FCC Test Report

Report No.:	RF170315E03A-1
FCC ID:	I88C3000Z
Test Model:	C3000Z
Received Date:	Mar. 15, 2017
Test Date:	Apr. 06 to 20, 2017
Issued Date:	July 12, 2017
Applicant:	Zyxel Communications Corporation
Address:	No.2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF170315E03A-1	Original release.	July 12, 2017

1 Certificate of Conformity

Product:	WiFi-N VDSL2 4-port Combo WAN CPE
Brand:	ZYXEL
Test Model:	C3000Z
Sample Status:	ENGINEERING SAMPLE
Applicant:	Zyxel Communications Corporation
Test Date:	Apr. 06 to 20, 2017
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 : Cindy Hsin , **Date:** July 12, 2017

Cindy Hsin / Specialist

Approved by : , **Date:** July 12, 2017

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 -8.54dB at 0.32578MHz.
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 -0.3dB at 5350.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	4.78 dB
	6GHz ~ 18GHz	4.52 dB
	18GHz ~ 40GHz	5.08 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (DFS Band)

Product	WiFi-N VDSL2 4-port Combo WAN CPE
Brand	ZYXEL
Test Model	C3000Z
RF CPU Model No.	BCM63138
RF Chip Model No.	BCM4366E
FW	CZD001-4.16.004.0-DFS0512
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	5.26GHz ~ 5.32GHz, 5.50GHz ~ 5.72GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 16 802.11n (HT40), 802.11ac (VHT40): 8 802.11ac (VHT80): 4
Output Power	**5.26 ~ 5.32GHz:** **CDD Mode:** 221.701mW **Beamforming Mode:** 87.065mW **5.50 ~ 5.72GHz** **CDD Mode:** 241.613mW **Beamforming Mode:** 87.031mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	RJ 11 cable(unshielded, 3.6m) x1 RJ 45 cable(unshielded, 1.8m) x1

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF170315E03-1 as the following:
   - ◆ Add DFS band <5.26 ~ 5.32GHz, 5.50 ~ 5.72GHz>
2. According to above condition, all test items need to be performed. And all data weres verified to meet the requirements.
3. Simultaneously transmission condition.

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

4. The EUT must be supplied from a power adapter as following table:

Brand	Model	Spec.
UMEC	UP0251M-12PA	Input: 100-240Vac, 50/60Hz, 0.6A Output: 12V, 2A DC output cable (Unshielded, 1.8m)

5. The EUT incorporates a MIMO function.

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

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

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

2.4GHz antenna								
Antenna NO.	PCB NO.	Brand	Model	Antenna Gain(dBi) Including cable loss	Frequency range (GHz)	Antenna Type	Antenna Connector	Cable Length (mm)
1	WJ1	Airgain	65-031-049008B	4.5	2.4~2.4835	Dipole	NA	295
2	WJ0	Airgain	65-031-049007B	4.1	2.4~2.4835	Dipole	NA	320
3	WJ2	Airgain	65-031-049009B	3.1	2.4~2.4835	Dipole	NA	270
5GHz antenna								
Antenna NO.	PCB NO.	Brand	Model	Antenna Gain(dBi) Including cable loss	Frequency range (GHz)	Antenna Type	Antenna Connector	Cable Length (mm)
1	JC2	Airgain	65-031-049003B	4.4	5.15~5.85	Dipole	i-pex(MHF)	50
2	JC3	Airgain	65-031-049004B	4.8	5.15~5.85	Dipole	i-pex(MHF)	85
3	JC1	Airgain	65-031-049005B	4.4	5.15~5.85	Dipole	i-pex(MHF)	50
4	JC0	Airgain	65-031-049006B	4.4	5.15~5.85	Dipole	i-pex(MHF)	65

7. The power setting are list as below:

Modulation Mode	Frequency (MHz)	Power Setting (CDD)	Power Setting (Beamforming)
802.11a	5260	54	-
	5300	53	-
	5320	53	-
	5500	50	-
	5580	51	-
	5700	51	-
	5720	51	-
802.11ac (VHT20)	5260	54	54
	5300	53	53
	5320	53	53
	5500	50	50
	5580	51	51
	5700	51	51
	5720	51	51
802.11ac (VHT40)	5270	67	54
	5310	66	53
	5510	64	51
	5550	64	51
	5670	64	51
	5710	64	51
802.11ac (VHT80)	5290	69	52
	5530	67	49
	5610	68	50
	5690	69	50

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

3.2 Description of Test Modes

FOR 5260 ~ 5320MHz

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

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

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

Channel	Frequency	Channel	Frequency
54	5270MHz	62	5310MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

FOR 5500 ~ 5720MHz

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

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

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

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

3 channels are provided for 802.11ac (VHT80):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Radiated Emission Test (Above 1GHz):

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

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

Radiated Emission Test (Below 1GHz):

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT80)	5260-5320 5500-5720	58 106 to 138	106	OFDM	BPSK	29.3

Power Line Conducted Emission Test:

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT80)	5260-5320 5500-5720	58 106 to 138	106	OFDM	BPSK	29.3

Antenna Port Conducted Measurement:

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3
Beamforming Mode (output power only)						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	13
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	27
802.11ac (VHT80)		58	58	OFDM	BPSK	58.5
802.11ac (VHT20)	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	13
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	27
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	58.5

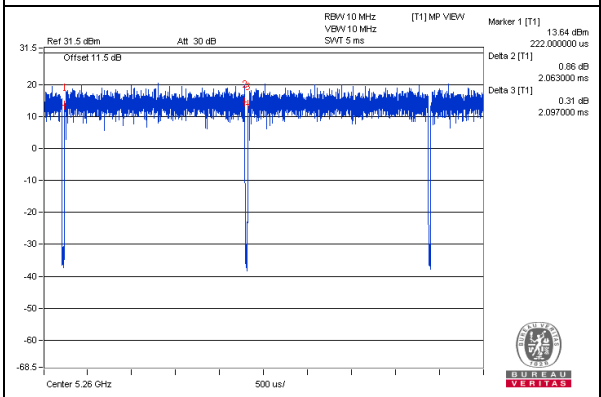
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	21deg. C, 65%RH	120Vac, 60Hz	Terry Huang
RE<1G	25deg. C, 66%RH	120Vac, 60Hz	Terry Huang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	23deg. C, 66%RH	120Vac, 60Hz	Robert Cheng

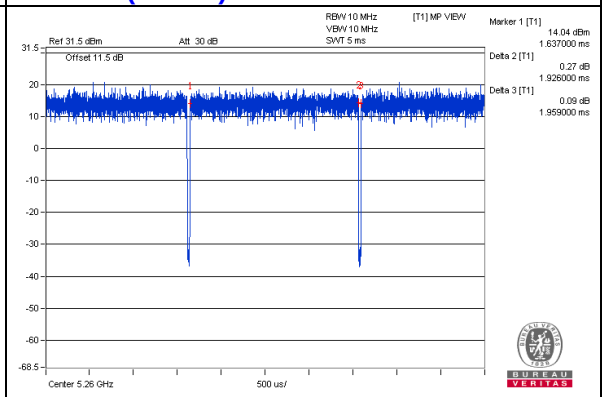
3.3 Duty Cycle of Test Signal

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 = 2.063 ms/2.097 ms = 0.984
802.11ac (VHT20): Duty cycle = 1.926 ms/1.959 ms = 0.983
802.11ac (VHT40): Duty cycle = 0.95 ms/0.983ms = 0.966, Duty factor = 10 * log(1/0.966) = 0.15
802.11ac (VHT80): Duty cycle = 0.459 ms/0.489 ms = 0.939, Duty factor = 10 * log(1/0.939) = 0.27

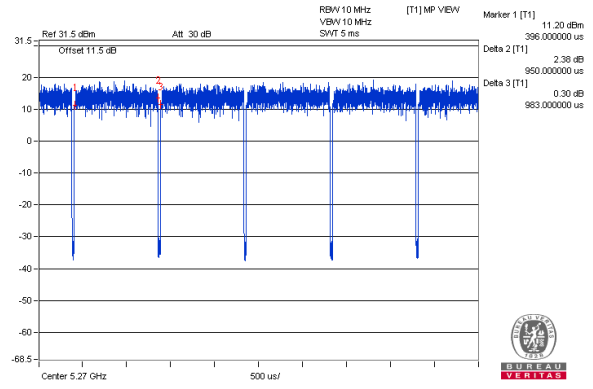
802.11a



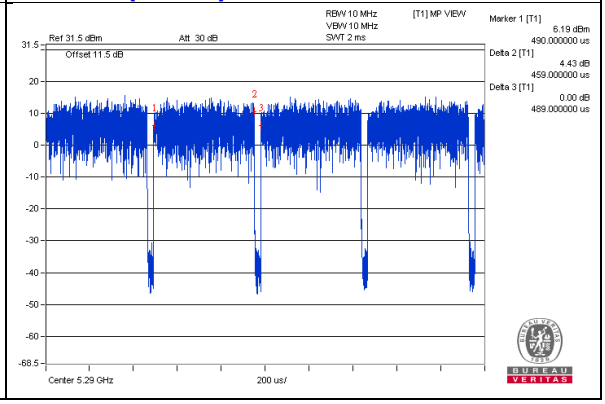
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

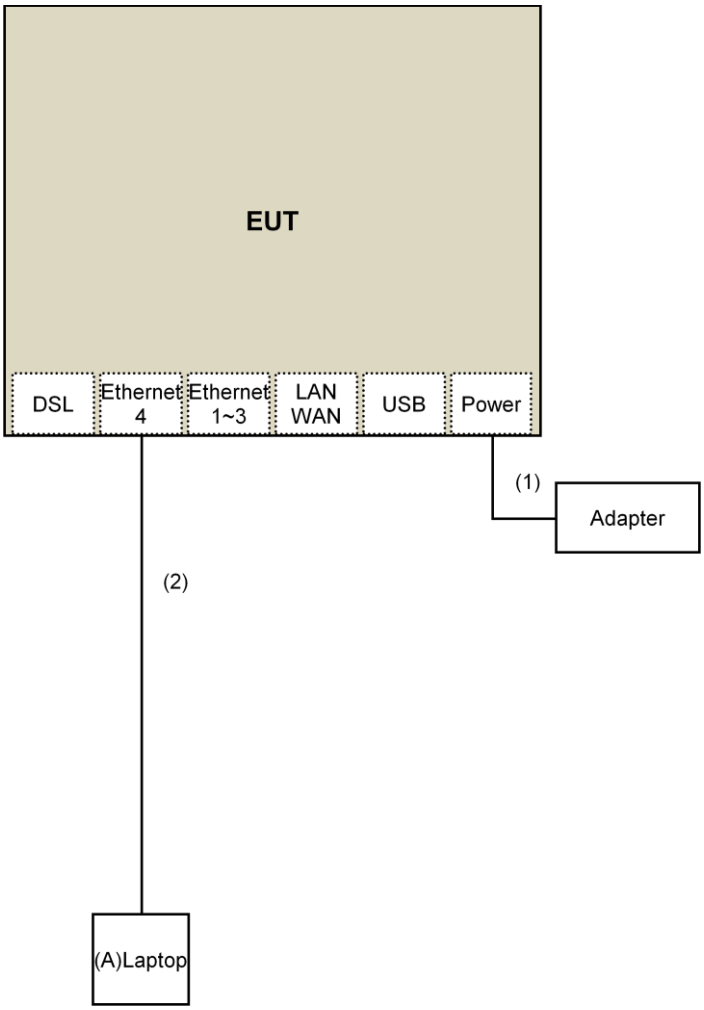
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5440	6FC7F12	FCC DoC	Provided by Lab

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

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

3.4.1 Configuration of System under Test



Note: The test configuration was defined by the client requirement.

