



# FCC TEST REPORT (15.407)

**REPORT NO.:** RF141013E03-3

**MODEL NO.:** C7000

**FCC ID:** PY314300285

**RECEIVED:** Oct. 13, 2014

**TESTED:** Oct. 21 to Nov. 21, 2014

**ISSUED:** June 12, 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. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

**TEST LOCATION (2):** No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141013E03-3	Original release	June 12, 2015





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## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -9.18dB at 0.15781MHz
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 5380MHz
15.407(a/1/2/3)	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 change. (Add DFS band: 5250~5350MHz & 5470~5725MHz).

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



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## 2.1 MEASUREMENT UNCERTAINTY

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

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

<b>Measurement</b>	<b>Value</b>
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT (DFS BAND)

<b>PRODUCT</b>	AC1900 WiFi Cable Modem Router
<b>MODEL NO.</b>	C7000
<b>POWER SUPPLY</b>	DC 12V from adapter power
<b>MODULATION TYPE</b>	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
<b>MODULATION TECHNOLOGY</b>	OFDM
<b>TRANSFER RATE</b>	802.11a: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
<b>OPERATING FREQUENCY</b>	5.26 ~ 5.32GHz, 5.5~5.70GHz
<b>NUMBER OF CHANNEL</b>	15 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 7 for 802.11n (HT40), 802.11ac (VHT40) 3 for 802.11ac (VHT80)
<b>MAXIMUM OUTPUT POWER</b>	<b>CDD Mode:</b> 802.11a: 164.873mW 802.11ac (VHT20): 166.284mW 802.11ac (VHT40): 244.659mW 802.11ac (VHT80): 240.664mW <b>Beamforming Mode:</b> 802.11ac (VHT20): 166.284mW 802.11ac (VHT40): 174.189mW 802.11ac (VHT80): 169.226mW
<b>ANTENNA TYPE</b>	Refer to note as below
<b>DATA CABLE</b>	RJ-45 cable (Unshielded or Shielded, 1.5m) Coaxial cable (Shielded, 3m)
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	Adapter x 1



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**Note:**

1. This report is prepared for FCC Class II. The difference compared with the Report No.: RF141013E03-1 design is as the following:

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

2. 2.4GHz and 5GHz technology can transmit at same time.

3. The EUT must be supplied with a adapter, there are two different models could be chosen as following table:

No	Brand	Model No.	Spec.
1	NETGEAR	AD898F20	Input: 100-240V, 1.0A, 50-60Hz Output: 12V, 3.5A DC output cable (Unshielded, 1.8m)
2	NETGEAR	2AAF042F NA	Input: 100-240V, 1.5A, 50-60Hz Output: 12V, 3.5A DC output cable (Unshielded, 1.8m)

For radiated test, the EUT was pre-tested with above adapters, the worse case was found in **adapter 1**. Therefore only the test data of the adapter was recorded in this report.

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
Chain 0	Netgear	NA	2.0 2.8	2400~2483.5 5150~5850	Dipole	i-Pex
Chain 1	Netgear	NA	2.0 2.8	2400~2483.5 5150~5850	Dipole	i-Pex
Chain 2	Netgear	NA	2.0 2.8	2400~2483.5 5150~5850	Dipole	i-Pex

5. The EUT incorporates a MIMO function.

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

#### Operated in 5250 ~ 5350MHz band:

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
58	5290 MHz

#### Operated in 5470MHz ~ 5725MHz bands:

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz		

2 channels are provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530 MHz	122	5610 MHz

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

#### **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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	54 to 140	134	OFDM	BPSK	13.5

#### **RADIATED EMISSION TEST (BELOW 1 GHz):**

- 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	54 to 140	134	OFDM	BPSK	13.5



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**RADIATED EMISSION TEST (ABOVE 1 GHz):**

- 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.

<b>CDD MODE</b>					
<b>MODE</b>	<b>AVAILABLE CHANNEL</b>	<b>TESTED CHANNEL</b>	<b>MODULATION TECHNOLOGY</b>	<b>MODULATION TYPE</b>	<b>DATA RATE (Mbps)</b>
802.11a	52 to 140	52, 60, 64, 100, 120, 140	OFDM	BPSK	6
802.11ac (VHT20)	52 to 140	52, 60, 64, 100, 120, 140	OFDM	BPSK	6.5
802.11ac (VHT40)	54 to 134	54, 62, 102, 118, 134	OFDM	BPSK	13.5
802.11ac (VHT80)	58 to 122	58, 106, 122	OFDM	BPSK	29.3



**ANTENNA PORT CONDUCTED MEASUREMENT:**

- 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.

<b>CDD MODE</b>					
<b>MODE</b>	<b>AVAILABLE CHANNEL</b>	<b>TESTED CHANNEL</b>	<b>MODULATION TECHNOLOGY</b>	<b>MODULATION TYPE</b>	<b>DATA RATE (Mbps)</b>
802.11a	52 to 140	52, 60, 64, 100, 120, 140	OFDM	BPSK	6
802.11ac (VHT20)	52 to 140	52, 60, 64, 100, 120, 140	OFDM	BPSK	6.5
802.11ac (VHT40)	54 to 134	54, 62, 102, 118, 134	OFDM	BPSK	13.5
802.11ac (VHT80)	58 to 122	58, 106, 122	OFDM	BPSK	29.3
<b>Beamforming MODE</b>					
<b>MODE</b>	<b>AVAILABLE CHANNEL</b>	<b>TESTED CHANNEL</b>	<b>MODULATION TECHNOLOGY</b>	<b>MODULATION TYPE</b>	<b>DATA RATE (Mbps)</b>
802.11ac (VHT20)	52 to 140	52, 60, 64, 100, 120, 140	OFDM	BPSK	6.5
802.11ac (VHT40)	54 to 134	54, 62, 102, 118, 134	OFDM	BPSK	13.5
802.11ac (VHT80)	58 to 122	58, 106, 122	OFDM	BPSK	29.3

**TEST CONDITION:**

<b>APPLICABLE TO</b>	<b>ENVIRONMENTAL CONDITIONS</b>	<b>INPUT POWER</b>	<b>TESTED BY</b>
PLC	26deg. C, 68%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	23deg. C, 68%RH	120Vac, 60Hz	Tim Ho
RE≥1G	24deg. C, 69%RH	120Vac, 60Hz	Gary Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

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 Procedures 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.

### 3.4 DUTY CYCLE OF TEST SIGNAL

If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

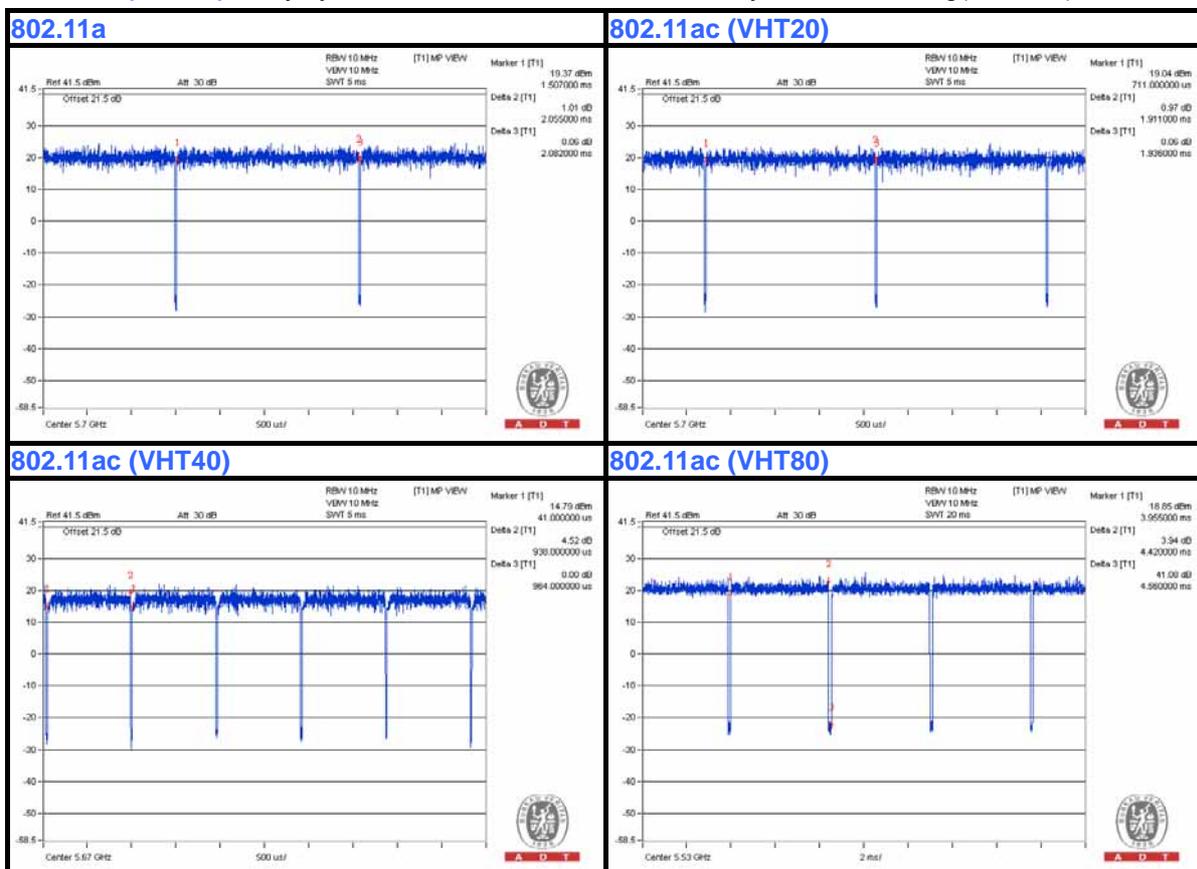
If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

**802.11a:** Duty cycle = 2.055 ms/2.082 ms = 0.987

**802.11ac (VHT20):** Duty cycle = 1.911 ms/1.936 ms = 0.987

**802.11ac (VHT40):** Duty cycle = 0.938 ms/0.964 ms = 0.973, Duty factor =  $10 * \log(1/0.973) = 0.12$

**802.11ac (VHT80):** Duty cycle = 4.42 ms/4.56 ms = 0.969, Duty factor =  $10 * \log(1/0.969) = 0.14$





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### 3.5 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.

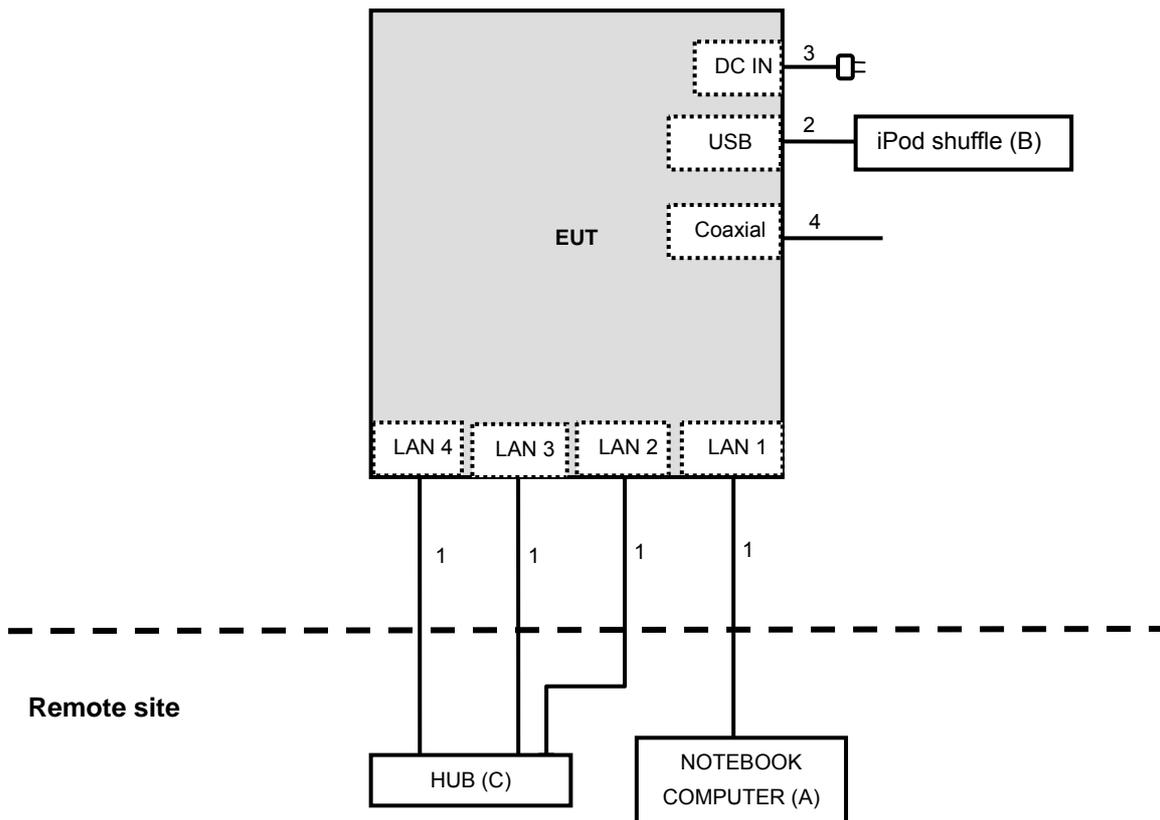
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E6400	D814C A00 APCC	NA	Provided by Lab
B	iPod shuffle	Apple	MD778TA/A	CC4JMCMXF4T1	NA	Provided by Lab
C	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab

**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	USB	1	0.1	No	0	Provided by Lab
3	DC	1	1.8	No	0	Supplied by client
4	Coaxial	1	10	No	0	Provided by Lab

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST





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## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
- The lower limit shall apply at the transition frequencies.
  - The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

#### 4.1.2 TEST INSTRUMENTS

##### For mode 1 test

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. 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. 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:**

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The test was performed in Shielded Room No. C.
- The VCCI Con C Registration No. is C-3611.
- Tested Date: Oct. 21, 2014



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**For mode 2 test**

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. 11, 2014	Nov. 10, 2015
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10 , 2014	Mar. 09, 2015
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: Nov. 14, 2014

#### 4.1.3 TEST PROCEDURES

- 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.
- b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- d. The frequency range from 150kHz to 30MHz was searched. Emission level under (Limit – 20dB) was not recorded.

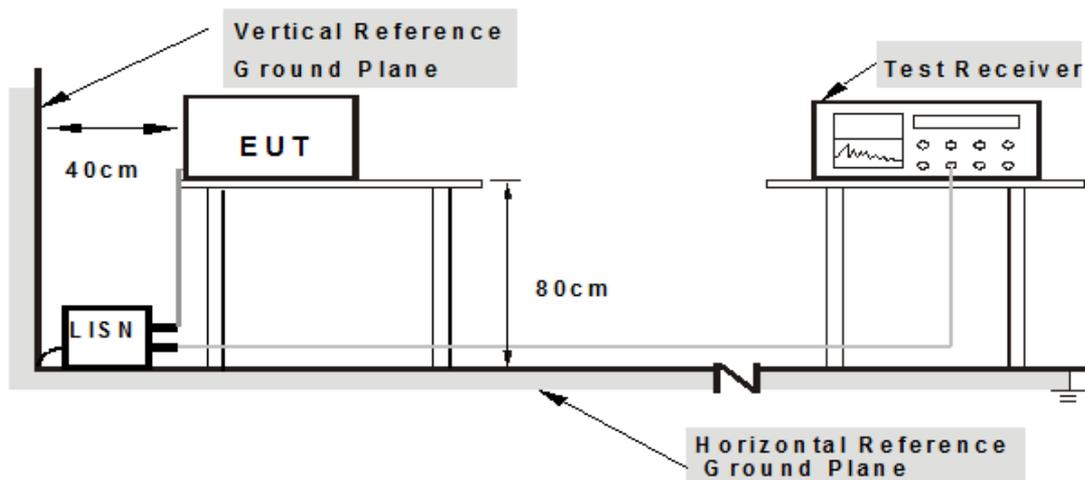
#### NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



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

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.6 EUT OPERATING CONDITIONS

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 [2.0.1.0])” to enable EUT under transmission/receiving condition continuously.

### 4.1.7 TEST RESULTS (MODE 1)

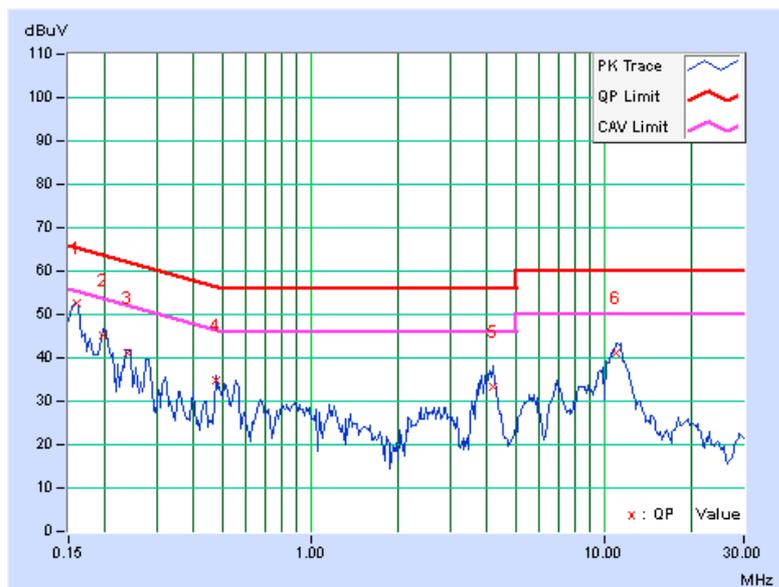
#### CDD MODE

<b>PHASE</b>	Line (L)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	----------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15984	0.07	52.36	45.69	52.43	45.76	65.47	55.47	-13.05	-9.72
2	0.19687	0.07	45.29	38.45	45.36	38.52	63.74	53.74	-18.38	-15.22
3	0.23984	0.07	40.86	33.82	40.93	33.89	62.10	52.10	-21.17	-18.21
4	0.47813	0.10	34.71	30.79	34.81	30.89	56.37	46.37	-21.57	-15.49
5	4.19922	0.26	33.13	24.78	33.39	25.04	56.00	46.00	-22.61	-20.96
6	11.00781	0.48	40.50	34.03	40.98	34.51	60.00	50.00	-19.02	-15.49

#### 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

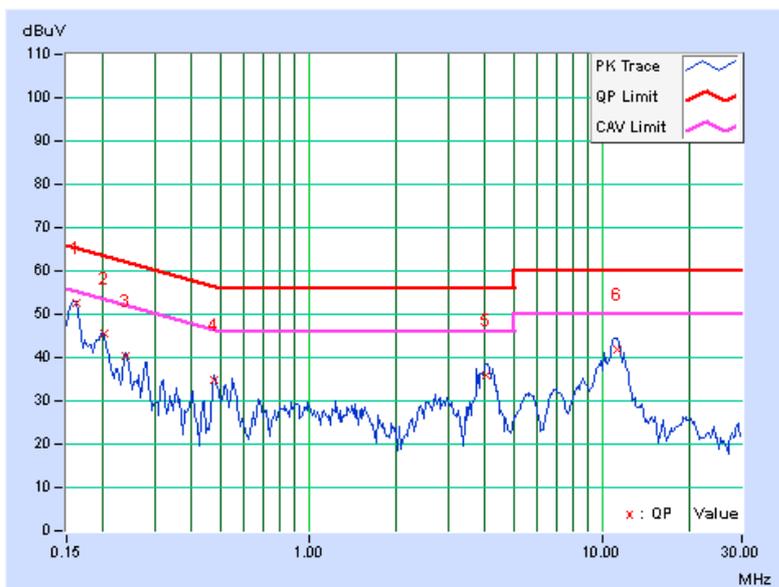


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.06	52.47	44.84	52.53	44.90	65.38	55.38	-12.84	-10.47
2	0.20078	0.06	45.62	38.21	45.68	38.27	63.58	53.58	-17.90	-15.31
3	0.23984	0.07	40.27	33.74	40.34	33.81	62.10	52.10	-21.77	-18.30
4	0.47813	0.10	34.68	30.56	34.78	30.66	56.37	46.37	-21.60	-15.72
5	4.03516	0.26	35.55	25.99	35.81	26.25	56.00	46.00	-20.19	-19.75
6	11.25391	0.50	41.22	35.15	41.72	35.65	60.00	50.00	-18.28	-14.35

**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



### 4.1.8 TEST RESULTS (MODE 2)

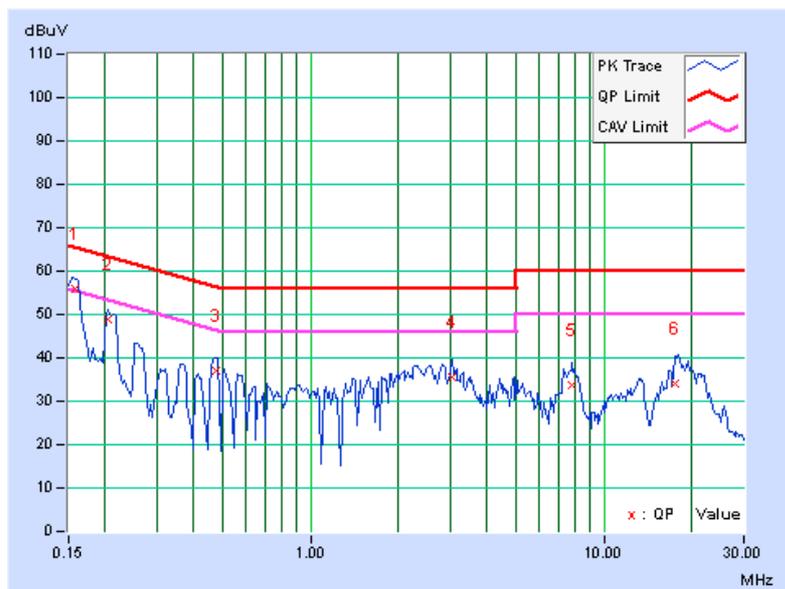
#### CDD MODE

<b>PHASE</b>	Line (L)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.07	56.00	46.33	56.07	46.40	65.58	55.58	-9.51	-9.18
2	0.20469	0.07	48.65	36.66	48.72	36.73	63.42	53.42	-14.70	-16.69
3	0.47422	0.09	36.89	31.06	36.98	31.15	56.44	46.44	-19.45	-15.28
4	3.05078	0.22	35.22	25.33	35.44	25.55	56.00	46.00	-20.56	-20.45
5	7.79688	0.38	33.17	25.50	33.55	25.88	60.00	50.00	-26.45	-24.12
6	17.44141	0.64	33.56	25.18	34.20	25.82	60.00	50.00	-25.80	-24.18

#### 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

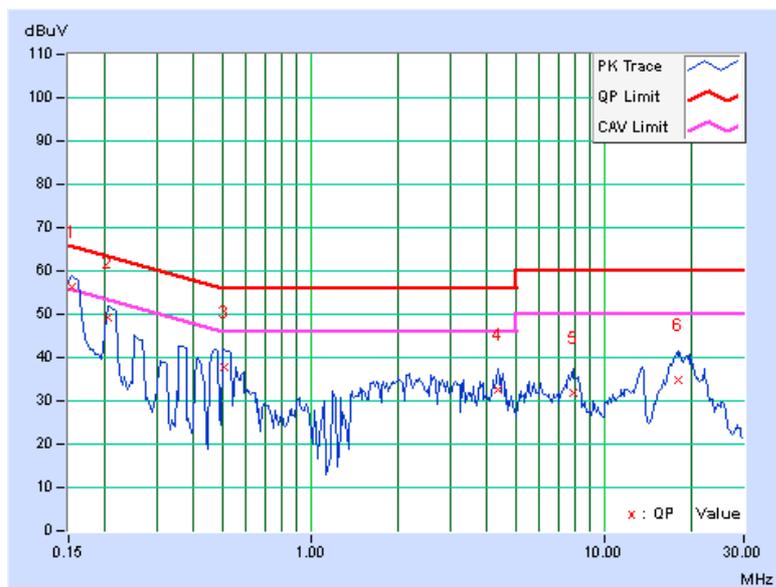


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.06	56.20	44.25	56.26	44.31	65.79	55.79	-9.52	-11.47
2	0.20469	0.06	49.14	37.29	49.20	37.35	63.42	53.42	-14.22	-16.07
3	0.50850	0.10	37.86	23.90	37.96	24.00	56.00	46.00	-18.04	-22.00
4	4.35156	0.27	32.18	20.65	32.45	20.92	56.00	46.00	-23.55	-25.08
5	7.83984	0.39	31.35	24.11	31.74	24.50	60.00	50.00	-28.26	-25.50
6	17.82813	0.68	34.21	24.70	34.89	25.38	60.00	50.00	-25.11	-24.62

