



FCC TEST REPORT (WLAN)

REPORT NO.: RF120102E08

MODEL NO.: AW-NM388

FCC ID: TLZ-NM388

RECEIVED: Nov. 04, 2011

TESTED: Jan. 20, 2012

ISSUED: Feb. 07, 2012

APPLICANT: AzureWave Technologies, Inc.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120102E08	Original release	Feb. 07, 2012



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1. CERTIFICATION

PRODUCT: IEEE 802.11 b/g/n Wireless LAN & Bluetooth Module
BRAND NAME: Azurewave
MODEL NO.: AW-NM388
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: AzureWave Technologies, Inc.
TESTED: Jan. 20, 2012
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2009

The above equipment (Model: AW-NM388) 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:** Feb. 07, 2012
(Midoli Peng, Specialist)

APPROVED BY : , **DATE:** Feb. 07, 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 -13.93dB at 0.150MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2483.5MHz.
15.247(d)	Conducted Out-Band Emission 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.

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	2.45 dB
Radiated emissions (30MHz-1GHz)	3.89 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (1GHz -40GHz)	2.56 dB



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT(WLAN)

PRODUCT	IEEE 802.11 b/g/n Wireless LAN & Bluetooth Module
MODEL NO.	AW-NM388
FCC ID	TLZ-NM388
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n (20MHz, 800ns GI): up to 65Mbps 802.11n (20MHz, 400ns GI): up to 72.2Mbps 802.11n (40MHz, 800ns GI): up to 135Mbps 802.11n (40MHz, 400ns GI): up to 150Mbps
OPERATING FREQUENCY	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 85.1mW 802.11g: 151.4mW 802.11n (20MHz): 134.9mW 802.11n (40MHz): 141.3mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. There are WLAN technology and Bluetooth technology used for the EUT. <the Bluetooth test data please refer " RF120102E08-1">
2. Spurious emission of the simultaneous operation (WLAN & Bluetooth) has been evaluated and no non-compliance was found.



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

No.	Brand	Model	Antenna Type	Connector Type	Freq. range (MHz)	Cable Loss (dB)	Gain (dBi) include cable loss	Cable Length (mm)	Antenna Diversity
Main	wgt	S180AU	PIFA	IPEX	2400-2500	0.7	1.74	175	Both Tx & Rx
Aux	wgt	S180AU	PIFA	IPEX	2400-2500	0.7	1.74	175	Both Tx & Rx
BT	wgt	S180AU	PIFA	IPEX	2400-2500	0.7	1.74	175	Both Tx & Rx

- 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 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.



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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		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

POWER LINE CONDUCTED EMISSION TEST:

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

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

RADIATED EMISSION TEST (BELOW 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ plane 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)	PLANE
802.11g	1 to 11	6	OFDM	BPSK	6	X-Y

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, XYZ plane 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)	PLANE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	X-Y
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	X-Y
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	X-Y
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	X-Y



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ANTENNA PORT CONDUCTED MEASUREMENT:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- 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 (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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 (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

※ TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	23deg. C, 63%RH,	120Vac, 60Hz	Scott Chen
RE [≥] 1G	23deg. C, 69%RH	120Vac, 60Hz	Nelson Teng
RE<1G	24deg. C, 69%RH	120Vac, 60Hz	Nelson Teng
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)
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

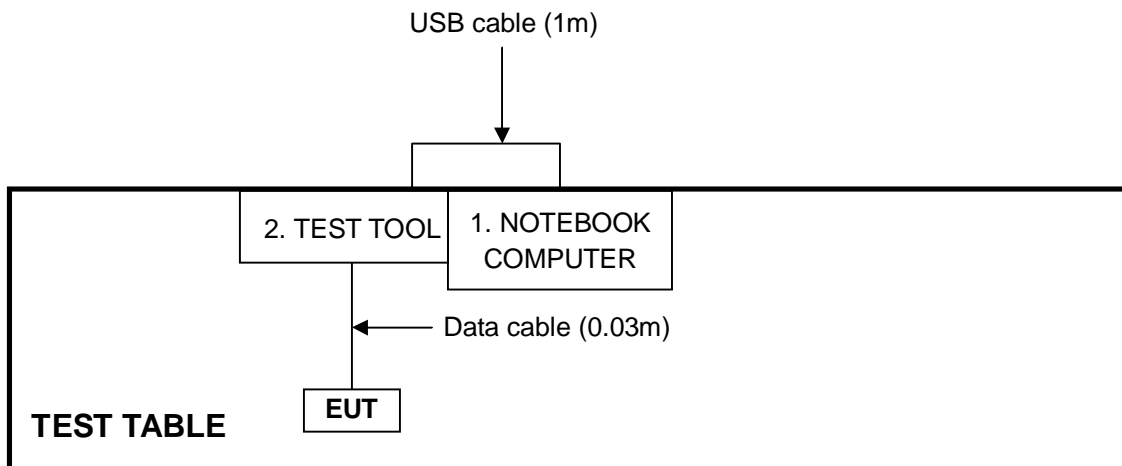
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	Lenovo	LV-R5ZD4 08/10	NA	FCC DoC
2	TEST TOOL	AzureWave	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	USB cable (1m with 2 cores) / Data cable (0.03m)

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



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 μ 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

Test date: Jan. 20, 2012

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2011	Mar. 08, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 01, 2011	Oct. 31, 2012
RF Cable (JYBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	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.

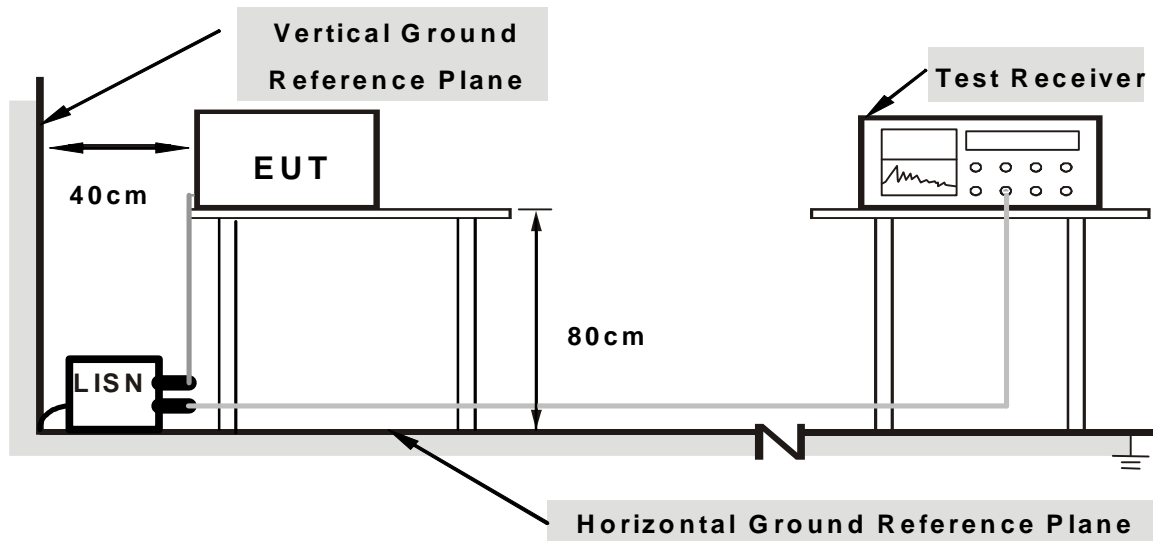
4.1.3 TEST PROCEDURES

- 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.

