



# FCC TEST REPORT

**REPORT NO.:** RF120725E06A

**MODEL NO.:** RG300-3.7 FLF-81, RG300-3.7-1D FLF-81,  
RG300-3.7-1D1V FLF-81,  
RG300-3.7-1D1V1W FLF-81,  
RG300-3.7 2D1V FLF-81,  
RG300-3.7-2D1V1W FLF-81,  
RG300-3.7-2D1V1W FLF-81

**FCC ID:** V8YFW181RG30015W

**RECEIVED:** July 30, 2012

**TESTED:** July 30 to Aug. 11, 2012

**ISSUED:** Sep. 25, 2012

**APPLICANT:** Accton Wireless Broadband Corp.

**ADDRESS:** 3F, No. 1 Creation Rd. III, Science-based Industrial  
Park Hsinchu 30077, Taiwan, R.O.C.

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

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120725E06A	Original release	Sep. 25, 2012



## 1. CERTIFICATION

**PRODUCT:** WiMAX 802.16e Indoor Gateway

**BRAND NAME:** AWB

**MODEL NO.:** RG300-3.7 FLF-81, RG300-3.7-1D FLF-81,  
RG300-3.7-1D1V FLF-81,  
RG300-3.7-1D1V1W FLF-81,  
RG300-3.7 2D1V FLF-81,  
RG300-3.7-2D1V1W FLF-81,  
RG300-3.7-2D1V1W FLF-81


**TEST SAMPLE:** R&D SAMPLE

**APPLICANT:** Accton Wireless Broadband Corp.

**TESTED:** July 30 to Aug. 11, 2012

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

The above equipment (Model: RG300-3.7 FLF-81) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** :  , **DATE:** Sep. 25, 2012  
( Claire Kuan, Specialist )

**APPROVED BY** :  , **DATE:** Sep. 25, 2012  
( May Chen, Deputy Manager )

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

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 -24.72dB at 23.12891MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.0dB 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	No antenna connector is used.

## 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)	5.59 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>	WiMAX 802.16e Indoor Gateway
<b>MODEL NO.</b>	RG300-3.7 FLF-81, RG300-3.7-1D FLF-81, RG300-3.7-1D1V FLF-81, RG300-3.7-1D1V1W FLF-81, RG300-3.7 2D1V FLF-81, RG300-3.7-2D1V1W FLF-81, RG300-3.7-2D1V1W FLF-81
<b>POWER SUPPLY</b>	DC 12V from power adapter
<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 802.11g: Up to 54Mbps 802.11n (HT20): Up to 72Mbps
<b>OPERATING FREQUENCY</b>	2.412 ~ 2.462GHz
<b>NUMBER OF CHANNEL</b>	11
<b>MAXIMUM OUTPUT POWER</b>	802.11b: 37.154mW 802.11g: 234.423mW 802.11n (HT20): 234.423mW
<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>	Adapter x 1

#### NOTE:

1. There are WiMAX technology and WiFi technology used for the EUT, this report was recorded the WiFi test data. For the WiMAX test data was recorded in another test report<RF120725E06>.
2. Spurious emission of the simultaneous operation (WiFi & WiMAX) has been evaluated and no non-compliance found.



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

Brand	Model Name	Difference
AWB	RG300-3.7 FLF-81	for marketing requirement
	RG300-3.7-1D FLF-81	
	RG300-3.7-1D1V FLF-81	
	RG300-3.7-1D1V1W FLF-81	
	RG300-3.7 2D1V FLF-81	
	RG300-3.7-2D1V1W FLF-81	
	RG300-3.7-2D1V1W FLF-81	

From the above models, model: **RG300-3.7 FLF-81** was selected as representative model for the test and its data was recorded in this report.

4. The EUT must be supplied with a power adapter as following table:

Brand	Model No.	Spec.
Sunny	SYS1381-1212-W2	AC input: 100~240V, 0.5A, 50-60Hz DC output: 12V, 1.0A DC output cable: Unshielded, 1.9m

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

Antenna Type	Antenna Connector	Gain (dBi) Include cable loss	Frequency range (MHz to MHz)
Printed	NA	4.96	2400-2500

6. The EUT incorporates a SISO function.

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

7. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
8. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

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

11 channels are provided for 802.11b, 802.11g, 802.11n (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		





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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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20MHz)	1 to 11	1, 6, 11	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 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20MHz)	1 to 11	1, 6, 11	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 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	23deg. C, 63%RH	120Vac, 60Hz	JyunChun Lin
RE<1G	22deg. C, 70%RH	120Vac, 60Hz	Nelson Tseng
RE≥1G	22deg. C, 70%RH	120Vac, 60Hz	Nelson Tseng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nelson Tseng
OB	25deg. C, 60%RH	120Vac, 60Hz	Nelson Tseng

