

FCC Part 15E Test Report

FCC ID: 2AW6PFM2

Product Name:	Smart Home Gym Machine
Trademark:	N/A
Model Name :	FN2-C4-31B FN2-C3-31B, FN2-C2-31B
Prepared For : Address :	FEITENGSHIKE INTELLIGENT TECHNOLOGY(SHENZHEN)CO.,LTD 603 ROOM, NO.9, SAIGE NEW TOWN SANLIAN COMMUNITY, JIHUA STREET LONGGANG DISTRICT, SHENGZHEN, China
Prepared By : Address :	Shenzhen BCTC Testing Co., Ltd. BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Date:	Jul. 10, 2020 – Aug. 05, 2020
Date of Report :	Aug. 05, 2020
Report No.:	BCTC2006001338-3E

TEST RESULT CERTIFICATION

Applicant's name FEITENGSHIKE INTELLIGENT TECHNOLOGY(SHENZHEN)CO.,LTD

Address 603 ROOM, NO.9, SAIGE NEW TOWN SANLIAN COMMUNITY,
JIHUA STREET LONGGANG DISTRICT, SHENGZHEN, China

Manufacture's Name FEITENGSHIKE INTELLIGENT TECHNOLOGY(SHENZHEN)CO.,LTD

Address 603 ROOM, NO.9, SAIGE NEW TOWN SANLIAN COMMUNITY,
JIHUA STREET LONGGANG DISTRICT, SHENGZHEN, China

Product description

Product name Smart Home Gym Machine

Trademark N/A

Model and/or type FN2-C4-31B

reference FN2-C3-31B, FN2-C2-31B

Standards FCC Part15 15.407

ANSI C63.10-2013

KDB 789033 D02 v02r01

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Prepared by(Engineer): Willem Wang

Willem Wang

Reviewer(Supervisor): Eric Yang

Eric Yang

Approved(Manager): Zero Zhou

Zero Zhou



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Revision History

Report No.	Version	Description	Issued Date
BCTC2006001338-3E	Rev.01	Initial issue of report	Aug. 05, 2020

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.209(a), 15.407 (b)(1) 15.407 (b)(4) 15.407 (b)(6)	Spurious Radiated Emissions	PASS	
15.207	Conducted Emission	PASS	
15.407 (a)(5) 15.1049	26 dB and 99% Emission Bandwidth	PASS	
15.407(e)	Minimum 6 dB bandwidth	PASS	
15.407 (a)(1) 15.407 (a)(3)	Maximum Conducted Output Power	PASS	
2.1051, 15.407(b)(1) 15.407(b)(4)	Band Edge	PASS	
15.407 (a)(1) 15.407 (a)(3)	Power Spectral Density	PASS	
2.1051, 15.407(b)	Spurious Emissions at Antenna Terminals	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen BCTC Testing Co., Ltd.

Add. : BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

1.2 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	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
2	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
3	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
4	Conducted Adjacent channel power	U=1.38dB
5	Conducted output power uncertainty Above 1G	U=1.576dB
6	Conducted output power uncertainty below 1G	U=1.28dB
7	humidity uncertainty	U=5.3%
8	Temperature uncertainty	U=0.59℃

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smart Home Gym Machine	
Trade Name	N/A	
Model Name	FN2-C4-31B FN2-C3-31B, FN2-C2-31B	
Model Difference	All the model are the same circuit and RF module, except model names.	
Product Description	IEEE 802.11 WLAN Mode Supported	☒ 802.11a/n/ac(20MHz channel bandwidth) ☒ 802.11n/ac(40MHz channel bandwidth) ☒ 802.11ac(80MHz channel bandwidth)
	Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS8
	Modulation	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
	Operating Frequency Range	☒ 5180-5240MHz for 802.11a/n(HT20)/ac20; 5190-5230MHz for 802.11n(HT40)/ac40; 5210MHz for 802.11 ac80; ☒ 5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11a/n(HT40)/ac40; 5775MHz for 802.11 ac80;
	Number of Channels	☒ 4 channels for 802.11a/n20/ac20 in the 5180-5240MHz band ; 2 channels for 802.11 n40/ac40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; ☒ 5 channels for 802.11a/n20/ac20 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band ;
	Antenna Type	External antenna
	Antenna Gain	1.2dBi
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Channel List	Please refer to the Note 2.	
Ratings	DC24V from Adapter	
Adapter	Model: FY2406000 Input: AC100-240V 50/60Hz Max 3A Output: DC 24V 6A	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Frequency and Channel list for 802.11a/n/ac(20MHz) band I (5180-5240MHz):

802.11a/n/ac(20MHz) Carrier Frequency Channel							
Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)
36	5180	44	5220	-	-	-	-
40	5200	48	5240	-	-	-	-

802.11n /ac(40MHz) Carrier Frequency Channel							
Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)
38	5190	-	-	-	-	-	-
46	5230	-	-	-	-	-	-

802.11ac (80MHz) Carrier Frequency Channel	
Channel	Frequency (MHz)
42	5210

Frequency and Channel list for 802.11a/n/ac(20 MHz) band IV (5745-5825MHz):

802.11a/n/ac(20 MHz) Carrier Frequency Channel							
Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)	Channel	Frequen cy (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

802.11n/ac 40MHz Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-

802.11ac 80MHz Carrier Frequency Channel	
Channel	Frequency (MHz)
155	5775

The EUT has two types of antenna. The wireless module is 1x1 Wi-Fi support 802.11a / n / ac;

Antenna

Antenna	Antenna Type	Antenna Gain(dBi)
A(main)	External antenna	1.2

2.2 DESCRIPTION OF TEST MODES

Pretest Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48 802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH38/ CH 46 802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	802.11a / n/ ac 20 CH36/ CH40/ CH 48 802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 5	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

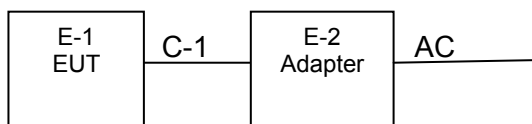
For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48 802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH38/ CH 46 802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	802.11a / n/ ac 20 CH36/ CH40/ CH 48 802.11a /n/ ac 20 CH149/ CH157/ CH 165

Note:

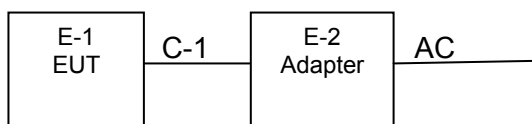
(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emissions Test



Spurious emissions Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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.

No.	Device Type	Brand	Model	Series No.	Data Cable
E-1	Smart Home Gym Machine	N/A	M2-C4-31B-CN	N/A	EUT
E-2	Adapter	N/A	FY2406000	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.8M	DC cable unshielded

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4407B	MY45109572	Jun. 08, 2020	Jun. 07, 2021
2	Test Receiver (9kHz-7GHz)	R&S	ESR7	101154	Jun. 08, 2020	Jun. 07, 2021
3	Bilog Antenna (30MHz-3GHz)	SCHWARZBECK	VULB9163	VULB9163-942	Jun. 08, 2020	Jun. 07, 2021
4	Horn Antenna (1GHz-18GHz)	SCHWARZBECK	BBHA9120D	1541	Jun. 10, 2020	Jun. 09, 2021
5	Horn Antenna (18GHz-40GHz)	SCHWARZBECK	BBHA9170	822	Jun. 10, 2020	Jun. 09, 2021
6	Amplifier (9KHz-6GHz)	SCHWARZBECK	BBV9744	9744-0037	Jun. 04, 2020	Jun. 03, 2021
7	Amplifier (0.5GHz-18GHz)	SCHWARZBECK	BBV9718	9718-309	Jun. 04, 2020	Jun. 03, 2021
8	Amplifier (18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	Jun. 08, 2020	Jun. 07, 2021
9	Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	014	Jun. 08, 2020	Jun. 07, 2021
10	RF cables1 (9kHz-30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-0008	Jun. 08, 2020	Jun. 07, 2021
11	RF cables2 (30MHz-1GHz)	Huber+Suhnar	30MHz-1GHz	1486150	Jun. 08, 2020	Jun. 07, 2021
12	RF cables3 (1GHz-40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	Jun. 08, 2020	Jun. 07, 2021
13	Power Metter	Keysight	E4419B	\	Jun. 08, 2020	Jun. 07, 2021
14	Power Sensor (AV)	Keysight	E9 300A	\	Jun. 08, 2020	Jun. 07, 2021
15	Signal Analyzer 20kHz-26.5GHz	KEYSIGHT	N9020A	MY49100060	Jun. 04, 2020	Jun. 03, 2021
16	Spectrum Analyzer 9kHz-40GHz	Agilent	FSP40	100363	Jun. 13, 2020	Jun. 12, 2021
17	D.C. Power Supply	LongWei	TPR-6405D	\	\	\
18	Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESR3	102075	Jun. 08, 2020	Jun. 07, 2021
2	LISN	SCHWARZBEC K	NSLK8127	8127739	Jun. 13, 2020	Jun. 12, 2021
3	LISN	R&S	ENV216	101375	Jun. 04, 2020	Jun. 03, 2021
4	RF cables	Huber+Suhnar	9kHz-30MHz	B1702988-00 08	Jun. 08, 2020	Jun. 07, 2021
5	Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

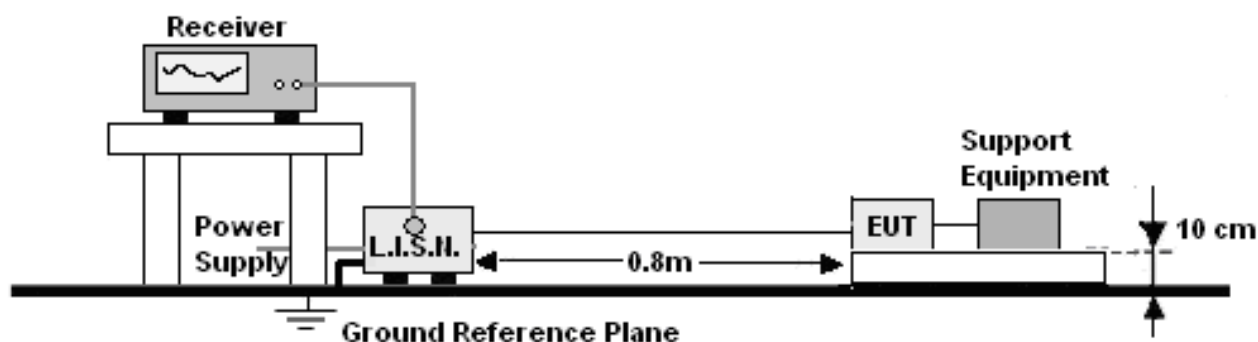
3.1.2 TEST PROCEDURE

- The EUT was placed 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP

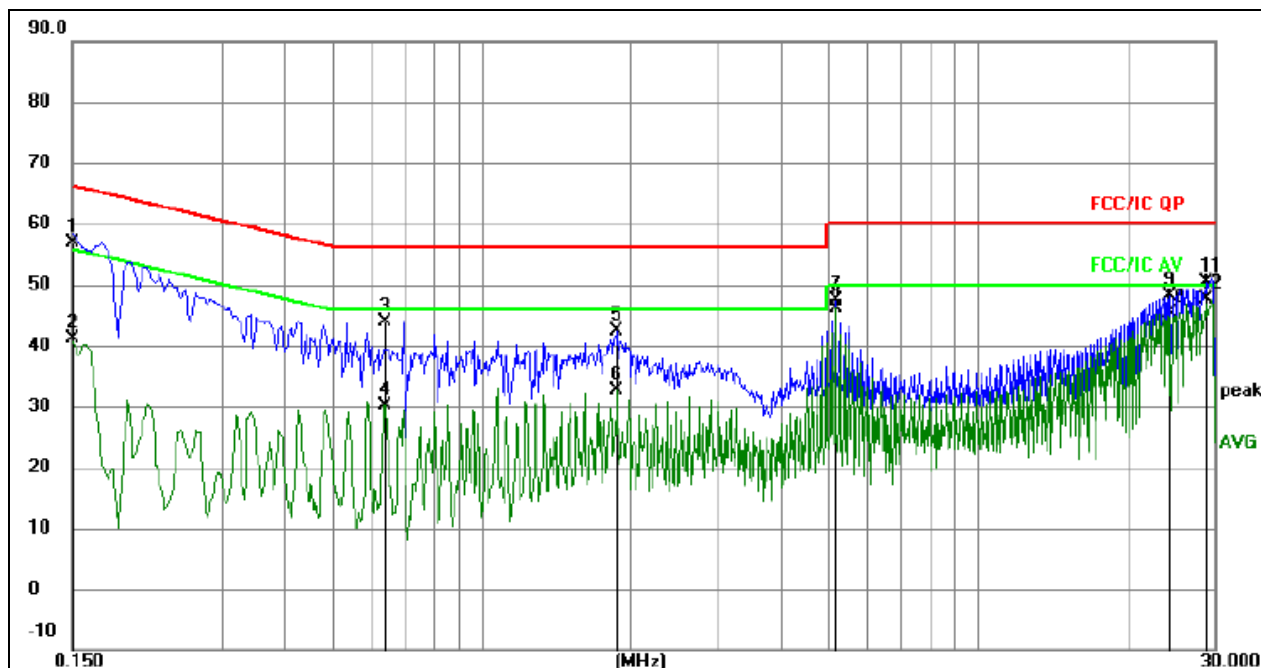


3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC120V/60Hz and AC 240V, the worst voltage was AC120V/60Hz and the data recording in the report.

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC120V/60Hz/60Hz	Test Mode :	Mode 5

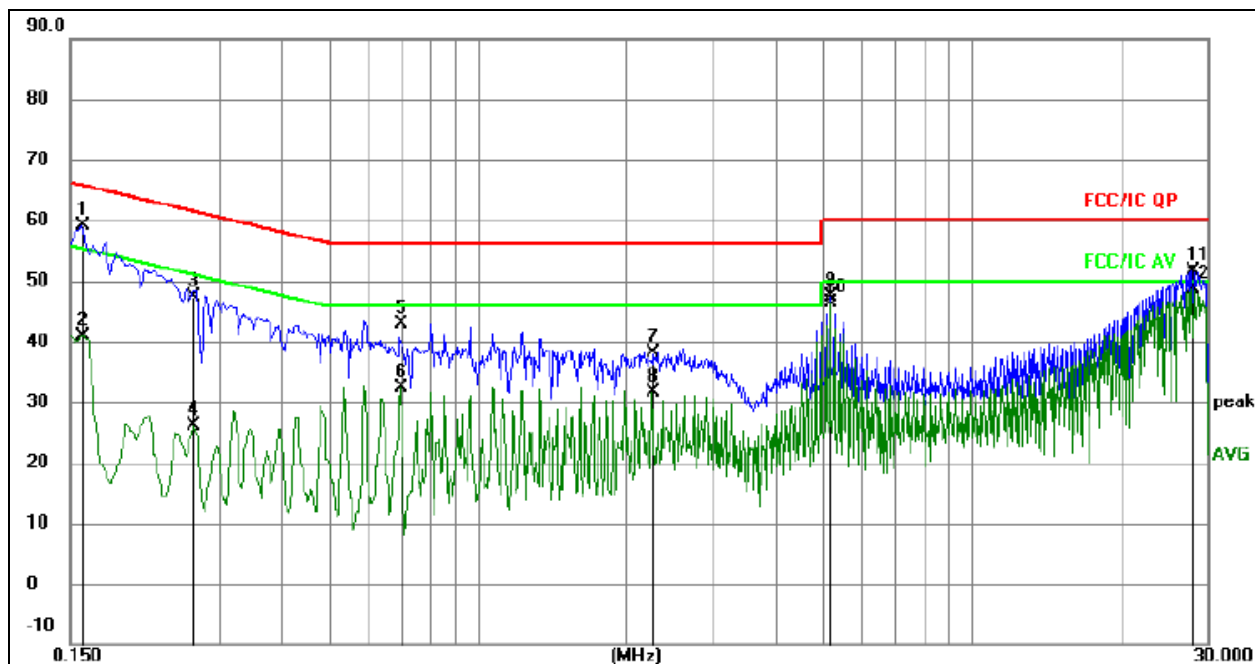


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz		dB	dBuV	dBuV	dB		
1		0.1500	47.25	9.52	56.77	66.00	-9.23	QP	
2		0.1500	31.57	9.52	41.09	56.00	-14.91	AVG	
3		0.6372	34.06	9.87	43.93	56.00	-12.07	QP	
4		0.6372	20.28	9.87	30.15	46.00	-15.85	AVG	
5		1.8779	32.86	9.59	42.45	56.00	-13.55	QP	
6		1.8779	23.10	9.59	32.69	46.00	-13.31	AVG	
7		5.1663	37.63	9.79	47.42	60.00	-12.58	QP	
8		5.1663	36.36	9.79	46.15	50.00	-3.85	AVG	
9		24.3994	38.26	9.75	48.01	60.00	-11.99	QP	
10		24.3994	35.74	9.75	45.49	50.00	-4.51	AVG	
11		28.9077	40.59	9.71	50.30	60.00	-9.70	QP	
12	*	28.9077	37.93	9.71	47.64	50.00	-2.36	AVG	

