FCC Test Report

Report No.:	RF181023C12A
FCC ID:	PY318300422
Test Model:	EX7300v2
Series Model:	EX6400v2 (refer to item 3.1 for more details)
Received Date:	Oct. 23, 2018
Test Date:	Nov. 05 ~ Dec. 26, 2018
Issued Date:	Jan. 07, 2019
Applicant:	NETGEAR, INC.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF181023C12A	Original release	Jan. 07, 2019

1 Certificate of Conformity

Product:	Nighthawk X4 AC2200 WiFi Mesh Extender (refer to item 3.1 for more details)
Brand:	NETGEAR
Test Model:	EX7300v2
Series Model:	EX6400v2 (refer to item 3.1 for more details)
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Nov. 05 ~ Dec. 26, 2018
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Jan. 07, 2019
Polly Chien / Specialist

Approved by : _____ , **Date:** Jan. 07, 2019
Bruce Chen / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.43dB at 0.15000MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5364.00MHz & 5470.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.63 dB
	200MHz ~1000MHz	3.64 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Nighthawk X4 AC2200 WiFi Mesh Extender (refer to note for more details)
Brand	NETGEAR
Test Model	EX7300v2
Series Model	EX6400v2
Model Difference	Refer to Note
Sample Status	Engineering sample
Power Supply Rating	100-240Vac
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 600Mbps 802.11ac: 1733.3Mbps
Operating Frequency	5260 ~ 5320MHz, 5500 ~ 5720MHz
Number of Channel	5260 ~ 5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500 ~ 5720MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 12 802.11n (HT40), 802.11ac (VHT40): 6 802.11ac (VHT80): 3
Conducted Output Power	CDD Mode: 5260 ~ 5320MHz: 231.217mW 5500 ~ 5720MHz: 215.895mW Beamforming Mode: 5260 ~ 5320MHz: 231.217mW 5500 ~ 5720MHz: 215.895mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The differences compared with the original report (BV CPS report no.: RF181023C12-1) are adding 5.26GHz to 5.32GHz and 5.50GHz to 5.72GHz by software.

2. All models are listed as below.

Brand	Product Name	Model	Difference
NETGEAR	Nighthawk X4 AC2200 WiFi Mesh Extender	EX7300v2	The listed models are electrically and mechanically identical. The intention of these models is only for RF output transmit antenna (EX7300v2 2.4G: 4T4R; EX6400v2 2.4G: 3T3R) and different NETGEAR logo (EX7300v2 has silver coating. EX6400v2 has no silver coating) purpose.
	AC1900 WiFi Mesh Extender	EX6400v2	

* For above two model are presented in power output test item. For other test items, model EX7300v2 is the worst case for final tests after pretesting.

3. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Modulation Mode	TX Function	Beamforming
802.11a	4TX	Not Support
802.11n (HT20)	4TX	Support
802.11n (HT40)	4TX	Support
802.11ac (VHT20)	4TX	Support
802.11ac (VHT40)	4TX	Support
802.11ac (VHT80)	4TX	Support

* The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

* CDD mode is the worst case for final tests except output power test after pretesting CDD mode and beamforming mode.

4. The EUT uses following antennas.

Model: EX6400v2 & EX7300v2

Ant. Type	PIFA
Connecter Type	NA
Frequency	Directional Gain (dBi)
5150~5250MHz	5.49
5250~5350MHz	5.48
5470~5725MHz	5.11
5725~5850MHz	5.14

3.2 Description of Test Modes

For 5260 ~ 5320MHz:

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

For 5500 ~ 5720MHz:

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz
138	5690 MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52	OFDM	6.0
	802.11a	5500-5720	100 to 144		OFDM	6.0

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52	OFDM	6.0
	802.11a	5500-5720	100 to 144		OFDM	6.0

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

Test Condition:

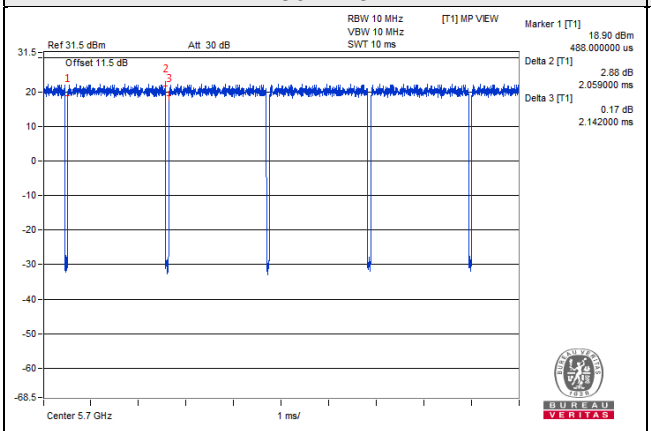
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25deg. C, 70%RH	120Vac, 60Hz	Noah Chang Luis Lee
RE<1G	25deg. C, 71%RH	120Vac, 60Hz	Noah Chang
PLC	25deg. C, 71%RH	120Vac, 60Hz	Noah Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Alan Wu

3.3 Duty Cycle of Test Signal

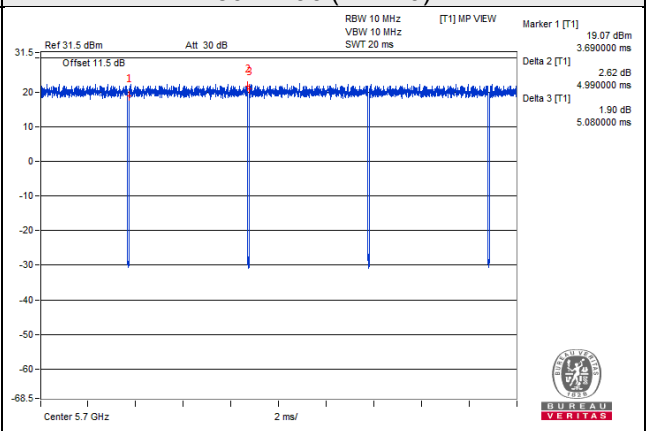
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.059/2.142 = 0.961, Duty factor = 10 * log (1/0.961) = 0.17
802.11ac (VHT20): Duty cycle = 4.990/5.080 = 0.982
802.11ac (VHT40): Duty cycle = 2.420/2.515 = 0.962, Duty factor = 10 * log (1/0.962) = 0.17
802.11ac (VHT80): Duty cycle = 1.144/1.209 = 0.946, Duty factor = 10 * log (1/0.946) = 0.24

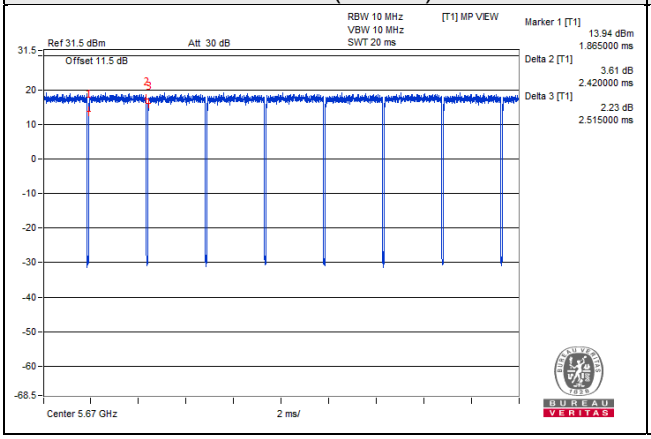
802.11a



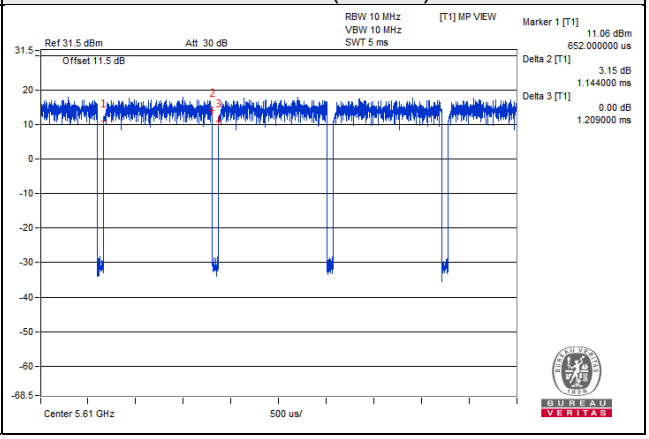
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

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

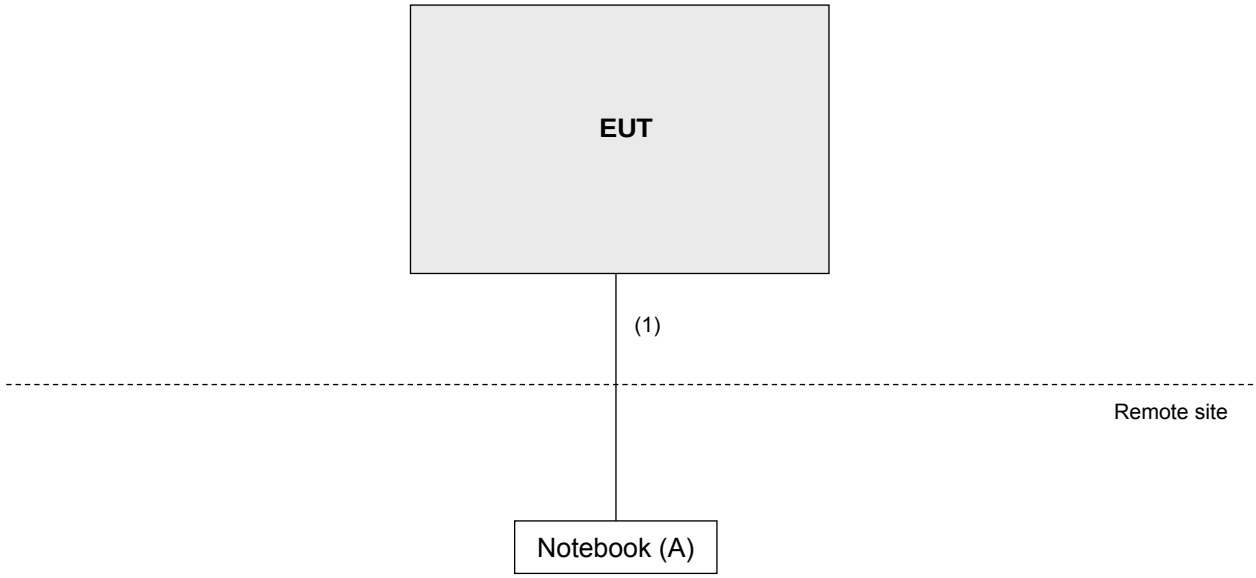
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	6	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10:2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

<table>
<tr><td colspan="3">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="3" rowspan="2">789033 D02 General UNII Test Procedure New Rules v02r01</td><td colspan="2">Field Strength at 3m</td></tr>
<tr><td>PK: 74 (dBμV/m)</td><td>AV: 54 (dBμV/m)</td></tr>
<tr><td>Frequency Band</td><td colspan="2">Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3m</td></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK: -27 (dBm/MHz)</td><td rowspan="3">PK: 68.2(dBμV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☒</td><td>15.407(b)(4)(i)</td><td>PK: -27 (dBm/MHz) *1
PK: 10 (dBm/MHz) *2
PK: 15.6 (dBm/MHz) *3
PK: 27 (dBm/MHz) *4</td><td>PK: 68.2(dBμV/m) *1
PK: 105.2 (dBμV/m) *2
PK: 110.8(dBμV/m) *3
PK: 122.2 (dBμV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="5">*1 beyond 75 MHz or more above of the band edge.
*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.
*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.
*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.</td></tr>
</table>

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 29, 2018	May 28, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 25, 2018	Sep. 24, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Dec. 11, 2017	Dec. 10, 2018
			Nov. 21, 2018	Nov. 20, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Mar. 25, 2018	Mar. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
			Nov. 25, 2018	Nov. 24, 2019
Loop Antenna TESEQ	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Aug. 08, 2018	Aug. 07, 2019
Preamplifier KEYSIGHT (Above 1GHz)	83017A	MY53270295	Jul. 02, 2018	Jul. 01, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 08, 2018	Aug. 07, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 08, 2018	Aug. 07, 2019
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Nov. 14, 2017	Nov. 13, 2018
			Nov. 14, 2018	Nov. 13, 2019
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 17, 2018	Jul. 16, 2019

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 4.
3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
4. The IC Site Registration No. is 7450F-4.

