

FCC TEST REPORT

REPORT NO.: RF120418E09

MODEL NO.: DIR-601L

FCC ID: KA2IR601LA1

RECEIVED: Apr. 18, 2012

TESTED: May 09 to 15, 2012

ISSUED: May 30, 2012

APPLICANT: D-Link Corporation

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

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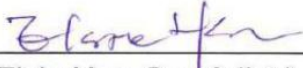
RELEASE CONTROL RECORD

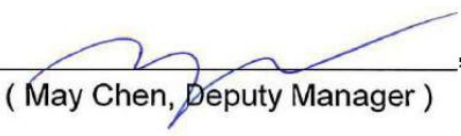
ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120418E09	Original release	May 30, 2012

1. CERTIFICATION

PRODUCT: Wireless N 150 Cloud Router
BRAND NAME: D-Link
MODEL NO.: DIR-601L
TEST SAMPLE: MASS-PRODUCTION
APPLICANT: D-Link Corporation
TESTED: May 09 to 15, 2012
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (Model: DIR-601L) 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:** May 30, 2012
(Elsie Hsu, Specialist)

APPROVED BY : , **DATE:** May 30, 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 -13.95dB at 3.01172MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2489.34MHz & 2390.00MHz
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)	4.89 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless N 150 Cloud Router
MODEL NO.	DIR-601L
POWER SUPPLY	DC 5V from power adapter
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 HT20 (800ns GI): Up to 65Mbps HT40 (800ns GI): Up to 135Mbps. HT20 (400ns GI): Up to 72.2Mbps. HT40 (400ns GI): Up to 150.0Mbps.
OPERATING FREQUENCY	2.412 ~ 2.462GHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 147.911mW 802.11g: 204.174mW 802.11n (20MHz): 162.181mW 802.11n (40MHz): 125.893mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter × 1

NOTE:

1. The antenna provided to the EUT, please refer to the following table:

Manufacture	Model name	Peak Gain (dBi) (Net gain)	Antenna Type	Connector Type
Alpha	NA	1.83	Printed	NA

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

No.	Manufacturer	Brand	Model No.	Spec.
1	Yeou Diann	D-Link	AMS47-0501000FU	Input: 100-240V, 0.2A, 50/60Hz Output: 5V, 1A Power core: DC output cable (1.5m, unshielded)

3. The EUT incorporates a SISO function.

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

4. The EUT is 1 * 1 spatial SISO (1Tx & 1Rx) without beam forming function.
5. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
6. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

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

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

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

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

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission **RE < 1G**: Radiated Emission below 1GHz
RE ³ 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	1	OFDM	BPSK	6

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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

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 (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	TESTED BY
PLC	27deg. C, 63%RH	120Vac, 60Hz	Kyle Huang
RE<1G	27deg. C, 62%RH	120Vac, 60Hz	Nelson Teng
RE ³ 1G	25deg. C, 65%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu
OB	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu



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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 is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



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3.4 DESCRIPTION OF SUPPORT UNITS

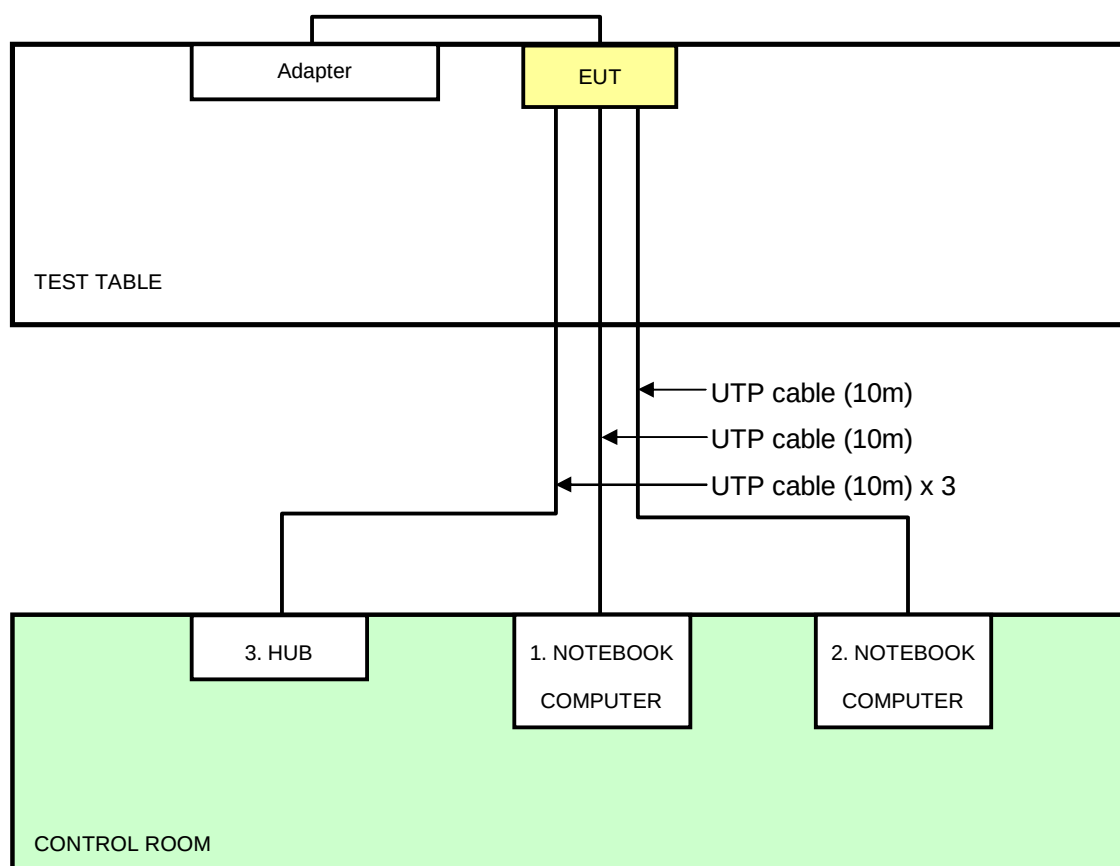
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC

No.	Signal cable description
1	UTP cable (10m)
2	UTP cable (10m)
3	UTP cable (10m)

Note: The power cords of the above support units were unshielded (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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Feb. 29, 2012	Feb. 28, 2013
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 10, 2011	June 09, 2012
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 06, 2011	Aug. 05, 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. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: May 11, 2012

