

## FCC Test Report

**Report No.:** RF140812C13B-1

**FCC ID:** PY314100252

**Test Model:** C7000BMX

**Series Model:** C7000BMy-zzzzzz with this note "Where y = X if battery is used, and zzzzzz = a different service provider in the same/different country.

**Received Date:** Nov. 19, 2014

**Test Date:** Dec. 09 to 17, 2014

**Issued Date:** Apr. 29, 2015

**Applicant:** NETGEAR INC.

**Address:** 350 East Plumeria Drive, San Jose CA 95134, USA

**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  
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### Release Control Record

Issue No.	Description	Date Issued
RF140812C13B-1	Original release.	Apr. 29, 2015



A D T

## 1 Certificate of Conformity

**Product:** Wireless Cable Data Gateway

**Brand:** NETGEAR

**Test Model:** C7000BMX

**Series Model:** C7000BMy-zzzzzz with this note "Where y = X if battery is used, and zzzzzz = a different service provider in the same/different country.

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** NETGEAR INC.

**Test Date:** Dec. 09 to 17, 2014

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

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

**Prepared by :**  , **Date:** Apr. 29, 2015  
Lori Chung / Specialist

**Approved by :**  , **Date:** Apr. 29, 2015  
May Chen / Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407 Under New Rule)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -13.07dB at 0.15785MHz.
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 5417.00MHz, 5383.00MHz, 5418.00MHz, 5403.00MHz, 5360.00MHz, 5782.00MHz, 5350.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power 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(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) not a standard connector.

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

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

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 dB
	18GHz ~ 40GHz	4.11 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	Wireless Cable Data Gateway
Brand	NETGEAR
Test Model	C7000BMX
Series Model	C7000BMy-zzzzzz with this note "Where y = X if battery is used, and zzzzzz = a different service provider in the same/different country.
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	100Vac~240Vac
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5.26 ~ 5.32GHz, 5.5~5.72GHz
Number of Channel	16 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 8 for 802.11n (HT40), 802.11ac (VHT40) 4 for 802.11ac (VHT80)
Output Power	<b>CDD MODE :</b> 802.11a: 165.607mW 802.11ac (VHT20): 171.285mW 802.11ac (VHT40): 242.814mW 802.11ac (VHT80): 230.44mW <b>Beamforming MODE :</b> 802.11a: 155.03mW 802.11ac (VHT20): 155.066mW 802.11ac (VHT40): 156.048mW 802.11ac (VHT80): 146.625mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	RJ45 cable (Unshielded, 1.5m)

#### Note:

- This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF140812C13-1 design is as the following:
  - ◆ Add DFS band <5250~5350MHz & 5470~5725MHz>
- According to above condition, all test items need to be performed. And all data weres verified to meet the requirements.

3. The EUT must be supplied with an internal power supply:

<b>brand:</b>	PEGATRON
<b>Model:</b>	UPM60N
<b>Input:</b>	100Vac~240Vac
<b>Output:</b>	12V/5A max.
<b>Power Line:</b>	AC cable (Unshielded, 2m)

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

<b>2.4GHz antenna</b>					
No.	Transmitter Circuit	Gain (dBi) (Include cable loss)	Frequency range (GHz to GHz)	Antenna Type	Connector Type
1	0	2.07	2.4~2.4835	PIFA	i-pex(MHF)
2	1	2.07	2.4~2.4835	PIFA	i-pex(MHF)
3	2	2.07	2.4~2.4835	PIFA	i-pex(MHF)
<b>5GHz antenna</b>					
No.	Transmitter Circuit	Gain (dBi) (Include cable loss)	Frequency range (GHz to GHz)	Antenna Type	Connector Type
4	0	3.33	5.15~5.25	PIFA	i-pex(MHF)
		3.32	5.25~5.35	PIFA	i-pex(MHF)
		3.29	5.47~5.725	PIFA	i-pex(MHF)
		3.28	5.725~5.850	PIFA	i-pex(MHF)
5	1	3.33	5.15~5.25	PIFA	i-pex(MHF)
		3.32	5.25~5.35	PIFA	i-pex(MHF)
		3.29	5.47~5.725	PIFA	i-pex(MHF)
		3.28	5.725~5.850	PIFA	i-pex(MHF)
6	2	3.33	5.15~5.25	PIFA	i-pex(MHF)
		3.32	5.25~5.35	PIFA	i-pex(MHF)
		3.29	5.47~5.725	PIFA	i-pex(MHF)
		3.28	5.725~5.850	PIFA	i-pex(MHF)



5. The EUT incorporates a MIMO function.

<b>MODULATION MODE</b>	<b>DATA RATE (MCS)</b>	<b>TX &amp; RX CONFIGURATION</b>	
<b>802.11b</b>	1 ~ 11Mbps	3TX CDD	3RX
<b>802.11g</b>	6 ~ 54Mbps	3TX CDD	3RX
<b>802.11n (HT20) 802.11n (HT40) (For 2.4GHz)</b>	MCS 0~7	3TX CDD / beamforming	3RX
	MCS 8~15	3TX CDD / beamforming	3RX
	MCS 16~23	3TX / beamforming	3RX
<b>802.11n (BW20) (For 2.4GHz)</b>	MCS 0~8, Nss=1 (256QAM)	3TX CDD / beamforming	3RX
	MCS 0~8, Nss=2 (256QAM)	3TX CDD / beamforming	3RX
	MCS 0~9, Nss=3 (256QAM)	3TX / beamforming	3RX
<b>802.11n (BW40) (For 2.4GHz)</b>	MCS 0~9, Nss=1 (256QAM)	3TX CDD / beamforming	3RX
	MCS 0~9, Nss=2 (256QAM)	3TX CDD / beamforming	3RX
	MCS 0~9, Nss=3 (256QAM)	3TX / beamforming	3RX
<b>802.11a</b>	6 ~ 54Mbps	3TX CDD / beamforming	3RX
<b>802.11n (HT20), 802.11n (HT40) (For 5GHz)</b>	MCS 0~7	3TX CDD / beamforming	3RX
	MCS 8~15	3TX CDD / beamforming	3RX
	MCS 16~23	3TX / beamforming	3RX
<b>802.11ac (VHT20) (For 5GHz)</b>	MCS 0~8, Nss=1	3TX CDD / beamforming	3RX
	MCS 0~8, Nss=2	3TX CDD / beamforming	3RX
	MCS 0~9, Nss=3	3TX / beamforming	3RX
<b>802.11ac (VHT40) 802.11ac (VHT80) (For 5GHz)</b>	MCS 0~9, Nss=1	3TX CDD / beamforming	3RX
	MCS 0~9, Nss=2	3TX CDD / beamforming	3RX
	MCS 0~9, Nss=3	3TX / beamforming	3RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

6. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
7. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 Description of Test Modes

#### FOR 5260 ~ 5320MHz

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
58	5290MHz

#### FOR 5500 ~ 5720MHz

12 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	144	5720 MHz

6 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	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530MHz	138	5690 MHz
122	5610 MHz		

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE $<$ 1G	PLC	APCM	
-	√	√	√	√	-

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

#### **Radiated Emission Test (Above 1GHz):**

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

CDD MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5 MCS 0 / NSS=1
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5 MCS 0 NSS=1
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3 MCS 0 NSS=1
802.11a	5500-5720	100 to 144	100, 120, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 120, 140, 144	OFDM	BPSK	6.5 MCS 0 / NSS=1
802.11ac (VHT40)		102 to 142	102, 118, 134, 142	OFDM	BPSK	13.5 MCS 0 NSS=1
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3 MCS 0 NSS=1

#### **Radiated Emission Test (Below 1GHz):**

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

CDD MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT80)	5500-5720	106 to 138	122	OFDM	BPSK	29.3 MCS 0 NSS=1

#### **Power Line Conducted Emission Test:**

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

CDD MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT80)	5500-5720	106 to 138	122	OFDM	BPSK	29.3 MCS 0 NSS=1

**Antenna Port Conducted Measurement:**

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

<b>CDD MODE</b>						
<b>MODE</b>	<b>FREQ. BAND (MHz)</b>	<b>AVAILABLE CHANNEL</b>	<b>TESTED CHANNEL</b>	<b>MODULATION TECHNOLOGY</b>	<b>MODULATION TYPE</b>	<b>DATA RATE (Mbps)</b>
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5 MCS 0 / NSS=1
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5 MCS 0 NSS=1
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3 MCS 0 NSS=1
802.11a	5500-5720	100 to 144	100, 120, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 120, 140, 144	OFDM	BPSK	6.5 MCS 0 / NSS=1
802.11ac (VHT40)		102 to 142	102, 118, 134, 142	OFDM	BPSK	13.5 MCS 0 NSS=1
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3 MCS 0 NSS=1
<b>Beamforming MODE</b>						
<b>MODE</b>	<b>FREQ. BAND (MHz)</b>	<b>AVAILABLE CHANNEL</b>	<b>TESTED CHANNEL</b>	<b>MODULATION TECHNOLOGY</b>	<b>MODULATION TYPE</b>	<b>DATA RATE (Mbps)</b>
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5 MCS 0 / NSS=1
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5 MCS 0 NSS=1
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3 MCS 0 NSS=1
802.11a	5500-5720	100 to 144	100, 120, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 120, 140, 144	OFDM	BPSK	6.5 MCS 0 / NSS=1
802.11ac (VHT40)		102 to 142	102, 118, 134, 142	OFDM	BPSK	13.5 MCS 0 NSS=1
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3 MCS 0 NSS=1

**Test Condition:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	24deg. C, 70%RH	120Vac, 60Hz	Robert Cheng
RE<1G	25deg. C, 70%RH	120Vac, 60Hz	Robert Cheng
PLC	23deg. C, 70%RH	120Vac, 60Hz	Gary Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

### 3.3 Duty Cycle of Test Signal

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

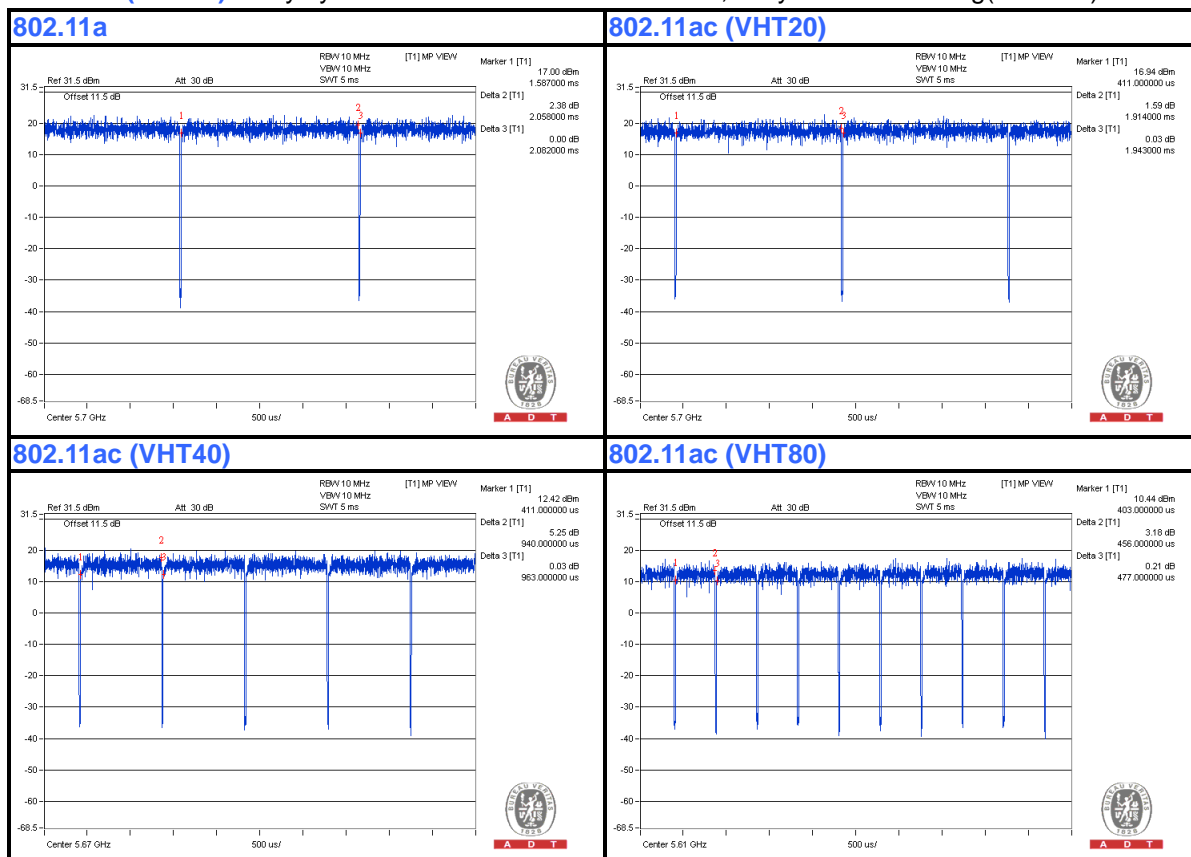
If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

**802.11a:** Duty cycle =  $2.058 \text{ ms} / 2.082 \text{ ms} = 0.988$

**802.11ac (VHT20):** Duty cycle =  $1.914 \text{ ms} / 1.943 \text{ ms} = 0.985$

**802.11ac (VHT40):** Duty cycle =  $0.940 \text{ ms} / 0.963 \text{ ms} = 0.976$ , Duty factor =  $10 * \log(1/0.976) = 0.1$

**802.11ac (VHT80):** Duty cycle =  $0.456 \text{ ms} / 0.477 \text{ ms} = 0.956$ , Duty factor =  $10 * \log(1/0.956) = 0.2$



