FCC Test Report (DFS Band)

Report No.:	RF200203E11A-1
FCC ID:	2AF5PML2410
Test Model:	ML2410
Series Model:	ML2410XY (where both X and Y can be A, B, C, D or blank)
Received Date:	Feb. 3, 2020
Test Date:	Mar. 03 to 09, 2020
Issued Date:	Mar. 31, 2020
Applicant:	MTRLC LLC
Address:	225 Franklin Street, 26th Floor, Boston, MA 02110 USA
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
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RF200203E11A-1	Original release.	Mar. 31, 2020

1 Certificate of Conformity

Product:	AC1900 LTE Router
Brand:	Motorola
Test Model:	ML2410
Series Model:	ML2410XY (where both X and Y can be A, B, C, D or blank)
Sample Status:	ENGINEERING SAMPLE
Applicant:	MTRLC LLC
Test Date:	Mar. 03 to 09, 2020
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 : Phoenix Huang , **Date:** Mar. 31, 2020

Phoenix Huang / Specialist

Approved by : , **Date:** Mar. 31, 2020

Clark Lin / Technical 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 -5.60 dB at 18.91016 MHz.
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 -0.1 dB at 5150.00 MHz, 5350.00 MHz, 5460.00 MHz, 5470.00 MHz, and 5725.00 MHz.
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.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.8 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.0 dB
	30MHz ~ 1GHz	5.1 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (DFS Band)

Product	AC1900 LTE Router
Brand	Motorola
Test Model	ML2410
Series Model	ML2410XY (where both X and Y can be A, B, C, D or blank)
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter or 7.2Vdc from batttery
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 in 2.4GHz
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 450 Mbps 802.11ac: up to 1300 Mbps
Operating Frequency	5.26 ~ 5.32 GHz, 5.50 ~ 5.72 GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 16 802.11n (HT40), 802.11ac (VHT40): 8 802.11ac (VHT80): 4
Output Power	**CDD Mode:** **5.26 ~ 5.32GHz:** 227.505 mW **5.50 ~ 5.72GHz:** 240.804 mW **Beamforming Mode:** **5.26 ~ 5.32GHz:** 116.886 mW **5.50 ~ 5.72GHz:** 104.103 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1, Battery x 1
Data Cable Supplied	Ethernet cable x1 (Unshieled, 1.5 m)

Note:

1. This report is record DFS band test, the DTS-WLAN band test is record in Report No.: RF200203E11, the NII (U-NII-1 and U-NII-3) band test is record in Report No.: RF200203E11-1.
2. The EUT contains certified WWAN module which FCC ID: XMR201808EC25AF (Brand: Quectel; Model: EC25-AF)
3. The EUT has below model names, which are identical to each other in all aspects except for the following table:

Brand	Model No.	Description
Motorola	ML2410	For marketing purposes of identical hardware.
	ML2410XY (where both X and Y can be A, B, C, D or blank)	
From the above models, model: **ML2410** was selected as representative model for the test and its data was recorded in this report.		

4. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3
WLAN (2.4GHz)	WLAN (5GHz)	WWAN

5. Simultaneously transmission condition.

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

6. The EUT must be supplied with a power and the following different models could be chosen:

Adapter			
No	Brand	Model No.	Spec.
1	T&W ELECTRONICS	S36B52-120A300-04	Input: 100-240V, 1A, 50-60Hz Output: 12V, 3A DC output cable (Unshielded, 1.5 m)
2	HON-KWANG ELECTRIC CO., LTD.	HK-BE-120A300-US (HKSC-190178)	Input: 100-240V, 1A, 50-60Hz Output: 12V, 3A DC output cable (Unshielded, 1.5 m)
3	HON-KWANG ELECTRIC CO., LTD.	HK-BE-120A300-US (HKSC-190147)	Input: 100-240V, 1A, 50-60Hz Output: 12V, 3A DC output cable (Unshielded, 1.5 m)
Battery			
No	Brand	Model No.	Spec.
1	Getac Technolog(Kunshan) Co.,LTD	BP-15033-22/2150 S	7.2V 4.3Ah 30.96Wh

Note:
1. The adapter 3 is as same as adapter 2; except for DC plug is different.
2. From the above adapters, the AC Power Conducted Emissions test worst case was found in **Adapter No.: 1**. Therefore only the test data of the mode was recorded in this report.
3. From the above adapters and battery, the Radiated Emissions test worst case was found in **Adapter No.: 1**. Therefore only the test data of the mode was recorded in this report.

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

WLAN Antenna							
Ant. No.	RF Chain No.	Brand	Ant. Net Gain	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	WiFi Chain0	Airgain	4.3 dBi, 4.3 dBi, 5.5 dBi	2.4 to 2.49, 5.15 to 5.35, 5.47 to 5.85	PCB	i-pex(MHF)	140
2	WiFi Chain1	Airgain	3.2 dBi, 4.4 dBi, 4.1 dBi	2.4 to 2.49, 5.15 to 5.35, 5.47 to 5.85	PCB	i-pex(MHF)	170
3	WiFi Chain2	Airgain	4.6 dBi, 4.9 dBi, 5.4 dBi	2.4 to 2.49, 5.15 to 5.35, 5.47 to 5.85	PCB	i-pex(MHF)	100

WWAN Antenna							
Ant. No.	RF Chain No.	Brand	Ant. Net Gain	Frequency Range (MHz)	Antenna Type	Connector Type	Cable Length (mm)
1	LTE MAIN	Cortec	1.08 dBi 3.19 dBi	617 ~ 894 1710 ~ 2200	Dipole	SMA	280
2	LTE AUX	Cortec	1.08 dBi 3.19 dBi	617 ~ 894 1710 ~ 2200	Dipole	SMA	200

8. The EUT incorporates a MIMO function.

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

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz, 80MHz), therefore the manufacturer will control the power for 802.11n mode is the same as the 802.11ac or more lower than it and investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)

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

3.2 Description of Test Modes

FOR 5260 ~ 5320MHz

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

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

FOR 5500 ~ 5720MHz

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

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

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	138	5690 MHz
122	5610 MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Radiated Emission Test (Above 1GHz):

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT80)	5260-5320, 5500-5720	52 to 64, 100 to 144	122	OFDM	BPSK	29.3

Power Line Conducted Emission Test:

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT80)	5260-5320, 5500-5720	52 to 64, 100 to 144	122	OFDM	BPSK	29.3

Antenna Port Conducted Measurement:

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3
Beamforming Mode (output power only)						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11ac (VHT20)	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3

Test Condition:

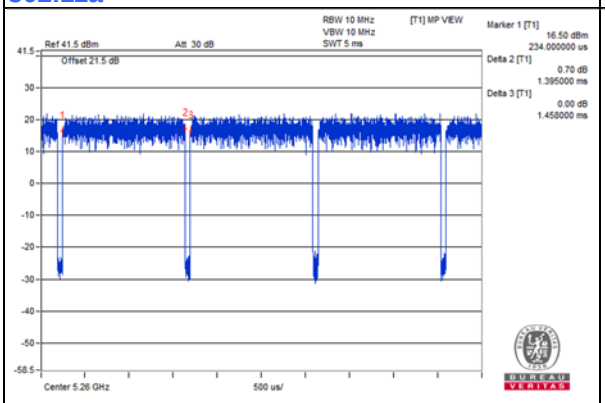
Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	25deg. C, 68%RH	120Vac, 60Hz	Gary Cheng
RE<1G	23deg. C, 63%RH	120Vac, 60Hz	Kevin Ko
PLC	25deg. C, 75%RH	120Vac, 60Hz	Kevin Ko
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

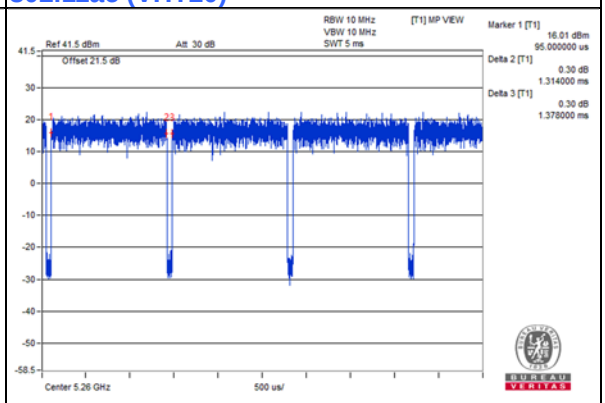
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 1.395 ms/1.458 ms = 0.957, Duty factor = 10 * log (1/Duty cycle) = 0.19 dB
802.11ac (VHT20): Duty cycle = 1.314 ms/1.378 ms = 0.954, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB
802.11ac (VHT40): Duty cycle = 0.655 ms/0.718 ms = 0.912, Duty factor = 10 * log (1/Duty cycle) = 0.4 dB
802.11ac (VHT80): Duty cycle = 0.323 ms/0.385 ms = 0.839, Duty factor = 10 * log (1/Duty cycle) = 0.76 dB

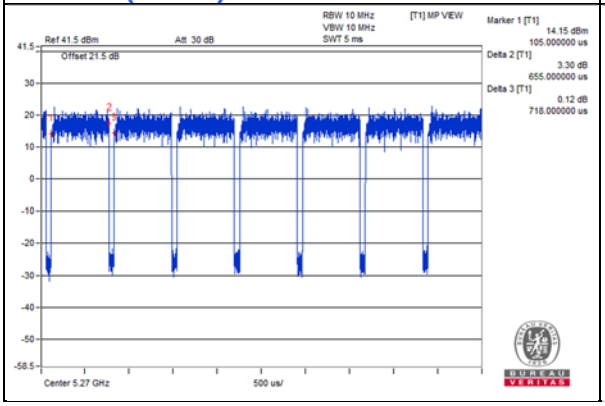
802.11a



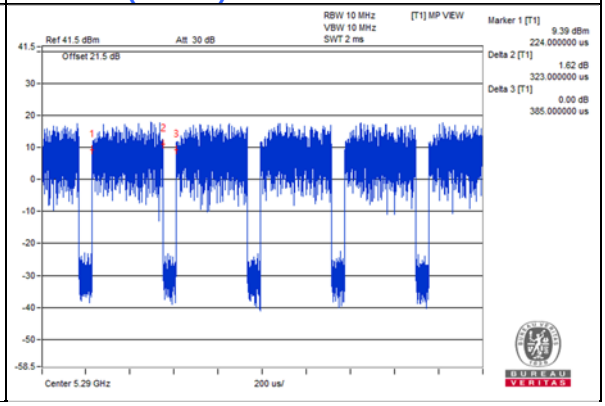
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

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

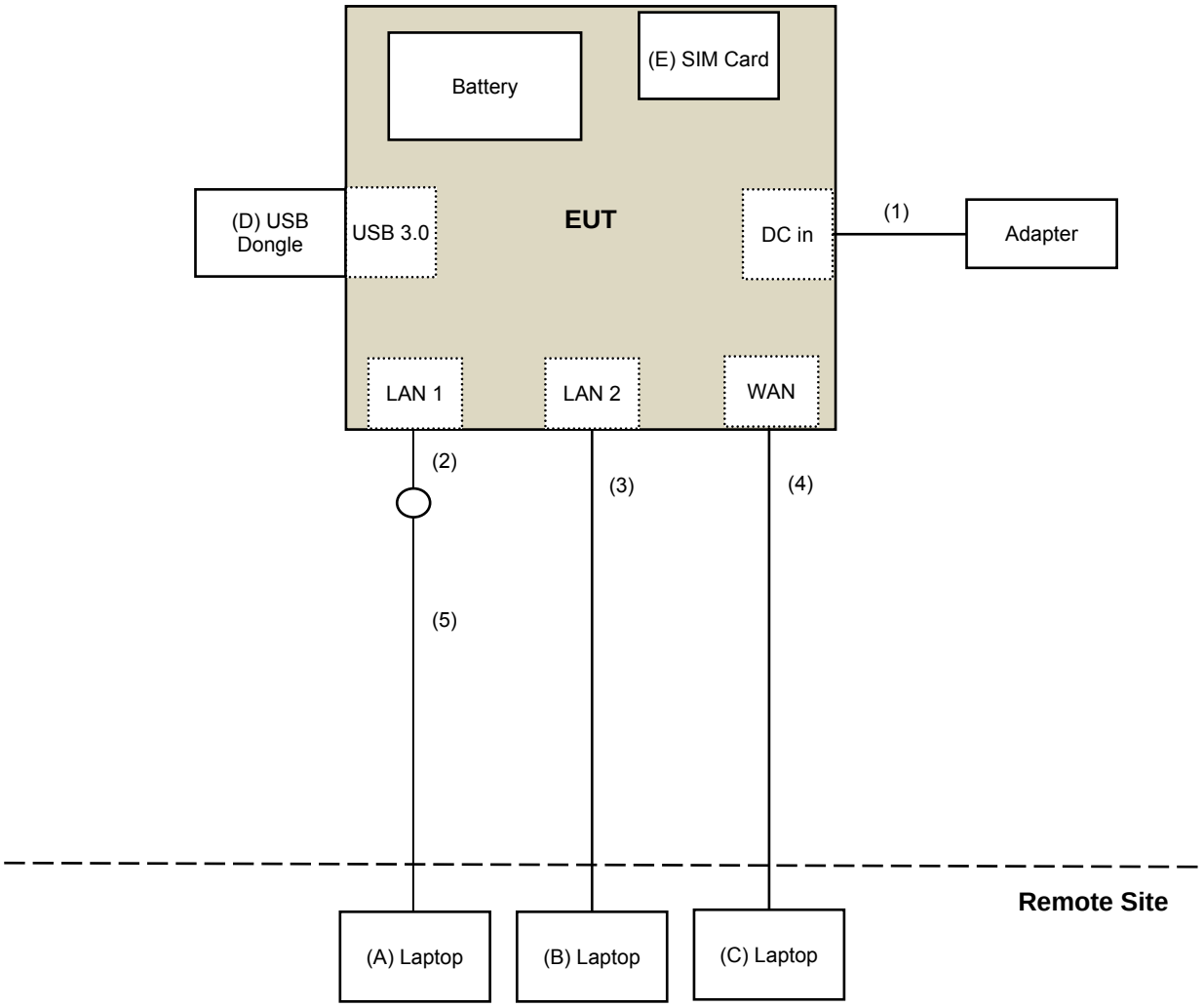
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	Laptop	SONY	SVS151A12P	275548477001150	NA	Provided by Lab
C.	Laptop	DELL	E5430	4N1SKV1	FCC DoC	Provided by Lab
D.	USB Dongle	Sandisk	128G	NA	NA	Provided by Lab
E.	SIM Card	Anritsu	NA	NA	NA	Provided 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	0	Supplied by client
2.	RJ-45 Cable	1	1.5	No	0	Supplied by client
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	RJ-45 Cable	1	10	No	0	Provided by Lab
5.	RJ-45 Cable	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard and References

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

Test Standard:
FCC Part 15, Subpart E (15.407)
ANSI C63.10-2013

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

References Test Guidance:
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

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 03, 2019	July 02, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 30, 2019	May 29, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 16, 2019	Sep. 15, 2020
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	Apr. 30, 2019	Apr. 29, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 11, 2019	Nov. 10, 2020
RF Cable	8D	966-3-1	Mar. 18, 2019	Mar. 17, 2020
RF Cable	8D	966-3-2	Mar. 18, 2019	Mar. 17, 2020
RF Cable	8D	966-3-3	Mar. 18, 2019	Mar. 17, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 26, 2019	Sep. 25, 2020
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-1200	160922	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-2000	180601	June 10, 2019	June 09, 2020
RF Cable	EMC104-SM-SM-6000	180602	June 10, 2019	June 09, 2020
Spectrum Analyzer Keysight	N9030A	MY54490679	July 17, 2019	July 16, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC102-KM-KM-4500	181205	Aug. 26, 2019	Aug. 25, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 16, 2020	Jan. 15, 2021
True RMS Clamp Meter FLUKE	325	31130711WS	May 21, 2019	May 20, 2020

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 3.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Mar. 04 to 09, 2020

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:

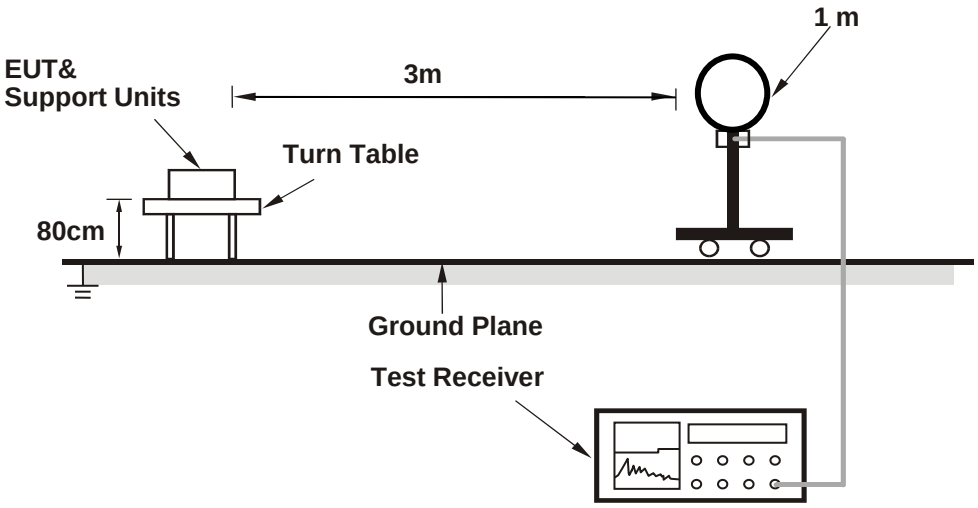
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

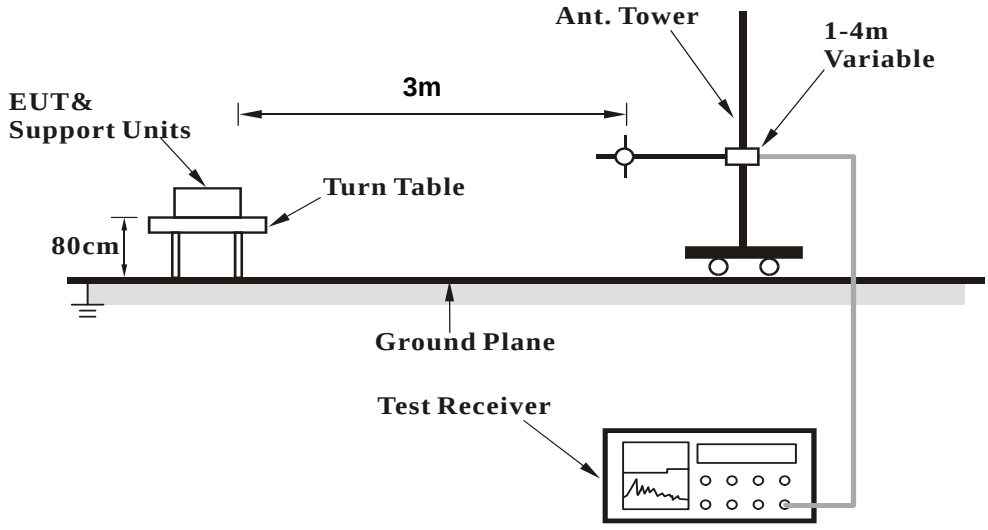
No deviation.

4.1.5 Test Setup

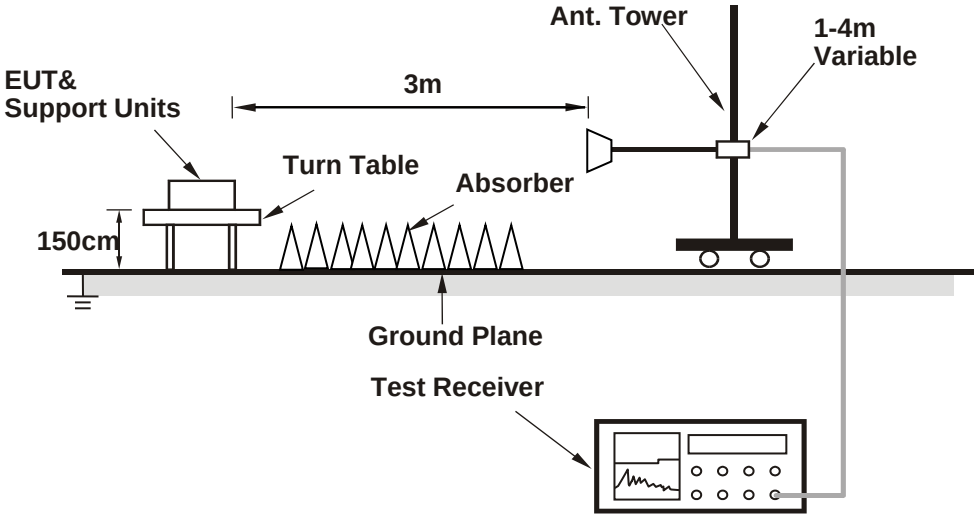
For Radiated emission below 30MHz



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 Computer which is placed on remote site.
b. Controlling software (package_UIv2.05_DLLv4.08_20190312) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

802.11a

CHANNEL	TX Channel 52	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	58.4 PK	74.0	-15.6	1.25 H	188	55.4	3.0
2	5150.00	48.8 AV	54.0	-5.2	1.25 H	188	45.8	3.0
3	*5260.00	121.0 PK			1.25 H	188	118.5	2.5
4	*5260.00	112.3 AV			1.25 H	188	109.8	2.5
5	5350.00	59.5 PK	74.0	-14.5	1.25 H	188	56.9	2.6
6	5350.00	47.4 AV	54.0	-6.6	1.25 H	188	44.8	2.6
7	#10520.00	51.4 PK	68.2	-16.8	1.49 H	314	38.8	12.6
8	15780.00	46.8 PK	74.0	-27.2	1.54 H	161	35.0	11.8
9	15780.00	33.9 AV	54.0	-20.1	1.54 H	161	22.1	11.8
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	57.7 PK	74.0	-16.3	2.18 V	128	54.7	3.0
2	5150.00	50.2 AV	54.0	-3.8	2.18 V	128	47.2	3.0
3	*5260.00	123.7 PK			2.18 V	128	121.2	2.5
4	*5260.00	115.2 AV			2.18 V	128	112.7	2.5
5	5350.00	60.0 PK	74.0	-14.0	2.18 V	128	57.4	2.6
6	5350.00	49.2 AV	54.0	-4.8	2.18 V	128	46.6	2.6
7	#10520.00	53.7 PK	68.2	-14.5	3.86 V	264	41.1	12.6
8	15780.00	43.3 PK	74.0	-30.7	1.59 V	51	31.5	11.8
9	15780.00	33.1 AV	54.0	-20.9	1.59 V	51	21.3	11.8

REMARKS:

