

FCC Test Report

Report No.: RF141003E10B-1

FCC ID: PY314300283

Test Model: EX6150

Received Date: Apr. 17, 2015

Test Date: Apr. 22 to July 21, 2015

Issued Date: Aug. 03, 2015

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: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (1): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (2): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City, Taiwan
R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.



Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT (DFS Band)	7
3.2 Description of Test Modes	9
3.2.1 Test Mode Applicability and Tested Channel Detail	10
3.3 Duty Cycle of Test Signal	12
3.4 Description of Support Units	13
3.4.1 Configuration of System under Test	13
3.5 General Description of Applied Standard	14
4 Test Types and Results	15
4.1 Radiated Emission and Bandedge Measurement.....	15
4.1.1 Limits of Radiated Emission and Bandedge Measurement	15
4.1.2 Test Instruments	16
4.1.3 Test Procedure	17
4.1.4 Deviation from Test Standard	17
4.1.5 Test Setup.....	18
4.1.6 EUT Operating Condition	18
4.1.7 Test Results	19
4.2 Conducted Emission Measurement	41
4.2.1 Limits of Conducted Emission Measurement	41
4.2.2 Test Instruments	41
4.2.3 Test Procedure	42
4.2.4 Deviation from Test Standard	42
4.2.5 Test Setup.....	42
4.2.6 EUT Operating Condition	42
4.2.7 Test Results	43
4.3 Transmit Power Measurement	45
4.3.1 Limits of Transmit Power Measurement	45
4.3.2 Test Setup.....	46
4.3.3 Test Instruments	46
4.3.4 Test Procedure	46
4.3.5 Deviation from Test Standard	46
4.3.6 EUT Operating Condition	46
4.3.7 Test Result.....	47
4.4 Peak Power Spectral Density Measurement	51
4.4.1 Limits of Peak Power Spectral Density Measurement	51
4.4.2 Test Setup.....	51
4.4.3 Test Instruments	51
4.4.4 Test Procedure	51
4.4.5 Deviation from Test Standard	52
4.4.6 EUT Operating Condition	52
4.4.7 Test Results	53
4.5 Frequency Stability Measurement	55
4.5.1 Limits of Frequency Stability Measurement	55
4.5.2 Test Setup.....	55
4.5.3 Test Instruments	55
4.5.4 Test Procedure	55
4.5.5 Deviation from Test Standard	55
4.5.6 EUT Operating Condition	55



4.5.7 Test Results 56

5 Pictures of Test Arrangements..... 57

Appendix – Information on the Testing Laboratories 58



A D T

Release Control Record

Issue No.	Description	Date Issued
RF141003E10B-1	Original release.	Aug. 03, 2015



1 Certificate of Conformity

Product: AC1200 WiFi Range Extender

Brand: NETGEAR

Test Model: EX6150

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: Apr. 22 to July 21, 2015

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10: 2013

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

Prepared by :  , **Date:** Aug. 03, 2015
Lori Chung / Specialist

Approved by :  , **Date:** Aug. 03, 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 -5.10dB at 0.25547MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB 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 i-pex not a standard connector.

NOTE: 1. This report is prepared for FCC class II permissive change. (Add DFS band: 5.26GHz ~ 5.32GHz, 5.50 ~ 5.58GHz, 5.66GHz ~ 5.70GHz).

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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 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	AC1200 WiFi Range Extender
Brand	NETGEAR
Test Model	EX6150
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	AC 100-240V, 0.2A, 50-60Hz
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 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	5.26GHz ~ 5.32GHz, 5.50 ~ 5.58GHz, 5.66GHz ~ 5.70GHz
Number of Channel	12 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 5 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
Output Power	802.11a: 249.768mW 802.11ac (VHT20): 247.222mW 802.11ac (VHT40): 247.195mW 802.11ac (VHT80): 69.616mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF141003E10-1 design is as the following:
 - ◆ Add DFS band <5.26GHz ~ 5.32GHz, 5.50 ~ 5.58GHz, 5.66GHz ~ 5.70GHz>
2. According to above condition, all test items need to be performed. And all data weres verified to meet the requirements.
3. 2.4GHz and 5GHz technology can transmit at same time.
4. The antennas provided to the EUT, please refer to the following table:

PCB Chain No.	Brand	Model	Antenna Gain(dBi) < including cable loss>	Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	Cable Length (mm)
Chain 0	NETGEAR	NA	3.1	2400~2500	Dipole	i-pec	50
			2.7	5150~5250			
			2.9	5250~5350			
			2.2	5470~5725			
			2.6	5725~5850			
Chain 1	NETGEAR	NA	3.1	2400~2500	Dipole	i-pec	50
			2.7	5150~5250			
			2.9	5250~5350			
			2.2	5470~5725			
			2.6	5725~5850			

5. The EUT incorporates a MIMO function.

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

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 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	5290MHz

For 5500 ~ 5700MHz

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	116	5580 MHz
104	5520 MHz	132	5660 MHz
108	5540 MHz	136	5680 MHz
112	5560 MHz	140	5700 MHz

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

Channel	Frequency	Channel	Frequency
102	5510 MHz	134	5670 MHz
110	5550 MHz		

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
106	5530MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

NOTE:

1. In original report, the EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

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.

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	29.5
802.11a	5500-5580 & 5660~5700	100 to 116 & 132 to 140	100, 116, 132, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 116 & 132 to 140	100, 116, 132, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 110 & 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106	106	OFDM	BPSK	29.5

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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5320 5500-5580 & 5660~5700	52 to 64 100 to 116 & 132 to 140	116	OFDM	BPSK	6

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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5320 5500-5700	52 to 64 100 to 140	116	OFDM	BPSK	6

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.

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	29.5
802.11a	5500-5580 & 5660~5700	100 to 116 & 132 to 140	100, 116, 132, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 116 & 132 to 140	100, 116, 132, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 110 & 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106	106	OFDM	BPSK	29.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 68%RH	120Vac, 60Hz	Tim Ho
RE<1G	22deg. C, 69%RH	120Vac, 60Hz	Jason Huang
PLC	20deg. 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 $\geq 98\%$, duty factor is not required.

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

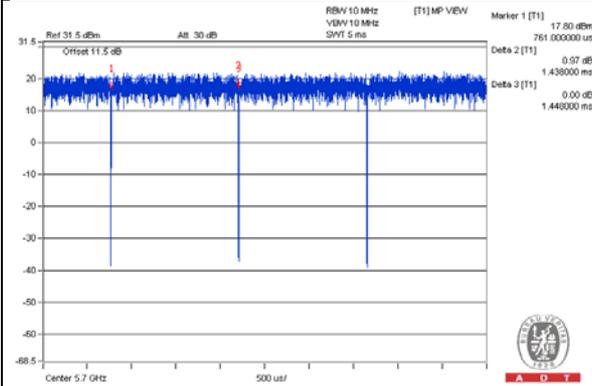
802.11a: Duty cycle = $1.438 \text{ ms} / 1.448 \text{ ms} = 0.993$

802.11ac (VHT20): Duty cycle = $1.346 \text{ ms} / 1.359 \text{ ms} = 0.99$

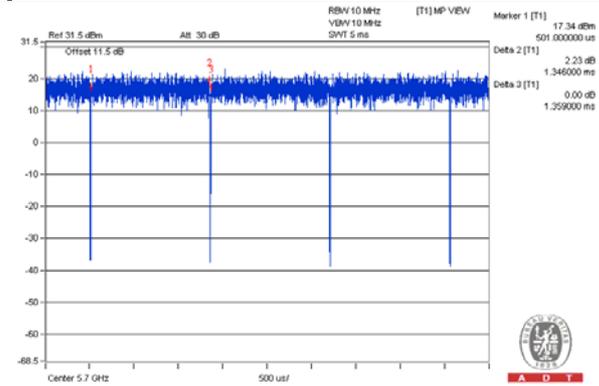
802.11ac (VHT40): Duty cycle = $0.666 \text{ ms} / 0.677 \text{ ms} = 0.984$

802.11ac (VHT80): Duty cycle = $0.334 \text{ ms} / 0.354 \text{ ms} = 0.944$, Duty factor = $10 * \log(1/0.944) = 0.25$

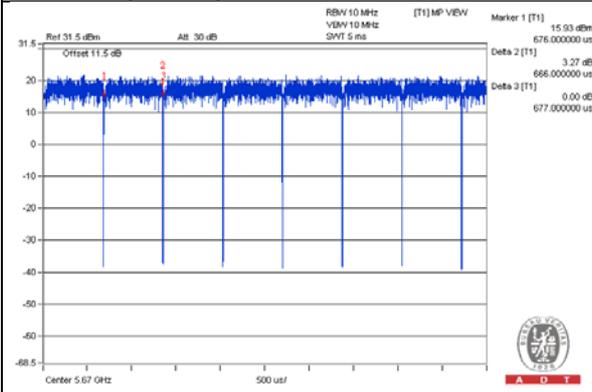
802.11a



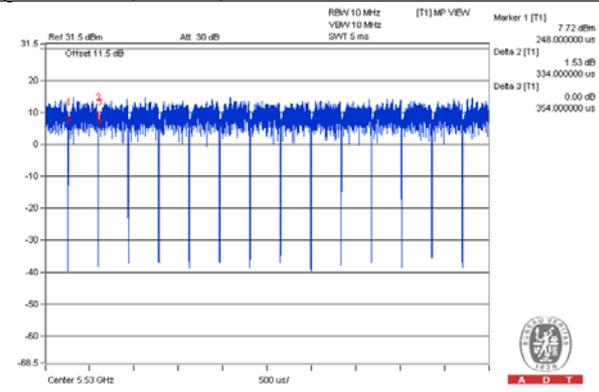
802.11ac (VHT20)



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.

