FCC Test Report

Report No.:	RF180330E07
FCC ID:	PY318100409
Test Model:	C6300v2
Received Date:	Mar. 30, 2018
Test Date:	Apr. 11 to May 02, 2018
Issued Date:	May 11, 2018
Applicant:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch 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.
FCC Registration / Designation Number:	723255 / TW2022 for Test Location (1) 736135 / TW0004 for Test Location (2)

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Release Control Record

Issue No.	Description	Date Issued
RF180330E07	Original release.	May 11, 2018

1 Certificate of Conformity

Product:	AC 1750 Wireless Cable Gateway
Brand:	NETGEAR
Test Model:	C6300v2
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR, Inc.
Test Date:	Apr. 11 to May 02, 2018
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:** May 11, 2018

Wendy Wu / Specialist

Approved by : _____ , **Date:** May 11, 2018

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 -6.57dB at 0.32188MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5150.00MHz, 17475.00MHz.
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	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.19 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	AC 1750 Wireless Cable Gateway
Brand	NETGEAR
Test Model	C6300v2
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
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): 11 802.11n (HT40): 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:** **1TX Mode:**558.47mW **CDD Mode:** 975.119mW **Beamforming Mode:** 993.724mW **5GHz:** **CDD Mode:** **5.18 ~ 5.24GHz:** 906.062mW **5.745 ~ 5.825GHz:** 688.966mW **Beamforming Mode:** **5.18 ~ 5.24GHz:** 937.444mW **5.745 ~ 5.825GHz:** 720.127mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	NA

Note:

1. Simultaneously transmission condition.

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

2. The EUT must be supplied power adapter and following different models could be chosen as following table:

No.	Brand	Model No.	P/N	Spec.
1	Netgear	2ABN042F1 NJ	332-10951-01	Input: 100-240Vac, 1.0A, 50/60Hz Output: 12V, 3.5A DC Output cable: Unshielded, 1.8m
2	Netgear	AD2080F10	332-10875-01	Input: 100-240Vac, 1.0A, 50/60Hz Output: 12V, 3.5A DC Output cable: Unshielded, 1.8m
From the above adapters, the worse radiated emissions was found in Adapter 1. Therefore only the test data of the mode was recorded in this report.				

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

Frequency Range (GHz)	Directional Antenna Gain (dBi)
2.4~2.4835	5.76
5.15~5.25	6.20
5.725~5.85	6.20

4. The EUT incorporates a MIMO function:

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	1TX diversity	1RX diversity
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
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 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.
3. 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)

5. 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	
1	√	√	√	√	Power from adapter 1
2	-	-	√	-	Power from adapter 2

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

Radiated Emission Test (Above 1GHz):

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

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

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
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.

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT20)	5180-5240 5745-5825	36 to 48 149 to 165	40	OFDM	BPSK	6.5

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.

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT20)	5180-5240 5745-5825	36 to 48 149 to 165	40	OFDM	BPSK	6.5

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.

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
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
Beamforming Mode						
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
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

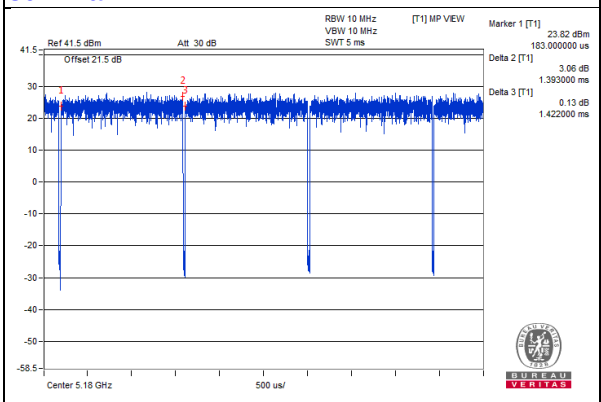
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	23deg. C, 70%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	22deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
PLC	25deg. C, 68%RH	120Vac, 60Hz	David Chuang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

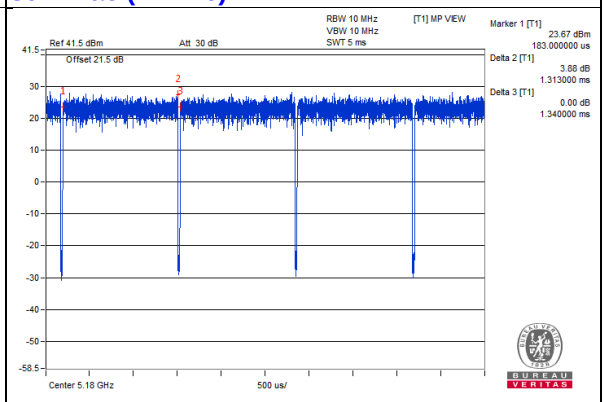
3.3 Duty Cycle of Test Signal

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 = 1.393 ms/1.422 ms = 0.98
802.11ac (VHT20): Duty cycle = 1.313 ms/1.34 ms = 0.98
802.11ac (VHT40): Duty cycle = 0.656 ms/0.682 ms = 0.962, Duty factor = 10 * log(1/0.962) = 0.17
802.11ac (VHT80): Duty cycle = 0.324 ms/0.35 ms = 0.926, Duty factor = 10 * log(1/0.926) = 0.34

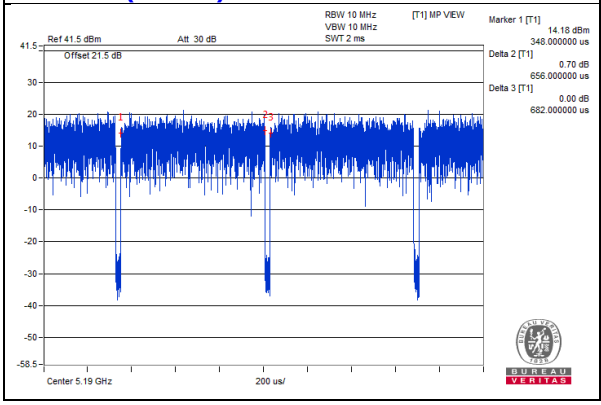
802.11a



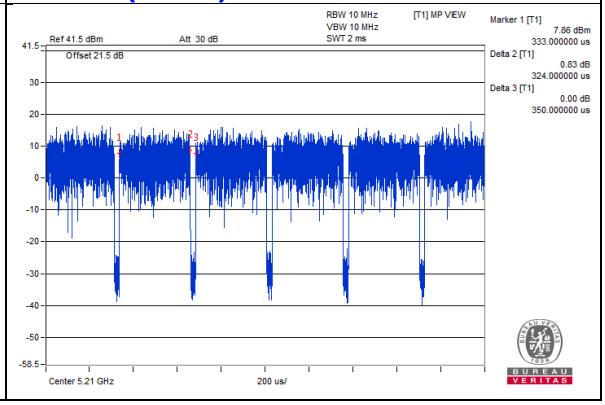
802.11ac (VHT20)



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	E6420	B92T3R1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	iPod	Apple	MC749TA/A	CC4DN29UDFDM	NA	Provided by Lab

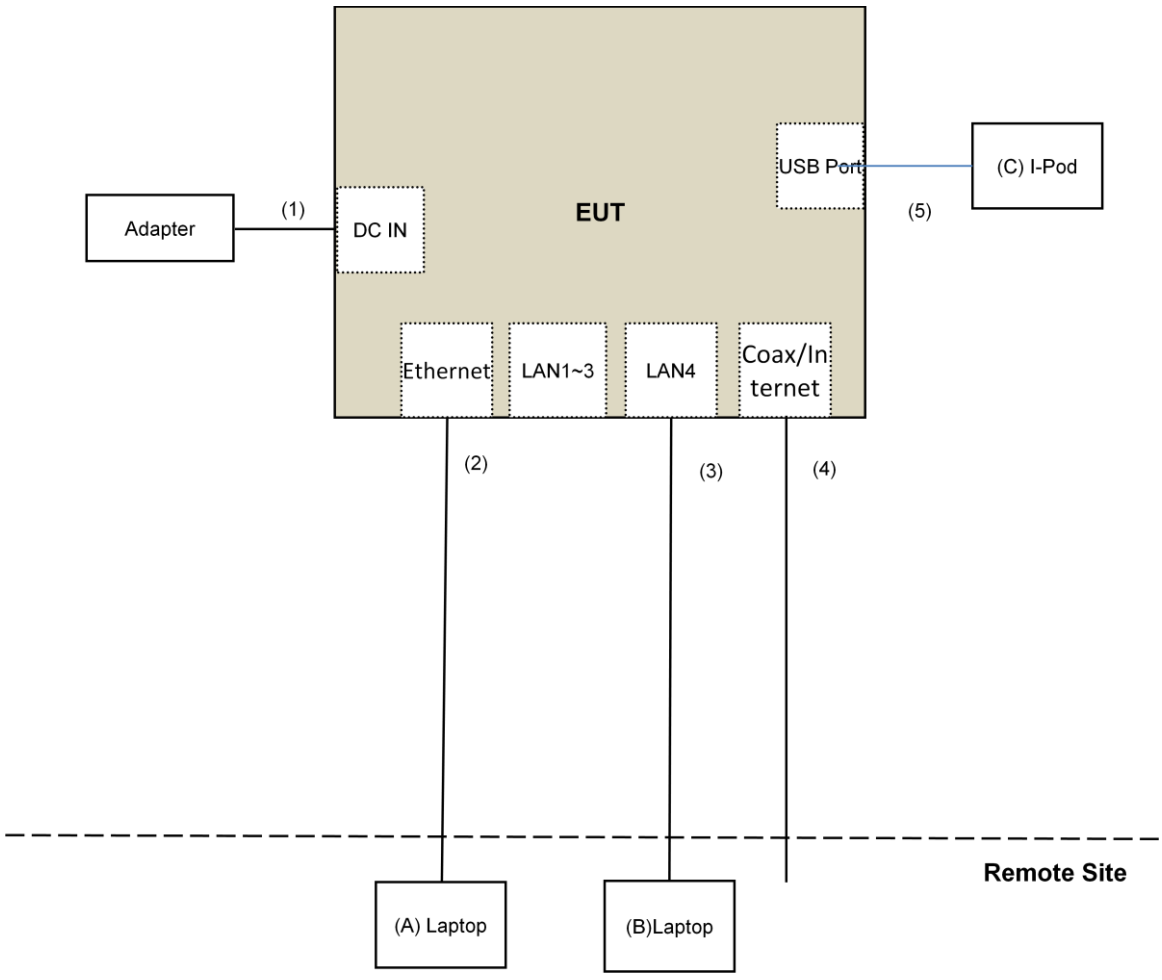
Note:

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.	Coaxial Cable	1	10	Yes	0	Provided by Lab
5.	USB Cable	1	0.1	Yes	0	Provided by Lab

Note: The core(s) is(are) originally attached to the cable(s).

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

<table>
<tr><td colspan="2">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="2" rowspan="2">789033 D02 General UNII Test Procedure New Rules v02r01</td><td colspan="2">Field Strength at 3m</td></tr>
<tr><td>PK:74 (dBμV/m)</td><td>AV:54 (dBμV/m)</td></tr>
<tr><td>Frequency Band</td><td colspan="2">Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3m</td></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK:-27 (dBm/MHz)</td><td rowspan="3">PK:68.2(dBμV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☒</td><td>15.407(b)(4)(i)</td><td>PK:-27 (dBm/MHz) *1
PK:10 (dBm/MHz) *2
PK:15.6 (dBm/MHz) *3
PK:27 (dBm/MHz) *4</td><td>PK: 68.2(dBμV/m) *1
PK:105.2 (dBμV/m) *2
PK: 110.8(dBμV/m) *3
PK:122.2 (dBμV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="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 Agilent	N9038A	MY50010156	July 12, 2017	July 11, 2018
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 06, 2017	May 05, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-3-1 966-3-2 966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160922 150317 150322	Jan. 29, 2018	Jan. 28, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 25, 2017	July 24, 2018
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160924	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Spectrum Analyzer R&S	FSv40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 10, 2018	Jan. 09, 2019
True RMS Clamp Meter FLUKE	325	31130711WS	May 29, 2017	May 28, 2018

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The 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. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Apr. 11 to May 02, 2018

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

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

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

NOTE:

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

For Radiated emission above 30MHz

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

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

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

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

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

f. The test-receiver system was set to peak and average detects 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:

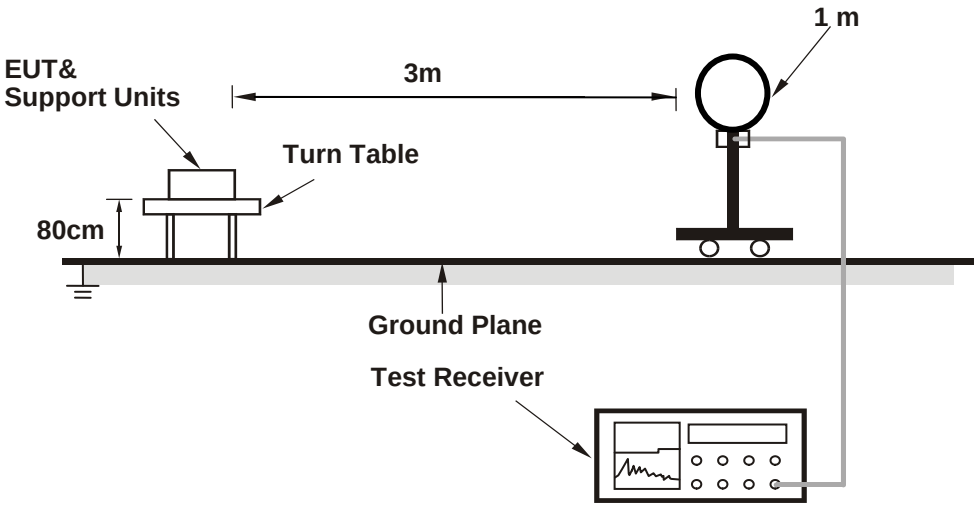
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

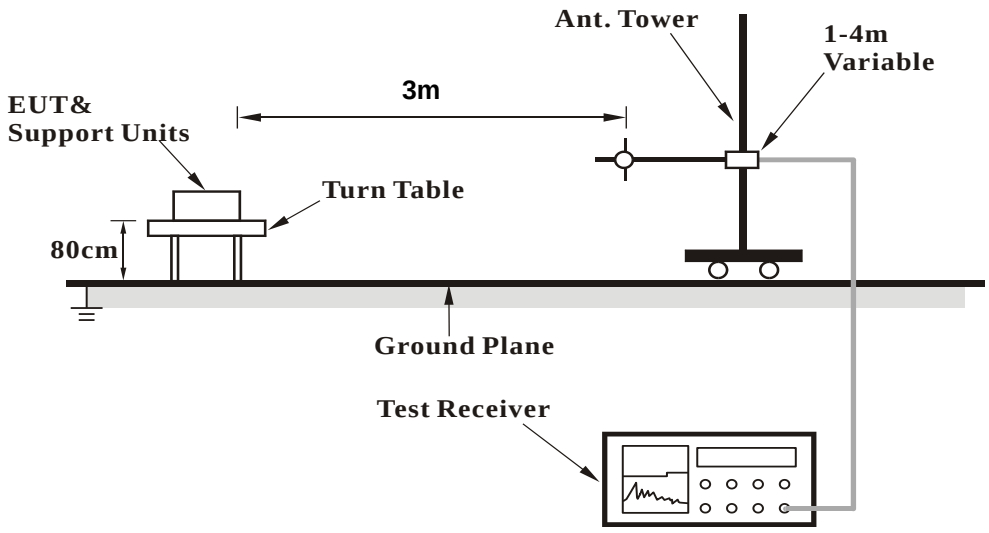
No deviation.