### **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.

### 3.4 DESCRIPTION OF SUPPORT UNITS

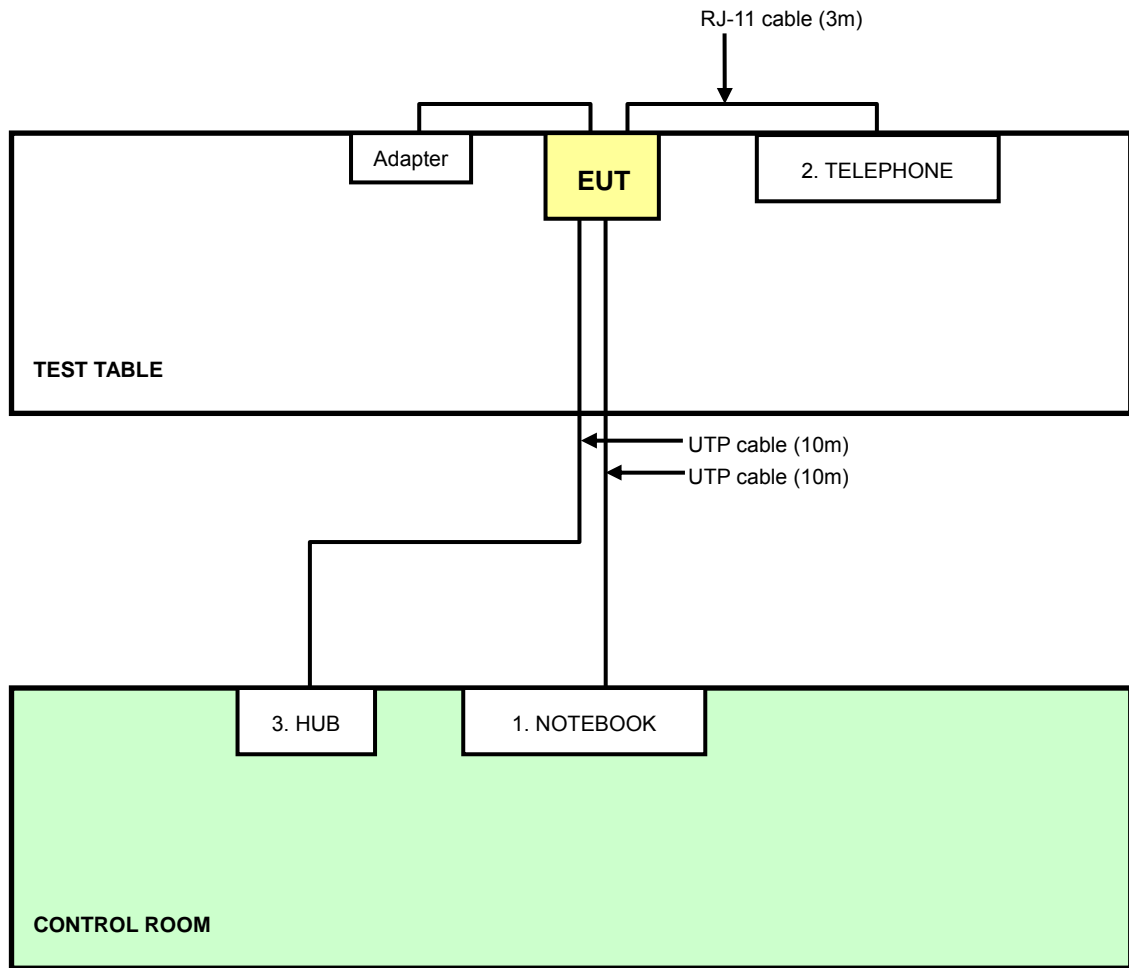
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	TELEPHONE	WONDER	WD-303	7C17KA 04011	NA
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	RJ-11 cable (3m)
3	UTP cable (10m)

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

### 3.5 CONFIGURATION OF SYSTEM UNDER TEST







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## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 08, 2012	Mar. 07, 2013
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 02, 2011	Nov. 01, 2012
RF Cable (JYEBAO)	5DFB	COCCAB-001	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 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: July. 30, 2012

#### 4.1.3 TEST PROCEDURES

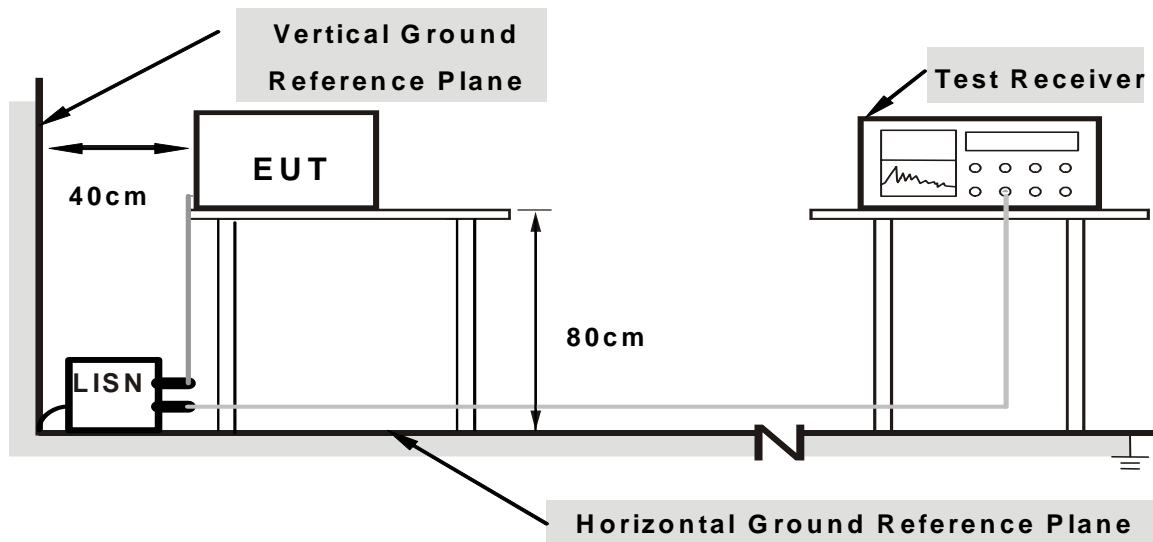
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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.

**Note:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



**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 other computer system (support unit 1) to act as communication partner and placed them outside of testing area.
3. The communication partner ran test program “Telnet” to enable EUT under transmission/receiving condition continuously via one UTP cable transmission.