### 3.4 Description of Support Units

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

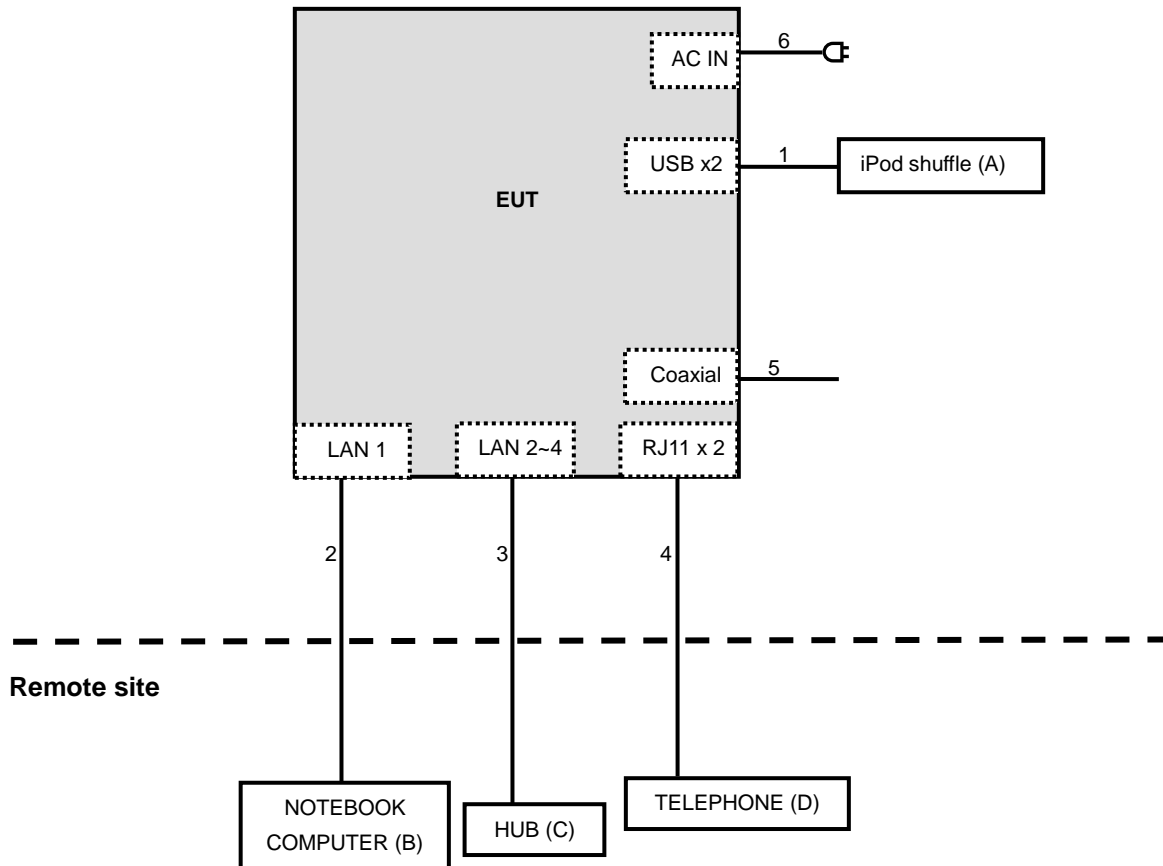
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	iPod shuffle	Apple	MD778TA/A	CC4JMCMXF4T1	NA	Provided by Lab
	iPod shuffle	Apple	MD778TA/A	CC4JMH7LF4T1	NA	Provided by Lab
B	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
D	TELEPHONE	WONDER	WD-303	8C17DA02825	NA	Provided by Lab
	TELEPHONE	WONDER	WD-303	8C17DA02763	NA	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.	USB	2	0.1	Yes	0	Provided by Lab
2.	RJ-45	1	10	No	0	Provided by Lab
3.	RJ-45	3	10	No	0	Provided by Lab
4.	RJ-11	2	10	No	0	Provided by Lab
5.	Coaxial	1	10	No	0	Provided by Lab
6.	AC	1	2	No	0	Supplied by client

### 3.4.1 Configuration of System under Test





### 3.5 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.

## 4 Test Types and Results

### 4.1 Radiated Emission and Bandedge Measurement

#### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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

#### NOTE:

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

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

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test 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:

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

#### 4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	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 EMCI	EMC184045	980143	Jan. 17, 2014	Jan. 16, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 05, 2014	Dec. 04, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-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. 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: Dec. 09 to 17, 2014

#### 4.1.3 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:**

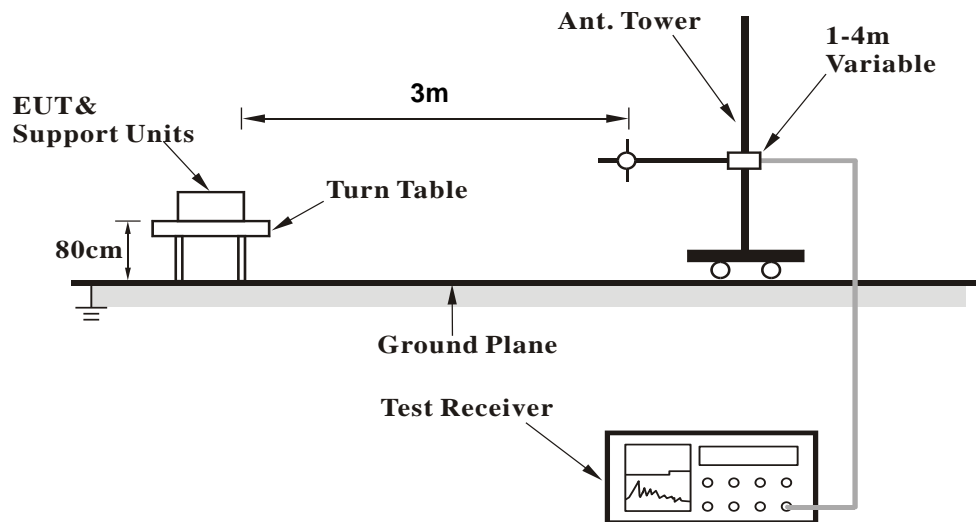
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

#### 4.1.4 Deviation from Test Standard

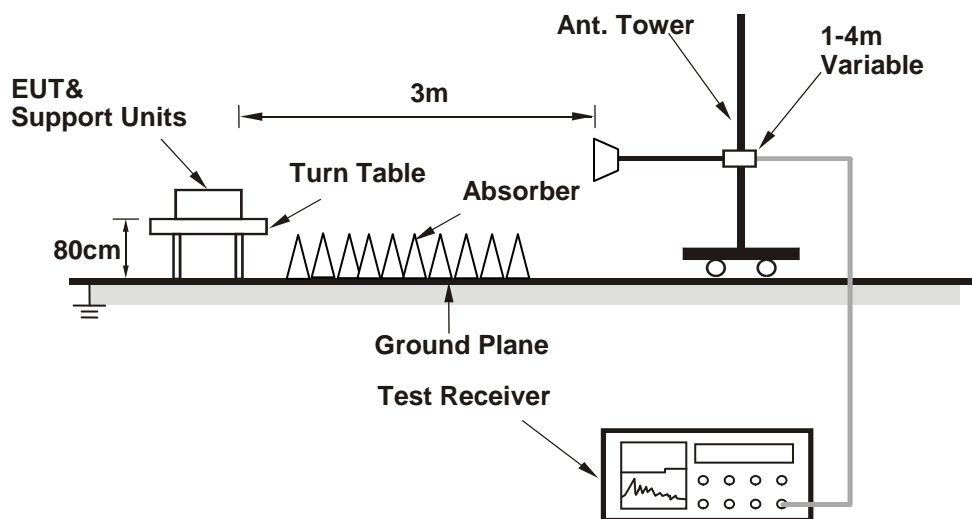
No deviation.

#### 4.1.5 Test Setup

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



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



#### 4.1.6 EUT Operating Conditions

1. Placed the EUT on testing table.
2. Prepared computer system (support unit B) to act as communication partner.
3. The communication partner ran test program "Mtool.exe[2.0.1.1]" to enable EUT under transmission/receiving condition continuously.

#### 4.1.7 Test Results

##### CDD MODE

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	5000.00	53.1 PK	74.0	-20.9	1.00 H	275	46.68	6.42
2	5000.00	47.2 AV	54.0	-6.8	1.00 H	275	40.78	6.42
3	5043.00	61.1 PK	74.0	-12.9	1.00 H	260	54.63	6.47
4	5043.00	50.1 AV	54.0	-3.9	1.00 H	260	43.63	6.47
5	*5260.00	119.2 PK			1.00 H	270	112.02	7.18
6	*5260.00	110.1 AV			1.00 H	270	102.92	7.18
7	5417.00	62.7 PK	74.0	-11.3	1.13 H	265	54.94	7.76
8	5417.00	53.0 AV	54.0	-1.0	1.13 H	265	45.24	7.76
9	#5478.00	60.1 PK	74.0	-13.9	1.39 H	265	52.15	7.95
10	#5478.00	49.9 AV	54.0	-4.1	1.39 H	265	41.95	7.95
11	#10520.00	56.2 PK	74.0	-17.8	1.00 H	302	42.98	13.22
12	#10520.00	42.9 AV	54.0	-11.1	1.00 H	302	29.68	13.22
13	15780.00	61.1 PK	74.0	-12.9	1.00 H	215	42.59	18.51
14	15780.00	49.1 AV	54.0	-4.9	1.00 H	215	30.59	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	5000.00	54.2 PK	74.0	-19.8	1.00 V	117	47.78	6.42
2	5000.00	48.3 AV	54.0	-5.7	1.00 V	117	41.88	6.42
3	5043.00	63.2 PK	74.0	-10.8	1.27 V	260	56.73	6.47
4	5043.00	52.7 AV	54.0	-1.3	1.27 V	260	46.23	6.47
5	*5260.00	121.1 PK			1.01 V	294	113.92	7.18
6	*5260.00	111.5 AV			1.01 V	294	104.32	7.18
7	5417.00	64.1 PK	74.0	-9.9	1.00 V	185	56.34	7.76
<b>8</b>	<b>5417.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.00 V</b>	<b>185</b>	<b>46.14</b>	<b>7.76</b>
9	#5478.00	64.4 PK	74.0	-9.6	1.00 V	186	56.45	7.95
10	#5478.00	53.2 AV	54.0	-0.8	1.00 V	186	45.25	7.95
11	#10520.00	55.2 PK	74.0	-18.8	1.00 V	90	41.98	13.22
12	#10520.00	43.1 AV	54.0	-10.9	1.00 V	90	29.88	13.22
13	15780.00	61.2 PK	74.0	-12.8	1.09 V	124	42.69	18.51
14	15780.00	48.9 AV	54.0	-5.1	1.09 V	124	30.39	18.51

#### REMARKS:

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

<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	111.6 PK			1.05 H	271	104.31	7.29
2	*5300.00	101.4 AV			1.05 H	271	94.11	7.29
3	5383.00	62.1 PK	74.0	-11.9	1.04 H	264	54.47	7.63
4	5383.00	52.7 AV	54.0	-1.3	1.04 H	264	45.07	7.63
5	10600.00	53.5 PK	74.0	-20.5	1.00 H	29	39.97	13.53
6	10600.00	41.2 AV	54.0	-12.8	1.00 H	29	27.67	13.53
7	15900.00	60.8 PK	74.0	-13.2	1.19 H	264	42.15	18.65
8	15900.00	47.7 AV	54.0	-6.3	1.19 H	264	29.05	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	113.5 PK			1.04 V	285	106.21	7.29
2	*5300.00	103.5 AV			1.04 V	285	96.21	7.29
3	5383.00	64.4 PK	74.0	-9.6	1.01 V	187	56.77	7.63
<b>4</b>	<b>5383.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.01 V</b>	<b>187</b>	<b>46.27</b>	<b>7.63</b>
5	10600.00	55.8 PK	74.0	-18.2	1.56 V	334	42.27	13.53
6	10600.00	42.9 AV	54.0	-11.1	1.56 V	334	29.37	13.53
7	15900.00	61.3 PK	74.0	-12.7	1.24 V	273	42.65	18.65
8	15900.00	48.0 AV	54.0	-6.0	1.24 V	273	29.35	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.

<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	113.7 PK			1.01 H	286	106.32	7.38
2	*5320.00	103.8 AV			1.01 H	286	96.42	7.38
3	5403.00	61.5 PK	74.0	-12.5	1.03 H	255	53.78	7.72
4	5403.00	52.3 AV	54.0	-1.7	1.03 H	255	44.58	7.72
5	10640.00	53.5 PK	74.0	-20.5	1.00 H	39	39.87	13.63
6	10640.00	41.3 AV	54.0	-12.7	1.00 H	39	27.67	13.63
7	15960.00	60.8 PK	74.0	-13.2	1.16 H	263	42.19	18.61
8	15960.00	47.9 AV	54.0	-6.1	1.16 H	263	29.29	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	116.1 PK			1.04 V	287	108.72	7.38
2	*5320.00	106.3 AV			1.04 V	287	98.92	7.38
3	5403.00	64.2 PK	74.0	-9.8	1.00 V	186	56.48	7.72
4	5403.00	53.8 AV	54.0	-0.2	1.00 V	186	46.08	7.72
5	10640.00	56.0 PK	74.0	-18.0	1.51 V	328	42.37	13.63
6	10640.00	43.0 AV	54.0	-11.0	1.51 V	328	29.37	13.63
7	15960.00	61.3 PK	74.0	-12.7	1.29 V	300	42.69	18.61
8	15960.00	47.9 AV	54.0	-6.1	1.29 V	300	29.29	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.