3.5 General Description of Applied Standard

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

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v01r04
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 v01r03</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 20, 2016	July 19, 2017
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. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
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. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
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 150323	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. 15, 2016	Dec. 14, 2017
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	June 28, 2016	June 27, 2017
Power meter Anritsu	ML2495A	1014008	May 5, 2016	May 4, 2017
Power sensor Anritsu	MA2411B	0917122	May 5, 2016	May 4, 2017
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
Digital Multimeter FLUKE	87III	73680266	Nov. 10, 2016	Nov. 09, 2017

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 FCC Site Registration No. is 292998
5. The CANADA Site Registration No. is 20331-2
6 Loop antenna was used for all emissions below 30 MHz.
7. Tested Date: Apr. 18 to 20, 2017

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 detect 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:

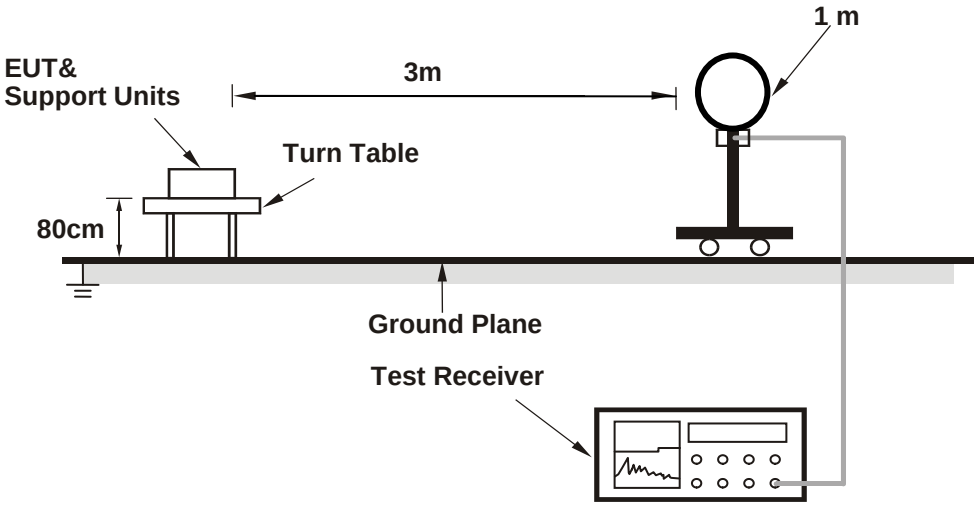
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

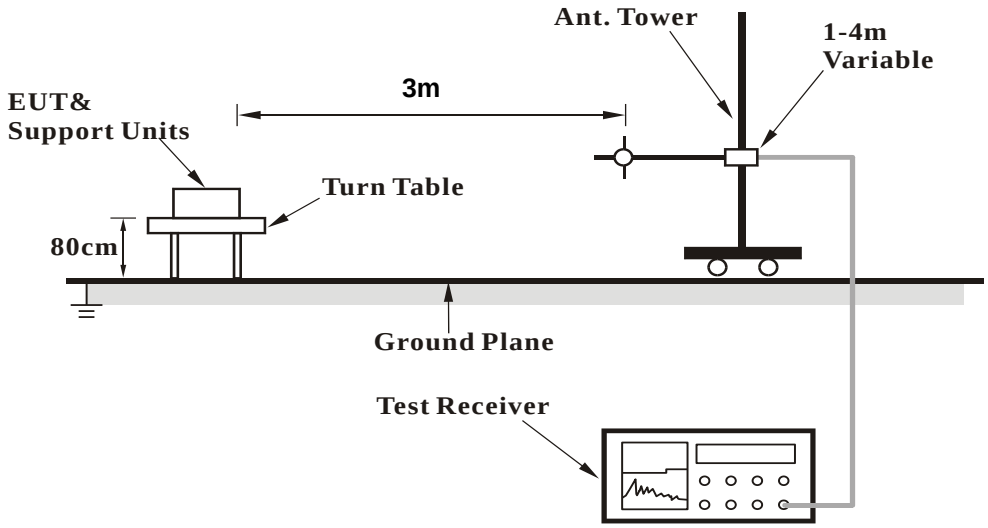
No deviation.

4.1.5 Test Setup

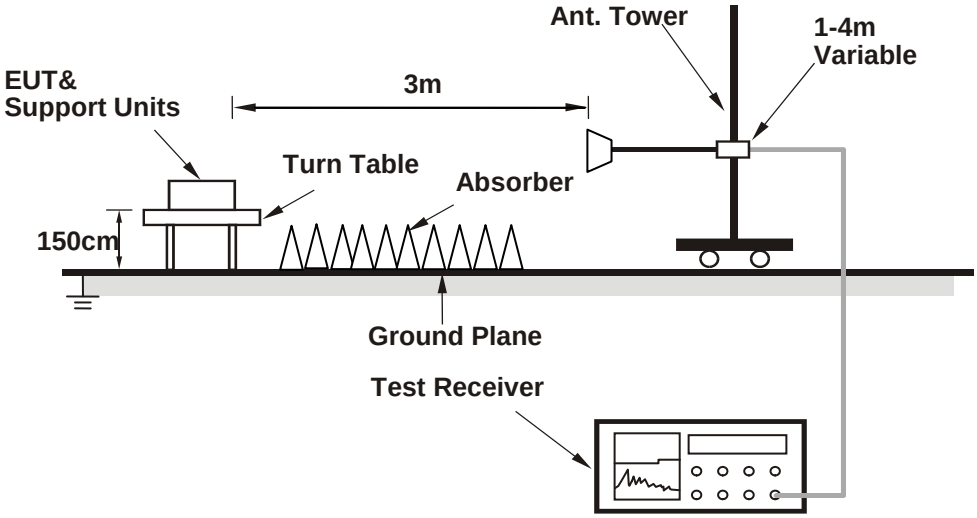
For Radiated emission below 30MHz



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. Contorlling software (Mtool 3.0.0.2) 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	51.9 PK	74.0	-22.1	1.83 H	182	47.9	4.0
2	5150.00	39.3 AV	54.0	-14.7	1.83 H	182	35.3	4.0
3	*5260.00	110.8 PK			1.83 H	182	106.6	4.2
4	*5260.00	100.4 AV			1.83 H	182	96.2	4.2
5	5350.00	52.3 PK	74.0	-21.7	1.83 H	182	47.9	4.4
6	5350.00	40.3 AV	54.0	-13.7	1.83 H	182	35.9	4.4
7	#10520.00	47.1 PK	74.0	-26.9	1.88 H	67	33.3	13.8
8	#10520.00	32.8 AV	54.0	-21.2	1.88 H	67	19.0	13.8
9	15780.00	45.6 PK	74.0	-28.4	1.69 H	193	31.5	14.1
10	15780.00	33.1 AV	54.0	-20.9	1.69 H	193	19.0	14.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	51.0 PK	74.0	-23.0	1.47 V	14	47.0	4.0
2	5150.00	38.2 AV	54.0	-15.8	1.47 V	14	34.2	4.0
3	*5260.00	110.9 PK			1.47 V	14	106.7	4.2
4	*5260.00	99.8 AV			1.47 V	14	95.6	4.2
5	5350.00	51.2 PK	74.0	-22.8	1.47 V	14	46.8	4.4
6	5350.00	39.8 AV	54.0	-14.2	1.47 V	14	35.4	4.4
7	#10520.00	53.3 PK	74.0	-20.7	1.49 V	259	39.5	13.8
8	#10520.00	39.1 AV	54.0	-14.9	1.49 V	259	25.3	13.8
9	15780.00	51.4 PK	74.0	-22.6	1.44 V	301	37.3	14.1
10	15780.00	38.3 AV	54.0	-15.7	1.44 V	301	24.2	14.1

REMARKS:

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

CHANNEL	TX Channel 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	110.9 PK			1.80 H	185	106.6	4.3
2	*5300.00	100.2 AV			1.80 H	185	95.9	4.3
3	5350.00	54.0 PK	74.0	-20.0	1.80 H	185	49.6	4.4
4	5350.00	42.5 AV	54.0	-11.5	1.80 H	185	38.1	4.4
5	10600.00	47.7 PK	74.0	-26.3	1.85 H	80	33.9	13.8
6	10600.00	33.3 AV	54.0	-20.7	1.85 H	80	19.5	13.8
7	15900.00	45.5 PK	74.0	-28.5	1.72 H	199	32.3	13.2
8	15900.00	32.8 AV	54.0	-21.2	1.72 H	199	19.6	13.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	110.8 PK			1.44 V	15	106.5	4.3
2	*5300.00	99.5 AV			1.44 V	15	95.2	4.3
3	5350.00	53.6 PK	74.0	-20.4	1.44 V	15	49.2	4.4
4	5350.00	42.6 AV	54.0	-11.4	1.44 V	15	38.2	4.4
5	10600.00	53.3 PK	74.0	-20.7	1.51 V	260	39.5	13.8
6	10600.00	38.9 AV	54.0	-15.1	1.51 V	260	25.1	13.8
7	15900.00	50.8 PK	74.0	-23.2	1.49 V	291	37.6	13.2
8	15900.00	37.9 AV	54.0	-16.1	1.49 V	291	24.7	13.2

REMARKS:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	110.7 PK			1.82 H	187	106.4	4.3
2	*5320.00	100.0 AV			1.82 H	187	95.7	4.3
3	5350.00	54.8 PK	74.0	-19.2	1.82 H	187	50.4	4.4
4	5350.00	43.0 AV	54.0	-11.0	1.82 H	187	38.6	4.4
5	10640.00	47.2 PK	74.0	-26.8	1.89 H	58	33.2	14.0
6	10640.00	33.0 AV	54.0	-21.0	1.89 H	58	19.0	14.0
7	15960.00	45.6 PK	74.0	-28.4	1.72 H	182	32.1	13.5
8	15960.00	33.2 AV	54.0	-20.8	1.72 H	182	19.7	13.5
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	*5320.00	110.8 PK			1.40 V	17	106.5	4.3
2	*5320.00	99.2 AV			1.40 V	17	94.9	4.3
3	5350.00	56.1 PK	74.0	-17.9	1.40 V	17	51.7	4.4
4	5350.00	43.1 AV	54.0	-10.9	1.40 V	17	38.7	4.4
5	10640.00	53.3 PK	74.0	-20.7	1.53 V	252	39.3	14.0
6	10640.00	38.8 AV	54.0	-15.2	1.53 V	252	24.8	14.0
7	15960.00	50.4 PK	74.0	-23.6	1.52 V	306	36.9	13.5
8	15960.00	37.7 AV	54.0	-16.3	1.52 V	306	24.2	13.5

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 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	55.6 PK	74.0	-18.4	1.56 H	176	51.1	4.5
2	#5470.00	43.1 AV	54.0	-10.9	1.56 H	176	38.6	4.5
3	*5500.00	111.0 PK			1.56 H	176	106.5	4.5
4	*5500.00	100.7 AV			1.56 H	176	96.2	4.5
5	11000.00	46.7 PK	74.0	-27.3	1.84 H	58	31.9	14.8
6	11000.00	32.5 AV	54.0	-21.5	1.84 H	58	17.7	14.8
7	#16500.00	45.8 PK	74.0	-28.2	1.67 H	205	30.2	15.6
8	#16500.00	33.1 AV	54.0	-20.9	1.67 H	205	17.5	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	54.6 PK	74.0	-19.4	1.50 V	15	50.1	4.5
2	#5470.00	42.4 AV	54.0	-11.6	1.50 V	15	37.9	4.5
3	*5500.00	110.3 PK			1.50 V	15	105.8	4.5
4	*5500.00	99.0 AV			1.50 V	15	94.5	4.5
5	11000.00	52.9 PK	74.0	-21.1	1.46 V	275	38.1	14.8
6	11000.00	38.4 AV	54.0	-15.6	1.46 V	275	23.6	14.8
7	#16500.00	49.9 PK	74.0	-24.1	1.51 V	293	34.3	15.6
8	#16500.00	36.8 AV	54.0	-17.2	1.51 V	293	21.2	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	*5580.00	111.7 PK			1.61 H	181	107.1	4.6
2	*5580.00	100.9 AV			1.61 H	181	96.3	4.6
3	11160.00	46.5 PK	74.0	-27.5	1.92 H	56	32.1	14.4
4	11160.00	32.4 AV	54.0	-21.6	1.92 H	56	18.0	14.4
5	#16740.00	45.5 PK	74.0	-28.5	1.73 H	187	29.0	16.5
6	#16740.00	33.2 AV	54.0	-20.8	1.73 H	187	16.7	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	*5580.00	109.7 PK			1.47 V	14	105.1	4.6
2	*5580.00	98.9 AV			1.47 V	14	94.3	4.6
3	11160.00	53.0 PK	74.0	-21.0	1.46 V	261	38.6	14.4
4	11160.00	38.8 AV	54.0	-15.2	1.46 V	261	24.4	14.4
5	#16740.00	49.8 PK	74.0	-24.2	1.53 V	292	33.3	16.5
6	#16740.00	36.9 AV	54.0	-17.1	1.53 V	292	20.4	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 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	111.5 PK			1.58 H	177	106.7	4.8
2	*5700.00	100.4 AV			1.58 H	177	95.6	4.8
3	#5725.00	56.3 PK	74.0	-17.7	1.58 H	177	51.4	4.9
4	#5725.00	44.7 AV	54.0	-9.3	1.58 H	177	39.8	4.9
5	11400.00	47.2 PK	74.0	-26.8	1.85 H	55	32.8	14.4
6	11400.00	33.0 AV	54.0	-21.0	1.85 H	55	18.6	14.4
7	#17100.00	46.0 PK	74.0	-28.0	1.69 H	184	27.5	18.5
8	#17100.00	33.2 AV	54.0	-20.8	1.69 H	184	14.7	18.5
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	*5700.00	110.0 PK			1.51 V	12	105.2	4.8
2	*5700.00	99.5 AV			1.51 V	12	94.7	4.8
3	#5725.00	55.5 PK	74.0	-18.5	1.51 V	12	50.6	4.9
4	#5725.00	44.7 AV	54.0	-9.3	1.51 V	12	39.8	4.9
5	11400.00	53.1 PK	74.0	-20.9	1.40 V	248	38.7	14.4
6	11400.00	39.1 AV	54.0	-14.9	1.40 V	248	24.7	14.4
7	#17100.00	49.3 PK	74.0	-24.7	1.51 V	295	30.8	18.5
8	#17100.00	36.5 AV	54.0	-17.5	1.51 V	295	18.0	18.5

