FCC Test Report

Report No.:	RF190218E04-1
FCC ID:	I88VMG9827-B50A
Test Model:	VMG9827-B50A, VMG3927-B50B
Series Model:	EMG8726-B10A
Received Date:	Feb. 18, 2019
Test Date:	Feb. 21 to May 14, 2019
Issued Date:	June 06, 2019
Applicant:	Zyxel Communications Corporation
Address:	No.2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan
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

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Release Control Record

Issue No.	Description	Date Issued
RF190218E04-1	Original release.	June 06, 2019

1 Certificate of Conformity

Product:	Wireless AC2400 VDSL Gateway with VoIP, Wireless AC Gigabit Ethernet Gateway with VoIP, Dual Band Wireless AC/N VDSL2 Gateway
Brand:	ZYXEL
Test Model:	VMG9827-B50A, VMG3927-B50B
Series Model:	EMG8726-B10A
Sample Status:	ENGINEERING SAMPLE
Applicant:	Zyxel Communications Corporation
Test Date:	Feb. 21 to May 14, 2019
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:** June 06, 2019

Claire Kuan / Specialis

Approved by : _____ , **Date:** June 06, 2019

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 -10.20dB at 0.29844MHz.
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 -0.4dB at 5150.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

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

Note:

Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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	1.8 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	4.8 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.0 dB
	6GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless AC2400 VDSL Gateway with VoIP, Wireless AC Gigabit Ethernet Gateway with VoIP, Dual Band Wireless AC/N VDSL2 Gateway
Brand	ZYXEL
Test Model	VMG9827-B50A, VMG3927-B50B
Series Model	EMG8726-B10A
CPU Model No.	VMG9827-B50A：BCM63138V EMG8726-B10A：BCM63136SV VMG3927-B50B：BCM63138U
RF Chip Model No.	VMG9827-B50A：BCM43602 (2.4G) + BCM4366E (5G) EMG8726-B10A：BCM43602 (2.4G) + BCM4366E (5G) VMG3927-B50B：BCM43602 (2.4G) + BCM4366E (5G)
FW Version (FVIN)	VMG9827-B50A：V5.13(ABLY.2)b2_C3_v3 EMG8726-B10A：V5.13(ABNP.2)b1 VMG3927-B50B：V5.13(ABLY.3)b1
Sample Status	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	**2.4GHz:** 2.412GHz ~ 2.462GHz **5GHz:** 5.18GHz ~ 5.24GHz, 5.745GHz ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** **CDD Mode:** 530.899mW **Beamforming Mode:** 442.069mW **5.18 ~ 5.24GHz** **CDD Mode:** 785.887 mW **Beamforming Mode** 785.887mW **5.745 ~ 5.825GHz** **CDD Mode:** 944.104mW **Beamforming Mode:** 828.446mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note

Accessory Device	For VMG9827-B50A & EMG8726-B10A : - AC Adaptor, Brand:UMEC, Model:UP0301A-12PA - Ethernet Cable (yellow), Non-shielded, 1.8m x1 (for VMG9827-B50A) - Ethernet Cable (blue), Non-shielded, 1.0m x1 (for EMG8726-B10A) - Phone Cable, Non-shielded, 1.8m, w/ core x1 (for VMG9827-B50A) - Phone Cable, Non-shielded, 1.8m, w/o core x1 (for EMG8726-B10A) For VMG3927-B50B : - AC Adaptor, Brand:DVE, Model:DSA-24PFS-12 FUS - Ethernet Cable (yellow), Non-shielded, 1.8m x1 - Phone Cable, Non-shielded,1.8m, w/ core x1

Note:

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

Product	Brand	Model No.	CPU	WAN	LAN	FXS_RJ11	USB	DSL	WiFi 802.11n 3x3	WiFi 802.11ac 4x4 up tp 80MHz
Wireless AC2400 VDSL Gateway with VoIP	ZYXEL	VMG9827-B50A	BCM63138V	x1	x4	x2	x1	RJ-14 x1 (Bonded VDSL 17A and single Line VDSL 35B)	V	V
Wireless AC Gigabit Ethernet Gateway with VoIP		EMG8726-B10A	BCM63136SV	x1	x4	x2	x1	N/A	V	V
Dual Band Wireless AC/N VDSL2 Gateway		VMG3927-B50B	BCM63138U	x1	x4	N/A	x1	RJ-11 x1 (single Line VDSL 35B)	V	V

From the above models, model: **VMG9827-B50A, VMG3927-B50B** was selected as representative model for the test and its data are recorded in this report.

2. Simultaneously transmission condition.

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

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

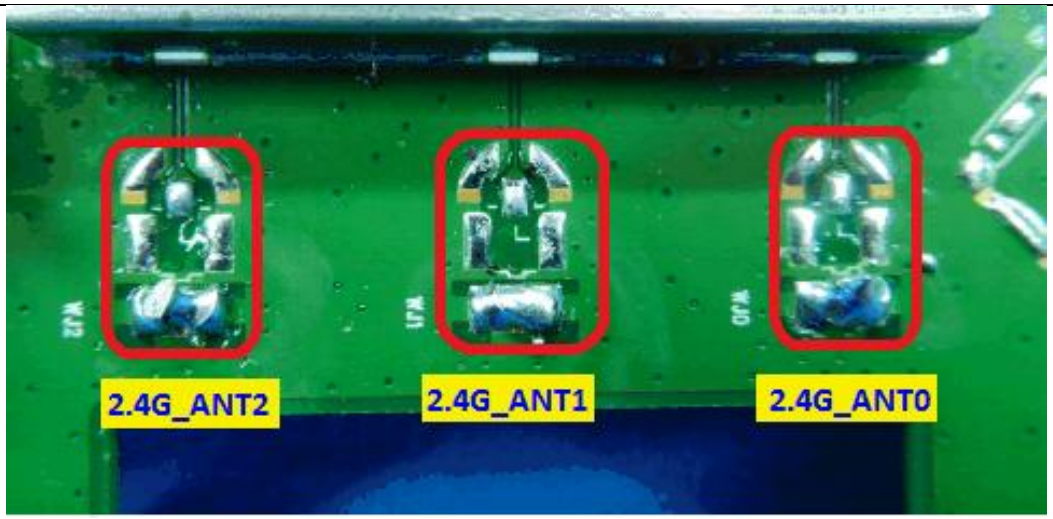
Brand	Model No.	Spec.	Remark
UMEC	UP0301A-12PA	AC Input: 100-240Vac, 0.8A, 50/60Hz DC Output: 12V, 2.5A DC Output Cable: 1.5m unshielded	For VMG9827-B50A & EMG8726-B10A
DVE	DSA-24PFS-12 FUS	AC Input: 100-240Vac, 0.8A, 50/60Hz DC Output: 12V, 2A DC Output Cable: 1.5m unshielded	For VMG3927-B50B

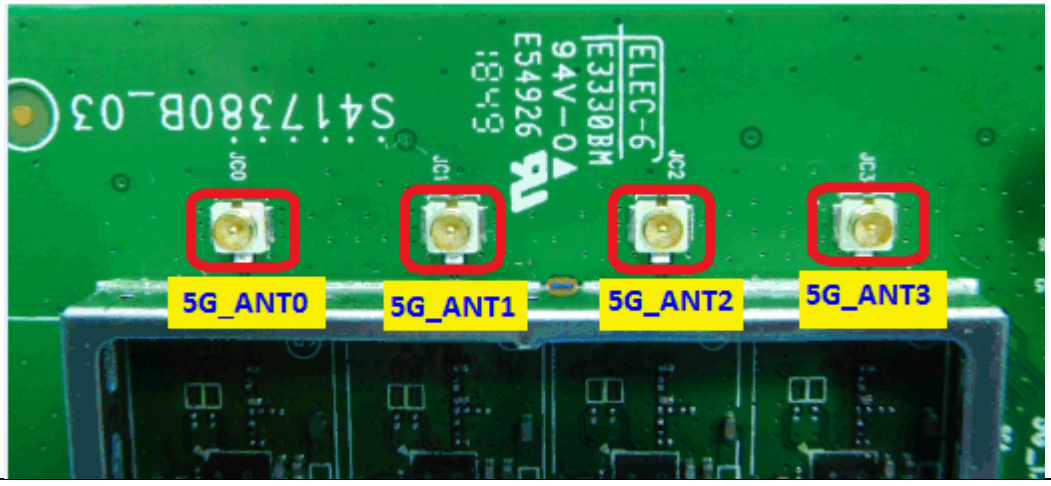
4. The antennas provided to the EUT, please refer to the following table:

2.4GHz Band					
Frequency	3D Peak gain (dBi)			Directional Antenna Gain (dBi)	Connector Type
	ANT0	ANT1	ANT2		
2400MHz	2.47	1.27	1.50	4.28	NA
2450MHz	2.24	1.16	1.83	4.53	
2500MHz	2.44	1.02	2.90	5.25	
2.4G Max gain	2.47	1.27	2.90	5.25	

5GHz Band						
Frequency	3D Peak gain (dBi)				Directional Antenna Gain (dBi)	Connector Type
	ANT0	ANT1	ANT2	ANT3		
5150MHz	3.63	2.45	3.57	2.55	6.48	i-PEX(MHF)
5350MHz	4.00	2.73	4.24	2.01	6.78	
5470MHz	4.27	2.19	3.70	2.08	6.10	
5725MHz	3.45	2.23	3.84	2.33	6.37	
5850MHz	2.65	3.55	2.91	2.93	6.34	

Note: More detailed information, please refer to operating description.





5. The EUT incorporates a MIMO function.

2.4GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11b	3TX	3RX
802.11g	3TX	3RX
802.11n (HT20)	3TX	3RX
802.11n (HT40)	3TX	3RX
5GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11a	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
802.11ac (VHT20)	4TX	4RX
802.11ac (VHT40)	4TX	4RX
802.11ac (VHT80)	4TX	4RX

Note:
1. 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)
2. All of modulation mode support beamforming function except (802.11b/g/a) modulation mode.
3. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

6. The power setting are list as below:

CDD Mode							
802.11a		802.11ac (VHT20)		802.11ac (VHT40)		802.11ac (VHT80)	
Frequency (MHz)	Power Setting	Frequency (MHz)	Power Setting	Frequency (MHz)	Power Setting	Frequency (MHz)	Power Setting
5180	87	5180	84	5190	72	5210	70
5200	88	5200	88	5230	92	5775	82
5240	88	5240	91	5755	92		
5745	90	5745	90	5795	92		
5785	92	5785	92				
5825	91	5825	90				

Beamforming Mode					
802.11ac (VHT20)		802.11ac (VHT40)		802.11ac (VHT80)	
Frequency (MHz)	Power Setting	Frequency (MHz)	Power Setting	Frequency (MHz)	Power Setting
5180	84	5190	72	5210	70
5200	88	5230	92	5775	82
5240	91	5755	89		
5745	89	5795	89		
5785	89				
5825	89				

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

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 MHz

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	For model: VMG9827-B50A
2	-	√	√	-	For model: VMG3927-B50B

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement
Note: "-" means no effect

Radiated Emission Test (Above 1GHz):

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

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

Radiated Emission Test (Below 1GHz):

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT40)	5180-5240, 5745-5825	38 to 46, 151 to 159	159	OFDM	BPSK	13.5

Power Line Conducted Emission Test:

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT40)	5180-5240, 5745-5825	38 to 46, 151 to 159	159	OFDM	BPSK	13.5

Antenna Port Conducted Measurement:

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

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

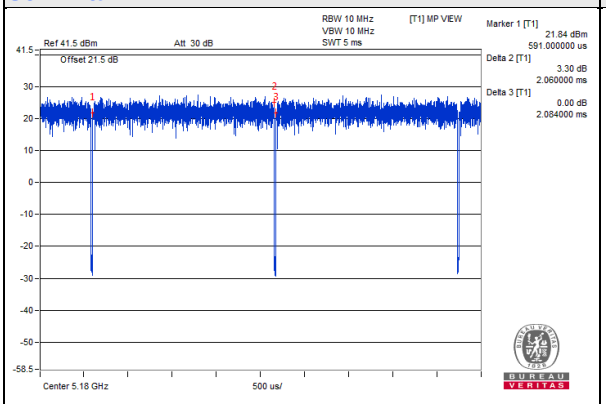
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz	Robert Cheng
RE<1G	23deg. C, 66%RH	120Vac, 60Hz	Frank Chuang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Frank Chuang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

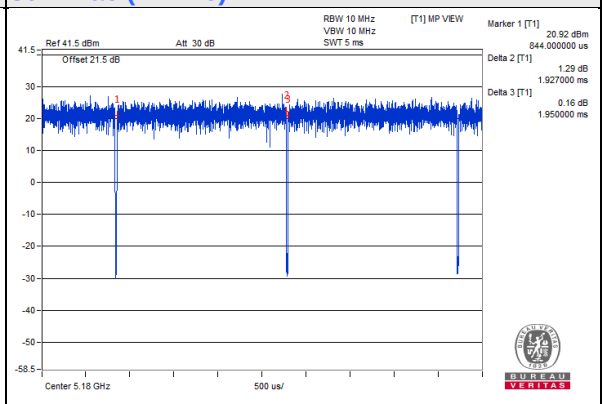
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.06/2.084 = 0.988
802.11ac (VHT20): Duty cycle = 1.927/1.95 = 0.988
802.11ac (VHT40): Duty cycle = 0.949/0.972 = 0.976, Duty factor = 10 * log(1/0.976) = 0.10
802.11ac (VHT80): Duty cycle = 0.46/0.48 = 0.958, Duty factor = 10 * log(1/0.958) = 0.18

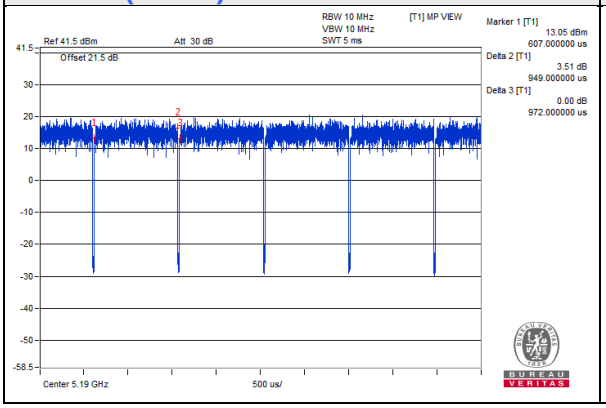
802.11a



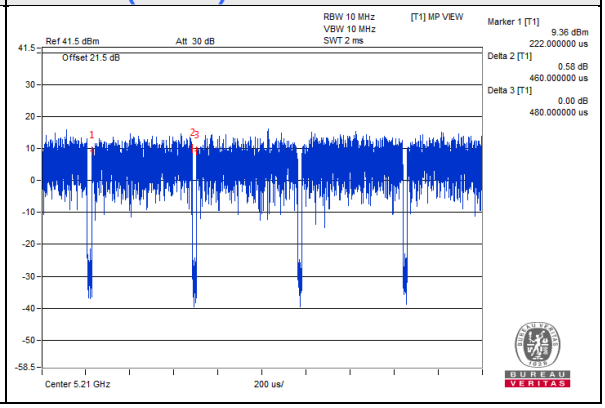
802.11ac (VHT20)



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.

