FCC Test Report

Report No.:	RF180613C24-1
FCC ID:	PY317300397
Test Model:	Leopard
Received Date:	Jun. 13, 2018
Test Date:	Jun. 07 ~ Aug. 01, 2018
Issued Date:	Aug. 03, 2018
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
RF180613C24-1	Original release.	Aug. 03, 2018

1 Certificate of Conformity

Product:	Leopard
Brand:	NETGEAR
Test Model:	Leopard
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Jun. 07 ~ Aug. 01, 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:** Aug. 03, 2018

Suntee Liu / Specialist

Approved by : _____ , **Date:** Aug. 03, 2018

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 -20.37dB at 0.38827MHz.
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 -0.3dB at 5150.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is I-PEX not a standard connector.

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.

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	Leopard
Brand	NETGEAR
Test Model	Leopard
Sample Status	Engineering sample
Power Supply Rating	19Vdc (adapter)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 1200Mbps 802.11ac: up to 3466.4Mbps 802.11ax: up to 4804Mbps
Operating Frequency	5180~5240MHz, 5745~5825MHz
Number of Channel	5180~5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 4 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1 5745~5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 5 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1 802.11ac (VHT80+80), 802.11ax (HE80+80): 1 set
Output Power	CDD Mode: 5180~5240MHz: 882.295mW 5745~5825MHz: 995.432mW Beamforming_NSS1 Mode: 5180~5240MHz: 269.735mW 5745~5825MHz: 271.004mW Beamforming_NSS2 Mode: 5180~5240MHz: 486.676mW 5745~5825MHz: 541.982mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Cable Supplied	NA

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 8 completed transmitter and 8 receivers.

Band	Modulation Mode	Beamforming Mode	TX Function
5GHz	802.11a	Not Support	8TX
	802.11n (HT20)	Support (CDD / NSS1 / NSS2)	8TX
	802.11n (HT40)	Support (CDD / NSS1 / NSS2)	8TX
	802.11ac (VHT20)	Support (CDD / NSS1 / NSS2)	8TX
	802.11ac (VHT40)	Support (CDD / NSS1 / NSS2)	8TX
	802.11ac (VHT80)	Support (CDD / NSS1 / NSS2)	8TX
	802.11ac (VHT80+80)	Not Support	4TX+4TX
	802.11ax (HE20)	Support (CDD / NSS1 / NSS2)	8TX
	802.11ax (HE40)	Support (CDD / NSS1 / NSS2)	8TX
	802.11ax (HE80)	Support (CDD / NSS1 / NSS2)	8TX
	802.11ax (HE80+80)	Not Support	4TX+4TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40 on 802.11ac mode and HE20/HE40 on 802.11ax mode. The bandwidth and modulation are similar for VHT80 on 802.11ac mode and HE80 on 802.11ax mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)
* CDD mode and Beamforming mode are presented in output power test item. For other test items, CDD mode is the worst case for final tests after pretesting.

2. The EUT uses following antenna.

Antenna Type	Dipole			Connecter Type	I-PEX		
Directional Antenna Gain (dBi)							
Antenna No.	2.4G	5G Band 1			5G Band 4		
		CDD	NSS1	NSS2	CDD	NSS1	NSS2
8TX	3.29	3.22	11.37	8.76	3.10	11.55	8.32
4TX+4TX	-	3.22	-	-	3.10	-	-

3. The EUT consumes power from the following adapters.

Adapter 1	
Brand	NETGEAR
Model	2ABS060K NA
P/N	332-10856-01
Input Power	100-240Vac, 50/60Hz, 1.7A
Output Power	19Vdc, 3.16A
Power Cord	1.8m power cable without core attached on adapter

Adapter 2	
Brand	NETGEAR
Model	AD2073F20
P/N	332-10835-01
Input Power	100-240Vac, 50/60Hz, 1.5A
Output Power	19Vdc, 3.16A
Power Cord	1.8m power cable without core attached on adapter

* Adapter 2 is the worst case for final test after pretesting.

4. The worst case spurious emission of the simultaneous operation mode is listed as below and the test data please refer to BV CPS report no.: RF180613C24-2.

No	Mode
1	WLAN 2.4GHz + WLAN 5GHz B4

3.2 Description of Test Modes

5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Freqency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
42	5210 MHz

5745~5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
155	5775 MHz

For simultaneous transmission:

1 set is provided for 802.11ac (VHT80+80), 802.11ax (HE80+80):

Channel	Frequency
42+155	5210 MHz + 5775 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

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	Modulation Type	Data Rate (Mbps)	Remark
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0	-
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	MCS0	-
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	MCS0	-
	802.11ac (VHT80)		42	42	OFDM	BPSK	MCS0	-
	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0	-
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0	-
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	MCS0	-
	802.11ac (VHT80)		155	155	OFDM	BPSK	MCS0	-
	802.11ac (VHT80+80)	5180-5240 5745-5825	42+155	42+155	OFDM	BPSK	MCS0	-

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	Modulation Type	Data Rate (Mbps)	Remark
-	802.11a	5180-5240	36 to 48	157	OFDM	BPSK	6.0	
	802.11a	5745-5825	149 to 165					

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	Modulation Type	Data Rate (Mbps)	Remark
-	802.11a	5180-5240	36 to 48	157	OFDM	BPSK	6.0	
	802.11a	5745-5825	149 to 165					

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	Modulation Type	Data Rate (Mbps)	Remark
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0	-
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	MCS0	-
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	MCS0	-
	802.11ac (VHT80)		42	42	OFDM	BPSK	MCS0	-
	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	BPSK	MCS0	-
	802.11ax (HE40)		38 to 46	38, 46	OFDMA	BPSK	MCS0	-
	802.11ax (HE80)		42	42	OFDMA	BPSK	MCS0	-
	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0	-
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0	-
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	MCS0	-
	802.11ac (VHT80)		155	155	OFDM	BPSK	MCS0	-
	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	BPSK	MCS0	-
	802.11ax (HE40)		151 to 159	151, 159	OFDMA	BPSK	MCS0	-
	802.11ax (HE80)		155	155	OFDMA	BPSK	MCS0	-
	802.11ac (VHT80+80)	5180-5240	42+155	42+155	OFDM	BPSK	MCS0	-
	802.11ax (HE80+80)	5745-5825	42+155	42+155	OFDMA	BPSK	MCS0	-

* 802.11ax mode is presented in output power test item only.

Test Condition:

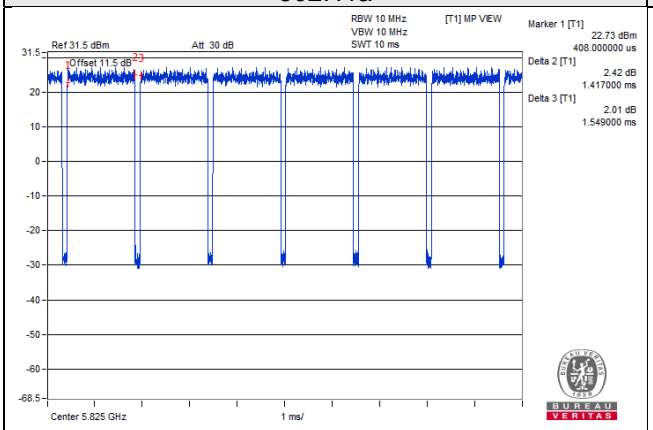
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25deg. C, 70%RH	120Vac, 60Hz	Noah Chang
RE<1G	25deg. C, 71%RH	120Vac, 60Hz	Noah Chang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Noah Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Alan Wu

3.3 Duty Cycle of Test Signal

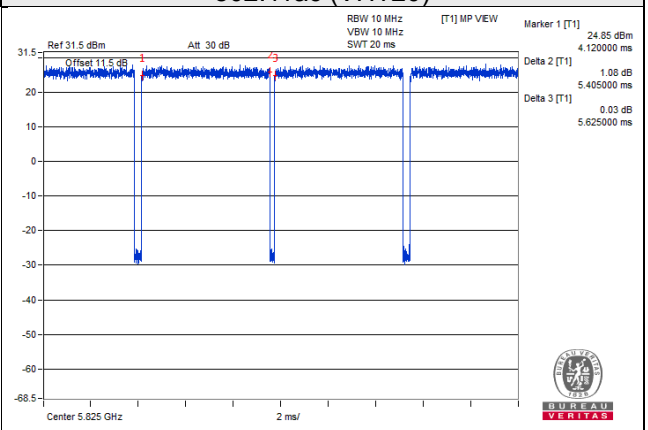
Duty cycle of test signal is ≥ 98%, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 1.417/1.549 = 0.915, Duty factor = 10 * log(1/0.915) = 0.39
802.11ac (VHT20): Duty cycle = 5.405/5.625 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17
802.11ac (VHT40): Duty cycle = 5.395/5.69 = 0.948, Duty factor = 10 * log(1/0.948) = 0.23
802.11ac (VHT80): Duty cycle = 5.41/5.71 = 0.947, Duty factor = 10 * log(1/0.947) = 0.23
802.11ac (VHT80+80): Duty cycle = 5.41/5.71 = 0.947, Duty factor = 10 * log(1/0.947) = 0.23

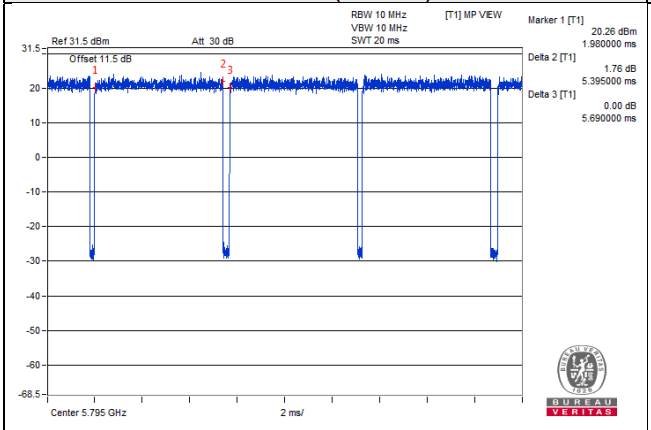
802.11a



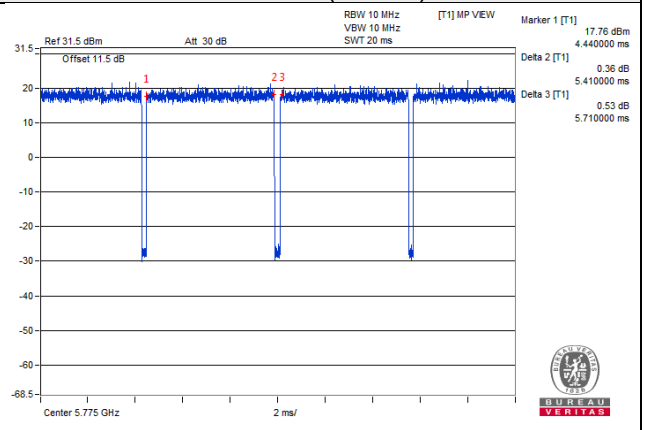
802.11ac (VHT20)



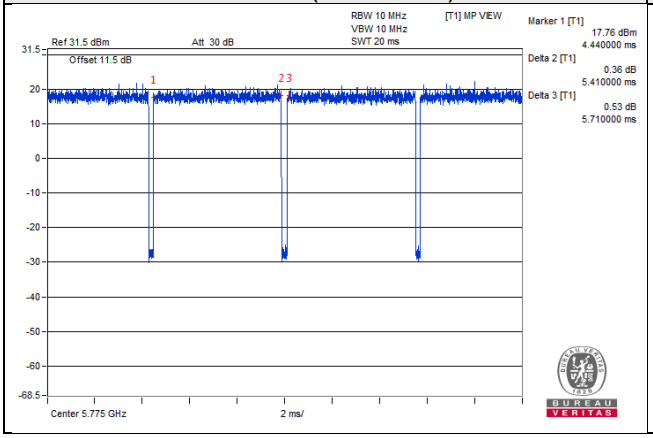
802.11ac (VHT40)



802.11ac (VHT80)



802.11ac (VHT80+80)



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.