<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	5418.00	61.9 PK	74.0	-12.1	1.10 H	269	54.14	7.76
2	5418.00	52.4 AV	54.0	-1.6	1.10 H	269	44.64	7.76
3	#5470.00	63.2 PK	74.0	-10.8	1.00 H	254	55.27	7.93
4	#5470.00	44.2 AV	54.0	-9.8	1.00 H	254	36.27	7.93
5	*5500.00	114.9 PK			1.00 H	281	106.88	8.02
6	*5500.00	104.8 AV			1.00 H	281	96.78	8.02
7	11000.00	53.5 PK	74.0	-20.5	1.04 H	14	39.08	14.42
8	11000.00	41.7 AV	54.0	-12.3	1.04 H	14	27.28	14.42
9	#16500.00	61.0 PK	74.0	-13.0	1.25 H	275	40.06	20.94
10	#16500.00	48.1 AV	54.0	-5.9	1.25 H	275	27.16	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	5418.00	64.1 PK	74.0	-9.9	1.00 V	187	56.34	7.76
2	5418.00	53.9 AV	54.0	-0.1	1.00 V	187	46.14	7.76
3	#5470.00	65.2 PK	74.0	-8.8	1.00 V	302	57.27	7.93
4	#5470.00	47.8 AV	54.0	-6.2	1.00 V	302	39.87	7.93
5	*5500.00	117.2 PK			1.05 V	289	109.18	8.02
6	*5500.00	107.1 AV			1.05 V	289	99.08	8.02
7	#5732.00	62.4 PK	74.0	-11.6	1.00 V	247	54.00	8.40
8	#5732.00	51.6 AV	54.0	-2.4	1.00 V	247	43.20	8.40
9	11000.00	55.8 PK	74.0	-18.2	1.59 V	330	41.38	14.42
10	11000.00	42.6 AV	54.0	-11.4	1.59 V	330	28.18	14.42
11	#16500.00	61.4 PK	74.0	-12.6	1.20 V	280	40.46	20.94
12	#16500.00	48.0 AV	54.0	-6.0	1.20 V	280	27.06	20.94

**REMARKS:**

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

<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	5360.00	62.4 PK	74.0	-11.6	1.05 H	250	54.86	7.54
2	5360.00	53.0 AV	54.0	-1.0	1.05 H	250	45.46	7.54
3	*5600.00	116.1 PK			1.09 H	271	107.89	8.21
4	*5600.00	106.2 AV			1.09 H	271	97.99	8.21
5	#5834.00	59.8 PK	74.0	-14.2	1.42 H	271	51.17	8.63
6	#5834.00	49.6 AV	54.0	-4.4	1.42 H	271	40.97	8.63
7	11200.00	54.0 PK	74.0	-20.0	1.00 H	26	39.74	14.26
8	11200.00	41.9 AV	54.0	-12.1	1.00 H	26	27.64	14.26
9	#16800.00	61.3 PK	74.0	-12.7	1.16 H	273	40.00	21.30
10	#16800.00	48.1 AV	54.0	-5.9	1.16 H	273	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	5360.00	64.1 PK	74.0	-9.9	1.01 V	184	56.56	7.54
2	5360.00	53.7 AV	54.0	-0.3	1.01 V	184	46.16	7.54
3	*5600.00	118.7 PK			1.05 V	289	110.49	8.21
4	*5600.00	108.5 AV			1.05 V	289	100.29	8.21
5	#5761.00	63.5 PK	74.0	-10.5	1.04 V	228	55.05	8.45
6	#5761.00	52.8 AV	54.0	-1.2	1.04 V	228	44.35	8.45
7	#5834.00	66.2 PK	74.0	-7.8	1.03 V	227	57.57	8.63
8	#5834.00	53.7 AV	54.0	-0.3	1.03 V	227	45.07	8.63
9	11200.00	55.2 PK	74.0	-18.8	1.55 V	316	40.94	14.26
10	11200.00	42.3 AV	54.0	-11.7	1.55 V	316	28.04	14.26
11	#16800.00	62.1 PK	74.0	-11.9	1.23 V	273	40.80	21.30
12	#16800.00	48.6 AV	54.0	-5.4	1.23 V	273	27.30	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.

<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	5455.00	63.6 PK	74.0	-10.4	1.00 H	266	55.72	7.88
2	5455.00	44.5 AV	54.0	-9.5	1.00 H	266	36.62	7.88
3	*5700.00	113.8 PK			1.00 H	282	105.45	8.35
4	*5700.00	103.7 AV			1.00 H	282	95.35	8.35
5	#5782.00	64.0 PK	68.2	-4.2	1.09 H	123	55.53	8.47
6	11400.00	53.7 PK	74.0	-20.3	1.00 H	17	39.28	14.42
7	11400.00	41.9 AV	54.0	-12.1	1.00 H	17	27.48	14.42
8	#17100.00	60.9 PK	68.2	-7.3	1.18 H	291	39.13	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	5455.00	62.7 PK	74.0	-11.3	1.00 V	186	54.82	7.88
2	5455.00	51.3 AV	54.0	-2.7	1.00 V	186	43.42	7.88
3	*5700.00	116.4 PK			1.02 V	283	108.05	8.35
4	*5700.00	106.4 AV			1.02 V	283	98.05	8.35
5	#5782.00	68.0 PK	68.2	-0.2	1.04 V	228	59.53	8.47
6	11400.00	55.9 PK	74.0	-18.1	1.51 V	315	41.48	14.42
7	11400.00	43.0 AV	54.0	-11.0	1.51 V	315	28.58	14.42
8	#17100.00	61.8 PK	68.2	-6.4	1.20 V	287	40.03	21.77

**REMARKS:**

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

<b>CHANNEL</b>	TX Channel 144	<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	*5720.00	115.1 PK			1.00 H	284	106.71	8.39
2	*5720.00	105.2 AV			1.00 H	284	96.81	8.39
3	#5850.00	61.4 PK	74.0	-12.6	1.07 H	285	52.73	8.67
4	#5850.00	52.4 AV	54.0	-1.6	1.07 H	285	43.73	8.67
5	#5958.00	60.3 PK	74.0	-13.7	1.42 H	280	51.27	9.03
6	#5958.00	50.2 AV	54.0	-3.8	1.42 H	280	41.17	9.03
7	11440.00	53.7 PK	74.0	-20.3	1.00 H	22	39.31	14.39
8	11440.00	41.7 AV	54.0	-12.3	1.00 H	22	27.31	14.39
9	#17160.00	60.8 PK	74.0	-13.2	1.19 H	277	38.79	22.01
10	#17160.00	48.0 AV	54.0	-6.0	1.19 H	277	25.99	22.01

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5720.00	118.1 PK			1.01 V	244	109.71	8.39
2	*5720.00	108.0 AV			1.01 V	244	99.61	8.39
3	#5850.00	69.3 PK	74.0	-4.7	1.00 V	296	60.63	8.67
4	#5850.00	53.4 AV	54.0	-0.6	1.00 V	296	44.73	8.67
5	#5881.00	65.1 PK	74.0	-8.9	1.02 V	228	56.31	8.79
6	#5881.00	53.2 AV	54.0	-0.8	1.02 V	228	44.41	8.79
7	#5958.00	66.2 PK	74.0	-7.8	1.00 V	230	57.17	9.03
8	#5958.00	53.6 AV	54.0	-0.4	1.00 V	230	44.57	9.03
9	11440.00	55.4 PK	74.0	-18.6	1.57 V	334	41.01	14.39
10	11440.00	42.4 AV	54.0	-11.6	1.57 V	334	28.01	14.39
11	#17160.00	61.4 PK	74.0	-12.6	1.24 V	286	39.39	22.01
12	#17160.00	48.0 AV	54.0	-6.0	1.24 V	286	25.99	22.01

**REMARKS:**

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

**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	5000.00	63.4 PK	74.0	-10.6	1.00 H	253	56.98	6.42
2	5000.00	44.3 AV	54.0	-9.7	1.00 H	253	37.88	6.42
3	5043.00	59.9 PK	74.0	-14.1	1.44 H	278	53.43	6.47
4	5043.00	49.9 AV	54.0	-4.1	1.44 H	278	43.43	6.47
5	*5260.00	118.6 PK			1.04 H	280	111.42	7.18
6	*5260.00	109.1 AV			1.04 H	280	101.92	7.18
7	5417.00	62.2 PK	74.0	-11.8	1.08 H	279	54.44	7.76
8	5417.00	52.9 AV	54.0	-1.1	1.08 H	279	45.14	7.76
9	#5478.00	59.8 PK	74.0	-14.2	1.42 H	257	51.85	7.95
10	#5478.00	49.8 AV	54.0	-4.2	1.42 H	257	41.85	7.95
11	#10520.00	53.0 PK	74.0	-21.0	1.00 H	22	39.78	13.22
12	#10520.00	41.0 AV	54.0	-13.0	1.00 H	22	27.78	13.22
13	15780.00	61.4 PK	74.0	-12.6	1.22 H	284	42.89	18.51
14	15780.00	48.1 AV	54.0	-5.9	1.22 H	284	29.59	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	5000.00	53.6 PK	74.0	-20.4	1.00 V	108	47.18	6.42
2	5000.00	47.9 AV	54.0	-6.1	1.00 V	108	41.48	6.42
3	5043.00	63.0 PK	74.0	-11.0	1.29 V	250	56.53	6.47
4	5043.00	52.3 AV	54.0	-1.7	1.29 V	250	45.83	6.47
5	*5260.00	121.0 PK			1.03 V	279	113.82	7.18
6	*5260.00	111.1 AV			1.03 V	279	103.92	7.18
7	5417.00	63.9 PK	74.0	-10.1	1.00 V	185	56.14	7.76
8	5417.00	53.8 AV	54.0	-0.2	1.00 V	185	46.04	7.76
9	#5478.00	64.4 PK	74.0	-9.6	1.06 V	184	56.45	7.95
10	#5478.00	53.6 AV	54.0	-0.4	1.06 V	184	45.65	7.95
11	#10520.00	54.9 PK	74.0	-19.1	1.52 V	320	41.68	13.22
12	#10520.00	42.3 AV	54.0	-11.7	1.52 V	320	29.08	13.22
13	15780.00	61.7 PK	74.0	-12.3	1.27 V	297	43.19	18.51
14	15780.00	48.6 AV	54.0	-5.4	1.27 V	297	30.09	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.

<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	111.3 PK			1.11 H	259	104.01	7.29
2	*5300.00	101.4 AV			1.11 H	259	94.11	7.29
3	5383.00	61.9 PK	74.0	-12.1	1.00 H	252	54.27	7.63
4	5383.00	52.3 AV	54.0	-1.7	1.00 H	252	44.67	7.63
5	10600.00	53.6 PK	74.0	-20.4	1.04 H	33	40.07	13.53
6	10600.00	41.5 AV	54.0	-12.5	1.04 H	33	27.97	13.53
7	15900.00	61.0 PK	74.0	-13.0	1.24 H	288	42.35	18.65
8	15900.00	48.0 AV	54.0	-6.0	1.24 H	288	29.35	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	113.5 PK			1.01 V	293	106.21	7.29
2	*5300.00	103.5 AV			1.01 V	293	96.21	7.29
3	5383.00	63.9 PK	74.0	-10.1	1.03 V	186	56.27	7.63
<b>4</b>	<b>5383.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.03 V</b>	<b>186</b>	<b>46.27</b>	<b>7.63</b>
5	10600.00	55.6 PK	74.0	-18.4	1.52 V	329	42.07	13.53
6	10600.00	42.7 AV	54.0	-11.3	1.52 V	329	29.17	13.53
7	15900.00	61.1 PK	74.0	-12.9	1.20 V	299	42.45	18.65
8	15900.00	48.1 AV	54.0	-5.9	1.20 V	299	29.45	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.

<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	113.6 PK			1.05 H	271	106.22	7.38
2	*5320.00	103.7 AV			1.05 H	271	96.32	7.38
3	5403.00	62.8 PK	74.0	-11.2	1.03 H	270	55.08	7.72
4	5403.00	53.2 AV	54.0	-0.8	1.03 H	270	45.48	7.72
5	10640.00	53.8 PK	74.0	-20.2	1.00 H	27	40.17	13.63
6	10640.00	41.6 AV	54.0	-12.4	1.00 H	27	27.97	13.63
7	15960.00	60.8 PK	74.0	-13.2	1.19 H	278	42.19	18.61
8	15960.00	47.8 AV	54.0	-6.2	1.19 H	278	29.19	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	115.8 PK			1.01 V	282	108.42	7.38
2	*5320.00	106.2 AV			1.01 V	282	98.82	7.38
3	5403.00	64.2 PK	74.0	-9.8	1.02 V	186	56.48	7.72
4	<b>5403.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.02 V</b>	<b>186</b>	<b>46.18</b>	<b>7.72</b>
5	10640.00	55.9 PK	74.0	-18.1	1.58 V	317	42.27	13.63
6	10640.00	42.8 AV	54.0	-11.2	1.58 V	317	29.17	13.63
7	15960.00	61.1 PK	74.0	-12.9	1.29 V	286	42.49	18.61
8	15960.00	48.0 AV	54.0	-6.0	1.29 V	286	29.39	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.

<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	5418.00	61.7 PK	74.0	-12.3	1.06 H	261	53.94	7.76
2	5418.00	52.4 AV	54.0	-1.6	1.06 H	261	44.64	7.76
3	#5470.00	63.0 PK	74.0	-11.0	1.00 H	265	55.07	7.93
4	#5470.00	43.8 AV	54.0	-10.2	1.00 H	265	35.87	7.93
5	*5500.00	114.9 PK			1.09 H	270	106.88	8.02
6	*5500.00	104.6 AV			1.09 H	270	96.58	8.02
7	11000.00	53.4 PK	74.0	-20.6	1.00 H	23	38.98	14.42
8	11000.00	41.5 AV	54.0	-12.5	1.00 H	23	27.08	14.42
9	#16500.00	60.6 PK	74.0	-13.4	1.15 H	291	39.66	20.94
10	#16500.00	47.7 AV	54.0	-6.3	1.15 H	291	26.76	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	5418.00	63.8 PK	74.0	-10.2	1.00 V	187	56.04	7.76
2	5418.00	53.8 AV	54.0	-0.2	1.00 V	187	46.04	7.76
3	#5470.00	65.0 PK	74.0	-9.0	1.00 V	294	57.07	7.93
4	#5470.00	47.8 AV	54.0	-6.2	1.00 V	294	39.87	7.93
5	*5500.00	117.2 PK			1.09 V	292	109.18	8.02
6	*5500.00	107.1 AV			1.09 V	292	99.08	8.02
7	#5732.00	62.0 PK	74.0	-12.0	1.00 V	234	53.60	8.40
8	#5732.00	51.4 AV	54.0	-2.6	1.00 V	234	43.00	8.40
9	11000.00	55.1 PK	74.0	-18.9	1.56 V	307	40.68	14.42
10	11000.00	42.5 AV	54.0	-11.5	1.56 V	307	28.08	14.42
11	#16500.00	62.1 PK	74.0	-11.9	1.21 V	276	41.16	20.94
12	#16500.00	48.8 AV	54.0	-5.2	1.21 V	276	27.86	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.



