

TEST REPORT

Report No.: BCTC2011000487-4E

Applicant: Privacy Labs, Inc.

Product Name: HELM

Model/Type
reference: 256G

Tested Date: 2020-11-27 to 2021-01-13

Issued Date: 2021-01-13

Shenzhen BCTC Testing Co., Ltd.



FCC ID:2AYVZ256G

Product Name: HELM
Trademark: N/A
Model/Type reference: 256G
512G, 1TB
Prepared For: Privacy Labs, Inc.
Address: 5242 148th Ave SE Bellevue, WA 98006 USA
Manufacturer: Shenzhen Vamrs Technology Co., Ltd.
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Sample Received Date: 2020-11-27
Sample tested Date: 2020-11-27 to 2021-01-13
Issue Date: 2021-01-13
Report No.: BCTC2011000487-4E
FCC Part15 15.407
ANSI C63.10-2013
Test Standards KDB 662911 D01 v02r01
KDB 789033 D02 v02r01
Test Results PASS

Tested by:



Kelsey Tan/ Project Handler

Approved by:



Zero Zhou/Reviewer

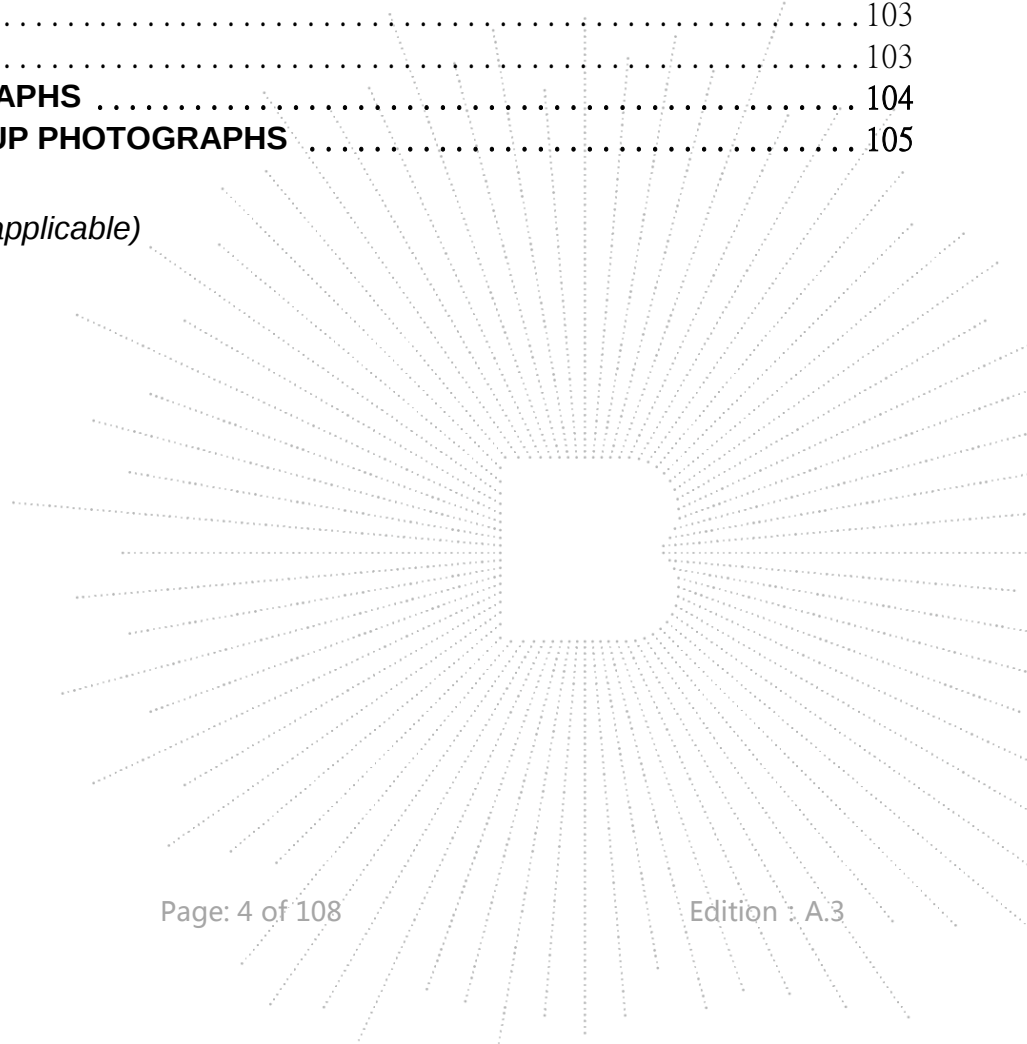
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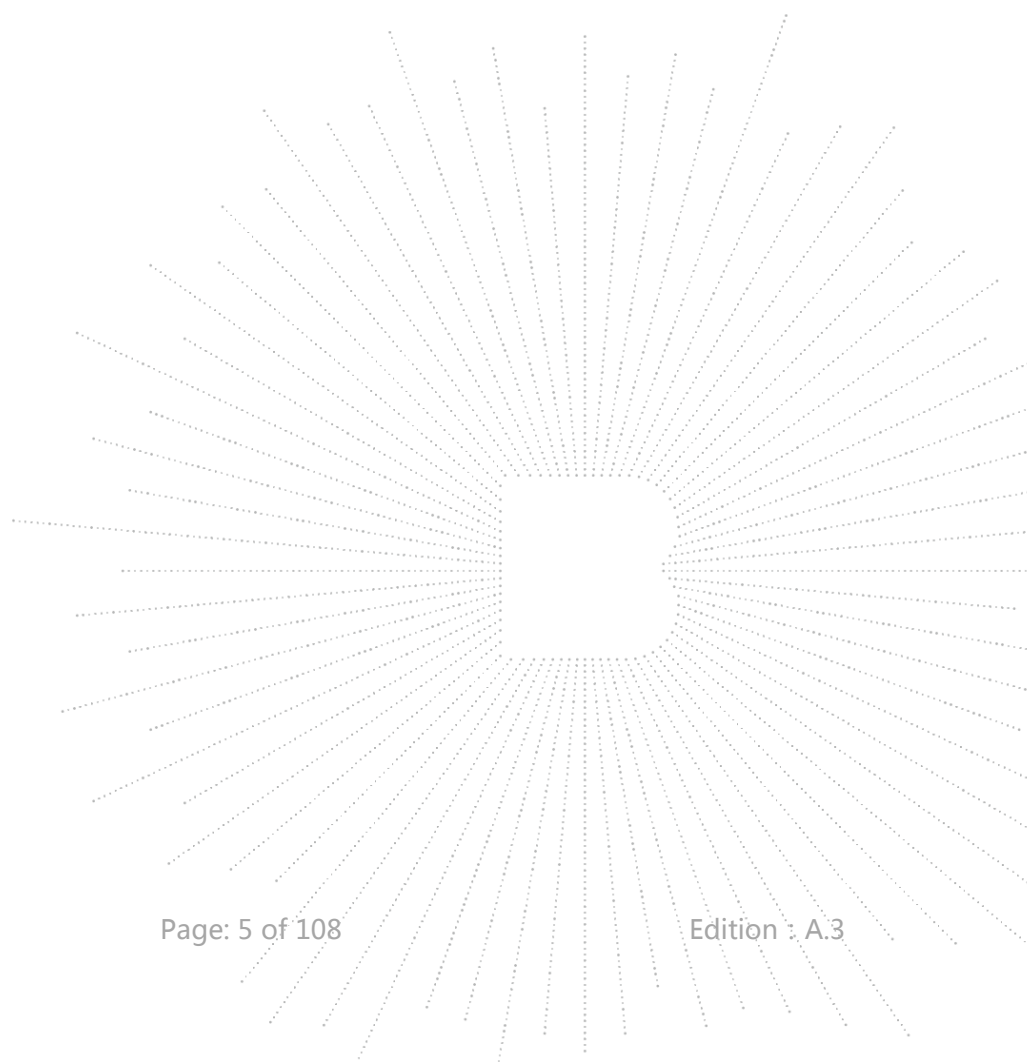
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(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
BCTC2011000487-4E	2021-01-13	Original	Valid



2. TEST SUMMARY

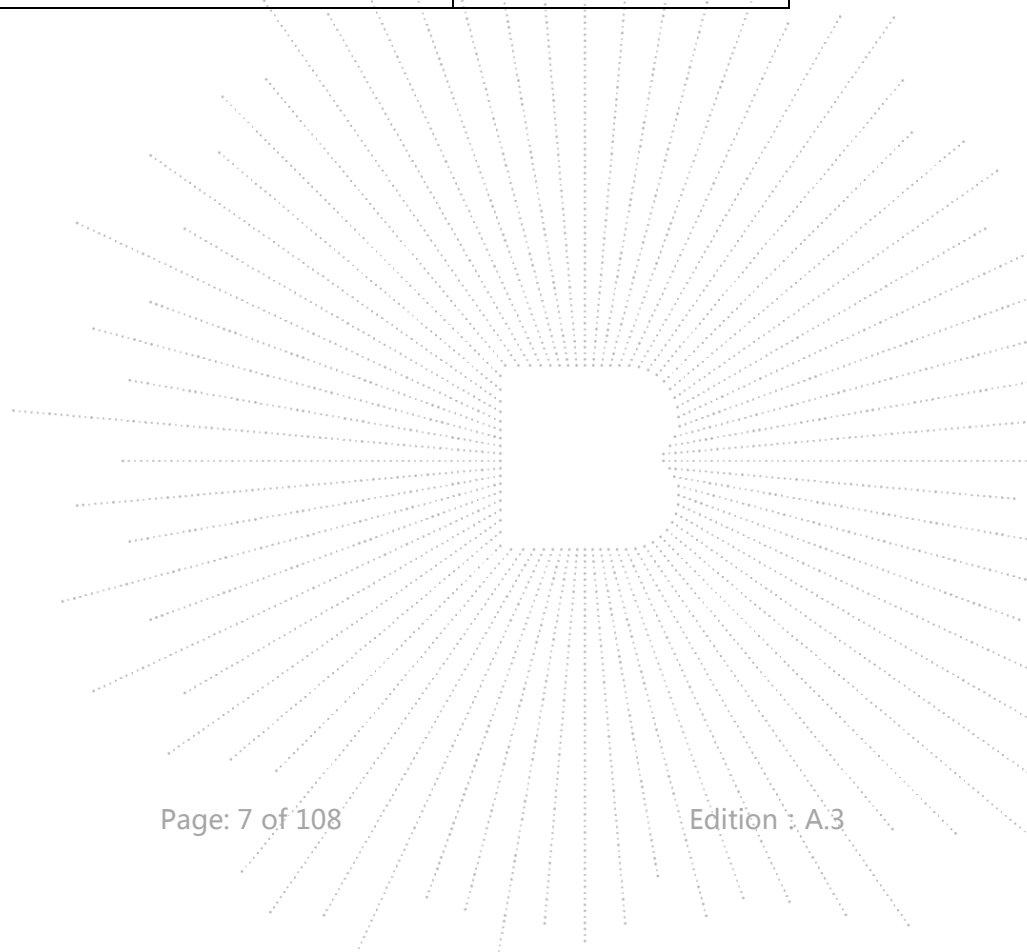
The Product has been tested according to the following specifications:

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
8	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

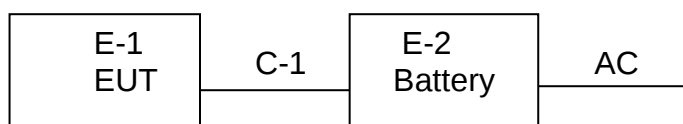
4.1 Product Information

Model/Type reference:	256G 512G, 1TB
Model differences:	All the model are the same circuit and RF module, except model names.
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:	Chip antenna*2
Antenna Gain:	Antenna A:1dBi Antenna B:1dBi
Product Type	Client devices
Ratings:	DC 5V MODEL:RCL-PD30WLU INPUT:AC100-240V 50/60Hz 1A OUTPUT:5V---3A 9V---3A 12V---2.5A 15V---2A 20V---1.5A 30W
Adapter:	

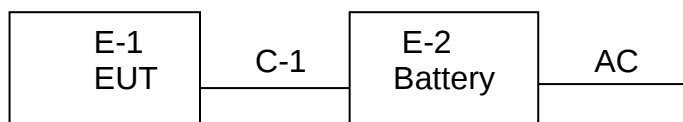
4.2 Test Setup Configuration

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

Conducted Emission Test:



Radiated Spurious Emission:



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
E-1	HELM	N/A	256G	512G, 1TB	EUT	E-1
E-2	Adapter	N/A	BCTC001	N/A	Auxiliary	E-2

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.6M	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

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

4.5 Test Mode

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly 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
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.

