FCC Test Report (DFS Band)

Report No.:	RF180614E09A-1
FCC ID:	PY318100406
Test Model:	Otter
Received Date:	July 10, 2018
Test Date:	June 30 to July 31, 2018
Issued Date:	Aug. 10, 2018
Applicant:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF180614E09A-1	Original release.	Aug. 10, 2018

1 Certificate of Conformity

Product:	WiFi Device
Brand:	NETGEAR
Test Model:	Otter
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR, Inc.
Test Date:	June 30 to July 31, 2018
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

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

Prepared by : _____ , **Date:** Aug. 10, 2018

Phoenix Huang / Specialist

Approved by : _____ , **Date:** Aug. 10, 2018

Max Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -20.03dB at 0.76719MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5350.00MHz and 5470.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.19 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (DFS Band)

Product	WiFi Device
Brand	NETGEAR
Test Model	Otter
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	19Vdc from power adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	5.26GHz ~ 5.32GHz, 5.50GHz ~ 5.72GHz
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	**5.26 ~ 5.32GHz** **CDD Mode:** 239.998mW **Beamforming Mode** 244.502mW **5.5 ~ 5.72GHz** **CDD Mode:** 250.042mW **Beamforming Mode** 246.565mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II change. The difference compared with the Report No.: RF180614E09-1 as the following:
   - ◆ Add DFS band <5.26GHz ~ 5.32GHz, 5.50GHz ~ 5.72GHz>
2. According to above condition, all test items need to be performed. And all data weres verified to meet the requirements.
3. There are WLAN and Bluetooth technology used for the EUT. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3
WLAN (2.4GHz) + WLAN (5GHz HB)	WLAN (5GHz LB)	Bluetooth

4. Simultaneously transmission condition.

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

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

No.	Brand	Model No.	P/N	Spec.
1	NETGEAR	AD2003F10	332-11039-01	Input: 100-120Vac, 1.5A, 50/60Hz Output: 19V, 3.16A DC output cable (unshielded, 1.8m)
2	NETGEAR	2ABS060K 1 NJ	332-11043-01	Input: 100-120Vac, 1.7A, 50/60Hz Output: 19V, 3.16A DC output cable (unshielded, 1.8m)
Note: In original report, from the above adapters, the worst radiated emission test was found in **Adapter 2**. Therefore only the test data of the modes were recorded in this report.				

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

For WLAN					
Antenna No.	Ant. Gain (dBi) (include cable loss)	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length (mm)
Dual band (Black)	3.46	2.4 ~ 2.4835	Dipole	i-pex(MHF)	214
	2.99	5.15~5.25			
	2.99	5.25~5.35			
Dual band (Red)	2.73	2.4 ~ 2.4835	Dipole	i-pex(MHF)	156
	2.44	5.15~5.25			
	2.44	5.25~5.35			
5G Antenna (Blue)	3.31	5.47~5.725	Dipole	i-pex(MHF)	125
	2.65	5.725~5.85			
5G Antenna (Yellow)	2.26	5.47~5.725	Dipole	i-pex(MHF)	70
	3.24	5.725~5.85			
For Bluetooth					
Antenna No.	Ant. Gain (dBi) (include cable loss)	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length (mm)
Antenna (White)	3.32	2.4 ~ 2.5	PIFA	i-pex(MHF)	200

7. The EUT incorporates a MIMO function.

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

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

8. This device can support different category application which switched by access point mode and client mode by software.
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	
1	√	√	√	√	With Adapter 2
2	-	-	√	-	With Adapter 1

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

Radiated Emission Test (Above 1GHz):

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
Beamforming Mode						
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

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)**
802.11a	5500-5720,	100 to 144	116	OFDM	BPSK	6
Beamforming Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT40)	5260-5320	54 to 62	54	OFDM	BPSK	13.5

Power Line Conducted Emission Test:

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5500-5720,	100 to 144	116	OFDM	BPSK	6
Beamforming Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT40)	5260-5320	54 to 62	54	OFDM	BPSK	13.5

Antenna Port Conducted Measurement:

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
Beamforming Mode						
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

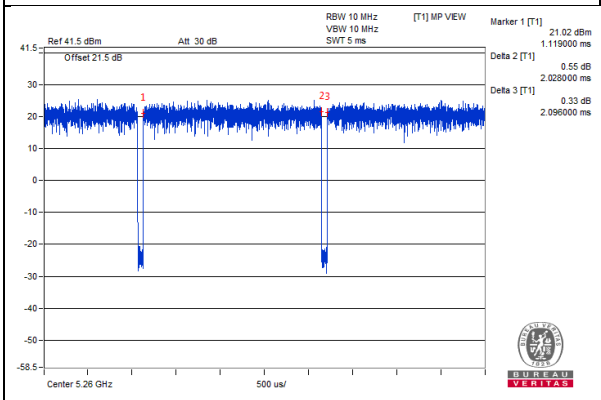
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	24deg. C, 70%RH	120Vac, 60Hz	Eason Tseng
RE<1G	22deg. C, 68%RH	120Vac, 60Hz	Andy Ho
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
	23deg. C, 76%RH	120Vac, 60Hz	Andy Ho
	23deg. C, 74%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

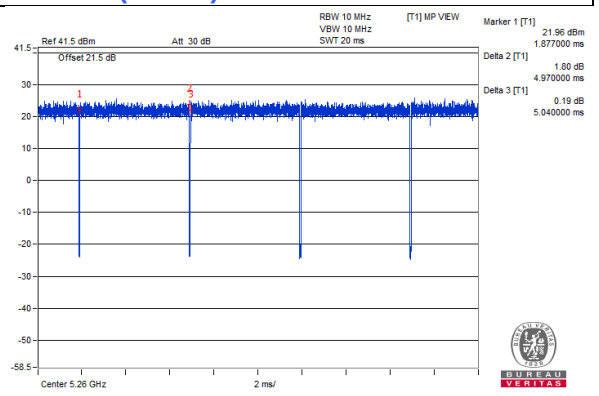
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.028 ms/2.096 ms = 0.968, Duty factor = 10 * log (1/Duty cycle) = 0.14
802.11ac (VHT20): Duty cycle = 4.97 ms/5.04 ms = 0.986
802.11ac (VHT40): Duty cycle = 2.413 ms/2.487 ms = 0.97, Duty factor = 10 * log (1/Duty cycle) = 0.13
802.11ac (VHT80): Duty cycle = 1.135 ms/1.195 ms = 0.95, Duty factor = 10 * log (1/Duty cycle) = 0.22

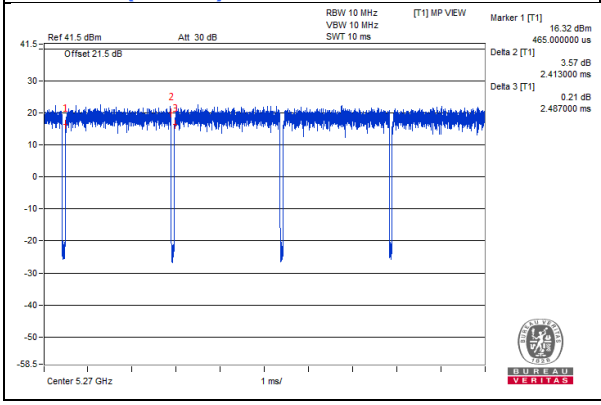
802.11a



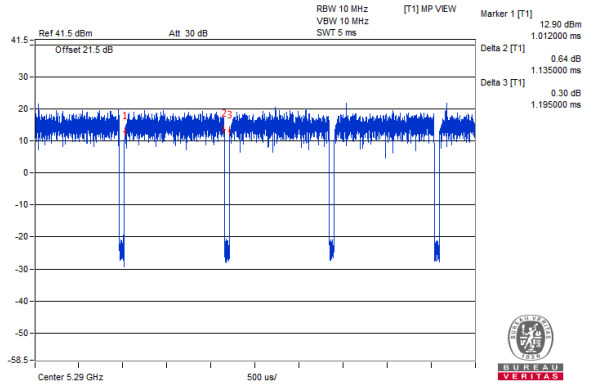
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

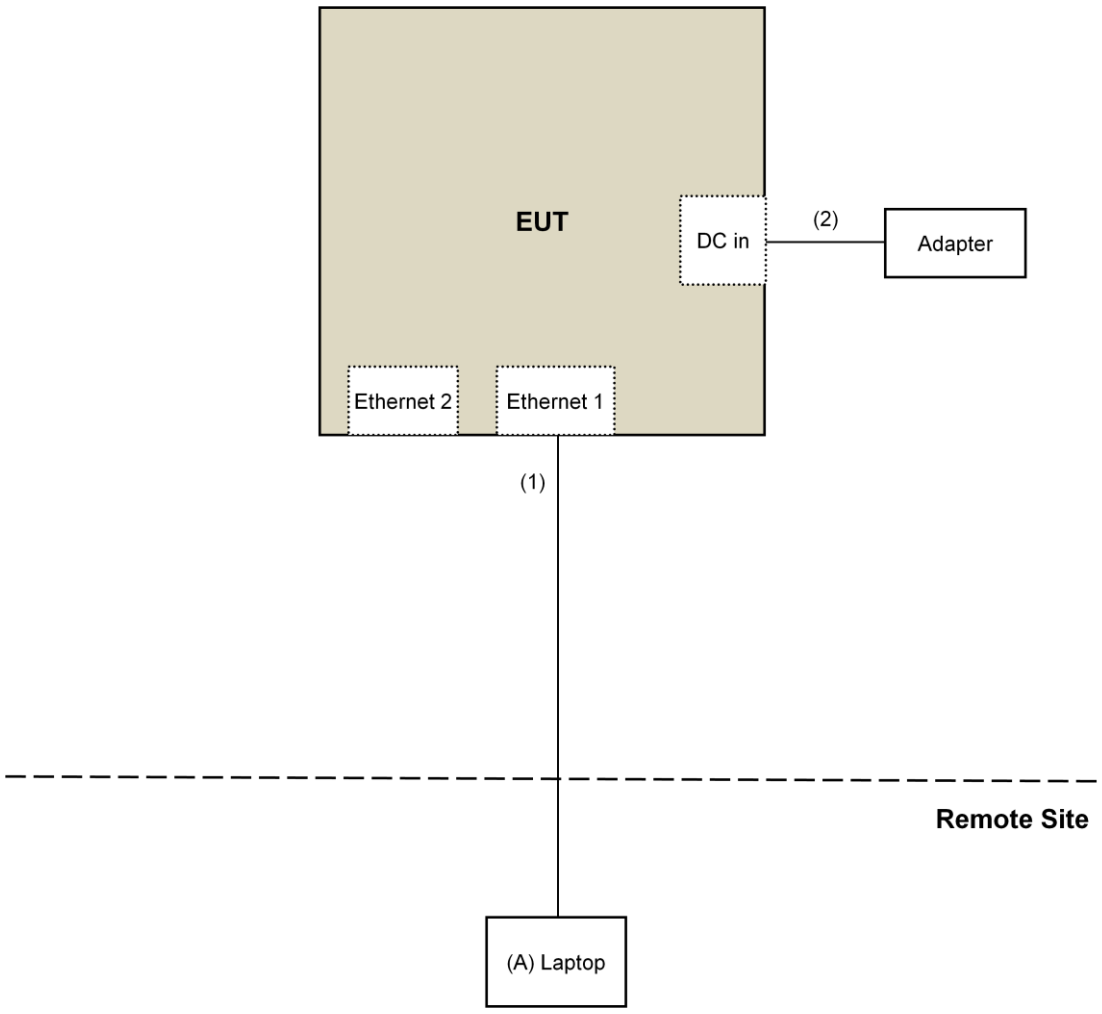
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

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

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

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v02r01			Field Strength at 3m	
			PK:74 (dBμV/m)	AV:54 (dBμV/m)
Frequency Band	Applicable To		EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)		PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☒	15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

*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.

Note:

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200	160922	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150317	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150322	Jan. 29, 2018	Jan. 28, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160924	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Spectrum Analyzer R&S	FSv40	100964	June 20, 2018	June 19, 2019
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019
AC Power Source Extech Electronics	6205	1440452	NA	NA
DC Power Supply Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 10, 2018	Jan. 09, 2019
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: July 27 to 31, 2018

4.1.3 Test Procedure

For Radiated emission below 30MHz

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

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

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

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

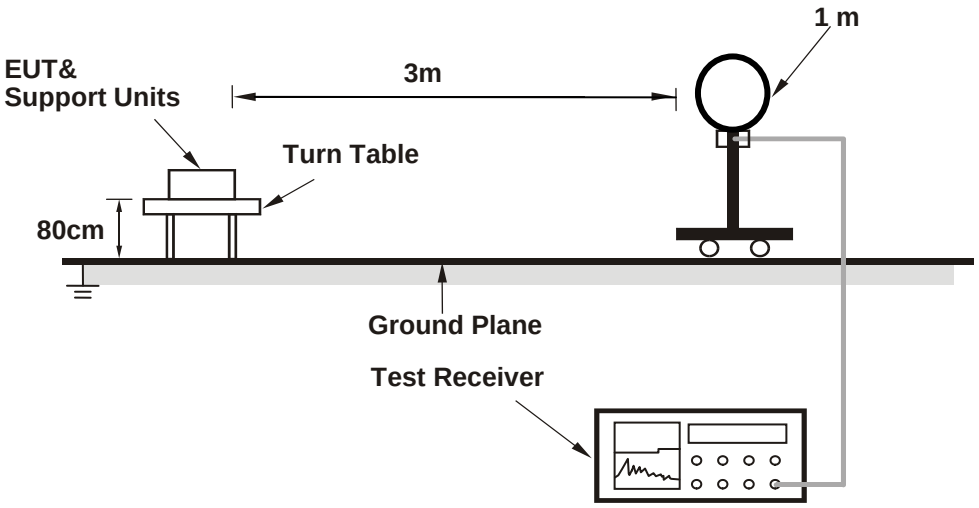
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

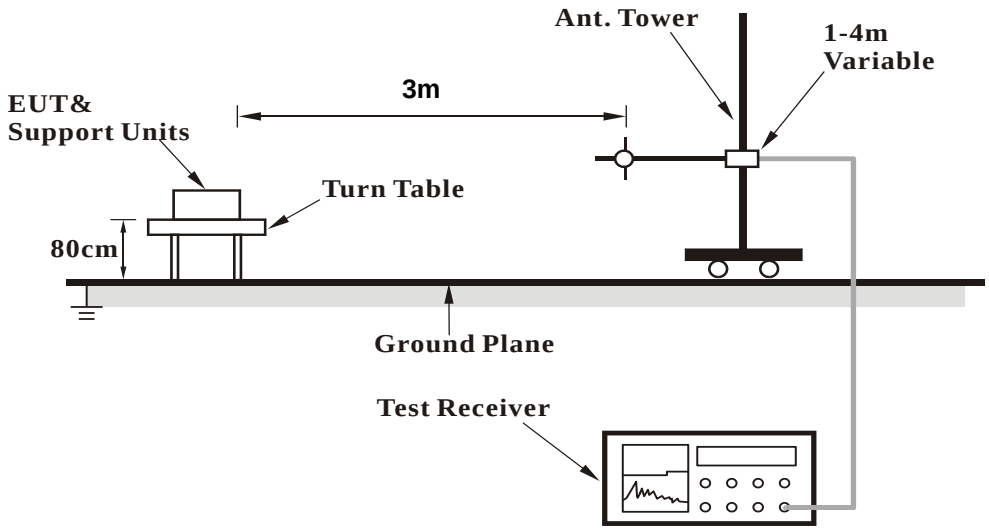
No deviation.