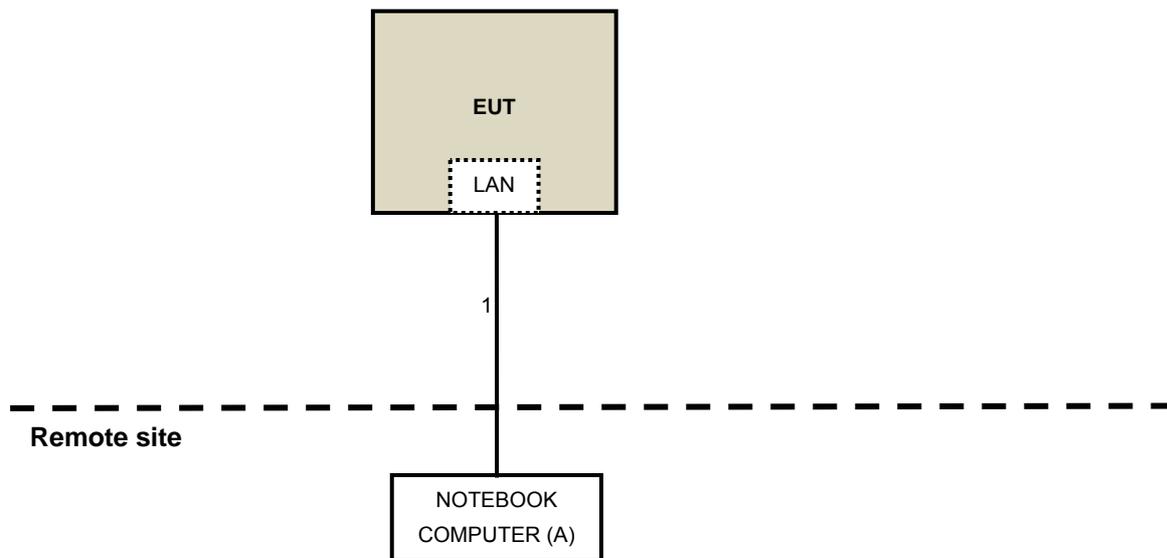
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab

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

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 C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedure New Rules 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
Test Receiver Agilent	N9038A	MY51210202	Dec. 12, 2014	Dec. 11, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	8D-FB	CHGCAB-001 -1 CHGCAB-001 -2	Oct. 04, 2014	Oct. 03, 2015
	RF-141	CHGCAB-004	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	000032009111 0	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/ 4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
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	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2015	May 07, 2016
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-AR	MAA0812-00 8	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 test was performed in 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: July 15 to 21, 2015

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:

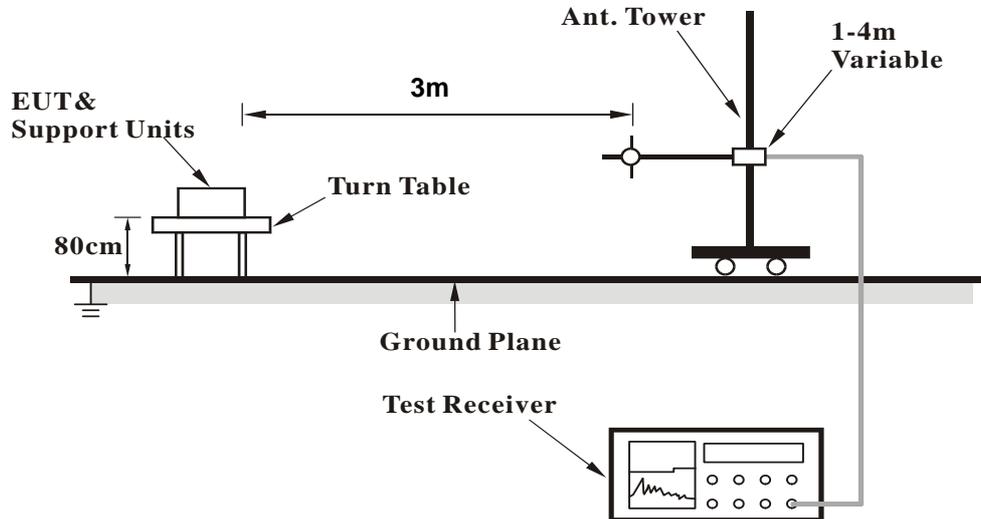
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 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 ($10 \log(1/\text{duty cycle})$).
4. 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.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

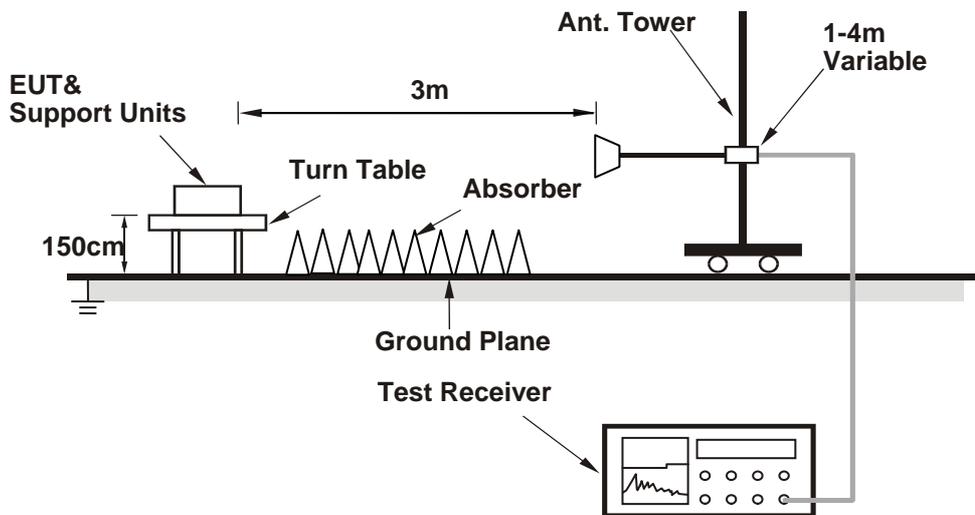
No deviation.

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 "(MT76xxE_AP.exe)" 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	5150.00	50.8 PK	74.0	-23.2	1.85 H	298	42.47	8.33
2	5150.00	39.1 AV	54.0	-14.9	1.85 H	298	30.77	8.33
3	*5260.00	109.1 PK			1.85 H	298	100.47	8.63
4	*5260.00	99.1 AV			1.85 H	298	90.47	8.63
5	5380.00	51.9 PK	74.0	-22.1	1.85 H	298	43.02	8.88
6	5380.00	40.3 AV	54.0	-13.7	1.85 H	298	31.42	8.88
7	#10520.00	48.3 PK	74.0	-25.7	1.19 H	326	33.84	14.46
8	#10520.00	41.0 AV	54.0	-13.0	1.19 H	326	26.54	14.46
9	15780.00	56.0 PK	74.0	-18.0	1.10 H	337	36.78	19.22
10	15780.00	43.5 AV	54.0	-10.5	1.10 H	337	24.28	19.22

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	53.9 PK	74.0	-20.1	1.68 V	4	45.57	8.33
2	5150.00	43.5 AV	54.0	-10.5	1.68 V	4	35.17	8.33
3	*5260.00	118.8 PK			1.68 V	4	110.17	8.63
4	*5260.00	109.0 AV			1.68 V	4	100.37	8.63
5	5380.00	56.7 PK	74.0	-17.3	1.52 V	350	47.82	8.88
6	5380.00	45.0 AV	54.0	-9.0	1.52 V	350	36.12	8.88
7	#10520.00	51.1 PK	74.0	-22.9	1.35 V	200	36.64	14.46
8	#10520.00	40.8 AV	54.0	-13.2	1.35 V	200	26.34	14.46
9	15780.00	57.6 PK	74.0	-16.4	1.14 V	321	38.38	19.22
10	15780.00	45.5 AV	54.0	-8.5	1.14 V	321	26.28	19.22

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	4820.00	52.7 PK	74.0	-21.3	1.80 H	290	45.63	7.07
2	4820.00	40.5 AV	54.0	-13.5	1.80 H	290	33.43	7.07
3	*5300.00	108.4 PK			1.80 H	290	99.71	8.69
4	*5300.00	98.6 AV			1.80 H	290	89.91	8.69
5	5350.00	54.9 PK	74.0	-19.1	1.80 H	290	46.10	8.80
6	5350.00	41.4 AV	54.0	-12.6	1.80 H	290	32.60	8.80
7	10600.00	48.1 PK	74.0	-25.9	1.17 H	337	33.56	14.54
8	10600.00	40.6 AV	54.0	-13.4	1.17 H	337	26.06	14.54
9	15900.00	55.8 PK	74.0	-18.2	1.15 H	339	36.41	19.39
10	15900.00	43.5 AV	54.0	-10.5	1.15 H	339	24.11	19.39

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	4820.00	52.5 PK	74.0	-21.5	1.70 V	4	45.43	7.07
2	4820.00	40.1 AV	54.0	-13.9	1.70 V	4	33.03	7.07
3	*5300.00	118.0 PK			1.70 V	4	109.31	8.69
4	*5300.00	108.0 AV			1.70 V	4	99.31	8.69
5	5350.00	58.6 PK	74.0	-15.4	1.70 V	4	49.80	8.80
6	5350.00	45.3 AV	54.0	-8.7	1.70 V	4	36.50	8.80
7	10600.00	50.9 PK	74.0	-23.1	1.37 V	213	36.36	14.54
8	10600.00	40.8 AV	54.0	-13.2	1.37 V	213	26.26	14.54
9	15900.00	57.6 PK	74.0	-16.4	1.17 V	311	38.21	19.39
10	15900.00	45.4 AV	54.0	-8.6	1.17 V	311	26.01	19.39

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.

