

TEST REPORT

Report No.: BCTC2201502914-4E

Applicant: Shenzhen Wuhaio Electronic Intelligent Technology Co., Ltd.

Product Name: Windows Laptop

Model/Type Ref.: CreaBook i540

Tested Date: 2022-01-10 to 2022-01-25

Issued Date: 2022-01-26

Shenzhen BCTC Testing Co., Ltd.



FCC ID: 2A2V4-I540

Product Name: Windows Laptop

Trademark: N/A

Model/Type Ref.: CreaBook i540

Prepared For: Shenzhen Wuhao Electronic Intelligent Technology Co., Ltd.

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Manufacturer: Shenzhen Wuhao Electronic Intelligent Technology Co., Ltd.

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Prepared By: Shenzhen BCTC Testing Co., Ltd.

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Sample Received Date: 2022-01-10

Sample tested Date: 2022-01-10 to 2022-01-25

Issue Date: 2022-01-26

Report No.: BCTC2201502914-4E

Test Standards: FCC Part15 15.407
ANSI C63.10-2013

Test Results: PASS

Tested by:



Eric Yang/Project Handler

Approved by:



Zero Zhou/Reviewer

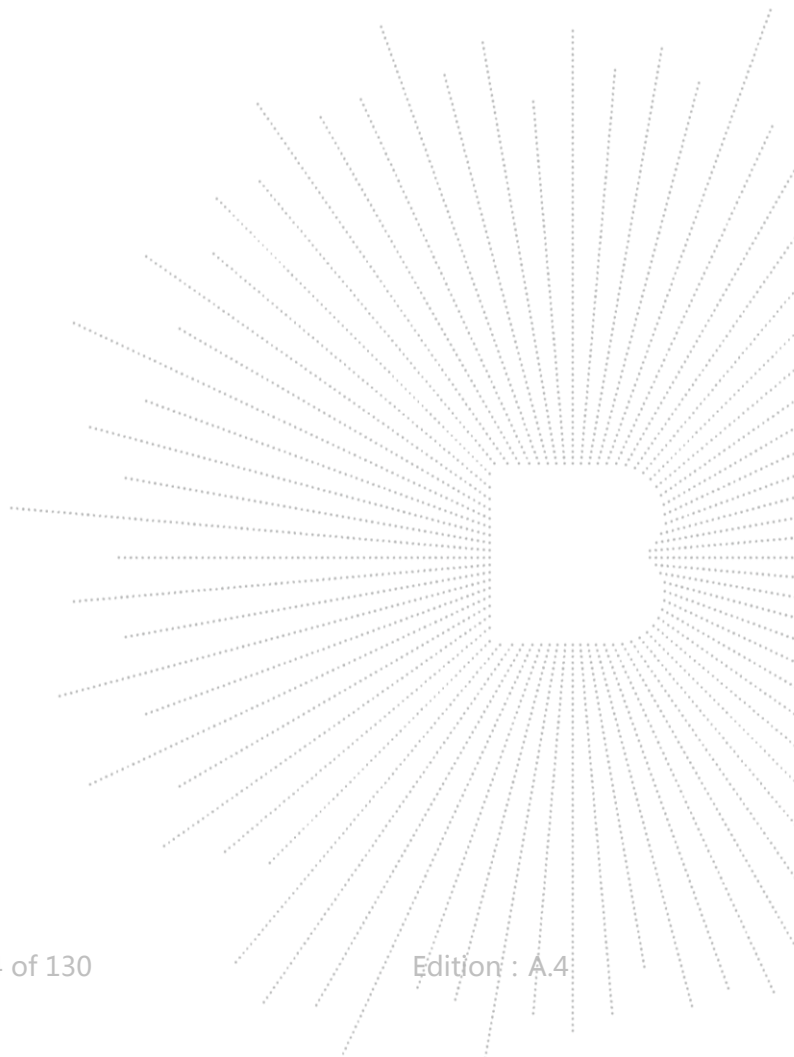
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(Note: N/A Means Not Applicable)



1. Version

Report No.	Issue Date	Description	Approved
BCTC2201502914-4E	2022-01-26	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)(6)	PASS
2	Conducted Emission	15.207	N/A
3	26 dB and 99% Emission Bandwidth	15.407 (a)(5) 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	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(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission(150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59°C

4. Product Information And Test Setup

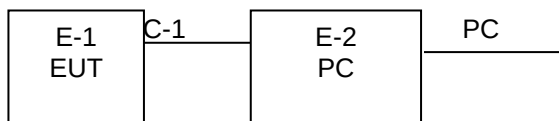
4.1 Product Information

Model/Type Ref.:	CreaBook i540
Model differences:	N/A
IEEE 802.11 WLAN	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth)
Mode Supported	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;
Data Rate	5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11a/n(HT40)/ac40; 802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-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 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ;
Antenna installation:	FPC antenna
Antenna Gain:	1dBi
Ratings:	DC 7.6V From battery, DC 19V From adapter
Adapter:	MODEL: JHD-AP045U-190210-AF INPUT: 100-240V~ 50/60Hz 1.5A OUTPUT: DC 19V 2.1A

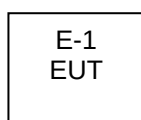
4.2 Test Setup Configuration

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	JHD-AP045U-19 0210-AF	N/A	Auxiliary

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

5.1G

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
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)	Channel	Frequency (MHz)
38	5190	46	5230	-	-	-	-
151	5755	159	5795	-	-	-	-

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

5.8G

802.11a/n/ac(20MHz) 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)	Channel	Frequency (MHz)
151	5755	159	5795	-	-	-	-

802.11n/ac (80MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	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.

5.1G

Pretest Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48
Mode 2	802.11n/ ac40 CH38/ CH 46
Mode 3	802.11 ac80 CH 42
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48
Mode 2	802.11n/ ac40 CH38/ CH 46
Mode 3	802.11 ac80 CH 42

Note:

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

5.8G

Pretest Mode	Description
Mode 1	802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac 80 CH155
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac 80 CH155

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	SETUP		
Parameters	DEF	DEF	DEF

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

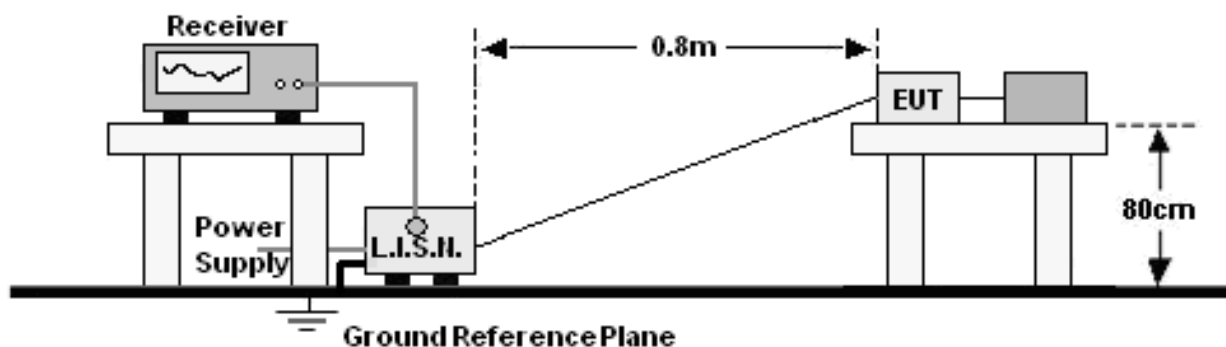
Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB DC-6GHz	1650	May 28, 2021	May 27, 2022

RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022

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	May 28, 2021	May 27, 2022
Receiver	R&S	ESRP	101154	May 28, 2021	May 27, 2022
Amplifier	SKET	LAPA_01G18 G-45dB	\	May 28, 2021	May 27, 2022
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 28, 2021	May 27, 2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	Jun. 01, 2021	May 31, 2022
Horn Antenna	Schwarzbeck	BBHA9120D	1541	Jun. 02, 2021	Jun. 01, 2022
Horn Antenn(18GHz -40GHz)	Schwarzbeck	BBHA9170	00822	Jun. 15, 2021	Jun. 14, 2022
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35- HG	2034381	May 28, 2021	May 27, 2022
Loop Antenna(9kHz -30MHz)	Schwarzbeck	FMZB1519B	00014	Jun. 02, 2021	Jun. 01, 2022
RF cables1(9kHz- 30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-00 08	May 28, 2021	May 27, 2022
RF cables2(30MH z-1GHz)	Huber+Suhnar	30MHz-1GH z	1486150	May 28, 2021	May 27, 2022
RF cables3(1GHz- 40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 28, 2021	May 27, 2022
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz -26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

