FCC Test Report (DFS Band)

Report No.:	RF171208E04-6
FCC ID:	Q87-08011
Test Model:	WHW03 V2
Series Model:	A03 V2
Received Date:	Dec. 08, 2017
Test Date:	Dec. 20, 2017 to Jan. 05, 2018
Issued Date:	June 27, 2018
Applicant:	Linksys LLC
Address:	121 Theory Drive, Irvine, CA 92617, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Testing Laboratory
2022

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Release Control Record

Issue No.	Description	Date Issued
RF171208E04-6	Original release.	June 27, 2018

1 Certificate of Conformity

Product:	WHOLE HOME WI-FI
Brand:	Linksys
Test Model:	WHW03 V2
Series Model:	A03 V2
Sample Status:	ENGINEERING SAMPLE
Applicant:	Linksys LLC
Test Date:	Dec. 20, 2017 to Jan. 05, 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:** June 27, 2018

Wendy Wu / Specialist

Approved by : _____ , **Date:** June 27, 2018

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -4.93dB at 0.41953MHz.
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 5352.20MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (DFS Band)

Product	WHOLE HOME WI-FI
Brand	Linksys
Test Model	WHW03 V2
Series Model	A03 V2
Status of EUT	ENGINEERING SAMPLE
Driver version	2.1.4.189308
Power Supply Rating	12Vdc from power adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
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	**CDD Mode:** **5.26 ~ 5.32GHz:** 250.771mW **5.50 ~ 5.72GHz:** 238.675mW **Beamforming Mode:** **5.26 ~ 5.32GHz:** 197.533mW **5.50 ~ 5.72GHz:** 197.557mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF171208E04-1 as the following:
   - ◆ Add DFS band <5.26 ~ 5.32GHz, 5.5 ~ 5.72GHz>.
   - ◆ Change Driver version.
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, Bluetooth and Zigbee technology used for the EUT. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3	Radio 4
WLAN 2.4GHz + 5GHz (low band)	WLAN 5GHz (high band)	Bluetooth	Zigbee

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

Brand	Model Name	Different
Linksys	WHW03 V2	For maketing request
	A03 V2	

From the above models, model: **WHW03 V2** was selected as representative model for the test and its data was recorded in this report.

5. Simultaneously transmission condition.

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

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

No.	Brand	Model No.	Spec.	Plug
1	LEI	IU24-6120200-WP	Input: 100-240Vac, 0.7A, 50-60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.8m)	Universal
2	LEI	MU24A6120200-A1	Input: 100-240Vac, 0.7A, 50-60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.8m)	FCC
3	Ktec	KSA-24H-120200D5	Input: 100-240Vac, 0.7A, 50-60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.8m)	Universal
4	Ktec	KSA-24H-120200HU	Input: 100-240Vac, 0.7A, 50-60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.8m)	FCC
Note: From the above models, the worst radiated emission test was found in **Adapter 1**. Therefore only the test data of the modes were recorded in this report.				

7. The DDR3 Memory of EUT as following table

Item	Brand	Model No.	Different
Main source	SK HYNIX	H5TC4G63CFR-PBA	1. For maketing request. 2. DDR3 Memory.
Second source	NANYA	NT5CC256M16EP-EK	
Note: From the above models, the worst case was found in **Main source**. Therefore only the test data of the modes were recorded in this report.			

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

Bluetooth						
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	Aristotle	RFA-BT-9267	1.69	2.4~2.4835	Dipole	i-pex(MHF)
Zigbee						
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	Aristotle	RFA-ZB-9267	0.85	2.4~2.4835	Dipole	i-pex(MHF)
WLAN						
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	Aristotle	RFA-05-9267-L	3.55	5.5~5.825	Dipole	i-pex(MHF)
2	Aristotle	RFA-05-9267-R	3.87	5.5~5.825	Dipole	i-pex(MHF)
3	Aristotle	RFA-25-9267-B-V2	3.12	2.4~2.4835	Dipole	i-pex(MHF)
			3.77	5.18~5.320		
4	Aristotle	RFA-25-9267-F-V2	3.26	2.4~2.4835	Dipole	i-pex(MHF)
			3.68	5.18~5.320		

9. The EUT incorporates a MIMO function.

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

Note:
1. All of modulation mode support beamforming function except 802.11b modulation mode.
2. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

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

3.2 Description of Test Modes

FOR 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	5530MHz	122	5610 MHz
138	5690MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	Power from Adapter 1
2	-	-	√	-	Power from Adapter 2
3	-	-	√	-	Power from Adapter 3
4	-	-	√	-	Power from Adapter 4

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
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

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

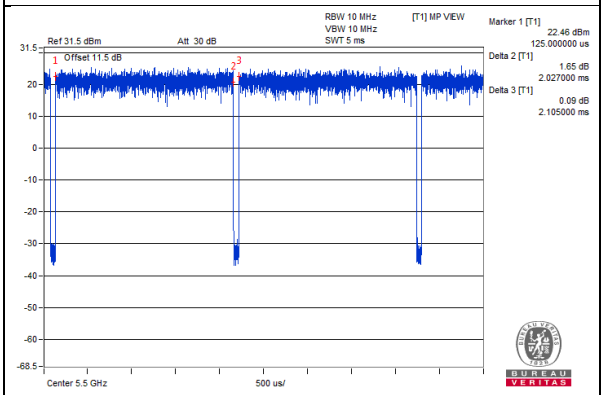
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	21deg. C, 65%RH	120Vac, 60Hz	Frank Chuang
RE<1G	22deg. C, 67%RH	120Vac, 60Hz	Steven Chiang
PLC	24deg. C, 73%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 65%RH	120Vac, 60Hz	Robert Cheng

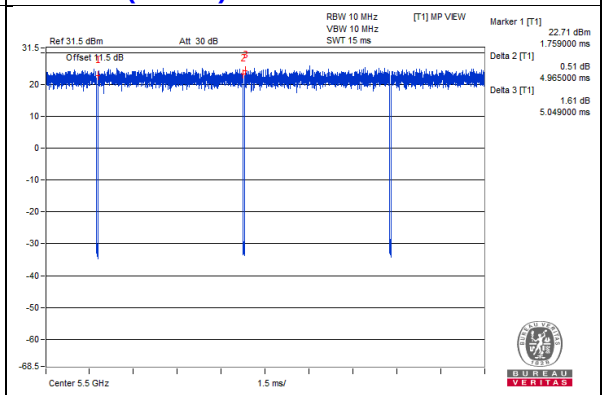
3.3 Duty Cycle of Test Signal

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 = 2.027 ms/2.105 ms = 0.963, Duty factor = 10 * log(1/0.963) = 0.16
802.11ac (VHT20): Duty cycle = 4.965 ms/5.049 ms = 0.983
802.11ac (VHT40): Duty cycle = 2.414 ms/2.503 ms = 0.964, Duty factor = 10 * log(1/0.964) = 0.16
802.11ac (VHT80): Duty cycle = 1.134 ms/1.21 ms = 0.937, Duty factor = 10 * log(1/0.937) = 0.28

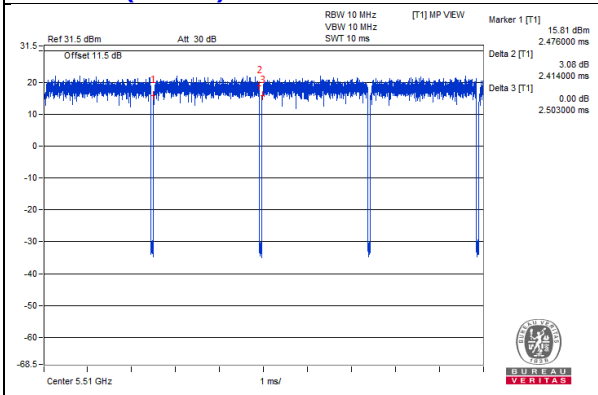
802.11a



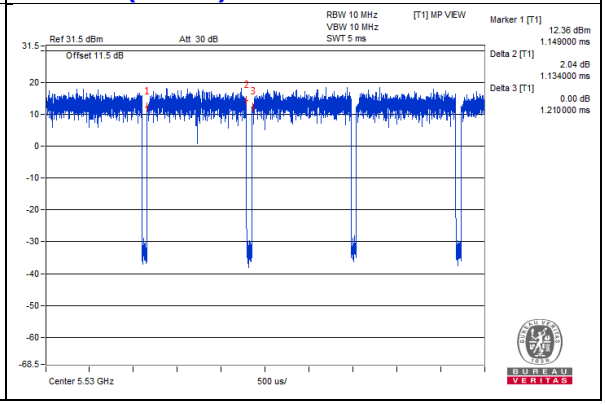
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

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

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

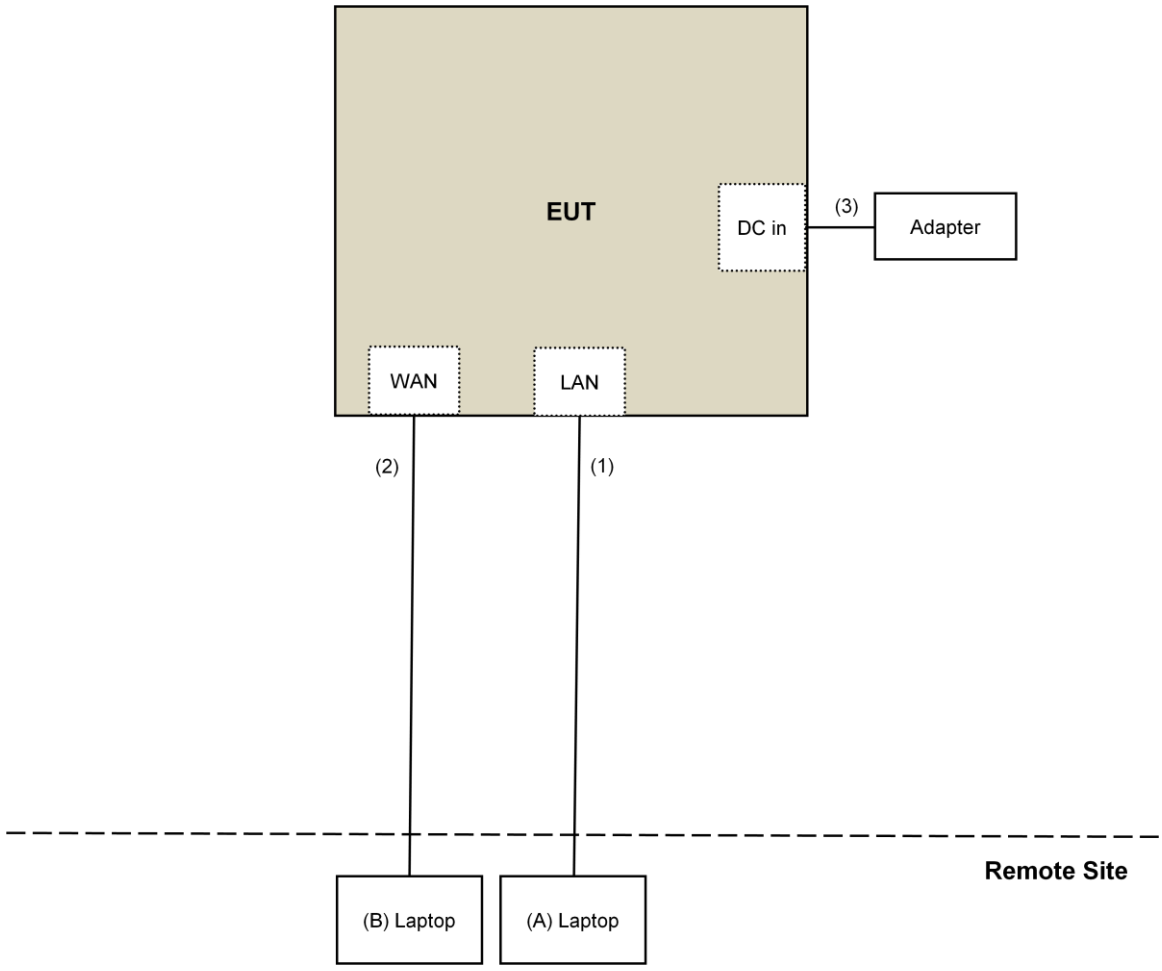
Note:

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

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

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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

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

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

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

Note:

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSv40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 11, 2017	Jan. 10, 2018
True RMS Clamp Meter FLUKE	325	31130711WS	May 29, 2017	May 28, 2018

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Dec. 20, 2017 to Jan. 05, 2018

4.1.3 Test Procedure

For Radiated emission below 30MHz

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

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

c. Both X and Y axes of the antenna are set to make the measurement.

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

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

NOTE:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

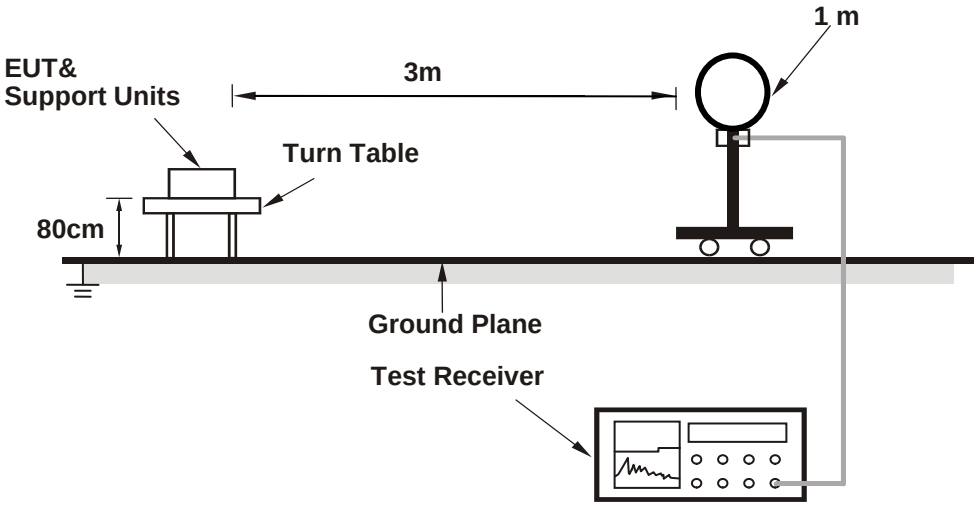
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

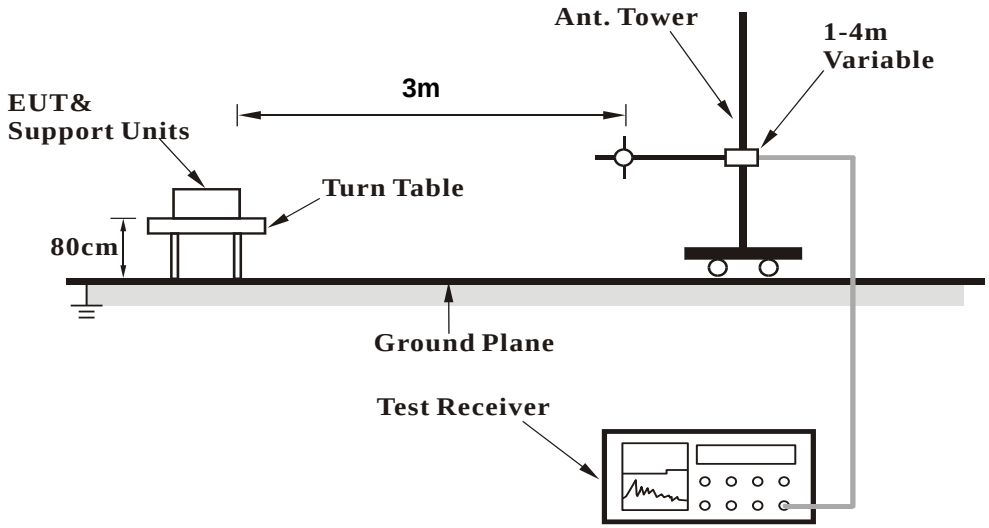
No deviation.