<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	5360.00	61.7 PK	74.0	-12.3	1.01 H	274	54.16	7.54
2	5360.00	52.3 AV	54.0	-1.7	1.01 H	274	44.76	7.54
3	*5600.00	116.2 PK			1.04 H	263	107.99	8.21
4	*5600.00	105.3 AV			1.04 H	263	97.09	8.21
5	#5834.00	59.5 PK	74.0	-14.5	1.42 H	264	50.87	8.63
6	#5834.00	49.6 AV	54.0	-4.4	1.42 H	264	40.97	8.63
7	11200.00	53.5 PK	74.0	-20.5	1.03 H	17	39.24	14.26
8	11200.00	41.5 AV	54.0	-12.5	1.03 H	17	27.24	14.26
9	#16800.00	61.1 PK	74.0	-12.9	1.17 H	285	39.80	21.30
10	#16800.00	47.8 AV	54.0	-6.2	1.17 H	285	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	5360.00	63.4 PK	74.0	-10.6	1.02 V	184	55.86	7.54
2	5360.00	53.9 AV	54.0	-0.1	1.02 V	184	46.36	7.54
3	*5600.00	118.3 PK			1.09 V	296	110.09	8.21
4	*5600.00	108.2 AV			1.09 V	296	99.99	8.21
5	#5761.00	62.7 PK	74.0	-11.3	1.02 V	203	54.25	8.45
6	#5761.00	52.7 AV	54.0	-1.3	1.02 V	203	44.25	8.45
7	#5834.00	64.8 PK	74.0	-9.2	1.00 V	224	56.17	8.63
8	#5834.00	53.4 AV	54.0	-0.6	1.00 V	224	44.77	8.63
9	11200.00	55.6 PK	74.0	-18.4	1.53 V	327	41.34	14.26
10	11200.00	42.7 AV	54.0	-11.3	1.53 V	327	28.44	14.26
11	#16800.00	61.4 PK	74.0	-12.6	1.21 V	300	40.10	21.30
12	#16800.00	48.3 AV	54.0	-5.7	1.21 V	300	27.00	21.30

**REMARKS:**

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

<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	5455.00	63.1 PK	74.0	-10.9	1.00 H	263	55.22	7.88
2	5455.00	44.1 AV	54.0	-9.9	1.00 H	263	36.22	7.88
3	*5700.00	116.3 PK			1.05 H	265	107.95	8.35
4	*5700.00	104.1 AV			1.05 H	265	95.75	8.35
5	#5782.00	60.4 PK	68.2	-7.8	1.38 H	271	51.93	8.47
6	11400.00	53.5 PK	74.0	-20.5	1.00 H	40	39.08	14.42
7	11400.00	41.5 AV	54.0	-12.5	1.00 H	40	27.08	14.42
8	#17100.00	61.2 PK	68.2	-7.0	1.24 H	281	39.43	21.77

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5455.00	62.5 PK	74.0	-11.5	1.00 V	173	54.62	7.88
2	5455.00	51.4 AV	54.0	-2.6	1.00 V	173	43.52	7.88
3	*5700.00	116.7 PK			1.01 V	276	108.35	8.35
4	*5700.00	106.4 AV			1.01 V	276	98.05	8.35
<b>5</b>	<b>#5782.00</b>	<b>68.1 PK</b>	<b>68.2</b>	<b>-0.1</b>	<b>1.04 V</b>	<b>208</b>	<b>59.63</b>	<b>8.47</b>
6	11400.00	56.1 PK	74.0	-17.9	1.60 V	316	41.68	14.42
7	11400.00	43.0 AV	54.0	-11.0	1.60 V	316	28.58	14.42
8	#17100.00	61.4 PK	68.2	-6.8	1.23 V	279	39.63	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.

<b>CHANNEL</b>	TX Channel 144	<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	*5720.00	116.2 PK			1.11 H	263	107.81	8.39
2	*5720.00	106.5 AV			1.11 H	263	98.11	8.39
3	#5850.00	62.1 PK	74.0	-11.9	1.02 H	268	53.43	8.67
4	#5850.00	52.1 AV	54.0	-1.9	1.02 H	268	43.43	8.67
5	11440.00	53.0 PK	74.0	-21.0	1.00 H	33	38.61	14.39
6	11440.00	40.9 AV	54.0	-13.1	1.00 H	33	26.51	14.39
7	#17160.00	61.7 PK	74.0	-12.3	1.17 H	267	39.69	22.01
8	#17160.00	48.3 AV	54.0	-5.7	1.17 H	267	26.29	22.01

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5720.00	118.3 PK			1.04 V	302	109.91	8.39
2	*5720.00	108.6 AV			1.04 V	302	100.21	8.39
3	#5850.00	70.2 PK	74.0	-3.8	1.00 V	289	61.53	8.67
4	#5850.00	53.2 AV	54.0	-0.8	1.00 V	289	44.53	8.67
5	#5881.00	65.2 PK	74.0	-8.8	1.02 V	233	56.41	8.79
6	#5881.00	53.1 AV	54.0	-0.9	1.02 V	233	44.31	8.79
7	11440.00	55.0 PK	74.0	-19.0	1.62 V	310	40.61	14.39
8	11440.00	42.4 AV	54.0	-11.6	1.62 V	310	28.01	14.39
9	#17160.00	62.2 PK	74.0	-11.8	1.26 V	297	40.19	22.01
10	#17160.00	48.8 AV	54.0	-5.2	1.26 V	297	26.79	22.01

**REMARKS:**

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

**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	5113.00	63.4 PK	74.0	-10.6	1.02 H	245	56.78	6.62
2	5113.00	44.6 AV	54.0	-9.4	1.02 H	245	37.98	6.62
3	*5270.00	112.7 PK			1.06 H	263	105.48	7.22
4	*5270.00	101.9 AV			1.06 H	263	94.68	7.22
5	5350.00	62.5 PK	74.0	-11.5	1.05 H	276	55.01	7.49
6	5350.00	53.0 AV	54.0	-1.0	1.05 H	276	45.51	7.49
7	#10540.00	54.1 PK	74.0	-19.9	1.03 H	38	40.81	13.29
8	#10540.00	41.8 AV	54.0	-12.2	1.03 H	38	28.51	13.29
9	15810.00	61.4 PK	74.0	-12.6	1.20 H	285	42.83	18.57
10	15810.00	48.3 AV	54.0	-5.7	1.20 H	285	29.73	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	5113.00	60.1 PK	74.0	-13.9	1.00 V	186	53.48	6.62
2	5113.00	46.5 AV	54.0	-7.5	1.00 V	186	39.88	6.62
3	*5270.00	114.5 PK			1.01 V	295	107.28	7.22
4	*5270.00	104.1 AV			1.01 V	295	96.88	7.22
5	5350.00	65.2 PK	74.0	-8.8	1.01 V	187	57.71	7.49
<b>6</b>	<b>5350.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.01 V</b>	<b>187</b>	<b>46.41</b>	<b>7.49</b>
7	#10540.00	55.8 PK	74.0	-18.2	1.55 V	329	42.51	13.29
8	#10540.00	43.1 AV	54.0	-10.9	1.55 V	329	29.81	13.29
9	15810.00	61.9 PK	74.0	-12.1	1.24 V	294	43.33	18.57
10	15810.00	48.8 AV	54.0	-5.2	1.24 V	294	30.23	18.57

**REMARKS:**

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

<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	110.1 PK			1.08 H	278	102.77	7.33
2	*5310.00	99.3 AV			1.08 H	278	91.97	7.33
3	5350.00	62.2 PK	74.0	-11.8	1.08 H	252	54.71	7.49
4	5350.00	52.8 AV	54.0	-1.2	1.08 H	252	45.31	7.49
5	10620.00	53.6 PK	74.0	-20.4	1.04 H	35	40.01	13.59
6	10620.00	41.7 AV	54.0	-12.3	1.04 H	35	28.11	13.59
7	15930.00	61.7 PK	74.0	-12.3	1.24 H	261	43.06	18.64
8	15930.00	48.4 AV	54.0	-5.6	1.24 H	261	29.76	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	112.1 PK			1.00 V	275	104.77	7.33
2	*5310.00	101.8 AV			1.00 V	275	94.47	7.33
3	5350.00	69.6 PK	74.0	-4.4	1.00 V	293	62.11	7.49
<b>4</b>	<b>5350.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.00 V</b>	<b>293</b>	<b>46.41</b>	<b>7.49</b>
5	10620.00	56.1 PK	74.0	-17.9	1.54 V	315	42.51	13.59
6	10620.00	43.1 AV	54.0	-10.9	1.54 V	315	29.51	13.59
7	15930.00	61.9 PK	74.0	-12.1	1.20 V	293	43.26	18.64
8	15930.00	48.6 AV	54.0	-5.4	1.20 V	293	29.96	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	62.1 PK	74.0	-11.9	1.09 H	265	54.17	7.93
2	#5470.00	52.6 AV	54.0	-1.4	1.09 H	265	44.67	7.93
3	*5510.00	108.7 PK			1.09 H	255	100.66	8.04
4	*5510.00	97.6 AV			1.09 H	255	89.56	8.04
5	11020.00	52.8 PK	74.0	-21.2	1.00 H	28	38.43	14.37
6	11020.00	41.0 AV	54.0	-13.0	1.00 H	28	26.63	14.37
7	#16530.00	61.2 PK	74.0	-12.8	1.23 H	270	40.28	20.92
8	#16530.00	48.0 AV	54.0	-6.0	1.23 H	270	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	69.4 PK	74.0	-4.6	1.01 V	237	61.47	7.93
2	#5470.00	53.8 AV	54.0	-0.2	1.01 V	237	45.87	7.93
3	*5510.00	110.4 PK			1.00 V	289	102.36	8.04
4	*5510.00	100.1 AV			1.00 V	289	92.06	8.04
5	11020.00	55.2 PK	74.0	-18.8	1.61 V	332	40.83	14.37
6	11020.00	42.3 AV	54.0	-11.7	1.61 V	332	27.93	14.37
7	#16530.00	61.2 PK	74.0	-12.8	1.19 V	301	40.28	20.92
8	#16530.00	48.1 AV	54.0	-5.9	1.19 V	301	27.18	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.

<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	5433.00	61.8 PK	74.0	-12.2	1.01 H	258	53.98	7.82
2	5433.00	52.4 AV	54.0	-1.6	1.01 H	258	44.58	7.82
3	*5590.00	115.7 PK			1.01 H	273	107.51	8.19
4	*5590.00	105.1 AV			1.01 H	273	96.91	8.19
5	11180.00	53.5 PK	74.0	-20.5	1.01 H	13	39.25	14.25
6	11180.00	41.6 AV	54.0	-12.4	1.01 H	13	27.35	14.25
7	#16770.00	60.6 PK	74.0	-13.4	1.24 H	283	39.39	21.21
8	#16770.00	47.7 AV	54.0	-6.3	1.24 H	283	26.49	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	5433.00	63.4 PK	74.0	-10.6	1.00 V	185	55.58	7.82
2	5433.00	53.2 AV	54.0	-0.8	1.00 V	185	45.38	7.82
3	*5590.00	118.2 PK			1.00 V	320	110.01	8.19
4	*5590.00	107.7 AV			1.00 V	320	99.51	8.19
5	11180.00	55.2 PK	74.0	-18.8	1.51 V	336	40.95	14.25
6	11180.00	42.3 AV	54.0	-11.7	1.51 V	336	28.05	14.25
7	#16770.00	61.6 PK	74.0	-12.4	1.20 V	274	40.39	21.21
8	#16770.00	48.3 AV	54.0	-5.7	1.20 V	274	27.09	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.

<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	111.6 PK			1.06 H	266	103.29	8.31
2	*5670.00	101.8 AV			1.06 H	266	93.49	8.31
3	#5744.00	59.8 PK	68.2	-8.4	1.43 H	274	51.38	8.42
4	11340.00	53.0 PK	74.0	-21.0	1.03 H	37	38.68	14.32
5	11340.00	41.2 AV	54.0	-12.8	1.03 H	37	26.88	14.32
6	#17010.00	61.7 PK	68.2	-6.5	1.25 H	286	40.17	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	114.5 PK			1.00 V	334	106.19	8.31
2	*5670.00	104.3 AV			1.00 V	334	95.99	8.31
3	#5744.00	68.0 PK	68.2	-0.2	1.01 V	244	59.58	8.42
4	11340.00	55.5 PK	74.0	-18.5	1.53 V	321	41.18	14.32
5	11340.00	42.8 AV	54.0	-11.2	1.53 V	321	28.48	14.32
6	#17010.00	61.1 PK	68.2	-7.1	1.23 V	282	39.57	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.



