FCC Test Report

Report No.:	RF180123E04-1
FCC ID:	KA2COVR2200A1
Test Model:	COVR-2200
Received Date:	Jan. 23, 2018
Test Date:	Feb. 02 to 12, 2018
Issued Date:	Mar. 09, 2018
Applicant:	D-Link Corporation
Address:	17595 Mt. Herrmann, Fountain Valley, California, United States 92708
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:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Testing Laboratory
2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF180123E04-1	Original release.	Mar. 09, 2018

1 Certificate of Conformity

Product:	Tri Band Whole Home Wi-Fi Extender
Brand:	D-Link
Test Model:	COVR-2200
Sample Status:	ENGINEERING SAMPLE
Applicant:	D-Link Corporation
Test Date:	Feb. 02 to 12, 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:** Mar. 09, 2018

Wendy Wu / Specialist

Approved by : _____ , **Date:** Mar. 09, 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 -14.39dB at 0.44297MHz.
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, 5143.60MHz.
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	5.33 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.10 dB
	6GHz ~ 18GHz	4.85 dB
	18GHz ~ 40GHz	5.24 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Tri Band Whole Home Wi-Fi Extender
Brand	D-Link
Test Model	COVR-2200
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 and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20: 11 802.11n (HT40), VHT40: 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** **CDD Mode:** 694.376mW **Beamforming Mode:** 624.15mW **5GHz:** **CDD Mode:** **5.18 ~ 5.24GHz:** 620.455mW **5.745 ~ 5.825GHz:** 993.819mW **Beamforming Mode:** **5.18 ~ 5.24GHz:** 598.859mW **5.745 ~ 5.825GHz:** 575.319mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The EUT has below radios as following table:

Radio 1	Radio 2
WLAN 2.4GHz + 5GHz (low band)	WLAN 5GHz (high band)

2. Simultaneously transmission condition.

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

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

Brand	Model No.	Spec.
Shenzhen Gongjin Electronics Co., Ltd	S24B72-120A200-C4	Input: 100-240Vac, 0.8A, 50/60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.2m)

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

Ant No.	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
Dual-Ant 0	290-60110	5.23	2.4~2.4835	PCB	i-pex(MHF)
		3.76	5.15~5.25		
		3.04	5.25~5.35		
Dual-Ant 1	290-60111	4.76	2.4~2.4835	PCB	i-pex(MHF)
		5.45	5.15~5.25		
		5.31	5.25~5.35		
5g_Ant 1	290-60107	5.24	5.47~5.725	PCB	i-pex(MHF)
		5.23	5.725~5.85		
5g_Ant 1_B	290-60105	5.12	5.47~5.725	Dipole	i-pex(MHF)
		5.09	5.725~5.85		
5g_Ant 0	290-60108	3.84	5.47~5.725	PCB	i-pex(MHF)
		5.15	5.725~5.85		
5g_Ant 0_B	290-60106	3.45	5.47~5.725	Dipole	i-pex(MHF)
		3.48	5.725~5.85		

5. For Antenna configuration mode of 5GHz (high band), please refer to the following table:

Condition	**Antenna No.**	
1	5g_Ant 1	5g_Ant 0
2	5g_Ant 1_B	5g_Ant 0_B
3	5g_Ant 1_B	5g_Ant 0
4	5g_Ant 1	5g_Ant 0_B

Note:
1. From the above antennas, the radiated emissions worst case was found in **Condition 3**.
2. For other test, **Condition 1** was selected for final test.

6. The EUT incorporates a MIMO function.

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

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

7. 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	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz

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

Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Radiated Emission Test (Above 1GHz):

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

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

Radiated Emission Test (Below 1GHz):

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

Radio 1 / CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240 5745-5825	36 to 48 149 to 165	48	OFDM	BPSK	6
Radio 2 / 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	157	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.

Radio 1 / CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5180-5240 5745-5825	36 to 48 149 to 165	48	OFDM	BPSK	6
Radio 2 / 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	157	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.

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

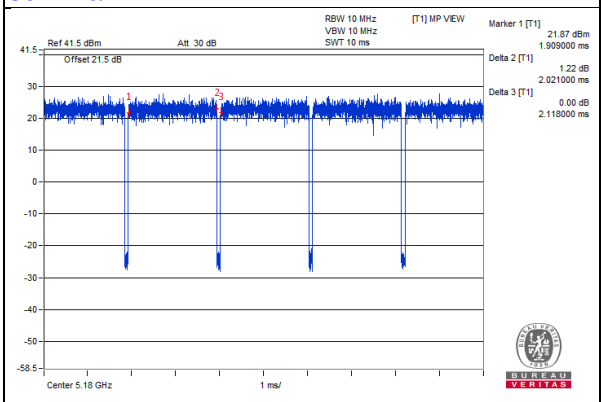
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	22deg. C, 62%RH	120Vac, 60Hz	Eason Tseng
RE<1G	24deg. C, 67%RH	120Vac, 60Hz	Andy Ho
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin

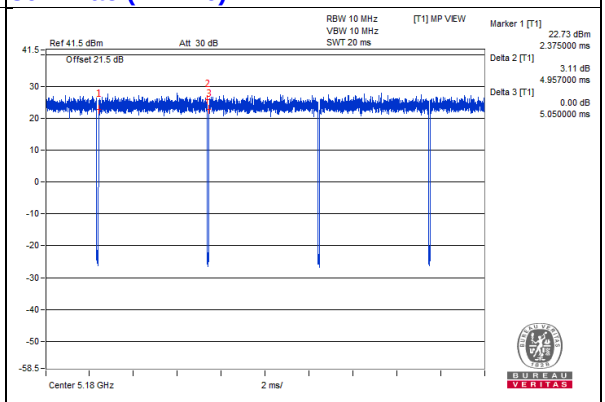
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.021 ms/2.118 ms = 0.954, Duty factor = 10 * log(1/0.954) = 0.20
802.11ac (VHT20): Duty cycle = 4.957 ms/5.05 ms = 0.982
802.11ac (VHT40): Duty cycle = 2.409 ms/2.504 ms = 0.962, Duty factor = 10 * log(1/0.962) = 0.17
802.11ac (VHT80): Duty cycle = 1.133 ms/1.219 ms = 0.929, Duty factor = 10 * log(1/0.929) = 0.32

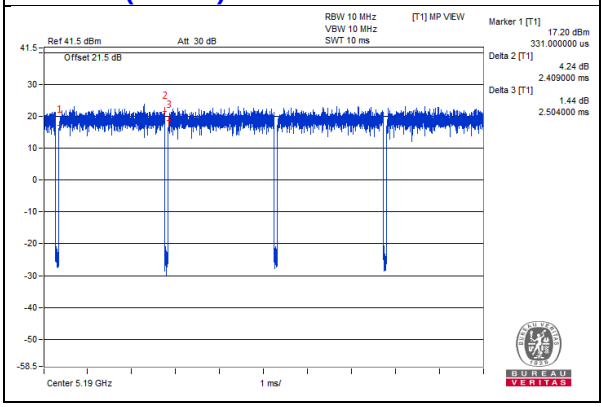
802.11a



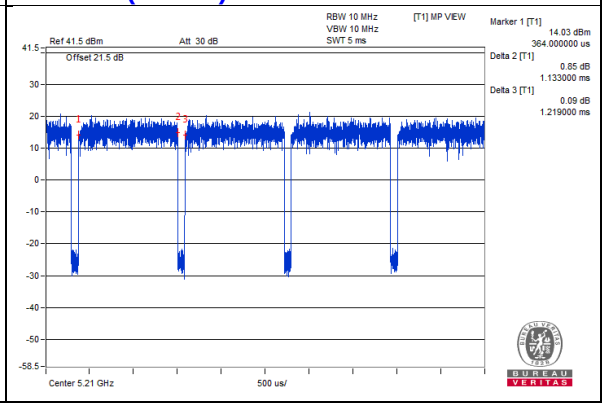
802.11ac (VHT20)



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.

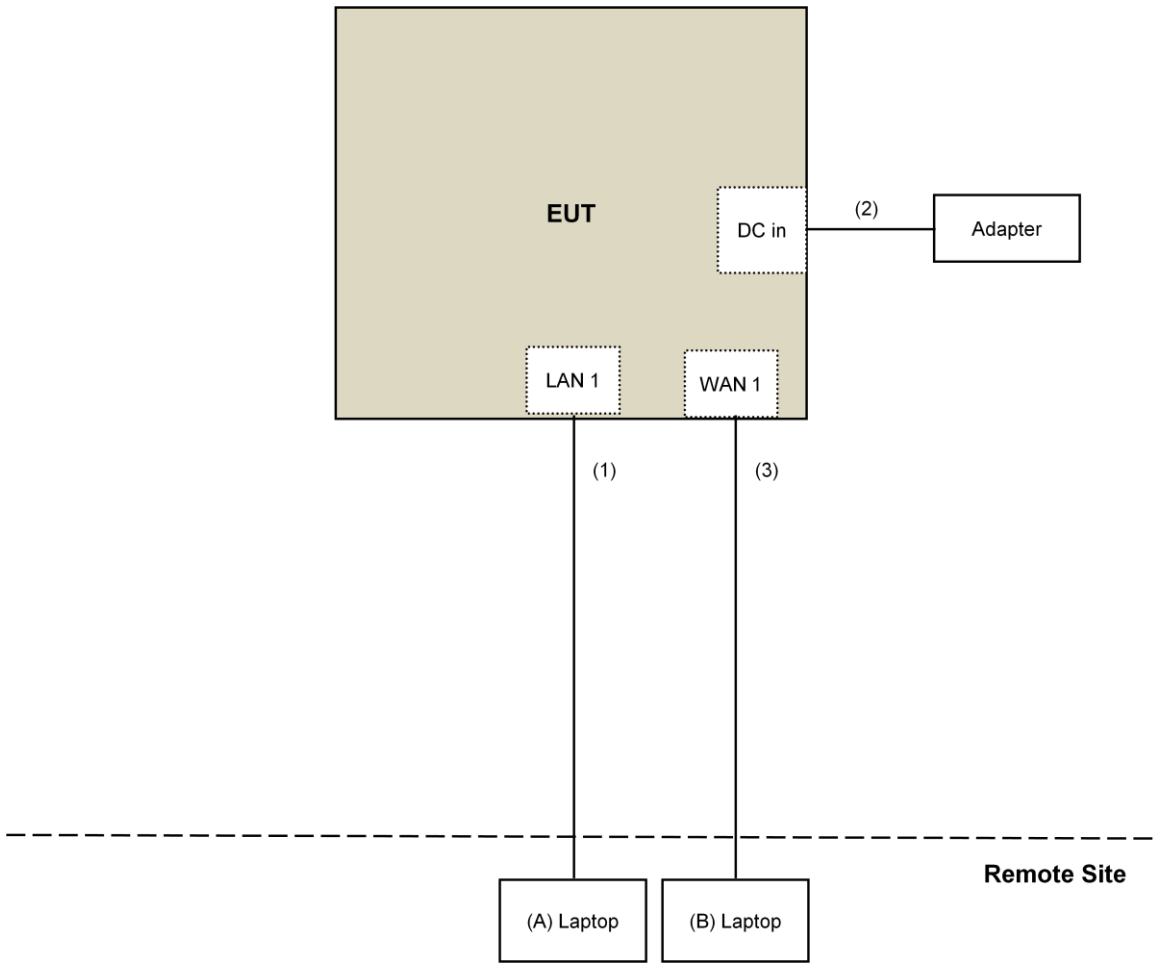
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E6420	482T3R1	FCC DoC	Provided by Lab

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.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	DC Cable	1	1.2	No	0	Supplied by client
3.	RJ-45 Cable	1	10	No	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 Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Loop Antenna(*) TESEQ	HLA 6121	45745	May 19, 2017	May 18, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980385	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Jan. 29, 2018 Jan. 29, 2018 Jan. 29, 2018	Jan. 28, 2019 Jan. 28, 2019 Jan. 28, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160925	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSv40	100964	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. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Feb. 02 to 12, 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. Both X and Y axes of the antenna are set to make the measurement.

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

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

NOTE:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

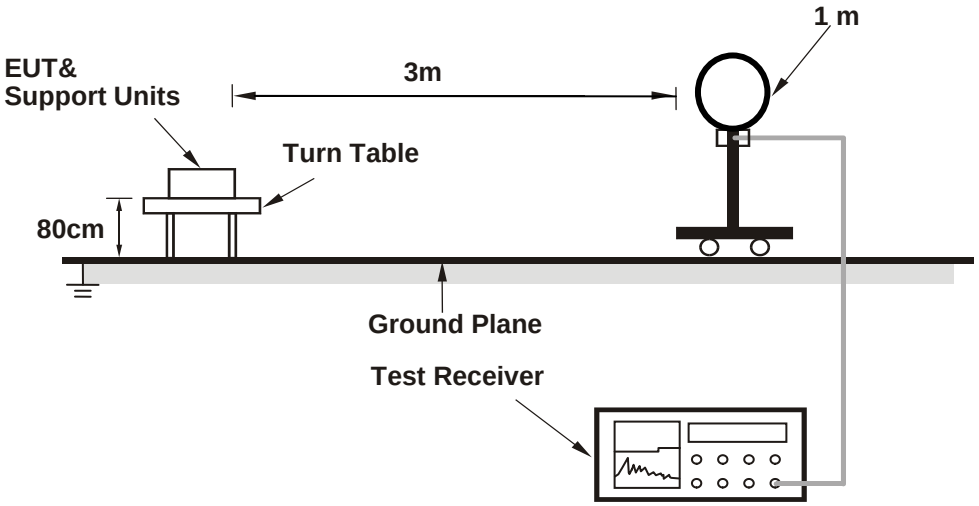
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

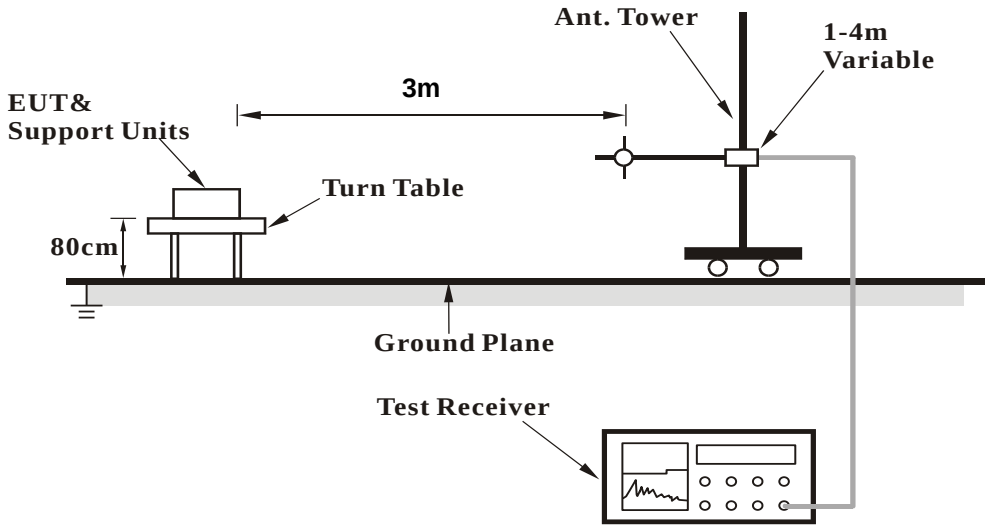
No deviation.