4.1.5 Test Setup

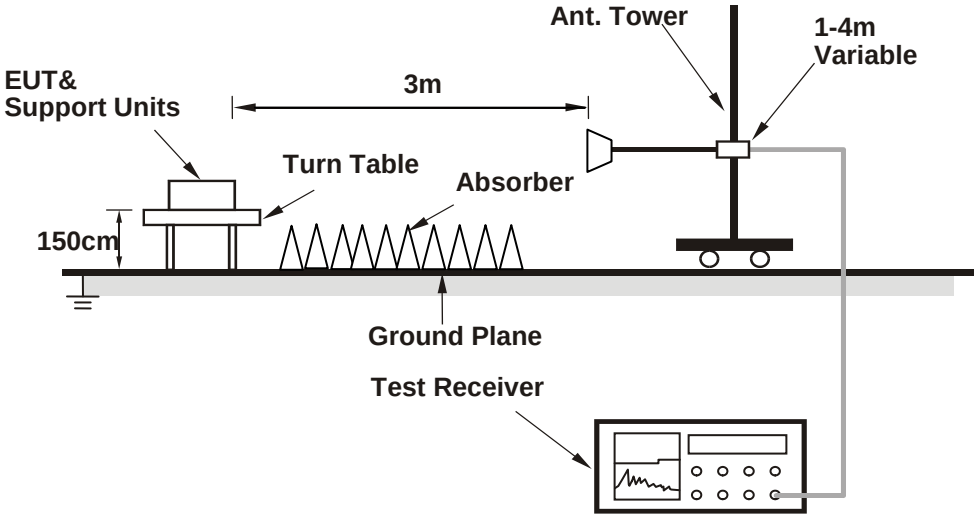
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (QDART-Connectivity (1.0.40)) has been activated to set the EUT on specific status.

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	50.6 PK	74.0	-23.4	1.63 H	184	48.0	2.6
2	5150.00	37.5 AV	54.0	-16.5	1.63 H	184	34.9	2.6
3	*5260.00	111.3 PK			1.63 H	184	109.2	2.1
4	*5260.00	100.2 AV			1.63 H	184	98.1	2.1
5	#10520.00	48.2 PK	68.2	-20.0	1.49 H	226	35.8	12.4
6	15780.00	48.2 PK	74.0	-25.8	1.56 H	238	36.7	11.5
7	15780.00	37.2 AV	54.0	-16.8	1.56 H	238	25.7	11.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	52.3 PK	74.0	-21.7	1.74 V	174	49.7	2.6
2	5150.00	39.4 AV	54.0	-14.6	1.74 V	174	36.8	2.6
3	*5260.00	117.6 PK			1.74 V	174	115.5	2.1
4	*5260.00	105.4 AV			1.74 V	174	103.3	2.1
5	#10520.00	46.7 PK	68.2	-21.5	1.53 V	175	34.3	12.4
6	15780.00	47.7 PK	74.0	-26.3	1.51 V	246	36.2	11.5
7	15780.00	36.2 AV	54.0	-17.8	1.51 V	246	24.7	11.5

REMARKS:

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

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	111.2 PK			1.66 H	171	109.0	2.2
2	*5300.00	100.2 AV			1.66 H	171	98.0	2.2
3	10600.00	48.4 PK	74.0	-25.6	1.51 H	218	36.7	11.7
4	10600.00	35.7 AV	54.0	-18.3	1.51 H	218	24.0	11.7
5	15900.00	48.5 PK	74.0	-25.5	1.59 H	220	37.3	11.2
6	15900.00	37.2 AV	54.0	-16.8	1.59 H	220	26.0	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	117.1 PK			1.72 V	176	114.9	2.2
2	*5300.00	105.2 AV			1.72 V	176	103.0	2.2
3	10600.00	46.7 PK	74.0	-27.3	1.48 V	165	35.0	11.7
4	10600.00	35.5 AV	54.0	-18.5	1.48 V	165	23.8	11.7
5	15900.00	48.2 PK	74.0	-25.8	1.55 V	242	37.0	11.2
6	15900.00	36.8 AV	54.0	-17.2	1.55 V	242	25.6	11.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	111.2 PK			1.65 H	184	108.9	2.3
2	*5320.00	100.1 AV			1.65 H	184	97.8	2.3
3	5350.00	63.9 PK	74.0	-10.1	1.65 H	184	61.6	2.3
4	5350.00	50.5 AV	54.0	-3.5	1.65 H	184	48.2	2.3
5	10640.00	48.2 PK	74.0	-25.8	1.52 H	228	36.5	11.7
6	10640.00	35.5 AV	54.0	-18.5	1.52 H	228	23.8	11.7
7	15960.00	49.0 PK	74.0	-25.0	1.52 H	229	37.6	11.4
8	15960.00	37.9 AV	54.0	-16.1	1.52 H	229	26.5	11.4
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	117.5 PK			1.80 V	167	115.2	2.3
2	*5320.00	105.4 AV			1.80 V	167	103.1	2.3
3	5350.00	67.3 PK	74.0	-6.7	1.80 V	167	65.0	2.3
4	5350.00	53.6 AV	54.0	-0.4	1.80 V	167	51.3	2.3
5	10640.00	46.0 PK	74.0	-28.0	1.44 V	155	34.3	11.7
6	10640.00	34.6 AV	54.0	-19.4	1.44 V	155	22.9	11.7
7	15960.00	47.4 PK	74.0	-26.6	1.52 V	236	36.0	11.4
8	15960.00	36.2 AV	54.0	-17.8	1.52 V	236	24.8	11.4

REMARKS:

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

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	63.7 PK	74.0	-10.3	1.79 H	309	61.1	2.6
2	5460.00	43.1 AV	54.0	-10.9	1.79 H	309	40.5	2.6
3	#5470.00	63.1 PK	68.2	-5.1	1.79 H	309	60.5	2.6
4	*5500.00	108.1 PK			1.79 H	309	105.6	2.5
5	*5500.00	98.8 AV			1.79 H	309	96.3	2.5
6	11000.00	48.2 PK	74.0	-25.8	1.49 H	216	36.0	12.2
7	11000.00	35.7 AV	54.0	-18.3	1.49 H	216	23.5	12.2
8	#16500.00	48.8 PK	68.2	-19.4	1.57 H	244	35.1	13.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	67.1 PK	74.0	-6.9	1.87 V	308	64.5	2.6
2	5460.00	46.5 AV	54.0	-7.5	1.87 V	308	43.9	2.6
3	#5470.00	67.5 PK	68.2	-0.7	1.87 V	308	64.9	2.6
4	*5500.00	115.7 PK			1.87 V	308	113.2	2.5
5	*5500.00	105.8 AV			1.87 V	308	103.3	2.5
6	11000.00	45.6 PK	74.0	-28.4	1.55 V	167	33.4	12.2
7	11000.00	34.6 AV	54.0	-19.4	1.55 V	167	22.4	12.2
8	#16500.00	47.1 PK	68.2	-21.1	1.53 V	255	33.4	13.7

REMARKS:

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

CHANNEL	TX Channel 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	108.4 PK			1.80 H	318	105.6	2.8
2	*5580.00	99.0 AV			1.80 H	318	96.2	2.8
3	11160.00	47.9 PK	74.0	-26.1	1.58 H	225	35.9	12.0
4	11160.00	35.4 AV	54.0	-18.6	1.58 H	225	23.4	12.0
5	#16740.00	48.3 PK	68.2	-19.9	1.58 H	226	34.1	14.2
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	*5580.00	115.8 PK			1.60 V	21	113.0	2.8
2	*5580.00	106.0 AV			1.60 V	21	103.2	2.8
3	11160.00	46.6 PK	74.0	-27.4	1.48 V	148	34.6	12.0
4	11160.00	35.3 AV	54.0	-18.7	1.48 V	148	23.3	12.0
5	#16740.00	47.7 PK	68.2	-20.5	1.53 V	230	33.5	14.2

REMARKS:

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

CHANNEL	TX Channel 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	108.4 PK			1.84 H	309	105.5	2.9
2	*5700.00	98.9 AV			1.84 H	309	96.0	2.9
3	#5725.00	65.4 PK	68.2	-2.8	1.84 H	309	62.5	2.9
4	11400.00	48.3 PK	74.0	-25.7	1.53 H	206	35.3	13.0
5	11400.00	36.0 AV	54.0	-18.0	1.53 H	206	23.0	13.0
6	#17100.00	48.5 PK	68.2	-19.7	1.58 H	233	32.4	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	*5700.00	116.3 PK			1.87 V	313	113.4	2.9
2	*5700.00	106.7 AV			1.87 V	313	103.8	2.9
3	#5725.00	68.0 PK	68.2	-0.2	1.87 V	313	65.1	2.9
4	11400.00	46.2 PK	74.0	-27.8	1.53 V	170	33.2	13.0
5	11400.00	35.1 AV	54.0	-18.9	1.53 V	170	22.1	13.0
6	#17100.00	47.5 PK	68.2	-20.7	1.51 V	229	31.4	16.1

REMARKS:

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

CHANNEL	TX Channel 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	*5720.00	108.0 PK			1.84 H	303	105.1	2.9
2	*5720.00	98.5 AV			1.84 H	303	95.6	2.9
3	#5850.00	43.4 PK	68.2	-24.8	1.84 H	303	40.1	3.3
4	11440.00	48.4 PK	74.0	-25.6	1.57 H	223	35.7	12.7
5	11440.00	36.0 AV	54.0	-18.0	1.57 H	223	23.3	12.7
6	#17160.00	49.1 PK	68.2	-19.1	1.51 H	229	33.5	15.6
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	*5720.00	115.6 PK			1.83 V	312	112.7	2.9
2	*5720.00	106.1 AV			1.83 V	312	103.2	2.9
3	#5850.00	46.4 PK	68.2	-21.8	1.83 V	312	43.1	3.3
4	11440.00	46.4 PK	74.0	-27.6	1.50 V	153	33.7	12.7
5	11440.00	35.5 AV	54.0	-18.5	1.50 V	153	22.8	12.7
6	#17160.00	47.4 PK	68.2	-20.8	1.59 V	247	31.8	15.6

REMARKS:

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

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	49.4 PK	74.0	-24.6	1.72 H	187	46.8	2.6
2	5150.00	37.6 AV	54.0	-16.4	1.72 H	187	35.0	2.6
3	*5260.00	111.4 PK			1.72 H	187	109.3	2.1
4	*5260.00	100.3 AV			1.72 H	187	98.2	2.1
5	5350.00	51.8 PK	74.0	-22.2	1.72 H	187	49.5	2.3
6	5350.00	38.4 AV	54.0	-15.6	1.72 H	187	36.1	2.3
7	#10520.00	47.9 PK	68.2	-20.3	1.50 H	225	35.5	12.4
8	15780.00	49.1 PK	74.0	-24.9	1.55 H	238	37.6	11.5
9	15780.00	37.9 AV	54.0	-16.1	1.55 H	238	26.4	11.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	51.0 PK	74.0	-23.0	1.55 V	167	48.4	2.6
2	5150.00	39.2 AV	54.0	-14.8	1.55 V	167	36.6	2.6
3	*5260.00	115.6 PK			1.55 V	167	113.5	2.1
4	*5260.00	105.4 AV			1.55 V	167	103.3	2.1
5	5350.00	53.7 PK	74.0	-20.3	1.55 V	167	51.4	2.3
6	5350.00	40.3 AV	54.0	-13.7	1.55 V	167	38.0	2.3
7	#10520.00	46.4 PK	68.2	-21.8	1.52 V	156	34.0	12.4
8	15780.00	48.1 PK	74.0	-25.9	1.57 V	253	36.6	11.5
9	15780.00	36.6 AV	54.0	-17.4	1.57 V	253	25.1	11.5

REMARKS:

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

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	112.1 PK			1.67 H	182	109.9	2.2
2	*5300.00	100.7 AV			1.67 H	182	98.5	2.2
3	5350.00	58.4 PK	74.0	-15.6	1.67 H	182	56.1	2.3
4	5350.00	46.3 AV	54.0	-7.7	1.67 H	182	44.0	2.3
5	10600.00	48.0 PK	74.0	-26.0	1.54 H	208	36.3	11.7
6	10600.00	35.9 AV	54.0	-18.1	1.54 H	208	24.2	11.7
7	15900.00	48.8 PK	74.0	-25.2	1.55 H	243	37.6	11.2
8	15900.00	37.4 AV	54.0	-16.6	1.55 H	243	26.2	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	116.9 PK			1.71 V	168	114.7	2.2
2	*5300.00	105.7 AV			1.71 V	168	103.5	2.2
3	5350.00	61.8 PK	74.0	-12.2	1.71 V	168	59.5	2.3
4	5350.00	48.9 AV	54.0	-5.1	1.71 V	168	46.6	2.3
5	10600.00	46.2 PK	74.0	-27.8	1.56 V	150	34.5	11.7
6	10600.00	35.3 AV	54.0	-18.7	1.56 V	150	23.6	11.7
7	15900.00	47.6 PK	74.0	-26.4	1.60 V	248	36.4	11.2
8	15900.00	35.9 AV	54.0	-18.1	1.60 V	248	24.7	11.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	111.4 PK			1.69 H	199	109.1	2.3
2	*5320.00	100.1 AV			1.69 H	199	97.8	2.3
3	5350.00	62.8 PK	74.0	-11.2	1.69 H	199	60.5	2.3
4	5350.00	50.5 AV	54.0	-3.5	1.69 H	199	48.2	2.3
5	10640.00	48.3 PK	74.0	-25.7	1.54 H	219	36.6	11.7
6	10640.00	35.8 AV	54.0	-18.2	1.54 H	219	24.1	11.7
7	15960.00	49.2 PK	74.0	-24.8	1.56 H	243	37.8	11.4
8	15960.00	37.6 AV	54.0	-16.4	1.56 H	243	26.2	11.4
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	116.4 PK			1.74 V	169	114.1	2.3
2	*5320.00	105.4 AV			1.74 V	169	103.1	2.3
3	5350.00	66.2 PK	74.0	-7.8	1.74 V	169	63.9	2.3
4	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**1.74 V**	**169**	**51.6**	**2.3**
5	10640.00	45.9 PK	74.0	-28.1	1.46 V	167	34.2	11.7
6	10640.00	34.6 AV	54.0	-19.4	1.46 V	167	22.9	11.7
7	15960.00	48.4 PK	74.0	-25.6	1.53 V	241	37.0	11.4
8	15960.00	36.8 AV	54.0	-17.2	1.53 V	241	25.4	11.4