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	CMD		
Parameters	DEF	DEF	DEF

4.7 Antenna

EUT has two External antennas with Max gain GANT 1dBi on every antenna, CDD device with two spatial streams, also can operat 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,
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 4.01dBi

2)For power measurements,

The Array gain=0 dB for $\text{NANT} \leq 4$,

So the directional gain for Power measurements is 1dBi

Antenna	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
A	N/A	N/A	Chip antenna	1	N/A
B	N/A	N/A	Chip antenna	1	N/A

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

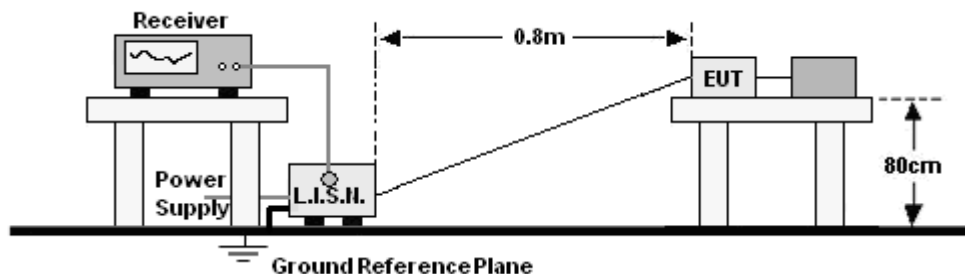
Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	Jun. 08, 2020	Jun. 07, 2021
LISN	R&S	ENV216	101375	Jun. 04, 2020	Jun. 03, 2021
ISN	HPX	ISN T800	S1509001	Jun. 04, 2020	Jun. 03, 2021
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

Radiated emissions Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESR3	102075	Jun. 08, 2020	Jun. 07, 2021
Receiver	R&S	ESRP	101154	Jun. 08, 2020	Jun. 07, 2021
Amplifier	Schwarzbeck	BBV9718	9718-309	Jun. 04, 2020	Jun. 03, 2021
Amplifier	Schwarzbeck	BBV9744	9744-0037	Jun. 04, 2020	Jun. 03, 2021
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-942	Jun. 08, 2020	Jun. 07, 2021
Horn Antenna	SCHWARZBECK	BBHA9120D	1201	Jun. 10, 2020	Jun. 09, 2021
Horn Antenna (18GHz-40GHz)	SCHWARZBECK	BBHA9170	822	Jun. 10, 2020	Jun. 09, 2021
Amplifier (18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	Jun. 08, 2020	Jun. 07, 2021
Loop Antenna (9kHz-30MHz)	SCHWARZBECK	FMZB1519B	014	Jun. 08, 2020	Jun. 07, 2021
RF cables1 (9kHz-30MHz)	Huber+Suhner	9kHz-30MHz	B1702988-0008	Jun. 08, 2020	Jun. 07, 2021
RF cables2 (30MHz-1GHz)	Huber+Suhner	30MHz-1GHz	1486150	Jun. 08, 2020	Jun. 07, 2021
RF cables3 (1GHz-40GHz)	Huber+Suhner	1GHz-40GHz	1607106	Jun. 08, 2020	Jun. 07, 2021
Power Metter	Keysight	E4419B	\	Jun. 08, 2020	Jun. 07, 2021
Power Sensor (AV)	Keysight	E9 300A	\	Jun. 08, 2020	Jun. 07, 2021
Signal Analyzer 20kHz-26.5GHz	KEYSIGHT	N9020A	MY49100060	Jun. 04, 2020	Jun. 03, 2021
Spectrum Analyzer 9kHz-40GHz	Agilent	FSP40	100363	Jun. 13, 2020	Jun. 12, 2021
Software	Frad	EZ-EMC	FA-03A2RE	\	\

RF conducted test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power Metter	Keysight	E4419B	\	Jun. 08, 2020	Jun. 07, 2021
Power Sensor (AV)	Keysight	E9 300A	\	Jun. 08, 2020	Jun. 07, 2021
Signal Analyzer 20kHz-26.5GHz	KEYSIGHT	N9020A	MY49100060	Jun. 04, 2020	Jun. 03, 2021
Spectrum Analyzer 9kHz-40GHz	Agilent	FSP40	100363	Jun. 13, 2020	Jun. 12, 2021

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:
1. *Decreasing linearly with logarithm of frequency.
2. 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

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

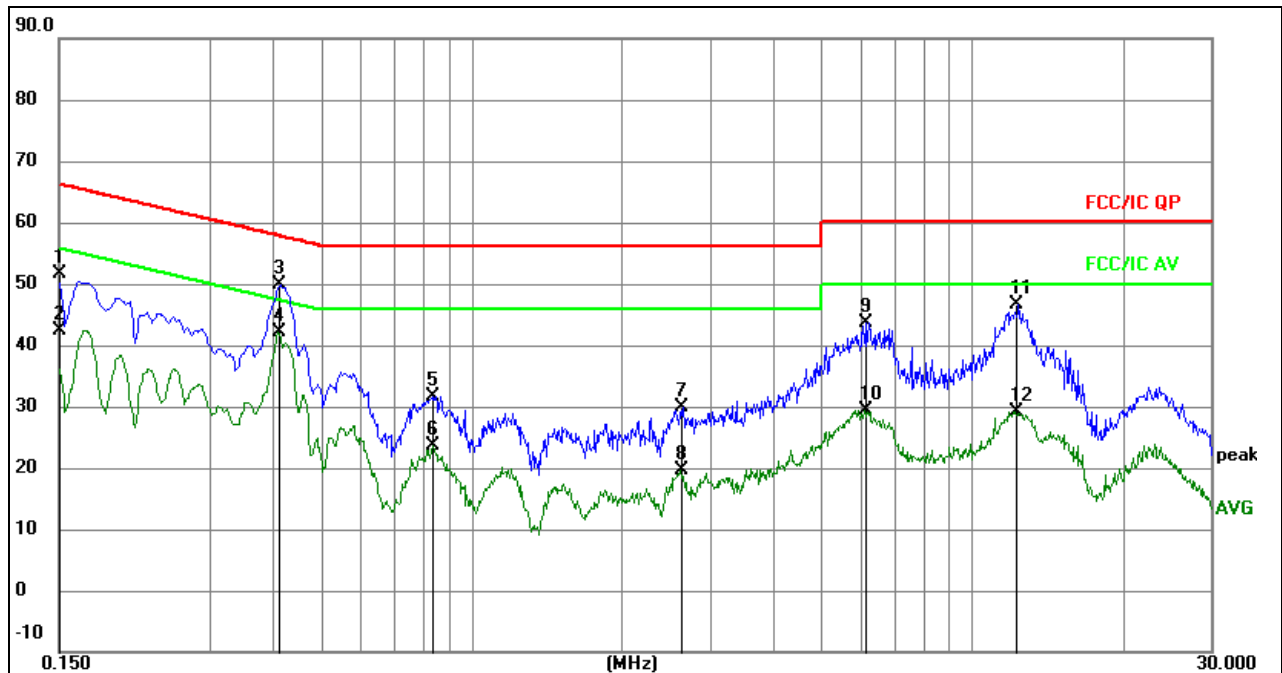
6.4 EUT operating Conditions

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

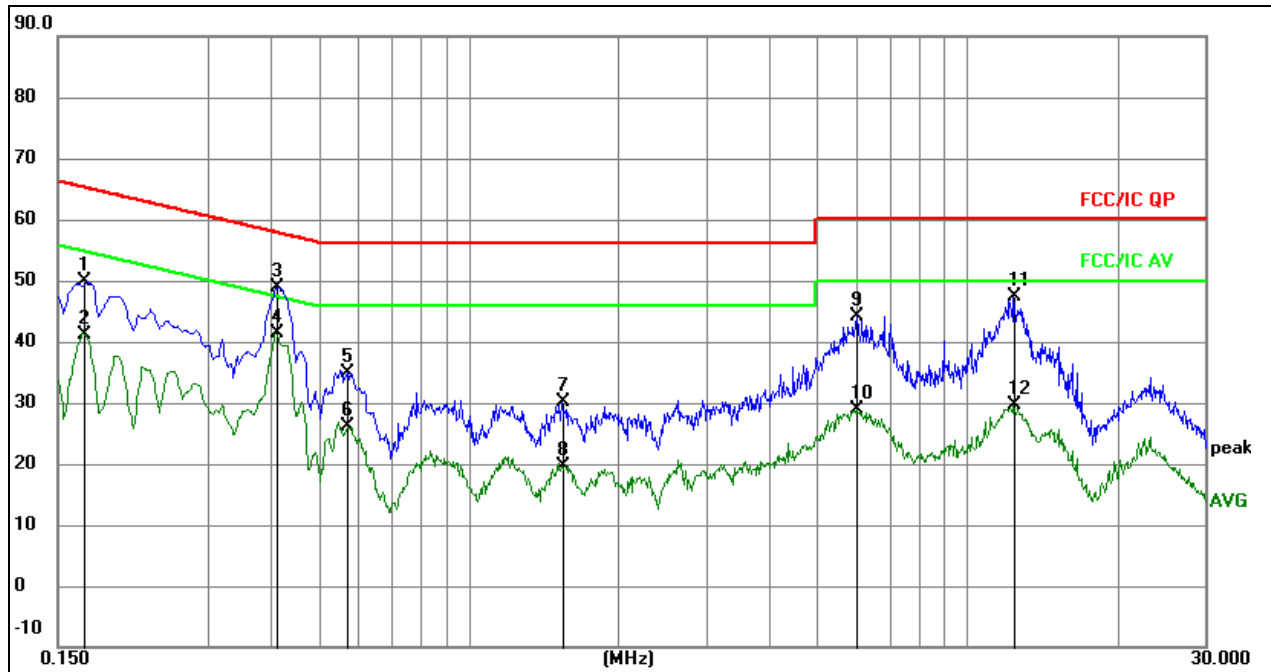


Remark:

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		0.1500	42.20	9.52	51.72	66.00	-14.28	QP
2		0.1500	32.96	9.52	42.48	56.00	-13.52	AVG
3		0.4110	40.26	9.51	49.77	57.63	-7.86	QP
4	*	0.4110	32.73	9.51	42.24	47.63	-5.39	AVG
5		0.8385	21.95	9.62	31.57	56.00	-24.43	QP
6		0.8385	13.91	9.62	23.53	46.00	-22.47	AVG
7		2.6115	20.34	9.63	29.97	56.00	-26.03	QP
8		2.6115	9.95	9.63	19.58	46.00	-26.42	AVG
9		6.1035	33.95	9.76	43.71	60.00	-16.29	QP
10		6.1035	19.69	9.76	29.45	50.00	-20.55	AVG
11		12.2504	37.05	9.69	46.74	60.00	-13.26	QP
12		12.2504	19.55	9.69	29.24	50.00	-20.76	AVG

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



Remark:

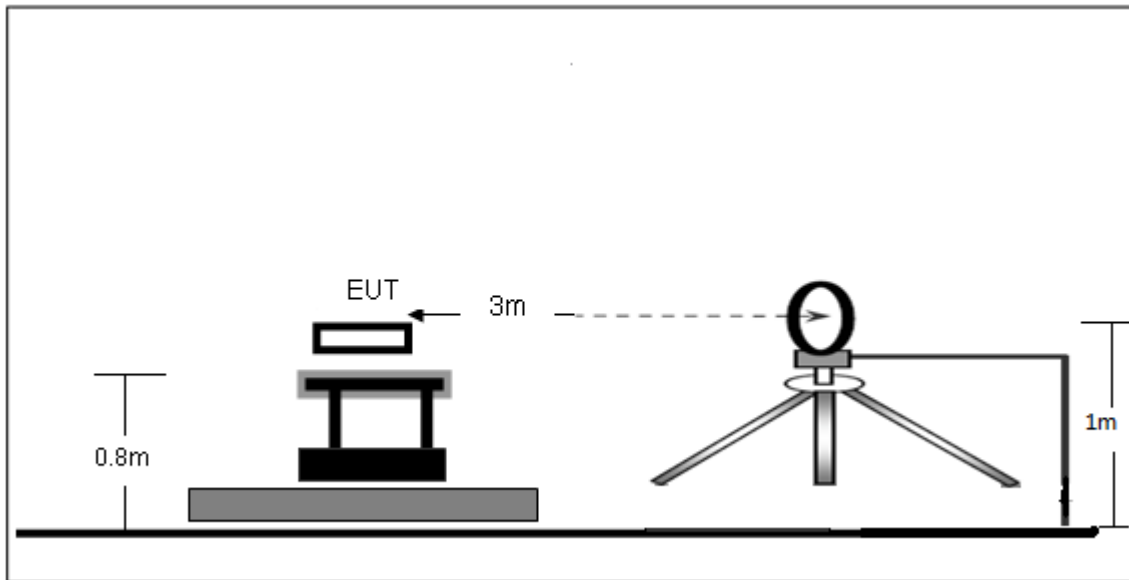
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1694	40.35	9.50	49.85	64.99	-15.14	QP
2		0.1694	31.67	9.50	41.17	54.99	-13.82	AVG
3		0.4105	39.38	9.51	48.89	57.64	-8.75	QP
4	*	0.4105	31.90	9.51	41.41	47.64	-6.23	AVG
5		0.5701	25.06	9.88	34.94	56.00	-21.06	QP
6		0.5701	16.14	9.88	26.02	46.00	-19.98	AVG
7		1.5355	20.45	9.58	30.03	56.00	-25.97	QP
8		1.5355	10.11	9.58	19.69	46.00	-26.31	AVG
9		5.9925	34.47	9.76	44.23	60.00	-15.77	QP
10		5.9925	19.02	9.76	28.78	50.00	-21.22	AVG
11		12.3837	37.77	9.69	47.46	60.00	-12.54	QP
12		12.3837	19.82	9.69	29.51	50.00	-20.49	AVG

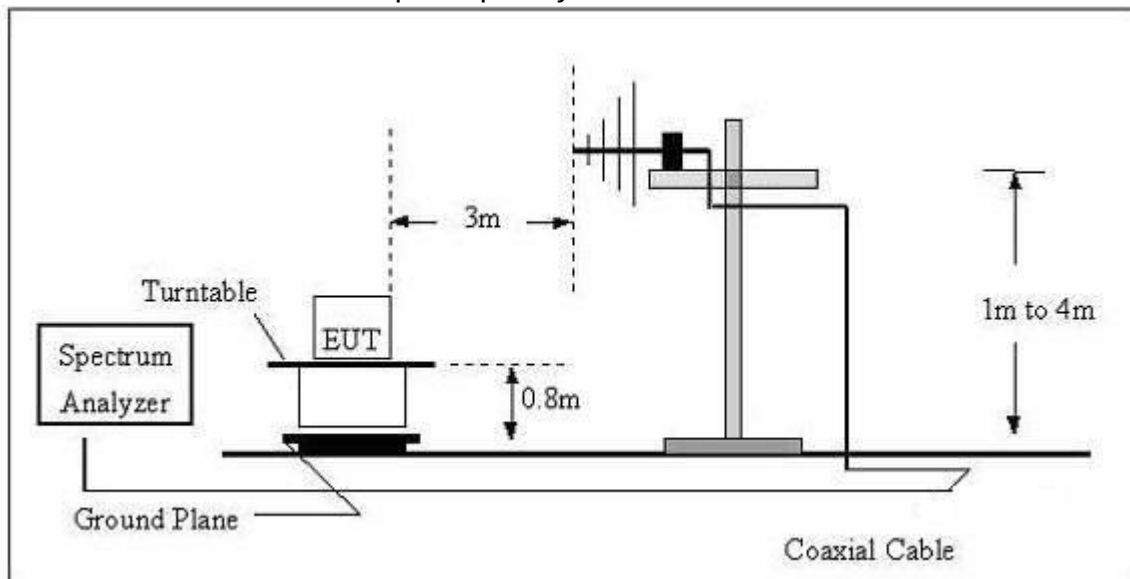
7. RADIATED EMISSIONS

7.1 Block Diagram Of Test Setup

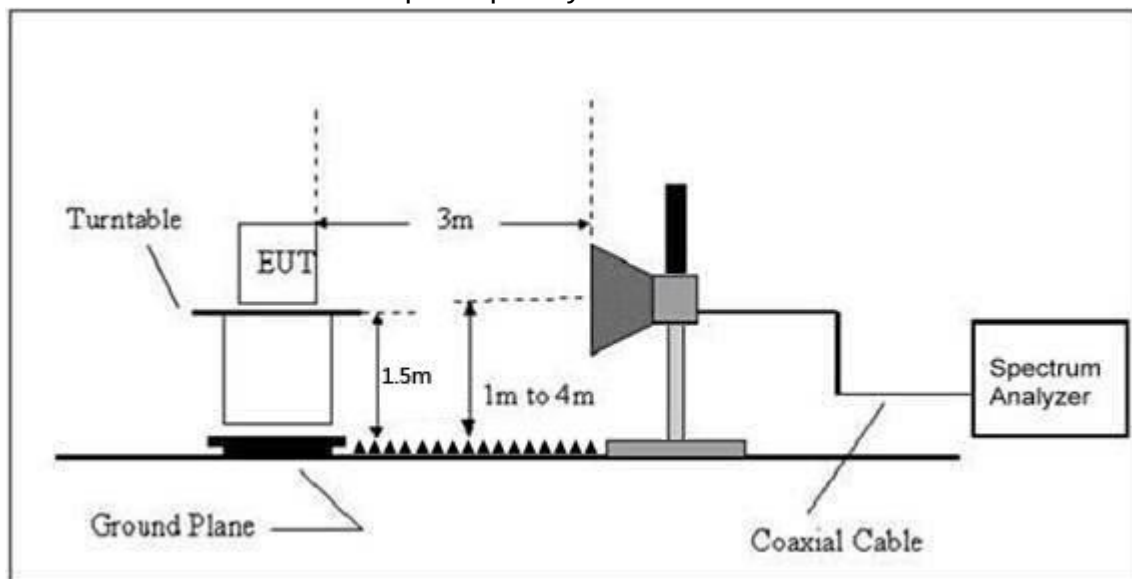
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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

