	30	PASS
11n(HT20)	CH149	12.11	30	PASS
11n(HT20)	CH157	12.26	30	PASS
11n(HT20)	CH165	12.67	30	PASS
11ac(HT20)	CH149	12.15	30	PASS
11ac(HT20)	CH157	12.06	30	PASS
11ac(HT20)	CH165	12.63	30	PASS
11n(HT40)	CH151	12.53	30	PASS
11n(HT40)	CH159	11.60	30	PASS
11ac(HT40)	CH151	11.13	30	PASS
11ac(HT40)	CH159	11.13	30	PASS

6.4. 6dB Emission Bandwidth

6.4.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e)& Part 2 J Section 2.1049
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02 Section C
Limit:	>500kHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02 Section C 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS

6.4.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF Cable (9KHz-40GHz)	TCT	RE-03	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-03	N/A	Sep. 27, 2018

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

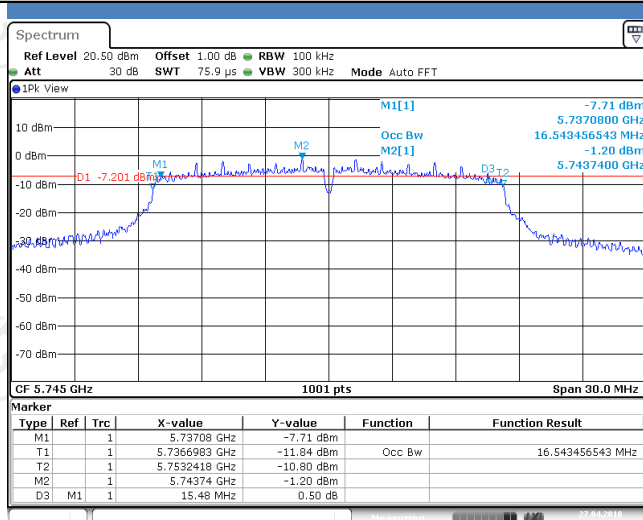
6.4.3. Test data

Band IV (5725 - 5850 MHz)					
Mode	Test channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
11a	CH149	5745	15.48	0.5	PASS
11a	CH157	5785	15.84	0.5	PASS
11a	CH161	5825	15.51	0.5	PASS
11n(HT20)	CH149	5745	17.64	0.5	PASS
11n(HT20)	CH157	5785	17.64	0.5	PASS
11n(HT20)	CH161	5825	17.64	0.5	PASS
11ac(HT20)	CH149	5745	17.79	0.5	PASS
11ac(HT20)	CH157	5785	17.79	0.5	PASS
11ac(HT20)	CH161	5825	17.82	0.5	PASS
11n(HT40)	CH151	5755	36.61	0.5	PASS
11n(HT40)	CH159	5795	36.70	0.5	PASS
11ac(HT40)	CH151	5755	36.54	0.5	PASS
11ac(HT40)	CH159	5795	36.60	0.5	PASS

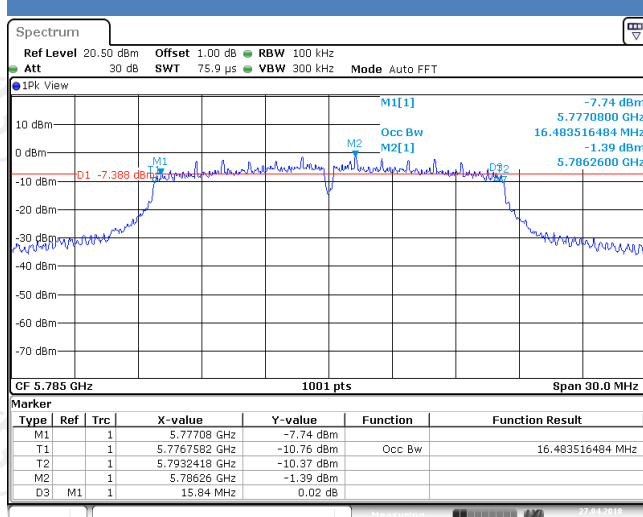
Test plots as follows:

Band IV (5725 – 5850 MHz)

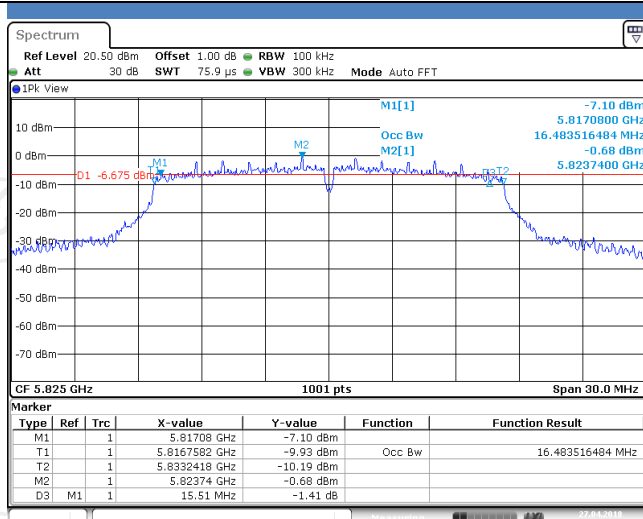
802.11a



Low

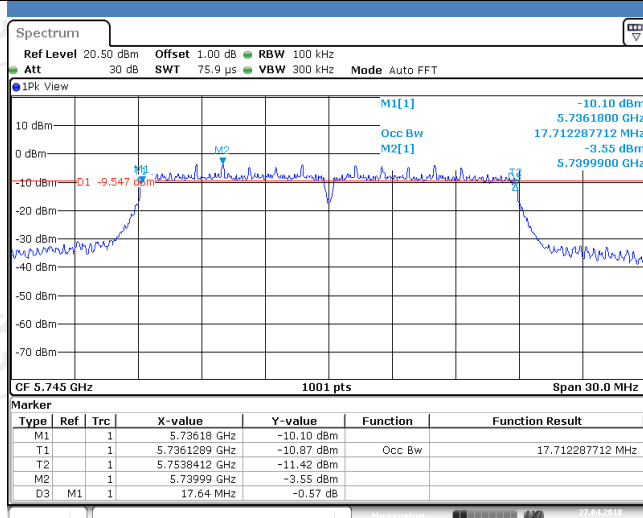


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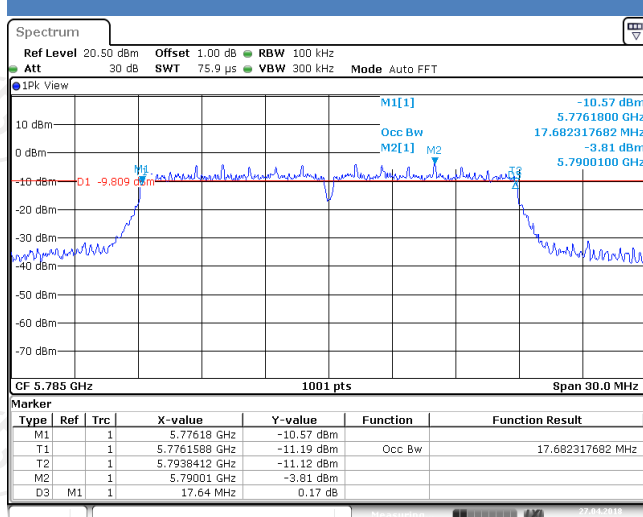


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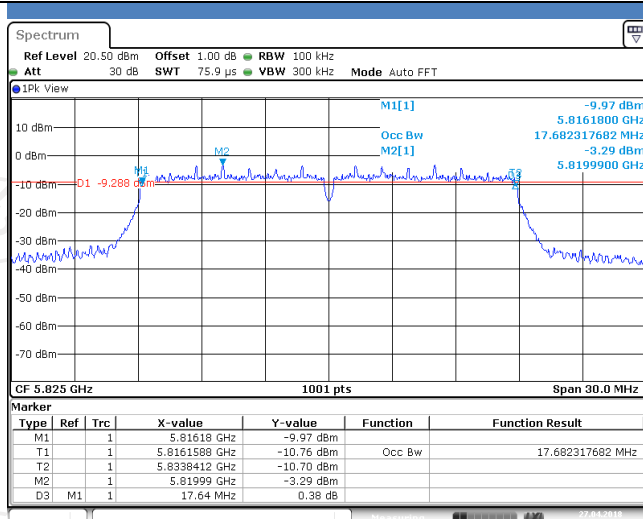
802.11n(HT20)



Low

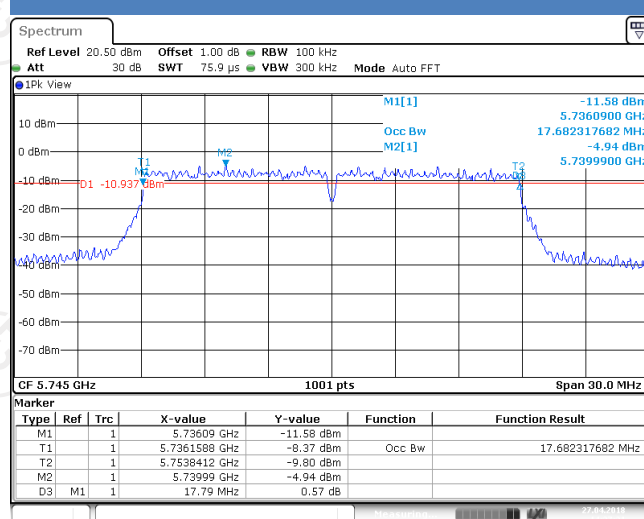


Mid

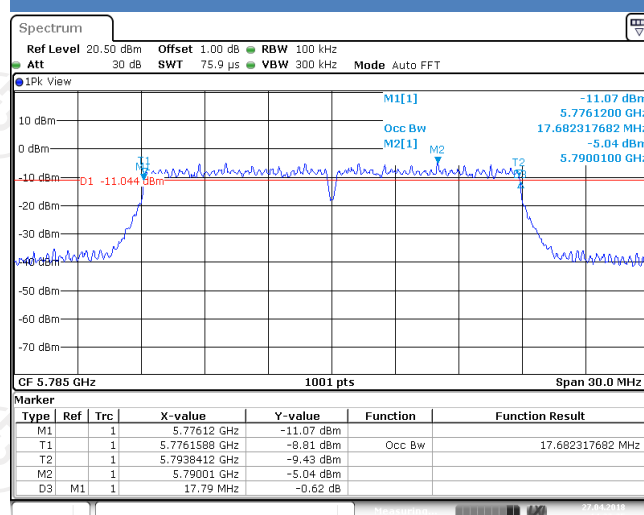


High

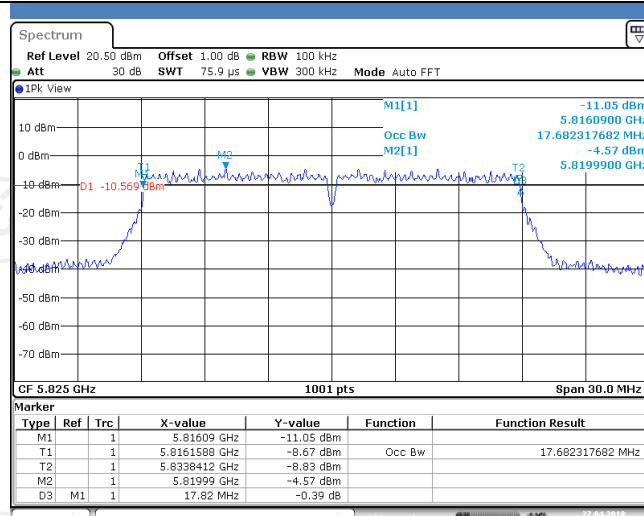
802.11ac(HT20)



Low

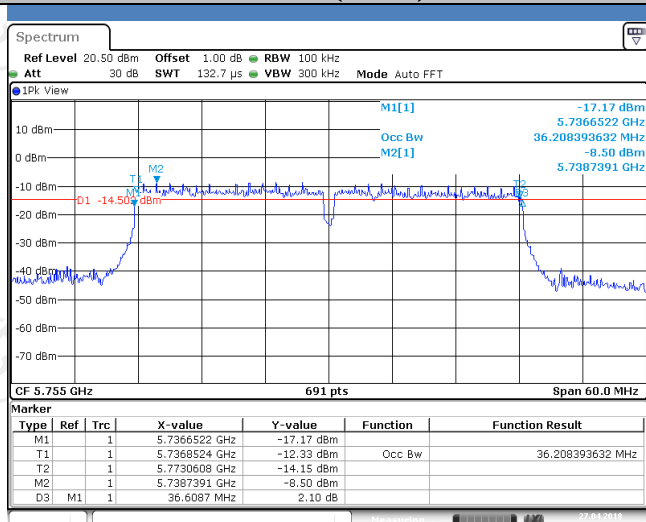


Mid

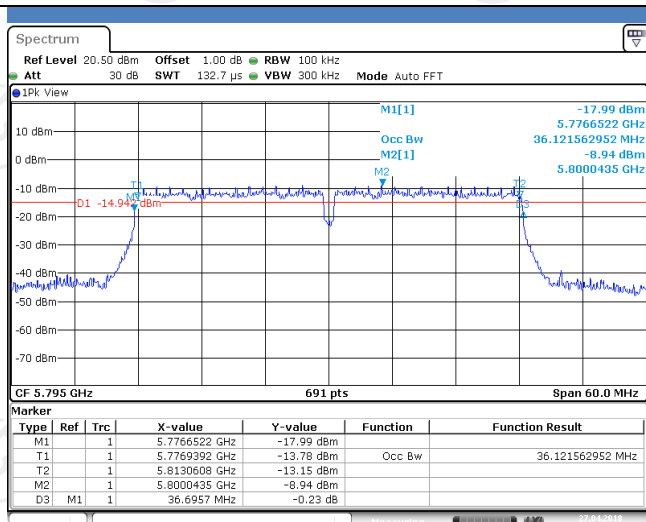


High

802.11n(HT40)

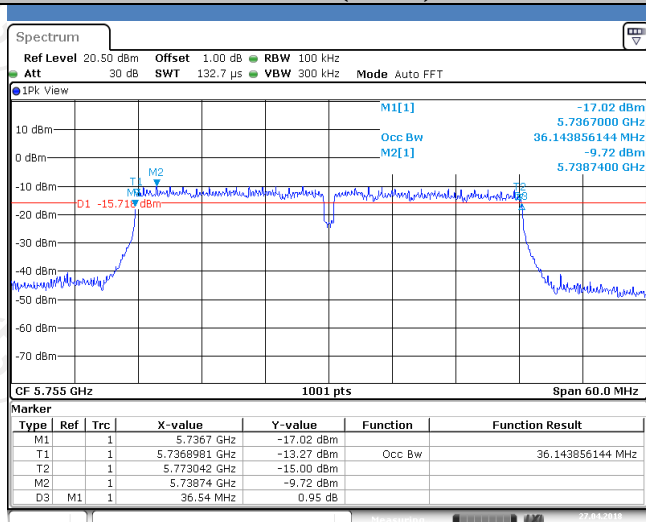


Low

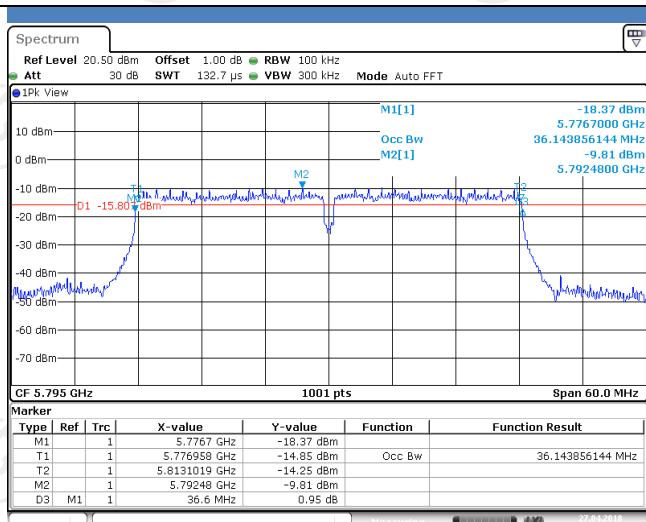


High

802.11ac(HT40)