REMARKS:

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

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	#5470.00	61.3 PK	68.2	-6.9	1.80 H	296	58.7	2.6
2	*5500.00	108.2 PK			1.80 H	296	105.7	2.5
3	*5500.00	98.9 AV			1.80 H	296	96.4	2.5
4	11000.00	48.4 PK	74.0	-25.6	1.58 H	224	36.2	12.2
5	11000.00	36.0 AV	54.0	-18.0	1.58 H	224	23.8	12.2
6	#16500.00	48.5 PK	68.2	-19.7	1.51 H	234	34.8	13.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	64.3 PK	68.2	-3.9	1.85 V	321	61.7	2.6
2	*5500.00	116.3 PK			1.85 V	321	113.8	2.5
3	*5500.00	106.1 AV			1.85 V	321	103.6	2.5
4	11000.00	46.4 PK	74.0	-27.6	1.46 V	156	34.2	12.2
5	11000.00	35.3 AV	54.0	-18.7	1.46 V	156	23.1	12.2
6	#16500.00	47.4 PK	68.2	-20.8	1.54 V	245	33.7	13.7

REMARKS:

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

CHANNEL	TX Channel 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	108.4 PK			1.78 H	299	105.6	2.8
2	*5580.00	97.8 AV			1.78 H	299	95.0	2.8
3	11160.00	48.1 PK	74.0	-25.9	1.53 H	230	36.1	12.0
4	11160.00	35.9 AV	54.0	-18.1	1.53 H	230	23.9	12.0
5	#16740.00	49.4 PK	68.2	-18.8	1.54 H	238	35.2	14.2
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	*5580.00	115.9 PK			1.72 V	20	113.1	2.8
2	*5580.00	105.1 AV			1.72 V	20	102.3	2.8
3	11160.00	46.4 PK	74.0	-27.6	1.45 V	168	34.4	12.0
4	11160.00	35.1 AV	54.0	-18.9	1.45 V	168	23.1	12.0
5	#16740.00	47.7 PK	68.2	-20.5	1.52 V	243	33.5	14.2

REMARKS:

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

CHANNEL	TX Channel 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	109.0 PK			1.80 H	310	106.1	2.9
2	*5700.00	98.2 AV			1.80 H	310	95.3	2.9
3	#5725.00	64.3 PK	68.2	-3.9	1.80 H	310	61.4	2.9
4	11400.00	48.0 PK	74.0	-26.0	1.58 H	210	35.0	13.0
5	11400.00	35.9 AV	54.0	-18.1	1.58 H	210	22.9	13.0
6	#17100.00	48.3 PK	68.2	-19.9	1.60 H	223	32.2	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	*5700.00	115.7 PK			1.83 V	317	112.8	2.9
2	*5700.00	105.9 AV			1.83 V	317	103.0	2.9
3	#5725.00	67.4 PK	68.2	-0.8	1.83 V	317	64.5	2.9
4	11400.00	46.4 PK	74.0	-27.6	1.47 V	163	33.4	13.0
5	11400.00	35.1 AV	54.0	-18.9	1.47 V	163	22.1	13.0
6	#17100.00	47.5 PK	68.2	-20.7	1.51 V	233	31.4	16.1

REMARKS:

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

CHANNEL	TX Channel 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	#5470.00	43.5 PK	68.2	-24.7	1.84 H	321	40.9	2.6
2	*5720.00	109.1 PK			1.84 H	321	106.2	2.9
3	*5720.00	98.5 AV			1.84 H	321	95.6	2.9
4	#5850.00	44.7 PK	68.2	-23.5	1.84 H	321	41.4	3.3
5	11440.00	47.7 PK	74.0	-26.3	1.48 H	226	35.0	12.7
6	11440.00	35.4 AV	54.0	-18.6	1.48 H	226	22.7	12.7
7	#17160.00	48.4 PK	68.2	-19.8	1.59 H	234	32.8	15.6
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	#5470.00	46.6 PK	68.2	-21.6	1.89 V	322	44.0	2.6
2	*5720.00	116.1 PK			1.89 V	322	113.2	2.9
3	*5720.00	106.4 AV			1.89 V	322	103.5	2.9
4	#5850.00	47.9 PK	68.2	-20.3	1.89 V	322	44.6	3.3
5	11440.00	46.2 PK	74.0	-27.8	1.49 V	161	33.5	12.7
6	11440.00	35.1 AV	54.0	-18.9	1.49 V	161	22.4	12.7
7	#17160.00	48.4 PK	68.2	-19.8	1.58 V	230	32.8	15.6

REMARKS:

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

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	46.7 PK	74.0	-27.3	1.70 H	167	44.1	2.6
2	5150.00	37.4 AV	54.0	-16.6	1.70 H	167	34.8	2.6
3	*5270.00	105.4 PK			1.70 H	167	103.3	2.1
4	*5270.00	98.8 AV			1.70 H	167	96.7	2.1
5	5350.00	56.9 PK	74.0	-17.1	1.70 H	167	54.6	2.3
6	5350.00	46.8 AV	54.0	-7.2	1.70 H	167	44.5	2.3
7	#10540.00	48.5 PK	68.2	-19.7	1.53 H	207	36.3	12.2
8	15810.00	48.9 PK	74.0	-25.1	1.55 H	246	37.6	11.3
9	15810.00	37.4 AV	54.0	-16.6	1.55 H	246	26.1	11.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	48.9 PK	74.0	-25.1	2.00 V	176	46.3	2.6
2	5150.00	39.2 AV	54.0	-14.8	2.00 V	176	36.6	2.6
3	*5270.00	111.9 PK			2.00 V	176	109.8	2.1
4	*5270.00	104.2 AV			2.00 V	176	102.1	2.1
5	5350.00	60.3 PK	74.0	-13.7	2.00 V	176	58.0	2.3
6	5350.00	50.2 AV	54.0	-3.8	2.00 V	176	47.9	2.3
7	#10540.00	46.8 PK	68.2	-21.4	1.51 V	146	34.6	12.2
8	15810.00	47.6 PK	74.0	-26.4	1.53 V	256	36.3	11.3
9	15810.00	36.1 AV	54.0	-17.9	1.53 V	256	24.8	11.3

REMARKS:

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

CHANNEL	TX Channel 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	104.6 PK			1.71 H	155	102.4	2.2
2	*5310.00	97.6 AV			1.71 H	155	95.4	2.2
3	5350.00	63.4 PK	74.0	-10.6	1.71 H	155	61.1	2.3
4	5350.00	50.5 AV	54.0	-3.5	1.71 H	155	48.2	2.3
5	10620.00	47.6 PK	74.0	-26.4	1.50 H	216	35.9	11.7
6	10620.00	35.4 AV	54.0	-18.6	1.50 H	216	23.7	11.7
7	15930.00	48.8 PK	74.0	-25.2	1.48 H	240	37.6	11.2
8	15930.00	37.5 AV	54.0	-16.5	1.48 H	240	26.3	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	110.8 PK			1.80 V	178	108.6	2.2
2	*5310.00	103.5 AV			1.80 V	178	101.3	2.2
3	5350.00	66.8 PK	74.0	-7.2	1.80 V	178	64.5	2.3
4	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**1.80 V**	**178**	**51.6**	**2.3**
5	10620.00	45.7 PK	74.0	-28.3	1.46 V	165	34.0	11.7
6	10620.00	34.7 AV	54.0	-19.3	1.46 V	165	23.0	11.7
7	15930.00	47.4 PK	74.0	-26.6	1.51 V	241	36.2	11.2
8	15930.00	35.9 AV	54.0	-18.1	1.51 V	241	24.7	11.2

REMARKS:

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

CHANNEL	TX Channel 102	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	61.2 PK	74.0	-12.8	1.84 H	292	58.6	2.6
2	5460.00	44.0 AV	54.0	-10.0	1.84 H	292	41.4	2.6
3	#5470.00	65.4 PK	68.2	-2.8	1.84 H	292	62.8	2.6
4	*5510.00	106.1 PK			1.84 H	292	103.6	2.5
5	*5510.00	96.4 AV			1.84 H	292	93.9	2.5
6	11020.00	48.6 PK	74.0	-25.4	1.54 H	205	36.3	12.3
7	11020.00	36.0 AV	54.0	-18.0	1.54 H	205	23.7	12.3
8	#16530.00	48.8 PK	68.2	-19.4	1.49 H	251	34.9	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	64.6 PK	74.0	-9.4	1.90 V	21	62.0	2.6
2	5460.00	47.4 AV	54.0	-6.6	1.90 V	21	44.8	2.6
3	#5470.00	68.0 PK	68.2	-0.2	1.90 V	21	65.4	2.6
4	*5510.00	112.8 PK			1.90 V	21	110.3	2.5
5	*5510.00	103.0 AV			1.90 V	21	100.5	2.5
6	11020.00	46.7 PK	74.0	-27.3	1.49 V	176	34.4	12.3
7	11020.00	35.4 AV	54.0	-18.6	1.49 V	176	23.1	12.3
8	#16530.00	48.3 PK	68.2	-19.9	1.57 V	248	34.4	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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 110	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	1.89 H	290	52.6	2.6
2	5460.00	41.7 AV	54.0	-12.3	1.89 H	290	39.1	2.6
3	#5470.00	57.3 PK	68.2	-10.9	1.89 H	290	54.7	2.6
4	*5550.00	105.8 PK			1.89 H	290	103.1	2.7
5	*5550.00	96.2 AV			1.89 H	290	93.5	2.7
6	11100.00	48.9 PK	74.0	-25.1	1.55 H	217	36.8	12.1
7	11100.00	36.2 AV	54.0	-17.8	1.55 H	217	24.1	12.1
8	#16650.00	48.9 PK	68.2	-19.3	1.58 H	242	34.7	14.2
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	5460.00	58.6 PK	74.0	-15.4	2.29 V	19	56.0	2.6
2	5460.00	45.1 AV	54.0	-8.9	2.29 V	19	42.5	2.6
3	#5470.00	60.4 PK	68.2	-7.8	2.29 V	19	57.8	2.6
4	*5550.00	112.5 PK			2.29 V	19	109.8	2.7
5	*5550.00	103.0 AV			2.29 V	19	100.3	2.7
6	11100.00	46.5 PK	74.0	-27.5	1.52 V	160	34.4	12.1
7	11100.00	35.3 AV	54.0	-18.7	1.52 V	160	23.2	12.1
8	#16650.00	47.8 PK	68.2	-20.4	1.53 V	251	33.6	14.2

REMARKS:

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

CHANNEL	TX Channel 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	106.8 PK			1.83 H	303	103.9	2.9
2	*5670.00	97.3 AV			1.83 H	303	94.4	2.9
3	#5725.00	62.4 PK	68.2	-5.8	1.83 H	303	59.5	2.9
4	#5733.00	63.9 PK	68.2	-4.3	1.83 H	303	61.0	2.9
5	11340.00	47.9 PK	74.0	-26.1	1.55 H	209	35.0	12.9
6	11340.00	35.7 AV	54.0	-18.3	1.55 H	209	22.8	12.9
7	#17010.00	49.1 PK	68.2	-19.1	1.59 H	231	33.3	15.8
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	*5670.00	114.0 PK			1.64 V	23	111.1	2.9
2	*5670.00	104.2 AV			1.64 V	23	101.3	2.9
3	#5725.00	65.3 PK	68.2	-2.9	1.64 V	23	62.4	2.9
4	#5733.00	66.9 PK	68.2	-1.3	1.64 V	23	64.0	2.9
5	11340.00	46.4 PK	74.0	-27.6	1.49 V	153	33.5	12.9
6	11340.00	35.0 AV	54.0	-19.0	1.49 V	153	22.1	12.9
7	#17010.00	47.8 PK	68.2	-20.4	1.60 V	232	32.0	15.8

REMARKS:

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

CHANNEL	TX Channel 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	#5470.00	41.4 PK	68.2	-26.8	1.92 H	277	38.8	2.6
2	*5710.00	106.2 PK			1.92 H	277	103.2	3.0
3	*5710.00	96.6 AV			1.92 H	277	93.6	3.0
4	#5850.00	49.3 PK	68.2	-18.9	1.92 H	277	46.0	3.3
5	11420.00	48.7 PK	74.0	-25.3	1.51 H	222	35.8	12.9
6	11420.00	36.1 AV	54.0	-17.9	1.51 H	222	23.2	12.9
7	#17130.00	48.5 PK	68.2	-19.7	1.55 H	236	32.7	15.8
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	#5470.00	43.6 PK	68.2	-24.6	1.62 V	23	41.0	2.6
2	*5710.00	111.9 PK			1.62 V	23	108.9	3.0
3	*5710.00	103.1 AV			1.62 V	23	100.1	3.0
4	#5850.00	51.1 PK	68.2	-17.1	1.62 V	23	47.8	3.3
5	11420.00	46.5 PK	74.0	-27.5	1.53 V	159	33.6	12.9
6	11420.00	35.0 AV	54.0	-19.0	1.53 V	159	22.1	12.9
7	#17130.00	48.5 PK	68.2	-19.7	1.51 V	252	32.7	15.8

REMARKS:

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

802.11ac (VHT80)

