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# FCC TEST REPORT (WLAN 15.407)

**REPORT NO.:** RF141029E01-1

**MODEL NO.:** DVW32G

**FCC ID:** XCNDVW32G

**RECEIVED:** Oct. 29, 2014

**TESTED:** Nov. 25 to Dec. 08, 2014

**ISSUED:** Dec. 23, 2014

**APPLICANT:** Ubee Interactive Corp.

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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## Table of Contents

RELEASE CONTROL RECORD .....	4
1. CERTIFICATION.....	5
2. SUMMARY OF TEST RESULTS .....	6
2.1 MEASUREMENT UNCERTAINTY .....	7
3. GENERAL INFORMATION .....	8
3.1 GENERAL DESCRIPTION OF EUT .....	8
3.2 DESCRIPTION OF TEST MODES .....	11
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	12
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	15
3.4 DUTY CYCLE OF TEST SIGNAL .....	16
3.5 DESCRIPTION OF SUPPORT UNITS .....	17
3.6 CONFIGURATION OF SYSTEM UNDER TEST.....	18
4. TEST TYPES AND RESULTS .....	19
4.1 CONDUCTED EMISSION MEASUREMENT.....	19
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	19
4.1.2 TEST INSTRUMENTS.....	19
4.1.3 TEST PROCEDURES .....	20
4.1.4 DEVIATION FROM TEST STANDARD.....	20
4.1.5 TEST SETUP.....	20
4.1.6 EUT OPERATING CONDITIONS .....	21
4.1.7 TEST RESULTS .....	22
4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT .....	24
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT ...	24
4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	25
4.2.3 TEST INSTRUMENTS.....	26
4.2.4 TEST PROCEDURES .....	28
4.2.5 DEVIATION FROM TEST STANDARD.....	28
4.2.6 TEST SETUP.....	29
4.2.7 EUT OPERATING CONDITION.....	29
4.2.8 TEST RESULTS (MODE 1) .....	30
4.2.9 TEST RESULTS (MODE 2) .....	49
4.3 TRANSMIT POWER MEASUREMENT .....	61
4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT .....	61
4.3.2 TEST INSTRUMENTS.....	62
4.3.3 TEST PROCEDURE.....	62
4.3.4 DEVIATION FROM TEST STANDARD.....	62
4.3.5 TEST SETUP.....	62
4.3.6 EUT OPERATING CONDITIONS .....	62
4.3.7 TEST RESULTS (MODE 1) .....	63
4.3.8 TEST RESULTS (MODE 2) .....	65
4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT.....	66
4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT .....	66
4.4.2 TEST INSTRUMENTS.....	66



4.4.3	TEST PROCEDURES .....	67
4.4.4	DEVIATION FROM TEST STANDARD .....	67
4.4.5	TEST SETUP .....	67
4.4.6	EUT OPERATING CONDITIONS .....	67
4.4.7	TEST RESULTS (MODE 1) .....	68
4.4.8	TEST RESULTS (MODE 2) .....	73
4.5	FREQUENCY STABILITY .....	77
4.5.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT .....	77
4.5.2	TEST INSTRUMENTS .....	77
4.5.3	TEST PROCEDURE .....	77
4.5.4	DEVIATION FROM TEST STANDARD .....	78
4.5.5	TEST SETUP .....	78
4.5.6	EUT OPERATING CONDITION .....	78
4.5.7	TEST RESULTS .....	79
4.6	6dB BANDWIDTH MEASUREMENT .....	80
4.6.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT .....	80
4.6.2	TEST INSTRUMENTS .....	80
4.6.3	TEST PROCEDURE .....	80
4.6.4	DEVIATION FROM TEST STANDARD .....	80
4.6.5	TEST SETUP .....	80
4.6.6	EUT OPERATING CONDITIONS .....	80
4.6.7	TEST RESULTS (MODE 1) .....	81
4.6.8	TEST RESULTS (MODE 2) .....	83
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION .....	85
6.	INFORMATION ON THE TESTING LABORATORIES .....	86
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	87



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## RELEASE CONTROL RECORD

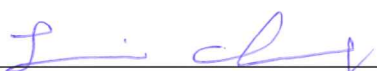
ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141029E01-1	Original release	Dec. 23, 2014




## 1. CERTIFICATION

**PRODUCT:** Wireless eMTA  
**BRAND NAME:** Ubee  
**MODEL NO.:** DVW32G  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** Ubee Interactive Corp.  
**TESTED:** Nov. 25 to Dec. 08, 2014  
**STANDARDS:** **FCC Part 15, Subpart E (Section 15.407)**  
ANSI C63.10-2009

The above equipment (Model: DVW32G) 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:** Dec. 23, 2014  
( Lori Chung, Specialist )

**Approved by :**  , **Date:** Dec. 23, 2014  
( May Chen, Manager )



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## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -21.50dB at 0.18516MHz
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 5850.00MHz, 5408.00MHz, 5351.00MHz & 5715.00MHz.
15.407(a/1/2/3)	Transmit Power	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(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 MHF not a standard connector.

**NOTE:** The EUT was operating in 2.400 ~ 2.4835GHz, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.25GHz and 5.725~5.850GHz. For the 2.400 ~ 2.4835GHz RF parameters was recorded in another test report.



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## 2.1 MEASUREMENT UNCERTAINTY

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

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

<b>Measurement</b>	<b>Value</b>
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.72 dB
Radiated emissions (6GHz -18GHz)	4.00 dB
Radiated emissions (18GHz -40GHz)	4.11 dB



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Wireless eMTA
<b>MODEL NO.</b>	DVW32G
<b>POWER SUPPLY</b>	AC Input: 100-120Vac
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
<b>MODULATION TECHNOLOGY</b>	DSSS,OFDM
<b>TRANSFER RATE</b>	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
<b>OPERATING FREQUENCY</b>	<b>For 15.407</b> 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	<b>For 15.247</b> 2.412 ~ 2.462GHz
<b>NUMBER OF CHANNEL</b>	<b>For 15.407</b> 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	<b>For 15.247</b> 11 for 802.11b, 802.11g, 802.11n (HT20), VHT20 7 for 802.11n (HT40), VHT40
<b>MAXIMUM OUTPUT POWER</b>	<b>For 15.407</b> <b>CDD Mode:</b> 802.11a: 251.281mW 802.11ac (VHT20): 234.222mW 802.11ac (VHT40): 272.803mW 802.11ac (VHT80): 143.433mW <b>Beamforming Mode:</b> 802.11ac (VHT20): 225.239mW 802.11ac (VHT40): 208.671mW 802.11ac (VHT80): 112.167mW <b>For 15.247</b> <b>CDD Mode:</b> 802.11b: 437.359mW 802.11g: 679.335mW VHT20: 584.672mW VHT40: 188.996mW <b>Beamforming Mode:</b> VHT20: 371.197mW VHT40: 188.996mW





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<b>ANTENNA TYPE</b>	Please see NOTE
<b>DATA CABLE</b>	RJ11 cable (Unshielded, 1.5m) RJ45 cable (Unshielded, 1.5m)
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	Battery (optional)

**NOTE:**

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

Antenna set 1						
Antenna No.	Brand	Model	Gain (dBi) Including cable loss	Antenna Type	Connector Type	Frequency range (GHz to GHz)
1	WHA YU	NA	4.6	Dipole (PCB)	MHF	2.4~2.4835
			4.4			5.15~5.25
			6.3			5.725~5.850
2	WHA YU	NA	6	Dipole (PCB)	MHF	2.4~2.4835
			4.6			5.15~5.25
			5.8			5.725~5.850
3	WHA YU	NA	5.3	Dipole (PCB)	MHF	2.4~2.4835
			3.8			5.15~5.25
			4.2			5.725~5.850
Antenna set 2						
Antenna No.	Brand	Model	Gain (dBi) Including cable loss	Antenna Type	Connector Type	Frequency range (GHz to GHz)
1 (Black)	TONGDA	NA	4.453	Dipole (PCB)	MHF	2.4~2.4835
			4.289			5.15~5.25
			6.158			5.725~5.850
2 (Gray)	TONGDA	NA	5.989	Dipole (PCB)	MHF	2.4~2.4835
			4.442			5.15~5.25
			5.633			5.725~5.850
3 (White)	TONGDA	NA	5.120	Dipole (PCB)	MHF	2.4~2.4835
			3.508			5.15~5.25
			4.058			5.725~5.850

From the above antenna sets, antenna set 1 was selected as representative antenna for the 802.11b/g test and its data was recorded in this report.

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

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

Brand	Model No.	Spec.
CHICONY POWER TECHNOLOGY CO LTD	N12-035N1A	AC Input: 100-120Vac, 0.9A max, 60Hz DC Output: 12Vdc, 2.92A, class II

4. The associated devices(optional) of EUT information are as below:

Battery (optional)		
Brand	Model No.	Rated
SIMPLO TECHNOLOGY CO LTD	SMPCM10	7.4Vdc, 2550mAh



5. The EUT incorporates a MIMO function.

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

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

### 3.2 DESCRIPTION OF TEST MODES

#### Operated in 5150 ~ 5250MHz band:

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
42	5210 MHz

#### Operated in 5725 ~ 5850MHz band:

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
155	5775 MHz



### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

#### **POWER LINE CONDUCTED EMISSION TEST:**

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

CDD MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (MBPS)
802.11a	36 to 48 & 149 to 165	157	OFDM	BPSK	6

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

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

CDD MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48 & 149 to 165	157	OFDM	BPSK	6



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

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

<b>CDD MODE</b>					
<b>MODE</b>	<b>AVAILABLE CHANNEL</b>	<b>TESTED CHANNEL</b>	<b>MODULATION TECHNOLOGY</b>	<b>MODULATION TYPE</b>	<b>DATA RATE (Mbps)</b>
802.11a	36 to 48 & 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)	36 to 48 & 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	38 to 46 & 151 to 159	38, 46, 151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	42 & 155	42, 155	OFDM	BPSK	29.3
<b>Beamforming MODE</b>					
<b>MODE</b>	<b>AVAILABLE CHANNEL</b>	<b>TESTED CHANNEL</b>	<b>MODULATION TECHNOLOGY</b>	<b>MODULATION TYPE</b>	<b>DATA RATE (Mbps)</b>
802.11ac (VHT20)	36 to 48 & 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	38 to 46 & 151 to 159	38, 46, 151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	42 & 155	42, 155	OFDM	BPSK	29.3

**ANTENNA PORT CONDUCTED MEASUREMENT:**

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

<b>CDD MODE</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48 & 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)	36 to 48 & 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	38 to 46 & 151 to 159	38, 46, 151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	42 & 155	42, 155	OFDM	BPSK	29.3
<b>Beamforming MODE</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	36 to 48 & 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	38 to 46 & 151 to 159	38, 46, 151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	42 & 155	42, 155	OFDM	BPSK	29.3

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	25deg. C, 71%RH	120Vac, 60Hz	Wythe Lin
RE<1G	25deg. C, 73%RH	120Vac, 60Hz	Andy Ho
RE≥1G	20deg. C, 67%RH	120Vac, 60Hz	Gary Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

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

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

**FCC Part 15, Subpart E (15.407)**

**789033 D02 General UNII Test Procedures New Rules v01**

**662911 D01 Multiple Transmitter Output v02r01**

ANSI C63.10-2009

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

**Note:** The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

### 3.4 DUTY CYCLE OF TEST SIGNAL

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

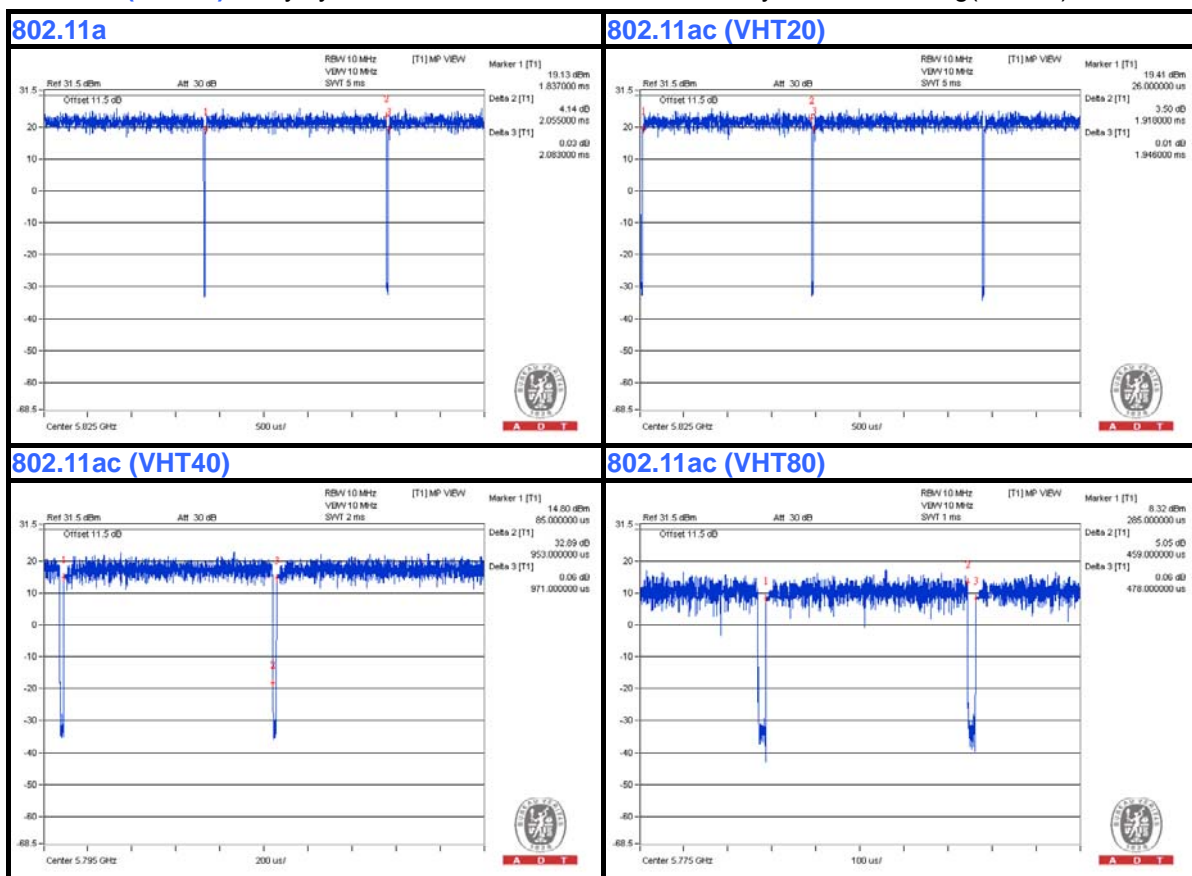
If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

**802.11a:** Duty cycle = 2.055 ms/2.083 ms = 0.987

**802.11ac (VHT20):** Duty cycle = 1.918 ms/1.946 ms = 0.986

**802.11ac (VHT40):** Duty cycle = 0.953 ms/0.971 ms = 0.981

**802.11ac (VHT80):** Duty cycle = 0.459 ms/0.478 ms = 0.96, Duty factor =  $10 * \log(1/0.96) = 0.18$







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### 3.5 DESCRIPTION OF SUPPORT UNITS