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 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	49.4 PK	74.0	-24.6	1.60 H	179	44.9	4.5
2	#5470.00	37.4 AV	54.0	-16.6	1.60 H	179	32.9	4.5
3	*5720.00	111.3 PK			1.60 H	179	106.4	4.9
4	*5720.00	100.5 AV			1.60 H	179	95.6	4.9
5	#5850.00	54.9 PK	74.0	-19.1	1.60 H	179	49.8	5.1
6	#5850.00	44.1 AV	54.0	-9.9	1.60 H	179	39.0	5.1
7	11440.00	47.7 PK	74.0	-26.3	1.92 H	82	33.5	14.2
8	11440.00	33.3 AV	54.0	-20.7	1.92 H	82	19.1	14.2
9	#17160.00	45.7 PK	74.0	-28.3	1.71 H	190	27.4	18.3
10	#17160.00	33.3 AV	54.0	-20.7	1.71 H	190	15.0	18.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	50.0 PK	74.0	-24.0	1.46 V	14	45.5	4.5
2	#5470.00	37.5 AV	54.0	-16.5	1.46 V	14	33.0	4.5
3	*5720.00	109.6 PK			1.46 V	14	104.7	4.9
4	*5720.00	99.6 AV			1.46 V	14	94.7	4.9
5	#5850.00	54.8 PK	74.0	-19.2	1.46 V	14	49.7	5.1
6	#5850.00	45.0 AV	54.0	-9.0	1.46 V	14	39.9	5.1
7	11440.00	53.3 PK	74.0	-20.7	1.49 V	251	39.1	14.2
8	11440.00	38.9 AV	54.0	-15.1	1.49 V	251	24.7	14.2
9	#17160.00	49.5 PK	74.0	-24.5	1.53 V	297	31.2	18.3
10	#17160.00	36.6 AV	54.0	-17.4	1.53 V	297	18.3	18.3

REMARKS:

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

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	51.7 PK	74.0	-22.3	1.31 H	360	47.7	4.0
2	5150.00	40.1 AV	54.0	-13.9	1.31 H	360	36.1	4.0
3	*5260.00	109.2 PK			1.31 H	360	105.0	4.2
4	*5260.00	99.2 AV			1.31 H	360	95.0	4.2
5	#10520.00	45.3 PK	74.0	-28.7	1.24 H	36	31.5	13.8
6	#10520.00	32.8 AV	54.0	-21.2	1.24 H	36	19.0	13.8
7	15780.00	45.9 PK	74.0	-28.1	1.60 H	271	31.8	14.1
8	15780.00	33.1 AV	54.0	-20.9	1.60 H	271	19.0	14.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	49.7 PK	74.0	-24.3	1.49 V	88	45.7	4.0
2	5150.00	38.3 AV	54.0	-15.7	1.49 V	88	34.3	4.0
3	*5260.00	111.8 PK			1.49 V	88	107.6	4.2
4	*5260.00	99.5 AV			1.49 V	88	95.3	4.2
5	#10520.00	52.4 PK	74.0	-21.6	1.81 V	259	38.6	13.8
6	#10520.00	40.5 AV	54.0	-13.5	1.81 V	259	26.7	13.8
7	15780.00	50.1 PK	74.0	-23.9	1.37 V	309	36.0	14.1
8	15780.00	37.7 AV	54.0	-16.3	1.37 V	309	23.6	14.1

REMARKS:

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

CHANNEL	TX Channel 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	110.1 PK			1.22 H	360	105.8	4.3
2	*5300.00	98.6 AV			1.22 H	360	94.3	4.3
3	10600.00	45.7 PK	74.0	-28.3	1.29 H	23	31.9	13.8
4	10600.00	33.2 AV	54.0	-20.8	1.29 H	23	19.4	13.8
5	15900.00	45.9 PK	74.0	-28.1	1.63 H	272	32.7	13.2
6	15900.00	33.0 AV	54.0	-21.0	1.63 H	272	19.8	13.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	110.9 PK			1.48 V	86	106.6	4.3
2	*5300.00	99.1 AV			1.48 V	86	94.8	4.3
3	10600.00	52.1 PK	74.0	-21.9	1.79 V	249	38.3	13.8
4	10600.00	40.1 AV	54.0	-13.9	1.79 V	249	26.3	13.8
5	15900.00	50.0 PK	74.0	-24.0	1.36 V	323	36.8	13.2
6	15900.00	37.5 AV	54.0	-16.5	1.36 V	323	24.3	13.2

REMARKS:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	109.9 PK			1.27 H	360	105.6	4.3
2	*5320.00	99.3 AV			1.27 H	360	95.0	4.3
3	5350.00	58.8 PK	74.0	-15.2	1.27 H	360	54.4	4.4
4	5350.00	42.6 AV	54.0	-11.4	1.27 H	360	38.2	4.4
5	10640.00	45.7 PK	74.0	-28.3	1.21 H	40	31.7	14.0
6	10640.00	33.2 AV	54.0	-20.8	1.21 H	40	19.2	14.0
7	15960.00	45.6 PK	74.0	-28.4	1.57 H	262	32.1	13.5
8	15960.00	32.9 AV	54.0	-21.1	1.57 H	262	19.4	13.5
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	*5320.00	110.2 PK			1.44 V	81	105.9	4.3
2	*5320.00	99.0 AV			1.44 V	81	94.7	4.3
3	5350.00	53.4 PK	74.0	-20.6	1.44 V	81	49.0	4.4
4	5350.00	41.5 AV	54.0	-12.5	1.44 V	81	37.1	4.4
5	10640.00	52.6 PK	74.0	-21.4	1.78 V	249	38.6	14.0
6	10640.00	40.3 AV	54.0	-13.7	1.78 V	249	26.3	14.0
7	15960.00	50.6 PK	74.0	-23.4	1.37 V	331	37.1	13.5
8	15960.00	37.9 AV	54.0	-16.1	1.37 V	331	24.4	13.5

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 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	54.4 PK	74.0	-19.6	1.25 H	360	49.9	4.5
2	#5470.00	42.5 AV	54.0	-11.5	1.25 H	360	38.0	4.5
3	*5500.00	110.6 PK			1.25 H	360	106.1	4.5
4	*5500.00	99.2 AV			1.25 H	360	94.7	4.5
5	11000.00	45.4 PK	74.0	-28.6	1.24 H	20	30.6	14.8
6	11000.00	32.6 AV	54.0	-21.4	1.24 H	20	17.8	14.8
7	#16500.00	45.4 PK	74.0	-28.6	1.62 H	279	29.8	15.6
8	#16500.00	32.9 AV	54.0	-21.1	1.62 H	279	17.3	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	54.9 PK	74.0	-19.1	1.57 V	88	50.4	4.5
2	#5470.00	42.1 AV	54.0	-11.9	1.57 V	88	37.6	4.5
3	*5500.00	110.0 PK			1.57 V	88	105.5	4.5
4	*5500.00	98.0 AV			1.57 V	88	93.5	4.5
5	11000.00	52.2 PK	74.0	-21.8	1.83 V	272	37.4	14.8
6	11000.00	39.9 AV	54.0	-14.1	1.83 V	272	25.1	14.8
7	#16500.00	49.5 PK	74.0	-24.5	1.36 V	342	33.9	15.6
8	#16500.00	37.1 AV	54.0	-16.9	1.36 V	342	21.5	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	*5580.00	110.0 PK			1.20 H	360	105.4	4.6
2	*5580.00	99.9 AV			1.20 H	360	95.3	4.6
3	11160.00	45.3 PK	74.0	-28.7	1.29 H	51	30.9	14.4
4	11160.00	32.9 AV	54.0	-21.1	1.29 H	51	18.5	14.4
5	#16740.00	45.2 PK	74.0	-28.8	1.62 H	272	28.7	16.5
6	#16740.00	32.6 AV	54.0	-21.4	1.62 H	272	16.1	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	*5580.00	110.5 PK			1.55 V	86	105.9	4.6
2	*5580.00	99.0 AV			1.55 V	86	94.4	4.6
3	11160.00	52.4 PK	74.0	-21.6	1.78 V	260	38.0	14.4
4	11160.00	40.1 AV	54.0	-13.9	1.78 V	260	25.7	14.4
5	#16740.00	49.7 PK	74.0	-24.3	1.34 V	336	33.2	16.5
6	#16740.00	37.2 AV	54.0	-16.8	1.34 V	336	20.7	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 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	110.7 PK			1.22 H	360	105.9	4.8
2	*5700.00	100.5 AV			1.22 H	360	95.7	4.8
3	#5725.00	54.4 PK	74.0	-19.6	1.22 H	360	49.5	4.9
4	#5725.00	42.4 AV	54.0	-11.6	1.22 H	360	37.5	4.9
5	11400.00	45.2 PK	74.0	-28.8	1.24 H	38	30.8	14.4
6	11400.00	32.9 AV	54.0	-21.1	1.24 H	38	18.5	14.4
7	#17100.00	46.3 PK	74.0	-27.7	1.62 H	267	27.8	18.5
8	#17100.00	33.4 AV	54.0	-20.6	1.62 H	267	14.9	18.5
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	*5700.00	111.2 PK			1.59 V	89	106.4	4.8
2	*5700.00	99.1 AV			1.59 V	89	94.3	4.8
3	#5725.00	55.0 PK	74.0	-19.0	1.59 V	89	50.1	4.9
4	#5725.00	43.4 AV	54.0	-10.6	1.59 V	89	38.5	4.9
5	11400.00	52.5 PK	74.0	-21.5	1.79 V	265	38.1	14.4
6	11400.00	40.1 AV	54.0	-13.9	1.79 V	265	25.7	14.4
7	#17100.00	49.4 PK	74.0	-24.6	1.30 V	328	30.9	18.5
8	#17100.00	37.0 AV	54.0	-17.0	1.30 V	328	18.5	18.5

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 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	#5470.00	50.7 PK	74.0	-23.3	1.24 H	360	46.2	4.5
2	#5470.00	37.8 AV	54.0	-16.2	1.24 H	360	33.3	4.5
3	*5720.00	110.3 PK			1.24 H	360	105.4	4.9
4	*5720.00	100.1 AV			1.24 H	360	95.2	4.9
5	#5850.00	55.7 PK	74.0	-18.3	1.24 H	360	50.6	5.1
6	#5850.00	44.6 AV	54.0	-9.4	1.24 H	360	39.5	5.1
7	11440.00	45.2 PK	74.0	-28.8	1.19 H	34	31.0	14.2
8	11440.00	32.6 AV	54.0	-21.4	1.19 H	34	18.4	14.2
9	#17160.00	46.4 PK	74.0	-27.6	1.60 H	286	28.1	18.3
10	#17160.00	33.4 AV	54.0	-20.6	1.60 H	286	15.1	18.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	50.4 PK	74.0	-23.6	1.55 V	85	45.9	4.5
2	#5470.00	37.5 AV	54.0	-16.5	1.55 V	85	33.0	4.5
3	*5720.00	111.1 PK			1.55 V	85	106.2	4.9
4	*5720.00	99.3 AV			1.55 V	85	94.4	4.9
5	#5850.00	54.0 PK	74.0	-20.0	1.55 V	85	48.9	5.1
6	#5850.00	44.1 AV	54.0	-9.9	1.55 V	85	39.0	5.1
7	11440.00	52.4 PK	74.0	-21.6	1.77 V	269	38.2	14.2
8	11440.00	40.3 AV	54.0	-13.7	1.77 V	269	26.1	14.2
9	#17160.00	49.8 PK	74.0	-24.2	1.36 V	342	31.5	18.3
10	#17160.00	37.1 AV	54.0	-16.9	1.36 V	342	18.8	18.3

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	55.5 PK	74.0	-18.5	1.58 H	15	51.5	4.0
2	5150.00	42.9 AV	54.0	-11.1	1.58 H	15	38.9	4.0
3	*5270.00	109.1 PK			1.58 H	15	104.9	4.2
4	*5270.00	98.1 AV			1.58 H	15	93.9	4.2
5	5350.00	55.4 PK	74.0	-18.6	1.58 H	15	51.0	4.4
6	5350.00	44.3 AV	54.0	-9.7	1.58 H	15	39.9	4.4
7	#10540.00	44.3 PK	74.0	-29.7	1.33 H	289	30.6	13.7
8	#10540.00	34.0 AV	54.0	-20.0	1.33 H	289	20.3	13.7
9	15810.00	45.9 PK	74.0	-28.1	3.25 H	169	31.9	14.0
10	15810.00	34.1 AV	54.0	-19.9	3.25 H	169	20.1	14.0
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	5150.00	55.2 PK	74.0	-18.8	1.49 V	282	51.2	4.0
2	5150.00	43.3 AV	54.0	-10.7	1.49 V	282	39.3	4.0
3	*5270.00	110.6 PK			1.49 V	282	106.4	4.2
4	*5270.00	99.1 AV			1.49 V	282	94.9	4.2
5	5350.00	55.6 PK	74.0	-18.4	1.49 V	282	51.2	4.4
6	5350.00	45.2 AV	54.0	-8.8	1.49 V	282	40.8	4.4
7	#10540.00	52.3 PK	74.0	-21.7	1.85 V	254	38.6	13.7
8	#10540.00	41.8 AV	54.0	-12.2	1.85 V	254	28.1	13.7
9	15810.00	53.1 PK	74.0	-20.9	1.29 V	304	39.1	14.0
10	15810.00	38.7 AV	54.0	-15.3	1.29 V	304	24.7	14.0

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 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	109.2 PK			1.55 H	13	104.9	4.3
2	*5310.00	97.7 AV			1.55 H	13	93.4	4.3
3	5350.00	60.9 PK	74.0	-13.1	1.55 H	13	56.5	4.4
4	5350.00	47.3 AV	54.0	-6.7	1.55 H	13	42.9	4.4
5	10620.00	44.6 PK	74.0	-29.4	1.38 H	304	30.7	13.9
6	10620.00	34.2 AV	54.0	-19.8	1.38 H	304	20.3	13.9
7	15930.00	46.1 PK	74.0	-27.9	3.26 H	164	32.8	13.3
8	15930.00	34.1 AV	54.0	-19.9	3.26 H	164	20.8	13.3
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	*5310.00	109.8 PK			1.53 V	280	105.5	4.3
2	*5310.00	98.7 AV			1.53 V	280	94.4	4.3
3	5350.00	62.1 PK	74.0	-11.9	1.53 V	280	57.7	4.4
4	5350.00	47.0 AV	54.0	-7.0	1.53 V	280	42.6	4.4
5	10620.00	52.8 PK	74.0	-21.2	1.84 V	247	38.9	13.9
6	10620.00	42.0 AV	54.0	-12.0	1.84 V	247	28.1	13.9
7	15930.00	53.2 PK	74.0	-20.8	1.33 V	312	39.9	13.3
8	15930.00	38.9 AV	54.0	-15.1	1.33 V	312	25.6	13.3

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.

