FCC Test Report

Report No.:	RF170110E09-1
FCC ID:	PY316400363
Test Model:	R8000P
Series Model:	R7900P
Received Date:	Jan. 10, 2017
Test Date:	Jan. 20 to 25, 2017
Issued Date:	Feb. 17, 2017
Applicant:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF170110E09-1	Original release.	Feb. 17, 2017

1 Certificate of Conformity

Product:	Nighthawk X6S AC4000 Tri-band WiFi Router
Brand:	NETGEAR
Test Model:	R8000P
Series Model:	R7900P
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR, Inc.
Test Date:	Jan. 20 to 25, 2017
Standard:	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 EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Feb. 17, 2017

Wendy Wu / Specialist

Approved by : _____ , **Date:** Feb. 17, 2017

May Chen / Manager

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 -12.77dB at 0.48594MHz.
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 -0.2dB at 5150.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) 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	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.34 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.41 dB
	6GHz ~ 18GHz	3.49 dB
	18GHz ~ 40GHz	3.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Nighthawk X6S AC4000 Tri-band WiFi Router
Brand	NETGEAR
Test Model	R8000P
Series Model	R7900P
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	19Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 in 2.4GHz band
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20: 11 802.11n (HT40), VHT40: 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** **CDD Mode** 988.566mW **Beamforming Mode** 831.536mW **5GHz:** **5.18GHz ~ 5.24GHz:** **CDD Mode** 641.289mW **Beamforming Mode** 641.289mW **5.745GHz ~ 5.825GHz:** **CDD Mode** 979.264mW **Beamforming Mode** 795.796mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The EUT has below model names, which are identical to each other in all aspects except for the following:

Brand	Model No.	Different
NETGEAR	R8000P	-
	R7900P	Remove one USB 2.0 port.

From the above models, model: **R8000P** was selected as representative model for the test and its data was recorded in this report.

2. Simultaneously transmission condition.

Condition	**Technology**	
1	WLAN (Radio 1) (2.4GHz + 5GHz-UNII-1)	WLAN (Radio 2) (5GHz-UNII-3)
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

3. The EUT must be supplied with a power adapter as following table:

No	Brand Name	Model No.	P/N	Spec.	Plug
1	NETGEAR	AD2003F10	332-10631-01	Input: 100-120Vac, 50/60Hz, 1.5A Output: 19Vdc, 3.16A DC output cable: 1.8m, unshielded	FCC

4. The antennas provided to the EUT, please refer to the following table:

WLAN (Radio 1) Antenna				
Antenna No.	Ant. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connecter Type
1	1.76	2.4~2.4835	PIFA	i-pex(MHF)
	3.12	5.15~5.25		
	3.11	5.25~5.35		
2	1.76	2.4~2.4835	PIFA	i-pex(MHF)
	3.12	5.15~5.25		
	3.11	5.25~5.35		
3	1.76	2.4~2.4835	PIFA	i-pex(MHF)
	3.12	5.15~5.25		
	3.11	5.25~5.35		
WLAN (Radio 2) Antenna				
Antenna No.	Ant. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connecter Type
4	2.14	5.47~5.725	PIFA	i-pex(MHF)
	2.2	5.725~5.850		
5	2.14	5.47~5.725	PIFA	i-pex(MHF)
	2.2	5.725~5.850		
6	2.14	5.47~5.725	PIFA	i-pex(MHF)
	2.2	5.725~5.850		

5. The EUT incorporates a MIMO function.

For 2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	3TX	3RX
802.11g	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
VHT20	MCS0~8 Nss=1	3TX	3RX
	MCS0~8 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
VHT40	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
For 5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11ac (VHT20)	MCS 0~8, Nss=1	3TX	3RX
	MCS 0~8, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
802.11ac (VHT40)	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
802.11ac (VHT80)	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)
3. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

Channel	Frequency	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):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

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 **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE:
1. The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **Y-plane**.

Radiated Emission Test (Above 1GHz):

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

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

Radio 1						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Radio 2						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

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

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

Radio 1						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5
Radio 2						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6

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.

Radio 1						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5
Radio 2						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6

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.

Radio 1						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Beamforming Mode (Output power only)						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Radio 2						
CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3
Beamforming Mode (Output power only)						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT20)	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

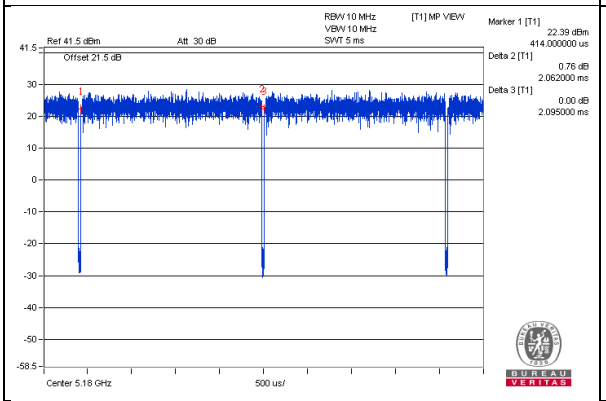
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	22deg. C, 64%RH	120Vac, 60Hz	Rey Chen
RE<1G	22deg. C, 64%RH	120Vac, 60Hz	Rey Chen
PLC	25deg. C, 75%RH	120Vac, 60Hz	Weiwei Lo
APCM	24deg. C, 65%RH	120Vac, 60Hz	Anderson Chen

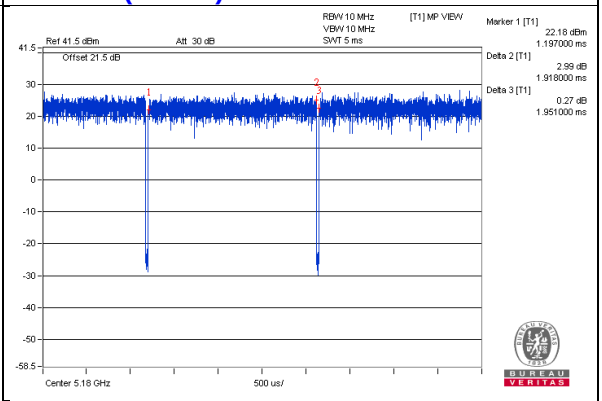
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.062/2.095 = 0.984
802.11ac (VHT20): Duty cycle = 1.918/1.951 = 0.983
802.11ac (VHT40): Duty cycle = 0.949/0.968 = 0.98
802.11ac (VHT80): Duty cycle = 0.46/0.49 = 0.939, Duty factor = 10 * log(1/0.939) = 0.27

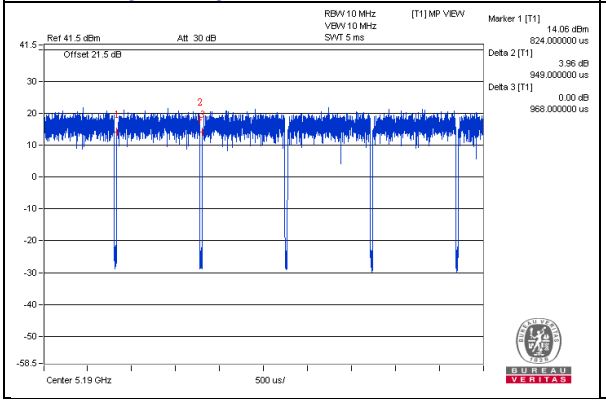
802.11a



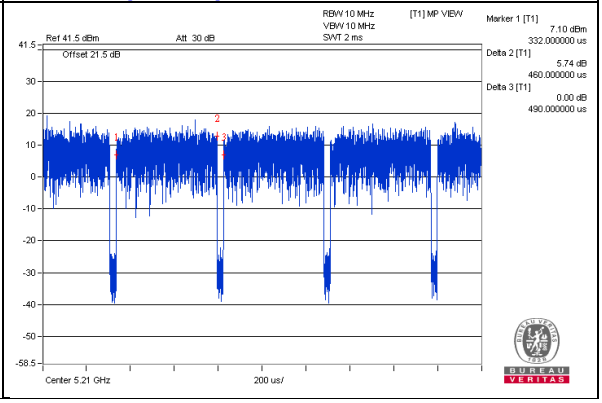
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

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

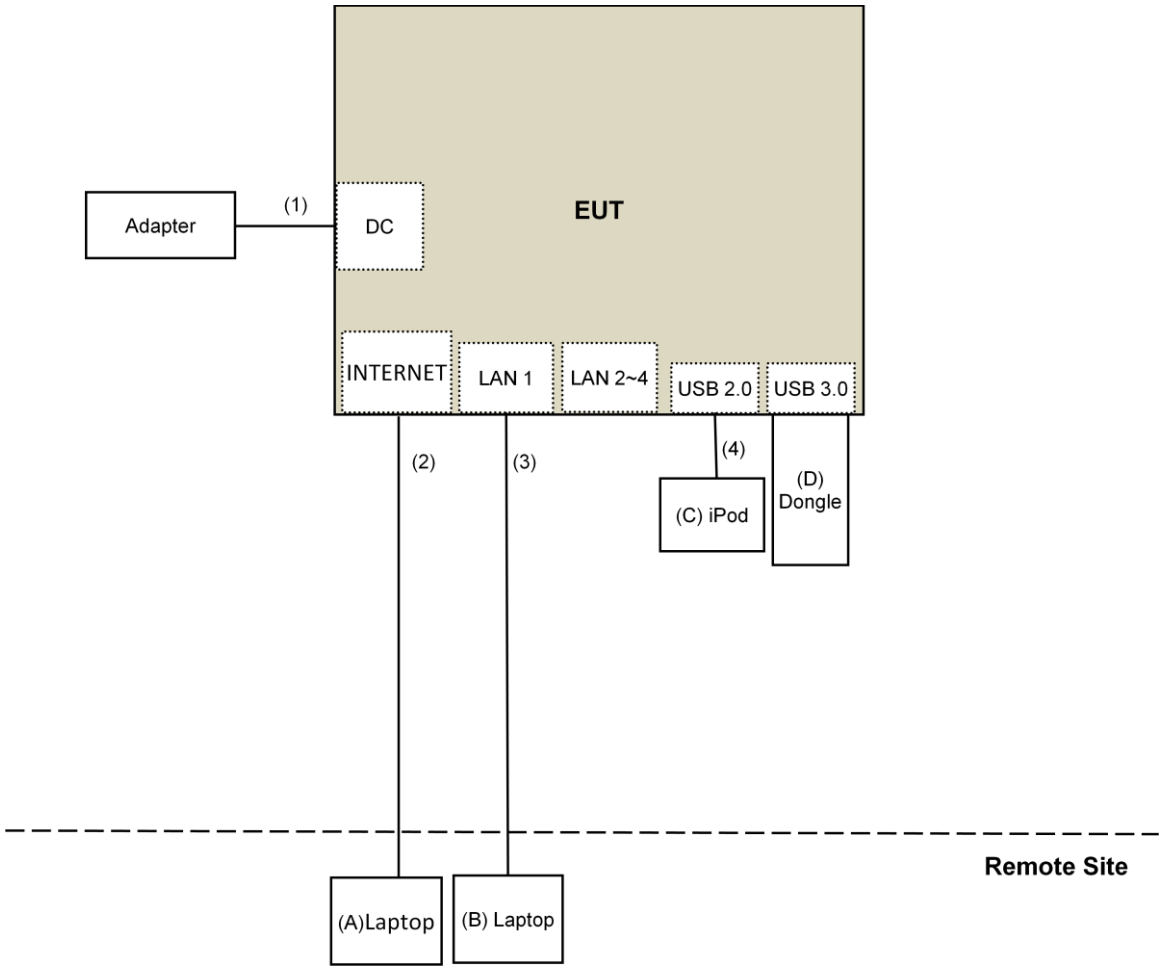
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6440	F9LYQ32	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	iPod	Apple	MD778TA/A	CC4JL03FF4T1	NA	Provided by Lab
D.	Dongel	Transcend	JetFlash 700	NA	NA	Provided by Lab

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	USB Cable	1	0.1	Yes	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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 v01r03
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

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="2">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="2" rowspan="2">789033 D02 General UNII Test Procedure New Rules v01r03</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="4">*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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 20, 2016	July 19, 2017
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 02, 2016	Apr. 01, 2017
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 18, 2016	Sep. 17, 2017
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150318 150323 150324	Mar. 30, 2016	Mar. 29, 2017
Pre-Amplifier EMCI	EMC184045	980143	Jan. 14, 2017	Jan. 13, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSv40	100964	June 28, 2016	June 27, 2017
Power meter Anritsu	ML2495A	1014008	May 5, 2016	May 4, 2017
Power sensor Anritsu	MA2411B	0917122	May 5, 2016	May 4, 2017
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 11, 2017	Jan. 10, 2018
Digital Multimeter FLUKE	87III	73680266	Nov. 10, 2016	Nov. 09, 2017

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The FCC Site Registration No. is 292998
5. The CANADA Site Registration No. is 20331-2
6 Loop antenna was used for all emissions below 30 MHz.
7. Tested Date: Jan. 20 to 25, 2017

4.1.3 Test Procedure

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. Both X and Y axes 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:

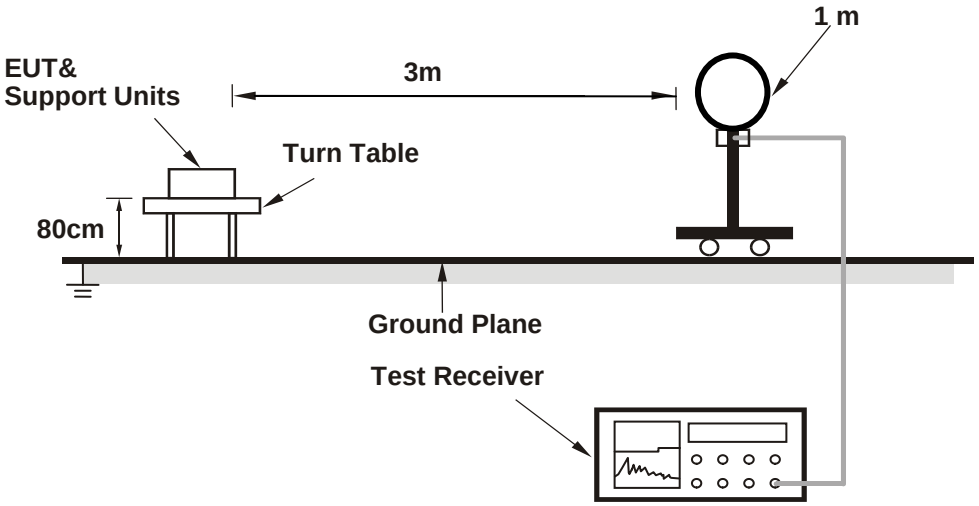
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

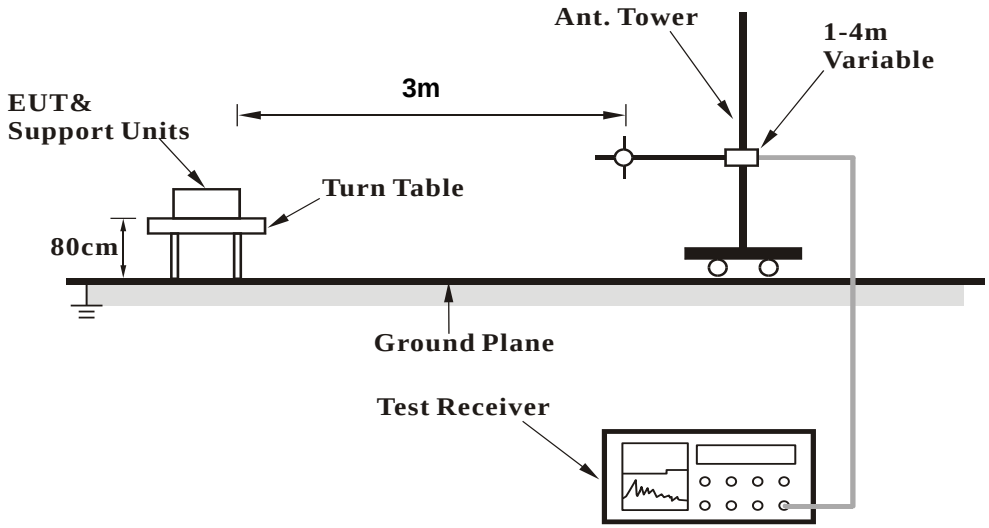
No deviation.