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

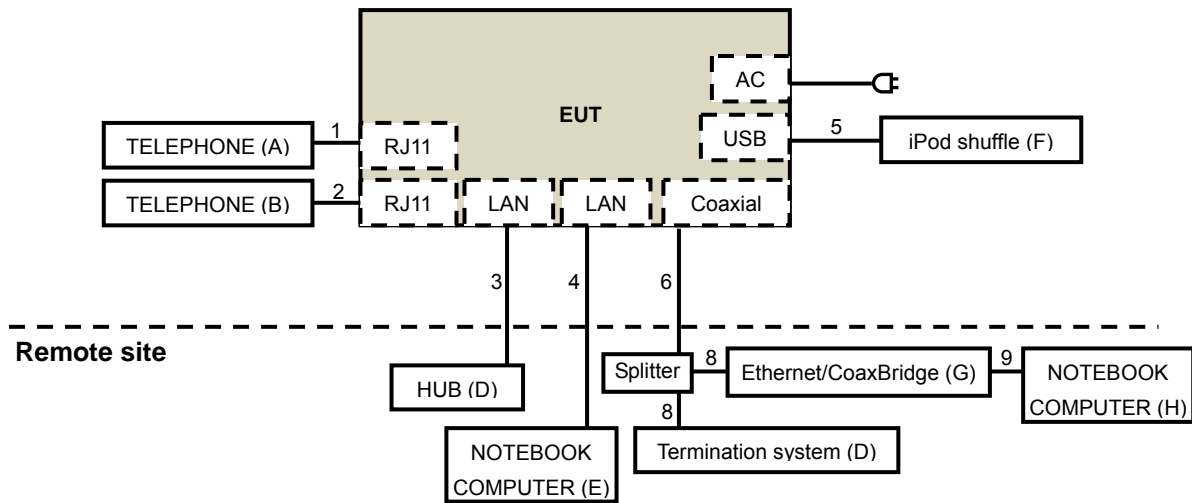
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	TELEPHONE	WONDER	WD-303	7C17KA04011	NA	Provided by Lab
B	TELEPHONE	WONDER	WD-303	7C17KA05211	NA	Provided by Lab
C	iPod shuffle	Apple	MD778TA/A	CC4JMH7LF4T1	NA	Provided by Lab
D	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
E	NOTEBOOK COMPUTER	DELL	E5440	6FC7F12	FCC DoC	Provided by Lab
F	Termination system	CASA SYSTEM	CASA C2200	NA	NA	Supplied by client
G	Ethernet/Coax Bridge	Broadcom	BCM97428	NA	NA	Supplied by client
H	NOTEBOOK COMPUTER	DELL	E5430	4N1SKV1	FCC DoC	Provided by Lab

**NOTE:**

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	RJ11	1	1.5	No	0	Supplied by client
2	RJ11	1	1.5	No	0	Supplied by client
3	RJ45	3	10	No	0	Provided by Lab
4	RJ45	1	10	No	0	Provided by Lab
5	USB	1	0.1	No	0	Provided by Lab
6	Coaxial	1	10	No	0	Provided by Lab
7	AC	1	1.5	No	0	Supplied by client
8	Coaxial	1	1	Yes	0	Supplied by client
9	RJ45	1	1	No	0	Supplied by client

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST





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## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	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 0.50 MHz.

#### 4.1.2 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: Nov. 27, 2014

### 4.1.3 TEST PROCEDURES

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

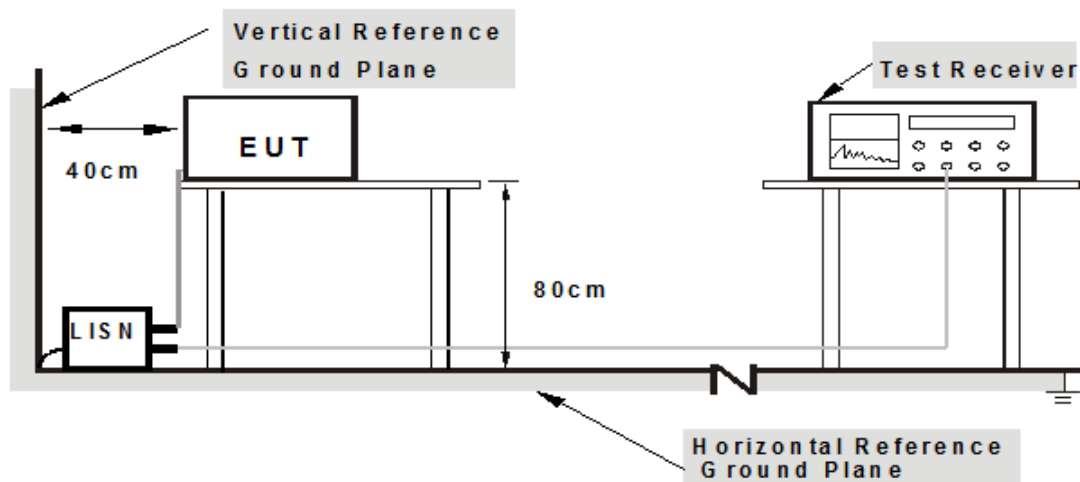
#### NOTE:

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

### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.1.5 TEST SETUP



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

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

#### 4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit E (Notebook Computer) which is placed on remote site.
2. Controlling software (MTool\_2.0.1.1.msi) has been activated to set the EUT on specific status.

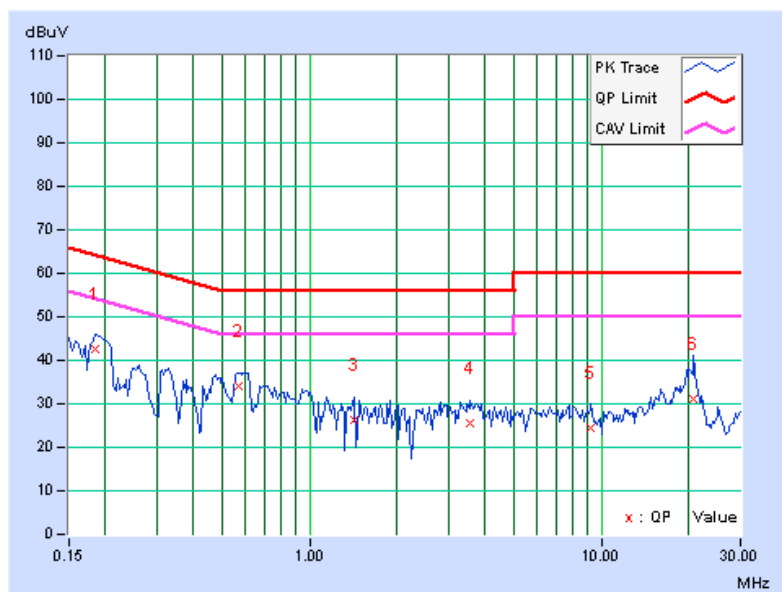
### 4.1.7 TEST RESULTS

<b>PHASE</b>	Line (L)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.07	42.68	28.09	42.75	28.16	64.25	54.25	-21.50	-26.09
2	0.56797	0.10	33.89	20.58	33.99	20.68	56.00	46.00	-22.01	-25.32
3	1.42188	0.15	26.09	14.37	26.24	14.52	56.00	46.00	-29.76	-31.48
4	3.56250	0.23	25.31	14.78	25.54	15.01	56.00	46.00	-30.46	-30.99
5	9.23438	0.42	24.16	15.87	24.58	16.29	60.00	50.00	-35.42	-33.71
6	20.73047	0.71	30.52	22.59	31.23	23.30	60.00	50.00	-28.77	-26.70

#### REMARKS:

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

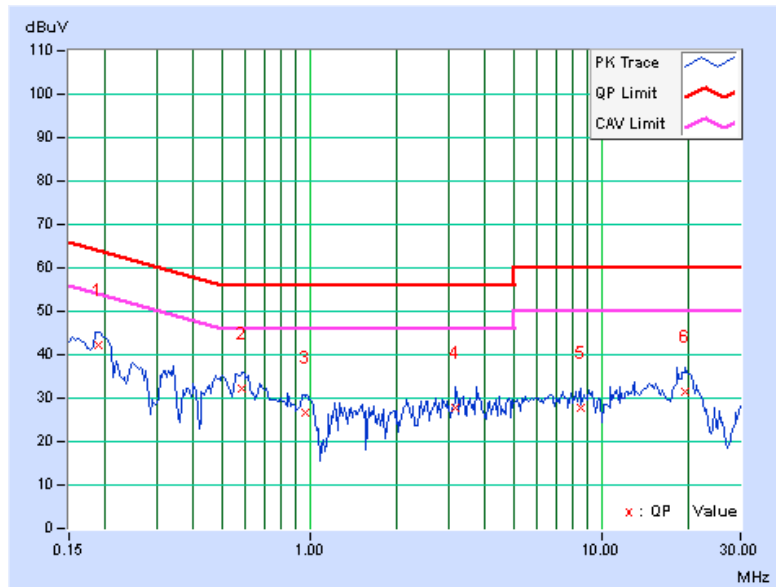


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	0.06	42.04	29.56	42.10	29.62	64.08	54.08	-21.98	-24.46
2	0.58750	0.10	32.02	18.35	32.12	18.45	56.00	46.00	-23.88	-27.55
3	0.97422	0.13	26.67	11.88	26.80	12.01	56.00	46.00	-29.20	-33.99
4	3.17188	0.23	27.43	16.90	27.66	17.13	56.00	46.00	-28.34	-28.87
5	8.51953	0.41	27.48	22.08	27.89	22.49	60.00	50.00	-32.11	-27.51
6	19.49219	0.73	30.72	23.69	31.45	24.42	60.00	50.00	-28.55	-25.58

**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





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## 4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

**NOTE:**

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





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

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

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

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

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



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### 4.2.3 TEST INSTRUMENTS

For Below 1GHz test:

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 AISl	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCl	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. 12, 2013	Dec. 11, 2014
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
- 5 The VCCI Site Registration No. is G-137.
- 6 The CANADA Site Registration No. is IC 7450H-2.
- 7 Tested Date: Nov. 25, 2014



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**For Above 1GHz test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISL	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131215 SNMY23685/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier 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. 12, 2013	Dec. 11, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Dec. 01, 2014



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#### 4.2.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

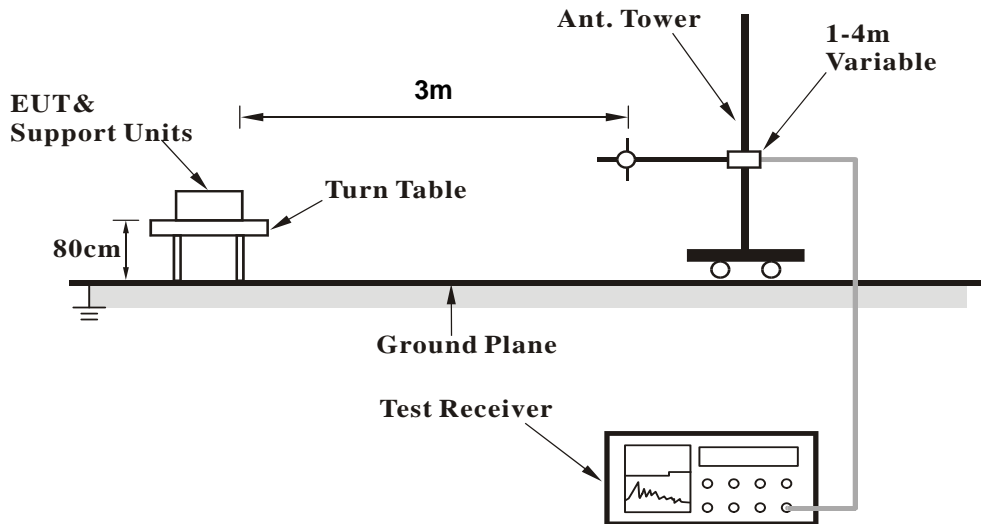
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

#### 4.2.5 DEVIATION FROM TEST STANDARD

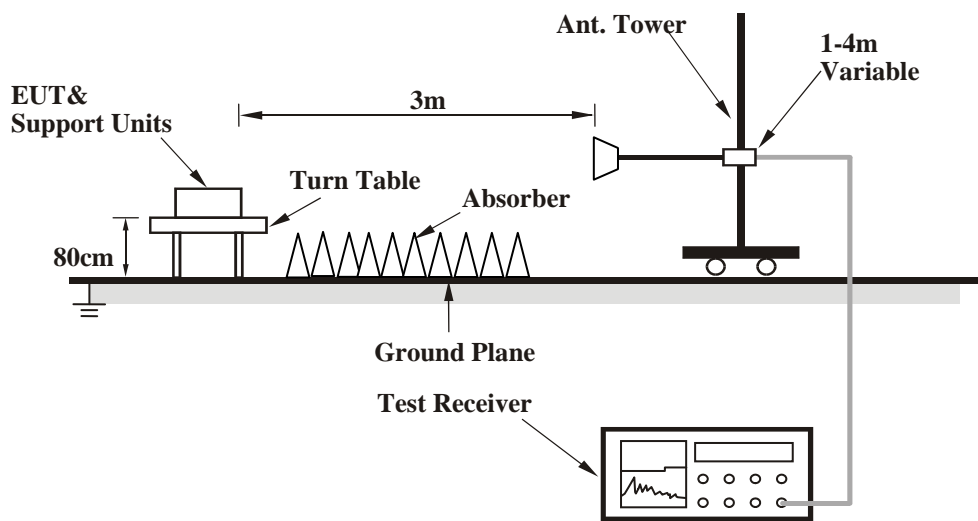
No deviation

### 4.2.6 TEST SETUP

#### <Frequency Range below 1GHz>



#### <Frequency Range above 1GHz>



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

### 4.2.7 EUT OPERATING CONDITION

Same as 4.1.6



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### 4.2.8 TEST RESULTS (MODE 1)

#### BELOW 1GHz WORST-CASE DATA

##### 802.11a

<b>CHANNEL</b>	TX Channel 157	<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	159.98	34.3 QP	43.5	-9.2	1.00 H	243	47.09	-12.78
2	250.00	36.2 QP	46.0	-9.8	1.50 H	304	50.14	-13.92
3	375.03	38.1 QP	46.0	-7.9	1.50 H	223	47.91	-9.78
4	625.00	40.8 QP	46.0	-5.2	1.00 H	234	44.49	-3.68
5	749.98	42.2 QP	46.0	-3.8	1.00 H	261	43.41	-1.21
6	902.76	40.2 QP	46.0	-5.8	1.50 H	146	39.36	0.87

