



# FCC TEST REPORT

**REPORT NO.:** RF120606E13

**MODEL NO.:** VNT9271BB05B, VNT9271BB03B

**FCC ID:** NCI-VNT9271BB0XB

**RECEIVED:** June 06, 2012

**TESTED:** June 22 to 27, 2012

**ISSUED:** July 09, 2012

**APPLICANT:** VIA Technologies, Inc.

**ADDRESS:** 8F, 533, Chung-Cheng Rd., Hsin-Tien, New Taipei,  
Taiwan

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

**LAB ADDRESS :** No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung  
Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

**TEST LOCATION (1):** No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung  
Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

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

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120606E13	Original release	July 09, 2012



## 1. CERTIFICATION

**PRODUCT:** 802.11bgn USB Module  
**BRAND NAME:** VIA  
**MODEL NO.:** VNT9271BB05B, VNT9271BB03B  
**TEST SAMPLE:** MASS-PRODUCTION  
**APPLICANT:** VIA Technologies, Inc.  
**TESTED:** June 22 to 27, 2012  
**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247)**  
ANSI C63.10-2009

The above equipment (Model: VNT9271BB05B, VNT9271BB03B) have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** : , **DATE:** July 09, 2012  
(Lori Chung, Specialist)

**APPROVED BY** : , **DATE:** July 09, 2012  
(May Chen, Deputy Manager)



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## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.57dB at 0.21341MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2483.50MHz
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 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 IPEX not a standard connector.



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## 2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.69 dB
Radiated emissions (1GHz -6GHz)	3.84 dB
Radiated emissions (6GHz -18GHz)	4.09 dB
Radiated emissions (18GHz -40GHz)	4.24 dB



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### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	802.11bgn USB Module
<b>MODEL NO.</b>	VNT9271BB05B, VNT9271BB03B
<b>POWER SUPPLY</b>	DC 3.3V from host equipment or DC 5V from host equipment
<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 150Mbps
<b>OPERATING FREQUENCY</b>	2.412 ~ 2.462GHz
<b>NUMBER OF CHANNEL</b>	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
<b>MAXIMUM OUTPUT POWER</b>	802.11b: 66.069mW 802.11g: 288.403mW 802.11n (20MHz): 275.423mW 802.11n (40MHz): 144.544mW
<b>ANTENNA TYPE</b>	Please see NOTE
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	NA



**NOTE:**

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

Brand	Model No.	Difference
VIA	VNT9271BB05B	Power supply from 5Vdc
	VNT9271BB03B	Power supply from 3.3Vdc

From the above models, the worst radiated emission was found in **VNT9271BB03B**. Therefore only the test data of the model was recorded in this report individually.

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

Set 1						
Manufacture	Model	Antenna Type	Peak Gain (Net gain) (dBi)	Connector Type		
VIA Technologies, Inc.	NA	PCB	-3.288	NA		
Set 2						
Manufacture	Model	Antenna Type	Peak Gain (Net gain) (dBi)	Connector Type		
ARISTOTLE ENTERPRISES	RFA-02-P05-70B-150	PCB	2	I-PEX		
Set 3						
Manufacture	Model	Antenna Type	Peak Gain (Net gain) (dBi)	Connector Type		
ARISTOTLE ENTERPRISES	RFA-02-C2H1	Dipole	2.09	I-PEX		
Set 4						
Manufacture	Model	Antenna Type	Peak Gain (Excluded cable loss) (dBi)	Cable Loss (dBi)	Peak gain (Net gain) (dBi)	Connector Type
ARISTOTLE ENTERPRISES	RFA-02-C2M2-M1 0-N	Dipole	2.09	3.2	-1.11	I-PEX
Set 5						
Manufacture	Model	Antenna Type	Peak Gain (Excluded cable loss) (dBi)	Cable Loss (dBi)	Peak gain (Net gain) (dBi)	Connector Type
WHA YU GROUP	C1336S510077-A (SSR-10994)	Dipole	1.26122	3.2	-1.93878	I-PEX
Set 6						
Manufacture	Model	Antenna Type	Peak Gain (Excluded cable loss) (dBi)	Cable Loss (dBi)	Peak gain (Net gain) (dBi)	Connector Type
WHA YU GROUP	C529-510331-A (SSR-02752)	Dipole	3.0	3.2	-0.2	I-PEX



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Set 7						
Manufacture	Model	Antenna Type	Peak Gain (Excluded cable loss) (dBi)	Cable Loss (dBi)	Peak gain (Net gain) (dBi)	Connector Type
WANSHIH ELECTRONIC CO., LTD	WSS002	Dipole	2.24	3.2	-0.96	I-PEX
Set 8						
Manufacture	Model	Antenna Type	Peak Gain (Excluded cable loss) (dBi)	Cable Loss (dBi)	Peak gain (Net gain) (dBi)	Connector Type
WANSHIH ELECTRONIC CO., LTD	WSS003	Dipole	3.34	3.2	0.14	I-PEX
Set 9						
Manufacture	Model	Antenna Type	Peak Gain (Excluded cable loss) (dBi)	Cable Loss (dBi)	Peak gain (Net gain) (dBi)	Connector Type
WANSHIH ELECTRONIC CO., LTD	WSS007	Dipole	4.97	3.2	1.77	I-PEX
Set 10						
Manufacture	Model	Antenna Type	Peak Gain (Excluded cable loss) (dBi)	Cable Loss (dBi)	Peak gain (Net gain) (dBi)	Connector Type
ARISTOTLE ENTERPRISES	RFA-02-3-C 52M3	Dipole	3	3.2	-0.2	I-PEX
From the above antenna sets, <b>Set 2 &amp; Set 3</b> were selected for testing.						

3. The EUT incorporates a SISO function.

MODULATION MODE	Tx/Rx FUNCTION
<b>802.11b</b>	1Tx/1Rx
<b>802.11g</b>	1Tx/1Rx
<b>802.11n (20MHz)</b>	1Tx/1Rx
<b>802.11n (40MHz)</b>	1Tx/1Rx

4. The EUT is 1 \* 1 spatial SISO (1Tx & 1Rx) without beam forming function.

5. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.

6. The EUT was pre-tested under following test modes:

Pre-test Mode	Description
Mode A	EUT with antenna set 2(X-Y plane)
<b>Mode B</b>	<b>EUT with antenna set 2(Y-Z plane)</b>
Mode C	EUT with antenna set 2(X-Z plane)

From the above modes, the worst radiated emission was found in **Mode B**. Therefore only the test data of the modes were recorded in this report individually.



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

### 3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided for 802.11b, 802.11g, 802.11n (20MHz):

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

Seven channels are provided for 802.11n (40MHz):

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



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### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
Mode 1	√	√	√	√	√	Model: VNT9271BB03B + antenna set 3
Mode 2	-	√	√	-	-	Model: VNT9271BB03B + antenna set 2
Mode 3	√	-	-	-	-	Model: VNT9271BB05B + antenna set 3

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)	COMBINATION MODE
802.11g	1 to 11	6	OFDM	BPSK	6	Mode 1 & 3

#### **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)	COMBINATION MODE
802.11g	1 to 11	6	OFDM	BPSK	6	Mode 1 & 2



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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	Mode 1 & 2
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	Mode 1 & 2
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	Mode 1 & 2
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	Mode 1 & 2

**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)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	Mode 1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	Mode 1
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	Mode 1
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	Mode 1

**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)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	Mode 1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	Mode 1
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	Mode 1
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	Mode 1



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**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C, 60%RH 26deg. C, 66%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	21deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
RE <sup>3</sup> 1G	21deg. C, 63%RH	120Vac, 60Hz	Evan Huang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang

### 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 v01**  
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 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	DC Power Supply	Topward	6603D	795558	NA

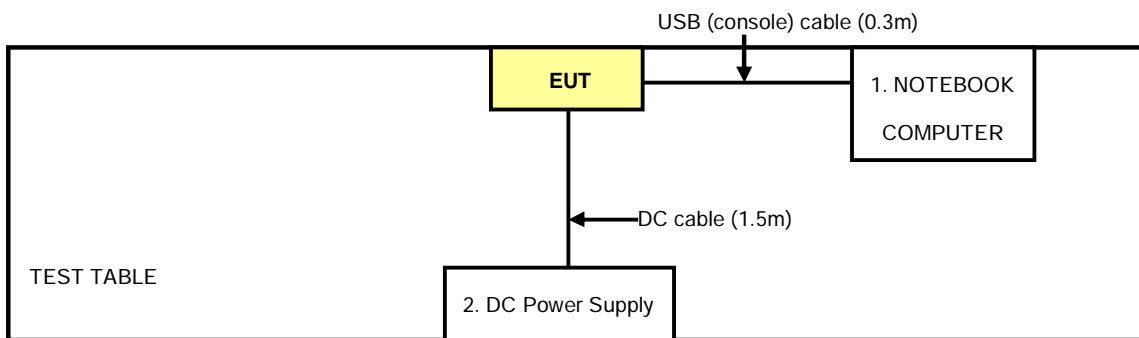
No.	Signal cable description
1	USB (console) cable (0.3m)
2	DC cable (1.5m)

Note: The power cords of the above support units were unshielded (1.8m).

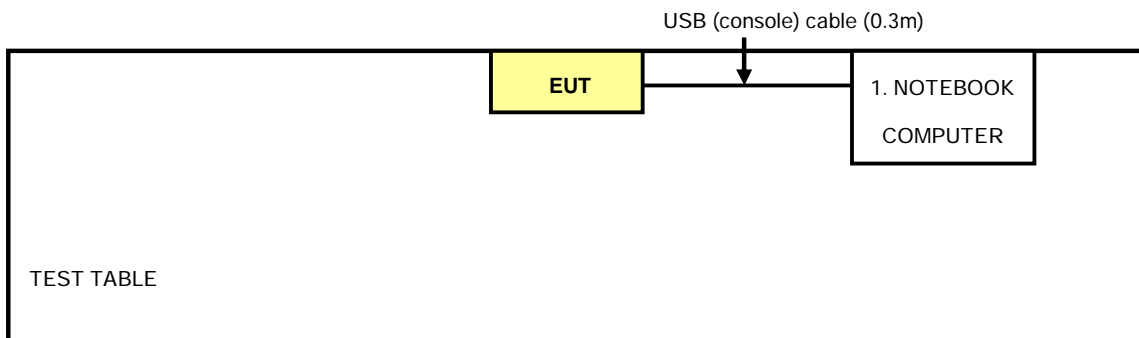


### 3.5 CONFIGURATION OF SYSTEM UNDER TEST

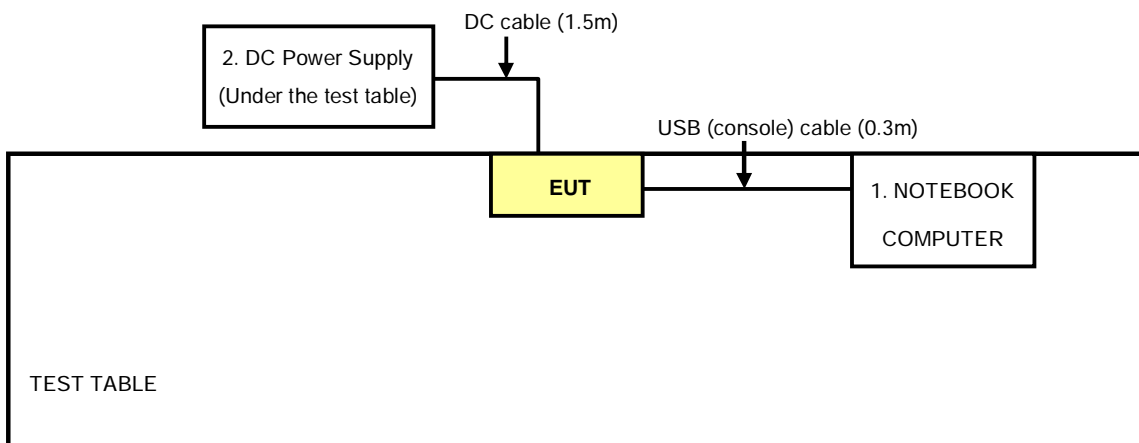
**For conducted emission test (Mode 1):**