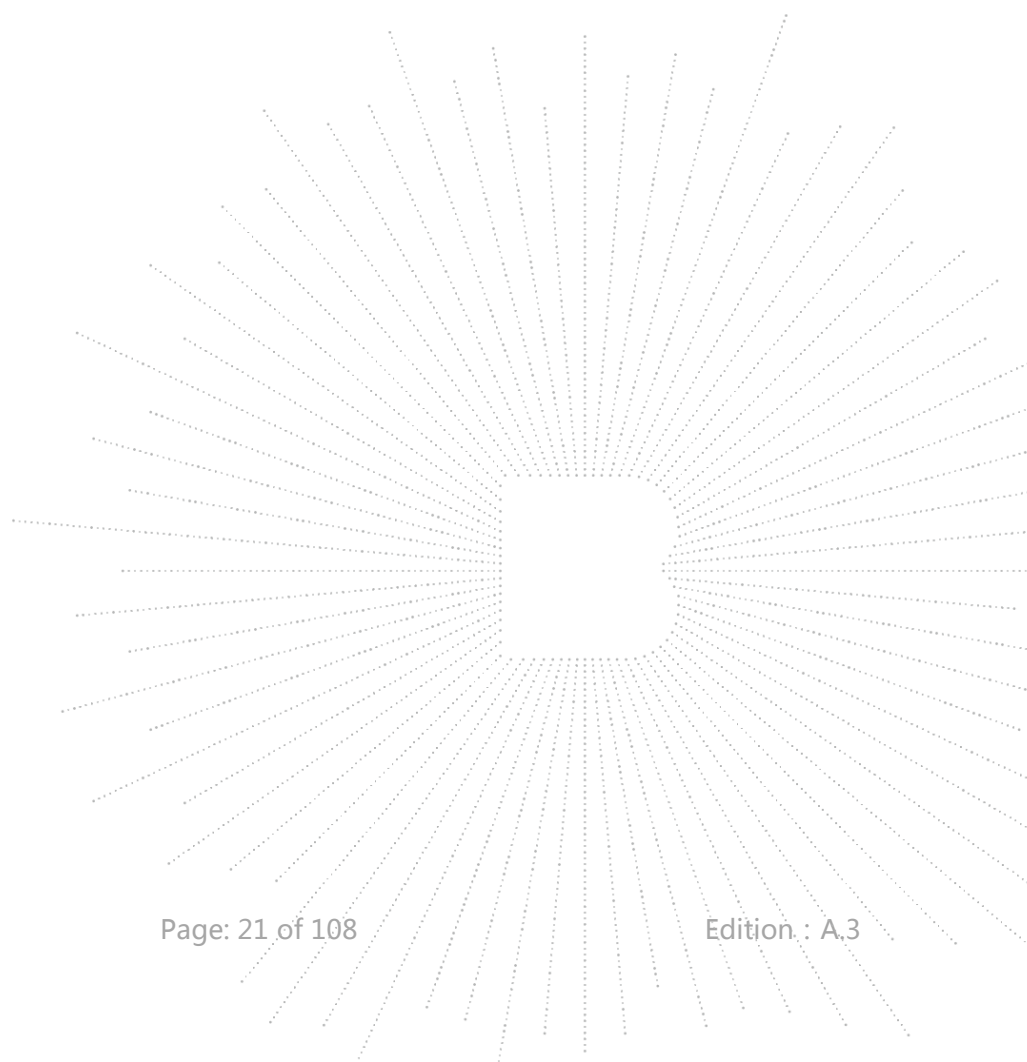
During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

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 4	Polarization :	--

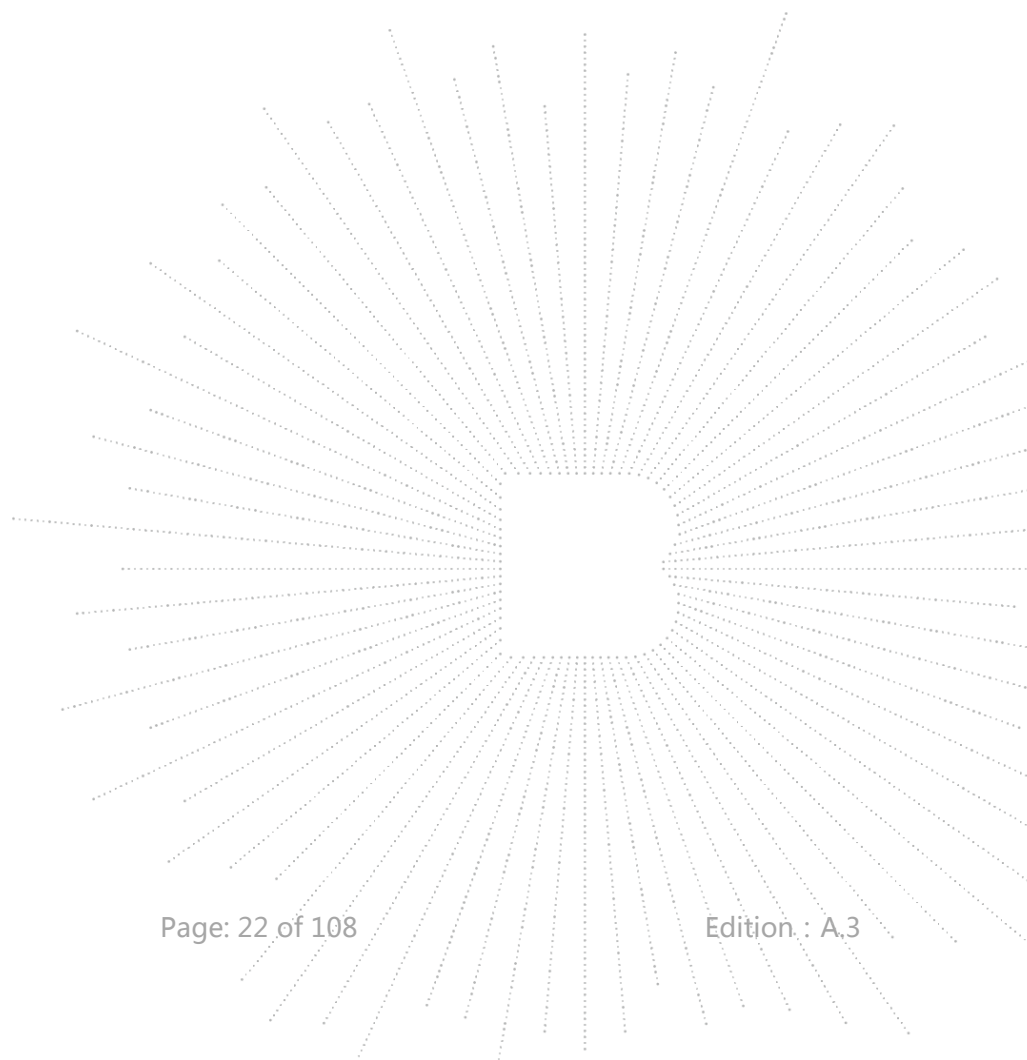
Freq. (MHz)	Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	State P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

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

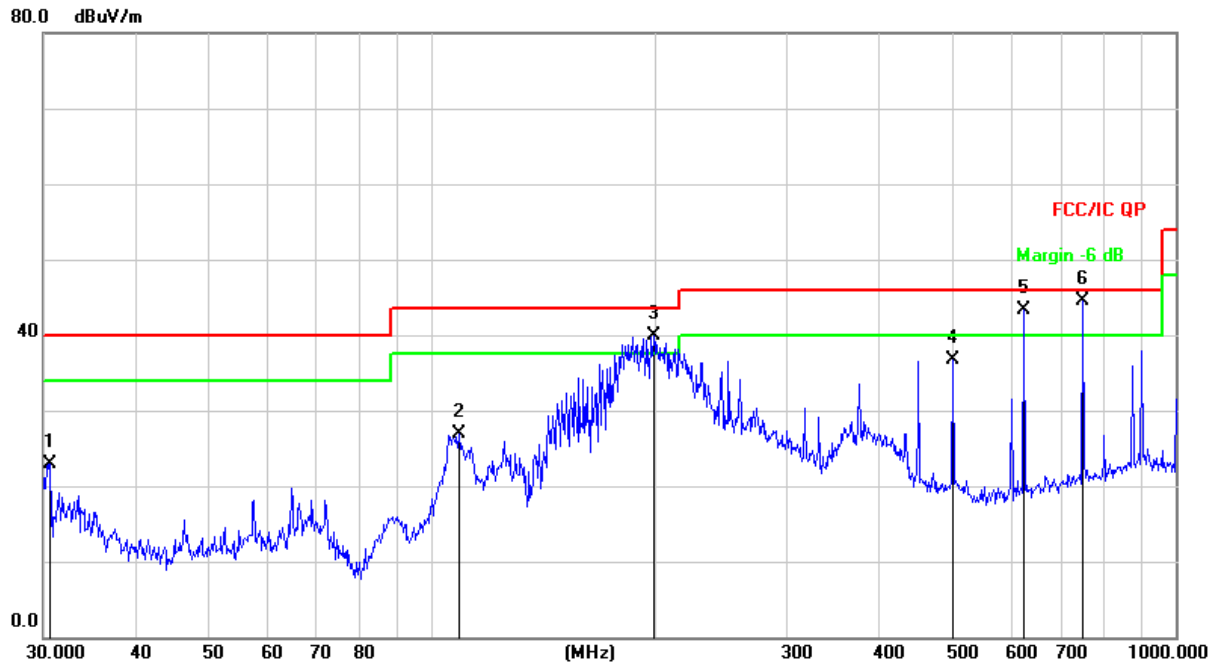
Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

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 4	Polarization :	Horizontal

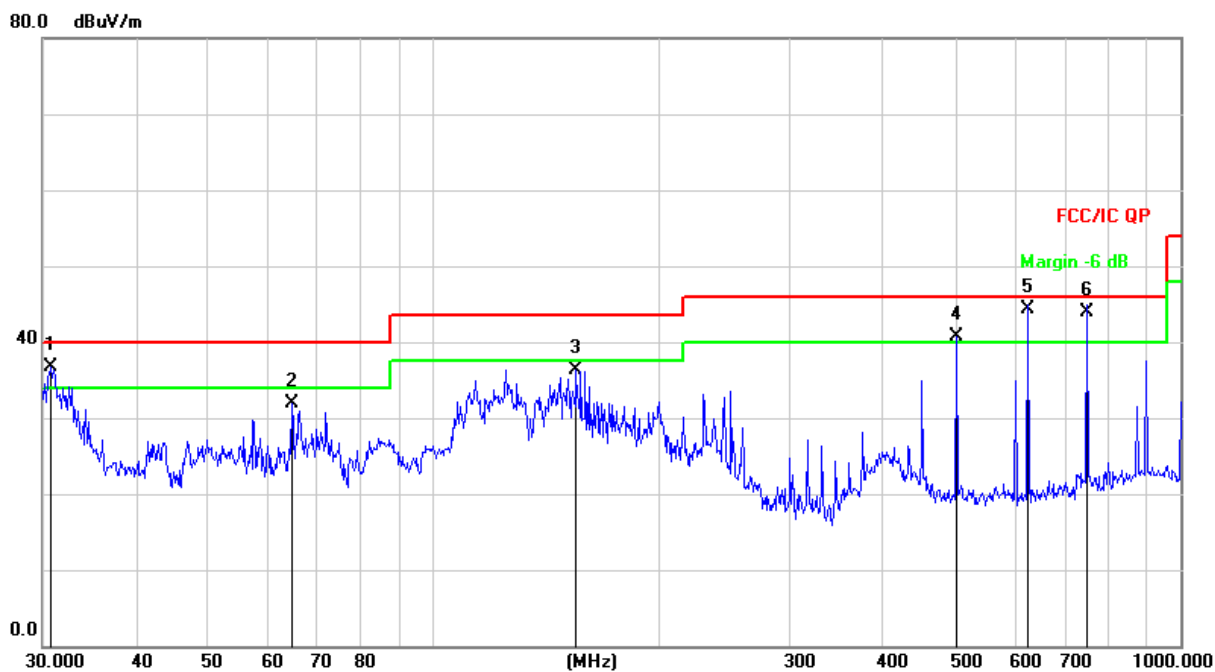


Remark:

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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		30.6379	38.97	-16.04	22.93	40.00	-17.07	QP
2		108.6470	42.89	-16.03	26.86	43.50	-16.64	QP
3	!	198.5880	55.24	-15.36	39.88	43.50	-3.62	QP
4		501.1790	44.18	-7.54	36.64	46.00	-9.36	QP
5	!	625.0780	47.99	-4.68	43.31	46.00	-2.69	QP
6	*	750.1083	47.39	-2.80	44.59	46.00	-1.41	QP

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 4	Polarization :	Vertical



Remark:

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

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dB/m	dB	
1	!	30.7455	52.71	-16.02	36.69	40.00	-3.31	QP
2		64.6594	47.68	-15.86	31.82	40.00	-8.18	QP
3		155.3644	54.56	-18.34	36.22	43.50	-7.28	QP
4	!	501.1790	48.23	-7.54	40.69	46.00	-5.31	QP
5	*	625.0780	48.94	-4.68	44.26	46.00	-1.74	QP
6	!	750.1083	46.69	-2.80	43.89	46.00	-2.11	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.1G) - 802.11a
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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	4434.159	62.29	5.94	35.40	44.00	59.63	68.20	-8.57	PK
V	4434.159	43.85	5.94	35.40	44.00	41.19	54.00	-12.81	AV
V	10360.069	61.21	8.46	39.75	44.50	64.92	74.00	-9.08	PK
V	10360.069	43.08	8.46	39.75	44.50	46.79	54.00	-7.21	AV
V	15540.040	62.15	10.12	38.80	44.10	66.97	74.00	-7.03	PK
V	15540.040	43.76	10.12	38.80	42.70	49.98	54.00	-4.02	AV
H	4434.088	61.78	5.94	35.18	44.00	58.90	68.20	-9.30	PK
H	4434.088	43.78	5.94	35.18	44.00	40.90	54.00	-13.10	AV
H	10360.157	52.42	8.46	38.71	44.50	55.09	74.00	-18.91	PK
H	10360.157	41.85	8.46	38.71	44.50	44.52	54.00	-9.48	AV
H	15540.152	52.30	10.12	38.38	44.10	56.70	74.00	-17.30	PK
H	15540.152	41.84	10.12	38.38	44.10	46.24	54.00	-7.76	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.030	60.23	6.48	36.35	44.05	59.01	74.00	-14.99	PK
V	4592.030	44.00	6.48	36.35	44.05	42.78	54.00	-11.22	AV
V	10400.052	62.33	8.47	37.88	44.51	64.17	68.20	-4.03	PK
V	10400.052	43.77	8.47	37.88	44.51	45.61	54.00	-8.39	AV
V	15600.047	64.40	10.12	38.80	44.10	69.22	74.00	-4.78	PK
V	15600.047	43.26	10.12	38.80	42.70	49.48	54.00	-4.52	AV
H	4592.112	63.51	6.48	36.37	44.05	62.31	74.00	-11.69	PK
H	4592.112	43.66	6.48	36.37	44.05	42.46	54.00	-11.54	AV
H	10400.181	50.38	8.47	38.64	44.50	52.99	68.20	-15.21	PK
H	10400.181	43.78	8.47	38.64	44.50	46.39	54.00	-7.61	AV
H	15600.022	51.89	10.12	38.38	44.10	56.29	74.00	-17.71	PK
H	15600.022	40.62	10.12	38.38	44.10	45.02	54.00	-8.98	AV
High Channel (5240 MHz)-Above 1G									
V	4739.075	61.93	7.10	37.24	43.50	62.77	74.00	-11.23	PK
V	4739.075	43.68	7.10	37.24	43.50	44.52	54.00	-9.48	AV
V	10480.107	62.53	8.46	37.68	44.50	64.17	68.20	-4.03	PK
V	10480.107	43.62	8.46	37.68	44.50	45.26	54.00	-8.74	AV
V	15720.033	61.65	10.12	38.80	44.10	66.47	74.00	-7.53	PK
V	15720.033	43.41	10.12	38.80	42.70	49.63	54.00	-4.37	AV
H	4739.162	62.11	7.10	37.24	43.50	62.95	74.00	-11.05	PK
H	4739.162	43.16	7.10	37.24	43.50	44.00	54.00	-10.00	AV
H	10480.066	51.06	8.46	38.57	44.50	53.59	68.20	-14.61	PK
H	10480.066	40.05	8.46	38.57	44.50	42.58	54.00	-11.42	AV
H	15720.077	52.71	10.12	38.38	44.10	57.11	74.00	-16.89	PK
H	15720.077	44.98	10.12	38.38	44.10	49.38	54.00	-4.62	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.

The worst case is Antenna A.

Test Mode :	TX(5.1G) - 802.11n-HT20
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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	4434.138	61.45	5.94	35.40	44.00	58.79	68.20	-9.41	PK
V	4434.138	43.48	5.94	35.40	44.00	40.82	54.00	-13.18	AV
V	10360.188	62.92	8.46	39.75	44.50	66.63	68.20	-1.57	PK
V	10360.188	43.76	8.46	39.75	44.50	47.47	54.00	-6.53	AV
V	15540.167	64.14	10.12	38.80	44.10	68.96	74.00	-5.04	PK
V	15540.167	43.09	10.12	38.80	42.70	49.31	54.00	-4.69	AV
H	4434.011	63.58	5.94	35.18	44.00	60.70	68.20	-7.50	PK
H	4434.011	43.93	5.94	35.18	44.00	41.05	54.00	-12.95	AV
H	10360.156	51.24	8.46	38.71	44.50	53.91	68.20	-14.29	PK
H	10360.156	43.96	8.46	38.71	44.50	46.63	54.00	-7.37	AV
H	15540.136	52.40	10.12	38.38	44.10	56.80	74.00	-17.20	PK
H	15540.136	43.58	10.12	38.38	44.10	47.98	54.00	-6.02	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.110	60.46	6.48	36.35	44.05	59.24	74.00	-14.76	PK
V	4592.110	43.20	6.48	36.35	44.05	41.98	54.00	-12.02	AV
V	10400.095	62.56	8.47	37.88	44.51	64.40	68.20	-3.80	PK
V	10400.095	43.04	8.47	37.88	44.51	44.88	54.00	-9.12	AV
V	15600.086	63.32	10.12	38.80	44.10	68.14	74.00	-5.86	PK
V	15600.086	43.53	10.12	38.80	42.70	49.75	54.00	-4.25	AV
H	4592.046	63.39	6.48	36.37	44.05	62.19	74.00	-11.81	PK
H	4592.046	43.72	6.48	36.37	44.05	42.52	54.00	-11.48	AV
H	10400.100	54.60	8.47	38.64	44.50	57.21	68.20	-10.99	PK
H	10400.100	40.89	8.47	38.64	44.50	43.50	54.00	-10.50	AV
H	15600.123	52.41	10.12	38.38	44.10	56.81	74.00	-17.19	PK
H	15600.123	40.12	10.12	38.38	44.10	44.52	54.00	-9.48	AV
High Channel (5240 MHz)-Above 1G									
V	4739.048	63.46	7.10	37.24	43.50	64.30	74.00	-9.70	PK
V	4739.048	43.12	7.10	37.24	43.50	43.96	54.00	-10.04	AV
V	10480.178	63.15	8.46	37.68	44.50	64.79	68.20	-3.41	PK
V	10480.178	43.89	8.46	37.68	44.50	45.53	54.00	-8.47	AV
V	15720.073	62.64	10.12	38.80	44.10	67.46	74.00	-6.54	PK
V	15720.073	43.96	10.12	38.80	42.70	50.18	54.00	-3.82	AV
H	4739.176	63.87	7.10	37.24	43.50	64.71	74.00	-9.29	PK
H	4739.176	43.38	7.10	37.24	43.50	44.22	54.00	-9.78	AV
H	10480.017	52.53	8.46	38.57	44.50	55.06	68.20	-13.14	PK
H	10480.017	42.69	8.46	38.57	44.50	45.22	54.00	-8.78	AV
H	15720.123	51.32	10.12	38.38	44.10	55.72	74.00	-18.28	PK
H	15720.123	44.11	10.12	38.38	44.10	48.51	54.00	-5.49	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
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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	4434.011	63.14	5.94	35.40	44.00	60.48	74.00	-13.52	PK
V	4434.011	43.76	5.94	35.40	44.00	41.10	54.00	-12.90	AV
V	10380.092	62.79	8.46	39.75	44.50	66.50	68.20	-1.70	PK
V	10380.092	43.18	8.46	39.75	44.50	46.89	54.00	-7.11	AV
V	15570.101	62.28	10.12	38.80	44.10	67.10	74.00	-6.90	PK
V	15570.101	43.83	10.12	38.80	42.70	50.05	54.00	-3.95	AV
H	4434.085	63.81	5.94	35.18	44.00	60.93	74.00	-13.07	PK
H	4434.085	43.12	5.94	35.18	44.00	40.24	54.00	-13.76	AV
H	10380.065	52.70	8.46	38.71	44.50	55.37	68.20	-12.83	PK
H	10380.065	41.98	8.46	38.71	44.50	44.65	54.00	-9.35	AV
H	15570.062	50.24	10.12	38.38	44.10	54.64	74.00	-19.36	PK
H	15570.062	40.81	10.12	38.38	44.10	45.21	54.00	-8.79	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.187	61.85	6.48	36.35	44.05	60.63	74.00	-13.37	PK
V	4739.187	43.04	6.48	36.35	44.05	41.82	54.00	-12.18	AV
V	10460.093	64.77	8.47	37.88	44.51	66.61	68.20	-1.59	PK
V	10460.093	43.78	8.47	37.88	44.51	45.62	54.00	-8.38	AV
V	15690.021	60.37	10.12	38.80	44.10	65.19	74.00	-8.81	PK
V	15690.021	43.65	10.12	38.80	42.70	49.87	54.00	-4.13	AV
H	4739.080	64.42	6.48	36.37	44.05	63.22	74.00	-10.78	PK
H	4739.080	43.54	6.48	36.37	44.05	42.34	54.00	-11.66	AV
H	10460.046	50.35	8.47	38.64	44.50	52.96	68.20	-15.24	PK
H	10460.046	43.85	8.47	38.64	44.50	46.46	54.00	-7.54	AV
H	15690.027	50.56	10.12	38.38	44.10	54.96	74.00	-19.04	PK
H	15690.027	43.71	10.12	38.38	44.10	48.11	54.00	-5.89	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
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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	4434.054	61.90	5.94	35.40	44.00	59.24	68.20	-8.96	PK
V	4434.054	43.28	5.94	35.40	44.00	40.62	54.00	-13.38	AV
V	10360.072	62.24	8.46	39.75	44.50	65.95	74.00	-8.05	PK
V	10360.072	43.19	8.46	39.75	44.50	46.90	54.00	-7.10	AV
V	15540.197	63.13	10.12	38.80	44.10	67.95	74.00	-6.05	PK
V	15540.197	43.75	10.12	38.80	42.70	49.97	54.00	-4.03	AV
H	4434.038	62.08	5.94	35.18	44.00	59.20	68.20	-9.00	PK
H	4434.038	43.26	5.94	35.18	44.00	40.38	54.00	-13.62	AV
H	10360.090	52.43	8.46	38.71	44.50	55.10	74.00	-18.90	PK
H	10360.090	44.55	8.46	38.71	44.50	47.22	54.00	-6.78	AV
H	15540.029	52.95	10.12	38.38	44.10	57.35	74.00	-16.65	PK
H	15540.029	40.08	10.12	38.38	44.10	44.48	54.00	-9.52	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.123	63.10	6.48	36.35	44.05	61.88	74.00	-12.12	PK
V	4592.123	43.88	6.48	36.35	44.05	42.66	54.00	-11.34	AV
V	10400.036	60.99	8.47	37.88	44.51	62.83	68.20	-5.37	PK
V	10400.036	43.27	8.47	37.88	44.51	45.11	54.00	-8.89	AV
V	15600.149	61.00	10.12	38.80	44.10	65.82	74.00	-8.18	PK
V	15600.149	43.52	10.12	38.80	42.70	49.74	54.00	-4.26	AV
H	4592.097	64.49	6.48	36.37	44.05	63.29	74.00	-10.71	PK
H	4592.097	43.71	6.48	36.37	44.05	42.51	54.00	-11.49	AV
H	10400.012	52.64	8.47	38.64	44.50	55.25	68.20	-12.95	PK
H	10400.012	43.01	8.47	38.64	44.50	45.62	54.00	-8.38	AV
H	15600.036	53.97	10.12	38.38	44.10	58.37	74.00	-15.63	PK
H	15600.036	42.66	10.12	38.38	44.10	47.06	54.00	-6.94	AV
High Channel (5240 MHz)-Above 1G									
V	4739.157	60.85	7.10	37.24	43.50	61.69	74.00	-12.31	PK
V	4739.157	43.05	7.10	37.24	43.50	43.89	54.00	-10.11	AV
V	10480.044	61.51	8.46	37.68	44.50	63.15	68.20	-5.05	PK
V	10480.044	43.04	8.46	37.68	44.50	44.68	54.00	-9.32	AV
V	15720.032	60.41	10.12	38.80	44.10	65.23	74.00	-8.77	PK
V	15720.032	43.05	10.12	38.80	42.70	49.27	54.00	-4.73	AV
H	4739.011	60.06	7.10	37.24	43.50	60.90	74.00	-13.10	PK
H	4739.011	43.34	7.10	37.24	43.50	44.18	54.00	-9.82	AV
H	10480.157	50.12	8.46	38.57	44.50	52.65	68.20	-15.55	PK
H	10480.157	42.57	8.46	38.57	44.50	45.10	54.00	-8.90	AV
H	15720.099	52.29	10.12	38.38	44.10	56.69	74.00	-17.31	PK
H	15720.099	43.61	10.12	38.38	44.10	48.01	54.00	-5.99	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.

Test Mode is MIMO Mode.

Test Mode :	TX(5.1G) - 802.11ac-HT40
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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 (5190 MHz)-Above 1G									
V	4434.026	64.40	5.94	35.40	44.00	61.74	74.00	-12.26	PK
V	4434.026	43.38	5.94	35.40	44.00	40.72	54.00	-13.28	AV
V	10380.056	60.53	8.46	39.75	44.50	64.24	68.20	-3.96	PK
V	10380.056	43.56	8.46	39.75	44.50	47.27	54.00	-6.73	AV
V	15570.123	62.69	10.12	38.80	44.10	67.51	74.00	-6.49	PK
V	15570.123	43.64	10.12	38.80	42.70	49.86	54.00	-4.14	AV
H	4434.191	61.10	5.94	35.18	44.00	58.22	74.00	-15.78	PK
H	4434.191	43.22	5.94	35.18	44.00	40.34	54.00	-13.66	AV
H	10380.128	54.69	8.46	38.71	44.50	57.36	68.20	-10.84	PK
H	10380.128	40.21	8.46	38.71	44.50	42.88	54.00	-11.12	AV
H	15570.105	52.60	10.12	38.38	44.10	57.00	74.00	-17.00	PK
H	15570.105	42.43	10.12	38.38	44.10	46.83	54.00	-7.17	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.160	62.13	6.48	36.35	44.05	60.91	74.00	-13.09	PK
V	4739.160	43.99	6.48	36.35	44.05	42.77	54.00	-11.23	AV
V	10460.035	63.43	8.47	37.88	44.51	65.27	68.20	-2.93	PK
V	10460.035	43.88	8.47	37.88	44.51	45.72	54.00	-8.28	AV
V	15690.034	60.05	10.12	38.80	44.10	64.87	74.00	-9.13	PK
V	15690.034	43.15	10.12	38.80	42.70	49.37	54.00	-4.63	AV
H	4739.055	64.05	6.48	36.37	44.05	62.85	74.00	-11.15	PK
H	4739.055	43.19	6.48	36.37	44.05	41.99	54.00	-12.01	AV
H	10460.017	52.33	8.47	38.64	44.50	54.94	68.20	-13.26	PK
H	10460.017	44.56	8.47	38.64	44.50	47.17	54.00	-6.83	AV
H	15690.024	54.18	10.12	38.38	44.10	58.58	74.00	-15.42	PK
H	15690.024	42.40	10.12	38.38	44.10	46.80	54.00	-7.20	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
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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	4434.160	61.89	5.94	35.40	44.00	59.23	74.00	-14.77	PK
V	4434.160	43.18	5.94	35.40	44.00	40.52	54.00	-13.48	AV
V	10420.144	61.29	8.46	39.75	44.50	65.00	68.20	-3.20	PK
V	10420.144	43.16	8.46	39.75	44.50	46.87	54.00	-7.13	AV
V	15630.046	61.67	10.12	38.80	44.10	66.49	74.00	-7.51	PK
V	15630.046	43.60	10.12	38.80	42.70	49.82	54.00	-4.18	AV
H	4434.006	64.57	5.94	35.18	44.00	61.69	74.00	-12.31	PK
H	4434.006	43.89	5.94	35.18	44.00	41.01	54.00	-12.99	AV
H	10420.166	50.09	8.46	38.71	44.50	52.76	68.20	-15.44	PK
H	10420.166	44.13	8.46	38.71	44.50	46.80	54.00	-7.20	AV
H	15630.144	54.99	10.12	38.38	44.10	59.39	74.00	-14.61	PK
H	15630.144	42.68	10.12	38.38	44.10	47.08	54.00	-6.92	AV

