

# FCC TEST REPORT

## (WLAN, 15.247)

**REPORT NO.:** RF131028E08 R1

**MODEL NO.:** MC32N0

**FCC ID:** UZ7MC32N0

**RECEIVED:** Oct. 28, 2013

**TESTED:** Nov. 29, 2013 to Feb. 10, 2014

**ISSUED:** Feb. 13, 2014

**APPLICANT:** Motorola Solutions, Inc.

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131028E08	Original release	Feb. 07, 2014
RF131028E08 R1	Modified the test result of section 4.3.7	Feb. 13, 2014



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## 1. CERTIFICATION

**PRODUCT:** Mobile Computer  
**BRAND NAME:** MOTOROLA  
**MODEL NO.:** MC32N0  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** Motorola Solutions, Inc.  
**TESTED:** Nov. 29, 2013 to Feb. 10, 2014  
**STANDARDS:** FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.10-2009

The above equipment (Model: MC32N0) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** Midoli Peng , **DATE:** Feb. 13, 2014  
( Midoli Peng, Specialist )

**APPROVED BY :** May Chen , **DATE:** Feb. 13, 2014  
( May Chen, Manager )

## 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 - 8.12dB at 0.150MHz
15.247(d) 15.209	Radiated Emissions(bandedge)	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00MHz & 2483.5MHz
15.247(d) 15.209	Radiated Emissions(Non-bandedge)	PASS	Meet the requirement of limit. Minimum passing margin is -6.6dB at 4834MHz
15.247(d)	Band Edge Measurement	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	Antenna connector is Hirose U.FL 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 -9.64dB at 0.150MHz
15.247(d) 15.209	Radiated Emissions(bandedge)	PASS	Meet the requirement of limit. Minimum passing margin is -7.4dB at 37.61MHz
15.247(d) 15.209	Radiated Emissions(Non-bandedge)	PASS	Meet the requirement of limit. Minimum passing margin is -15.4dB at 5460MHz
15.247(d)	Band Edge Measurement	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	Antenna connector is Hirose U.FL 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 and 5.47~5.6GHz & 5.65~5.725GHz RF parameters was recorded in another test report.

## 2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT (WLAN)

<b>PRODUCT</b>	Mobile Computer
<b>MODEL NO.</b>	MC32N0
<b>POWER SUPPLY</b>	DC 5.4V from power adapter or DC 3.7V from battery
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<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 72.2Mbps
<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 ~ 2.472GHz <b>5GHz:</b> 5.745 ~ 5.825GHz
<b>NUMBER OF CHANNEL</b>	<b>For 15.407</b> 16 for 802.11a, 802.11n (HT20)
	<b>For 15.247 (2.4GHz)</b> 13 for 802.11b, 802.11g, 802.11n (HT20)
	<b>For 15.247 (5GHz)</b> 5 for 802.11a, 802.11n (HT20)
<b>MAXIMUM OUTPUT POWER</b>	<b>For 15.407</b> 802.11a: 86.099mW 802.11n (HT20): 73.451mW
	<b>For 15.247 (2.4GHz)</b> 802.11b: 161.065mW 802.11g: 196.789mW 802.11n (HT20): 199.986mW
	<b>For 15.247 (5GHz)</b> 802.11a: 123.027mW 802.11n (HT20): 123.027mW
<b>ANTENNA TYPE</b>	Please see NOTE
<b>DATA CABLE</b>	Please see NOTE
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	Please see NOTE

**NOTE:**

1. There are Bluetooth 2.1 + EDR technology and WLAN 802.11 a/b/g/n technology.
2. For WLAN: 2.4GHz and 5GHz technology cannot transmit at same time.
3. WLAN & BT technology can transmit at same time.
4. EUT Configuration list:

	Feature	Straight	Rotate	Gun
<b>OS</b>	WIN CE 7.0	V	V	V
	Android	V	V	V
<b>Display</b>	Size 3", Resolution: 320x320	V	V	V
<b>Flash/RAM</b>	512M/2G	V	V	V
	1G/4G	V	V	V
<b>Scanner</b>	2D Imager SE4750	V		V
	2D Imager SE4500			V
	1D SE965	V	V	V
<b>Keypad</b>	28 keys	V	V	V
	38 keys	V	V	V
	48 keys	V	V	V
<b>Battery</b>	1X	V	V	
	2X	V	V	V
<b>RF</b>	WLAN 802.11 a/b/g/n (HT20)	V	V	V
	BT 2.1 EDR	V	V	V
<b>Accessories</b>	USB1.1 Full speed host/client	V	V	V
	Holster	V	V	V
	Headset	V	V	V

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

Product	Brand	Model
Headset	MOTOROLA	RCH51
Cable (RCH51 adapter cable to MC32N0) (Part No. : 25-124411-02R)		

6. The Version of EUT information are as below:

<b>WinCE System</b>		
Mobile Computer	OS Version	07.00.2824
	OEM Name	Motorola MC32N0
	OEM Version	00.40.02
Wireless(Fusion)	Part Number	31-FUSION-X2.01
	Version	X_2.01.0.0.062R
	WLAN Firmware	X_2.01.0.0.166
XW2DMT	Version	X_2.01.0.0.3
	Motorola version	X_2.01.0.0.166
BTRegTest Ver4.1	Version	3.00.2.0.031R

<b>Android System</b>		
Android	Version	4.1.1
EA	Version	2.53
Kernal version	Version	3.0.31

7. The EUT could be supplied with the a power adapter and/or Li-ion battery as below:

<b>Power Adapter</b>	
Brand:	MOTOROLA
Part No.:	PWRS-14000-249R
Input power:	100~240V, 50~60Hz, 0.6A
Output power:	5.4V, 3A
US AC line cord, un-grounded and unshielded, 1.85m (Part No.: 50-16000-182R)	
USB Client Communication and Charging Cable	
Brand:	MOTOROLA
Part No.:	25-67868-03R
Associated Devices:	AC cable*1 (Part No.: 50-16000-182R) Adapter * 1 (Part No.: PWRS-14000-249R)
<b>Li-ion Battery 1</b>	
Brand:	MOTOROLA
Model No.:	82-000011-01
RATING:	3.7V, 2740mAh, 10.2Wh
<b>Li-ion Battery 2</b>	
Brand:	MOTOROLA
Model No.:	82-000012-01
RATING:	3.7V, 4800mAh, 17.8Wh

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

For WLAN								
No.	Brand	Model	Antenna Type	Gain (dBi)	Connector Type	Frequency range (MHz)	Cable Loss(dB)	Cable Length(mm)
1	Laird	Rot - Main	PIFA	0.95 (2.4G) 5.5 (5G)	Hirose U.FL	2400~2500 4900~5850	0.1~0.15	61 +2/-1
2	Laird	Rot - Aux	PIFA	0.61 (2.4G) 5.89 (5G)	Hirose U.FL	2400~2500 4900~5850	0.1~0.15	23 +2.5/0
3	Laird	Str - Main	PIFA	1.09 (2.4G) 4.65 (5G)	Hirose U.FL	2400~2500 4900~5850	0.1~0.15	61 +2/-1
4	Laird	Str - Aux	PIFA	0.66 (2.4G) 4.19 (5G)	Hirose U.FL	2400~2500 4900~5850	0.1~0.15	23 +2.5/0
5	Laird	Gun - Main	PIFA	1.77 (2.4G) 4.82 (5G)	Hirose U.FL	2400~2500 4900~5850	0.1~0.15	61 +2/-1
6	Laird	Gun - Aux	PIFA	1.61 (2.4G) 5.82 (5G)	Hirose U.FL	2400~2500 4900~5850	0.1~0.15	23 +2.5/0
<b>Note :</b> 1. For 2.4G: The antenna 5 was selected as representative antenna for the test. 2. For 5G: The antenna 2 was selected as representative antenna for the test.								
For Bluetooth								
No.	Brand	Model	Antenna Type	Gain (dBi)	Connector Type	Frequency range (MHz)	Cable Loss(dB)	Cable Length(mm)
7	Aristotle	Rot	PIFA	2.6	IPEX	2400~2480	0.1~0.15	26 ± 0.5
8	Aristotle	Str	PIFA	2.71	IPEX	2400~2480	0.1~0.15	26 ± 0.5
9	Aristotle	Gun	PIFA	3.74	IPEX	2400~2480	0.1~0.15	26 ± 0.5
<b>Note :</b> 1. The antenna 9 was selected as representative antenna for the test.								



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9. The EUT was pre-tested in chamber under following test modes :

For Radiated Emission (2.4GHz)								
Mode	Axis	Scanner	Keypad	Feature	Memory	Antenna	Battery	Adapter
<b>Mode A</b>	<b>X-Y</b>	<b>SE965</b>	<b>48 keys</b>	<b>Gun</b>	<b>4GBFlash/1GB DDR</b>	<b>Main</b>	<b>2X</b>	<b>Yes</b>
Mode B	X-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode C	Y-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode D	X-Y	SE965	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
Mode E	X-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
Mode F	Y-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
Mode G	X-Y	SE965	38 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode H	X-Y	SE965	28 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode I	X-Y	SE4750	48 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode J	X-Y	SE4500	48 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode K	X-Y	SE965	48 keys	Rotate	4GBFlash/1GB DDR	Main	2X	Yes
Mode L	X-Y	SE965	48 keys	Rotate	4GBFlash/1GB DDR	Main	1X	Yes
Mode M	X-Y	SE965	48 keys	Straight	4GBFlash/1GB DDR	Main	2X	Yes
Mode N	X-Y	SE965	48 keys	Straight	2GBFlash/512MB DDR	Main	2X	Yes
For Radiated Emission (5GHz)								
Mode	Axis	Scanner	Keypad	Feature	Memory	Antenna	Battery	Adapter
Mode O	X-Y	SE965	48 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode P	X-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode Q	Y-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Main	2X	Yes
Mode R	X-Y	SE965	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
Mode S	X-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
Mode T	Y-Z	SE965	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
Mode U	X-Y	SE4750	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
Mode V	X-Y	SE4500	48 keys	Gun	4GBFlash/1GB DDR	Aux	2X	Yes
<b>Mode W</b>	<b>X-Y</b>	<b>SE965</b>	<b>48 keys</b>	<b>Rotate</b>	<b>4GBFlash/1GB DDR</b>	<b>Aux</b>	<b>2X</b>	<b>Yes</b>
Mode X	X-Y	SE965	48 keys	Straight	4GBFlash/1GB DDR	Aux	2X	Yes

The worse radiated emission (2.4GHz) was found in **Mode A** and the worse radiated emission (5GHz) was found in **Mode W**. Therefore only the test data of the modes were recorded in this report.

10. The EUT incorporates a SISO function. Both, main and diversity (aux.) antennas path can transmit but only one can transmit at given time while the other is RX only.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX/1RX(Diversity)
802.11g	1TX/1RX(Diversity)
802.11a	1TX/1RX(Diversity)
802.11n (HT20)	1TX/1RX(Diversity)

11. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
12. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



### 3.2 DESCRIPTION OF TEST MODES

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	8	2447MHz
2	2417MHz	9	2452MHz
3	2422MHz	10	2457MHz
4	2427MHz	11	2462MHz
5	2432MHz	12	2467MHz
6	2437MHz	13	2472MHz
7	2442MHz		

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

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

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

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

#### 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)
For 2.4 GHz 802.11n (HT20)	1 to 13	6	OFDM	BPSK	6.5
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)
For 2.4 GHz 802.11n (HT20)	1 to 13	6	OFDM	BPSK	6.5
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 13	1, 2, 3, 6, 9, 10 11, 12, 13	DSSS	DBPSK	1
802.11g	1 to 13	1, 2, 3, 6, 9, 10 11, 12, 13	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 13	1, 2, 3, 6, 9, 10 11, 12, 13	OFDM	BPSK	6.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5

### **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 13	1, 2, 3, 6, 9, 10 11, 12, 13	DSSS	DBPSK	1
802.11g	1 to 13	1, 2, 3, 6, 9, 10 11, 12, 13	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 13	1, 2, 3, 6, 9, 10 11, 12, 13	OFDM	BPSK	6.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5

### **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 13	1, 2, 3, 6, 9, 10 11, 12, 13	DSSS	DBPSK	1
802.11g	1 to 13	1, 2, 3, 6, 9, 10 11, 12, 13	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 13	1, 2, 3, 6, 9, 10 11, 12, 13	OFDM	BPSK	6.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5

### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	24deg. C, 58%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	24deg. C, 73%RH	120Vac, 60Hz	Jason Huang
RE <sup>3</sup> 1G	25deg. C, 67%RH	120Vac, 60Hz	Tim Ho
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 v03r01**  
**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

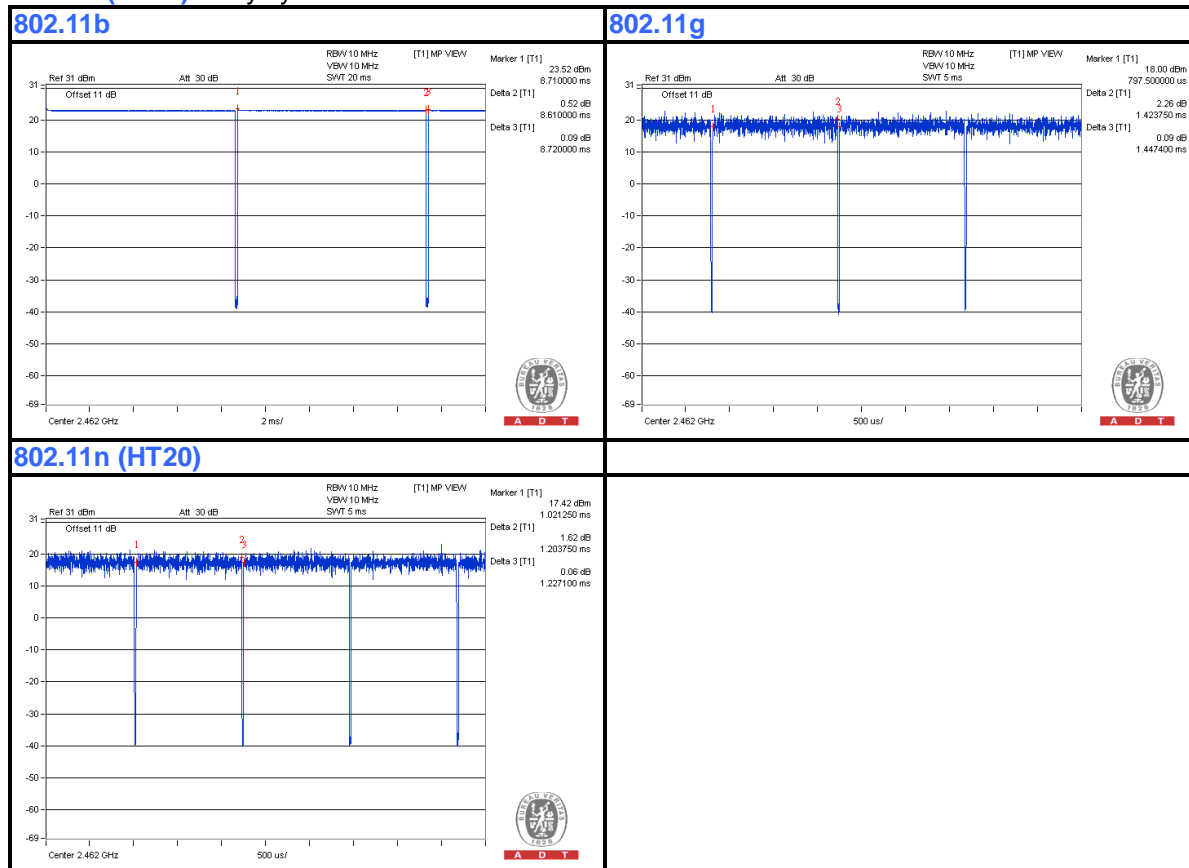
If duty cycle of test signal is > 98 %, duty factor is not required.

#### For 2.4GHz

**802.11b:** Duty cycle = 8.61 ms/8.72 ms = 0.987

**802.11g:** Duty cycle = 1.424 ms/1.447 ms = 0.984

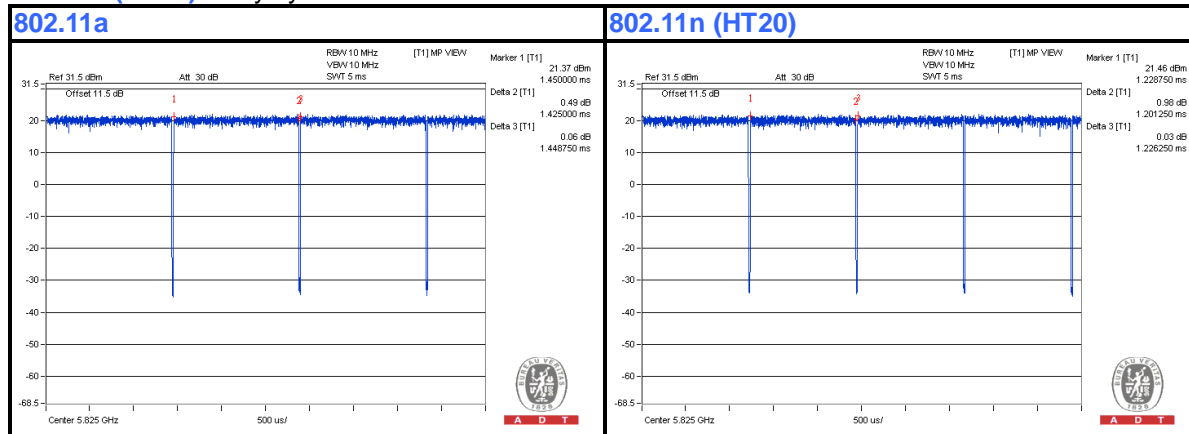
**802.11n(HT20):** Duty cycle = 1.204 ms/1.227 ms = 0.981



#### For 5GHz

**802.11a:** Duty cycle = 1.425 ms/1.449 ms = 0.983

**802.11n (HT20):** Duty cycle = 1.201 ms/1.226 ms = 0.98



### 3.5 DESCRIPTION OF SUPPORT UNITS

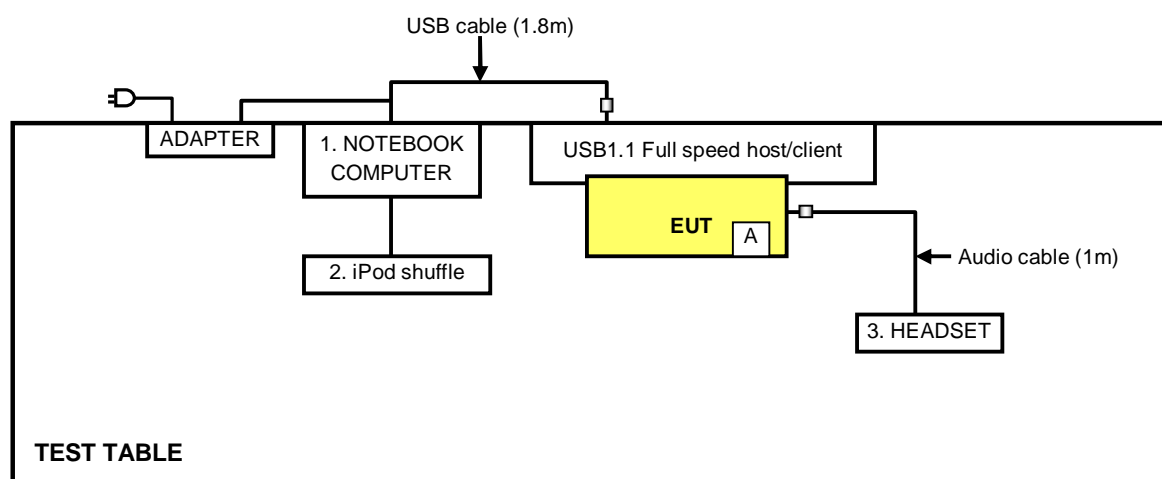
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	iPod shuffle	Apple	MC749TA/A	CC4DN25WDFDM	NA
3	HEADSET	MOTOROLA	RCH51	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable (1.8m with 1 core)
2	USB cable (0.1m)
3	Audio cable (1m with 1 core)

**NOTE:** All power cords of the above support units are non shielded (1.8m).

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST



**NOTE:** 1. Item A is the Micro SD Card.

## 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 ROHDE & SCHWARZ	ESCS 30	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) ROHDE & SCHWARZ	NSLK-8127	5127-523	Oct. 02, 2013	Oct. 01, 2014
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COACAB-001	May 27, 2013	May 26, 2014
50 ohms Terminator	50	3	Oct. 17, 2013	Oct. 16, 2014
50 ohms Terminator	N/A	EMC-04	Oct. 17, 2013	Oct. 16, 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. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Dec. 16, 2013



#### 4.1.3 TEST PROCEDURES

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

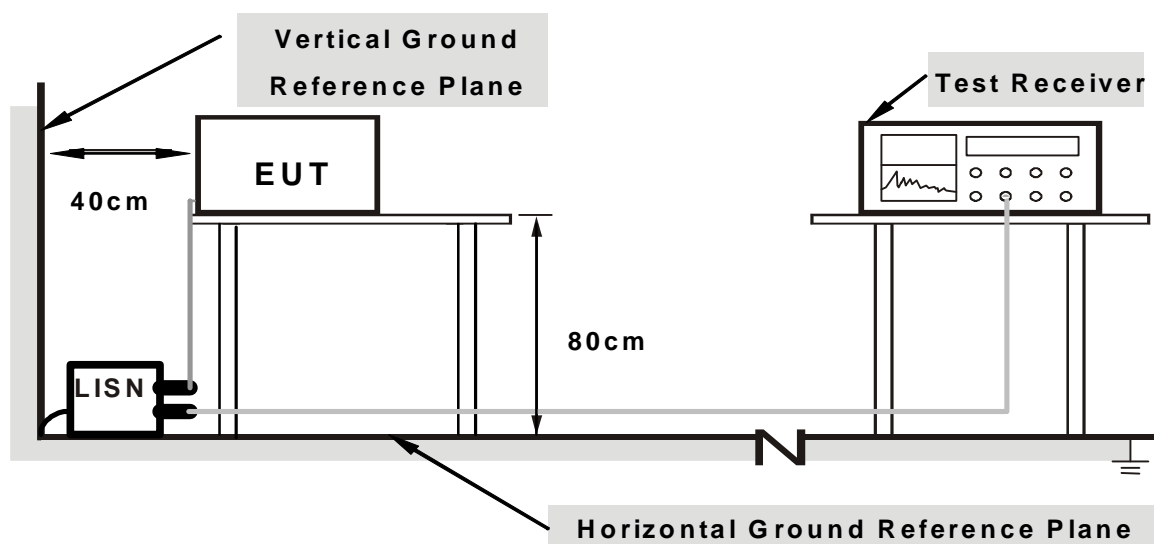
#### NOTE:

- 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.



