FCC TEST REPORT

REPORT NO.: RF121104E01E

MODEL NO.: RNX-N150NUB

FCC ID: W6RRNX-N150NUB

RECEIVED: Nov. 05, 2012

TESTED: Nov. 07 to 22, 2012 ; Mar. 25, 2015

ISSUED: Apr. 14, 2015

APPLICANT: Rosewill Inc.

ADDRESS: 17708 Rowland Street, City of Industry, CA 91748, USA

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

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

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

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF121104E01E	Original release	Apr. 14, 2015

1. CERTIFICATION

PRODUCT:	150Mbps Wireless N Nano USB Adapter
BRAND NAME:	TP-LINK
MODEL NO.:	RNX-N150NUB
TEST SAMPLE:	PROTOTYPE
APPLICANT:	Rosewill Inc.
TESTED:	Nov. 07 to 22, 2012 ; Mar. 25, 2015
STANDARDS:	FCC Part 15, Subpart C. (15.247) 558074 D01 DTS Meas Guidance v03r02 ANSI C63.10-2009

The above equipment (Model: RNX-N150NUB) 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:** Apr. 14, 2015
(Midoli Peng, Specialist)

Approved By : _____ , **Date:** Apr. 14, 2015
(May Chen, 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 -11.93dB at 0.21641MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.6dB at 2483.5MHz & 4824MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.69 dB
Radiated emissions (1GHz -6GHz)	3.56 dB
Radiated emissions (6GHz -18GHz)	4.10 dB
Radiated emissions (18GHz -40GHz)	4.24 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	150Mbps Wireless N Nano USB Adapter
MODEL NO.	RNX-N150NUB
POWER SUPPLY	DC 5V± 10% 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: Up to 150Mbps
OPERATING FREQUENCY	2.412 ~ 2.462GHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n HT20 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	802.11b: 102.329mW 802.11g: 239.883mW 802.11n (HT20): 229.087mW 802.11n (HT40): 190.546mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is a 2.4GHz WLAN device.

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

Brand	Model	Antenna Type	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Connector
Realtek	PIFA-RPA003	PIFA	-0.5	2400~2500	SMA Male Reverse

3. The EUT incorporates a SISO function.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX	1RX
802.11g	6 ~ 54Mbps	1TX	1RX
802.11n (HT20)	MCS 0~7	1TX	1RX
802.11n (HT40)	MCS 0~7	1TX	1RX

4. 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 (HT20):

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 (HT40):

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

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**

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	11	OFDM	BPSK	6

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	11	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 (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	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 (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	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 (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C, 53%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	24deg. C, 70%RH	120Vac, 60Hz	Weiwei Lo
RE≥1G	23deg. C, 70%RH 25deg. C, 65%RH	120Vac, 60Hz	Amos Chuang Weiwei Lo
APCM	25deg. C, 60%RH	120Vac, 60Hz	Amos Chuang
OB	25deg. C, 60%RH	120Vac, 60Hz	Amos Chuang

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 (Section 15.247)
558074 D01 DTS Meas Guidance v03r02
ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

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.

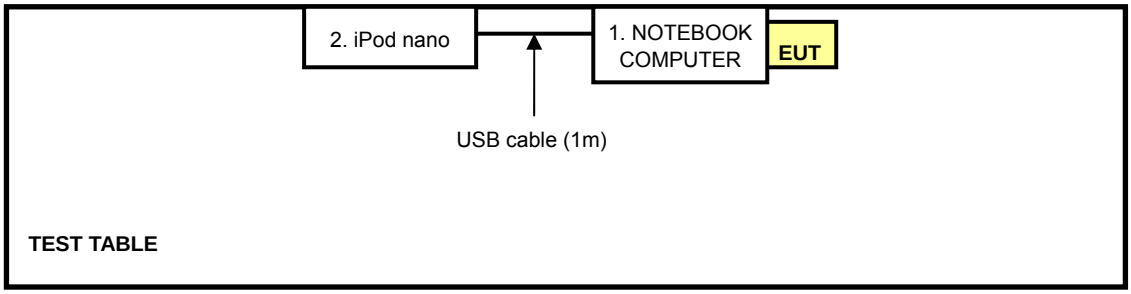
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER (For other test)	DELL	E6420	H62T3R1	FCC DoC
	NOTEBOOK COMPUTER(For conducted test)	DELL	E5430	4N1SKV1	FCC DoC
2	iPod shuffle (For other test)	Apple	MC749TA/A	CC4DN25WDFDM	NA
	iPod nano (For conducted test)	APPLE	A1199	YM712NB3VQ5	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	USB cable (1m) / USB cable (0.1m)

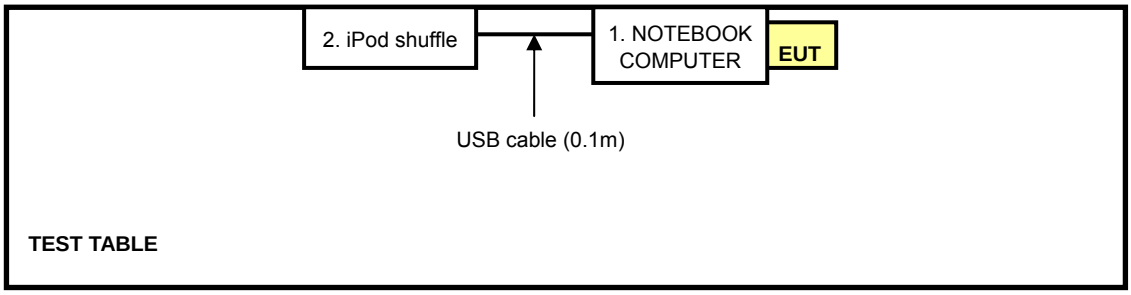
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted test



For other 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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100287	Feb. 29, 2012	Feb. 28, 2013
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 19, 2012	Sep. 20, 2013
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	848773/004	Oct. 29, 2012	Oct. 28, 2013
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 05, 2012	Aug. 04, 2013
50 ohms Terminator	50	3	Oct. 23, 2012	Oct. 22, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3 The VCCI Con A Registration No. is C-817.
4. Tested Date: Nov. 07, 2012

