

FCC Test Report (15.407)

Report No.: RF140901E08B-1

FCC ID: PY314200280

Test Model: EX7000

Received Date: Sep. 19, 2014

Test Date: Sep. 19, 2014 to May 20, 2015

Issued Date: June 05, 2015

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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A D T

Release Control Record

Issue No.	Description	Date Issued
RF140901E08B-1	Original release.	June 05, 2015



A D T

1 Certificate of Conformity

Product: AC1900 WiFi Range Extender

Brand: NETGEAR

Test Model: EX7000

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: Sep. 19, 2014 to May 20, 2015

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2009

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

Prepared by : , **Date:** June 05, 2015
Elsie Hsu / Specialist

Approved by : , **Date:** June 05, 2015
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407 Under New Rule)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -9.49dB at 0.38828MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5725.00MHz
15.407(a) (1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
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 Re-SMA not a standard connector.

NOTE: 1. This report is prepared for FCC class II change. (Add DFS band: 5250~5350MHz & 5470~5725MHz).

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

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	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.72 dB
	6GHz ~ 18GHz	4.00 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 (For DFS Band)

Product	AC1900 WiFi Range Extender
Brand	NETGEAR
Test Model	EX7000
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 5V from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5.26 ~ 5.32GHz, 5.50 ~ 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	CDD Mode: 802.11a: 209.369mW 802.11ac (VHT20): 209.113mW 802.11ac (VHT40): 244.829mW 802.11ac (VHT80): 244.004mW Beamforming Mode: 802.11ac (VHT20): 209.113mW 802.11ac (VHT40): 206.763mW 802.11ac (VHT80): 208.494mW
Antenna Type	Please see Note
Antenna Connector	Please see 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 original report design is as the following information:

◆ Add DFS band <5250~5350MHz & 5470~5725MHz>

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

No.	Brand	Model No.	Spec.
1	Netgear	SAS030F1 NA	AC I/P: 100-120V, 47~63Hz, 0.9A AC Input cable: 1.8m, unshielded DC O/P: 12V, 2.5A
2	Netgear	P030WF120B	AC I/P: 100-240V, 50~60Hz, 1.0A AC Input cable: 1.8m, unshielded DC O/P: 12V, 2.5A

※For radiated emission test, the EUT was pre-tested with above adapters, the worse case was found in **adapter 2**. Therefore only the test data of the adapter was recorded in this report.

※For power line conducted emission test, the EUT was tested with each adapter individually. Therefore the test data of both adapters were recorded in this report.

3. There are three antennas provided to this EUT, please refer to the following table:

Antenna No.	Brand	Model	Antenna Gain(dBi)	Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	Cable Length(External only)
Antenna L	Netgear	NA	2	2412~2477 5150~5250 5250~5350 5470~5725 5725~5850	Dipole	Re-SMA	85+5/-0 mm
Antenna M	Netgear	NA	2	2412~2477 5150~5250 5250~5350 5470~5725 5725~5850	Dipole	Re-SMA	85+5/-0 mm
Antenna R	Netgear	NA	2	2412~2477 5150~5250 5250~5350 5470~5725 5725~5850	Dipole	Re-SMA	85+5/-0 mm

4. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.

5. The EUT incorporates a MIMO function.

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

Note: 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)

6. The above EUT information was declared by the 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	5290MHz

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	5530MHz	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	√	√	√	√	Adapter 2
2	-	-	√	-	Adapter 1

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

NOTE: 1. The test mode was reference to the worst case in the original test report.
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	19.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	40.5
802.11ac (VHT80)		58	58	OFDM	BPSK	87.8
802.11a	5500-5700	100 to 140	100, 120, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 140	100, 120, 140	OFDM	BPSK	19.5
802.11ac (VHT40)		102 to 134	102, 118, 134	OFDM	BPSK	40.5
802.11ac (VHT80)		106 to 122	106, 122	OFDM	BPSK	87.8

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	52 to 64	54	OFDM	BPSK	40.5
	5500-5700	100 to 140				

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	52 to 64	54	OFDM	BPSK	40.5
	5500-5700	100 to 140				

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	19.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	40.5
802.11ac (VHT80)		58	58	OFDM	BPSK	87.8
802.11a	5500-5700	100 to 140	100, 120, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 140	100, 120, 140	OFDM	BPSK	19.5
802.11ac (VHT40)		102 to 134	102, 118, 134	OFDM	BPSK	40.5
802.11ac (VHT80)		106 to 122	106, 122	OFDM	BPSK	87.8
Beamforming MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	19.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	40.5
802.11ac (VHT80)		58	58	OFDM	BPSK	87.8
802.11ac (VHT20)	5500-5700	100 to 140	100, 120, 140	OFDM	BPSK	19.5
802.11ac (VHT40)		102 to 134	102, 118, 134	OFDM	BPSK	40.5
802.11ac (VHT80)		106 to 122	106, 122	OFDM	BPSK	87.8

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	18deg. C, 66%RH	120Vac, 60Hz	Gary Cheng
RE<1G	22deg. C, 69%RH	120Vac, 60Hz	Gary Cheng
PLC	25deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.

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

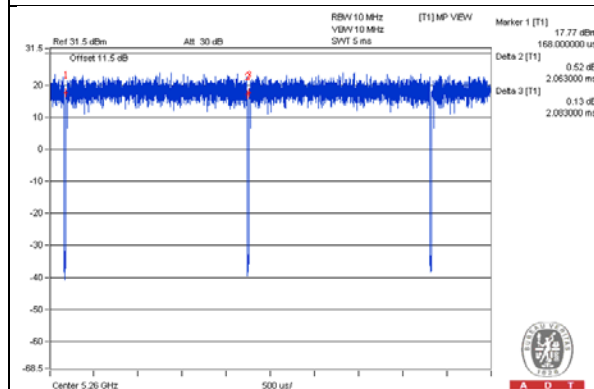
802.11a: Duty cycle = 2.063 ms/2.083 ms = 0.99

802.11ac (VHT20): Duty cycle = 1.918 ms/1.941 ms = 0.988

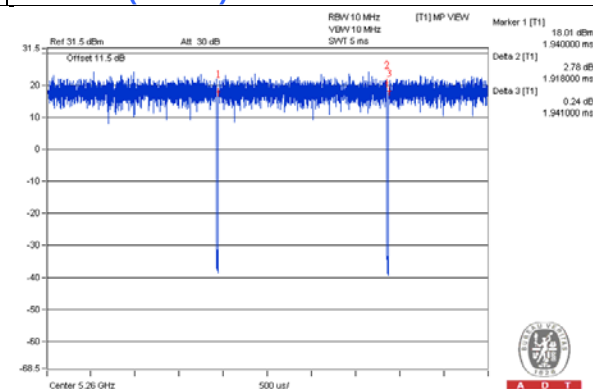
802.11ac (VHT40): Duty cycle = 0.943 ms/0.965 ms = 0.977, Duty factor = $10 * \log(1/0.977) = 0.10$

802.11ac (VHT80): Duty cycle = 0.455 ms/0.478 ms = 0.952, Duty factor = $10 * \log(1/0.952) = 0.21$

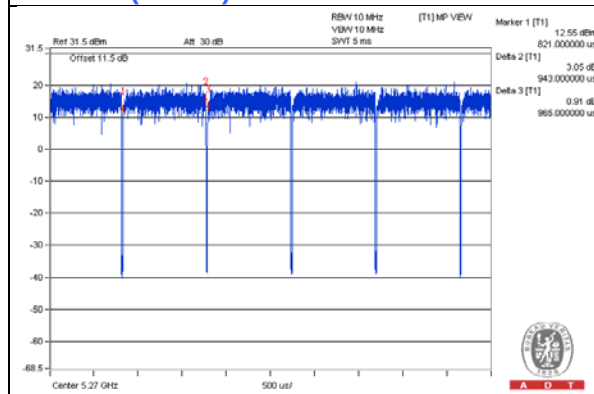
802.11a



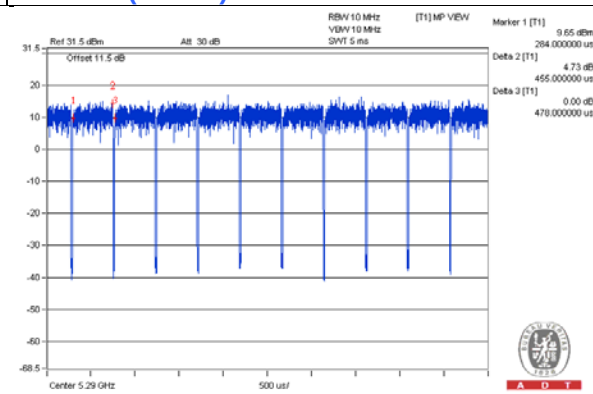
802.11ac (VHT20)



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.

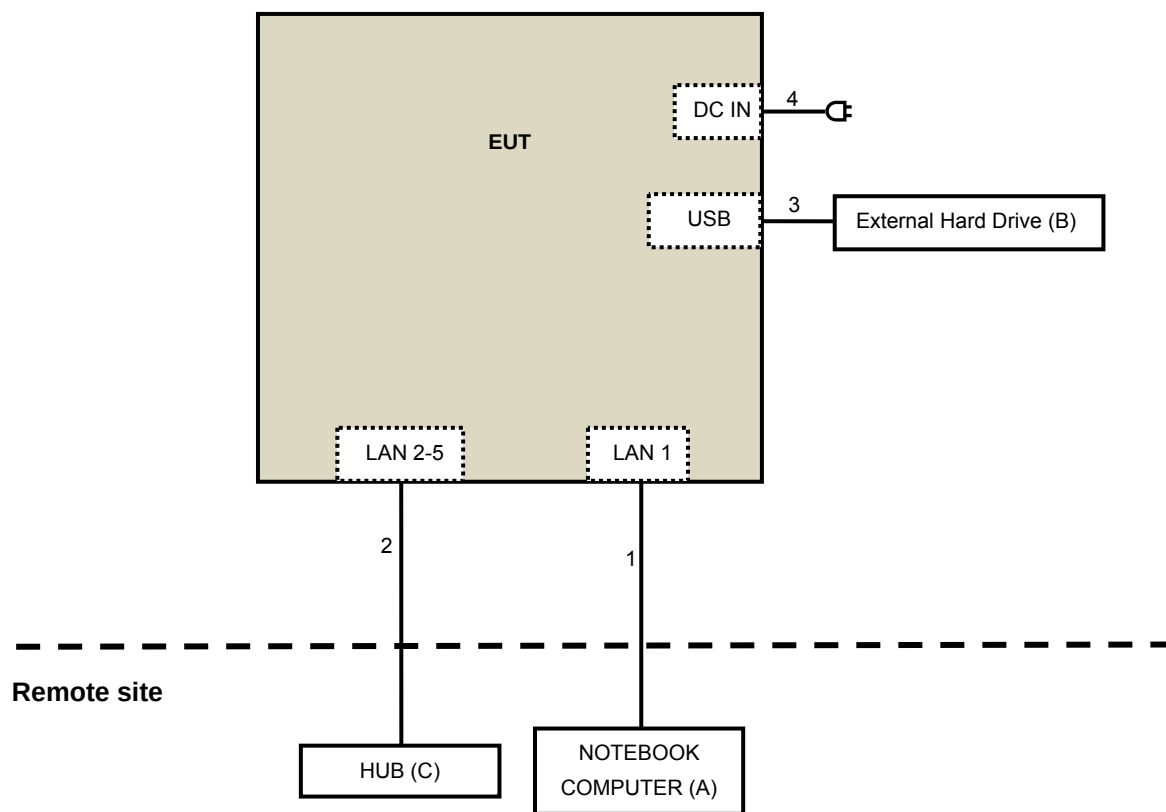
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E6400	D814C A00 APCC	N/A	Provided by Lab
B	External Hard Drive	WD	WDBACW0010HBK-SESN	WCAZAL625787	FCC DoC	Provided by Lab
C	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab