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

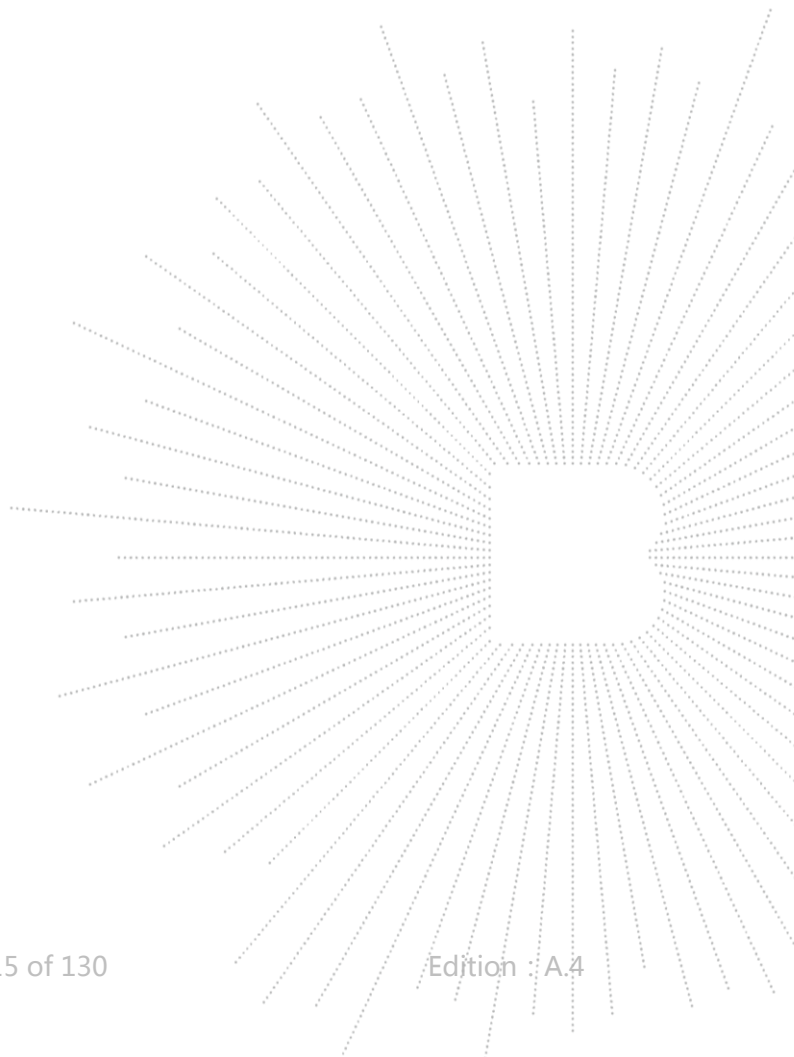
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- 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

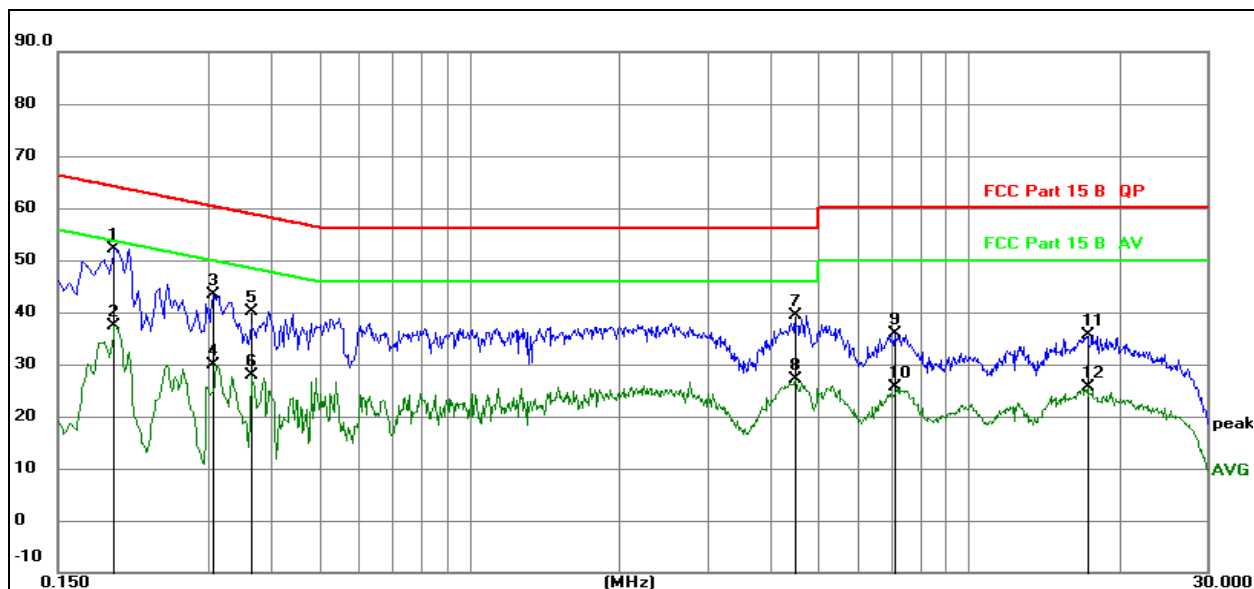
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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 :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4

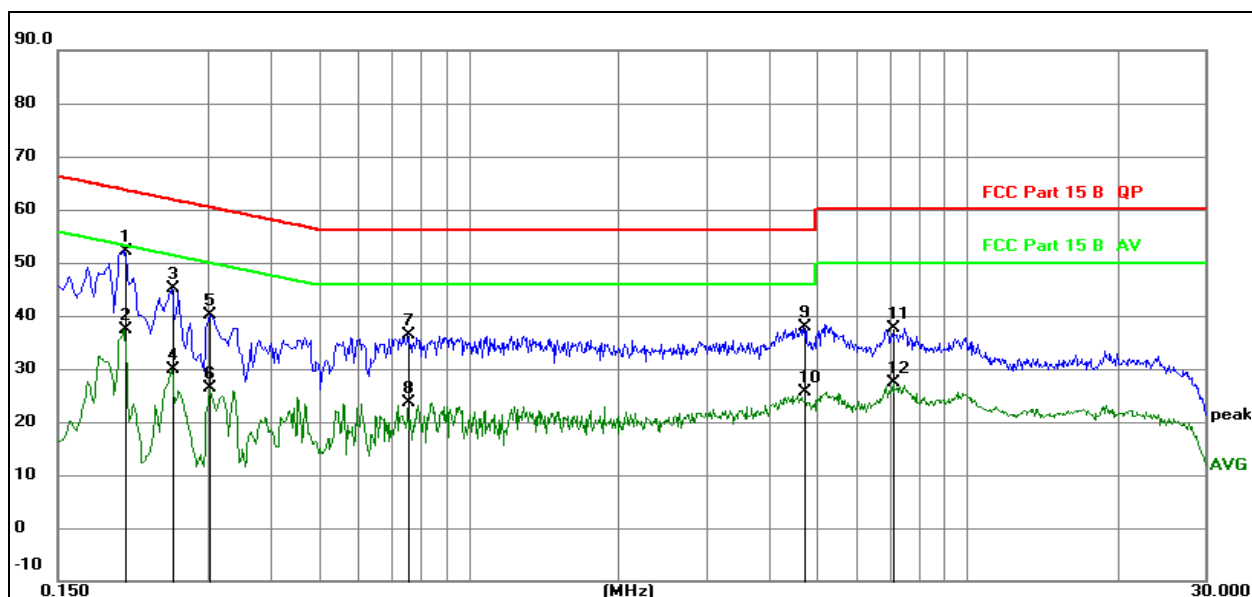


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over=Measurement-Limit

No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1944	32.63	19.60	52.23	63.85	-11.62	QP
2		0.1944	17.82	19.60	37.42	53.85	-16.43	AVG
3		0.3067	23.68	19.61	43.29	60.06	-16.77	QP
4		0.3067	10.22	19.61	29.83	50.06	-20.23	AVG
5		0.3653	20.40	19.61	40.01	58.61	-18.60	QP
6		0.3653	8.19	19.61	27.80	48.61	-20.81	AVG
7		4.5014	19.69	19.69	39.38	56.00	-16.62	QP
8		4.5014	7.40	19.69	27.09	46.00	-18.91	AVG
9		7.0997	16.16	19.73	35.89	60.00	-24.11	QP
10		7.0997	5.79	19.73	25.52	50.00	-24.48	AVG
11		17.2907	15.91	19.76	35.67	60.00	-24.33	QP
12		17.2907	5.77	19.76	25.53	50.00	-24.47	AVG