4.1.3 TEST PROCEDURES

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

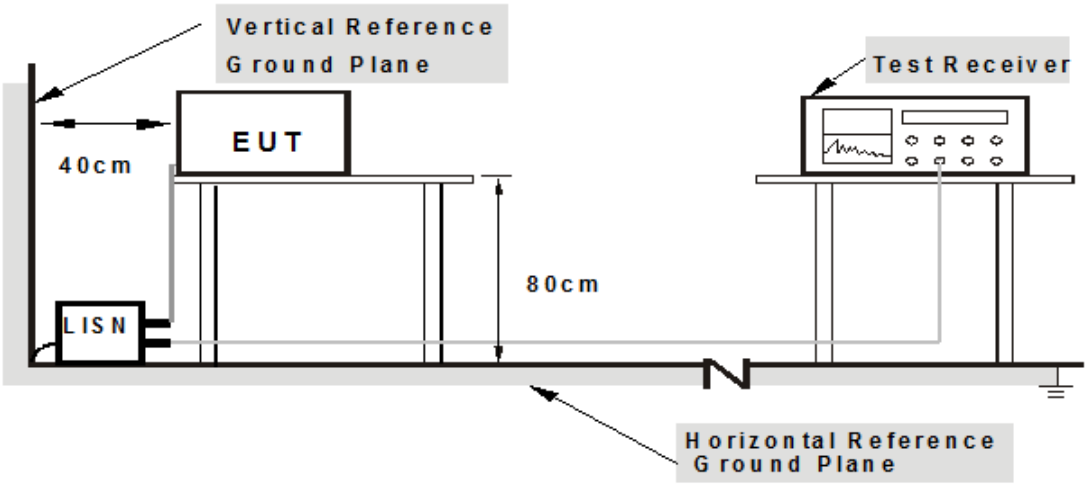
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “MP819xVC.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

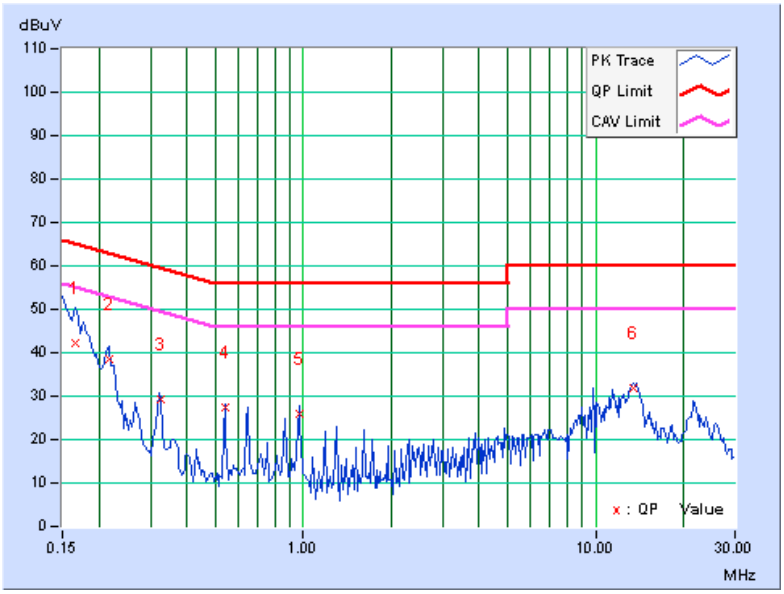
4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.09	41.98	40.85	42.07	40.94	65.18	55.18	-23.11	-14.24
2	0.21641	0.10	38.49	33.92	38.59	34.02	62.96	52.96	-24.36	-18.93
3	0.32388	0.13	28.96	28.57	29.09	28.70	59.61	49.61	-30.52	-20.91
4	0.54063	0.16	27.33	26.44	27.49	26.60	56.00	46.00	-28.51	-19.40
5	0.97031	0.18	25.90	25.00	26.08	25.18	56.00	46.00	-29.92	-20.82
6	13.47600	0.60	31.42	30.11	32.02	30.71	60.00	50.00	-27.98	-19.29

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.

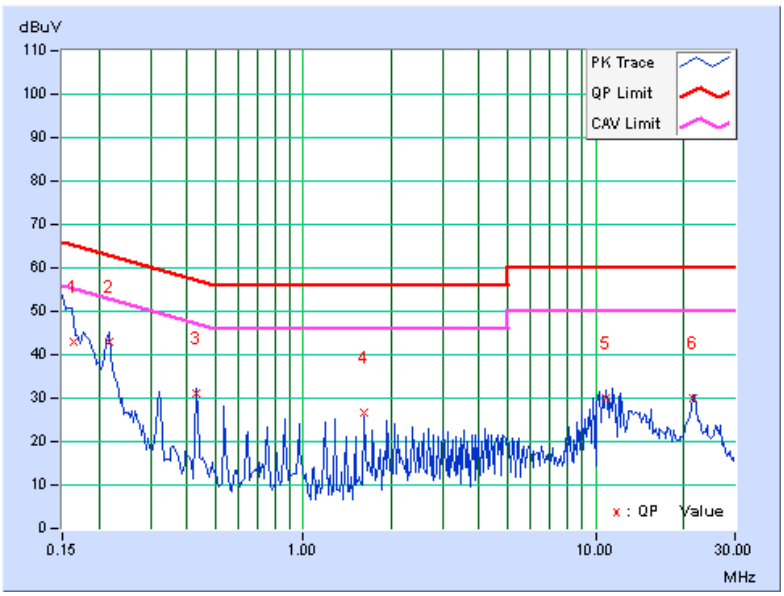


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16425	0.10	42.73	41.29	42.83	41.39	65.25	55.25	-22.42	-13.86
2	**0.21641**	**0.11**	**42.92**	**40.91**	**43.03**	**41.02**	**62.96**	**52.96**	**-19.92**	**-11.93**
3	0.43125	0.16	31.03	30.48	31.19	30.64	57.23	47.23	-26.04	-16.59
4	1.61653	0.22	26.28	25.45	26.50	25.67	56.00	46.00	-29.50	-20.33
5	10.87269	0.52	29.34	26.54	29.86	27.06	60.00	50.00	-30.14	-22.94
6	21.64241	0.73	29.16	29.04	29.89	29.77	60.00	50.00	-30.11	-20.23

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

For below 1GHz test

For above 1GHz (802.11b<CH6> & 802.11n(HT40<CH9>) test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 09, 2015	Feb. 08, 2016
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131216 131217 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: Mar. 25, 2015

For above 1GHz (other channels) test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250254	July 09, 2012	July 08, 2013
Pre-Selector Agilent	N9039A	MY46520311	July 09, 2012	July 08, 2013
Signal Generator Agilent	N5181A	MY49060517	July 09, 2012	July 08, 2013
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 26, 2012	June 25, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 26, 2011	Dec. 25, 2012
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: Nov. 22, 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 3 meter chamber. 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.