NOTE:

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1.	RJ-45	1	10	No	0	Provided by Lab
2.	RJ-45	4	10	No	0	Provided by Lab
3.	USB	1	0.45	Yes	0	Provided by Lab
4.	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)

789033 D02 General UNII Test Procedure New Rules v01

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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:

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

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedure New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBuV/m)	AV:54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBuV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) ^{*1} PK:-17 (dBm/MHz) ^{*2}	PK: 68.2(dBuV/m) ^{*1} PK:78.2 (dBuV/m) ^{*2}

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 06, 2015	Feb. 05, 2016
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131213 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Power Meter Anritsu	ML2495A	0824006	May 22, 2014	May 21, 2015
Power Sensor Anritsu	MA2411B	0738172	May 22, 2014	May 21, 2015
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015
True RMS Multimeter FLUKE	87III	73680266	Nov. 07, 2014	Nov. 06, 2015
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 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. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
- 5 The CANADA Site Registration No. is IC 7450H-3.
- 6 Tested Date: May 15 to 20, 2015

4.1.3 Test Procedure

- a. The EUT was placed on the top of a rotating table 0.8 meters 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:

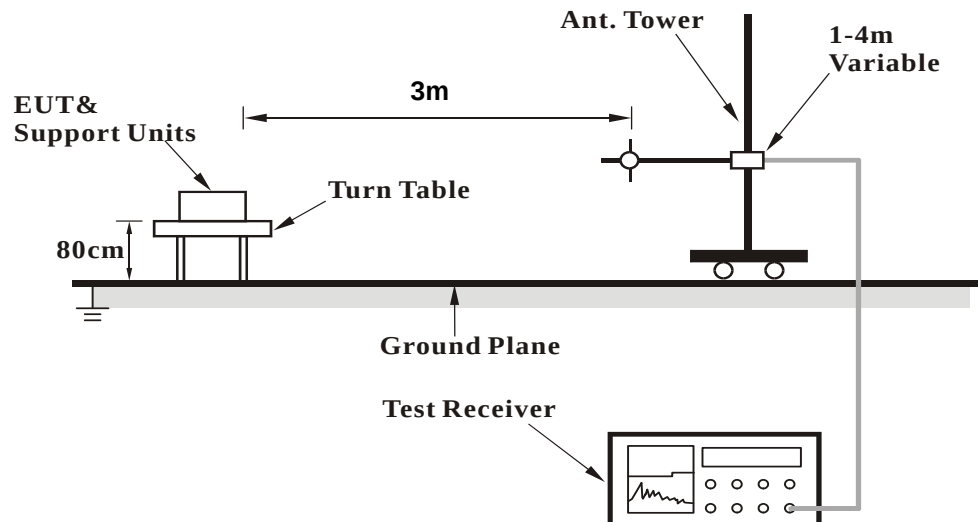
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

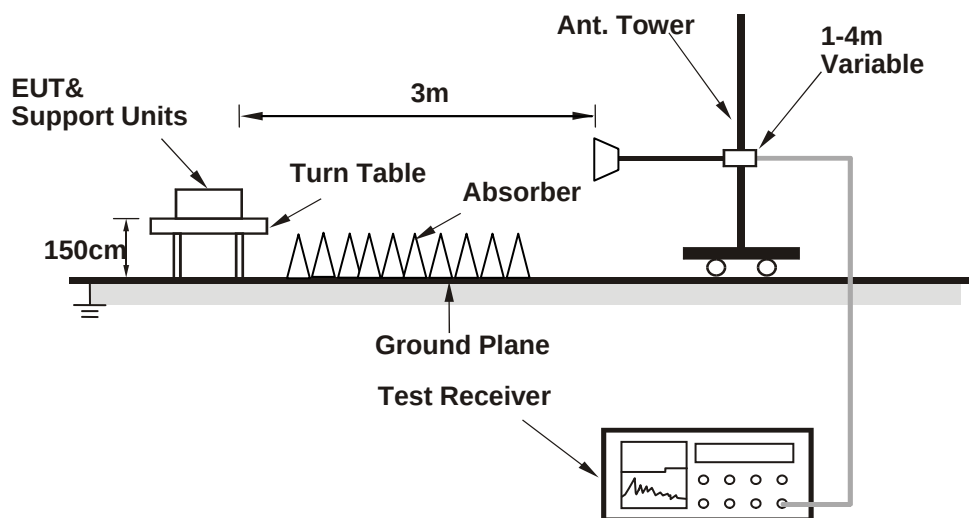
No deviation.

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

1. Placed the EUT on testing table.
2. Prepared computer system (support unit A) to act as communication partner.
3. The communication partner ran test program "Mtool.exe[2.0.1.8]" to enable EUT under transmission/receiving condition continuously.

4.1.7 Test Results

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 52	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	*5260.00	111.6 PK			1.00 H	158	104.75	6.85
2	*5260.00	101.8 AV			1.00 H	158	94.95	6.85
3	5414.30	55.3 PK	74.0	-18.7	1.21 H	168	48.08	7.22
4	5414.30	44.6 AV	54.0	-9.4	1.21 H	168	37.38	7.22
5	#10520.00	61.9 PK	74.0	-12.1	1.04 H	202	48.07	13.83
6	#10520.00	47.9 AV	54.0	-6.1	1.04 H	202	34.07	13.83
7	15780.00	62.9 PK	74.0	-11.1	1.06 H	197	43.54	19.36
8	15780.00	50.4 AV	54.0	-3.6	1.06 H	197	31.04	19.36

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	*5260.00	122.5 PK			1.13 V	262	115.65	6.85
2	*5260.00	112.3 AV			1.13 V	262	105.45	6.85
3	5414.30	64.7 PK	74.0	-9.3	1.01 V	360	57.48	7.22
4	5414.30	53.5 AV	54.0	-0.5	1.01 V	360	46.28	7.22
5	#10520.00	63.2 PK	74.0	-10.8	1.39 V	64	49.37	13.83
6	#10520.00	50.0 AV	54.0	-4.0	1.39 V	64	36.17	13.83
7	15780.00	63.6 PK	74.0	-10.4	1.11 V	205	44.24	19.36
8	15780.00	51.6 AV	54.0	-2.4	1.11 V	205	32.24	19.36

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)
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	*5300.00	107.2 PK			1.02 H	150	100.30	6.90
2	*5300.00	97.0 AV			1.02 H	150	90.10	6.90
3	5384.30	55.4 PK	74.0	-18.6	1.12 H	354	48.26	7.14
4	5384.30	45.2 AV	54.0	-8.8	1.12 H	354	38.06	7.14
5	10600.00	62.0 PK	74.0	-12.0	1.00 H	209	48.56	13.44
6	10600.00	47.9 AV	54.0	-6.1	1.00 H	209	34.46	13.44
7	15900.00	63.6 PK	74.0	-10.4	1.09 H	176	44.59	19.01
8	15900.00	50.4 AV	54.0	-3.6	1.09 H	176	31.39	19.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	117.5 PK			1.24 V	253	110.60	6.90
2	*5300.00	107.3 AV			1.24 V	253	100.40	6.90
3	5384.30	64.6 PK	74.0	-9.4	1.00 V	360	57.46	7.14
4	5384.30	53.8 AV	54.0	-0.2	1.00 V	360	46.66	7.14
5	10600.00	63.8 PK	74.0	-10.2	1.36 V	63	50.36	13.44
6	10600.00	50.4 AV	54.0	-3.6	1.36 V	63	36.96	13.44
7	15900.00	62.5 PK	74.0	-11.5	1.11 V	204	43.49	19.01
8	15900.00	50.0 AV	54.0	-4.0	1.11 V	204	30.99	19.01

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)
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	*5320.00	106.4 PK			1.03 H	145	99.43	6.97
2	*5320.00	96.5 AV			1.03 H	145	89.53	6.97
3	5350.00	61.4 PK	74.0	-12.6	1.03 H	146	54.36	7.04
4	5350.00	50.3 AV	54.0	-3.7	1.03 H	146	43.26	7.04
5	10640.00	62.5 PK	74.0	-11.5	1.03 H	193	48.83	13.67
6	10640.00	48.2 AV	54.0	-5.8	1.03 H	193	34.53	13.67
7	15960.00	63.0 PK	74.0	-11.0	1.04 H	177	44.16	18.84
8	15960.00	50.3 AV	54.0	-3.7	1.04 H	177	31.46	18.84
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	116.3 PK			1.24 V	256	109.33	6.97
2	*5320.00	106.6 AV			1.24 V	256	99.63	6.97
3	5350.00	64.2 PK	74.0	-9.8	1.02 V	360	57.16	7.04
4	5350.00	53.6 AV	54.0	-0.4	1.02 V	360	46.56	7.04
5	10640.00	63.6 PK	74.0	-10.4	1.45 V	62	49.93	13.67
6	10640.00	50.6 AV	54.0	-3.4	1.45 V	62	36.93	13.67
7	15960.00	62.8 PK	74.0	-11.2	1.17 V	205	43.96	18.84
8	15960.00	50.1 AV	54.0	-3.9	1.17 V	205	31.26	18.84