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

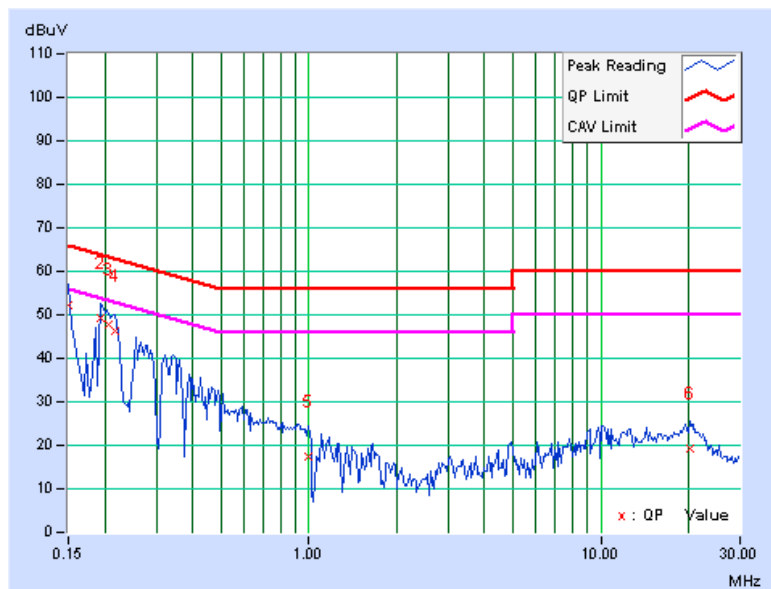
1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed in test table.
2. The support unit 1 (Notebook Computer) runs test program “MFG-8787-WIFI-SD-BT-SD-WIN-X86-1.2.6.22-14.0.3.p155” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.09	51.98	31.25	52.07	31.34	66.00	56.00	-13.93	-24.66
2	0.19297	0.11	49.18	33.55	49.29	33.66	63.91	53.91	-14.62	-20.25
3	0.20722	0.11	47.49	34.25	47.60	34.36	63.32	53.32	-15.71	-18.95
4	0.21641	0.11	46.28	29.40	46.39	29.51	62.96	52.96	-16.56	-23.44
5	0.98984	0.19	17.14	6.00	17.33	6.19	56.00	46.00	-38.67	-39.81
6	20.17969	1.11	18.04	13.20	19.15	14.31	60.00	50.00	-40.85	-35.69

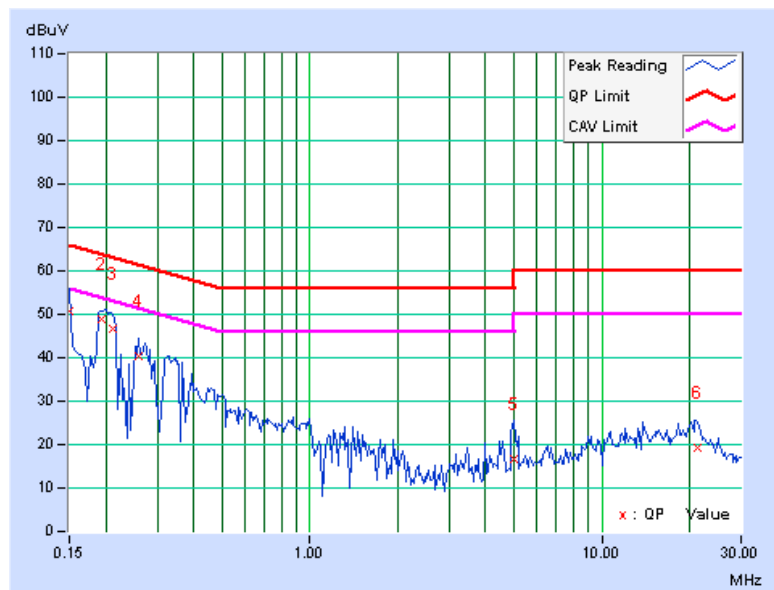
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.07	50.52	28.22	50.59	28.29	66.00	56.00	-15.41	-27.71
2	0.19297	0.10	48.78	32.93	48.88	33.03	63.91	53.91	-15.03	-20.88
3	0.21250	0.10	46.67	31.60	46.77	31.70	63.11	53.11	-16.34	-21.41
4	0.25938	0.11	40.22	24.64	40.33	24.75	61.45	51.45	-21.12	-26.70
5	4.99609	0.36	16.27	4.37	16.63	4.73	56.00	46.00	-39.37	-41.27
6	21.18750	1.05	18.30	12.98	19.35	14.03	60.00	50.00	-40.65	-35.97

- 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, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). 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. As shown in 15.35(b), 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

Test date: Jan. 20, 2012

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 29, 2011	Aug. 28, 2012
Agilent Pre-Selector	N9039A	MY46520310	Aug. 29, 2011	Aug. 28, 2012
Agilent Signal Generator	N5181A	MY49060347	July 25, 2011	July 24, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 28, 2011	Feb. 27, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 23, 2011	Nov. 22, 2012
SCHWARZBECK Horn_Antenna	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
CT Antenna Tower & Turn Table	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.