Low



High

6.5. 26dB Bandwidth and 99% Occupied Bandwidth

6.5.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407 (a)& Part 2 J Section 2.1049
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02 Section D
Limit:	No restriction limits
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02 Section D 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	PASS

6.5.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF Cable (9KHz-26.5GHz)	TCT	RE-06	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-01	N/A	Sep. 27, 2018

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

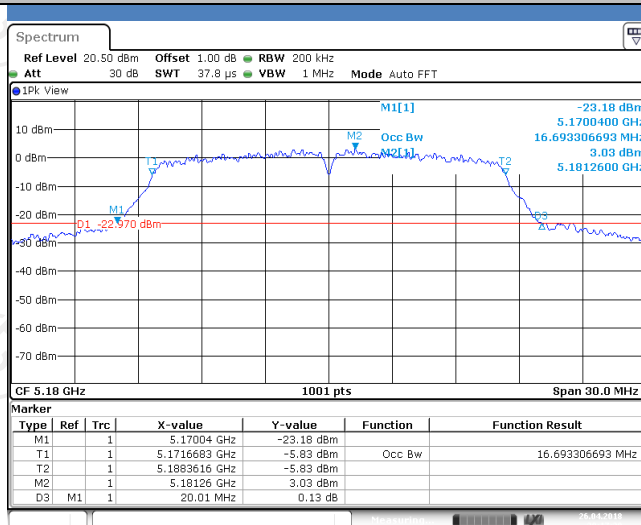
6.5.3. Test data**Band I**

Mode	Test channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	CH36	5180	20.01	16.69
11a	CH44	5220	20.52	16.60
11a	CH48	5240	22.44	16.75
11n(HT20)	CH36	5180	19.86	17.59
11n(HT20)	CH44	5220	21.12	17.77
11n(HT20)	CH48	5240	20.22	17.74
11ac(HT20)	CH36	5180	20.10	17.80
11ac(HT20)	CH44	5220	20.04	17.74
11ac(HT20)	CH48	5240	20.01	17.71
11n(HT40)	CH38	5190	40.20	36.26
11n(HT40)	CH46	5230	40.08	36.26
11ac(HT40)	CH38	5190	40.26	36.38
11ac(HT40)	CH46	5230	40.50	36.26

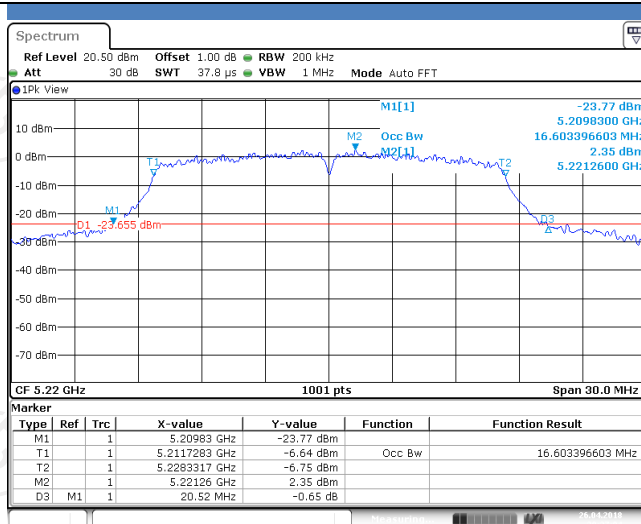
Test plots as follows:

Band I (5150 – 5250 MHz)

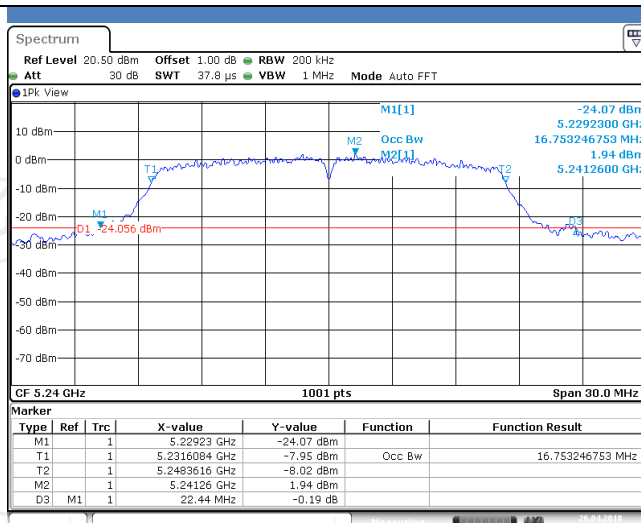
802.11a



Low

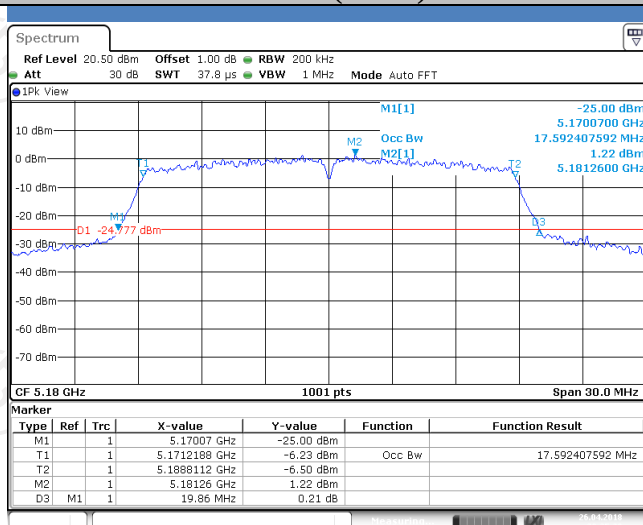


Mid

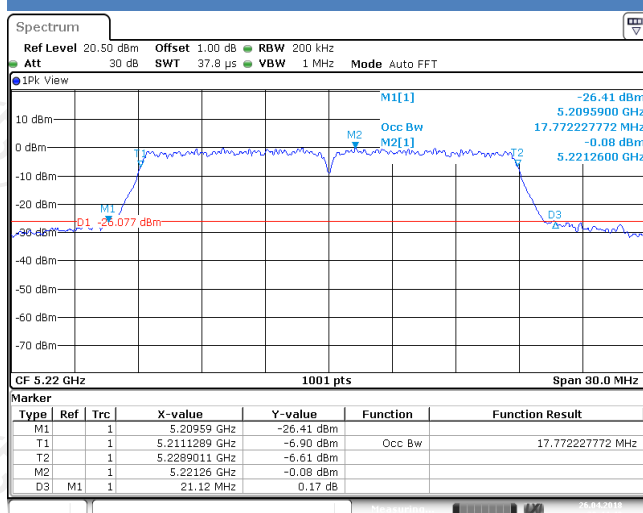


High

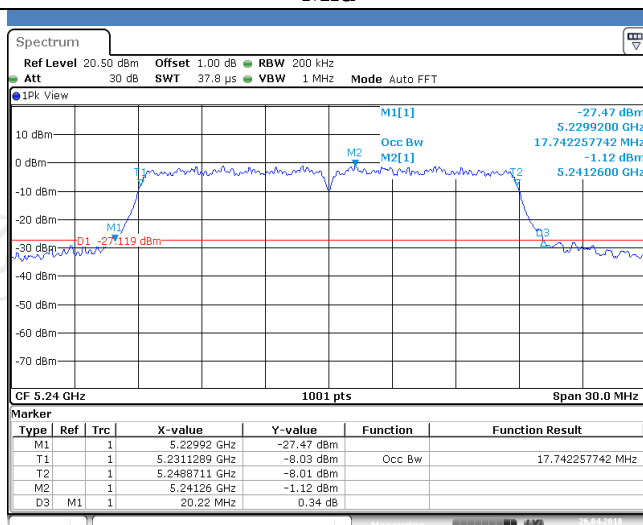
802.11n(HT20)



Low

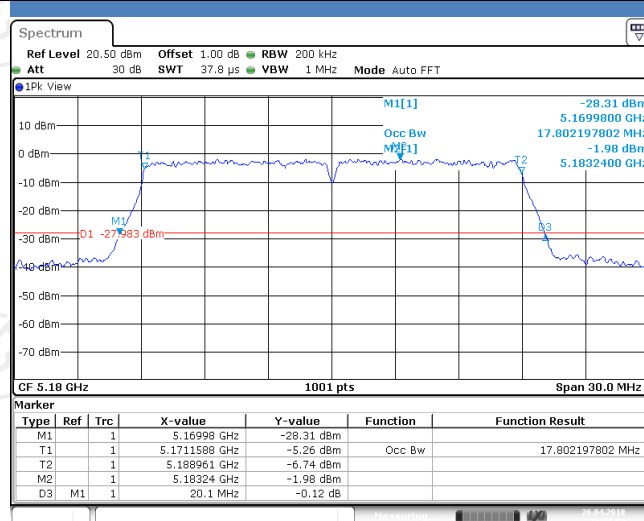


Mid

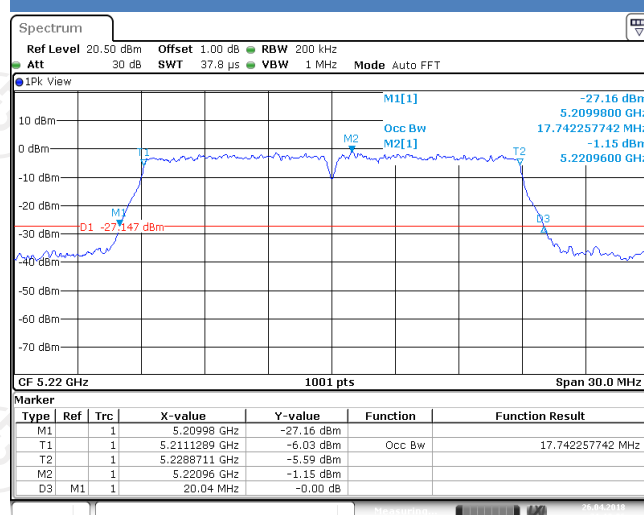


High

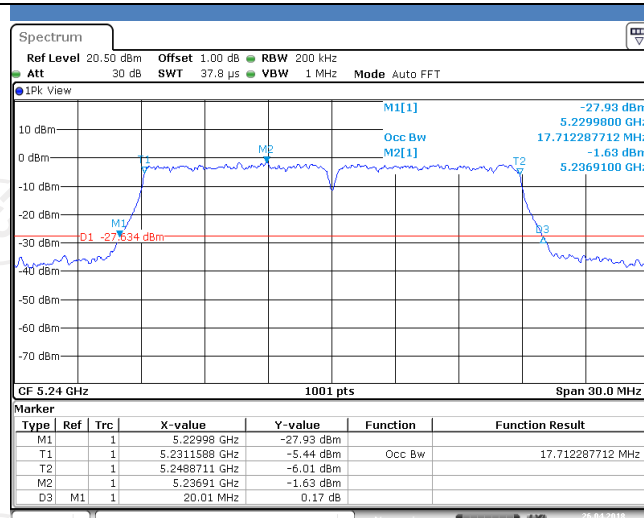
802.11ac(HT20)



Low

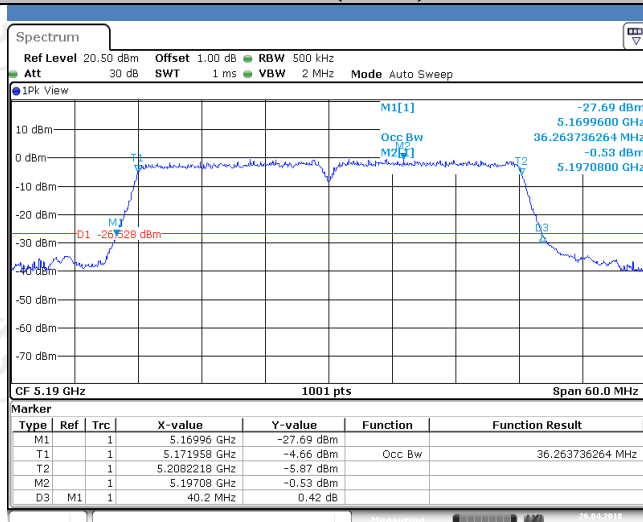


Mid

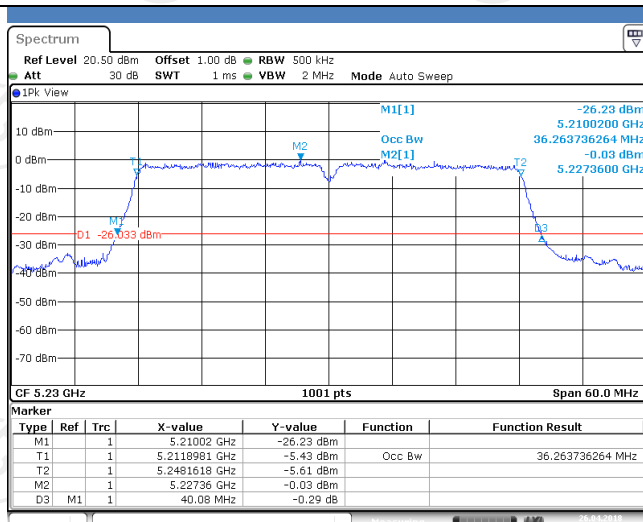


High

802.11n(HT40)