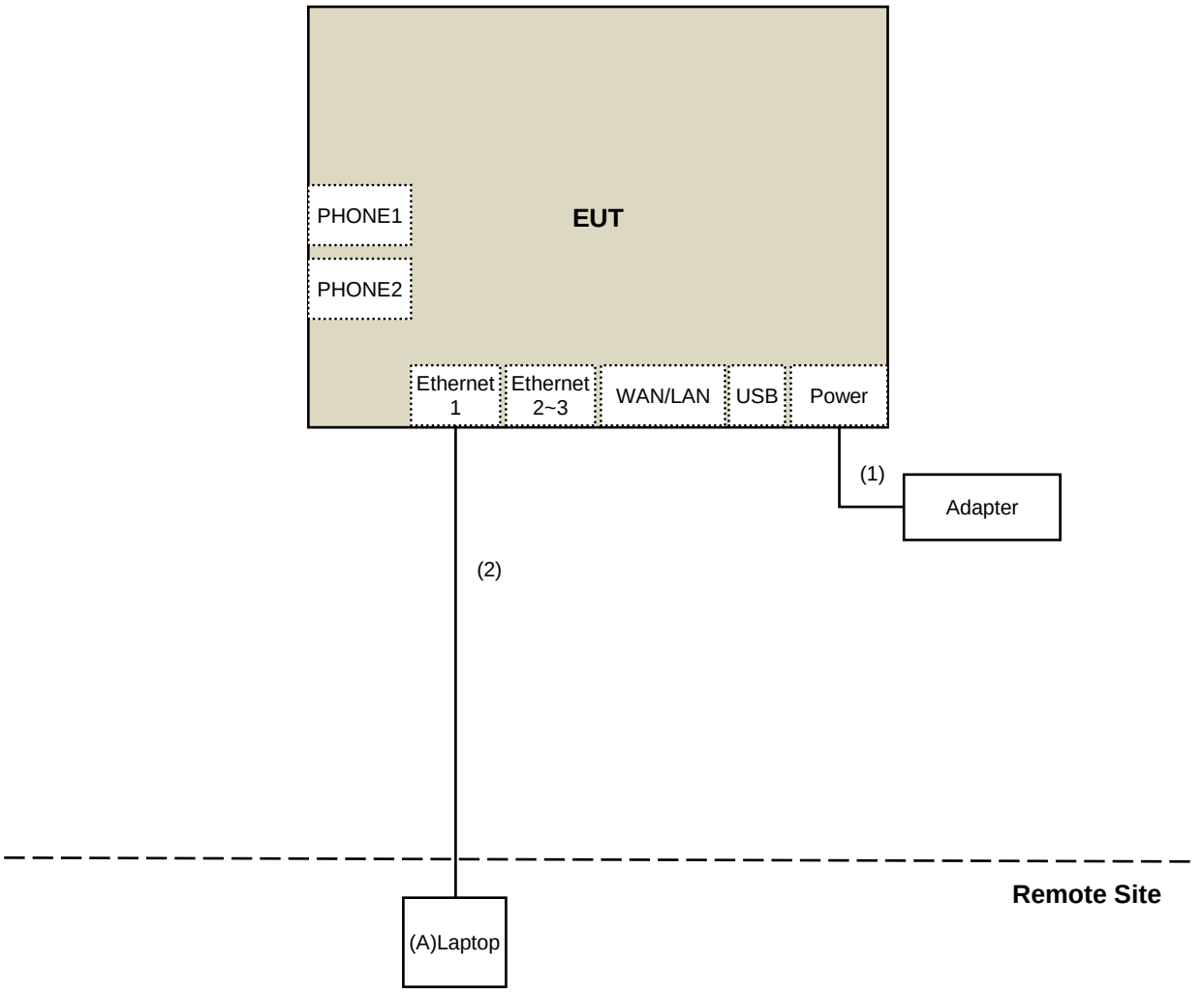
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



Note: The test Configuration was defined by the applicant requirement.

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

Note:

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

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

4.1.2 Test Instruments

For radiated emission below 1GHz test mode 2:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ESR7 R&S	ESR7	102026	Apr. 24, 2019	Apr. 23, 2020
Spectrum Analyzer Keysight	N9030B	MY57141948	June 01, 2018	May 31, 2019
Pre-Amplifier EMCI	EMC001340	980142	Jan. 25, 2019	Jan. 24, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier EMCI	EMC330N	980538	Apr. 30, 2019	Apr. 29, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB9168	9168-0842	Nov. 21, 2018	Nov. 20, 2019
RF Cable	8D	966-5-1	May 03, 2019	May 02, 2020
RF Cable	8D	966-5-2	May 03, 2019	May 02, 2020
RF Cable	8D	966-5-3	May 03, 2019	May 02, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 5.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: May 14, 2019

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ESR7 R&S	ESR7	102026	Apr. 18, 2018	Apr. 17, 2019
Spectrum Analyzer Keysight	N9030B	MY57141948	June 01, 2018	May 31, 2019
Pre-Amplifier EMCI	EMC001340	980142	Jan. 25, 2019	Jan. 24, 2020
Loop Antenna(*) Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier EMCI	EMC330N	980538	May 07, 2018	May 06, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB9168	AMP-ZFL-05	May 07, 2018	May 06, 2019
RF Cable	8D	966-5-1	May 07, 2018	May 06, 2019
RF Cable	8D	966-5-2	May 07, 2018	May 06, 2019
RF Cable	8D	966-5-3	May 07, 2018	May 06, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-1819	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980509	May 07, 2018	May 06, 2019
RF Cable EMCI	EMC104-SM-SM-1500	180503	May 07, 2018	May 06, 2019
RF Cable EMCI	EMC104-SM-SM-2000	180501	May 07, 2018	May 06, 2019
RF Cable EMCI	EMC104-SM-SM-6000	180505	May 07, 2018	May 06, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The 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. 5.
4. Loop antenna was used for all emissions below 30 MHz.
5. Tested Date: Feb. 21 to Mar. 04, 2019

4.1.3 Test Procedure

For Radiated emission below 30MHz

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

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

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

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

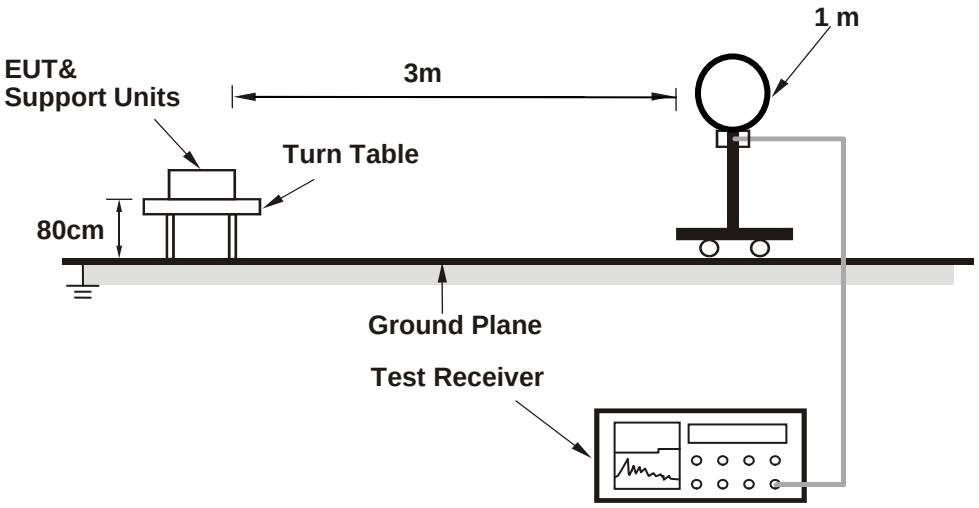
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

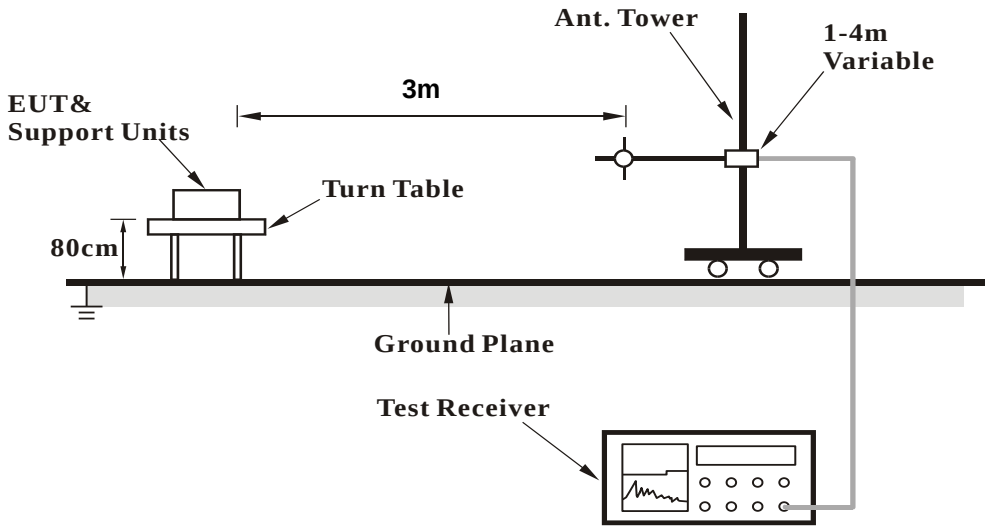
No deviation.

4.1.5 Test Setup

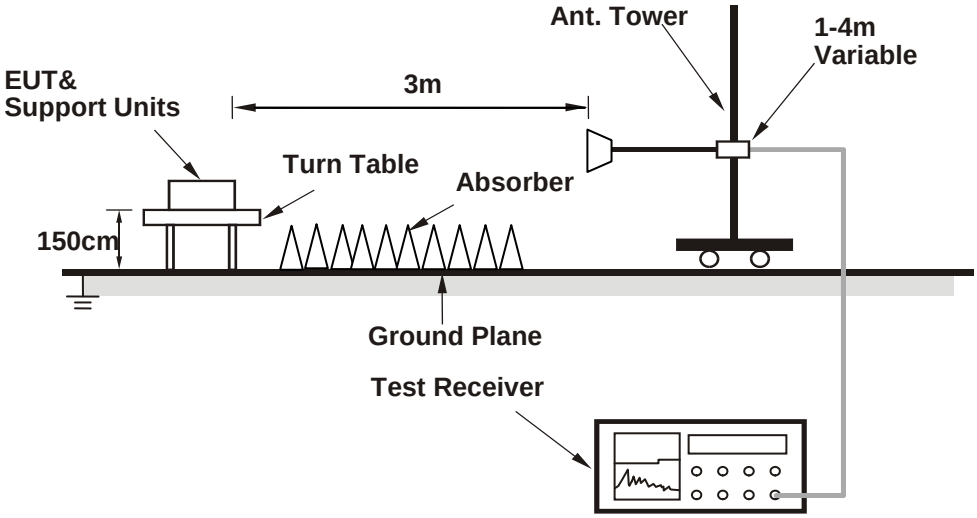
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (Mtool.exe v3.0.0.2) has been activated to set the EUT on specific status.

4.1.7 Test Results (Mode 1)

CDD Mode

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	72.0 PK	74.0	-2.0	1.55 H	192	70.2	1.8
2	5150.00	53.1 AV	54.0	-0.9	1.55 H	192	51.3	1.8
3	*5180.00	117.1 PK			1.55 H	192	115.4	1.7
4	*5180.00	107.4 AV			1.55 H	192	105.7	1.7
5	#10360.00	56.2 PK	68.2	-12.0	1.58 H	188	45.2	11.0
6	15540.00	65.1 PK	74.0	-8.9	1.93 H	149	54.2	10.9
7	15540.00	46.3 AV	54.0	-7.7	1.93 H	149	35.4	10.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	73.4 PK	74.0	-0.6	2.00 V	87	71.6	1.8
2	5150.00	53.3 AV	54.0	-0.7	2.00 V	87	51.5	1.8
3	*5180.00	118.5 PK			2.00 V	87	116.8	1.7
4	*5180.00	108.9 AV			2.00 V	87	107.2	1.7
5	#10360.00	57.6 PK	68.2	-10.6	1.72 V	143	46.6	11.0
6	15540.00	71.4 PK	74.0	-2.6	1.92 V	250	60.5	10.9
7	15540.00	52.9 AV	54.0	-1.1	1.92 V	250	42.0	10.9

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	118.6 PK			1.52 H	208	116.9	1.7
2	*5200.00	108.0 AV			1.52 H	208	106.3	1.7
3	#10400.00	56.4 PK	68.2	-11.8	1.61 H	180	45.1	11.3
4	15600.00	64.7 PK	74.0	-9.3	1.50 H	341	53.5	11.2
5	15600.00	45.9 AV	54.0	-8.1	1.50 H	341	34.7	11.2
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	*5200.00	120.1 PK			1.97 V	102	118.4	1.7
2	*5200.00	109.4 AV			1.97 V	102	107.7	1.7
3	#10400.00	57.5 PK	68.2	-10.7	1.73 V	143	46.2	11.3
4	15600.00	72.6 PK	74.0	-1.4	1.96 V	265	61.4	11.2
5	15600.00	53.4 AV	54.0	-0.6	1.96 V	265	42.2	11.2

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	119.6 PK			1.58 H	191	118.2	1.4
2	*5240.00	108.2 AV			1.58 H	191	106.8	1.4
3	5350.00	52.1 PK	74.0	-21.9	1.58 H	191	50.6	1.5
4	5350.00	43.2 AV	54.0	-10.8	1.58 H	191	41.7	1.5
5	#10480.00	56.4 PK	68.2	-11.8	1.53 H	199	45.0	11.4
6	15720.00	62.8 PK	74.0	-11.2	1.50 H	347	52.3	10.5
7	15720.00	44.3 AV	54.0	-9.7	1.50 H	347	33.8	10.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	121.0 PK			2.06 V	79	119.6	1.4
2	*5240.00	109.6 AV			2.06 V	79	108.2	1.4
3	5350.00	56.5 PK	74.0	-17.5	2.06 V	79	55.0	1.5
4	5350.00	45.0 AV	54.0	-9.0	2.06 V	79	43.5	1.5
5	#10480.00	57.9 PK	68.2	-10.3	1.72 V	137	46.5	11.4
6	15720.00	72.1 PK	74.0	-1.9	1.60 V	274	61.6	10.5
7	15720.00	52.8 AV	54.0	-1.2	1.60 V	274	42.3	10.5

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5649.70	55.8 PK	68.2	-12.4	1.60 H	179	54.1	1.7
2	*5745.00	118.5 PK			1.60 H	179	116.5	2.0
3	*5745.00	109.7 AV			1.60 H	179	107.7	2.0
4	#5990.94	61.3 PK	68.2	-6.9	1.60 H	179	58.8	2.5
5	11490.00	63.1 PK	74.0	-10.9	1.61 H	177	51.4	11.7
6	11490.00	50.5 AV	54.0	-3.5	1.61 H	177	38.8	11.7
7	#17235.00	62.3 PK	68.2	-5.9	1.94 H	149	45.5	16.8
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	#5635.74	56.1 PK	68.2	-12.1	2.01 V	83	54.4	1.7
2	*5745.00	118.9 PK			2.01 V	83	116.9	2.0
3	*5745.00	111.1 AV			2.01 V	83	109.1	2.0
4	#5990.42	62.5 PK	68.2	-5.7	2.01 V	83	60.0	2.5
5	11490.00	64.2 PK	74.0	-9.8	1.47 V	272	52.5	11.7
6	11490.00	51.8 AV	54.0	-2.2	1.47 V	272	40.1	11.7
7	#17235.00	67.6 PK	68.2	-0.6	1.77 V	286	50.8	16.8

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5626.38	54.9 PK	68.2	-13.3	1.55 H	192	53.1	1.8
2	*5785.00	118.3 PK			1.55 H	192	116.2	2.1
3	*5785.00	109.8 AV			1.55 H	192	107.7	2.1
4	#6018.64	59.4 PK	68.2	-8.8	1.55 H	192	56.9	2.5
5	11570.00	63.6 PK	74.0	-10.4	1.59 H	185	52.1	11.5
6	11570.00	51.3 AV	54.0	-2.7	1.59 H	185	39.8	11.5
7	#17355.00	65.9 PK	68.2	-2.3	1.99 H	138	49.0	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	#5620.77	56.7 PK	68.2	-11.5	2.00 V	82	54.9	1.8
2	*5785.00	120.9 PK			2.00 V	82	118.8	2.1
3	*5785.00	112.1 AV			2.00 V	82	110.0	2.1
4	#5941.35	60.5 PK	68.2	-7.7	2.00 V	82	58.1	2.4
5	11570.00	64.3 PK	74.0	-9.7	1.51 V	272	52.8	11.5
6	11570.00	52.3 AV	54.0	-1.7	1.51 V	272	40.8	11.5
7	#17355.00	66.3 PK	68.2	-1.9	3.11 V	295	49.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5586.53	57.8 PK	68.2	-10.4	1.52 H	200	56.1	1.7
2	*5825.00	118.5 PK			1.52 H	200	116.3	2.2
3	*5825.00	109.4 AV			1.52 H	200	107.2	2.2
4	#5939.36	59.0 PK	68.2	-9.2	1.52 H	200	56.6	2.4
5	11650.00	62.0 PK	74.0	-12.0	1.56 H	170	50.9	11.1
6	11650.00	49.3 AV	54.0	-4.7	1.56 H	170	38.2	11.1
7	#17475.00	67.0 PK	68.2	-1.2	1.95 H	225	48.7	18.3
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	#5590.33	59.4 PK	68.2	-8.8	1.97 V	96	57.7	1.7
2	*5825.00	120.5 PK			1.97 V	96	118.3	2.2
3	*5825.00	111.5 AV			1.97 V	96	109.3	2.2
4	#5928.81	58.6 PK	68.2	-9.6	1.97 V	96	56.3	2.3
5	11650.00	64.2 PK	74.0	-9.8	1.46 V	272	53.1	11.1
6	11650.00	52.4 AV	54.0	-1.6	1.46 V	272	41.3	11.1
7	#17475.00	66.2 PK	68.2	-2.0	1.46 V	320	47.9	18.3