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4



Remark:

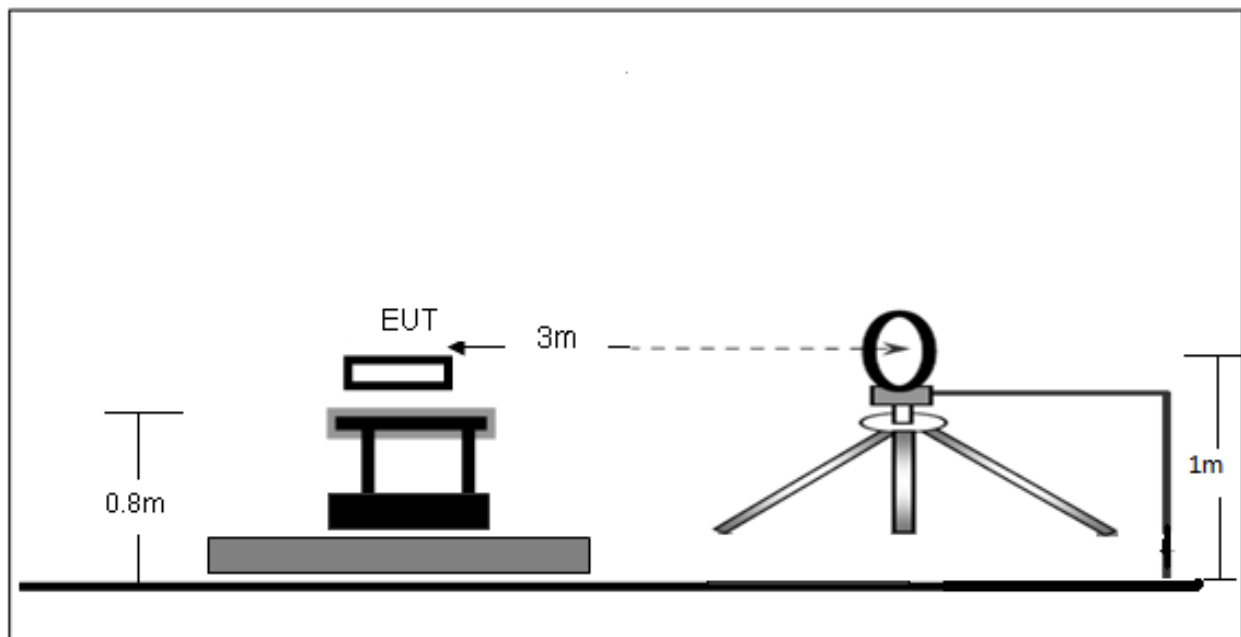
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over=Measurement-Limit

No. Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1 *	0.2040	32.56	19.60	52.16	63.45	-11.29	QP
2	0.2040	17.72	19.60	37.32	53.45	-16.13	AVG
3	0.2535	25.40	19.61	45.01	61.64	-16.63	QP
4	0.2535	10.29	19.61	29.90	51.64	-21.74	AVG
5	0.3030	20.50	19.61	40.11	60.16	-20.05	QP
6	0.3030	6.73	19.61	26.34	50.16	-23.82	AVG
7	0.7575	16.72	19.61	36.33	56.00	-19.67	QP
8	0.7575	3.90	19.61	23.51	46.00	-22.49	AVG
9	4.7040	18.18	19.69	37.87	56.00	-18.13	QP
10	4.7040	5.99	19.69	25.68	46.00	-20.32	AVG
11	7.1070	17.81	19.73	37.54	60.00	-22.46	QP
12	7.1070	7.55	19.73	27.28	50.00	-22.72	AVG

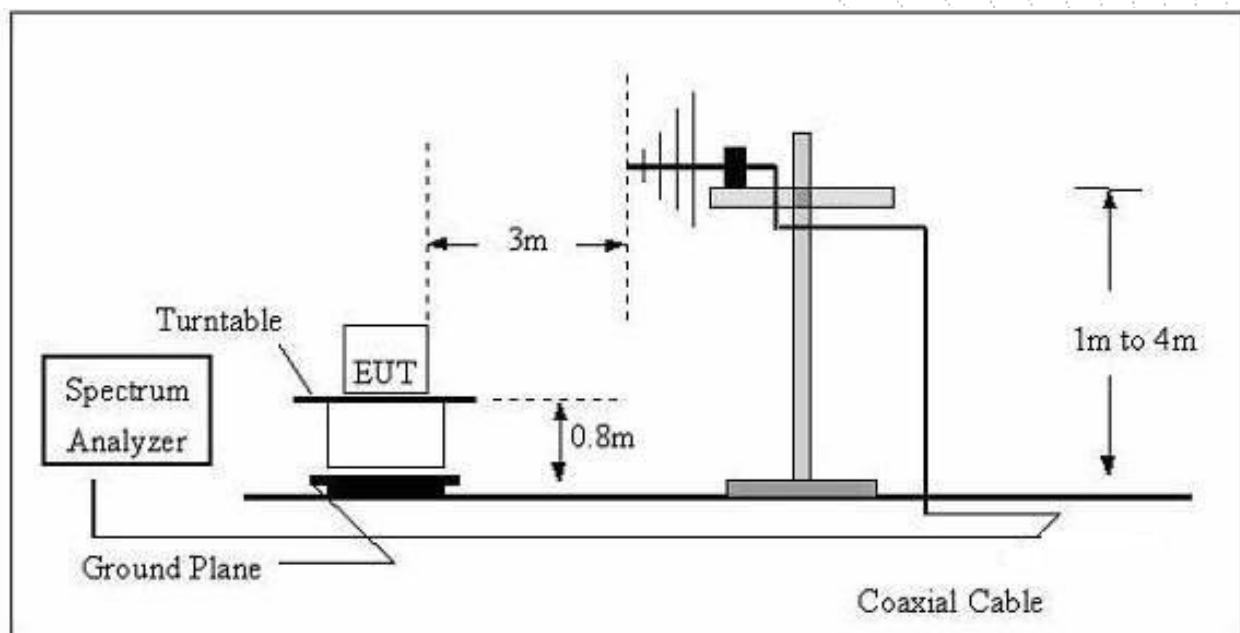
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