**For conducted emission test (Mode 3):**



**For Other test items:**





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## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 12, 2012	Mar.11, 2013
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 08,2012	June 07,2013
RF Cable (JYEBAO)	5DFB	COCCAB-001	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	EMC-3	Sep. 26, 2011	Sep. 25, 2012
Software ADT	BV ADT_Cond_V7.3.7 .3	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: June 22, 2012

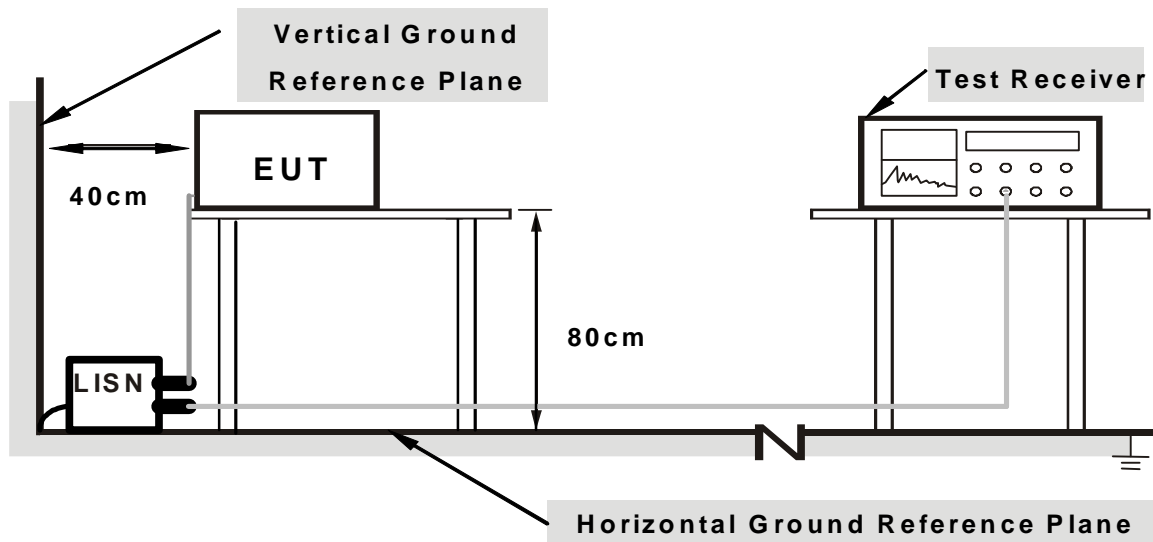
#### 4.1.3 TEST PROCEDURES

- a. The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



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

**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

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

#### 4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared computer system (support unit 1) to act as communication partner.
3. The communication partner ran test program “ART.exe V R0.8B127” to enable EUT under transmission/receiving condition continuously.

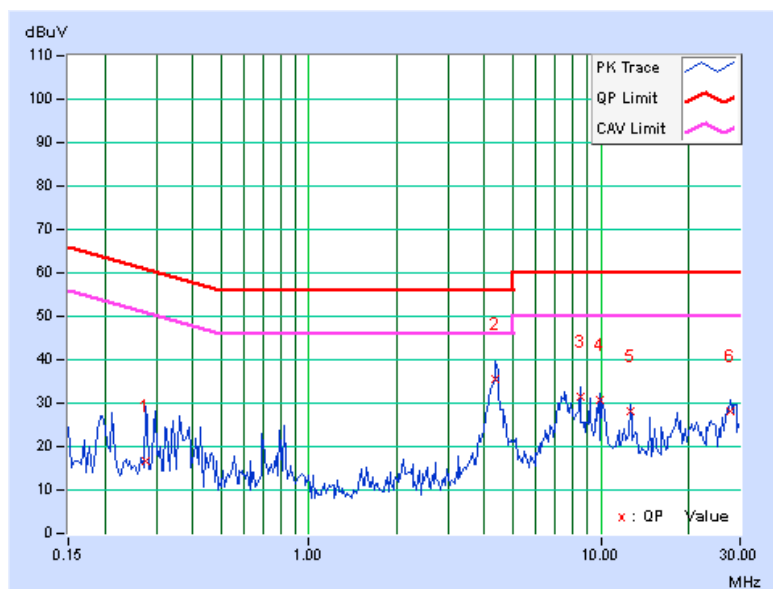
### 4.1.7 TEST RESULTS (MODE 1)

<b>PHASE</b>	Line (L)	<b>6dB BANDWIDTH</b>	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.27500	0.07	16.60	4.09	16.67	4.16	60.97	50.97	-44.29	-46.80
2	4.37109	0.33	35.28	26.48	35.61	26.81	56.00	46.00	-20.39	-19.19
3	8.50000	0.48	31.04	29.84	31.52	30.32	60.00	50.00	-28.48	-19.68
4	9.90625	0.53	30.17	26.96	30.70	27.49	60.00	50.00	-29.30	-22.51
5	12.63300	0.62	27.59	23.61	28.21	24.23	60.00	50.00	-31.79	-25.77
6	27.93750	0.98	27.08	21.72	28.06	22.70	60.00	50.00	-31.94	-27.30

**REMARKS:**

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

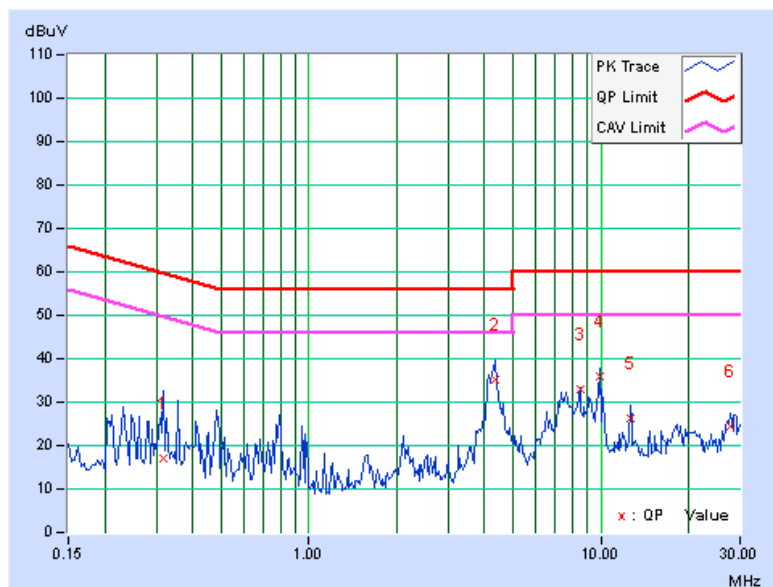


<b>PHASE</b>	Neutral (N)	<b>6dB BANDWIDTH</b>	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.31797	0.07	16.80	6.02	16.87	6.09	59.76	49.76	-42.89
2	4.37500	0.25	35.04	26.44	35.29	26.69	56.00	46.00	-20.71	-19.31
3	8.49953	0.35	32.44	30.92	32.79	31.27	60.00	50.00	-27.21	-18.73
4	9.90234	0.39	35.39	32.20	35.78	32.59	60.00	50.00	-24.22	-17.41
5	12.62891	0.48	25.90	21.69	26.38	22.17	60.00	50.00	-33.62	-27.83
6	27.93347	0.89	23.71	20.54	24.60	21.43	60.00	50.00	-35.40	-28.57

**REMARKS:**

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



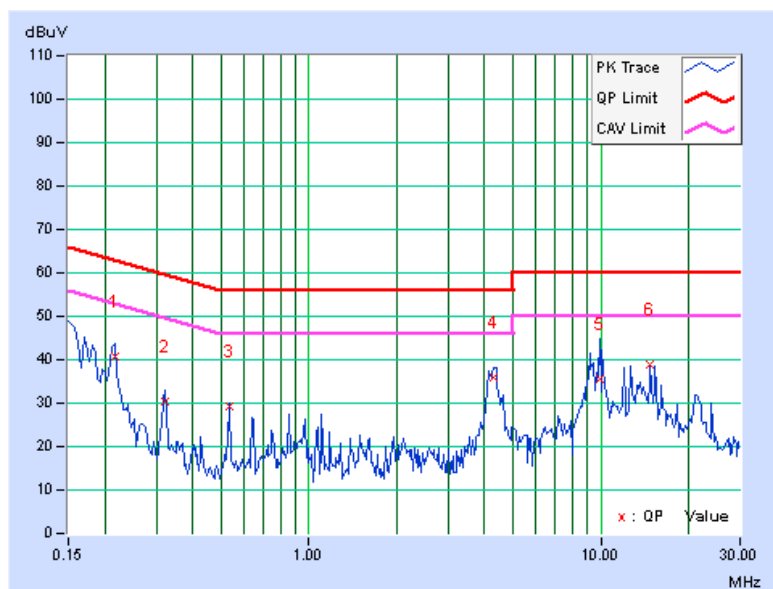
### 4.1.8 TEST RESULTS (MODE 3)

<b>PHASE</b>	Line (L)	<b>6dB BANDWIDTH</b>	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21641	0.07	40.78	33.20	40.85	33.27	62.96	52.96	-22.10	-19.68
2	0.32188	0.08	30.41	29.32	30.49	29.40	59.66	49.66	-29.17	-20.26
3	0.53672	0.09	29.13	28.25	29.22	28.34	56.00	46.00	-26.78	-17.66
4	4.29297	0.33	35.49	28.33	35.82	28.66	56.00	46.00	-20.18	-17.34
5	9.90234	0.53	35.02	31.32	35.55	31.85	60.00	50.00	-24.45	-18.15
6	14.68203	0.68	38.10	34.23	38.78	34.91	60.00	50.00	-21.22	-15.09