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

CHANNEL	TX Channel 60	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	*5300.00	121.5 PK			1.27 H	198	119.1	2.4
2	*5300.00	112.0 AV			1.27 H	198	109.6	2.4
3	5350.00	64.7 PK	74.0	-9.3	1.27 H	198	62.1	2.6
4	5350.00	50.3 AV	54.0	-3.7	1.27 H	198	47.7	2.6
5	10600.00	51.3 PK	74.0	-22.7	1.46 H	330	38.9	12.4
6	10600.00	39.7 AV	54.0	-14.3	1.46 H	330	27.3	12.4
7	15900.00	46.5 PK	74.0	-27.5	1.59 H	162	34.4	12.1
8	15900.00	33.4 AV	54.0	-20.6	1.59 H	162	21.3	12.1
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	*5300.00	123.7 PK			2.30 V	138	121.3	2.4
2	*5300.00	114.8 AV			2.30 V	138	112.4	2.4
3	5350.00	67.5 PK	74.0	-6.5	2.30 V	138	64.9	2.6
4	5350.00	53.6 AV	54.0	-0.4	2.30 V	138	51.0	2.6
5	10600.00	54.0 PK	74.0	-20.0	3.83 V	274	41.6	12.4
6	10600.00	41.2 AV	54.0	-12.8	3.83 V	274	28.8	12.4
7	15900.00	43.4 PK	74.0	-30.6	1.64 V	49	31.3	12.1
8	15900.00	33.3 AV	54.0	-20.7	1.64 V	49	21.2	12.1

REMARKS:

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

CHANNEL	TX Channel 64	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	*5320.00	118.1 PK			1.22 H	194	115.6	2.5
2	*5320.00	109.0 AV			1.22 H	194	106.5	2.5
3	5350.00	68.3 PK	74.0	-5.7	1.22 H	194	65.7	2.6
4	5350.00	50.5 AV	54.0	-3.5	1.22 H	194	47.9	2.6
5	10640.00	51.6 PK	74.0	-22.4	1.54 H	301	39.2	12.4
6	10640.00	40.1 AV	54.0	-13.9	1.54 H	301	27.7	12.4
7	15960.00	46.6 PK	74.0	-27.4	1.49 H	151	34.2	12.4
8	15960.00	33.9 AV	54.0	-20.1	1.49 H	151	21.5	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	*5320.00	120.8 PK			2.17 V	128	118.3	2.5
2	*5320.00	111.9 AV			2.17 V	128	109.4	2.5
3	5350.00	68.3 PK	74.0	-5.7	2.17 V	128	65.7	2.6
4	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**2.17 V**	**128**	**51.3**	**2.6**
5	10640.00	54.2 PK	74.0	-19.8	3.92 V	253	41.8	12.4
6	10640.00	41.6 AV	54.0	-12.4	3.92 V	253	29.2	12.4
7	15960.00	43.4 PK	74.0	-30.6	1.64 V	39	31.0	12.4
8	15960.00	33.1 AV	54.0	-20.9	1.64 V	39	20.7	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 100	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	5460.00	60.4 PK	74.0	-13.6	1.31 H	183	57.4	3.0
2	5460.00	48.9 AV	54.0	-5.1	1.31 H	183	45.9	3.0
3	#5470.00	66.3 PK	68.2	-1.9	1.31 H	183	63.2	3.1
4	*5500.00	115.9 PK			1.31 H	183	112.8	3.1
5	*5500.00	106.7 AV			1.31 H	183	103.6	3.1
6	11000.00	51.7 PK	74.0	-22.3	1.55 H	302	39.1	12.6
7	11000.00	39.9 AV	54.0	-14.1	1.55 H	302	27.3	12.6
8	#16500.00	46.3 PK	68.2	-21.9	1.55 H	163	32.7	13.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.1 PK	74.0	-11.9	2.31 V	116	59.1	3.0
2	5460.00	50.0 AV	54.0	-4.0	2.31 V	116	47.0	3.0
3	**#5470.00**	**68.1 PK**	**68.2**	**-0.1**	**2.31 V**	**116**	**65.0**	**3.1**
4	*5500.00	118.8 PK			2.31 V	116	115.7	3.1
5	*5500.00	109.8 AV			2.31 V	116	106.7	3.1
6	11000.00	53.4 PK	74.0	-20.6	3.91 V	272	40.8	12.6
7	11000.00	40.6 AV	54.0	-13.4	3.91 V	272	28.0	12.6
8	#16500.00	43.6 PK	68.2	-24.6	1.53 V	54	30.0	13.6

REMARKS:

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

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	121.8 PK			1.24 H	192	118.8	3.0
2	*5580.00	112.2 AV			1.24 H	192	109.2	3.0
3	11160.00	51.6 PK	74.0	-22.4	1.49 H	313	39.2	12.4
4	11160.00	40.0 AV	54.0	-14.0	1.49 H	313	27.6	12.4
5	#16740.00	46.4 PK	68.2	-21.8	1.51 H	148	31.6	14.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	123.9 PK			2.36 V	129	120.9	3.0
2	*5580.00	115.3 AV			2.36 V	129	112.3	3.0
3	11160.00	53.6 PK	74.0	-20.4	3.85 V	278	41.2	12.4
4	11160.00	40.9 AV	54.0	-13.1	3.85 V	278	28.5	12.4
5	#16740.00	43.0 PK	68.2	-25.2	1.63 V	52	28.2	14.8

REMARKS:

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

CHANNEL	TX Channel 140	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	*5700.00	115.9 PK			1.22 H	186	112.7	3.2
2	*5700.00	106.7 AV			1.22 H	186	103.5	3.2
3	#5725.00	65.7 PK	68.2	-2.5	1.22 H	186	62.4	3.3
4	11400.00	51.8 PK	74.0	-22.2	1.55 H	315	38.8	13.0
5	11400.00	40.0 AV	54.0	-14.0	1.55 H	315	27.0	13.0
6	#17100.00	46.5 PK	68.2	-21.7	1.49 H	168	30.2	16.3
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	*5700.00	118.2 PK			2.31 V	133	115.0	3.2
2	*5700.00	109.4 AV			2.31 V	133	106.2	3.2
3	#5725.00	68.0 PK	68.2	-0.2	2.31 V	133	64.7	3.3
4	11400.00	53.3 PK	74.0	-20.7	3.87 V	259	40.3	13.0
5	11400.00	40.6 AV	54.0	-13.4	3.87 V	259	27.6	13.0
6	#17100.00	42.7 PK	68.2	-25.5	1.64 V	37	26.4	16.3

REMARKS:

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

CHANNEL	TX Channel 144	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	5460.00	54.8 PK	74.0	-19.2	1.27 H	177	51.8	3.0
2	5460.00	44.0 AV	54.0	-10.0	1.27 H	177	41.0	3.0
3	#5470.00	55.3 PK	68.2	-12.9	1.27 H	177	52.2	3.1
4	*5720.00	121.9 PK			1.27 H	177	118.7	3.2
5	*5720.00	112.3 AV			1.27 H	177	109.1	3.2
6	#5850.00	54.6 PK	68.2	-13.6	1.27 H	177	50.9	3.7
7	11440.00	52.0 PK	74.0	-22.0	1.43 H	306	39.2	12.8
8	11440.00	40.1 AV	54.0	-13.9	1.43 H	306	27.3	12.8
9	#17160.00	46.9 PK	68.2	-21.3	1.58 H	175	30.3	16.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.1 PK	74.0	-18.9	2.38 V	127	52.1	3.0
2	5460.00	44.3 AV	54.0	-9.7	2.38 V	127	41.3	3.0
3	#5470.00	55.5 PK	68.2	-12.7	2.38 V	127	52.4	3.1
4	*5720.00	123.6 PK			2.38 V	127	120.4	3.2
5	*5720.00	115.2 AV			2.38 V	127	112.0	3.2
6	#5850.00	54.9 PK	68.2	-13.3	2.38 V	127	51.2	3.7
7	11440.00	53.7 PK	74.0	-20.3	3.89 V	264	40.9	12.8
8	11440.00	41.0 AV	54.0	-13.0	3.89 V	264	28.2	12.8
9	#17160.00	43.5 PK	68.2	-24.7	1.54 V	61	26.9	16.6

REMARKS:

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

802.11ac (VHT20)

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.0 PK	74.0	-17.0	1.27 H	173	54.0	3.0
2	5150.00	48.8 AV	54.0	-5.2	1.27 H	173	45.8	3.0
3	*5260.00	120.4 PK			1.27 H	173	117.9	2.5
4	*5260.00	110.6 AV			1.27 H	173	108.1	2.5
5	5350.00	58.1 PK	74.0	-15.9	1.27 H	173	55.5	2.6
6	5350.00	48.0 AV	54.0	-6.0	1.27 H	173	45.4	2.6
7	#10520.00	50.8 PK	68.2	-17.4	1.51 H	298	38.2	12.6
8	15780.00	46.7 PK	74.0	-27.3	1.55 H	146	34.9	11.8
9	15780.00	33.5 AV	54.0	-20.5	1.55 H	146	21.7	11.8
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	58.2 PK	74.0	-15.8	2.26 V	157	55.2	3.0
2	5150.00	49.6 AV	54.0	-4.4	2.26 V	157	46.6	3.0
3	*5260.00	122.9 PK			2.26 V	157	120.4	2.5
4	*5260.00	113.8 AV			2.26 V	157	111.3	2.5
5	5350.00	59.3 PK	74.0	-14.7	2.26 V	157	56.7	2.6
6	5350.00	48.3 AV	54.0	-5.7	2.26 V	157	45.7	2.6
7	#10520.00	54.4 PK	68.2	-13.8	3.83 V	258	41.8	12.6
8	15780.00	43.5 PK	74.0	-30.5	1.62 V	66	31.7	11.8
9	15780.00	33.3 AV	54.0	-20.7	1.62 V	66	21.5	11.8

REMARKS:

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

CHANNEL	TX Channel 60	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	*5300.00	120.9 PK			1.27 H	202	118.5	2.4
2	*5300.00	111.0 AV			1.27 H	202	108.6	2.4
3	5350.00	68.5 PK	74.0	-5.5	1.27 H	202	65.9	2.6
4	5350.00	50.4 AV	54.0	-3.6	1.27 H	202	47.8	2.6
5	10600.00	51.2 PK	74.0	-22.8	1.46 H	328	38.8	12.4
6	10600.00	39.6 AV	54.0	-14.4	1.46 H	328	27.2	12.4
7	15900.00	47.0 PK	74.0	-27.0	1.52 H	148	34.9	12.1
8	15900.00	34.4 AV	54.0	-19.6	1.52 H	148	22.3	12.1
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	*5300.00	123.1 PK			2.25 V	128	120.7	2.4
2	*5300.00	114.3 AV			2.25 V	128	111.9	2.4
3	5350.00	71.4 PK	74.0	-2.6	2.25 V	128	68.8	2.6
4	5350.00	53.8 AV	54.0	-0.2	2.25 V	128	51.2	2.6
5	10600.00	53.7 PK	74.0	-20.3	3.81 V	273	41.3	12.4
6	10600.00	40.9 AV	54.0	-13.1	3.81 V	273	28.5	12.4
7	15900.00	42.5 PK	74.0	-31.5	1.60 V	52	30.4	12.1
8	15900.00	32.6 AV	54.0	-21.4	1.60 V	52	20.5	12.1

REMARKS:

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

CHANNEL	TX Channel 64	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	*5320.00	117.5 PK			1.29 H	182	115.0	2.5
2	*5320.00	107.4 AV			1.29 H	182	104.9	2.5
3	5350.00	65.2 PK	74.0	-8.8	1.29 H	182	62.6	2.6
4	5350.00	49.6 AV	54.0	-4.4	1.29 H	182	47.0	2.6
5	10640.00	51.9 PK	74.0	-22.1	1.50 H	302	39.5	12.4
6	10640.00	40.2 AV	54.0	-13.8	1.50 H	302	27.8	12.4
7	15960.00	46.6 PK	74.0	-27.4	1.49 H	174	34.2	12.4
8	15960.00	33.8 AV	54.0	-20.2	1.49 H	174	21.4	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	*5320.00	119.7 PK			2.27 V	118	117.2	2.5
2	*5320.00	110.6 AV			2.27 V	118	108.1	2.5
3	5350.00	69.4 PK	74.0	-4.6	2.27 V	118	66.8	2.6
4	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**2.27 V**	**118**	**51.3**	**2.6**
5	10640.00	54.1 PK	74.0	-19.9	3.87 V	269	41.7	12.4
6	10640.00	41.4 AV	54.0	-12.6	3.87 V	269	29.0	12.4
7	15960.00	43.3 PK	74.0	-30.7	1.62 V	50	30.9	12.4
8	15960.00	32.9 AV	54.0	-21.1	1.62 V	50	20.5	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 100	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	5460.00	61.4 PK	74.0	-12.6	1.25 H	181	58.4	3.0
2	5460.00	49.9 AV	54.0	-4.1	1.25 H	181	46.9	3.0
3	#5470.00	65.0 PK	68.2	-3.2	1.25 H	181	61.9	3.1
4	*5500.00	115.8 PK			1.25 H	181	112.7	3.1
5	*5500.00	105.8 AV			1.25 H	181	102.7	3.1
6	11000.00	51.3 PK	74.0	-22.7	1.46 H	304	38.7	12.6
7	11000.00	39.9 AV	54.0	-14.1	1.46 H	304	27.3	12.6
8	#16500.00	46.3 PK	68.2	-21.9	1.51 H	154	32.7	13.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.8 PK	74.0	-12.2	2.23 V	120	58.8	3.0
2	5460.00	50.8 AV	54.0	-3.2	2.23 V	120	47.8	3.0
3	#5470.00	67.9 PK	68.2	-0.3	2.23 V	120	64.8	3.1
4	*5500.00	118.1 PK			2.23 V	120	115.0	3.1
5	*5500.00	108.9 AV			2.23 V	120	105.8	3.1
6	11000.00	53.9 PK	74.0	-20.1	3.81 V	248	41.3	12.6
7	11000.00	41.1 AV	54.0	-12.9	3.81 V	248	28.5	12.6
8	#16500.00	43.1 PK	68.2	-25.1	1.57 V	61	29.5	13.6

REMARKS:

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

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	119.9 PK			1.29 H	177	116.9	3.0
2	*5580.00	110.1 AV			1.29 H	177	107.1	3.0
3	11160.00	51.2 PK	74.0	-22.8	1.49 H	301	38.8	12.4
4	11160.00	39.3 AV	54.0	-14.7	1.49 H	301	26.9	12.4
5	#16740.00	47.1 PK	68.2	-21.1	1.57 H	152	32.3	14.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	122.9 PK			2.19 V	118	119.9	3.0
2	*5580.00	113.7 AV			2.19 V	118	110.7	3.0
3	11160.00	53.3 PK	74.0	-20.7	3.89 V	263	40.9	12.4
4	11160.00	40.7 AV	54.0	-13.3	3.89 V	263	28.3	12.4
5	#16740.00	43.2 PK	68.2	-25.0	1.64 V	54	28.4	14.8

REMARKS:

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

CHANNEL	TX Channel 140	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	*5700.00	115.9 PK			1.30 H	175	112.7	3.2
2	*5700.00	105.8 AV			1.30 H	175	102.6	3.2
3	#5725.00	64.9 PK	68.2	-3.3	1.30 H	175	61.6	3.3
4	11400.00	51.6 PK	74.0	-22.4	1.54 H	319	38.6	13.0
5	11400.00	39.6 AV	54.0	-14.4	1.54 H	319	26.6	13.0
6	#17100.00	46.9 PK	68.2	-21.3	1.54 H	149	30.6	16.3
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	*5700.00	118.7 PK			2.26 V	129	115.5	3.2
2	*5700.00	108.9 AV			2.26 V	129	105.7	3.2
3	**#5725.00**	**68.1 PK**	**68.2**	**-0.1**	**2.26 V**	**129**	**64.8**	**3.3**
4	11400.00	53.8 PK	74.0	-20.2	3.85 V	250	40.8	13.0
5	11400.00	41.4 AV	54.0	-12.6	3.85 V	250	28.4	13.0
6	#17100.00	43.4 PK	68.2	-24.8	1.56 V	53	27.1	16.3

REMARKS:

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

CHANNEL	TX Channel 144	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	5460.00	54.6 PK	74.0	-19.4	1.22 H	181	51.6	3.0
2	5460.00	43.7 AV	54.0	-10.3	1.22 H	181	40.7	3.0
3	#5470.00	55.6 PK	68.2	-12.6	1.22 H	181	52.5	3.1
4	*5720.00	119.9 PK			1.22 H	181	116.7	3.2
5	*5720.00	110.3 AV			1.22 H	181	107.1	3.2
6	#5850.00	55.7 PK	68.2	-12.5	1.22 H	181	52.0	3.7
7	11440.00	51.2 PK	74.0	-22.8	1.54 H	316	38.4	12.8
8	11440.00	39.3 AV	54.0	-14.7	1.54 H	316	26.5	12.8
9	#17160.00	47.0 PK	68.2	-21.2	1.56 H	165	30.4	16.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	54.7 PK	74.0	-19.3	2.31 V	0	51.7	3.0
2	5460.00	43.9 AV	54.0	-10.1	2.31 V	0	40.9	3.0
3	#5470.00	56.0 PK	68.2	-12.2	2.31 V	0	52.9	3.1
4	*5720.00	123.1 PK			2.31 V	139	119.9	3.2
5	*5720.00	113.8 AV			2.31 V	139	110.6	3.2
6	#5850.00	55.1 PK	68.2	-13.1	2.31 V	0	51.4	3.7
7	11440.00	54.3 PK	74.0	-19.7	3.81 V	258	41.5	12.8
8	11440.00	41.4 AV	54.0	-12.6	3.81 V	258	28.6	12.8
9	#17160.00	43.6 PK	68.2	-24.6	1.55 V	36	27.0	16.6

REMARKS:

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

802.11ac (VHT40)

CHANNEL	TX Channel 54	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	58.5 PK	74.0	-15.5	1.31 H	196	55.5	3.0
2	5150.00	49.3 AV	54.0	-4.7	1.31 H	196	46.3	3.0
3	*5270.00	115.5 PK			1.31 H	196	113.0	2.5
4	*5270.00	107.9 AV			1.31 H	196	105.4	2.5
5	5350.00	65.6 PK	74.0	-8.4	1.31 H	196	63.0	2.6
6	5350.00	50.4 AV	54.0	-3.6	1.31 H	196	47.8	2.6
7	#10540.00	51.5 PK	68.2	-16.7	1.44 H	321	38.9	12.6
8	15810.00	46.7 PK	74.0	-27.3	1.54 H	148	35.0	11.7
9	15810.00	33.6 AV	54.0	-20.4	1.54 H	148	21.9	11.7
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	58.9 PK	74.0	-15.1	2.31 V	129	55.9	3.0
2	5150.00	50.2 AV	54.0	-3.8	2.31 V	129	47.2	3.0
3	*5270.00	118.6 PK			2.31 V	129	116.1	2.5
4	*5270.00	111.1 AV			2.31 V	129	108.6	2.5
5	5350.00	69.4 PK	74.0	-4.6	2.31 V	129	66.8	2.6
6	5350.00	53.6 AV	54.0	-0.4	2.31 V	129	51.0	2.6
7	#10540.00	54.0 PK	68.2	-14.2	3.86 V	279	41.4	12.6
8	15810.00	43.5 PK	74.0	-30.5	1.57 V	41	31.8	11.7
9	15810.00	33.2 AV	54.0	-20.8	1.57 V	41	21.5	11.7

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

CHANNEL	TX Channel 62	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	*5310.00	111.0 PK			1.27 H	200	108.6	2.4
2	*5310.00	102.2 AV			1.27 H	200	99.8	2.4
3	5350.00	64.9 PK	74.0	-9.1	1.27 H	200	62.3	2.6
4	5350.00	49.8 AV	54.0	-4.2	1.27 H	200	47.2	2.6
5	10620.00	51.9 PK	74.0	-22.1	1.50 H	312	39.5	12.4
6	10620.00	39.9 AV	54.0	-14.1	1.50 H	312	27.5	12.4
7	15930.00	47.1 PK	74.0	-26.9	1.54 H	159	34.9	12.2
8	15930.00	34.1 AV	54.0	-19.9	1.54 H	159	21.9	12.2
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	*5310.00	113.9 PK			2.25 V	118	111.5	2.4
2	*5310.00	105.3 AV			2.25 V	118	102.9	2.4
3	5350.00	67.4 PK	74.0	-6.6	2.25 V	118	64.8	2.6
4	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**2.25 V**	**118**	**51.3**	**2.6**
5	10620.00	53.4 PK	74.0	-20.6	3.83 V	277	41.0	12.4
6	10620.00	41.0 AV	54.0	-13.0	3.83 V	277	28.6	12.4
7	15930.00	43.6 PK	74.0	-30.4	1.61 V	53	31.4	12.2
8	15930.00	33.3 AV	54.0	-20.7	1.61 V	53	21.1	12.2

REMARKS:

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

CHANNEL	TX Channel 102	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	5460.00	60.3 PK	74.0	-13.7	1.20 H	204	57.3	3.0
2	5460.00	47.8 AV	54.0	-6.2	1.20 H	204	44.8	3.0
3	#5470.00	64.8 PK	68.2	-3.4	1.20 H	204	61.7	3.1
4	*5510.00	109.9 PK			1.20 H	204	106.8	3.1
5	*5510.00	101.8 AV			1.20 H	204	98.7	3.1
6	11020.00	51.4 PK	74.0	-22.6	1.45 H	325	38.9	12.5
7	11020.00	39.7 AV	54.0	-14.3	1.45 H	325	27.2	12.5
8	#16530.00	46.7 PK	68.2	-21.5	1.55 H	165	32.8	13.9
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	5460.00	62.7 PK	74.0	-11.3	2.22 V	125	59.7	3.0
2	5460.00	50.5 AV	54.0	-3.5	2.22 V	125	47.5	3.0
3	#5470.00	67.9 PK	68.2	-0.3	2.22 V	125	64.8	3.1
4	*5510.00	112.8 PK			2.22 V	125	109.7	3.1
5	*5510.00	104.6 AV			2.22 V	125	101.5	3.1
6	11020.00	53.2 PK	74.0	-20.8	3.83 V	252	40.7	12.5
7	11020.00	40.7 AV	54.0	-13.3	3.83 V	252	28.2	12.5
8	#16530.00	43.6 PK	68.2	-24.6	1.55 V	56	29.7	13.9

REMARKS:

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

CHANNEL	TX Channel 110	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	5460.00	60.8 PK	74.0	-13.2	1.30 H	178	57.8	3.0
2	5460.00	48.9 AV	54.0	-5.1	1.30 H	178	45.9	3.0
3	#5470.00	64.6 PK	68.2	-3.6	1.30 H	178	61.5	3.1
4	*5550.00	115.9 PK			1.30 H	178	112.9	3.0
5	*5550.00	108.2 AV			1.30 H	178	105.2	3.0
6	11100.00	51.1 PK	74.0	-22.9	1.54 H	319	38.8	12.3
7	11100.00	39.3 AV	54.0	-14.7	1.54 H	319	27.0	12.3
8	#16650.00	46.9 PK	68.2	-21.3	1.52 H	148	32.3	14.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	63.4 PK	74.0	-10.6	2.30 V	114	60.4	3.0
2	5460.00	52.0 AV	54.0	-2.0	2.30 V	114	49.0	3.0
3	#5470.00	67.9 PK	68.2	-0.3	2.30 V	114	64.8	3.1
4	*5550.00	118.9 PK			2.30 V	114	115.9	3.0
5	*5550.00	111.4 AV			2.30 V	114	108.4	3.0
6	11100.00	53.8 PK	74.0	-20.2	3.88 V	270	41.5	12.3
7	11100.00	41.0 AV	54.0	-13.0	3.88 V	270	28.7	12.3
8	#16650.00	43.3 PK	68.2	-24.9	1.63 V	37	28.7	14.6