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	61.4 PK	74.0	-12.6	1.51 H	20	56.9	4.5
2	#5470.00	45.8 AV	54.0	-8.2	1.51 H	20	41.3	4.5
3	*5510.00	108.3 PK			1.51 H	20	103.7	4.6
4	*5510.00	97.5 AV			1.51 H	20	92.9	4.6
5	11020.00	44.6 PK	74.0	-29.4	1.29 H	285	29.9	14.7
6	11020.00	34.1 AV	54.0	-19.9	1.29 H	285	19.4	14.7
7	#16530.00	46.2 PK	74.0	-27.8	3.27 H	184	30.4	15.8
8	#16530.00	34.4 AV	54.0	-19.6	3.27 H	184	18.6	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	62.2 PK	74.0	-11.8	1.00 V	286	57.7	4.5
2	#5470.00	46.1 AV	54.0	-7.9	1.00 V	286	41.6	4.5
3	*5510.00	108.9 PK			1.50 V	286	104.3	4.6
4	*5510.00	98.0 AV			1.50 V	286	93.4	4.6
5	11020.00	52.6 PK	74.0	-21.4	1.88 V	243	37.9	14.7
6	11020.00	41.7 AV	54.0	-12.3	1.88 V	243	27.0	14.7
7	#16530.00	52.7 PK	74.0	-21.3	1.38 V	297	36.9	15.8
8	#16530.00	38.7 AV	54.0	-15.3	1.38 V	297	22.9	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) 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	*5550.00	110.1 PK			1.58 H	16	105.6	4.5
2	*5550.00	97.8 AV			1.58 H	16	93.3	4.5
3	11100.00	43.9 PK	74.0	-30.1	1.28 H	279	29.5	14.4
4	11100.00	33.6 AV	54.0	-20.4	1.28 H	279	19.2	14.4
5	#16650.00	46.1 PK	74.0	-27.9	3.19 H	168	29.7	16.4
6	#16650.00	34.5 AV	54.0	-19.5	3.19 H	168	18.1	16.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	109.9 PK			1.56 V	281	105.4	4.5
2	*5550.00	98.0 AV			1.56 V	281	93.5	4.5
3	11100.00	52.3 PK	74.0	-21.7	1.90 V	239	37.9	14.4
4	11100.00	41.5 AV	54.0	-12.5	1.90 V	239	27.1	14.4
5	#16650.00	52.7 PK	74.0	-21.3	1.33 V	289	36.3	16.4
6	#16650.00	39.0 AV	54.0	-15.0	1.33 V	289	22.6	16.4

REMARKS:

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

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	109.7 PK			1.63 H	12	104.9	4.8
2	*5670.00	98.0 AV			1.63 H	12	93.2	4.8
3	#5725.00	60.5 PK	74.0	-13.5	1.63 H	12	55.6	4.9
4	#5725.00	45.3 AV	54.0	-8.7	1.63 H	12	40.4	4.9
5	11340.00	44.0 PK	74.0	-30.0	1.35 H	279	29.6	14.4
6	11340.00	33.6 AV	54.0	-20.4	1.35 H	279	19.2	14.4
7	#17010.00	46.1 PK	74.0	-27.9	3.30 H	168	27.9	18.2
8	#17010.00	34.5 AV	54.0	-19.5	3.30 H	168	16.3	18.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	109.4 PK			1.55 V	285	104.6	4.8
2	*5670.00	98.5 AV			1.55 V	285	93.7	4.8
3	#5725.00	59.4 PK	74.0	-14.6	1.55 V	285	54.5	4.9
4	#5725.00	45.6 AV	54.0	-8.4	1.55 V	285	40.7	4.9
5	11340.00	51.9 PK	74.0	-22.1	1.85 V	228	37.5	14.4
6	11340.00	41.2 AV	54.0	-12.8	1.85 V	228	26.8	14.4
7	#17010.00	52.7 PK	74.0	-21.3	1.37 V	308	34.5	18.2
8	#17010.00	39.0 AV	54.0	-15.0	1.37 V	308	20.8	18.2

REMARKS:

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

CHANNEL	TX Channel 142	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	52.2 PK	74.0	-21.8	1.62 H	19	47.7	4.5
2	#5470.00	40.9 AV	54.0	-13.1	1.62 H	19	36.4	4.5
3	*5710.00	109.5 PK			1.62 H	19	104.6	4.9
4	*5710.00	98.8 AV			1.62 H	19	93.9	4.9
5	#5850.00	56.6 PK	74.0	-17.4	1.62 H	19	51.5	5.1
6	#5850.00	45.2 AV	54.0	-8.8	1.62 H	19	40.1	5.1
7	11420.00	44.6 PK	74.0	-29.4	1.38 H	282	30.3	14.3
8	11420.00	34.3 AV	54.0	-19.7	1.38 H	282	20.0	14.3
9	#17130.00	46.2 PK	74.0	-27.8	3.28 H	177	27.7	18.5
10	#17130.00	34.4 AV	54.0	-19.6	3.28 H	177	15.9	18.5
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	51.7 PK	74.0	-22.3	1.53 V	283	47.2	4.5
2	#5470.00	41.3 AV	54.0	-12.7	1.53 V	283	36.8	4.5
3	*5710.00	109.8 PK			1.53 V	283	104.9	4.9
4	*5710.00	98.7 AV			1.53 V	283	93.8	4.9
5	#5850.00	54.8 PK	74.0	-19.2	1.53 V	283	49.7	5.1
6	#5850.00	44.0 AV	54.0	-10.0	1.53 V	283	38.9	5.1
7	11420.00	53.0 PK	74.0	-21.0	1.88 V	237	38.7	14.3
8	11420.00	42.2 AV	54.0	-11.8	1.88 V	237	27.9	14.3
9	#17130.00	52.4 PK	74.0	-21.6	1.33 V	290	33.9	18.5
10	#17130.00	38.3 AV	54.0	-15.7	1.33 V	290	19.8	18.5

REMARKS:

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

802.11ac (VHT80)

CHANNEL	TX Channel 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	55.2 PK	74.0	-18.8	1.00 H	171	51.2	4.0
2	5150.00	44.6 AV	54.0	-9.4	1.00 H	171	40.6	4.0
3	*5290.00	108.7 PK			1.00 H	171	104.4	4.3
4	*5290.00	99.8 AV			1.00 H	171	95.5	4.3
5	5350.00	71.8 PK	74.0	-2.2	1.00 H	171	67.4	4.4
6	**5350.00**	**53.7 AV**	**54.0**	**-0.3**	**1.00 H**	**171**	**49.3**	**4.4**
7	#10580.00	46.2 PK	74.0	-27.8	1.48 H	329	32.3	13.9
8	#10580.00	35.2 AV	54.0	-18.8	1.48 H	329	21.3	13.9
9	15870.00	46.7 PK	74.0	-27.3	1.51 H	19	33.3	13.4
10	15870.00	35.3 AV	54.0	-18.7	1.51 H	19	21.9	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	55.9 PK	74.0	-18.1	2.11 V	112	51.9	4.0
2	5150.00	44.3 AV	54.0	-9.7	2.11 V	112	40.3	4.0
3	*5290.00	108.6 PK			2.11 V	112	104.3	4.3
4	*5290.00	99.5 AV			2.11 V	112	95.2	4.3
5	5350.00	71.6 PK	74.0	-2.4	2.11 V	112	67.2	4.4
6	5350.00	51.2 AV	54.0	-2.8	2.11 V	112	46.8	4.4
7	#10580.00	54.1 PK	74.0	-19.9	1.88 V	259	40.2	13.9
8	#10580.00	42.6 AV	54.0	-11.4	1.88 V	259	28.7	13.9
9	15870.00	50.7 PK	74.0	-23.3	1.37 V	304	37.3	13.4
10	15870.00	39.2 AV	54.0	-14.8	1.37 V	304	25.8	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 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	72.7 PK	74.0	-1.3	1.05 H	168	68.2	4.5
2	#5470.00	52.4 AV	54.0	-1.6	1.05 H	168	47.9	4.5
3	*5530.00	107.8 PK			1.05 H	168	103.3	4.5
4	*5530.00	99.5 AV			1.05 H	168	95.0	4.5
5	#5725.00	54.3 PK	74.0	-19.7	1.05 H	168	49.4	4.9
6	#5725.00	43.1 AV	54.0	-10.9	1.05 H	168	38.2	4.9
7	11060.00	46.4 PK	74.0	-27.6	1.52 H	320	31.9	14.5
8	11060.00	35.7 AV	54.0	-18.3	1.52 H	320	21.2	14.5
9	#16590.00	46.7 PK	74.0	-27.3	1.47 H	15	30.1	16.6
10	#16590.00	35.6 AV	54.0	-18.4	1.47 H	15	19.0	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	#5470.00	71.5 PK	74.0	-2.5	2.13 V	109	67.0	4.5
2	#5470.00	52.8 AV	54.0	-1.2	2.13 V	109	48.3	4.5
3	*5530.00	107.3 PK			2.13 V	109	102.8	4.5
4	*5530.00	98.0 AV			2.13 V	109	93.5	4.5
5	#5725.00	54.1 PK	74.0	-19.9	2.13 V	109	49.2	4.9
6	#5725.00	43.7 AV	54.0	-10.3	2.13 V	109	38.8	4.9
7	11060.00	53.5 PK	74.0	-20.5	1.93 V	263	39.0	14.5
8	11060.00	42.0 AV	54.0	-12.0	1.93 V	263	27.5	14.5
9	#16590.00	50.1 PK	74.0	-23.9	1.37 V	304	33.5	16.6
10	#16590.00	38.8 AV	54.0	-15.2	1.37 V	304	22.2	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 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5610.00	108.5 PK			1.08 H	174	103.8	4.7
2	*5610.00	99.6 AV			1.08 H	174	94.9	4.7
3	#5725.00	58.7 PK	74.0	-15.3	1.08 H	174	53.8	4.9
4	#5725.00	46.6 AV	54.0	-7.4	1.08 H	174	41.7	4.9
5	11220.00	45.8 PK	74.0	-28.2	1.45 H	326	31.4	14.4
6	11220.00	34.9 AV	54.0	-19.1	1.45 H	326	20.5	14.4
7	#16830.00	46.6 PK	74.0	-27.4	1.53 H	5	29.6	17.0
8	#16830.00	35.1 AV	54.0	-18.9	1.53 H	5	18.1	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	*5610.00	107.5 PK			2.08 V	116	102.8	4.7
2	*5610.00	98.6 AV			2.08 V	116	93.9	4.7
3	#5725.00	60.2 PK	74.0	-13.8	2.08 V	116	55.3	4.9
4	#5725.00	46.5 AV	54.0	-7.5	2.08 V	116	41.6	4.9
5	11220.00	53.9 PK	74.0	-20.1	1.93 V	274	39.5	14.4
6	11220.00	42.4 AV	54.0	-11.6	1.93 V	274	28.0	14.4
7	#16830.00	51.1 PK	74.0	-22.9	1.35 V	318	34.1	17.0
8	#16830.00	39.6 AV	54.0	-14.4	1.35 V	318	22.6	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) 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	52.9 PK	74.0	-21.1	1.02 H	177	48.4	4.5
2	#5470.00	42.8 AV	54.0	-11.2	1.02 H	177	38.3	4.5
3	*5690.00	108.0 PK			1.02 H	177	103.2	4.8
4	*5690.00	99.0 AV			1.02 H	177	94.2	4.8
5	#5850.00	54.3 PK	74.0	-19.7	1.02 H	177	49.2	5.1
6	#5850.00	44.3 AV	54.0	-9.7	1.02 H	177	39.2	5.1
7	11380.00	46.4 PK	74.0	-27.6	1.43 H	321	32.0	14.4
8	11380.00	35.7 AV	54.0	-18.3	1.43 H	321	21.3	14.4
9	#17070.00	46.5 PK	74.0	-27.5	1.48 H	4	28.2	18.3
10	#17070.00	35.4 AV	54.0	-18.6	1.48 H	4	17.1	18.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	52.2 PK	74.0	-21.8	2.11 V	111	47.7	4.5
2	#5470.00	41.7 AV	54.0	-12.3	2.11 V	111	37.2	4.5
3	*5690.00	107.3 PK			2.11 V	111	102.5	4.8
4	*5690.00	98.7 AV			2.11 V	111	93.9	4.8
5	#5850.00	56.5 PK	74.0	-17.5	2.11 V	111	51.4	5.1
6	#5850.00	45.1 AV	54.0	-8.9	2.11 V	111	40.0	5.1
7	11380.00	54.7 PK	74.0	-19.3	1.86 V	257	40.3	14.4
8	11380.00	43.0 AV	54.0	-11.0	1.86 V	257	28.6	14.4
9	#17070.00	50.4 PK	74.0	-23.6	1.34 V	293	32.1	18.3
10	#17070.00	38.8 AV	54.0	-15.2	1.34 V	293	20.5	18.3