**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 RADIATED EMISSION AND BANDEDGE MEASUREMENT

### 4.2.1 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.

#### 4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBµV/m)	AV:54 (dBµV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBµV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) <sup>*1</sup> PK:-17 (dBm/MHz) <sup>*2</sup>	PK: 68.2(dBµV/m) <sup>*1</sup> PK:78.2 (dBµV/m) <sup>*2</sup>

**NOTE:** <sup>\*1</sup> beyond 10MHz of the band edge    <sup>\*2</sup> within 10 MHz of band edge

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

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



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## 4.2.3 TEST INSTRUMENTS

### For Below 1GHz:

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. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AIS1	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131215 SNMY23685/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKka-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 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: Nov. 12, 2014



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**For Above 1GHz:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISL	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Antenna Tower & Turn Table CT	NA	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 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. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Nov. 03 to 12, 2014

#### 4.2.4 TEST PROCEDURES

- 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:**

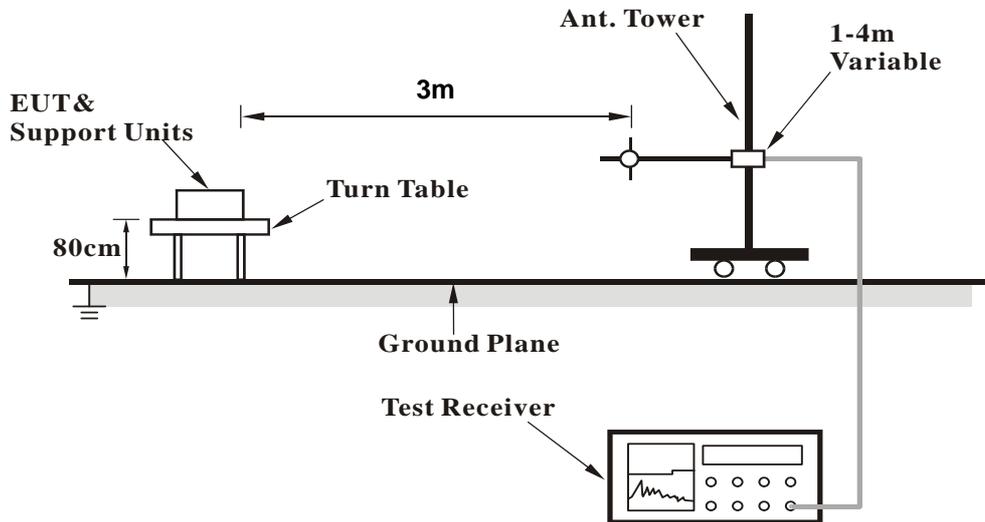
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

#### 4.2.5 DEVIATION FROM TEST STANDARD

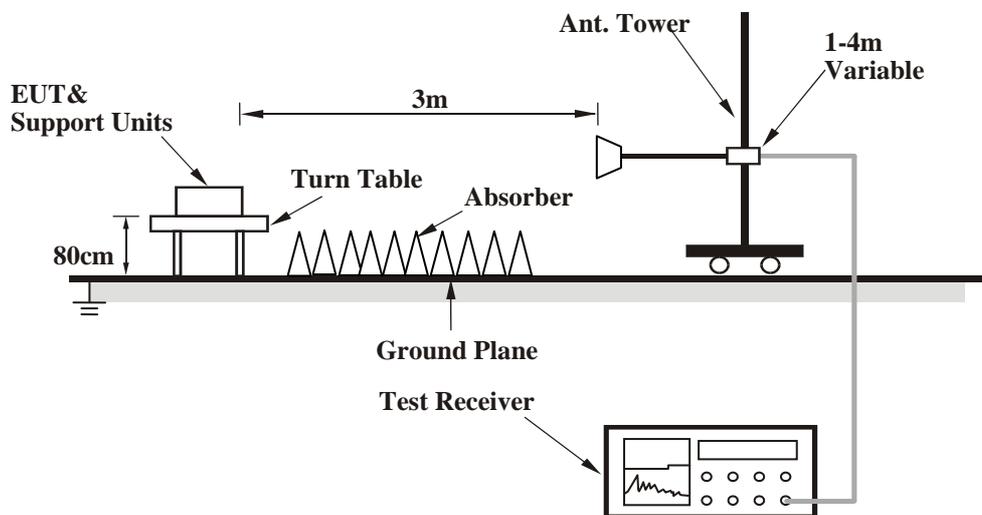
No deviation

#### 4.2.6 TEST SETUP

##### <Frequency Range below 1GHz>



##### <Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

## 4.2.8 TEST RESULTS

### CDD MODE

### BELOW 1GHz WORST-CASE DATA

### 802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 134	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	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	374.98	36.2 QP	46.0	-9.8	1.50 H	287	46.38	-10.15
2	500.01	36.2 QP	46.0	-9.8	2.00 H	210	43.36	-7.19
3	625.00	41.2 QP	46.0	-4.8	1.00 H	247	45.53	-4.30
4	749.98	39.3 QP	46.0	-6.7	1.50 H	194	41.27	-1.97
5	875.02	41.3 QP	46.0	-4.8	1.00 H	221	41.61	-0.36
6	1000.00	40.4 QP	54.0	-13.6	1.50 H	170	38.78	1.65

#### 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	33.98	33.1 QP	40.0	-7.0	1.50 V	190	47.30	-14.25
2	51.17	32.3 QP	40.0	-7.7	2.00 V	117	45.76	-13.42
3	375.03	37.2 QP	46.0	-8.9	1.50 V	191	47.30	-10.15
4	500.01	37.5 QP	46.0	-8.5	2.00 V	253	44.70	-7.19
5	625.00	39.2 QP	46.0	-6.8	1.50 V	173	43.51	-4.30
6	875.02	40.6 QP	46.0	-5.4	1.00 V	162	40.98	-0.36

#### 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



**ABOVE 1GHz DATA**  
802.11a

<b>CHANNEL</b>	TX Channel 52	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	3618.10	50.2 PK	74.0	-23.8	1.10 H	321	49.12	1.08
2	3618.10	42.2 AV	54.0	-11.8	1.10 H	321	41.12	1.08
3	5150.00	53.8 PK	74.0	-20.2	1.39 H	292	47.00	6.80
4	5150.00	45.6 AV	54.0	-8.4	1.39 H	292	38.80	6.80
5	*5260.00	117.9 PK			1.06 H	100	110.72	7.18
6	*5260.00	108.8 AV			1.06 H	100	101.62	7.18
7	5377.90	60.2 PK	74.0	-13.8	1.06 H	132	52.58	7.62
8	5377.90	46.3 AV	54.0	-7.7	1.06 H	132	38.68	7.62
9	#10520.00	57.0 PK	74.0	-17.0	1.11 H	91	43.78	13.22
10	#10520.00	44.9 AV	54.0	-9.1	1.11 H	91	31.68	13.22
11	15780.00	61.8 PK	74.0	-12.2	1.02 H	118	43.29	18.51
12	15780.00	50.5 AV	54.0	-3.5	1.02 H	118	31.99	18.51

**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	3618.10	51.5 PK	74.0	-22.5	1.14 V	252	50.42	1.08
2	3618.10	46.3 AV	54.0	-7.7	1.14 V	252	45.22	1.08
3	5150.00	55.8 PK	74.0	-18.2	1.38 V	282	49.00	6.80
4	5150.00	48.1 AV	54.0	-5.9	1.38 V	282	41.30	6.80
5	*5260.00	121.1 PK			1.00 V	251	113.92	7.18
6	*5260.00	111.5 AV			1.00 V	251	104.32	7.18
7	5377.90	62.4 PK	74.0	-11.6	1.38 V	276	54.78	7.62
8	5377.90	50.2 AV	54.0	-3.8	1.38 V	276	42.58	7.62
9	#10520.00	56.1 PK	74.0	-17.9	1.09 V	73	42.88	13.22
10	#10520.00	44.1 AV	54.0	-9.9	1.09 V	73	30.88	13.22
11	15780.00	60.9 PK	74.0	-13.1	1.01 V	116	42.39	18.51
12	15780.00	49.2 AV	54.0	-4.8	1.01 V	116	30.69	18.51

**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.



A D T

<b>CHANNEL</b>	TX Channel 60	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	53.2 PK	74.0	-20.8	1.02 H	162	46.78	6.42
2	5000.00	44.3 AV	54.0	-9.7	1.02 H	162	37.88	6.42
3	*5300.00	115.4 PK			1.06 H	100	108.11	7.29
4	*5300.00	106.2 AV			1.06 H	100	98.91	7.29
5	5380.00	59.4 PK	74.0	-14.6	1.02 H	76	51.78	7.62
6	5380.00	51.4 AV	54.0	-2.6	1.02 H	76	43.78	7.62
7	#5741.60	56.4 PK	74.0	-17.6	1.32 H	320	47.99	8.41
8	#5741.60	50.4 AV	54.0	-3.6	1.32 H	320	41.99	8.41
9	10600.00	54.3 PK	74.0	-19.7	1.13 H	80	40.77	13.53
10	10600.00	42.6 AV	54.0	-11.4	1.13 H	80	29.07	13.53
11	15900.00	60.2 PK	74.0	-13.8	1.03 H	132	41.55	18.65
12	15900.00	48.6 AV	54.0	-5.4	1.03 H	132	29.95	18.65

**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	54.7 PK	74.0	-19.3	1.09 V	86	48.28	6.42
2	5000.00	45.7 AV	54.0	-8.3	1.09 V	86	39.28	6.42
3	*5300.00	119.1 PK			1.00 V	247	111.81	7.29
4	*5300.00	109.5 AV			1.00 V	247	102.21	7.29
5	5380.00	63.6 PK	74.0	-10.4	1.08 V	79	55.98	7.62
6	<b>5380.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.08 V</b>	<b>79</b>	<b>46.28</b>	<b>7.62</b>
7	#5741.60	58.1 PK	74.0	-15.9	1.28 V	269	49.69	8.41
8	#5741.60	52.9 AV	54.0	-1.1	1.28 V	269	44.49	8.41
9	10600.00	53.2 PK	74.0	-20.8	1.10 V	84	39.67	13.53
10	10600.00	40.4 AV	54.0	-13.6	1.10 V	84	26.87	13.53
11	15900.00	59.6 PK	74.0	-14.4	1.00 V	111	40.95	18.65
12	15900.00	47.2 AV	54.0	-6.8	1.00 V	111	28.55	18.65

**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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<b>CHANNEL</b>	TX Channel 64	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	3618.00	49.6 PK	74.0	-24.4	1.10 H	321	48.52	1.08
2	3618.00	41.6 AV	54.0	-12.4	1.10 H	321	40.52	1.08
3	5000.00	53.6 PK	74.0	-20.4	1.02 H	162	47.18	6.42
4	5000.00	44.6 AV	54.0	-9.4	1.02 H	162	38.18	6.42
5	*5320.00	114.2 PK			1.05 H	100	106.82	7.38
6	*5320.00	105.4 AV			1.05 H	100	98.02	7.38
7	5352.00	59.6 PK	74.0	-14.4	1.02 H	72	52.09	7.51
8	5352.00	51.6 AV	54.0	-2.4	1.02 H	72	44.09	7.51
9	5400.00	59.6 PK	74.0	-14.4	1.02 H	74	51.89	7.71
10	5400.00	52.3 AV	54.0	-1.7	1.02 H	74	44.59	7.71
11	#5763.00	56.6 PK	74.0	-17.4	1.32 H	320	48.14	8.46
12	#5763.00	50.6 AV	54.0	-3.4	1.32 H	320	42.14	8.46
13	10640.00	54.2 PK	74.0	-19.8	1.18 H	87	40.57	13.63
14	10640.00	42.4 AV	54.0	-11.6	1.18 H	87	28.77	13.63
15	15960.00	59.8 PK	74.0	-14.2	1.06 H	146	41.19	18.61
16	15960.00	48.5 AV	54.0	-5.5	1.06 H	146	29.89	18.61



