

TEST REPORT

Report No.: BCTC2105136964-2E

Applicant: RabbitRun Technologies USA Inc.

Product Name: Wireless router

Model/Type
reference: RRT-200-LTE

Tested Date: 2021-06-03 to 2021-06-23

Issued Date: 2021-07-16

Shenzhen BCTC Testing Co., Ltd.



FCC ID: 2A2OKRRT-200-LTE

Product Name: Wireless router
Trademark: N/A
Model/Type reference: RRT-200-LTE
Prepared For: RabbitRun Technologies USA Inc.
Address: 1211 1st Avenue North Suite 202, St. Petersburg Florida 33705
Manufacturer: SHENZHEN ZHIBOTONG ELECTRONICS CO., LTD.
Address: Floor 4, Bldg. A2, Hedian Industrial Park, NO.9 Shijing Rd, Guanlan, Longhua District, ShenZhen, China
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2021-05-24
Sample tested Date: 2021-06-03 to 2021-06-23
Issue Date: 2021-07-16
Report No.: BCTC2105136964-2E
FCC Part15 15.407
ANSI C63.10-2013
Test Standards KDB 662911 D01 v02r01
KDB 789033 D02 v02r01
Test Results PASS

Tested by:



Eric Yang/Project Handler

Approved by:



Zero Zhou/Reviewer

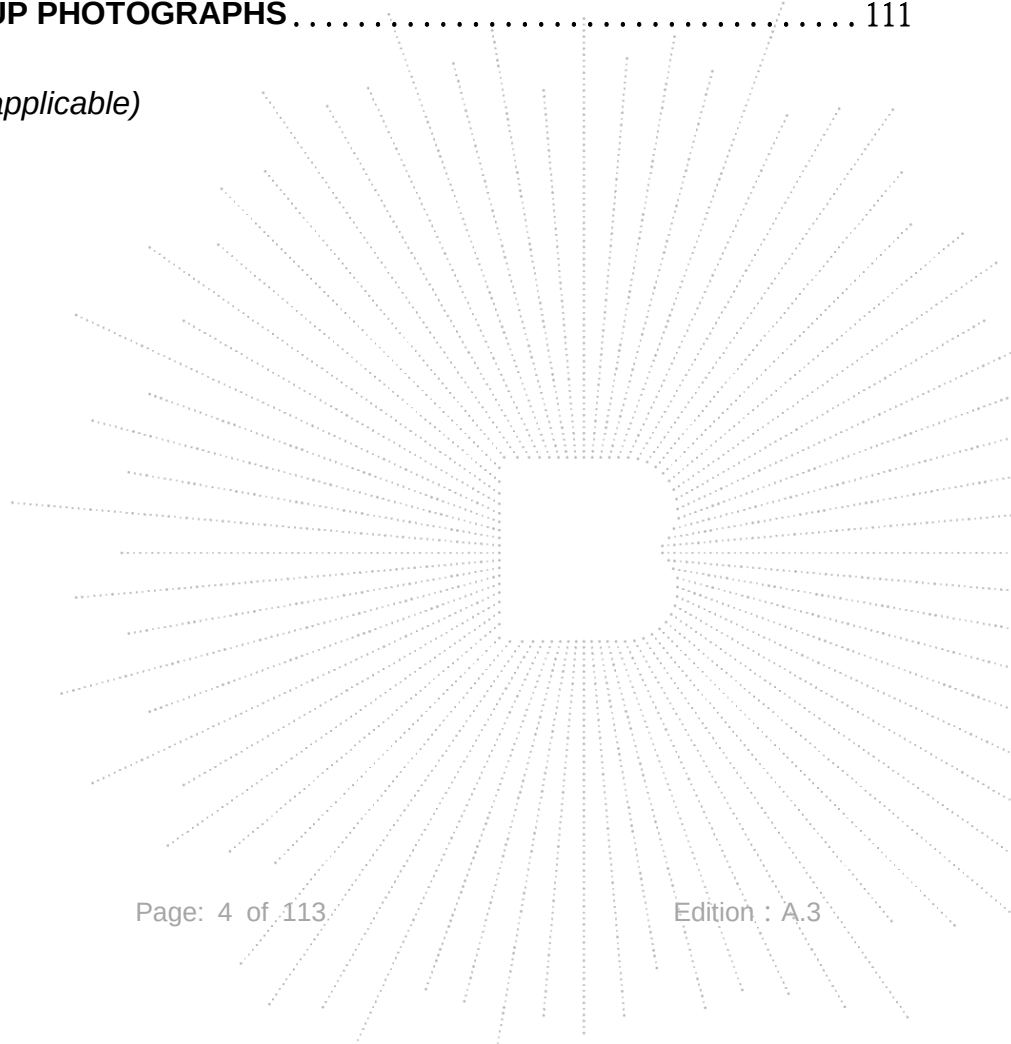
The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

TABLE OF CONTENT

Test Report Declaration	Page
1. VERSION	5
2. TEST SUMMARY	6
3. MEASUREMENT UNCERTAINTY	7
4. PRODUCT INFORMATION AND TEST SETUP	8
4.1 Product Information	8
4.2 Test Setup Configuration	9
4.3 Support Equipment	9
4.4 Channel List	10
4.5 Test Mode	11
4.6 table of parameters of text software setting	12
4.7 Antenna	12
5. TEST FACILITY AND TEST INSTRUMENT USED	13
5.1 Test Facility	13
5.2 Test Instrument Used	13
6. CONDUCTED EMISSIONS	15
6.1 Block Diagram Of Test Setup	15
6.2 Limit	15
6.3 Test procedure	15
6.4 EUT operating Conditions	15
6.5 Test Result	16
7. RADIATED EMISSIONS	18
7.1 Block Diagram Of Test Setup	18
7.2 Limit	19
7.3 Test procedure	20
7.4 EUT operating Conditions	21
7.5 Test Result	22
8. POWER SPECTRAL DENSITY TEST	37
8.1 Block Diagram Of Test Setup	37
8.2 Limit	37
8.3 Test procedure	38
8.4 EUT operating Conditions	38
8.5 Test Result	39
9. 26DB & 6DB & 99% EMISSION BANDWIDTH	47
9.1 Block Diagram Of Test Setup	47
9.2 Limit	47
9.3 Test procedure	47
9.4 EUT operating Conditions	48
9.5 Test Result	48

10. MAXIMUM CONDUCTED OUTPUT POWER	69
10.1 Block Diagram Of Test Setup	69
10.2 Limit	69
10.3 Test procedure	69
10.4 EUT operating Conditions	70
10.5 Test Result	71
11. OUT OF BAND EMISSIONS	73
11.1 Block Diagram Of Test Setup	73
11.2 Limit	73
11.3 Test procedure	73
11.4 EUT operating Conditions	73
11.5 Test Result	73
12. SPURIOUS RF CONDUCTED EMISSIONS	86
12.1 Block Diagram Of Test Setup	86
12.2 Limit	86
12.3 Test procedure	86
12.4 Test Result	87
13. FREQUENCY STABILITY MEASUREMENT	102
14. ANTENNA REQUIREMENT	109
14.1 Limit	109
14.2 Test Result	109
15. EUT PHOTOGRAPHS	110
16. EUT TEST SETUP PHOTOGRAPHS	111

(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
BCTC2105136964-2E	2021-07-16	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No	Results
1	Spurious Radiated Emissions	15.209(a), 15.407 (b)(1) 15.407 (b)(4) 15.407 (b)(8)	PASS
2	Conducted Emission	15.207	PASS
3	26 dB and 99% Emission Bandwidth	15.407 (a)(12) 15.1049	PASS
4	Minimum 6 dB bandwidth	15.407(e)	PASS
5	Maximum Conducted Output Power	15.407 (a)(1) 15.407 (a)(3)	PASS
6	Band Edge	2.1051, 15.407(b)(1) 15.407(b)(4)	PASS
7	Power Spectral Density	15.407 (a)(1) 15.407 (a)(3)	PASS
8	Spurious Emissions at Antenna Terminals	2.1051, 15.407(b)	PASS
9	Frequency Stability Measurement	15.407(g)	PASS
10	Antenna Requirement	15.203	PASS

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

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°C

4. PRODUCT INFORMATION AND TEST SETUP

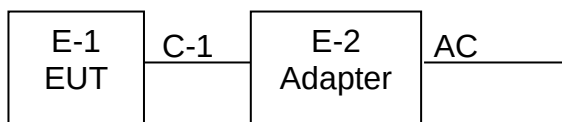
4.1 Product Information

Model/Type reference:	RRT-200-LTE
Model differences:	N/A
IEEE 802.11 WLAN Mode Supported	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth) 802.11ac(80MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n/ac(HT20); 5190-5230MHz for 802.11n/ac(HT40); 5210MHz for 802.11 ac80; 5745-5825 MHz for 802.11a/n/ac(HT20); 5755-5795 MHz for 802.11a/n/ac(HT40); 5775MHz for 802.11 ac80;
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n/ac(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Number Of Channel	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 2 channels for 802.11 n40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band ;
Antenna installation:	External antenna *2
Antenna Gain:	Antenna A:2dBi Antenna B:2dBi
Ratings:	DC 12V From adapter
Adapter:	Model No.: TAP25-120S200U1 Input: AC 100-240V 50/60Hz 0.6A Output: DC 15V 2A

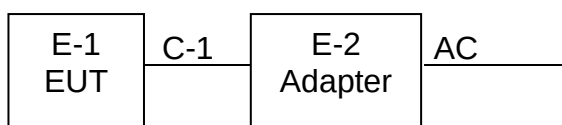
4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission:



Radiated Spurious Emission



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-2	Adapter	N/A	TAP25-120S20 0U1	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0M	DC cable unshielded

Notes:

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.

4.4 Channel List

Frequency and Channel list for 802.11a/n/ac(20 MHz) band IV (5180-5240MHz):

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

802.11n /ac(40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (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	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (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

4.5 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

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

Note:

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

4.6 table of parameters of text software setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Test software Version	QA_Tool_UIV1.0.3.14_DLLV1.0.3.12		
Parameters	DEF	DEF	DEF

4.7 Antenna

EUT has two External antennas with Max gain 2dBi on every antenna, CDD device with two spatial streams, also can operate with one spatial streams according to KDB662911 D01 v02r01,

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

1)For power spectral density(PSD) measurements,
 $\text{Array Gain} = 10\log(\text{NANT}/\text{NSS})\text{dB} = 10\log(2/1) = 3.01\text{dB}$,
 So the directional gain for PSD is 5.01dBi

2)For power measurements,
 The Array gain=0 dB for $\text{NANT} \leq 4$,
 So the directional gain for Power measurements is 2dBi

Antenna	Brand	Model Name	Antenna Type	Gain (dBi)
A	N/A	N/A	External antenna	2
B	N/A	N/A	External antenna	2

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address:1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