4.1.5 Test Setup

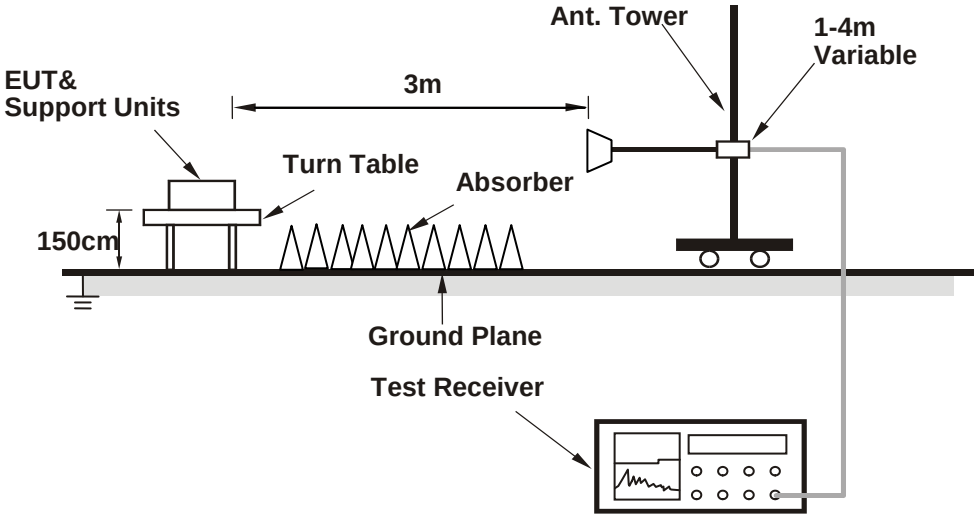
For Radiated emission below 30MHz



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 (QRCT Ver:3.0.2664.0) has been activated to set the EUT on specific status.

4.1.7 Test Results

Radio 1

Above 1GHz Data:

802.11a

CHANNEL	TX Channel 36	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	56.8 PK	74.0	-17.2	1.40 H	203	52.7	4.1
2	5150.00	44.6 AV	54.0	-9.4	1.40 H	203	40.5	4.1
3	*5180.00	110.2 PK			1.40 H	203	106.4	3.8
4	*5180.00	100.9 AV			1.40 H	203	97.1	3.8
5	#10360.00	49.7 PK	74.0	-24.3	2.11 H	255	36.6	13.1
6	#10360.00	37.2 AV	54.0	-16.8	2.11 H	255	24.1	13.1
7	15540.00	58.8 PK	74.0	-15.2	2.46 H	13	45.7	13.1
8	15540.00	47.3 AV	54.0	-6.7	2.46 H	13	34.2	13.1
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	5150.00	71.0 PK	74.0	-3.0	1.76 V	157	66.9	4.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.76 V**	**157**	**49.8**	**4.1**
3	*5180.00	117.5 PK			1.76 V	157	113.7	3.8
4	*5180.00	108.2 AV			1.76 V	157	104.4	3.8
5	#10360.00	45.6 PK	74.0	-28.4	1.56 V	181	32.5	13.1
6	#10360.00	34.1 AV	54.0	-19.9	1.56 V	181	21.0	13.1
7	15540.00	55.8 PK	74.0	-18.2	3.79 V	12	42.7	13.1
8	15540.00	43.2 AV	54.0	-10.8	3.79 V	12	30.1	13.1

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.3 PK	74.0	-16.7	1.43 H	187	53.2	4.1
2	5150.00	45.1 AV	54.0	-8.9	1.43 H	187	41.0	4.1
3	*5200.00	112.5 PK			1.43 H	187	108.8	3.7
4	*5200.00	102.5 AV			1.43 H	187	98.8	3.7
5	#10400.00	51.1 PK	74.0	-22.9	2.11 H	251	38.0	13.1
6	#10400.00	39.9 AV	54.0	-14.1	2.11 H	251	26.8	13.1
7	15600.00	60.2 PK	74.0	-13.8	2.51 H	22	47.2	13.0
8	15600.00	49.1 AV	54.0	-4.9	2.51 H	22	36.1	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	69.1 PK	74.0	-4.9	1.65 V	168	65.0	4.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.65 V**	**168**	**49.8**	**4.1**
3	*5200.00	119.3 PK			1.65 V	168	115.6	3.7
4	*5200.00	110.2 AV			1.65 V	168	106.5	3.7
5	#10400.00	47.9 PK	74.0	-26.1	1.55 V	171	34.8	13.1
6	#10400.00	36.6 AV	54.0	-17.4	1.55 V	171	23.5	13.1
7	15600.00	57.3 PK	74.0	-16.7	3.82 V	24	44.3	13.0
8	15600.00	45.6 AV	54.0	-8.4	3.82 V	24	32.6	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 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	112.9 PK			1.44 H	187	109.4	3.5
2	*5240.00	102.7 AV			1.44 H	187	99.2	3.5
3	5350.00	47.3 PK	74.0	-26.7	1.44 H	187	43.7	3.6
4	5350.00	36.6 AV	54.0	-17.4	1.44 H	187	33.0	3.6
5	#10480.00	51.3 PK	74.0	-22.7	2.11 H	249	37.8	13.5
6	#10480.00	40.2 AV	54.0	-13.8	2.11 H	249	26.7	13.5
7	15720.00	60.3 PK	74.0	-13.7	2.48 H	25	47.5	12.8
8	15720.00	49.5 AV	54.0	-4.5	2.48 H	25	36.7	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	120.6 PK			1.50 V	146	117.1	3.5
2	*5240.00	110.9 AV			1.50 V	146	107.4	3.5
3	5350.00	49.7 PK	74.0	-24.3	1.50 V	146	46.1	3.6
4	5350.00	38.2 AV	54.0	-15.8	1.50 V	146	34.6	3.6
5	#10480.00	48.0 PK	74.0	-26.0	1.51 V	155	34.5	13.5
6	#10480.00	36.5 AV	54.0	-17.5	1.51 V	155	23.0	13.5
7	15720.00	57.6 PK	74.0	-16.4	3.85 V	33	44.8	12.8
8	15720.00	45.9 AV	54.0	-8.1	3.85 V	33	33.1	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.

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	5145.00	56.2 PK	74.0	-17.8	1.44 H	183	52.1	4.1
2	5145.00	43.3 AV	54.0	-10.7	1.44 H	183	39.2	4.1
3	*5180.00	110.7 PK			1.44 H	183	106.9	3.8
4	*5180.00	99.8 AV			1.44 H	183	96.0	3.8
5	#10360.00	49.1 PK	74.0	-24.9	2.06 H	234	36.0	13.1
6	#10360.00	39.2 AV	54.0	-14.8	2.06 H	234	26.1	13.1
7	15540.00	58.3 PK	74.0	-15.7	2.53 H	32	45.2	13.1
8	15540.00	48.1 AV	54.0	-5.9	2.53 H	32	35.0	13.1
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	5145.00	68.8 PK	74.0	-5.2	1.78 V	158	64.7	4.1
2	5145.00	53.7 AV	54.0	-0.3	1.78 V	158	49.6	4.1
3	*5180.00	119.1 PK			1.78 V	158	115.3	3.8
4	*5180.00	107.9 AV			1.78 V	158	104.1	3.8
5	#10360.00	46.1 PK	74.0	-27.9	1.53 V	144	33.0	13.1
6	#10360.00	35.7 AV	54.0	-18.3	1.53 V	144	22.6	13.1
7	15540.00	56.6 PK	74.0	-17.4	3.78 V	10	43.5	13.1
8	15540.00	44.8 AV	54.0	-9.2	3.78 V	10	31.7	13.1

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 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	5143.60	57.1 PK	74.0	-16.9	1.48 H	194	53.0	4.1
2	5143.60	44.2 AV	54.0	-9.8	1.48 H	194	40.1	4.1
3	*5200.00	112.2 PK			1.48 H	194	108.5	3.7
4	*5200.00	101.4 AV			1.48 H	194	97.7	3.7
5	#10400.00	50.7 PK	74.0	-23.3	2.08 H	243	37.6	13.1
6	#10400.00	40.0 AV	54.0	-14.0	2.08 H	243	26.9	13.1
7	15600.00	60.1 PK	74.0	-13.9	2.50 H	36	47.1	13.0
8	15600.00	48.9 AV	54.0	-5.1	2.50 H	36	35.9	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	5143.60	71.4 PK	74.0	-2.6	1.50 V	162	67.3	4.1
2	**5143.60**	**53.9 AV**	**54.0**	**-0.1**	**1.50 V**	**162**	**49.8**	**4.1**
3	*5200.00	120.2 PK			1.50 V	162	116.5	3.7
4	*5200.00	109.6 AV			1.50 V	162	105.9	3.7
5	#10400.00	47.4 PK	74.0	-26.6	1.52 V	160	34.3	13.1
6	#10400.00	36.2 AV	54.0	-17.8	1.52 V	160	23.1	13.1
7	15600.00	57.8 PK	74.0	-16.2	3.77 V	16	44.8	13.0
8	15600.00	45.9 AV	54.0	-8.1	3.77 V	16	32.9	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 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	112.9 PK			1.47 H	207	109.4	3.5
2	*5240.00	102.8 AV			1.47 H	207	99.3	3.5
3	5350.00	58.2 PK	74.0	-15.8	1.47 H	207	54.6	3.6
4	5350.00	44.6 AV	54.0	-9.4	1.47 H	207	41.0	3.6
5	#10480.00	51.3 PK	74.0	-22.7	2.10 H	228	37.8	13.5
6	#10480.00	40.4 AV	54.0	-13.6	2.10 H	228	26.9	13.5
7	15720.00	60.6 PK	74.0	-13.4	2.51 H	41	47.8	12.8
8	15720.00	49.4 AV	54.0	-4.6	2.51 H	41	36.6	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	120.7 PK			1.88 V	149	117.2	3.5
2	*5240.00	109.9 AV			1.88 V	149	106.4	3.5
3	5350.00	49.6 PK	74.0	-24.4	1.88 V	149	46.0	3.6
4	5350.00	38.1 AV	54.0	-15.9	1.88 V	149	34.5	3.6
5	#10480.00	48.3 PK	74.0	-25.7	1.51 V	132	34.8	13.5
6	#10480.00	36.8 AV	54.0	-17.2	1.51 V	132	23.3	13.5
7	15720.00	58.3 PK	74.0	-15.7	3.75 V	17	45.5	12.8
8	15720.00	46.4 AV	54.0	-7.6	3.75 V	17	33.6	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.

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	63.6 PK	74.0	-10.4	1.44 H	191	59.5	4.1
2	5150.00	44.2 AV	54.0	-9.8	1.44 H	191	40.1	4.1
3	*5190.00	103.4 PK			1.44 H	191	99.6	3.8
4	*5190.00	93.2 AV			1.44 H	191	89.4	3.8
5	5350.00	47.9 PK	74.0	-26.1	1.44 H	191	44.3	3.6
6	5350.00	35.1 AV	54.0	-18.9	1.44 H	191	31.5	3.6
7	#10380.00	49.4 PK	74.0	-24.6	2.14 H	239	36.3	13.1
8	#10380.00	38.2 AV	54.0	-15.8	2.14 H	239	25.1	13.1
9	15570.00	58.6 PK	74.0	-15.4	2.44 H	40	45.5	13.1
10	15570.00	47.4 AV	54.0	-6.6	2.44 H	40	34.3	13.1
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	5150.00	73.8 PK	74.0	-0.2	2.50 V	152	69.7	4.1
2	5150.00	53.1 AV	54.0	-0.9	2.50 V	152	49.0	4.1
3	*5190.00	113.2 PK			2.50 V	152	109.4	3.8
4	*5190.00	101.8 AV			2.50 V	152	98.0	3.8
5	5350.00	49.1 PK	74.0	-24.9	2.50 V	152	45.5	3.6
6	5350.00	37.2 AV	54.0	-16.8	2.50 V	152	33.6	3.6
7	#10380.00	45.2 PK	74.0	-28.8	1.56 V	156	32.1	13.1
8	#10380.00	34.3 AV	54.0	-19.7	1.56 V	156	21.2	13.1
9	15570.00	57.1 PK	74.0	-16.9	3.84 V	36	44.0	13.1
10	15570.00	45.6 AV	54.0	-8.4	3.84 V	36	32.5	13.1