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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	3618.00	51.5 PK	74.0	-22.5	1.15 V	258	50.42	1.08
2	3618.00	47.1 AV	54.0	-6.9	1.15 V	258	46.02	1.08
3	5000.00	55.9 PK	74.0	-18.1	1.16 V	280	49.48	6.42
4	5000.00	48.4 AV	54.0	-5.6	1.16 V	280	41.98	6.42
5	*5320.00	118.4 PK			1.00 V	252	111.02	7.38
6	*5320.00	108.9 AV			1.00 V	252	101.52	7.38
7	5352.00	73.5 PK	74.0	-0.5	1.07 V	242	65.99	7.51
8	5352.00	52.2 AV	54.0	-1.8	1.07 V	242	44.69	7.51
9	5400.00	63.6 PK	74.0	-10.4	1.05 V	280	55.89	7.71
10	5400.00	53.7 AV	54.0	-0.3	1.05 V	280	45.99	7.71
11	#5763.00	56.5 PK	74.0	-17.5	1.16 V	271	48.04	8.46
12	#5763.00	52.2 AV	54.0	-1.8	1.16 V	271	43.74	8.46
13	10640.00	53.2 PK	74.0	-20.8	1.12 V	72	39.57	13.63
14	10640.00	40.2 AV	54.0	-13.8	1.12 V	72	26.57	13.63
15	15960.00	59.8 PK	74.0	-14.2	1.00 V	119	41.19	18.61
16	15960.00	47.6 AV	54.0	-6.4	1.00 V	119	28.99	18.61

**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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<b>CHANNEL</b>	TX Channel 100	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	3670.50	50.2 PK	74.0	-23.8	1.10 H	320	48.86	1.34
2	3670.50	42.2 AV	54.0	-11.8	1.10 H	320	40.86	1.34
3	5418.40	71.3 PK	74.0	-2.7	1.02 H	79	63.54	7.76
4	5418.40	50.2 AV	54.0	-3.8	1.02 H	79	42.44	7.76
5	5425.50	59.3 PK	74.0	-14.7	1.02 H	76	51.51	7.79
6	5425.50	50.6 AV	54.0	-3.4	1.02 H	76	42.81	7.79
7	#5470.00	72.4 PK	74.0	-1.6	1.10 H	76	64.47	7.93
8	#5470.00	51.3 AV	54.0	-2.7	1.10 H	76	43.37	7.93
9	*5500.00	114.8 PK			1.06 H	104	106.78	8.02
10	*5500.00	106.9 AV			1.06 H	104	98.88	8.02
11	#5729.20	57.3 PK	68.2	-10.9	1.30 H	320	48.90	8.40
12	11000.00	53.8 PK	74.0	-20.2	1.22 H	98	39.38	14.42
13	11000.00	42.2 AV	54.0	-11.8	1.22 H	98	27.78	14.42
14	#16500.00	59.6 PK	74.0	-14.4	1.06 H	140	38.66	20.94
15	#16500.00	48.3 AV	54.0	-5.7	1.06 H	140	27.36	20.94



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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	3670.50	50.3 PK	74.0	-23.7	1.13 V	259	48.96	1.34
2	3670.50	47.3 AV	54.0	-6.7	1.13 V	259	45.96	1.34
3	5418.40	73.0 PK	74.0	-1.0	1.15 V	132	65.24	7.76
4	5418.40	52.6 AV	54.0	-1.4	1.15 V	132	44.84	7.76
5	5425.50	61.3 PK	74.0	-12.7	1.01 V	40	53.51	7.79
6	5425.50	51.6 AV	54.0	-2.4	1.01 V	40	43.81	7.79
7	#5470.00	73.1 PK	74.0	-0.9	1.25 V	76	65.17	7.93
8	#5470.00	53.7 AV	54.0	-0.3	1.25 V	76	45.77	7.93
9	*5500.00	119.9 PK			1.25 V	76	111.88	8.02
10	*5500.00	110.9 AV			1.25 V	76	102.88	8.02
11	#5729.20	60.5 PK	68.2	-7.7	1.39 V	74	52.10	8.40
12	11000.00	53.3 PK	74.0	-20.7	1.10 V	79	38.88	14.42
13	11000.00	40.0 AV	54.0	-14.0	1.10 V	79	25.58	14.42
14	#16500.00	59.6 PK	74.0	-14.4	1.04 V	116	38.66	20.94
15	#16500.00	47.6 AV	54.0	-6.4	1.04 V	116	26.66	20.94

**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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<b>CHANNEL</b>	TX Channel 120	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	3618.00	50.6 PK	74.0	-23.4	1.10 H	312	49.52	1.08
2	3618.00	42.6 AV	54.0	-11.4	1.10 H	312	41.52	1.08
3	5136.00	54.3 PK	74.0	-19.7	1.00 H	120	47.56	6.74
4	5136.00	45.6 AV	54.0	-8.4	1.00 H	120	38.86	6.74
5	*5600.00	115.6 PK			1.05 H	100	107.39	8.21
6	*5600.00	107.6 AV			1.05 H	100	99.39	8.21
7	#5833.40	55.4 PK	74.0	-18.6	1.30 H	312	46.77	8.63
8	#5833.40	49.3 AV	54.0	-4.7	1.30 H	312	40.67	8.63
9	11200.00	53.5 PK	74.0	-20.5	1.23 H	108	39.24	14.26
10	11200.00	41.8 AV	54.0	-12.2	1.23 H	108	27.54	14.26
11	#16800.00	59.7 PK	74.0	-14.3	1.05 H	154	38.40	21.30
12	#16800.00	48.1 AV	54.0	-5.9	1.05 H	154	26.80	21.30

**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	3618.00	52.5 PK	74.0	-21.5	1.13 V	260	51.42	1.08
2	3618.00	47.1 AV	54.0	-6.9	1.13 V	260	46.02	1.08
3	5136.00	56.8 PK	74.0	-17.2	1.13 V	253	50.06	6.74
4	5136.00	47.9 AV	54.0	-6.1	1.13 V	253	41.16	6.74
5	*5600.00	121.1 PK			1.01 V	251	112.89	8.21
6	*5600.00	111.5 AV			1.01 V	251	103.29	8.21
7	#5833.40	57.1 PK	74.0	-16.9	1.47 V	86	48.47	8.63
8	#5833.40	51.0 AV	54.0	-3.0	1.47 V	86	42.37	8.63
9	11200.00	53.6 PK	74.0	-20.4	1.08 V	86	39.34	14.26
10	11200.00	40.2 AV	54.0	-13.8	1.08 V	86	25.94	14.26
11	#16800.00	59.2 PK	74.0	-14.8	1.01 V	113	37.90	21.30
12	#16800.00	47.2 AV	54.0	-6.8	1.01 V	113	25.90	21.30

**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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<b>CHANNEL</b>	TX Channel 140	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	115.8 PK			1.05 H	106	107.45	8.35
2	*5700.00	107.3 AV			1.05 H	106	98.95	8.35
3	#5725.00	68.6 PK	74.0	-5.4	1.05 H	106	60.21	8.39
4	#5725.00	51.4 AV	54.0	-2.6	1.05 H	106	43.01	8.39
5	#5780.80	60.4 PK	74.0	-13.6	1.00 H	265	51.93	8.47
6	#5780.80	51.6 AV	54.0	-2.4	1.00 H	265	43.13	8.47
7	11400.00	53.4 PK	74.0	-20.6	1.20 H	114	38.98	14.42
8	11400.00	41.4 AV	54.0	-12.6	1.20 H	114	26.98	14.42
9	#17100.00	59.3 PK	74.0	-14.7	1.00 H	159	37.53	21.77
10	#17100.00	47.8 AV	54.0	-6.2	1.00 H	159	26.03	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	*5700.00	119.7 PK			1.00 V	245	111.35	8.35
2	*5700.00	110.8 AV			1.00 V	245	102.45	8.35
3	#5725.00	70.8 PK	74.0	-3.2	1.00 V	245	62.41	8.39
4	#5725.00	53.2 AV	54.0	-0.8	1.00 V	245	44.81	8.39
5	#5780.80	62.8 PK	74.0	-11.2	1.00 V	68	54.33	8.47
6	#5780.80	53.2 AV	54.0	-0.8	1.00 V	68	44.73	8.47
7	11400.00	53.4 PK	74.0	-20.6	1.03 V	91	38.98	14.42
8	11400.00	40.3 AV	54.0	-13.7	1.03 V	91	25.88	14.42
9	#17100.00	59.6 PK	74.0	-14.4	1.02 V	110	37.83	21.77
10	#17100.00	47.7 AV	54.0	-6.3	1.02 V	110	25.93	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.



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## 802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 52	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	3618.10	50.2 PK	74.0	-23.8	1.14 H	335	49.12	1.08
2	3618.10	44.3 AV	54.0	-9.7	1.14 H	335	43.22	1.08
3	5150.00	54.1 PK	74.0	-19.9	1.01 H	148	47.30	6.80
4	5150.00	47.2 AV	54.0	-6.8	1.01 H	148	40.40	6.80
5	*5260.00	117.3 PK			1.10 H	93	110.12	7.18
6	*5260.00	108.3 AV			1.10 H	93	101.12	7.18
7	5418.20	60.1 PK	74.0	-13.9	1.07 H	131	52.34	7.76
8	5418.20	46.0 AV	54.0	-8.0	1.07 H	131	38.24	7.76
9	#10520.00	57.2 PK	74.0	-16.8	1.12 H	95	43.98	13.22
10	#10520.00	45.1 AV	54.0	-8.9	1.12 H	95	31.88	13.22
11	15780.00	59.0 PK	74.0	-15.0	1.02 H	106	40.49	18.51
12	15780.00	47.6 AV	54.0	-6.4	1.02 H	106	29.09	18.51

**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	3618.10	51.6 PK	74.0	-22.4	1.15 V	259	50.52	1.08
2	3618.10	46.3 AV	54.0	-7.7	1.15 V	259	45.22	1.08
3	5150.00	55.9 PK	74.0	-18.1	1.04 V	80	49.10	6.80
4	5150.00	49.0 AV	54.0	-5.0	1.04 V	80	42.20	6.80
5	*5260.00	121.2 PK			1.10 V	254	114.02	7.18
6	*5260.00	110.5 AV			1.10 V	254	103.32	7.18
7	5418.20	62.6 PK	74.0	-11.4	1.06 V	247	54.84	7.76
8	5418.20	49.7 AV	54.0	-4.3	1.06 V	247	41.94	7.76
9	#10520.00	53.0 PK	74.0	-21.0	1.06 V	93	39.78	13.22
10	#10520.00	39.4 AV	54.0	-14.6	1.06 V	93	26.18	13.22
11	15780.00	59.6 PK	74.0	-14.4	1.07 V	88	41.09	18.51
12	15780.00	48.1 AV	54.0	-5.9	1.07 V	88	29.59	18.51

**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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<b>CHANNEL</b>	TX Channel 60	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	115.9 PK			1.04 H	98	108.61	7.29
2	*5300.00	106.5 AV			1.04 H	98	99.21	7.29
3	5380.00	59.0 PK	74.0	-15.0	1.02 H	69	51.38	7.62
4	5380.00	51.2 AV	54.0	-2.8	1.02 H	69	43.58	7.62
5	#5741.60	56.0 PK	74.0	-18.0	1.35 H	323	47.59	8.41
6	#5741.60	49.9 AV	54.0	-4.1	1.35 H	323	41.49	8.41
7	10600.00	54.3 PK	74.0	-19.7	1.11 H	73	40.77	13.53
8	10600.00	42.4 AV	54.0	-11.6	1.11 H	73	28.87	13.53
9	15900.00	59.8 PK	74.0	-14.2	1.04 H	128	41.15	18.65
10	15900.00	48.4 AV	54.0	-5.6	1.04 H	128	29.75	18.65

**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	121.4 PK			1.08 V	253	114.11	7.29
2	*5300.00	109.9 AV			1.08 V	253	102.61	7.29
3	5380.00	63.8 PK	74.0	-10.2	1.06 V	281	56.18	7.62
4	5380.00	53.5 AV	54.0	-0.5	1.06 V	281	45.88	7.62
5	#5741.60	58.2 PK	74.0	-15.8	1.08 V	268	49.79	8.41
6	#5741.60	53.1 AV	54.0	-0.9	1.08 V	268	44.69	8.41
7	10600.00	52.9 PK	74.0	-21.1	1.03 V	108	39.37	13.53
8	10600.00	39.3 AV	54.0	-14.7	1.03 V	108	25.77	13.53
9	15900.00	59.3 PK	74.0	-14.7	1.03 V	78	40.65	18.65
10	15900.00	47.8 AV	54.0	-6.2	1.03 V	78	29.15	18.65

