FCC Test Report (DFS Band)

Report No.:	RF160623E04A-1
FCC ID:	PY326200348
Test Model:	C7000v2
Received Date:	July 18, 2016
Test Date:	June 23 to Aug. 18, 2016
Issued Date:	Sep. 07, 2016
Applicant:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (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
RF160623E04A-1	Original release.	Sep. 07, 2016

1 Certificate of Conformity

Product:	AC1900 WiFi Cable Modem Router
Brand:	NETGEAR
Test Model:	C7000v2
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR, Inc.
Test Date:	June 23 to Aug. 18, 2016
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

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

Prepared by : _____ , **Date:** Sep. 07, 2016
Midoli Peng / Specialist

Approved by : _____ , **Date:** Sep. 07, 2016
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 -8.47dB at 0.32522MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5470.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Meet the requirement.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex (MHF) not a standard connector.

NOTE: 1. This report is prepared for FCC class II permissive change.

2. The DFS report was recorded in another test report.

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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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.19 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.40 dB
	6GHz ~ 18GHz	3.73 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (DFS Band)

Product	AC1900 WiFi Cable Modem Router
Brand	NETGEAR
Test Model	C7000v2
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5.26GH ~ 5.32GHz, 5.50GHz ~ 5.70GHz
Number of Channel	15 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 7 for 802.11n (HT40), 802.11ac (VHT40) 3 for 802.11ac (VHT80)
Output Power	**5.26GHz ~ 5.32GHz** **CDD Mode** 245.398mW **Beamforming Mode** 208.217mW **5.50GHz ~ 5.70GHz** **CDD Mode** 243.493mW **Beamforming Mode** 209.524mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF160623E04-1 as the following:
   - ◆ Add DFS band <5.26GHz ~ 5.32GHz, 5.5GHz ~ 5.70GHz>
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 with a power adapter and following different models could be chosen as following table:

No	Brand Name	Model No.	PN	Spec.
1	NETGEAR	MU42-3120350-A1	332-10762-01	Input: 100-240Vac, 50-60Hz, 1.5A Output: 12Vdc, 3.5A Power cord (Unshielded, 1.8m)
2		2ABN042F NA	332-10761-01	Input: 100-240Vac, 50-60Hz, 1.3A Output: 12Vdc, 3.5A Power cord (Unshielded, 1.8m)
Note: From the above adapters, the radiated emission worse case was found in Adapter 2. Therefore only the test data of the mode was recorded in this report.				

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

Transmitter Circuit	Brand	Model	Antenna Gain(dBi) <including cable loss>	Frequency range (MHz ~ MHz)	Antenna Type	Connecter Type	Cable Length (mm)
Chain (2)	Masterwave	NA	2	2.4~2.4835 5.15~5.85	PCB	I-pex (MHF)	105
Chain (0)	Masterwave	NA	2	2.4~2.4835 5.15~5.85	PCB	I-pex (MHF)	70
Chain (1)	Masterwave	NA	2	2.4~2.4835 5.15~5.85	PCB	I-pex (MHF)	101

6. The EUT incorporates a MIMO function.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS16~23	3TX	3RX
802.11ac (VHT20)	MCS0~8 Nss=1	3TX	3RX
	MCS0~8 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
802.11ac (VHT40)	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
802.11ac (VHT80)	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX

Note:
1. All of modulation mode support beamforming function except 802.11a 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)

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

3.2 Description of Test Modes

FOR 5260 ~ 5320MHz

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

FOR 5500 ~ 5700MHz

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

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

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

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	-	-	√	-	EUT with adapter 1
2	√	√	√	√	EUT with adapter 2

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE: 1. The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **Y-plane.**
2. "-"means no effect.

Radiated Emission Test (Above 1GHz):

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

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 122	106, 122	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

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

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT40)	5260-5320	54 to 62	54	OFDM	BPSK	13.5
	5500-5700	102 to 134				

Power Line Conducted Emission Test:

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT40)	5260-5320	54 to 62	54	OFDM	BPSK	13.5
	5500-5700	102 to 134				

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	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 122	106, 122	OFDM	BPSK	29.3
Beamforming Mode (Output power only)						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11ac (VHT20)	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 122	106, 122	OFDM	BPSK	29.3

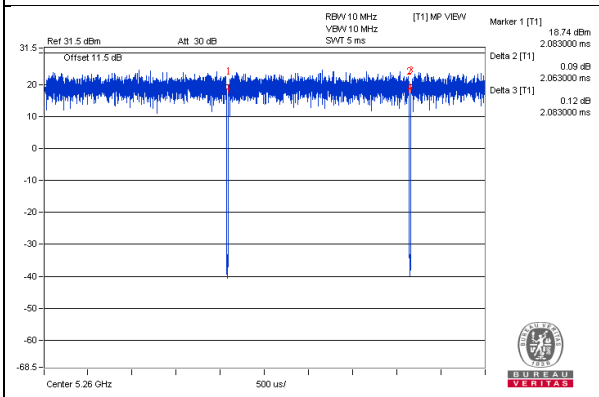
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
RE<1G	25deg. C, 67%RH	120Vac, 60Hz	Gary Cheng
PLC	25deg. C, 62%RH	120Vac, 60Hz	Jyunchun Lin
APCM	24deg. C, 66%RH	120Vac, 60Hz	Anderson Chen

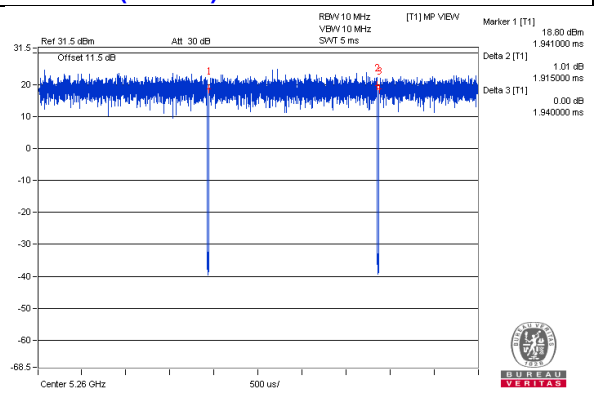
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.063 ms/2.083 ms = 0.99
802.11ac (VHT20): Duty cycle = 1.915 ms/1.94 ms = 0.987
802.11ac (VHT40): Duty cycle = 0.946 ms/0.964 ms = 0.981
802.11ac (VHT80): Duty cycle = 0.46 ms/0.478 ms = 0.962, Duty factor = 10 * log(1/0.962) = 0.17

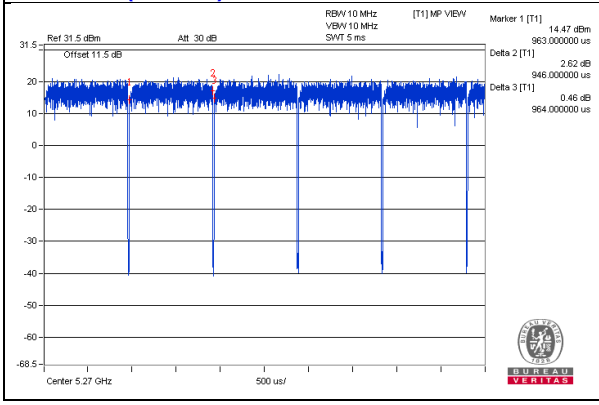
802.11a



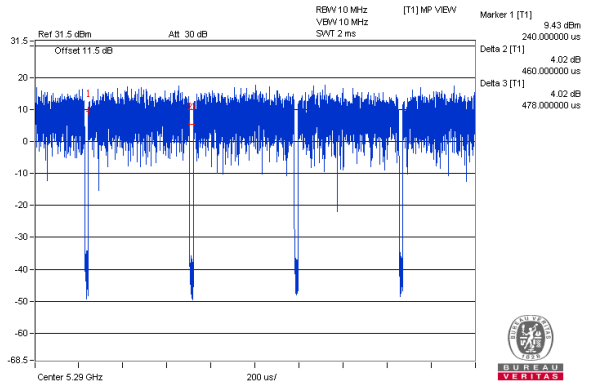
802.11ac (VHT20)



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.