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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:

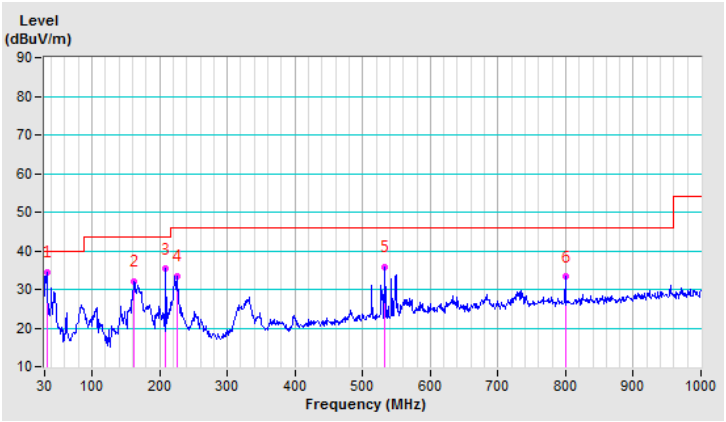
802.11ac (VHT80)

CHANNEL	TX Channel 106	**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	33.56	34.6 QP	40.0	-5.4	3.00 H	0	44.3	-9.7
2	161.31	32.2 QP	43.5	-11.3	1.50 H	96	40.6	-8.4
3	208.75	35.3 QP	43.5	-8.2	2.50 H	126	46.9	-11.6
4	226.13	33.5 QP	46.0	-12.5	1.00 H	70	45.1	-11.6
5	532.61	35.8 QP	46.0	-10.2	1.50 H	49	38.1	-2.3
6	799.21	33.3 QP	46.0	-12.7	1.00 H	99	31.0	2.3

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

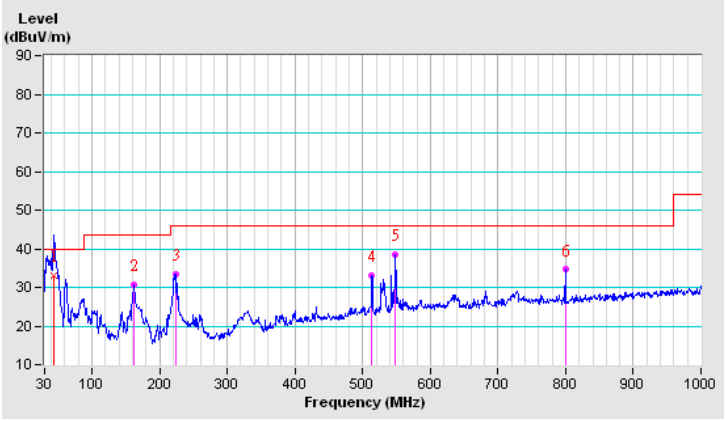


CHANNEL	TX Channel 106	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.80	33.2 QP	40.0	-6.8	1.50 V	42	14.4	18.8
2	161.27	30.6 QP	43.5	-12.9	1.00 V	81	39.0	-8.4
3	223.56	33.5 QP	46.0	-12.5	1.50 V	25	45.0	-11.5
4	513.91	33.2 QP	46.0	-12.8	2.00 V	360	35.6	-2.4
5	548.51	38.5 QP	46.0	-7.5	1.50 V	0	40.5	-2.0
6	799.21	34.6 QP	46.0	-11.4	1.00 V	360	32.3	2.3

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 13, 2016	June 12, 2017
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 20, 2016	June 19, 2017
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: Apr. 06, 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.

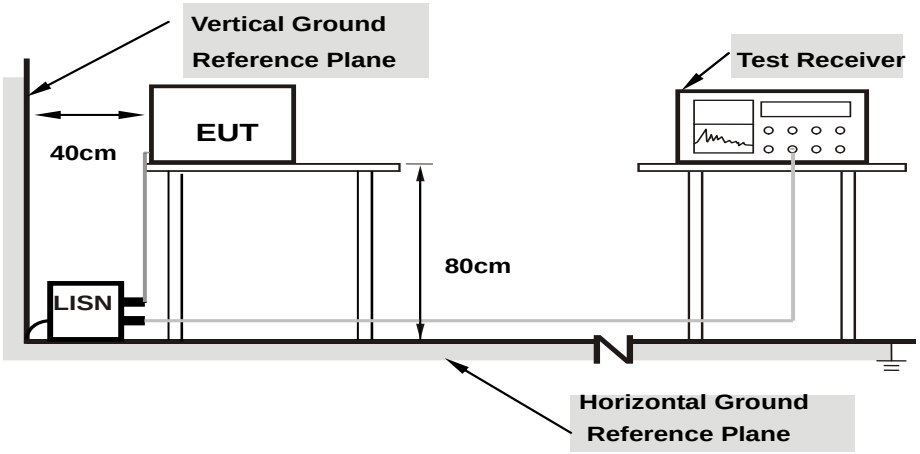
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

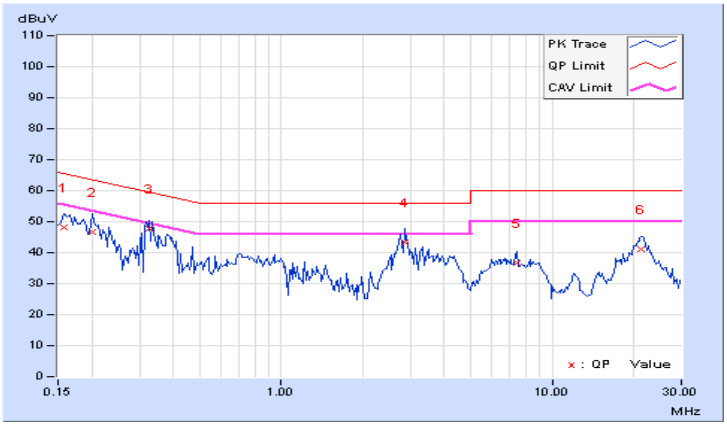
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	10.20	37.98	23.19	48.18	33.39	65.58	55.58	-17.40	-22.19
2	0.20078	10.20	36.40	24.95	46.60	35.15	63.58	53.58	-16.98	-18.43
3	**0.32578**	**10.23**	**37.71**	**30.79**	**47.94**	**41.02**	**59.56**	**49.56**	**-11.62**	**-8.54**
4	2.84375	10.30	33.11	18.09	43.41	28.39	56.00	46.00	-12.59	-17.61
5	7.37109	10.55	26.27	21.25	36.82	31.80	60.00	50.00	-23.18	-18.20
6	21.28516	11.72	29.55	22.38	41.27	34.10	60.00	50.00	-18.73	-15.90

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.

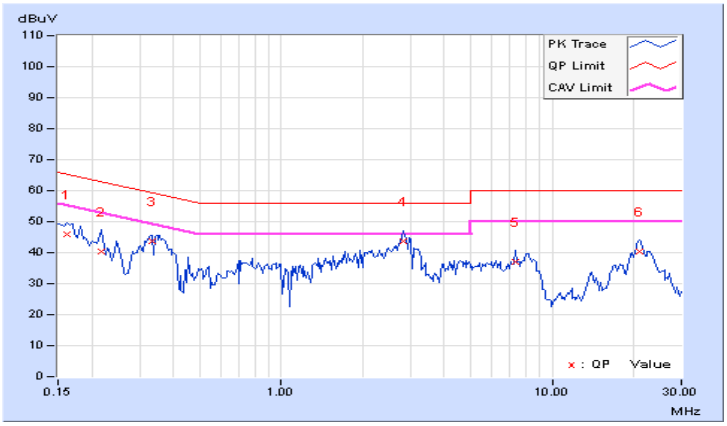


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16172	10.19	35.65	22.10	45.84	32.29	65.38	55.38	-19.54	-23.09
2	0.21641	10.18	30.17	19.37	40.35	29.55	62.96	52.96	-22.61	-23.41
3	0.33359	10.22	33.32	21.22	43.54	31.44	59.36	49.36	-15.82	-17.92
4	2.81641	10.27	33.32	21.14	43.59	31.41	56.00	46.00	-12.41	-14.59
5	7.35938	10.45	26.42	21.45	36.87	31.90	60.00	50.00	-23.13	-18.10
6	21.06250	11.38	28.84	21.48	40.22	32.86	60.00	50.00	-19.78	-17.14

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 Measurment

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)
		Mobile and Portable 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,

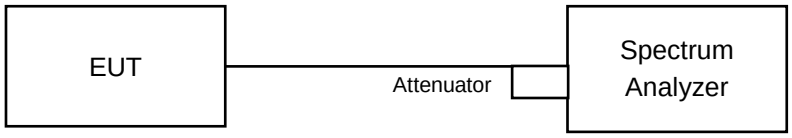
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

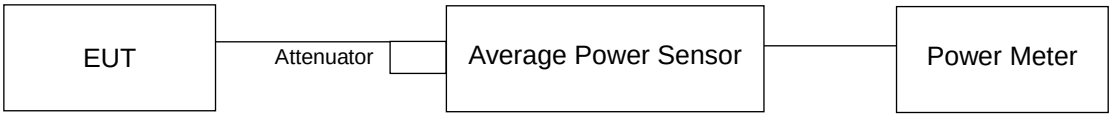
4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT

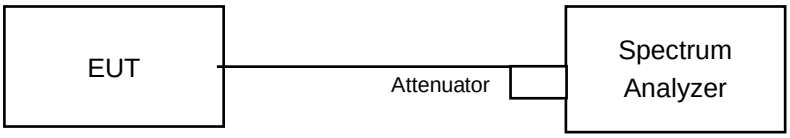
For channel straddling 5725MHz:



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:

802.11a, 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

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	Chain 2	Chain 3				
52	5260	13.40	13.40	13.56	13.31	87.884	19.44	24.00	Pass
60	5300	13.24	13.23	13.55	13.30	86.15	19.35	24.00	Pass
64	5320	13.34	13.33	13.49	13.38	87.218	19.41	24.00	Pass
100	5500	13.29	13.38	13.16	13.35	85.435	19.32	24.00	Pass
116	5580	13.39	13.36	13.30	13.25	86.019	19.35	24.00	Pass
140	5700	13.25	13.14	13.34	13.01	83.317	19.21	24.00	Pass
*144 (UNII-2C Band)	5720	9.67	9.38	9.35	9.61	35.689	15.53	22.99	Pass
*144 (UNII-3 Band)	5720	3.72	3.37	3.36	3.59	8.982	9.53	30.00	Pass

Note: * 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	44.671	16.5
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	Chain 2	Chain 3
52	5260	21.65	21.72	21.72	21.73
60	5300	21.84	21.83	21.66	21.71
64	5320	21.79	21.73	21.77	21.86
100	5500	21.78	21.72	21.75	21.69
116	5580	21.78	21.74	21.78	21.72
140	5700	21.73	21.67	21.72	21.79
144 (UNII-2C Band)	5720	15.89	15.84	15.84	15.86

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	21.65	24.35 > 24
60	5300	21.66	24.35 > 24
64	5320	21.73	24.37 > 24
100	5500	21.69	24.36 > 24
116	5580	21.72	24.36 > 24
140	5700	21.67	24.35 > 24
144 (UNII-2C Band)	5720	15.84	22.99 < 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	Chain 2	Chain 3				
52	5260	13.19	13.07	13.48	13.33	84.934	19.29	24.00	Pass
60	5300	13.39	13.32	13.45	13.28	86.717	19.38	24.00	Pass
64	5320	13.45	13.31	13.41	13.34	87.065	19.40	24.00	Pass
100	5500	13.21	13.08	13.23	13.28	83.584	19.22	24.00	Pass
116	5580	13.29	13.26	13.27	13.44	85.826	19.34	24.00	Pass
140	5700	13.38	13.35	13.30	12.96	84.554	19.27	24.00	Pass
*144 (UNII-2C Band)	5720	9.88	9.78	9.10	9.28	35.833	15.54	23.00	Pass
*144 (UNII-3 Band)	5720	4.34	4.28	3.50	3.70	9.978	9.99	30.00	Pass

Note: * 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	45.811	16.61
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	Chain 2	Chain 3
52	5260	21.92	21.95	21.97	22.04
60	5300	21.85	21.80	21.90	22.05
64	5320	21.86	21.91	21.90	21.97
100	5500	22.03	21.91	22.15	22.02
116	5580	21.95	22.08	21.88	21.96
140	5700	22.00	21.95	21.97	22.06
144 (UNII-2C Band)	5720	15.86	15.91	15.88	15.92

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.92	24.4 > 24
60	5300	21.80	24.38 > 24
64	5320	21.86	24.39 > 24
100	5500	21.91	24.4 > 24
116	5580	21.88	24.4 > 24
140	5700	21.95	24.41 > 24
144 (UNII-2C Band)	5720	15.86	23 < 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	16.49	16.17	16.49	16.52	175.407	22.44	24.00	Pass
62	5310	16.45	16.27	16.58	16.40	175.672	22.45	24.00	Pass
102	5510	16.47	16.48	16.39	16.25	174.545	22.42	24.00	Pass
110	5550	16.08	16.68	16.32	16.31	172.721	22.37	24.00	Pass
134	5670	16.07	16.72	16.49	16.45	176.17	22.46	24.00	Pass
*142 (UNII-2C Band)	5710	12.92	12.87	13.31	13.48	85.537	19.32	24.00	Pass
*142 (UNII-3 Band)	5710	2.78	2.62	3.07	3.24	8.135	9.10	30.00	Pass