4.1.5 Test Setup

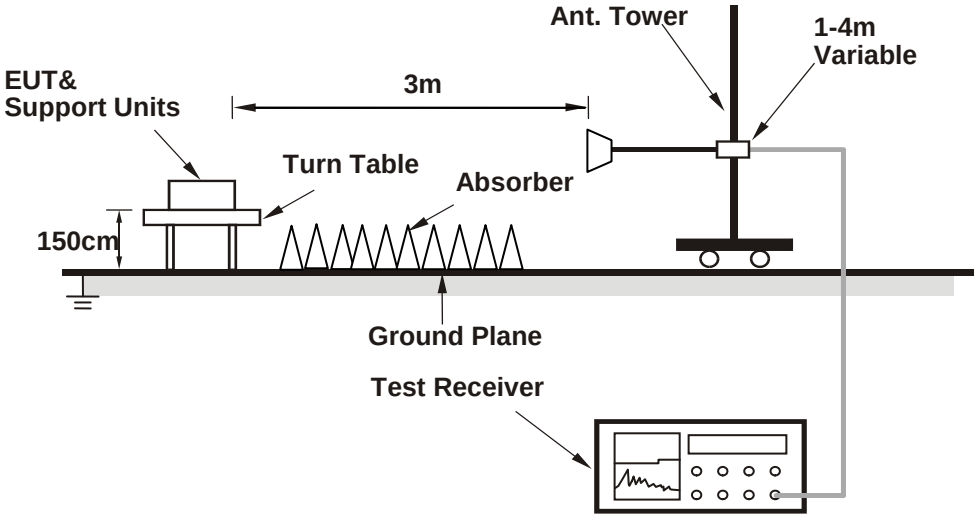
For Radiated emission below 30MHz



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 Condition

a. Connected the EUT with the Laptop which is placed on remote site.

b. Contorlling software (Mtool 3.0.0.2) has been activated to set the EUT on specific status.

4.1.7 Test Results

Radio 1

Above 1GHz 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	70.7 PK	74.0	-3.3	1.21 H	270	67.7	3.0
2	**5150.00**	**53.8 AV**	**54.0**	**-0.2**	**1.21 H**	**270**	**50.8**	**3.0**
3	*5180.00	115.4 PK			1.21 H	270	112.3	3.1
4	*5180.00	105.7 AV			1.21 H	270	102.6	3.1
5	#10360.00	50.9 PK	74.0	-23.1	1.32 H	172	38.0	12.9
6	#10360.00	37.8 AV	54.0	-16.2	1.32 H	172	24.9	12.9
7	15540.00	51.8 PK	74.0	-22.2	3.03 H	129	37.3	14.5
8	15540.00	39.8 AV	54.0	-14.2	3.03 H	129	25.3	14.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	67.6 PK	74.0	-6.4	3.08 V	189	64.6	3.0
2	5150.00	50.7 AV	54.0	-3.3	3.08 V	189	47.7	3.0
3	*5180.00	110.7 PK			3.08 V	189	107.6	3.1
4	*5180.00	101.3 AV			3.08 V	189	98.2	3.1
5	#10360.00	49.4 PK	74.0	-24.6	3.18 V	200	36.5	12.9
6	#10360.00	36.7 AV	54.0	-17.3	3.18 V	200	23.8	12.9
7	15540.00	52.1 PK	74.0	-21.9	1.30 V	259	37.6	14.5
8	15540.00	39.8 AV	54.0	-14.2	1.30 V	259	25.3	14.5

REMARKS:

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

CHANNEL	TX Channel 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	5150.00	69.6 PK	74.0	-4.4	1.03 H	272	66.6	3.0
2	5150.00	52.3 AV	54.0	-1.7	1.03 H	272	49.3	3.0
3	*5200.00	117.2 PK			1.03 H	272	114.1	3.1
4	*5200.00	107.3 AV			1.03 H	272	104.2	3.1
5	#10400.00	51.0 PK	74.0	-23.0	1.27 H	177	37.9	13.1
6	#10400.00	37.8 AV	54.0	-16.2	1.27 H	177	24.7	13.1
7	15600.00	51.6 PK	74.0	-22.4	2.99 H	144	37.0	14.6
8	15600.00	39.5 AV	54.0	-14.5	2.99 H	144	24.9	14.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.7 PK	74.0	-9.3	3.04 V	192	61.7	3.0
2	5150.00	48.6 AV	54.0	-5.4	3.04 V	192	45.6	3.0
3	*5200.00	112.5 PK			3.04 V	192	109.4	3.1
4	*5200.00	102.9 AV			3.04 V	192	99.8	3.1
5	#10400.00	49.9 PK	74.0	-24.1	3.15 V	215	36.8	13.1
6	#10400.00	37.1 AV	54.0	-16.9	3.15 V	215	24.0	13.1
7	15600.00	51.7 PK	74.0	-22.3	1.28 V	252	37.1	14.6
8	15600.00	39.6 AV	54.0	-14.4	1.28 V	252	25.0	14.6

REMARKS:

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

CHANNEL	TX Channel 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	116.9 PK			1.15 H	271	113.8	3.1
2	*5240.00	107.0 AV			1.15 H	271	103.9	3.1
3	5350.00	51.6 PK	74.0	-22.4	1.15 H	271	48.4	3.2
4	5350.00	38.9 AV	54.0	-15.1	1.15 H	271	35.7	3.2
5	#10480.00	51.2 PK	74.0	-22.8	1.32 H	169	38.7	12.5
6	#10480.00	37.7 AV	54.0	-16.3	1.32 H	169	25.2	12.5
7	15720.00	51.7 PK	74.0	-22.3	2.98 H	154	36.9	14.8
8	15720.00	39.4 AV	54.0	-14.6	2.98 H	154	24.6	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	*5240.00	112.2 PK			3.01 V	207	109.1	3.1
2	*5240.00	102.6 AV			3.01 V	207	99.5	3.1
3	5350.00	50.5 PK	74.0	-23.5	3.01 V	207	47.3	3.2
4	5350.00	38.2 AV	54.0	-15.8	3.01 V	207	35.0	3.2
5	#10480.00	50.6 PK	74.0	-23.4	3.12 V	230	38.1	12.5
6	#10480.00	37.5 AV	54.0	-16.5	3.12 V	230	25.0	12.5
7	15720.00	51.4 PK	74.0	-22.6	1.33 V	241	36.6	14.8
8	15720.00	39.5 AV	54.0	-14.5	1.33 V	241	24.7	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.

802.11ac (VHT20)

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	71.1 PK	74.0	-2.9	1.50 H	280	68.1	3.0
2	5150.00	53.4 AV	54.0	-0.6	1.50 H	280	50.4	3.0
3	*5180.00	115.6 PK			1.50 H	280	112.5	3.1
4	*5180.00	105.0 AV			1.50 H	280	101.9	3.1
5	#10360.00	50.4 PK	74.0	-23.6	1.26 H	183	37.5	12.9
6	#10360.00	37.4 AV	54.0	-16.6	1.26 H	183	24.5	12.9
7	15540.00	51.4 PK	74.0	-22.6	3.05 H	132	36.9	14.5
8	15540.00	39.5 AV	54.0	-14.5	3.05 H	132	25.0	14.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.8 PK	74.0	-5.2	3.06 V	218	65.8	3.0
2	5150.00	51.0 AV	54.0	-3.0	3.06 V	218	48.0	3.0
3	*5180.00	110.9 PK			3.06 V	218	107.8	3.1
4	*5180.00	100.6 AV			3.06 V	218	97.5	3.1
5	#10360.00	49.9 PK	74.0	-24.1	3.12 V	225	37.0	12.9
6	#10360.00	37.3 AV	54.0	-16.7	3.12 V	225	24.4	12.9
7	15540.00	51.5 PK	74.0	-22.5	1.32 V	263	37.0	14.5
8	15540.00	39.5 AV	54.0	-14.5	1.32 V	263	25.0	14.5

REMARKS:

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

CHANNEL	TX Channel 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	5147.60	69.1 PK	74.0	-4.9	1.50 H	277	66.1	3.0
2	5147.60	52.1 AV	54.0	-1.9	1.50 H	277	49.1	3.0
3	*5200.00	116.3 PK			1.50 H	277	113.2	3.1
4	*5200.00	106.4 AV			1.50 H	277	103.3	3.1
5	#10400.00	51.4 PK	74.0	-22.6	1.24 H	172	38.3	13.1
6	#10400.00	38.3 AV	54.0	-15.7	1.24 H	172	25.2	13.1
7	15600.00	51.4 PK	74.0	-22.6	2.94 H	149	36.8	14.6
8	15600.00	39.2 AV	54.0	-14.8	2.94 H	149	24.6	14.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5147.60	66.8 PK	74.0	-7.2	3.06 V	227	63.8	3.0
2	5147.60	50.0 AV	54.0	-4.0	3.06 V	227	47.0	3.0
3	*5200.00	111.6 PK			3.06 V	227	108.5	3.1
4	*5200.00	102.0 AV			3.06 V	227	98.9	3.1
5	#10400.00	49.5 PK	74.0	-24.5	3.16 V	240	36.4	13.1
6	#10400.00	36.8 AV	54.0	-17.2	3.16 V	240	23.7	13.1
7	15600.00	52.2 PK	74.0	-21.8	1.29 V	262	37.6	14.6
8	15600.00	40.0 AV	54.0	-14.0	1.29 V	262	25.4	14.6

REMARKS:

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

CHANNEL	TX Channel 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	117.4 PK			1.50 H	275	114.3	3.1
2	*5240.00	107.3 AV			1.50 H	275	104.2	3.1
3	5350.00	50.5 PK	74.0	-23.5	1.50 H	275	47.3	3.2
4	5350.00	38.8 AV	54.0	-15.2	1.50 H	275	35.6	3.2
5	#10480.00	51.0 PK	74.0	-23.0	1.29 H	177	38.5	12.5
6	#10480.00	38.0 AV	54.0	-16.0	1.29 H	177	25.5	12.5
7	15720.00	51.3 PK	74.0	-22.7	3.01 H	154	36.5	14.8
8	15720.00	39.1 AV	54.0	-14.9	3.01 H	154	24.3	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	*5240.00	112.7 PK			3.04 V	230	109.6	3.1
2	*5240.00	102.9 AV			3.04 V	230	99.8	3.1
3	5350.00	50.4 PK	74.0	-23.6	3.04 V	230	47.2	3.2
4	5350.00	38.6 AV	54.0	-15.4	3.04 V	230	35.4	3.2
5	#10480.00	49.0 PK	74.0	-25.0	3.15 V	253	36.5	12.5
6	#10480.00	36.4 AV	54.0	-17.6	3.15 V	253	23.9	12.5
7	15720.00	52.1 PK	74.0	-21.9	1.34 V	275	37.3	14.8
8	15720.00	39.9 AV	54.0	-14.1	1.34 V	275	25.1	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.

802.11ac (VHT40)

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	73.0 PK	74.0	-1.0	1.14 H	108	70.0	3.0
2	5150.00	53.3 AV	54.0	-0.7	1.14 H	108	50.3	3.0
3	*5190.00	110.4 PK			1.14 H	108	107.3	3.1
4	*5190.00	100.6 AV			1.14 H	108	97.5	3.1
5	5350.00	51.1 PK	74.0	-22.9	1.14 H	108	47.9	3.2
6	5350.00	39.7 AV	54.0	-14.3	1.14 H	108	36.5	3.2
7	#10380.00	51.3 PK	74.0	-22.7	1.24 H	168	38.3	13.0
8	#10380.00	38.4 AV	54.0	-15.6	1.24 H	168	25.4	13.0
9	15570.00	51.0 PK	74.0	-23.0	2.99 H	161	36.5	14.5
10	15570.00	39.1 AV	54.0	-14.9	2.99 H	161	24.6	14.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.6 PK	74.0	-5.4	3.05 V	218	65.6	3.0
2	5150.00	50.9 AV	54.0	-3.1	3.05 V	218	47.9	3.0
3	*5190.00	105.7 PK			3.05 V	218	102.6	3.1
4	*5190.00	96.2 AV			3.05 V	218	93.1	3.1
5	5350.00	51.0 PK	74.0	-23.0	3.05 V	218	47.8	3.2
6	5350.00	39.4 AV	54.0	-14.6	3.05 V	218	36.2	3.2
7	#10380.00	49.0 PK	74.0	-25.0	3.19 V	242	36.0	13.0
8	#10380.00	36.5 AV	54.0	-17.5	3.19 V	242	23.5	13.0
9	15570.00	52.4 PK	74.0	-21.6	1.25 V	262	37.9	14.5
10	15570.00	40.2 AV	54.0	-13.8	1.25 V	262	25.7	14.5

REMARKS:

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

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	68.2 PK	74.0	-5.8	1.28 H	101	65.2	3.0
2	5150.00	53.6 AV	54.0	-0.4	1.28 H	101	50.6	3.0
3	*5230.00	115.3 PK			1.28 H	101	112.2	3.1
4	*5230.00	105.4 AV			1.28 H	101	102.3	3.1
5	5350.00	50.6 PK	74.0	-23.4	1.28 H	101	47.4	3.2
6	5350.00	39.2 AV	54.0	-14.8	1.28 H	101	36.0	3.2
7	#10460.00	51.1 PK	74.0	-22.9	1.27 H	162	38.4	12.7
8	#10460.00	38.2 AV	54.0	-15.8	1.27 H	162	25.5	12.7
9	15690.00	51.2 PK	74.0	-22.8	3.00 H	159	36.3	14.9
10	15690.00	39.1 AV	54.0	-14.9	3.00 H	159	24.2	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	5150.00	65.6 PK	74.0	-8.4	3.02 V	227	62.6	3.0
2	5150.00	51.2 AV	54.0	-2.8	3.02 V	227	48.2	3.0
3	*5230.00	110.6 PK			3.02 V	227	107.5	3.1
4	*5230.00	101.0 AV			3.02 V	227	97.9	3.1
5	5350.00	50.2 PK	74.0	-23.8	3.02 V	227	47.0	3.2
6	5350.00	38.4 AV	54.0	-15.6	3.02 V	227	35.2	3.2
7	#10460.00	48.5 PK	74.0	-25.5	3.20 V	231	35.8	12.7
8	#10460.00	36.0 AV	54.0	-18.0	3.20 V	231	23.3	12.7
9	15690.00	52.9 PK	74.0	-21.1	1.20 V	274	38.0	14.9
10	15690.00	40.7 AV	54.0	-13.3	1.20 V	274	25.8	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.