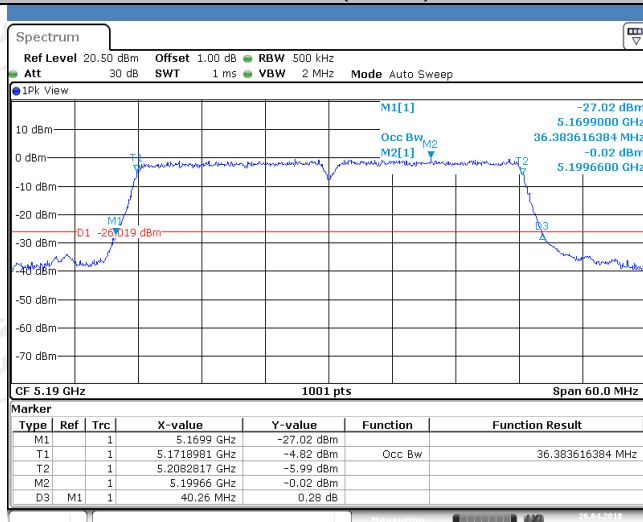


Low

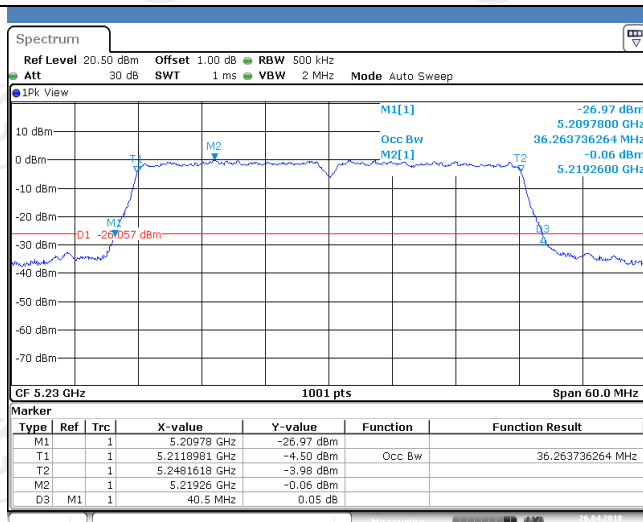


High

802.11ac(HT40)



Low



High

6.6. Power Spectral Density

6.6.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02 Section F
Limit:	≤11.00dBm/MHz for Band I 5150MHz-5250MHz ≤30.00dBm/500KHz for Band IV 5725MHz-5850MHz The e.i.r.p spectral density for Band I 5150MHz – 5250 MHz should not exceed 10dBm/MHz Note: For those cases where it is specified that the conducted output power be reduced by the amount in dB that the directional gain of the transmitting antenna exceeds 6 dBi, the PSD effective limit shall be calculated as follows in Equation: $PSD_{out} = PSD_{Limit} - (directional\ gain - 6)$
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 1. Set RBW = 500 kHz/1 MHz, VBW ≥ 3*RBW, Sweep time = Auto, Detector = RMS. 2. Allow the sweeps to continue until the trace stabilizes. 3. Use the peak marker function to determine the maximum amplitude level. 4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

6.6.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	FSP40	100056	Sep. 27, 2018
RF Cable (9KHz-40GHz)	TCT	RE-03	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-03	N/A	Sep. 27, 2018

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.6.3. Test data

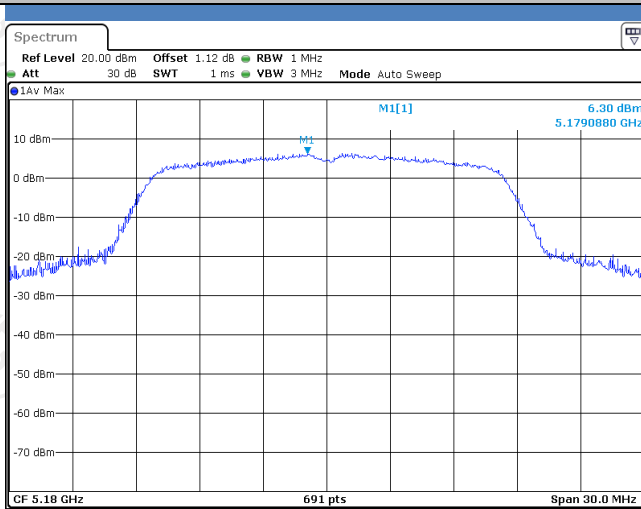
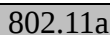
Configuration Band I (5150 - 5250 MHz)				
Mode	Test channel	Power Spectral Density	Limit (dBm/MHz)	Result
11a	CH36	6.30	11	PASS
11a	CH44	6.36	11	PASS
11a	CH48	6.49	11	PASS
11n(HT20)	CH36	5.19	11	PASS
11n(HT20)	CH44	4.00	11	PASS
11n(HT20)	CH48	3.15	11	PASS
11ac(HT20)	CH36	3.70	11	PASS
11ac(HT20)	CH44	3.85	11	PASS
11ac(HT20)	CH48	3.90	11	PASS
11n(HT40)	CH38	0.71	11	PASS
11n(HT40)	CH46	1.13	11	PASS
11ac(HT40)	CH38	0.86	11	PASS
11ac(HT40)	CH46	0.73	11	PASS

Configuration Band IV (5725 - 5850 MHz)

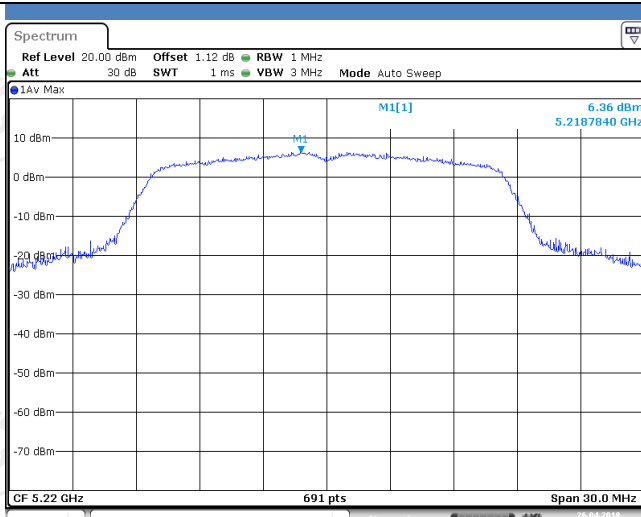
Mode	Test channel	Power Spectral Density	Limit (dBm/MHz)	Result
11a	CH149	3.14	30	PASS
11a	CH157	2.71	30	PASS
11a	CH161	3.51	30	PASS
11n(HT20)	CH149	0.32	30	PASS
11n(HT20)	CH157	0.06	30	PASS
11n(HT20)	CH161	1.01	30	PASS
11ac(HT20)	CH149	1.02	30	PASS
11ac(HT20)	CH157	0.49	30	PASS
11ac(HT20)	CH161	1.75	30	PASS
11n(HT40)	CH151	-2.50	30	PASS
11n(HT40)	CH159	-2.67	30	PASS
11ac(HT40)	CH151	-3.89	30	PASS
11ac(HT40)	CH159	-3.49	30	PASS

Test plots as follows:

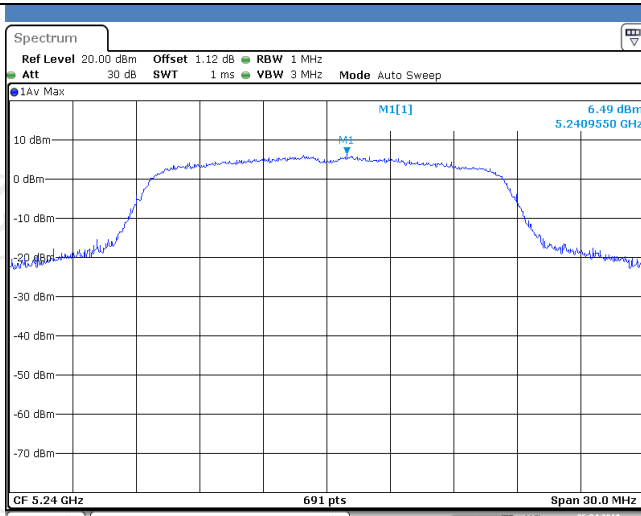
Band I (5150 – 5250 MHz)



Low

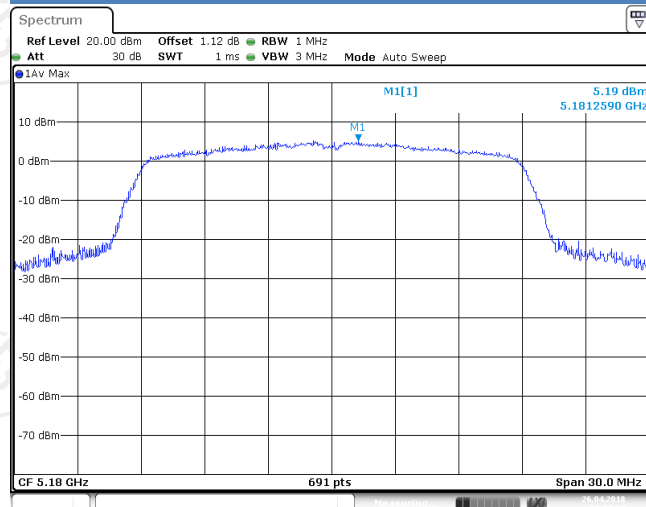


Mid

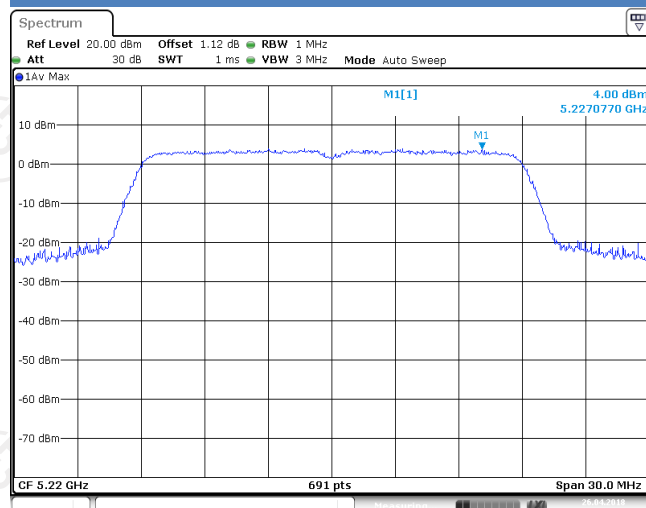


High

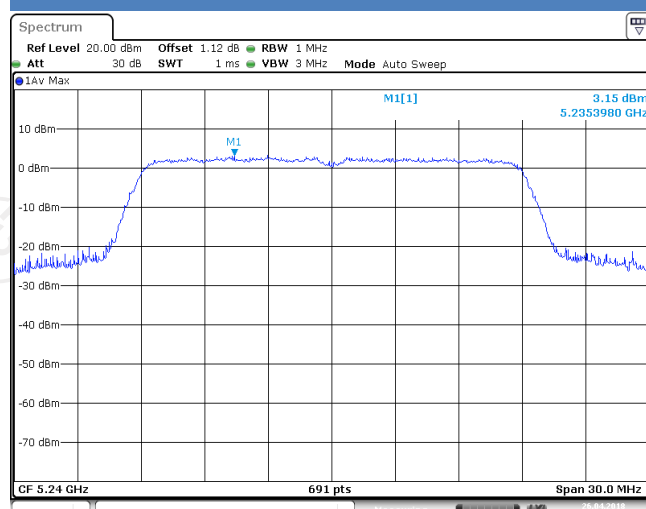
802.11n(HT20)



Low

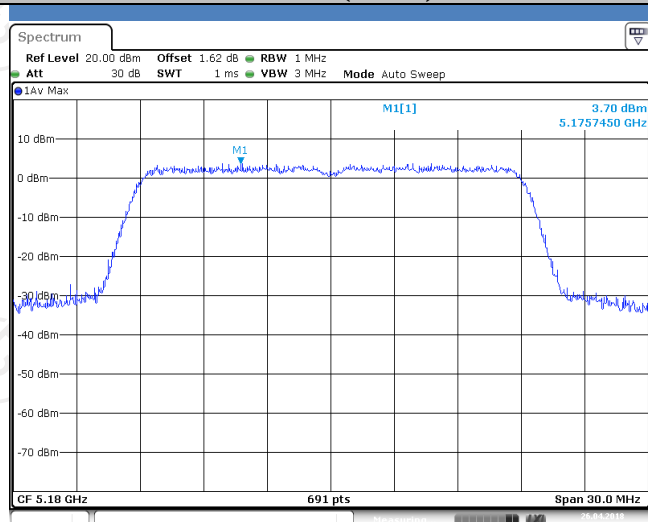


Mid

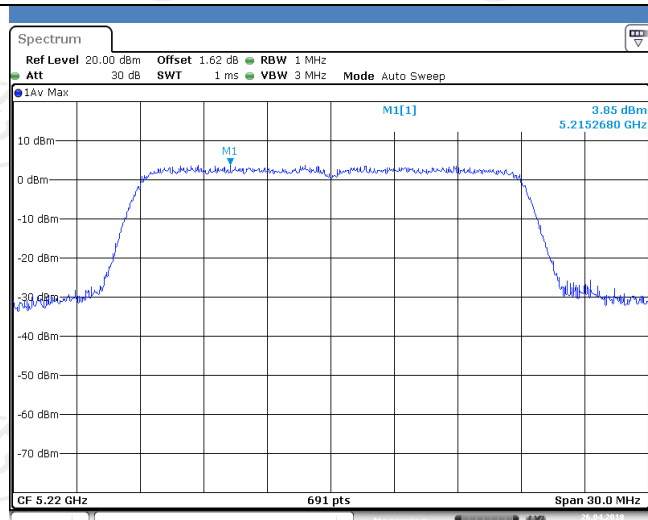


High

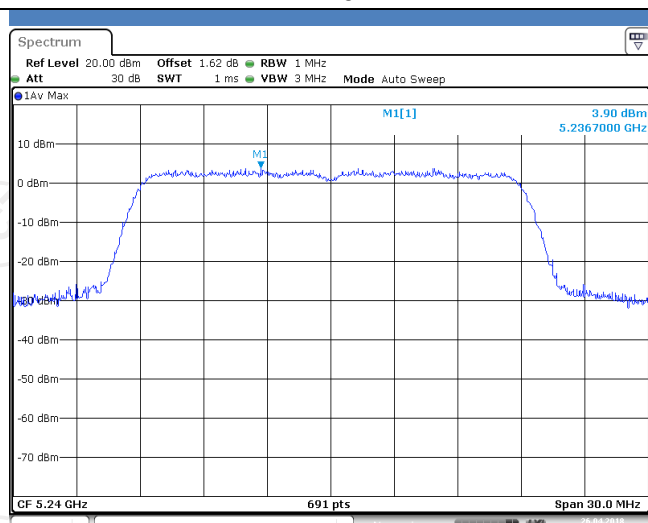
802.11ac(HT20)