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

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
142	5710	93.672	19.72
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	Chain 2	Chain 3
54	5270	41.36	41.52	41.37	41.65
62	5310	41.66	41.71	41.44	41.84
102	5510	41.46	41.36	41.55	41.45
110	5550	41.56	41.34	41.32	41.44
134	5670	41.50	41.48	41.50	41.56
142 (UNII-2C Band)	5710	35.78	35.80	35.83	35.81

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.36	27.16 > 24
62	5310	41.44	27.17 > 24
102	5510	41.36	27.16 > 24
110	5550	41.32	27.16 > 24
134	5670	41.48	27.17 > 24
142 (UNII-2C Band)	5710	35.78	26.53 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	17.31	17.47	17.86	17.07	221.701	23.46	24.00	Pass
106	5530	17.78	17.92	17.82	17.72	241.613	23.83	24.00	Pass
122	5610	17.57	17.73	17.92	17.56	235.401	23.72	24.00	Pass
*138 (UNII-2C Band)	5690	14.35	14.40	14.90	14.10	118.655	20.74	24.00	Pass
*138 (UNII-3 Band)	5690	0.86	0.76	1.14	0.44	5.132	7.10	30.00	Pass

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

The Total Power for the straddle channel:

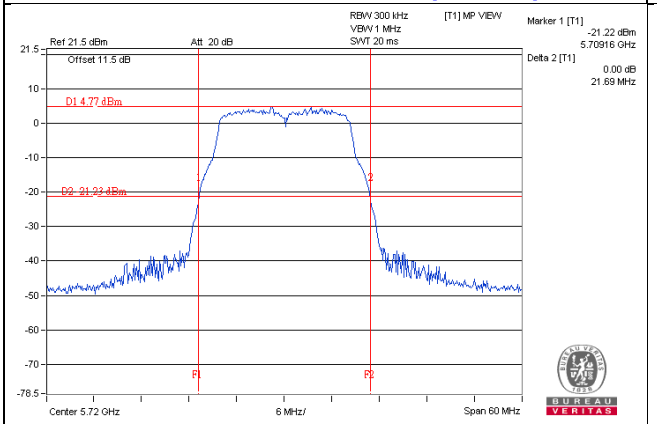
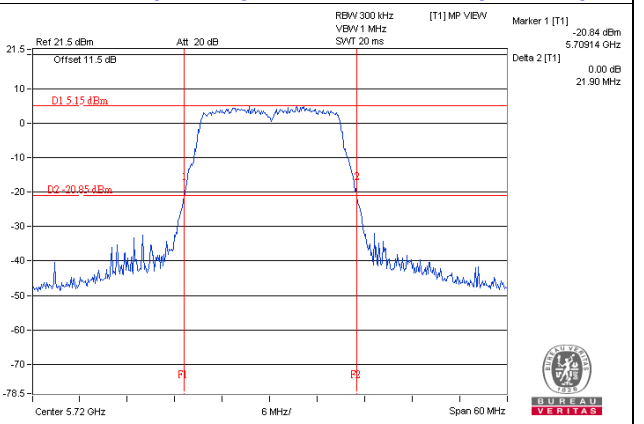
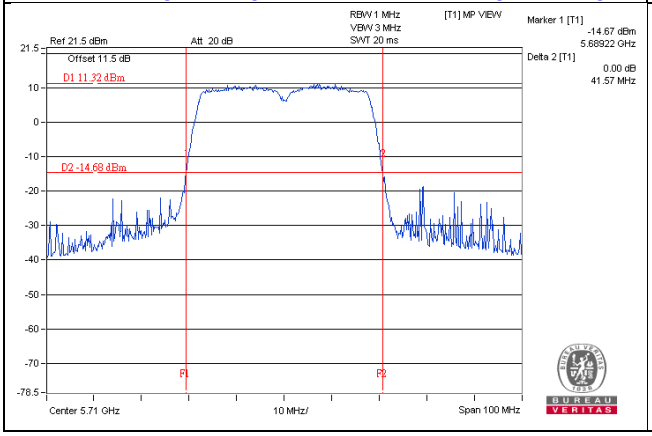
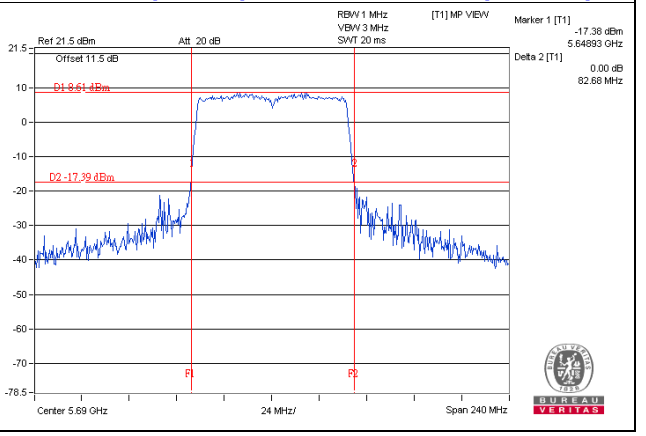
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
138	5690	123.787	20.93
Note: The total power was calculated through formula and record the value for reference only.			

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	82.79	82.86	82.75	82.49
106	5530	82.61	82.58	82.97	82.57
122	5610	82.79	82.95	83.11	82.97
138 (UNII-2C Band)	5690	76.15	76.18	76.27	76.07

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.49	30.16 > 24
106	5530	82.57	30.16 > 24
122	5610	82.79	30.17 > 24
138 (UNII-2C Band)	5690	76.07	29.81 > 24

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144 (UNII-2C)	**802.11ac (VHT20)_Chain 0 / CH144 (UNII-2C)**
	
802.11ac (VHT40) _Chain 0 / CH142 (UNII-2C)	**802.11ac (VHT80) _Chain 3 / CH138 (UNII-2C)**
	

NOTE:

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

Beamforming Mode

802.11ac (VHT20)

Power Output:

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	13.19	13.07	13.48	13.33	84.934	19.29	19.48	Pass
60	5300	13.39	13.32	13.45	13.28	86.717	19.38	19.48	Pass
64	5320	13.45	13.31	13.41	13.34	87.065	19.40	19.48	Pass
100	5500	13.21	13.08	13.23	13.28	83.584	19.22	19.48	Pass
116	5580	13.29	13.26	13.27	13.44	85.826	19.34	19.48	Pass
140	5700	13.38	13.35	13.30	12.96	84.554	19.27	19.48	Pass
*144 (UNII-2C Band)	5720	9.88	9.78	9.10	9.28	35.833	15.54	18.48	Pass
*144 (UNII-3 Band)	5720	4.34	4.28	3.50	3.70	9.978	9.99	25.48	Pass

Note: * 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	45.811	16.61
Note: The total power was calculated through formula and record the value for reference only.			

Note:

1. For UNII-2A & For UNII-2C : Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power limit shall be reduced to 24-(10.52-6) = 19.48dBm.
2. For UNII-3: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power limit shall be reduced to 30-(10.52-6) = 25.48dBm.

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	21.92	21.95	21.97	22.04
60	5300	21.85	21.80	21.90	22.05
64	5320	21.86	21.91	21.90	21.97
100	5500	22.03	21.91	22.15	22.02
116	5580	21.95	22.08	21.88	21.96
140	5700	22.00	21.95	21.97	22.06
144 (UNII-2C Band)	5720	15.86	15.91	15.88	15.92

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.92	24.4 > 24
60	5300	21.80	24.38 > 24
64	5320	21.86	24.39 > 24
100	5500	21.91	24.4 > 24
116	5580	21.88	24.4 > 24
140	5700	21.95	24.41 > 24
144 (UNII-2C Band)	5720	15.86	23 < 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	13.34	13.11	13.24	13.43	85.156	19.30	19.48	Pass
62	5310	13.29	13.01	13.32	13.42	84.786	19.28	19.48	Pass
102	5510	13.21	13.45	13.05	12.88	82.665	19.17	19.48	Pass
110	5550	12.81	13.53	12.95	13.08	81.689	19.12	19.48	Pass
134	5670	12.71	13.49	13.37	13.15	83.381	19.21	19.48	Pass
*142 (UNII-2C Band)	5710	9.96	10.20	10.31	10.29	43.262	16.36	19.48	Pass
*142 (UNII-3 Band)	5710	-0.28	-0.07	0.08	-0.04	4.0676	6.09	25.48	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)
142	5710	47.3296	16.75
Note: The total power was calculated through formula and record the value for reference only.			

Note:

1. For UNII-2A & For UNII-2C : Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power limit shall be reduced to 24-(10.52-6) = 19.48dBm.
2. For UNII-3: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power limit shall be reduced to 30-(10.52-6) = 25.48dBm.

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	41.36	41.52	41.37	41.65
62	5310	41.66	41.71	41.44	41.84
102	5510	41.46	41.36	41.55	41.45
110	5550	41.56	41.34	41.32	41.44
134	5670	41.50	41.48	41.50	41.56
142 (UNII-2C Band)	5710	35.78	35.80	35.83	35.81

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.36	27.16 > 24
62	5310	41.44	27.17 > 24
102	5510	41.36	27.16 > 24
110	5550	41.32	27.16 > 24
134	5670	41.48	27.17 > 24
142 (UNII-2C Band)	5710	35.79	26.53 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	13.06	13.26	13.67	12.86	84.015	19.24	19.48	Pass
106	5530	13.28	13.49	13.46	13.27	87.031	19.40	19.48	Pass
122	5610	13.07	13.22	13.48	13.01	83.549	19.22	19.48	Pass
*138 (UNII-2C Band)	5690	10.14	10.44	10.47	10.40	46.345	16.66	19.48	Pass
*138 (UNII-3 Band)	5690	-3.52	-3.25	-3.27	-3.25	1.9837	2.97	25.48	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)
138	5690	48.3287	16.84
Note: The total power was calculated through formula and record the value for reference only.			

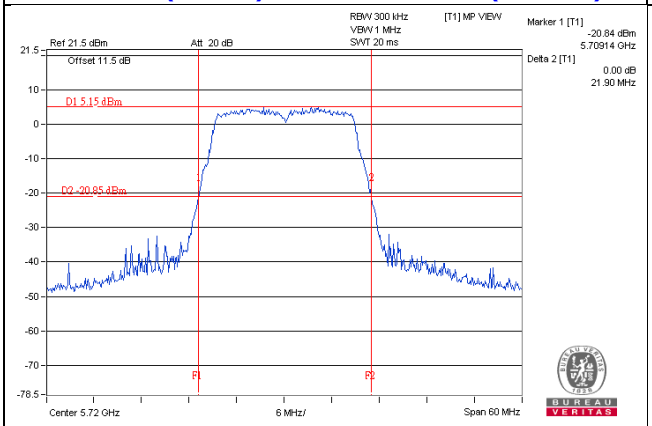
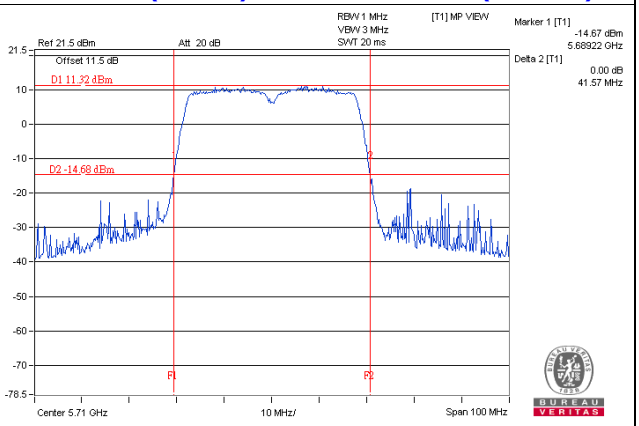
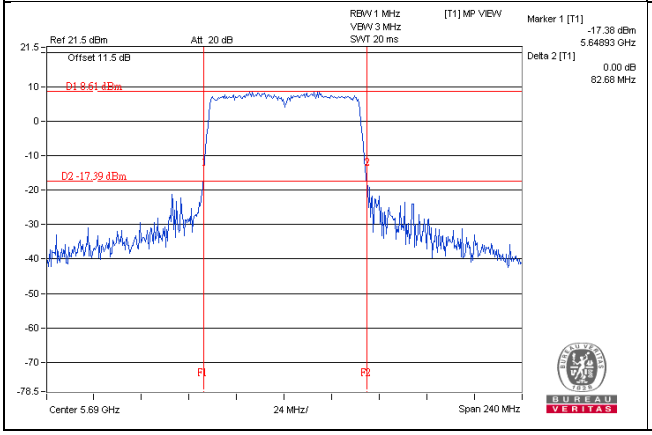
Note:
1. For UNII-2A & For UNII-2C : Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$ + $10^{G4/20}$)^2 / 4] = 10.52dBi > 6dBi, so the power limit shall be reduced to 24-(10.52-6) = 19.48dBm.
2. For UNII-3: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$ + $10^{G4/20}$)^2 / 4] = 10.52dBi > 6dBi, so the power limit shall be reduced to 30-(10.52-6) = 25.48dBm.