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#### 4.1.6 EUT OPERATING CONDITIONS

1. Turn on the power of EUT.
2. The communication partner run test program "XW2DMT.exe" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

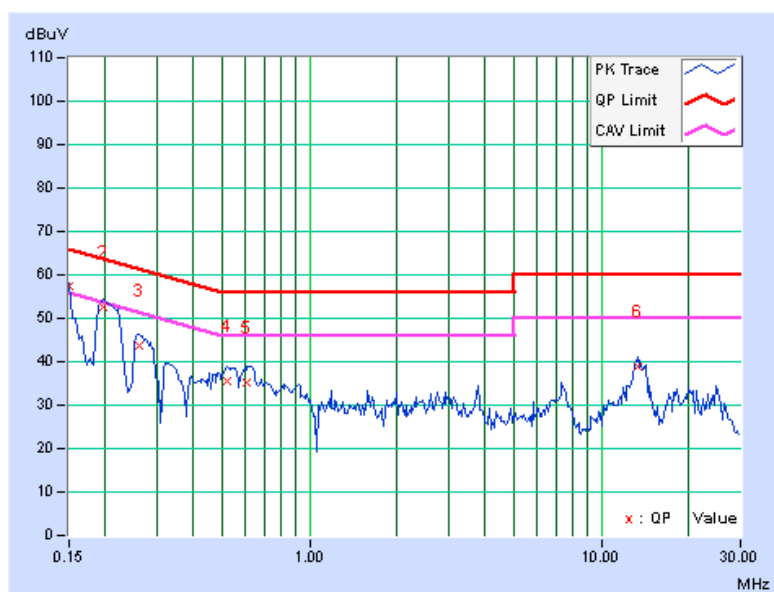
#### 4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.05	57.51	29.70	57.56	29.75	66.00	56.00	-8.44	-26.25
2	0.19687	0.06	52.38	36.57	52.44	36.63	63.74	53.74	-11.30	-17.11
3	0.25938	0.07	43.54	25.03	43.61	25.10	61.45	51.45	-17.84	-26.35
4	0.52500	0.11	35.38	21.46	35.49	21.57	56.00	46.00	-20.51	-24.43
5	0.61094	0.12	35.00	22.22	35.12	22.34	56.00	46.00	-20.88	-23.66
6	13.32813	0.58	38.25	32.75	38.83	33.33	60.00	50.00	-21.17	-16.67

#### REMARKS:

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

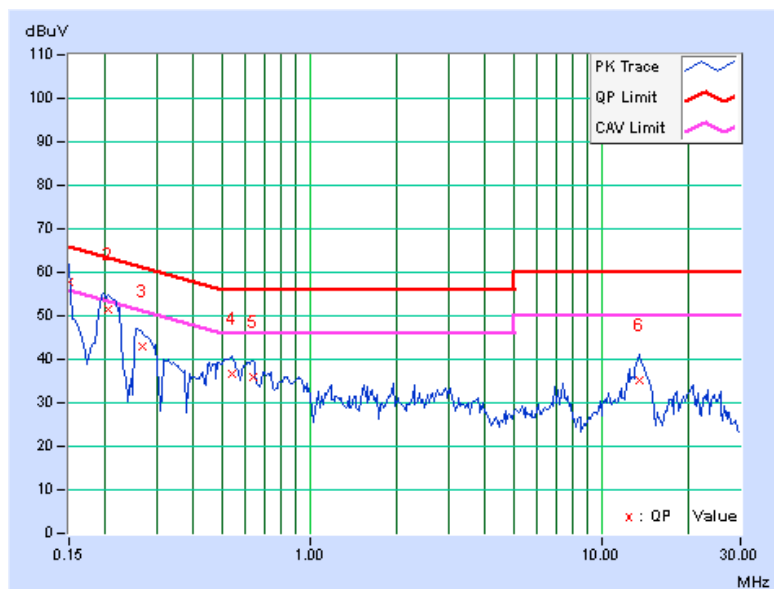


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB]	AV. [dB]
1	0.15000	0.05	57.83	29.90	57.88	29.95	66.00	56.00	-8.12	-26.05
2	0.20469	0.05	51.56	37.47	51.61	37.52	63.42	53.42	-11.81	-15.90
3	0.26719	0.07	43.03	26.22	43.10	26.29	61.20	51.20	-18.10	-24.91
4	0.54453	0.12	36.52	17.91	36.64	18.03	56.00	46.00	-19.36	-27.97
5	0.63828	0.12	35.73	24.73	35.85	24.85	56.00	46.00	-20.15	-21.15
6	13.47266	0.57	34.58	28.63	35.15	29.20	60.00	50.00	-24.85	-20.80

#### REMARKS:

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



## 4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

## 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29, 2013	Jan. 28, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISL	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
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: Nov. 29 to Dec. 11, 2013

#### 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:**

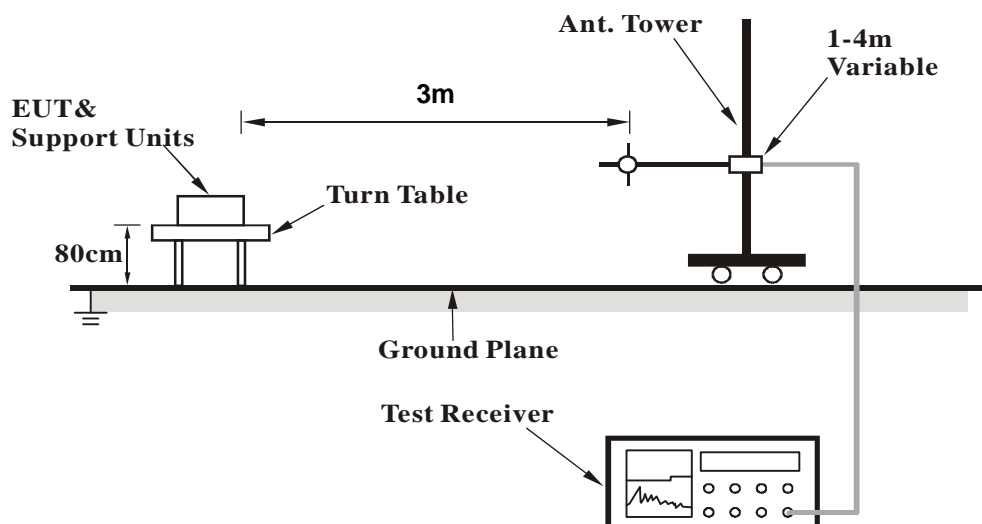
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

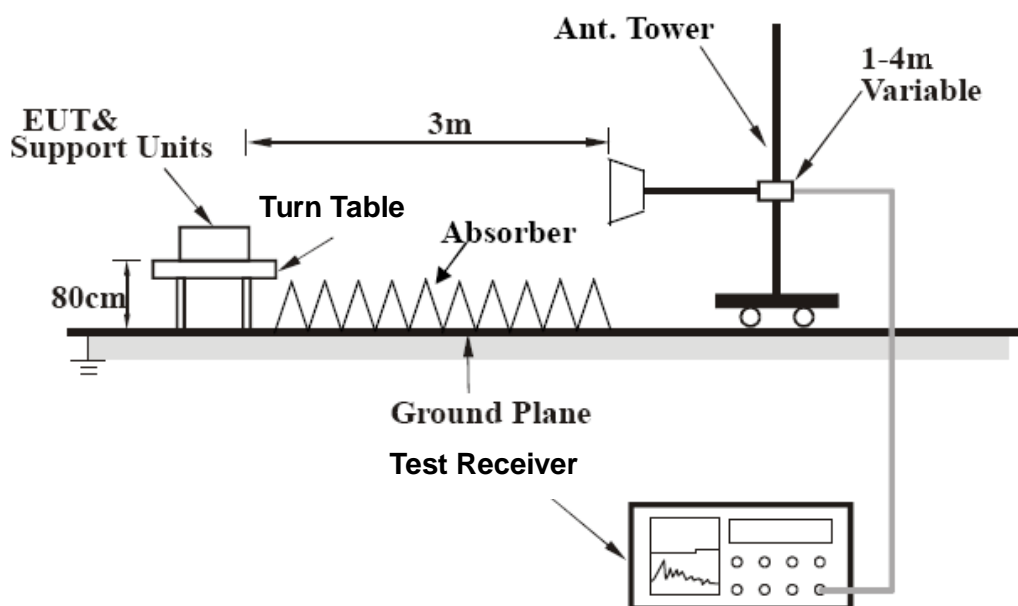
No deviation

## 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



## 4.2.7 TEST RESULTS

### BELOW 1GHz WORST-CASE DATA

#### 802.11n(HT20)

<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	110.56	30.1 QP	43.5	-13.4	2.00 H	260	46.09	-16.00
2	128.65	30.9 QP	43.5	-12.6	2.00 H	310	45.52	-14.65
3	150.00	32.8 QP	43.5	-10.7	2.00 H	124	46.12	-13.33
4	166.38	33.1 QP	43.5	-10.4	1.00 H	317	47.02	-13.92
5	240.01	30.6 QP	46.0	-15.4	1.00 H	183	45.37	-14.76
6	322.07	27.2 QP	46.0	-18.8	1.00 H	260	38.94	-11.71
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	37.61	32.0 QP	40.0	-8.1	1.00 V	23	45.91	-13.96
2	126.08	32.7 QP	43.5	-10.8	1.00 V	307	47.31	-14.58
3	133.16	34.9 QP	43.5	-8.6	1.00 V	326	49.10	-14.19
4	150.09	33.6 QP	43.5	-10.0	1.00 V	231	46.86	-13.31
5	161.63	34.4 QP	43.5	-9.2	1.50 V	360	47.46	-13.11
6	306.94	32.2 QP	46.0	-13.8	2.00 V	23	44.52	-12.31

#### REMARKS:

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

## ABOVE 1GHz WORST-CASE 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	2387.30	51.5 PK	74.0	-22.5	1.18 H	158	53.21	-1.71
2	2387.30	41.7 AV	54.0	-12.3	1.18 H	158	43.41	-1.71
3	*2412.00	103.5 PK			1.18 H	158	105.10	-1.60
4	*2412.00	100.2 AV			1.18 H	158	101.80	-1.60
5	4824.00	52.1 PK	74.0	-21.9	1.05 H	314	44.90	7.20
6	4824.00	46.2 AV	54.0	-7.8	1.05 H	314	39.00	7.20

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	2387.30	56.3 PK	74.0	-17.7	1.00 V	272	58.01	-1.71
2	2387.30	49.1 AV	54.0	-4.9	1.00 V	272	50.81	-1.71
3	*2412.00	107.9 PK			1.00 V	272	109.50	-1.60
4	*2412.00	105.1 AV			1.00 V	272	106.70	-1.60
5	4824.00	51.5 PK	74.0	-22.5	1.07 V	278	44.30	7.20
6	4824.00	44.0 AV	54.0	-10.0	1.07 V	278	36.80	7.20

#### REMARKS:

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

<b>CHANNEL</b>	TX Channel 2	<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	2388.72	52.5 PK	74.0	-21.5	1.28 H	290	54.20	-1.70
2	2388.72	45.5 AV	54.0	-8.5	1.28 H	290	47.20	-1.70
3	*2417.00	106.6 PK			1.28 H	290	108.18	-1.58
4	*2417.00	104.0 AV			1.28 H	290	105.58	-1.58
5	4834.00	53.8 PK	74.0	-20.2	1.03 H	173	46.58	7.22
6	4834.00	47.4 AV	54.0	-6.6	1.03 H	173	40.18	7.22
7	7251.00	54.4 PK	74.0	-19.6	1.09 H	151	39.34	15.06
8	7251.00	42.8 AV	54.0	-11.2	1.09 H	151	27.74	15.06
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	55.5 PK	74.0	-18.5	1.00 V	263	57.20	-1.70
2	2390.00	46.6 AV	54.0	-7.4	1.00 V	263	48.30	-1.70
3	*2417.00	107.5 PK			1.00 V	263	109.08	-1.58
4	*2417.00	104.6 AV			1.00 V	263	106.18	-1.58
5	4834.00	51.2 PK	74.0	-22.8	1.10 V	273	43.98	7.22
6	4834.00	43.8 AV	54.0	-10.2	1.10 V	273	36.58	7.22
7	7251.00	54.4 PK	74.0	-19.6	1.11 V	268	39.34	15.06
8	7251.00	42.8 AV	54.0	-11.2	1.11 V	268	27.74	15.06

**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.

<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	2385.72	52.1 PK	74.0	-21.9	1.25 H	290	53.82	-1.72
2	2385.72	44.7 AV	54.0	-9.3	1.25 H	290	46.42	-1.72
3	*2422.00	106.6 PK			1.25 H	290	108.15	-1.55
4	*2422.00	103.9 AV			1.25 H	290	105.45	-1.55
5	4844.00	52.3 PK	74.0	-21.7	1.06 H	315	45.06	7.24
6	4844.00	46.5 AV	54.0	-7.5	1.06 H	315	39.26	7.24
7	7266.00	54.4 PK	74.0	-19.6	1.15 H	158	39.38	15.02
8	7266.00	42.7 AV	54.0	-11.3	1.15 H	158	27.68	15.02
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.5 PK	74.0	-20.5	1.07 V	108	55.20	-1.70
2	2390.00	40.7 AV	54.0	-13.3	1.07 V	108	42.40	-1.70
3	*2422.00	108.5 PK			1.07 V	108	110.05	-1.55
4	*2422.00	105.4 AV			1.07 V	108	106.95	-1.55
5	4844.00	51.1 PK	74.0	-22.9	1.08 V	278	43.86	7.24
6	4844.00	43.8 AV	54.0	-10.2	1.08 V	278	36.56	7.24
7	7266.00	54.2 PK	74.0	-19.8	1.05 V	277	39.18	15.02
8	7266.00	42.7 AV	54.0	-11.3	1.05 V	277	27.68	15.02

**REMARKS:**

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

CHANNEL	TX Channel 6	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	2390.00	47.9 PK	74.0	-26.1	1.26 H	288	49.60	-1.70
2	2390.00	36.6 AV	54.0	-17.4	1.26 H	288	38.30	-1.70
3	*2437.00	107.2 PK			1.26 H	288	108.69	-1.49
4	*2437.00	104.4 AV			1.26 H	288	105.89	-1.49
5	2483.50	49.3 PK	74.0	-24.7	1.26 H	288	50.58	-1.28
6	2483.50	36.3 AV	54.0	-17.7	1.26 H	288	37.58	-1.28
7	4874.00	52.5 PK	74.0	-21.5	1.04 H	305	45.17	7.33
8	4874.00	46.8 AV	54.0	-7.2	1.04 H	305	39.47	7.33
9	7311.00	54.3 PK	74.0	-19.7	1.05 H	133	39.34	14.96
10	7311.00	42.6 AV	54.0	-11.4	1.05 H	133	27.64	14.96
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	47.5 PK	74.0	-26.5	1.04 V	107	49.20	-1.70
2	2390.00	36.4 AV	54.0	-17.6	1.04 V	107	38.10	-1.70
3	*2437.00	108.0 PK			1.04 V	107	109.49	-1.49
4	*2437.00	105.0 AV			1.04 V	107	106.49	-1.49
5	2483.50	49.0 PK	74.0	-25.0	1.04 V	107	50.28	-1.28
6	2483.50	35.9 AV	54.0	-18.1	1.04 V	107	37.18	-1.28
7	4874.00	50.9 PK	74.0	-23.1	1.00 V	277	43.57	7.33
8	4874.00	44.0 AV	54.0	-10.0	1.00 V	277	36.67	7.33
9	7311.00	53.9 PK	74.0	-20.1	1.09 V	274	38.94	14.96
10	7311.00	42.4 AV	54.0	-11.6	1.09 V	274	27.44	14.96

#### REMARKS:

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

<b>CHANNEL</b>	TX Channel 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	108.2 PK			1.26 H	289	109.62	-1.42
2	*2452.00	105.4 AV			1.26 H	289	106.82	-1.42
3	2484.14	54.5 PK	74.0	-19.5	1.26 H	289	55.77	-1.27
4	2484.14	43.5 AV	54.0	-10.5	1.26 H	289	44.77	-1.27
5	4904.00	52.1 PK	74.0	-21.9	1.02 H	303	44.69	7.41
6	4904.00	46.3 AV	54.0	-7.7	1.02 H	303	38.89	7.41
7	7356.00	54.1 PK	74.0	-19.9	1.06 H	145	39.19	14.91
8	7356.00	42.5 AV	54.0	-11.5	1.06 H	145	27.59	14.91
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	108.5 PK			1.03 V	123	109.92	-1.42
2	*2452.00	105.4 AV			1.03 V	123	106.82	-1.42
3	2483.50	54.1 PK	74.0	-19.9	1.03 V	123	55.38	-1.28
4	2483.50	41.4 AV	54.0	-12.6	1.03 V	123	42.68	-1.28
5	4904.00	51.0 PK	74.0	-23.0	1.02 V	266	43.59	7.41
6	4904.00	43.8 AV	54.0	-10.2	1.02 V	266	36.39	7.41
7	7356.00	54.1 PK	74.0	-19.9	1.09 V	277	39.19	14.91
8	7356.00	42.6 AV	54.0	-11.4	1.09 V	277	27.69	14.91

**REMARKS:**

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

<b>CHANNEL</b>	TX Channel 10	<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	*2457.00	108.8 PK			1.25 H	288	110.19	-1.39
2	*2457.00	106.0 AV			1.25 H	288	107.39	-1.39
3	2483.50	55.3 PK	74.0	-18.7	1.25 H	288	56.58	-1.28
4	2483.50	45.1 AV	54.0	-8.9	1.25 H	288	46.38	-1.28
5	4914.00	52.4 PK	74.0	-21.6	1.05 H	308	44.96	7.44
6	4914.00	46.5 AV	54.0	-7.5	1.05 H	308	39.06	7.44
7	7371.00	54.3 PK	74.0	-19.7	1.10 H	144	39.39	14.91
8	7371.00	42.8 AV	54.0	-11.2	1.10 H	144	27.89	14.91
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	*2457.00	108.4 PK			1.00 V	251	109.79	-1.39
2	*2457.00	105.5 AV			1.00 V	251	106.89	-1.39
3	2483.50	56.4 PK	74.0	-17.6	1.00 V	251	57.68	-1.28
4	2483.50	47.7 AV	54.0	-6.3	1.00 V	251	48.98	-1.28
5	4914.00	51.2 PK	74.0	-22.8	1.00 V	274	43.76	7.44
6	4914.00	44.1 AV	54.0	-9.9	1.00 V	274	36.66	7.44
7	7371.00	54.0 PK	74.0	-20.0	1.03 V	288	39.09	14.91
8	7371.00	42.7 AV	54.0	-11.3	1.03 V	288	27.79	14.91

**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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CHANNEL	TX Channel 11	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	*2462.00	109.1 PK			1.25 H	287	110.48	-1.38
2	*2462.00	106.3 AV			1.25 H	287	107.68	-1.38
3	2483.50	60.9 PK	74.0	-13.1	1.25 H	287	62.18	-1.28
4	2483.50	53.0 AV	54.0	-1.0	1.25 H	287	54.28	-1.28
5	4924.00	52.7 PK	74.0	-21.3	1.00 H	130	45.23	7.47
6	4924.00	43.9 AV	54.0	-10.1	1.00 H	130	36.43	7.47
7	7386.00	53.6 PK	74.0	-20.4	1.00 H	335	38.71	14.89
8	7386.00	41.5 AV	54.0	-12.5	1.00 H	335	26.61	14.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.6 PK			1.00 V	276	110.98	-1.38
2	*2462.00	106.7 AV			1.00 V	276	108.08	-1.38
3	2483.50	59.9 PK	74.0	-14.1	1.00 V	276	61.18	-1.28
4	2483.50	52.5 AV	54.0	-1.5	1.00 V	276	53.78	-1.28
5	4924.00	51.9 PK	74.0	-22.1	1.00 V	283	44.43	7.47
6	4924.00	43.1 AV	54.0	-10.9	1.00 V	283	35.63	7.47
7	7386.00	54.2 PK	74.0	-19.8	1.00 V	302	39.31	14.89
8	7386.00	41.5 AV	54.0	-12.5	1.00 V	302	26.61	14.89