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	49.0 PK	74.0	-25.0	1.66 H	171	46.4	2.6
2	5150.00	38.7 AV	54.0	-15.3	1.66 H	171	36.1	2.6
3	*5290.00	100.8 PK			1.66 H	171	98.7	2.1
4	*5290.00	94.0 AV			1.66 H	171	91.9	2.1
5	5350.00	60.8 PK	74.0	-13.2	1.66 H	171	58.5	2.3
6	5350.00	50.5 AV	54.0	-3.5	1.66 H	171	48.2	2.3
7	#10580.00	48.2 PK	68.2	-20.0	1.48 H	199	36.4	11.8
8	15870.00	48.7 PK	74.0	-25.3	1.51 H	221	37.5	11.2
9	15870.00	37.6 AV	54.0	-16.4	1.51 H	221	26.4	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	52.4 PK	74.0	-21.6	1.84 V	178	49.8	2.6
2	5150.00	42.1 AV	54.0	-11.9	1.84 V	178	39.5	2.6
3	*5290.00	107.3 PK			1.84 V	178	105.2	2.1
4	*5290.00	99.4 AV			1.84 V	178	97.3	2.1
5	5350.00	64.2 PK	74.0	-9.8	1.84 V	178	61.9	2.3
6	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**1.84 V**	**178**	**51.6**	**2.3**
7	#10580.00	45.9 PK	68.2	-22.3	1.55 V	176	34.1	11.8
8	15870.00	47.3 PK	74.0	-26.7	1.56 V	228	36.1	11.2
9	15870.00	36.0 AV	54.0	-18.0	1.56 V	228	24.8	11.2

REMARKS:

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

CHANNEL	TX Channel 106	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	62.5 PK	74.0	-11.5	1.84 H	292	59.9	2.6
2	5460.00	49.1 AV	54.0	-4.9	1.84 H	292	46.5	2.6
3	#5470.00	65.1 PK	68.2	-3.1	1.84 H	292	62.5	2.6
4	*5530.00	102.3 PK			1.84 H	292	99.7	2.6
5	*5530.00	95.1 AV			1.84 H	292	92.5	2.6
6	#5725.00	50.9 PK	68.2	-17.3	1.84 H	292	48.0	2.9
7	11060.00	48.0 PK	74.0	-26.0	1.53 H	217	35.9	12.1
8	11060.00	35.5 AV	54.0	-18.5	1.53 H	217	23.4	12.1
9	#16590.00	49.5 PK	68.2	-18.7	1.51 H	230	35.3	14.2
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	5460.00	65.9 PK	74.0	-8.1	2.25 V	28	63.3	2.6
2	5460.00	52.5 AV	54.0	-1.5	2.25 V	28	49.9	2.6
3	**#5470.00**	**68.1 PK**	**68.2**	**-0.1**	**2.25 V**	**28**	**65.5**	**2.6**
4	*5530.00	109.7 PK			2.25 V	28	107.1	2.6
5	*5530.00	101.7 AV			2.25 V	28	99.1	2.6
6	#5725.00	53.9 PK	68.2	-14.3	2.25 V	28	51.0	2.9
7	11060.00	45.8 PK	74.0	-28.2	1.54 V	175	33.7	12.1
8	11060.00	34.9 AV	54.0	-19.1	1.54 V	175	22.8	12.1
9	#16590.00	47.6 PK	68.2	-20.6	1.60 V	231	33.4	14.2

REMARKS:

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

CHANNEL	TX Channel 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	102.5 PK			1.84 H	297	99.7	2.8
2	*5610.00	95.2 AV			1.84 H	297	92.4	2.8
3	#5725.00	52.1 PK	68.2	-16.1	1.84 H	297	49.2	2.9
4	#5732.70	63.1 PK	68.2	-5.1	1.84 H	297	60.2	2.9
5	11220.00	47.7 PK	74.0	-26.3	1.53 H	215	35.4	12.3
6	11220.00	35.4 AV	54.0	-18.6	1.53 H	215	23.1	12.3
7	#16830.00	49.4 PK	68.2	-18.8	1.58 H	246	34.8	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	*5610.00	109.5 PK			2.27 V	28	106.7	2.8
2	*5610.00	101.4 AV			2.27 V	28	98.6	2.8
3	#5725.00	55.2 PK	68.2	-13.0	2.27 V	28	52.3	2.9
4	#5732.70	66.3 PK	68.2	-1.9	2.27 V	28	63.4	2.9
5	11220.00	46.2 PK	74.0	-27.8	1.45 V	167	33.9	12.3
6	11220.00	34.9 AV	54.0	-19.1	1.45 V	167	22.6	12.3
7	#16830.00	47.3 PK	68.2	-20.9	1.60 V	253	32.7	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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 138	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	#5470.00	49.0 PK	68.2	-19.2	1.82 H	292	46.4	2.6
2	*5690.00	103.2 PK			1.82 H	292	100.3	2.9
3	*5690.00	96.3 AV			1.82 H	292	93.4	2.9
4	#5850.00	63.3 PK	68.2	-4.9	1.82 H	292	60.0	3.3
5	11380.00	47.6 PK	74.0	-26.4	1.53 H	223	34.7	12.9
6	11380.00	35.5 AV	54.0	-18.5	1.53 H	223	22.6	12.9
7	#17070.00	48.9 PK	68.2	-19.3	1.51 H	231	32.8	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	#5470.00	52.1 PK	68.2	-16.1	1.65 V	31	49.5	2.6
2	*5690.00	109.9 PK			1.65 V	31	107.0	2.9
3	*5690.00	102.3 AV			1.65 V	31	99.4	2.9
4	#5850.00	66.4 PK	68.2	-1.8	1.65 V	31	63.1	3.3
5	11380.00	46.2 PK	74.0	-27.8	1.46 V	163	33.3	12.9
6	11380.00	34.8 AV	54.0	-19.2	1.46 V	163	21.9	12.9
7	#17070.00	48.3 PK	68.2	-19.9	1.57 V	257	32.2	16.1

REMARKS:

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

Below 1GHz Data:

802.11a

CHANNEL	TX Channel 116	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	122.86	37.9 QP	43.5	-5.6	2.50 H	153	47.3	-9.4
2	272.40	33.6 QP	46.0	-12.4	2.50 H	204	41.5	-7.9
3	468.42	36.8 QP	46.0	-9.2	2.00 H	224	39.4	-2.6
4	571.81	33.3 QP	46.0	-12.7	2.00 H	233	33.9	-0.6
5	759.14	30.1 QP	46.0	-15.9	1.50 H	321	26.7	3.4
6	778.92	30.4 QP	46.0	-15.6	2.00 H	184	26.7	3.7
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	35.85	31.1 QP	40.0	-8.9	1.00 V	271	39.9	-8.8
2	270.35	38.5 QP	46.0	-7.5	1.50 V	276	46.5	-8.0
3	345.16	36.9 QP	46.0	-9.1	1.00 V	134	42.6	-5.7
4	491.61	38.8 QP	46.0	-7.2	1.00 V	264	41.0	-2.2
5	758.15	40.5 QP	46.0	-5.5	2.00 V	285	37.1	3.4
6	765.61	32.9 QP	46.0	-13.1	1.50 V	305	29.3	3.6

REMARKS:

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

802.11ac (VHT40)

CHANNEL	TX Channel 54	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	125.33	37.6 QP	43.5	-5.9	2.00 H	124	46.9	-9.3
2	270.52	33.2 QP	46.0	-12.8	3.00 H	163	41.2	-8.0
3	467.27	36.9 QP	46.0	-9.1	2.00 H	229	39.6	-2.7
4	571.17	34.2 QP	46.0	-11.8	2.50 H	247	34.8	-0.6
5	759.23	28.2 QP	46.0	-17.8	1.29 H	267	24.8	3.4
6	778.88	29.6 QP	46.0	-16.4	1.50 H	157	25.9	3.7
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	37.45	29.6 QP	40.0	-10.4	1.00 V	242	38.3	-8.7
2	271.26	40.7 QP	46.0	-5.3	1.50 V	277	48.7	-8.0
3	343.51	38.4 QP	46.0	-7.6	1.00 V	129	44.2	-5.8
4	490.55	40.8 QP	46.0	-5.2	1.00 V	247	43.0	-2.2
5	757.13	41.1 QP	46.0	-4.9	2.00 V	276	37.7	3.4
6	765.89	32.6 QP	46.0	-13.4	1.00 V	273	29.0	3.6

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 2017	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3 Tested Date: June 30, 2018

4.2.3 Test Procedure

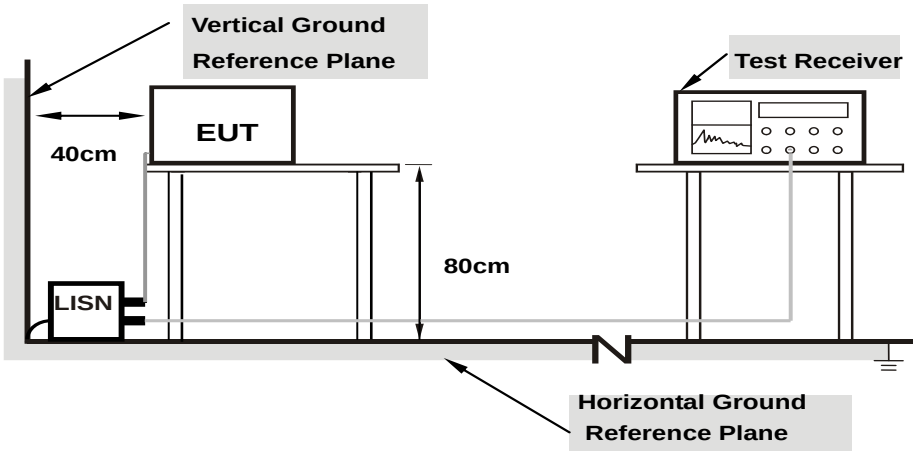
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

4.2.7 Test Results (Mode 1)

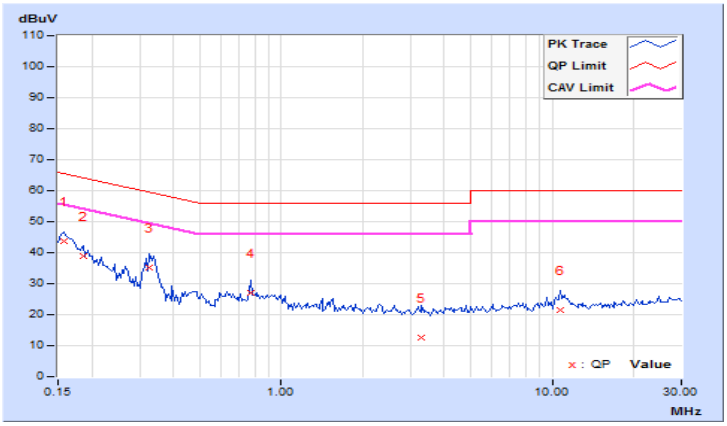
For Radio 1

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	10.05	33.78	17.55	43.83	27.60	65.58	55.58	-21.75	-27.98
2	0.18516	10.06	28.73	13.19	38.79	23.25	64.25	54.25	-25.46	-31.00
3	0.32578	10.10	25.01	15.29	35.11	25.39	59.56	49.56	-24.45	-24.17
4	0.77109	10.15	17.06	14.91	27.21	25.06	56.00	46.00	-28.79	-20.94
5	3.28516	10.30	2.37	-3.45	12.67	6.85	56.00	46.00	-43.33	-39.15
6	10.75391	10.76	10.75	1.89	21.51	12.65	60.00	50.00	-38.49	-37.35

Remarks:

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



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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	9.96	33.15	17.45	43.11	27.41	65.58	55.58	-22.47	-28.17
2	0.32188	10.00	24.40	15.15	34.40	25.15	59.66	49.66	-25.26	-24.51
3	**0.76719**	**10.03**	**17.28**	**15.94**	**27.31**	**25.97**	**56.00**	**46.00**	**-28.69**	**-20.03**
4	2.03125	10.10	7.71	2.04	17.81	12.14	56.00	46.00	-38.19	-33.86
5	10.56641	10.58	10.98	3.15	21.56	13.73	60.00	50.00	-38.44	-36.27
6	23.95313	11.21	-0.64	-6.21	10.57	5.00	60.00	50.00	-49.43	-45.00

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

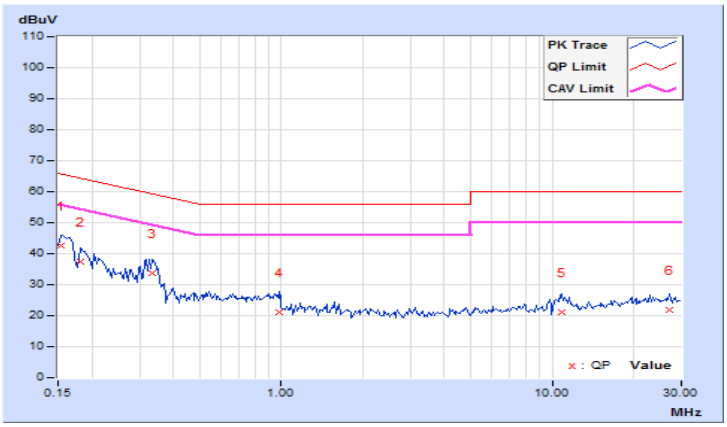
For Radio 2

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.05	32.68	12.62	42.73	22.67	65.79	55.79	-23.06	-33.12
2	0.18125	10.06	27.39	9.67	37.45	19.73	64.43	54.43	-26.98	-34.70
3	0.33359	10.10	23.65	14.36	33.75	24.46	59.36	49.36	-25.61	-24.90
4	0.97813	10.17	10.84	3.52	21.01	13.69	56.00	46.00	-34.99	-32.31
5	10.88281	10.77	10.18	-0.96	20.95	9.81	60.00	50.00	-39.05	-40.19
6	27.16797	11.53	10.28	0.14	21.81	11.67	60.00	50.00	-38.19	-38.33

Remarks:

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

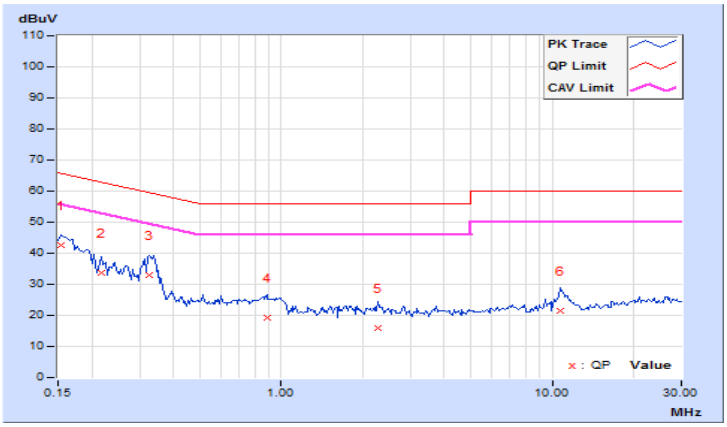


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.96	32.66	12.56	42.62	22.52	65.79	55.79	-23.17	-33.27
2	0.21641	9.97	23.60	7.06	33.57	17.03	62.96	52.96	-29.39	-35.93
3	0.32578	10.00	23.04	12.14	33.04	22.14	59.56	49.56	-26.52	-27.42
4	0.88438	10.04	9.40	2.22	19.44	12.26	56.00	46.00	-36.56	-33.74
5	2.28125	10.11	5.81	-1.08	15.92	9.03	56.00	46.00	-40.08	-36.97
6	10.77344	10.59	10.90	0.83	21.49	11.42	60.00	50.00	-38.51	-38.58