**REMARKS:**

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

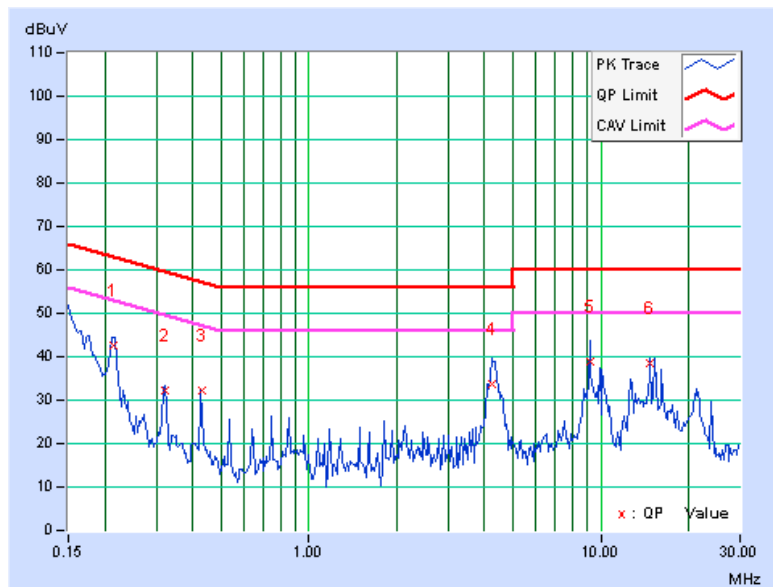


<b>PHASE</b>	Neutral (N)	<b>6dB BANDWIDTH</b>	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.21341	0.06	42.46	40.44	42.52	40.50	63.07	53.07	-20.55
2	0.32188	0.07	32.11	31.45	32.18	31.52	59.66	49.66	-27.48	-18.14
3	0.42834	0.08	32.14	31.28	32.22	31.36	57.28	47.28	-25.06	-15.92
4	4.26172	0.25	33.38	26.31	33.63	26.56	56.00	46.00	-22.37	-19.44
5	9.21875	0.37	38.42	34.43	38.79	34.80	60.00	50.00	-21.21	-15.20
6	14.67969	0.55	38.04	34.17	38.59	34.72	60.00	50.00	-21.41	-15.28

**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 BANDEGE MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION AND BANDEGE MEASUREMENT

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

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

**NOTE:**

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



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#### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 29, 2011	Aug. 28, 2012
Pre-Selector Agilent	N9039A	MY46520310	Aug. 29, 2011	Aug. 28, 2012
Signal Generator Agilent	N5181A	MY49060347	July 25, 2011	July 24, 2012
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 15, 2011	Nov. 14, 2012
Pre-Amplifier Agilent	8449B	3008A02465	Feb. 27, 2012	Feb. 26, 2013
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Apr. 06, 2012	Apr. 05, 2013
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 23, 2011	Nov. 22, 2012
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
Loop Antenna <sup>(*)</sup> R&S	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 27, 2011	Dec. 26, 2012
RF Cable	NA	CHHCAB_001	Oct. 08, 2011	Oct. 07, 2012
Software	ADT_Radiated _V8.7.05	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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
- 3 The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in 966 Chamber No. H.
- 5 The FCC Site Registration No. is 797305.
- 6 The CANADA Site Registration No. is IC 7450H-3.
- 7 Tested Date: June 26 to 27, 2012



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#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber 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.

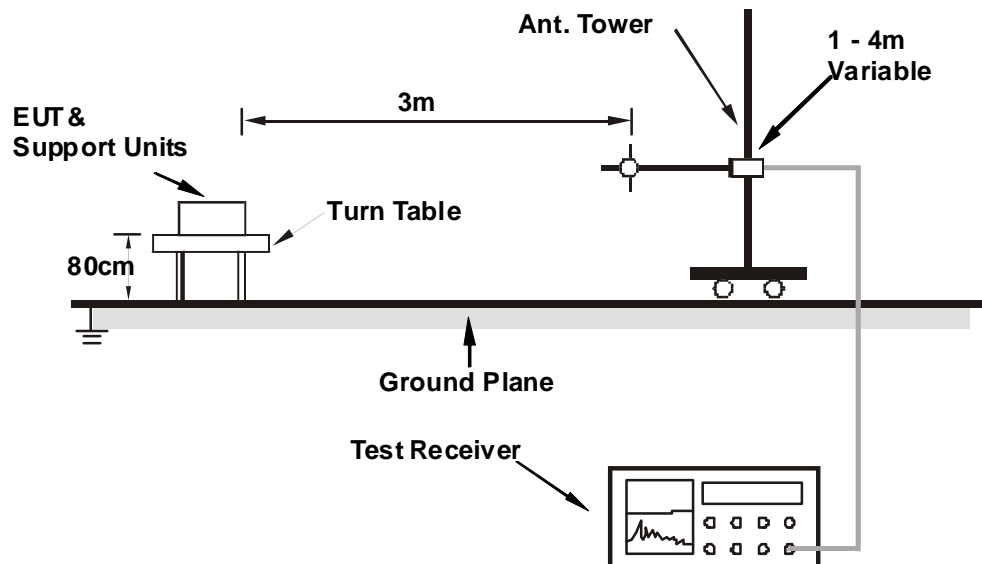
#### NOTE:

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 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
4. 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



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 (MODE 1)

### BELOW 1GHz WORST-CASE DATA

#### 802.11g

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	110.76	37.8 QP	43.5	-5.7	2.00 H	360	26.64	11.13
2	216.28	40.5 QP	46.0	-5.5	1.50 H	180	28.77	11.76
3	240.03	41.2 QP	46.0	-4.8	1.12 H	67	28.35	12.85
4	483.56	36.5 QP	46.0	-9.5	1.50 H	335	16.82	19.65
5	715.67	36.5 QP	46.0	-9.5	1.00 H	71	12.51	23.95
6	960.00	49.2 QP	54.0	-4.8	1.34 H	92	21.20	27.98
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	33.32	36.7 QP	40.0	-3.3	1.50 V	108	23.66	13.03
2	113.25	32.7 QP	43.5	-10.8	1.00 V	68	21.21	11.46
3	239.96	35.1 QP	46.0	-10.9	1.50 V	360	22.26	12.84
4	481.55	31.9 QP	46.0	-14.1	2.00 V	0	12.29	19.60
5	720.40	31.8 QP	46.0	-14.2	1.50 V	360	7.78	24.03
6	960.00	46.3 QP	54.0	-7.7	1.16 V	84	18.31	27.98

#### 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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



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ABOVE 1GHz DATA

802.11b

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.9 PK	74.0	-18.1	1.13 H	60	23.71	32.19
2	2390.00	44.4 AV	54.0	-9.6	1.13 H	60	12.21	32.19
3	*2412.00	95.3 PK			1.14 H	60	63.05	32.25
4	*2412.00	92.8 AV			1.14 H	60	60.55	32.25
5	4824.00	55.6 PK	74.0	-18.4	1.07 H	15	14.03	41.57
6	4824.00	52.4 AV	54.0	-1.6	1.07 H	15	10.83	41.57

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.7 PK	74.0	-16.3	1.00 V	264	25.51	32.19
2	2390.00	46.2 AV	54.0	-7.8	1.00 V	264	14.01	32.19
3	*2412.00	105.7 PK			1.00 V	264	73.45	32.25
4	*2412.00	103.5 AV			1.00 V	264	71.25	32.25
5	4824.00	56.4 PK	74.0	-17.6	1.06 V	360	14.83	41.57
6	4824.00	53.2 AV	54.0	-0.8	1.06 V	360	11.63	41.57

REMARKS:

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



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	97.8 PK			1.10 H	61	65.49	32.31
2	*2437.00	95.4 AV			1.10 H	61	63.09	32.31
3	4874.00	56.3 PK	74.0	-17.7	1.03 H	14	14.64	41.66
4	4874.00	51.9 AV	54.0	-2.1	1.03 H	14	10.24	41.66
5	7311.00	53.9 PK	74.0	-20.1	1.03 H	104	7.76	46.14
6	7311.00	43.5 AV	54.0	-10.5	1.03 H	104	-2.64	46.14

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.8 PK			1.00 V	263	74.49	32.31
2	*2437.00	104.6 AV			1.00 V	263	72.29	32.31
3	4874.00	55.8 PK	74.0	-18.2	1.32 V	300	14.14	41.66
4	4874.00	52.9 AV	54.0	-1.1	1.32 V	300	11.24	41.66
5	7311.00	53.6 PK	74.0	-20.4	1.11 V	67	7.46	46.14
6	7311.00	42.9 AV	54.0	-11.1	1.11 V	67	-3.24	46.14

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.2 PK			1.09 H	60	66.83	32.37
2	*2462.00	96.5 AV			1.09 H	60	64.13	32.37
3	2483.50	57.2 PK	74.0	-16.8	1.10 H	60	24.77	32.43
4	2483.50	44.9 AV	54.0	-9.1	1.10 H	60	12.47	32.43
5	4924.00	55.8 PK	74.0	-18.2	1.59 H	89	14.10	41.70
6	4924.00	51.5 AV	54.0	-2.5	1.59 H	89	9.80	41.70
7	7386.00	57.1 PK	74.0	-16.9	1.43 H	256	10.77	46.33
8	7386.00	49.0 AV	54.0	-5.0	1.43 H	256	2.67	46.33

**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	106.9 PK			1.00 V	265	74.53	32.37
2	*2462.00	104.6 AV			1.00 V	265	72.23	32.37
3	2483.50	58.9 PK	74.0	-15.1	1.00 V	265	26.47	32.43
4	2483.50	47.4 AV	54.0	-6.6	1.00 V	265	14.97	32.43
5	4924.00	56.4 PK	74.0	-17.6	1.06 V	359	14.70	41.70
6	4924.00	53.3 AV	54.0	-0.7	1.06 V	359	11.60	41.70
7	7386.00	54.7 PK	74.0	-19.3	1.12 V	69	8.37	46.33
8	7386.00	46.8 AV	54.0	-7.2	1.12 V	69	0.47	46.33

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.





