



A D T

FCC TEST REPORT

REPORT NO.: RF110526E05C

MODEL NO.: DIR-619L

FCC ID: KA2IR619LA1

RECEIVED: May 26, 2011

TESTED: Jun. 21, 2011 & Feb. 21 to Mar. 21, 2012

ISSUED: May 03, 2012

APPLICANT: D-Link Corporation

ADDRESS: No.289, Sinhu 3rd Rd., Neihu District, Taipei
City 114, Taiwan, R.O.C.

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.

This test report consists of 58 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.





A D T

Table of Contents

RELEASE CONTROL RECORD.....	4
1. CERTIFICATION.....	5
2. SUMMARY OF TEST RESULTS.....	6
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT.....	8
3.2 DESCRIPTION OF TEST MODES.....	11
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	12
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	15
3.4 DESCRIPTION OF SUPPORT UNITS.....	16
3.5 CONFIGURATION OF SYSTEM UNDER TEST	17
4. TEST TYPES AND RESULTS.....	19
4.1 CONDUCTED EMISSION MEASUREMENT	19
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	19
4.1.2 TEST INSTRUMENTS	19
4.1.3 TEST PROCEDURES.....	20
4.1.4 DEVIATION FROM TEST STANDARD	20
4.1.5 TEST SETUP	21
4.1.6 EUT OPERATING CONDITIONS.....	21
4.1.7 TEST RESULTS.....	22
4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT.....	24
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT ...	24
4.2.2 TEST INSTRUMENTS	25
4.2.3 TEST PROCEDURES.....	27
4.2.4 DEVIATION FROM TEST STANDARD	27
4.2.5 TEST SETUP	28
4.2.6 EUT OPERATING CONDITIONS.....	29
4.2.7 TEST RESULTS.....	30
4.3 6dB BANDWIDTH MEASUREMENT	43
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	43
4.3.2 TEST INSTRUMENTS	43
4.3.3 TEST PROCEDURE	43
4.3.4 DEVIATION FROM TEST STANDARD	43
4.3.5 TEST SETUP	43
4.3.6 EUT OPERATING CONDITIONS.....	44
4.3.7 TEST RESULTS.....	45
4.4 CONDUCTED OUTPUT POWER.....	46



A D T

4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	46
4.4.2	INSTRUMENTS	46
4.4.3	TEST PROCEDURES.....	46
4.4.4	DEVIATION FROM TEST STANDARD	46
4.4.5	TEST SETUP	46
4.4.6	EUT OPERATING CONDITIONS.....	46
4.4.7	TEST RESULTS.....	47
4.5	POWER SPECTRAL DENSITY MEASUREMENT.....	48
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	48
4.5.2	TEST INSTRUMENTS	48
4.5.3	TEST PROCEDURE	48
4.5.4	DEVIATION FROM TEST STANDARD	48
4.5.5	TEST SETUP	48
4.5.6	EUT OPERATING CONDITION	48
4.5.7	TEST RESULTS.....	49
4.6	CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	50
4.6.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT	50
4.6.2	TEST INSTRUMENTS	50
4.6.3	TEST PROCEDURE	50
4.6.4	DEVIATION FROM TEST STANDARD	51
4.6.5	TEST SETUP	51
4.6.6	EUT OPERATING CONDITION	51
4.6.7	TEST RESULTS.....	51
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	56
6.	INFORMATION ON THE TESTING LABORATORIES	57
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	58



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110526E05C	Original release	May 03, 2012



A D T

1. CERTIFICATION

PRODUCT: Wireless N 300 Cloud Router
BRAND NAME: D-Link
MODEL NO.: DIR-619L
TEST SAMPLE: MASS-PRODUCTION
APPLICANT: D-Link Corporation
TESTED: Jun. 21, 2011 & Feb. 21 to Mar. 21, 2012
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (Model: DIR-619L) 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 03, 2012
(Midoli Peng, Specialist)

APPROVED BY :  , **DATE:** May 03, 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 -7.28dB at 18.24219MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2483.50MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is SMA Plug Reverse not a standard connector.