4.2.3 TEST PROCEDURES

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

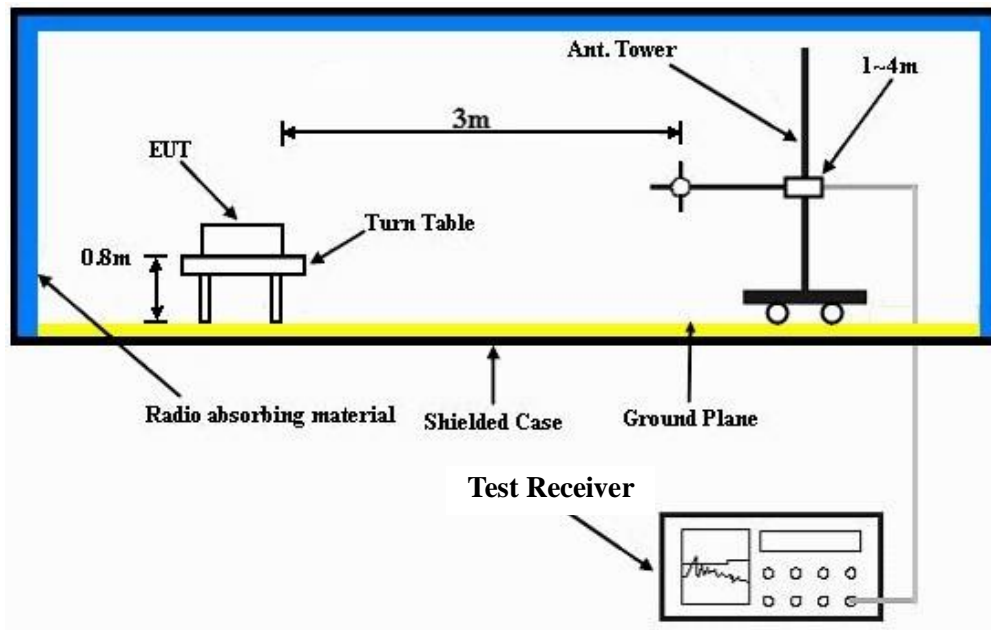
NOTE:

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

TX Low

802.11g OFDM MODULATION

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	163.70	38.4 QP	43.5	-5.1	2.00 H	360	24.13	14.26
2	283.00	31.0 QP	46.0	-15.0	1.50 H		16.35	14.69
3	316.46	38.9 QP	46.0	-7.1	1.00 H	51	23.10	15.77
4	547.98	40.6 QP	46.0	-5.4	1.50 H	360	19.45	21.12
5	663.80	41.9 QP	46.0	-4.1	1.00 H	232	19.18	22.73
6	864.05	41.6 QP	46.0	-4.4	1.00 H	46	15.22	26.42
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	164.88	37.8 QP	43.5	-5.7	1.00 V	340	23.58	14.18
2	348.32	33.1 QP	46.0	-12.9	2.00 V	142	16.65	16.47
3	582.68	36.2 QP	46.0	-9.8	1.00 V	213	14.30	21.87
4	664.15	37.7 QP	46.0	-8.3	1.00 V	122	14.97	22.74
5	864.05	34.5 QP	46.0	-11.5	2.00 V	71	8.08	26.42
6	996.09	36.4 QP	54.0	-17.6	1.00 V	250	8.18	28.25

- 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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TX High

802.11b DSSS MODULATION

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.20	59.1 PK	74.0	-14.9	1.46 H	225	27.89	31.21
2	2389.20	45.3 AV	54.0	-8.7	1.46 H	225	14.09	31.21
3	*2412.00	105.3 PK			1.45 H	223	74.03	31.27
4	*2412.00	103.2 AV			1.45 H	223	71.93	31.27
5	4824.00	55.2 PK	74.0	-18.8	1.14 H	255	15.78	39.42
6	4824.00	52.3 AV	54.0	-1.7	1.14 H	255	12.88	39.42

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	56.2 PK	74.0	-17.8	1.00 V	143	24.99	31.21
2	2390.00	44.2 AV	54.0	-9.8	1.00 V	143	12.99	31.21
3	*2412.00	98.5 PK			1.00 V	143	67.23	31.27
4	*2412.00	96.2 AV			1.00 V	143	64.93	31.27
5	4824.00	56.8 PK	74.0	-17.2	1.00 V	274	17.38	39.42
6	4824.00	52.4 AV	54.0	-1.6	1.00 V	274	12.98	39.42

- 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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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.1 PK			1.48 H	265	71.76	31.34
2	*2437.00	100.8 AV			1.48 H	265	69.46	31.34
3	4874.00	54.5 PK	74.0	-19.5	1.15 H	242	14.88	39.62
4	4874.00	50.2 AV	54.0	-3.8	1.15 H	242	10.58	39.62
5	7311.00	54.6 PK	74.0	-19.4	1.42 H	289	10.50	44.10
6	7311.00	40.8 AV	54.0	-13.2	1.42 H	289	-3.30	44.10

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	98.2 PK			1.06 V	224	66.86	31.34
2	*2437.00	95.8 AV			1.06 V	224	64.46	31.34
3	4874.00	56.2 PK	74.0	-17.8	1.00 V	275	16.58	39.62
4	4874.00	52.8 AV	54.0	-1.2	1.00 V	275	13.18	39.62
5	7311.00	53.8 PK	74.0	-20.2	1.39 V	143	9.70	44.10
6	7311.00	41.9 AV	54.0	-12.1	1.39 V	143	-2.20	44.10

- 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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CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.2 PK			1.50 H	269	71.80	31.40
2	*2462.00	100.6 AV			1.50 H	269	69.20	31.40
3	2484.84	56.8 PK	74.0	-17.2	1.00 H		25.34	31.46
4	2484.84	44.1 AV	54.0	-9.9	1.00 H		12.64	31.46
5	4924.00	54.9 PK	74.0	-19.1	1.12 H	241	15.08	39.82
6	4924.00	51.9 AV	54.0	-2.1	1.12 H	241	12.08	39.82
7	7386.00	54.3 PK	74.0	-19.7	1.48 H	282	10.12	44.18
8	7386.00	40.6 AV	54.0	-13.4	1.48 H	282	-3.58	44.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	97.7 PK			1.03 V	247	66.30	31.40
2	*2462.00	95.3 AV			1.03 V	247	63.90	31.40
3	2484.74	56.7 PK	74.0	-17.3	1.03 V	247	25.24	31.46
4	2484.74	43.9 AV	54.0	-10.1	1.03 V	247	12.44	31.46
5	4924.00	55.7 PK	74.0	-18.3	1.00 V	277	15.88	39.82
6	4924.00	52.6 AV	54.0	-1.4	1.00 V	277	12.78	39.82
7	7386.00	54.1 PK	74.0	-19.9	1.44 V	138	9.92	44.18
8	7386.00	42.3 AV	54.0	-11.7	1.44 V	138	-1.88	44.18

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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 OFDM MODULATION

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.5 PK	74.0	-3.5	1.50 H	219	39.29	31.21
2	2390.00	52.3 AV	54.0	-1.7	1.50 H	219	21.09	31.21
3	*2412.00	101.3 PK			1.50 H	219	70.03	31.27
4	*2412.00	92.7 AV			1.50 H	219	61.43	31.27
5	4824.00	58.7 PK	74.0	-15.3	1.10 H	255	19.28	39.42
6	4824.00	44.5 AV	54.0	-9.5	1.10 H	255	5.08	39.42
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	58.0 PK	74.0	-16.0	1.04 V	228	26.79	31.21
2	2390.00	44.4 AV	54.0	-9.6	1.04 V	228	13.19	31.21
3	*2412.00	94.5 PK			1.04 V	228	63.23	31.27
4	*2412.00	85.5 AV			1.04 V	228	54.23	31.27
5	4824.00	58.6 PK	74.0	-15.4	1.05 V	275	19.18	39.42
6	4824.00	44.3 AV	54.0	-9.7	1.05 V	275	4.88	39.42