5.2 Test Instrument Used

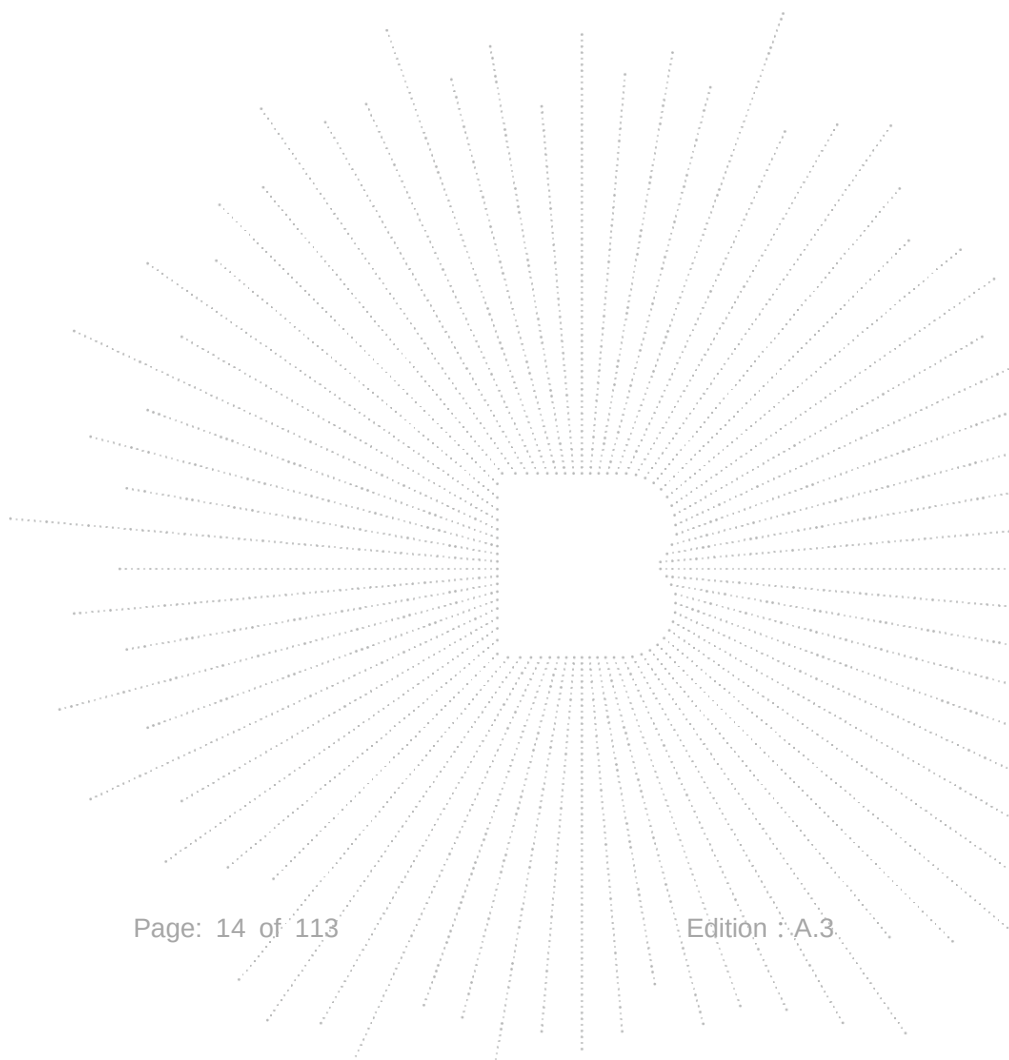
Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4407B	MY45109572	May 28, 2021	May 27, 2022
2	Test Receiver (9kHz-7GHz)	R&S	ESRP	101154	May 28, 2021	May 27, 2022
3	Bilog Antenna (30MHz-3GHz)	SCHWARZBECK	VULB9163	VULB9163-942	Jun. 01, 2021	May 31, 2022
4	Horn Antenna (1GHz-18GHz)	SCHWARZBECK	BBHA9120D	1541	Jun. 02, 2021	Jun. 01, 2022
5	Horn Antenna (18GHz-40GHz)	SCHWARZBECK	BBHA9170	00822	May 28, 2021	May 27, 2022
6	Amplifier (9KHz-6GHz)	SCHWARZBECK	BBV9744	9744-0037	May 28, 2021	May 27, 2022
7	Amplifier	SKET	LAPA_01G18G-45dB	\	May 28, 2021	May 27, 2022
8	Amplifier (18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 28, 2021	May 27, 2022
9	Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	00014	Jun. 02, 2021	Jun. 01, 2022
10	RF cables1 (9kHz-30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-0008	May 28, 2021	May 27, 2022
11	RF cables2 (30MHz-1GHz)	Huber+Suhnar	30MHz-1GHz	1486150	May 28, 2021	May 27, 2022
12	RF cables3 (1GHz-40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 28, 2021	May 27, 2022
13	Power Metter	Keysight	E4419B	\	May 28, 2021	May 27, 2022
14	Power Sensor (AV)	Keysight	E9 300A	\	May 28, 2021	May 27, 2022
15	Signal Analyzer 20kHz-26.5GHz	KEYSIGHT	N9020A	MY49100060	May 28, 2021	May 27, 2022
16	Spectrum Analyzer 9kHz-40GHz	Agilent	FSP40	100363	May 28, 2021	May 27, 2022
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	May 28, 2021	May 27, 2022
2	LISN	SCHWARZBEC K	NSLK8127	8127739	May 28, 2021	May 27, 2022
3	LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
4	RF cables	Huber+Suhnar	9kHz-30MHz	B1702988-0008	May 28, 2021	May 27, 2022
5	Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

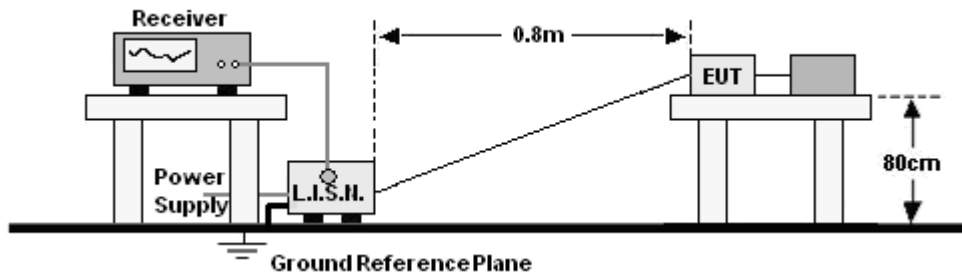
RF conducted test

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Power Metter	Keysight	E4419B	\	May 28, 2021	May 27, 2022
2	Power Sensor (AV)	Keysight	E9 300A	\	May 28, 2021	May 27, 2022
3	Signal Analyzer 20kHz-26.5GHz	KEYSIGHT	N9020A	MY49100060	May 28, 2021	May 27, 2022
4	Spectrum Analyzer 9kHz-40GHz	Agilent	FSP40	100363	May 28, 2021	May 27, 2022



6. CONDUCTED EMISSIONS

6.1 Block Diagram Of Test Setup



6.2 Limit

FREQUENCY (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Notes:

- *Decreasing linearly with logarithm of frequency.
- The lower limit shall apply at the transition frequencies.

6.3 Test procedure

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

a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N.).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

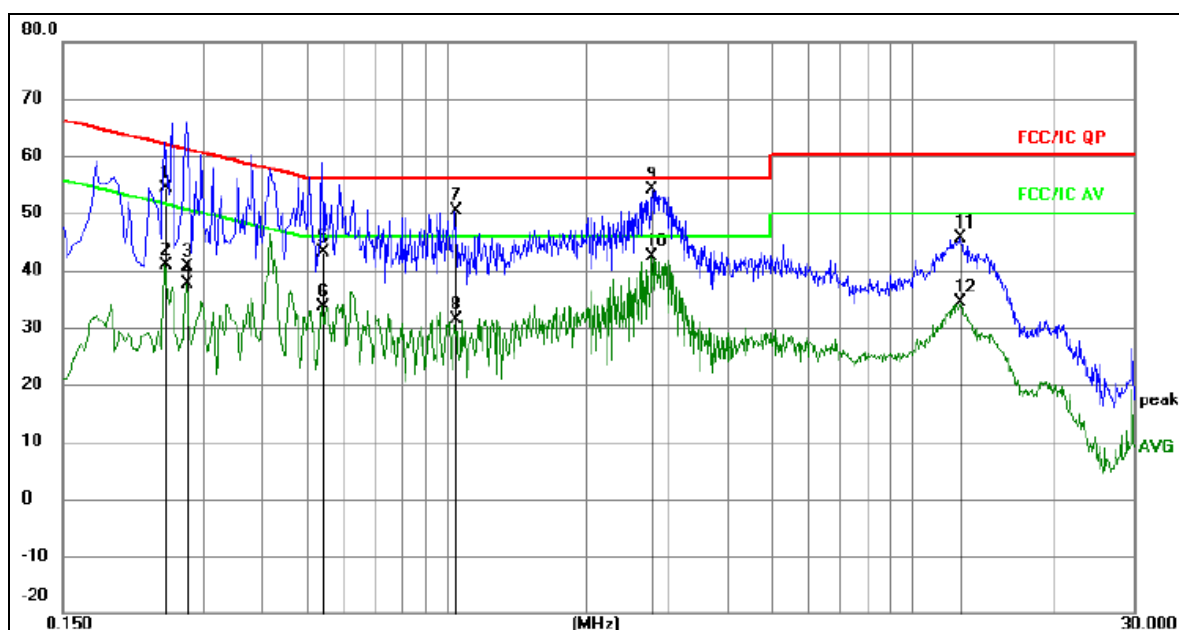
6.4 EUT operating Conditions

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 AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

6.5 Test Result

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5

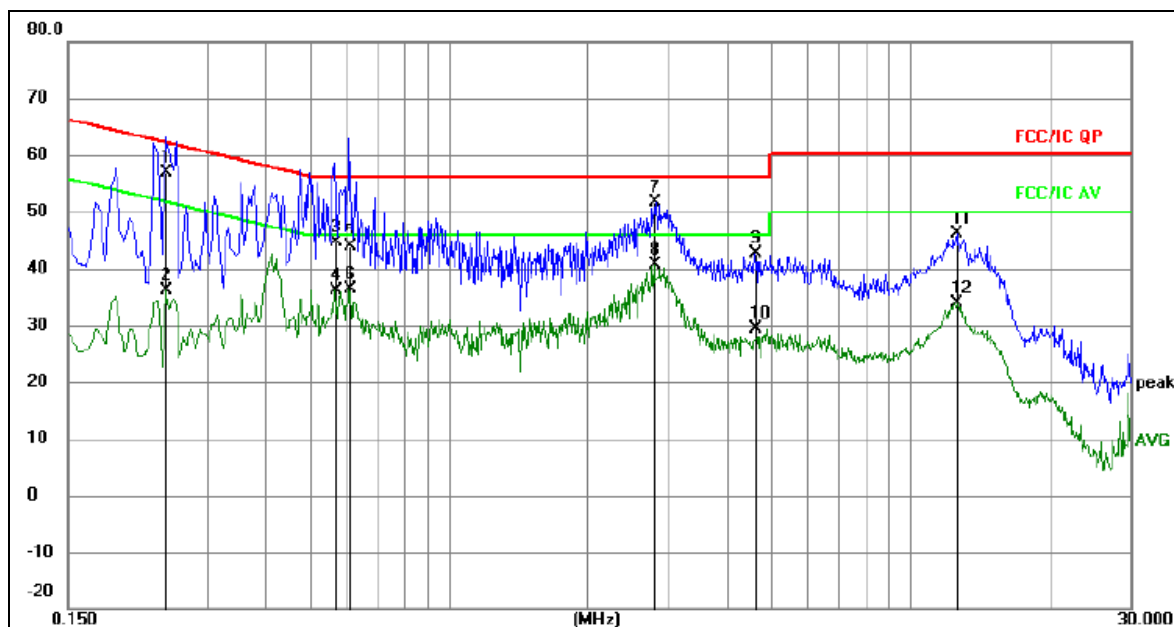


Remark:

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

No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.2490	44.91	9.52	54.43	61.79	-7.36	QP
2		0.2490	31.44	9.52	40.96	51.79	-10.83	AVG
3		0.2760	31.11	9.55	40.66	60.94	-20.28	QP
4		0.2760	28.04	9.55	37.59	50.94	-13.35	AVG
5		0.5415	33.31	9.76	43.07	56.00	-12.93	QP
6		0.5415	23.98	9.76	33.74	46.00	-12.26	AVG
7		1.0455	40.89	9.57	50.46	56.00	-5.54	QP
8		1.0455	21.72	9.57	31.29	46.00	-14.71	AVG
9	*	2.7510	44.51	9.64	54.15	56.00	-1.85	QP
10		2.7510	32.77	9.64	42.41	46.00	-3.59	AVG
11		12.6510	35.87	9.70	45.57	60.00	-14.43	QP
12		12.6510	24.78	9.70	34.48	50.00	-15.52	AVG

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5



Remark:

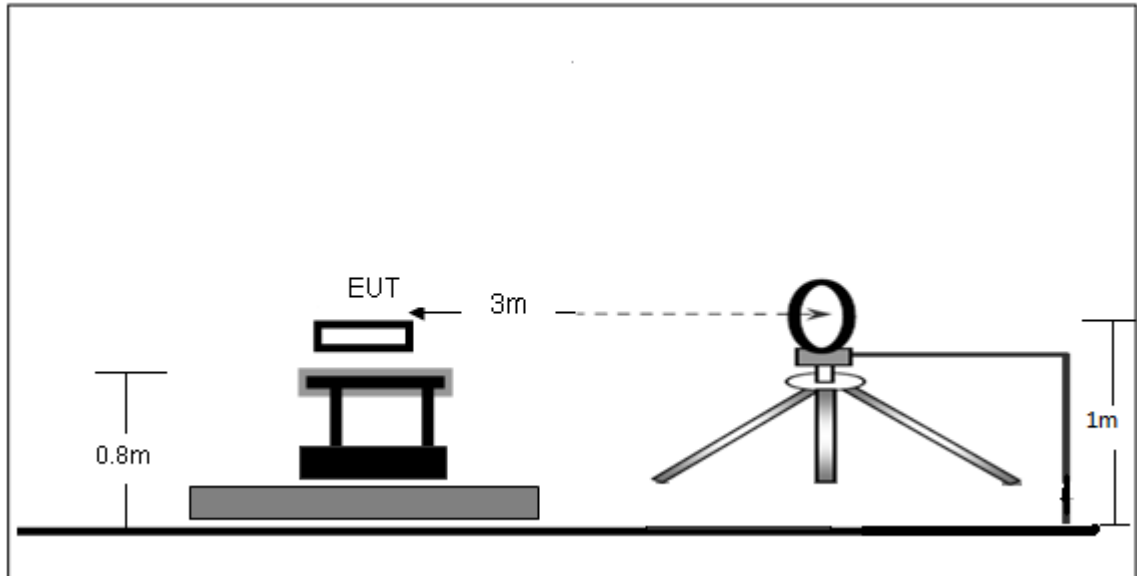
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
	MHz		dB	dBuV	dBuV	dB	Detector
1	0.2440	47.33	9.51	56.84	61.96	-5.12	QP
2	0.2440	26.61	9.51	36.12	51.96	-15.84	AVG
3	0.5680	34.80	9.87	44.67	56.00	-11.33	QP
4	0.5680	26.34	9.87	36.21	46.00	-9.79	AVG
5	0.6134	33.85	9.95	43.80	56.00	-12.20	QP
6	0.6134	26.47	9.95	36.42	46.00	-9.58	AVG
7 *	2.7960	41.93	9.65	51.58	56.00	-4.42	peak
8	2.7960	30.91	9.65	40.56	46.00	-5.44	AVG
9	4.6185	32.97	9.77	42.74	56.00	-13.26	peak
10	4.6185	19.57	9.77	29.34	46.00	-16.66	AVG
11	12.6330	36.32	9.69	46.01	60.00	-13.99	peak
12	12.6330	24.15	9.69	33.84	50.00	-16.16	AVG

