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# FCC TEST REPORT (WLAN 15.247)

**REPORT NO.:** RF140605E01

**MODEL NO.:** AW-CB178NF(UART), AW-CB178NF

**FCC ID:** TLZ-CB178NF

**RECEIVED:** Feb. 14, 2014

**TESTED:** Feb. 14 to Aug. 14, 2014

**ISSUED:** Sep. 26, 2014

**APPLICANT:** AzureWave Technologies, Inc.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140605E01	Original release	Sep. 26, 2014



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## 1. CERTIFICATION

**PRODUCT:** 802.11ac/a/b/g/n 2X2 MIMO WLAN & Bluetooth M.2 module

**BRAND NAME:** AzureWave

**MODEL NO.:** AW-CB178NF(UART), AW-CB178NF

**TEST SAMPLE:** ENGINEERING SAMPLE

**APPLICANT:** AzureWave Technologies, Inc.

**TESTED:** Feb. 14 to Aug. 14, 2014

**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247)**  
ANSI C63.10-2009

The above equipment (Model: AW-CB178NF(UART), AW-CB178NF) have 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 :** Midoli Peng , **Date:** Sep. 26, 2014  
( Midoli Peng, Specialist )

**Approved by :** May Chen , **Date:** Sep. 26, 2014  
( May Chen, Manager )



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## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz, 2400~2483.5MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.92dB at 0.53672MHz
15.205 15.209 15.247(d)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2386.20MHz
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	1. For PCB Antenna connector is R-SMA not a standard connector. 2. For PIFA Antenna connector is mini - ipex not a standard connector.



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For 5GHz, 5725~5850MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.16dB at 0.53672MHz
15.205 15.209 15.247(d)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -2.7dB at 11490.00MHz
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted <b>Output</b> Power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	1. For PCB Antenna connector is R-SMA not a standard connector. 2. For PIFA Antenna connector is mini - ipex not a standard connector.

**NOTE:** The EUT was operating in 2.400 ~ 2.4835GHz, 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2.400 ~ 2.4835GHz and 5.725~5.850GHz. For the 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz 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) for Chamber H	5.43 dB
Radiated emissions (30MHz-1GHz) for Chamber G	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 (WLAN)

<b>PRODUCT</b>	802.11ac/a/b/g/n 2X2 MIMO WLAN & Bluetooth M.2 module
<b>MODEL NO.</b>	AW-CB178NF(UART), AW-CB178NF
<b>POWER SUPPLY</b>	3.3Vdc (from host equipment)
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
<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 300Mbps 802.11ac: up to 866.7Mbps
<b>OPERATING FREQUENCY</b>	<b>For 15.407</b> <b>5GHz:</b> 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66GHz ~ 5.70GHz
	<b>For 15.247</b> <b>2.4GHz:</b> 2.412 ~ 2.462GHz <b>5GHz:</b> 5.745 ~ 5.825GHz
<b>NUMBER OF CHANNEL</b>	<b>For 15.407</b> 16 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 7 for 802.11n (HT40), 802.11ac (VHT40) 3 for 802.11ac (VHT80)
	<b>For 15.247 (2.4GHz)</b> 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) <b>For 15.247 (5GHz)</b> 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)

<b>MAXIMUM OUTPUT POWER</b>	<p><b>For 15.407</b></p> <p>802.11a: 92.229mW              802.11ac (VHT20): 96.455mW              802.11ac (VHT40): 71.625mW              802.11ac (VHT80): 15.489mW</p> <p><b>For 15.247 (2.4GHz)</b></p> <p>802.11b: 195.223mW              802.11g: 738.888mW              802.11n (HT20): 749.096mW              802.11n (HT40): 297.044mW</p> <p><b>For 15.247 (5GHz)</b></p> <p>802.11a: 381.898mW              802.11ac (VHT20): 386.999mW              802.11ac (VHT40): 368.999mW              802.11ac (VHT80): 256.483mW</p>
<b>ANTENNA TYPE</b>	Please see NOTE
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	NA

**NOTE:**

1. There are Bluetooth 4.0 technology and WLAN (2.4GHz and 5GHz) technology used for the EUT.
2. For WLAN: 2.4GHz and 5GHz technology cannot transmit at same time.
3. WLAN/BT coexistence mode:

Condition	Technology	
1	WLAN(2.4GHz) 1TX only	BT
2	WLAN(5GHz) 1TX only	BT

From above coexistence mode, radiated emission of the simultaneous operation has been evaluated and no non-compliance was found.

4. The EUT has two model names which are identical to each other in all aspects except for the following table:

Brand Name	Model No.	Description
AzureWave	AW-CB178NF(UART)	With UART interface
	AW-CB178NF	Without UART interface

From the model names, the radiated emission worst case was found in model No.: **AW-CB178NF**. Therefore only the test data of the mode was recorded in this report.

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

<b>Set 1 Antenna</b>											
Transmitter Circuit	Brand	Model	Ant. Gain (dBi) < Excluding cable loss>	Cable Loss (dB)		Net. Gain (dBi)	Frequency range (MHz to MHz)	Ant. Type	Connector Type	Cable Length (mm)	
				100 mm	180 mm						
Chain (0)	Microsoft	2118433-1	2.18	1	0.54	0.64	2400~2484	PCB	R-SMA	100+180	
			2.34	1.3	0.96	0.08	5150~5850				
Chain (1)	Microsoft	2118433-1	2.18	1	0.54	0.64	2400~2484	PCB	R-SMA	100+180	
			2.34	1.3	0.96	0.08	5150~5850				
<b>Set 2 Antenna</b>											
Transmitter Circuit	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (MHz to MHz)	Ant. Type	Connector Type	Cable Length (mm)				
Chain (0)	Walsin	RFPCA310715EMLB301	3.06	2400~2500	PIFA	mini - ipex	150				
			4.81	5150~5850							
Chain (1)	Walsin	RFPCA310715EMLB301	3.06	2400~2500	PIFA	mini - ipex	150				
			4.81	5150~5850							
<b>Set 3 Antenna</b>											
Transmitter Circuit	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (MHz to MHz)	Ant. Type	Connector Type	Cable Length (mm)				
Chain (0)	Wistron NeWeb Corporation	81EAAX15.G12	1.02	2400~2484	PIFA	mini - ipex	254				
			-1.03	5150~5850							
Chain (1)	Wistron NeWeb Corporation	81EAAX15.G12	1.02	2400~2484	PIFA	mini - ipex	563				
			-1.03	5150~5850							
<p>Note: 1. From the above 1TX configuration mode, the worst case was found in transmission circuit on Chain (1).</p> <p>2. From the above antenna sets, <b>Set 1 Antenna</b> and <b>Set 2 Antenna</b> were selected as representative antenna for the test and its data was recorded in this report.</p>											

6. The EUT incorporates a MIMO function without Beamforming.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
<b>802.11a</b>	6 ~ 54Mbps	1Tx (diversity)	1Rx (diversity)
		2TX(CDD)	2Rx
<b>802.11b</b>	1 ~ 11Mbps	1Tx (diversity)	1Rx (diversity)
		2TX(CDD)	2Rx
<b>802.11g</b>	6 ~ 54Mbps	1Tx (diversity)	1Rx (diversity)
		2TX(CDD)	2Rx
<b>802.11n (HT20)</b>	MCS 0~7	1Tx (diversity)	1Rx (diversity)
	MCS 8~15	2Tx	2Rx
<b>802.11n (HT40)</b>	MCS 0~7	1Tx (diversity)	1Rx (diversity)
	MCS 8~15	2Tx	2Rx
<b>802.11ac (VHT20) (5GHz)</b>	MCS0~8 Nss=1	1Tx (diversity)	1Rx (diversity)
	MCS0~8 Nss=2	2Tx	2Rx
<b>802.11ac (VHT40) (5GHz)</b>	MCS0~9 Nss=1	1Tx (diversity)	1Rx (diversity)
	MCS0~9 Nss=2	2Tx	2Rx
<b>802.11ac (VHT80) (5GHz)</b>	MCS0~9 Nss=1	1Tx (diversity)	1Rx (diversity)
	MCS0~9 Nss=2	2Tx	2Rx

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

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

### 3.2 DESCRIPTION OF TEST MODES

#### Operated in 2400 ~ 2483.5MHz band:

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

#### 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
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	OB	
1	√	√	√	√	√	PIFA Ant. (Set 2 Ant.) (Model No.: AW-CB178NF)
2	-	√	√	-	-	PCB Ant. (Set 1 Ant.) (Model No.: AW-CB178NF)
	√	-	-	-	-	PIFA Ant. (Set 2 Ant.) (Model No.: AW-CB178NF(UART))

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

- NOTE:** 1. The EUT's antenna (PIFA) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane** (for below 1GHz) and **X-plane** (for above 1GHz).
2. **For 2.4GHz**: The EUT's antenna (PCB) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.
3. **For 5GHz**: The EUT's antenna (PCB) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane** (for below 1GHz) and **X-plane** (for above 1GHz).

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6
802.11a	149 to 165	149	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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6
802.11a	149 to 165	149	OFDM	BPSK	6

**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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	13
For 5 GHz 802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	27
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	58.5



**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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	13
For 5 GHz 802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	27
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	58.5

**CONDUCTED OUT-BAND EMISSION 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	13
For 5 GHz 802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	27
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	58.5



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**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	13deg. 65C, %RH	120Vac, 60Hz	Anderson Chen
RE<1G	24deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
	21deg. C, 63%RH	120Vac, 60Hz	Andy Ho
RE≥1G	22deg. C, 67%RH	120Vac, 60Hz	Gary Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng
OB	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

### 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 C (15.247)**

**558074 D01 DTS Meas Guidance v03r02**

**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.

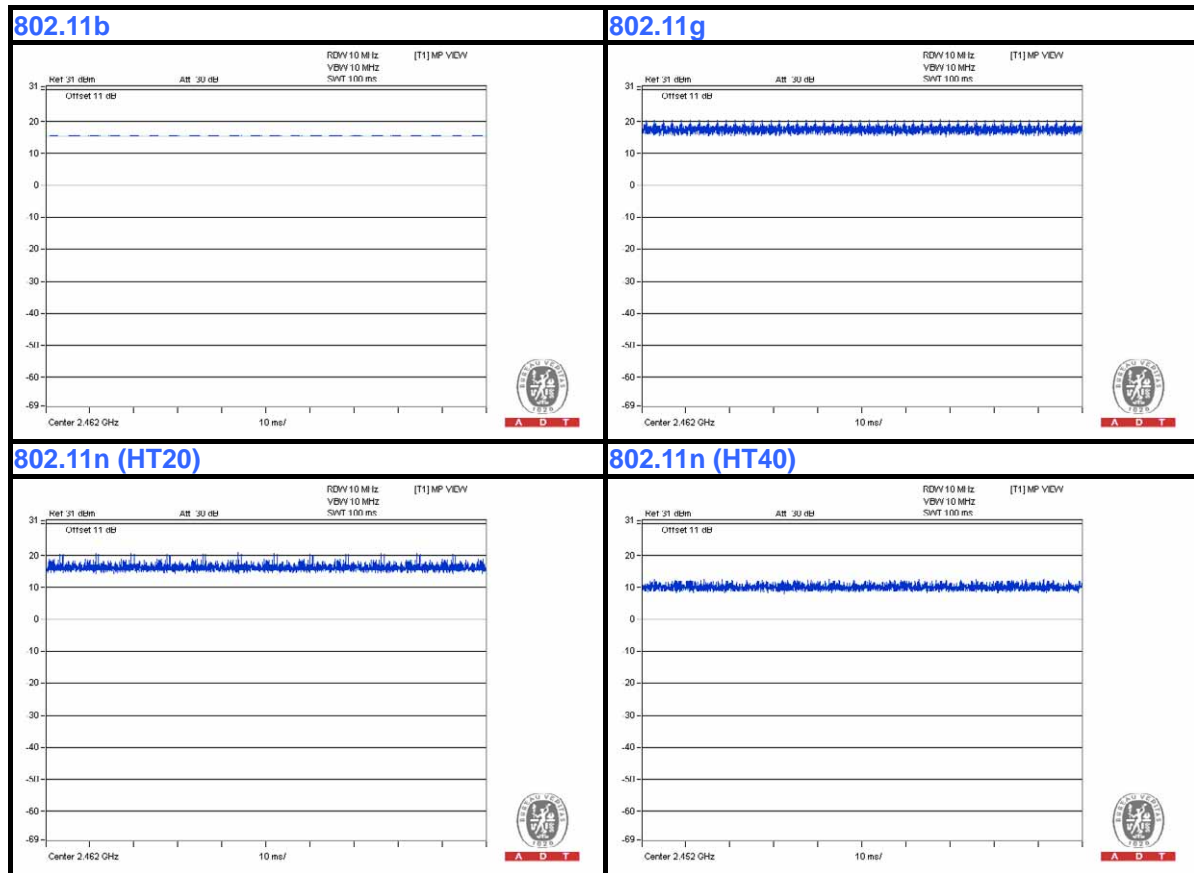


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### 3.4 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is 100 %, duty factor is not required.

For 2.4GHz





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Duty cycle of test signal is 100 %, duty factor is not required.

For 5GHz





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### 3.5 DESCRIPTION OF SUPPORT UNITS

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

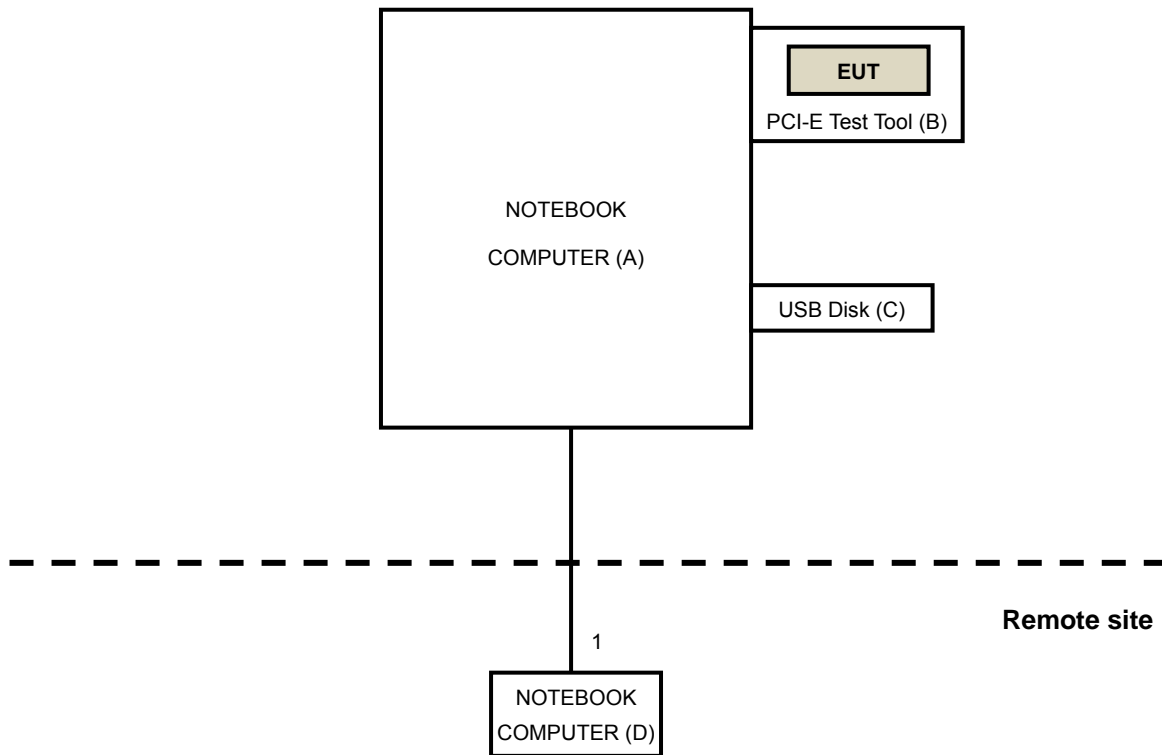
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	HP	EliteBook 8470p	AVB0000504	FCC DoC	Supplied by client
B	PCI-E Test Tool	AzureWave	NA	NA	NA	Supplied by client
C	USB Disk	Silicon Power	16G	NA	NA	Supplied by client
D	NOTEBOOK COMPUTER	DELL	PP32LA	DSL32S	FCC DoC	Provided by Lab

**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	UTP	1	10	No	0	Provided by Lab

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST





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## 4. TEST TYPES AND RESULTS (FOR 2.4GHz, 2.400 ~ 2.4835GHz Band)

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- NOTE:**
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 LIG NEX1	ER-265	L09068005	July 22, 2013	July 21, 2014
Pulse Limiter	VTSD 9561F	NA	NA	NA
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 05, 2013	Sep. 04, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 06, 2013	June 05, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-03	Sep. 24, 2013	Sep. 23, 2014
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Feb. 14, 2014



#### 4.1.3 TEST PROCEDURES

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

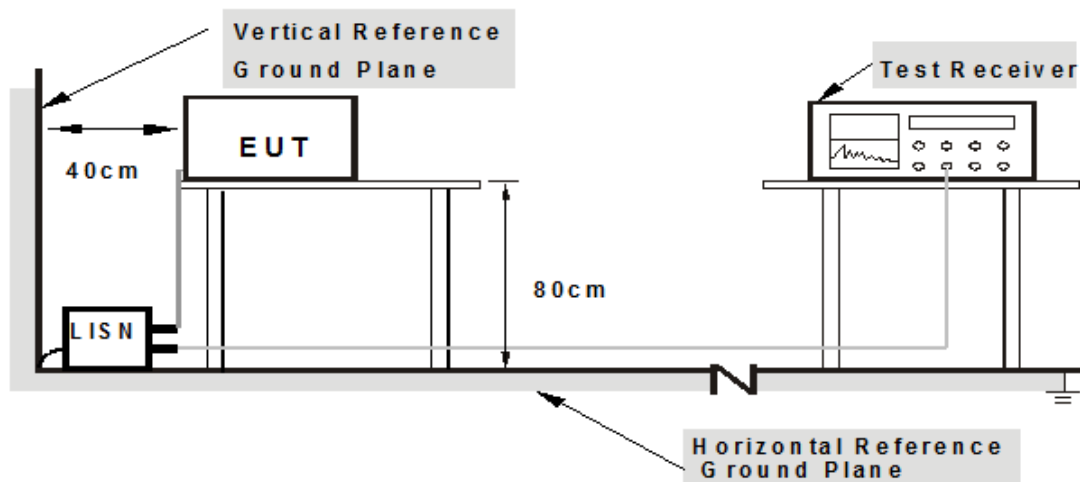
#### NOTE:

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

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



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

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

#### 4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Controlling software “DutApiMimoBtFmBrdigeEth.exe[ver.2.0.0.43]” has been activated to set the EUT under transmission/receiving condition continuously.

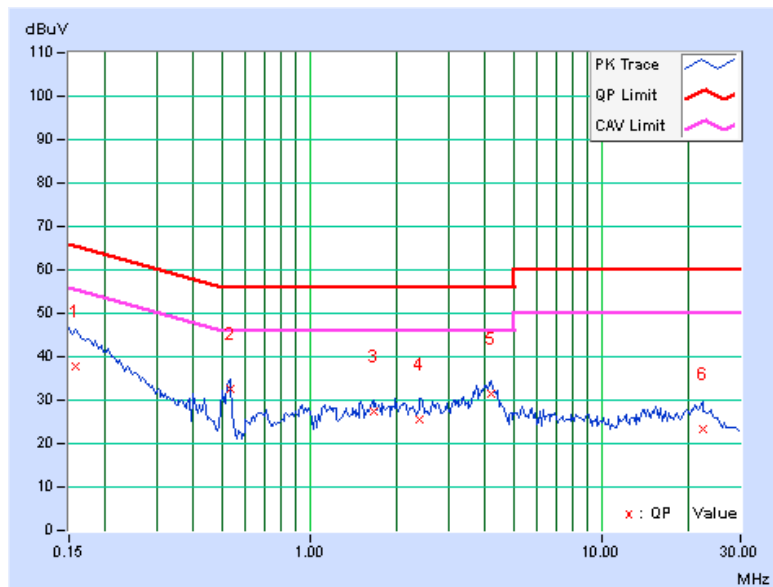
### 4.1.7 TEST RESULTS (MODE 1)

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

No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.15781	0.08	37.62	22.68	37.70	22.76	65.58
2	0.53281	0.15	32.37	31.59	32.52	31.74	56.00	46.00	-23.48	-14.26
3	1.67188	0.20	27.35	23.01	27.55	23.21	56.00	46.00	-28.45	-22.79
4	2.39063	0.22	25.29	21.16	25.51	21.38	56.00	46.00	-30.49	-24.62
5	4.19141	0.29	31.03	23.07	31.32	23.36	56.00	46.00	-24.68	-22.64
6	22.35938	0.78	22.48	18.16	23.26	18.94	60.00	50.00	-36.74	-31.06

**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

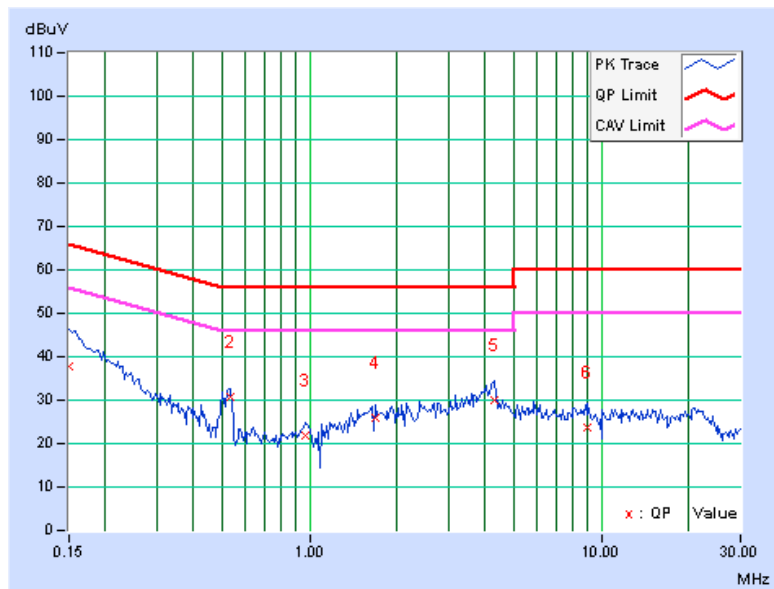


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.09	37.73	23.18	37.82	23.27	66.00	56.00	-28.18	-32.73
2	0.53281	0.15	30.57	29.54	30.72	29.69	56.00	46.00	-25.28	-16.31
3	0.97031	0.17	21.79	17.68	21.96	17.85	56.00	46.00	-34.04	-28.15
4	1.67578	0.20	25.82	21.87	26.02	22.07	56.00	46.00	-29.98	-23.93
5	4.30078	0.29	29.58	23.18	29.87	23.47	56.00	46.00	-26.13	-22.53
6	9.00000	0.44	23.37	17.46	23.81	17.90	60.00	50.00	-36.19	-32.10