Low

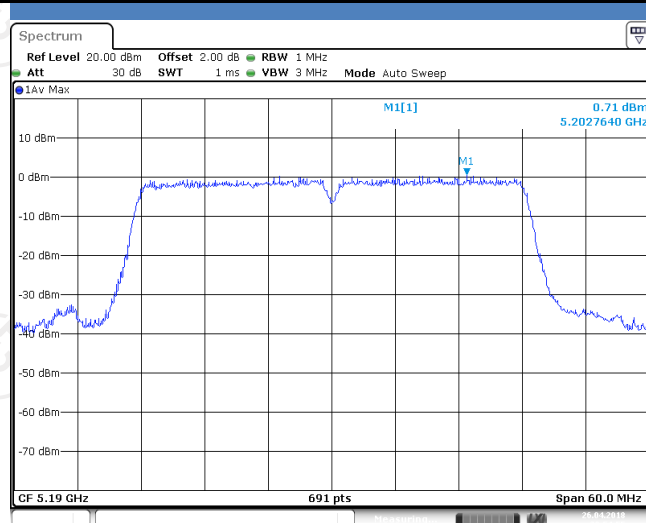


Mid

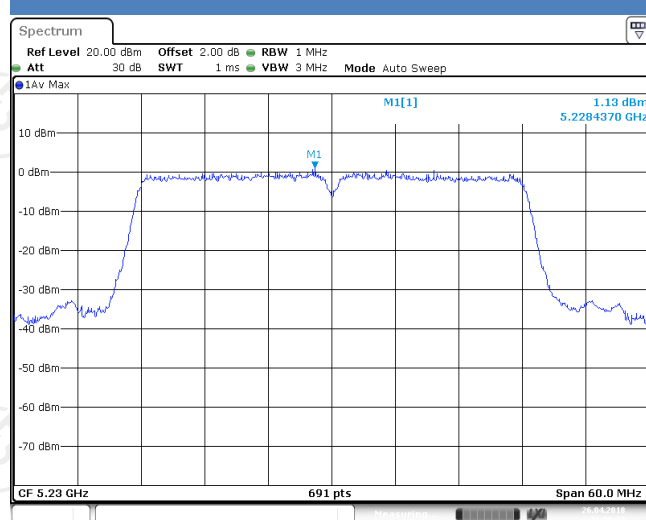


High

802.11n(HT40)

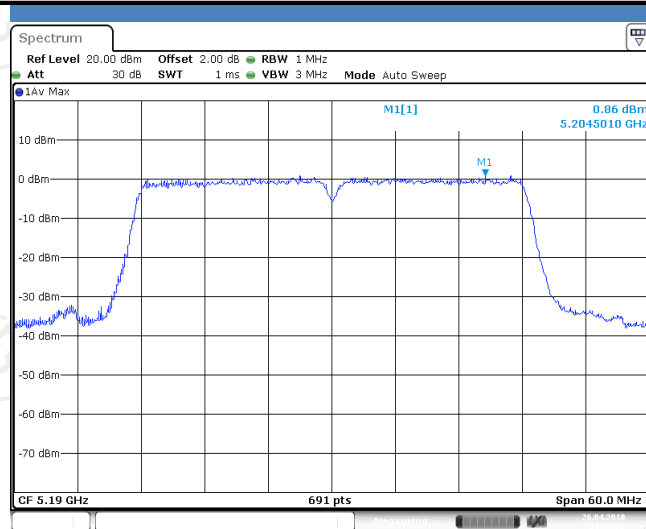


Low

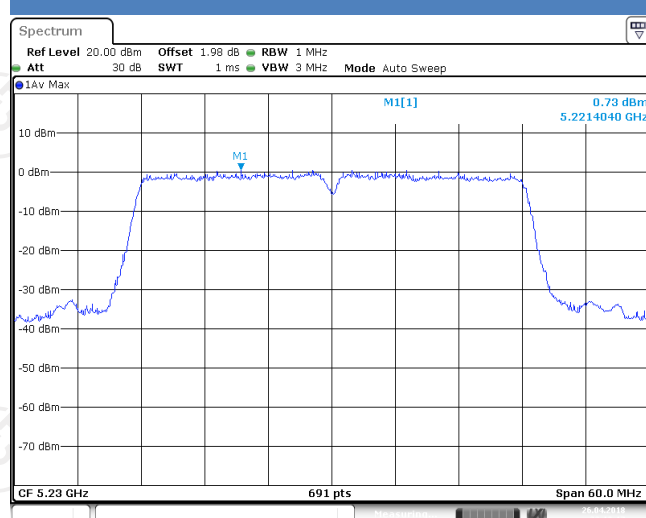


High

802.11ac(HT40)



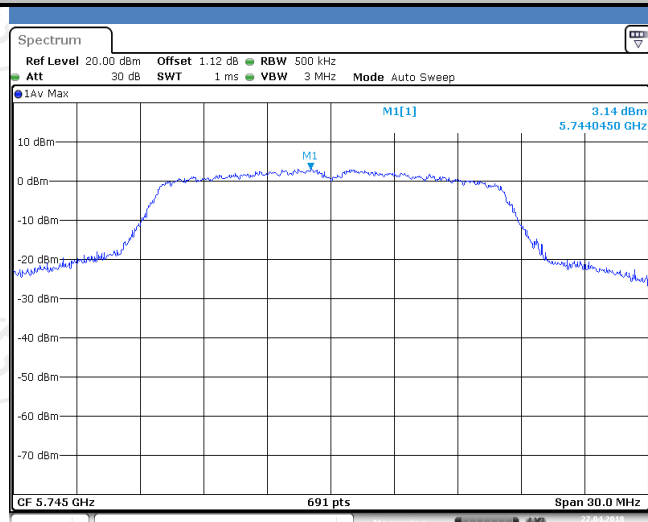
Low



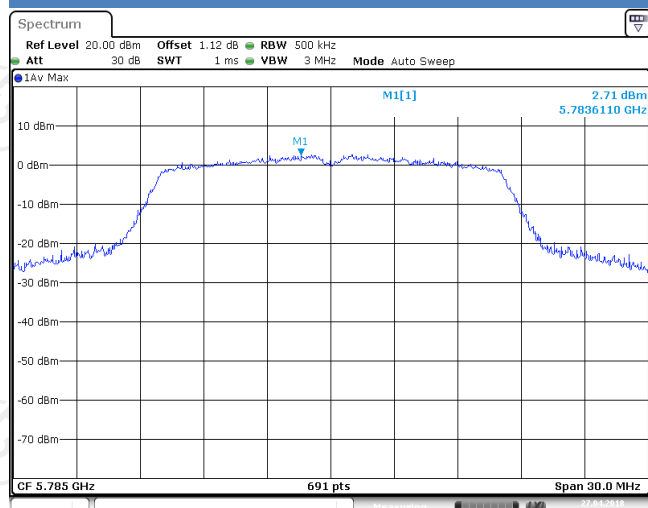
High

Band IV (5725 – 5850 MHz)

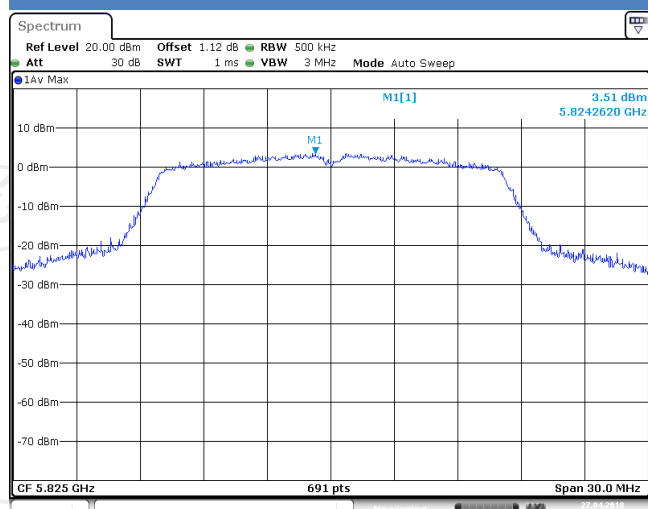
802.11a



Low

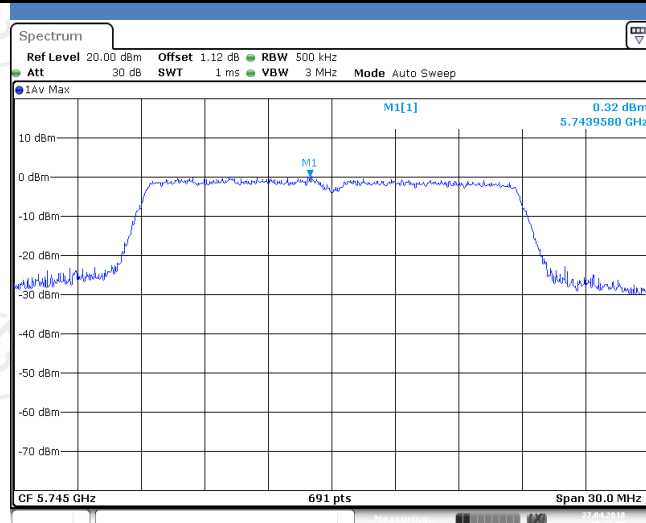


Mid

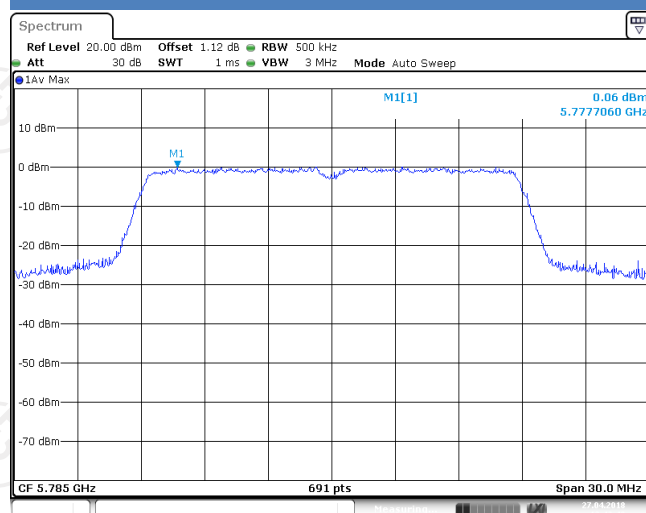


High

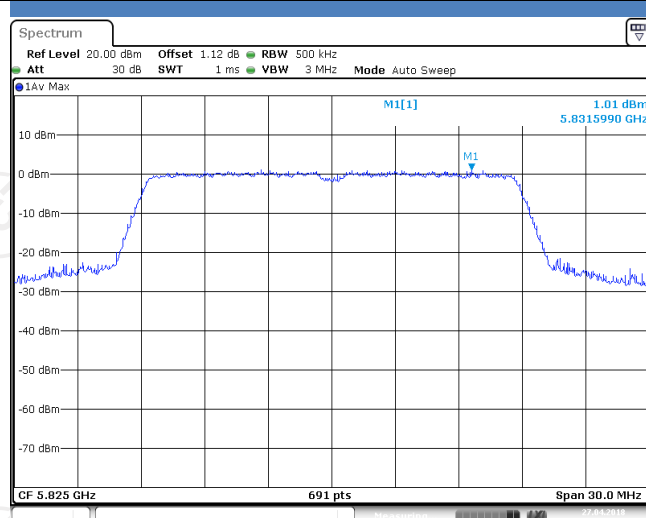
802.11n(HT20)



Low

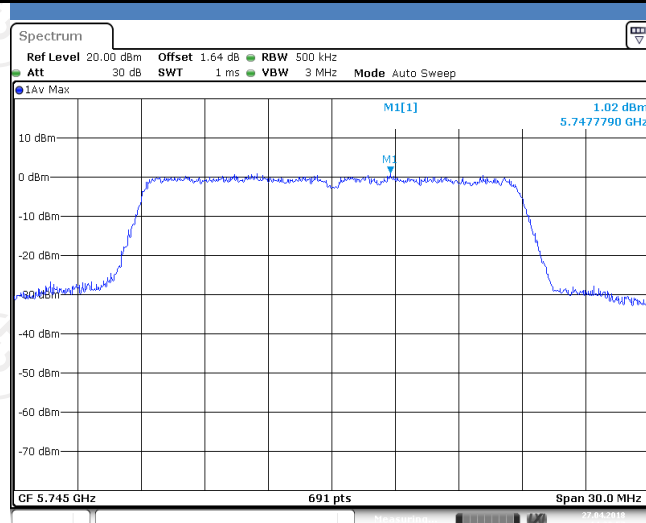


Mid

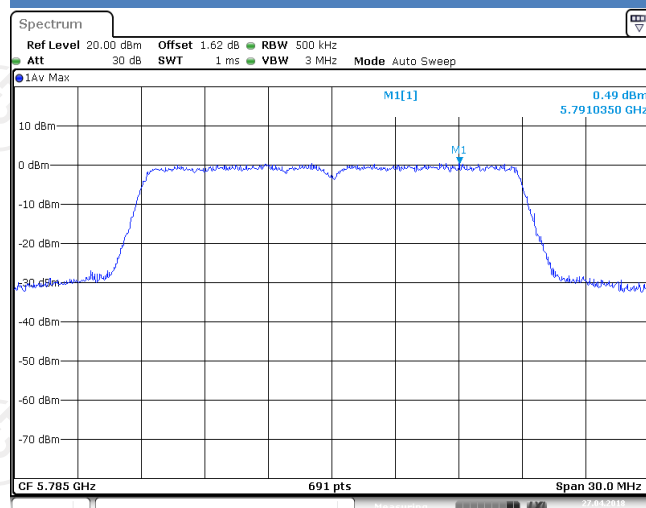


High

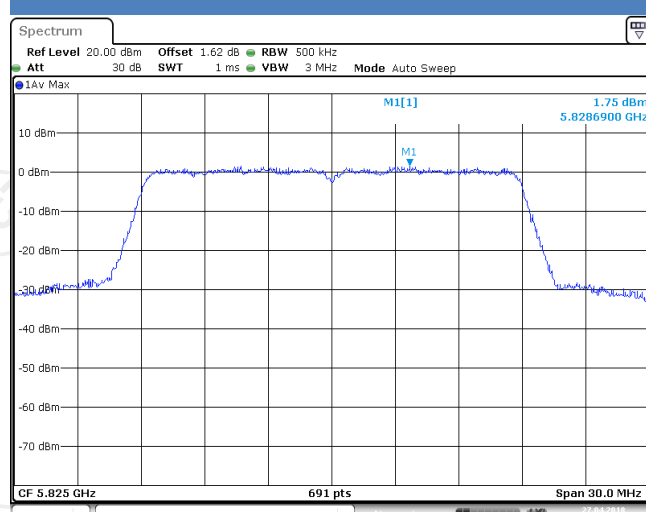
802.11ac(HT20)



Low

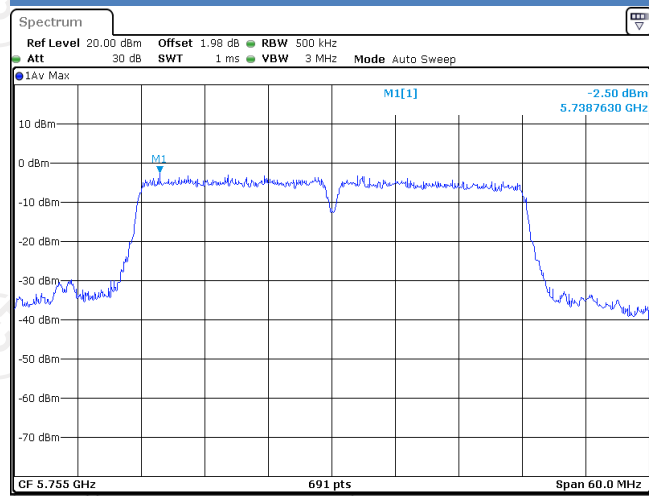


Mid

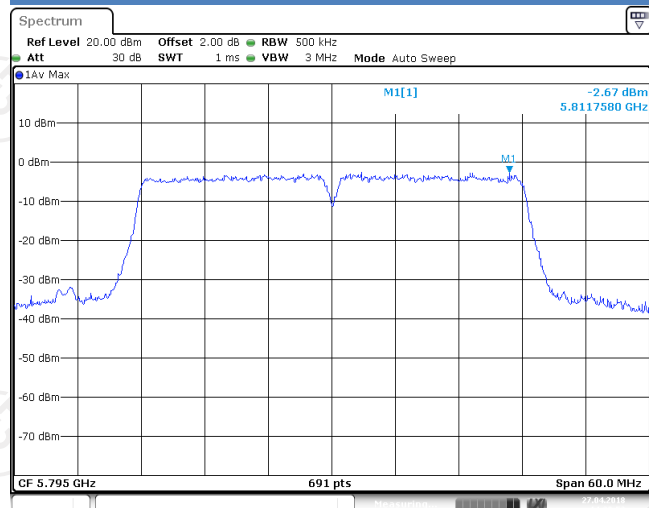


High

802.11n(HT40)