REMARKS:

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

CHANNEL	TX Channel 134	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	*5670.00	111.5 PK			1.20 H	176	108.3	3.2
2	*5670.00	103.2 AV			1.20 H	176	100.0	3.2
3	#5725.00	65.3 PK	68.2	-2.9	1.20 H	176	62.0	3.3
4	11340.00	51.1 PK	74.0	-22.9	1.51 H	307	38.2	12.9
5	11340.00	39.6 AV	54.0	-14.4	1.51 H	307	26.7	12.9
6	#17010.00	46.5 PK	68.2	-21.7	1.55 H	155	30.6	15.9
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	*5670.00	114.8 PK			2.31 V	115	111.6	3.2
2	*5670.00	106.7 AV			2.31 V	115	103.5	3.2
3	#5725.00	68.0 PK	68.2	-0.2	2.31 V	115	64.7	3.3
4	11340.00	54.2 PK	74.0	-19.8	3.88 V	280	41.3	12.9
5	11340.00	41.3 AV	54.0	-12.7	3.88 V	280	28.4	12.9
6	#17010.00	42.9 PK	68.2	-25.3	1.58 V	37	27.0	15.9

REMARKS:

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

CHANNEL	TX Channel 142	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	5460.00	54.7 PK	74.0	-19.3	1.20 H	187	51.7	3.0
2	5460.00	44.0 AV	54.0	-10.0	1.20 H	187	41.0	3.0
3	#5470.00	56.7 PK	68.2	-11.5	1.20 H	187	53.6	3.1
4	*5710.00	116.8 PK			1.20 H	187	113.6	3.2
5	*5710.00	109.0 AV			1.20 H	187	105.8	3.2
6	#5850.00	56.6 PK	68.2	-11.6	1.20 H	187	52.9	3.7
7	11420.00	50.5 PK	74.0	-23.5	1.46 H	291	37.6	12.9
8	11420.00	39.1 AV	54.0	-14.9	1.46 H	291	26.2	12.9
9	#17130.00	46.3 PK	68.2	-21.9	1.60 H	167	29.9	16.4
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	5460.00	55.3 PK	74.0	-18.7	2.30 V	115	52.3	3.0
2	5460.00	44.3 AV	54.0	-9.7	2.30 V	115	41.3	3.0
3	#5470.00	57.2 PK	68.2	-11.0	2.30 V	115	54.1	3.1
4	*5710.00	120.1 PK			2.30 V	115	116.9	3.2
5	*5710.00	112.3 AV			2.30 V	115	109.1	3.2
6	#5850.00	58.3 PK	68.2	-9.9	2.30 V	115	54.6	3.7
7	11420.00	53.4 PK	74.0	-20.6	3.92 V	254	40.5	12.9
8	11420.00	40.8 AV	54.0	-13.2	3.92 V	254	27.9	12.9
9	#17130.00	43.5 PK	68.2	-24.7	1.55 V	49	27.1	16.4

REMARKS:

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

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CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.0 PK	74.0	-17.0	1.25 H	173	54.0	3.0
2	5150.00	47.3 AV	54.0	-6.7	1.25 H	173	44.3	3.0
3	*5290.00	105.6 PK			1.25 H	173	103.2	2.4
4	*5290.00	97.5 AV			1.25 H	173	95.1	2.4
5	5350.00	60.8 PK	74.0	-13.2	1.25 H	173	58.2	2.6
6	5350.00	50.7 AV	54.0	-3.3	1.25 H	173	48.1	2.6
7	#10580.00	51.7 PK	68.2	-16.5	1.53 H	324	39.2	12.5
8	15870.00	47.1 PK	74.0	-26.9	1.53 H	162	35.2	11.9
9	15870.00	33.9 AV	54.0	-20.1	1.53 H	162	22.0	11.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.2 PK	74.0	-13.8	2.22 V	156	57.2	3.0
2	5150.00	49.5 AV	54.0	-4.5	2.22 V	156	46.5	3.0
3	*5290.00	108.7 PK			2.22 V	156	106.3	2.4
4	*5290.00	100.8 AV			2.22 V	156	98.4	2.4
5	5350.00	63.6 PK	74.0	-10.4	2.22 V	156	61.0	2.6
6	5350.00	53.6 AV	54.0	-0.4	2.22 V	156	51.0	2.6
7	#10580.00	54.0 PK	68.2	-14.2	3.91 V	278	41.5	12.5
8	15870.00	43.2 PK	74.0	-30.8	1.59 V	61	31.3	11.9
9	15870.00	32.8 AV	54.0	-21.2	1.59 V	61	20.9	11.9

REMARKS:

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

CHANNEL	TX Channel 106	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	5460.00	59.8 PK	74.0	-14.2	1.22 H	173	56.8	3.0
2	5460.00	49.8 AV	54.0	-4.2	1.22 H	173	46.8	3.0
3	#5470.00	65.3 PK	68.2	-2.9	1.22 H	173	62.2	3.1
4	*5530.00	107.4 PK			1.22 H	173	104.4	3.0
5	*5530.00	99.1 AV			1.22 H	173	96.1	3.0
6	11060.00	52.0 PK	74.0	-22.0	1.51 H	325	39.6	12.4
7	11060.00	40.0 AV	54.0	-14.0	1.51 H	325	27.6	12.4
8	#16590.00	47.0 PK	68.2	-21.2	1.58 H	153	32.6	14.4
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	5460.00	63.7 PK	74.0	-10.3	2.80 V	117	60.7	3.0
2	**5460.00**	**53.9 AV**	**54.0**	**-0.1**	**2.80 V**	**117**	**50.9**	**3.0**
3	#5470.00	67.9 PK	68.2	-0.3	2.80 V	117	64.8	3.1
4	*5530.00	109.4 PK			2.80 V	117	106.4	3.0
5	*5530.00	102.0 AV			2.80 V	117	99.0	3.0
6	11060.00	53.8 PK	74.0	-20.2	3.88 V	275	41.4	12.4
7	11060.00	41.1 AV	54.0	-12.9	3.88 V	275	28.7	12.4
8	#16590.00	43.2 PK	68.2	-25.0	1.63 V	50	28.8	14.4

REMARKS:

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

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5610.00	110.5 PK			1.22 H	174	107.5	3.0
2	*5610.00	102.9 AV			1.22 H	174	99.9	3.0
3	#5725.00	64.8 PK	68.2	-3.4	1.22 H	174	61.5	3.3
4	11220.00	50.8 PK	74.0	-23.2	1.52 H	307	38.3	12.5
5	11220.00	39.3 AV	54.0	-14.7	1.52 H	307	26.8	12.5
6	#16830.00	46.1 PK	68.2	-22.1	1.60 H	160	31.2	14.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5610.00	113.6 PK			2.23 V	119	110.6	3.0
2	*5610.00	106.1 AV			2.23 V	119	103.1	3.0
3	#5725.00	67.9 PK	68.2	-0.3	2.23 V	119	64.6	3.3
4	11220.00	53.6 PK	74.0	-20.4	3.84 V	256	41.1	12.5
5	11220.00	40.7 AV	54.0	-13.3	3.84 V	256	28.2	12.5
6	#16830.00	43.1 PK	68.2	-25.1	1.65 V	47	28.2	14.9

REMARKS:

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

CHANNEL	TX Channel 138	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	5460.00	55.2 PK	74.0	-18.8	1.23 H	186	52.2	3.0
2	5460.00	44.4 AV	54.0	-9.6	1.23 H	186	41.4	3.0
3	#5470.00	56.0 PK	68.2	-12.2	1.23 H	186	52.9	3.1
4	*5690.00	114.5 PK			1.23 H	186	111.3	3.2
5	*5690.00	106.5 AV			1.23 H	186	103.3	3.2
6	#5850.00	64.7 PK	68.2	-3.5	1.23 H	186	61.0	3.7
7	11380.00	51.1 PK	74.0	-22.9	1.44 H	303	38.2	12.9
8	11380.00	39.7 AV	54.0	-14.3	1.44 H	303	26.8	12.9
9	#17070.00	47.1 PK	68.2	-21.1	1.55 H	149	31.0	16.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.1 PK	74.0	-16.9	2.71 V	113	54.1	3.0
2	5460.00	46.3 AV	54.0	-7.7	2.71 V	113	43.3	3.0
3	#5470.00	58.4 PK	68.2	-9.8	2.71 V	113	55.3	3.1
4	*5690.00	117.3 PK			2.71 V	113	114.1	3.2
5	*5690.00	109.4 AV			2.71 V	113	106.2	3.2
6	#5850.00	68.0 PK	68.2	-0.2	2.71 V	113	64.3	3.7
7	11380.00	53.0 PK	74.0	-21.0	3.92 V	253	40.1	12.9
8	11380.00	40.6 AV	54.0	-13.4	3.92 V	253	27.7	12.9
9	#17070.00	42.9 PK	68.2	-25.3	1.59 V	50	26.8	16.1

REMARKS:

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

Below 1GHz Data:

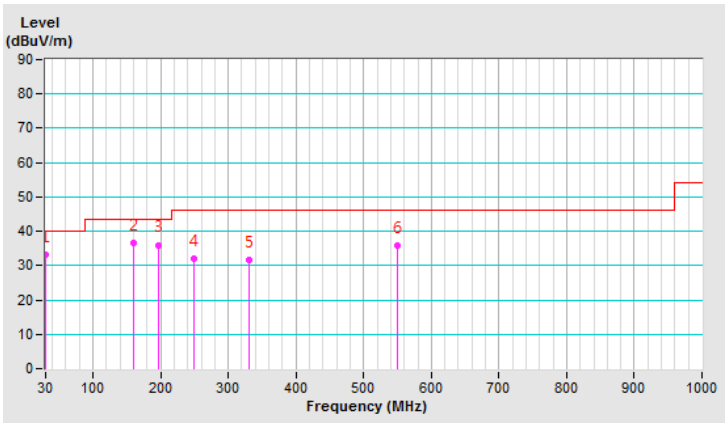
802.11ac (VHT80)

CHANNEL	TX Channel 122	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	30.05	33.2 QP	40.0	-6.8	2.00 H	76	41.8	-8.6
2	160.47	36.6 QP	43.5	-6.9	1.50 H	93	43.8	-7.2
3	196.35	36.0 QP	43.5	-7.5	1.50 H	360	46.3	-10.3
4	250.00	31.9 QP	46.0	-14.1	1.00 H	102	40.3	-8.4
5	330.41	31.6 QP	46.0	-14.4	1.00 H	273	36.9	-5.3
6	550.02	35.8 QP	46.0	-10.2	1.00 H	258	36.4	-0.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

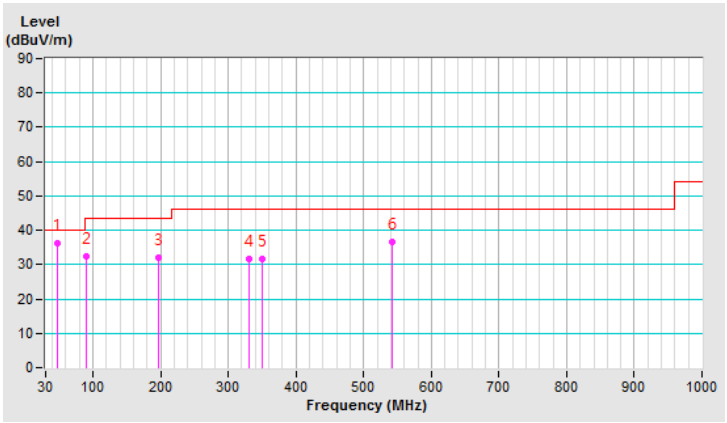


CHANNEL	TX Channel 122	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.41	36.2 QP	40.0	-3.8	1.00 V	96	44.0	-7.8
2	89.22	32.5 QP	43.5	-11.0	2.00 V	360	45.9	-13.4
3	196.04	32.0 QP	43.5	-11.5	1.00 V	50	42.3	-10.3
4	331.02	31.7 QP	46.0	-14.3	1.00 V	314	37.0	-5.3
5	350.97	31.8 QP	46.0	-14.2	2.00 V	360	36.8	-5.0
6	542.52	36.7 QP	46.0	-9.3	1.00 V	283	37.5	-0.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3 Tested Date: Mar. 03, 2020

4.2.3 Test Procedure

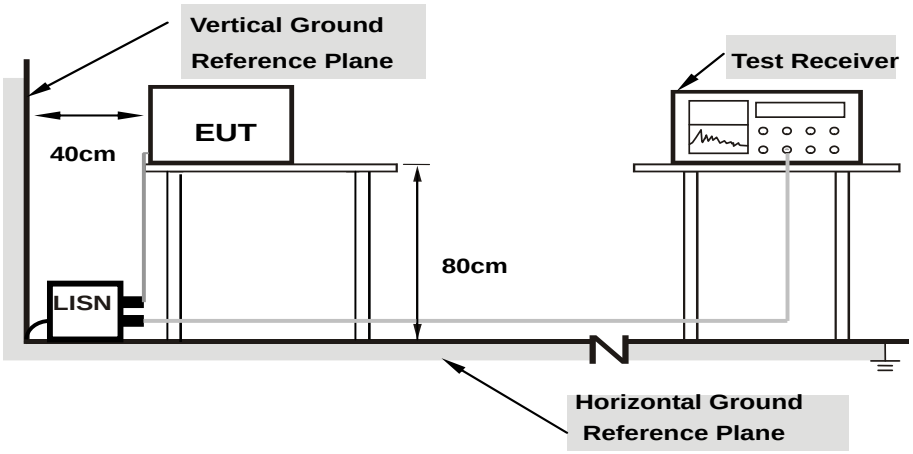
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

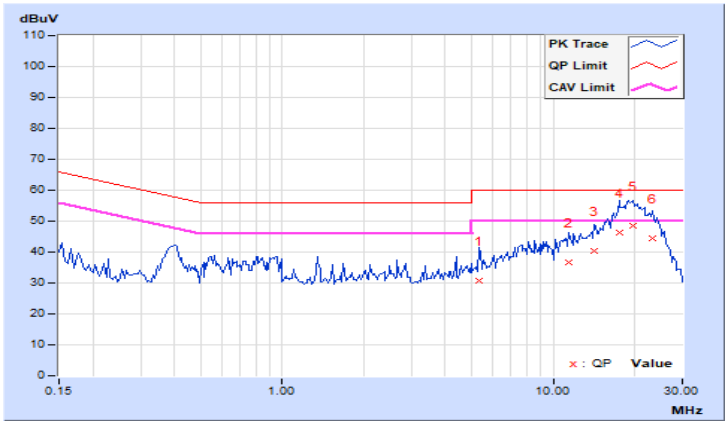
4.2.7 Test Results

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	5.35156	10.35	20.21	13.22	30.56	23.57	60.00	50.00	-29.44	-26.43
2	11.45703	10.76	26.08	19.90	36.84	30.66	60.00	50.00	-23.16	-19.34
3	14.14063	10.95	29.26	23.16	40.21	34.11	60.00	50.00	-19.79	-15.89
4	17.53125	11.19	34.94	29.06	46.13	40.25	60.00	50.00	-13.87	-9.75
5	19.71875	11.35	37.26	32.01	48.61	43.36	60.00	50.00	-11.39	-6.64
6	23.18359	11.48	32.79	26.79	44.27	38.27	60.00	50.00	-15.73	-11.73

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

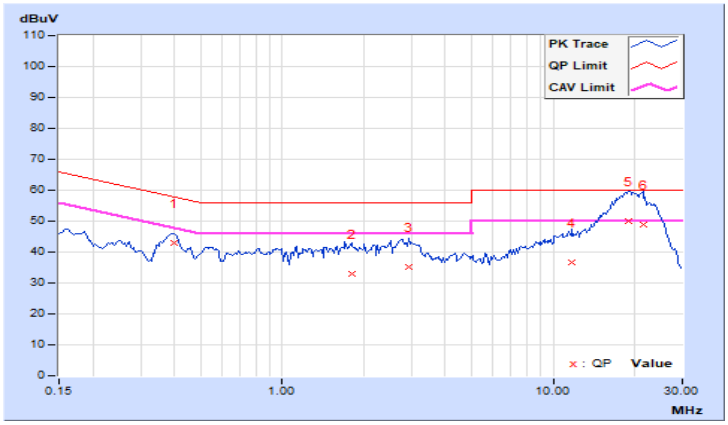


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.40000	10.01	32.78	24.73	42.79	34.74	57.85	47.85	-15.06	-13.11
2	1.80859	10.11	23.00	15.80	33.11	25.91	56.00	46.00	-22.89	-20.09
3	2.92578	10.17	25.01	15.92	35.18	26.09	56.00	46.00	-20.82	-19.91
4	11.75391	10.67	26.07	20.26	36.74	30.93	60.00	50.00	-23.26	-19.07
5	**18.91016**	**11.05**	**39.00**	**33.35**	**50.05**	**44.40**	**60.00**	**50.00**	**-9.95**	**-5.60**
6	21.53125	11.15	37.63	32.00	48.78	43.15	60.00	50.00	-11.22	-6.85

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,

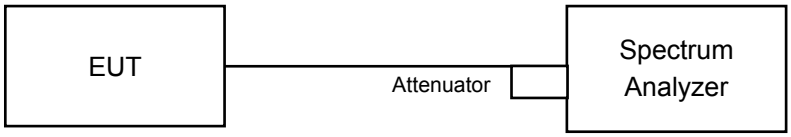
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.3.2 Test Setup

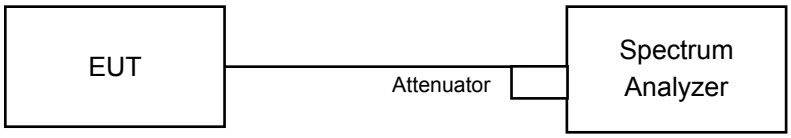
FOR POWER OUTPUT MEASUREMENT

For channel straddling 5725MHz:



For other channels:

FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR POWER OUTPUT MEASUREMENT

For other channels:

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.

For channel straddling 5725MHz:

Follow FCC KDB 789033 UNII test procedure:

Method SA-2

1. Set span to encompass the emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW ≥ 3 x RBW.
4. Number of points in sweep ≥ 2 Span / RBW.
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle < 98 percent).

FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Results

CDD Mode

POWER OUTPUT

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2				
52	5260	15.38	15.74	15.78	109.856	20.41	23.98	Pass
60	5300	15.34	15.81	16.47	116.665	20.67	23.99	Pass
64	5320	15.34	15.82	16.35	115.544	20.63	24.00	Pass
100	5500	15.21	14.03	16.18	99.978	20.00	23.96	Pass
116	5580	15.07	13.76	16.35	99.057	19.96	24.00	Pass
140	5700	15.94	15.26	14.39	100.317	20.01	24.00	Pass
*144 (U-NII-2C Band)	5720	10.70	10.26	10.25	32.958	15.18	22.72	Pass
*144 (U-NII-3 Band)	5720	1.82	2.55	1.22	4.644	6.67	30.00	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)			Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1	Chain2		
144	5720	37.602	15.75	15.88	15.19	14.23	98.248	19.92

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	19.87	23.98 < 24
60	5300	19.95	23.99 < 24
64	5320	19.96	24 = 24
100	5500	19.8	23.96 < 24
116	5580	20.06	24.02 > 24
140	5700	19.96	24 = 24
144 (U-NII-2C Band)	5720	14.88	22.72 < 24

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2				
52	5260	15.32	15.71	15.73	108.691	20.36	24.00	Pass
60	5300	15.11	15.83	16.61	116.531	20.66	24.00	Pass
64	5320	15.21	16.09	16.31	116.59	20.67	24.00	Pass
100	5500	15.37	13.89	16.24	100.998	20.04	24.00	Pass
116	5580	14.98	13.91	16.42	99.934	20.00	24.00	Pass
140	5700	15.64	15.58	14.54	101.229	20.05	24.00	Pass
*144 (U-NII-2C Band)	5720	10.17	10.42	9.78	30.921	14.90	22.75	Pass
*144 (U-NII-3 Band)	5720	2.99	3.28	2.77	6.011	7.79	30.00	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)			Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1	Chain2		
144	5720	36.932	15.67	15.73	15.25	14.34	98.072	19.92

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.14	24.04 > 24
60	5300	20.14	24.04 > 24
64	5320	20.18	24.04 > 24
100	5500	20.17	24.04 > 24
116	5580	20.13	24.03 > 24
140	5700	20.03	24.01 > 24
144 (U-NII-2C Band)	5720	14.97	22.75 < 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2				
54	5270	18.62	18.83	18.94	227.505	23.57	24.00	Pass
62	5310	17.98	18.58	19.13	216.763	23.36	24.00	Pass
102	5510	18.34	17.27	19.26	205.901	23.14	24.00	Pass
110	5550	18.12	18.73	18.18	205.274	23.12	24.00	Pass
134	5670	18.16	17.52	19.24	205.903	23.14	24.00	Pass
*142 (U-NII-2C Band)	5710	13.68	12.84	12.83	61.752	17.91	24.00	Pass
*142 (U-NII-3 Band)	5710	0.99	0.38	-0.51	3.2367	5.10	30.00	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)			Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1	Chain2		
142	5710	64.9887	18.13	19.21	18.12	17.49	204.336	23.10

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.65	27.19 > 24
62	5310	41.5	27.18 > 24
102	5510	41.5	27.18 > 24
110	5550	41.21	27.15 > 24
134	5670	41.37	27.16 > 24
142 (U-NII-2C Band)	5710	35.6	26.51 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2				
58	5290	17.61	17.55	17.74	173.991	22.41	24.00	Pass
106	5530	16.89	15.68	18.28	153.146	21.85	24.00	Pass
122	5610	19.03	17.74	20.06	240.804	23.82	24.00	Pass
*138 (U-NII-2C Band)	5690	11.96	12.11	14.36	59.249	17.73	24.00	Pass
*138 (U-NII-3 Band)	5690	-4.49	-4.66	-2.22	1.2974	1.13	30.00	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)			Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1	Chain2		
138	5690	60.5464	17.82	18.48	18.72	19.96	244.026	23.87

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	80.97	30.08 > 24
106	5530	81.2	30.09 > 24
122	5610	80.9	30.07 > 24
138 (U-NII-2C Band)	5690	75.6	29.78 > 24

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2				
52	5260	15.32	15.71	15.73	108.691	20.36	20.69	Pass
60	5300	15.11	15.83	16.61	116.531	20.66	20.69	Pass
64	5320	15.21	16.09	16.31	116.59	20.67	20.69	Pass
100	5500	15.37	13.89	16.24	100.998	20.04	20.21	Pass
116	5580	14.98	13.91	16.42	99.934	20.00	20.21	Pass
140	5700	15.64	15.58	14.54	101.229	20.05	20.21	Pass
*144 (U-NII-2C Band)	5720	10.17	10.42	9.78	30.921	14.90	18.96	Pass
*144 (U-NII-3 Band)	5720	2.99	3.28	2.77	6.011	7.79	26.21	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

1. For U-NII-2A: the directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.31 dBi > 6 dBi, so the power limit shall be reduced to “Determined Conducted Limit-(9.31-6)”.
2. For U-NII-2C, U-NII-3: the directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.79 dBi > 6 dBi, so the power limit shall be reduced to “Determined Conducted Limit-(9.79-6)”.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)			Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1	Chain2		
144	5720	36.932	15.67	15.73	15.25	14.34	98.072	19.92

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.14	24.04 > 24
60	5300	20.14	24.04 > 24
64	5320	20.18	24.04 > 24
100	5500	20.17	24.04 > 24
116	5580	20.13	24.03 > 24
140	5700	20.03	24.01 > 24
144 (U-NII-2C Band)	5720	14.97	22.75 < 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2				
54	5270	15.89	15.71	16.11	116.886	20.68	20.69	Pass
62	5310	14.96	15.73	16.24	110.817	20.45	20.69	Pass
102	5510	15.46	14.34	16.21	104.103	20.17	20.21	Pass
110	5550	15.04	15.81	15.08	102.233	20.10	20.21	Pass
134	5670	15.13	14.62	16.28	104.019	20.17	20.21	Pass
*142 (U-NII-2C Band)	5710	10.74	8.55	8.12	25.505	14.07	20.21	Pass
*142 (U-NII-3 Band)	5710	-3.52	-2.72	-5.04	1.2925	1.11	26.21	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

1. For U-NII-2A: the directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.31 dBi > 6 dBi, so the power limit shall be reduced to “Determined Conducted Limit-(9.31-6)”.
2. For U-NII-2C, U-NII-3: the directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.79 dBi > 6 dBi, so the power limit shall be reduced to “Determined Conducted Limit-(9.79-6)”.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)			Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1	Chain2		
142	5710	26.7975	14.28	16.25	15.07	14.53	102.685	20.12

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.65	27.19 > 24
62	5310	41.5	27.18 > 24
102	5510	41.5	27.18 > 24
110	5550	41.21	27.15 > 24
134	5670	41.37	27.16 > 24
142 (U-NII-2C Band)	5710	35.6	26.51 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2				
58	5290	15.69	15.43	15.81	110.089	20.42	20.69	Pass
106	5530	14.96	13.78	16.34	98.264	19.92	20.21	Pass
122	5610	15.13	13.89	16.11	97.906	19.91	20.21	Pass
*138 (U-NII-2C Band)	5690	7.86	8.51	9.75	22.646	13.55	20.21	Pass
*138 (U-NII-3 Band)	5690	-8.24	-8.49	-6.58	0.5113	-2.91	26.21	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

1. For U-NII-2A: the directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.31 dBi > 6 dBi, so the power limit shall be reduced to “Determined Conducted Limit-(9.31-6)”.
2. For U-NII-2C, U-NII-3: the directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.79 dBi > 6 dBi, so the power limit shall be reduced to “Determined Conducted Limit-(9.79-6)”.