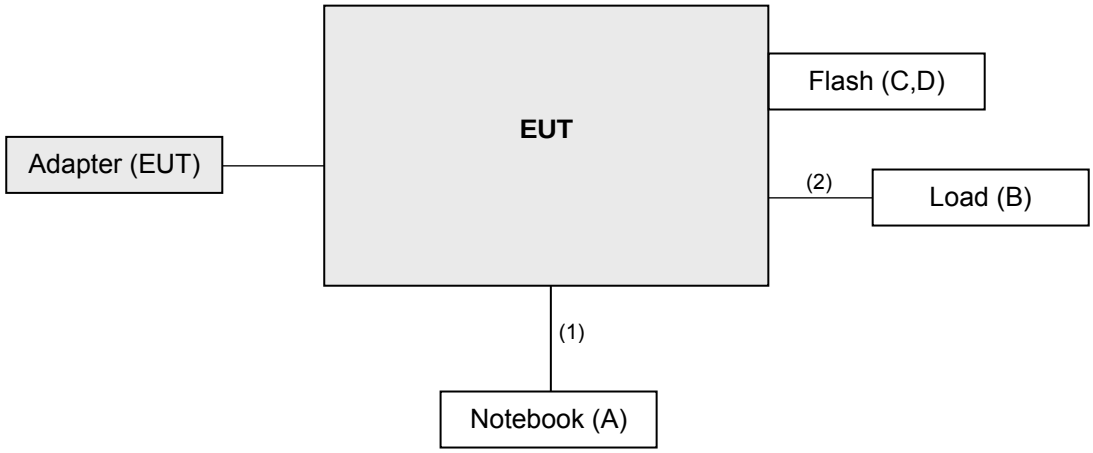
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	HP	11-u018TU	8CG70505V9	FCC DoC Approved	-
B.	Load	NA	NA	NA	NA	-
C.	Flash	HP	v250W	06	NA	-
D.	Flash	HP	v250W	03	NA	-

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	5	N	0	-
2.	RJ45, Cat5e	5	1.5	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	ESCI	100424	Oct. 17, 2017	Oct. 16, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 18, 2017	Aug. 17, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Aug. 08, 2017	Aug. 07, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A01960	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 08, 2017	Aug. 07, 2018
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
26GHz ~ 40GHz Amplifier Agilent	8449B	3008A1960	Aug. 08, 2017	Aug. 07, 2018
High Speed Peak Power Meter	ML2495A	0824012	Aug. 18, 2017	Aug. 17, 2018
Power Sensor	MA2411B	0738171	Aug. 18, 2017	Aug. 17, 2018

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 IC 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:

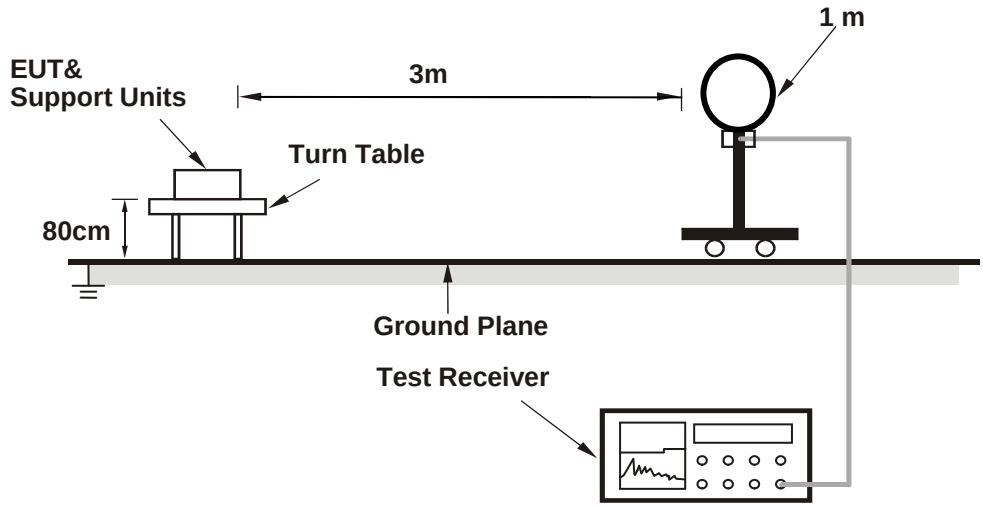
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

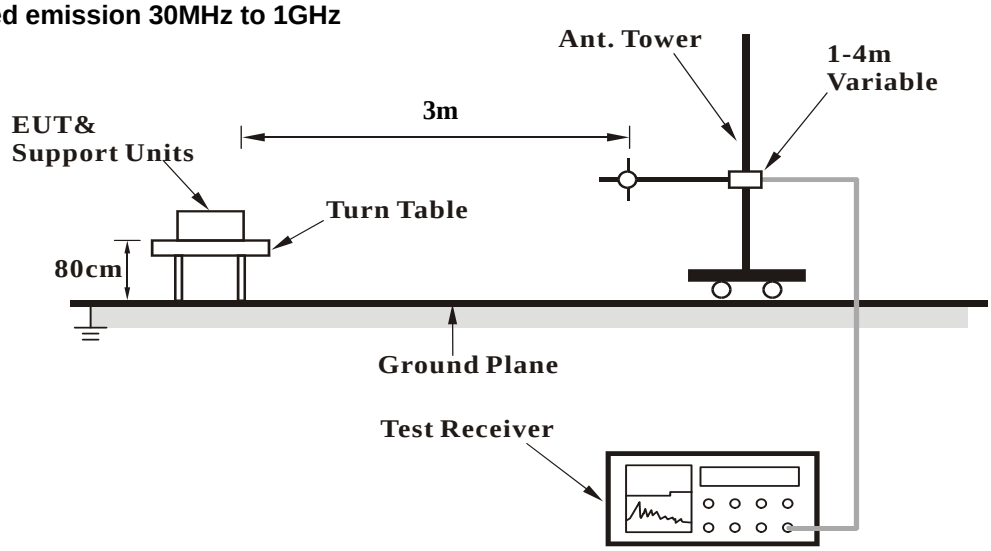
No deviation.

4.1.5 Test Setup

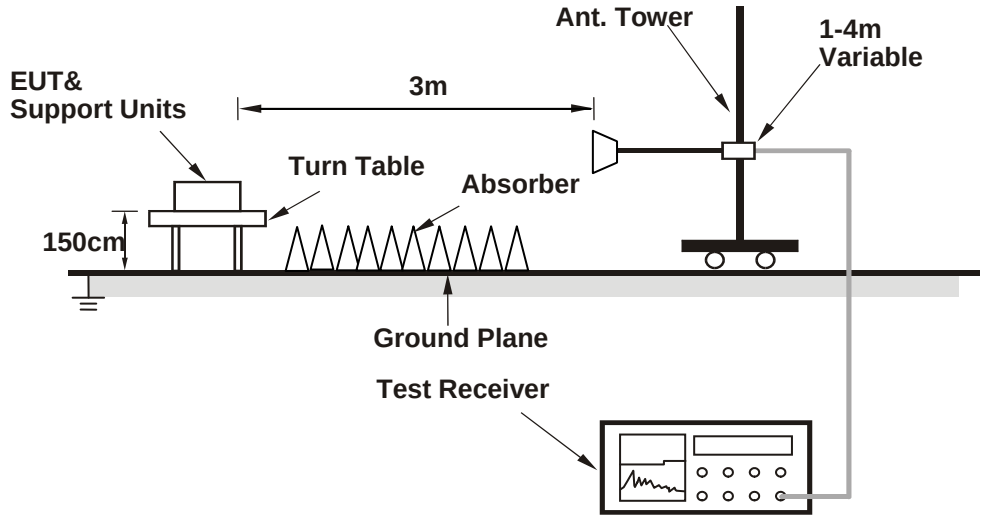
For Radiated emission below 30MHz



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 necessary accessories enable the system in full functions.

4.1.7 Test Results

Above 1GHz worst-case data:

802.11a

CHANNEL	TX Channel 36	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	66.3 PK	74.0	-7.7	1.00 H	310	63.7	2.6
2	5150.00	46.0 AV	54.0	-8.0	1.00 H	310	43.4	2.6
3	*5180.00	115.4 PK			1.00 H	310	74.5	40.9
4	*5180.00	106.1 AV			1.00 H	310	65.2	40.9
5	#10360.00	59.7 PK	74.0	-14.3	2.56 H	87	44.9	14.8
6	#10360.00	46.6 AV	54.0	-7.4	2.56 H	87	31.8	14.8
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	5150.00	62.6 PK	74.0	-11.4	1.42 V	4	60.0	2.6
2	5150.00	49.2 AV	54.0	-4.8	1.42 V	4	46.6	2.6
3	*5180.00	124.5 PK			1.42 V	4	83.6	40.9
4	*5180.00	114.2 AV			1.42 V	4	73.3	40.9
5	#10360.00	59.6 PK	74.0	-14.4	2.58 V	320	44.8	14.8
6	#10360.00	46.4 AV	54.0	-7.6	2.58 V	320	31.6	14.8

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 40	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	*5200.00	116.5 PK			1.00 H	294	75.6	40.9
2	*5200.00	106.8 AV			1.00 H	294	65.9	40.9
3	#10400.00	59.7 PK	74.0	-14.3	3.52 H	150	44.8	14.9
4	#10400.00	47.8 AV	54.0	-6.2	3.52 H	150	32.9	14.9
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	*5200.00	122.5 PK			3.22 V	181	81.6	40.9
2	*5200.00	112.9 AV			3.22 V	181	72.0	40.9
3	#10400.00	60.5 PK	74.0	-13.5	3.38 V	255	45.6	14.9
4	#10400.00	47.7 AV	54.0	-6.3	3.38 V	255	32.8	14.9

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 48	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	*5240.00	117.8 PK			1.41 H	9	77.1	40.7
2	*5240.00	107.5 AV			1.41 H	9	66.8	40.7
3	5350.00	56.8 PK	74.0	-17.2	1.41 H	9	54.0	2.8
4	5350.00	44.1 AV	54.0	-9.9	1.41 H	9	41.3	2.8
5	#10480.00	59.6 PK	74.0	-14.4	2.59 H	152	44.9	14.7
6	#10480.00	49.3 AV	54.0	-4.7	2.59 H	152	34.6	14.7
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	*5240.00	124.5 PK			2.29 V	232	83.8	40.7
2	*5240.00	114.3 AV			2.29 V	232	73.6	40.7
3	5350.00	59.7 PK	74.0	-14.3	2.29 V	232	56.9	2.8
4	5350.00	49.5 AV	54.0	-4.5	2.29 V	232	46.7	2.8
5	#10480.00	60.2 PK	74.0	-13.8	2.15 V	82	45.5	14.7
6	#10480.00	50.0 AV	54.0	-4.0	2.15 V	82	35.3	14.7

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 149	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	#5644.00	58.0 PK	68.2	-10.2	3.31 H	242	54.6	3.4
2	*5745.00	120.7 PK			3.31 H	242	78.5	42.2
3	*5745.00	110.2 AV			3.31 H	242	68.0	42.2
4	#5964.80	59.2 PK	68.2	-9.0	3.31 H	242	54.5	4.7
5	11490.00	61.3 PK	74.0	-12.7	2.61 H	170	45.1	16.2
6	11490.00	48.1 AV	54.0	-5.9	2.61 H	170	31.9	16.2
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	#5624.00	64.2 PK	68.2	-4.0	1.66 V	18	60.7	3.5
2	*5745.00	127.6 PK			1.66 V	18	85.4	42.2
3	*5745.00	117.3 AV			1.66 V	18	75.1	42.2
4	#5940.00	64.6 PK	68.2	-3.6	1.66 V	18	60.1	4.5
5	11490.00	61.8 PK	74.0	-12.2	1.62 V	281	45.6	16.2
6	11490.00	49.3 AV	54.0	-4.7	1.62 V	281	33.1	16.2

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 157	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	#5621.60	58.1 PK	68.2	-10.1	3.24 H	234	54.6	3.5
2	*5785.00	119.9 PK			3.24 H	234	77.5	42.4
3	*5785.00	109.3 AV			3.24 H	234	66.9	42.4
4	#5985.60	59.7 PK	68.2	-8.5	3.24 H	234	55.1	4.6
5	11570.00	61.2 PK	74.0	-12.8	2.81 H	114	45.2	16.0
6	11570.00	47.8 AV	54.0	-6.2	2.81 H	114	31.8	16.0
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	#5613.60	63.9 PK	68.2	-4.3	2.39 V	18	60.4	3.5
2	*5785.00	127.0 PK			2.39 V	18	84.6	42.4
3	*5785.00	116.6 AV			2.39 V	18	74.2	42.4
4	#5947.20	64.4 PK	68.2	-3.8	2.39 V	18	59.8	4.6
5	11570.00	61.8 PK	74.0	-12.2	1.20 V	226	45.8	16.0
6	11570.00	48.9 AV	54.0	-5.1	1.20 V	226	32.9	16.0

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 165	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	#5626.40	58.8 PK	68.2	-9.4	3.26 H	237	55.3	3.5
2	*5825.00	121.4 PK			3.26 H	237	78.6	42.8
3	*5825.00	111.5 AV			3.26 H	237	68.7	42.8
4	#5961.60	59.9 PK	68.2	-8.3	3.26 H	237	55.2	4.7
5	11650.00	60.5 PK	74.0	-13.5	2.96 H	174	45.1	15.4
6	11650.00	48.0 AV	54.0	-6.0	2.96 H	174	32.6	15.4
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	#5634.40	66.1 PK	68.2	-2.1	1.49 V	14	62.6	3.5
2	*5825.00	127.7 PK			1.49 V	14	84.9	42.8
3	*5825.00	117.5 AV			1.49 V	14	74.7	42.8
4	#5950.40	65.0 PK	68.2	-3.2	1.49 V	14	60.4	4.6
5	11650.00	61.2 PK	74.0	-12.8	1.39 V	257	45.8	15.4
6	11650.00	48.2 AV	54.0	-5.8	1.39 V	257	32.8	15.4

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 36	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	57.0 PK	74.0	-17.0	1.99 H	259	54.4	2.6
2	5150.00	44.4 AV	54.0	-9.6	1.99 H	259	41.8	2.6
3	*5180.00	115.4 PK			1.99 H	259	74.5	40.9
4	*5180.00	104.5 AV			1.99 H	259	63.6	40.9
5	#10360.00	59.7 PK	74.0	-14.3	2.59 H	336	44.9	14.8
6	#10360.00	49.4 AV	54.0	-4.6	2.59 H	336	34.6	14.8
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	5150.00	70.2 PK	74.0	-3.8	2.51 V	48	67.6	2.6
2	5150.00	50.7 AV	54.0	-3.3	2.51 V	48	48.1	2.6
3	*5180.00	122.8 PK			2.51 V	47	81.9	40.9
4	*5180.00	112.9 AV			2.51 V	47	72.0	40.9
5	#10360.00	60.6 PK	74.0	-13.4	2.62 V	68	45.8	14.8
6	#10360.00	50.1 AV	54.0	-3.9	2.62 V	68	35.3	14.8