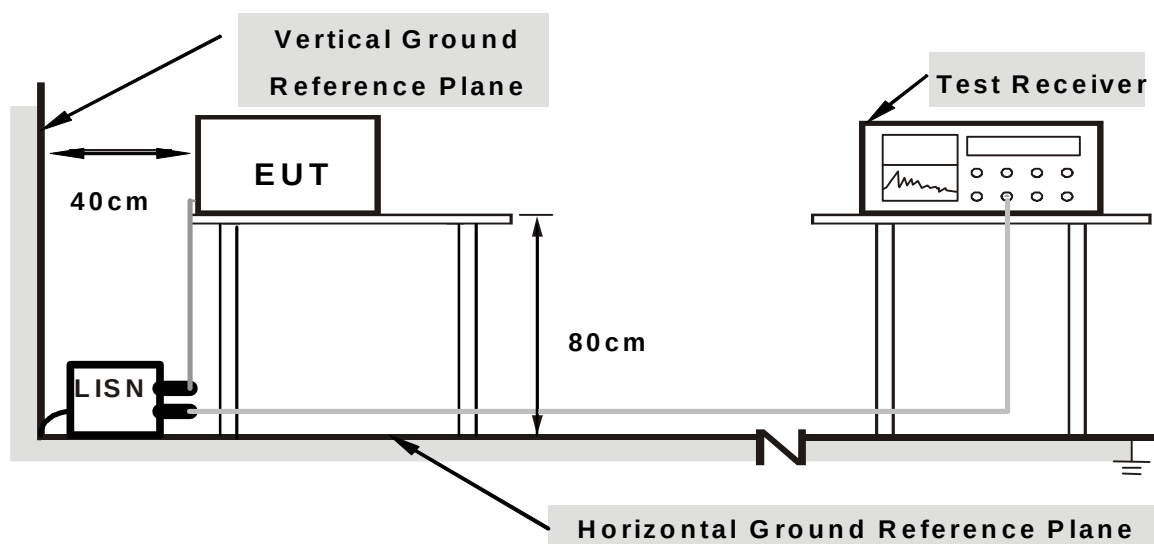
4.1.3 TEST PROCEDURES

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

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

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared computer system (support unit 1~2) to act as communication partner.
3. The communication partner ran test program “RT5350QA.exe” to enable EUT under transmission/receiving condition continuously.

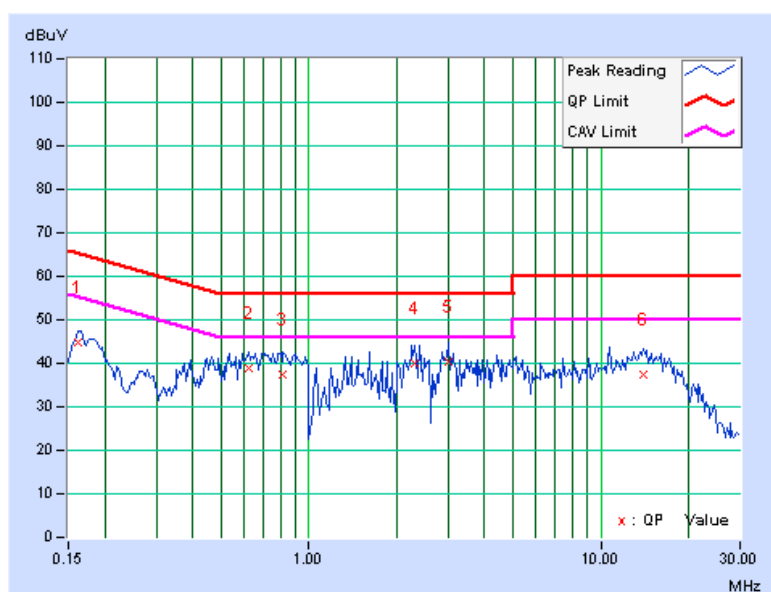
4.1.7 TEST RESULTS

PHASE	Line (L)	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	0.16172	0.06	44.87	39.60	44.93	39.66	65.38	55.38	-20.45	-15.72
2	0.62266	0.09	38.74	28.65	38.83	28.74	56.00	46.00	-17.17	-17.26
3	0.81797	0.10	37.18	27.98	37.28	28.08	56.00	46.00	-18.72	-17.92
4	2.31641	0.20	39.96	31.68	40.16	31.88	56.00	46.00	-15.84	-14.12
5	3.01172	0.23	40.08	31.82	40.31	32.05	56.00	46.00	-15.69	-13.95
6	14.00781	0.50	36.82	27.78	37.32	28.28	60.00	50.00	-22.68	-21.72

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.

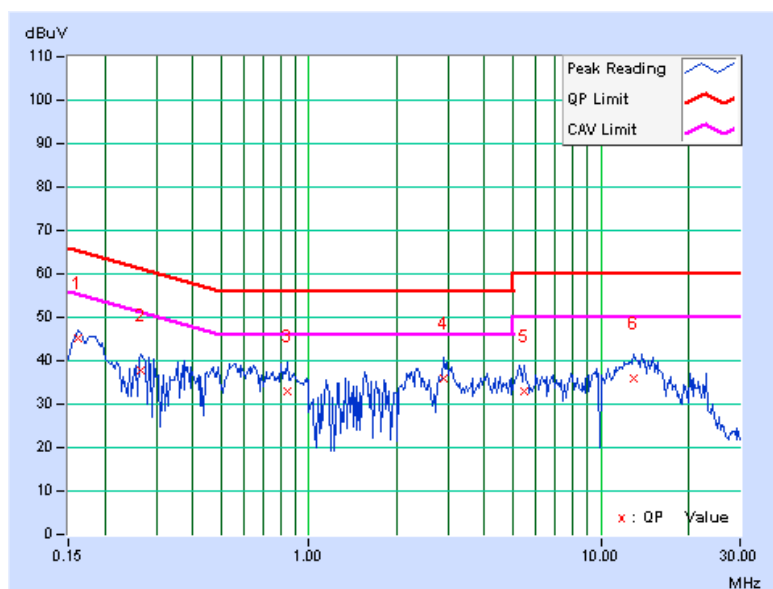


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.07	44.97	39.64	45.04	39.71	65.38	55.38	-20.34	-15.67
2	0.26719	0.07	37.66	23.37	37.73	23.44	61.20	51.20	-23.47	-27.76
3	0.84531	0.11	32.89	22.91	33.00	23.02	56.00	46.00	-23.00	-22.98
4	2.91016	0.21	35.85	27.20	36.06	27.41	56.00	46.00	-19.94	-18.59
5	5.44531	0.28	32.62	22.91	32.90	23.19	60.00	50.00	-27.10	-26.81
6	12.93359	0.45	35.56	25.29	36.01	25.74	60.00	50.00	-23.99	-24.26

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
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2011	Nov. 29 , 2012
HP Pre_Amplifier	8449B	300801923	Oct. 31, 2011	Oct. 30, 2012
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 02, 2011	Sep. 01, 2012
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 02, 2012	Apr. 01, 2013
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 16, 2011	Dec. 15, 2012
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2012	Jan. 16, 2013
RF Switches	EMH-011	1001	Sep. 24, 2011	Sep. 23, 2012
RF CABLE (Chaintek)	Sucoflex 106	RF106-102	Jan. 19, 2012	Jan. 18, 2013
RF Cable	8DFB	STCCAB-30M-1GHz	Sep. 24, 2011	Sep. 23, 2012
Software	ADT_Radiated_V7.6.15.9.2	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) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
- 5 The VCCI Site Registration No. is R-1626.
- 6 The CANADA Site Registration No. is IC 7450G-3.
- 7 Tested Date: May 09 to 15, 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 10 meters open field site. 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.