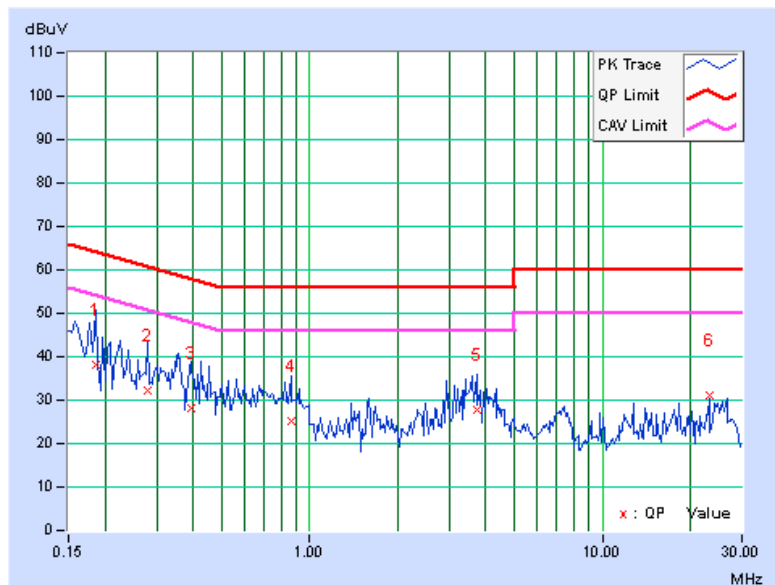
#### 4.1.7 TEST RESULTS

<b>PHASE</b>	Line (L)	<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	0.18516	0.08	37.90	15.88	37.98	15.96	64.25	54.25	-26.27
2	0.27891	0.09	32.29	21.72	32.38	21.81	60.85	50.85	-28.47	-29.04
3	0.39219	0.10	28.11	15.84	28.21	15.94	58.02	48.02	-29.81	-32.08
4	0.86094	0.13	24.96	14.92	25.09	15.05	56.00	46.00	-30.91	-30.95
5	3.73438	0.37	27.47	18.62	27.84	18.99	56.00	46.00	-28.16	-27.01
<b>6</b>	<b>23.12891</b>	<b>1.26</b>	<b>29.78</b>	<b>24.02</b>	<b>31.04</b>	<b>25.28</b>	<b>60.00</b>	<b>50.00</b>	<b>-28.96</b>	<b>-24.72</b>

#### 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.

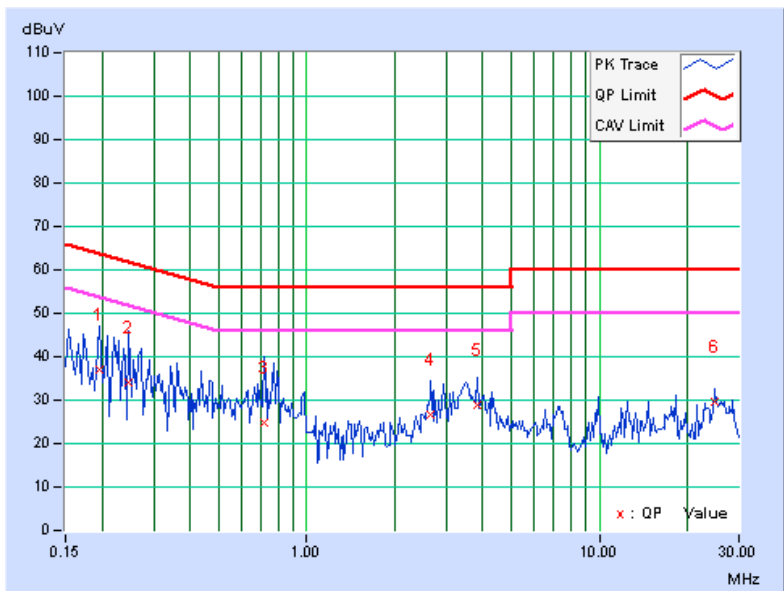


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.19687	0.08	36.85	18.79	36.93	18.87	63.74	53.74	-26.81
2	0.24766	0.08	34.15	15.77	34.23	15.85	61.84	51.84	-27.60	-35.98
3	0.71641	0.11	24.69	16.46	24.80	16.57	56.00	46.00	-31.20	-29.43
4	2.66406	0.26	26.31	17.85	26.57	18.11	56.00	46.00	-29.43	-27.89
5	3.82813	0.34	28.39	19.56	28.73	19.90	56.00	46.00	-27.27	-26.10
6	24.90234	1.19	28.35	22.04	29.54	23.23	60.00	50.00	-30.46	-26.77

**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
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, 2012	July 24, 2013
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
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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Aug. 11, 2012

#### 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 room. 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:

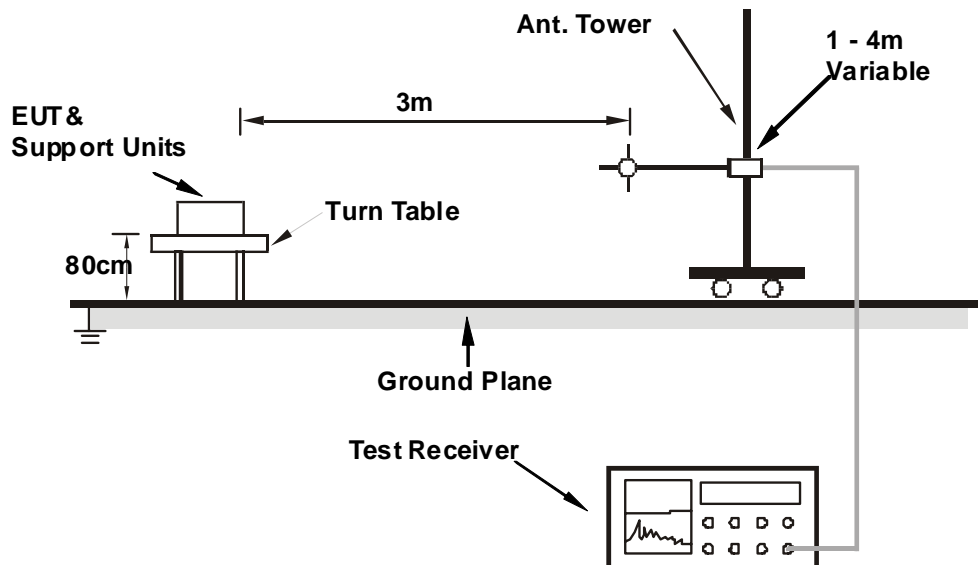
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

### 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	106.74	33.74 QP	43.50	-9.76	1.75 H	264	23.13	10.61
2	151.50	33.01 QP	43.50	-10.49	2.00 H	283	18.47	14.54
3	208.34	40.87 QP	43.50	-2.63	1.75 H	290	29.47	11.40
4	362.18	29.46 QP	46.00	-16.54	1.75 H	308	12.70	16.76
5	656.34	32.35 QP	46.00	-13.65	1.75 H	306	9.38	22.97
6	766.47	29.91 QP	46.00	-16.09	1.75 H	299	5.00	24.91
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	50.46	37.62 QP	40.00	-2.38	1.01 V	336	23.70	13.92
2	106.74	36.54 QP	43.50	-6.96	1.00 V	339	25.93	10.61
3	281.77	31.47 QP	46.00	-14.53	2.00 V	345	16.89	14.58
4	500.02	30.10 QP	46.00	-15.90	2.00 V	0	10.06	20.04
5	625.07	26.77 QP	46.00	-19.23	1.25 V	343	4.23	22.54
6	750.01	28.47 QP	46.00	-17.53	2.00 V	13	3.91	24.56