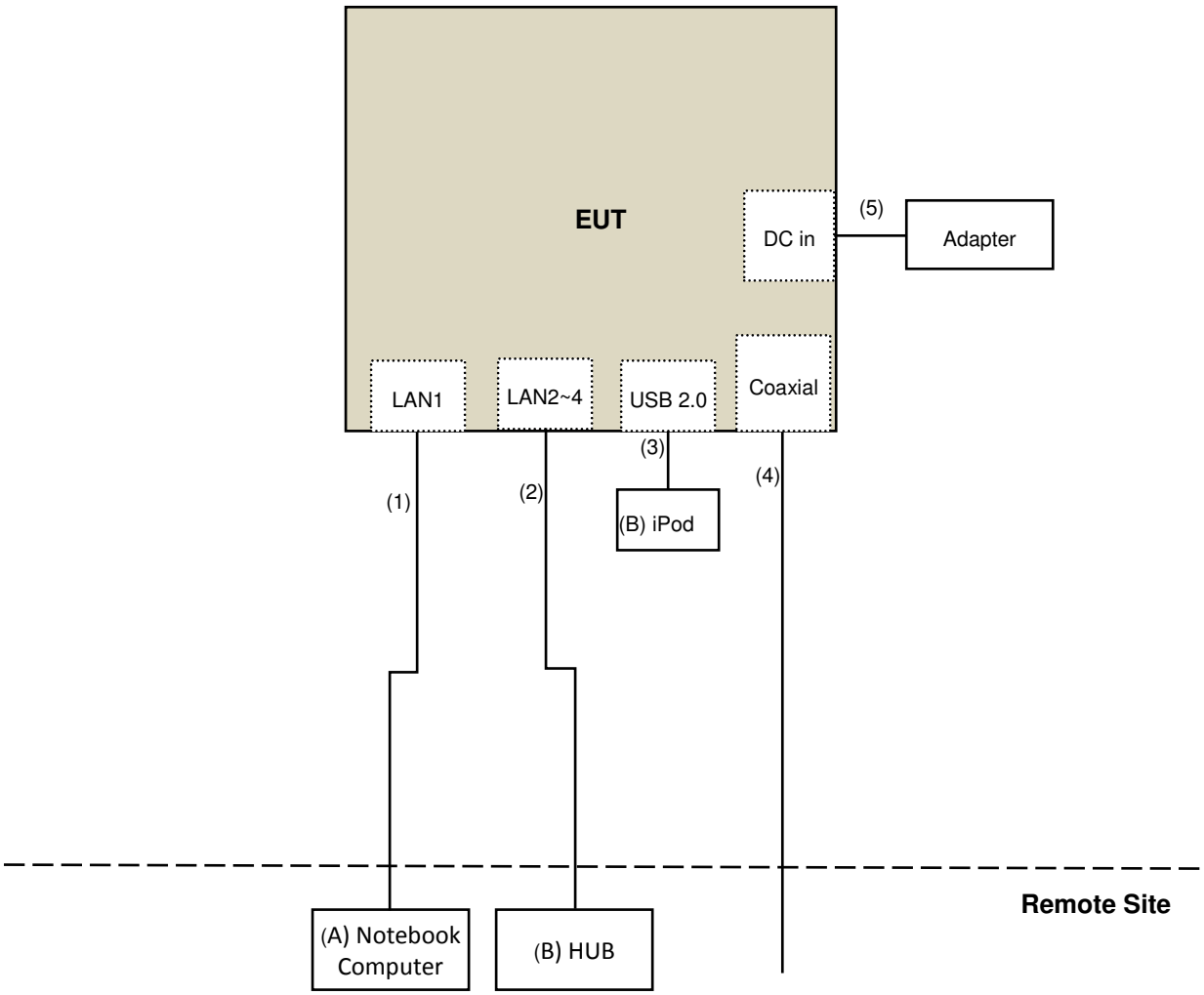
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
C.	iPod	Apple	MC749TA/A	CC4DMFJUDFDM	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45	1	10	No	0	Provided by Lab
2.	RJ-45	3	10	No	0	Provided by Lab
3.	USB	1	0.1	Yes	0	Provided by Lab
4.	Coaxial	1	10	Yes	0	Provided by Lab
5.	DC	1	1.8	No	0	Supplied by client

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v01r03
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

For below 1GHz test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-01	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Jan. 04, 2016	Jan. 03, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 02, 2016	Apr. 01, 2017
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA

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 Loop antenna was used for all emissions below 30 MHz.
4. The test was performed in 966 Chamber No. 4.
5. The FCC Site Registration No. is 292998
6. The CANADA Site Registration No. is 20331-2
7. Tested Date: June 23, 2016

For above 1GHz test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	Aug. 12, 2015	Aug. 11, 2016
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Jan. 20, 2016	Jan. 19, 2017
Pre-Amplifier Agilent	8449B	3008A02465	Apr. 05, 2016	Apr. 04, 2017
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150317 150321 150322	Mar. 30, 2016	Mar. 29, 2017
Spectrum Analyzer Keysight	N9030A	MY54490520	July 26, 2015	July 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 15, 2016	Jan. 14, 2017
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Jan. 08, 2016	Jan. 07, 2017
RF Cable	SUCOFLEX 102	36432/2 36441/2	Jan. 16, 2016	Jan. 15, 2017
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 3.
3. The FCC Site Registration No. is 147459
4. The CANADA Site Registration No. is 20331-1
6. Tested Date: July 23, 2016

4.1.3 Test Procedure

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 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:

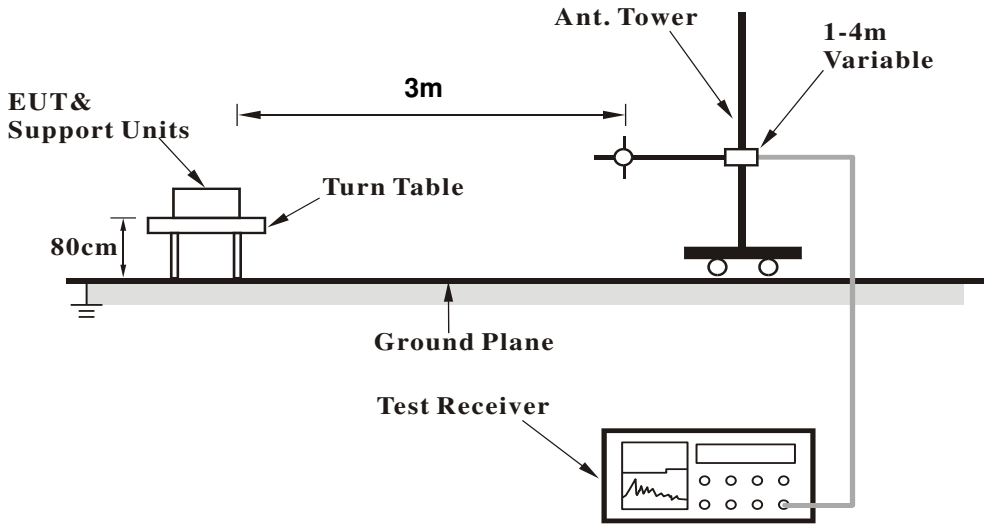
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

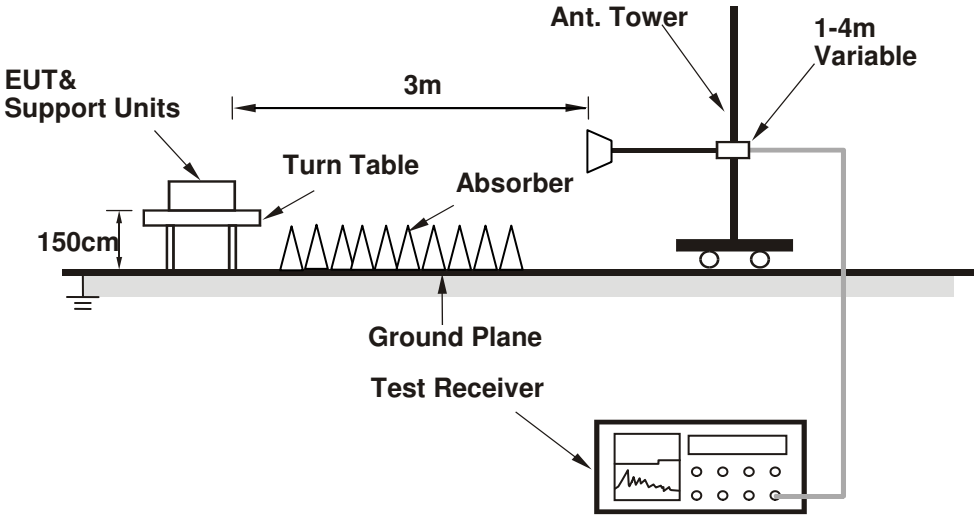
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range 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 Notebook Computer which is placed on remote site.
b. Contorlling software (Mtool.exe [2.0.1.0]) 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	51.4 PK	74.0	-22.6	2.47 H	285	48.4	3.0
2	5150.00	39.5 AV	54.0	-14.5	2.47 H	285	36.5	3.0
3	*5260.00	113.0 PK			2.47 H	285	109.7	3.3
4	*5260.00	103.1 AV			2.47 H	285	99.8	3.3
5	#10520.00	53.8 PK	74.0	-20.2	2.26 H	208	39.7	14.1
6	#10520.00	42.5 AV	54.0	-11.5	2.26 H	208	28.4	14.1
7	15780.00	47.6 PK	74.0	-26.4	2.66 H	128	32.4	15.2
8	15780.00	35.4 AV	54.0	-18.6	2.66 H	128	20.2	15.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	53.0 PK	74.0	-21.0	2.38 V	67	50.0	3.0
2	5150.00	41.0 AV	54.0	-13.0	2.38 V	67	38.0	3.0
3	*5260.00	114.1 PK			2.38 V	67	110.8	3.3
4	*5260.00	104.3 AV			2.38 V	67	101.0	3.3
5	#10520.00	54.5 PK	74.0	-19.5	3.58 V	273	40.4	14.1
6	#10520.00	40.8 AV	54.0	-13.2	3.58 V	273	26.7	14.1
7	15780.00	48.1 PK	74.0	-25.9	1.68 V	243	32.9	15.2
8	15780.00	36.2 AV	54.0	-17.8	1.68 V	243	21.0	15.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	112.5 PK			2.50 H	265	109.2	3.3
2	*5300.00	102.7 AV			2.50 H	265	99.4	3.3
3	10600.00	54.4 PK	74.0	-19.6	2.32 H	209	40.1	14.3
4	10600.00	43.0 AV	54.0	-11.0	2.32 H	209	28.7	14.3
5	15900.00	47.8 PK	74.0	-26.2	2.63 H	120	32.7	15.1
6	15900.00	35.6 AV	54.0	-18.4	2.63 H	120	20.5	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	113.9 PK			2.38 V	66	110.6	3.3
2	*5300.00	104.1 AV			2.38 V	66	100.8	3.3
3	10600.00	54.2 PK	74.0	-19.8	3.61 V	268	39.9	14.3
4	10600.00	40.5 AV	54.0	-13.5	3.61 V	268	26.2	14.3
5	15900.00	48.0 PK	74.0	-26.0	1.65 V	242	32.9	15.1
6	15900.00	35.9 AV	54.0	-18.1	1.65 V	242	20.8	15.1

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.