**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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<b>CHANNEL</b>	TX Channel 64	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	114.6 PK			1.01 H	93	107.22	7.38
2	*5320.00	105.6 AV			1.01 H	93	98.22	7.38
3	5352.00	59.7 PK	74.0	-14.3	1.04 H	68	52.19	7.51
4	5352.00	51.7 AV	54.0	-2.3	1.04 H	68	44.19	7.51
5	5400.00	59.6 PK	74.0	-14.4	1.02 H	74	51.89	7.71
6	5400.00	52.3 AV	54.0	-1.7	1.02 H	74	44.59	7.71
7	#5763.00	57.0 PK	74.0	-17.0	1.37 H	327	48.54	8.46
8	#5763.00	50.8 AV	54.0	-3.2	1.37 H	327	42.34	8.46
9	10640.00	54.3 PK	74.0	-19.7	1.15 H	83	40.67	13.63
10	10640.00	42.5 AV	54.0	-11.5	1.15 H	83	28.87	13.63
11	15960.00	60.4 PK	74.0	-13.6	1.03 H	149	41.79	18.61
12	15960.00	48.9 AV	54.0	-5.1	1.03 H	149	30.29	18.61

**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	119.7 PK			1.08 V	254	112.32	7.38
2	*5320.00	109.8 AV			1.08 V	254	102.42	7.38
3	5352.00	71.2 PK	74.0	-2.8	1.07 V	249	63.69	7.51
4	5352.00	52.3 AV	54.0	-1.7	1.07 V	249	44.79	7.51
5	5400.00	64.3 PK	74.0	-9.7	1.06 V	256	56.59	7.71
6	5400.00	53.6 AV	54.0	-0.4	1.06 V	256	45.89	7.71
7	#5763.00	56.1 PK	74.0	-17.9	1.09 V	268	47.64	8.46
8	#5763.00	51.9 AV	54.0	-2.1	1.09 V	268	43.44	8.46
9	10640.00	53.4 PK	74.0	-20.6	1.11 V	105	39.77	13.63
10	10640.00	39.5 AV	54.0	-14.5	1.11 V	105	25.87	13.63
11	15960.00	59.2 PK	74.0	-14.8	1.03 V	100	40.59	18.61
12	15960.00	47.8 AV	54.0	-6.2	1.03 V	100	29.19	18.61

**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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<b>CHANNEL</b>	TX Channel 100	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5418.40	59.5 PK	74.0	-14.5	1.03 H	73	51.74	7.76
2	5418.40	50.8 AV	54.0	-3.2	1.03 H	73	43.04	7.76
3	#5470.00	72.4 PK	74.0	-1.6	1.15 H	67	64.47	7.93
4	#5470.00	51.7 AV	54.0	-2.3	1.15 H	67	43.77	7.93
5	*5500.00	114.9 PK			1.00 H	95	106.88	8.02
6	*5500.00	106.9 AV			1.00 H	95	98.88	8.02
7	#5729.20	57.6 PK	74.0	-16.4	1.27 H	319	49.20	8.40
8	#5729.20	50.2 AV	54.0	-3.8	1.27 H	319	41.80	8.40
9	11000.00	53.8 PK	74.0	-20.2	1.20 H	95	39.38	14.42
10	11000.00	42.3 AV	54.0	-11.7	1.20 H	95	27.88	14.42
11	#16500.00	59.3 PK	74.0	-14.7	1.08 H	134	38.36	20.94
12	#16500.00	48.3 AV	54.0	-5.7	1.08 H	134	27.36	20.94

**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	5418.40	64.3 PK	74.0	-9.7	1.05 V	255	56.54	7.76
2	5418.40	52.8 AV	54.0	-1.2	1.05 V	255	45.04	7.76
3	#5470.00	73.2 PK	74.0	-0.8	1.04 V	256	65.27	7.93
4	#5470.00	52.7 AV	54.0	-1.3	1.04 V	256	44.77	7.93
5	*5500.00	119.1 PK			1.04 V	256	111.08	8.02
6	*5500.00	109.4 AV			1.04 V	256	101.38	8.02
7	#5729.20	56.7 PK	74.0	-17.3	1.38 V	85	48.30	8.40
8	#5729.20	51.7 AV	54.0	-2.3	1.38 V	85	43.30	8.40
9	11000.00	53.6 PK	74.0	-20.4	1.07 V	118	39.18	14.42
10	11000.00	39.6 AV	54.0	-14.4	1.07 V	118	25.18	14.42
11	#16500.00	59.5 PK	74.0	-14.5	1.07 V	100	38.56	20.94
12	#16500.00	48.2 AV	54.0	-5.8	1.07 V	100	27.26	20.94

**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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<b>CHANNEL</b>	TX Channel 120	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5136.00	54.1 PK	74.0	-19.9	1.02 H	130	47.36	6.74
2	5136.00	45.5 AV	54.0	-8.5	1.02 H	130	38.76	6.74
3	*5600.00	115.7 PK			1.00 H	97	107.49	8.21
4	*5600.00	107.5 AV			1.00 H	97	99.29	8.21
5	#5833.40	55.6 PK	74.0	-18.4	1.25 H	297	46.97	8.63
6	#5833.40	49.5 AV	54.0	-4.5	1.25 H	297	40.87	8.63
7	11200.00	53.5 PK	74.0	-20.5	1.17 H	109	39.24	14.26
8	11200.00	41.9 AV	54.0	-12.1	1.17 H	109	27.64	14.26
9	#16800.00	59.6 PK	74.0	-14.4	1.02 H	155	38.30	21.30
10	#16800.00	47.8 AV	54.0	-6.2	1.02 H	155	26.50	21.30

**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	5136.00	56.1 PK	74.0	-17.9	1.11 V	280	49.36	6.74
2	5136.00	46.8 AV	54.0	-7.2	1.11 V	280	40.06	6.74
3	*5600.00	120.2 PK			1.02 V	252	111.99	8.21
4	*5600.00	110.3 AV			1.02 V	252	102.09	8.21
5	#5833.40	58.2 PK	74.0	-15.8	1.35 V	86	49.57	8.63
6	#5833.40	51.0 AV	54.0	-3.0	1.35 V	86	42.37	8.63
7	11200.00	52.3 PK	74.0	-21.7	1.10 V	87	38.04	14.26
8	11200.00	39.0 AV	54.0	-15.0	1.10 V	87	24.74	14.26
9	#16800.00	59.5 PK	74.0	-14.5	1.06 V	87	38.20	21.30
10	#16800.00	48.3 AV	54.0	-5.7	1.06 V	87	27.00	21.30

**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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<b>CHANNEL</b>	TX Channel 140	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	115.3 PK			1.06 H	110	106.95	8.35
2	*5700.00	107.0 AV			1.06 H	110	98.65	8.35
3	#5725.00	68.9 PK	74.0	-5.1	1.10 H	104	60.51	8.39
4	#5725.00	51.6 AV	54.0	-2.4	1.10 H	104	43.21	8.39
5	#5780.00	60.0 PK	74.0	-14.0	1.00 H	263	51.53	8.47
6	#5780.00	49.3 AV	54.0	-4.7	1.00 H	263	40.83	8.47
7	11400.00	53.7 PK	74.0	-20.3	1.16 H	123	39.28	14.42
8	11400.00	41.8 AV	54.0	-12.2	1.16 H	123	27.38	14.42
9	#17100.00	59.9 PK	74.0	-14.1	1.01 H	173	38.13	21.77
10	#17100.00	48.1 AV	54.0	-5.9	1.01 H	173	26.33	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	*5700.00	117.6 PK			1.00 V	245	109.25	8.35
2	*5700.00	108.1 AV			1.00 V	245	99.75	8.35
3	#5725.00	71.2 PK	74.0	-2.8	1.00 V	245	62.81	8.39
4	#5725.00	53.5 AV	54.0	-0.5	1.00 V	245	45.11	8.39
5	#5780.00	60.1 PK	74.0	-13.9	1.00 V	63	51.63	8.47
6	#5780.00	50.1 AV	54.0	-3.9	1.00 V	63	41.63	8.47
7	11400.00	52.9 PK	74.0	-21.1	1.08 V	118	38.48	14.42
8	11400.00	39.3 AV	54.0	-14.7	1.08 V	118	24.88	14.42
9	#17100.00	59.5 PK	74.0	-14.5	1.06 V	107	37.73	21.77
10	#17100.00	48.0 AV	54.0	-6.0	1.06 V	107	26.23	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.



802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 54	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	54.2 PK	74.0	-19.8	1.02 H	113	47.40	6.80
2	5150.00	42.4 AV	54.0	-11.6	1.02 H	113	35.60	6.80
3	*5270.00	114.0 PK			1.02 H	113	106.78	7.22
4	*5270.00	105.3 AV			1.02 H	113	98.08	7.22
5	5350.00	62.4 PK	74.0	-11.6	1.02 H	113	54.91	7.49
6	5350.00	50.6 AV	54.0	-3.4	1.02 H	113	43.11	7.49
7	#10540.00	52.5 PK	74.0	-21.5	1.23 H	107	39.21	13.29
8	#10540.00	41.1 AV	54.0	-12.9	1.23 H	107	27.81	13.29
9	15810.00	58.5 PK	74.0	-15.5	1.10 H	183	39.93	18.57
10	15810.00	47.3 AV	54.0	-6.7	1.10 H	183	28.73	18.57

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.5 PK	74.0	-18.5	1.00 V	251	48.70	6.80
2	5150.00	43.2 AV	54.0	-10.8	1.00 V	251	36.40	6.80
3	*5270.00	118.0 PK			1.00 V	251	110.78	7.22
4	*5270.00	109.2 AV			1.00 V	251	101.98	7.22
5	5350.00	63.8 PK	74.0	-10.2	1.00 V	251	56.31	7.49
6	5350.00	51.2 AV	54.0	-2.8	1.00 V	251	43.71	7.49
7	#10540.00	53.3 PK	74.0	-20.7	1.04 V	142	40.01	13.29
8	#10540.00	39.4 AV	54.0	-14.6	1.04 V	142	26.11	13.29
9	15810.00	59.3 PK	74.0	-14.7	1.02 V	126	40.73	18.57
10	15810.00	47.6 AV	54.0	-6.4	1.02 V	126	29.03	18.57

**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.



<b>CHANNEL</b>	TX Channel 62	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	108.9 PK			1.02 H	100	101.57	7.33
2	*5310.00	101.3 AV			1.02 H	100	93.97	7.33
3	5350.00	68.5 PK	74.0	-5.5	1.02 H	100	61.01	7.49
4	5350.00	51.3 AV	54.0	-2.7	1.02 H	100	43.81	7.49
5	10620.00	52.0 PK	74.0	-22.0	1.27 H	114	38.41	13.59
6	10620.00	40.6 AV	54.0	-13.4	1.27 H	114	27.01	13.59
7	15930.00	58.8 PK	74.0	-15.2	1.11 H	176	40.16	18.64
8	15930.00	47.7 AV	54.0	-6.3	1.11 H	176	29.06	18.64

**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	112.9 PK			1.08 V	249	105.57	7.33
2	*5310.00	105.2 AV			1.08 V	249	97.87	7.33
3	5350.00	70.7 PK	74.0	-3.3	1.08 V	249	63.21	7.49
4	5350.00	53.1 AV	54.0	-0.9	1.08 V	249	45.61	7.49
5	10620.00	53.3 PK	74.0	-20.7	1.04 V	132	39.71	13.59
6	10620.00	39.4 AV	54.0	-14.6	1.04 V	132	25.81	13.59
7	15930.00	58.6 PK	74.0	-15.4	1.03 V	129	39.96	18.64
8	15930.00	47.2 AV	54.0	-6.8	1.03 V	129	28.56	18.64

**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.



<b>CHANNEL</b>	TX Channel 102	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	68.9 PK	74.0	-5.1	1.02 H	106	60.97	7.93
2	#5470.00	51.6 AV	54.0	-2.4	1.02 H	106	43.67	7.93
3	*5510.00	108.6 PK			1.02 H	106	100.56	8.04
4	*5510.00	100.6 AV			1.02 H	106	92.56	8.04
5	11020.00	52.2 PK	74.0	-21.8	1.22 H	121	37.83	14.37
6	11020.00	40.6 AV	54.0	-13.4	1.22 H	121	26.23	14.37
7	#16530.00	59.1 PK	74.0	-14.9	1.09 H	183	38.18	20.92
8	#16530.00	48.0 AV	54.0	-6.0	1.09 H	183	27.08	20.92