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	106.5 PK			1.49 H	193	103.0	3.5
2	*5230.00	96.4 AV			1.49 H	193	92.9	3.5
3	5350.00	49.2 PK	74.0	-24.8	1.46 H	187	45.6	3.6
4	5350.00	36.7 AV	54.0	-17.3	1.46 H	187	33.1	3.6
5	#10460.00	51.3 PK	74.0	-22.7	2.11 H	248	37.9	13.4
6	#10460.00	40.4 AV	54.0	-13.6	2.11 H	248	27.0	13.4
7	15690.00	60.5 PK	74.0	-13.5	2.48 H	31	47.6	12.9
8	15690.00	49.2 AV	54.0	-4.8	2.48 H	31	36.3	12.9
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	*5230.00	114.2 PK			1.89 V	148	110.7	3.5
2	*5230.00	104.9 AV			1.89 V	148	101.4	3.5
3	5350.00	52.7 PK	74.0	-21.3	1.89 V	148	49.1	3.6
4	5350.00	39.5 AV	54.0	-14.5	1.89 V	148	35.9	3.6
5	#10460.00	46.7 PK	74.0	-27.3	1.54 V	146	33.3	13.4
6	#10460.00	35.7 AV	54.0	-18.3	1.54 V	146	22.3	13.4
7	15690.00	58.2 PK	74.0	-15.8	3.78 V	26	45.3	12.9
8	15690.00	46.1 AV	54.0	-7.9	3.78 V	26	33.2	12.9

REMARKS:

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

802.11ac (VHT80)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.8 PK	74.0	-18.2	1.61 H	202	51.7	4.1
2	5150.00	45.9 AV	54.0	-8.1	1.61 H	202	41.8	4.1
3	*5210.00	104.1 PK			1.61 H	202	100.4	3.7
4	*5210.00	95.3 AV			1.61 H	202	91.6	3.7
5	5350.00	48.8 PK	74.0	-25.2	1.61 H	202	45.2	3.6
6	5350.00	37.9 AV	54.0	-16.1	1.61 H	202	34.3	3.6
7	#10420.00	50.0 PK	74.0	-24.0	2.12 H	226	36.8	13.2
8	#10420.00	38.7 AV	54.0	-15.3	2.12 H	226	25.5	13.2
9	15630.00	58.9 PK	74.0	-15.1	2.39 H	47	45.9	13.0
10	15630.00	47.7 AV	54.0	-6.3	2.39 H	47	34.7	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	63.5 PK	74.0	-10.5	1.62 V	157	59.4	4.1
2	5150.00	53.8 AV	54.0	-0.2	1.62 V	157	49.7	4.1
3	*5210.00	110.0 PK			1.62 V	157	106.3	3.7
4	*5210.00	101.1 AV			1.62 V	157	97.4	3.7
5	5350.00	56.3 PK	74.0	-17.7	1.62 V	157	52.7	3.6
6	5350.00	43.4 AV	54.0	-10.6	1.62 V	157	39.8	3.6
7	#10420.00	45.8 PK	74.0	-28.2	1.57 V	149	32.6	13.2
8	#10420.00	34.6 AV	54.0	-19.4	1.57 V	149	21.4	13.2
9	15630.00	57.0 PK	74.0	-17.0	3.84 V	38	44.0	13.0
10	15630.00	45.2 AV	54.0	-8.8	3.84 V	38	32.2	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.

Below 1GHz Data:

802.11a

CHANNEL	TX Channel 48	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	124.99	37.4 QP	43.5	-6.1	1.98 H	205	46.8	-9.4
2	140.58	33.6 QP	43.5	-9.9	1.76 H	283	41.7	-8.1
3	165.80	31.6 QP	43.5	-11.9	1.92 H	113	39.6	-8.0
4	270.56	30.1 QP	46.0	-15.9	1.46 H	225	38.3	-8.2
5	526.64	29.4 QP	46.0	-16.6	1.42 H	187	31.2	-1.8
6	730.35	39.2 QP	46.0	-6.8	1.16 H	203	37.4	1.8
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	37.75	33.2 QP	40.0	-6.8	1.00 V	38	41.7	-8.5
2	53.28	34.4 QP	40.0	-5.6	1.02 V	143	42.3	-7.9
3	157.07	33.5 QP	43.5	-10.0	1.00 V	226	41.0	-7.5
4	395.69	28.4 QP	46.0	-17.6	1.00 V	241	33.1	-4.7
5	683.78	31.6 QP	46.0	-14.4	1.43 V	206	30.4	1.2
6	910.76	35.5 QP	46.0	-10.5	1.95 V	174	30.8	4.7

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

Radio 2

Above 1GHz Data:

802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5425.10	45.3 PK	74.0	-28.7	1.50 H	0	41.4	3.9
2	5425.10	39.8 AV	54.0	-14.2	1.50 H	0	35.9	3.9
3	#5644.25	61.5 PK	68.2	-6.7	1.50 H	0	57.0	4.5
4	#5663.64	68.8 PK	78.3	-9.5	1.50 H	0	64.4	4.4
5	*5745.00	116.6 PK			1.50 H	0	112.3	4.3
6	*5745.00	105.9 AV			1.50 H	0	101.6	4.3
7	#6022.26	59.4 PK	68.2	-8.8	1.50 H	0	54.3	5.1
8	11490.00	54.3 PK	74.0	-19.7	1.47 H	29	40.3	14.0
9	11490.00	42.4 AV	54.0	-11.6	1.47 H	29	28.4	14.0
10	#17235.00	57.3 PK	74.0	-16.7	1.65 H	346	40.4	16.9
11	#17235.00	45.7 AV	54.0	-8.3	1.65 H	346	28.8	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	5425.10	54.8 PK	74.0	-19.2	1.65 V	31	50.9	3.9
2	5425.10	48.0 AV	54.0	-6.0	1.65 V	31	44.1	3.9
3	#5646.20	63.7 PK	68.2	-4.5	1.65 V	30	59.2	4.5
4	#5657.53	68.6 PK	73.8	-5.2	1.65 V	30	64.2	4.4
5	*5745.00	119.0 PK			1.65 V	31	114.7	4.3
6	*5745.00	108.6 AV			1.65 V	31	104.3	4.3
7	#5953.19	60.3 PK	68.2	-7.9	1.65 V	30	55.4	4.9
8	11490.00	52.0 PK	74.0	-22.0	1.71 V	224	38.0	14.0
9	11490.00	40.2 AV	54.0	-13.8	1.71 V	224	26.2	14.0
10	#17235.00	54.3 PK	74.0	-19.7	1.81 V	266	37.4	16.9
11	#17235.00	42.5 AV	54.0	-11.5	1.81 V	266	25.6	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 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	#5610.73	61.2 PK	68.2	-7.0	1.50 H	308	56.8	4.4
2	*5785.00	118.4 PK			1.50 H	308	114.1	4.3
3	*5785.00	107.9 AV			1.50 H	308	103.6	4.3
4	#5936.07	59.7 PK	68.2	-8.5	1.50 H	308	54.8	4.9
5	11570.00	55.3 PK	74.0	-18.7	1.45 H	22	41.3	14.0
6	11570.00	43.3 AV	54.0	-10.7	1.45 H	22	29.3	14.0
7	#17355.00	58.6 PK	74.0	-15.4	1.62 H	345	41.3	17.3
8	#17355.00	46.8 AV	54.0	-7.2	1.62 H	345	29.5	17.3
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	#5592.90	59.2 PK	68.2	-9.0	1.50 V	21	54.8	4.4
2	*5785.00	119.2 PK			1.66 V	46	114.9	4.3
3	*5785.00	108.8 AV			1.66 V	46	104.5	4.3
4	#5977.38	60.2 PK	68.2	-8.0	1.50 V	21	55.3	4.9
5	11570.00	51.5 PK	74.0	-22.5	1.77 V	223	37.5	14.0
6	11570.00	40.0 AV	54.0	-14.0	1.77 V	223	26.0	14.0
7	#17355.00	53.7 PK	74.0	-20.3	1.78 V	251	36.4	17.3
8	#17355.00	42.2 AV	54.0	-11.8	1.78 V	251	24.9	17.3

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 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	#5615.93	61.8 PK	68.2	-6.4	1.50 H	317	57.4	4.4
2	*5825.00	117.8 PK			1.50 H	317	113.4	4.4
3	*5825.00	107.5 AV			1.50 H	317	103.1	4.4
4	#5952.38	61.2 PK	68.2	-7.0	1.50 H	317	56.3	4.9
5	11650.00	55.4 PK	74.0	-18.6	1.41 H	15	41.5	13.9
6	11650.00	43.5 AV	54.0	-10.5	1.41 H	15	29.6	13.9
7	#17475.00	58.5 PK	74.0	-15.5	1.59 H	358	40.3	18.2
8	#17475.00	46.6 AV	54.0	-7.4	1.59 H	358	28.4	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	#5641.98	59.4 PK	68.2	-8.8	2.26 V	36	54.9	4.5
2	*5825.00	118.8 PK			1.64 V	39	114.4	4.4
3	*5825.00	108.5 AV			1.64 V	39	104.1	4.4
4	#5952.21	58.7 PK	68.2	-9.5	2.26 V	36	53.8	4.9
5	11650.00	51.9 PK	74.0	-22.1	1.76 V	234	38.0	13.9
6	11650.00	40.1 AV	54.0	-13.9	1.76 V	234	26.2	13.9
7	#17475.00	53.6 PK	74.0	-20.4	1.80 V	258	35.4	18.2
8	#17475.00	42.1 AV	54.0	-11.9	1.80 V	258	23.9	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 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	#5586.71	60.8 PK	68.2	-7.4	1.50 H	310	56.4	4.4
2	*5745.00	117.6 PK			1.50 H	310	113.3	4.3
3	*5745.00	106.6 AV			1.50 H	310	102.3	4.3
4	#5966.69	59.1 PK	68.2	-9.1	1.50 H	310	54.2	4.9
5	11490.00	55.1 PK	74.0	-18.9	1.37 H	44	41.1	14.0
6	11490.00	43.3 AV	54.0	-10.7	1.37 H	44	29.3	14.0
7	#17235.00	58.6 PK	74.0	-15.4	1.66 H	358	41.7	16.9
8	#17235.00	47.2 AV	54.0	-6.8	1.66 H	358	30.3	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	#5588.12	58.8 PK	68.2	-9.4	2.38 V	34	54.4	4.4
2	*5745.00	119.2 PK			2.38 V	34	114.9	4.3
3	*5745.00	108.3 AV			2.38 V	34	104.0	4.3
4	#5993.69	59.6 PK	68.2	-8.6	2.38 V	34	54.5	5.1
5	11490.00	51.6 PK	74.0	-22.4	1.77 V	221	37.6	14.0
6	11490.00	40.8 AV	54.0	-13.2	1.77 V	221	26.8	14.0
7	#17235.00	53.2 PK	74.0	-20.8	1.79 V	230	36.3	16.9
8	#17235.00	42.1 AV	54.0	-11.9	1.79 V	230	25.2	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 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	#5630.00	60.9 PK	68.2	-7.3	1.50 H	310	56.4	4.5
2	*5785.00	117.8 PK			1.50 H	310	113.5	4.3
3	*5785.00	107.1 AV			1.50 H	310	102.8	4.3
4	#5973.45	59.0 PK	68.2	-9.2	1.50 H	310	54.1	4.9
5	11570.00	55.4 PK	74.0	-18.6	1.40 H	35	41.4	14.0
6	11570.00	43.5 AV	54.0	-10.5	1.40 H	35	29.5	14.0
7	#17355.00	58.7 PK	74.0	-15.3	1.64 H	356	41.4	17.3
8	#17355.00	47.0 AV	54.0	-7.0	1.64 H	356	29.7	17.3
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	#5644.19	60.5 PK	68.2	-7.7	2.02 V	31	56.0	4.5
2	*5785.00	121.0 PK			2.02 V	31	116.7	4.3
3	*5785.00	109.2 AV			2.02 V	31	104.9	4.3
4	#5954.34	59.2 PK	68.2	-9.0	2.02 V	31	54.3	4.9
5	11570.00	51.6 PK	74.0	-22.4	1.74 V	207	37.6	14.0
6	11570.00	40.6 AV	54.0	-13.4	1.74 V	207	26.6	14.0
7	#17355.00	53.1 PK	74.0	-20.9	1.79 V	237	35.8	17.3
8	#17355.00	41.8 AV	54.0	-12.2	1.79 V	237	24.5	17.3

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 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	#5624.29	61.2 PK	68.2	-7.0	1.64 H	316	56.8	4.4
2	*5825.00	117.1 PK			1.64 H	316	112.7	4.4
3	*5825.00	106.8 AV			1.64 H	316	102.4	4.4
4	#5985.31	58.7 PK	68.2	-9.5	1.64 H	316	53.6	5.1
5	11650.00	55.3 PK	74.0	-18.7	1.42 H	31	41.4	13.9
6	11650.00	43.3 AV	54.0	-10.7	1.42 H	31	29.4	13.9
7	#17475.00	58.4 PK	74.0	-15.6	1.64 H	346	40.2	18.2
8	#17475.00	47.1 AV	54.0	-6.9	1.64 H	346	28.9	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	#5612.69	59.7 PK	68.2	-8.5	1.50 V	31	55.3	4.4
2	*5825.00	120.7 PK			1.50 V	31	116.3	4.4
3	*5825.00	108.9 AV			1.50 V	31	104.5	4.4
4	#5974.25	58.8 PK	68.2	-9.4	1.50 V	31	53.9	4.9
5	11650.00	51.6 PK	74.0	-22.4	1.83 V	214	37.7	13.9
6	11650.00	40.8 AV	54.0	-13.2	1.83 V	214	26.9	13.9
7	#17475.00	53.7 PK	74.0	-20.3	1.77 V	243	35.5	18.2
8	#17475.00	42.6 AV	54.0	-11.4	1.77 V	243	24.4	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 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	#5641.77	65.2 PK	68.2	-3.0	1.26 H	306	60.7	4.5
2	*5755.00	113.9 PK			1.26 H	306	109.6	4.3
3	*5755.00	103.4 AV			1.26 H	306	99.1	4.3
4	#5948.96	59.4 PK	68.2	-8.8	1.26 H	306	54.5	4.9
5	11510.00	51.3 PK	74.0	-22.7	1.48 H	35	37.3	14.0
6	11510.00	41.2 AV	54.0	-12.8	1.48 H	35	27.2	14.0
7	#17265.00	54.6 PK	74.0	-19.4	1.60 H	346	37.6	17.0
8	#17265.00	46.3 AV	54.0	-7.7	1.60 H	346	29.3	17.0
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	#5664.76	71.3 PK	79.2	-7.9	1.78 V	45	66.9	4.4
2	*5755.00	115.3 PK			1.78 V	45	111.0	4.3
3	*5755.00	107.7 AV			1.78 V	45	103.4	4.3
4	#5964.94	59.1 PK	68.2	-9.1	1.78 V	45	54.2	4.9
5	11510.00	49.2 PK	74.0	-24.8	1.79 V	220	35.2	14.0
6	11510.00	38.2 AV	54.0	-15.8	1.79 V	220	24.2	14.0
7	#17265.00	52.6 PK	74.0	-21.4	1.75 V	233	35.6	17.0
8	#17265.00	41.2 AV	54.0	-12.8	1.75 V	233	24.2	17.0

REMARKS:

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

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5597.33	62.4 PK	68.2	-5.8	3.49 H	126	58.0	4.4
2	*5795.00	112.3 PK			3.49 H	126	108.0	4.3
3	*5795.00	102.0 AV			3.49 H	126	97.7	4.3
4	#5959.50	59.8 PK	68.2	-8.4	3.49 H	126	54.9	4.9
5	11590.00	54.9 PK	74.0	-19.1	1.42 H	37	40.9	14.0
6	11590.00	42.9 AV	54.0	-11.1	1.42 H	37	28.9	14.0
7	#17385.00	58.7 PK	74.0	-15.3	1.65 H	356	41.4	17.3
8	#17385.00	47.6 AV	54.0	-6.4	1.65 H	356	30.3	17.3
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	#5636.57	59.8 PK	68.2	-8.4	2.44 V	33	55.3	4.5
2	*5795.00	117.5 PK			2.44 V	34	113.2	4.3
3	*5795.00	109.0 AV			2.44 V	34	104.7	4.3
4	#5959.65	59.6 PK	68.2	-8.6	2.44 V	33	54.7	4.9
5	11590.00	50.9 PK	74.0	-23.1	1.86 V	226	36.9	14.0
6	11590.00	39.9 AV	54.0	-14.1	1.86 V	226	25.9	14.0
7	#17385.00	53.7 PK	74.0	-20.3	1.76 V	255	36.4	17.3
8	#17385.00	42.8 AV	54.0	-11.2	1.76 V	255	25.5	17.3

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.

