FCC Test Report

Report No.:	RF180731E05-1
FCC ID:	NKR-LRV5-100
Test Model:	LRV5-100
Received Date:	Aug. 02, 2018
Test Date:	Aug. 04 to 09, 2018
Issued Date:	Sep. 03, 2018
Applicant:	Wistron NeWeb Corp.
Address:	20 Park Avenue II, Hsinchu Science Park,Hsinchu 308, Taiwan, R.O.C.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location :	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Testing Laboratory
2022

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Release Control Record

Issue No.	Description	Date Issued
RF180731E05-1	Original release.	Sep. 03, 2018

1 Certificate of Conformity

Product:	Router
Brand:	Verizon Wireless
Test Model:	LRV5-100
Sample Status:	ENGINEERING SAMPLE
Applicant:	Wistron NeWeb Corp.
Test Date:	Aug. 04 to 09, 2018
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Wendy Wu , **Date:** Sep. 03, 2018

Wendy Wu / Specialist

Approved by : , **Date:** Sep. 03, 2018

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -4.98dB at 0.35313MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5639.30MHz, 10400.00MHz, 10480.00MHz, 10360.00MHz, 15720.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.33 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.10 dB
	6GHz ~ 18GHz	4.85 dB
	18GHz ~ 40GHz	5.24 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Router
Brand	Verizon Wireless
Test Model	LRV5-100
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 54V from power adapter (WLAN function) or DC 3.6V from battery (LTE function)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
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:** 2.412 ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz** **CDD Mode:** 854.346mW **Beamforming Mode:** 854.346mW **5GHz:** **CDD Mode:** **5.18 ~ 5.24GHz:** 673.319mW **5.745 ~ 5.825GHz:** 893.395mW **Beamforming Mode:** **5.18 ~ 5.24GHz:** 673.319mW **5.745 ~ 5.825GHz:** 893.395mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	NA

Note:

1. The EUT contains certified LTE modular which FCC ID: NKR-IMG2.
2. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3	Radio 4	Radio 5
WLAN - 2.4GHz	WLAN - 5GHz Low Band	WLAN - 5GHz High Band	LTE	GPS

3. Simultaneously transmission condition.

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

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

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4~2.4835	3.05	Dipole	i-pex(MHF)
5.15~5.25	6.43		
5.25~5.35	6.43		
5.47~5.725	6.47		
5.725~5.85	6.47		
Note: More detailed information, please refer to opearating description.			

5. The EUT could be supplied from a power adapter or battery as following table:

Adapter		
Brand	Model No.	Spec.
FSP	FSP120-AWAN3-W	Input: 100-240Vac, 1.8A, 50-60Hz Output: 54V, 2.22A DC cable: Unshielded, 1.5m with one core
Battery		
Brand	Model No.	Spec.
WNC	BTY-LRV5000	3.6 V, 2280mAh

6. Power suppied from batteries condition only support WWAN function.

7. The EUT incorporates a MIMO function:

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	1TX Fixed Chain 2	1RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	4TX	4RX
802.11n (HT20)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
802.11n (HT40)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
802.11ac (VHT20)	MCS0~8 Nss=1	4TX	4RX
	MCS0~8 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~8 Nss=4	4TX	4RX
802.11ac (VHT40)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX
802.11ac (VHT80)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX

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

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

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	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	√	√	√	√	5GHz Low Band
2	√	√	√	√	5GHz High Band

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

Radiated Emission Test (Above 1GHz):

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

CDD Mode							
EUT Configure Mode	Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	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
2	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							
EUT Configure Mode	Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	802.11ac (VHT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5
2	802.11ac (VHT40)	5745-5825	151 to 159	151	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							
EUT Configure Mode	Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	802.11ac (VHT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5
2	802.11ac (VHT40)	5745-5825	151 to 159	151	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							
EUT Configure Mode	Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	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
2	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)							
EUT Configure Mode	Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	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
2	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

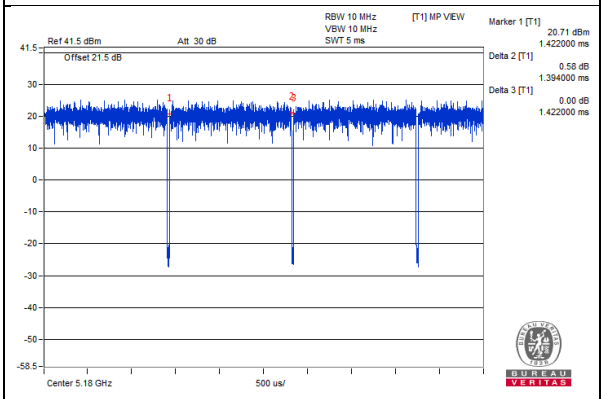
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz	Frank Chuang
RE<1G	24deg. C, 67%RH	120Vac, 60Hz	Frank Chuang
PLC	24deg. C, 72%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

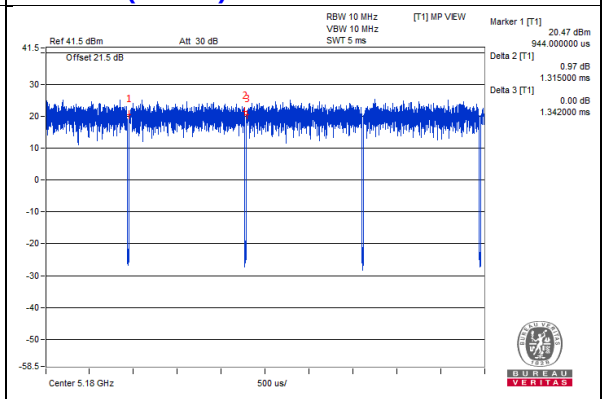
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 1.394 ms/1.422 ms = 0.98
802.11ac (VHT20): Duty cycle = 1.315 ms/1.342 ms = 0.98
802.11ac (VHT40): Duty cycle = 0.653 ms/0.682 ms = 0.957, Duty factor = 10 * log(1/0.957) = 0.19
802.11ac (VHT80): Duty cycle = 0.322 ms/0.35 ms = 0.92, Duty factor = 10 * log(1/0.92) = 0.36

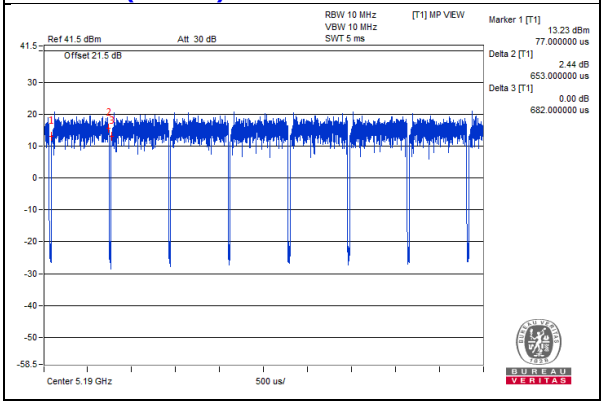
802.11a



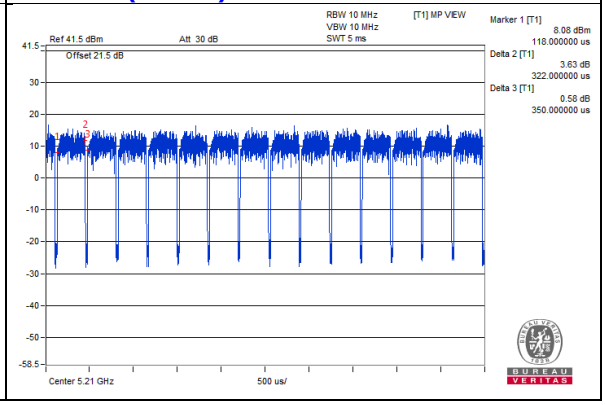
802.11ac (VHT20)



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.	Test Tool	NA	NA	NA	NA	Supplied by client
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	Telephone	WONDER	WD-303	7C17KA 04011	NA	Provided by Lab
D.	SIM Card	NA	NA	NA	NA	Provided by Lab

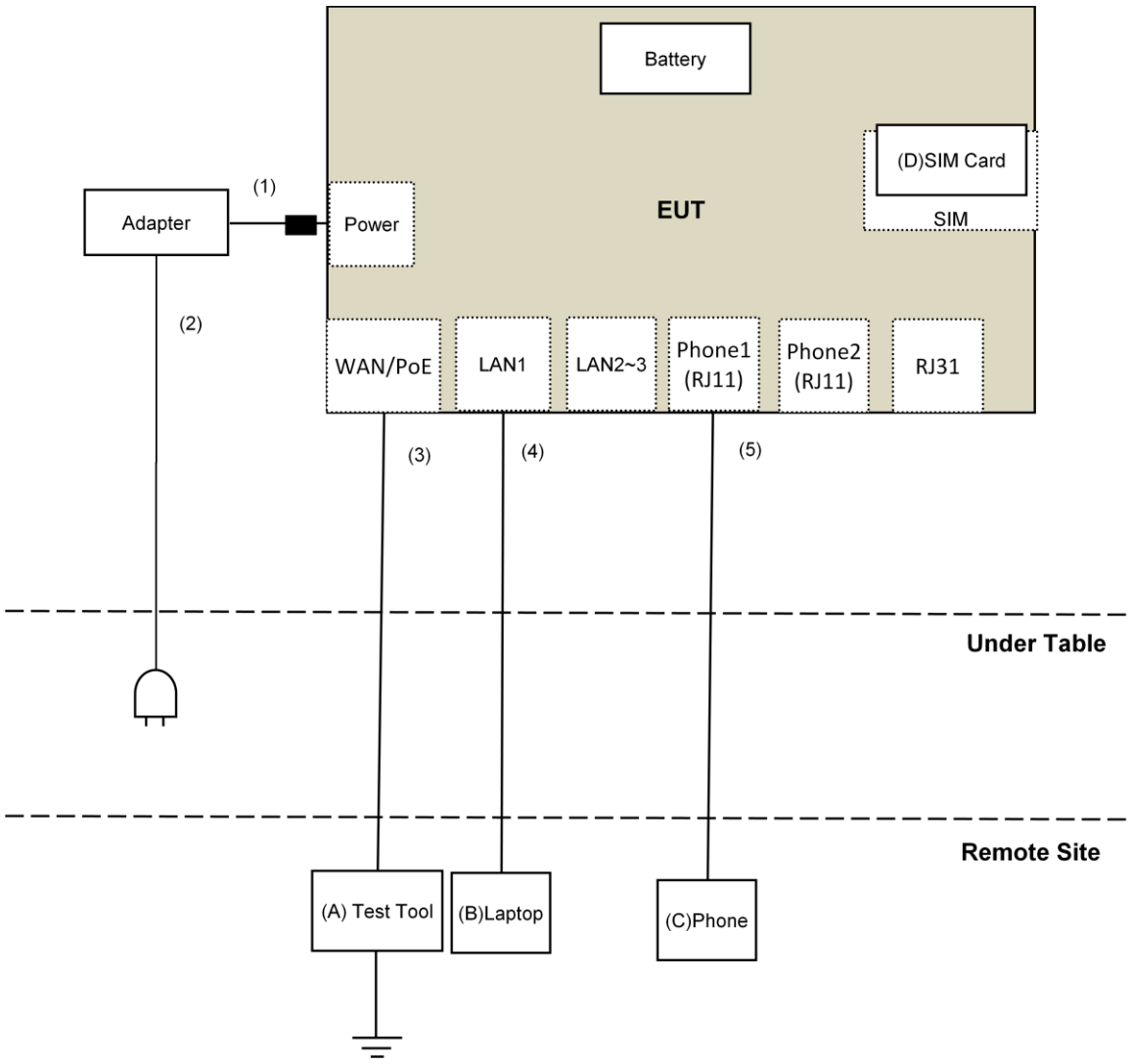
Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	No	1	Supplied by client
2.	AC Cable	1	1.8	No	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	RJ-45 Cable	1	10	No	0	Provided by Lab
5.	RJ-11 Cable	1	10	No	0	Provided by Lab

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

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

Note:

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 05, 2018	July 04, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-4-1	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-2	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-3	Mar. 21, 2018	Mar. 20, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier Mini-Circuits	ZVA-183-S+	AMP-ZVA-03	May 10, 2018	May 09, 2019
RF Cable	EMC104-SM-SM-1200	160923	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150318	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150321	Jan. 29, 2018	Jan. 28, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160925	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
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
AC Power Source Extech Electronics	6205	1440452	NA	NA
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 10, 2018	Jan. 09, 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. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Aug. 06 to 09, 2018

4.1.3 Test Procedure

For Radiated emission below 30MHz

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

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

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

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

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

NOTE:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

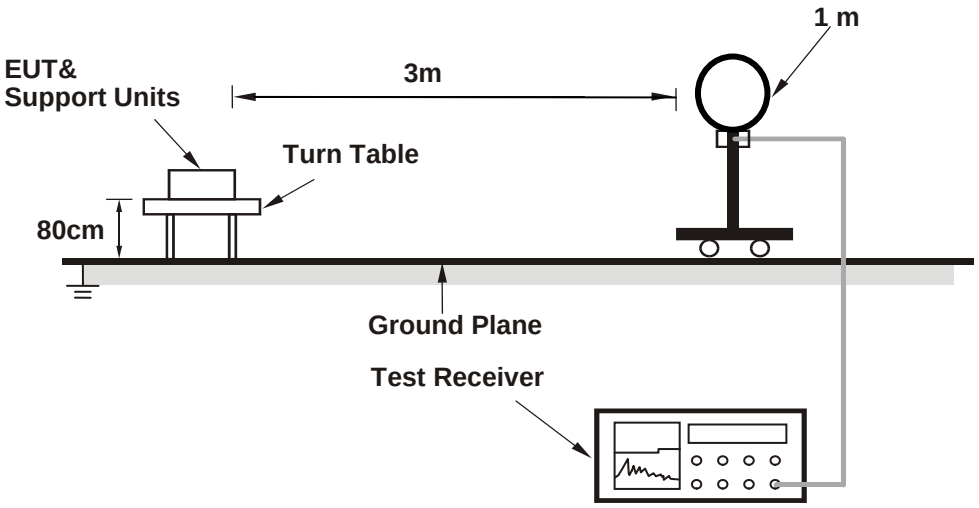
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

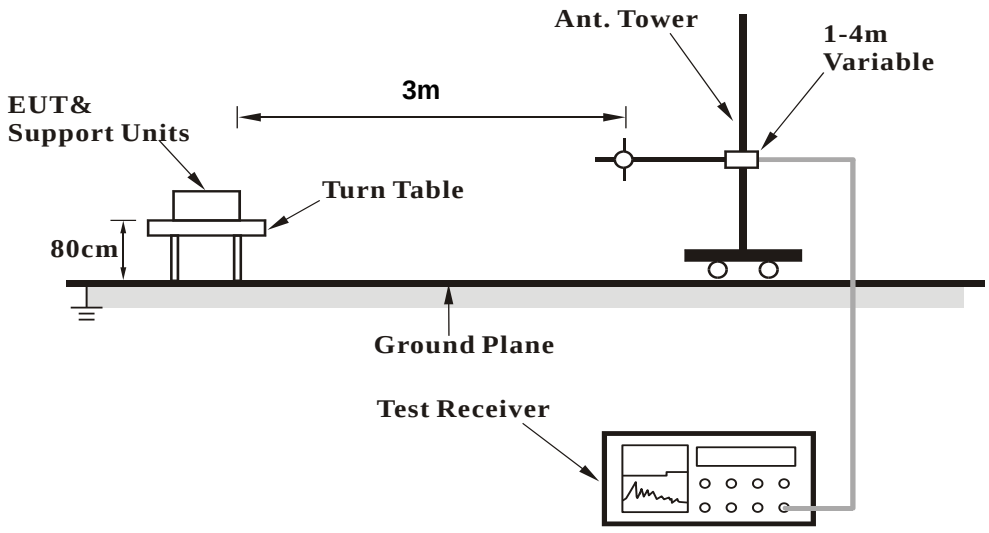
No deviation.