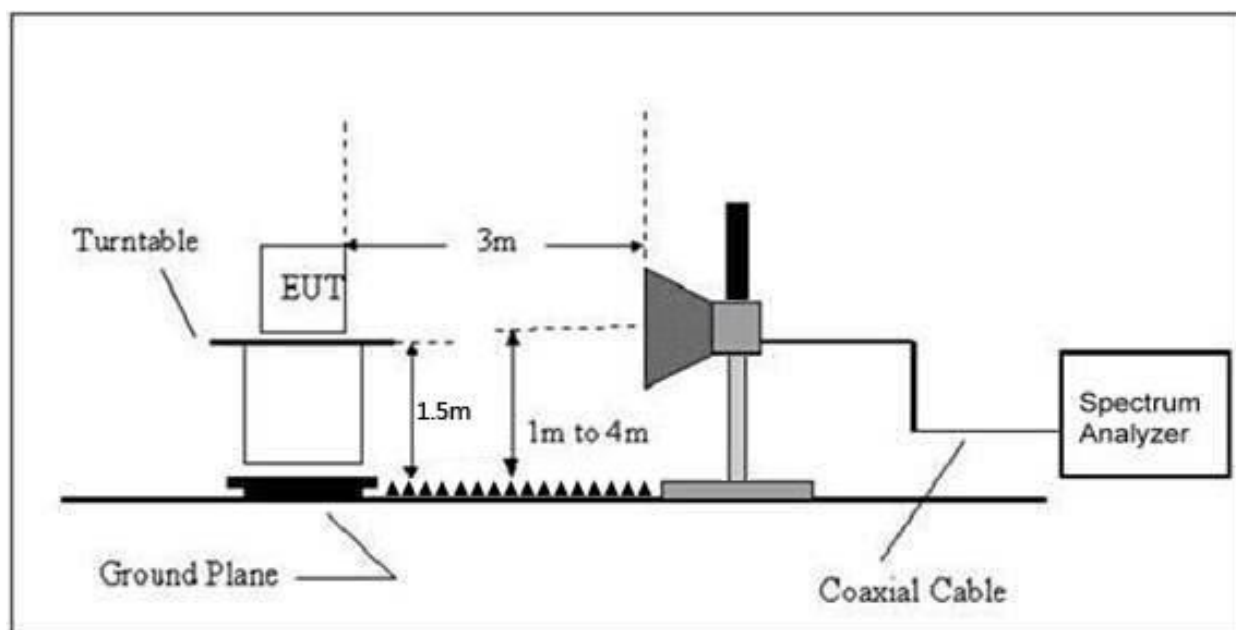
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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 (MHz)	Field Strength uV/m	Distance (m)	Field Strength Limit at 3m Distance	
			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 :	DC 7.6V
Test Mode :	Mode 5	Polarization :	--

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

Note:

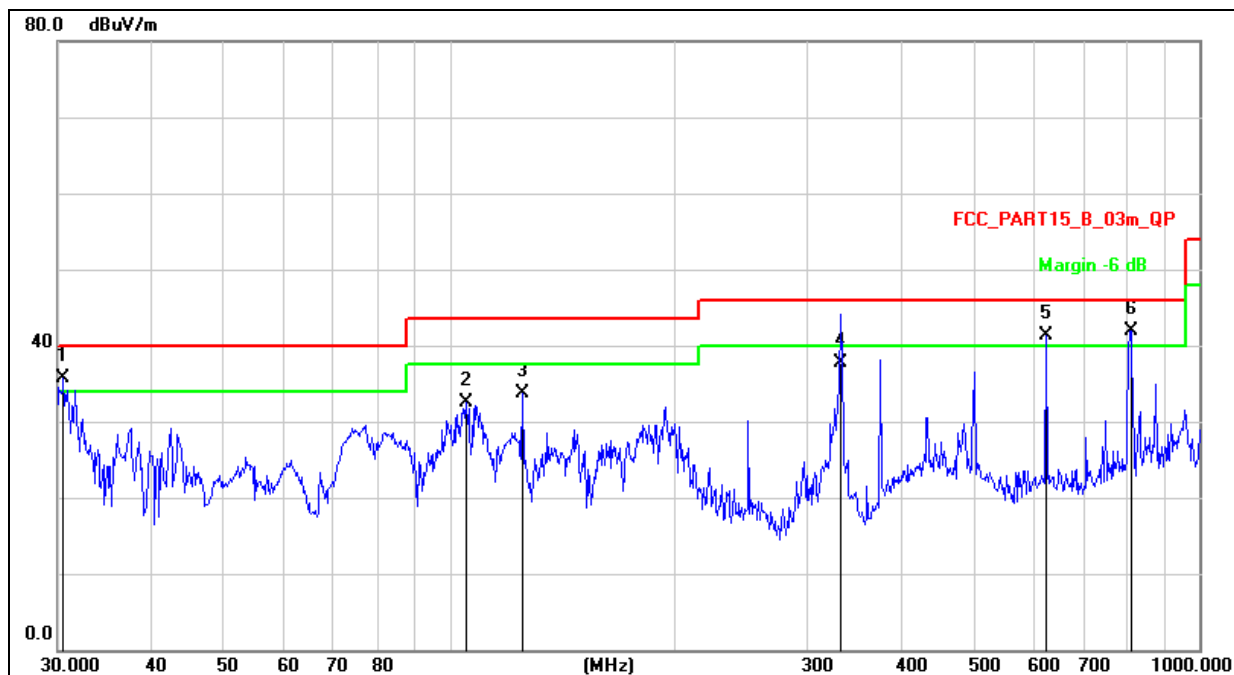
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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 :	DC 7.6V
Test Mode :	Mode 4	Polarization :	Horizontal

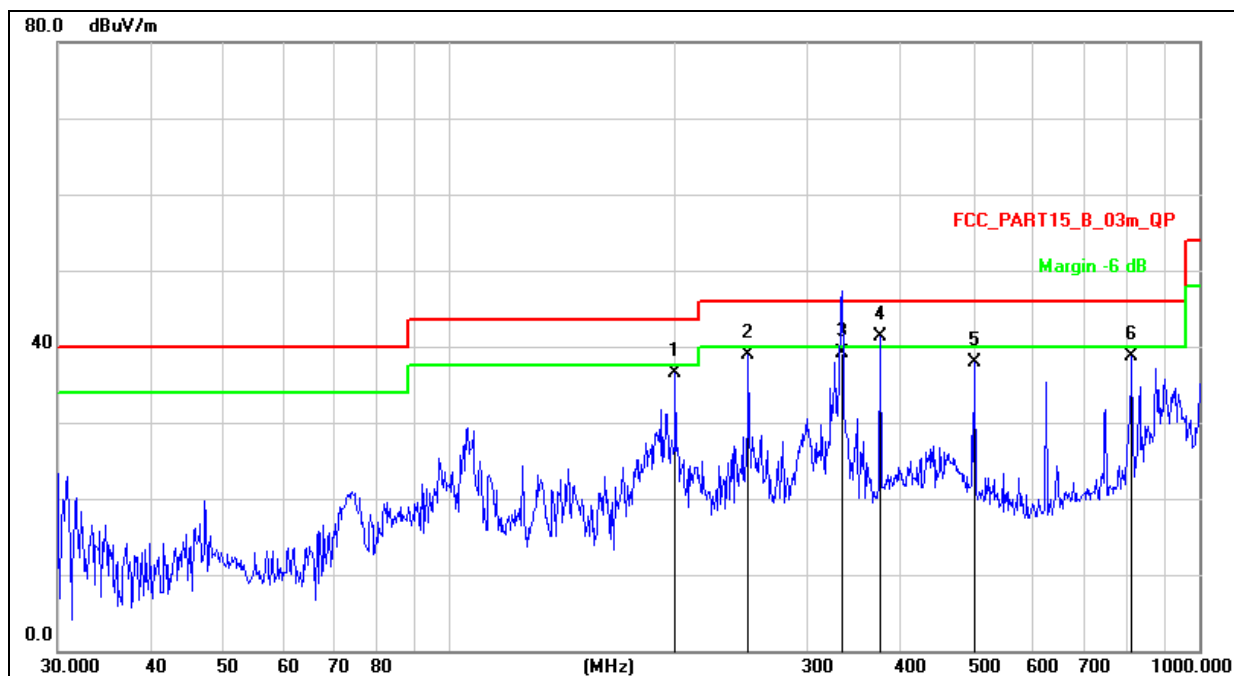


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over=Measurement-Limit

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	!	30.5306	54.03	-18.37	35.66	40.00	-4.34	QP
2		105.2718	49.07	-16.48	32.59	43.50	-10.91	QP
3		125.0066	51.54	-17.81	33.73	43.50	-9.77	QP
4		332.1331	50.45	-12.82	37.63	46.00	-8.37	QP
5	!	625.0780	46.79	-5.41	41.38	46.00	-4.62	QP
6	*	810.2654	43.67	-1.70	41.97	46.00	-4.03	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	DC 7.6V
Test Mode :	Mode 4	Polarization :	Vertical



Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over=Measurement-Limit

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		199.9856	52.03	-15.45	36.58	43.50	-6.92	QP
2		250.3012	53.45	-14.64	38.81	46.00	-7.19	QP
3		333.2082	51.91	-12.79	39.12	46.00	-6.88	QP
4	*	375.9385	52.94	-11.55	41.39	46.00	-4.61	QP
5		501.1790	46.20	-8.28	37.92	46.00	-8.08	QP
6		813.1115	40.41	-1.64	38.77	46.00	-7.23	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.1G) - 802.11a
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
V	4434.088	63.21	5.94	35.40	44.00	60.55	68.2	-7.65	PK
V	4434.088	43.86	5.94	35.40	44.00	41.20	54	-12.80	AV
V	10360.103	60.99	8.46	39.75	44.50	64.70	68.2	-3.50	PK
V	10360.103	43.85	8.46	39.75	44.50	47.56	54	-6.44	AV
V	15540.132	63.00	10.12	38.80	44.10	67.82	74	-6.18	PK
V	15540.132	43.06	10.12	38.80	42.70	49.28	54	-4.72	AV
H	4434.074	64.26	5.94	35.18	44.00	61.38	68.2	-6.82	PK
H	4434.074	43.47	5.94	35.18	44.00	40.59	54	-13.41	AV
H	10360.052	52.26	8.46	38.71	44.50	54.93	68.2	-13.27	PK
H	10360.052	40.05	8.46	38.71	44.50	42.72	54	-11.28	AV
H	15540.024	53.90	10.12	38.38	44.10	58.30	74	-15.70	PK
H	15540.024	44.17	10.12	38.38	44.10	48.57	54	-5.43	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.125	62.63	6.48	36.35	44.05	61.41	74	-12.59	PK
V	4592.125	43.63	6.48	36.35	44.05	42.41	54	-11.59	AV
V	10400.112	64.91	8.47	37.88	44.51	66.75	68.2	-1.45	PK
V	10400.112	43.25	8.47	37.88	44.51	45.09	54	-8.91	AV
V	15600.092	64.19	10.12	38.80	44.10	69.01	74	-4.99	PK
V	15600.092	43.22	10.12	38.80	42.70	49.44	54	-4.56	AV
H	4592.043	62.46	6.48	36.37	44.05	61.26	74	-12.74	PK
H	4592.043	43.53	6.48	36.37	44.05	42.33	54	-11.67	AV
H	10400.136	51.60	8.47	38.64	44.50	54.21	68.2	-13.99	PK
H	10400.136	42.80	8.47	38.64	44.50	45.41	54	-8.59	AV
H	15600.123	53.41	10.12	38.38	44.10	57.81	74	-16.19	PK
H	15600.123	43.59	10.12	38.38	44.10	47.99	54	-6.01	AV
High Channel (5240 MHz)-Above 1G									
V	4739.004	60.47	7.10	37.24	43.50	61.31	74	-12.69	PK
V	4739.004	43.31	7.10	37.24	43.50	44.15	54	-9.85	AV
V	10480.064	61.24	8.46	37.68	44.50	62.88	68.2	-5.32	PK
V	10480.064	43.83	8.46	37.68	44.50	45.47	54	-8.53	AV
V	15720.192	61.40	10.12	38.80	44.10	66.22	74	-7.78	PK
V	15720.192	43.25	10.12	38.80	42.70	49.47	54	-4.53	AV
H	4739.104	62.60	7.10	37.24	43.50	63.44	74	-10.56	PK
H	4739.104	43.09	7.10	37.24	43.50	43.93	54	-10.07	AV
H	10480.156	51.36	8.46	38.57	44.50	53.89	68.2	-14.31	PK
H	10480.156	44.07	8.46	38.57	44.50	46.60	54	-7.40	AV
H	15720.015	50.91	10.12	38.38	44.10	55.31	74	-18.69	PK
H	15720.015	42.50	10.12	38.38	44.10	46.90	54	-7.10	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	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
V	4434.132	63.70	5.94	35.40	44.00	61.04	68.2	-7.16	PK
V	4434.132	43.73	5.94	35.40	44.00	41.07	54	-12.93	AV
V	10360.023	63.80	8.46	39.75	44.50	67.51	68.2	-0.69	PK
V	10360.023	43.86	8.46	39.75	44.50	47.57	54	-6.43	AV
V	15540.122	60.35	10.12	38.80	44.10	65.17	74	-8.83	PK
V	15540.122	43.63	10.12	38.80	42.70	49.85	54	-4.15	AV
H	4434.185	63.45	5.94	35.18	44.00	60.57	68.2	-7.63	PK
H	4434.185	43.09	5.94	35.18	44.00	40.21	54	-13.79	AV
H	10360.044	52.70	8.46	38.71	44.50	55.37	68.2	-12.83	PK
H	10360.044	43.92	8.46	38.71	44.50	46.59	54	-7.41	AV
H	15540.144	52.89	10.12	38.38	44.10	57.29	74	-16.71	PK
H	15540.144	41.43	10.12	38.38	44.10	45.83	54	-8.17	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.162	61.96	6.48	36.35	44.05	60.74	74	-13.26	PK
V	4592.162	43.92	6.48	36.35	44.05	42.70	54	-11.30	AV
V	10400.033	62.09	8.47	37.88	44.51	63.93	68.2	-4.27	PK
V	10400.033	43.63	8.47	37.88	44.51	45.47	54	-8.53	AV
V	15600.200	63.34	10.12	38.80	44.10	68.16	74	-5.84	PK
V	15600.200	43.73	10.12	38.80	42.70	49.95	54	-4.05	AV
H	4592.008	64.90	6.48	36.37	44.05	63.70	74	-10.30	PK
H	4592.008	43.73	6.48	36.37	44.05	42.53	54	-11.47	AV
H	10400.028	50.57	8.47	38.64	44.50	53.18	68.2	-15.02	PK
H	10400.028	40.22	8.47	38.64	44.50	42.83	54	-11.17	AV
H	15600.056	52.50	10.12	38.38	44.10	56.90	74	-17.10	PK
H	15600.056	42.72	10.12	38.38	44.10	47.12	54	-6.88	AV
High Channel (5240 MHz)-Above 1G									
V	4739.151	62.08	7.10	37.24	43.50	62.92	74	-11.08	PK
V	4739.151	43.67	7.10	37.24	43.50	44.51	54	-9.49	AV
V	10480.157	60.23	8.46	37.68	44.50	61.87	68.2	-6.33	PK
V	10480.157	43.64	8.46	37.68	44.50	45.28	54	-8.72	AV
V	15720.082	64.00	10.12	38.80	44.10	68.82	74	-5.18	PK
V	15720.082	43.94	10.12	38.80	42.70	50.16	54	-3.84	AV
H	4739.015	63.52	7.10	37.24	43.50	64.36	74	-9.64	PK
H	4739.015	43.54	7.10	37.24	43.50	44.38	54	-9.62	AV
H	10480.046	52.49	8.46	38.57	44.50	55.02	68.2	-13.18	PK
H	10480.046	44.33	8.46	38.57	44.50	46.86	54	-7.14	AV
H	15720.150	52.32	10.12	38.38	44.10	56.72	74	-17.28	PK
H	15720.150	40.47	10.12	38.38	44.10	44.87	54	-9.13	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
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G									
V	4434.063	64.21	5.94	35.40	44.00	61.55	68.2	-6.65	PK
V	4434.063	43.65	5.94	35.40	44.00	40.99	54	-13.01	AV
V	10380.157	63.36	8.46	39.75	44.50	67.07	68.2	-1.13	PK
V	10380.157	43.04	8.46	39.75	44.50	46.75	54	-7.25	AV
V	15570.181	61.87	10.12	38.80	44.10	66.69	74	-7.31	PK
V	15570.181	43.04	10.12	38.80	42.70	49.26	54	-4.74	AV
H	4434.125	60.53	5.94	35.18	44.00	57.65	74	-16.35	PK
H	4434.125	43.08	5.94	35.18	44.00	40.20	54	-13.80	AV
H	10380.052	51.88	8.46	38.71	44.50	54.55	68.2	-13.65	PK
H	10380.052	41.75	8.46	38.71	44.50	44.42	54	-9.58	AV
H	15570.060	50.43	10.12	38.38	44.10	54.83	74	-19.17	PK
H	15570.060	44.75	10.12	38.38	44.10	49.15	54	-4.85	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.197	62.97	6.48	36.35	44.05	61.75	68.2	-6.45	PK