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.51	32.5 QP	40.0	-7.5	1.22 V	243	46.48	-14.02
2	71.95	30.9 QP	40.0	-9.1	1.23 V	226	46.50	-15.64
3	200.04	33.4 QP	43.5	-10.1	1.00 V	198	49.31	-15.93
4	374.98	36.7 QP	46.0	-9.3	1.00 V	263	46.49	-9.78
5	749.98	37.0 QP	46.0	-9.0	1.00 V	176	38.22	-1.21
6	902.81	37.4 QP	46.0	-8.6	1.50 V	227	36.53	0.87

#### REMARKS:

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



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**ABOVE 1GHz DATA**

**802.11a**

<b>CHANNEL</b>	TX Channel 36	<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	5100.00	53.0 PK	74.0	-21.0	1.22 H	306	49.28	3.72
2	5100.00	44.2 AV	54.0	-9.8	1.22 H	306	40.48	3.72
3	*5180.00	106.7 PK			1.03 H	324	102.78	3.92
4	*5180.00	98.3 AV			1.03 H	324	94.38	3.92
5	#10360.00	54.0 PK	74.0	-20.0	1.01 H	163	44.57	9.43
6	#10360.00	40.0 AV	54.0	-14.0	1.01 H	163	30.57	9.43
7	15540.00	60.3 PK	74.0	-13.7	1.14 H	214	46.27	14.03
8	15540.00	48.2 AV	54.0	-5.8	1.14 H	214	34.17	14.03

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5100.00	62.8 PK	74.0	-11.2	1.36 V	238	59.08	3.72
2	5100.00	53.6 AV	54.0	-0.4	1.36 V	238	49.88	3.72
3	*5180.00	116.5 PK			1.19 V	250	112.58	3.92
4	*5180.00	108.1 AV			1.19 V	250	104.18	3.92
5	#10360.00	54.1 PK	74.0	-19.9	1.15 V	107	44.67	9.43
6	#10360.00	40.5 AV	54.0	-13.5	1.15 V	107	31.07	9.43
7	15540.00	60.3 PK	74.0	-13.7	1.03 V	98	46.27	14.03
8	15540.00	47.8 AV	54.0	-6.2	1.03 V	98	33.77	14.03

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 40	<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	5123.50	53.4 PK	74.0	-20.6	1.05 H	287	49.62	3.78
2	5123.50	44.6 AV	54.0	-9.4	1.05 H	287	40.82	3.78
3	*5200.00	106.3 PK			1.03 H	308	102.34	3.96
4	*5200.00	97.4 AV			1.03 H	308	93.44	3.96
5	5356.20	53.6 PK	74.0	-20.4	1.22 H	312	49.51	4.09
6	5356.20	43.6 AV	54.0	-10.4	1.22 H	312	39.51	4.09
7	#10400.00	54.4 PK	74.0	-19.6	1.04 H	148	44.95	9.45
8	#10400.00	40.2 AV	54.0	-13.8	1.04 H	148	30.75	9.45
9	15600.00	60.0 PK	74.0	-14.0	1.10 H	213	45.82	14.18
10	15600.00	47.7 AV	54.0	-6.3	1.10 H	213	33.52	14.18

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5123.50	63.0 PK	74.0	-11.0	1.36 V	238	59.22	3.78
2	5123.50	53.7 AV	54.0	-0.3	1.36 V	238	49.92	3.78
3	*5200.00	116.0 PK			1.19 V	247	112.04	3.96
4	*5200.00	106.8 AV			1.19 V	247	102.84	3.96
5	5356.20	63.5 PK	74.0	-10.5	1.40 V	244	59.41	4.09
6	5356.20	52.1 AV	54.0	-1.9	1.40 V	244	48.01	4.09
7	#10400.00	54.4 PK	74.0	-19.6	1.20 V	105	44.95	9.45
8	#10400.00	40.7 AV	54.0	-13.3	1.20 V	105	31.25	9.45
9	15600.00	60.4 PK	74.0	-13.6	1.04 V	98	46.22	14.18
10	15600.00	48.1 AV	54.0	-5.9	1.04 V	98	33.92	14.18

**REMARKS:**

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





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<b>CHANNEL</b>	TX Channel 48	<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	*5240.00	107.1 PK			1.02 H	355	103.15	3.95
2	*5240.00	98.2 AV			1.02 H	355	94.25	3.95
3	5400.00	54.6 PK	74.0	-19.4	1.00 H	289	50.41	4.19
4	5400.00	45.1 AV	54.0	-8.9	1.00 H	289	40.91	4.19
5	#10480.00	53.9 PK	74.0	-20.1	1.00 H	151	44.23	9.67
6	#10480.00	40.0 AV	54.0	-14.0	1.00 H	151	30.33	9.67
7	15720.00	60.4 PK	74.0	-13.6	1.07 H	206	46.51	13.89
8	15720.00	48.0 AV	54.0	-6.0	1.07 H	206	34.11	13.89

**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	*5240.00	117.1 PK			1.18 V	248	113.15	3.95
2	*5240.00	107.5 AV			1.18 V	248	103.55	3.95
3	5400.00	64.2 PK	74.0	-9.8	1.17 V	195	60.01	4.19
4	5400.00	53.7 AV	54.0	-0.3	1.17 V	195	49.51	4.19
5	#10480.00	54.6 PK	74.0	-19.4	1.23 V	99	44.93	9.67
6	#10480.00	40.7 AV	54.0	-13.3	1.23 V	99	31.03	9.67
7	15720.00	60.5 PK	74.0	-13.5	1.00 V	85	46.61	13.89
8	15720.00	47.9 AV	54.0	-6.1	1.00 V	85	34.01	13.89

**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.



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<b>CHANNEL</b>	TX Channel 149	<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	57.2 PK	68.2	-11.0	1.03 H	167	52.70	4.50
2	#5725.00	67.7 PK	78.2	-10.5	1.03 H	167	63.20	4.50
3	*5745.00	108.2 PK			1.03 H	167	103.71	4.49
4	*5745.00	97.8 AV			1.03 H	167	93.31	4.49
5	11490.00	59.9 PK	74.0	-14.1	1.01 H	23	49.86	10.04
6	11490.00	44.6 AV	54.0	-9.4	1.01 H	23	34.56	10.04
7	#17235.00	62.9 PK	68.2	-5.3	1.21 H	122	44.34	18.56

**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	66.9 PK	68.2	-1.3	1.10 V	262	62.40	4.50
2	#5725.00	77.8 PK	78.2	-0.4	1.09 V	263	73.30	4.50
3	*5745.00	117.9 PK			1.09 V	263	113.41	4.49
4	*5745.00	107.4 AV			1.09 V	263	102.91	4.49
5	11490.00	58.3 PK	74.0	-15.7	1.05 V	245	48.26	10.04
6	11490.00	46.7 AV	54.0	-7.3	1.05 V	245	36.66	10.04
7	#17235.00	61.9 PK	68.2	-6.3	1.02 V	125	43.34	18.56

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 157	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5700.00	57.2 PK	68.2	-11.0	1.08 H	156	52.71	4.49
2	#5725.00	50.5 PK	78.2	-27.7	1.08 H	156	46.00	4.50
3	*5785.00	108.5 PK			1.08 H	156	104.00	4.50
4	*5785.00	98.1 AV			1.08 H	156	93.60	4.50
5	#5850.00	53.4 PK	78.2	-24.8	1.08 H	156	48.83	4.57
6	#5871.20	58.1 PK	68.2	-10.1	1.08 H	156	53.50	4.60
7	11570.00	59.6 PK	74.0	-14.4	1.05 H	26	49.52	10.08
8	11570.00	45.6 AV	54.0	-8.4	1.05 H	26	35.52	10.08
9	#17355.00	62.5 PK	68.2	-5.7	1.21 H	135	43.60	18.90

**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	#5700.00	67.1 PK	68.2	-1.1	1.09 V	264	62.61	4.49
2	#5725.00	56.3 PK	78.2	-21.9	1.09 V	262	51.80	4.50
3	*5785.00	118.2 PK			1.09 V	262	113.70	4.50
4	*5785.00	107.8 AV			1.09 V	262	103.30	4.50
5	#5850.00	62.1 PK	78.2	-16.1	1.09 V	262	57.53	4.57
6	#5871.20	67.9 PK	68.2	-0.3	1.09 V	222	63.30	4.60
7	11570.00	59.3 PK	74.0	-14.7	1.04 V	256	49.22	10.08
8	11570.00	47.9 AV	54.0	-6.1	1.04 V	256	37.82	10.08
9	#17355.00	62.5 PK	68.2	-5.7	1.00 V	125	43.60	18.90

**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.



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<b>CHANNEL</b>	TX Channel 165	<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	*5825.00	109.4 PK			1.09 H	164	104.87	4.53
2	*5825.00	98.7 AV			1.09 H	164	94.17	4.53
3	#5850.00	68.3 PK	78.2	-9.9	1.09 H	164	63.73	4.57
4	#5905.00	58.0 PK	68.2	-10.2	1.05 H	173	53.35	4.65
5	11650.00	59.5 PK	74.0	-14.5	1.06 H	18	49.53	9.97
6	11650.00	45.5 AV	54.0	-8.5	1.06 H	18	35.53	9.97
7	#17475.00	62.4 PK	68.2	-5.8	1.22 H	141	43.29	19.11

**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	*5825.00	119.1 PK			1.09 V	223	114.57	4.53
2	*5825.00	108.3 AV			1.09 V	223	103.77	4.53
3	#5850.00	76.9 PK	78.2	-1.3	1.09 V	223	72.33	4.57
4	#5905.00	67.9 PK	68.2	-0.3	1.07 V	222	63.25	4.65
5	11650.00	59.0 PK	74.0	-15.0	1.06 V	264	49.03	9.97
6	11650.00	47.5 AV	54.0	-6.5	1.06 V	264	37.53	9.97
7	#17475.00	61.7 PK	68.2	-6.5	1.03 V	122	42.59	19.11

**REMARKS:**

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



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802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 36	<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	5100.00	56.6 PK	74.0	-17.4	1.06 H	204	52.88	3.72
2	5100.00	46.8 AV	54.0	-7.2	1.06 H	204	43.08	3.72
3	5150.00	57.0 PK	74.0	-17.0	1.04 H	164	53.16	3.84
4	5150.00	43.8 AV	54.0	-10.2	1.04 H	164	39.96	3.84
5	*5180.00	109.3 PK			1.04 H	164	105.38	3.92
6	*5180.00	99.8 AV			1.04 H	164	95.88	3.92
7	#10360.00	54.1 PK	74.0	-19.9	1.00 H	148	44.67	9.43
8	#10360.00	40.2 AV	54.0	-13.8	1.00 H	148	30.77	9.43
9	15540.00	60.8 PK	74.0	-13.2	1.02 H	192	46.77	14.03
10	15540.00	48.3 AV	54.0	-5.7	1.02 H	192	34.27	14.03

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5100.00	62.6 PK	74.0	-11.4	1.23 V	255	58.88	3.72
2	5100.00	53.8 AV	54.0	-0.2	1.23 V	255	50.08	3.72
3	5150.00	62.8 PK	74.0	-11.2	1.21 V	251	58.96	3.84
4	5150.00	49.7 AV	54.0	-4.3	1.21 V	251	45.86	3.84
5	*5180.00	116.1 PK			1.21 V	251	112.18	3.92
6	*5180.00	106.7 AV			1.21 V	251	102.78	3.92
7	#10360.00	54.2 PK	74.0	-19.8	1.18 V	101	44.77	9.43
8	#10360.00	40.3 AV	54.0	-13.7	1.18 V	101	30.87	9.43
9	15540.00	60.6 PK	74.0	-13.4	1.03 V	73	46.57	14.03
10	15540.00	47.7 AV	54.0	-6.3	1.03 V	73	33.67	14.03

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 40	<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	5122.00	57.2 PK	74.0	-16.8	1.00 H	149	53.42	3.78
2	5122.00	47.1 AV	54.0	-6.9	1.00 H	149	43.32	3.78
3	*5200.00	108.7 PK			1.02 H	155	104.74	3.96
4	*5200.00	99.4 AV			1.02 H	155	95.44	3.96
5	5359.30	55.4 PK	74.0	-18.6	1.04 H	168	51.31	4.09
6	5359.30	46.6 AV	54.0	-7.4	1.04 H	168	42.51	4.09
7	#10400.00	54.5 PK	74.0	-19.5	1.01 H	143	45.05	9.45
8	#10400.00	40.3 AV	54.0	-13.7	1.01 H	143	30.85	9.45
9	15600.00	60.9 PK	74.0	-13.1	1.07 H	180	46.72	14.18
10	15600.00	48.6 AV	54.0	-5.4	1.07 H	180	34.42	14.18

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5122.00	63.0 PK	74.0	-11.0	1.24 V	269	59.22	3.78
2	5122.00	53.8 AV	54.0	-0.2	1.24 V	269	50.02	3.78
3	*5200.00	115.6 PK			1.20 V	246	111.64	3.96
4	*5200.00	106.0 AV			1.20 V	246	102.04	3.96
5	5359.30	61.3 PK	74.0	-12.7	1.16 V	100	57.21	4.09
6	5359.30	51.4 AV	54.0	-2.6	1.16 V	100	47.31	4.09
7	#10400.00	54.8 PK	74.0	-19.2	1.21 V	104	45.35	9.45
8	#10400.00	40.7 AV	54.0	-13.3	1.21 V	104	31.25	9.45
9	15600.00	60.0 PK	74.0	-14.0	1.04 V	68	45.82	14.18
10	15600.00	47.3 AV	54.0	-6.7	1.04 V	68	33.12	14.18

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 48	<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	*5240.00	110.9 PK			1.03 H	158	106.95	3.95
2	*5240.00	100.2 AV			1.03 H	158	96.25	3.95
3	5400.00	57.4 PK	74.0	-16.6	1.00 H	164	53.21	4.19
4	5400.00	47.2 AV	54.0	-6.8	1.00 H	164	43.01	4.19
5	#10480.00	54.9 PK	74.0	-19.1	1.02 H	158	45.23	9.67
6	#10480.00	40.7 AV	54.0	-13.3	1.02 H	158	31.03	9.67
7	15720.00	60.8 PK	74.0	-13.2	1.03 H	171	46.91	13.89
8	15720.00	48.5 AV	54.0	-5.5	1.03 H	171	34.61	13.89

**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	*5240.00	117.1 PK			1.19 V	244	113.15	3.95
2	*5240.00	107.6 AV			1.19 V	244	103.65	3.95
3	5400.00	63.3 PK	74.0	-10.7	1.16 V	245	59.11	4.19
4	5400.00	53.7 AV	54.0	-0.3	1.16 V	245	49.51	4.19
5	#10480.00	54.9 PK	74.0	-19.1	1.23 V	92	45.23	9.67
6	#10480.00	41.1 AV	54.0	-12.9	1.23 V	92	31.43	9.67
7	15720.00	60.1 PK	74.0	-13.9	1.07 V	76	46.21	13.89
8	15720.00	47.6 AV	54.0	-6.4	1.07 V	76	33.71	13.89