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802.11g

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.8 PK	74.0	-16.2	1.12 H	59	25.61	32.19
2	2390.00	45.5 AV	54.0	-8.5	1.12 H	59	13.31	32.19
3	*2412.00	95.5 PK			1.11 H	59	63.25	32.25
4	*2412.00	84.9 AV			1.11 H	59	52.65	32.25
5	4824.00	51.4 PK	74.0	-22.6	1.25 H	68	9.83	41.57
6	4824.00	38.6 AV	54.0	-15.4	1.25 H	68	-2.97	41.57

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.9 PK	74.0	-11.1	1.00 V	264	30.71	32.19
2	2390.00	53.2 AV	54.0	-0.8	1.00 V	264	21.01	32.19
3	*2412.00	106.2 PK			1.00 V	264	73.95	32.25
4	*2412.00	95.5 AV			1.00 V	264	63.25	32.25
5	4824.00	52.3 PK	74.0	-21.7	1.50 V	50	10.73	41.57
6	4824.00	39.2 AV	54.0	-14.8	1.50 V	50	-2.37	41.57

**REMARKS:**

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



A D T

<b>CHANNEL</b>	TX Channel 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	57.9 PK	74.0	-16.1	1.11 H	61	25.71	32.19
2	2390.00	44.4 AV	54.0	-9.6	1.11 H	61	12.21	32.19
3	*2437.00	101.7 PK			1.11 H	61	69.39	32.31
4	*2437.00	91.8 AV			1.11 H	61	59.49	32.31
5	2483.50	58.5 PK	74.0	-15.5	1.11 H	61	26.07	32.43
6	2483.50	44.5 AV	54.0	-9.5	1.11 H	61	12.07	32.43
7	4874.00	60.1 PK	74.0	-13.9	1.25 H	70	18.44	41.66
8	4874.00	45.5 AV	54.0	-8.5	1.25 H	70	3.84	41.66
9	7311.00	61.3 PK	74.0	-12.7	1.12 H	113	15.16	46.14
10	7311.00	48.1 AV	54.0	-5.9	1.12 H	113	1.96	46.14

**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	60.5 PK	74.0	-13.5	1.00 V	68	28.31	32.19
2	2390.00	46.2 AV	54.0	-7.8	1.00 V	68	14.01	32.19
3	*2437.00	111.4 PK			1.00 V	68	79.09	32.31
4	*2437.00	101.0 AV			1.00 V	68	68.69	32.31
5	2483.50	61.1 PK	74.0	-12.9	1.00 V	68	28.67	32.43
6	2483.50	46.9 AV	54.0	-7.1	1.00 V	68	14.47	32.43
7	4874.00	60.1 PK	74.0	-13.9	1.16 V	190	18.44	41.66
8	4874.00	46.3 AV	54.0	-7.7	1.16 V	190	4.64	41.66
9	7311.00	65.9 PK	74.0	-8.1	1.09 V	333	19.76	46.14
10	7311.00	53.1 AV	54.0	-0.9	1.09 V	333	6.96	46.14

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.3 PK			1.09 H	60	67.93	32.37
2	*2462.00	90.1 AV			1.09 H	60	57.73	32.37
3	2483.50	67.3 PK	74.0	-6.7	1.08 H	62	34.87	32.43
4	2483.50	49.8 AV	54.0	-4.2	1.08 H	62	17.37	32.43
5	4924.00	53.8 PK	74.0	-20.2	1.23 H	64	12.10	41.70
6	4924.00	40.0 AV	54.0	-14.0	1.23 H	64	-1.70	41.70
7	7386.00	57.6 PK	74.0	-16.4	1.15 H	105	11.27	46.33
8	7386.00	42.7 AV	54.0	-11.3	1.15 H	105	-3.63	46.33

**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	265	76.43	32.37
2	*2462.00	98.2 AV			1.00 V	265	65.83	32.37
3	2483.50	70.2 PK	74.0	-3.8	1.00 V	265	37.77	32.43
4	<b>2483.50</b>	<b>53.5 AV</b>	<b>54.0</b>	<b>-0.5</b>	<b>1.00 V</b>	<b>265</b>	<b>21.07</b>	<b>32.43</b>
5	4924.00	51.5 PK	74.0	-22.5	1.48 V	46	9.80	41.70
6	4924.00	39.0 AV	54.0	-15.0	1.48 V	46	-2.70	41.70
7	7386.00	60.0 PK	74.0	-14.0	1.00 V	214	13.67	46.33
8	7386.00	45.4 AV	54.0	-8.6	1.00 V	214	-0.93	46.33

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.

**802.11n (20MHz)**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.1 PK	74.0	-14.9	1.11 H	60	26.91	32.19
2	2390.00	45.8 AV	54.0	-8.2	1.11 H	60	13.61	32.19
3	*2412.00	94.2 PK			1.11 H	59	61.95	32.25
4	*2412.00	84.5 AV			1.11 H	59	52.25	32.25
5	4824.00	49.8 PK	74.0	-24.2	1.25 H	66	8.23	41.57
6	4824.00	38.1 AV	54.0	-15.9	1.25 H	66	-3.47	41.57
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	1.00 V	264	35.01	32.19
2	2390.00	53.4 AV	54.0	-0.6	1.00 V	264	21.21	32.19
3	*2412.00	104.9 PK			1.00 V	264	72.65	32.25
4	*2412.00	94.0 AV			1.00 V	264	61.75	32.25
5	4824.00	48.9 PK	74.0	-25.1	1.45 V	44	7.33	41.57
6	4824.00	36.8 AV	54.0	-17.2	1.45 V	44	-4.77	41.57

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.6 PK	74.0	-17.4	1.10 H	62	24.41	32.19
2	2390.00	44.3 AV	54.0	-9.7	1.10 H	62	12.11	32.19
3	*2437.00	101.8 PK			1.10 H	62	69.49	32.31
4	*2437.00	91.9 AV			1.10 H	62	59.59	32.31
5	2483.50	57.2 PK	74.0	-16.8	1.10 H	62	24.77	32.43
6	2483.50	44.6 AV	54.0	-9.4	1.10 H	62	12.17	32.43
7	4874.00	59.1 PK	74.0	-14.9	1.26 H	71	17.44	41.66
8	4874.00	46.1 AV	54.0	-7.9	1.26 H	71	4.44	41.66
9	7311.00	61.3 PK	74.0	-12.7	1.14 H	107	15.16	46.14
10	7311.00	47.7 AV	54.0	-6.3	1.14 H	107	1.56	46.14

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.2 PK	74.0	-11.8	1.00 V	67	30.01	32.19
2	2390.00	46.9 AV	54.0	-7.1	1.00 V	67	14.71	32.19
3	*2437.00	111.1 PK			1.00 V	67	78.79	32.31
4	*2437.00	100.7 AV			1.00 V	67	68.39	32.31
5	2483.50	64.0 PK	74.0	-10.0	1.00 V	67	31.57	32.43
6	2483.50	47.7 AV	54.0	-6.3	1.00 V	67	15.27	32.43
7	4874.00	59.3 PK	74.0	-14.7	1.16 V	190	17.64	41.66
8	4874.00	45.7 AV	54.0	-8.3	1.16 V	190	4.04	41.66
9	7311.00	66.7 PK	74.0	-7.3	1.09 V	345	20.56	46.14
10	7311.00	52.8 AV	54.0	-1.2	1.09 V	345	6.66	46.14

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.2 PK			1.08 H	59	67.83	32.37
2	*2462.00	89.1 AV			1.08 H	59	56.73	32.37
3	2483.50	68.2 PK	74.0	-5.8	1.09 H	60	35.77	32.43
4	2483.50	49.3 AV	54.0	-4.7	1.09 H	60	16.87	32.43
5	4924.00	51.8 PK	74.0	-22.2	1.24 H	64	10.10	41.70
6	4924.00	38.8 AV	54.0	-15.2	1.24 H	64	-2.90	41.70
7	7386.00	56.2 PK	74.0	-17.8	1.14 H	107	9.87	46.33
8	7386.00	42.4 AV	54.0	-11.6	1.14 H	107	-3.93	46.33

**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	107.0 PK			1.00 V	263	74.63	32.37
2	*2462.00	96.8 AV			1.00 V	263	64.43	32.37
3	2483.50	68.9 PK	74.0	-5.1	1.00 V	263	36.47	32.43
4	2483.50	52.9 AV	54.0	-1.1	1.00 V	263	20.47	32.43
5	4924.00	49.8 PK	74.0	-24.2	1.47 V	46	8.10	41.70
6	4924.00	37.9 AV	54.0	-16.1	1.47 V	46	-3.80	41.70
7	7386.00	59.2 PK	74.0	-14.8	1.05 V	254	12.87	46.33
8	7386.00	43.2 AV	54.0	-10.8	1.05 V	254	-3.13	46.33

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.



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802.11n (40MHz)

<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	58.1 PK	74.0	-15.9	1.12 H	61	25.91	32.19
2	2390.00	46.1 AV	54.0	-7.9	1.12 H	61	13.91	32.19
3	*2422.00	91.0 PK			1.11 H	62	58.73	32.27
4	*2422.00	81.6 AV			1.11 H	62	49.33	32.27
5	4844.00	50.6 PK	74.0	-23.4	1.25 H	69	8.99	41.61
6	4844.00	37.9 AV	54.0	-16.1	1.25 H	69	-3.71	41.61
7	7266.00	53.2 PK	74.0	-20.8	1.13 H	106	7.18	46.02
8	7266.00	40.2 AV	54.0	-13.8	1.13 H	106	-5.82	46.02

**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	66.1 PK	74.0	-7.9	1.00 V	264	33.91	32.19
2	2390.00	52.2 AV	54.0	-1.8	1.00 V	264	20.01	32.19
3	*2422.00	100.5 PK			1.00 V	264	68.23	32.27
4	*2422.00	89.8 AV			1.00 V	264	57.53	32.27
5	4844.00	50.3 PK	74.0	-23.7	1.47 V	45	8.69	41.61
6	4844.00	37.2 AV	54.0	-16.8	1.47 V	45	-4.41	41.61
7	7266.00	54.7 PK	74.0	-19.3	1.05 V	254	8.68	46.02
8	7266.00	41.5 AV	54.0	-12.5	1.05 V	254	-4.52	46.02

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.5 PK	74.0	-16.5	1.10 H	60	25.31	32.19
2	2390.00	45.4 AV	54.0	-8.6	1.10 H	60	13.21	32.19
3	*2437.00	95.6 PK			1.10 H	60	63.29	32.31
4	*2437.00	85.1 AV			1.10 H	60	52.79	32.31
5	2483.50	61.6 PK	74.0	-12.4	1.10 H	60	29.17	32.43
6	2483.50	48.2 AV	54.0	-5.8	1.10 H	60	15.77	32.43
7	4874.00	51.2 PK	74.0	-22.8	1.26 H	71	9.54	41.66
8	4874.00	38.2 AV	54.0	-15.8	1.26 H	71	-3.46	41.66
9	7311.00	53.9 PK	74.0	-20.1	1.14 H	105	7.76	46.14
10	7311.00	41.3 AV	54.0	-12.7	1.14 H	105	-4.84	46.14

**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	65.2 PK	74.0	-8.8	1.00 V	263	33.01	32.19
2	2390.00	50.9 AV	54.0	-3.1	1.00 V	263	18.71	32.19
3	*2437.00	104.0 PK			1.00 V	263	71.69	32.31
4	*2437.00	94.1 AV			1.00 V	263	61.79	32.31
5	2483.50	69.4 PK	74.0	-4.6	1.00 V	264	36.97	32.43
<b>6</b>	<b>2483.50</b>	<b>53.5 AV</b>	<b>54.0</b>	<b>-0.5</b>	<b>1.00 V</b>	<b>264</b>	<b>21.07</b>	<b>32.43</b>
7	4874.00	50.9 PK	74.0	-23.1	1.16 V	190	9.24	41.66
8	4874.00	38.4 AV	54.0	-15.6	1.16 V	190	-3.26	41.66
9	7311.00	55.2 PK	74.0	-18.8	1.09 V	343	9.06	46.14
10	7311.00	42.6 AV	54.0	-11.4	1.09 V	343	-3.54	46.14

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.