V	4739.197	43.78	6.48	36.35	44.05	42.56	54	-11.44	AV
V	10460.198	63.28	8.47	37.88	44.51	65.12	68.2	-3.08	PK
V	10460.198	43.83	8.47	37.88	44.51	45.67	54	-8.33	AV
V	15690.047	64.50	10.12	38.80	44.10	69.32	74	-4.68	PK
V	15690.047	43.85	10.12	38.80	42.70	50.07	54	-3.93	AV
H	4739.136	63.43	6.48	36.37	44.05	62.23	68.2	-5.97	PK
H	4739.136	44.00	6.48	36.37	44.05	42.80	54	-11.20	AV
H	10460.096	50.81	8.47	38.64	44.50	53.42	68.2	-14.78	PK
H	10460.096	43.21	8.47	38.64	44.50	45.82	54	-8.18	AV
H	15690.036	52.80	10.12	38.38	44.10	57.20	74	-16.80	PK
H	15690.036	40.84	10.12	38.38	44.10	45.24	54	-8.76	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 AC20
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
V	4434.063	64.32	5.94	35.40	44.00	61.66	68.2	-6.54	PK
V	4434.063	43.15	5.94	35.40	44.00	40.49	54	-13.51	AV
V	10360.046	61.92	8.46	39.75	44.50	65.63	68.2	-2.57	PK
V	10360.046	43.49	8.46	39.75	44.50	47.20	54	-6.80	AV
V	15540.024	63.81	10.12	38.80	44.10	68.63	74	-5.37	PK
V	15540.024	43.39	10.12	38.80	42.70	49.61	54	-4.39	AV
H	4434.080	64.24	5.94	35.18	44.00	61.36	68.2	-6.84	PK
H	4434.080	43.34	5.94	35.18	44.00	40.46	54	-13.54	AV
H	10360.036	53.63	8.46	38.71	44.50	56.30	68.2	-11.90	PK
H	10360.036	42.77	8.46	38.71	44.50	45.44	54	-8.56	AV
H	15540.065	54.15	10.12	38.38	44.10	58.55	74	-15.45	PK
H	15540.065	42.89	10.12	38.38	44.10	47.29	54	-6.71	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.070	62.26	6.48	36.35	44.05	61.04	74	-12.96	PK
V	4592.070	43.38	6.48	36.35	44.05	42.16	54	-11.84	AV
V	10400.078	64.18	8.47	37.88	44.51	66.02	68.2	-2.18	PK
V	10400.078	43.76	8.47	37.88	44.51	45.60	54	-8.40	AV
V	15600.022	62.29	10.12	38.80	44.10	67.11	74	-6.89	PK
V	15600.022	43.64	10.12	38.80	42.70	49.86	54	-4.14	AV
H	4592.188	64.78	6.48	36.37	44.05	63.58	74	-10.42	PK
H	4592.188	43.03	6.48	36.37	44.05	41.83	54	-12.17	AV
H	10400.146	54.69	8.47	38.64	44.50	57.30	68.2	-10.90	PK
H	10400.146	44.45	8.47	38.64	44.50	47.06	54	-6.94	AV
H	15600.109	52.01	10.12	38.38	44.10	56.41	74	-17.59	PK
H	15600.109	43.36	10.12	38.38	44.10	47.76	54	-6.24	AV
High Channel (5240 MHz)-Above 1G									
V	4739.071	62.01	7.10	37.24	43.50	62.85	74	-11.15	PK
V	4739.071	43.90	7.10	37.24	43.50	44.74	54	-9.26	AV
V	10480.167	63.10	8.46	37.68	44.50	64.74	68.2	-3.46	PK
V	10480.167	43.47	8.46	37.68	44.50	45.11	54	-8.89	AV
V	15720.169	63.82	10.12	38.80	44.10	68.64	74	-5.36	PK
V	15720.169	43.80	10.12	38.80	42.70	50.02	54	-3.98	AV
H	4739.197	64.19	7.10	37.24	43.50	65.03	74	-8.97	PK
H	4739.197	43.65	7.10	37.24	43.50	44.49	54	-9.51	AV
H	10480.168	51.09	8.46	38.57	44.50	53.62	68.2	-14.58	PK
H	10480.168	44.09	8.46	38.57	44.50	46.62	54	-7.38	AV
H	15720.016	51.27	10.12	38.38	44.10	55.67	74	-18.33	PK
H	15720.016	43.20	10.12	38.38	44.10	47.60	54	-6.40	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 AC40
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Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G									
V	4434.053	64.18	5.94	35.40	44.00	61.52	68.2	-6.68	PK
V	4434.053	43.86	5.94	35.40	44.00	41.20	54	-12.80	AV
V	10380.097	61.36	8.46	39.75	44.50	65.07	68.2	-3.13	PK
V	10380.097	43.35	8.46	39.75	44.50	47.06	54	-6.94	AV
V	15570.055	64.62	10.12	38.80	44.10	69.44	74	-4.56	PK
V	15570.055	43.11	10.12	38.80	42.70	49.33	54	-4.67	AV
H	4434.185	62.23	5.94	35.18	44.00	59.35	74	-14.65	PK
H	4434.185	43.91	5.94	35.18	44.00	41.03	54	-12.97	AV
H	10380.178	51.03	8.46	38.71	44.50	53.70	68.2	-14.50	PK
H	10380.178	43.07	8.46	38.71	44.50	45.74	54	-8.26	AV
H	15570.159	51.07	10.12	38.38	44.10	55.47	74	-18.53	PK
H	15570.159	41.07	10.12	38.38	44.10	45.47	54	-8.53	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.118	60.38	6.48	36.35	44.05	59.16	68.2	-9.04	PK
V	4739.118	43.74	6.48	36.35	44.05	42.52	54	-11.48	AV
V	10460.054	61.86	8.47	37.88	44.51	63.70	68.2	-4.50	PK
V	10460.054	43.29	8.47	37.88	44.51	45.13	54	-8.87	AV
V	15690.178	62.73	10.12	38.80	44.10	67.55	74	-6.45	PK
V	15690.178	43.44	10.12	38.80	42.70	49.66	54	-4.34	AV
H	4739.189	61.58	6.48	36.37	44.05	60.38	68.2	-7.82	PK
H	4739.189	43.28	6.48	36.37	44.05	42.08	54	-11.92	AV
H	10460.123	50.79	8.47	38.64	44.50	53.40	68.2	-14.80	PK
H	10460.123	41.71	8.47	38.64	44.50	44.32	54	-9.68	AV
H	15690.083	50.66	10.12	38.38	44.10	55.06	74	-18.94	PK
H	15690.083	43.83	10.12	38.38	44.10	48.23	54	-5.77	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	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5210 MHz)-Above 1G									
V	4434.016	62.29	5.94	35.40	44.00	59.63	68.2	-8.57	PK
V	4434.016	43.54	5.94	35.40	44.00	40.88	54	-13.12	AV
V	10420.039	63.26	8.46	39.75	44.50	66.97	68.2	-1.23	PK
V	10420.039	43.60	8.46	39.75	44.50	47.31	54	-6.69	AV
V	15630.128	64.19	10.12	38.80	44.10	69.01	74	-4.99	PK
V	15630.128	43.30	10.12	38.80	42.70	49.52	54	-4.48	AV
H	4434.196	62.64	5.94	35.18	44.00	59.76	68.2	-8.44	PK
H	4434.196	43.99	5.94	35.18	44.00	41.11	54	-12.89	AV
H	10420.012	53.30	8.46	38.71	44.50	55.97	68.2	-12.23	PK
H	10420.012	40.21	8.46	38.71	44.50	42.88	54	-11.12	AV
H	15630.071	50.33	10.12	38.38	44.10	54.73	74	-19.27	PK
H	15630.071	40.72	10.12	38.38	44.10	45.12	54	-8.88	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
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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	4679.092	55.04	5.94	35.40	44.00	52.38	74	-21.62	PK
V	4679.092	43.43	5.94	35.40	44.00	40.77	54	-13.23	AV
V	11490.116	56.95	8.46	39.75	44.50	60.66	68.2	-7.54	PK
V	11490.116	43.31	8.46	39.75	44.50	47.02	54	-6.98	AV
V	17235.143	56.01	10.12	38.80	44.10	60.83	68.2	-7.37	PK
V	17235.143	43.66	10.12	38.80	42.70	49.88	54	-4.12	AV