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	5414.10	54.7 PK	74.0	-19.3	1.21 H	102	47.48	7.22
2	5414.10	44.3 AV	54.0	-9.7	1.21 H	102	37.08	7.22
3	#5470.00	56.4 PK	74.0	-17.6	1.03 H	146	49.11	7.29
4	#5470.00	42.4 AV	54.0	-11.6	1.03 H	146	35.11	7.29
5	*5500.00	106.4 PK			1.03 H	146	99.07	7.33
6	*5500.00	97.0 AV			1.03 H	146	89.67	7.33
7	#5729.20	48.0 PK	74.0	-26.0	1.23 H	46	40.61	7.39
8	#5729.20	43.6 AV	54.0	-10.4	1.23 H	46	36.21	7.39
9	11000.00	61.8 PK	74.0	-12.2	1.00 H	208	47.57	14.23
10	11000.00	47.7 AV	54.0	-6.3	1.00 H	208	33.47	14.23
11	#16500.00	63.1 PK	74.0	-10.9	1.10 H	191	42.13	20.97
12	#16500.00	50.0 AV	54.0	-4.0	1.10 H	191	29.03	20.97

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	5414.10	63.9 PK	74.0	-10.1	1.26 V	90	56.68	7.22
2	5414.10	53.7 AV	54.0	-0.3	1.26 V	90	46.48	7.22
3	#5470.00	59.4 PK	74.0	-14.6	1.29 V	240	52.11	7.29
4	#5470.00	45.9 AV	54.0	-8.1	1.29 V	240	38.61	7.29
5	*5500.00	116.2 PK			1.29 V	240	108.87	7.33
6	*5500.00	106.4 AV			1.29 V	240	99.07	7.33
7	#5729.20	57.6 PK	74.0	-16.4	1.27 V	33	50.21	7.39
8	#5729.20	53.2 AV	54.0	-0.8	1.27 V	33	45.81	7.39
9	11000.00	63.0 PK	74.0	-11.0	1.43 V	61	48.77	14.23
10	11000.00	49.7 AV	54.0	-4.3	1.43 V	61	35.47	14.23
11	#16500.00	62.4 PK	74.0	-11.6	1.10 V	225	41.43	20.97
12	#16500.00	49.9 AV	54.0	-4.1	1.10 V	225	28.93	20.97

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 120	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	*5600.00	111.5 PK			1.02 H	139	104.37	7.13
2	*5600.00	102.5 AV			1.02 H	139	95.37	7.13
3	#5833.60	52.9 PK	68.2	-15.3	1.02 H	116	45.61	7.29
4	11200.00	60.9 PK	74.0	-13.1	1.21 H	230	46.43	14.47
5	11200.00	47.2 AV	54.0	-6.8	1.21 H	230	32.73	14.47
6	#16800.00	65.7 PK	74.0	-8.3	1.22 H	202	43.60	22.10
7	#16800.00	49.4 AV	54.0	-4.6	1.22 H	202	27.30	22.10
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	*5600.00	122.3 PK			1.23 V	83	115.17	7.13
2	*5600.00	112.6 AV			1.23 V	83	105.47	7.13
3	#5833.60	62.4 PK	68.2	-5.8	1.23 V	94	55.11	7.29
4	11200.00	65.8 PK	74.0	-8.2	1.23 V	148	51.33	14.47
5	11200.00	51.6 AV	54.0	-2.4	1.23 V	148	37.13	14.47
6	#16800.00	68.8 PK	74.0	-5.2	1.22 V	87	46.70	22.10
7	#16800.00	53.6 AV	54.0	-0.4	1.22 V	87	31.50	22.10

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	108.6 PK			1.04 H	142	101.21	7.39
2	*5700.00	100.2 AV			1.04 H	142	92.81	7.39
3	#5725.00	59.6 PK	68.2	-8.6	1.04 H	142	52.22	7.38
4	#10520.00	61.0 PK	74.0	-13.0	1.05 H	195	47.17	13.83
5	#10520.00	46.9 AV	54.0	-7.1	1.05 H	195	33.07	13.83
6	15780.00	61.5 PK	74.0	-12.5	1.06 H	174	42.14	19.36
7	15780.00	49.6 AV	54.0	-4.4	1.06 H	174	30.24	19.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	118.6 PK			1.41 V	49	111.21	7.39
2	*5700.00	109.6 AV			1.41 V	49	102.21	7.39
3	#5725.00	68.1 PK	68.2	-0.1	1.19 V	305	60.72	7.38
4	11400.00	61.3 PK	74.0	-12.7	1.32 V	55	46.44	14.86
5	11400.00	48.3 AV	54.0	-5.7	1.32 V	55	33.44	14.86
6	#17100.00	53.1 PK	74.0	-20.9	1.11 V	187	30.11	22.99
7	#17100.00	51.6 AV	54.0	-2.4	1.11 V	187	28.61	22.99

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)
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	5000.00	56.4 PK	74.0	-17.6	1.36 H	154	50.39	6.01
2	5000.00	50.6 AV	54.0	-3.4	1.36 H	154	44.59	6.01
3	*5260.00	111.3 PK			1.05 H	162	104.45	6.85
4	*5260.00	101.4 AV			1.05 H	162	94.55	6.85
5	5420.00	55.0 PK	74.0	-19.0	1.25 H	156	47.77	7.23
6	5420.00	44.2 AV	54.0	-9.8	1.25 H	156	36.97	7.23
7	#10520.00	62.1 PK	74.0	-11.9	1.00 H	195	48.27	13.83
8	#10520.00	48.1 AV	54.0	-5.9	1.00 H	195	34.27	13.83
9	15780.00	62.9 PK	74.0	-11.1	1.02 H	194	43.54	19.36
10	15780.00	50.6 AV	54.0	-3.4	1.02 H	194	31.24	19.36
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	5000.00	58.9 PK	74.0	-15.1	1.21 V	327	52.89	6.01
2	5000.00	53.6 AV	54.0	-0.4	1.21 V	327	47.59	6.01
3	*5260.00	122.4 PK			1.19 V	273	115.55	6.85
4	*5260.00	111.9 AV			1.19 V	273	105.05	6.85
5	5420.00	64.2 PK	74.0	-9.8	1.02 V	360	56.97	7.23
6	5420.00	53.6 AV	54.0	-0.4	1.02 V	360	46.37	7.23
7	#10520.00	62.2 PK	74.0	-11.8	1.38 V	68	48.37	13.83
8	#10520.00	49.4 AV	54.0	-4.6	1.38 V	68	35.57	13.83
9	15780.00	64.0 PK	74.0	-10.0	1.12 V	184	44.64	19.36
10	15780.00	52.0 AV	54.0	-2.0	1.12 V	184	32.64	19.36

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)
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	*5300.00	107.2 PK			1.01 H	144	100.30	6.90
2	*5300.00	96.9 AV			1.01 H	144	90.00	6.90
3	5385.00	55.2 PK	74.0	-18.8	1.11 H	349	48.06	7.14
4	5385.00	45.3 AV	54.0	-8.7	1.11 H	349	38.16	7.14
5	#5742.00	49.9 PK	74.0	-24.1	1.02 H	146	42.52	7.38
6	#5742.00	45.4 AV	54.0	-8.6	1.02 H	146	38.02	7.38
7	10600.00	61.1 PK	74.0	-12.9	1.02 H	216	47.66	13.44
8	10600.00	47.3 AV	54.0	-6.7	1.02 H	216	33.86	13.44
9	15900.00	63.9 PK	74.0	-10.1	1.11 H	170	44.89	19.01
10	15900.00	50.6 AV	54.0	-3.4	1.11 H	170	31.59	19.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	116.1 PK			1.24 V	39	109.20	6.90
2	*5300.00	106.2 AV			1.24 V	39	99.30	6.90
3	5385.00	63.6 PK	74.0	-10.4	1.24 V	72	56.46	7.14
4	5385.00	53.4 AV	54.0	-0.6	1.24 V	72	46.26	7.14
5	#5742.00	59.1 PK	74.0	-14.9	1.26 V	79	51.72	7.38
6	#5742.00	53.2 AV	54.0	-0.8	1.26 V	79	45.82	7.38
7	10600.00	63.5 PK	74.0	-10.5	1.28 V	60	50.06	13.44
8	10600.00	49.8 AV	54.0	-4.2	1.28 V	60	36.36	13.44
9	15900.00	61.2 PK	74.0	-12.8	1.16 V	173	42.19	19.01
10	15900.00	49.4 AV	54.0	-4.6	1.16 V	173	30.39	19.01

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 64	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	*5320.00	106.6 PK			1.04 H	148	99.63	6.97
2	*5320.00	96.5 AV			1.04 H	148	89.53	6.97
3	5350.00	61.3 PK	74.0	-12.7	1.00 H	152	54.26	7.04
4	5350.00	50.3 AV	54.0	-3.7	1.00 H	152	43.26	7.04
5	#5763.30	48.6 PK	74.0	-25.4	1.02 H	136	41.22	7.38
6	#5763.30	43.6 AV	54.0	-10.4	1.02 H	136	36.22	7.38
7	10640.00	61.5 PK	74.0	-12.5	1.04 H	194	47.83	13.67
8	10640.00	47.7 AV	54.0	-6.3	1.04 H	194	34.03	13.67
9	15960.00	62.1 PK	74.0	-11.9	1.02 H	167	43.26	18.84
10	15960.00	49.5 AV	54.0	-4.5	1.02 H	167	30.66	18.84
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	116.1 PK			1.20 V	254	109.13	6.97
2	*5320.00	106.2 AV			1.20 V	254	99.23	6.97
3	5350.00	63.5 PK	74.0	-10.5	1.02 V	360	56.46	7.04
4	5350.00	53.2 AV	54.0	-0.8	1.02 V	360	46.16	7.04
5	#5763.30	57.2 PK	74.0	-16.8	1.28 V	96	49.82	7.38
6	#5763.30	53.0 AV	54.0	-1.0	1.28 V	96	45.62	7.38
7	10640.00	63.2 PK	74.0	-10.8	1.26 V	49	49.53	13.67
8	10640.00	49.6 AV	54.0	-4.4	1.26 V	49	35.93	13.67
9	15960.00	60.8 PK	74.0	-13.2	1.18 V	182	41.96	18.84
10	15960.00	48.9 AV	54.0	-5.1	1.18 V	182	30.06	18.84