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	73.4 PK	74.0	-0.6	1.84 H	179	71.6	1.8
2	5150.00	52.4 AV	54.0	-1.6	1.84 H	179	50.6	1.8
3	*5180.00	117.3 PK			1.84 H	179	115.6	1.7
4	*5180.00	106.5 AV			1.84 H	179	104.8	1.7
5	#10360.00	56.3 PK	68.2	-11.9	1.60 H	168	45.3	11.0
6	15540.00	65.4 PK	74.0	-8.6	1.95 H	136	54.5	10.9
7	15540.00	46.4 AV	54.0	-7.6	1.95 H	136	35.5	10.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	73.0 PK	74.0	-1.0	2.04 V	87	71.2	1.8
2	**5150.00**	**53.6 AV**	**54.0**	**-0.4**	**2.04 V**	**87**	**51.8**	**1.8**
3	*5180.00	119.0 PK			2.04 V	87	117.3	1.7
4	*5180.00	107.6 AV			2.04 V	87	105.9	1.7
5	#10360.00	57.5 PK	68.2	-10.7	1.49 V	261	46.5	11.0
6	15540.00	71.8 PK	74.0	-2.2	1.42 V	310	60.9	10.9
7	15540.00	52.4 AV	54.0	-1.6	1.42 V	310	41.5	10.9

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	119.3 PK			1.59 H	192	117.6	1.7
2	*5200.00	107.0 AV			1.59 H	192	105.3	1.7
3	#10400.00	56.4 PK	68.2	-11.8	1.65 H	188	45.1	11.3
4	15600.00	65.2 PK	74.0	-8.8	1.97 H	162	54.0	11.2
5	15600.00	46.3 AV	54.0	-7.7	1.97 H	162	35.1	11.2
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	*5200.00	120.1 PK			2.06 V	80	118.4	1.7
2	*5200.00	108.5 AV			2.06 V	80	106.8	1.7
3	#10400.00	57.4 PK	68.2	-10.8	1.50 V	254	46.1	11.3
4	15600.00	73.4 PK	74.0	-0.6	1.67 V	268	62.2	11.2
5	15600.00	53.4 AV	54.0	-0.6	1.67 V	268	42.2	11.2

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	119.9 PK			1.54 H	177	118.5	1.4
2	*5240.00	107.8 AV			1.54 H	177	106.4	1.4
3	5350.00	55.2 PK	74.0	-18.8	1.54 H	177	53.7	1.5
4	5350.00	44.1 AV	54.0	-9.9	1.54 H	177	42.6	1.5
5	#10480.00	55.9 PK	68.2	-12.3	1.64 H	182	44.5	11.4
6	15720.00	64.0 PK	74.0	-10.0	1.50 H	343	53.5	10.5
7	15720.00	44.4 AV	54.0	-9.6	1.50 H	343	33.9	10.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	120.8 PK			2.04 V	90	119.4	1.4
2	*5240.00	109.2 AV			2.04 V	90	107.8	1.4
3	5350.00	56.9 PK	74.0	-17.1	2.04 V	90	55.4	1.5
4	5350.00	45.4 AV	54.0	-8.6	2.04 V	90	43.9	1.5
5	#10480.00	57.6 PK	68.2	-10.6	1.52 V	275	46.2	11.4
6	15720.00	72.1 PK	74.0	-1.9	1.62 V	282	61.6	10.5
7	15720.00	53.3 AV	54.0	-0.7	1.62 V	282	42.8	10.5

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.84	54.7 PK	68.8	-14.1	1.53 H	193	53.1	1.6
2	*5745.00	117.7 PK			1.53 H	193	115.7	2.0
3	*5745.00	108.7 AV			1.53 H	193	106.7	2.0
4	#5991.85	60.2 PK	68.2	-8.0	1.53 H	193	57.7	2.5
5	11490.00	62.9 PK	74.0	-11.1	1.64 H	164	51.2	11.7
6	11490.00	50.3 AV	54.0	-3.7	1.64 H	164	38.6	11.7
7	#17235.00	62.1 PK	68.2	-6.1	1.88 H	158	45.3	16.8
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	#5614.51	56.4 PK	68.2	-11.8	2.03 V	83	54.6	1.8
2	*5745.00	118.7 PK			2.03 V	83	116.7	2.0
3	*5745.00	110.5 AV			2.03 V	83	108.5	2.0
4	#5978.16	59.4 PK	68.2	-8.8	2.03 V	83	56.9	2.5
5	11490.00	66.1 PK	74.0	-7.9	2.05 V	280	54.4	11.7
6	11490.00	53.2 AV	54.0	-0.8	2.05 V	280	41.5	11.7
7	#17235.00	63.5 PK	68.2	-4.7	2.25 V	289	46.7	16.8

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5623.24	54.2 PK	68.2	-14.0	1.52 H	201	52.4	1.8
2	*5785.00	117.4 PK			1.52 H	201	115.3	2.1
3	*5785.00	109.3 AV			1.52 H	201	107.2	2.1
4	#6017.78	57.7 PK	68.2	-10.5	1.52 H	201	55.2	2.5
5	11570.00	63.4 PK	74.0	-10.6	1.59 H	178	51.9	11.5
6	11570.00	50.5 AV	54.0	-3.5	1.59 H	178	39.0	11.5
7	#17355.00	65.6 PK	68.2	-2.6	1.95 H	149	48.7	16.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5616.22	53.2 PK	68.2	-15.0	2.05 V	94	51.4	1.8
2	*5785.00	117.8 PK			2.05 V	99	115.7	2.1
3	*5785.00	109.1 AV			2.05 V	99	107.0	2.1
4	#6017.78	61.7 PK	68.2	-6.5	2.05 V	99	59.2	2.5
5	11570.00	64.3 PK	74.0	-9.7	1.98 V	278	52.8	11.5
6	11570.00	52.8 AV	54.0	-1.2	1.98 V	278	41.3	11.5
7	#17355.00	65.6 PK	68.2	-2.6	1.80 V	261	48.7	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5588.85	56.1 PK	68.2	-12.1	1.56 H	178	54.4	1.7
2	*5825.00	117.6 PK			1.56 H	178	115.4	2.2
3	*5825.00	108.4 AV			1.56 H	178	106.2	2.2
4	#5977.12	57.2 PK	68.2	-11.0	1.56 H	178	54.7	2.5
5	11650.00	62.8 PK	74.0	-11.2	1.63 H	165	51.7	11.1
6	11650.00	50.5 AV	54.0	-3.5	1.63 H	165	39.4	11.1
7	#17475.00	66.5 PK	68.2	-1.7	1.89 H	135	48.2	18.3
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	#5575.51	58.0 PK	68.2	-10.2	2.04 V	101	56.3	1.7
2	*5825.00	119.1 PK			2.04 V	101	116.9	2.2
3	*5825.00	108.6 AV			2.04 V	101	106.4	2.2
4	#5929.38	58.4 PK	68.2	-9.8	2.01 V	101	56.1	2.3
5	11650.00	64.2 PK	74.0	-9.8	1.92 V	279	53.1	11.1
6	11650.00	51.5 AV	54.0	-2.5	1.92 V	279	40.4	11.1
7	#17475.00	67.5 PK	68.2	-0.7	1.81 V	288	49.2	18.3

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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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	72.4 PK	74.0	-1.6	1.28 H	171	70.6	1.8
2	5150.00	51.2 AV	54.0	-2.8	1.28 H	171	49.4	1.8
3	*5190.00	110.8 PK			1.28 H	171	109.1	1.7
4	*5190.00	99.9 AV			1.28 H	171	98.2	1.7
5	#10380.00	53.2 PK	68.2	-15.0	1.62 H	171	42.0	11.2
6	15570.00	55.6 PK	74.0	-18.4	1.92 H	136	44.5	11.1
7	15570.00	42.1 AV	54.0	-11.9	1.92 H	136	31.0	11.1
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	73.1 PK	74.0	-0.9	1.98 V	87	71.3	1.8
2	**5150.00**	**53.6 AV**	**54.0**	**-0.4**	**1.98 V**	**87**	**51.8**	**1.8**
3	*5190.00	112.9 PK			1.98 V	87	111.2	1.7
4	*5190.00	101.5 AV			1.98 V	87	99.8	1.7
5	#10380.00	54.3 PK	68.2	-13.9	1.89 V	273	43.1	11.2
6	15570.00	59.2 PK	74.0	-14.8	1.77 V	288	48.1	11.1
7	15570.00	46.1 AV	54.0	-7.9	1.77 V	288	35.0	11.1

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	115.8 PK			1.51 H	192	114.3	1.5
2	*5230.00	104.1 AV			1.51 H	192	102.6	1.5
3	5350.00	57.8 PK	74.0	-16.2	1.51 H	192	56.3	1.5
4	5350.00	41.5 AV	54.0	-12.5	1.51 H	192	40.0	1.5
5	5375.00	56.3 PK	74.0	-17.7	1.51 H	192	54.8	1.5
6	5375.00	46.2 AV	54.0	-7.8	1.51 H	192	44.7	1.5
7	#10460.00	53.2 PK	68.2	-15.0	1.64 H	177	41.9	11.3
8	15690.00	60.2 PK	74.0	-13.8	1.93 H	139	49.7	10.5
9	15690.00	46.3 AV	54.0	-7.7	1.93 H	139	35.8	10.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5145.00	67.3 PK	74.0	-6.7	1.97 V	87	65.5	1.8
2	5145.00	50.5 AV	54.0	-3.5	1.97 V	87	48.7	1.8
3	*5230.00	117.0 PK			1.97 V	87	115.5	1.5
4	*5230.00	105.5 AV			1.97 V	87	104.0	1.5
5	5350.00	60.2 PK	74.0	-13.8	1.97 V	87	58.7	1.5
6	5350.00	44.5 AV	54.0	-9.5	1.97 V	87	43.0	1.5
7	5375.00	59.7 PK	74.0	-14.3	1.97 V	87	58.2	1.5
8	5375.00	49.3 AV	54.0	-4.7	1.97 V	87	47.8	1.5
9	#10460.00	57.5 PK	68.2	-10.7	1.91 V	284	46.2	11.3
10	15690.00	64.2 PK	74.0	-9.8	1.76 V	282	53.7	10.5
11	15690.00	49.3 AV	54.0	-4.7	1.76 V	282	38.8	10.5

REMARKS:

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

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5642.20	62.2 PK	68.2	-6.0	1.50 H	177	60.5	1.7
2	*5755.00	114.9 PK			1.50 H	177	112.9	2.0
3	*5755.00	105.0 AV			1.50 H	177	103.0	2.0
4	#5928.24	55.2 PK	68.2	-13.0	1.50 H	177	52.9	2.3
5	11510.00	59.2 PK	74.0	-14.8	1.57 H	192	47.4	11.8
6	11510.00	46.8 AV	54.0	-7.2	1.57 H	192	35.0	11.8
7	#17265.00	58.2 PK	68.2	-10.0	1.99 H	137	41.4	16.8
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	#5624.39	61.9 PK	68.2	-6.3	1.81 V	100	60.1	1.8
2	*5755.00	118.1 PK			1.81 V	100	116.1	2.0
3	*5755.00	105.6 AV			1.81 V	100	103.6	2.0
4	#5929.43	57.9 PK	68.2	-10.3	1.81 V	100	55.6	2.3
5	11510.00	62.0 PK	74.0	-12.0	1.96 V	282	50.2	11.8
6	11510.00	49.0 AV	54.0	-5.0	1.96 V	282	37.2	11.8
7	#17265.00	60.1 PK	68.2	-8.1	1.85 V	290	43.3	16.8

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5647.52	55.5 PK	68.2	-12.7	1.56 H	188	53.8	1.7
2	*5795.00	116.0 PK			1.56 H	188	113.8	2.2
3	*5795.00	105.6 AV			1.56 H	188	103.4	2.2
4	#5947.15	58.3 PK	68.2	-9.9	1.56 H	188	55.9	2.4
5	11590.00	59.5 PK	74.0	-14.5	1.66 H	187	48.1	11.4
6	11590.00	47.2 AV	54.0	-6.8	1.66 H	187	35.8	11.4
7	#17385.00	58.3 PK	68.2	-9.9	1.95 H	163	41.3	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	#5599.73	55.2 PK	68.2	-13.0	2.05 V	102	53.5	1.7
2	*5795.00	115.8 PK			2.05 V	102	113.6	2.2
3	*5795.00	105.7 AV			2.05 V	102	103.5	2.2
4	#5941.11	60.0 PK	68.2	-8.2	2.05 V	102	57.6	2.4
5	11590.00	62.2 PK	74.0	-11.8	1.92 V	281	50.8	11.4
6	11590.00	49.2 AV	54.0	-4.8	1.92 V	281	37.8	11.4
7	#17385.00	60.1 PK	68.2	-8.1	1.89 V	62	43.1	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	68.1 PK	74.0	-5.9	1.30 H	179	66.3	1.8
2	5150.00	48.8 AV	54.0	-5.2	1.30 H	179	47.0	1.8
3	*5210.00	107.5 PK			1.30 H	179	105.8	1.7
4	*5210.00	98.9 AV			1.30 H	179	97.2	1.7
5	5350.00	55.4 PK	74.0	-18.6	1.30 H	179	53.9	1.5
6	5350.00	45.6 AV	54.0	-8.4	1.30 H	179	44.1	1.5
7	#10420.00	53.4 PK	68.2	-14.8	1.58 H	188	42.2	11.2
8	15630.00	54.2 PK	74.0	-19.8	1.98 H	140	43.3	10.9
9	15630.00	41.7 AV	54.0	-12.3	1.98 H	140	30.8	10.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.1 PK	74.0	-2.9	1.97 V	85	69.3	1.8
2	**5150.00**	**53.6 AV**	**54.0**	**-0.4**	**1.97 V**	**85**	**51.8**	**1.8**
3	*5210.00	109.9 PK			1.97 V	85	108.2	1.7
4	*5210.00	100.6 AV			1.97 V	85	98.9	1.7
5	5350.00	57.6 PK	74.0	-16.4	1.97 V	85	56.1	1.5
6	5350.00	46.9 AV	54.0	-7.1	1.97 V	85	45.4	1.5
7	#10420.00	54.2 PK	68.2	-14.0	1.98 V	290	43.0	11.2
8	15630.00	56.1 PK	74.0	-17.9	1.82 V	292	45.2	10.9
9	15630.00	43.2 AV	54.0	-10.8	1.82 V	292	32.3	10.9

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5642.24	67.6 PK	68.2	-0.6	1.58 H	186	65.9	1.7
2	#5648.70	67.4 PK	68.2	-0.8	1.58 H	186	65.7	1.7
3	*5775.00	110.8 PK			1.58 H	186	108.7	2.1
4	*5775.00	103.4 AV			1.58 H	186	101.3	2.1
5	#5932.09	63.4 PK	68.2	-4.8	1.58 H	186	61.1	2.3
6	11550.00	54.1 PK	74.0	-19.9	1.61 H	162	42.5	11.6
7	11550.00	42.5 AV	54.0	-11.5	1.61 H	162	30.9	11.6
8	#17325.00	55.2 PK	68.2	-13.0	1.99 H	151	38.4	16.8
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	#5644.38	66.6 PK	68.2	-1.6	1.97 V	100	64.9	1.7
2	*5775.00	111.8 PK			1.97 V	100	109.7	2.1
3	*5775.00	103.3 AV			1.97 V	100	101.2	2.1
4	#5932.99	65.5 PK	68.2	-2.7	1.97 V	100	63.2	2.3
5	11550.00	57.6 PK	74.0	-16.4	1.92 V	278	46.0	11.6
6	11550.00	45.1 AV	54.0	-8.9	1.92 V	278	33.5	11.6
7	#17325.00	58.6 PK	68.2	-9.6	1.76 V	294	41.8	16.8

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.