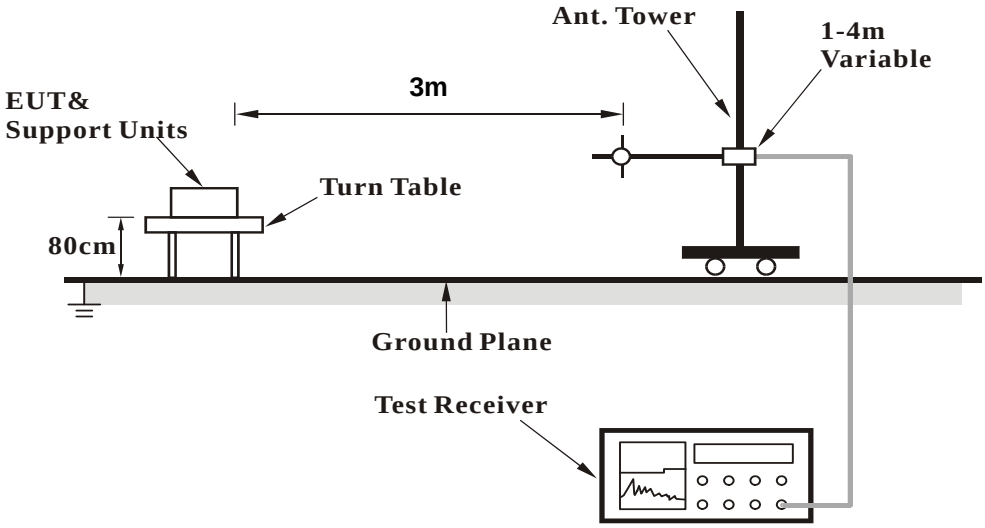
NOTE:

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 11	**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	151.93	31.6 QP	43.5	-11.9	2.00 H	0	44.54	-12.90
2	298.69	39.1 QP	46.0	-6.9	1.00 H	93	51.21	-12.09
3	398.89	37.9 QP	46.0	-8.1	2.00 H	360	47.36	-9.43
4	697.46	32.3 QP	46.0	-13.7	1.50 H	360	35.11	-2.81
5	799.21	30.1 QP	46.0	-16.0	1.50 H	241	30.67	-0.62
6	896.26	30.8 QP	46.0	-15.2	1.50 H	243	30.20	0.63
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	37.28	34.1 QP	40.0	-5.9	1.00 V	360	47.87	-13.81
2	152.66	34.3 QP	43.5	-9.2	1.00 V	219	47.19	-12.86
3	310.96	38.3 QP	46.0	-7.7	1.50 V	360	49.99	-11.69
4	478.92	32.0 QP	46.0	-14.0	2.00 V	196	39.30	-7.30
5	698.43	27.7 QP	46.0	-18.3	2.00 V	300	30.48	-2.80
6	799.45	30.6 QP	46.0	-15.4	1.50 V	360	31.25	-0.63

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.

ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	58.0 PK	74.0	-16.0	1.11 H	160	25.62	32.38
2	2390.00	45.1 AV	54.0	-8.9	1.11 H	160	12.72	32.38
3	*2412.00	100.9 PK			1.11 H	160	68.46	32.44
4	*2412.00	97.9 AV			1.11 H	160	65.46	32.44
5	4824.00	53.9 PK	74.0	-20.1	1.12 H	159	11.96	41.94
6	4824.00	49.1 AV	54.0	-4.9	1.12 H	159	7.16	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	56.9 PK	74.0	-17.1	1.65 V	211	24.52	32.38
2	2390.00	44.2 AV	54.0	-9.8	1.65 V	211	11.82	32.38
3	*2412.00	94.6 PK			1.65 V	211	62.16	32.44
4	*2412.00	92.0 AV			1.65 V	211	59.56	32.44
5	4824.00	57.1 PK	74.0	-16.9	1.52 V	85	15.16	41.94
6	**4824.00**	**53.4 AV**	**54.0**	**-0.6**	**1.52 V**	**85**	**11.46**	**41.94**

REMARKS:

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

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	101.7 PK			1.13 H	158	107.03	-5.33
2	*2437.00	98.1 AV			1.13 H	158	103.43	-5.33
3	4874.00	55.2 PK	74.0	-18.8	1.12 H	168	52.70	2.50
4	4874.00	50.1 AV	54.0	-3.9	1.12 H	168	47.60	2.50
5	7311.00	52.2 PK	74.0	-21.8	1.00 H	46	42.52	9.68
6	7311.00	40.1 AV	54.0	-13.9	1.00 H	46	30.42	9.68
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	98.0 PK			1.05 V	267	103.33	-5.33
2	*2437.00	95.0 AV			1.05 V	267	100.33	-5.33
3	4874.00	54.0 PK	74.0	-20.0	1.12 V	87	51.50	2.50
4	4874.00	48.1 AV	54.0	-5.9	1.12 V	87	45.60	2.50
5	7311.00	52.8 PK	74.0	-21.2	1.00 V	159	43.12	9.68
6	7311.00	40.5 AV	54.0	-13.5	1.00 V	159	30.82	9.68

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	102.9 PK			1.02 H	154	70.33	32.57
2	*2462.00	100.1 AV			1.02 H	154	67.53	32.57
3	2483.50	58.7 PK	74.0	-15.3	1.02 H	154	26.07	32.63
4	2483.50	48.7 AV	54.0	-5.3	1.02 H	154	16.07	32.63
5	4924.00	54.8 PK	74.0	-19.2	1.04 H	163	12.79	42.01
6	4924.00	51.1 AV	54.0	-2.9	1.04 H	163	9.09	42.01
7	7386.00	52.9 PK	74.0	-21.1	1.00 H	56	6.17	46.73
8	7386.00	40.6 AV	54.0	-13.4	1.00 H	56	-6.13	46.73
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	96.1 PK			1.65 V	215	63.53	32.57
2	*2462.00	94.0 AV			1.65 V	215	61.43	32.57
3	2483.50	56.4 PK	74.0	-17.6	1.65 V	215	23.77	32.63
4	2483.50	43.9 AV	54.0	-10.1	1.65 V	215	11.27	32.63
5	4924.00	56.3 PK	74.0	-17.7	1.38 V	265	14.29	42.01
6	4924.00	53.2 AV	54.0	-0.8	1.38 V	265	11.19	42.01
7	7386.00	53.2 PK	74.0	-20.8	1.00 V	153	6.47	46.73
8	7386.00	40.7 AV	54.0	-13.3	1.00 V	153	-6.03	46.73

REMARKS:

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

802.11g

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	60.7 PK	74.0	-13.3	1.07 H	151	28.32	32.38
2	2390.00	47.0 AV	54.0	-7.0	1.07 H	151	14.62	32.38
3	*2412.00	100.1 PK			1.07 H	151	67.66	32.44
4	*2412.00	89.0 AV			1.07 H	151	56.56	32.44
5	4824.00	50.6 PK	74.0	-23.4	1.00 H	45	8.66	41.94
6	4824.00	40.2 AV	54.0	-13.8	1.00 H	45	-1.74	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.8 PK	74.0	-15.2	1.00 V	276	26.42	32.38
2	2390.00	45.4 AV	54.0	-8.6	1.00 V	276	13.02	32.38
3	*2412.00	96.0 PK			1.68 V	217	63.56	32.44
4	*2412.00	86.8 AV			1.68 V	217	54.36	32.44
5	4824.00	52.5 PK	74.0	-21.5	1.00 V	261	10.57	41.94
6	4824.00	42.2 AV	54.0	-11.8	1.00 V	261	0.26	41.94

REMARKS:

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

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	57.1 PK	74.0	-16.9	1.04 H	156	24.72	32.38
2	2390.00	44.4 AV	54.0	-9.6	1.04 H	156	12.02	32.38
3	*2437.00	102.8 PK			1.04 H	156	70.29	32.51
4	*2437.00	90.3 AV			1.04 H	156	57.79	32.51
5	2483.50	56.8 PK	74.0	-17.2	1.04 H	156	24.17	32.63
6	2483.50	44.6 AV	54.0	-9.4	1.04 H	156	11.97	32.63
7	4874.00	50.6 PK	74.0	-23.4	1.05 H	37	8.61	41.99
8	4874.00	40.4 AV	54.0	-13.6	1.05 H	37	-1.59	41.99
9	7311.00	53.0 PK	74.0	-21.0	1.05 H	65	6.47	46.53
10	7311.00	41.0 AV	54.0	-13.0	1.05 H	65	-5.53	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.4 PK	74.0	-16.6	1.28 V	356	25.02	32.38
2	2390.00	44.2 AV	54.0	-9.8	1.28 V	356	11.82	32.38
3	*2437.00	94.4 PK			1.00 V	268	61.89	32.51
4	*2437.00	84.5 AV			1.00 V	268	51.99	32.51
5	4874.00	52.8 PK	74.0	-21.2	1.02 V	249	10.81	41.99
6	4874.00	42.7 AV	54.0	-11.3	1.02 V	249	0.71	41.99
7	7311.00	53.6 PK	74.0	-20.4	1.00 V	138	7.07	46.53
8	7311.00	41.1 AV	54.0	-12.9	1.00 V	138	-5.43	46.53

REMARKS:

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

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	103.1 PK			1.06 H	159	70.53	32.57
2	*2462.00	90.9 AV			1.06 H	159	58.33	32.57
3	2483.50	66.3 PK	74.0	-7.7	1.06 H	159	33.67	32.63
4	2483.50	47.3 AV	54.0	-6.7	1.06 H	159	14.67	32.63
5	4924.00	50.9 PK	74.0	-23.1	1.01 H	26	8.89	42.01
6	4924.00	40.6 AV	54.0	-13.4	1.01 H	26	-1.41	42.01
7	7386.00	53.1 PK	74.0	-20.9	1.11 H	63	6.37	46.73
8	7386.00	40.8 AV	54.0	-13.2	1.11 H	63	-5.93	46.73

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	95.1 PK			1.65 V	219	62.53	32.57
2	*2462.00	85.8 AV			1.65 V	219	53.23	32.57
3	2483.50	57.6 PK	74.0	-16.4	1.00 V	259	24.97	32.63
4	2483.50	44.2 AV	54.0	-9.8	1.00 V	259	11.57	32.63
5	4924.00	52.5 PK	74.0	-21.5	1.05 V	253	10.49	42.01
6	4924.00	42.1 AV	54.0	-11.9	1.05 V	253	0.09	42.01
7	7386.00	52.9 PK	74.0	-21.1	1.03 V	142	6.17	46.73
8	7386.00	40.5 AV	54.0	-13.5	1.03 V	142	-6.23	46.73

REMARKS:

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

802.11n (HT20)

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	64.1 PK	74.0	-9.9	1.07 H	153	31.72	32.38
2	2390.00	46.8 AV	54.0	-7.2	1.07 H	153	14.42	32.38
3	*2412.00	99.3 PK			1.07 H	153	66.86	32.44
4	*2412.00	88.1 AV			1.07 H	153	55.66	32.44
5	4824.00	50.5 PK	74.0	-23.5	1.09 H	26	8.56	41.94
6	4824.00	40.3 AV	54.0	-13.7	1.09 H	26	-1.64	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.9 PK	74.0	-10.1	1.68 V	219	31.52	32.38
2	2390.00	46.6 AV	54.0	-7.4	1.68 V	219	14.22	32.38
3	*2412.00	96.6 PK			1.68 V	219	64.16	32.44
4	*2412.00	87.0 AV			1.68 V	219	54.56	32.44
5	4824.00	52.4 PK	74.0	-21.6	1.04 V	255	10.46	41.94
6	4824.00	41.7 AV	54.0	-12.3	1.04 V	255	-0.24	41.94

REMARKS:

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

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	56.3 PK	74.0	-17.7	1.06 H	151	23.92	32.38
2	2390.00	44.7 AV	54.0	-9.3	1.06 H	151	12.32	32.38
3	*2437.00	101.0 PK			1.06 H	151	68.49	32.51
4	*2437.00	88.8 AV			1.06 H	151	56.29	32.51
5	2483.50	57.7 PK	74.0	-16.3	1.06 H	151	25.07	32.63
6	2483.50	44.7 AV	54.0	-9.3	1.06 H	151	12.07	32.63
7	4874.00	50.7 PK	74.0	-23.3	1.06 H	25	8.71	41.99
8	4874.00	40.3 AV	54.0	-13.7	1.06 H	25	-1.69	41.99
9	7311.00	53.6 PK	74.0	-20.4	1.12 H	64	7.07	46.53
10	7311.00	41.2 AV	54.0	-12.8	1.12 H	64	-5.33	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	94.8 PK			1.66 V	209	62.29	32.51
2	*2437.00	85.3 AV			1.66 V	209	52.79	32.51
3	4874.00	52.5 PK	74.0	-21.5	1.04 V	249	10.51	41.99
4	4874.00	42.1 AV	54.0	-11.9	1.04 V	249	0.11	41.99
5	7311.00	53.0 PK	74.0	-21.0	1.07 V	136	6.47	46.53
6	7311.00	40.5 AV	54.0	-13.5	1.07 V	136	-6.03	46.53

REMARKS:

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

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	100.6 PK			1.09 H	155	68.03	32.57
2	*2462.00	88.7 AV			1.09 H	155	56.13	32.57
3	2483.50	63.6 PK	74.0	-10.4	1.09 H	155	30.97	32.63
4	2483.50	45.8 AV	54.0	-8.2	1.09 H	155	13.17	32.63
5	4924.00	51.4 PK	74.0	-22.6	1.02 H	18	9.39	42.01
6	4924.00	41.0 AV	54.0	-13.0	1.02 H	18	-1.01	42.01
7	7386.00	53.5 PK	74.0	-20.5	1.13 H	77	6.77	46.73
8	7386.00	41.1 AV	54.0	-12.9	1.13 H	77	-5.63	46.73
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	94.2 PK			1.64 V	213	61.63	32.57
2	*2462.00	84.2 AV			1.64 V	213	51.63	32.57
3	2483.50	56.8 PK	74.0	-17.2	1.64 V	213	24.17	32.63
4	2483.50	44.2 AV	54.0	-9.8	1.64 V	213	11.57	32.63
5	4924.00	52.7 PK	74.0	-21.3	1.02 V	244	10.69	42.01
6	4924.00	42.2 AV	54.0	-11.8	1.02 V	244	0.19	42.01
7	7386.00	52.6 PK	74.0	-21.4	1.05 V	137	5.87	46.73
8	7386.00	40.0 AV	54.0	-14.0	1.05 V	137	-6.73	46.73

REMARKS:

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

802.11n (HT40)