<b>CHANNEL</b>	TX Channel 142	<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	*5710.00	114.7 PK			1.02 H	272	106.34	8.36
2	*5710.00	103.9 AV			1.02 H	272	95.54	8.36
3	#5850.00	63.2 PK	74.0	-10.8	1.40 H	273	54.53	8.67
4	#5850.00	50.0 AV	54.0	-4.0	1.40 H	273	41.33	8.67
5	11420.00	53.5 PK	74.0	-20.5	1.02 H	34	39.09	14.41
6	11420.00	41.2 AV	54.0	-12.8	1.02 H	34	26.79	14.41
7	#17130.00	61.3 PK	74.0	-12.7	1.14 H	290	39.41	21.89
8	#17130.00	48.2 AV	54.0	-5.8	1.14 H	290	26.31	21.89

**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	*5710.00	117.5 PK			1.01 V	250	109.14	8.36
2	*5710.00	106.4 AV			1.01 V	250	98.04	8.36
3	#5850.00	70.8 PK	74.0	-3.2	1.00 V	292	62.13	8.67
4	#5850.00	53.7 AV	54.0	-0.3	1.00 V	292	45.03	8.67
5	11420.00	55.1 PK	74.0	-18.9	1.59 V	318	40.69	14.41
6	11420.00	42.3 AV	54.0	-11.7	1.59 V	318	27.89	14.41
7	#17130.00	61.3 PK	74.0	-12.7	1.20 V	290	39.41	21.89
8	#17130.00	48.3 AV	54.0	-5.7	1.20 V	290	26.41	21.89

**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	*5290.00	104.2 PK			1.00 H	277	96.92	7.28
2	*5290.00	93.9 AV			1.00 H	277	86.62	7.28
3	5350.00	62.2 PK	74.0	-11.8	1.00 H	264	54.71	7.49
4	5350.00	52.5 AV	54.0	-1.5	1.00 H	264	45.01	7.49
5	#10580.00	53.3 PK	74.0	-20.7	1.01 H	16	39.85	13.45
6	#10580.00	41.4 AV	54.0	-12.6	1.01 H	16	27.95	13.45
7	15870.00	60.8 PK	74.0	-13.2	1.18 H	289	42.18	18.62
8	15870.00	47.8 AV	54.0	-6.2	1.18 H	289	29.18	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	*5290.00	106.7 PK			1.00 V	295	99.42	7.28
2	*5290.00	96.1 AV			1.00 V	295	88.82	7.28
3	5350.00	70.1 PK	74.0	-3.9	1.02 V	185	62.61	7.49
<b>4</b>	<b>5350.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.02 V</b>	<b>185</b>	<b>46.41</b>	<b>7.49</b>
5	#10580.00	55.8 PK	74.0	-18.2	1.54 V	312	42.35	13.45
6	#10580.00	43.1 AV	54.0	-10.9	1.54 V	312	29.65	13.45
7	15870.00	62.1 PK	74.0	-11.9	1.25 V	294	43.48	18.62
8	15870.00	48.8 AV	54.0	-5.2	1.25 V	294	30.18	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.

<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	#5470.00	61.7 PK	74.0	-12.3	1.08 H	278	53.77	7.93
2	#5470.00	52.5 AV	54.0	-1.5	1.08 H	278	44.57	7.93
3	*5530.00	102.8 PK			1.03 H	278	94.72	8.08
4	*5530.00	92.1 AV			1.03 H	278	84.02	8.08
5	11060.00	53.4 PK	74.0	-20.6	1.00 H	16	39.10	14.30
6	11060.00	41.1 AV	54.0	-12.9	1.00 H	16	26.80	14.30
7	#16590.00	61.2 PK	74.0	-12.8	1.18 H	279	40.30	20.90
8	#16590.00	48.1 AV	54.0	-5.9	1.18 H	279	27.20	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	#5470.00	68.9 PK	74.0	-5.1	1.00 V	187	60.97	7.93
2	#5470.00	53.6 AV	54.0	-0.4	1.00 V	187	45.67	7.93
3	*5530.00	105.1 PK			1.00 V	304	97.02	8.08
4	*5530.00	94.4 AV			1.00 V	304	86.32	8.08
5	11060.00	55.5 PK	74.0	-18.5	1.56 V	332	41.20	14.30
6	11060.00	42.8 AV	54.0	-11.2	1.56 V	332	28.50	14.30
7	#16590.00	61.3 PK	74.0	-12.7	1.20 V	279	40.40	20.90
8	#16590.00	48.3 AV	54.0	-5.7	1.20 V	279	27.40	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	110.1 PK			1.06 H	275	101.87	8.23
2	*5610.00	97.2 AV			1.06 H	275	88.97	8.23
3	#5725.00	62.1 PK	74.0	-11.9	1.00 H	262	53.71	8.39
4	#5725.00	52.6 AV	54.0	-1.4	1.00 H	262	44.21	8.39
5	11220.00	53.1 PK	74.0	-20.9	1.00 H	31	38.84	14.26
6	11220.00	41.0 AV	54.0	-13.0	1.00 H	31	26.74	14.26
7	#16830.00	61.2 PK	74.0	-12.8	1.18 H	285	39.85	21.35
8	#16830.00	48.0 AV	54.0	-6.0	1.18 H	285	26.65	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	112.7 PK			1.00 V	321	104.47	8.23
2	*5610.00	100.2 AV			1.00 V	321	91.97	8.23
3	#5725.00	68.6 PK	74.0	-5.4	1.11 V	254	60.21	8.39
4	#5725.00	53.8 AV	54.0	-0.2	1.11 V	254	45.41	8.39
5	11220.00	55.7 PK	74.0	-18.3	1.57 V	336	41.44	14.26
6	11220.00	43.0 AV	54.0	-11.0	1.57 V	336	28.74	14.26
7	#16830.00	60.9 PK	74.0	-13.1	1.23 V	295	39.55	21.35
8	#16830.00	48.0 AV	54.0	-6.0	1.23 V	295	26.65	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.

<b>CHANNEL</b>	TX Channel 138	<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	*5690.00	112.2 PK			1.04 H	271	103.87	8.33
2	*5690.00	99.1 AV			1.04 H	271	90.77	8.33
3	#5850.00	59.8 PK	74.0	-14.2	1.42 H	279	51.13	8.67
4	#5850.00	49.9 AV	54.0	-4.1	1.42 H	279	41.23	8.67
5	11380.00	54.0 PK	74.0	-20.0	1.00 H	16	39.61	14.39
6	11380.00	41.7 AV	54.0	-12.3	1.00 H	16	27.31	14.39
7	#17070.00	61.0 PK	74.0	-13.0	1.18 H	268	39.31	21.69
8	#17070.00	47.6 AV	54.0	-6.4	1.18 H	268	25.91	21.69

**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	*5690.00	115.9 PK			1.12 V	255	107.57	8.33
2	*5690.00	102.2 AV			1.12 V	255	93.87	8.33
3	#5850.00	69.7 PK	74.0	-4.3	1.02 V	287	61.03	8.67
4	#5850.00	53.5 AV	54.0	-0.5	1.02 V	287	44.83	8.67
5	11380.00	56.0 PK	74.0	-18.0	1.62 V	329	41.61	14.39
6	11380.00	43.1 AV	54.0	-10.9	1.62 V	329	28.71	14.39
7	#17070.00	61.7 PK	74.0	-12.3	1.26 V	302	40.01	21.69
8	#17070.00	48.5 AV	54.0	-5.5	1.26 V	302	26.81	21.69

**REMARKS:**

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

**Below 1GHz Data:**
**802.11ac (VHT80)**

<b>CHANNEL</b>	TX Channel 122	<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	200.60	33.4 QP	43.5	-10.1	1.24 H	241	49.75	-16.33
2	375.11	41.5 QP	46.0	-4.5	1.42 H	245	51.74	-10.23
3	557.74	33.4 QP	46.0	-12.6	1.45 H	134	39.65	-6.23
4	624.72	37.2 QP	46.0	-8.8	1.45 H	134	41.62	-4.41
5	720.11	38.1 QP	46.0	-7.9	1.64 H	104	41.37	-3.26
6	799.75	42.6 QP	46.0	-3.4	1.33 H	142	44.03	-1.41

**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	46.21	35.0 QP	40.0	-5.0	1.45 V	124	48.65	-13.64
2	103.75	32.4 QP	43.5	-11.1	1.45 V	100	49.62	-17.20
3	201.11	33.4 QP	43.5	-10.1	1.34 V	245	49.76	-16.34
4	374.75	41.5 QP	46.0	-4.6	1.24 V	245	51.69	-10.24
5	540.11	42.0 QP	46.0	-4.0	1.42 V	67	48.60	-6.59
6	875.11	39.8 QP	46.0	-6.3	1.45 V	245	40.20	-0.45

**REMARKS:**

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

## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	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: Dec. 15, 2014

#### 4.2.3 Test Procedures

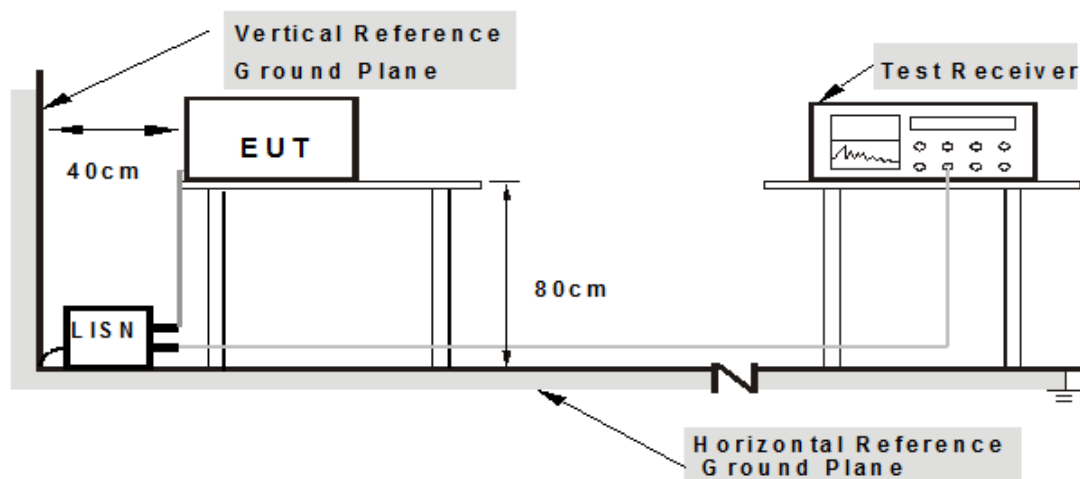
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



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

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

#### 4.2.6 Eut Operating Conditions

Same as 4.1.6.



### 4.2.7 Test Results

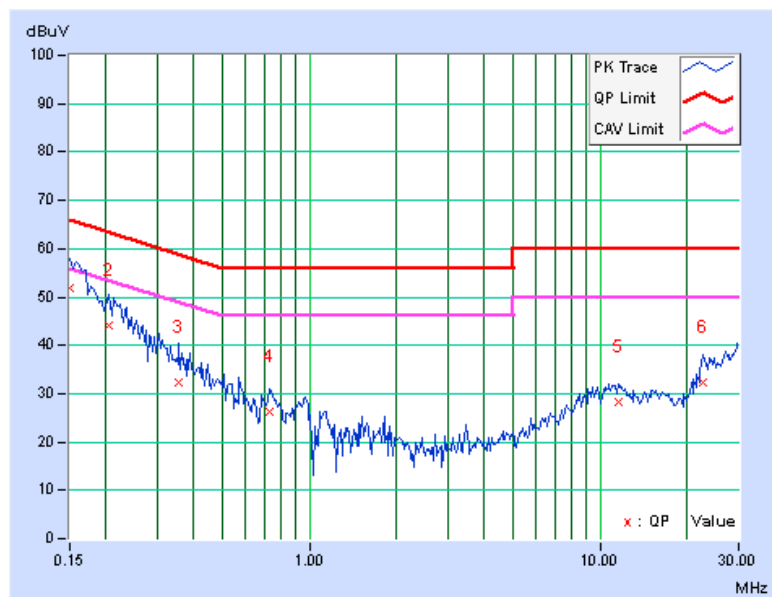
#### CDD MODE

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.07	51.63	36.13	51.70	36.20	66.00	56.00	-14.30	-19.80
2	0.20469	0.07	43.92	30.60	43.99	30.67	63.42	53.42	-19.43	-22.75
3	0.35703	0.09	32.13	21.07	32.22	21.16	58.80	48.80	-26.58	-27.64
4	0.73203	0.11	26.11	15.69	26.22	15.80	56.00	46.00	-29.78	-30.20
5	11.53906	0.49	27.81	23.04	28.30	23.53	60.00	50.00	-31.70	-26.47
6	22.69531	0.75	31.47	26.02	32.22	26.77	60.00	50.00	-27.78	-23.23

#### REMARKS:

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

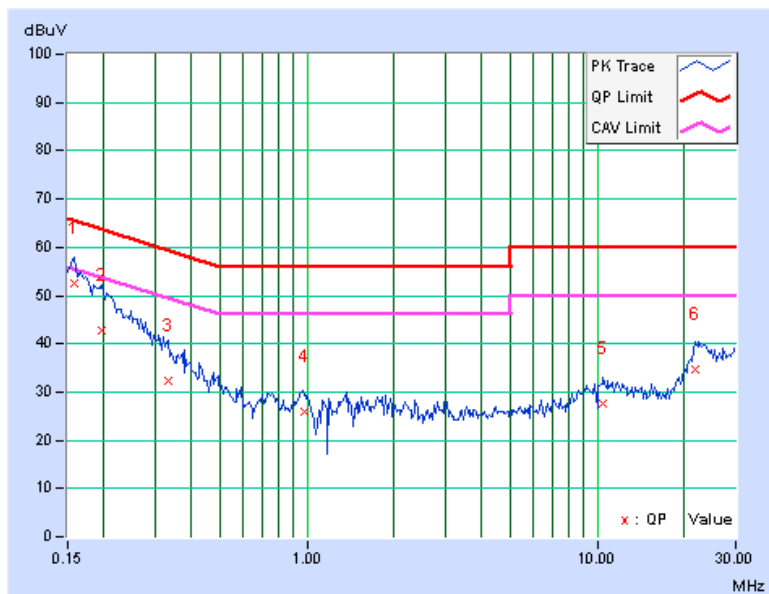


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.15785	0.06	52.44	42.37	52.50	42.43	65.58	55.58	-13.07	-13.14
2	0.19668	0.06	42.68	26.15	42.74	26.21	63.75	53.75	-21.01	-27.54
3	0.33345	0.08	32.22	21.55	32.30	21.63	59.36	49.36	-27.06	-27.73
4	0.97435	0.13	25.78	15.20	25.91	15.33	56.00	46.00	-30.09	-30.67
5	10.45315	0.47	27.21	22.21	27.68	22.68	60.00	50.00	-32.32	-27.32
6	21.67156	0.78	33.77	28.57	34.55	29.35	60.00	50.00	-25.45	-20.65

**REMARKS:**

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



### 4.3 Transmit Power Measurement

#### 4.3.1 Limits Of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3		√	1 Watt (30 dBm)

\*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 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;

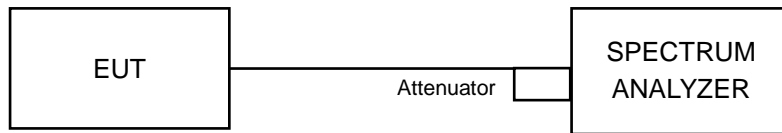
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT  $\geq$  5.