- 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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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.5 PK			1.43 H	242	76.16	31.34
2	*2437.00	99.3 AV			1.43 H	242	67.96	31.34
3	4874.00	59.4 PK	74.0	-14.6	1.07 H	283	19.78	39.62
4	4874.00	44.8 AV	54.0	-9.2	1.07 H	283	5.18	39.62
5	7311.00	56.1 PK	74.0	-17.9	1.50 H	148	12.00	44.10
6	7311.00	42.0 AV	54.0	-12.0	1.50 H	148	-2.10	44.10

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	99.5 PK			1.04 V	224	68.16	31.34
2	*2437.00	90.9 AV			1.04 V	224	59.56	31.34
3	4874.00	59.0 PK	74.0	-15.0	1.00 V	270	19.38	39.62
4	4874.00	44.5 AV	54.0	-9.5	1.00 V	270	4.88	39.62
5	7311.00	55.3 PK	74.0	-18.7	1.44 V	135	11.20	44.10
6	7311.00	41.5 AV	54.0	-12.5	1.44 V	135	-2.60	44.10

- 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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CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.3 PK			1.41 H	222	72.90	31.40
2	*2462.00	95.4 AV			1.41 H	222	64.00	31.40
3	2483.50	68.4 PK	74.0	-5.6	1.41 H	222	36.94	31.46
4	2483.50	50.3 AV	54.0	-3.7	1.41 H	222	18.84	31.46
5	4924.00	60.0 PK	74.0	-14.0	1.07 H	296	20.18	39.82
6	4924.00	45.1 AV	54.0	-8.9	1.07 H	296	5.28	39.82
7	7386.00	56.3 PK	74.0	-17.7	1.47 H	136	12.12	44.18
8	7386.00	42.0 AV	54.0	-12.0	1.47 H	136	-2.18	44.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	95.2 PK			1.04 V	227	63.80	31.40
2	*2462.00	86.1 AV			1.04 V	227	54.70	31.40
3	2483.50	57.1 PK	74.0	-16.9	1.04 V	226	25.64	31.46
4	2483.50	43.8 AV	54.0	-10.2	1.04 V	226	12.34	31.46
5	4924.00	58.8 PK	74.0	-15.2	1.00 V	286	18.98	39.82
6	4924.00	44.3 AV	54.0	-9.7	1.00 V	286	4.48	39.82
7	7386.00	54.5 PK	74.0	-19.5	1.49 V	147	10.32	44.18
8	7386.00	41.0 AV	54.0	-13.0	1.49 V	147	-3.18	44.18

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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) OFDM MODULATION

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.3 PK	74.0	-6.7	1.42 H	215	36.09	31.21
2	2390.00	50.9 AV	54.0	-3.1	1.42 H	215	19.69	31.21
3	*2412.00	104.4 PK			1.42 H	215	73.13	31.27
4	*2412.00	95.0 AV			1.42 H	215	63.73	31.27
5	4824.00	58.8 PK	74.0	-15.2	1.14 H	270	19.38	39.42
6	4824.00	44.9 AV	54.0	-9.1	1.14 H	270	5.48	39.42
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	58.4 PK	74.0	-15.6	1.02 V	231	27.19	31.21
2	2390.00	44.5 AV	54.0	-9.5	1.02 V	231	13.29	31.21
3	*2412.00	94.1 PK			1.02 V	231	62.83	31.27
4	*2412.00	84.8 AV			1.02 V	231	53.53	31.27
5	4824.00	58.2 PK	74.0	-15.8	1.03 V	271	18.78	39.42
6	4824.00	44.0 AV	54.0	-10.0	1.03 V	271	4.58	39.42

- 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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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.0 PK			1.40 H	224	77.66	31.34
2	*2437.00	100.3 AV			1.40 H	224	68.96	31.34
3	4874.00	59.5 PK	74.0	-14.5	1.02 H	292	19.88	39.62
4	4874.00	44.8 AV	54.0	-9.2	1.02 H	292	5.18	39.62
5	7311.00	55.7 PK	74.0	-18.3	1.49 H	151	11.60	44.10
6	7311.00	41.6 AV	54.0	-12.4	1.49 H	151	-2.50	44.10

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	99.0 PK			1.06 V	224	67.66	31.34
2	*2437.00	90.1 AV			1.06 V	224	58.76	31.34
3	4874.00	59.4 PK	74.0	-14.6	1.01 V	265	19.78	39.62
4	4874.00	44.7 AV	54.0	-9.3	1.01 V	265	5.08	39.62
5	7311.00	55.0 PK	74.0	-19.0	1.48 V	127	10.90	44.10
6	7311.00	41.3 AV	54.0	-12.7	1.48 V	127	-2.80	44.10

- 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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CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.2 PK			1.41 H	217	70.80	31.40
2	*2462.00	93.1 AV			1.41 H	217	61.70	31.40
3	2483.50	71.3 PK	74.0	-2.7	1.41 H	217	39.84	31.46
4	2483.50	51.9 AV	54.0	-2.1	1.41 H	217	20.44	31.46
5	4924.00	59.8 PK	74.0	-14.2	1.00 H	296	19.98	39.82
6	4924.00	45.0 AV	54.0	-9.0	1.00 H	296	5.18	39.82
7	7386.00	55.9 PK	74.0	-18.1	1.53 H	140	11.72	44.18
8	7386.00	41.9 AV	54.0	-12.1	1.53 H	140	-2.28	44.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	95.1 PK			1.00 V	226	63.70	31.40
2	*2462.00	86.1 AV			1.00 V	226	54.70	31.40
3	2483.50	57.0 PK	74.0	-17.0	1.01 V	227	25.54	31.46
4	2483.50	43.9 AV	54.0	-10.1	1.01 V	227	12.44	31.46
5	4924.00	58.9 PK	74.0	-15.1	1.07 V	270	19.08	39.82
6	4924.00	44.3 AV	54.0	-9.7	1.07 V	270	4.48	39.82
7	7386.00	55.1 PK	74.0	-18.9	1.45 V	136	10.92	44.18
8	7386.00	41.7 AV	54.0	-12.3	1.45 V	136	-2.48	44.18

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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) OFDM MODULATION