4.1.5 Test Setup

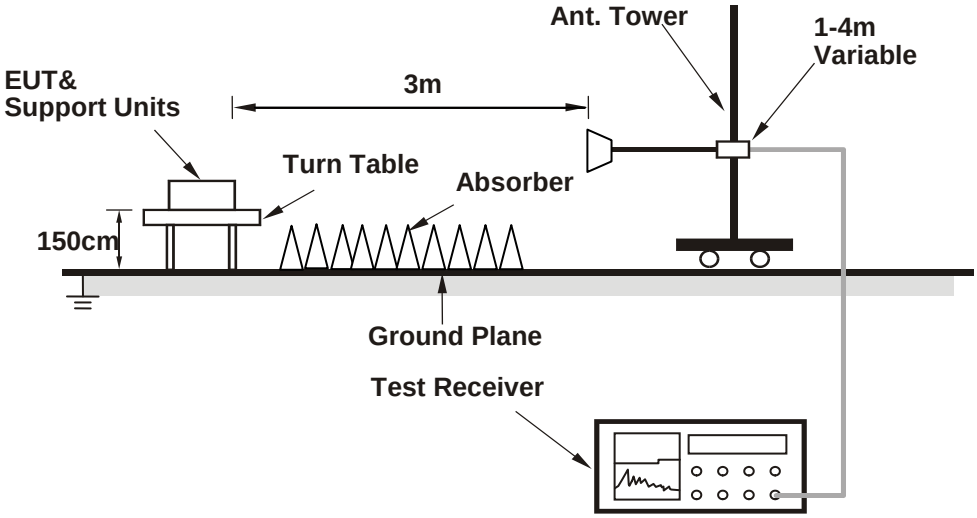
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (QDART_1.0.38) 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	47.1 PK	74.0	-26.9	1.04 H	63	42.8	4.3
2	5150.00	35.2 AV	54.0	-18.8	1.04 H	63	30.9	4.3
3	*5260.00	112.6 PK			1.04 H	63	108.8	3.8
4	*5260.00	100.6 AV			1.04 H	63	96.8	3.8
5	#10520.00	55.1 PK	74.0	-18.9	1.51 H	324	41.1	14.0
6	#10520.00	39.7 AV	54.0	-14.3	1.51 H	324	25.7	14.0
7	15780.00	54.0 PK	74.0	-20.0	1.38 H	176	40.4	13.6
8	15780.00	38.0 AV	54.0	-16.0	1.38 H	176	24.4	13.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	49.7 PK	74.0	-24.3	2.61 V	311	45.4	4.3
2	5150.00	37.3 AV	54.0	-16.7	2.61 V	311	33.0	4.3
3	*5260.00	115.2 PK			2.61 V	311	111.4	3.8
4	*5260.00	102.7 AV			2.61 V	311	98.9	3.8
5	#10520.00	48.5 PK	74.0	-25.5	1.87 V	306	34.5	14.0
6	#10520.00	34.5 AV	54.0	-19.5	1.87 V	306	20.5	14.0
7	15780.00	49.3 PK	74.0	-24.7	1.59 V	202	35.7	13.6
8	15780.00	35.5 AV	54.0	-18.5	1.59 V	202	21.9	13.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	112.4 PK			1.89 H	267	108.5	3.9
2	*5300.00	100.4 AV			1.89 H	267	96.5	3.9
3	5350.00	50.5 PK	74.0	-23.5	1.89 H	267	46.5	4.0
4	5350.00	37.6 AV	54.0	-16.4	1.89 H	267	33.6	4.0
5	10600.00	50.7 PK	74.0	-23.3	1.79 H	332	37.3	13.4
6	10600.00	37.5 AV	54.0	-16.5	1.79 H	332	24.1	13.4
7	15900.00	59.9 PK	74.0	-14.1	1.52 H	221	47.4	12.5
8	15900.00	44.7 AV	54.0	-9.3	1.52 H	221	32.2	12.5
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	*5300.00	114.6 PK			1.50 V	182	110.7	3.9
2	*5300.00	102.4 AV			1.50 V	182	98.5	3.9
3	5350.00	52.7 PK	74.0	-21.3	1.50 V	182	48.7	4.0
4	5350.00	38.6 AV	54.0	-15.4	1.50 V	182	34.6	4.0
5	10600.00	49.8 PK	74.0	-24.2	1.77 V	254	36.4	13.4
6	10600.00	36.2 AV	54.0	-17.8	1.77 V	254	22.8	13.4
7	15900.00	56.7 PK	74.0	-17.3	2.24 V	168	44.2	12.5
8	15900.00	40.8 AV	54.0	-13.2	2.24 V	168	28.3	12.5

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.

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	112.5 PK			1.82 H	109	108.6	3.9
2	*5320.00	100.5 AV			1.82 H	109	96.6	3.9
3	5350.00	61.2 PK	74.0	-12.8	1.82 H	109	57.2	4.0
4	5350.00	41.5 AV	54.0	-12.5	1.82 H	109	37.5	4.0
5	10640.00	51.1 PK	74.0	-22.9	1.56 H	217	37.5	13.6
6	10640.00	37.5 AV	54.0	-16.5	1.56 H	217	23.9	13.6
7	15960.00	58.2 PK	74.0	-15.8	2.20 H	231	45.3	12.9
8	15960.00	43.3 AV	54.0	-10.7	2.20 H	231	30.4	12.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	114.7 PK			1.70 V	185	110.8	3.9
2	*5320.00	102.5 AV			1.70 V	185	98.6	3.9
3	5350.00	63.4 PK	74.0	-10.6	1.70 V	185	59.4	4.0
4	5350.00	47.0 AV	54.0	-7.0	1.70 V	185	43.0	4.0
5	10640.00	49.4 PK	74.0	-24.6	2.03 V	45	35.8	13.6
6	10640.00	35.7 AV	54.0	-18.3	2.03 V	45	22.1	13.6
7	15960.00	56.2 PK	74.0	-17.8	1.36 V	221	43.3	12.9
8	15960.00	40.5 AV	54.0	-13.5	1.36 V	221	27.6	12.9

REMARKS:

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

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	60.1 PK	74.0	-13.9	1.51 H	352	55.8	4.3
2	#5470.00	48.5 AV	54.0	-5.5	1.51 H	352	44.2	4.3
3	*5500.00	113.8 PK			1.51 H	352	109.5	4.3
4	*5500.00	101.6 AV			1.51 H	352	97.3	4.3
5	11000.00	51.4 PK	74.0	-22.6	1.57 H	178	37.5	13.9
6	11000.00	37.8 AV	54.0	-16.2	1.57 H	178	23.9	13.9
7	#16500.00	58.5 PK	74.0	-15.5	2.32 H	120	42.9	15.6
8	#16500.00	43.6 AV	54.0	-10.4	2.32 H	120	28.0	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	66.9 PK	74.0	-7.1	1.74 V	218	62.6	4.3
2	#5470.00	52.6 AV	54.0	-1.4	1.74 V	218	48.3	4.3
3	*5500.00	115.8 PK			1.74 V	218	111.5	4.3
4	*5500.00	103.2 AV			1.74 V	218	98.9	4.3
5	11000.00	49.4 PK	74.0	-24.6	1.54 V	43	35.5	13.9
6	11000.00	35.7 AV	54.0	-18.3	1.54 V	43	21.8	13.9
7	#16500.00	56.6 PK	74.0	-17.4	1.34 V	301	41.0	15.6
8	#16500.00	40.7 AV	54.0	-13.3	1.34 V	301	25.1	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.

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	5439.00	52.7 PK	74.0	-21.3	3.20 H	356	48.4	4.3
2	5439.00	40.3 AV	54.0	-13.7	3.20 H	356	36.0	4.3
3	*5580.00	113.6 PK			3.20 H	356	109.2	4.4
4	*5580.00	101.3 AV			3.20 H	356	96.9	4.4
5	#5725.00	51.1 PK	74.0	-22.9	3.20 H	356	46.6	4.5
6	#5725.00	37.9 AV	54.0	-16.1	3.20 H	356	33.4	4.5
7	11160.00	55.1 PK	74.0	-18.9	1.84 H	77	41.4	13.7
8	11160.00	39.7 AV	54.0	-14.3	1.84 H	77	26.0	13.7
9	#16740.00	53.9 PK	74.0	-20.1	1.43 H	133	37.3	16.6
10	#16740.00	38.2 AV	54.0	-15.8	1.43 H	133	21.6	16.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5439.00	54.0 PK	74.0	-20.0	1.40 V	229	49.7	4.3
2	5439.00	40.7 AV	54.0	-13.3	1.40 V	229	36.4	4.3
3	*5580.00	115.9 PK			1.40 V	229	111.5	4.4
4	*5580.00	103.5 AV			1.40 V	229	99.1	4.4
5	#5725.00	51.2 PK	74.0	-22.8	1.40 V	229	46.7	4.5
6	#5725.00	38.0 AV	54.0	-16.0	1.40 V	229	33.5	4.5
7	11160.00	48.9 PK	74.0	-25.1	1.85 V	133	35.2	13.7
8	11160.00	34.6 AV	54.0	-19.4	1.85 V	133	20.9	13.7
9	#16740.00	49.7 PK	74.0	-24.3	1.77 V	206	33.1	16.6
10	#16740.00	35.9 AV	54.0	-18.1	1.77 V	206	19.3	16.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	114.4 PK			3.17 H	356	109.9	4.5
2	*5700.00	101.9 AV			3.17 H	356	97.4	4.5
3	#5725.00	61.1 PK	74.0	-12.9	3.17 H	356	56.6	4.5
4	#5725.00	48.0 AV	54.0	-6.0	3.17 H	356	43.5	4.5
5	11400.00	52.1 PK	74.0	-21.9	1.59 H	21	37.6	14.5
6	11400.00	38.2 AV	54.0	-15.8	1.59 H	21	23.7	14.5
7	#17100.00	58.7 PK	74.0	-15.3	2.07 H	116	41.4	17.3
8	#17100.00	43.6 AV	54.0	-10.4	2.07 H	116	26.3	17.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	116.8 PK			1.79 V	351	112.3	4.5
2	*5700.00	104.1 AV			1.79 V	351	99.6	4.5
3	#5725.00	61.3 PK	74.0	-12.7	2.24 V	325	56.8	4.5
4	#5725.00	48.3 AV	54.0	-5.7	2.24 V	325	43.8	4.5
5	11400.00	49.6 PK	74.0	-24.4	2.04 V	222	35.1	14.5
6	11400.00	35.8 AV	54.0	-18.2	2.04 V	222	21.3	14.5
7	#17100.00	55.9 PK	74.0	-18.1	1.68 V	321	38.6	17.3
8	#17100.00	40.3 AV	54.0	-13.7	1.68 V	321	23.0	17.3

REMARKS:

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

CHANNEL	TX Channel 144	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	5439.90	54.7 PK	74.0	-19.3	3.16 H	356	50.4	4.3
2	5439.90	40.6 AV	54.0	-13.4	3.16 H	356	36.3	4.3
3	*5720.00	113.7 PK			3.16 H	356	109.2	4.5
4	*5720.00	101.7 AV			3.16 H	356	97.2	4.5
5	#5850.00	51.1 PK	74.0	-22.9	3.16 H	356	46.3	4.8
6	#5850.00	38.4 AV	54.0	-15.6	3.16 H	356	33.6	4.8
7	11440.00	51.5 PK	74.0	-22.5	2.36 H	37	37.3	14.2
8	11440.00	37.8 AV	54.0	-16.2	2.36 H	37	23.6	14.2
9	#17160.00	59.0 PK	74.0	-15.0	2.02 H	304	42.1	16.9
10	#17160.00	44.0 AV	54.0	-10.0	2.02 H	304	27.1	16.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5439.90	55.0 PK	74.0	-19.0	2.42 V	342	50.7	4.3
2	5439.90	41.3 AV	54.0	-12.7	2.42 V	342	37.0	4.3
3	*5720.00	116.0 PK			2.42 V	342	111.5	4.5
4	*5720.00	103.7 AV			2.42 V	342	99.2	4.5
5	#5850.00	52.2 PK	74.0	-21.8	2.42 V	342	47.4	4.8
6	#5850.00	38.9 AV	54.0	-15.1	2.42 V	342	34.1	4.8
7	11440.00	48.7 PK	74.0	-25.3	2.05 V	86	34.5	14.2
8	11440.00	35.2 AV	54.0	-18.8	2.05 V	86	21.0	14.2
9	#17160.00	56.7 PK	74.0	-17.3	1.84 V	220	39.8	16.9
10	#17160.00	40.8 AV	54.0	-13.2	1.84 V	220	23.9	16.9

REMARKS:

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

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	5136.00	44.9 PK	74.0	-29.1	1.86 H	271	40.6	4.3
2	5136.00	34.4 AV	54.0	-19.6	1.86 H	271	30.1	4.3
3	*5260.00	110.9 PK			1.86 H	271	107.1	3.8
4	*5260.00	100.2 AV			1.86 H	271	96.4	3.8
5	#10520.00	54.5 PK	74.0	-19.5	1.75 H	323	40.5	14.0
6	#10520.00	39.9 AV	54.0	-14.1	1.75 H	323	25.9	14.0
7	15780.00	56.0 PK	74.0	-18.0	1.59 H	181	42.4	13.6
8	15780.00	40.6 AV	54.0	-13.4	1.59 H	181	27.0	13.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5136.00	47.5 PK	74.0	-26.5	1.86 V	296	43.2	4.3
2	5136.00	35.6 AV	54.0	-18.4	1.86 V	296	31.3	4.3
3	*5260.00	113.5 PK			1.86 V	296	109.7	3.8
4	*5260.00	102.3 AV			1.86 V	296	98.5	3.8
5	#10520.00	48.2 PK	74.0	-25.8	1.46 V	224	34.2	14.0
6	#10520.00	34.3 AV	54.0	-19.7	1.46 V	224	20.3	14.0
7	15780.00	48.7 PK	74.0	-25.3	1.53 V	171	35.1	13.6
8	15780.00	35.2 AV	54.0	-18.8	1.53 V	171	21.6	13.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	5150.00	45.1 PK	74.0	-28.9	1.92 H	259	40.8	4.3
2	5150.00	34.4 AV	54.0	-19.6	1.92 H	259	30.1	4.3
3	*5300.00	111.7 PK			1.92 H	259	107.8	3.9
4	*5300.00	100.6 AV			1.92 H	259	96.7	3.9
5	5350.00	45.9 PK	74.0	-28.1	1.92 H	259	41.9	4.0
6	5350.00	34.7 AV	54.0	-19.3	1.92 H	259	30.7	4.0
7	10600.00	54.9 PK	74.0	-19.1	1.75 H	302	41.5	13.4
8	10600.00	40.0 AV	54.0	-14.0	1.75 H	302	26.6	13.4
9	15900.00	56.8 PK	74.0	-17.2	1.53 H	164	44.3	12.5
10	15900.00	41.1 AV	54.0	-12.9	1.53 H	164	28.6	12.5
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	47.7 PK	74.0	-26.3	1.22 V	151	43.4	4.3
2	5150.00	35.6 AV	54.0	-18.4	1.22 V	151	31.3	4.3
3	*5300.00	114.3 PK			1.22 V	151	110.4	3.9
4	*5300.00	102.7 AV			1.22 V	151	98.8	3.9
5	5350.00	48.5 PK	74.0	-25.5	1.22 V	151	44.5	4.0
6	5350.00	35.9 AV	54.0	-18.1	1.22 V	151	31.9	4.0
7	10600.00	48.7 PK	74.0	-25.3	1.46 V	220	35.3	13.4
8	10600.00	34.6 AV	54.0	-19.4	1.46 V	220	21.2	13.4
9	15900.00	48.7 PK	74.0	-25.3	1.51 V	172	36.2	12.5
10	15900.00	35.2 AV	54.0	-18.8	1.51 V	172	22.7	12.5

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.