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	66.6 PK	74.0	-7.4	1.05 H	150	34.22	32.38
2	2390.00	50.6 AV	54.0	-3.4	1.05 H	150	18.22	32.38
3	*2422.00	97.8 PK			1.05 H	150	65.33	32.47
4	*2422.00	85.1 AV			1.05 H	150	52.63	32.47
5	4844.00	50.8 PK	74.0	-23.2	1.03 H	18	8.84	41.96
6	4844.00	40.3 AV	54.0	-13.7	1.03 H	18	-1.66	41.96
7	7266.00	53.1 PK	74.0	-20.9	1.06 H	64	6.70	46.40
8	7266.00	40.7 AV	54.0	-13.3	1.06 H	64	-5.70	46.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.2 PK	74.0	-13.8	1.65 V	211	27.82	32.38
2	2390.00	46.7 AV	54.0	-7.3	1.65 V	211	14.32	32.38
3	*2422.00	92.7 PK			1.65 V	211	60.23	32.47
4	*2422.00	82.8 AV			1.65 V	211	50.33	32.47
5	4844.00	52.8 PK	74.0	-21.2	1.05 V	265	10.84	41.96
6	4844.00	42.6 AV	54.0	-11.4	1.05 V	265	0.64	41.96
7	7266.00	53.2 PK	74.0	-20.8	1.05 V	138	6.80	46.40
8	7266.00	40.6 AV	54.0	-13.4	1.05 V	138	-5.80	46.40

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	63.2 PK	74.0	-10.8	1.05 H	156	30.82	32.38
2	2390.00	49.3 AV	54.0	-4.7	1.05 H	156	16.92	32.38
3	*2437.00	99.2 PK			1.05 H	156	66.69	32.51
4	*2437.00	88.2 AV			1.05 H	156	55.69	32.51
5	2483.50	63.1 PK	74.0	-10.9	1.05 H	156	30.47	32.63
6	2483.50	50.4 AV	54.0	-3.6	1.05 H	156	17.77	32.63
7	4874.00	51.0 PK	74.0	-23.0	1.02 H	33	9.01	41.99
8	4874.00	40.5 AV	54.0	-13.5	1.02 H	33	-1.49	41.99
9	7311.00	52.7 PK	74.0	-21.3	1.11 H	51	6.17	46.53
10	7311.00	40.7 AV	54.0	-13.3	1.11 H	51	-5.83	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	90.7 PK			1.65 V	220	58.19	32.51
2	*2437.00	81.2 AV			1.65 V	220	48.69	32.51
3	4874.00	53.3 PK	74.0	-20.7	1.03 V	269	11.31	41.99
4	4874.00	42.6 AV	54.0	-11.4	1.03 V	269	0.61	41.99
5	7311.00	53.1 PK	74.0	-20.9	1.07 V	132	6.57	46.53
6	7311.00	40.7 AV	54.0	-13.3	1.07 V	132	-5.83	46.53

REMARKS:

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

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	98.1 PK			1.10 H	149	103.34	-5.24
2	*2452.00	86.3 AV			1.10 H	149	91.54	-5.24
3	2483.50	70.6 PK	74.0	-3.4	1.13 H	164	75.65	-5.05
4	**2483.50**	**53.4 AV**	**54.0**	**-0.6**	**1.13 H**	**164**	**58.45**	**-5.05**
5	4904.00	51.0 PK	74.0	-23.0	1.00 H	17	48.40	2.60
6	4904.00	40.3 AV	54.0	-13.7	1.00 H	17	37.70	2.60
7	7356.00	53.3 PK	74.0	-20.7	1.17 H	72	43.54	9.76
8	7356.00	40.9 AV	54.0	-13.1	1.17 H	72	31.14	9.76

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	92.6 PK			1.11 V	209	97.84	-5.24
2	*2452.00	82.6 AV			1.11 V	209	87.84	-5.24
3	2483.50	60.4 PK	74.0	-13.6	1.11 V	221	65.45	-5.05
4	2483.50	46.8 AV	54.0	-7.2	1.11 V	221	51.85	-5.05
5	4904.00	53.7 PK	74.0	-20.3	1.02 V	240	51.10	2.60
6	4904.00	42.8 AV	54.0	-11.2	1.02 V	240	40.20	2.60
7	7356.00	52.2 PK	74.0	-21.8	1.03 V	142	42.44	9.76
8	7356.00	39.7 AV	54.0	-14.3	1.03 V	142	29.94	9.76

REMARKS:

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

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Nov. 22, 2012

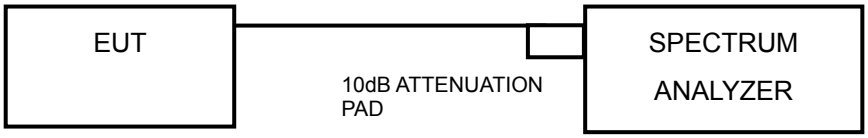
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.09	0.5	PASS
6	2437	9.51	0.5	PASS
11	2462	9.11	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.63	0.5	PASS
6	2437	16.63	0.5	PASS
11	2462	16.63	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.88	0.5	PASS
6	2437	17.85	0.5	PASS
11	2462	17.85	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.50	0.5	PASS
6	2437	36.51	0.5	PASS
9	2452	36.50	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 : Nov. 22, 2012

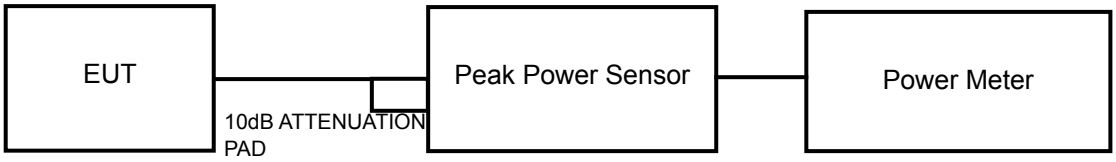
4.4.3 TEST PROCEDURES

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)	LIMIT (dBm)	PASS/FAIL
1	2412	100.000	20.00	30	PASS
6	2437	102.329	20.10	30	PASS
11	2462	97.724	19.90	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	223.872	23.50	30	PASS
6	2437	229.087	23.60	30	PASS
11	2462	239.883	23.80	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	218.776	23.40	30	PASS
6	2437	229.087	23.60	30	PASS
11	2462	223.872	23.50	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	173.780	22.40	30	PASS
6	2437	190.546	22.80	30	PASS
9	2452	186.209	22.70	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Nov. 22, 2012

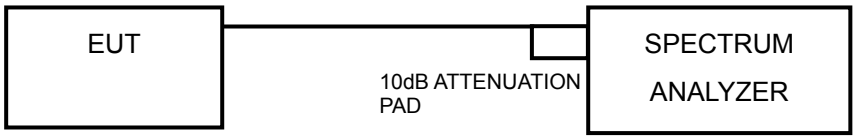
4.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

4.5.4 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/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-6.95	8	PASS
6	2437	-5.68	8	PASS
11	2462	-5.32	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.39	8	PASS
6	2437	-13.12	8	PASS
11	2462	-12.90	8	PASS

802.11n (HT20)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-14.98	8	PASS
6	2437	-13.94	8	PASS
11	2462	-14.14	8	PASS

802.11n (HT40)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-16.65	8	PASS
6	2437	-16.76	8	PASS
9	2452	-16.15	8	PASS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Nov. 22, 2012

4.6.3 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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.