4.1.5 Test Setup

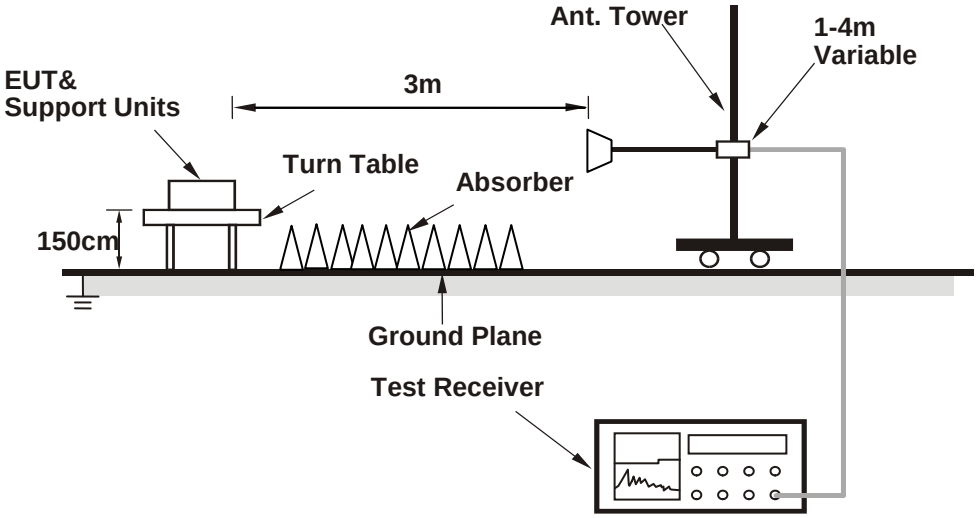
For Radiated emission below 30MHz



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. Controlling software (Lantiq DUT version: 540.55) has been activated to set the EUT on specific status.

4.1.7 Test Results

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	64.6 PK	74.0	-9.4	1.88 H	271	60.6	4.0
2	5150.00	47.0 AV	54.0	-7.0	1.88 H	271	43.0	4.0
3	*5180.00	113.9 PK			1.88 H	271	110.0	3.9
4	*5180.00	103.1 AV			1.88 H	271	99.2	3.9
5	#10360.00	59.6 PK	74.0	-14.4	1.43 H	323	46.8	12.8
6	#10360.00	47.2 AV	54.0	-6.8	1.43 H	323	34.4	12.8
7	15540.00	59.3 PK	74.0	-14.7	1.58 H	288	46.0	13.3
8	15540.00	44.2 AV	54.0	-9.8	1.58 H	288	30.9	13.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.6 PK	74.0	-2.4	1.74 V	97	67.6	4.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.74 V**	**97**	**49.9**	**4.0**
3	*5180.00	119.5 PK			1.74 V	96	115.6	3.9
4	*5180.00	109.7 AV			1.74 V	96	105.8	3.9
5	#10360.00	61.7 PK	74.0	-12.3	2.57 V	212	48.9	12.8
6	#10360.00	48.4 AV	54.0	-5.6	2.57 V	212	35.6	12.8
7	15540.00	59.5 PK	74.0	-14.5	2.76 V	277	46.2	13.3
8	15540.00	44.6 AV	54.0	-9.4	2.76 V	277	31.3	13.3

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 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	116.0 PK			1.85 H	276	112.2	3.8
2	*5200.00	105.3 AV			1.85 H	276	101.5	3.8
3	#10400.00	60.1 PK	74.0	-13.9	1.49 H	325	47.1	13.0
4	#10400.00	47.6 AV	54.0	-6.4	1.49 H	325	34.6	13.0
5	15600.00	59.8 PK	74.0	-14.2	1.53 H	288	46.1	13.7
6	15600.00	44.5 AV	54.0	-9.5	1.53 H	288	30.8	13.7
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	*5200.00	120.8 PK			1.79 V	93	117.0	3.8
2	*5200.00	110.5 AV			1.79 V	93	106.7	3.8
3	#10400.00	61.5 PK	74.0	-12.5	2.56 V	214	48.5	13.0
4	#10400.00	48.2 AV	54.0	-5.8	2.56 V	214	35.2	13.0
5	15600.00	60.2 PK	74.0	-13.8	2.75 V	269	46.5	13.7
6	15600.00	45.1 AV	54.0	-8.9	2.75 V	269	31.4	13.7

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 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	116.1 PK			1.89 H	265	112.5	3.6
2	*5240.00	105.1 AV			1.89 H	265	101.5	3.6
3	5350.00	50.2 PK	74.0	-23.8	1.89 H	265	46.6	3.6
4	5350.00	38.1 AV	54.0	-15.9	1.89 H	265	34.5	3.6
5	#10480.00	60.6 PK	74.0	-13.4	1.52 H	327	47.3	13.3
6	#10480.00	47.9 AV	54.0	-6.1	1.52 H	327	34.6	13.3
7	15720.00	60.5 PK	74.0	-13.5	1.48 H	280	47.7	12.8
8	15720.00	45.0 AV	54.0	-9.0	1.48 H	280	32.2	12.8
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	111.3 PK			1.76 V	90	107.7	3.6
2	*5240.00	110.9 AV			1.76 V	90	107.3	3.6
3	5350.00	55.1 PK	74.0	-18.9	1.76 V	90	51.5	3.6
4	5350.00	42.8 AV	54.0	-11.2	1.76 V	90	39.2	3.6
5	#10480.00	61.2 PK	74.0	-12.8	2.52 V	199	47.9	13.3
6	#10480.00	48.1 AV	54.0	-5.9	2.52 V	199	34.8	13.3
7	15720.00	59.9 PK	74.0	-14.1	2.73 V	279	47.1	12.8
8	15720.00	44.8 AV	54.0	-9.2	2.73 V	279	32.0	12.8

REMARKS:

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

CHANNEL	TX Channel 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	#5633.60	55.6 PK	68.2	-12.6	1.58 H	65	51.4	4.2
2	*5745.00	114.3 PK			1.58 H	65	109.9	4.4
3	*5745.00	104.6 AV			1.58 H	65	100.2	4.4
4	#5938.55	54.4 PK	68.2	-13.8	1.58 H	65	49.5	4.9
5	11490.00	62.9 PK	74.0	-11.1	1.49 H	327	49.6	13.3
6	11490.00	50.6 AV	54.0	-3.4	1.49 H	327	37.3	13.3
7	#17235.00	68.4 PK	74.0	-5.6	1.42 H	231	52.3	16.1
8	#17235.00	53.8 AV	54.0	-0.2	1.42 H	231	37.7	16.1
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	#5633.60	59.3 PK	68.2	-8.9	2.13 V	112	55.1	4.2
2	*5745.00	119.5 PK			2.13 V	112	115.1	4.4
3	*5745.00	109.1 AV			2.13 V	112	104.7	4.4
4	#5952.80	55.8 PK	68.2	-12.4	2.13 V	112	51.0	4.8
5	11490.00	63.2 PK	74.0	-10.8	2.53 V	215	49.9	13.3
6	11490.00	51.2 AV	54.0	-2.8	2.53 V	215	37.9	13.3
7	#17235.00	68.2 PK	74.0	-5.8	2.81 V	254	52.1	16.1
8	#17235.00	53.5 AV	54.0	-0.5	2.81 V	254	37.4	16.1

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	#5631.70	54.9 PK	68.2	-13.3	1.59 H	68	50.7	4.2
2	*5785.00	114.1 PK			1.59 H	68	109.5	4.6
3	*5785.00	103.9 AV			1.59 H	68	99.3	4.6
4	#5935.70	54.7 PK	68.2	-13.5	1.59 H	68	49.8	4.9
5	11570.00	62.5 PK	74.0	-11.5	1.47 H	335	49.0	13.5
6	11570.00	50.5 AV	54.0	-3.5	1.47 H	335	37.0	13.5
7	#17355.00	68.9 PK	74.0	-5.1	1.46 H	224	52.0	16.9
8	#17355.00	53.7 AV	54.0	-0.3	1.46 H	224	36.8	16.9
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	#5633.60	57.8 PK	68.2	-10.4	2.10 V	110	53.6	4.2
2	*5785.00	119.3 PK			2.10 V	110	114.7	4.6
3	*5785.00	108.2 AV			2.10 V	110	103.6	4.6
4	#5972.75	56.4 PK	68.2	-11.8	2.10 V	110	51.6	4.8
5	11570.00	63.5 PK	74.0	-10.5	2.56 V	215	50.0	13.5
6	11570.00	51.4 AV	54.0	-2.6	2.56 V	215	37.9	13.5
7	#17355.00	68.4 PK	74.0	-5.6	2.81 V	245	51.5	16.9
8	#17355.00	53.7 AV	54.0	-0.3	2.81 V	245	36.8	16.9

REMARKS:

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

CHANNEL	TX Channel 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	#5598.45	54.2 PK	68.2	-14.0	1.61 H	67	50.1	4.1
2	*5825.00	113.9 PK			1.61 H	67	109.2	4.7
3	*5825.00	103.2 AV			1.61 H	67	98.5	4.7
4	#5958.50	55.2 PK	68.2	-13.0	1.61 H	67	50.4	4.8
5	11650.00	62.6 PK	74.0	-11.4	1.47 H	320	49.1	13.5
6	11650.00	50.5 AV	54.0	-3.5	1.47 H	320	37.0	13.5
7	#17475.00	68.3 PK	74.0	-5.7	1.37 H	239	50.1	18.2
8	**#17475.00**	**53.9 AV**	**54.0**	**-0.1**	**1.37 H**	**239**	**35.7**	**18.2**
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5614.60	56.0 PK	68.2	-12.2	1.93 V	111	51.8	4.2
2	*5825.00	118.2 PK			1.93 V	111	113.5	4.7
3	*5825.00	107.2 AV			1.93 V	111	102.5	4.7
4	#5980.35	56.3 PK	68.2	-11.9	1.93 V	111	51.5	4.8
5	11650.00	62.8 PK	74.0	-11.2	2.50 V	210	49.3	13.5
6	11650.00	51.0 AV	54.0	-3.0	2.50 V	210	37.5	13.5
7	#17475.00	68.1 PK	74.0	-5.9	2.81 V	259	49.9	18.2
8	#17475.00	53.5 AV	54.0	-0.5	2.81 V	259	35.3	18.2

REMARKS:

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

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	66.9 PK	74.0	-7.1	1.91 H	284	62.9	4.0
2	5150.00	47.3 AV	54.0	-6.7	1.91 H	284	43.3	4.0
3	*5180.00	113.3 PK			1.91 H	284	109.4	3.9
4	*5180.00	102.6 AV			1.91 H	284	98.7	3.9
5	#10360.00	60.6 PK	74.0	-13.4	1.54 H	337	47.8	12.8
6	#10360.00	48.1 AV	54.0	-5.9	1.54 H	337	35.3	12.8
7	15540.00	59.4 PK	74.0	-14.6	1.52 H	283	46.1	13.3
8	15540.00	44.0 AV	54.0	-10.0	1.52 H	283	30.7	13.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	72.2 PK	74.0	-1.8	1.66 V	93	68.2	4.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.66 V**	**93**	**49.9**	**4.0**
3	*5180.00	118.9 PK			1.66 V	93	115.0	3.9
4	*5180.00	107.9 AV			1.66 V	93	104.0	3.9
5	#10360.00	61.4 PK	74.0	-12.6	2.54 V	202	48.6	12.8
6	#10360.00	48.2 AV	54.0	-5.8	2.54 V	202	35.4	12.8
7	15540.00	60.0 PK	74.0	-14.0	2.71 V	271	46.7	13.3
8	15540.00	44.9 AV	54.0	-9.1	2.71 V	271	31.6	13.3

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 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	116.0 PK			1.89 H	259	112.2	3.8
2	*5200.00	105.1 AV			1.89 H	259	101.3	3.8
3	#10400.00	59.7 PK	74.0	-14.3	1.45 H	319	46.7	13.0
4	#10400.00	47.2 AV	54.0	-6.8	1.45 H	319	34.2	13.0
5	15600.00	59.9 PK	74.0	-14.1	1.58 H	292	46.2	13.7
6	15600.00	44.3 AV	54.0	-9.7	1.58 H	292	30.6	13.7
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	*5200.00	120.6 PK			1.78 V	93	116.8	3.8
2	*5200.00	109.7 AV			1.78 V	93	105.9	3.8
3	#10400.00	61.8 PK	74.0	-12.2	2.58 V	221	48.8	13.0
4	#10400.00	48.5 AV	54.0	-5.5	2.58 V	221	35.5	13.0
5	15600.00	59.9 PK	74.0	-14.1	2.71 V	257	46.2	13.7
6	15600.00	44.8 AV	54.0	-9.2	2.71 V	257	31.1	13.7