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 40	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	*5200.00	115.4 PK			2.38 H	254	74.5	40.9
2	*5200.00	104.6 AV			2.38 H	254	63.7	40.9
3	#10400.00	59.3 PK	74.0	-14.7	1.50 H	22	44.4	14.9
4	#10400.00	46.1 AV	54.0	-7.9	1.50 H	22	31.2	14.9
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	*5200.00	123.4 PK			2.73 V	49	82.5	40.9
2	*5200.00	113.6 AV			2.73 V	49	72.7	40.9
3	#10400.00	59.4 PK	74.0	-14.6	2.73 V	85	44.5	14.9
4	#10400.00	46.4 AV	54.0	-7.6	2.73 V	85	31.5	14.9

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 48	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	*5240.00	116.6 PK			2.49 H	355	75.9	40.7
2	*5240.00	105.8 AV			2.49 H	355	65.1	40.7
3	5350.00	57.2 PK	74.0	-16.8	2.49 H	355	54.4	2.8
4	5350.00	44.3 AV	54.0	-9.7	2.49 H	355	41.5	2.8
5	#10480.00	59.6 PK	74.0	-14.4	3.15 H	22	44.9	14.7
6	#10480.00	48.2 AV	54.0	-5.8	3.15 H	22	33.5	14.7
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	*5240.00	123.0 PK			3.21 V	195	82.3	40.7
2	*5240.00	111.4 AV			3.21 V	195	70.7	40.7
3	5350.00	57.8 PK	74.0	-16.2	3.21 V	195	55.0	2.8
4	5350.00	45.2 AV	54.0	-8.8	3.21 V	195	42.4	2.8
5	#10480.00	59.9 PK	74.0	-14.1	2.65 V	88	45.2	14.7
6	#10480.00	49.0 AV	54.0	-5.0	2.65 V	88	34.3	14.7

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 149	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	#5649.60	59.6 PK	68.2	-8.6	3.16 H	240	56.2	3.4
2	*5745.00	118.0 PK			3.16 H	240	75.8	42.2
3	*5745.00	105.7 AV			3.16 H	240	63.5	42.2
4	#5940.80	59.9 PK	68.2	-8.3	3.16 H	240	55.4	4.5
5	11490.00	61.0 PK	74.0	-13.0	2.85 H	149	44.8	16.2
6	11490.00	48.1 AV	54.0	-5.9	2.85 H	149	31.9	16.2
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	#5648.80	64.2 PK	68.2	-4.0	1.37 V	12	60.8	3.4
2	*5745.00	125.7 PK			1.37 V	12	83.5	42.2
3	*5745.00	114.5 AV			1.37 V	12	72.3	42.2
4	#5996.00	64.3 PK	68.2	-3.9	1.37 V	12	59.6	4.7
5	11490.00	62.0 PK	74.0	-12.0	1.74 V	270	45.8	16.2
6	11490.00	48.8 AV	54.0	-5.2	1.74 V	270	32.6	16.2

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 157	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	#5601.60	57.9 PK	68.2	-10.3	3.43 H	224	54.3	3.6
2	*5785.00	117.3 PK			3.43 H	224	74.9	42.4
3	*5785.00	107.2 AV			3.43 H	224	64.8	42.4
4	#5980.00	59.6 PK	68.2	-8.6	3.43 H	224	55.0	4.6
5	11570.00	60.8 PK	74.0	-13.2	2.64 H	179	44.8	16.0
6	11570.00	48.2 AV	54.0	-5.8	2.64 H	179	32.2	16.0
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	#5641.60	63.3 PK	68.2	-4.9	1.42 V	15	59.9	3.4
2	*5785.00	124.5 PK			1.42 V	15	82.1	42.4
3	*5785.00	114.2 AV			1.42 V	15	71.8	42.4
4	#5971.20	65.0 PK	68.2	-3.2	1.42 V	15	60.4	4.6
5	11570.00	61.7 PK	74.0	-12.3	1.60 V	298	45.7	16.0
6	11570.00	48.9 AV	54.0	-5.1	1.60 V	298	32.9	16.0

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 165	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	#5604.80	58.3 PK	68.2	-9.9	3.42 H	244	54.7	3.6
2	*5825.00	117.7 PK			3.42 H	244	74.9	42.8
3	*5825.00	107.3 AV			3.42 H	244	64.5	42.8
4	#5980.80	60.0 PK	68.2	-8.2	3.42 H	244	55.4	4.6
5	11650.00	60.5 PK	74.0	-13.5	2.63 H	195	45.1	15.4
6	11650.00	47.3 AV	54.0	-6.7	2.63 H	195	31.9	15.4
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	#5634.40	59.1 PK	68.2	-9.1	2.38 V	5	55.6	3.5
2	*5825.00	123.7 PK			2.38 V	5	80.9	42.8
3	*5825.00	113.1 AV			2.38 V	5	70.3	42.8
4	#5926.40	60.8 PK	68.2	-7.4	2.38 V	5	56.3	4.5
5	11650.00	61.8 PK	74.0	-12.2	1.68 V	241	46.4	15.4
6	11650.00	48.9 AV	54.0	-5.1	1.68 V	241	33.5	15.4

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.

802.11n (HT40)

CHANNEL	TX Channel 38	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	68.6 PK	74.0	-5.4	1.76 H	310	66.0	2.6
2	5150.00	49.8 AV	54.0	-4.2	1.76 H	310	47.2	2.6
3	*5190.00	111.9 PK			1.76 H	310	71.0	40.9
4	*5190.00	102.0 AV			1.76 H	310	61.1	40.9
5	#10380.00	59.1 PK	74.0	-14.9	2.55 H	266	44.3	14.8
6	#10380.00	46.1 AV	54.0	-7.9	2.55 H	266	31.3	14.8
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	**5150.00**	**73.7 PK**	**74.0**	**-0.3**	**2.48 V**	**227**	**71.1**	**2.6**
2	5150.00	52.9 AV	54.0	-1.1	2.48 V	227	50.3	2.6
3	*5190.00	118.1 PK			2.48 V	227	77.2	40.9
4	*5190.00	108.0 AV			2.48 V	227	67.1	40.9
5	#10380.00	59.4 PK	74.0	-14.6	3.50 V	55	44.6	14.8
6	#10380.00	46.3 AV	54.0	-7.7	3.50 V	55	31.5	14.8

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 46	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	*5230.00	113.4 PK			1.67 H	44	72.7	40.7
2	*5230.00	103.3 AV			1.67 H	44	62.6	40.7
3	5350.00	57.3 PK	74.0	-16.7	1.67 H	44	54.5	2.8
4	5350.00	44.3 AV	54.0	-9.7	1.67 H	44	41.5	2.8
5	#10460.00	59.1 PK	74.0	-14.9	2.55 H	325	44.3	14.8
6	#10460.00	46.4 AV	54.0	-7.6	2.55 H	325	31.6	14.8
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	*5230.00	119.7 PK			2.42 V	225	79.0	40.7
2	*5230.00	110.0 AV			2.42 V	225	69.3	40.7
3	5350.00	58.3 PK	74.0	-15.7	2.42 V	225	55.5	2.8
4	5350.00	45.4 AV	54.0	-8.6	2.42 V	225	42.6	2.8
5	#10460.00	59.6 PK	74.0	-14.4	2.99 V	305	44.8	14.8
6	#10460.00	46.4 AV	54.0	-7.6	2.99 V	305	31.6	14.8

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 151	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	#5635.20	61.0 PK	68.2	-7.2	3.28 H	242	57.5	3.5
2	*5755.00	115.3 PK			3.28 H	242	73.0	42.3
3	*5755.00	103.3 AV			3.28 H	242	61.0	42.3
4	#5959.20	59.5 PK	68.2	-8.7	3.28 H	242	54.8	4.7
5	11510.00	60.9 PK	74.0	-13.1	2.81 H	152	44.9	16.0
6	11510.00	48.1 AV	54.0	-5.9	2.81 H	152	32.1	16.0
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	#5644.00	61.0 PK	68.2	-7.2	2.62 V	3	57.6	3.4
2	*5755.00	120.1 PK			2.62 V	3	77.8	42.3
3	*5755.00	110.1 AV			2.62 V	3	67.8	42.3
4	#5958.40	60.0 PK	68.2	-8.2	2.62 V	3	55.3	4.7
5	11510.00	61.8 PK	74.0	-12.2	1.58 V	247	45.8	16.0
6	11510.00	48.8 AV	54.0	-5.2	1.58 V	247	32.8	16.0

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 159	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	#5616.00	57.9 PK	68.2	-10.3	3.28 H	226	54.4	3.5
2	*5795.00	116.2 PK			3.28 H	226	73.7	42.5
3	*5795.00	106.9 AV			3.28 H	226	64.4	42.5
4	#5990.40	59.4 PK	68.2	-8.8	3.28 H	226	54.7	4.7
5	11590.00	60.9 PK	74.0	-13.1	2.96 H	132	45.1	15.8
6	11590.00	47.9 AV	54.0	-6.1	2.96 H	132	32.1	15.8
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	#5604.80	59.4 PK	68.2	-8.8	2.48 V	196	55.8	3.6
2	*5795.00	120.8 PK			2.48 V	196	78.3	42.5
3	*5795.00	111.3 AV			2.48 V	196	68.8	42.5
4	#5931.20	61.1 PK	68.2	-7.1	2.48 V	196	56.6	4.5
5	11590.00	61.6 PK	74.0	-12.4	1.63 V	225	45.8	15.8
6	11590.00	48.7 AV	54.0	-5.3	1.63 V	225	32.9	15.8

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.

802.11ac (VHT80)

CHANNEL	TX Channel 42	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	58.8 PK	74.0	-15.2	3.84 H	115	56.2	2.6
2	5150.00	45.8 AV	54.0	-8.2	3.84 H	115	43.2	2.6
3	*5210.00	106.3 PK			3.84 H	115	65.5	40.8
4	*5210.00	96.0 AV			3.84 H	115	55.2	40.8
5	5350.00	57.2 PK	74.0	-16.8	3.84 H	115	54.4	2.8
6	5350.00	44.1 AV	54.0	-9.9	3.84 H	115	41.3	2.8
7	#10420.00	59.1 PK	74.0	-14.9	1.55 H	302	44.3	14.8
8	#10420.00	46.7 AV	54.0	-7.3	1.55 H	302	31.9	14.8
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	5150.00	68.9 PK	74.0	-5.1	1.00 V	49	66.3	2.6
2	5150.00	53.5 AV	54.0	-0.5	1.00 V	49	50.9	2.6
3	*5210.00	112.0 PK			1.00 V	46	71.2	40.8
4	*5210.00	101.4 AV			1.00 V	46	60.6	40.8
5	5350.00	59.5 PK	74.0	-14.5	1.00 V	49	56.7	2.8
6	5350.00	46.3 AV	54.0	-7.7	1.00 V	49	43.5	2.8
7	#10420.00	59.4 PK	74.0	-14.6	1.20 V	172	44.6	14.8
8	#10420.00	47.0 AV	54.0	-7.0	1.20 V	172	32.2	14.8

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 155	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	#5606.40	59.9 PK	68.2	-8.3	3.13 H	221	56.4	3.5
2	*5775.00	111.6 PK			3.13 H	221	69.2	42.4
3	*5775.00	101.3 AV			3.13 H	221	58.9	42.4
4	#5928.80	59.6 PK	68.2	-8.6	3.13 H	221	55.1	4.5
5	11550.00	61.1 PK	74.0	-12.9	2.37 H	164	45.1	16.0
6	11550.00	48.3 AV	54.0	-5.7	2.37 H	164	32.3	16.0
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	#5638.40	60.9 PK	68.2	-7.3	1.97 V	349	57.5	3.4
2	*5775.00	116.4 PK			1.97 V	349	74.0	42.4
3	*5775.00	106.8 AV			1.97 V	349	64.4	42.4
4	#5928.00	59.9 PK	68.2	-8.3	1.97 V	349	55.4	4.5
5	11550.00	60.6 PK	74.0	-13.4	2.25 V	152	44.6	16.0
6	11550.00	48.2 AV	54.0	-5.8	2.25 V	152	32.2	16.0

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 (VHT80+80)

CHANNEL	TX Channel 42+155	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	60.9 PK	74.0	-13.1	2.00 H	316	58.3	2.6
2	5150.00	47.2 AV	54.0	-6.8	2.00 H	316	44.6	2.6
3	*5210.00	107.1 PK			2.00 H	316	66.3	40.8
4	*5210.00	96.4 AV			2.00 H	316	55.6	40.8
5	5350.00	59.3 PK	74.0	-14.7	2.00 H	316	56.5	2.8
6	5350.00	44.7 AV	54.0	-9.3	2.00 H	316	41.9	2.8
7	#5603.20	57.4 PK	68.2	-10.8	1.98 H	345	53.8	3.6
8	*5775.00	110.0 PK			1.98 H	345	67.6	42.4
9	*5775.00	99.6 AV			1.98 H	345	57.2	42.4
10	#5981.60	58.5 PK	68.2	-9.7	1.98 H	345	53.9	4.6
11	#10420.00	59.8 PK	74.0	-14.2	2.64 H	142	45.0	14.8
12	#10420.00	47.4 AV	54.0	-6.6	2.64 H	142	32.6	14.8
13	11550.00	62.1 PK	74.0	-11.9	2.55 H	161	46.1	16.0
14	11550.00	48.5 AV	54.0	-5.5	2.55 H	161	32.5	16.0
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	66.6 PK	74.0	-7.4	1.43 V	335	64.0	2.6
2	5150.00	53.5 AV	54.0	-0.5	1.43 V	335	50.9	2.6
3	*5210.00	116.6 PK			1.43 V	335	75.8	40.8
4	*5210.00	105.9 AV			1.43 V	335	65.1	40.8
5	5350.00	58.9 PK	74.0	-15.1	1.43 V	335	56.1	2.8
6	5350.00	45.9 AV	54.0	-8.1	1.43 V	335	43.1	2.8
7	#5618.40	58.5 PK	68.2	-9.7	1.69 V	346	55.0	3.5
8	*5775.00	113.9 PK			1.69 V	346	71.5	42.4
9	*5775.00	101.7 AV			1.69 V	346	59.3	42.4
10	#5958.40	59.4 PK	68.2	-8.8	1.69 V	346	54.7	4.7
11	#10420.00	62.1 PK	74.0	-11.9	2.71 V	152	47.3	14.8
12	#10420.00	48.8 AV	54.0	-5.2	2.71 V	152	34.0	14.8
13	11550.00	61.6 PK	74.0	-12.4	2.39 V	147	45.6	16.0
14	11550.00	48.4 AV	54.0	-5.6	2.39 V	147	32.4	16.0

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 157	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	39.60	37.3 QP	40.0	-2.7	1.01 H	7	46.9	-9.6
2	173.49	38.0 QP	43.5	-5.5	1.01 H	278	47.1	-9.1
3	311.26	30.9 QP	46.0	-15.1	1.01 H	63	37.7	-6.8
4	540.23	39.6 QP	46.0	-6.4	1.50 H	229	42.3	-2.7
5	742.03	41.7 QP	46.0	-4.3	1.01 H	7	39.5	2.2
6	951.59	38.6 QP	46.0	-7.4	1.99 H	43	32.5	6.1
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	31.84	34.8 QP	40.0	-5.2	1.00 V	128	45.4	-10.6
2	59.01	34.2 QP	40.0	-5.8	1.00 V	128	43.3	-9.1
3	173.49	38.9 QP	43.5	-4.6	1.00 V	297	48.0	-9.1
4	291.85	27.2 QP	46.0	-18.8	1.49 V	13	34.5	-7.3
5	538.28	37.7 QP	46.0	-8.3	1.00 V	220	40.4	-2.7
6	951.59	40.0 QP	46.0	-6.0	1.00 V	327	33.9	6.1

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.
4. Margin value = Emission Level – Limit value

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	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 06, 2018	Mar. 05, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
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.