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC120V/60Hz/60Hz	Test Mode :	Mode 5



Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz		dB	dBuV	dBuV	dB		
1	0.1590	49.52	9.51	59.03	65.52	-6.49	QP	
2	0.1590	31.48	9.51	40.97	55.52	-14.55	AVG	
3	0.2670	37.85	9.54	47.39	61.21	-13.82	QP	
4	0.2670	16.52	9.54	26.06	51.21	-25.15	AVG	
5	0.6990	33.31	9.65	42.96	56.00	-13.04	QP	
6	0.6990	22.63	9.65	32.28	46.00	-13.72	AVG	
7	2.2605	28.62	9.61	38.23	56.00	-17.77	QP	
8	2.2605	22.09	9.61	31.70	46.00	-14.30	AVG	
9	5.1855	37.54	9.79	47.33	60.00	-12.67	QP	
10	5.1855	36.49	9.79	46.28	50.00	-3.72	AVG	
11	27.9735	41.83	9.72	51.55	60.00	-8.45	QP	
12 *	27.9735	38.79	9.72	48.51	50.00	-1.49	AVG	

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 APPLICABLE STANDARD

According to FCC Part 15.407(d) and 15.209

3.2.2 CONFORMANCE LIMIT

According to FCC Part 15.407(b)(7): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	24000/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Remark :1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);

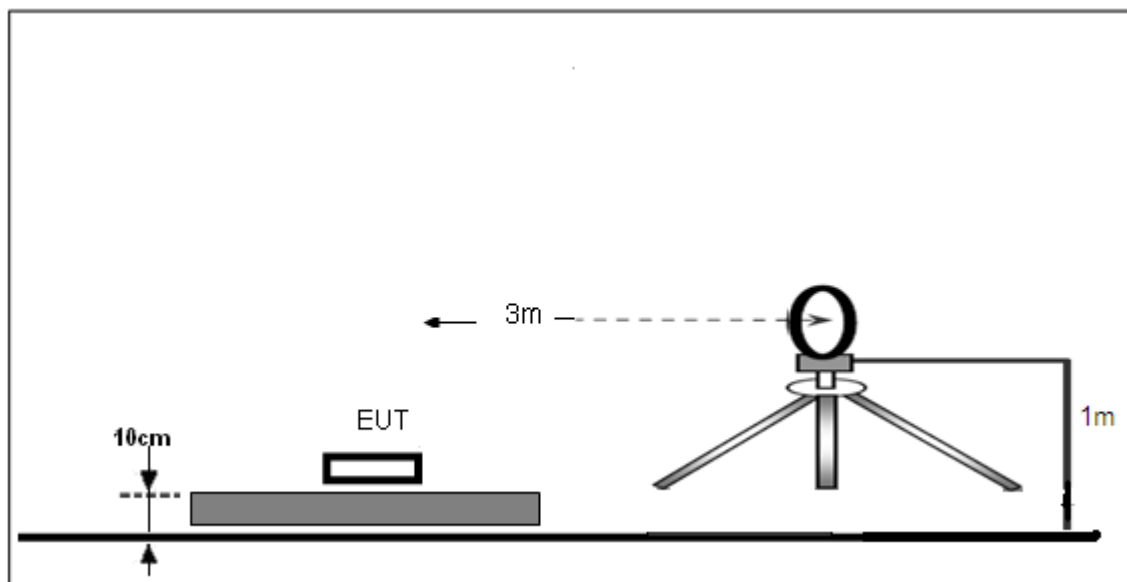
Limit line=Specific limits(dBuV) + distance extrapolation factor.

3.2.3 MEASURING INSTRUMENTS

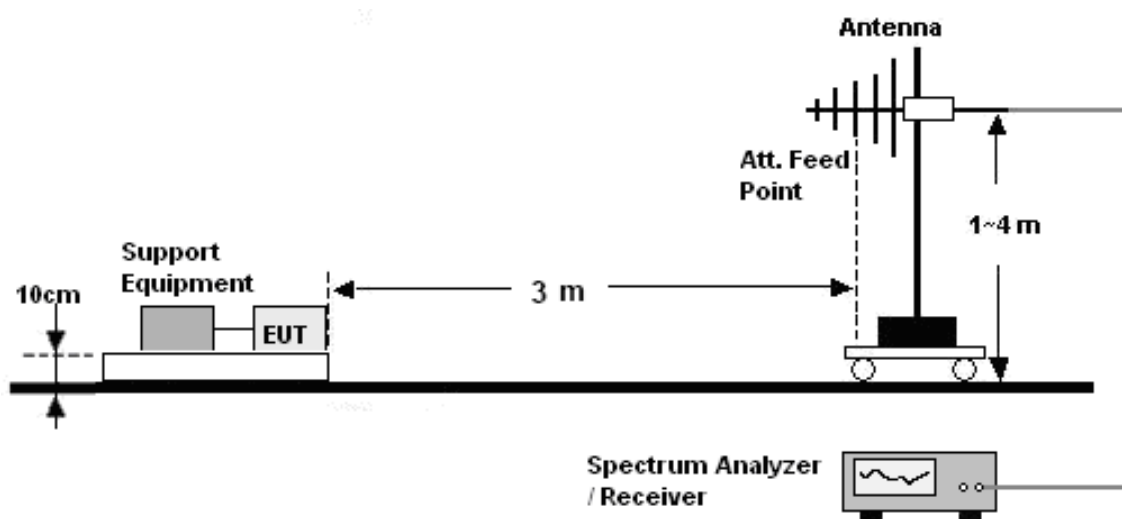
The Measuring equipment is listed in the section 6.3 of this test report.

3.2.4 TEST CONFIGURATION

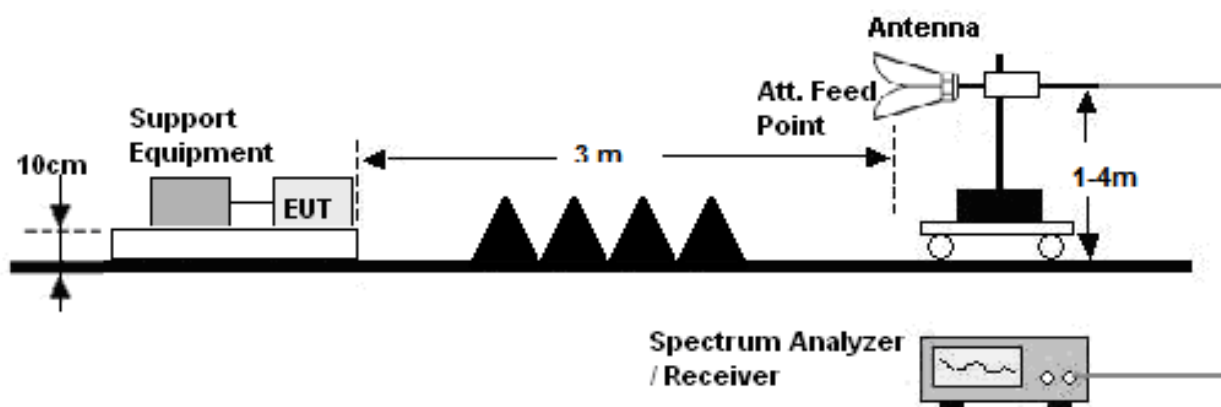
(a) For radiated emissions below 30MHz



(b) For radiated emissions from 30MHz to 1000MHz



(c) For radiated emissions above 1000MHz



3.2.5 TEST PROCEDURE

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT.

Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.1 m the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 1 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW [kHz]})$. , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

3.2.6 TEST RESULTS (9KHZ – 30 MHZ)

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 5	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

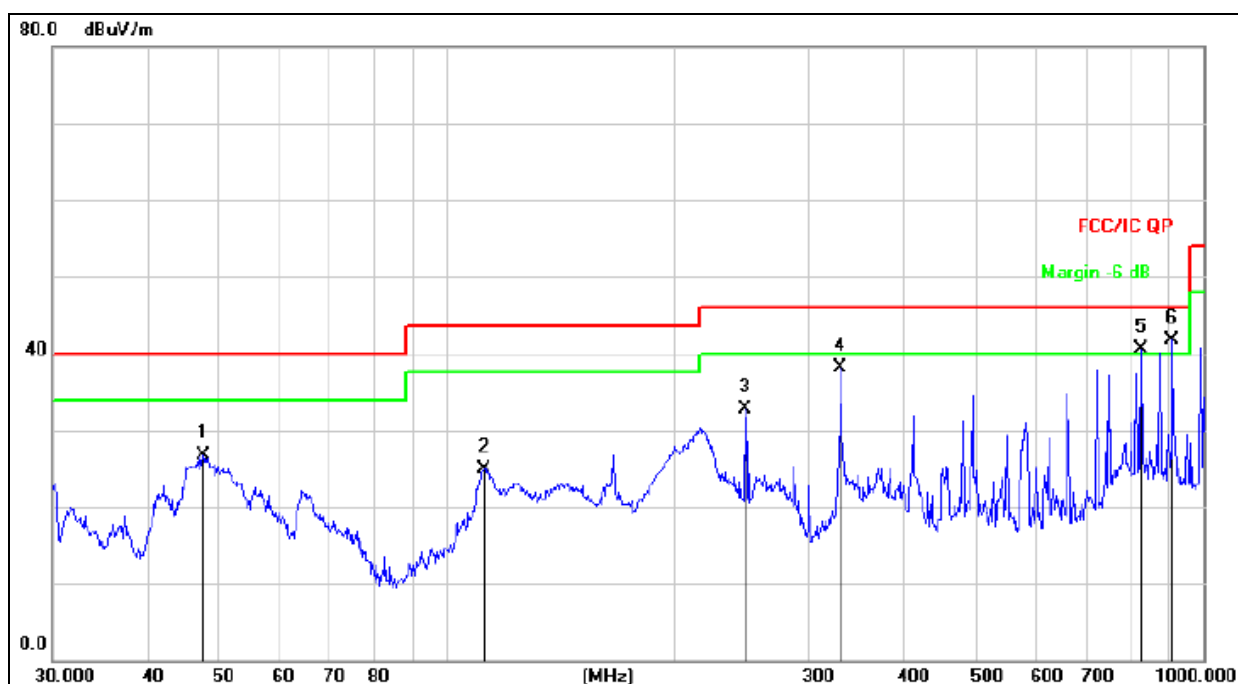
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuV) + distance extrapolation factor.

3.2.7 TEST RESULTS (30MHZ – 1GHZ)

Temperature :	26°C	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	Horizontal
Test Voltage :	AC120V/60Hz		
Test Mode :	Mode 5		

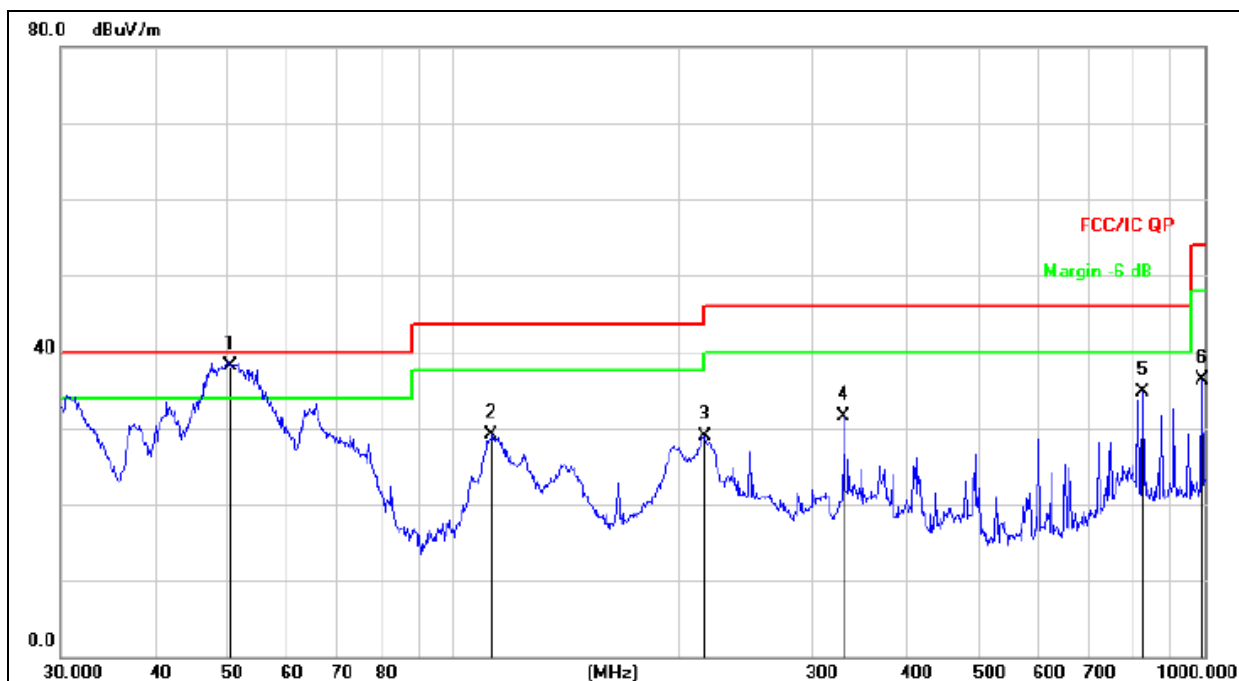


Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		47.4918	41.71	-14.99	26.72	40.00	-13.28	QP
2		111.7380	42.03	-17.04	24.99	43.50	-18.51	QP
3		247.6819	47.85	-15.20	32.65	46.00	-13.35	QP
4		331.3546	50.83	-12.74	38.09	46.00	-7.91	QP
5	!	827.4934	43.45	-3.02	40.43	46.00	-5.57	QP
6	*	909.6667	43.18	-1.42	41.76	46.00	-4.24	QP

Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Polarization :	Vertical
Test Voltage :	AC120V/60Hz		
Test Mode :	Mode 5		



Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	50.4525	52.99	-14.90	38.09	40.00	-1.91	QP
2		112.5242	46.14	-17.09	29.05	43.50	-14.45	QP
3		216.0240	44.76	-15.93	28.83	46.00	-17.17	QP
4		331.3546	44.22	-12.74	31.48	46.00	-14.52	QP
5		827.4932	37.74	-3.02	34.72	46.00	-11.28	QP
6		993.0113	37.21	-0.85	36.36	54.00	-17.64	QP