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	4840.00	52.3 PK	74.0	-21.7	1.83 H	287	45.16	7.14
2	4840.00	39.8 AV	54.0	-14.2	1.83 H	287	32.66	7.14
3	*5320.00	108.4 PK			1.83 H	287	99.67	8.73
4	*5320.00	98.0 AV			1.83 H	287	89.27	8.73
5	5350.00	67.1 PK	74.0	-6.9	1.83 H	287	58.30	8.80
6	5350.00	49.2 AV	54.0	-4.8	1.83 H	287	40.40	8.80
7	10640.00	48.3 PK	74.0	-25.7	1.19 H	329	33.72	14.58
8	10640.00	41.0 AV	54.0	-13.0	1.19 H	329	26.42	14.58
9	15960.00	56.5 PK	74.0	-17.5	1.11 H	335	37.15	19.35
10	15960.00	43.8 AV	54.0	-10.2	1.11 H	335	24.45	19.35

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	4840.00	52.8 PK	74.0	-21.2	1.93 V	23	45.66	7.14
2	4840.00	40.2 AV	54.0	-13.8	1.93 V	23	33.06	7.14
3	*5320.00	117.4 PK			1.58 V	353	108.67	8.73
4	*5320.00	107.2 AV			1.58 V	353	98.47	8.73
5	5350.00	71.1 PK	74.0	-2.9	1.70 V	4	62.30	8.80
6	5350.00	53.1 AV	54.0	-0.9	1.70 V	4	44.30	8.80
7	10640.00	51.4 PK	74.0	-22.6	1.34 V	216	36.82	14.58
8	10640.00	41.0 AV	54.0	-13.0	1.34 V	216	26.42	14.58
9	15960.00	57.8 PK	74.0	-16.2	1.19 V	322	38.45	19.35
10	15960.00	45.8 AV	54.0	-8.2	1.19 V	322	26.45	19.35

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	69.4 PK	74.0	-4.6	1.69 H	191	60.22	9.18
2	#5470.00	48.5 AV	54.0	-5.5	1.69 H	191	39.32	9.18
3	*5500.00	109.2 PK			1.69 H	191	99.91	9.29
4	*5500.00	99.1 AV			1.69 H	191	89.81	9.29
5	11000.00	47.9 PK	74.0	-26.1	1.23 H	332	32.63	15.27
6	11000.00	40.5 AV	54.0	-13.5	1.23 H	332	25.23	15.27
7	#16500.00	56.3 PK	74.0	-17.7	1.16 H	329	35.43	20.87
8	#16500.00	43.8 AV	54.0	-10.2	1.16 H	329	22.93	20.87

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	73.1 PK	74.0	-0.9	1.75 V	360	63.92	9.18
2	#5470.00	52.5 AV	54.0	-1.5	1.75 V	360	43.32	9.18
3	*5500.00	116.8 PK			1.59 V	45	107.51	9.29
4	*5500.00	106.9 AV			1.59 V	45	97.61	9.29
5	11000.00	51.1 PK	74.0	-22.9	1.35 V	194	35.83	15.27
6	11000.00	40.5 AV	54.0	-13.5	1.35 V	194	25.23	15.27
7	#16500.00	58.1 PK	74.0	-15.9	1.12 V	316	37.23	20.87
8	#16500.00	45.7 AV	54.0	-8.3	1.12 V	316	24.83	20.87

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)
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	55.9 PK	74.0	-18.1	1.86 H	292	46.72	9.18
2	#5470.00	43.0 AV	54.0	-11.0	1.86 H	292	33.82	9.18
3	*5580.00	107.5 PK			1.86 H	292	98.15	9.35
4	*5580.00	98.1 AV			1.86 H	292	88.75	9.35
5	#5725.00	52.3 PK	74.0	-21.7	1.86 H	292	42.60	9.70
6	#5725.00	40.6 AV	54.0	-13.4	1.86 H	292	30.90	9.70
7	11160.00	48.2 PK	74.0	-25.8	1.21 H	336	32.96	15.24
8	11160.00	40.9 AV	54.0	-13.1	1.21 H	336	25.66	15.24
9	#16740.00	55.7 PK	74.0	-18.3	1.13 H	340	33.93	21.77
10	#16740.00	43.2 AV	54.0	-10.8	1.13 H	340	21.43	21.77

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	55.5 PK	74.0	-18.5	1.59 V	44	46.32	9.18
2	#5470.00	42.8 AV	54.0	-11.2	1.59 V	44	33.62	9.18
3	*5580.00	117.0 PK			1.59 V	44	107.65	9.35
4	*5580.00	107.3 AV			1.59 V	44	97.95	9.35
5	#5725.00	51.7 PK	74.0	-22.3	1.59 V	44	42.00	9.70
6	#5725.00	40.2 AV	54.0	-13.8	1.59 V	44	30.50	9.70
7	11160.00	50.7 PK	74.0	-23.3	1.34 V	199	35.46	15.24
8	11160.00	40.6 AV	54.0	-13.4	1.34 V	199	25.36	15.24
9	#16740.00	57.4 PK	74.0	-16.6	1.20 V	308	35.63	21.77
10	#16740.00	45.6 AV	54.0	-8.4	1.20 V	308	23.83	21.77

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 132	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	*5660.00	108.8 PK			1.90 H	305	99.27	9.53
2	*5660.00	98.7 AV			1.90 H	305	89.17	9.53
3	#5725.00	52.4 PK	74.0	-21.6	1.90 H	305	42.70	9.70
4	#5725.00	40.9 AV	54.0	-13.1	1.90 H	305	31.20	9.70
5	#5740.00	53.6 PK	74.0	-20.4	1.90 H	305	43.86	9.74
6	#5740.00	40.9 AV	54.0	-13.1	1.90 H	305	31.16	9.74
7	11320.00	47.9 PK	74.0	-26.1	1.23 H	311	32.70	15.20
8	11320.00	40.9 AV	54.0	-13.1	1.23 H	311	25.70	15.20
9	#16980.00	55.2 PK	74.0	-18.8	1.05 H	333	32.18	23.02
10	#16980.00	43.0 AV	54.0	-11.0	1.05 H	333	19.98	23.02

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	*5660.00	117.5 PK			1.71 V	45	107.97	9.53
2	*5660.00	107.5 AV			1.71 V	45	97.97	9.53
3	#5725.00	56.2 PK	74.0	-17.8	1.71 V	45	46.50	9.70
4	#5725.00	44.6 AV	54.0	-9.4	1.71 V	45	34.90	9.70
5	#5740.00	53.5 PK	74.0	-20.5	1.71 V	45	43.76	9.74
6	#5740.00	41.1 AV	54.0	-12.9	1.71 V	45	31.36	9.74
7	11320.00	51.4 PK	74.0	-22.6	1.36 V	206	36.20	15.20
8	11320.00	40.8 AV	54.0	-13.2	1.36 V	206	25.60	15.20
9	#16980.00	58.3 PK	74.0	-15.7	1.09 V	306	35.28	23.02
10	#16980.00	46.0 AV	54.0	-8.0	1.09 V	306	22.98	23.02

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 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	104.0 PK			1.86 H	309	94.36	9.64
2	*5700.00	93.8 AV			1.86 H	309	84.16	9.64
3	#5725.00	67.6 PK	74.0	-6.4	1.86 H	309	57.90	9.70
4	#5725.00	49.0 AV	54.0	-5.0	1.86 H	309	39.30	9.70
5	11400.00	48.4 PK	74.0	-25.6	1.17 H	336	33.05	15.35
6	11400.00	41.3 AV	54.0	-12.7	1.17 H	336	25.95	15.35
7	#17100.00	56.1 PK	74.0	-17.9	1.15 H	330	32.30	23.80
8	#17100.00	43.9 AV	54.0	-10.1	1.15 H	330	20.10	23.80