4.1.5 Test Setup

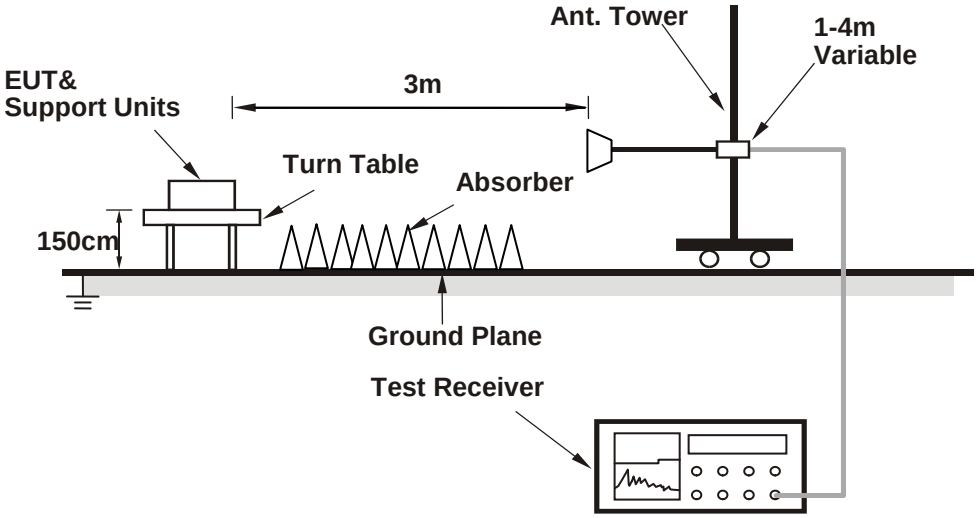
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (Lantiq DUT Ver.541.41) has been activated to set the EUT on specific status.

4.1.7 Test Results (Mode 1)

Above 1GHz Data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.5 PK	74.0	-20.5	1.73 H	300	50.5	3.0
2	5150.00	39.4 AV	54.0	-14.6	1.73 H	300	36.4	3.0
3	*5180.00	111.0 PK			1.73 H	300	108.2	2.8
4	*5180.00	101.3 AV			1.73 H	300	98.5	2.8
5	#10360.00	59.8 PK	68.2	-8.4	1.87 H	206	47.4	12.4
6	15540.00	62.6 PK	74.0	-11.4	1.56 H	123	49.8	12.8
7	15540.00	49.8 AV	54.0	-4.2	1.56 H	123	37.0	12.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.3 PK	74.0	-17.7	2.11 V	7	53.3	3.0
2	5150.00	45.3 AV	54.0	-8.7	2.11 V	7	42.3	3.0
3	*5180.00	117.3 PK			2.11 V	7	114.5	2.8
4	*5180.00	107.7 AV			2.11 V	7	104.9	2.8
5	#10360.00	67.8 PK	68.2	-0.4	1.86 V	328	55.4	12.4
6	15540.00	65.2 PK	74.0	-8.8	2.23 V	258	52.4	12.8
7	15540.00	50.3 AV	54.0	-3.7	2.23 V	258	37.5	12.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.8 PK	74.0	-18.2	1.77 H	301	52.8	3.0
2	5150.00	43.2 AV	54.0	-10.8	1.77 H	301	40.2	3.0
3	*5200.00	115.4 PK			1.77 H	301	112.7	2.7
4	*5200.00	105.4 AV			1.77 H	301	102.7	2.7
5	#10400.00	62.3 PK	68.2	-5.9	1.77 H	252	49.8	12.5
6	15600.00	64.8 PK	74.0	-9.2	1.55 H	110	52.0	12.8
7	15600.00	51.2 AV	54.0	-2.8	1.55 H	110	38.4	12.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.2 PK	74.0	-17.8	2.69 V	96	53.2	3.0
2	5150.00	44.2 AV	54.0	-9.8	2.69 V	96	41.2	3.0
3	*5200.00	120.8 PK			2.69 V	96	118.1	2.7
4	*5200.00	111.2 AV			2.69 V	96	108.5	2.7
5	**#10400.00**	**68.1 PK**	**68.2**	**-0.1**	**1.34 V**	**323**	**55.6**	**12.5**
6	15600.00	67.2 PK	74.0	-6.8	2.22 V	318	54.4	12.8
7	15600.00	52.5 AV	54.0	-1.5	2.22 V	318	39.7	12.8

REMARKS:

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

CHANNEL	TX Channel 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	5150.00	53.1 PK	74.0	-20.9	1.75 H	291	50.1	3.0
2	5150.00	39.8 AV	54.0	-14.2	1.75 H	291	36.8	3.0
3	*5240.00	114.1 PK			1.75 H	291	111.6	2.5
4	*5240.00	104.5 AV			1.75 H	291	102.0	2.5
5	5350.00	53.3 PK	74.0	-20.7	1.75 H	291	50.7	2.6
6	5350.00	39.4 AV	54.0	-14.6	1.75 H	291	36.8	2.6
7	#10480.00	62.5 PK	68.2	-5.7	2.58 H	54	49.5	13.0
8	15720.00	62.6 PK	74.0	-11.4	1.15 H	236	50.2	12.4
9	15720.00	49.6 AV	54.0	-4.4	1.15 H	236	37.2	12.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.3 PK	74.0	-20.7	1.70 V	4	50.3	3.0
2	5150.00	40.4 AV	54.0	-13.6	1.70 V	4	37.4	3.0
3	*5240.00	120.8 PK			1.70 V	4	118.3	2.5
4	*5240.00	110.8 AV			1.70 V	4	108.3	2.5
5	5350.00	52.5 PK	74.0	-21.5	1.70 V	4	49.9	2.6
6	5350.00	40.2 AV	54.0	-13.8	1.70 V	4	37.6	2.6
7	**#10480.00**	**68.1 PK**	**68.2**	**-0.1**	**1.23 V**	**326**	**55.1**	**13.0**
8	15720.00	61.6 PK	74.0	-12.4	2.45 V	40	49.2	12.4
9	15720.00	48.9 AV	54.0	-5.1	2.45 V	40	36.5	12.4

REMARKS:

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

802.11ac (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	53.3 PK	74.0	-20.7	1.77 H	285	50.3	3.0
2	5150.00	39.3 AV	54.0	-14.7	1.77 H	285	36.3	3.0
3	*5180.00	111.4 PK			1.77 H	285	108.6	2.8
4	*5180.00	101.4 AV			1.77 H	285	98.6	2.8
5	#10360.00	60.5 PK	68.2	-7.7	2.30 H	241	48.1	12.4
6	15540.00	62.7 PK	74.0	-11.3	1.77 H	285	49.9	12.8
7	15540.00	49.8 AV	54.0	-4.2	1.77 H	285	37.0	12.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.0 PK	74.0	-12.0	1.63 V	3	59.0	3.0
2	5150.00	43.7 AV	54.0	-10.3	1.63 V	3	40.7	3.0
3	*5180.00	118.2 PK			1.63 V	3	115.4	2.8
4	*5180.00	107.6 AV			1.63 V	3	104.8	2.8
5	**#10360.00**	**68.1 PK**	**68.2**	**-0.1**	**1.90 V**	**330**	**55.7**	**12.4**
6	15540.00	65.1 PK	74.0	-8.9	2.22 V	66	52.3	12.8
7	15540.00	50.3 AV	54.0	-3.7	2.22 V	66	37.5	12.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	52.1 PK	74.0	-21.9	1.76 H	284	49.1	3.0
2	5150.00	44.5 AV	54.0	-9.5	1.76 H	284	41.5	3.0
3	*5200.00	112.4 PK			1.76 H	284	109.7	2.7
4	*5200.00	102.2 AV			1.76 H	284	99.5	2.7
5	5350.00	51.1 PK	74.0	-22.9	1.76 H	284	48.5	2.6
6	5350.00	40.0 AV	54.0	-14.0	1.76 H	284	37.4	2.6
7	#10400.00	62.2 PK	68.2	-6.0	1.22 H	306	49.7	12.5
8	15600.00	64.2 PK	74.0	-9.8	2.20 H	133	51.4	12.8
9	15600.00	51.6 AV	54.0	-2.4	2.20 H	133	38.8	12.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	52.2 PK	74.0	-21.8	2.24 V	324	49.2	3.0
2	5150.00	45.2 AV	54.0	-8.8	2.24 V	324	42.2	3.0
3	*5200.00	119.7 PK			2.24 V	324	117.0	2.7
4	*5200.00	108.9 AV			2.24 V	324	106.2	2.7
5	5350.00	51.3 PK	74.0	-22.7	2.24 V	324	48.7	2.6
6	5350.00	40.0 AV	54.0	-14.0	2.24 V	324	37.4	2.6
7	**#10400.00**	**68.1 PK**	**68.2**	**-0.1**	**1.02 V**	**326**	**55.6**	**12.5**
8	15600.00	68.7 PK	74.0	-5.3	3.19 V	342	55.9	12.8
9	15600.00	53.7 AV	54.0	-0.3	3.19 V	342	40.9	12.8

REMARKS:

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

CHANNEL	TX Channel 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	5150.00	50.6 PK	74.0	-23.4	1.78 H	286	47.6	3.0
2	5150.00	39.8 AV	54.0	-14.2	1.78 H	286	36.8	3.0
3	*5240.00	115.2 PK			1.78 H	286	112.7	2.5
4	*5240.00	104.9 AV			1.78 H	286	102.4	2.5
5	5350.00	52.0 PK	74.0	-22.0	1.78 H	286	49.4	2.6
6	5350.00	44.5 AV	54.0	-9.5	1.78 H	286	41.9	2.6
7	#10480.00	63.3 PK	68.2	-4.9	2.26 H	78	50.3	13.0
8	15720.00	63.7 PK	74.0	-10.3	2.18 H	135	51.3	12.4
9	15720.00	51.4 AV	54.0	-2.6	2.18 H	135	39.0	12.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	52.7 PK	74.0	-21.3	1.80 V	7	49.7	3.0
2	5150.00	40.1 AV	54.0	-13.9	1.80 V	7	37.1	3.0
3	*5240.00	122.0 PK			1.80 V	7	119.5	2.5
4	*5240.00	111.0 AV			1.80 V	7	108.5	2.5
5	5350.00	52.6 PK	74.0	-21.4	1.80 V	7	50.0	2.6
6	5350.00	40.4 AV	54.0	-13.6	1.80 V	7	37.8	2.6
7	#10480.00	67.6 PK	68.2	-0.6	1.89 V	328	54.6	13.0
8	15720.00	68.9 PK	74.0	-5.1	3.21 V	337	56.5	12.4
9	**15720.00**	**53.9 AV**	**54.0**	**-0.1**	**3.21 V**	**337**	**41.5**	**12.4**

REMARKS:

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

802.11ac (VHT40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.3 PK	74.0	-8.7	1.74 H	280	62.3	3.0
2	5150.00	51.5 AV	54.0	-2.5	1.74 H	280	48.5	3.0
3	*5190.00	106.5 PK			1.74 H	280	103.7	2.8
4	*5190.00	99.8 AV			1.74 H	280	97.0	2.8
5	5350.00	50.6 PK	74.0	-23.4	1.74 H	280	48.0	2.6
6	5350.00	39.4 AV	54.0	-14.6	1.74 H	280	36.8	2.6
7	#10380.00	61.1 PK	68.2	-7.1	2.20 H	215	48.7	12.4
8	15570.00	62.3 PK	74.0	-11.7	1.77 H	14	49.5	12.8
9	15570.00	48.2 AV	54.0	-5.8	1.77 H	14	35.4	12.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.5 PK	74.0	-5.5	1.83 V	183	65.5	3.0
2	5150.00	53.2 AV	54.0	-0.8	1.83 V	183	50.2	3.0
3	*5190.00	113.7 PK			1.83 V	183	110.9	2.8
4	*5190.00	105.1 AV			1.83 V	183	102.3	2.8
5	5350.00	50.7 PK	74.0	-23.3	1.83 V	183	48.1	2.6
6	5350.00	39.6 AV	54.0	-14.4	1.83 V	183	37.0	2.6
7	#10380.00	64.6 PK	68.2	-3.6	2.05 V	47	52.2	12.4
8	15570.00	65.4 PK	74.0	-8.6	2.18 V	356	52.6	12.8
9	15570.00	50.4 AV	54.0	-3.6	2.18 V	356	37.6	12.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.4 PK	74.0	-16.6	1.72 H	264	54.4	3.0
2	5150.00	46.2 AV	54.0	-7.8	1.72 H	264	43.2	3.0
3	*5230.00	112.3 PK			1.72 H	264	109.8	2.5
4	*5230.00	104.5 AV			1.72 H	264	102.0	2.5
5	5350.00	55.1 PK	74.0	-18.9	1.72 H	264	52.5	2.6
6	5350.00	42.3 AV	54.0	-11.7	1.72 H	264	39.7	2.6
7	#10460.00	64.5 PK	68.2	-3.7	2.06 H	102	51.6	12.9
8	15690.00	65.2 PK	74.0	-8.8	2.20 H	178	52.8	12.4
9	15690.00	50.2 AV	54.0	-3.8	2.20 H	178	37.8	12.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.6 PK	74.0	-15.4	1.90 V	6	55.6	3.0
2	5150.00	48.4 AV	54.0	-5.6	1.90 V	6	45.4	3.0
3	*5230.00	118.3 PK			1.90 V	6	115.8	2.5
4	*5230.00	110.1 AV			1.90 V	6	107.6	2.5
5	5350.00	56.8 PK	74.0	-17.2	1.90 V	6	54.2	2.6
6	5350.00	43.2 AV	54.0	-10.8	1.90 V	6	40.6	2.6
7	#10460.00	67.6 PK	68.2	-0.6	1.15 V	326	54.7	12.9
8	15690.00	67.1 PK	74.0	-6.9	3.21 V	343	54.7	12.4
9	15690.00	52.2 AV	54.0	-1.8	3.21 V	343	39.8	12.4

REMARKS:

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

802.11ac (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	65.5 PK	74.0	-8.5	1.77 H	278	62.5	3.0
2	5150.00	51.5 AV	54.0	-2.5	1.77 H	278	48.5	3.0
3	*5210.00	106.8 PK			1.77 H	278	104.1	2.7
4	*5210.00	99.9 AV			1.77 H	278	97.2	2.7
5	5350.00	50.2 PK	74.0	-23.8	1.77 H	278	47.6	2.6
6	5350.00	39.0 AV	54.0	-15.0	1.77 H	278	36.4	2.6
7	#10420.00	56.6 PK	68.2	-11.6	1.87 H	203	44.0	12.6
8	15630.00	60.2 PK	74.0	-13.8	2.21 H	65	47.5	12.7
9	15630.00	45.5 AV	54.0	-8.5	2.21 H	65	32.8	12.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.2 PK	74.0	-9.8	1.89 V	7	61.2	3.0
2	5150.00	53.4 AV	54.0	-0.6	1.89 V	7	50.4	3.0
3	*5210.00	110.0 PK			1.89 V	7	107.3	2.7
4	*5210.00	101.9 AV			1.89 V	7	99.2	2.7
5	5350.00	52.9 PK	74.0	-21.1	1.89 V	7	50.3	2.6
6	5350.00	42.4 AV	54.0	-11.6	1.89 V	7	39.8	2.6
7	#10420.00	58.6 PK	68.2	-9.6	1.52 V	94	46.0	12.6
8	15630.00	61.1 PK	74.0	-12.9	3.17 V	337	48.4	12.7
9	15630.00	48.9 AV	54.0	-5.1	3.17 V	337	36.2	12.7

REMARKS:

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

Below 1GHz Data:

802.11ac (VHT40)

CHANNEL	TX Channel 46	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	45.79	29.1 QP	40.0	-10.9	2.00 H	272	37.0	-7.9
2	108.84	28.0 QP	43.5	-15.5	1.50 H	68	38.9	-10.9
3	143.32	26.5 QP	43.5	-17.0	2.00 H	50	34.5	-8.0
4	299.54	28.1 QP	46.0	-17.9	1.00 H	64	35.2	-7.1
5	365.01	28.9 QP	46.0	-17.1	1.00 H	64	34.1	-5.2
6	411.96	36.0 QP	46.0	-10.0	1.00 H	344	39.9	-3.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	89.90	30.7 QP	43.5	-12.8	1.00 V	360	44.3	-13.6
2	160.78	29.5 QP	43.5	-14.0	1.00 V	76	37.3	-7.8
3	289.28	27.8 QP	46.0	-18.2	2.00 V	334	35.2	-7.4
4	414.02	39.7 QP	46.0	-6.3	1.00 V	1	43.6	-3.9
5	433.42	39.5 QP	46.0	-6.5	1.00 V	61	42.5	-3.0
6	608.24	31.1 QP	46.0	-14.9	1.50 V	167	30.1	1.0