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 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	115.5 PK			1.90 H	266	111.9	3.6
2	*5240.00	104.7 AV			1.90 H	266	101.1	3.6
3	5350.00	50.2 PK	74.0	-23.8	1.90 H	266	46.6	3.6
4	5350.00	38.0 AV	54.0	-16.0	1.90 H	266	34.4	3.6
5	#10480.00	59.6 PK	74.0	-14.4	1.52 H	333	46.3	13.3
6	#10480.00	47.2 AV	54.0	-6.8	1.52 H	333	33.9	13.3
7	15720.00	60.2 PK	74.0	-13.8	1.54 H	292	47.4	12.8
8	15720.00	44.9 AV	54.0	-9.1	1.54 H	292	32.1	12.8
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	121.1 PK			1.75 V	94	117.5	3.6
2	*5240.00	110.1 AV			1.75 V	94	106.5	3.6
3	5350.00	55.9 PK	74.0	-18.1	1.75 V	94	52.3	3.6
4	5350.00	42.1 AV	54.0	-11.9	1.75 V	94	38.5	3.6
5	#10480.00	62.2 PK	74.0	-11.8	2.52 V	230	48.9	13.3
6	#10480.00	48.7 AV	54.0	-5.3	2.52 V	230	35.4	13.3
7	15720.00	59.8 PK	74.0	-14.2	2.71 V	279	47.0	12.8
8	15720.00	45.0 AV	54.0	-9.0	2.71 V	279	32.2	12.8

REMARKS:

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

CHANNEL	TX Channel 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	#5608.90	55.3 PK	68.2	-12.9	1.64 H	68	51.1	4.2
2	*5745.00	114.7 PK			1.64 H	68	110.3	4.4
3	*5745.00	104.2 AV			1.64 H	68	99.8	4.4
4	#5961.35	54.8 PK	68.2	-13.4	1.64 H	68	49.9	4.9
5	11490.00	63.1 PK	74.0	-10.9	1.51 H	340	49.8	13.3
6	11490.00	50.7 AV	54.0	-3.3	1.51 H	340	37.4	13.3
7	#17235.00	68.7 PK	74.0	-5.3	1.45 H	232	52.6	16.1
8	#17235.00	53.6 AV	54.0	-0.4	1.45 H	232	37.5	16.1
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	#5636.45	57.8 PK	68.2	-10.4	2.00 V	113	53.7	4.1
2	*5745.00	118.5 PK			2.00 V	113	114.1	4.4
3	*5745.00	108.2 AV			2.00 V	113	103.8	4.4
4	#5946.15	56.0 PK	68.2	-12.2	2.00 V	113	51.2	4.8
5	11490.00	63.5 PK	74.0	-10.5	2.53 V	200	50.2	13.3
6	11490.00	51.3 AV	54.0	-2.7	2.53 V	200	38.0	13.3
7	#17235.00	68.3 PK	74.0	-5.7	2.78 V	239	52.2	16.1
8	#17235.00	53.5 AV	54.0	-0.5	2.78 V	239	37.4	16.1

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	#5569.95	55.5 PK	68.2	-12.7	1.76 H	70	51.4	4.1
2	*5785.00	114.1 PK			1.76 H	70	109.5	4.6
3	*5785.00	103.2 AV			1.76 H	70	98.6	4.6
4	#5968.95	54.7 PK	68.2	-13.5	1.76 H	70	49.9	4.8
5	11570.00	62.9 PK	74.0	-11.1	1.45 H	334	49.4	13.5
6	11570.00	50.6 AV	54.0	-3.4	1.45 H	334	37.1	13.5
7	#17355.00	68.1 PK	74.0	-5.9	1.38 H	243	51.2	16.9
8	#17355.00	53.6 AV	54.0	-0.4	1.38 H	243	36.7	16.9
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	#5595.60	56.4 PK	68.2	-11.8	2.06 V	114	52.3	4.1
2	*5785.00	117.4 PK			2.06 V	114	112.8	4.6
3	*5785.00	107.3 AV			2.06 V	114	102.7	4.6
4	#5960.40	55.5 PK	68.2	-12.7	2.06 V	114	50.6	4.9
5	11570.00	63.5 PK	74.0	-10.5	2.51 V	212	50.0	13.5
6	11570.00	51.5 AV	54.0	-2.5	2.51 V	212	38.0	13.5
7	#17355.00	67.9 PK	74.0	-6.1	2.75 V	241	51.0	16.9
8	#17355.00	53.5 AV	54.0	-0.5	2.75 V	241	36.6	16.9

REMARKS:

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

CHANNEL	TX Channel 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	#5567.10	54.5 PK	68.2	-13.7	1.76 H	70	50.4	4.1
2	*5825.00	113.9 PK			1.76 H	70	109.2	4.7
3	*5825.00	102.8 AV			1.76 H	70	98.1	4.7
4	#5942.35	55.1 PK	68.2	-13.1	1.76 H	70	50.2	4.9
5	11650.00	63.3 PK	74.0	-10.7	1.48 H	326	49.8	13.5
6	11650.00	50.9 AV	54.0	-3.1	1.48 H	326	37.4	13.5
7	#17475.00	68.5 PK	74.0	-5.5	1.42 H	229	50.3	18.2
8	**#17475.00**	**53.9 AV**	**54.0**	**-0.1**	**1.42 H**	**229**	**35.7**	**18.2**
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5615.55	56.8 PK	68.2	-11.4	1.93 V	130	52.6	4.2
2	*5825.00	116.2 PK			1.93 V	130	111.5	4.7
3	*5825.00	106.4 AV			1.93 V	130	101.7	4.7
4	#5935.70	56.3 PK	68.2	-11.9	1.93 V	130	51.4	4.9
5	11650.00	63.5 PK	74.0	-10.5	2.58 V	229	50.0	13.5
6	11650.00	51.4 AV	54.0	-2.6	2.58 V	229	37.9	13.5
7	#17475.00	68.4 PK	74.0	-5.6	2.76 V	261	50.2	18.2
8	**#17475.00**	**53.9 AV**	**54.0**	**-0.1**	**2.76 V**	**261**	**35.7**	**18.2**

REMARKS:

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

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	61.3 PK	74.0	-12.7	1.77 H	86	57.3	4.0
2	5150.00	47.2 AV	54.0	-6.8	1.77 H	86	43.2	4.0
3	*5190.00	107.6 PK			1.77 H	86	103.7	3.9
4	*5190.00	98.1 AV			1.77 H	86	94.2	3.9
5	5350.00	53.1 PK	74.0	-20.9	1.77 H	86	49.5	3.6
6	5350.00	40.5 AV	54.0	-13.5	1.77 H	86	36.9	3.6
7	#10380.00	49.8 PK	74.0	-24.2	1.56 H	344	36.9	12.9
8	#10380.00	38.4 AV	54.0	-15.6	1.56 H	344	25.5	12.9
9	15570.00	43.9 PK	74.0	-30.1	1.43 H	246	30.5	13.4
10	15570.00	35.8 AV	54.0	-18.2	1.43 H	246	22.4	13.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.0 PK	74.0	-6.0	1.75 V	94	64.0	4.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.75 V**	**94**	**49.9**	**4.0**
3	*5190.00	112.9 PK			1.75 V	94	109.0	3.9
4	*5190.00	103.3 AV			1.75 V	94	99.4	3.9
5	5350.00	57.0 PK	74.0	-17.0	1.75 V	94	53.4	3.6
6	5350.00	44.8 AV	54.0	-9.2	1.75 V	94	41.2	3.6
7	#10380.00	54.3 PK	74.0	-19.7	2.56 V	207	41.4	12.9
8	#10380.00	40.2 AV	54.0	-13.8	2.56 V	207	27.3	12.9
9	15570.00	45.1 PK	74.0	-28.9	2.74 V	267	31.7	13.4
10	15570.00	36.5 AV	54.0	-17.5	2.74 V	267	23.1	13.4

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.2 PK	74.0	-14.8	1.71 H	55	55.2	4.0
2	5150.00	47.5 AV	54.0	-6.5	1.71 H	55	43.5	4.0
3	*5230.00	112.1 PK			1.71 H	55	108.5	3.6
4	*5230.00	103.2 AV			1.71 H	55	99.6	3.6
5	5350.00	52.3 PK	74.0	-21.7	1.71 H	55	48.7	3.6
6	5350.00	39.6 AV	54.0	-14.4	1.71 H	55	36.0	3.6
7	#10460.00	49.6 PK	74.0	-24.4	1.48 H	332	36.3	13.3
8	#10460.00	38.5 AV	54.0	-15.5	1.48 H	332	25.2	13.3
9	15690.00	43.9 PK	74.0	-30.1	1.46 H	228	30.9	13.0
10	15690.00	35.4 AV	54.0	-18.6	1.46 H	228	22.4	13.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.2 PK	74.0	-7.8	2.21 V	92	62.2	4.0
2	5150.00	52.5 AV	54.0	-1.5	2.21 V	92	48.5	4.0
3	*5230.00	117.8 PK			2.21 V	92	114.2	3.6
4	*5230.00	108.2 AV			2.21 V	92	104.6	3.6
5	5350.00	58.5 PK	74.0	-15.5	2.21 V	92	54.9	3.6
6	5350.00	46.1 AV	54.0	-7.9	2.21 V	92	42.5	3.6
7	#10460.00	54.5 PK	74.0	-19.5	2.61 V	213	41.2	13.3
8	#10460.00	40.3 AV	54.0	-13.7	2.61 V	213	27.0	13.3
9	15690.00	45.5 PK	74.0	-28.5	2.74 V	270	32.5	13.0
10	15690.00	36.8 AV	54.0	-17.2	2.74 V	270	23.8	13.0

REMARKS:

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

CHANNEL	TX Channel 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	#5646.90	55.1 PK	68.2	-13.1	1.72 H	70	50.9	4.2
2	*5755.00	112.2 PK			1.72 H	70	107.7	4.5
3	*5755.00	102.7 AV			1.72 H	70	98.2	4.5
4	#5985.10	55.2 PK	68.2	-13.0	1.72 H	70	50.4	4.8
5	11510.00	60.6 PK	74.0	-13.4	1.57 H	276	47.3	13.3
6	11510.00	50.1 AV	54.0	-3.9	1.57 H	276	36.8	13.3
7	#17265.00	64.4 PK	74.0	-9.6	1.68 H	238	48.2	16.2
8	#17265.00	53.6 AV	54.0	-0.4	1.68 H	238	37.4	16.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5631.70	58.6 PK	68.2	-9.6	2.00 V	108	54.4	4.2
2	*5755.00	115.8 PK			2.00 V	108	111.3	4.5
3	*5755.00	106.7 AV			2.00 V	108	102.2	4.5
4	#5930.95	56.1 PK	68.2	-12.1	2.00 V	108	51.2	4.9
5	11510.00	60.9 PK	74.0	-13.1	2.57 V	232	47.6	13.3
6	11510.00	50.6 AV	54.0	-3.4	2.57 V	232	37.3	13.3
7	#17265.00	64.2 PK	74.0	-9.8	2.76 V	271	48.0	16.2
8	#17265.00	53.5 AV	54.0	-0.5	2.76 V	271	37.3	16.2

REMARKS:

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

CHANNEL	TX Channel 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	#5614.60	55.1 PK	68.2	-13.1	1.71 H	69	50.9	4.2
2	*5795.00	112.1 PK			1.71 H	69	107.6	4.5
3	*5795.00	102.3 AV			1.71 H	69	97.8	4.5
4	#5939.50	55.3 PK	68.2	-12.9	1.71 H	69	50.4	4.9
5	11590.00	60.3 PK	74.0	-13.7	1.52 H	277	46.6	13.7
6	11590.00	49.9 AV	54.0	-4.1	1.52 H	277	36.2	13.7
7	#17385.00	64.2 PK	74.0	-9.8	1.69 H	243	47.1	17.1
8	#17385.00	53.6 AV	54.0	-0.4	1.69 H	243	36.5	17.1
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	#5620.30	57.1 PK	68.2	-11.1	2.02 V	111	52.9	4.2
2	*5795.00	115.0 PK			2.02 V	111	110.5	4.5
3	*5795.00	105.5 AV			2.02 V	111	101.0	4.5
4	#5953.75	56.0 PK	68.2	-12.2	2.02 V	111	51.2	4.8
5	11590.00	60.5 PK	74.0	-13.5	2.57 V	226	46.8	13.7
6	11590.00	50.0 AV	54.0	-4.0	2.57 V	226	36.3	13.7
7	#17385.00	64.4 PK	74.0	-9.6	2.77 V	265	47.3	17.1
8	#17385.00	53.7 AV	54.0	-0.3	2.77 V	265	36.6	17.1

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.