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	67.5 PK	74.0	-6.5	1.18 H	108	64.5	3.0
2	5150.00	53.6 AV	54.0	-0.4	1.18 H	108	50.6	3.0
3	*5210.00	107.6 PK			1.18 H	108	104.5	3.1
4	*5210.00	99.9 AV			1.18 H	108	96.8	3.1
5	5350.00	51.6 PK	74.0	-22.4	1.18 H	108	48.4	3.2
6	5350.00	40.3 AV	54.0	-13.7	1.18 H	108	37.1	3.2
7	#10420.00	51.6 PK	74.0	-22.4	1.21 H	157	38.7	12.9
8	#10420.00	38.5 AV	54.0	-15.5	1.21 H	157	25.6	12.9
9	15630.00	51.9 PK	74.0	-22.1	2.95 H	156	37.2	14.7
10	15630.00	39.6 AV	54.0	-14.4	2.95 H	156	24.9	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	5150.00	65.4 PK	74.0	-8.6	3.07 V	243	62.4	3.0
2	5150.00	51.1 AV	54.0	-2.9	3.07 V	243	48.1	3.0
3	*5210.00	103.2 PK			3.07 V	243	100.1	3.1
4	*5210.00	95.5 AV			3.07 V	243	92.4	3.1
5	5350.00	51.2 PK	74.0	-22.8	3.07 V	243	48.0	3.2
6	5350.00	39.4 AV	54.0	-14.6	3.07 V	243	36.2	3.2
7	#10420.00	48.8 PK	74.0	-25.2	3.16 V	239	35.9	12.9
8	#10420.00	36.0 AV	54.0	-18.0	3.16 V	239	23.1	12.9
9	15630.00	52.5 PK	74.0	-21.5	1.17 V	272	37.8	14.7
10	15630.00	40.3 AV	54.0	-13.7	1.17 V	272	25.6	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.

Below 1GHz Data:

802.11ac (VHT40)

CHANNEL	TX Channel 46	**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	34.00	30.3 QP	40.0	-9.7	1.00 H	22	39.1	-8.8
2	96.93	35.1 QP	43.5	-8.4	3.00 H	122	48.4	-13.3
3	186.82	32.1 QP	43.5	-11.4	2.00 H	278	42.8	-10.7
4	250.02	28.6 QP	46.0	-17.4	1.00 H	10	38.3	-9.7
5	355.68	29.0 QP	46.0	-17.0	1.00 H	163	35.5	-6.5
6	1000.00	38.9 QP	54.0	-15.1	2.00 H	278	33.9	5.0
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	69.72	35.8 QP	40.0	-4.2	1.00 V	199	45.9	-10.1
2	96.76	34.7 QP	43.5	-8.8	1.00 V	194	48.1	-13.4
3	186.53	25.4 QP	43.5	-18.1	1.00 V	271	36.0	-10.6
4	333.54	26.7 QP	46.0	-19.3	2.00 V	167	33.6	-6.9
5	523.51	30.1 QP	46.0	-15.9	1.00 V	360	32.5	-2.4
6	1000.00	38.6 QP	54.0	-15.4	2.00 V	357	33.6	5.0

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

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Above 1GHz Data:

802.11a

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	#5580.87	63.9 PK	68.2	-4.3	3.10 H	254	60.2	3.7
2	*5745.00	123.0 PK			3.10 H	254	118.9	4.1
3	*5745.00	112.9 AV			3.10 H	254	108.8	4.1
4	#5977.02	66.0 PK	68.2	-2.2	3.10 H	254	61.0	5.0
5	11490.00	51.6 PK	74.0	-22.4	1.27 H	164	38.0	13.6
6	11490.00	37.8 AV	54.0	-16.2	1.27 H	164	24.2	13.6
7	#17235.00	56.7 PK	74.0	-17.3	2.98 H	165	36.6	20.1
8	#17235.00	45.2 AV	54.0	-8.8	2.98 H	165	25.1	20.1
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	#5628.37	59.1 PK	68.2	-9.1	2.76 V	201	55.3	3.8
2	*5745.00	120.0 PK			2.76 V	201	115.9	4.1
3	*5745.00	109.5 AV			2.76 V	201	105.4	4.1
4	#5977.50	60.4 PK	68.2	-7.8	2.76 V	201	55.4	5.0
5	11490.00	51.3 PK	74.0	-22.7	3.15 V	229	37.7	13.6
6	11490.00	38.0 AV	54.0	-16.0	3.15 V	229	24.4	13.6
7	#17235.00	56.9 PK	74.0	-17.1	1.32 V	256	36.8	20.1
8	#17235.00	45.4 AV	54.0	-8.6	1.32 V	256	25.3	20.1

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
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	#5551.90	66.3 PK	68.2	-1.9	3.09 H	257	62.7	3.6
2	*5785.00	122.9 PK			3.09 H	257	118.8	4.1
3	*5785.00	112.9 AV			3.09 H	257	108.8	4.1
4	#6018.82	65.0 PK	68.2	-3.2	3.09 H	257	59.8	5.2
5	11570.00	51.7 PK	74.0	-22.3	1.28 H	153	38.3	13.4
6	11570.00	38.1 AV	54.0	-15.9	1.28 H	153	24.7	13.4
7	#17355.00	57.4 PK	74.0	-16.6	3.04 H	172	36.7	20.7
8	#17355.00	45.9 AV	54.0	-8.1	3.04 H	172	25.2	20.7
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	#5619.35	59.7 PK	68.2	-8.5	2.80 V	200	55.9	3.8
2	*5785.00	119.9 PK			2.80 V	200	115.8	4.1
3	*5785.00	110.2 AV			2.80 V	200	106.1	4.1
4	#6018.35	61.3 PK	68.2	-6.9	2.80 V	200	56.1	5.2
5	11570.00	51.4 PK	74.0	-22.6	3.17 V	235	38.0	13.4
6	11570.00	37.9 AV	54.0	-16.1	3.17 V	235	24.5	13.4
7	#17355.00	57.2 PK	74.0	-16.8	1.36 V	255	36.5	20.7
8	#17355.00	45.6 AV	54.0	-8.4	1.36 V	255	24.9	20.7

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 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	#5575.65	64.6 PK	68.2	-3.6	3.38 H	255	60.9	3.7
2	*5825.00	121.9 PK			3.37 H	255	117.7	4.2
3	*5825.00	112.1 AV			3.37 H	255	107.9	4.2
4	#5980.82	61.2 PK	68.2	-7.0	3.38 H	255	56.1	5.1
5	11650.00	51.7 PK	74.0	-22.3	1.31 H	166	38.3	13.4
6	11650.00	37.9 AV	54.0	-16.1	1.31 H	166	24.5	13.4
7	#17475.00	56.7 PK	74.0	-17.3	3.09 H	182	35.7	21.0
8	#17475.00	45.4 AV	54.0	-8.6	3.09 H	182	24.4	21.0
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	#5576.60	60.8 PK	68.2	-7.4	2.82 V	202	57.1	3.7
2	*5825.00	109.9 PK			2.82 V	202	105.7	4.2
3	*5825.00	109.9 AV			2.82 V	202	105.7	4.2
4	#5936.65	60.2 PK	68.2	-8.0	2.82 V	202	55.7	4.5
5	11650.00	51.9 PK	74.0	-22.1	3.14 V	221	38.5	13.4
6	11650.00	38.2 AV	54.0	-15.8	3.14 V	221	24.8	13.4
7	#17475.00	56.9 PK	74.0	-17.1	1.36 V	246	35.9	21.0
8	#17475.00	45.3 AV	54.0	-8.7	1.36 V	246	24.3	21.0

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 (VHT20)

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	#5588.45	62.2 PK	68.2	-6.0	2.69 H	71	58.5	3.7
2	*5745.00	122.3 PK			2.69 H	71	118.2	4.1
3	*5745.00	112.3 AV			2.69 H	71	108.2	4.1
4	#5976.41	65.2 PK	68.2	-3.0	2.69 H	71	60.2	5.0
5	11490.00	51.9 PK	74.0	-22.1	1.32 H	165	38.3	13.6
6	11490.00	38.1 AV	54.0	-15.9	1.32 H	165	24.5	13.6
7	#17235.00	57.5 PK	74.0	-16.5	3.01 H	157	37.4	20.1
8	#17235.00	45.9 AV	54.0	-8.1	3.01 H	157	25.8	20.1
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	#5646.83	58.7 PK	68.2	-9.5	2.69 V	206	54.8	3.9
2	*5745.00	118.7 PK			2.69 V	206	114.6	4.1
3	*5745.00	108.2 AV			2.69 V	206	104.1	4.1
4	#5975.84	58.2 PK	68.2	-10.0	2.69 V	206	53.2	5.0
5	11490.00	51.9 PK	74.0	-22.1	3.15 V	220	38.3	13.6
6	11490.00	38.3 AV	54.0	-15.7	3.15 V	220	24.7	13.6
7	#17235.00	56.5 PK	74.0	-17.5	1.37 V	241	36.4	20.1
8	#17235.00	45.2 AV	54.0	-8.8	1.37 V	241	25.1	20.1

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
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	#5552.64	64.9 PK	68.2	-3.3	3.81 H	66	61.3	3.6
2	*5785.00	122.0 PK			3.81 H	66	117.9	4.1
3	*5785.00	111.8 AV			3.81 H	66	107.7	4.1
4	#6017.65	63.5 PK	68.2	-4.7	3.81 H	66	58.3	5.2
5	11570.00	52.2 PK	74.0	-21.8	1.31 H	155	38.8	13.4
6	11570.00	38.4 AV	54.0	-15.6	1.31 H	155	25.0	13.4
7	#17355.00	56.8 PK	74.0	-17.2	3.02 H	166	36.1	20.7
8	#17355.00	45.1 AV	54.0	-8.9	3.02 H	166	24.4	20.7
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	#5619.06	57.7 PK	68.2	-10.5	2.66 V	216	53.9	3.8
2	*5785.00	118.4 PK			2.66 V	216	114.3	4.1
3	*5785.00	108.1 AV			2.66 V	216	104.0	4.1
4	#6012.10	57.9 PK	68.2	-10.3	2.66 V	216	52.6	5.3
5	11570.00	51.9 PK	74.0	-22.1	3.16 V	204	38.5	13.4
6	11570.00	38.2 AV	54.0	-15.8	3.16 V	204	24.8	13.4
7	#17355.00	56.9 PK	74.0	-17.1	1.35 V	250	36.2	20.7
8	#17355.00	45.3 AV	54.0	-8.7	1.35 V	250	24.6	20.7

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 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	#5590.73	66.1 PK	68.2	-2.1	2.76 H	74	62.4	3.7
2	*5825.00	122.3 PK			2.76 H	74	118.1	4.2
3	*5825.00	112.1 AV			2.76 H	74	107.9	4.2
4	#5986.56	62.5 PK	68.2	-5.7	2.76 H	74	57.4	5.1
5	11650.00	52.2 PK	74.0	-21.8	1.29 H	148	38.8	13.4
6	11650.00	38.7 AV	54.0	-15.3	1.29 H	148	25.3	13.4
7	#17475.00	56.6 PK	74.0	-17.4	3.02 H	156	35.6	21.0
8	#17475.00	45.0 AV	54.0	-9.0	3.02 H	156	24.0	21.0
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	#5590.66	58.3 PK	68.2	-9.9	2.65 V	209	54.6	3.7
2	*5825.00	118.9 PK			2.65 V	209	114.7	4.2
3	*5825.00	108.5 AV			2.65 V	209	104.3	4.2
4	#5968.94	58.0 PK	68.2	-10.2	2.65 V	209	53.1	4.9
5	11650.00	51.7 PK	74.0	-22.3	3.13 V	215	38.3	13.4
6	11650.00	38.3 AV	54.0	-15.7	3.13 V	215	24.9	13.4
7	#17475.00	57.0 PK	74.0	-17.0	1.37 V	244	36.0	21.0
8	#17475.00	45.3 AV	54.0	-8.7	1.37 V	244	24.3	21.0

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 (VHT40)

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	#5648.48	65.7 PK	68.2	-2.5	3.81 H	255	61.8	3.9
2	*5755.00	118.0 PK			3.81 H	255	114.0	4.0
3	*5755.00	107.7 AV			3.81 H	255	103.7	4.0
4	#5944.44	59.3 PK	68.2	-8.9	3.80 H	255	54.7	4.6
5	11510.00	51.0 PK	74.0	-23.0	1.32 H	149	37.5	13.5
6	11510.00	38.3 AV	54.0	-15.7	1.32 H	149	24.8	13.5
7	#17265.00	57.0 PK	74.0	-17.0	3.05 H	158	36.7	20.3
8	#17265.00	45.2 AV	54.0	-8.8	3.05 H	158	24.9	20.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5645.05	64.1 PK	68.2	-4.1	3.99 V	182	60.2	3.9
2	*5755.00	114.1 PK			3.99 V	182	110.1	4.0
3	*5755.00	103.5 AV			3.99 V	182	99.5	4.0
4	#5922.97	58.6 PK	69.7	-11.1	3.99 V	182	54.2	4.4
5	11510.00	51.1 PK	74.0	-22.9	3.09 V	226	37.6	13.5
6	11510.00	37.9 AV	54.0	-16.1	3.09 V	226	24.4	13.5
7	#17265.00	57.5 PK	74.0	-16.5	1.39 V	234	37.2	20.3
8	#17265.00	45.8 AV	54.0	-8.2	1.39 V	234	25.5	20.3

REMARKS:

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

CHANNEL	TX Channel 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	#5655.87	64.7 PK	72.6	-7.9	2.13 H	262	60.7	4.0
2	*5795.00	118.3 PK			2.13 H	262	114.2	4.1
3	*5795.00	107.8 AV			2.13 H	262	103.7	4.1
4	#5925.01	65.8 PK	68.2	-2.4	2.13 H	262	61.4	4.4
5	11590.00	50.6 PK	74.0	-23.4	1.36 H	162	37.3	13.3
6	11590.00	37.8 AV	54.0	-16.2	1.36 H	162	24.5	13.3
7	#17385.00	56.4 PK	74.0	-17.6	3.02 H	155	35.6	20.8
8	#17385.00	45.0 AV	54.0	-9.0	3.02 H	155	24.2	20.8
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	#5630.00	58.9 PK	68.2	-9.3	3.98 V	175	55.1	3.8
2	*5795.00	114.5 PK			3.98 V	175	110.4	4.1
3	*5795.00	103.8 AV			3.98 V	175	99.7	4.1
4	#5922.13	63.6 PK	70.3	-6.7	3.98 V	175	59.2	4.4
5	11590.00	51.3 PK	74.0	-22.7	3.11 V	227	38.0	13.3
6	11590.00	38.2 AV	54.0	-15.8	3.11 V	227	24.9	13.3
7	#17385.00	57.0 PK	74.0	-17.0	1.34 V	230	36.2	20.8
8	#17385.00	45.6 AV	54.0	-8.4	1.34 V	230	24.8	20.8