REMARKS:

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

4.1.8 Test Results (Mode 2)

Above 1GHz Data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	#5645.88	60.6 PK	68.2	-7.6	1.43 H	332	49.0	11.6
2	*5745.00	116.4 PK			1.43 H	332	113.1	3.3
3	*5745.00	107.3 AV			1.43 H	332	104.0	3.3
4	#5980.90	60.5 PK	68.2	-7.7	1.43 H	332	48.5	12.0
5	11490.00	58.1 PK	74.0	-15.9	2.35 H	271	44.7	13.4
6	11490.00	46.5 AV	54.0	-7.5	2.35 H	271	33.1	13.4
7	#17235.00	61.2 PK	68.2	-7.0	1.44 H	233	44.5	16.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	#5647.79	61.1 PK	68.2	-7.1	1.59 V	310	57.9	3.2
2	*5745.00	123.6 PK			1.59 V	310	120.3	3.3
3	*5745.00	113.6 AV			1.59 V	310	110.3	3.3
4	#6023.73	59.6 PK	68.2	-8.6	1.59 V	310	55.8	3.8
5	11490.00	59.4 PK	74.0	-14.6	1.70 V	207	46.0	13.4
6	11490.00	47.3 AV	54.0	-6.7	1.70 V	207	33.9	13.4
7	#17235.00	62.3 PK	68.2	-5.9	1.83 V	210	45.6	16.7

REMARKS:

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

CHANNEL	TX Channel 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	#5618.45	60.8 PK	68.2	-7.4	1.46 H	331	49.2	11.6
2	*5785.00	116.0 PK			1.46 H	331	112.7	3.3
3	*5785.00	106.8 AV			1.46 H	331	103.5	3.3
4	#5972.62	60.9 PK	68.2	-7.3	1.46 H	331	49.0	11.9
5	11570.00	58.5 PK	74.0	-15.5	2.34 H	289	45.1	13.4
6	11570.00	46.8 AV	54.0	-7.2	2.34 H	289	33.4	13.4
7	#17355.00	61.5 PK	68.2	-6.7	1.49 H	256	44.2	17.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5611.29	60.7 PK	68.2	-7.5	1.73 V	317	49.1	11.6
2	*5785.00	123.9 PK			1.73 V	317	120.6	3.3
3	*5785.00	114.2 AV			1.73 V	317	110.9	3.3
4	#5965.26	59.2 PK	68.2	-9.0	1.73 V	317	47.3	11.9
5	11570.00	59.5 PK	74.0	-14.5	1.71 V	216	46.1	13.4
6	11570.00	47.3 AV	54.0	-6.7	1.71 V	216	33.9	13.4
7	#17355.00	63.1 PK	68.2	-5.1	1.44 V	195	45.8	17.3

REMARKS:

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

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5640.95	60.6 PK	68.2	-7.6	1.42 H	338	49.0	11.6
2	*5825.00	116.3 PK			1.42 H	338	112.8	3.5
3	*5825.00	107.1 AV			1.42 H	338	103.6	3.5
4	#5974.14	60.2 PK	68.2	-8.0	1.42 H	338	48.3	11.9
5	11650.00	58.3 PK	74.0	-15.7	2.32 H	277	45.0	13.3
6	11650.00	46.5 AV	54.0	-7.5	2.32 H	277	33.2	13.3
7	#17475.00	61.2 PK	68.2	-7.0	1.45 H	246	43.0	18.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5646.47	60.4 PK	68.2	-7.8	1.53 V	312	57.2	3.2
2	*5825.00	123.6 PK			1.53 V	312	120.1	3.5
3	*5825.00	113.7 AV			1.53 V	312	110.2	3.5
4	#5930.80	60.4 PK	68.2	-7.8	1.53 V	312	56.8	3.6
5	11650.00	58.9 PK	74.0	-15.1	1.66 V	206	45.6	13.3
6	11650.00	46.9 AV	54.0	-7.1	1.66 V	206	33.6	13.3
7	#17475.00	62.8 PK	68.2	-5.4	1.46 V	191	44.6	18.2

REMARKS:

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

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5618.04	61.1 PK	68.2	-7.1	1.42 H	331	49.5	11.6
2	*5745.00	116.3 PK			1.42 H	331	113.0	3.3
3	*5745.00	107.2 AV			1.42 H	331	103.9	3.3
4	#5992.94	61.4 PK	68.2	-6.8	1.42 H	331	49.4	12.0
5	11490.00	58.1 PK	74.0	-15.9	2.37 H	287	44.7	13.4
6	11490.00	46.2 AV	54.0	-7.8	2.37 H	287	32.8	13.4
7	#17235.00	62.1 PK	68.2	-6.1	1.49 H	244	45.4	16.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.43	65.7 PK	68.5	-2.8	1.57 V	311	62.5	3.2
2	*5745.00	123.7 PK			1.57 V	311	120.4	3.3
3	*5745.00	113.0 AV			1.57 V	311	109.7	3.3
4	#5943.35	58.8 PK	68.2	-9.4	1.57 V	311	55.3	3.5
5	11490.00	59.2 PK	74.0	-14.8	1.61 V	192	45.8	13.4
6	11490.00	47.0 AV	54.0	-7.0	1.61 V	192	33.6	13.4
7	#17235.00	62.5 PK	68.2	-5.7	1.76 V	240	45.8	16.7

REMARKS:

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

CHANNEL	TX Channel 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	#5594.03	61.1 PK	68.2	-7.1	1.51 H	334	49.6	11.5
2	*5785.00	115.6 PK			1.51 H	334	112.3	3.3
3	*5785.00	106.5 AV			1.51 H	334	103.2	3.3
4	#5995.29	60.8 PK	68.2	-7.4	1.51 H	334	48.8	12.0
5	11570.00	58.8 PK	74.0	-15.2	2.27 H	290	45.4	13.4
6	11570.00	47.0 AV	54.0	-7.0	2.27 H	290	33.6	13.4
7	#17355.00	61.5 PK	68.2	-6.7	1.43 H	239	44.2	17.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5602.38	60.1 PK	68.2	-8.1	1.71 V	313	48.5	11.6
2	*5785.00	124.6 PK			1.71 V	313	121.3	3.3
3	*5785.00	113.8 AV			1.71 V	313	110.5	3.3
4	#5930.36	59.2 PK	68.2	-9.0	1.71 V	313	47.2	12.0
5	11570.00	59.3 PK	74.0	-14.7	1.68 V	211	45.9	13.4
6	11570.00	47.2 AV	54.0	-6.8	1.68 V	211	33.8	13.4
7	#17355.00	62.4 PK	68.2	-5.8	1.44 V	187	45.1	17.3

REMARKS:

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

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5630.65	60.2 PK	68.2	-8.0	1.43 H	328	48.6	11.6
2	*5825.00	115.8 PK			1.43 H	328	112.3	3.5
3	*5825.00	106.6 AV			1.43 H	328	103.1	3.5
4	#6015.27	61.0 PK	68.2	-7.2	1.43 H	328	48.9	12.1
5	11650.00	58.7 PK	74.0	-15.3	2.38 H	261	45.4	13.3
6	11650.00	46.9 AV	54.0	-7.1	2.38 H	261	33.6	13.3
7	#17475.00	61.4 PK	68.2	-6.8	1.44 H	260	43.2	18.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5647.49	59.6 PK	68.2	-8.6	1.56 V	313	56.4	3.2
2	*5825.00	123.8 PK			1.56 V	313	120.3	3.5
3	*5825.00	113.3 AV			1.56 V	313	109.8	3.5
4	#5948.36	59.5 PK	68.2	-8.7	1.56 V	313	56.0	3.5
5	11650.00	58.6 PK	74.0	-15.4	1.70 V	204	45.3	13.3
6	11650.00	46.7 AV	54.0	-7.3	1.70 V	204	33.4	13.3
7	#17475.00	63.1 PK	68.2	-5.1	1.49 V	193	44.9	18.2

REMARKS:

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

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5648.27	65.1 PK	68.2	-3.1	1.42 H	332	53.5	11.6
2	*5755.00	113.1 PK			1.42 H	332	109.8	3.3
3	*5755.00	105.5 AV			1.42 H	332	102.2	3.3
4	#5943.80	60.9 PK	68.2	-7.3	1.42 H	332	49.0	11.9
5	11510.00	56.8 PK	74.0	-17.2	2.30 H	291	43.4	13.4
6	11510.00	45.5 AV	54.0	-8.5	2.30 H	291	32.1	13.4
7	#17265.00	60.1 PK	68.2	-8.1	1.40 H	256	43.3	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	**#5639.30**	**68.1 PK**	**68.2**	**-0.1**	**1.56 V**	**310**	**64.9**	**3.2**
2	*5755.00	120.9 PK			1.56 V	310	117.6	3.3
3	*5755.00	112.7 AV			1.56 V	310	109.4	3.3
4	#5984.70	59.0 PK	68.2	-9.2	1.56 V	310	55.3	3.7
5	11510.00	57.8 PK	74.0	-16.2	1.68 V	208	44.4	13.4
6	11510.00	45.6 AV	54.0	-8.4	1.68 V	208	32.2	13.4
7	#17265.00	61.8 PK	68.2	-6.4	1.83 V	234	45.0	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.

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	#5639.89	62.7 PK	68.2	-5.5	1.40 H	326	51.1	11.6
2	*5795.00	112.9 PK			1.40 H	326	109.6	3.3
3	*5795.00	105.4 AV			1.40 H	326	102.1	3.3
4	#6006.15	60.9 PK	68.2	-7.3	1.40 H	326	48.9	12.0
5	11590.00	57.4 PK	74.0	-16.6	2.33 H	292	44.0	13.4
6	11590.00	45.8 AV	54.0	-8.2	2.33 H	292	32.4	13.4
7	#17385.00	58.8 PK	68.2	-9.4	1.44 H	242	41.3	17.5
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	#5640.86	64.7 PK	68.2	-3.5	1.59 V	316	61.5	3.2
2	*5795.00	121.3 PK			1.59 V	316	118.0	3.3
3	*5795.00	113.0 AV			1.59 V	316	109.7	3.3
4	#5941.63	61.5 PK	68.2	-6.7	1.59 V	316	58.0	3.5
5	11590.00	57.6 PK	74.0	-16.4	1.63 V	185	44.2	13.4
6	11590.00	46.2 AV	54.0	-7.8	1.63 V	185	32.8	13.4
7	#17385.00	60.3 PK	68.2	-7.9	1.82 V	226	42.8	17.5

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5647.58	64.6 PK	68.2	-3.6	1.47 H	331	53.0	11.6
2	*5775.00	108.8 PK			1.47 H	331	105.4	3.4
3	*5775.00	99.7 AV			1.47 H	331	96.3	3.4
4	#5943.98	60.7 PK	68.2	-7.5	1.47 H	331	48.8	11.9
5	11550.00	54.1 PK	74.0	-19.9	2.35 H	282	40.8	13.3
6	11550.00	42.1 AV	54.0	-11.9	2.35 H	282	28.8	13.3
7	#17325.00	55.7 PK	68.2	-12.5	1.46 H	238	38.6	17.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5620.97	67.6 PK	68.2	-0.6	1.64 V	309	64.3	3.3
2	*5775.00	114.2 PK			1.64 V	309	110.8	3.4
3	*5775.00	105.7 AV			1.64 V	309	102.3	3.4
4	#5932.60	59.8 PK	68.2	-8.4	1.64 V	309	56.2	3.6
5	11550.00	54.2 PK	74.0	-19.8	1.61 V	203	40.9	13.3
6	11550.00	42.3 AV	54.0	-11.7	1.61 V	203	29.0	13.3
7	#17325.00	57.2 PK	68.2	-11.0	1.78 V	225	40.1	17.1

REMARKS:

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

Below 1GHz Data:

802.11ac (VHT40)

CHANNEL	TX Channel 151	**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	45.01	28.7 QP	40.0	-11.3	1.00 H	222	36.7	-8.0
2	143.30	26.3 QP	43.5	-17.2	2.00 H	68	34.3	-8.0
3	204.02	26.4 QP	43.5	-17.1	1.50 H	86	37.5	-11.1
4	297.43	27.2 QP	46.0	-18.8	1.00 H	240	34.4	-7.2
5	417.27	36.0 QP	46.0	-10.0	1.00 H	324	39.8	-3.8
6	796.64	33.8 QP	46.0	-12.2	1.00 H	360	30.0	3.8
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	83.23	30.9 QP	40.0	-9.1	1.50 V	360	44.1	-13.2
2	189.83	26.1 QP	43.5	-17.4	1.00 V	288	36.6	-10.5
3	417.15	39.3 QP	46.0	-6.7	1.50 V	360	43.1	-3.8
4	452.53	35.5 QP	46.0	-10.5	1.00 V	143	38.1	-2.6
5	509.45	29.3 QP	46.0	-16.7	1.50 V	2	30.8	-1.5
6	796.59	34.8 QP	46.0	-11.2	2.00 V	10	31.0	3.8

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 2017	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
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: Aug. 04, 2018

4.2.3 Test Procedure

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

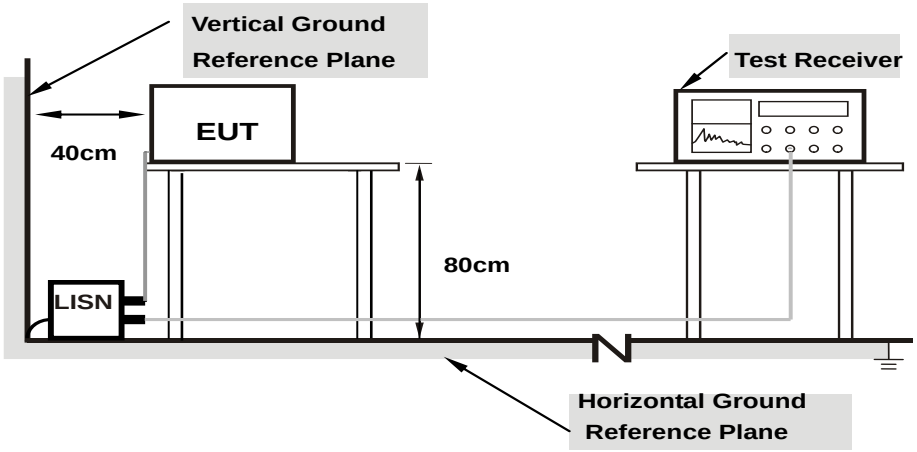
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

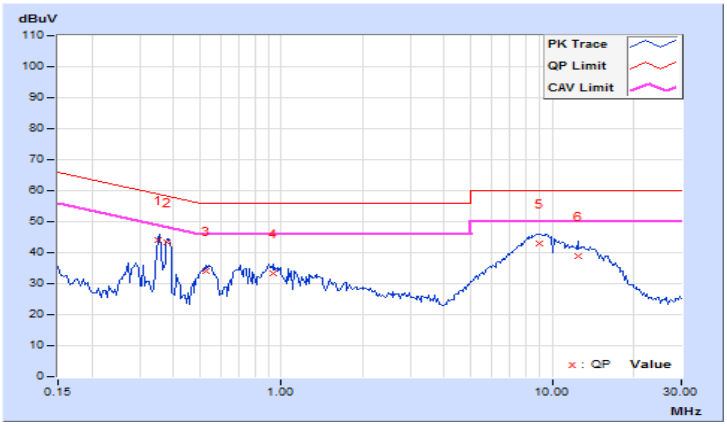
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.35313**	**10.10**	**34.00**	**33.81**	**44.10**	**43.91**	**58.89**	**48.89**	**-14.79**	**-4.98**
2	0.38047	10.11	33.34	32.01	43.45	42.12	58.27	48.27	-14.82	-6.15
3	0.52500	10.12	23.77	17.58	33.89	27.70	56.00	46.00	-22.11	-18.30
4	0.93516	10.15	23.27	18.82	33.42	28.97	56.00	46.00	-22.58	-17.03
5	8.96875	10.49	32.63	26.15	43.12	36.64	60.00	50.00	-16.88	-13.36
6	12.50781	10.69	28.33	21.35	39.02	32.04	60.00	50.00	-20.98	-17.96

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.