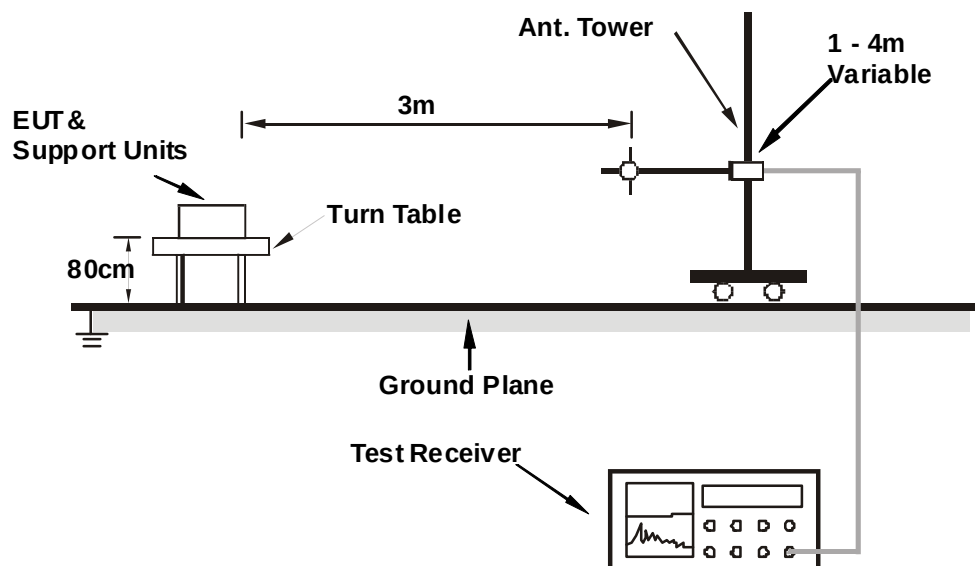
NOTE:

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

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	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	125.13	20.2 QP	43.5	-23.3	1.00 H	249	7.07	13.17
2	360.17	32.5 QP	46.0	-13.6	1.00 H	6	14.39	18.06
3	500.13	30.2 QP	46.0	-15.8	1.25 H	75	8.09	22.11
4	625.22	28.6 QP	46.0	-17.4	1.50 H	230	2.55	26.06
5	750.42	40.0 QP	46.0	-6.0	1.00 H	159	12.36	27.64
6	999.97	33.7 QP	54.0	-20.3	1.00 H	251	3.24	30.45
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	125.03	28.9 QP	43.5	-14.6	1.50 V	121	15.78	13.16
2	250.17	35.1 QP	46.0	-10.9	1.00 V	210	20.73	14.39
3	360.17	34.1 QP	46.0	-11.9	1.00 V	293	16.03	18.06
4	500.17	32.0 QP	46.0	-14.0	1.25 V	300	9.85	22.12
5	624.99	27.1 QP	46.0	-18.9	1.75 V	220	1.03	26.05
6	999.91	35.2 QP	54.0	-18.8	1.75 V	21	4.78	30.45

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

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	60.3 PK	74.0	-13.7	1.91 H	41	30.52	29.78
2	2390.00	50.9 AV	54.0	-3.1	1.91 H	41	21.12	29.78
3	*2412.00	109.4 PK			1.91 H	41	79.53	29.87
4	*2412.00	107.2 AV			1.91 H	41	77.33	29.87
5	4824.00	54.7 PK	74.0	-19.3	1.60 H	318	19.44	35.26
6	4824.00	52.6 AV	54.0	-1.4	1.60 H	318	17.34	35.26

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.9 PK	74.0	-14.1	1.64 V	92	30.12	29.78
2	2390.00	50.0 AV	54.0	-4.0	1.64 V	92	20.22	29.78
3	*2412.00	108.9 PK			1.64 V	92	79.03	29.87
4	*2412.00	106.8 AV			1.64 V	92	76.93	29.87
5	4824.00	49.0 PK	74.0	-25.0	1.02 V	110	13.74	35.26
6	4824.00	44.7 AV	54.0	-9.3	1.02 V	110	9.44	35.26

REMARKS:

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

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	109.8 PK			1.89 H	43	79.84	29.96
2	*2437.00	107.8 AV			1.89 H	43	77.84	29.96
3	4874.00	47.8 PK	74.0	-26.2	1.14 H	315	12.48	35.32
4	4874.00	42.5 AV	54.0	-11.5	1.14 H	315	7.18	35.32
5	7311.00	54.3 PK	74.0	-19.7	1.32 H	47	12.80	41.50
6	7311.00	48.6 AV	54.0	-5.4	1.32 H	47	7.10	41.50
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	108.5 PK			1.66 V	88	78.54	29.96
2	*2437.00	106.4 AV			1.66 V	88	76.44	29.96
3	4874.00	44.8 PK	74.0	-29.2	1.24 V	189	9.48	35.32
4	4874.00	36.5 AV	54.0	-17.5	1.24 V	189	1.18	35.32
5	7311.00	57.2 PK	74.0	-16.8	1.32 V	342	15.70	41.50
6	7311.00	52.9 AV	54.0	-1.1	1.32 V	342	11.40	41.50

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.

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	110.4 PK			1.90 H	41	80.34	30.06
2	*2462.00	108.4 AV			1.90 H	41	78.34	30.06
3	2483.50	61.6 PK	74.0	-12.4	1.89 H	42	31.46	30.14
4	2483.50	53.0 AV	54.0	-1.0	1.89 H	42	22.86	30.14
5	4924.00	48.6 PK	74.0	-25.4	1.31 H	311	13.20	35.40
6	4924.00	44.1 AV	54.0	-9.9	1.31 H	311	8.70	35.40
7	7386.00	53.9 PK	74.0	-20.1	1.27 H	44	12.19	41.71
8	7386.00	48.2 AV	54.0	-5.8	1.27 H	44	6.49	41.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.9 PK			1.65 V	73	77.84	30.06
2	*2462.00	105.9 AV			1.65 V	73	75.84	30.06
3	2483.50	61.3 PK	74.0	-12.7	1.66 V	98	31.16	30.14
4	2483.50	52.2 AV	54.0	-1.8	1.66 V	98	22.06	30.14
5	4924.00	48.8 PK	74.0	-25.2	1.51 V	174	13.40	35.40
6	4924.00	43.9 AV	54.0	-10.1	1.51 V	174	8.50	35.40
7	7386.00	56.9 PK	74.0	-17.1	1.32 V	343	15.19	41.71
8	7386.00	52.6 AV	54.0	-1.4	1.32 V	343	10.89	41.71