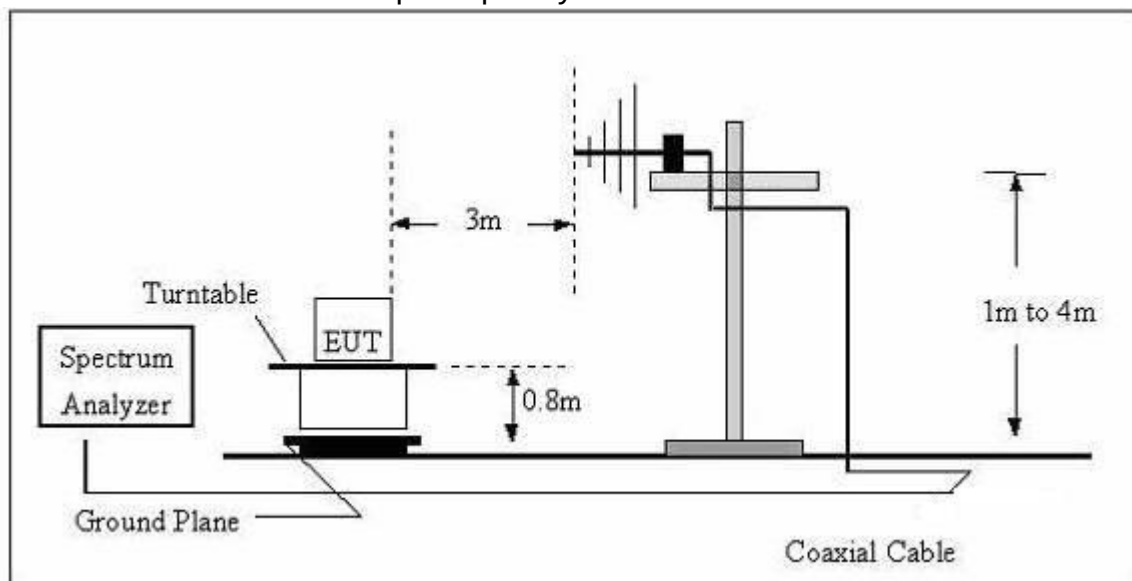
7. RADIATED EMISSIONS

7.1 Block Diagram Of Test Setup

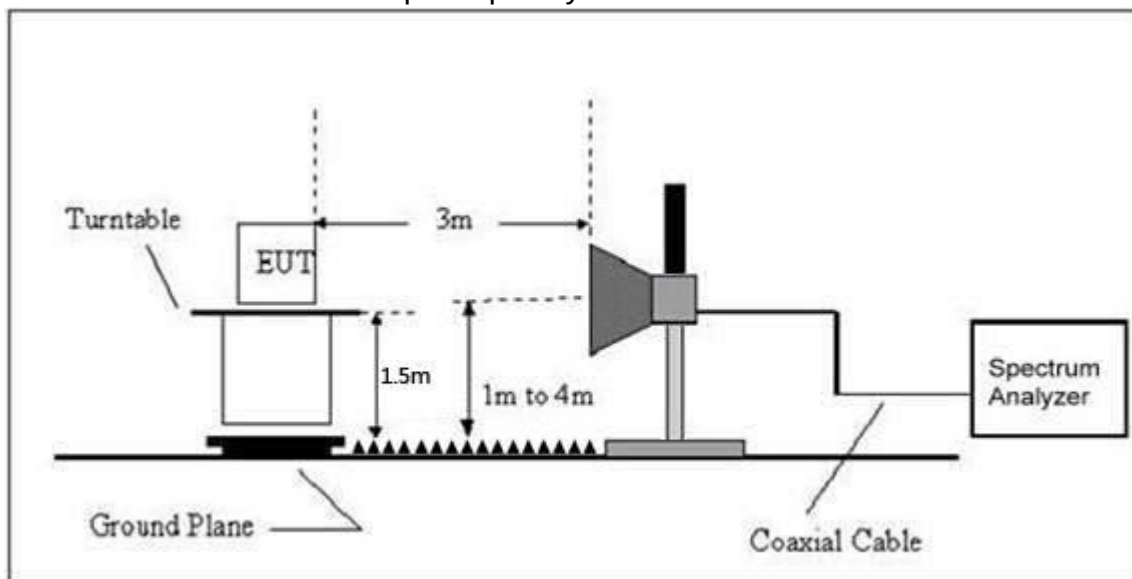
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



7.2 Limit

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.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance	
(MHz)	uV/m	(m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1)The limit for radiated test was performed according to FCC PART 15C.
- (2)The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

7.3 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 0.8 m for below 1GHz and 1.5m for above 1GHz 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 0.8 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

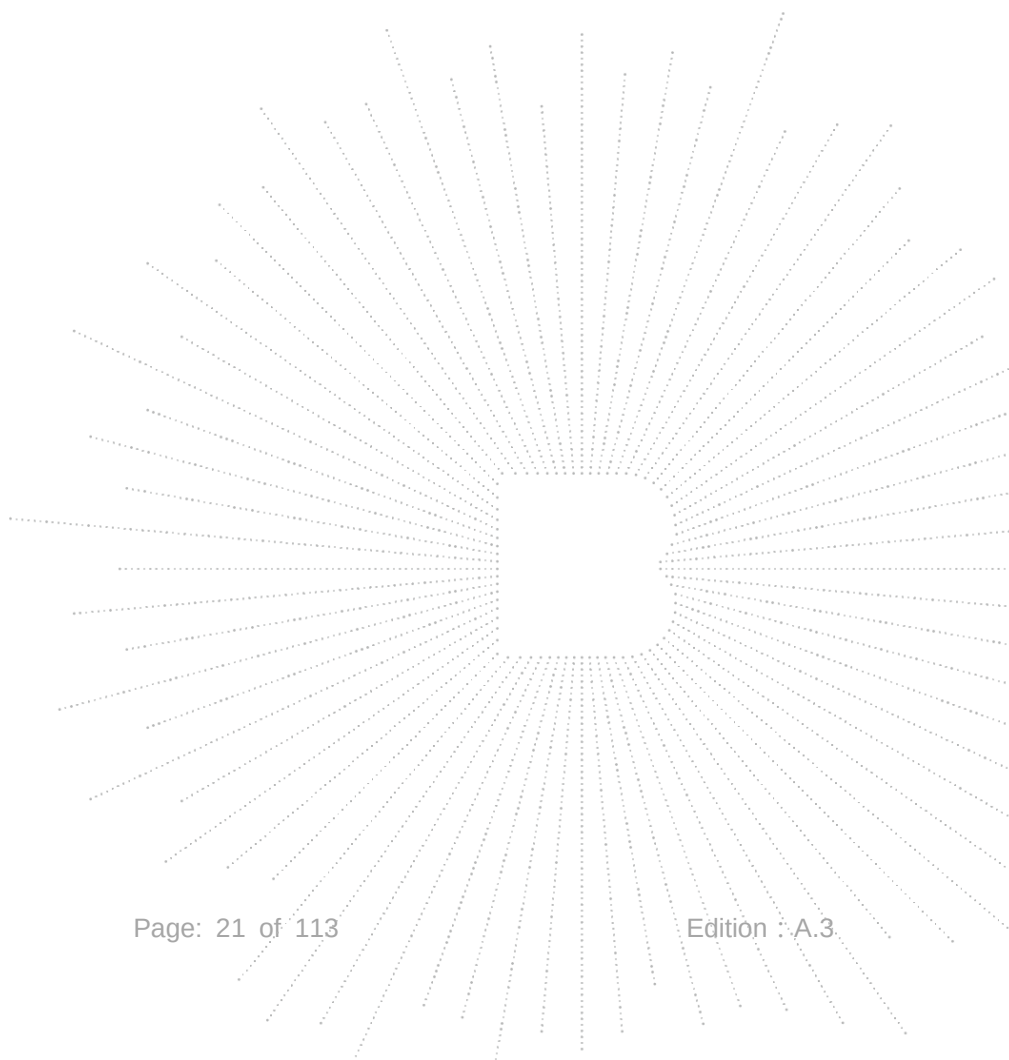
During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

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.

7.4 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.



7.5 Test Result

Below 30MHz

Temperature:	26°C	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 5	Polarization :	--

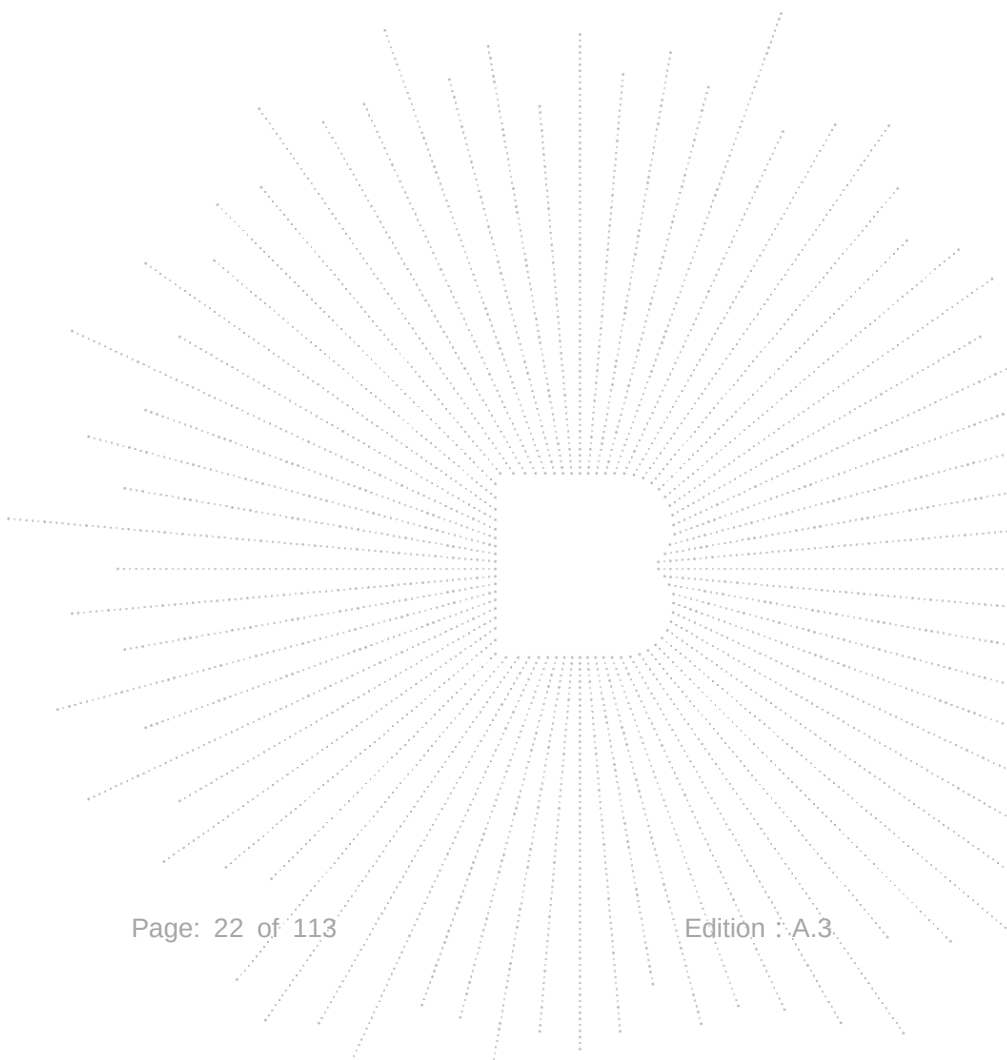
Freq. (MHz)	Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	State P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

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

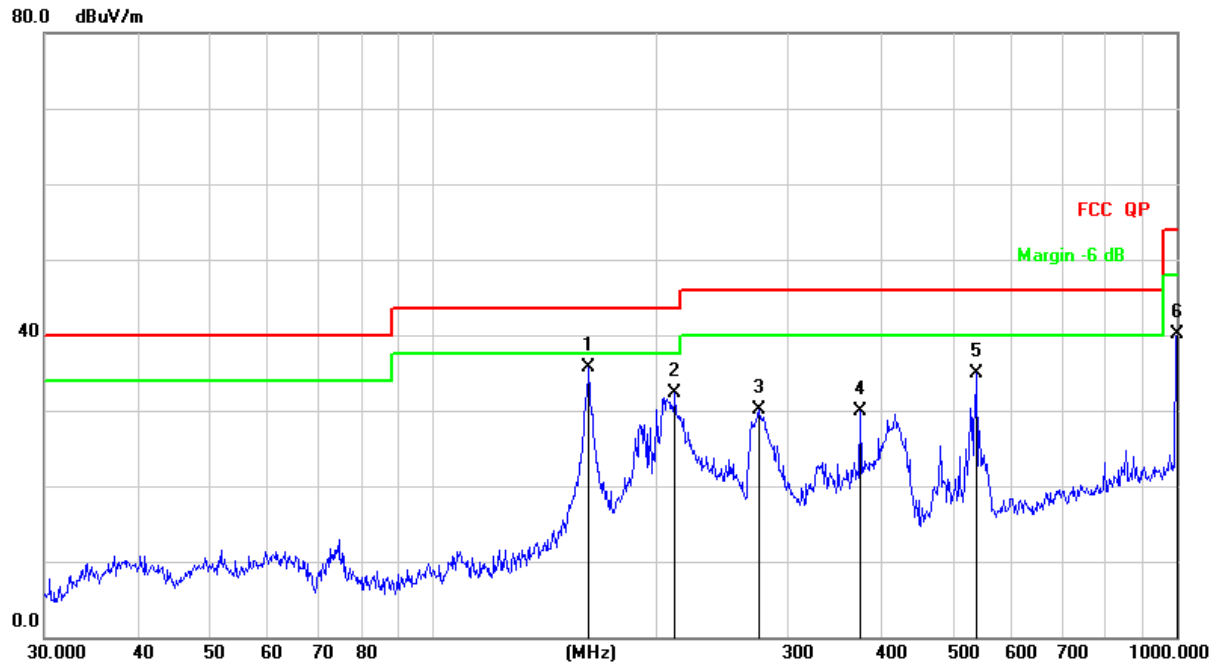
Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