Below 1GHz Data:

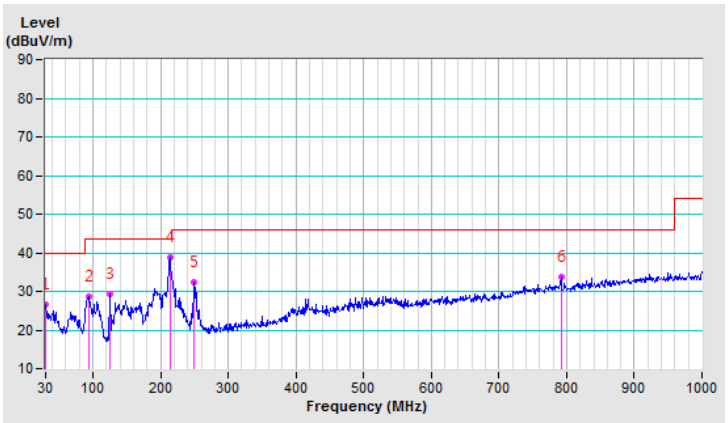
802.11ac (VHT40)

CHANNEL	TX Channel 159	**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	30.12	26.7 QP	40.0	-13.3	1.50 H	326	41.4	-14.7
2	93.24	28.6 QP	43.5	-14.9	2.00 H	284	46.9	-18.3
3	125.01	29.3 QP	43.5	-14.2	3.00 H	236	44.1	-14.8
4	214.20	38.8 QP	43.5	-4.7	1.50 H	76	54.5	-15.7
5	250.09	32.5 QP	46.0	-13.5	1.00 H	38	46.5	-14.0
6	791.98	33.8 QP	46.0	-12.2	1.50 H	123	36.2	-2.4

REMARKS:

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

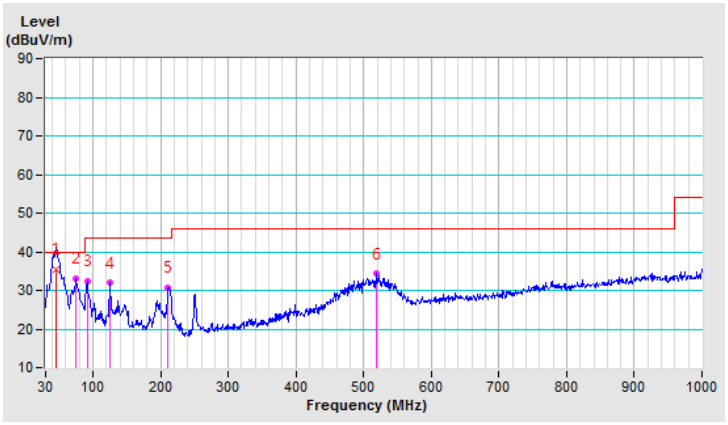


CHANNEL	TX Channel 159	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	46.05	35.5 QP	40.0	-4.5	1.50 V	39	48.7	-13.2
2	75.35	33.1 QP	40.0	-6.9	1.50 V	1	49.9	-16.8
3	91.86	32.4 QP	43.5	-11.1	3.00 V	0	50.8	-18.4
4	124.99	31.9 QP	43.5	-11.6	1.50 V	2	46.7	-14.8
5	211.37	30.8 QP	43.5	-12.7	1.50 V	1	46.5	-15.7
6	519.51	34.3 QP	46.0	-11.7	1.50 V	2	41.5	-7.2

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. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.1.8 Test Results (Mode 2)

Below 1GHz Data:

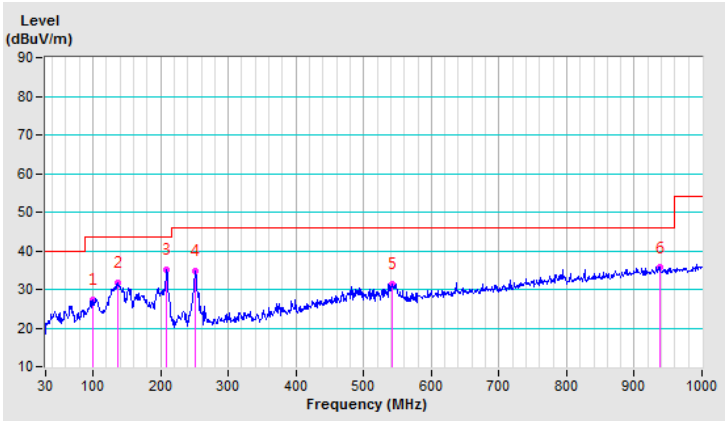
802.11ac (VHT40)

CHANNEL	TX Channel 159	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	99.48	27.3 QP	43.5	-16.2	1.32 H	109	44.8	-17.5
2	136.92	31.7 QP	43.5	-11.8	1.67 H	250	45.4	-13.7
3	209.13	35.1 QP	43.5	-8.4	1.85 H	289	50.8	-15.7
4	251.09	34.9 QP	46.0	-11.1	1.99 H	316	48.9	-14.0
5	542.81	31.4 QP	46.0	-14.6	1.69 H	22	38.4	-7.0
6	937.51	35.6 QP	46.0	-10.4	1.74 H	147	36.4	-0.8

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

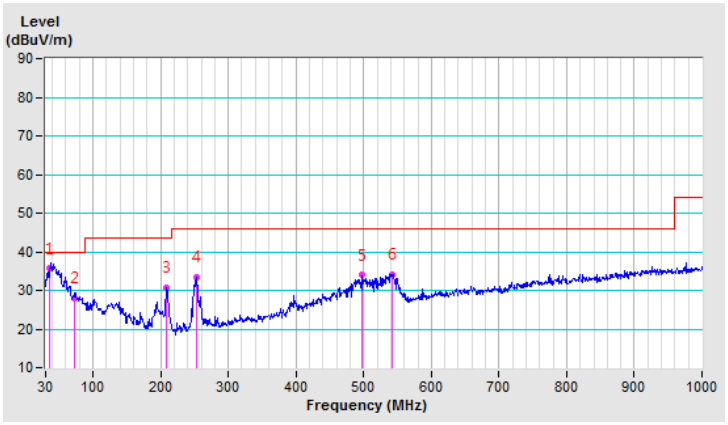


CHANNEL	TX Channel 159	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.99	35.6 QP	40.0	-4.4	1.50 V	73	49.5	-13.9
2	72.63	28.1 QP	40.0	-11.9	1.47 V	22	44.3	-16.2
3	208.72	30.8 QP	43.5	-12.7	1.24 V	355	46.5	-15.7
4	253.75	33.4 QP	46.0	-12.6	1.11 V	2	47.4	-14.0
5	497.42	33.9 QP	46.0	-12.1	1.00 V	88	41.7	-7.8
6	541.63	34.2 QP	46.0	-11.8	1.77 V	79	41.2	-7.0

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

For test mode 1:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
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 Conduction 1.
3. Tested Date: Feb. 28, 2019

For test mode 2:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
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 Conduction 1.
3. Tested Date: May 10, 2019

4.2.3 Test Procedure

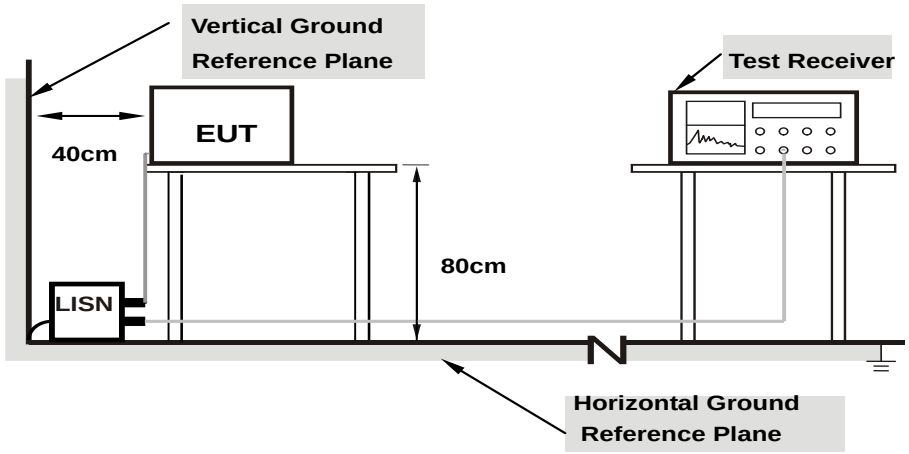
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

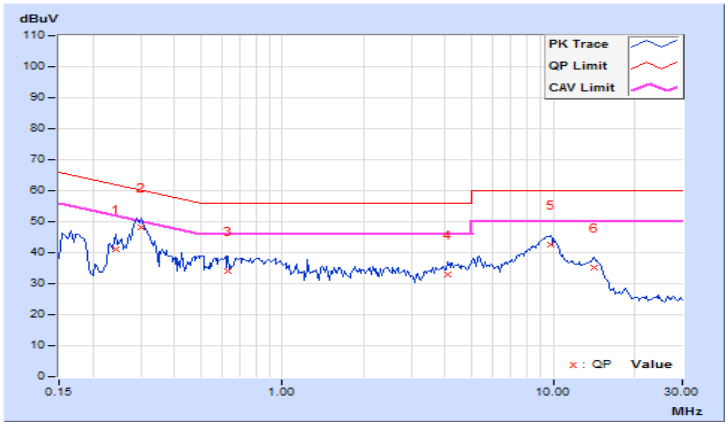
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.24375	10.06	31.20	18.95	41.26	29.01	61.97	51.97	-20.71	-22.96
2	0.30234	10.07	38.03	29.30	48.10	39.37	60.18	50.18	-12.08	-10.81
3	0.63438	10.10	23.90	12.32	34.00	22.42	56.00	46.00	-22.00	-23.58
4	4.08203	10.33	22.46	16.03	32.79	26.36	56.00	46.00	-23.21	-19.64
5	9.75000	10.68	31.80	27.15	42.48	37.83	60.00	50.00	-17.52	-12.17
6	14.16016	10.97	24.13	19.93	35.10	30.90	60.00	50.00	-24.90	-19.10

Remarks:

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

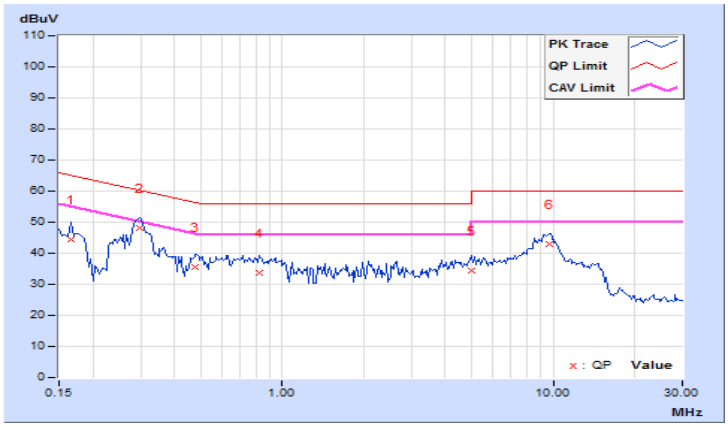


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	9.94	34.46	23.24	44.40	33.18	65.18	55.18	-20.78	-22.00
2	**0.29844**	**9.96**	**38.16**	**30.13**	**48.12**	**40.09**	**60.29**	**50.29**	**-12.17**	**-10.20**
3	0.47813	9.98	25.57	16.62	35.55	26.60	56.37	46.37	-20.82	-19.77
4	0.82578	9.99	23.60	15.17	33.59	25.16	56.00	46.00	-22.41	-20.84
5	5.00000	10.23	24.05	18.07	34.28	28.30	56.00	46.00	-21.72	-17.70
6	9.71875	10.51	32.36	27.68	42.87	38.19	60.00	50.00	-17.13	-11.81

Remarks:

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



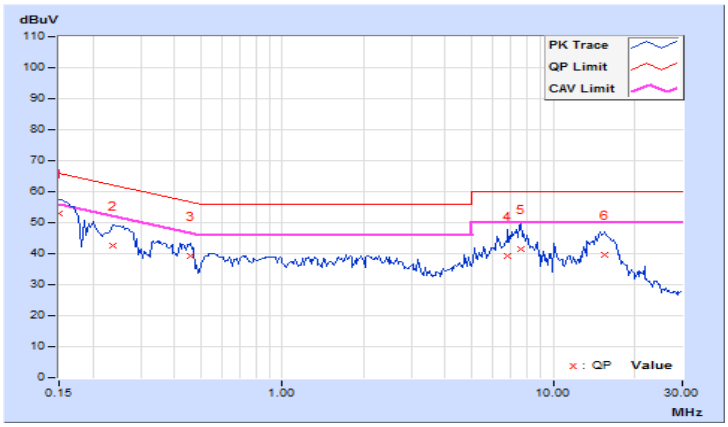
4.2.8 Test Results (Mode 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.03	42.77	21.66	52.80	31.69	66.00	56.00	-13.20	-24.31
2	0.23594	10.06	32.71	16.02	42.77	26.08	62.24	52.24	-19.47	-26.16
3	0.45859	10.08	29.31	15.66	39.39	25.74	56.72	46.72	-17.33	-20.98
4	6.81641	10.50	28.81	20.07	39.31	30.57	60.00	50.00	-20.69	-19.43
5	7.59766	10.55	31.01	22.51	41.56	33.06	60.00	50.00	-18.44	-16.94
6	15.58984	11.07	28.73	22.17	39.80	33.24	60.00	50.00	-20.20	-16.76

Remarks:

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

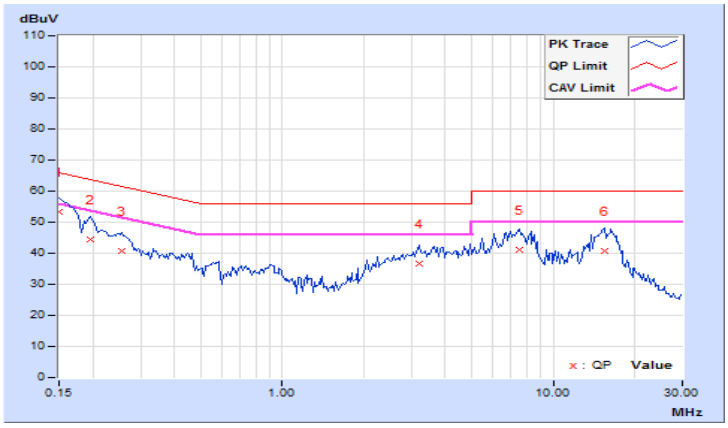


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.94	43.39	21.50	53.33	31.44	66.00	56.00	-12.67	-24.56
2	0.19687	9.95	34.34	13.03	44.29	22.98	63.74	53.74	-19.45	-30.76
3	0.25547	9.96	30.96	11.20	40.92	21.16	61.58	51.58	-20.66	-30.42
4	3.21875	10.13	26.40	17.01	36.53	27.14	56.00	46.00	-19.47	-18.86
5	7.48828	10.38	30.69	22.53	41.07	32.91	60.00	50.00	-18.93	-17.09
6	15.56250	10.87	29.86	23.68	40.73	34.55	60.00	50.00	-19.27	-15.45