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	113.3 PK			2.42 H	298	109.8	3.5
2	*5320.00	103.5 AV			2.42 H	298	100.0	3.5
3	5350.00	56.8 PK	74.0	-17.2	2.42 H	298	53.3	3.5
4	5350.00	43.5 AV	54.0	-10.5	2.42 H	298	40.0	3.5
5	10640.00	53.2 PK	74.0	-20.8	2.24 H	212	38.9	14.3
6	10640.00	42.0 AV	54.0	-12.0	2.24 H	212	27.7	14.3
7	15960.00	47.8 PK	74.0	-26.2	2.61 H	127	32.7	15.1
8	15960.00	35.7 AV	54.0	-18.3	2.61 H	127	20.6	15.1
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	*5320.00	114.4 PK			2.37 V	63	110.9	3.5
2	*5320.00	104.7 AV			2.37 V	63	101.2	3.5
3	5350.00	58.4 PK	74.0	-15.6	2.37 V	63	54.9	3.5
4	5350.00	45.1 AV	54.0	-8.9	2.37 V	63	41.6	3.5
5	10640.00	54.7 PK	74.0	-19.3	3.58 V	255	40.4	14.3
6	10640.00	40.7 AV	54.0	-13.3	3.58 V	255	26.4	14.3
7	15960.00	48.1 PK	74.0	-25.9	1.60 V	236	33.0	15.1
8	15960.00	35.8 AV	54.0	-18.2	1.60 V	236	20.7	15.1

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.

CHANNEL	TX Channel 100	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	56.7 PK	74.0	-17.3	2.49 H	285	53.0	3.7
2	#5470.00	43.5 AV	54.0	-10.5	2.49 H	285	39.8	3.7
3	*5500.00	113.5 PK			2.49 H	285	109.7	3.8
4	*5500.00	103.7 AV			2.49 H	285	99.9	3.8
5	11000.00	54.4 PK	74.0	-19.6	2.23 H	206	39.2	15.2
6	11000.00	42.9 AV	54.0	-11.1	2.23 H	206	27.7	15.2
7	#16500.00	47.2 PK	74.0	-26.8	2.65 H	119	29.8	17.4
8	#16500.00	35.3 AV	54.0	-18.7	2.65 H	119	17.9	17.4
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	#5470.00	58.5 PK	74.0	-15.5	2.40 V	89	54.8	3.7
2	#5470.00	45.1 AV	54.0	-8.9	2.40 V	89	41.4	3.7
3	*5500.00	114.7 PK			2.40 V	89	110.9	3.8
4	*5500.00	104.7 AV			2.40 V	89	100.9	3.8
5	11000.00	54.8 PK	74.0	-19.2	3.60 V	265	39.6	15.2
6	11000.00	41.0 AV	54.0	-13.0	3.60 V	265	25.8	15.2
7	#16500.00	48.0 PK	74.0	-26.0	1.65 V	242	30.6	17.4
8	#16500.00	35.9 AV	54.0	-18.1	1.65 V	242	18.5	17.4

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 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	112.1 PK			2.52 H	287	108.2	3.9
2	*5580.00	102.7 AV			2.52 H	287	98.8	3.9
3	11160.00	53.4 PK	74.0	-20.6	2.28 H	219	38.2	15.2
4	11160.00	42.2 AV	54.0	-11.8	2.28 H	219	27.0	15.2
5	#16740.00	47.3 PK	74.0	-26.7	2.70 H	121	29.0	18.3
6	#16740.00	35.4 AV	54.0	-18.6	2.70 H	121	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	*5580.00	113.7 PK			2.34 V	85	109.8	3.9
2	*5580.00	104.1 AV			2.34 V	85	100.2	3.9
3	11160.00	54.0 PK	74.0	-20.0	3.62 V	254	38.8	15.2
4	11160.00	40.5 AV	54.0	-13.5	3.62 V	254	25.3	15.2
5	#16740.00	48.0 PK	74.0	-26.0	1.65 V	257	29.7	18.3
6	#16740.00	35.9 AV	54.0	-18.1	1.65 V	257	17.6	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.

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	112.6 PK			2.52 H	279	108.4	4.2
2	*5700.00	102.6 AV			2.52 H	279	98.4	4.2
3	#5725.00	56.2 PK	74.0	-17.8	2.52 H	279	52.0	4.2
4	#5725.00	43.0 AV	54.0	-11.0	2.52 H	279	38.8	4.2
5	11400.00	53.9 PK	74.0	-20.1	2.25 H	217	38.4	15.5
6	11400.00	42.6 AV	54.0	-11.4	2.25 H	217	27.1	15.5
7	#17100.00	47.4 PK	74.0	-26.6	2.72 H	114	27.3	20.1
8	#17100.00	35.2 AV	54.0	-18.8	2.72 H	114	15.1	20.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	113.8 PK			2.32 V	72	109.6	4.2
2	*5700.00	103.8 AV			2.32 V	72	99.6	4.2
3	#5725.00	57.9 PK	74.0	-16.1	2.32 V	72	53.7	4.2
4	#5725.00	44.7 AV	54.0	-9.3	2.32 V	72	40.5	4.2
5	11400.00	54.5 PK	74.0	-19.5	3.57 V	253	39.0	15.5
6	11400.00	40.8 AV	54.0	-13.2	3.57 V	253	25.3	15.5
7	#17100.00	47.9 PK	74.0	-26.1	1.62 V	254	27.8	20.1
8	#17100.00	35.8 AV	54.0	-18.2	1.62 V	254	15.7	20.1

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.

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	56.8 PK	74.0	-17.2	2.50 H	284	53.8	3.0
2	5150.00	43.6 AV	54.0	-10.4	2.50 H	284	40.6	3.0
3	*5260.00	111.2 PK			2.50 H	284	107.9	3.3
4	*5260.00	101.2 AV			2.50 H	284	97.9	3.3
5	#10520.00	54.5 PK	74.0	-19.5	2.25 H	195	40.4	14.1
6	#10520.00	42.9 AV	54.0	-11.1	2.25 H	195	28.8	14.1
7	15780.00	47.7 PK	74.0	-26.3	2.67 H	123	32.5	15.2
8	15780.00	35.7 AV	54.0	-18.3	2.67 H	123	20.5	15.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.2 PK	74.0	-15.8	2.38 V	84	55.2	3.0
2	5150.00	44.9 AV	54.0	-9.1	2.38 V	84	41.9	3.0
3	*5260.00	112.7 PK			2.38 V	84	109.4	3.3
4	*5260.00	102.5 AV			2.38 V	84	99.2	3.3
5	#10520.00	54.5 PK	74.0	-19.5	3.56 V	260	40.4	14.1
6	#10520.00	40.7 AV	54.0	-13.3	3.56 V	260	26.6	14.1
7	15780.00	48.5 PK	74.0	-25.5	1.70 V	242	33.3	15.2
8	15780.00	36.3 AV	54.0	-17.7	1.70 V	242	21.1	15.2

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 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	110.6 PK			2.49 H	288	107.3	3.3
2	*5300.00	100.4 AV			2.49 H	288	97.1	3.3
3	10600.00	53.8 PK	74.0	-20.2	2.24 H	216	39.5	14.3
4	10600.00	42.8 AV	54.0	-11.2	2.24 H	216	28.5	14.3
5	15900.00	47.2 PK	74.0	-26.8	2.64 H	125	32.1	15.1
6	15900.00	35.2 AV	54.0	-18.8	2.64 H	125	20.1	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	112.1 PK			2.38 V	64	108.8	3.3
2	*5300.00	102.1 AV			2.38 V	64	98.8	3.3
3	10600.00	53.8 PK	74.0	-20.2	3.64 V	275	39.5	14.3
4	10600.00	40.2 AV	54.0	-13.8	3.64 V	275	25.9	14.3
5	15900.00	47.7 PK	74.0	-26.3	1.62 V	248	32.6	15.1
6	15900.00	35.9 AV	54.0	-18.1	1.62 V	248	20.8	15.1

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	111.6 PK			2.42 H	282	108.1	3.5
2	*5320.00	101.3 AV			2.42 H	282	97.8	3.5
3	5350.00	56.5 PK	74.0	-17.5	2.42 H	282	53.0	3.5
4	5350.00	43.2 AV	54.0	-10.8	2.42 H	282	39.7	3.5
5	10640.00	54.4 PK	74.0	-19.6	2.28 H	196	40.1	14.3
6	10640.00	42.9 AV	54.0	-11.1	2.28 H	196	28.6	14.3
7	15960.00	47.3 PK	74.0	-26.7	2.69 H	117	32.2	15.1
8	15960.00	35.1 AV	54.0	-18.9	2.69 H	117	20.0	15.1
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	*5320.00	113.3 PK			2.40 V	90	109.8	3.5
2	*5320.00	102.9 AV			2.40 V	90	99.4	3.5
3	5350.00	58.2 PK	74.0	-15.8	2.40 V	90	54.7	3.5
4	5350.00	45.1 AV	54.0	-8.9	2.40 V	90	41.6	3.5
5	10640.00	54.2 PK	74.0	-19.8	3.66 V	256	39.9	14.3
6	10640.00	40.8 AV	54.0	-13.2	3.66 V	256	26.5	14.3
7	15960.00	48.1 PK	74.0	-25.9	1.66 V	229	33.0	15.1
8	15960.00	36.3 AV	54.0	-17.7	1.66 V	229	21.2	15.1

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.