3.2.8 TEST RESULTS (1GHz-40GHz)

Test Mode :	TX(5.1G) - 802.11a
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	4434.155	62.22	5.94	35.40	44.00	59.56	68.20	-8.64	Pk
Vertical	4434.157	46.53	5.94	35.40	44.00	43.87	54.00	-10.13	AV
Vertical	10360.362	60.47	8.46	39.75	44.50	64.18	68.20	-4.02	Pk
Vertical	10360.362	42.92	8.46	39.75	44.50	46.63	54.00	-7.37	AV
Vertical	15540.196	61.48	10.12	38.80	44.10	66.3	74.00	-7.7	Pk
Vertical	15540.196	37.57	10.12	38.80	42.70	43.79	54.00	-10.21	AV
Horizontal	4434.521	66.56	5.94	35.18	44.00	63.68	68.20	-4.52	Pk
Horizontal	4434.521	44.14	5.94	35.18	44.00	41.26	54.00	-12.74	AV
Horizontal	10360.623	58.98	8.46	38.71	44.50	61.65	68.20	-6.55	Pk
Horizontal	10360.623	41.04	8.46	38.71	44.50	43.71	54.00	-10.29	AV
Horizontal	15540.865	56.96	10.12	38.38	44.10	61.36	74.00	-12.64	Pk
Horizontal	15540.865	38.87	10.12	38.38	44.10	43.27	54.00	-10.73	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4592.093	60.23	6.48	36.35	44.05	59.01	74.00	-14.99	Pk
Vertical	4592.093	41.98	6.48	36.35	44.05	40.76	54.00	-13.24	AV
Vertical	10400.424	59.64	8.47	37.88	44.51	61.48	68.20	-6.72	Pk
Vertical	10400.424	42.76	8.47	37.88	44.51	44.6	54.00	-9.4	AV
Vertical	15600.218	56.51	10.12	38.8	44.10	61.33	74.00	-12.67	Pk
Vertical	15600.218	36.66	10.12	38.8	42.70	42.88	54.00	-11.12	AV
Horizontal	4592.691	59.87	6.48	36.37	44.05	58.67	74.00	-15.33	Pk
Horizontal	4592.691	43.12	6.48	36.37	44.05	41.92	54.00	-12.08	AV
Horizontal	10400.114	58.87	8.47	38.64	44.50	61.48	68.20	-6.72	Pk
Horizontal	10400.114	42.27	8.47	38.64	44.50	44.88	54.00	-9.12	AV
Horizontal	15600.187	59.86	10.12	38.38	44.10	64.26	74.00	-9.74	Pk
Horizontal	15600.187	38.77	10.12	38.38	44.10	43.17	54.00	-10.83	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4739.246	61.26	7.10	37.24	43.50	62.1	74.00	-11.9	Pk
Vertical	4739.246	44.43	7.10	37.24	43.50	45.27	54.00	-8.73	AV
Vertical	10480.371	60.58	8.46	37.68	44.50	62.22	68.20	-5.98	Pk
Vertical	10480.371	40.35	8.46	37.68	44.50	41.99	54.00	-12.01	AV
Vertical	15720.359	61.77	10.12	38.8	44.10	66.59	74.00	-7.41	Pk
Vertical	15720.359	39.63	10.12	38.8	42.70	45.85	54.00	-8.15	AV
Horizontal	4739.352	62.27	7.10	37.24	43.50	63.11	74.00	-10.89	Pk
Horizontal	4739.352	43.24	7.10	37.24	43.50	44.08	54.00	-9.92	AV
Horizontal	10480.111	62.57	8.46	38.57	44.50	65.1	68.20	-3.1	Pk
Horizontal	10480.111	43.36	8.46	38.57	44.50	45.89	54.00	-8.11	AV
Horizontal	15720.357	60.71	10.12	38.38	44.10	65.11	74.00	-8.89	Pk
Horizontal	15720.357	42.27	10.12	38.38	44.10	46.67	54.00	-7.33	AV

Note: "The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11 n20
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamplifier Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	4434.157	62.22	5.94	35.40	44.00	59.56	68.20	-8.64	Pk
Vertical	4434.157	46.54	5.94	35.40	44.00	43.88	54.00	-10.12	AV
Vertical	10360.362	60.42	8.46	39.75	44.50	64.13	68.20	-4.07	Pk
Vertical	10360.362	42.81	8.46	39.75	44.50	46.52	54.00	-7.48	AV
Vertical	15540.196	61.66	10.12	38.80	44.10	66.48	74.00	-7.52	Pk
Vertical	15540.196	37.57	10.12	38.80	42.70	43.79	54.00	-10.21	AV
Horizontal	4434.521	66.52	5.94	35.18	44.00	63.64	68.20	-4.56	Pk
Horizontal	4434.521	44.17	5.94	35.18	44.00	41.29	54.00	-12.71	AV
Horizontal	10360.623	58.52	8.46	38.71	44.50	61.19	68.20	-7.01	Pk
Horizontal	10360.623	41.08	8.46	38.71	44.50	43.75	54.00	-10.25	AV
Horizontal	15540.865	56.57	10.12	38.38	44.10	60.97	74.00	-13.03	Pk
Horizontal	15540.865	38.63	10.12	38.38	44.10	43.03	54.00	-10.97	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4592.093	60.67	6.48	36.35	44.05	59.45	74.00	-14.55	Pk
Vertical	4592.093	41.52	6.48	36.35	44.05	40.3	54.00	-13.7	AV
Vertical	10400.324	59.62	8.47	37.88	44.51	61.46	68.20	-6.74	Pk
Vertical	10400.324	42.75	8.47	37.88	44.51	44.59	54.00	-9.41	AV
Vertical	15600.413	56.54	10.12	38.8	44.10	61.36	74.00	-12.64	Pk
Vertical	15600.413	36.63	10.12	38.8	42.70	42.85	54.00	-11.15	AV
Horizontal	4592.691	59.84	6.48	36.37	44.05	58.64	74.00	-15.36	Pk
Horizontal	4592.691	43.13	6.48	36.37	44.05	41.93	54.00	-12.07	AV
Horizontal	10400.236	58.84	8.47	38.64	44.50	61.45	68.20	-6.75	Pk
Horizontal	10400.236	42.26	8.47	38.64	44.50	44.87	54.00	-9.13	AV
Horizontal	15600.318	59.87	10.12	38.38	44.10	64.27	74.00	-9.73	Pk
Horizontal	15600.318	38.76	10.12	38.38	44.10	43.16	54.00	-10.84	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4739.246	61.27	7.10	37.24	43.50	62.11	74.00	-11.89	Pk
Vertical	4739.246	44.46	7.10	37.24	43.50	45.3	54.00	-8.7	AV
Vertical	10480.476	60.52	8.46	37.68	44.50	62.16	68.20	-6.04	Pk
Vertical	10480.476	40.36	8.46	37.68	44.50	42	54.00	-12	AV
Vertical	15720.347	61.72	10.12	38.8	44.10	66.54	74.00	-7.46	Pk
Vertical	15720.347	39.63	10.12	38.8	42.70	45.85	54.00	-8.15	AV
Horizontal	4739.352	62.27	7.10	37.24	43.50	63.11	74.00	-10.89	Pk
Horizontal	4739.352	43.22	7.10	37.24	43.50	44.06	54.00	-9.94	AV
Horizontal	10480.176	62.57	8.46	38.57	44.50	65.1	68.20	-3.1	Pk
Horizontal	10480.176	43.32	8.46	38.57	44.50	45.85	54.00	-8.15	AV
Horizontal	15720.374	60.73	10.12	38.38	44.10	65.13	74.00	-8.87	Pk
Horizontal	15720.374	42.25	10.12	38.38	44.10	46.65	54.00	-7.35	AV

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level.

Test Mode : TX(5.1G) - 802.11n40

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G									
Vertical	4434.157	62.22	5.94	35.40	44.00	59.56	68.20	-8.64	Pk
Vertical	4434.157	46.57	5.94	35.40	44.00	43.91	54.00	-10.09	AV
Vertical	10380.375	60.43	8.46	39.75	44.50	64.14	68.20	-4.06	Pk
Vertical	10380.375	42.91	8.46	39.75	44.50	46.62	54.00	-7.38	AV
Vertical	15570.271	61.46	10.12	38.80	44.10	66.28	74.00	-7.72	Pk
Vertical	15570.271	37.57	10.12	38.80	42.70	43.79	54.00	-10.21	AV
Horizontal	4434.521	66.52	5.94	35.18	44.00	63.64	68.20	-4.56	Pk
Horizontal	4434.521	44.13	5.94	35.18	44.00	41.25	54.00	-12.75	AV
Horizontal	10380.376	58.96	8.46	38.71	44.50	61.63	68.20	-6.57	Pk
Horizontal	10380.376	41.07	8.46	38.71	44.50	43.74	54.00	-10.26	AV
Horizontal	15570.865	56.92	10.12	38.38	44.10	61.32	74.00	-12.68	Pk
Horizontal	15570.865	38.75	10.12	38.38	44.10	43.15	54.00	-10.85	AV
High Channel (5230 MHz)-Above 1G									
Vertical	4739.246	61.33	7.10	37.24	43.50	62.17	74.00	-11.83	Pk
Vertical	4739.246	44.47	7.10	37.24	43.50	45.31	54.00	-8.69	AV
Vertical	10460.435	60.52	8.46	37.68	44.50	62.16	68.20	-6.04	Pk
Vertical	10460.435	40.35	8.46	37.68	44.50	41.99	54.00	-12.01	AV
Vertical	15690.254	61.73	10.12	38.8	44.10	66.55	74.00	-7.45	Pk
Vertical	15690.254	39.65	10.12	38.8	42.70	45.87	54.00	-8.13	AV
Horizontal	4739.352	62.24	7.10	37.24	43.50	63.08	74.00	-10.92	Pk
Horizontal	4739.352	43.27	7.10	37.24	43.50	44.11	54.00	-9.89	AV
Horizontal	10460.333	62.59	8.46	38.57	44.50	65.12	68.20	-3.08	Pk
Horizontal	10460.333	43.34	8.46	38.57	44.50	45.87	54.00	-8.13	AV
Horizontal	15690.357	60.76	10.12	38.38	44.10	65.16	74.00	-8.84	Pk

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11 AC20
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamplifier	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	4434.157	62.24	5.94	35.40	44.00	59.58	68.20	-8.62	Pk
Vertical	4434.157	46.57	5.94	35.40	44.00	43.91	54.00	-10.09	AV
Vertical	10360.358	60.43	8.46	39.75	44.50	64.14	68.20	-4.06	Pk
Vertical	10360.358	42.92	8.46	39.75	44.50	46.63	54.00	-7.37	AV
Vertical	15540.173	61.48	10.12	38.80	44.10	66.3	74.00	-7.7	Pk
Vertical	15540.173	37.54	10.12	38.80	42.70	43.76	54.00	-10.24	AV
Horizontal	4434.517	66.57	5.94	35.18	44.00	63.69	68.20	-4.51	Pk
Horizontal	4434.517	44.12	5.94	35.18	44.00	41.24	54.00	-12.76	AV
Horizontal	10360.642	58.31	8.46	38.71	44.50	60.98	68.20	-7.22	Pk
Horizontal	10360.642	41.07	8.46	38.71	44.50	43.74	54.00	-10.26	AV
Horizontal	15540.865	56.92	10.12	38.38	44.10	61.32	74.00	-12.68	Pk
Horizontal	15540.865	38.82	10.12	38.38	44.10	43.22	54.00	-10.78	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4592.093	60.24	6.48	36.35	44.05	59.02	74.00	-14.98	Pk
Vertical	4592.093	41.93	6.48	36.35	44.05	40.71	54.00	-13.29	AV
Vertical	10400.485	59.62	8.47	37.88	44.51	61.46	68.20	-6.74	Pk
Vertical	10400.485	42.77	8.47	37.88	44.51	44.61	54.00	-9.39	AV
Vertical	15600.275	56.53	10.12	38.8	44.10	61.35	74.00	-12.65	Pk
Vertical	15600.275	36.64	10.12	38.8	42.70	42.86	54.00	-11.14	AV
Horizontal	4592.691	59.82	6.48	36.37	44.05	58.62	74.00	-15.38	Pk
Horizontal	4592.691	43.15	6.48	36.37	44.05	41.95	54.00	-12.05	AV
Horizontal	10400.136	58.53	8.47	38.64	44.50	61.14	68.20	-7.06	Pk
Horizontal	10400.136	42.24	8.47	38.64	44.50	44.85	54.00	-9.15	AV
Horizontal	15600.187	59.87	10.12	38.38	44.10	64.27	74.00	-9.73	Pk
Horizontal	15600.187	38.72	10.12	38.38	44.10	43.12	54.00	-10.88	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4739.246	61.23	7.10	37.24	43.50	62.07	74.00	-11.93	Pk
Vertical	4739.246	44.42	7.10	37.24	43.50	45.26	54.00	-8.74	AV
Vertical	10480.341	60.53	8.46	37.68	44.50	62.17	68.20	-6.03	Pk
Vertical	10480.341	40.34	8.46	37.68	44.50	41.98	54.00	-12.02	AV
Vertical	15720.359	61.72	10.12	38.8	44.10	66.54	74.00	-7.46	Pk
Vertical	15720.359	39.66	10.12	38.8	42.70	45.88	54.00	-8.12	AV
Horizontal	4739.374	62.24	7.10	37.24	43.50	63.08	74.00	-10.92	Pk
Horizontal	4739.374	43.25	7.10	37.24	43.50	44.09	54.00	-9.91	AV
Horizontal	10480.222	62.53	8.46	38.57	44.50	65.06	68.20	-3.14	Pk
Horizontal	10480.222	43.32	8.46	38.57	44.50	45.85	54.00	-8.15	AV
Horizontal	15720.357	60.78	10.12	38.38	44.10	65.18	74.00	-8.82	Pk
Horizontal	15720.357	42.25	10.12	38.38	44.10	46.65	54.00	-7.35	AV

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level.

Test Mode :	TX(5.1G) - 802.11 AC 40
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G									
Vertical	4434.336	62.23	5.94	35.40	44.00	59.57	68.20	-8.63	Pk
Vertical	4434.336	46.52	5.94	35.40	44.00	43.86	54.00	-10.14	AV
Vertical	10380.351	60.45	8.46	39.75	44.50	64.16	68.20	-4.04	Pk
Vertical	10380.351	42.98	8.46	39.75	44.50	46.69	54.00	-7.31	AV
Vertical	15570.271	61.48	10.12	38.80	44.10	66.3	74.00	-7.7	Pk
Vertical	15570.271	37.53	10.12	38.80	42.70	43.75	54.00	-10.25	AV
Horizontal	4434.573	66.57	5.94	35.18	44.00	63.69	68.20	-4.51	Pk
Horizontal	4434.573	44.14	5.94	35.18	44.00	41.26	54.00	-12.74	AV
Horizontal	10380.374	58.56	8.46	38.71	44.50	61.23	68.20	-6.97	Pk
Horizontal	10380.374	41.17	8.46	38.71	44.50	43.84	54.00	-10.16	AV
Horizontal	15570.865	56.64	10.12	38.38	44.10	61.04	74.00	-12.96	Pk
Horizontal	15570.865	38.85	10.12	38.38	44.10	43.25	54.00	-10.75	AV
High Channel (5230 MHz)-Above 1G									
Vertical	4739.235	61.23	7.10	37.24	43.50	62.07	74.00	-11.93	Pk
Vertical	4739.235	44.47	7.10	37.24	43.50	45.31	54.00	-8.69	AV
Vertical	10460.472	60.54	8.46	37.68	44.50	62.18	68.20	-6.02	Pk
Vertical	10460.472	40.32	8.46	37.68	44.50	41.96	54.00	-12.04	AV
Vertical	15690.241	61.79	10.12	38.8	44.10	66.61	74.00	-7.39	Pk
Vertical	15690.241	39.61	10.12	38.8	42.70	45.83	54.00	-8.17	AV
Horizontal	4739.352	62.25	7.10	37.24	43.50	63.09	74.00	-10.91	Pk
Horizontal	4739.352	43.24	7.10	37.24	43.50	44.08	54.00	-9.92	AV
Horizontal	10460.555	62.55	8.46	38.57	44.50	65.08	68.20	-3.12	Pk
Horizontal	10460.555	43.36	8.46	38.57	44.50	45.89	54.00	-8.11	AV
Horizontal	15690.336	60.73	10.12	38.38	44.10	65.13	74.00	-8.87	Pk

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11AC80
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5210 MHz)-Above 1G									
Vertical	4434.157	62.22	5.94	35.40	44.00	59.56	68.20	-8.64	Pk
Vertical	4434.157	46.56	5.94	35.40	44.00	43.9	54.00	-10.1	AV
Vertical	10420.362	60.47	8.46	39.75	44.50	64.18	68.20	-4.02	Pk
Vertical	10420.362	42.92	8.46	39.75	44.50	46.63	54.00	-7.37	AV
Vertical	15630.196	61.46	10.12	38.80	44.10	66.28	74.00	-7.72	Pk
Vertical	15630.196	37.54	10.12	38.80	42.70	43.76	54.00	-10.24	AV
Horizontal	4434.521	66.52	5.94	35.18	44.00	63.64	68.20	-4.56	Pk
Horizontal	4434.521	44.18	5.94	35.18	44.00	41.3	54.00	-12.7	AV
Horizontal	10420.623	58.94	8.46	38.71	44.50	61.61	68.20	-6.59	Pk
Horizontal	10420.623	41.06	8.46	38.71	44.50	43.73	54.00	-10.27	AV
Horizontal	15630.865	56.98	10.12	38.38	44.10	61.38	74.00	-12.62	Pk