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

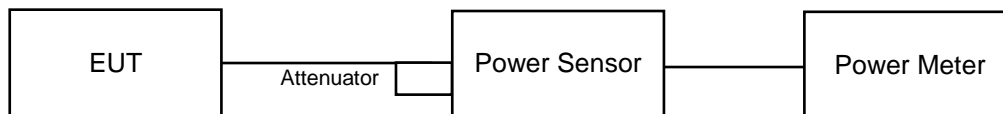
#### 4.3.2 Test Setup

##### FOR POWER OUTPUT MEASUREMENT

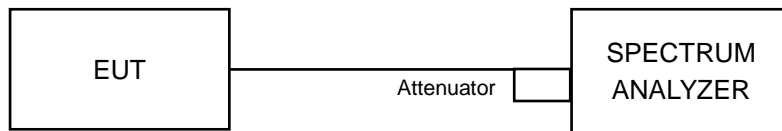
For channel straddling 5725MHz:



For other channels:



##### FOR 26dB OCCUPIED BANDWIDTH



#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 Test Procedure

##### For POWER OUTPUT MEASUREMENT:

##### For channel straddling 5725MHz:

Follow FCC KDB 789033 UNII test procedure:

##### For 802.11a & 802.11ac (VHT20)

###### Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Set trigger to free run (duty cycle  $\geq 98$  percent) ; Set video trigger (duty cycle  $< 98$  percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

##### For 802.11ac (VHT40) & 802.11ac (VHT80)

###### Method SA-2

1. Set span to encompass the emission bandwidth (EBW) of the signal.
2. Set RBW = 1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle  $< 98$  percent).

##### For other channels:

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

##### FOR 26dB OCCUPIED BANDWIDTH

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

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Conditions

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

### 4.3.7 Test Result

#### POWER OUTPUT:

<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	16.98	17.54	17.32	160.593	22.06	24	PASS
60	5300	14.03	14.52	14.49	81.726	19.12	24	PASS
64	5320	16.94	17.33	17.31	157.333	21.97	24	PASS
100	5500	16.52	17.31	17.36	153.152	21.85	24	PASS
120	5600	17.01	17.53	17.69	165.607	22.19	24	PASS
140	5700	16.58	17.17	17.59	155.03	21.90	24	PASS
144 (UNII-2c Band)	5720	12.63	13.22	13.71	62.808	17.98	22.78	PASS
144 (UNII-3 Band)	5720	5.64	7.07	7.59	14.498	11.61	30	PASS
<b>802.11ac (VHT20)</b>								
52	5260	17.01	17.69	17.56	165.999	22.20	24	PASS
60	5300	14.01	14.42	14.47	80.836	19.08	24	PASS
64	5320	16.87	17.34	17.31	156.668	21.95	24	PASS
100	5500	16.49	17.29	17.32	152.097	21.82	24	PASS
120	5600	17.01	17.57	17.72	166.538	22.22	24	PASS
140	5700	17.01	17.62	18.01	171.285	22.34	24	PASS
144 (UNII-2c Band)	5720	12.33	13.09	13.66	60.697	17.83	22.82	PASS
144 (UNII-3 Band)	5720	6.48	7.23	7.87	15.854	12.00	30	PASS
<b>802.11ac (VHT40)</b>								
54	5270	17.61	17.98	18.11	185.197	22.68	24	PASS
62	5310	15.31	15.59	15.71	107.426	20.31	24	PASS
102	5510	13.79	14.79	15.07	86.2	19.36	24	PASS
118	5590	18.47	19.20	19.51	242.814	23.85	24	PASS
134	5670	17.58	18.44	18.58	199.214	22.99	24	PASS
142 (UNII-2c Band)	5710	15.45	16.07	16.29	120.997	20.83	24	PASS
142 (UNII-3 Band)	5710	4.89	5.67	6.00	11.018	10.42	30	PASS
<b>802.11ac (VHT80)</b>								
58	5290	13.01	13.57	13.85	67.016	18.26	24	PASS
106	5530	11.24	12.76	13.23	53.223	17.26	24	PASS
122	5610	17.71	19.11	19.54	230.44	23.63	24	PASS
138 (UNII-2c Band)	5690	15.10	16.05	16.48	122.483	20.88	24	PASS
138 (UNII-3 Band)	5690	0.94	2.17	2.81	5.021	7.01	30	PASS

**Beamforming MODE**

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	16.72	17.27	17.05	151.021	21.79	21.91	PASS
60	5300	14.03	14.52	14.49	81.726	19.12	21.91	PASS
64	5320	16.62	17.33	17.31	153.822	21.87	21.91	PASS
100	5500	16.52	17.31	17.36	153.152	21.85	21.94	PASS
120	5600	16.49	17.02	17.21	147.518	21.69	21.94	PASS
140	5700	16.58	17.17	17.59	155.03	21.90	21.94	PASS
144 (UNII-2c Band)	5720	12.63	13.22	13.71	62.808	17.98	20.72	PASS
144 (UNII-3 Band)	5720	5.64	7.07	7.59	14.498	11.61	27.95	PASS
<b>802.11ac (VHT20)</b>								
52	5260	16.70	17.37	17.25	154.438	21.89	21.91	PASS
60	5300	14.01	14.42	14.47	80.836	19.08	21.91	PASS
64	5320	16.59	17.06	17.03	146.886	21.67	21.91	PASS
100	5500	16.49	17.29	17.32	152.097	21.82	21.94	PASS
120	5600	16.70	17.26	17.41	155.066	21.91	21.94	PASS
140	5700	16.51	17.11	17.50	152.409	21.83	21.94	PASS
144 (UNII-2c Band)	5720	12.33	13.09	13.66	60.697	17.83	20.76	PASS
144 (UNII-3 Band)	5720	6.48	7.23	7.87	15.854	12.00	27.95	PASS
<b>802.11ac (VHT40)</b>								
54	5270	16.64	16.89	17.05	145.696	21.63	21.91	PASS
62	5310	15.31	15.59	15.71	107.426	20.31	21.91	PASS
102	5510	13.79	14.79	15.07	86.2	19.36	21.94	PASS
118	5590	16.38	17.18	17.54	152.445	21.83	21.94	PASS
134	5670	16.53	17.37	17.52	156.048	21.93	21.94	PASS
142 (UNII-2c Band)	5710	15.45	16.07	16.29	120.997	20.83	21.94	PASS
142 (UNII-3 Band)	5710	4.89	5.67	6.00	11.018	10.42	27.95	PASS

**NOTE: 1. For U-NII-2A Band:**

Directional gain = 3.32dBi + 10log(3) = 8.09dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(8.09-6)"

**For U-NII-2C Band:**

Directional gain = 3.29dBi + 10log(3) = 8.06dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(8.06-6)"

**For U-NII-3 Band:**

Directional gain = 3.28dBi + 10log(3) = 8.05dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(8.05-6)

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 (VHT80)</b>								
58	5290	13.01	13.57	13.85	67.016	18.26	21.91	PASS
106	5530	11.24	12.76	13.23	53.223	17.26	21.94	PASS
122	5610	15.75	17.14	17.58	146.625	21.66	21.94	PASS
138 (UNII-2c Band)	5690	15.10	16.05	16.48	122.483	20.88	21.94	PASS
138 (UNII-3 Band)	5690	0.94	2.17	2.81	5.021	7.01	27.95	PASS

**NOTE: 1. For U-NII-2A Band:**

Directional gain =  $3.32\text{dBi} + 10\log(3) = 8.09\text{dBi} > 6\text{dBi}$ , therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(8.09-6)"

**For U-NII-2C Band:**

Directional gain =  $3.29\text{dBi} + 10\log(3) = 8.06\text{dBi} > 6\text{dBi}$ , therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(8.06-6)"

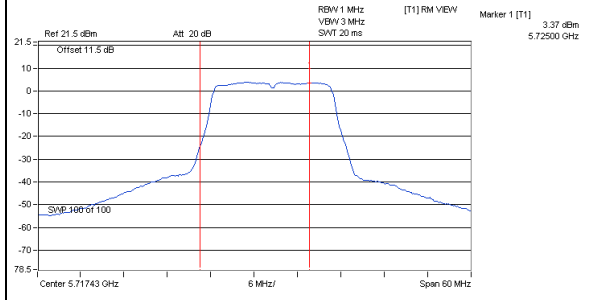
**For U-NII-3 Band:**

Directional gain =  $3.28\text{dBi} + 10\log(3) = 8.05\text{dBi} > 6\text{dBi}$ , therefore the limit needs to reduce, so the power limit shall be reduced to 30 Limit-(8.05-6)



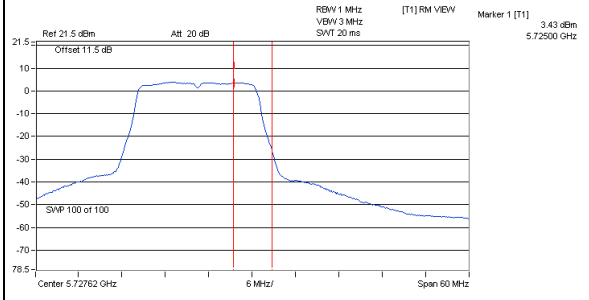
**SPECTRUM PLOT OF WORST VALUE**

**802.11a – Chain (2): CH 144 (UNII-2c Band)**



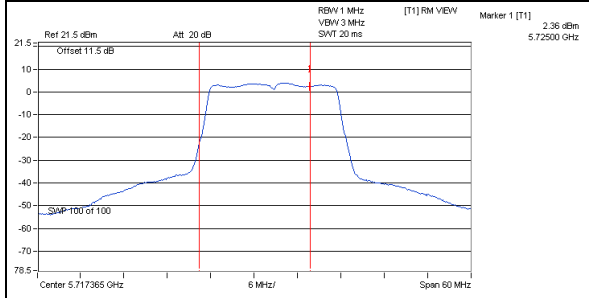
TX Channel Bandwidth: 15.14 MHz  
Power: 13.71 dBm

**802.11a – Chain (2): CH 144 (UNII-3 Band)**



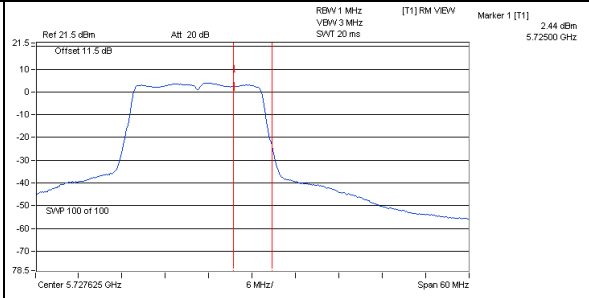
TX Channel Bandwidth: 5.24 MHz  
Power: 7.59 dBm

**802.11ac (VHT20) – Chain (2): CH 144 (UNII-2c Band)**



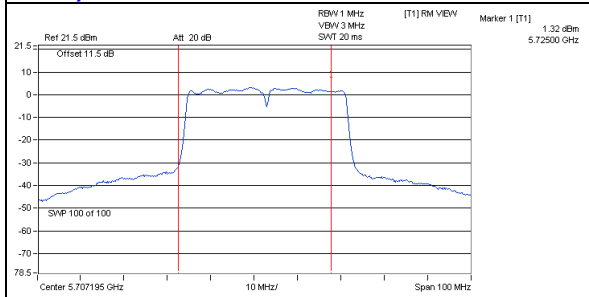
TX Channel Bandwidth: 15.27 MHz  
Power: 13.86 dBm

**802.11ac (VHT20) – Chain (2): CH 144 (UNII-3 Band)**



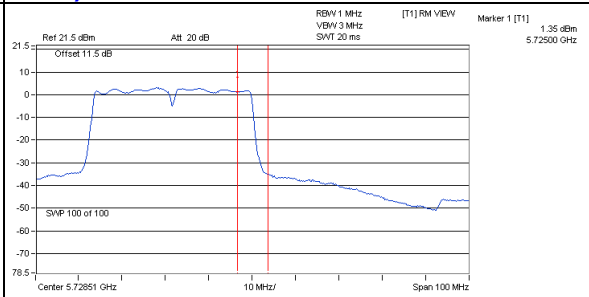
TX Channel Bandwidth: 5.25 MHz  
Power: 7.87 dBm

**802.11ac (VHT40) – Chain (2): CH 142 (UNII-2c Band)**



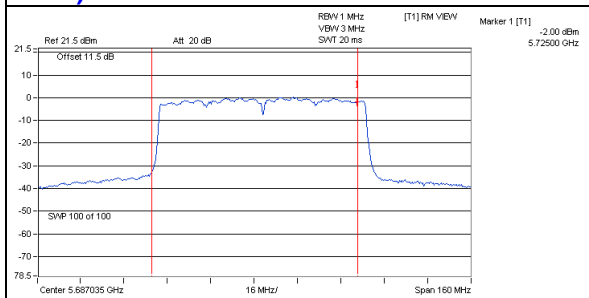
TX Channel Bandwidth: 35.61 MHz  
Power: 16.29 dBm