#### REMARKS:

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

**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)	CORRECTIO N FACTOR (dB/m)
1	2332.72	57.9 PK	74.0	-16.1	1.00 H	326	25.71	32.19
2	2332.72	45.8 AV	54.0	-8.2	1.00 H	326	13.61	32.19
3	*2412.00	96.0 PK			1.00 H	326	63.56	32.44
4	*2412.00	93.5 AV			1.00 H	326	61.06	32.44
5	4824.00	51.2 PK	74.0	-22.8	1.07 H	35	9.26	41.94
6	4824.00	44.2 AV	54.0	-9.8	1.07 H	35	2.26	41.94

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

NO	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTIO N FACTOR (dB/m)
1	2332.72	56.7 PK	74.0	-17.3	1.03 V	90	24.51	32.19
2	2332.72	48.6 AV	54.0	-5.4	1.03 V	90	16.41	32.19
3	*2412.00	104.2 PK			1.00 V	96	71.76	32.44
4	*2412.00	101.7 AV			1.00 V	96	69.26	32.44
5	2492.81	58.2 PK	74.0	-15.8	1.00 V	84	25.55	32.65
6	2492.81	48.8 AV	54.0	-5.2	1.00 V	84	16.15	32.65
7	4824.00	55.6 PK	74.0	-18.4	1.13 V	185	13.66	41.94
8	4824.00	51.8 AV	54.0	-2.2	1.13 V	185	9.86	41.94

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	*2437.00	96.3 PK			1.04 H	321	63.79	32.51
2	*2437.00	93.7 AV			1.04 H	321	61.19	32.51
3	4874.00	51.6 PK	74.0	-22.4	1.08 H	33	9.61	41.99
4	4874.00	44.6 AV	54.0	-9.4	1.08 H	33	2.61	41.99
5	7311.00	53.6 PK	74.0	-20.4	1.44 H	60	7.07	46.53
6	7311.00	40.7 AV	54.0	-13.3	1.44 H	60	-5.83	46.53

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

NO	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.5 PK			1.01 V	88	71.99	32.51
2	*2437.00	101.9 AV			1.01 V	88	69.39	32.51
3	4874.00	55.8 PK	74.0	-18.2	1.37 V	185	13.81	41.99
4	4874.00	51.5 AV	54.0	-2.5	1.37 V	185	9.51	41.99
5	7311.00	53.0 PK	74.0	-21.0	1.01 V	251	6.47	46.53
6	7311.00	40.4 AV	54.0	-13.6	1.01 V	251	-6.13	46.53

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	96.4 PK			1.00 H	334	63.83	32.57
2	*2462.00	93.8 AV			1.00 H	334	61.23	32.57
3	2483.50	57.1 PK	74.0	-16.9	1.00 H	334	24.47	32.63
4	2483.50	43.9 AV	54.0	-10.1	1.00 H	334	11.27	32.63
5	4924.00	52.1 PK	74.0	-21.9	1.03 H	26	10.09	42.01
6	4924.00	45.1 AV	54.0	-8.9	1.03 H	26	3.09	42.01
7	7386.00	53.4 PK	74.0	-20.6	1.42 H	55	6.67	46.73
8	7386.00	40.4 AV	54.0	-13.6	1.42 H	55	-6.33	46.73

**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	2382.80	59.8 PK	74.0	-14.2	1.01 V	97	27.45	32.35
2	2382.80	51.1 AV	54.0	-2.9	1.01 V	97	18.75	32.35
3	*2462.00	104.4 PK			1.00 V	84	71.83	32.57
4	*2462.00	102.0 AV			1.00 V	84	69.43	32.57
5	2483.50	58.2 PK	74.0	-15.8	1.00 V	84	25.57	32.63
6	2483.50	45.8 AV	54.0	-8.2	1.00 V	84	13.17	32.63
7	4924.00	55.9 PK	74.0	-18.1	1.36 V	183	13.89	42.01
8	4924.00	51.6 AV	54.0	-2.4	1.36 V	183	9.59	42.01
9	7386.00	52.9 PK	74.0	-21.1	1.03 V	243	6.17	46.73
10	7386.00	40.6 AV	54.0	-13.4	1.03 V	243	-6.13	46.73

**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.

**802.11g**

<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>								
<b>NO</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV/m)</b>	<b>LIMIT (dBuV/m)</b>	<b>MARGIN (dB)</b>	<b>ANTENNA HEIGHT (m)</b>	<b>TABLE ANGLE (Degree)</b>	<b>RAW VALUE (dBuV)</b>	<b>CORRECTIO N FACTOR (dB/m)</b>
1	2390.00	57.3 PK	74.0	-16.7	1.00 H	322	24.92	32.38
2	2390.00	45.4 AV	54.0	-8.6	1.00 H	322	13.02	32.38
3	*2412.00	95.9 PK			1.00 H	322	63.46	32.44
4	*2412.00	84.7 AV			1.00 H	322	52.26	32.44
5	4824.00	52.2 PK	74.0	-21.8	1.21 H	274	10.26	41.94
6	4824.00	37.9 AV	54.0	-16.1	1.21 H	274	-4.04	41.94
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
<b>NO</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV/m)</b>	<b>LIMIT (dBuV/m)</b>	<b>MARGIN (dB)</b>	<b>ANTENNA HEIGHT (m)</b>	<b>TABLE ANGLE (Degree)</b>	<b>RAW VALUE (dBuV)</b>	<b>CORRECTIO N FACTOR (dB/m)</b>
1	2390.00	70.3 PK	74.0	-3.7	1.02 V	96	37.92	32.38
2	2390.00	51.6 AV	54.0	-2.4	1.02 V	96	19.22	32.38
3	*2412.00	106.3 PK			1.02 V	96	73.86	32.44
4	*2412.00	96.3 AV			1.02 V	96	63.86	32.44
5	4824.00	57.0 PK	74.0	-17.0	1.28 V	190	15.06	41.94
6	4824.00	42.7 AV	54.0	-11.3	1.28 V	190	0.76	41.94