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.

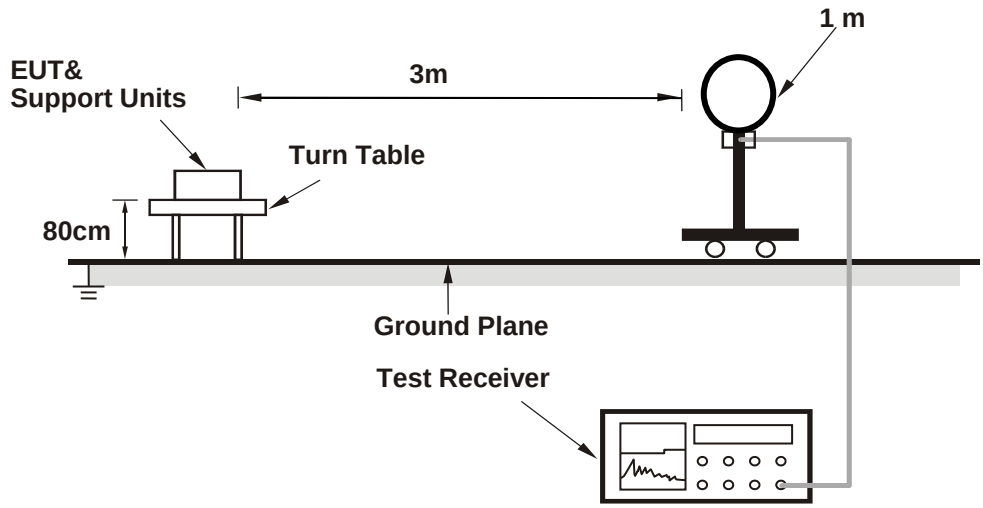
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

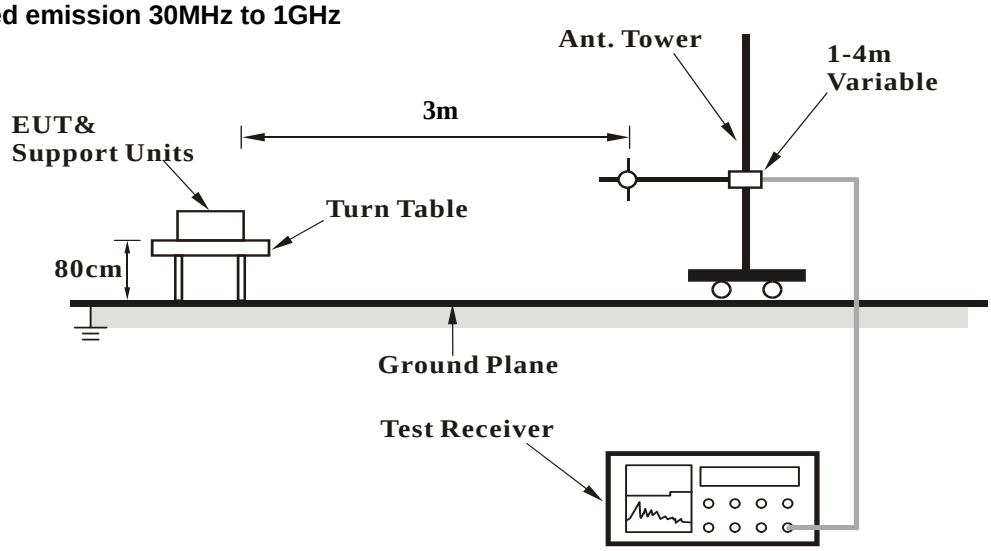
No deviation.

4.1.5 Test Setup

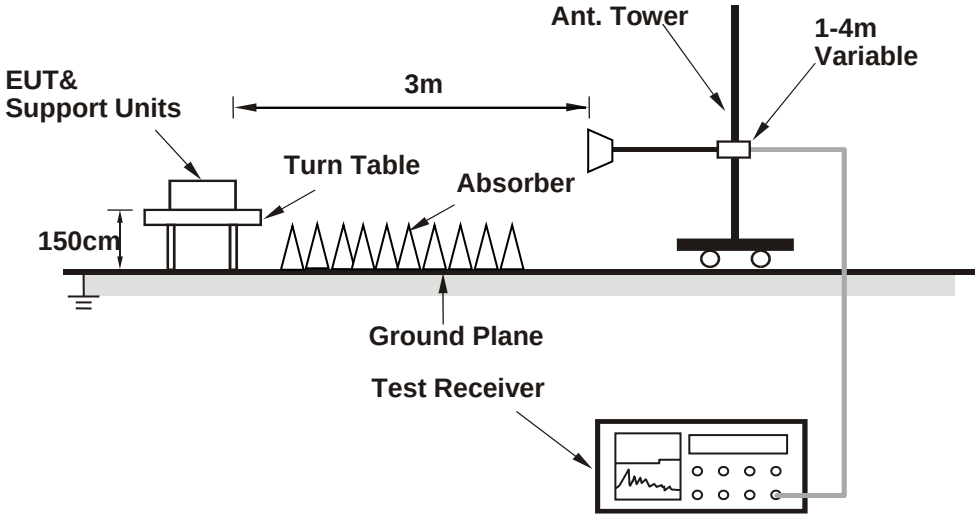
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz data:

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.4 PK	74.0	-14.6	1.18 H	235	47.6	11.8
2	5150.00	46.3 AV	54.0	-7.7	1.18 H	235	34.5	11.8
3	*5260.00	115.1 PK			1.18 H	235	74.6	40.5
4	*5260.00	104.4 AV			1.18 H	235	63.9	40.5
5	11520.00	63.0 PK	68.2	-5.2	2.63 H	201	39.7	23.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.3 PK	74.0	-13.7	2.12 V	167	48.5	11.8
2	5150.00	47.1 AV	54.0	-6.9	2.12 V	167	35.3	11.8
3	*5260.00	118.9 PK			2.12 V	167	78.4	40.5
4	*5260.00	108.3 AV			2.12 V	167	67.8	40.5
5	#10520.00	62.3 PK	68.2	-5.9	1.82 V	246	40.0	22.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	114.2 PK			1.20 H	231	73.8	40.4
2	*5300.00	103.6 AV			1.20 H	231	63.2	40.4
3	10600.00	61.1 PK	74.0	-12.9	2.33 H	195	38.8	22.3
4	10600.00	48.4 AV	54.0	-5.6	2.33 H	195	26.1	22.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	117.4 PK			2.11 V	169	77.0	40.4
2	*5300.00	107.2 AV			2.11 V	169	66.8	40.4
3	10600.00	62.0 PK	74.0	-12.0	1.83 V	214	39.7	22.3
4	10600.00	48.8 AV	54.0	-5.2	1.83 V	214	26.5	22.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	109.5 PK			1.21 H	233	68.9	40.6
2	*5320.00	98.5 AV			1.21 H	233	57.9	40.6
3	5350.00	62.1 PK	74.0	-11.9	1.21 H	233	50.2	11.9
4	5350.00	50.7 AV	54.0	-3.3	1.21 H	233	38.8	11.9
5	10640.00	61.6 PK	74.0	-12.4	2.97 H	188	39.1	22.5
6	10640.00	49.3 AV	54.0	-4.7	2.97 H	188	26.8	22.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	112.5 PK			2.33 V	174	71.9	40.6
2	*5320.00	101.9 AV			2.33 V	174	61.3	40.6
3	5350.00	65.2 PK	74.0	-8.8	2.33 V	174	53.3	11.9
4	5350.00	53.6 AV	54.0	-0.4	2.33 V	174	41.7	11.9
5	10640.00	62.7 PK	74.0	-11.3	1.73 V	239	40.2	22.5
6	10640.00	49.3 AV	54.0	-4.7	1.73 V	239	26.8	22.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.0 PK	74.0	-10.0	1.15 H	229	51.5	12.5
2	5460.00	52.4 AV	54.0	-1.6	1.15 H	229	39.9	12.5
3	#5470.00	65.3 PK	68.2	-2.9	1.15 H	229	52.8	12.5
4	*5500.00	115.2 PK			1.15 H	229	73.7	41.5
5	*5500.00	104.6 AV			1.15 H	229	63.1	41.5
6	11000.00	61.9 PK	74.0	-12.1	2.76 H	182	39.2	22.7
7	11000.00	49.2 AV	54.0	-4.8	2.76 H	182	26.5	22.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.3 PK	74.0	-9.7	2.06 V	167	51.8	12.5
2	5460.00	53.2 AV	54.0	-0.8	2.06 V	167	40.7	12.5
3	#5470.00	65.7 PK	68.2	-2.5	2.06 V	167	53.2	12.5
4	*5500.00	117.4 PK			2.06 V	167	75.9	41.5
5	*5500.00	106.7 AV			2.06 V	167	65.2	41.5
6	11000.00	62.5 PK	74.0	-11.5	1.96 V	258	39.8	22.7
7	11000.00	49.4 AV	54.0	-4.6	1.96 V	258	26.7	22.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	115.2 PK			1.19 H	234	73.4	41.8
2	*5580.00	104.6 AV			1.19 H	234	62.8	41.8
3	11160.00	61.6 PK	74.0	-12.4	2.33 H	164	38.9	22.7
4	11160.00	49.1 AV	54.0	-4.9	2.33 H	164	26.4	22.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	117.4 PK			2.11 V	178	75.6	41.8
2	*5580.00	106.8 AV			2.11 V	178	65.0	41.8
3	11160.00	62.2 PK	74.0	-11.8	2.61 V	174	39.5	22.7
4	11160.00	49.0 AV	54.0	-5.0	2.61 V	174	26.3	22.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	115.6 PK			1.22 H	231	73.5	42.1
2	*5700.00	105.1 AV			1.22 H	231	63.0	42.1
3	#5725.00	65.7 PK	68.2	-2.5	1.15 H	229	52.9	12.8
4	11400.00	62.6 PK	74.0	-11.4	3.19 H	254	38.8	23.8
5	11400.00	50.3 AV	54.0	-3.7	3.19 H	254	26.5	23.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	118.0 PK			2.00 V	174	75.9	42.1
2	*5700.00	107.4 AV			2.00 V	174	65.3	42.1
3	#5725.00	67.1 PK	68.2	-1.1	2.00 V	174	54.3	12.8
4	11400.00	63.6 PK	74.0	-10.4	2.98 V	156	39.8	23.8
5	11400.00	51.1 AV	54.0	-2.9	2.98 V	156	27.3	23.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	60.6 PK	68.2	-7.6	1.05 H	87	48.1	12.5
2	*5720.00	114.4 PK			1.05 H	87	72.3	42.1
3	*5720.00	103.7 AV			1.05 H	87	61.6	42.1
4	#5850.00	62.3 PK	68.2	-5.9	1.05 H	87	48.5	13.8
5	11440.00	64.7 PK	74.0	-9.3	2.18 H	305	41.1	23.6
6	11440.00	51.1 AV	54.0	-2.9	2.18 H	305	27.5	23.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	61.0 PK	68.2	-7.2	1.84 V	164	48.5	12.5
2	*5720.00	116.8 PK			1.84 V	164	74.7	42.1
3	*5720.00	105.9 AV			1.84 V	164	63.8	42.1
4	#5850.00	62.7 PK	68.2	-5.5	1.84 V	164	48.9	13.8
5	11440.00	64.9 PK	74.0	-9.1	1.58 V	214	41.3	23.6
6	11440.00	51.5 AV	54.0	-2.5	1.58 V	214	27.9	23.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT20)