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

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	67.4 PK	74.0	-6.6	1.90 H	47	37.62	29.78
2	2390.00	53.0 AV	54.0	-1.0	1.90 H	47	23.22	29.78
3	*2412.00	110.4 PK			1.91 H	47	80.53	29.87
4	*2412.00	101.3 AV			1.91 H	47	71.43	29.87
5	4824.00	44.1 PK	74.0	-29.9	1.18 H	326	8.84	35.26
6	4824.00	31.5 AV	54.0	-22.5	1.18 H	326	-3.76	35.26
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.8 PK	74.0	-14.2	1.61 V	95	30.02	29.78
2	2390.00	47.5 AV	54.0	-6.5	1.61 V	95	17.72	29.78
3	*2412.00	106.9 PK			1.61 V	93	77.03	29.87
4	*2412.00	98.7 AV			1.61 V	93	68.83	29.87
5	4824.00	44.2 PK	74.0	-29.8	1.23 V	189	8.94	35.26
6	4824.00	32.0 AV	54.0	-22.0	1.23 V	189	-3.26	35.26

REMARKS:

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

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	2384.88	62.6 PK	74.0	-11.4	1.89 H	44	32.84	29.76
2	2384.88	52.7 AV	54.0	-1.3	1.89 H	44	22.94	29.76
3	*2437.00	111.1 PK			1.81 H	45	81.14	29.96
4	*2437.00	102.5 AV			1.81 H	45	72.54	29.96
5	2489.34	63.1 PK	74.0	-10.9	1.47 H	53	32.94	30.16
6	2489.34	53.5 AV	54.0	-0.5	1.47 H	53	23.34	30.16
7	4874.00	43.9 PK	74.0	-30.1	1.13 H	327	8.58	35.32
8	4874.00	31.3 AV	54.0	-22.7	1.13 H	327	-4.02	35.32
9	7311.00	57.3 PK	74.0	-16.7	1.21 H	38	15.80	41.50
10	7311.00	44.3 AV	54.0	-9.7	1.21 H	38	2.80	41.50
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	107.0 PK			1.63 V	95	77.04	29.96
2	*2437.00	98.7 AV			1.63 V	95	68.74	29.96
3	4874.00	44.1 PK	74.0	-29.9	1.20 V	188	8.78	35.32
4	4874.00	31.7 AV	54.0	-22.3	1.20 V	188	-3.62	35.32
5	7311.00	57.4 PK	74.0	-16.6	1.31 V	347	15.90	41.50
6	7311.00	44.5 AV	54.0	-9.5	1.31 V	347	3.00	41.50

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.9 PK			1.69 H	44	79.84	30.06
2	*2462.00	101.5 AV			1.69 H	44	71.44	30.06
3	2483.50	71.7 PK	74.0	-2.3	1.70 H	45	41.56	30.14
4	2483.50	53.4 AV	54.0	-0.6	1.70 H	45	23.26	30.14
5	4924.00	44.0 PK	74.0	-30.0	1.16 H	322	8.60	35.40
6	4924.00	31.5 AV	54.0	-22.5	1.16 H	322	-3.90	35.40
7	7386.00	57.0 PK	74.0	-17.0	1.26 H	42	15.29	41.71
8	7386.00	44.1 AV	54.0	-9.9	1.26 H	42	2.39	41.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.7 PK			1.66 V	98	76.64	30.06
2	*2462.00	97.9 AV			1.66 V	98	67.84	30.06
3	2483.50	61.9 PK	74.0	-12.1	1.66 V	99	31.76	30.14
4	2483.50	49.0 AV	54.0	-5.0	1.66 V	99	18.86	30.14
5	4924.00	44.2 PK	74.0	-29.8	1.15 V	173	8.80	35.40
6	4924.00	31.8 AV	54.0	-22.2	1.15 V	173	-3.60	35.40
7	7386.00	57.7 PK	74.0	-16.3	1.33 V	339	15.99	41.71
8	7386.00	44.4 AV	54.0	-9.6	1.33 V	339	2.69	41.71

REMARKS:

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

802.11n (20MHz)

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	68.8 PK	74.0	-5.2	1.89 H	45	39.02	29.78
2	2390.00	53.5 AV	54.0	-0.5	1.89 H	45	23.72	29.78
3	*2412.00	109.0 PK			1.89 H	45	79.13	29.87
4	*2412.00	100.5 AV			1.89 H	45	70.63	29.87
5	4824.00	43.6 PK	74.0	-30.4	1.17 H	329	8.34	35.26
6	4824.00	31.0 AV	54.0	-23.0	1.17 H	329	-4.26	35.26
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.4 PK	74.0	-10.6	1.69 V	94	33.62	29.78
2	2390.00	48.7 AV	54.0	-5.3	1.69 V	94	18.92	29.78
3	*2412.00	106.0 PK			1.69 V	97	76.13	29.87
4	*2412.00	97.5 AV			1.69 V	97	67.63	29.87
5	4824.00	43.9 PK	74.0	-30.1	1.28 V	195	8.64	35.26
6	4824.00	32.0 AV	54.0	-22.0	1.28 V	195	-3.26	35.26

REMARKS:

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

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	2385.30	61.1 PK	74.0	-12.9	1.89 H	49	31.34	29.76
2	2385.30	50.7 AV	54.0	-3.3	1.89 H	49	20.94	29.76
3	*2437.00	110.6 PK			1.82 H	44	80.64	29.96
4	*2437.00	101.8 AV			1.82 H	44	71.84	29.96
5	2488.74	63.5 PK	74.0	-10.5	1.47 H	50	33.34	30.16
6	2488.74	53.2 AV	54.0	-0.8	1.47 H	50	23.04	30.16
7	4874.00	43.9 PK	74.0	-30.1	1.12 H	328	8.58	35.32
8	4874.00	31.3 AV	54.0	-22.7	1.12 H	328	-4.02	35.32
9	7311.00	56.9 PK	74.0	-17.1	1.21 H	37	15.40	41.50
10	7311.00	44.3 AV	54.0	-9.7	1.21 H	37	2.80	41.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.29	59.2 PK	74.0	-14.8	1.75 V	98	29.44	29.76
2	2385.29	47.7 AV	54.0	-6.3	1.75 V	98	17.94	29.76
3	*2437.00	105.7 PK			1.71 V	86	75.74	29.96
4	*2437.00	97.4 AV			1.71 V	86	67.44	29.96
5	2488.74	61.4 PK	74.0	-12.6	1.66 V	99	31.24	30.16
6	2488.74	50.7 AV	54.0	-3.3	1.66 V	99	20.54	30.16
7	4874.00	44.0 PK	74.0	-30.0	1.21 V	198	8.68	35.32
8	4874.00	31.6 AV	54.0	-22.4	1.21 V	198	-3.72	35.32
9	7311.00	57.3 PK	74.0	-16.7	1.31 V	348	15.80	41.50
10	7311.00	44.5 AV	54.0	-9.5	1.31 V	348	3.00	41.50

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.