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



Between 30MHz – 1GHz

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

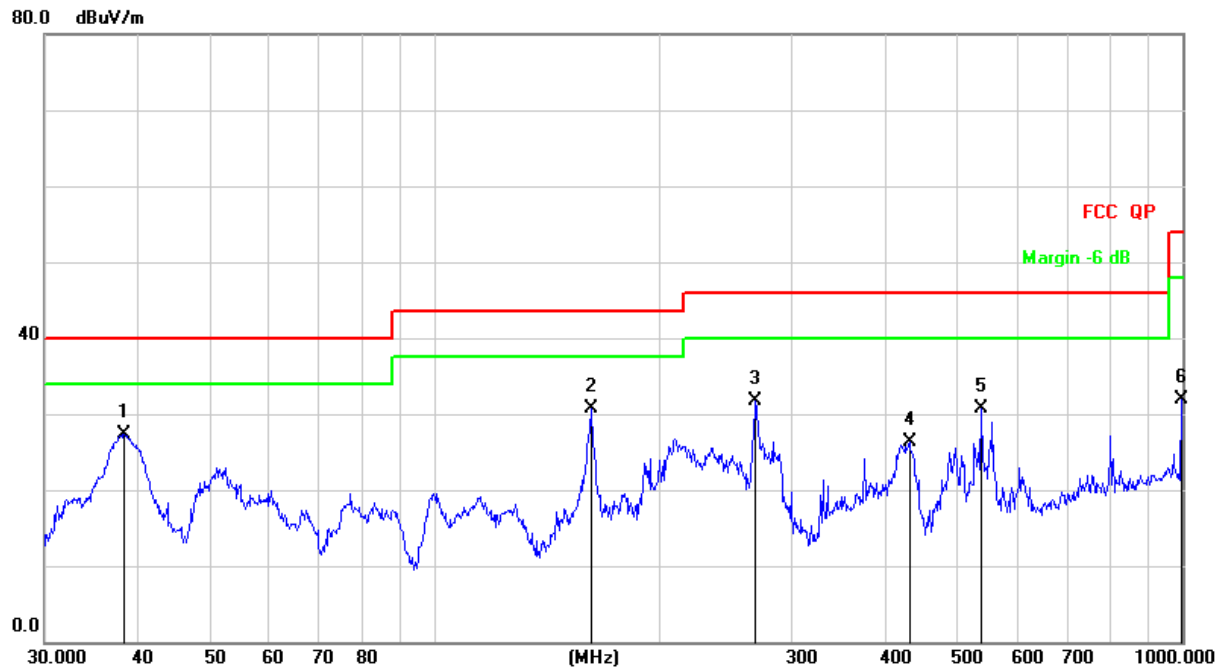


Remark:

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	*	162.0414	54.48	-18.73	35.75	43.50	-7.75	QP
2		211.5265	48.35	-16.03	32.32	43.50	-11.18	QP
3		274.1939	44.45	-14.40	30.05	46.00	-15.95	QP
4		375.9385	41.56	-11.64	29.92	46.00	-16.08	QP
5		537.5891	42.88	-7.99	34.89	46.00	-11.11	QP
6		1000.000	40.99	-0.81	40.18	54.00	-13.82	QP

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



Remark:

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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dB/m	dB	
1	*	38.3462	43.06	-15.72	27.34	40.00	-12.66	QP
2		161.4742	49.40	-18.77	30.63	43.50	-12.87	QP
3		268.4853	46.19	-14.58	31.61	46.00	-14.39	QP
4		431.0316	36.73	-10.39	26.34	46.00	-19.66	QP
5		537.5891	38.62	-7.99	30.63	46.00	-15.37	QP
6		996.4996	32.74	-0.83	31.91	54.00	-22.09	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.1G) - 802.11a
-------------	--------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.135	61.48	5.94	35.40	44.00	58.82	68.20	-9.38	PK
V	4434.135	43.42	5.94	35.40	44.00	40.76	54.00	-13.24	AV
V	10360.031	62.56	8.46	39.75	44.50	66.27	74.00	-7.73	PK
V	10360.031	43.45	8.46	39.75	44.50	47.16	54.00	-6.84	AV
V	15540.061	60.96	10.12	38.80	44.10	65.78	74.00	-8.22	PK
V	15540.061	43.94	10.12	38.80	42.70	50.16	54.00	-3.84	AV
H	4434.059	63.30	5.94	35.18	44.00	60.42	68.20	-7.78	PK
H	4434.059	43.25	5.94	35.18	44.00	40.37	54.00	-13.63	AV
H	10360.016	54.21	8.46	38.71	44.50	56.88	74.00	-17.12	PK
H	10360.016	43.97	8.46	38.71	44.50	46.64	54.00	-7.36	AV
H	15540.045	53.69	10.12	38.38	44.10	58.09	74.00	-15.91	PK
H	15540.045	44.02	10.12	38.38	44.10	48.42	54.00	-5.58	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.125	63.20	6.48	36.35	44.05	61.98	74.00	-12.02	PK
V	4592.125	43.22	6.48	36.35	44.05	42.00	54.00	-12.00	AV
V	10400.157	63.77	8.47	37.88	44.51	65.61	68.20	-2.59	PK
V	10400.157	43.62	8.47	37.88	44.51	45.46	54.00	-8.54	AV
V	15600.067	64.74	10.12	38.80	44.10	69.56	74.00	-4.44	PK
V	15600.067	43.69	10.12	38.80	42.70	49.91	54.00	-4.09	AV
H	4592.087	60.28	6.48	36.37	44.05	59.08	74.00	-14.92	PK
H	4592.087	43.08	6.48	36.37	44.05	41.88	54.00	-12.12	AV
H	10400.188	52.21	8.47	38.64	44.50	54.82	68.20	-13.38	PK
H	10400.188	42.79	8.47	38.64	44.50	45.40	54.00	-8.60	AV
H	15600.120	53.18	10.12	38.38	44.10	57.58	74.00	-16.42	PK
H	15600.120	40.78	10.12	38.38	44.10	45.18	54.00	-8.82	AV
High Channel (5240 MHz)-Above 1G									
V	4739.029	62.05	7.10	37.24	43.50	62.89	74.00	-11.11	PK
V	4739.029	43.01	7.10	37.24	43.50	43.85	54.00	-10.15	AV
V	10480.095	60.84	8.46	37.68	44.50	62.48	68.20	-5.72	PK
V	10480.095	43.36	8.46	37.68	44.50	45.00	54.00	-9.00	AV
V	15720.115	61.28	10.12	38.80	44.10	66.10	74.00	-7.90	PK
V	15720.115	43.01	10.12	38.80	42.70	49.23	54.00	-4.77	AV
H	4739.175	60.27	7.10	37.24	43.50	61.11	74.00	-12.89	PK
H	4739.175	43.54	7.10	37.24	43.50	44.38	54.00	-9.62	AV
H	10480.047	52.06	8.46	38.57	44.50	54.59	68.20	-13.61	PK
H	10480.047	41.87	8.46	38.57	44.50	44.40	54.00	-9.60	AV
H	15720.062	50.02	10.12	38.38	44.10	54.42	74.00	-19.58	PK
H	15720.062	42.61	10.12	38.38	44.10	47.01	54.00	-6.99	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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.

The worst case is Antenna A.

Test Mode :	TX(5.1G) - 802.11n-HT20
-------------	-------------------------

Polar (H/V)	Frequency	Meter Reading	Cable loss	Antenn a Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
V	4434.105	62.54	5.94	35.40	44.00	59.88	68.20	-8.32	PK
V	4434.105	43.83	5.94	35.40	44.00	41.17	54.00	-12.83	AV
V	10360.016	61.88	8.46	39.75	44.50	65.59	68.20	-2.61	PK
V	10360.016	43.01	8.46	39.75	44.50	46.72	54.00	-7.28	AV
V	15540.070	62.04	10.12	38.80	44.10	66.86	74.00	-7.14	PK
V	15540.070	43.15	10.12	38.80	42.70	49.37	54.00	-4.63	AV
H	4434.012	62.08	5.94	35.18	44.00	59.20	68.20	-9.00	PK
H	4434.012	43.39	5.94	35.18	44.00	40.51	54.00	-13.49	AV
H	10360.109	52.28	8.46	38.71	44.50	54.95	68.20	-13.25	PK
H	10360.109	43.22	8.46	38.71	44.50	45.89	54.00	-8.11	AV
H	15540.114	54.66	10.12	38.38	44.10	59.06	74.00	-14.94	PK
H	15540.114	43.19	10.12	38.38	44.10	47.59	54.00	-6.41	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.150	62.67	6.48	36.35	44.05	61.45	74.00	-12.55	PK
V	4592.150	44.00	6.48	36.35	44.05	42.78	54.00	-11.22	AV
V	10400.144	64.06	8.47	37.88	44.51	65.90	68.20	-2.30	PK
V	10400.144	43.60	8.47	37.88	44.51	45.44	54.00	-8.56	AV
V	15600.017	60.37	10.12	38.80	44.10	65.19	74.00	-8.81	PK
V	15600.017	43.42	10.12	38.80	42.70	49.64	54.00	-4.36	AV
H	4592.022	62.88	6.48	36.37	44.05	61.68	74.00	-12.32	PK
H	4592.022	43.68	6.48	36.37	44.05	42.48	54.00	-11.52	AV
H	10400.101	53.21	8.47	38.64	44.50	55.82	68.20	-12.38	PK
H	10400.101	42.99	8.47	38.64	44.50	45.60	54.00	-8.40	AV
H	15600.023	52.47	10.12	38.38	44.10	56.87	74.00	-17.13	PK
H	15600.023	41.65	10.12	38.38	44.10	46.05	54.00	-7.95	AV
High Channel (5240 MHz)-Above 1G									
V	4739.152	63.85	7.10	37.24	43.50	64.69	74.00	-9.31	PK
V	4739.152	43.82	7.10	37.24	43.50	44.66	54.00	-9.34	AV
V	10480.066	61.02	8.46	37.68	44.50	62.66	68.20	-5.54	PK
V	10480.066	43.71	8.46	37.68	44.50	45.35	54.00	-8.65	AV
V	15720.198	60.36	10.12	38.80	44.10	65.18	74.00	-8.82	PK
V	15720.198	43.44	10.12	38.80	42.70	49.66	54.00	-4.34	AV
H	4739.068	63.55	7.10	37.24	43.50	64.39	74.00	-9.61	PK
H	4739.068	43.36	7.10	37.24	43.50	44.20	54.00	-9.80	AV
H	10480.144	51.11	8.46	38.57	44.50	53.64	68.20	-14.56	PK
H	10480.144	42.47	8.46	38.57	44.50	45.00	54.00	-9.00	AV
H	15720.073	54.83	10.12	38.38	44.10	59.23	74.00	-14.77	PK
H	15720.073	41.47	10.12	38.38	44.10	45.87	54.00	-8.13	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

Test Mode :	TX(5.1G) - 802.11n-HT40
-------------	-------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenn a Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5190 MHz)-Above 1G									
V	4434.098	61.89	5.94	35.40	44.00	59.23	74.00	-14.77	PK
V	4434.098	43.33	5.94	35.40	44.00	40.67	54.00	-13.33	AV
V	10380.197	62.51	8.46	39.75	44.50	66.22	68.20	-1.98	PK
V	10380.197	43.47	8.46	39.75	44.50	47.18	54.00	-6.82	AV
V	15570.005	64.08	10.12	38.80	44.10	68.90	74.00	-5.10	PK
V	15570.005	43.85	10.12	38.80	42.70	50.07	54.00	-3.93	AV
H	4434.041	64.61	5.94	35.18	44.00	61.73	74.00	-12.27	PK
H	4434.041	43.43	5.94	35.18	44.00	40.55	54.00	-13.45	AV
H	10380.128	50.31	8.46	38.71	44.50	52.98	68.20	-15.22	PK
H	10380.128	42.11	8.46	38.71	44.50	44.78	54.00	-9.22	AV
H	15570.140	53.31	10.12	38.38	44.10	57.71	74.00	-16.29	PK
H	15570.140	42.43	10.12	38.38	44.10	46.83	54.00	-7.17	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.097	64.35	6.48	36.35	44.05	63.13	74.00	-10.87	PK
V	4739.097	43.21	6.48	36.35	44.05	41.99	54.00	-12.01	AV
V	10460.100	63.20	8.47	37.88	44.51	65.04	68.20	-3.16	PK
V	10460.100	43.55	8.47	37.88	44.51	45.39	54.00	-8.61	AV
V	15690.050	63.42	10.12	38.80	44.10	68.24	74.00	-5.76	PK
V	15690.050	43.41	10.12	38.80	42.70	49.63	54.00	-4.37	AV
H	4739.097	60.56	6.48	36.37	44.05	59.36	74.00	-14.64	PK
H	4739.097	43.18	6.48	36.37	44.05	41.98	54.00	-12.02	AV
H	10460.009	53.53	8.47	38.64	44.50	56.14	68.20	-12.06	PK
H	10460.009	44.98	8.47	38.64	44.50	47.59	54.00	-6.41	AV
H	15690.055	52.87	10.12	38.38	44.10	57.27	74.00	-16.73	PK
H	15690.055	41.98	10.12	38.38	44.10	46.38	54.00	-7.62	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