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	112.0 PK			1.88 H	254	108.1	3.9
2	*5320.00	100.8 AV			1.88 H	254	96.9	3.9
3	5350.00	59.4 PK	74.0	-14.6	1.88 H	254	55.4	4.0
4	5350.00	44.8 AV	54.0	-9.2	1.88 H	254	40.8	4.0
5	10640.00	54.0 PK	74.0	-20.0	1.67 H	323	40.4	13.6
6	10640.00	39.6 AV	54.0	-14.4	1.67 H	323	26.0	13.6
7	15960.00	56.6 PK	74.0	-17.4	1.55 H	158	43.7	12.9
8	15960.00	41.3 AV	54.0	-12.7	1.55 H	158	28.4	12.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	114.6 PK			2.75 V	286	110.7	3.9
2	*5320.00	102.9 AV			2.75 V	286	99.0	3.9
3	5350.00	62.0 PK	74.0	-12.0	2.75 V	286	58.0	4.0
4	5350.00	46.0 AV	54.0	-8.0	2.75 V	286	42.0	4.0
5	10640.00	47.8 PK	74.0	-26.2	1.45 V	221	34.2	13.6
6	10640.00	34.0 AV	54.0	-20.0	1.45 V	221	20.4	13.6
7	15960.00	48.3 PK	74.0	-25.7	1.47 V	171	35.4	12.9
8	15960.00	34.7 AV	54.0	-19.3	1.47 V	171	21.8	12.9

REMARKS:

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

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	#5468.00	64.3 PK	74.0	-9.7	1.90 H	261	60.0	4.3
2	#5468.00	50.9 AV	54.0	-3.1	1.90 H	261	46.6	4.3
3	*5500.00	113.5 PK			1.90 H	261	109.2	4.3
4	*5500.00	102.1 AV			1.90 H	261	97.8	4.3
5	11000.00	54.6 PK	74.0	-19.4	1.69 H	300	40.7	13.9
6	11000.00	40.0 AV	54.0	-14.0	1.69 H	300	26.1	13.9
7	#16500.00	56.1 PK	74.0	-17.9	1.53 H	159	40.5	15.6
8	#16500.00	40.7 AV	54.0	-13.3	1.53 H	159	25.1	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	#5468.00	66.9 PK	74.0	-7.1	2.60 V	334	62.6	4.3
2	#5468.00	52.1 AV	54.0	-1.9	2.60 V	334	47.8	4.3
3	*5500.00	116.1 PK			2.60 V	334	111.8	4.3
4	*5500.00	104.2 AV			2.60 V	334	99.9	4.3
5	11000.00	48.5 PK	74.0	-25.5	1.48 V	215	34.6	13.9
6	11000.00	34.4 AV	54.0	-19.6	1.48 V	215	20.5	13.9
7	#16500.00	48.1 PK	74.0	-25.9	1.52 V	169	32.5	15.6
8	#16500.00	34.8 AV	54.0	-19.2	1.52 V	169	19.2	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.

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	5440.00	48.1 PK	74.0	-25.9	1.86 H	256	43.8	4.3
2	5440.00	38.3 AV	54.0	-15.7	1.86 H	256	34.0	4.3
3	*5580.00	111.9 PK			1.86 H	256	107.5	4.4
4	*5580.00	100.9 AV			1.86 H	256	96.5	4.4
5	#5725.00	46.9 PK	74.0	-27.1	1.86 H	256	42.4	4.5
6	#5725.00	37.1 AV	54.0	-16.9	1.86 H	256	32.6	4.5
7	11160.00	54.3 PK	74.0	-19.7	1.69 H	301	40.6	13.7
8	11160.00	39.7 AV	54.0	-14.3	1.69 H	301	26.0	13.7
9	#16740.00	56.2 PK	74.0	-17.8	1.60 H	155	39.6	16.6
10	#16740.00	40.7 AV	54.0	-13.3	1.60 H	155	24.1	16.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5440.00	50.7 PK	74.0	-23.3	1.96 V	342	46.4	4.3
2	5440.00	39.5 AV	54.0	-14.5	1.96 V	342	35.2	4.3
3	*5580.00	114.5 PK			1.96 V	342	110.1	4.4
4	*5580.00	103.0 AV			1.96 V	342	98.6	4.4
5	#5725.00	49.5 PK	74.0	-24.5	1.96 V	342	45.0	4.5
6	#5725.00	38.3 AV	54.0	-15.7	1.96 V	342	33.8	4.5
7	11160.00	48.2 PK	74.0	-25.8	1.43 V	229	34.5	13.7
8	11160.00	34.1 AV	54.0	-19.9	1.43 V	229	20.4	13.7
9	#16740.00	48.9 PK	74.0	-25.1	1.44 V	186	32.3	16.6
10	#16740.00	35.3 AV	54.0	-18.7	1.44 V	186	18.7	16.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	113.1 PK			1.83 H	275	108.6	4.5
2	*5700.00	102.7 AV			1.83 H	275	98.2	4.5
3	#5725.00	63.9 PK	74.0	-10.1	1.83 H	275	59.4	4.5
4	#5725.00	50.6 AV	54.0	-3.4	1.83 H	275	46.1	4.5
5	11400.00	54.3 PK	74.0	-19.7	1.67 H	318	39.8	14.5
6	11400.00	39.4 AV	54.0	-14.6	1.67 H	318	24.9	14.5
7	#17100.00	56.3 PK	74.0	-17.7	1.58 H	159	39.0	17.3
8	#17100.00	40.7 AV	54.0	-13.3	1.58 H	159	23.4	17.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	115.7 PK			2.33 V	348	111.2	4.5
2	*5700.00	104.8 AV			2.33 V	348	100.3	4.5
3	#5725.00	66.5 PK	74.0	-7.5	2.33 V	348	62.0	4.5
4	#5725.00	51.8 AV	54.0	-2.2	2.33 V	348	47.3	4.5
5	11400.00	47.6 PK	74.0	-26.4	1.41 V	241	33.1	14.5
6	11400.00	33.9 AV	54.0	-20.1	1.41 V	241	19.4	14.5
7	#17100.00	48.8 PK	74.0	-25.2	1.44 V	171	31.5	17.3
8	#17100.00	35.4 AV	54.0	-18.6	1.44 V	171	18.1	17.3

REMARKS:

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

CHANNEL	TX Channel 144	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	5440.00	50.5 PK	74.0	-23.5	1.81 H	271	46.2	4.3
2	5440.00	40.8 AV	54.0	-13.2	1.81 H	271	36.5	4.3
3	*5720.00	113.2 PK			1.81 H	271	108.7	4.5
4	*5720.00	102.9 AV			1.81 H	271	98.4	4.5
5	#5850.00	45.9 PK	74.0	-28.1	1.81 H	271	41.1	4.8
6	#5850.00	35.0 AV	54.0	-19.0	1.81 H	271	30.2	4.8
7	11440.00	54.9 PK	74.0	-19.1	1.76 H	315	40.7	14.2
8	11440.00	40.1 AV	54.0	-13.9	1.76 H	315	25.9	14.2
9	#17160.00	56.1 PK	74.0	-17.9	1.57 H	166	39.2	16.9
10	#17160.00	40.7 AV	54.0	-13.3	1.57 H	166	23.8	16.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5440.00	53.1 PK	74.0	-20.9	2.52 V	346	48.8	4.3
2	5440.00	42.0 AV	54.0	-12.0	2.52 V	346	37.7	4.3
3	*5720.00	115.8 PK			2.52 V	346	111.3	4.5
4	*5720.00	105.0 AV			2.52 V	346	100.5	4.5
5	#5850.00	48.5 PK	74.0	-25.5	2.52 V	346	43.7	4.8
6	#5850.00	36.2 AV	54.0	-17.8	2.52 V	346	31.4	4.8
7	11440.00	47.9 PK	74.0	-26.1	1.47 V	214	33.7	14.2
8	11440.00	34.1 AV	54.0	-19.9	1.47 V	214	19.9	14.2
9	#17160.00	48.3 PK	74.0	-25.7	1.49 V	178	31.4	16.9
10	#17160.00	35.0 AV	54.0	-19.0	1.49 V	178	18.1	16.9

REMARKS:

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

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	47.7 PK	74.0	-26.3	1.71 H	79	43.4	4.3
2	5150.00	38.2 AV	54.0	-15.8	1.71 H	79	33.9	4.3
3	*5270.00	109.2 PK			1.71 H	79	105.4	3.8
4	*5270.00	100.1 AV			1.71 H	79	96.3	3.8
5	5350.00	53.8 PK	74.0	-20.2	1.71 H	79	49.8	4.0
6	5350.00	40.7 AV	54.0	-13.3	1.71 H	79	36.7	4.0
7	#10540.00	55.9 PK	74.0	-18.1	1.76 H	296	42.1	13.8
8	#10540.00	41.1 AV	54.0	-12.9	1.76 H	296	27.3	13.8
9	15810.00	56.8 PK	74.0	-17.2	1.49 H	172	43.4	13.4
10	15810.00	40.7 AV	54.0	-13.3	1.49 H	172	27.3	13.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	50.3 PK	74.0	-23.7	1.36 V	180	46.0	4.3
2	5150.00	39.4 AV	54.0	-14.6	1.36 V	180	35.1	4.3
3	*5270.00	112.2 PK			1.36 V	180	108.4	3.8
4	*5270.00	102.9 AV			1.36 V	180	99.1	3.8
5	5350.00	56.4 PK	74.0	-17.6	1.36 V	180	52.4	4.0
6	5350.00	41.9 AV	54.0	-12.1	1.36 V	180	37.9	4.0
7	#10540.00	47.6 PK	74.0	-26.4	1.40 V	219	33.8	13.8
8	#10540.00	34.1 AV	54.0	-19.9	1.40 V	219	20.3	13.8
9	15810.00	49.1 PK	74.0	-24.9	1.50 V	179	35.7	13.4
10	15810.00	35.3 AV	54.0	-18.7	1.50 V	179	21.9	13.4

REMARKS:

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

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	108.3 PK			1.74 H	63	104.4	3.9
2	*5310.00	98.6 AV			1.74 H	63	94.7	3.9
3	5350.00	68.3 PK	74.0	-5.7	1.74 H	63	64.3	4.0
4	5350.00	52.4 AV	54.0	-1.6	1.74 H	63	48.4	4.0
5	10620.00	54.2 PK	74.0	-19.8	1.71 H	311	40.7	13.5
6	10620.00	39.6 AV	54.0	-14.4	1.71 H	311	26.1	13.5
7	15930.00	56.3 PK	74.0	-17.7	1.56 H	166	43.6	12.7
8	15930.00	40.8 AV	54.0	-13.2	1.56 H	166	28.1	12.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	111.3 PK			1.09 V	164	107.4	3.9
2	*5310.00	101.4 AV			1.09 V	164	97.5	3.9
3	5350.00	70.9 PK	74.0	-3.1	1.09 V	164	66.9	4.0
4	5350.00	53.6 AV	54.0	-0.4	1.09 V	164	49.6	4.0
5	10620.00	48.0 PK	74.0	-26.0	1.46 V	227	34.5	13.5
6	10620.00	34.1 AV	54.0	-19.9	1.46 V	227	20.6	13.5
7	15930.00	48.6 PK	74.0	-25.4	1.49 V	170	35.9	12.7
8	15930.00	35.2 AV	54.0	-18.8	1.49 V	170	22.5	12.7

REMARKS:

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

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	#5470.00	65.3 PK	74.0	-8.7	1.80 H	66	61.0	4.3
2	#5470.00	52.3 AV	54.0	-1.7	1.80 H	66	48.0	4.3
3	*5510.00	107.9 PK			1.80 H	66	103.6	4.3
4	*5510.00	98.6 AV			1.80 H	66	94.3	4.3
5	11020.00	54.4 PK	74.0	-19.6	1.60 H	293	40.6	13.8
6	11020.00	39.8 AV	54.0	-14.2	1.60 H	293	26.0	13.8
7	#16530.00	55.7 PK	74.0	-18.3	1.52 H	180	39.9	15.8
8	#16530.00	40.3 AV	54.0	-13.7	1.52 H	180	24.5	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	67.9 PK	74.0	-6.1	2.66 V	342	63.6	4.3
2	#5470.00	53.5 AV	54.0	-0.5	2.66 V	342	49.2	4.3
3	*5510.00	110.9 PK			2.66 V	342	106.6	4.3
4	*5510.00	101.4 AV			2.66 V	342	97.1	4.3
5	11020.00	47.7 PK	74.0	-26.3	1.39 V	243	33.9	13.8
6	11020.00	34.3 AV	54.0	-19.7	1.39 V	243	20.5	13.8
7	#16530.00	48.0 PK	74.0	-26.0	1.51 V	193	32.2	15.8
8	#16530.00	34.8 AV	54.0	-19.2	1.51 V	193	19.0	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 110	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	62.5 PK	74.0	-11.5	1.74 H	63	58.2	4.3
2	#5470.00	49.9 AV	54.0	-4.1	1.74 H	63	45.6	4.3
3	*5550.00	110.6 PK			1.74 H	63	106.3	4.3
4	*5550.00	100.7 AV			1.74 H	63	96.4	4.3
5	#5725.00	48.0 PK	74.0	-26.0	1.74 H	63	43.5	4.5
6	#5725.00	38.5 AV	54.0	-15.5	1.74 H	63	34.0	4.5
7	11100.00	54.0 PK	74.0	-20.0	1.69 H	309	40.2	13.8
8	11100.00	39.6 AV	54.0	-14.4	1.69 H	309	25.8	13.8
9	#16650.00	56.7 PK	74.0	-17.3	1.53 H	184	40.2	16.5
10	#16650.00	41.0 AV	54.0	-13.0	1.53 H	184	24.5	16.5
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	#5470.00	65.1 PK	74.0	-8.9	2.56 V	344	60.8	4.3
2	#5470.00	51.1 AV	54.0	-2.9	2.56 V	344	46.8	4.3
3	*5550.00	113.6 PK			2.56 V	344	109.3	4.3
4	*5550.00	103.5 AV			2.56 V	344	99.2	4.3
5	#5725.00	50.6 PK	74.0	-23.4	2.56 V	344	46.1	4.5
6	#5725.00	39.7 AV	54.0	-14.3	2.56 V	344	35.2	4.5
7	11100.00	47.8 PK	74.0	-26.2	1.37 V	238	34.0	13.8
8	11100.00	34.0 AV	54.0	-20.0	1.37 V	238	20.2	13.8
9	#16650.00	47.8 PK	74.0	-26.2	1.51 V	188	31.3	16.5
10	#16650.00	34.3 AV	54.0	-19.7	1.51 V	188	17.8	16.5

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 134	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	46.0 PK	74.0	-28.0	1.78 H	57	41.7	4.3
2	#5470.00	37.7 AV	54.0	-16.3	1.78 H	57	33.4	4.3
3	*5670.00	111.1 PK			1.78 H	57	106.7	4.4
4	*5670.00	101.0 AV			1.78 H	57	96.6	4.4
5	#5725.00	62.2 PK	74.0	-11.8	1.78 H	57	57.7	4.5
6	#5725.00	51.2 AV	54.0	-2.8	1.78 H	57	46.7	4.5
7	11340.00	53.9 PK	74.0	-20.1	1.69 H	299	39.8	14.1
8	11340.00	39.5 AV	54.0	-14.5	1.69 H	299	25.4	14.1
9	#17010.00	56.5 PK	74.0	-17.5	1.53 H	164	39.0	17.5
10	#17010.00	40.9 AV	54.0	-13.1	1.53 H	164	23.4	17.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	48.6 PK	74.0	-25.4	2.44 V	342	44.3	4.3
2	#5470.00	38.9 AV	54.0	-15.1	2.44 V	342	34.6	4.3
3	*5670.00	114.1 PK			2.44 V	342	109.7	4.4
4	*5670.00	103.8 AV			2.44 V	342	99.4	4.4
5	#5725.00	64.8 PK	74.0	-9.2	2.44 V	342	60.3	4.5
6	#5725.00	52.4 AV	54.0	-1.6	2.44 V	342	47.9	4.5
7	11340.00	48.2 PK	74.0	-25.8	1.45 V	245	34.1	14.1
8	11340.00	34.6 AV	54.0	-19.4	1.45 V	245	20.5	14.1
9	#17010.00	48.6 PK	74.0	-25.4	1.52 V	175	31.1	17.5
10	#17010.00	35.1 AV	54.0	-18.9	1.52 V	175	17.6	17.5