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.6 PK	74.0	-8.4	1.46 H	218	34.39	31.21
2	2390.00	52.3 AV	54.0	-1.7	1.46 H	218	21.09	31.21
3	*2422.00	100.0 PK			1.46 H	218	68.70	31.30
4	*2422.00	91.2 AV			1.46 H	218	59.90	31.30
5	4844.00	59.7 PK	74.0	-14.3	1.00 H	298	20.20	39.50
6	4844.00	45.0 AV	54.0	-9.0	1.00 H	298	5.50	39.50
7	7266.00	56.1 PK	74.0	-17.9	1.58 H	136	12.04	44.06
8	7266.00	42.3 AV	54.0	-11.7	1.58 H	136	-1.76	44.06

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.0 PK	74.0	-16.0	1.02 V	241	26.79	31.21
2	2390.00	45.2 AV	54.0	-8.8	1.02 V	241	13.99	31.21
3	*2422.00	91.8 PK			1.02 V	225	60.50	31.30
4	*2422.00	82.4 AV			1.02 V	225	51.10	31.30
5	4844.00	58.7 PK	74.0	-15.3	1.02 V	251	19.20	39.50
6	4844.00	44.3 AV	54.0	-9.7	1.02 V	251	4.80	39.50
7	7266.00	55.0 PK	74.0	-19.0	1.48 V	149	10.94	44.06
8	7266.00	41.4 AV	54.0	-12.6	1.48 V	149	-2.66	44.06

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.3 PK	74.0	-10.7	1.45 H	218	32.09	31.21
2	2390.00	51.0 AV	54.0	-3.0	1.45 H	218	19.79	31.21
3	*2437.00	101.8 PK			1.43 H	217	70.46	31.34
4	*2437.00	93.3 AV			1.43 H	217	61.96	31.34
5	2483.50	66.4 PK	74.0	-7.6	1.41 H	222	34.94	31.46
6	2483.50	53.0 AV	54.0	-1.0	1.41 H	222	21.54	31.46
7	4874.00	59.7 PK	74.0	-14.3	1.01 H	305	20.08	39.62
8	4874.00	44.9 AV	54.0	-9.1	1.01 H	305	5.28	39.62
9	7311.00	56.0 PK	74.0	-18.0	1.59 H	151	11.90	44.10
10	7311.00	42.3 AV	54.0	-11.7	1.59 H	151	-1.80	44.10

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	93.2 PK			1.03 V	223	61.86	31.34
2	*2437.00	84.1 AV			1.03 V	223	52.76	31.34
3	4874.00	58.7 PK	74.0	-15.3	1.00 V	243	19.08	39.62
4	4874.00	44.0 AV	54.0	-10.0	1.00 V	243	4.38	39.62
5	7311.00	54.6 PK	74.0	-19.4	1.52 V	147	10.50	44.10
6	7311.00	41.2 AV	54.0	-12.8	1.52 V	147	-2.90	44.10

- 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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CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	101.5 PK			1.41 H	215	70.12	31.38
2	*2452.00	92.4 AV			1.41 H	215	61.02	31.38
3	2484.00	69.0 PK	74.0	-5.0	1.41 H	215	37.54	31.46
4	2484.00	51.9 AV	54.0	-2.1	1.41 H	215	20.44	31.46
5	4904.00	59.7 PK	74.0	-14.3	1.01 H	285	19.96	39.74
6	4904.00	44.6 AV	54.0	-9.4	1.01 H	285	4.86	39.74
7	7356.00	55.6 PK	74.0	-18.4	1.53 H	156	11.45	44.15
8	7356.00	41.4 AV	54.0	-12.6	1.53 H	156	-2.75	44.15

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	92.1 PK			1.01 V	212	60.72	31.38
2	*2452.00	82.6 AV			1.01 V	212	51.22	31.38
3	2483.50	57.9 PK	74.0	-16.1	1.03 V	246	26.44	31.46
4	2483.50	44.5 AV	54.0	-9.5	1.03 V	246	13.04	31.46
5	4904.00	59.0 PK	74.0	-15.0	1.00 V	240	19.26	39.74
6	4904.00	44.3 AV	54.0	-9.7	1.00 V	240	4.56	39.74
7	7356.00	54.0 PK	74.0	-20.0	1.54 V	163	9.85	44.15
8	7356.00	40.9 AV	54.0	-13.1	1.54 V	163	-3.25	44.15

- 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

Test date: Jan. 20, 2012

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

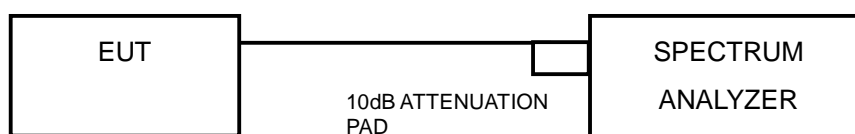
4.3.3 TEST PROCEDURE

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





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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 DSSS MODULATION:

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.15	0.5	PASS
6	2437	10.15	0.5	PASS
11	2462	10.17	0.5	PASS

802.11g OFDM MODULATION:

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.55	0.5	PASS
6	2437	16.58	0.5	PASS
11	2462	16.53	0.5	PASS

802.11n (20MHz) OFDM MODULATION:

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.87	0.5	PASS
6	2437	17.84	0.5	PASS
11	2462	17.84	0.5	PASS

802.11n (40MHz) OFDM MODULATION:

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.95	0.5	PASS
6	2437	36.74	0.5	PASS
9	2452	36.84	0.5	PASS

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 902 –928 MHz, 2400–2483.5 MHz, and 5725 –5850 MHz bands: 1 Watt (30dBm)

4.4.2 INSTRUMENTS

Test date: Jan. 20, 2012

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Peak Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

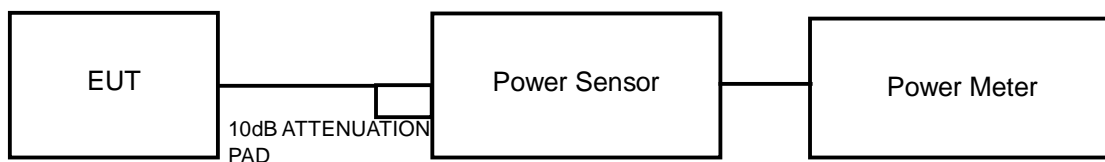
4.4.3 TEST PROCEDURES

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 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 DSSS MODULATION:

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	85.1	19.3	30	PASS
6	2437	79.4	19.0	30	PASS
11	2462	81.3	19.1	30	PASS

802.11g OFDM MODULATION:

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	141.3	21.5	30	PASS
6	2437	151.4	21.8	30	PASS
11	2462	147.9	21.7	30	PASS

802.11n (20MHz) OFDM MODULATION:

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	128.8	21.1	30	PASS
6	2437	134.9	21.3	30	PASS
11	2462	134.9	21.3	30	PASS

802.11n (40MHz) OFDM MODULATION:

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
3	2422	112.2	20.5	30	PASS
6	2437	141.3	21.5	30	PASS
9	2452	125.9	21.0	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

Test date: Jan. 20, 2012

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

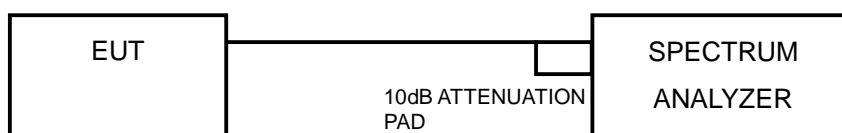
4.5.3 TEST PROCEDURE

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 DSSS MODULATION:

Channel	FREQUENCY (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	6.9	-8.3	8	PASS
6	2437	6.4	-8.9	8	PASS
11	2462	6.1	-9.2	8	PASS

802.11g OFDM MODULATION:

Channel	FREQUENCY (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-3.5	-18.7	8	PASS
6	2437	0.4	-14.9	8	PASS
11	2462	-3.9	-19.1	8	PASS

802.11n (20MHz) OFDM MODULATION:

Channel	FREQUENCY (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-3.5	-18.8	8	PASS
6	2437	0.9	-14.4	8	PASS
11	2462	-3.7	-18.9	8	PASS

802.11n (40MHz) OFDM MODULATION:

Channel	FREQUENCY (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-7.4	-22.6	8	PASS
6	2437	-5.3	-20.5	8	PASS
9	2452	-6.6	-21.8	8	PASS



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4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

Test date: Jan. 20, 2012

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

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.

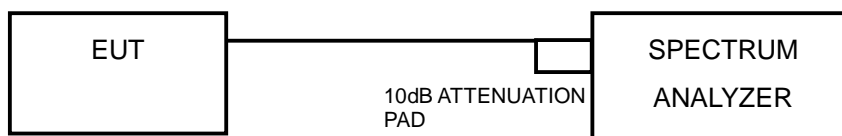
MEASUREMENT PROCEDURE OOBE

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 conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit. Only worst data of each operating mode is presented.

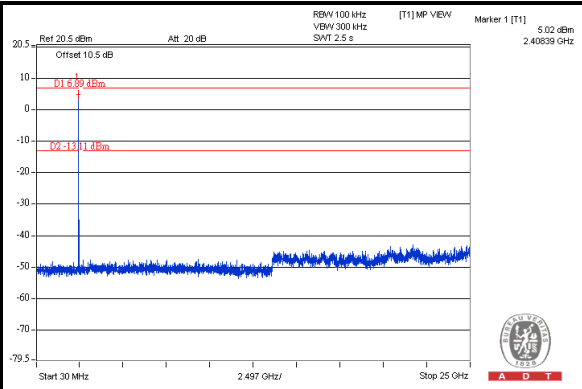
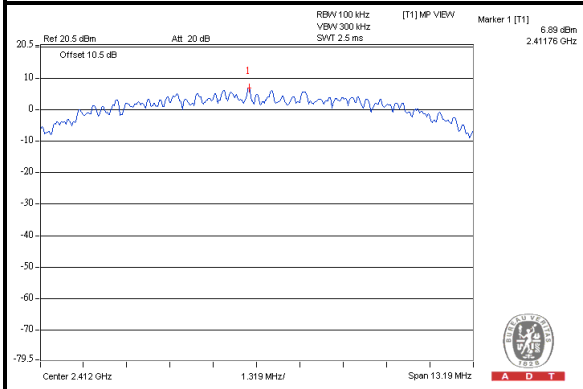
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).



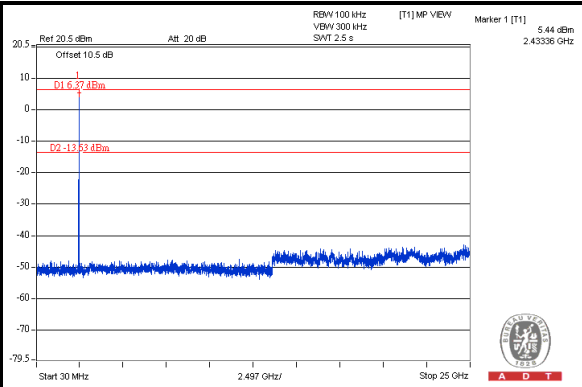
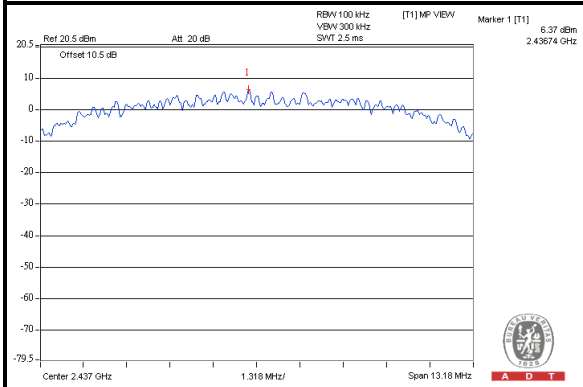
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802.11b DSSS MODULATION:

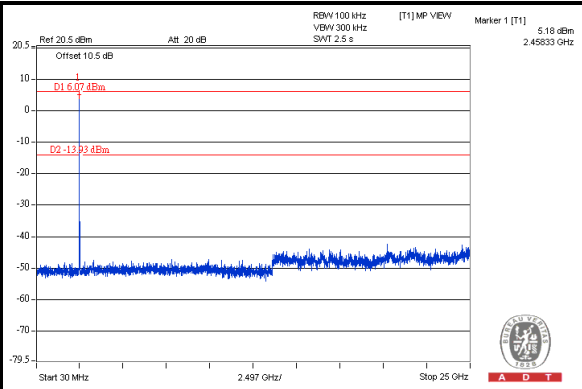
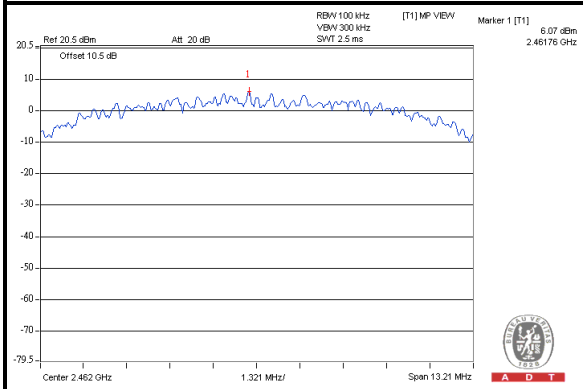
CH 1