A D T

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	3.81 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB



A D T

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless N 300 Cloud Router
MODEL NO.	DIR-619L
POWER SUPPLY	DC 12V 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 130Mbps HT40 (800ns GI): Up to 270Mbps. HT20 (400ns GI): Up to 144.444Mbps. HT40 (400ns GI): Up to 300Mbps.
OPERATING FREQUENCY	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 407.38mW 802.11g: 691.83mW 802.11n (20MHz): 903.77mW 802.11n (40MHz): 925.31mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	Ethernet cable(Unshielded, 1.5m)
I/O PORTS	Please refer User's manuel
ASSOCIATED DEVICES	Adapter x 1

NOTE:

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

Set 1					
Transmitter Circuit	Manufacture	Model name	Peak Gain (dBi) (Included Cable loss)	Antenna Type	Connector Type
Chain (0)	WHA YU GROUP	C037-511046-A (SSR-209146)	3.52	Dipole	SMA Plug Reverse
Chain (1)	WHA YU GROUP	C037-511046-A (SSR-209146)	3.52	Dipole	SMA Plug Reverse
Chain (2)	WHA YU GROUP	C037-511046-A (SSR-209146)	3.52	Dipole	SMA Plug Reverse
Set 2					
Transmitter Circuit	Manufacture	Model name	Peak Gain (dBi) (Included Cable loss)	Antenna Type	Connector Type
Chain (0)	WHA YU GROUP	C037-511127-A	4.705	Dipole	SMA Plug Reverse
Chain (1)	WHA YU GROUP	C037-511127-A	4.705	Dipole	SMA Plug Reverse
Chain (2)	WHA YU GROUP	C037-511127-A	4.705	Dipole	SMA Plug Reverse

Antenna Set 2 was chosen for the final test.

2. The EUT must be supplied with a power adapter and following four different model names could be chosen:

No.	Manufacturer	Brand	Model No.	Spec.
1	Channel Well	D-Link	CAP012121US	Input: 100-240V, 0.35A, 47-63Hz Output: 12.0V, 1.0A DC output cable(1.2m, unshielded)
2	FRECOM	D-Link	FM120010-US	Input: 100-240V, 0.6A, 50/60Hz Output: 12V, 1A DC output cable(1.25m, unshielded)
3	JENTEC	D-Link	CH1812-B	Input: 100-240V, 0.4A, 50-60Hz Output: +12V, 1.25A DC output cable(1.5m, unshielded)
4	AMIGO	D-Link or AMIGO	AMS3-1201250 FU	Input: 100-240V, 0.5A, 50/60Hz Output: +12V, 1.25A DC output cable(1.5m, unshielded)

3. The EUT was pre-tested for radiated test under following test modes:

Pre-test Mode	Power
Mode A	With adapter 1
Mode B	With adapter 2
Mode C	With adapter 3
Mode D	With adapter 4

From the above modes, the worst radiated test was found in **Mode D**. and the worst conducted test was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

4. The EUT is 2 * 3 spatial MIMO (2Tx & 3Rx) without beam forming function. The 11b and 11g legacy mode is limited to single transmitter only.
5. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
6. The above EUT information was declared by 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		



A D T

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
1	√	-	-	-	-	With Adapter 1
2	-	√	√	√	√	With Adapter 4

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 2 axis. The worst case was found when positioned on **X-plane**.

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)	TX CHAIN(2)
A	802.11 b	√		
B	802.11 g	√		
C	802.11n(20MHz) for MCS0~7	√		
D	802.11n(20MHz) for MCS8~15	√		√
E	802.11n(40MHz) for MCS0~7	√		
F	802.11n(40MHz) for MCS8~15	√		√

Note:

- The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
- Mode A, B, D, and F the worst modes, were selected as representative mode for the report.