Test Mode :	TX(5.1G) - 802.11ac-HT20
-------------	--------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.011	62.22	5.94	35.40	44.00	59.56	68.20	-8.64	PK
V	4434.011	43.06	5.94	35.40	44.00	40.40	54.00	-13.60	AV
V	10360.195	62.69	8.46	39.75	44.50	66.40	68.20	-1.80	PK
V	10360.195	43.38	8.46	39.75	44.50	47.09	54.00	-6.91	AV
V	15540.025	63.13	10.12	38.80	44.10	67.95	74.00	-6.05	PK
V	15540.025	43.49	10.12	38.80	42.70	49.71	54.00	-4.29	AV
H	4434.115	63.93	5.94	35.18	44.00	61.05	68.20	-7.15	PK
H	4434.115	43.56	5.94	35.18	44.00	40.68	54.00	-13.32	AV
H	10360.032	51.75	8.46	38.71	44.50	54.42	68.20	-13.78	PK
H	10360.032	40.90	8.46	38.71	44.50	43.57	54.00	-10.43	AV
H	15540.026	53.51	10.12	38.38	44.10	57.91	74.00	-16.09	PK
H	15540.026	43.52	10.12	38.38	44.10	47.92	54.00	-6.08	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.075	64.61	6.48	36.35	44.05	63.39	74.00	-10.61	PK
V	4592.075	43.29	6.48	36.35	44.05	42.07	54.00	-11.93	AV
V	10400.100	61.59	8.47	37.88	44.51	63.43	68.20	-4.77	PK
V	10400.100	43.14	8.47	37.88	44.51	44.98	54.00	-9.02	AV
V	15600.099	60.08	10.12	38.80	44.10	64.90	74.00	-9.10	PK
V	15600.099	43.70	10.12	38.80	42.70	49.92	54.00	-4.08	AV
H	4592.043	64.23	6.48	36.37	44.05	63.03	74.00	-10.97	PK
H	4592.043	43.80	6.48	36.37	44.05	42.60	54.00	-11.40	AV
H	10400.070	52.78	8.47	38.64	44.50	55.39	68.20	-12.81	PK
H	10400.070	42.58	8.47	38.64	44.50	45.19	54.00	-8.81	AV
H	15600.005	54.74	10.12	38.38	44.10	59.14	74.00	-14.86	PK
H	15600.005	43.75	10.12	38.38	44.10	48.15	54.00	-5.85	AV
High Channel (5240 MHz)-Above 1G									
V	4739.137	64.66	7.10	37.24	43.50	65.50	74.00	-8.50	PK
V	4739.137	43.24	7.10	37.24	43.50	44.08	54.00	-9.92	AV
V	10480.151	62.42	8.46	37.68	44.50	64.06	68.20	-4.14	PK
V	10480.151	43.50	8.46	37.68	44.50	45.14	54.00	-8.86	AV
V	15720.094	61.29	10.12	38.80	44.10	66.11	74.00	-7.89	PK
V	15720.094	43.69	10.12	38.80	42.70	49.91	54.00	-4.09	AV
H	4739.052	64.92	7.10	37.24	43.50	65.76	74.00	-8.24	PK
H	4739.052	43.73	7.10	37.24	43.50	44.57	54.00	-9.43	AV
H	10480.012	54.05	8.46	38.57	44.50	56.58	68.20	-11.62	PK
H	10480.012	43.91	8.46	38.57	44.50	46.44	54.00	-7.56	AV
H	15720.090	54.11	10.12	38.38	44.10	58.51	74.00	-15.49	PK
H	15720.090	44.91	10.12	38.38	44.10	49.31	54.00	-4.69	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

Test Mode :	TX(5.1G) - 802.11ac-HT40
-------------	--------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBUV)	Cable loss (dB)	Antenn a Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector Type
Low Channel (5190 MHz)-Above 1G									
V	4434.033	62.19	5.94	35.40	44.00	59.53	74.00	-14.47	PK
V	4434.033	43.18	5.94	35.40	44.00	40.52	54.00	-13.48	AV
V	10380.050	63.05	8.46	39.75	44.50	66.76	68.20	-1.44	PK
V	10380.050	43.92	8.46	39.75	44.50	47.63	54.00	-6.37	AV
V	15570.064	60.60	10.12	38.80	44.10	65.42	74.00	-8.58	PK
V	15570.064	43.71	10.12	38.80	42.70	49.93	54.00	-4.07	AV
H	4434.082	64.18	5.94	35.18	44.00	61.30	74.00	-12.70	PK
H	4434.082	43.91	5.94	35.18	44.00	41.03	54.00	-12.97	AV
H	10380.134	53.52	8.46	38.71	44.50	56.19	68.20	-12.01	PK
H	10380.134	40.16	8.46	38.71	44.50	42.83	54.00	-11.17	AV
H	15570.180	52.23	10.12	38.38	44.10	56.63	74.00	-17.37	PK
H	15570.180	44.19	10.12	38.38	44.10	48.59	54.00	-5.41	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.089	61.12	6.48	36.35	44.05	59.90	74.00	-14.10	PK
V	4739.089	43.67	6.48	36.35	44.05	42.45	54.00	-11.55	AV
V	10460.095	60.28	8.47	37.88	44.51	62.12	68.20	-6.08	PK
V	10460.095	43.99	8.47	37.88	44.51	45.83	54.00	-8.17	AV
V	15690.136	64.09	10.12	38.80	44.10	68.91	74.00	-5.09	PK
V	15690.136	43.65	10.12	38.80	42.70	49.87	54.00	-4.13	AV
H	4739.063	61.58	6.48	36.37	44.05	60.38	74.00	-13.62	PK
H	4739.063	43.04	6.48	36.37	44.05	41.84	54.00	-12.16	AV
H	10460.029	52.35	8.47	38.64	44.50	54.96	68.20	-13.24	PK
H	10460.029	40.18	8.47	38.64	44.50	42.79	54.00	-11.21	AV
H	15690.032	52.73	10.12	38.38	44.10	57.13	74.00	-16.87	PK
H	15690.032	42.67	10.12	38.38	44.10	47.07	54.00	-6.93	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

Test Mode :	TX(5.1G) - 802.11 AC80
-------------	------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBUV)	Cable loss (dB)	Antenn a Factor dB/m	Preamp Factor (dB)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector Type
(5210 MHz)-Above 1G									
V	4434.025	61.94	5.94	35.40	44.00	59.28	74.00	-14.72	PK
V	4434.025	43.97	5.94	35.40	44.00	41.31	54.00	-12.69	AV
V	10420.066	60.20	8.46	39.75	44.50	63.91	68.20	-4.29	PK
V	10420.066	43.02	8.46	39.75	44.50	46.73	54.00	-7.27	AV
V	15630.045	63.40	10.12	38.80	44.10	68.22	74.00	-5.78	PK
V	15630.045	43.07	10.12	38.80	42.70	49.29	54.00	-4.71	AV
H	4434.133	62.03	5.94	35.18	44.00	59.15	74.00	-14.85	PK
H	4434.133	43.63	5.94	35.18	44.00	40.75	54.00	-13.25	AV
H	10420.016	53.56	8.46	38.71	44.50	56.23	68.20	-11.97	PK
H	10420.016	40.51	8.46	38.71	44.50	43.18	54.00	-10.82	AV
H	15630.086	51.49	10.12	38.38	44.10	55.89	74.00	-18.11	PK
H	15630.086	43.72	10.12	38.38	44.10	48.12	54.00	-5.88	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

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

Polar (H/V)	Frequency	Meter Reading	Cable loss	Antenn a Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
V	4679.124	60.97	5.94	35.40	44.00	58.31	74.00	-15.69	PK
V	4679.124	43.61	5.94	35.40	44.00	40.95	54.00	-13.05	AV
V	11490.131	60.02	8.46	39.75	44.50	63.73	68.20	-4.47	PK
V	11490.131	43.95	8.46	39.75	44.50	47.66	54.00	-6.34	AV
V	17235.011	60.90	10.12	38.80	44.10	65.72	74.00	-8.28	PK
V	17235.011	43.24	10.12	38.80	42.70	49.46	54.00	-4.54	AV
H	4679.128	64.32	5.94	35.18	44.00	61.44	74.00	-12.56	PK
H	4679.128	44.00	5.94	35.18	44.00	41.12	54.00	-12.88	AV
H	11490.004	54.32	8.46	38.71	44.50	56.99	68.20	-11.21	PK
H	11490.004	42.90	8.46	38.71	44.50	45.57	54.00	-8.43	AV
H	17235.075	52.38	10.12	38.38	44.10	56.78	74.00	-17.22	PK
H	17235.075	40.41	10.12	38.38	44.10	44.81	54.00	-9.19	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.054	64.33	6.48	36.35	44.05	63.11	74.00	-10.89	PK
V	4592.054	43.12	6.48	36.35	44.05	41.90	54.00	-12.10	AV
V	11570.161	62.66	8.47	37.88	44.51	64.50	68.20	-3.70	PK
V	11570.161	43.63	8.47	37.88	44.51	45.47	54.00	-8.53	AV
V	17355.039	64.12	10.12	38.80	44.10	68.94	74.00	-5.06	PK
V	17355.039	43.59	10.12	38.80	42.70	49.81	54.00	-4.19	AV
H	4592.017	62.36	6.48	36.37	44.05	61.16	74.00	-12.84	PK
H	4592.017	43.99	6.48	36.37	44.05	42.79	54.00	-11.21	AV
H	11570.168	53.42	8.47	38.64	44.50	56.03	68.20	-12.17	PK
H	11570.168	42.84	8.47	38.64	44.50	45.45	54.00	-8.55	AV
H	17355.072	53.11	10.12	38.38	44.10	57.51	74.00	-16.49	PK
H	17355.072	43.72	10.12	38.38	44.10	48.12	54.00	-5.88	AV
High Channel (5825 MHz)-Above 1G									
V	6039.198	60.19	7.10	37.24	43.50	61.03	68.20	-7.17	PK
V	6039.198	43.70	7.10	37.24	43.50	44.54	54.00	-9.46	AV
V	11650.180	62.46	8.46	37.68	44.50	64.10	74.00	-9.90	PK
V	11650.180	43.97	8.46	37.68	44.50	45.61	54.00	-8.39	AV
V	17475.161	63.74	10.12	38.80	44.10	68.56	68.20	0.36	PK
V	17475.161	43.67	10.12	38.80	42.70	49.89	54.00	-4.11	AV
H	6039.176	61.20	7.10	37.24	43.50	62.04	68.20	-6.16	PK
H	6039.176	43.56	7.10	37.24	43.50	44.40	54.00	-9.60	AV
H	11650.172	54.48	8.46	38.57	44.50	57.01	74.00	-16.99	PK
H	11650.172	41.61	8.46	38.57	44.50	44.14	54.00	-9.86	AV
H	17475.065	50.41	10.12	38.38	44.10	54.81	68.20	-13.39	PK
H	17475.065	44.92	10.12	38.38	44.10	49.32	54.00	-4.68	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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.