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	102.1 PK			1.00 H	318	69.59	32.51
2	*2437.00	90.9 AV			1.00 H	318	58.39	32.51
3	4874.00	54.1 PK	74.0	-19.9	1.27 H	285	12.11	41.99
4	4874.00	41.5 AV	54.0	-12.5	1.27 H	285	-0.49	41.99
5	7311.00	53.1 PK	74.0	-20.9	1.48 H	51	6.57	46.53
6	7311.00	40.2 AV	54.0	-13.8	1.48 H	51	-6.33	46.53

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

NO	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.6 PK			1.02 V	90	78.09	32.51
2	*2437.00	100.4 AV			1.02 V	90	67.89	32.51
3	4874.00	60.9 PK	74.0	-13.1	1.21 V	178	18.91	41.99
4	4874.00	47.8 AV	54.0	-6.2	1.21 V	178	5.81	41.99
5	7311.00	52.5 PK	74.0	-21.5	1.09 V	239	5.97	46.53
6	7311.00	40.5 AV	54.0	-13.5	1.09 V	239	-6.03	46.53

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	97.5 PK			1.00 H	317	64.93	32.57
2	*2462.00	86.8 AV			1.00 H	317	54.23	32.57
3	2483.50	60.7 PK	74.0	-13.3	1.00 H	317	28.07	32.63
4	2483.50	45.9 AV	54.0	-8.1	1.00 H	317	13.27	32.63
5	4924.00	52.0 PK	74.0	-22.0	1.23 H	273	9.99	42.01
6	4924.00	37.7 AV	54.0	-16.3	1.23 H	273	-4.31	42.01
7	7386.00	53.1 PK	74.0	-20.9	1.48 H	45	6.37	46.73
8	7386.00	39.9 AV	54.0	-14.1	1.48 H	45	-6.83	46.73

**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	105.5 PK			1.01 V	86	72.93	32.57
2	*2462.00	95.5 AV			1.01 V	86	62.93	32.57
3	2483.50	71.2 PK	74.0	-2.8	1.01 V	86	38.57	32.63
4	2483.50	51.8 AV	54.0	-2.2	1.01 V	86	19.17	32.63
5	4924.00	56.8 PK	74.0	-17.2	1.26 V	187	14.79	42.01
6	4924.00	42.6 AV	54.0	-11.4	1.26 V	187	0.59	42.01
7	7386.00	52.1 PK	74.0	-21.9	1.11 V	230	5.37	46.73
8	7386.00	40.2 AV	54.0	-13.8	1.11 V	230	-6.53	46.73

**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 (HT20)**

<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	57.3 PK	74.0	-16.7	1.04 H	314	24.92	32.38
2	2390.00	45.3 AV	54.0	-8.7	1.04 H	314	12.92	32.38
3	*2412.00	95.8 PK			1.04 H	314	63.36	32.44
4	*2412.00	84.5 AV			1.04 H	314	52.06	32.44
5	4824.00	52.2 PK	74.0	-21.8	1.18 H	281	10.26	41.94
6	4824.00	37.8 AV	54.0	-16.2	1.18 H	281	-4.14	41.94
<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	68.9 PK	74.0	-5.1	1.01 V	97	36.52	32.38
2	2390.00	51.5 AV	54.0	-2.5	1.01 V	97	19.12	32.38
3	*2412.00	106.4 PK			1.01 V	97	73.96	32.44
4	*2412.00	96.5 AV			1.01 V	97	64.06	32.44
5	2492.97	60.8 PK	74.0	-13.2	1.00 V	96	28.15	32.65
6	2492.97	48.1 AV	54.0	-5.9	1.00 V	96	15.45	32.65
7	4824.00	56.6 PK	74.0	-17.4	1.29 V	185	14.66	41.94
8	4824.00	42.3 AV	54.0	-11.7	1.29 V	185	0.36	41.94

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	102.7 PK			1.00 H	331	70.19	32.51
2	*2437.00	91.4 AV			1.00 H	331	58.89	32.51
3	4874.00	53.7 PK	74.0	-20.3	1.24 H	282	11.71	41.99
4	4874.00	41.3 AV	54.0	-12.7	1.24 H	282	-0.69	41.99
5	7311.00	52.8 PK	74.0	-21.2	1.43 H	41	6.27	46.53
6	7311.00	39.8 AV	54.0	-14.2	1.43 H	41	-6.73	46.53

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

NO	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2357.60	62.3 PK	74.0	-11.7	1.01 V	91	30.03	32.27
2	2357.60	51.5 AV	54.0	-2.5	1.01 V	91	19.23	32.27
3	*2437.00	110.9 PK			1.00 V	87	78.39	32.51
4	*2437.00	100.7 AV			1.00 V	87	68.19	32.51
5	2483.50	63.9 PK	74.0	-10.1	1.00 V	87	31.27	32.63
6	2483.50	46.6 AV	54.0	-7.4	1.00 V	87	13.97	32.63
7	4874.00	60.7 PK	74.0	-13.3	1.17 V	185	18.71	41.99
8	4874.00	47.9 AV	54.0	-6.1	1.17 V	185	5.91	41.99
9	7311.00	53.0 PK	74.0	-21.0	1.14 V	251	6.47	46.53
10	7311.00	41.0 AV	54.0	-13.0	1.14 V	251	-5.53	46.53

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	97.0 PK			1.00 H	318	64.43	32.57
2	*2462.00	86.3 AV			1.00 H	318	53.73	32.57
3	2483.50	60.9 PK	74.0	-13.1	1.00 H	318	28.27	32.63
4	2483.50	45.9 AV	54.0	-8.1	1.00 H	318	13.27	32.63
5	4924.00	52.4 PK	74.0	-21.6	1.26 H	260	10.39	42.01
6	4924.00	38.2 AV	54.0	-15.8	1.26 H	260	-3.81	42.01
7	7386.00	52.6 PK	74.0	-21.4	1.46 H	35	5.87	46.73
8	7386.00	39.6 AV	54.0	-14.4	1.46 H	35	-7.13	46.73