**REMARKS:**

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



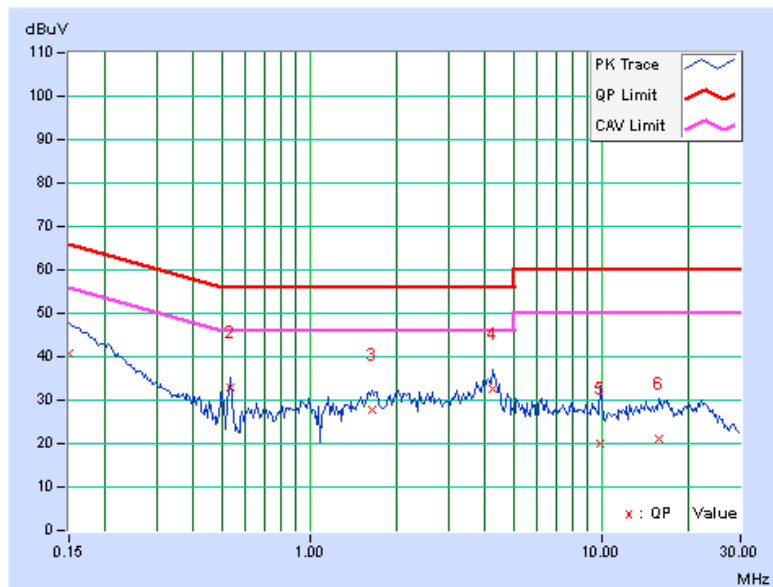
### 4.1.8 TEST RESULTS (MODE 2)

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

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.15000	0.08	40.64	23.36	40.72	23.44	66.00
2	0.53672	0.15	32.99	32.93	33.14	33.08	56.00	46.00	-22.86	-12.92
3	1.64453	0.20	27.64	22.78	27.84	22.98	56.00	46.00	-28.16	-23.02
4	4.23047	0.29	32.39	21.96	32.68	22.25	56.00	46.00	-23.32	-23.75
5	9.98438	0.47	19.62	14.78	20.09	15.25	60.00	50.00	-39.91	-34.75
6	15.77734	0.63	20.34	14.94	20.97	15.57	60.00	50.00	-39.03	-34.43

**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

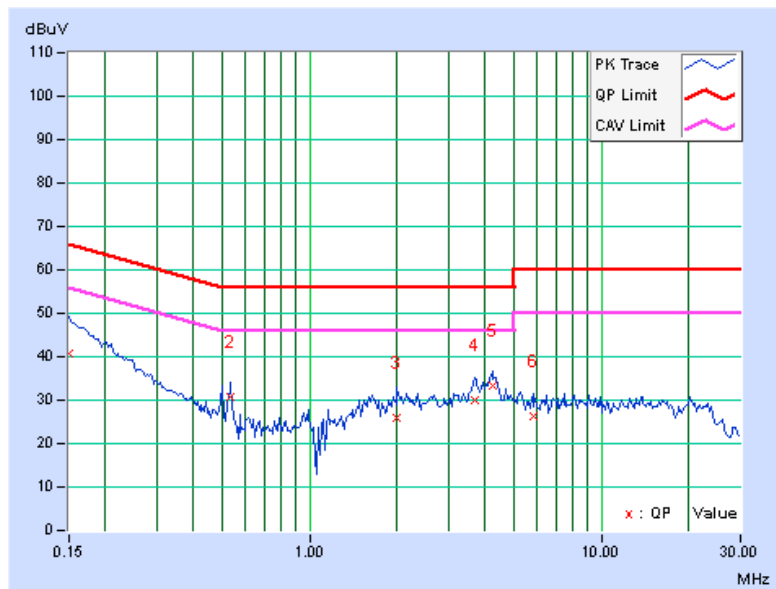


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	--------------------------------

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	0.15000	0.09	40.61	23.31	40.70	23.40	66.00	56.00	-25.30	-32.60
2	0.53672	0.15	30.71	30.41	30.86	30.56	56.00	46.00	-25.14	-15.44
3	2.00000	0.22	25.77	21.10	25.99	21.32	56.00	46.00	-30.01	-24.68
4	3.69922	0.27	29.66	22.05	29.93	22.32	56.00	46.00	-26.07	-23.68
5	4.22266	0.29	32.90	24.70	33.19	24.99	56.00	46.00	-22.81	-21.01
6	5.87500	0.34	26.14	19.83	26.48	20.17	60.00	50.00	-33.52	-29.83

**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 BANDEGE MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION AND BANDEGE MEASUREMENT

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

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

**NOTE:**

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



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## 4.2.2 TEST INSTRUMENTS

### For Below 1GHz: (Mode 1)

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 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: Feb. 20, 2014





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**For Below 1GHz: (Mode 2)**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21,2014	Jan. 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 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. 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: July 08, 2014

**A D T****For Above 1GHz:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 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: Aug. 11, 2014

### 4.2.3 TEST PROCEDURES

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

**Note:**

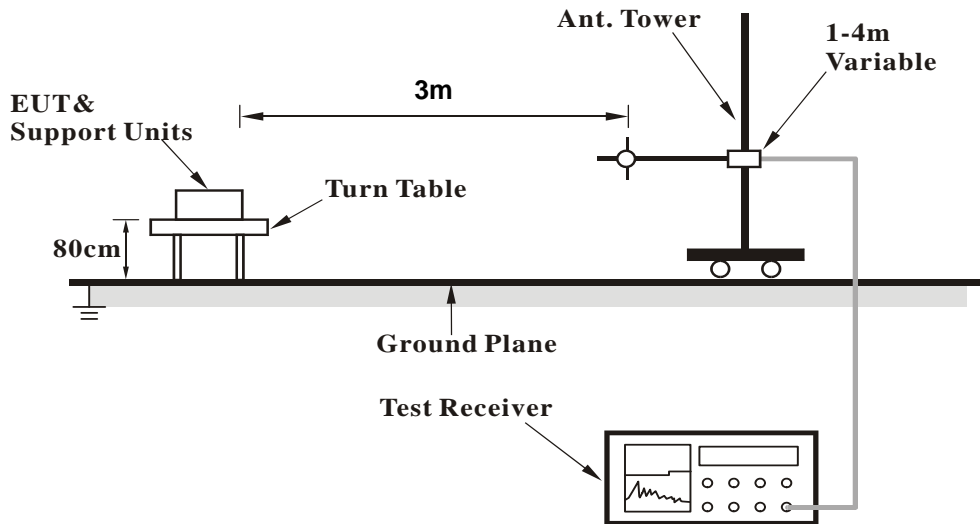
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

### 4.2.4 DEVIATION FROM TEST STANDARD

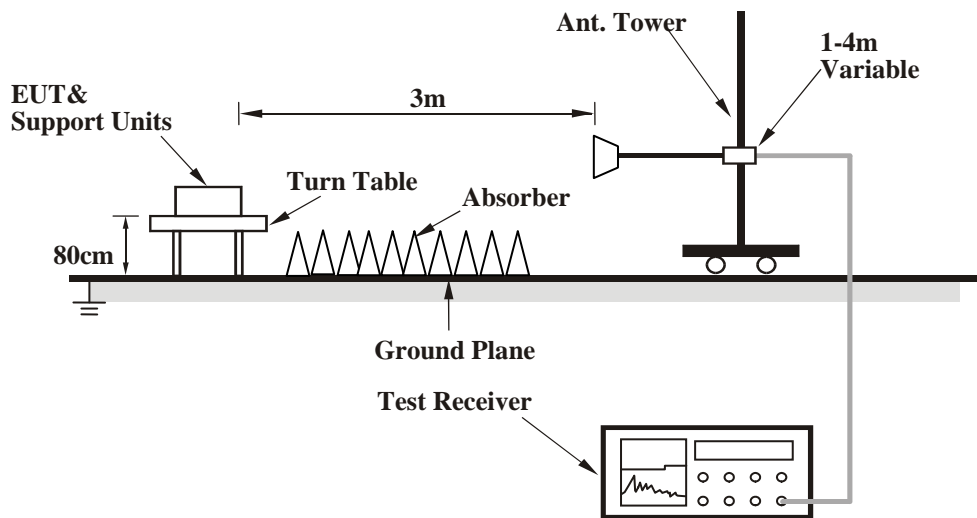
No deviation

### 4.2.5 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.

### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6



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### 4.2.7 TEST RESULTS (MODE 1)

#### BELOW 1GHz WORST-CASE DATA

##### 802.11g

<b>CHANNEL</b>	TX Channel 6	<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	216.05	36.1 QP	46.0	-9.9	1.00 H	360	51.55	-15.47
2	232.34	36.1 QP	46.0	-9.9	1.50 H	357	50.72	-14.61
3	548.56	37.4 QP	46.0	-8.6	1.50 H	113	43.51	-6.15
4	597.35	38.0 QP	46.0	-8.0	1.50 H	215	42.75	-4.71
5	699.35	35.3 QP	46.0	-10.8	1.00 H	255	38.40	-3.15
6	895.97	38.1 QP	46.0	-7.9	1.50 H	311	37.73	0.34

#### 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	190.68	35.2 QP	43.5	-8.4	2.00 V	303	50.59	-15.44
2	299.81	34.2 QP	46.0	-11.8	1.00 V	280	45.89	-11.68
3	548.56	32.2 QP	46.0	-13.8	1.00 V	324	38.31	-6.15
4	599.63	36.6 QP	46.0	-9.4	1.00 V	235	41.20	-4.63
5	930.55	31.5 QP	46.0	-14.5	1.00 V	285	30.05	1.43
6	959.99	38.1 QP	46.0	-7.9	1.00 V	348	36.37	1.74

#### REMARKS:

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



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**ABOVE 1GHz DATA**

**802.11b**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2386.20	73.8 PK	74.0	-0.2	1.11 H	140	79.42	-5.62
2	2386.20	44.8 AV	54.0	-9.2	1.11 H	140	50.42	-5.62
3	*2412.00	109.2 PK			1.11 H	140	114.73	-5.53
4	*2412.00	105.2 AV			1.11 H	140	110.73	-5.53
5	4824.00	55.0 PK	74.0	-19.0	1.92 H	265	51.14	3.86
6	4824.00	52.3 AV	54.0	-1.7	1.92 H	265	48.44	3.86

**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	2386.20	63.5 PK	74.0	-10.5	1.41 V	299	69.12	-5.62
2	2386.20	36.6 AV	54.0	-17.4	1.41 V	299	42.22	-5.62
3	*2412.00	99.7 PK			1.41 V	299	105.23	-5.53
4	*2412.00	97.0 AV			1.41 V	299	102.53	-5.53
5	4824.00	52.2 PK	74.0	-21.8	1.41 V	261	48.34	3.86
6	4824.00	48.3 AV	54.0	-5.7	1.41 V	261	44.44	3.86

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	62.5 PK	74.0	-11.5	1.10 H	146	68.10	-5.60
2	2390.00	35.1 AV	54.0	-18.9	1.10 H	146	40.70	-5.60
3	*2437.00	109.1 PK			1.10 H	146	114.52	-5.42
4	*2437.00	106.6 AV			1.10 H	146	112.02	-5.42
5	2483.50	63.1 PK	74.0	-10.9	1.10 H	146	68.30	-5.20
6	2483.50	36.1 AV	54.0	-17.9	1.10 H	146	41.30	-5.20
7	4874.00	54.9 PK	74.0	-19.1	1.96 H	280	51.09	3.81
8	4874.00	52.2 AV	54.0	-1.8	1.96 H	280	48.39	3.81
9	7311.00	52.6 PK	74.0	-21.4	1.12 H	298	44.37	8.23
10	7311.00	40.5 AV	54.0	-13.5	1.12 H	298	32.27	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.2 PK	74.0	-11.8	1.43 V	295	67.80	-5.60
2	2390.00	34.8 AV	54.0	-19.2	1.43 V	295	40.40	-5.60
3	*2437.00	99.6 PK			1.43 V	295	105.02	-5.42
4	*2437.00	97.3 AV			1.43 V	295	102.72	-5.42
5	2483.50	63.0 PK	74.0	-11.0	1.43 V	295	68.20	-5.20
6	2483.50	36.2 AV	54.0	-17.8	1.43 V	295	41.40	-5.20
7	4874.00	51.7 PK	74.0	-22.3	1.45 V	276	47.89	3.81
8	4874.00	47.9 AV	54.0	-6.1	1.45 V	276	44.09	3.81
9	7311.00	52.2 PK	74.0	-21.8	1.10 V	297	43.97	8.23
10	7311.00	40.3 AV	54.0	-13.7	1.10 V	297	32.07	8.23

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	108.5 PK			1.10 H	145	113.81	-5.31
2	*2462.00	106.0 AV			1.10 H	145	111.31	-5.31
3	2487.90	73.2 PK	74.0	-0.8	1.10 H	145	78.40	-5.20
4	2487.90	41.7 AV	54.0	-12.3	1.10 H	145	46.90	-5.20
5	4924.00	55.0 PK	74.0	-19.0	1.93 H	273	51.20	3.80
6	4924.00	52.5 AV	54.0	-1.5	1.93 H	273	48.70	3.80
7	7386.00	53.1 PK	74.0	-20.9	1.08 H	283	44.55	8.55
8	7386.00	40.8 AV	54.0	-13.2	1.08 H	283	32.25	8.55

**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	*2462.00	100.1 PK			1.45 V	283	105.41	-5.31
2	*2462.00	97.5 AV			1.45 V	283	102.81	-5.31
3	2487.90	62.3 PK	74.0	-11.7	1.45 V	283	67.50	-5.20
4	2487.90	34.8 AV	54.0	-19.2	1.45 V	283	40.00	-5.20
5	4924.00	51.4 PK	74.0	-22.6	1.42 V	269	47.60	3.80
6	4924.00	47.5 AV	54.0	-6.5	1.42 V	269	43.70	3.80
7	7386.00	52.0 PK	74.0	-22.0	1.13 V	305	43.45	8.55
8	7386.00	40.0 AV	54.0	-14.0	1.13 V	305	31.45	8.55

**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.





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802.11g

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	70.3 PK	74.0	-3.7	1.14 H	159	75.90	-5.60
2	2390.00	53.4 AV	54.0	-0.6	1.14 H	159	59.00	-5.60
3	*2412.00	110.1 PK			1.14 H	159	115.63	-5.53
4	*2412.00	100.6 AV			1.14 H	159	106.13	-5.53
5	4824.00	52.5 PK	74.0	-21.5	1.89 H	273	48.64	3.86
6	4824.00	48.7 AV	54.0	-5.3	1.89 H	273	44.84	3.86

**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	2390.00	59.0 PK	74.0	-15.0	1.09 V	240	64.60	-5.60
2	2390.00	49.1 AV	54.0	-4.9	1.09 V	240	54.70	-5.60
3	*2412.00	102.9 PK			1.09 V	240	108.43	-5.53
4	*2412.00	93.7 AV			1.09 V	240	99.23	-5.53
5	4824.00	52.0 PK	74.0	-22.0	1.43 V	289	48.14	3.86
6	4824.00	48.2 AV	54.0	-5.8	1.43 V	289	44.34	3.86

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	64.8 PK	74.0	-9.2	1.13 H	155	70.40	-5.60
2	2390.00	40.5 AV	54.0	-13.5	1.13 H	155	46.10	-5.60
3	*2437.00	113.4 PK			1.13 H	155	118.82	-5.42
4	*2437.00	103.9 AV			1.13 H	155	109.32	-5.42
5	2483.50	65.4 PK	74.0	-8.6	1.13 H	155	70.60	-5.20
6	2483.50	40.1 AV	54.0	-13.9	1.13 H	155	45.30	-5.20
7	4874.00	52.7 PK	74.0	-21.3	1.86 H	263	48.89	3.81
8	4874.00	48.9 AV	54.0	-5.1	1.86 H	263	45.09	3.81
9	7311.00	52.7 PK	74.0	-21.3	1.10 H	314	44.47	8.23
10	7311.00	40.7 AV	54.0	-13.3	1.10 H	314	32.47	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.9 PK	74.0	-11.1	1.39 V	312	68.50	-5.60
2	2390.00	35.9 AV	54.0	-18.1	1.39 V	312	41.50	-5.60
3	*2437.00	104.3 PK			1.39 V	312	109.72	-5.42
4	*2437.00	94.6 AV			1.39 V	312	100.02	-5.42
5	2483.50	61.9 PK	74.0	-12.1	1.39 V	312	67.10	-5.20
6	2483.50	34.4 AV	54.0	-19.6	1.39 V	312	39.60	-5.20
7	4874.00	51.6 PK	74.0	-22.4	1.47 V	261	47.79	3.81
8	4874.00	47.6 AV	54.0	-6.4	1.47 V	261	43.79	3.81
9	7311.00	51.7 PK	74.0	-22.3	1.06 V	307	43.47	8.23
10	7311.00	40.0 AV	54.0	-14.0	1.06 V	307	31.77	8.23

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	110.9 PK			1.12 H	201	116.21	-5.31
2	*2462.00	100.4 AV			1.12 H	201	105.71	-5.31
3	2483.50	71.2 PK	74.0	-2.8	1.12 H	201	76.40	-5.20
4	2483.50	53.2 AV	54.0	-0.8	1.12 H	201	58.40	-5.20
5	4924.00	53.1 PK	74.0	-20.9	1.88 H	248	49.30	3.80
6	4924.00	49.3 AV	54.0	-4.7	1.88 H	248	45.50	3.80
7	7386.00	52.8 PK	74.0	-21.2	1.07 H	318	44.25	8.55
8	7386.00	41.1 AV	54.0	-12.9	1.07 H	318	32.55	8.55

**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	*2462.00	101.9 PK			1.39 V	314	107.21	-5.31
2	*2462.00	91.4 AV			1.39 V	314	96.71	-5.31
3	2483.50	68.0 PK	74.0	-6.0	1.39 V	314	73.20	-5.20
4	2483.50	41.5 AV	54.0	-12.5	1.39 V	314	46.70	-5.20
5	4924.00	51.7 PK	74.0	-22.3	1.45 V	283	47.90	3.80
6	4924.00	47.7 AV	54.0	-6.3	1.45 V	283	43.90	3.80
7	7386.00	52.0 PK	74.0	-22.0	1.04 V	281	43.45	8.55
8	7386.00	40.1 AV	54.0	-13.9	1.04 V	281	31.55	8.55

**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.



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802.11n (HT20)

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	73.0 PK	74.0	-1.0	1.14 H	360	78.60	-5.60
2	2390.00	50.2 AV	54.0	-3.8	1.14 H	360	55.80	-5.60
3	*2412.00	110.2 PK			1.14 H	360	115.73	-5.53
4	*2412.00	99.5 AV			1.14 H	360	105.03	-5.53
5	4824.00	52.8 PK	74.0	-21.2	1.88 H	274	48.94	3.86
6	4824.00	48.8 AV	54.0	-5.2	1.88 H	274	44.94	3.86

**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	2390.00	68.1 PK	74.0	-5.9	1.46 V	298	73.70	-5.60
2	2390.00	41.3 AV	54.0	-12.7	1.46 V	298	46.90	-5.60
3	*2412.00	101.6 PK			1.46 V	298	107.13	-5.53
4	*2412.00	90.8 AV			1.46 V	298	96.33	-5.53
5	4824.00	51.9 PK	74.0	-22.1	1.49 V	264	48.04	3.86
6	4824.00	48.1 AV	54.0	-5.9	1.49 V	264	44.24	3.86

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	62.3 PK	74.0	-11.7	1.11 H	353	67.90	-5.60
2	2390.00	40.9 AV	54.0	-13.1	1.11 H	353	46.50	-5.60
3	*2437.00	113.2 PK			1.11 H	353	118.62	-5.42
4	*2437.00	103.1 AV			1.11 H	353	108.52	-5.42
5	2483.50	67.7 PK	74.0	-6.3	1.11 H	353	72.90	-5.20
6	2483.50	40.1 AV	54.0	-13.9	1.11 H	353	45.30	-5.20
7	4874.00	52.6 PK	74.0	-21.4	1.92 H	273	48.79	3.81
8	4874.00	48.6 AV	54.0	-5.4	1.92 H	273	44.79	3.81
9	7311.00	52.6 PK	74.0	-21.4	1.15 H	312	44.37	8.23
10	7311.00	40.5 AV	54.0	-13.5	1.15 H	312	32.27	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.3 PK	74.0	-10.7	1.46 V	299	68.90	-5.60
2	2390.00	36.3 AV	54.0	-17.7	1.46 V	299	41.90	-5.60
3	*2437.00	104.4 PK			1.46 V	299	109.82	-5.42
4	*2437.00	94.2 AV			1.46 V	299	99.62	-5.42
5	2483.50	62.2 PK	74.0	-11.8	1.46 V	299	67.40	-5.20
6	2483.50	35.0 AV	54.0	-19.0	1.46 V	299	40.20	-5.20
7	4874.00	51.9 PK	74.0	-22.1	1.47 V	273	48.09	3.81
8	4874.00	47.9 AV	54.0	-6.1	1.47 V	273	44.09	3.81
9	7311.00	52.7 PK	74.0	-21.3	1.13 V	294	44.47	8.23
10	7311.00	40.7 AV	54.0	-13.3	1.13 V	294	32.47	8.23

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	111.4 PK			1.11 H	358	116.71	-5.31
2	*2462.00	101.1 AV			1.11 H	358	106.41	-5.31
3	2483.50	73.3 PK	74.0	-0.7	1.11 H	358	78.50	-5.20
4	2483.50	50.5 AV	54.0	-3.5	1.11 H	358	55.70	-5.20
5	4924.00	53.0 PK	74.0	-21.0	1.83 H	254	49.20	3.80
6	4924.00	49.0 AV	54.0	-5.0	1.83 H	254	45.20	3.80
7	7386.00	52.3 PK	74.0	-21.7	1.06 H	322	43.75	8.55
8	7386.00	40.5 AV	54.0	-13.5	1.06 H	322	31.95	8.55

**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	*2462.00	102.8 PK			1.40 V	314	108.11	-5.31
2	*2462.00	92.5 AV			1.40 V	314	97.81	-5.31
3	2483.50	68.2 PK	74.0	-5.8	1.40 V	314	73.40	-5.20
4	2483.50	41.7 AV	54.0	-12.3	1.40 V	314	46.90	-5.20
5	4924.00	51.0 PK	74.0	-23.0	1.49 V	262	47.20	3.80
6	4924.00	47.4 AV	54.0	-6.6	1.49 V	262	43.60	3.80
7	7386.00	52.2 PK	74.0	-21.8	1.05 V	307	43.65	8.55
8	7386.00	40.0 AV	54.0	-14.0	1.05 V	307	31.45	8.55

**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.



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802.11n (HT40)

<b>CHANNEL</b>	TX Channel 3	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	70.6 PK	74.0	-3.4	1.13 H	360	76.20	-5.60
2	2390.00	53.5 AV	54.0	-0.5	1.13 H	360	59.10	-5.60
3	*2422.00	105.5 PK			1.13 H	360	110.99	-5.49
4	*2422.00	95.6 AV			1.13 H	360	101.09	-5.49
5	4844.00	52.6 PK	74.0	-21.4	1.92 H	266	48.76	3.84
6	4844.00	48.7 AV	54.0	-5.3	1.92 H	266	44.86	3.84
7	7266.00	53.2 PK	74.0	-20.8	1.16 H	299	45.14	8.06
8	7266.00	41.0 AV	54.0	-13.0	1.16 H	299	32.94	8.06

**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	2390.00	67.9 PK	74.0	-6.1	1.46 V	290	73.50	-5.60
2	2390.00	41.1 AV	54.0	-12.9	1.46 V	290	46.70	-5.60
3	*2422.00	95.9 PK			1.46 V	290	101.39	-5.49
4	*2422.00	86.3 AV			1.46 V	290	91.79	-5.49
5	4844.00	51.5 PK	74.0	-22.5	1.41 V	282	47.66	3.84
6	4844.00	47.5 AV	54.0	-6.5	1.41 V	282	43.66	3.84
7	7266.00	51.7 PK	74.0	-22.3	1.06 V	303	43.64	8.06
8	7266.00	39.9 AV	54.0	-14.1	1.06 V	303	31.84	8.06