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	56.1 PK	74.0	-17.9	2.50 H	269	52.4	3.7
2	#5470.00	43.1 AV	54.0	-10.9	2.50 H	269	39.4	3.7
3	*5500.00	111.6 PK			2.50 H	269	107.8	3.8
4	*5500.00	101.4 AV			2.50 H	269	97.6	3.8
5	11000.00	53.8 PK	74.0	-20.2	2.30 H	213	38.6	15.2
6	11000.00	42.5 AV	54.0	-11.5	2.30 H	213	27.3	15.2
7	#16500.00	47.7 PK	74.0	-26.3	2.70 H	112	30.3	17.4
8	#16500.00	35.7 AV	54.0	-18.3	2.70 H	112	18.3	17.4
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	#5470.00	58.0 PK	74.0	-16.0	2.37 V	75	54.3	3.7
2	#5470.00	44.7 AV	54.0	-9.3	2.37 V	75	41.0	3.7
3	*5500.00	112.9 PK			2.37 V	75	109.1	3.8
4	*5500.00	102.9 AV			2.37 V	75	99.1	3.8
5	11000.00	53.7 PK	74.0	-20.3	3.56 V	272	38.5	15.2
6	11000.00	40.0 AV	54.0	-14.0	3.56 V	272	24.8	15.2
7	#16500.00	48.0 PK	74.0	-26.0	1.64 V	228	30.6	17.4
8	#16500.00	36.0 AV	54.0	-18.0	1.64 V	228	18.6	17.4

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 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	110.4 PK			2.42 H	281	106.5	3.9
2	*5580.00	100.6 AV			2.42 H	281	96.7	3.9
3	11160.00	54.0 PK	74.0	-20.0	2.25 H	200	38.8	15.2
4	11160.00	42.5 AV	54.0	-11.5	2.25 H	200	27.3	15.2
5	#16740.00	47.7 PK	74.0	-26.3	2.72 H	120	29.4	18.3
6	#16740.00	35.8 AV	54.0	-18.2	2.72 H	120	17.5	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	*5580.00	112.5 PK			2.35 V	72	108.6	3.9
2	*5580.00	102.5 AV			2.35 V	72	98.6	3.9
3	11160.00	54.6 PK	74.0	-19.4	3.57 V	265	39.4	15.2
4	11160.00	40.7 AV	54.0	-13.3	3.57 V	265	25.5	15.2
5	#16740.00	48.3 PK	74.0	-25.7	1.62 V	254	30.0	18.3
6	#16740.00	36.3 AV	54.0	-17.7	1.62 V	254	18.0	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.

CHANNEL	TX Channel 140	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	*5700.00	111.4 PK			2.50 H	286	107.2	4.2
2	*5700.00	100.8 AV			2.50 H	286	96.6	4.2
3	#5725.00	51.2 PK	74.0	-22.8	2.50 H	286	47.0	4.2
4	#5725.00	39.1 AV	54.0	-14.9	2.50 H	286	34.9	4.2
5	11400.00	53.6 PK	74.0	-20.4	2.25 H	219	38.1	15.5
6	11400.00	42.3 AV	54.0	-11.7	2.25 H	219	26.8	15.5
7	#17100.00	47.5 PK	74.0	-26.5	2.66 H	122	27.4	20.1
8	#17100.00	35.1 AV	54.0	-18.9	2.66 H	122	15.0	20.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	112.8 PK			2.32 V	64	108.6	4.2
2	*5700.00	102.5 AV			2.32 V	64	98.3	4.2
3	#5725.00	53.0 PK	74.0	-21.0	2.32 V	64	48.8	4.2
4	#5725.00	40.9 AV	54.0	-13.1	2.32 V	64	36.7	4.2
5	11400.00	54.3 PK	74.0	-19.7	3.60 V	273	38.8	15.5
6	11400.00	40.7 AV	54.0	-13.3	3.60 V	273	25.2	15.5
7	#17100.00	47.4 PK	74.0	-26.6	1.60 V	226	27.3	20.1
8	#17100.00	35.4 AV	54.0	-18.6	1.60 V	226	15.3	20.1

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.

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	52.3 PK	74.0	-21.7	2.42 H	277	49.3	3.0
2	5150.00	39.9 AV	54.0	-14.1	2.42 H	277	36.9	3.0
3	*5270.00	109.1 PK			2.42 H	277	105.8	3.3
4	*5270.00	98.4 AV			2.42 H	277	95.1	3.3
5	#10540.00	54.0 PK	74.0	-20.0	2.27 H	211	39.8	14.2
6	#10540.00	42.5 AV	54.0	-11.5	2.27 H	211	28.3	14.2
7	15810.00	47.0 PK	74.0	-27.0	2.72 H	132	32.0	15.0
8	15810.00	34.9 AV	54.0	-19.1	2.72 H	132	19.9	15.0
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	53.3 PK	74.0	-20.7	2.31 V	83	50.3	3.0
2	5150.00	41.0 AV	54.0	-13.0	2.31 V	83	38.0	3.0
3	*5270.00	110.1 PK			2.31 V	83	106.8	3.3
4	*5270.00	99.4 AV			2.31 V	83	96.1	3.3
5	#10540.00	54.3 PK	74.0	-19.7	3.65 V	282	40.1	14.2
6	#10540.00	40.7 AV	54.0	-13.3	3.65 V	282	26.5	14.2
7	15810.00	47.7 PK	74.0	-26.3	1.69 V	252	32.7	15.0
8	15810.00	35.6 AV	54.0	-18.4	1.69 V	252	20.6	15.0

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	109.4 PK			2.50 H	273	106.0	3.4
2	*5310.00	98.6 AV			2.50 H	273	95.2	3.4
3	5350.00	68.3 PK	74.0	-5.7	2.50 H	273	64.8	3.5
4	5350.00	51.6 AV	54.0	-2.4	2.50 H	273	48.1	3.5
5	10620.00	54.3 PK	74.0	-19.7	2.30 H	206	40.0	14.3
6	10620.00	42.9 AV	54.0	-11.1	2.30 H	206	28.6	14.3
7	15930.00	47.9 PK	74.0	-26.1	2.70 H	137	32.8	15.1
8	15930.00	35.4 AV	54.0	-18.6	2.70 H	137	20.3	15.1
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	*5310.00	110.2 PK			2.63 V	79	106.8	3.4
2	*5310.00	99.5 AV			2.63 V	79	96.1	3.4
3	5350.00	69.1 PK	74.0	-4.9	2.63 V	79	65.6	3.5
4	5350.00	52.9 AV	54.0	-1.1	2.63 V	79	49.4	3.5
5	10620.00	53.9 PK	74.0	-20.1	3.56 V	267	39.6	14.3
6	10620.00	40.3 AV	54.0	-13.7	3.56 V	267	26.0	14.3
7	15930.00	47.7 PK	74.0	-26.3	1.60 V	251	32.6	15.1
8	15930.00	35.4 AV	54.0	-18.6	1.60 V	251	20.3	15.1

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	68.2 PK	74.0	-5.8	2.48 H	294	64.5	3.7
2	#5470.00	52.2 AV	54.0	-1.8	2.48 H	294	48.5	3.7
3	*5510.00	110.1 PK			2.48 H	294	106.3	3.8
4	*5510.00	98.1 AV			2.48 H	294	94.3	3.8
5	11020.00	53.7 PK	74.0	-20.3	2.27 H	209	38.6	15.1
6	11020.00	42.4 AV	54.0	-11.6	2.27 H	209	27.3	15.1
7	#16530.00	47.6 PK	74.0	-26.4	2.63 H	123	30.1	17.5
8	#16530.00	35.4 AV	54.0	-18.6	2.63 H	123	17.9	17.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	69.8 PK	74.0	-4.2	2.35 V	77	66.1	3.7
2	**#5470.00**	**53.9 AV**	**54.0**	**-0.1**	**2.35 V**	**77**	**50.2**	**3.7**
3	*5510.00	111.5 PK			2.35 V	77	107.7	3.8
4	*5510.00	99.8 AV			2.35 V	77	96.0	3.8
5	11020.00	54.4 PK	74.0	-19.6	3.64 V	257	39.3	15.1
6	11020.00	41.0 AV	54.0	-13.0	3.64 V	257	25.9	15.1
7	#16530.00	48.1 PK	74.0	-25.9	1.62 V	251	30.6	17.5
8	#16530.00	36.0 AV	54.0	-18.0	1.62 V	251	18.5	17.5

REMARKS:

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

CHANNEL	TX Channel 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	108.0 PK			2.53 H	294	104.1	3.9
2	*5550.00	97.4 AV			2.53 H	294	93.5	3.9
3	11100.00	53.9 PK	74.0	-20.1	2.25 H	196	38.8	15.1
4	11100.00	42.8 AV	54.0	-11.2	2.25 H	196	27.7	15.1
5	#16650.00	48.1 PK	74.0	-25.9	2.70 H	141	30.1	18.0
6	#16650.00	35.7 AV	54.0	-18.3	2.70 H	141	17.7	18.0
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	*5550.00	109.8 PK			2.41 V	67	105.9	3.9
2	*5550.00	99.3 AV			2.41 V	67	95.4	3.9
3	11100.00	54.1 PK	74.0	-19.9	3.65 V	263	39.0	15.1
4	11100.00	40.5 AV	54.0	-13.5	3.65 V	263	25.4	15.1
5	#16650.00	48.1 PK	74.0	-25.9	1.67 V	241	30.1	18.0
6	#16650.00	35.8 AV	54.0	-18.2	1.67 V	241	17.8	18.0

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 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	108.7 PK			2.51 H	276	104.7	4.0
2	*5670.00	97.8 AV			2.51 H	276	93.8	4.0
3	#5725.00	57.1 PK	74.0	-16.9	2.51 H	276	52.9	4.2
4	#5725.00	43.9 AV	54.0	-10.1	2.51 H	276	39.7	4.2
5	11340.00	53.3 PK	74.0	-20.7	2.23 H	210	38.0	15.3
6	11340.00	42.1 AV	54.0	-11.9	2.23 H	210	26.8	15.3
7	#17010.00	47.0 PK	74.0	-27.0	2.62 H	127	27.1	19.9
8	#17010.00	35.1 AV	54.0	-18.9	2.62 H	127	15.2	19.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	110.1 PK			2.39 V	87	106.1	4.0
2	*5670.00	99.3 AV			2.39 V	87	95.3	4.0
3	#5725.00	58.6 PK	74.0	-15.4	2.39 V	87	54.4	4.2
4	#5725.00	45.6 AV	54.0	-8.4	2.39 V	87	41.4	4.2
5	11340.00	54.3 PK	74.0	-19.7	3.63 V	271	39.0	15.3
6	11340.00	40.5 AV	54.0	-13.5	3.63 V	271	25.2	15.3
7	#17010.00	48.2 PK	74.0	-25.8	1.70 V	256	28.3	19.9
8	#17010.00	35.9 AV	54.0	-18.1	1.70 V	256	16.0	19.9

REMARKS:

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

802.11ac (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	53.0 PK	74.0	-21.0	2.42 H	282	50.0	3.0
2	5150.00	40.7 AV	54.0	-13.3	2.42 H	282	37.7	3.0
3	*5290.00	106.5 PK			2.42 H	282	103.2	3.3
4	*5290.00	93.7 AV			2.42 H	282	90.4	3.3
5	5352.00	70.4 PK	74.0	-3.6	2.42 H	282	66.9	3.5
6	5352.00	51.3 AV	54.0	-2.7	2.42 H	282	47.8	3.5
7	#10580.00	53.5 PK	74.0	-20.5	2.21 H	196	39.2	14.3
8	#10580.00	42.5 AV	54.0	-11.5	2.21 H	196	28.2	14.3
9	15870.00	48.0 PK	74.0	-26.0	2.65 H	120	33.0	15.0
10	15870.00	35.7 AV	54.0	-18.3	2.65 H	120	20.7	15.0
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	54.5 PK	74.0	-19.5	2.64 V	100	51.5	3.0
2	5150.00	42.1 AV	54.0	-11.9	2.64 V	100	39.1	3.0
3	*5290.00	108.4 PK			2.64 V	100	105.1	3.3
4	*5290.00	95.5 AV			2.64 V	100	92.2	3.3
5	5352.00	72.1 PK	74.0	-1.9	2.64 V	100	68.6	3.5
6	5352.00	53.1 AV	54.0	-0.9	2.64 V	100	49.6	3.5
7	#10580.00	54.1 PK	74.0	-19.9	3.57 V	284	39.8	14.3
8	#10580.00	40.6 AV	54.0	-13.4	3.57 V	284	26.3	14.3
9	15870.00	47.3 PK	74.0	-26.7	1.66 V	227	32.3	15.0
10	15870.00	35.5 AV	54.0	-18.5	1.66 V	227	20.5	15.0

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 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	69.2 PK	74.0	-4.8	2.44 H	282	65.5	3.7
2	#5470.00	51.9 AV	54.0	-2.1	2.44 H	282	48.2	3.7
3	*5530.00	107.3 PK			2.44 H	282	103.4	3.9
4	*5530.00	93.5 AV			2.44 H	282	89.6	3.9
5	11060.00	53.6 PK	74.0	-20.4	2.31 H	208	38.5	15.1
6	11060.00	42.5 AV	54.0	-11.5	2.31 H	208	27.4	15.1
7	#16590.00	47.0 PK	74.0	-27.0	2.70 H	123	29.3	17.7
8	#16590.00	35.0 AV	54.0	-19.0	2.70 H	123	17.3	17.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	71.0 PK	74.0	-3.0	2.72 V	75	67.3	3.7
2	#5470.00	53.8 AV	54.0	-0.2	2.72 V	75	50.1	3.7
3	*5530.00	108.3 PK			2.72 V	75	104.4	3.9
4	*5530.00	94.5 AV			2.72 V	75	90.6	3.9
5	11060.00	54.5 PK	74.0	-19.5	3.64 V	257	39.4	15.1
6	11060.00	40.8 AV	54.0	-13.2	3.64 V	257	25.7	15.1
7	#16590.00	48.1 PK	74.0	-25.9	1.61 V	256	30.4	17.7
8	#16590.00	35.8 AV	54.0	-18.2	1.61 V	256	18.1	17.7

REMARKS:

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

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) 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	106.0 PK			2.50 H	277	102.1	3.9
2	*5610.00	93.7 AV			2.50 H	277	89.8	3.9
3	#5725.00	55.4 PK	74.0	-18.6	2.50 H	277	51.2	4.2
4	#5725.00	43.3 AV	54.0	-10.7	2.50 H	277	39.1	4.2
5	11220.00	53.7 PK	74.0	-20.3	2.27 H	204	38.5	15.2
6	11220.00	42.1 AV	54.0	-11.9	2.27 H	204	26.9	15.2
7	#16830.00	47.7 PK	74.0	-26.3	2.66 H	126	29.2	18.5
8	#16830.00	35.3 AV	54.0	-18.7	2.66 H	126	16.8	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	*5610.00	107.4 PK			2.74 V	73	103.5	3.9
2	*5610.00	95.2 AV			2.74 V	73	91.3	3.9
3	#5725.00	56.8 PK	74.0	-17.2	2.74 V	73	52.6	4.2
4	#5725.00	44.8 AV	54.0	-9.2	2.74 V	73	40.6	4.2
5	11220.00	53.7 PK	74.0	-20.3	3.61 V	278	38.5	15.2
6	11220.00	40.2 AV	54.0	-13.8	3.61 V	278	25.0	15.2
7	#16830.00	48.2 PK	74.0	-25.8	1.68 V	257	29.7	18.5
8	#16830.00	36.3 AV	54.0	-17.7	1.68 V	257	17.8	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.

Below 1GHz Data：

802.11ac (VHT40)

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 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	49.55	36.9 QP	40.0	-3.1	2.50 H	100	45.7	-8.8
2	87.06	34.9 QP	40.0	-5.1	1.30 H	110	49.5	-14.6
3	107.32	39.5 QP	43.5	-4.0	1.40 H	102	51.2	-11.7
4	375.40	38.3 QP	46.0	-7.7	3.00 H	100	44.4	-6.1
5	625.00	38.3 QP	46.0	-7.7	1.50 H	100	38.3	0.0
6	874.86	40.2 QP	46.0	-5.8	1.00 H	100	36.8	3.4
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	59.44	36.7 QP	40.0	-3.3	1.00 V	100	45.7	-9.0
2	107.42	36.3 QP	43.5	-7.2	1.00 V	100	48.0	-11.7
3	130.52	40.3 QP	43.5	-3.2	1.00 V	186	50.2	-9.9
4	250.26	39.2 QP	46.0	-6.8	1.00 V	100	49.2	-10.0
5	460.66	37.2 QP	46.0	-8.8	1.10 V	100	40.7	-3.5
6	625.39	39.3 QP	46.0	-6.7	1.00 V	100	39.3	0.0

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2015	Oct. 22, 2016
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 28, 2015	Oct. 27, 2016
RF Cable	5D-FB	COACAB-002	Mar. 04, 2016	Mar. 03, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	Jun. 20, 2016	Jun. 19, 2017
Software BVADT	BVADT_Cond_ V7.3.7.3	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: July. 27, 2016

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.

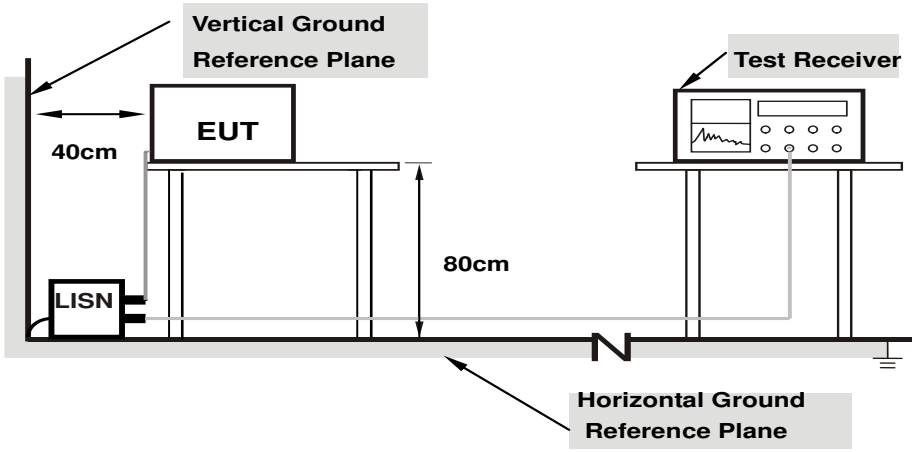
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

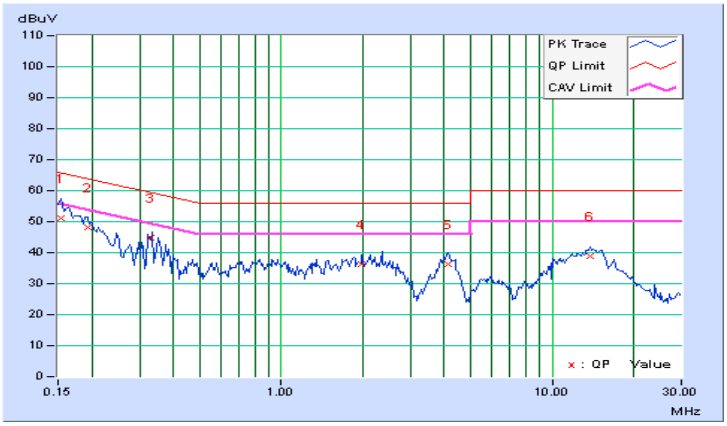
4.2.7 Test Results (Mode 1)

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.21	40.94	29.31	51.15	39.52	65.79	55.79	-14.64	-16.27
2	0.19297	10.22	37.93	28.99	48.15	39.21	63.91	53.91	-15.76	-14.70
3	0.32784	10.22	34.58	30.42	44.80	40.64	59.51	49.51	-14.71	-8.87
4	1.98828	10.31	26.13	20.26	36.44	30.57	56.00	46.00	-19.56	-15.43
5	4.12891	10.30	25.93	21.14	36.23	31.44	56.00	46.00	-19.77	-14.56
6	13.89453	10.97	27.80	23.40	38.77	34.37	60.00	50.00	-21.23	-15.63

Remarks:

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

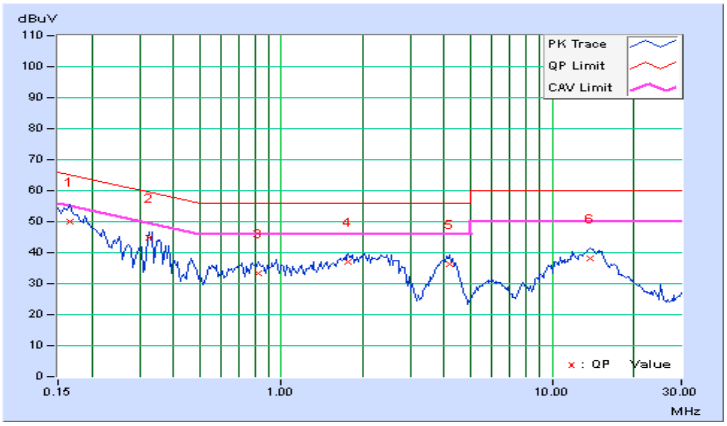


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.20	39.97	28.76	50.17	38.96	65.18	55.18	-15.01	-16.22
2	**0.32522**	**10.20**	**34.62**	**30.90**	**44.82**	**41.10**	**59.57**	**49.57**	**-14.75**	**-8.47**
3	0.82578	10.23	23.00	17.67	33.23	27.90	56.00	46.00	-22.77	-18.10
4	1.77344	10.28	26.61	19.90	36.89	30.18	56.00	46.00	-19.11	-15.82
5	4.17578	10.26	26.14	21.28	36.40	31.54	56.00	46.00	-19.60	-14.46
6	13.74609	10.79	27.38	23.10	38.17	33.89	60.00	50.00	-21.83	-16.11

Remarks:

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



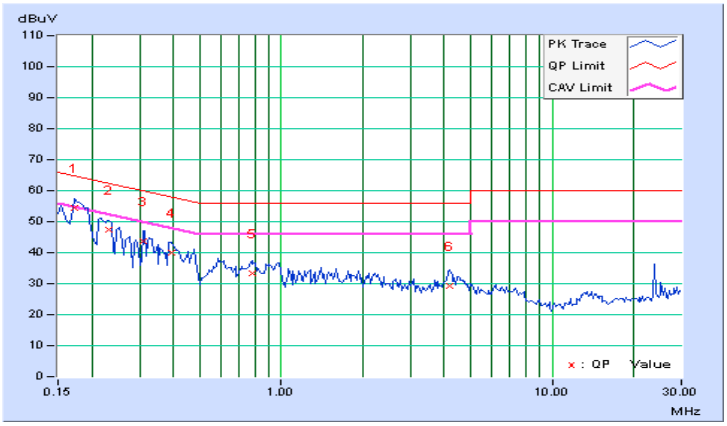
4.2.8 Test Results (Mode 2)

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	10.21	44.27	28.63	54.48	38.84	64.79	54.79	-10.31	-15.95
2	0.23203	10.22	37.06	23.18	47.28	33.40	62.38	52.38	-15.10	-18.98
3	0.31016	10.22	33.64	21.23	43.86	31.45	59.97	49.97	-16.11	-18.52
4	0.39219	10.22	29.90	19.94	40.12	30.16	58.02	48.02	-17.90	-17.86
5	0.77891	10.25	22.92	13.66	33.17	23.91	56.00	46.00	-22.83	-22.09
6	4.17969	10.30	18.88	12.30	29.18	22.60	56.00	46.00	-26.82	-23.40

Remarks:

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

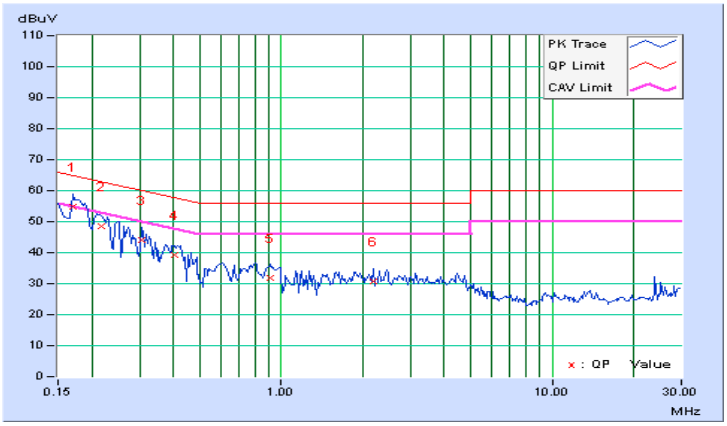


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.20	44.64	26.57	54.84	36.77	64.98	54.98	-10.15	-18.22
2	0.21641	10.21	38.41	23.09	48.62	33.30	62.96	52.96	-14.34	-19.66
3	0.30625	10.20	34.03	20.73	44.23	30.93	60.07	50.07	-15.84	-19.14
4	0.40391	10.20	29.09	19.25	39.29	29.45	57.77	47.77	-18.48	-18.32
5	0.91172	10.23	21.63	12.67	31.86	22.90	56.00	46.00	-24.14	-23.10
6	2.19531	10.29	20.40	14.33	30.69	24.62	56.00	46.00	-25.31	-21.38

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

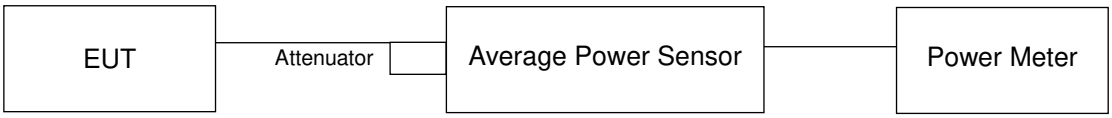
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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 $N_{ANT} \geq 5$.

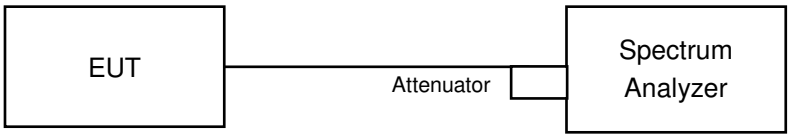
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	0824006	May 26, 2016	May 25, 2017
Power sensor Anritsu	MA2411B	0738172	May 26, 2016	May 25, 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. Tested Date: Aug. 18, 2016

FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP40	100036	Jan. 27, 2016	Jan. 26, 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. Tested Date: Aug. 18, 2016

4.3.4 Test Procedure

FOR AVERAGE POWER MEASUREMENT

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				
52	5260	18.52	18.53	18.26	209.394	23.21	24.00	Pass
60	5300	18.51	18.51	18.23	208.443	23.19	24.00	Pass
64	5320	18.50	18.49	18.26	208.415	23.19	24.00	Pass
100	5500	18.52	18.59	18.21	209.62	23.21	24.00	Pass
116	5580	18.49	18.60	18.23	209.603	23.21	24.00	Pass
140	5700	18.47	18.57	18.22	208.626	23.19	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
52	5260	20.53	20.59	20.43
60	5300	20.54	20.63	20.39
64	5320	20.31	20.62	20.48
100	5500	20.37	20.41	20.41
116	5580	20.49	20.41	20.52
140	5700	20.42	20.47	20.60

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.43	24.1 > 24
60	5300	20.39	24.09 > 24
64	5320	20.31	24.07 > 24
100	5500	20.37	24.08 > 24
116	5580	20.41	24.09 > 24
140	5700	20.42	24.1 > 24

802.11ac (VHT20)

POWER OUTPUT:

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
52	5260	18.46	18.49	18.17	206.393	23.15	24.00	Pass
60	5300	18.47	18.48	18.19	206.693	23.15	24.00	Pass
64	5320	18.45	18.52	18.21	207.327	23.17	24.00	Pass
100	5500	18.47	18.49	18.22	207.313	23.17	24.00	Pass
116	5580	18.45	18.57	18.25	208.763	23.20	24.00	Pass
140	5700	18.46	18.55	18.31	209.524	23.21	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
52	5260	20.58	20.56	20.71
60	5300	20.57	20.56	20.87
64	5320	20.48	20.49	20.76
100	5500	20.64	20.52	20.94
116	5580	20.65	20.57	20.82
140	5700	20.60	20.44	20.97

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.56	24.13 > 24
60	5300	20.56	24.13 > 24
64	5320	20.48	24.11 > 24
100	5500	20.52	24.12 > 24
116	5580	20.57	24.13 > 24
140	5700	20.44	24.1 > 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				
54	5270	19.21	19.16	19.01	245.398	23.90	24.00	Pass
62	5310	19.11	19.17	19.07	244.798	23.89	24.00	Pass
102	5510	18.74	18.76	18.51	220.937	23.44	24.00	Pass
110	5550	19.12	19.11	19.04	243.296	23.86	24.00	Pass
134	5670	19.11	19.15	19.02	243.493	23.86	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
54	5270	41.11	41.17	41.38
62	5310	41.03	41.26	41.66
102	5510	41.25	41.19	41.51
110	5550	41.14	41.14	41.53
134	5670	41.36	41.15	41.64

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.11	27.13 > 24
62	5310	41.03	27.13 > 24
102	5510	41.19	27.14 > 24
110	5550	41.14	27.14 > 24
134	5670	41.15	27.14 > 24

802.11ac (VHT80)

OUTPUT POWER:

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
58	5290	19.29	19.15	18.87	244.232	23.88	24.00	Pass
106	5530	18.69	18.72	18.51	219.392	23.41	24.00	Pass
122	5610	19.21	19.12	18.91	242.83	23.85	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
58	5290	82.25	82.22	83.13
106	5530	82.60	82.87	83.43
122	5610	82.43	82.83	83.27

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.22	30.14 > 24
106	5530	82.60	30.16 > 24
122	5610	82.43	30.16 > 24

Beamforming Mode

802.11ac (VHT20)

POWER OUTPUT:

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
52	5260	18.46	18.49	18.17	206.393	23.15	23.23	Pass
60	5300	18.47	18.48	18.19	206.693	23.15	23.23	Pass
64	5320	18.45	18.52	18.21	207.327	23.17	23.23	Pass
100	5500	18.47	18.49	18.22	207.313	23.17	23.23	Pass
116	5580	18.45	18.57	18.25	208.763	23.20	23.23	Pass
140	5700	18.46	18.55	18.31	209.524	23.21	23.23	Pass

Note: 1. Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi, , so the power limit shall be reduced to "Determined Conducted Limit-(6.77-6).