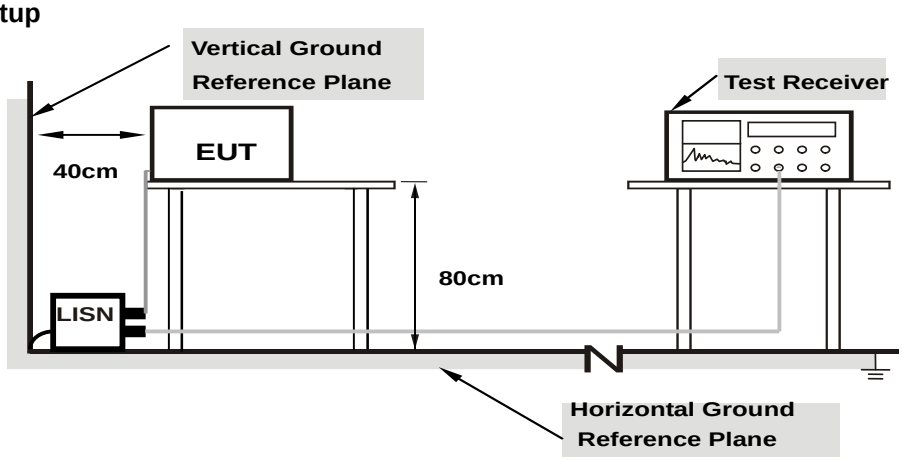
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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 item 4.3.6.

4.2.7 Test Results

Worst-case data:

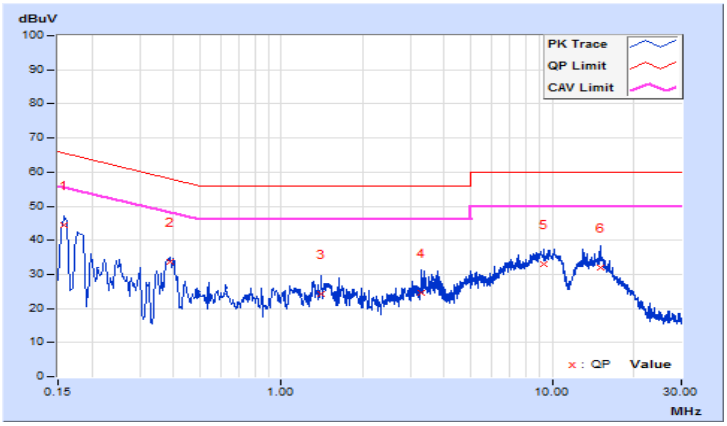
802.11a

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	0.15811	10.16	34.44	19.42	44.60	29.58	65.56	55.56	-20.96	-25.98
2	**0.38827**	**10.20**	**23.50**	**17.53**	**33.70**	**27.73**	**58.10**	**48.10**	**-24.40**	**-20.37**
3	1.40600	10.20	13.99	9.77	24.19	19.97	56.00	46.00	-31.81	-26.03
4	3.29000	10.31	14.38	7.68	24.69	17.99	56.00	46.00	-31.31	-28.01
5	9.29400	10.61	22.25	17.56	32.86	28.17	60.00	50.00	-27.14	-21.83
6	15.14600	10.96	20.87	14.72	31.83	25.68	60.00	50.00	-28.17	-24.32

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.

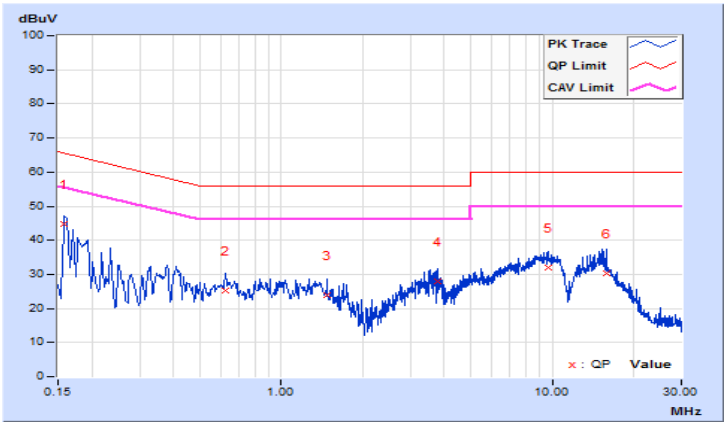


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15811	10.15	34.54	20.97	44.69	31.12	65.56	55.56	-20.87	-24.44
2	0.62200	10.20	15.08	11.48	25.28	21.68	56.00	46.00	-30.72	-24.32
3	1.47000	10.21	13.78	9.23	23.99	19.44	56.00	46.00	-32.01	-26.56
4	3.79000	10.33	17.50	8.88	27.83	19.21	56.00	46.00	-28.17	-26.79
5	9.63000	10.56	21.29	16.55	31.85	27.11	60.00	50.00	-28.15	-22.89
6	15.81800	10.83	19.43	14.07	30.26	24.90	60.00	50.00	-29.74	-25.10

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

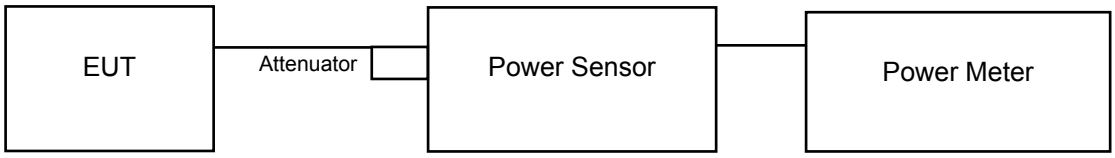
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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 $N_{ANT} \geq 5$.

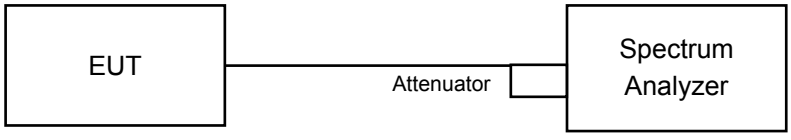
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

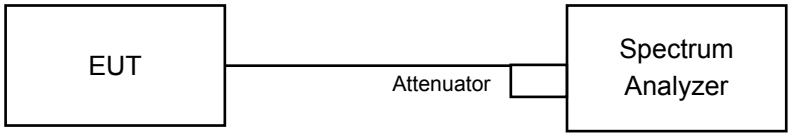
For Power Output
802.11a, 802.11ac (VHT20), 802.11ac (VHT40), 802.11ax (HE20), 802.11ax (HE40)



802.11ac (VHT80), 802.11ac (VHT80+80), 802.11ax (HE80), 802.11ax (HE80+80)



For 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), 802.11ax (HE20), 802.11ax (HE40)
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. Duty factor is not added to measured value.

802.11ac (VHT80), 802.11ac (VHT80+80), 802.11ax (HE80), 802.11ax (HE80+80)

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS
i. Trace mode = max hold
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
k. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

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)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
36	5180	20.21	20.29	20.63	20.02	20.53	20.57	20.43	20.68	**882.295**	29.46	30	Pass
40	5200	20.61	20.09	20.48	20.39	20.23	20.03	20.59	20.65	875.084	29.42	30	Pass
48	5240	20.55	20.30	20.26	19.91	20.39	20.42	20.45	19.97	854.550	29.32	30	Pass
149	5745	20.89	20.77	20.44	21.20	21.01	21.24	21.08	20.55	985.593	29.94	30	Pass
157	5785	20.57	20.44	20.22	21.25	21.22	21.33	21.40	21.00	**995.432**	29.98	30	Pass
165	5825	20.20	20.55	20.41	21.35	21.20	21.00	21.20	21.11	983.239	29.93	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
36	5180	20.45	20.17	20.37	20.54	20.55	20.21	20.35	20.14	867.167	29.38	30	Pass
40	5200	20.70	20.26	20.60	20.49	20.09	20.01	19.97	19.90	849.778	29.29	30	Pass
48	5240	20.66	20.27	20.45	19.91	20.66	20.11	20.39	20.57	874.092	29.42	30	Pass
149	5745	21.16	20.62	20.64	21.01	21.13	21.59	20.63	20.25	983.489	29.93	30	Pass
157	5785	21.48	20.63	20.74	21.05	21.00	21.42	20.63	20.22	987.455	29.95	30	Pass
165	5825	20.98	20.42	20.55	20.89	21.05	21.23	20.23	20.10	939.571	29.73	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
38	5190	18.79	19.28	19.02	18.74	19.03	18.62	18.67	18.86	618.318	27.91	30	Pass
46	5230	20.43	20.08	20.39	20.51	20.47	20.56	19.91	20.35	865.657	29.37	30	Pass
151	5755	21.00	20.40	20.44	21.11	21.35	21.05	21.14	20.07	970.775	29.87	30	Pass
159	5795	21.15	20.59	20.35	21.05	21.40	20.98	21.05	20.43	981.780	29.92	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42	5210	16.02	16.28	16.22	15.86	16.26	15.85	15.92	16.01	322.596	25.09	30	Pass
155	5775	20.27	20.05	20.00	20.49	21.00	20.43	21.25	21.24	922.214	29.65	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ac (VHT80+80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42+ 155	5210	17.90	17.86	18.29	18.16	-	-	-	-	255.670	24.08	30	Pass
	5775	-	-	-	-	18.01	18.06	18.05	18.02	254.428	24.06	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
36	5180	20.33	20.53	20.29	20.42	20.35	20.25	20.16	20.43	866.412	29.38	30	Pass
40	5200	20.65	20.36	20.47	20.11	20.09	19.97	20.05	20.02	841.807	29.25	30	Pass
48	5240	20.61	20.14	20.51	20.19	20.38	20.14	20.27	20.58	868.411	29.39	30	Pass
149	5745	20.91	20.40	20.58	20.82	20.85	21.41	20.53	19.97	940.294	29.73	30	Pass
157	5785	21.35	20.55	20.51	20.82	20.92	21.278	20.49	19.98	952.495	29.79	30	Pass
165	5825	20.88	20.14	20.29	20.68	20.78	21.02	19.98	19.86	892.109	29.50	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
38	5190	18.47	19.41	19.11	18.82	18.89	18.63	18.47	18.90	613.607	27.88	30	Pass
46	5230	20.53	19.86	20.47	20.14	20.46	20.24	20.28	20.13	851.066	29.30	30	Pass
151	5755	20.78	20.31	20.16	20.83	21.17	20.77	20.93	19.87	923.133	29.65	30	Pass
159	5795	21.06	20.48	20.21	20.94	21.24	20.88	20.86	20.22	951.109	29.78	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42	5210	15.89	16.16	16.19	15.80	16.17	15.64	15.70	15.97	314.464	24.98	30	Pass
155	5775	20.21	19.92	19.98	20.41	20.76	20.40	21.06	21.10	897.811	29.53	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

802.11ax (HE80+80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42+ 155	5210	17.75	17.70	18.25	18.07	-	-	-	-	249.406	23.97	30	Pass
	5775	-	-	-	-	17.97	18.03	17.86	17.88	248.665	23.96	30	Pass

Note:
5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.

Beamforming_NSS1 Mode

802.11ac (VHT20) / 802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
36	5180	15.24	14.98	15.04	15.10	15.55	15.11	15.42	15.21	265.521	24.24	24.63	Pass
40	5200	15.37	15.22	15.47	14.92	15.22	14.98	15.00	15.36	264.706	24.23	24.63	Pass
48	5240	15.23	15.06	15.22	15.27	15.40	15.27	15.07	14.93	263.901	24.21	24.63	Pass
149	5745	15.49	14.86	15.00	15.37	15.39	15.91	15.03	14.47	265.497	24.24	24.45	Pass
157	5785	15.69	14.96	15.20	15.42	15.47	15.86	15.04	14.62	**271.004**	24.33	24.45	Pass
165	5825	15.33	14.69	14.88	15.24	15.41	15.65	14.47	14.41	254.821	24.06	24.45	Pass

Note:
5180~5240MHz Directional Gain = 11.37dBi > 6dBi, so the power density limit shall be reduced to 30-(11.37-6) = 24.63dBm.
5745~5825MHz Directional Gain = 11.55dBi > 6dBi, so the power density limit shall be reduced to 30-(11.55-6) = 24.45dBm.