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<b>CHANNEL</b>	TX Channel 9	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	92.1 PK			1.10 H	61	59.75	32.35
2	*2452.00	81.9 AV			1.10 H	61	49.55	32.35
3	2483.50	63.1 PK	74.0	-10.9	1.10 H	61	30.67	32.43
4	2483.50	49.1 AV	54.0	-4.9	1.10 H	61	16.67	32.43
5	4904.00	50.7 PK	74.0	-23.3	1.25 H	70	8.99	41.71
6	4904.00	38.1 AV	54.0	-15.9	1.25 H	70	-3.61	41.71
7	7356.00	53.2 PK	74.0	-20.8	1.12 H	100	6.94	46.26
8	7356.00	40.1 AV	54.0	-13.9	1.12 H	100	-6.16	46.26

**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	101.4 PK			1.00 V	264	69.05	32.35
2	*2452.00	90.8 AV			1.00 V	264	58.45	32.35
3	2483.50	67.5 PK	74.0	-6.5	1.00 V	264	35.07	32.43
4	2483.50	53.0 AV	54.0	-1.0	1.00 V	264	20.57	32.43
5	4904.00	50.2 PK	74.0	-23.8	1.48 V	46	8.49	41.71
6	4904.00	37.5 AV	54.0	-16.5	1.48 V	46	-4.21	41.71
7	7356.00	54.7 PK	74.0	-19.3	1.06 V	235	8.44	46.26
8	7356.00	41.3 AV	54.0	-12.7	1.06 V	235	-4.96	46.26

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.

## 4.2.8 TEST RESULTS (MODE 2)

### BELOW 1GHz WORST-CASE DATA

#### 802.11g

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	114.44	36.6 QP	43.5	-6.9	2.00 H	0	25.03	11.61
2	216.28	40.6 QP	46.0	-5.4	1.50 H	158	28.86	11.76
3	240.44	41.8 QP	46.0	-4.2	1.00 H	193	28.93	12.86
4	482.37	35.6 QP	46.0	-10.4	1.50 H	342	16.02	19.62
5	721.59	37.9 QP	46.0	-8.1	1.00 H	229	13.82	24.05
6	960.01	49.5 QP	54.0	-4.5	2.00 H	142	21.51	27.98
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	113.25	33.0 QP	43.5	-10.5	1.00 V	264	21.54	11.46
2	215.09	32.2 QP	43.5	-11.3	1.50 V	113	20.50	11.71
3	236.06	32.3 QP	46.0	-13.7	1.50 V	69	19.65	12.66
4	482.02	30.7 QP	46.0	-15.3	1.50 V	0	11.12	19.61
5	721.94	32.0 QP	46.0	-14.0	1.00 V	360	7.98	24.06
6	960.03	41.5 QP	54.0	-12.6	1.00 V	86	13.47	27.98

#### 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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



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ABOVE 1GHz DATA

802.11b

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.6 PK	74.0	-16.4	1.09 H	56	25.41	32.19
2	2390.00	44.3 AV	54.0	-9.7	1.09 H	56	12.11	32.19
3	*2412.00	98.2 PK			1.09 H	56	65.95	32.25
4	*2412.00	95.5 AV			1.09 H	56	63.25	32.25
5	4824.00	54.3 PK	74.0	-19.7	1.07 H	10	12.73	41.57
6	4824.00	49.6 AV	54.0	-4.4	1.07 H	10	8.03	41.57

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	1.09 V	34	25.01	32.19
2	2390.00	45.8 AV	54.0	-8.2	1.09 V	34	13.61	32.19
3	*2412.00	104.0 PK			1.09 V	34	71.75	32.25
4	*2412.00	101.9 AV			1.09 V	34	69.65	32.25
5	4824.00	56.2 PK	74.0	-17.8	1.06 V	66	14.63	41.57
6	4824.00	53.1 AV	54.0	-0.9	1.06 V	66	11.53	41.57

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	98.5 PK			1.09 H	56	66.19	32.31
2	*2437.00	95.8 AV			1.09 H	56	63.49	32.31
3	4874.00	55.6 PK	74.0	-18.4	1.04 H	11	13.94	41.66
4	4874.00	51.6 AV	54.0	-2.4	1.04 H	11	9.94	41.66
5	7311.00	54.3 PK	74.0	-19.7	1.12 H	98	8.16	46.14
6	7311.00	42.1 AV	54.0	-11.9	1.12 H	98	-4.04	46.14

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.4 PK			1.06 V	35	73.09	32.31
2	*2437.00	103.1 AV			1.06 V	35	70.79	32.31
3	4874.00	56.1 PK	74.0	-17.9	1.05 V	67	14.44	41.66
4	4874.00	53.0 AV	54.0	-1.0	1.05 V	67	11.34	41.66
5	7311.00	53.6 PK	74.0	-20.4	1.15 V	60	7.46	46.14
6	7311.00	42.3 AV	54.0	-11.7	1.15 V	60	-3.84	46.14

**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).
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	98.4 PK			1.09 H	56	66.03	32.37
2	*2462.00	95.6 AV			1.09 H	56	63.23	32.37
3	2483.50	57.1 PK	74.0	-16.9	1.09 H	56	24.67	32.43
4	2483.50	45.0 AV	54.0	-9.0	1.09 H	56	12.57	32.43
5	4924.00	55.9 PK	74.0	-18.1	1.05 H	11	14.20	41.70
6	4924.00	52.5 AV	54.0	-1.5	1.05 H	11	10.80	41.70
7	7386.00	55.9 PK	74.0	-18.1	1.01 H	102	9.57	46.33
8	7386.00	44.3 AV	54.0	-9.7	1.01 H	102	-2.03	46.33

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	106.9 PK			1.05 V	35	74.53	32.37
2	*2462.00	104.8 AV			1.05 V	35	72.43	32.37
3	2483.50	59.8 PK	74.0	-14.2	1.05 V	35	27.37	32.43
4	2483.50	49.6 AV	54.0	-4.4	1.05 V	35	17.17	32.43
5	4924.00	56.3 PK	74.0	-17.7	1.04 V	62	14.60	41.70
6	4924.00	53.0 AV	54.0	-1.0	1.04 V	62	11.30	41.70
7	7386.00	57.0 PK	74.0	-17.0	1.13 V	62	10.67	46.33
8	7386.00	49.1 AV	54.0	-4.9	1.13 V	62	2.77	46.33

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.



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802.11g

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.5 PK	74.0	-14.5	1.08 H	58	27.31	32.19
2	2390.00	46.9 AV	54.0	-7.1	1.08 H	58	14.71	32.19
3	*2412.00	101.3 PK			1.08 H	57	69.05	32.25
4	*2412.00	90.5 AV			1.08 H	57	58.25	32.25
5	4824.00	55.5 PK	74.0	-18.5	1.35 H	68	13.93	41.57
6	4824.00	41.2 AV	54.0	-12.8	1.35 H	68	-0.37	41.57

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.6 PK	74.0	-5.4	1.10 V	34	36.41	32.19
2	2390.00	53.1 AV	54.0	-0.9	1.10 V	34	20.91	32.19
3	*2412.00	107.8 PK			1.09 V	56	75.55	32.25
4	*2412.00	97.8 AV			1.09 V	56	65.55	32.25
5	4824.00	56.8 PK	74.0	-17.2	1.35 V	90	15.23	41.57
6	4824.00	42.9 AV	54.0	-11.1	1.35 V	90	1.33	41.57

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.6 PK	74.0	-14.4	1.07 H	57	27.41	32.19
2	2390.00	45.4 AV	54.0	-8.6	1.07 H	57	13.21	32.19
3	*2437.00	105.4 PK			1.07 H	57	73.09	32.31
4	*2437.00	95.3 AV			1.07 H	57	62.99	32.31
5	2483.50	60.6 PK	74.0	-13.4	1.07 H	57	28.17	32.43
6	2483.50	45.0 AV	54.0	-9.0	1.07 H	57	12.57	32.43
7	4874.00	62.5 PK	74.0	-11.5	1.38 H	68	20.84	41.66
8	4874.00	48.2 AV	54.0	-5.8	1.38 H	68	6.54	41.66
9	7311.00	57.8 PK	74.0	-16.2	1.20 H	65	11.66	46.14
10	7311.00	45.2 AV	54.0	-8.8	1.20 H	65	-0.95	46.14

**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	66.2 PK	74.0	-7.8	1.08 V	36	34.01	32.19
2	2390.00	47.8 AV	54.0	-6.2	1.08 V	36	15.61	32.19
3	*2437.00	112.2 PK			1.08 V	36	79.89	32.31
4	*2437.00	101.6 AV			1.08 V	36	69.29	32.31
5	2483.50	69.7 PK	74.0	-4.3	1.08 V	36	37.27	32.43
6	2483.50	48.9 AV	54.0	-5.1	1.08 V	36	16.47	32.43
7	4874.00	62.9 PK	74.0	-11.1	1.06 V	83	21.24	41.66
8	4874.00	49.6 AV	54.0	-4.4	1.06 V	83	7.94	41.66
9	7311.00	61.8 PK	74.0	-12.2	1.20 V	49	15.66	46.14
10	7311.00	49.6 AV	54.0	-4.4	1.20 V	49	3.46	46.14

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.6 PK			1.04 H	57	68.23	32.37
2	*2462.00	90.8 AV			1.04 H	57	58.43	32.37
3	2483.50	62.9 PK	74.0	-11.1	1.04 H	57	30.47	32.43
4	2483.50	48.0 AV	54.0	-6.0	1.04 H	57	15.57	32.43
5	4924.00	50.9 PK	74.0	-23.1	1.30 H	72	9.20	41.70
6	4924.00	38.6 AV	54.0	-15.4	1.30 H	72	-3.10	41.70
7	7386.00	55.0 PK	74.0	-19.0	1.21 H	62	8.67	46.33
8	7386.00	42.0 AV	54.0	-12.0	1.21 H	62	-4.33	46.33

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	106.9 PK			1.07 V	37	74.53	32.37
2	*2462.00	96.6 AV			1.07 V	37	64.23	32.37
3	2483.50	67.4 PK	74.0	-6.6	1.07 V	37	34.97	32.43
4	<b>2483.50</b>	<b>53.5 AV</b>	<b>54.0</b>	<b>-0.5</b>	<b>1.07 V</b>	<b>37</b>	<b>21.07</b>	<b>32.43</b>
5	4924.00	52.4 PK	74.0	-21.6	1.33 V	90	10.70	41.70
6	4924.00	40.2 AV	54.0	-13.8	1.33 V	90	-1.50	41.70
7	7386.00	56.9 PK	74.0	-17.1	1.10 V	66	10.57	46.33
8	7386.00	44.4 AV	54.0	-9.6	1.10 V	66	-1.93	46.33

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.