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) -- 802.11a
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamplifier	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4679.195	59.93	5.94	35.40	44.00	57.27	74.00	-16.73	Pk
Vertical	4679.195	39.64	5.94	35.40	44.00	36.98	54.00	-17.02	AV
Vertical	11490.364	59.52	8.46	39.75	44.50	63.23	74.00	-10.77	Pk
Vertical	11490.364	42.13	8.46	39.75	44.50	45.84	54.00	-8.16	AV
Vertical	17235.101	55.54	10.12	38.80	44.10	60.36	68.20	-7.84	Pk
Vertical	17235.101	38.63	10.12	38.80	42.70	44.85	54.00	-9.15	AV
Horizontal	4679.332	57.96	5.94	35.18	44.00	55.08	74.00	-18.92	Pk
Horizontal	4679.332	44.55	5.94	35.18	44.00	41.67	54.00	-12.33	AV
Horizontal	11490.164	56.67	8.46	38.71	44.50	59.34	74.00	-14.66	Pk
Horizontal	11490.164	40.12	8.46	38.71	44.50	42.79	54.00	-11.21	AV
Horizontal	17235.196	58.65	10.12	38.38	44.10	63.05	68.20	-5.15	Pk
Horizontal	17235.196	42.27	10.12	38.38	44.10	46.67	54.00	-7.33	AV
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.228	59.86	6.48	36.35	44.05	58.64	74.00	-15.36	Pk
Vertical	4592.228	43.37	6.48	36.35	44.05	42.15	54.00	-11.85	AV
Vertical	11570.203	61.12	8.47	37.88	44.51	62.96	74.00	-11.04	Pk
Vertical	11570.203	43.28	8.47	37.88	44.51	45.12	54.00	-8.88	AV
Vertical	17355.147	59.53	10.12	38.8	44.10	64.35	68.20	-3.85	Pk
Vertical	17355.147	40.18	10.12	38.8	42.70	46.4	54.00	-7.6	AV
Horizontal	4592.526	58.62	6.48	36.37	44.05	57.42	74.00	-16.58	Pk
Horizontal	4592.526	54.64	6.48	36.37	44.05	53.44	54.00	-0.56	AV
Horizontal	11570.123	38.63	8.47	38.64	44.50	41.24	74.00	-32.76	Pk
Horizontal	11570.123	42.27	8.47	38.64	44.50	44.88	54.00	-9.12	AV
Horizontal	17355.269	57.52	10.12	38.38	44.10	61.92	68.20	-6.28	Pk
Horizontal	17355.269	42.23	10.12	38.38	44.10	46.63	54.00	-7.37	AV
High Channel (5825 MHz)-Above 1G									
Vertical	6039.199	57.67	7.10	37.24	43.50	58.51	68.20	-9.69	Pk
Vertical	6039.199	42.22	7.10	37.24	43.50	43.06	54.00	-10.94	AV
Vertical	11650.562	58.95	8.46	37.68	44.50	60.59	74.00	-13.41	Pk
Vertical	11650.562	41.13	8.46	37.68	44.50	42.77	54.00	-11.23	AV
Vertical	17475.128	58.54	10.12	38.8	44.10	63.36	68.20	-4.84	Pk
Vertical	17475.128	40.36	10.12	38.8	42.70	46.58	54.00	-7.42	AV
Horizontal	6039.232	59.93	7.10	37.24	43.50	60.77	68.20	-7.43	Pk
Horizontal	6039.232	43.35	7.10	37.24	43.50	44.19	54.00	-9.81	AV
Horizontal	11650.319	52.22	8.46	38.57	44.50	54.75	74.00	-19.25	Pk
Horizontal	11650.319	40.14	8.46	38.57	44.50	42.67	54.00	-11.33	AV
Horizontal	17475.062	57.73	10.12	38.38	44.10	62.13	68.20	-6.07	Pk
Horizontal	17475.062	40.37	10.12	38.38	44.10	44.77	54.00	-9.23	AV

Note: ". The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level.

Test Mode :	TX (5.8G) -- 802.11n20
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4679.195	59.93	5.94	35.40	44.00	57.27	74.00	-16.73	Pk
Vertical	4679.195	39.64	5.94	35.40	44.00	36.98	54.00	-17.02	AV
Vertical	11490.345	59.52	8.46	39.75	44.50	63.23	74.00	-10.77	Pk
Vertical	11490.345	42.15	8.46	39.75	44.50	45.86	54.00	-8.14	AV
Vertical	17235.112	55.53	10.12	38.80	44.10	60.35	68.20	-7.85	Pk
Vertical	17235.112	38.67	10.12	38.80	42.70	44.89	54.00	-9.11	AV
Horizontal	4679.332	57.95	5.94	35.18	44.00	55.07	74.00	-18.93	Pk
Horizontal	4679.332	44.56	5.94	35.18	44.00	41.68	54.00	-12.32	AV
Horizontal	11490.153	56.61	8.46	38.71	44.50	59.28	74.00	-14.72	Pk
Horizontal	11490.153	40.13	8.46	38.71	44.50	42.8	54.00	-11.2	AV
Horizontal	17235.174	58.67	10.12	38.38	44.10	63.07	68.20	-5.13	Pk
Horizontal	17235.174	42.24	10.12	38.38	44.10	46.64	54.00	-7.36	AV
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.228	59.86	6.48	36.35	44.05	58.64	74.00	-15.36	Pk
Vertical	4592.228	43.37	6.48	36.35	44.05	42.15	54.00	-11.85	AV
Vertical	11570.214	61.15	8.47	37.88	44.51	62.99	74.00	-11.01	Pk
Vertical	11570.214	43.28	8.47	37.88	44.51	45.12	54.00	-8.88	AV
Vertical	17355.131	59.54	10.12	38.8	44.10	64.36	68.20	-3.84	Pk
Vertical	17355.131	40.16	10.12	38.8	42.70	46.38	54.00	-7.62	AV
Horizontal	4592.526	58.65	6.48	36.37	44.05	57.45	74.00	-16.55	Pk
Horizontal	4592.526	43.34	6.48	36.37	44.05	42.14	54.00	-11.86	AV
Horizontal	11570.141	60.02	8.47	38.64	44.50	62.63	74.00	-11.37	Pk
Horizontal	11570.141	42.23	8.47	38.64	44.50	44.84	54.00	-9.16	AV
Horizontal	17355.243	56.37	10.12	38.38	44.10	60.77	68.20	-7.43	Pk
Horizontal	17355.243	42.22	10.12	38.38	44.10	46.62	54.00	-7.38	AV
High Channel (5825 MHz)-Above 1G									
Vertical	6039.199	57.63	7.10	37.24	43.50	58.47	68.20	-9.73	Pk
Vertical	6039.199	42.27	7.10	37.24	43.50	43.11	54.00	-10.89	AV
Vertical	11650.545	58.96	8.46	37.68	44.50	60.6	74.00	-13.4	Pk
Vertical	11650.545	41.14	8.46	37.68	44.50	42.78	54.00	-11.22	AV
Vertical	17475.135	58.52	10.12	38.8	44.10	63.34	68.20	-4.86	Pk
Vertical	17475.135	40.38	10.12	38.8	42.70	46.6	54.00	-7.4	AV
Horizontal	6039.232	59.96	7.10	37.24	43.50	60.8	68.20	-7.4	Pk
Horizontal	6039.232	43.34	7.10	37.24	43.50	44.18	54.00	-9.82	AV
Horizontal	11650.317	52.22	8.46	38.57	44.50	54.75	74.00	-19.25	Pk
Horizontal	11650.317	40.17	8.46	38.57	44.50	42.7	54.00	-11.3	AV
Horizontal	17475.065	57.73	10.12	38.38	44.10	62.13	68.20	-6.07	Pk
Horizontal	17475.065	40.34	10.12	38.38	44.10	44.74	54.00	-9.26	AV

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode : TX (5.8G) -- 802.11n40

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G									
Vertical	4679.195	59.54	5.94	35.40	44.00	56.88	74.00	-17.12	Pk
Vertical	4679.195	39.23	5.94	35.40	44.00	36.57	54.00	-17.43	AV
Vertical	11510.323	59.57	8.46	39.75	44.50	63.28	74.00	-10.72	Pk
Vertical	11510.323	42.16	8.46	39.75	44.50	45.87	54.00	-8.13	AV
Vertical	17265.125	55.56	10.12	38.80	44.10	60.38	68.20	-7.82	Pk
Vertical	17265.125	38.64	10.12	38.80	42.70	44.86	54.00	-9.14	AV
Horizontal	4679.332	57.92	5.94	35.18	44.00	55.04	74.00	-18.96	Pk
Horizontal	4679.332	44.56	5.94	35.18	44.00	41.68	54.00	-12.32	AV
Horizontal	11510.115	56.62	8.46	38.71	44.50	59.29	74.00	-14.71	Pk
Horizontal	11510.115	40.13	8.46	38.71	44.50	42.8	54.00	-11.2	AV
Horizontal	17265.164	58.61	10.12	38.38	44.10	63.01	68.20	-5.19	Pk
Horizontal	17265.164	42.28	10.12	38.38	44.10	46.68	54.00	-7.32	AV
High Channel (5795 MHz)-Above 1G									
Vertical	6039.199	57.62	7.10	37.24	43.50	58.46	68.20	-9.74	Pk
Vertical	6039.199	42.28	7.10	37.24	43.50	43.12	54.00	-10.88	AV
Vertical	11590.547	58.95	8.46	37.68	44.50	60.59	74.00	-13.41	Pk
Vertical	11590.547	41.13	8.46	37.68	44.50	42.77	54.00	-11.23	AV
Vertical	17385.133	58.54	10.12	38.8	44.10	63.36	68.20	-4.84	Pk
Vertical	17385.133	40.32	10.12	38.8	42.70	46.54	54.00	-7.46	AV
Horizontal	6039.232	59.91	7.10	37.24	43.50	60.75	68.20	-7.45	Pk
Horizontal	6039.232	43.35	7.10	37.24	43.50	44.19	54.00	-9.81	AV
Horizontal	11590.324	52.23	8.46	38.57	44.50	54.76	74.00	-19.24	Pk
Horizontal	11590.324	40.11	8.46	38.57	44.50	42.64	54.00	-11.36	AV
Horizontal	17385.075	57.73	10.12	38.38	44.10	62.13	68.20	-6.07	Pk

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) -- 802.11ac20
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4679.195	59.63	5.94	35.40	44.00	56.97	74.00	-17.03	Pk
Vertical	4679.195	39.64	5.94	35.40	44.00	36.98	54.00	-17.02	AV
Vertical	11490.362	59.52	8.46	39.75	44.50	63.23	74.00	-10.77	Pk
Vertical	11490.362	42.17	8.46	39.75	44.50	45.88	54.00	-8.12	AV
Vertical	17235.102	55.51	10.12	38.80	44.10	60.33	68.20	-7.87	Pk
Vertical	17235.102	38.62	10.12	38.80	42.70	44.84	54.00	-9.16	AV
Horizontal	4679.332	57.93	5.94	35.18	44.00	55.05	74.00	-18.95	Pk
Horizontal	4679.332	44.56	5.94	35.18	44.00	41.68	54.00	-12.32	AV
Horizontal	11490.163	56.64	8.46	38.71	44.50	59.31	74.00	-14.69	Pk
Horizontal	11490.163	40.13	8.46	38.71	44.50	42.8	54.00	-11.2	AV
Horizontal	17235.195	58.61	10.12	38.38	44.10	63.01	68.20	-5.19	Pk
Horizontal	17235.195	42.28	10.12	38.38	44.10	46.68	54.00	-7.32	AV
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.228	59.83	6.48	36.35	44.05	58.61	74.00	-15.39	Pk
Vertical	4592.228	43.36	6.48	36.35	44.05	42.14	54.00	-11.86	AV
Vertical	11570.208	61.17	8.47	37.88	44.51	63.01	74.00	-10.99	Pk
Vertical	11570.208	43.23	8.47	37.88	44.51	45.07	54.00	-8.93	AV
Vertical	17355.142	59.57	10.12	38.8	44.10	64.39	68.20	-3.81	Pk
Vertical	17355.142	42.27	10.12	38.8	42.70	48.49	54.00	-5.51	AV
Horizontal	4592.526	58.66	6.48	36.37	44.05	57.46	74.00	-16.54	Pk
Horizontal	4592.526	43.35	6.48	36.37	44.05	42.15	54.00	-11.85	AV
Horizontal	11570.124	60.03	8.47	38.64	44.50	62.64	74.00	-11.36	Pk
Horizontal	11570.124	42.24	8.47	38.64	44.50	44.85	54.00	-9.15	AV
Horizontal	17355.268	57.57	10.12	38.38	44.10	61.97	68.20	-6.23	Pk
Horizontal	17355.268	42.26	10.12	38.38	44.10	46.66	54.00	-7.34	AV
High Channel (5825 MHz)-Above 1G									
Vertical	6039.199	57.27	7.10	37.24	43.50	58.11	68.20	-10.09	Pk
Vertical	6039.199	42.33	7.10	37.24	43.50	43.17	54.00	-10.83	AV
Vertical	11650.563	58.54	8.46	37.68	44.50	60.18	74.00	-13.82	Pk
Vertical	11650.563	41.13	8.46	37.68	44.50	42.77	54.00	-11.23	AV
Vertical	17475.124	58.57	10.12	38.8	44.10	63.39	68.20	-4.81	Pk
Vertical	17475.124	40.34	10.12	38.8	42.70	46.56	54.00	-7.44	AV
Horizontal	6039.232	59.12	7.10	37.24	43.50	59.96	68.20	-8.24	Pk
Horizontal	6039.232	43.37	7.10	37.24	43.50	44.21	54.00	-9.79	AV
Horizontal	11650.315	52.23	8.46	38.57	44.50	54.76	74.00	-19.24	Pk
Horizontal	11650.315	40.14	8.46	38.57	44.50	42.67	54.00	-11.33	AV
Horizontal	17475.067	57.71	10.12	38.38	44.10	62.11	68.20	-6.09	Pk
Horizontal	17475.067	40.34	10.12	38.38	44.10	44.74	54.00	-9.26	AV

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode : TX (5.8G) -- 802.11ac40

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamplifier Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G									
Vertical	4679.195	59.53	5.94	35.40	44.00	56.87	74.00	-17.13	Pk
Vertical	4679.195	39.64	5.94	35.40	44.00	36.98	54.00	-17.02	AV
Vertical	11510.373	59.58	8.46	39.75	44.50	63.29	74.00	-10.71	Pk
Vertical	11510.373	42.14	8.46	39.75	44.50	45.85	54.00	-8.15	AV
Vertical	17265.128	55.53	10.12	38.80	44.10	60.35	68.20	-7.85	Pk
Vertical	17265.128	38.67	10.12	38.80	42.70	44.89	54.00	-9.11	AV
Horizontal	4679.332	57.95	5.94	35.18	44.00	55.07	74.00	-18.93	Pk
Horizontal	4679.332	44.57	5.94	35.18	44.00	41.69	54.00	-12.31	AV
Horizontal	11510.114	56.62	8.46	38.71	44.50	59.29	74.00	-14.71	Pk
Horizontal	11510.114	40.17	8.46	38.71	44.50	42.84	54.00	-11.16	AV
Horizontal	17265.184	58.61	10.12	38.38	44.10	63.01	68.20	-5.19	Pk
Horizontal	17265.184	42.29	10.12	38.38	44.10	46.69	54.00	-7.31	AV
High Channel (5795 MHz)-Above 1G									
Vertical	6039.199	57.67	7.10	37.24	43.50	58.51	68.20	-9.69	Pk
Vertical	6039.199	42.22	7.10	37.24	43.50	43.06	54.00	-10.94	AV
Vertical	11590.523	58.94	8.46	37.68	44.50	60.58	74.00	-13.42	Pk
Vertical	11590.523	41.13	8.46	37.68	44.50	42.77	54.00	-11.23	AV
Vertical	17385.177	58.57	10.12	38.8	44.10	63.39	68.20	-4.81	Pk
Vertical	17385.177	40.36	10.12	38.8	42.70	46.58	54.00	-7.42	AV
Horizontal	6039.232	59.92	7.10	37.24	43.50	60.76	68.20	-7.44	Pk
Horizontal	6039.232	43.37	7.10	37.24	43.50	44.21	54.00	-9.79	AV
Horizontal	11590.363	52.25	8.46	38.57	44.50	54.78	74.00	-19.22	Pk
Horizontal	11590.363	40.14	8.46	38.57	44.50	42.67	54.00	-11.33	AV
Horizontal	17385.071	57.73	10.12	38.38	44.10	62.13	68.20	-6.07	Pk
Horizontal	17385.071	40.34	10.12	38.38	44.10	44.74	54.00	-9.26	AV

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level.