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 Results

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	21.79	22.28	21.72	22.03	628.234	27.98	30.00	Pass
40	5200	22.02	22.33	21.82	22.08	643.714	28.09	30.00	Pass
48	5240	21.85	22.09	21.89	22.04	629.398	27.99	30.00	Pass
149	5745	23.04	23.45	23.38	23.32	855.235	29.32	30.00	Pass
157	5785	23.55	23.74	23.71	23.66	930.293	29.69	30.00	Pass
165	5825	23.36	23.65	23.54	23.59	903.013	29.56	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	21.01	21.44	20.92	21.22	521.528	27.17	30.00	Pass
40	5200	21.85	22.36	21.75	22.25	642.8	28.08	30.00	Pass
48	5240	22.46	22.77	22.38	22.79	728.522	28.62	30.00	Pass
149	5745	23.06	23.33	23.36	23.25	845.699	29.27	30.00	Pass
157	5785	23.46	23.91	23.69	23.82	942.732	29.74	30.00	Pass
165	5825	23.03	23.42	23.13	23.37	843.554	29.26	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	17.94	18.12	17.88	18.12	253.332	24.04	30.00	Pass
46	5230	22.90	22.95	22.85	23.03	785.887	28.95	30.00	Pass
151	5755	23.58	23.77	23.63	23.84	939.044	29.73	30.00	Pass
159	5795	23.51	23.82	23.72	23.86	944.104	29.75	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	17.23	17.15	17.19	17.48	213.061	23.29	30.00	Pass
155	5775	21.16	21.57	21.33	21.65	556.215	27.45	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	21.01	21.44	20.92	21.22	521.528	27.17	29.52	Pass
40	5200	21.85	22.36	21.75	22.25	642.8	28.08	29.52	Pass
48	5240	22.46	22.77	22.38	22.79	728.522	28.62	29.52	Pass
149	5745	22.80	23.07	23.12	23.05	800.267	29.03	29.63	Pass
157	5785	22.95	23.32	23.17	23.20	828.446	29.18	29.63	Pass
165	5825	22.81	23.18	22.95	23.12	801.313	29.04	29.63	Pass

Note: 1. For U-NII-1: Directional gain = 6.48dBi > 6dBi, so the power limit shall be reduced to 30-(6.48-6) = 29.52dBm.
2. For U-NII-3: Directional gain = 6.37dBi > 6dBi, so the power limit shall be reduced to 30-(6.37-6) = 29.63dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	17.94	18.12	17.88	18.12	253.332	24.04	29.52	Pass
46	5230	22.90	22.95	22.85	23.03	785.887	28.95	29.52	Pass
151	5755	22.84	23.02	22.96	23.12	795.569	29.01	29.63	Pass
159	5795	22.77	23.11	23.01	23.09	797.568	29.02	29.63	Pass

Note: 1. For U-NII-1: Directional gain = 6.48dBi > 6dBi, so the power limit shall be reduced to 30-(6.48-6) = 29.52dBm.
2. For U-NII-3: Directional gain = 6.37dBi > 6dBi, so the power limit shall be reduced to 30-(6.37-6) = 29.63dBm.

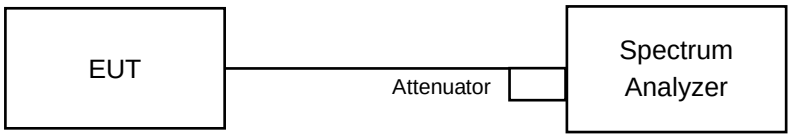
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	17.23	17.15	17.19	17.48	213.061	23.29	29.52	Pass
155	5775	21.16	21.57	21.33	21.65	556.215	27.45	29.63	Pass

Note: 1. For U-NII-1: Directional gain = 6.48dBi > 6dBi, so the power limit shall be reduced to 30-(6.48-6) = 29.52dBm.
2. For U-NII-3: Directional gain = 6.37dBi > 6dBi, so the power limit shall be reduced to 30-(6.37-6) = 29.63dBm.

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

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	17.04	17.16	16.92	17.04
40	5200	17.04	16.92	17.04	17.16
48	5240	17.16	17.04	16.92	17.04
149	5745	17.76	17.40	17.40	17.40
157	5785	18.48	18.12	18.48	18.24
165	5825	18.36	18.60	18.48	18.12

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	18.00	18.12	18.12	18.12
40	5200	18.12	18.00	18.12	18.12
48	5240	18.12	18.24	18.12	18.12
149	5745	18.48	18.36	18.48	18.48
157	5785	19.44	19.56	19.08	18.96
165	5825	18.96	18.96	18.96	18.84

802.11ac (VHT40)

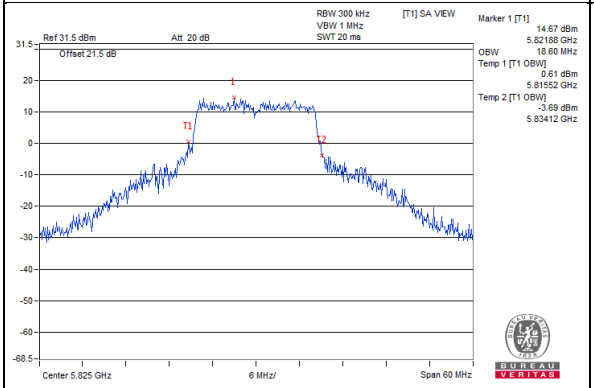
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	36.72	36.72	36.72	36.72
46	5230	36.72	36.96	36.96	37.20
151	5755	37.68	37.68	37.68	37.44
159	5795	37.92	37.92	38.16	37.68

802.11ac (VHT80)

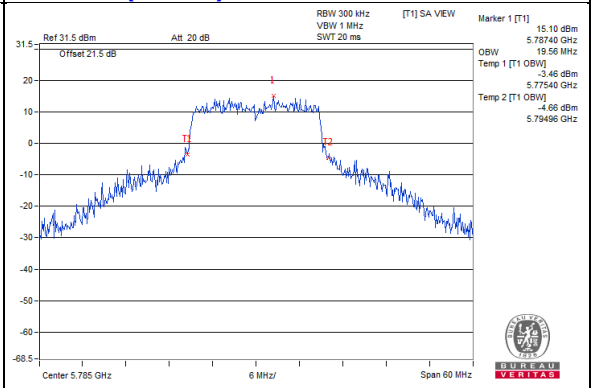
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	74.88	75.36	74.88	74.88
155	5775	76.32	76.32	76.32	76.32