The Worst mode is Antenna B

Test Mode :	TX (5.8G) --802.11n-HT20
-------------	--------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenn a Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.179	61.44	5.94	35.40	44.00	58.78	74.00	-15.22	PK
V	4679.179	43.76	5.94	35.40	44.00	41.10	54.00	-12.90	AV
V	11490.013	62.53	8.46	39.75	44.50	66.24	68.20	-1.96	PK
V	11490.013	43.84	8.46	39.75	44.50	47.55	54.00	-6.45	AV
V	17235.020	61.30	10.12	38.80	44.10	66.12	74.00	-7.88	PK
V	17235.020	43.90	10.12	38.80	42.70	50.12	54.00	-3.88	AV
H	4679.084	63.02	5.94	35.18	44.00	60.14	74.00	-13.86	PK
H	4679.084	43.62	5.94	35.18	44.00	40.74	54.00	-13.26	AV
H	11490.016	52.63	8.46	38.71	44.50	55.30	68.20	-12.90	PK
H	11490.016	40.76	8.46	38.71	44.50	43.43	54.00	-10.57	AV
H	17235.133	51.57	10.12	38.38	44.10	55.97	74.00	-18.03	PK
H	17235.133	40.36	10.12	38.38	44.10	44.76	54.00	-9.24	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.120	64.06	6.48	36.35	44.05	62.84	74.00	-11.16	PK
V	4592.120	43.13	6.48	36.35	44.05	41.91	54.00	-12.09	AV
V	11570.144	62.57	8.47	37.88	44.51	64.41	68.20	-3.79	PK
V	11570.144	43.90	8.47	37.88	44.51	45.74	54.00	-8.26	AV
V	17355.100	63.63	10.12	38.80	44.10	68.45	74.00	-5.55	PK
V	17355.100	43.14	10.12	38.80	42.70	49.36	54.00	-4.64	AV
H	4592.129	63.13	6.48	36.37	44.05	61.93	74.00	-12.07	PK
H	4592.129	43.81	6.48	36.37	44.05	42.61	54.00	-11.39	AV
H	11570.133	53.15	8.47	38.64	44.50	55.76	68.20	-12.44	PK
H	11570.133	43.95	8.47	38.64	44.50	46.56	54.00	-7.44	AV
H	17355.094	53.62	10.12	38.38	44.10	58.02	74.00	-15.98	PK
H	17355.094	43.20	10.12	38.38	44.10	47.60	54.00	-6.40	AV
High Channel (5825 MHz)-Above 1G									
V	6039.039	63.23	7.10	37.24	43.50	64.07	68.20	-4.13	PK
V	6039.039	43.77	7.10	37.24	43.50	44.61	54.00	-9.39	AV
V	11650.131	63.96	8.46	37.68	44.50	65.60	74.00	-8.40	PK
V	11650.131	43.71	8.46	37.68	44.50	45.35	54.00	-8.65	AV
V	17475.118	64.82	10.12	38.80	44.10	69.64	68.20	1.44	PK
V	17475.118	43.04	10.12	38.80	42.70	49.26	54.00	-4.74	AV
H	6039.021	64.13	7.10	37.24	43.50	64.97	68.20	-3.23	PK
H	6039.021	43.43	7.10	37.24	43.50	44.27	54.00	-9.73	AV
H	11650.181	52.88	8.46	38.57	44.50	55.41	74.00	-18.59	PK
H	11650.181	44.91	8.46	38.57	44.50	47.44	54.00	-6.56	AV
H	17475.082	54.23	10.12	38.38	44.10	58.63	68.20	-9.57	PK
H	17475.082	40.95	10.12	38.38	44.10	45.35	54.00	-8.65	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

Test Mode :	TX (5.8G) -- 802.11n-HT40
-------------	---------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBUV)	Cable loss (dB)	Antenn a Factor dB/m	Preamp Factor (dB)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector Type
Low Channel (5755 MHz)-Above 1G									
V	4679.142	61.78	5.94	35.40	44.00	59.12	74.00	-14.88	PK
V	4679.142	43.65	5.94	35.40	44.00	40.99	54.00	-13.01	AV
V	11510.109	61.78	8.46	39.75	44.50	65.49	68.20	-2.71	PK
V	11510.109	43.10	8.46	39.75	44.50	46.81	54.00	-7.19	AV
V	17265.003	60.13	10.12	38.80	44.10	64.95	74.00	-9.05	PK
V	17265.003	43.04	10.12	38.80	42.70	49.26	54.00	-4.74	AV
H	4679.096	64.00	5.94	35.18	44.00	61.12	74.00	-12.88	PK
H	4679.096	43.11	5.94	35.18	44.00	40.23	54.00	-13.77	AV
H	11510.009	52.89	8.46	38.71	44.50	55.56	68.20	-12.64	PK
H	11510.009	41.15	8.46	38.71	44.50	43.82	54.00	-10.18	AV
H	17265.021	53.83	10.12	38.38	44.10	58.23	74.00	-15.77	PK
H	17265.021	43.25	10.12	38.38	44.10	47.65	54.00	-6.35	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.130	63.16	6.48	36.35	44.05	61.94	68.20	-6.26	PK
V	6039.130	43.62	6.48	36.35	44.05	42.40	54.00	-11.60	AV
V	11590.090	61.41	8.47	37.88	44.51	63.25	74.00	-10.75	PK
V	11590.090	43.93	8.47	37.88	44.51	45.77	54.00	-8.23	AV
V	17385.111	60.66	10.12	38.80	44.10	65.48	68.20	-2.72	PK
V	17385.111	43.15	10.12	38.80	42.70	49.37	54.00	-4.63	AV
H	6039.165	62.38	6.48	36.37	44.05	61.18	68.20	-7.02	PK
H	6039.165	43.86	6.48	36.37	44.05	42.66	54.00	-11.34	AV
H	11590.024	54.81	8.47	38.64	44.50	57.42	74.00	-16.58	PK
H	11590.024	43.34	8.47	38.64	44.50	45.95	54.00	-8.05	AV
H	17385.152	54.60	10.12	38.38	44.10	59.00	68.20	-9.20	PK
H	17385.152	40.05	10.12	38.38	44.10	44.45	54.00	-9.55	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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.

The Worst mode is Antenna A.

Test Mode :	TX (5.8G) --802.11ac-HT20
-------------	---------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBUV)	Cable loss (dB)	Antenn a Factor dB/m	Preamp Factor (dB)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.139	60.53	5.94	35.40	44.00	57.87	74.00	-16.13	PK
V	4679.139	43.21	5.94	35.40	44.00	40.55	54.00	-13.45	AV
V	11490.038	60.60	8.46	39.75	44.50	64.31	68.20	-3.89	PK
V	11490.038	43.42	8.46	39.75	44.50	47.13	54.00	-6.87	AV
V	17235.172	60.72	10.12	38.80	44.10	65.54	74.00	-8.46	PK
V	17235.172	43.51	10.12	38.80	42.70	49.73	54.00	-4.27	AV
H	4679.083	62.58	5.94	35.18	44.00	59.70	74.00	-14.30	PK
H	4679.083	43.80	5.94	35.18	44.00	40.92	54.00	-13.08	AV
H	11490.109	54.53	8.46	38.71	44.50	57.20	68.20	-11.00	PK
H	11490.109	44.82	8.46	38.71	44.50	47.49	54.00	-6.51	AV
H	17235.177	51.12	10.12	38.38	44.10	55.52	74.00	-18.48	PK
H	17235.177	44.27	10.12	38.38	44.10	48.67	54.00	-5.33	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.176	62.11	6.48	36.35	44.05	60.89	74.00	-13.11	PK
V	4592.176	43.52	6.48	36.35	44.05	42.30	54.00	-11.70	AV
V	11570.080	63.89	8.47	37.88	44.51	65.73	68.20	-2.47	PK
V	11570.080	43.37	8.47	37.88	44.51	45.21	54.00	-8.79	AV
V	17355.119	63.53	10.12	38.80	44.10	68.35	74.00	-5.65	PK
V	17355.119	43.28	10.12	38.80	42.70	49.50	54.00	-4.50	AV
H	4592.035	64.40	6.48	36.37	44.05	63.20	74.00	-10.80	PK
H	4592.035	43.61	6.48	36.37	44.05	42.41	54.00	-11.59	AV
H	11570.042	54.55	8.47	38.64	44.50	57.16	68.20	-11.04	PK
H	11570.042	44.95	8.47	38.64	44.50	47.56	54.00	-6.44	AV
H	17355.102	54.30	10.12	38.38	44.10	58.70	74.00	-15.30	PK
H	17355.102	44.65	10.12	38.38	44.10	49.05	54.00	-4.95	AV
High Channel (5825 MHz)-Above 1G									
V	6039.183	63.08	7.10	37.24	43.50	63.92	68.20	-4.28	PK
V	6039.183	43.47	7.10	37.24	43.50	44.31	54.00	-9.69	AV
V	11650.029	63.47	8.46	37.68	44.50	65.11	74.00	-8.89	PK
V	11650.029	43.95	8.46	37.68	44.50	45.59	54.00	-8.41	AV
V	17475.164	62.29	10.12	38.80	44.10	67.11	68.20	-1.09	PK
V	17475.164	43.70	10.12	38.80	42.70	49.92	54.00	-4.08	AV
H	6039.060	64.49	7.10	37.24	43.50	65.33	68.20	-2.87	PK
H	6039.060	43.71	7.10	37.24	43.50	44.55	54.00	-9.45	AV
H	11650.198	51.66	8.46	38.57	44.50	54.19	74.00	-19.81	PK
H	11650.198	41.34	8.46	38.57	44.50	43.87	54.00	-10.13	AV
H	17475.022	51.34	10.12	38.38	44.10	55.74	68.20	-12.46	PK
H	17475.022	40.46	10.12	38.38	44.10	44.86	54.00	-9.14	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

Test Mode :	TX (5.8G) -- 802.11ac-HT40
-------------	----------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBUV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector Type
Low Channel (5755 MHz)-Above 1G									
V	4679.004	62.68	5.94	35.40	44.00	60.02	74.00	-13.98	PK
V	4679.004	43.17	5.94	35.40	44.00	40.51	54.00	-13.49	AV
V	11510.138	61.38	8.46	39.75	44.50	65.09	68.20	-3.11	PK
V	11510.138	43.84	8.46	39.75	44.50	47.55	54.00	-6.45	AV
V	17265.067	60.92	10.12	38.80	44.10	65.74	74.00	-8.26	PK
V	17265.067	43.89	10.12	38.80	42.70	50.11	54.00	-3.89	AV
H	4679.198	62.35	5.94	35.18	44.00	59.47	74.00	-14.53	PK
H	4679.198	43.57	5.94	35.18	44.00	40.69	54.00	-13.31	AV
H	11510.044	53.35	8.46	38.71	44.50	56.02	68.20	-12.18	PK
H	11510.044	41.36	8.46	38.71	44.50	44.03	54.00	-9.97	AV
H	17265.018	53.62	10.12	38.38	44.10	58.02	74.00	-15.98	PK
H	17265.018	40.17	10.12	38.38	44.10	44.57	54.00	-9.43	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.093	62.22	6.48	36.35	44.05	61.00	68.20	-7.20	PK
V	6039.093	43.17	6.48	36.35	44.05	41.95	54.00	-12.05	AV
V	11590.034	63.20	8.47	37.88	44.51	65.04	74.00	-8.96	PK
V	11590.034	43.82	8.47	37.88	44.51	45.66	54.00	-8.34	AV
V	17385.187	60.44	10.12	38.80	44.10	65.26	68.20	-2.94	PK
V	17385.187	43.99	10.12	38.80	42.70	50.21	54.00	-3.79	AV
H	6039.028	63.03	6.48	36.37	44.05	61.83	68.20	-6.37	PK
H	6039.028	43.78	6.48	36.37	44.05	42.58	54.00	-11.42	AV
H	11590.133	54.09	8.47	38.64	44.50	56.70	74.00	-17.30	PK
H	11590.133	41.90	8.47	38.64	44.50	44.51	54.00	-9.49	AV
H	17385.167	50.15	10.12	38.38	44.10	54.55	68.20	-13.65	PK
H	17385.167	44.42	10.12	38.38	44.10	48.82	54.00	-5.18	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode

Test Mode :	TX(5.8G) - 802.11 AC80
-------------	------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBUV)	Cable loss (dB)	Antenn a Factor dB/m	Preamp Factor (dB)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector Type
(5775 MHz)-Above 1G									
V	4679.031	62.42	5.94	35.40	44.00	59.76	74.00	-14.24	PK
V	4679.031	43.97	5.94	35.40	44.00	41.31	54.00	-12.69	AV
V	11550.183	61.56	8.46	39.75	44.50	65.27	68.20	-2.93	PK
V	11550.183	43.20	8.46	39.75	44.50	46.91	54.00	-7.09	AV
V	17325.182	62.11	10.12	38.80	44.10	66.93	74.00	-7.07	PK
V	17325.182	43.29	10.12	38.80	42.70	49.51	54.00	-4.49	AV
H	4679.081	62.62	5.94	35.18	44.00	59.74	74.00	-14.26	PK
H	4679.081	43.27	5.94	35.18	44.00	40.39	54.00	-13.61	AV
H	11550.089	50.18	8.46	38.71	44.50	52.85	68.20	-15.35	PK
H	11550.089	41.68	8.46	38.71	44.50	44.35	54.00	-9.65	AV
H	17325.085	54.02	10.12	38.38	44.10	58.42	74.00	-15.58	PK
H	17325.085	41.06	10.12	38.38	44.10	45.46	54.00	-8.54	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G 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 is MIMO Mode.

8. POWER SPECTRAL DENSITY TEST

8.1 Block Diagram Of Test Setup



8.2 Limit

For the band 5.15-5.25 GHz,

(i) For an outdoor Wifi Repeater 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 Wifi Repeater 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 Wifi Repeaters 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 collocated 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.

8.3 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 $RBW (< 500 \text{ KHz})$ 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 $RBW (< 1 \text{ MHz})$ 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 $RBW=100 \text{ KHz}$ is available on nearly all spectrum analyzers.

8.4 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.