The Total Power for the straddle channel and power meter value for reference only:

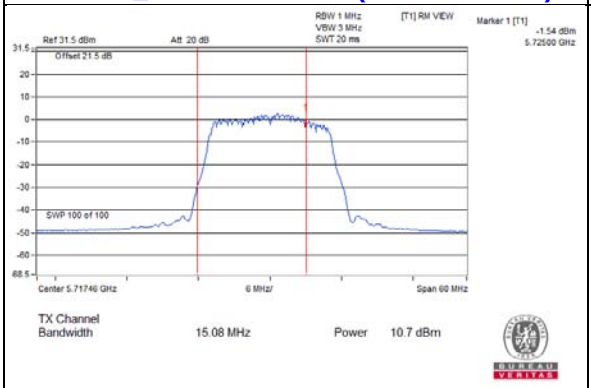
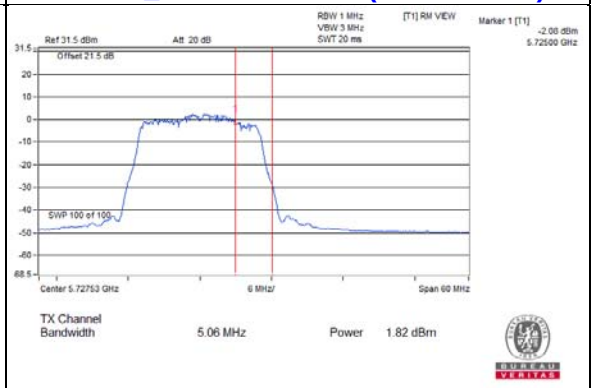
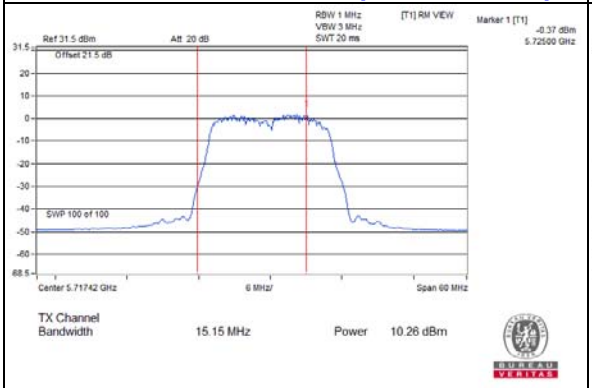
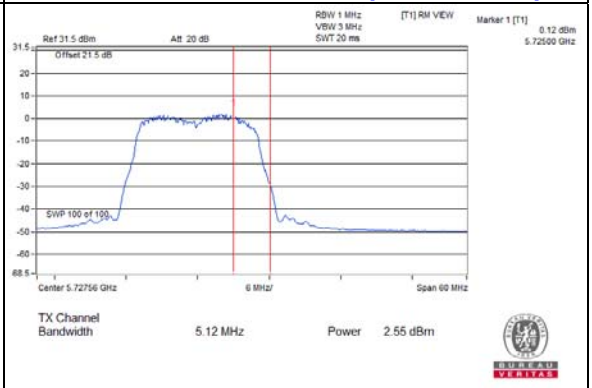
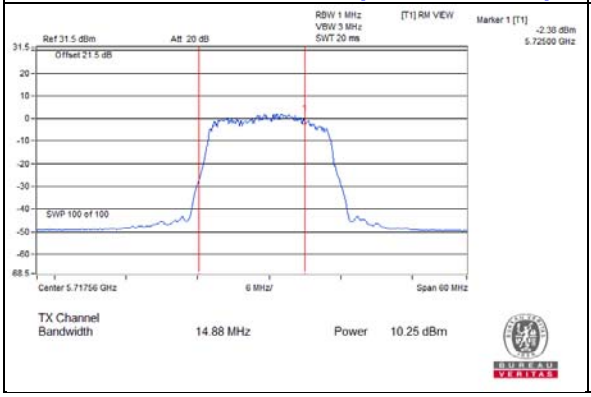
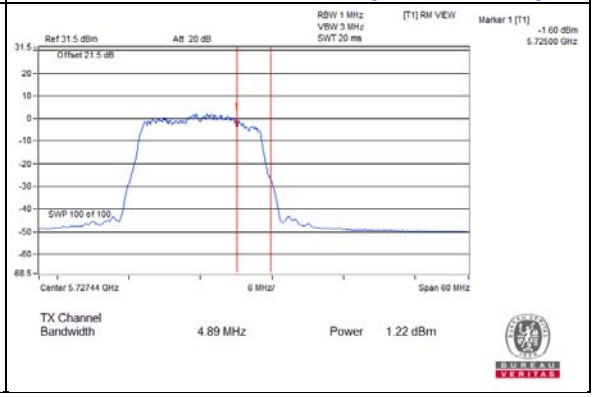
Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)			Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1	Chain2		
138	5690	23.1573	13.65	14.63	14.86	16.02	99.654	19.98

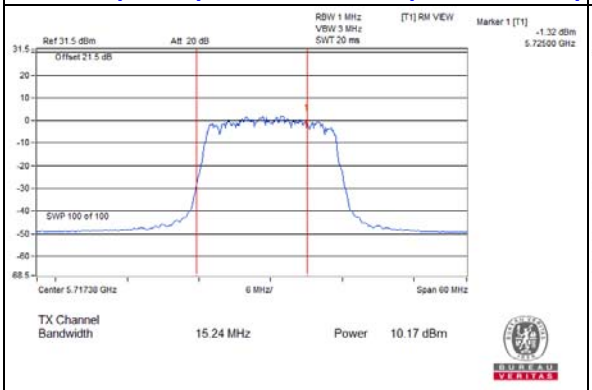
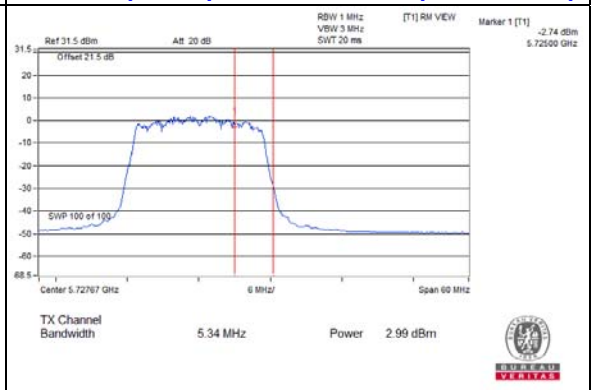
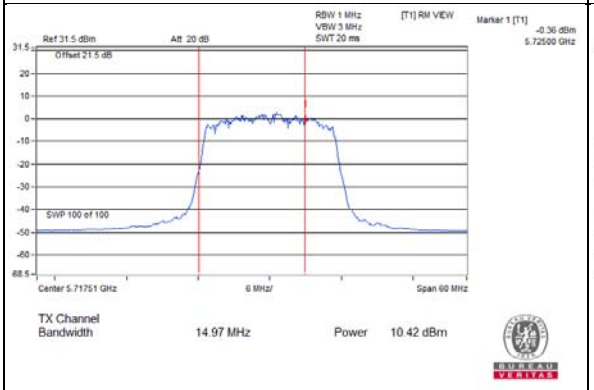
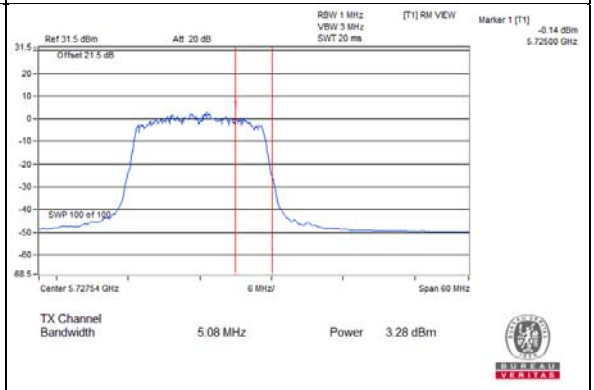
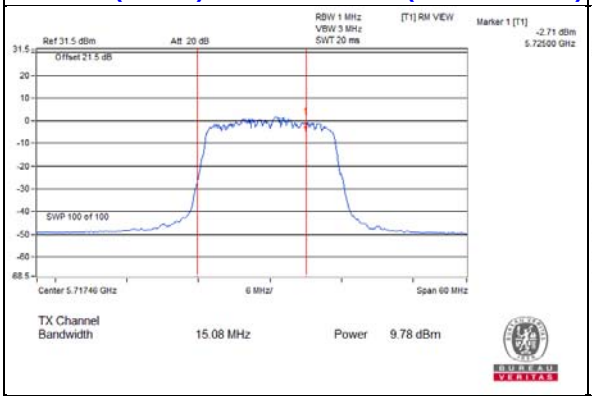
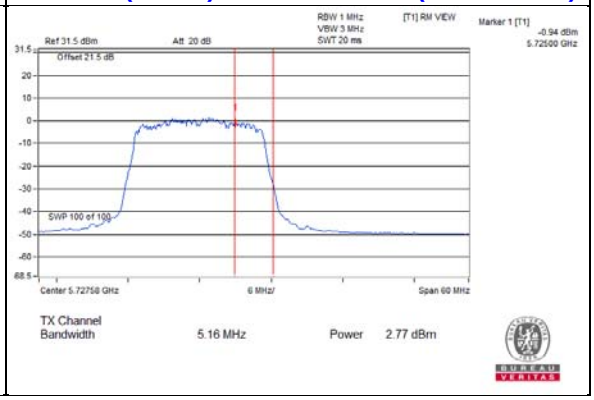
Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

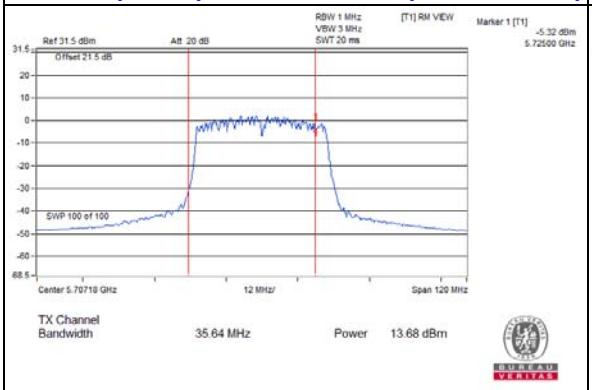
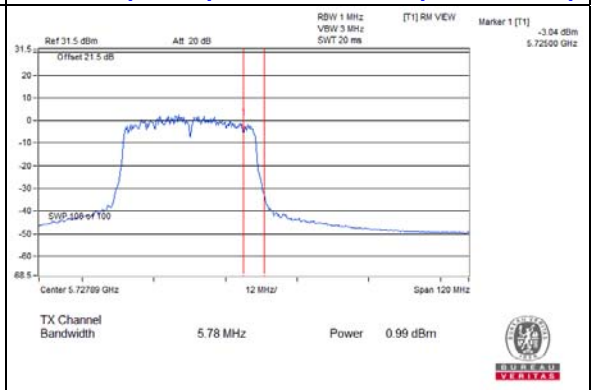
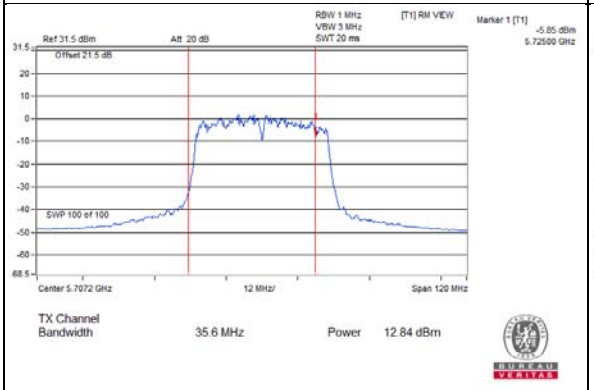
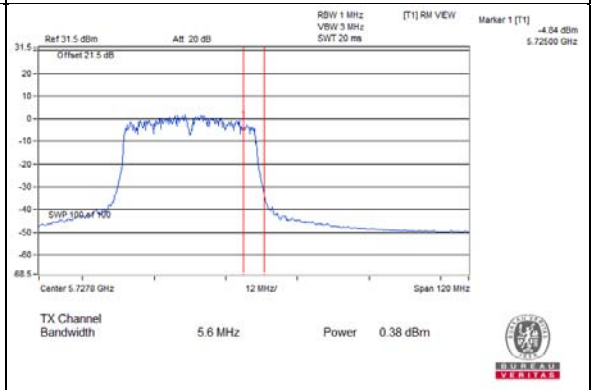
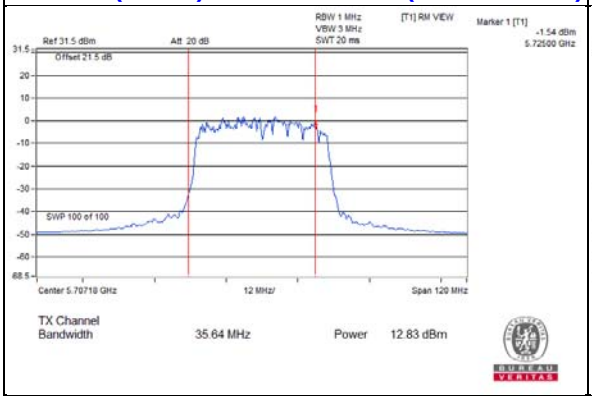
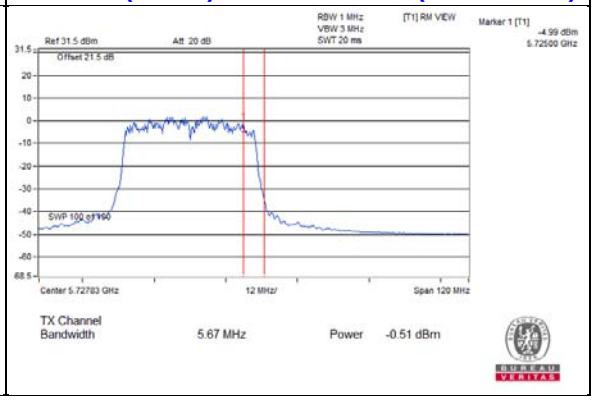
Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	80.97	30.08 > 24
106	5530	81.2	30.09 > 24
122	5610	80.9	30.07 > 24
138 (U-NII-2C Band)	5690	75.6	29.78 > 24

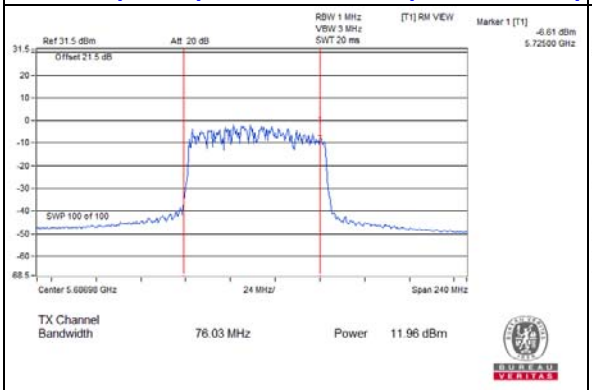
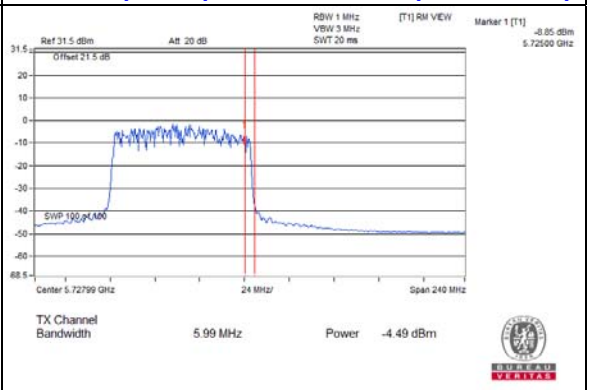
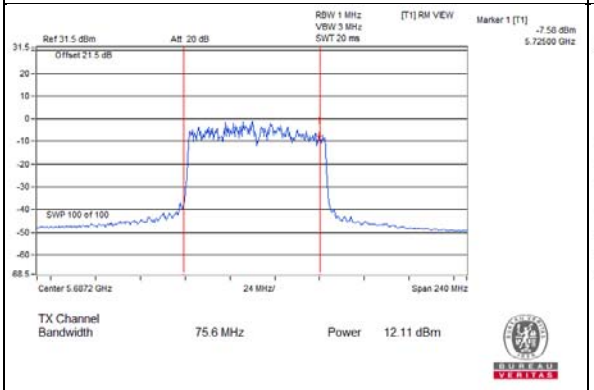
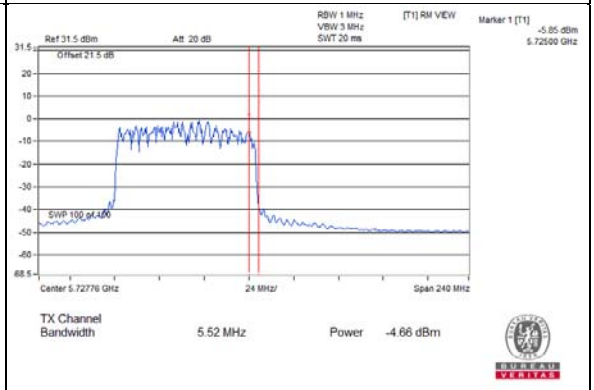
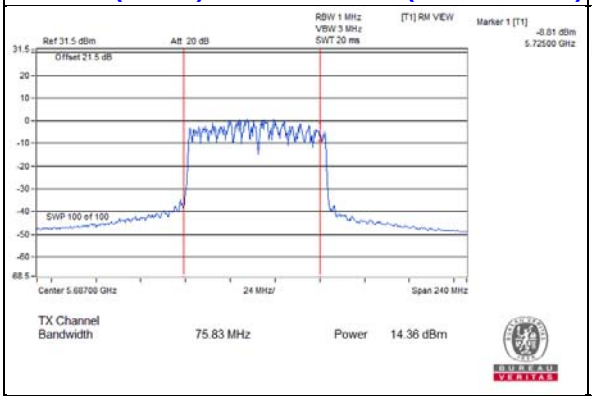
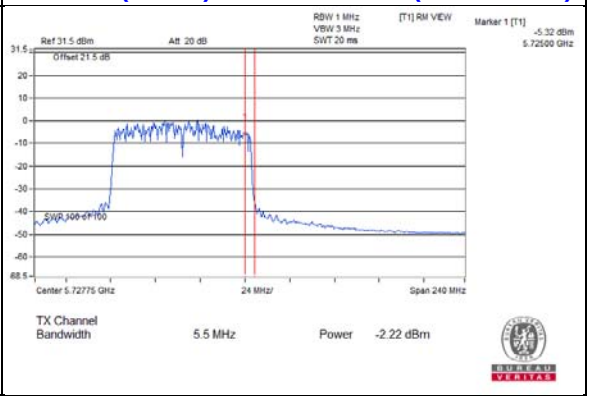
For channel straddling 5725MHz of Power