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	82.79	82.86	82.75	82.49
106	5530	82.61	82.58	82.97	82.57
122	5610	82.79	82.95	83.11	82.97
138 (UNII-2C Band)	5690	76.15	76.18	76.27	76.07

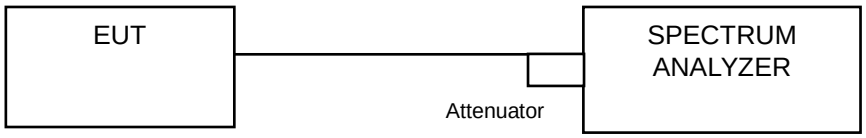
Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.49	30.16 > 24
106	5530	82.57	30.16 > 24
122	5610	82.79	30.17 > 24
138 (UNII-2C Band)	5690	76.26	29.82 > 24

Spectrum Plot of Worst Value	
802.11ac (VHT20)_Chain 0 / CH144 (UNII-2C)	**802.11ac (VHT40) _Chain 0 / CH142 (UNII-2C)**
	
802.11ac (VHT80) _Chain 3 / CH138 (UNII-2C)	
	

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3
52	5260	17.04	16.92	16.92	17.04
60	5300	16.92	16.80	17.04	17.04
64	5320	16.92	16.92	16.92	17.16
100	5500	16.80	17.04	16.80	16.92
116	5580	16.92	17.04	16.80	17.04
140	5700	16.92	17.04	16.92	16.92
144 (UNII-2C Band)	5720	13.52	13.40	13.52	13.52
144 (UNII-3 Band)	5720	3.40	3.52	3.52	3.40

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3
52	5260	18.00	17.88	17.88	18.00
60	5300	18.12	18.00	18.00	17.88
64	5320	18.00	18.00	18.12	18.00
100	5500	18.12	18.00	18.00	17.88
116	5580	17.88	18.00	17.88	18.12
140	5700	18.00	18.00	18.24	18.12
144 (UNII-2C Band)	5720	14.00	14.00	14.00	14.00
144 (UNII-3 Band)	5720	4.00	3.88	4.00	4.00

802.11ac (VHT40)

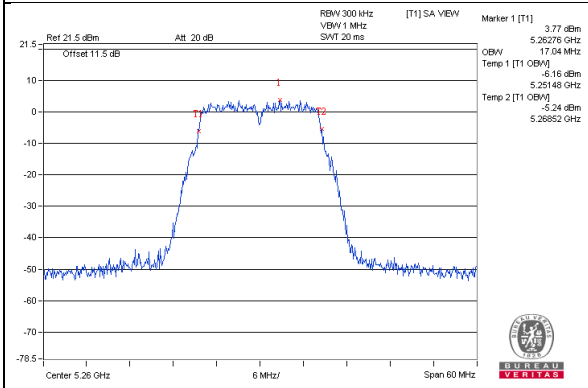
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3
54	5270	36.72	36.72	36.48	36.72
62	5310	36.72	36.72	36.72	36.72
102	5510	36.72	36.72	36.48	36.72
110	5550	36.72	36.72	36.48	36.48
134	5670	36.72	36.72	36.72	36.48
142 (UNII-2C Band)	5710	33.40	33.40	33.40	33.40
142 (UNII-3 Band)	5710	3.20	3.40	3.20	3.20

802.11ac (VHT80)

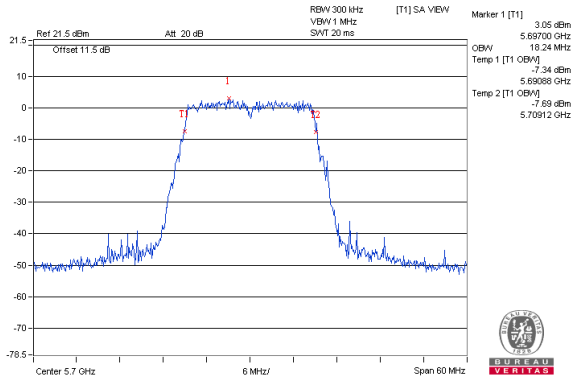
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3
58	5290	75.84	75.84	75.84	75.84
106	5530	75.84	75.84	75.84	75.84
122	5610	76.32	75.84	76.32	76.32
138 (UNII-2C Band)	5690	72.92	73.40	73.40	72.92
138 (UNII-3 Band)	5690	2.92	2.92	2.92	2.92

Spectrum Plot of Worst Value

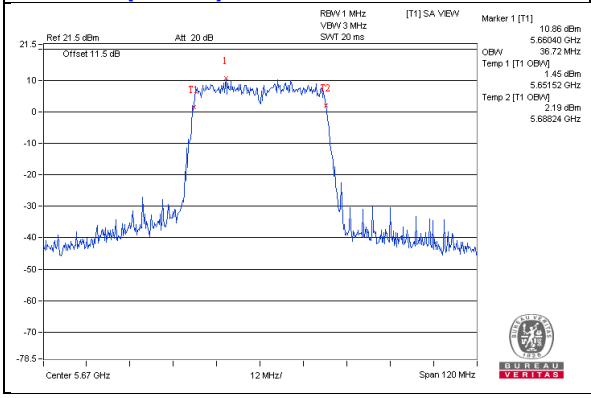
802.11a_Chain0 / CH52



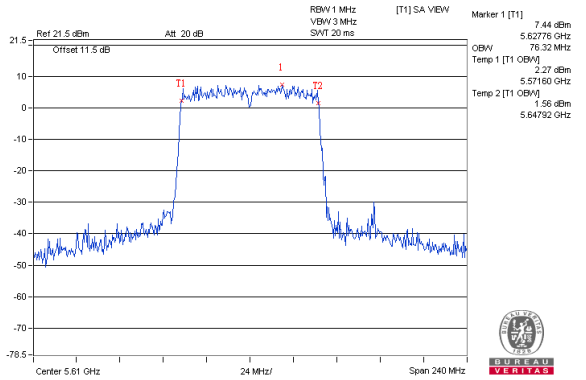
802.11ac (VHT20)_Chain2 / CH140



802.11ac (VHT40)_Chain1 / CH134



802.11ac (VHT80)_Chain2/ CH122

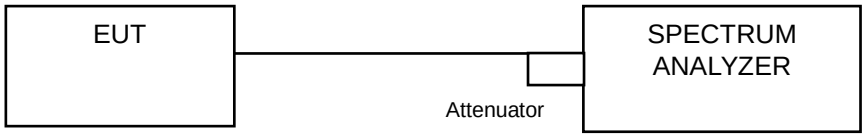


4.5 Peak Power Spectral Density Measurement

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	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

802.11a, 802.11ac (VHT20)

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

Using method SA-1

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

For U-NII-3:

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

802.11ac (VHT40), 802.11ac (VHT80)

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

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 U-NII-2A, UNII-2C:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
52	5260	-0.23	-0.13	0.01	-0.23	5.88	6.48	Pass
60	5300	-0.22	0.03	0.19	-0.37	5.93	6.48	Pass
64	5320	-0.08	-0.32	0.02	-0.34	5.84	6.48	Pass
100	5500	-0.26	0.00	0.06	-0.13	5.94	6.48	Pass
116	5580	0.05	0.13	-0.13	-0.23	5.98	6.48	Pass
140	5700	-0.35	-0.73	-0.54	-0.23	5.56	6.48	Pass
144 (UNII-2C Band)	5720	-0.50	-0.61	-0.77	-0.58	5.41	6.48	Pass

Note:
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. For UNII-2A & UNII-2C: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$ + $10^{G4/20}$)^2 / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 11-(10.52-6) = 6.48dBm.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
52	5260	-0.37	-0.45	-0.28	-0.36	5.66	6.48	Pass
60	5300	-0.36	-0.12	-0.30	-0.51	5.70	6.48	Pass
64	5320	-0.25	-0.43	-0.54	-0.64	5.56	6.48	Pass
100	5500	-0.34	-0.49	-0.52	-0.54	5.55	6.48	Pass
116	5580	-0.49	-0.37	-0.43	-0.45	5.59	6.48	Pass
140	5700	-0.37	-0.48	-0.90	-0.84	5.38	6.48	Pass
144 (UNII-2C Band)	5720	-0.41	-0.31	-0.93	-0.91	5.39	6.48	Pass

Note:
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. For UNII-2A & UNII-2C: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$ + $10^{G4/20}$)^2 / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 11-(10.52-6) = 6.48dBm.

802.11ac (VHT40)

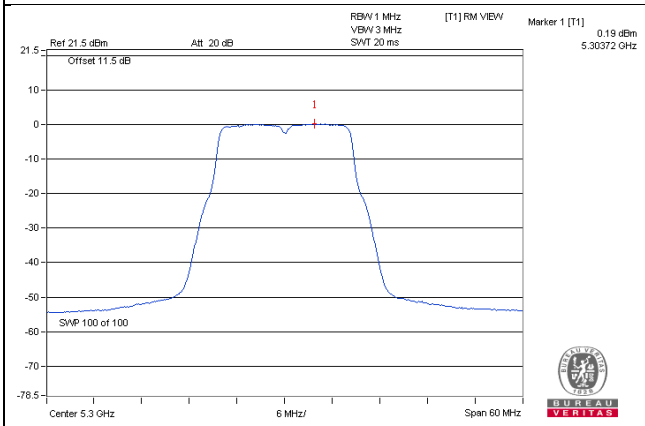
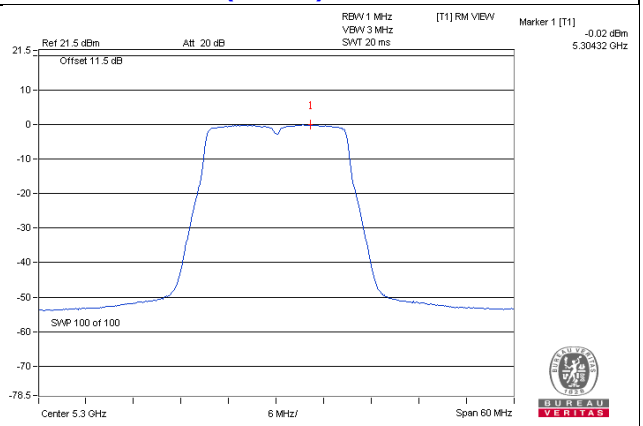
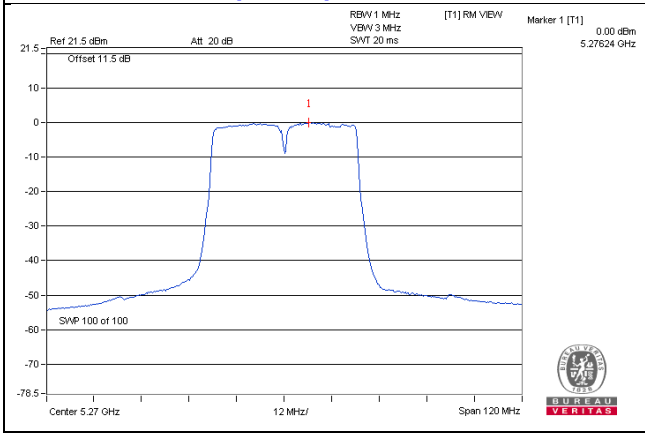
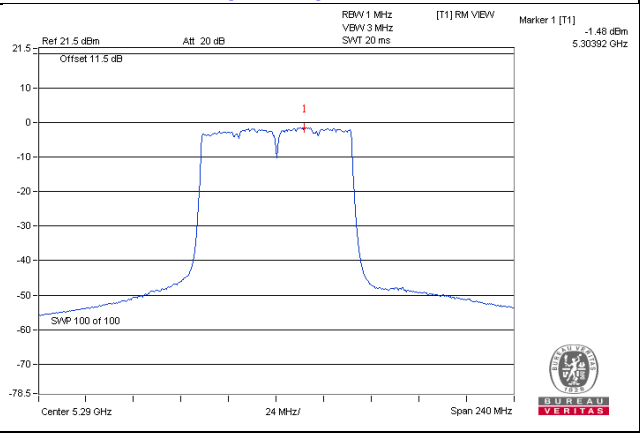
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	-0.13	-0.47	0.00	-0.49	0.15	5.90	6.48	Pass
62	5310	-0.37	-0.45	-0.15	-0.37	0.15	5.84	6.48	Pass
102	5510	-0.40	-0.13	-0.40	-0.48	0.15	5.82	6.48	Pass
110	5550	-0.60	-0.38	-0.45	-0.59	0.15	5.66	6.48	Pass
134	5670	-0.75	-0.16	-0.51	-0.45	0.15	5.71	6.48	Pass
142 (UNII-2C Band)	5710	-0.99	-1.07	-0.50	-0.35	0.15	5.45	6.48	Pass

Note:
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. For UNII-2A & UNII-2C: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 11-(10.52-6) = 6.48dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	-2.02	-1.94	-1.57	-2.40	0.27	4.32	6.48	Pass
106	5530	-1.91	-2.00	-1.85	-2.08	0.27	4.34	6.48	Pass
122	5610	-2.60	-2.10	-1.98	-2.49	0.27	4.01	6.48	Pass
138 (UNII-2C Band)	5690	-2.71	-2.60	-2.36	-2.90	0.27	3.66	6.48	Pass

Note:
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. For UNII-2A & UNII-2C: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 11-(10.52-6) = 6.48dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 2 / CH60	**802.11ac (VHT20)_Chain 1 / CH60**
	
802.11ac (VHT40)_Chain 2 / CH54	**802.11ac (VHT80)_Chain 2 / CH58**
	

For U-NII-3:

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=4) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	144 (UNII-3 Band)	5720	-8.86	-6.64	6.02	-0.62	25.48	Pass
1	144 (UNII-3 Band)	5720	-9.12	-6.90	6.02	-0.88	25.48	Pass
2	144 (UNII-3 Band)	5720	-9.04	-6.82	6.02	-0.80	25.48	Pass
3	144 (UNII-3 Band)	5720	-8.81	-6.59	6.02	-0.57	25.48	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 30-(10.52-6) = 25.48dBm.