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	108.6 PK			1.68 H	43	78.54	30.06
2	*2462.00	100.1 AV			1.68 H	43	70.04	30.06
3	2483.50	69.7 PK	74.0	-4.3	1.69 H	44	39.56	30.14
4	2483.50	52.4 AV	54.0	-1.6	1.69 H	44	22.26	30.14
5	4924.00	44.2 PK	74.0	-29.8	1.17 H	340	8.80	35.40
6	4924.00	31.6 AV	54.0	-22.4	1.17 H	340	-3.80	35.40
7	7386.00	56.7 PK	74.0	-17.3	1.23 H	33	14.99	41.71
8	7386.00	44.0 AV	54.0	-10.0	1.23 H	33	2.29	41.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.1 PK			1.66 V	97	75.04	30.06
2	*2462.00	96.7 AV			1.66 V	97	66.64	30.06
3	2483.50	63.9 PK	74.0	-10.1	1.66 V	96	33.76	30.14
4	2483.50	48.7 AV	54.0	-5.3	1.66 V	96	18.56	30.14
5	4924.00	43.9 PK	74.0	-30.1	1.16 V	187	8.50	35.40
6	4924.00	31.8 AV	54.0	-22.2	1.16 V	187	-3.60	35.40
7	7386.00	56.8 PK	74.0	-17.2	1.30 V	328	15.09	41.71
8	7386.00	43.8 AV	54.0	-10.2	1.30 V	328	2.09	41.71

REMARKS:

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

802.11n (40MHz)

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	67.8 PK	74.0	-6.2	1.89 H	46	38.02	29.78
2	2390.00	52.7 AV	54.0	-1.3	1.89 H	46	22.92	29.78
3	*2422.00	103.7 PK			1.82 H	43	73.80	29.90
4	*2422.00	95.8 AV			1.82 H	43	65.90	29.90
5	4844.00	43.4 PK	74.0	-30.6	1.20 H	319	8.12	35.28
6	4844.00	30.9 AV	54.0	-23.1	1.20 H	319	-4.38	35.28
7	7266.00	57.3 PK	74.0	-16.7	1.27 H	45	15.88	41.42
8	7266.00	44.5 AV	54.0	-9.5	1.27 H	45	3.08	41.42
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	66.1 PK	74.0	-7.9	1.58 V	86	36.32	29.78
2	2390.00	50.5 AV	54.0	-3.5	1.58 V	86	20.72	29.78
3	*2422.00	100.4 PK			1.58 V	86	70.50	29.90
4	*2422.00	92.3 AV			1.58 V	86	62.40	29.90
5	4844.00	43.6 PK	74.0	-30.4	1.18 V	201	8.32	35.28
6	4844.00	31.2 AV	54.0	-22.8	1.18 V	201	-4.08	35.28
7	7266.00	57.1 PK	74.0	-16.9	1.27 V	335	15.68	41.42
8	7266.00	44.7 AV	54.0	-9.3	1.27 V	335	3.28	41.42

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.

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	62.9 PK	74.0	-11.1	1.90 H	45	33.12	29.78
2	2390.00	49.8 AV	54.0	-4.2	1.90 H	45	20.02	29.78
3	*2437.00	106.4 PK			1.80 H	44	76.44	29.96
4	*2437.00	98.3 AV			1.80 H	44	68.34	29.96
5	2483.50	67.5 PK	74.0	-6.5	1.68 H	43	37.36	30.14
6	2483.50	52.8 AV	54.0	-1.2	1.68 H	43	22.66	30.14
7	4874.00	43.3 PK	74.0	-30.7	1.24 H	315	7.98	35.32
8	4874.00	31.4 AV	54.0	-22.6	1.24 H	315	-3.92	35.32
9	7311.00	56.8 PK	74.0	-17.2	1.32 H	49	15.30	41.50
10	7311.00	44.2 AV	54.0	-9.8	1.32 H	49	2.70	41.50
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	103.7 PK			1.60 V	89	73.74	29.96
2	*2437.00	95.6 AV			1.60 V	89	65.64	29.96
3	4874.00	43.9 PK	74.0	-30.1	1.20 V	213	8.58	35.32
4	4874.00	31.3 AV	54.0	-22.7	1.20 V	213	-4.02	35.32
5	7311.00	56.8 PK	74.0	-17.2	1.21 V	333	15.30	41.50
6	7311.00	44.4 AV	54.0	-9.6	1.21 V	333	2.90	41.50

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.

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	102.4 PK			1.69 H	43	72.38	30.02
2	*2452.00	94.2 AV			1.69 H	43	64.18	30.02
3	2483.50	68.3 PK	74.0	-5.7	1.69 H	43	38.16	30.14
4	2483.50	52.8 AV	54.0	-1.2	1.69 H	43	22.66	30.14
5	4904.00	42.9 PK	74.0	-31.1	1.27 H	315	7.54	35.36
6	4904.00	30.8 AV	54.0	-23.2	1.27 H	315	-4.56	35.36
7	7356.00	57.4 PK	74.0	-16.6	1.35 H	38	15.77	41.63
8	7356.00	44.5 AV	54.0	-9.5	1.35 H	38	2.87	41.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	99.7 PK			1.57 V	77	69.68	30.02
2	*2452.00	91.5 AV			1.57 V	77	61.48	30.02
3	2483.50	65.8 PK	74.0	-8.2	1.52 V	77	35.66	30.14
4	2483.50	50.6 AV	54.0	-3.4	1.52 V	77	20.46	30.14
5	4904.00	43.8 PK	74.0	-30.2	1.14 V	204	8.44	35.36
6	4904.00	31.5 AV	54.0	-22.5	1.14 V	204	-3.86	35.36
7	7356.00	57.1 PK	74.0	-16.9	1.22 V	343	15.47	41.63
8	7356.00	44.5 AV	54.0	-9.5	1.22 V	343	2.87	41.63

REMARKS:

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

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

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

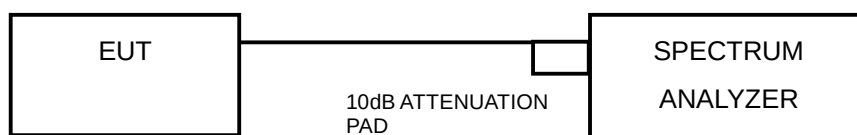
4.3.3 TEST PROCEDURE

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.