**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	#5470.00	70.4 PK	74.0	-3.6	1.03 V	246	62.47	7.93
2	#5470.00	53.3 AV	54.0	-0.7	1.03 V	246	45.37	7.93
3	*5510.00	110.7 PK			1.03 V	246	102.66	8.04
4	*5510.00	104.6 AV			1.03 V	246	96.56	8.04
5	11020.00	52.9 PK	74.0	-21.1	1.09 V	127	38.53	14.37
6	11020.00	39.3 AV	54.0	-14.7	1.09 V	127	24.93	14.37
7	#16530.00	59.2 PK	74.0	-14.8	1.00 V	122	38.28	20.92
8	#16530.00	48.0 AV	54.0	-6.0	1.00 V	122	27.08	20.92

**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.
6. " # ": The radiated frequency is out of the restricted band.



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<b>CHANNEL</b>	TX Channel 118	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	51.6 PK	74.0	-22.4	1.00 H	122	43.70	7.90
2	5460.00	41.6 AV	54.0	-12.4	1.00 H	122	33.70	7.90
3	#5470.00	57.6 PK	74.0	-16.4	1.07 H	124	49.67	7.93
4	#5470.00	48.6 AV	54.0	-5.4	1.07 H	124	40.67	7.93
5	*5590.00	114.7 PK			1.00 H	72	106.51	8.19
6	*5590.00	105.0 AV			1.00 H	72	96.81	8.19
7	11180.00	51.9 PK	74.0	-22.1	1.24 H	116	37.65	14.25
8	11180.00	40.7 AV	54.0	-13.3	1.24 H	116	26.45	14.25
9	#16770.00	58.7 PK	74.0	-15.3	1.15 H	175	37.49	21.21
10	#16770.00	47.6 AV	54.0	-6.4	1.15 H	175	26.39	21.21

**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	53.1 PK	74.0	-20.9	1.02 V	250	45.20	7.90
2	5460.00	43.2 AV	54.0	-10.8	1.02 V	250	35.30	7.90
3	#5470.00	59.6 PK	74.0	-14.4	1.02 V	250	51.67	7.93
4	#5470.00	49.1 AV	54.0	-4.9	1.02 V	250	41.17	7.93
5	*5590.00	116.6 PK			1.02 V	250	108.41	8.19
6	*5590.00	109.0 AV			1.02 V	250	100.81	8.19
7	11180.00	53.0 PK	74.0	-21.0	1.04 V	128	38.75	14.25
8	11180.00	39.1 AV	54.0	-14.9	1.04 V	128	24.85	14.25
9	#16770.00	59.1 PK	74.0	-14.9	1.06 V	129	37.89	21.21
10	#16770.00	47.6 AV	54.0	-6.4	1.06 V	129	26.39	21.21

**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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<b>CHANNEL</b>	TX Channel 134	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	112.6 PK			1.00 H	292	104.29	8.31
2	*5670.00	102.9 AV			1.00 H	292	94.59	8.31
3	#5725.00	63.1 PK	74.0	-10.9	1.00 H	71	54.71	8.39
4	#5725.00	48.5 AV	54.0	-5.5	1.00 H	71	40.11	8.39
5	11340.00	52.1 PK	74.0	-21.9	1.24 H	126	37.78	14.32
6	11340.00	40.7 AV	54.0	-13.3	1.24 H	126	26.38	14.32
7	#17010.00	58.7 PK	74.0	-15.3	1.10 H	181	37.17	21.53
8	#17010.00	47.6 AV	54.0	-6.4	1.10 H	181	26.07	21.53

**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	114.9 PK			1.00 V	251	106.59	8.31
2	*5670.00	107.8 AV			1.00 V	251	99.49	8.31
3	#5725.00	73.2 PK	74.0	-0.8	1.00 V	72	64.81	8.39
4	#5725.00	50.8 AV	54.0	-3.2	1.00 V	72	42.41	8.39
5	11340.00	53.6 PK	74.0	-20.4	1.06 V	123	39.28	14.32
6	11340.00	39.9 AV	54.0	-14.1	1.06 V	123	25.58	14.32
7	#17010.00	59.1 PK	74.0	-14.9	1.04 V	103	37.57	21.53
8	#17010.00	47.5 AV	54.0	-6.5	1.04 V	103	25.97	21.53

**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)

<b>CHANNEL</b>	TX Channel 58	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	54.7 PK	74.0	-19.3	1.09 H	170	47.90	6.80
2	5150.00	47.4 AV	54.0	-6.6	1.09 H	170	40.60	6.80
3	*5290.00	112.0 PK			1.01 H	289	104.72	7.28
4	*5290.00	102.5 AV			1.01 H	289	95.22	7.28
5	5350.00	69.4 PK	74.0	-4.6	1.01 H	289	61.91	7.49
6	5350.00	51.4 AV	54.0	-2.6	1.01 H	289	43.91	7.49
7	#10580.00	52.3 PK	74.0	-21.7	1.17 H	118	38.85	13.45
8	#10580.00	40.5 AV	54.0	-13.5	1.17 H	118	27.05	13.45
9	15870.00	58.4 PK	74.0	-15.6	1.14 H	191	39.78	18.62
10	15870.00	47.0 AV	54.0	-7.0	1.14 H	191	28.38	18.62

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.4 PK	74.0	-18.6	1.15 V	72	48.60	6.80
2	5150.00	48.3 AV	54.0	-5.7	1.15 V	72	41.50	6.80
3	*5290.00	108.5 PK			1.08 V	249	101.22	7.28
4	*5290.00	103.3 AV			1.08 V	249	96.02	7.28
5	5350.00	71.1 PK	74.0	-2.9	1.00 V	239	63.61	7.49
6	5350.00	53.1 AV	54.0	-0.9	1.00 V	239	45.61	7.49
7	#10580.00	53.4 PK	74.0	-20.6	1.12 V	130	39.95	13.45
8	#10580.00	39.5 AV	54.0	-14.5	1.12 V	130	26.05	13.45
9	15870.00	59.4 PK	74.0	-14.6	1.03 V	112	40.78	18.62
10	15870.00	47.8 AV	54.0	-6.2	1.03 V	112	29.18	18.62

**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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<b>CHANNEL</b>	TX Channel 106	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	64.3 PK	74.0	-9.7	1.02 H	287	56.40	7.90
2	5460.00	50.4 AV	54.0	-3.6	1.02 H	287	42.50	7.90
3	#5470.00	57.4 PK	74.0	-16.6	1.02 H	287	49.47	7.93
4	#5470.00	51.4 AV	54.0	-2.6	1.02 H	287	43.47	7.93
5	*5530.00	105.4 PK			1.02 H	287	97.32	8.08
6	*5530.00	100.6 AV			1.02 H	287	92.52	8.08
7	11060.00	52.2 PK	74.0	-21.8	1.18 H	118	37.90	14.30
8	11060.00	40.7 AV	54.0	-13.3	1.18 H	118	26.40	14.30
9	#16590.00	58.4 PK	74.0	-15.6	1.09 H	193	37.50	20.90
10	#16590.00	47.1 AV	54.0	-6.9	1.09 H	193	26.20	20.90

**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	65.5 PK	74.0	-8.5	1.05 V	282	57.60	7.90
2	5460.00	51.2 AV	54.0	-2.8	1.05 V	282	43.30	7.90
3	#5470.00	69.1 PK	74.0	-4.9	1.04 V	285	61.17	7.93
4	#5470.00	53.2 AV	54.0	-0.8	1.04 V	285	45.27	7.93
5	*5530.00	107.5 PK			1.04 V	249	99.42	8.08
6	*5530.00	102.7 AV			1.04 V	249	94.62	8.08
7	11060.00	53.1 PK	74.0	-20.9	1.11 V	142	38.80	14.30
8	11060.00	39.4 AV	54.0	-14.6	1.11 V	142	25.10	14.30
9	#16590.00	59.5 PK	74.0	-14.5	1.00 V	120	38.60	20.90
10	#16590.00	48.1 AV	54.0	-5.9	1.00 V	120	27.20	20.90

**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.



<b>CHANNEL</b>	TX Channel 122	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	*5610.00	105.2 PK			1.07 H	286	96.97	8.23
2	*5610.00	100.4 AV			1.07 H	286	92.17	8.23
3	#5727.00	65.8 PK	74.0	-8.2	1.07 H	286	57.41	8.39
4	#5727.00	51.6 AV	54.0	-2.4	1.07 H	286	43.21	8.39
5	11220.00	52.0 PK	74.0	-22.0	1.18 H	112	37.74	14.26
6	11220.00	40.4 AV	54.0	-13.6	1.18 H	112	26.14	14.26
7	#16830.00	58.6 PK	74.0	-15.4	1.11 H	189	37.25	21.35
8	#16830.00	47.5 AV	54.0	-6.5	1.11 H	189	26.15	21.35

**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	*5610.00	114.7 PK			1.02 V	251	106.47	8.23
2	*5610.00	108.2 AV			1.02 V	251	99.97	8.23
3	#5727.00	67.3 PK	74.0	-6.7	1.00 V	64	58.91	8.39
4	#5727.00	53.5 AV	54.0	-0.5	1.00 V	64	45.11	8.39
5	11220.00	53.4 PK	74.0	-20.6	1.11 V	133	39.14	14.26
6	11220.00	39.7 AV	54.0	-14.3	1.11 V	133	25.44	14.26
7	#16830.00	59.5 PK	74.0	-14.5	1.05 V	98	38.15	21.35
8	#16830.00	48.2 AV	54.0	-5.8	1.05 V	98	26.85	21.35

**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.
6. " # ": The radiated frequency is out of the restricted band.

### 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)

**Note:** Where B is the 26dB emission bandwidth in MHz.

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT  $\leq$  4;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq$  40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT  $\geq$  5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.



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### 4.3.2 TEST INSTRUMENTS

#### FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power Sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Nov. 21, 2014

#### FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Nov. 21, 2014

### 4.3.3 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 BANDWIDTH

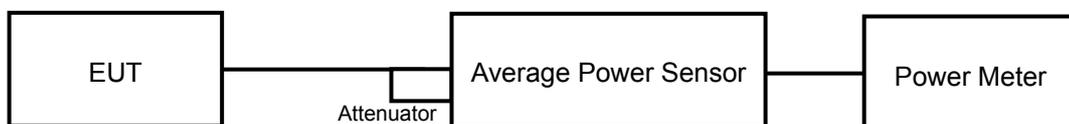
1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 TEST SETUP

##### FOR POWER OUTPUT MEASUREMENT



##### FOR 26dB OCCUPIED BANDWIDTH



#### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

### 4.3.7 TEST RESULTS

#### POWER OUTPUT:

<b>CDD MODE</b>								
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
<b>802.11a</b>								
52	5260	17.52	17.10	17.20	160.261	22.05	24.00	PASS
60	5300	17.30	17.50	16.94	159.368	22.02	24.00	PASS
64	5320	17.66	17.20	17.21	163.428	22.13	24.00	PASS
100	5500	17.54	17.18	17.28	162.45	22.11	24.00	PASS
120	5600	17.42	17.45	17.33	164.873	22.17	24.00	PASS
140	5700	17.25	17.50	17.32	163.273	22.13	24.00	PASS
<b>802.11ac (VHT20)</b>								
52	5260	17.72	17.00	17.38	163.977	22.15	24.00	PASS
60	5300	17.55	17.10	17.31	161.998	22.10	24.00	PASS
64	5320	17.57	17.19	17.15	161.388	22.08	24.00	PASS
100	5500	17.19	17.40	17.37	161.89	22.09	24.00	PASS
120	5600	17.03	17.46	17.28	159.641	22.03	24.00	PASS
140	5700	17.34	17.52	17.45	166.284	22.21	24.00	PASS
<b>802.11ac (VHT40)</b>								
54	5270	19.36	18.71	19.19	243.585	23.87	24.00	PASS
62	5310	16.00	15.21	15.35	107.277	20.31	24.00	PASS
102	5510	15.22	15.54	15.32	103.117	20.13	24.00	PASS
118	5590	19.84	18.64	18.76	244.659	23.89	24.00	PASS
134	5670	19.75	18.69	18.81	244.4	23.88	24.00	PASS
<b>802.11ac (VHT80)</b>								
58	5290	15.27	14.59	14.45	90.286	19.56	24.00	PASS
106	5530	14.41	13.86	13.78	75.806	18.80	24.00	PASS
122	5610	19.71	18.55	18.78	240.664	23.81	24.00	PASS