CH 6



CH 11

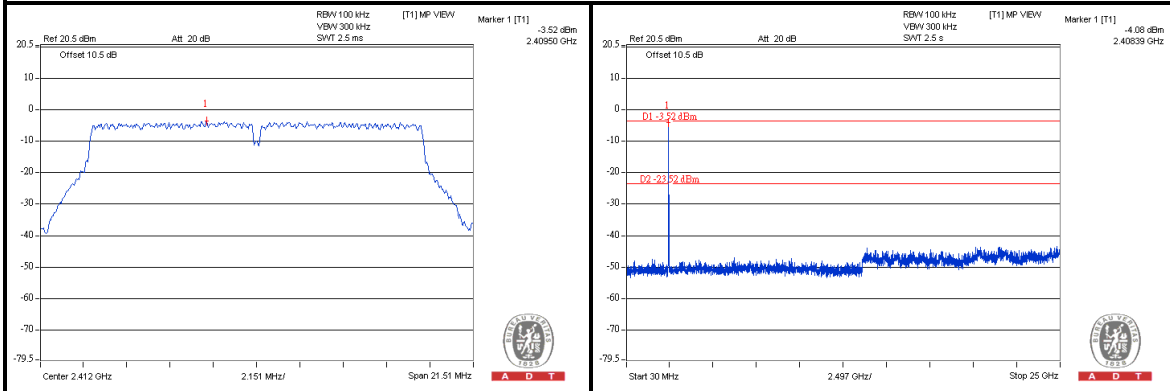




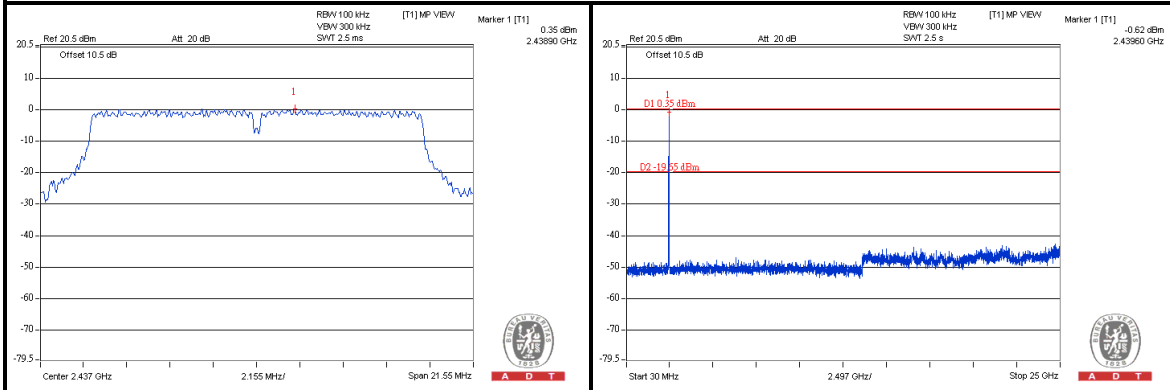
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802.11g OFDM MODULATION:

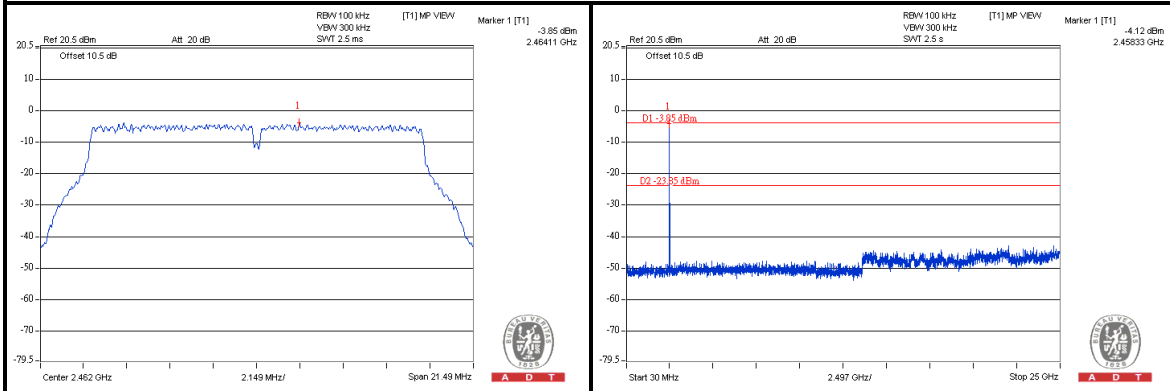
CH 1



CH 6



CH 11

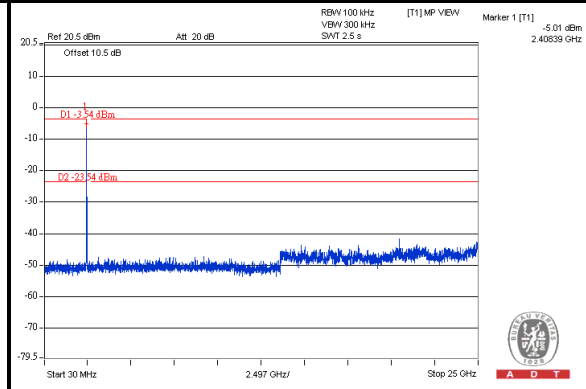
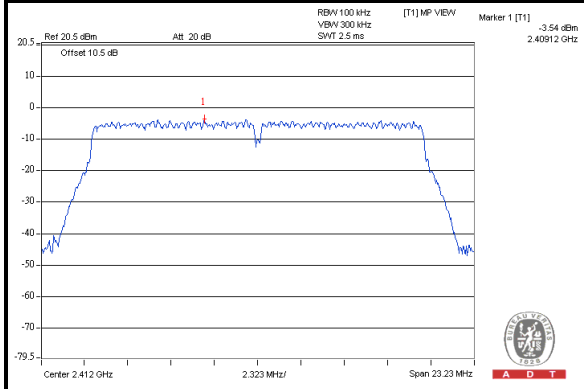




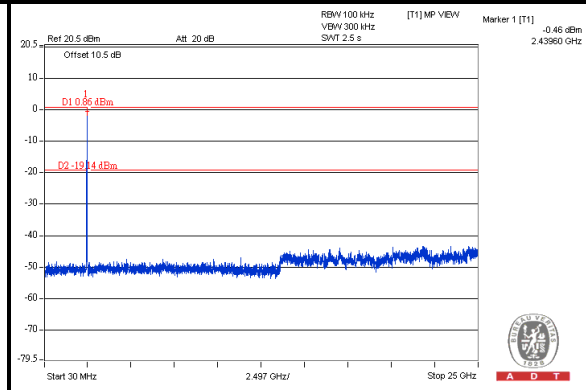
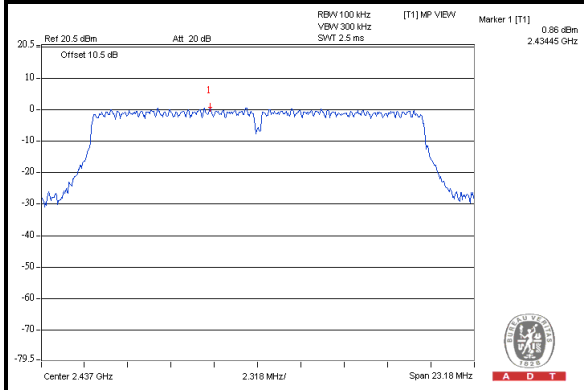
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802.11n (20MHz) OFDM MODULATION:

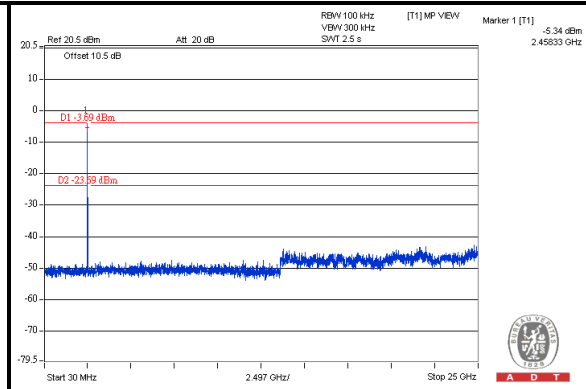
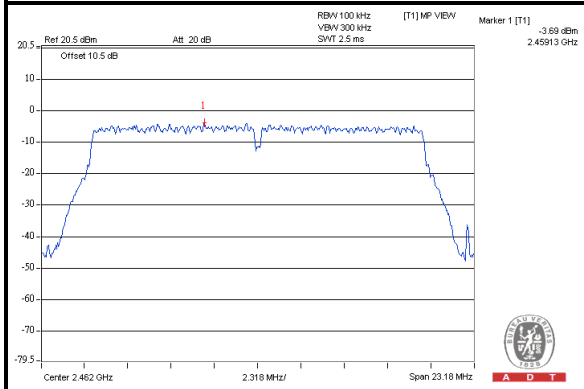
CH 1



CH 6



CH 11

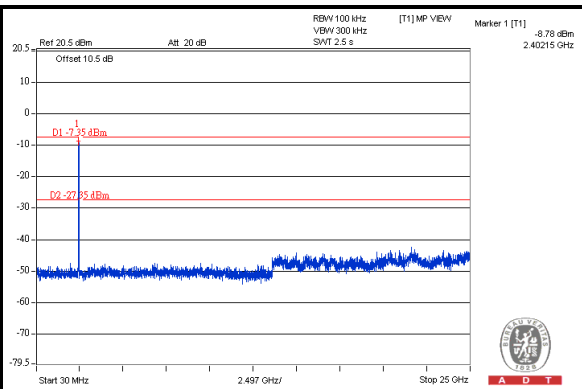
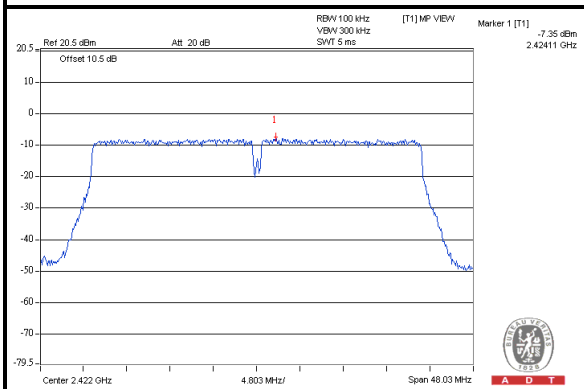




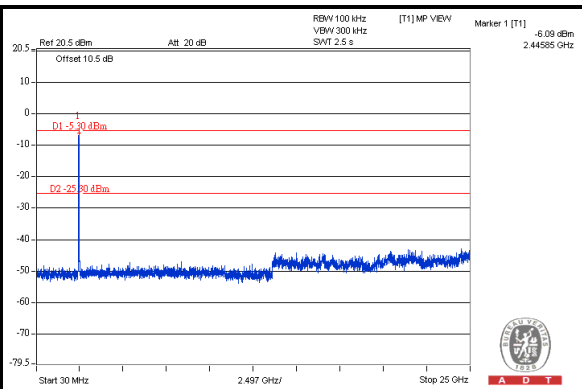
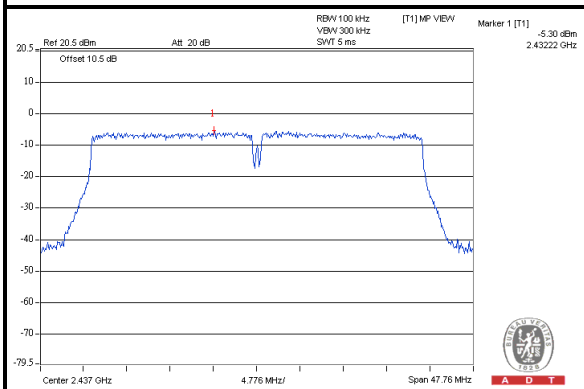
A D T

802.11n (40MHz) OFDM MODULATION:

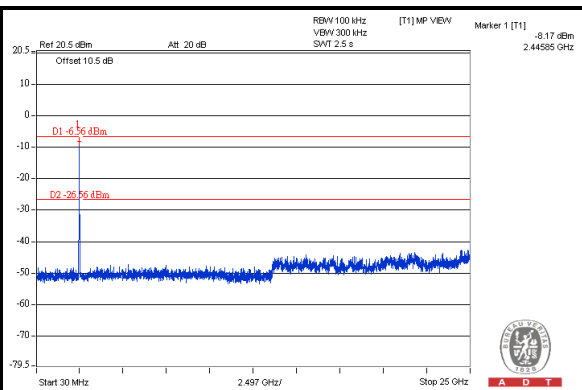
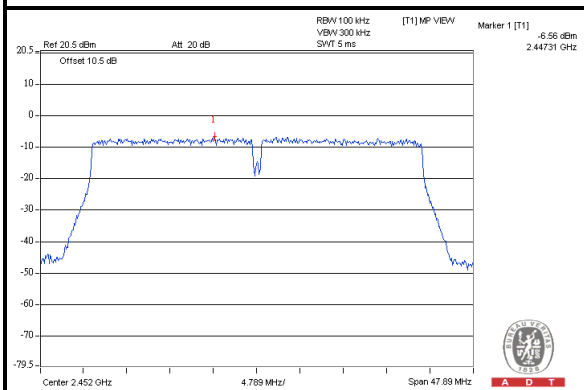
CH 3



CH 6



CH 9





5. 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.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5.phtml.

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: 886-3-3185050

Email: service.adt@tw.bureauveritas.com

Web Site: 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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6.APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

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

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