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.1 PK	74.0	-13.9	1.11 H	234	48.3	11.8
2	5150.00	46.0 AV	54.0	-8.0	1.11 H	234	34.2	11.8
3	*5260.00	114.8 PK			1.11 H	234	74.3	40.5
4	*5260.00	103.3 AV			1.11 H	234	62.8	40.5
5	#10520.00	61.1 PK	68.2	-7.1	1.63 H	264	38.8	22.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.3 PK	74.0	-13.7	2.40 V	182	48.5	11.8
2	5150.00	46.7 AV	54.0	-7.3	2.40 V	182	34.9	11.8
3	*5260.00	116.7 PK			2.40 V	182	76.2	40.5
4	*5260.00	105.3 AV			2.40 V	182	64.8	40.5
5	#10520.00	62.1 PK	68.2	-6.1	1.69 V	255	39.8	22.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	113.9 PK			1.24 H	239	73.5	40.4
2	*5300.00	103.6 AV			1.24 H	239	63.2	40.4
3	10600.00	61.2 PK	74.0	-12.8	2.88 H	189	38.9	22.3
4	10600.00	48.7 AV	54.0	-5.3	2.88 H	189	26.4	22.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	116.8 PK			2.46 V	183	76.4	40.4
2	*5300.00	106.1 AV			2.46 V	183	65.7	40.4
3	10600.00	62.0 PK	74.0	-12.0	1.71 V	263	39.7	22.3
4	10600.00	49.1 AV	54.0	-4.9	1.71 V	263	26.8	22.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	109.9 PK			1.11 H	234	69.3	40.6
2	*5320.00	98.2 AV			1.11 H	234	57.6	40.6
3	5362.00	63.0 PK	74.0	-11.0	1.11 H	234	51.0	12.0
4	5362.00	51.1 AV	54.0	-2.9	1.11 H	234	39.1	12.0
5	10640.00	61.4 PK	74.0	-12.6	2.41 H	136	38.9	22.5
6	10640.00	48.8 AV	54.0	-5.2	2.41 H	136	26.3	22.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	111.9 PK			2.63 V	187	71.3	40.6
2	*5320.00	101.4 AV			2.63 V	187	60.8	40.6
3	5362.00	65.3 PK	74.0	-8.7	2.63 V	187	53.3	12.0
4	5362.00	53.7 AV	54.0	-0.3	2.63 V	187	41.7	12.0
5	10640.00	62.1 PK	74.0	-11.9	1.94 V	220	39.6	22.5
6	10640.00	49.4 AV	54.0	-4.6	1.94 V	220	26.9	22.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.8 PK	74.0	-11.2	1.26 H	85	50.3	12.5
2	5460.00	50.9 AV	54.0	-3.1	1.26 H	85	38.4	12.5
3	#5470.00	62.7 PK	68.2	-5.5	1.29 H	85	50.2	12.5
4	*5500.00	113.8 PK			1.29 H	85	72.3	41.5
5	*5500.00	103.4 AV			1.29 H	85	61.9	41.5
6	11000.00	61.6 PK	74.0	-12.4	2.46 H	181	38.9	22.7
7	11000.00	49.0 AV	54.0	-5.0	2.46 H	181	26.3	22.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	65.1 PK	74.0	-8.9	2.00 V	166	52.6	12.5
2	5460.00	52.6 AV	54.0	-1.4	2.00 V	166	40.1	12.5
3	#5470.00	65.9 PK	68.2	-2.3	2.00 V	166	53.4	12.5
4	*5500.00	116.7 PK			2.00 V	166	75.2	41.5
5	*5500.00	105.4 AV			2.00 V	166	63.9	41.5
6	11000.00	61.9 PK	74.0	-12.1	1.63 V	241	39.2	22.7
7	11000.00	49.5 AV	54.0	-4.5	1.63 V	241	26.8	22.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	114.9 PK			1.32 H	96	73.1	41.8
2	*5580.00	103.8 AV			1.32 H	96	62.0	41.8
3	11160.00	61.3 PK	74.0	-12.7	2.70 H	163	38.6	22.7
4	11160.00	48.8 AV	54.0	-5.2	2.70 H	163	26.1	22.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	117.1 PK			2.37 V	174	75.3	41.8
2	*5580.00	105.8 AV			2.37 V	174	64.0	41.8
3	11160.00	61.6 PK	74.0	-12.4	1.73 V	205	38.9	22.7
4	11160.00	49.6 AV	54.0	-4.4	1.73 V	205	26.9	22.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	114.6 PK			1.24 H	87	72.5	42.1
2	*5700.00	103.5 AV			1.24 H	87	61.4	42.1
3	#5725.00	65.7 PK	68.2	-2.5	1.24 H	87	52.9	12.8
4	11400.00	62.4 PK	74.0	-11.6	2.94 H	166	38.6	23.8
5	11400.00	50.3 AV	54.0	-3.7	2.94 H	166	26.5	23.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	116.9 PK			2.20 V	161	74.8	42.1
2	*5700.00	105.8 AV			2.20 V	161	63.7	42.1
3	#5725.00	67.5 PK	68.2	-0.7	2.20 V	161	54.7	12.8
4	11400.00	63.3 PK	74.0	-10.7	1.89 V	254	39.5	23.8
5	11400.00	50.7 AV	54.0	-3.3	1.89 V	254	26.9	23.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	60.5 PK	68.2	-7.7	1.01 H	93	48.0	12.5
2	*5720.00	114.5 PK			1.01 H	93	72.4	42.1
3	*5720.00	103.6 AV			1.01 H	93	61.5	42.1
4	#5850.00	62.0 PK	68.2	-6.2	1.01 H	93	48.2	13.8
5	11440.00	64.8 PK	74.0	-9.2	2.85 H	163	41.2	23.6
6	11440.00	50.5 AV	54.0	-3.5	2.85 H	163	26.9	23.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	60.9 PK	68.2	-7.3	2.00 V	178	48.4	12.5
2	*5720.00	116.9 PK			2.00 V	178	74.8	42.1
3	*5720.00	105.5 AV			2.00 V	178	63.4	42.1
4	#5850.00	62.5 PK	68.2	-5.7	2.00 V	178	48.7	13.8
5	11440.00	65.2 PK	74.0	-8.8	1.95 V	245	41.6	23.6
6	11440.00	51.4 AV	54.0	-2.6	1.95 V	245	27.8	23.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT40)

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.4 PK	74.0	-14.6	1.03 H	235	47.6	11.8
2	5150.00	46.5 AV	54.0	-7.5	1.03 H	235	34.7	11.8
3	*5270.00	110.3 PK			1.03 H	235	69.9	40.4
4	*5270.00	100.5 AV			1.03 H	235	60.1	40.4
5	#10540.00	61.4 PK	68.2	-6.8	2.94 H	173	39.2	22.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.2 PK	74.0	-13.8	2.58 V	183	48.4	11.8
2	5150.00	47.1 AV	54.0	-6.9	2.58 V	183	35.3	11.8
3	*5270.00	113.1 PK			2.58 V	183	72.7	40.4
4	*5270.00	103.8 AV			2.58 V	183	63.4	40.4
5	#10540.00	62.1 PK	68.2	-6.1	1.88 V	239	39.9	22.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	109.5 PK			1.01 H	237	69.0	40.5
2	*5310.00	99.7 AV			1.01 H	237	59.2	40.5
3	5350.00	67.4 PK	74.0	-6.6	1.01 H	237	55.5	11.9
4	5350.00	51.8 AV	54.0	-2.2	1.01 H	237	39.9	11.9
5	10620.00	61.2 PK	74.0	-12.8	2.95 H	145	38.9	22.3
6	10620.00	48.6 AV	54.0	-5.4	2.95 H	145	26.3	22.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	112.3 PK			2.35 V	201	71.8	40.5
2	*5310.00	103.0 AV			2.35 V	201	62.5	40.5
3	5354.00	69.0 PK	74.0	-5.0	2.35 V	201	57.1	11.9
4	5354.00	53.5 AV	54.0	-0.5	2.35 V	201	41.6	11.9
5	10620.00	62.0 PK	74.0	-12.0	1.52 V	270	39.7	22.3
6	10620.00	48.8 AV	54.0	-5.2	1.52 V	270	26.5	22.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.7 PK	74.0	-12.3	1.33 H	86	49.2	12.5
2	5460.00	47.8 AV	54.0	-6.2	1.33 H	86	35.3	12.5
3	#5470.00	65.1 PK	68.2	-3.1	1.33 H	86	52.6	12.5
4	*5510.00	111.5 PK			1.33 H	86	69.9	41.6
5	*5510.00	100.9 AV			1.33 H	86	59.3	41.6
6	11020.00	61.8 PK	74.0	-12.2	2.61 H	144	39.1	22.7
7	11020.00	49.5 AV	54.0	-4.5	2.61 H	144	26.8	22.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.9 PK	74.0	-12.1	2.35 V	180	49.4	12.5
2	5460.00	48.1 AV	54.0	-5.9	2.35 V	180	35.6	12.5
3	#5470.00	66.2 PK	68.2	-2.0	2.35 V	180	53.7	12.5
4	*5510.00	113.0 PK			2.35 V	180	71.4	41.6
5	*5510.00	103.5 AV			2.35 V	180	61.9	41.6
6	11020.00	61.6 PK	74.0	-12.4	1.69 V	224	38.9	22.7
7	11020.00	49.4 AV	54.0	-4.6	1.69 V	224	26.7	22.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	111.0 PK			1.42 H	91	69.3	41.7
2	*5550.00	100.8 AV			1.42 H	91	59.1	41.7
3	11100.00	62.0 PK	74.0	-12.0	2.66 H	189	39.1	22.9
4	11100.00	49.3 AV	54.0	-4.7	2.66 H	189	26.4	22.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	113.5 PK			2.36 V	177	71.8	41.7
2	*5550.00	103.7 AV			2.36 V	177	62.0	41.7
3	11100.00	61.8 PK	74.0	-12.2	1.68 V	259	38.9	22.9
4	11100.00	49.4 AV	54.0	-4.6	1.68 V	259	26.5	22.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	109.9 PK			1.36 H	81	68.2	41.7
2	*5670.00	100.2 AV			1.36 H	81	58.5	41.7
3	#5725.00	61.7 PK	68.2	-6.5	1.36 H	81	48.9	12.8
4	11340.00	62.5 PK	74.0	-11.5	2.14 H	183	39.2	23.3
5	11340.00	49.7 AV	54.0	-4.3	2.14 H	183	26.4	23.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	112.2 PK			2.27 V	159	70.5	41.7
2	*5670.00	102.5 AV			2.27 V	159	60.8	41.7
3	#5725.00	62.8 PK	68.2	-5.4	2.27 V	159	50.0	12.8
4	11340.00	62.8 PK	74.0	-11.2	1.63 V	295	39.5	23.3
5	11340.00	50.0 AV	54.0	-4.0	1.63 V	295	26.7	23.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 142	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	61.0 PK	68.2	-7.2	1.10 H	90	48.5	12.5
2	*5710.00	111.7 PK			1.10 H	90	69.6	42.1
3	*5710.00	101.9 AV			1.10 H	90	59.8	42.1
4	#5850.00	62.1 PK	68.2	-6.1	1.10 H	90	48.3	13.8
5	11420.00	64.3 PK	74.0	-9.7	2.63 H	117	40.5	23.8
6	11420.00	50.6 AV	54.0	-3.4	2.63 H	117	26.8	23.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	61.4 PK	68.2	-6.8	1.99 V	180	48.9	12.5
2	*5710.00	113.4 PK			1.99 V	180	71.3	42.1
3	*5710.00	103.8 AV			1.99 V	180	61.7	42.1
4	#5850.00	62.8 PK	68.2	-5.4	1.99 V	180	49.0	13.8
5	11420.00	64.9 PK	74.0	-9.1	1.98 V	261	41.1	23.8
6	11420.00	51.3 AV	54.0	-2.7	1.98 V	261	27.5	23.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.8 PK	74.0	-14.2	1.15 H	236	48.0	11.8
2	5150.00	47.5 AV	54.0	-6.5	1.15 H	236	35.7	11.8
3	*5290.00	104.6 PK			1.15 H	236	64.2	40.4
4	*5290.00	94.8 AV			1.15 H	236	54.4	40.4
5	5364.00	64.2 PK	74.0	-9.8	1.15 H	236	52.2	12.0
6	5364.00	50.9 AV	54.0	-3.1	1.15 H	236	38.9	12.0
7	#10580.00	61.3 PK	68.2	-6.9	2.75 H	146	39.1	22.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.4 PK	74.0	-11.6	2.37 V	166	50.6	11.8
2	5150.00	48.7 AV	54.0	-5.3	2.37 V	166	36.9	11.8
3	*5290.00	108.7 PK			2.37 V	166	68.3	40.4
4	*5290.00	99.3 AV			2.37 V	166	58.9	40.4
5	5364.00	68.4 PK	74.0	-5.6	2.37 V	166	56.4	12.0
6	**5364.00**	**53.9 AV**	**54.0**	**-0.1**	**2.37 V**	**166**	**41.9**	**12.0**
7	#10580.00	61.9 PK	68.2	-6.3	1.46 V	280	39.7	22.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.2 PK	74.0	-9.8	1.33 H	90	51.7	12.5
2	5460.00	50.5 AV	54.0	-3.5	1.33 H	90	38.0	12.5
3	#5470.00	66.3 PK	68.2	-1.9	1.33 H	90	53.8	12.5
4	*5530.00	106.3 PK			1.33 H	90	64.6	41.7
5	*5530.00	96.2 AV			1.33 H	90	54.5	41.7
6	#5725.00	61.2 PK	68.2	-7.0	1.33 H	90	48.4	12.8
7	11060.00	61.3 PK	74.0	-12.7	2.97 H	184	38.5	22.8
8	11060.00	48.8 AV	54.0	-5.2	2.97 H	184	26.0	22.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.7 PK	74.0	-9.3	2.04 V	167	52.2	12.5
2	5460.00	50.8 AV	54.0	-3.2	2.04 V	167	38.3	12.5
3	**#5470.00**	**68.1 PK**	**68.2**	**-0.1**	**2.04 V**	**167**	**55.6**	**12.5**
4	*5530.00	107.4 PK			2.04 V	167	65.7	41.7
5	*5530.00	97.6 AV			2.04 V	167	55.9	41.7
6	#5725.00	61.4 PK	68.2	-6.8	2.04 V	167	48.6	12.8
7	11060.00	61.7 PK	74.0	-12.3	1.26 V	301	38.9	22.8
8	11060.00	49.1 AV	54.0	-4.9	1.26 V	301	26.3	22.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	63.6 PK	74.0	-10.4	1.29 H	85	51.1	12.5
2	5460.00	49.9 AV	54.0	-4.1	1.29 H	85	37.4	12.5
3	#5470.00	65.1 PK	68.2	-3.1	1.29 H	85	52.6	12.5
4	*5610.00	106.4 PK			1.29 H	85	64.7	41.7
5	*5610.00	96.2 AV			1.29 H	85	54.5	41.7
6	#5725.00	66.0 PK	68.2	-2.2	1.29 H	85	53.2	12.8
7	11220.00	61.0 PK	74.0	-13.0	2.39 H	177	38.4	22.6
8	11220.00	49.0 AV	54.0	-5.0	2.39 H	177	26.4	22.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.9 PK	74.0	-9.1	2.05 V	164	52.4	12.5
2	5460.00	50.4 AV	54.0	-3.6	2.05 V	164	37.9	12.5
3	#5470.00	66.8 PK	68.2	-1.4	2.05 V	164	54.3	12.5
4	*5610.00	107.7 PK			2.05 V	164	66.0	41.7
5	*5610.00	98.2 AV			2.05 V	164	56.5	41.7
6	#5725.00	67.6 PK	68.2	-0.6	2.05 V	164	54.8	12.8
7	11220.00	61.2 PK	74.0	-12.8	1.96 V	230	38.6	22.6
8	11220.00	49.3 AV	54.0	-4.7	1.96 V	230	26.7	22.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 138	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	60.7 PK	68.2	-7.5	1.00 H	90	48.2	12.5
2	*5690.00	107.5 PK			1.00 H	90	65.5	42.0
3	*5690.00	98.5 AV			1.00 H	90	56.5	42.0
4	#5850.00	63.3 PK	68.2	-4.9	1.00 H	90	49.5	13.8
5	11380.00	64.1 PK	74.0	-9.9	1.97 H	225	40.5	23.6
6	11380.00	50.7 AV	54.0	-3.3	1.97 H	225	27.1	23.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	60.9 PK	68.2	-7.3	2.23 V	175	48.4	12.5
2	*5690.00	110.0 PK			2.23 V	175	68.0	42.0
3	*5690.00	99.8 AV			2.23 V	175	57.8	42.0
4	#5850.00	63.9 PK	68.2	-4.3	2.23 V	175	50.1	13.8
5	11380.00	64.7 PK	74.0	-9.3	1.64 V	281	41.1	23.6
6	11380.00	51.4 AV	54.0	-2.6	1.64 V	281	27.8	23.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz Worst-Case Data:

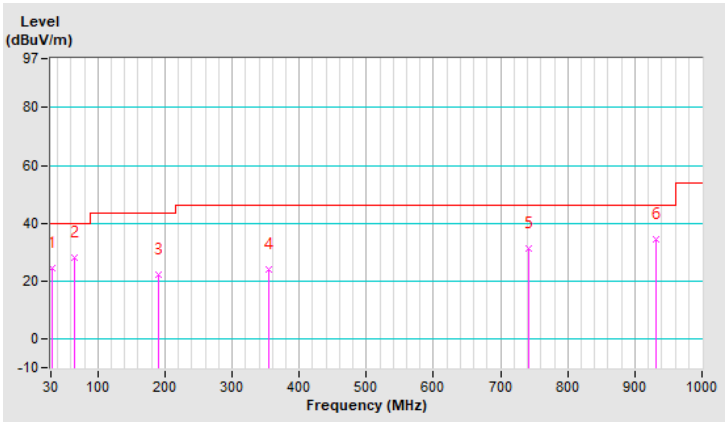
802.11a

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.84	24.5 QP	40.0	-15.5	1.00 H	112	34.7	-10.2
2	64.83	28.0 QP	40.0	-12.0	1.00 H	104	37.7	-9.7
3	190.95	22.4 QP	43.5	-21.1	1.00 H	4	33.8	-11.4
4	353.95	24.2 QP	46.0	-21.8	1.00 H	9	31.5	-7.3
5	742.03	31.2 QP	46.0	-14.8	1.00 H	264	30.2	1.0
6	932.19	34.4 QP	46.0	-11.6	1.00 H	216	30.3	4.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report

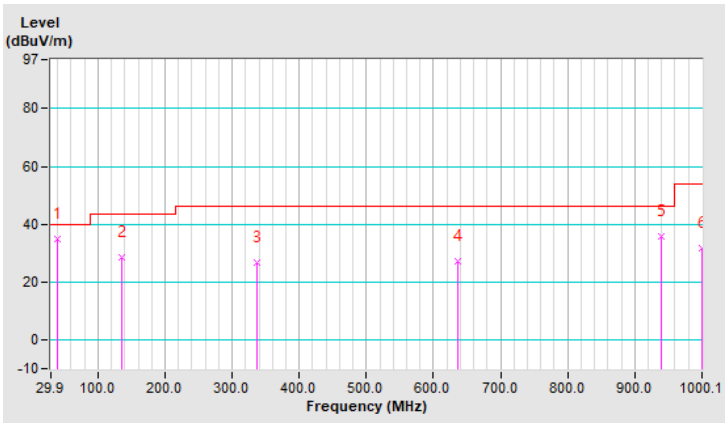


CHANNEL	TX Channel 52	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.60	35.0 QP	40.0	-5.0	1.00 V	67	44.4	-9.4
2	134.68	28.5 QP	43.5	-15.0	1.00 V	33	38.2	-9.7
3	336.48	26.9 QP	46.0	-19.1	1.00 V	146	34.2	-7.3
4	635.30	27.0 QP	46.0	-19.0	1.00 V	157	28.6	-1.6
5	939.95	36.0 QP	46.0	-10.0	1.00 V	184	31.8	4.2
6	1000.00	31.8 QP	54.0	-22.2	1.00 V	16	27.2	4.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Sep. 03, 2018	Sep. 02, 2019
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

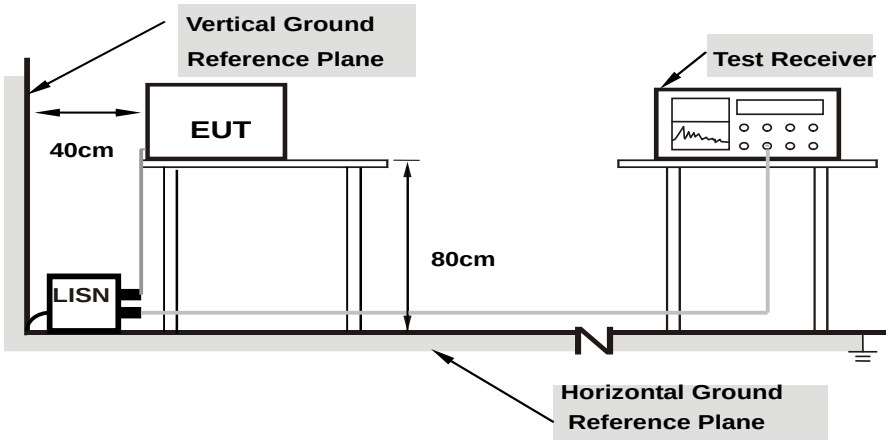
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

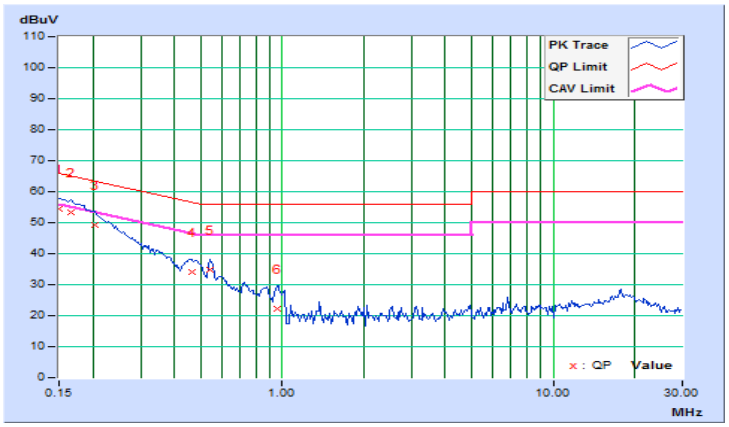
Worst-case data:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**9.67**	**44.90**	**29.04**	**54.57**	**38.71**	**66.00**	**56.00**	**-11.43**	**-17.29**
2	0.16562	9.67	43.54	29.17	53.21	38.84	65.18	55.18	-11.97	-16.34
3	0.20469	9.67	39.45	24.65	49.12	34.32	63.42	53.42	-14.30	-19.10
4	0.46250	9.66	24.40	12.01	34.06	21.67	56.65	46.65	-22.59	-24.98
5	0.54063	9.66	25.12	15.82	34.78	25.48	56.00	46.00	-21.22	-20.52
6	0.95469	9.65	12.70	2.62	22.35	12.27	56.00	46.00	-33.65	-33.73

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

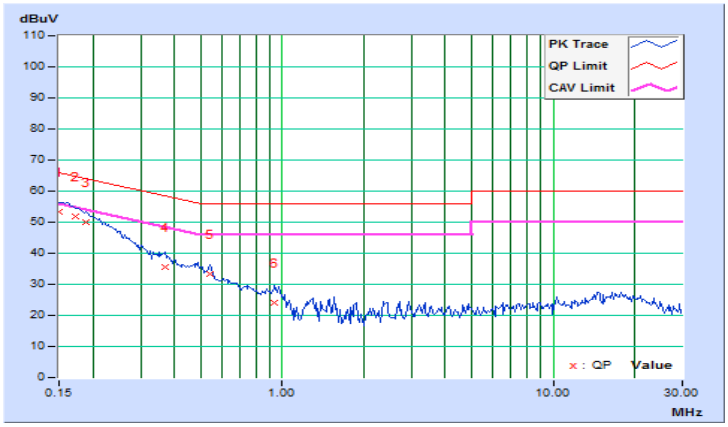


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.68	43.75	27.80	53.43	37.48	66.00	56.00	-12.57	-18.52
2	0.17344	9.68	42.26	27.39	51.94	37.07	64.79	54.79	-12.85	-17.72
3	0.18906	9.67	40.35	25.51	50.02	35.18	64.08	54.08	-14.06	-18.90
4	0.36875	9.67	25.89	12.73	35.56	22.40	58.53	48.53	-22.97	-26.13
5	0.54063	9.67	23.69	15.70	33.36	25.37	56.00	46.00	-22.64	-20.63
6	0.93906	9.65	14.56	5.85	24.21	15.50	56.00	46.00	-31.79	-30.50

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

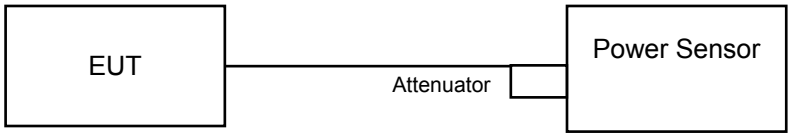
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

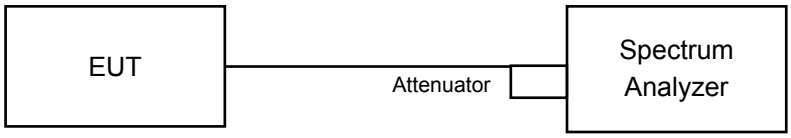
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

For Power Output



For 26dB Bandwidth



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

802.11a, 802.11ac (VHT20), 802.11ac (VHT40)

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to average. Duty factor is not added to measured value.