**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.



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<b>CHANNEL</b>	TX Channel 149	<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	#5665.80	57.4 PK	68.2	-10.8	1.00 H	96	52.90	4.50
2	#5725.00	68.5 PK	78.2	-9.7	1.04 H	158	64.00	4.50
3	*5745.00	106.5 PK			1.04 H	158	102.01	4.49
4	*5745.00	97.6 AV			1.04 H	158	93.11	4.49
5	11490.00	59.0 PK	74.0	-15.0	1.06 H	24	48.96	10.04
6	11490.00	45.1 AV	54.0	-8.9	1.06 H	24	35.06	10.04
7	#17235.00	62.8 PK	68.2	-5.4	1.26 H	132	44.24	18.56

**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	#5665.80	66.2 PK	68.2	-2.0	1.10 V	86	61.70	4.50
2	#5725.00	77.7 PK	78.2	-0.5	1.10 V	221	73.20	4.50
3	*5745.00	116.7 PK			1.10 V	221	112.21	4.49
4	*5745.00	107.4 AV			1.10 V	221	102.91	4.49
5	11490.00	58.7 PK	74.0	-15.3	1.01 V	252	48.66	10.04
6	11490.00	47.5 AV	54.0	-6.5	1.01 V	252	37.46	10.04
7	#17235.00	61.7 PK	68.2	-6.5	1.09 V	135	43.14	18.56

**REMARKS:**

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





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<b>CHANNEL</b>	TX Channel 157	<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	#5706.00	56.3 PK	68.2	-11.9	1.03 H	161	51.82	4.48
2	#5725.00	50.2 PK	78.2	-28.0	1.03 H	161	45.70	4.50
3	*5785.00	105.2 PK			1.03 H	161	100.70	4.50
4	*5785.00	95.3 AV			1.03 H	161	90.80	4.50
5	#5850.00	56.7 PK	78.2	-21.5	1.03 H	161	52.13	4.57
6	#5864.00	57.6 PK	68.2	-10.6	1.03 H	161	53.01	4.59
7	11570.00	58.8 PK	74.0	-15.2	1.09 H	25	48.72	10.08
8	11570.00	45.1 AV	54.0	-8.9	1.09 H	25	35.02	10.08
9	#17355.00	63.1 PK	68.2	-5.1	1.29 H	138	44.20	18.90

**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	#5706.00	65.8 PK	68.2	-2.4	1.09 V	81	61.32	4.48
2	#5725.00	54.0 PK	78.2	-24.2	1.10 V	222	49.50	4.50
3	*5785.00	115.3 PK			1.10 V	222	110.80	4.50
4	*5785.00	105.8 AV			1.10 V	222	101.30	4.50
5	#5850.00	63.0 PK	78.2	-15.2	1.10 V	222	58.43	4.57
6	#5864.00	68.0 PK	68.2	-0.2	1.08 V	223	63.41	4.59
7	11570.00	58.6 PK	74.0	-15.4	1.00 V	257	48.52	10.08
8	11570.00	47.5 AV	54.0	-6.5	1.00 V	257	37.42	10.08
9	#17355.00	62.2 PK	68.2	-6.0	1.11 V	133	43.30	18.90

**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.



A D T

<b>CHANNEL</b>	TX Channel 165	<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	*5825.00	108.6 PK			1.07 H	154	104.07	4.53
2	*5825.00	98.4 AV			1.07 H	154	93.87	4.53
3	#5850.00	68.5 PK	78.2	-9.7	1.07 H	154	63.93	4.57
4	#5905.00	60.2 PK	68.2	-8.0	1.07 H	154	55.55	4.65
5	11650.00	58.6 PK	74.0	-15.4	1.11 H	19	48.63	9.97
6	11650.00	44.8 AV	54.0	-9.2	1.11 H	19	34.83	9.97
7	#17475.00	63.5 PK	68.2	-4.7	1.29 H	125	44.39	19.11

**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	*5825.00	118.0 PK			1.09 V	221	113.47	4.53
2	*5825.00	108.4 AV			1.09 V	221	103.87	4.53
<b>3</b>	<b>#5850.00</b>	<b>78.1 PK</b>	<b>78.2</b>	<b>-0.1</b>	<b>1.09 V</b>	<b>221</b>	<b>73.53</b>	<b>4.57</b>
4	#5905.00	68.0 PK	68.2	-0.2	1.08 V	222	63.35	4.65
5	11650.00	59.0 PK	74.0	-15.0	1.03 V	246	49.03	9.97
6	11650.00	47.9 AV	54.0	-6.1	1.03 V	246	37.93	9.97
7	#17475.00	62.6 PK	68.2	-5.6	1.16 V	133	43.49	19.11

**REMARKS:**

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



A D T

802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 38	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	61.3 PK	74.0	-12.7	1.04 H	162	57.46	3.84
2	5150.00	47.3 AV	54.0	-6.7	1.04 H	162	43.46	3.84
3	*5190.00	106.2 PK			1.04 H	162	102.26	3.94
4	*5190.00	95.4 AV			1.04 H	162	91.46	3.94
5	#10380.00	55.1 PK	74.0	-18.9	1.07 H	142	45.66	9.44
6	#10380.00	40.9 AV	54.0	-13.1	1.07 H	142	31.46	9.44
7	15570.00	60.4 PK	74.0	-13.6	1.03 H	170	46.29	14.11
8	15570.00	48.3 AV	54.0	-5.7	1.03 H	170	34.19	14.11

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.3 PK	74.0	-6.7	1.22 V	268	63.46	3.84
2	5150.00	53.8 AV	54.0	-0.2	1.22 V	268	49.96	3.84
3	*5190.00	112.8 PK			1.22 V	268	108.86	3.94
4	*5190.00	102.8 AV			1.22 V	268	98.86	3.94
5	#10380.00	55.1 PK	74.0	-18.9	1.25 V	89	45.66	9.44
6	#10380.00	41.2 AV	54.0	-12.8	1.25 V	89	31.76	9.44
7	15570.00	60.2 PK	74.0	-13.8	1.10 V	73	46.09	14.11
8	15570.00	48.0 AV	54.0	-6.0	1.10 V	73	33.89	14.11

**REMARKS:**

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



A D T

<b>CHANNEL</b>	TX Channel 46	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.1 PK	74.0	-15.9	1.00 H	185	54.26	3.84
2	5150.00	46.7 AV	54.0	-7.3	1.00 H	185	42.86	3.84
3	*5230.00	111.4 PK			1.09 H	177	107.44	3.96
4	*5230.00	98.7 AV			1.09 H	177	94.74	3.96
5	5385.40	58.5 PK	74.0	-15.5	1.03 H	164	54.34	4.16
6	5385.40	47.7 AV	54.0	-6.3	1.03 H	164	43.54	4.16
7	#10460.00	55.7 PK	74.0	-18.3	1.02 H	147	46.09	9.61
8	#10460.00	41.2 AV	54.0	-12.8	1.02 H	147	31.59	9.61
9	15690.00	60.7 PK	74.0	-13.3	1.07 H	176	46.80	13.90
10	15690.00	48.6 AV	54.0	-5.4	1.07 H	176	34.70	13.90

**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	5150.00	63.7 PK	74.0	-10.3	1.10 V	247	59.86	3.84
2	5150.00	53.4 AV	54.0	-0.6	1.10 V	247	49.56	3.84
3	*5230.00	117.4 PK			1.21 V	267	113.44	3.96
4	*5230.00	106.6 AV			1.21 V	267	102.64	3.96
5	5385.40	63.4 PK	74.0	-10.6	1.18 V	215	59.24	4.16
6	5385.40	53.6 AV	54.0	-0.4	1.18 V	215	49.44	4.16
7	#10460.00	55.3 PK	74.0	-18.7	1.26 V	80	45.69	9.61
8	#10460.00	41.5 AV	54.0	-12.5	1.26 V	80	31.89	9.61
9	15690.00	60.1 PK	74.0	-13.9	1.16 V	84	46.20	13.90
10	15690.00	47.7 AV	54.0	-6.3	1.16 V	84	33.80	13.90

**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.



A D T

<b>CHANNEL</b>	TX Channel 151	<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	#5715.00	62.4 PK	74.0	-11.6	1.11 H	140	57.92	4.48
2	#5715.00	45.1 AV	54.0	-8.9	1.11 H	140	40.62	4.48
3	#5725.00	68.4 PK	78.2	-9.8	1.11 H	140	63.90	4.50
4	*5755.00	102.7 PK			1.11 H	140	98.21	4.49
5	*5755.00	92.6 AV			1.11 H	140	88.11	4.49
6	#5850.00	53.8 PK	78.2	-24.4	1.11 H	140	49.23	4.57
7	11510.00	58.3 PK	74.0	-15.7	1.10 H	22	48.25	10.05
8	11510.00	44.4 AV	54.0	-9.6	1.10 H	22	34.35	10.05
9	#17265.00	63.5 PK	74.0	-10.5	1.24 H	114	44.86	18.64
10	#17265.00	50.6 AV	54.0	-3.4	1.24 H	114	31.96	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	#5715.00	71.0 PK	74.0	-3.0	1.09 V	214	66.52	4.48
2	#5715.00	53.2 AV	54.0	-0.8	1.09 V	214	48.72	4.48
3	#5725.00	77.6 PK	78.2	-0.6	1.09 V	214	73.10	4.50
4	*5755.00	112.1 PK			1.09 V	214	107.61	4.49
5	*5755.00	102.8 AV			1.09 V	214	98.31	4.49
6	#5850.00	62.9 PK	78.2	-15.3	1.09 V	222	58.33	4.57
7	11510.00	59.5 PK	74.0	-14.5	1.03 V	247	49.45	10.05
8	11510.00	48.3 AV	54.0	-5.7	1.03 V	247	38.25	10.05
9	#17265.00	63.0 PK	74.0	-11.0	1.12 V	139	44.36	18.64
10	#17265.00	50.2 AV	54.0	-3.8	1.12 V	139	31.56	18.64

**REMARKS:**

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



A D T

<b>CHANNEL</b>	TX Channel 159	<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	*5795.00	103.2 PK			1.08 H	150	98.69	4.51
2	*5795.00	93.3 AV			1.08 H	150	88.79	4.51
3	#5850.00	62.6 PK	78.2	-15.6	1.08 H	150	58.03	4.57
4	#5861.10	58.2 PK	74.0	-15.8	1.08 H	150	53.61	4.59
5	#5861.10	44.6 AV	54.0	-9.4	1.08 H	150	40.01	4.59
6	11590.00	58.8 PK	74.0	-15.2	1.13 H	24	48.71	10.09
7	11590.00	44.8 AV	54.0	-9.2	1.13 H	24	34.71	10.09
8	#17385.00	63.1 PK	74.0	-10.9	1.27 H	119	44.10	19.00
9	#17385.00	50.4 AV	54.0	-3.6	1.27 H	119	31.40	19.00

**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	*5795.00	113.4 PK			1.08 V	215	108.89	4.51
2	*5795.00	103.4 AV			1.08 V	215	98.89	4.51
3	#5850.00	71.7 PK	78.2	-6.5	1.08 V	215	67.13	4.57
4	#5861.10	67.1 PK	74.0	-6.9	1.08 V	224	62.51	4.59
5	#5861.10	53.5 AV	54.0	-0.5	1.08 V	224	48.91	4.59
6	11590.00	59.6 PK	74.0	-14.4	1.04 V	263	49.51	10.09
7	11590.00	48.6 AV	54.0	-5.4	1.04 V	263	38.51	10.09
8	#17385.00	63.6 PK	74.0	-10.4	1.09 V	154	44.60	19.00
9	#17385.00	50.6 AV	54.0	-3.4	1.09 V	154	31.60	19.00

**REMARKS:**

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



A D T

802.11ac (VHT80)

<b>CHANNEL</b>	TX Channel 42	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.2 PK	74.0	-9.8	1.10 H	182	60.36	3.84
2	5150.00	46.8 AV	54.0	-7.2	1.10 H	182	42.96	3.84
3	*5210.00	98.1 PK			1.10 H	182	94.14	3.96
4	*5210.00	88.6 AV			1.10 H	182	84.64	3.96
5	5350.00	52.3 PK	74.0	-21.7	1.10 H	182	48.23	4.07
6	5350.00	39.7 AV	54.0	-14.3	1.10 H	182	35.63	4.07
7	#5788.00	54.6 PK	74.0	-19.4	1.05 H	169	50.10	4.50
8	#5788.00	46.5 AV	54.0	-7.5	1.05 H	169	42.00	4.50
9	#10420.00	55.5 PK	74.0	-18.5	1.03 H	141	46.00	9.50
10	#10420.00	41.2 AV	54.0	-12.8	1.03 H	141	31.70	9.50
11	15630.00	61.1 PK	74.0	-12.9	1.02 H	190	47.01	14.09
12	15630.00	49.0 AV	54.0	-5.0	1.02 H	190	34.91	14.09

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.6 PK	74.0	-4.4	1.09 V	249	65.76	3.84
2	5150.00	53.5 AV	54.0	-0.5	1.09 V	249	49.66	3.84
3	*5210.00	107.8 PK			1.09 V	249	103.84	3.96
4	*5210.00	97.9 AV			1.09 V	249	93.94	3.96
5	5350.00	55.9 PK	74.0	-18.1	1.09 V	249	51.83	4.07
6	5350.00	43.5 AV	54.0	-10.5	1.09 V	249	39.43	4.07
7	#5788.00	57.1 PK	74.0	-16.9	1.08 V	79	52.60	4.50
8	#5788.00	53.3 AV	54.0	-0.7	1.08 V	79	48.80	4.50
9	#10420.00	55.2 PK	74.0	-18.8	1.32 V	87	45.70	9.50
10	#10420.00	41.2 AV	54.0	-12.8	1.32 V	87	31.70	9.50
11	15630.00	59.5 PK	74.0	-14.5	1.20 V	76	45.41	14.09
12	15630.00	47.3 AV	54.0	-6.7	1.20 V	76	33.21	14.09

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 155	<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	5133.00	50.6 PK	74.0	-23.4	1.08 H	135	46.80	3.80
2	5133.00	40.4 AV	54.0	-13.6	1.08 H	135	36.60	3.80
3	#5715.00	57.6 PK	74.0	-16.4	1.08 H	135	53.12	4.48
4	#5715.00	45.2 AV	54.0	-8.8	1.08 H	135	40.72	4.48
5	#5725.00	64.7 PK	78.2	-13.5	1.08 H	135	60.20	4.50
6	*5775.00	98.7 PK			1.08 H	135	94.21	4.49
7	*5775.00	88.2 AV			1.08 H	135	83.71	4.49
8	#5850.00	59.7 PK	78.2	-18.5	1.08 H	135	55.13	4.57
9	#5860.00	56.9 PK	74.0	-17.1	1.08 H	135	52.31	4.59
10	#5860.00	42.6 AV	54.0	-11.4	1.08 H	135	38.01	4.59
11	11550.00	58.5 PK	74.0	-15.5	1.15 H	39	48.43	10.07
12	11550.00	44.3 AV	54.0	-9.7	1.15 H	39	34.23	10.07
13	#17325.00	63.1 PK	74.0	-10.9	1.30 H	130	44.28	18.82
14	#17325.00	50.4 AV	54.0	-3.6	1.30 H	130	31.58	18.82