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802.11n (20MHz)

<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	60.1 PK	74.0	-13.9	1.04 H	56	27.91	32.19
2	2390.00	46.5 AV	54.0	-7.5	1.04 H	56	14.31	32.19
3	*2412.00	99.1 PK			1.04 H	56	66.85	32.25
4	*2412.00	88.2 AV			1.04 H	56	55.95	32.25
5	4824.00	52.6 PK	74.0	-21.4	1.29 H	71	11.03	41.57
6	4824.00	39.4 AV	54.0	-14.6	1.29 H	71	-2.17	41.57

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.7 PK	74.0	-4.3	1.08 V	34	37.51	32.19
2	2390.00	53.3 AV	54.0	-0.7	1.08 V	34	21.11	32.19
3	*2412.00	106.8 PK			1.08 V	34	74.55	32.25
4	*2412.00	95.6 AV			1.08 V	34	63.35	32.25
5	4824.00	54.1 PK	74.0	-19.9	1.35 V	82	12.53	41.57
6	4824.00	41.8 AV	54.0	-12.2	1.35 V	82	0.23	41.57

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.9 PK	74.0	-15.1	1.04 H	56	26.71	32.19
2	2390.00	45.3 AV	54.0	-8.7	1.04 H	56	13.11	32.19
3	*2437.00	105.2 PK			1.04 H	56	72.89	32.31
4	*2437.00	94.6 AV			1.04 H	56	62.29	32.31
5	2483.50	60.4 PK	74.0	-13.6	1.04 H	56	27.97	32.43
6	2483.50	45.8 AV	54.0	-8.2	1.04 H	56	13.37	32.43
7	4874.00	63.4 PK	74.0	-10.6	1.30 H	71	21.74	41.66
8	4874.00	48.3 AV	54.0	-5.7	1.30 H	71	6.64	41.66
9	7311.00	56.8 PK	74.0	-17.2	1.20 H	62	10.66	46.14
10	7311.00	44.6 AV	54.0	-9.4	1.20 H	62	-1.54	46.14

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.6 PK	74.0	-5.4	1.08 V	34	36.41	32.19
2	2390.00	49.3 AV	54.0	-4.7	1.08 V	34	17.11	32.19
3	*2437.00	111.3 PK			1.08 V	34	78.99	32.31
4	*2437.00	101.2 AV			1.08 V	34	68.89	32.31
5	2483.50	68.8 PK	74.0	-5.2	1.08 V	34	36.37	32.43
6	2483.50	49.1 AV	54.0	-4.9	1.08 V	34	16.67	32.43
7	4874.00	62.4 PK	74.0	-11.6	1.05 V	83	20.74	41.66
8	4874.00	49.1 AV	54.0	-4.9	1.05 V	83	7.44	41.66
9	7311.00	62.3 PK	74.0	-11.7	1.08 V	58	16.16	46.14
10	7311.00	49.4 AV	54.0	-4.6	1.08 V	58	3.26	46.14

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.0 PK			1.04 H	56	67.63	32.37
2	*2462.00	89.3 AV			1.04 H	56	56.93	32.37
3	2483.50	65.3 PK	74.0	-8.7	1.04 H	57	32.87	32.43
4	2483.50	47.9 AV	54.0	-6.1	1.04 H	57	15.47	32.43
5	4924.00	50.3 PK	74.0	-23.7	1.34 H	64	8.60	41.70
6	4924.00	38.2 AV	54.0	-15.8	1.34 H	64	-3.50	41.70
7	7386.00	53.3 PK	74.0	-20.7	1.20 H	65	6.97	46.33
8	7386.00	41.4 AV	54.0	-12.6	1.20 H	65	-4.93	46.33

**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	107.0 PK			1.06 V	36	74.63	32.37
2	*2462.00	96.2 AV			1.06 V	36	63.83	32.37
3	2483.50	68.1 PK	74.0	-5.9	1.06 V	36	35.67	32.43
4	<b>2483.50</b>	<b>53.5 AV</b>	<b>54.0</b>	<b>-0.5</b>	<b>1.06 V</b>	<b>36</b>	<b>21.07</b>	<b>32.43</b>
5	4924.00	51.2 PK	74.0	-22.8	1.33 V	90	9.50	41.70
6	4924.00	38.8 AV	54.0	-15.2	1.33 V	90	-2.90	41.70
7	7386.00	56.1 PK	74.0	-17.9	1.11 V	66	9.77	46.33
8	7386.00	42.7 AV	54.0	-11.3	1.11 V	66	-3.63	46.33

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.

**802.11n (40MHz)**

<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	60.0 PK	74.0	-14.0	1.10 H	58	27.81	32.19
2	2390.00	46.5 AV	54.0	-7.5	1.10 H	58	14.31	32.19
3	*2422.00	93.1 PK			1.09 H	58	60.83	32.27
4	*2422.00	82.6 AV			1.09 H	58	50.33	32.27
5	4844.00	49.9 PK	74.0	-24.1	1.30 H	65	8.29	41.61
6	4844.00	37.1 AV	54.0	-16.9	1.30 H	65	-4.51	41.61
7	7266.00	52.3 PK	74.0	-21.7	1.20 H	66	6.28	46.02
8	7266.00	40.3 AV	54.0	-13.7	1.20 H	66	-5.72	46.02

**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	64.4 PK	74.0	-9.6	1.04 V	61	32.21	32.19
2	2390.00	53.1 AV	54.0	-0.9	1.04 V	61	20.91	32.19
3	*2422.00	100.0 PK			1.04 V	61	67.73	32.27
4	*2422.00	90.0 AV			1.04 V	61	57.73	32.27
5	4844.00	50.2 PK	74.0	-23.8	1.34 V	80	8.59	41.61
6	4844.00	38.5 AV	54.0	-15.5	1.34 V	80	-3.11	41.61
7	7266.00	53.2 PK	74.0	-20.8	1.11 V	55	7.18	46.02
8	7266.00	41.2 AV	54.0	-12.8	1.11 V	55	-4.82	46.02

**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).
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	60.9 PK	74.0	-13.1	1.10 H	57	28.71	32.19
2	2390.00	47.2 AV	54.0	-6.8	1.10 H	57	15.01	32.19
3	*2437.00	97.2 PK			1.09 H	57	64.89	32.31
4	*2437.00	86.5 AV			1.09 H	57	54.19	32.31
5	2483.50	59.2 PK	74.0	-14.8	1.10 H	57	26.77	32.43
6	2483.50	46.6 AV	54.0	-7.4	1.10 H	57	14.17	32.43
7	4874.00	50.0 PK	74.0	-24.0	1.30 H	65	8.34	41.66
8	4874.00	37.8 AV	54.0	-16.2	1.30 H	65	-3.86	41.66
9	7311.00	53.5 PK	74.0	-20.5	1.19 H	66	7.36	46.14
10	7311.00	41.1 AV	54.0	-12.9	1.19 H	66	-5.04	46.14

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	1.08 V	35	35.01	32.19
2	2390.00	52.9 AV	54.0	-1.1	1.08 V	35	20.71	32.19
3	*2437.00	103.8 PK			1.07 V	35	71.49	32.31
4	*2437.00	92.9 AV			1.07 V	35	60.59	32.31
5	2483.50	66.7 PK	74.0	-7.3	1.07 V	35	34.27	32.43
<b>6</b>	<b>2483.50</b>	<b>53.5 AV</b>	<b>54.0</b>	<b>-0.5</b>	<b>1.07 V</b>	<b>35</b>	<b>21.07</b>	<b>32.43</b>
7	4874.00	50.9 PK	74.0	-23.1	1.36 V	80	9.24	41.66
8	4874.00	38.6 AV	54.0	-15.4	1.36 V	80	-3.06	41.66
9	7311.00	53.5 PK	74.0	-20.5	1.10 V	56	7.36	46.14
10	7311.00	41.5 AV	54.0	-12.5	1.10 V	56	-4.64	46.14

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 9	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	91.8 PK			1.09 H	58	59.45	32.35
2	*2452.00	81.6 AV			1.09 H	58	49.25	32.35
3	2483.50	59.5 PK	74.0	-14.5	1.09 H	58	27.07	32.43
4	2483.50	46.9 AV	54.0	-7.1	1.09 H	58	14.47	32.43
5	4904.00	50.0 PK	74.0	-24.0	1.30 H	65	8.29	41.71
6	4904.00	37.5 AV	54.0	-16.5	1.30 H	65	-4.21	41.71
7	7356.00	52.5 PK	74.0	-21.5	1.20 H	66	6.24	46.26
8	7356.00	40.5 AV	54.0	-13.5	1.20 H	66	-5.76	46.26

**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	99.8 PK			1.06 V	35	67.45	32.35
2	*2452.00	89.6 AV			1.06 V	35	57.25	32.35
3	2483.50	66.9 PK	74.0	-7.1	1.03 V	35	34.47	32.43
4	<b>2483.50</b>	<b>53.5 AV</b>	<b>54.0</b>	<b>-0.5</b>	<b>1.03 V</b>	<b>35</b>	<b>21.07</b>	<b>32.43</b>
5	4904.00	50.8 PK	74.0	-23.2	1.36 V	80	9.09	41.71
6	4904.00	38.9 AV	54.0	-15.1	1.36 V	80	-2.81	41.71
7	7356.00	53.8 PK	74.0	-20.2	1.10 V	58	7.54	46.26
8	7356.00	41.6 AV	54.0	-12.4	1.10 V	58	-4.66	46.26

**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).
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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 09, 2012	May 08, 2013

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 25, 2012

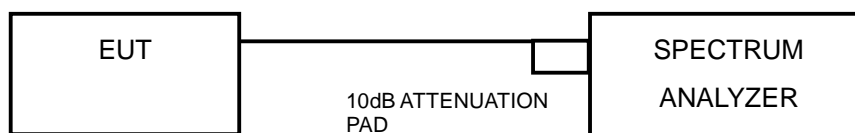
#### 4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
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.