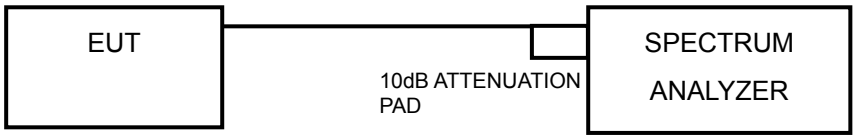
MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 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

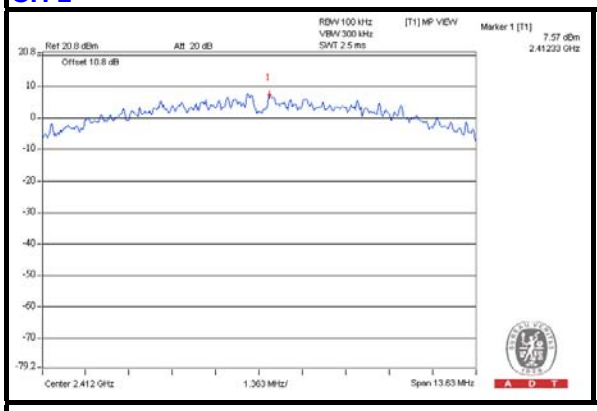
Same as Item 4.3.6

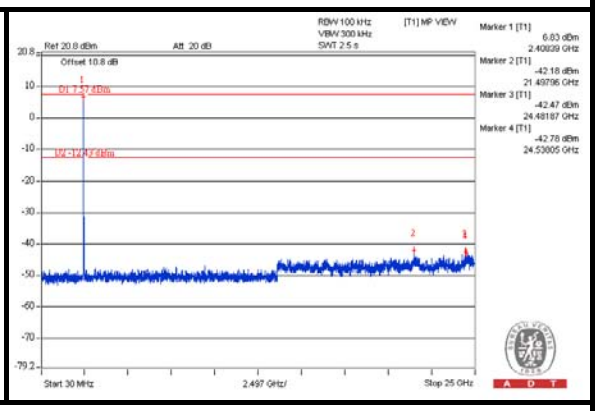
4.6.7 TEST RESULTS

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.

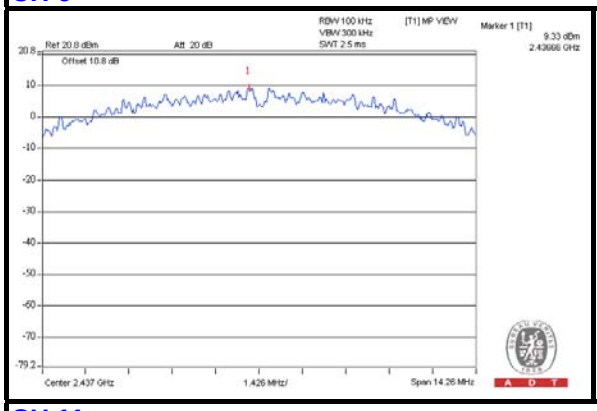
802.11b

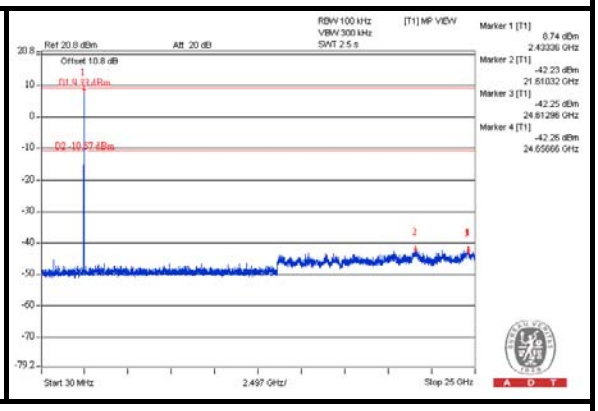
CH 1



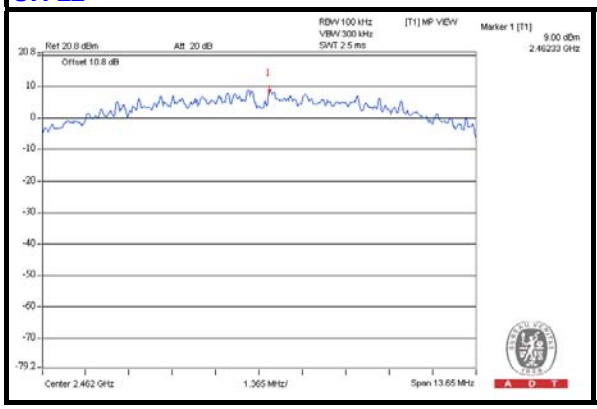


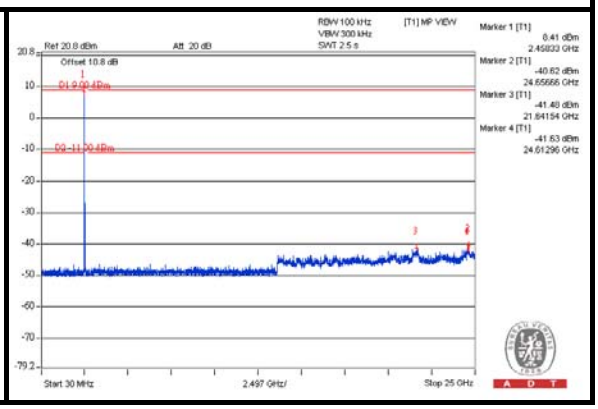
CH 6





CH 11





802.11g

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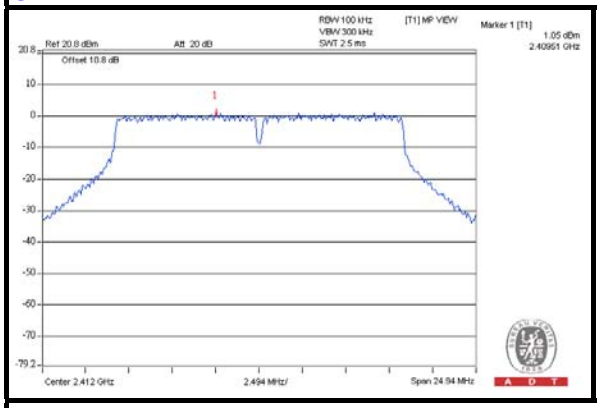