Test Mode :	TX (5.8G) -- 802.11ac80
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5210 MHz)-Above 1G									
Vertical	4592.228	59.53	6.48	36.35	44.05	58.31	74	-15.69	Pk
Vertical	4592.228	43.37	6.48	36.35	44.05	42.15	54	-11.85	AV
Vertical	11550.214	61.16	8.47	37.88	44.51	63	74	-11	Pk
Vertical	11550.214	43.27	8.47	37.88	44.51	45.11	54	-8.89	AV
Vertical	17325.157	59.53	10.12	38.8	44.1	64.35	68.2	-3.85	Pk
Vertical	17325.157	42.26	10.12	38.8	42.7	48.48	54	-5.52	AV
Horizontal	4592.526	58.67	6.48	36.37	44.05	57.47	74	-16.53	Pk
Horizontal	4592.526	43.32	6.48	36.37	44.05	42.12	54	-11.88	AV
Horizontal	11550.173	60.03	8.47	38.64	44.5	62.64	74	-11.36	Pk
Horizontal	11550.173	42.26	8.47	38.64	44.5	44.87	54	-9.13	AV
Horizontal	17325.254	57.54	10.12	38.38	44.1	61.94	68.2	-6.26	Pk

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

According to FCC §15.407(a)(3)

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

(3) 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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4.2 TEST PROCEDURE

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3$ RBW.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHz is available on nearly all spectrum analyzers.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.6 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-1 (5180-5240MHz)		

Mode	Frequency	Measured Power Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11 a	5180 MHz	9.682	11	PASS
	5200 MHz	9.553	11	PASS
	5240 MHz	8.320	11	PASS
802.11 n20	5180 MHz	9.799	11	PASS
	5200 MHz	9.168	11	PASS
	5240 MHz	7.895	11	PASS
802.11 n40	5190 MHz	5.974	11	PASS
	5230 MHz	6.201	11	PASS
802.11 AC20	5180 MHz	9.471	11	PASS
	5200 MHz	10.021	11	PASS
	5240 MHz	9.065	11	PASS
802.11 AC40	5190 MHz	6.487	11	PASS
	5230 MHz	7.346	11	PASS
802.11 AC80	5210 MHz	4.112	11	PASS

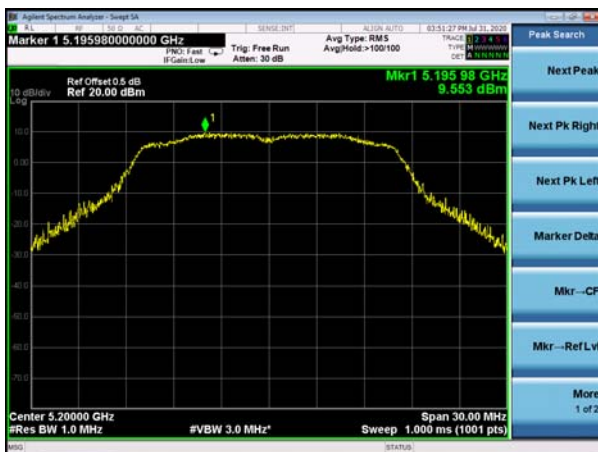
(802.11a) PSD plot on channel 36



(802.11n20) PSD plot on channel 36



(802.11a) PSD plot on channel 40



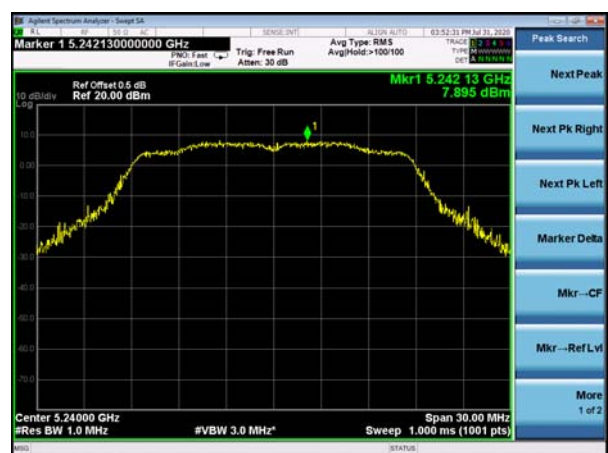
(802.11n20) PSD plot on channel 40



(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



(802.11n40) PSD plot on channel 38



(802.11ac20) PSD plot on channel 36



(802.11n40) PSD plot on channel 46



(802.11ac20) PSD plot on channel 40



(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46



Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-3 (5745-5825MHz)		

Mode	Frequency	Measured Power Density (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11 a	5745 MHz	6.181	30	PASS
	5785 MHz	5.489	30	PASS
	5825 MHz	6.527	30	PASS
802.11 n20	5745 MHz	6.083	30	PASS
	5785 MHz	5.711	30	PASS
	5825 MHz	5.054	30	PASS
802.11 n40	5755 MHz	3.442	30	PASS
	5795 MHz	2.340	30	PASS
802.11 AC20	5745 MHz	5.764	30	PASS
	5785 MHz	5.843	30	PASS
	5825 MHz	5.089	30	PASS
802.11 AC40	5755 MHz	3.024	30	PASS
	5795 MHz	2.711	30	PASS
802.11 AC80	5775 MHz	-0.510	30	PASS

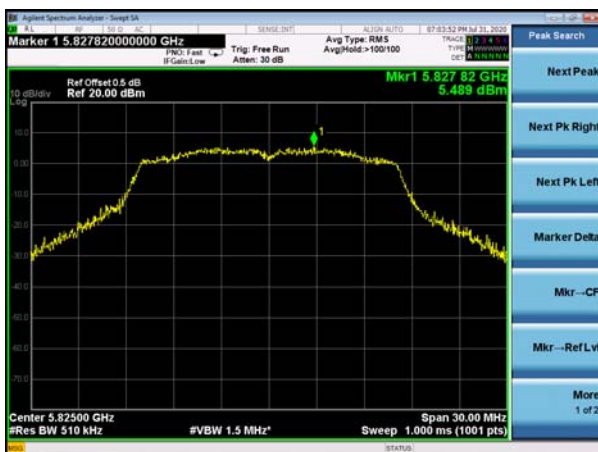
(802.11a) PSD plot on channel 149



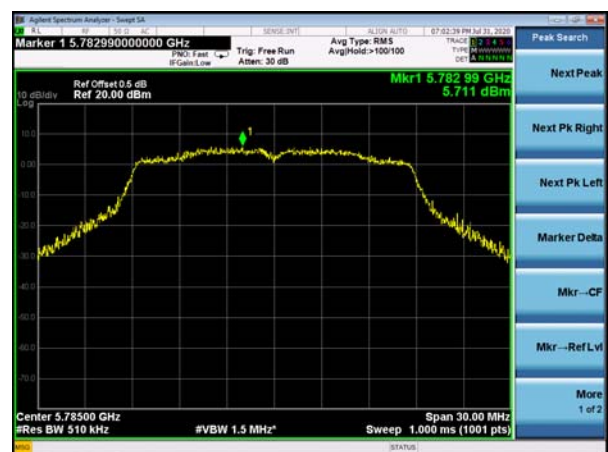
(802.11n20) PSD plot on channel 149



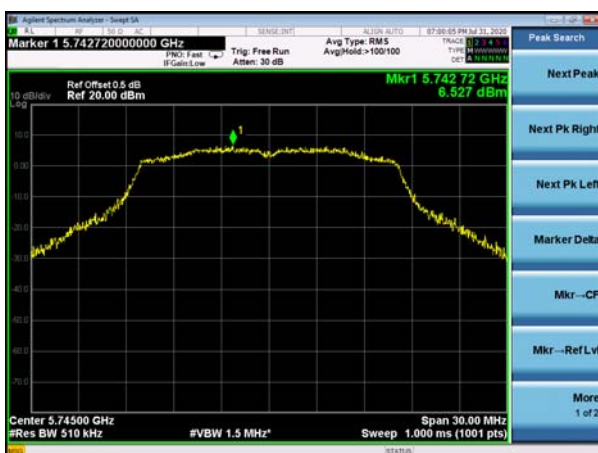
(802.11a) PSD plot on channel 157



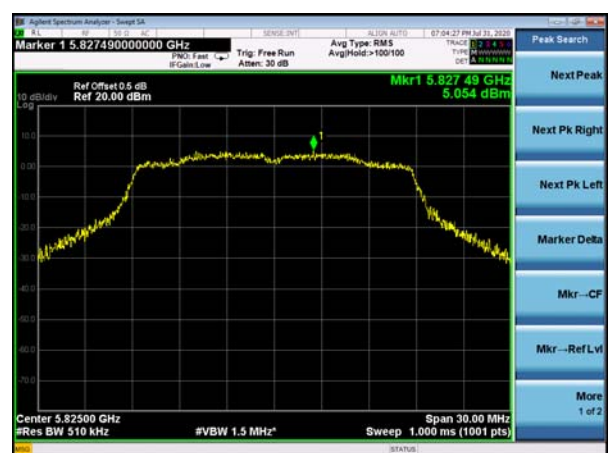
(802.11n20) PSD plot on channel 157



(802.11a) PSD plot on channel 165



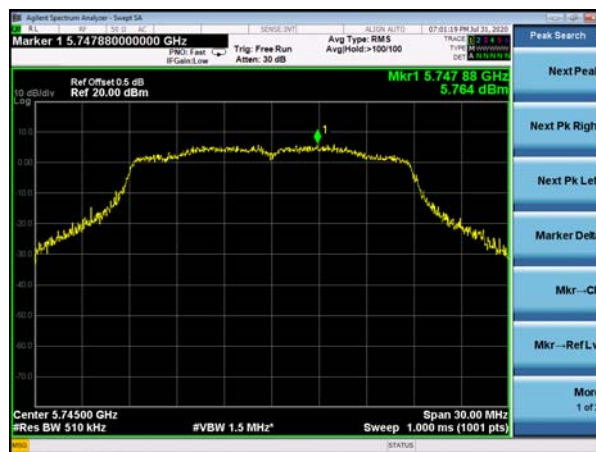
(802.11n20) PSD plot on channel 165



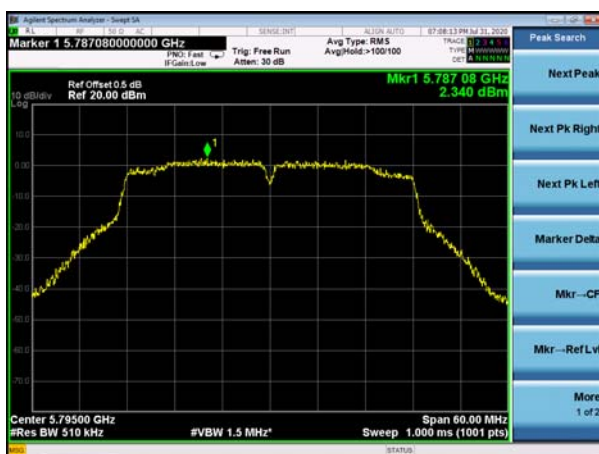
(802.11n40) PSD plot on channel 151



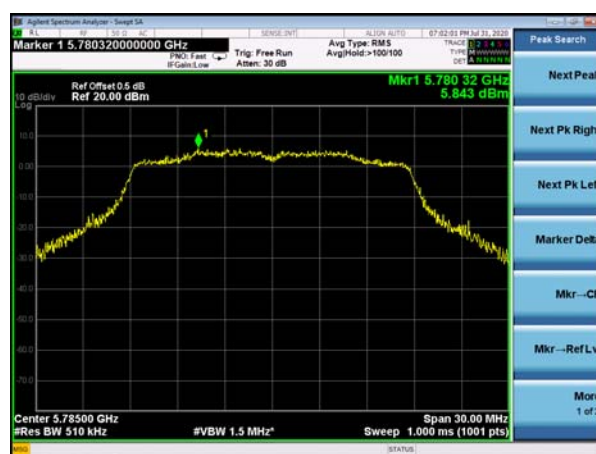
(802.11ac20) PSD plot on channel 149



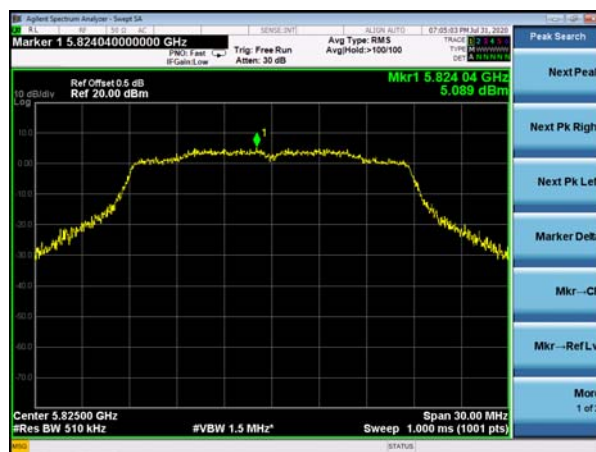
(802.11n40) PSD plot on channel 159



(802.11ac20) PSD plot on channel 157



(802.11ac20) PSD plot on channel 165



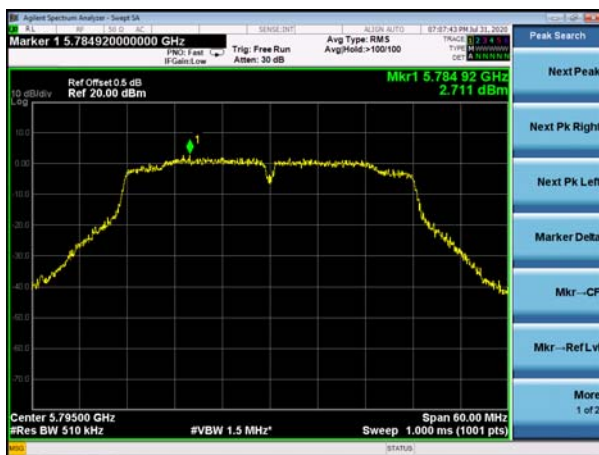
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155



(802.11ac40) PSD plot on channel 159



5. 26DB & 6DB& 99% EMISSION BANDWIDTH

5.1 APPLIED PROCEDURES / LIMIT

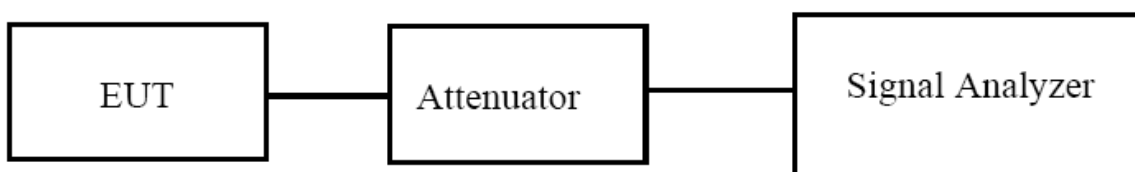
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

5.2 TEST PROCEDURE

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.