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=4) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	144 (UNII-3 Band)	5720	-8.54	-6.32	6.02	-0.30	25.48	Pass
1	144 (UNII-3 Band)	5720	-8.53	-6.31	6.02	-0.29	25.48	Pass
2	144 (UNII-3 Band)	5720	-9.35	-7.13	6.02	-1.11	25.48	Pass
3	144 (UNII-3 Band)	5720	-9.05	-6.83	6.02	-0.81	25.48	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 30-(10.52-6) = 25.48dBm.

802.11ac (VHT40)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	142 (UNII-3 Band)	5710	-9.59	-7.37	6.02	0.15	-1.20	25.48	Pass
1	142 (UNII-3 Band)	5710	-9.82	-7.60	6.02	0.15	-1.43	25.48	Pass
2	142 (UNII-3 Band)	5710	-9.33	-7.11	6.02	0.15	-0.94	25.48	Pass
3	142 (UNII-3 Band)	5710	-9.16	-6.94	6.02	0.15	-0.77	25.48	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 30-(10.52-6) = 25.48dBm.

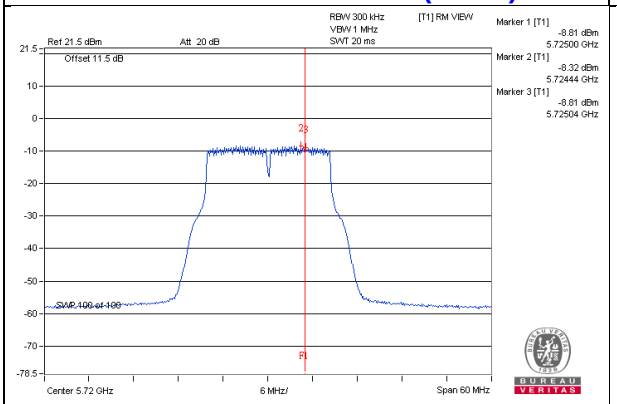
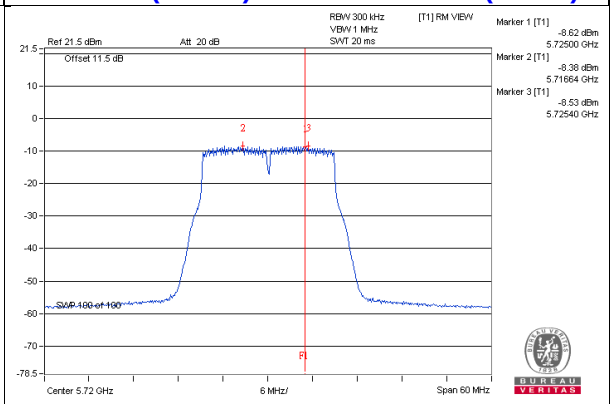
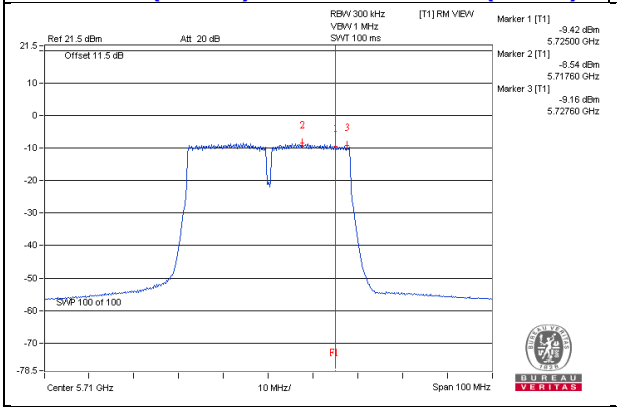
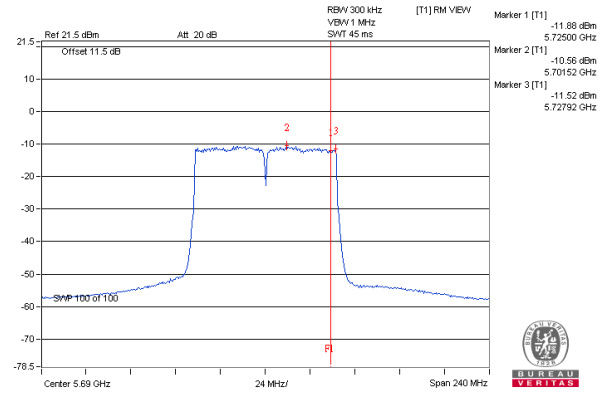
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) 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	-12.13	-9.91	6.02	0.27	-3.62	25.48	Pass
1	138 (UNII-3 Band)	5690	-12.14	-9.92	6.02	0.27	-3.63	25.48	Pass
2	138 (UNII-3 Band)	5690	-11.52	-9.30	6.02	0.27	-3.01	25.48	Pass
3	138 (UNII-3 Band)	5690	-12.44	-10.22	6.02	0.27	-3.93	25.48	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / 4] = 10.52dBi > 6dBi, so the power density limit shall be reduced to 30-(10.52-6) = 25.48dBm.

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

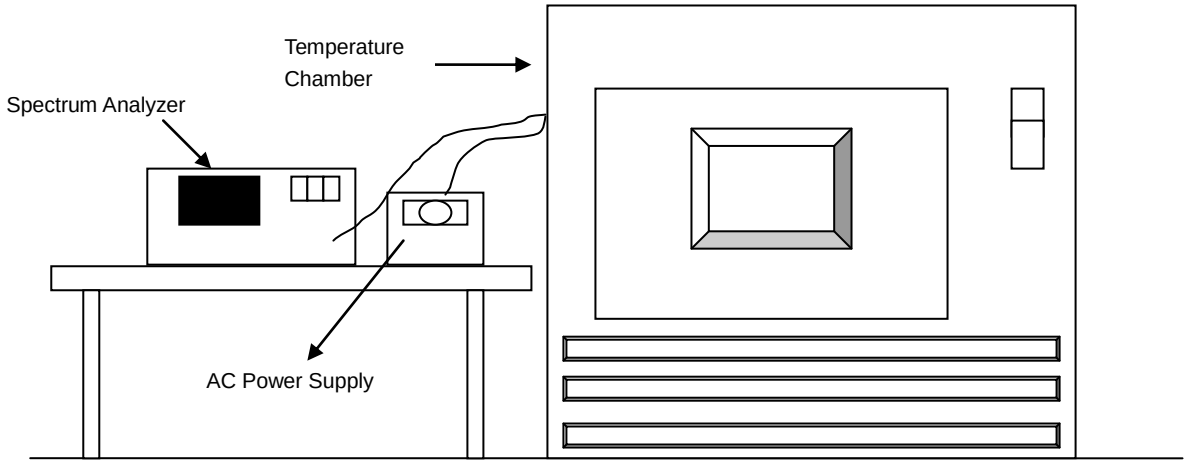
Spectrum Plot of Worst Value	
802.11a – Chain 3: CH 144(UNII-3)	**802.11ac (VHT20) – Chain 1: CH 144(UNII-3)**
	
802.11ac (VHT40) – Chain 3: CH 142(UNII-3)	**802.11ac (VHT80) – Chain 2: CH 138(UNII-3)**
	

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	5259.994	PASS	5259.9936	PASS	5259.9899	PASS	5259.9934	PASS
40	120	5260.0266	PASS	5260.0259	PASS	5260.0266	PASS	5260.023	PASS
30	120	5259.9874	PASS	5259.9849	PASS	5259.9869	PASS	5259.9879	PASS
20	120	5260.0115	PASS	5260.0155	PASS	5260.016	PASS	5260.016	PASS
10	120	5260.0141	PASS	5260.0115	PASS	5260.0119	PASS	5260.0156	PASS
0	120	5260.0201	PASS	5260.0201	PASS	5260.0208	PASS	5260.0216	PASS
-10	120	5260.0243	PASS	5260.0257	PASS	5260.0236	PASS	5260.0248	PASS
-20	120	5259.9887	PASS	5259.991	PASS	5259.9897	PASS	5259.9896	PASS
-30	120	5259.9958	PASS	5259.9934	PASS	5259.993	PASS	5259.9944	PASS

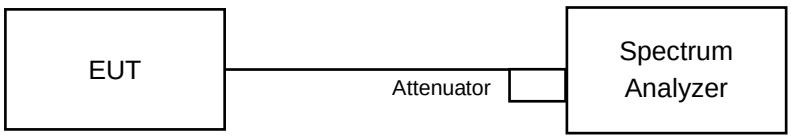
Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5260.0121	PASS	5260.0152	PASS	5260.0161	PASS	5260.0167	PASS
	120	5260.0115	PASS	5260.0155	PASS	5260.016	PASS	5260.016	PASS
	102	5260.0125	PASS	5260.0149	PASS	5260.0169	PASS	5260.0167	PASS

4.7 6dB Bandwidth Measurment

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
144 (UNII-3 Band)	5720	3.23	3.24	3.25	3.24	0.5	Pass

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

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
144 (UNII-3 Band)	5720	3.87	3.88	3.87	3.87	0.5	Pass

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

802.11ac (VHT40)

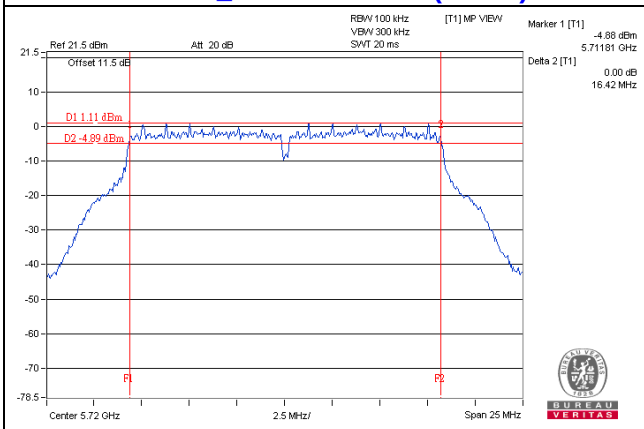
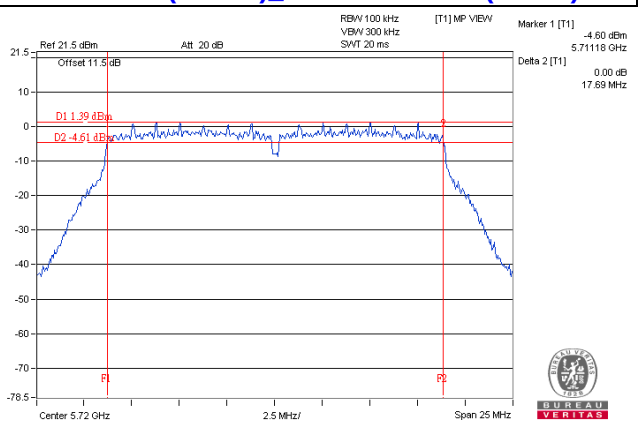
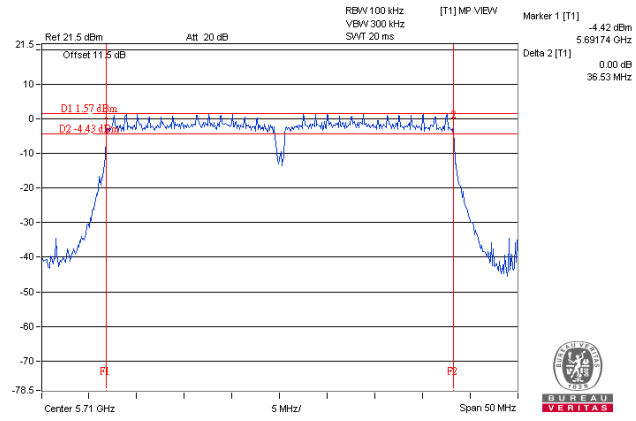
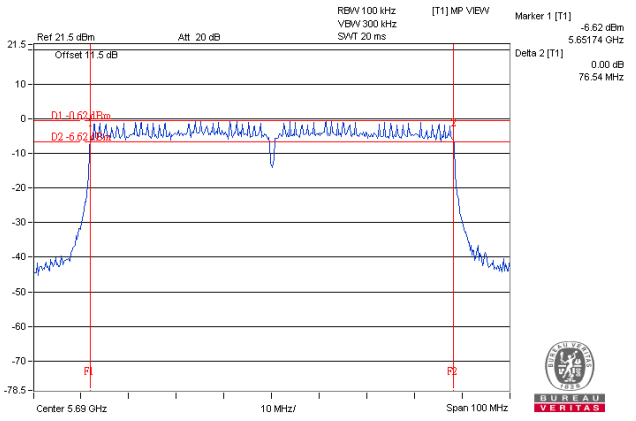
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
142 (UNII-3 Band)	5710	3.27	3.28	3.28	3.27	0.5	Pass

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

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
138 (UNII-3 Band)	5690	3.34	3.32	3.30	3.28	0.5	Pass

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

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

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 accredited and approved according to ISO/IEC 17025.

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

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Hsin Chu EMC/RF/Telecom Lab
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Web Site: www.bureauveritas-adt.com

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

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