CDD Mode

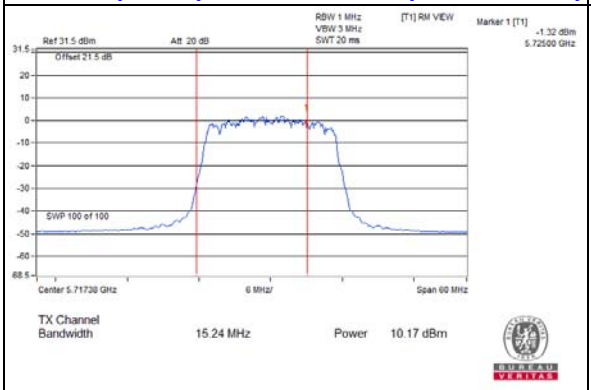
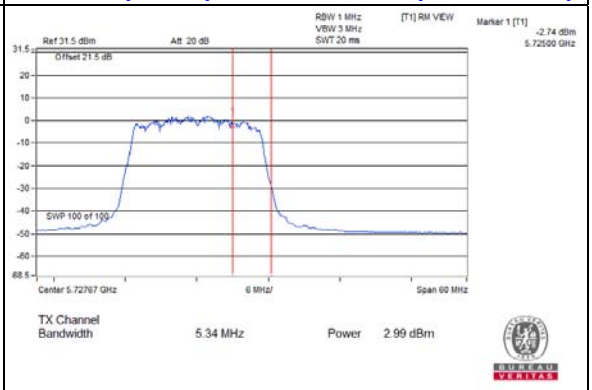
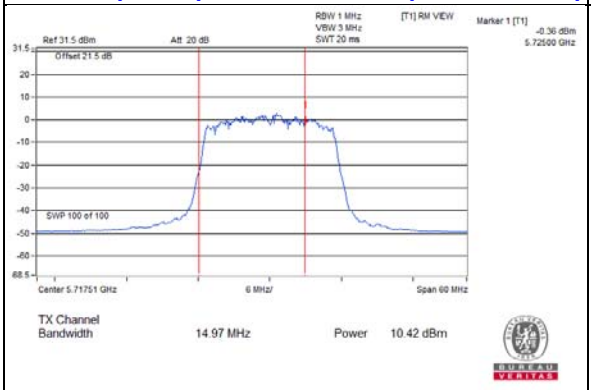
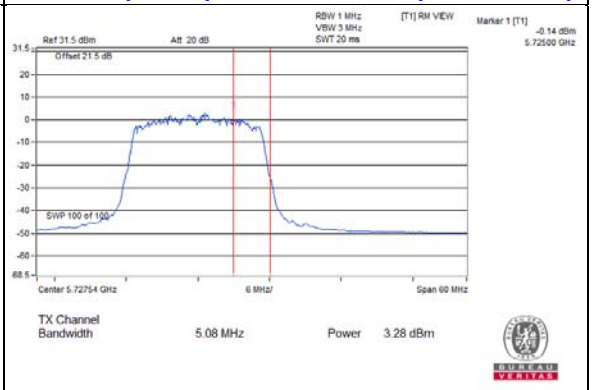
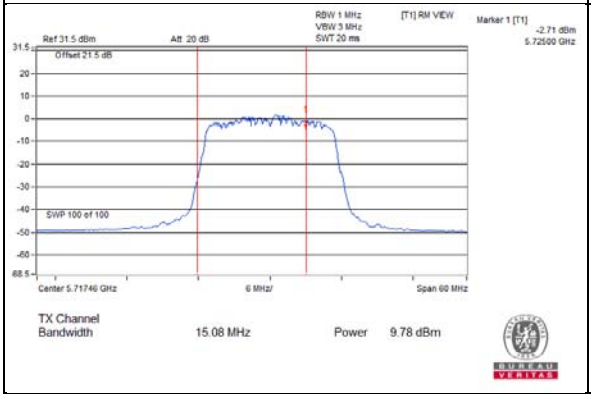
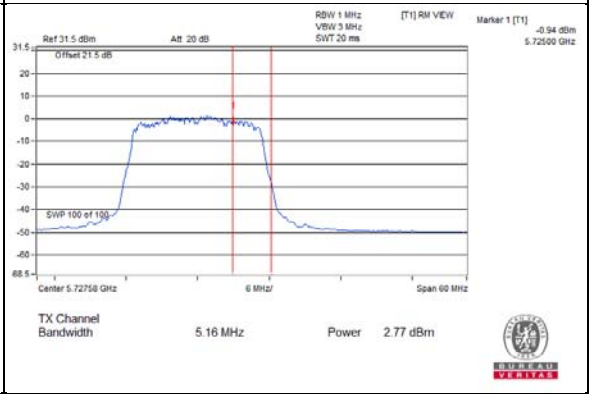
Spectrum Plot Value of Power	
802.11a_Chain 0 / CH144 (U-NII-2C Band)	**802.11a_Chain 0 / CH144 (U-NII-3 Band)**
	
802.11a_Chain 1 / CH144 (U-NII-2C Band)	**802.11a_Chain 1 / CH144 (U-NII-3 Band)**
	
802.11a_Chain 2 / CH144 (U-NII-2C Band)	**802.11a_Chain 2 / CH144 (U-NII-3 Band)**
	

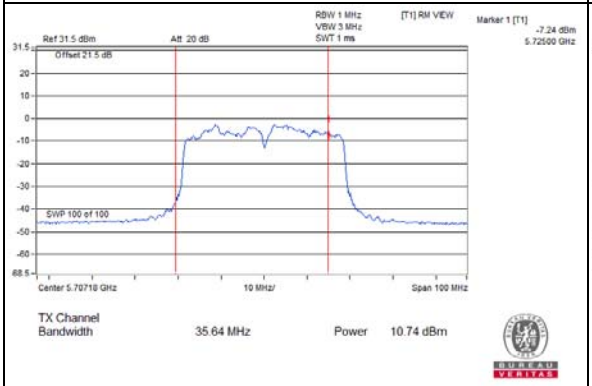
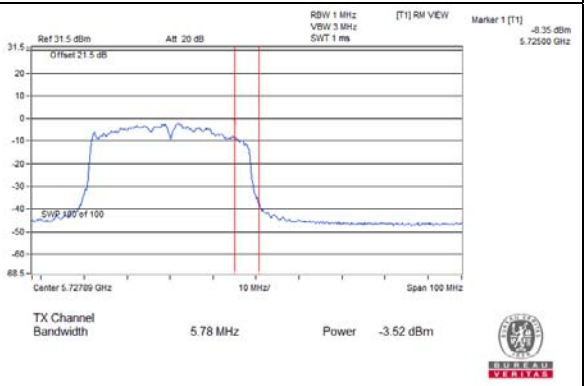
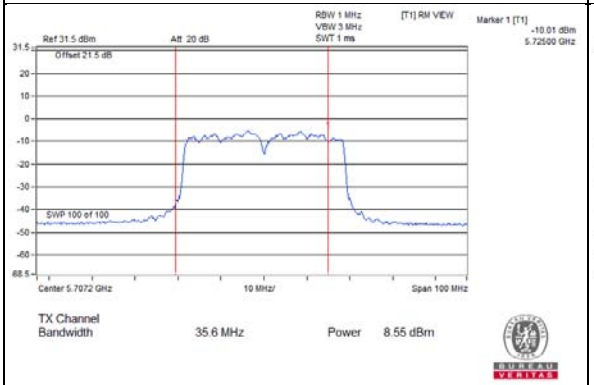
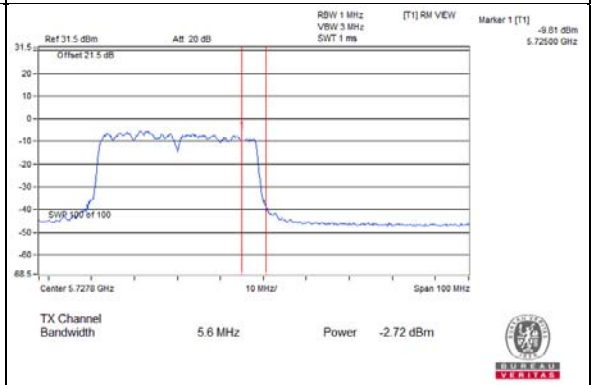
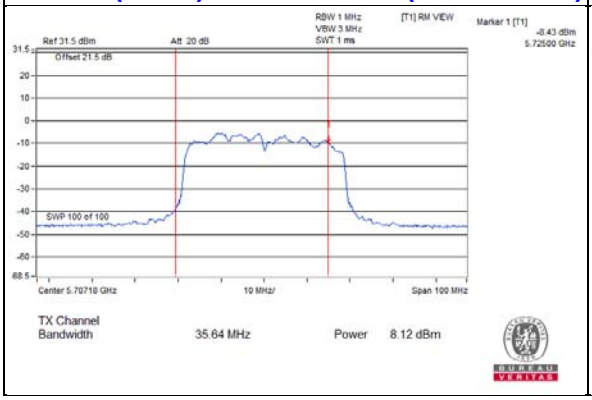
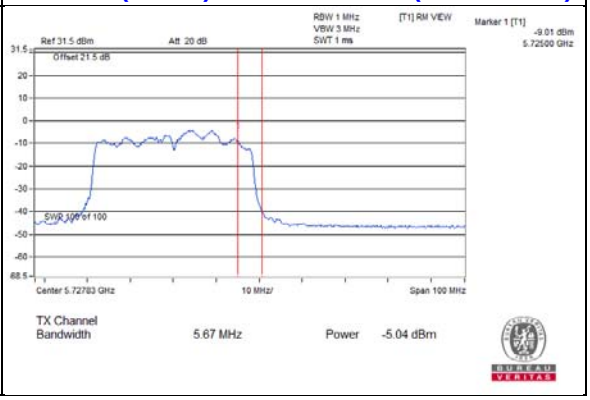
Spectrum Plot Value of Power	
802.11ac (VHT20)_Chain 0 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 0 / CH144 (U-NII-3 Band)**
	
802.11ac (VHT20)_Chain 1 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 1 / CH144 (U-NII-3 Band)**
	
802.11ac (VHT20)_Chain 2 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 2 / CH144 (U-NII-3 Band)**
	

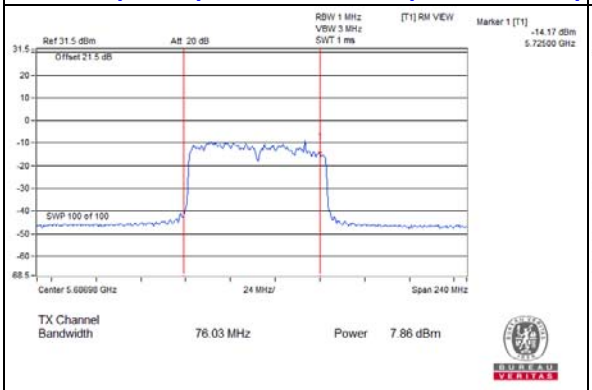
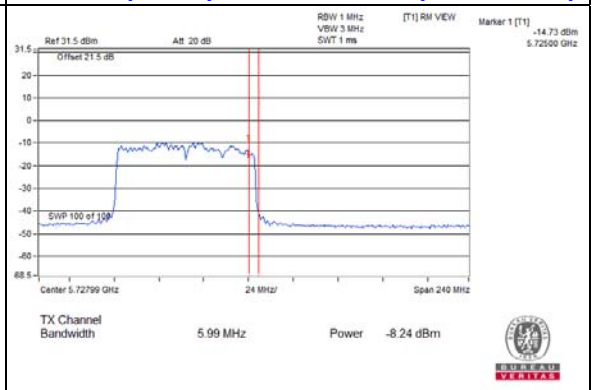
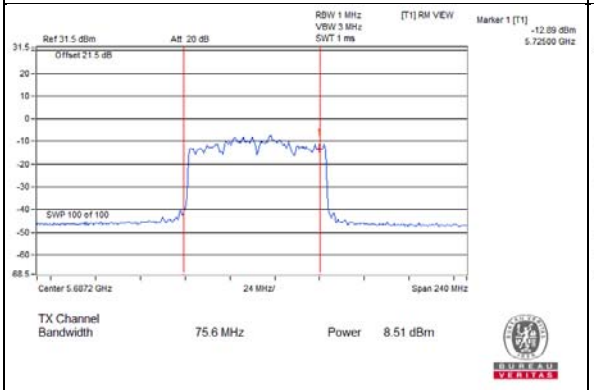
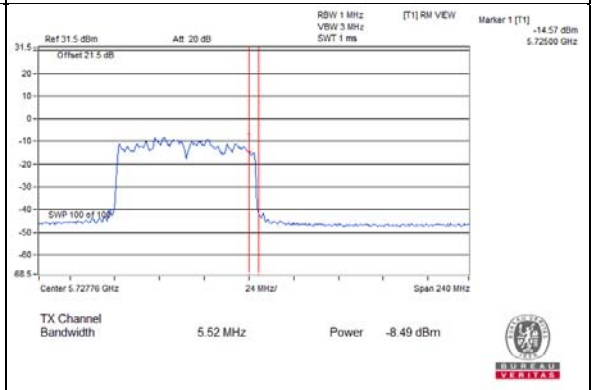
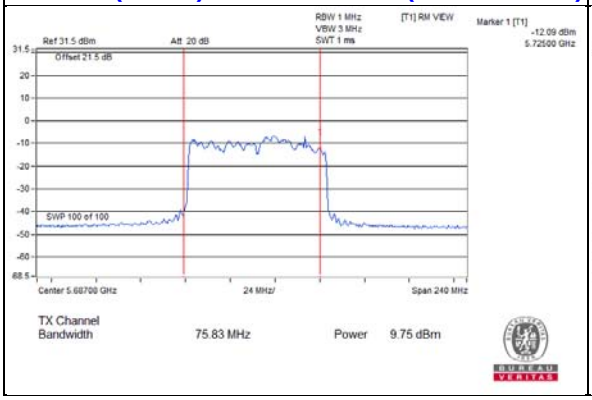
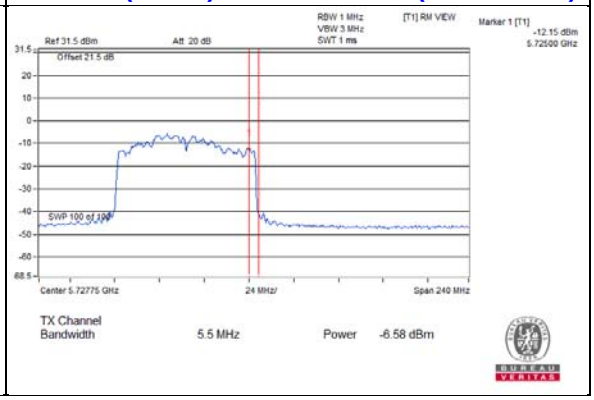
Spectrum Plot Value of Power	
802.11ac (VHT40)_Chain 0 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 0 / CH142 (U-NII-3 Band)**
	
802.11ac (VHT40)_Chain 1 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 1 / CH142 (U-NII-3 Band)**
	
802.11ac (VHT40)_Chain 2 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 2 / CH142 (U-NII-3 Band)**
	

Spectrum Plot Value of Power	
802.11ac (VHT80)_Chain 0 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 0 / CH138 (U-NII-3 Band)**
	
802.11ac (VHT80)_Chain 1 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 1 / CH138 (U-NII-3 Band)**
	
802.11ac (VHT80)_Chain 2 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 2 / CH138 (U-NII-3 Band)**
	

Beamforming Mode

Spectrum Plot Value of Power	
802.11ac (VHT20)_Chain 0 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 0 / CH144 (U-NII-3 Band)**
	
802.11ac (VHT20)_Chain 1 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 1 / CH144 (U-NII-3 Band)**
	
802.11ac (VHT20)_Chain 2 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 2 / CH144 (U-NII-3 Band)**
	

Spectrum Plot Value of Power	
802.11ac (VHT40)_Chain 0 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 0 / CH142 (U-NII-3 Band)**
	
802.11ac (VHT40)_Chain 1 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 1 / CH142 (U-NII-3 Band)**
	
802.11ac (VHT40)_Chain 2 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 2 / CH142 (U-NII-3 Band)**
	

Spectrum Plot Value of Power	
802.11ac (VHT80)_Chain 0 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 0 / CH138 (U-NII-3 Band)**
	
802.11ac (VHT80)_Chain 1 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 1 / CH138 (U-NII-3 Band)**
	
802.11ac (VHT80)_Chain 2 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 2 / CH138 (U-NII-3 Band)**
	

26dB OCCUPIED BANDWIDTH

CDD Mode

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
52	5260	20.24	20.23	19.87	Pass
60	5300	20.15	20.43	19.95	Pass
64	5320	20.48	20.37	19.96	Pass
100	5500	20.33	20.03	19.8	Pass
116	5580	20.12	20.37	20.06	Pass
140	5700	20.14	20.38	19.96	Pass
144 (U-NII-2C Band)	5720	15.08	15.15	14.88	Pass
144 (U-NII-3 Band)	5720	5.06	5.12	4.89	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
52	5260	20.59	20.14	20.21	Pass
60	5300	20.61	20.14	20.28	Pass
64	5320	20.62	20.18	20.29	Pass
100	5500	20.56	20.17	20.34	Pass
116	5580	20.6	20.13	20.26	Pass
140	5700	20.55	20.03	20.22	Pass
144 (U-NII-2C Band)	5720	15.24	14.97	15.08	Pass
144 (U-NII-3 Band)	5720	5.34	5.08	5.16	Pass

802.11ac (VHT40)

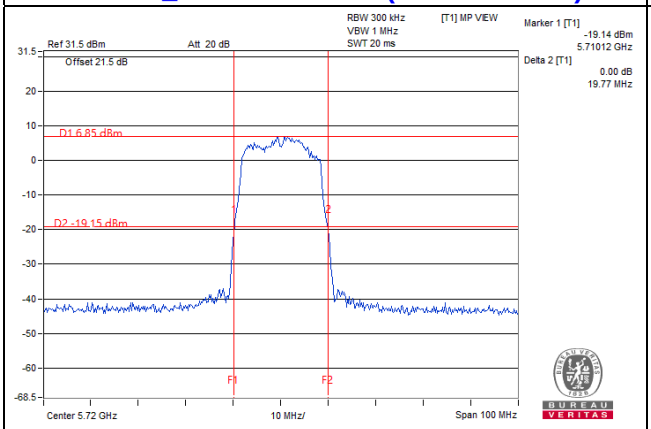
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
54	5270	41.74	41.65	41.75	Pass
62	5310	41.52	41.53	41.5	Pass
102	5510	41.58	41.6	41.5	Pass
110	5550	41.58	41.21	41.52	Pass
134	5670	41.69	41.37	41.74	Pass
142 (U-NII-2C Band)	5710	35.64	35.6	35.64	Pass
142 (U-NII-3 Band)	5710	5.78	5.6	5.67	Pass

802.11ac (VHT80)

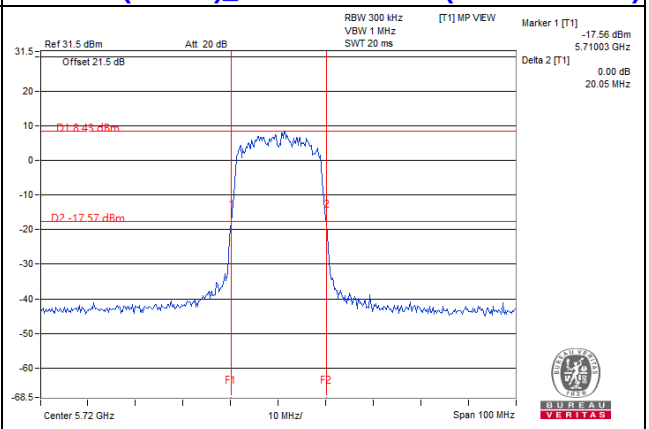
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
58	5290	82.29	80.97	81.36	Pass
106	5530	82.12	81.2	81.24	Pass
122	5610	82.47	80.9	81.14	Pass
138 (U-NII-2C Band)	5690	76.03	75.6	75.83	Pass
138 (U-NII-3 Band)	5690	5.99	5.52	5.5	Pass

Spectrum Plot of Worst Value

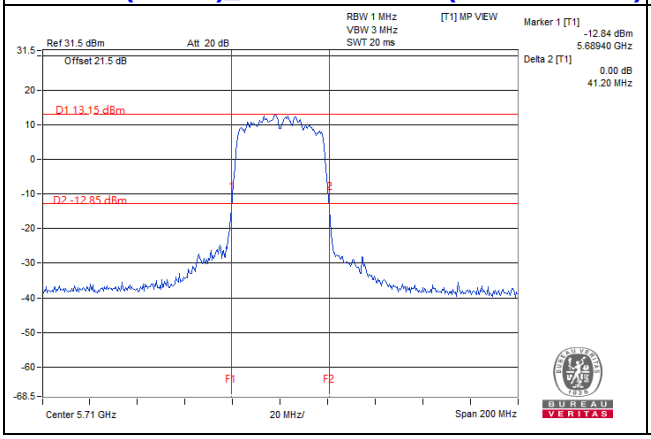
802.11a_Chain 2 / CH144 (U-NII-2C Band)



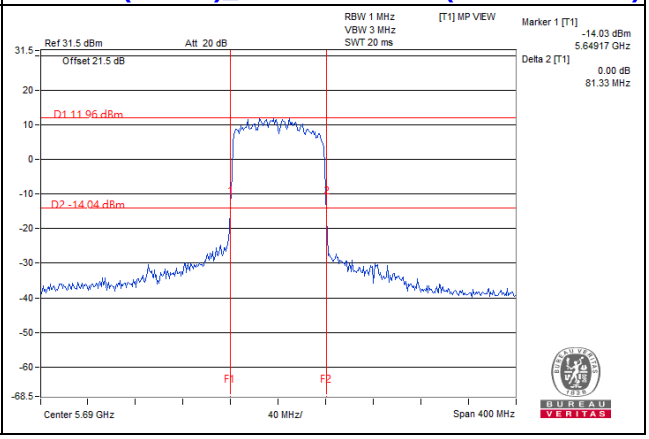
802.11ac (VHT20)_Chain 1 / CH144 (U-NII-2C Band)



802.11ac (VHT40)_Chain 1 / CH142 (U-NII-2C Band)



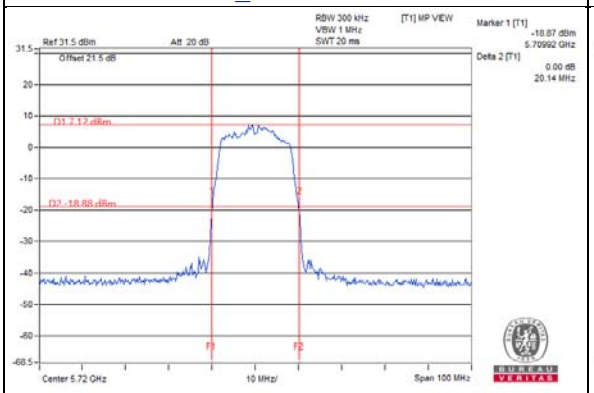
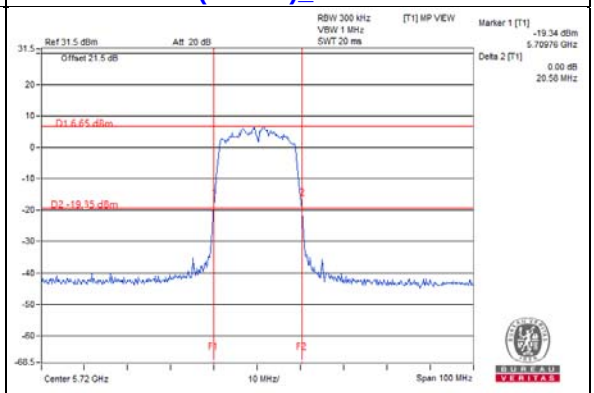
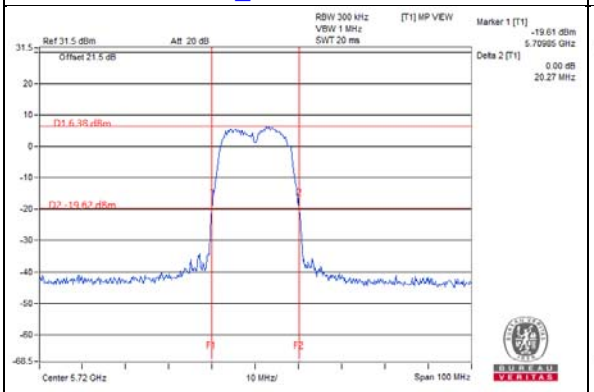
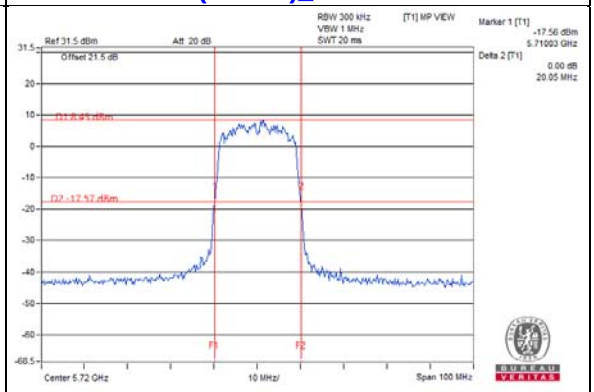
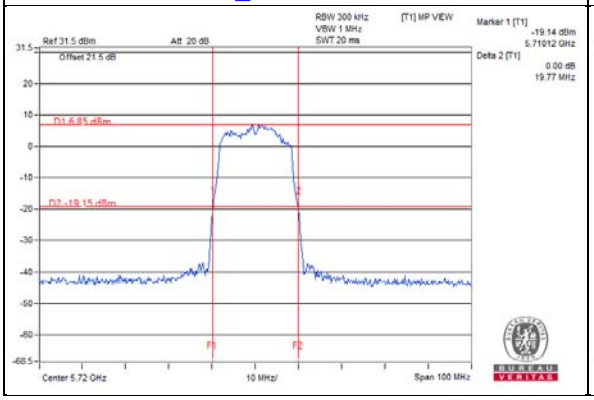
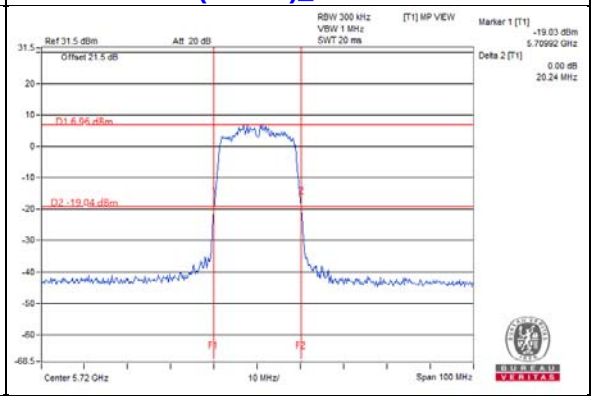
802.11ac (VHT80)_Chain 2 / CH138 (U-NII-2C Band)