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	113.1 PK			1.70 V	41	103.46	9.64
2	*5700.00	102.9 AV			1.70 V	41	93.26	9.64
3	#5725.00	72.2 PK	74.0	-1.8	1.70 V	40	62.50	9.70
4	#5725.00	53.5 AV	54.0	-0.5	1.70 V	40	43.80	9.70
5	11400.00	50.9 PK	74.0	-23.1	1.33 V	199	35.55	15.35
6	11400.00	40.8 AV	54.0	-13.2	1.33 V	199	25.45	15.35
7	#17100.00	57.7 PK	74.0	-16.3	1.17 V	335	33.90	23.80
8	#17100.00	45.6 AV	54.0	-8.4	1.17 V	335	21.80	23.80

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	5150.00	54.4 PK	74.0	-19.6	1.78 H	19	46.07	8.33
2	5150.00	41.4 AV	54.0	-12.6	1.78 H	19	33.07	8.33
3	*5260.00	108.0 PK			1.78 H	19	99.37	8.63
4	*5260.00	97.9 AV			1.78 H	19	89.27	8.63
5	5350.00	54.4 PK	74.0	-19.6	1.78 H	19	45.60	8.80
6	5350.00	43.6 AV	54.0	-10.4	1.78 H	19	34.80	8.80
7	#10520.00	48.5 PK	74.0	-25.5	1.17 H	311	34.04	14.46
8	#10520.00	41.3 AV	54.0	-12.7	1.17 H	311	26.84	14.46
9	15780.00	55.6 PK	74.0	-18.4	1.08 H	338	36.38	19.22
10	15780.00	43.3 AV	54.0	-10.7	1.08 H	338	24.08	19.22

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	1.70 V	173	46.17	8.33
2	5150.00	41.2 AV	54.0	-12.8	1.70 V	173	32.87	8.33
3	*5260.00	116.0 PK			1.70 V	173	107.37	8.63
4	*5260.00	107.1 AV			1.70 V	173	98.47	8.63
5	5350.00	54.2 PK	74.0	-19.8	1.70 V	173	45.40	8.80
6	5350.00	43.5 AV	54.0	-10.5	1.70 V	173	34.70	8.80
7	#10520.00	51.7 PK	74.0	-22.3	1.32 V	211	37.24	14.46
8	#10520.00	41.1 AV	54.0	-12.9	1.32 V	211	26.64	14.46
9	15780.00	57.5 PK	74.0	-16.5	1.18 V	311	38.28	19.22
10	15780.00	45.7 AV	54.0	-8.3	1.18 V	311	26.48	19.22

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	5150.00	53.4 PK	74.0	-20.6	1.89 H	285	45.07	8.33
2	5150.00	41.5 AV	54.0	-12.5	1.89 H	285	33.17	8.33
3	*5300.00	109.2 PK			1.89 H	285	100.51	8.69
4	*5300.00	99.3 AV			1.89 H	285	90.61	8.69
5	5350.00	59.4 PK	74.0	-14.6	1.89 H	285	50.60	8.80
6	5350.00	42.8 AV	54.0	-11.2	1.89 H	285	34.00	8.80
7	10600.00	48.6 PK	74.0	-25.4	1.14 H	332	34.06	14.54
8	10600.00	41.4 AV	54.0	-12.6	1.14 H	332	26.86	14.54
9	15900.00	55.8 PK	74.0	-18.2	1.10 H	346	36.41	19.39
10	15900.00	43.1 AV	54.0	-10.9	1.10 H	346	23.71	19.39

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	5150.00	52.8 PK	74.0	-21.2	1.77 V	349	44.47	8.33
2	5150.00	41.1 AV	54.0	-12.9	1.77 V	349	32.77	8.33
3	*5300.00	118.0 PK			1.77 V	349	109.31	8.69
4	*5300.00	108.1 AV			1.77 V	349	99.41	8.69
5	5350.00	63.2 PK	74.0	-10.8	1.77 V	349	54.40	8.80
6	5350.00	46.5 AV	54.0	-7.5	1.77 V	349	37.70	8.80
7	10600.00	50.8 PK	74.0	-23.2	1.33 V	188	36.26	14.54
8	10600.00	40.5 AV	54.0	-13.5	1.33 V	188	25.96	14.54
9	15900.00	58.0 PK	74.0	-16.0	1.13 V	306	38.61	19.39
10	15900.00	45.8 AV	54.0	-8.2	1.13 V	306	26.41	19.39

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.

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	107.2 PK			1.84 H	284	98.47	8.73
2	*5320.00	97.3 AV			1.84 H	284	88.57	8.73
3	5350.00	69.3 PK	74.0	-4.7	1.84 H	284	60.50	8.80
4	5350.00	49.2 AV	54.0	-4.8	1.84 H	284	40.40	8.80
5	10640.00	48.4 PK	74.0	-25.6	1.16 H	327	33.82	14.58
6	10640.00	41.0 AV	54.0	-13.0	1.16 H	327	26.42	14.58
7	15960.00	56.3 PK	74.0	-17.7	1.14 H	343	36.95	19.35
8	15960.00	43.8 AV	54.0	-10.2	1.14 H	343	24.45	19.35

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	116.2 PK			1.65 V	360	107.47	8.73
2	*5320.00	106.1 AV			1.65 V	360	97.37	8.73
3	5350.00	73.5 PK	74.0	-0.5	1.65 V	360	64.70	8.80
4	5350.00	53.1 AV	54.0	-0.9	1.65 V	360	44.30	8.80
5	10640.00	50.9 PK	74.0	-23.1	1.30 V	204	36.32	14.58
6	10640.00	40.8 AV	54.0	-13.2	1.30 V	204	26.22	14.58
7	15960.00	58.1 PK	74.0	-15.9	1.09 V	328	38.75	19.35
8	15960.00	45.9 AV	54.0	-8.1	1.09 V	328	26.55	19.35

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	70.3 PK	74.0	-3.7	1.81 H	305	61.12	9.18
2	#5470.00	48.9 AV	54.0	-5.1	1.81 H	305	39.72	9.18
3	*5500.00	102.8 PK			1.81 H	305	93.51	9.29
4	*5500.00	93.3 AV			1.81 H	305	84.01	9.29
5	11000.00	48.5 PK	74.0	-25.5	1.14 H	331	33.23	15.27
6	11000.00	41.1 AV	54.0	-12.9	1.14 H	331	25.83	15.27
7	#16500.00	56.2 PK	74.0	-17.8	1.13 H	333	35.33	20.87
8	#16500.00	43.8 AV	54.0	-10.2	1.13 H	333	22.93	20.87

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	73.6 PK	74.0	-0.4	1.60 V	353	64.42	9.18
2	#5470.00	52.4 AV	54.0	-1.6	1.60 V	353	43.22	9.18
3	*5500.00	112.0 PK			1.68 V	353	102.71	9.29
4	*5500.00	102.4 AV			1.68 V	353	93.11	9.29
5	11000.00	50.9 PK	74.0	-23.1	1.40 V	188	35.63	15.27
6	11000.00	40.8 AV	54.0	-13.2	1.40 V	188	25.53	15.27
7	#16500.00	57.9 PK	74.0	-16.1	1.17 V	326	37.03	20.87
8	#16500.00	45.8 AV	54.0	-8.2	1.17 V	326	24.93	20.87

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)
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	53.0 PK	74.0	-21.0	1.82 H	302	43.82	9.18
2	#5470.00	41.2 AV	54.0	-12.8	1.82 H	302	32.02	9.18
3	*5580.00	105.9 PK			1.82 H	302	96.55	9.35
4	*5580.00	96.2 AV			1.82 H	302	86.85	9.35
5	#5725.00	51.6 PK	74.0	-22.4	1.82 H	302	41.90	9.70
6	#5725.00	39.7 AV	54.0	-14.3	1.82 H	302	30.00	9.70
7	11160.00	48.2 PK	74.0	-25.8	1.22 H	323	32.96	15.24
8	11160.00	41.1 AV	54.0	-12.9	1.22 H	323	25.86	15.24
9	#16740.00	56.8 PK	74.0	-17.2	1.12 H	342	35.03	21.77
10	#16740.00	44.0 AV	54.0	-10.0	1.12 H	342	22.23	21.77

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	53.1 PK	74.0	-20.9	1.88 V	351	43.92	9.18
2	#5470.00	41.3 AV	54.0	-12.7	1.88 V	351	32.12	9.18
3	*5580.00	114.8 PK			1.75 V	43	105.45	9.35
4	*5580.00	105.3 AV			1.75 V	43	95.95	9.35
5	#5725.00	52.0 PK	74.0	-22.0	1.88 V	351	42.30	9.70
6	#5725.00	39.9 AV	54.0	-14.1	1.88 V	351	30.20	9.70
7	11160.00	51.6 PK	74.0	-22.4	1.38 V	215	36.36	15.24
8	11160.00	41.0 AV	54.0	-13.0	1.38 V	215	25.76	15.24
9	#16740.00	57.9 PK	74.0	-16.1	1.14 V	315	36.13	21.77
10	#16740.00	45.8 AV	54.0	-8.2	1.14 V	315	24.03	21.77