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 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	#5628.83	67.8 PK	68.2	-0.4	1.34 H	257	64.0	3.8
2	*5775.00	114.4 PK			1.34 H	257	110.3	4.1
3	*5775.00	104.6 AV			1.34 H	257	100.5	4.1
4	#5938.22	64.8 PK	68.2	-3.4	1.34 H	257	60.3	4.5
5	11550.00	50.5 PK	74.0	-23.5	1.37 H	152	37.0	13.5
6	11550.00	37.9 AV	54.0	-16.1	1.37 H	152	24.4	13.5
7	#17325.00	57.2 PK	74.0	-16.8	3.02 H	159	36.7	20.5
8	#17325.00	45.7 AV	54.0	-8.3	3.02 H	159	25.2	20.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5630.31	62.5 PK	68.2	-5.7	2.74 V	204	58.7	3.8
2	*5775.00	109.2 PK			2.74 V	204	105.1	4.1
3	*5775.00	100.0 AV			2.74 V	204	95.9	4.1
4	#5925.56	63.8 PK	68.2	-4.4	2.74 V	204	59.4	4.4
5	11550.00	51.5 PK	74.0	-22.5	3.15 V	231	38.0	13.5
6	11550.00	38.2 AV	54.0	-15.8	3.15 V	231	24.7	13.5
7	#17325.00	57.0 PK	74.0	-17.0	1.39 V	241	36.5	20.5
8	#17325.00	45.3 AV	54.0	-8.7	1.39 V	241	24.8	20.5

REMARKS:

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

Below 1GHz 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	34.61	30.5 QP	40.0	-9.5	1.00 H	176	39.5	-9.0
2	95.89	34.5 QP	43.5	-9.0	2.00 H	330	48.0	-13.5
3	186.51	29.4 QP	43.5	-14.1	2.00 H	288	40.0	-10.6
4	250.02	30.6 QP	46.0	-15.4	1.00 H	274	40.3	-9.7
5	357.08	29.8 QP	46.0	-16.2	1.00 H	183	36.2	-6.4
6	1000.00	36.2 QP	54.0	-17.8	1.00 H	50	31.2	5.0
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	68.31	36.8 QP	40.0	-3.2	1.00 V	185	46.7	-9.9
2	95.96	36.2 QP	43.5	-7.3	1.00 V	260	49.7	-13.5
3	187.09	26.6 QP	43.5	-16.9	2.00 V	236	37.3	-10.7
4	330.99	27.0 QP	46.0	-19.0	2.00 V	178	33.9	-6.9
5	528.63	29.6 QP	46.0	-16.4	1.00 V	122	32.0	-2.4
6	1000.00	41.1 QP	54.0	-12.9	1.00 V	0	36.1	5.0

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

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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 13, 2016	June 12, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 20, 2016	June 19, 2017
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 1.
3 Tested Date: Jan. 20, 2017

4.2.3 Test Procedure

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.

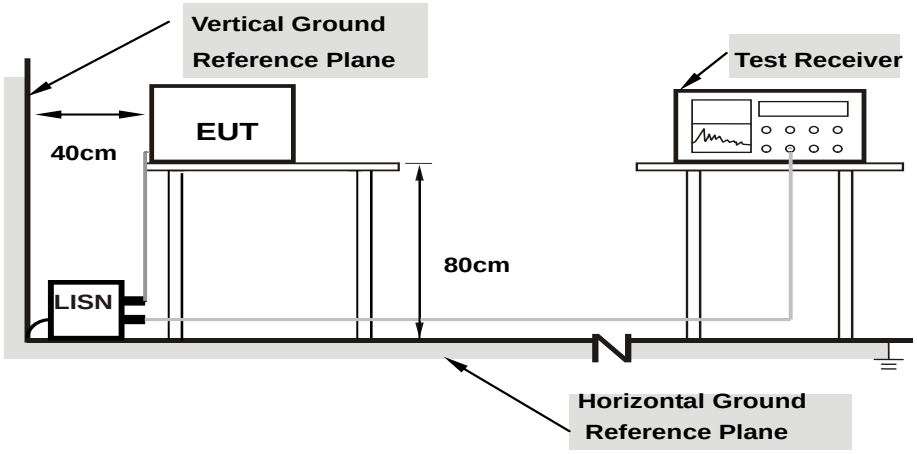
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

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 Condition

Same as 4.1.6.

4.2.7 Test Results

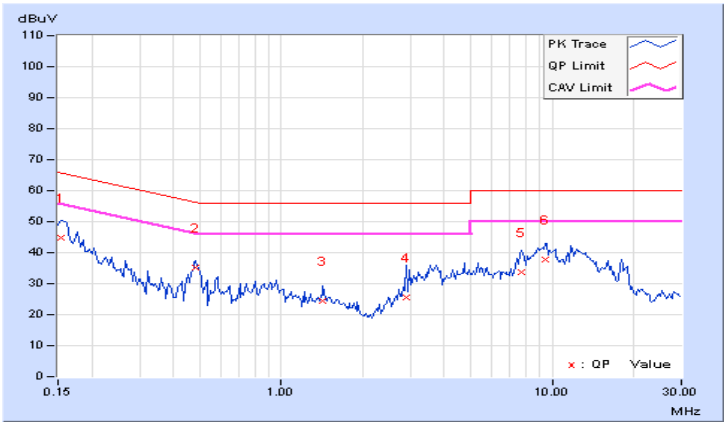
Radio 1

Phase	Line (L)	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	0.15391	10.19	34.53	22.78	44.72	32.97	65.79	55.79	-21.07	-22.82
2	0.48203	10.23	24.98	22.87	35.21	33.10	56.30	46.30	-21.09	-13.20
3	1.42969	10.25	14.27	9.46	24.52	19.71	56.00	46.00	-31.48	-26.29
4	2.90234	10.24	15.26	7.80	25.50	18.04	56.00	46.00	-30.50	-27.96
5	7.71484	10.43	23.25	17.84	33.68	28.27	60.00	50.00	-26.32	-21.73
6	9.46875	10.52	27.43	22.53	37.95	33.05	60.00	50.00	-22.05	-16.95

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.

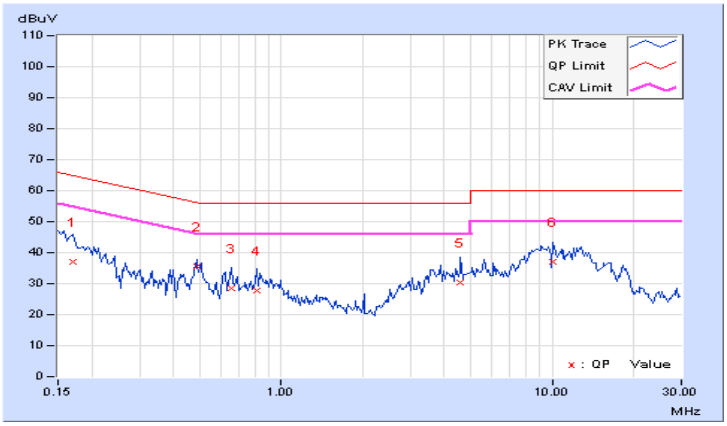


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16953	10.17	26.75	7.73	36.92	17.90	64.98	54.98	-28.06	-37.08
2	0.48594	10.21	25.32	22.00	35.53	32.21	56.24	46.24	-20.71	-14.03
3	0.65391	10.22	18.15	10.19	28.37	20.41	56.00	46.00	-27.63	-25.59
4	0.81016	10.22	17.47	12.02	27.69	22.24	56.00	46.00	-28.31	-23.76
5	4.59375	10.19	20.33	14.05	30.52	24.24	56.00	46.00	-25.48	-21.76
6	10.08984	10.50	26.68	21.49	37.18	31.99	60.00	50.00	-22.82	-18.01

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.



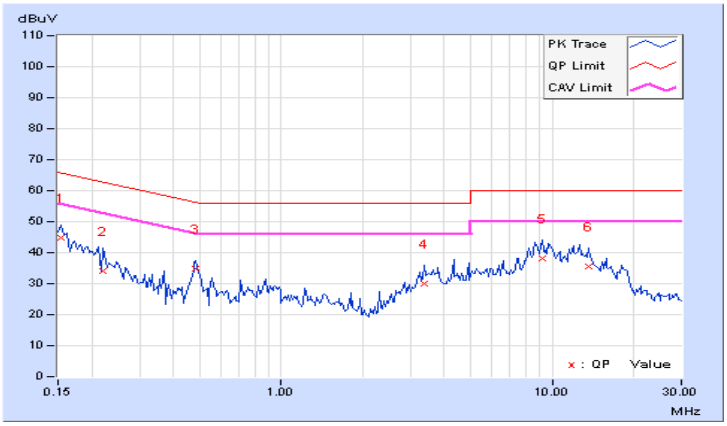
Radio 2

Phase	Line (L)	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	0.15391	10.19	34.70	22.80	44.89	32.99	65.79	55.79	-20.90	-22.80
2	0.22031	10.19	23.70	6.11	33.89	16.30	62.81	52.81	-28.92	-36.51
3	0.48203	10.23	24.74	22.55	34.97	32.78	56.30	46.30	-21.33	-13.52
4	3.37891	10.24	19.61	10.76	29.85	21.00	56.00	46.00	-26.15	-25.00
5	9.15625	10.51	27.72	22.30	38.23	32.81	60.00	50.00	-21.77	-17.19
6	13.64063	10.91	24.54	19.56	35.45	30.47	60.00	50.00	-24.55	-19.53

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.

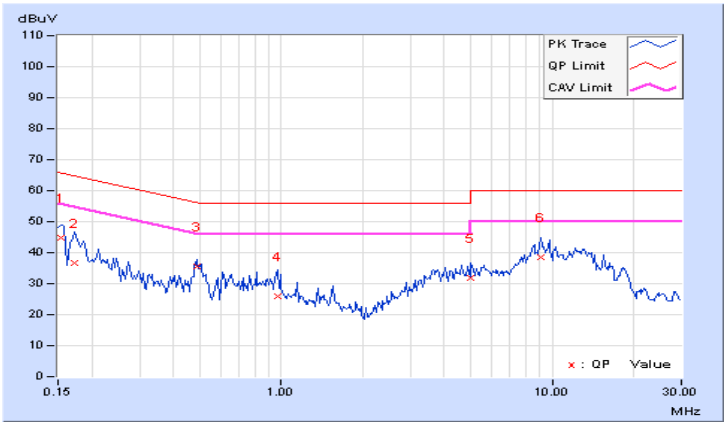


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15391	10.18	34.58	25.03	44.76	35.21	65.79	55.79	-21.03	-20.58
2	0.17344	10.17	26.34	9.21	36.51	19.38	64.79	54.79	-28.28	-35.41
3	**0.48594**	**10.21**	**25.36**	**23.26**	**35.57**	**33.47**	**56.24**	**46.24**	**-20.67**	**-12.77**
4	0.97031	10.23	15.56	10.92	25.79	21.15	56.00	46.00	-30.21	-24.85
5	5.03125	10.22	21.60	16.43	31.82	26.65	60.00	50.00	-28.18	-23.35
6	9.05078	10.44	28.09	22.96	38.53	33.40	60.00	50.00	-21.47	-16.60

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 Measurment

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)

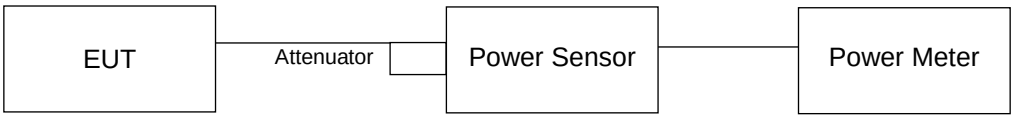
*B is the 26 dB emission bandwidth in megahertz

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



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Result

Radio 1

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	22.34	21.70	22.36	491.494	26.92	30.00	Pass
40	5200	23.27	22.71	23.75	636.099	28.04	30.00	Pass
48	5240	22.75	22.97	23.95	634.831	28.03	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	22.27	21.69	22.39	489.606	26.90	30.00	Pass
40	5200	23.12	22.68	23.61	620.084	27.92	30.00	Pass
48	5240	22.75	22.87	23.81	622.443	27.94	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	19.13	19.34	19.23	251.5	24.01	30.00	Pass
46	5230	22.75	22.92	24.10	641.289	28.07	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	18.19	17.74	18.33	193.423	22.87	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	22.27	21.69	22.39	489.606	26.90	28.11	Pass
40	5200	23.12	22.68	23.61	620.084	27.92	28.11	Pass
48	5240	22.75	22.87	23.81	622.443	27.94	28.11	Pass

NOTE: Directional gain = 3.12dBi + 10log(3) = 7.89dBi > 6dBi , so the power limit shall be reduced to 30-(7.89-6) = 28.11dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	19.13	19.34	19.23	251.5	24.01	28.11	Pass
46	5230	22.75	22.92	24.10	641.289	28.07	28.11	Pass

NOTE: Directional gain = 3.12dBi + 10log(3) = 7.89dBi > 6dBi , so the power limit shall be reduced to 30-(7.89-6) = 28.11dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	18.19	17.74	18.33	193.423	22.87	28.11	Pass

NOTE: Directional gain = 3.12dBi + 10log(3) = 7.89dBi > 6dBi , so the power limit shall be reduced to 30-(7.89-6) = 28.11dBm.

Radio 2

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
149	5745	25.09	25.03	25.15	968.61	29.86	30.00	Pass
157	5785	25.32	24.86	25.22	979.264	29.91	30.00	Pass
165	5825	25.16	24.71	25.17	952.748	29.79	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
149	5745	25.07	24.93	25.16	960.633	29.83	30.00	Pass
157	5785	25.15	24.86	25.25	968.502	29.86	30.00	Pass
165	5825	25.17	24.76	25.21	959.972	29.82	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
151	5755	24.69	25.18	25.43	973.192	29.88	30.00	Pass
159	5795	24.63	25.01	25.36	950.917	29.78	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
155	5775	23.17	23.18	23.89	660.367	28.20	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
149	5745	24.27	24.19	24.25	795.796	29.01	29.03	Pass
157	5785	24.29	23.92	24.23	779.988	28.92	29.03	Pass
165	5825	24.22	23.96	24.25	779.2	28.92	29.03	Pass

NOTE: Directional gain = 2.2dBi + 10log(3) = 6.97dBi > 6dBi , so the power limit shall be reduced to 30-(6.97-6) = 29.03dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
151	5755	23.72	24.29	24.62	793.773	29.00	29.03	Pass
159	5795	23.54	24.12	24.41	760.228	28.81	29.03	Pass

NOTE: Directional gain = 2.2dBi + 10log(3) = 6.97dBi > 6dBi , so the power limit shall be reduced to 30-(6.97-6) = 29.03dBm.

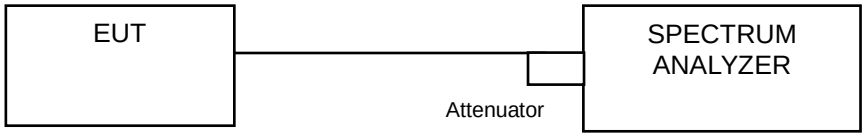
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
155	5775	23.17	23.18	23.89	660.367	28.20	29.03	Pass

NOTE: Directional gain = 2.2dBi + 10log(3) = 6.97dBi > 6dBi , so the power limit shall be reduced to 30-(6.97-6) = 29.03dBm.