REMARKS:

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

CHANNEL	TX Channel 142	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	5440.00	49.3 PK	74.0	-24.7	1.70 H	72	45.0	4.3
2	5440.00	40.0 AV	54.0	-14.0	1.70 H	72	35.7	4.3
3	*5710.00	110.2 PK			1.70 H	72	105.7	4.5
4	*5710.00	100.9 AV			1.70 H	72	96.4	4.5
5	#5850.00	47.2 PK	74.0	-26.8	1.70 H	72	42.4	4.8
6	#5850.00	35.9 AV	54.0	-18.1	1.70 H	72	31.1	4.8
7	11420.00	54.7 PK	74.0	-19.3	1.63 H	283	40.4	14.3
8	11420.00	40.2 AV	54.0	-13.8	1.63 H	283	25.9	14.3
9	#17130.00	55.9 PK	74.0	-18.1	1.54 H	192	38.7	17.2
10	#17130.00	40.4 AV	54.0	-13.6	1.54 H	192	23.2	17.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5440.00	51.9 PK	74.0	-22.1	2.30 V	352	47.6	4.3
2	5440.00	41.2 AV	54.0	-12.8	2.30 V	352	36.9	4.3
3	*5710.00	113.2 PK			2.30 V	352	108.7	4.5
4	*5710.00	103.7 AV			2.30 V	352	99.2	4.5
5	#5850.00	49.8 PK	74.0	-24.2	2.30 V	352	45.0	4.8
6	#5850.00	37.1 AV	54.0	-16.9	2.30 V	352	32.3	4.8
7	11420.00	47.5 PK	74.0	-26.5	1.47 V	248	33.2	14.3
8	11420.00	34.1 AV	54.0	-19.9	1.47 V	248	19.8	14.3
9	#17130.00	47.9 PK	74.0	-26.1	1.47 V	178	30.7	17.2
10	#17130.00	34.7 AV	54.0	-19.3	1.47 V	178	17.5	17.2

REMARKS:

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

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	56.3 PK	74.0	-17.7	1.89 H	58	52.0	4.3
2	5150.00	44.0 AV	54.0	-10.0	1.89 H	58	39.7	4.3
3	*5290.00	106.4 PK			1.89 H	58	102.5	3.9
4	*5290.00	95.7 AV			1.89 H	58	91.8	3.9
5	5352.20	65.8 PK	74.0	-8.2	1.89 H	58	61.8	4.0
6	5352.20	52.7 AV	54.0	-1.3	1.89 H	58	48.7	4.0
7	#10580.00	55.0 PK	74.0	-19.0	1.66 H	303	41.4	13.6
8	#10580.00	40.2 AV	54.0	-13.8	1.66 H	303	26.6	13.6
9	15870.00	56.2 PK	74.0	-17.8	1.51 H	166	43.4	12.8
10	15870.00	40.5 AV	54.0	-13.5	1.51 H	166	27.7	12.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.9 PK	74.0	-15.1	1.86 V	170	54.6	4.3
2	5150.00	45.2 AV	54.0	-8.8	1.86 V	170	40.9	4.3
3	*5290.00	109.1 PK			1.86 V	170	105.2	3.9
4	*5290.00	99.0 AV			1.86 V	170	95.1	3.9
5	5352.20	68.4 PK	74.0	-5.6	1.86 V	170	64.4	4.0
6	**5352.20**	**53.9 AV**	**54.0**	**-0.1**	**1.86 V**	**170**	**49.9**	**4.0**
7	#10580.00	47.3 PK	74.0	-26.7	1.44 V	210	33.7	13.6
8	#10580.00	34.4 AV	54.0	-19.6	1.44 V	210	20.8	13.6
9	15870.00	47.8 PK	74.0	-26.2	1.44 V	163	35.0	12.8
10	15870.00	33.7 AV	54.0	-20.3	1.44 V	163	20.9	12.8

REMARKS:

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

CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	63.6 PK	74.0	-10.4	1.78 H	70	59.3	4.3
2	#5470.00	52.3 AV	54.0	-1.7	1.78 H	70	48.0	4.3
3	*5530.00	103.1 PK			1.78 H	70	98.8	4.3
4	*5530.00	93.5 AV			1.78 H	70	89.2	4.3
5	#5725.00	47.1 PK	74.0	-26.9	1.78 H	70	42.6	4.5
6	#5725.00	37.2 AV	54.0	-16.8	1.78 H	70	32.7	4.5
7	11060.00	54.3 PK	74.0	-19.7	1.66 H	298	40.5	13.8
8	11060.00	39.8 AV	54.0	-14.2	1.66 H	298	26.0	13.8
9	#16590.00	56.2 PK	74.0	-17.8	1.53 H	179	39.5	16.7
10	#16590.00	40.6 AV	54.0	-13.4	1.53 H	179	23.9	16.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	66.2 PK	74.0	-7.8	1.50 V	215	61.9	4.3
2	#5470.00	53.5 AV	54.0	-0.5	1.50 V	215	49.2	4.3
3	*5530.00	105.8 PK			1.50 V	215	101.5	4.3
4	*5530.00	96.8 AV			1.50 V	215	92.5	4.3
5	#5725.00	49.7 PK	74.0	-24.3	1.50 V	215	45.2	4.5
6	#5725.00	38.4 AV	54.0	-15.6	1.50 V	215	33.9	4.5
7	11060.00	47.7 PK	74.0	-26.3	1.41 V	235	33.9	13.8
8	11060.00	34.1 AV	54.0	-19.9	1.41 V	235	20.3	13.8
9	#16590.00	48.2 PK	74.0	-25.8	1.47 V	179	31.5	16.7
10	#16590.00	34.8 AV	54.0	-19.2	1.47 V	179	18.1	16.7

REMARKS:

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

CHANNEL	TX Channel 122	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	#5468.70	51.1 PK	74.0	-22.9	1.88 H	50	46.8	4.3
2	#5468.70	49.2 AV	54.0	-4.8	1.88 H	50	44.9	4.3
3	*5610.00	107.2 PK			1.88 H	50	102.8	4.4
4	*5610.00	97.8 AV			1.88 H	50	93.4	4.4
5	#5725.00	65.3 PK	74.0	-8.7	1.88 H	50	60.8	4.5
6	#5725.00	51.9 AV	54.0	-2.1	1.88 H	50	47.4	4.5
7	11220.00	55.0 PK	74.0	-19.0	1.66 H	295	41.3	13.7
8	11220.00	40.3 AV	54.0	-13.7	1.66 H	295	26.6	13.7
9	#16830.00	56.2 PK	74.0	-17.8	1.59 H	157	39.2	17.0
10	#16830.00	40.1 AV	54.0	-13.9	1.59 H	157	23.1	17.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5468.70	53.7 PK	74.0	-20.3	2.44 V	330	49.4	4.3
2	#5468.70	50.4 AV	54.0	-3.6	2.44 V	330	46.1	4.3
3	*5610.00	109.9 PK			2.44 V	330	105.5	4.4
4	*5610.00	101.1 AV			2.44 V	330	96.7	4.4
5	#5725.00	67.9 PK	74.0	-6.1	2.44 V	330	63.4	4.5
6	#5725.00	53.1 AV	54.0	-0.9	2.44 V	330	48.6	4.5
7	11220.00	47.5 PK	74.0	-26.5	1.44 V	227	33.8	13.7
8	11220.00	34.3 AV	54.0	-19.7	1.44 V	227	20.6	13.7
9	#16830.00	48.0 PK	74.0	-26.0	1.52 V	156	31.0	17.0
10	#16830.00	34.2 AV	54.0	-19.8	1.52 V	156	17.2	17.0

REMARKS:

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

CHANNEL	TX Channel 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	5440.00	52.1 PK	74.0	-21.9	1.78 H	75	47.8	4.3
2	5440.00	42.3 AV	54.0	-11.7	1.78 H	75	38.0	4.3
3	*5690.00	107.1 PK			1.78 H	75	102.7	4.4
4	*5690.00	97.6 AV			1.78 H	75	93.2	4.4
5	#5850.00	54.0 PK	74.0	-20.0	1.78 H	75	49.2	4.8
6	#5850.00	42.7 AV	54.0	-11.3	1.78 H	75	37.9	4.8
7	11380.00	55.1 PK	74.0	-18.9	1.74 H	320	40.8	14.3
8	11380.00	40.3 AV	54.0	-13.7	1.74 H	320	26.0	14.3
9	#17070.00	55.8 PK	74.0	-18.2	1.52 H	155	38.5	17.3
10	#17070.00	39.9 AV	54.0	-14.1	1.52 H	155	22.6	17.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5440.00	54.7 PK	74.0	-19.3	2.44 V	347	50.4	4.3
2	5440.00	43.5 AV	54.0	-10.5	2.44 V	347	39.2	4.3
3	*5690.00	109.8 PK			2.44 V	347	105.4	4.4
4	*5690.00	100.9 AV			2.44 V	347	96.5	4.4
5	#5850.00	56.6 PK	74.0	-17.4	2.44 V	347	51.8	4.8
6	#5850.00	43.9 AV	54.0	-10.1	2.44 V	347	39.1	4.8
7	11380.00	47.3 PK	74.0	-26.7	1.46 V	221	33.0	14.3
8	11380.00	34.1 AV	54.0	-19.9	1.46 V	221	19.8	14.3
9	#17070.00	48.7 PK	74.0	-25.3	1.51 V	176	31.4	17.3
10	#17070.00	34.7 AV	54.0	-19.3	1.51 V	176	17.4	17.3

REMARKS:

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

Below 1GHz Data:

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	30.90	31.4 QP	40.0	-8.6	1.00 H	112	40.2	-8.8
2	80.15	31.7 QP	40.0	-8.3	2.00 H	360	44.2	-12.5
3	148.19	28.5 QP	43.5	-15.0	2.00 H	283	36.2	-7.7
4	559.57	24.9 QP	46.0	-21.1	1.50 H	132	26.1	-1.2
5	653.88	27.9 QP	46.0	-18.1	1.50 H	360	27.0	0.9
6	917.33	31.5 QP	46.0	-14.5	2.00 H	360	26.6	4.9
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	36.91	36.6 QP	40.0	-3.4	1.00 V	149	45.2	-8.6
2	93.51	26.8 QP	43.5	-16.7	3.00 V	101	40.2	-13.4
3	167.57	23.6 QP	43.5	-19.9	1.00 V	302	31.7	-8.1
4	237.90	27.2 QP	46.0	-18.8	2.00 V	221	36.8	-9.6
5	714.21	28.7 QP	46.0	-17.3	1.00 V	312	27.3	1.4
6	848.41	30.0 QP	46.0	-16.0	1.00 V	249	26.3	3.7

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 20167	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 2018
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 1.
3 Tested Date: Dec. 21 to 22, 2017

4.2.3 Test Procedure

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

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

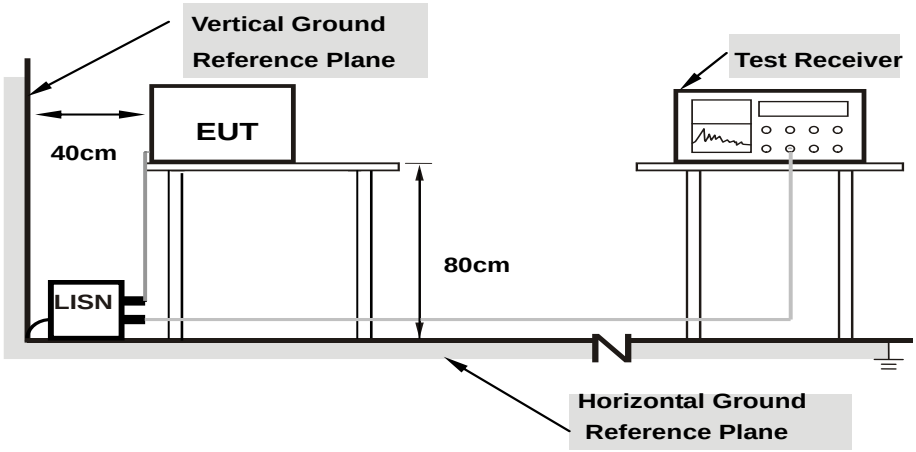
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

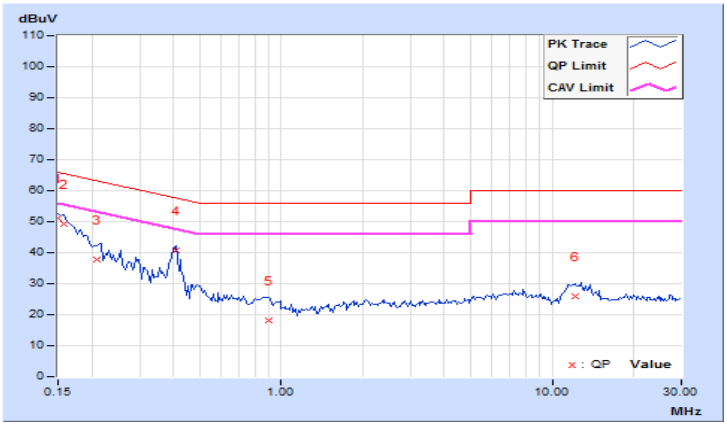
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	40.90	26.17	50.99	36.26	66.00	56.00	-15.01	-19.74
2	0.15781	10.08	39.12	24.31	49.20	34.39	65.58	55.58	-16.38	-21.19
3	0.20859	10.07	27.56	19.34	37.63	29.41	63.26	53.26	-25.63	-23.85
4	0.40781	10.12	30.51	28.87	40.63	38.99	57.69	47.69	-17.06	-8.70
5	0.89609	10.16	8.17	2.24	18.33	12.40	56.00	46.00	-37.67	-33.60
6	12.14063	10.97	15.11	10.18	26.08	21.15	60.00	50.00	-33.92	-28.85

REMARKS:

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

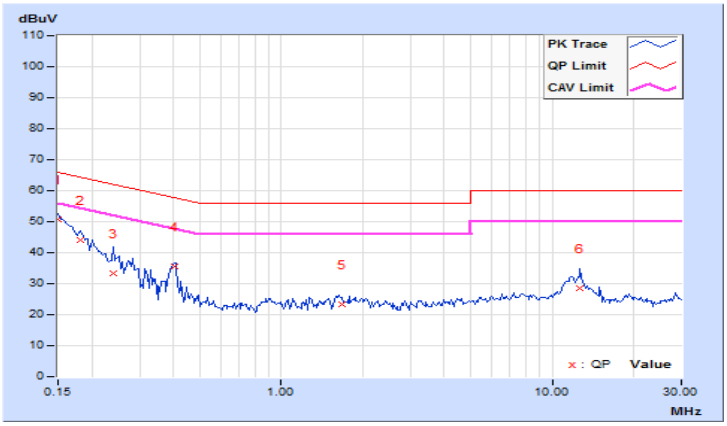


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	40.74	26.11	50.82	36.19	66.00	56.00	-15.18	-19.81
2	0.18125	10.05	34.16	18.42	44.21	28.47	64.43	54.43	-20.22	-25.96
3	0.23984	10.06	23.11	9.88	33.17	19.94	62.10	52.10	-28.93	-32.16
4	0.40391	10.12	25.39	23.45	35.51	33.57	57.77	47.77	-22.26	-14.20
5	1.67188	10.18	13.20	6.70	23.38	16.88	56.00	46.00	-32.62	-29.12
6	12.71094	10.87	17.63	12.45	28.50	23.32	60.00	50.00	-31.50	-26.68