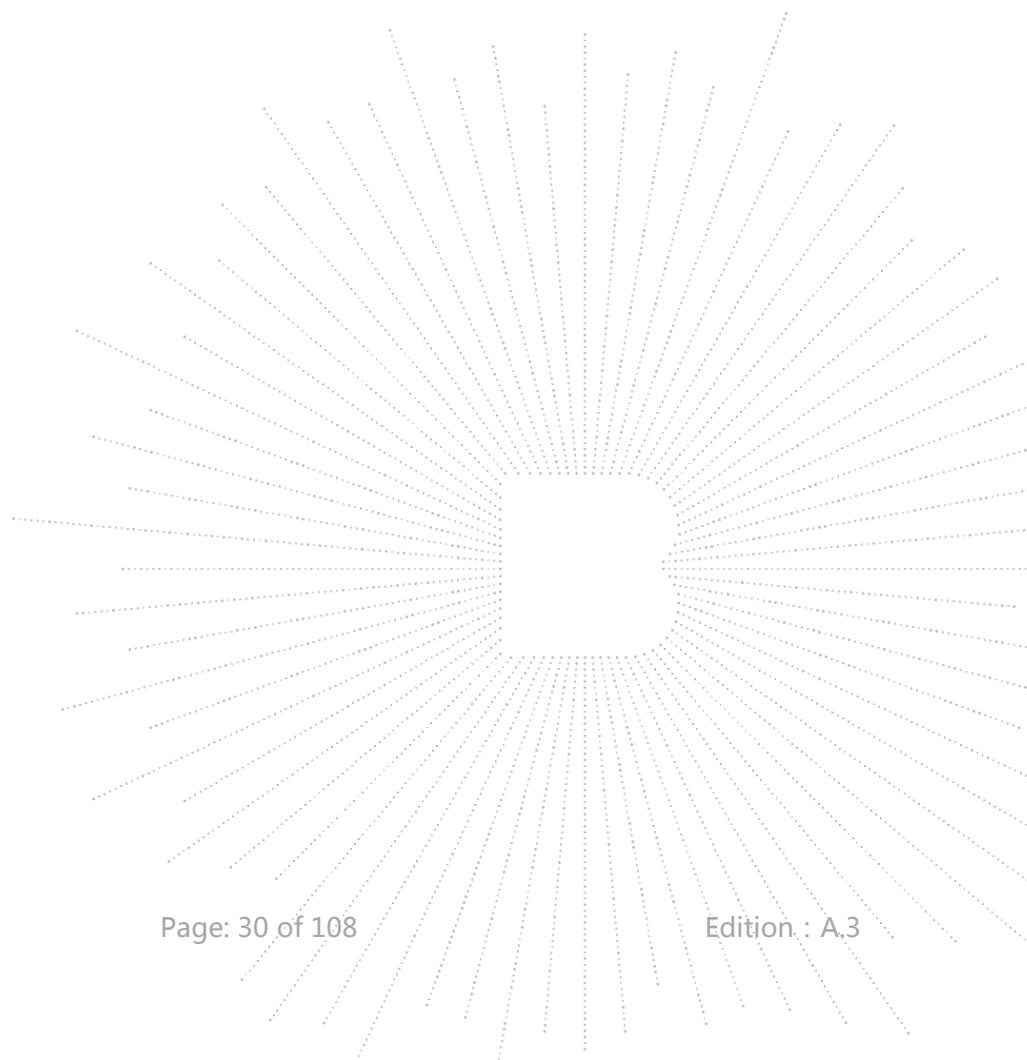
Note: PK value is lower than the Average value limit, So average didn't record.

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
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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 (5745 MHz)-Above 1G									
V	4679.096	60.64	5.94	35.40	44.00	57.98	74.00	-16.02	PK
V	4679.096	43.51	5.94	35.40	44.00	40.85	54.00	-13.15	AV
V	11490.185	61.65	8.46	39.75	44.50	65.36	68.20	-2.84	PK
V	11490.185	43.91	8.46	39.75	44.50	47.62	54.00	-6.38	AV
V	17235.161	64.21	10.12	38.80	44.10	69.03	74.00	-4.97	PK
V	17235.161	43.52	10.12	38.80	42.70	49.74	54.00	-4.26	AV
H	4679.038	61.89	5.94	35.18	44.00	59.01	74.00	-14.99	PK
H	4679.038	43.67	5.94	35.18	44.00	40.79	54.00	-13.21	AV
H	11490.153	53.88	8.46	38.71	44.50	56.55	68.20	-11.65	PK
H	11490.153	43.43	8.46	38.71	44.50	46.10	54.00	-7.90	AV
H	17235.021	51.78	10.12	38.38	44.10	56.18	74.00	-17.82	PK
H	17235.021	43.31	10.12	38.38	44.10	47.71	54.00	-6.29	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.128	62.61	6.48	36.35	44.05	61.39	74.00	-12.61	PK
V	4592.128	43.96	6.48	36.35	44.05	42.74	54.00	-11.26	AV
V	11570.170	61.07	8.47	37.88	44.51	62.91	68.20	-5.29	PK
V	11570.170	43.77	8.47	37.88	44.51	45.61	54.00	-8.39	AV
V	17355.019	61.57	10.12	38.80	44.10	66.39	74.00	-7.61	PK
V	17355.019	43.99	10.12	38.80	42.70	50.21	54.00	-3.79	AV
H	4592.064	64.70	6.48	36.37	44.05	63.50	74.00	-10.50	PK
H	4592.064	43.64	6.48	36.37	44.05	42.44	54.00	-11.56	AV
H	11570.108	50.36	8.47	38.64	44.50	52.97	68.20	-15.23	PK
H	11570.108	43.90	8.47	38.64	44.50	46.51	54.00	-7.49	AV
H	17355.058	54.97	10.12	38.38	44.10	59.37	74.00	-14.63	PK
H	17355.058	42.68	10.12	38.38	44.10	47.08	54.00	-6.92	AV
High Channel (5825 MHz)-Above 1G									
V	6039.118	61.86	7.10	37.24	43.50	62.70	68.20	-5.50	PK
V	6039.118	43.99	7.10	37.24	43.50	44.83	54.00	-9.17	AV
V	11650.071	62.33	8.46	37.68	44.50	63.97	74.00	-10.03	PK
V	11650.071	43.32	8.46	37.68	44.50	44.96	54.00	-9.04	AV
V	17475.198	61.13	10.12	38.80	44.10	65.95	68.20	-2.25	PK
V	17475.198	43.63	10.12	38.80	42.70	49.85	54.00	-4.15	AV
H	6039.027	61.21	7.10	37.24	43.50	62.05	68.20	-6.15	PK
H	6039.027	43.35	7.10	37.24	43.50	44.19	54.00	-9.81	AV
H	11650.097	50.79	8.46	38.57	44.50	53.32	74.00	-20.68	PK
H	11650.097	41.78	8.46	38.57	44.50	44.31	54.00	-9.69	AV
H	17475.148	52.72	10.12	38.38	44.10	57.12	68.20	-11.08	PK
H	17475.148	41.41	10.12	38.38	44.10	45.81	54.00	-8.19	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) --802.11n-HT20
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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	4679.072	63.72	5.94	35.40	44.00	61.06	74.00	-12.94	PK
V	4679.072	43.33	5.94	35.40	44.00	40.67	54.00	-13.33	AV
V	11490.186	63.39	8.46	39.75	44.50	67.10	68.20	-1.10	PK
V	11490.186	43.37	8.46	39.75	44.50	47.08	54.00	-6.92	AV
V	17235.163	62.30	10.12	38.80	44.10	67.12	74.00	-6.88	PK
V	17235.163	43.10	10.12	38.80	42.70	49.32	54.00	-4.68	AV
H	4679.029	64.49	5.94	35.18	44.00	61.61	74.00	-12.39	PK
H	4679.029	43.22	5.94	35.18	44.00	40.34	54.00	-13.66	AV
H	11490.050	50.28	8.46	38.71	44.50	52.95	68.20	-15.25	PK
H	11490.050	43.33	8.46	38.71	44.50	46.00	54.00	-8.00	AV
H	17235.140	54.30	10.12	38.38	44.10	58.70	74.00	-15.30	PK
H	17235.140	41.03	10.12	38.38	44.10	45.43	54.00	-8.57	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.072	60.52	6.48	36.35	44.05	59.30	74.00	-14.70	PK
V	4592.072	43.10	6.48	36.35	44.05	41.88	54.00	-12.12	AV
V	11570.125	64.24	8.47	37.88	44.51	66.08	68.20	-2.12	PK
V	11570.125	43.40	8.47	37.88	44.51	45.24	54.00	-8.76	AV
V	17355.155	63.52	10.12	38.80	44.10	68.34	74.00	-5.66	PK
V	17355.155	43.41	10.12	38.80	42.70	49.63	54.00	-4.37	AV
H	4592.007	63.43	6.48	36.37	44.05	62.23	74.00	-11.77	PK
H	4592.007	43.83	6.48	36.37	44.05	42.63	54.00	-11.37	AV
H	11570.058	52.77	8.47	38.64	44.50	55.38	68.20	-12.82	PK
H	11570.058	44.90	8.47	38.64	44.50	47.51	54.00	-6.49	AV
H	17355.028	51.27	10.12	38.38	44.10	55.67	74.00	-18.33	PK
H	17355.028	43.06	10.12	38.38	44.10	47.46	54.00	-6.54	AV
High Channel (5825 MHz)-Above 1G									
V	6039.174	62.20	7.10	37.24	43.50	63.04	68.20	-5.16	PK
V	6039.174	43.05	7.10	37.24	43.50	43.89	54.00	-10.11	AV
V	11650.164	62.30	8.46	37.68	44.50	63.94	74.00	-10.06	PK
V	11650.164	43.78	8.46	37.68	44.50	45.42	54.00	-8.58	AV
V	17475.009	60.71	10.12	38.80	44.10	65.53	68.20	-2.67	PK
V	17475.009	43.43	10.12	38.80	42.70	49.65	54.00	-4.35	AV
H	6039.023	63.12	7.10	37.24	43.50	63.96	68.20	-4.24	PK
H	6039.023	43.55	7.10	37.24	43.50	44.39	54.00	-9.61	AV
H	11650.026	53.61	8.46	38.57	44.50	56.14	74.00	-17.86	PK
H	11650.026	43.14	8.46	38.57	44.50	45.67	54.00	-8.33	AV
H	17475.142	50.64	10.12	38.38	44.10	55.04	68.20	-13.16	PK
H	17475.142	40.48	10.12	38.38	44.10	44.88	54.00	-9.12	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
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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	4679.189	64.60	5.94	35.40	44.00	61.94	74.00	-12.06	PK
V	4679.189	43.79	5.94	35.40	44.00	41.13	54.00	-12.87	AV
V	11510.161	61.74	8.46	39.75	44.50	65.45	68.20	-2.75	PK
V	11510.161	43.40	8.46	39.75	44.50	47.11	54.00	-6.89	AV
V	17265.072	60.46	10.12	38.80	44.10	65.28	74.00	-8.72	PK
V	17265.072	43.01	10.12	38.80	42.70	49.23	54.00	-4.77	AV
H	4679.122	61.52	5.94	35.18	44.00	58.64	74.00	-15.36	PK
H	4679.122	43.26	5.94	35.18	44.00	40.38	54.00	-13.62	AV
H	11510.063	54.21	8.46	38.71	44.50	56.88	68.20	-11.32	PK
H	11510.063	43.22	8.46	38.71	44.50	45.89	54.00	-8.11	AV
H	17265.185	52.19	10.12	38.38	44.10	56.59	74.00	-17.41	PK
H	17265.185	43.41	10.12	38.38	44.10	47.81	54.00	-6.19	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.121	62.95	6.48	36.35	44.05	61.73	68.20	-6.47	PK
V	6039.121	43.38	6.48	36.35	44.05	42.16	54.00	-11.84	AV
V	11590.008	64.33	8.47	37.88	44.51	66.17	74.00	-7.83	PK
V	11590.008	43.64	8.47	37.88	44.51	45.48	54.00	-8.52	AV
V	17385.005	60.33	10.12	38.80	44.10	65.15	68.20	-3.05	PK
V	17385.005	43.43	10.12	38.80	42.70	49.65	54.00	-4.35	AV
H	6039.177	60.59	6.48	36.37	44.05	59.39	68.20	-8.81	PK
H	6039.177	43.19	6.48	36.37	44.05	41.99	54.00	-12.01	AV
H	11590.008	50.07	8.47	38.64	44.50	52.68	74.00	-21.32	PK
H	11590.008	41.02	8.47	38.64	44.50	43.63	54.00	-10.37	AV
H	17385.078	54.76	10.12	38.38	44.10	59.16	68.20	-9.04	PK
H	17385.078	41.43	10.12	38.38	44.10	45.83	54.00	-8.17	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
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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	4679.040	61.02	5.94	35.40	44.00	58.36	74.00	-15.64	PK
V	4679.040	43.67	5.94	35.40	44.00	41.01	54.00	-12.99	AV
V	11490.097	60.17	8.46	39.75	44.50	63.88	68.20	-4.32	PK
V	11490.097	43.27	8.46	39.75	44.50	46.98	54.00	-7.02	AV
V	17235.152	61.60	10.12	38.80	44.10	66.42	74.00	-7.58	PK
V	17235.152	43.84	10.12	38.80	42.70	50.06	54.00	-3.94	AV
H	4679.083	63.37	5.94	35.18	44.00	60.49	74.00	-13.51	PK
H	4679.083	43.31	5.94	35.18	44.00	40.43	54.00	-13.57	AV
H	11490.079	54.08	8.46	38.71	44.50	56.75	68.20	-11.45	PK
H	11490.079	40.60	8.46	38.71	44.50	43.27	54.00	-10.73	AV
H	17235.033	53.26	10.12	38.38	44.10	57.66	74.00	-16.34	PK
H	17235.033	40.93	10.12	38.38	44.10	45.33	54.00	-8.67	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.148	60.34	6.48	36.35	44.05	59.12	74.00	-14.88	PK
V	4592.148	43.87	6.48	36.35	44.05	42.65	54.00	-11.35	AV
V	11570.118	61.28	8.47	37.88	44.51	63.12	68.20	-5.08	PK
V	11570.118	43.36	8.47	37.88	44.51	45.20	54.00	-8.80	AV
V	17355.191	60.32	10.12	38.80	44.10	65.14	74.00	-8.86	PK
V	17355.191	43.50	10.12	38.80	42.70	49.72	54.00	-4.28	AV
H	4592.166	64.90	6.48	36.37	44.05	63.70	74.00	-10.30	PK
H	4592.166	43.61	6.48	36.37	44.05	42.41	54.00	-11.59	AV
H	11570.173	51.10	8.47	38.64	44.50	53.71	68.20	-14.49	PK
H	11570.173	41.65	8.47	38.64	44.50	44.26	54.00	-9.74	AV
H	17355.117	50.78	10.12	38.38	44.10	55.18	74.00	-18.82	PK
H	17355.117	43.99	10.12	38.38	44.10	48.39	54.00	-5.61	AV
High Channel (5825 MHz)-Above 1G									
V	6039.038	61.41	7.10	37.24	43.50	62.25	68.20	-5.95	PK
V	6039.038	43.05	7.10	37.24	43.50	43.89	54.00	-10.11	AV
V	11650.072	62.24	8.46	37.68	44.50	63.88	74.00	-10.12	PK
V	11650.072	43.62	8.46	37.68	44.50	45.26	54.00	-8.74	AV
V	17475.166	60.67	10.12	38.80	44.10	65.49	68.20	-2.71	PK
V	17475.166	43.37	10.12	38.80	42.70	49.59	54.00	-4.41	AV
H	6039.145	62.98	7.10	37.24	43.50	63.82	68.20	-4.38	PK
H	6039.145	43.57	7.10	37.24	43.50	44.41	54.00	-9.59	AV
H	11650.163	52.29	8.46	38.57	44.50	54.82	74.00	-19.18	PK
H	11650.163	44.85	8.46	38.57	44.50	47.38	54.00	-6.62	AV
H	17475.109	52.60	10.12	38.38	44.10	57.00	68.20	-11.20	PK
H	17475.109	44.23	10.12	38.38	44.10	48.63	54.00	-5.37	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
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Polar (H/V)	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G									
V	4679.089	64.49	5.94	35.40	44.00	61.83	74.00	-12.17	PK
V	4679.089	43.97	5.94	35.40	44.00	41.31	54.00	-12.69	AV
V	11510.136	60.71	8.46	39.75	44.50	64.42	68.20	-3.78	PK
V	11510.136	43.47	8.46	39.75	44.50	47.18	54.00	-6.82	AV
V	17265.176	60.90	10.12	38.80	44.10	65.72	74.00	-8.28	PK
V	17265.176	43.29	10.12	38.80	42.70	49.51	54.00	-4.49	AV
H	4679.182	60.21	5.94	35.18	44.00	57.33	74.00	-16.67	PK
H	4679.182	43.65	5.94	35.18	44.00	40.77	54.00	-13.23	AV
H	11510.091	51.52	8.46	38.71	44.50	54.19	68.20	-14.01	PK
H	11510.091	41.38	8.46	38.71	44.50	44.05	54.00	-9.95	AV
H	17265.191	51.70	10.12	38.38	44.10	56.10	74.00	-17.90	PK
H	17265.191	40.07	10.12	38.38	44.10	44.47	54.00	-9.53	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.034	60.27	6.48	36.35	44.05	59.05	68.20	-9.15	PK
V	6039.034	43.91	6.48	36.35	44.05	42.69	54.00	-11.31	AV
V	11590.172	60.53	8.47	37.88	44.51	62.37	74.00	-11.63	PK
V	11590.172	43.07	8.47	37.88	44.51	44.91	54.00	-9.09	AV
V	17385.089	60.98	10.12	38.80	44.10	65.80	68.20	-2.40	PK
V	17385.089	43.78	10.12	38.80	42.70	50.00	54.00	-4.00	AV
H	6039.198	60.17	6.48	36.37	44.05	58.97	68.20	-9.23	PK
H	6039.198	43.99	6.48	36.37	44.05	42.79	54.00	-11.21	AV
H	11590.092	54.44	8.47	38.64	44.50	57.05	74.00	-16.95	PK
H	11590.092	43.81	8.47	38.64	44.50	46.42	54.00	-7.58	AV
H	17385.044	53.21	10.12	38.38	44.10	57.61	68.20	-10.59	PK
H	17385.044	42.22	10.12	38.38	44.10	46.62	54.00	-7.38	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) - 802.11 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	4679.184	61.12	5.94	35.40	44.00	58.46	74.00	-15.54	PK
V	4679.184	43.47	5.94	35.40	44.00	40.81	54.00	-13.19	AV
V	11550.031	61.42	8.46	39.75	44.50	65.13	68.20	-3.07	PK
V	11550.031	43.35	8.46	39.75	44.50	47.06	54.00	-6.94	AV
V	17325.134	61.76	10.12	38.80	44.10	66.58	74.00	-7.42	PK
V	17325.134	43.58	10.12	38.80	42.70	49.80	54.00	-4.20	AV
H	4679.095	62.20	5.94	35.18	44.00	59.32	74.00	-14.68	PK
H	4679.095	43.75	5.94	35.18	44.00	40.87	54.00	-13.13	AV
H	11550.080	53.24	8.46	38.71	44.50	55.91	68.20	-12.29	PK
H	11550.080	43.68	8.46	38.71	44.50	46.35	54.00	-7.65	AV
H	17325.180	51.29	10.12	38.38	44.10	55.69	74.00	-18.31	PK
H	17325.180	44.22	10.12	38.38	44.10	48.62	54.00	-5.38	AV