H	4679.022	57.64	5.94	35.18	44.00	54.76	74	-19.24	PK
H	4679.022	43.63	5.94	35.18	44.00	40.75	54	-13.25	AV
H	11490.002	52.13	8.46	38.71	44.50	54.80	68.2	-13.40	PK
H	11490.002	40.43	8.46	38.71	44.50	43.10	54	-10.90	AV
H	17235.015	50.73	10.12	38.38	44.10	55.13	68.2	-13.07	PK
H	17235.015	40.28	10.12	38.38	44.10	44.68	54	-9.32	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.180	54.75	6.48	36.35	44.05	53.53	74	-20.47	PK
V	4592.180	43.69	6.48	36.35	44.05	42.47	54	-11.53	AV
V	11570.177	58.24	8.47	37.88	44.51	60.08	68.2	-8.12	PK
V	11570.177	43.40	8.47	37.88	44.51	45.24	54	-8.76	AV
V	17355.177	57.86	10.12	38.80	44.10	62.68	68.2	-5.52	PK
V	17355.177	39.23	10.12	38.80	42.70	45.45	54	-8.55	AV
H	4592.193	57.89	6.48	36.37	44.05	56.69	74	-17.31	PK
H	4592.193	43.50	6.48	36.37	44.05	42.30	54	-11.70	AV
H	11570.150	54.01	8.47	38.64	44.50	56.62	68.2	-11.58	PK
H	11570.150	42.57	8.47	38.64	44.50	45.18	54	-8.82	AV
H	17355.071	53.91	10.12	38.38	44.10	58.31	68.2	-9.89	PK
H	17355.071	43.78	10.12	38.38	44.10	48.18	54	-5.82	AV
High Channel (5825 MHz)-Above 1G									
V	6039.029	56.69	7.10	37.24	43.50	57.53	68.2	-10.67	PK
V	6039.029	43.76	7.10	37.24	43.50	44.60	54	-9.40	AV
V	11650.095	60.11	8.46	37.68	44.50	61.75	74	-12.25	PK
V	11650.095	43.42	8.46	37.68	44.50	45.06	54	-8.94	AV
V	17475.136	54.60	10.12	38.80	44.10	59.42	68.2	-8.78	PK
V	17475.136	43.30	10.12	38.80	42.70	49.52	54	-4.48	AV
H	6039.084	56.27	7.10	37.24	43.50	57.11	68.2	-11.09	PK
H	6039.084	43.56	7.10	37.24	43.50	44.40	54	-9.60	AV
H	11650.096	52.13	8.46	38.57	44.50	54.66	74	-19.34	PK
H	11650.096	41.99	8.46	38.57	44.50	44.52	54	-9.48	AV
H	17475.107	54.90	10.12	38.38	44.10	59.30	68.2	-8.90	PK
H	17475.107	42.04	10.12	38.38	44.10	46.44	54	-7.56	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 :	TX (5.8G) --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 (5745 MHz)-Above 1G									
V	4679.137	59.14	5.94	35.40	44.00	56.48	74	-17.52	PK
V	4679.137	43.63	5.94	35.40	44.00	40.97	54	-13.03	AV
V	11490.071	56.06	8.46	39.75	44.50	59.77	68.2	-8.43	PK
V	11490.071	43.08	8.46	39.75	44.50	46.79	54	-7.21	AV
V	17235.130	61.87	10.12	38.80	44.10	66.69	68.2	-1.51	PK
V	17235.130	43.07	10.12	38.80	42.70	49.29	54	-4.71	AV
H	4679.158	56.64	5.94	35.18	44.00	53.76	74	-20.24	PK
H	4679.158	43.35	5.94	35.18	44.00	40.47	54	-13.53	AV
H	11490.143	49.14	8.46	38.71	44.50	51.81	68.2	-16.39	PK
H	11490.143	41.89	8.46	38.71	44.50	44.56	54	-9.44	AV
H	17235.153	54.46	10.12	38.38	44.10	58.86	68.2	-9.34	PK
H	17235.153	41.16	10.12	38.38	44.10	45.56	54	-8.44	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.177	62.45	6.48	36.35	44.05	61.23	74	-12.77	PK
V	4592.177	43.98	6.48	36.35	44.05	42.76	54	-11.24	AV
V	11570.130	55.39	8.47	37.88	44.51	57.23	68.2	-10.97	PK
V	11570.130	43.68	8.47	37.88	44.51	45.52	54	-8.48	AV
V	17355.170	60.62	10.12	38.80	44.10	65.44	68.2	-2.76	PK
V	17355.170	43.13	10.12	38.80	42.70	49.35	54	-4.65	AV
H	4592.169	60.82	6.48	36.37	44.05	59.62	74	-14.38	PK
H	4592.169	43.52	6.48	36.37	44.05	42.32	54	-11.68	AV
H	11570.129	54.59	8.47	38.64	44.50	57.20	68.2	-11.00	PK
H	11570.129	42.33	8.47	38.64	44.50	44.94	54	-9.06	AV
H	17355.194	54.28	10.12	38.38	44.10	58.68	68.2	-9.52	PK
H	17355.194	43.66	10.12	38.38	44.10	48.06	54	-5.94	AV
High Channel (5825 MHz)-Above 1G									
V	6039.194	58.87	7.10	37.24	43.50	59.71	68.2	-8.49	PK
V	6039.194	43.79	7.10	37.24	43.50	44.63	54	-9.37	AV
V	11650.026	58.83	8.46	37.68	44.50	60.47	74	-13.53	PK
V	11650.026	43.53	8.46	37.68	44.50	45.17	54	-8.83	AV
V	17475.114	57.11	10.12	38.80	44.10	61.93	68.2	-6.27	PK
V	17475.114	43.90	10.12	38.80	42.70	50.12	54	-3.88	AV
H	6039.057	59.58	7.10	37.24	43.50	60.42	68.2	-7.78	PK
H	6039.057	43.49	7.10	37.24	43.50	44.33	54	-9.67	AV
H	11650.197	52.39	8.46	38.57	44.50	54.92	74	-19.08	PK
H	11650.197	42.45	8.46	38.57	44.50	44.98	54	-9.02	AV
H	17475.160	50.16	10.12	38.38	44.10	54.56	68.2	-13.64	PK
H	17475.160	41.45	10.12	38.38	44.10	45.85	54	-8.15	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 :	TX (5.8G) -- 802.11n-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 (5755 MHz)-Above 1G									
V	4679.177	56.84	5.94	35.40	44.00	54.18	74	-19.82	PK
V	4679.177	43.63	5.94	35.40	44.00	40.97	54	-13.03	AV
V	11510.056	55.87	8.46	39.75	44.50	59.58	74	-14.42	PK
V	11510.056	43.11	8.46	39.75	44.50	46.82	54	-7.18	AV
V	17265.195	58.35	10.12	38.80	44.10	63.17	68.2	-5.03	PK
V	17265.195	2.00	10.12	38.80	42.70	8.22	54	-45.78	AV
H	4679.014	60.93	5.94	35.18	44.00	58.05	74	-15.95	PK
H	4679.014	43.77	5.94	35.18	44.00	40.89	54	-13.11	AV
H	11510.128	51.31	8.46	38.71	44.50	53.98	74	-20.02	PK
H	11510.128	44.23	8.46	38.71	44.50	46.90	54	-7.10	AV
H	17265.087	50.91	10.12	38.38	44.10	55.31	68.2	-12.89	PK
H	17265.087	40.25	10.12	38.38	44.10	44.65	54	-9.35	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.143	57.85	6.48	36.35	44.05	56.63	68.2	-11.57	PK
V	6039.143	43.02	6.48	36.35	44.05	41.80	54	-12.20	AV
V	11590.146	58.71	8.47	37.88	44.51	60.55	74	-13.45	PK
V	11590.146	43.24	8.47	37.88	44.51	45.08	54	-8.92	AV
V	17385.034	55.37	10.12	38.80	44.10	60.19	68.2	-8.01	PK
V	17385.034	41.84	10.12	38.80	42.70	48.06	54	-5.94	AV
H	6039.025	58.04	6.48	36.37	44.05	56.84	68.2	-11.36	PK
H	6039.025	43.35	6.48	36.37	44.05	42.15	54	-11.85	AV
H	11590.081	54.20	8.47	38.64	44.50	56.81	74	-17.19	PK
H	11590.081	41.46	8.47	38.64	44.50	44.07	54	-9.93	AV
H	17385.104	51.13	10.12	38.38	44.10	55.53	68.2	-12.67	PK
H	17385.104	40.02	10.12	38.38	44.10	44.42	54	-9.58	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 :	TX (5.8G) --802.11AC20