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	59.5 PK	74.0	-14.5	1.82 H	65	55.5	4.0
2	5150.00	47.8 AV	54.0	-6.2	1.82 H	65	43.8	4.0
3	*5210.00	102.1 PK			1.82 H	65	98.3	3.8
4	*5210.00	93.2 AV			1.82 H	65	89.4	3.8
5	5350.00	52.1 PK	74.0	-21.9	1.82 H	65	48.5	3.6
6	5350.00	40.2 AV	54.0	-13.8	1.82 H	65	36.6	3.6
7	#10420.00	45.1 PK	74.0	-28.9	1.52 H	354	32.0	13.1
8	#10420.00	34.9 AV	54.0	-19.1	1.52 H	354	21.8	13.1
9	15630.00	44.0 PK	74.0	-30.0	1.50 H	247	30.6	13.4
10	15630.00	35.8 AV	54.0	-18.2	1.50 H	247	22.4	13.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.9 PK	74.0	-9.1	2.14 V	91	60.9	4.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**2.14 V**	**91**	**49.9**	**4.0**
3	*5210.00	107.7 PK			2.14 V	91	103.9	3.8
4	*5210.00	98.2 AV			2.14 V	91	94.4	3.8
5	5350.00	57.8 PK	74.0	-16.2	2.14 V	91	54.2	3.6
6	5350.00	45.0 AV	54.0	-9.0	2.14 V	91	41.4	3.6
7	#10420.00	45.6 PK	74.0	-28.4	2.54 V	195	32.5	13.1
8	#10420.00	35.2 AV	54.0	-18.8	2.54 V	195	22.1	13.1
9	15630.00	44.5 PK	74.0	-29.5	2.76 V	282	31.1	13.4
10	15630.00	36.0 AV	54.0	-18.0	2.76 V	282	22.6	13.4

REMARKS:

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

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	#5628.85	60.6 PK	68.2	-7.6	1.78 H	72	56.4	4.2
2	*5775.00	107.7 PK			1.78 H	72	103.2	4.5
3	*5775.00	98.8 AV			1.78 H	72	94.3	4.5
4	#5929.05	60.7 PK	68.2	-7.5	1.78 H	72	55.8	4.9
5	11550.00	59.6 PK	74.0	-14.4	1.54 H	288	46.1	13.5
6	11550.00	49.3 AV	54.0	-4.7	1.54 H	288	35.8	13.5
7	#17325.00	64.2 PK	74.0	-9.8	1.52 H	244	47.6	16.6
8	#17325.00	52.8 AV	54.0	-1.2	1.52 H	244	36.2	16.6
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	#5647.85	67.9 PK	68.2	-0.3	2.11 V	112	63.7	4.2
2	*5775.00	110.2 PK			2.11 V	112	105.7	4.5
3	*5775.00	103.2 AV			2.11 V	112	98.7	4.5
4	#5936.65	62.9 PK	68.2	-5.3	2.11 V	112	58.0	4.9
5	11550.00	59.2 PK	74.0	-14.8	2.56 V	223	45.7	13.5
6	11550.00	49.6 AV	54.0	-4.4	2.56 V	223	36.1	13.5
7	#17325.00	63.8 PK	74.0	-10.2	2.75 V	250	47.2	16.6
8	#17325.00	52.1 AV	54.0	-1.9	2.75 V	250	35.5	16.6

REMARKS:

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

Below 1GHz Data:

802.11ac (VHT20)

CHANNEL	TX Channel 40	**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	92.50	33.6 QP	43.5	-9.9	1.65 H	99	47.3	-13.7
2	185.44	36.1 QP	43.5	-7.4	1.65 H	88	46.4	-10.3
3	272.66	36.9 QP	46.0	-9.1	1.65 H	200	45.2	-8.3
4	375.01	38.2 QP	46.0	-7.8	1.43 H	99	43.7	-5.5
5	625.01	36.2 QP	46.0	-9.8	1.65 H	77	35.9	0.3
6	875.01	35.2 QP	46.0	-10.8	1.65 H	99	31.3	3.9
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	32.88	36.1 QP	40.0	-3.9	1.24 V	100	45.2	-9.1
2	55.65	35.1 QP	40.0	-4.9	1.21 V	152	43.4	-8.3
3	94.65	36.1 QP	43.5	-7.4	1.45 V	200	49.4	-13.3
4	125.11	34.2 QP	43.5	-9.3	1.65 V	300	43.8	-9.6
5	186.11	34.2 QP	43.5	-9.3	1.24 V	100	44.5	-10.3
6	446.11	35.1 QP	46.0	-10.9	1.25 V	105	38.5	-3.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

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	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-523	Oct. 06, 2017	Oct. 05, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100071	Nov. 15, 2017	Nov. 14, 2018
RF Cable	5D-FB	COACAB-001	May 23, 2017	May 22, 2018
10 dB PAD EMEC	STI02-2200-10	002	Mar. 16, 2018	Mar. 15, 2019
50 ohms Terminator	50	3	Nov. 01, 2017	Oct. 31, 2018
50 ohms Terminator	N/A	EMC-04	Nov. 01, 2017	Oct. 31, 2018
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 Conducted Room D
3. The VCCI Con D Registration No. is C-20005.
4. Tested Date: Apr. 18, 2018

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.

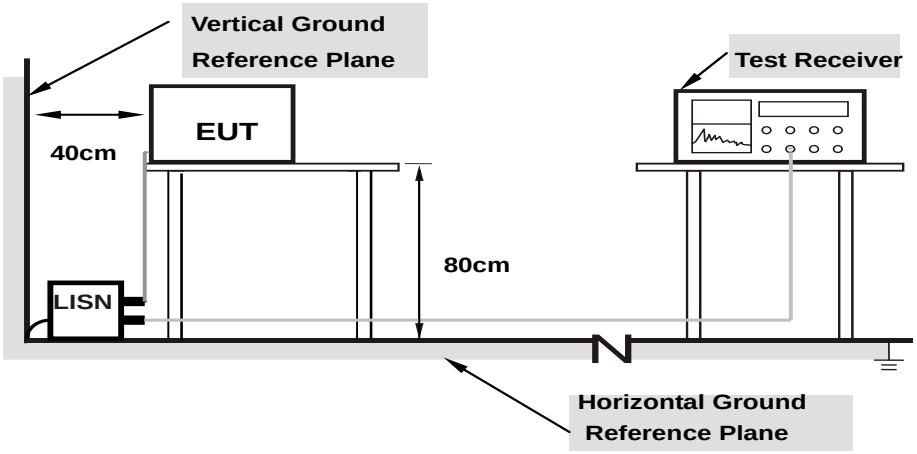
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

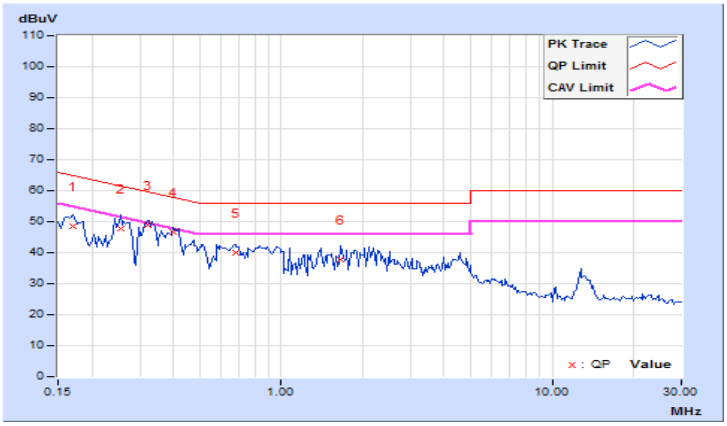
4.2.7 Test Results (Mode 1)

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	0.16953	9.89	38.79	25.05	48.68	34.94	64.98	54.98	-16.30	-20.04
2	0.25547	9.90	37.87	28.63	47.77	38.53	61.58	51.58	-13.81	-13.05
3	**0.32188**	**9.90**	**38.93**	**33.19**	**48.83**	**43.09**	**59.66**	**49.66**	**-10.83**	**-6.57**
4	0.40000	9.90	36.64	28.63	46.54	38.53	57.85	47.85	-11.31	-9.32
5	0.67734	9.91	30.14	21.13	40.05	31.04	56.00	46.00	-15.95	-14.96
6	1.65625	9.95	27.66	20.76	37.61	30.71	56.00	46.00	-18.39	-15.29

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.

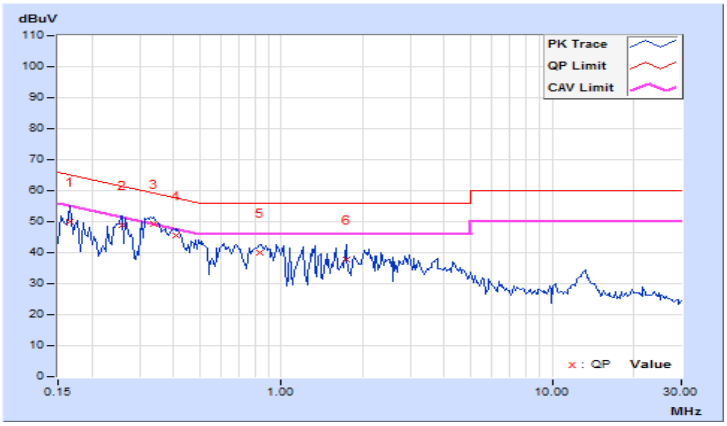


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16562	9.88	39.94	28.89	49.82	38.77	65.18	55.18	-15.36	-16.41
2	0.25938	9.89	38.85	28.11	48.74	38.00	61.45	51.45	-12.71	-13.45
3	0.33750	9.89	39.22	28.36	49.11	38.25	59.26	49.26	-10.15	-11.01
4	0.41172	9.89	35.74	27.09	45.63	36.98	57.61	47.61	-11.98	-10.63
5	0.83750	9.90	29.99	21.81	39.89	31.71	56.00	46.00	-16.11	-14.29
6	1.73828	9.91	27.76	20.48	37.67	30.39	56.00	46.00	-18.33	-15.61

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.



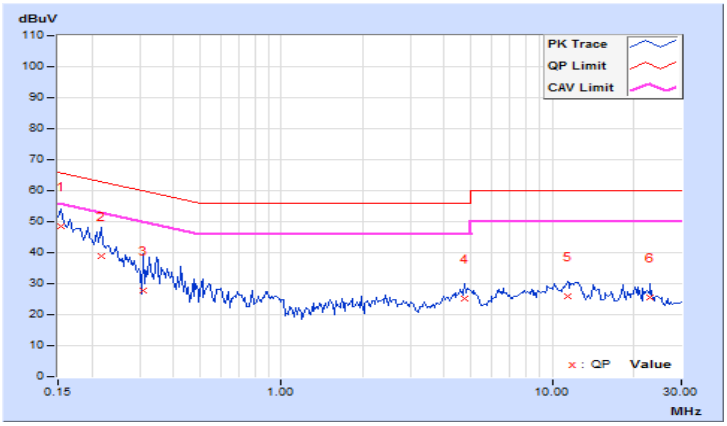
4.2.8 Test Results (Mode 2)

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	9.89	38.51	24.05	48.40	33.94	65.79	55.79	-17.39	-21.85
2	0.21641	9.90	28.89	16.11	38.79	26.01	62.96	52.96	-24.17	-26.95
3	0.31016	9.90	17.99	9.85	27.89	19.75	59.97	49.97	-32.08	-30.22
4	4.75000	10.03	15.32	9.58	25.35	19.61	56.00	46.00	-30.65	-26.39
5	11.38672	10.17	15.73	11.24	25.90	21.41	60.00	50.00	-34.10	-28.59
6	23.06641	10.37	15.26	13.01	25.63	23.38	60.00	50.00	-34.37	-26.62

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.

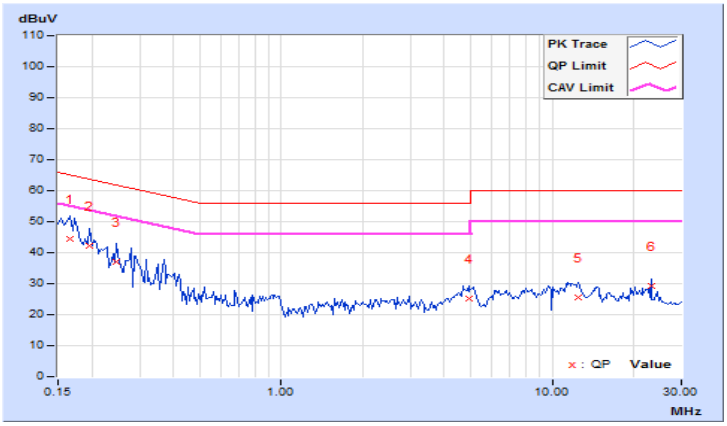


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16562	9.88	34.55	21.25	44.43	31.13	65.18	55.18	-20.75	-24.05
2	0.19687	9.89	32.43	18.20	42.32	28.09	63.74	53.74	-21.42	-25.65
3	0.24766	9.89	27.07	14.76	36.96	24.65	61.84	51.84	-24.88	-27.19
4	4.91016	9.98	15.21	9.35	25.19	19.33	56.00	46.00	-30.81	-26.67
5	12.55469	10.14	15.37	10.14	25.51	20.28	60.00	50.00	-34.49	-29.72
6	23.12891	10.35	19.00	16.70	29.35	27.05	60.00	50.00	-30.65	-22.95

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.



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		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)

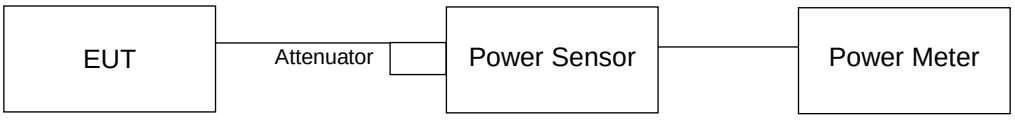
*B is the 26 dB emission bandwidth in megahertz

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

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	22.67	22.73	22.17	537.242	27.30	30.00	Pass
40	5200	24.90	25.03	24.45	906.062	29.57	30.00	Pass
48	5240	25.08	24.70	24.32	887.624	29.48	30.00	Pass
149	5745	24.30	23.52	22.72	681.126	28.33	30.00	Pass
157	5785	24.27	23.04	23.43	688.966	28.38	30.00	Pass
165	5825	23.77	23.19	23.01	646.667	28.11	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	22.89	22.90	22.34	560.916	27.49	29.80	Pass
40	5200	25.08	25.10	24.65	937.444	29.72	29.80	Pass
48	5240	24.98	25.03	24.54	917.641	29.63	29.80	Pass
149	5745	24.40	23.41	23.53	720.127	28.57	29.80	Pass
157	5785	24.22	23.33	23.43	699.812	28.45	29.80	Pass
165	5825	23.63	23.19	23.10	643.298	28.08	29.80	Pass

Note: 1. Directional gain = 6.2dBi > 6dBi , so the power limit shall be reduced to 30-(6.2-6) = 29.80dBm.

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	19.89	19.99	19.34	283.17	24.52	29.80	Pass
46	5230	25.58	24.69	23.49	879.209	29.44	29.80	Pass
151	5755	24.15	23.15	22.83	658.421	28.19	29.80	Pass
159	5795	24.14	23.05	23.21	670.666	28.27	29.80	Pass

Note: 1. Directional gain = 6.2dBi > 6dBi , so the power limit shall be reduced to 30-(6.2-6) = 29.80dBm.

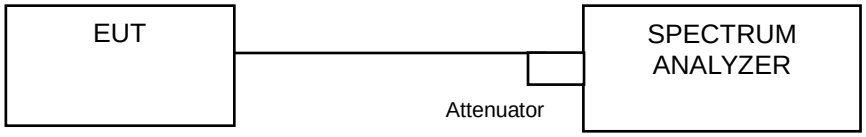
802.11ac (VHT80)

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	17.58	16.65	17.02	153.868	21.87	29.80	Pass
155	5775	23.29	22.05	23.74	610.221	27.85	29.80	Pass

Note: 1. Directional gain = 6.2dBi > 6dBi , so the power limit shall be reduced to 30-(6.2-6) = 29.80dBm.