802.11ac (VHT80)

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5657.01	69.4 PK	73.4	-4.0	1.50 H	44	65.0	4.4
2	*5775.00	107.6 PK			1.50 H	44	103.2	4.4
3	*5775.00	97.1 AV			1.50 H	44	92.7	4.4
4	#5941.76	60.5 PK	68.2	-7.7	1.50 H	44	55.6	4.9
5	11550.00	50.8 PK	74.0	-23.2	1.44 H	47	36.9	13.9
6	11550.00	40.7 AV	54.0	-13.3	1.44 H	47	26.8	13.9
7	#17325.00	54.1 PK	74.0	-19.9	1.57 H	333	36.9	17.2
8	#17325.00	45.4 AV	54.0	-8.6	1.57 H	333	28.2	17.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5648.95	67.2 PK	68.2	-1.0	1.88 V	33	62.7	4.5
2	#5658.99	70.2 PK	74.9	-4.7	1.88 V	33	65.8	4.4
3	*5775.00	110.6 PK			1.88 V	33	106.2	4.4
4	*5775.00	100.9 AV			1.88 V	33	96.5	4.4
5	#5926.76	67.7 PK	68.2	-0.5	1.88 V	33	62.8	4.9
6	#5934.92	66.5 PK	68.2	-1.7	1.88 V	33	61.6	4.9
7	11550.00	48.6 PK	74.0	-25.4	1.76 V	228	34.7	13.9
8	11550.00	37.8 AV	54.0	-16.2	1.76 V	228	23.9	13.9
9	#17325.00	52.1 PK	74.0	-21.9	1.77 V	239	34.9	17.2
10	#17325.00	40.8 AV	54.0	-13.2	1.77 V	239	23.6	17.2

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.

Below 1GHz Data:

802.11ac (VHT20)

CHANNEL	TX Channel 157	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	124.99	36.2 QP	43.5	-7.3	1.84 H	311	45.6	-9.4
2	140.58	32.8 QP	43.5	-10.7	1.75 H	266	40.9	-8.1
3	165.80	32.4 QP	43.5	-11.1	1.83 H	273	40.4	-8.0
4	270.56	31.0 QP	46.0	-15.0	1.56 H	139	39.2	-8.2
5	526.64	30.5 QP	46.0	-15.5	1.51 H	299	32.3	-1.8
6	730.35	37.5 QP	46.0	-8.5	1.00 H	106	35.7	1.8
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	37.75	33.5 QP	40.0	-6.5	1.10 V	261	42.0	-8.5
2	53.28	34.3 QP	40.0	-5.7	1.00 V	206	42.2	-7.9
3	157.07	34.6 QP	43.5	-8.9	1.21 V	146	42.1	-7.5
4	395.69	27.6 QP	46.0	-18.4	1.19 V	263	32.3	-4.7
5	683.78	29.4 QP	46.0	-16.6	1.52 V	144	28.2	1.2
6	910.76	36.4 QP	46.0	-9.6	1.66 V	307	31.7	4.7

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

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) R&S	ESH3-Z5	848773/004	Nov. 15, 2017	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 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 Shielded Room No. 1.
3 Tested Date: Feb. 09, 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.

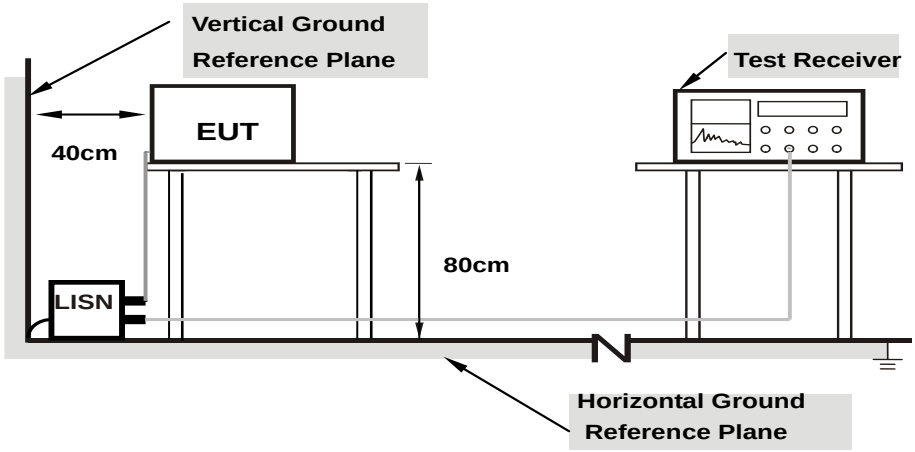
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

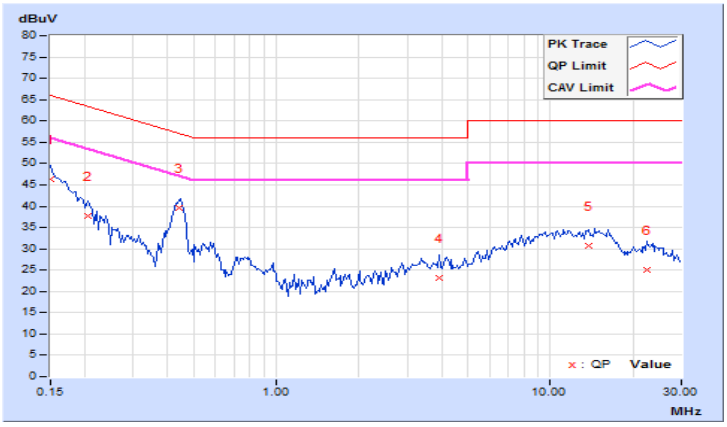
Radio 1

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.14	36.15	19.08	46.29	29.22	66.00	56.00	-19.71	-26.78
2	0.20469	10.15	27.59	12.99	37.74	23.14	63.42	53.42	-25.68	-30.28
3	0.44297	10.20	29.53	22.34	39.73	32.54	57.01	47.01	-17.28	-14.47
4	3.92188	10.43	12.81	6.60	23.24	17.03	56.00	46.00	-32.76	-28.97
5	13.73828	11.08	19.55	14.14	30.63	25.22	60.00	50.00	-29.37	-24.78
6	22.53906	11.55	13.44	8.14	24.99	19.69	60.00	50.00	-35.01	-30.31

REMARKS:

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

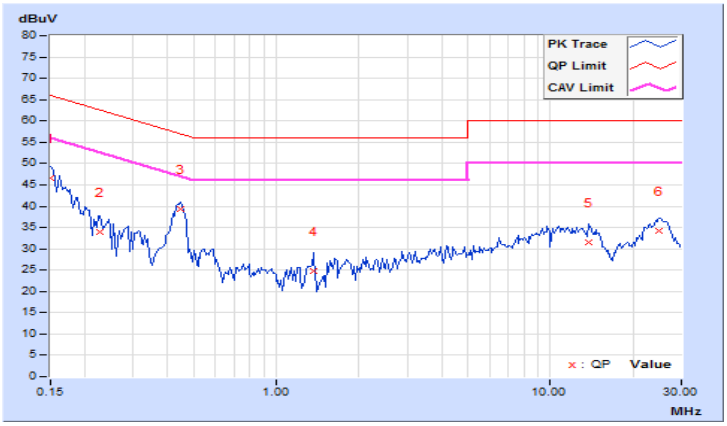


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.05	36.45	20.50	46.50	30.55	66.00	56.00	-19.50	-25.45
2	0.22812	10.06	23.78	9.26	33.84	19.32	62.52	52.52	-28.68	-33.20
3	0.44688	10.10	29.17	22.09	39.27	32.19	56.93	46.93	-17.66	-14.74
4	1.35938	10.14	14.64	6.76	24.78	16.90	56.00	46.00	-31.22	-29.10
5	13.71484	10.89	20.73	14.51	31.62	25.40	60.00	50.00	-28.38	-24.60
6	24.98828	11.34	22.85	17.38	34.19	28.72	60.00	50.00	-25.81	-21.28

REMARKS:

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



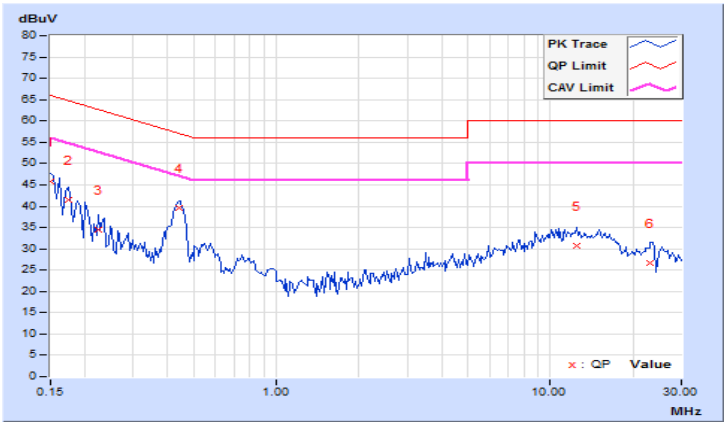
Radio 2

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.14	35.61	18.60	45.75	28.74	66.00	56.00	-20.25	-27.26
2	0.17344	10.14	31.44	15.96	41.58	26.10	64.79	54.79	-23.21	-28.69
3	0.22422	10.16	24.25	9.66	34.41	19.82	62.66	52.66	-28.25	-32.84
4	**0.44297**	**10.20**	**29.45**	**22.42**	**39.65**	**32.62**	**57.01**	**47.01**	**-17.36**	**-14.39**
5	12.46875	10.99	19.59	13.96	30.58	24.95	60.00	50.00	-29.42	-25.05
6	23.12500	11.56	15.10	10.76	26.66	22.32	60.00	50.00	-33.34	-27.68

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.

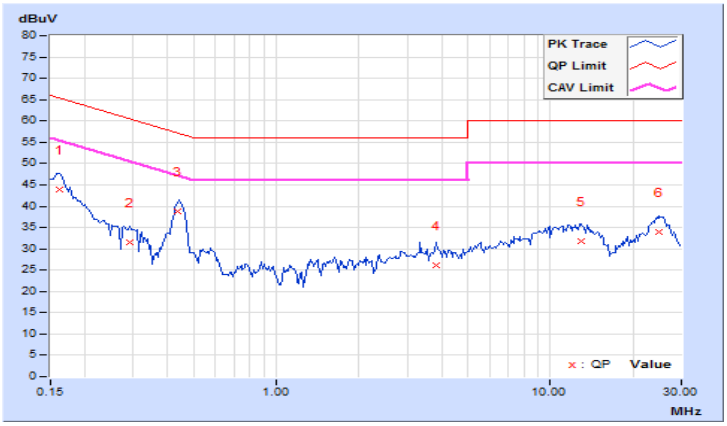


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16172	10.05	33.96	16.86	44.01	26.91	65.38	55.38	-21.37	-28.47
2	0.29063	10.07	21.44	11.05	31.51	21.12	60.51	50.51	-29.00	-29.39
3	0.43516	10.10	28.74	21.43	38.84	31.53	57.15	47.15	-18.31	-15.62
4	3.81250	10.28	15.76	9.55	26.04	19.83	56.00	46.00	-29.96	-26.17
5	13.01172	10.84	20.85	14.63	31.69	25.47	60.00	50.00	-28.31	-24.53
6	24.91797	11.34	22.62	17.16	33.96	28.50	60.00	50.00	-26.04	-21.50

REMARKS:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

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

*B is the 26 dB emission bandwidth in megahertz

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

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

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

4.3.2 Test Setup

4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Result

Radio 1

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	21.48	21.11	269.727	24.31	30.00	Pass
40	5200	24.22	23.97	513.7	27.11	30.00	Pass
48	5240	25.04	24.79	620.455	27.93	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.30	21.97	327.222	25.15	30.00	Pass
40	5200	24.64	24.31	560.846	27.49	30.00	Pass
48	5240	24.92	24.60	598.859	27.77	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	20.50	20.15	215.716	23.34	30.00	Pass
46	5230	24.78	24.28	568.525	27.55	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	20.90	20.52	235.747	23.72	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				
36	5180	22.30	21.97	327.222	25.15	28.34	Pass
40	5200	24.64	24.31	560.846	27.49	28.34	Pass
48	5240	24.92	24.60	598.859	27.77	28.34	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.66dBi > 6dBi , so the power limit shall be reduced to 30-(7.66-6) = 28.34dBm.