Remarks:

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



4.2.8 Test Results (Mode 2)

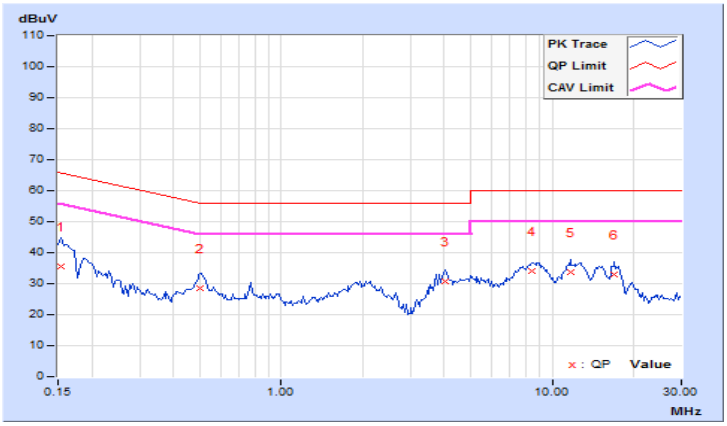
For Radio 1

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.05	25.38	9.04	35.43	19.09	65.79	55.79	-30.36	-36.70
2	0.50000	10.13	18.22	10.21	28.35	20.34	56.00	46.00	-27.65	-25.66
3	4.03125	10.34	20.25	11.73	30.59	22.07	56.00	46.00	-25.41	-23.93
4	8.39844	10.61	23.58	17.55	34.19	28.16	60.00	50.00	-25.81	-21.84
5	11.65625	10.83	22.92	17.76	33.75	28.59	60.00	50.00	-26.25	-21.41
6	17.01563	11.19	21.82	16.35	33.01	27.54	60.00	50.00	-26.99	-22.46

Remarks:

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

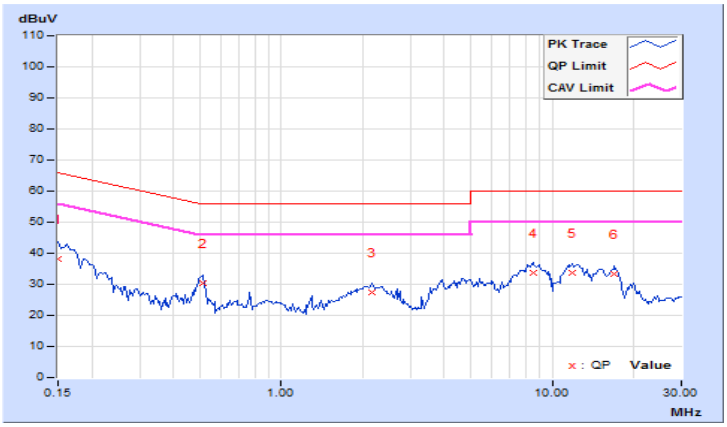


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.95	28.34	9.42	38.29	19.37	66.00	56.00	-27.71	-36.63
2	0.51328	10.02	20.28	11.72	30.30	21.74	56.00	46.00	-25.70	-24.26
3	2.17578	10.11	17.44	11.36	27.55	21.47	56.00	46.00	-28.45	-24.53
4	8.50781	10.45	23.36	17.33	33.81	27.78	60.00	50.00	-26.19	-22.22
5	11.92578	10.67	23.00	17.70	33.67	28.37	60.00	50.00	-26.33	-21.63
6	17.04297	10.99	22.23	17.05	33.22	28.04	60.00	50.00	-26.78	-21.96

Remarks:

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



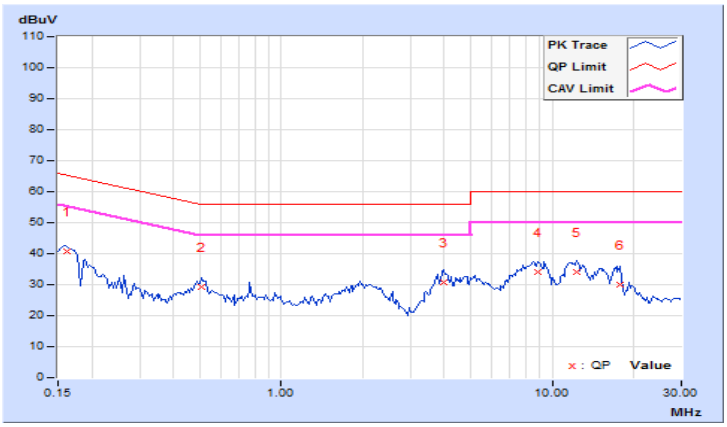
For Radio 2

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.05	30.55	17.67	40.60	27.72	65.38	55.38	-24.78	-27.66
2	0.50938	10.13	19.12	10.39	29.25	20.52	56.00	46.00	-26.75	-25.48
3	3.98438	10.34	20.27	11.57	30.61	21.91	56.00	46.00	-25.39	-24.09
4	8.90234	10.64	23.57	18.01	34.21	28.65	60.00	50.00	-25.79	-21.35
5	12.38281	10.88	23.17	17.52	34.05	28.40	60.00	50.00	-25.95	-21.60
6	17.75781	11.24	18.79	13.42	30.03	24.66	60.00	50.00	-29.97	-25.34

Remarks:

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

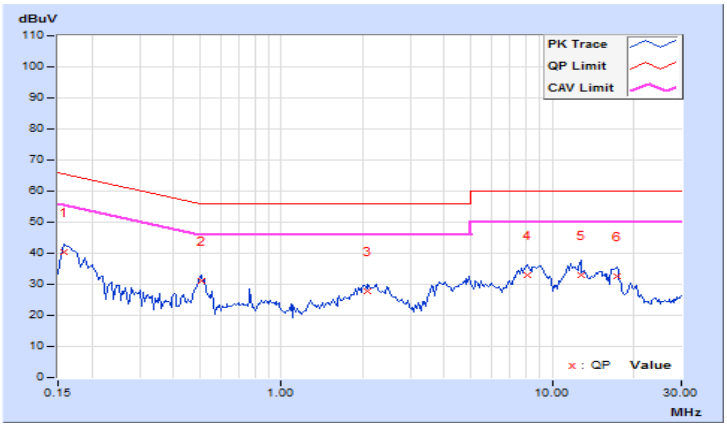


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	9.96	30.37	12.86	40.33	22.82	65.58	55.58	-25.25	-32.76
2	0.50547	10.02	20.99	13.21	31.01	23.23	56.00	46.00	-24.99	-22.77
3	2.09375	10.10	17.63	11.49	27.73	21.59	56.00	46.00	-28.27	-24.41
4	8.06641	10.43	22.50	16.28	32.93	26.71	60.00	50.00	-27.07	-23.29
5	12.75000	10.72	22.24	16.34	32.96	27.06	60.00	50.00	-27.04	-22.94
6	17.42578	11.01	21.46	16.07	32.47	27.08	60.00	50.00	-27.53	-22.92

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

Note: This device can support different category application which switched by access point mode and client mode by software.

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 $N_{ANT} \geq 5$.

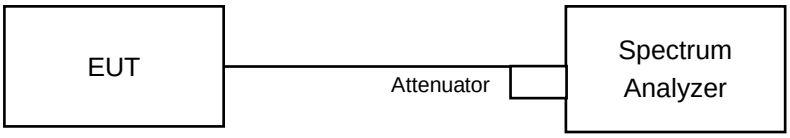
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

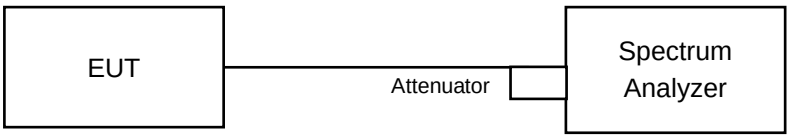
FOR POWER OUTPUT MEASUREMENT

For other channels:

For channel straddling 5725MHz:



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

802.11a

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.44	20.98	235.976	23.73	23.97	Pass
60	5300	20.46	21.10	239.998	23.80	23.87	Pass
64	5320	20.60	20.96	239.553	23.79	23.97	Pass
100	5500	21.01	20.44	236.845	23.74	23.96	Pass
116	5580	21.17	20.76	250.042	23.98	24.00	Pass
140	5700	20.30	20.83	228.212	23.58	23.84	Pass
*144 (U-NII-2C Band)	5720	15.98	16.89	91.46	19.61	22.63	Pass
*144 (U-NII-3 Band)	5720	9.98	10.91	23.032	13.62	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:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	114.492	20.59
Note: The total power was calculated through formula and record the value for reference only.			

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	20.46	20.72	229.205	23.60
Note: The total power was calculated through formula and record the value for reference only.					

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.83	20.07
60	5300	20.02	19.40
64	5320	19.82	20.27
100	5500	19.78	19.81
116	5580	19.99	19.99
140	5700	19.59	19.26
144 (U-NII-2C Band)	5720	14.74	14.56

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	19.83	23.97 < 24
60	5300	19.40	23.87 < 24
64	5320	19.82	23.97 < 24
100	5500	19.78	23.96 < 24
116	5580	19.99	24 = 24
140	5700	19.26	23.84 < 24
144 (U-NII-2C Band)	5720	14.56	22.63 < 24

Beamforming Mode

802.11ac (VHT20)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.20	21.10	233.538	23.68	24.00	Pass
60	5300	20.26	21.27	240.138	23.80	24.00	Pass
64	5320	20.65	20.84	237.484	23.76	24.00	Pass
100	5500	20.95	20.42	234.605	23.70	24.00	Pass
116	5580	21.18	20.62	246.565	23.92	24.00	Pass
140	5700	20.56	21.02	240.237	23.81	24.00	Pass
*144 (U-NII-2C Band)	5720	16.96	17.25	102.747	20.12	22.80	Pass
*144 (U-NII-3 Band)	5720	11.29	11.81	28.63	14.57	30.00	Pass

Note: 1. For U-NII-2A band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.73dBi < 6dBi, so the power limit shall not be reduced.
2. For U-NII-2C band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.81dBi < 6dBi, so the power limit shall not be reduced.
3. For U-NII-3 band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.96dBi < 6dBi, so the power limit shall not be reduced.
* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	131.377	21.19
Note: The total power was calculated through formula and record the value for reference only.			

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	20.81	21.15	250.821	23.99
Note: The total power was calculated through formula and record the value for reference only.					

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.78	20.76
60	5300	20.73	20.56
64	5320	20.88	21.19
100	5500	20.45	20.56
116	5580	20.52	20.51
140	5700	20.50	20.29
144 (U-NII-2C Band)	5720	15.24	15.15

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	20.76	24.17 > 24
60	5300	20.56	24.13 > 24
64	5320	20.88	24.19 > 24
100	5500	20.45	24.1 > 24
116	5580	20.51	24.11 > 24
140	5700	20.29	24.07 > 24
144 (U-NII-2C Band)	5720	15.15	22.8 < 24

802.11ac (VHT40)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.53	21.19	244.502	23.88	24.00	Pass
62	5310	19.78	20.15	198.574	22.98	24.00	Pass
102	5510	20.58	20.24	219.97	23.42	24.00	Pass
110	5550	20.75	20.91	242.16	23.84	24.00	Pass
134	5670	20.59	20.74	233.128	23.68	24.00	Pass
*142 (U-NII-2C Band)	5710	16.89	17.42	107.265	20.30	24.00	Pass
*142 (U-NII-3 Band)	5710	5.46	5.79	7.533	8.77	30.00	Pass

Note: 1. For U-NII-2A band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.73dBi < 6dBi, so the power limit shall not be reduced.
2. For U-NII-2C band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.81dBi < 6dBi, so the power limit shall not be reduced.
3. For U-NII-3 band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.96dBi < 6dBi, so the power limit shall not be reduced.
* 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:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
142	5710	114.798	20.6
Note: The total power was calculated through formula and record the value for reference only.			

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	20.72	20.90	241.059	23.82
Note: The total power was calculated through formula and record the value for reference only.					

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	40.86	40.80
62	5310	41.21	41.04
102	5510	40.94	40.37
110	5550	40.70	40.57
134	5670	40.78	40.60
142 (U-NII-2C Band)	5710	35.43	35.32

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	40.80	27.1 > 24
62	5310	41.04	27.13 > 24
102	5510	40.37	27.06 > 24
110	5550	40.57	27.08 > 24
134	5670	40.60	27.08 > 24
142 (U-NII-2C Band)	5710	35.32	26.48 > 24

802.11ac (VHT80)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	19.67	19.20	175.859	22.45	24.00	Pass
106	5530	20.41	20.42	220.055	23.43	24.00	Pass
122	5610	20.86	20.32	229.546	23.61	24.00	Pass
*138 (U-NII-2C Band)	5690	16.23	16.65	92.877	19.68	24.00	Pass
*138 (U-NII-3 Band)	5690	1.67	2.64	3.481	5.42	30.00	Pass

Note: 1. For U-NII-2A band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.73dBi < 6dBi, so the power limit shall not be reduced.
2. For U-NII-2C band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.81dBi < 6dBi, so the power limit shall not be reduced.
3. For U-NII-3 band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.96dBi < 6dBi, so the power limit shall not be reduced.
* 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:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
138	5690	96.358	19.84
Note: The total power was calculated through formula and record the value for reference only.			