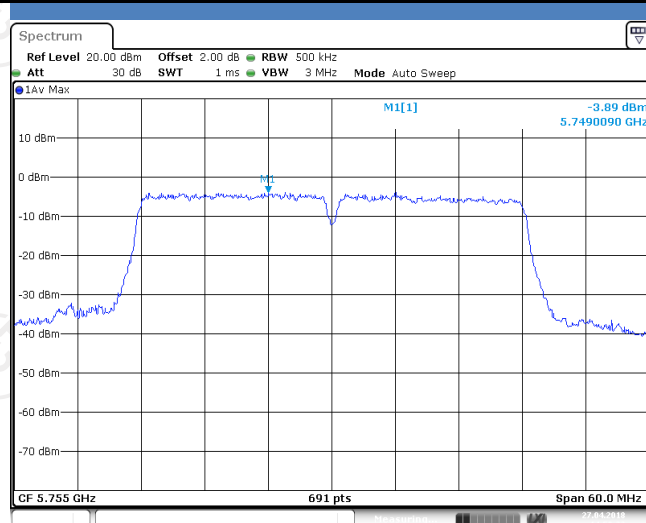


Low

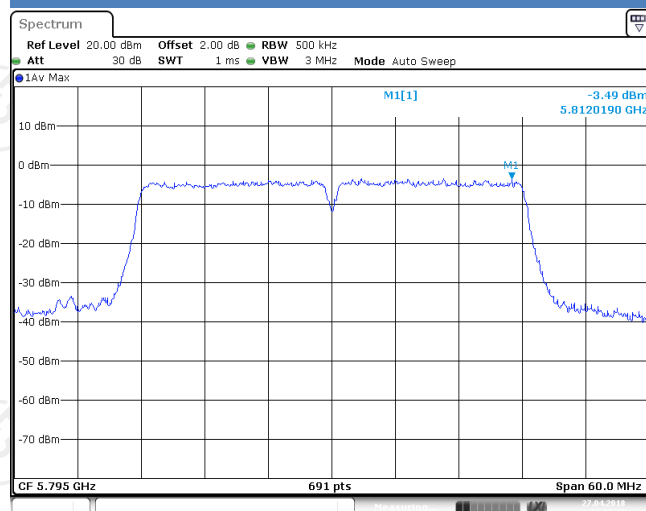


High

802.11ac(HT40)



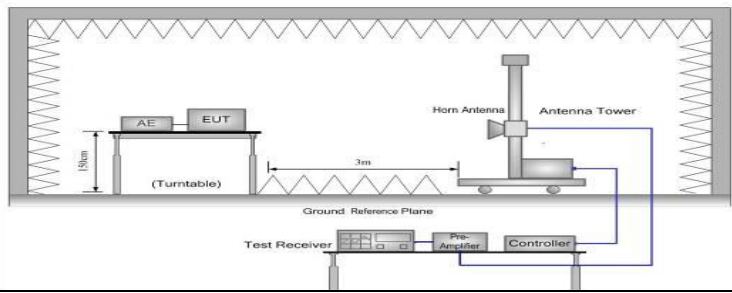
Low



High

6.7. Band edge

6.7.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407
Test Method:	ANSI C63.10 2013
Limit:	For band I&II&III: $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB$\mu V/m$, for EIRP(dBm)= -27dBm For band IV(5715-5725MHz&5850-5860MHz): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 78.2$ dB$\mu V/m$, for EIRP(dBm)= -17dBm; For band IV(other un-restricted band): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB$\mu V/m$, for EIRP(dBm)= -27dBm
Test Setup:	 The diagram illustrates the test setup within an anechoic chamber. An Equipment Under Test (EUT) is placed on a turntable at a height of 1.5m. A 3m camber is indicated between the turntable and the antenna. A Horn Antenna is mounted on an Antenna Tower. The setup is connected to a Test Receiver, which includes a Pre-Amplifier and a Controller. A Ground Reference Plane is also shown.
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then

	reported in a data sheet.
Test Result:	PASS

6.7.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHW ARZ	ESVD	100008	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ	200061	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHW ARZ	FSP40	100056	Sep. 27, 2018
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 27, 2018
Pre-amplifier	HP	8447D	2727A05017	Sep. 27, 2018
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBH 9170	582	Jun. 07, 2018
Coax cable (9KHz-1GHz)	TCT	RE-low-01	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9KHz-1GHz)	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 27, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.7.3. Test Data

Band I for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11a		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	17.65	31.70	9.79	0.00	59.14	68.20	-9.06	Horizontal	Peak
5350.00	17.35	31.40	10.06	0.00	58.81	68.20	-9.39	Horizontal	Peak
5150.00	17.77	31.70	9.79	0.00	59.26	68.20	-8.94	Vertical	Peak
5350.00	17.15	31.40	10.06	0.00	58.61	68.20	-9.59	Vertical	Peak
5150.00	7.88	31.70	9.79	0.00	49.37	54.00	-4.63	Horizontal	Average
5350.00	7.12	31.40	10.06	0.00	48.58	54.00	-5.42	Horizontal	Average
5150.00	7.53	31.70	9.79	0.00	49.02	54.00	-4.98	Vertical	Average
5350.00	7.18	31.40	10.06	0.00	48.64	54.00	-5.36	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11a		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	17.33	31.73	10.47	0.00	59.53	68.20	-8.67	Horizontal	Peak
5850.00	17.25	32.20	10.61	0.00	60.06	68.20	-8.14	Horizontal	Peak
5725.00	17.13	31.73	10.47	0.00	59.33	68.20	-8.87	Vertical	Peak
5850.00	17.12	32.20	10.61	0.00	59.93	68.20	-8.27	Vertical	Peak
5725.00	7.38	31.73	10.47	0.00	49.58	54.00	-4.42	Horizontal	Average
5850.00	7.35	32.20	10.61	0.00	50.16	54.00	-3.84	Horizontal	Average
5725.00	7.23	31.73	10.47	0.00	49.43	54.00	-4.57	Vertical	Average
5850.00	7.17	32.20	10.61	0.00	49.98	54.00	-4.02	Vertical	Average

Band I for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11a		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.55	31.70	9.79	0.00	58.04	68.20	-10.16	Horizontal	Peak
5350.00	16.62	31.40	10.06	0.00	58.08	68.20	-10.12	Horizontal	Peak
5150.00	16.83	31.70	9.79	0.00	58.32	68.20	-9.88	Vertical	Peak
5350.00	16.65	31.40	10.06	0.00	58.11	68.20	-10.09	Vertical	Peak
5150.00	7.95	31.70	9.79	0.00	49.44	54.00	-4.56	Horizontal	Average
5350.00	7.86	31.40	10.06	0.00	49.32	54.00	-4.68	Horizontal	Average
5150.00	7.56	31.70	9.79	0.00	49.05	54.00	-4.95	Vertical	Average
5350.00	7.42	31.40	10.06	0.00	48.88	54.00	-5.12	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11a		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	17.53	31.73	10.47	0.00	59.73	68.20	-8.47	Horizontal	Peak
5850.00	17.27	32.20	10.61	0.00	60.08	68.20	-8.12	Horizontal	Peak
5725.00	16.89	31.73	10.47	0.00	59.09	68.20	-9.11	Vertical	Peak
5850.00	17.19	32.20	10.61	0.00	60.00	68.20	-8.20	Vertical	Peak
5725.00	7.28	31.73	10.47	0.00	49.48	54.00	-4.52	Horizontal	Average
5850.00	7.24	32.20	10.61	0.00	50.05	54.00	-3.95	Horizontal	Average
5725.00	6.93	31.73	10.47	0.00	49.13	54.00	-4.87	Vertical	Average
5850.00	7.07	32.20	10.61	0.00	49.88	54.00	-4.12	Vertical	Average

Band I for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11n		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.88	31.70	9.79	0.00	58.37	68.20	-9.83	Horizontal	Peak
5350.00	16.42	31.40	10.06	0.00	57.88	68.20	-10.32	Horizontal	Peak
5150.00	16.58	31.70	9.79	0.00	58.07	68.20	-10.13	Vertical	Peak
5350.00	16.36	31.40	10.06	0.00	57.82	68.20	-10.39	Vertical	Peak
5150.00	7.46	31.70	9.79	0.00	48.95	54.00	-5.05	Horizontal	Average
5350.00	7.33	31.40	10.06	0.00	48.79	54.00	-5.21	Horizontal	Average
5150.00	7.28	31.70	9.79	0.00	48.77	54.00	-5.23	Vertical	Average
5350.00	7.24	31.40	10.06	0.00	48.70	54.00	-5.30	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11n		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.46	31.73	10.47	0.00	58.66	68.20	-9.54	Horizontal	Peak
5850.00	16.21	32.20	10.61	0.00	59.02	68.20	-9.18	Horizontal	Peak
5725.00	16.53	31.73	10.47	0.00	58.73	68.20	-9.47	Vertical	Peak
5850.00	16.42	32.20	10.61	0.00	59.23	68.20	-8.97	Vertical	Peak
5725.00	7.25	31.73	10.47	0.00	49.45	54.00	-4.55	Horizontal	Average
5850.00	7.11	32.20	10.61	0.00	49.92	54.00	-4.08	Horizontal	Average
5725.00	7.13	31.73	10.47	0.00	49.33	54.00	-4.67	Vertical	Average
5850.00	7.12	32.20	10.61	0.00	49.93	54.00	-4.07	Vertical	Average

Band I for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11n		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.47	31.70	9.79	0.00	57.96	68.20	-10.24	Horizontal	Peak
5350.00	16.40	31.40	10.06	0.00	57.86	68.20	-10.34	Horizontal	Peak
5150.00	16.34	31.70	9.79	0.00	57.83	68.20	-10.37	Vertical	Peak
5350.00	16.25	31.40	10.06	0.00	57.71	68.20	-10.49	Vertical	Peak
5150.00	7.25	31.70	9.79	0.00	48.74	54.00	-5.26	Horizontal	Average
5350.00	7.13	31.40	10.06	0.00	48.59	54.00	-5.41	Horizontal	Average
5150.00	7.18	31.70	9.79	0.00	48.67	54.00	-5.33	Vertical	Average
5350.00	7.04	31.40	10.06	0.00	48.50	54.00	-5.50	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11n		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.58	31.73	10.47	0.00	58.78	68.20	-9.42	Horizontal	Peak
5850.00	16.37	32.20	10.61	0.00	59.18	68.20	-9.02	Horizontal	Peak
5725.00	16.43	31.73	10.47	0.00	58.63	68.20	-9.57	Vertical	Peak
5850.00	16.55	32.20	10.61	0.00	59.36	68.20	-8.84	Vertical	Peak
5725.00	7.35	31.73	10.47	0.00	49.55	54.00	-4.45	Horizontal	Average
5850.00	7.26	32.20	10.61	0.00	50.07	54.00	-3.93	Horizontal	Average
5725.00	7.23	31.73	10.47	0.00	49.43	54.00	-4.57	Vertical	Average
5850.00	7.15	32.20	10.61	0.00	49.96	54.00	-4.04	Vertical	Average

Band I for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11ac		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.55	31.70	9.79	0.00	58.04	68.20	-10.16	Horizontal	Peak
5350.00	16.43	31.40	10.06	0.00	57.89	68.20	-10.31	Horizontal	Peak
5150.00	16.38	31.70	9.79	0.00	57.87	68.20	-10.33	Vertical	Peak
5350.00	16.35	31.40	10.06	0.00	57.81	68.20	-10.39	Vertical	Peak
5150.00	7.42	31.70	9.79	0.00	48.91	54.00	-5.09	Horizontal	Average
5350.00	7.36	31.40	10.06	0.00	48.82	54.00	-5.18	Horizontal	Average
5150.00	7.44	31.70	9.79	0.00	48.93	54.00	-5.07	Vertical	Average
5350.00	7.25	31.40	10.06	0.00	48.71	54.00	-5.29	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11ac		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.77	31.73	10.47	0.00	58.97	68.20	-9.23	Horizontal	Peak
5850.00	16.56	32.20	10.61	0.00	59.37	68.20	-8.83	Horizontal	Peak
5725.00	16.63	31.73	10.47	0.00	58.83	68.20	-9.37	Vertical	Peak
5850.00	16.53	32.20	10.61	0.00	59.34	68.20	-8.86	Vertical	Peak
5725.00	7.37	31.73	10.47	0.00	49.57	54.00	-4.43	Horizontal	Average
5850.00	7.28	32.20	10.61	0.00	50.09	54.00	-3.91	Horizontal	Average
5725.00	7.22	31.73	10.47	0.00	49.42	54.00	-4.58	Vertical	Average
5850.00	7.16	32.20	10.61	0.00	49.97	54.00	-4.03	Vertical	Average

Band I for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11ac		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.72	31.70	9.79	0.00	58.21	68.20	-9.99	Horizontal	Peak
5350.00	16.54	31.40	10.06	0.00	58.00	68.20	-10.20	Horizontal	Peak
5150.00	16.59	31.70	9.79	0.00	58.08	68.20	-10.12	Vertical	Peak
5350.00	16.43	31.40	10.06	0.00	57.89	68.20	-10.31	Vertical	Peak
5150.00	7.62	31.70	9.79	0.00	49.11	54.00	-4.89	Horizontal	Average
5350.00	7.46	31.40	10.06	0.00	48.92	54.00	-5.08	Horizontal	Average
5150.00	7.64	31.70	9.79	0.00	49.13	54.00	-4.87	Vertical	Average
5350.00	7.54	31.40	10.06	0.00	49.00	54.00	-5.00	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		20MHz		Worst mode:		802.11ac		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.64	31.73	10.47	0.00	58.84	68.20	-9.36	Horizontal	Peak
5850.00	16.44	32.20	10.61	0.00	59.25	68.20	-8.95	Horizontal	Peak
5725.00	16.59	31.73	10.47	0.00	58.79	68.20	-9.41	Vertical	Peak
5850.00	16.50	32.20	10.61	0.00	59.31	68.20	-8.89	Vertical	Peak
5725.00	7.33	31.73	10.47	0.00	49.53	54.00	-4.47	Horizontal	Average
5850.00	7.24	32.20	10.61	0.00	50.05	54.00	-3.95	Horizontal	Average
5725.00	7.27	31.73	10.47	0.00	49.47	54.00	-4.53	Vertical	Average
5850.00	7.26	32.20	10.61	0.00	50.07	54.00	-3.93	Vertical	Average