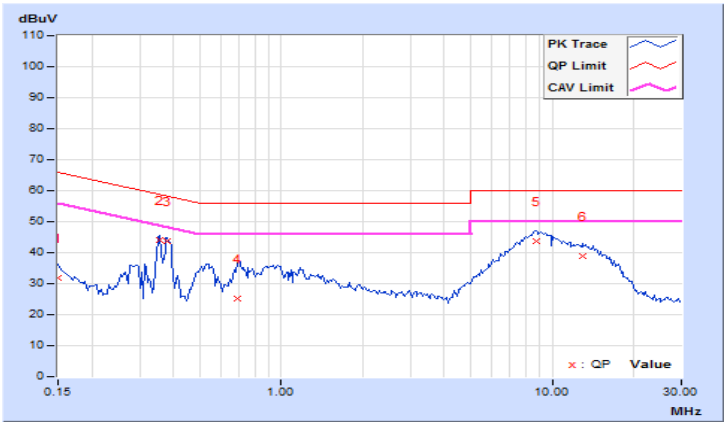


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	21.90	15.38	31.84	25.32	66.00	56.00	-34.16	-30.68
2	0.35703	9.99	33.96	27.15	43.95	37.14	58.80	48.80	-14.85	-11.66
3	0.38047	10.00	33.81	31.83	43.81	41.83	58.27	48.27	-14.46	-6.44
4	0.69297	10.01	15.05	8.59	25.06	18.60	56.00	46.00	-30.94	-27.40
5	8.72656	10.34	33.32	26.87	43.66	37.21	60.00	50.00	-16.34	-12.79
6	12.95313	10.55	28.23	21.56	38.78	32.11	60.00	50.00	-21.22	-17.89

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.



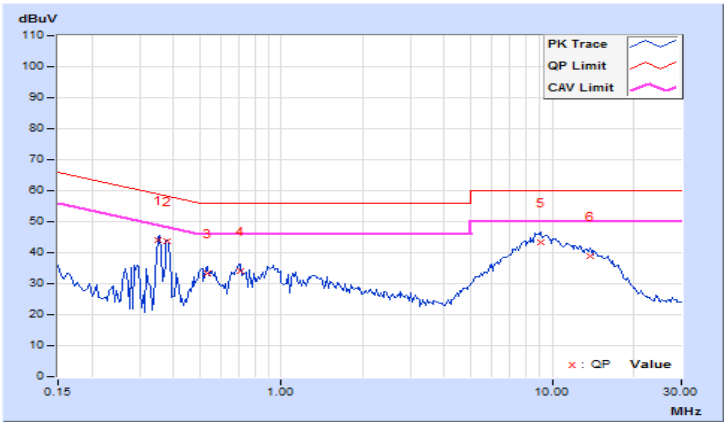
4.2.8 Test Results (Mode 2)

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	0.35313	10.10	34.03	33.50	44.13	43.60	58.89	48.89	-14.76	-5.29
2	0.38047	10.11	33.59	32.50	43.70	42.61	58.27	48.27	-14.57	-5.66
3	0.53672	10.12	23.04	10.61	33.16	20.73	56.00	46.00	-22.84	-25.27
4	0.70362	10.13	23.83	21.30	33.96	31.43	56.00	46.00	-22.04	-14.57
5	9.07813	10.50	32.74	26.21	43.24	36.71	60.00	50.00	-16.76	-13.29
6	13.90234	10.77	28.11	20.99	38.88	31.76	60.00	50.00	-21.12	-18.24

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.

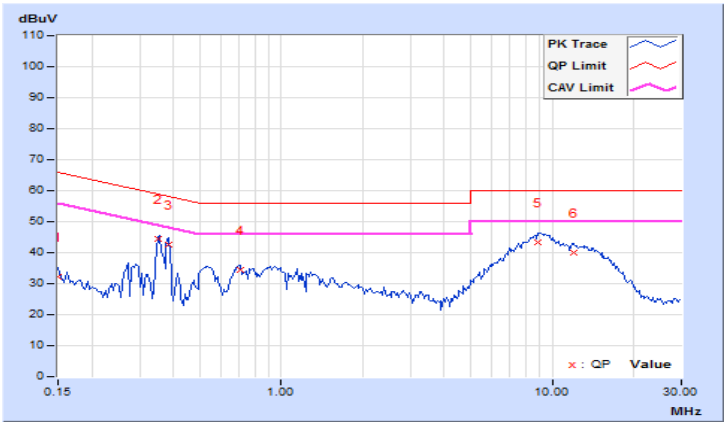


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	22.11	16.17	32.05	26.11	66.00	56.00	-33.95	-29.89
2	0.35313	9.99	34.29	33.46	44.28	43.45	58.89	48.89	-14.61	-5.44
3	0.38438	10.00	32.67	32.25	42.67	42.25	58.18	48.18	-15.51	-5.93
4	0.70469	10.02	24.33	21.65	34.35	31.67	56.00	46.00	-21.65	-14.33
5	8.90234	10.34	32.94	25.85	43.28	36.19	60.00	50.00	-16.72	-13.81
6	11.95703	10.49	29.60	22.71	40.09	33.20	60.00	50.00	-19.91	-16.80

REMARKS:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

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

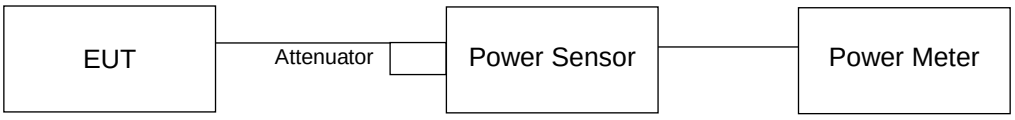
*B is the 26 dB emission bandwidth in megahertz

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

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

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Result (Mode 1)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	18.76	18.71	20.13	18.85	329.239	25.18	30.00	Pass
40	5200	21.14	22.13	22.36	22.18	630.705	28.00	30.00	Pass
48	5240	20.03	21.29	21.44	21.27	508.563	27.06	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	18.75	18.79	20.20	18.88	332.653	25.22	30.00	Pass
40	5200	19.62	20.78	21.19	21.04	469.875	26.72	30.00	Pass
48	5240	20.73	21.86	22.31	22.11	604.537	27.81	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	17.48	17.36	19.02	17.77	250.066	23.98	30.00	Pass
46	5230	21.62	21.75	22.81	22.73	673.319	28.28	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	16.16	16.32	18.12	16.58	194.522	22.89	30.00	Pass

Beamforming 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	18.76	18.71	20.13	18.85	329.239	25.18	29.57	Pass
40	5200	21.14	22.13	22.36	22.18	630.705	28.00	29.57	Pass
48	5240	20.03	21.29	21.44	21.27	508.563	27.06	29.57	Pass

Note: 1. Directional gain = 6.43dBi > 6dBi, so the power limit shall be reduced to 30-(6.43-6) = 29.57dBm.

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	18.75	18.79	20.20	18.88	332.653	25.22	29.57	Pass
40	5200	19.62	20.78	21.19	21.04	469.875	26.72	29.57	Pass
48	5240	20.73	21.86	22.31	22.11	604.537	27.81	29.57	Pass

Note: 1. Directional gain = 6.43dBi > 6dBi, so the power limit shall be reduced to 30-(6.43-6) = 29.57dBm.

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	17.48	17.36	19.02	17.77	250.066	23.98	29.57	Pass
46	5230	21.62	21.75	22.81	22.73	673.319	28.28	29.57	Pass

Note: 1. Directional gain = 6.43dBi > 6dBi, so the power limit shall be reduced to 30-(6.43-6) = 29.57dBm.

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	16.16	16.32	18.12	16.58	194.522	22.89	29.57	Pass

Note: 1. Directional gain = 6.43dBi > 6dBi, so the power limit shall be reduced to 30-(6.43-6) = 29.57dBm.

4.3.8 Test Result (Mode 2)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.59	23.03	23.44	23.19	858.718	29.34	30.00	Pass
157	5785	23.58	23.38	23.49	23.42	888.948	29.49	30.00	Pass
165	5825	23.25	22.47	22.73	22.77	764.686	28.83	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				
149	5745	23.58	23.01	23.42	23.14	853.869	29.31	30.00	Pass
157	5785	23.55	23.29	23.41	23.39	877.321	29.43	30.00	Pass
165	5825	23.15	22.49	22.73	22.77	760.69	28.81	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				
151	5755	23.66	23.48	23.65	23.15	893.395	29.51	30.00	Pass
159	5795	23.56	22.91	23.13	23.01	827.995	29.18	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				
155	5775	19.10	19.21	19.15	19.43	334.575	25.24	30.00	Pass

Beamforming 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				
149	5745	23.59	23.03	23.44	23.19	858.718	29.34	29.53	Pass
157	5785	23.58	23.38	23.49	23.42	888.948	29.49	29.53	Pass
165	5825	23.25	22.47	22.73	22.77	764.686	28.83	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power limit shall be reduced to 30-(6.47-6) = 29.53dBm.

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				
149	5745	23.58	23.01	23.42	23.14	853.869	29.31	29.53	Pass
157	5785	23.55	23.29	23.41	23.39	877.321	29.43	29.53	Pass
165	5825	23.15	22.49	22.73	22.77	760.69	28.81	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power limit shall be reduced to 30-(6.47-6) = 29.53dBm.

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				
151	5755	23.66	23.48	23.65	23.15	893.395	29.51	29.53	Pass
159	5795	23.56	22.91	23.13	23.01	827.995	29.18	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power limit shall be reduced to 30-(6.47-6) = 29.53dBm.

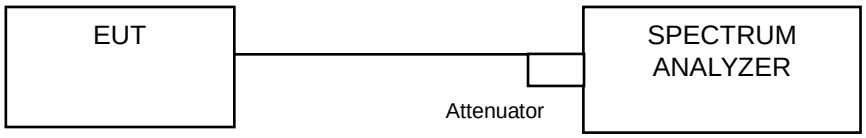
802.11ac (VHT80)

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				
155	5775	19.10	19.21	19.15	19.43	334.575	25.24	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power limit shall be reduced to 30-(6.47-6) = 29.53dBm.

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 (Mode 1)

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.80	16.80	16.68	16.80
40	5200	16.80	16.92	16.68	16.80
48	5240	16.80	17.28	16.68	16.80

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	18.00	18.00	17.88	18.00
40	5200	18.00	17.88	17.88	17.88
48	5240	18.00	18.60	18.12	17.88

802.11ac (VHT40)

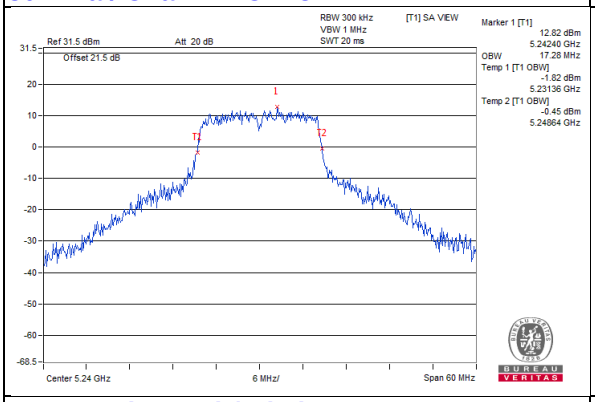
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	36.72	36.96	36.96	36.72
46	5230	36.96	37.44	37.44	36.96

802.11ac (VHT80)

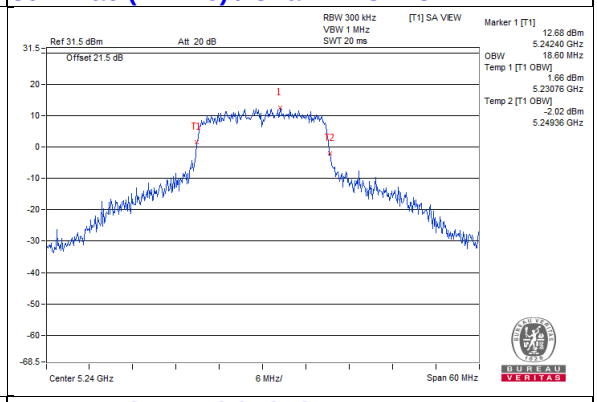
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	75.36	75.84	75.36	75.36