**REMARKS:**

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



<b>CHANNEL</b>	TX Channel 12	<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	*2467.00	87.3 PK			1.26 H	288	88.66	-1.36
2	*2467.00	81.5 AV			1.26 H	288	82.86	-1.36
3	2483.50	48.9 PK	74.0	-25.1	1.26 H	288	50.18	-1.28
4	2483.50	35.1 AV	54.0	-18.9	1.26 H	288	36.38	-1.28
5	4934.00	50.7 PK	74.0	-23.3	1.02 H	337	43.20	7.50
6	4934.00	38.9 AV	54.0	-15.1	1.02 H	337	31.40	7.50
7	7401.00	53.6 PK	74.0	-20.4	1.03 H	321	38.72	14.88
8	7401.00	41.5 AV	54.0	-12.5	1.03 H	321	26.62	14.88
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	*2467.00	82.7 PK			1.05 V	279	84.06	-1.36
2	*2467.00	78.7 AV			1.05 V	279	80.06	-1.36
3	4934.00	48.5 PK	74.0	-25.5	1.02 V	348	41.00	7.50
4	4934.00	37.8 AV	54.0	-16.2	1.02 V	348	30.30	7.50
5	7401.00	54.2 PK	74.0	-19.8	1.00 V	291	39.32	14.88
6	7401.00	41.7 AV	54.0	-12.3	1.00 V	291	26.82	14.88

**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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CHANNEL	TX Channel 13	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	*2472.00	87.7 PK			1.28 H	282	89.03	-1.33
2	*2472.00	81.7 AV			1.28 H	282	83.03	-1.33
3	2483.50	48.6 PK	74.0	-25.4	1.28 H	282	49.88	-1.28
4	2483.50	34.9 AV	54.0	-19.1	1.28 H	282	36.18	-1.28
5	4944.00	50.9 PK	74.0	-23.1	1.05 H	349	43.38	7.52
6	4944.00	38.8 AV	54.0	-15.2	1.05 H	349	31.28	7.52
7	7416.00	53.6 PK	74.0	-20.4	1.00 H	325	38.74	14.86
8	7416.00	41.2 AV	54.0	-12.8	1.00 H	325	26.34	14.86
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	*2472.00	81.1 PK			1.07 V	279	82.43	-1.33
2	*2472.00	78.6 AV			1.07 V	279	79.93	-1.33
3	4944.00	48.0 PK	74.0	-26.0	1.05 V	343	40.48	7.52
4	4944.00	37.6 AV	54.0	-16.4	1.05 V	343	30.08	7.52
5	7416.00	54.8 PK	74.0	-19.2	1.00 V	286	39.94	14.86
6	7416.00	42.2 AV	54.0	-11.8	1.00 V	286	27.34	14.86

**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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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	2390.00	70.4 PK	74.0	-3.6	1.30 H	290	72.10	-1.70
2	2390.00	50.0 AV	54.0	-4.0	1.30 H	290	51.70	-1.70
3	*2412.00	107.0 PK			1.30 H	290	108.60	-1.60
4	*2412.00	94.7 AV			1.30 H	290	96.30	-1.60
5	4824.00	47.4 PK	74.0	-26.6	1.00 H	205	40.20	7.20
6	4824.00	36.7 AV	54.0	-17.3	1.00 H	205	29.50	7.20
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	72.9 PK	74.0	-1.1	1.00 V	274	74.60	-1.70
2	2390.00	51.0 AV	54.0	-3.0	1.00 V	274	52.70	-1.70
3	*2412.00	107.4 PK			1.00 V	274	109.00	-1.60
4	*2412.00	95.0 AV			1.00 V	274	96.60	-1.60
5	4824.00	48.3 PK	74.0	-25.7	1.00 V	114	41.10	7.20
6	4824.00	36.5 AV	54.0	-17.5	1.00 V	114	29.30	7.20

## 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 2	<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	70.7 PK	74.0	-3.3	1.28 H	289	72.40	-1.70
2	2390.00	49.4 AV	54.0	-4.6	1.28 H	289	51.10	-1.70
3	*2417.00	107.4 PK			1.28 H	289	108.98	-1.58
4	*2417.00	95.3 AV			1.28 H	289	96.88	-1.58
5	4834.00	48.0 PK	74.0	-26.0	1.00 H	348	40.78	7.22
6	4834.00	36.6 AV	54.0	-17.4	1.00 H	348	29.38	7.22
7	7251.00	52.6 PK	74.0	-21.4	1.00 H	331	37.54	15.06
8	7251.00	42.4 AV	54.0	-11.6	1.00 H	331	27.34	15.06
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	73.0 PK	74.0	-1.0	1.00 V	276	74.70	-1.70
2	2390.00	49.9 AV	54.0	-4.1	1.00 V	276	51.60	-1.70
3	*2417.00	111.0 PK			1.00 V	276	112.58	-1.58
4	*2417.00	98.6 AV			1.00 V	276	100.18	-1.58
5	4834.00	47.9 PK	74.0	-26.1	1.00 V	2	40.68	7.22
6	4834.00	37.3 AV	54.0	-16.7	1.00 V	2	30.08	7.22
7	7251.00	53.2 PK	74.0	-20.8	1.00 V	10	38.14	15.06
8	7251.00	42.2 AV	54.0	-11.8	1.00 V	10	27.14	15.06

**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.

<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	67.9 PK	74.0	-6.1	1.29 H	288	69.60	-1.70
2	2390.00	51.0 AV	54.0	-3.0	1.29 H	288	52.70	-1.70
3	*2422.00	108.5 PK			1.29 H	288	110.05	-1.55
4	*2422.00	95.6 AV			1.29 H	288	97.15	-1.55
5	4844.00	48.6 PK	74.0	-25.4	1.00 H	354	41.36	7.24
6	4844.00	38.3 AV	54.0	-15.7	1.00 H	354	31.06	7.24
7	7266.00	52.8 PK	74.0	-21.2	1.00 H	330	37.78	15.02
8	7266.00	42.8 AV	54.0	-11.2	1.00 H	330	27.78	15.02
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.9 PK	74.0	-1.1	1.00 V	274	74.60	-1.70
2	2390.00	52.5 AV	54.0	-1.5	1.00 V	274	54.20	-1.70
3	*2422.00	110.9 PK			1.00 V	274	112.45	-1.55
4	*2422.00	98.1 AV			1.00 V	274	99.65	-1.55
5	4844.00	48.9 PK	74.0	-25.1	1.00 V	3	41.66	7.24
6	4844.00	38.1 AV	54.0	-15.9	1.00 V	3	30.86	7.24
7	7266.00	53.3 PK	74.0	-20.7	1.00 V	15	38.28	15.02
8	7266.00	42.5 AV	54.0	-11.5	1.00 V	15	27.48	15.02

**REMARKS:**

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

<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	66.4 PK	74.0	-7.6	1.29 H	287	68.10	-1.70
2	2390.00	45.1 AV	54.0	-8.9	1.29 H	287	46.80	-1.70
3	*2437.00	109.8 PK			1.29 H	287	111.29	-1.49
4	*2437.00	97.7 AV			1.29 H	287	99.19	-1.49
5	2483.50	66.7 PK	74.0	-7.3	1.29 H	287	67.98	-1.28
6	2483.50	46.9 AV	54.0	-7.1	1.29 H	287	48.18	-1.28
7	4874.00	51.0 PK	74.0	-23.0	1.00 H	335	43.67	7.33
8	4874.00	39.5 AV	54.0	-14.5	1.00 H	335	32.17	7.33
9	7311.00	53.2 PK	74.0	-20.8	1.00 H	17	38.24	14.96
10	7311.00	42.3 AV	54.0	-11.7	1.00 H	17	27.34	14.96
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	275	65.20	-1.70
2	2390.00	40.9 AV	54.0	-13.1	1.00 V	275	42.60	-1.70
3	*2437.00	111.2 PK			1.00 V	275	112.69	-1.49
4	*2437.00	98.3 AV			1.00 V	275	99.79	-1.49
5	2483.50	68.1 PK	74.0	-5.9	1.00 V	275	69.38	-1.28
6	2483.50	46.1 AV	54.0	-7.9	1.00 V	275	47.38	-1.28
7	4874.00	49.4 PK	74.0	-24.6	1.00 V	358	42.07	7.33
8	4874.00	38.0 AV	54.0	-16.0	1.00 V	358	30.67	7.33
9	7311.00	53.5 PK	74.0	-20.5	1.00 V	7	38.54	14.96
10	7311.00	42.2 AV	54.0	-11.8	1.00 V	7	27.24	14.96

**REMARKS:**

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

<b>CHANNEL</b>	TX Channel 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	110.0 PK			1.24 H	292	111.42	-1.42
2	*2452.00	98.0 AV			1.24 H	292	99.42	-1.42
3	2483.50	70.4 PK	74.0	-3.6	1.24 H	292	71.68	-1.28
4	2483.50	52.0 AV	54.0	-2.0	1.24 H	292	53.28	-1.28
5	4904.00	50.7 PK	74.0	-23.3	1.05 H	334	43.29	7.41
6	4904.00	39.4 AV	54.0	-14.6	1.05 H	334	31.99	7.41
7	7356.00	53.1 PK	74.0	-20.9	1.02 H	13	38.19	14.91
8	7356.00	42.1 AV	54.0	-11.9	1.02 H	13	27.19	14.91
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	111.7 PK			1.00 V	275	113.12	-1.42
2	*2452.00	99.1 AV			1.00 V	275	100.52	-1.42
3	2483.50	73.0 PK	74.0	-1.0	1.00 V	275	74.28	-1.28
4	2483.50	51.7 AV	54.0	-2.3	1.00 V	275	52.98	-1.28
5	4904.00	49.2 PK	74.0	-24.8	1.03 V	353	41.79	7.41
6	4904.00	37.9 AV	54.0	-16.1	1.03 V	353	30.49	7.41
7	7356.00	53.3 PK	74.0	-20.7	1.06 V	11	38.39	14.91
8	7356.00	42.2 AV	54.0	-11.8	1.06 V	11	27.29	14.91

**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 10	<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	*2457.00	109.1 PK			1.28 H	289	110.49	-1.39
2	*2457.00	97.5 AV			1.28 H	289	98.89	-1.39
3	2483.50	71.3 PK	74.0	-2.7	1.28 H	289	72.58	-1.28
4	2483.50	52.1 AV	54.0	-1.9	1.28 H	289	53.38	-1.28
5	4914.00	50.5 PK	74.0	-23.5	1.08 H	330	43.06	7.44
6	4914.00	39.4 AV	54.0	-14.6	1.08 H	330	31.96	7.44
7	7371.00	52.7 PK	74.0	-21.3	1.03 H	5	37.79	14.91
8	7371.00	41.8 AV	54.0	-12.2	1.03 H	5	26.89	14.91
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	*2457.00	110.7 PK			1.00 V	275	112.09	-1.39
2	*2457.00	98.1 AV			1.00 V	275	99.49	-1.39
3	2483.50	72.9 PK	74.0	-1.1	1.00 V	275	74.18	-1.28
4	2483.50	49.3 AV	54.0	-4.7	1.00 V	275	50.58	-1.28
5	4914.00	49.2 PK	74.0	-24.8	1.00 V	357	41.76	7.44
6	4914.00	37.7 AV	54.0	-16.3	1.00 V	357	30.26	7.44
7	7371.00	53.4 PK	74.0	-20.6	1.04 V	18	38.49	14.91
8	7371.00	42.2 AV	54.0	-11.8	1.04 V	18	27.29	14.91

**REMARKS:**

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



<b>CHANNEL</b>	TX Channel 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	107.3 PK			1.25 H	286	108.68	-1.38
2	*2462.00	95.3 AV			1.25 H	286	96.68	-1.38
3	2483.50	72.2 PK	74.0	-1.8	1.25 H	286	73.48	-1.28
4	2483.50	47.8 AV	54.0	-6.2	1.25 H	286	49.08	-1.28
5	4924.00	46.5 PK	74.0	-27.5	1.00 H	44	39.03	7.47
6	4924.00	35.7 AV	54.0	-18.3	1.00 H	44	28.23	7.47
7	7386.00	54.2 PK	74.0	-19.8	1.00 H	15	39.31	14.89
8	7386.00	42.7 AV	54.0	-11.3	1.00 H	15	27.81	14.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.8 PK			1.00 V	275	109.18	-1.38
2	*2462.00	95.4 AV			1.00 V	275	96.78	-1.38
3	2483.50	72.9 PK	74.0	-1.1	1.00 V	275	74.18	-1.28
4	2483.50	47.3 AV	54.0	-6.7	1.00 V	275	48.58	-1.28
5	4924.00	46.4 PK	74.0	-27.6	1.00 V	260	38.93	7.47
6	4924.00	35.6 AV	54.0	-18.4	1.00 V	260	28.13	7.47
7	7386.00	53.6 PK	74.0	-20.4	1.00 V	2	38.71	14.89
8	7386.00	42.7 AV	54.0	-11.3	1.00 V	2	27.81	14.89

**REMARKS:**

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

<b>CHANNEL</b>	TX Channel 12	<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	*2467.00	87.4 PK			1.24 H	288	88.76	-1.36
2	*2467.00	75.8 AV			1.24 H	288	77.16	-1.36
3	2483.50	49.8 PK	74.0	-24.2	1.24 H	288	51.08	-1.28
4	2483.50	35.5 AV	54.0	-18.5	1.24 H	288	36.78	-1.28
5	4934.00	46.1 PK	74.0	-27.9	1.02 H	10	38.60	7.50
6	4934.00	35.7 AV	54.0	-18.3	1.02 H	10	28.20	7.50
7	7401.00	53.6 PK	74.0	-20.4	1.03 H	6	38.72	14.88
8	7401.00	42.5 AV	54.0	-11.5	1.03 H	6	27.62	14.88
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	*2467.00	83.5 PK			1.04 V	288	84.86	-1.36
2	*2467.00	71.7 AV			1.04 V	288	73.06	-1.36
3	2483.50	48.4 PK	74.0	-25.6	1.04 V	288	49.68	-1.28
4	2483.50	33.6 AV	54.0	-20.4	1.04 V	288	34.88	-1.28
5	4934.00	45.9 PK	74.0	-28.1	1.02 V	269	38.40	7.50
6	4934.00	35.3 AV	54.0	-18.7	1.02 V	269	27.80	7.50
7	7401.00	53.3 PK	74.0	-20.7	1.00 V	12	38.42	14.88
8	7401.00	42.6 AV	54.0	-11.4	1.00 V	12	27.72	14.88

**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 13	<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	*2472.00	86.4 PK			1.27 H	283	87.73	-1.33
2	*2472.00	74.9 AV			1.27 H	283	76.23	-1.33
3	2483.50	48.3 PK	74.0	-25.7	1.27 H	283	49.58	-1.28
4	2483.50	34.8 AV	54.0	-19.2	1.27 H	283	36.08	-1.28
5	4944.00	45.4 PK	74.0	-28.6	1.01 H	13	37.88	7.52
6	4944.00	35.6 AV	54.0	-18.4	1.01 H	13	28.08	7.52
7	7416.00	53.4 PK	74.0	-20.6	1.08 H	6	38.54	14.86
8	7416.00	42.6 AV	54.0	-11.4	1.08 H	6	27.74	14.86

**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	*2472.00	84.1 PK			1.04 V	278	85.43	-1.33
2	*2472.00	72.3 AV			1.04 V	278	73.63	-1.33
3	2483.50	60.4 PK	74.0	-13.6	1.04 V	278	61.68	-1.28
4	2483.50	37.8 AV	54.0	-16.2	1.04 V	278	39.08	-1.28
5	4944.00	45.6 PK	74.0	-28.4	1.04 V	234	38.08	7.52
6	4944.00	35.0 AV	54.0	-19.0	1.04 V	234	27.48	7.52
7	7416.00	53.3 PK	74.0	-20.7	1.04 V	21	38.44	14.86
8	7416.00	43.1 AV	54.0	-10.9	1.04 V	21	28.24	14.86

**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 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	67.7 PK	74.0	-6.3	1.31 H	289	69.40	-1.70
2	2390.00	45.3 AV	54.0	-8.7	1.31 H	289	47.00	-1.70
3	*2412.00	105.9 PK			1.31 H	289	107.50	-1.60
4	*2412.00	92.7 AV			1.31 H	289	94.30	-1.60
5	4824.00	48.2 PK	74.0	-25.8	1.00 H	139	41.00	7.20
6	4824.00	35.3 AV	54.0	-18.7	1.00 H	139	28.10	7.20
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	72.8 PK	74.0	-1.2	1.00 V	272	74.50	-1.70
2	2390.00	47.8 AV	54.0	-6.2	1.00 V	272	49.50	-1.70
3	*2412.00	107.6 PK			1.00 V	272	109.20	-1.60
4	*2412.00	93.8 AV			1.00 V	272	95.40	-1.60
5	4824.00	47.9 PK	74.0	-26.1	1.00 V	326	40.70	7.20
6	4824.00	35.3 AV	54.0	-18.7	1.00 V	326	28.10	7.20

## 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 2	<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	68.9 PK	74.0	-5.1	1.30 H	288	70.60	-1.70
2	2390.00	49.8 AV	54.0	-4.2	1.30 H	288	51.50	-1.70
3	*2417.00	107.9 PK			1.30 H	288	109.48	-1.58
4	*2417.00	94.8 AV			1.30 H	288	96.38	-1.58
5	4834.00	51.2 PK	74.0	-22.8	1.05 H	360	43.98	7.22
6	4834.00	40.0 AV	54.0	-14.0	1.05 H	360	32.78	7.22
7	7251.00	53.8 PK	74.0	-20.2	1.04 H	227	38.74	15.06
8	7251.00	42.3 AV	54.0	-11.7	1.04 H	227	27.24	15.06
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	72.9 PK	74.0	-1.1	1.00 V	274	74.60	-1.70
2	2390.00	50.1 AV	54.0	-3.9	1.00 V	274	51.80	-1.70
3	*2417.00	110.9 PK			1.00 V	274	112.48	-1.58
4	*2417.00	96.7 AV			1.00 V	274	98.25	-1.58
5	4834.00	48.6 PK	74.0	-25.4	1.00 V	284	41.38	7.22
6	4834.00	37.3 AV	54.0	-16.7	1.00 V	284	30.08	7.22
7	7251.00	53.0 PK	74.0	-21.0	1.08 V	260	37.94	15.06
8	7251.00	42.1 AV	54.0	-11.9	1.08 V	260	27.04	15.06

**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.

<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	66.8 PK	74.0	-7.2	1.27 H	290	68.50	-1.70
2	2390.00	49.5 AV	54.0	-4.5	1.27 H	290	51.20	-1.70
3	*2422.00	109.0 PK			1.27 H	290	110.55	-1.55
4	*2422.00	95.6 AV			1.27 H	290	97.15	-1.55
5	4844.00	50.7 PK	74.0	-23.3	1.01 H	349	43.46	7.24
6	4844.00	39.7 AV	54.0	-14.3	1.01 H	349	32.46	7.24
7	7266.00	53.7 PK	74.0	-20.3	1.01 H	214	38.68	15.02
8	7266.00	42.5 AV	54.0	-11.5	1.01 H	214	27.48	15.02
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.8 PK	74.0	-1.2	1.00 V	274	74.50	-1.70
2	2390.00	50.9 AV	54.0	-3.1	1.00 V	274	52.60	-1.70
3	*2422.00	111.1 PK			1.00 V	274	112.65	-1.55
4	*2422.00	96.9 AV			1.00 V	274	98.45	-1.55
5	4844.00	48.7 PK	74.0	-25.3	1.05 V	277	41.46	7.24
6	4844.00	37.1 AV	54.0	-16.9	1.05 V	277	29.86	7.24
7	7266.00	53.6 PK	74.0	-20.4	1.03 V	257	38.58	15.02
8	7266.00	42.5 AV	54.0	-11.5	1.03 V	257	27.48	15.02

**REMARKS:**

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

<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	65.5 PK	74.0	-8.5	1.31 H	285	67.20	-1.70
2	2390.00	44.2 AV	54.0	-9.8	1.31 H	285	45.90	-1.70
3	*2437.00	110.0 PK			1.31 H	285	111.49	-1.49
4	*2437.00	98.1 AV			1.31 H	285	99.59	-1.49
5	2483.50	66.7 PK	74.0	-7.3	1.31 H	285	67.98	-1.28
6	2483.50	46.6 AV	54.0	-7.4	1.31 H	285	47.88	-1.28
7	4874.00	50.4 PK	74.0	-23.6	1.00 H	338	43.07	7.33
8	4874.00	39.2 AV	54.0	-14.8	1.00 H	338	31.87	7.33
9	7311.00	53.5 PK	74.0	-20.5	1.00 H	210	38.54	14.96
10	7311.00	42.1 AV	54.0	-11.9	1.00 H	210	27.14	14.96
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	69.7 PK	74.0	-4.3	1.00 V	274	71.40	-1.70
2	2390.00	47.6 AV	54.0	-6.4	1.00 V	274	49.30	-1.70
3	*2437.00	112.1 PK			1.00 V	274	113.59	-1.49
4	*2437.00	98.2 AV			1.00 V	274	99.69	-1.49
5	2483.50	67.5 PK	74.0	-6.5	1.00 V	274	68.78	-1.28
6	2483.50	47.5 AV	54.0	-6.5	1.00 V	274	48.78	-1.28
7	4874.00	49.0 PK	74.0	-25.0	1.00 V	283	41.67	7.33
8	4874.00	37.6 AV	54.0	-16.4	1.00 V	283	30.27	7.33
9	7311.00	53.1 PK	74.0	-20.9	1.00 V	254	38.14	14.96
10	7311.00	42.2 AV	54.0	-11.8	1.00 V	254	27.24	14.96