**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	2382.80	58.4 PK	74.0	-15.6	1.00 V	84	26.05	32.35
2	2382.80	48.3 AV	54.0	-5.7	1.00 V	84	15.95	32.35
3	*2462.00	105.6 PK			1.00 V	84	73.03	32.57
4	*2462.00	95.7 AV			1.00 V	84	63.13	32.57
5	2483.50	71.6 PK	74.0	-2.4	1.00 V	84	38.97	32.63
6	<b>2483.50</b>	<b>52.0 AV</b>	<b>54.0</b>	<b>-2.0</b>	<b>1.00 V</b>	<b>84</b>	<b>19.37</b>	<b>32.63</b>
7	4924.00	56.5 PK	74.0	-17.5	1.29 V	185	14.49	42.01
8	4924.00	42.1 AV	54.0	-11.9	1.29 V	185	0.09	42.01
9	7386.00	52.6 PK	74.0	-21.4	1.06 V	216	5.87	46.73
10	7386.00	40.4 AV	54.0	-13.6	1.06 V	216	-6.33	46.73

**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	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 11, 2012

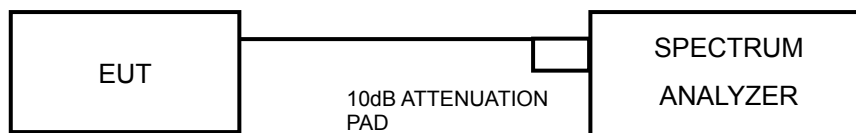
#### 4.3.3 TEST PROCEDURE

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	8.69	0.5	PASS
6	2437	8.52	0.5	PASS
11	2462	8.74	0.5	PASS

##### 802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.27	0.5	PASS
6	2437	16.23	0.5	PASS
11	2462	16.20	0.5	PASS

##### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.60	0.5	PASS
6	2437	17.23	0.5	PASS
11	2462	17.12	0.5	PASS

#### 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
Peak 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 : Aug. 08, 2012

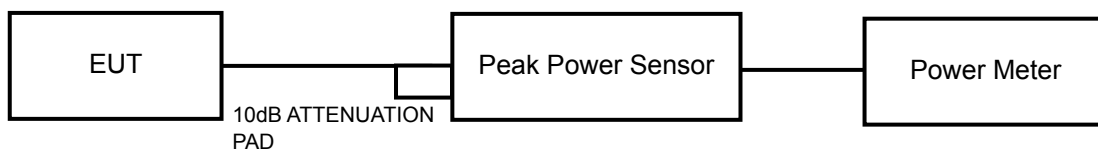
##### 4.4.3 TEST PROCEDURES

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)	LIMIT (dBm)	PASS/FAIL
1	2412	36.308	15.6	30	PASS
6	2437	37.154	15.7	30	PASS
11	2462	36.308	15.6	30	PASS

##### 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	138.038	21.4	30	PASS
6	2437	234.423	23.7	30	PASS
11	2462	120.226	20.8	30	PASS

##### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	117.490	20.7	30	PASS
6	2437	234.423	23.7	30	PASS
11	2462	107.152	20.3	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	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Aug. 11, 2012

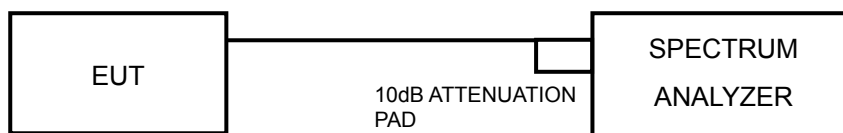
### 4.5.3 TEST PROCEDURE

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	FREQUENCY (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	4.12	-11.11	8	PASS
6	2437	4.10	-11.13	8	PASS
11	2462	4.66	-10.57	8	PASS

### 802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	3.83	-11.40	8	PASS
6	2437	8.28	-6.95	8	PASS
11	2462	3.36	-11.87	8	PASS

### 802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	4.61	-10.62	8	PASS
6	2437	8.70	-6.53	8	PASS
11	2462	3.03	-12.20	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	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012

**Note:**

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

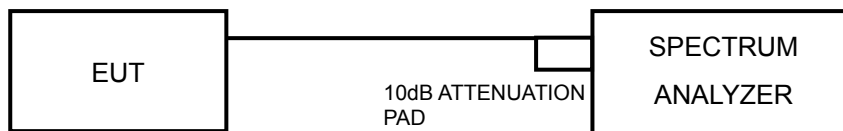
## MEASUREMENT PROCEDURE OOB

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

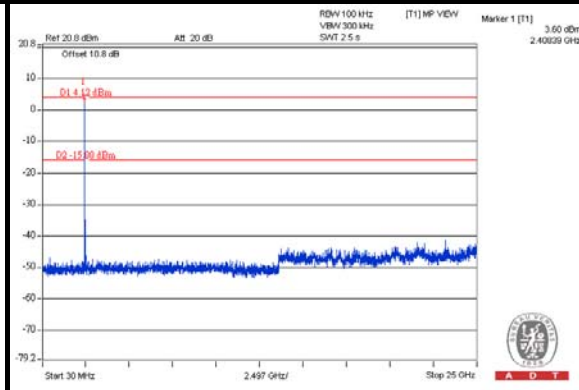
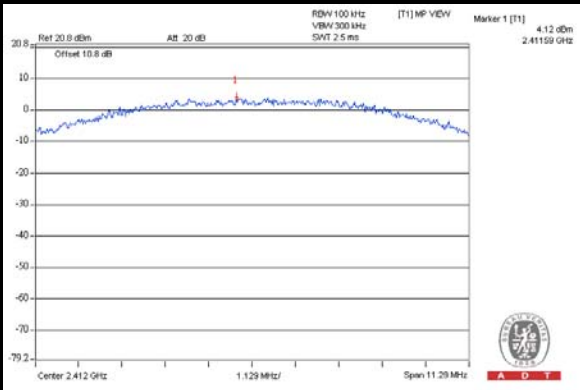
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