Spectrum Plot of Max Value

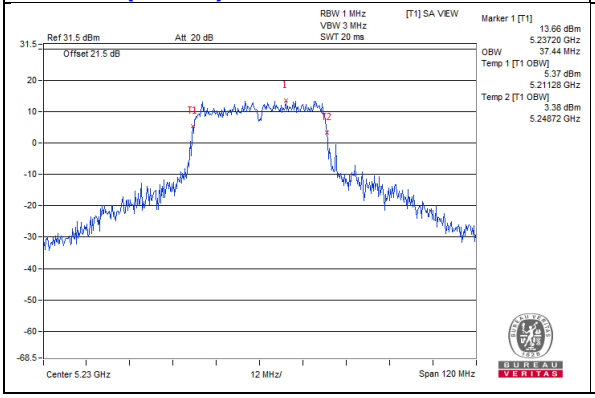
802.11a / Chain 1 : CH48



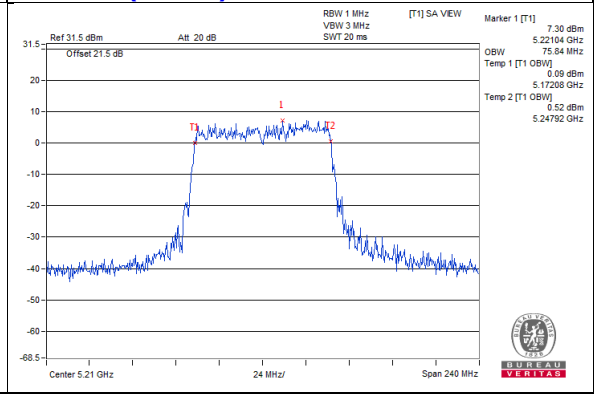
802.11ac (VHT20) / Chain 1: CH48



802.11ac (VHT40) / Chain 1: CH46

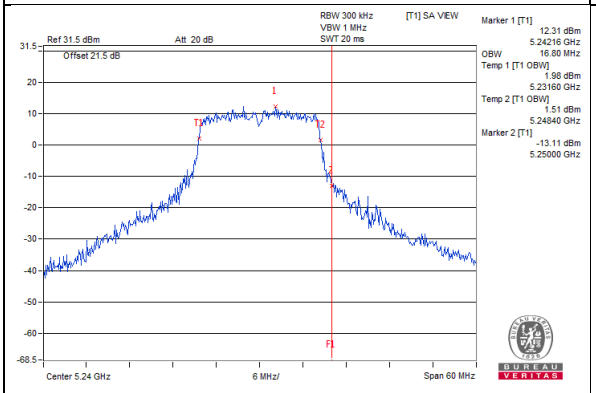


802.11ac (VHT80) / Chain 1: CH42

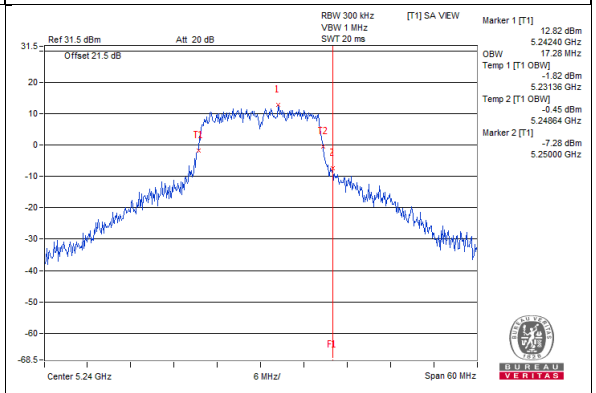


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

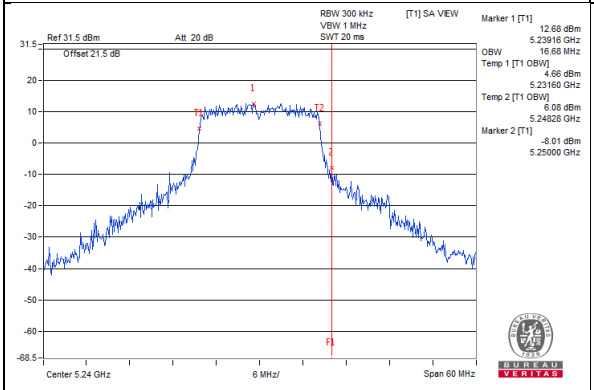
802.11a / Chain 0 : CH48



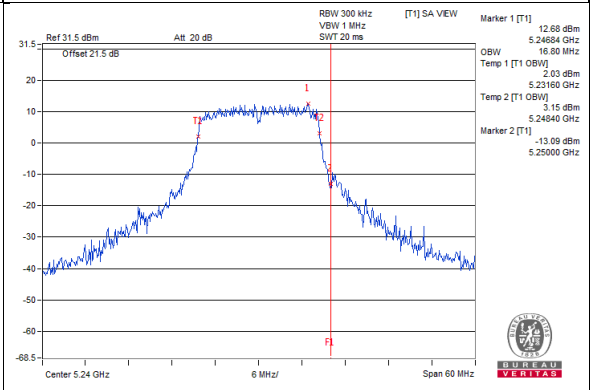
802.11a / Chain 1 : CH48



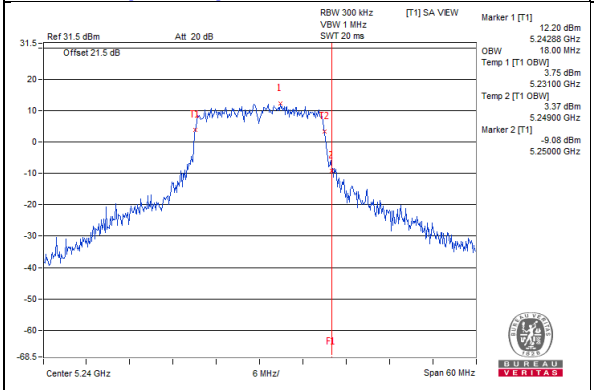
802.11a / Chain 2 : CH48



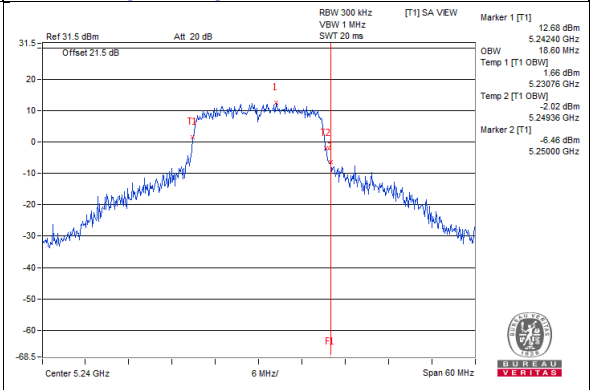
802.11a / Chain 3 : CH48



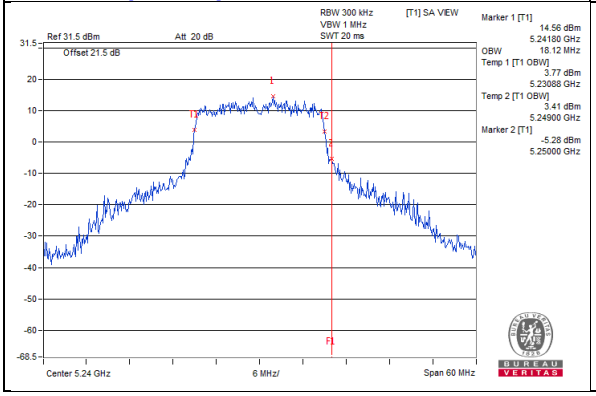
802.11ac (VHT20) / Chain 0 : CH48



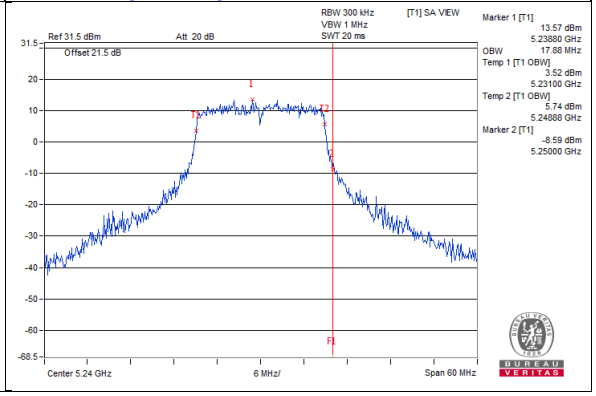
802.11ac (VHT20) / Chain 1 : CH48



802.11ac (VHT20) / Chain 2 : CH48

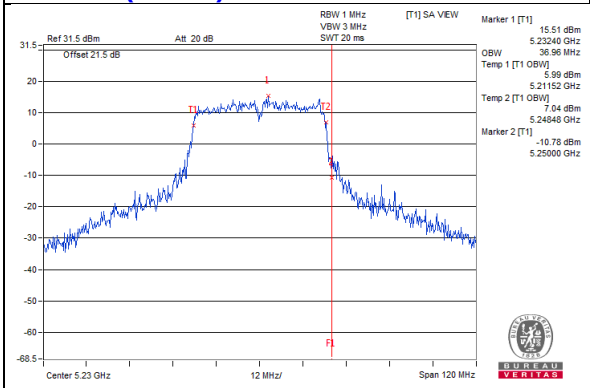


802.11ac (VHT20) / Chain 3 : CH48

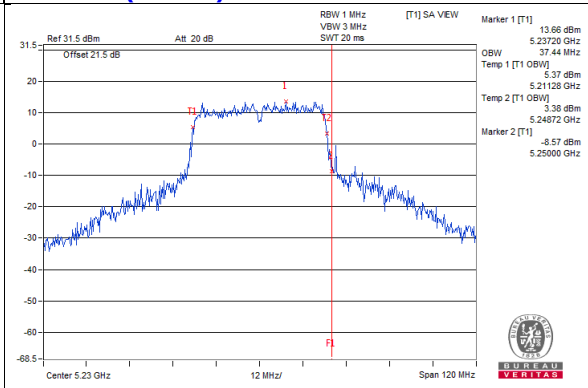


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

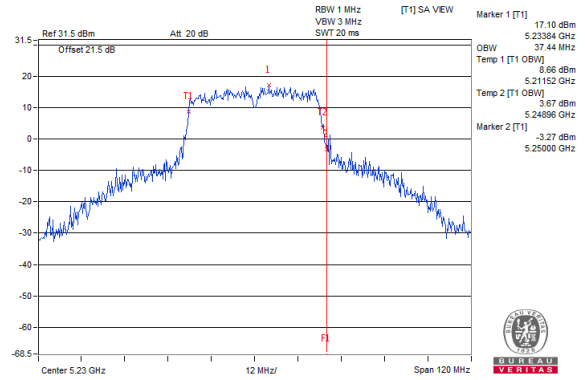
802.11ac (VHT40) / Chain 0 : CH46



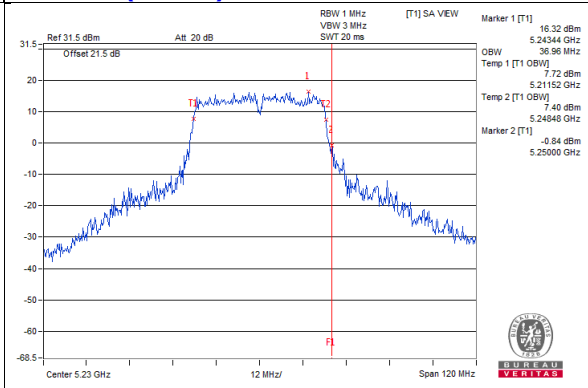
802.11ac (VHT40) / Chain 1 : CH46



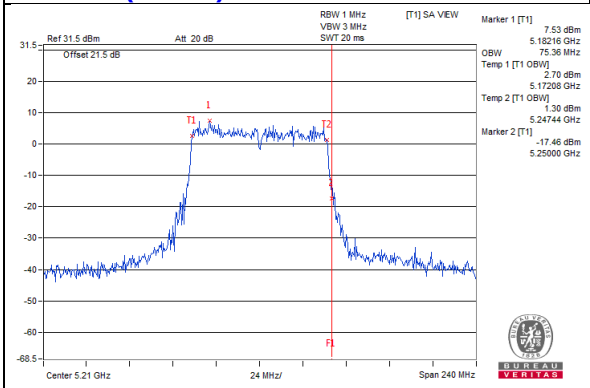
802.11ac (VHT40) / Chain 2 : CH46



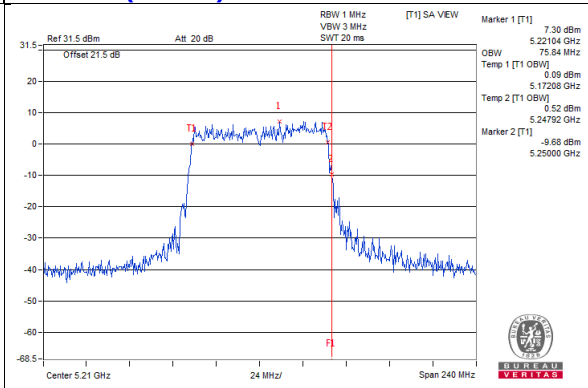
802.11ac (VHT40) / Chain 3 : CH46



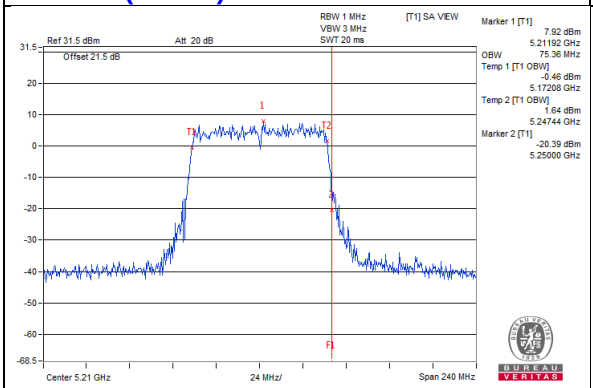
802.11ac (VHT80) / Chain 0 : CH42



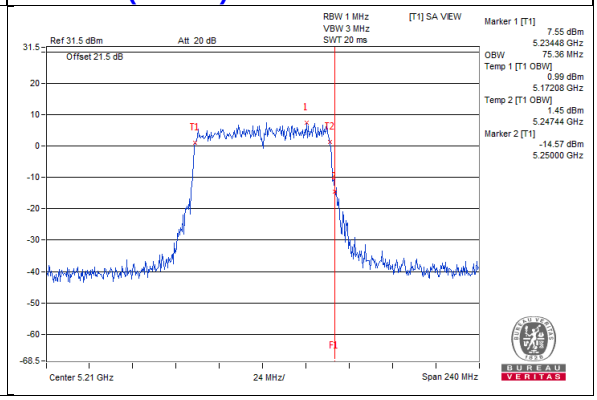
802.11ac (VHT80) / Chain 1 : CH42



802.11ac (VHT80) / Chain 2 : CH42



802.11ac (VHT80) / Chain 3 : CH42



4.4.5 Test Results (Mode 2)

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	16.92	17.88	18.24	17.52
157	5785	17.16	19.08	18.48	17.76
165	5825	17.04	17.28	19.68	18.24

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	18.24	18.48	19.08	18.48
157	5785	18.36	19.68	18.84	18.60
165	5825	18.24	18.48	19.56	18.72

802.11ac (VHT40)

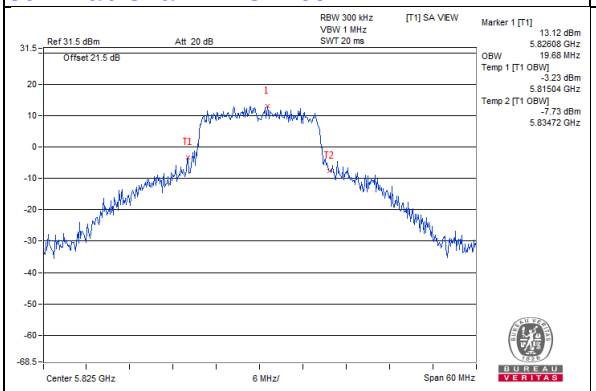
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
151	5755	37.20	37.44	38.16	37.20
159	5795	37.20	38.16	38.40	37.92

802.11ac (VHT80)

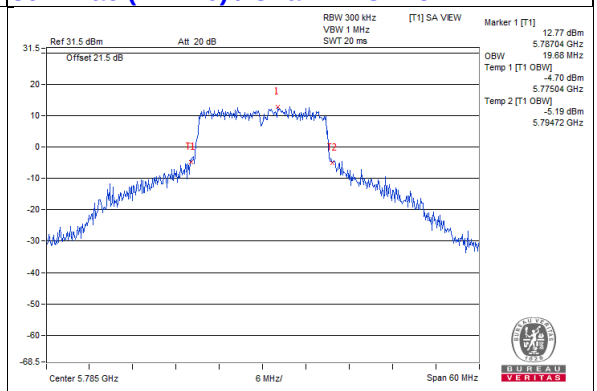
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
155	5775	75.84	75.36	75.36	75.36