802.11ac (VHT40) / 802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
38	5190	15.48	15.27	15.08	15.16	15.23	15.15	15.07	15.21	265.392	24.24	24.63	Pass
46	5230	15.27	15.29	15.10	15.25	15.12	15.23	15.14	15.31	265.786	24.25	24.63	Pass
151	5755	15.24	14.67	14.71	15.36	15.74	15.34	15.39	14.53	261.333	24.17	24.45	Pass
159	5795	15.56	15.08	14.79	15.37	15.72	15.40	15.40	14.75	269.293	24.30	24.45	Pass

Note:
5180~5240MHz Directional Gain = 11.37dBi > 6dBi, so the power density limit shall be reduced to 30-(11.37-6) = 24.63dBm.
5745~5825MHz Directional Gain = 11.55dBi > 6dBi, so the power density limit shall be reduced to 30-(11.55-6) = 24.45dBm.

802.11ac (VHT80) / 802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42	5210	15.18	15.52	15.50	15.09	15.54	14.99	15.13	15.24	**269.735**	24.31	24.63	Pass
155	5775	15.15	15.20	15.27	15.06	15.44	15.17	15.41	15.32	268.235	24.29	24.45	Pass

Note:
5180~5240MHz Directional Gain = 11.37dBi > 6dBi, so the power density limit shall be reduced to 30-(11.37-6) = 24.63dBm.
5745~5825MHz Directional Gain = 11.55dBi > 6dBi, so the power density limit shall be reduced to 30-(11.55-6) = 24.45dBm.

Beamforming_NSS2 Mode

802.11ac (VHT20) / 802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
36	5180	17.76	17.67	17.67	17.82	18.21	17.66	18.04	17.87	**486.676**	26.87	27.24	Pass
40	5200	17.99	17.74	18.15	17.49	17.83	17.62	17.65	18.03	484.024	26.85	27.24	Pass
48	5240	17.79	17.59	17.83	17.91	17.96	17.88	17.60	17.61	479.118	26.80	27.24	Pass
149	5745	18.47	17.96	18.14	18.37	18.21	18.80	18.22	18.25	**541.982**	27.34	27.68	Pass
157	5785	18.49	18.11	18.08	18.37	18.36	18.68	17.87	18.22	538.236	27.31	27.68	Pass
165	5825	18.21	18.32	18.16	18.21	18.30	18.67	17.94	18.02	532.673	27.26	27.68	Pass

Note:
5180~5240MHz Directional Gain = 8.76dBi > 6dBi, so the power density limit shall be reduced to 30-(8.76-6) = 27.24dBm.
5745~5825MHz Directional Gain = 8.32dBi > 6dBi, so the power density limit shall be reduced to 30-(8.32-6) = 27.68dBm.

802.11ac (VHT40) / 802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
38	5190	18.02	17.97	17.73	17.88	17.78	17.75	17.60	17.90	485.466	26.86	27.24	Pass
46	5230	17.93	17.93	17.67	17.85	17.80	17.78	17.68	17.90	484.115	26.85	27.24	Pass
151	5755	18.22	18.24	18.03	18.33	18.65	18.35	18.36	18.01	538.129	27.31	27.68	Pass
159	5795	18.58	18.03	18.17	18.20	18.57	18.21	18.40	18.05	538.534	27.31	27.68	Pass

Note:
5180~5240MHz Directional Gain = 8.76dBi > 6dBi, so the power density limit shall be reduced to 30-(8.76-6) = 27.24dBm.
5745~5825MHz Directional Gain = 8.32dBi > 6dBi, so the power density limit shall be reduced to 30-(8.32-6) = 27.68dBm.

802.11ac (VHT80) / 802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)								Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42	5210	16.02	16.28	16.22	15.86	16.26	15.85	15.92	16.01	322.596	25.09	27.24	Pass
155	5775	18.08	18.26	18.28	18.22	18.44	18.27	18.26	18.39	537.908	27.31	27.68	Pass

Note:
5180~5240MHz Directional Gain = 8.76dBi > 6dBi, so the power density limit shall be reduced to 30-(8.76-6) = 27.24dBm.
5745~5825MHz Directional Gain = 8.32dBi > 6dBi, so the power density limit shall be reduced to 30-(8.32-6) = 27.68dBm.

26dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
36	5180	22.26	22.13	20.91	20.97	20.10	21.47	20.55	19.00
40	5200	21.93	22.42	21.10	20.84	20.22	21.34	20.02	19.38
48	5240	21.64	22.61	21.29	21.05	21.14	20.95	20.78	20.31

802.11ac (VHT20)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
36	5180	23.76	22.91	22.31	23.78	21.91	22.33	22.48	22.32
40	5200	23.60	23.06	21.77	21.93	22.08	23.07	22.00	22.26
48	5240	23.52	23.78	22.97	23.45	21.79	22.13	22.08	22.43

802.11ac (VHT40)

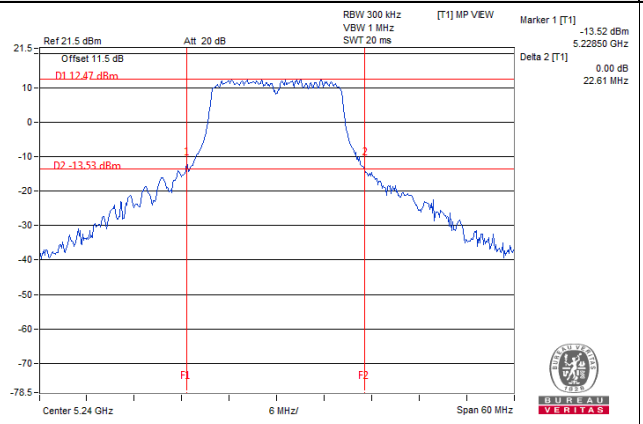
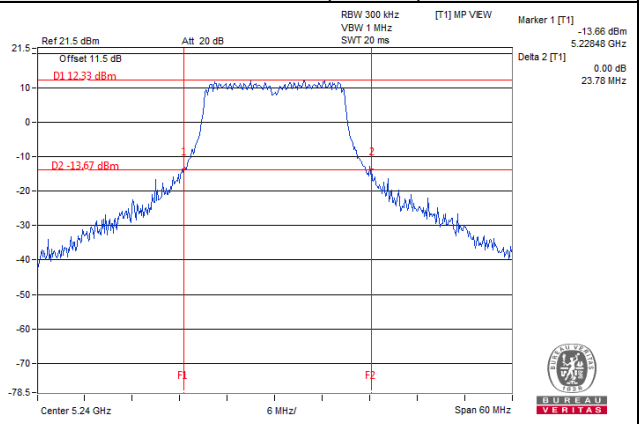
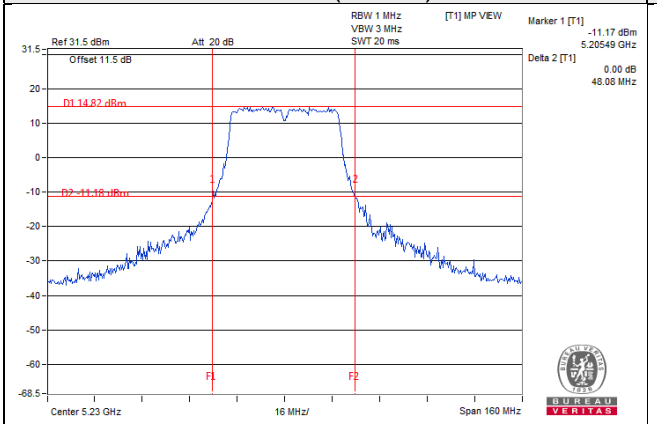
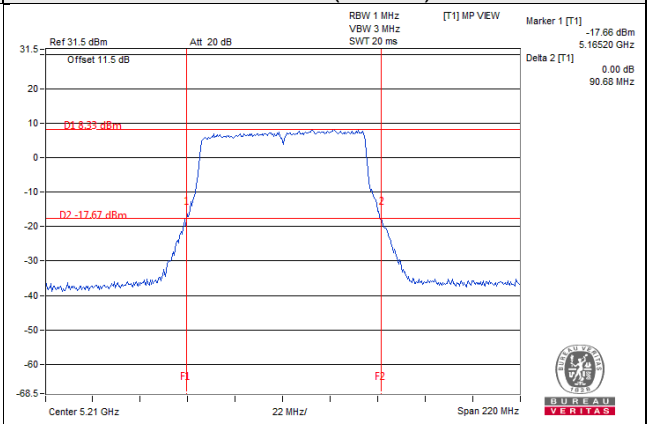
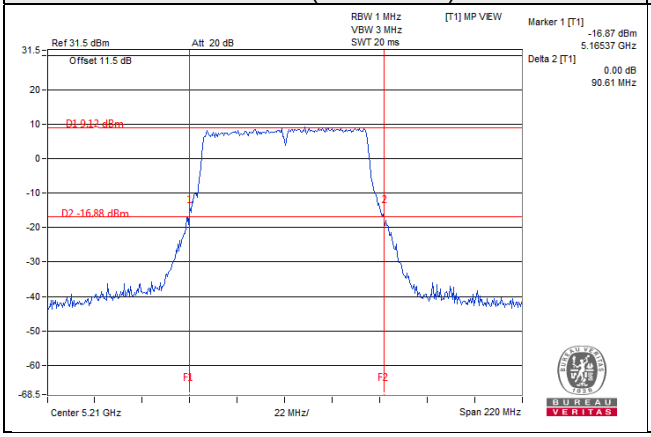
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
38	5190	47.84	45.22	45.05	45.12	45.44	45.36	45.67	46.96
46	5230	46.64	45.73	44.55	44.44	45.02	46.44	46.25	48.08

802.11ac (VHT80)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
42	5210	90.68	88.68	88.43	87.73	88.96	88.03	87.68	87.84

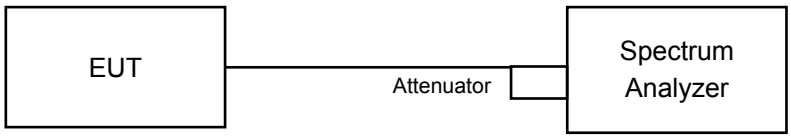
802.11ac (VHT80+80)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
42+155	5210	90.61	88.43	87.59	90.18	-	-	-	-
	5775	-							

Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	
802.11ac (VHT80+80)	
	

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	Chain 4	Chain 5	Chain 6	Chain 7
36	5180	16.80	16.80	16.80	17.04	16.56	17.04	16.56	15.60
40	5200	16.92	16.92	16.80	16.92	16.56	17.04	16.56	16.32
48	5240	16.92	16.80	16.68	16.80	16.80	16.92	16.80	16.80
149	5745	17.04	16.68	16.68	16.56	16.68	16.92	16.68	16.56
157	5785	16.92	16.80	16.68	16.80	16.68	17.04	16.68	16.44
165	5825	17.04	16.80	16.68	16.68	16.80	16.92	16.92	16.68

802.11ac (VHT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
36	5180	18.00	17.88	17.88	17.88	17.88	17.88	17.88	18.00
40	5200	18.12	18.00	17.88	17.88	17.88	17.88	17.88	17.88
48	5240	18.12	18.00	17.88	17.88	17.88	17.88	17.88	18.00
149	5745	18.00	17.88	17.88	17.88	17.88	17.88	17.88	18.00
157	5785	17.91	18.00	17.88	17.88	17.88	17.88	18.00	18.09
165	5825	18.00	17.88	17.88	17.88	17.88	17.88	17.88	18.00

802.11ac (VHT40)