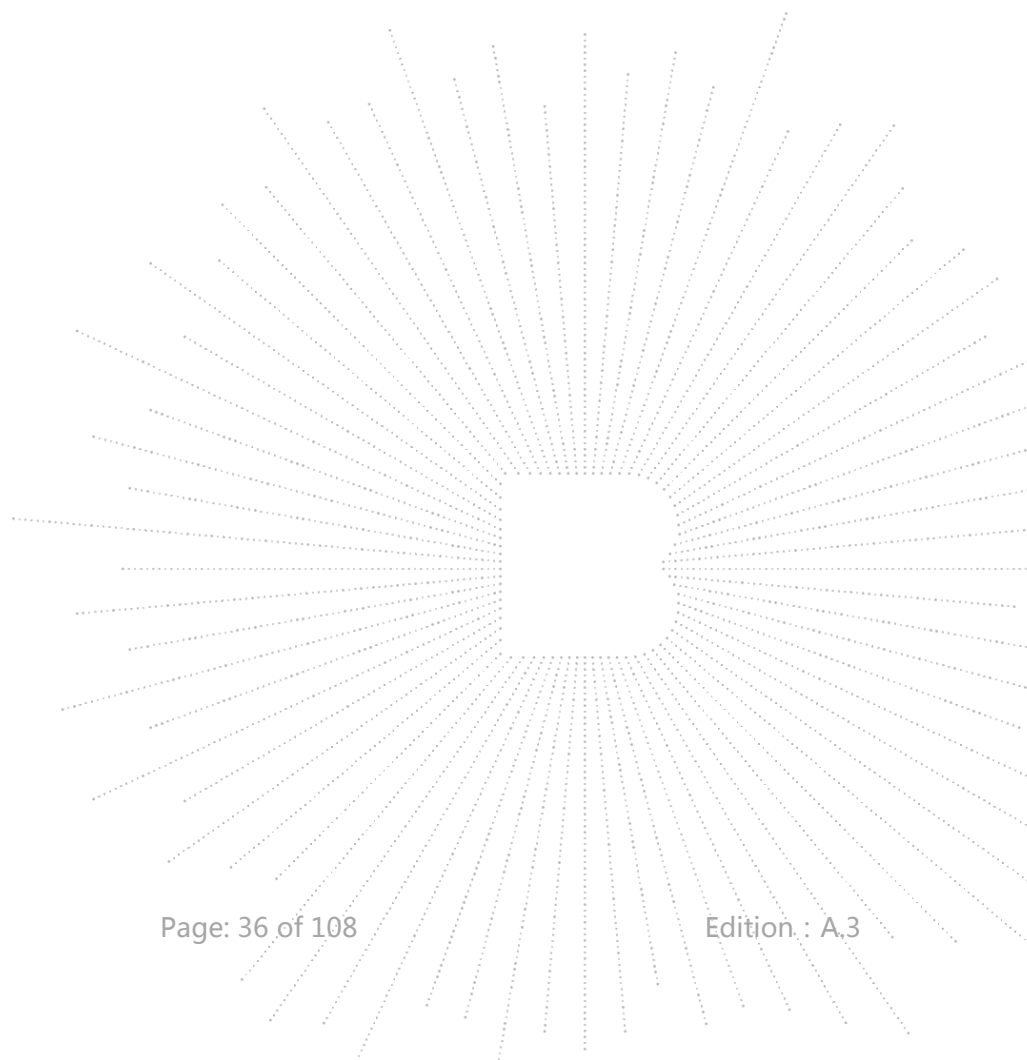
Note: PK value is lower than the Average value limit, So average didn't record.

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 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 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.

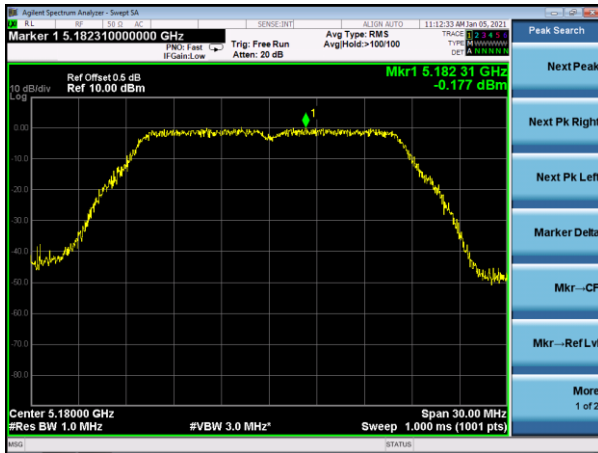
8.5 Test Result

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V
Test Mode :	TX Frequency U-NII-1 (5180-5240MHz)		

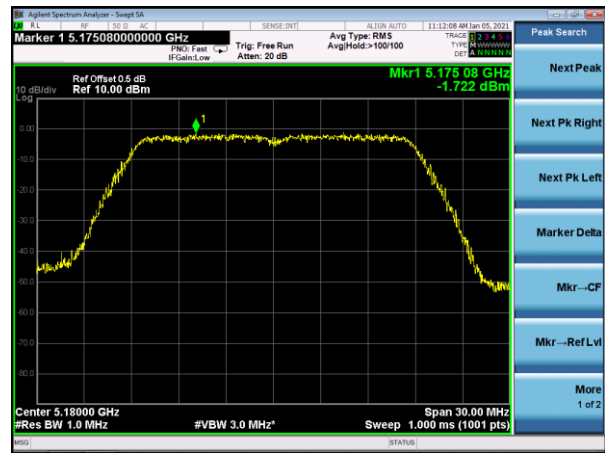
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.

Mode	Frequency	Measured Power Density (dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	Total		
802.11 a	5180 MHz	0.661	-0.177	/	11	PASS
	5200 MHz	0.384	0.230	/	11	PASS
	5240 MHz	-1.453	0.876	/	11	PASS
802.11 n20	5180 MHz	-0.963	-1.722	1.684	11	PASS
	5200 MHz	-1.281	-1.258	1.741	11	PASS
	5240 MHz	-2.690	-0.704	1.426	11	PASS
802.11 n40	5190 MHz	-2.251	-2.676	0.552	11	PASS
	5230 MHz	-4.057	-2.316	-0.090	11	PASS
802.11 ac20	5180 MHz	0.284	-1.265	2.588	11	PASS
	5200 MHz	-1.052	-1.261	1.855	11	PASS
	5240 MHz	-1.863	-0.129	2.100	11	PASS
802.11 ac40	5190 MHz	-2.252	-1.297	1.262	11	PASS
	5230 MHz	-3.353	-0.816	1.108	11	PASS
802.11 AC80	5210 MHz	-3.993	-3.366	-0.658	11	PASS