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### 4.3.7 TEST RESULTS

#### 802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.39	0.5	PASS
6	2437	12.50	0.5	PASS
11	2462	12.50	0.5	PASS

#### 802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.53	0.5	PASS
6	2437	16.73	0.5	PASS
11	2462	16.55	0.5	PASS

#### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.81	0.5	PASS
6	2437	17.79	0.5	PASS
11	2462	17.86	0.5	PASS

#### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.66	0.5	PASS
6	2437	37.22	0.5	PASS
9	2452	36.66	0.5	PASS





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## 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 band: 1 Watt (30dBm)

### 4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 10, 2012	May 09, 2013
Power Sensor	MA2411B	0738172	May 10, 2012	May 09, 2013

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 25, 2012

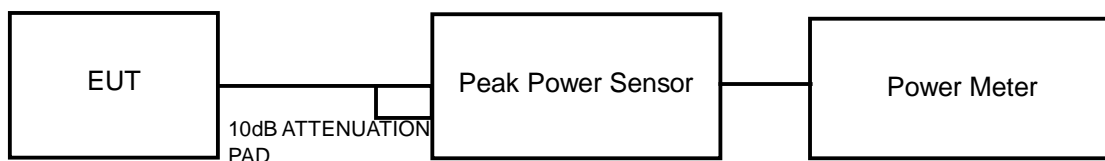
### 4.4.3 TEST PROCEDURES

A 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



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#### 4.4.7 TEST RESULTS

##### 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	53.703	17.3	30	PASS
6	2437	66.069	18.2	30	PASS
11	2462	64.565	18.1	30	PASS

##### 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	109.648	20.4	30	PASS
6	2437	288.403	24.6	30	PASS
11	2462	173.780	22.4	30	PASS

##### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	89.125	19.5	30	PASS
6	2437	275.423	24.4	30	PASS
11	2462	141.254	21.5	30	PASS

##### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
3	2422	61.660	17.9	30	PASS
6	2437	144.544	21.6	30	PASS
9	2452	51.286	17.1	30	PASS

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 09, 2012	May 08, 2013

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 25, 2012

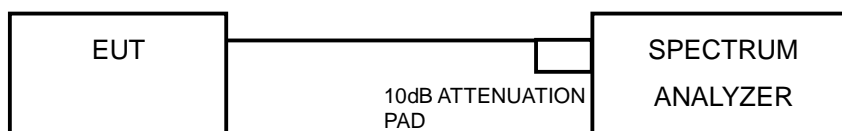
### 4.5.3 TEST PROCEDURE

1. Set the RBW = 100 kHz, VBW =300 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 power level in any 100 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.5.5 TEST SETUP



### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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### 4.5.7 TEST RESULTS

#### 802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	4.75	-10.48	8	PASS
6	2437	5.73	-9.50	8	PASS
11	2462	4.84	-10.39	8	PASS

#### 802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-0.24	-15.47	8	PASS
6	2437	5.45	-9.78	8	PASS
11	2462	2.20	-13.03	8	PASS

#### 802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-1.40	-16.63	8	PASS
6	2437	5.49	-9.74	8	PASS
11	2462	1.36	-13.87	8	PASS

#### 802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-5.01	-20.24	8	PASS
6	2437	-1.38	-16.61	8	PASS
9	2452	-5.95	-21.18	8	PASS

## 4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 09, 2012	May 08, 2013

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 25, 2012

### 4.6.3 TEST PROCEDURE

#### MEASUREMENT PROCEDURE REF

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.

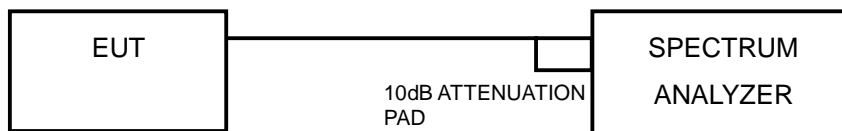
## MEASUREMENT PROCEDURE OOB

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.

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.6.5 TEST SETUP



### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

### 4.6.7 TEST RESULTS

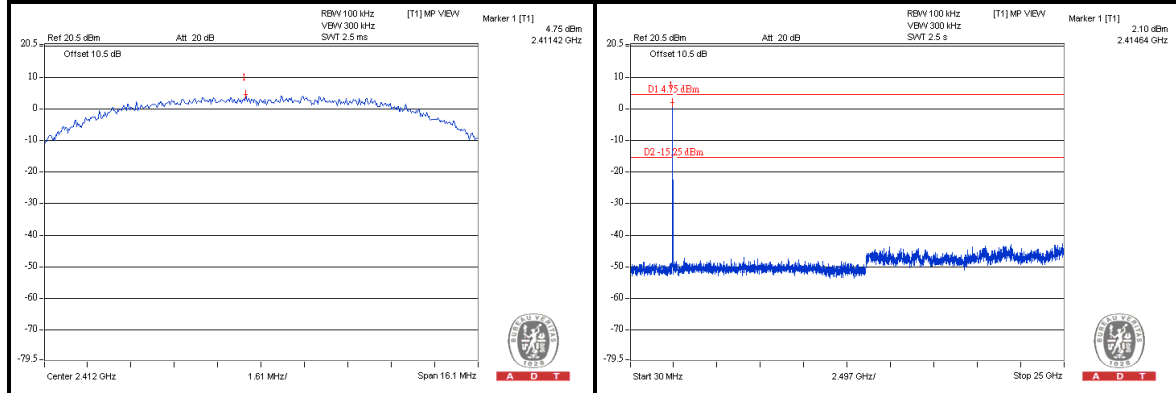
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



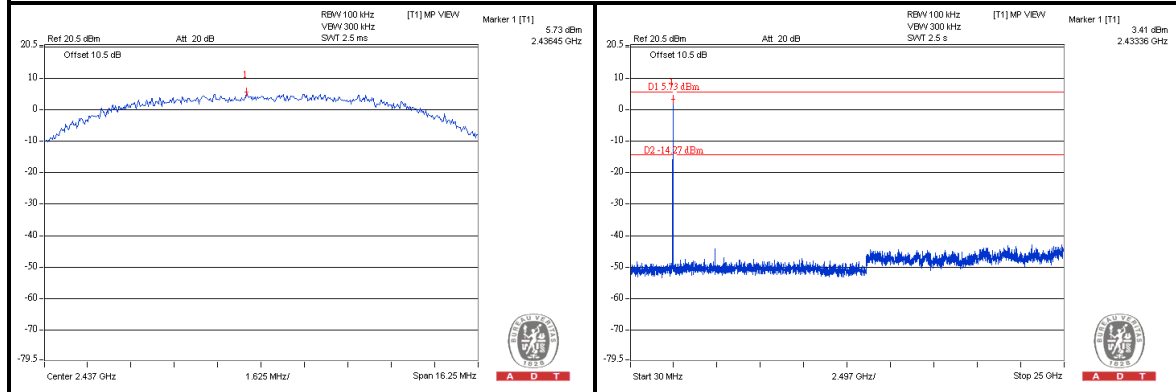
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### 802.11b

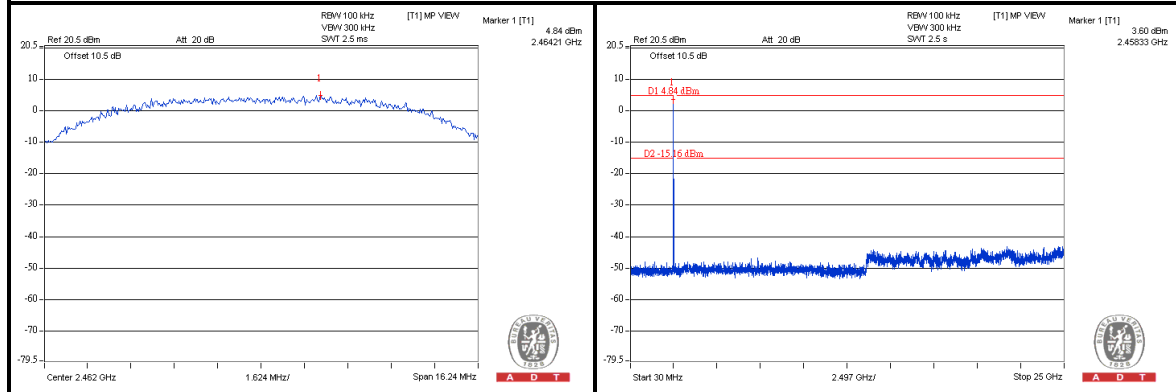
#### CH 1



#### CH 6



#### CH 11

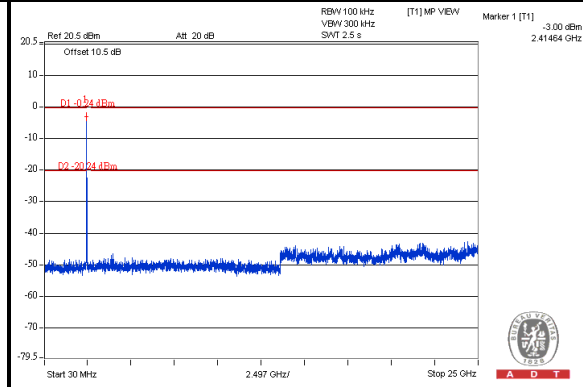
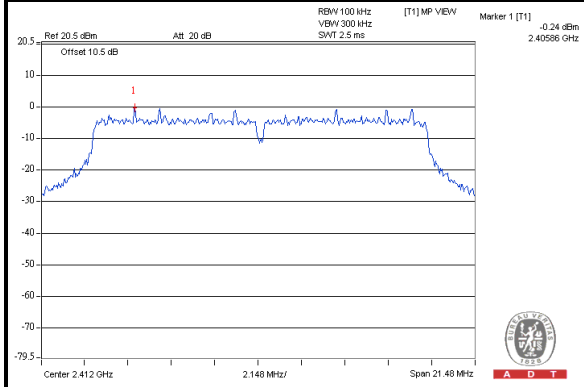




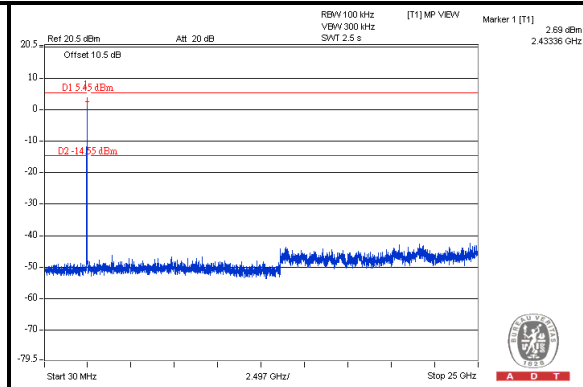
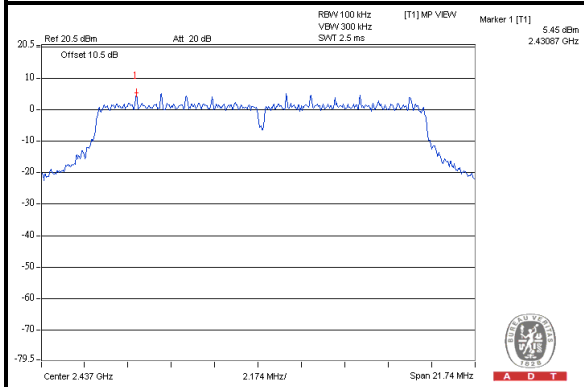
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### 802.11g