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 SAMPLE. 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 Results

Radio 1

CDD Mode

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	17.04	17.04	17.28
40	5200	17.40	17.16	17.28
48	5240	17.28	17.16	17.16

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	18.24	18.12	18.12
40	5200	18.24	18.48	18.36
48	5240	18.24	18.24	18.12

802.11ac (VHT40)

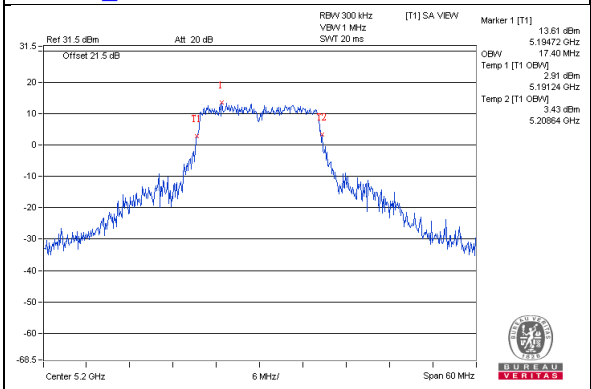
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
38	5190	36.72	36.72	36.72
46	5230	36.96	37.20	37.20

802.11ac (VHT80)

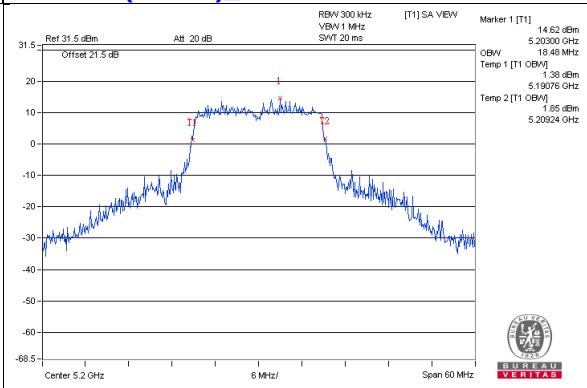
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
42	5210	75.36	74.88	75.36

Spectrum Plot of Worst Value

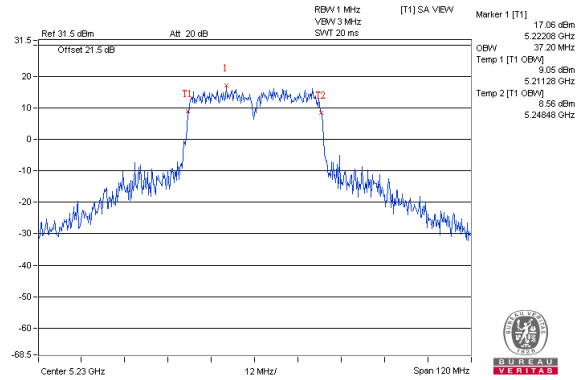
802.11a_Chain0 / CH40



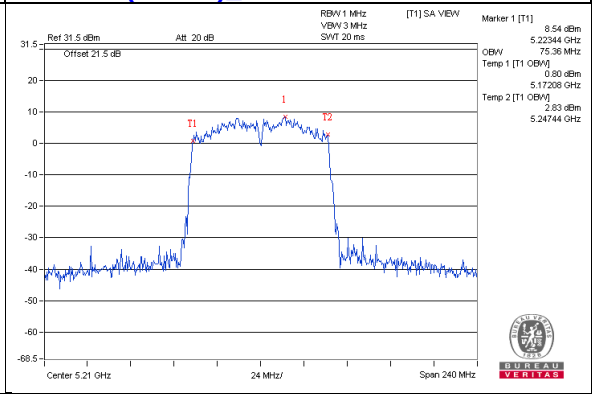
802.11ac (VHT20)_Chain1 / CH40



802.11ac (VHT40)_Chain1 / CH46



802.11ac (VHT80)_Chain0 / CH42



Radio 2

CDD Mode

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
149	5745	17.28	17.04	17.64
157	5785	17.16	17.04	17.40
165	5825	17.28	17.16	17.16

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
149	5745	18.36	18.00	18.48
157	5785	18.12	18.24	18.24
165	5825	18.12	18.36	18.36

802.11ac (VHT40)

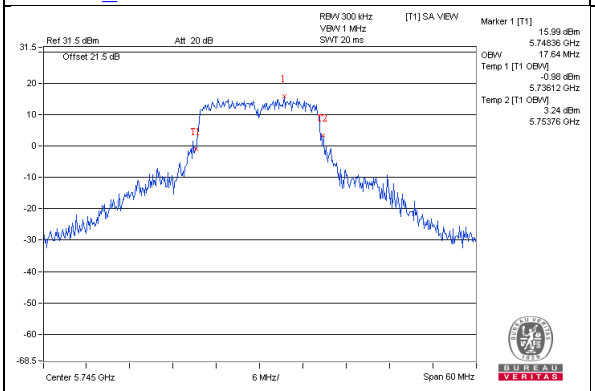
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
151	5755	37.20	36.96	37.44
159	5795	36.96	37.20	36.96

802.11ac (VHT80)

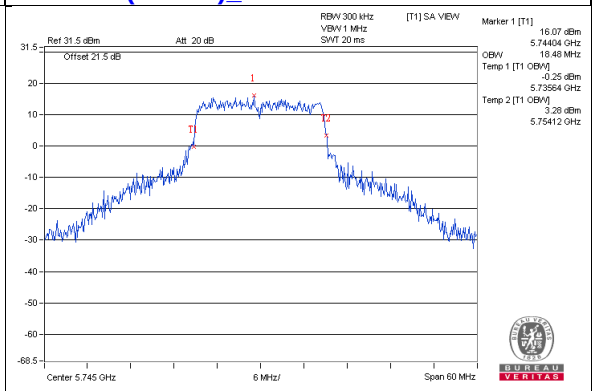
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
155	5775	76.32	76.32	76.32