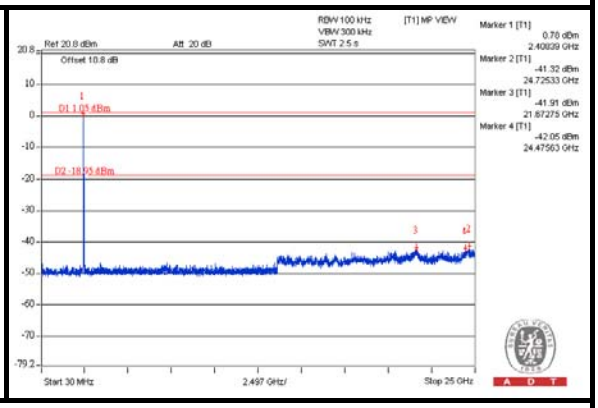

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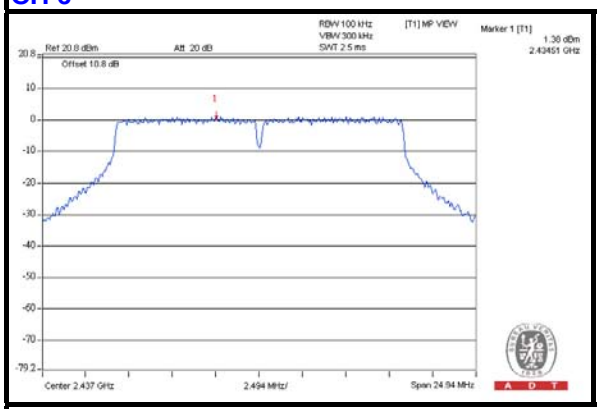

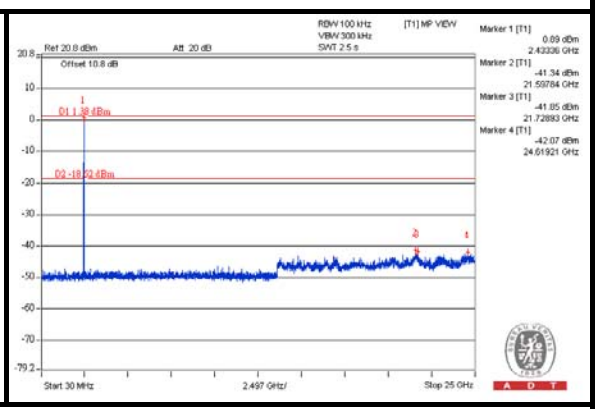

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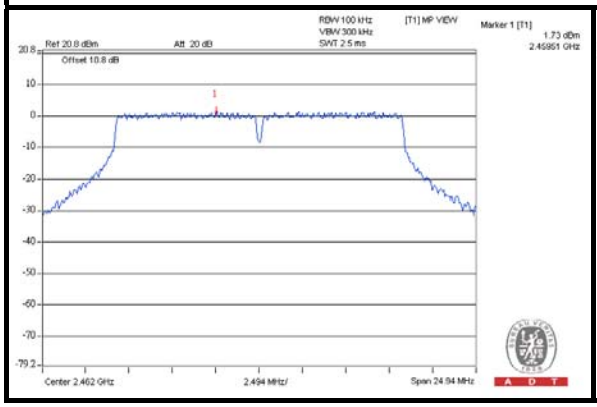

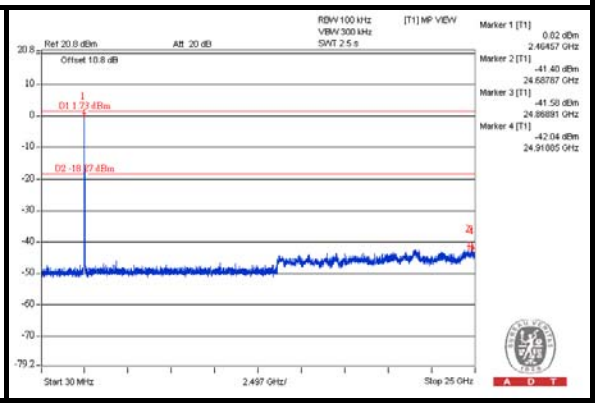

802.11n (HT20)

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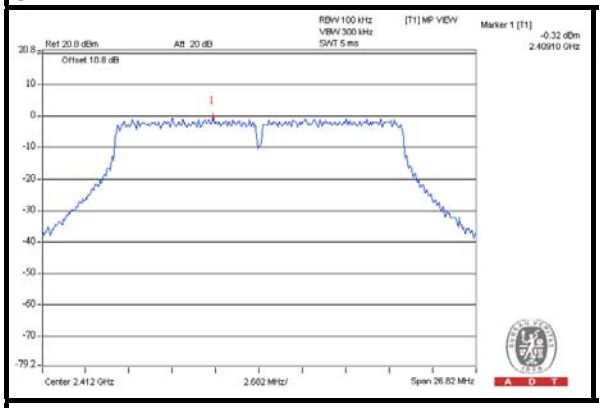

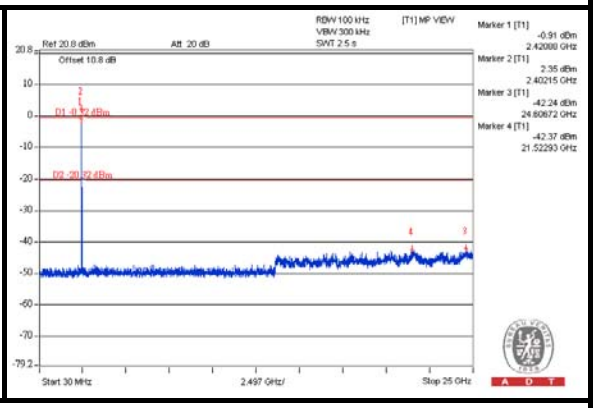

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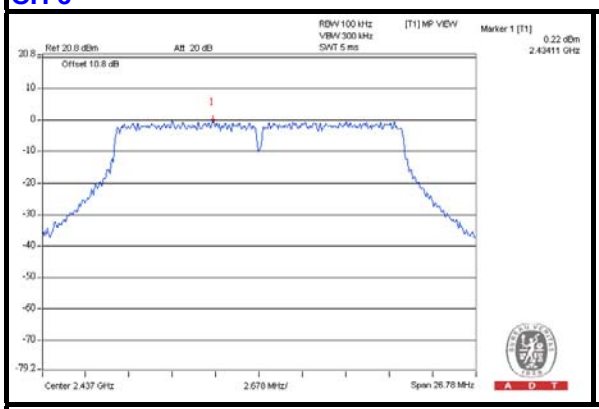