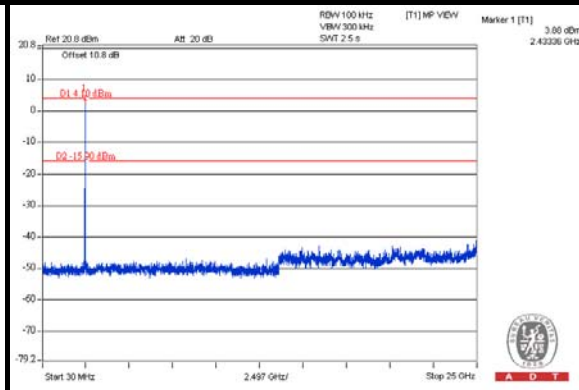
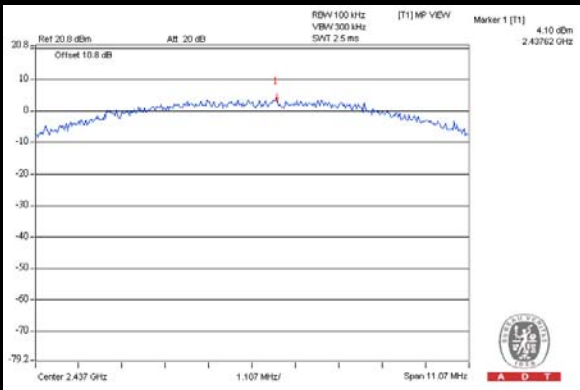
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### 802.11b

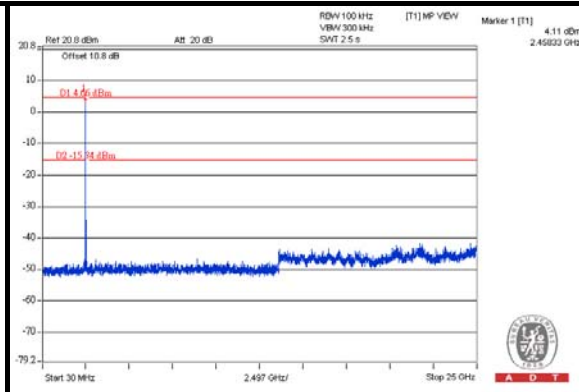
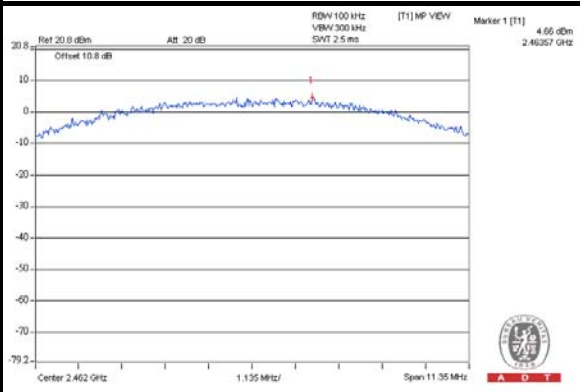
#### CH 1



#### CH 6



#### CH 11

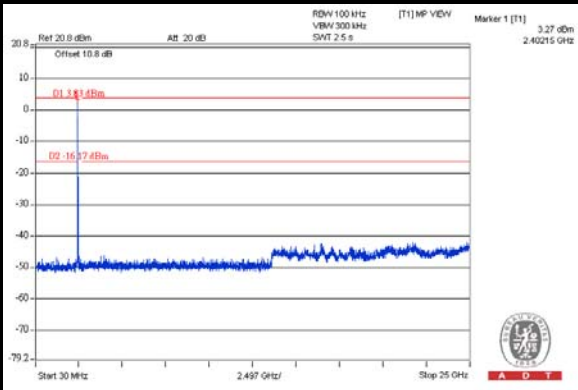
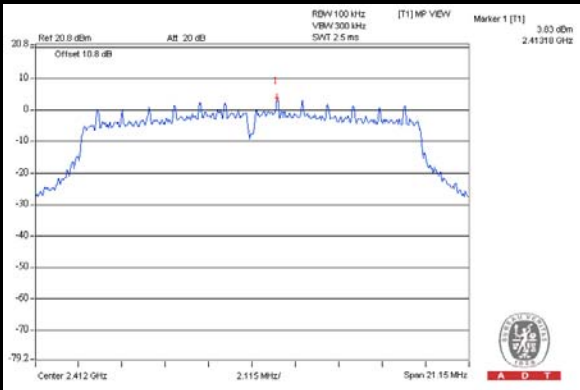




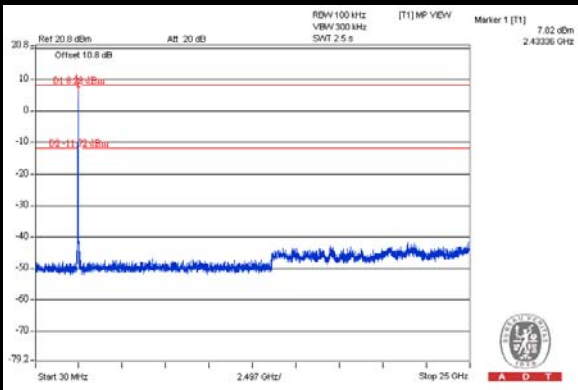
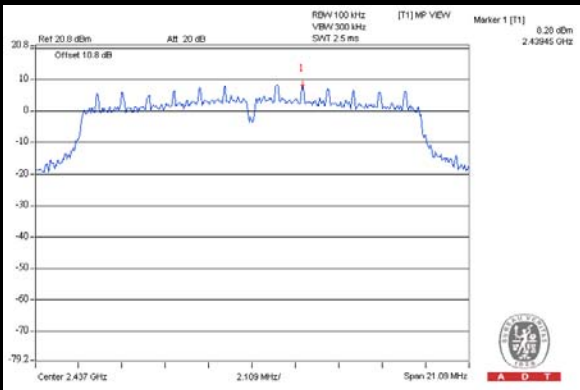
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### 802.11g