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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	4679.090	59.79	5.94	35.40	44.00	57.13	74	-16.87	PK
V	4679.090	43.45	5.94	35.40	44.00	40.79	54	-13.21	AV
V	11490.035	57.56	8.46	39.75	44.50	61.27	68.2	-6.93	PK
V	11490.035	43.87	8.46	39.75	44.50	47.58	54	-6.42	AV
V	17235.131	59.59	10.12	38.80	44.10	64.41	68.2	-3.79	PK
V	17235.131	43.72	10.12	38.80	42.70	49.94	54	-4.06	AV
H	4679.158	54.62	5.94	35.18	44.00	51.74	74	-22.26	PK
H	4679.158	43.21	5.94	35.18	44.00	40.33	54	-13.67	AV
H	11490.094	54.17	8.46	38.71	44.50	56.84	68.2	-11.36	PK
H	11490.094	42.09	8.46	38.71	44.50	44.76	54	-9.24	AV
H	17235.088	50.58	10.12	38.38	44.10	54.98	68.2	-13.22	PK
H	17235.088	40.88	10.12	38.38	44.10	45.28	54	-8.72	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.091	54.22	6.48	36.35	44.05	53.00	74	-21.00	PK
V	4592.091	43.81	6.48	36.35	44.05	42.59	54	-11.41	AV
V	11570.007	57.29	8.47	37.88	44.51	59.13	68.2	-9.07	PK
V	11570.007	43.04	8.47	37.88	44.51	44.88	54	-9.12	AV
V	17355.140	58.02	10.12	38.80	44.10	62.84	68.2	-5.36	PK
V	17355.140	39.78	10.12	38.80	42.70	46.00	54	-8.00	AV
H	4592.036	59.58	6.48	36.37	44.05	58.38	74	-15.62	PK
H	4592.036	43.39	6.48	36.37	44.05	42.19	54	-11.81	AV
H	11570.186	50.69	8.47	38.64	44.50	53.30	68.2	-14.90	PK
H	11570.186	44.67	8.47	38.64	44.50	47.28	54	-6.72	AV
H	17355.191	51.27	10.12	38.38	44.10	55.67	68.2	-12.53	PK
H	17355.191	42.59	10.12	38.38	44.10	46.99	54	-7.01	AV
High Channel (5825 MHz)-Above 1G									
V	6039.049	56.29	7.10	37.24	43.50	57.13	68.2	-11.07	PK
V	6039.049	43.17	7.10	37.24	43.50	44.01	54	-9.99	AV
V	11650.076	58.61	8.46	37.68	44.50	60.25	74	-13.75	PK
V	11650.076	43.13	8.46	37.68	44.50	44.77	54	-9.23	AV
V	17475.149	55.78	10.12	38.80	44.10	60.60	68.2	-7.60	PK
V	17475.149	43.94	10.12	38.80	42.70	50.16	54	-3.84	AV
H	6039.113	55.21	7.10	37.24	43.50	56.05	68.2	-12.15	PK
H	6039.113	43.80	7.10	37.24	43.50	44.64	54	-9.36	AV
H	11650.022	54.79	8.46	38.57	44.50	57.32	74	-16.68	PK
H	11650.022	43.19	8.46	38.57	44.50	45.72	54	-8.28	AV
H	17475.020	51.15	10.12	38.38	44.10	55.55	68.2	-12.65	PK
H	17475.020	40.58	10.12	38.38	44.10	44.98	54	-9.02	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 :	TX (5.8G) -- 802.11AC40
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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 (5755 MHz)-Above 1G									
V	4679.012	57.24	5.94	35.40	44.00	54.58	74	-19.42	PK
V	4679.012	43.89	5.94	35.40	44.00	41.23	54	-12.77	AV
V	11510.159	56.54	8.46	39.75	44.50	60.25	74	-13.75	PK
V	11510.159	43.98	8.46	39.75	44.50	47.69	54	-6.31	AV
V	17265.143	58.55	10.12	38.80	44.10	63.37	68.2	-4.83	PK
V	17265.143	2.00	10.12	38.80	42.70	8.22	54	-45.78	AV
H	4679.015	59.70	5.94	35.18	44.00	56.82	74	-17.18	PK
H	4679.015	43.93	5.94	35.18	44.00	41.05	54	-12.95	AV
H	11510.156	52.38	8.46	38.71	44.50	55.05	74	-18.95	PK
H	11510.156	44.22	8.46	38.71	44.50	46.89	54	-7.11	AV
H	17265.153	52.73	10.12	38.38	44.10	57.13	68.2	-11.07	PK
H	17265.153	43.87	10.12	38.38	44.10	48.27	54	-5.73	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.023	57.21	6.48	36.35	44.05	55.99	68.2	-12.21	PK
V	6039.023	43.90	6.48	36.35	44.05	42.68	54	-11.32	AV
V	11590.067	59.71	8.47	37.88	44.51	61.55	74	-12.45	PK
V	11590.067	43.05	8.47	37.88	44.51	44.89	54	-9.11	AV
V	17385.182	55.63	10.12	38.80	44.10	60.45	68.2	-7.75	PK
V	17385.182	41.30	10.12	38.80	42.70	47.52	54	-6.48	AV
H	6039.025	58.89	6.48	36.37	44.05	57.69	68.2	-10.51	PK
H	6039.025	43.32	6.48	36.37	44.05	42.12	54	-11.88	AV
H	11590.106	54.40	8.47	38.64	44.50	57.01	74	-16.99	PK
H	11590.106	41.83	8.47	38.64	44.50	44.44	54	-9.56	AV
H	17385.005	50.09	10.12	38.38	44.10	54.49	68.2	-13.71	PK
H	17385.005	42.54	10.12	38.38	44.10	46.94	54	-7.06	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 :	TX (5.8G) -- 802.11AC80
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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 (5775 MHz)-Above 1G									
V	4679.026	56.05	5.94	35.40	44.00	53.39	74	-20.61	PK
V	4679.026	43.56	5.94	35.40	44.00	40.90	54	-13.10	AV
V	11550.133	58.61	8.46	39.75	44.50	62.32	74	-11.68	PK
V	11550.133	42.35	8.46	39.75	44.50	46.06	54	-7.94	AV
V	17325.152	59.64	10.12	38.80	44.10	64.46	68.2	-3.74	PK
V	17325.152	41.37	10.12	38.80	42.70	47.59	54	-6.41	AV
H	4679.031	58.57	5.94	35.18	44.00	55.69	74	-18.31	PK
H	4679.031	43.93	5.94	35.18	44.00	41.05	54	-12.95	AV
H	11550.147	54.30	8.46	38.71	44.50	56.97	74	-17.03	PK
H	11550.147	42.97	8.46	38.71	44.50	45.64	54	-8.36	AV
H	17325.153	52.09	10.12	38.38	44.10	56.49	68.2	-11.71	PK
H	17325.153	41.91	10.12	38.38	44.10	46.31	54	-7.69	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.

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 colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

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

For the band 5.725-5.85 GHz

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

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

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 :	AC 120V/60Hz
Test Mode :	TX Frequency U-NII-1 (5180-5240MHz)		

Test Mode	Frequency	Measured Power Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11 a	5180 MHz	-10.41	11	PASS
	5200 MHz	-11.4	11	PASS
	5240 MHz	-10.92	11	PASS
802.11 n20	5180 MHz	-11.84	11	PASS
	5200 MHz	-13.49	11	PASS
	5240 MHz	-12.26	11	PASS
802.11 n40	5190 MHz	-13.92	11	PASS
	5230 MHz	-15.44	11	PASS
802.11 AC20	5180 MHz	-10.85	11	PASS
	5200 MHz	-12	11	PASS
	5240 MHz	-13.32	11	PASS
802.11 AC40	5190 MHz	-13.65	11	PASS
	5230 MHz	-15.36	11	PASS
802.11 AC80	5210 MHz	-16.89	11	PASS