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 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	5414.00	54.5 PK	74.0	-19.5	1.16 H	105	47.28	7.22
2	5414.00	44.2 AV	54.0	-9.8	1.16 H	105	36.98	7.22
3	#5470.00	56.2 PK	74.0	-17.8	1.07 H	144	48.91	7.29
4	#5470.00	42.7 AV	54.0	-11.3	1.07 H	144	35.41	7.29
5	*5500.00	106.6 PK			1.00 H	138	99.27	7.33
6	*5500.00	97.4 AV			1.00 H	138	90.07	7.33
7	11000.00	61.9 PK	74.0	-12.1	1.06 H	208	47.67	14.23
8	11000.00	47.9 AV	54.0	-6.1	1.06 H	208	33.67	14.23
9	#16500.00	62.8 PK	74.0	-11.2	1.02 H	184	41.83	20.97
10	#16500.00	50.2 AV	54.0	-3.8	1.02 H	184	29.23	20.97
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	5414.00	63.4 PK	74.0	-10.6	1.04 V	360	56.18	7.22
2	5414.00	53.2 AV	54.0	-0.8	1.04 V	360	45.98	7.22
3	#5470.00	60.1 PK	74.0	-13.9	1.28 V	253	52.81	7.29
4	#5470.00	46.3 AV	54.0	-7.7	1.28 V	253	39.01	7.29
5	*5500.00	117.8 PK			1.24 V	253	110.47	7.33
6	*5500.00	106.9 AV			1.24 V	253	99.57	7.33
7	11000.00	63.4 PK	74.0	-10.6	1.45 V	48	49.17	14.23
8	11000.00	50.1 AV	54.0	-3.9	1.45 V	48	35.87	14.23
9	#16500.00	62.5 PK	74.0	-11.5	1.12 V	233	41.53	20.97
10	#16500.00	49.8 AV	54.0	-4.2	1.12 V	233	28.83	20.97

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 120	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	*5600.00	110.9 PK			1.02 H	111	103.77	7.13
2	*5600.00	102.0 AV			1.02 H	111	94.87	7.13
3	#5833.30	53.5 PK	68.2	-14.7	1.00 H	100	46.21	7.29
4	11200.00	60.5 PK	74.0	-13.5	1.16 H	235	46.03	14.47
5	11200.00	46.7 AV	54.0	-7.3	1.16 H	235	32.23	14.47
6	#16800.00	65.1 PK	74.0	-8.9	1.20 H	189	43.00	22.10
7	#16800.00	49.0 AV	54.0	-5.0	1.20 H	189	26.90	22.10
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	*5600.00	122.5 PK			1.22 V	73	115.37	7.13
2	*5600.00	112.5 AV			1.22 V	73	105.37	7.13
3	#5833.30	63.2 PK	68.2	-5.0	1.36 V	223	55.91	7.29
4	11200.00	65.7 PK	74.0	-8.3	1.24 V	143	51.23	14.47
5	11200.00	51.7 AV	54.0	-2.3	1.24 V	143	37.23	14.47
6	#16800.00	68.7 PK	74.0	-5.3	1.19 V	81	46.60	22.10
7	#16800.00	53.8 AV	54.0	-0.2	1.19 V	81	31.70	22.10

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	#5462.50	52.5 PK	74.0	-21.5	1.05 H	162	45.22	7.28
2	#5462.50	42.6 AV	54.0	-11.4	1.05 H	162	35.32	7.28
3	*5700.00	108.3 PK			1.05 H	130	100.91	7.39
4	*5700.00	99.9 AV			1.05 H	130	92.51	7.39
5	#5725.00	56.3 PK	68.2	-11.9	1.04 H	127	48.92	7.38
6	#5780.80	56.5 PK	68.2	-11.7	1.10 H	136	49.13	7.37
7	#10520.00	60.2 PK	74.0	-13.8	1.08 H	205	46.37	13.83
8	#10520.00	46.8 AV	54.0	-7.2	1.08 H	205	32.97	13.83
9	15780.00	61.1 PK	74.0	-12.9	1.05 H	172	41.74	19.36
10	15780.00	48.9 AV	54.0	-5.1	1.05 H	172	29.54	19.36
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	#5462.50	61.7 PK	74.0	-12.3	1.41 V	296	54.42	7.28
2	#5462.50	51.5 AV	54.0	-2.5	1.41 V	296	44.22	7.28
3	*5700.00	118.1 PK			1.41 V	52	110.71	7.39
4	*5700.00	109.1 AV			1.41 V	52	101.71	7.39
5	#5725.00	66.5 PK	68.2	-1.7	1.41 V	52	59.12	7.38
6	#5780.80	67.9 PK	68.2	-0.3	1.38 V	52	60.53	7.37
7	11400.00	60.9 PK	74.0	-13.1	1.35 V	66	46.04	14.86
8	11400.00	47.8 AV	54.0	-6.2	1.35 V	66	32.94	14.86
9	#17100.00	52.9 PK	74.0	-21.1	1.15 V	190	29.91	22.99
10	#17100.00	51.2 AV	54.0	-2.8	1.15 V	190	28.21	22.99

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.

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CHANNEL	TX Channel 54	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	*5270.00	107.6 PK			1.06 H	132	100.74	6.86
2	*5270.00	97.4 AV			1.06 H	132	90.54	6.86
3	5352.30	55.0 PK	74.0	-19.0	1.05 H	144	47.94	7.06
4	5352.30	44.3 AV	54.0	-9.7	1.05 H	144	37.24	7.06
5	#10540.00	60.6 PK	74.0	-13.4	1.02 H	160	46.87	13.73
6	#10540.00	47.0 AV	54.0	-7.0	1.02 H	160	33.27	13.73
7	15810.00	61.6 PK	74.0	-12.4	1.03 H	184	42.18	19.42
8	15810.00	49.6 AV	54.0	-4.4	1.03 H	184	30.18	19.42
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	*5270.00	117.4 PK			1.09 V	41	110.54	6.86
2	*5270.00	106.8 AV			1.09 V	41	99.94	6.86
3	5352.30	64.6 PK	74.0	-9.4	1.09 V	40	57.54	7.06
4	5352.30	53.6 AV	54.0	-0.4	1.09 V	40	46.54	7.06
5	#10540.00	61.6 PK	74.0	-12.4	1.25 V	58	47.87	13.73
6	#10540.00	49.3 AV	54.0	-4.7	1.25 V	58	35.57	13.73
7	15810.00	63.8 PK	74.0	-10.2	1.13 V	181	44.38	19.42
8	15810.00	51.8 AV	54.0	-2.2	1.13 V	181	32.38	19.42

REMARKS:

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

CHANNEL	TX Channel 62	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	*5310.00	104.2 PK			1.02 H	133	97.26	6.94
2	*5310.00	94.2 AV			1.02 H	133	87.26	6.94
3	5350.00	60.5 PK	74.0	-13.5	1.09 H	126	53.46	7.04
4	5350.00	44.3 AV	54.0	-9.7	1.09 H	126	37.26	7.04
5	10620.00	60.5 PK	74.0	-13.5	1.01 H	213	46.96	13.54
6	10620.00	47.0 AV	54.0	-7.0	1.01 H	213	33.46	13.54
7	15930.00	61.0 PK	74.0	-13.0	1.08 H	184	42.08	18.92
8	15930.00	49.1 AV	54.0	-4.9	1.08 H	184	30.18	18.92

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	113.8 PK			1.15 V	43	106.86	6.94
2	*5310.00	104.2 AV			1.15 V	43	97.26	6.94
3	5350.00	69.9 PK	74.0	-4.1	1.15 V	43	62.86	7.04
4	5350.00	53.5 AV	54.0	-0.5	1.15 V	43	46.46	7.04
5	10620.00	60.0 PK	74.0	-14.0	1.32 V	63	46.46	13.54
6	10620.00	47.2 AV	54.0	-6.8	1.32 V	63	33.66	13.54
7	15930.00	52.5 PK	74.0	-21.5	1.12 V	187	33.58	18.92
8	15930.00	51.0 AV	54.0	-3.0	1.12 V	187	32.08	18.92

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	5051.00	48.0 PK	74.0	-26.0	1.00 H	162	41.90	6.10
2	5051.00	42.4 AV	54.0	-11.6	1.00 H	162	36.30	6.10
3	#5470.00	59.6 PK	74.0	-14.4	1.04 H	132	52.31	7.29
4	#5470.00	45.3 AV	54.0	-8.7	1.04 H	132	38.01	7.29
5	*5510.00	102.4 PK			1.04 H	130	95.09	7.31
6	*5510.00	92.3 AV			1.04 H	130	84.99	7.31
7	11020.00	59.0 PK	74.0	-15.0	1.03 H	194	44.72	14.28
8	11020.00	46.0 AV	54.0	-8.0	1.03 H	194	31.72	14.28
9	#16530.00	61.6 PK	74.0	-12.4	1.00 H	168	40.37	21.23
10	#16530.00	49.2 AV	54.0	-4.8	1.00 H	168	27.97	21.23

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	5051.00	56.9 PK	74.0	-17.1	1.32 V	99	50.80	6.10
2	5051.00	51.4 AV	54.0	-2.6	1.32 V	99	45.30	6.10
3	#5470.00	69.0 PK	74.0	-5.0	1.12 V	41	61.71	7.29
4	#5470.00	53.6 AV	54.0	-0.4	1.12 V	41	46.31	7.29
5	*5510.00	112.2 PK			1.12 V	41	104.89	7.31
6	*5510.00	102.5 AV			1.12 V	41	95.19	7.31
7	11020.00	60.9 PK	74.0	-13.1	1.30 V	53	46.62	14.28
8	11020.00	47.7 AV	54.0	-6.3	1.30 V	53	33.42	14.28
9	#16530.00	52.7 PK	74.0	-21.3	1.15 V	180	31.47	21.23
10	#16530.00	51.0 AV	54.0	-3.0	1.15 V	180	29.77	21.23