Spectrum Plot of Max Value

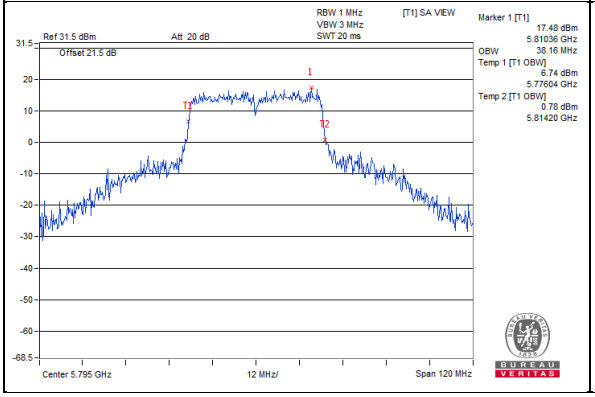
802.11a_Chain 1 / CH165



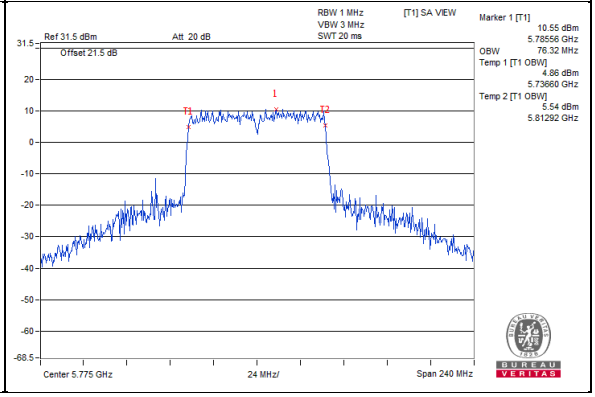
802.11ac (VHT20)_Chain 1 / CH157



802.11ac (VHT40)_Chain 2 / CH159

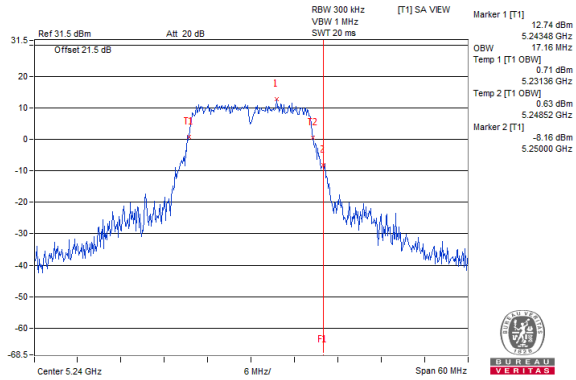


802.11ac (VHT80)_Chain 0 / CH155

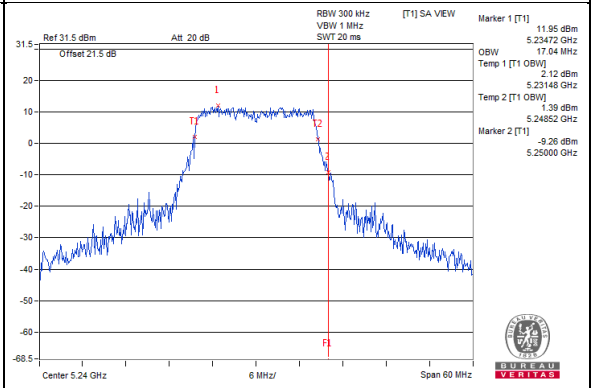


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

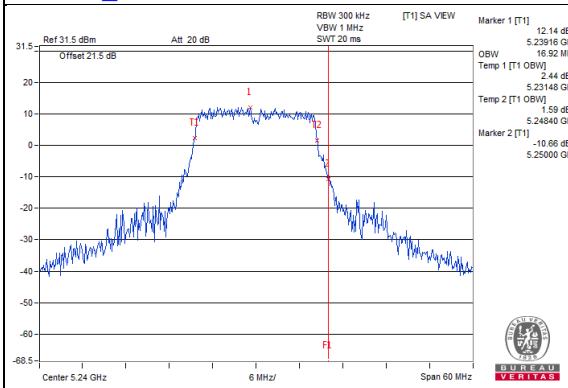
802.11a_Chain0 / CH48



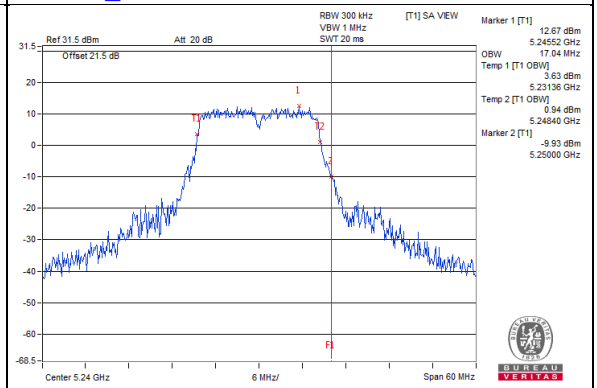
802.11a_Chain1 / CH48



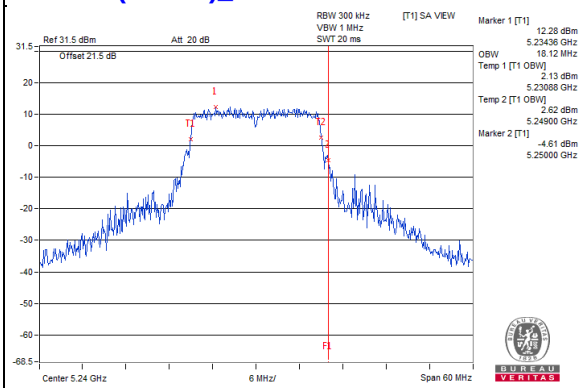
802.11a_Chain2 / CH48



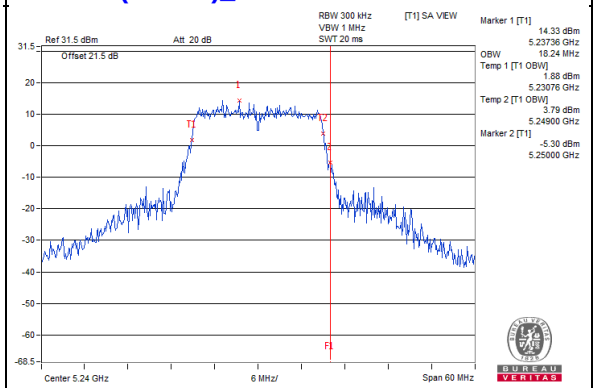
802.11a_Chain3 / CH48



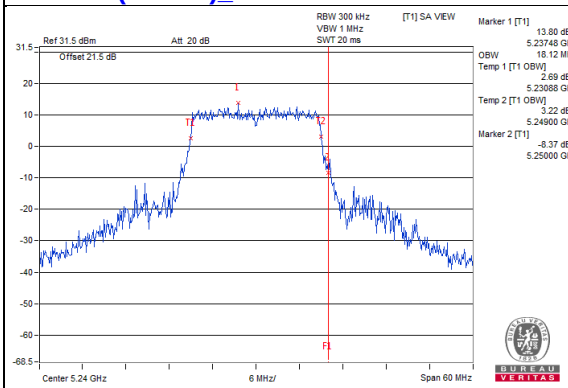
802.11ac(VHT20)_Chain0 / CH48



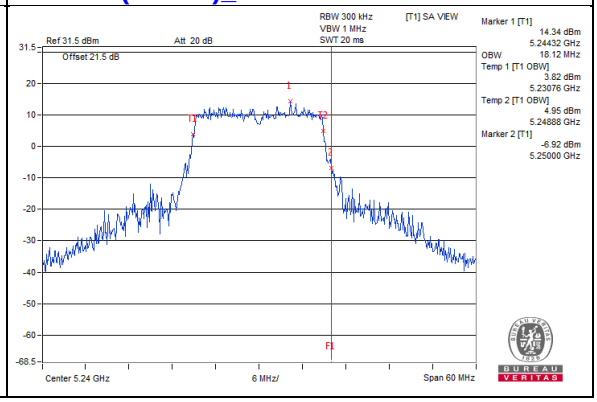
802.11ac(VHT20)_Chain1 / CH48



802.11ac(VHT20)_Chain2 / CH48

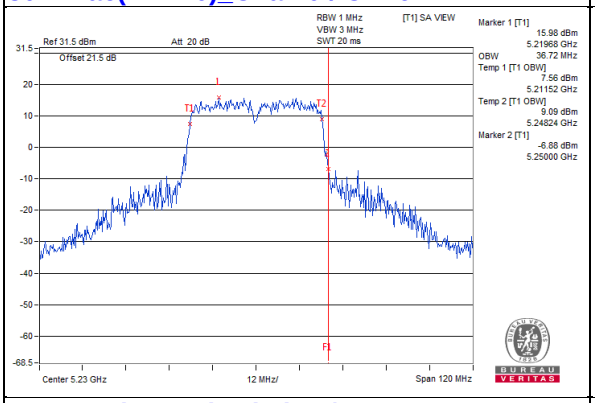


802.11ac(VHT20)_Chain3 / CH48

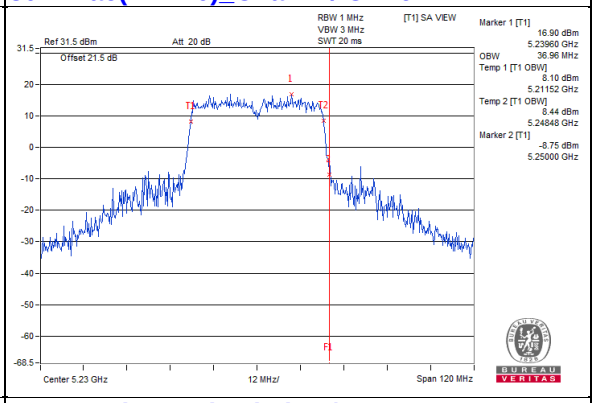


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

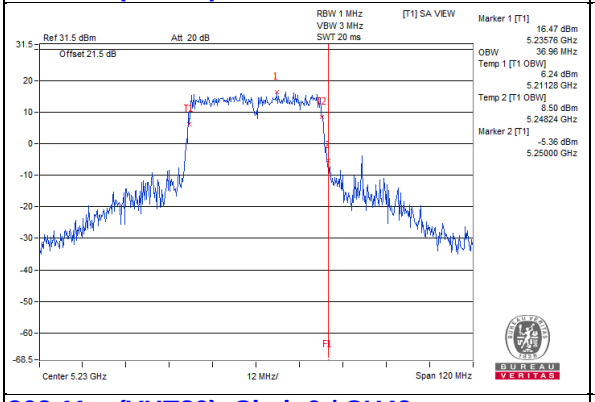
802.11ac(VHT40)_Chain0 / CH46



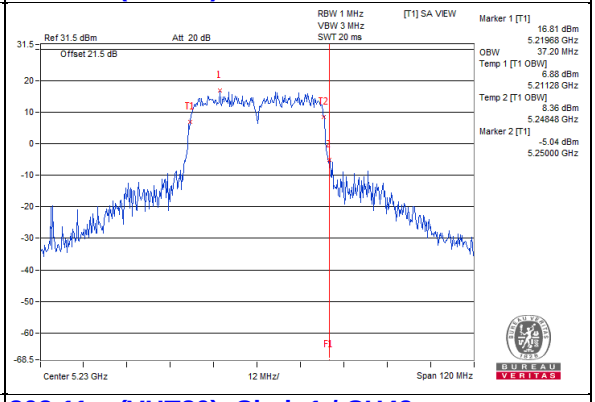
802.11ac(VHT40)_Chain1 / CH46



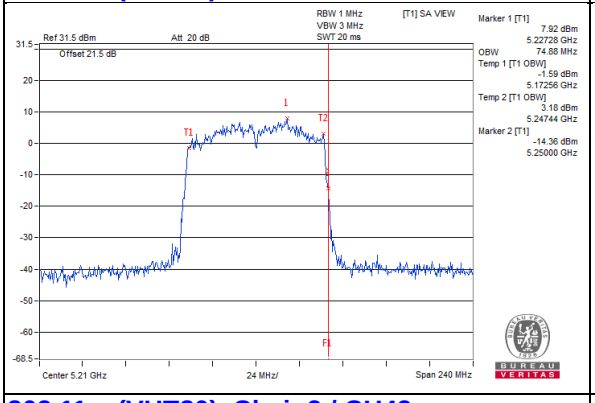
802.11ac(VHT40)_Chain2 / CH46



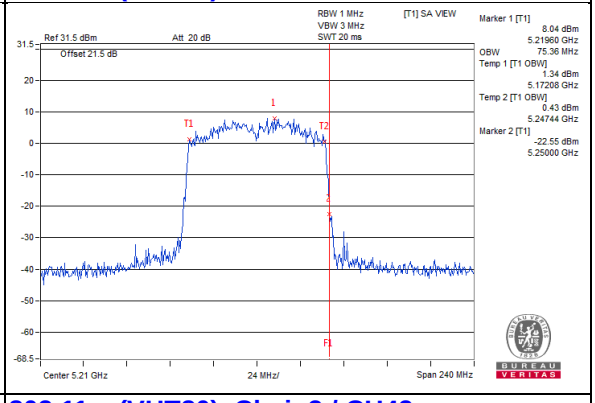
802.11ac(VHT40)_Chain3 / CH46



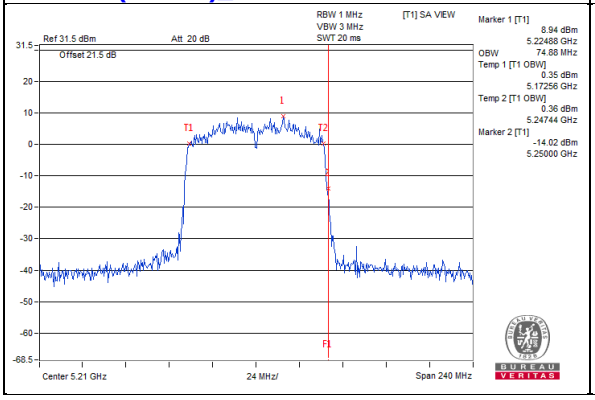
802.11ac(VHT80)_Chain0 / CH42



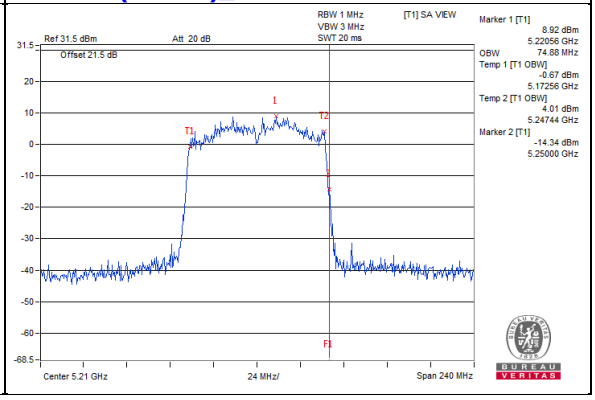
802.11ac(VHT80)_Chain1 / CH42



802.11ac(VHT80)_Chain2 / CH42

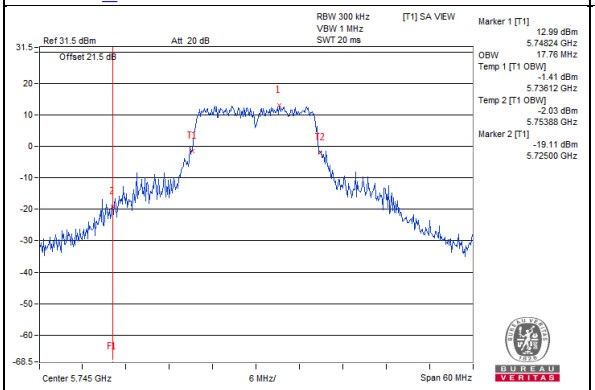


802.11ac(VHT80)_Chain3 / CH42

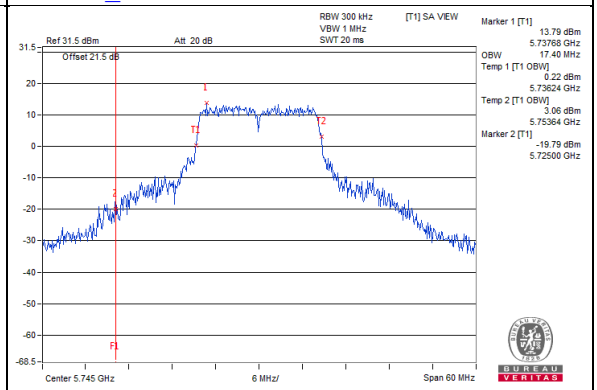


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

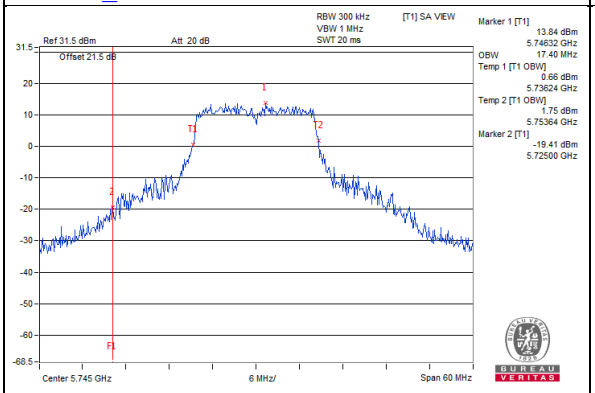
802.11a_Chain0 / CH149



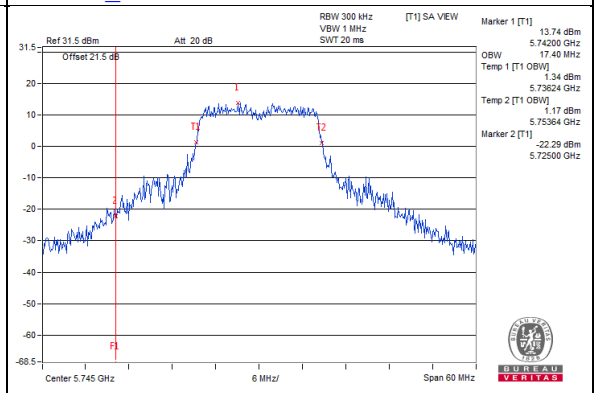
802.11a_Chain1 / CH149



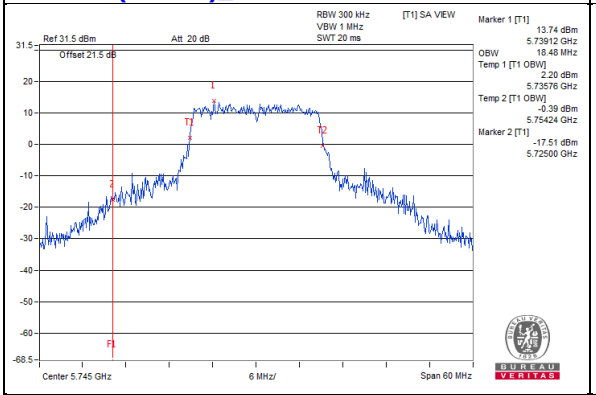
802.11a_Chain2 / CH149



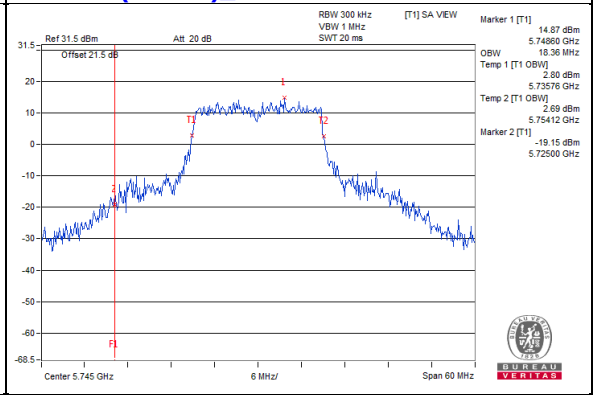
802.11a_Chain3 / CH149



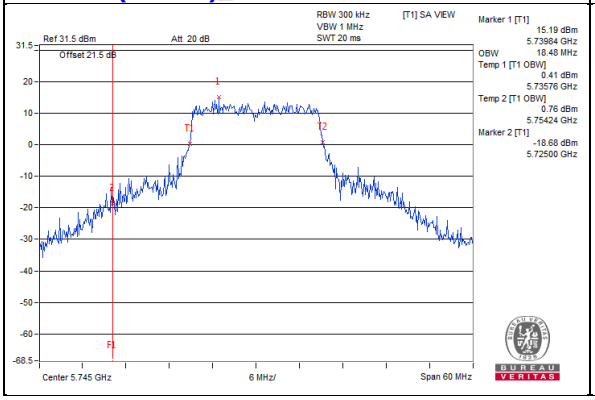
802.11ac(VHT20)_Chain0 / CH149



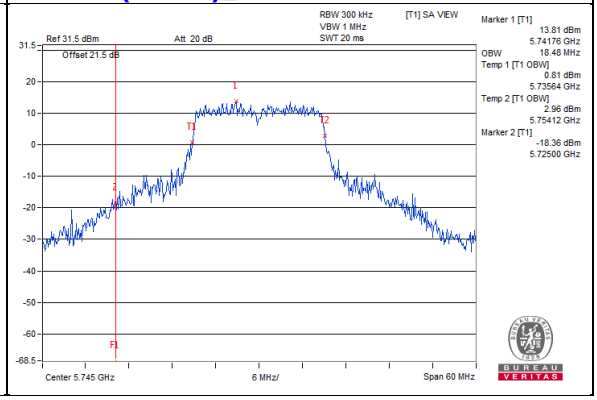
802.11ac(VHT20)_Chain1 / CH149



802.11ac(VHT20)_Chain2 / CH149

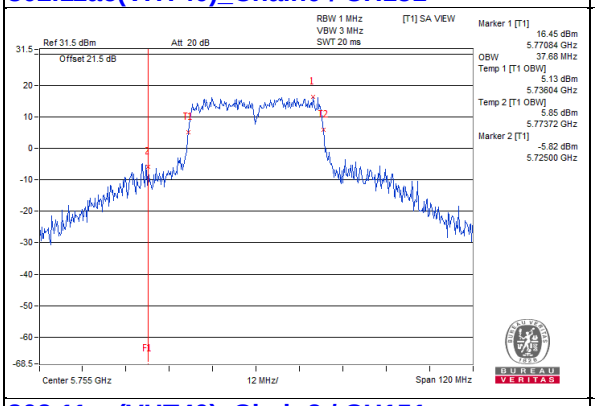


802.11ac(VHT20)_Chain3 / CH149

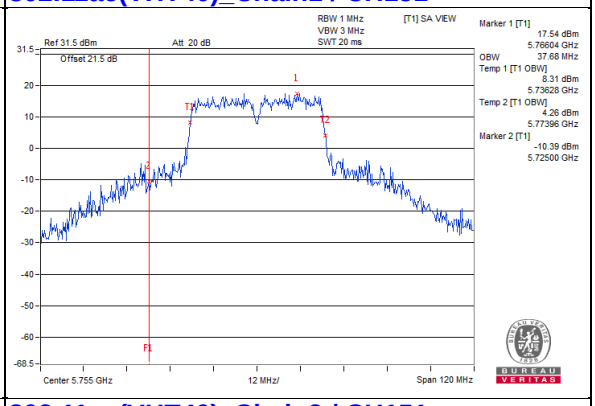


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

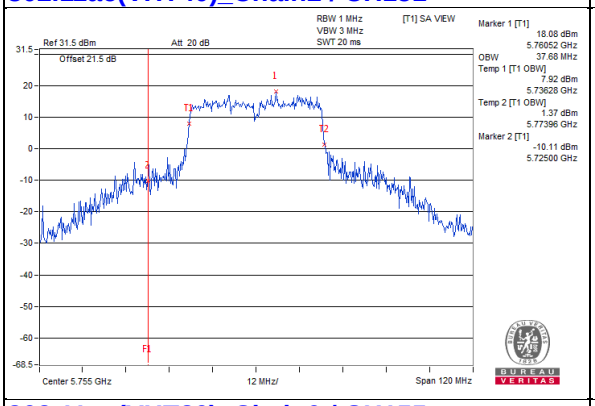
802.11ac(VHT40)_Chain0 / CH151



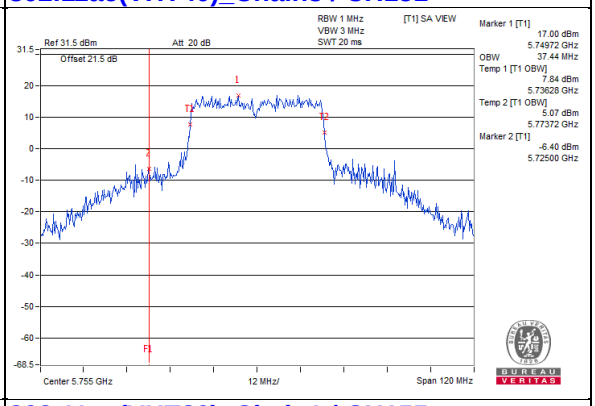
802.11ac(VHT40)_Chain1 / CH151



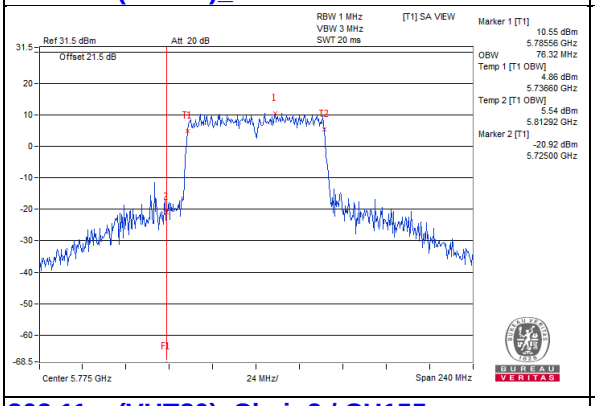
802.11ac(VHT40)_Chain2 / CH151



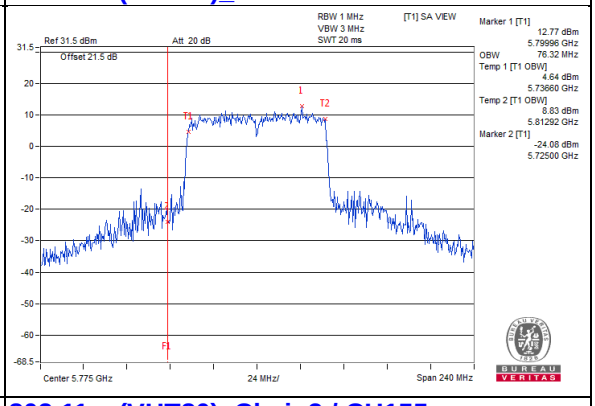
802.11ac(VHT40)_Chain3 / CH151



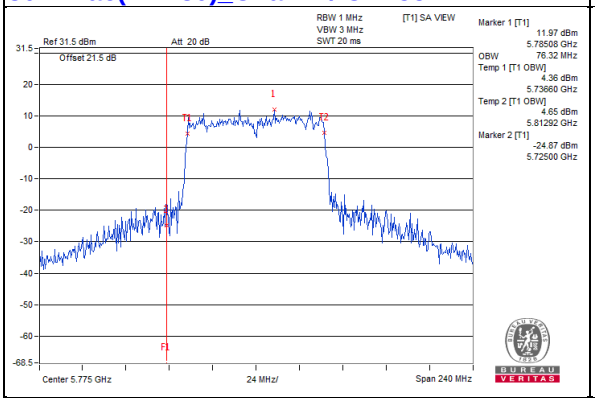
802.11ac(VHT80)_Chain0 / CH155



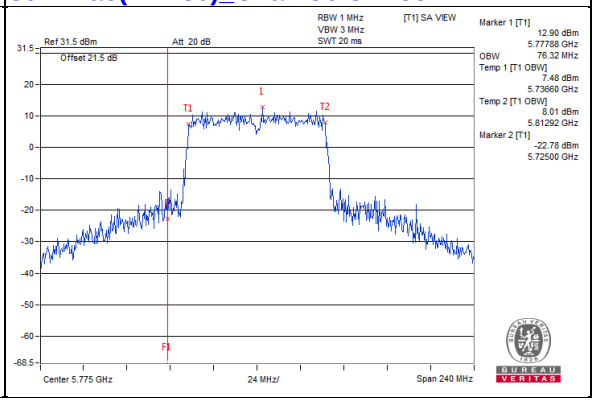
802.11ac(VHT80)_Chain1 / CH155



802.11ac(VHT80)_Chain2 / CH155



802.11ac(VHT80)_Chain3 / CH155

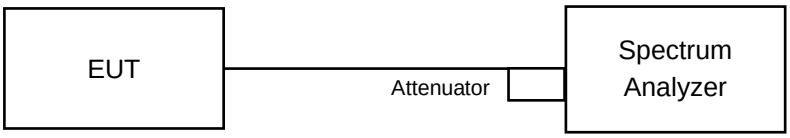


4.5 Peak Power Spectral Density Measurement

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

For U-NII-1 band:

For 802.11a, 802.11ac (VHT20):

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 other Modulation test:

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 band:

For 802.11a, 802.11ac (VHT20):

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(500kHz/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

For other Modulation test:

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(500kHz/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

CDD Mode

For U-NII-1:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
36	5180	7.77	8.39	7.89	7.82	14.00	16.52	Pass
40	5200	8.17	8.38	8.39	8.50	14.38	16.52	Pass
48	5240	7.94	8.47	8.39	8.18	14.27	16.52	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.48dBi > 6dBi, so the power density limit shall be reduced to 17-(6.48-6) = 16.52dBm.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
36	5180	6.99	7.20	7.07	7.11	13.11	16.52	Pass
40	5200	8.07	8.28	8.37	8.43	14.31	16.52	Pass
48	5240	8.46	8.90	8.81	8.64	14.73	16.52	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.48dBi > 6dBi, so the power density limit shall be reduced to 17-(6.48-6) = 16.52dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	0.80	1.47	1.29	1.18	0.10	7.31	16.52	Pass