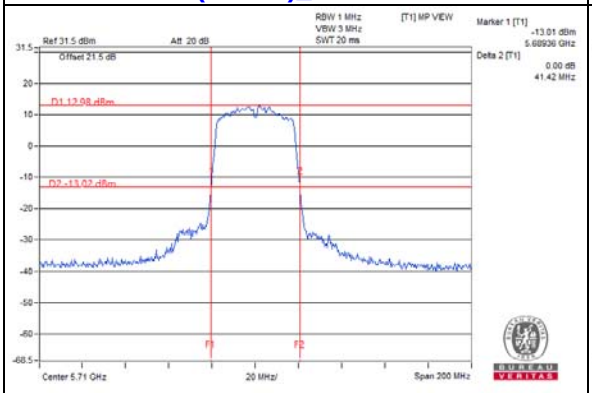
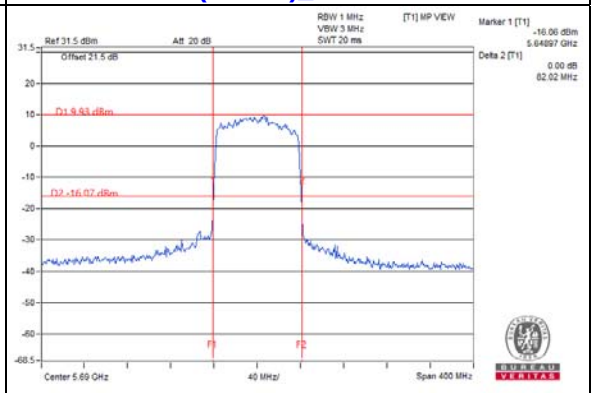
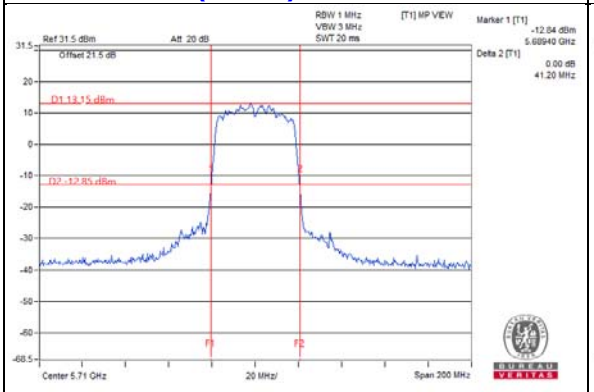
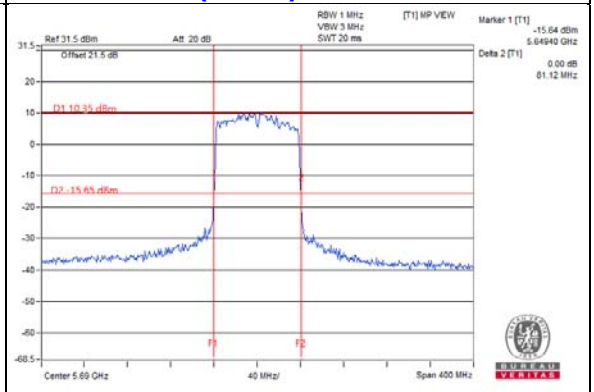
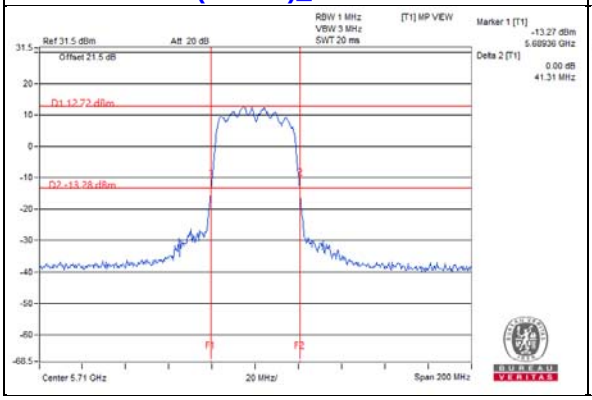
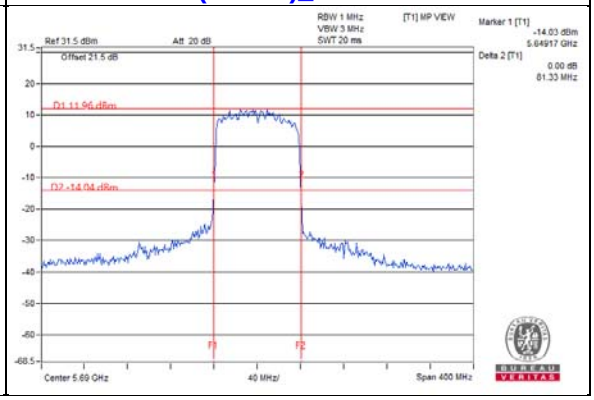


Note:

For CH144 (U-NII-2C) = 5725MHz - Marker 1
For CH142 (U-NII-2C) = 5725MHz - Marker 1
For CH138 (U-NII-2C) = 5725MHz - Marker 1

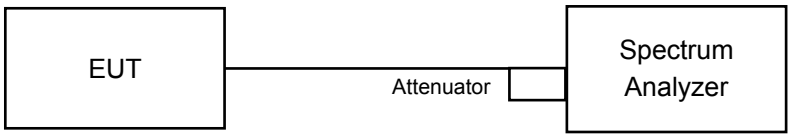
For channel straddling 5725MHz of 26dB BW

Spectrum Plot Value of 26dB BW	
802.11a_Chain 0 / CH144	**802.11ac (VHT20)_Chain 0 / CH144**
	
802.11a_Chain 1 / CH144	**802.11ac (VHT20)_Chain 1 / CH144**
	
802.11a_Chain 2 / CH144	**802.11ac (VHT20)_Chain 2 / CH144**
	

Spectrum Plot Value of 26dB BW	
802.11ac (VHT40)_Chain 0 / CH142	**802.11ac (VHT80)_Chain 0 / CH138**
	
802.11ac (VHT40)_Chain 1 / CH142	**802.11ac (VHT80)_Chain 1 / CH138**
	
802.11ac (VHT40)_Chain 2 / CH142	**802.11ac (VHT80)_Chain 2 / CH138**
	

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to SAMPLE. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Test Results

CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
52	5260	16.56	16.44	16.44	Pass
60	5300	16.56	16.44	16.32	Pass
64	5320	16.68	16.56	16.44	Pass
100	5500	16.56	16.56	16.44	Pass
116	5580	16.68	16.56	16.44	Pass
140	5700	16.56	16.44	16.44	Pass
144 (U-NII-2C Band)	5720	13.4	13.4	13.4	Pass
144 (U-NII-3 Band)	5720	3.28	3.16	3.16	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
52	5260	17.64	17.64	17.52	Pass
60	5300	17.64	17.64	17.64	Pass
64	5320	17.76	17.52	17.64	Pass
100	5500	17.76	17.64	17.52	Pass
116	5580	17.76	17.64	17.64	Pass
140	5700	17.64	17.4	17.64	Pass
144 (U-NII-2C Band)	5720	13.88	13.88	13.88	Pass
144 (U-NII-3 Band)	5720	3.76	3.76	3.76	Pass

802.11ac (VHT40)

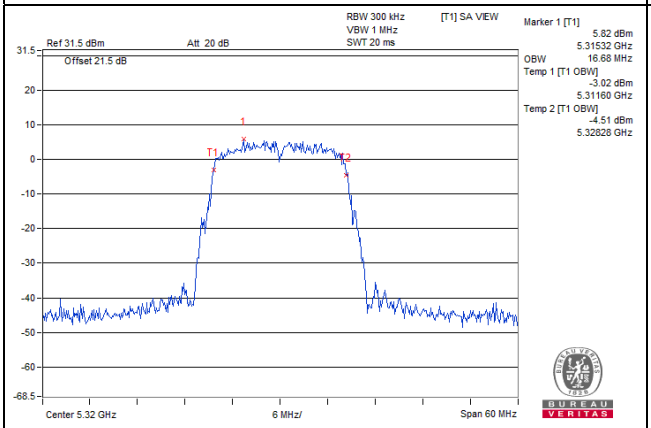
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
54	5270	36.24	36.48	36	Pass
62	5310	36.24	36.24	36.24	Pass
102	5510	36.24	36.72	36.24	Pass
110	5550	36.24	36.24	36	Pass
134	5670	36.24	36.24	36.24	Pass
142 (U-NII-2C Band)	5710	33.24	33.24	33	Pass
142 (U-NII-2C Band)	5710	3	3	2.76	Pass

802.11ac (VHT80)

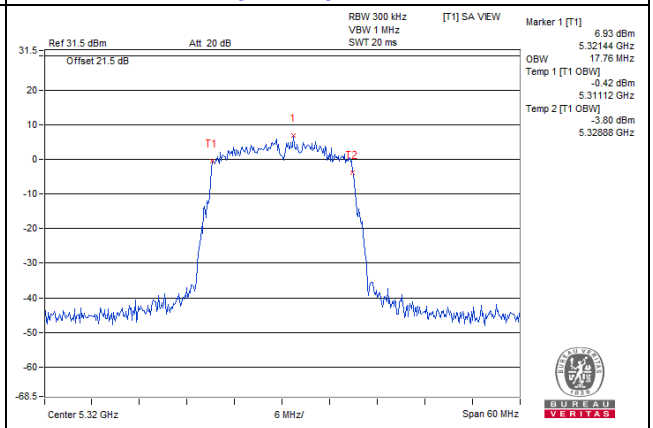
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain0	Chain1	Chain2	
58	5290	75.36	75.36	75.36	Pass
106	5530	75.36	75.84	75.36	Pass
122	5610	75.36	75.36	75.36	Pass
138 (U-NII-2C Band)	5690	72.92	72.92	72.92	Pass
138 (U-NII-3 Band)	5690	2.44	2.44	2.44	Pass

Spectrum Plot of Worst Value

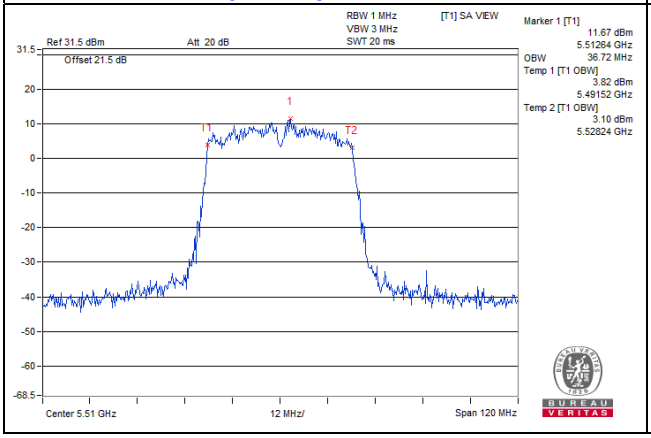
802.11a_Chain 0 / CH64



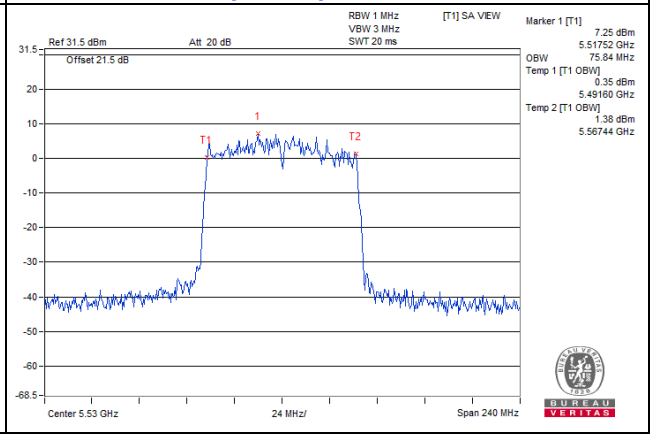
802.11ac (VHT20)_Chain 0 / CH64



802.11ac (VHT40)_Chain 1 / CH102



802.11ac (VHT80)_Chain 1 / CH106

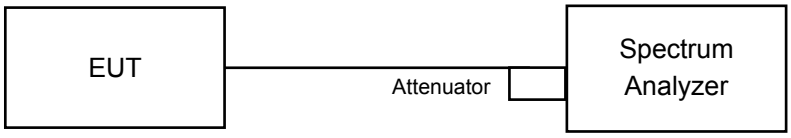


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For U-NII-2A, U-NII-2C band:

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(500kHz/300kHz)
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)			Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1	Chain2				
52	5260	2.82	2.09	2.68	0.19	7.50	7.69	Pass
60	5300	2.67	1.57	2.80	0.19	7.34	7.69	Pass
64	5320	2.35	1.62	3.62	0.19	7.57	7.69	Pass
100	5500	2.44	1.70	2.27	0.19	7.11	7.21	Pass
116	5580	1.71	1.04	3.27	0.19	7.07	7.21	Pass
140	5700	3.32	-0.46	1.56	0.19	6.70	7.21	Pass
144 (U-NII-2C Band)	5720	1.47	1.13	1.46	0.19	6.32	7.21	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. For U-NII-2A: The directional gain is = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2$ / 3] = 9.31 dBi, so the power density limit shall be reduced to 11-(9.31-6) = 7.69 dBm.
3. For U-NII-2C: The directional gain is = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2$ / 3] = 9.79 dBi, so the power density limit shall be reduced to 11-(9.79-6) = 7.21 dBm.
4. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)			Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1	Chain2				
52	5260	1.62	2.85	2.61	0.21	7.37	7.69	Pass
60	5300	1.47	1.05	3.58	0.21	7.16	7.69	Pass
64	5320	1.50	2.03	3.60	0.21	7.45	7.69	Pass
100	5500	0.97	2.38	2.15	0.21	6.86	7.21	Pass
116	5580	2.18	1.40	1.68	0.21	6.75	7.21	Pass
140	5700	2.20	1.94	0.31	0.21	6.54	7.21	Pass
144 (U-NII-2C Band)	5720	0.34	2.67	1.37	0.21	6.55	7.21	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. For U-NII-2A: The directional gain is = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2$ / 3] = 9.31 dBi, so the power density limit shall be reduced to 11-(9.31-6) = 7.69 dBm.
3. For U-NII-2C: The directional gain is = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2$ / 3] = 9.79 dBi, so the power density limit shall be reduced to 11-(9.79-6) = 7.21 dBm.
4. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

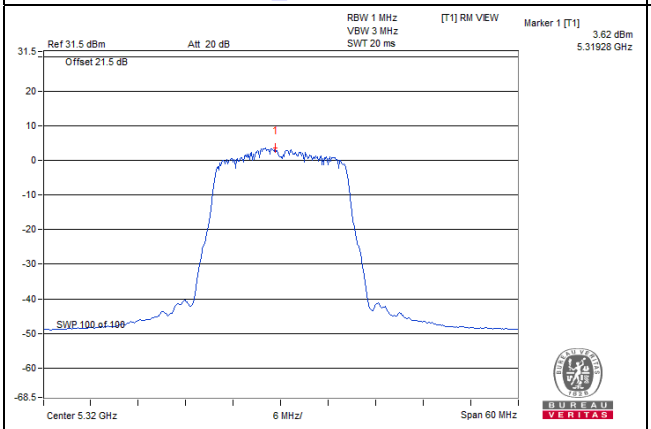
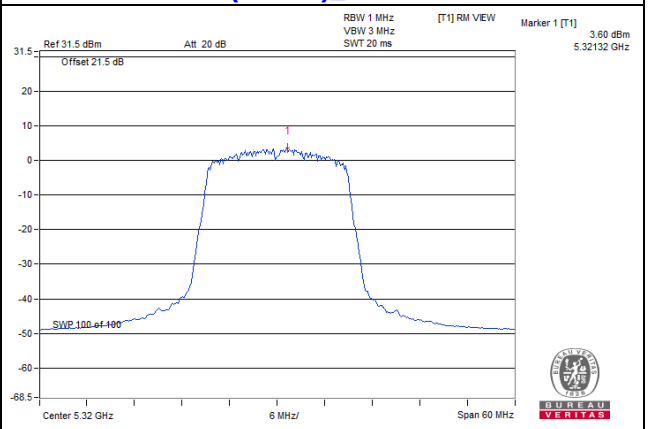
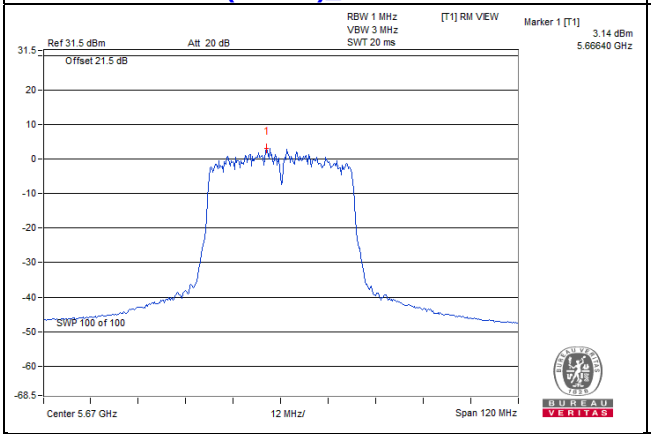
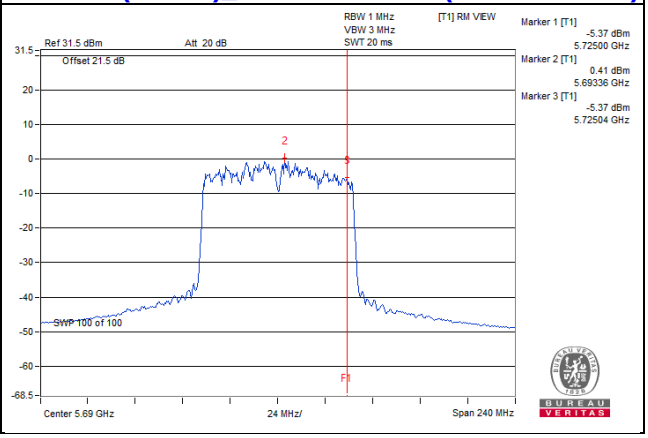
Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)			Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1	Chain2				
54	5270	1.42	2.88	1.17	0.40	7.06	7.69	Pass
62	5310	1.37	2.91	3.00	0.40	7.66	7.69	Pass
102	5510	2.32	1.26	2.07	0.40	7.08	7.21	Pass
110	5550	2.30	2.59	0.39	0.40	7.03	7.21	Pass
134	5670	3.14	1.00	1.66	0.40	7.20	7.21	Pass
142 (U-NII-2C Band)	5710	1.89	1.93	2.07	0.40	7.14	7.21	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. For U-NII-2A: The directional gain is = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.31 dBi, so the power density limit shall be reduced to 11-(9.31-6) = 7.69 dBm.
3. For U-NII-2C: The directional gain is = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.79 dBi, so the power density limit shall be reduced to 11-(9.79-6) = 7.21 dBm.
4. 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 (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1	Chain2				
58	5290	-3.05	-4.09	-3.59	0.76	1.98	7.69	Pass
106	5530	-2.14	-5.37	-2.72	0.76	2.33	7.21	Pass
122	5610	-1.39	-4.79	-0.49	0.76	3.66	7.21	Pass
138 (U-NII-2C Band)	5690	-2.72	-1.80	0.41	0.76	4.37	7.21	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. For U-NII-2A: The directional gain is = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.31 dBi, so the power density limit shall be reduced to 11-(9.31-6) = 7.69 dBm.
3. For U-NII-2C: The directional gain is = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.79 dBi, so the power density limit shall be reduced to 11-(9.79-6) = 7.21 dBm.
4. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 2 / CH64	**802.11ac (VHT20)_Chain 2 / CH64**
	
802.11ac (VHT40)_Chain 0 / CH134	**802.11ac (VHT80)_Chain 2 / CH138 (U-NII-2C Band)**
	

For U-NII-3:

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)			Duty Factor (dB)	Total PSD (dBm/300 kHz)	Total PSD (dBm/500 kHz)	PSD Limit (dBm/500 kHz)	Pass / Fail
		Chain0	Chain1	Chain2					
144 (U-NII-3 Band)	5720	-8.81	-7.07	-9.03	0.19	-3.25	-1.03	26.21	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain is = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2$ / 3] = 9.79 dBi, so the power density limit shall be reduced to 30-(9.79-6) = 26.21 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)			Duty Factor (dB)	Total PSD (dBm/300 kHz)	Total PSD (dBm/500 kHz)	PSD Limit (dBm/500 kHz)	Pass / Fail
		Chain0	Chain1	Chain2					
144 (U-NII-3 Band)	5720	-8.90	-8.55	-9.55	0.21	-4.00	-1.78	26.21	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain is = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2$ / 3] = 9.79 dBi, so the power density limit shall be reduced to 30-(9.79-6) = 26.21 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)			Duty Factor (dB)	Total PSD (dBm/300 kHz)	Total PSD (dBm/500 kHz)	PSD Limit (dBm/500 kHz)	Pass / Fail
		Chain0	Chain1	Chain2					
142 (U-NII-3 Band)	5710	-9.68	-10.63	-10.24	0.40	-4.99	-2.77	26.21	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain is = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2$ / 3] = 9.79 dBi, so the power density limit shall be reduced to 30-(9.79-6) = 26.21 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