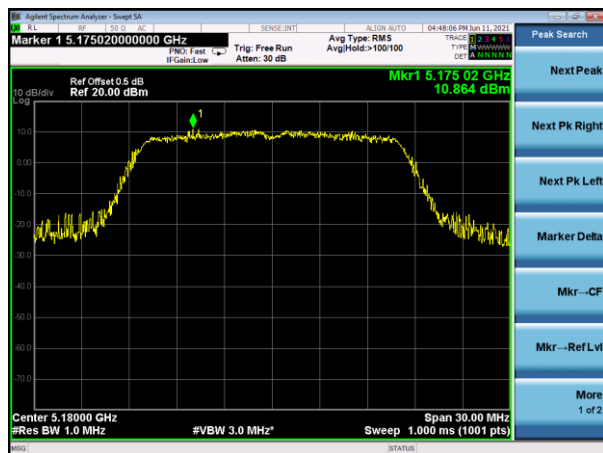
8.5 Test Result

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

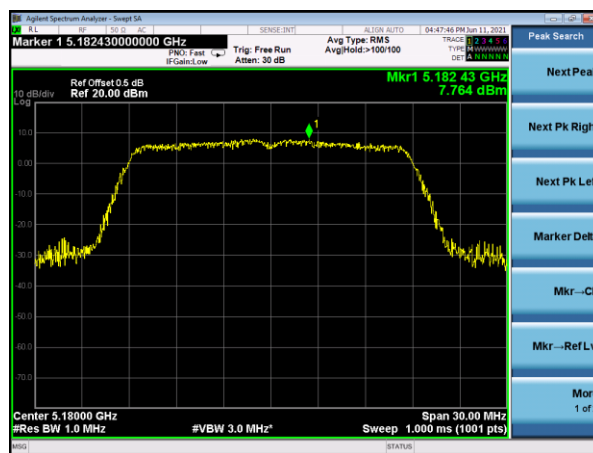
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

Mode	Frequency	Measured Power Density (dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	Total		
802.11 a	5180 MHz	10.864	8.243	/	17	PASS
	5200 MHz	10.362	8.048	/	17	PASS
	5240 MHz	10.148	7.763	/	17	PASS
802.11 n20	5180 MHz	7.764	6.831	10.333	17	PASS
	5200 MHz	7.577	6.294	9.993	17	PASS
	5240 MHz	7.460	6.338	9.945	17	PASS
802.11 n40	5190 MHz	6.916	5.096	9.111	17	PASS
	5230 MHz	6.257	4.292	8.395	17	PASS
802.11 ac20	5180 MHz	8.043	6.838	10.492	17	PASS
	5200 MHz	7.527	6.310	9.971	17	PASS
	5240 MHz	6.963	5.499	9.303	17	PASS
802.11 ac40	5190 MHz	7.167	5.613	9.469	17	PASS
	5230 MHz	7.108	4.355	8.956	17	PASS
802.11 AC80	5210 MHz	4.380	2.702	6.632	17	PASS

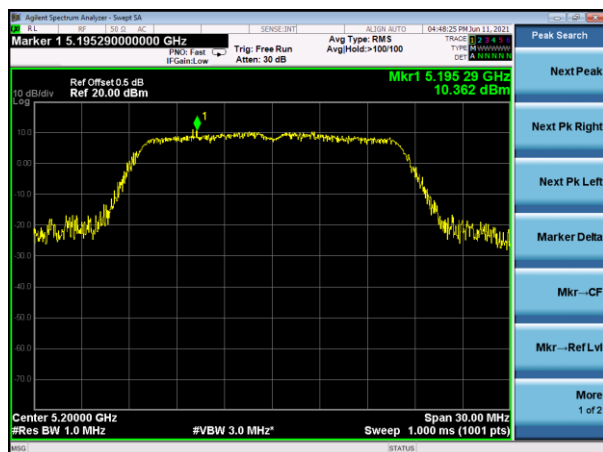
(802.11a) PSD plot on channel 36



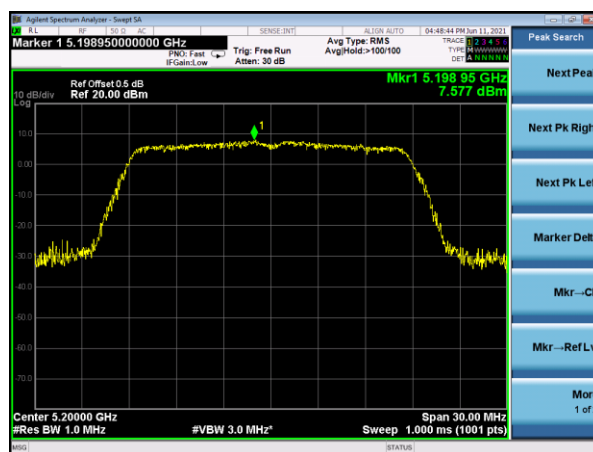
(802.11n20) PSD plot on channel 36



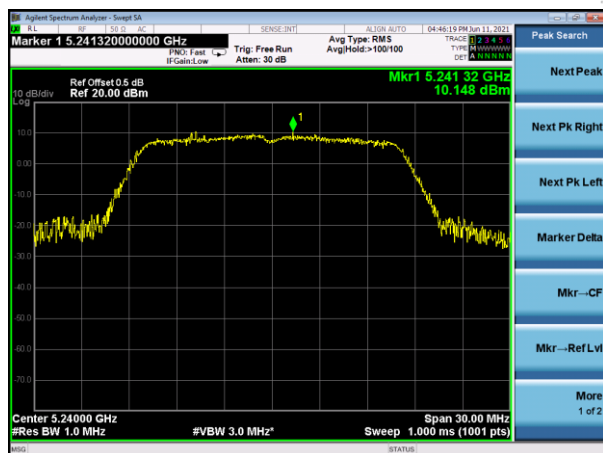
(802.11a) PSD plot on channel 40



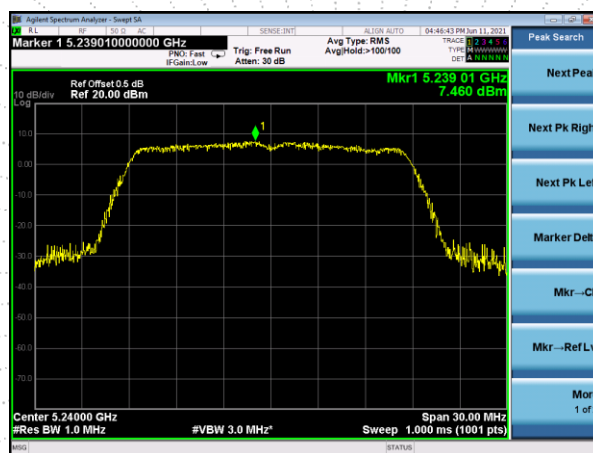
(802.11n20) PSD plot on channel 40



(802.11a) PSD plot on channel 48



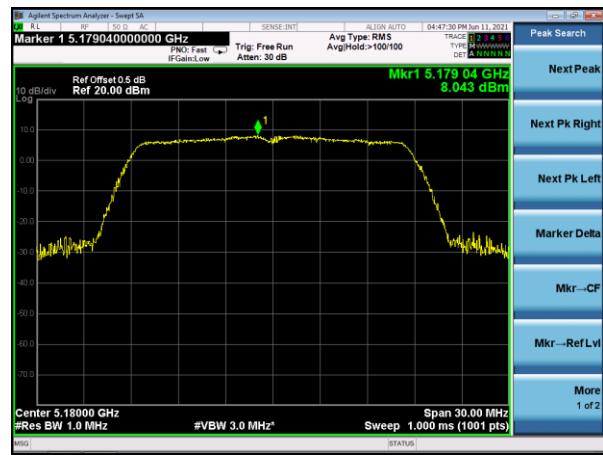
(802.11n20) PSD plot on channel 48



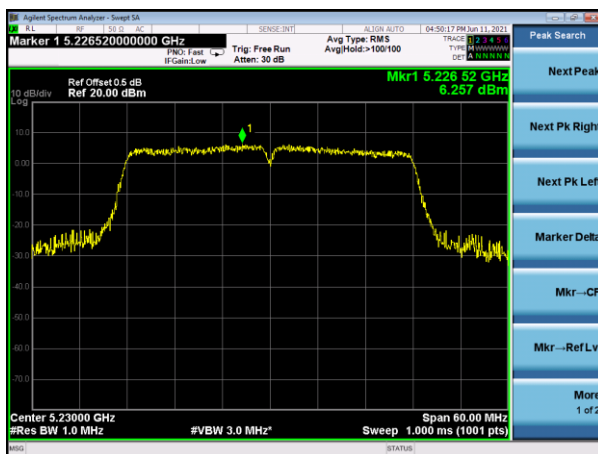
(802.11n40) PSD plot on channel 38



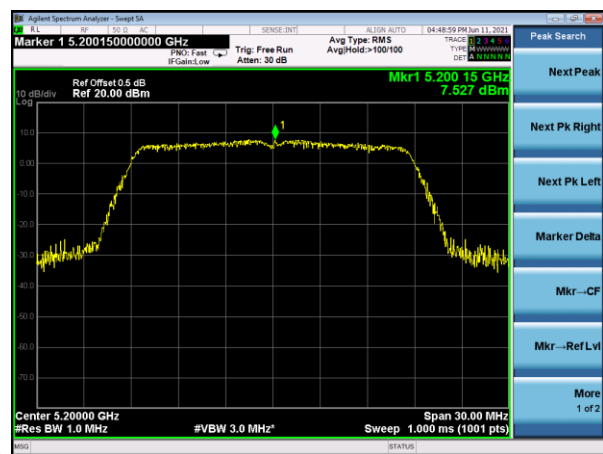
(802.11ac20) PSD plot on channel 36



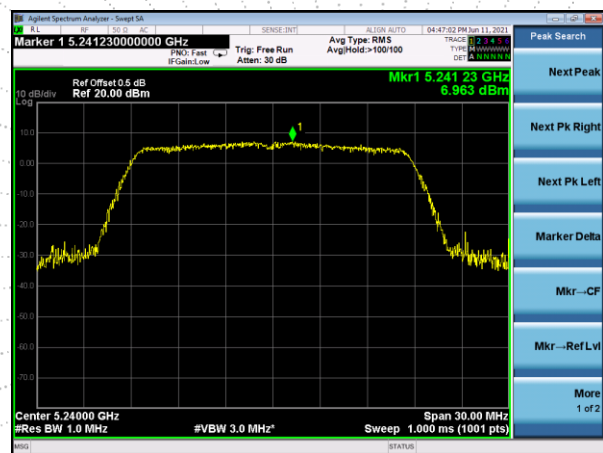
(802.11n40) PSD plot on channel 46



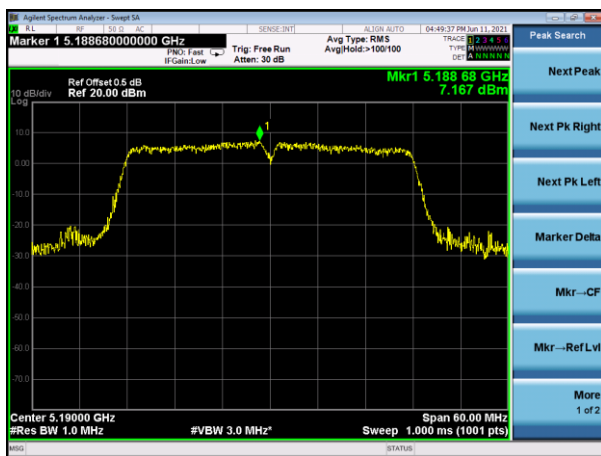
(802.11ac20) PSD plot on channel 40



(802.11ac20) PSD plot on channel 48



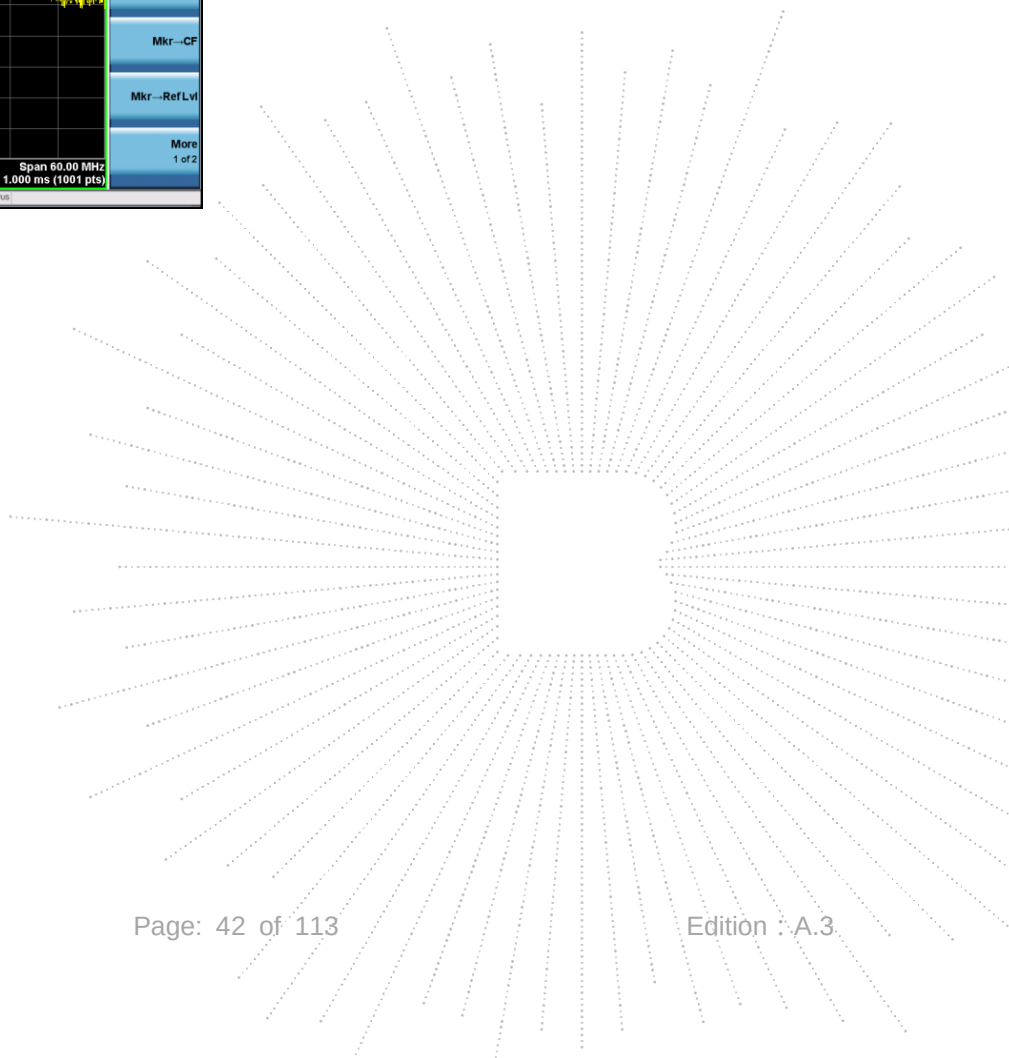
(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46