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**26dB OCCUPIED BANDWIDTH:**

<b>CDD MODE</b>				
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11a</b>				
52	5260	20.51	20.27	20.43
60	5300	20.55	20.47	20.61
64	5320	20.42	20.46	20.22
100	5500	20.53	20.48	20.32
120	5600	20.55	20.47	20.40
140	5700	20.45	20.50	20.32

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.27	24.06 > 24
60	5300	20.47	24.11 > 24
64	5320	20.22	24.05 > 24
100	5500	20.32	24.07 > 24
120	5600	20.40	24.09 > 24
140	5700	20.32	24.07 > 24



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### 26dB OCCUPIED BANDWIDTH

CDD MODE				
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT20)</b>				
52	5260	20.90	20.48	20.64
60	5300	20.75	20.60	20.67
64	5320	20.83	20.63	20.62
100	5500	20.76	20.57	20.61
120	5600	20.83	20.60	20.54
140	5700	20.83	20.36	20.60

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.48	24.11 > 24
60	5300	20.60	24.13 > 24
64	5320	20.62	24.14 > 24
100	5500	20.57	24.13 > 24
120	5600	20.54	24.12 > 24
140	5700	20.36	24.08 > 24



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### 26dB OCCUPIED BANDWIDTH

CDD MODE				
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT40)</b>				
54	5270	41.63	41.05	41.20
62	5310	41.50	41.08	41.03
102	5510	41.31	41.15	41.09
118	5590	41.53	41.03	41.19
134	5670	41.98	41.22	47.40

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.05	27.13 > 24
62	5310	41.03	27.13 > 24
102	5510	41.09	27.13 > 24
110	5550	41.03	27.13 > 24
134	5670	41.22	27.15 > 24



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### 26dB OCCUPIED BANDWIDTH

CDD MODE				
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT80)</b>				
58	5290	83.18	82.34	82.66
106	5530	83.18	82.16	82.13
122	5610	83.06	82.81	82.69

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.34	30.15 > 24
106	5530	82.13	30.14 > 24
122	5610	82.69	30.17 > 24

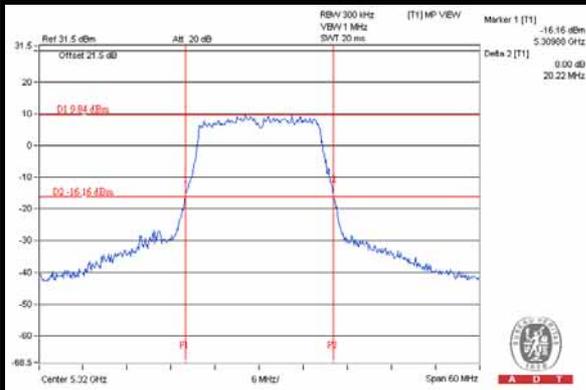


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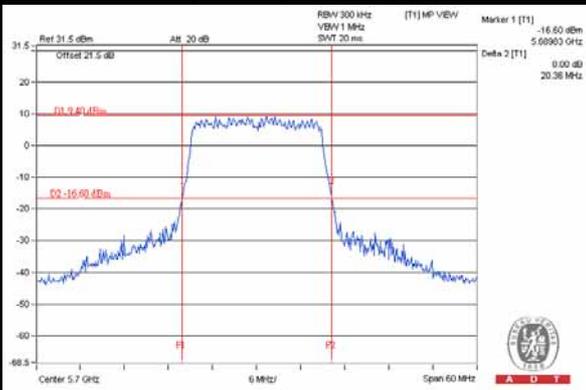
### CDD MODE

### SPECTRUM PLOT OF WORST VALUE

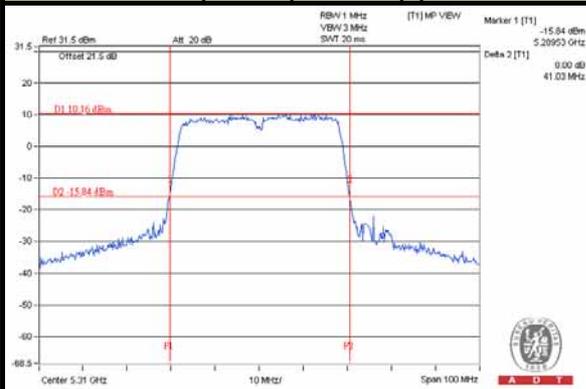
#### 802.11a / Chain(2) : CH64



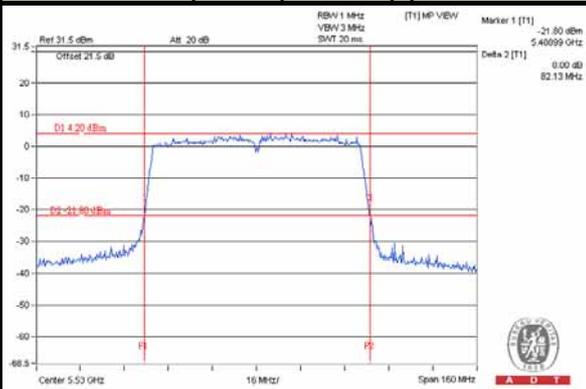
#### 802.11ac (VHT20) / Chain(1) : CH140



#### 802.11ac (VHT40) / Chain(2) : CH62



#### 802.11ac (VHT80) / Chain(2) : CH106





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**POWER OUTPUT:**

<b>Beamforming MODE</b>								
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
<b>802.11ac (VHT20)</b>								
52	5260	17.72	17.00	17.38	163.977	22.15	22.43	PASS
60	5300	17.55	17.10	17.31	161.998	22.10	22.43	PASS
64	5320	17.57	17.19	17.15	161.388	22.08	22.43	PASS
100	5500	17.19	17.40	17.37	161.89	22.09	22.43	PASS
120	5600	17.03	17.46	17.28	159.641	22.03	22.43	PASS
140	5700	17.34	17.52	17.45	166.284	22.21	22.43	PASS
<b>802.11ac (VHT40)</b>								
54	5270	17.86	17.27	17.72	173.583	22.40	22.43	PASS
62	5310	16.00	15.21	15.35	107.277	20.31	22.43	PASS
102	5510	15.22	15.54	15.32	103.117	20.13	22.43	PASS
118	5590	18.41	17.15	17.24	174.189	22.41	22.43	PASS
134	5670	18.30	17.13	17.36	173.7	22.40	22.43	PASS
<b>802.11ac (VHT80)</b>								
58	5290	15.27	14.59	14.45	90.286	19.56	22.43	PASS
106	5530	14.41	13.86	13.78	75.806	18.80	22.43	PASS
122	5610	18.12	17.14	17.21	169.226	22.28	22.43	PASS

Note: Directional gain = 2.8dBi + 10log(3) = 7.57dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(7.57-6)".



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**26dB OCCUPIED BANDWIDTH**

<b>Beamforming MODE</b>				
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT20)</b>				
52	5260	20.71	20.48	20.56
60	5300	20.77	20.71	20.65
64	5320	20.86	20.53	20.52
100	5500	20.83	20.59	20.60
120	5600	20.78	20.62	20.57
140	5700	20.73	20.61	20.61

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.48	24.11 > 24
60	5300	20.65	24.14 > 24
64	5320	20.52	24.12 > 24
100	5500	20.59	24.13 > 24
120	5600	20.57	24.13 > 24
140	5700	20.61	24.14 > 24



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### 26dB OCCUPIED BANDWIDTH

Beamforming MODE				
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT40)</b>				
54	5270	41.52	41.11	40.96
62	5310	41.61	41.05	41.21
102	5510	41.34	41.18	40.92
118	5590	41.35	41.07	41.46
134	5670	41.62	41.24	41.17

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	40.96	27.12 > 24
62	5310	41.05	27.13 > 24
102	5510	40.92	27.11 > 24
110	5550	41.07	27.13 > 24
134	5670	41.17	27.14 > 24



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### 26dB OCCUPIED BANDWIDTH

Beamforming MODE				
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT80)</b>				
58	5290	82.87	82.13	82.23
106	5530	82.49	82.65	81.50
122	5610	83.19	82.70	82.31

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.13	30.14 > 24
106	5530	81.50	30.11 > 24
122	5610	82.31	30.15 > 24

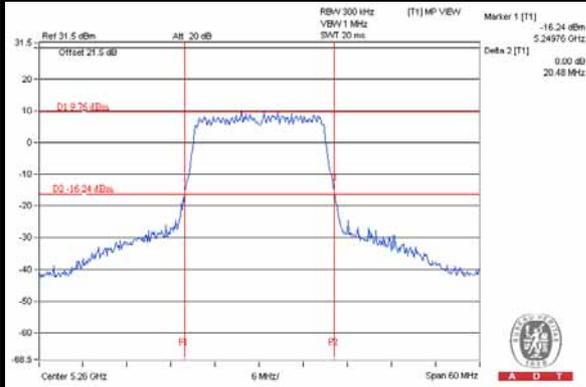


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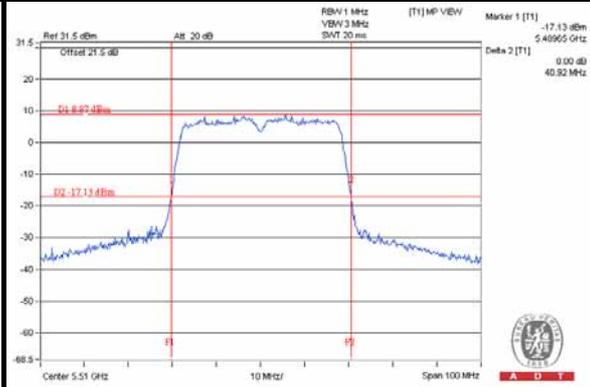
### Beamforming MODE

### SPECTRUM PLOT OF WORST VALUE

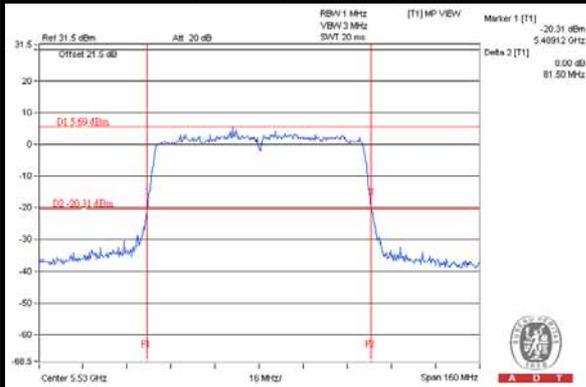
#### 802.11ac (VHT20) / Chain(1) : CH52



#### 802.11ac (VHT40) / Chain(2) : CH102



#### 802.11ac (VHT80) / Chain(2) : CH106





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## 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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Nov. 21, 2014

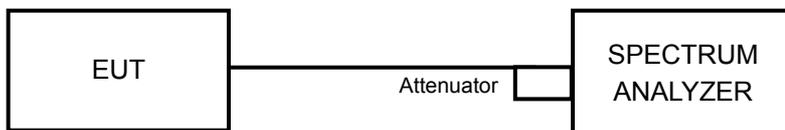
#### 4.4.3 TEST PROCEDURES

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 for duty cycle of test signal is  $< 98\%$  add  $10 \log (1/\text{duty cycle})$

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6



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#### 4.4.7 TEST RESULTS

CDD MODE							
802.11a							
CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
52	5260	3.94	3.19	3.94	8.48	9.43	PASS
60	5300	4.20	3.44	4.09	8.69	9.43	PASS
64	5320	4.31	3.49	4.14	8.77	9.43	PASS
100	5500	3.83	2.27	2.35	7.65	9.43	PASS
120	5600	3.36	2.11	2.20	7.37	9.43	PASS
140	5700	4.68	3.42	3.83	8.78	9.43	PASS
802.11ac (VHT20)							
CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
52	5260	4.05	3.25	3.70	8.45	9.43	PASS
60	5300	3.81	2.97	3.32	8.15	9.43	PASS
64	5320	3.79	2.82	3.21	8.06	9.43	PASS
100	5500	3.40	1.65	1.63	7.08	9.43	PASS
120	5600	2.89	1.49	1.44	6.77	9.43	PASS
140	5700	4.14	2.90	2.87	8.12	9.43	PASS