REMARKS:

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



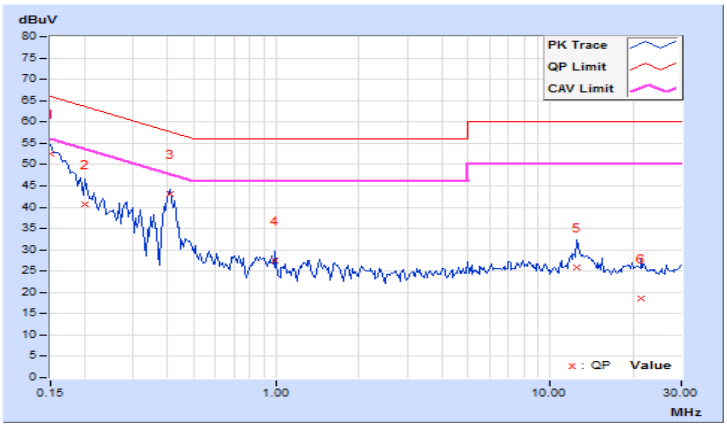
4.2.8 Test Results (Mode 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.14	42.37	27.91	52.51	38.05	66.00	56.00	-13.49	-17.95
2	0.20078	10.15	30.41	19.87	40.56	30.02	63.58	53.58	-23.02	-23.56
3	0.40781	10.20	32.80	31.67	43.00	41.87	57.69	47.69	-14.69	-5.82
4	0.98984	10.25	17.24	14.67	27.49	24.92	56.00	46.00	-28.51	-21.08
5	12.53125	10.99	14.81	9.78	25.80	20.77	60.00	50.00	-34.20	-29.23
6	21.33984	11.53	7.18	2.59	18.71	14.12	60.00	50.00	-41.29	-35.88

REMARKS:

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

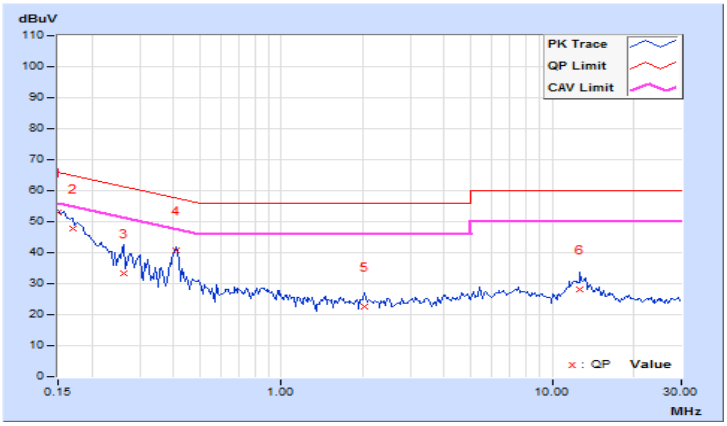


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	42.85	27.99	52.93	38.07	66.00	56.00	-13.07	-17.93
2	0.16953	10.06	37.76	24.62	47.82	34.68	64.98	54.98	-17.16	-20.30
3	0.26328	10.07	23.16	11.92	33.23	21.99	61.33	51.33	-28.10	-29.34
4	0.41172	10.12	30.54	28.70	40.66	38.82	57.61	47.61	-16.95	-8.79
5	2.01953	10.21	12.23	5.69	22.44	15.90	56.00	46.00	-33.56	-30.10
6	12.69141	10.87	17.16	12.39	28.03	23.26	60.00	50.00	-31.97	-26.74

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.



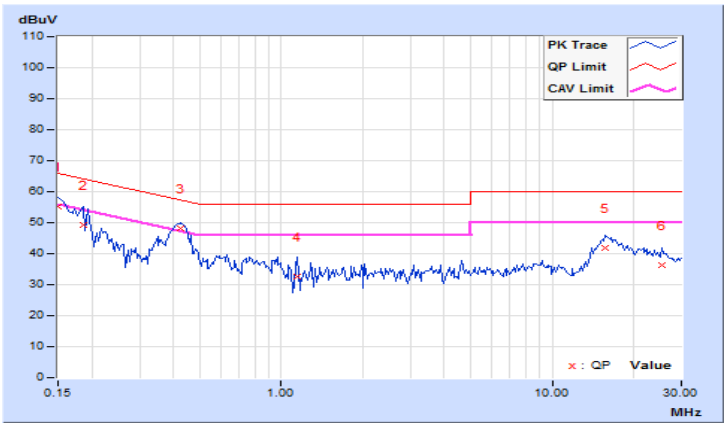
4.2.9 Test Results (Mode 3)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	45.04	28.72	55.13	38.81	66.00	56.00	-10.87	-17.19
2	0.18516	10.07	39.09	23.69	49.16	33.76	64.25	54.25	-15.09	-20.49
3	0.42734	10.12	38.00	29.31	48.12	39.43	57.30	47.30	-9.18	-7.87
4	1.14063	10.17	22.35	12.53	32.52	22.70	56.00	46.00	-23.48	-23.30
5	15.70703	11.26	30.62	25.10	41.88	36.36	60.00	50.00	-18.12	-13.64
6	25.41406	11.66	24.76	19.46	36.42	31.12	60.00	50.00	-23.58	-18.88

REMARKS:

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

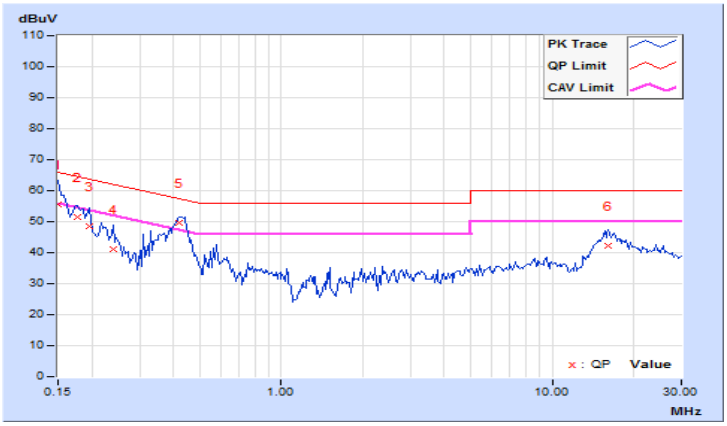


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	45.48	30.24	55.56	40.32	66.00	56.00	-10.44	-15.68
2	0.17734	10.06	41.27	26.53	51.33	36.59	64.61	54.61	-13.28	-18.02
3	0.19687	10.04	38.37	25.66	48.41	35.70	63.74	53.74	-15.33	-18.04
4	0.23984	10.06	31.12	16.99	41.18	27.05	62.10	52.10	-20.92	-25.05
5	**0.41953**	**10.12**	**39.59**	**32.41**	**49.71**	**42.53**	**57.46**	**47.46**	**-7.75**	**-4.93**
6	16.19531	11.08	31.29	25.80	42.37	36.88	60.00	50.00	-17.63	-13.12

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.



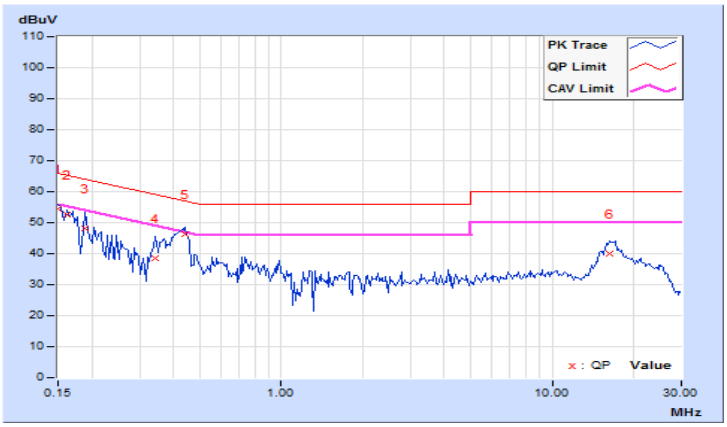
4.2.10 Test Results (Mode 4)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	44.38	28.11	54.47	38.20	66.00	56.00	-11.53	-17.80
2	0.16172	10.08	42.62	27.74	52.70	37.82	65.38	55.38	-12.68	-17.56
3	0.18906	10.07	37.95	25.66	48.02	35.73	64.08	54.08	-16.06	-18.35
4	0.34141	10.11	28.55	17.17	38.66	27.28	59.17	49.17	-20.51	-21.89
5	0.43906	10.12	36.13	28.87	46.25	38.99	57.08	47.08	-10.83	-8.09
6	16.36719	11.31	28.84	23.52	40.15	34.83	60.00	50.00	-19.85	-15.17

REMARKS:

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

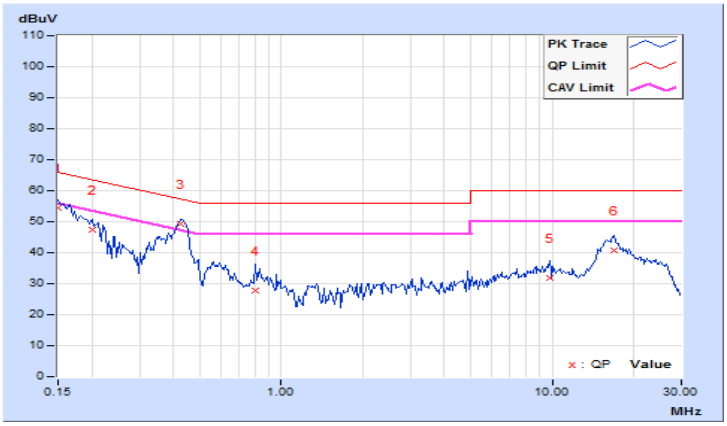


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	44.54	29.49	54.62	39.57	66.00	56.00	-11.38	-16.43
2	0.20078	10.04	37.46	23.85	47.50	33.89	63.58	53.58	-16.08	-19.69
3	0.42734	10.12	39.20	31.14	49.32	41.26	57.30	47.30	-7.98	-6.04
4	0.79844	10.13	17.73	8.09	27.86	18.22	56.00	46.00	-28.14	-27.78
5	9.78906	10.69	21.16	15.22	31.85	25.91	60.00	50.00	-28.15	-24.09
6	16.83594	11.11	29.81	24.30	40.92	35.41	60.00	50.00	-19.08	-14.59

REMARKS:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

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

*B is the 26 dB emission bandwidth in megahertz

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

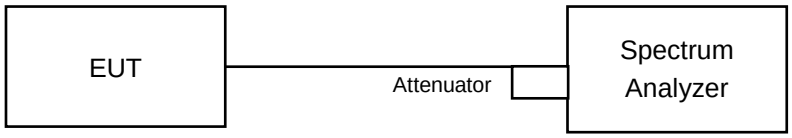
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

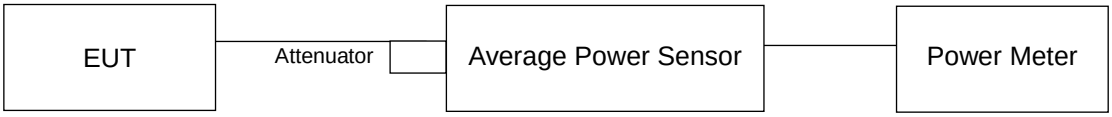
4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT

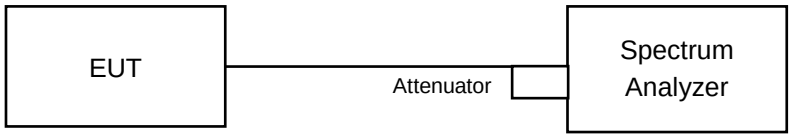
For channel straddling 5725MHz:



For other channels:



FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

For channel straddling 5725MHz:

802.11ac (VHT20)

Method SA-1

1. Set span to encompass the entire 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. Set trigger to free run (duty cycle ≥ 98 percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

Other Modulation mode

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 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 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 Result

Radio 1

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	19.67	19.75	187.089	22.72	23.91	Pass
60	5300	19.70	20.10	195.654	22.91	24.00	Pass
64	5320	20.12	19.74	196.991	22.94	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.74	19.58
60	5300	19.97	20.43
64	5320	20.95	20.46

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	19.58	23.91 < 24
60	5300	19.97	24 = 24
64	5320	20.46	24.1 > 24

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	19.58	19.71	184.323	22.66	24.00	Pass
60	5300	19.71	20.17	197.533	22.96	24.00	Pass
64	5320	20.10	19.68	195.226	22.91	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.60	20.76
60	5300	20.59	20.90
64	5320	20.56	20.93

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.60	24.13 > 24
60	5300	20.59	24.13 > 24
64	5320	20.56	24.13 > 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	20.72	21.23	250.771	23.99	24.00	Pass
62	5310	20.09	20.04	203.019	23.08	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	41.25	41.30
62	5310	41.18	41.12

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidtl

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.25	27.15 > 24
62	5310	41.12	27.14 > 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	20.05	20.25	207.083	23.16	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	84.06	83.74

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.74	30.22 > 24

Beamforming 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	19.67	19.75	187.089	22.72	23.17	Pass
60	5300	19.70	20.10	195.654	22.91	23.26	Pass
64	5320	20.12	19.74	196.991	22.94	23.26	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

2. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.74dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.74-6).

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.74	19.58
60	5300	19.97	20.43
64	5320	20.95	20.46

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	19.58	23.91 < 24
60	5300	19.97	24 = 24
64	5320	20.46	24.1 > 24

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	19.58	19.71	184.323	22.66	23.26	Pass
60	5300	19.71	20.17	197.533	22.96	23.26	Pass
64	5320	20.10	19.68	195.226	22.91	23.26	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

2. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.74dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.74-6).

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.60	20.76
60	5300	20.59	20.90
64	5320	20.56	20.93

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	20.60	24.13 > 24
60	5300	20.59	24.13 > 24
64	5320	20.56	24.13 > 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	19.69	20.18	197.343	22.95	23.26	Pass
62	5310	19.63	19.54	181.783	22.60	23.26	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.74dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.74-6).