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
52	5260	20.58	20.56	20.71
60	5300	20.57	20.56	20.87
64	5320	20.48	20.49	20.76
100	5500	20.64	20.52	20.94
116	5580	20.65	20.57	20.82
140	5700	20.60	20.44	20.97

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.56	24.13 > 24
60	5300	20.56	24.13 > 24
64	5320	20.48	24.11 > 24
100	5500	20.52	24.12 > 24
116	5580	20.57	24.13 > 24
140	5700	20.44	24.1 > 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				
54	5270	18.46	18.42	18.22	206.022	23.14	23.23	Pass
62	5310	18.45	18.47	18.19	206.208	23.14	23.23	Pass
102	5510	18.49	18.51	18.26	208.578	23.19	23.23	Pass
110	5550	18.43	18.41	18.23	205.533	23.13	23.23	Pass
134	5670	18.39	18.45	18.25	205.842	23.14	23.23	Pass

Note: 1. Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi, , so the power limit shall be reduced to "Determined Conducted Limit-(6.77-6).

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
54	5270	41.11	41.17	41.38
62	5310	41.03	41.26	41.66
102	5510	41.25	41.19	41.51
110	5550	41.14	41.14	41.53
134	5670	41.36	41.15	41.64

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.11	27.13 > 24
62	5310	41.03	27.13 > 24
102	5510	41.19	27.14 > 24
110	5550	41.14	27.14 > 24
134	5670	41.15	27.14 > 24

802.11ac (VHT80)

OUTPUT POWER:

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
58	5290	18.46	18.47	18.31	208.217	23.19	23.23	Pass
106	5530	18.42	18.45	18.26	206.474	23.15	23.23	Pass
122	5610	18.52	18.62	18.17	209.514	23.21	23.23	Pass

Note: 1. Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi, , so the power limit shall be reduced to "Determined Conducted Limit-(6.77-6).

26dB BANDWIDTH:

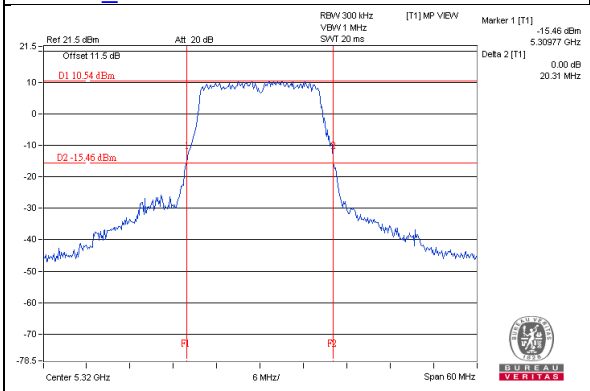
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
58	5290	82.25	82.22	83.13
106	5530	82.60	82.87	83.43
122	5610	82.43	82.83	83.27

Note: For FCC output power limitation is determined based on 26dB bandwidth.

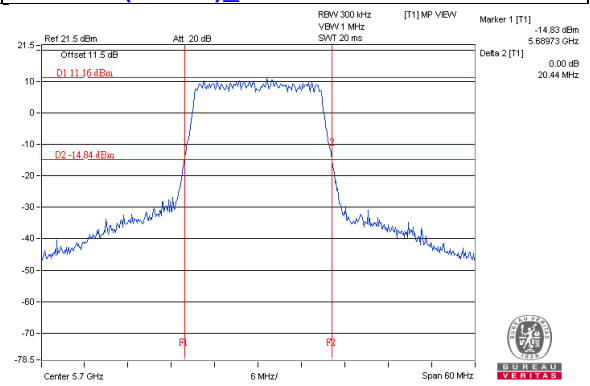
Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.22	30.14 > 24
106	5530	82.60	30.16 > 24
122	5610	82.43	30.16 > 24

Spectrum Plot of Worst Value

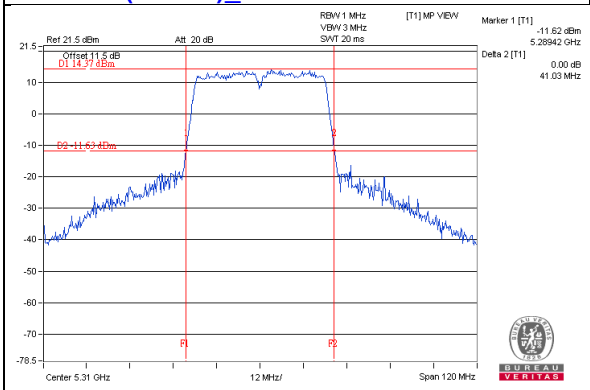
802.11a_Chain 0 / CH64



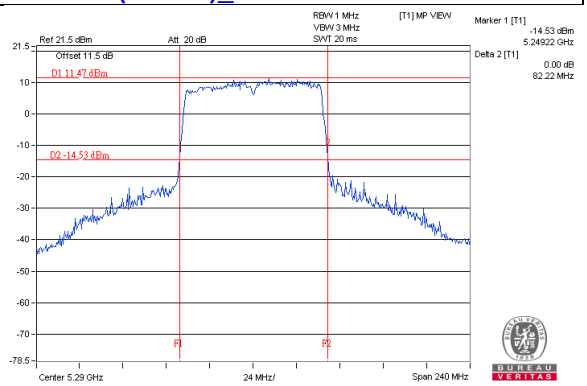
802.11ac (VHT20)_Chain 1 / CH140



802.11ac (VHT40)_Chain 0 / CH62

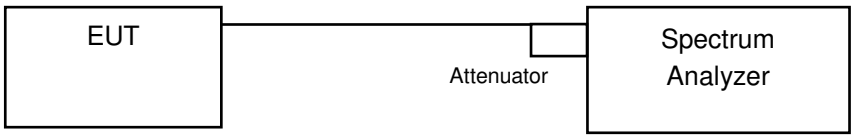


802.11ac (VHT80)_Chain 1 / CH58



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP40	100036	Jan. 27, 2016	Jan. 26, 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. Tested Date: Aug. 18, 2016

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.

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
52	5260	16.80	17.88	16.92
60	5300	16.80	17.76	16.80
64	5320	16.80	17.88	16.92
100	5500	16.68	16.80	16.80
116	5580	16.68	16.80	16.92
140	5700	16.80	16.68	16.80

802.11ac (VHT20)

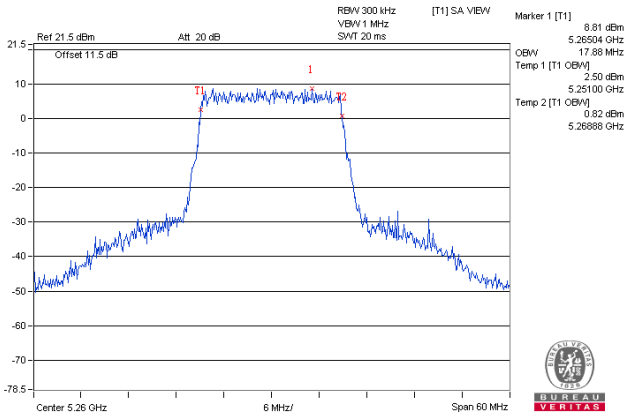
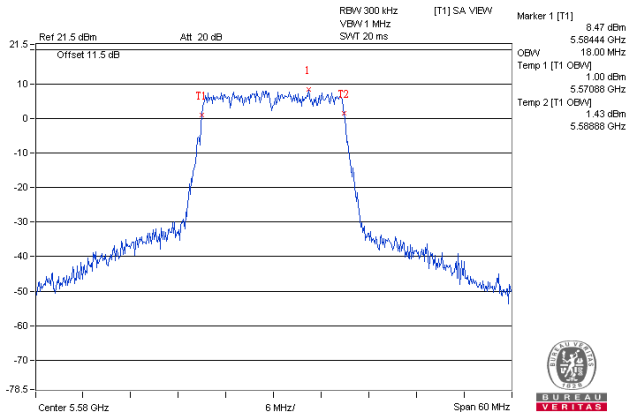
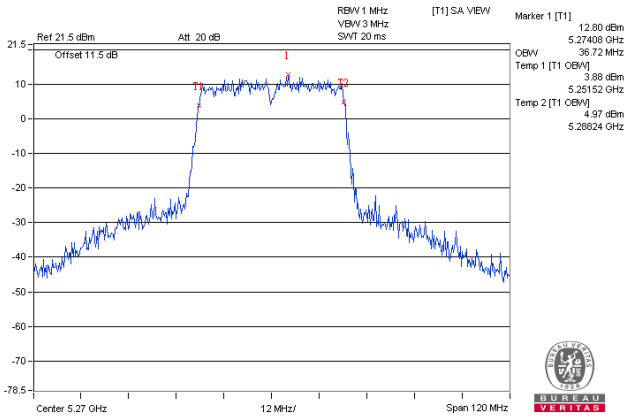
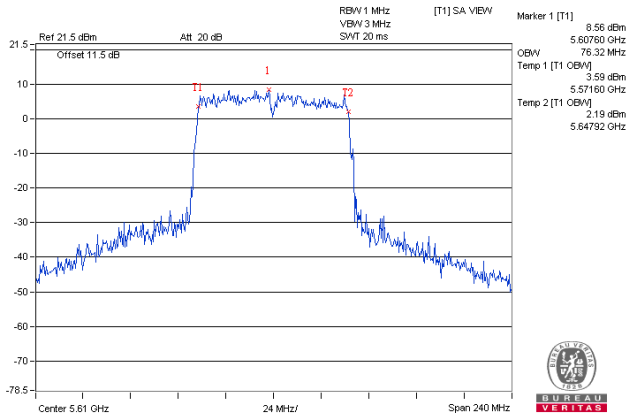
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
52	5260	17.88	17.88	17.88
60	5300	17.88	17.88	17.88
64	5320	17.88	17.88	17.88
100	5500	17.88	17.88	17.88
116	5580	17.88	17.88	18.00
140	5700	17.76	17.88	17.88