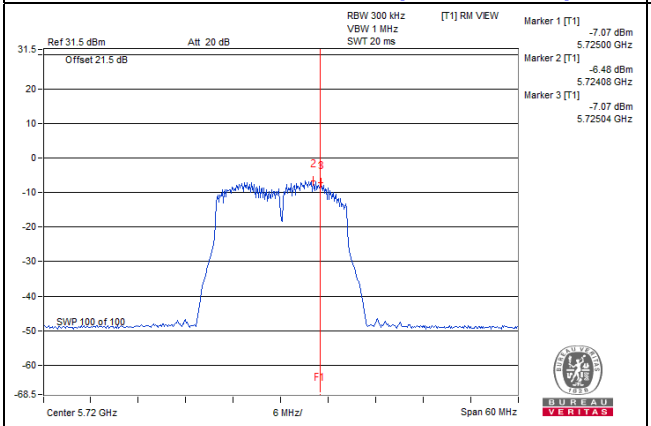
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)			Duty Factor (dB)	Total PSD (dBm/300 kHz)	Total PSD (dBm/500 kHz)	PSD Limit (dBm/500 kHz)	Pass / Fail
		Chain0	Chain1	Chain2					
138 (U-NII-3 Band)	5690	-15.22	-14.16	-12.07	0.76	-8.08	-5.86	26.21	Pass

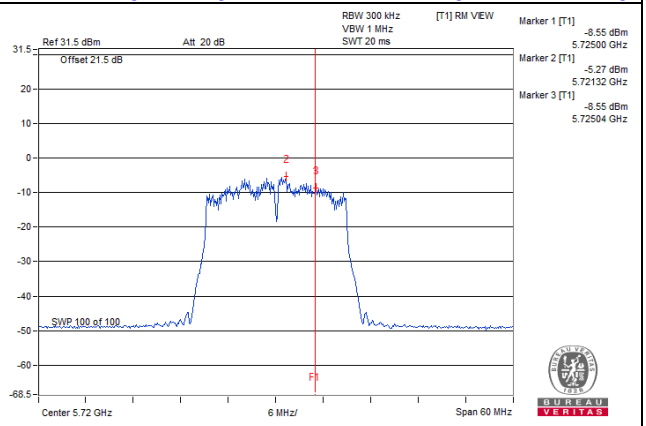
Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain is = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$)^2 / 3] = 9.79 dBi, so the power density limit shall be reduced to 30-(9.79-6) = 26.21 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

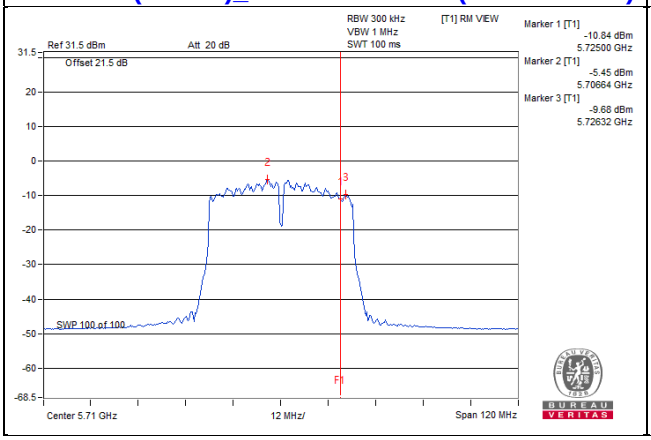
802.11a_Chain 1 / CH144 (U-NII-3 Band)



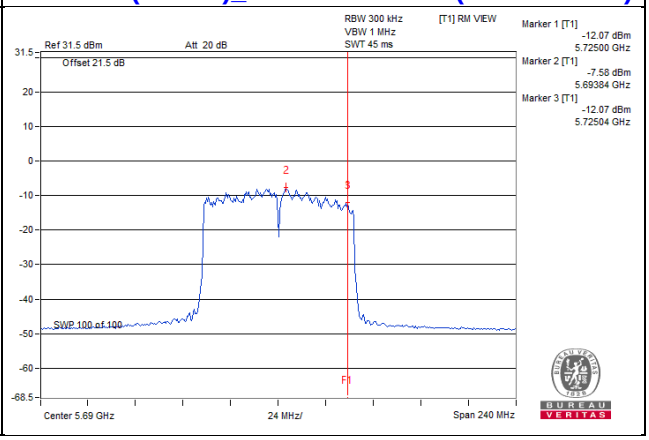
802.11ac (VHT20)_Chain 1 / CH144 (U-NII-3 Band)



802.11ac (VHT40)_Chain 0 / CH142 (U-NII-3 Band)



802.11ac (VHT80)_Chain 2 / CH138 (U-NII-3 Band)

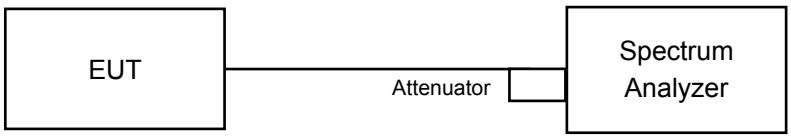


4.6 6dB Bandwidth Measurement

4.6.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1	Chain2		
144 (U-NII-3 Band)	5720	2.57	2.6	2.56	0.5	Pass

802.11ac (VHT20)

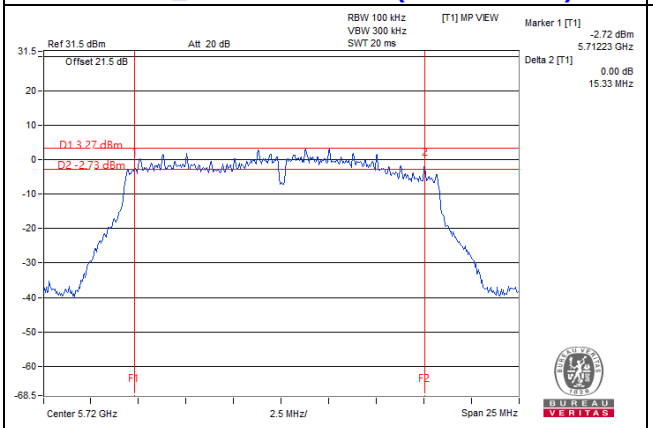
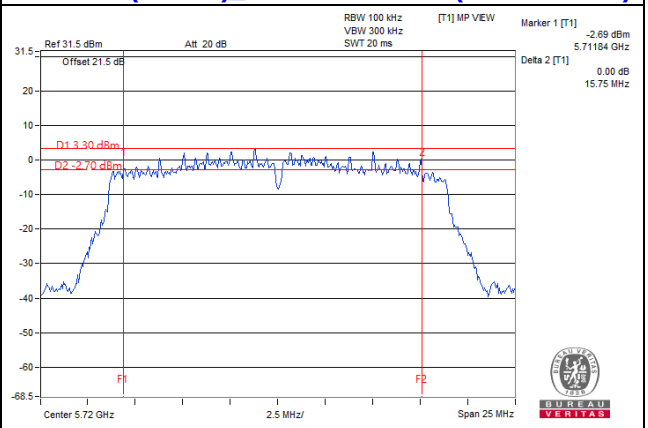
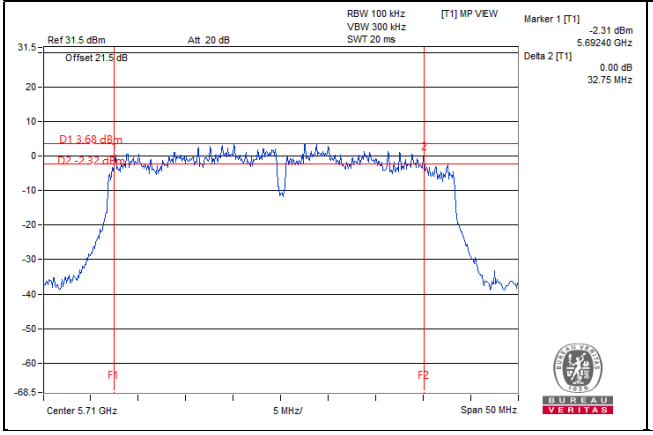
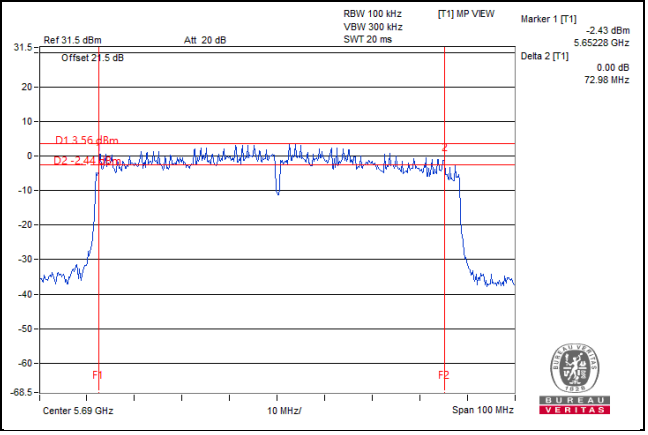
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1	Chain2		
144 (U-NII-3 Band)	5720	2.63	3.17	2.59	0.5	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1	Chain2		
142 (U-NII-3 Band)	5710	2.63	1.38	0.14	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1	Chain2		
138 (U-NII-3 Band)	5690	2.65	2.68	0.26	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 2 / CH144 (U-NII-3 Band)	**802.11ac (VHT20)_Chain 2 / CH144 (U-NII-3 Band)**
	
802.11ac (VHT40)_Chain 2 / CH142 (U-NII-3 Band)	**802.11ac (VHT80)_Chain 2 / CH138 (U-NII-3 Band)**
	

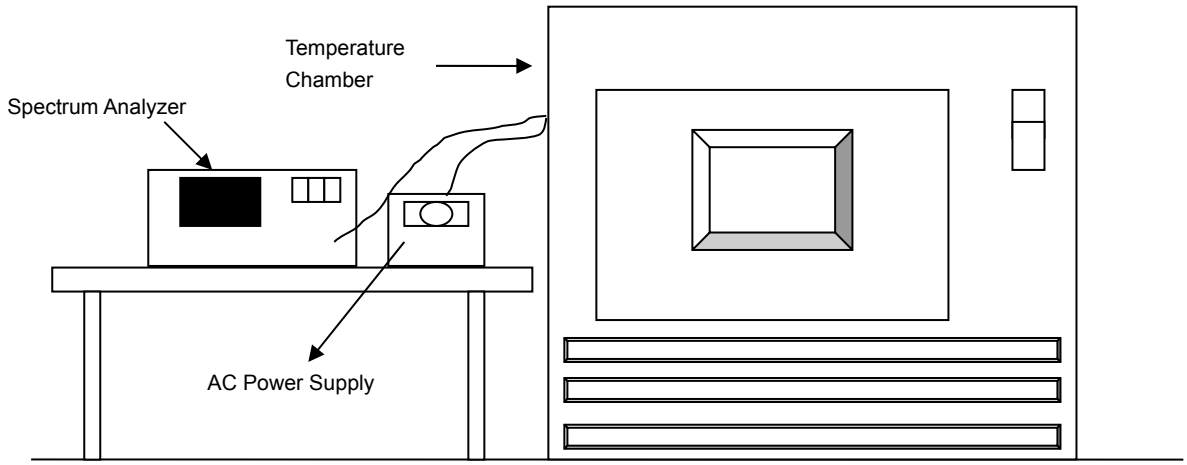
Note: The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

4.7 Frequency Stability Measurement

4.7.1 Limits of Frequency Stability Measurement

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

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

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

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5260 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
40	120	5260.0047	Pass	5260.0036	Pass	5260.0086	Pass	5260.0083	Pass
30	120	5260.003	Pass	5260.002	Pass	5260.005	Pass	5260.0011	Pass
20	120	5260.0063	Pass	5260.0098	Pass	5260.0056	Pass	5260.0054	Pass
10	120	5260.0212	Pass	5260.0201	Pass	5260.0216	Pass	5260.0198	Pass
0	120	5259.9975	Pass	5259.9985	Pass	5259.9947	Pass	5259.9965	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5260 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	5260.0072	Pass	5260.0097	Pass	5260.0062	Pass	5260.0045	Pass
	120	5260.0063	Pass	5260.0098	Pass	5260.0056	Pass	5260.0054	Pass
	102	5260.0071	Pass	5260.0091	Pass	5260.006	Pass	5260.0052	Pass

5 Pictures of Test Arrangements

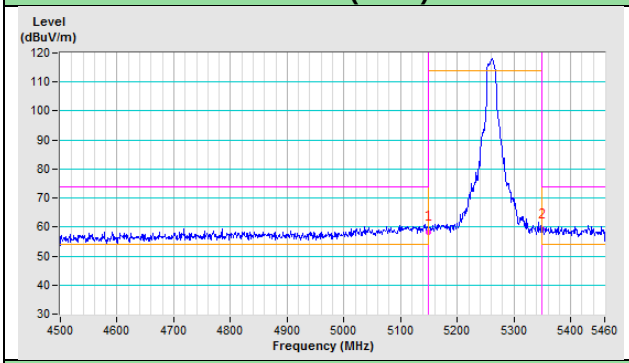
Please refer to the attached file (Test Setup Photo).

Annex A - Band-Edge Measurement (For U-NII-2A, U-NII-2C band)

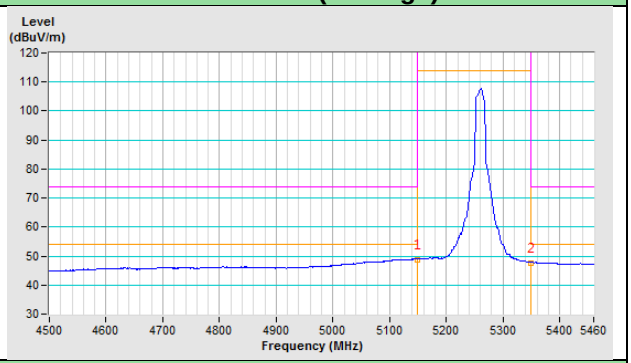
802.11a

Channel 52

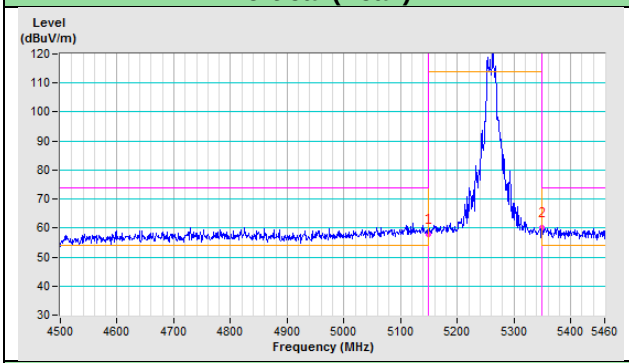
Horizontal (Peak)



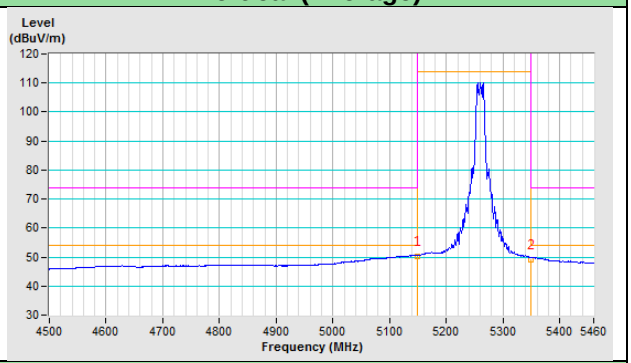
Horizontal (Average)



Vertical (Peak)

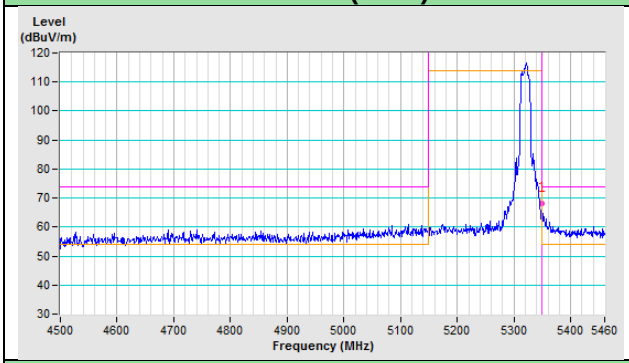


Vertical (Average)

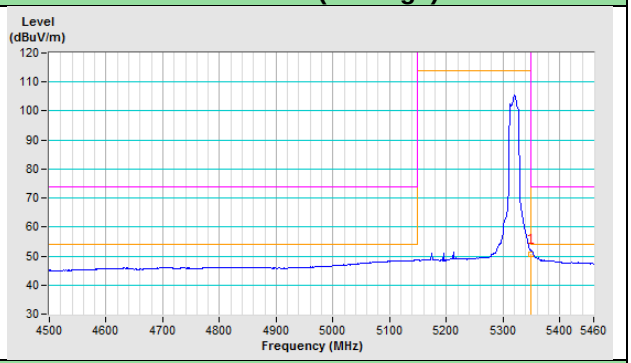


Channel 64

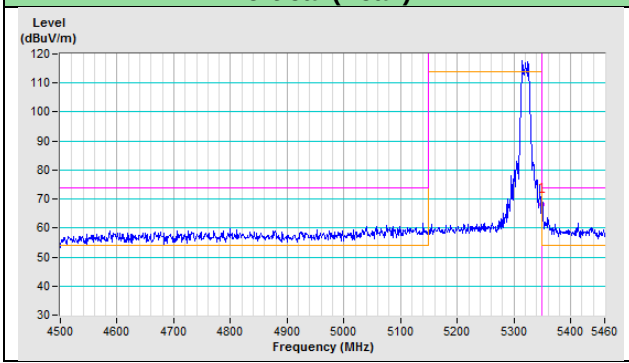
Horizontal (Peak)



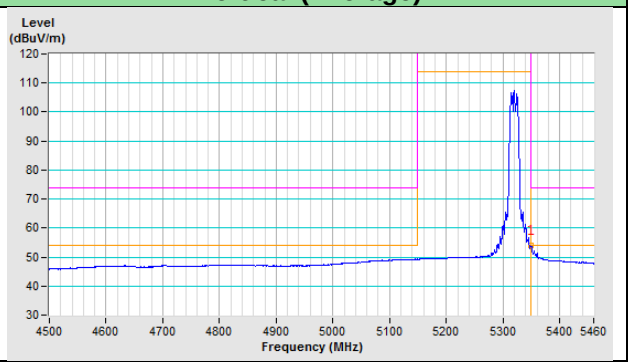
Horizontal (Average)

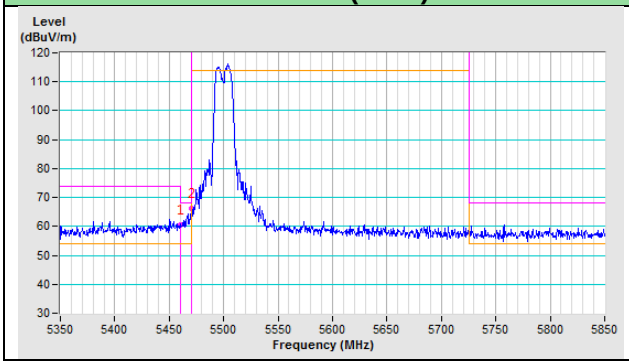
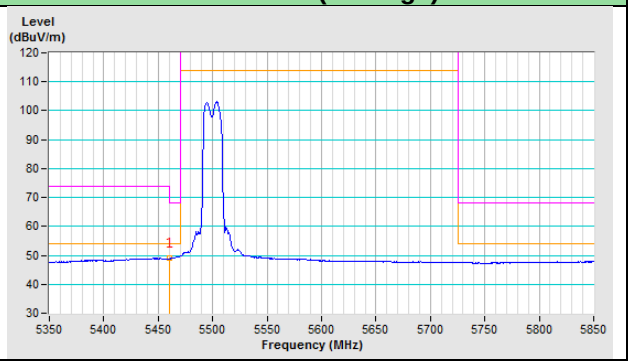
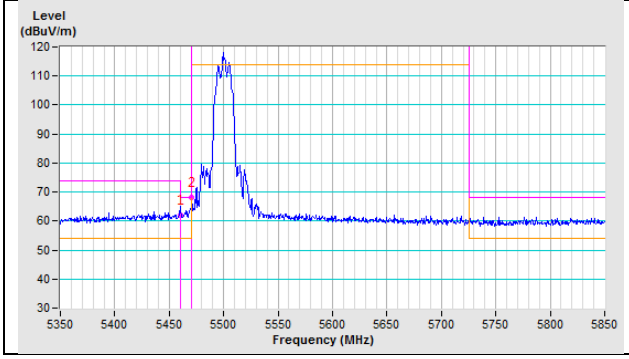
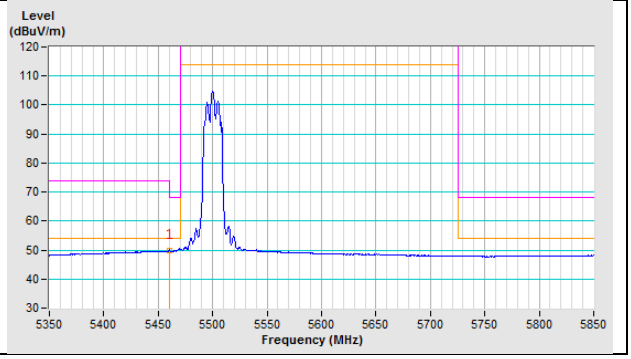


Vertical (Peak)



Vertical (Average)

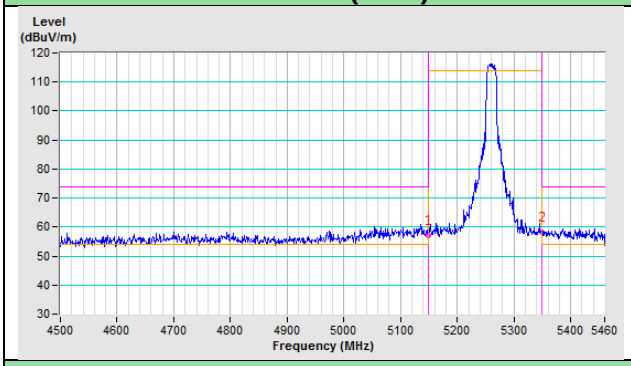


Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

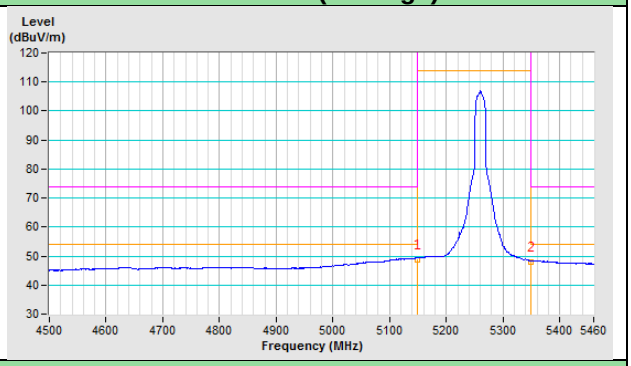
802.11ac (VHT20)