For 26dB Bandwidth

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 peak 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%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

Power Output:

CDD Mode

802.11a

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	17.29	17.16	17.55	17.36	216.915	23.36	23.86	Pass
60	5300	17.30	17.14	17.33	17.26	212.750	23.28	23.87	Pass
64	5320	14.53	14.83	15.37	15.13	125.807	21.00	23.92	Pass
100	5500	17.43	17.07	16.92	17.36	209.922	23.22	23.94	Pass
116	5580	17.39	16.98	17.02	17.59	212.478	23.27	23.91	Pass
140	5700	17.45	17.08	17.48	17.24	215.582	23.34	23.94	Pass
144	5720 (For U-NII-2C)	14.75	15.07	14.55	14.41	122.868	20.89	22.65	Pass
144	5720 (For U-NII-3)	9.25	9.08	7.64	8.54	30.645	14.86	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0

1. 11dBm + 10log (19.94) = 23.99 < 24dBm
2. 11dBm + 10log (19.93) = 23.99 < 24dBm
3. 11dBm + 10log (20.05) = 24.02 > 24dBm
4. 11dBm + 10log (20.13) = 24.03 > 24dBm
5. 11dBm + 10log (20.02) = 24.01 > 24dBm
6. 11dBm + 10log (20.19) = 24.05 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.78) = 22.82 < 24dBm

Chain 1

1. 11dBm + 10log (19.78) = 23.96 < 24dBm
2. 11dBm + 10log (19.48) = 23.89 < 24dBm
3. 11dBm + 10log (19.94) = 23.99 < 24dBm
4. 11dBm + 10log (19.84) = 23.97 < 24dBm
5. 11dBm + 10log (19.94) = 23.99 < 24dBm
6. 11dBm + 10log (20.25) = 24.06 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.84) = 22.80 < 24dBm

Chain 2

1. 11dBm + 10log (19.35) = 23.86 < 24dBm
2. 11dBm + 10log (19.40) = 23.87 < 24dBm
3. 11dBm + 10log (19.63) = 23.92 < 24dBm
4. 11dBm + 10log (19.77) = 23.96 < 24dBm
5. 11dBm + 10log (19.86) = 23.97 < 24dBm
6. 11dBm + 10log (20.06) = 24.02 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.91) = 22.78 < 24dBm

Chain 3

1. 11dBm + 10log (19.73) = 23.95 < 24dBm
2. 11dBm + 10log (20.32) = 24.07 > 24dBm
3. 11dBm + 10log (20.15) = 24.04 > 24dBm
4. 11dBm + 10log (19.69) = 23.94 < 24dBm
5. 11dBm + 10log (19.55) = 23.91 < 24dBm
6. 11dBm + 10log (19.69) = 23.94 < 24dBm
7. 11dBm + 10log (5725.00 - 5710.35) = 22.65 < 24dBm

For reference only - power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
144	5720	213.796	23.30

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	17.02	17.00	17.33	17.28	208.000	23.18	24.00	Pass
60	5300	17.17	17.01	17.63	17.58	217.576	23.38	24.00	Pass
64	5320	14.76	14.91	15.77	15.66	135.467	21.32	24.00	Pass
100	5500	17.41	17.20	17.33	17.32	215.588	23.34	24.00	Pass
116	5580	17.45	17.17	17.22	17.44	**215.895**	23.34	24.00	Pass
140	5700	17.25	17.20	17.22	17.21	210.894	23.24	24.00	Pass
144	5720 (For U-NII-2C)	15.19	15.10	15.40	14.74	129.855	21.13	22.84	Pass
144	5720 (For U-NII-3)	9.72	9.38	9.77	10.09	37.739	15.77	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (20.54) = 24.12 > 24dBm
2. 11dBm + 10log (20.64) = 24.14 > 24dBm
3. 11dBm + 10log (20.75) = 24.17 > 24dBm
4. 11dBm + 10log (20.58) = 24.13 > 24dBm
5. 11dBm + 10log (20.67) = 24.15 > 24dBm
6. 11dBm + 10log (20.72) = 24.16 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.65) = 22.86 < 24dBm

Chain 1
1. 11dBm + 10log (20.74) = 24.16 > 24dBm
2. 11dBm + 10log (20.62) = 24.14 > 24dBm
3. 11dBm + 10log (20.57) = 24.13 > 24dBm
4. 11dBm + 10log (20.54) = 24.12 > 24dBm
5. 11dBm + 10log (20.60) = 24.13 > 24dBm
6. 11dBm + 10log (20.67) = 24.15 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.66) = 22.85 < 24dBm

Chain 2
1. 11dBm + 10log (20.57) = 24.13 > 24dBm
2. 11dBm + 10log (20.57) = 24.13 > 24dBm
3. 11dBm + 10log (20.65) = 24.14 > 24dBm
4. 11dBm + 10log (20.64) = 24.14 > 24dBm
5. 11dBm + 10log (20.67) = 24.15 > 24dBm
6. 11dBm + 10log (20.79) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.62) = 22.86 < 24dBm

Chain 3

1. 11dBm + 10log (20.49) = 24.11 > 24dBm
2. 11dBm + 10log (20.42) = 24.10 > 24dBm
3. 11dBm + 10log (20.46) = 24.10 > 24dBm
4. 11dBm + 10log (20.45) = 24.10 > 24dBm
5. 11dBm + 10log (20.61) = 24.14 > 24dBm
6. 11dBm + 10log (20.68) = 24.15 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.70) = 22.84 < 24dBm

For reference only - power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
144	5720	209.894	23.22

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	17.26	17.23	17.67	17.49	220.640	23.44	24.00	Pass
62	5310	17.52	17.25	17.89	17.79	**231.217**	23.64	24.00	Pass
102	5510	17.15	16.89	16.85	17.15	201.042	23.03	24.00	Pass
110	5550	17.29	16.95	16.91	17.16	204.216	23.10	24.00	Pass
134	5670	17.11	16.97	17.46	17.28	210.353	23.23	24.00	Pass
142	5710 (For U-NII-2C)	14.97	15.72	15.68	14.77	141.032	21.49	24.00	Pass
142	5710 (For U-NII-3)	3.37	4.65	4.10	5.24	11.434	10.58	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (40.83) = 27.10 > 24dBm
2. 11dBm + 10log (40.82) = 27.10 > 24dBm
3. 11dBm + 10log (40.72) = 27.09 > 24dBm
4. 11dBm + 10log (40.72) = 27.09 > 24dBm
5. 11dBm + 10log (40.69) = 27.09 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.70) = 26.47 > 24dBm

Chain 1
1. 11dBm + 10log (40.69) = 27.09 > 24dBm
2. 11dBm + 10log (40.79) = 27.10 > 24dBm
3. 11dBm + 10log (40.95) = 27.12 > 24dBm
4. 11dBm + 10log (40.90) = 27.11 > 24dBm
5. 11dBm + 10log (40.93) = 27.12 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.67) = 26.48 > 24dBm

Chain 2
1. 11dBm + 10log (40.57) = 27.08 > 24dBm
2. 11dBm + 10log (40.71) = 27.09 > 24dBm
3. 11dBm + 10log (40.63) = 27.08 > 24dBm
4. 11dBm + 10log (40.48) = 27.07 > 24dBm
5. 11dBm + 10log (40.57) = 27.08 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.75) = 26.47 > 24dBm

Chain 3
1. 11dBm + 10log (40.60) = 27.08 > 24dBm
2. 11dBm + 10log (40.61) = 27.08 > 24dBm
3. 11dBm + 10log (40.41) = 27.06 > 24dBm
4. 11dBm + 10log (40.49) = 27.07 > 24dBm
5. 11dBm + 10log (40.54) = 27.07 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.79) = 26.46 > 24dBm

For reference only - power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
142	5710	210.378	23.23

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	15.37	15.26	16.05	15.77	146.038	21.64	24.00	Pass
106	5530	16.04	16.14	15.96	16.46	164.999	22.17	24.00	Pass
122	5610	16.91	16.31	16.75	17.05	189.861	22.78	24.00	Pass
138	5690 (For U-NII-2C)	14.95	14.21	14.76	14.45	121.965	20.86	24.00	Pass
138	5690 (For U-NII-3)	0.89	0.16	1.19	-1.48	4.5351	6.57	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
1. 11dBm + 10log (84.03) = 30.24 > 24dBm
2. 11dBm + 10log (83.83) = 30.23 > 24dBm
3. 11dBm + 10log (83.83) = 30.23 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.20) = 29.85 > 24dBm

Chain 1
1. 11dBm + 10log (83.91) = 30.23 > 24dBm
2. 11dBm + 10log (84.03) = 30.24 > 24dBm
3. 11dBm + 10log (84.13) = 30.24 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.09) = 29.85 > 24dBm

Chain 2
1. 11dBm + 10log (84.23) = 30.25 > 24dBm
2. 11dBm + 10log (84.10) = 30.24 > 24dBm
3. 11dBm + 10log (84.12) = 30.24 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.05) = 29.86 > 24dBm

Chain 3
1. 11dBm + 10log (83.23) = 30.20 > 24dBm
2. 11dBm + 10log (83.32) = 30.20 > 24dBm
3. 11dBm + 10log (82.86) = 30.18 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.55) = 29.83 > 24dBm

For reference only - power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
138	5690	215.278	23.33

Beamforming Mode

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	17.02	17.00	17.33	17.28	208.000	23.18	24.00	Pass
60	5300	17.17	17.01	17.63	17.58	217.576	23.38	24.00	Pass
64	5320	14.76	14.91	15.77	15.66	135.467	21.32	24.00	Pass
100	5500	17.41	17.20	17.33	17.32	215.588	23.34	24.00	Pass
116	5580	17.45	17.17	17.22	17.44	**215.895**	23.34	24.00	Pass
140	5700	17.25	17.20	17.22	17.21	210.894	23.24	24.00	Pass
144	5720 (For U-NII-2C)	15.19	15.10	15.40	14.74	129.855	21.13	22.84	Pass
144	5720 (For U-NII-3)	9.72	9.38	9.77	10.09	37.739	15.77	30.00	Pass

Note:
1. 5260~5320MHz Directional gain = 5.48dBi < 6dBi, so the limit no need to be reduced.
2. 5500~5720MHz Directional gain = 5.11dBi < 6dBi, so the limit no need to be reduced.
3. 5745~5825MHz Directional gain = 5.14dBi < 6dBi, so the limit no need to be reduced.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11dBm + 10log (20.54) = 24.12 > 24dBm
2. 11dBm + 10log (20.64) = 24.14 > 24dBm
3. 11dBm + 10log (20.75) = 24.17 > 24dBm
4. 11dBm + 10log (20.58) = 24.13 > 24dBm
5. 11dBm + 10log (20.67) = 24.15 > 24dBm
6. 11dBm + 10log (20.72) = 24.16 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.65) = 22.86 < 24dBm

Chain 1

1. 11dBm + 10log (20.74) = 24.16 > 24dBm
2. 11dBm + 10log (20.62) = 24.14 > 24dBm
3. 11dBm + 10log (20.57) = 24.13 > 24dBm
4. 11dBm + 10log (20.54) = 24.12 > 24dBm
5. 11dBm + 10log (20.60) = 24.13 > 24dBm
6. 11dBm + 10log (20.67) = 24.15 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.66) = 22.85 < 24dBm

Chain 2

1. 11dBm + 10log (20.57) = 24.13 > 24dBm
2. 11dBm + 10log (20.57) = 24.13 > 24dBm
3. 11dBm + 10log (20.65) = 24.14 > 24dBm
4. 11dBm + 10log (20.64) = 24.14 > 24dBm
5. 11dBm + 10log (20.67) = 24.15 > 24dBm
6. 11dBm + 10log (20.79) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.62) = 22.86 < 24dBm