Spectrum Plot of Max Value

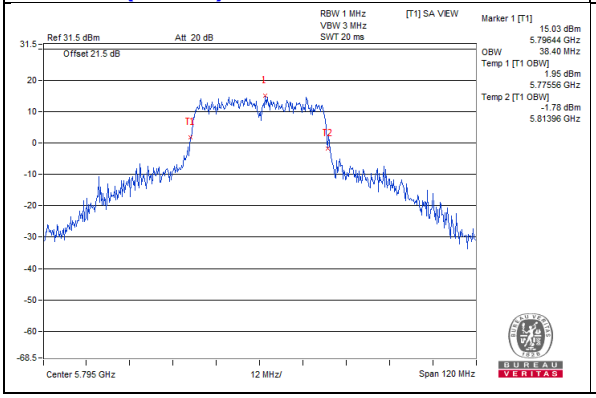
802.11a / Chain 2 : CH165



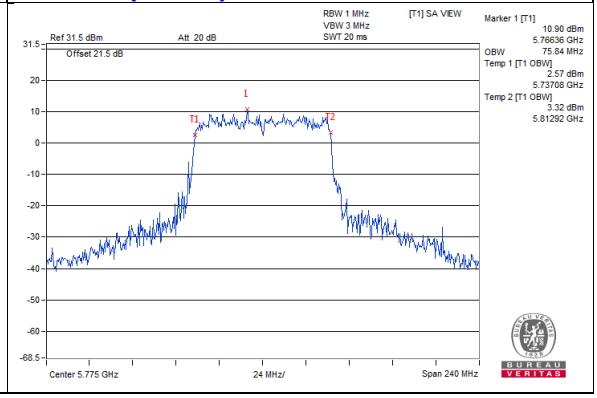
802.11ac (VHT20) / Chain 1: CH157



802.11ac (VHT40) / Chain 2 CH159

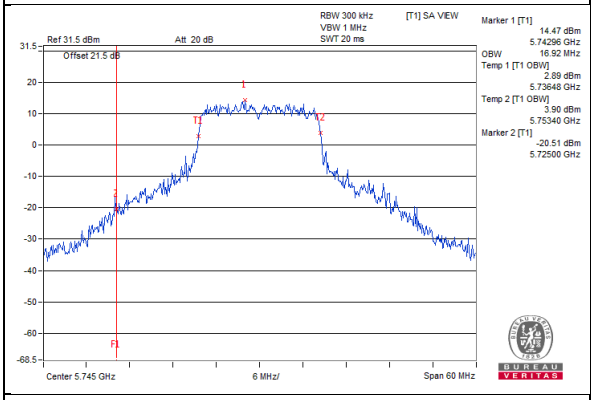


802.11ac (VHT80) / Chain 0 : CH155

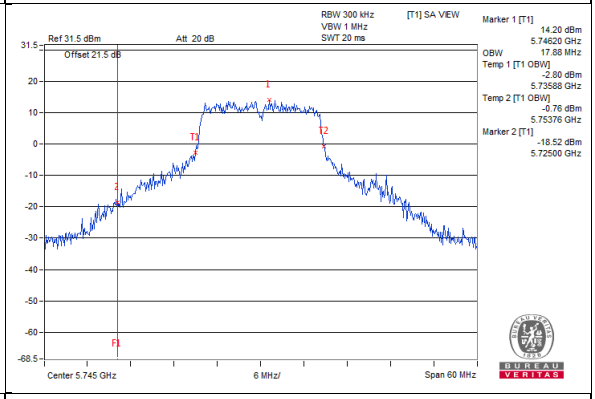


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

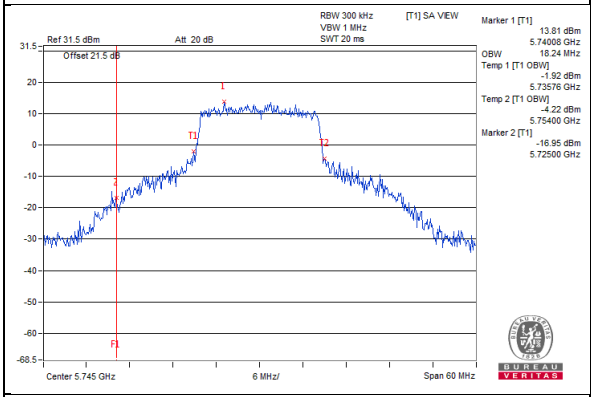
802.11a / Chain 0 : CH149



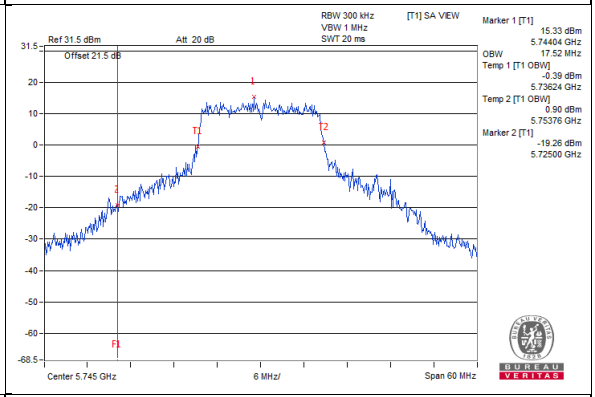
802.11a / Chain 1 : CH149



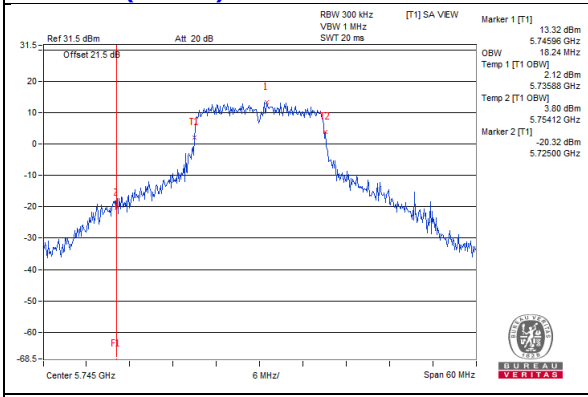
802.11a / Chain 2 : CH149



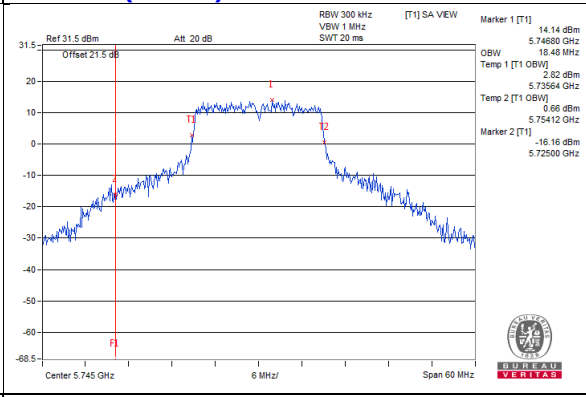
802.11a / Chain 3 : CH149



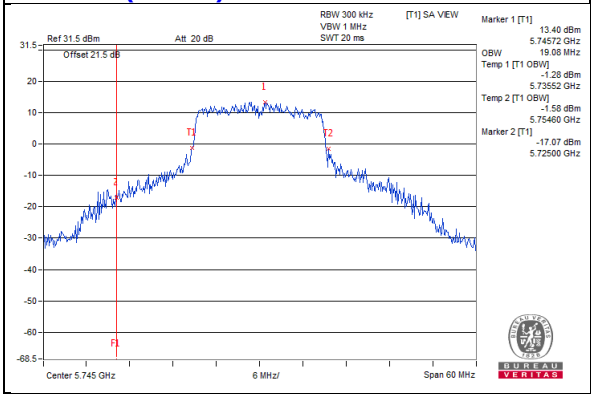
802.11ac (VHT20) / Chain 0 : CH149



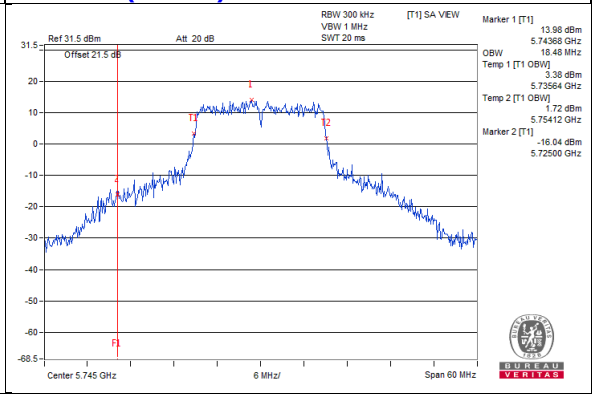
802.11ac (VHT20) / Chain 1 : CH149



802.11ac (VHT20) / Chain 2 : CH149

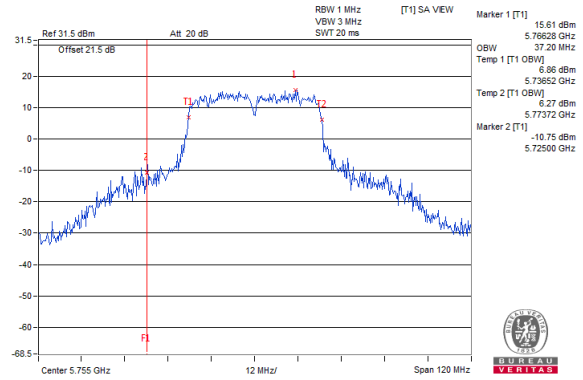


802.11ac (VHT20) / Chain 3 : CH149

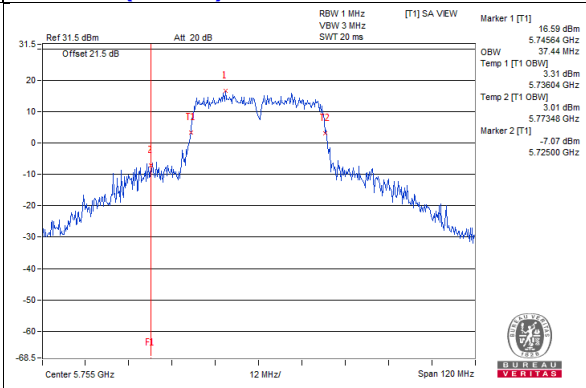


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

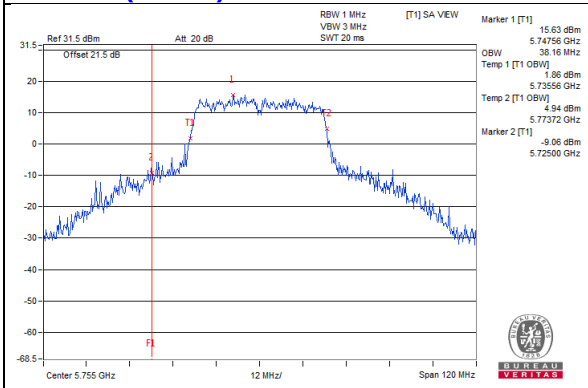
802.11ac (VHT40) / Chain 0 : CH151



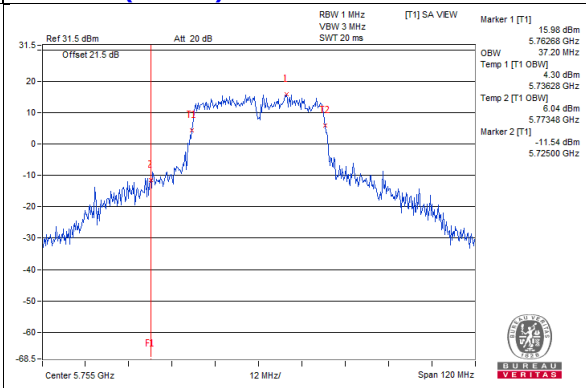
802.11ac (VHT40) / Chain 1 : CH151



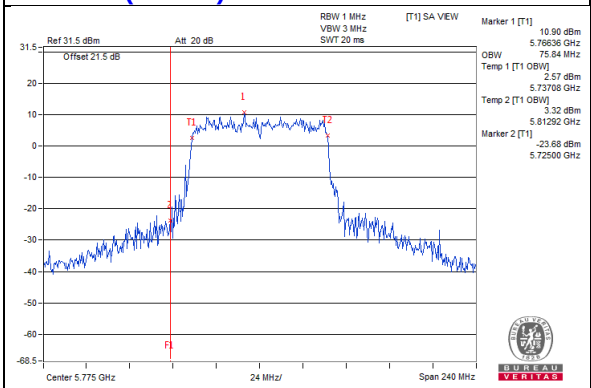
802.11ac (VHT40) / Chain 2 : CH151



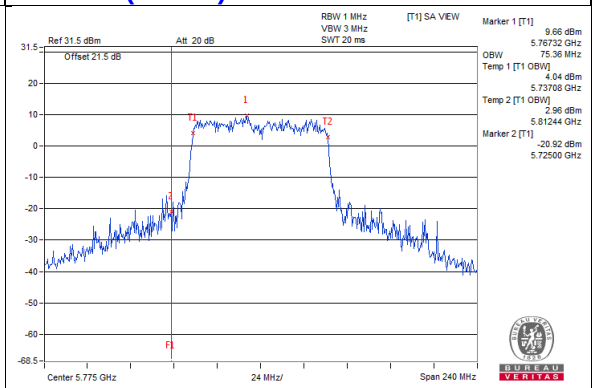
802.11ac (VHT40) / Chain 3 : CH151



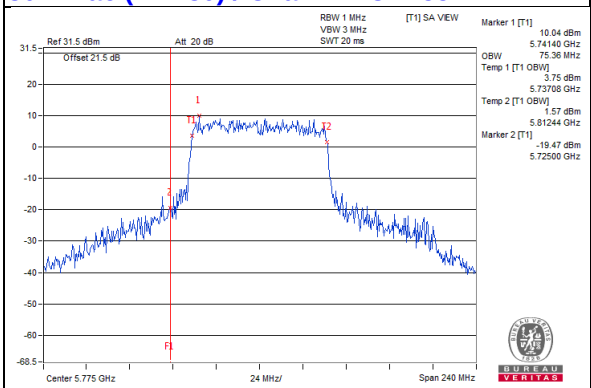
802.11ac (VHT80) / Chain 0 : CH155



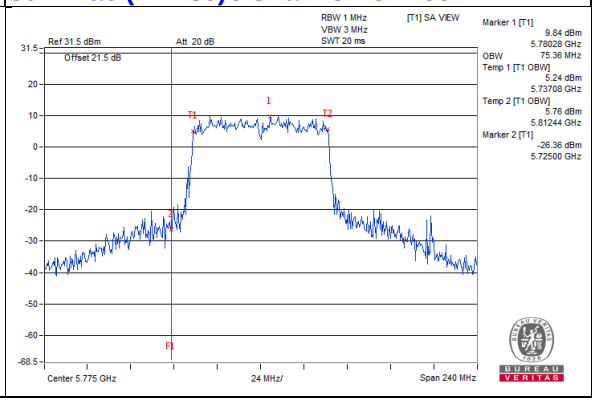
802.11ac (VHT80) / Chain 1 : CH155



802.11ac (VHT80) / Chain 2 : CH155



802.11ac (VHT80) / Chain 3 : CH155

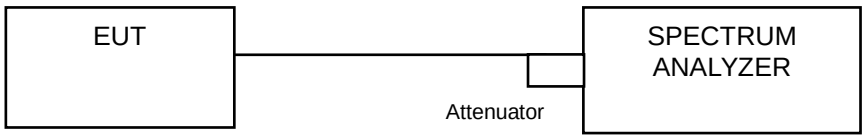


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
	√	Indoor Access Point	
		Client device	11dBm/ MHz
U-NII-2A			11dBm/ MHz
U-NII-2C			11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

802.11a, 802.11ac (VHT20)

For U-NII-1:

Using method SA-1

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

For U-NII-3:

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

802.11ac (VHT40), 802.11ac (VHT80)

For U-NII-1:

Using method SA-2

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

For U-NII-3:

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results (Mode 1)

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	6.07	5.90	6.11	5.86	12.01	16.57	Pass
40	5200	8.05	7.72	9.14	8.83	14.49	16.57	Pass
48	5240	8.07	8.07	9.03	8.49	14.45	16.57	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 = 6.43dBi > 6dBi, so the power density limit shall be reduced to 17-(6.43-6) = 16.57dBm.

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	5.63	5.50	5.98	5.70	11.73	16.57	Pass
40	5200	6.91	6.77	7.99	8.03	13.49	16.57	Pass
48	5240	8.47	8.56	9.64	8.87	14.93	16.57	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 = 6.43dBi > 6dBi, so the power density limit shall be reduced to 17-(6.43-6) = 16.57dBm.

802.11ac (VHT40)

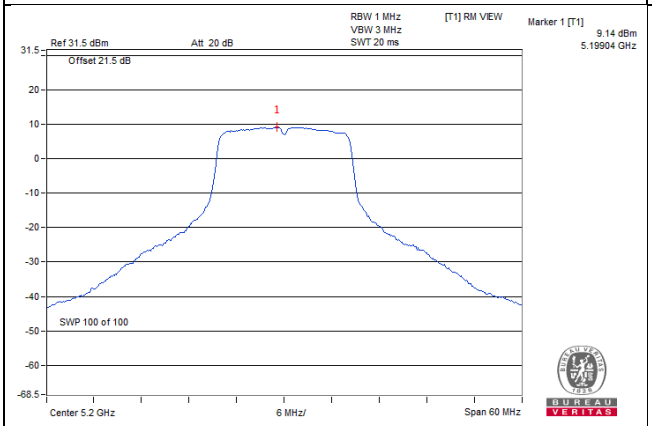
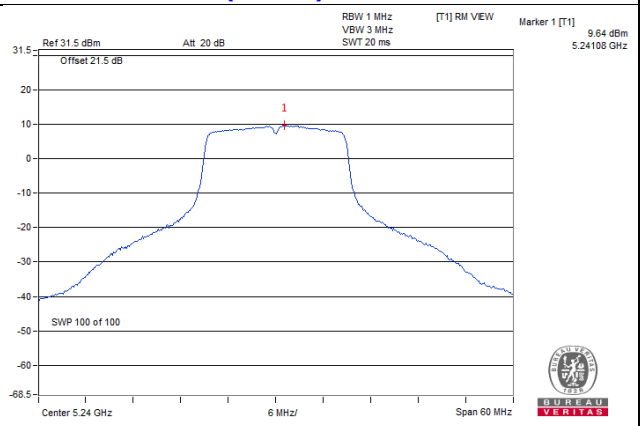
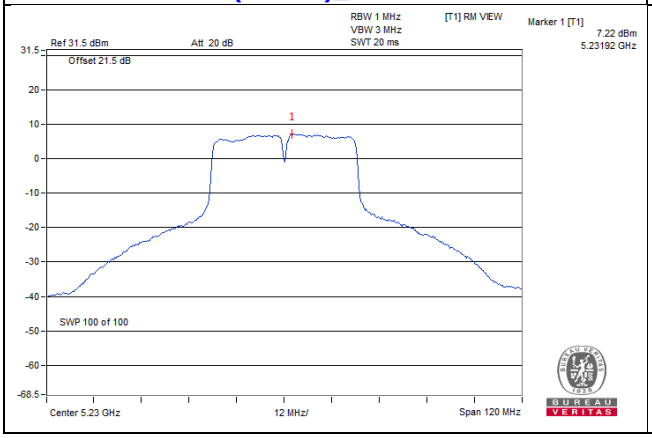
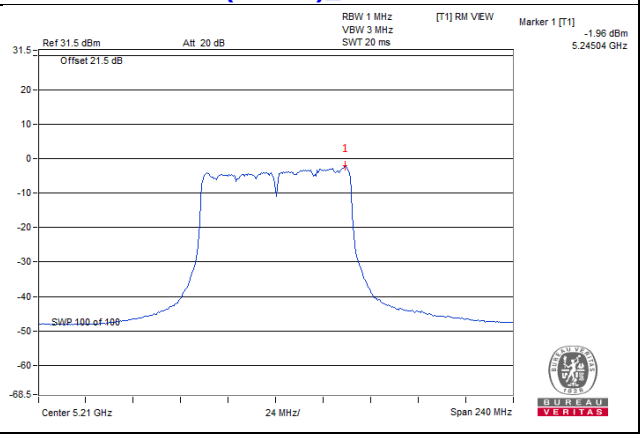
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	0.85	1.02	1.40	1.09	0.19	7.30	16.57	Pass
46	5230	5.21	4.11	7.13	6.50	0.19	12.10	16.57	Pass