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				
38	5190	20.50	20.15	215.716	23.34	28.34	Pass
46	5230	24.78	24.28	568.525	27.55	28.34	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.66dBi > 6dBi , so the power limit shall be reduced to 30-(7.66-6) = 28.34dBm.

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				
42	5210	20.90	20.52	235.747	23.72	28.34	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.66dBi > 6dBi , so the power limit shall be reduced to 30-(7.66-6) = 28.34dBm.

Radio 2

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	25.94	26.51	840.358	29.24	30.00	Pass
157	5785	26.20	27.59	990.985	29.96	30.00	Pass
165	5825	26.17	26.51	861.713	29.35	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	25.89	26.63	848.407	29.29	30.00	Pass
157	5785	25.94	27.79	993.819	29.97	30.00	Pass
165	5825	25.97	26.78	871.798	29.40	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
151	5755	23.02	23.68	433.793	26.37	30.00	Pass
159	5795	26.43	27.39	987.819	29.95	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	22.38	23.47	395.313	25.97	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				
149	5745	23.94	24.78	548.35	27.39	27.80	Pass
157	5785	24.02	24.89	560.667	27.49	27.80	Pass
165	5825	23.98	24.63	540.437	27.33	27.80	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 8.20dBi > 6dBi , so the power limit shall be reduced to 30-(8.20-6) = 27.80dBm.

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				
151	5755	23.02	23.68	433.793	26.37	27.80	Pass
159	5795	24.11	25.02	575.319	27.60	27.80	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 8.20dBi > 6dBi , so the power limit shall be reduced to 30-(8.20-6) = 27.80dBm.

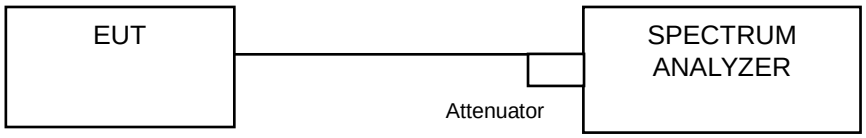
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	22.38	23.47	395.313	25.97	27.80	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 8.20dBi > 6dBi , so the power limit shall be reduced to 30-(8.20-6) = 27.80dBm.

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

Radio 1

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.44	16.56
40	5200	16.68	16.56
48	5240	17.04	17.40

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.76	17.76
40	5200	18.00	17.76
48	5240	18.00	18.36

802.11ac (VHT40)

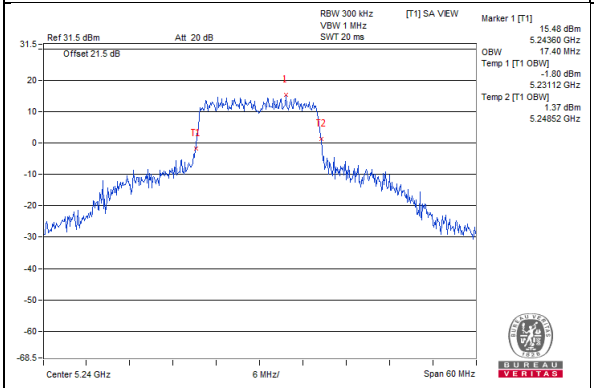
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.48	36.24
46	5230	36.72	37.20

802.11ac (VHT80)

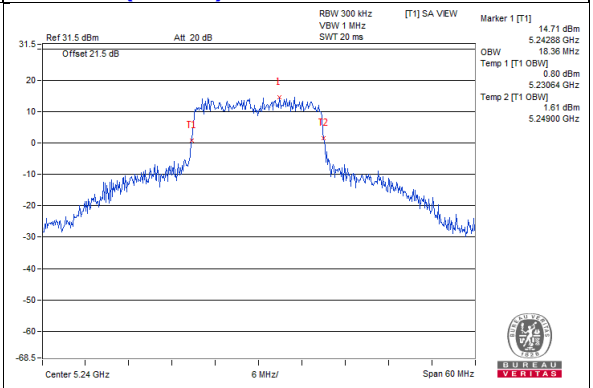
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.32	75.84

Spectrum Plot of Worst Value

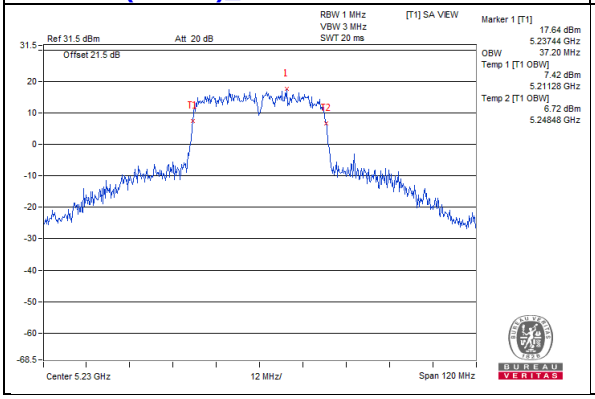
802.11a_Chain1 / CH48



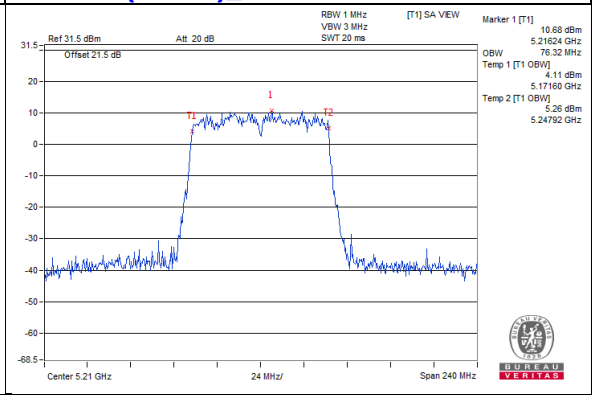
802.11ac (VHT20)_Chain1 / CH48



802.11ac (VHT40)_Chain1 / CH46



802.11ac (VHT80)_Chain0 / CH42



Radio 2

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
149	5745	23.04	20.64
157	5785	36.00	34.92
165	5825	26.16	35.40

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
149	5745	22.92	19.20
157	5785	19.44	35.64
165	5825	26.88	35.16

802.11ac (VHT40)

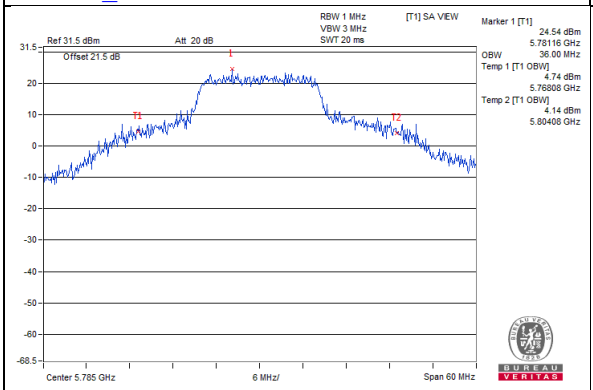
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
151	5755	36.24	38.40
159	5795	58.32	38.16

802.11ac (VHT80)

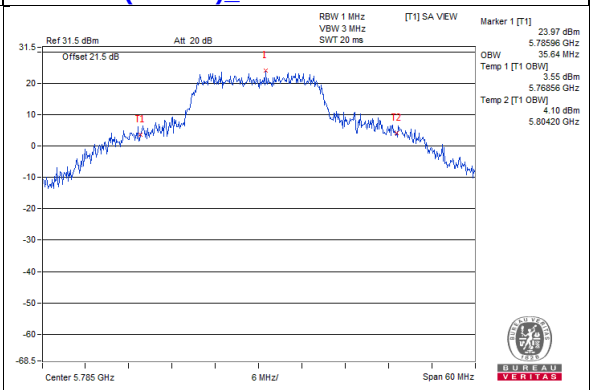
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
155	5775	90.72	76.80