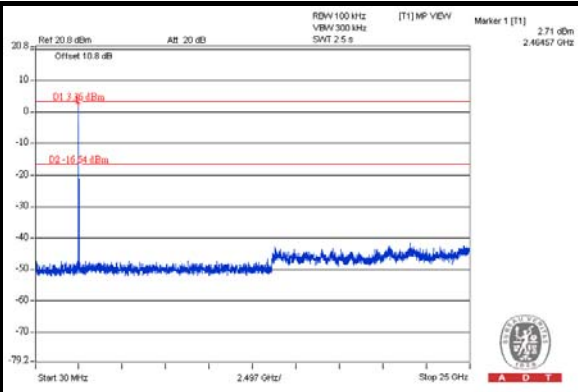
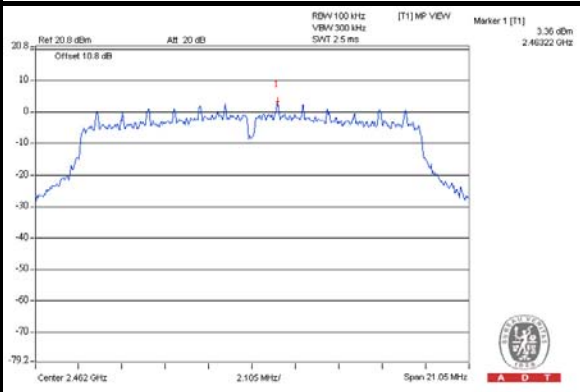
#### CH 1



#### CH 6

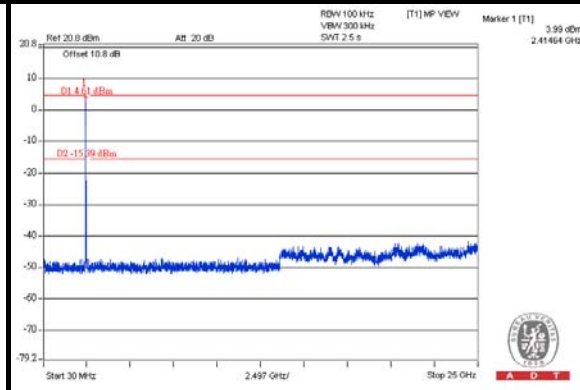
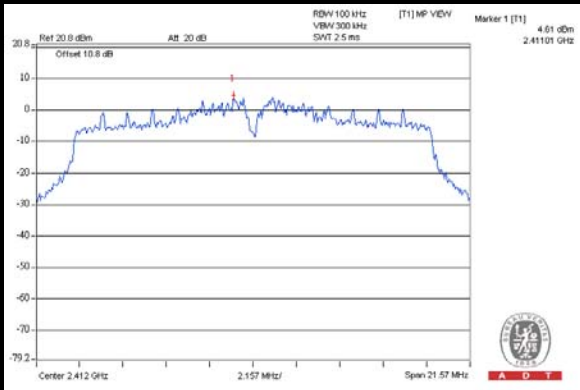


#### CH 11

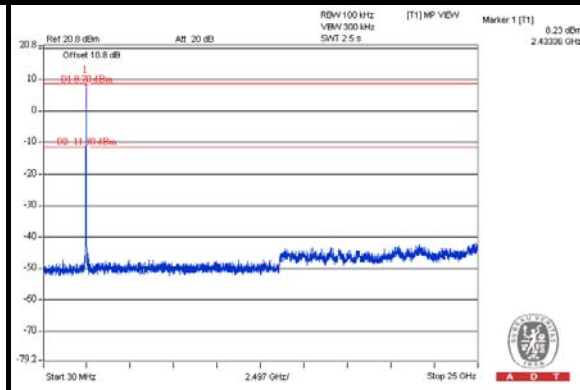
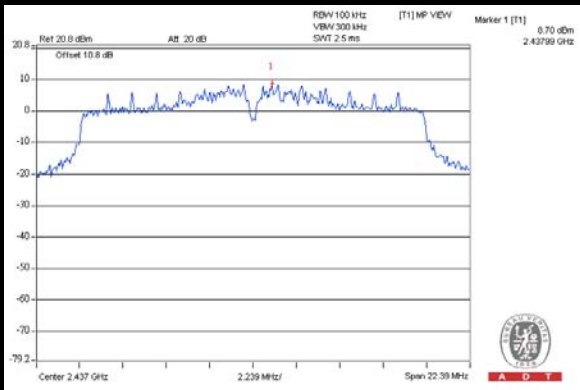


802.11n (HT20MHz)

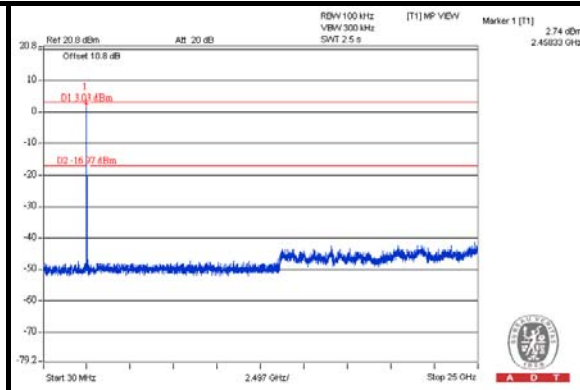
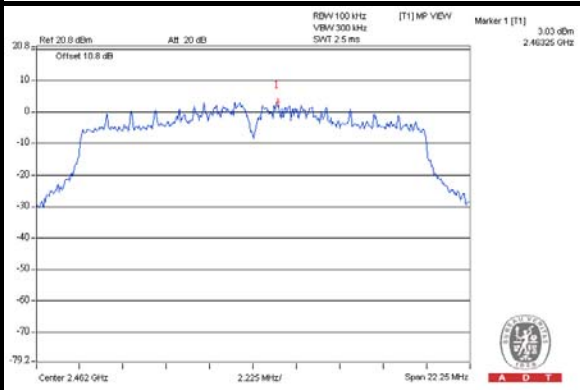
CH 1



CH 6



CH 11



## 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:

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**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 ---**