**REMARKS:**

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

CHANNEL	TX Channel 9	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	*2452.00	112.0 PK			1.30 H	345	113.42	-1.42
2	*2452.00	98.1 AV			1.30 H	345	99.52	-1.42
3	2483.50	71.8 PK	74.0	-2.2	1.30 H	345	73.08	-1.28
4	2483.50	52.6 AV	54.0	-1.4	1.30 H	345	53.88	-1.28
5	4904.00	50.7 PK	74.0	-23.3	1.03 H	332	43.29	7.41
6	4904.00	39.6 AV	54.0	-14.4	1.03 H	332	32.19	7.41
7	7356.00	53.9 PK	74.0	-20.1	1.03 H	217	38.99	14.91
8	7356.00	42.4 AV	54.0	-11.6	1.03 H	217	27.49	14.91
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	112.3 PK			1.00 V	274	113.72	-1.42
2	*2452.00	98.5 AV			1.00 V	274	99.92	-1.42
3	2483.50	73.0 PK	74.0	-1.0	1.00 V	274	74.28	-1.28
4	2483.50	52.1 AV	54.0	-1.9	1.00 V	274	53.38	-1.28
5	4904.00	49.0 PK	74.0	-25.0	1.03 V	280	41.59	7.41
6	4904.00	37.3 AV	54.0	-16.7	1.03 V	280	29.89	7.41
7	7356.00	53.3 PK	74.0	-20.7	1.03 V	254	38.39	14.91
8	7356.00	42.2 AV	54.0	-11.8	1.03 V	254	27.29	14.91

#### 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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CHANNEL	TX Channel 10	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	*2457.00	111.0 PK			1.30 H	339	112.39	-1.39
2	*2457.00	98.1 AV			1.30 H	339	99.49	-1.39
3	2483.50	73.0 PK	74.0	-1.0	1.30 H	339	74.28	-1.28
4	2483.50	52.7 AV	54.0	-1.3	1.30 H	339	53.98	-1.28
5	4914.00	50.9 PK	74.0	-23.1	1.04 H	318	43.46	7.44
6	4914.00	39.8 AV	54.0	-14.2	1.04 H	318	32.36	7.44
7	7371.00	53.8 PK	74.0	-20.2	1.02 H	214	38.89	14.91
8	7371.00	42.1 AV	54.0	-11.9	1.02 H	214	27.19	14.91
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	*2457.00	111.9 PK			1.00 V	274	113.29	-1.39
2	*2457.00	98.1 AV			1.00 V	274	99.49	-1.39
3	2483.50	72.9 PK	74.0	-1.1	1.00 V	274	74.18	-1.28
4	2483.50	49.8 AV	54.0	-4.2	1.00 V	274	51.08	-1.28
5	4914.00	49.5 PK	74.0	-24.5	1.07 V	281	42.06	7.44
6	4914.00	37.7 AV	54.0	-16.3	1.07 V	281	30.26	7.44
7	7371.00	53.7 PK	74.0	-20.3	1.03 V	256	38.79	14.91
8	7371.00	42.7 AV	54.0	-11.3	1.03 V	256	27.79	14.91

**REMARKS:**

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

<b>CHANNEL</b>	TX Channel 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	110.5 PK			1.08 H	334	111.88	-1.38
2	*2462.00	96.9 AV			1.08 H	334	98.28	-1.38
3	2483.50	73.0 PK	74.0	-1.0	1.08 H	334	74.28	-1.28
4	2483.50	50.8 AV	54.0	-3.2	1.08 H	334	52.08	-1.28
5	4924.00	46.2 PK	74.0	-27.8	1.00 H	15	38.73	7.47
6	4924.00	36.2 AV	54.0	-17.8	1.00 H	15	28.73	7.47
7	7386.00	54.4 PK	74.0	-19.6	1.00 H	341	39.51	14.89
8	7386.00	42.9 AV	54.0	-11.1	1.00 H	341	28.01	14.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.8 PK			1.00 V	274	110.18	-1.38
2	*2462.00	94.9 AV			1.00 V	274	96.28	-1.38
3	2483.50	72.9 PK	74.0	-1.1	1.00 V	274	74.18	-1.28
4	2483.50	47.7 AV	54.0	-6.3	1.00 V	274	48.98	-1.28
5	4924.00	46.8 PK	74.0	-27.2	1.00 V	202	39.33	7.47
6	4924.00	36.1 AV	54.0	-17.9	1.00 V	202	28.63	7.47
7	7386.00	54.5 PK	74.0	-19.5	1.00 V	20	39.61	14.89
8	7386.00	42.7 AV	54.0	-11.3	1.00 V	20	27.81	14.89

**REMARKS:**

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

<b>CHANNEL</b>	TX Channel 12	<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	*2467.00	87.1 PK			1.29 H	286	88.46	-1.36
2	*2467.00	75.5 AV			1.29 H	286	76.86	-1.36
3	2483.50	49.2 PK	74.0	-24.8	1.29 H	286	50.48	-1.28
4	2483.50	34.8 AV	54.0	-19.2	1.29 H	286	36.08	-1.28
5	4934.00	45.9 PK	74.0	-28.1	1.00 H	13	38.40	7.50
6	4934.00	36.2 AV	54.0	-17.8	1.00 H	13	28.70	7.50
7	7401.00	54.3 PK	74.0	-19.7	1.00 H	355	39.42	14.88
8	7401.00	43.1 AV	54.0	-10.9	1.00 H	355	28.22	14.88
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	*2467.00	85.0 PK			1.03 V	284	86.36	-1.36
2	*2467.00	71.9 AV			1.03 V	284	73.26	-1.36
3	2483.50	49.9 PK	74.0	-24.1	1.03 V	284	51.18	-1.28
4	2483.50	34.1 AV	54.0	-19.9	1.03 V	284	35.38	-1.28
5	4934.00	46.7 PK	74.0	-27.3	1.02 V	197	39.20	7.50
6	4934.00	36.1 AV	54.0	-17.9	1.02 V	197	28.60	7.50
7	7401.00	54.5 PK	74.0	-19.5	1.05 V	22	39.62	14.88
8	7401.00	42.5 AV	54.0	-11.5	1.05 V	22	27.62	14.88

**REMARKS:**

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

<b>CHANNEL</b>	TX Channel 13	<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	*2472.00	87.2 PK			1.30 H	288	88.53	-1.33
2	*2472.00	75.9 AV			1.30 H	288	77.23	-1.33
3	2483.50	50.1 PK	74.0	-23.9	1.30 H	288	51.38	-1.28
4	2483.50	35.8 AV	54.0	-18.2	1.30 H	288	37.08	-1.28
5	4944.00	45.7 PK	74.0	-28.3	1.04 H	20	38.18	7.52
6	4944.00	36.3 AV	54.0	-17.7	1.04 H	20	28.78	7.52
7	7416.00	53.9 PK	74.0	-20.1	1.04 H	360	39.04	14.86
8	7416.00	42.9 AV	54.0	-11.1	1.04 H	360	28.04	14.86
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	*2472.00	84.1 PK			1.03 V	282	85.43	-1.33
2	*2472.00	71.5 AV			1.03 V	282	72.83	-1.33
3	2483.50	61.2 PK	74.0	-12.8	1.03 V	282	62.48	-1.28
4	2483.50	38.4 AV	54.0	-15.6	1.03 V	282	39.68	-1.28
5	4944.00	46.2 PK	74.0	-27.8	1.05 V	208	38.68	7.52
6	4944.00	35.6 AV	54.0	-18.4	1.05 V	208	28.08	7.52
7	7416.00	54.6 PK	74.0	-19.4	1.03 V	32	39.74	14.86
8	7416.00	42.4 AV	54.0	-11.6	1.03 V	32	27.54	14.86

**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.

### 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

For 802.11b

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 31, 2013

For 802.11g & 802.11n (HT20)

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP 40	100036	Jan. 21, 2014	Jan. 20, 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 : Feb. 10, 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	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.65	0.5	PASS
2	2417	9.12	0.5	PASS
3	2422	9.58	0.5	PASS
6	2437	9.58	0.5	PASS
9	2452	8.61	0.5	PASS
10	2457	9.13	0.5	PASS
11	2462	9.10	0.5	PASS
12	2467	9.53	0.5	PASS
13	2472	9.12	0.5	PASS

#### 802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.15	0.5	PASS
2	2417	15.15	0.5	PASS
3	2422	15.16	0.5	PASS
6	2437	15.21	0.5	PASS
9	2452	15.04	0.5	PASS
10	2457	15.16	0.5	PASS
11	2462	15.14	0.5	PASS
12	2467	15.18	0.5	PASS
13	2472	15.13	0.5	PASS



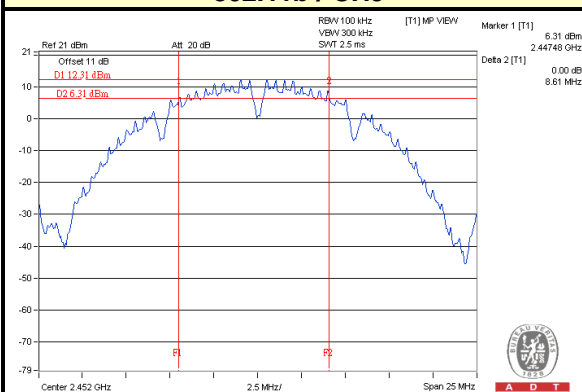
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## 802.11n (HT20)

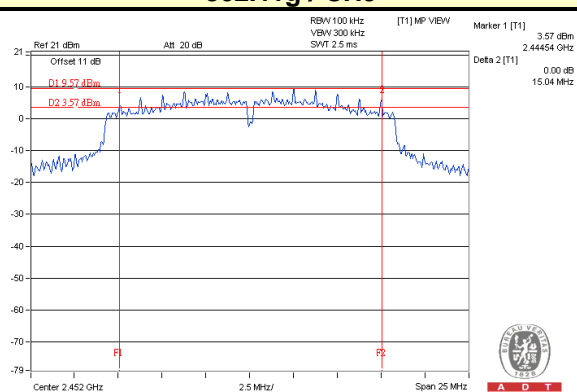
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.18	0.5	PASS
2	2417	15.15	0.5	PASS
3	2422	15.14	0.5	PASS
6	2437	15.19	0.5	PASS
9	2452	15.15	0.5	PASS
10	2457	15.15	0.5	PASS
11	2462	15.15	0.5	PASS
12	2467	15.30	0.5	PASS
13	2472	15.15	0.5	PASS

## SPECTRUM PLOT OF WORST VALUE

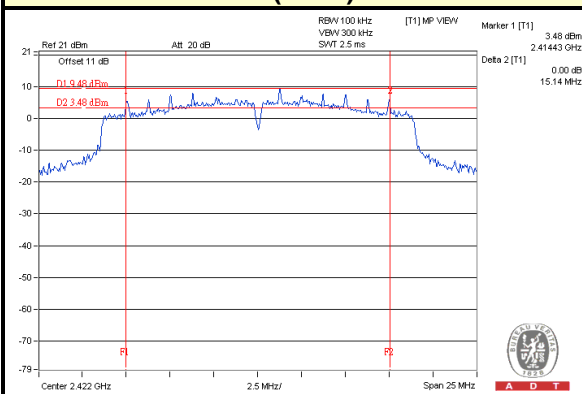
## 802.11b / CH9



## 802.11g / CH9



## 802.11n (HT20) / CH3





## 4.4 CONDUCTED OUTPUT POWER MEASUREMENT

### 4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

### 4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 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 : Jan. 17, 2014

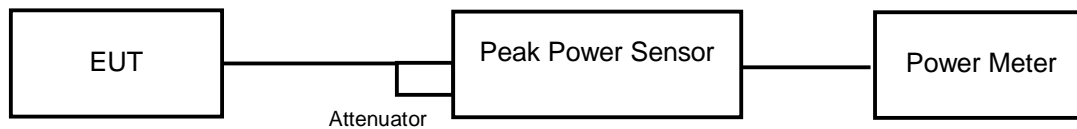
### 4.4.3 TEST PROCEDURES

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

##### 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	158.855	22.01	30	PASS
2	2417	158.855	22.01	30	PASS
3	2422	157.761	21.98	30	PASS
6	2437	158.855	22.01	30	PASS
9	2452	161.065	22.07	30	PASS
10	2457	160.325	22.05	30	PASS
11	2462	160.694	22.06	30	PASS
12	2467	1.393	1.44	30	PASS
13	2472	1.400	1.46	30	PASS

##### 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	174.985	22.43	30	PASS
2	2417	183.231	22.63	30	PASS
3	2422	184.077	22.65	30	PASS
6	2437	193.642	22.87	30	PASS
9	2452	196.789	22.94	30	PASS
10	2457	191.867	22.83	30	PASS
11	2462	183.654	22.64	30	PASS
12	2467	1.358	1.33	30	PASS
13	2472	1.349	1.30	30	PASS



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802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	158.855	22.01	30	PASS
2	2417	159.956	22.04	30	PASS
3	2422	178.649	22.52	30	PASS
6	2437	199.986	23.01	30	PASS
9	2452	183.654	22.64	30	PASS
10	2457	174.985	22.43	30	PASS
11	2462	164.816	22.17	30	PASS
12	2467	1.324	1.22	30	PASS
13	2472	1.330	1.24	30	PASS

## 4.5 AVERAGE OUTPUT POWER

### 4.5.1 FOR REFERENCE.

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

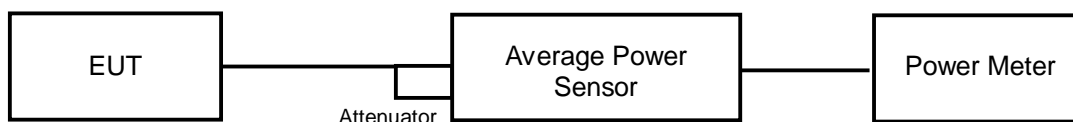
**Note:**

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 : Jan. 17, 2014

### 4.5.3 TEST PROCEDURES

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

### 4.5.4 TEST SETUP



### 4.5.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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#### 4.5.6 TEST RESULTS

##### 802.11b

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	109.144	20.38
2	2417	108.643	20.36
3	2422	107.895	20.33
6	2437	104.472	20.19
9	2452	105.196	20.22
10	2457	103.514	20.15
11	2462	104.954	20.21
12	2467	0.830	-0.81
13	2472	0.824	-0.84

##### 802.11g

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	47.315	16.75
2	2417	58.614	17.68
3	2422	81.283	19.10
6	2437	92.897	19.68
9	2452	79.616	19.01
10	2457	54.075	17.33
11	2462	33.806	15.29
12	2467	0.813	-0.90
13	2472	0.802	-0.96

## 802.11n (HT20)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	33.729	15.28
2	2417	55.081	17.41
3	2422	70.469	18.48
6	2437	91.622	19.62
9	2452	76.208	18.82
10	2457	53.580	17.29
11	2462	29.174	14.65
12	2467	0.805	-0.94
13	2472	0.802	-0.96

## 4.6 POWER SPECTRAL DENSITY MEASUREMENT

### 4.6.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 31, 2013

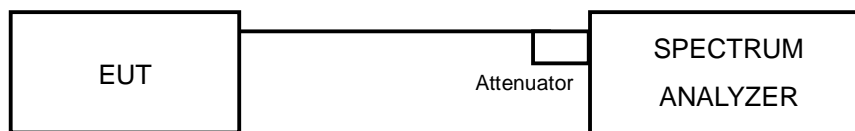
### 4.6.3 TEST PROCEDURE

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.

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.6.5 TEST SETUP



### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6





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#### 4.6.7 TEST RESULTS

##### 802.11b

Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
1	2412	-2.46	8	PASS
2	2417	-2.36	8	PASS
3	2422	-1.48	8	PASS
6	2437	-2.35	8	PASS
9	2452	-2.56	8	PASS
10	2457	-2.86	8	PASS
11	2462	-2.84	8	PASS
12	2467	-26.78	8	PASS
13	2472	-26.50	8	PASS

##### 802.11g

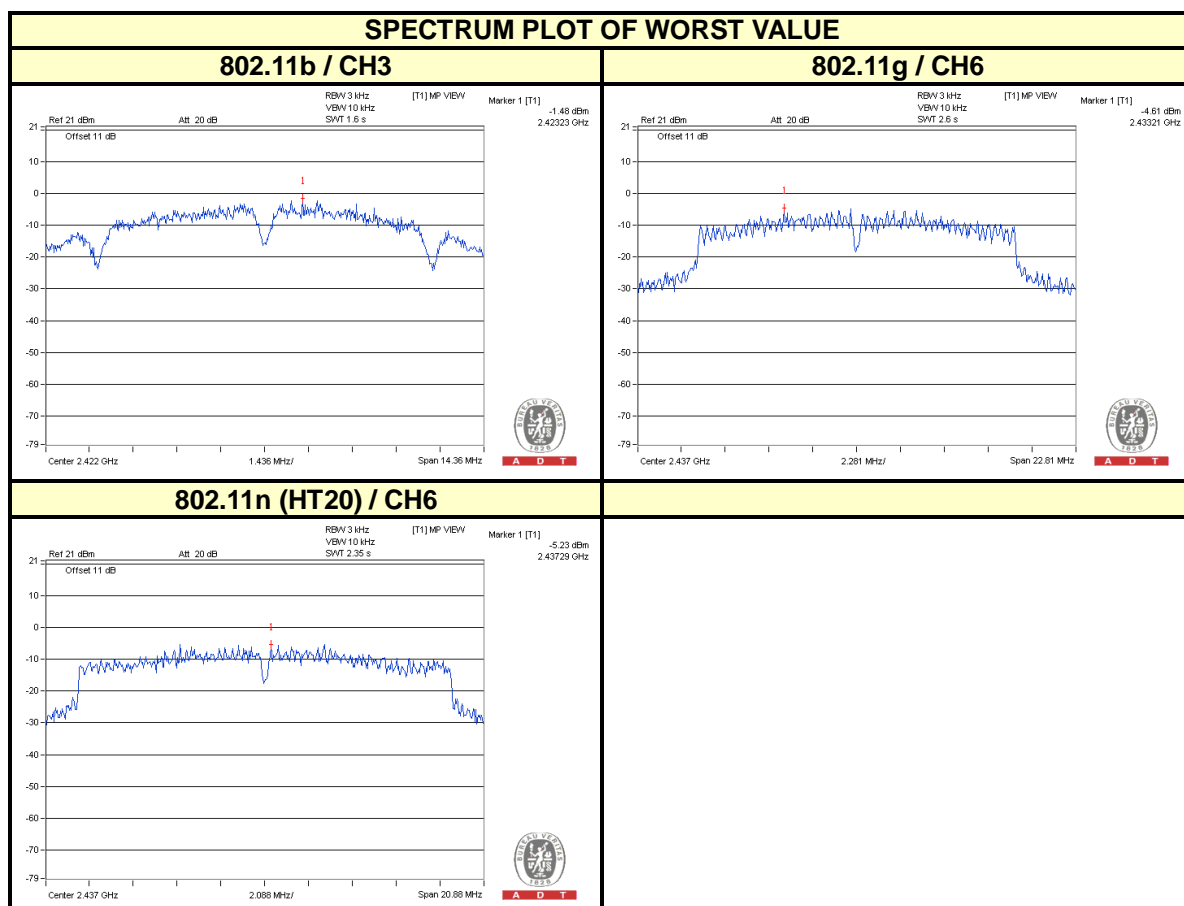
Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
1	2412	-7.19	8	PASS
2	2417	-7.11	8	PASS
3	2422	-5.56	8	PASS
6	2437	-4.61	8	PASS
9	2452	-5.31	8	PASS
10	2457	-5.50	8	PASS
11	2462	-8.82	8	PASS
12	2467	-27.30	8	PASS
13	2472	-28.60	8	PASS



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### 802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
1	2412	-10.08	8	PASS
2	2417	-6.59	8	PASS
3	2422	-5.47	8	PASS
6	2437	-5.23	8	PASS
9	2452	-6.50	8	PASS
10	2457	-6.94	8	PASS
11	2462	-9.47	8	PASS
12	2467	-27.27	8	PASS
13	2472	-27.10	8	PASS





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## 4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

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

### 4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 31, 2013

### 4.7.3 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.

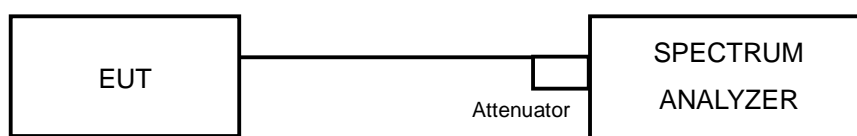
#### Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