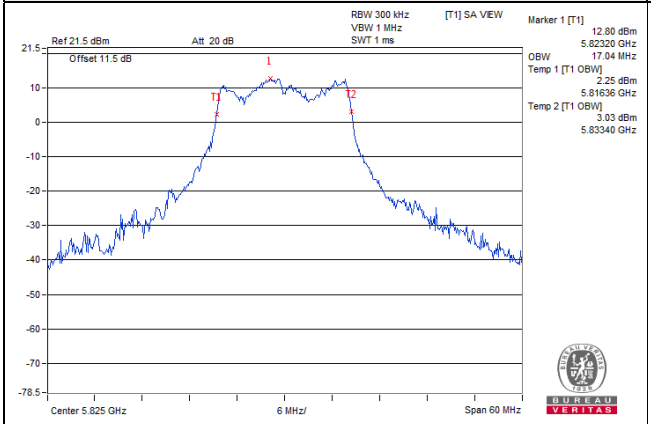
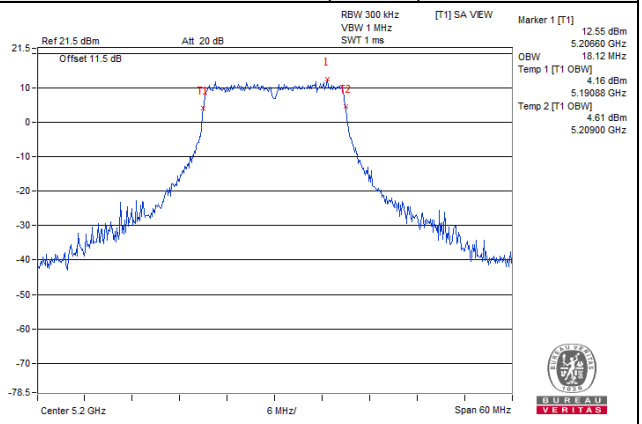
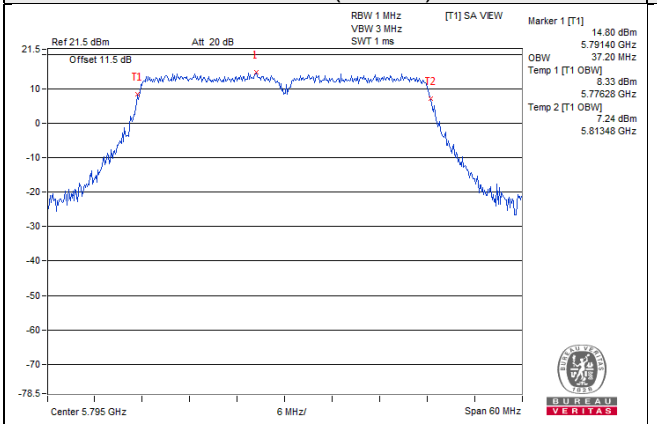
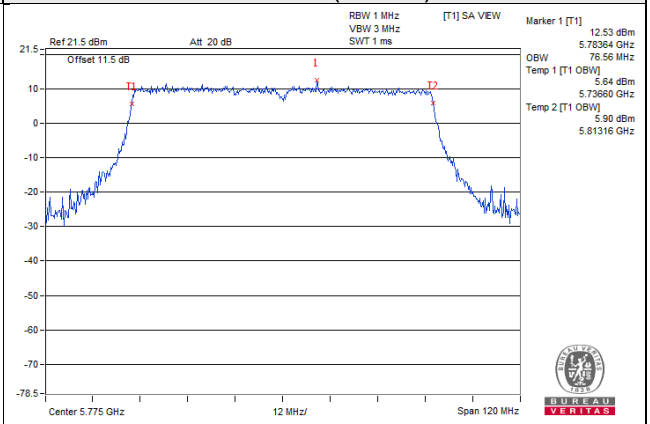
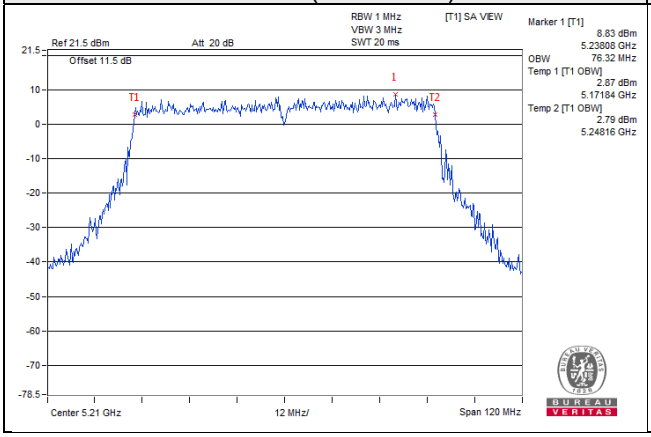
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
38	5190	37.08	37.08	36.96	37.08	36.84	37.08	36.96	37.20
46	5230	37.20	36.96	36.96	37.08	36.96	37.08	37.20	37.20
151	5755	37.08	37.08	37.08	37.08	37.08	37.20	37.20	37.20
159	5795	37.20	37.08	37.08	37.08	36.96	37.08	37.08	37.20

802.11ac (VHT80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
42	5210	76.32	76.32	76.32	76.32	76.08	76.32	76.32	76.08
155	5775	76.56	76.08	76.32	76.32	76.32	76.08	76.32	76.08

802.11ac (VHT80+80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)							
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7
42+ 155	5210	76.32	76.08	76.32	76.08	-	-	-	-
	5775	-	-	-	-	76.32	76.32	76.08	76.08

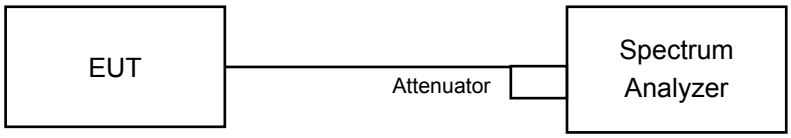
Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	
802.11ac (VHT80+80)	
	

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

Duty cycle of test signal is ≥ 98%
Using method SA-1
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS.
3) Set Channel power measure = 1MHz.
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Record the max value.

Duty cycle of test signal is < 98%
Using method SA-2
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS.
3) Set Channel power measure = 1MHz.
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Record the max value and add 10 log (1/duty cycle).

For U-NII-3 Band
Duty cycle of test signal is ≥ 98%
Using method SA-1
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS.
3) Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4) Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured 1) power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz).
5) Sweep time = auto, trigger set to “free run”.
6) Trace average at least 100 traces in power averaging mode.
7) Record the max value.

Duty cycle of test signal is < 98%
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS.
3) Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4) 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).
5) Sweep time = auto, trigger set to “free run”.
6) Trace average at least 100 traces in power averaging mode.
7) 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 item 4.3.6.

4.5.7 Test Results

For U-NII-1 Band

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm)								Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
36	5180	7.74	7.38	6.71	8.26	7.29	7.83	6.31	7.90	0.39	16.50	17	Pass
40	5200	7.77	7.36	6.65	7.56	7.93	7.32	6.71	8.30	0.39	16.51	17	Pass
48	5240	7.59	7.84	7.40	6.49	8.10	8.08	6.89	8.04	0.39	16.62	17	Pass

Note:
1. Method a) 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. 5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power 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)								Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
36	5180	7.25	6.46	6.57	7.68	7.27	7.49	6.34	7.78	0.17	16.17	17	Pass
40	5200	7.32	6.21	6.35	7.23	6.42	6.93	6.98	6.73	0.17	15.82	17	Pass
48	5240	7.53	6.62	6.74	7.90	6.24	7.30	6.47	7.46	0.17	16.10	17	Pass

Note:
1. Method a) 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. 5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm)								Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
38	5190	3.59	2.14	2.50	3.95	2.71	2.97	2.57	2.68	0.23	11.96	17	Pass
46	5230	4.27	3.26	3.75	4.73	4.21	4.26	3.77	3.57	0.23	13.03	17	Pass

Note:
1. Method a) 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. 5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

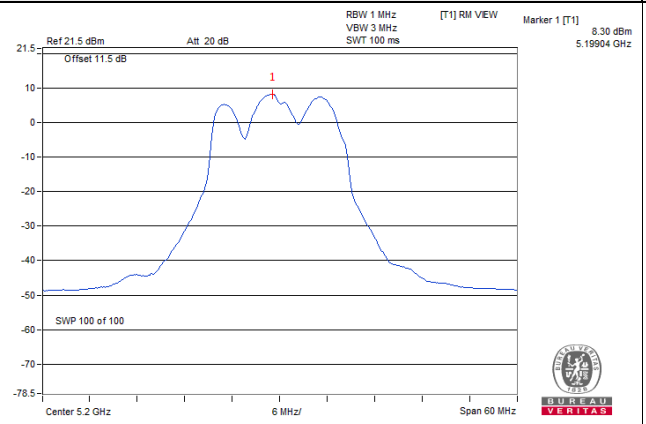
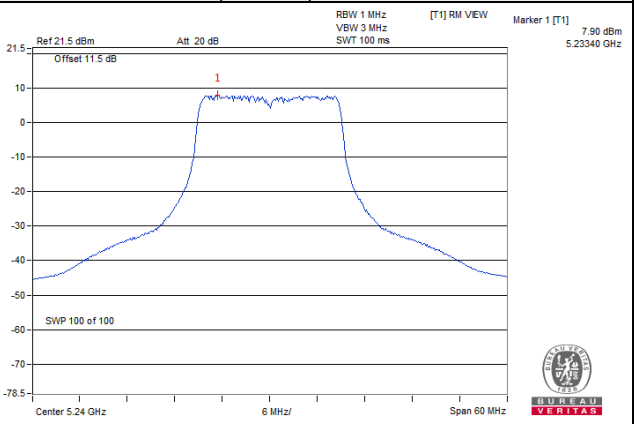
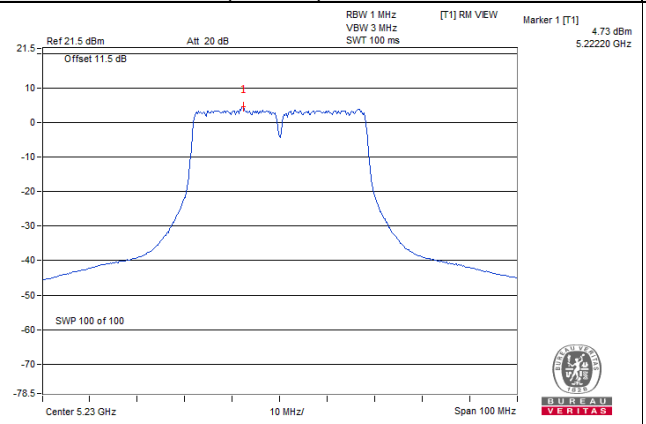
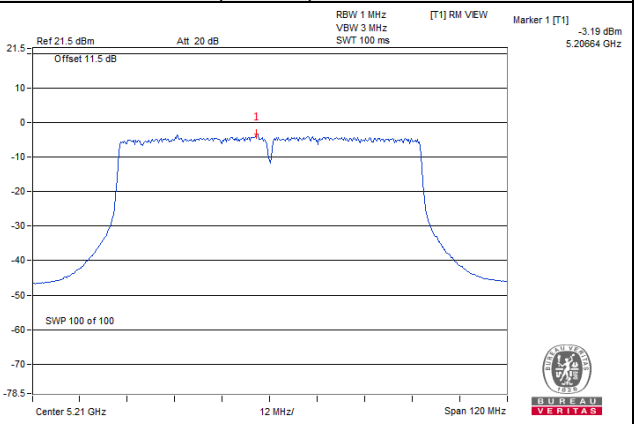
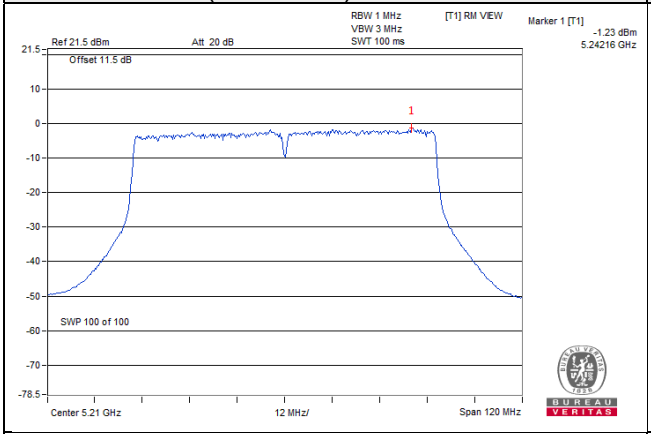
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm)								Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42	5210	-3.29	-3.95	-4.13	-3.19	-3.31	-3.48	-4.26	-3.83	0.23	5.37	17	Pass

Note:
1. Method a) 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. 5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80+80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm)								Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/ MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7				
42+ 155	5210	-2.53	-2.12	-1.64	-1.23	-	-	-	-	0.23	4.17	17	Pass
	5775	-											

Note:
1. Method a) 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. 5180~5240MHz Directional Gain = 3.22dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 7 / Ch 40	802.11ac (VHT20) / Chain 3 / Ch 48
	
802.11ac (VHT40) / Chain 3 / Ch 46	802.11ac (VHT80) / Chain 3 / Ch 42
	
802.11ac (VHT80+80) / Chain 3 / Ch 42	
	

For U-NII-3 band

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)								Duty Factor (dB)	Total PSD with Duty Factor		Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		mW/ 300kHz	dBm/ 300kHz			
149	5745	1.30	0.05	0.36	1.43	0.47	0.14	0.21	0.13	0.39	9.0639	9.57	11.79	30	Pass
157	5785	1.59	0.25	0.04	0.23	0.13	0.37	0.14	1.66	0.39	9.1826	9.63	11.85	30	Pass
165	5825	1.01	0.00	0.50	1.41	0.69	0.47	0.38	0.63	0.39	9.3015	9.69	11.91	30	Pass

Note:
1. Method a) 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. 5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power 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/300kHz)								Duty Factor (dB)	Total PSD with Duty Factor		Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		mW/ 300kHz	dBm/ 300kHz			
149	5745	0.18	-0.15	-0.57	-0.73	0.19	-0.55	-0.77	-0.29	0.17	7.4294	8.71	10.93	30	Pass
157	5785	0.94	-0.19	-0.32	0.75	0.42	-0.86	-0.31	-0.62	0.17	8.0363	9.05	11.27	30	Pass
165	5825	0.72	-0.39	-0.28	0.23	-0.65	-0.38	-0.88	-0.86	0.17	7.5005	8.75	10.97	30	Pass

Note:
1. Method a) 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. 5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)								Duty Factor (dB)	Total PSD with Duty Factor		Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		mW/ 300kHz	dBm/ 300kHz			
151	5755	-3.20	-3.63	-4.50	-3.29	-4.70	-4.63	-4.47	-4.65	0.23	3.1190	4.94	7.16	30	Pass
159	5795	-3.64	-3.76	-4.78	-4.22	-4.67	-4.73	-4.45	-3.55	0.23	3.0425	4.83	7.05	30	Pass

Note:
1. Method a) 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. 5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