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	69.6 PK	74.0	-4.4	1.11 H	359	75.20	-5.60
2	2390.00	53.0 AV	54.0	-1.0	1.11 H	359	58.60	-5.60
3	*2437.00	107.6 PK			1.11 H	359	113.02	-5.42
4	*2437.00	96.8 AV			1.11 H	359	102.22	-5.42
5	2483.50	71.1 PK	74.0	-2.9	1.11 H	359	76.30	-5.20
6	2483.50	50.2 AV	54.0	-3.8	1.11 H	359	55.40	-5.20
7	4874.00	52.9 PK	74.0	-21.1	1.82 H	261	49.09	3.81
8	4874.00	48.9 AV	54.0	-5.1	1.82 H	261	45.09	3.81
9	7311.00	53.0 PK	74.0	-21.0	1.08 H	321	44.77	8.23
10	7311.00	40.9 AV	54.0	-13.1	1.08 H	321	32.67	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.9 PK	74.0	-11.1	1.40 V	313	68.50	-5.60
2	2390.00	35.9 AV	54.0	-18.1	1.40 V	313	41.50	-5.60
3	*2437.00	98.5 PK			1.40 V	313	103.92	-5.42
4	*2437.00	87.4 AV			1.40 V	313	92.82	-5.42
5	2483.50	62.7 PK	74.0	-11.3	1.40 V	313	67.90	-5.20
6	2483.50	35.1 AV	54.0	-18.9	1.40 V	313	40.30	-5.20
7	4874.00	51.6 PK	74.0	-22.4	1.42 V	290	47.79	3.81
8	4874.00	47.8 AV	54.0	-6.2	1.42 V	290	43.99	3.81
9	7311.00	51.5 PK	74.0	-22.5	1.08 V	285	43.27	8.23
10	7311.00	39.8 AV	54.0	-14.2	1.08 V	285	31.57	8.23

**REMARKS:**

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





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<b>CHANNEL</b>	TX Channel 9	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2452.00	105.5 PK			1.10 H	360	110.86	-5.36
2	*2452.00	95.3 AV			1.10 H	360	100.66	-5.36
3	2483.50	68.1 PK	74.0	-5.9	1.10 H	360	73.30	-5.20
4	2483.50	53.3 AV	54.0	-0.7	1.10 H	360	58.50	-5.20
5	4904.00	52.5 PK	74.0	-21.5	1.82 H	265	48.71	3.79
6	4904.00	48.6 AV	54.0	-5.4	1.82 H	265	44.81	3.79
7	7356.00	53.1 PK	74.0	-20.9	1.07 H	308	44.67	8.43
8	7356.00	40.9 AV	54.0	-13.1	1.07 H	308	32.47	8.43

**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	*2452.00	96.5 PK			1.40 V	300	101.86	-5.36
2	*2452.00	86.1 AV			1.40 V	300	91.46	-5.36
3	2483.50	67.5 PK	74.0	-6.5	1.40 V	300	72.70	-5.20
4	2483.50	41.1 AV	54.0	-12.9	1.40 V	300	46.30	-5.20
5	4904.00	52.0 PK	74.0	-22.0	1.50 V	260	48.21	3.79
6	4904.00	48.0 AV	54.0	-6.0	1.50 V	260	44.21	3.79
7	7356.00	52.2 PK	74.0	-21.8	1.09 V	300	43.77	8.43
8	7356.00	40.1 AV	54.0	-13.9	1.09 V	300	31.67	8.43

**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.



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## 4.2.8 TEST RESULTS (MODE 2)

### BELOW 1GHz WORST-CASE DATA

#### 802.11g

<b>CHANNEL</b>	TX Channel 6	<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	165.99	33.7 QP	43.5	-9.8	2.00 H	360	47.18	-13.49
2	199.22	33.8 QP	43.5	-9.7	1.00 H	360	50.06	-16.30
3	232.39	38.3 QP	46.0	-7.7	1.00 H	5	53.89	-15.57
4	497.93	33.9 QP	46.0	-12.1	2.00 H	155	41.23	-7.35
5	796.59	34.8 QP	46.0	-11.2	2.00 H	360	36.20	-1.40
6	899.75	38.6 QP	46.0	-7.4	1.00 H	309	38.52	0.06

#### 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	34.22	31.4 QP	40.0	-8.6	1.00 V	214	45.71	-14.28
2	90.00	37.8 QP	43.5	-5.7	1.00 V	306	56.93	-19.13
3	165.99	32.9 QP	43.5	-10.6	2.00 V	305	46.40	-13.49
4	697.51	39.0 QP	46.0	-7.0	1.00 V	63	42.59	-3.57
5	754.06	36.3 QP	46.0	-9.7	1.00 V	110	38.14	-1.87
6	874.19	34.9 QP	46.0	-11.1	1.00 V	146	35.34	-0.47

#### 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

## 802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2385.90	63.1 PK	74.0	-10.9	1.02 H	76	68.72	-5.62
2	2385.90	40.5 AV	54.0	-13.5	1.02 H	76	46.12	-5.62
3	*2412.00	103.7 PK			1.79 H	67	109.23	-5.53
4	*2412.00	100.9 AV			1.79 H	67	106.43	-5.53
5	4824.00	51.4 PK	74.0	-22.6	1.77 H	280	47.54	3.86
6	4824.00	46.2 AV	54.0	-7.8	1.77 H	280	42.34	3.86
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	2385.90	73.4 PK	74.0	-0.6	1.45 V	183	79.02	-5.62
2	2385.90	45.1 AV	54.0	-8.9	1.45 V	183	50.72	-5.62
3	*2412.00	108.1 PK			1.45 V	183	113.63	-5.53
4	*2412.00	105.7 AV			1.45 V	183	111.23	-5.53
5	4824.00	51.1 PK	74.0	-22.9	1.77 V	359	47.24	3.86
6	4824.00	47.2 AV	54.0	-6.8	1.77 V	359	43.34	3.86

## 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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	105.5 PK			1.80 H	80	110.92	-5.42
2	*2437.00	103.2 AV			1.80 H	80	108.62	-5.42
3	4874.00	52.4 PK	74.0	-21.6	1.72 H	281	48.59	3.81
4	4874.00	47.8 AV	54.0	-6.2	1.72 H	281	43.99	3.81
5	7311.00	54.2 PK	74.0	-19.8	1.82 H	112	45.97	8.23
6	7311.00	38.5 AV	54.0	-15.5	1.82 H	112	30.27	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.8 PK			1.51 V	185	115.22	-5.42
2	*2437.00	107.3 AV			1.51 V	185	112.72	-5.42
3	4874.00	53.1 PK	74.0	-20.9	1.74 V	360	49.29	3.81
4	4874.00	49.9 AV	54.0	-4.1	1.74 V	360	46.09	3.81
5	7311.00	53.0 PK	74.0	-21.0	1.85 V	88	44.77	8.23
6	7311.00	42.6 AV	54.0	-11.4	1.85 V	88	34.37	8.23

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	105.5 PK			1.79 H	82	110.81	-5.31
2	*2462.00	103.1 AV			1.79 H	82	108.41	-5.31
3	2487.60	69.5 PK	74.0	-4.5	1.79 H	82	74.70	-5.20
4	2487.60	39.8 AV	54.0	-14.2	1.79 H	82	45.00	-5.20
5	4924.00	53.2 PK	74.0	-20.8	1.75 H	274	49.40	3.80
6	4924.00	48.3 AV	54.0	-5.7	1.75 H	274	44.50	3.80
7	7386.00	53.8 PK	74.0	-20.2	1.87 H	107	45.25	8.55
8	7386.00	38.2 AV	54.0	-15.8	1.87 H	107	29.65	8.55

**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	*2462.00	109.7 PK			1.41 V	230	115.01	-5.31
2	*2462.00	107.4 AV			1.41 V	230	112.71	-5.31
3	2487.60	73.5 PK	74.0	-0.5	1.41 V	230	78.70	-5.20
4	2487.60	44.0 AV	54.0	-10.0	1.41 V	230	49.20	-5.20
5	4924.00	52.9 PK	74.0	-21.1	1.69 V	360	49.10	3.80
6	4924.00	49.7 AV	54.0	-4.3	1.69 V	360	45.90	3.80
7	7386.00	52.9 PK	74.0	-21.1	1.84 V	101	44.35	8.55
8	7386.00	42.6 AV	54.0	-11.4	1.84 V	101	34.05	8.55

**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.



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802.11g

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	69.1 PK	74.0	-4.9	1.78 H	84	74.70	-5.60
2	2390.00	47.4 AV	54.0	-6.6	1.78 H	84	53.00	-5.60
3	*2412.00	110.5 PK			1.78 H	84	116.03	-5.53
4	*2412.00	99.8 AV			1.78 H	84	105.33	-5.53
5	4824.00	52.2 PK	74.0	-21.8	1.75 H	285	48.34	3.86
6	4824.00	47.4 AV	54.0	-6.6	1.75 H	285	43.54	3.86

**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	2390.00	73.0 PK	74.0	-1.0	1.00 V	278	78.60	-5.60
2	2390.00	51.5 AV	54.0	-2.5	1.00 V	278	57.10	-5.60
3	*2412.00	114.5 PK			1.00 V	278	120.03	-5.53
4	*2412.00	103.9 AV			1.00 V	278	109.43	-5.53
5	4824.00	53.4 PK	74.0	-20.6	1.70 V	355	49.54	3.86
6	4824.00	49.9 AV	54.0	-4.1	1.70 V	355	46.04	3.86

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	55.5 PK	74.0	-18.5	1.79 H	92	61.10	-5.60
2	2390.00	39.9 AV	54.0	-14.1	1.79 H	92	45.50	-5.60
3	*2437.00	111.4 PK			1.79 H	92	116.82	-5.42
4	*2437.00	101.1 AV			1.79 H	92	106.52	-5.42
5	2483.50	58.4 PK	74.0	-15.6	1.79 H	92	63.60	-5.20
6	2483.50	34.7 AV	54.0	-19.3	1.79 H	92	39.90	-5.20
7	4874.00	52.4 PK	74.0	-21.6	1.73 H	294	48.59	3.81
8	4874.00	48.0 AV	54.0	-6.0	1.73 H	294	44.19	3.81
9	7311.00	53.9 PK	74.0	-20.1	1.77 H	97	45.67	8.23
10	7311.00	38.0 AV	54.0	-16.0	1.77 H	97	29.77	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.5 PK	74.0	-14.5	1.00 V	277	65.10	-5.60
2	2390.00	44.1 AV	54.0	-9.9	1.00 V	277	49.70	-5.60
3	*2437.00	115.5 PK			1.00 V	277	120.92	-5.42
4	*2437.00	105.4 AV			1.00 V	277	110.82	-5.42
5	2483.50	62.4 PK	74.0	-11.6	1.00 V	277	67.60	-5.20
6	2483.50	38.4 AV	54.0	-15.6	1.00 V	277	43.60	-5.20
7	4874.00	52.9 PK	74.0	-21.1	1.72 V	360	49.09	3.81
8	4874.00	49.7 AV	54.0	-4.3	1.72 V	360	45.89	3.81
9	7311.00	53.6 PK	74.0	-20.4	1.80 V	104	45.37	8.23
10	7311.00	43.0 AV	54.0	-11.0	1.80 V	104	34.77	8.23

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	107.6 PK			1.76 H	90	112.91	-5.31
2	*2462.00	97.6 AV			1.76 H	90	102.91	-5.31
3	2483.50	69.6 PK	74.0	-4.4	1.76 H	90	74.80	-5.20
4	2483.50	44.8 AV	54.0	-9.2	1.76 H	90	50.00	-5.20
5	4924.00	52.6 PK	74.0	-21.4	1.75 H	293	48.80	3.80
6	4924.00	48.1 AV	54.0	-5.9	1.75 H	293	44.30	3.80
7	7386.00	54.6 PK	74.0	-19.4	1.83 H	115	46.05	8.55
8	7386.00	38.8 AV	54.0	-15.2	1.83 H	115	30.25	8.55

**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	*2462.00	111.4 PK			1.00 V	267	116.71	-5.31
2	*2462.00	101.6 AV			1.00 V	267	106.91	-5.31
3	2483.50	73.3 PK	74.0	-0.7	1.00 V	267	78.50	-5.20
4	2483.50	48.6 AV	54.0	-5.4	1.00 V	267	53.80	-5.20
5	4924.00	52.7 PK	74.0	-21.3	1.78 V	360	48.90	3.80
6	4924.00	49.6 AV	54.0	-4.4	1.78 V	360	45.80	3.80
7	7386.00	52.5 PK	74.0	-21.5	1.88 V	81	43.95	8.55
8	7386.00	42.1 AV	54.0	-11.9	1.88 V	81	33.55	8.55

**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.





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802.11n (HT20)

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	68.2 PK	74.0	-5.8	1.84 H	69	73.80	-5.60
2	2390.00	48.9 AV	54.0	-5.1	1.84 H	69	54.50	-5.60
3	*2412.00	107.7 PK			1.84 H	69	113.23	-5.53
4	*2412.00	97.8 AV			1.84 H	69	103.33	-5.53
5	4824.00	52.4 PK	74.0	-21.6	1.74 H	297	48.54	3.86
6	4824.00	47.7 AV	54.0	-6.3	1.74 H	297	43.84	3.86

**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	2390.00	72.5 PK	74.0	-1.5	1.00 V	262	78.10	-5.60
2	2390.00	53.0 AV	54.0	-1.0	1.00 V	262	58.60	-5.60
3	*2412.00	112.2 PK			1.00 V	262	117.73	-5.53
4	*2412.00	102.1 AV			1.00 V	262	107.63	-5.53
5	4824.00	53.8 PK	74.0	-20.2	1.71 V	359	49.94	3.86
6	4824.00	50.3 AV	54.0	-3.7	1.71 V	359	46.44	3.86

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	59.4 PK	74.0	-14.6	1.80 H	81	65.00	-5.60
2	2390.00	38.8 AV	54.0	-15.2	1.80 H	81	44.40	-5.60
3	*2437.00	110.2 PK			1.80 H	81	115.62	-5.42
4	*2437.00	100.3 AV			1.80 H	81	105.72	-5.42
5	2483.50	62.6 PK	74.0	-11.4	1.80 H	81	67.80	-5.20
6	2483.50	34.0 AV	54.0	-20.0	1.80 H	81	39.20	-5.20
7	4874.00	52.6 PK	74.0	-21.4	1.72 H	266	48.79	3.81
8	4874.00	47.9 AV	54.0	-6.1	1.72 H	266	44.09	3.81
9	7311.00	54.3 PK	74.0	-19.7	1.79 H	110	46.07	8.23
10	7311.00	38.3 AV	54.0	-15.7	1.79 H	110	30.07	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.5 PK	74.0	-10.5	1.00 V	278	69.10	-5.60
2	2390.00	43.2 AV	54.0	-10.8	1.00 V	278	48.80	-5.60
3	*2437.00	114.7 PK			1.00 V	278	120.12	-5.42
4	*2437.00	104.6 AV			1.00 V	278	110.02	-5.42
5	2483.50	67.0 PK	74.0	-7.0	1.00 V	278	72.20	-5.20
6	2483.50	38.3 AV	54.0	-15.7	1.00 V	278	43.50	-5.20
7	4874.00	53.2 PK	74.0	-20.8	1.70 V	360	49.39	3.81
8	4874.00	50.1 AV	54.0	-3.9	1.70 V	360	46.29	3.81
9	7311.00	53.3 PK	74.0	-20.7	1.83 V	95	45.07	8.23
10	7311.00	43.1 AV	54.0	-10.9	1.83 V	95	34.87	8.23

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	106.9 PK			1.80 H	73	112.21	-5.31
2	*2462.00	96.5 AV			1.80 H	73	101.81	-5.31
3	2483.50	69.0 PK	74.0	-5.0	1.80 H	73	74.20	-5.20
4	2483.50	44.2 AV	54.0	-9.8	1.80 H	73	49.40	-5.20
5	4924.00	52.8 PK	74.0	-21.2	1.66 H	281	49.00	3.80
6	4924.00	48.1 AV	54.0	-5.9	1.66 H	281	44.30	3.80
7	7386.00	53.5 PK	74.0	-20.5	1.81 H	99	44.95	8.55
8	7386.00	38.1 AV	54.0	-15.9	1.81 H	99	29.55	8.55

**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	*2462.00	110.6 PK			1.00 V	254	115.91	-5.31
2	*2462.00	100.4 AV			1.00 V	254	105.71	-5.31
3	2483.50	73.0 PK	74.0	-1.0	1.00 V	254	78.20	-5.20
4	2483.50	48.2 AV	54.0	-5.8	1.00 V	254	53.40	-5.20
5	4924.00	53.6 PK	74.0	-20.4	1.79 V	360	49.80	3.80
6	4924.00	50.4 AV	54.0	-3.6	1.79 V	360	46.60	3.80
7	7386.00	53.0 PK	74.0	-21.0	1.80 V	103	44.45	8.55
8	7386.00	42.6 AV	54.0	-11.4	1.80 V	103	34.05	8.55

**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.



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802.11n (HT40)

<b>CHANNEL</b>	TX Channel 3	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	64.7 PK	74.0	-9.3	1.85 H	65	70.30	-5.60
2	2390.00	49.4 AV	54.0	-4.6	1.85 H	65	55.00	-5.60
3	*2422.00	101.5 PK			1.85 H	65	106.99	-5.49
4	*2422.00	91.7 AV			1.85 H	65	97.19	-5.49
5	4844.00	52.4 PK	74.0	-21.6	1.67 H	270	48.56	3.84
6	4844.00	47.7 AV	54.0	-6.3	1.67 H	270	43.86	3.84
7	7266.00	54.1 PK	74.0	-19.9	1.88 H	126	46.04	8.06
8	7266.00	38.1 AV	54.0	-15.9	1.88 H	126	30.04	8.06

**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	2390.00	68.4 PK	74.0	-5.6	1.00 V	266	74.00	-5.60
2	2390.00	53.0 AV	54.0	-1.0	1.00 V	266	58.60	-5.60
3	*2422.00	105.8 PK			1.00 V	266	111.29	-5.49
4	*2422.00	95.9 AV			1.00 V	266	101.39	-5.49
5	4844.00	53.1 PK	74.0	-20.9	1.69 V	360	49.26	3.84
6	4844.00	49.7 AV	54.0	-4.3	1.69 V	360	45.86	3.84
7	7266.00	53.3 PK	74.0	-20.7	1.89 V	92	45.24	8.06
8	7266.00	43.0 AV	54.0	-11.0	1.89 V	92	34.94	8.06

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	64.6 PK	74.0	-9.4	1.86 H	83	70.20	-5.60
2	2390.00	48.6 AV	54.0	-5.4	1.86 H	83	54.20	-5.60
3	*2437.00	103.3 PK			1.86 H	83	108.72	-5.42
4	*2437.00	93.4 AV			1.86 H	83	98.82	-5.42
5	2483.50	56.8 PK	74.0	-17.2	1.86 H	83	62.00	-5.20
6	2483.50	40.4 AV	54.0	-13.6	1.86 H	83	45.60	-5.20
7	4874.00	52.7 PK	74.0	-21.3	1.71 H	283	48.89	3.81
8	4874.00	48.1 AV	54.0	-5.9	1.71 H	283	44.29	3.81
9	7311.00	54.0 PK	74.0	-20.0	1.86 H	103	45.77	8.23
10	7311.00	38.2 AV	54.0	-15.8	1.86 H	103	29.97	8.23

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.1 PK	74.0	-4.9	1.00 V	266	74.70	-5.60
2	2390.00	53.0 AV	54.0	-1.0	1.00 V	266	58.60	-5.60
3	*2437.00	107.0 PK			1.00 V	266	112.42	-5.42
4	*2437.00	97.1 AV			1.00 V	266	102.52	-5.42
5	2483.50	60.5 PK	74.0	-13.5	1.00 V	266	65.70	-5.20
6	2483.50	44.1 AV	54.0	-9.9	1.00 V	266	49.30	-5.20
7	4874.00	52.8 PK	74.0	-21.2	1.79 V	360	48.99	3.81
8	4874.00	49.8 AV	54.0	-4.2	1.79 V	360	45.99	3.81
9	7311.00	52.8 PK	74.0	-21.2	1.81 V	80	44.57	8.23
10	7311.00	42.2 AV	54.0	-11.8	1.81 V	80	33.97	8.23

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 9	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2452.00	103.6 PK			1.76 H	90	108.96	-5.36
2	*2452.00	92.6 AV			1.76 H	90	97.96	-5.36
3	2483.50	63.5 PK	74.0	-10.5	1.76 H	90	68.70	-5.20
4	2483.50	49.4 AV	54.0	-4.6	1.76 H	90	54.60	-5.20
5	4904.00	52.2 PK	74.0	-21.8	1.68 H	267	48.41	3.79
6	4904.00	47.4 AV	54.0	-6.6	1.68 H	267	43.61	3.79
7	7356.00	53.7 PK	74.0	-20.3	1.81 H	126	45.27	8.43
8	7356.00	38.2 AV	54.0	-15.8	1.81 H	126	29.77	8.43

**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	*2452.00	107.6 PK			1.00 V	279	112.96	-5.36
2	*2452.00	96.8 AV			1.00 V	279	102.16	-5.36
3	2483.50	67.2 PK	74.0	-6.8	1.00 V	279	72.40	-5.20
4	2483.50	53.0 AV	54.0	-1.0	1.00 V	279	58.20	-5.20
5	4904.00	52.4 PK	74.0	-21.6	1.73 V	360	48.61	3.79
6	4904.00	49.3 AV	54.0	-4.7	1.73 V	360	45.51	3.79
7	7356.00	52.3 PK	74.0	-21.7	1.77 V	76	43.87	8.43
8	7356.00	41.9 AV	54.0	-12.1	1.77 V	76	33.47	8.43

**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.



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### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST INSTRUMENTS

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

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 14, 2014

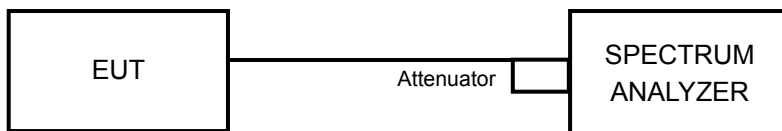
#### 4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW)  $\geq 3 \times$  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

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

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



### 4.3.7 TEST RESULTS

#### 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.12	10.12	0.5	PASS
6	2437	10.09	10.06	0.5	PASS
11	2462	10.11	10.09	0.5	PASS

#### 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.60	16.57	0.5	PASS
6	2437	16.42	16.61	0.5	PASS
11	2462	16.59	16.53	0.5	PASS

#### 802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.78	17.77	0.5	PASS
6	2437	17.75	17.77	0.5	PASS
11	2462	17.37	17.69	0.5	PASS

#### 802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.55	36.53	0.5	PASS
6	2437	36.51	36.53	0.5	PASS
9	2452	36.52	36.51	0.5	PASS

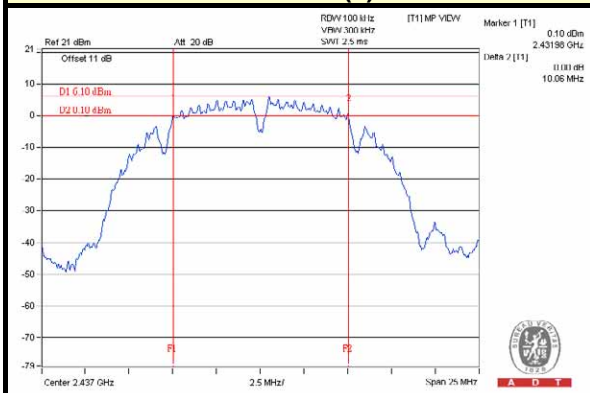




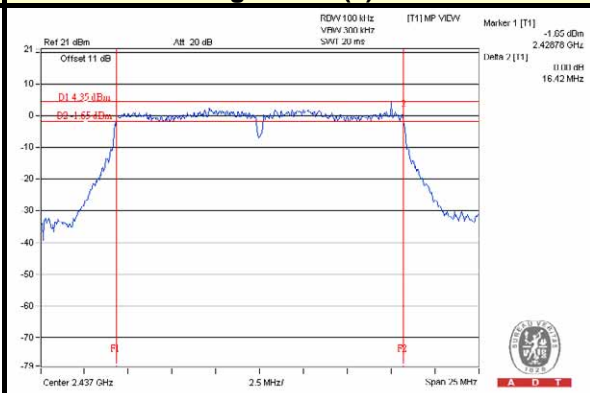
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### SPECTRUM PLOT OF WORST VALUE

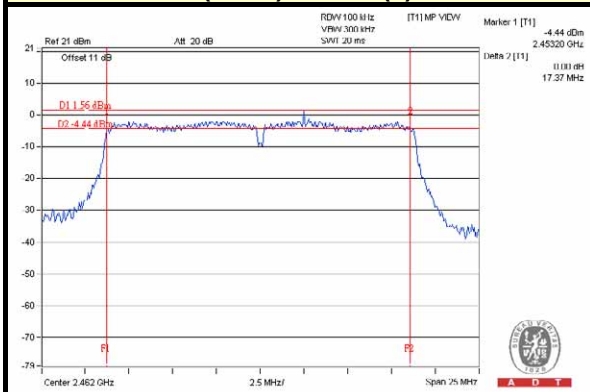
#### 802.11b / Chain(1) : CH6



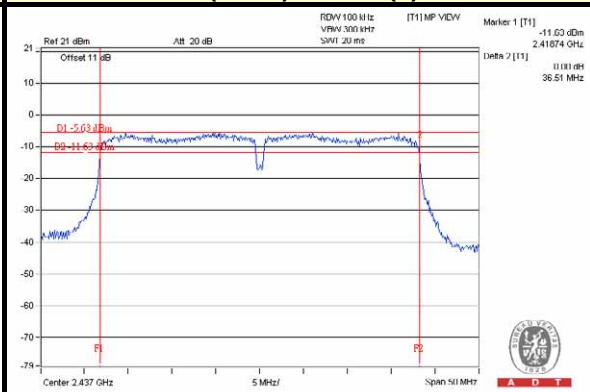
#### 802.11g / Chain(0) : CH6



#### 802.11n (HT20) / Chain(0) : CH11



#### 802.11n (HT40) / Chain(0) : CH6





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## 4.4 CONDUCTED OUTPUT POWER MEASUREMENT

### 4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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 =  $5 \log(\text{NANT}/\text{NSS})$  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 =  $10 \log(\text{NANT}/\text{NSS})$  dB.