#### 4.7.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.7.5 TEST SETUP



#### 4.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

#### 4.7.7 TEST RESULTS

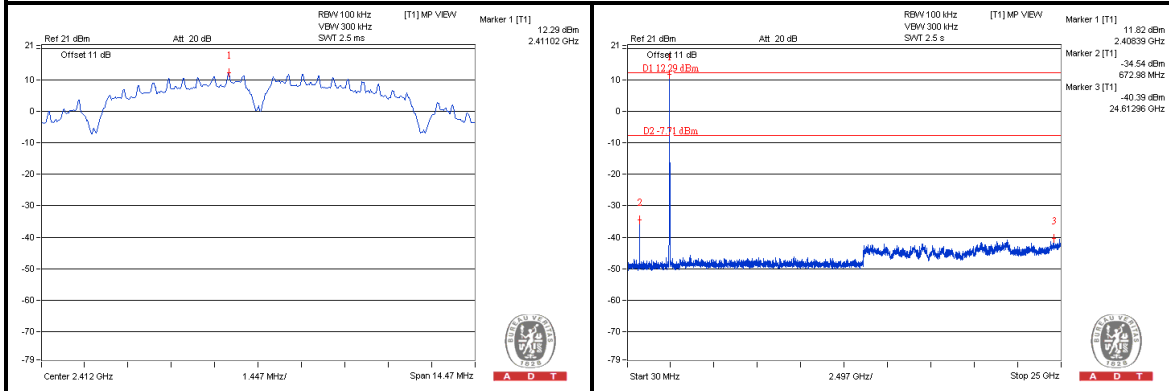
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



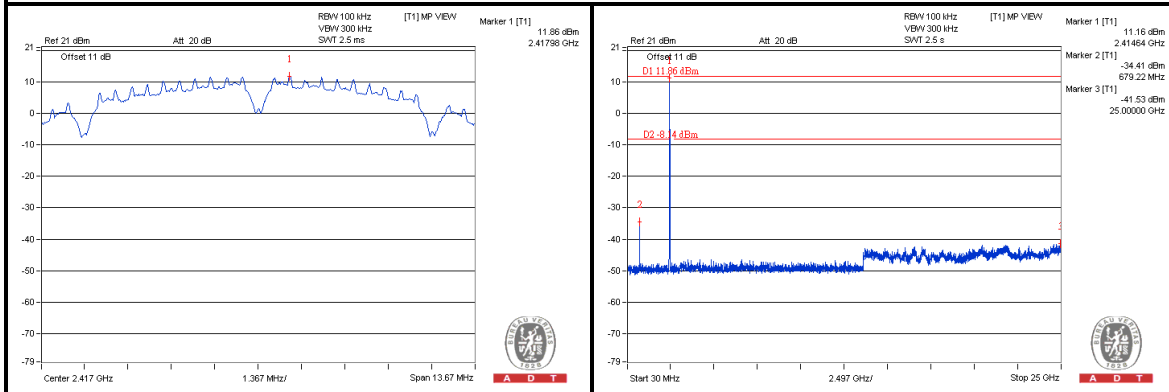
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802.11b:

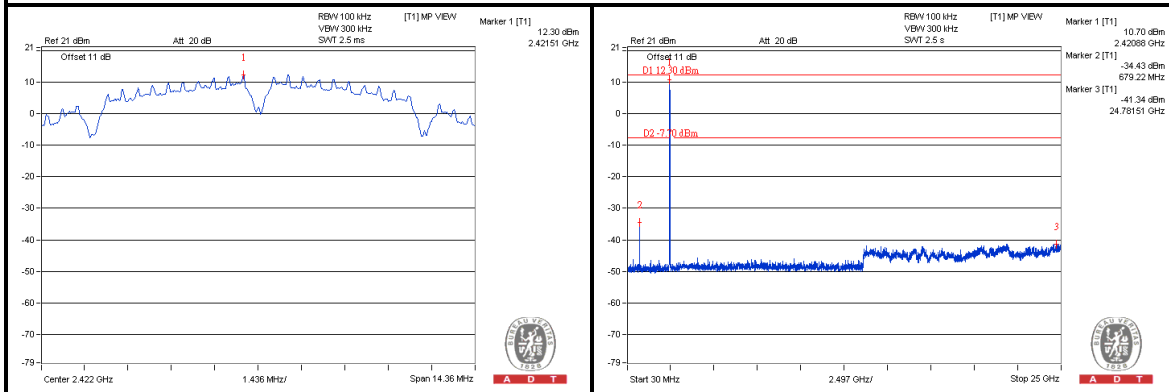
### CH 1



### CH 2



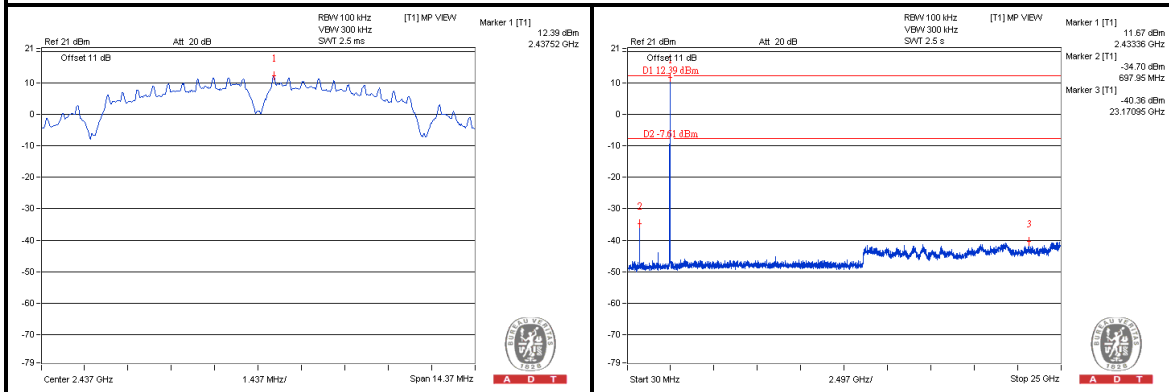
### CH 3



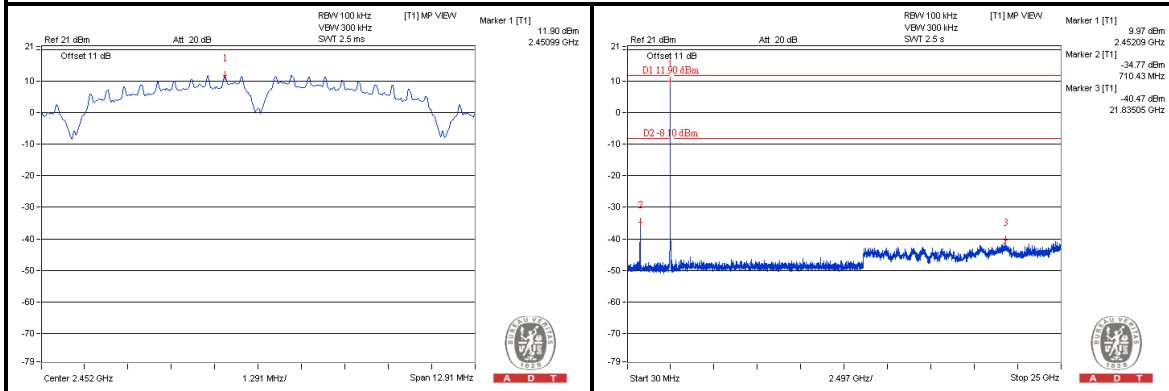


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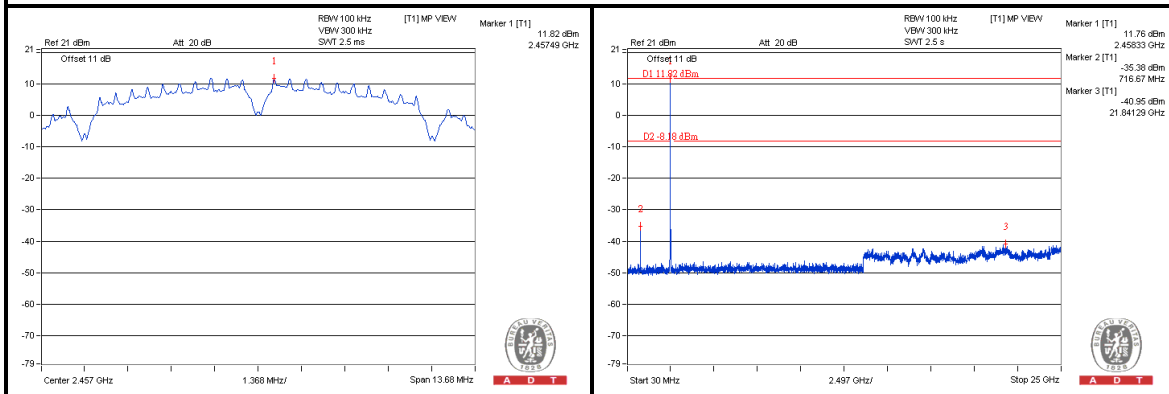
## CH 6



## CH 9



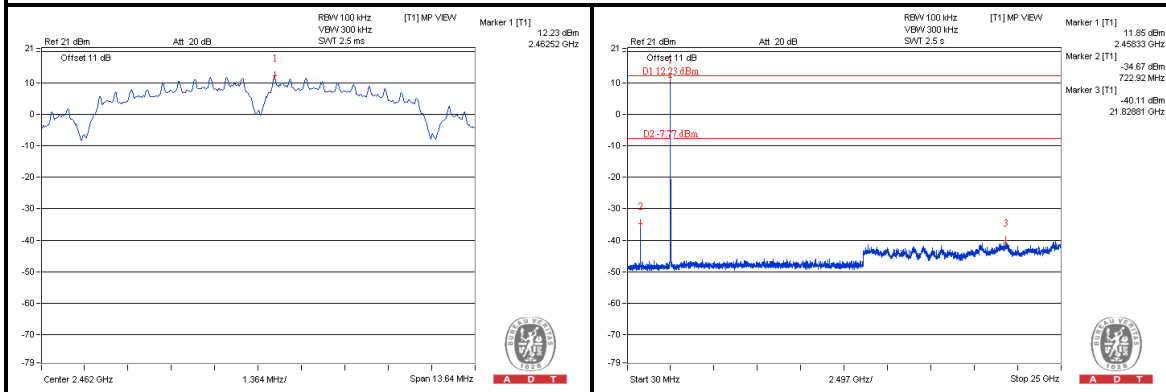
## CH 10



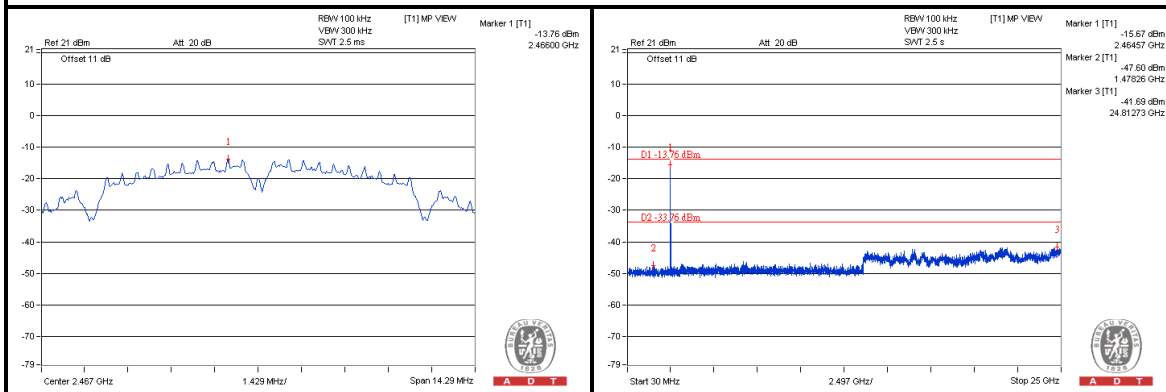


A D T

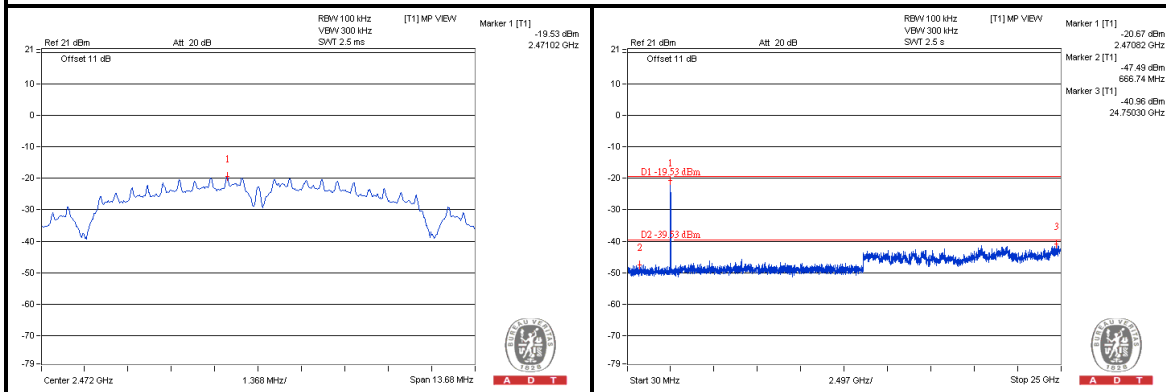
## CH 11



## CH 12



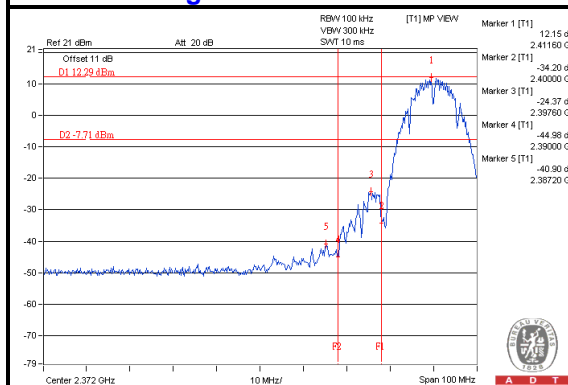
## CH 13



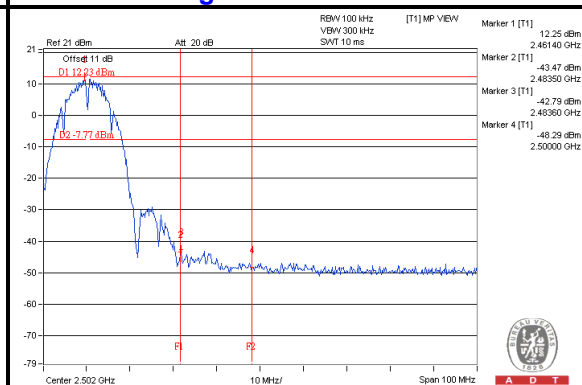


A D T

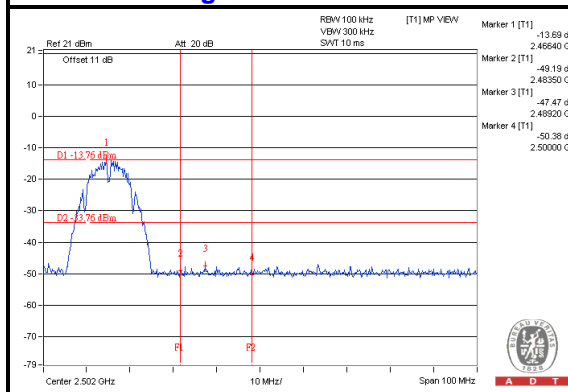
### CH 1 Band edge



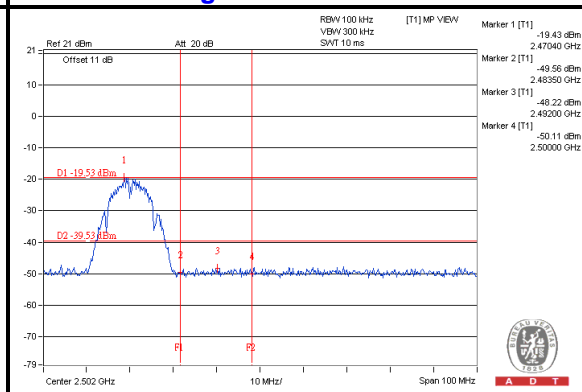
### CH 11 Band edge



### CH 12 Band edge



### CH 13 Band edge



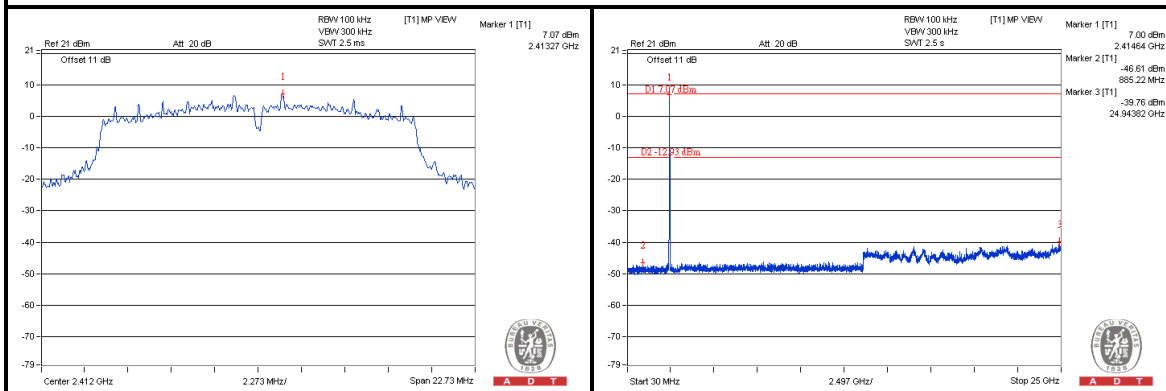




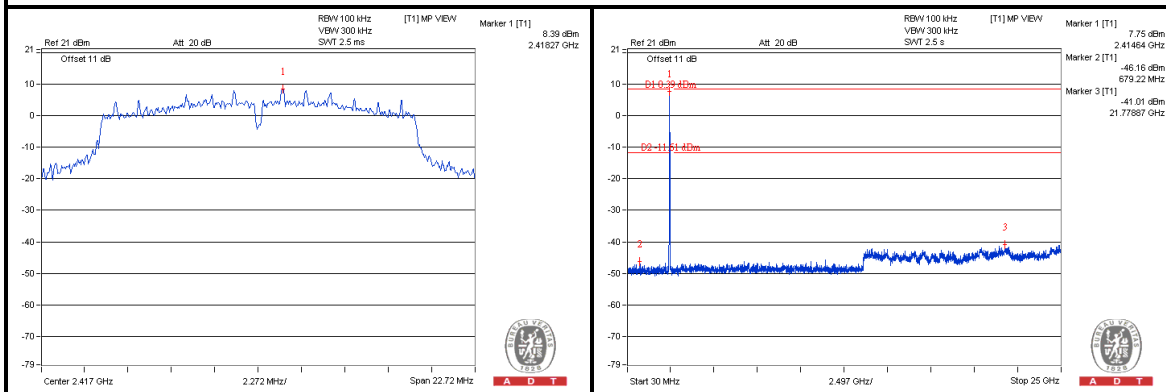
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802.11g:

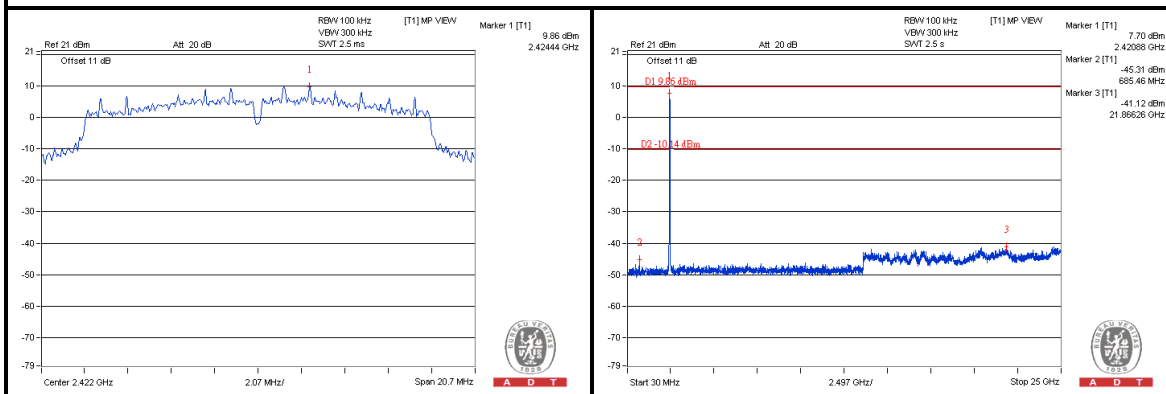
### CH 1



### CH 2



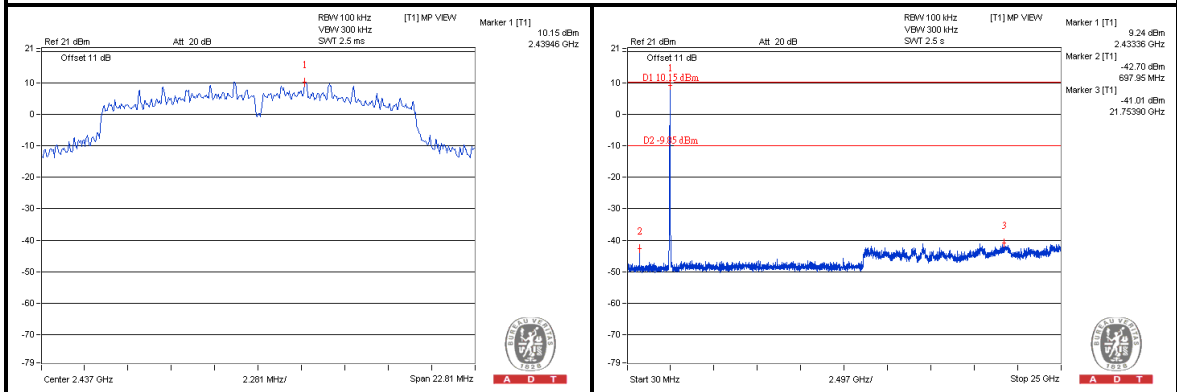
### CH 3



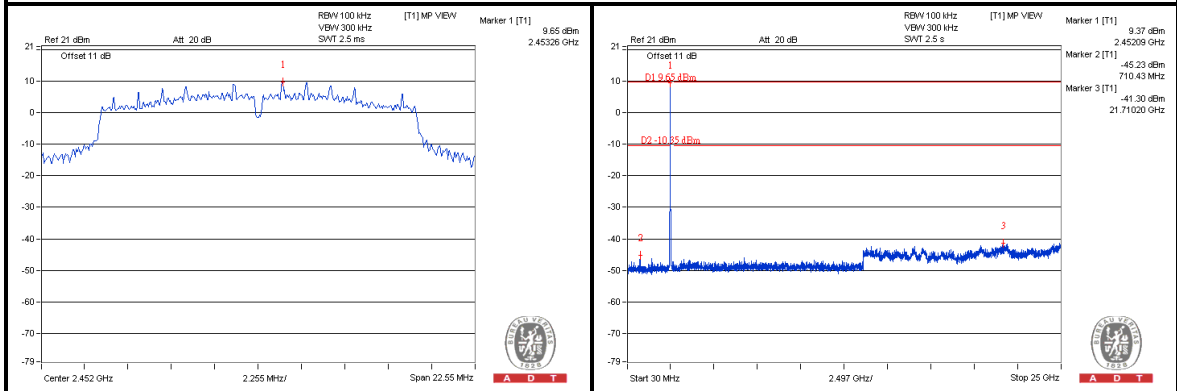


A D T

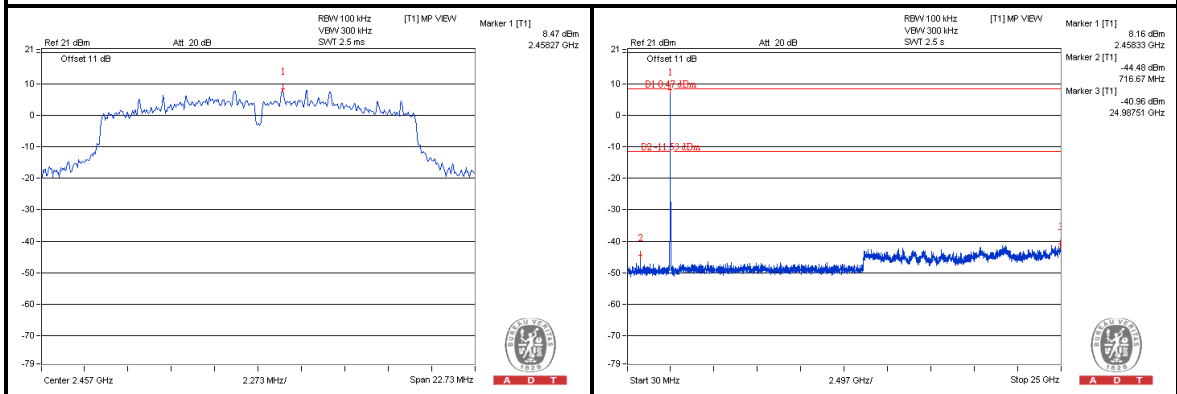
## CH 6



## CH 9



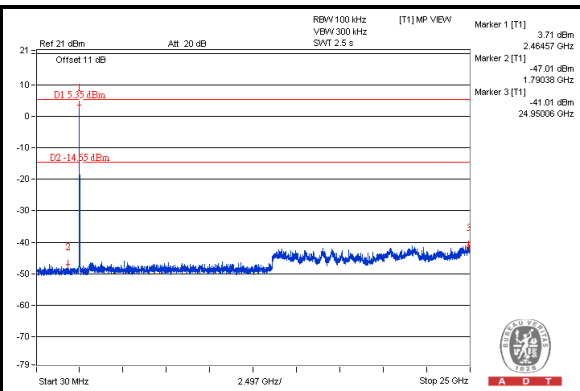
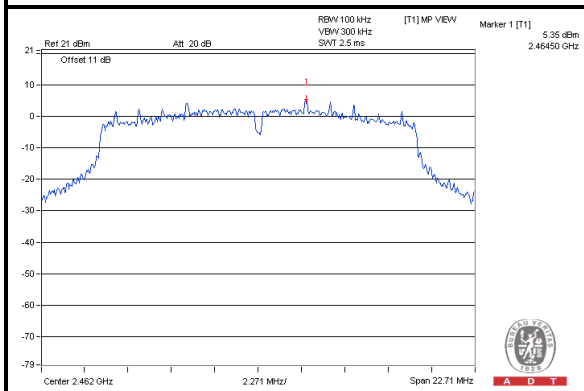
## CH 10



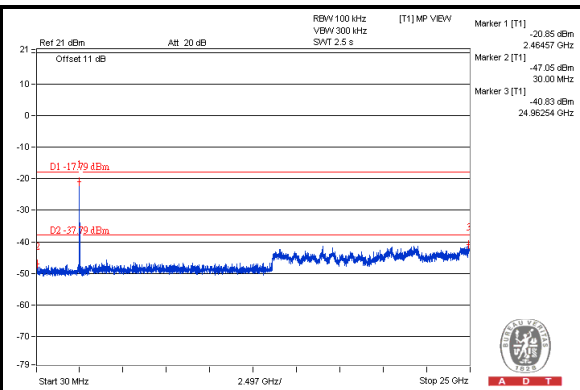
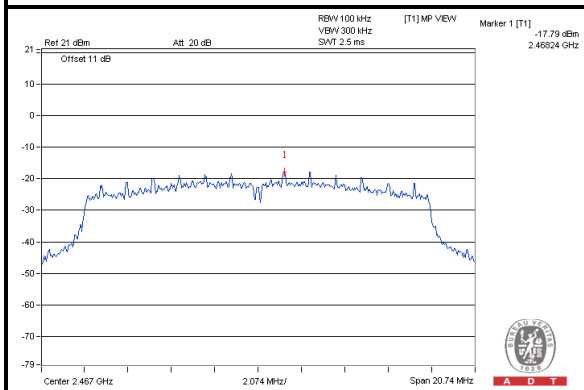


A D T

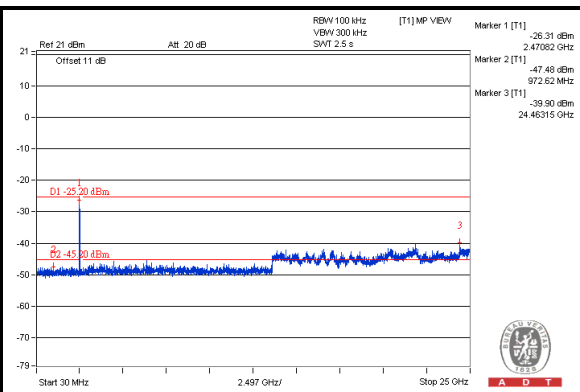
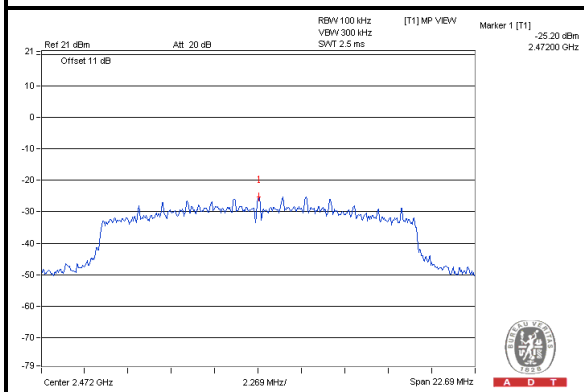
## CH 11



## CH 12



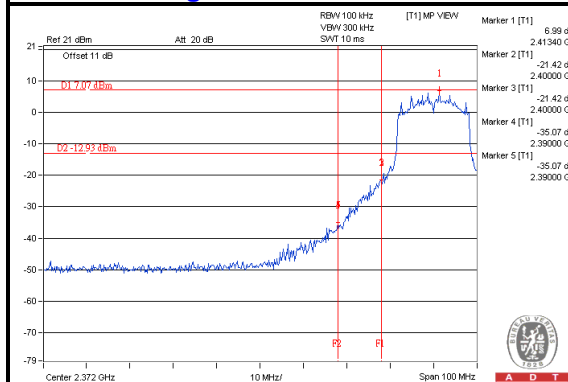
## CH 13



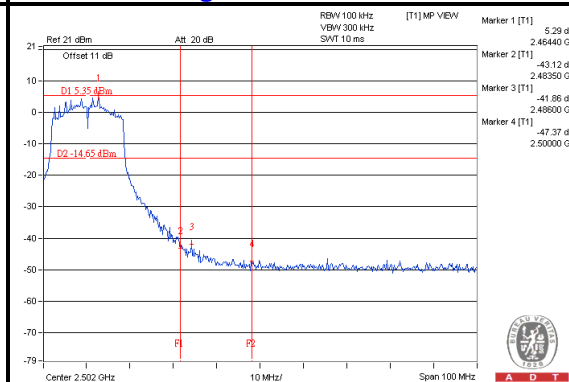


A D T

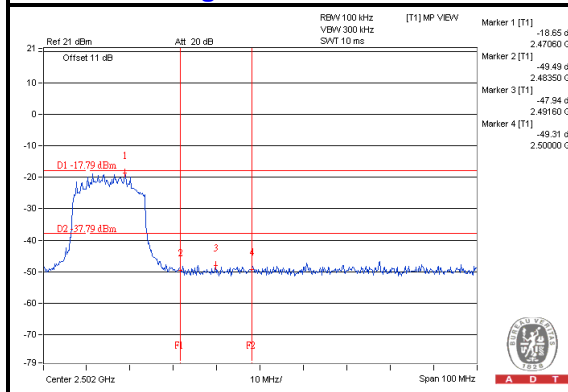
### CH 1 Band edge



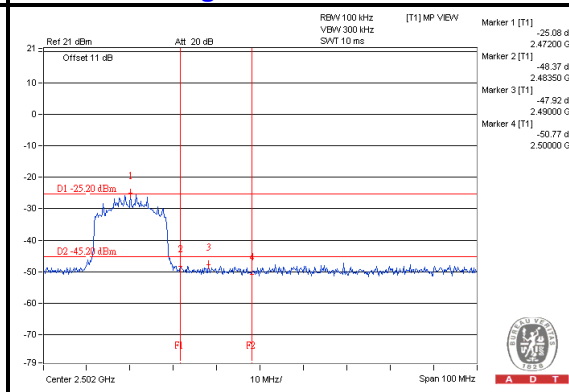
### CH 11 Band edge



### CH 12 Band edge



### CH 13 Band edge

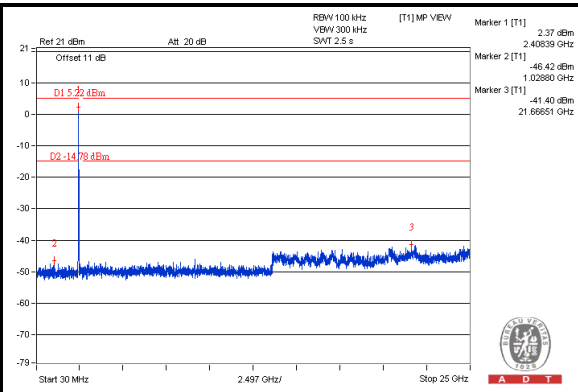
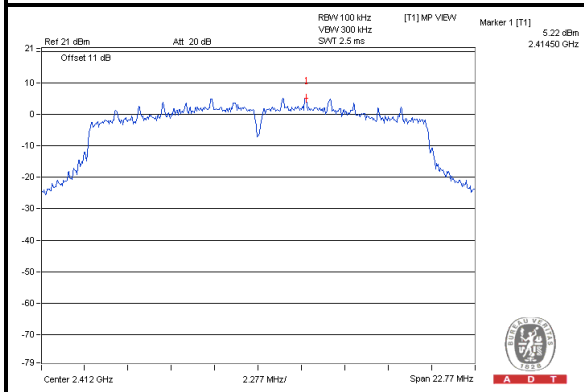




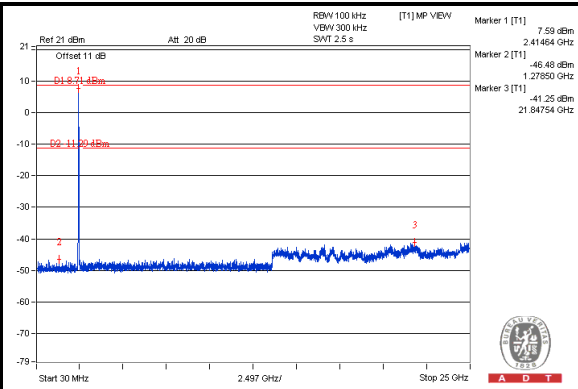
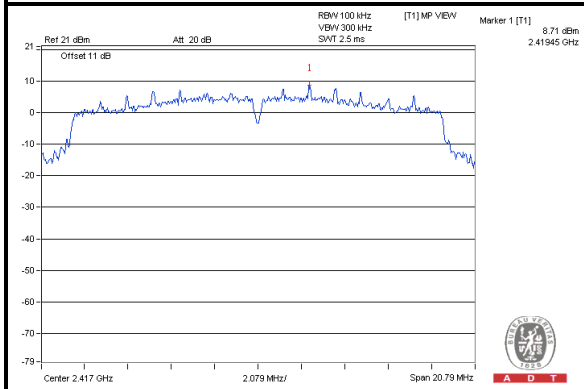
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## 802.11n (HT20):

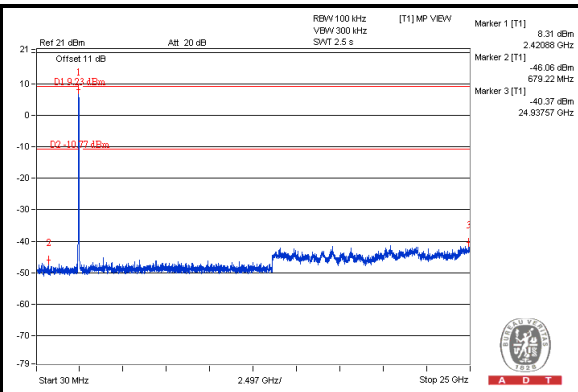
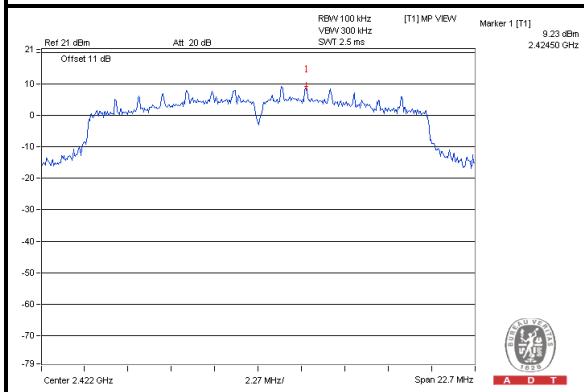
### CH 1



### CH 2



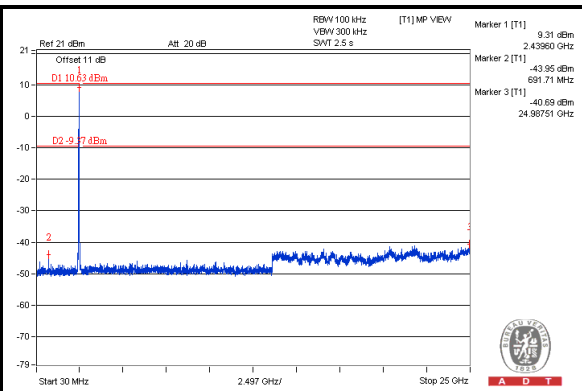
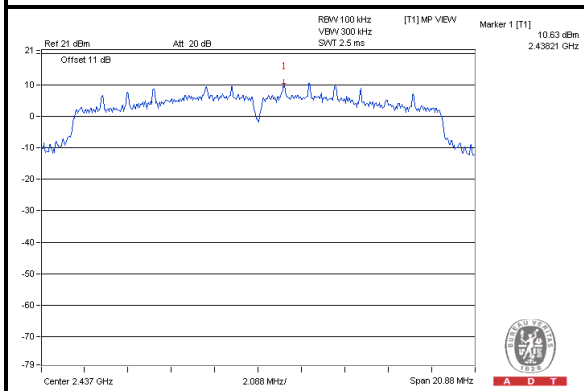
### CH 3



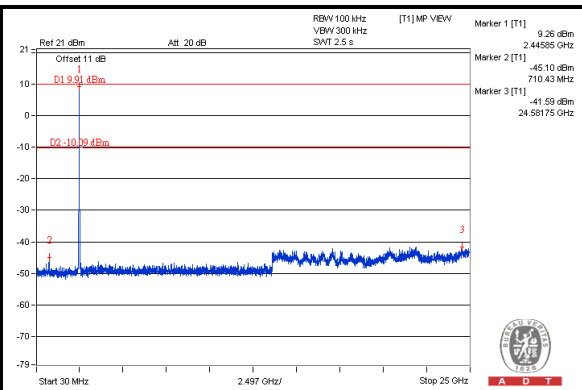
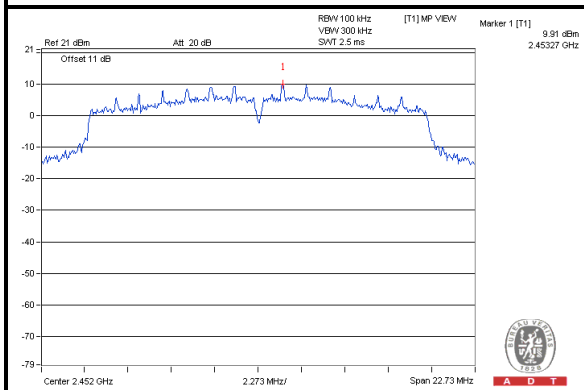


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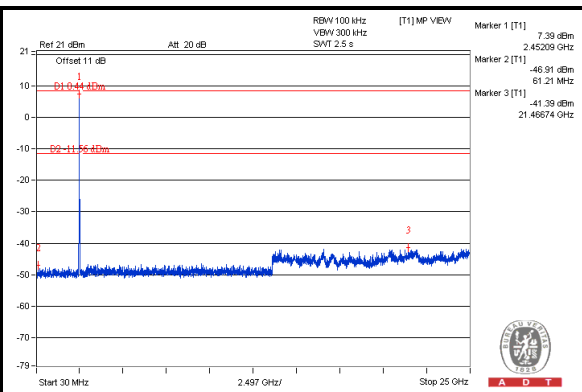
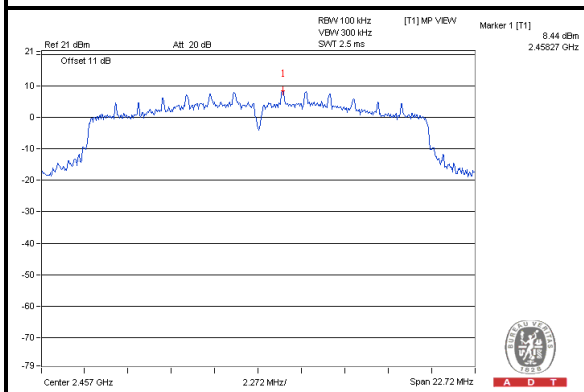
## CH 6