5.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

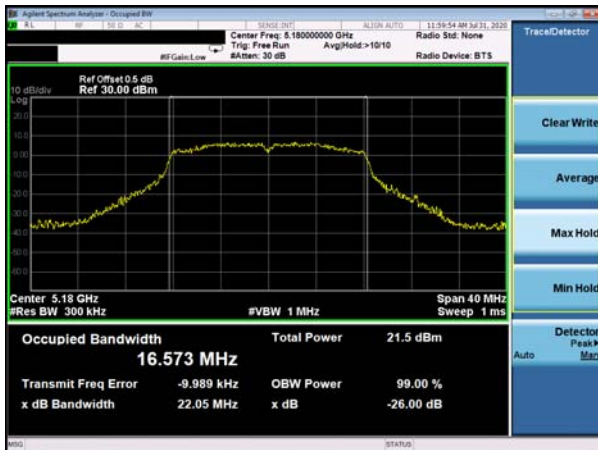
5.4 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-1 (5180-5240MHz)		

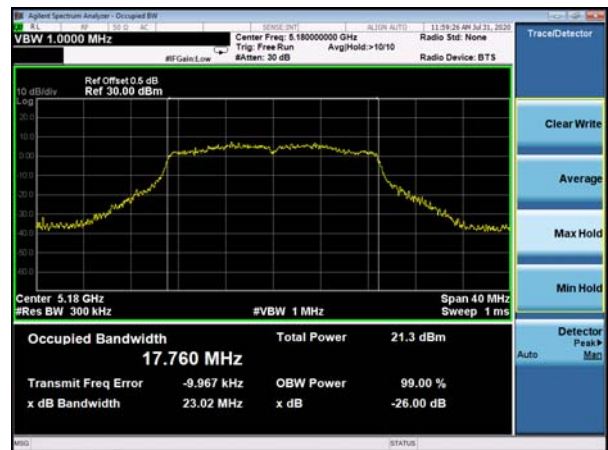
Mode	Channel	Frequency (MHz)	99% bandwidth(MHz)	26dB bandwidth (MHz)	Result
			Antenna A	Antenna A	
802.11a	CH36	5180	16.573	22.05	Pass
	CH40	5200	16.541	22.26	Pass
	CH48	5240	16.717	23.79	Pass
802.11 n20	CH36	5180	17.760	23.02	Pass
	CH40	5200	17.793	22.27	Pass
	CH48	5240	17.751	23.66	Pass
802.11 n40	CH 38	5190	36.323	43.93	Pass
	CH 46	5230	36.367	45.37	Pass
802.11 AC20	CH36	5180	17.771	22.62	Pass
	CH40	5200	17.780	23.27	Pass
	CH48	5240	17.823	23.80	Pass
802.11 AC40	CH 38	5190	36.329	44.73	Pass
	CH 46	5230	36.356	44.45	Pass
802.11 AC80	CH 42	5210	75.045	84.61	Pass

Test plot

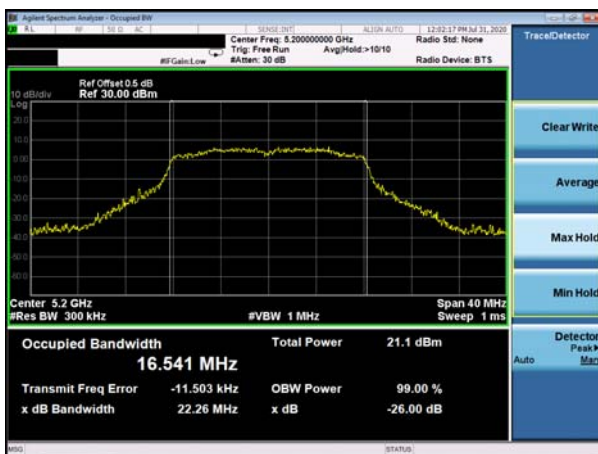
(802.11a) -26dB&99%Bandwidth plot on
channel 36



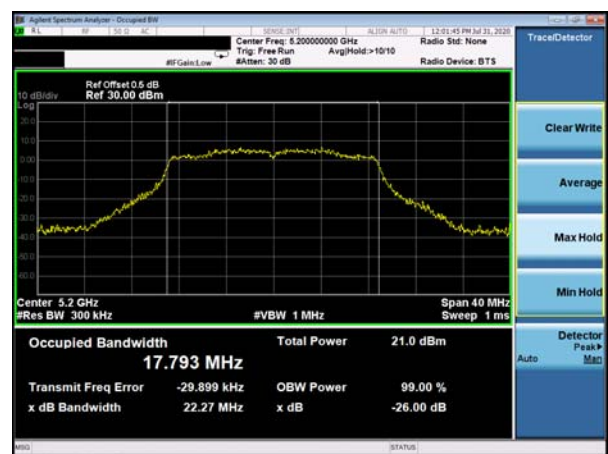
(802.11 n20) -26dB&99%Bandwidth plot on
channel 36



(802.11a) -26dB&99%Bandwidth plot on
channel 40



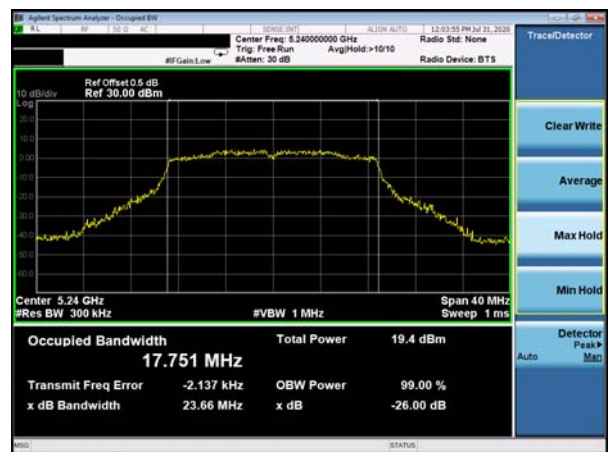
(802.11 n20) -26dB&99%Bandwidth plot on
channel 40



(802.11a) -26dB&99%Bandwidth plot on
channel 48

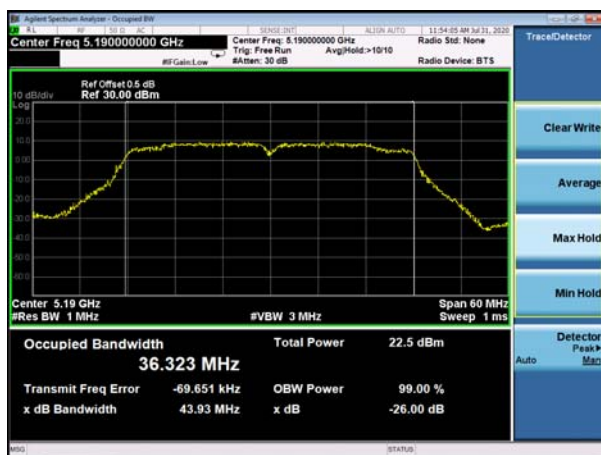


(802.11 n20) -26dB&99%Bandwidth plot on
channel 48

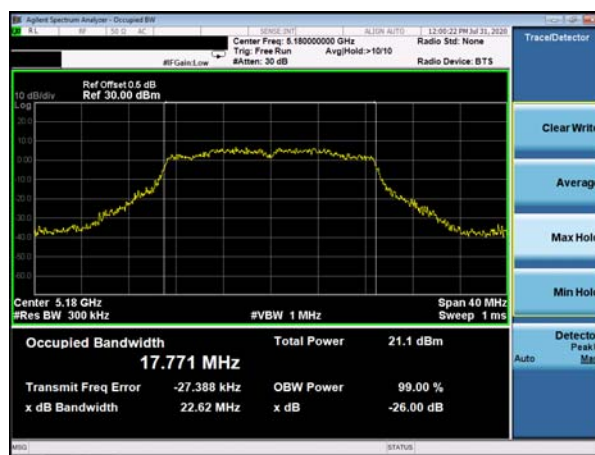


Test plot

(802.11 n40) -26dB&99%Bandwidth plot on
channel 38



(802.11 AC20) -26dB&99%Bandwidth plot on
channel 36



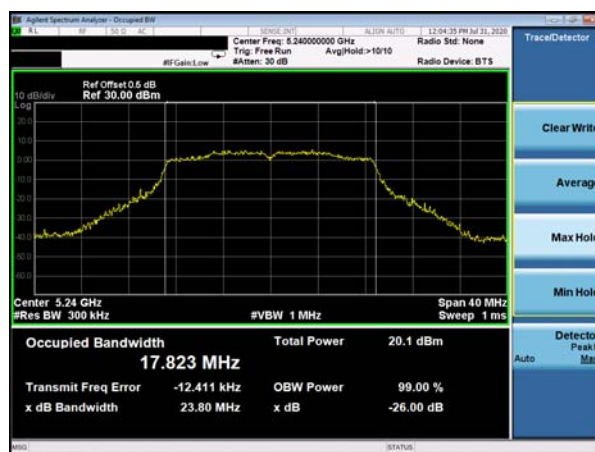
(802.11 n40) -26dB&99%Bandwidth plot on
channel 46



(802.11 AC20) -26dB&99%Bandwidth plot on
channel 40



(802.11 AC20) -26dB&99%Bandwidth plot on
channel 48

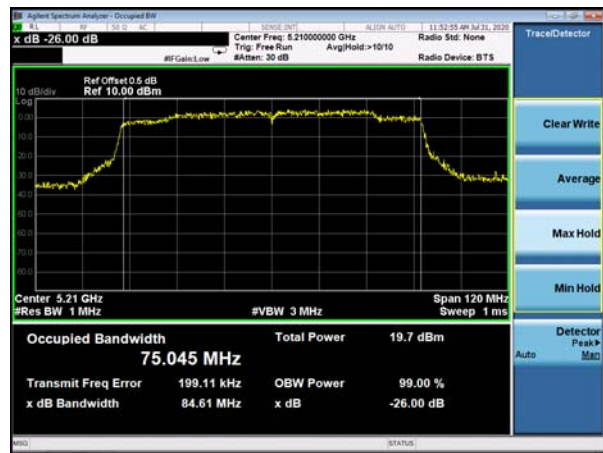


Test plot

(802.11 AC40) -26dB&99%Bandwidth plot on
channel 38



(802.11 AC80) -26dB&99%Bandwidth plot on
channel 42

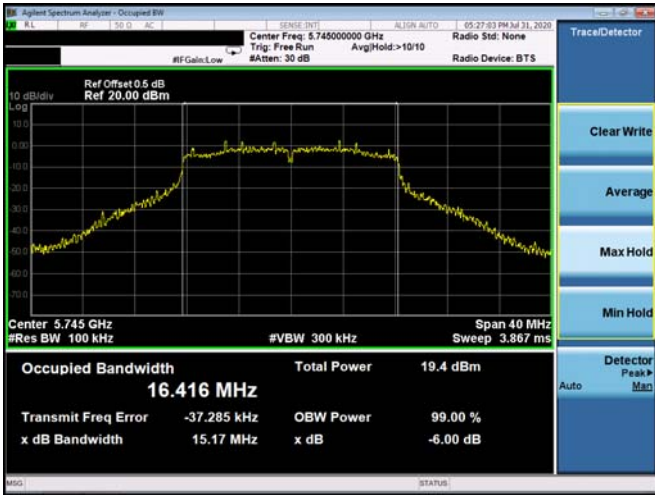
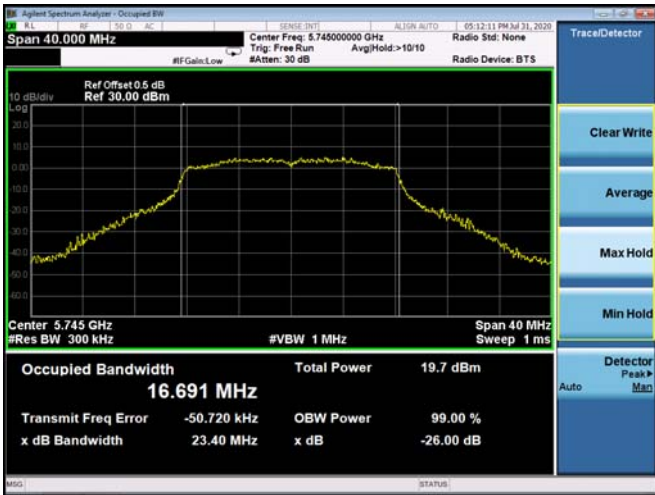


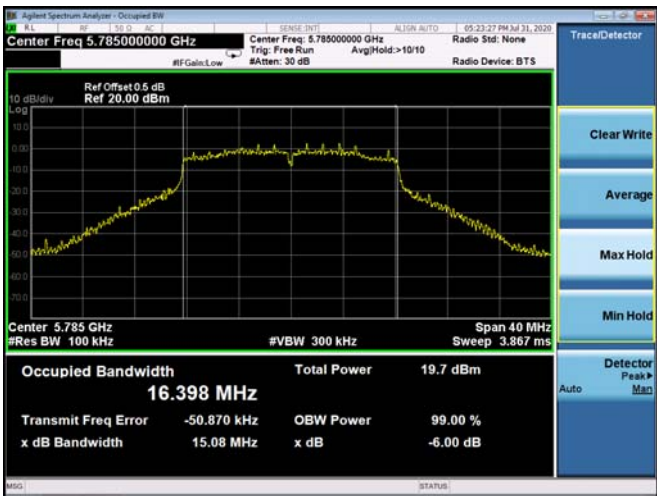
(802.11 AC40) -26dB&99%Bandwidth plot on
channel 46



Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-3 (5745-5825MHz)		

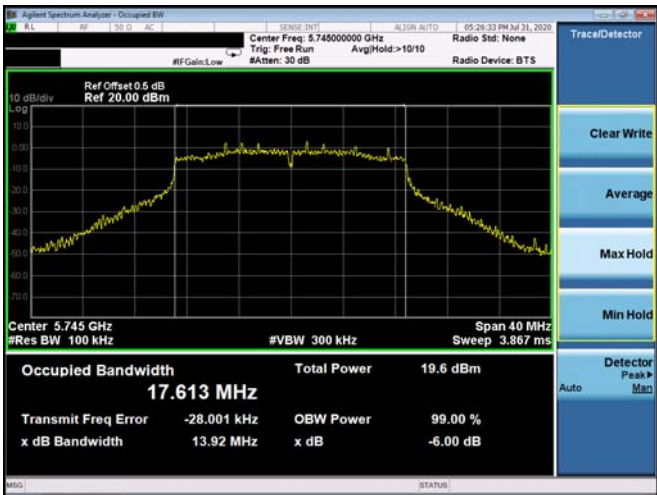
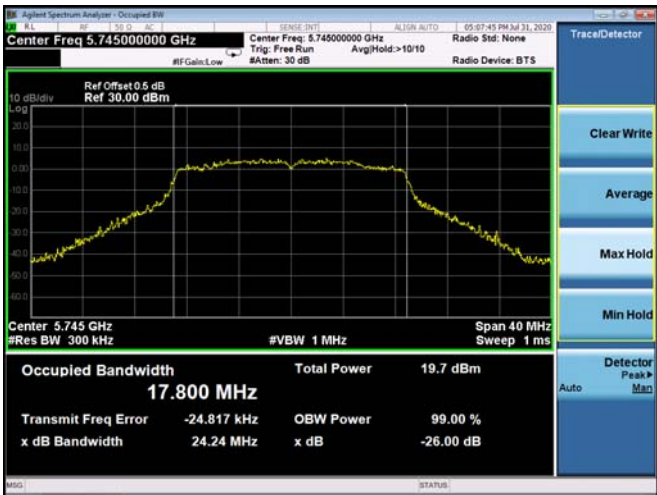
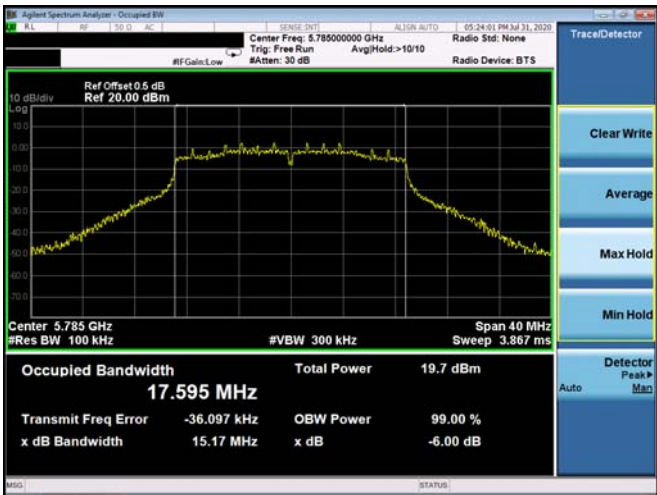
Mode	Channel	Frequency (MHz)	99% bandwidth(MHz)	6dB bandwidth (MHz)	Result
802.11a	CH149	5745	16.691	15.17	Pass
	CH157	5785	16.621	15.08	Pass
	CH165	5825	16.700	15.33	Pass
802.11 n20	CH149	5745	17.800	13.92	Pass
	CH157	5785	17.748	15.17	Pass
	CH165	5825	17.765	15.48	Pass
802.11 n40	CH151	5755	36.307	35.10	Pass
	CH159	5795	36.352	33.86	Pass
802.11 AC20	CH149	5745	17.808	15.18	Pass
	CH157	5785	17.830	14.72	Pass
	CH165	5825	17.798	15.17	Pass
802.11 AC40	CH151	5755	36.371	35.12	Pass
	CH159	5795	36.337	35.01	Pass
802.11 AC80	CH155	5775	74.911	62.74	Pass