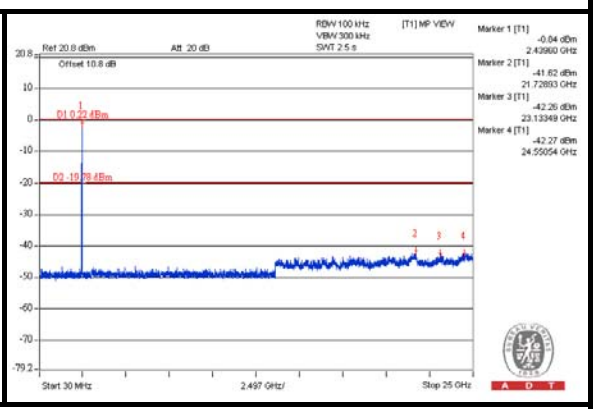

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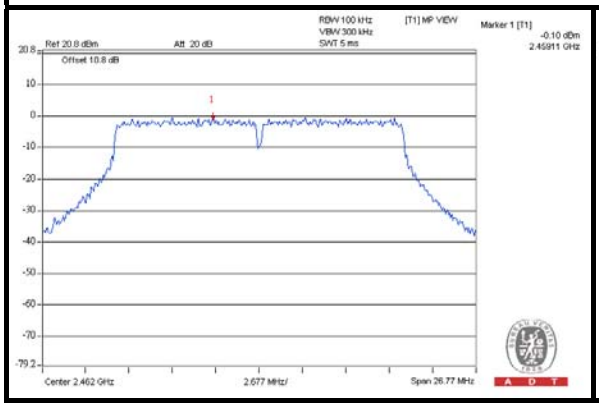

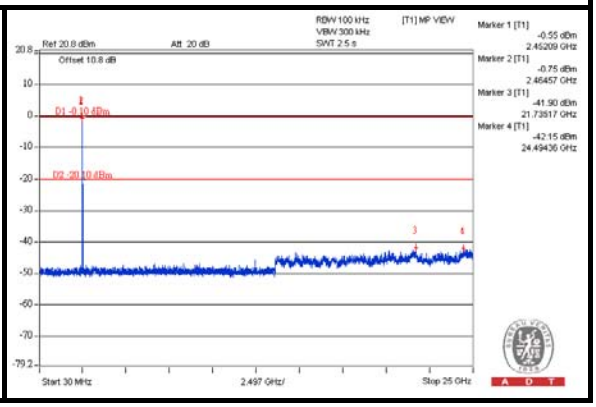

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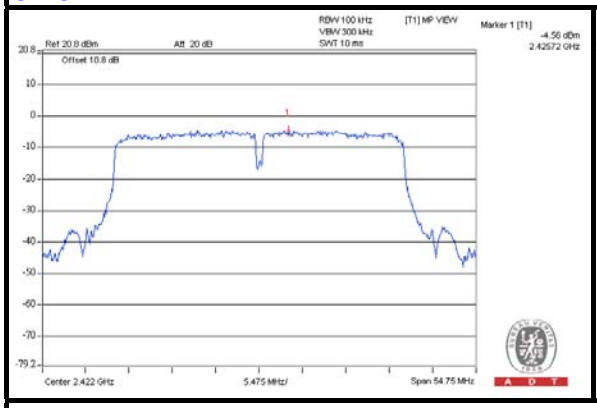

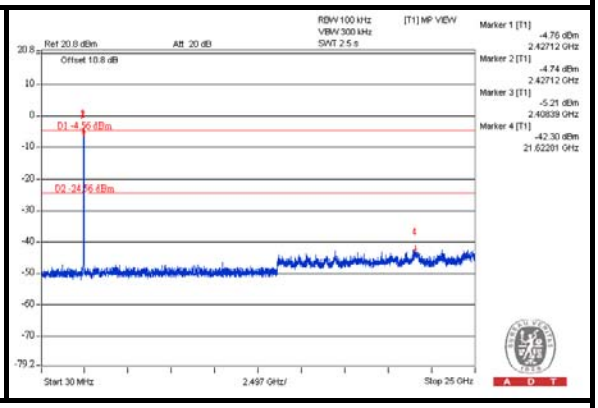

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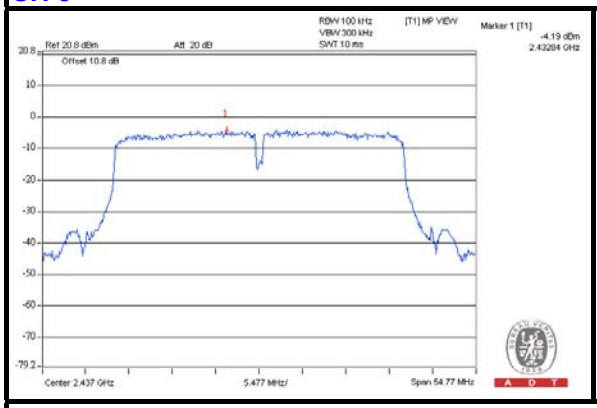

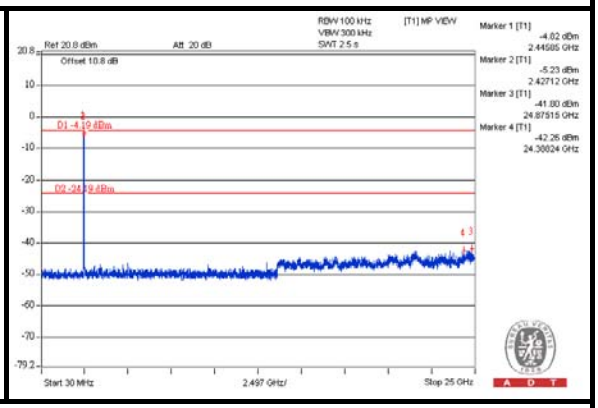

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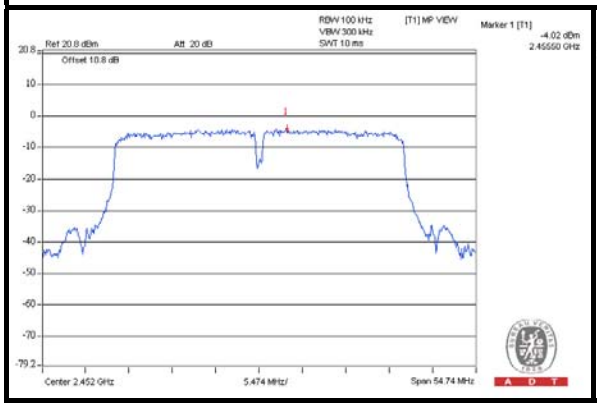

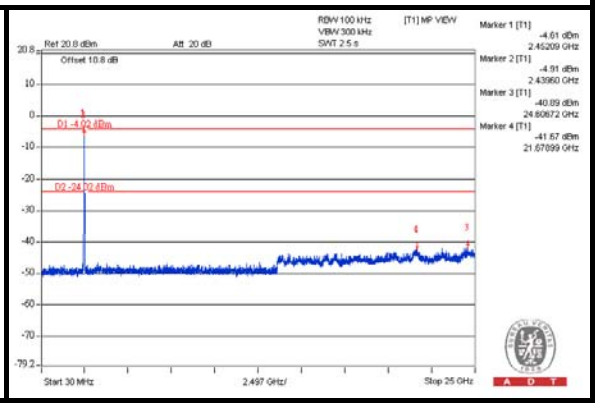

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF//Telecom Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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

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

--- END ---