### 4.4.2 TEST INSTRUMENTS

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 : Aug. 14, 2014

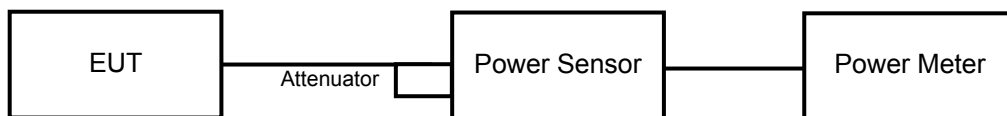
### 4.4.3 TEST PROCEDURES

The peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the peak power level.

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

#### 4.4.7 TEST RESULTS

##### FOR PEAK POWER

##### 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	18.13	18.20	131.082	21.18	30	PASS
6	2437	19.52	19.91	187.485	22.73	30	PASS
11	2462	19.90	19.89	195.223	22.91	30	PASS

##### 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.70	17.11	98.178	19.92	30	PASS
6	2437	25.61	25.74	738.888	28.69	30	PASS
11	2462	17.00	16.58	95.618	19.81	30	PASS

##### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	20.68	22.66	301.452	24.79	30	PASS
6	2437	25.76	25.71	749.096	28.75	30	PASS
11	2462	22.47	23.23	386.982	25.88	30	PASS

##### 802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	18.81	20.40	185.681	22.69	30	PASS
6	2437	22.04	21.37	297.044	24.73	30	PASS
9	2452	20.44	21.72	259.256	24.14	30	PASS



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### FOR AVERAGE POWER

#### 802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.19	15.25	66.534	18.23
6	2437	16.71	17.01	97.115	19.87
11	2462	17.02	16.98	100.238	20.01

#### 802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	13.67	14.15	49.283	16.93
6	2437	17.16	17.62	109.810	20.41
11	2462	13.96	13.63	47.956	16.81

#### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	13.55	14.10	48.350	16.84
6	2437	17.27	17.55	110.218	20.42
11	2462	13.81	14.33	51.146	17.09

#### 802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	10.74	11.01	24.476	13.89
6	2437	13.19	12.94	40.524	16.08
9	2452	11.76	12.18	31.517	14.99



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## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST INSTRUMENTS

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

**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 : Aug. 14, 2014

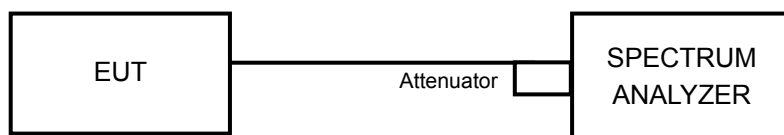
### 4.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.5.5 TEST SETUP



### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



### 4.5.7 TEST RESULTS

#### 802.11b

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-10.05	3.01	-7.04	7.93	PASS
	6	2437	-8.99	3.01	-5.98	7.93	PASS
	11	2462	-9.06	3.01	-6.05	7.93	PASS
1	1	2412	-9.56	3.01	-6.55	7.93	PASS
	6	2437	-9.15	3.01	-6.14	7.93	PASS
	11	2462	-8.90	3.01	-5.89	7.93	PASS

**NOTE:** Directional gain =  $3.06\text{dBi} + 10\log(2) = 6.07\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $8-(6.07-6) = 7.93\text{dBm}$ .

#### 802.11g

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-14.58	3.01	-11.57	7.93	PASS
	6	2437	-11.37	3.01	-8.36	7.93	PASS
	11	2462	-13.31	3.01	-10.30	7.93	PASS
1	1	2412	-13.67	3.01	-10.66	7.93	PASS
	6	2437	-10.60	3.01	-7.59	7.93	PASS
	11	2462	-13.34	3.01	-10.33	7.93	PASS

**NOTE:** Directional gain =  $3.06\text{dBi} + 10\log(2) = 6.07\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $8-(6.07-6) = 7.93\text{dBm}$ .



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### 802.11n (HT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-13.95	3.01	-10.94	8	PASS
	6	2437	-11.16	3.01	-8.15	8	PASS
	11	2462	-13.60	3.01	-10.59	8	PASS
1	1	2412	-14.96	3.01	-11.95	8	PASS
	6	2437	-10.78	3.01	-7.77	8	PASS
	11	2462	-12.57	3.01	-9.56	8	PASS

### 802.11n (HT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	3	2422	-20.48	3.01	-17.47	8	PASS
	6	2437	-18.13	3.01	-15.12	8	PASS
	9	2452	-17.97	3.01	-14.96	8	PASS
1	3	2422	-19.65	3.01	-16.64	8	PASS
	6	2437	-17.39	3.01	-14.38	8	PASS
	9	2452	-17.32	3.01	-14.31	8	PASS

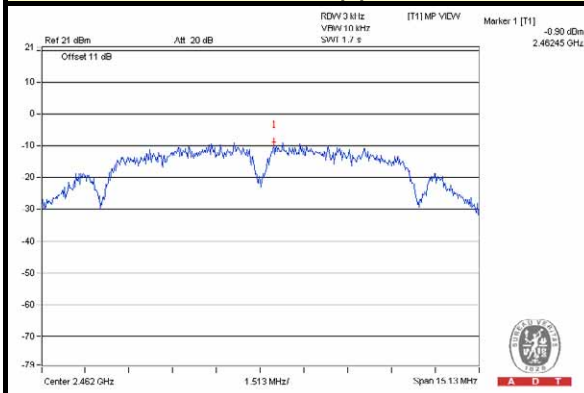




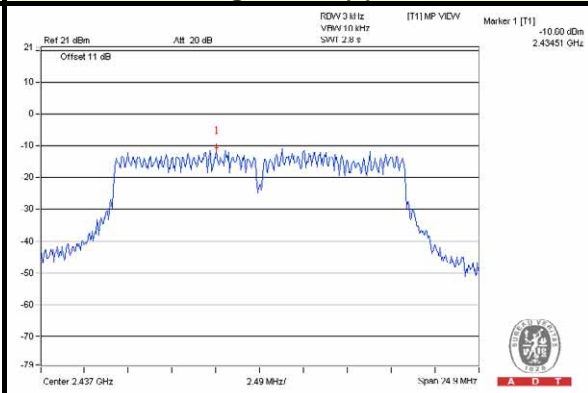
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### SPECTRUM PLOT OF WORST VALUE

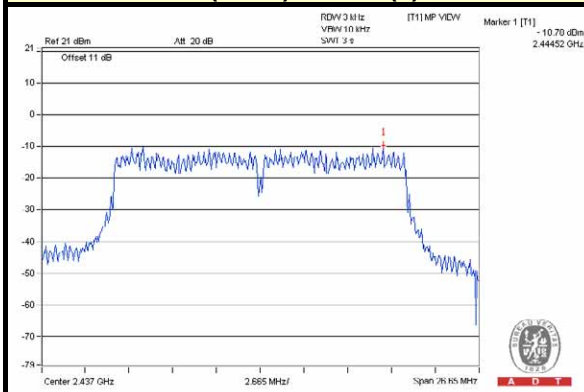
#### 802.11b / Chain(1) : CH11



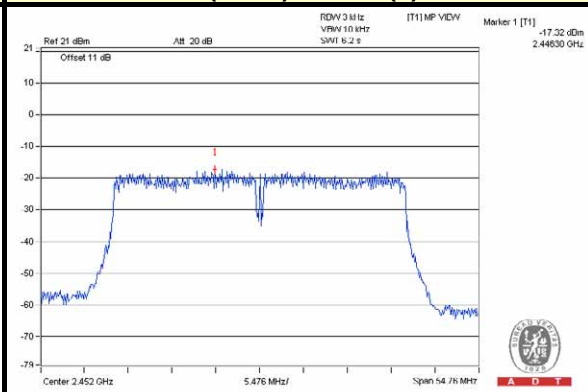
#### 802.11g / Chain(1) : CH6



#### 802.11n (HT20) / Chain(1) : CH6



#### 802.11n (HT40) / Chain(1) : CH9





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## 4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.6.2 TEST INSTRUMENTS

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

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 14, 2014

### 4.6.3 TEST PROCEDURE

#### Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

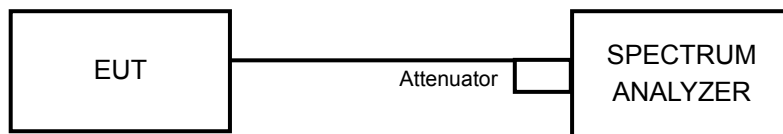
#### Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

#### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.6.5 TEST SETUP



#### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

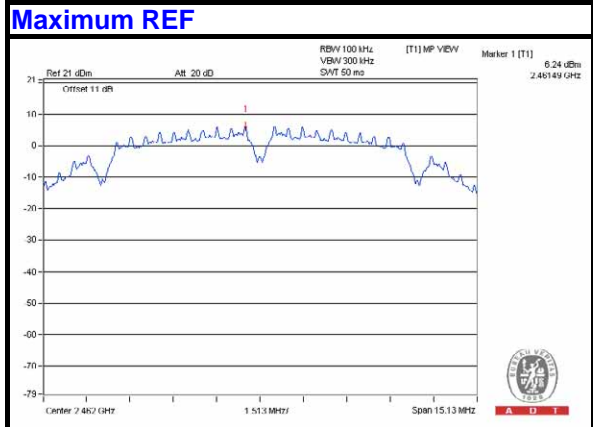
#### 4.6.7 TEST RESULTS

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

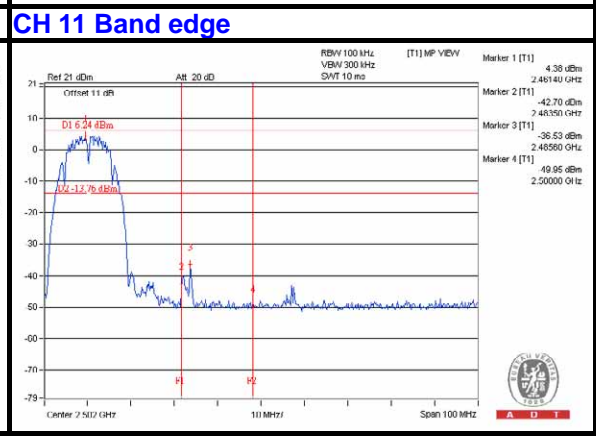
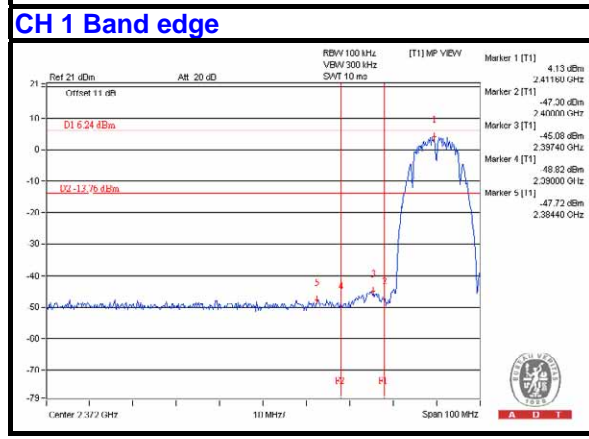
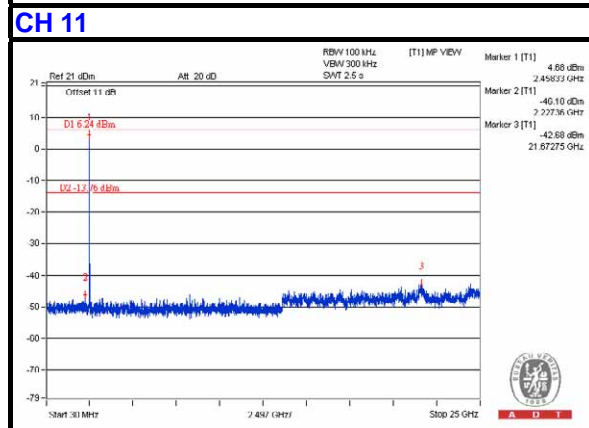
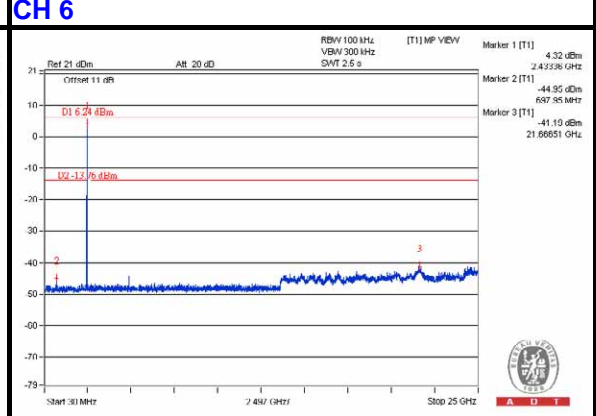
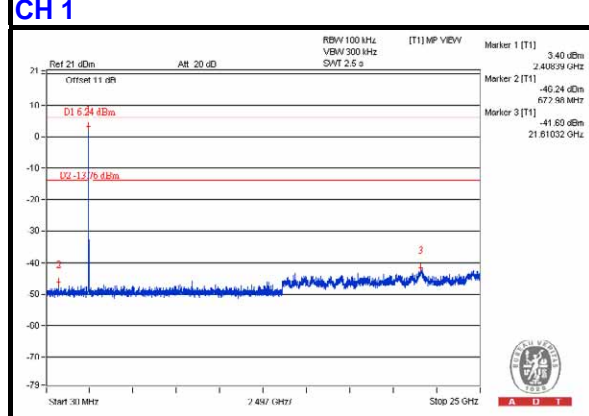


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802.11b



### Chain(0)

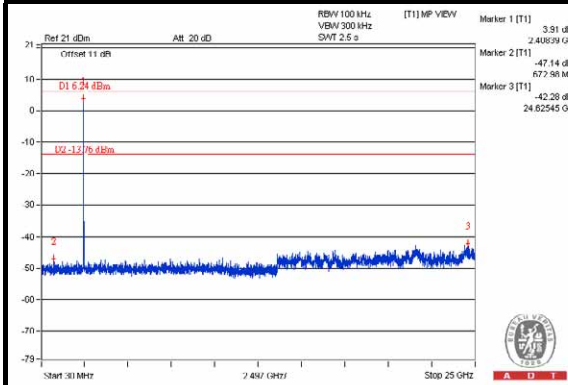




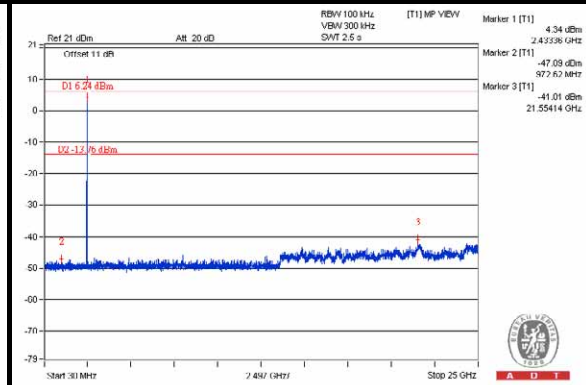
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### Chain(1)

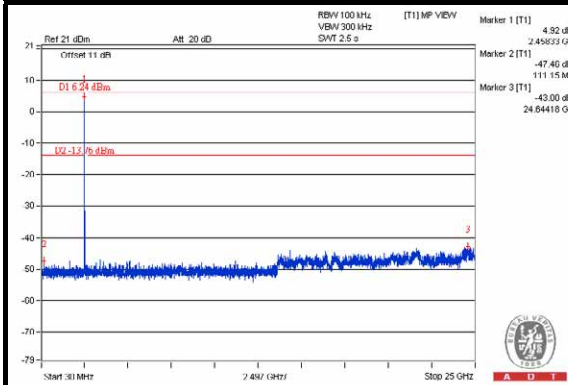
#### CH 1



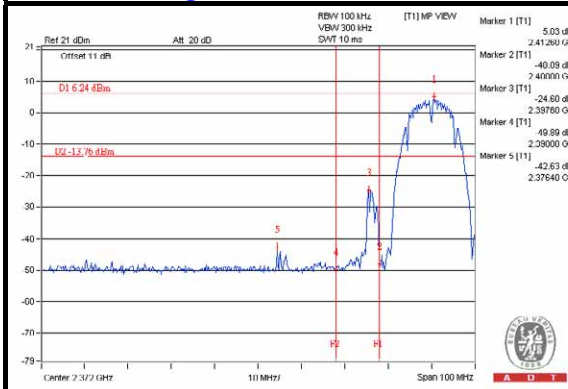
#### CH 6



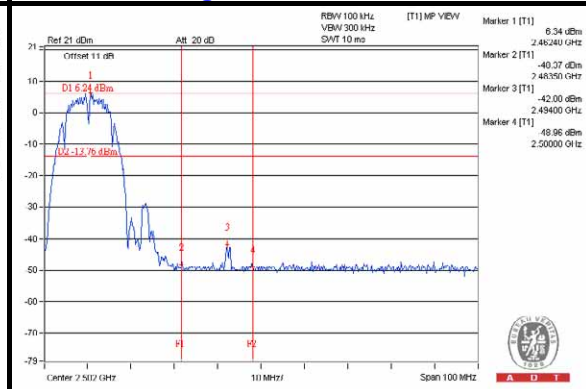
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

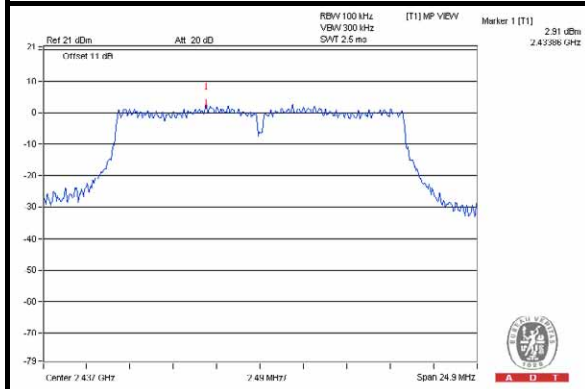




A D T

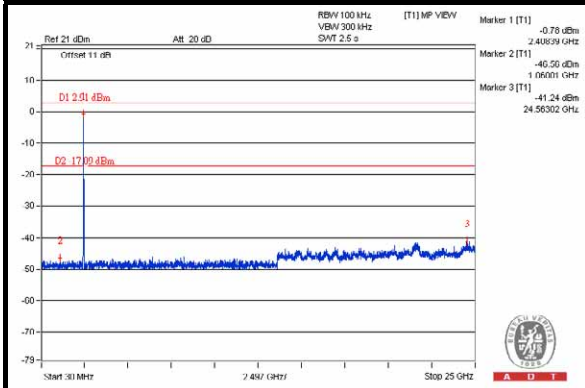
802.11g

### Maximum REF

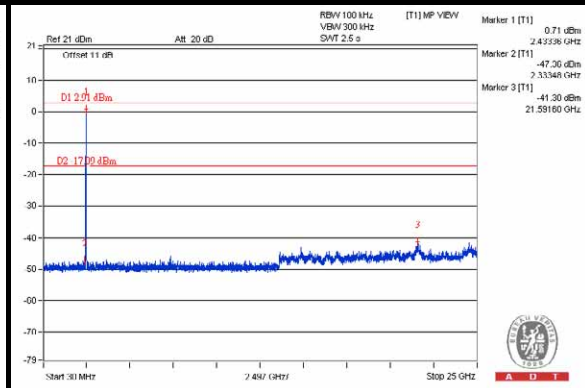


### Chain(0)

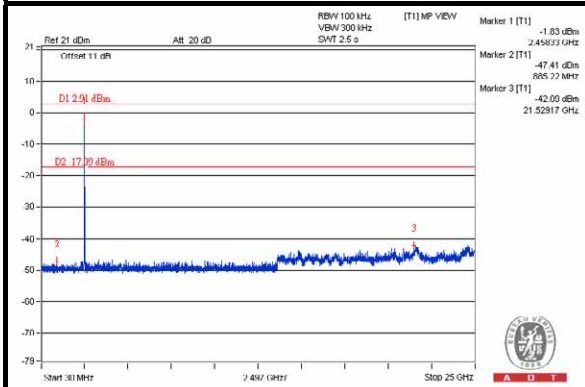
#### CH 1



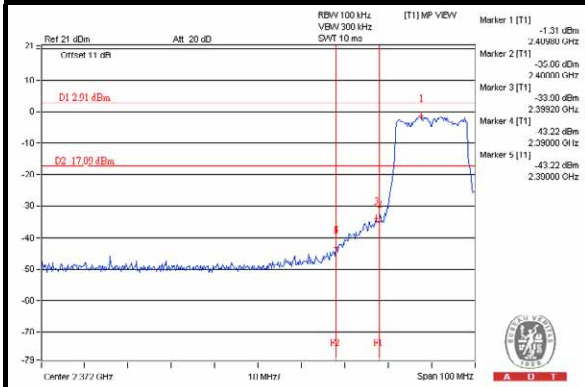
#### CH 6



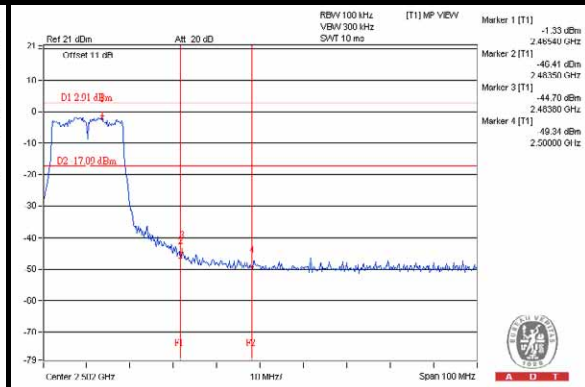
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