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

CDD Mode

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	16.68	16.68	16.68
40	5200	17.16	17.16	16.92
48	5240	17.04	17.04	16.68
149	5745	16.92	16.68	16.68
157	5785	17.04	16.80	16.68
165	5825	16.80	16.68	16.68

Beamforming Mode

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	18.00	17.88	17.88
40	5200	18.12	18.12	17.88
48	5240	18.24	18.12	18.00
149	5745	18.00	17.76	17.88
157	5785	18.00	18.00	17.88
165	5825	18.12	17.88	17.88

802.11ac (VHT40)

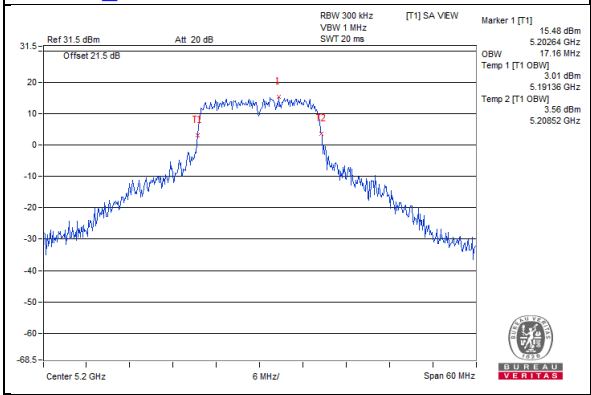
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
38	5190	36.72	36.72	36.72
46	5230	36.96	36.96	36.72
151	5755	36.96	36.72	36.72
159	5795	36.96	36.96	36.72

802.11ac (VHT80)

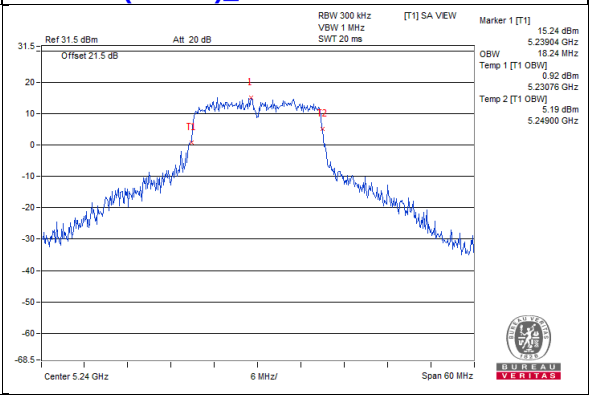
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
42	5210	75.36	75.36	75.36
155	5775	75.36	75.84	75.36