46	5230	5.92	6.45	6.19	6.30	0.10	12.34	16.52	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.48dBi > 6dBi, so the power density limit shall be reduced to 17-(6.48-6) = 16.52dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

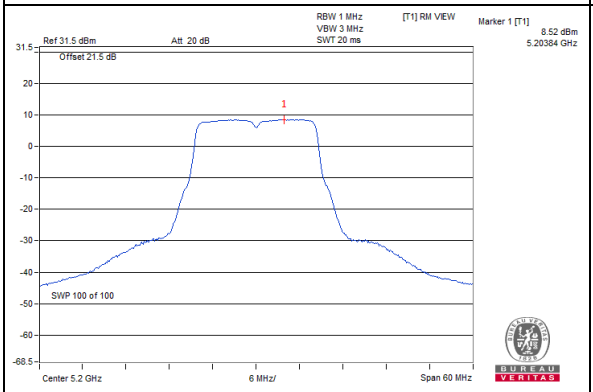
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	-1.78	-1.61	-1.61	-1.21	0.18	4.65	16.52	Pass

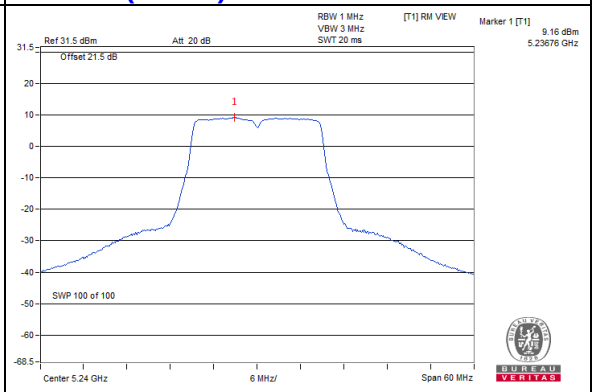
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.48dBi > 6dBi, so the power density limit shall be reduced to 17-(6.48-6) = 16.52dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

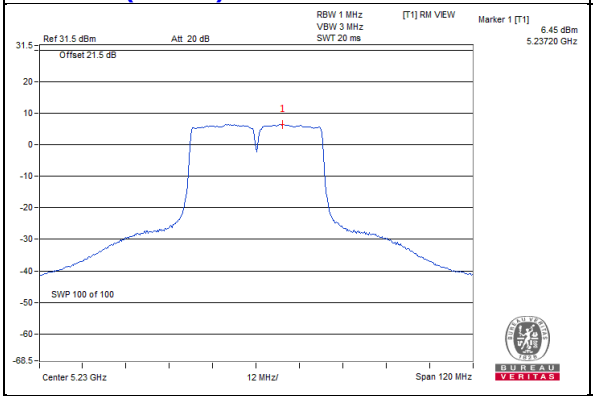
802.11a / Chain 3 : CH40



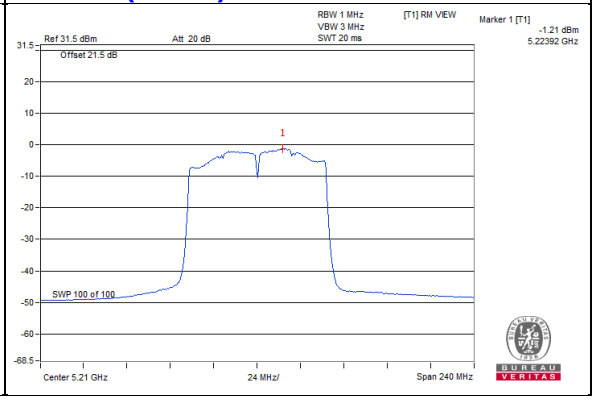
802.11ac (VHT20) / Chain 1 : CH48



802.11ac (VHT40) / Chain 1: CH46



802.11ac (VHT80) / Chain 3 : CH42



For U-NII-3:

802.11a

Chan.	Freq. (MHz)	PSD (dBm/300kHz)				Total PSD		Total PSD (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
		Chain 0	Chain 1	Chain 2	Chain 3	mW/ 300kHz	dBm/ 300kHz			
149	5745	1.40	1.51	1.77	1.71	5.7818	7.62	9.84	29.63	Pass
157	5785	1.92	2.03	2.16	2.40	6.534	8.15	10.37	29.63	Pass
165	5825	1.71	2.23	2.33	1.93	6.4232	8.08	10.30	29.63	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = 6.37dBi > 6dBi, so the power density limit shall be reduced to 30-(6.37-6) = 29.63dBm.

802.11ac (VHT20)

Chan.	Freq. (MHz)	PSD (dBm/300kHz)				Total PSD		Total PSD (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
		Chain 0	Chain 1	Chain 2	Chain 3	mW/ 300kHz	dBm/ 300kHz			
149	5745	1.20	1.42	1.48	1.38	5.4851	7.39	9.61	29.63	Pass
157	5785	1.89	1.99	2.13	1.82	6.2801	7.98	10.20	29.63	Pass
165	5825	1.51	1.65	1.84	1.43	5.7955	7.63	9.85	29.63	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = 6.37dBi > 6dBi, so the power density limit shall be reduced to 30-(6.37-6) = 29.63dBm.

802.11ac (VHT40)

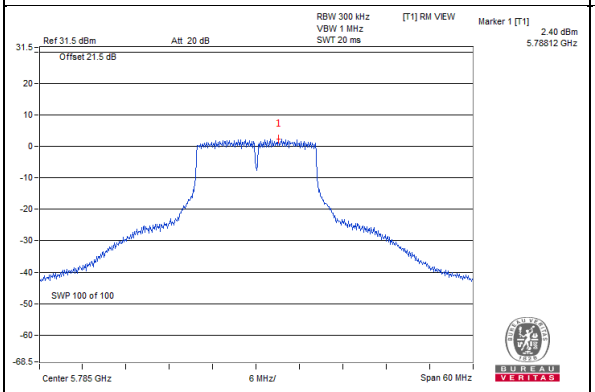
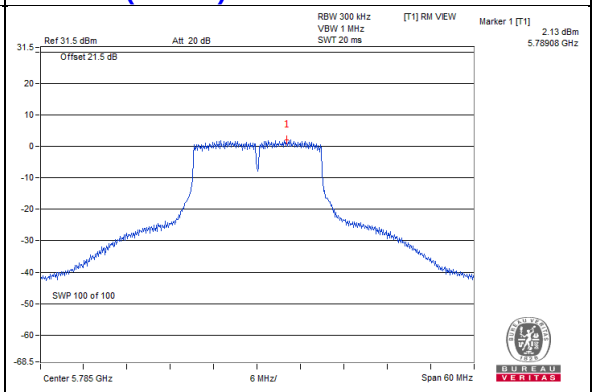
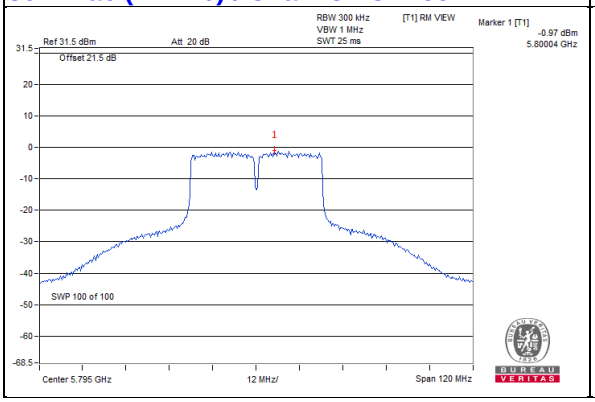
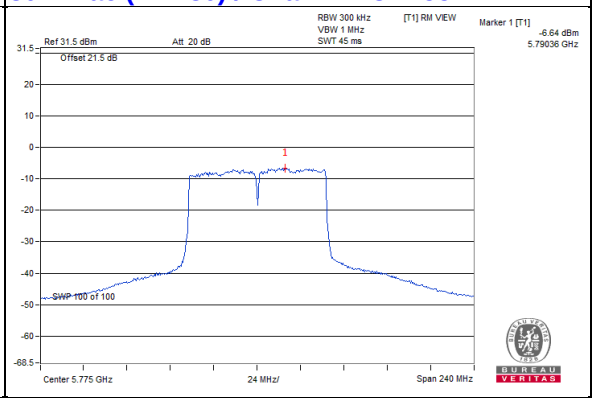
Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD With Duty Factor		Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
		Chain 0	Chain 1	Chain 2	Chain 3		mW/ 300kHz	dBm/ 300kHz			
151	5755	-1.34	-1.30	-1.35	-1.34	0.10	3.0145	4.79	7.01	29.63	Pass
159	5795	-1.71	-1.33	-1.09	-0.97	0.10	3.061	4.86	7.08	29.63	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = 6.37dBi > 6dBi, so the power density limit shall be reduced to 30-(6.37-6) = 29.63dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD With Duty Factor		Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
		Chain 0	Chain 1	Chain 2	Chain 3		mW/ 300kHz	dBm/ 300kHz			
155	5775	-7.00	-6.64	-6.66	-6.92	0.18	0.8716	-0.60	1.62	29.63	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = 6.37dBi > 6dBi, so the power density limit shall be reduced to 30-(6.37-6) = 29.63dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

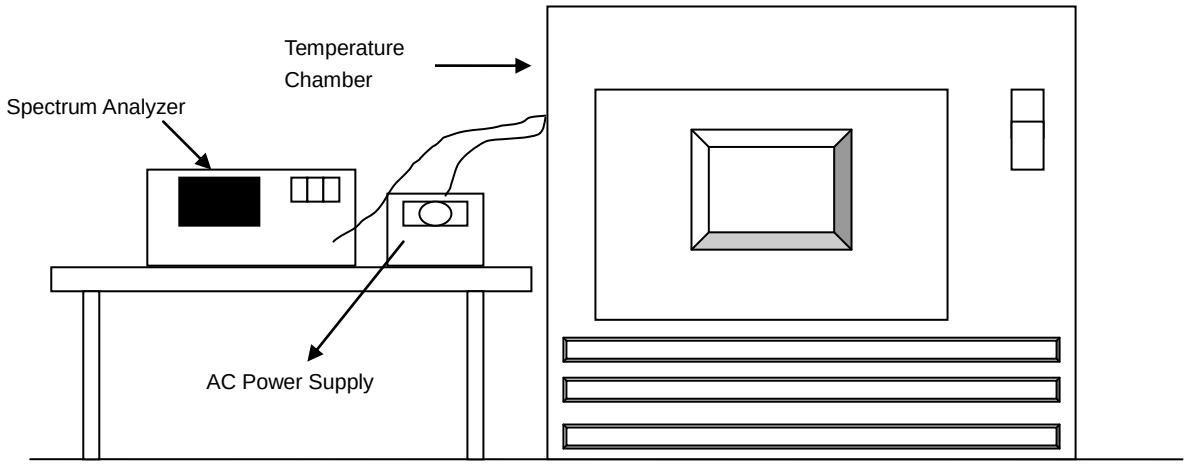
Spectrum Plot of Worst Value	
802.11a / Chain 3 : CH157	**802.11ac (VHT20) / Chain 2 : CH157**
	
802.11ac (VHT40) / Chain 3 : CH159	**802.11ac (VHT80) / Chain 1 : CH155**
	

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 0, 2, 5, and 10 Minutes.

e. Repeat step (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 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	5180.0198	PASS	5180.0181	PASS	5180.0172	PASS	5180.0206	PASS
40	120	5179.9833	PASS	5179.9853	PASS	5179.9859	PASS	5179.9846	PASS
30	120	5179.986	PASS	5179.9881	PASS	5179.9884	PASS	5179.9893	PASS
20	120	5180.0103	PASS	5180.0108	PASS	5180.0116	PASS	5180.015	PASS
10	120	5179.9938	PASS	5179.9922	PASS	5179.9938	PASS	5179.9915	PASS
0	120	5179.9824	PASS	5179.9816	PASS	5179.9826	PASS	5179.984	PASS
-10	120	5180.0085	PASS	5180.0073	PASS	5180.0043	PASS	5180.0085	PASS
-20	120	5180.0092	PASS	5180.0072	PASS	5180.0087	PASS	5180.0045	PASS
-30	120	5180.0259	PASS	5180.0227	PASS	5180.0241	PASS	5180.0228	PASS