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 118	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	*5590.00	108.6 PK			1.06 H	120	101.45	7.15
2	*5590.00	100.6 AV			1.06 H	120	93.45	7.15
3	#5735.80	51.3 PK	74.0	-22.7	1.00 H	136	43.92	7.38
4	#5735.80	41.8 AV	54.0	-12.2	1.00 H	136	34.42	7.38
5	11180.00	61.1 PK	74.0	-12.9	1.13 H	219	46.63	14.47
6	11180.00	47.1 AV	54.0	-6.9	1.13 H	219	32.63	14.47
7	#16770.00	64.9 PK	74.0	-9.1	1.13 H	138	42.87	22.03
8	#16770.00	49.0 AV	54.0	-5.0	1.13 H	138	26.97	22.03
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	*5590.00	118.4 PK			1.09 V	39	111.25	7.15
2	*5590.00	108.3 AV			1.09 V	39	101.15	7.15
3	#5735.80	59.8 PK	74.0	-14.2	1.33 V	54	52.42	7.38
4	#5735.80	50.6 AV	54.0	-3.4	1.33 V	54	43.22	7.38
5	11180.00	65.4 PK	74.0	-8.6	1.20 V	148	50.93	14.47
6	11180.00	51.5 AV	54.0	-2.5	1.20 V	148	37.03	14.47
7	#16770.00	68.6 PK	74.0	-5.4	1.18 V	97	46.57	22.03
8	#16770.00	53.6 AV	54.0	-0.4	1.18 V	97	31.57	22.03

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	108.6 PK			1.16 H	132	101.29	7.31
2	*5670.00	97.9 AV			1.16 H	132	90.59	7.31
3	#5725.00	59.6 PK	68.2	-8.6	1.16 H	130	52.22	7.38
4	11340.00	60.8 PK	74.0	-13.2	1.02 H	156	46.24	14.56
5	11340.00	47.2 AV	54.0	-6.8	1.02 H	156	32.64	14.56
6	#17010.00	61.3 PK	74.0	-12.7	1.06 H	172	37.91	23.39
7	#17010.00	49.3 AV	54.0	-4.7	1.06 H	172	25.91	23.39
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	117.9 PK			1.18 V	54	110.59	7.31
2	*5670.00	107.1 AV			1.18 V	54	99.79	7.31
3	#5725.00	67.7 PK	68.2	-0.5	1.16 V	54	60.32	7.38
4	11340.00	60.8 PK	74.0	-13.2	1.29 V	42	46.24	14.56
5	11340.00	48.4 AV	54.0	-5.6	1.29 V	42	33.84	14.56
6	#17010.00	63.4 PK	74.0	-10.6	1.12 V	176	40.01	23.39
7	#17010.00	51.7 AV	54.0	-2.3	1.12 V	176	28.31	23.39

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)
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	*5290.00	100.4 PK			1.06 H	102	93.51	6.89
2	*5290.00	90.4 AV			1.06 H	102	83.51	6.89
3	5350.00	60.4 PK	74.0	-13.6	1.10 H	100	53.36	7.04
4	5350.00	45.1 AV	54.0	-8.9	1.10 H	100	38.06	7.04
5	#10580.00	60.4 PK	74.0	-13.6	1.09 H	223	46.87	13.53
6	#10580.00	46.9 AV	54.0	-7.1	1.09 H	223	33.37	13.53
7	15870.00	59.8 PK	74.0	-14.2	1.03 H	145	40.65	19.15
8	15870.00	48.0 AV	54.0	-6.0	1.03 H	145	28.85	19.15
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	*5290.00	109.2 PK			1.20 V	46	102.31	6.89
2	*5290.00	99.0 AV			1.20 V	46	92.11	6.89
3	5350.00	68.9 PK	74.0	-5.1	1.20 V	46	61.86	7.04
4	5350.00	53.5 AV	54.0	-0.5	1.20 V	46	46.46	7.04
5	#10580.00	59.7 PK	74.0	-14.3	1.21 V	45	46.17	13.53
6	#10580.00	47.1 AV	54.0	-6.9	1.21 V	45	33.57	13.53
7	15870.00	52.4 PK	74.0	-21.6	1.06 V	210	33.25	19.15
8	15870.00	51.0 AV	54.0	-3.0	1.06 V	210	31.85	19.15

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.5 PK	74.0	-17.5	1.10 H	132	49.24	7.26
2	5460.00	43.2 AV	54.0	-10.8	1.10 H	132	35.94	7.26
3	#5470.00	61.2 PK	74.0	-12.8	1.06 H	120	53.91	7.29
4	#5470.00	44.9 AV	54.0	-9.1	1.06 H	120	37.61	7.29
5	*5530.00	100.6 PK			1.05 H	115	93.33	7.27
6	*5530.00	89.6 AV			1.05 H	115	82.33	7.27
7	11060.00	60.8 PK	74.0	-13.2	1.04 H	200	46.45	14.35
8	11060.00	47.1 AV	54.0	-6.9	1.04 H	200	32.75	14.35
9	#16590.00	59.7 PK	74.0	-14.3	1.02 H	162	37.96	21.74
10	#16590.00	48.0 AV	54.0	-6.0	1.02 H	162	26.26	21.74

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	65.7 PK	74.0	-8.3	1.22 V	41	58.44	7.26
2	5460.00	52.4 AV	54.0	-1.6	1.22 V	41	45.14	7.26
3	#5470.00	70.1 PK	74.0	-3.9	1.22 V	41	62.81	7.29
4	#5470.00	53.8 AV	54.0	-0.2	1.22 V	41	46.51	7.29
5	*5530.00	108.2 PK			1.22 V	41	100.93	7.27
6	*5530.00	97.7 AV			1.22 V	41	90.43	7.27
7	11060.00	60.5 PK	74.0	-13.5	1.27 V	44	46.15	14.35
8	11060.00	47.7 AV	54.0	-6.3	1.27 V	44	33.35	14.35
9	#16590.00	52.5 PK	74.0	-21.5	1.10 V	199	30.76	21.74
10	#16590.00	51.1 AV	54.0	-2.9	1.10 V	199	29.36	21.74

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	56.2 PK	74.0	-17.8	1.58 H	230	48.91	7.29
2	#5470.00	42.6 AV	54.0	-11.4	1.58 H	230	35.31	7.29
3	*5610.00	103.6 PK			1.58 H	230	96.45	7.15
4	*5610.00	93.2 AV			1.58 H	230	86.05	7.15
5	#5725.00	54.3 PK	68.2	-13.9	1.58 H	230	46.92	7.38
6	11220.00	59.9 PK	74.0	-14.1	1.00 H	213	45.46	14.44
7	11220.00	46.3 AV	54.0	-7.7	1.00 H	213	31.86	14.44
8	#16830.00	59.6 PK	74.0	-14.4	1.06 H	162	37.42	22.18
9	#16830.00	47.8 AV	54.0	-6.2	1.06 H	162	25.62	22.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	65.3 PK	74.0	-8.7	1.22 V	56	58.01	7.29
2	#5470.00	49.5 AV	54.0	-4.5	1.22 V	56	42.21	7.29
3	*5610.00	115.8 PK			1.22 V	56	108.65	7.15
4	*5610.00	103.8 AV			1.22 V	56	96.65	7.15
5	#5725.00	67.7 PK	68.2	-0.5	1.22 V	56	60.32	7.38
6	11220.00	60.3 PK	74.0	-13.7	1.32 V	53	45.86	14.44
7	11220.00	47.5 AV	54.0	-6.5	1.32 V	53	33.06	14.44
8	#16830.00	51.7 PK	74.0	-22.3	1.13 V	197	29.52	22.18
9	#16830.00	50.4 AV	54.0	-3.6	1.13 V	197	28.22	22.18

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 WORST-CASE DATA

802.11ac VHT40

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	47.99	26.6 QP	40.0	-13.4	1.00 H	49	39.79	-13.21
2	73.99	35.0 QP	40.0	-5.0	2.00 H	296	51.20	-16.21
3	84.37	32.7 QP	40.0	-7.3	2.00 H	308	51.26	-18.59
4	162.74	32.8 QP	43.5	-10.7	1.50 H	102	45.75	-12.99
5	500.01	34.9 QP	46.0	-11.1	1.00 H	353	42.09	-7.16
6	659.00	29.6 QP	46.0	-16.4	1.00 H	126	33.53	-3.92
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	39.80	32.6 QP	40.0	-7.4	1.00 V	360	46.36	-13.80
2	47.02	32.9 QP	40.0	-7.1	1.00 V	5	46.27	-13.35
3	109.54	31.0 QP	43.5	-12.5	1.00 V	320	47.06	-16.03
4	144.27	32.5 QP	43.5	-11.0	1.00 V	340	45.47	-12.97
5	500.01	34.6 QP	46.0	-11.4	1.00 V	109	41.74	-7.16
6	533.33	30.7 QP	46.0	-15.3	1.00 V	353	37.28	-6.60

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 ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-523	Oct. 02, 2013	Oct. 01, 2014
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10, 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	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 Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Sep. 19 to 22, 2014

4.2.3 Test Procedure

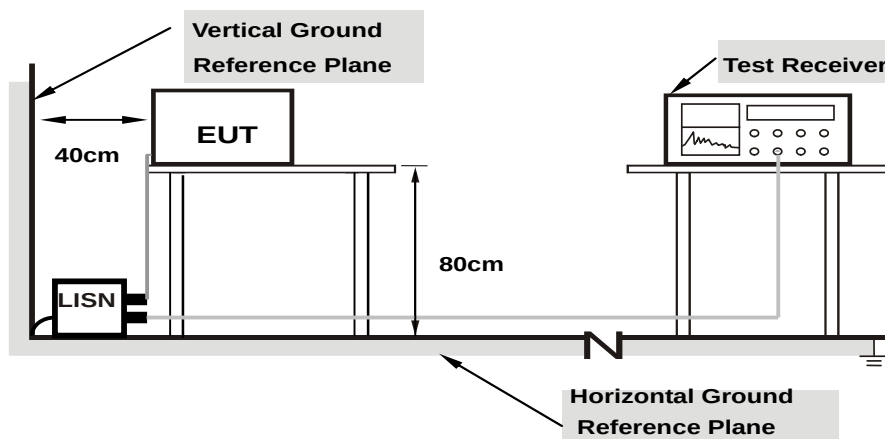
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