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

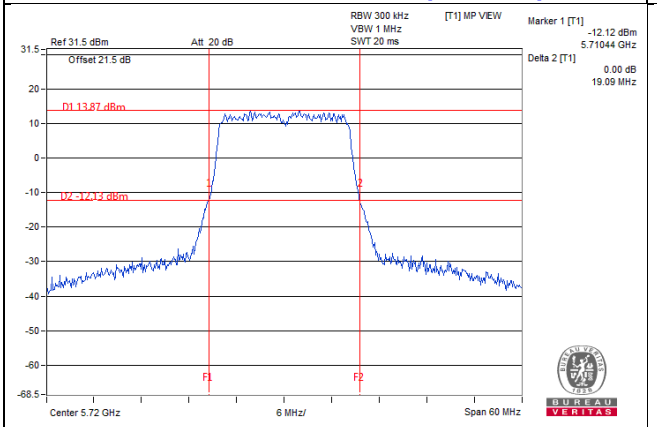
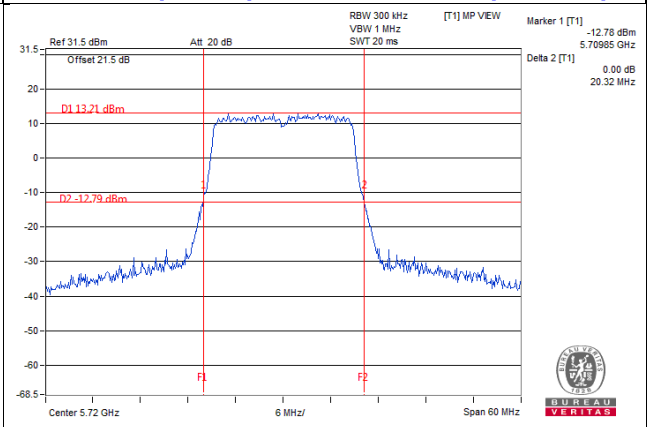
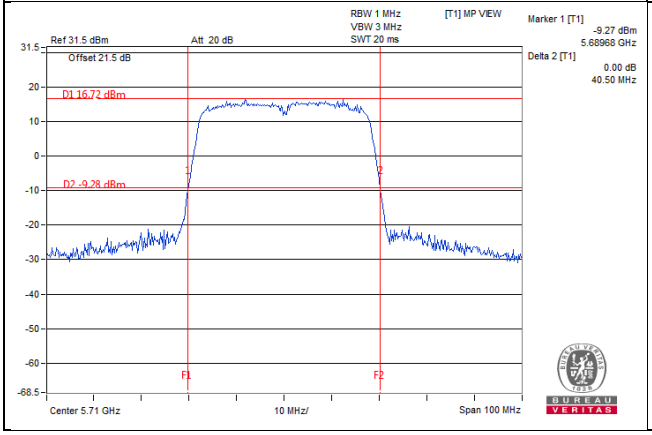
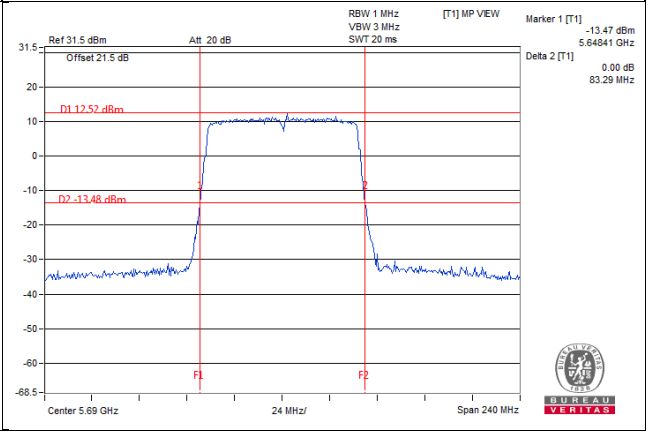
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	20.38	20.74	227.721	23.57
Note: The total power was calculated through formula and record the value for reference only.					

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	83.63	83.91
106	5530	83.35	83.39
122	5610	83.71	83.29
138 (U-NII-2C Band)	5690	76.59	76.96

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	83.63	30.22 > 24
106	5530	83.35	30.2 > 24
122	5610	83.29	30.2 > 24
138 (U-NII-2C Band)	5690	76.59	29.84 > 24

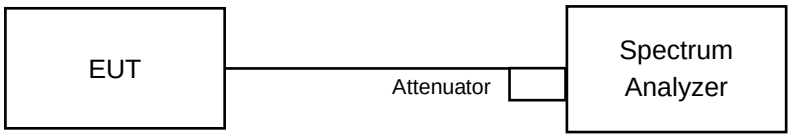
Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144 (U-NII-2C)	**802.11ac (VHT20) _Chain 1 / CH144 (U-NII-2C)**
	
802.11ac (VHT40) _Chain 1 / CH142 (U-NII-2C)	**802.11ac (VHT80) _Chain 0 / CH138 (U-NII-2C)**
	

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

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

CDD Mode

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	16.56	16.56
60	5300	16.56	16.44
64	5320	16.56	16.56
100	5500	16.56	16.44
116	5580	16.56	16.56
140	5700	16.44	16.56
144 (U-NII-2C Band)	5720	13.28	13.28
144 (U-NII-3 Band)	5720	3.28	3.16

Beamforming Mode

802.11ac (VHT20)

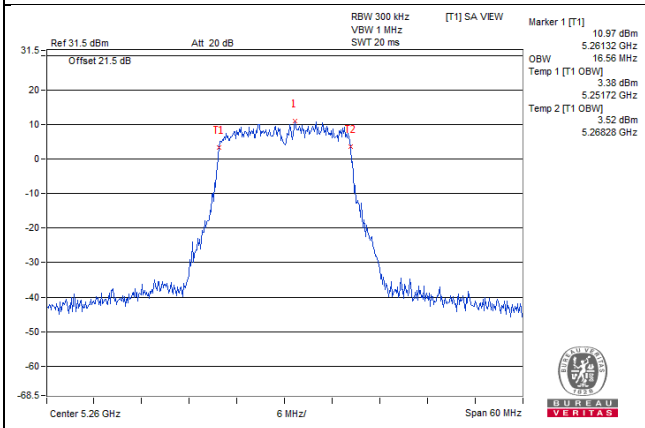
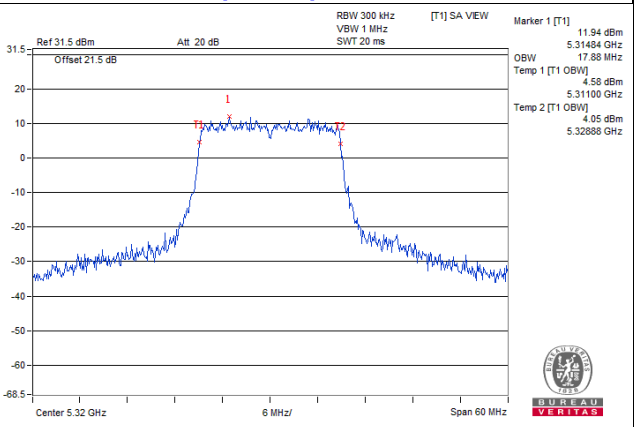
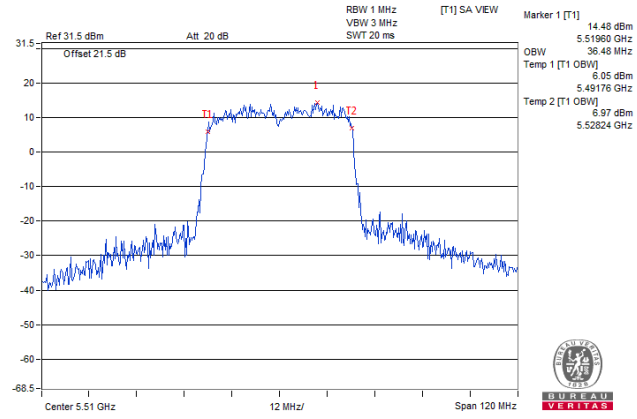
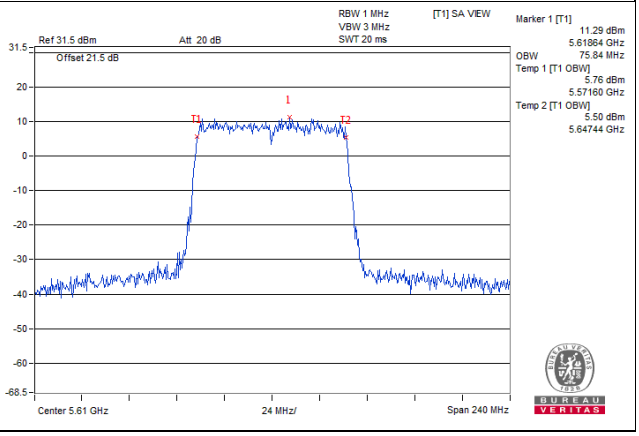
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.76	17.76
60	5300	17.64	17.64
64	5320	17.76	17.88
100	5500	17.76	17.76
116	5580	17.64	17.64
140	5700	17.64	17.64
144 (U-NII-2C Band)	5720	13.88	13.88
144 (U-NII-3 Band)	5720	3.76	3.88

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	36.24	36.24
62	5310	36.24	36.24
102	5510	36.24	36.48
110	5550	36.24	36.24
134	5670	36.24	36.24
142 (U-NII-2C Band)	5710	33.20	33.20
142 (U-NII-3 Band)	5710	3.00	3.00

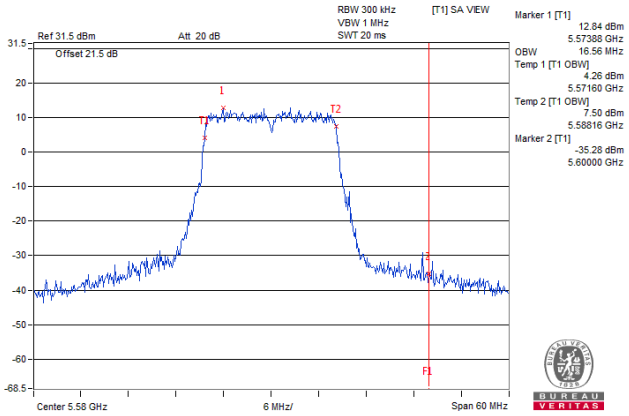
802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	75.36	75.84
106	5530	75.36	75.36
122	5610	75.84	75.84
138 (U-NII-2C Band)	5690	72.92	72.92
138 (U-NII-3 Band)	5690	2.92	2.44

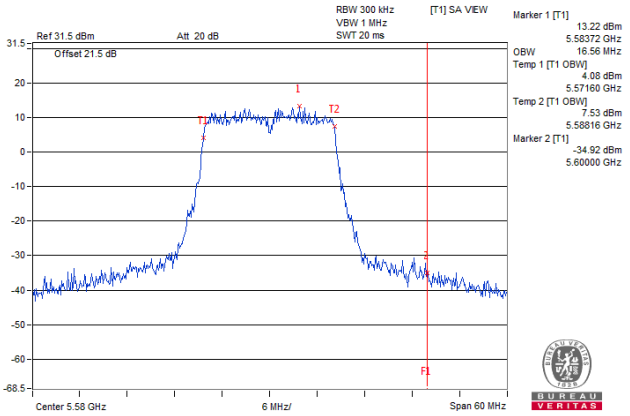
Spectrum Plot of Max Value	
802.11a_Chain 0 / CH52	**802.11ac (VHT20)_Chain 1 / CH64**
	
802.11ac (VHT40) _Chain 1 / CH102	**802.11ac (VHT80) _Chain 0 / CH122**
	

Verify that the 5600 – 5650 MHz band is notched.
Test results demonstrating last channel shall not exceed the band edge on 5600~5650MHz