Spectrum Plot of Worst Value

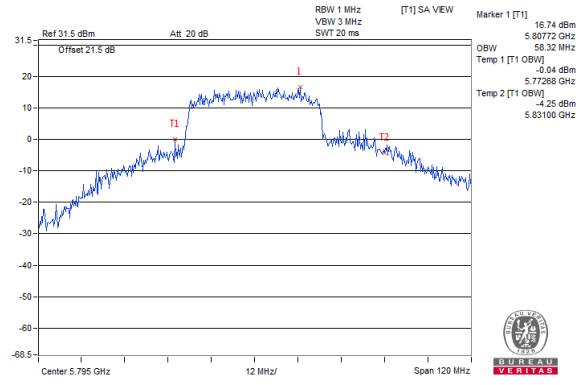
802.11a_Chain0 / CH157



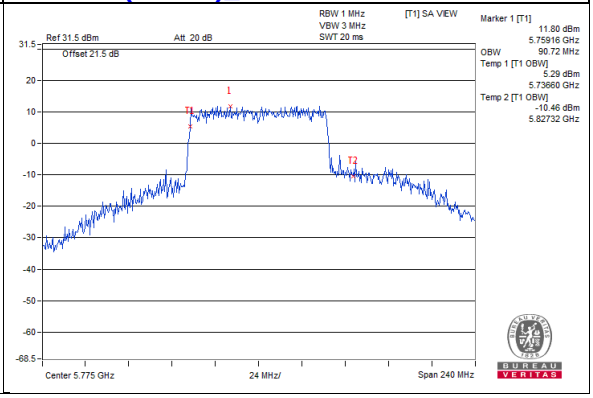
802.11ac (VHT20)_Chain1 / CH157



802.11ac (VHT40)_Chain0 / CH159

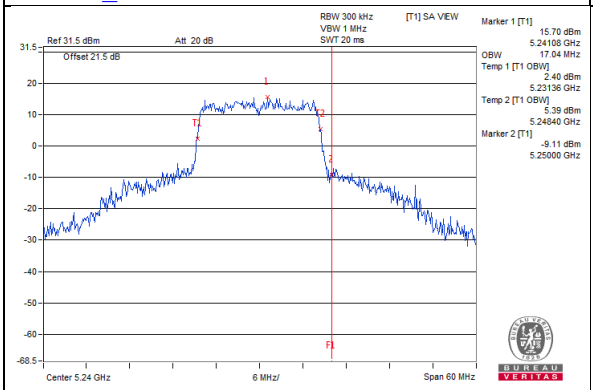


802.11ac (VHT80)_Chain0 / CH155

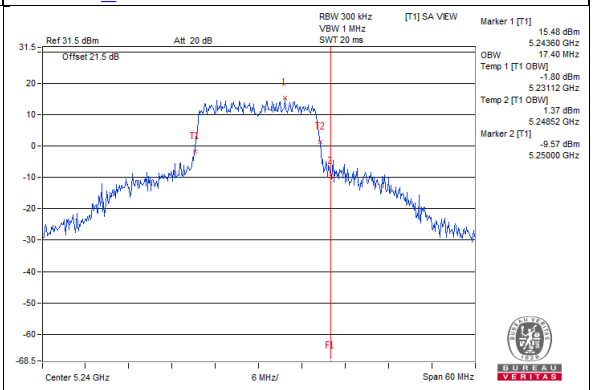


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

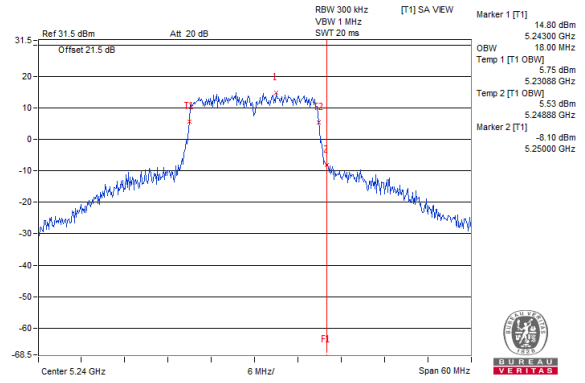
802.11a_Chain0 / CH48



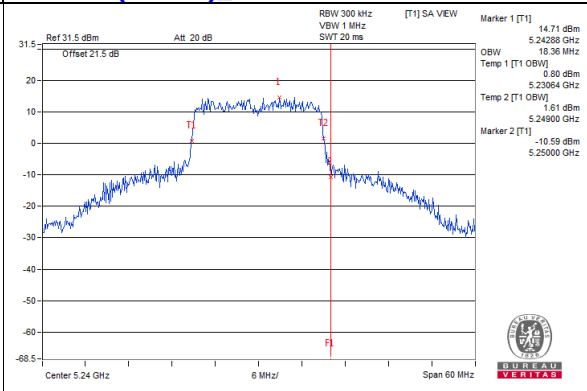
802.11a_Chain1 / CH48



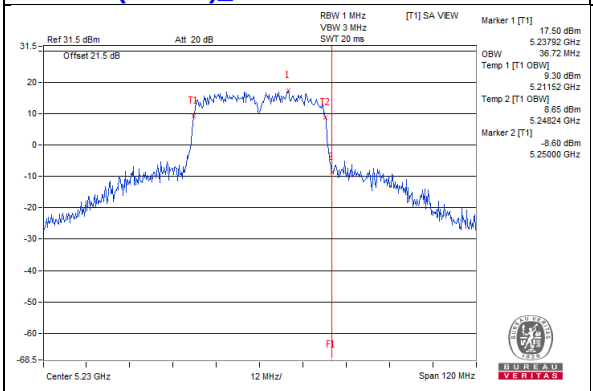
802.11ac(VHT20)_Chain0 / CH48



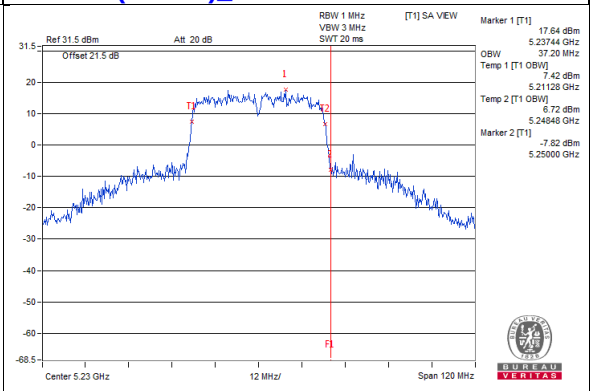
802.11ac(VHT20)_Chain1 / CH48



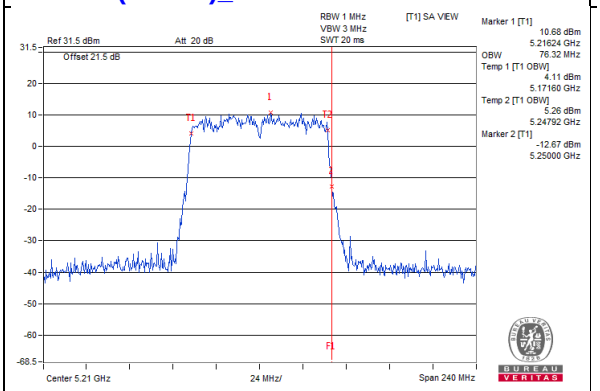
802.11ac(VHT40)_Chain0 / CH46



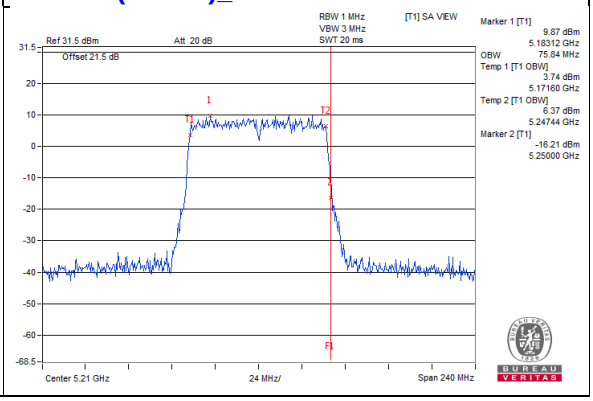
802.11ac(VHT40)_Chain1 / CH46



802.11ac(VHT80)_Chain0 / CH42

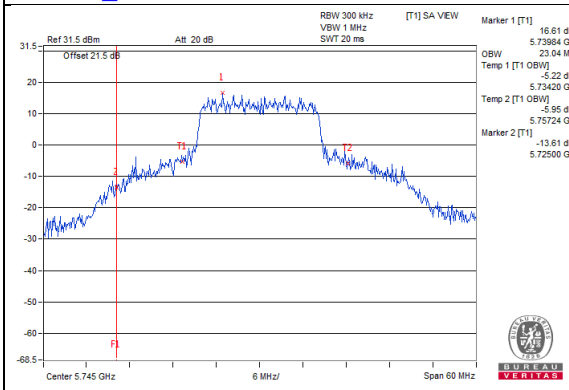


802.11ac(VHT80)_Chain1 / CH42

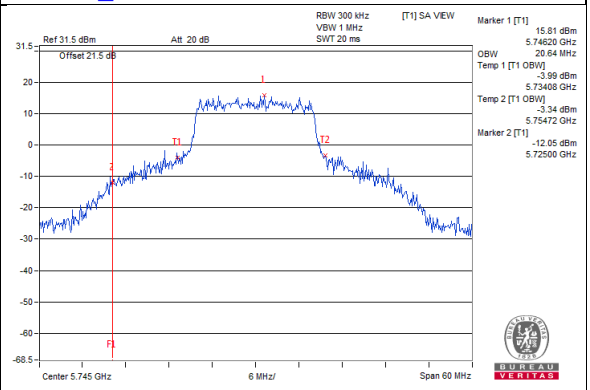


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

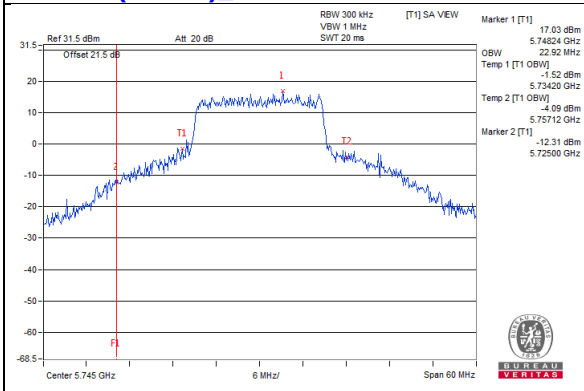
802.11a_Chain0 / CH149



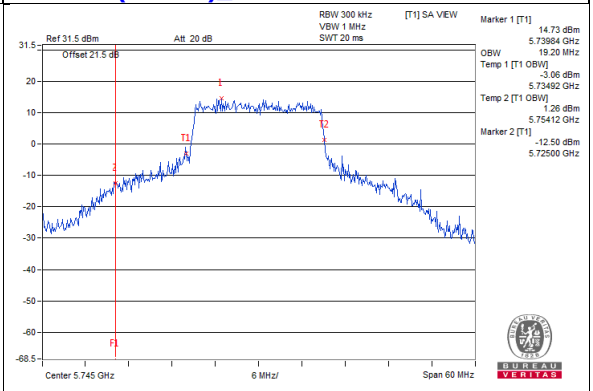
802.11a_Chain1 / CH149



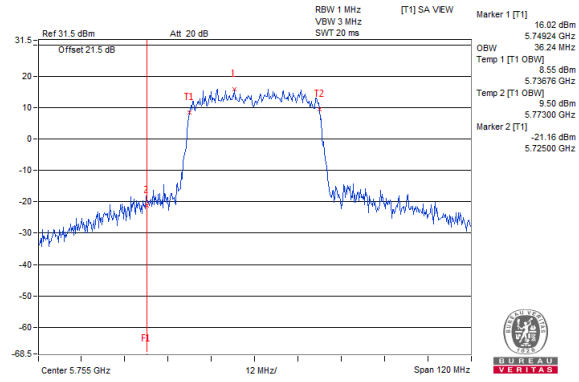
802.11ac(VHT20)_Chain0 / CH149



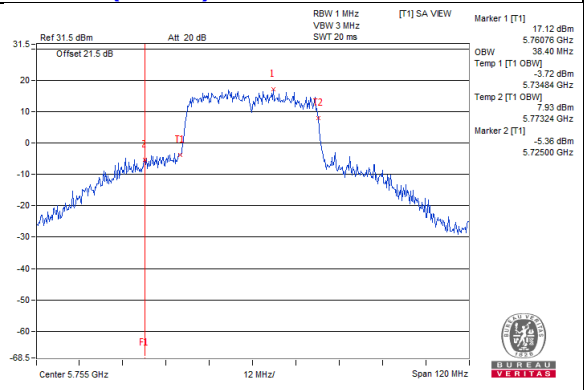
802.11ac(VHT20)_Chain1 / CH149



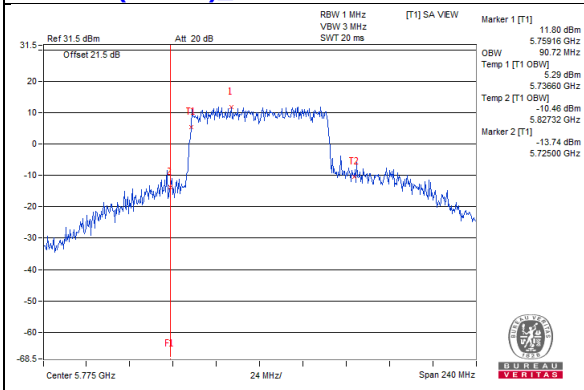
802.11ac(VHT40)_Chain0 / CH151



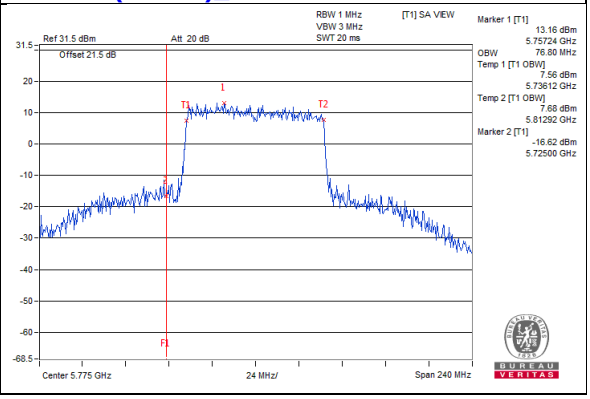
802.11ac(VHT40)_Chain1 / CH151



802.11ac(VHT80)_Chain0 / CH155



802.11ac(VHT80)_Chain1 / CH155

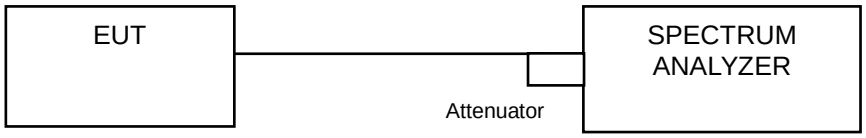


4.5 Peak Power Spectral Density Measurement

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

802.11ac (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

802.11a, 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:

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	7.70	5.48	0.20	9.94	15.34	Pass
40	5200	10.36	9.08	0.20	12.98	15.34	Pass
48	5240	10.67	9.96	0.20	13.54	15.34	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 = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.66dBi > 6dBi , so the power density limit shall be reduced to 17-(7.66-6) = 15.34dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

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			
36	5180	8.04	7.31	10.70	15.34	Pass
40	5200	10.38	9.78	13.10	15.34	Pass
48	5240	10.77	10.23	13.52	15.34	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 = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.66dBi > 6dBi , so the power density limit shall be reduced to 17-(7.66-6) = 15.34dBm.

802.11ac (VHT40)

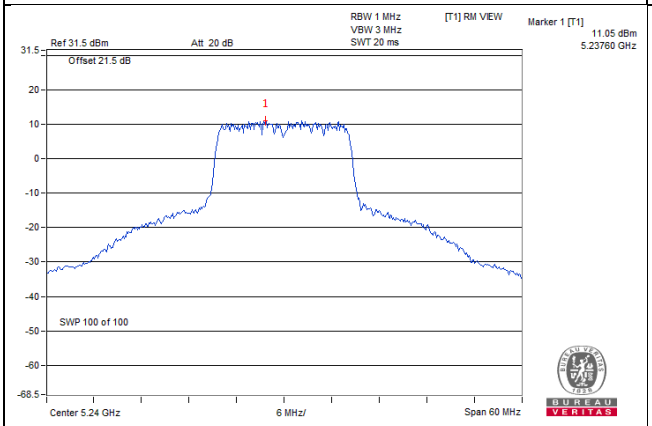
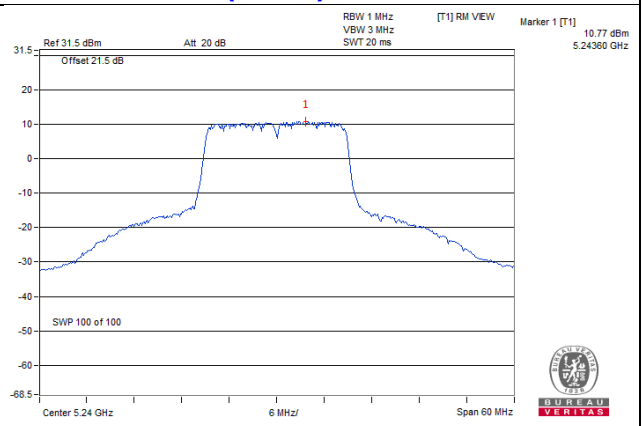
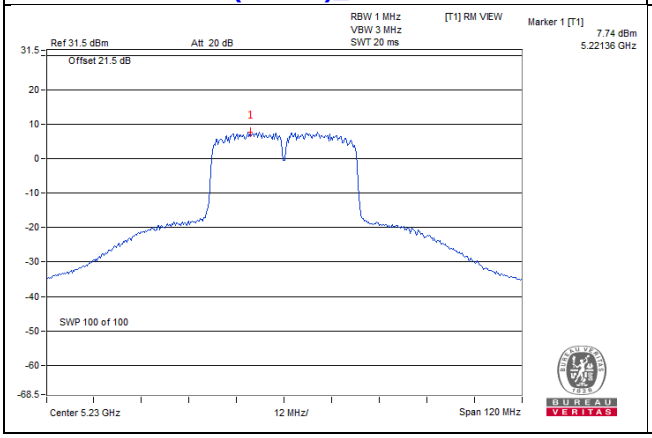
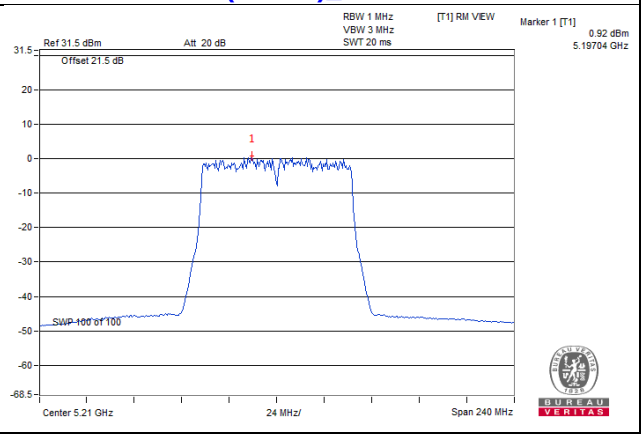
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	3.59	2.75	0.17	6.37	15.34	Pass
46	5230	7.59	7.14	0.17	10.55	15.34	Pass

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 = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.66dBi > 6dBi , so the power density limit shall be reduced to 17-(7.66-6) = 15.34dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	0.04	-0.11	0.32	3.29	15.34	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 = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.66dBi > 6dBi , so the power density limit shall be reduced to 17-(7.66-6) = 15.34dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH48	**802.11ac (VHT20)_Chain 0 / CH48**
	
802.11ac (VHT40)_Chain 0 / CH46	**802.11ac (VHT80)_Chain 0 / CH42**
	

For U-NII-3:

802.11a

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	1.67	3.89	3.01	0.20	7.10	27.80	Pass
	157	5785	5.26	7.48	3.01	0.20	10.69	27.80	Pass
	165	5825	4.23	6.45	3.01	0.20	9.66	27.80	Pass
1	149	5745	2.74	4.96	3.01	0.20	8.17	27.80	Pass
	157	5785	3.03	5.25	3.01	0.20	8.46	27.80	Pass
	165	5825	2.07	4.29	3.01	0.20	7.50	27.80	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 8.20dBi > 6dBi , so the power density limit shall be reduced to 30-(8.20-6) = 27.80dBm.