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	50.8 PK	74.0	-23.2	1.89 H	312	41.62	9.18
2	#5470.00	39.0 AV	54.0	-15.0	1.89 H	312	29.82	9.18
3	*5660.00	105.8 PK			1.89 H	312	96.27	9.53
4	*5660.00	96.2 AV			1.89 H	312	86.67	9.53
5	#5725.00	52.7 PK	74.0	-21.3	1.89 H	312	43.00	9.70
6	#5725.00	40.6 AV	54.0	-13.4	1.89 H	312	30.90	9.70
7	11320.00	48.5 PK	74.0	-25.5	1.14 H	333	33.30	15.20
8	11320.00	41.0 AV	54.0	-13.0	1.14 H	333	25.80	15.20
9	#16980.00	55.9 PK	74.0	-18.1	1.15 H	325	32.88	23.02
10	#16980.00	43.5 AV	54.0	-10.5	1.15 H	325	20.48	23.02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	51.0 PK	74.0	-23.0	1.89 V	228	41.82	9.18
2	#5470.00	39.0 AV	54.0	-15.0	1.89 V	228	29.82	9.18
3	*5660.00	114.5 PK			1.75 V	44	104.97	9.53
4	*5660.00	105.1 AV			1.75 V	44	95.57	9.53
5	#5725.00	53.2 PK	74.0	-20.8	1.89 V	228	43.50	9.70
6	#5725.00	40.8 AV	54.0	-13.2	1.89 V	228	31.10	9.70
7	11320.00	51.6 PK	74.0	-22.4	1.35 V	204	36.40	15.20
8	11320.00	41.2 AV	54.0	-12.8	1.35 V	204	26.00	15.20
9	#16980.00	57.1 PK	74.0	-16.9	1.08 V	311	34.08	23.02
10	#16980.00	45.1 AV	54.0	-8.9	1.08 V	311	22.08	23.02

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	101.6 PK			1.81 H	296	91.96	9.64
2	*5700.00	92.1 AV			1.81 H	296	82.46	9.64
3	#5725.00	68.6 PK	74.0	-5.4	1.81 H	296	58.90	9.70
4	#5725.00	49.1 AV	54.0	-4.9	1.81 H	296	39.40	9.70
5	11400.00	48.5 PK	74.0	-25.5	1.18 H	313	33.15	15.35
6	11400.00	41.0 AV	54.0	-13.0	1.18 H	313	25.65	15.35
7	#17100.00	56.3 PK	74.0	-17.7	1.15 H	331	32.50	23.80
8	#17100.00	43.6 AV	54.0	-10.4	1.15 H	331	19.80	23.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	110.6 PK			2.13 V	291	100.96	9.64
2	*5700.00	101.1 AV			2.13 V	291	91.46	9.64
3	#5725.00	72.6 PK	74.0	-1.4	2.13 V	291	62.90	9.70
4	#5725.00	53.1 AV	54.0	-0.9	2.13 V	291	43.40	9.70
5	11400.00	50.6 PK	74.0	-23.4	1.29 V	212	35.25	15.35
6	11400.00	40.5 AV	54.0	-13.5	1.29 V	212	25.15	15.35
7	#17100.00	57.9 PK	74.0	-16.1	1.13 V	312	34.10	23.80
8	#17100.00	45.8 AV	54.0	-8.2	1.13 V	312	22.00	23.80

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)
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	106.3 PK			1.82 H	296	97.66	8.64
2	*5270.00	96.1 AV			1.82 H	296	87.46	8.64
3	5350.00	62.7 PK	74.0	-11.3	1.82 H	296	53.90	8.80
4	5350.00	45.4 AV	54.0	-8.6	1.82 H	296	36.60	8.80
5	#10540.00	48.7 PK	74.0	-25.3	1.23 H	328	34.23	14.47
6	#10540.00	41.1 AV	54.0	-12.9	1.23 H	328	26.63	14.47
7	15810.00	56.3 PK	74.0	-17.7	1.13 H	333	37.00	19.30
8	15810.00	43.8 AV	54.0	-10.2	1.13 H	333	24.50	19.30

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	115.2 PK			1.47 V	169	106.56	8.64
2	*5270.00	105.1 AV			1.47 V	169	96.46	8.64
3	5350.00	66.7 PK	74.0	-7.3	1.51 V	169	57.90	8.80
4	5350.00	49.7 AV	54.0	-4.3	1.51 V	169	40.90	8.80
5	#10540.00	51.7 PK	74.0	-22.3	1.32 V	203	37.23	14.47
6	#10540.00	41.2 AV	54.0	-12.8	1.32 V	203	26.73	14.47
7	15810.00	57.4 PK	74.0	-16.6	1.13 V	323	38.10	19.30
8	15810.00	45.3 AV	54.0	-8.7	1.13 V	323	26.00	19.30

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	101.6 PK			1.80 H	306	92.88	8.72
2	*5310.00	91.6 AV			1.80 H	306	82.88	8.72
3	5350.00	62.9 PK	74.0	-11.1	1.80 H	306	54.10	8.80
4	5350.00	48.9 AV	54.0	-5.1	1.80 H	306	40.10	8.80
5	10620.00	48.4 PK	74.0	-25.6	1.19 H	327	33.83	14.57
6	10620.00	40.9 AV	54.0	-13.1	1.19 H	327	26.33	14.57
7	15930.00	56.2 PK	74.0	-17.8	1.07 H	335	36.83	19.37
8	15930.00	43.9 AV	54.0	-10.1	1.07 H	335	24.53	19.37

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			1.62 V	173	101.48	8.72
2	*5310.00	100.5 AV			1.62 V	173	91.78	8.72
3	5350.00	66.9 PK	74.0	-7.1	1.62 V	173	58.10	8.80
4	5350.00	53.1 AV	54.0	-0.9	1.62 V	173	44.30	8.80
5	10620.00	50.9 PK	74.0	-23.1	1.38 V	190	36.33	14.57
6	10620.00	40.6 AV	54.0	-13.4	1.38 V	190	26.03	14.57
7	15930.00	57.0 PK	74.0	-17.0	1.17 V	309	37.63	19.37
8	15930.00	45.0 AV	54.0	-9.0	1.17 V	309	25.63	19.37

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	68.0 PK	74.0	-6.0	1.81 H	288	58.82	9.18
2	#5470.00	49.6 AV	54.0	-4.4	1.81 H	288	40.42	9.18
3	*5510.00	99.7 PK			1.81 H	288	90.41	9.29
4	*5510.00	90.6 AV			1.81 H	288	81.31	9.29
5	11020.00	48.3 PK	74.0	-25.7	1.17 H	318	33.03	15.27
6	11020.00	40.7 AV	54.0	-13.3	1.17 H	318	25.43	15.27
7	#16530.00	55.9 PK	74.0	-18.1	1.08 H	328	34.83	21.07
8	#16530.00	43.3 AV	54.0	-10.7	1.08 H	328	22.23	21.07

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	71.3 PK	74.0	-2.7	1.67 V	2	62.12	9.18
2	#5470.00	53.1 AV	54.0	-0.9	1.67 V	2	43.92	9.18
3	*5510.00	108.6 PK			1.67 V	2	99.31	9.29
4	*5510.00	99.7 AV			1.67 V	2	90.41	9.29
5	11020.00	50.6 PK	74.0	-23.4	1.40 V	214	35.33	15.27
6	11020.00	40.4 AV	54.0	-13.6	1.40 V	214	25.13	15.27
7	#16530.00	57.7 PK	74.0	-16.3	1.20 V	315	36.63	21.07
8	#16530.00	45.4 AV	54.0	-8.6	1.20 V	315	24.33	21.07

REMARKS:

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

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	65.6 PK	74.0	-8.4	1.81 H	305	56.42	9.18
2	#5470.00	45.7 AV	54.0	-8.3	1.81 H	305	36.52	9.18
3	*5550.00	104.9 PK			1.81 H	305	95.57	9.33
4	*5550.00	95.3 AV			1.81 H	305	85.97	9.33
5	#5725.00	53.4 PK	74.0	-20.6	1.81 H	305	43.70	9.70
6	#5725.00	42.1 AV	54.0	-11.9	1.81 H	305	32.40	9.70
7	11100.00	48.3 PK	74.0	-25.7	1.18 H	311	33.05	15.25
8	11100.00	41.3 AV	54.0	-12.7	1.18 H	311	26.05	15.25
9	#16650.00	55.3 PK	74.0	-18.7	1.12 H	343	33.72	21.58
10	#16650.00	43.1 AV	54.0	-10.9	1.12 H	343	21.52	21.58

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	69.6 PK	74.0	-4.4	1.67 V	38	60.42	9.18
2	#5470.00	49.7 AV	54.0	-4.3	1.67 V	38	40.52	9.18
3	*5550.00	114.1 PK			1.67 V	38	104.77	9.33
4	*5550.00	104.5 AV			1.67 V	38	95.17	9.33
5	#5725.00	53.6 PK	74.0	-20.4	1.67 V	38	43.90	9.70
6	#5725.00	42.0 AV	54.0	-12.0	1.67 V	38	32.30	9.70
7	11100.00	51.5 PK	74.0	-22.5	1.40 V	205	36.25	15.25
8	11100.00	41.2 AV	54.0	-12.8	1.40 V	205	25.95	15.25
9	#16650.00	58.3 PK	74.0	-15.7	1.11 V	335	36.72	21.58
10	#16650.00	46.0 AV	54.0	-8.0	1.11 V	335	24.42	21.58