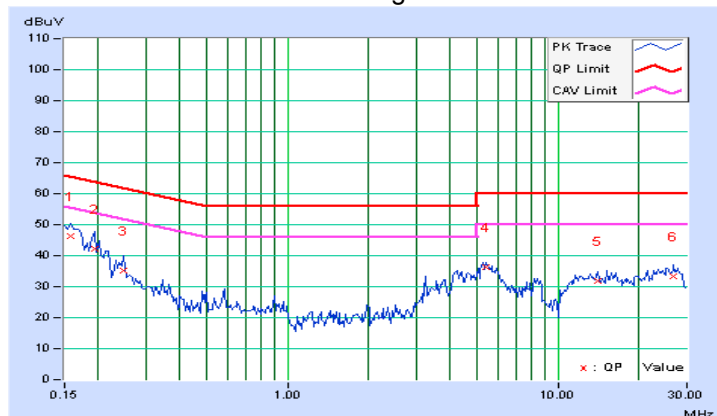
4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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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	0.15781	0.08	46.35	33.78	46.43	33.86	65.58	55.58	-19.15	-21.72
2	0.19297	0.09	42.12	30.57	42.21	30.66	63.91	53.91	-21.70	-23.25
3	0.24766	0.09	35.26	25.98	35.35	26.07	61.84	51.84	-26.48	-25.76
4	5.45313	0.28	35.85	29.63	36.13	29.91	60.00	50.00	-23.87	-20.09
5	14.01953	0.55	31.15	24.02	31.70	24.57	60.00	50.00	-28.30	-25.43
6	26.65625	0.85	32.46	26.23	33.31	27.08	60.00	50.00	-26.69	-22.92

Remarks:

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

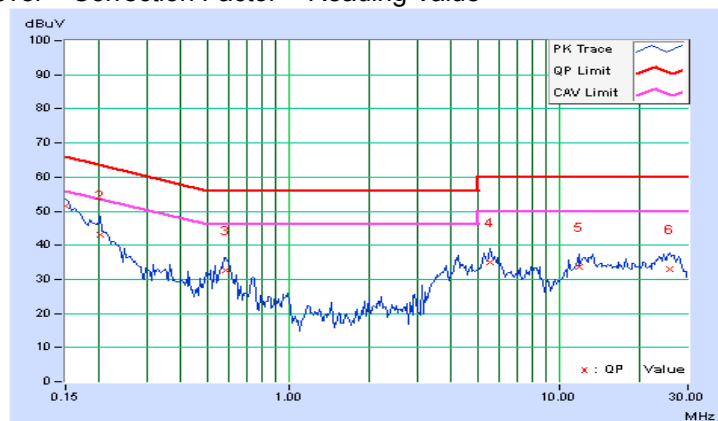


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	51.37	36.42	51.45	36.50	66.00	56.00	-14.55	-19.50
2	0.20078	0.08	43.18	32.99	43.26	33.07	63.58	53.58	-20.32	-20.51
3	0.58750	0.11	32.45	33.12	32.56	33.23	56.00	46.00	-23.44	-12.77
4	5.59375	0.29	34.72	28.51	35.01	28.80	60.00	50.00	-24.99	-21.20
5	11.81641	0.51	33.26	25.03	33.77	25.54	60.00	50.00	-26.23	-24.46
6	25.64844	0.88	32.25	26.78	33.13	27.66	60.00	50.00	-26.87	-22.34

Remarks:

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



4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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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	0.08	49.25	33.62	49.33	33.70	65.79	55.79	-16.46	-22.09
2	0.23203	0.09	46.21	34.86	46.30	34.95	62.38	52.38	-16.08	-17.43
3	0.38828	0.10	44.78	38.51	44.88	38.61	58.10	48.10	-13.22	-9.49
4	0.95078	0.13	30.17	26.23	30.30	26.36	56.00	46.00	-25.70	-19.64
5	7.26172	0.35	28.91	23.51	29.26	23.86	60.00	50.00	-30.74	-26.14
6	14.42578	0.56	23.62	19.62	24.18	20.18	60.00	50.00	-35.82	-29.82

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

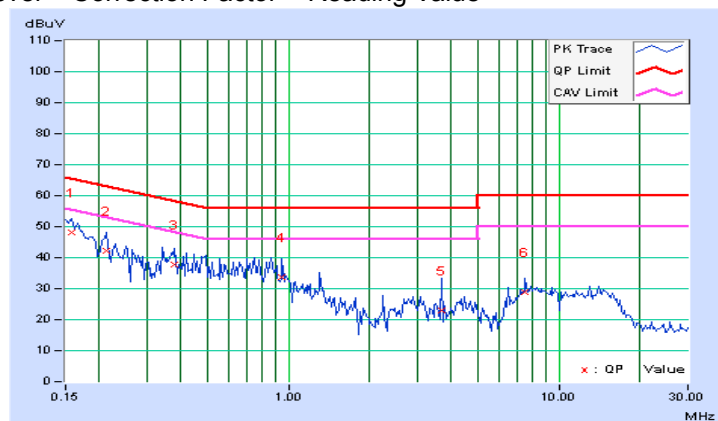


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.08	48.02	33.45	48.10	33.53	65.58	55.58	-17.48	-22.05
2	0.21250	0.08	42.15	32.69	42.23	32.77	63.11	53.11	-20.88	-20.34
3	0.38047	0.10	37.55	30.10	37.65	30.20	58.27	48.27	-20.62	-18.07
4	0.94688	0.13	33.45	24.98	33.58	25.11	56.00	46.00	-22.42	-20.89
5	3.68359	0.22	22.63	15.87	22.85	16.09	56.00	46.00	-33.15	-29.91
6	7.50391	0.36	28.62	22.41	28.98	22.77	60.00	50.00	-31.02	-27.23

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1	-	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 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	$\sqrt{}$		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	$\sqrt{}$		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 $N_{ANT} \leq 4$;

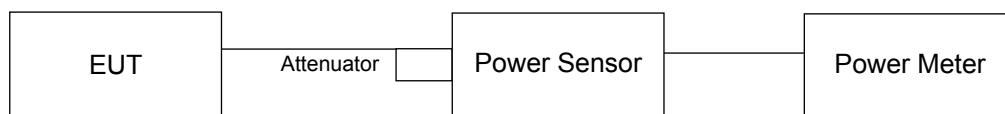
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

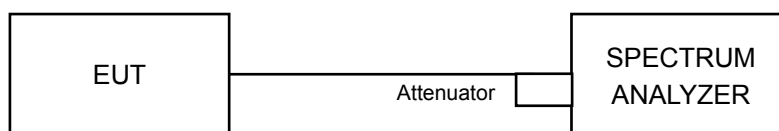
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR POWER OUTPUT 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

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
802.11a								
52	5260	17.50	18.91	18.65	207.32	23.17	24.00	Pass
60	5300	16.84	18.34	17.55	173.425	22.39	24.00	Pass
64	5320	16.62	17.86	17.56	164.03	22.15	24.00	Pass
100	5500	16.56	17.77	17.66	163.476	22.13	24.00	Pass
120	5600	17.78	19.11	18.32	209.369	23.21	24.00	Pass
140	5700	18.11	18.80	18.24	207.253	23.17	24.00	Pass
802.11ac (VHT20)								
52	5260	17.54	18.87	18.50	204.639	23.11	24.00	Pass
60	5300	16.80	18.35	17.62	174.064	22.41	24.00	Pass
64	5320	16.78	17.92	17.54	166.341	22.21	24.00	Pass
100	5500	16.84	17.86	17.68	168.014	22.25	24.00	Pass
120	5600	17.73	19.10	18.22	206.95	23.16	24.00	Pass
140	5700	18.10	18.79	18.38	209.113	23.20	24.00	Pass
802.11ac (VHT40)								
54	5270	18.32	19.71	19.21	244.829	23.89	24.00	Pass
62	5310	18.14	19.36	18.91	229.265	23.60	24.00	Pass
102	5510	16.54	17.48	16.61	146.872	21.67	24.00	Pass
118	5590	18.49	19.37	19.20	240.305	23.81	24.00	Pass
134	5670	18.48	19.44	19.32	243.878	23.87	24.00	Pass
802.11ac (VHT80)								
58	5290	16.22	17.56	17.38	153.597	21.86	24.00	Pass
106	5530	16.22	17.75	17.06	152.261	21.83	24.00	Pass
122	5610	18.41	19.53	19.29	244.004	23.87	24.00	Pass

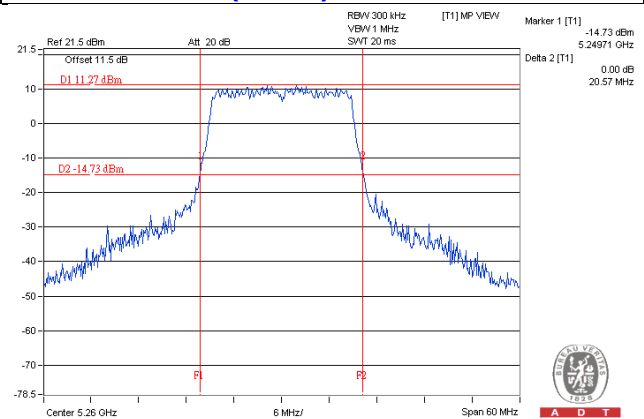
26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
802.11a				
52	5260	20.60	20.44	20.52
60	5300	20.61	20.44	20.55
64	5320	20.49	20.51	20.54
100	5500	20.55	20.49	20.66
120	5600	20.67	20.45	20.59
140	5700	20.58	20.43	20.60
802.11ac (VHT20)				
52	5260	20.90	20.57	20.83
60	5300	20.72	20.66	20.66
64	5320	20.87	20.65	20.82
100	5500	21.01	20.58	20.83
120	5600	20.84	20.63	20.75
140	5700	20.87	21.01	20.81
802.11ac (VHT40)				
54	5270	41.55	41.23	41.36
62	5310	41.52	41.08	41.16
102	5510	41.91	41.12	41.24
118	5590	41.91	41.14	41.20
134	5670	41.46	41.21	41.37
802.11ac (VHT80)				
58	5290	82.88	82.61	82.52
106	5530	83.23	82.73	82.48
122	5610	83.00	82.73	82.49