Chain 3

1. 11dBm + 10log (20.49) = 24.11 > 24dBm
2. 11dBm + 10log (20.42) = 24.10 > 24dBm
3. 11dBm + 10log (20.46) = 24.10 > 24dBm
4. 11dBm + 10log (20.45) = 24.10 > 24dBm
5. 11dBm + 10log (20.61) = 24.14 > 24dBm
6. 11dBm + 10log (20.68) = 24.15 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.70) = 22.84 < 24dBm

For reference only - power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
144	5720	209.894	23.22

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	17.26	17.23	17.67	17.49	220.640	23.44	24.00	Pass
62	5310	17.52	17.25	17.89	17.79	**231.217**	23.64	24.00	Pass
102	5510	17.15	16.89	16.85	17.15	201.042	23.03	24.00	Pass
110	5550	17.29	16.95	16.91	17.16	204.216	23.10	24.00	Pass
134	5670	17.11	16.97	17.46	17.28	210.353	23.23	24.00	Pass
142	5710 (For U-NII-2C)	14.97	15.72	15.68	14.77	141.032	21.49	24.00	Pass
142	5710 (For U-NII-3)	3.37	4.65	4.10	5.24	11.434	10.58	30.00	Pass

Note:
1. 5260~5320MHz Directional gain = 5.48dBi < 6dBi, so the limit no need to be reduced.
2. 5500~5720MHz Directional gain = 5.11dBi < 6dBi, so the limit no need to be reduced.
3. 5745~5825MHz Directional gain = 5.14dBi < 6dBi, so the limit no need to be reduced.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11dBm + 10log (40.83) = 27.10 > 24dBm
2. 11dBm + 10log (40.82) = 27.10 > 24dBm
3. 11dBm + 10log (40.72) = 27.09 > 24dBm
4. 11dBm + 10log (40.72) = 27.09 > 24dBm
5. 11dBm + 10log (40.69) = 27.09 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.70) = 26.47 > 24dBm

Chain 1

1. 11dBm + 10log (40.69) = 27.09 > 24dBm
2. 11dBm + 10log (40.79) = 27.10 > 24dBm
3. 11dBm + 10log (40.95) = 27.12 > 24dBm
4. 11dBm + 10log (40.90) = 27.11 > 24dBm
5. 11dBm + 10log (40.93) = 27.12 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.67) = 26.48 > 24dBm

Chain 2

1. 11dBm + 10log (40.57) = 27.08 > 24dBm
2. 11dBm + 10log (40.71) = 27.09 > 24dBm
3. 11dBm + 10log (40.63) = 27.08 > 24dBm
4. 11dBm + 10log (40.48) = 27.07 > 24dBm
5. 11dBm + 10log (40.57) = 27.08 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.75) = 26.47 > 24dBm

Chain 3

1. 11dBm + 10log (40.60) = 27.08 > 24dBm
2. 11dBm + 10log (40.61) = 27.08 > 24dBm
3. 11dBm + 10log (40.41) = 27.06 > 24dBm
4. 11dBm + 10log (40.49) = 27.07 > 24dBm
5. 11dBm + 10log (40.54) = 27.07 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.79) = 26.46 > 24dBm

For reference only - power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
142	5710	210.378	23.23

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	15.37	15.26	16.05	15.77	146.038	21.64	24.00	Pass
106	5530	16.04	16.14	15.96	16.46	164.999	22.17	24.00	Pass
122	5610	16.91	16.31	16.75	17.05	189.861	22.78	24.00	Pass
138	5690 (For U-NII-2C)	14.95	14.21	14.76	14.45	121.965	20.86	24.00	Pass
138	5690 (For U-NII-3)	0.89	0.16	1.19	-1.48	4.5351	6.57	30.00	Pass

Note:
1. 5260~5320MHz Directional gain = 5.48dBi < 6dBi, so the limit no need to be reduced.
2. 5500~5720MHz Directional gain = 5.11dBi < 6dBi, so the limit no need to be reduced.
3. 5745~5825MHz Directional gain = 5.14dBi < 6dBi, so the limit no need to be reduced.

For U-NII-2A, U-NII-2C Band:

1. 11dBm + 10log (84.03) = 30.24 > 24dBm
2. 11dBm + 10log (83.83) = 30.23 > 24dBm
3. 11dBm + 10log (83.83) = 30.23 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.20) = 29.85 > 24dBm

Chain 1

1. 11dBm + 10log (83.91) = 30.23 > 24dBm
2. 11dBm + 10log (84.03) = 30.24 > 24dBm
3. 11dBm + 10log (84.13) = 30.24 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.09) = 29.85 > 24dBm

Chain 2

1. 11dBm + 10log (84.23) = 30.25 > 24dBm
2. 11dBm + 10log (84.10) = 30.24 > 24dBm
3. 11dBm + 10log (84.12) = 30.24 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.05) = 29.86 > 24dBm

Chain 3

1. 11dBm + 10log (83.23) = 30.20 > 24dBm
2. 11dBm + 10log (83.32) = 30.20 > 24dBm
3. 11dBm + 10log (82.86) = 30.18 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.55) = 29.83 > 24dBm

For reference only - power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
138	5690	215.278	23.33

26dB Bandwidth:

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	19.94	19.78	19.35	19.73
60	5300	19.93	19.48	19.40	20.32
64	5320	20.05	19.94	19.63	20.15
100	5500	20.13	19.84	19.77	19.69
116	5580	20.02	19.94	19.86	19.55
140	5700	20.19	20.25	20.06	19.69
144	5720 (For U-NII-2C)	15.22	15.16	15.09	14.65
144	5720 (For U-NII-3)	4.89	4.86	4.70	4.92

802.11ac (VHT20)

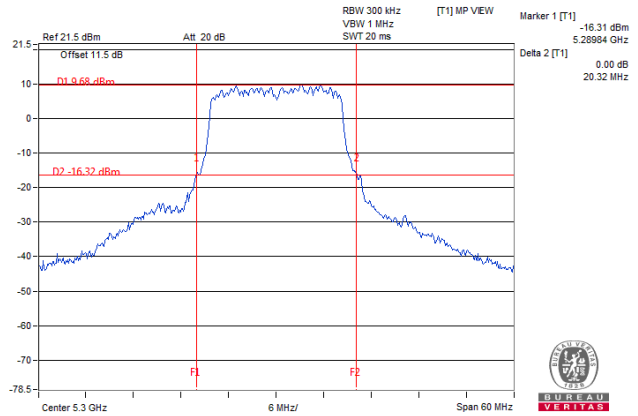
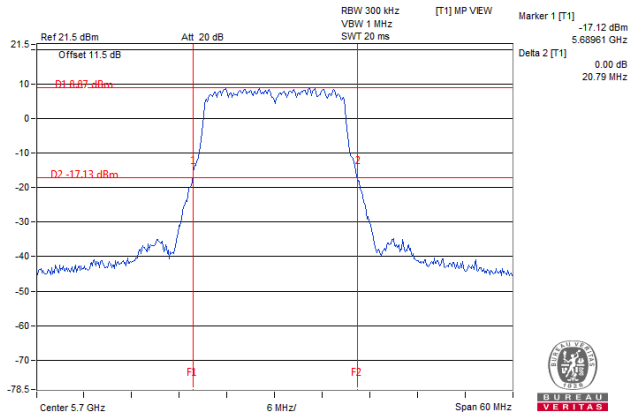
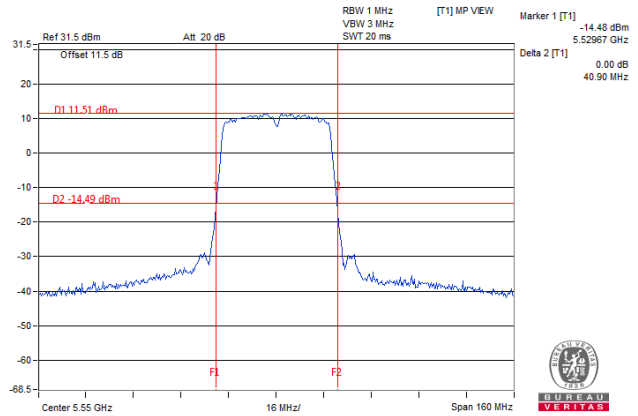
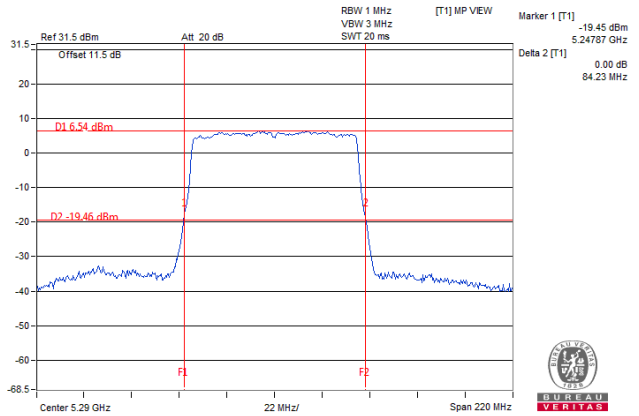
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	20.54	20.74	20.57	20.49
60	5300	20.64	20.62	20.57	20.42
64	5320	20.75	20.57	20.65	20.46
100	5500	20.58	20.54	20.64	20.45
116	5580	20.67	20.60	20.67	20.61
140	5700	20.72	20.67	20.79	20.68
144	5720 (For U-NII-2C)	15.35	15.34	15.38	15.30
144	5720 (For U-NII-3)	20.54	20.74	20.57	20.49

802.11ac (VHT40)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	40.83	40.69	40.57	40.60
62	5310	40.82	40.79	40.71	40.61
102	5510	40.72	40.95	40.63	40.41
110	5550	40.72	40.90	40.48	40.49
134	5670	40.69	40.93	40.57	40.54
142	5710 (For U-NII-2C)	35.30	35.33	35.25	35.21
142	5710 (For U-NII-3)	5.44	5.53	5.24	5.25

802.11ac (VHT80)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	84.03	83.91	84.23	83.23
106	5530	83.83	84.03	84.10	83.32
122	5610	83.83	84.13	84.12	82.86
138	5690 (For U-NII-2C)	76.80	76.91	76.95	76.45
138	5690 (For U-NII-3)	7.20	7.25	7.19	6.52

Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	

EUT Maximum Conducted Power

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	216.915	23.36
5470~5725	215.582	23.34

802.11ac (VHT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	217.576	23.38
5470~5725	215.895	23.34

802.11ac (VHT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	231.217	23.64
5470~5725	210.353	23.23

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	146.038	21.64
5470~5725	189.861	22.78

Beamforming Mode

802.11ac (VHT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	217.576	23.38
5470~5725	215.895	23.34

802.11ac (VHT40)

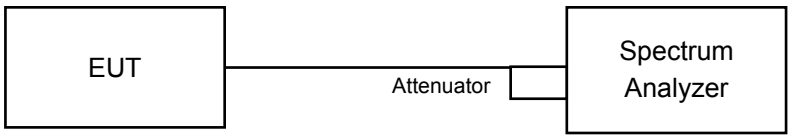
Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	231.217	23.64
5470~5725	210.353	23.23

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	146.038	21.64
5470~5725	189.861	22.78

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Test Result

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	17.64	17.64	17.64	17.64
60	5300	17.64	17.64	17.64	17.64
64	5320	17.64	17.64	17.64	17.64
100	5500	17.64	17.64	17.64	17.64
116	5580	17.64	17.64	17.64	17.64
140	5700	17.64	17.64	17.64	17.64
144	5720 For U-NII-2C	13.28	13.28	13.28	13.28
144	5720 For U-NII-3	3.16	3.16	3.16	3.16

802.11ac (VHT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	17.64	17.64	17.64	17.64
60	5300	17.64	17.64	17.64	17.64
64	5320	17.64	17.64	17.64	17.64
100	5500	17.64	17.64	17.64	17.64
116	5580	17.64	17.64	17.64	17.64
140	5700	17.64	17.64	17.64	17.64
144	5720 For U-NII-2C	13.88	13.88	13.88	13.88
144	5720 For U-NII-3	3.76	3.76	3.76	3.76

802.11ac (VHT40)