(802.11a) PSD plot on channel 36



(802.11n20) PSD plot on channel 36



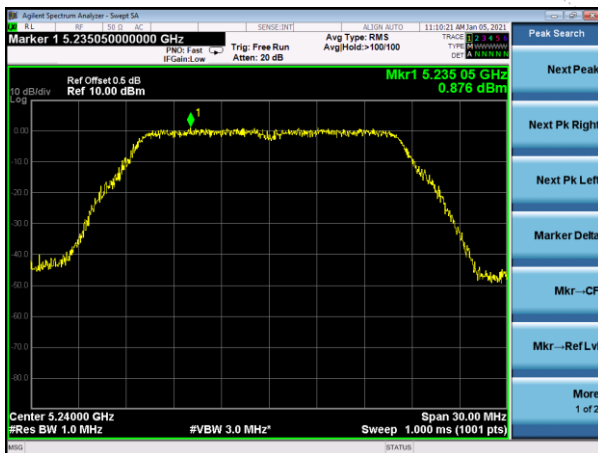
(802.11a) PSD plot on channel 40



(802.11n20) PSD plot on channel 40



(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



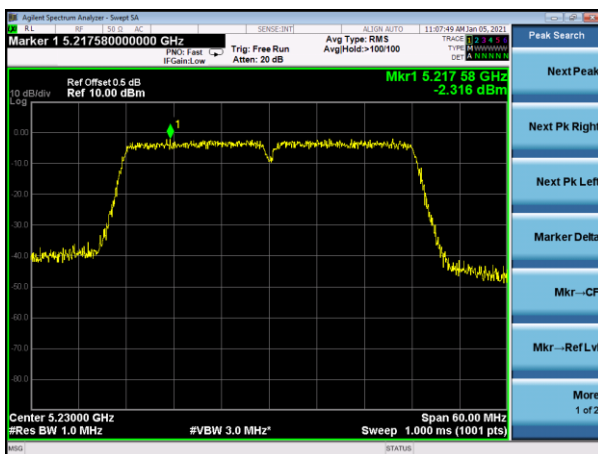
(802.11n40) PSD plot on channel 38



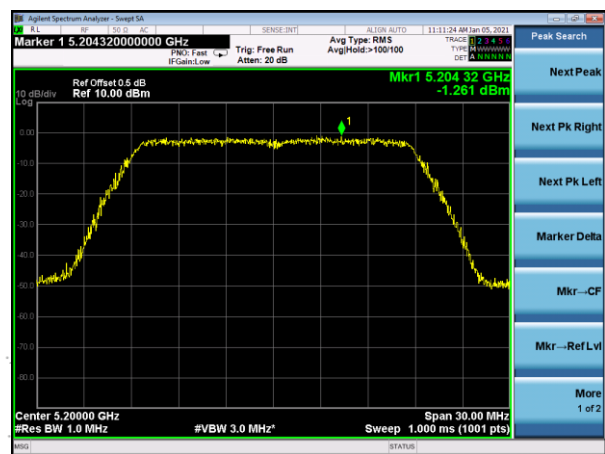
(802.11ac20) PSD plot on channel 36



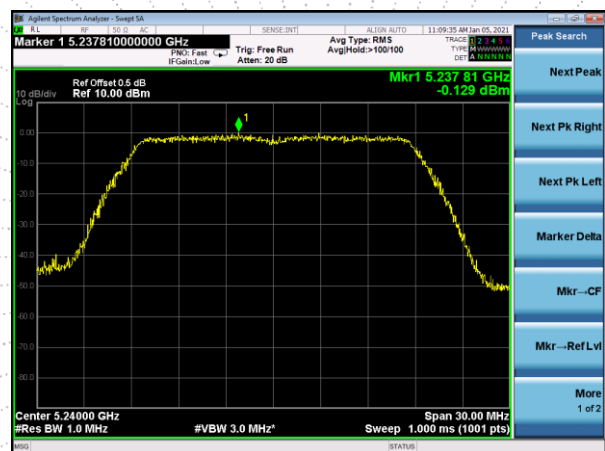
(802.11n40) PSD plot on channel 46



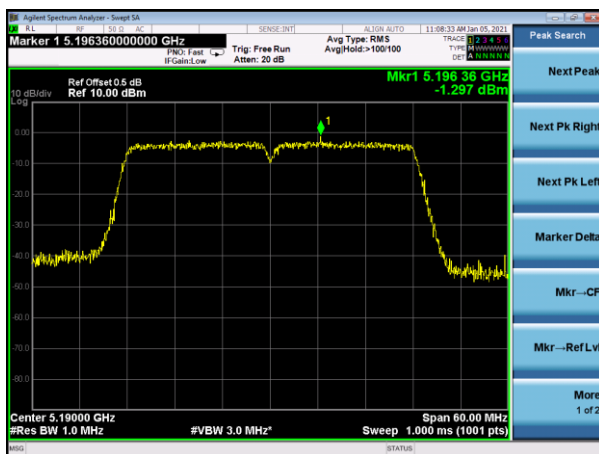
(802.11ac20) PSD plot on channel 40



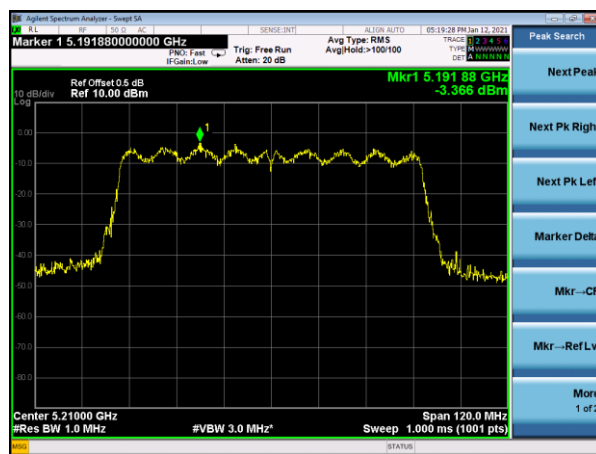
(802.11ac20) PSD plot on channel 48



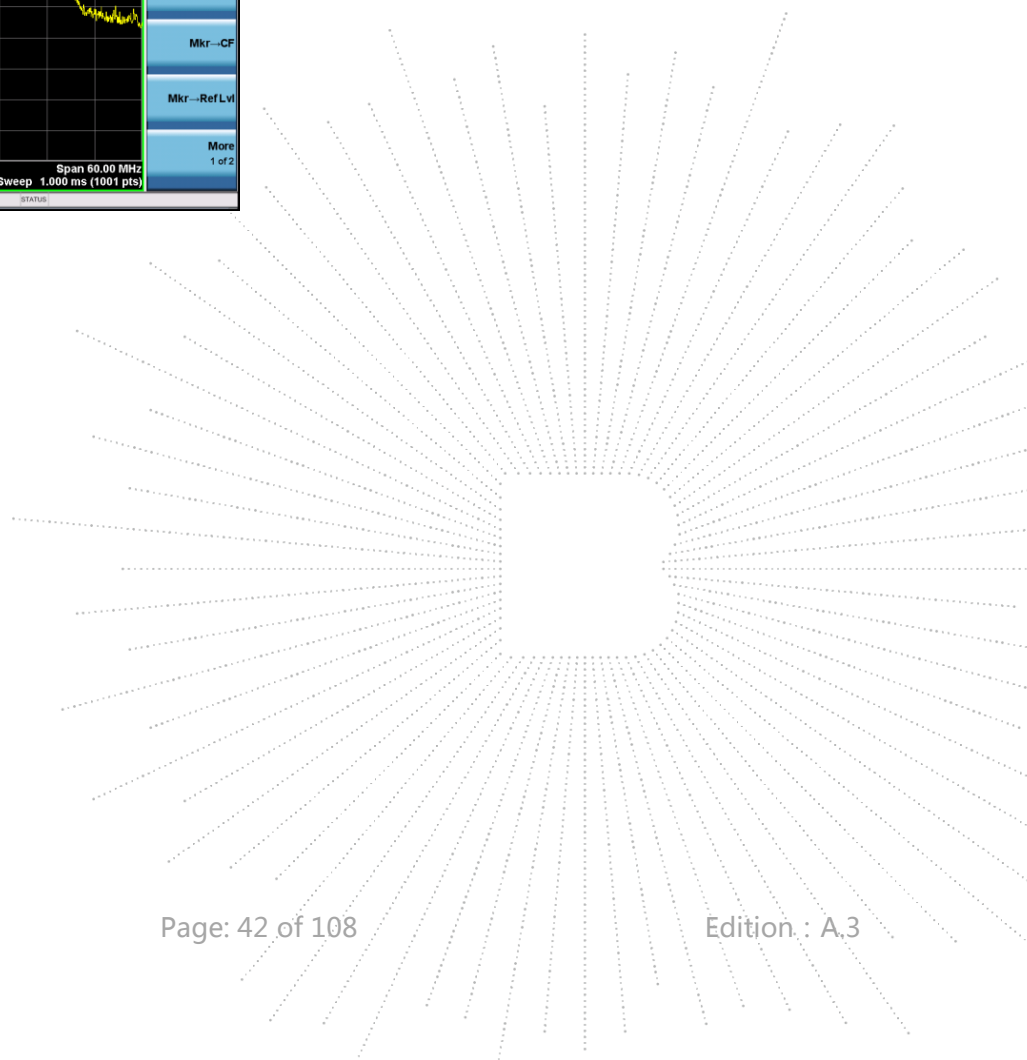
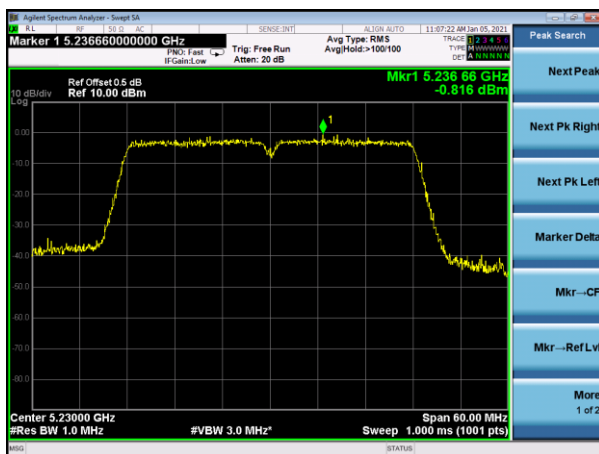
(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



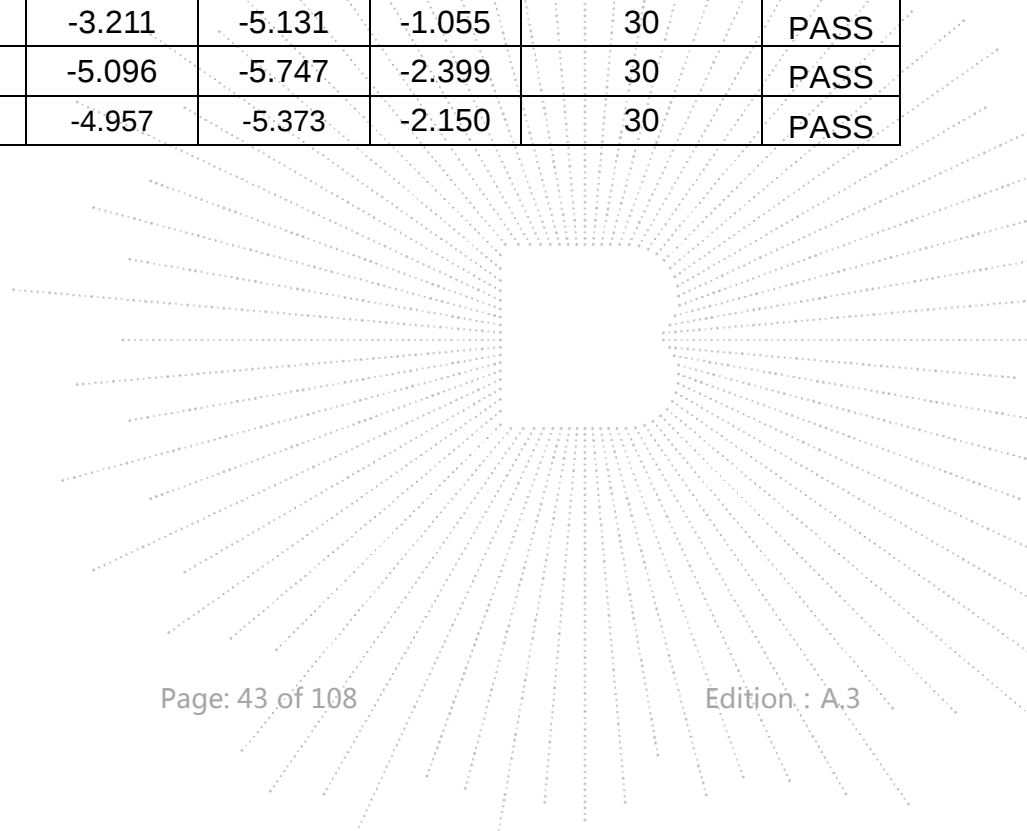
(802.11ac40) PSD plot on channel 46



Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V
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	-1.787	-2.212	/	30	PASS
	5785 MHz	-3.612	-3.890	/	30	PASS
	5825 MHz	-3.237	-3.117	/	30	PASS
802.11 n20	5745 MHz	-1.356	-2.916	0.944	30	PASS
	5785 MHz	-4.227	-4.580	-1.390	30	PASS
	5825 MHz	-4.103	-3.992	-1.037	30	PASS
802.11 n40	5755 MHz	-3.748	-4.682	-1.180	30	PASS
	5795 MHz	-5.534	-5.511	-2.512	30	PASS
802.11 ac20	5745 MHz	-1.978	-3.390	0.383	30	PASS
	5785 MHz	-4.451	-3.982	-1.200	30	PASS
	5825 MHz	-2.958	-3.423	-0.174	30	PASS
802.11 ac40	5755 MHz	-3.211	-5.131	-1.055	30	PASS
	5795 MHz	-5.096	-5.747	-2.399	30	PASS
802.11 AC80	5775 MHz	-4.957	-5.373	-2.150	30	PASS