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	103.1 PK			1.80 H	305	93.55	9.55
2	*5670.00	93.6 AV			1.80 H	305	84.05	9.55
3	#5725.00	64.7 PK	74.0	-9.3	1.80 H	305	55.00	9.70
4	#5725.00	49.7 AV	54.0	-4.3	1.80 H	305	40.00	9.70
5	11340.00	48.4 PK	74.0	-25.6	1.22 H	334	33.16	15.24
6	11340.00	41.0 AV	54.0	-13.0	1.22 H	334	25.76	15.24
7	#17010.00	55.8 PK	74.0	-18.2	1.10 H	321	32.58	23.22
8	#17010.00	43.0 AV	54.0	-11.0	1.10 H	321	19.78	23.22

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	112.7 PK			1.72 V	42	103.15	9.55
2	*5670.00	102.9 AV			1.72 V	42	93.35	9.55
3	#5725.00	68.5 PK	74.0	-5.5	1.00 V	327	58.80	9.70
4	#5725.00	53.8 AV	54.0	-0.2	1.00 V	327	44.10	9.70
5	11340.00	51.1 PK	74.0	-22.9	1.39 V	197	35.86	15.24
6	11340.00	40.7 AV	54.0	-13.3	1.39 V	197	25.46	15.24
7	#17010.00	57.2 PK	74.0	-16.8	1.10 V	309	33.98	23.22
8	#17010.00	45.3 AV	54.0	-8.7	1.10 V	309	22.08	23.22

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	98.6 PK			1.86 H	303	89.92	8.68
2	*5290.00	87.8 AV			1.86 H	303	79.12	8.68
3	5398.00	59.4 PK	74.0	-14.6	1.86 H	303	50.48	8.92
4	5398.00	49.9 AV	54.0	-4.1	1.86 H	303	40.98	8.92
5	#10580.00	48.8 PK	74.0	-25.2	1.19 H	318	34.28	14.52
6	#10580.00	41.5 AV	54.0	-12.5	1.19 H	318	26.98	14.52
7	15870.00	55.6 PK	74.0	-18.4	1.11 H	336	36.25	19.35
8	15870.00	43.0 AV	54.0	-11.0	1.11 H	336	23.65	19.35

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	107.2 PK			1.09 V	325	98.52	8.68
2	*5290.00	96.5 AV			1.09 V	325	87.82	8.68
3	5398.00	63.3 PK	74.0	-10.7	1.81 V	6	54.38	8.92
4	5398.00	53.5 AV	54.0	-0.5	1.81 V	6	44.58	8.92
5	#10580.00	51.2 PK	74.0	-22.8	1.31 V	184	36.68	14.52
6	#10580.00	40.9 AV	54.0	-13.1	1.31 V	184	26.38	14.52
7	15870.00	57.6 PK	74.0	-16.4	1.09 V	320	38.25	19.35
8	15870.00	45.8 AV	54.0	-8.2	1.09 V	320	26.45	19.35

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	5350.00	60.5 PK	74.0	-13.5	1.88 H	287	51.70	8.80
2	5350.00	48.7 AV	54.0	-5.3	1.88 H	287	39.90	8.80
3	#5467.00	63.5 PK	74.0	-10.5	1.88 H	287	54.33	9.17
4	#5467.00	49.5 AV	54.0	-4.5	1.88 H	287	40.33	9.17
5	*5530.00	97.3 PK			1.88 H	287	87.99	9.31
6	*5530.00	86.6 AV			1.88 H	287	77.29	9.31
7	11060.00	48.0 PK	74.0	-26.0	1.19 H	330	32.74	15.26
8	11060.00	40.9 AV	54.0	-13.1	1.19 H	330	25.64	15.26
9	#16590.00	55.6 PK	74.0	-18.4	1.13 H	348	34.16	21.44
10	#16590.00	43.3 AV	54.0	-10.7	1.13 H	348	21.86	21.44

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	5350.00	64.8 PK	74.0	-9.2	1.80 V	39	56.00	8.80
2	5350.00	53.2 AV	54.0	-0.8	1.80 V	39	44.40	8.80
3	#5467.00	67.2 PK	74.0	-6.8	1.80 V	39	58.03	9.17
4	#5467.00	53.4 AV	54.0	-0.6	1.80 V	39	44.23	9.17
5	*5530.00	106.1 PK			1.80 V	39	96.79	9.31
6	*5530.00	95.2 AV			1.80 V	39	85.89	9.31
7	11060.00	51.0 PK	74.0	-23.0	1.34 V	209	35.74	15.26
8	11060.00	40.9 AV	54.0	-13.1	1.34 V	209	25.64	15.26
9	#16590.00	58.0 PK	74.0	-16.0	1.09 V	330	36.56	21.44
10	#16590.00	45.7 AV	54.0	-8.3	1.09 V	330	24.26	21.44

REMARKS:

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

Below 1GHz Data:

802.11a

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	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	63.80	26.0 QP	40.0	-14.0	1.50 H	259	40.64	-14.61
2	144.12	28.6 QP	43.5	-14.9	1.50 H	332	41.94	-13.34
3	219.19	27.2 QP	46.0	-18.8	1.00 H	270	43.37	-16.14
4	375.20	28.2 QP	46.0	-17.8	1.00 H	155	38.46	-10.23
5	500.00	32.2 QP	46.0	-13.8	1.50 H	234	39.59	-7.36
6	799.23	27.2 QP	46.0	-18.8	1.00 H	233	28.63	-1.40

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	40.72	35.2 QP	40.0	-4.8	1.00 V	360	48.96	-13.73
2	71.61	35.2 QP	40.0	-4.8	1.00 V	231	51.14	-15.94
3	82.42	31.1 QP	40.0	-8.9	1.00 V	214	49.88	-18.78
4	298.74	30.3 QP	46.0	-15.7	1.50 V	201	42.73	-12.41
5	501.01	32.3 QP	46.0	-13.7	1.00 V	121	39.65	-7.33
6	960.00	27.2 QP	46.0	-18.8	1.50 V	233	26.14	1.06

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	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
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: Apr. 22, 2015

4.2.3 Test Procedure

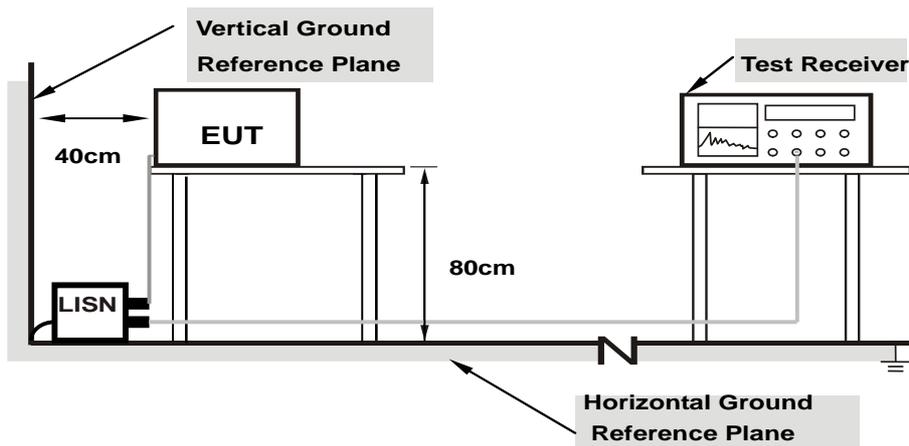
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

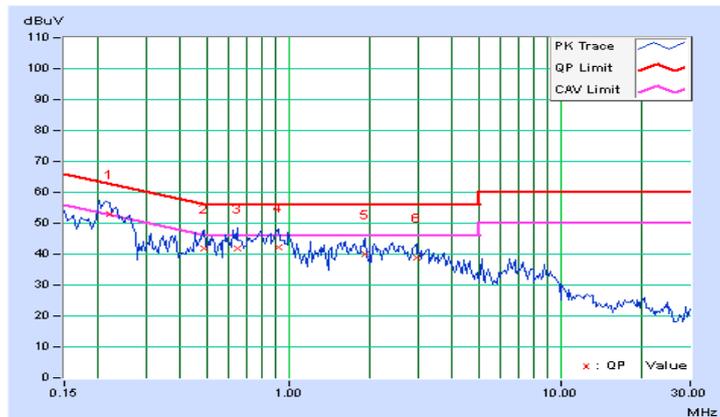
4.2.7 Test Results

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

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.22031	0.09	52.78	39.68	52.87	39.77	62.81	52.81	-9.94	-13.04
2	0.48984	0.10	41.77	36.06	41.87	36.16	56.17	46.17	-14.30	-10.01
3	0.65000	0.11	41.57	33.50	41.68	33.61	56.00	46.00	-14.32	-12.39
4	0.91953	0.13	42.22	34.14	42.35	34.27	56.00	46.00	-13.65	-11.73
5	1.91797	0.17	39.72	32.73	39.89	32.90	56.00	46.00	-16.11	-13.10
6	2.95313	0.19	38.84	31.49	39.03	31.68	56.00	46.00	-16.97	-14.32