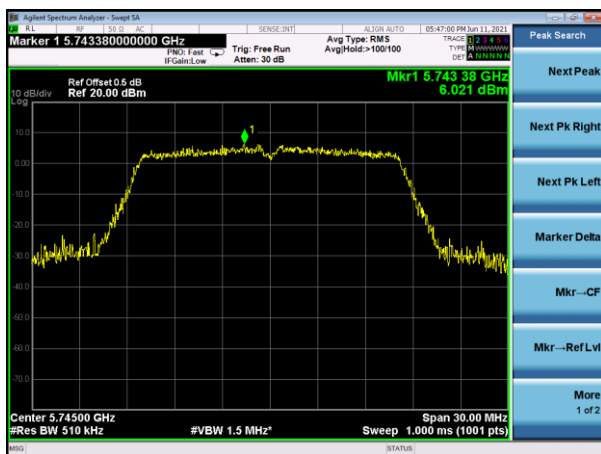


Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-3 (5745-5825MHz)		

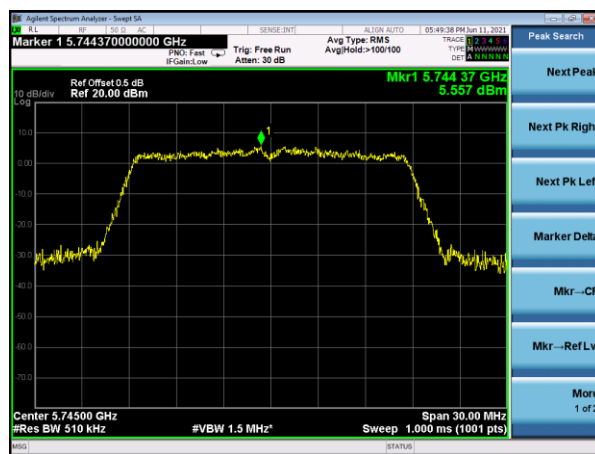
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

Mode	Frequency	Measured Power Density (dBm/500KHz)			Limit (dBm/500kHz)	Result
		ANT A	ANT B	Total		
802.11 a	5745 MHz	6.021	6.151	/	30	PASS
	5785 MHz	6.506	5.501	/	30	PASS
	5825 MHz	6.511	5.645	/	30	PASS
802.11 n20	5745 MHz	5.557	4.581	8.107	30	PASS
	5785 MHz	5.412	4.729	8.094	30	PASS
	5825 MHz	5.706	4.682	8.234	30	PASS
802.11 n40	5755 MHz	4.565	3.100	6.904	30	PASS
	5795 MHz	5.134	2.579	7.052	30	PASS
802.11 ac20	5745 MHz	5.345	4.990	8.181	30	PASS
	5785 MHz	5.446	4.395	7.963	30	PASS
	5825 MHz	6.230	4.803	8.585	30	PASS
802.11 ac40	5755 MHz	4.420	3.051	6.800	30	PASS
	5795 MHz	4.757	2.997	6.976	30	PASS
802.11 AC80	5775 MHz	2.051	0.943	4.543	30	PASS

(802.11a) PSD plot on channel 149



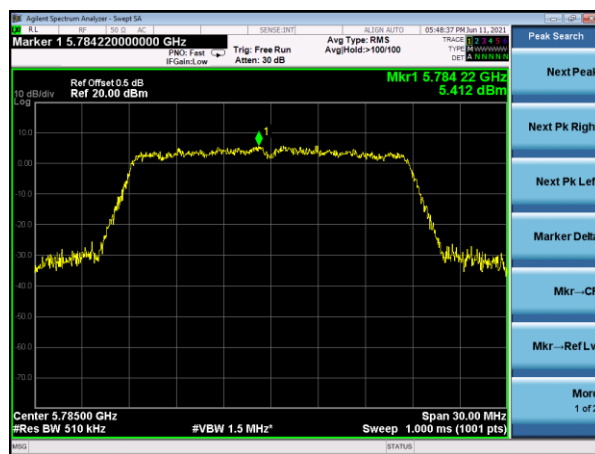
(802.11n20) PSD plot on channel 149



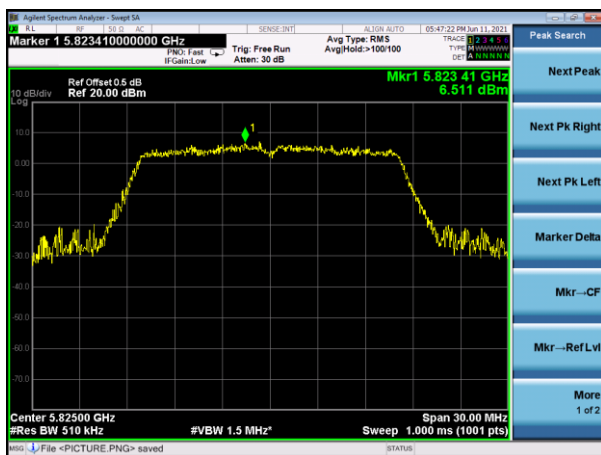
(802.11a) PSD plot on channel 157



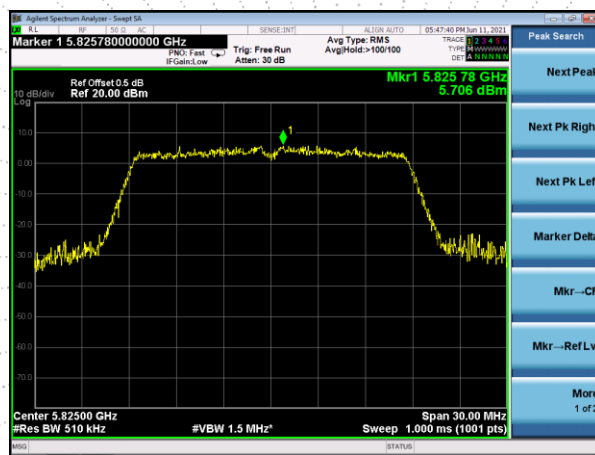
(802.11n20) PSD plot on channel 157



(802.11a) PSD plot on channel 165



(802.11n20) PSD plot on channel 165



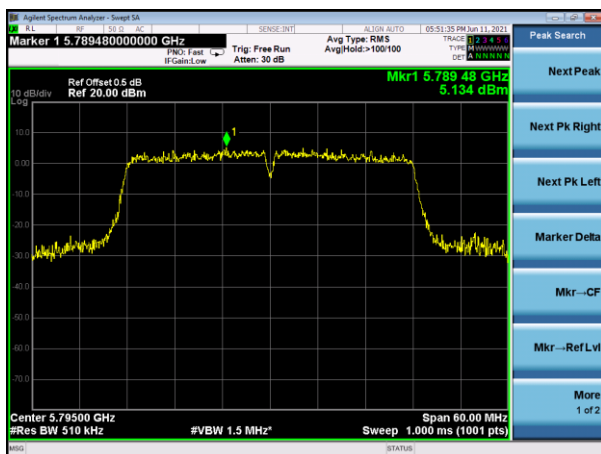
(802.11n40) PSD plot on channel 151



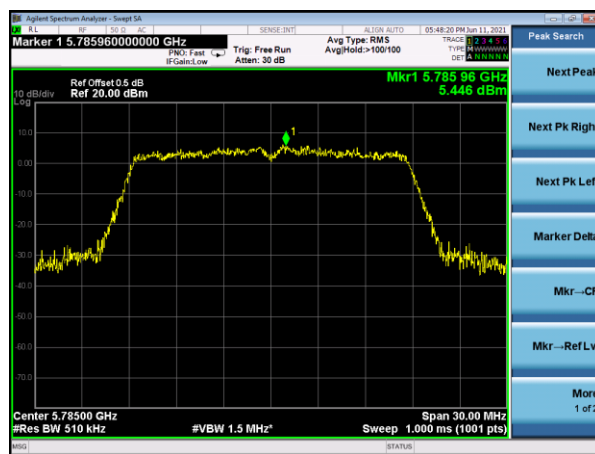
(802.11ac20) PSD plot on channel 149



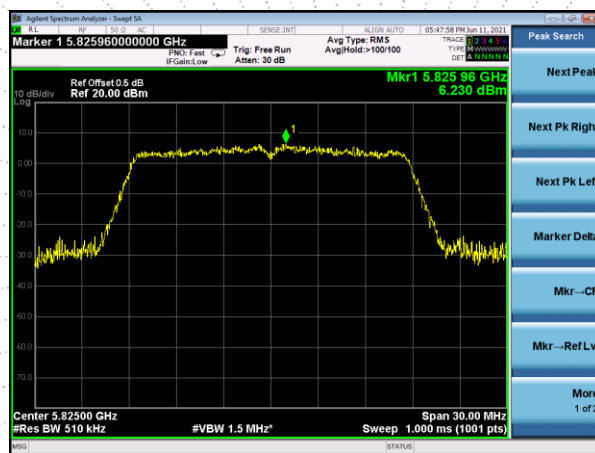
(802.11n40) PSD plot on channel 159



(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

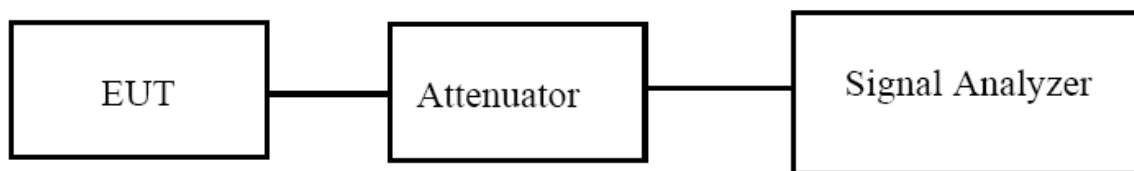


(802.11ac40) PSD plot on channel 159



9. 26DB & 6DB & 99% EMISSION BANDWIDTH

9.1 Block Diagram Of Test Setup



9.2 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.

9.3 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.

9.4 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.

9.5 Test Result

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

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

Mode	Channel	Frequency (MHz)	99% bandwidth(MHz)	26dB bandwidth (MHz)	Limit MHz	Result
			ANT A	ANT A		
802.11a	CH36	5180	16.816	19.99	N/A	Pass
	CH40	5200	16.739	20.09	N/A	Pass
	CH48	5240	16.812	23.08	N/A	Pass
802.11 n20	CH36	5180	17.682	20.14	N/A	Pass
	CH40	5200	17.650	20.23	N/A	Pass
	CH48	5240	17.691	20.22	N/A	Pass
802.11 n40	CH 38	5190	36.195	40.98	N/A	Pass
	CH 46	5230	36.267	41.33	N/A	Pass
802.11 ac20	CH36	5180	17.625	20.24	N/A	Pass
	CH40	5200	17.680	20.11	N/A	Pass
	CH48	5240	17.695	20.18	N/A	Pass
802.11 ac40	CH 38	5190	36.130	41.15	N/A	Pass
	CH 46	5230	36.202	41.37	N/A	Pass
802.11 AC80	CH 42	5210	75.230	90.77	N/A	Pass

Mode	Channel	Frequency (MHz)	99% bandwidth (MHz)	26dB bandwidth (MHz)	Limit MHz	Result
			ANT B	ANT B		
802.11a	CH36	5180	16.746	19.72	N/A	Pass
	CH40	5200	16.740	19.75	N/A	Pass
	CH48	5240	16.734	19.72	N/A	Pass
802.11 n20	CH36	5180	17.692	20.06	N/A	Pass
	CH40	5200	17.666	20.37	N/A	Pass
	CH48	5240	17.708	20.38	N/A	Pass
802.11 n40	CH 38	5190	36.160	41.24	N/A	Pass
	CH 46	5230	36.225	40.95	N/A	Pass
802.11 ac20	CH36	5180	17.670	20.26	N/A	Pass
	CH40	5200	17.706	20.25	N/A	Pass
	CH48	5240	17.683	20.26	N/A	Pass
802.11 ac40	CH 38	5190	36.119	40.90	N/A	Pass
	CH 46	5230	36.249	41.20	N/A	Pass
802.11 AC80	CH 42	5210	75.230	81.14	N/A	Pass