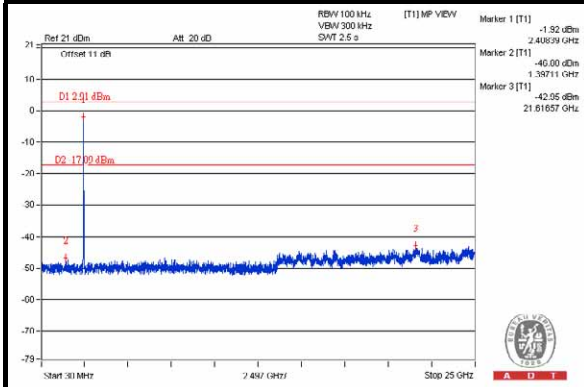




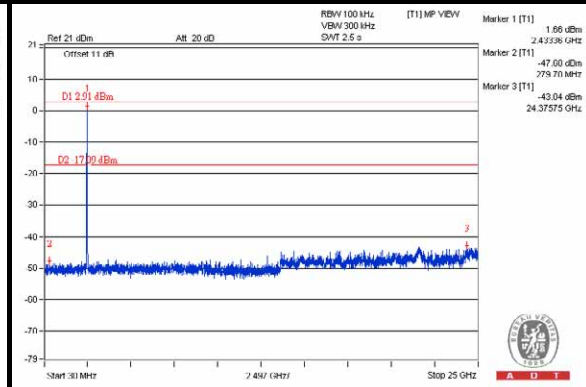
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### Chain(1)

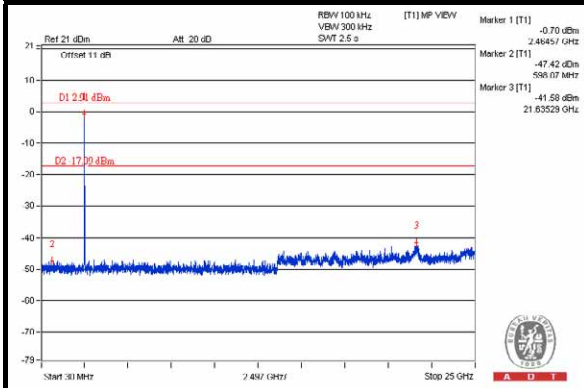
#### CH 1



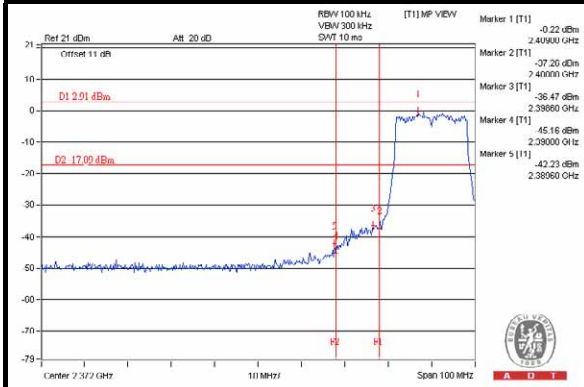
#### CH 6



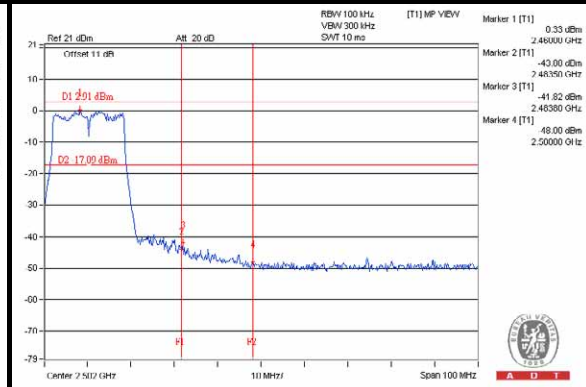
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

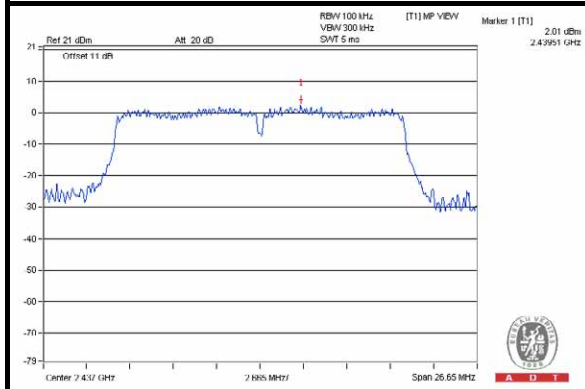




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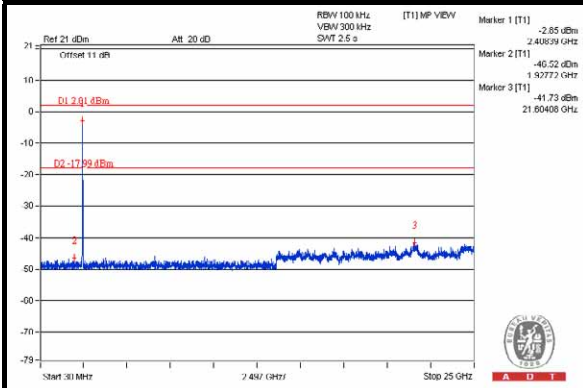
### 802.11n (HT20)

#### Maximum REF

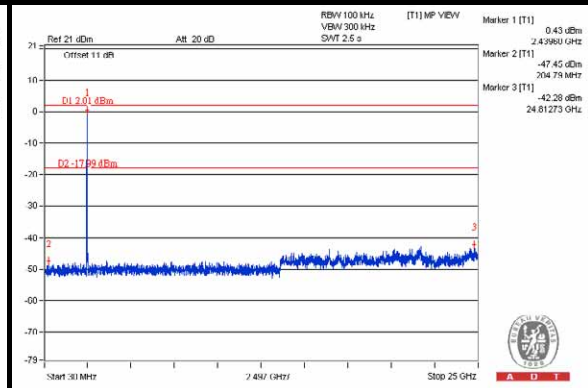


#### Chain(0)

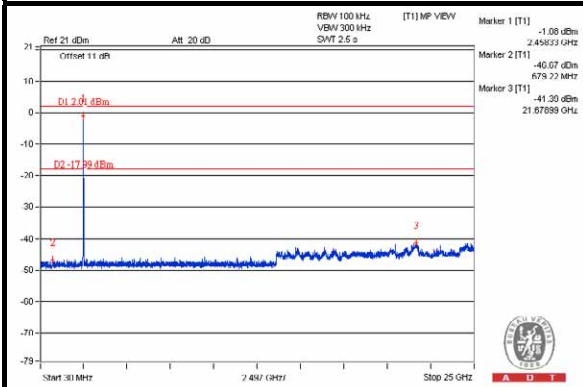
##### CH 1



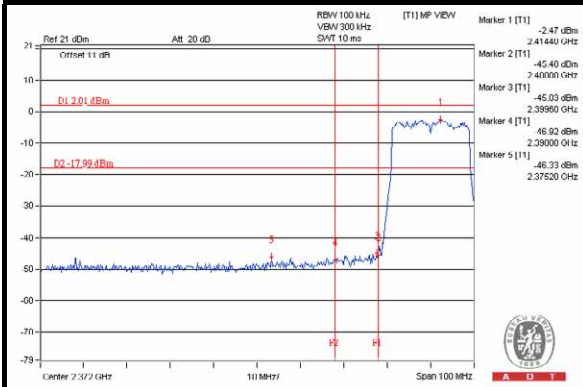
##### CH 6



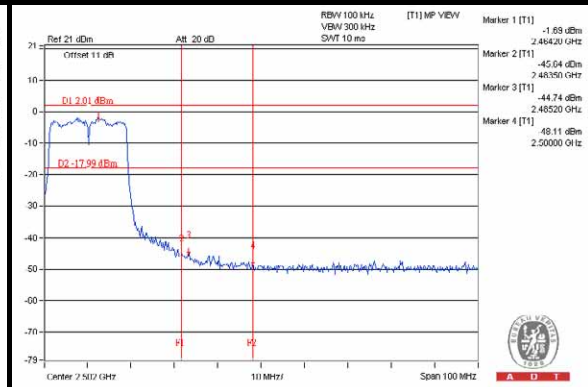
##### CH 11



##### CH 1 Band edge



##### CH 11 Band edge



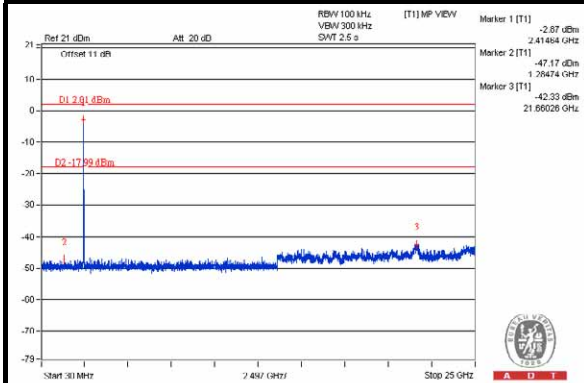




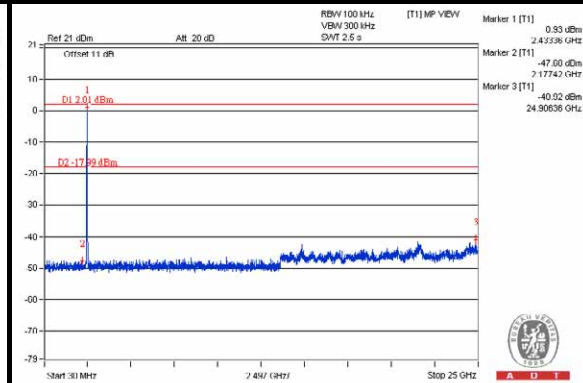
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### Chain(1)

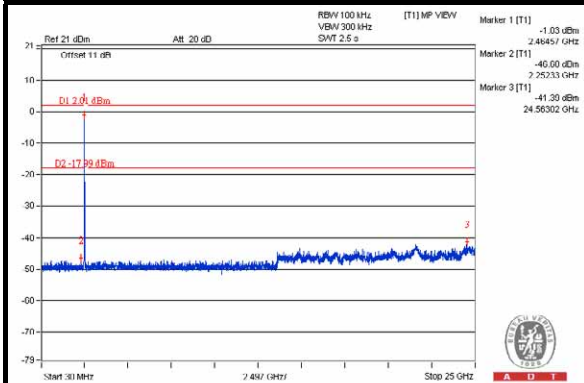
#### CH 1



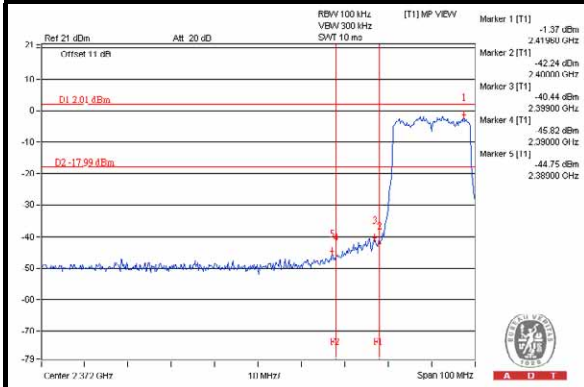
#### CH 6



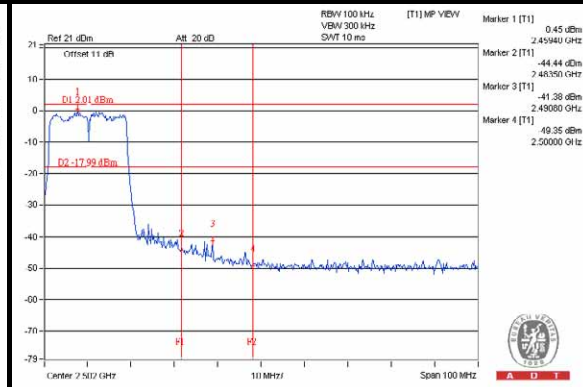
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

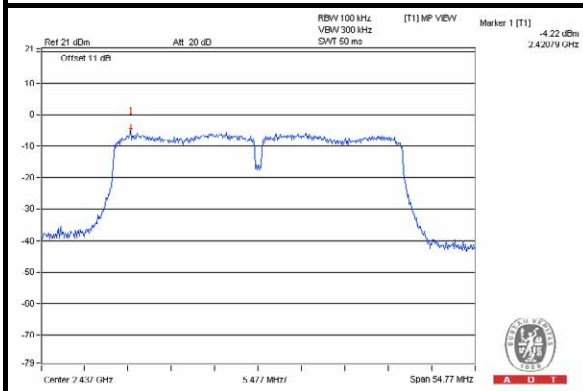




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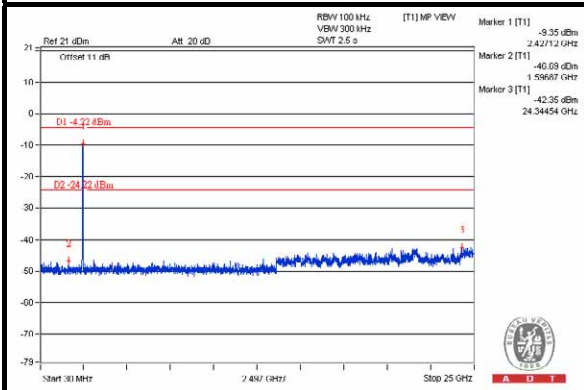
### 802.11n (HT40)

#### Maximum REF

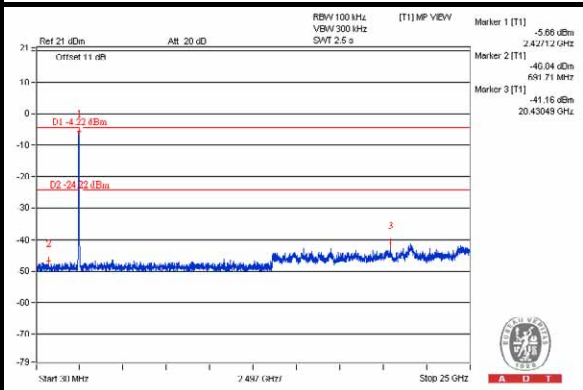


#### Chain(0)

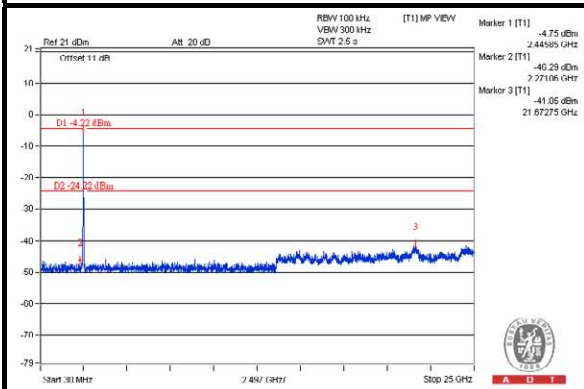
##### CH 3



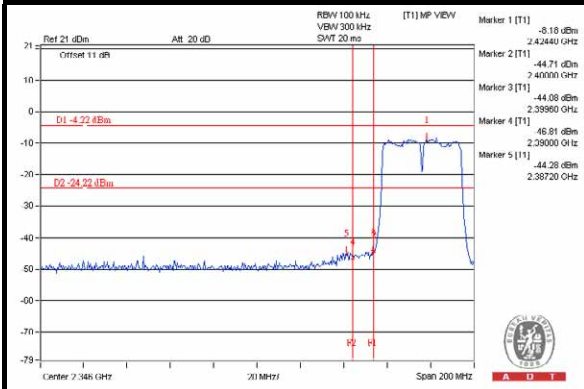
##### CH 6



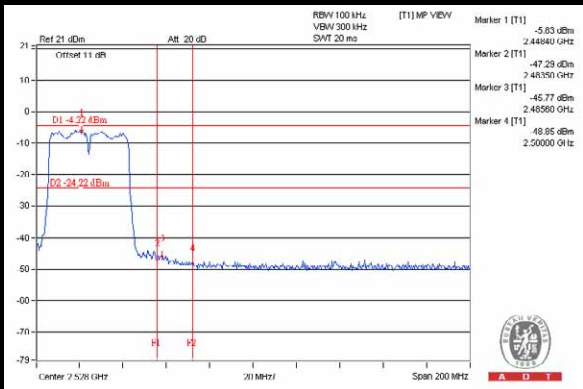
##### CH 9



##### CH 3 Band edge



##### CH 9 Band edge

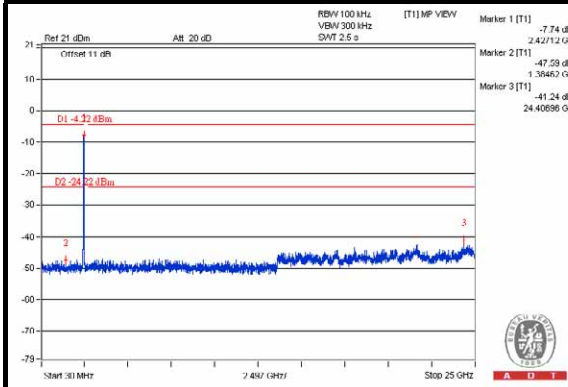




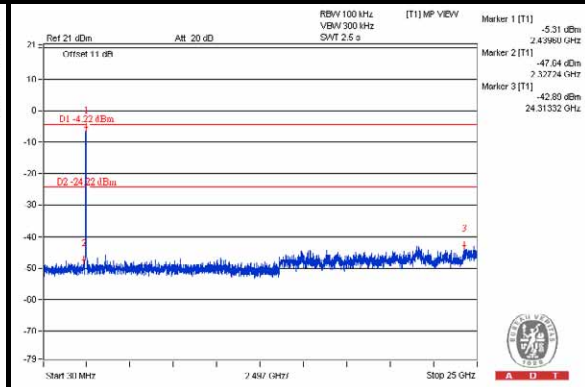
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### Chain(1)

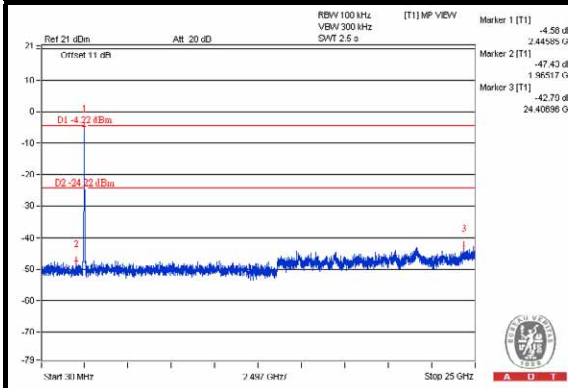
#### CH 3



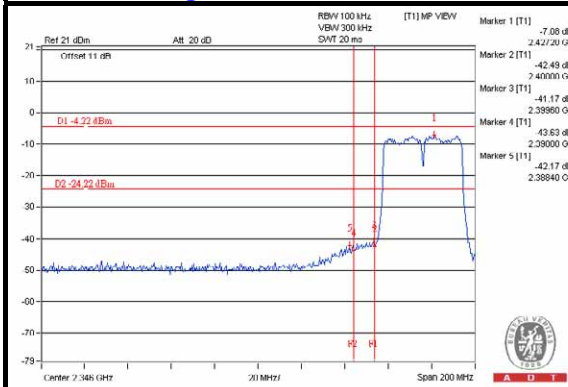
#### CH 6



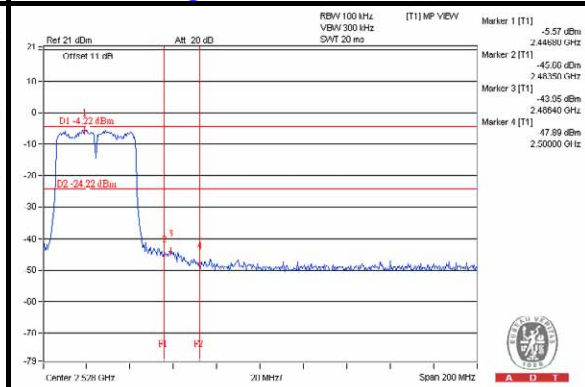
#### CH 9



#### CH 3 Band edge



#### CH 9 Band edge





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## 5. TEST TYPES AND RESULTS (FOR 5GHz, 5.725~5.850GHz Band)

### 5.1 CONDUCTED EMISSION MEASUREMENT

#### 5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- NOTE:** 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.