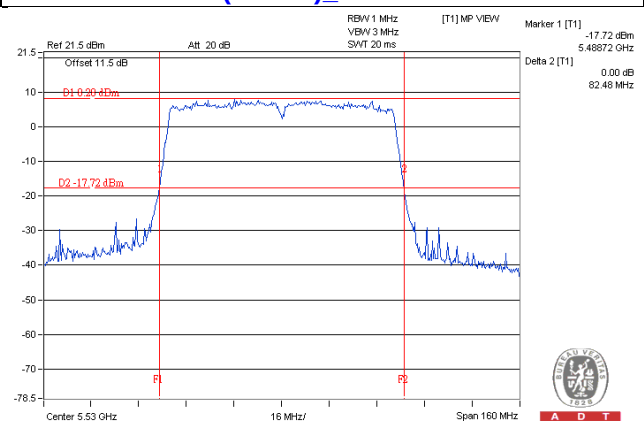
Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
802.11a			
52	5260	20.44	24.1 > 24
60	5300	20.44	24.1 > 24
64	5320	20.49	24.11 > 24
100	5500	20.49	24.11 > 24
120	5600	20.45	24.1 > 24
140	5700	20.43	24.1 > 24
802.11ac (VHT20)			
52	5260	20.57	24.13 > 24
60	5300	20.66	24.15 > 24
64	5320	20.65	24.14 > 24
100	5500	20.58	24.13 > 24
120	5600	20.63	24.14 > 24
140	5700	20.81	24.18 > 24
802.11ac (VHT40)			
54	5270	41.23	27.15 > 24
62	5310	41.08	27.13 > 24
102	5510	41.12	27.14 > 24
118	5590	41.14	27.14 > 24
134	5670	41.21	27.15 > 24
802.11ac (VHT80)			
58	5290	82.52	30.16 > 24
106	5530	82.48	30.16 > 24
122	5610	82.49	30.16 > 24

802.11ac (VHT20)_Chain 1 / CH52



802.11ac (VHT80)_Chain 2 / CH106



Beamforming Mode **POWER OUTPUT**

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
802.11ac (VHT20)								
52	5260	17.54	18.87	18.50	204.639	23.11	23.23	Pass
60	5300	16.80	18.35	17.62	174.064	22.41	23.23	Pass
64	5320	16.78	17.92	17.54	166.341	22.21	23.23	Pass
100	5500	16.84	17.86	17.68	168.014	22.25	23.23	Pass
120	5600	17.73	19.10	18.22	206.95	23.16	23.23	Pass
140	5700	18.10	18.79	18.38	209.113	23.20	23.23	Pass
802.11ac (VHT40)								
54	5270	17.48	18.98	18.46	205.19	23.12	23.23	Pass
62	5310	17.62	18.82	18.45	204.002	23.10	23.23	Pass
102	5510	16.54	17.48	16.61	146.872	21.67	23.23	Pass
118	5590	17.77	18.63	18.51	203.745	23.09	23.23	Pass
134	5670	17.82	18.60	18.66	206.429	23.15	23.23	Pass
802.11ac (VHT80)								
58	5290	16.22	17.56	17.38	153.597	21.86	23.23	Pass
106	5530	16.22	17.75	17.06	152.261	21.83	23.23	Pass
122	5610	17.73	18.78	18.58	206.913	23.16	23.23	Pass

NOTE: 1. 5250~5350MHz: The directional gain is 6.77dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(6.77-6)".

2. 5470~5725MHz: The directional gain is 6.77dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(6.77-6)".

26dB OCCUPIED BANDWIDTH

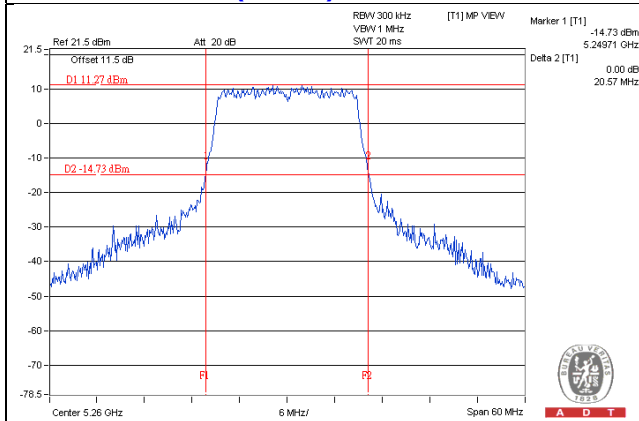
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
802.11ac (VHT20)				
52	5260	20.90	20.57	20.83
60	5300	20.72	20.66	20.66
64	5320	20.87	20.65	20.82
100	5500	21.01	20.58	20.83
120	5600	20.84	20.63	20.75
140	5700	20.87	21.01	20.81
802.11ac (VHT40)				
54	5270	41.68	41.44	41.07
62	5310	41.47	41.16	41.19
102	5510	41.91	41.12	41.24
118	5590	41.48	41.17	41.27
134	5670	41.52	41.27	41.29
802.11ac (VHT80)				
58	5290	82.88	82.61	82.52
106	5530	83.23	82.73	82.48
122	5610	83.24	82.84	82.48

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

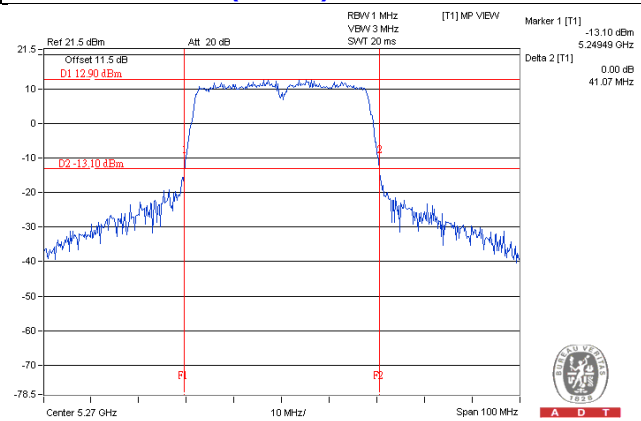
Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
802.11ac (VHT20)			
52	5260	20.57	24.13 > 24
60	5300	20.66	24.15 > 24
64	5320	20.65	24.14 > 24
100	5500	20.58	24.13 > 24
120	5600	20.63	24.14 > 24
140	5700	20.81	24.18 > 24
802.11ac (VHT40)			
54	5270	41.07	27.13 > 24
62	5310	41.16	27.14 > 24
102	5510	41.12	27.14 > 24
118	5590	41.17	27.14 > 24
134	5670	41.27	27.15 > 24
802.11ac (VHT80)			
58	5290	82.52	30.16 > 24
106	5530	82.48	30.16 > 24
122	5610	82.48	30.16 > 24

Spectrum Plot of Worst Value

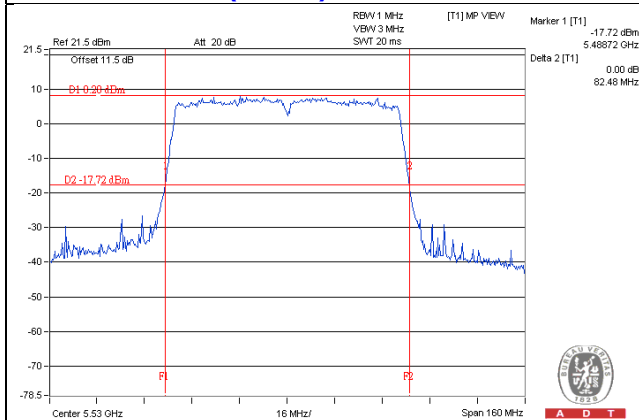
802.11ac (VHT20)_Chain 1 / CH52



802.11ac (VHT40)_Chain 2 / CH54



802.11ac (VHT80)_Chain 2 / CH106



4.4 Peak Power Spectral Density Measurement

4.4.1 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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

For 802.11a & 802.11ac (VHT20)

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW $\geq$ 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 802.11ac (VHT40) & 802.11ac (VHT80)

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW $\geq$ 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 $10 \log (1/\text{duty cycle})$

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.

4.4.7 Test Results

CDD Mode

For U-NII-2A, U-NII-2C Band

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
802.11a							
52	5260	4.72	5.32	4.92	9.77	10.23	Pass
60	5300	3.73	4.86	4.47	9.15	10.23	Pass
64	5320	3.73	4.74	4.30	9.05	10.23	Pass
100	5500	3.83	4.93	3.93	9.03	10.23	Pass
120	5600	4.31	5.73	4.96	9.81	10.23	Pass
140	5700	4.59	5.70	4.78	9.82	10.23	Pass
802.11ac (VHT20)							
52	5260	4.93	5.28	5.15	9.89	10.23	Pass
60	5300	3.21	4.46	3.91	8.66	10.23	Pass
64	5320	3.41	4.03	3.97	8.58	10.23	Pass
100	5500	3.41	4.73	3.60	8.72	10.23	Pass
120	5600	4.95	5.35	5.01	9.88	10.23	Pass
140	5700	4.88	5.22	4.97	9.80	10.23	Pass

NOTE: 1. Method 1 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. 5250~5350MHz: Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

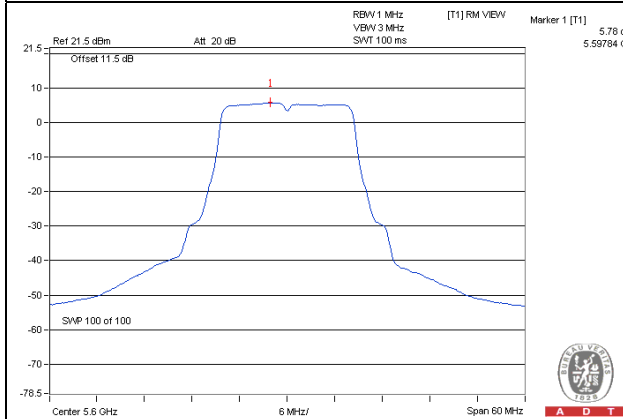
3. 5470~5725MHz: Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

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				
802.11ac (VHT40)								
54	5270	0.88	1.87	1.49	0.10	6.30	10.23	Pass
62	5310	1.20	2.49	1.88	0.10	6.76	10.23	Pass
102	5510	0.28	1.44	0.54	0.10	5.65	10.23	Pass
118	5550	1.18	2.24	1.64	0.10	6.58	10.23	Pass
134	5670	0.54	1.95	1.00	0.10	6.08	10.23	Pass
802.11ac (VHT80)								
58	5290	-3.52	-2.19	-2.50	0.21	2.28	10.23	Pass
106	5530	-4.00	-2.80	-3.90	0.21	1.45	10.23	Pass
122	5610	-2.13	-0.77	-1.62	0.21	3.51	10.23	Pass

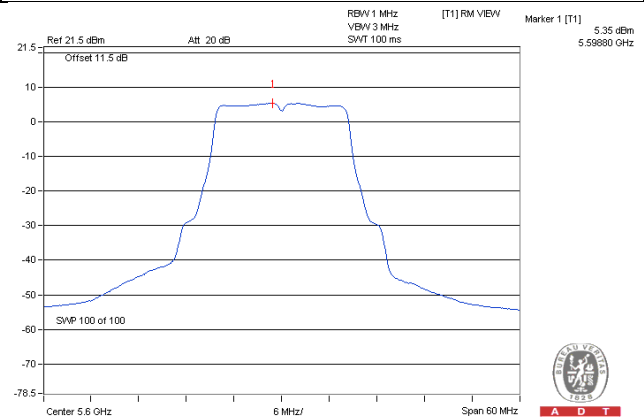
- NOTE:** 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5250~5350MHz: Directional gain = $2\text{dBi} + 10\log(3) = 6.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(6.77-6) = 10.23\text{dBm}$.
3. 5470~5725MHz: Directional gain = $2\text{dBi} + 10\log(3) = 6.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(6.77-6) = 10.23\text{dBm}$.