Spectrum Plot of Worst Value

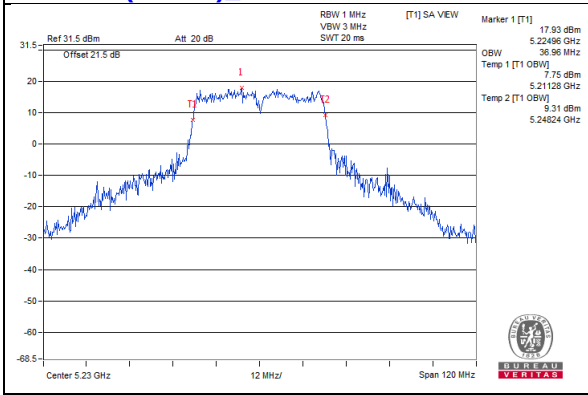
802.11a_Chain0 / CH40



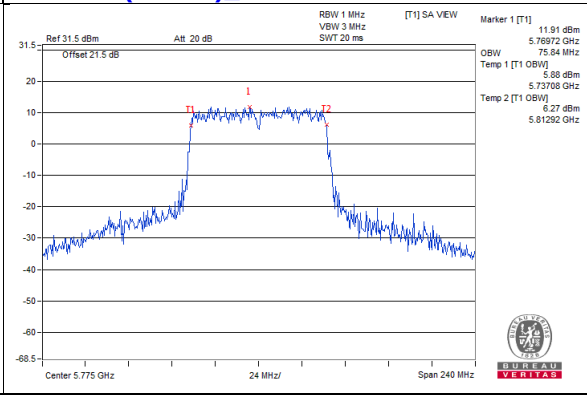
802.11ac (VHT20)_Chain0 / CH48



802.11ac (VHT40)_Chain0 / CH46

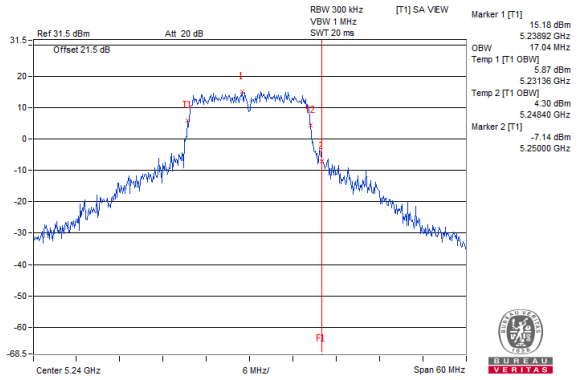


802.11ac (VHT80)_Chain1 / CH155

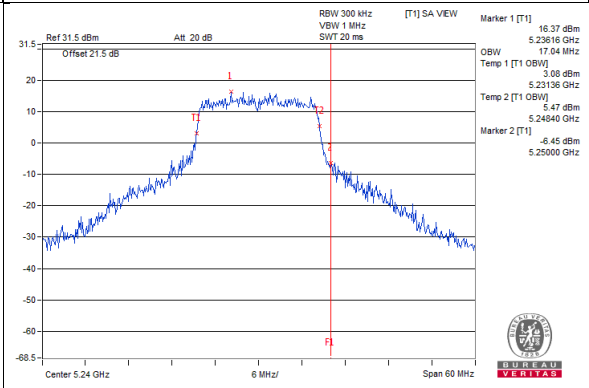


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

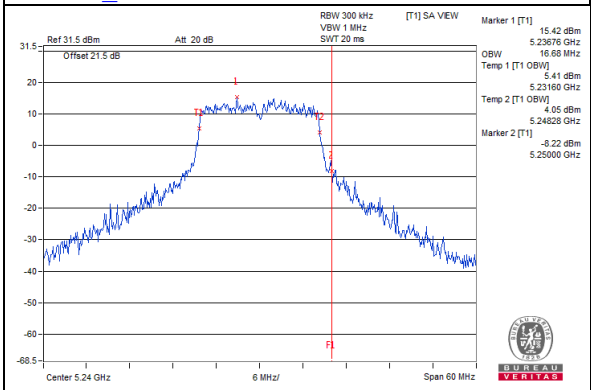
802.11a_Chain0 / CH48



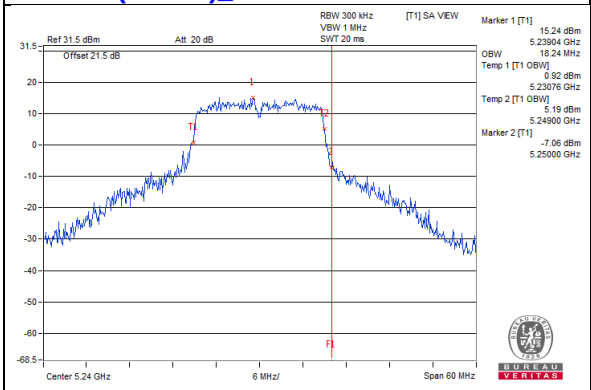
802.11a_Chain1 / CH48



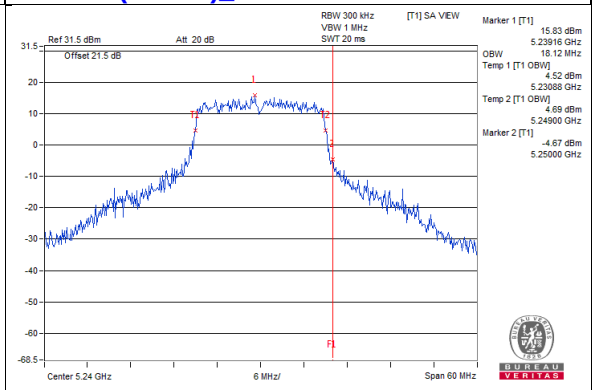
802.11a_Chain2 / CH48



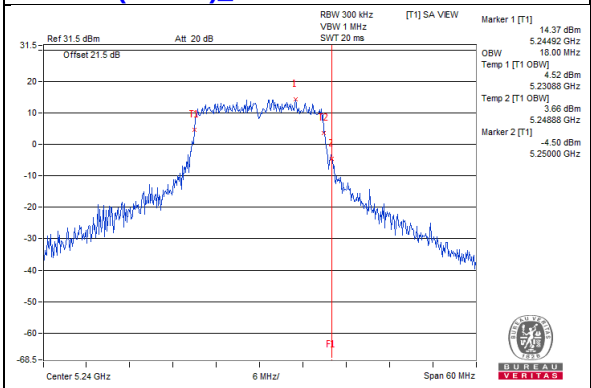
802.11ac(VHT20)_Chain0 / CH48



802.11ac(VHT20)_Chain1 / CH48

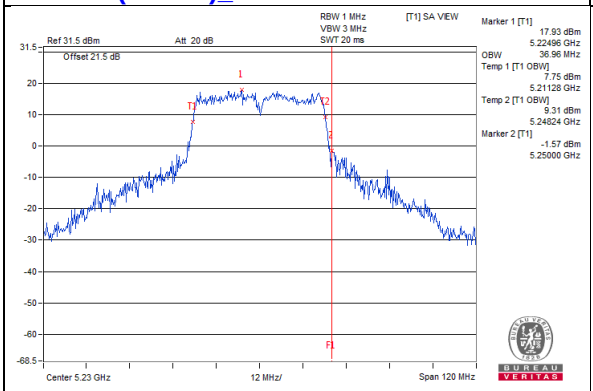


802.11ac(VHT20)_Chain2 / CH48

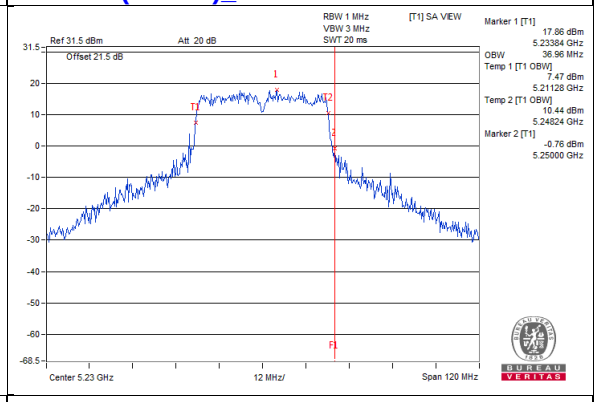


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

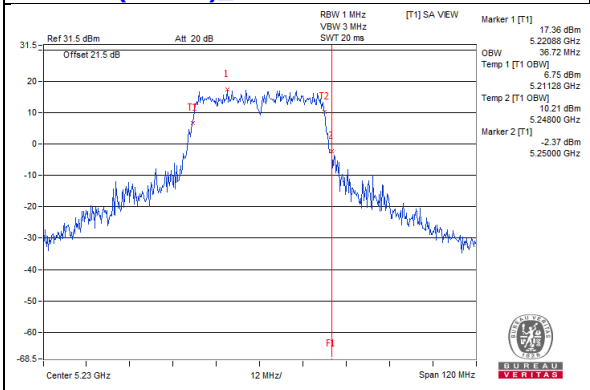
802.11ac(VHT40)_Chain0 / CH46



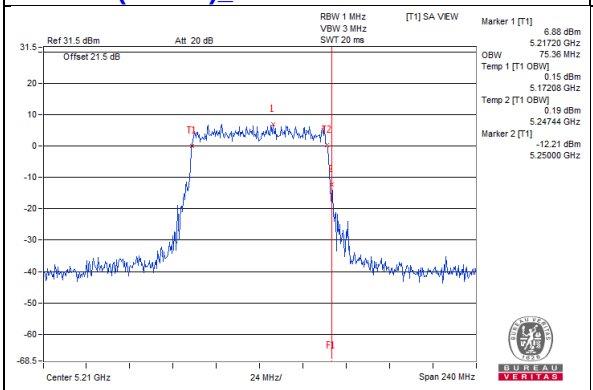
802.11ac(VHT40)_Chain1 / CH46



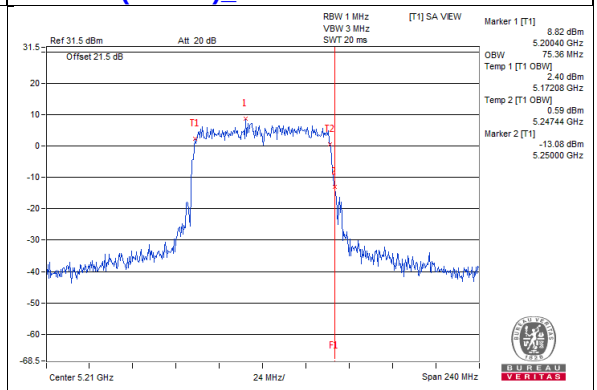
802.11ac(VHT40)_Chain2 / CH46



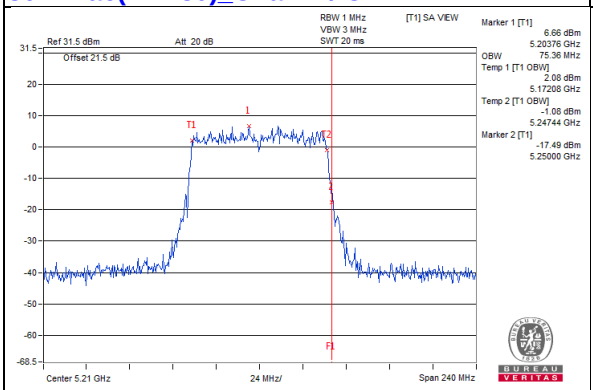
802.11ac(VHT80)_Chain0 / CH42



802.11ac(VHT80)_Chain1 / CH42

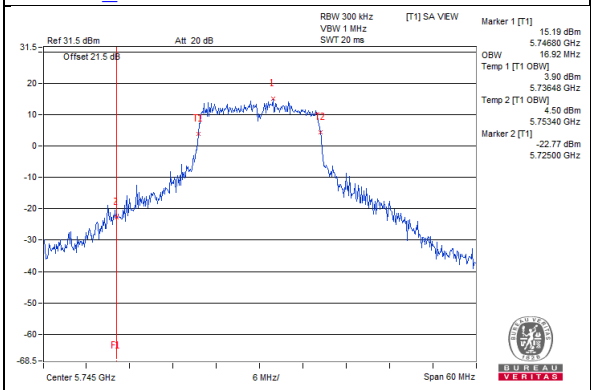


802.11ac(VHT80)_Chain2 / CH42

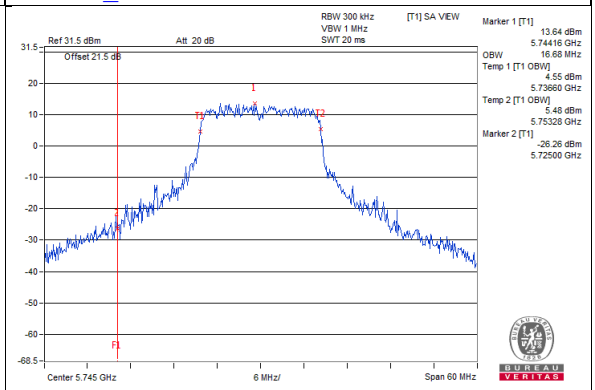


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

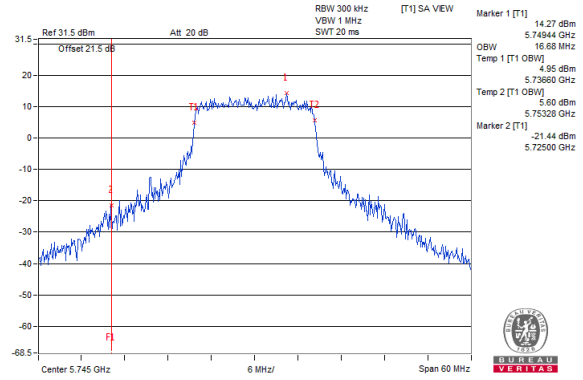
802.11a_Chain0 / CH149



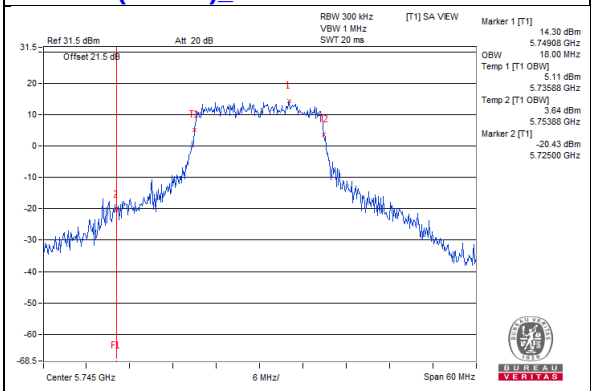
802.11a_Chain1 / CH149



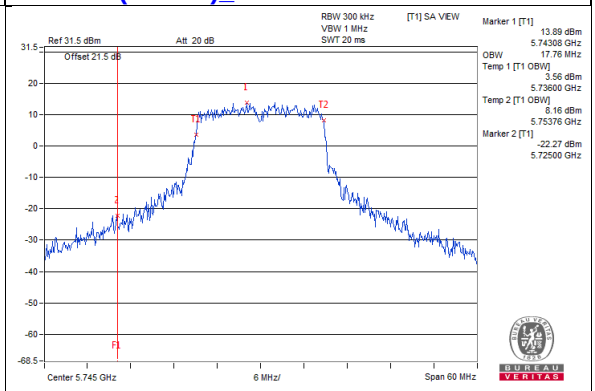
802.11a_Chain2 / CH149



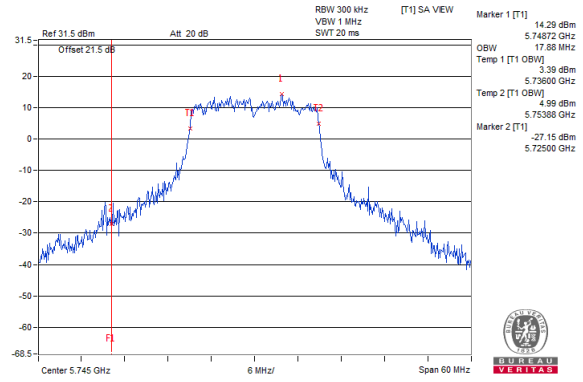
802.11ac(VHT20)_Chain0 / CH149



802.11ac(VHT20)_Chain1 / CH149

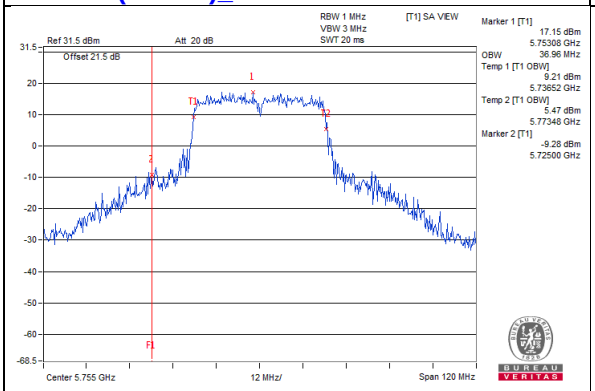


802.11ac(VHT20)_Chain2 / CH149

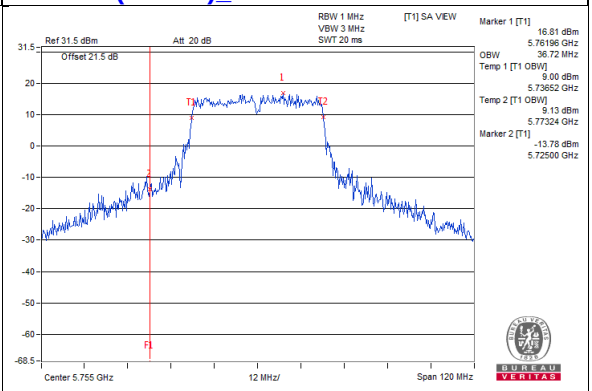


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

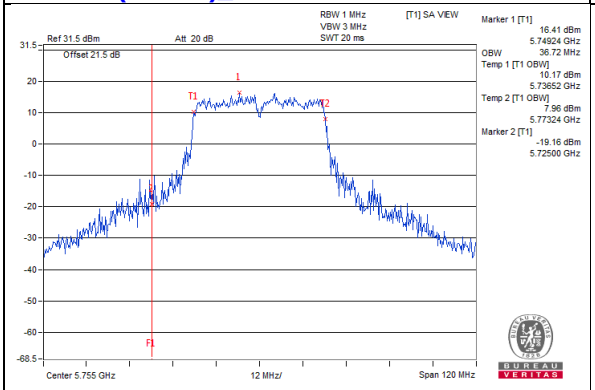
802.11ac(VHT40)_Chain0 / CH151



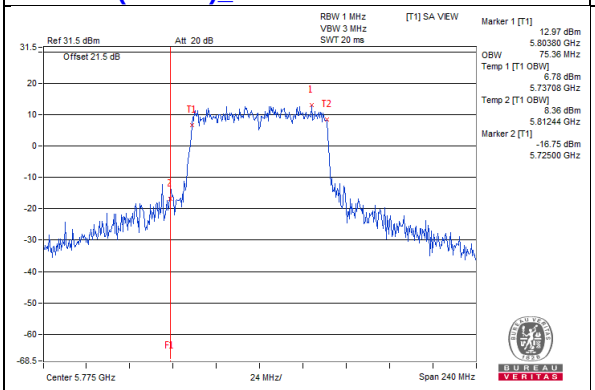
802.11ac(VHT40)_Chain1 / CH151



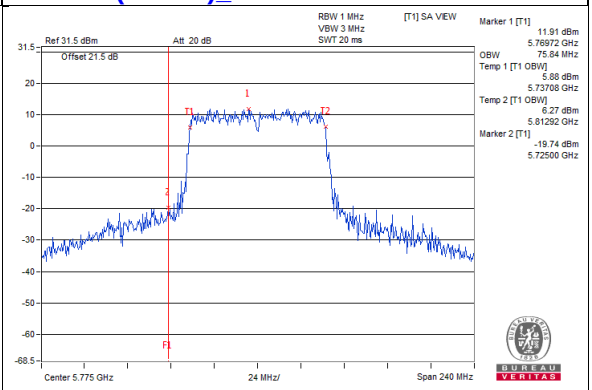
802.11ac(VHT40)_Chain2 / CH151



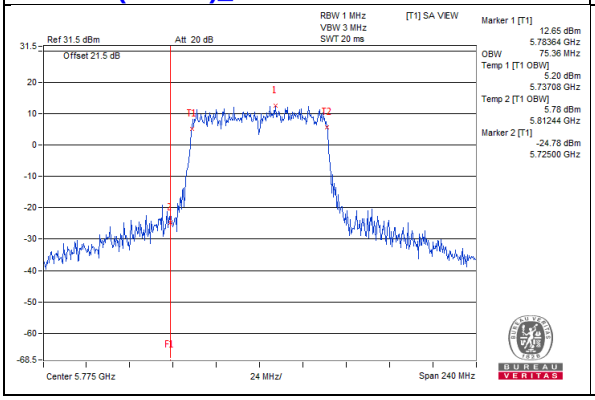
802.11ac(VHT80)_Chain0 / CH155



802.11ac(VHT80)_Chain1 / CH155



802.11ac(VHT80)_Chain2 / CH155

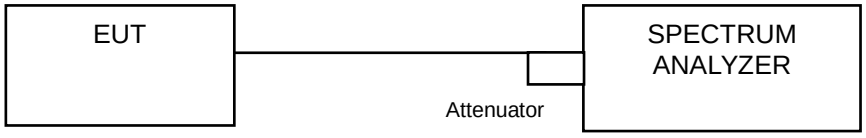


4.5 Peak Power Spectral Density Measurement

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	
		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)

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 (VHT40), 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	9.11	9.53	8.57	13.86	16.80	Pass
40	5200	11.43	12.15	11.01	16.33	16.80	Pass
48	5240	11.16	11.77	10.60	15.97	16.80	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 = 6.2dBi > 6dBi , so the power density limit shall be reduced to 17-(6.2-6) = 16.80dBm.

Beamforming Mode

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	8.50	9.07	8.20	13.38	16.80	Pass
40	5200	11.10	11.84	10.92	16.08	16.80	Pass
48	5240	10.93	11.46	10.52	15.76	16.80	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 = 6.2dBi > 6dBi , so the power density limit shall be reduced to 17-(6.2-6) = 16.80dBm.

802.11ac (VHT40)

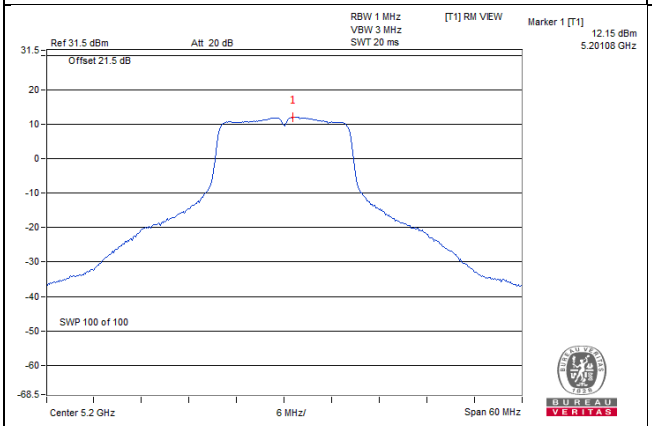
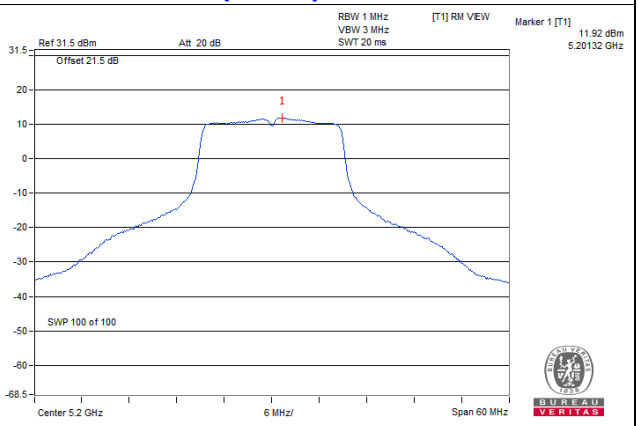
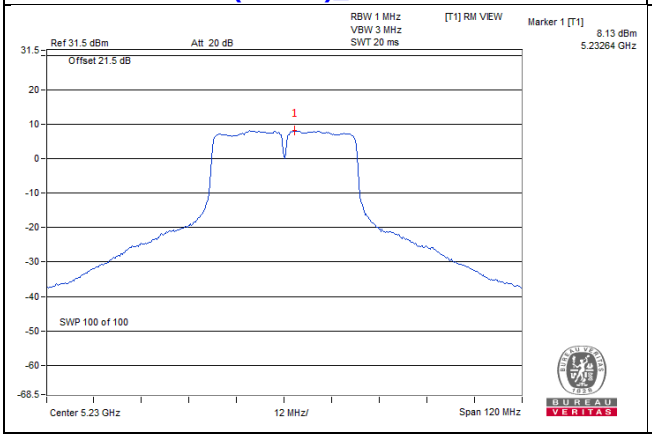
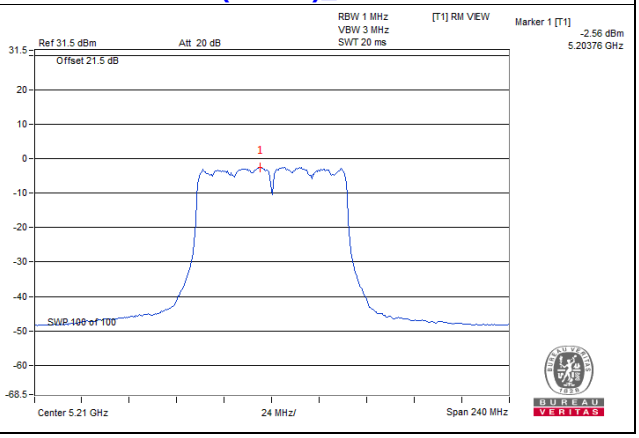
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)			Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	2.41	2.56	1.70	0.17	7.18	16.80	Pass
46	5230	7.96	8.00	7.24	0.17	12.69	16.80	Pass

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 = 6.2dBi > 6dBi , so the power density limit shall be reduced to 17-(6.2-6) = 16.80dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

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	-2.62	-2.70	-3.51	0.34	2.18	16.80	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 = 6.2dBi > 6dBi , so the power density limit shall be reduced to 17-(6.2-6) = 16.80dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH40	**802.11ac (VHT20)_Chain 1 / CH40**
	
802.11ac (VHT40)_Chain 1 / CH46	**802.11ac (VHT80)_Chain 0 / 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	2.54	4.76	4.77	9.53	29.80	Pass
	157	5785	2.35	4.57	4.77	9.34	29.80	Pass
	165	5825	2.28	4.50	4.77	9.27	29.80	Pass
1	149	5745	1.39	3.61	4.77	8.38	29.80	Pass
	157	5785	1.35	3.57	4.77	8.34	29.80	Pass
	165	5825	1.37	3.59	4.77	8.36	29.80	Pass
2	149	5745	1.24	3.46	4.77	8.23	29.80	Pass
	157	5785	1.38	3.60	4.77	8.37	29.80	Pass
	165	5825	1.21	3.43	4.77	8.20	29.80	Pass

Note: 1. Directional gain = 6.2dBi > 6dBi , so the power density limit shall be reduced to 30-(6.2-6) = 29.80dBm.