Band I for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11n		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.25	31.70	9.79	0.00	57.74	68.20	-10.46	Horizontal	Peak
5350.00	16.14	31.40	10.06	0.00	57.60	68.20	-10.60	Horizontal	Peak
5150.00	16.26	31.70	9.79	0.00	57.75	68.20	-10.45	Vertical	Peak
5350.00	16.24	31.40	10.06	0.00	57.70	68.20	-10.50	Vertical	Peak
5150.00	7.12	31.70	9.79	0.00	48.61	54.00	-5.39	Horizontal	Average
5350.00	7.06	31.40	10.06	0.00	48.52	54.00	-5.48	Horizontal	Average
5150.00	7.14	31.70	9.79	0.00	48.63	54.00	-5.37	Vertical	Average
5350.00	6.87	31.40	10.06	0.00	48.33	54.00	-5.67	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11n		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.38	31.73	10.47	0.00	58.58	68.20	-9.62	Horizontal	Peak
5850.00	16.24	32.20	10.61	0.00	59.05	68.20	-9.15	Horizontal	Peak
5725.00	16.16	31.73	10.47	0.00	58.36	68.20	-9.84	Vertical	Peak
5850.00	16.05	32.20	10.61	0.00	58.86	68.20	-9.34	Vertical	Peak
5725.00	7.03	31.73	10.47	0.00	49.23	54.00	-4.77	Horizontal	Average
5850.00	6.81	32.20	10.61	0.00	49.62	54.00	-4.38	Horizontal	Average
5725.00	7.07	31.73	10.47	0.00	49.27	54.00	-4.73	Vertical	Average
5850.00	6.73	32.20	10.61	0.00	49.54	54.00	-4.46	Vertical	Average

Band I for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11n		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.43	31.70	9.79	0.00	57.92	68.20	-10.29	Horizontal	Peak
5350.00	16.37	31.40	10.06	0.00	57.83	68.20	-10.37	Horizontal	Peak
5150.00	16.59	31.70	9.79	0.00	58.08	68.20	-10.12	Vertical	Peak
5350.00	16.42	31.40	10.06	0.00	57.88	68.20	-10.32	Vertical	Peak
5150.00	7.25	31.70	9.79	0.00	48.74	54.00	-5.26	Horizontal	Average
5350.00	7.22	31.40	10.06	0.00	48.68	54.00	-5.32	Horizontal	Average
5150.00	7.17	31.70	9.79	0.00	48.66	54.00	-5.34	Vertical	Average
5350.00	6.99	31.40	10.06	0.00	48.45	54.00	-5.55	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11n		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.60	31.73	10.47	0.00	58.80	68.20	-9.40	Horizontal	Peak
5850.00	16.44	32.20	10.61	0.00	59.25	68.20	-8.95	Horizontal	Peak
5725.00	16.59	31.73	10.47	0.00	58.79	68.20	-9.41	Vertical	Peak
5850.00	16.55	32.20	10.61	0.00	59.36	68.20	-8.84	Vertical	Peak
5725.00	7.23	31.73	10.47	0.00	49.43	54.00	-4.57	Horizontal	Average
5850.00	6.97	32.20	10.61	0.00	49.78	54.00	-4.22	Horizontal	Average
5725.00	7.27	31.73	10.47	0.00	49.47	54.00	-4.53	Vertical	Average
5850.00	7.22	32.20	10.61	0.00	50.03	54.00	-3.97	Vertical	Average

Band I for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11ac		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.45	31.70	9.79	0.00	57.94	68.20	-10.26	Horizontal	Peak
5350.00	16.40	31.40	10.06	0.00	57.86	68.20	-10.34	Horizontal	Peak
5150.00	16.29	31.70	9.79	0.00	57.78	68.20	-10.42	Vertical	Peak
5350.00	16.22	31.40	10.06	0.00	57.68	68.20	-10.52	Vertical	Peak
5150.00	7.03	31.70	9.79	0.00	48.52	54.00	-5.48	Horizontal	Average
5350.00	6.95	31.40	10.06	0.00	48.41	54.00	-5.59	Horizontal	Average
5150.00	7.07	31.70	9.79	0.00	48.56	54.00	-5.44	Vertical	Average
5350.00	6.96	31.40	10.06	0.00	48.42	54.00	-5.58	Vertical	Average

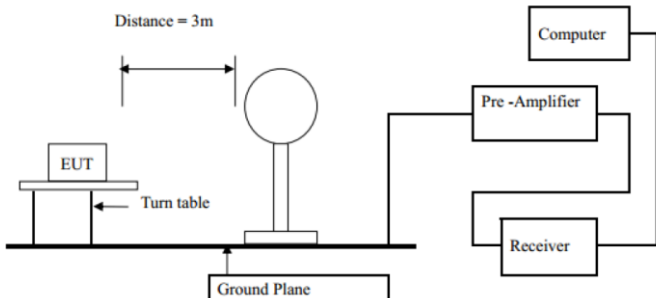
Band IV for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11ac		Test channel:	
								Low	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.57	31.73	10.47	0.00	58.77	68.20	-9.43	Horizontal	Peak
5850.00	16.43	32.20	10.61	0.00	59.24	68.20	-8.96	Horizontal	Peak
5725.00	16.56	31.73	10.47	0.00	58.76	68.20	-9.44	Vertical	Peak
5850.00	16.36	32.20	10.61	0.00	59.17	68.20	-9.04	Vertical	Peak
5725.00	7.20	31.73	10.47	0.00	49.40	54.00	-4.60	Horizontal	Average
5850.00	6.91	32.20	10.61	0.00	49.72	54.00	-4.28	Horizontal	Average
5725.00	7.17	31.73	10.47	0.00	49.37	54.00	-4.63	Vertical	Average
5850.00	7.02	32.20	10.61	0.00	49.83	54.00	-4.17	Vertical	Average

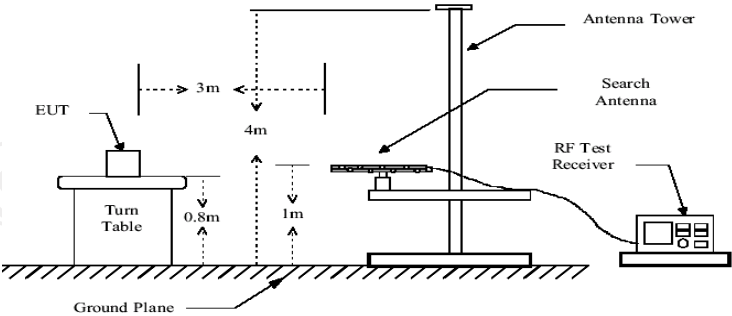
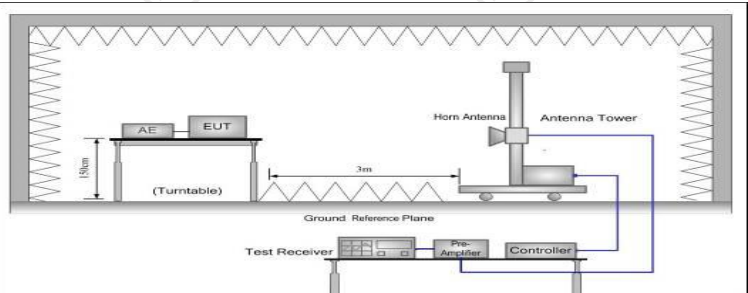
Band I for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11ac		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5150.00	16.35	31.70	9.79	0.00	57.84	68.20	-10.36	Horizontal	Peak
5350.00	16.20	31.40	10.06	0.00	57.66	68.20	-10.54	Horizontal	Peak
5150.00	16.33	31.70	9.79	0.00	57.82	68.20	-10.38	Vertical	Peak
5350.00	16.20	31.40	10.06	0.00	57.66	68.20	-10.54	Vertical	Peak
5150.00	7.09	31.70	9.79	0.00	48.58	54.00	-5.42	Horizontal	Average
5350.00	6.97	31.40	10.06	0.00	48.43	54.00	-5.57	Horizontal	Average
5150.00	7.02	31.70	9.79	0.00	48.51	54.00	-5.49	Vertical	Average
5350.00	6.95	31.40	10.06	0.00	48.41	54.00	-5.59	Vertical	Average

Band IV for Band edge emission									
Bandwidth:		40MHz		Worst mode:		802.11ac		Test channel:	
								High	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Detector
5725.00	16.43	31.73	10.47	0.00	58.63	68.20	-9.57	Horizontal	Peak
5850.00	16.36	32.20	10.61	0.00	59.17	68.20	-9.03	Horizontal	Peak
5725.00	16.43	31.73	10.47	0.00	58.63	68.20	-9.57	Vertical	Peak
5850.00	16.31	32.20	10.61	0.00	59.12	68.20	-9.08	Vertical	Peak
5725.00	7.14	31.73	10.47	0.00	49.34	54.00	-4.66	Horizontal	Average
5850.00	6.86	32.20	10.61	0.00	49.67	54.00	-4.33	Horizontal	Average
5725.00	7.19	31.73	10.47	0.00	49.39	54.00	-4.61	Vertical	Average
5850.00	6.85	32.20	10.61	0.00	49.66	54.00	-4.34	Vertical	Average

6.8. Spurious Emission

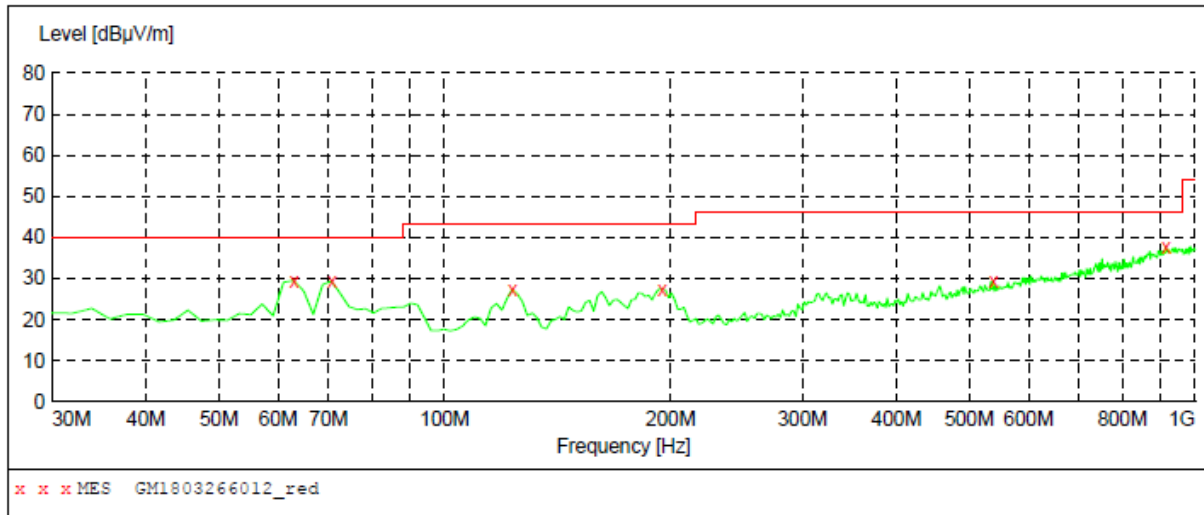
6.8.1.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205				
Test Method:	KDB 789033 D02 v02r01				
Frequency Range:	9kHz to 40GHz				
Measurement Distance:	3 m				
Antenna Polarization:	Horizontal & Vertical				
Operation mode:	Transmitting mode with modulation				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit:	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		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		30		30
	30-88		100		3
	88-216		150		3
	216-960		200		3
	Above 960		500		3
	Frequency		Limit (dBuV/m @3m)		Detector
	Above 1G		74.0		Peak
			54.0		Average
Test setup:	For radiated emissions below 30MHz				
					

	30MHz to 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8/1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test results:	PASS

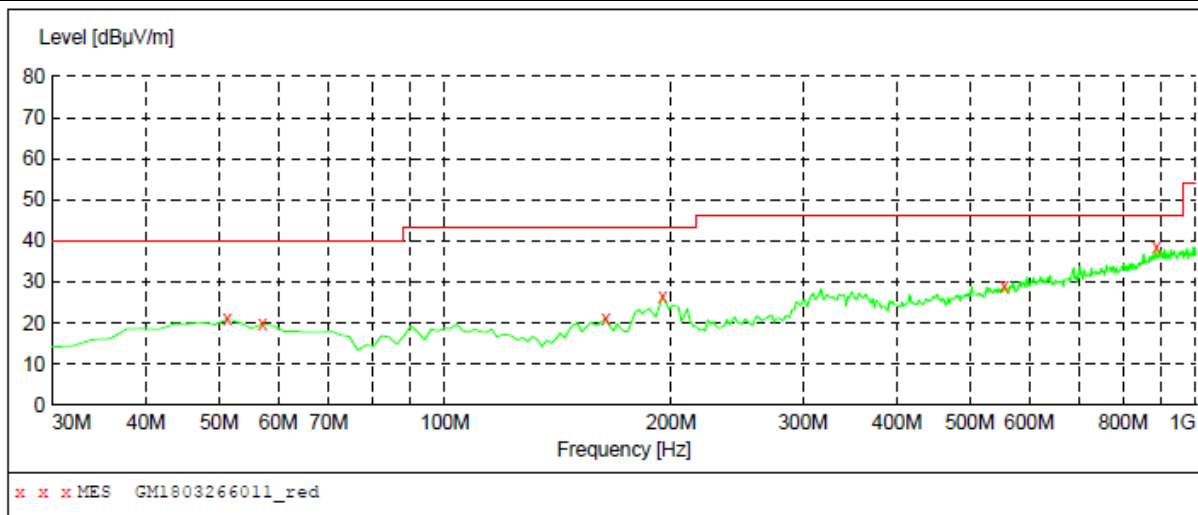
6.8.2. Test Data

Please refer to following diagram for individual
Below 1GHz



MEASUREMENT RESULT: "GM1803266012_red"

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
62.980000	29.50	-10.8	40.0	10.5	QP	100.0	0.00	VERTICAL
70.740000	29.40	-13.3	40.0	10.6	QP	100.0	27.00	VERTICAL
123.120000	27.40	-12.7	43.5	16.1	QP	100.0	91.00	VERTICAL
194.900000	27.40	-10.1	43.5	16.1	QP	100.0	79.00	VERTICAL
538.280000	29.30	-1.0	46.0	16.7	QP	100.0	158.00	VERTICAL
914.640000	37.60	6.9	46.0	8.4	QP	100.0	296.00	VERTICAL



MEASUREMENT RESULT: "GM1803266011_red"

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
51.340000	20.90	-8.8	40.0	19.1	QP	100.0	359.00	HORIZONTAL
57.160000	19.70	-9.4	40.0	20.3	QP	100.0	22.00	HORIZONTAL
163.860000	21.20	-13.2	43.5	22.3	QP	100.0	177.00	HORIZONTAL
194.900000	26.50	-10.1	43.5	17.0	QP	100.0	0.00	HORIZONTAL
555.740000	28.90	-0.6	46.0	17.1	QP	100.0	113.00	HORIZONTAL
885.540000	38.70	6.4	46.0	7.3	QP	100.0	314.00	HORIZONTAL

Remark:

1. Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level
2. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported
3. Pre-scan the 802.11a and 802.11n test mode, found that 802.11a and band 1 mode for low channel was the worst mode, and the report showed only the test results of the worst mode.