REMARKS:

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

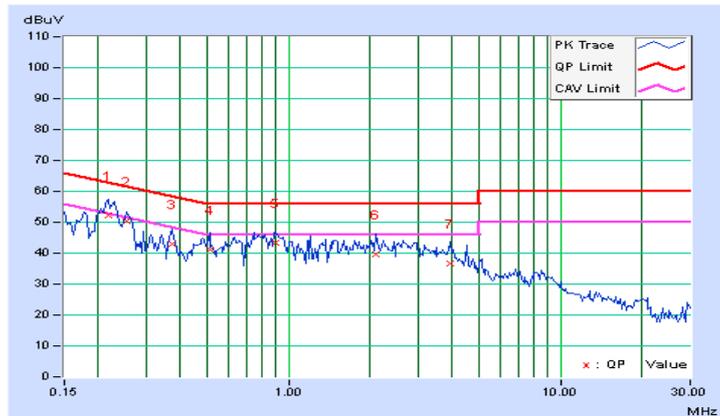


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.21641	0.08	52.01	38.93	52.09	39.01	62.96	52.96	-10.86	-13.94
2	0.25547	0.09	50.29	46.39	50.38	46.48	61.58	51.58	-11.20	-5.10
3	0.37266	0.10	42.93	38.12	43.03	38.22	58.44	48.44	-15.41	-10.22
4	0.51328	0.11	40.96	34.48	41.07	34.59	56.00	46.00	-14.93	-11.41
5	0.90000	0.12	43.24	35.14	43.36	35.26	56.00	46.00	-12.64	-10.74
6	2.09766	0.17	39.48	32.38	39.65	32.55	56.00	46.00	-16.35	-13.45
7	3.92188	0.23	36.27	29.22	36.50	29.45	56.00	46.00	-19.50	-16.55

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	√		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 $N_{ANT} \leq 4$;

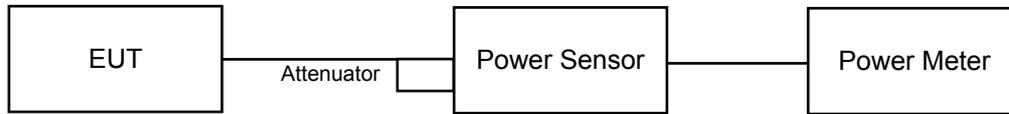
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

Refer to section 4.1.2 to get information of above instrument.

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 with average sensor 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

POWER OUTPUT:

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
802.11a							
52	5260	20.86	20.94	246.064	23.91	24	PASS
60	5300	20.97	20.78	244.7	23.89	24	PASS
64	5320	19.66	19.59	183.461	22.64	24	PASS
100	5500	19.75	20.49	206.35	23.15	24	PASS
116	5580	20.99	20.94	249.768	23.98	24	PASS
132	5660	20.93	20.72	241.912	23.84	24	PASS
140	5700	17.34	18.47	124.507	20.95	23.99	PASS
802.11ac (VHT20)							
52	5260	20.85	20.99	247.222	23.93	24	PASS
60	5300	20.81	20.98	245.818	23.91	24	PASS
64	5320	19.56	19.12	172.023	22.36	24	PASS
100	5500	20.16	19.56	194.118	22.88	24	PASS
116	5580	20.85	20.97	246.645	23.92	24	PASS
132	5660	20.48	20.93	235.566	23.72	24	PASS
140	5700	17.26	17.44	108.674	20.36	24	PASS
802.11ac (VHT40)							
54	5270	20.89	20.95	247.195	23.93	24	PASS
62	5310	17.25	17.38	107.79	20.33	24	PASS
102	5510	16.53	16.45	89.135	19.50	24	PASS
110	5550	20.51	20.92	236.055	23.73	24	PASS
134	5670	18.38	18.67	142.486	21.54	24	PASS
802.11ac (VHT80)							
58	5290	15.54	15.29	69.616	18.43	24	PASS
106	5530	14.41	14.51	55.855	17.47	24	PASS

26dB BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
802.11a			
52	5260	29.65	29.31
60	5300	28.92	28.26
64	5320	22.61	24.65
100	5500	20.27	25.75
116	5580	26.78	27.92
132	5660	28.07	28.17
140	5700	19.95	20.11
802.11ac (VHT20)			
52	5260	33.63	33.51
60	5300	33.26	33.60
64	5320	21.09	20.78
100	5500	20.97	21.16
116	5580	26.30	27.93
132	5660	27.02	33.88
140	5700	20.52	20.63
802.11ac (VHT40)			
54	5270	71.64	73.55
62	5310	41.77	42.02
102	5510	41.61	41.86
110	5550	67.92	67.48
134	5670	42.27	41.85
802.11ac (VHT80)			
58	5290	82.06	81.85
106	5530	81.74	81.90

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

802.11a

Power Limit = 11dBm + 10logB < UNII Band 2A~2C>

Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	29.31	25.67 > 24
60	5300	28.26	25.51 > 24
64	5320	22.61	24.54 > 24
100	5500	20.27	24.06 > 24
116	5580	26.78	25.27 > 24
132	5660	28.07	25.48 > 24
140	5700	19.95	23.99 < 24

802.11ac (VHT20)

52	5260	33.51	26.25 > 24
60	5300	33.26	26.21 > 24
64	5320	20.78	24.17 > 24
100	5500	20.97	24.21 > 24
116	5580	26.30	25.19 > 24
132	5660	27.02	25.31 > 24
140	5700	20.52	24.12 > 24

802.11ac (VHT40)

54	5270	71.64	29.55 > 24
62	5310	41.77	27.2 > 24
102	5510	41.61	27.19 > 24
110	5550	67.48	29.29 > 24
134	5670	41.85	27.21 > 24

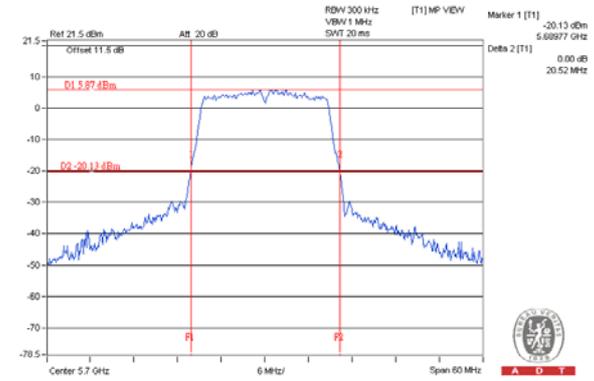
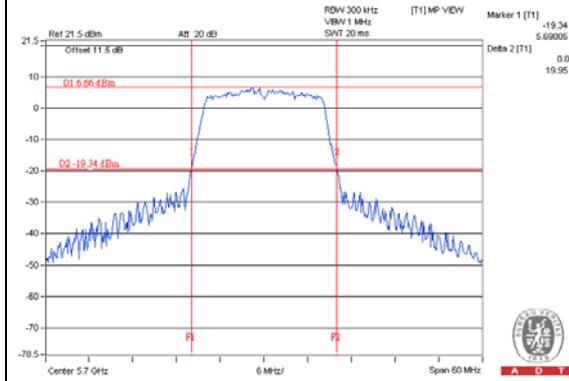
802.11ac (VHT80)

58	5290	81.85	30.13 > 24
106	5530	81.74	30.12 > 24

SPECTRUM PLOT OF WORST VALUE

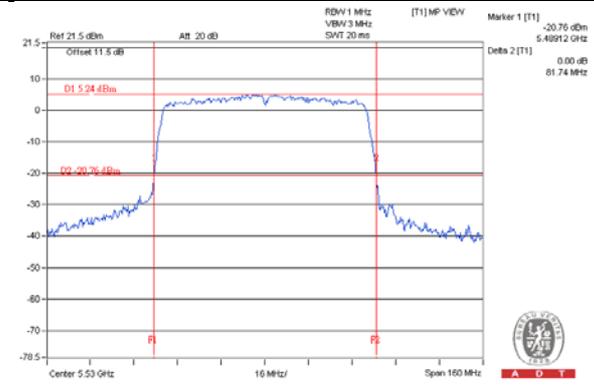
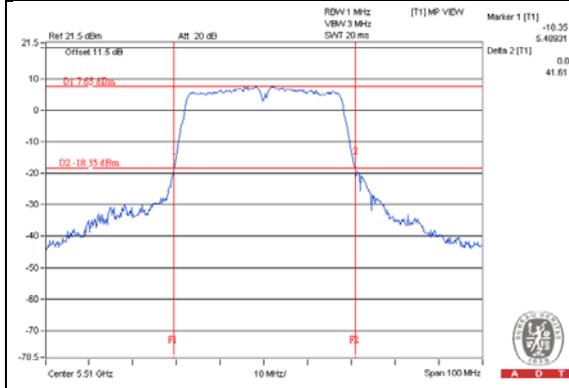
802.11a – Chain (0): CH 140

802.11ac (VHT20) – Chain (0): CH 140



802.11ac (VHT40) – Chain (0): CH 102

802.11ac (VHT80) – Chain (0): CH 106

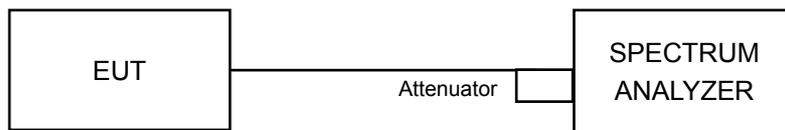


4.4 Peak Power Spectral Density Measurement

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) & 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

For 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)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.