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	41.25	41.30
62	5310	41.18	41.12

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidtl

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.25	27.15 > 24
62	5310	41.12	27.14 > 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	19.54	19.77	184.792	22.67	23.26	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

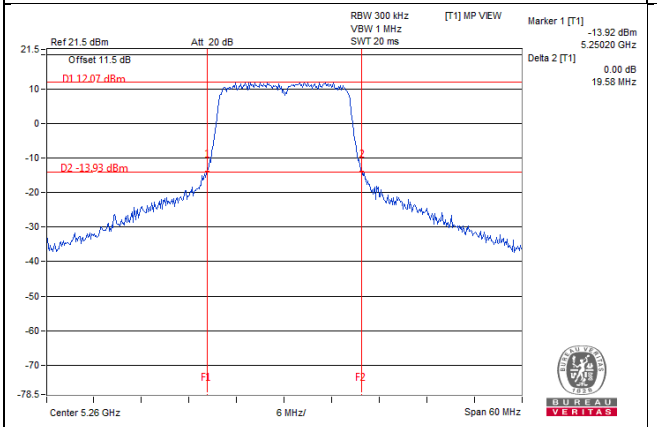
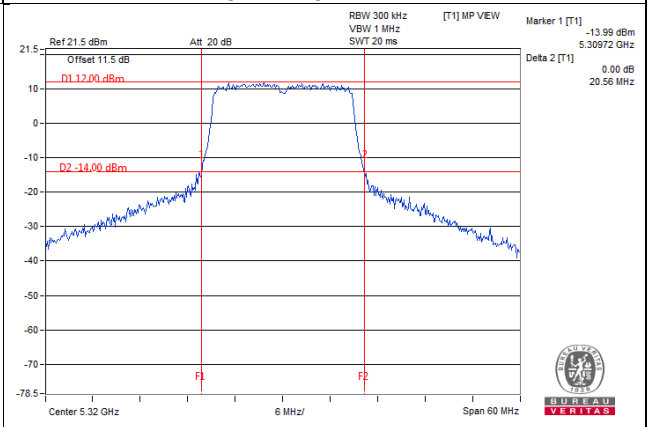
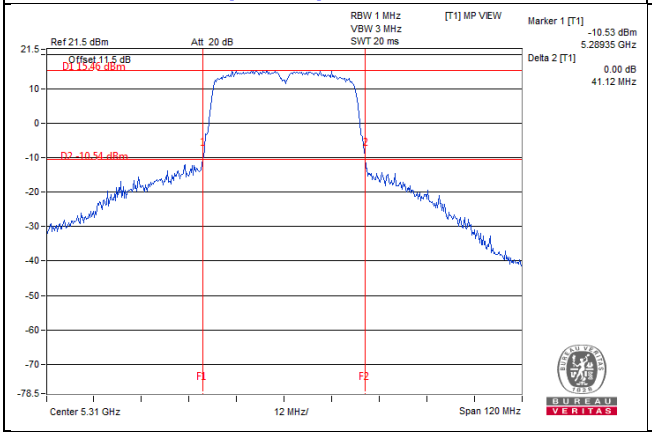
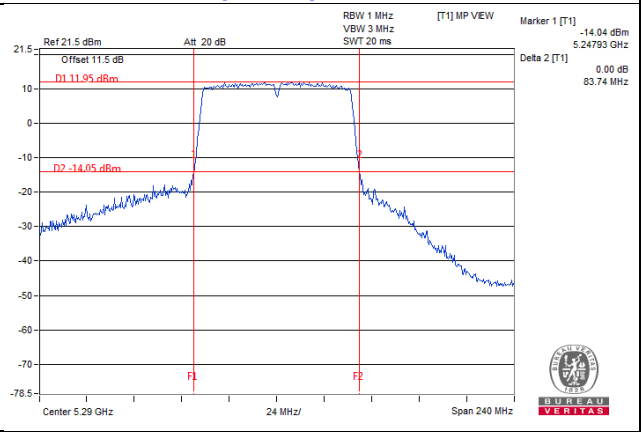
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.74dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.74-6).

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	84.06	83.74

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.74	30.22 > 24

Spectrum Plot of Worst Value	
802.11a / Chain 1 – CH52	**802.11ac (VHT20) / Chain 0 – CH64**
	
802.11ac (VHT40) / Chain 1 – CH62	**802.11ac (VHT80) / Chain 1 – CH58**
	

Radio 2

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				
100	5500	19.70	20.18	197.557	22.96	24.00	Pass
116	5580	19.88	19.95	196.13	22.93	24.00	Pass
140	5700	19.39	19.85	183.501	22.64	23.95	Pass
*144 (UNII-2C Band)	5720	15.88	16.42	85.757	19.33	22.78	Pass
*144 (UNII-3 Band)	5720	9.26	9.89	18.883	12.76	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	104.64	20.2
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
100	5500	20.35	20.25
116	5580	20.17	20.39
140	5700	19.74	20.12
144 (UNII-2C Band)	5720	15.07	15.48

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
100	5500	20.25	24.06 > 24
116	5580	20.17	24.04 > 24
140	5700	19.74	23.95 < 24
144 (UNII-2C Band)	5720	15.07	22.78 < 24

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				
100	5500	19.34	19.75	180.307	22.56	24.00	Pass
116	5580	19.55	19.63	181.99	22.60	24.00	Pass
140	5700	19.41	20.02	187.759	22.74	24.00	Pass
*144 (UNII-2C Band)	5720	16.47	16.94	93.792	19.72	22.87	Pass
*144 (UNII-3 Band)	5720	10.31	11.12	23.682	13.74	30.00	Pass

Note: 1. * 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	117.474	20.7
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
100	5500	20.84	20.91
116	5580	21.19	21.23
140	5700	20.77	20.89
144 (UNII-2C Band)	5720	15.41	15.52

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
100	5500	20.84	24.18 > 24
116	5580	21.19	24.26 > 24
140	5700	20.77	24.17 > 24
144 (UNII-2C Band)	5720	15.41	22.87 < 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				
102	5510	19.23	19.82	179.693	22.55	24.00	Pass
110	5550	20.61	20.92	238.675	23.78	24.00	Pass
134	5670	20.48	20.95	236.137	23.73	24.00	Pass
*142 (UNII-2C Band)	5710	17.52	18.11	125.677	20.99	24.00	Pass
*142 (UNII-3 Band)	5710	5.39	6.10	7.811	8.93	30.00	Pass

Note: 1. * 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	133.488	21.25
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
102	5510	41.06	41.25
110	5550	41.80	42.69
134	5670	40.99	40.89
142 (UNII-2C Band)	5710	35.60	35.64

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidtl

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
102	5510	41.06	27.13 > 24
110	5550	41.80	27.21 > 24
134	5670	40.89	27.11 > 24
142 (UNII-2C Band)	5710	35.60	26.51 > 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				
106	5530	18.52	18.86	148.034	21.70	24.00	Pass
122	5610	20.71	20.63	233.372	23.68	24.00	Pass
*138 (UNII-2C Band)	5690	17.09	17.93	120.845	20.82	24.00	Pass
*138 (UNII-3 Band)	5690	1.80	0.91	2.931	4.67	30.00	Pass

Note: 1. * 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	123.776	20.93
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
106	5530	84.16	83.92
122	5610	99.44	96.81
138 (UNII-2C Band)	5690	77.21	77.12

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

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
106	5530	83.92	30.23 > 24
122	5610	96.81	30.85 > 24
138 (UNII-2C Band)	5690	77.12	29.87 > 24

Beamforming 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				
100	5500	19.70	20.18	197.557	22.96	23.28	Pass
116	5580	19.88	19.95	196.13	22.93	23.28	Pass
140	5700	19.39	19.85	183.501	22.64	23.23	Pass
*144 (UNII-2C Band)	5720	15.88	16.42	85.757	19.33	22.06	Pass
*144 (UNII-3 Band)	5720	9.26	9.89	18.883	12.76	29.28	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

2. For UNII-2C: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.72-6).

3. For UNII-3: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to 30-(6.72-6) = 29.28dBm.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	104.64	20.2
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
100	5500	20.35	20.25
116	5580	20.17	20.39
140	5700	19.74	20.12
144 (UNII-2C Band)	5720	15.07	15.48

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
100	5500	20.25	24.06 > 24
116	5580	20.17	24.04 > 24
140	5700	19.74	23.95 < 24
144 (UNII-2C Band)	5720	15.07	22.78 < 24

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				
100	5500	19.34	19.75	180.307	22.56	23.28	Pass
116	5580	19.55	19.63	181.99	22.60	23.28	Pass
140	5700	19.41	20.02	187.759	22.74	23.28	Pass
*144 (UNII-2C Band)	5720	15.86	16.32	81.403	19.11	22.15	Pass
*144 (UNII-3 Band)	5720	9.78	10.21	20.001	13.01	29.28	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

2. For UNII-2C: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.72-6).

3. For UNII-3: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to 30-(6.72-6) = 29.28dBm.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	101.404	20.06
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
100	5500	20.84	20.91
116	5580	21.19	21.23
140	5700	20.77	20.89
144 (UNII-2C Band)	5720	15.41	15.52

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
100	5500	20.84	24.18 > 24
116	5580	21.19	24.26 > 24
140	5700	20.77	24.17 > 24
144 (UNII-2C Band)	5720	15.41	22.87 < 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				
102	5510	19.23	19.82	179.693	22.55	23.28	Pass
110	5550	19.64	19.87	189.096	22.77	23.28	Pass
134	5670	19.53	19.94	188.371	22.75	23.28	Pass
*142 (UNII-2C Band)	5710	16.71	17.14	102.279	20.10	23.28	Pass
*142 (UNII-3 Band)	5710	4.57	5.06	6.294	7.99	29.28	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

2. For UNII-2C: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.72-6).

3. For UNII-3: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to 30-(6.72-6) = 29.28dBm.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
142	5710	108.573	20.36
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
102	5510	41.06	41.25
110	5550	41.80	42.69
134	5670	40.99	40.89
142 (UNII-2C Band)	5710	35.60	35.64

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidt

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
102	5510	41.06	27.13 > 24
110	5550	41.80	27.21 > 24
134	5670	40.89	27.11 > 24
142 (UNII-2C Band)	5710	35.60	26.51 > 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				
106	5530	18.52	18.86	148.034	21.70	23.28	Pass
122	5610	19.73	19.72	187.728	22.74	23.28	Pass
*138 (UNII-2C Band)	5690	15.67	16.62	88.368	19.46	23.28	Pass
*138 (UNII-3 Band)	5690	0.52	1.36	2.662	4.25	29.28	Pass

Note: 1. * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

2. For UNII-2C: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to “Determined Conducted Limit” -(6.72-6).

3. For UNII-3: Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.72dBi > 6dBi , so the power limit shall be reduced to 30-(6.72-6) = 29.28dBm.

The Total Power for the straddle channel:

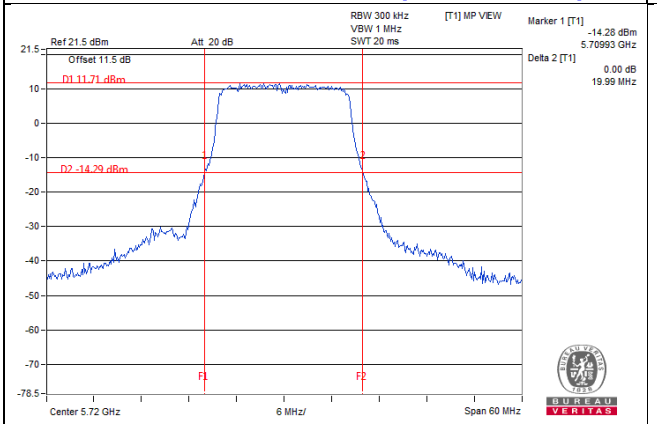
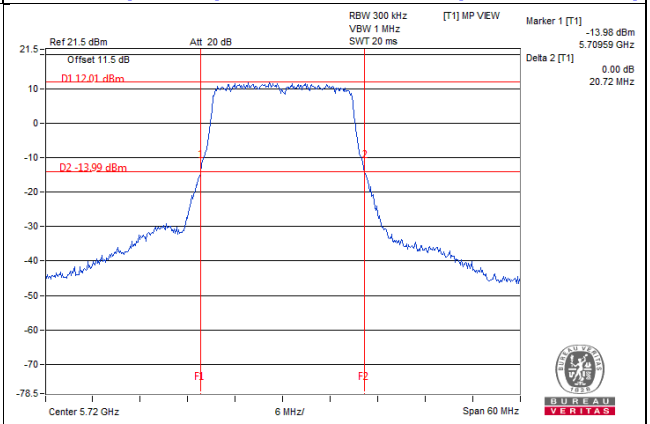
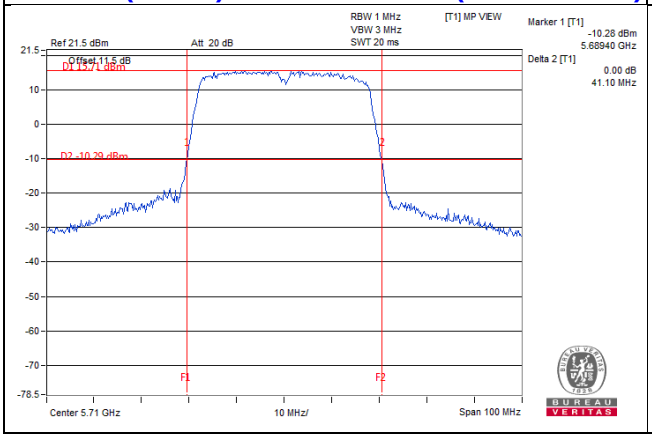
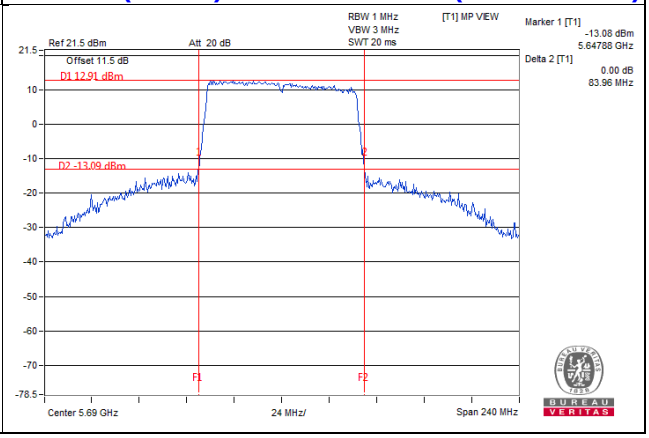
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
138	5690	91.03	19.59
Note: The total power was calculated through formula and record the value for reference only.			

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
106	5530	84.16	83.92
122	5610	99.44	96.81
138 (UNII-2C Band)	5690	77.21	77.12

Note: For U_NII-2A, U_NII-2C Band output power limitation is determined based on 26dBc bandwidtl

Power Limit = 11dBm + 10logB < U_NII-2A, U_NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
106	5530	83.92	30.23 > 24
122	5610	96.81	30.85 > 24
138 (UNII-2C Band)	5690	77.12	29.87 > 24

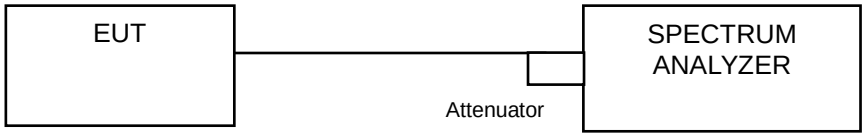
Spectrum Plot of Worst Value	
802.11a / Chain 0 – CH144 (UNII-2C Band)	**802.11ac (VHT20) / Chain 0 - CH144 (UNII-2C Band)**
	
802.11ac (VHT40) / Chain 0 - CH142 (UNII-2C Band)	**802.11ac (VHT80) / Chain 1 - CH138 (UNII-2C Band)**
	

NOTE:

For CH144 (UNII-2C Band) = 5725MHz - Marker 1
For CH142 (UNII-2C Band) = 5725MHz - Marker 1
For CH138 (UNII-2C Band) = 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

Radio 1

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	16.56	16.56
60	5300	16.44	16.44
64	5320	16.56	16.56

802.11ac (VHT20)