Beamforming Mode

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	2.44	4.66	4.77	9.43	29.80	Pass
	157	5785	2.10	4.32	4.77	9.09	29.80	Pass
	165	5825	1.83	4.05	4.77	8.82	29.80	Pass
1	149	5745	1.17	3.39	4.77	8.16	29.80	Pass
	157	5785	1.46	3.68	4.77	8.45	29.80	Pass
	165	5825	1.23	3.45	4.77	8.22	29.80	Pass
2	149	5745	1.16	3.38	4.77	8.15	29.80	Pass
	157	5785	0.82	3.04	4.77	7.81	29.80	Pass
	165	5825	1.09	3.31	4.77	8.08	29.80	Pass

Note: 1. Directional gain = 6.2dBi > 6dBi , so the power density limit shall be reduced to 30-(6.2-6) = 29.80dBm.

802.11ac (VHT40)

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	151	5755	-0.65	1.57	4.77	0.17	6.51	29.80	Pass
	159	5795	-1.08	1.14	4.77	0.17	6.08	29.80	Pass
1	151	5755	-1.26	0.96	4.77	0.17	5.90	29.80	Pass
	159	5795	-1.86	0.36	4.77	0.17	5.30	29.80	Pass
2	151	5755	-2.46	-0.24	4.77	0.17	4.70	29.80	Pass
	159	5795	-2.44	-0.22	4.77	0.17	4.72	29.80	Pass

Note: 1. Directional gain = 6.2dBi > 6dBi , so the power density limit shall be reduced to 30-(6.2-6) = 29.80dBm.

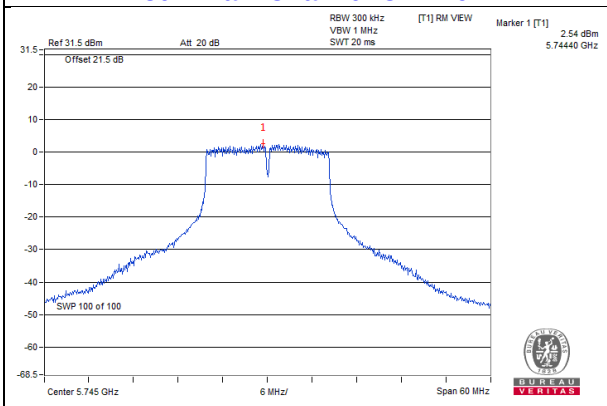
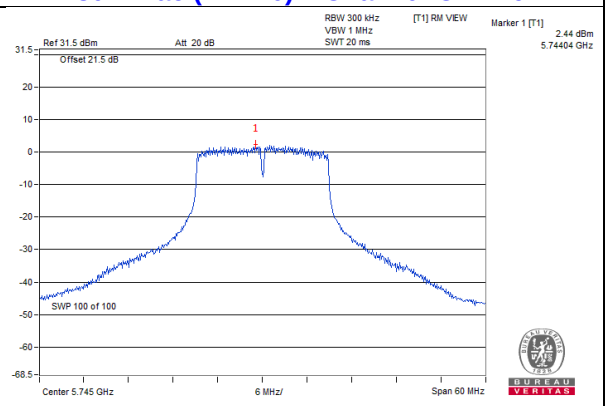
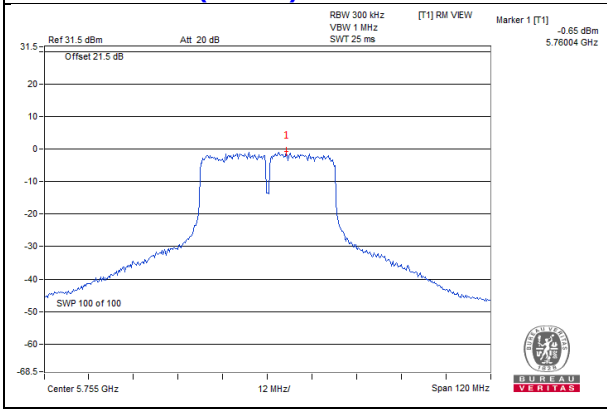
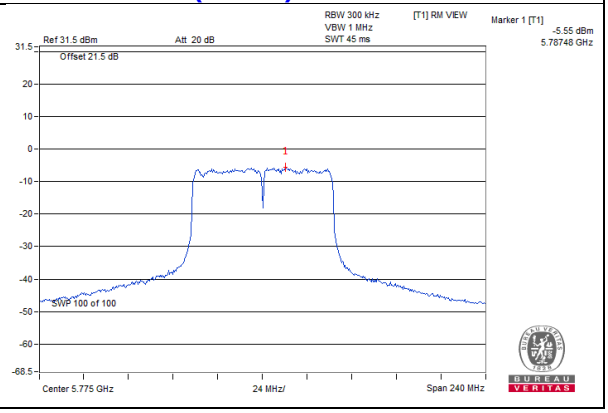
2. Refer to section 3.3 for duty cycle spectrum plot.

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	-5.55	-3.33	4.77	0.34	1.78	29.80	Pass
1	155	5775	-6.32	-4.10	4.77	0.34	1.01	29.80	Pass
2	155	5775	-6.72	-4.50	4.77	0.34	0.61	29.80	Pass

Note: 1. Directional gain = 6.2dBi > 6dBi , so the power density limit shall be reduced to 30-(6.2-6) = 29.80dBm.

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

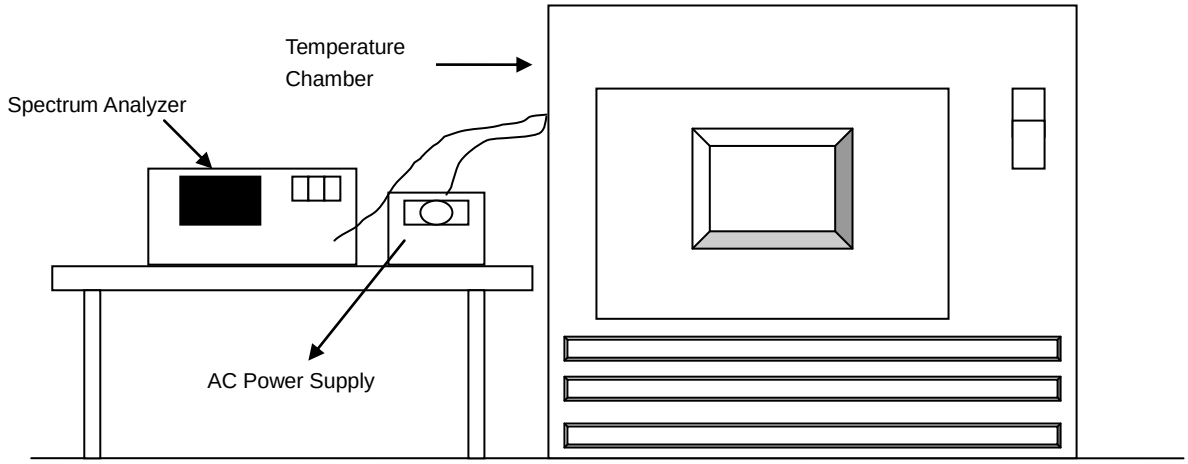
Spectrum Plot of Worst Value	
802.11a – Chain 0: CH 149	**802.11ac (VHT20) – Chain 0: CH 149**
	
802.11ac (VHT40) – Chain 0: CH 151	**802.11ac (VHT80) – Chain 0: CH 155**
	

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

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	5179.9751	PASS	5179.9785	PASS	5179.9773	PASS	5179.9783	PASS
40	120	5180.0016	PASS	5180.0042	PASS	5180.0051	PASS	5180.002	PASS
30	120	5179.9954	PASS	5179.9953	PASS	5179.9964	PASS	5179.9972	PASS
20	120	5179.9807	PASS	5179.9823	PASS	5179.9818	PASS	5179.9833	PASS
10	120	5179.9945	PASS	5179.9942	PASS	5179.9966	PASS	5179.9938	PASS
0	120	5179.9762	PASS	5179.9755	PASS	5179.978	PASS	5179.9743	PASS
-10	120	5179.981	PASS	5179.9805	PASS	5179.9799	PASS	5179.9842	PASS
-20	120	5179.9922	PASS	5179.9901	PASS	5179.9937	PASS	5179.9932	PASS
-30	120	5180.0218	PASS	5180.0235	PASS	5180.0247	PASS	5180.0261	PASS

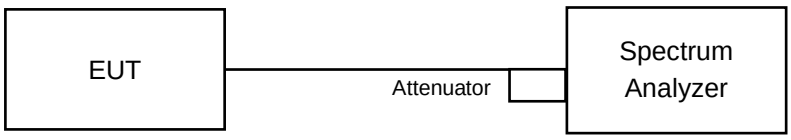
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5179.9801	PASS	5179.9824	PASS	5179.9828	PASS	5179.9835	PASS
	120	5179.9807	PASS	5179.9823	PASS	5179.9818	PASS	5179.9833	PASS
	102	5179.9803	PASS	5179.983	PASS	5179.9819	PASS	5179.9842	PASS

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

CDD Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	16.34	16.36	16.34	0.5	PASS
157	5785	16.36	16.37	16.37	0.5	PASS
165	5825	16.33	16.37	16.38	0.5	PASS

Beamforming Mode

802.11ac (VHT20)

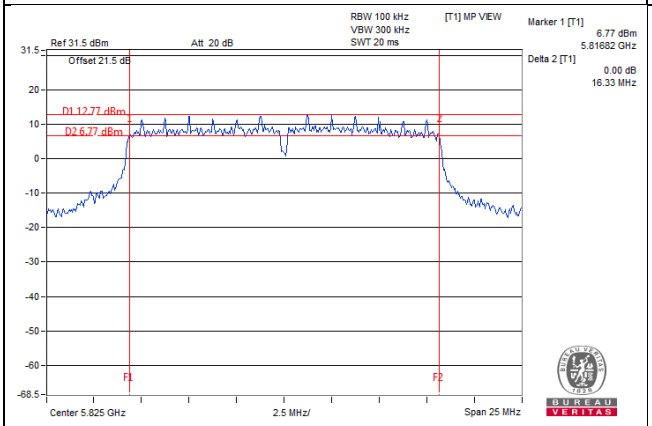
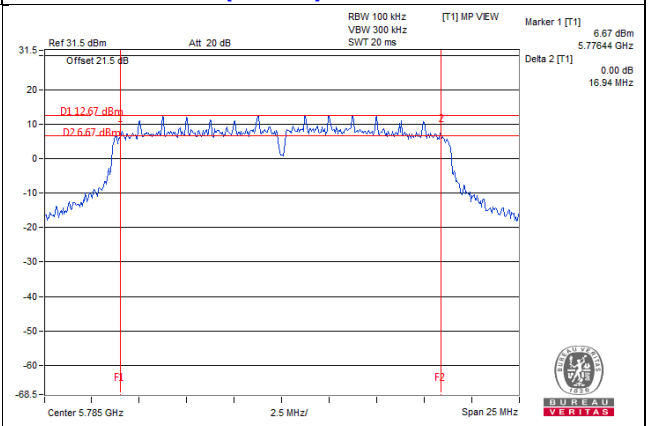
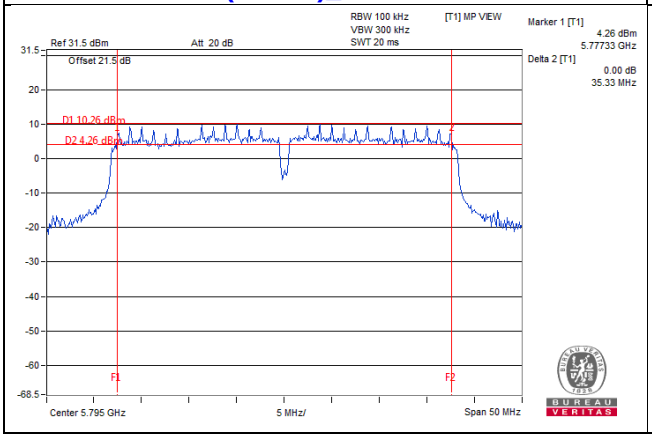
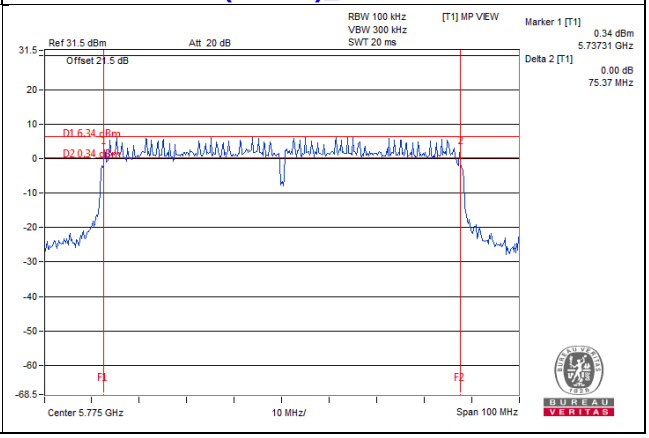
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.31	17.34	17.61	0.5	PASS
157	5785	16.94	17.34	17.58	0.5	PASS
165	5825	17.32	17.58	17.58	0.5	PASS

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	35.49	35.33	35.59	0.5	PASS
159	5795	35.33	35.33	35.34	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	75.37	75.39	75.38	0.5	PASS

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH165	**802.11ac (VHT20)_Chain 0 / CH157**
	