**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	5133.00	52.3 PK	74.0	-21.7	1.09 V	135	48.50	3.80
2	5133.00	47.6 AV	54.0	-6.4	1.09 V	135	43.80	3.80
3	#5715.00	67.2 PK	74.0	-6.8	1.09 V	221	62.72	4.48
4	#5715.00	53.6 AV	54.0	-0.4	1.09 V	221	49.12	4.48
5	#5725.00	73.7 PK	78.2	-4.5	1.09 V	221	69.20	4.50
6	*5775.00	108.7 PK			1.09 V	221	104.21	4.49
7	*5775.00	97.6 AV			1.09 V	221	93.11	4.49
8	#5850.00	69.4 PK	78.2	-8.8	1.09 V	221	64.83	4.57
9	#5860.00	65.5 PK	74.0	-8.5	1.09 V	221	60.91	4.59
10	#5860.00	51.8 AV	54.0	-2.2	1.09 V	221	47.21	4.59
11	11550.00	59.4 PK	74.0	-14.6	1.01 V	256	49.33	10.07
12	11550.00	48.5 AV	54.0	-5.5	1.01 V	256	38.43	10.07
13	#17325.00	63.7 PK	74.0	-10.3	1.08 V	147	44.88	18.82
14	#17325.00	50.7 AV	54.0	-3.3	1.08 V	147	31.88	18.82

**REMARKS:**

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





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## 4.2.9 TEST RESULTS (MODE 2)

### ABOVE 1GHz DATA

#### 802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 36	<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	5100.00	54.3 PK	74.0	-19.7	1.00 H	194	50.58	3.72
2	5100.00	44.2 AV	54.0	-9.8	1.00 H	194	40.48	3.72
3	5150.00	52.0 PK	74.0	-22.0	1.05 H	185	48.16	3.84
4	5150.00	43.1 AV	54.0	-10.9	1.05 H	185	39.26	3.84
5	*5180.00	101.6 PK			1.01 H	172	97.68	3.92
6	*5180.00	92.4 AV			1.01 H	172	88.48	3.92
7	#10360.00	53.8 PK	74.0	-20.2	1.00 H	141	44.37	9.43
8	#10360.00	39.7 AV	54.0	-14.3	1.00 H	141	30.27	9.43
9	15540.00	61.2 PK	74.0	-12.8	1.08 H	181	47.17	14.03
10	15540.00	48.4 AV	54.0	-5.6	1.08 H	181	34.37	14.03

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5100.00	64.1 PK	74.0	-9.9	1.26 V	266	60.38	3.72
2	5100.00	53.6 AV	54.0	-0.4	1.26 V	266	49.88	3.72
3	5150.00	61.9 PK	74.0	-12.1	1.09 V	26	58.06	3.84
4	5150.00	52.3 AV	54.0	-1.7	1.09 V	26	48.46	3.84
5	*5180.00	111.4 PK			1.07 V	360	107.48	3.92
6	*5180.00	101.7 AV			1.07 V	360	97.78	3.92
7	#10360.00	53.8 PK	74.0	-20.2	1.16 V	117	44.37	9.43
8	#10360.00	40.1 AV	54.0	-13.9	1.16 V	117	30.67	9.43
9	15540.00	59.8 PK	74.0	-14.2	1.02 V	66	45.77	14.03
10	15540.00	47.2 AV	54.0	-6.8	1.02 V	66	33.17	14.03

#### REMARKS:

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



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<b>CHANNEL</b>	TX Channel 40	<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	5122.00	56.4 PK	74.0	-17.6	1.00 H	135	52.62	3.78
2	5122.00	45.8 AV	54.0	-8.2	1.00 H	135	42.02	3.78
3	*5200.00	109.2 PK			1.03 H	174	105.24	3.96
4	*5200.00	99.9 AV			1.03 H	174	95.94	3.96
5	5358.20	57.3 PK	74.0	-16.7	1.02 H	184	53.21	4.09
6	5358.20	46.9 AV	54.0	-7.1	1.02 H	184	42.81	4.09
7	#10400.00	53.8 PK	74.0	-20.2	1.05 H	143	44.35	9.45
8	#10400.00	39.9 AV	54.0	-14.1	1.05 H	143	30.45	9.45
9	15600.00	61.7 PK	74.0	-12.3	1.05 H	181	47.52	14.18
10	15600.00	48.6 AV	54.0	-5.4	1.05 H	181	34.42	14.18

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5122.00	62.4 PK	74.0	-11.6	1.23 V	241	58.62	3.78
2	5122.00	52.6 AV	54.0	-1.4	1.23 V	241	48.82	3.78
3	*5200.00	114.2 PK			1.43 V	250	110.24	3.96
4	*5200.00	104.5 AV			1.43 V	250	100.54	3.96
5	5358.20	64.3 PK	74.0	-9.7	1.19 V	222	60.21	4.09
6	5358.20	53.8 AV	54.0	-0.2	1.19 V	222	49.71	4.09
7	#10400.00	53.6 PK	74.0	-20.4	1.20 V	109	44.15	9.45
8	#10400.00	39.7 AV	54.0	-14.3	1.20 V	109	30.25	9.45
9	15600.00	59.9 PK	74.0	-14.1	1.04 V	70	45.72	14.18
10	15600.00	47.3 AV	54.0	-6.7	1.04 V	70	33.12	14.18

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 48	<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	*5240.00	111.6 PK			1.08 H	178	107.65	3.95
2	*5240.00	101.5 AV			1.08 H	178	97.55	3.95
3	5408.00	57.5 PK	74.0	-16.5	1.03 H	182	53.31	4.19
4	5408.00	47.1 AV	54.0	-6.9	1.03 H	182	42.91	4.19
5	#10480.00	53.7 PK	74.0	-20.3	1.04 H	151	44.03	9.67
6	#10480.00	40.0 AV	54.0	-14.0	1.04 H	151	30.33	9.67
7	15720.00	61.3 PK	74.0	-12.7	1.01 H	166	47.41	13.89
8	15720.00	48.2 AV	54.0	-5.8	1.01 H	166	34.31	13.89

**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	*5240.00	116.5 PK			1.21 V	264	112.55	3.95
2	*5240.00	106.7 AV			1.21 V	264	102.75	3.95
3	5408.00	64.3 PK	74.0	-9.7	1.00 V	227	60.11	4.19
4	<b>5408.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.00 V</b>	<b>227</b>	<b>49.71</b>	<b>4.19</b>
5	#10480.00	53.6 PK	74.0	-20.4	1.18 V	120	43.93	9.67
6	#10480.00	39.9 AV	54.0	-14.1	1.18 V	120	30.23	9.67
7	15720.00	59.8 PK	74.0	-14.2	1.05 V	68	45.91	13.89
8	15720.00	47.5 AV	54.0	-6.5	1.05 V	68	33.61	13.89

**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.



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<b>CHANNEL</b>	TX Channel 149	<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	#5668.00	56.7 PK	68.2	-11.5	1.10 H	172	52.20	4.50
2	#5725.00	68.9 PK	78.2	-9.3	1.00 H	186	64.40	4.50
3	*5745.00	104.4 PK			1.02 H	163	99.91	4.49
4	*5745.00	95.7 AV			1.02 H	163	91.21	4.49
5	11490.00	58.6 PK	74.0	-15.4	1.00 H	27	48.56	10.04
6	11490.00	44.7 AV	54.0	-9.3	1.00 H	27	34.66	10.04
7	#17235.00	62.5 PK	68.2	-5.7	1.27 H	138	43.94	18.56

**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	#5668.00	64.4 PK	68.2	-3.8	1.09 V	220	59.90	4.50
2	#5725.00	77.9 PK	78.2	-0.3	1.07 V	218	73.40	4.50
3	*5745.00	115.7 PK			1.11 V	225	111.21	4.49
4	*5745.00	105.4 AV			1.11 V	225	100.91	4.49
5	11490.00	58.9 PK	74.0	-15.1	1.06 V	266	48.86	10.04
6	11490.00	47.6 AV	54.0	-6.4	1.06 V	266	37.56	10.04
7	#17235.00	61.6 PK	68.2	-6.6	1.11 V	127	43.04	18.56

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 157	<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	#5702.00	58.3 PK	68.2	-9.9	1.02 H	148	53.81	4.49
2	*5785.00	106.5 PK			1.06 H	151	102.00	4.50
3	*5785.00	98.4 AV			1.06 H	151	93.90	4.50
4	11570.00	59.3 PK	74.0	-14.7	1.01 H	31	49.22	10.08
5	11570.00	45.2 AV	54.0	-8.8	1.01 H	31	35.12	10.08
6	#17355.00	62.6 PK	68.2	-5.6	1.26 H	154	43.70	18.90

**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	#5702.00	67.8 PK	68.2	-0.4	1.00 V	213	63.31	4.49
2	*5785.00	117.7 PK			1.10 V	220	113.20	4.50
3	*5785.00	107.5 AV			1.10 V	220	103.00	4.50
4	#5862.00	67.1 PK	68.2	-1.1	1.08 V	223	62.51	4.59
5	11570.00	58.5 PK	74.0	-15.5	1.02 V	266	48.42	10.08
6	11570.00	47.1 AV	54.0	-6.9	1.02 V	266	37.02	10.08
7	#17355.00	61.6 PK	68.2	-6.6	1.11 V	119	42.70	18.90

**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.



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<b>CHANNEL</b>	TX Channel 165	<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	*5825.00	105.8 PK			1.05 H	182	101.27	4.53
2	*5825.00	98.1 AV			1.05 H	182	93.57	4.53
3	#5850.00	68.6 PK	78.2	-9.6	1.05 H	182	64.03	4.57
4	#5860.00	60.3 PK	74.0	-13.7	1.05 H	182	55.71	4.59
5	#5860.00	46.2 AV	54.0	-7.8	1.05 H	182	41.61	4.59
6	#5906.00	58.4 PK	68.2	-9.8	1.10 H	205	53.75	4.65
7	11650.00	59.3 PK	74.0	-14.7	1.00 H	47	49.33	9.97
8	11650.00	45.1 AV	54.0	-8.9	1.00 H	47	35.13	9.97
9	#17475.00	62.7 PK	68.2	-5.5	1.21 H	161	43.59	19.11

**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	*5825.00	117.4 PK			1.18 V	227	112.87	4.53
2	*5825.00	107.2 AV			1.18 V	227	102.67	4.53
3	#5850.00	77.9 PK	78.2	-0.3	1.08 V	231	73.33	4.57
4	#5860.00	70.6 PK	74.0	-3.4	1.09 V	225	66.01	4.59
5	#5860.00	52.1 AV	54.0	-1.9	1.09 V	225	47.51	4.59
6	#5906.00	67.2 PK	68.2	-1.0	1.13 V	254	62.55	4.65
7	11650.00	58.8 PK	74.0	-15.2	1.03 V	274	48.83	9.97
8	11650.00	47.1 AV	54.0	-6.9	1.03 V	274	37.13	9.97
9	#17475.00	61.8 PK	68.2	-6.4	1.16 V	117	42.69	19.11

**REMARKS:**

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



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## 802.11ac (VHT40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.5 PK	74.0	-6.5	1.11 H	165	63.66	3.84
2	5150.00	43.4 AV	54.0	-10.6	1.11 H	165	39.56	3.84
3	*5190.00	106.4 PK			1.11 H	165	102.46	3.94
4	*5190.00	91.9 AV			1.11 H	165	87.96	3.94
5	5351.00	57.2 PK	74.0	-16.8	1.06 H	183	53.13	4.07
6	5351.00	47.2 AV	54.0	-6.8	1.06 H	183	43.13	4.07
7	#10380.00	53.8 PK	74.0	-20.2	1.02 H	160	44.36	9.44
8	#10380.00	39.8 AV	54.0	-14.2	1.02 H	160	30.36	9.44
9	15570.00	61.5 PK	74.0	-12.5	1.05 H	169	47.39	14.11
10	15570.00	48.1 AV	54.0	-5.9	1.05 H	169	33.99	14.11

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	73.6 PK	74.0	-0.4	1.43 V	249	69.76	3.84
2	5150.00	49.7 AV	54.0	-4.3	1.43 V	249	45.86	3.84
3	*5190.00	110.7 PK			1.43 V	249	106.76	3.94
4	*5190.00	101.4 AV			1.43 V	249	97.46	3.94
5	5351.00	63.1 PK	74.0	-10.9	1.05 V	251	59.03	4.07
6	<b>5351.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.05 V</b>	<b>251</b>	<b>49.83</b>	<b>4.07</b>
7	#10380.00	53.4 PK	74.0	-20.6	1.18 V	117	43.96	9.44
8	#10380.00	39.7 AV	54.0	-14.3	1.18 V	117	30.26	9.44
9	15570.00	59.2 PK	74.0	-14.8	1.00 V	55	45.09	14.11
10	15570.00	47.2 AV	54.0	-6.8	1.00 V	55	33.09	14.11

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 46	<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	5132.00	56.7 PK	74.0	-17.3	1.02 H	149	52.90	3.80
2	5132.00	46.5 AV	54.0	-7.5	1.02 H	149	42.70	3.80
3	*5230.00	110.6 PK			1.07 H	154	106.64	3.96
4	*5230.00	95.2 AV			1.07 H	154	91.24	3.96
5	5372.00	58.3 PK	74.0	-15.7	1.05 H	168	54.18	4.12
6	5372.00	47.1 AV	54.0	-6.9	1.05 H	168	42.98	4.12
7	#10460.00	54.0 PK	74.0	-20.0	1.01 H	150	44.39	9.61
8	#10460.00	39.9 AV	54.0	-14.1	1.01 H	150	30.29	9.61
9	15690.00	61.7 PK	74.0	-12.3	1.08 H	170	47.80	13.90
10	15690.00	48.5 AV	54.0	-5.5	1.08 H	170	34.60	13.90

**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	5132.00	62.7 PK	74.0	-11.3	1.00 V	239	58.90	3.80
2	5132.00	52.9 AV	54.0	-1.1	1.00 V	239	49.10	3.80
3	*5230.00	114.8 PK			1.00 V	178	110.84	3.96
4	*5230.00	104.6 AV			1.00 V	178	100.64	3.96
5	5372.00	64.2 PK	74.0	-9.8	1.06 V	213	60.08	4.12
6	5372.00	53.7 AV	54.0	-0.3	1.06 V	213	49.58	4.12
7	#10460.00	52.7 PK	74.0	-21.3	1.15 V	125	43.09	9.61
8	#10460.00	39.3 AV	54.0	-14.7	1.15 V	125	29.69	9.61
9	15690.00	59.6 PK	74.0	-14.4	1.04 V	68	45.70	13.90
10	15690.00	47.3 AV	54.0	-6.7	1.04 V	68	33.40	13.90

**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.





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<b>CHANNEL</b>	TX Channel 151	<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	#5692.00	53.6 PK	74.0	-20.4	1.00 H	179	49.11	4.49
2	#5692.00	45.8 AV	54.0	-8.2	1.00 H	179	41.31	4.49
3	#5715.00	58.4 PK	74.0	-15.6	1.05 H	188	53.92	4.48
4	#5715.00	46.5 AV	54.0	-7.5	1.05 H	188	42.02	4.48
5	#5725.00	64.5 PK	78.2	-13.7	1.05 H	188	60.00	4.50
6	*5755.00	100.7 PK			1.05 H	188	96.21	4.49
7	*5755.00	94.3 AV			1.05 H	188	89.81	4.49
8	11510.00	59.4 PK	74.0	-14.6	1.01 H	60	49.35	10.05
9	11510.00	45.1 AV	54.0	-8.9	1.01 H	60	35.05	10.05
10	#17265.00	63.4 PK	74.0	-10.6	1.22 H	163	44.76	18.64
11	#17265.00	50.6 AV	54.0	-3.4	1.22 H	163	31.96	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	#5692.00	62.8 PK	74.0	-11.2	1.02 V	216	58.31	4.49
2	#5692.00	51.9 AV	54.0	-2.1	1.02 V	216	47.41	4.49
3	#5715.00	67.5 PK	74.0	-6.5	1.11 V	222	63.02	4.48
4	#5715.00	53.7 AV	54.0	-0.3	1.11 V	222	49.22	4.48
5	#5725.00	73.2 PK	78.2	-5.0	1.11 V	222	68.70	4.50
6	*5755.00	112.7 PK			1.11 V	220	108.21	4.49
7	*5755.00	102.5 AV			1.11 V	220	98.01	4.49
8	11510.00	58.4 PK	74.0	-15.6	1.03 V	283	48.35	10.05
9	11510.00	47.0 AV	54.0	-7.0	1.03 V	283	36.95	10.05
10	#17265.00	62.4 PK	74.0	-11.6	1.20 V	101	43.76	18.64
11	#17265.00	50.3 AV	54.0	-3.7	1.20 V	101	31.66	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.
6. " # ": The radiated frequency is out of the restricted band.