## CH 9



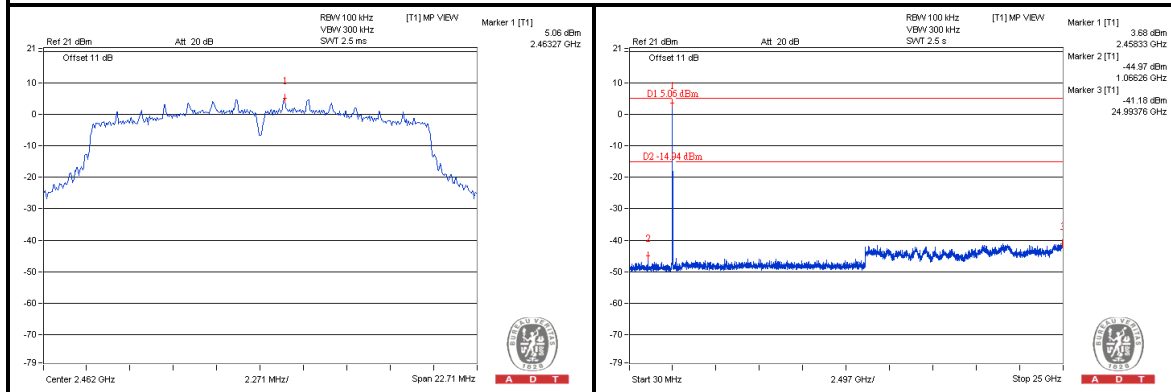
## CH 10



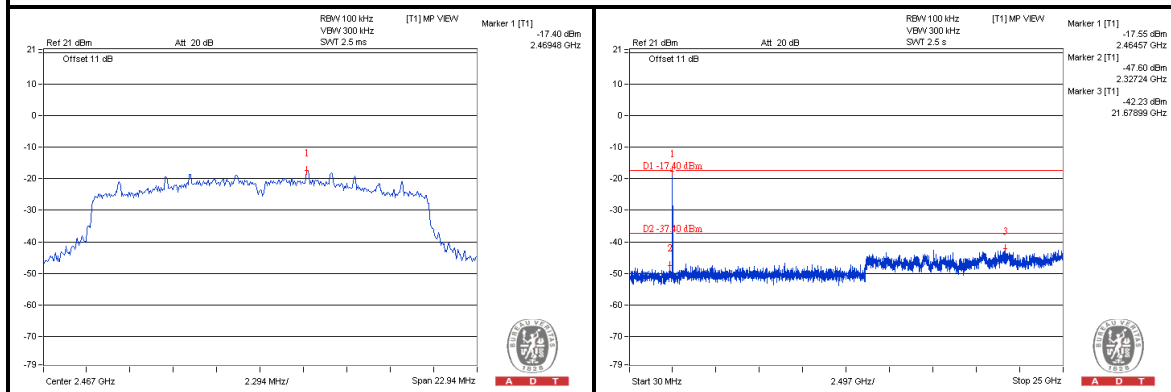


A D T

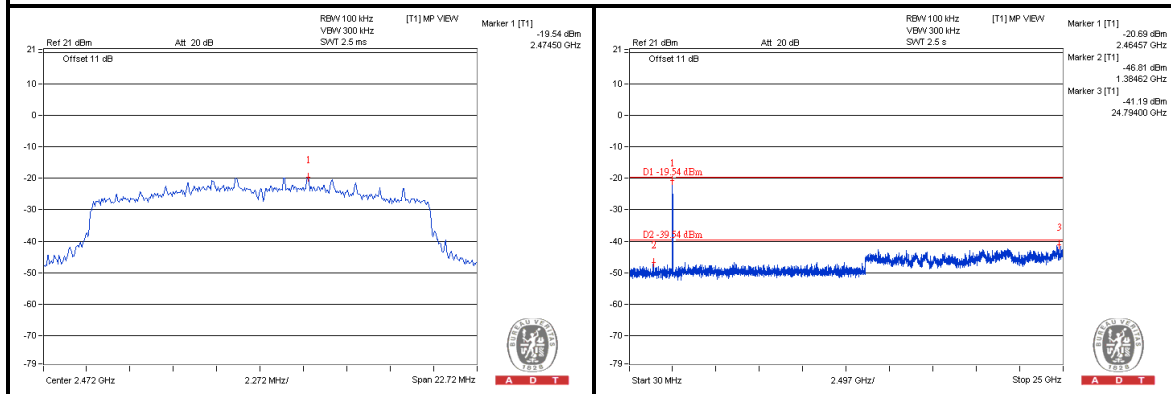
## CH 11



## CH 12



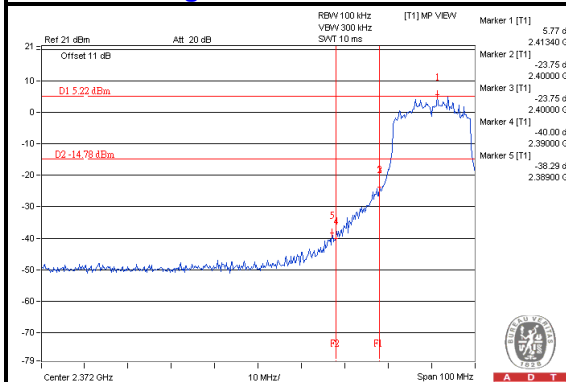
## CH 13



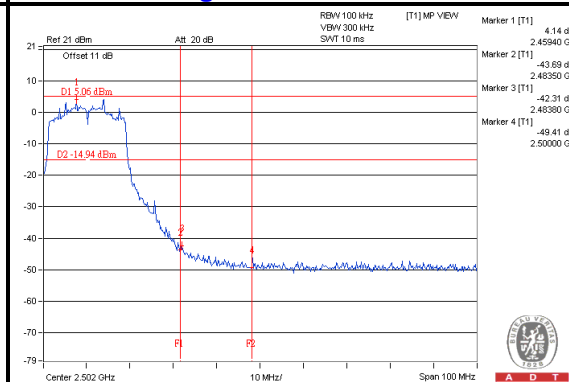


A D T

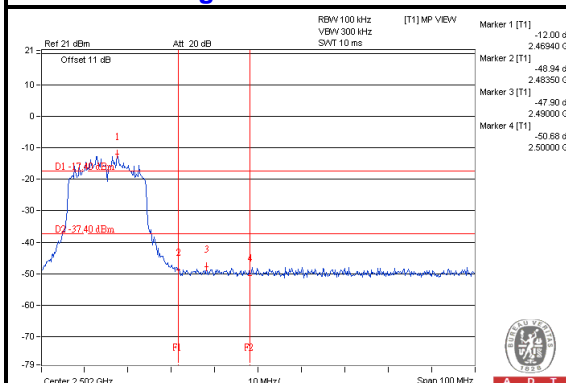
### CH 1 Band edge



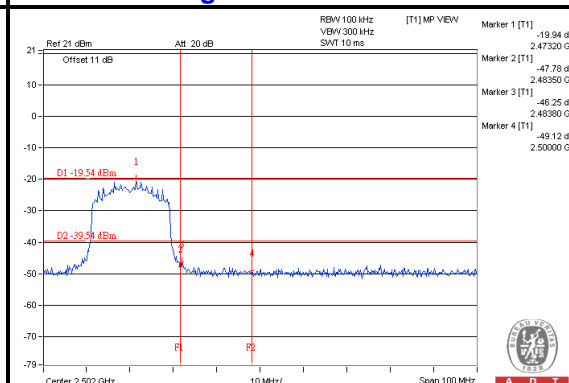
### CH 11 Band edge



### CH 12 Band edge



### CH 13 Band edge





## 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 ROHDE & SCHWARZ	ESCS 30	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) ROHDE & SCHWARZ	NSLK-8127	5127-523	Oct. 02, 2013	Oct. 01, 2014
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COACAB-001	May 27, 2013	May 26, 2014
50 ohms Terminator	50	3	Oct. 17, 2013	Oct. 16, 2014
50 ohms Terminator	N/A	EMC-04	Oct. 17, 2013	Oct. 16, 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. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Dec. 13, 2013

### 5.1.3 TEST PROCEDURES

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

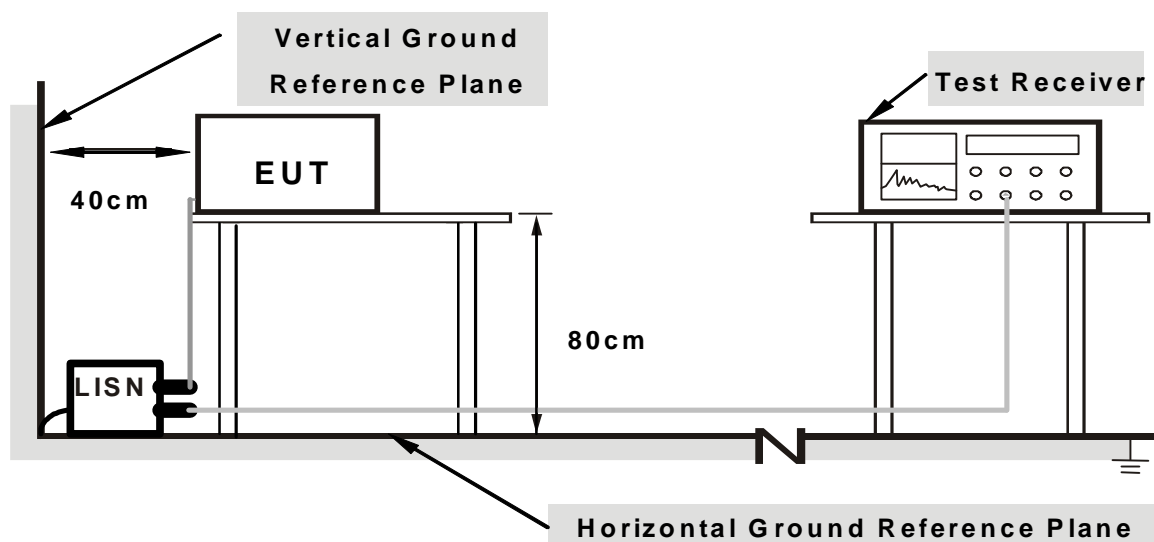
#### NOTE:

- 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

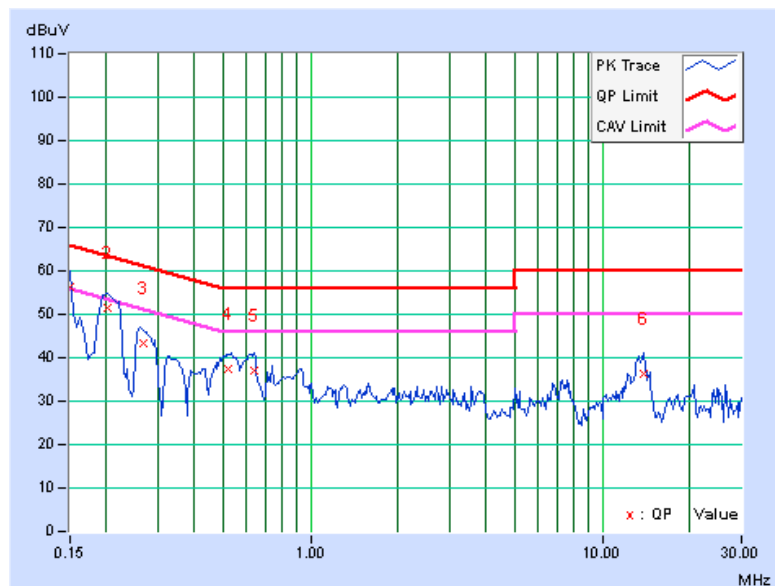
## 5.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.05	56.31	27.10	56.36	27.15	66.00	56.00	-9.64	-28.85
2	0.20078	0.06	51.52	37.99	51.58	38.05	63.58	53.58	-12.00	-15.53
3	0.26813	0.08	43.17	29.00	43.25	29.08	61.18	51.18	-17.93	-22.10
4	0.52500	0.11	37.36	25.23	37.47	25.34	56.00	46.00	-18.53	-20.66
5	0.63828	0.12	36.90	25.63	37.02	25.75	56.00	46.00	-18.98	-20.25
6	13.87500	0.60	35.71	30.61	36.31	31.21	60.00	50.00	-23.69	-18.79

### REMARKS:

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

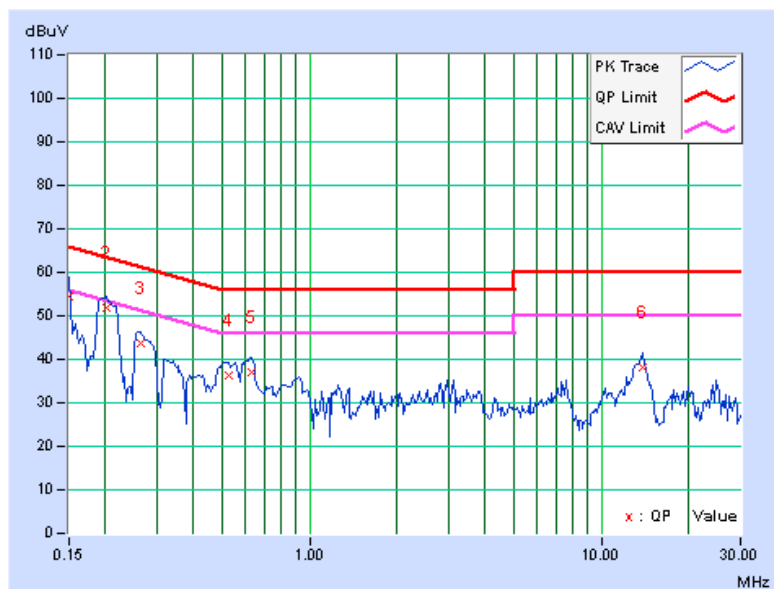


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB]	[dB]
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.05	54.22	32.55	54.27	32.60	66.00	56.00	-11.73	-23.40
2	0.20078	0.05	51.70	38.09	51.75	38.14	63.58	53.58	-11.83	-15.44
3	0.26328	0.07	43.54	28.22	43.61	28.29	61.33	51.33	-17.72	-23.04
4	0.52891	0.12	36.28	24.54	36.40	24.66	56.00	46.00	-19.60	-21.34
5	0.63047	0.12	36.76	25.04	36.88	25.16	56.00	46.00	-19.12	-20.84
6	13.87109	0.58	37.63	32.59	38.21	33.17	60.00	50.00	-21.79	-16.83

#### 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



## 5.2 RADIATED AND BANDEDGE EMISSION MEASUREMENT

### 5.2.1 LIMITS OF RADIATED AND BANDEDGE 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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29, 2013	Jan. 28, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISL	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
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: Nov. 29 to Dec. 11, 2013

### 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.

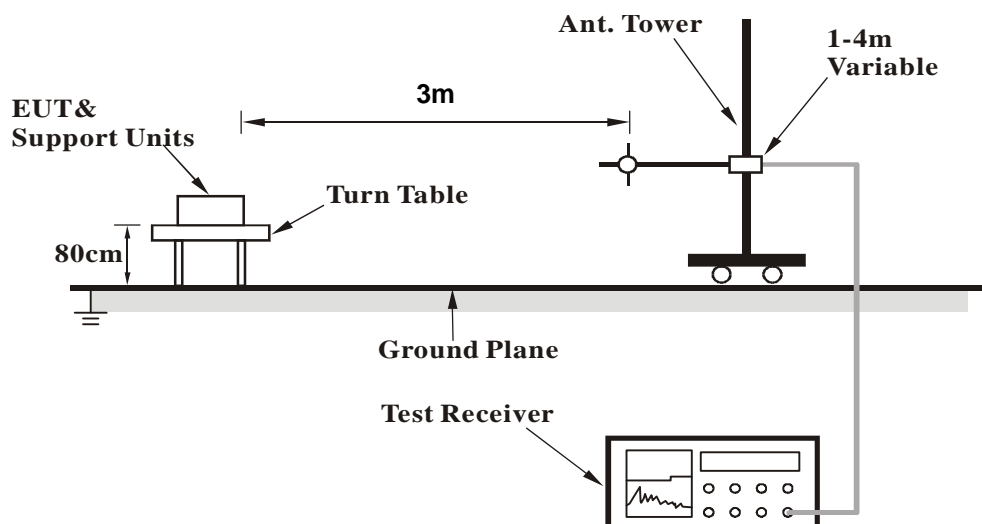
### 5.2.4 DEVIATION FROM TEST STANDARD

No deviation

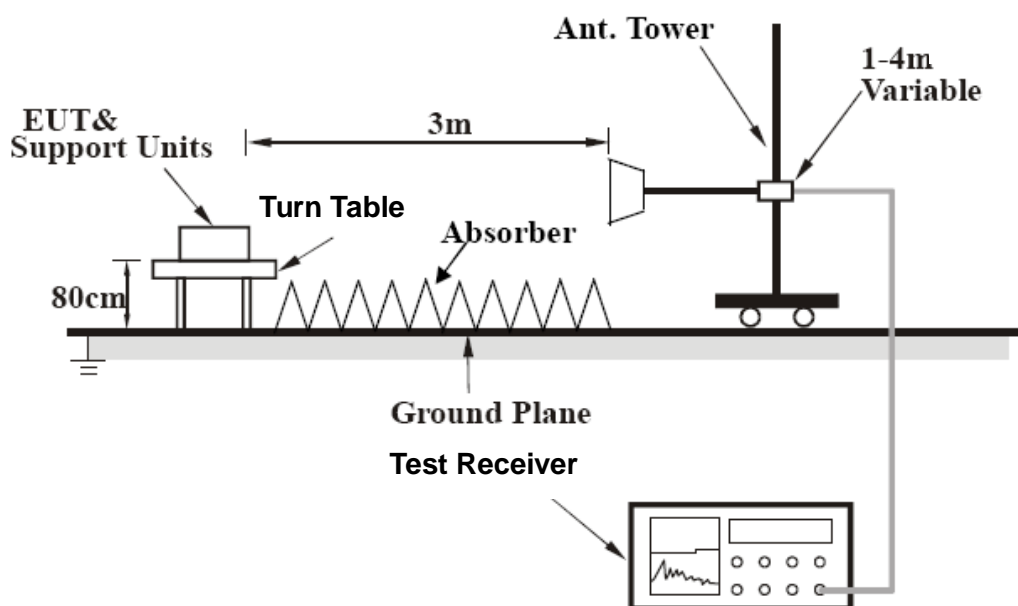


## 5.2.5 TEST SETUP

### <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

## 5.2.7 TEST RESULTS

### 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	110.56	30.1 QP	43.5	-13.4	1.89 H	214	46.12	-16.00
2	128.65	30.9 QP	43.5	-12.6	2.00 H	118	45.55	-14.65
3	150.00	32.8 QP	43.5	-10.7	2.00 H	124	46.17	-13.33
4	166.38	33.2 QP	43.5	-10.4	1.00 H	163	47.07	-13.92
5	240.01	30.6 QP	46.0	-15.4	1.00 H	174	45.36	-14.76
6	322.06	27.3 QP	46.0	-18.7	1.00 H	224	39.04	-11.71
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	37.61	32.6 QP	40.0	-7.4	1.00 V	116	46.52	-13.96
2	126.08	32.7 QP	43.5	-10.8	1.00 V	105	47.28	-14.58
3	133.16	35.0 QP	43.5	-8.5	1.00 V	341	49.21	-14.19
4	150.09	33.4 QP	43.5	-10.1	1.00 V	165	46.74	-13.31
5	161.63	34.5 QP	43.5	-9.0	1.50 V	112	47.57	-13.11
6	306.94	32.2 QP	46.0	-13.8	2.00 V	36	44.49	-12.31

#### REMARKS:

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

## ABOVE 1GHz WORST-CASE 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	5460.00	49.6 PK	74.0	-24.4	1.23 H	278	40.41	9.19
2	5460.00	37.6 AV	54.0	-16.4	1.23 H	278	28.41	9.19
3	*5745.00	111.4 PK			1.23 H	278	101.46	9.94
4	*5745.00	100.3 AV			1.23 H	278	90.36	9.94
5	11490.00	52.1 PK	74.0	-21.9	1.01 H	207	35.52	16.58
6	11490.00	40.6 AV	54.0	-13.4	1.01 H	207	24.02	16.58

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	51.0 PK	74.0	-23.0	1.10 V	288	41.81	9.19
2	5460.00	38.6 AV	54.0	-15.4	1.10 V	288	29.41	9.19
3	*5745.00	113.6 PK			1.10 V	288	103.66	9.94
4	*5745.00	102.6 AV			1.10 V	288	92.66	9.94
5	11490.00	53.4 PK	74.0	-20.6	1.00 V	188	36.82	16.58
6	11490.00	41.5 AV	54.0	-12.5	1.00 V	188	24.92	16.58

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	50.3 PK	74.0	-23.7	1.24 H	278	41.11	9.19
2	5460.00	38.0 AV	54.0	-16.0	1.24 H	278	28.81	9.19
3	*5785.00	111.4 PK			1.24 H	278	101.39	10.01
4	*5785.00	100.1 AV			1.24 H	278	90.09	10.01
5	11570.00	51.4 PK	74.0	-22.6	1.00 H	207	34.76	16.64
6	11570.00	40.1 AV	54.0	-13.9	1.00 H	207	23.46	16.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	50.9 PK	74.0	-23.1	1.10 V	288	41.71	9.19
2	5460.00	38.5 AV	54.0	-15.5	1.10 V	288	29.31	9.19
3	*5785.00	113.3 PK			1.10 V	288	103.29	10.01
4	*5785.00	102.6 AV			1.10 V	288	92.59	10.01
5	11570.00	53.2 PK	74.0	-20.8	1.06 V	186	36.56	16.64
6	11570.00	41.2 AV	54.0	-12.8	1.06 V	186	24.56	16.64

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	50.2 PK	74.0	-23.8	1.24 H	278	41.01	9.19
2	5460.00	37.7 AV	54.0	-16.3	1.24 H	278	28.51	9.19
3	*5825.00	111.7 PK			1.24 H	267	101.60	10.10
4	*5825.00	100.2 AV			1.24 H	267	90.10	10.10
5	11650.00	50.6 PK	74.0	-23.4	1.01 H	207	33.75	16.85
6	11650.00	39.5 AV	54.0	-14.5	1.01 H	207	22.65	16.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	50.8 PK	74.0	-23.2	1.09 V	286	41.61	9.19
2	5460.00	38.2 AV	54.0	-15.8	1.09 V	286	29.01	9.19
3	*5825.00	113.9 PK			1.09 V	286	103.80	10.10
4	*5825.00	102.9 AV			1.09 V	286	92.80	10.10
5	11650.00	52.5 PK	74.0	-21.5	1.05 V	179	35.65	16.85
6	11650.00	40.7 AV	54.0	-13.3	1.05 V	179	23.85	16.85

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. The limit value is defined as per 15.247.