Spectrum Plot of Worst Value

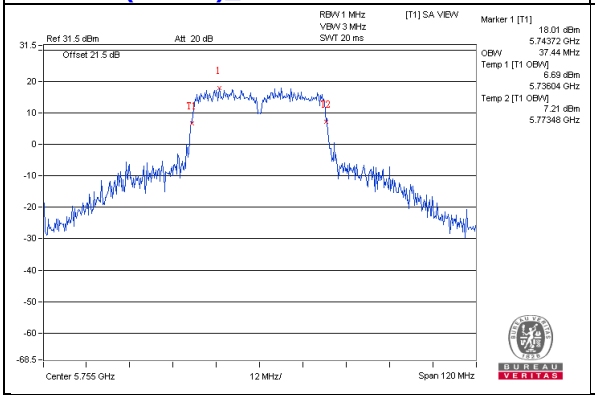
802.11a_Chain2 / CH149



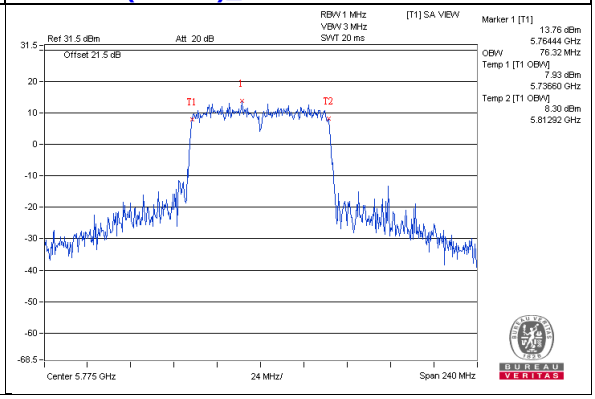
802.11ac (VHT20)_Chain2 / CH149



802.11ac (VHT40)_Chain2 / CH151

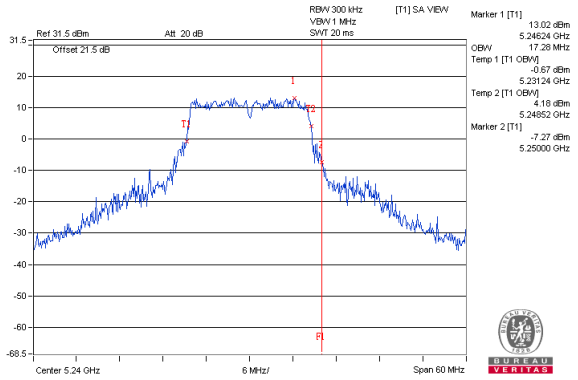


802.11ac (VHT80)_Chain0 / CH155

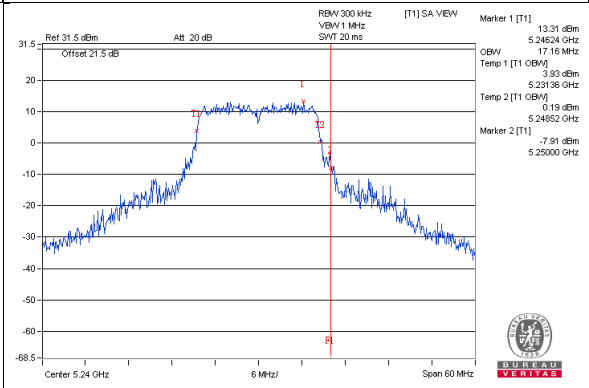


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

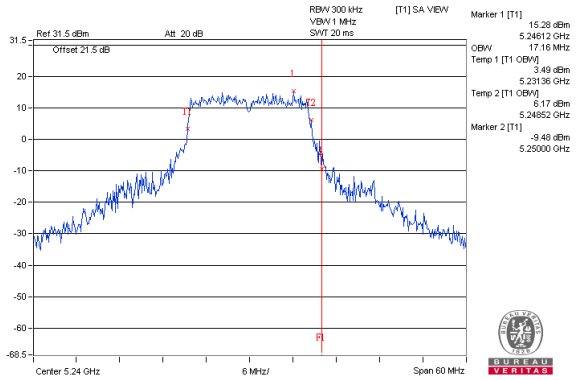
802.11a_Chain0 / CH48



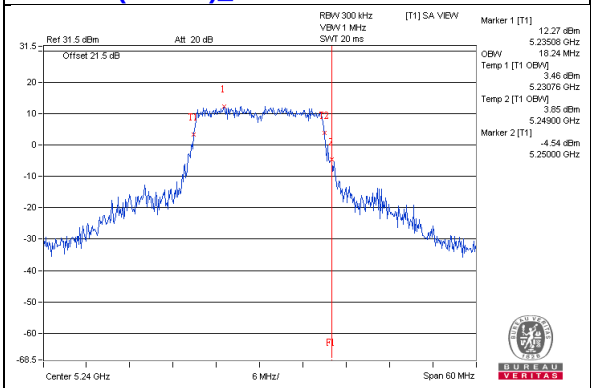
802.11a_Chain1 / CH48



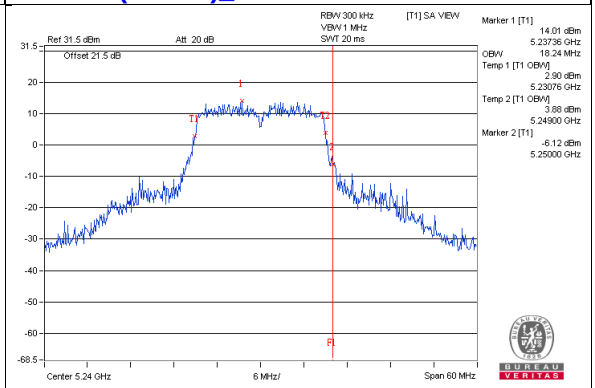
802.11a_Chain2 / CH48



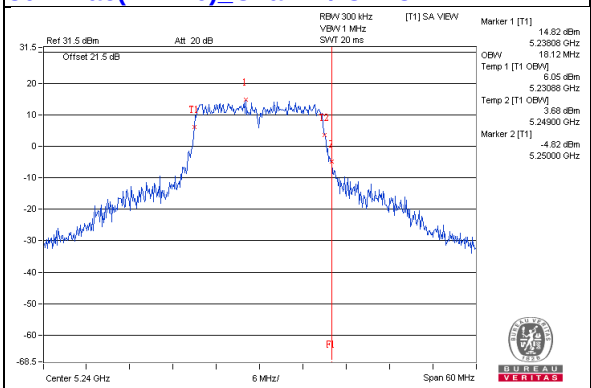
802.11ac(VHT20)_Chain0 / CH48



802.11ac(VHT20)_Chain1 / CH48

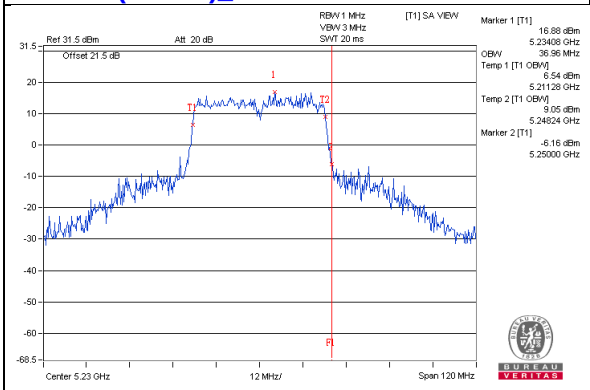


802.11ac(VHT20)_Chain2 / CH48

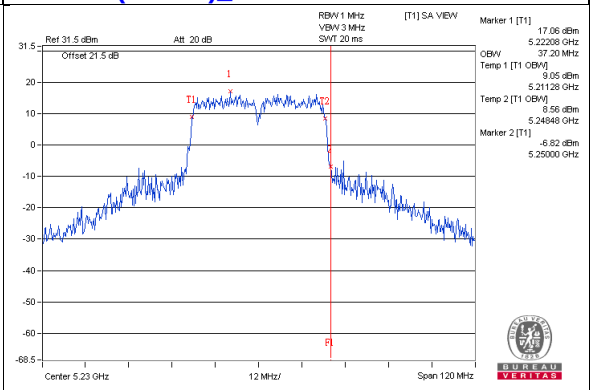


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

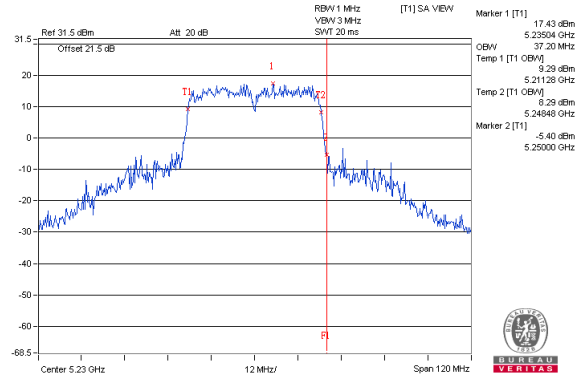
802.11ac(VHT40)_Chain0 / CH46



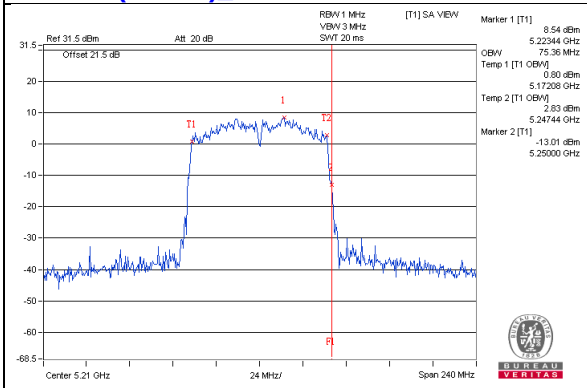
802.11ac(VHT40)_Chain1 / CH46



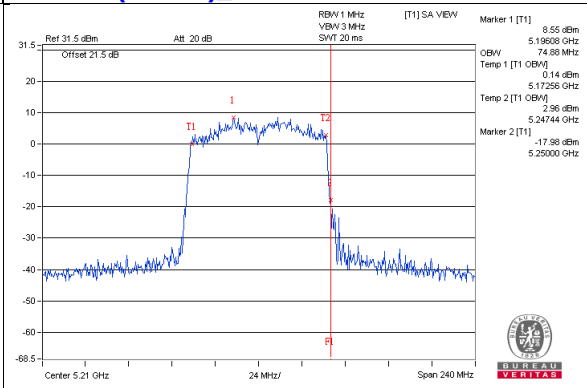
802.11ac(VHT40)_Chain2 / CH46



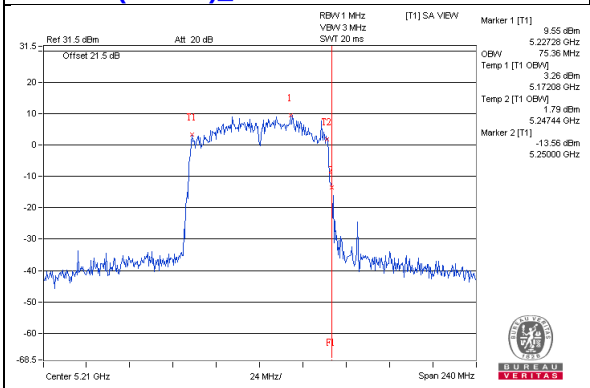
802.11ac(VHT80)_Chain0 / CH42



802.11ac(VHT80)_Chain1 / CH42

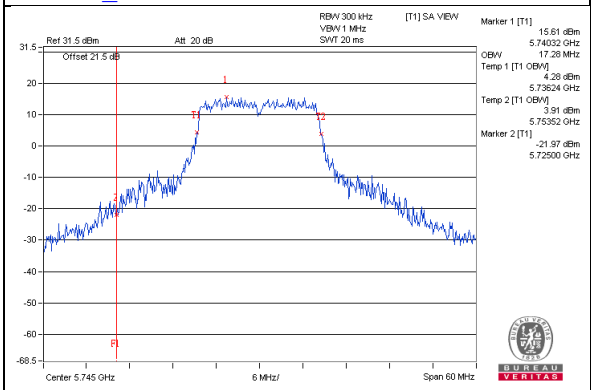


802.11ac(VHT80)_Chain2 / CH42

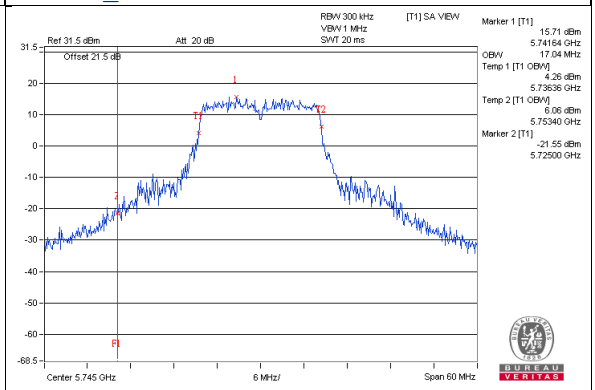


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

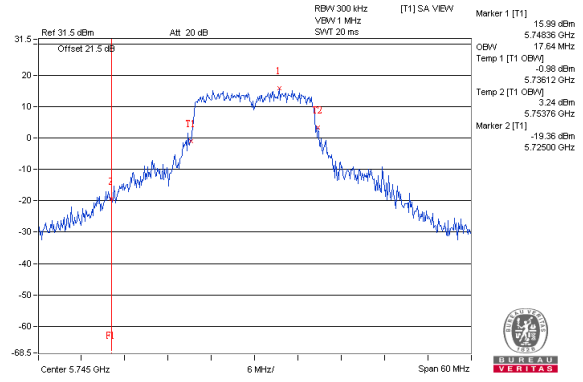
802.11a_Chain0 / CH149



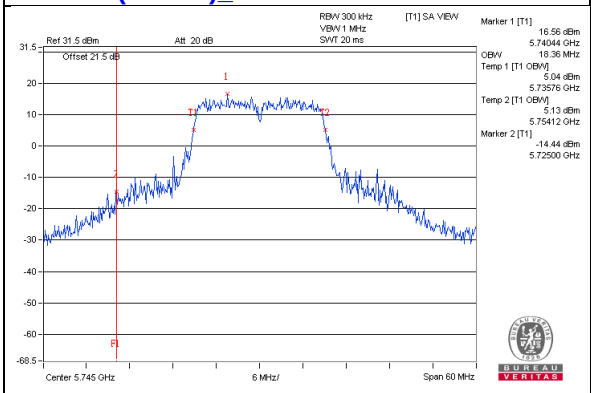
802.11a_Chain1 / CH149



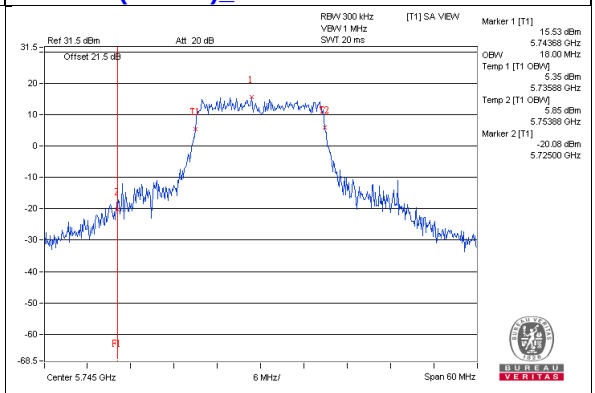
802.11a_Chain2 / CH149



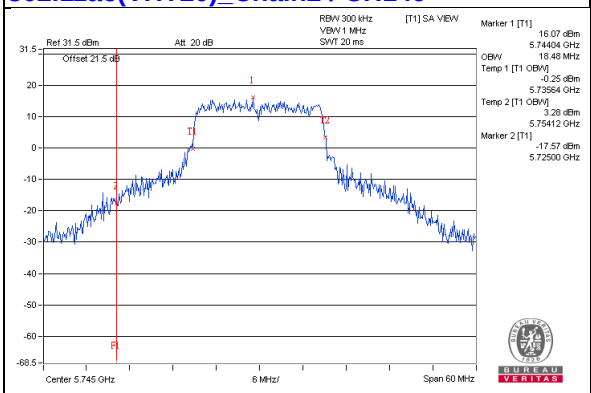
802.11ac(VHT20)_Chain0 / CH149



802.11ac(VHT20)_Chain1 / CH149

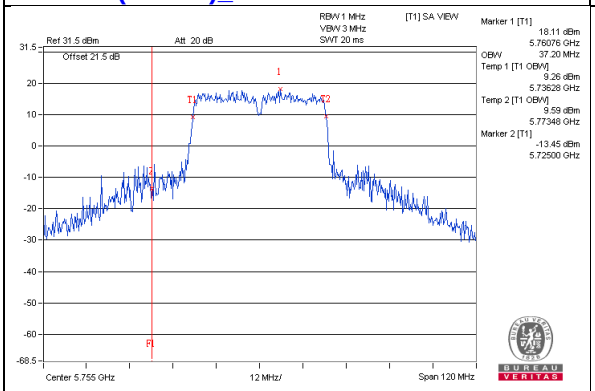


802.11ac(VHT20)_Chain2 / CH149

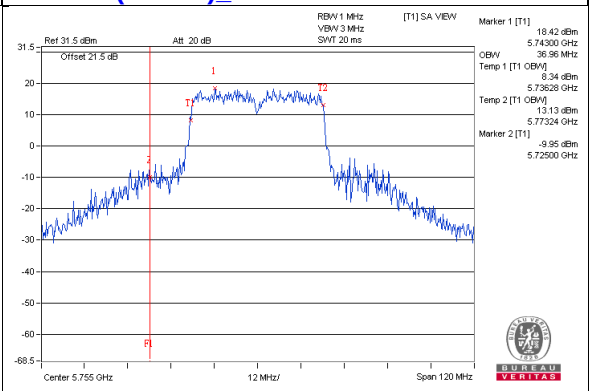


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

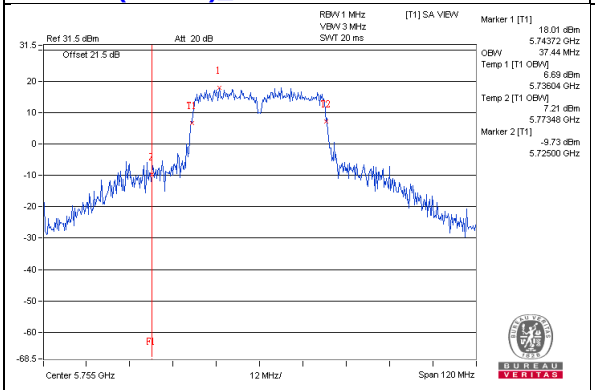
802.11ac(VHT40)_Chain0 / CH151



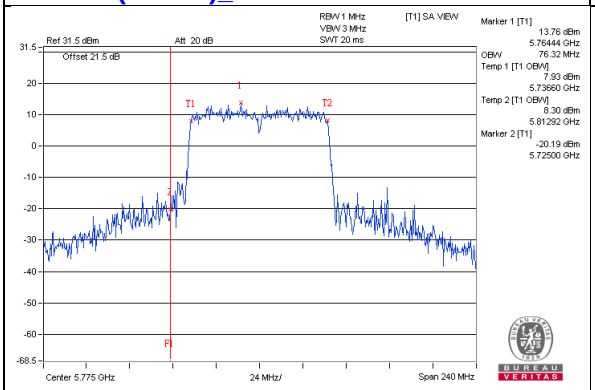
802.11ac(VHT40)_Chain1 / CH151



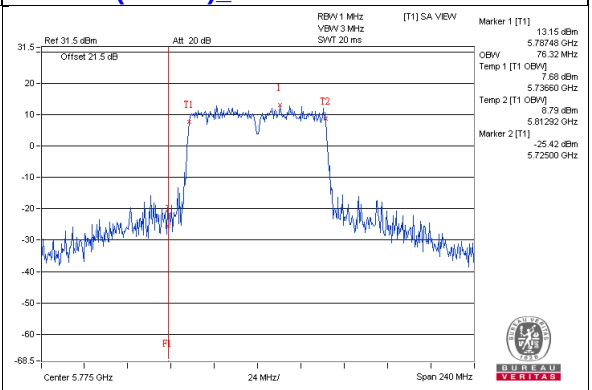
802.11ac(VHT40)_Chain2 / CH151



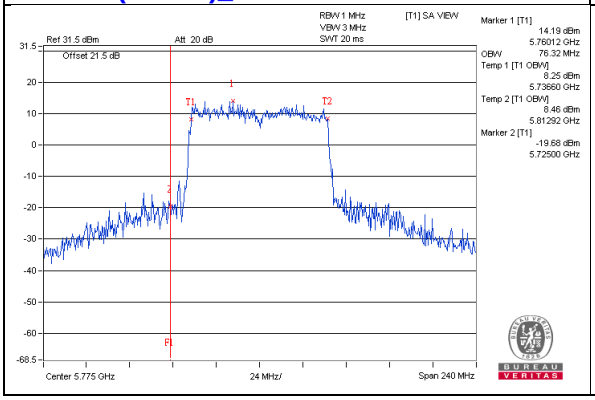
802.11ac(VHT80)_Chain0 / CH155



802.11ac(VHT80)_Chain1 / CH155



802.11ac(VHT80)_Chain2 / CH155

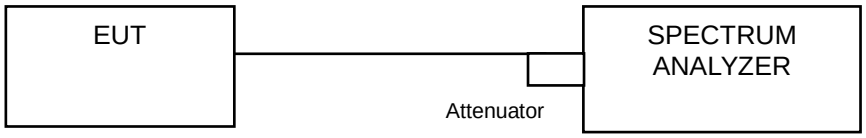


4.5 Peak Power Spectral Density Measurement

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 Procedure

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

For U-NII-1:

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

For U-NII-3:

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/300kHz)
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

802.11ac (VHT80)

For U-NII-1:

Using method SA-2

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

For U-NII-3:

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/300kHz)
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 Condition

Same as Item 4.3.6.

4.5.7 Test Results

For U-NII-1:

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)			Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
36	5180	8.35	7.57	8.45	12.91	15.11	Pass
40	5200	10.07	9.64	10.53	14.87	15.11	Pass
48	5240	9.82	9.83	10.58	14.86	15.11	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. Directional gain = 3.12dBi + 10log(3) = 7.89dBi > 6dBi, so the power density limit shall be reduced to 17-(7.89-6) = 15.11dBm.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)			Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
36	5180	8.34	7.48	8.46	12.89	15.11	Pass
40	5200	10.09	9.72	10.46	14.87	15.11	Pass
48	5240	9.60	9.89	10.80	14.90	15.11	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. Directional gain = 3.12dBi + 10log(3) = 7.89dBi > 6dBi, so the power density limit shall be reduced to 17-(7.89-6) = 15.11dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)			Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
38	5190	2.29	2.17	2.35	7.04	15.11	Pass
46	5230	6.24	5.98	7.02	11.21	15.11	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. Directional gain = 3.12dBi + 10log(3) = 7.89dBi > 6dBi, so the power density limit shall be reduced to 17-(7.89-6) = 15.11dBm.

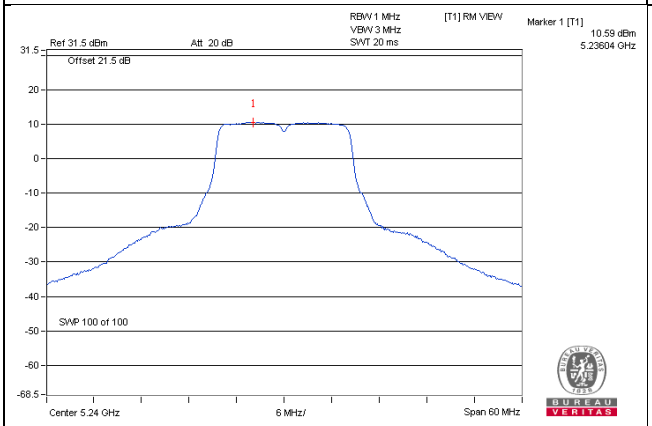
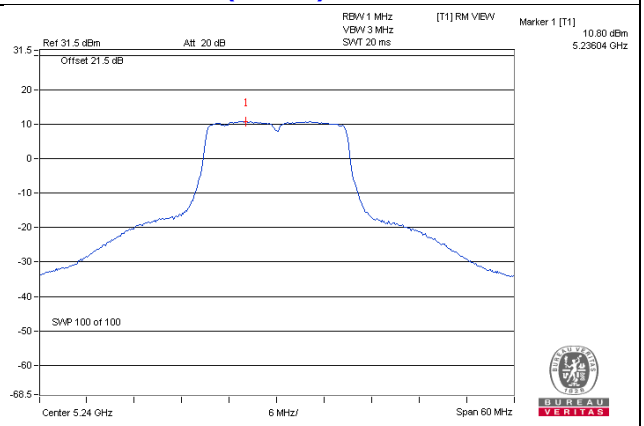
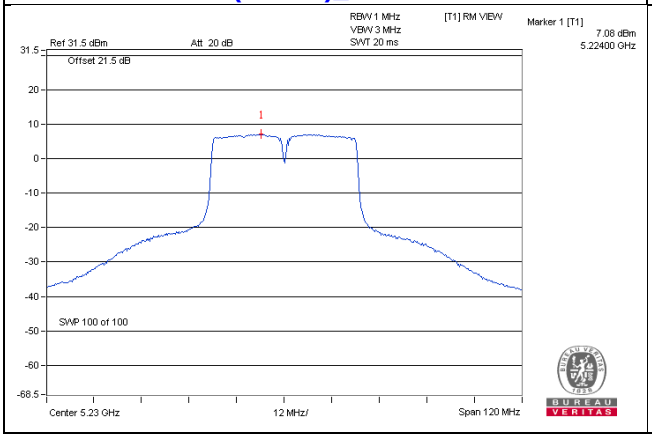
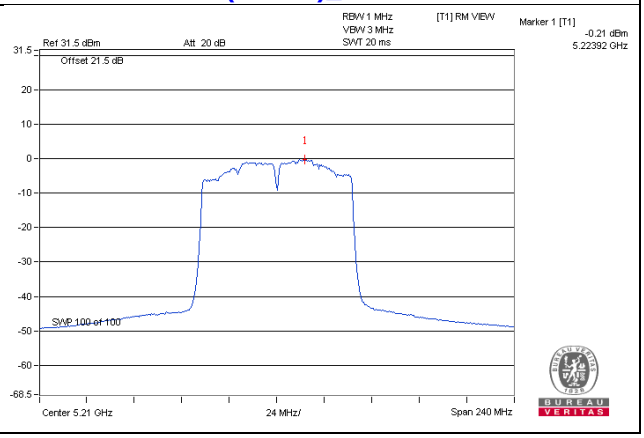
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)			Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	-0.58	-1.03	-0.32	0.27	4.41	15.11	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. Directional gain = 3.12dBi + 10log(3) = 7.89dBi > 6dBi, so the power density limit shall be reduced to 17-(7.89-6) = 15.11dBm.