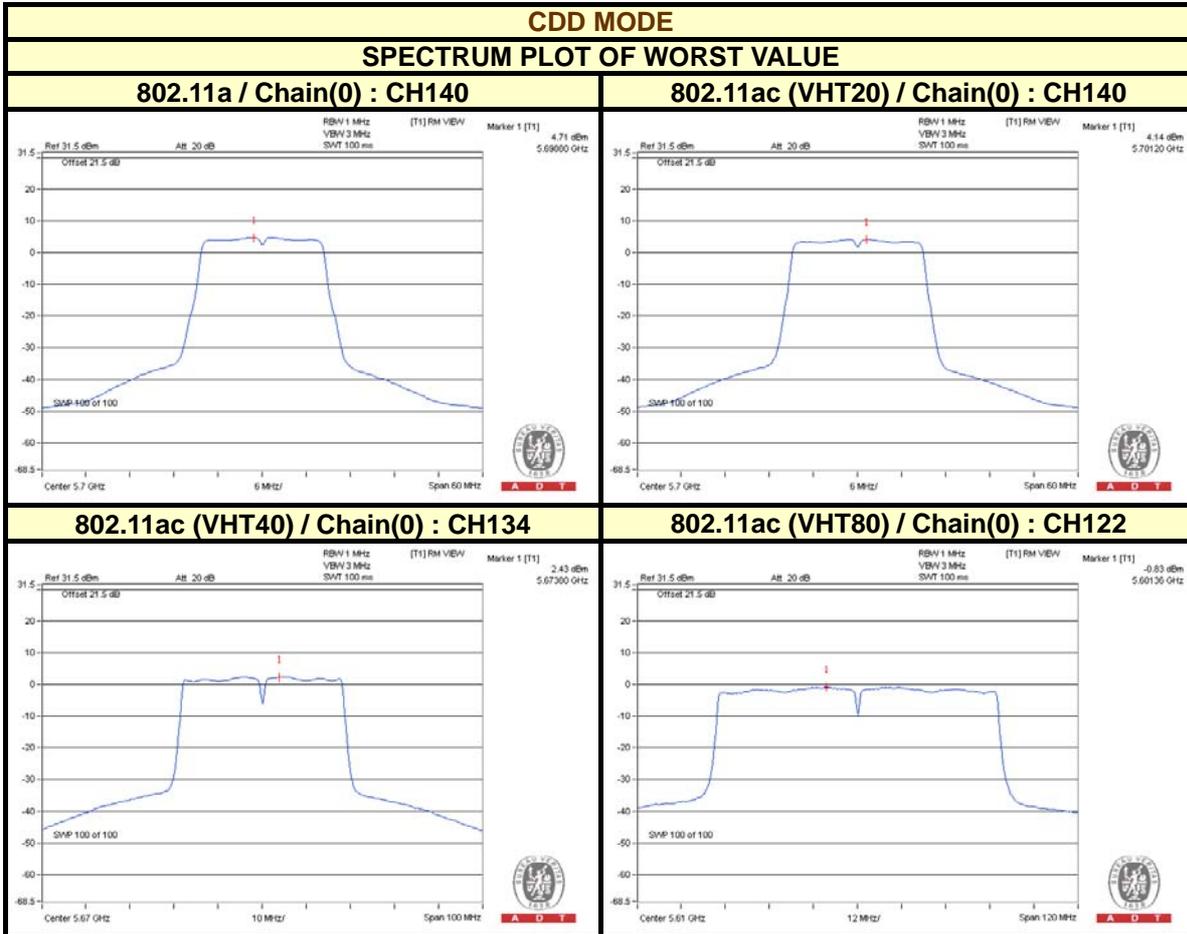


CDD MODE								
802.11ac (VHT40)								
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)			DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
54	5270	1.97	1.51	2.05	0.12	6.74	9.43	PASS
62	5310	-0.43	-1.50	-1.15	0.12	3.89	9.43	PASS
102	5510	-1.76	-3.22	-3.34	0.12	2.18	9.43	PASS
118	5590	2.30	1.04	1.50	0.12	6.53	9.43	PASS
134	5670	2.43	1.19	1.42	0.12	6.60	9.43	PASS
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	CHAIN 2				
58	5290	-4.13	-5.34	-4.83	0.14	0.17	9.43	PASS
106	5530	-6.79	-7.92	-7.91	0.14	-2.60	9.43	PASS
122	5610	-0.83	-1.98	-2.04	0.14	3.33	9.43	PASS

- NOTE:**
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
  2. Directional gain =  $2.8\text{dBi} + 10\log(3) = 7.57\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (7.57 - 6) = 9.43\text{dBm}$ .
  3. Refer to section 3.4 for duty cycle spectrum plot.



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**Beamforming MODE**

**802.11ac (VHT20)**

CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
52	5260	3.87	3.16	3.78	8.39	9.43	PASS
60	5300	3.70	2.93	3.49	8.16	9.43	PASS
64	5320	3.73	2.89	3.39	8.12	9.43	PASS
100	5500	3.13	1.58	2.01	7.06	9.43	PASS
120	5600	2.71	1.37	1.69	6.73	9.43	PASS
140	5700	4.02	3.02	3.27	8.23	9.43	PASS

**802.11ac (VHT40)**

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	CHAIN 2				
54	5270	0.37	0.19	0.67	0.12	5.30	9.43	PASS
62	5310	-0.57	-1.34	-0.96	0.12	3.94	9.43	PASS
102	5510	-1.89	-3.43	-2.97	0.12	2.18	9.43	PASS
118	5590	0.72	-0.48	0.03	0.12	5.01	9.43	PASS
134	5670	0.82	-0.28	-0.31	0.12	5.00	9.43	PASS

**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	CHAIN 2				
58	5290	-4.32	-5.27	-4.76	0.14	0.14	9.43	PASS
106	5530	-7.02	-8.18	-7.70	0.14	-2.70	9.43	PASS
122	5610	-2.49	-3.57	-3.23	0.14	1.83	9.43	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.
  - Directional gain =  $2.8\text{dBi} + 10\log(3) = 7.57\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11-(7.57-6) = 9.43\text{dBm}$ .
  - Refer to section 3.4 for duty cycle spectrum plot.

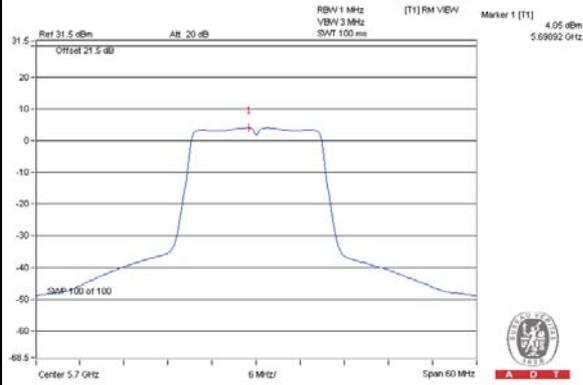


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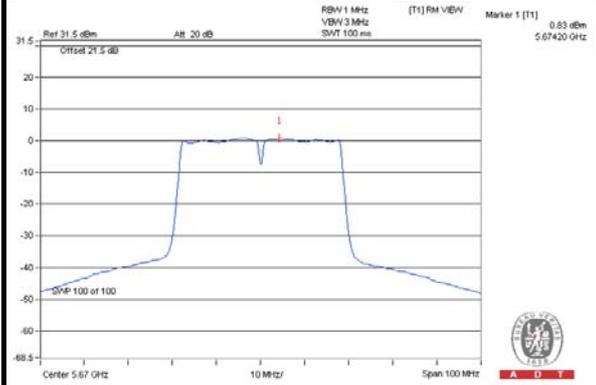
### Beamforming MODE

### SPECTRUM PLOT OF WORST VALUE

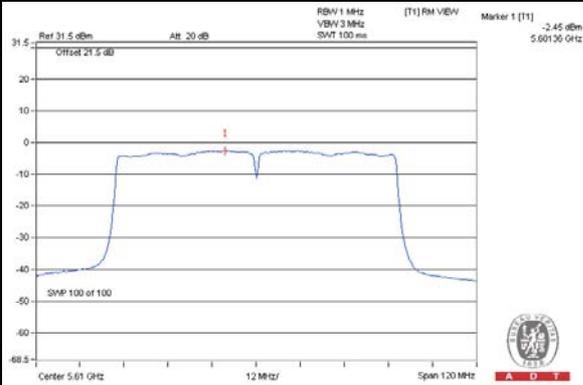
802.11ac (VHT20) / Chain(0) : CH140



802.11ac (VHT40) / Chain(0) : CH134



802.11ac (VHT80) / Chain(0) : CH122



## 4.5 FREQUENCY STABILITY

### 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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015
Temperature Humidity Chamber GIANTFORCE &	GTH-150-40-SP -AR	MAA0812-008	Jan. 13, 2014	Jan. 12, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Nov. 21, 2014

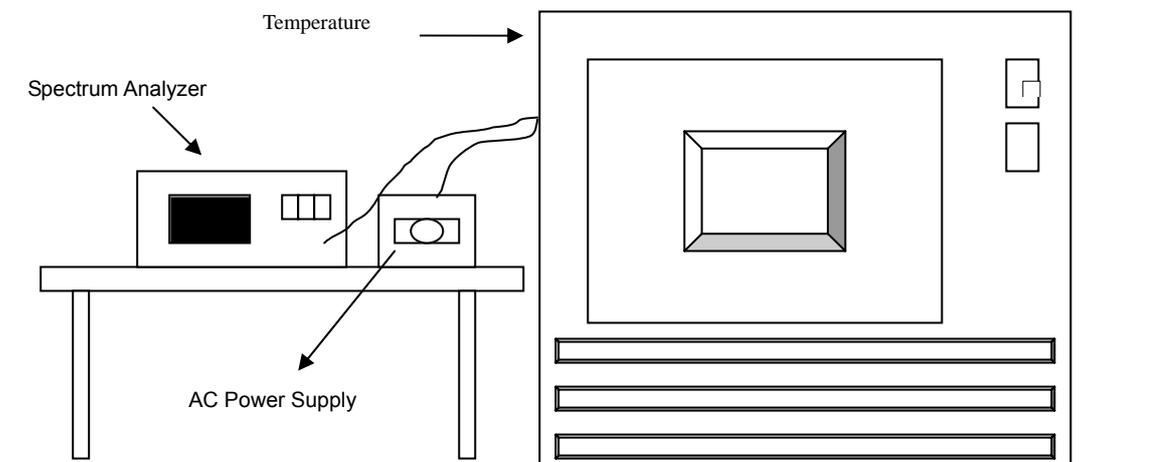
### 4.5.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. 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.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. 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.

#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITION

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



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#### 4.5.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
50	120	5319.9866	-0.00025	5319.9855	-0.00027	5319.9861	-0.00026	5319.9848	-0.00029
40	120	5319.978	-0.00041	5319.9789	-0.00040	5319.9775	-0.00042	5319.9775	-0.00042
30	120	5319.9803	-0.00037	5319.9778	-0.00042	5319.977	-0.00043	5319.9782	-0.00041
20	120	5320.0108	0.00020	5320.0131	0.00025	5320.011	0.00021	5320.011	0.00021
10	120	5320.0067	0.00013	5320.0085	0.00016	5320.0036	0.00007	5320.0045	0.00008
0	120	5319.9926	-0.00014	5319.9946	-0.00010	5319.9919	-0.00015	5319.9951	-0.00009
-10	120	5320.0179	0.00034	5320.0199	0.00037	5320.0186	0.00035	5320.0149	0.00028
-20	120	5320.0218	0.00041	5320.0198	0.00037	5320.0234	0.00044	5320.0219	0.00041
-30	120	5320.0178	0.00033	5320.0187	0.00035	5320.0215	0.00040	5320.0212	0.00040

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
20	138	5320.0103	0.00019	5320.0139	0.00026	5320.0114	0.00021	5320.0101	0.00019
	120	5320.0108	0.00020	5320.0131	0.00025	5320.011	0.00021	5320.011	0.00021
	102	5320.0111	0.00021	5320.0135	0.00025	5320.0115	0.00022	5320.0103	0.00019

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



## 6. 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: 886-2-26052943

**Hsin Chu EMC/RF/Telecom Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety Lab:**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

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

## 7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

--- END ---