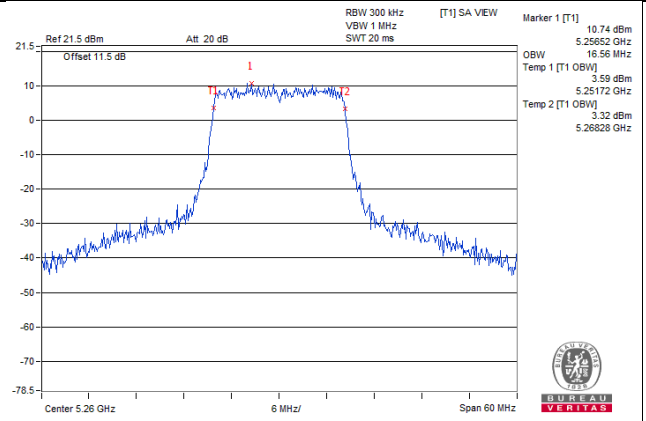
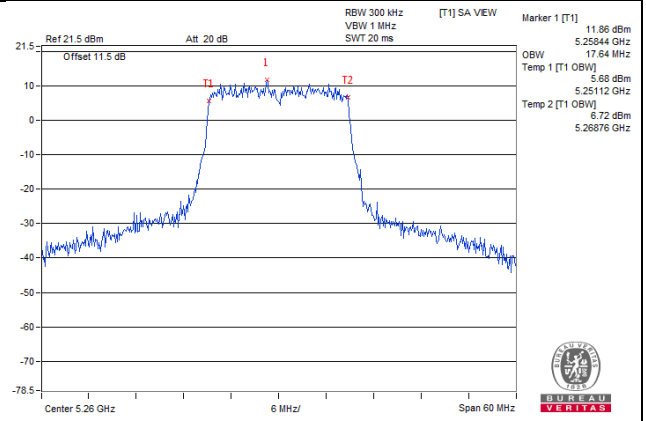
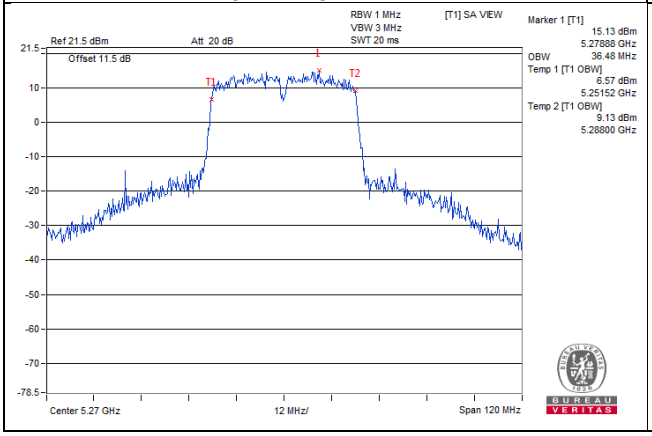
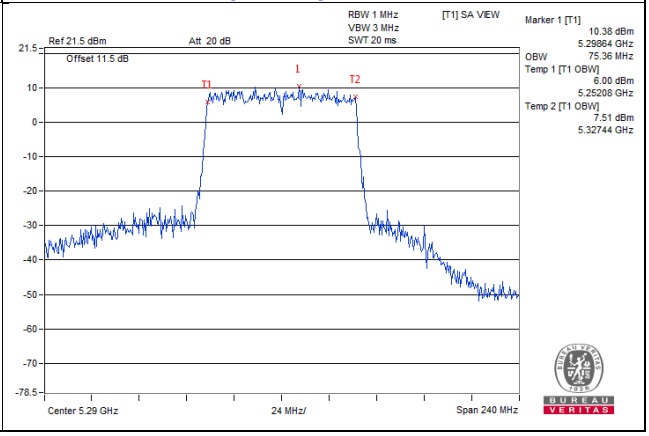
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.64	17.64
60	5300	17.64	17.64
64	5320	17.64	17.64

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	36.24	36.48
62	5310	36.24	36.24

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	75.36	75.36

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH52	**802.11ac (VHT20)_ Chain 0 / CH52**
	
802.11ac (VHT40) _Chain 1 / CH54	**802.11ac (VHT80) _Chain 0 / CH58**
	

Radio 2

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
100	5500	16.44	16.56
116	5580	16.56	16.56
140	5700	16.56	16.56
144 (UNII-2C Band)	5720	13.40	13.40
144 (UNII-3 Band)	5720	3.16	3.16

802.11ac (VHT20)

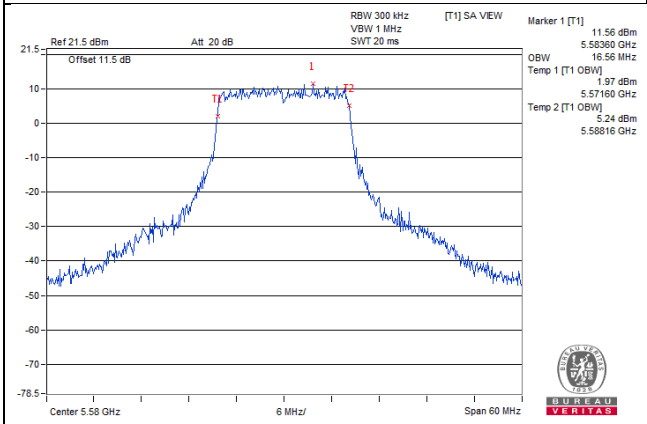
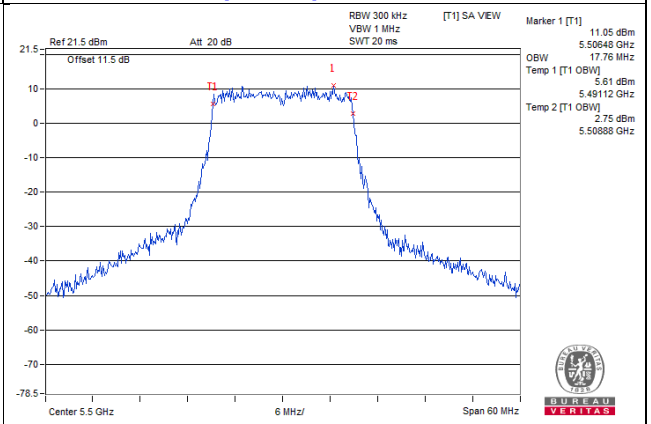
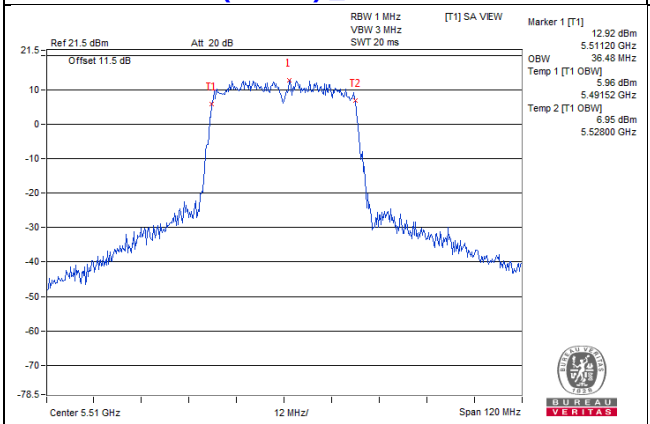
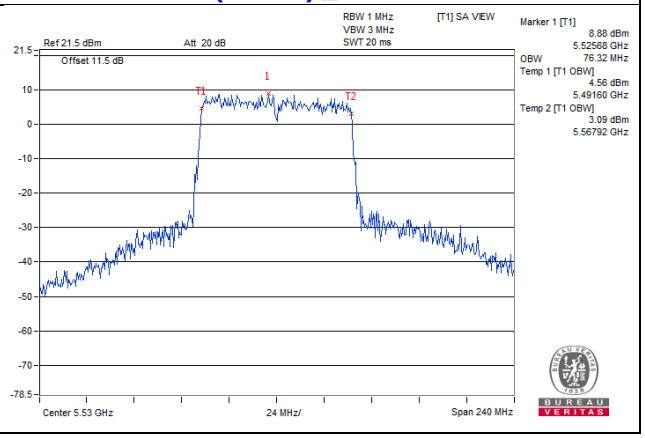
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
100	5500	17.64	17.76
116	5580	17.64	17.76
140	5700	17.64	17.76
144 (UNII-2C Band)	5720	14.00	14.00
144 (UNII-3 Band)	5720	3.76	3.76

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
102	5510	36.24	36.48
110	5550	36.24	36.48
134	5670	36.48	36.00
142 (UNII-2C Band)	5710	33.40	33.40
142 (UNII-3 Band)	5710	3.00	3.00

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
106	5530	76.32	75.84
122	5610	76.32	76.32
138 (UNII-2C Band)	5690	73.40	73.40
138 (UNII-3 Band)	5690	2.44	2.44

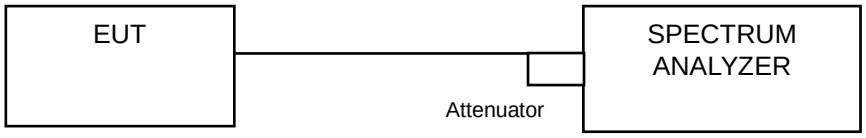
Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH116	**802.11ac (VHT20)_ Chain 1 / CH100**
	
802.11ac (VHT40) _Chain 1 / CH102	**802.11ac (VHT80) _Chain 0 / CH106**
	

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

802.11ac (VHT20)

For U-NII-1:

Using method SA-1

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

For U-NII-3:

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

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

For U-NII-1:

Using method SA-2

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

For U-NII-3:

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

For Radio 1 (UNII-2A):

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	6.27	6.79	0.16	9.71	10.26	Pass
60	5300	6.61	6.96	0.16	9.96	10.26	Pass
64	5320	7.26	6.73	0.16	10.18	10.26	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.74dBi > 6dBi , so the power density limit shall be reduced to 11-(6.74-6) = 10.26dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
52	5260	6.59	6.54	9.58	10.26	Pass
60	5300	6.60	6.78	9.70	10.26	Pass
64	5320	6.53	6.57	9.56	10.26	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.74dBi > 6dBi , so the power density limit shall be reduced to 11-(6.74-6) = 10.26dBm.

802.11ac (VHT40)

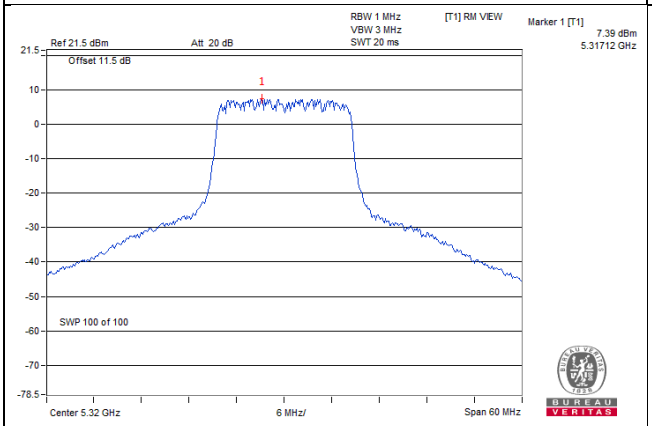
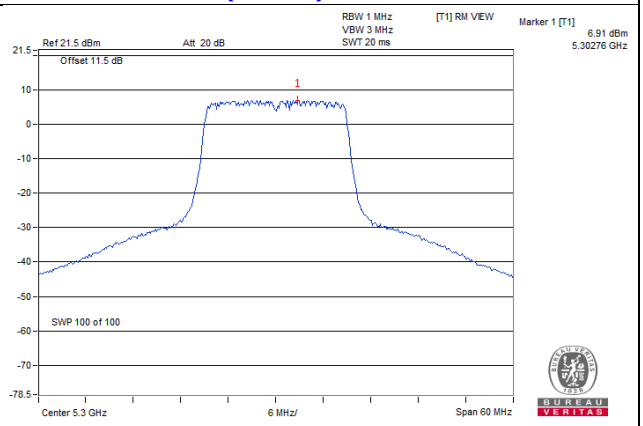
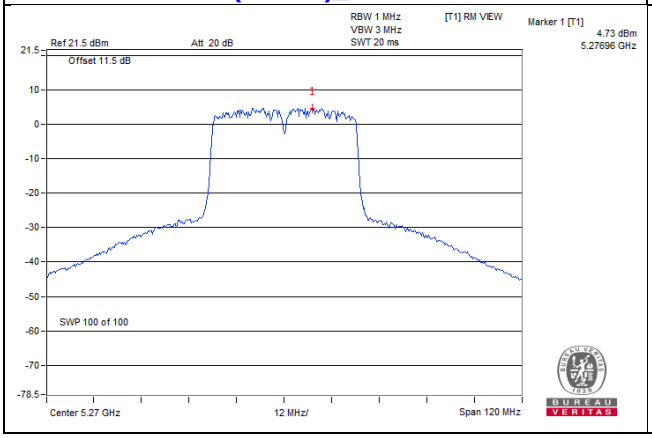
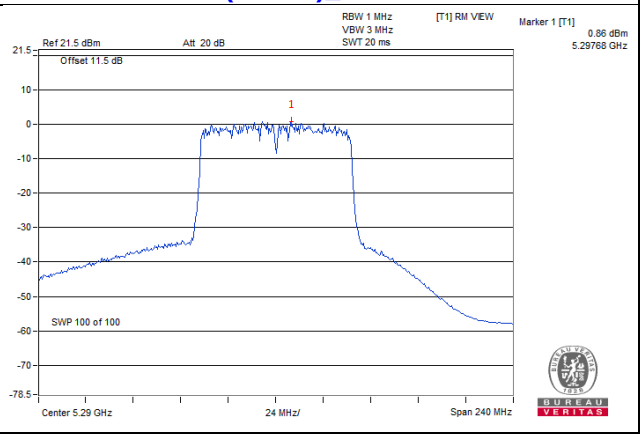
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	4.14	4.56	0.16	7.52	10.26	Pass
62	5310	3.80	4.02	0.16	7.08	10.26	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.74dBi > 6dBi , so the power density limit shall be reduced to 11-(6.74-6) = 10.26dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	-0.45	0.26	0.28	3.21	10.26	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.74dBi > 6dBi , so the power density limit shall be reduced to 11-(6.74-6) = 10.26dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH64	**802.11ac (VHT20)_Chain 1 / CH60**
	
802.11ac (VHT40)_Chain 1 / CH54	**802.11ac (VHT80)_Chain 1 / CH58**
	

For Radio 2 (UNII-2C):

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				
100	5500	6.61	6.69	0.16	9.82	10.28	Pass
116	5580	6.76	6.69	0.16	9.90	10.28	Pass
140	5700	6.27	7.13	0.16	9.90	10.28	Pass
144 (UNII-2C Band)	5720	6.29	6.79	0.16	9.72	10.28	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 11-(6.72-6) = 10.28dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
100	5500	6.01	6.30	9.17	10.28	Pass
116	5580	6.23	6.10	9.18	10.28	Pass
140	5700	6.24	6.51	9.39	10.28	Pass
144 (UNII-2C Band)	5720	6.35	6.73	9.55	10.28	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 11-(6.72-6) = 10.28dBm.