Channel 52

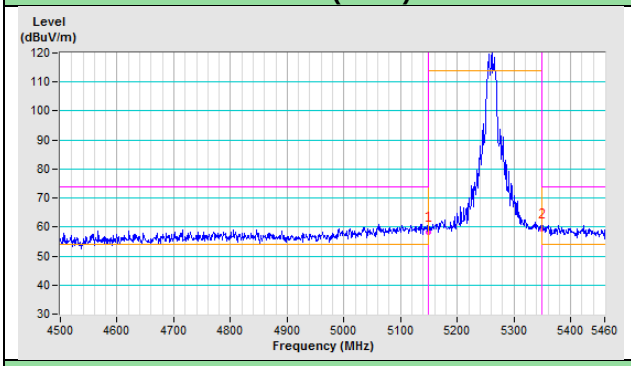
Horizontal (Peak)



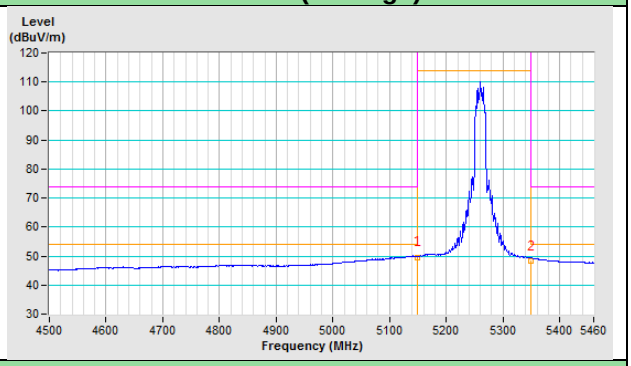
Horizontal (Average)



Vertical (Peak)

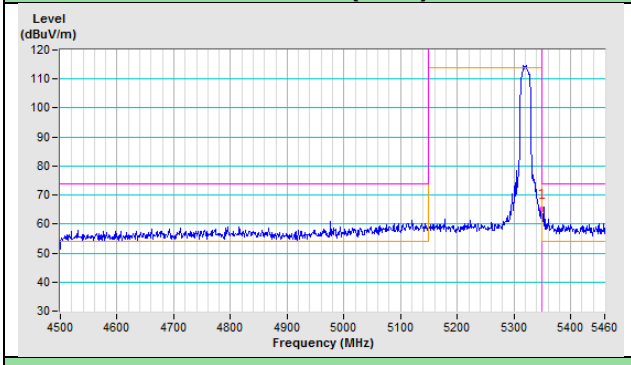


Vertical (Average)

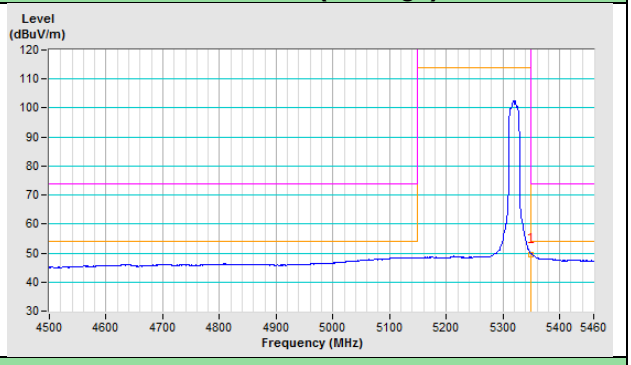


Channel 64

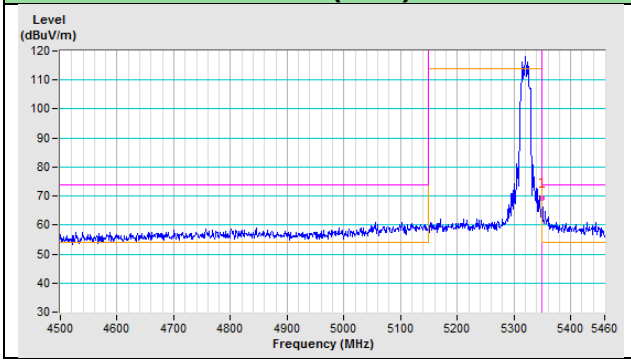
Horizontal (Peak)



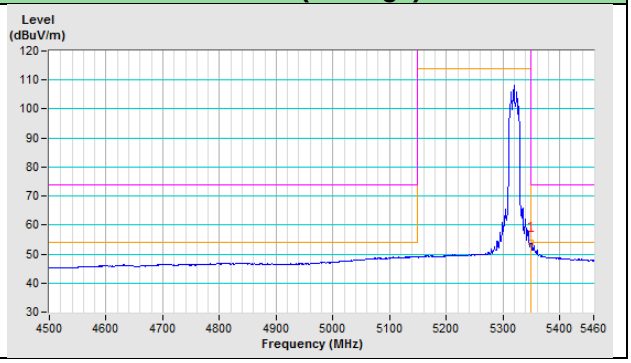
Horizontal (Average)

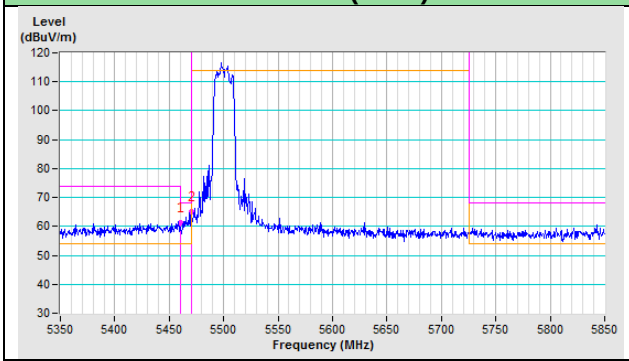
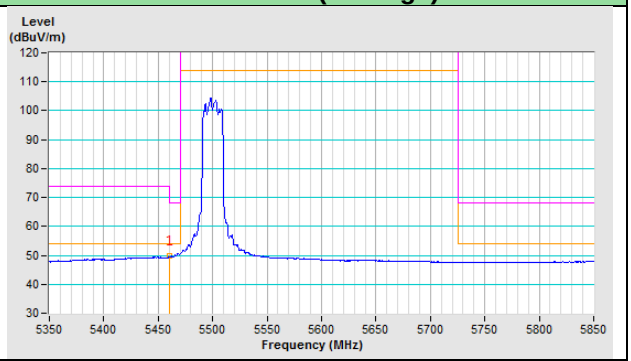
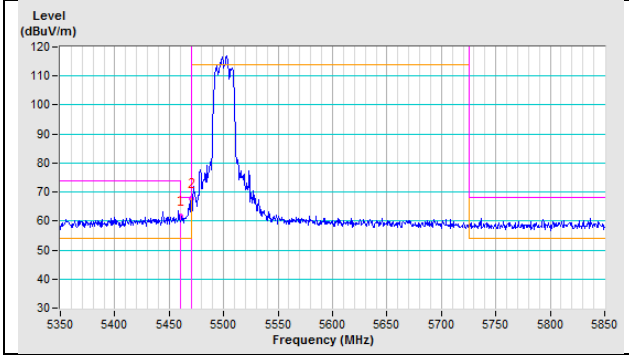
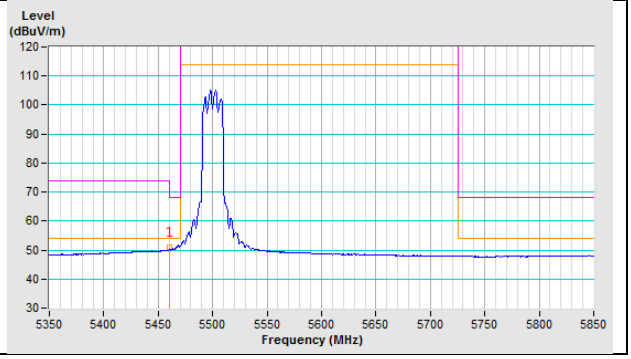


Vertical (Peak)



Vertical (Average)

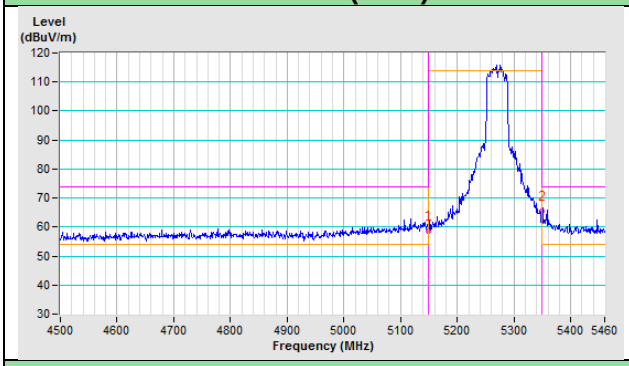


Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

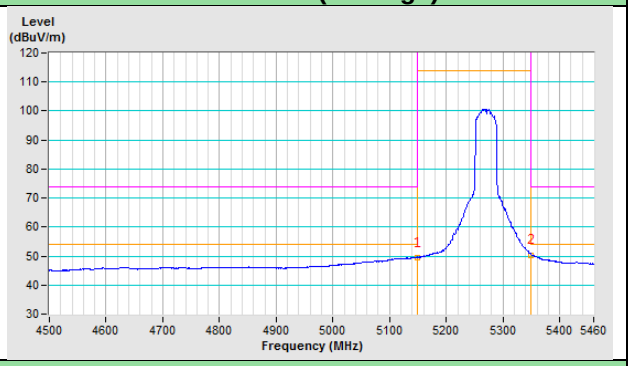
802.11ac (VHT40)

Channel 54

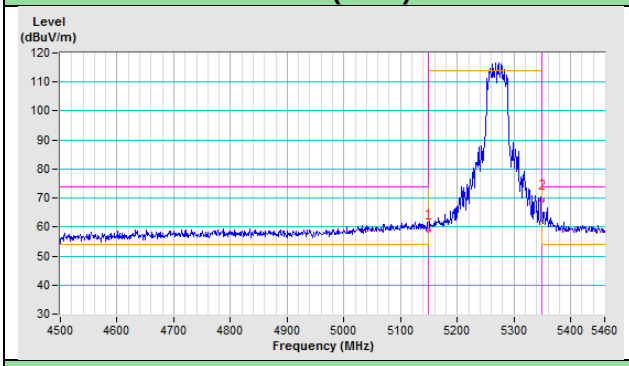
Horizontal (Peak)



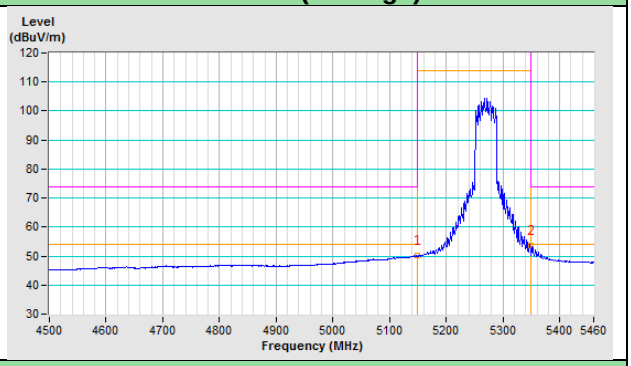
Horizontal (Average)



Vertical (Peak)

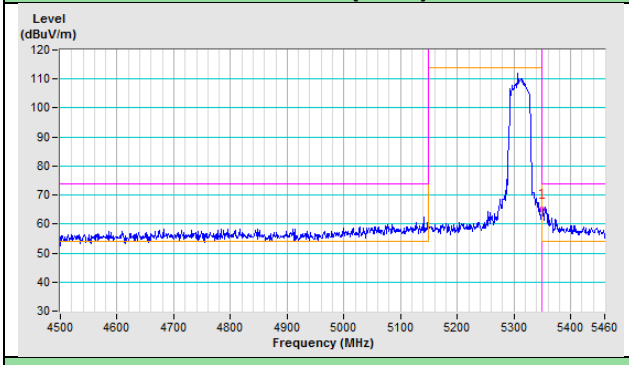


Vertical (Average)

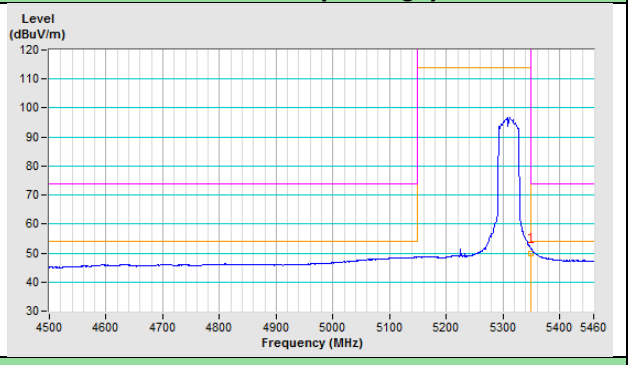


Channel 62

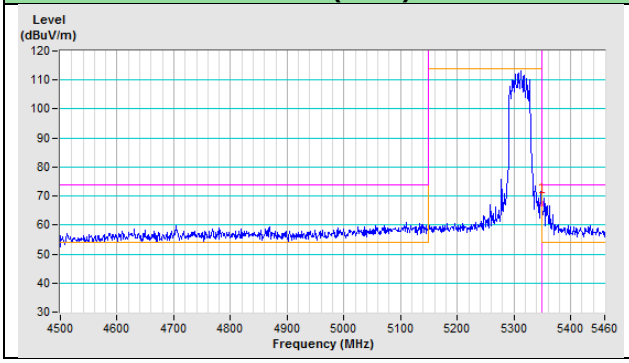
Horizontal (Peak)



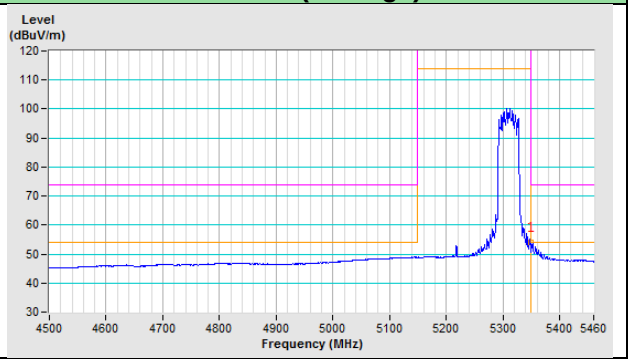
Horizontal (Average)

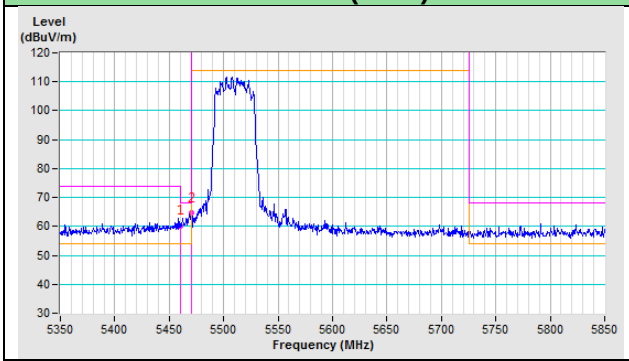
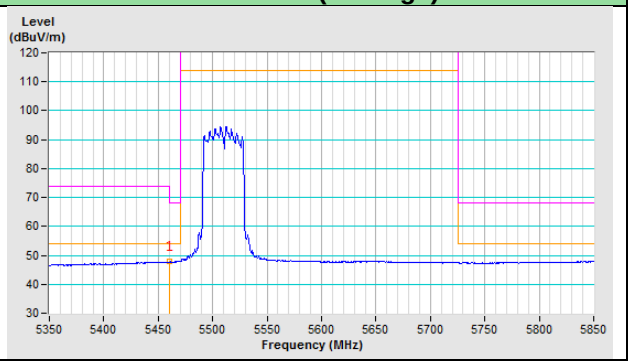
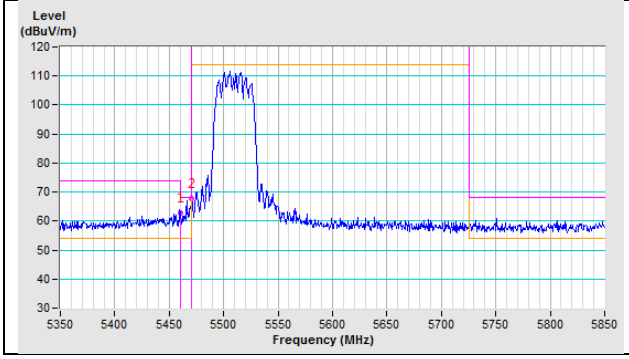
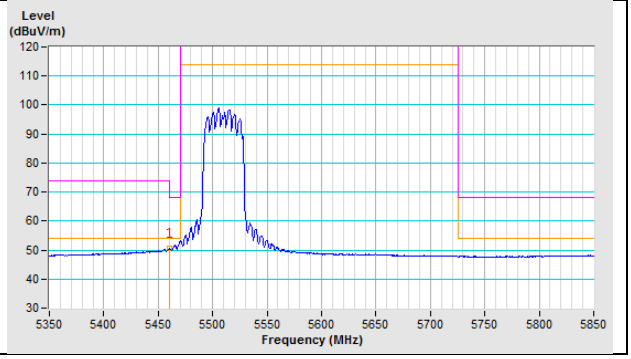


Vertical (Peak)



Vertical (Average)

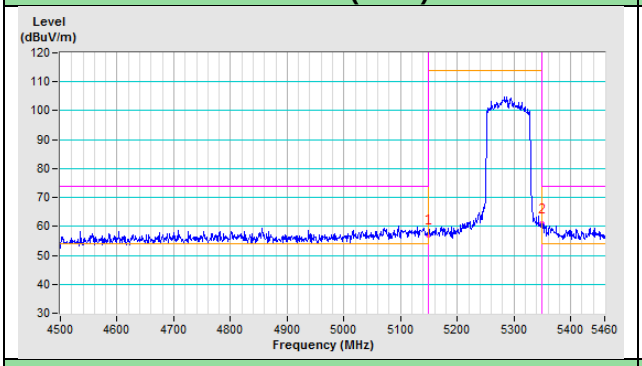


Channel 102	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

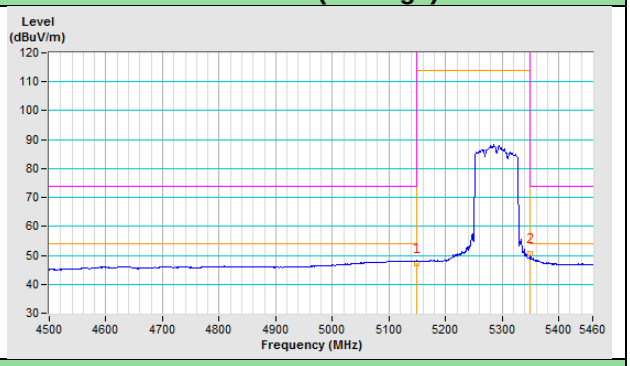
802.11ac (VHT80)

Channel 58

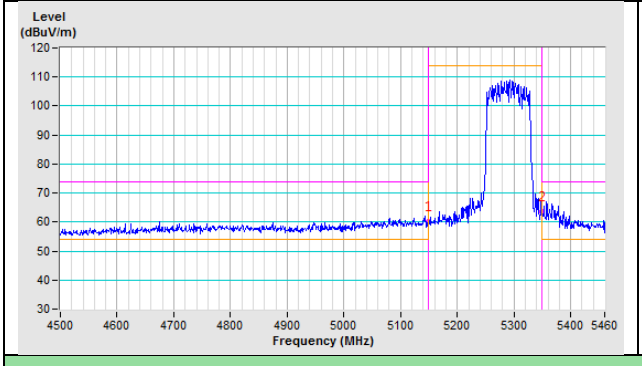
Horizontal (Peak)



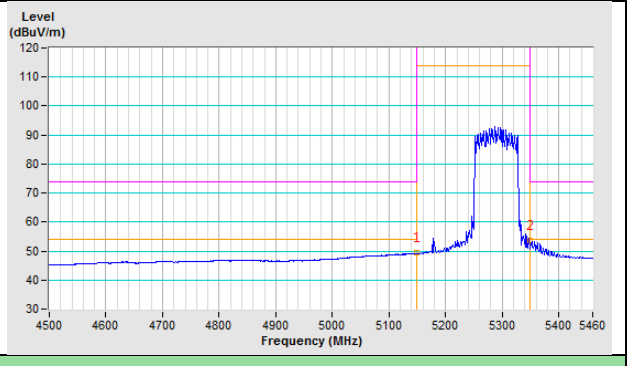
Horizontal (Average)



Vertical (Peak)

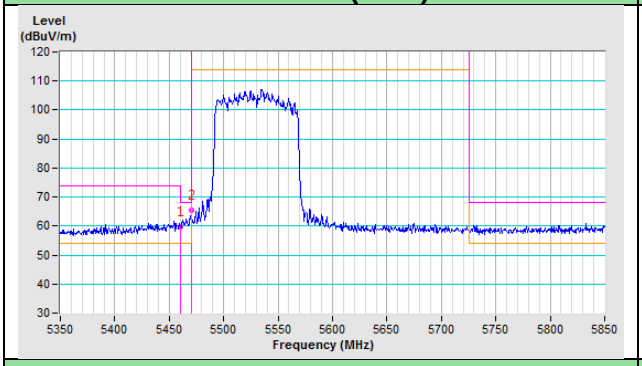


Vertical (Average)

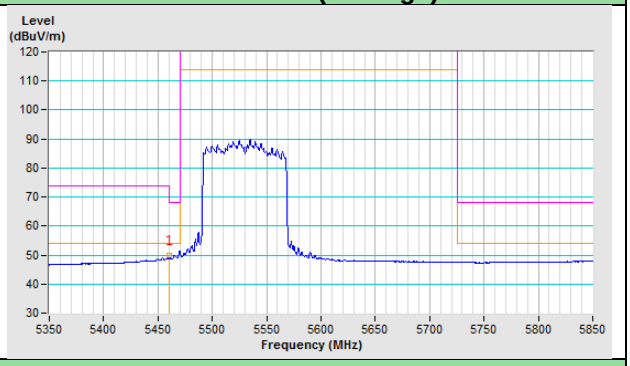


Channel 106

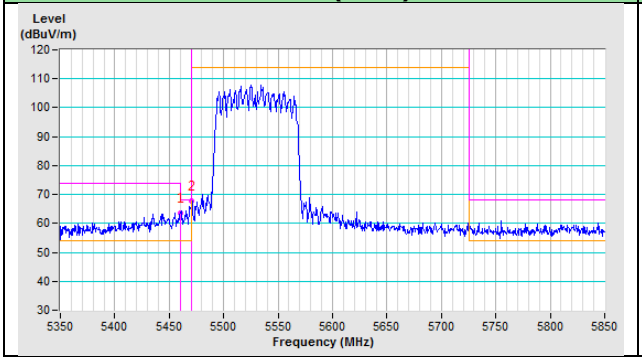
Horizontal (Peak)



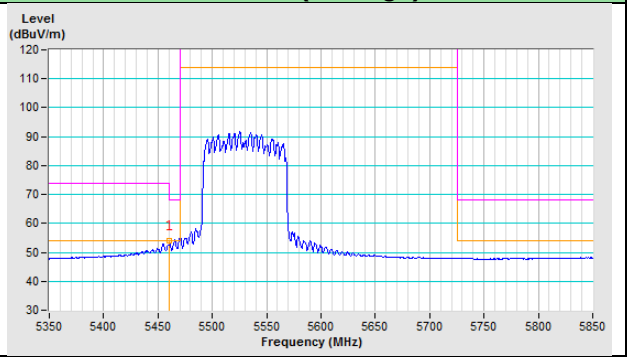
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



Appendix – Information of the Testing Laboratories

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

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

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