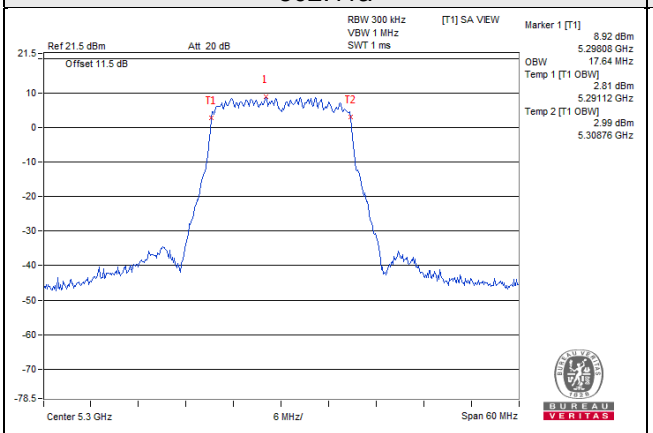
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	36.00	36.00	36.00	36.00
62	5310	36.12	36.00	36.00	36.00
102	5510	36.00	36.12	36.00	36.00
110	5550	36.12	36.12	36.00	36.00
134	5670	36.00	36.12	36.00	36.00
142	5710 For U-NII-2C	33.00	33.00	33.00	33.00
142	5710 For U-NII-3	3.00	3.00	3.00	3.00

802.11ac (VHT80)

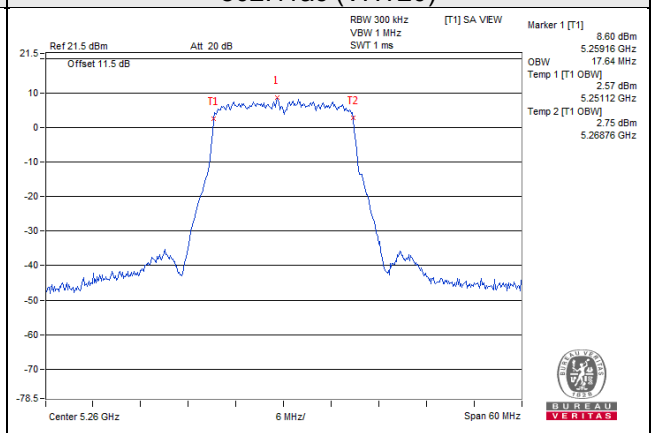
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	75.84	76.08	75.84	75.84
106	5530	75.84	75.84	75.84	75.84
122	5610	75.84	75.84	75.84	75.84
138	5690 For U-NII-2C	75.84	75.84	75.84	75.84
138	5690 For U-NII-3	72.92	72.92	72.92	72.92

Spectrum Plot of Worst Value

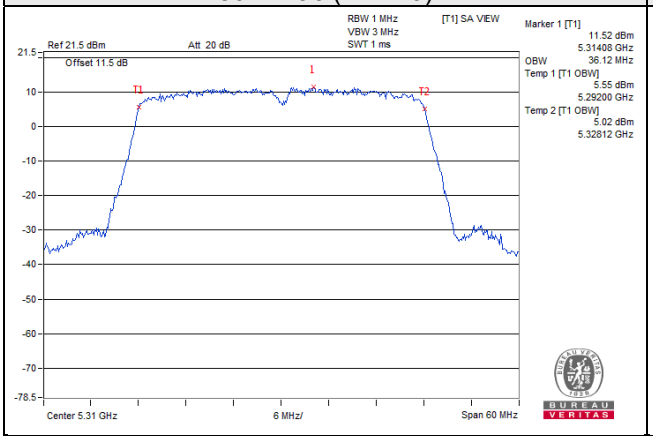
802.11a



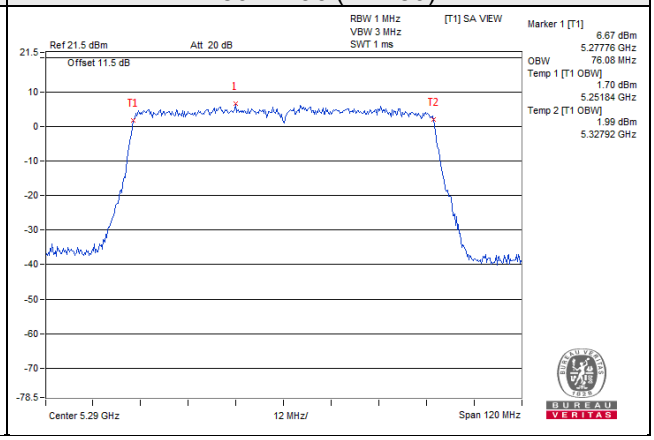
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

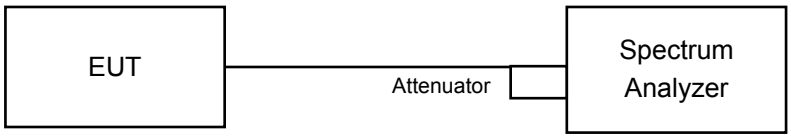


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-2A and U-NII-2C band:

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

d. Sweep time = auto, trigger set to “free run”.

e. Trace average at least 100 traces in power averaging mode.

f. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-2A and U-NII-2C band:

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	4.19	4.23	4.07	4.28	0.17	10.38	11.00	Pass
60	5300	4.17	4.51	4.41	4.58	0.17	10.61	11.00	Pass
64	5320	1.43	1.89	1.84	1.97	0.17	7.98	11.00	Pass
100	5500	4.34	4.28	3.82	4.50	0.17	10.43	11.00	Pass
116	5580	4.22	3.96	4.04	4.31	0.17	10.33	11.00	Pass
140	5700	4.23	4.45	4.43	4.42	0.17	10.57	11.00	Pass
144	5720	4.38	4.49	4.47	4.56	0.17	10.67	11.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5260~5320MHz: Directional gain = 5.48dBi < 6dBi, so the power density limit no need to reduced.
   5500~5720MHz: Directional gain = 5.11dBi < 6dBi, so the power density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Total PSD (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
52	5260	3.62	3.37	3.76	4.23	9.78	11.00	Pass
60	5300	3.63	3.56	4.00	4.65	10.00	11.00	Pass
64	5320	1.54	1.65	2.18	2.11	7.90	11.00	Pass
100	5500	3.71	3.99	3.39	3.59	9.70	11.00	Pass
116	5580	3.26	3.66	3.66	3.58	9.56	11.00	Pass
140	5700	3.68	3.75	3.72	3.95	9.80	11.00	Pass
144	5720	3.81	3.80	3.78	3.99	9.87	11.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5260~5320MHz: Directional gain = 5.48dBi < 6dBi, so the power density limit no need to reduced.
   5500~5720MHz: Directional gain = 5.11dBi < 6dBi, so the power density limit no need to reduced.

802.11ac (VHT40)

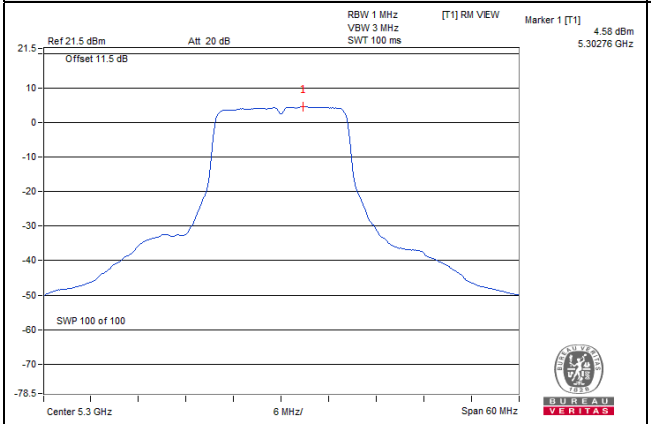
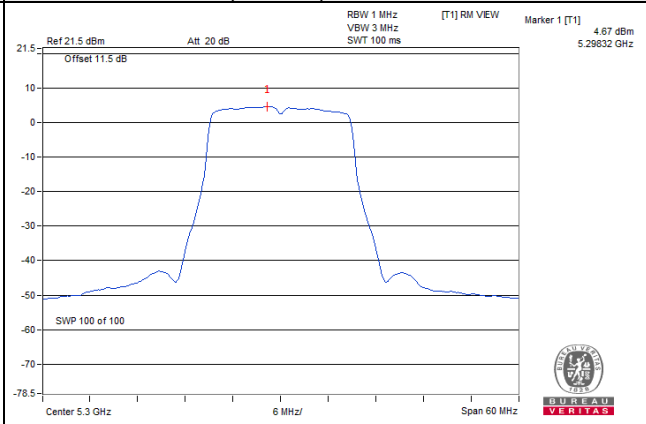
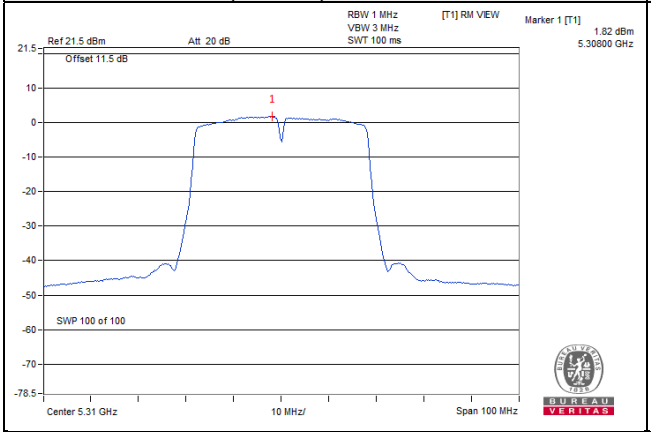
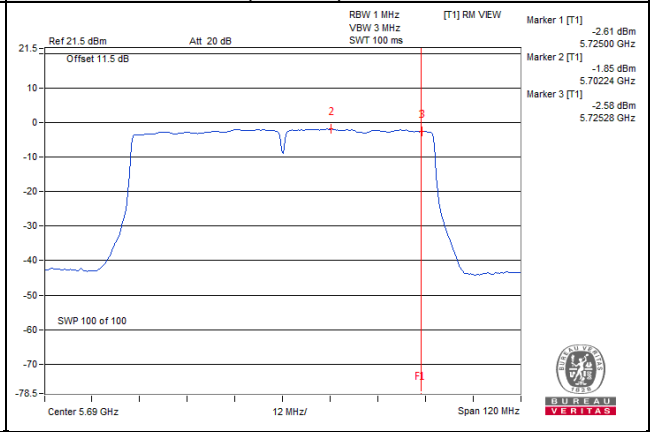
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	0.97	0.92	1.27	1.36	0.17	7.32	11.00	Pass
62	5310	1.12	0.92	1.39	1.68	0.17	7.48	11.00	Pass
102	5510	0.71	0.66	1.11	1.17	0.17	7.11	11.00	Pass
110	5550	0.90	0.77	1.44	1.00	0.17	7.23	11.00	Pass
134	5670	1.46	0.89	1.62	1.47	0.17	7.56	11.00	Pass
142	5710	1.39	1.20	1.60	1.37	0.17	7.58	11.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5260~5320MHz: Directional gain = 5.48dBi < 6dBi, so the power density limit no need to reduced.
   5500~5720MHz: Directional gain = 5.11dBi < 6dBi, so the power density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	-4.53	-4.24	-4.14	-4.37	0.24	1.94	11.00	Pass
106	5530	-3.43	-3.58	-3.21	-3.43	0.24	2.85	11.00	Pass
122	5610	-2.75	-3.34	-2.33	-2.59	0.24	3.52	11.00	Pass
138	5690	-1.87	-2.28	-1.93	-2.07	0.24	4.23	11.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5260~5320MHz: Directional gain = 5.48dBi < 6dBi, so the power density limit no need to reduced.
   5500~5720MHz: Directional gain = 5.11dBi < 6dBi, so the power density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 3 / CH 60	802.11ac (VHT20) / Chain 3 / CH 60
	
802.11ac (VHT40) / Chain 3 / CH 62	802.11ac (VHT80) / Chain 0 / 138
	

For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	144	5720	-3.95	-1.73	6.02	0.17	4.46	30.00	Pass
1	144	5720	-4.11	-1.89	6.02	0.17	4.30	30.00	Pass
2	144	5720	-3.91	-1.69	6.02	0.17	4.50	30.00	Pass
3	144	5720	-3.90	-1.68	6.02	0.17	4.51	30.00	Pass

Note:
1. Directional gain = 5.14dBi < 6dBi, so the power density limit no need to reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Total PSD (dBm/500kHz)	Limit (dBm/500k Hz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	144	5720	-4.59	-2.37	6.02	3.65	30.00	Pass
1	144	5720	-4.76	-2.54	6.02	3.48	30.00	Pass
2	144	5720	-4.22	-2.00	6.02	4.02	30.00	Pass
3	144	5720	-4.48	-2.26	6.02	3.76	30.00	Pass

Note:
1. Directional gain = 5.14dBi < 6dBi, so the power density limit no need to reduced.