4.4.7 Test Results

802.11a						
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
52	5260	7.00	6.75	9.89	11	PASS
60	5300	6.44	6.51	9.49	11	PASS
64	5320	4.69	5.01	7.86	11	PASS
100	5500	4.71	5.92	8.37	11	PASS
116	5580	6.29	6.50	9.41	11	PASS
132	5660	6.65	6.26	9.47	11	PASS
140	5700	1.79	2.30	5.06	11	PASS
802.11ac (VHT20)						
52	5260	6.66	6.59	9.64	11	PASS
60	5300	6.59	6.75	9.68	11	PASS
64	5320	4.26	3.96	7.12	11	PASS
100	5500	5.15	5.02	8.10	11	PASS
116	5580	5.37	6.10	8.76	11	PASS
132	5660	5.23	6.63	9.00	11	PASS
140	5700	1.39	0.90	4.16	11	PASS
802.11ac (VHT40)						
54	5270	3.20	3.35	6.29	11	PASS
62	5310	-1.95	-2.42	0.83	11	PASS
102	5510	-3.01	-1.64	0.74	11	PASS
110	5550	3.27	3.74	6.52	11	PASS
134	5670	-0.30	0.49	3.12	11	PASS

NOTE:

- 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.
- For U-NII-2A Band:**
Directional gain = $2.9\text{dBi} + 10\log(2) = 5.91\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.
- For U-NII-2C Band:**
Directional gain = $2.2\text{dBi} + 10\log(2) = 5.21\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.

802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (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				
58	5290	-6.26	-6.21	0.25	-2.97	11	PASS
106	5530	-5.33	-5.61	0.25	-2.21	11	PASS

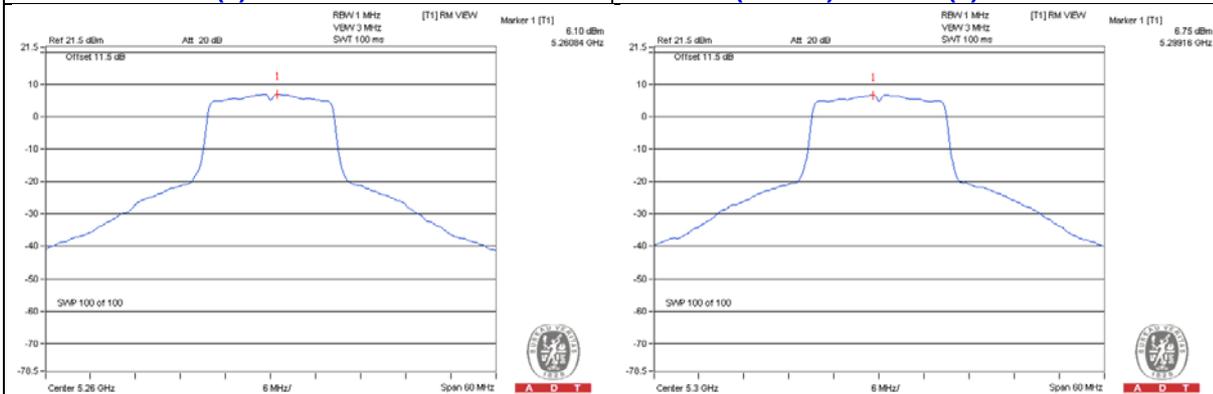
NOTE:

- 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.
- For U-NII-2A Band:**
Directional gain = $2.9\text{dBi} + 10\log(2) = 5.91\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.
For U-NII-2C Band:
Directional gain = $2.2\text{dBi} + 10\log(2) = 5.21\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

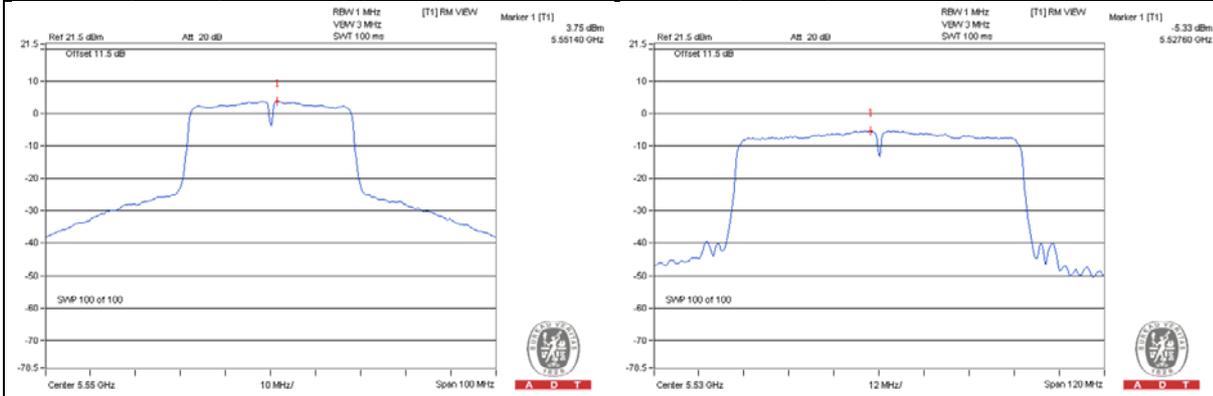
802.11a – Chain (0): CH 52

802.11ac (VHT20) – Chain (1): CH 60



802.11ac (VHT40) – Chain (1): CH 110

802.11ac (VHT80) – Chain (0): CH 106

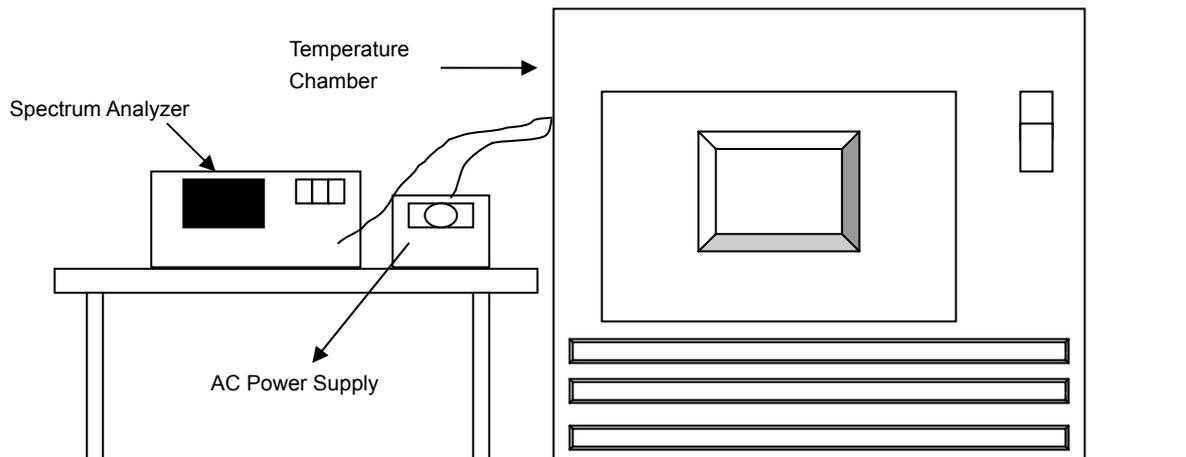


4.5 Frequency Stability Measurement

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: 5700MHz									
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	5699.9938	-0.00011	5699.99	-0.00018	5699.9899	-0.00018	5699.9887	-0.00020
40	120	5699.9932	-0.00012	5699.9902	-0.00017	5699.9931	-0.00012	5699.9912	-0.00015
30	120	5700.0288	0.00051	5700.0294	0.00052	5700.0299	0.00052	5700.0285	0.00050
20	120	5700.0172	0.00030	5700.0149	0.00026	5700.0165	0.00029	5700.0187	0.00033
10	120	5700.0096	0.00017	5700.0133	0.00023	5700.0109	0.00019	5700.013	0.00023
0	120	5699.9768	-0.00041	5699.9785	-0.00038	5699.981	-0.00033	5699.9791	-0.00037
-10	120	5700.0129	0.00023	5700.0126	0.00022	5700.0123	0.00022	5700.0118	0.00021
-20	120	5699.9802	-0.00035	5699.981	-0.00033	5699.9773	-0.00040	5699.9781	-0.00038
-30	120	5700.0266	0.00047	5700.0218	0.00038	5700.0221	0.00039	5700.0223	0.00039

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5700MHz									
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	5700.0168	0.00029	5700.0157	0.00028	5700.016	0.00028	5700.0188	0.00033
	120	5700.0172	0.00030	5700.0149	0.00026	5700.0165	0.00029	5700.0187	0.00033
	102	5700.0182	0.00032	5700.0145	0.00025	5700.0167	0.00029	5700.0187	0.00033

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:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---