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 = 6.43dBi > 6dBi, so the power density limit shall be reduced to 17-(6.43-6) = 16.57dBm.
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	-4.25	-1.96	-2.25	-2.37	0.36	3.76	16.57	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 = 6.43dBi > 6dBi, so the power density limit shall be reduced to 17-(6.43-6) = 16.57dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 2 / CH40	**802.11ac (VHT20)_Chain 2 / CH48**
	
802.11ac (VHT40)_Chain 2 / CH46	**802.11ac (VHT80)_Chain 1 / CH42**
	

For U-NII-3:

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=4) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	1.71	3.93	6.02	9.95	29.53	Pass
	157	5785	1.61	3.83	6.02	9.85	29.53	Pass
	165	5825	1.82	4.04	6.02	10.06	29.53	Pass
1	149	5745	1.56	3.78	6.02	9.80	29.53	Pass
	157	5785	0.82	3.04	6.02	9.06	29.53	Pass
	165	5825	0.04	2.26	6.02	8.28	29.53	Pass
2	149	5745	1.83	4.05	6.02	10.07	29.53	Pass
	157	5785	1.44	3.66	6.02	9.68	29.53	Pass
	165	5825	1.14	3.36	6.02	9.38	29.53	Pass
3	149	5745	2.35	4.57	6.02	10.59	29.53	Pass
	157	5785	1.63	3.85	6.02	9.87	29.53	Pass
	165	5825	1.66	3.88	6.02	9.90	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power density limit shall be reduced to 30-(6.47-6) = 29.53dBm.

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=4) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	1.33	3.55	6.02	9.57	29.53	Pass
	157	5785	1.09	3.31	6.02	9.33	29.53	Pass
	165	5825	1.31	3.53	6.02	9.55	29.53	Pass
1	149	5745	1.51	3.73	6.02	9.75	29.53	Pass
	157	5785	0.76	2.98	6.02	9.00	29.53	Pass
	165	5825	-0.33	1.89	6.02	7.91	29.53	Pass
2	149	5745	1.23	3.45	6.02	9.47	29.53	Pass
	157	5785	1.38	3.60	6.02	9.62	29.53	Pass
	165	5825	0.71	2.93	6.02	8.95	29.53	Pass
3	149	5745	2.38	4.60	6.02	10.62	29.53	Pass
	157	5785	1.47	3.69	6.02	9.71	29.53	Pass
	165	5825	1.51	3.73	6.02	9.75	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power density limit shall be reduced to 30-(6.47-6) = 29.53dBm.

802.11ac (VHT40)

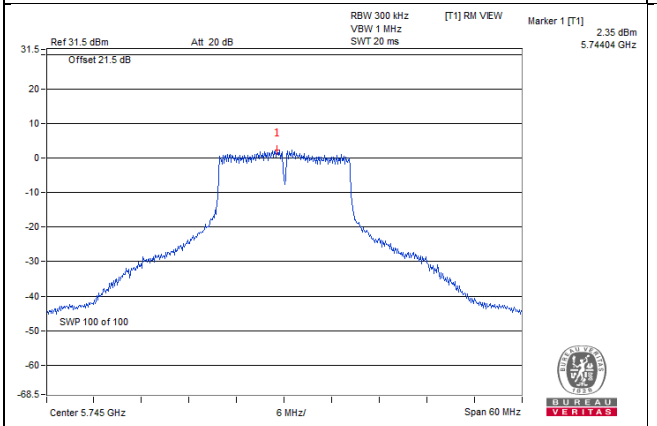
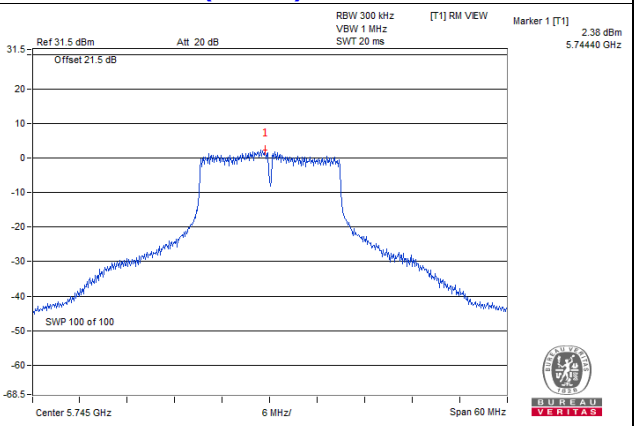
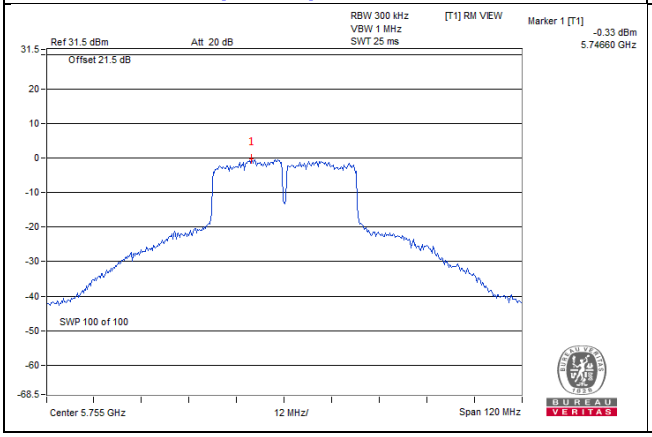
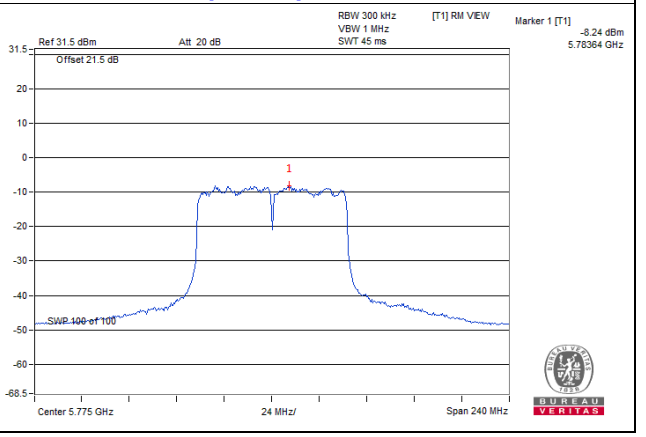
TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-0.99	1.23	6.02	0.19	7.44	29.53	Pass
	159	5795	-0.99	1.23	6.02	0.19	7.44	29.53	Pass
1	151	5755	-1.96	0.26	6.02	0.19	6.47	29.53	Pass
	159	5795	-2.78	-0.56	6.02	0.19	5.65	29.53	Pass
2	151	5755	-1.24	0.98	6.02	0.19	7.19	29.53	Pass
	159	5795	-2.00	0.22	6.02	0.19	6.43	29.53	Pass
3	151	5755	-0.33	1.89	6.02	0.19	8.10	29.53	Pass
	159	5795	-1.12	1.10	6.02	0.19	7.31	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power density limit shall be reduced to 30-(6.47-6) = 29.53dBm.

802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-8.28	-6.06	6.02	0.36	0.32	29.53	Pass
1	155	5775	-8.41	-6.19	6.02	0.36	0.19	29.53	Pass
2	155	155	-8.75	-6.53	6.02	0.36	-0.15	29.53	Pass
3	155	155	-8.24	-6.02	6.02	0.36	0.36	29.53	Pass

Note: 1. Directional gain = 6.47dBi > 6dBi, so the power density limit shall be reduced to 30-(6.47-6) = 29.53dBm.

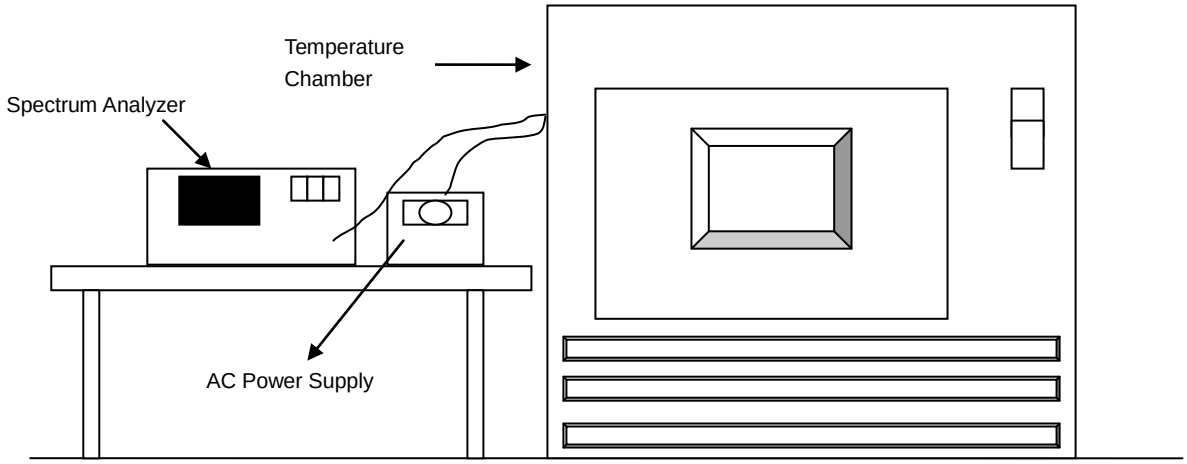
Spectrum Plot of Worst Value	
802.11a – Chain 3: CH 149	**802.11ac (VHT20) – Chain 3: CH 149**
	
802.11ac (VHT40) – Chain 3: CH 151	**802.11ac (VHT80) – Chain 3: CH 155**
	

4.6 Frequency Stability Measurement

4.6.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results (Mode 1)

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5179.9945	PASS	5179.9965	PASS	5179.995	PASS	5179.995	PASS
40	120	5179.9751	PASS	5179.9754	PASS	5179.9759	PASS	5179.9746	PASS
30	120	5180.0221	PASS	5180.0198	PASS	5180.0177	PASS	5180.0208	PASS
20	120	5179.9815	PASS	5179.9849	PASS	5179.9822	PASS	5179.9805	PASS
10	120	5180.0001	PASS	5179.9971	PASS	5179.9977	PASS	5179.9986	PASS
0	120	5180.0071	PASS	5180.0066	PASS	5180.0065	PASS	5180.0061	PASS
-10	120	5179.9885	PASS	5179.9895	PASS	5179.9901	PASS	5179.9889	PASS
-20	120	5179.9915	PASS	5179.9906	PASS	5179.994	PASS	5179.9946	PASS
-30	120	5179.9739	PASS	5179.9771	PASS	5179.9744	PASS	5179.9753	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	5179.9809	PASS	5179.9857	PASS	5179.9828	PASS	5179.9814	PASS
	120	5179.9815	PASS	5179.9849	PASS	5179.9822	PASS	5179.9805	PASS
	102	5179.982	PASS	5179.9839	PASS	5179.9814	PASS	5179.9807	PASS

4.6.8 Test Results (Mode 2)

Frequency Stability Versus Temp.									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5745.0197	PASS	5745.0177	PASS	5745.0164	PASS	5745.0175	PASS
40	120	5744.9918	PASS	5744.9889	PASS	5744.9899	PASS	5744.9864	PASS
30	120	5744.9849	PASS	5744.9848	PASS	5744.9802	PASS	5744.9811	PASS
20	120	5745.0261	PASS	5745.0221	PASS	5745.0272	PASS	5745.0231	PASS
10	120	5744.9838	PASS	5744.9834	PASS	5744.9804	PASS	5744.983	PASS
0	120	5745.0153	PASS	5745.0145	PASS	5745.0173	PASS	5745.0189	PASS
-10	120	5745.0264	PASS	5745.0258	PASS	5745.0251	PASS	5745.0241	PASS
-20	120	5744.9756	PASS	5744.9733	PASS	5744.9772	PASS	5744.9766	PASS
-30	120	5745.0141	PASS	5745.0103	PASS	5745.0116	PASS	5745.0131	PASS

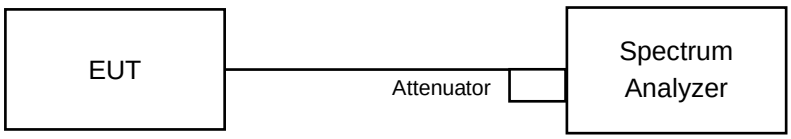
Frequency Stability Versus Voltage									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5745.0271	PASS	5745.0216	PASS	5745.0277	PASS	5745.0227	PASS
	120	5745.0261	PASS	5745.0221	PASS	5745.0272	PASS	5745.0231	PASS
	102	5745.0251	PASS	5745.0224	PASS	5745.0267	PASS	5745.0236	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 (Mode 2)

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.34	16.38	16.34	16.34	0.5	PASS
157	5785	15.78	16.38	15.77	16.38	0.5	PASS
165	5825	15.78	16.34	16.34	16.37	0.5	PASS

802.11ac (VHT20)

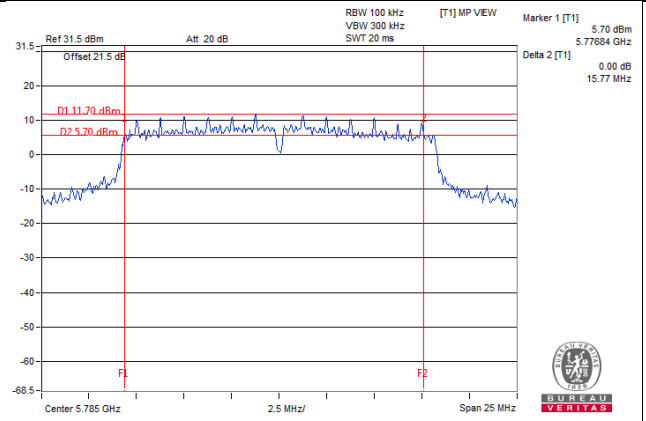
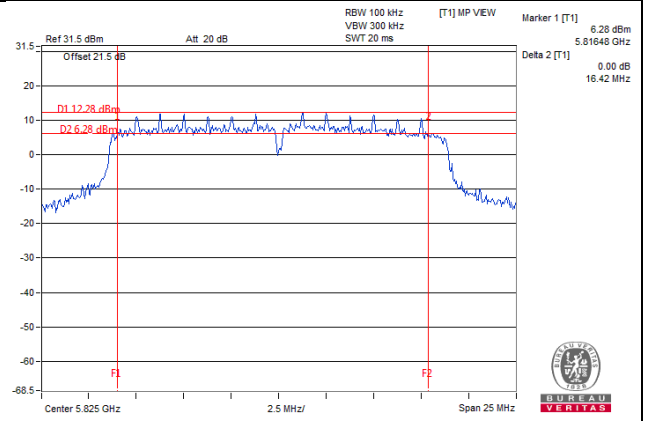
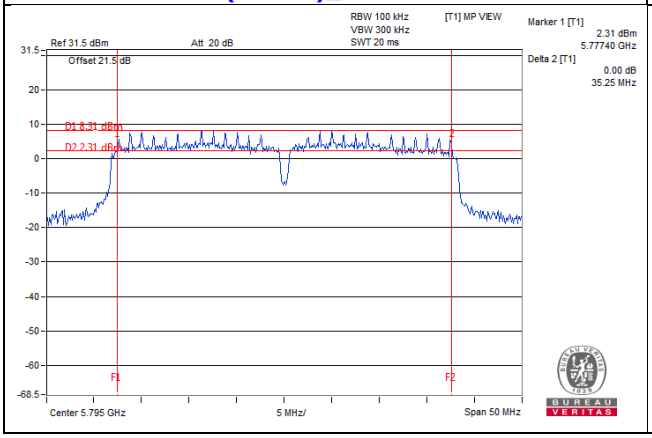
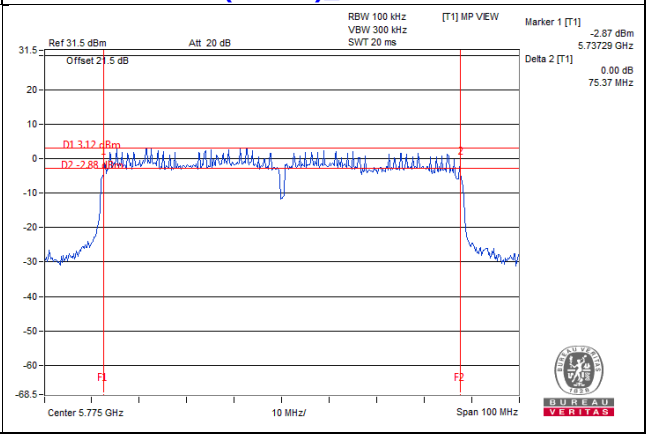
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	17.32	17.65	16.73	17.23	0.5	PASS
157	5785	17.21	17.64	16.72	17.62	0.5	PASS
165	5825	16.42	17.57	17.59	17.56	0.5	PASS