#### 5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver LIG NEX1	ER-265	L09068005	July 22, 2013	July 21, 2014
Pulse Limiter	VTSD 9561F	NA	NA	NA
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 05, 2013	Sep. 04, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 06, 2013	June 05, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-03	Sep. 24, 2013	Sep. 23, 2014
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Feb. 14, 2014

### 5.1.3 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 levels under (Limit – 20dB) were not recorded.

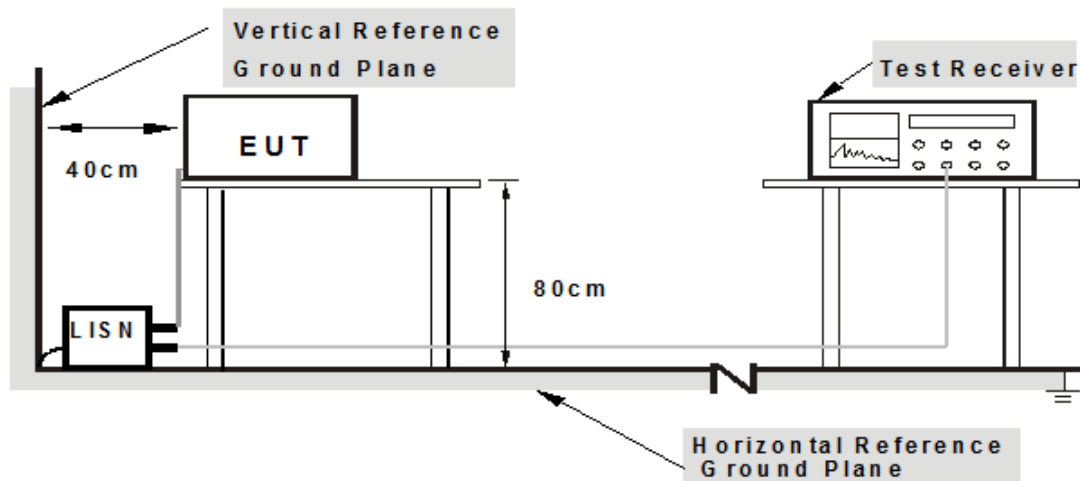
#### NOTE:

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

### 5.1.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.1.5 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.

## 5.1.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

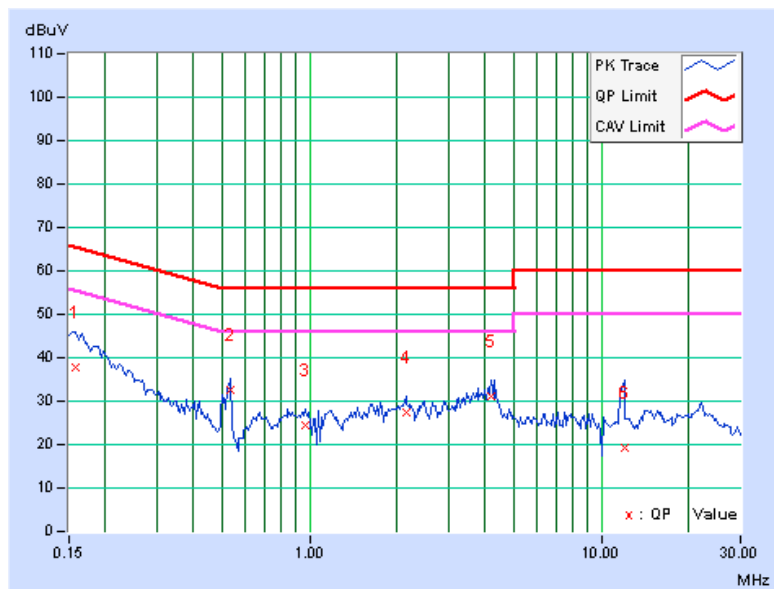
### 5.1.7 TEST RESULTS (MODE 1)

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

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. (dB)	AV. (dB)
	1	0.15781	0.08	37.84	22.74	37.92	22.82	65.58	55.58	-27.66
2	<b>0.53672</b>	<b>0.15</b>	<b>32.43</b>	<b>31.69</b>	<b>32.58</b>	<b>31.84</b>	<b>56.00</b>	<b>46.00</b>	<b>-23.42</b>	<b>-14.16</b>
3	0.96641	0.17	24.45	20.63	24.62	20.80	56.00	46.00	-31.38	-25.20
4	2.14844	0.22	27.26	21.44	27.48	21.66	56.00	46.00	-28.52	-24.34
5	4.21875	0.29	31.00	23.16	31.29	23.45	56.00	46.00	-24.71	-22.55
6	11.97266	0.53	18.89	13.64	19.42	14.17	60.00	50.00	-40.58	-35.83

**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

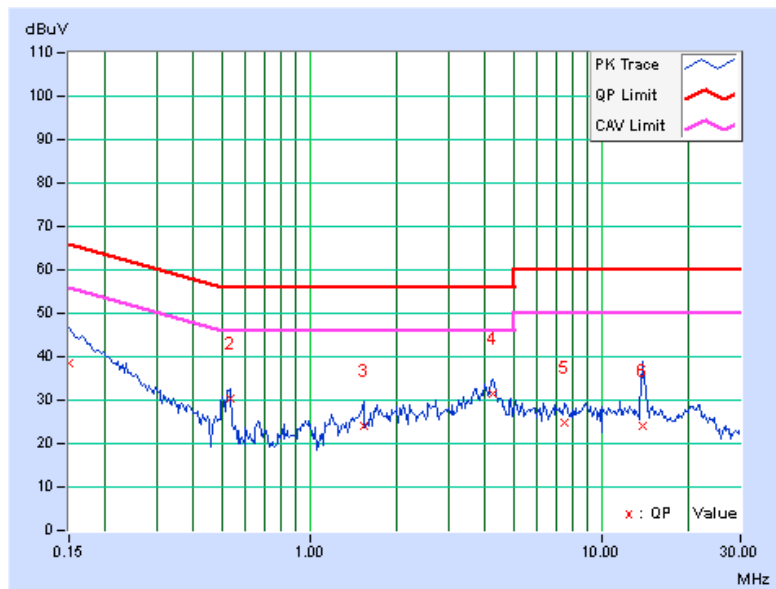


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	--------------------------------

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	0.15000	0.09	38.47	23.36	38.56	23.45	66.00	56.00	-27.44	-32.55
2	0.53672	0.15	30.35	28.40	30.50	28.55	56.00	46.00	-25.50	-17.45
3	1.53516	0.20	23.84	18.47	24.04	18.67	56.00	46.00	-31.96	-27.33
4	4.25000	0.29	31.21	22.97	31.50	23.26	56.00	46.00	-24.50	-22.74
5	7.52344	0.39	24.43	19.43	24.82	19.82	60.00	50.00	-35.18	-30.18
6	13.91406	0.58	23.31	18.26	23.89	18.84	60.00	50.00	-36.11	-31.16

**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





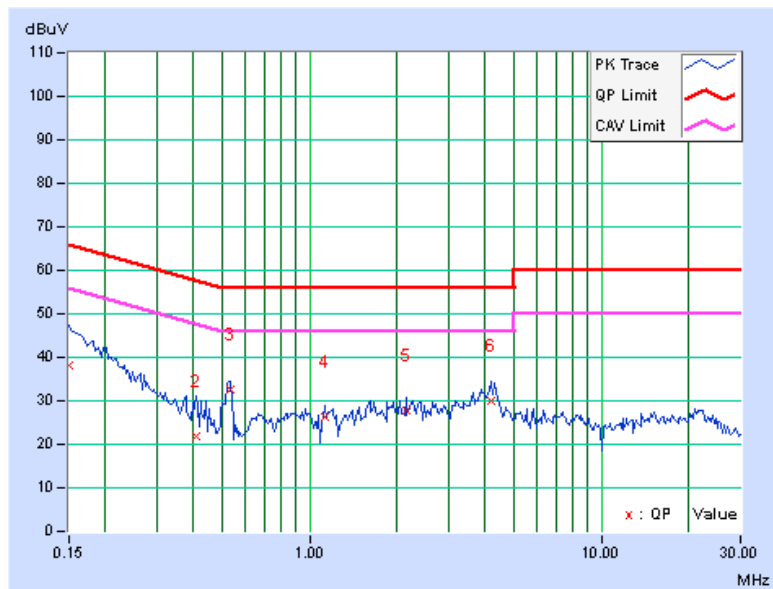
### 5.1.8 TEST RESULTS (MODE 2)

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

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.15000	0.08	38.05	23.09	38.13	23.17	66.00
2	0.40781	0.14	21.86	17.88	22.00	18.02	57.69	47.69	-35.69	-29.67
3	0.53281	0.15	32.32	31.49	32.47	31.64	56.00	46.00	-23.53	-14.36
4	1.13672	0.18	26.10	22.08	26.28	22.26	56.00	46.00	-29.72	-23.74
5	2.14453	0.22	27.63	22.20	27.85	22.42	56.00	46.00	-28.15	-23.58
6	4.19922	0.29	29.78	21.39	30.07	21.68	56.00	46.00	-25.93	-24.32

**REMARKS:**

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

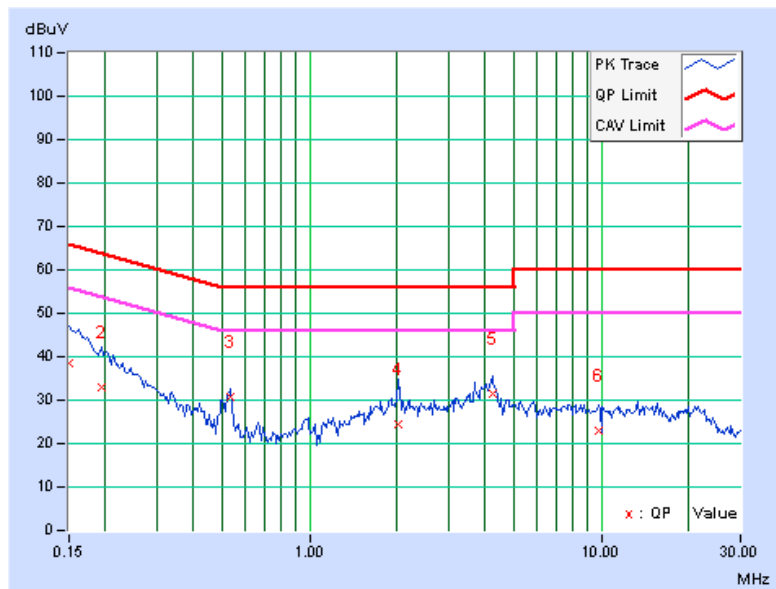


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.09	38.45	23.30	38.54	23.39	66.00	56.00	-27.46	-32.61
2	0.19297	0.10	32.83	20.04	32.93	20.14	63.91	53.91	-30.98	-33.77
3	0.53672	0.15	30.57	28.31	30.72	28.46	56.00	46.00	-25.28	-17.54
4	2.02344	0.22	24.23	19.99	24.45	20.21	56.00	46.00	-31.55	-25.79
5	4.22266	0.29	31.18	23.18	31.47	23.47	56.00	46.00	-24.53	-22.53
6	9.85156	0.47	22.66	19.07	23.13	19.54	60.00	50.00	-36.87	-30.46

**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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## 5.2 RADIATED AND BANDEGE EMISSION MEASUREMENT

### 5.2.1 LIMITS OF RADIATED AND BANDEGE EMISSION MEASUREMENT

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

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

**NOTE:**

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



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## 5.2.2 TEST INSTRUMENTS

### For Below 1GHz: (Mode 1)

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 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: Feb. 20, 2014



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**For Below 1GHz: (Mode 2)**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21,2014	Jan. 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 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. 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: July 08, 2014



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**For Above 1GHz:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 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: Aug. 11, 2014

### 5.2.3 TEST PROCEDURES

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

**Note:**

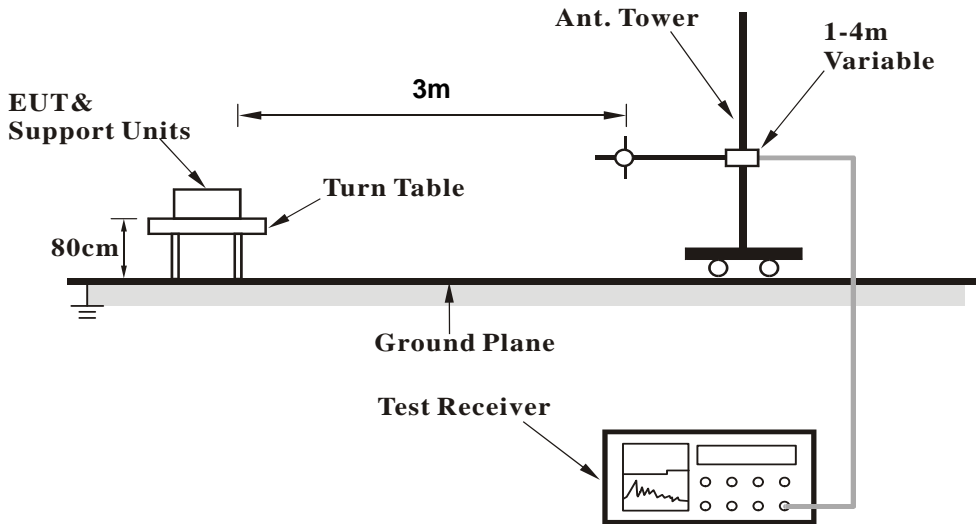
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

### 5.2.4 DEVIATION FROM TEST STANDARD

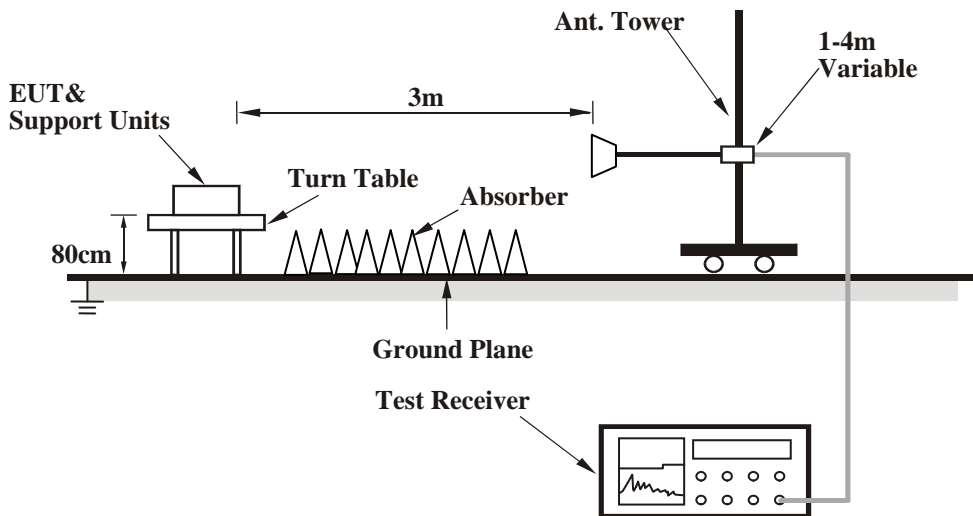
No deviation

### 5.2.5 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.

### 5.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6





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### 5.2.7 TEST RESULTS (MODE 1)

#### BELOW 1GHz WORST-CASE DATA

##### 802.11a

<b>CHANNEL</b>	TX Channel 149	<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	171.65	35.4 QP	43.5	-8.1	1.10 H	100	48.49	-13.07
2	216.65	36.3 QP	46.0	-9.7	1.64 H	245	51.81	-15.49
3	548.21	37.4 QP	46.0	-8.6	1.45 H	302	43.58	-6.16
4	597.02	38.7 QP	46.0	-7.4	1.74 H	55	43.37	-4.72
5	699.62	35.9 QP	46.0	-10.2	1.44 H	122	38.99	-3.14
6	896.10	38.7 QP	46.0	-7.4	1.87 H	54	38.30	0.35

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	190.74	36.7 QP	43.5	-6.9	1.56 V	302	52.09	-15.44
2	300.12	35.1 QP	46.0	-10.9	1.24 V	247	46.79	-11.67
3	549.34	33.1 QP	46.0	-12.9	2.41 V	65	39.23	-6.11
4	599.61	37.0 QP	46.0	-9.0	1.45 V	201	41.61	-4.63
5	930.89	32.1 QP	46.0	-13.9	1.20 V	111	30.71	1.41
6	959.96	38.9 QP	46.0	-7.2	1.42 V	145	37.11	1.74

#### REMARKS:

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



A D T

### ABOVE 1GHz DATA

#### 802.11a

<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	*5745.00	108.7 PK			1.15 H	217	103.78	4.92
2	*5745.00	100.5 AV			1.15 H	217	95.58	4.92
3	11490.00	57.0 PK	74.0	-17.0	1.02 H	265	46.35	10.65
4	11490.00	50.5 AV	54.0	-3.5	1.02 H	265	39.85	10.65

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	102.5 PK			1.75 V	171	97.58	4.92
2	*5745.00	93.8 AV			1.75 V	171	88.88	4.92
3	11490.00	57.9 PK	74.0	-16.1	1.11 V	222	47.25	10.65
4	11490.00	49.4 AV	54.0	-4.6	1.11 V	222	38.75	10.65

#### REMARKS:

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



A D T

<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	*5785.00	109.4 PK			1.11 H	227	104.45	4.95
2	*5785.00	101.0 AV			1.11 H	227	96.05	4.95
3	11570.00	57.3 PK	74.0	-16.7	1.44 H	253	46.62	10.68
4	11570.00	50.0 AV	54.0	-4.0	1.44 H	253	39.32	10.68

**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	*5785.00	101.8 PK			1.70 V	155	96.85	4.95
2	*5785.00	93.4 AV			1.70 V	155	88.45	4.95
3	11570.00	57.2 PK	74.0	-16.8	1.09 V	235	46.52	10.68
4	11570.00	49.0 AV	54.0	-5.0	1.09 V	235	38.32	10.68

**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.



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	109.4 PK			1.09 H	221	104.42	4.98
2	*5825.00	101.2 AV			1.09 H	221	96.22	4.98
3	11650.00	56.8 PK	74.0	-17.2	1.02 H	248	46.21	10.59
4	11650.00	49.7 AV	54.0	-4.3	1.02 H	248	39.11	10.59

**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	102.4 PK			1.79 V	162	97.42	4.98
2	*5825.00	93.7 AV			1.79 V	162	88.72	4.98
3	11650.00	58.1 PK	74.0	-15.9	1.13 V	235	47.51	10.59
4	11650.00	49.4 AV	54.0	-4.6	1.13 V	235	38.81	10.59

**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.



A D T

802.11ac (VHT20)

<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	*5745.00	108.3 PK			1.73 H	48	103.38	4.92
2	*5745.00	98.5 AV			1.73 H	48	93.58	4.92
3	11490.00	58.3 PK	74.0	-15.7	1.00 H	244	47.65	10.65
4	11490.00	45.6 AV	54.0	-8.4	1.00 H	244	34.95	10.65

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	101.8 PK			1.73 V	157	96.88	4.92
2	*5745.00	93.4 AV			1.73 V	157	88.48	4.92
3	11490.00	57.7 PK	74.0	-16.3	1.14 V	217	47.05	10.65
4	11490.00	49.4 AV	54.0	-4.6	1.14 V	217	38.75	10.65

**REMARKS:**

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



A D T

<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	*5785.00	108.4 PK			1.78 H	39	103.45	4.95
2	*5785.00	98.5 AV			1.78 H	39	93.55	4.95
3	11570.00	57.9 PK	74.0	-16.1	1.00 H	233	47.22	10.68
4	11570.00	45.3 AV	54.0	-8.7	1.00 H	233	34.62	10.68

**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	*5785.00	102.9 PK			1.71 V	174	97.95	4.95
2	*5785.00	94.1 AV			1.71 V	174	89.15	4.95
3	11570.00	57.8 PK	74.0	-16.2	1.10 V	235	47.12	10.68
4	11570.00	49.6 AV	54.0	-4.4	1.10 V	235	38.92	10.68

**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.



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	107.6 PK			1.77 H	44	102.62	4.98
2	*5825.00	98.0 AV			1.77 H	44	93.02	4.98
3	11650.00	58.4 PK	74.0	-15.6	1.02 H	256	47.81	10.59
4	11650.00	46.0 AV	54.0	-8.0	1.02 H	256	35.41	10.59

**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	103.1 PK			1.75 V	184	98.12	4.98
2	*5825.00	94.1 AV			1.75 V	184	89.12	4.98
3	11650.00	58.2 PK	74.0	-15.8	1.08 V	236	47.61	10.59
4	11650.00	49.6 AV	54.0	-4.4	1.08 V	236	39.01	10.59

**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.



A D T

802.11ac (VHT40)

<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	*5755.00	104.1 PK			1.09 H	242	99.17	4.93
2	*5755.00	94.2 AV			1.09 H	242	89.27	4.93
3	11510.00	56.8 PK	74.0	-17.2	1.01 H	264	46.14	10.66
4	11510.00	43.9 AV	54.0	-10.1	1.01 H	264	33.24	10.66

**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	*5755.00	99.0 PK			1.04 V	269	94.07	4.93
2	*5755.00	90.0 AV			1.04 V	269	85.07	4.93
3	11510.00	54.9 PK	74.0	-19.1	1.48 V	302	44.24	10.66
4	11510.00	44.5 AV	54.0	-9.5	1.48 V	302	33.84	10.66

**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.





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	103.9 PK			1.07 H	243	98.94	4.96
2	*5795.00	94.1 AV			1.07 H	243	89.14	4.96
3	11590.00	56.7 PK	74.0	-17.3	1.03 H	257	46.01	10.69
4	11590.00	43.7 AV	54.0	-10.3	1.03 H	257	33.01	10.69

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	98.7 PK			1.12 V	247	93.74	4.96
2	*5795.00	90.1 AV			1.12 V	247	85.14	4.96
3	11590.00	55.0 PK	74.0	-19.0	1.50 V	286	44.31	10.69
4	11590.00	44.6 AV	54.0	-9.4	1.50 V	286	33.91	10.69

**REMARKS:**

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



A D T

802.11ac (VHT80)

<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	*5775.00	95.2 PK			1.93 H	178	90.27	4.93
2	*5775.00	94.3 AV			1.93 H	178	89.37	4.93
3	11550.00	53.5 PK	74.0	-20.5	1.03 H	106	42.83	10.67
4	11550.00	41.7 AV	54.0	-12.3	1.03 H	106	31.03	10.67

**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	*5775.00	99.0 PK			1.01 V	351	94.07	4.93
2	*5775.00	89.7 AV			1.01 V	351	84.77	4.93
3	11550.00	53.6 PK	74.0	-20.4	1.00 V	339	42.93	10.67
4	11550.00	41.6 AV	54.0	-12.4	1.00 V	339	30.93	10.67

**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.



A D T

### 5.2.8 TEST RESULTS (MODE 2)

#### BELOW 1GHz WORST-CASE DATA

##### 802.11a

<b>CHANNEL</b>	TX Channel 149	<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	93.00	37.8 QP	43.5	-5.7	2.00 H	247	56.71	-18.87
2	165.99	33.7 QP	43.5	-9.8	1.50 H	224	47.21	-13.49
3	199.22	33.8 QP	43.5	-9.7	1.24 H	281	50.06	-16.30
4	232.39	38.3 QP	46.0	-7.7	1.00 H	5	53.89	-15.57
5	497.93	35.9 QP	46.0	-10.1	1.50 H	221	43.29	-7.35
6	796.59	37.8 QP	46.0	-8.2	1.00 H	243	39.20	-1.40

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.22	31.4 QP	40.0	-8.6	1.00 V	214	45.71	-14.28
2	90.00	37.8 QP	43.5	-5.7	1.00 V	306	56.93	-19.13
3	598.66	35.7 QP	46.0	-10.3	2.00 V	76	40.60	-4.94
4	697.51	39.0 QP	46.0	-7.0	1.00 V	63	42.59	-3.57
5	754.06	36.3 QP	46.0	-9.7	1.00 V	110	38.14	-1.87
6	895.58	34.6 QP	46.0	-11.4	1.00 V	141	34.63	-0.07

#### REMARKS:

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



A D T

ABOVE 1GHz DATA

802.11a

<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	*5745.00	110.9 PK			1.34 H	113	105.98	4.92
2	*5745.00	101.3 AV			1.34 H	113	96.38	4.92
3	11490.00	57.3 PK	74.0	-16.7	1.24 H	311	46.65	10.65
4	11490.00	50.8 AV	54.0	-3.2	1.24 H	311	40.15	10.65

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	108.9 PK			1.00 V	76	103.98	4.92
2	*5745.00	99.8 AV			1.00 V	76	94.88	4.92
3	11490.00	54.3 PK	74.0	-19.7	1.15 V	205	43.65	10.65
4	11490.00	43.4 AV	54.0	-10.6	1.15 V	205	32.75	10.65

**REMARKS:**

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



A D T

<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	*5785.00	111.2 PK			1.38 H	100	106.25	4.95
2	*5785.00	101.7 AV			1.38 H	100	96.75	4.95
3	11570.00	56.9 PK	74.0	-17.1	1.25 H	311	46.22	10.68
4	11570.00	50.4 AV	54.0	-3.6	1.25 H	311	39.72	10.68

**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	*5785.00	109.5 PK			1.02 V	69	104.55	4.95
2	*5785.00	100.4 AV			1.02 V	69	95.45	4.95
3	11570.00	54.3 PK	74.0	-19.7	1.21 V	193	43.62	10.68
4	11570.00	43.6 AV	54.0	-10.4	1.21 V	193	32.92	10.68