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
54	5270	36.72	36.72	36.72
62	5310	36.72	36.72	36.48
102	5510	36.72	36.72	36.72
110	5550	36.72	36.48	36.72
134	5670	36.72	36.72	36.72

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
58	5290	75.84	75.84	75.84
106	5530	75.36	75.84	75.84
122	5610	75.36	75.84	76.32

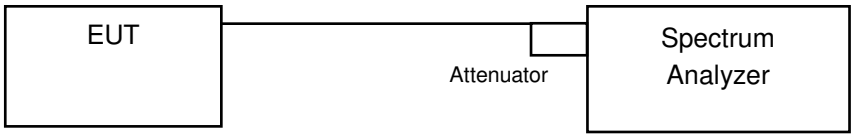
Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH52	**802.11ac (VHT20)_ Chain 2 / CH116**
	
802.11ac (VHT40) _Chain 0 / CH62	**802.11ac (VHT80) _Chain 2 / CH122**
	

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP40	100036	Jan. 27, 2016	Jan. 26, 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. Tested Date: Aug. 18, 2016

4.5.4 Test Procedure

802.11a, 802.11ac (VHT20), 802.11ac (VHT40)

Using method SA-1

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

802.11ac (VHT80)

Using method SA-2

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

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

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
52	5260	5.25	5.33	5.01	9.97	10.23	Pass
60	5300	5.49	5.48	5.07	10.12	10.23	Pass
64	5320	5.40	5.36	4.62	9.91	10.23	Pass
100	5500	5.11	5.55	5.10	10.03	10.23	Pass
116	5580	5.22	5.94	4.90	10.15	10.23	Pass
140	5700	4.68	5.58	5.75	10.13	10.23	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
52	5260	5.27	5.52	4.68	9.94	10.23	Pass
60	5300	5.41	5.45	4.47	9.90	10.23	Pass
64	5320	5.54	5.65	4.37	10.00	10.23	Pass
100	5500	4.90	5.27	5.23	9.91	10.23	Pass
116	5580	5.10	5.44	4.82	9.90	10.23	Pass
140	5700	4.70	5.52	5.33	9.97	10.23	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

802.11ac (VHT40)

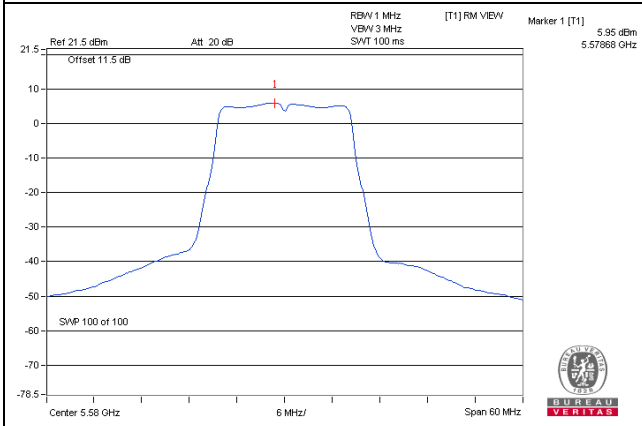
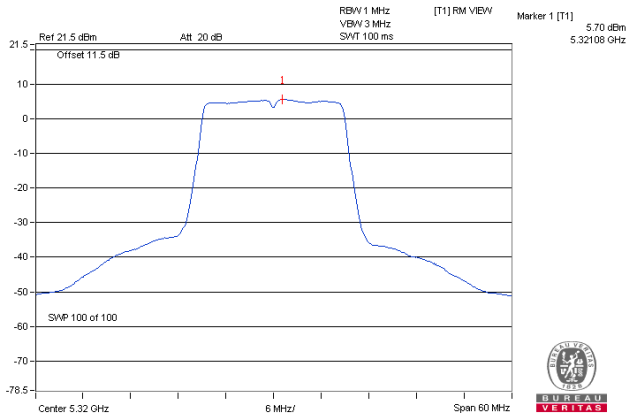
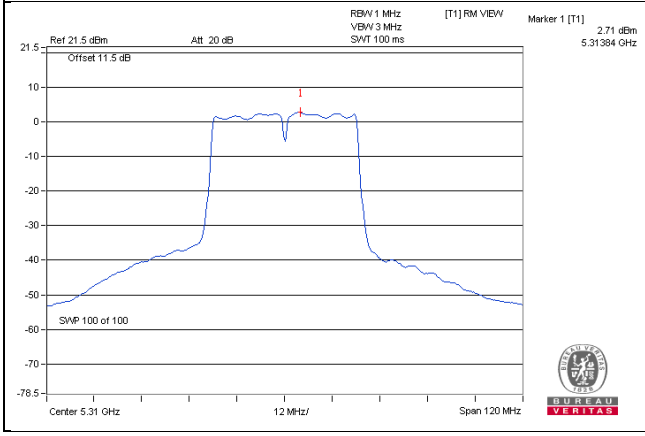
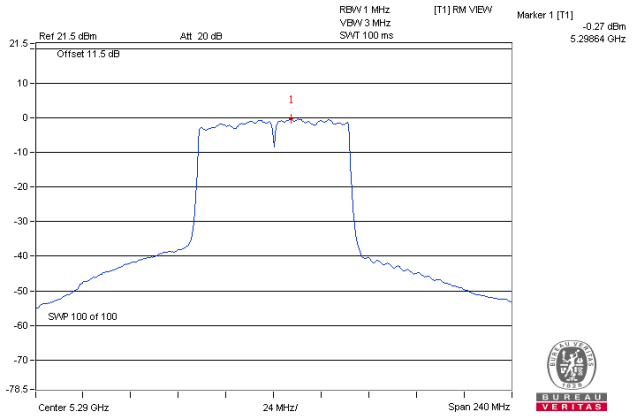
Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
54	5270	2.41	2.28	2.11	7.04	10.23	Pass
62	5310	2.71	2.71	2.48	7.41	10.23	Pass
102	5510	1.29	2.05	1.84	6.51	10.23	Pass
110	5550	2.48	2.13	2.33	7.09	10.23	Pass
134	5670	2.31	2.48	2.16	7.09	10.23	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)			Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
58	5290	-0.27	-0.76	-1.14	0.17	4.23	10.23	Pass
106	5530	-1.15	-1.25	-1.27	0.17	3.71	10.23	Pass
122	5610	-0.44	-0.59	-0.78	0.17	4.34	10.23	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

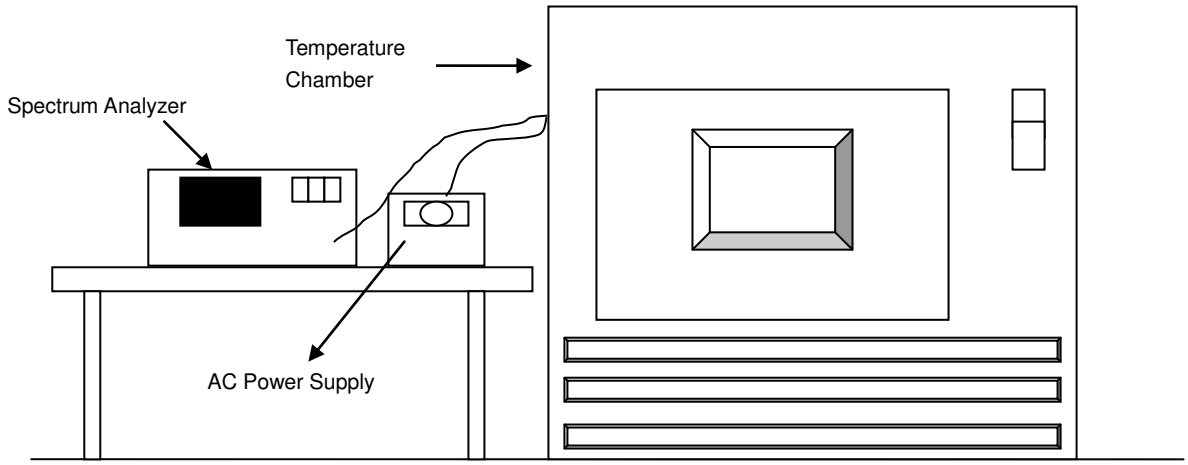
Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH116	**802.11ac (VHT20)_Chain 1 / CH64**
	
802.11ac (VHT40)_Chain 0 / CH62	**802.11ac (VHT80)_Chain 0 / CH58**
	

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP40	100036	Jan. 27, 2016	Jan. 26, 2017
AC Power Source Extech Electronics	6502	1140503	NA	NA
Temperature & Humidity Chamber TERCHY	MHU-225AU	911033	Dec. 03, 2015	Dec. 02, 2016
Digital Multimeter FLUKE	87III	73680266	Nov. 10, 2015	Nov. 09, 2016

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. Tested Date: Aug. 18, 2016

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	5259.9976	Pass	5259.9996	Pass	5259.998	Pass	5259.9984	Pass
40	120	5260.007	Pass	5260.0079	Pass	5260.0068	Pass	5260.005	Pass
30	120	5259.977	Pass	5259.9764	Pass	5259.9797	Pass	5259.9769	Pass
20	120	5259.9818	Pass	5259.9808	Pass	5259.9808	Pass	5259.9815	Pass
10	120	5259.983	Pass	5259.9807	Pass	5259.9791	Pass	5259.9811	Pass
0	120	5260.0239	Pass	5260.0219	Pass	5260.0209	Pass	5260.0233	Pass
-10	120	5260.0187	Pass	5260.0168	Pass	5260.0156	Pass	5260.0144	Pass
-20	120	5260.0196	Pass	5260.0176	Pass	5260.0191	Pass	5260.0202	Pass
-30	120	5260.0176	Pass	5260.0171	Pass	5260.0155	Pass	5260.0128	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5259.9823	Pass	5259.9811	Pass	5259.9811	Pass	5259.9821	Pass
	120	5259.9818	Pass	5259.9808	Pass	5259.9808	Pass	5259.9815	Pass
	102	5259.9811	Pass	5259.9813	Pass	5259.9808	Pass	5259.9805	Pass

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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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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