802.11ac (VHT40)_Chain 0 / CH159	**802.11ac (VHT80)_Chain 0 / CH155**
	

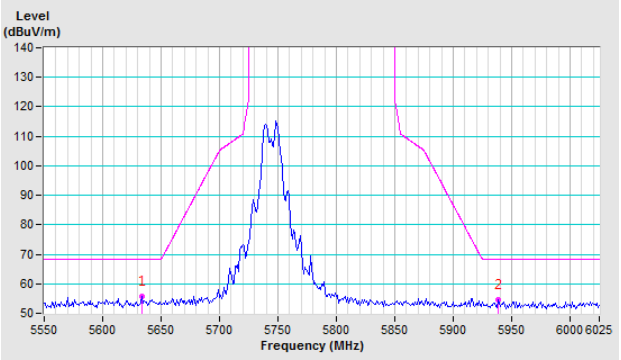
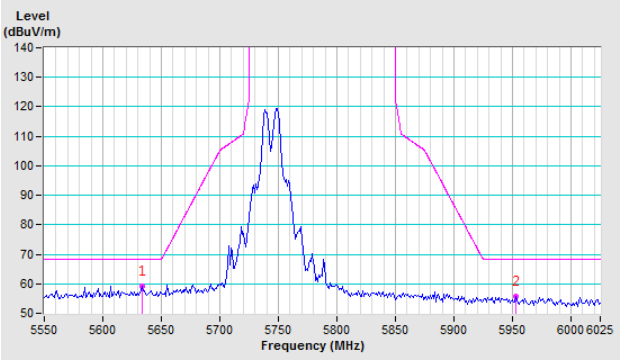
5 Pictures of Test Arrangements

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

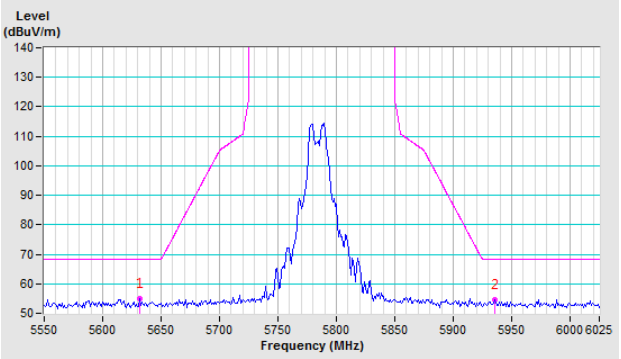
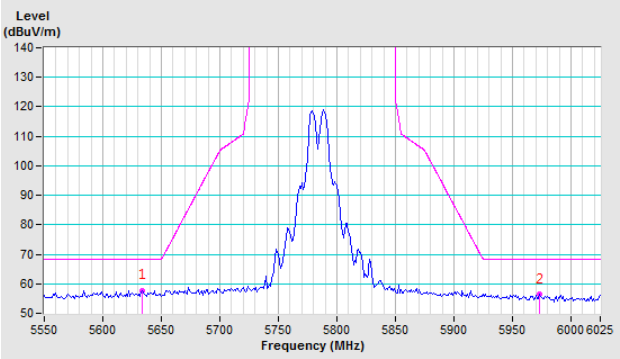
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

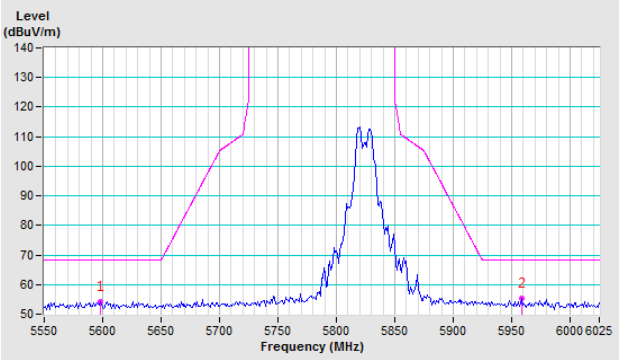
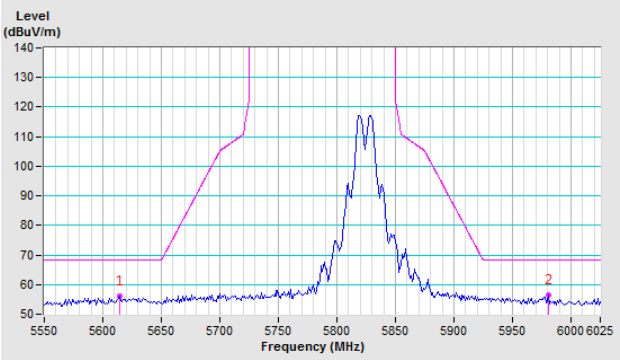
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

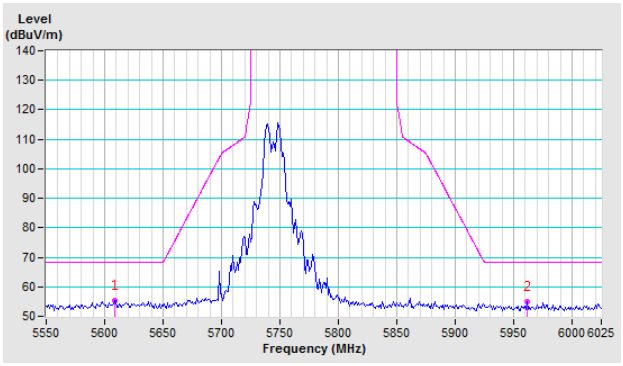
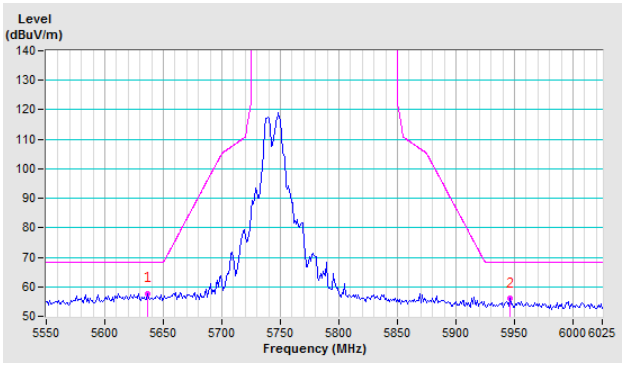
Horizontal	Vertical
	

CH 165 5825 MHz

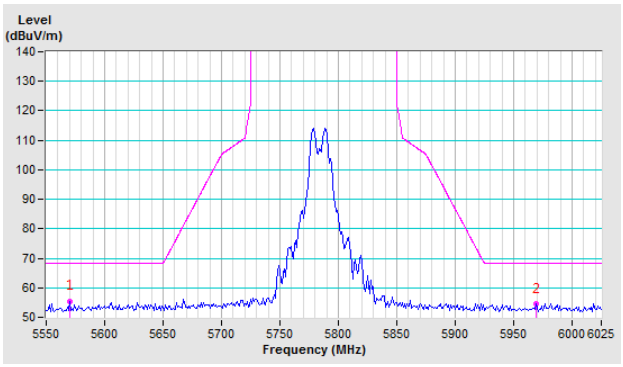
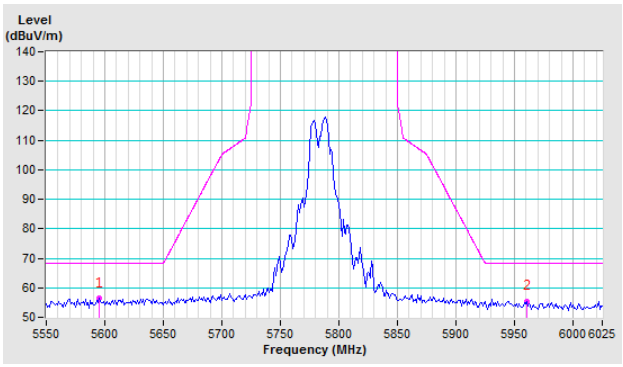
Horizontal	Vertical
	

802.11ac (VHT20)

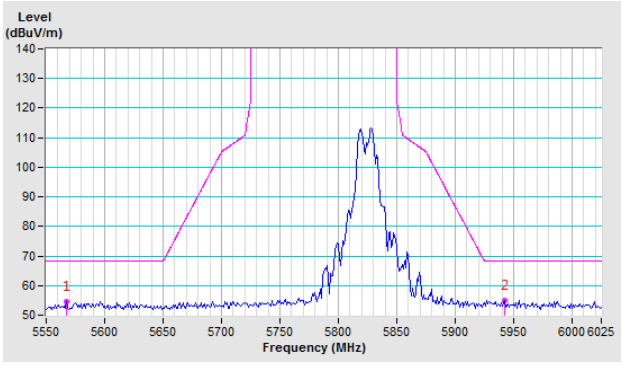
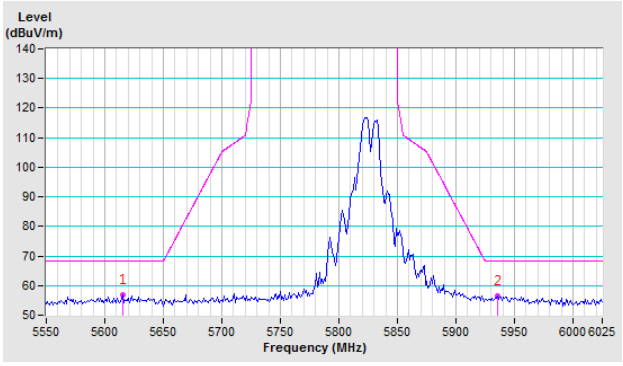
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

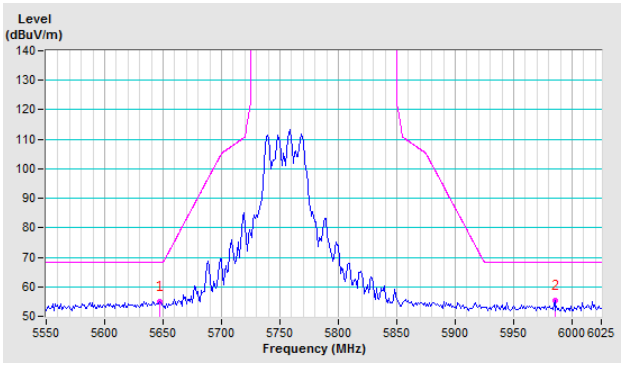
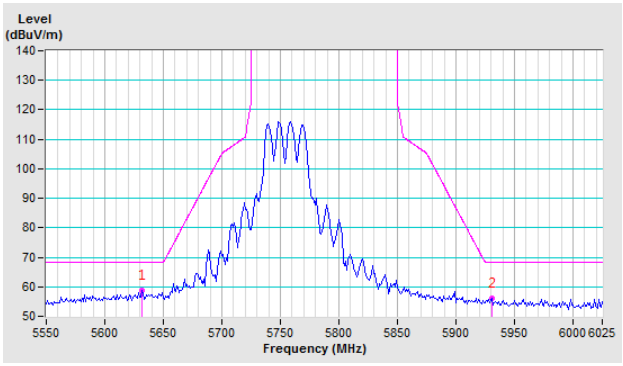
Horizontal	Vertical
	

CH 165 5825 MHz

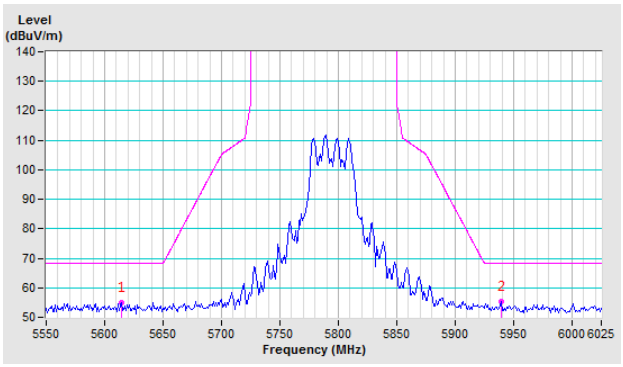
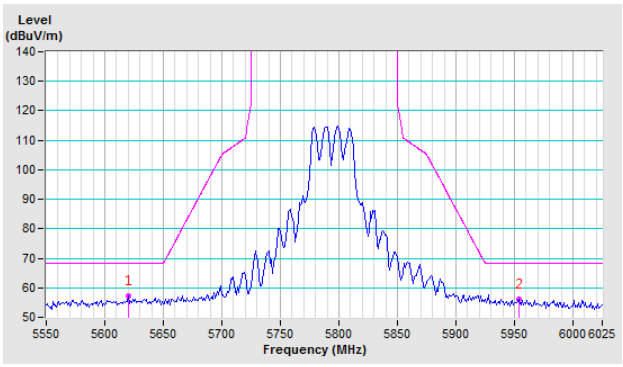
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

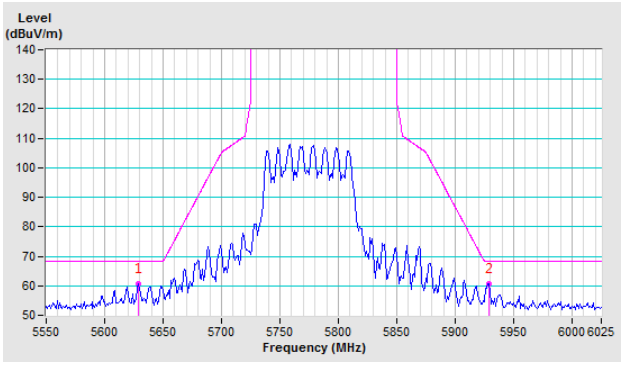
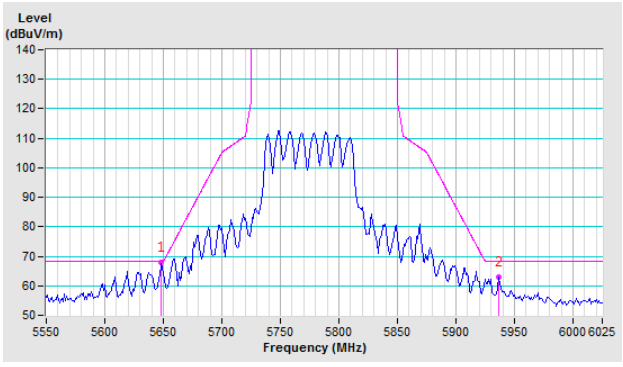
Horizontal	Vertical
	

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 FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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Email: service.adt@tw.bureauveritas.com
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The address and road map of all our labs can be found in our web site also.

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