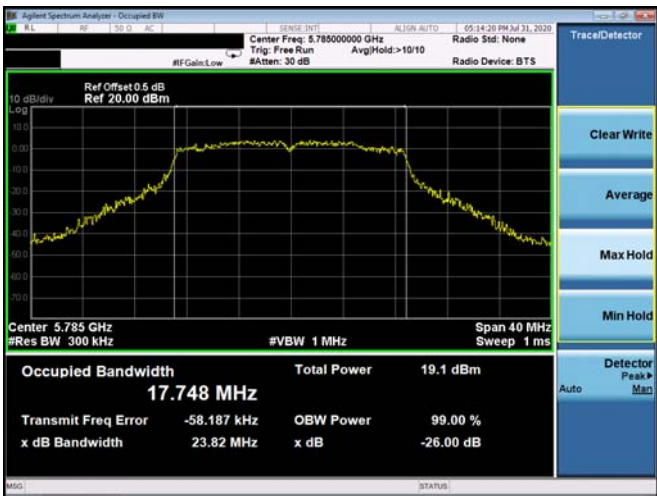
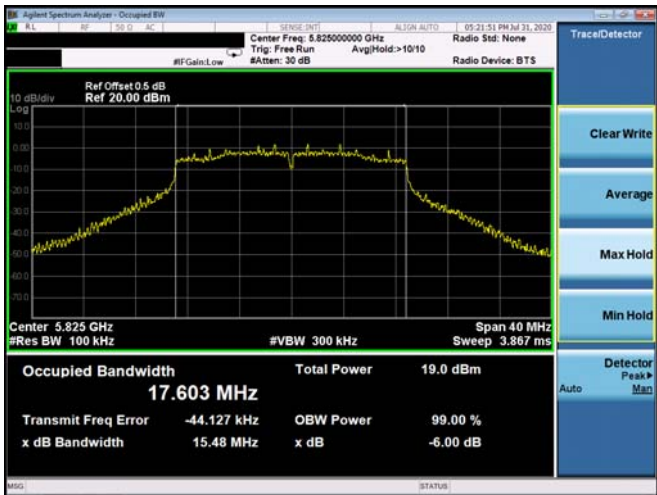
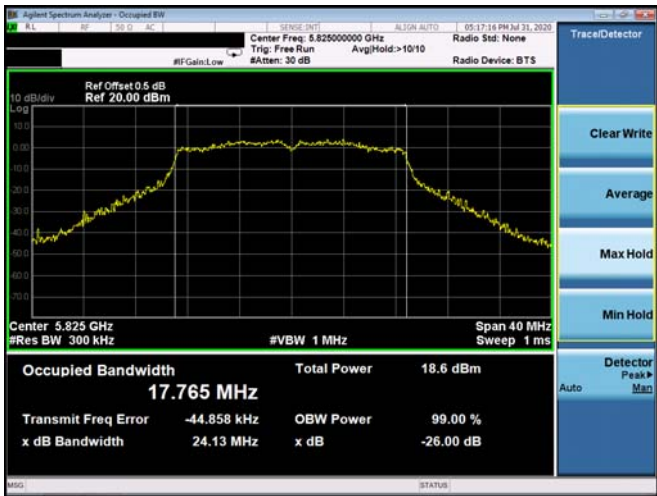
Mode:	802.11a-HT20
5745MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.74500000 GHz Span: 40 MHz Res BW: 100 kHz #VBW: 300 kHz Sweep: 3.867 ms Ref Offset: 0.5 dB Ref: 20.00 dBm Occupied Bandwidth: 16.416 MHz Total Power: 19.4 dBm Transmit Freq Error: -37.285 kHz x dB Bandwidth: 15.17 MHz OBW Power: 99.00 % x dB: -6.00 dB
5745MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.74500000 GHz Span: 40.000 MHz Res BW: 300 kHz #VBW: 1 MHz Sweep: 1 ms Ref Offset: 0.5 dB Ref: 30.00 dBm Occupied Bandwidth: 16.691 MHz Total Power: 19.7 dBm Transmit Freq Error: -50.720 kHz x dB Bandwidth: 23.40 MHz OBW Power: 99.00 % x dB: -26.00 dB

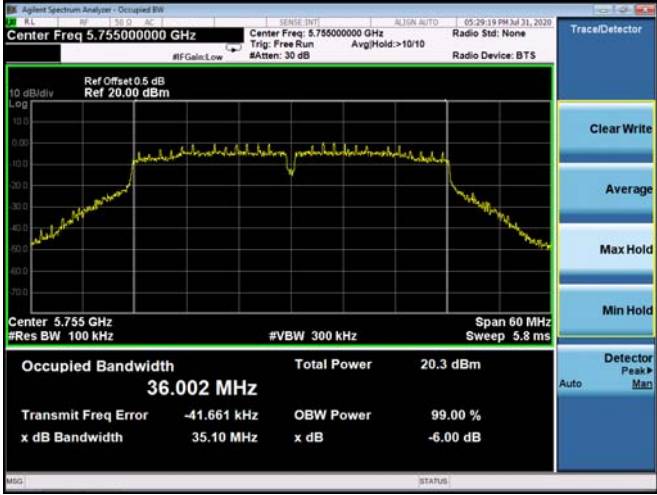
5785MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.785000000 GHz Ref Offset: 0.5 dB Ref: 20.00 dBm Center Freq: 5.785000000 GHz Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS #F Gain: Low #Att: 30 dB Span: 40 MHz Sweep: 3.867 ms #Res BW: 100 kHz #VBW: 300 kHz Occupied Bandwidth: 16.398 MHz Total Power: 19.7 dBm Transmit Freq Error: -50.870 kHz OBW Power: 99.00 % x dB Bandwidth: 15.08 MHz x dB: -6.00 dB
5785MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.785000000 GHz Ref Offset: 0.5 dB Ref: 20.00 dBm Center Freq: 5.785000000 GHz Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS #F Gain: Low #Att: 30 dB Span: 40 MHz Sweep: 1 ms #Res BW: 300 kHz #VBW: 1 MHz Occupied Bandwidth: 16.621 MHz Total Power: 19.2 dBm Transmit Freq Error: -45.447 kHz OBW Power: 99.00 % x dB Bandwidth: 23.75 MHz x dB: -26.00 dB
5825MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.825000000 GHz Ref Offset: 0.5 dB Ref: 20.00 dBm Center Freq: 5.825000000 GHz Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS #F Gain: Low #Att: 30 dB Span: 40 MHz Sweep: 3.867 ms #Res BW: 100 kHz #VBW: 300 kHz Occupied Bandwidth: 16.433 MHz Total Power: 19.2 dBm Transmit Freq Error: -43.239 kHz OBW Power: 99.00 % x dB Bandwidth: 15.33 MHz x dB: -6.00 dB

5825MHz
99% bandwidth

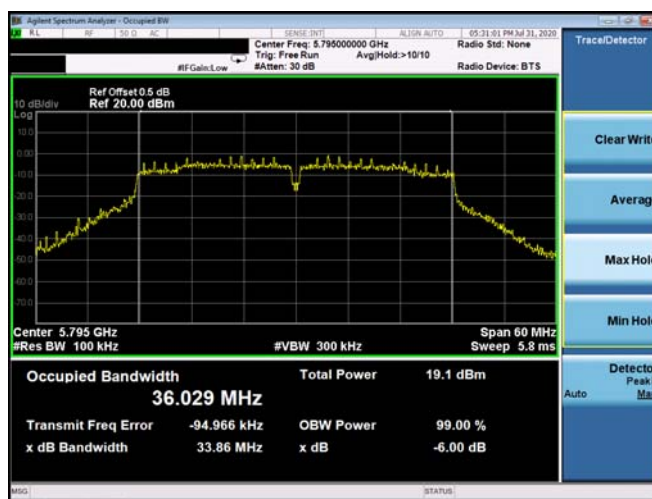


Mode:	802.11n-HT20
5745MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.745000000 GHz Span: 40 MHz Res BW: 100 kHz Sweep: 3.867 ms Ref Offset: 0.5 dB Ref: 20.00 dBm Occupied Bandwidth: 17.613 MHz Total Power: 19.6 dBm Transmit Freq Error: -28.001 kHz x dB Bandwidth: 13.92 MHz OBW Power: 99.00 % x dB: -6.00 dB
5745MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.745000000 GHz Span: 40 MHz Res BW: 300 kHz Sweep: 1 ms Ref Offset: 0.5 dB Ref: 30.00 dBm Occupied Bandwidth: 17.800 MHz Total Power: 19.7 dBm Transmit Freq Error: -24.817 kHz x dB Bandwidth: 24.24 MHz OBW Power: 99.00 % x dB: -26.00 dB
5785MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.785000000 GHz Span: 40 MHz Res BW: 100 kHz Sweep: 3.867 ms Ref Offset: 0.5 dB Ref: 20.00 dBm Occupied Bandwidth: 17.595 MHz Total Power: 19.7 dBm Transmit Freq Error: -36.097 kHz x dB Bandwidth: 15.17 MHz OBW Power: 99.00 % x dB: -6.00 dB

5785MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.785000000 GHz Trig: Free Run #F Gain: Low #Atten: 30 dB Avg/Hold: >10/10 Radio Std: None Radio Device: BTS Ref Offset: 0.5 dB Ref: 20.00 dBm Center 5.785 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1 ms Occupied Bandwidth 17.748 MHz Total Power 19.1 dBm Transmit Freq Error -58.187 kHz OBW Power 99.00 % x dB Bandwidth 23.82 MHz x dB -26.00 dB
5825MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.825000000 GHz Trig: Free Run #F Gain: Low #Atten: 30 dB Avg/Hold: >10/10 Radio Std: None Radio Device: BTS Ref Offset: 0.5 dB Ref: 20.00 dBm Center 5.825 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 3.867 ms Occupied Bandwidth 17.603 MHz Total Power 19.0 dBm Transmit Freq Error -44.127 kHz OBW Power 99.00 % x dB Bandwidth 15.48 MHz x dB -6.00 dB
5825MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.825000000 GHz Trig: Free Run #F Gain: Low #Atten: 30 dB Avg/Hold: >10/10 Radio Std: None Radio Device: BTS Ref Offset: 0.5 dB Ref: 20.00 dBm Center 5.825 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1 ms Occupied Bandwidth 17.765 MHz Total Power 18.6 dBm Transmit Freq Error -44.858 kHz OBW Power 99.00 % x dB Bandwidth 24.13 MHz x dB -26.00 dB

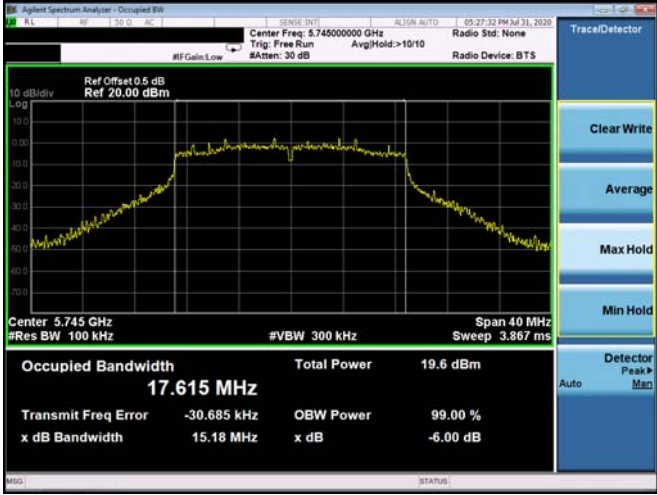
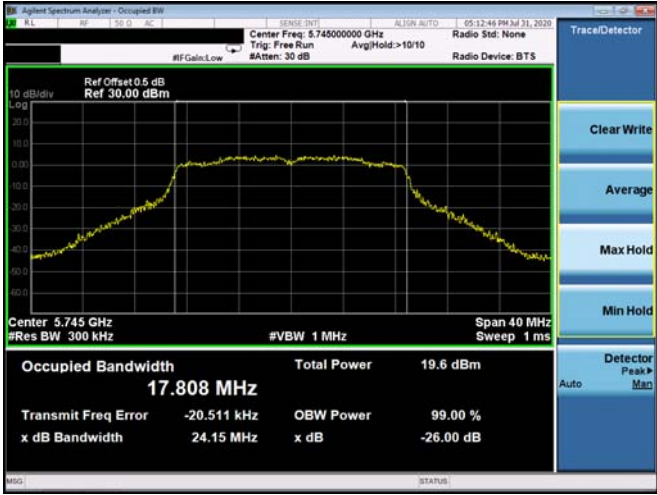
Mode:	802.11n-HT40
5755 MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq 5.755000000 GHz Ref Offset 0.5 dB Ref 20.00 dBm Span 60 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.8 ms Occupied Bandwidth 36.002 MHz Total Power 20.3 dBm Transmit Freq Error -41.661 kHz OBW Power 99.00 % x dB Bandwidth 35.10 MHz x dB -6.00 dB
5755 MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq 5.755000000 GHz Ref Offset 0.5 dB Ref 30.00 dBm Span 60.000 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 1 ms Occupied Bandwidth 36.307 MHz Total Power 20.9 dBm Transmit Freq Error -19.803 kHz OBW Power 99.00 % x dB Bandwidth 45.04 MHz x dB -26.00 dB

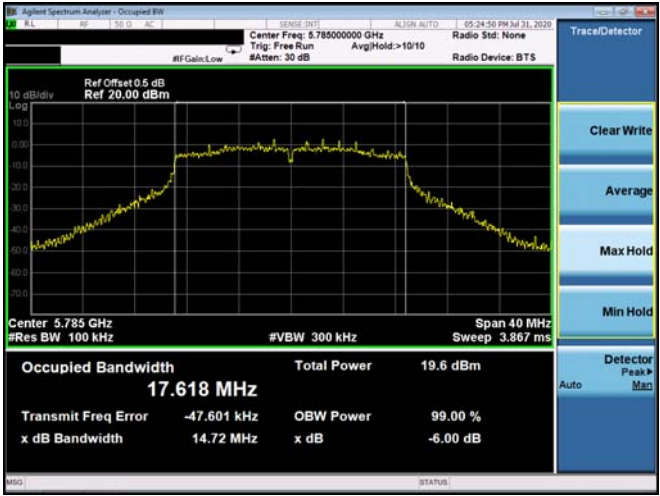
5795 MHz
6dB bandwidth



5795 MHz
99% bandwidth

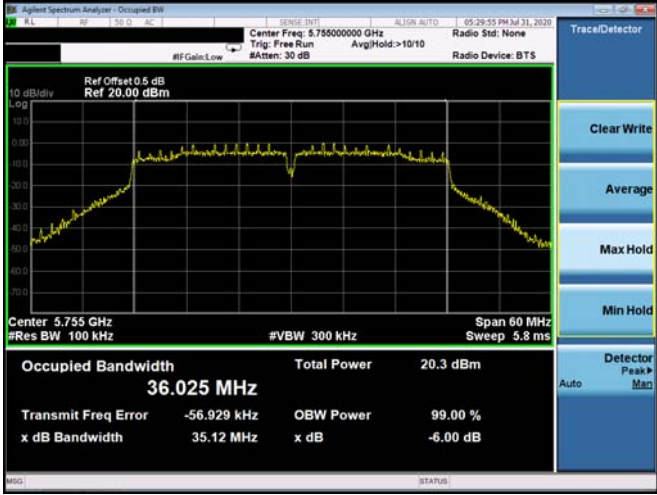


Mode:	802.11ac-HT20
5745MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.745000000 GHz Trig: Free Run #Atten: 30 dB Radio Std: None Radio Device: BTS Ref Offset 0.5 dB Ref 20.00 dBm Center 5.745 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 3.867 ms Occupied Bandwidth 17.615 MHz Total Power 19.6 dBm Transmit Freq Error -30.685 kHz OBW Power 99.00 % x dB Bandwidth 15.18 MHz x dB -6.00 dB
5745MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.745000000 GHz Trig: Free Run #Atten: 30 dB Radio Std: None Radio Device: BTS Ref Offset 0.5 dB Ref 30.00 dBm Center 5.745 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1 ms Occupied Bandwidth 17.808 MHz Total Power 19.6 dBm Transmit Freq Error -20.511 kHz OBW Power 99.00 % x dB Bandwidth 24.15 MHz x dB -26.00 dB

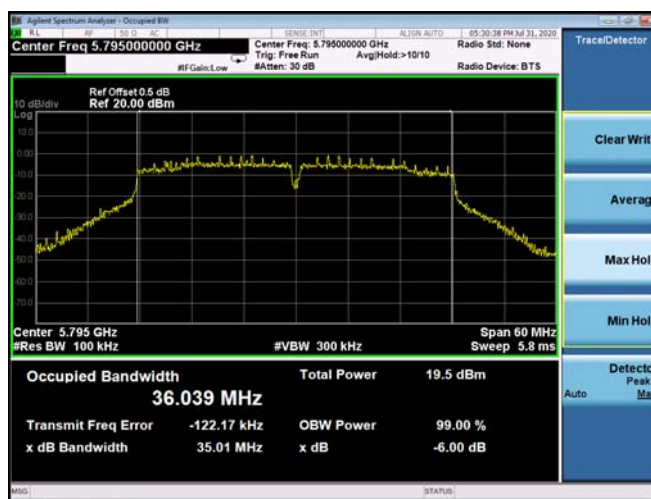
5785MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.785000000 GHz Ref Offset: 0.5 dB Ref: 20.00 dBm Span: 40 MHz #Res BW: 100 kHz #VBW: 300 kHz Sweep: 3.867 ms Occupied Bandwidth: 17.618 MHz Total Power: 19.6 dBm Transmit Freq Error: -47.601 kHz OBW Power: 99.00 % x dB Bandwidth: 14.72 MHz x dB: -6.00 dB
5785MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.785000000 GHz Ref Offset: 0.5 dB Ref: 20.00 dBm Span: 40 MHz #Res BW: 300 kHz #VBW: 1 MHz Sweep: 1 ms Occupied Bandwidth: 17.830 MHz Total Power: 19.4 dBm Transmit Freq Error: -60.626 kHz OBW Power: 99.00 % x dB Bandwidth: 23.74 MHz x dB: -26.00 dB
5825MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.825000000 GHz Ref Offset: 0.5 dB Ref: 20.00 dBm Span: 40 MHz #Res BW: 100 kHz #VBW: 300 kHz Sweep: 3.867 ms Occupied Bandwidth: 17.594 MHz Total Power: 19.3 dBm Transmit Freq Error: -33.337 kHz OBW Power: 99.00 % x dB Bandwidth: 15.17 MHz x dB: -6.00 dB