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.03	0.5	PASS
6	2437	12.01	0.5	PASS
11	2462	12.12	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.53	0.5	PASS
6	2437	16.54	0.5	PASS
11	2462	16.53	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.63	0.5	PASS
6	2437	17.67	0.5	PASS
11	2462	17.71	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.29	0.5	PASS
6	2437	36.32	0.5	PASS
9	2452	36.27	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
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 : May 10, 2012

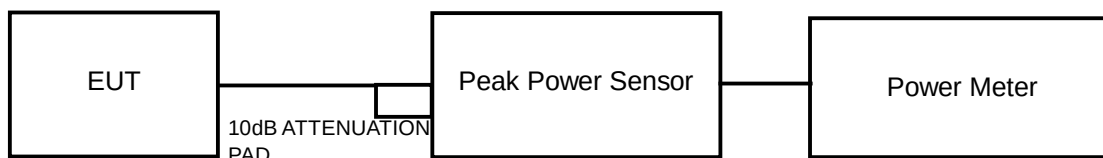
4.4.3 TEST PROCEDURES

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

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	147.911	21.7	30	PASS
6	2437	125.893	21.0	30	PASS
11	2462	112.202	20.5	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	204.174	23.1	30	PASS
6	2437	162.181	22.1	30	PASS
11	2462	125.893	21.0	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	162.181	22.1	30	PASS
6	2437	125.893	21.0	30	PASS
11	2462	109.648	20.4	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
3	2422	93.325	19.7	30	PASS
6	2437	125.893	21.0	30	PASS
9	2452	64.565	18.1	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

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

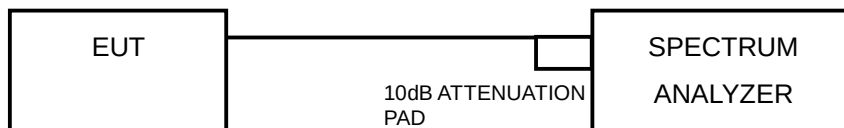
4.5.3 TEST PROCEDURE

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

4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	9.96	-5.27	8	PASS
6	2437	10.14	-5.09	8	PASS
11	2462	9.54	-5.69	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	3.11	-12.12	8	PASS
6	2437	2.62	-12.61	8	PASS
11	2462	0.77	-14.46	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.69	-12.54	8	PASS
6	2437	1.92	-13.31	8	PASS
11	2462	0.14	-15.09	8	PASS

802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-3.54	-18.77	8	PASS
6	2437	-2.05	-17.28	8	PASS
9	2452	-5.65	-20.88	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

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

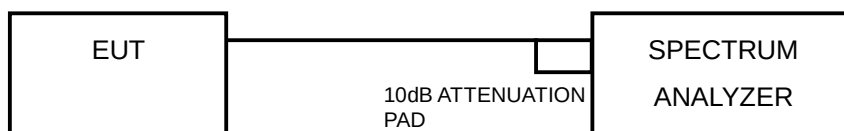
MEASUREMENT PROCEDURE OOB

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

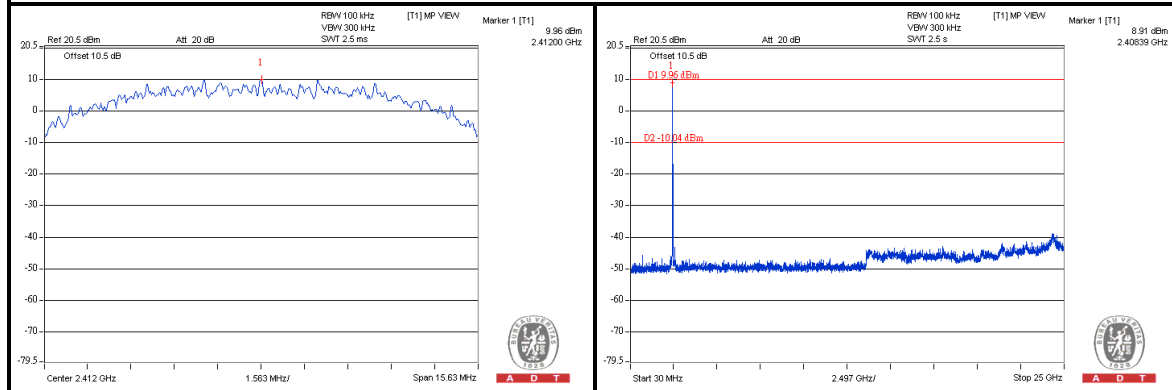
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



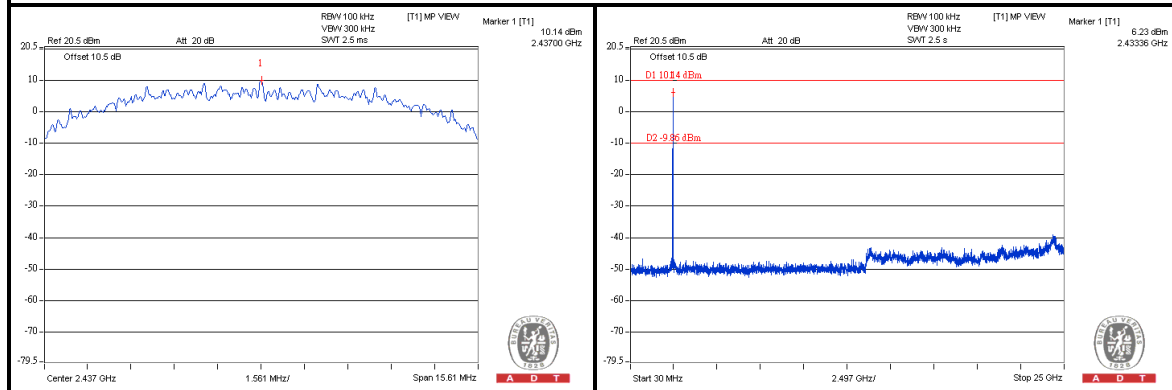
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802.11b