**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.



A D T

<b>CHANNEL</b>	TX Channel 165	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	112.1 PK			1.29 H	102	107.12	4.98
2	*5825.00	102.3 AV			1.29 H	102	97.32	4.98
3	11650.00	57.3 PK	74.0	-16.7	1.26 H	306	46.71	10.59
4	11650.00	51.1 AV	54.0	-2.9	1.26 H	306	40.51	10.59

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	109.9 PK			1.03 V	94	104.92	4.98
2	*5825.00	100.5 AV			1.03 V	94	95.52	4.98
3	11650.00	54.3 PK	74.0	-19.7	1.16 V	192	43.71	10.59
4	11650.00	43.8 AV	54.0	-10.2	1.16 V	192	33.21	10.59

**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.



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802.11ac (VHT20)

<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	*5745.00	111.0 PK			1.42 H	97	106.08	4.92
2	*5745.00	101.8 AV			1.42 H	97	96.88	4.92
3	11490.00	57.5 PK	74.0	-16.5	1.25 H	298	46.85	10.65
4	11490.00	51.3 AV	54.0	-2.7	1.25 H	298	40.65	10.65

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	109.4 PK			1.00 V	89	104.48	4.92
2	*5745.00	100.4 AV			1.00 V	89	95.48	4.92
3	11490.00	54.6 PK	74.0	-19.4	1.20 V	191	43.95	10.65
4	11490.00	44.1 AV	54.0	-9.9	1.20 V	191	33.45	10.65

**REMARKS:**

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



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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	*5785.00	111.5 PK			1.34 H	103	106.55	4.95
2	*5785.00	101.9 AV			1.34 H	103	96.95	4.95
3	11570.00	57.5 PK	74.0	-16.5	1.23 H	296	46.82	10.68
4	11570.00	51.2 AV	54.0	-2.8	1.23 H	296	40.52	10.68

**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	*5785.00	108.8 PK			1.00 V	76	103.85	4.95
2	*5785.00	99.6 AV			1.00 V	76	94.65	4.95
3	11570.00	54.1 PK	74.0	-19.9	1.18 V	179	43.42	10.68
4	11570.00	43.5 AV	54.0	-10.5	1.18 V	179	32.82	10.68

**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.





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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	111.0 PK			1.34 H	98	106.02	4.98
2	*5825.00	101.7 AV			1.34 H	98	96.72	4.98
3	11650.00	57.0 PK	74.0	-17.0	1.15 H	308	46.41	10.59
4	11650.00	51.2 AV	54.0	-2.8	1.15 H	308	40.61	10.59

**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	108.8 PK			1.07 V	83	103.82	4.98
2	*5825.00	99.6 AV			1.07 V	83	94.62	4.98
3	11650.00	53.5 PK	74.0	-20.5	1.18 V	201	42.91	10.59
4	11650.00	43.1 AV	54.0	-10.9	1.18 V	201	32.51	10.59

**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.



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802.11ac (VHT40)

<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	*5755.00	109.6 PK			1.64 H	78	104.67	4.93
2	*5755.00	100.1 AV			1.64 H	78	95.17	4.93
3	11510.00	56.4 PK	74.0	-17.6	1.16 H	299	45.74	10.66
4	11510.00	50.1 AV	54.0	-3.9	1.16 H	299	39.44	10.66

**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	*5755.00	105.4 PK			1.31 V	90	100.47	4.93
2	*5755.00	95.2 AV			1.31 V	90	90.27	4.93
3	11510.00	54.3 PK	74.0	-19.7	1.11 V	198	43.64	10.66
4	11510.00	43.4 AV	54.0	-10.6	1.11 V	198	32.74	10.66

**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.



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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	*5795.00	108.8 PK			1.37 H	76	103.84	4.96
2	*5795.00	98.7 AV			1.37 H	76	93.74	4.96
3	11590.00	57.4 PK	74.0	-16.6	1.17 H	322	46.71	10.69
4	11590.00	50.7 AV	54.0	-3.3	1.17 H	322	40.01	10.69

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	104.7 PK			1.32 V	93	99.74	4.96
2	*5795.00	94.9 AV			1.32 V	93	89.94	4.96
3	11590.00	54.1 PK	74.0	-19.9	1.21 V	191	43.41	10.69
4	11590.00	43.4 AV	54.0	-10.6	1.21 V	191	32.71	10.69

**REMARKS:**

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



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802.11ac (VHT80)

<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	*5775.00	105.3 PK			1.63 H	75	100.37	4.93
2	*5775.00	97.7 AV			1.63 H	75	92.77	4.93
3	11550.00	57.3 PK	74.0	-16.7	1.15 H	325	46.63	10.67
4	11550.00	50.5 AV	54.0	-3.5	1.15 H	325	39.83	10.67

**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	*5775.00	101.6 PK			1.39 V	53	96.67	4.93
2	*5775.00	90.6 AV			1.39 V	53	85.67	4.93
3	11550.00	54.8 PK	74.0	-19.2	1.11 V	181	44.13	10.67
4	11550.00	44.1 AV	54.0	-9.9	1.11 V	181	33.43	10.67

**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.

### 5.3 6dB BANDWIDTH MEASUREMENT

#### 5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

**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 : June 24, 2014

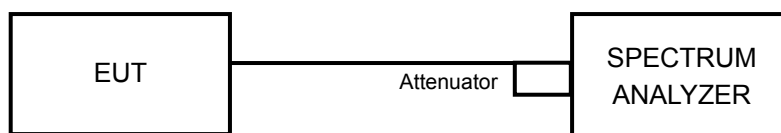
#### 5.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
2. Set the video bandwidth (VBW)  $\geq 3 \times$  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

#### 5.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 5.3.5 TEST SETUP



#### 5.3.6 EUT OPERATING CONDITIONS

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



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### 5.3.7 TEST RESULTS

#### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.50	16.40	0.5	PASS
157	5785	16.54	16.54	0.5	PASS
165	5825	16.61	16.59	0.5	PASS

#### 802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.79	17.74	0.5	PASS
157	5785	17.73	17.75	0.5	PASS
165	5825	17.73	17.68	0.5	PASS

#### 802.11ac (VHT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.56	35.28	0.5	PASS
159	5795	36.53	36.51	0.5	PASS

#### 802.11ac (VHT80)

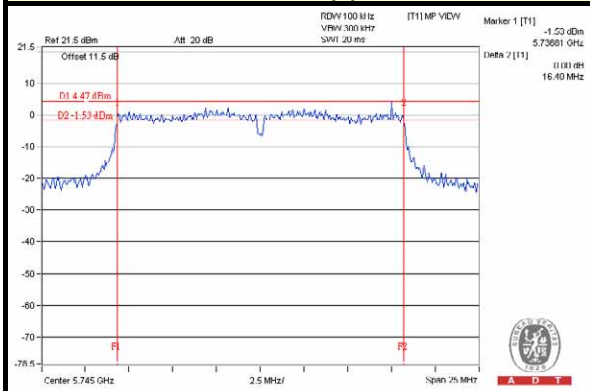
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	76.77	76.74	0.5	PASS



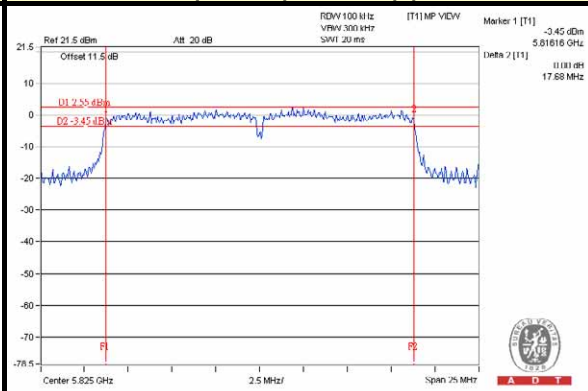
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### SPECTRUM PLOT OF WORST VALUE

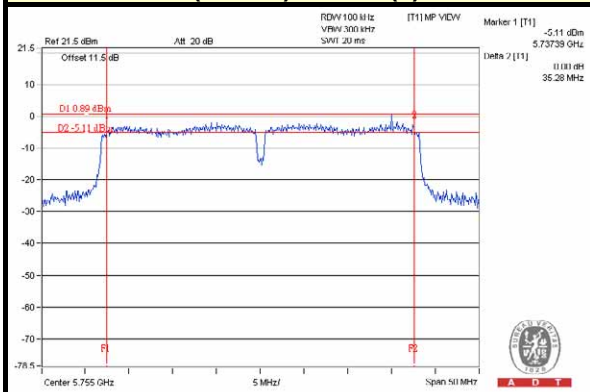
#### 802.11a / Chain(1) : CH149



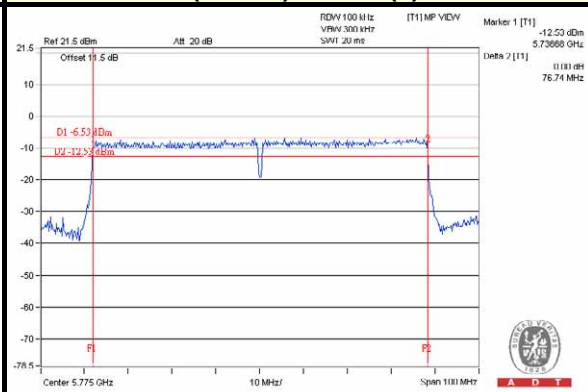
#### 802.11ac (VHT20) / Chain(1) : CH165



#### 802.11ac (VHT40) / Chain(1) : CH151



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





### 5.4 CONDUCTED OUTPUT POWER MEASUREMENT

#### 5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz band: 1 Watt (30dBm)

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 ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 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 ≥ 5.

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

#### 5.4.2 INSTRUMENTS

For 802.11a, 802.11ac (VHT20), 802.11ac (VHT40)

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 : June 24, 2014

For 802.11ac (VHT80)

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

**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 : June 24, 2014





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### 5.4.3 TEST PROCEDURES

#### For 802.11a, 802.11ac (VHT20), 802.11ac (VHT40)

The peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the peak power level.

#### For 802.11ac (VHT80)

Follow FCC KDB 558074 DTS test procedure:

#### Measurement Procedure Peak 2

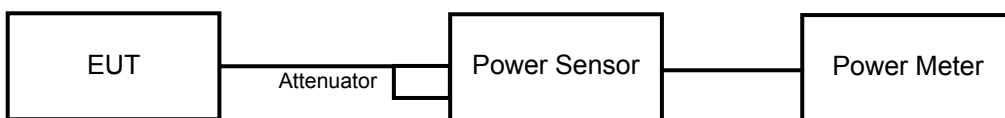
1. Set the RBW = 1 MHz.
2. Set the VBW  $\geq$  3 RBW.
3. Set the span  $\geq$  1.5 x DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the DTS bandwidth edges.

#### 5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.4.5 TEST SETUP

For 802.11a, 802.11ac (VHT20), 802.11ac (VHT40)



For 802.11ac (VHT80)



#### 5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

## 5.4.7 TEST RESULTS

### FOR PEAK POWER

#### 802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	21.75	23.66	381.898	25.82	30	PASS
157	5785	22.39	22.87	367.022	25.65	30	PASS
165	5825	21.92	23.05	357.434	25.53	30	PASS

#### 802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	22.77	22.45	365.026	25.62	30	PASS
157	5785	22.74	22.99	386.999	25.88	30	PASS
165	5825	21.50	22.49	318.673	25.03	30	PASS

#### 802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	22.03	23.21	368.999	25.67	30	PASS
159	5795	22.16	21.91	319.676	25.05	30	PASS

#### 802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
155	5775	20.64	21.48	256.483	24.09	30	PASS



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## FOR AVERAGE POWER

### 802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	15.13	15.37	67.019	18.26
157	5785	15.71	16.58	82.738	19.18
165	5825	15.38	16.19	76.105	18.81

### 802.11n (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	16.16	15.99	81.024	19.09
157	5785	15.58	16.40	79.793	19.02
165	5825	15.50	16.34	78.534	18.95

### 802.11n (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	14.88	15.44	65.756	18.18
159	5795	15.07	15.54	67.947	18.32

### 802.11n (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
155	5775	13.20	12.52	38.758	15.88



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## 5.5 POWER SPECTRAL DENSITY MEASUREMENT

### 5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

**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 : June 24, 2014

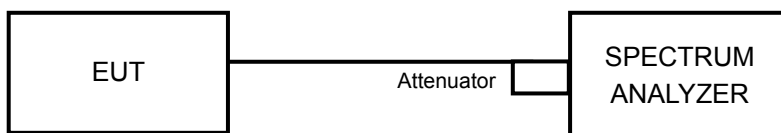
### 5.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

### 5.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.5.5 TEST SETUP



### 5.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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### 5.5.7 TEST RESULTS

#### 802.11a

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	149	5745	-12.04	3.01	-9.03	6.18	PASS
	157	5785	-10.86	3.01	-7.85	6.18	PASS
	165	5825	-11.69	3.01	-8.68	6.18	PASS
1	149	5745	-11.41	3.01	-8.40	6.18	PASS
	157	5785	-11.02	3.01	-8.01	6.18	PASS
	165	5825	-11.57	3.01	-8.56	6.18	PASS

**NOTE:** Directional gain = 4.81dBi + 10log(2) = 7.82dBi > 6dBi , so the power density limit shall be reduced to 8-(7.82-6) = 6.18dBm.

#### 802.11ac (VHT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	149	5745	-11.61	3.01	-8.60	8	PASS
	157	5785	-10.12	3.01	-7.11	8	PASS
	165	5825	-11.45	3.01	-8.44	8	PASS
1	149	5745	-11.64	3.01	-8.63	8	PASS
	157	5785	-10.77	3.01	-7.76	8	PASS
	165	5825	-11.71	3.01	-8.70	8	PASS

#### 802.11ac (VHT40)

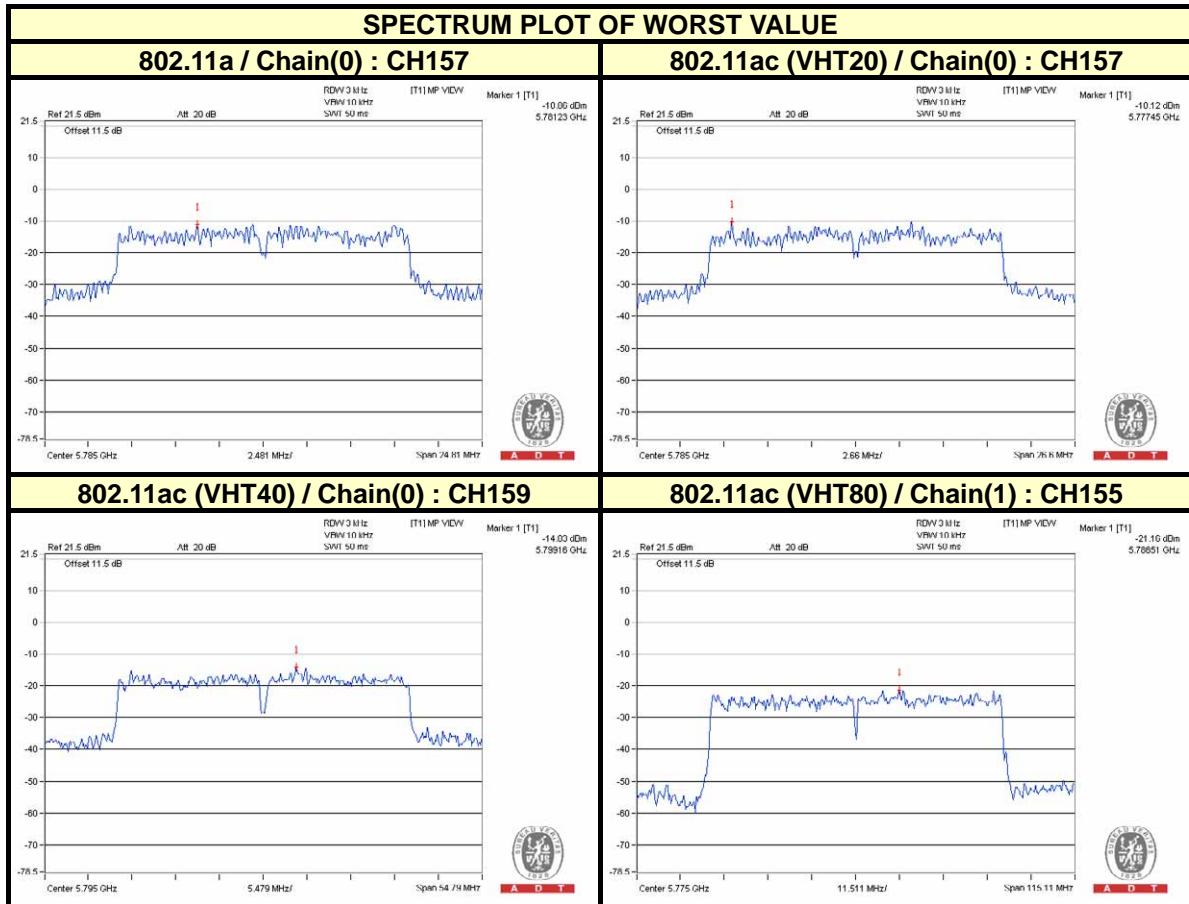
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	151	5755	-15.91	3.01	-12.90	8	PASS
	159	5795	-14.03	3.01	-11.02	8	PASS
1	151	5755	-15.59	3.01	-12.58	8	PASS
	159	5795	-15.65	3.01	-12.64	8	PASS



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### 802.11ac (VHT80)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	155	5775	-21.94	3.01	-18.93	8	PASS
1	155	5775	-21.16	3.01	-18.15	8	PASS





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## 5.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

### 5.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

**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 : June 24, 2014

### 5.6.3 TEST PROCEDURE

#### Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

#### Measurement Procedure –Unwanted Emission Level

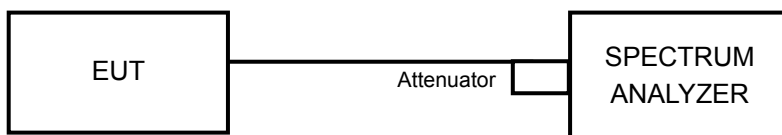
1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.



#### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation

#### 5.6.5 TEST SETUP



#### 5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

#### 5.6.7 TEST RESULTS

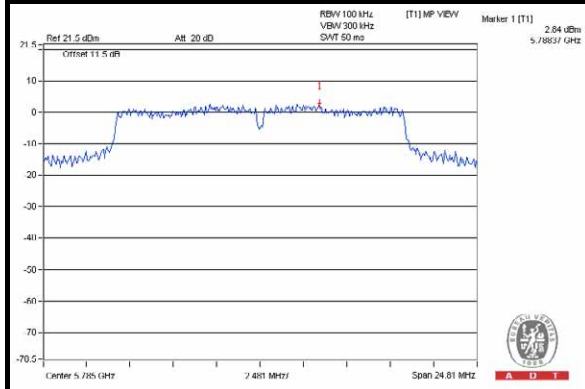
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



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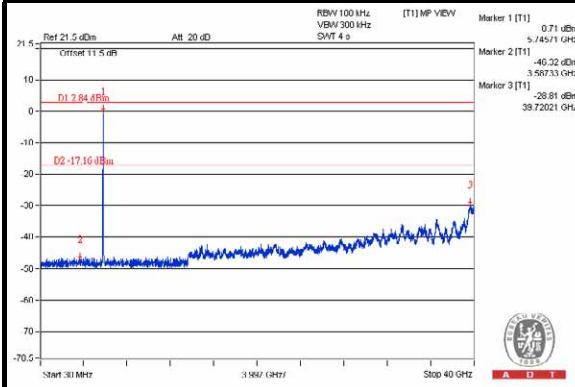
802.11a