Spectrum Plot of Worst Value

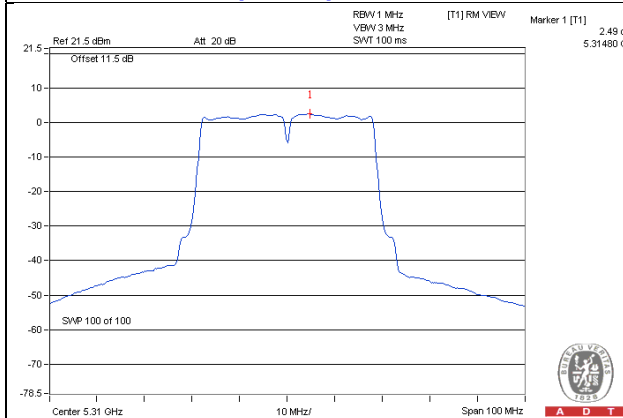
802.11a_Chain 1 / CH120



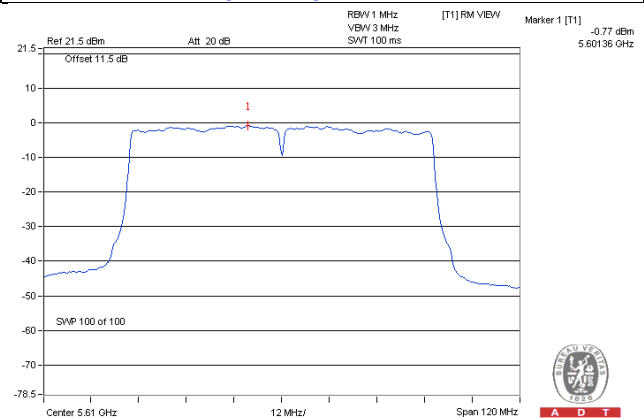
802.11ac (VHT20)_Chain 1 / CH120



802.11ac (VHT40)_Chain 1 / CH62



802.11ac (VHT80)_Chain 1 / CH122



Beamforming Mode

For U-NII-2A, U-NII-2C Band

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 3			
802.11ac (VHT20)							
52	5260	4.93	5.28	5.15	9.89	10.23	Pass
60	5300	3.21	4.46	3.91	8.66	10.23	Pass
64	5320	3.41	4.03	3.97	8.58	10.23	Pass
100	5500	3.41	4.73	3.60	8.72	10.23	Pass
120	5600	4.95	5.35	5.01	9.88	10.23	Pass
140	5700	4.88	5.22	4.97	9.80	10.23	Pass

NOTE: 1. Method 1 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. 5250~5350MHz: Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

3. 5470~5725MHz: Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

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				
802.11ac (VHT40)								
54	5270	0.50	1.27	0.81	0.10	5.74	10.23	Pass
62	5310	0.45	1.46	1.23	0.10	5.94	10.23	Pass
102	5510	0.28	1.44	0.54	0.10	5.65	10.23	Pass
118	5550	0.45	1.49	0.77	0.10	5.80	10.23	Pass
134	5670	0.19	0.62	-0.15	0.10	5.10	10.23	Pass
802.11ac (VHT80)								
58	5290	-3.52	-2.19	-2.50	0.21	2.28	10.23	Pass
106	5530	-4.00	-2.80	-3.90	0.21	1.45	10.23	Pass
122	5610	-2.97	-1.80	-2.42	0.21	2.61	10.23	Pass

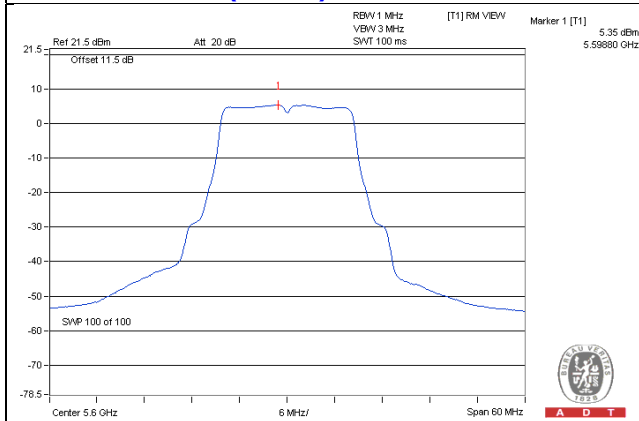
NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. 5250~5350MHz: Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

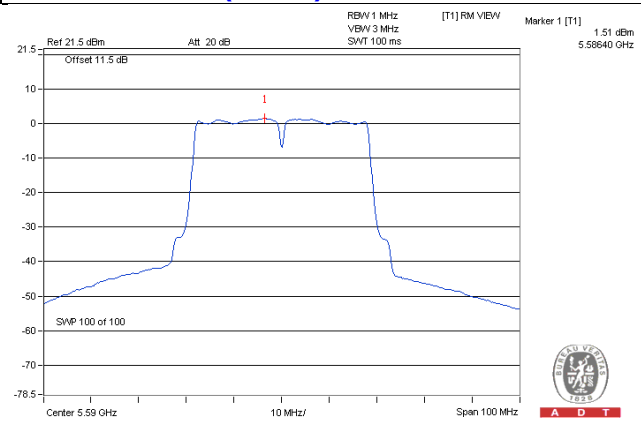
3. 5470~5725MHz: Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi , so the power density limit shall be reduced to 11-(6.77-6) = 10.23dBm.

Spectrum Plot of Worst Value

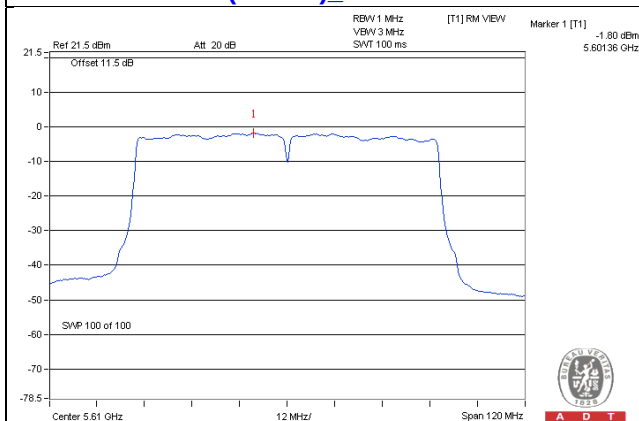
802.11ac (VHT20)_Chain 1 / CH120



802.11ac (VHT40)_Chain 1 / CH118



802.11ac (VHT80)_Chain 1 / CH122

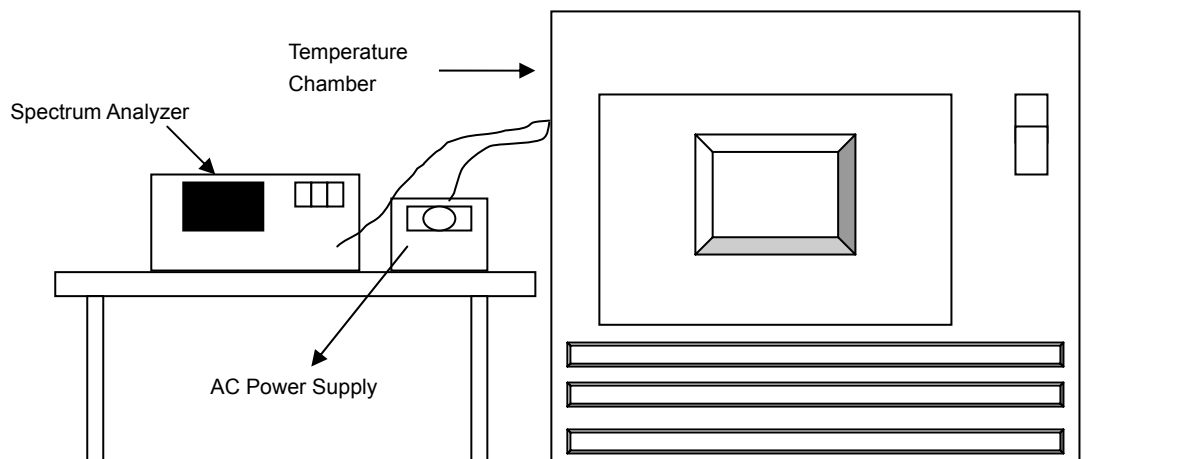


4.5 Frequency Stability Measurement

4.5.1 Limits of Frequency Stability Measurement

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

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

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- 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.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 Test Results

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5260MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5260.0075	0.00014	5260.0072	0.00014	5260.0036	0.00007	5260.005	0.00010
40	120	5259.9766	-0.00044	5259.9764	-0.00045	5259.9735	-0.00050	5259.9761	-0.00045
30	120	5260.0066	0.00013	5260.0097	0.00018	5260.0113	0.00021	5260.0112	0.00021
20	120	5260.0044	0.00008	5260.0037	0.00007	5260.0056	0.00011	5260.0073	0.00014
10	120	5259.9883	-0.00022	5259.9911	-0.00017	5259.9917	-0.00016	5259.9875	-0.00024
0	120	5260.0164	0.00031	5260.0187	0.00036	5260.0159	0.00030	5260.0172	0.00033
-10	120	5260.0116	0.00022	5260.0116	0.00022	5260.0141	0.00027	5260.01	0.00019
-20	120	5260.0191	0.00036	5260.0192	0.00037	5260.0173	0.00033	5260.0146	0.00028
-30	120	5259.982	-0.00034	5259.9824	-0.00033	5259.9846	-0.00029	5259.9815	-0.00035

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5260MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5260.0037	0.00007	5260.0045	0.00009	5260.0064	0.00012	5260.008	0.00015
	120	5260.0044	0.00008	5260.0037	0.00007	5260.0056	0.00011	5260.0073	0.00014
	102	5260.0051	0.00010	5260.0034	0.00006	5260.0056	0.00011	5260.0063	0.00012

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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