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

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	4.17	6.39	3.01	9.40	27.80	Pass
	157	5785	3.69	5.91	3.01	8.92	27.80	Pass
	165	5825	4.93	7.15	3.01	10.16	27.80	Pass
1	149	5745	1.85	4.07	3.01	7.08	27.80	Pass
	157	5785	2.50	4.72	3.01	7.73	27.80	Pass
	165	5825	2.50	4.72	3.01	7.73	27.80	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 8.20dBi > 6dBi , so the power density limit shall be reduced to 30-(8.20-6) = 27.80dBm.

802.11ac (VHT40)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-2.79	-0.57	3.01	0.17	2.61	27.80	Pass
	159	5795	-1.33	0.89	3.01	0.17	4.07	27.80	Pass
1	151	5755	-0.90	1.32	3.01	0.17	4.50	27.80	Pass
	159	5795	-0.93	1.29	3.01	0.17	4.47	27.80	Pass

Note: 1. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 8.20dBi > 6dBi , so the power density limit shall be reduced to 30-(8.20-6) = 27.80dBm.

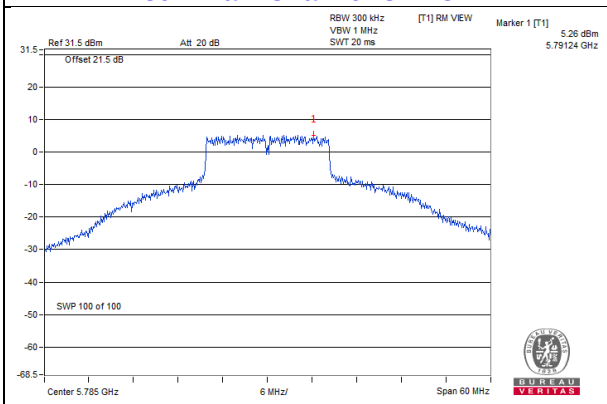
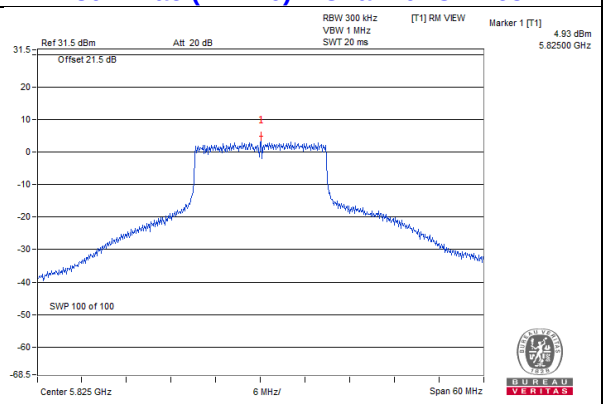
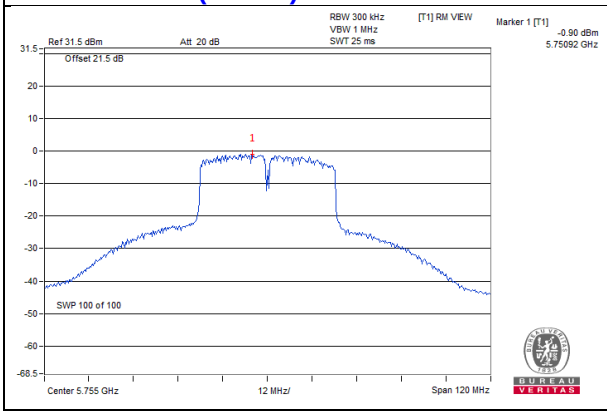
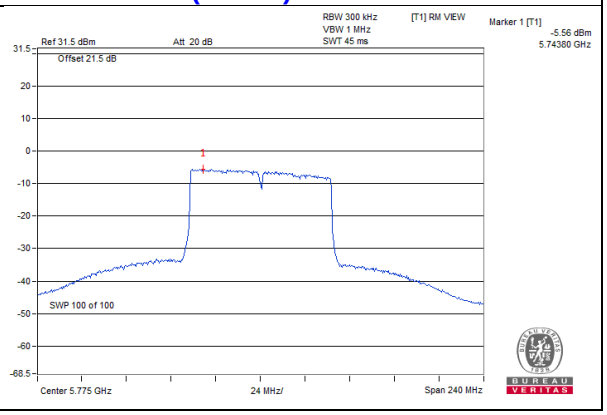
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-5.92	-3.70	3.01	0.32	-0.37	27.80	Pass
1	155	5775	-5.56	-3.34	3.01	0.32	-0.01	27.80	Pass

Note: 1. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 8.20dBi > 6dBi , so the power density limit shall be reduced to 30-(8.20-6) = 27.80dBm.

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

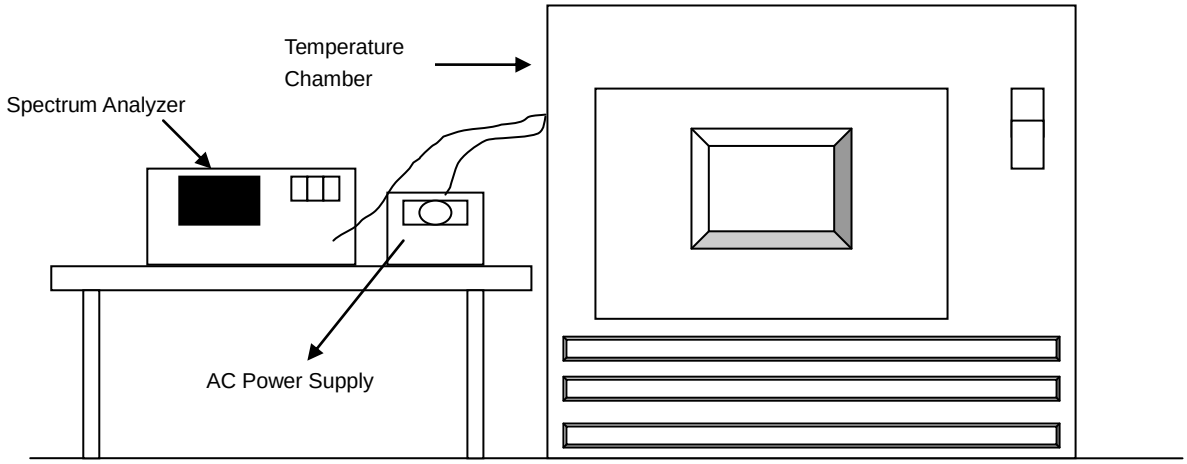
Spectrum Plot of Worst Value	
802.11a – Chain 0: CH 157	**802.11ac (VHT20) – Chain 0: CH 165**
	
802.11ac (VHT40) – Chain 1: CH 151	**802.11ac (VHT80) – Chain 1: CH 155**
	

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

For U-NII-1:

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5179.9786	PASS	5179.9784	PASS	5179.9742	PASS	5179.9786	PASS
40	120	5179.9832	PASS	5179.9818	PASS	5179.9836	PASS	5179.9851	PASS
30	120	5179.9887	PASS	5179.9861	PASS	5179.9864	PASS	5179.9886	PASS
20	120	5180.0276	PASS	5180.023	PASS	5180.0248	PASS	5180.0265	PASS
10	120	5179.9965	PASS	5179.9972	PASS	5179.9984	PASS	5179.9987	PASS
0	120	5179.9993	PASS	5179.9996	PASS	5179.9985	PASS	5179.9971	PASS
-10	120	5179.9811	PASS	5179.9772	PASS	5179.9781	PASS	5179.9775	PASS
-20	120	5180.0259	PASS	5180.0268	PASS	5180.0262	PASS	5180.0245	PASS
-30	120	5180.0255	PASS	5180.0243	PASS	5180.0259	PASS	5180.0253	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5180.028	PASS	5180.0238	PASS	5180.025	PASS	5180.026	PASS
	120	5180.0276	PASS	5180.023	PASS	5180.0248	PASS	5180.0265	PASS
	102	5180.0267	PASS	5180.0225	PASS	5180.0244	PASS	5180.0274	PASS

For U-NII-3:

Frequency Stability Versus Temp.									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5744.9745	PASS	5744.9741	PASS	5744.9788	PASS	5744.9755	PASS
40	120	5744.9927	PASS	5744.9899	PASS	5744.9929	PASS	5744.9885	PASS
30	120	5744.9823	PASS	5744.9846	PASS	5744.9836	PASS	5744.9815	PASS
20	120	5744.9836	PASS	5744.9856	PASS	5744.9867	PASS	5744.9882	PASS
10	120	5744.9834	PASS	5744.9822	PASS	5744.9809	PASS	5744.986	PASS
0	120	5745.0017	PASS	5745.0008	PASS	5745.0001	PASS	5745.0002	PASS
-10	120	5744.9981	PASS	5745.002	PASS	5744.9986	PASS	5745.0023	PASS
-20	120	5745.0121	PASS	5745.012	PASS	5745.0116	PASS	5745.0117	PASS
-30	120	5744.9867	PASS	5744.988	PASS	5744.9904	PASS	5744.991	PASS

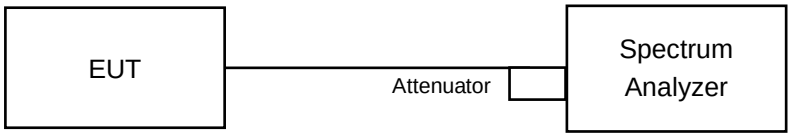
Frequency Stability Versus Voltage									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5744.9839	PASS	5744.9852	PASS	5744.9865	PASS	5744.9875	PASS
	120	5744.9836	PASS	5744.9856	PASS	5744.9867	PASS	5744.9882	PASS
	102	5744.9825	PASS	5744.9862	PASS	5744.9874	PASS	5744.9892	PASS

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.39	16.36	0.5	PASS
157	5785	16.41	16.32	0.5	PASS
165	5825	16.39	16.35	0.5	PASS

802.11ac (VHT20)

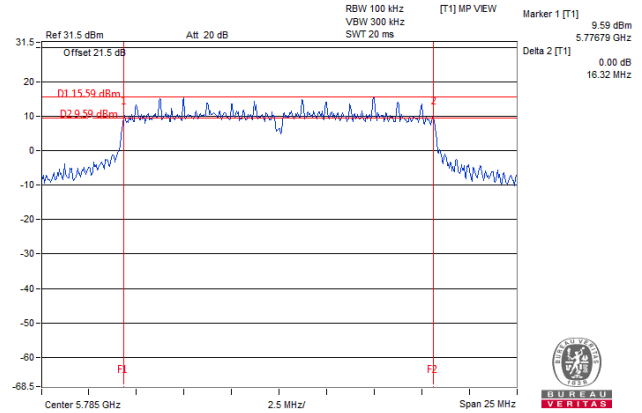
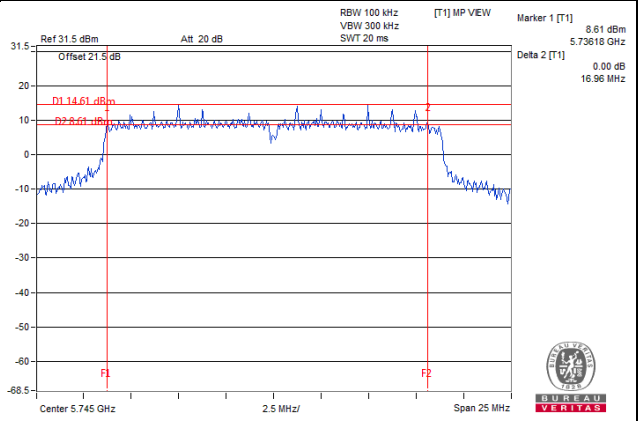
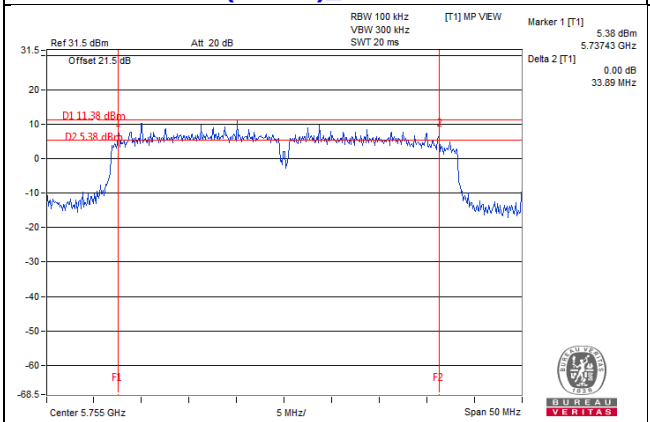
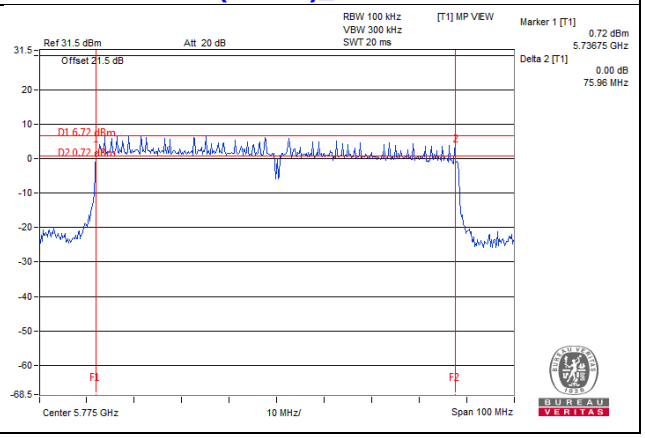
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.67	16.96	0.5	PASS
157	5785	17.59	17.62	0.5	PASS
165	5825	17.61	17.64	0.5	PASS

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.26	33.89	0.5	PASS
159	5795	35.12	35.16	0.5	PASS

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	76.38	75.96	0.5	PASS

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH157	**802.11ac (VHT20)_Chain 1 / CH149**
	