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<b>CHANNEL</b>	TX Channel 159	<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	56.8 PK	68.2	-11.4	1.05 H	201	52.31	4.49
2	#5725.00	56.7 PK	78.2	-21.5	1.13 H	226	52.20	4.50
3	*5795.00	104.2 PK			1.05 H	201	99.69	4.51
4	*5795.00	96.5 AV			1.05 H	201	91.99	4.51
5	#5850.00	64.8 PK	78.2	-13.4	1.05 H	201	60.23	4.57
6	#5861.10	58.1 PK	68.2	-10.1	1.05 H	201	53.51	4.59
7	11590.00	58.8 PK	74.0	-15.2	1.03 H	55	48.71	10.09
8	11590.00	44.6 AV	54.0	-9.4	1.03 H	55	34.51	10.09
9	#17385.00	63.7 PK	68.2	-4.5	1.19 H	154	44.70	19.00

**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	64.2 PK	68.2	-4.0	1.10 V	223	59.71	4.49
2	#5725.00	64.2 PK	78.2	-14.0	1.00 V	214	59.70	4.50
3	*5795.00	115.2 PK			1.10 V	223	110.69	4.51
4	*5795.00	104.6 AV			1.10 V	223	100.09	4.51
5	#5850.00	71.0 PK	78.2	-7.2	1.10 V	223	66.43	4.57
6	#5861.10	67.2 PK	68.2	-1.0	1.10 V	223	62.61	4.59
7	11590.00	58.8 PK	74.0	-15.2	1.02 V	297	48.71	10.09
8	11590.00	47.1 AV	54.0	-6.9	1.02 V	297	37.01	10.09
9	#17385.00	62.3 PK	68.2	-5.9	1.21 V	103	43.30	19.00

**REMARKS:**

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



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802.11ac (VHT80)

<b>CHANNEL</b>	TX Channel 42	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.4 PK	74.0	-13.6	1.00 H	138	56.56	3.84
2	5150.00	47.2 AV	54.0	-6.8	1.00 H	138	43.36	3.84
3	*5210.00	107.4 PK			1.10 H	142	103.44	3.96
4	*5210.00	89.2 AV			1.10 H	142	85.24	3.96
5	5350.00	56.4 PK	74.0	-17.6	1.02 H	145	52.33	4.07
6	5350.00	41.0 AV	54.0	-13.0	1.02 H	145	36.93	4.07
7	#10420.00	53.9 PK	74.0	-20.1	1.04 H	157	44.40	9.50
8	#10420.00	40.1 AV	54.0	-13.9	1.04 H	157	30.60	9.50
9	15630.00	61.5 PK	74.0	-12.5	1.06 H	171	47.41	14.09
10	15630.00	48.3 AV	54.0	-5.7	1.06 H	171	34.21	14.09

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.4 PK	74.0	-7.6	1.11 V	244	62.56	3.84
2	5150.00	53.6 AV	54.0	-0.4	1.11 V	244	49.76	3.84
3	*5210.00	111.3 PK			1.19 V	242	107.34	3.96
4	*5210.00	98.8 AV			1.19 V	242	94.84	3.96
5	5350.00	57.8 PK	74.0	-16.2	1.11 V	244	53.73	4.07
6	5350.00	44.8 AV	54.0	-9.2	1.11 V	244	40.73	4.07
7	#10420.00	52.6 PK	74.0	-21.4	1.11 V	137	43.10	9.50
8	#10420.00	39.3 AV	54.0	-14.7	1.11 V	137	29.80	9.50
9	15630.00	59.0 PK	74.0	-15.0	1.03 V	69	44.91	14.09
10	15630.00	47.0 AV	54.0	-7.0	1.03 V	69	32.91	14.09

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 155	<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	#5715.00	62.4 PK	74.0	-11.6	1.05 H	195	57.92	4.48
2	#5715.00	47.5 AV	54.0	-6.5	1.05 H	195	43.02	4.48
3	#5725.00	66.7 PK	78.2	-11.5	1.03 H	202	62.20	4.50
4	*5775.00	101.2 PK			1.03 H	202	96.71	4.49
5	*5775.00	90.6 AV			1.03 H	202	86.11	4.49
6	#5850.00	61.8 PK	78.2	-16.4	1.03 H	202	57.23	4.57
7	#5860.00	60.3 PK	74.0	-13.7	1.05 H	195	55.71	4.59
8	#5860.00	45.4 AV	54.0	-8.6	1.05 H	195	40.81	4.59
9	11550.00	59.4 PK	74.0	-14.6	1.03 H	69	49.33	10.07
10	11550.00	44.9 AV	54.0	-9.1	1.03 H	69	34.83	10.07
11	#17325.00	63.7 PK	74.0	-10.3	1.22 H	169	44.88	18.82
12	#17325.00	50.9 AV	54.0	-3.1	1.22 H	169	32.08	18.82

**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	#5715.00	71.4 PK	74.0	-2.6	1.10 V	224	66.92	4.48
2	#5715.00	53.9 AV	54.0	-0.1	1.10 V	224	49.42	4.48
3	#5725.00	74.5 PK	78.2	-3.7	1.10 V	224	70.00	4.50
4	*5775.00	110.8 PK			1.00 V	225	106.31	4.49
5	*5775.00	99.4 AV			1.00 V	225	94.91	4.49
6	#5850.00	68.7 PK	78.2	-9.5	1.00 V	217	64.13	4.57
7	#5860.00	69.4 PK	74.0	-4.6	1.10 V	224	64.81	4.59
8	#5860.00	50.2 AV	54.0	-3.8	1.10 V	224	45.61	4.59
9	11550.00	58.7 PK	74.0	-15.3	1.05 V	289	48.63	10.07
10	11550.00	47.0 AV	54.0	-7.0	1.05 V	289	36.93	10.07
11	#17325.00	62.3 PK	74.0	-11.7	1.21 V	107	43.48	18.82
12	#17325.00	50.5 AV	54.0	-3.5	1.21 V	107	31.68	18.82

**REMARKS:**

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



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## 4.3 TRANSMIT POWER MEASUREMENT

### 4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

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

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

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

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

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

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

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

### 4.3.2 TEST INSTRUMENTS

#### FOR POWER OUTPUT MEASUREMENT

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

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Dec. 08, 2014

### 4.3.3 TEST PROCEDURE

#### FOR POWER OUTPUT MEASUREMENT

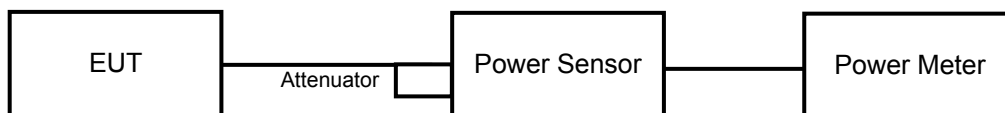
Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.3.5 TEST SETUP

#### FOR POWER OUTPUT MEASUREMENT



### 4.3.6 EUT OPERATING CONDITIONS

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

### 4.3.7 TEST RESULTS (MODE 1)

#### 802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	18.75	18.99	18.74	229.056	23.60	30	PASS
40	5200	17.31	17.38	17.21	161.131	22.07	30	PASS
48	5240	17.68	17.75	17.65	176.39	22.46	30	PASS
149	5745	18.11	18.64	17.99	200.779	23.03	29.70	PASS
157	5785	18.89	19.69	19.07	251.281	24.00	29.70	PASS
165	5825	18.43	19.08	18.44	220.396	23.43	29.70	PASS

- Note: 1. 5150~5250MHz: The directional gain is 4.6dBi < 6dBi, so the power limit shall not be reduced.
2. 5725~5850MHz: The directional gain is 6.3dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(6.3-6)".

#### 802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	17.79	17.87	17.61	179.029	22.53	30	PASS
40	5200	17.06	17.03	16.79	149.035	21.73	30	PASS
48	5240	18.88	19.09	18.80	234.222	23.70	30	PASS
149	5745	17.73	18.38	17.88	189.534	22.78	29.70	PASS
157	5785	18.26	19.27	18.70	225.647	23.53	29.70	PASS
165	5825	18.60	19.41	18.68	233.531	23.68	29.70	PASS

- Note: 1. 5150~5250MHz: The directional gain is 4.6dBi < 6dBi, so the power limit shall not be reduced.
2. 5725~5850MHz: The directional gain is 6.3dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(6.3-6)".



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### 802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
38	5190	16.27	16.23	16.25	126.51	21.02	30	PASS
46	5230	19.21	20.24	19.23	272.803	24.36	30	PASS
151	5755	17.03	17.77	17.12	161.83	22.09	29.70	PASS
159	5795	18.18	19.11	18.27	214.379	23.31	29.70	PASS

- Note: 1. 5150~5250MHz: The directional gain is 4.6dBi < 6dBi, so the power limit shall not be reduced.
2. 5725~5850MHz: The directional gain is 6.3dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(6.3-6)".

### 802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
42	5210	14.34	15.14	14.81	90.092	19.55	30	PASS
155	5775	16.18	17.33	16.80	143.433	21.57	29.70	PASS

- Note: 1. 5150~5250MHz: The directional gain is 4.6dBi < 6dBi, so the power limit shall not be reduced.
2. 5725~5850MHz: The directional gain is 6.3dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to "Determined Conducted Limit-(6.3-6)".



#### 4.3.8 TEST RESULTS (MODE 2)

##### 802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	17.88	17.95	17.22	176.472	22.47	26.96	PASS
40	5200	15.79	15.87	15.31	110.531	20.43	26.96	PASS
48	5240	16.25	16.33	15.79	123.055	20.90	26.96	PASS
149	5745	16.01	16.52	15.60	121.085	20.83	25.75	PASS
157	5785	18.58	19.27	18.12	221.502	23.45	25.75	PASS
165	5825	18.59	19.42	18.16	225.239	23.53	25.75	PASS

- NOTE:**
1. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 9.04dBi > 6dBi , so the power limit shall be reduced to 30-(9.04-6) =26.96dBm.
  2. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 10.25dBi > 6dBi , so the power limit shall be reduced to 30-(10.25-6) =25.75dBm.

##### 802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
38	5190	14.90	15.00	14.59	91.3	19.60	26.96	PASS
46	5230	17.82	17.95	17.31	176.734	22.47	26.96	PASS
151	5755	16.25	16.49	15.83	125.018	20.97	25.75	PASS
159	5795	18.25	18.97	17.99	208.671	23.19	25.75	PASS

- NOTE:**
1. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 9.04dBi > 6dBi , so the power limit shall be reduced to 30-(9.04-6) =26.96dBm.
  2. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 10.25dBi > 6dBi , so the power limit shall be reduced to 30-(10.25-6) =25.75dBm.

##### 802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
42	5210	15.68	15.84	15.66	112.167	20.50	26.96	PASS
155	5775	15.36	16.05	15.18	107.589	20.32	25.75	PASS

- NOTE:**
1. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 9.04dBi > 6dBi , so the power limit shall be reduced to 30-(9.04-6) =26.96dBm.
  2. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 10.25dBi > 6dBi , so the power limit shall be reduced to 30-(10.25-6) =25.75dBm.



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#### 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

##### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
	√	Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A	---		11dBm/ MHz
U-NII-2C	---		11dBm/ MHz
U-NII-3	---		30dBm/ 500kHz

##### 4.4.2 TEST INSTRUMENTS

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

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Dec. 08, 2014

#### 4.4.3 TEST PROCEDURES

※For U-NII-1:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and for duty cycle of test signal is < 98% add 10 log (1/duty cycle)

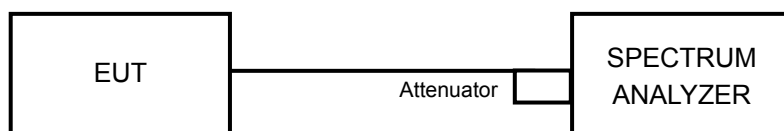
※For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 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 for duty cycle of test signal is < 98% add 10 log (1/duty cycle)

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6

#### 4.4.7 TEST RESULTS (MODE 1)

For U-NII-1:

##### 802.11a

CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	4.09	4.36	3.85	8.88	13.96	PASS
40	5200	2.72	2.86	4.04	8.02	13.96	PASS
48	5240	3.12	3.28	3.18	7.97	13.96	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. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 9.04dBi > 6dBi , so the power density limit shall be reduced to 17-(9.04-6) =13.96dBm.

##### 802.11ac (VHT20)

CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	2.43	2.73	2.53	7.34	13.96	PASS
40	5200	1.84	2.27	2.20	6.88	13.96	PASS
48	5240	3.92	4.40	4.25	8.97	13.96	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. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 9.04dBi > 6dBi , so the power density limit shall be reduced to 17-(9.04-6) =13.96dBm.

##### 802.11ac (VHT40)

CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-2.00	-1.60	-1.69	3.01	13.96	PASS
46	5230	1.91	2.37	2.11	6.91	13.96	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. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 9.04dBi > 6dBi , so the power density limit shall be reduced to 17-(9.04-6) =13.96dBm.