**802.11ac (VHT40) – Chain (2): CH 142 (UNII-3 Band)**



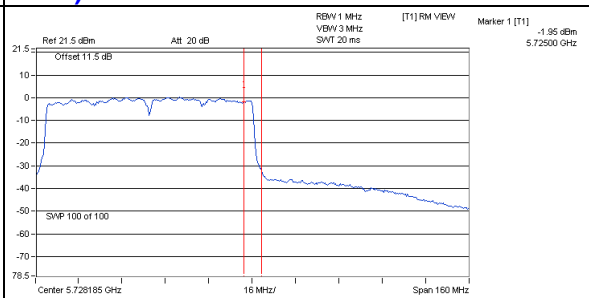
TX Channel Bandwidth: 7.02 MHz  
Power: 6 dBm

**802.11ac (VHT80) – Chain (2): CH 138 (UNII-2c Band)**



TX Channel Bandwidth: 75.93 MHz  
Power: 16.48 dBm

**802.11ac (VHT80) – Chain (2): CH 138 (UNII-3 Band)**



TX Channel Bandwidth: 6.37 MHz  
Power: 2.81 dBm

**802.11a**

Power Limit = 11dBm + 10logB &lt; UNII Band 2A~2C&gt;

Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.20	24.05 > 24
60	5300	20.32	24.07 > 24
64	5320	20.23	24.05 > 24
100	5500	20.29	24.07 > 24
120	5600	20.17	24.04 > 24
140	5700	20.30	24.07 > 24
144 (UNII-2c Band)	5720	15.09	22.78 < 24

**802.11ac (VHT20)**

52	5260	20.38	24.09 > 24
60	5300	20.42	24.1 > 24
64	5320	20.38	24.09 > 24
100	5500	20.35	24.08 > 24
120	5600	20.36	24.08 > 24
140	5700	20.44	24.1 > 24
144 (UNII-2c Band)	5720	15.21	22.82 < 24

**802.11ac (VHT40)**

Power Limit = 11dBm + 10logB &lt; UNII Band 2A~2C&gt;

Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.06	27.13 > 24
62	5310	41.10	27.13 > 24
102	5510	41.06	27.13 > 24
118	5590	40.97	27.12 > 24
134	5670	41.15	27.14 > 24
142 (UNII-2c Band)	5710	35.56	26.5 > 24

**802.11ac (VHT80)**

Power Limit = 11dBm + 10logB &lt; UNII Band 2A~2C&gt;

Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.53	30.16 > 24
106	5530	81.94	30.13 > 24
122	5610	82.44	30.16 > 24
138 (UNII-2c Band)	5690	75.93	29.8 > 24

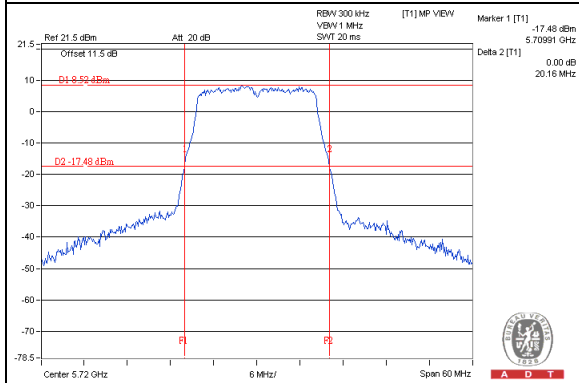
**26dB BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11a</b>				
52	5260	20.37	20.24	20.20
60	5300	20.33	20.45	20.32
64	5320	20.33	20.23	20.36
100	5500	20.38	20.29	20.49
120	5600	20.37	20.31	20.17
140	5700	20.31	20.30	20.40
144 (UNII-2c Band)	5720	15.20	15.09	15.14
<b>802.11ac (VHT20)</b>				
52	5260	20.55	20.38	20.63
60	5300	20.76	20.42	20.64
64	5320	20.62	20.38	20.52
100	5500	20.67	20.35	20.62
120	5600	20.91	20.36	20.51
140	5700	20.67	20.44	20.54
144 (UNII-2c Band)	5720	15.33	15.21	15.27
<b>802.11ac (VHT40)</b>				
54	5270	41.70	41.06	41.13
62	5310	41.48	41.10	41.12
102	5510	41.46	41.06	41.21
118	5590	41.54	40.98	40.97
134	5670	41.66	41.17	41.15
142 (UNII-2c Band)	5710	35.83	35.56	35.61
<b>802.11ac (VHT80)</b>				
58	5290	83.04	83.46	82.53
106	5530	82.76	82.24	81.94
122	5610	83.34	82.50	82.44
138 (UNII-2c Band)	5690	76.56	76.24	75.93

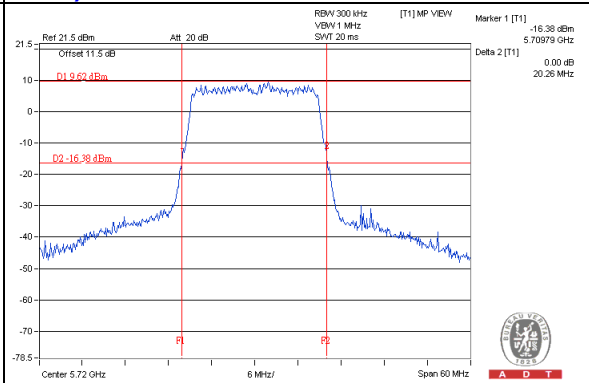
**Note: For FCC output power limitation is determined based on 26dB bandwidth.**

**SPECTRUM PLOT OF WORST VALUE**

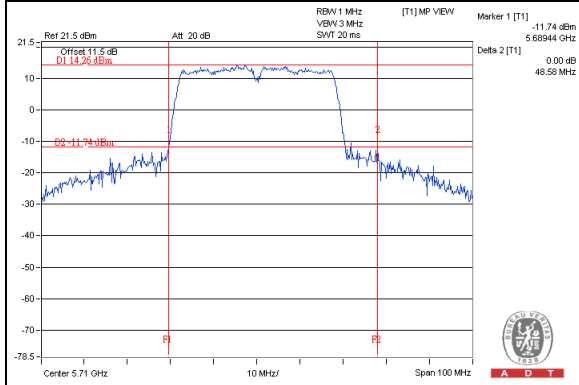
**802.11a – Chain (1): CH 144 (UNII-2c Band)**



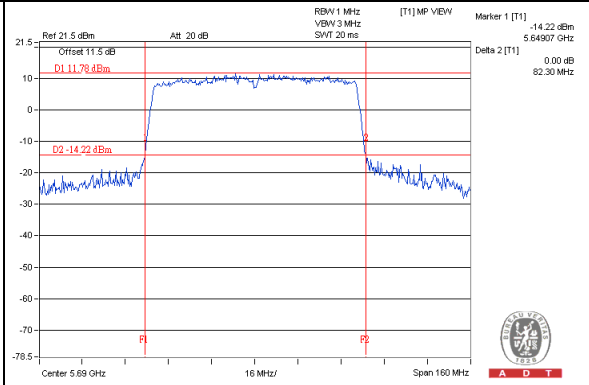
**802.11ac (VHT20) – Chain (1): CH 144 (UNII-2c Band)**



**802.11ac (VHT40) – Chain (1): CH 142 (UNII-2c Band)**



**802.11ac (VHT80) – Chain (2): CH 138 (UNII-2c Band)**



**NOTE:**

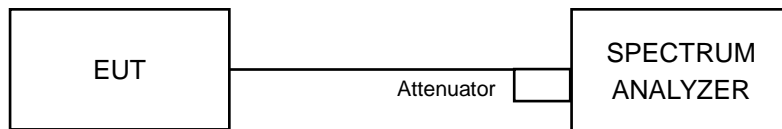
1. For CH144 (UNII-2c Band) = 5725 MHz - Marker 1
2. For CH142 (UNII-2c Band) = 5725 MHz - Marker 1
3. For CH138 (UNII-2c Band) = 5725 MHz - Marker 1

#### 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/ MHz

##### 4.4.2 Test Setup



##### 4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.4.4 Test Procedures

##### For 802.11a & 802.11ac (VHT20)

##### U-NII-1, U-NII-2A & U-NII-2C:

##### Using method SA-1

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

##### U-NII-3:

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

##### For 802.11ac (VHT40) & 802.11ac (VHT80)

##### U-NII-1, U-NII-2A & U-NII-2C:

##### Using method SA-2

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

##### U-NII-3:

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

#### 4.4.5 Deviation from Test Standard

No deviation.

#### 4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

#### 4.4.7 Test Results

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

802.11a							
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
52	5260	3.73	4.46	4.17	8.90	8.91	PASS
60	5300	0.21	1.02	1.59	5.75	8.91	PASS
64	5320	3.77	3.97	4.53	8.87	8.91	PASS
100	5500	3.48	4.32	4.15	8.77	8.94	PASS
120	5600	3.29	3.82	4.80	8.79	8.94	PASS
140	5700	2.84	3.04	3.57	7.93	8.94	PASS
144 (UNII-2c Band)	5720	3.50	4.03	4.45	8.78	8.94	PASS
802.11ac (VHT20)							
52	5260	3.44	4.40	4.18	8.80	8.91	PASS
60	5300	-0.03	0.90	1.21	5.50	8.91	PASS
64	5320	2.82	3.77	4.29	8.44	8.91	PASS
100	5500	3.36	4.12	4.82	8.91	8.94	PASS
120	5600	3.31	3.58	4.91	8.76	8.94	PASS
140	5700	2.55	3.82	4.63	8.52	8.94	PASS
144 (UNII-2c Band)	5720	3.60	4.12	4.45	8.84	8.94	PASS

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

**2. For U-NII-2A Band:**

Directional gain =  $3.32\text{dBi} + 10\log(3) = 8.09\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(8.09-6) = 8.91\text{dBm}$ .

**For U-NII-2C Band:**

Directional gain =  $3.29\text{dBi} + 10\log(3) = 8.06\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(8.06-6) = 8.94\text{dBm}$ .

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	0.33	1.34	1.45	0.10	5.95	8.91	PASS
62	5310	-1.65	-1.04	-0.50	0.10	3.84	8.91	PASS
102	5510	-2.55	-1.40	-1.42	0.10	3.12	8.94	PASS
118	5590	1.71	2.63	3.14	0.10	7.41	8.94	PASS
134	5670	0.16	0.87	2.08	0.10	5.99	8.94	PASS
142 (UNII-2c Band)	5710	1.24	2.59	3.12	0.10	7.26	8.94	PASS
802.11ac (VHT80)								
58	5290	-7.28	-6.37	-5.81	0.20	-1.48	8.91	PASS
106	5530	-8.71	-6.84	-6.20	0.20	-2.16	8.94	PASS
122	5610	-1.87	-1.37	-0.24	0.20	3.86	8.94	PASS
138 (UNII-2c Band)	5690	-1.46	-0.63	-0.17	0.20	4.25	8.94	PASS

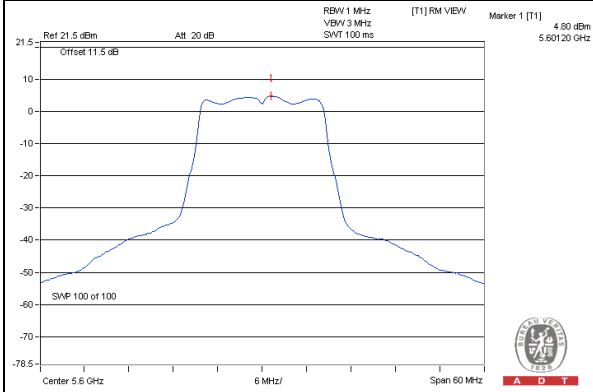
**NOTE:**

- Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-2A Band:**  
Directional gain =  $3.32\text{dBi} + 10\log(3) = 8.09\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(8.09-6) = 8.91\text{dBm}$ .  
**For U-NII-2C Band:**  
Directional gain =  $3.29\text{dBi} + 10\log(3) = 8.06\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(8.06-6) = 8.94\text{dBm}$ .
- Refer to section 3.3 for duty cycle spectrum plot.

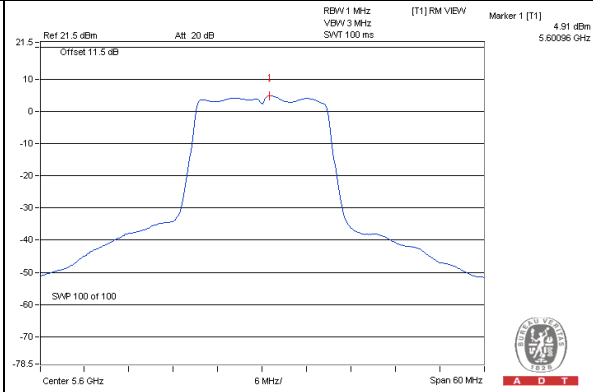


**SPECTRUM PLOT OF WORST VALUE**

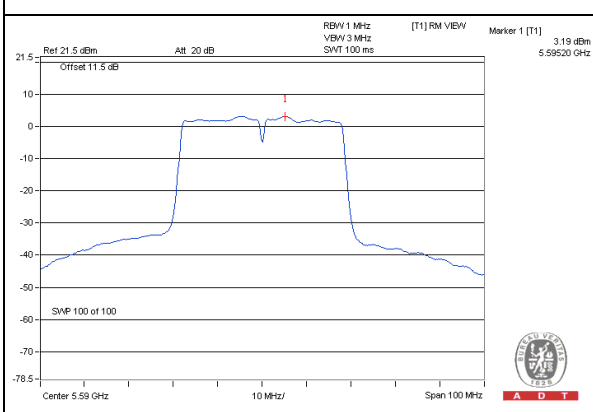
**802.11a – Chain (2): CH 120**



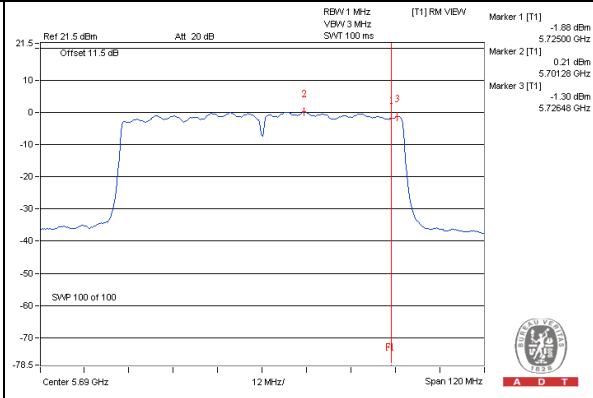
**802.11ac (VHT20) – Chain (2): CH 120**



**802.11ac (VHT40) – Chain (2): CH 118**



**802.11ac (VHT80) – Chain (2): CH 138 (UNII-2c Band)**



**For U-NII-3 Band**
**802.11a**

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	TOTAL PSD (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
0	144 (UNII-3 Band)	5720	-7.09	-4.87	4.77	-0.10	27.95	PASS
1	144 (UNII-3 Band)	5720	-5.95	-3.73	4.77	1.04	27.95	PASS
2	144 (UNII-3 Band)	5720	-4.95	-2.73	4.77	2.04	27.95	PASS

**802.11ac (VHT20)**

0	144 (UNII-3 Band)	5720	-7.82	-5.60	4.77	-0.83	27.95	PASS
1	144 (UNII-3 Band)	5720	-6.40	-4.18	4.77	0.59	27.95	PASS
2	144 (UNII-3 Band)	5720	-5.67	-3.45	4.77	1.32	27.95	PASS

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

**2. For U-NII-3 Band:**

Directional gain =  $3.28\text{dBi} + 10\log(3) = 8.05\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $30 - (8.05 - 6) = 27.95\text{dBm}$ .