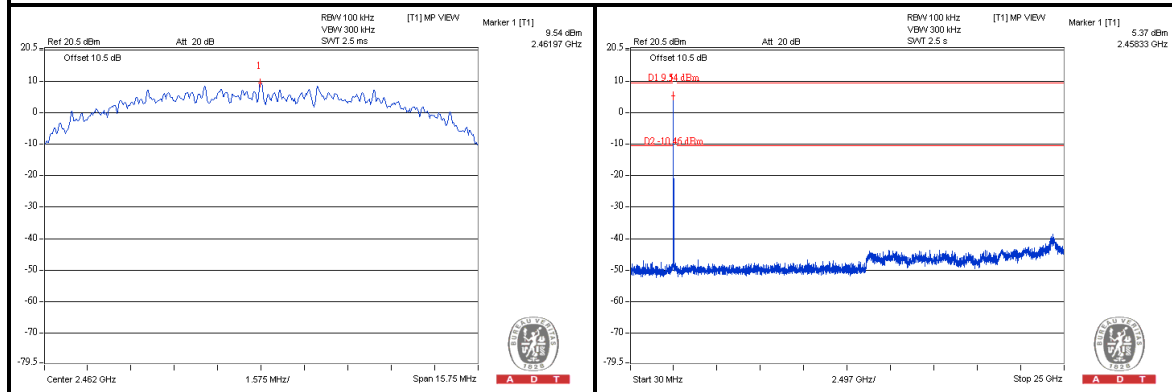
CH 1



CH 6



CH 11

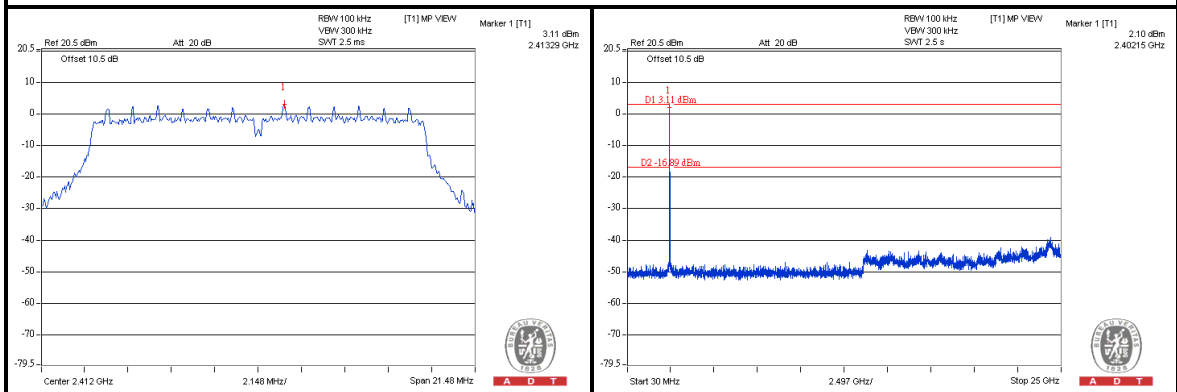




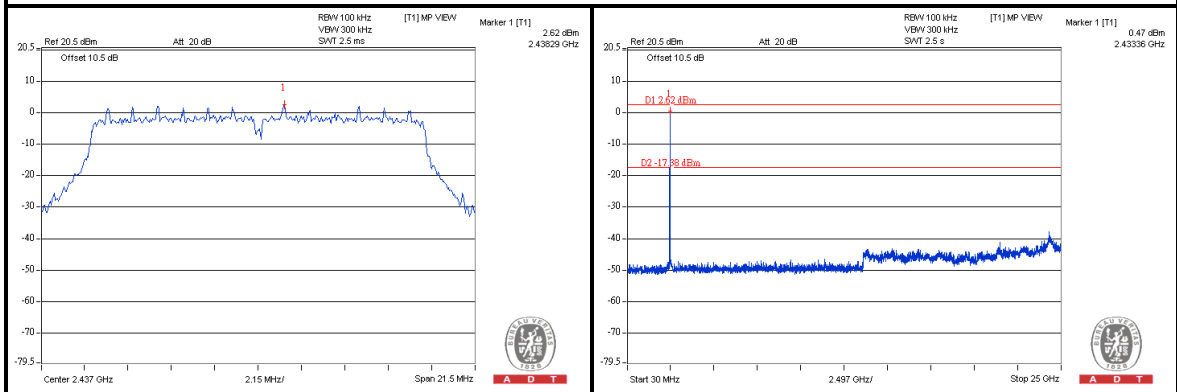
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802.11g

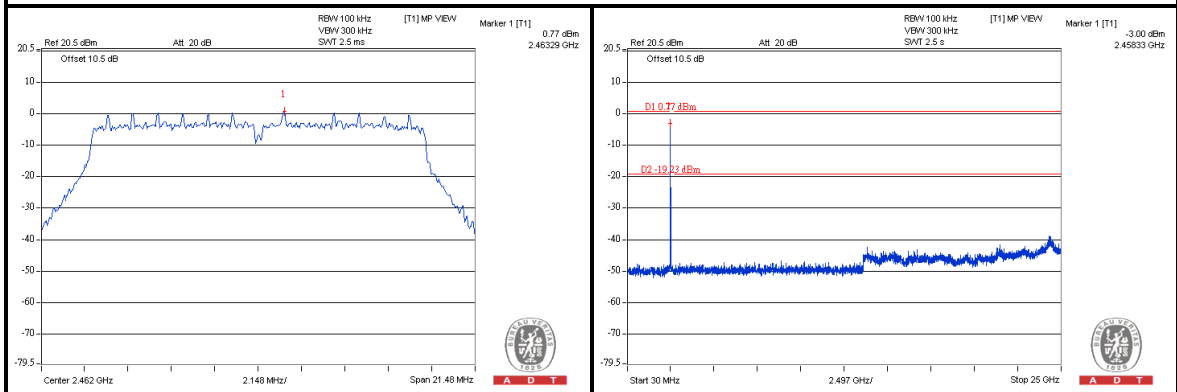
CH 1



CH 6

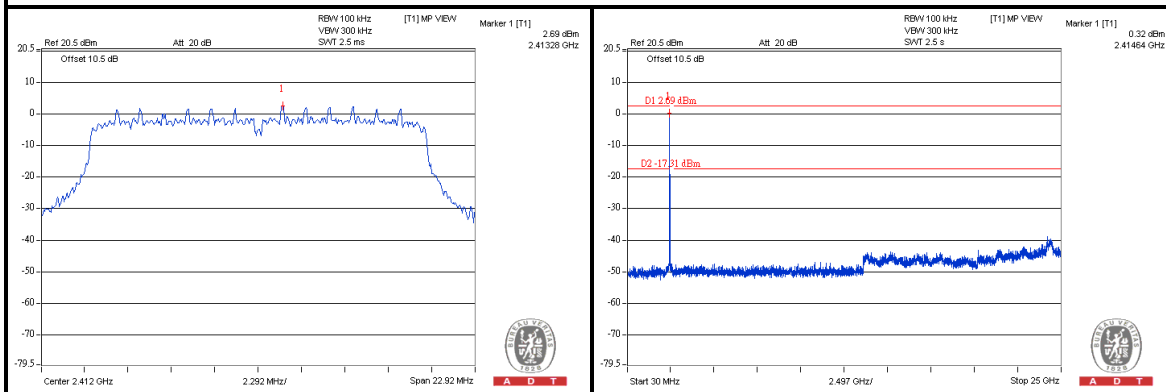


CH 11

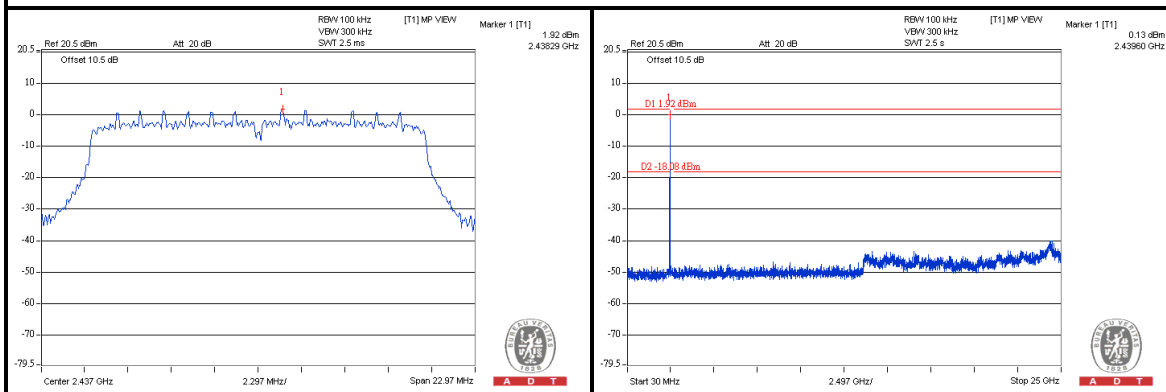


802.11n (20MHz)