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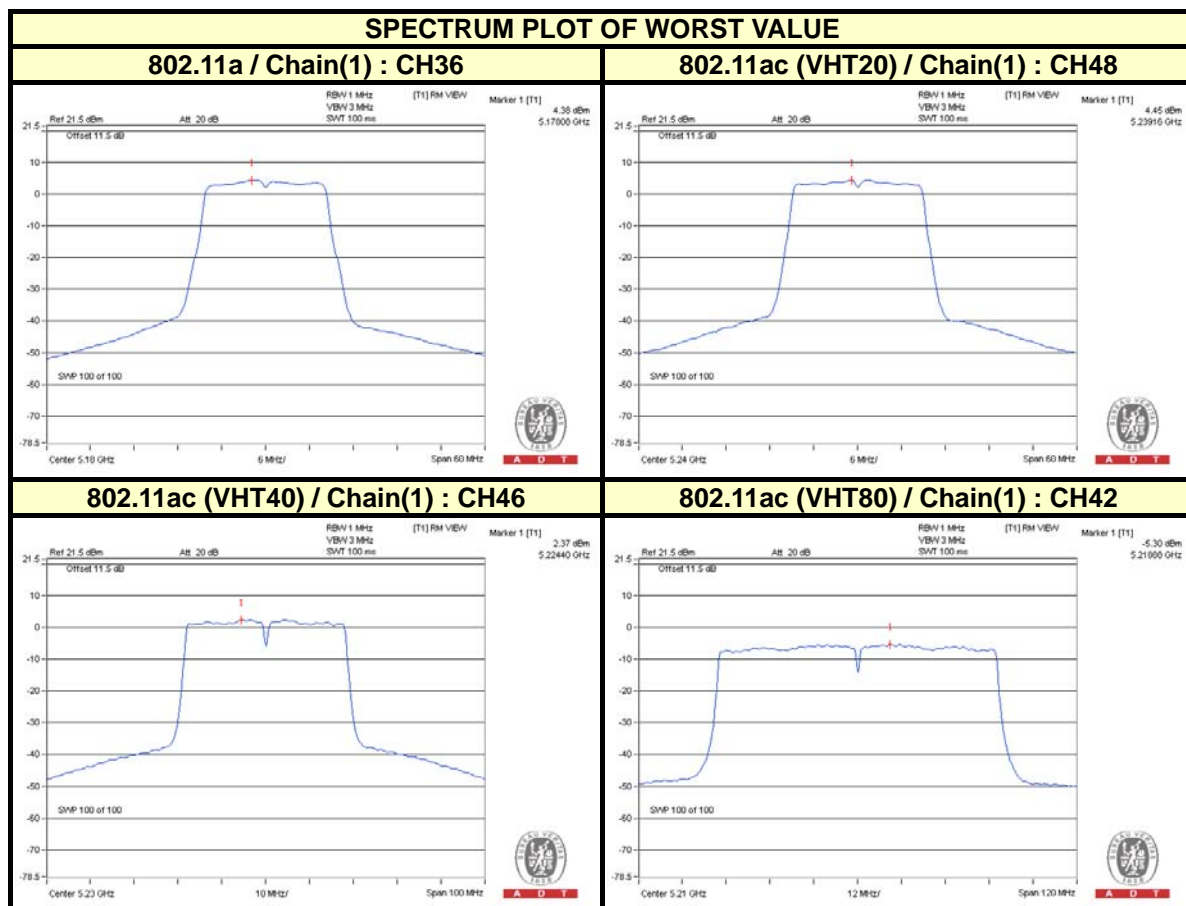
802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)			DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
42	5210	-5.34	-5.30	-5.71	0.18	-0.50	13.96	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. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 9.04dBi > 6dBi , so the power density limit shall be reduced to 17-(9.04-6) =13.96dBm.

3. Refer to section 3.4 for duty cycle spectrum plot.





For U-NII-3:

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	149	5745	-2.73	-0.51	4.77	4.26	25.75	PASS
	157	5785	-1.78	0.44	4.77	5.21	25.75	PASS
	165	5825	-2.32	-0.10	4.77	4.67	25.75	PASS
1	149	5745	-1.53	0.69	4.77	5.46	25.75	PASS
	157	5785	-0.82	1.40	4.77	6.17	25.75	PASS
	165	5825	-1.51	0.71	4.77	5.48	25.75	PASS
2	149	5745	-2.73	-0.51	4.77	4.26	25.75	PASS
	157	5785	-1.62	0.60	4.77	5.37	25.75	PASS
	165	5825	-1.89	0.33	4.77	5.10	25.75	PASS

**NOTE:** 1. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 10.25dBi > 6dBi , so the power density limit shall be reduced to  $30-(10.25-6) = 25.75$ dBm.

802.11ac (VHT20)

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	149	5745	-3.14	-0.92	4.77	3.85	25.75	PASS
	157	5785	-2.63	-0.41	4.77	4.36	25.75	PASS
	165	5825	-2.22	0.00	4.77	4.77	25.75	PASS
1	149	5745	-2.08	0.14	4.77	4.91	25.75	PASS
	157	5785	-1.59	0.63	4.77	5.40	25.75	PASS
	165	5825	-1.23	0.99	4.77	5.76	25.75	PASS
2	149	5745	-3.54	-1.32	4.77	3.45	25.75	PASS
	157	5785	-2.84	-0.62	4.77	4.15	25.75	PASS
	165	5825	-2.52	-0.30	4.77	4.47	25.75	PASS

**NOTE:** 1. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 10.25dBi > 6dBi , so the power density limit shall be reduced to  $30-(10.25-6) = 25.75$ dBm.



**802.11ac (VHT40)**

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	151	5755	-7.18	-4.96	4.77	-0.19	25.75	PASS
	159	5795	-5.89	-3.67	4.77	1.10	25.75	PASS
1	151	5755	-6.48	-4.26	4.77	0.51	25.75	PASS
	159	5795	-5.06	-2.84	4.77	1.93	25.75	PASS
2	151	5755	-7.74	-5.52	4.77	-0.75	25.75	PASS
	159	5795	-6.21	-3.99	4.77	0.78	25.75	PASS

**NOTE:** 1. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 10.25dBi > 6dBi , so the power density limit shall be reduced to  $30-(10.25-6)$  =25.75dBm.

**802.11ac (VHT80)**

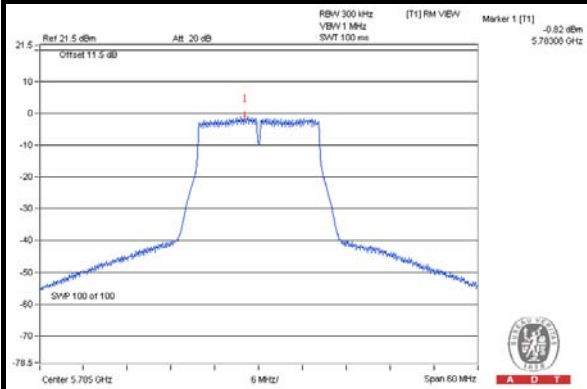
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR		10 log (N=3) dB	DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5745	-11.56	-9.34	4.77	0.18	-4.39	25.75	PASS
1	155	5745	-10.46	-8.24	4.77	0.18	-3.29	25.75	PASS
2	155	5745	-11.38	-9.16	4.77	0.18	-4.21	25.75	PASS

**NOTE:** 1. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$  = 10.25dBi > 6dBi , so the power density limit shall be reduced to  $30-(10.25-6)$  =25.75dBm.

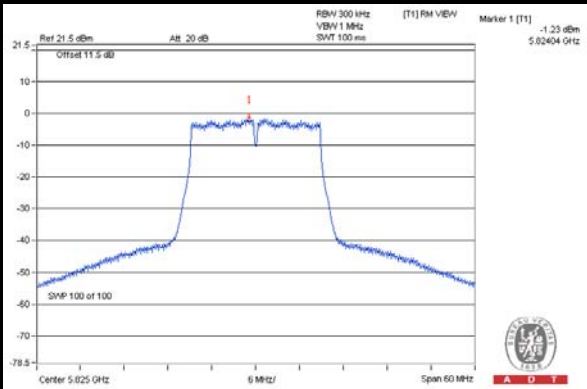
2. Refer to section 3.4 for duty cycle spectrum plot.

**SPECTRUM PLOT OF WORST VALUE**

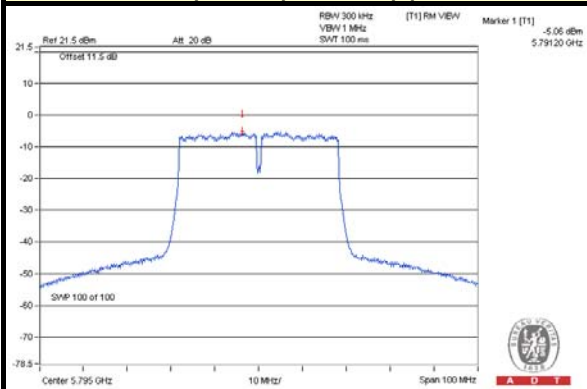
**802.11a / Chain(1) : CH157**



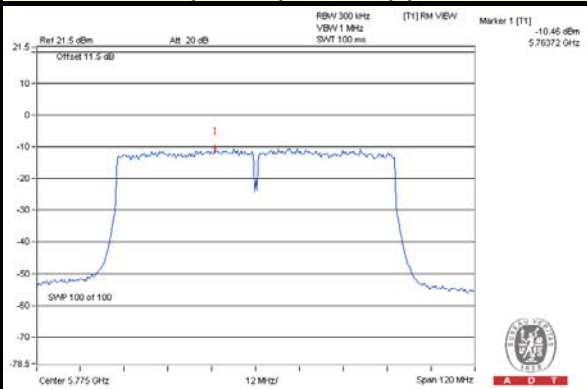
**802.11ac (VHT20) / Chain(1) : CH165**



**802.11ac (VHT40) / Chain(1) : CH159**



**802.11ac (VHT80) / Chain(1) : CH155**





#### 4.4.8 TEST RESULTS (MODE 2)

For U-NII-1:

##### 802.11ac (VHT20)

CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	2.39	2.80	2.79	7.44	13.96	PASS
40	5200	0.26	0.95	0.83	5.46	13.96	PASS
48	5240	0.84	1.23	1.24	5.88	13.96	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. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.04\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $17-(9.04-6) = 13.96\text{dBm}$ .

##### 802.11ac (VHT40)

CHAN.	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-3.28	-3.10	-3.19	1.58	13.96	PASS
46	5230	-0.53	-0.12	-0.27	4.47	13.96	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. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.04\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $17-(9.04-6) = 13.96\text{dBm}$ .

##### 802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)			DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
42	5210	-5.38	-5.38	-5.51	0.18	-0.47	13.96	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. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.04\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $17-(9.04-6) = 13.96\text{dBm}$ .

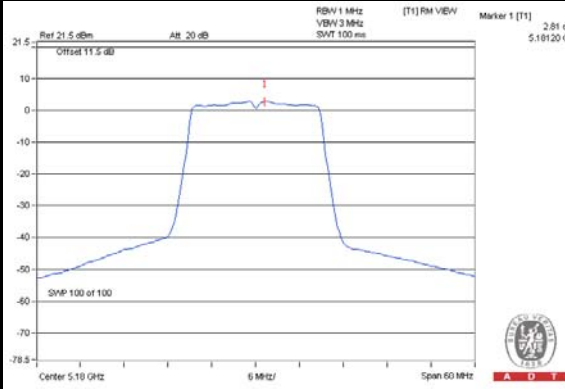
3. Refer to section 3.4 for duty cycle spectrum plot.



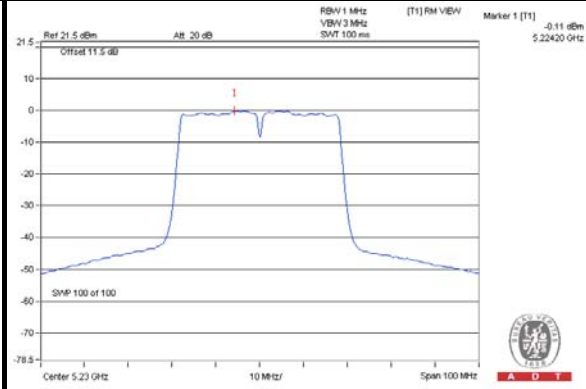
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### SPECTRUM PLOT OF WORST VALUE

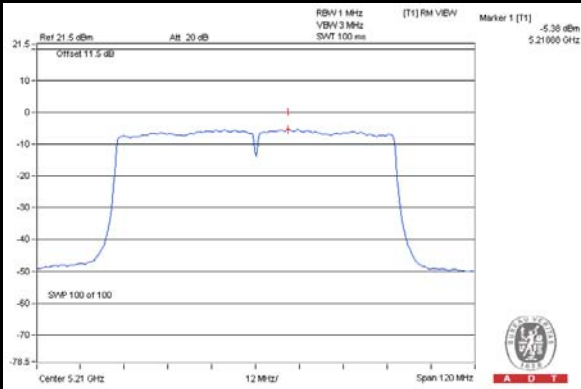
802.11ac (VHT20) / Chain(1) : CH36



802.11ac (VHT40) / Chain(1) : CH46



802.11ac (VHT80) / Chain(1) : CH42





For U-NII-3:

802.11ac (VHT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD		10 log (N=3) dB	TOTAL PSD (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	-5.59	-3.37	4.77	1.40	25.75	PASS
	157	5785	-2.66	-0.44	4.77	4.33	25.75	PASS
	165	5825	-2.48	-0.26	4.77	4.51	25.75	PASS
1	149	5745	-4.45	-2.23	4.77	2.54	25.75	PASS
	157	5785	-66.52	-64.30	4.77	-59.53	25.75	PASS
	165	5825	-1.61	0.61	4.77	5.38	25.75	PASS
2	149	5745	-5.96	-3.74	4.77	1.03	25.75	PASS
	157	5785	-3.31	-1.09	4.77	3.68	25.75	PASS
	165	5825	-2.82	-0.60	4.77	4.17	25.75	PASS

**NOTE:** 1. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 10.25\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $30-(10.25-6) = 25.75\text{dBm}$ .

802.11ac (VHT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR		10 log (N=3) dB	TOTAL PSD (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
			(dBm/300kHz)	(dBm/500kHz)				
0	151	5755	-8.55	-6.33	4.77	-1.56	25.75	PASS
	159	5795	-6.24	-4.02	4.77	0.75	25.75	PASS
1	151	5755	-7.94	-5.72	4.77	-0.95	25.75	PASS
	159	5795	-5.59	-3.37	4.77	1.40	25.75	PASS
2	151	5755	-9.17	-6.95	4.77	-2.18	25.75	PASS
	159	5795	-6.86	-4.64	4.77	0.13	25.75	PASS

**NOTE:** 1. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 10.25\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $30-(10.25-6) = 25.75\text{dBm}$ .