(802.11a) PSD plot on channel 149



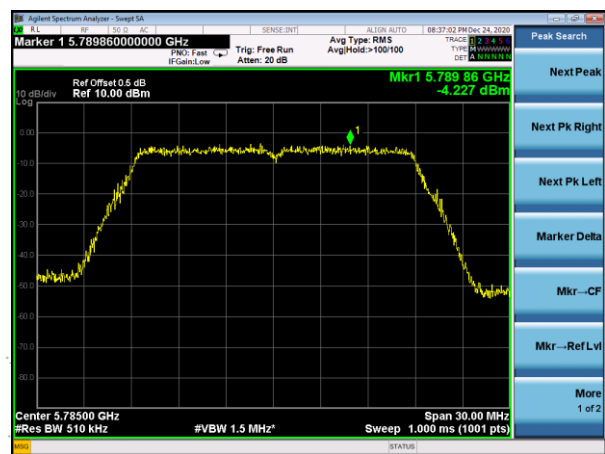
(802.11n20) PSD plot on channel 149



(802.11a) PSD plot on channel 157



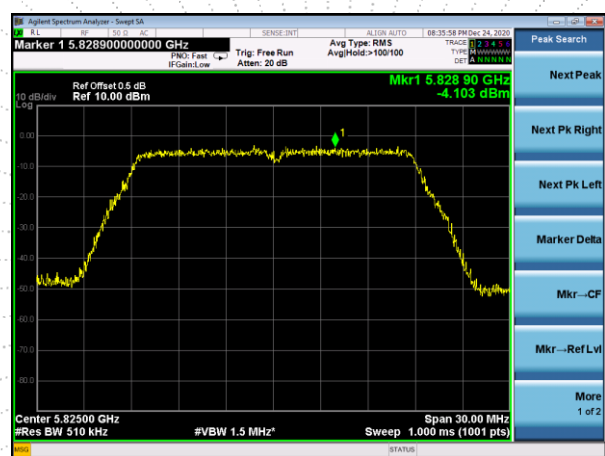
(802.11n20) PSD plot on channel 157



(802.11a) PSD plot on channel 165



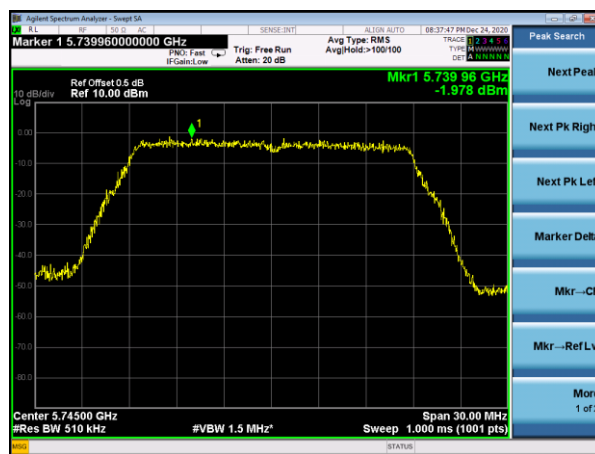
(802.11n20) PSD plot on channel 165



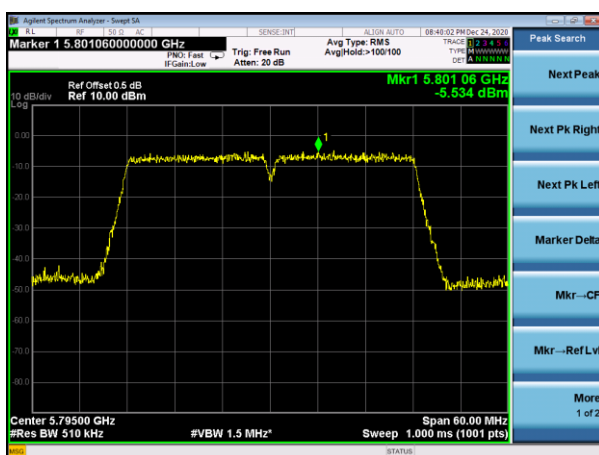
(802.11n40) PSD plot on channel 151



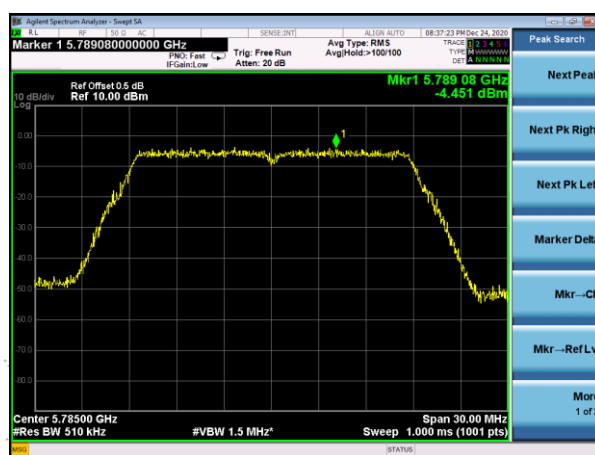
(802.11ac20) PSD plot on channel 149



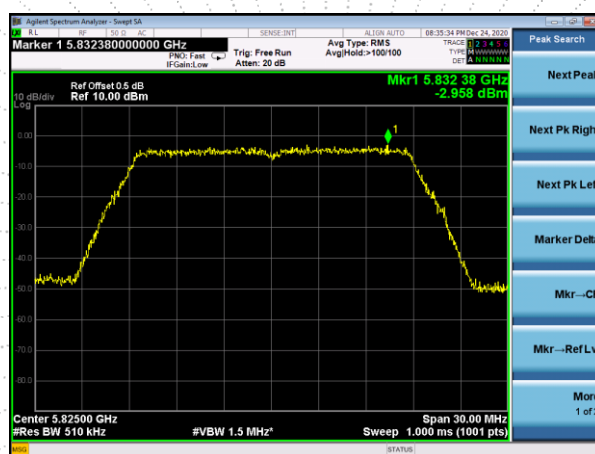
(802.11n40) PSD plot on channel 159



(802.11ac20) PSD plot on channel 157



(802.11ac20) PSD plot on channel 165



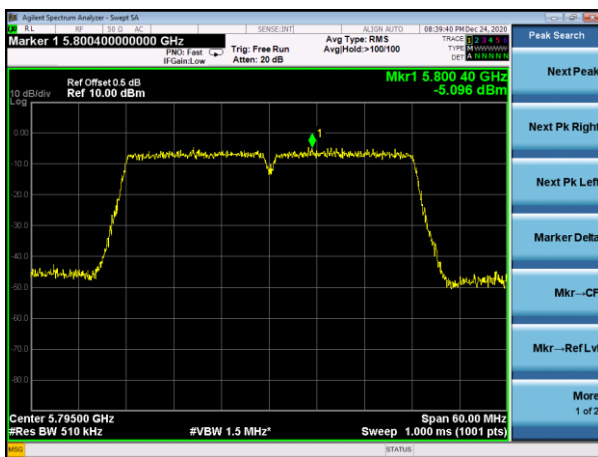
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

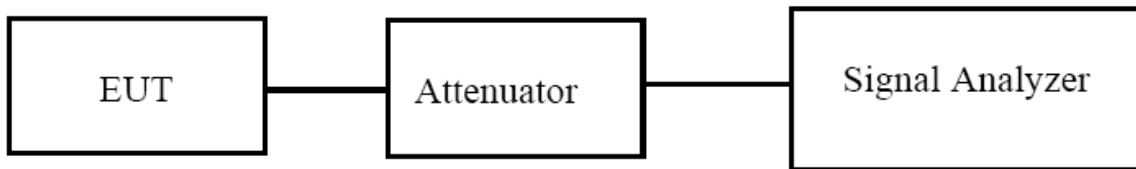


(802.11ac40) PSD plot on channel 159



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.

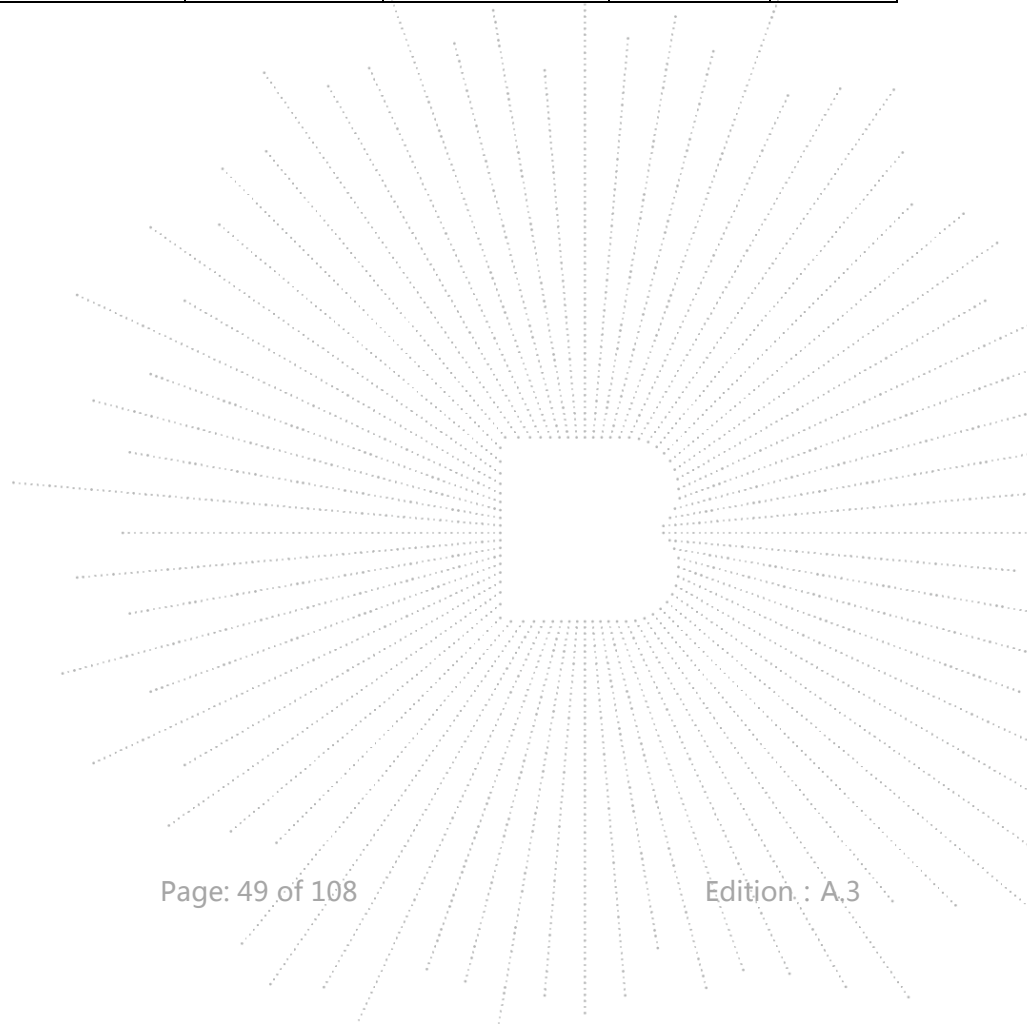
9.5 Test Result

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V
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.

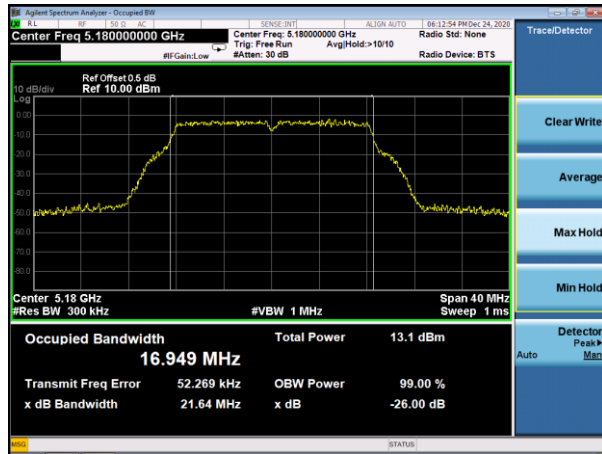
Mode	Channel	Frequency (MHz)	99% bandwidth(MHz)	26dB bandwidth (MHz)	Limit MHz	Result
			ANT A	ANT A		
802.11a	CH36	5180	16.949	21.64	N/A	Pass
	CH40	5200	17.024	21.73	N/A	Pass
	CH48	5240	17.024	21.55	N/A	Pass
802.11 n20	CH36	5180	18.094	21.83	N/A	Pass
	CH40	5200	18.095	21.96	N/A	Pass
	CH48	5240	18.091	21.64	N/A	Pass
802.11 n40	CH 38	5190	36.607	40.91	N/A	Pass
	CH 46	5230	36.553	41.27	N/A	Pass
802.11 ac20	CH36	5180	18.064	21.75	N/A	Pass
	CH40	5200	18.099	21.85	N/A	Pass
	CH48	5240	18.087	21.70	N/A	Pass
802.11 ac40	CH 38	5190	36.505	40.45	N/A	Pass
	CH 46	5230	36.609	41.37	N/A	Pass
802.11 AC80	CH 42	5210	75.820	83.65	N/A	Pass

Mode	Channel	Frequency (MHz)	99% bandwidth (MHz)	26dB bandwidth (MHz)	Limit MHz	Result
			ANT B	ANT B		
802.11a	CH36	5180	16.953	21.64	N/A	Pass
	CH40	5200	17.027	21.71	N/A	Pass
	CH48	5240	17.012	21.56	N/A	Pass
802.11 n20	CH36	5180	18.098	21.90	N/A	Pass
	CH40	5200	18.106	21.78	N/A	Pass
	CH48	5240	18.158	21.87	N/A	Pass
802.11 n40	CH 38	5190	36.579	41.00	N/A	Pass
	CH 46	5230	36.628	40.89	N/A	Pass
802.11 ac20	CH36	5180	18.077	21.83	N/A	Pass
	CH40	5200	18.110	21.85	N/A	Pass
	CH48	5240	18.101	21.89	N/A	Pass
802.11 ac40	CH 38	5190	36.628	41.20	N/A	Pass
	CH 46	5230	36.688	41.09	N/A	Pass
802.11 AC80	CH 42	5210	75.657	82.90	N/A	Pass

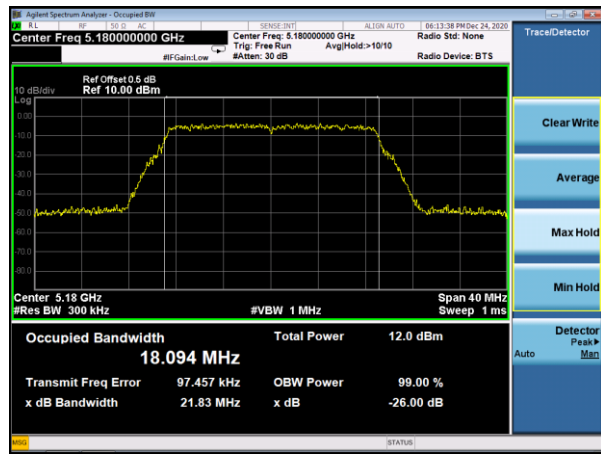


Test plot

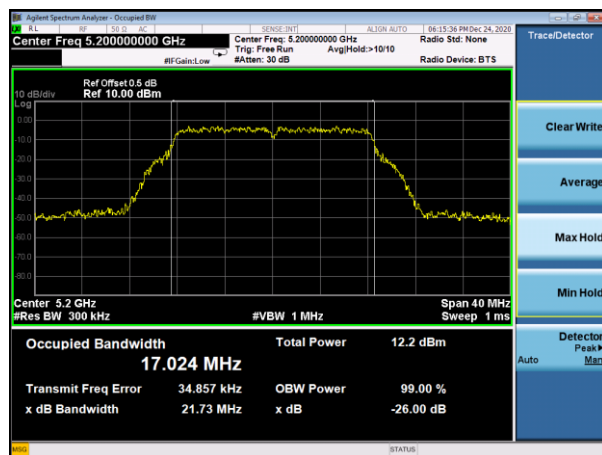
(802.11a) 26dB&99%Bandwidth plot on channel 36



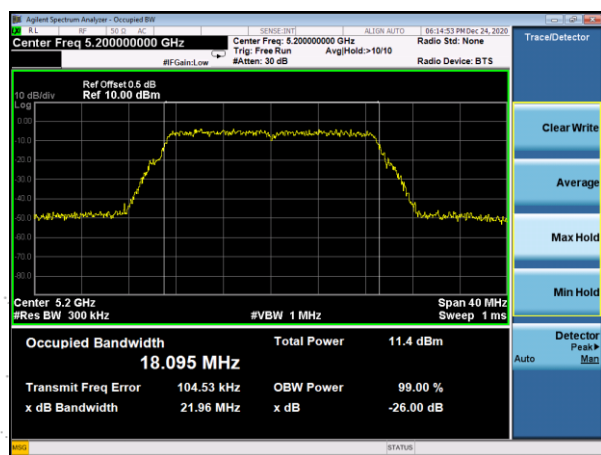
(802.11 n20) 26dB&99%Bandwidth plot on channel 36



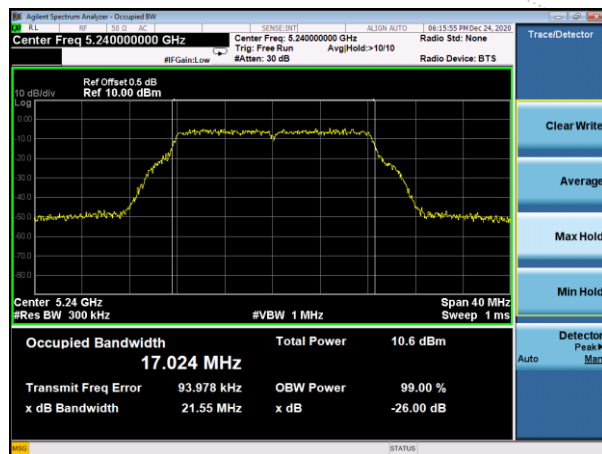
(802.11a) 26dB&99%Bandwidth plot on channel 40



(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