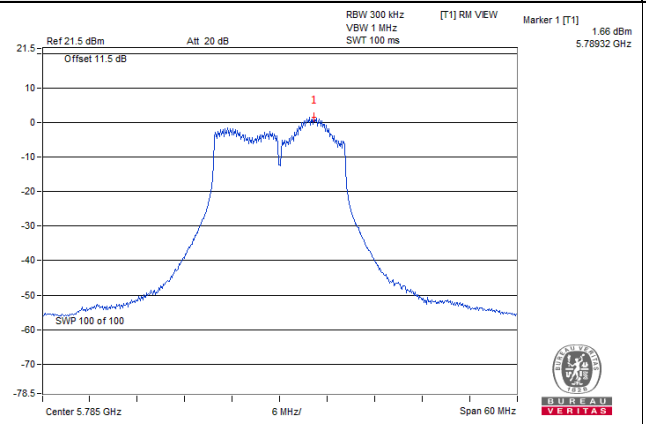
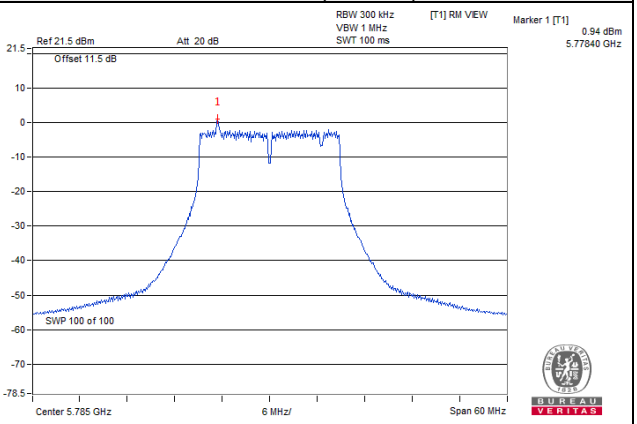
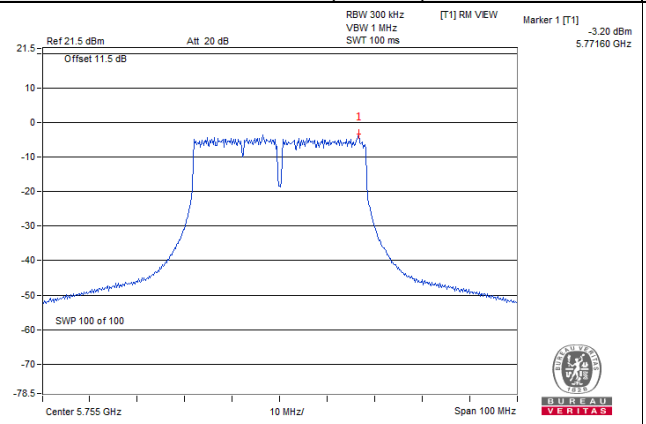
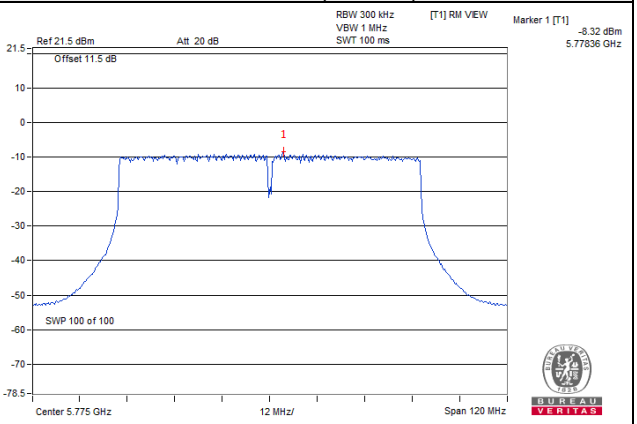
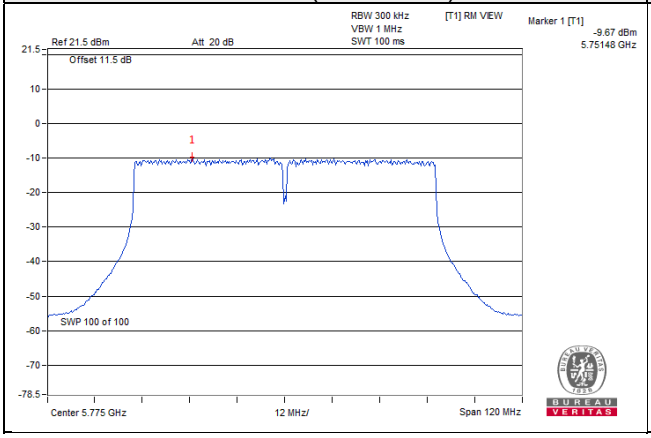
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)								Duty Factor (dB)	Total PSD with Duty Factor		Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		mW/ 300kHz	dBm/ 300kHz			
155	5775	-8.57	-9.43	-9.27	-8.45	-8.41	-8.40	-8.32	-9.19	0.23	1.0707	0.30	2.52	30	Pass

Note:
1. Method a) 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. 5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80+80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)								Duty Factor (dB)	Total PSD with Duty Factor		Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		mW/ 300kHz	dBm/ 300kHz			
42+ 155	5210	-													
	5775	-	-	-	-	-10.07	-10.03	-10.20	-9.67	0.23	0.40111	-3.97	-1.75	30	Pass

Note:
1. Method a) 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. 5745~5825MHz Directional Gain = 3.10dBi < 6dBi, so the power limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

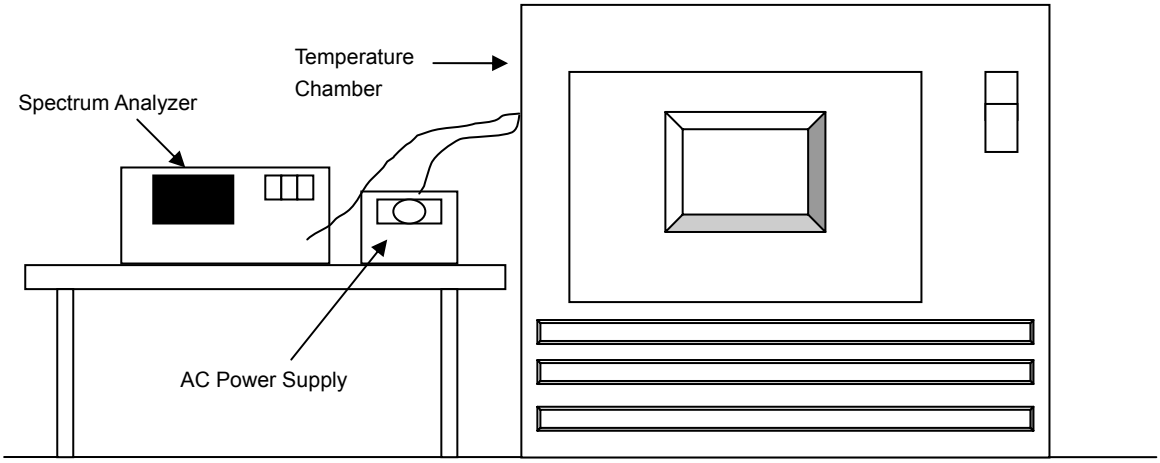
Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	
802.11ac (VHT80+80)	
	

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	100040	Aug. 18, 2017	Aug. 17, 2018
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 04, 2018	Jun. 03, 2019
Digital Multimeter Fluke	87-III	70360742	Jun. 30, 2017	Jun. 29, 2018
			Jun. 29, 2018	Jun. 28, 2019
AC Power Supply Extech	CFW-105	E000603	NA	NA

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: 5180MHz									
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
50	120	5180.0064	Pass	5180.0083	Pass	5180.0048	Pass	5180.0075	Pass
40	120	5180.0147	Pass	5180.0177	Pass	5180.0169	Pass	5180.0149	Pass
30	120	5179.9897	Pass	5179.9905	Pass	5179.99	Pass	5179.9924	Pass
20	120	5179.9891	Pass	5179.9879	Pass	5179.9878	Pass	5179.9863	Pass
10	120	5180.0127	Pass	5180.012	Pass	5180.014	Pass	5180.0121	Pass
0	120	5179.9814	Pass	5179.986	Pass	5179.9827	Pass	5179.9818	Pass
-10	120	5179.9768	Pass	5179.9788	Pass	5179.9769	Pass	5179.9771	Pass
-20	120	5179.983	Pass	5179.9857	Pass	5179.9826	Pass	5179.9847	Pass
-30	120	5179.9809	Pass	5179.9829	Pass	5179.9817	Pass	5179.9848	Pass

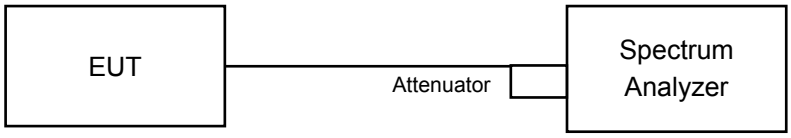
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5179.9887	Pass	5180.0111	Pass	5179.9885	Pass	5179.9873	Pass
	120	5179.9891	Pass	5180.012	Pass	5179.9878	Pass	5179.9863	Pass
	102	5179.9888	Pass	5180.0114	Pass	5179.9878	Pass	5179.9872	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

Measurement Procedure REF

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	Chain 4	Chain 5	Chain 6	Chain 7		
149	5745	15.77	16.41	16.40	12.03	16.37	16.44	15.95	15.79	0.5	Pass
157	5785	15.53	16.45	16.44	16.38	16.42	16.44	15.80	13.93	0.5	Pass
165	5825	16.41	16.42	16.40	15.77	15.80	16.40	16.43	15.79	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	Chain 4	Chain 5	Chain 6	Chain 7		
149	5745	17.63	17.66	17.67	17.59	17.65	17.66	17.66	17.65	0.5	Pass
157	5785	17.64	17.68	17.67	17.64	17.76	17.67	17.71	17.63	0.5	Pass
165	5825	17.62	17.67	17.65	17.76	17.73	17.69	17.67	17.65	0.5	Pass

802.11ac (VHT40)

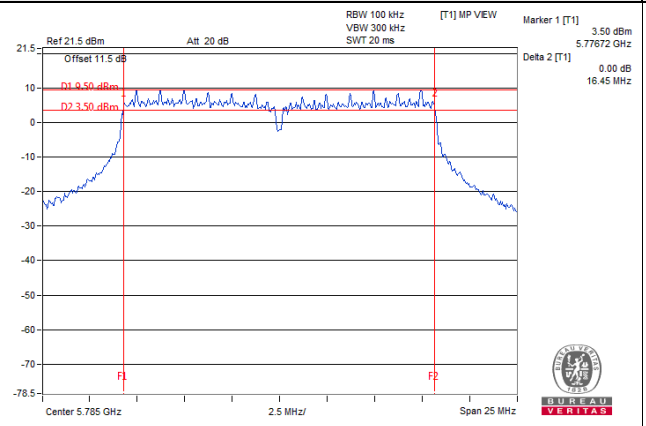
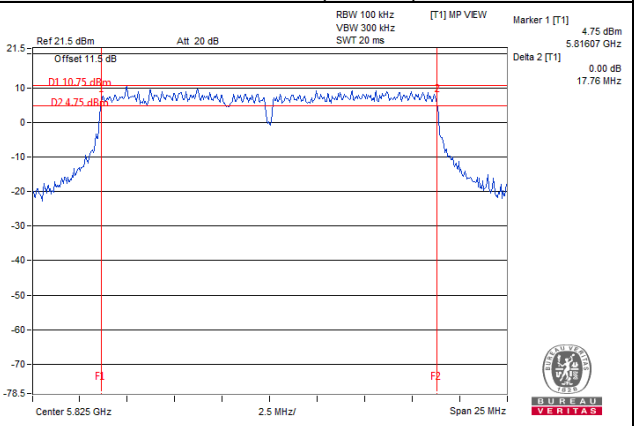
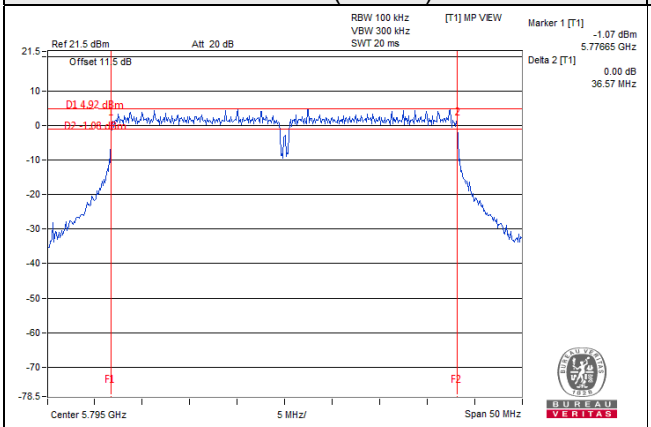
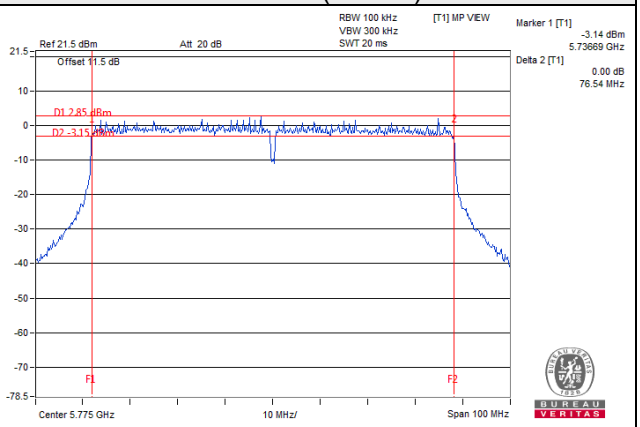
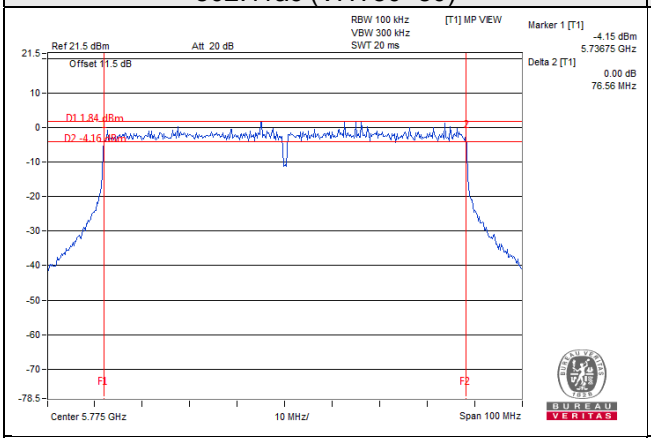
Channel	Frequency (MHz)	6dB Bandwidth (MHz)								Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		
151	5755	36.47	36.53	36.53	36.36	36.55	36.48	36.47	36.47	0.5	Pass
159	5795	36.39	36.57	36.51	36.52	36.50	36.46	36.48	36.46	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)								Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		
155	5775	75.48	76.54	76.51	76.50	76.51	76.54	76.44	76.51	0.5	Pass