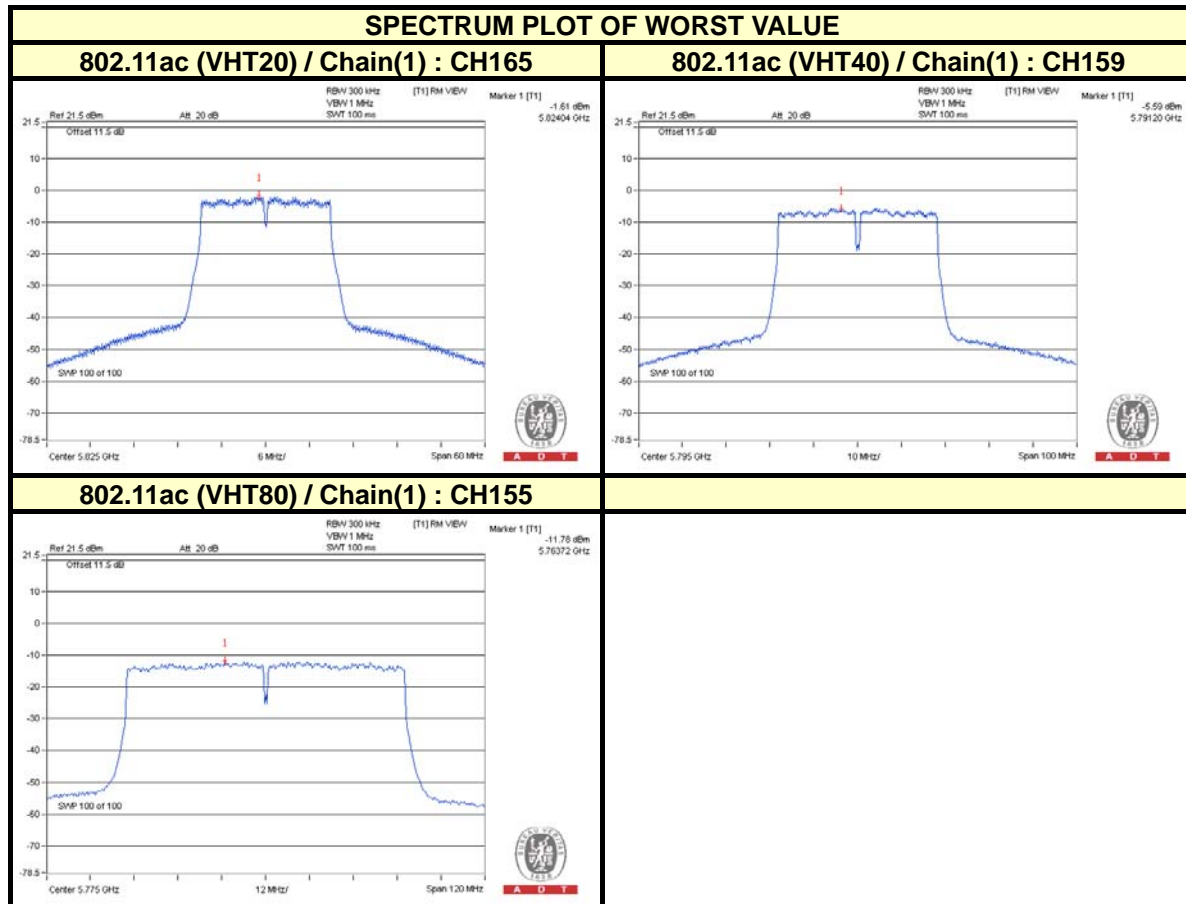
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802.11ac (VHT80)

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	155	5745	-12.89	-10.67	4.77	0.18	-5.72	25.75	PASS
1	155	5745	-11.78	-9.56	4.77	0.18	-4.61	25.75	PASS
2	155	5745	-12.71	-10.49	4.77	0.18	-5.54	25.75	PASS

**NOTE:** 1. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 10.25\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $30-(10.25-6) = 25.75\text{dBm}$ .

2. Refer to section 3.4 for duty cycle spectrum plot.





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## 4.5 FREQUENCY STABILITY

### 4.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015
Temperature Humidity Chamber & GIANTFORCE	GTH-150-40-SP -AR	MAA0812-008	Jan. 13, 2014	Jan. 12, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Dec. 08, 2014

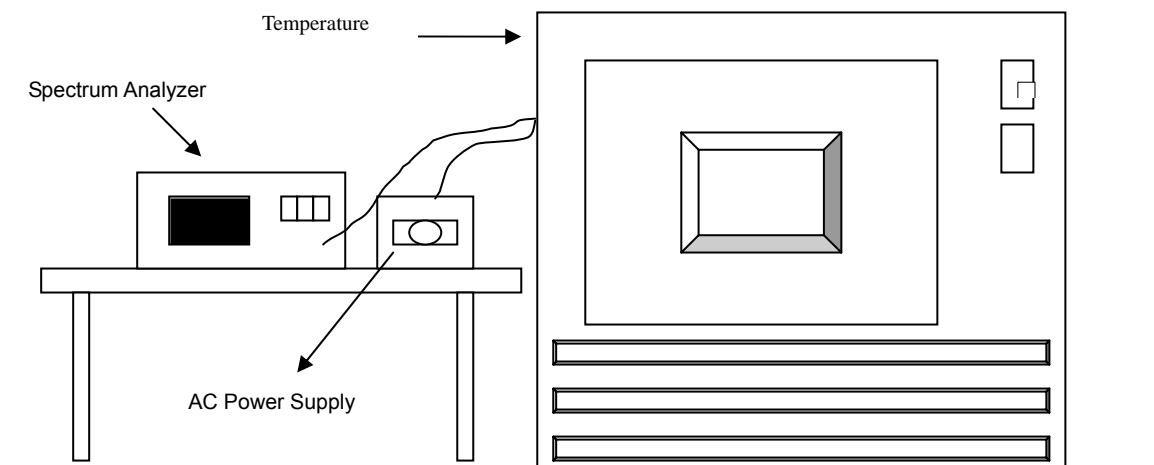
### 4.5.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITION

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



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### 4.5.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
50	120	5239.9755	-0.00047	5239.9745	-0.00049	5239.975	-0.00048	5239.974	-0.00050
40	120	5239.9961	-0.00007	5239.9974	-0.00005	5239.9945	-0.00010	5239.994	-0.00011
30	120	5239.9784	-0.00041	5239.9777	-0.00043	5239.9771	-0.00044	5239.9777	-0.00043
20	120	5240.0021	0.00004	5240	0.00000	5240.0005	0.00001	5239.9978	-0.00004
10	120	5239.9751	-0.00048	5239.9775	-0.00043	5239.9759	-0.00046	5239.9778	-0.00042
0	120	5240.0001	0.00000	5239.9955	-0.00009	5239.997	-0.00006	5239.9978	-0.00004
-10	120	5239.981	-0.00036	5239.9801	-0.00038	5239.9823	-0.00034	5239.9787	-0.00041
-20	120	5239.9828	-0.00033	5239.9798	-0.00039	5239.9814	-0.00035	5239.9805	-0.00037
-30	120	5239.9947	-0.00010	5239.997	-0.00006	5239.9957	-0.00008	5239.9971	-0.00006

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
20	138	5240.0022	0.00004	5239.9998	0.00000	5240.0001	0.00000	5239.9982	-0.00003
	120	5240.0021	0.00004	5240	0.00000	5240.0005	0.00001	5239.9978	-0.00004
	102	5240.0028	0.00005	5239.9993	-0.00001	5240.0013	0.00002	5239.9975	-0.00005

#### 4.6 6dB BANDWIDTH MEASUREMENT

##### 4.6.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

##### 4.6.2 TEST INSTRUMENTS

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

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Dec. 08, 2014

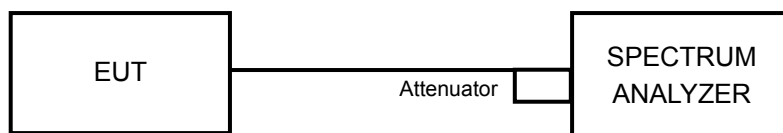
##### 4.6.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

##### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

##### 4.6.5 TEST SETUP



##### 4.6.6 EUT OPERATING CONDITIONS

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





## 4.6.7 TEST RESULTS (MODE 1)

## 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	16.41	16.41	16.44	0.5	PASS
157	5785	16.42	16.43	16.45	0.5	PASS
165	5825	16.42	16.40	16.44	0.5	PASS

## 802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.68	17.69	17.70	0.5	PASS
157	5785	17.67	17.71	17.69	0.5	PASS
165	5825	17.69	17.71	17.67	0.5	PASS

## 802.11ac (VHT40)

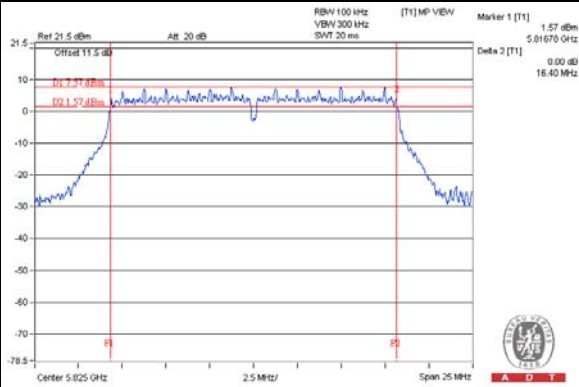
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	36.42	36.47	36.48	0.5	PASS
159	5795	36.45	36.47	36.50	0.5	PASS

## 802.11ac (VHT80)

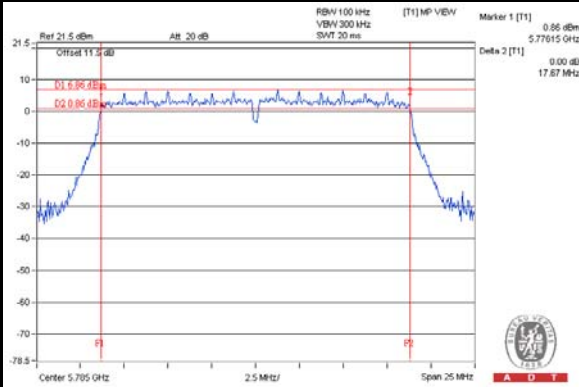
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
155	5775	76.21	76.46	76.48	0.5	PASS

**SPECTRUM PLOT OF WORST VALUE**

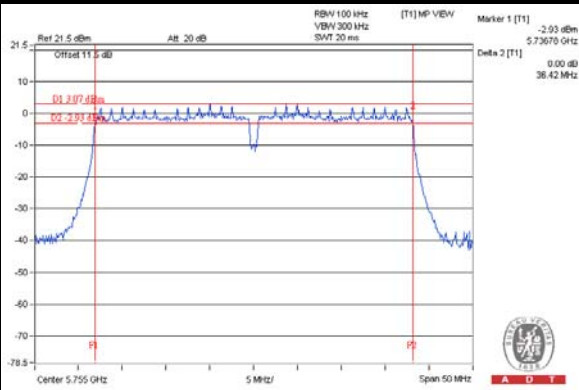
**802.11a / Chain(1) : CH165**



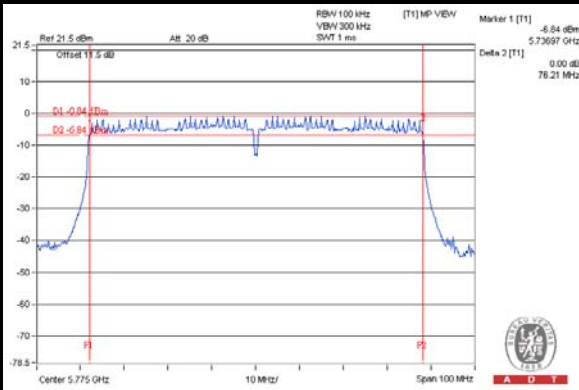
**802.11ac (VHT20) / Chain(0) : CH157**



**802.11ac (VHT40) / Chain(0) : CH151**



**802.11ac (VHT80) / Chain(0) : CH155**





#### 4.6.8 TEST RESULTS (MODE 2)

##### 802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.65	17.66	17.67	0.5	PASS
157	5785	17.67	25.00	17.64	0.5	PASS
165	5825	17.68	17.71	17.66	0.5	PASS

##### 802.11ac (VHT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	36.44	36.49	36.51	0.5	PASS
159	5795	36.43	36.47	36.50	0.5	PASS

##### 802.11ac (VHT80)

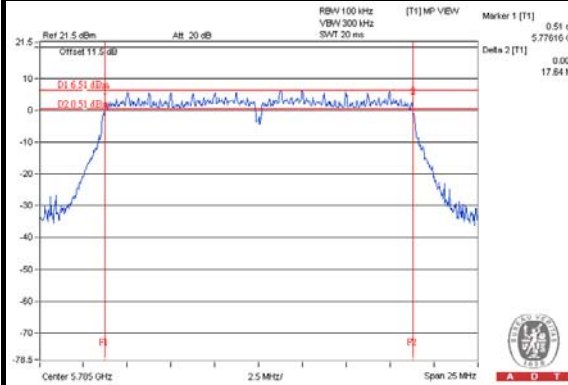
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
155	5775	76.23	76.47	76.47	0.5	PASS



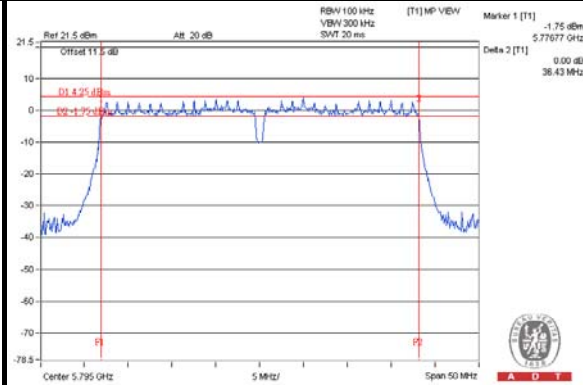
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### SPECTRUM PLOT OF WORST VALUE

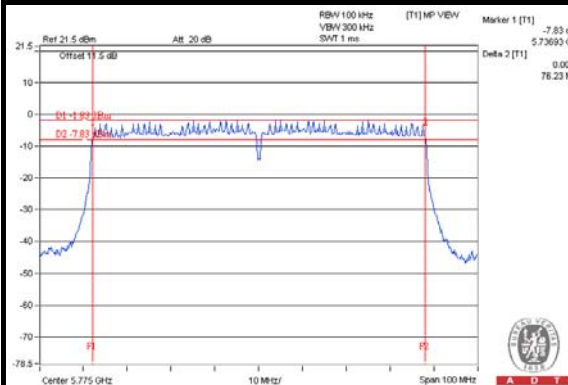
802.11ac (VHT20) / Chain(2) : CH157



802.11ac (VHT40) / Chain(0) : CH159



802.11ac (VHT80) / Chain(0) : CH155



## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 6. INFORMATION ON THE TESTING LABORATORIES

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

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

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



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

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

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