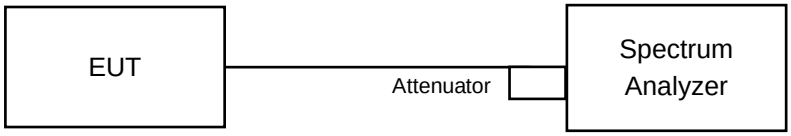
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5180.0098	PASS	5180.0103	PASS	5180.0112	PASS	5180.0153	PASS
	120	5180.0103	PASS	5180.0108	PASS	5180.0116	PASS	5180.015	PASS
	102	5180.0095	PASS	5180.0105	PASS	5180.0107	PASS	5180.0141	PASS

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.44	16.46	16.45	16.43	0.5	Pass
157	5785	16.43	16.46	16.42	16.43	0.5	Pass
165	5825	16.45	16.47	16.43	16.43	0.5	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	17.68	17.68	17.69	17.67	0.5	Pass
157	5785	17.69	17.69	17.70	17.67	0.5	Pass
165	5825	17.66	17.68	17.66	17.66	0.5	Pass

802.11ac (VHT40)

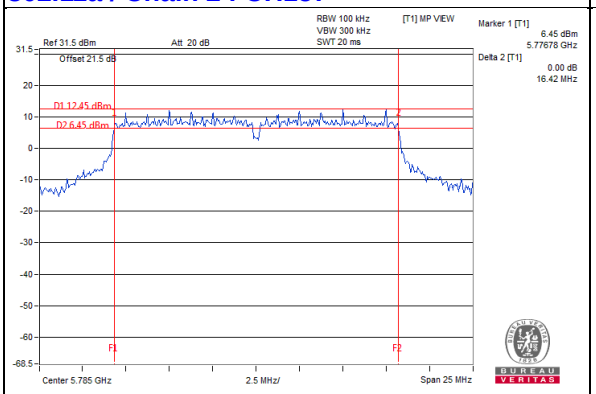
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	36.48	36.50	36.45	36.48	0.5	Pass
159	5795	36.50	36.50	36.48	36.48	0.5	Pass

802.11ac (VHT80)

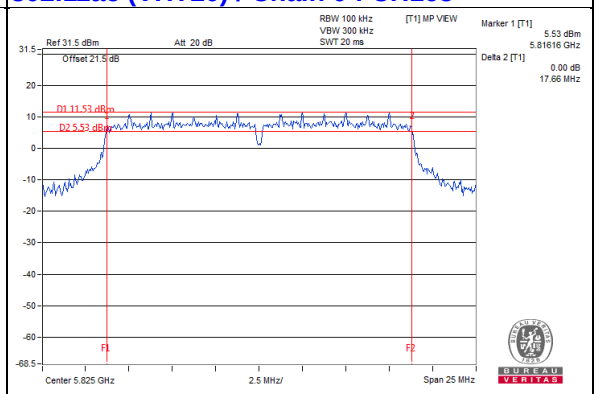
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	76.36	76.51	76.33	76.54	0.5	Pass

Spectrum Plot of Worst Value

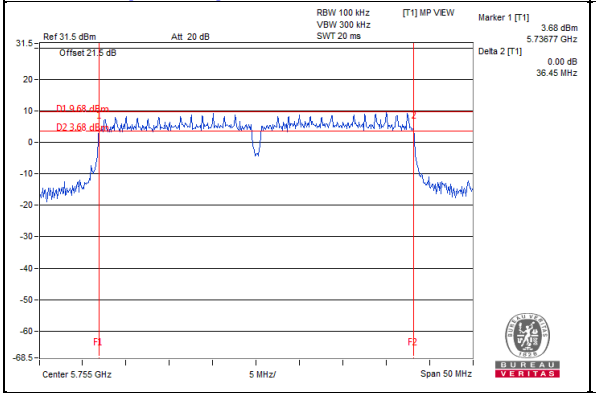
802.11a / Chain 2 : CH157



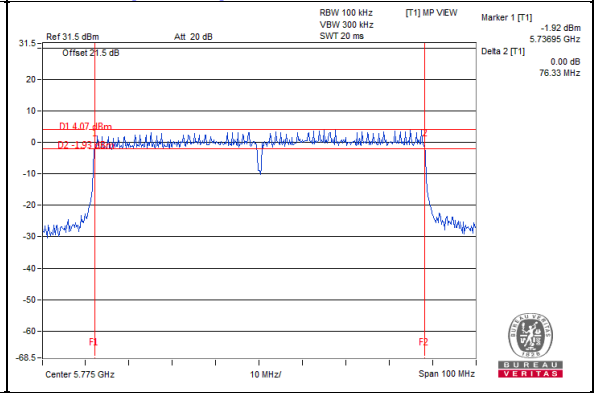
802.11ac (VHT20) / Chain 0 : CH165



802.11ac (VHT40) / Chain 2 : CH151



802.11ac (VHT80) / Chain 2 : CH155



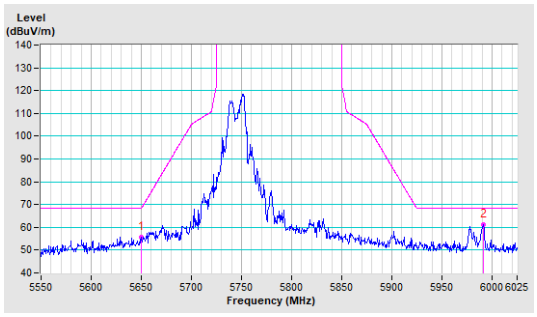
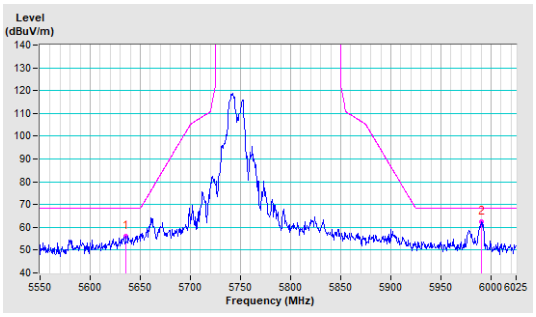
5 Pictures of Test Arrangements

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

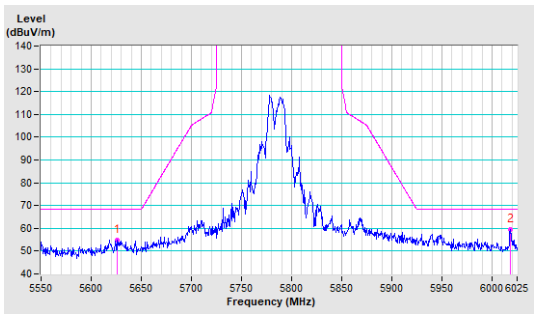
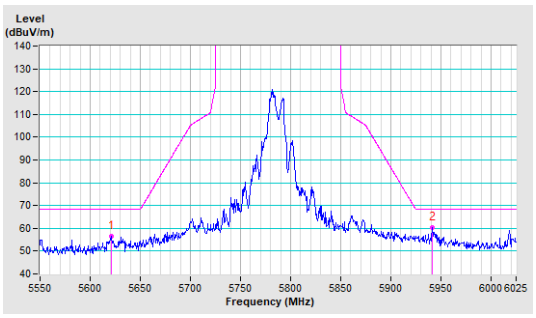
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

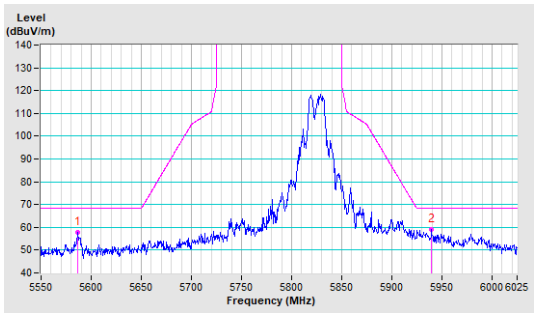
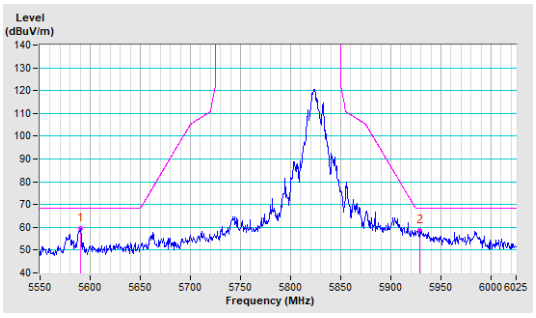
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

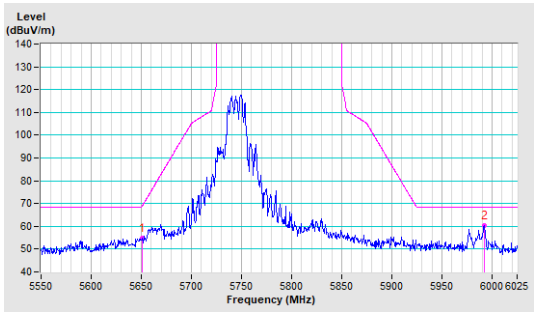
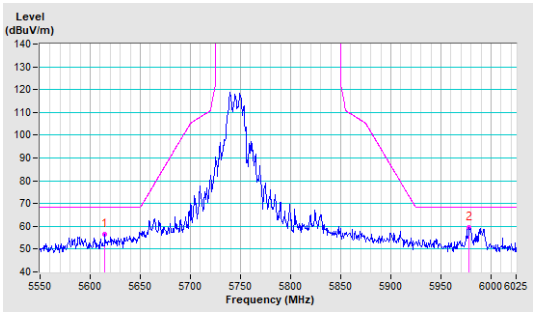
Horizontal	Vertical
	

CH 165 5825 MHz

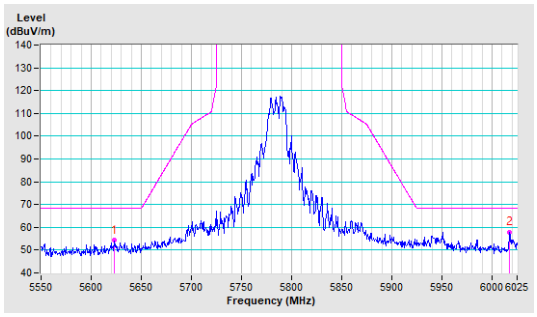
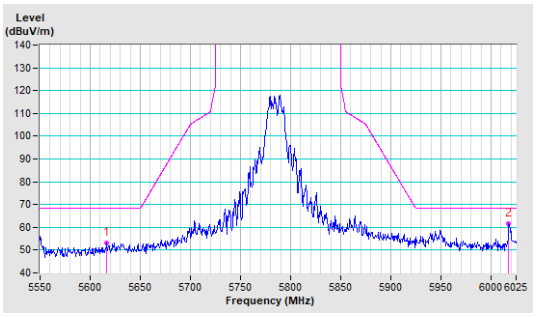
Horizontal	Vertical
	

802.11ac (VHT20)

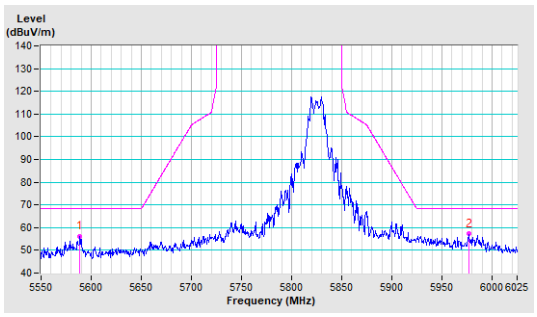
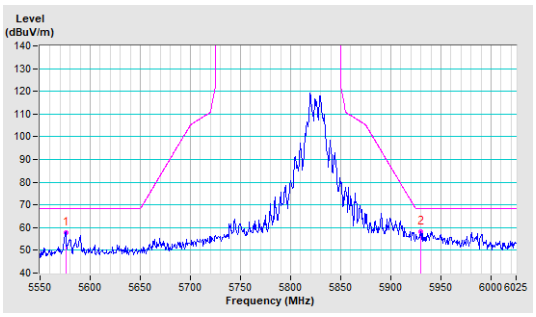
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

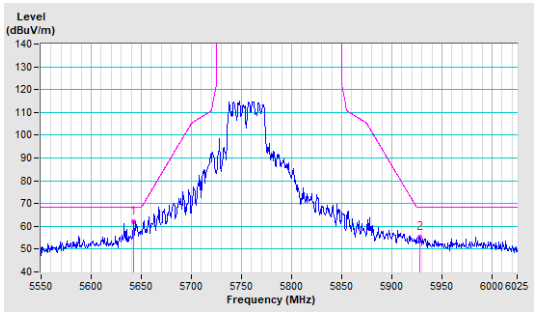
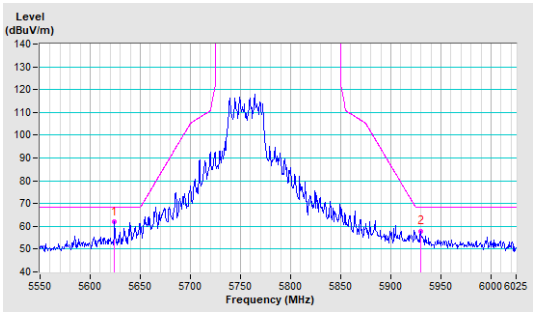
Horizontal	Vertical
	

CH 165 5825 MHz

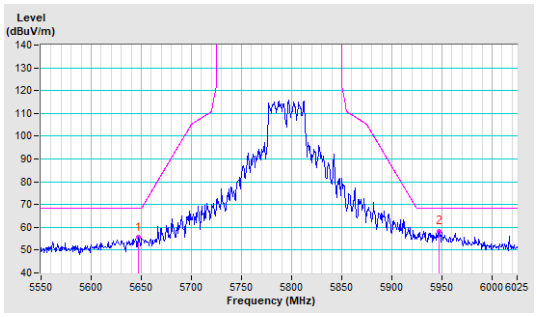
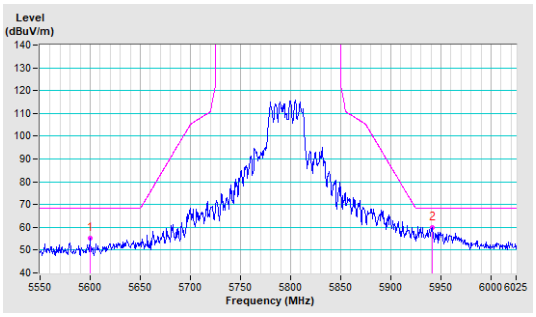
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

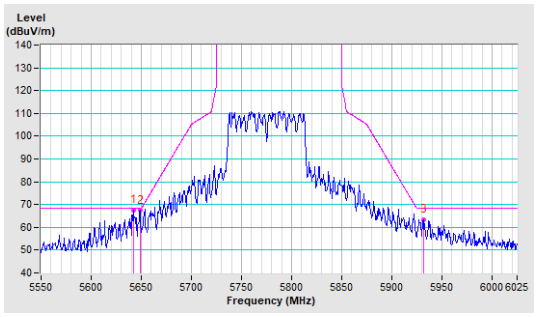
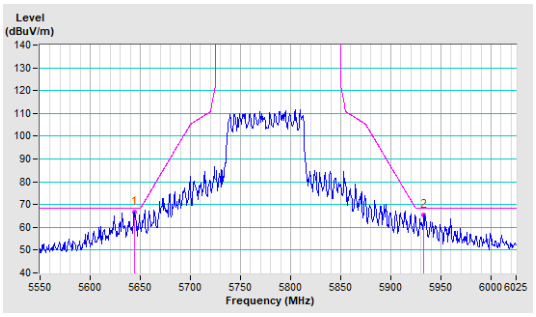
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

802.11ac (VHT80)

CH 155 5775 MHz

Horizontal	Vertical
	

Appendix – Information of 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.

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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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