802.11ac (VHT80+80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)								Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 4	Chain 5	Chain 6	Chain 7		
42+155	5210	-									
	5775	-	-	-	-	76.49	76.56	76.45	76.53	0.5	Pass

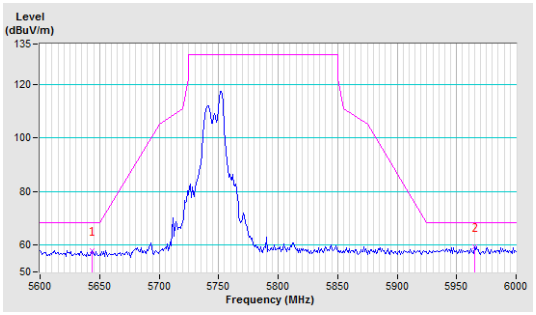
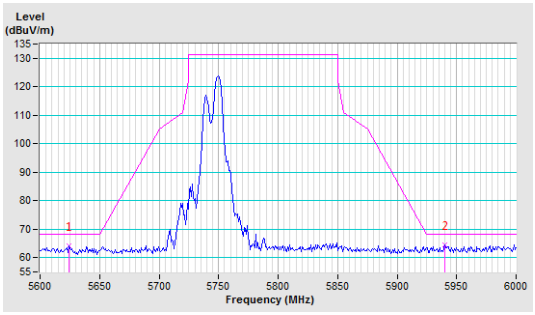
Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	
802.11ac (VHT80+80)	
	

5 Pictures of Test Arrangements

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

Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

CH149	
Horizontal	Vertical
	
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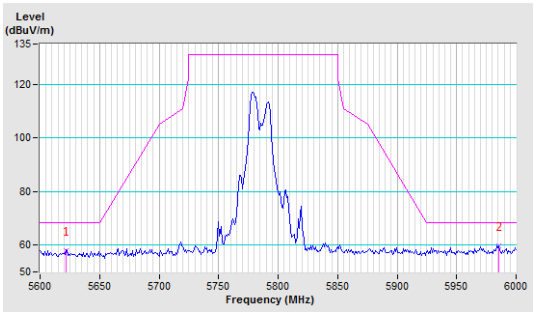
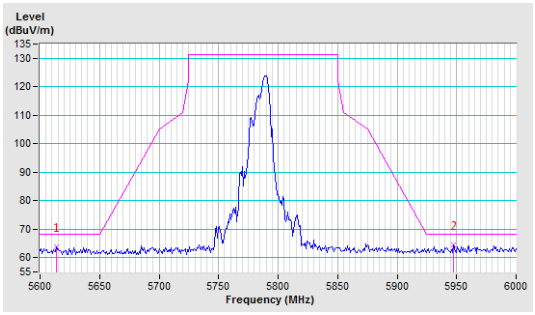
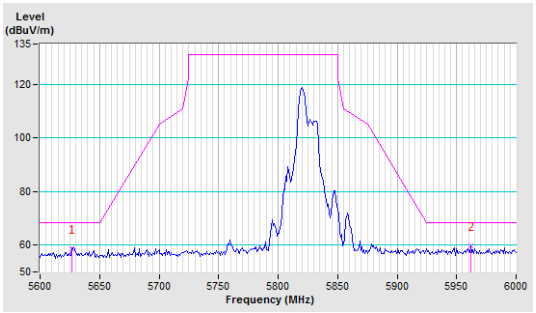
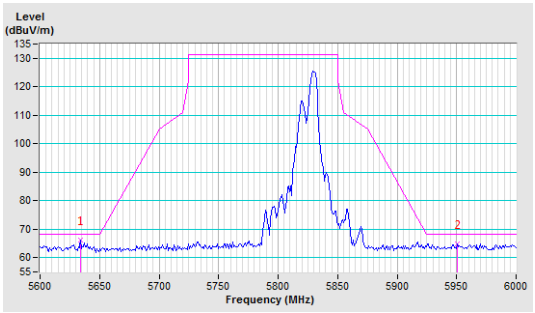
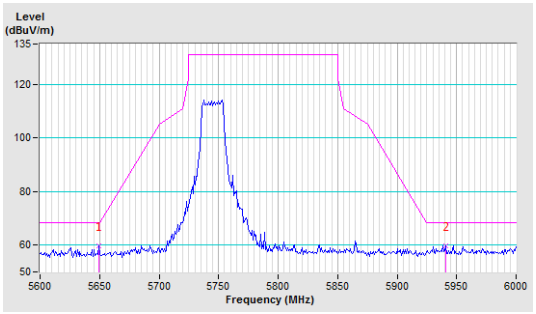
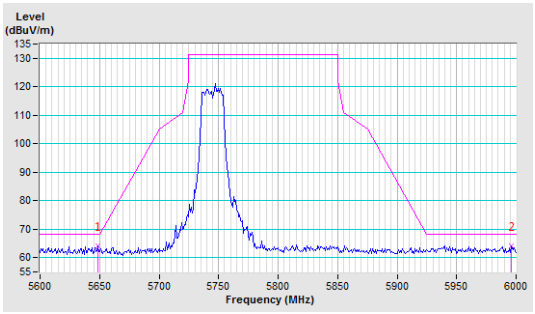
	
CH165	
Horizontal	Vertical
	

802.11ac (VHT20)

CH149	
Horizontal	Vertical
	
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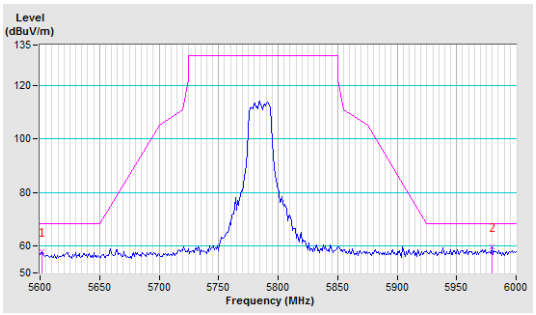	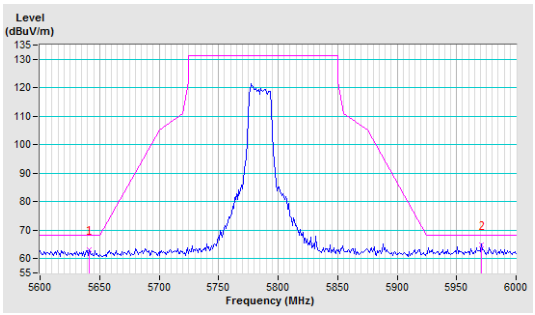
CH165	
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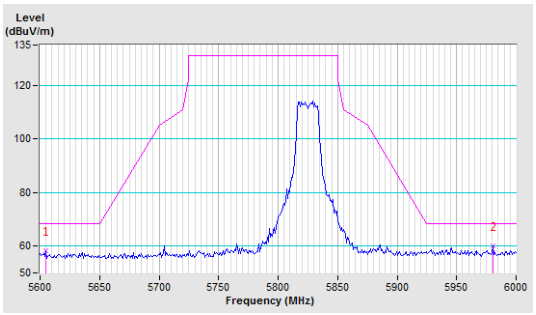	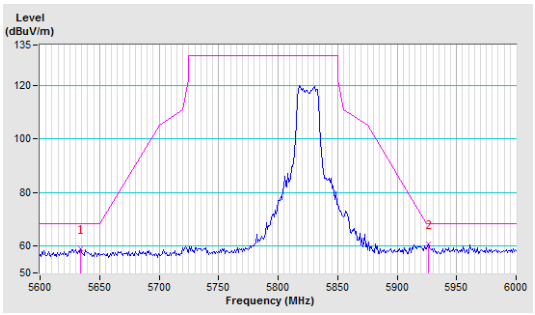

802.11ac (VHT40)

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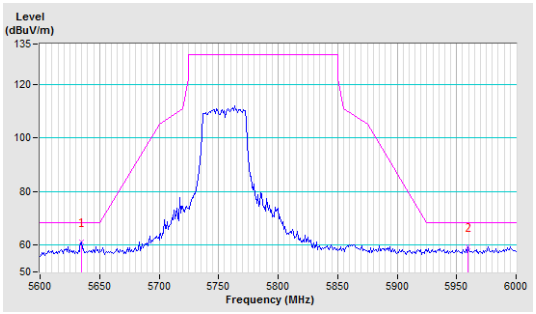
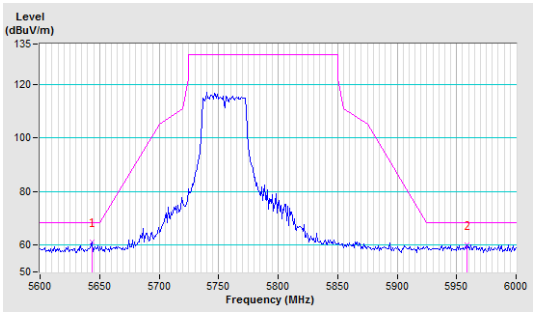
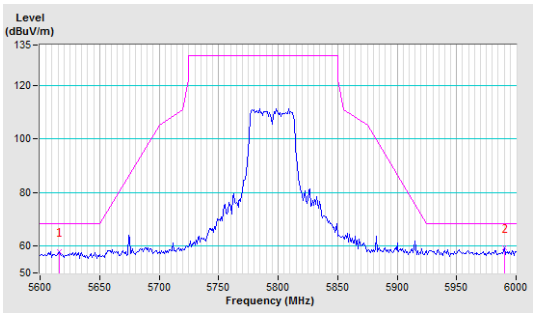
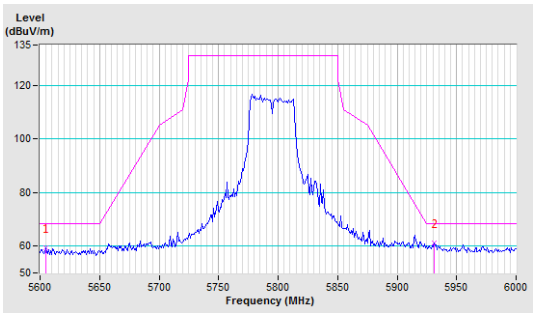
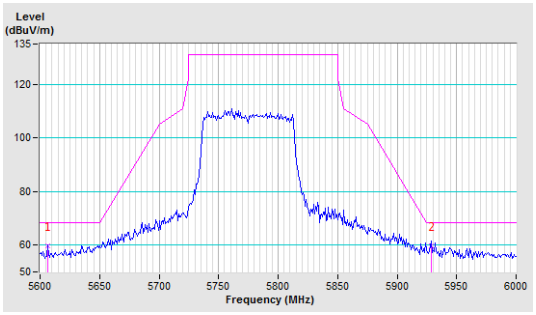
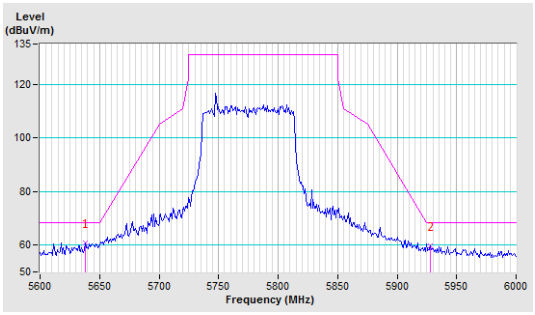
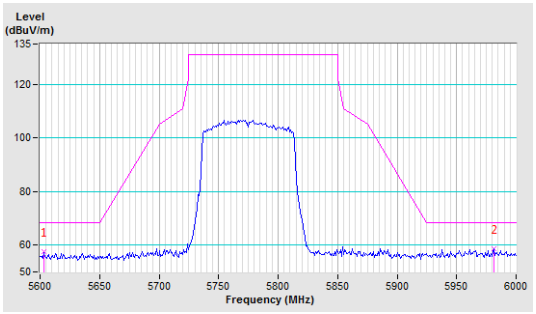
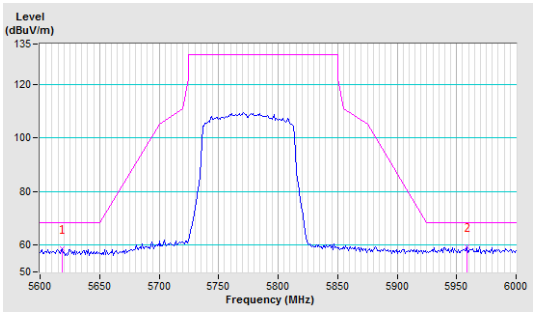
	
CH159	
Horizontal	Vertical
	

802.11ac (VHT80)

CH155	
Horizontal	Vertical
	

802.11ac (VHT80+80)

CH42+155	
Horizontal	Vertical
	

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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Web Site: www.bureauveritas-adt.com

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

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