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	35.47	35.34	35.49	35.32	0.5	PASS
159	5795	35.34	35.25	35.58	35.28	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	75.49	75.37	75.40	75.43	0.5	PASS

Spectrum Plot of Worst Value	
802.11a_Chain 2 / CH157	**802.11ac (VHT20)_Chain 0 / CH165**
	
802.11ac (VHT40)_Chain 1 / CH159	**802.11ac (VHT80)_Chain 1 / CH155**
	

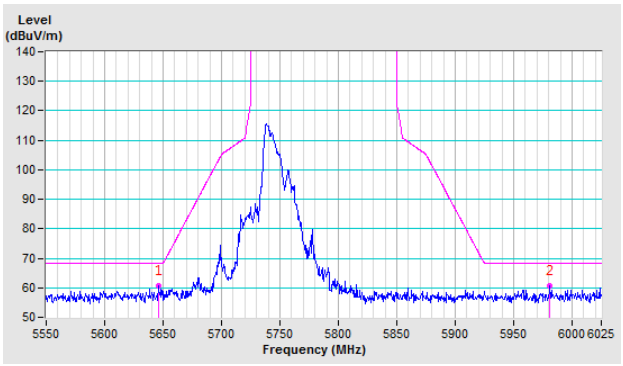
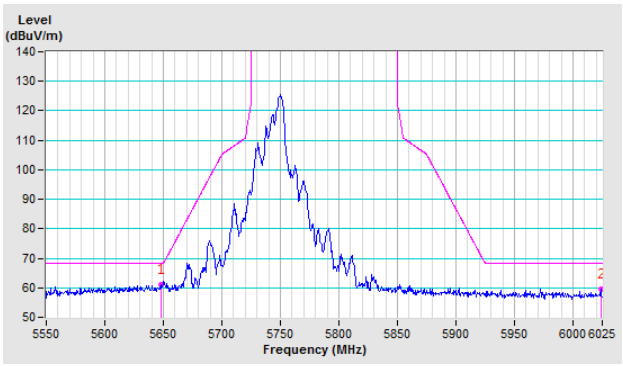
5 Pictures of Test Arrangements

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

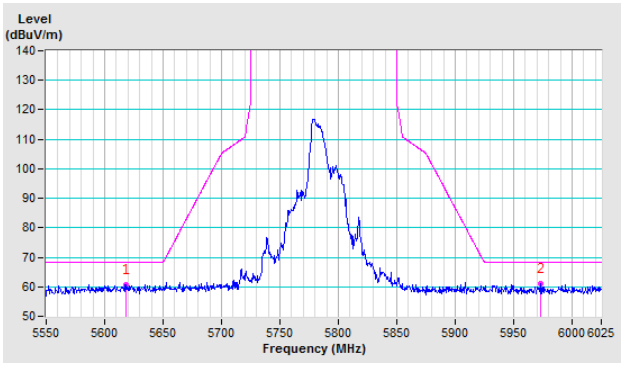
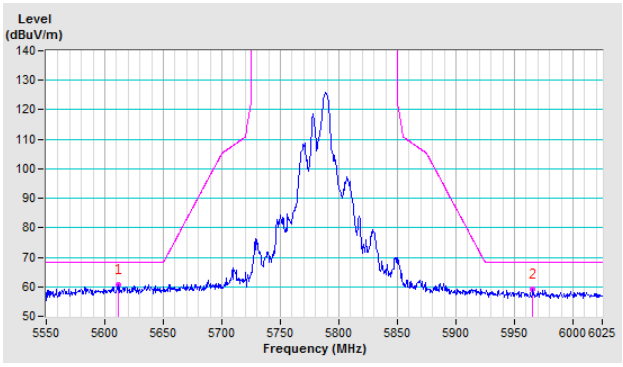
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

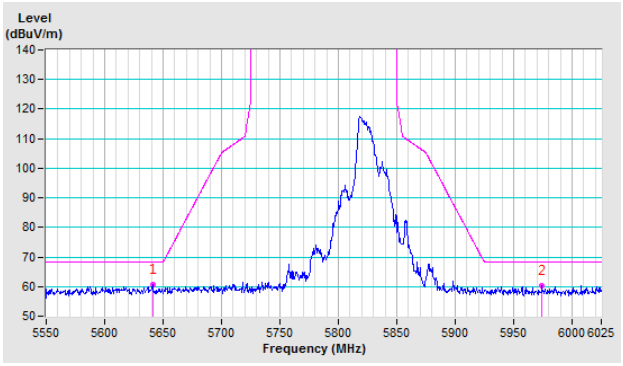
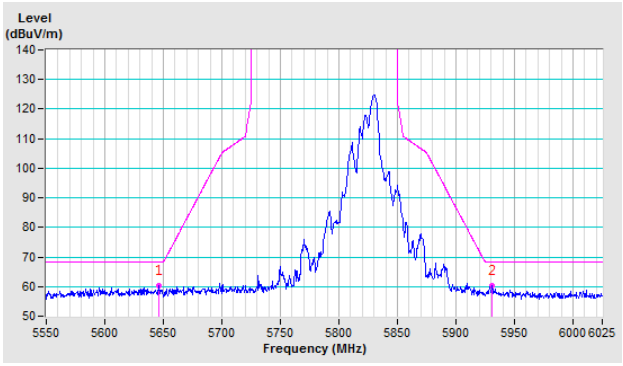
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

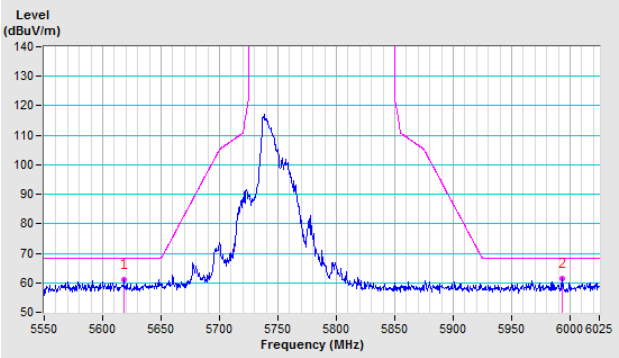
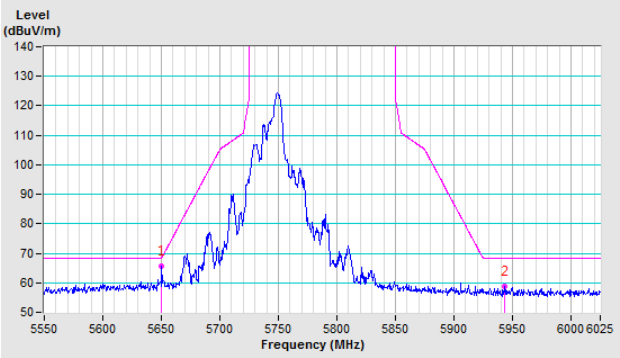
Horizontal	Vertical
	

CH 165 5825 MHz

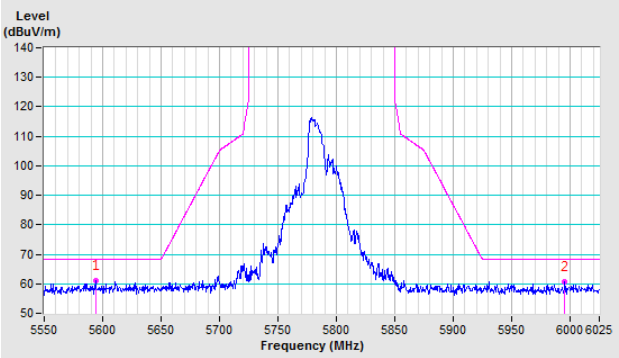
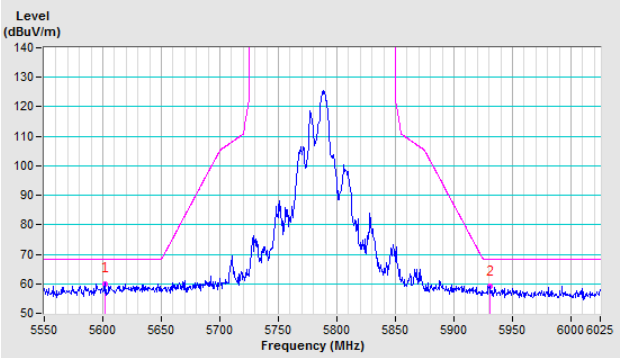
Horizontal	Vertical
	

802.11ac (VHT20)

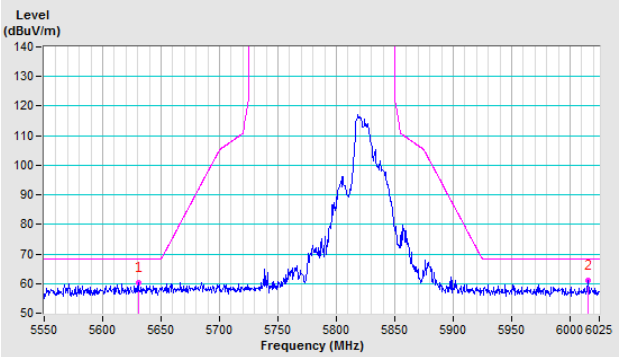
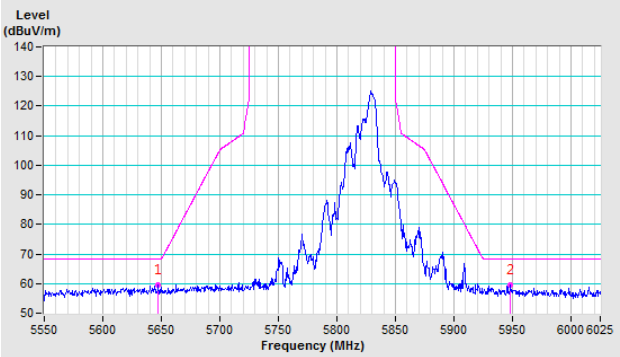
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

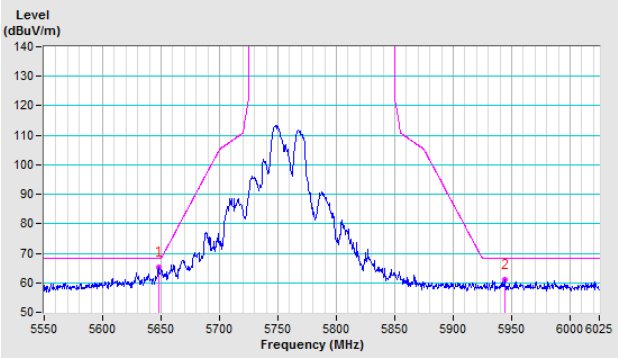
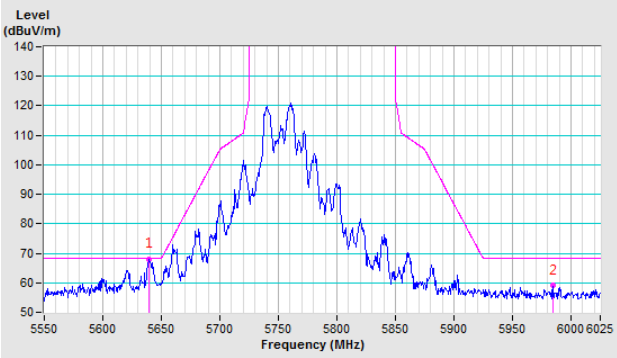
Horizontal	Vertical
	

CH 165 5825 MHz

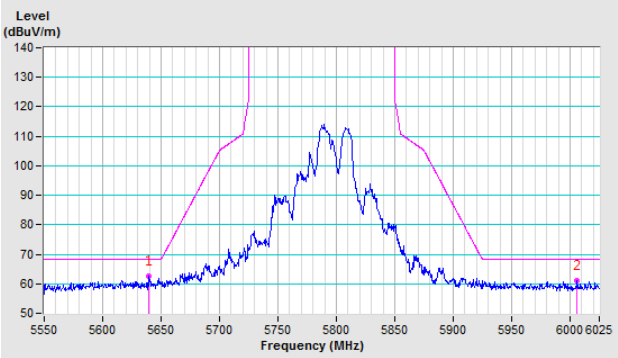
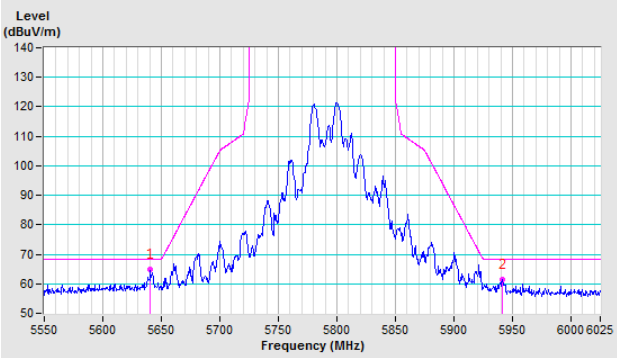
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

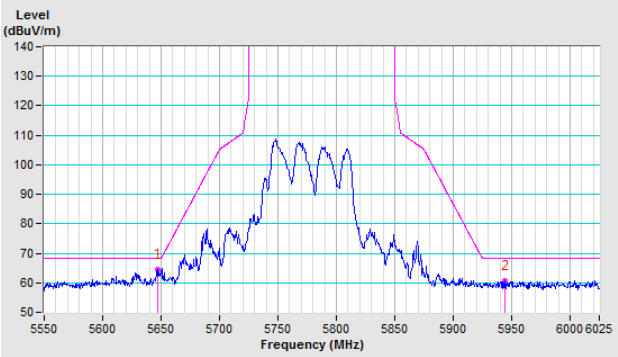
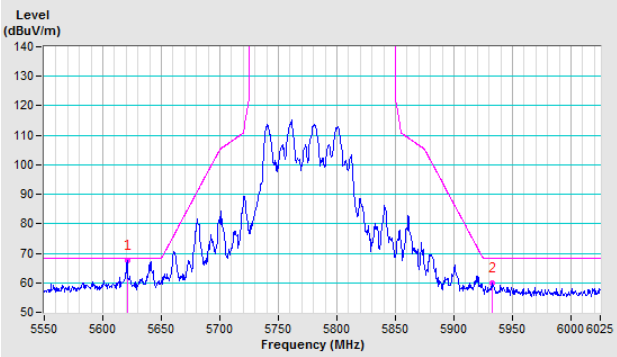
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

802.11ac (VHT80)

CH 155 5775 MHz

Horizontal	Vertical
	

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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