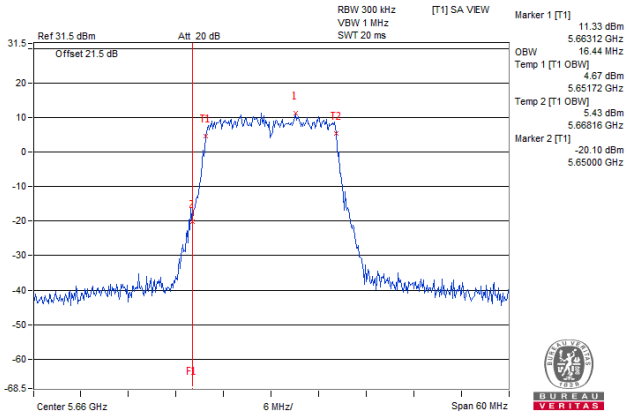
802.11a / Chain 0 – CH116



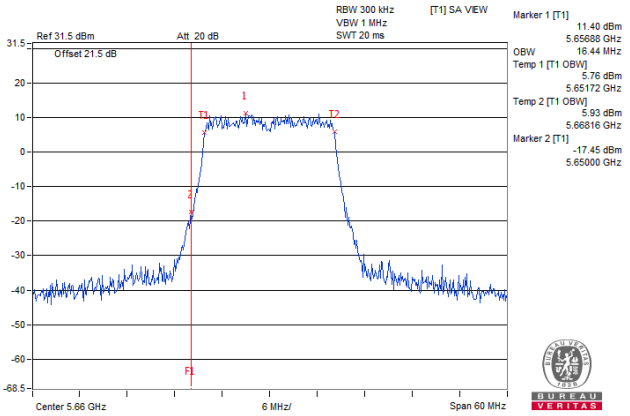
802.11a / Chain 1 – CH116



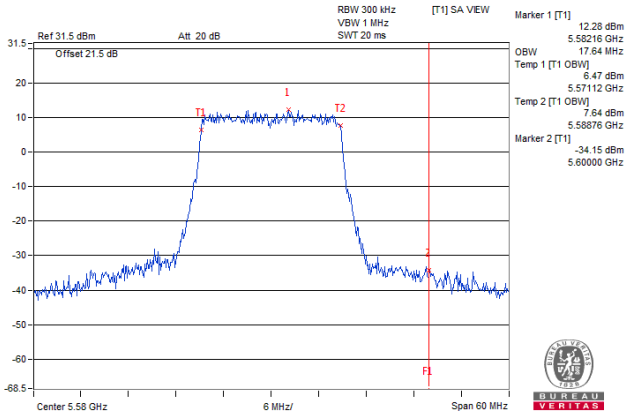
802.11a / Chain 0 – CH132



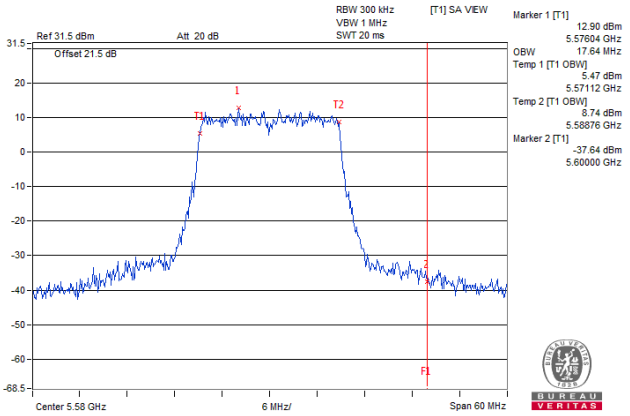
802.11a / Chain 1 – CH132



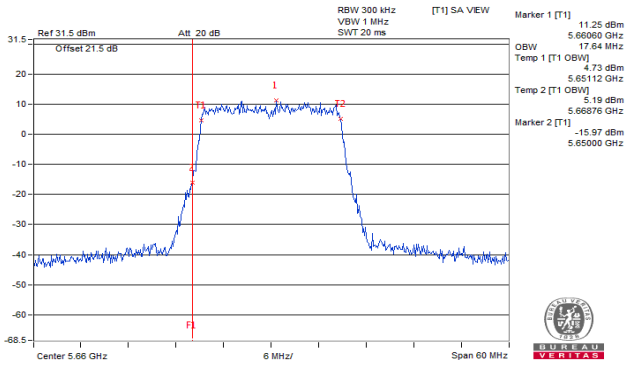
802.11ac (VHT20) / Chain 0 – CH116



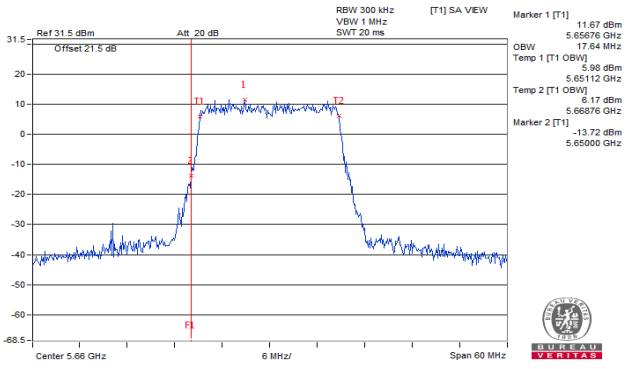
802.11ac (VHT20) / Chain 1 – CH116



802.11ac (VHT20) / Chain 0 – CH132

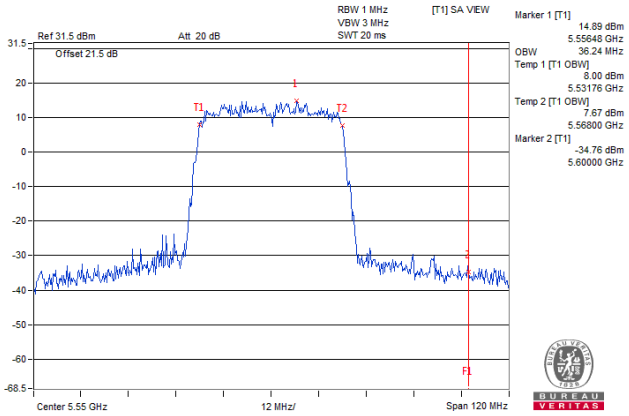


802.11ac (VHT20) / Chain 1 – CH132

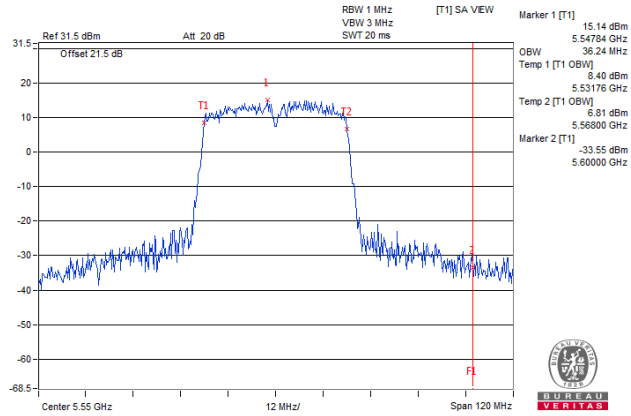


Verify that the 5600 – 5650 MHz band is notched.
Test results demonstrating last channel shall not exceed the band edge on 5600~5650MHz

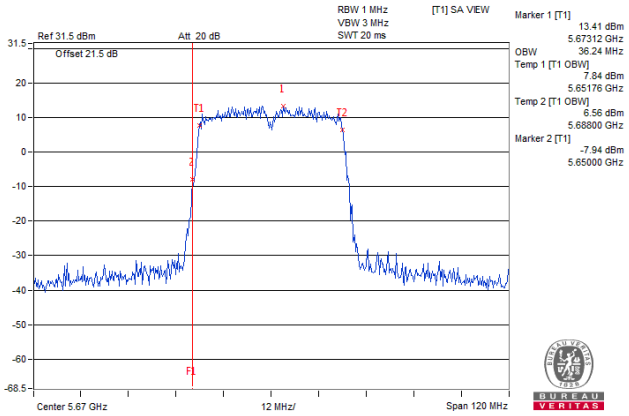
802.11ac (VHT40) / Chain 0 – CH110



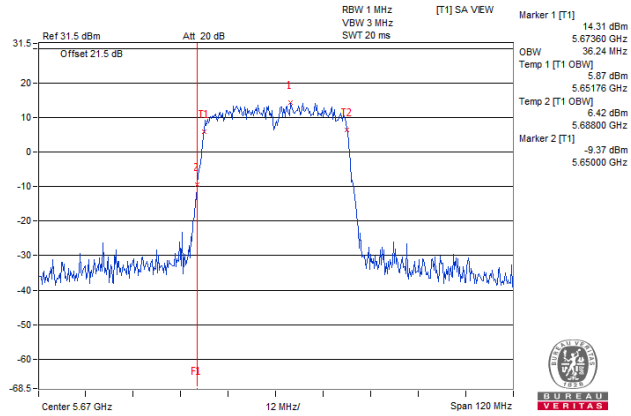
802.11ac (VHT40) / Chain 1 – CH110



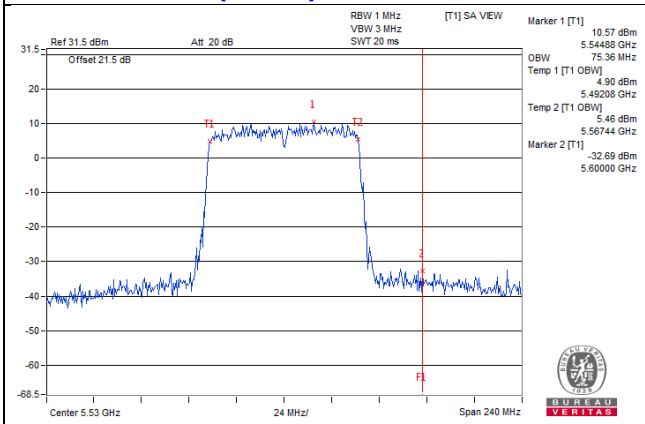
802.11ac (VHT40) / Chain 0 – CH134



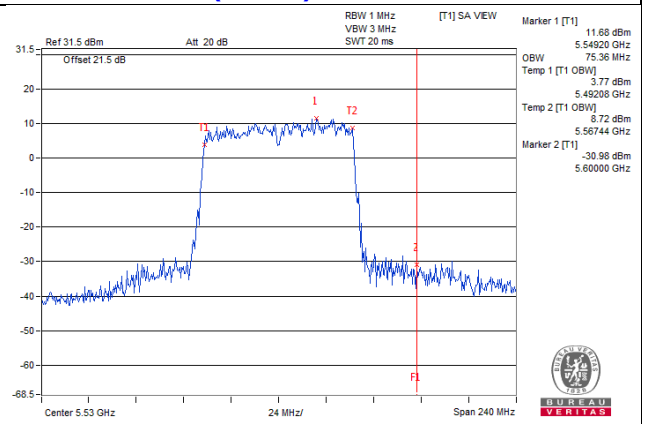
802.11ac (VHT40) / Chain 1 – CH134



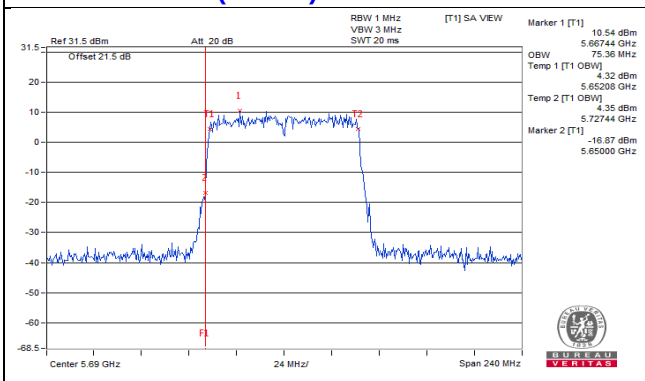
802.11ac (VHT80) / Chain 0 – CH106



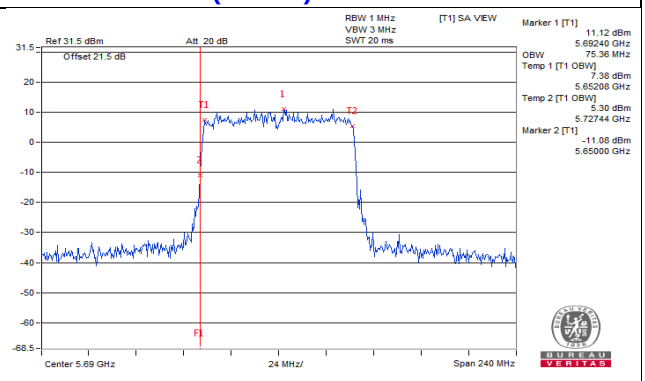
802.11ac (VHT80) / Chain 1 – CH106



802.11ac (VHT80) / Chain 0 – CH138



802.11ac (VHT80) / Chain 1 – CH138



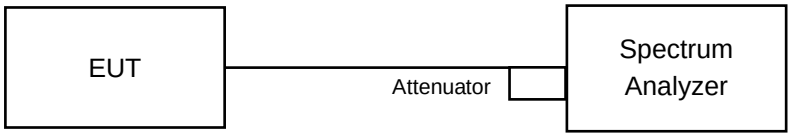
4.5 Peak Power Spectral Density Measurement

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

Note: This device can support different category application which switched by access point mode and client mode by software.

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:

802.11ac (VHT20)

Using method SA-1

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

802.11a, 802.11ac (VHT40), 802.11ac (VHT80)

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:

802.11ac (VHT20)

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

802.11a, 802.11ac (VHT40), 802.11ac (VHT80)

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 With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	6.00	7.33	0.14	9.87	11	Pass
60	5300	6.33	7.65	0.14	10.19	11	Pass
64	5320	6.67	7.28	0.14	10.14	11	Pass
100	5500	7.70	7.52	0.14	10.76	11	Pass
116	5580	7.85	7.56	0.14	10.86	11	Pass
140	5700	6.43	7.78	0.14	10.31	11	Pass
144 (U-NII-2C Band)	5720	6.55	7.83	0.14	10.39	11	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 band: the directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 5.73dBi < 6dBi , so the power density limit shall not be reduced.

3. For U-NII-2C band: the directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 5.81dBi < 6dBi , so the power density limit shall not be reduced.

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

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
52	5260	5.98	7.13	9.60	11	Pass
60	5300	6.32	7.64	10.04	11	Pass
64	5320	6.49	7.15	9.84	11	Pass
100	5500	7.45	7.01	10.25	11	Pass
116	5580	7.99	7.68	10.85	11	Pass
140	5700	6.46	6.91	9.70	11	Pass
144 (U-NII-2C Band)	5720	6.89	7.38	10.15	11	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 band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.73dBi < 6dBi , so the power density limit shall not be reduced.
3. For U-NII-2C band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.81dBi < 6dBi , so the power density limit shall not be reduced.

802.11ac (VHT40)

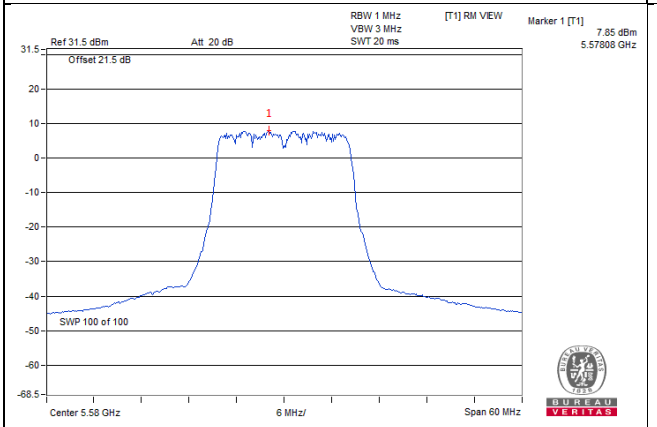
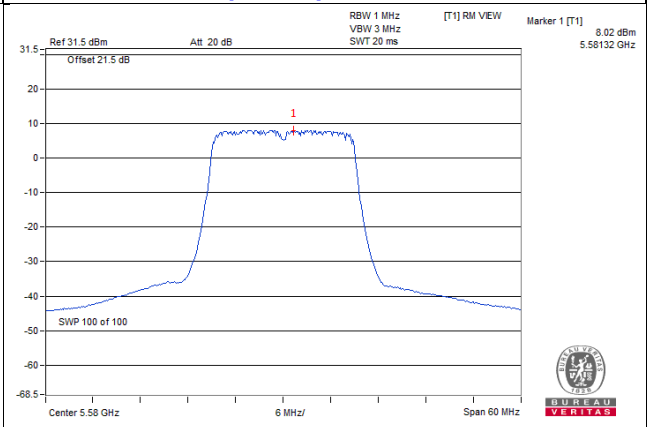
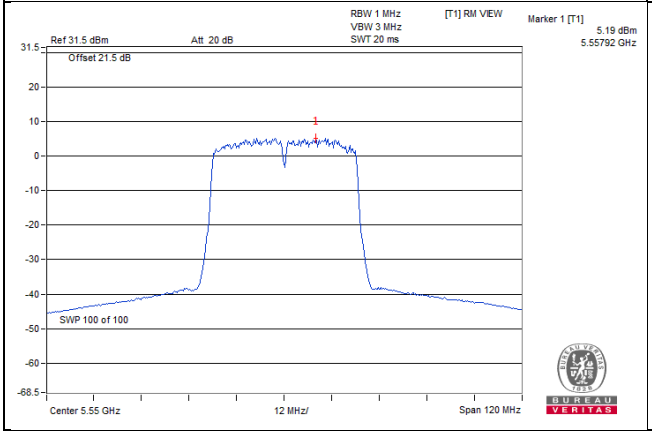
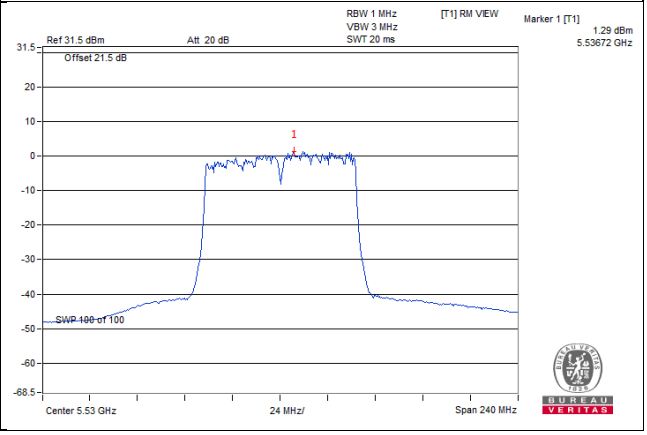
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	3.42	4.60	0.13	7.19	11	Pass
62	5310	2.90	3.54	0.13	6.37	11	Pass
102	5510	4.31	4.31	0.13	7.45	11	Pass
110	5550	4.57	5.19	0.13	8.03	11	Pass
134	5670	3.98	4.08	0.13	7.17	11	Pass
142 (U-NII-2C Band)	5710	3.83	4.61	0.13	7.38	11	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 band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.73dBi < 6dBi , so the power density limit shall not be reduced.
3. For U-NII-2C band: the directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.81dBi < 6dBi , so the power density limit shall not be reduced.
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 With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	0.45	0.75	0.22	3.84	11	Pass
106	5530	0.03	1.21	0.22	3.89	11	Pass
122	5610	0.44	0.36	0.22	3.63	11	Pass
138 (U-NII-2C Band)	5690	-0.38	0.15	0.22	3.13	11	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 band: the directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 5.73dBi < 6dBi , so the power density limit shall not be reduced.
3. For U-NII-2C band: the directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 5.81dBi < 6dBi , so the power density limit shall not be reduced.
4. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH116	**802.11ac (VHT20)_Chain 0 / CH116**
	
802.11ac (VHT40) _Chain 1 / CH110	**802.11ac (VHT80) _Chain 1 / CH106**
	

For U-NII-3:

CDD Mode

802.11a

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	144 (U-NII-3 Band)	5720	-2.02	0.20	3.01	0.14	3.35	30	Pass
1	144 (U-NII-3 Band)	5720	-1.03	1.19	3.01	0.14	4.34	30	Pass

Note: 1. The Directional gain = 10 log[(10$^{Chain0/20}$ + 10$^{Chain1/20}$)^2 / 2] = 5.96dBi < 6dBi, so the power density limit shall not be reduced.