802.11ac (VHT40)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	142	5710	-8.80	-6.58	6.02	0.17	-0.39	30.00	Pass
1	142	5710	-8.48	-6.26	6.02	0.17	-0.07	30.00	Pass
2	142	5710	-9.14	-6.92	6.02	0.17	-0.73	30.00	Pass
3	142	5710	-9.00	-6.78	6.02	0.17	-0.59	30.00	Pass

Note:
1. Directional gain = 5.14dBi < 6dBi, so the power density limit no need to reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

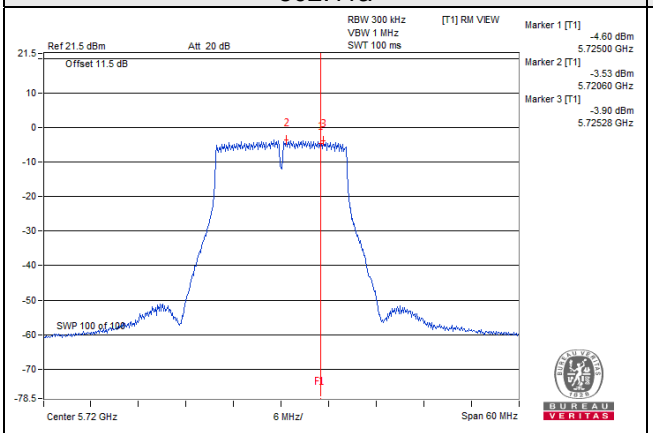
802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	138	5690	-11.58	-9.36	6.02	0.24	-3.10	30.00	Pass
1	138	5690	-11.87	-9.65	6.02	0.24	-3.39	30.00	Pass
2	138	5690	-12.02	-9.80	6.02	0.24	-3.54	30.00	Pass
3	138	5690	-11.96	-9.74	6.02	0.24	-3.48	30.00	Pass

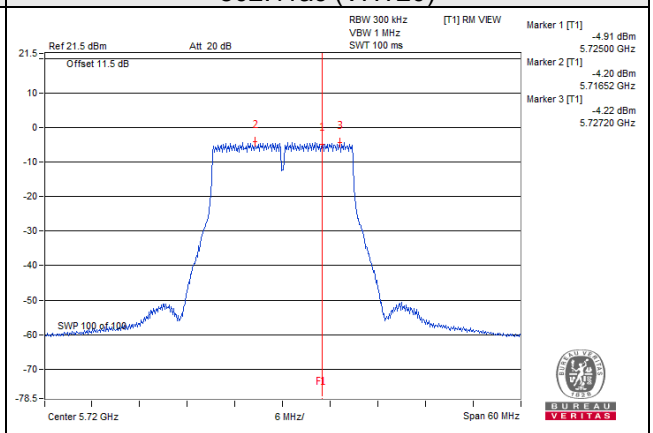
Note:
1. Directional gain = 5.14dBi < 6dBi, so the power density limit no need to reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

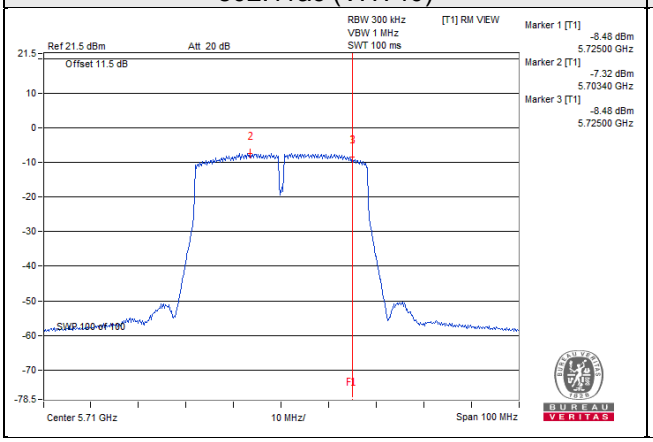
802.11a



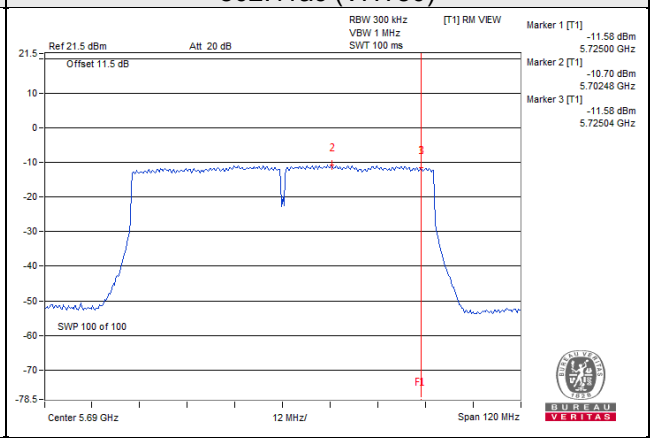
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

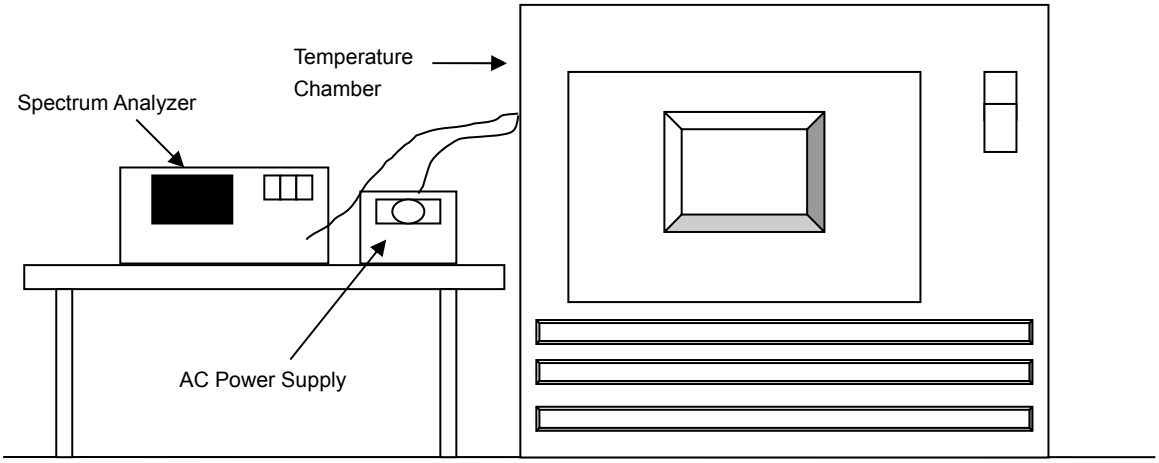


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 11, 2018	Jun. 10, 2019
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 04, 2018	Jun. 03, 2019
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2019
AC Power Supply Extech	CFW-105	E000603	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.

e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5260MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
45	120	5259.9798	Pass	5259.9794	Pass	5259.9828	Pass	5259.9804	Pass
40	120	5259.9933	Pass	5259.9885	Pass	5259.9903	Pass	5259.9908	Pass
30	120	5259.9749	Pass	5259.9743	Pass	5259.9779	Pass	5259.9731	Pass
20	120	5260.0096	Pass	5260.0074	Pass	5260.0100	Pass	5260.0059	Pass
10	120	5259.9818	Pass	5259.9816	Pass	5259.982	Pass	5259.9798	Pass
0	120	5259.9804	Pass	5259.9830	Pass	5259.9806	Pass	5259.9822	Pass

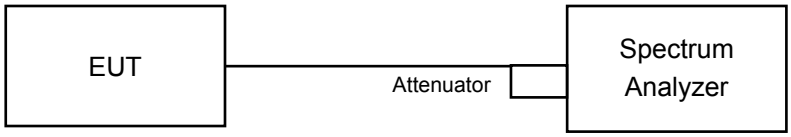
Frequency Stability Versus Voltage									
Operating Frequency: 5260MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5260.0091	Pass	5260.0077	Pass	5260.0095	Pass	5260.0059	Pass
	120	5260.0096	Pass	5260.0074	Pass	5260.0100	Pass	5260.0059	Pass
	102	5260.0088	Pass	5260.0081	Pass	5260.0101	Pass	5260.0055	Pass

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
144	5720 (For U-NII-3)	3.15	3.16	3.16	2.89	0.5	Pass

802.11ac (VHT20)

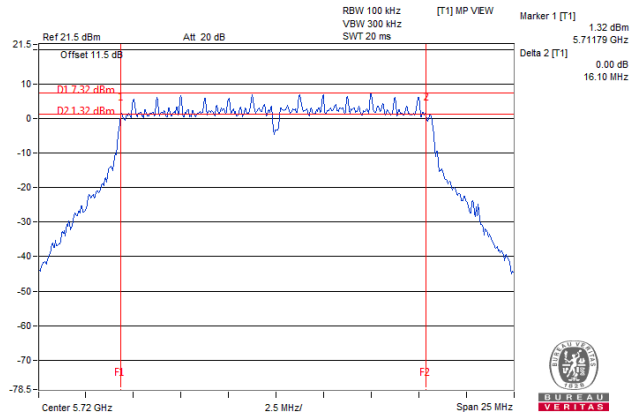
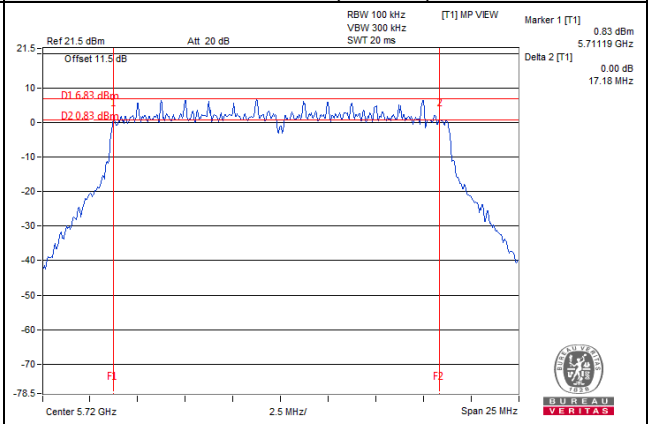
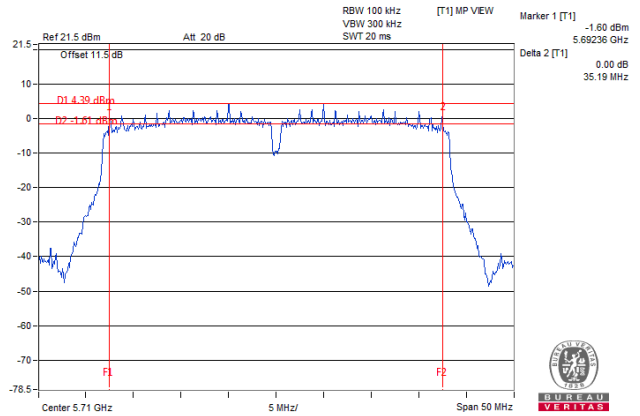
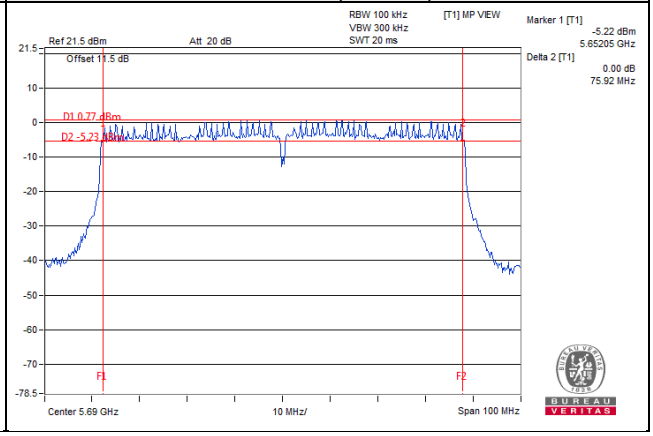
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
144	5720 (For U-NII-3)	3.50	3.37	3.78	3.76	0.5	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
142	5710 (For U-NII-2C)	2.57	2.58	2.60	2.55	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
138	5690 (For U-NII-2C)	2.97	3.04	3.20	3.20	0.5	Pass

Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	

Note:

For CH144 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH142 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH138 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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