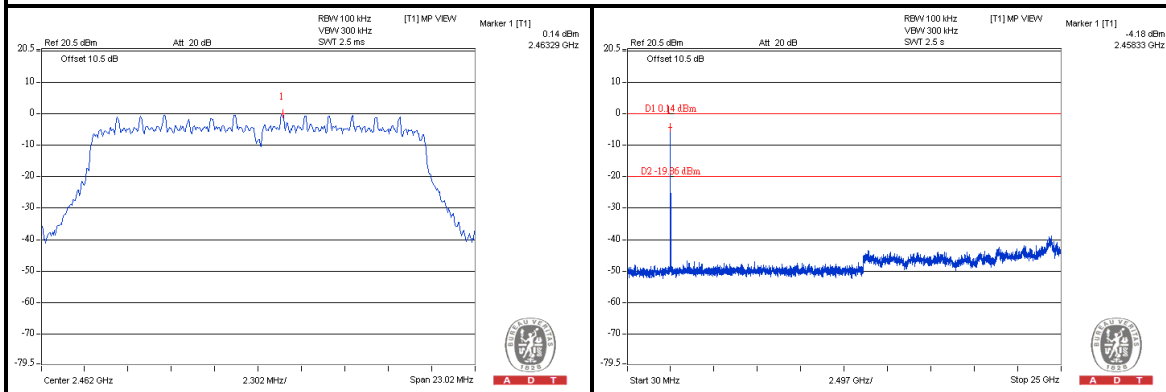
CH 1



CH 6



CH 11

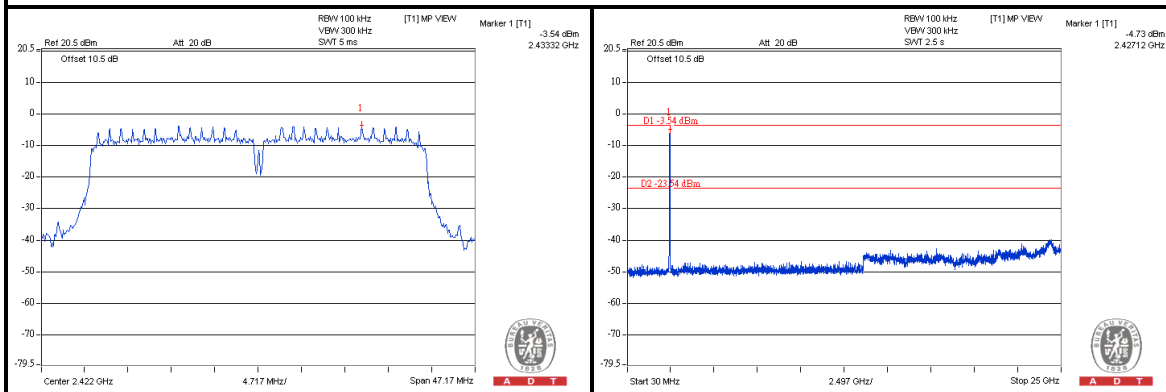




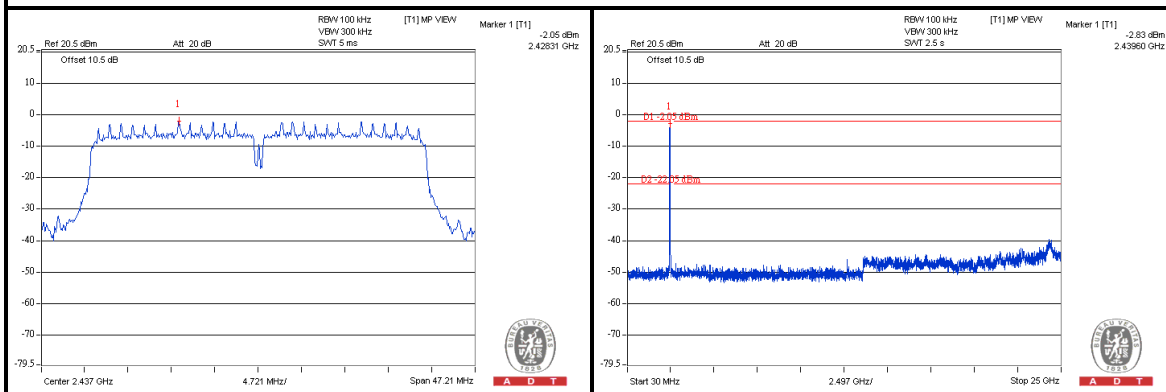
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802.11n (40MHz)

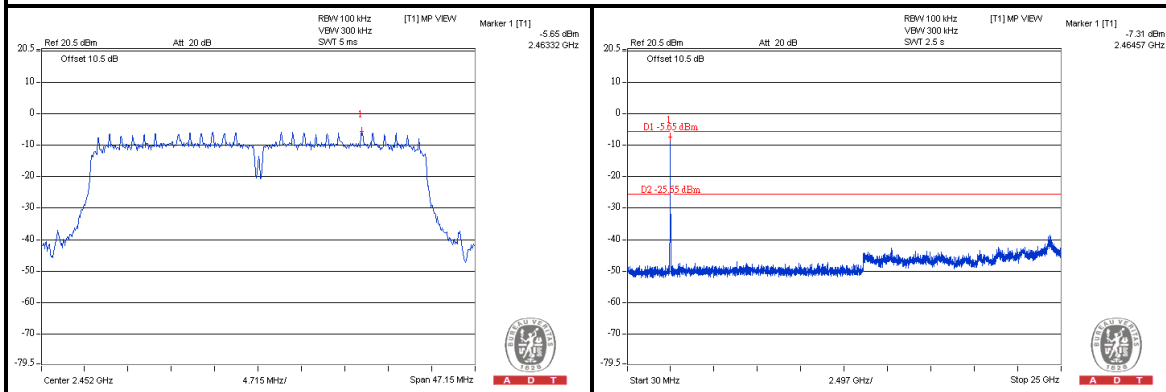
CH 3



CH 6



CH 9



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.

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:

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Fax: 886-3-3270892

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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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.

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