802.11ac (VHT40)

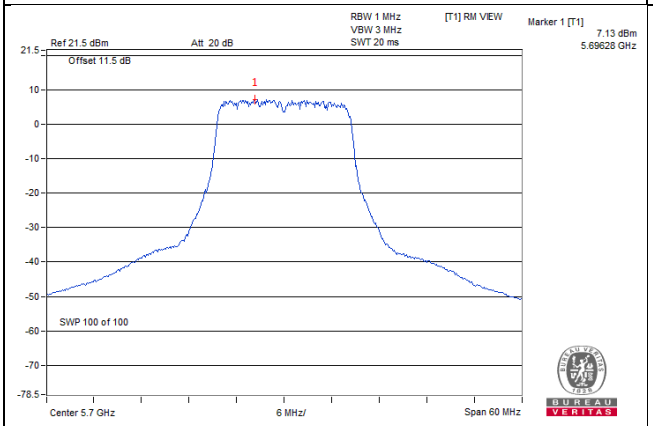
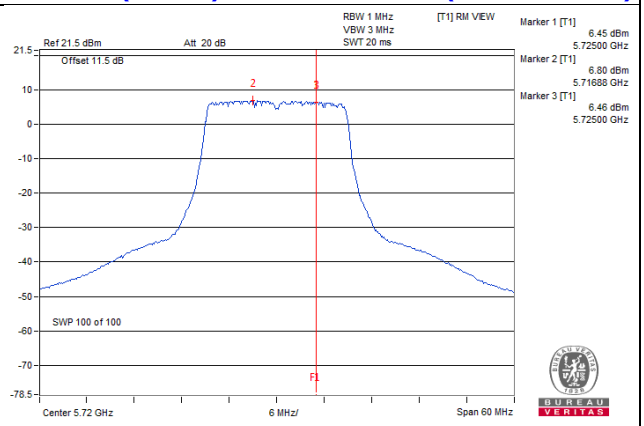
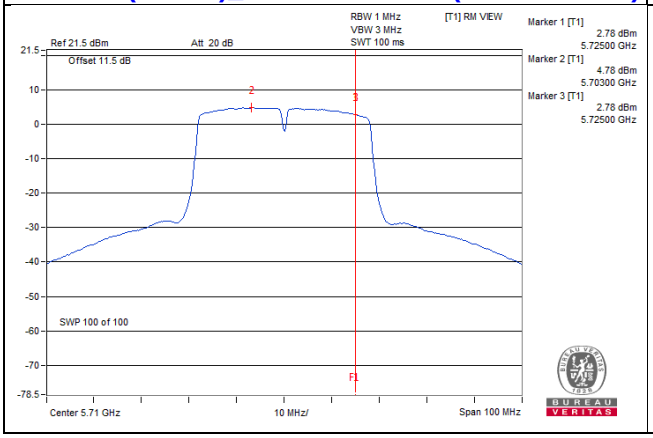
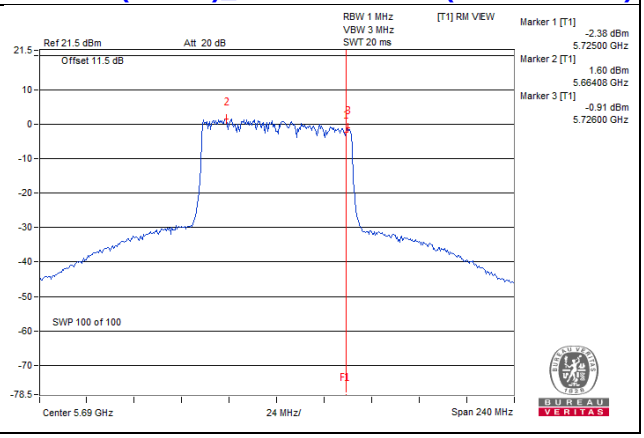
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
102	5510	3.28	3.54	0.16	6.58	10.28	Pass
110	5550	4.28	4.44	0.16	7.53	10.28	Pass
134	5670	3.90	4.63	0.16	7.45	10.28	Pass
142 (UNII-2C Band)	5710	4.35	4.78	0.16	7.74	10.28	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 11-(6.72-6) = 10.28dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
106	5530	-1.07	-0.35	0.28	2.60	10.28	Pass
122	5610	0.94	0.68	0.28	4.10	10.28	Pass
138 (UNII-2C Band)	5690	0.31	1.36	0.28	4.16	10.28	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 11-(6.72-6) = 10.28dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH140	**802.11ac (VHT20)_Chain 1 / CH144 (UNII-2C Band)**
	
802.11ac (VHT40)_Chain 1 / CH142 (UNII-2C Band)	**802.11ac (VHT80)_Chain 1 / CH138 (UNII-2C Band)**
	

For Radio 2 (UNII-3):

802.11a

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	144 (UNII-3 Band)	5720	-2.91	-0.69	3.01	0.16	2.48	29.28	Pass
1	144 (UNII-3 Band)	5720	-2.23	-0.01	3.01	0.16	3.16	29.28	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 30-(6.72-6) = 29.28dBm.

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

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 (UNII-3 Band)	5720	-2.78	-0.56	3.01	2.45	29.28	Pass
1	144 (UNII-3 Band)	5720	-1.99	0.23	3.01	3.24	29.28	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 30-(6.72-6) = 29.28dBm.

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 (UNII-3 Band)	5710	-6.02	-3.80	3.01	0.16	-0.63	29.28	Pass
1	142 (UNII-3 Band)	5710	-5.47	-3.25	3.01	0.16	-0.08	29.28	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 30-(6.72-6) = 29.28dBm.

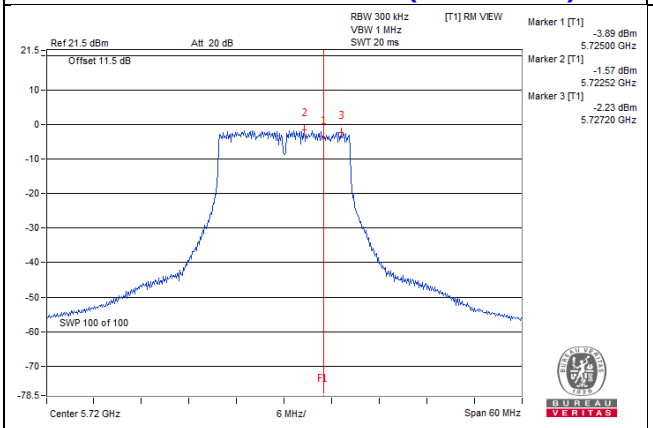
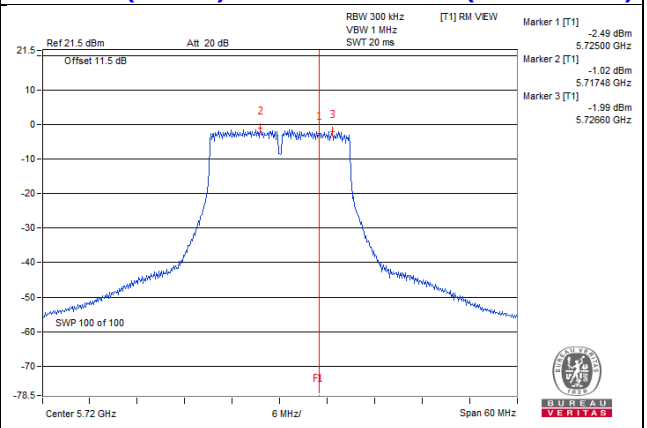
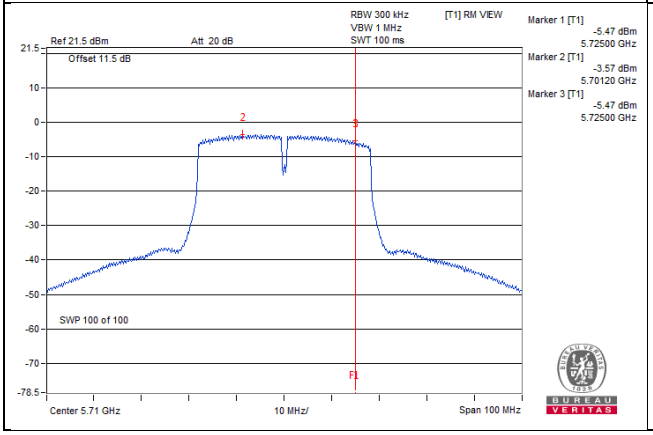
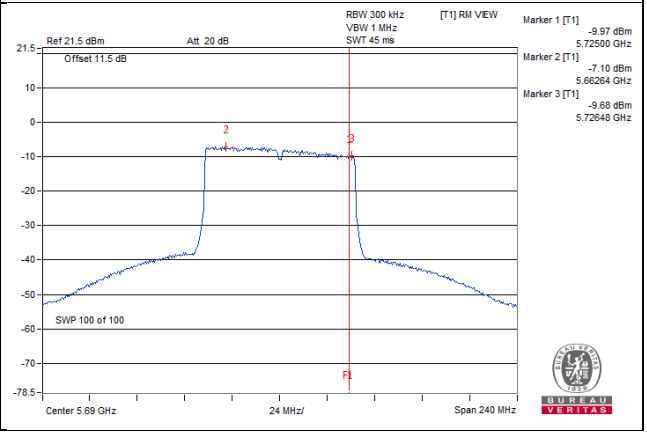
2. Refer to section 3.3 for duty cycle spectrum plot.

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 (UNII-3 Band)	5690	-10.47	-8.25	3.01	0.28	-4.96	29.28	Pass
1	138 (UNII-3 Band)	5690	-9.68	-7.46	3.01	0.28	-4.17	29.28	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.72dBi > 6dBi , so the power density limit shall be reduced to 30-(6.72-6) = 29.28dBm.

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

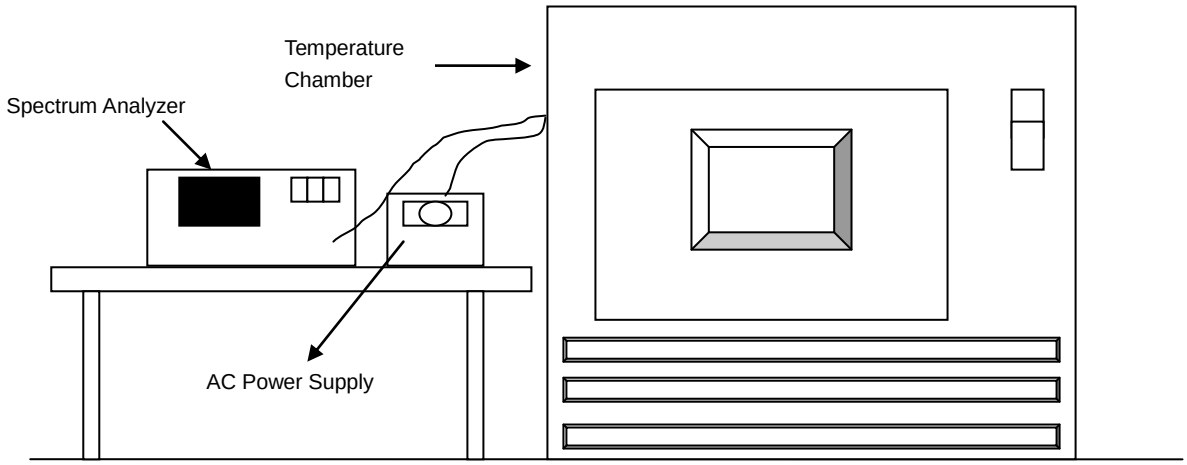
Spectrum Plot of Worst Value	
802.11a / Chain 1 – CH144 (UNII-3 Band)	**802.11ac (VHT20) / Chain 1 – CH144 (UNII-3 Band)**
	
802.11ac (VHT40) / Chain 1 – CH142 (UNII-3 Band)	**802.11ac (VHT80) / Chain 1 – CH138 (UNII-3 Band)**
	

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 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5260.0119	PASS	5260.0098	PASS	5260.0132	PASS	5260.0097	PASS
40	120	5259.9806	PASS	5259.9795	PASS	5259.9797	PASS	5259.9829	PASS
30	120	5259.9888	PASS	5259.9913	PASS	5259.9886	PASS	5259.9886	PASS
20	120	5259.9881	PASS	5259.9875	PASS	5259.9922	PASS	5259.9923	PASS
10	120	5259.9985	PASS	5260.0014	PASS	5259.9981	PASS	5260.0006	PASS
0	120	5259.9945	PASS	5259.9926	PASS	5259.9973	PASS	5259.9963	PASS
-10	120	5259.9749	PASS	5259.9729	PASS	5259.9753	PASS	5259.9747	PASS
-20	120	5260.0003	PASS	5259.9971	PASS	5259.9976	PASS	5259.9998	PASS
-30	120	5260.025	PASS	5260.0278	PASS	5260.0245	PASS	5260.0276	PASS

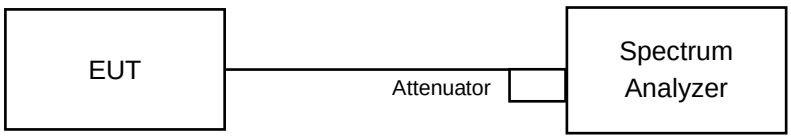
Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5259.9889	PASS	5259.9866	PASS	5259.9921	PASS	5259.9926	PASS
	120	5259.9881	PASS	5259.9875	PASS	5259.9922	PASS	5259.9923	PASS
	102	5259.9879	PASS	5259.9881	PASS	5259.9914	PASS	5259.9921	PASS

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (UNII-3 Band)	5720	3.15	3.14	0.5	Pass

802.11ac (VHT20)

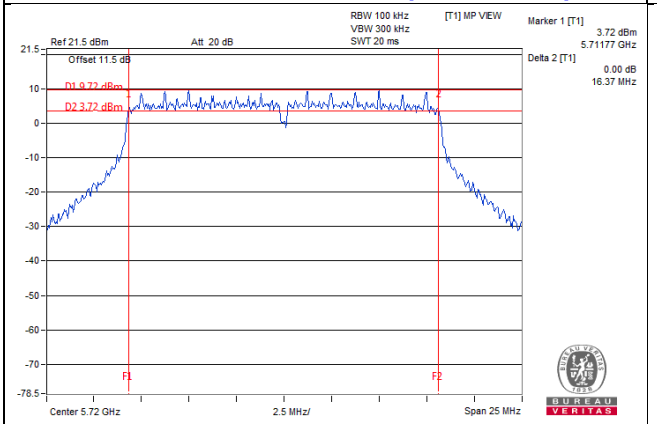
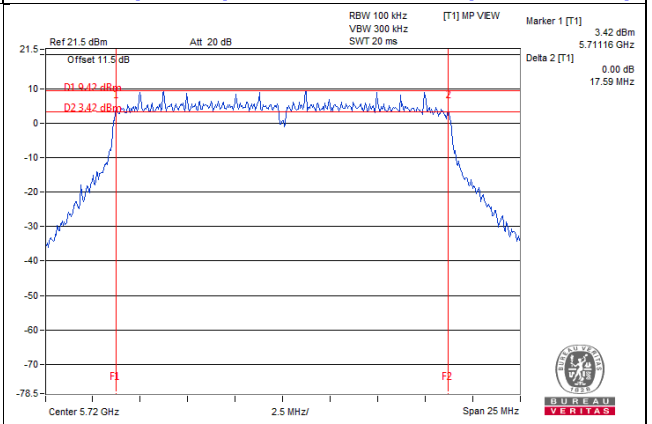
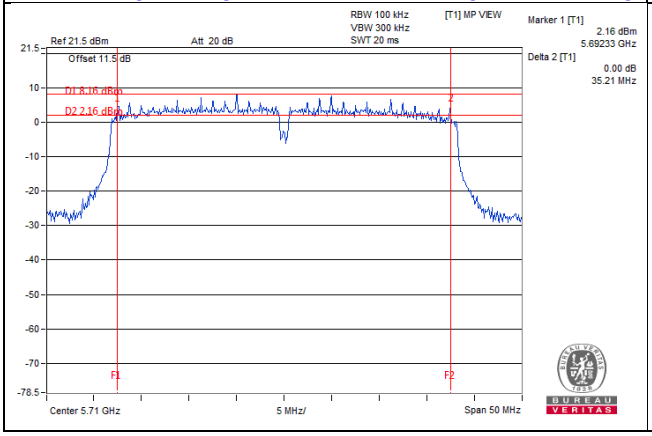
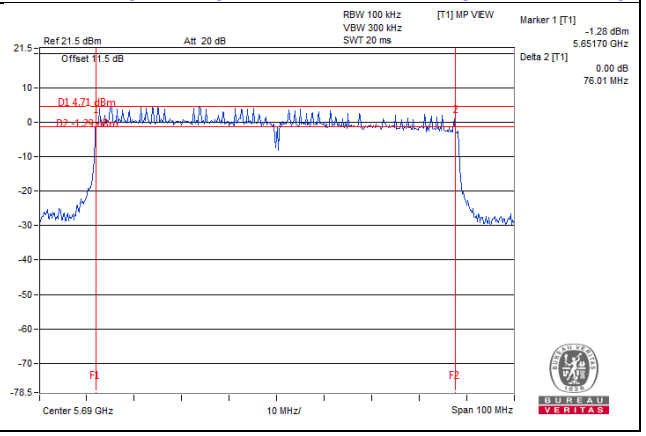
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (UNII-3 Band)	5720	3.75	3.76	0.5	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142 (UNII-3 Band)	5710	2.58	2.54	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138 (UNII-3 Band)	5690	2.72	2.71	0.5	Pass

Spectrum Plot of Worst Value	
802.11a / Chain 1 - CH144 (UNII-3 Band)	**802.11ac (VHT20) / Chain 0 - CH144 (UNII-3 Band)**
	
802.11ac (VHT40) / Chain 1 - CH142 (UNII-3 Band)	**802.11ac (VHT80) / Chain 1 - CH138 (UNII-3 Band)**
	

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

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