3. Refer to section 3.3 for duty cycle spectrum plot

Spectrum Plot of Worst Value	
802.11a_Chain 2 / CH48	**802.11ac (VHT20)_Chain 2 / CH48**
	
802.11ac (VHT40)_Chain 2 / CH46	**802.11ac (VHT80)_Chain 2 / CH42**
	

For U-NII-3:

CDD Mode

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	3.45	5.67	4.77	10.44	29.03	Pass
	157	5785	3.43	5.65	4.77	10.42	29.03	Pass
	165	5825	3.31	5.53	4.77	10.30	29.03	Pass
1	149	5745	3.32	5.54	4.77	10.31	29.03	Pass
	157	5785	3.08	5.30	4.77	10.07	29.03	Pass
	165	5825	2.89	5.11	4.77	9.88	29.03	Pass
2	149	5745	3.73	5.95	4.77	10.72	29.03	Pass
	157	5785	3.78	6.00	4.77	10.77	29.03	Pass
	165	5825	3.33	5.55	4.77	10.32	29.03	Pass

Note: 1. Directional gain = 2.2dBi + 10log(3) = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	3.14	5.36	4.77	10.13	29.03	Pass
	157	5785	3.20	5.42	4.77	10.19	29.03	Pass
	165	5825	3.06	5.28	4.77	10.05	29.03	Pass
1	149	5745	2.80	5.02	4.77	9.79	29.03	Pass
	157	5785	2.66	4.88	4.77	9.65	29.03	Pass
	165	5825	2.73	4.95	4.77	9.72	29.03	Pass
2	149	5745	3.19	5.41	4.77	10.18	29.03	Pass
	157	5785	3.67	5.89	4.77	10.66	29.03	Pass
	165	5825	3.38	5.60	4.77	10.37	29.03	Pass

Note: 1. Directional gain = 2.2dBi + 10log(3) = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.

802.11ac (VHT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	151	5755	-0.62	1.60	4.77	6.37	29.03	Pass
	159	5795	-0.55	1.67	4.77	6.44	29.03	Pass
1	151	5755	-0.20	2.02	4.77	6.79	29.03	Pass
	159	5795	-0.02	2.20	4.77	6.97	29.03	Pass
2	151	5755	-0.45	1.77	4.77	6.54	29.03	Pass
	159	5795	-0.66	1.56	4.77	6.33	29.03	Pass

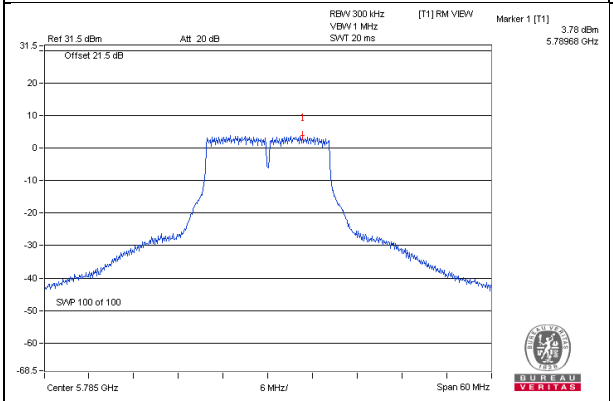
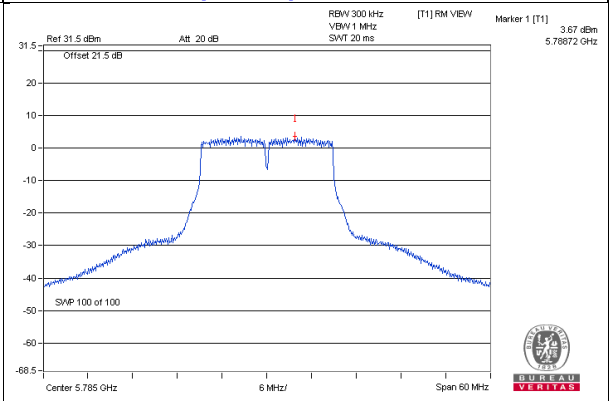
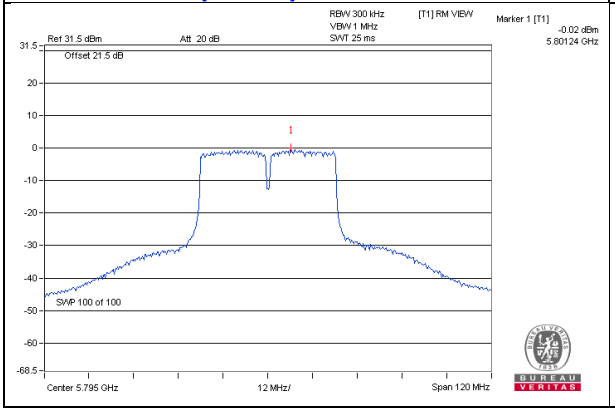
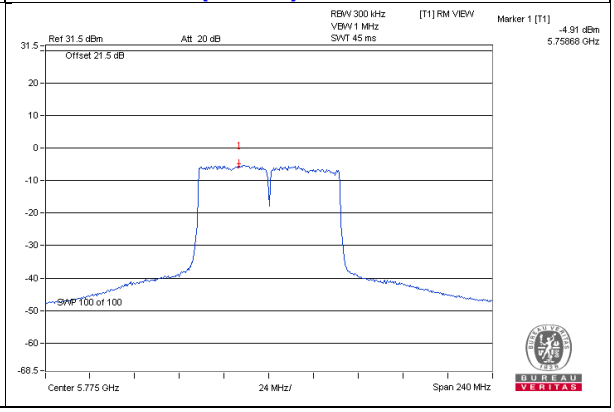
Note: 1. Directional gain = 2.2dBi + 10log(3) = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.

802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=3) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-5.03	-2.81	4.77	0.27	2.23	29.03	Pass
1	155	5775	-5.65	-3.43	4.77	0.27	1.61	29.03	Pass
2	155	5775	-4.91	-2.69	4.77	0.27	2.35	29.03	Pass

Note: 1. Directional gain = 2.2dBi + 10log(3) = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.

2. Refer to section 3.3 for duty cycle spectrum plot.

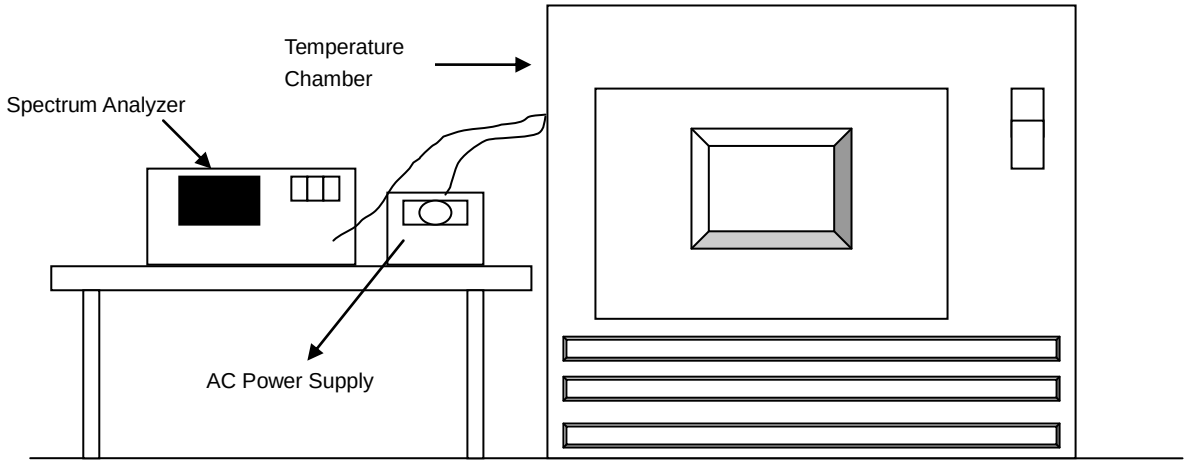
Spectrum Plot of Worst Value	
802.11a – Chain 2: CH 157	**802.11ac (VHT20) – Chain 2: CH 157**
	
802.11ac (VHT40) – Chain 1: CH 159	**802.11ac (VHT80) – Chain 2: CH 155**
	

4.6 Frequency Stability Measurement

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

Refer to section 4.1.2 to get information of above instrument.

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

Radio 1

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5180.0175	PASS	5180.0207	PASS	5180.0167	PASS	5180.0204	PASS
40	120	5179.9974	PASS	5179.9971	PASS	5179.9958	PASS	5179.9959	PASS
30	120	5179.9889	PASS	5179.9875	PASS	5179.9891	PASS	5179.9875	PASS
20	120	5180.0068	PASS	5180.0023	PASS	5180.0039	PASS	5180.0062	PASS
10	120	5179.9785	PASS	5179.9787	PASS	5179.9813	PASS	5179.9776	PASS
0	120	5180.018	PASS	5180.0164	PASS	5180.0208	PASS	5180.0184	PASS
-10	120	5180.0125	PASS	5180.0094	PASS	5180.008	PASS	5180.0088	PASS
-20	120	5179.9755	PASS	5179.9794	PASS	5179.9799	PASS	5179.9799	PASS
-30	120	5180.009	PASS	5180.01	PASS	5180.0101	PASS	5180.0089	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5180.0071	PASS	5180.0014	PASS	5180.0047	PASS	5180.0059	PASS
	120	5180.0068	PASS	5180.0023	PASS	5180.0039	PASS	5180.0062	PASS
	102	5180.0076	PASS	5180.0021	PASS	5180.0033	PASS	5180.0058	PASS

Radio 2

Frequency Stability Versus Temp.									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5745.0176	PASS	5745.0173	PASS	5745.0147	PASS	5745.0136	PASS
40	120	5744.9911	PASS	5744.9909	PASS	5744.9892	PASS	5744.9893	PASS
30	120	5745.0186	PASS	5745.0176	PASS	5745.0167	PASS	5745.0205	PASS
20	120	5745.0179	PASS	5745.0148	PASS	5745.0141	PASS	5745.0142	PASS
10	120	5745.0289	PASS	5745.0272	PASS	5745.0262	PASS	5745.0281	PASS
0	120	5744.9748	PASS	5744.979	PASS	5744.9782	PASS	5744.9801	PASS
-10	120	5744.9915	PASS	5744.9912	PASS	5744.9906	PASS	5744.9921	PASS
-20	120	5744.9939	PASS	5744.9926	PASS	5744.996	PASS	5744.9954	PASS
-30	120	5745.0111	PASS	5745.0155	PASS	5745.0135	PASS	5745.0131	PASS

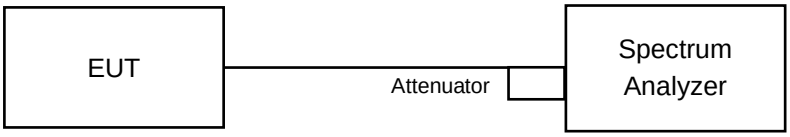
Frequency Stability Versus Voltage									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5745.0168	PASS	5745.015	PASS	5745.0133	PASS	5745.0136	PASS
	120	5745.0179	PASS	5745.0148	PASS	5745.0141	PASS	5745.0142	PASS
	102	5745.0188	PASS	5745.0146	PASS	5745.0137	PASS	5745.0152	PASS

4.7 6dB Bandwidth Measurment

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

CDD Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	16.45	16.43	16.44	0.5	PASS
157	5785	16.47	16.43	16.44	0.5	PASS
165	5825	16.47	16.43	16.45	0.5	PASS

802.11ac (VHT20)

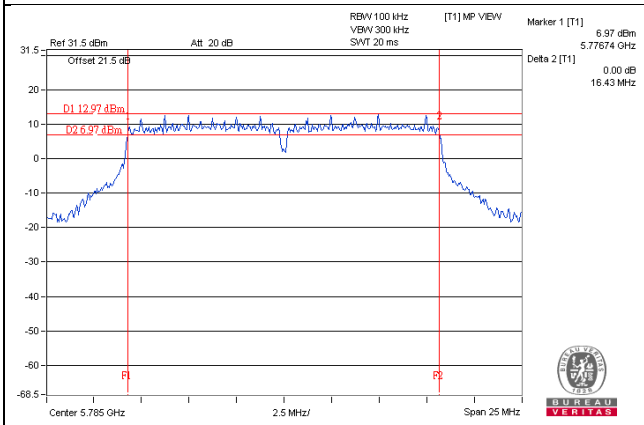
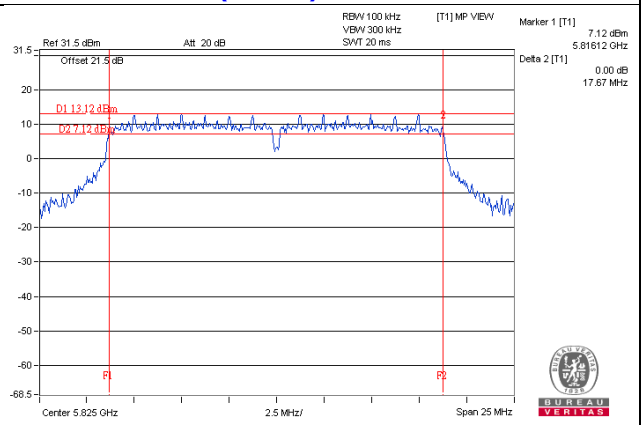
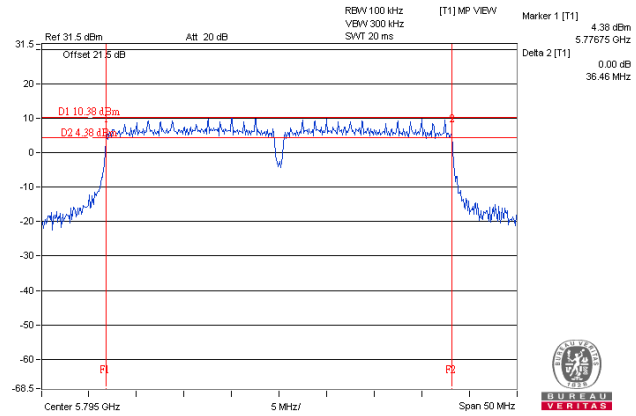
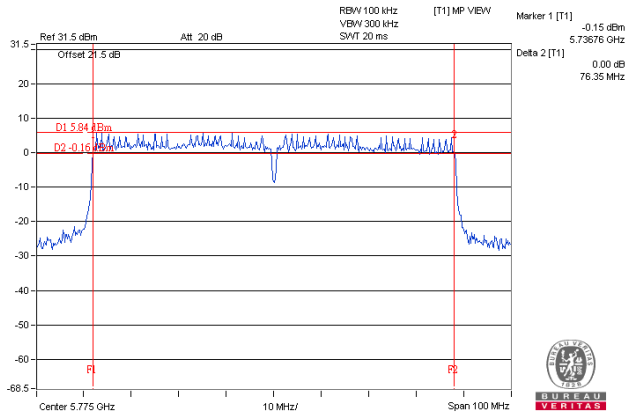
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.69	17.71	17.70	0.5	PASS
157	5785	17.68	17.70	17.67	0.5	PASS
165	5825	17.67	17.69	17.67	0.5	PASS