### Maximum REF

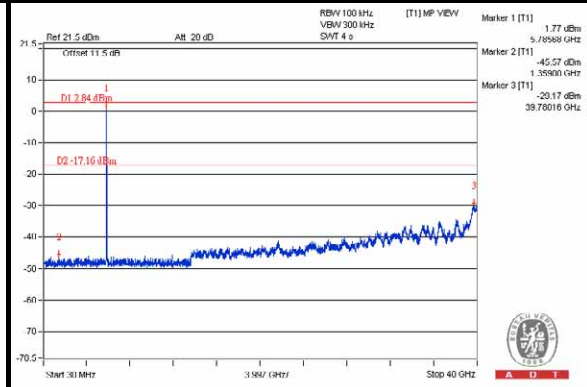


### Chain(0)

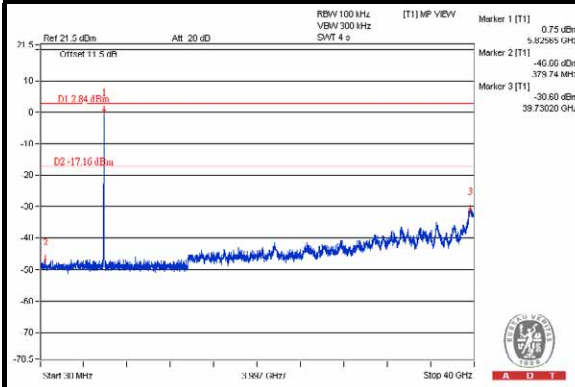
#### CH 149



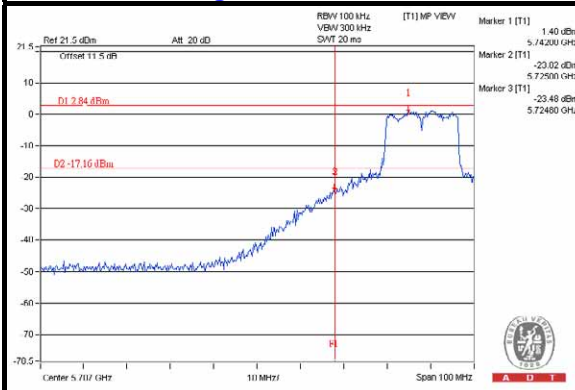
#### CH 157



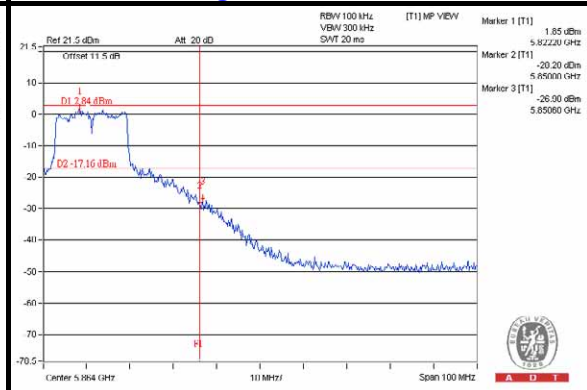
#### CH 165



#### CH 149 Band edge



#### CH 165 Band edge

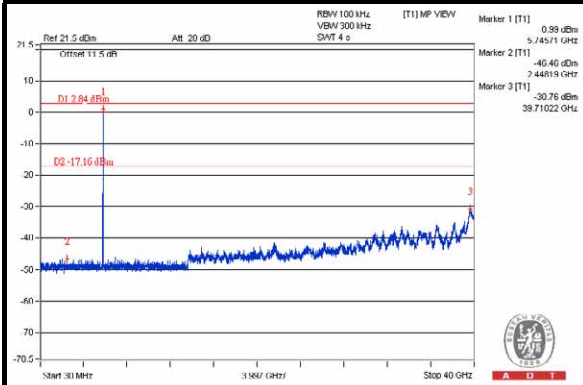




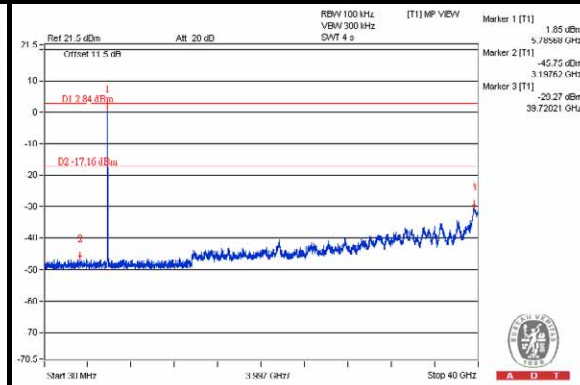
A D T

### Chain(1)

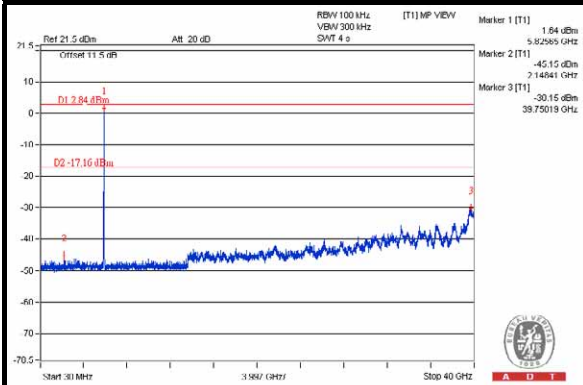
#### CH 149



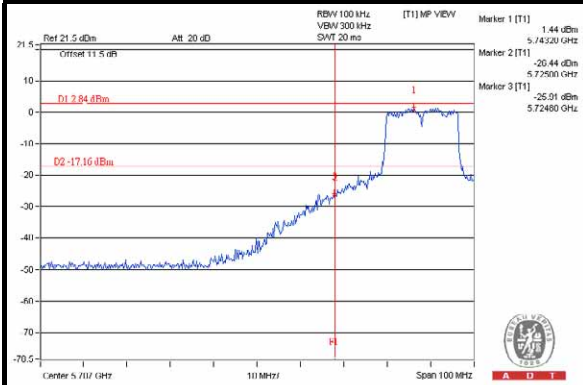
#### CH 157



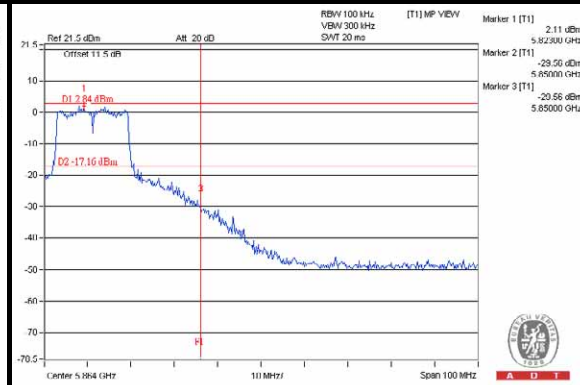
#### CH 165



#### CH 149 Band edge



#### CH 165 Band edge

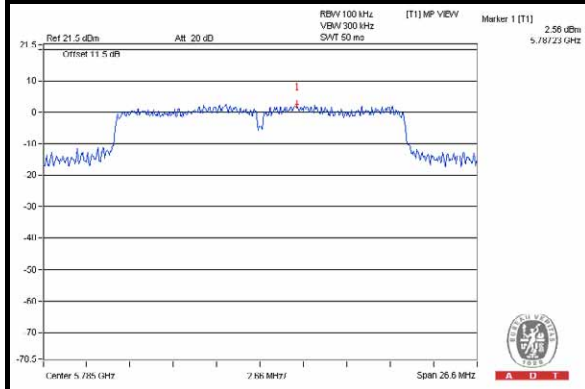




A D T

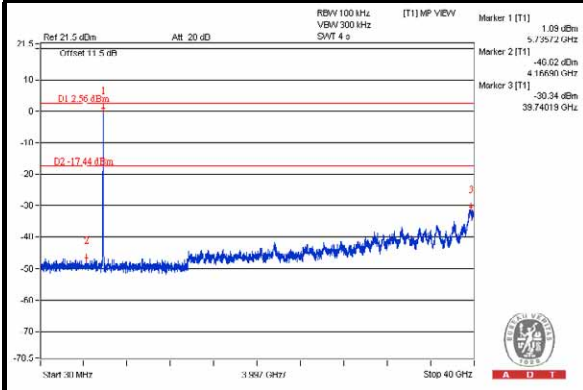
### 802.11ac (VHT20)

#### Maximum REF

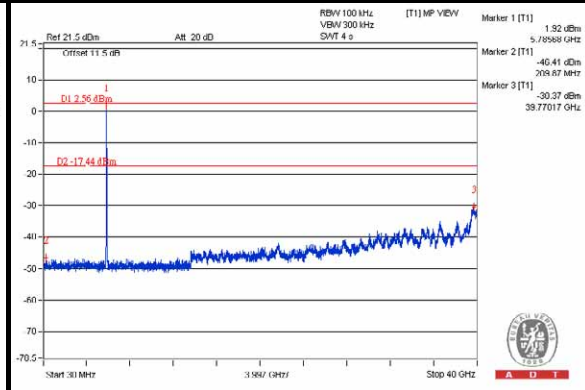


#### Chain(0)

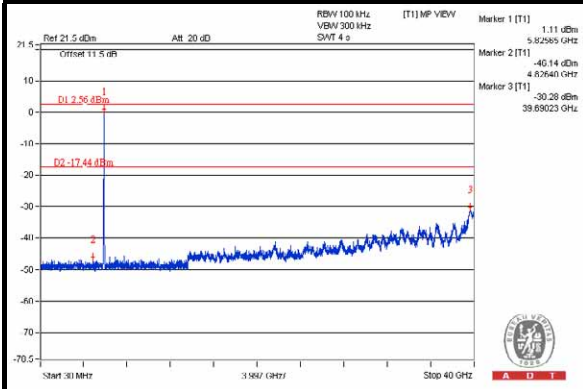
#### CH 149



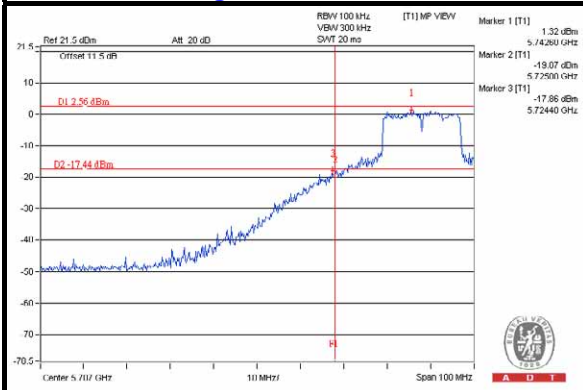
#### CH 157



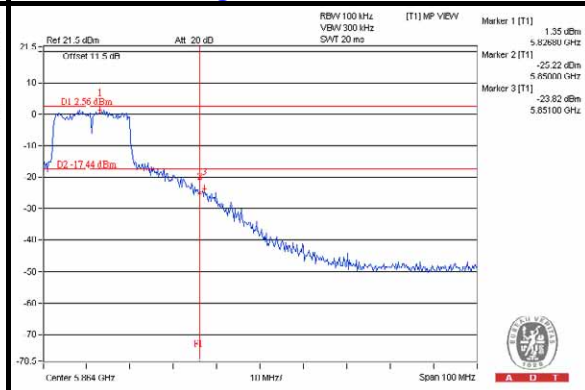
#### CH 165



#### CH 149 Band edge



#### CH 165 Band edge

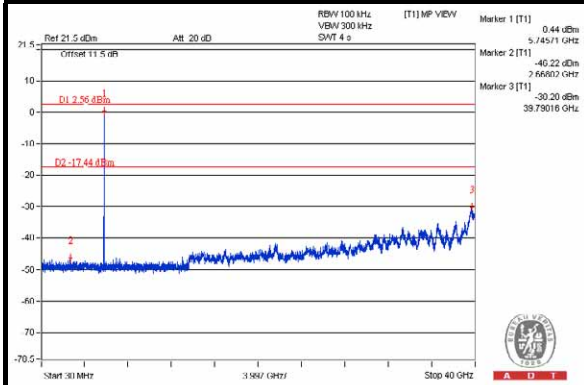




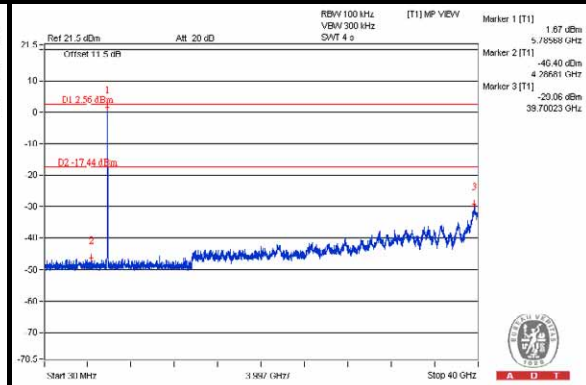
A D T

### Chain(1)

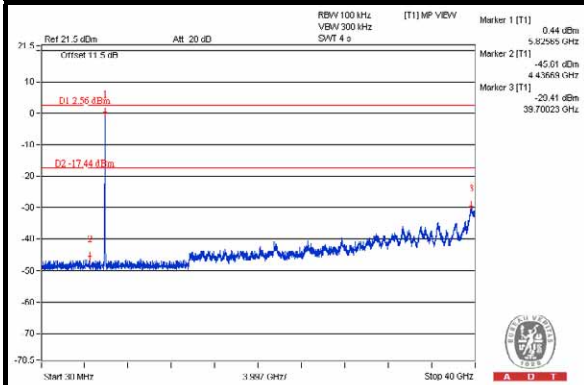
#### CH 149



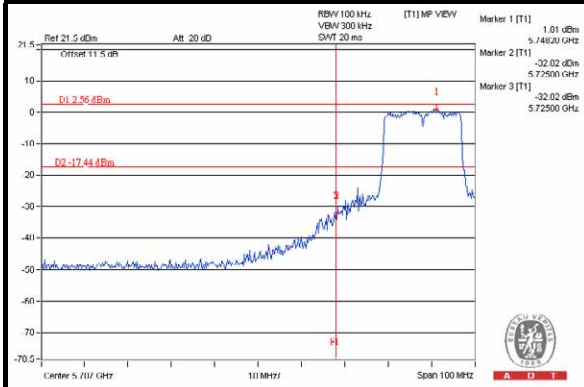
#### CH 157



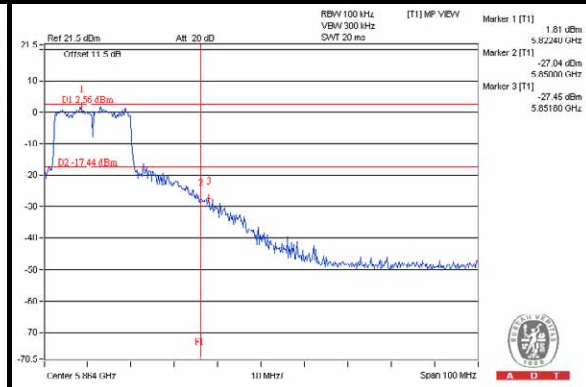
#### CH 165



#### CH 149 Band edge



#### CH 165 Band edge

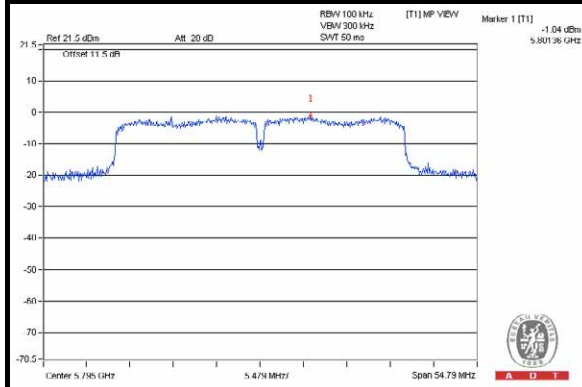




A D T

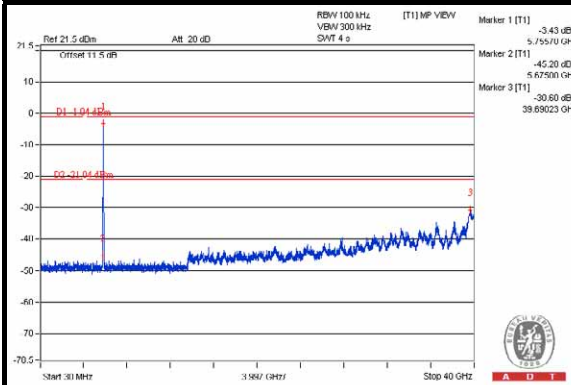
### 802.11ac (VHT40)

#### Maximum REF

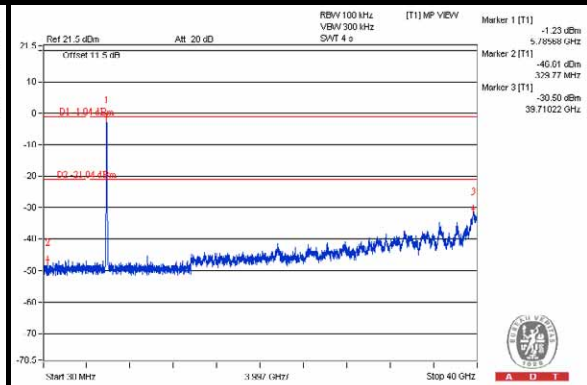


#### Chain(0)

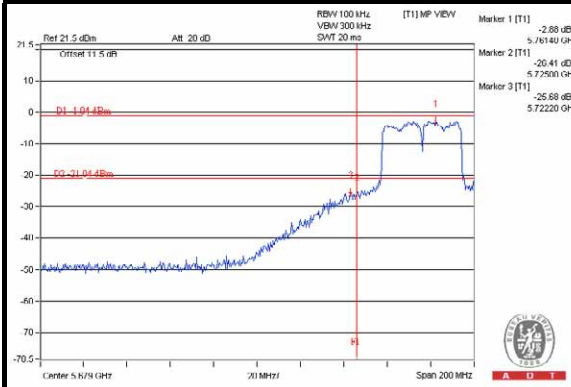
#### CH 151



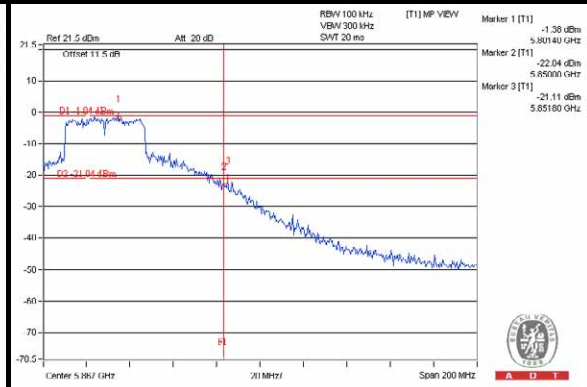
#### CH 159



#### CH 151 Band edge



#### CH 159 Band edge

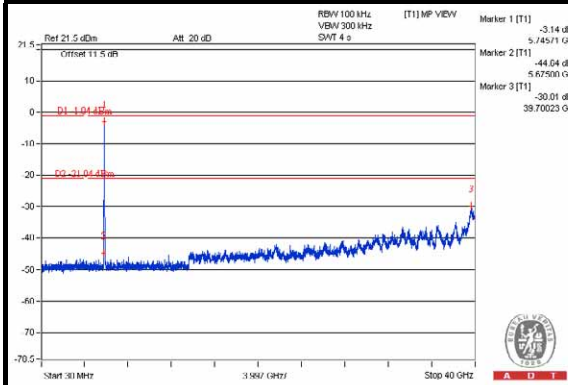




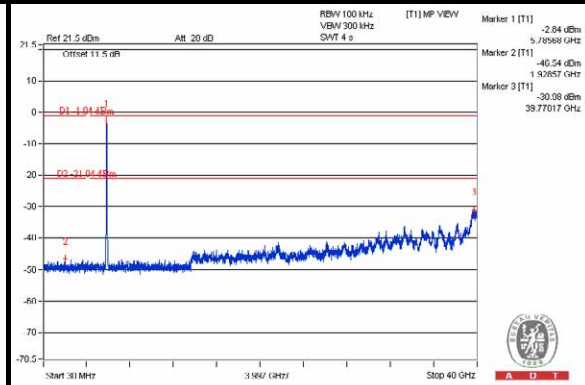
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### Chain(1)

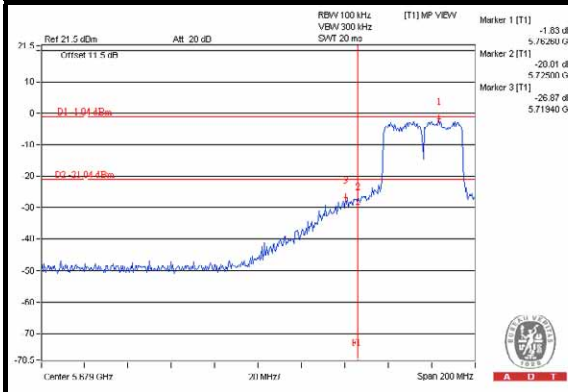
### CH 151



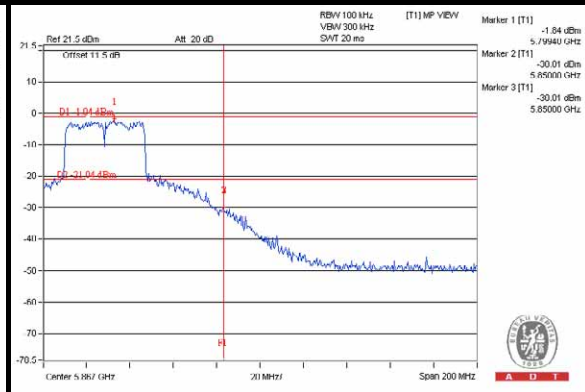
### CH 159



### CH 151 Band edge



### CH 159 Band edge

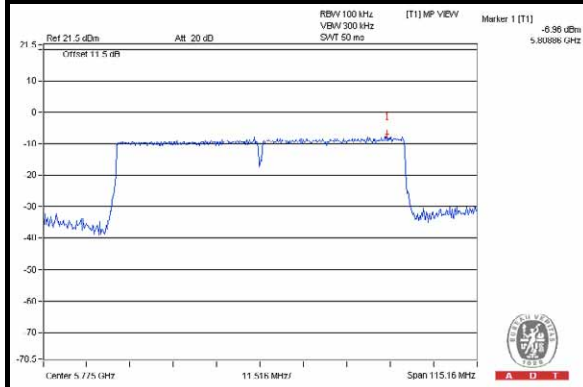




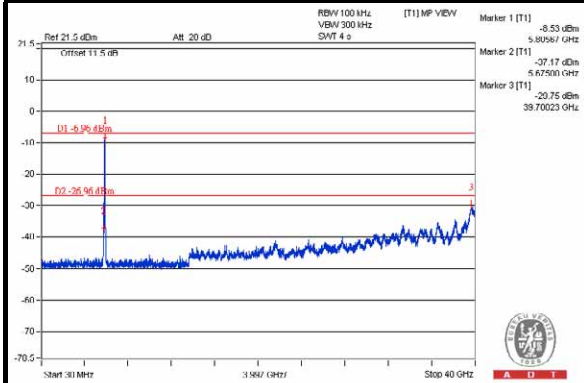
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### 802.11ac (VHT80)

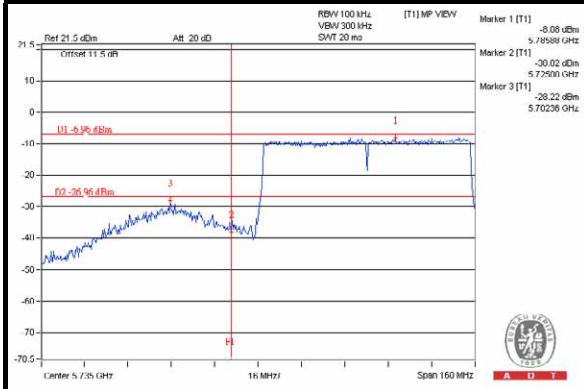
#### Maximum REF



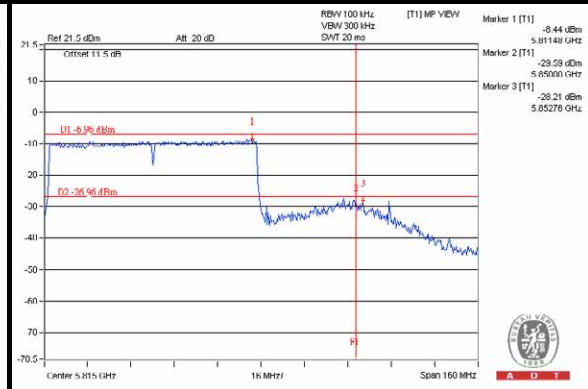
#### Chain(0) CH 155



#### CH 155 Band edge (Left)



#### CH 155 Band edge (Right)



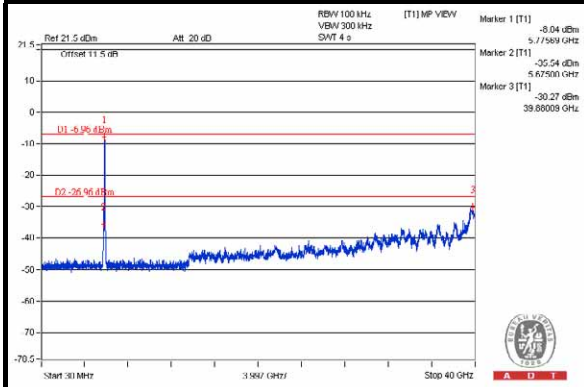




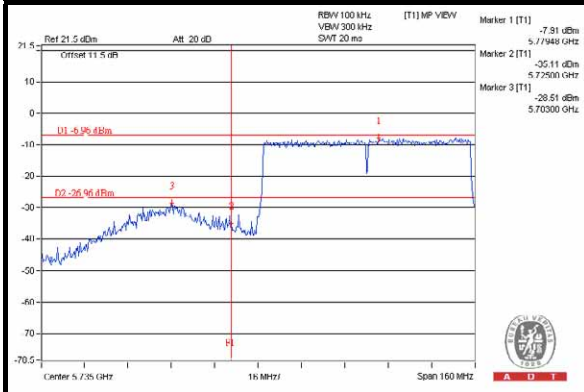
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### Chain(1)

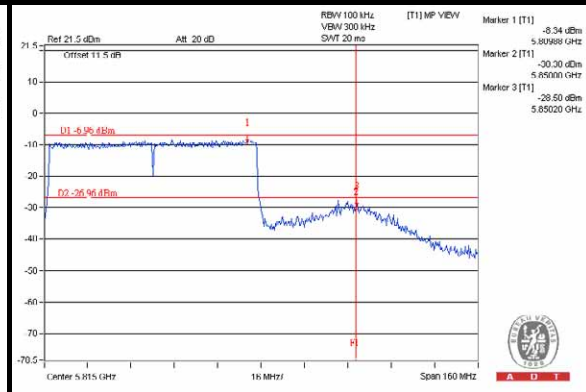
### CH 155



### CH 155 Band edge (Left)



### CH 155 Band edge (Right)





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## 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



## 7. INFORMATION ON THE TESTING LABORATORIES

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

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

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

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



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

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

--- END ---