# 802.11n (HT20)

<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	5460.00	50.5 PK	74.0	-23.5	1.15 H	280	41.31	9.19
2	5460.00	37.9 AV	54.0	-16.1	1.15 H	280	28.71	9.19
3	*5745.00	111.7 PK			1.15 H	280	101.76	9.94
4	*5745.00	100.1 AV			1.15 H	280	90.16	9.94
5	11490.00	51.0 PK	74.0	-23.0	1.02 H	202	34.42	16.58
6	11490.00	40.0 AV	54.0	-14.0	1.02 H	202	23.42	16.58
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	51.4 PK	74.0	-22.6	1.10 V	286	42.21	9.19
2	5460.00	38.6 AV	54.0	-15.4	1.10 V	286	29.41	9.19
3	*5745.00	114.3 PK			1.10 V	286	104.36	9.94
4	*5745.00	101.8 AV			1.10 V	286	91.86	9.94
5	11490.00	52.1 PK	74.0	-21.9	1.00 V	157	35.52	16.58
6	11490.00	40.3 AV	54.0	-13.7	1.00 V	157	23.72	16.58

## REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	50.9 PK	74.0	-23.1	1.06 H	267	41.71	9.19
2	5460.00	38.3 AV	54.0	-15.7	1.06 H	267	29.11	9.19
3	*5785.00	111.8 PK			1.06 H	267	101.79	10.01
4	*5785.00	100.0 AV			1.06 H	267	89.99	10.01
5	11570.00	51.3 PK	74.0	-22.7	1.01 H	206	34.66	16.64
6	11570.00	40.0 AV	54.0	-14.0	1.01 H	206	23.36	16.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	51.5 PK	74.0	-22.5	1.08 V	288	42.31	9.19
2	5460.00	38.4 AV	54.0	-15.6	1.08 V	288	29.21	9.19
3	*5785.00	114.3 PK			1.08 V	288	104.29	10.01
4	*5785.00	101.2 AV			1.08 V	288	91.19	10.01
5	11570.00	52.0 PK	74.0	-22.0	1.00 V	145	35.36	16.64
6	11570.00	39.9 AV	54.0	-14.1	1.00 V	145	23.26	16.64

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. The limit value is defined as per 15.247.

<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	5460.00	50.6 PK	74.0	-23.4	1.01 H	252	41.41	9.19
2	5460.00	38.0 AV	54.0	-16.0	1.01 H	252	28.81	9.19
3	*5825.00	111.5 PK			1.01 H	252	101.40	10.10
4	*5825.00	100.2 AV			1.01 H	252	90.10	10.10
5	11650.00	50.7 PK	74.0	-23.3	1.00 H	184	33.85	16.85
6	11650.00	39.5 AV	54.0	-14.5	1.00 H	184	22.65	16.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	50.8 PK	74.0	-23.2	1.08 V	288	41.61	9.19
2	5460.00	38.5 AV	54.0	-15.5	1.08 V	288	29.31	9.19
3	*5825.00	113.5 PK			1.08 V	288	103.40	10.10
4	*5825.00	101.1 AV			1.08 V	288	91.00	10.10
5	11650.00	51.5 PK	74.0	-22.5	1.00 V	152	34.65	16.85
6	11650.00	39.4 AV	54.0	-14.6	1.00 V	152	22.55	16.85

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. The limit value is defined as per 15.247.



### 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
R&S SPECTRUM ANALYZER	FSP40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 31, 2013

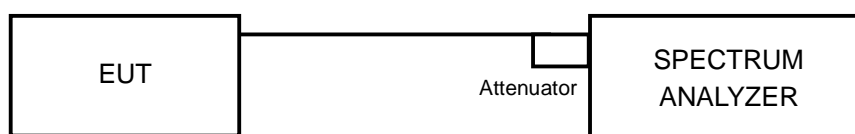
#### 5.3.3 TEST PROCEDURE

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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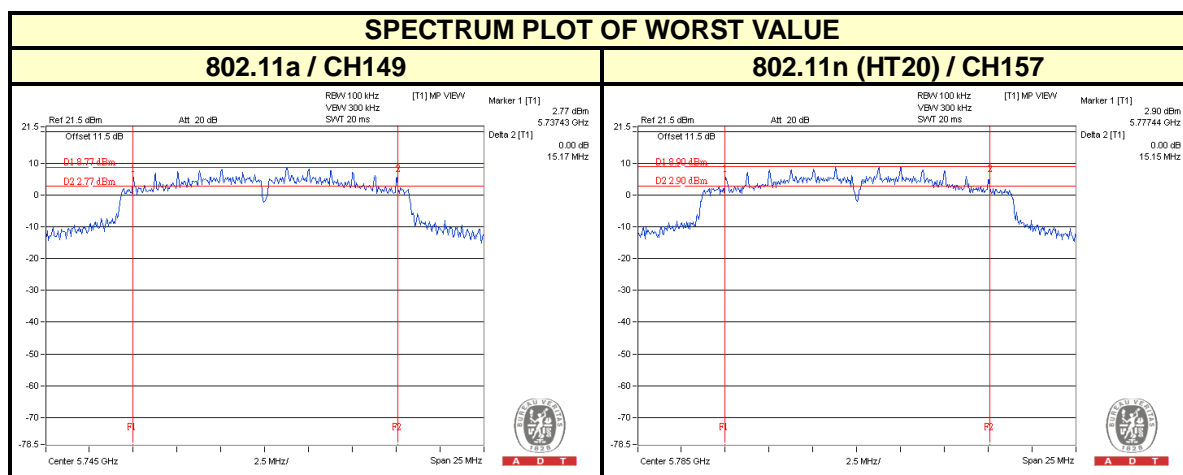
## 5.3.7 TEST RESULTS

### 802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.17	0.5	PASS
157	5785	15.17	0.5	PASS
165	5825	15.72	0.5	PASS

### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.21	0.5	PASS
157	5785	15.15	0.5	PASS
165	5825	15.17	0.5	PASS



## 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)

### 5.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 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 : Jan. 17, 2014

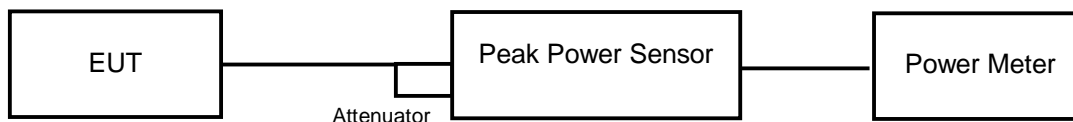
### 5.4.3 TEST PROCEDURES

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

### 5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

### 5.4.5 TEST SETUP



### 5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6



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## 5.4.7 TEST RESULTS

### 802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	123.027	20.90	30	PASS
157	5785	123.027	20.90	30	PASS
165	5825	120.226	20.80	30	PASS

### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	123.027	20.90	30	PASS
157	5785	120.226	20.80	30	PASS
165	5825	120.226	20.80	30	PASS

## 5.5 AVERAGE OUTPUT POWER

### 5.5.1 FOR REFERENCE.

### 5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

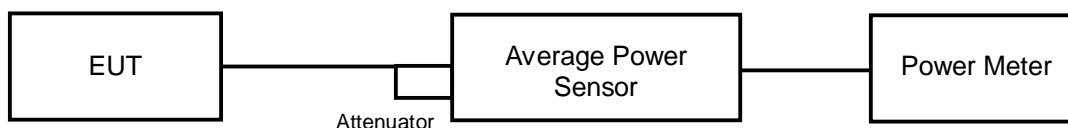
**Note:**

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 : Jan. 17, 2014

### 5.5.3 TEST PROCEDURES

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

### 5.5.4 TEST SETUP



### 5.5.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6

## 5.5.6 TEST RESULTS

### 802.11a

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	69.183	18.40
157	5785	67.608	18.30
165	5825	64.565	18.10

### 802.11n (HT20)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	67.608	18.30
157	5785	64.565	18.10
165	5825	64.565	18.10

## 5.6 POWER SPECTRAL DENSITY MEASUREMENT

### 5.6.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 31, 2013

### 5.6.3 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.

### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.6.5 TEST SETUP



### 5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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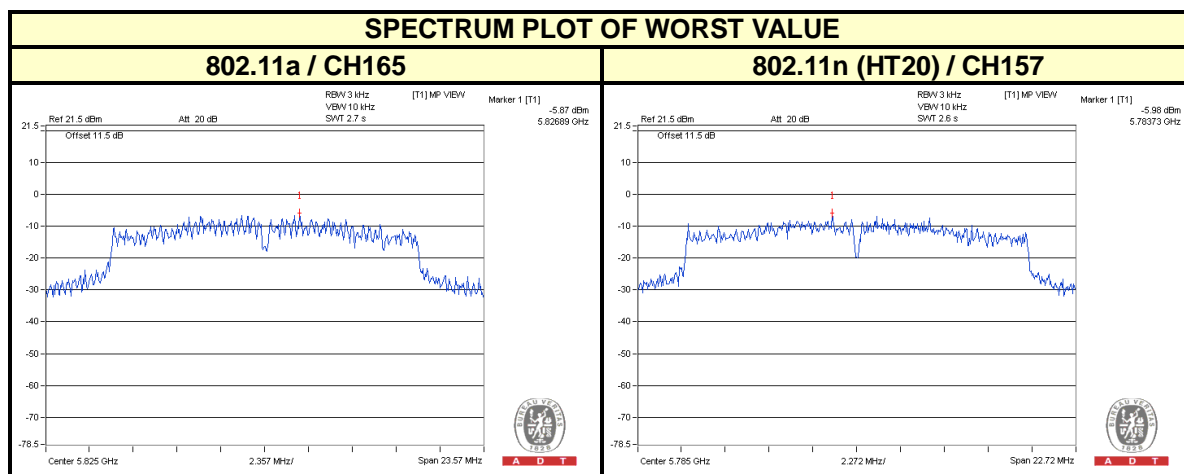
## 5.6.7 TEST RESULTS

### 802.11a

Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
149	5745	-6.89	8	PASS
157	5785	-6.16	8	PASS
165	5825	-5.87	8	PASS

### 802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
149	5745	-7.05	8	PASS
157	5785	-5.98	8	PASS
165	5825	-7.18	8	PASS







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## 5.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

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

### 5.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 31, 2013

### 5.7.3 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. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

#### 5.7.4 DEVIATION FROM TEST STANDARD

No deviation

#### 5.7.5 TEST SETUP



#### 5.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

#### 5.7.7 TEST RESULTS

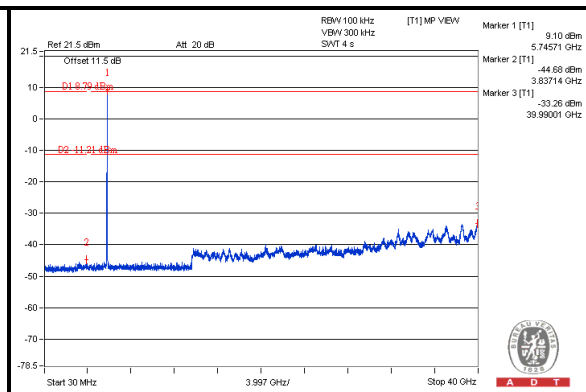
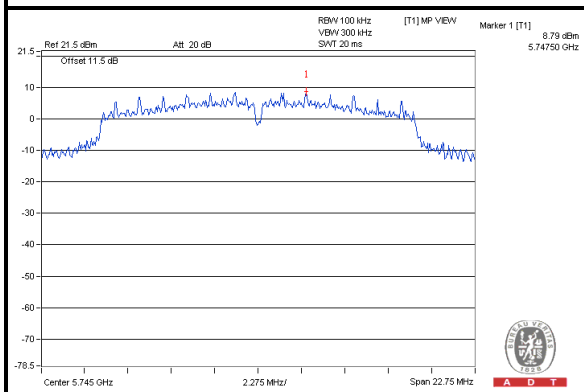
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



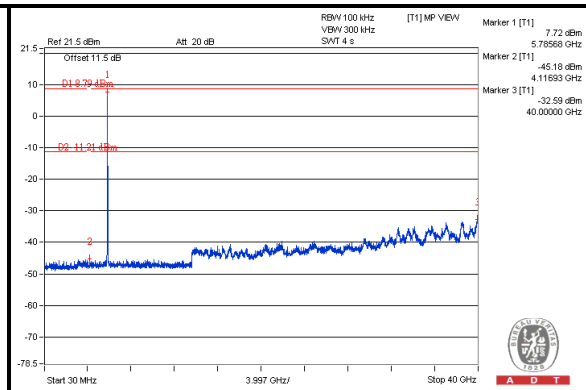
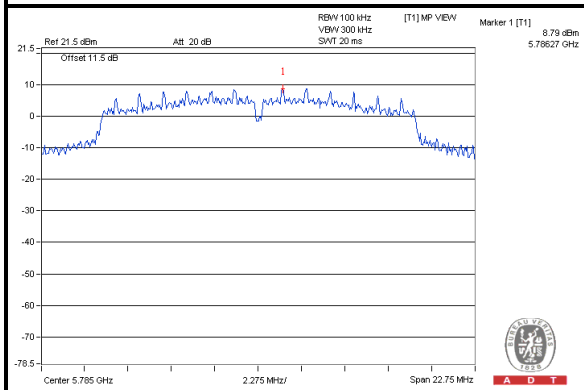
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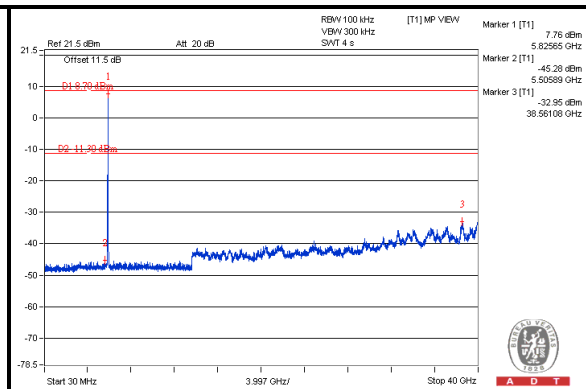
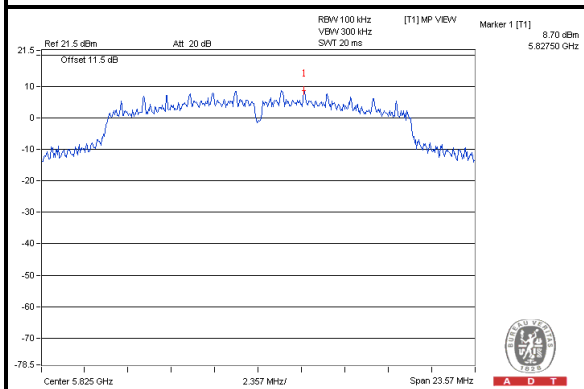
### CH 149



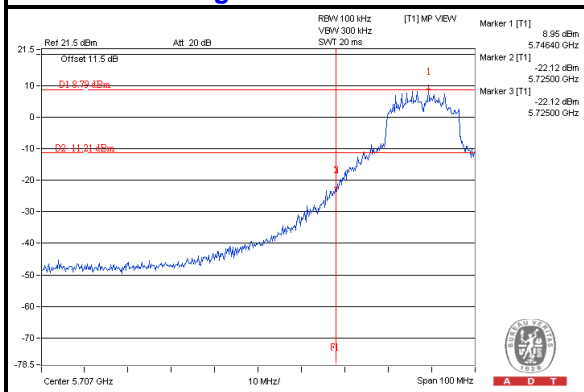
### CH 157



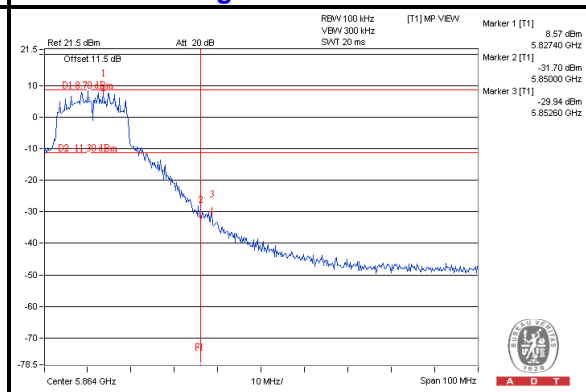
### CH 165



### CH 149 Band edge



### CH 165 Band edge

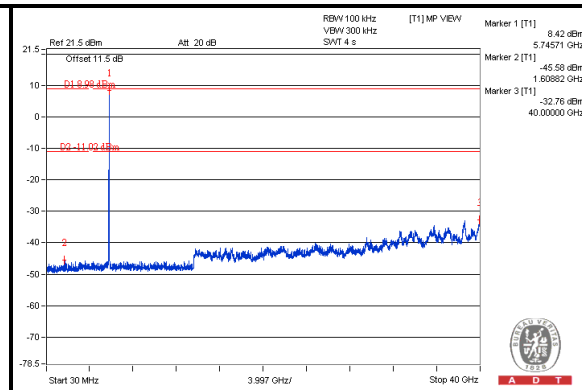
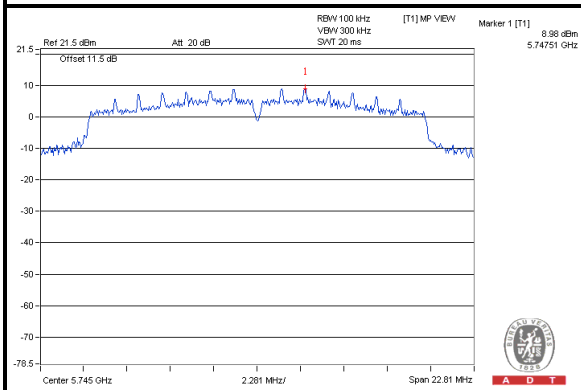




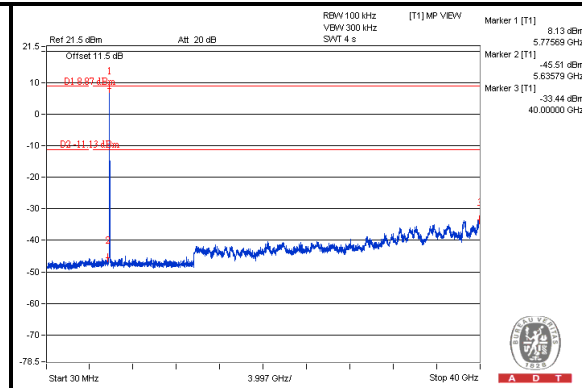
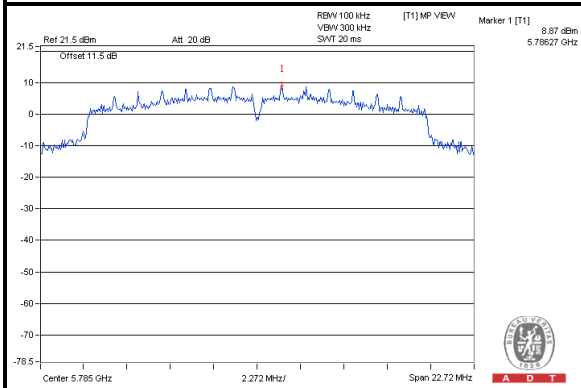
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## 802.11n(HT20)

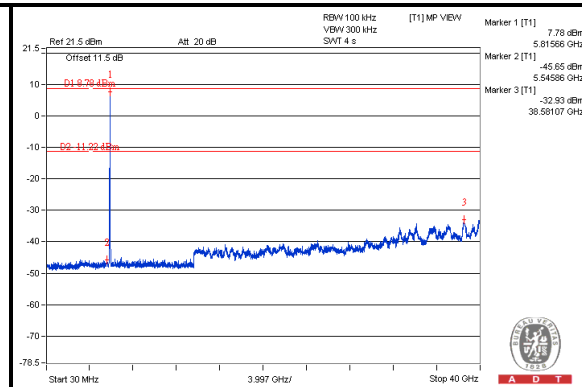
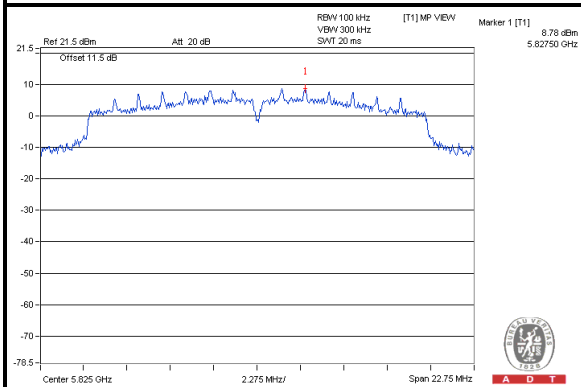
### CH 149



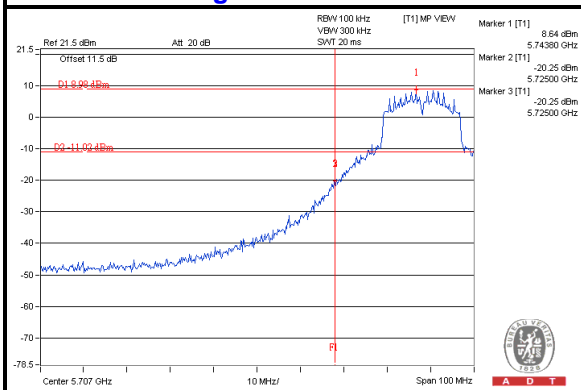
### CH 157



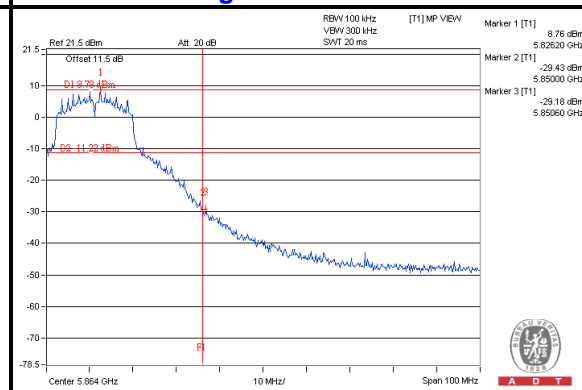
### CH 165



### CH 149 Band edge



### CH 165 Band edge



## 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:

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

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Fax: 886-3-5935342

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

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

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



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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 ---**