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	36.50	36.52	36.49	0.5	PASS
159	5795	36.46	36.49	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		
155	5775	76.51	76.58	76.35	0.5	PASS

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH149	**802.11ac (VHT20)_Chain 0 / CH165**
	
802.11ac (VHT40)_Chain 0 / CH159	**802.11ac (VHT80)_Chain 2 / CH155**
	

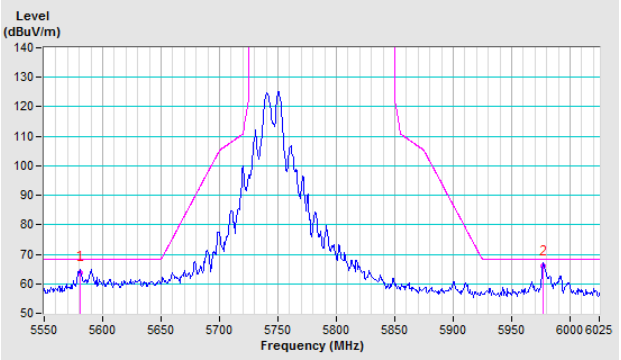
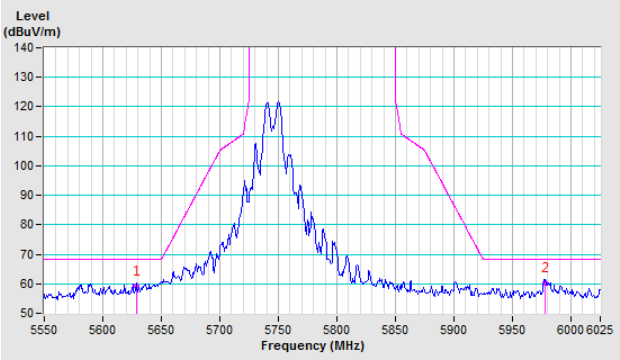
5 Pictures of Test Arrangements

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

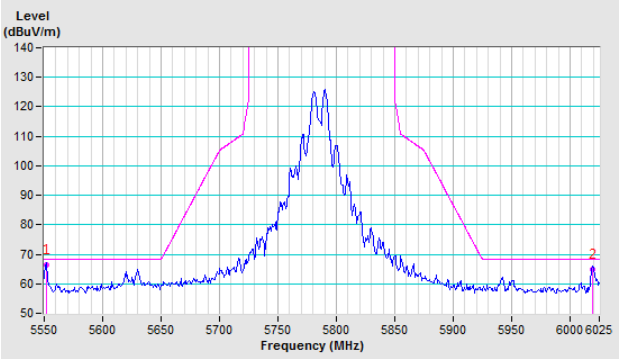
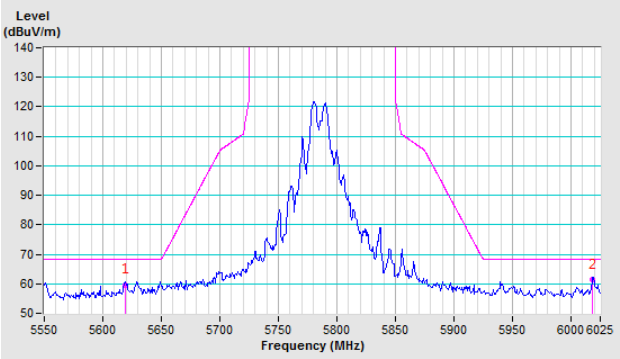
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

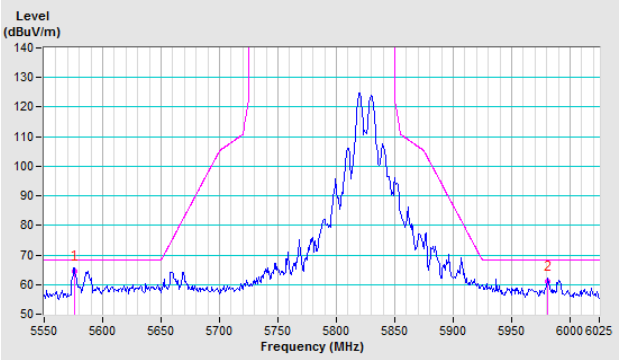
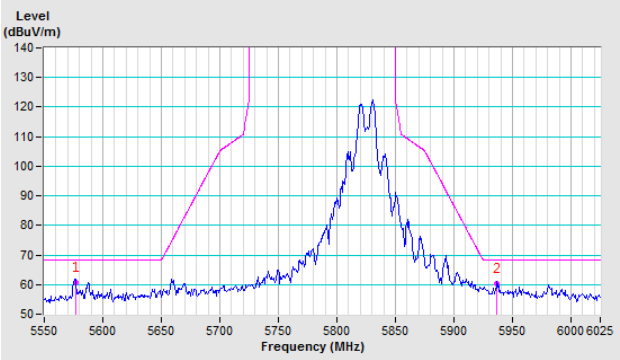
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

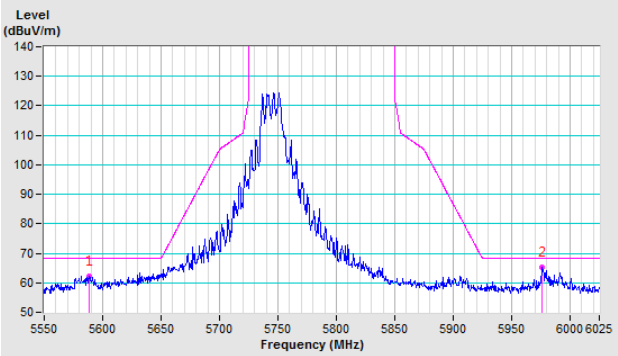
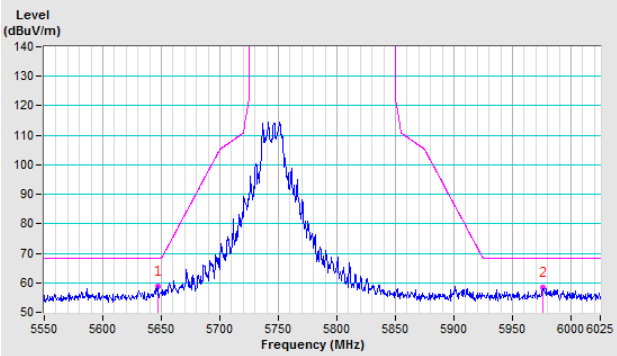
Horizontal	Vertical
	

CH 165 5825 MHz

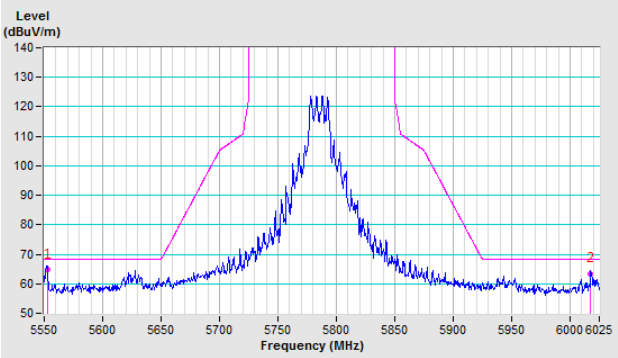
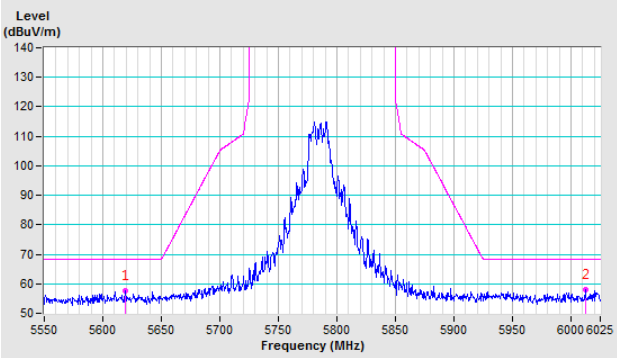
Horizontal	Vertical
	

802.11ac (VHT20)

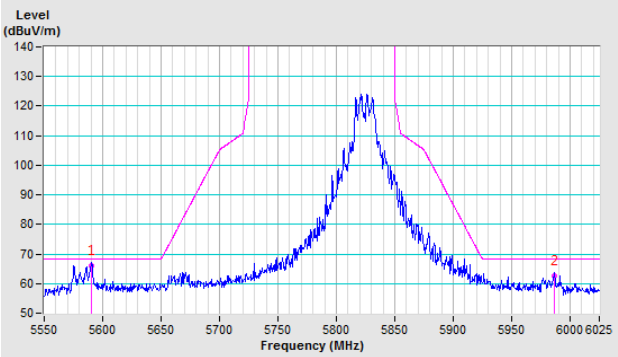
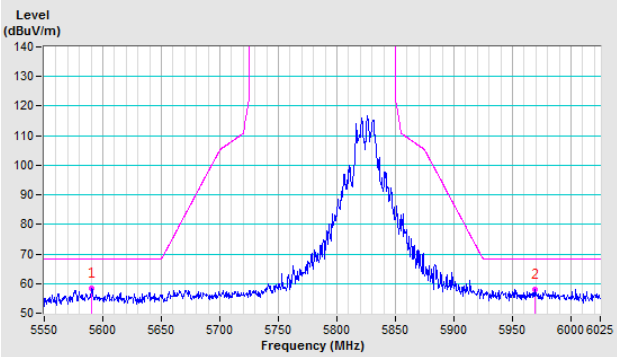
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

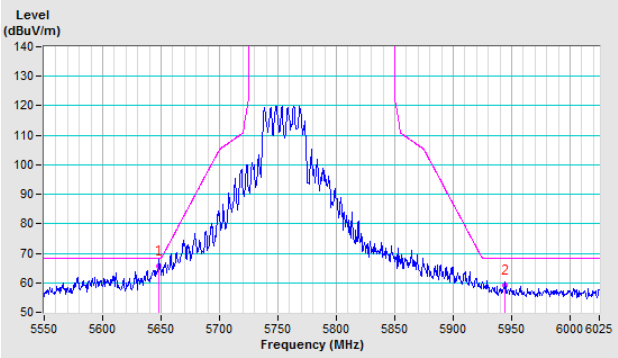
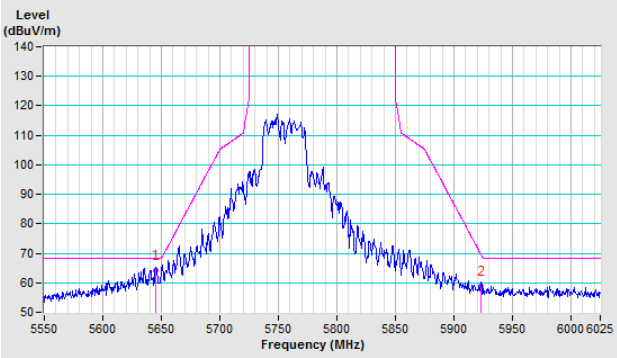
Horizontal	Vertical
	

CH 165 5825 MHz

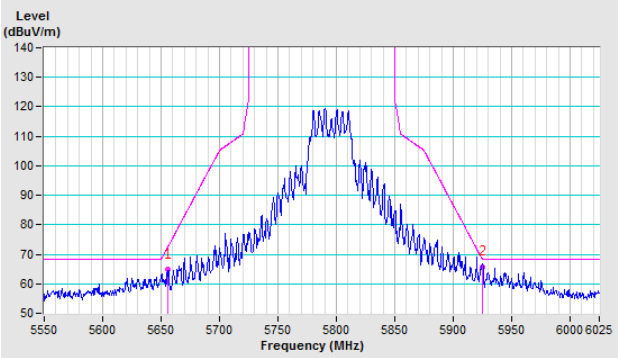
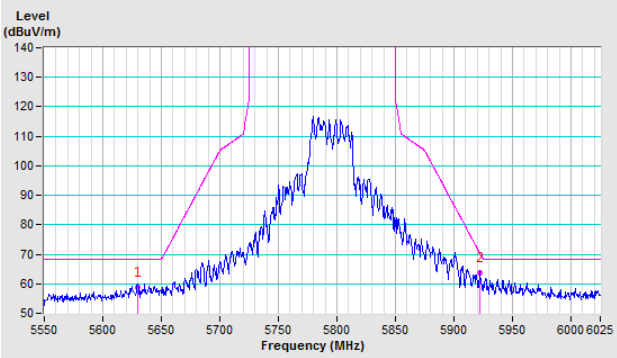
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

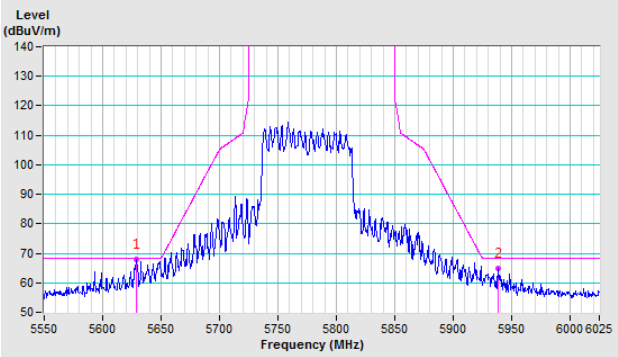
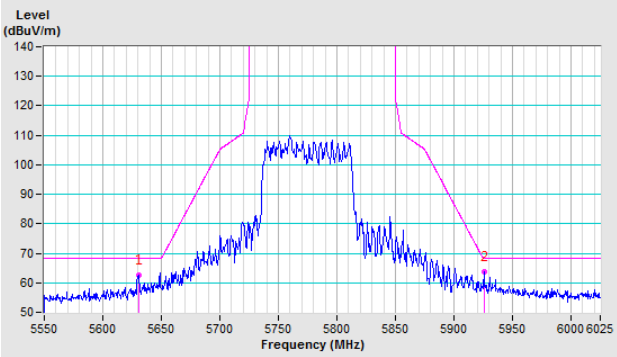
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

802.11ac (VHT80)

CH 155 5775 MHz

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 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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