Above 1GHz

Band I for Low									
Bandwidth: 20MHz				Worst mode: 802.11a					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1313.08	34.31	26.16	4.85	37.16	28.16	74.00	-45.84	Vertical	Peak
2912.82	30.25	28.51	7.43	37.58	28.61	74.00	-45.39	Vertical	Peak
4234.72	31.80	30.07	8.97	36.53	34.31	74.00	-39.69	Vertical	Peak
6833.77	30.51	34.24	11.64	33.80	42.59	74.00	-31.41	Vertical	Peak
1306.41	33.63	26.18	4.84	37.17	27.48	74.00	-46.52	Horizontal	Peak
1958.19	31.34	25.89	6.21	37.56	25.88	74.00	-48.12	Horizontal	Peak
3943.39	31.82	29.70	8.70	36.80	33.42	74.00	-40.58	Horizontal	Peak
6267.19	31.14	33.03	11.00	33.86	41.31	74.00	-32.69	Horizontal	Peak

Band I for Mid									
Bandwidth: 20MHz				Worst mode: 802.11a					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1823.48	32.56	25.38	6.00	37.43	26.51	74.00	-47.49	Vertical	Peak
3128.01	32.58	28.80	7.63	37.46	31.55	74.00	-42.45	Vertical	Peak
5504.17	30.87	31.90	10.20	34.42	38.55	74.00	-35.45	Vertical	Peak
8355.94	30.14	36.51	12.83	32.96	46.52	74.00	-27.48	Vertical	Peak
1182.94	35.51	26.17	4.62	37.23	29.07	74.00	-44.93	Horizontal	Peak
1791.27	32.08	25.38	5.94	37.40	26.00	74.00	-48.00	Horizontal	Peak
3112.13	32.63	28.80	7.61	37.48	31.56	74.00	-42.44	Horizontal	Peak
6017.06	29.95	32.50	10.70	34.13	39.02	74.00	-34.98	Horizontal	Peak

Band I for High									
Bandwidth: 20MHz				Worst mode: 802.11a					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1786.72	31.53	25.37	5.93	37.39	25.44	74.00	-48.56	Vertical	Peak
2644.26	28.92	27.93	7.01	37.59	26.27	74.00	-47.73	Vertical	Peak
4748.67	32.18	31.40	9.52	35.83	37.27	74.00	-36.73	Vertical	Peak
6662.01	30.68	34.20	11.43	33.71	42.60	74.00	-31.40	Vertical	Peak
1435.43	33.76	25.86	5.10	37.10	27.62	74.00	-46.38	Horizontal	Peak
2995.54	29.30	28.60	7.48	37.58	27.80	74.00	-46.20	Horizontal	Peak
5311.47	30.94	31.32	10.00	34.77	37.49	74.00	-36.51	Horizontal	Peak
6903.71	31.01	34.72	11.73	33.83	43.63	74.00	-30.37	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band I for Low									
Bandwidth:		20MHz			Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1521.98	32.93	25.60	5.35	37.10	26.78	68.20	-41.42	Vertical	Peak
2538.73	29.20	27.44	6.87	37.59	25.92	68.20	-42.28	Vertical	Peak
4570.77	31.26	30.84	9.41	36.16	35.35	68.20	-32.85	Vertical	Peak
6283.16	31.01	33.07	11.00	33.84	41.24	68.20	-26.96	Vertical	Peak
1439.09	32.70	25.86	5.11	37.10	26.57	68.20	-41.63	Horizontal	Peak
2577.80	28.20	27.67	6.89	37.59	25.17	68.20	-43.03	Horizontal	Peak
5204.40	31.60	31.49	9.84	34.98	37.95	68.20	-30.25	Horizontal	Peak
7282.79	30.20	36.28	11.95	33.39	45.04	68.20	-23.16	Horizontal	Peak

Band I for Mid									
Bandwidth:		20MHz			Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1406.50	34.16	25.89	5.02	37.11	27.96	68.20	-40.24	Vertical	Peak
3616.45	32.56	29.30	8.29	37.05	33.10	68.20	-35.10	Vertical	Peak
6561.03	30.69	34.12	11.29	33.65	42.45	68.20	-25.75	Vertical	Peak
7741.59	29.83	36.10	13.10	33.04	45.99	68.20	-22.21	Vertical	Peak
1597.40	33.42	24.92	5.56	37.19	26.71	68.20	-41.49	Horizontal	Peak
2468.63	29.59	27.32	6.82	37.59	26.14	68.20	-42.06	Horizontal	Peak
4478.63	31.70	30.66	9.26	36.31	35.31	68.20	-32.89	Horizontal	Peak
8313.51	31.73	36.43	12.82	32.97	48.01	68.20	-20.19	Horizontal	Peak

Band I for High									
Bandwidth:		20MHz			Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1464.96	34.06	25.83	5.19	37.09	27.99	68.20	-40.21	Vertical	Peak
2678.14	28.70	28.04	7.09	37.59	26.24	68.20	-41.96	Vertical	Peak
3863.90	32.49	29.66	8.59	36.86	33.88	68.20	-34.32	Vertical	Peak
7921.00	30.88	36.78	12.68	33.06	47.28	68.20	-20.92	Vertical	Peak
1402.92	33.20	25.90	5.01	37.12	26.99	68.20	-41.21	Horizontal	Peak
2657.76	28.71	27.97	7.04	37.59	26.13	68.20	-42.07	Horizontal	Peak
4223.95	31.14	30.05	8.96	36.54	33.61	68.20	-34.59	Horizontal	Peak
7099.75	30.74	35.60	11.85	33.70	44.49	68.20	-23.71	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band I for Low									
Bandwidth:		20MHz			Worst mode:			802.11ac	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1428.14	33.55	25.87	5.08	37.10	27.40	68.20	-40.80	Vertical	Peak
2241.03	29.55	27.75	6.51	37.59	26.22	68.20	-41.98	Vertical	Peak
4278.06	31.11	30.16	9.01	36.49	33.79	68.20	-34.41	Vertical	Peak
7489.60	30.81	36.12	12.36	33.04	46.25	68.20	-21.95	Vertical	Peak
1609.65	32.96	24.93	5.59	37.20	26.28	68.20	-41.92	Horizontal	Peak
2564.71	28.30	27.59	6.89	37.59	25.19	68.20	-43.01	Horizontal	Peak
4267.18	32.35	30.13	9.00	36.50	34.98	68.20	-33.22	Horizontal	Peak
6974.36	30.18	35.15	11.82	33.87	43.28	68.20	-24.92	Horizontal	Peak

Band I for Mid									
Bandwidth:		20MHz			Worst mode:			802.11ac	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1313.08	34.31	26.16	4.85	37.16	28.16	68.20	-40.04	Vertical	Peak
2358.07	29.76	27.81	6.70	37.59	26.68	68.20	-41.52	Vertical	Peak
3993.90	32.91	29.70	8.77	36.76	34.62	68.20	-33.58	Vertical	Peak
6032.40	30.60	32.50	10.73	34.11	39.72	68.20	-28.48	Vertical	Peak
1299.77	34.34	26.20	4.83	37.17	28.20	68.20	-40.00	Horizontal	Peak
2044.79	31.61	26.48	6.31	37.60	26.80	68.20	-41.40	Horizontal	Peak
3824.76	32.10	29.62	8.53	36.89	33.36	68.20	-34.84	Horizontal	Peak
6781.78	30.81	34.04	11.58	33.77	42.66	68.20	-25.54	Horizontal	Peak

Band I for High									
Bandwidth:		20MHz			Worst mode:			802.11ac	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1293.17	35.34	26.21	4.82	37.17	29.20	68.20	-39.00	Vertical	Peak
2092.18	30.59	26.67	6.35	37.60	26.01	68.20	-42.19	Vertical	Peak
3913.39	31.58	29.70	8.66	36.82	33.12	68.20	-35.08	Vertical	Peak
7301.36	31.36	36.30	11.97	33.35	46.28	68.20	-21.92	Vertical	Peak
1468.70	32.89	25.83	5.20	37.08	26.84	68.20	-41.36	Horizontal	Peak
2733.23	29.47	28.10	7.22	37.59	27.20	68.20	-41.00	Horizontal	Peak
4524.47	31.51	30.75	9.34	36.24	35.36	68.20	-32.84	Horizontal	Peak
7319.96	30.93	36.30	11.99	33.32	45.90	68.20	-22.30	Horizontal	Peak

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band I for Low									
Bandwidth:			40MHz		Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1728.56	32.36	25.26	5.82	37.33	26.11	68.20	-42.09	Vertical	Peak
2972.75	29.36	28.57	7.47	37.58	27.82	68.20	-40.38	Vertical	Peak
5588.88	31.60	31.81	10.26	34.37	39.30	68.20	-28.90	Vertical	Peak
8527.85	31.39	37.01	12.88	32.92	48.36	68.20	-19.84	Vertical	Peak
1457.52	33.26	25.84	5.16	37.09	27.17	68.20	-41.03	Horizontal	Peak
1795.84	32.09	25.39	5.95	37.40	26.03	68.20	-42.17	Horizontal	Peak
4014.29	32.04	29.73	8.79	36.75	33.81	68.20	-34.39	Horizontal	Peak
6868.65	31.20	34.48	11.69	33.81	43.56	68.20	-24.64	Horizontal	Peak

Band I for High									
Bandwidth:			40MHz		Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1353.80	34.51	26.04	4.92	37.14	28.33	68.20	-39.87	Vertical	Peak
2437.41	29.81	27.45	6.80	37.59	26.47	68.20	-41.73	Vertical	Peak
4128.28	31.79	29.93	8.88	36.63	33.97	68.20	-34.23	Vertical	Peak
6921.30	30.13	34.83	11.75	33.84	42.87	68.20	-25.33	Vertical	Peak
1626.12	33.14	24.98	5.62	37.22	26.52	68.20	-41.68	Horizontal	Peak
2818.01	29.83	28.17	7.38	37.58	27.80	68.20	-40.40	Horizontal	Peak
4223.95	31.14	30.05	8.96	36.54	33.61	68.20	-34.59	Horizontal	Peak
7900.86	31.10	36.70	12.78	33.06	47.52	68.20	-20.68	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamp Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band I for Low									
Bandwidth:		40MHz			Worst mode:			802.11ac	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1495.10	33.05	25.80	5.27	37.07	27.05	68.20	-41.15	Vertical	Peak
2740.20	30.69	28.10	7.23	37.58	28.44	68.20	-39.76	Vertical	Peak
3507.65	33.25	29.02	8.13	37.13	33.27	68.20	-34.93	Vertical	Peak
7135.98	30.89	35.82	11.86	33.64	44.93	68.20	-23.27	Vertical	Peak
1634.42	32.77	25.01	5.64	37.23	26.19	68.20	-42.01	Horizontal	Peak
2564.71	28.30	27.59	6.89	37.59	25.19	68.20	-43.01	Horizontal	Peak
4559.15	31.45	30.82	9.39	36.18	35.48	68.20	-32.72	Horizontal	Peak
7376.08	30.61	36.30	12.04	33.23	45.72	68.20	-22.48	Horizontal	Peak

Band I for High									
Bandwidth:		40MHz			Worst mode:			802.11ac	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1706.70	32.08	25.21	5.78	37.31	25.76	68.20	-42.44	Vertical	Peak
2883.32	29.56	28.43	7.42	37.58	27.83	68.20	-40.37	Vertical	Peak
3325.07	33.01	28.20	7.87	37.29	31.79	68.20	-36.41	Vertical	Peak
6992.14	30.20	35.25	11.84	33.88	43.41	68.20	-24.79	Vertical	Peak
1293.17	35.34	26.21	4.82	37.17	29.20	68.20	-39.00	Horizontal	Peak
2644.26	28.92	27.93	7.01	37.59	26.27	68.20	-41.93	Horizontal	Peak
4688.62	31.63	31.17	9.50	35.94	36.36	68.20	-31.84	Horizontal	Peak
6851.19	31.13	34.36	11.66	33.80	43.35	68.20	-24.85	Horizontal	Peak

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band IV for Low									
Bandwidth: 20MHz				Worst mode: 802.11a					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1593.34	34.15	24.96	5.55	37.18	27.48	68.20	-40.72	Vertical	Peak
2346.10	29.85	27.87	6.68	37.59	26.81	68.20	-41.39	Vertical	Peak
3672.11	33.11	29.30	8.35	37.00	33.76	68.20	-34.44	Vertical	Peak
6315.23	30.75	33.13	11.00	33.81	41.07	68.20	-27.13	Vertical	Peak
1326.51	34.09	26.12	4.88	37.15	27.94	68.20	-40.26	Horizontal	Peak
1923.61	31.82	25.54	6.15	37.53	25.98	68.20	-42.22	Horizontal	Peak
3923.37	31.63	29.70	8.67	36.82	33.18	68.20	-35.02	Horizontal	Peak
7585.53	30.32	36.19	12.67	33.03	46.15	68.20	-22.05	Horizontal	Peak

Band IV for Mid									
Bandwidth: 20MHz				Worst mode: 802.11a					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1468.70	32.89	25.83	5.20	37.08	26.84	68.20	-41.36	Vertical	Peak
2412.72	32.49	27.55	6.78	37.59	29.23	68.20	-38.97	Vertical	Peak
4321.84	32.42	30.27	9.06	36.45	35.30	68.20	-32.90	Vertical	Peak
7135.98	30.89	35.82	11.86	33.64	44.93	68.20	-23.27	Vertical	Peak
1565.20	33.49	25.21	5.47	37.15	27.02	68.20	-41.18	Horizontal	Peak
2839.61	30.19	28.26	7.39	37.58	28.26	68.20	-39.94	Horizontal	Peak
4524.47	31.51	30.75	9.34	36.24	35.36	68.20	-32.84	Horizontal	Peak
7027.82	31.27	35.38	11.85	33.83	44.67	68.20	-23.53	Horizontal	Peak

Band IV for High									
Bandwidth: 20MHz				Worst mode: 802.11a					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1472.44	32.52	25.83	5.21	37.08	26.48	68.20	-41.72	Vertical	Peak
2364.08	30.22	27.78	6.71	37.59	27.12	68.20	-41.08	Vertical	Peak
4501.49	31.76	30.70	9.30	36.29	35.47	68.20	-32.73	Vertical	Peak
7489.60	30.81	36.12	12.36	33.04	46.25	68.20	-21.95	Vertical	Peak
1392.25	33.35	25.92	4.99	37.12	27.14	68.20	-41.06	Horizontal	Peak
3018.50	31.79	28.64	7.50	37.56	30.37	68.20	-37.83	Horizontal	Peak
5546.36	31.29	31.85	10.23	34.39	38.98	68.20	-29.22	Horizontal	Peak
8398.59	31.34	36.60	12.85	32.94	47.85	68.20	-20.35	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band IV for Low									
Bandwidth:		20MHz			Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1402.92	33.20	25.90	5.01	37.12	26.99	68.20	-41.21	Vertical	Peak
2235.33	29.51	27.72	6.50	37.60	26.13	68.20	-42.07	Vertical	Peak
4107.32	31.19	29.91	8.87	36.65	33.32	68.20	-34.88	Vertical	Peak
7063.69	30.21	35.49	11.85	33.77	43.78	68.20	-24.42	Vertical	Peak
2246.74	30.74	27.78	6.52	37.59	27.45	68.20	-40.75	Horizontal	Peak
2846.85	29.71	28.29	7.40	37.58	27.82	68.20	-40.38	Horizontal	Peak
4086.46	31.80	29.87	8.85	36.67	33.85	68.20	-34.35	Horizontal	Peak
7489.60	30.81	36.12	12.36	33.04	46.25	68.20	-21.95	Horizontal	Peak