**802.11ac (VHT40)**

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR		10 log (N=3) dB	DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
			(dBm/300kHz)	(dBm/500kHz)					
0	142 (UNII-2c Band)	5710	-8.15	-5.93	4.77	0.10	-1.06	27.95	PASS
1	142 (UNII-2c Band)	5710	-7.57	-5.35	4.77	0.10	-0.48	27.95	PASS
2	142 (UNII-2c Band)	5710	-6.72	-4.50	4.77	0.10	0.37	27.95	PASS

**802.11ac (VHT80)**

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR		10 log (N=3) dB	DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
			(dBm/300kHz)	(dBm/500kHz)					
0	138 (UNII-2c Band)	5690	-13.09	-10.87	4.77	0.20	-5.90	27.95	PASS
1	138 (UNII-2c Band)	5690	-11.33	-9.11	4.77	0.20	-4.14	27.95	PASS
2	138 (UNII-2c Band)	5690	-10.21	-7.99	4.77	0.20	-3.02	27.95	PASS

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

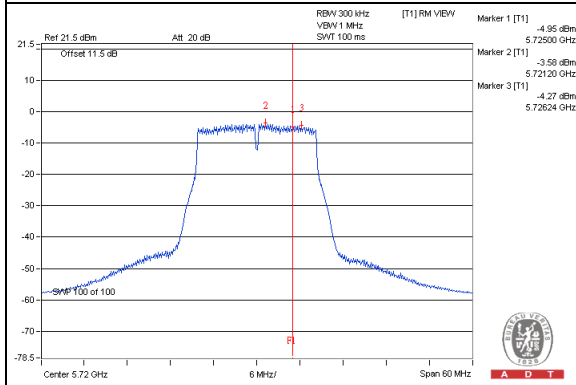
**2. For U-NII-3 Band:**

Directional gain = 3.28dBi + 10log(3) = 8.05dBi > 6dBi , so the power density limit shall be reduced to 30-(8.05-6) = 27.95dBm.

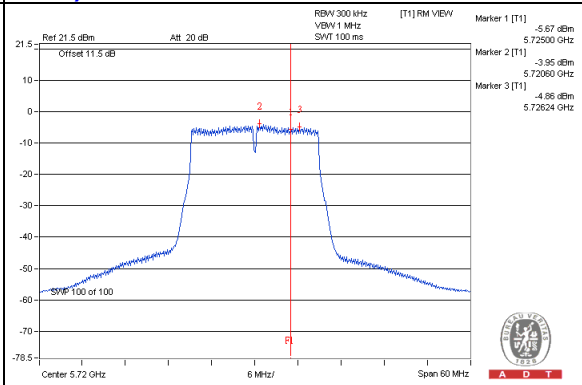
3. Refer to section 3.3 for duty cycle spectrum plot.

**SPECTRUM PLOT OF WORST VALUE**

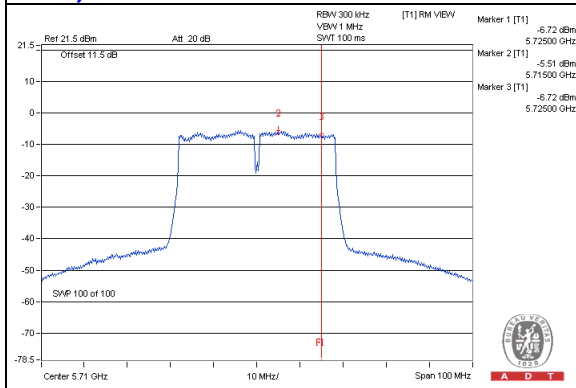
**802.11a – Chain (2): CH 144 (UNII-3 Band)**



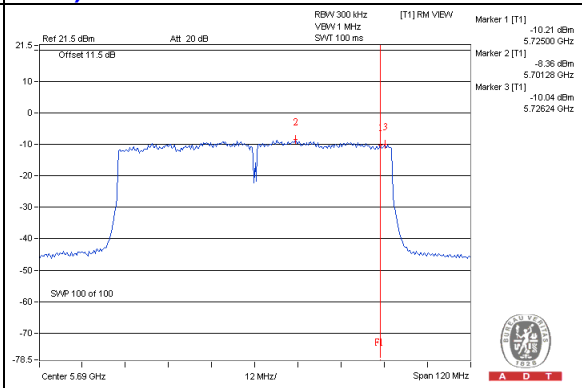
**802.11ac (VHT20) – Chain (2): CH 144 (UNII-3 Band)**



**802.11ac (VHT40) – Chain (2): CH 142 (UNII-3 Band)**



**802.11ac (VHT80) – Chain (2): CH 138 (UNII-3 Band)**

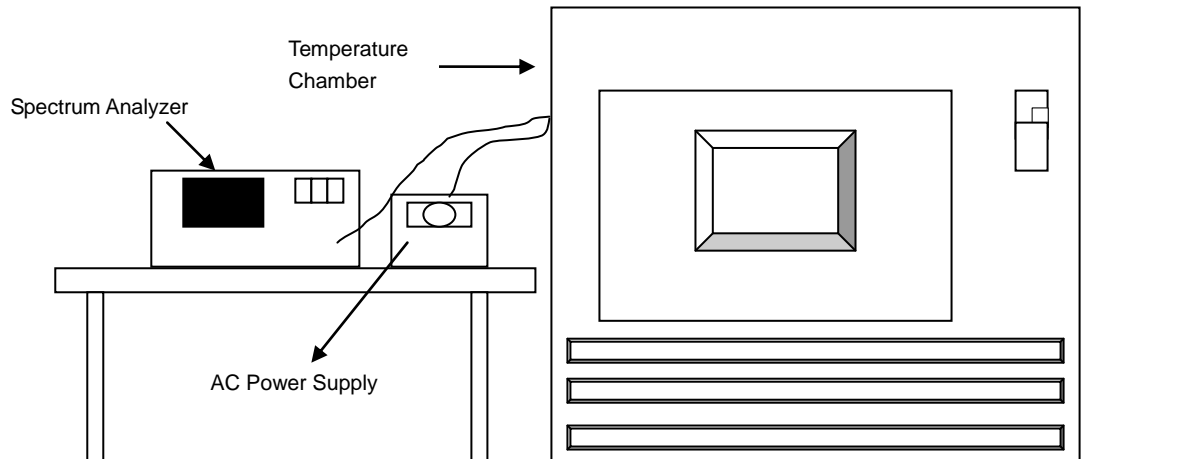


## 4.5 Frequency Stability

### 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 Setup



### 4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.5.4 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.

#### 4.5.5 Deviation from Test Standard

No deviation.

#### 4.5.6 EUT Operating Condition

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

#### 4.5.7 Test Results

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5319.9841	-0.00030	5319.9821	-0.00034	5319.9828	-0.00032	5319.9846	-0.00029
40	120	5319.9972	-0.00005	5319.9941	-0.00011	5319.9977	-0.00004	5319.9933	-0.00013
30	120	5319.9822	-0.00033	5319.9855	-0.00027	5319.9828	-0.00032	5319.9855	-0.00027
20	120	5320.023	0.00043	5320.0214	0.00040	5320.0214	0.00040	5320.0226	0.00042
10	120	5320.0078	0.00015	5320.0083	0.00016	5320.0095	0.00018	5320.0066	0.00012
0	120	5319.9972	-0.00005	5319.9997	-0.00001	5319.9992	-0.00002	5319.9953	-0.00009
-10	120	5319.9912	-0.00017	5319.9941	-0.00011	5319.9953	-0.00009	5319.9956	-0.00008
-20	120	5320.0198	0.00037	5320.0189	0.00036	5320.0202	0.00038	5320.0174	0.00033
-30	120	5319.9764	-0.00044	5319.9739	-0.00049	5319.9735	-0.00050	5319.9758	-0.00045

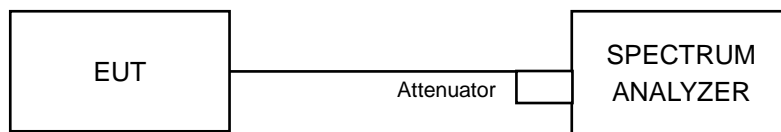
FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5320.0235	0.00044	5320.0204	0.00038	5320.0213	0.00040	5320.0227	0.00043
	120	5320.023	0.00043	5320.0214	0.00040	5320.0214	0.00040	5320.0226	0.00042
	102	5320.024	0.00045	5320.0204	0.00038	5320.0211	0.00040	5320.0233	0.00044

## 4.6 6dB Bandwidth Measurement

### 4.6.1 Limits Of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

### 4.6.2 Test Setup



### 4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.6.4 Test Procedure

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

### 4.6.5 Deviation from Test Standard

No deviation.

### 4.6.6 EUT Operating Condition

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

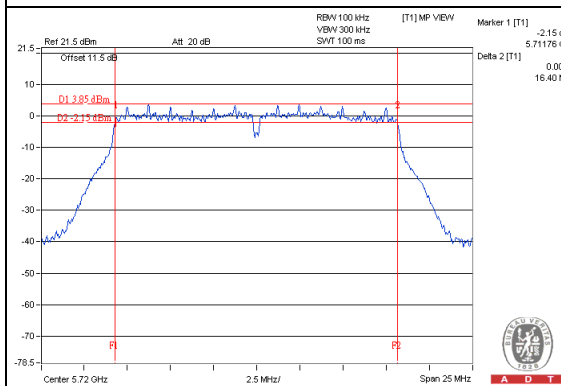


4.6.7 Test Results

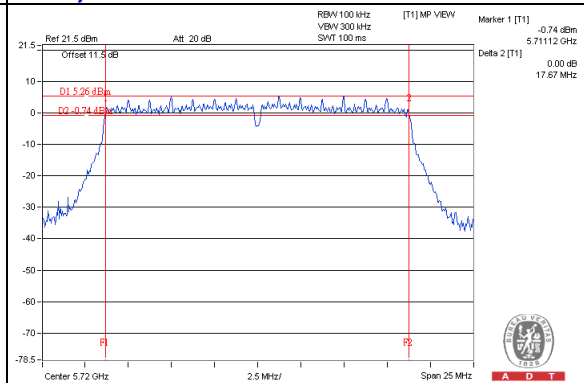
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
<b>802.11a</b>						
144 (UNII-3 Band)	5720	3.16	3.18	3.18	0.5	PASS
<b>802.11ac (VHT20)</b>						
144 (UNII-3 Band)	5720	3.80	3.82	3.79	0.5	PASS
<b>802.11ac (VHT40)</b>						
142 (UNII-3 Band)	5710	3.22	3.21	3.20	0.5	PASS
<b>802.11ac (VHT80)</b>						
138 (UNII-3 Band)	5690	3.21	3.10	3.09	0.5	PASS

**SPECTRUM PLOT OF WORST VALUE**

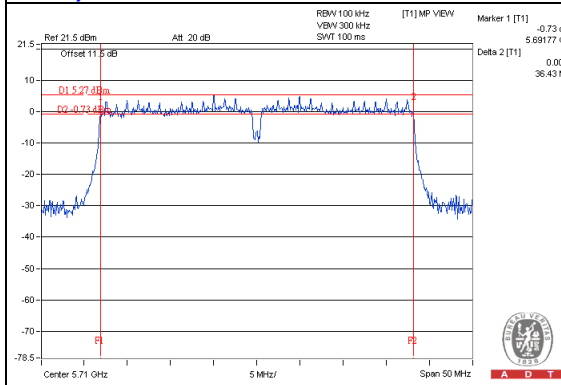
**802.11a – Chain (0): CH 144 (UNII-3 Band)**



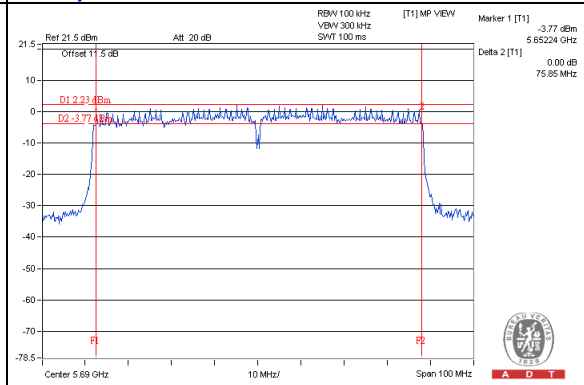
**802.11ac (VHT20) – Chain (2): CH 144 (UNII-3 Band)**



**802.11ac (VHT40) – Chain (2): CH 142 (UNII-3 Band)**



**802.11ac (VHT80) – Chain (2): CH 138 (UNII-3 Band)**



**NOTE:**

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

## 5 Pictures of Test Arrangements

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

## Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

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Fax: 886-2-26051924

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**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.

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