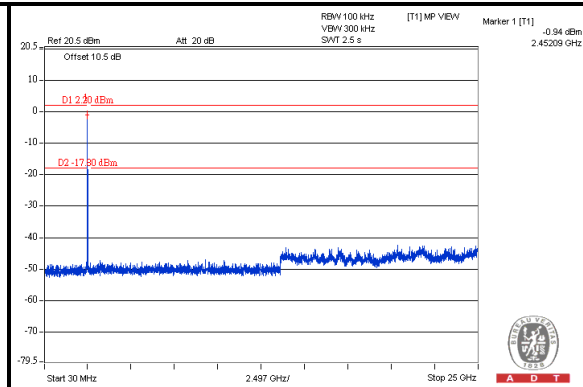
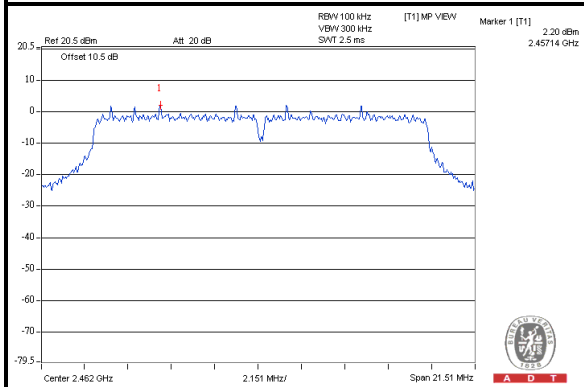
#### CH 1



#### CH 6



#### CH 11



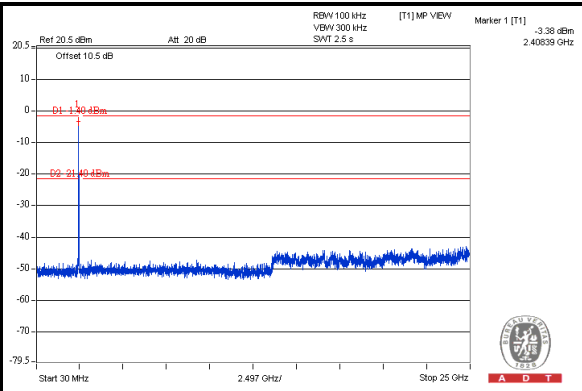
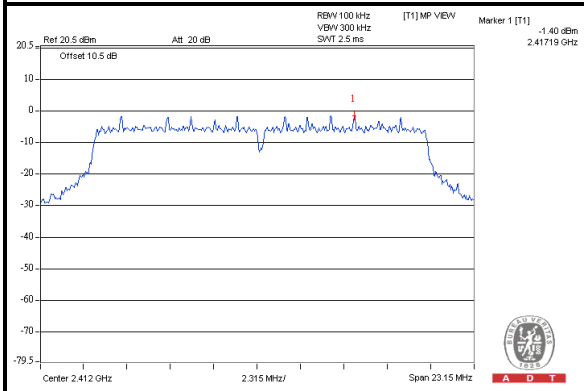




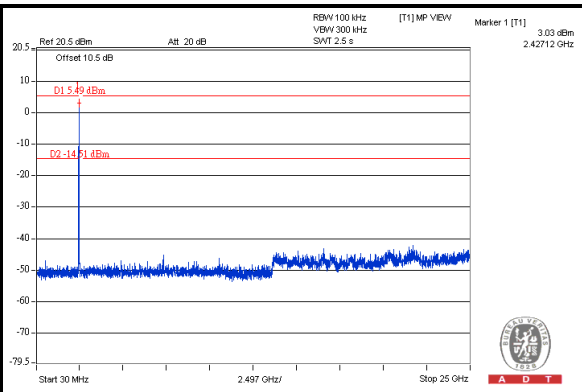
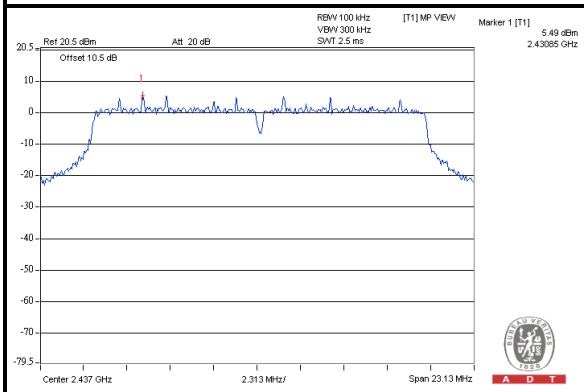
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### 802.11n (20MHz)

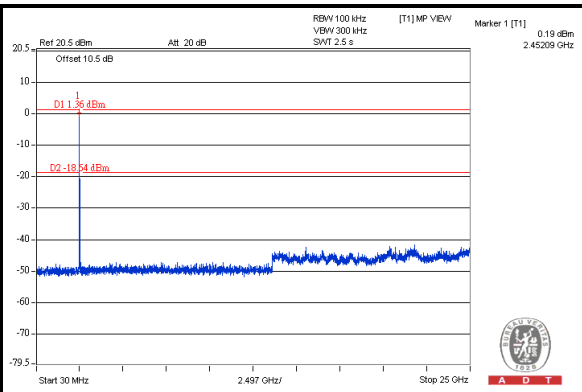
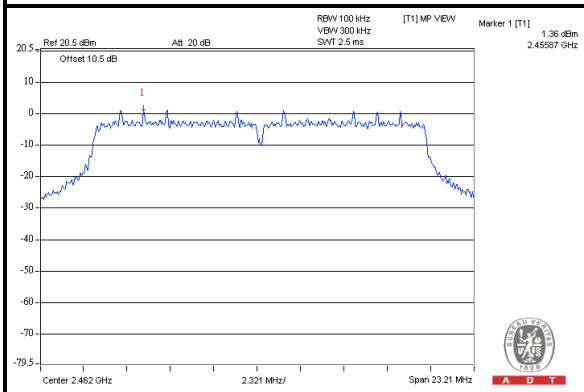
#### CH 1



#### CH 6



#### CH 11

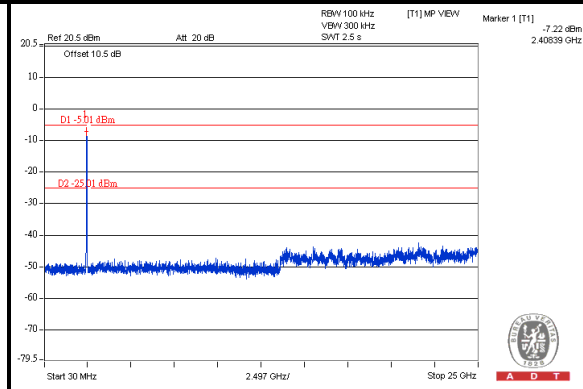
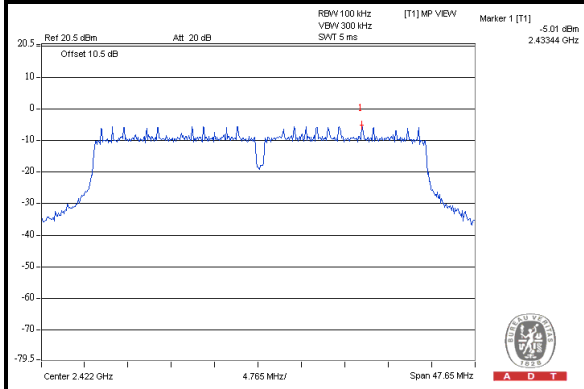




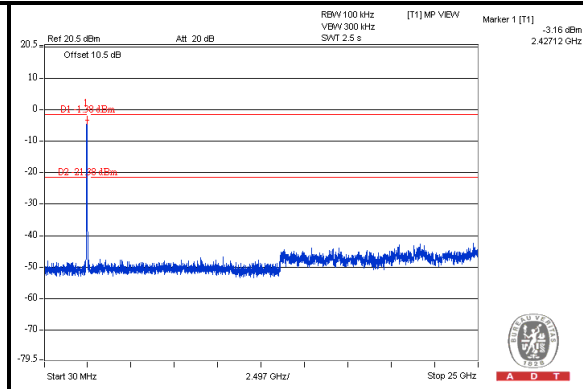
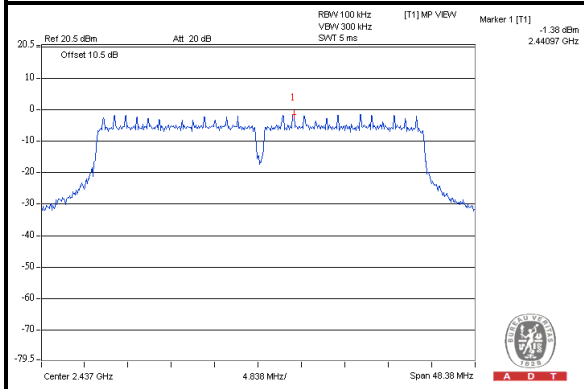
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### 802.11n (40MHz)

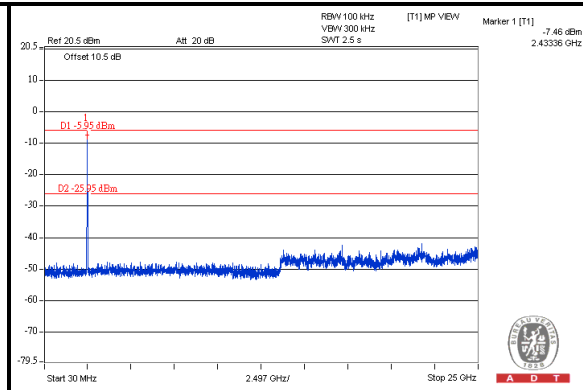
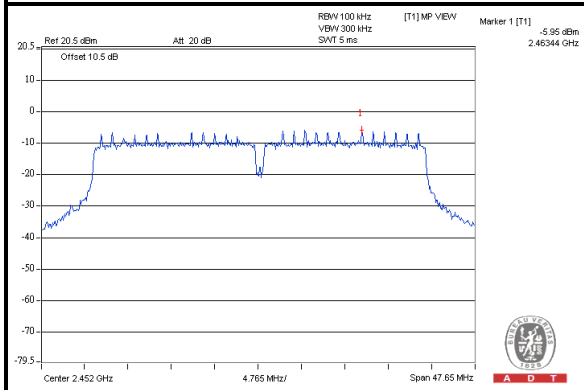
#### CH 3



#### CH 6



#### CH 9





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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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





## 6. INFORMATION ON THE TESTING LABORATORIES

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

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

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

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

Tel: 886-3-3183232

Fax: 886-3-3270892

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

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

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



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

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

**--- END ---**