802.11ac (VHT40)_Chain 1 / CH151	**802.11ac (VHT80)_Chain 1 / CH155**
	

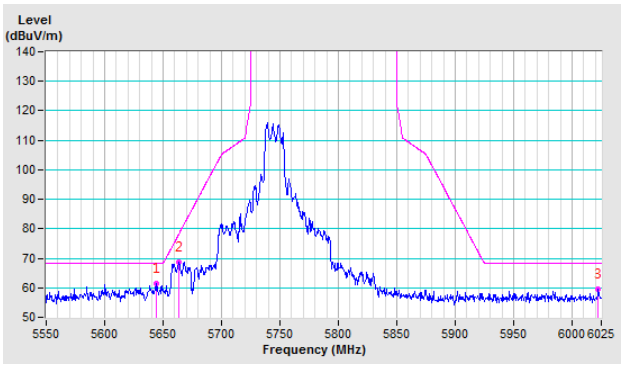
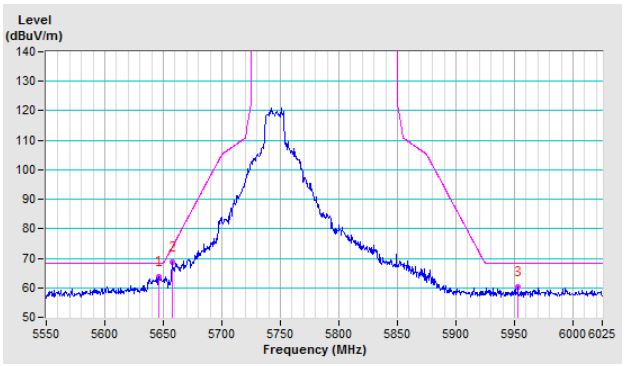
5 Pictures of Test Arrangements

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

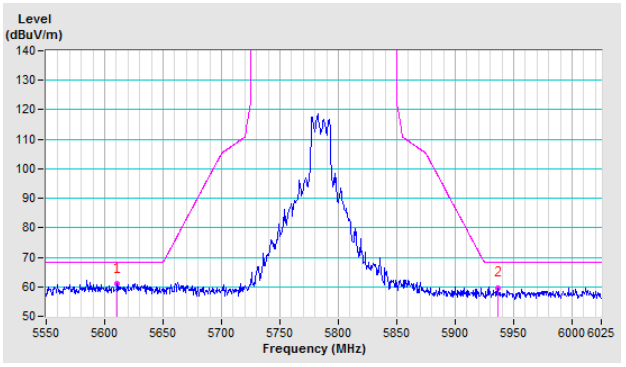
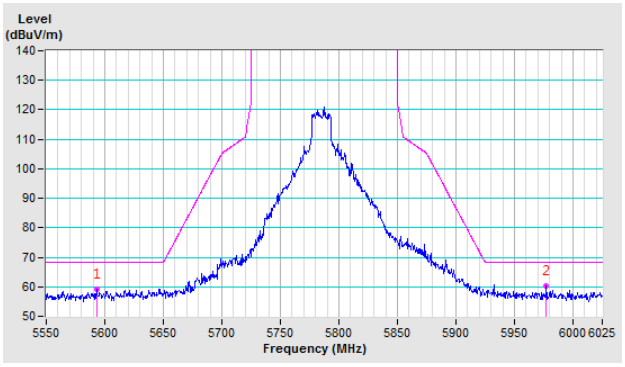
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

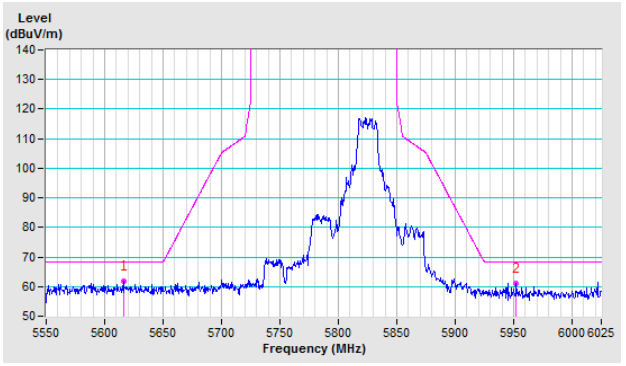
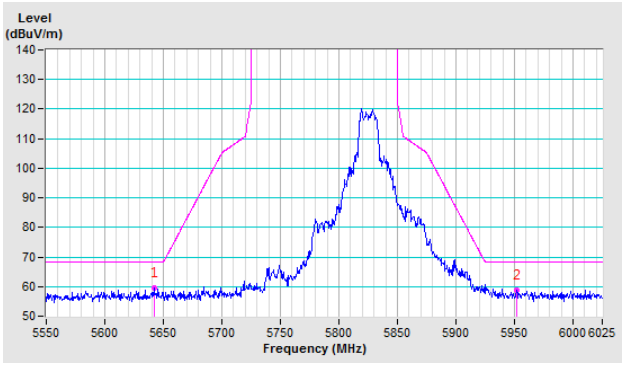
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

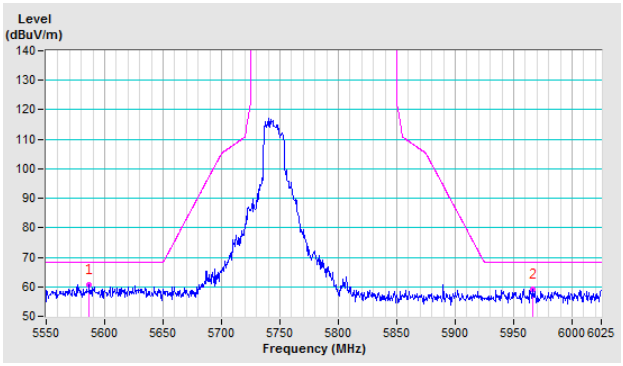
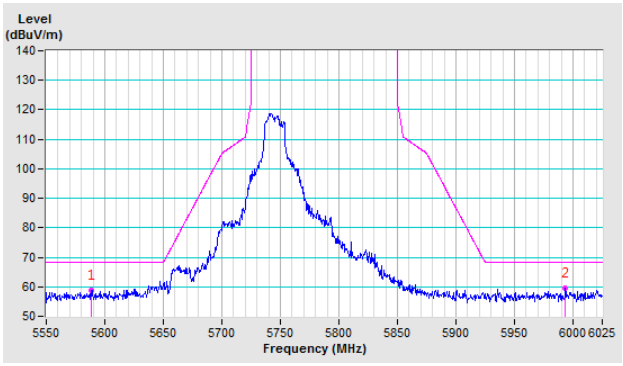
Horizontal	Vertical
	

CH 165 5825 MHz

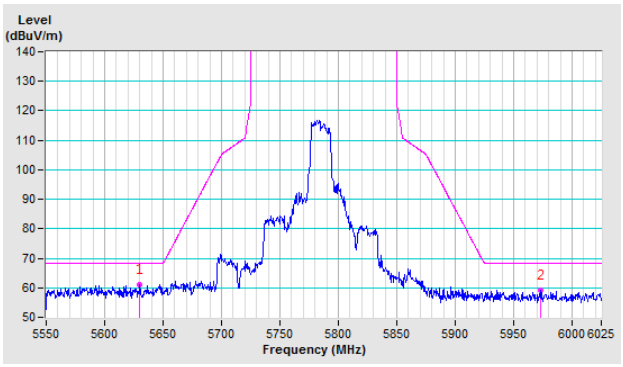
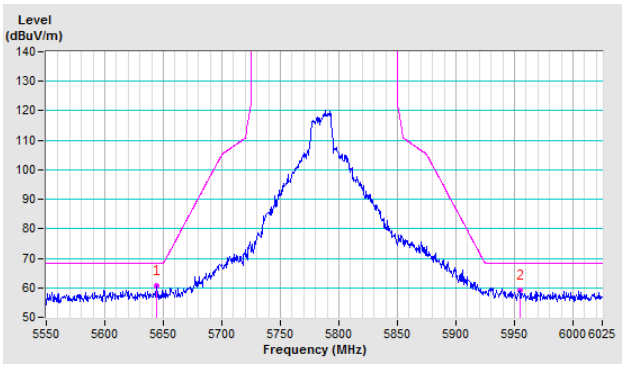
Horizontal	Vertical
	

802.11ac (VHT20)

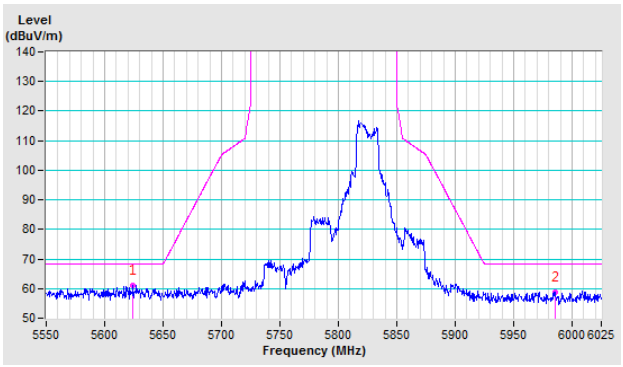
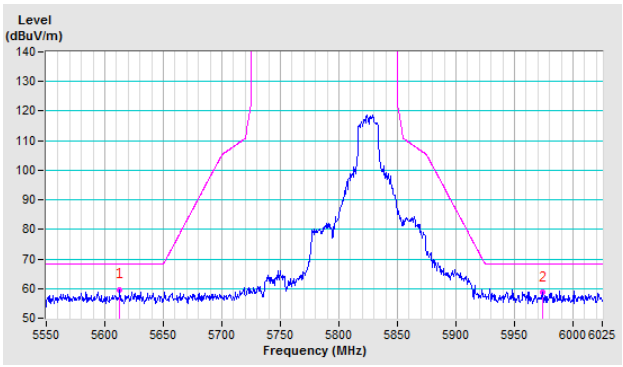
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

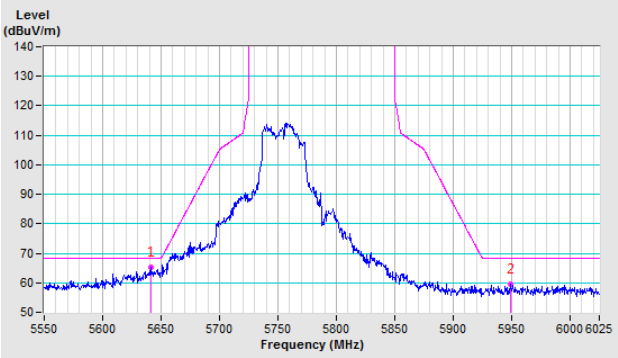
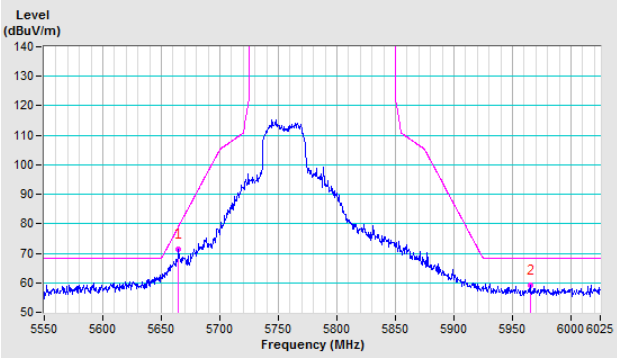
Horizontal	Vertical
	

CH 165 5825 MHz

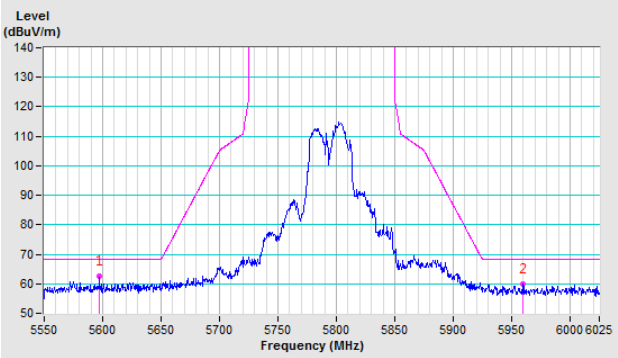
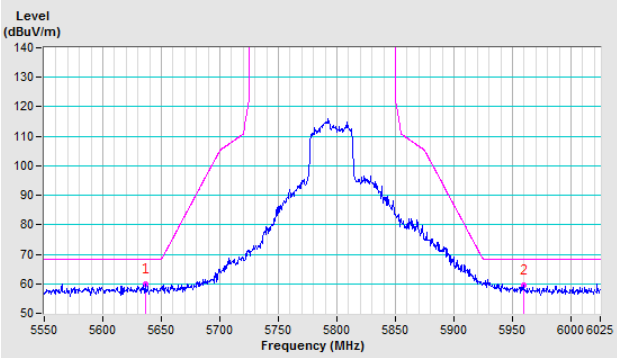
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

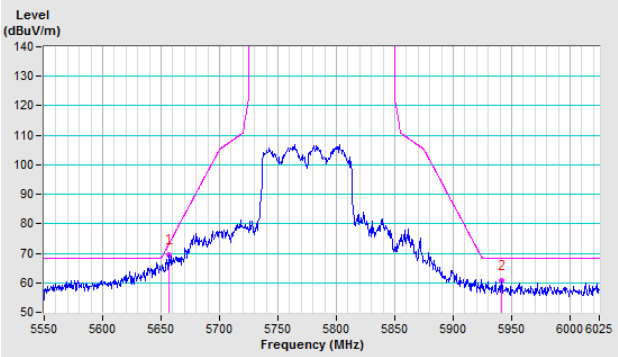
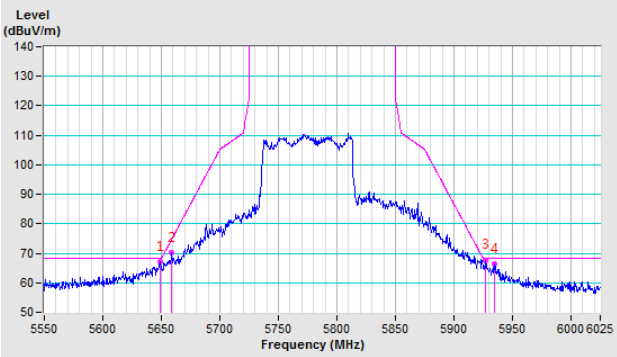
Horizontal	Vertical
	

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

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