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

Beamforming Mode

802.11ac (VHT20)

TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	144 (U-NII-3 Band)	5720	-1.58	0.64	3.01	3.65	30	Pass
1	144 (U-NII-3 Band)	5720	-1.00	1.22	3.01	4.23	30	Pass

Note: 1. The Directional gain = 10 log[(10$^{Chain0/20}$ + 10$^{Chain1/20}$)^2 / 2] = 5.96dBi < 6dBi, so the power density limit shall not be reduced.

802.11ac (VHT40)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	142 (U-NII-3 Band)	5710	-5.88	-3.66	3.01	0.13	-0.52	30	Pass
1	142 (U-NII-3 Band)	5710	-5.49	-3.27	3.01	0.13	-0.13	30	Pass

Note: 1. The Directional gain = 10 log[(10$^{Chain0/20}$ + 10$^{Chain1/20}$)^2 / 2] = 5.96dBi < 6dBi, so the power density limit shall not be reduced.

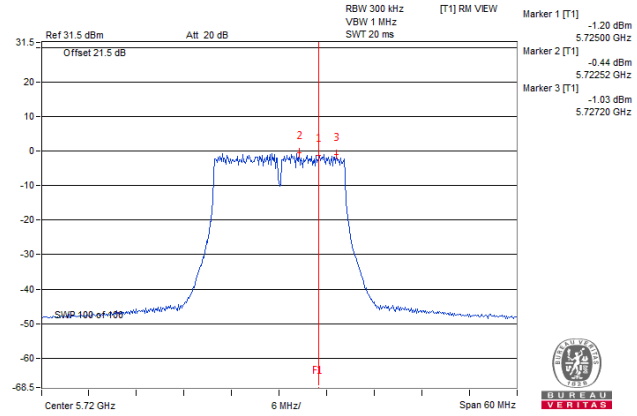
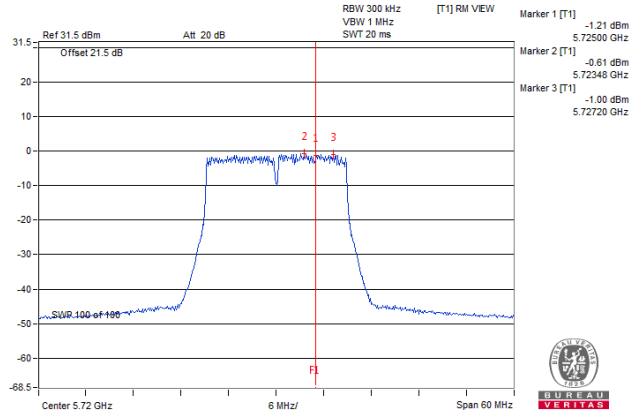
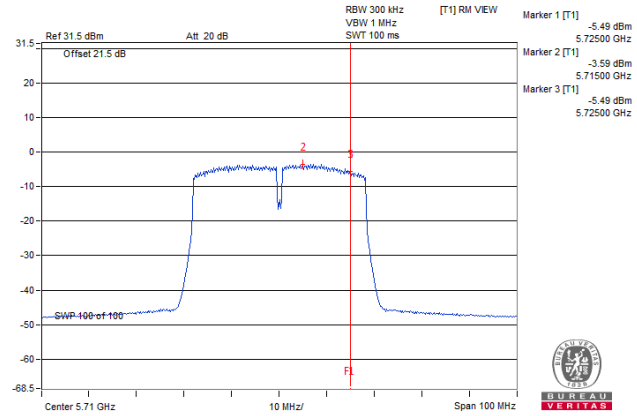
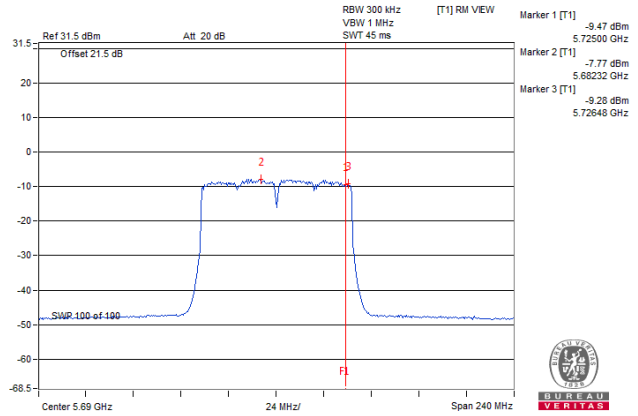
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	138 (U-NII-3 Band)	5690	-9.36	-7.14	3.01	0.22	-3.91	30	Pass
1	138 (U-NII-3 Band)	5690	-9.28	-7.06	3.01	0.22	-3.83	30	Pass

Note: 1. The Directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 5.96dBi < 6dBi, so the power density limit shall not be reduced.

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

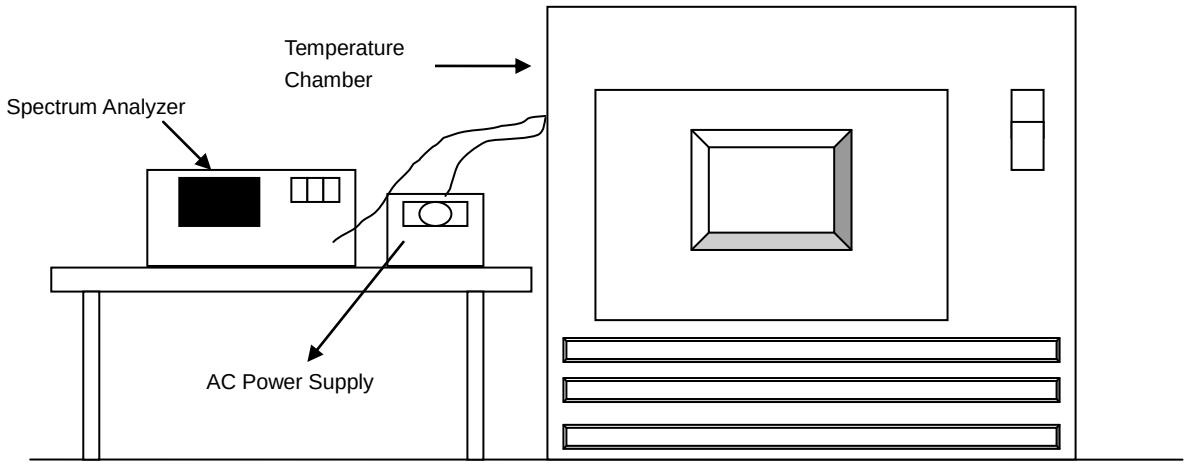
Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144	**802.11ac (VHT20)_Chain 1 / CH144**
	
802.11ac (VHT40) _Chain 1 / CH142	**802.11ac (VHT80) _Chain 1 / CH138**
	

4.6 Frequency Stability Measurement

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.

e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 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
50	120	5260.0101	Pass	5260.0089	Pass	5260.0118	Pass	5260.0091	Pass
40	120	5260.0007	Pass	5259.9959	Pass	5259.996	Pass	5259.9959	Pass
30	120	5259.977	Pass	5259.9766	Pass	5259.9793	Pass	5259.9783	Pass
20	120	5259.9976	Pass	5259.9991	Pass	5259.997	Pass	5259.9984	Pass
10	120	5259.9828	Pass	5259.9802	Pass	5259.9796	Pass	5259.9788	Pass
0	120	5259.9781	Pass	5259.9774	Pass	5259.9779	Pass	5259.9811	Pass
-10	120	5260.0014	Pass	5260	Pass	5259.9974	Pass	5260.0008	Pass
-20	120	5260.0205	Pass	5260.0198	Pass	5260.0171	Pass	5260.0204	Pass
-30	120	5259.9903	Pass	5259.9923	Pass	5259.9933	Pass	5259.9934	Pass

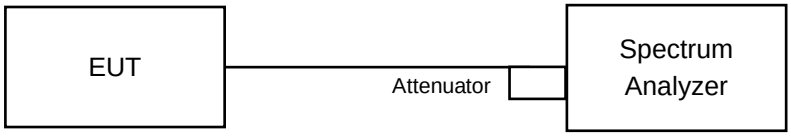
Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5259.9966	Pass	5259.9987	Pass	5259.9972	Pass	5259.9984	Pass
	120	5259.9976	Pass	5259.9991	Pass	5259.997	Pass	5259.9984	Pass
	102	5259.9971	Pass	5259.9996	Pass	5259.9972	Pass	5259.9992	Pass

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

CDD Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (U-NII-3 Band)	5720	3.18	3.19	0.5	Pass

Beamforming Mode

802.11ac (VHT20)

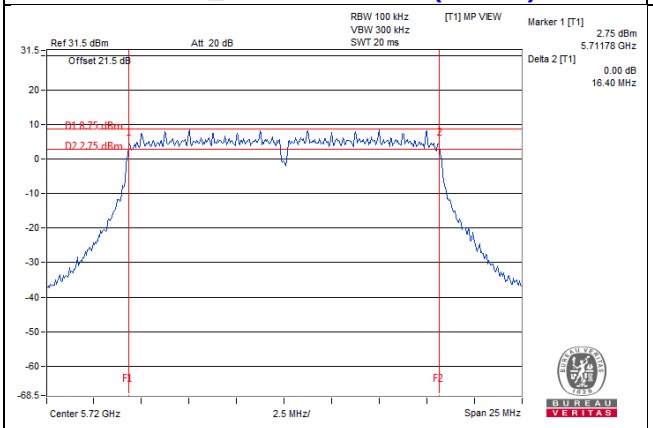
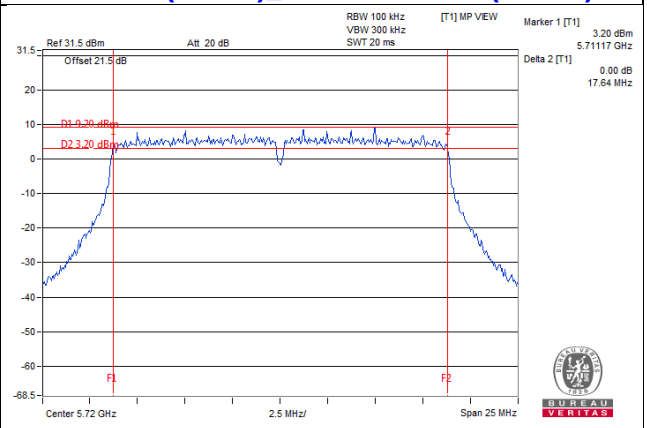
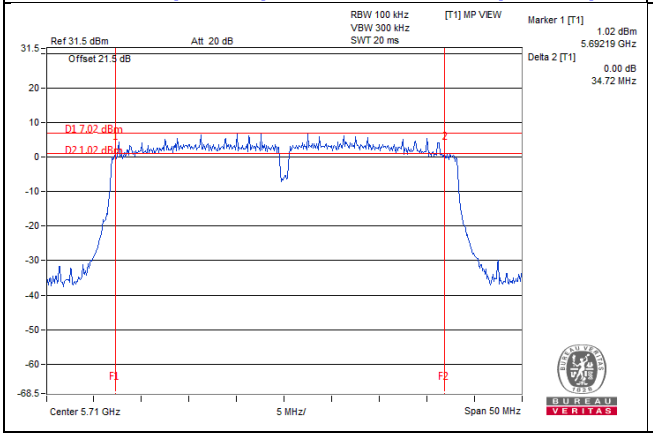
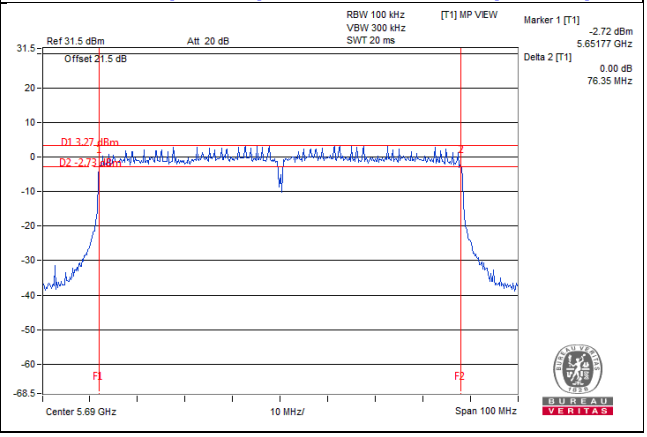
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (U-NII-3 Band)	5720	3.81	3.81	0.5	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142 (U-NII-3 Band)	5710	3.20	1.91	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138 (U-NII-3 Band)	5690	3.23	3.12	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH144 (U-NII-3)	**802.11ac (VHT20)_Chain 0 / CH144 (U-NII-3)**
	
802.11ac (VHT40)_Chain 1 / CH142 (U-NII-3)	**802.11ac (VHT80)_Chain 1 / CH138 (U-NII-3)**
	

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

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
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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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