5825MHz
99% bandwidth



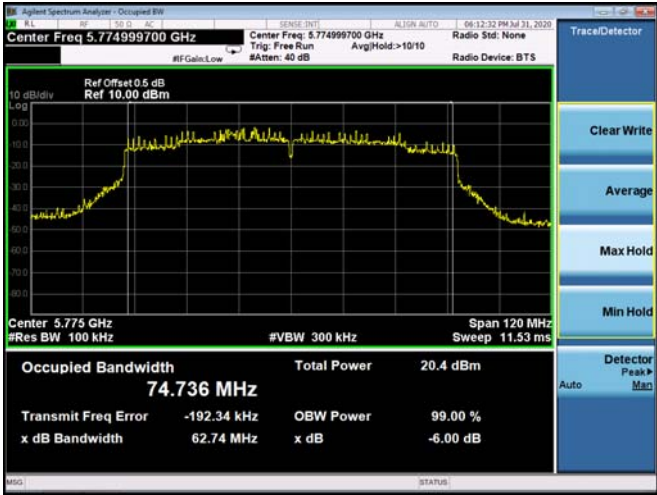
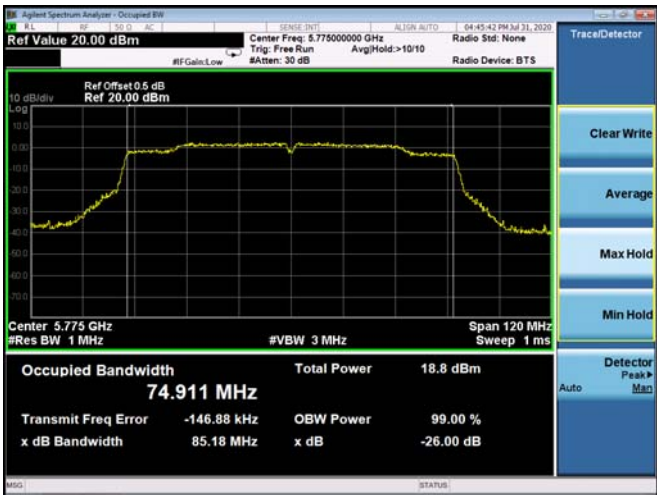
Mode:	802.11ac-HT40
5755 MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.755000000 GHz Span: 60 MHz Res BW: 100 kHz Sweep: 5.8 ms Ref Offset: 0.5 dB Ref: 20.00 dBm Occupied Bandwidth: 36.025 MHz Total Power: 20.3 dBm Transmit Freq Error: -56.929 kHz x dB Bandwidth: 35.12 MHz
5755 MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.755000000 GHz Span: 60 MHz Res BW: 1 MHz Sweep: 1 ms Ref Offset: 0.5 dB Ref: 20.00 dBm Occupied Bandwidth: 36.371 MHz Total Power: 18.8 dBm Transmit Freq Error: -99.389 kHz x dB Bandwidth: 45.39 MHz

5795 MHz
6dB bandwidth



5795 MHz
99% bandwidth



Mode:	802.11ac-HT80
5755 MHz 6dB bandwidth	 Agilent Spectrum Analyzer - Occupied BW Center Freq 5.774999700 GHz Ref Offset 0.5 dB Ref 10.00 dBm Center 5.775 GHz #Res BW 100 kHz #VBW 300 kHz Span 120 MHz Sweep 11.53 ms Occupied Bandwidth 74.736 MHz Total Power 20.4 dBm Transmit Freq Error -192.34 kHz OBW Power 99.00 % x dB Bandwidth 62.74 MHz x dB -6.00 dB
5755 MHz 99% bandwidth	 Agilent Spectrum Analyzer - Occupied BW Ref Value 20.00 dBm Center Freq 5.775000000 GHz Ref Offset 0.5 dB Ref 20.00 dBm Center 5.775 GHz #Res BW 1 MHz #VBW 3 MHz Span 120 MHz Sweep 1 ms Occupied Bandwidth 74.911 MHz Total Power 18.8 dBm Transmit Freq Error -146.88 kHz OBW Power 99.00 % x dB Bandwidth 85.18 MHz x dB -26.00 dB

6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407

The maximum conducted output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

- Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF power meter.

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.¹ However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

- The EUT transmits continuously (or with a duty cycle ≥ 98 percent).
- Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

6.2 DEVIATION FROM STANDARD

No deviation.

6.3 TEST SETUP



6.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.5 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH36	5180	16.92	23.98	Pass
CH40	5200	16.87	23.98	Pass
CH48	5240	16.91	23.98	Pass
TX 802.11 n20M Mode				
CH36	5180	17.11	23.98	Pass
CH40	5200	17.01	23.98	Pass
CH48	5240	16.34	23.98	Pass
TX 802.11 n40M Mode				
CH38	5190	5.74	23.98	Pass
CH46	5230	5.69	23.98	Pass
TX 802.11 AC20M Mode				
CH36	5180	17.13	23.98	Pass
CH40	5200	16.65	23.98	Pass
CH48	5240	16.73	23.98	Pass
TX 802.11 AC40M Mode				
CH38	5190	15.00	23.98	Pass
CH46	5230	14.50	23.98	Pass
TX 802.11 AC80M Mode				
CH42	5210	10.94	23.98	Pass

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX (5.8G) Mode Frequency Band IV (5725-5825MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH 149	5745	15.81	30	Pass
CH 157	5785	15.87	30	Pass
CH 165	5825	15.09	30	Pass
TX 802.11 n20M Mode				
CH 149	5745	15.54	30	Pass
CH 157	5785	15.62	30	Pass
CH 165	5825	15.32	30	Pass
TX 802.11 n40M Mode				
CH 151	5755	10.92	30	Pass
CH 159	5795	11.21	30	Pass
TX 802.11 AC20M Mode				
CH 149	5745	13.84	30	Pass
CH 157	5785	14.09	30	Pass
CH 165	5825	14.02	30	Pass
TX 802.11 AC40M Mode				
CH 151	5755	11.19	30	Pass
CH 159	5795	11.18	30	Pass
TX 802.11 AC80M Mode				
CH 155	5775	9.07	30	Pass

7. OUT OF BAND EMISSIONS

7.1 APPLICABLE STANDARD

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

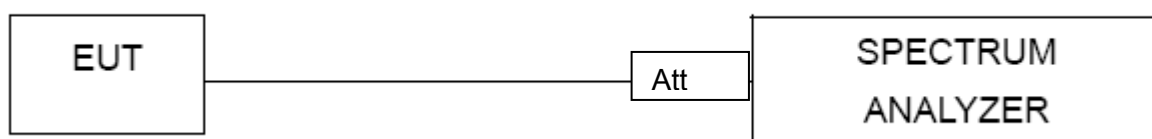
7.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

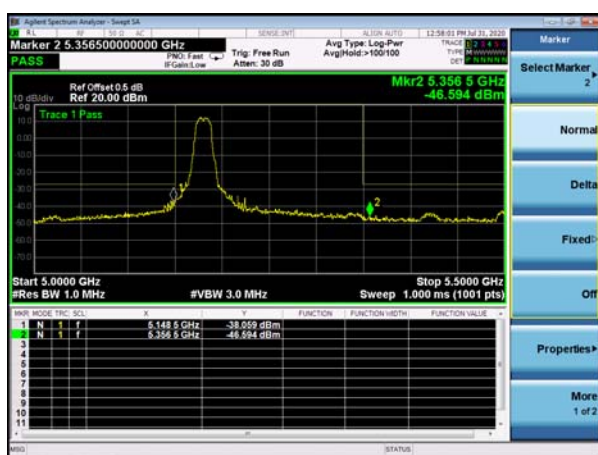
7.6 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz

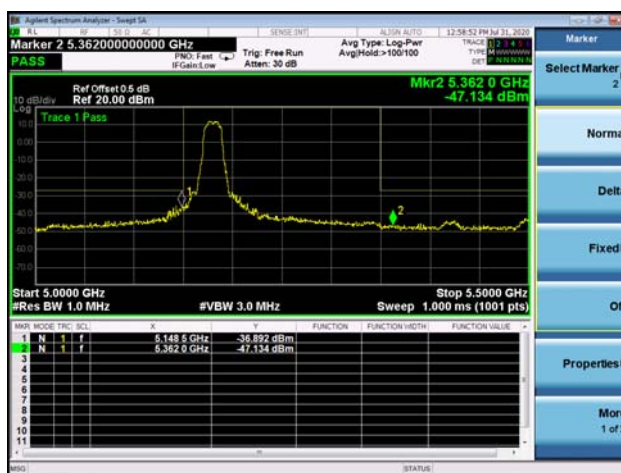
5.1G

5.180~5.240 GHz

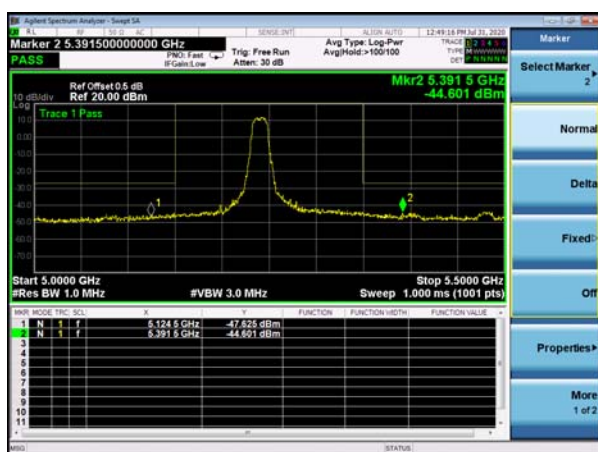
(802.11a) Band Edge, Left Side



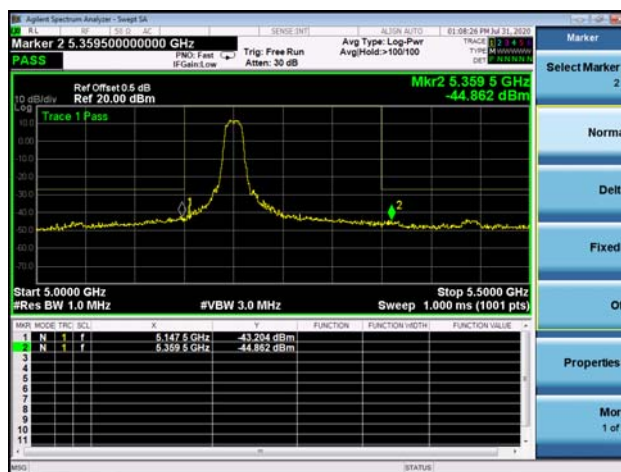
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

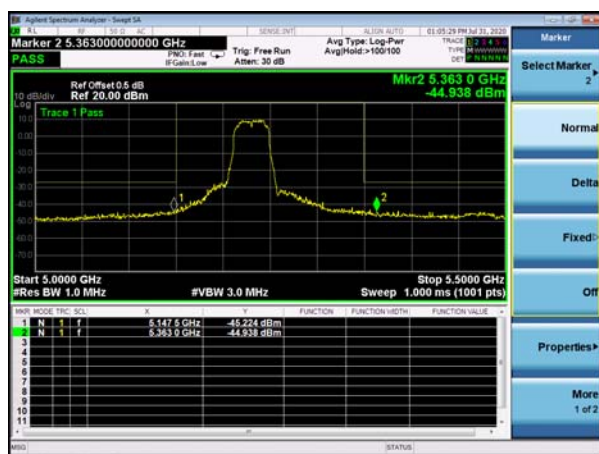


(802.11n20) Band Edge, Right Side

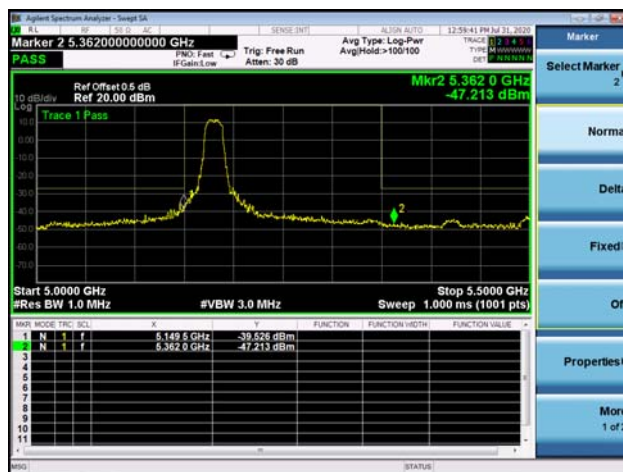


5.180~5.240 GHz

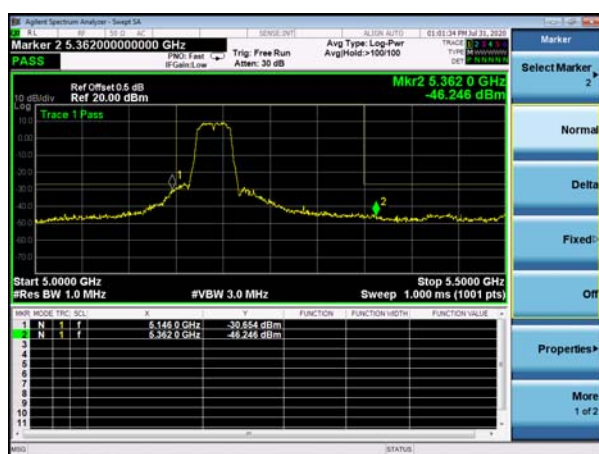
(802.11n40) Band Edge, Left Side



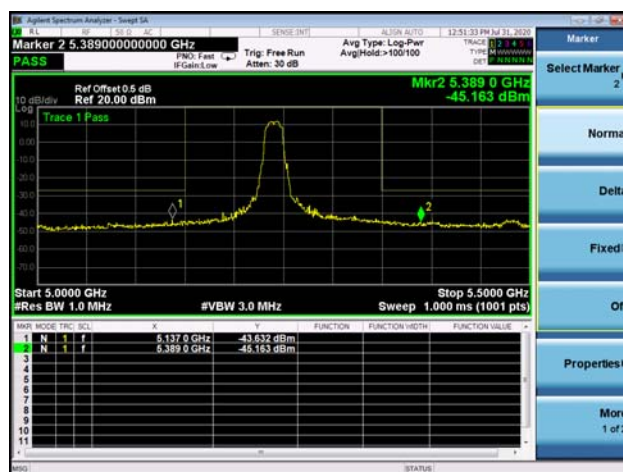
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Right Side

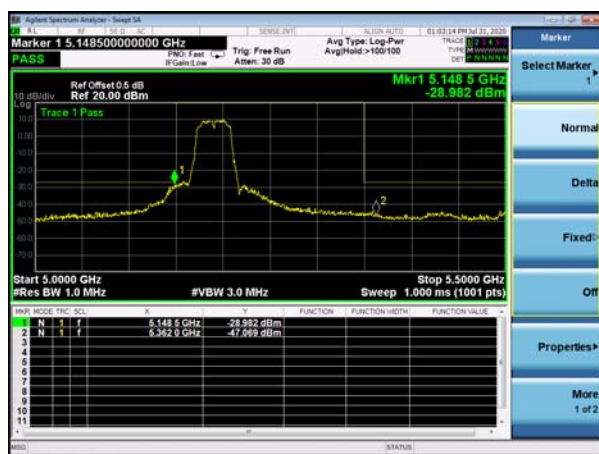


(802.11ac20) Band Edge, Right Side



5.180~5.240 GHz

(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



(802.11ac40) Band Edge, Right Side