Band IV for Mid									
Bandwidth:		20MHz			Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1904.12	32.12	25.34	6.12	37.51	26.07	68.20	-42.13	Vertical	Peak
2684.96	29.42	28.06	7.11	37.59	27.00	68.20	-41.20	Vertical	Peak
4388.35	31.94	30.47	9.12	36.39	35.14	68.20	-33.06	Vertical	Peak
7376.08	30.61	36.30	12.04	33.23	45.72	68.20	-22.48	Vertical	Peak
1326.51	34.09	26.12	4.88	37.15	27.94	68.20	-40.26	Horizontal	Peak
2229.65	30.15	27.68	6.49	37.60	26.72	68.20	-41.48	Horizontal	Peak
3805.33	32.03	29.61	8.51	36.90	33.25	68.20	-34.95	Horizontal	Peak
8615.13	31.42	37.39	12.91	32.94	48.78	68.20	-19.42	Horizontal	Peak

Band IV for High									
Bandwidth:		20MHz			Worst mode:			802.11n	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1506.56	32.93	25.74	5.30	37.08	26.89	68.20	-41.31	Vertical	Peak
2275.52	30.71	27.96	6.56	37.59	27.64	68.20	-40.56	Vertical	Peak
4536.00	31.33	30.77	9.35	36.22	35.23	68.20	-32.97	Vertical	Peak
6781.78	30.81	34.04	11.58	33.77	42.66	68.20	-25.54	Vertical	Peak
1958.19	31.34	25.89	6.21	37.56	25.88	68.20	-42.32	Horizontal	Peak
2754.19	29.66	28.10	7.26	37.58	27.44	68.20	-40.76	Horizontal	Peak
4478.63	31.70	30.66	9.26	36.31	35.31	68.20	-32.89	Horizontal	Peak
6956.63	29.82	35.04	11.80	33.86	42.80	68.20	-25.40	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band IV for Low									
Bandwidth: 20MHz				Worst mode: 802.11ac					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1518.11	32.91	25.63	5.34	37.09	26.79	68.20	-41.41	Vertical	Peak
2258.20	29.86	27.85	6.54	37.59	26.66	68.20	-41.54	Vertical	Peak
4310.85	32.12	30.23	9.05	36.46	34.94	68.20	-33.26	Vertical	Peak
7154.17	30.84	35.93	11.86	33.61	45.02	68.20	-23.18	Vertical	Peak
1439.09	32.70	25.86	5.11	37.10	26.57	68.20	-41.63	Horizontal	Peak
1908.97	31.23	25.39	6.13	37.51	25.24	68.20	-42.96	Horizontal	Peak
4138.80	32.86	29.94	8.89	36.62	35.07	68.20	-33.13	Horizontal	Peak
7135.98	30.89	35.82	11.86	33.64	44.93	68.20	-23.27	Horizontal	Peak

Band IV for Mid									
Bandwidth: 20MHz				Worst mode: 802.11ac					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1289.89	34.08	26.21	4.81	37.17	27.93	68.20	-40.27	Vertical	Peak
2140.66	30.94	27.03	6.39	37.60	26.76	68.20	-41.44	Vertical	Peak
6063.19	30.91	32.50	10.78	34.08	40.11	68.20	-28.09	Vertical	Peak
7245.81	31.24	36.25	11.91	33.45	45.95	68.20	-22.25	Vertical	Peak
1326.51	34.09	26.12	4.88	37.15	27.94	68.20	-40.26	Horizontal	Peak
3350.56	31.69	28.20	7.90	37.26	30.53	68.20	-37.67	Horizontal	Peak
6974.36	30.18	35.15	11.82	33.87	43.28	68.20	-24.92	Horizontal	Peak
8637.08	31.26	37.52	12.93	32.94	48.77	68.20	-19.43	Horizontal	Peak

Band IV for High									
Bandwidth: 20MHz				Worst mode: 802.11ac					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1381.66	32.96	25.95	4.97	37.13	26.75	68.20	-41.45	Vertical	Peak
2092.18	30.59	26.67	6.35	37.60	26.01	68.20	-42.19	Vertical	Peak
3543.55	33.22	29.13	8.18	37.11	33.42	68.20	-34.78	Vertical	Peak
5791.65	30.83	32.06	10.58	34.26	39.21	68.20	-28.99	Vertical	Peak
1472.44	32.52	25.83	5.21	37.08	26.48	68.20	-41.72	Horizontal	Peak
2328.25	29.53	27.96	6.65	37.59	26.55	68.20	-41.65	Horizontal	Peak
3993.90	32.91	29.70	8.77	36.76	34.62	68.20	-33.58	Horizontal	Peak
6938.94	30.08	34.93	11.77	33.85	42.93	68.20	-25.27	Horizontal	Peak

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band IV for Low									
Bandwidth: 40MHz				Worst mode: 802.11n					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1010.23	34.29	25.23	4.23	37.34	26.41	68.20	-41.79	Vertical	Peak
2912.82	30.25	28.51	7.43	37.58	28.61	68.20	-39.59	Vertical	Peak
6203.70	30.68	32.91	11.01	33.93	40.67	68.20	-27.53	Vertical	Peak
8770.01	31.04	37.76	13.07	32.98	48.89	68.20	-19.31	Vertical	Peak
1768.62	31.22	25.34	5.90	37.37	25.09	68.20	-43.11	Horizontal	Peak
2912.82	30.25	28.51	7.43	37.58	28.61	68.20	-39.59	Horizontal	Peak
3953.44	32.11	29.70	8.71	36.79	33.73	68.20	-34.47	Horizontal	Peak
5297.97	31.23	31.30	9.98	34.80	37.71	68.20	-30.49	Horizontal	Peak

Band IV for High									
Bandwidth: 40MHz				Worst mode: 802.11n					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1461.24	32.95	25.84	5.17	37.09	26.87	68.20	-41.33	Vertical	Peak
2281.32	30.00	27.99	6.57	37.59	26.97	68.20	-41.23	Vertical	Peak
4278.06	31.11	30.16	9.01	36.49	33.79	68.20	-34.41	Vertical	Peak
7301.36	31.36	36.30	11.97	33.35	46.28	68.20	-21.92	Vertical	Peak
1613.75	33.13	24.94	5.60	37.20	26.47	68.20	-41.73	Horizontal	Peak
2179.15	29.34	27.34	6.42	37.60	25.50	68.20	-42.70	Horizontal	Peak
4444.56	32.02	30.59	9.20	36.34	35.47	68.20	-32.73	Horizontal	Peak
6781.78	30.81	34.04	11.58	33.77	42.66	68.20	-25.54	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

Band IV for Low									
Bandwidth: 40MHz				Worst mode: 802.11ac					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1487.51	32.77	25.81	5.25	37.08	26.75	68.20	-41.45	Vertical	Peak
3308.19	32.45	28.20	7.85	37.30	31.20	68.20	-37.00	Vertical	Peak
4871.10	31.23	31.46	9.59	35.61	36.67	68.20	-31.53	Vertical	Peak
6461.58	31.25	33.73	11.10	33.66	42.42	68.20	-25.78	Vertical	Peak
1525.86	32.89	25.56	5.36	37.10	26.71	68.20	-41.49	Horizontal	Peak
2443.62	30.69	27.42	6.80	37.59	27.32	68.20	-40.88	Horizontal	Peak
4388.35	31.94	30.47	9.12	36.39	35.14	68.20	-33.06	Horizontal	Peak
6047.78	30.61	32.50	10.75	34.10	39.76	68.20	-28.44	Horizontal	Peak

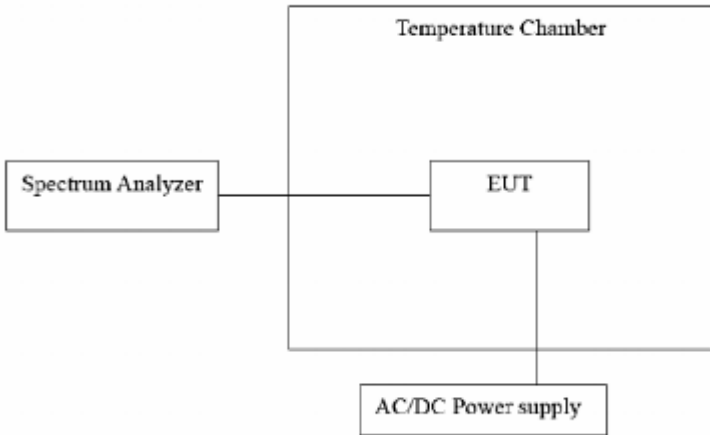
Band IV for High									
Bandwidth: 40MHz				Worst mode: 802.11ac					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1413.67	32.95	25.89	5.04	37.11	26.77	68.20	-41.43	Vertical	Peak
2487.56	30.38	27.25	6.83	37.59	26.87	68.20	-41.33	Vertical	Peak
4256.33	31.29	30.11	8.99	36.51	33.88	68.20	-34.32	Vertical	Peak
8187.50	31.14	36.74	12.74	33.01	47.61	68.20	-20.59	Vertical	Peak
1537.56	33.51	25.46	5.39	37.12	27.24	68.20	-40.96	Horizontal	Peak
2388.28	30.61	27.66	6.75	37.59	27.43	68.20	-40.77	Horizontal	Peak
4455.89	31.58	30.61	9.22	36.33	35.08	68.20	-33.12	Horizontal	Peak
9909.80	31.50	39.10	13.59	34.15	50.04	68.20	-18.16	Horizontal	Peak

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Measuring frequencies from 1 GHz to 40GHz of highest fundamental frequency.

6.9. Frequency Stability Measurement

6.9.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g) &Part2 J Section 2.1055
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] subgraph TC [Temperature Chamber] EUT end EUT --- P[AC/DC Power supply] </pre>
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	Pre-scan was performed at Low/ Mid /High channel, the worst case was found. Only the test data of Low channel was shown in this report.

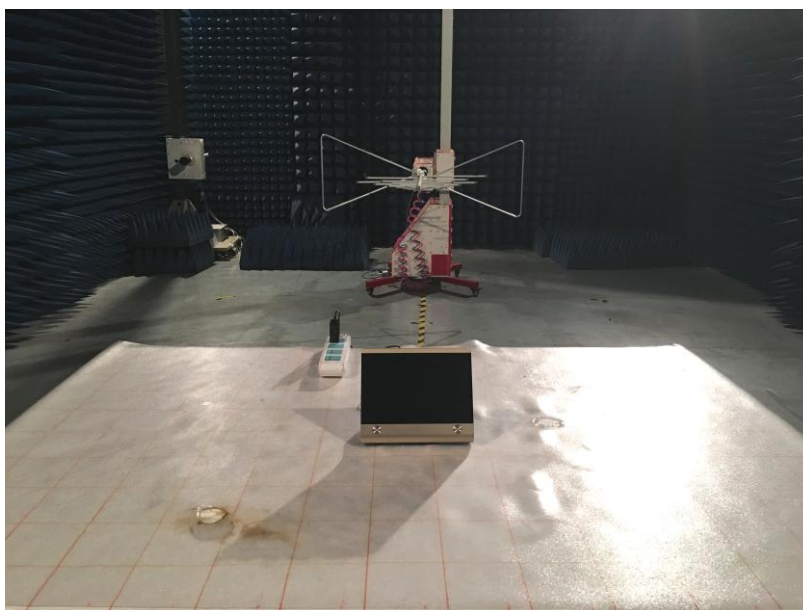
Test plots as follows:

Band I for 802.11a Low					
Voltage(%)	Power(VDC)	TEMP(°C)	Test Frequency (MHz)	Freq.Dev (Hz)	Deviation (ppm)
100%	3.80	-20	5180	15000	2.89575
100%		-10	5180	15000	2.89575
100%		0	5180	12000	2.31660
100%		10	5180	12000	2.31660
100%		20	5180	12000	2.31660
100%		30	5180	14000	2.70270
100%		40	5180	16000	3.08880
100%		50	5180	17000	3.28185
85%	3.60	25	5180	16000	3.08880
115%	4.35	25	5180	17000	3.28185

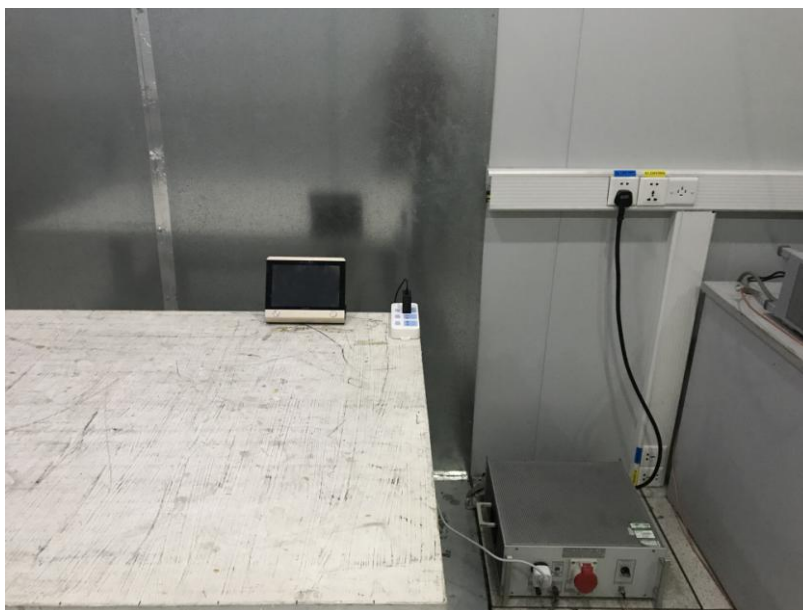
Band IV for 802.11a Low					
Voltage(%)	Power(VDC)	TEMP(°C)	Test Frequency (MHz)	Freq.Dev (Hz)	Deviation (ppm)
100%	3.80	-20	5745	16000	2.78503
100%		-10	5745	15000	2.61097
100%		0	5745	16000	2.78503
100%		10	5745	16000	2.78503
100%		20	5745	17000	2.95909
100%		30	5745	17000	2.95909
100%		40	5745	17000	2.95909
100%		50	5745	19000	3.30722
85%	3.60	25	5745	19000	3.30722
115%	4.35	25	5745	19000	3.30722

Appendix A: Photographs of Test Setup

Radiated Emission



CE



Appendix B: Photographs of EUT

Reference to the test report No.: TRE1804011701.

*******END OF REPORT*******