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	13	D



A D T

RADIATED EMISSION TEST (BELOW 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	13	D

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	D
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	27	F

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	D
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	27	F



A D T

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	D
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	27	F

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	23deg. C, 68%RH	120Vac, 60Hz	JyunChun Lin
RE<1G	24deg. C, 70%RH	120Vac, 60Hz	Nick Chang
RE ³ 1G	26deg. C, 67%RH	120Vac, 60Hz	Wen Yu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2009

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



A D T

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.

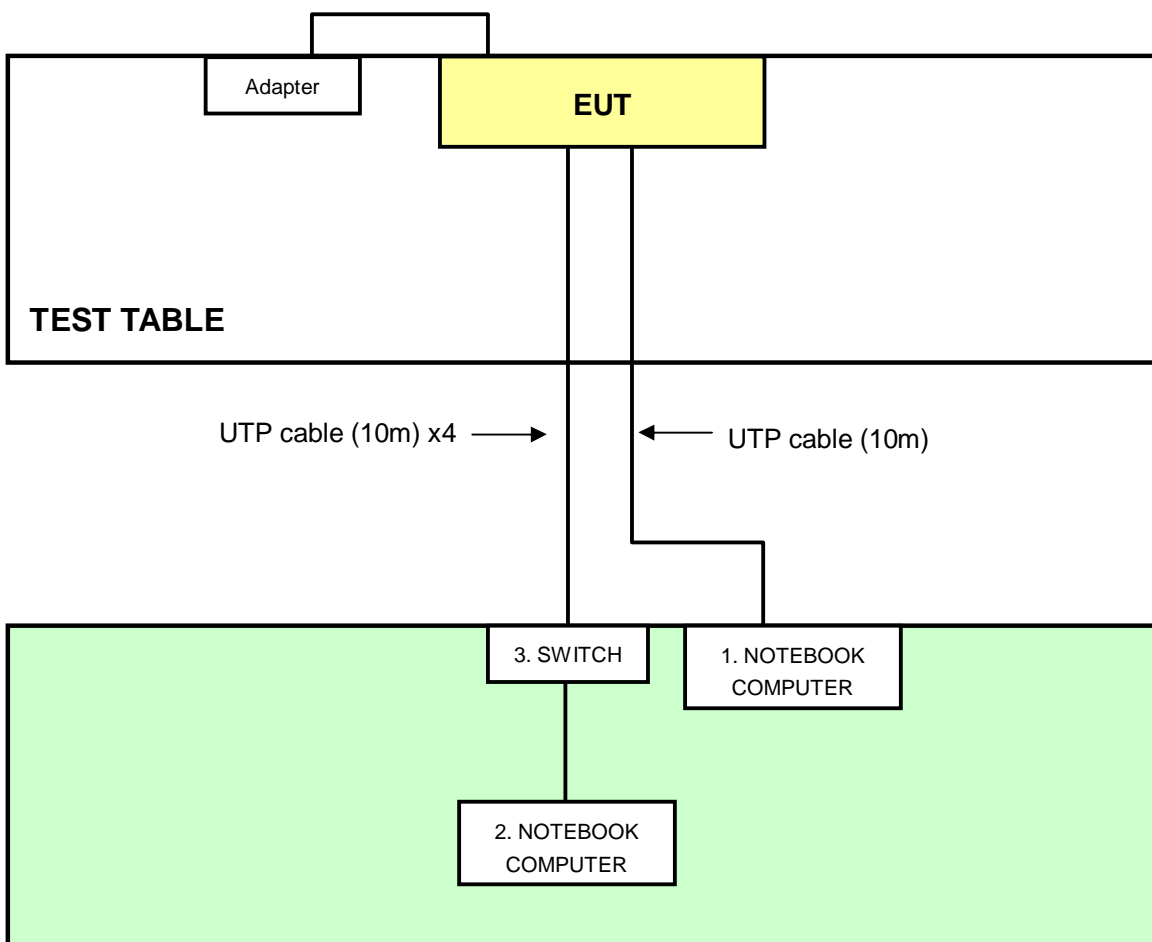
For conducted emission test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP27L	6YLB32S	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP27L	7YLB32S	FCC DoC
3	SWITCH	hp	J9661A	NA	NA
For other test items					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP27L	7YLB32S	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC

For conducted emission test	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	UTP cable (10m)
3	UTP cable (10m)
For other test items	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	UTP cable (10m)
3	UTP cable (10m)

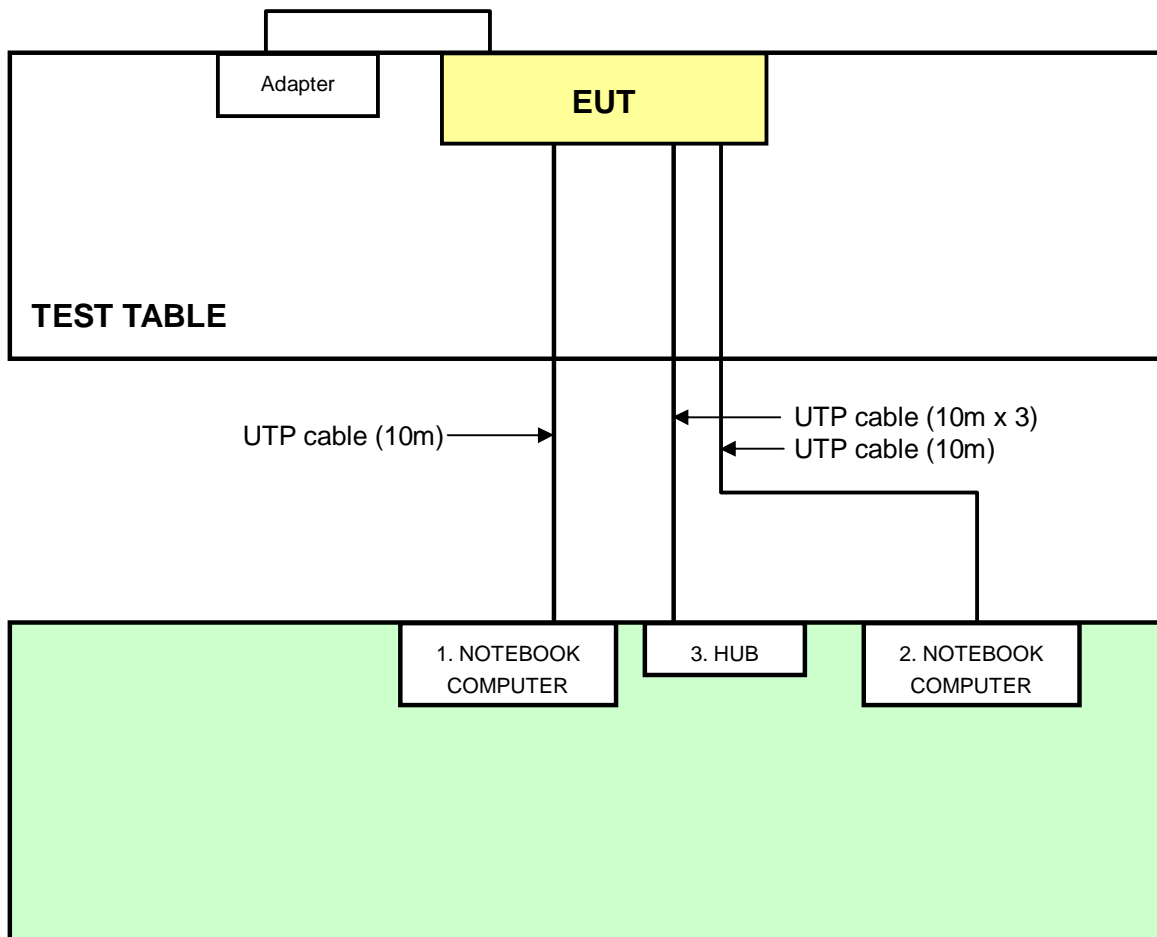
NOTE: 1. All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For conducted emission test



For other test items





A D T

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
Test Receiver	ESCS 30	100291	Nov. 23, 2011	Nov. 22, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 01, 2011	Oct. 31, 2012
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Mar. 15, 2012

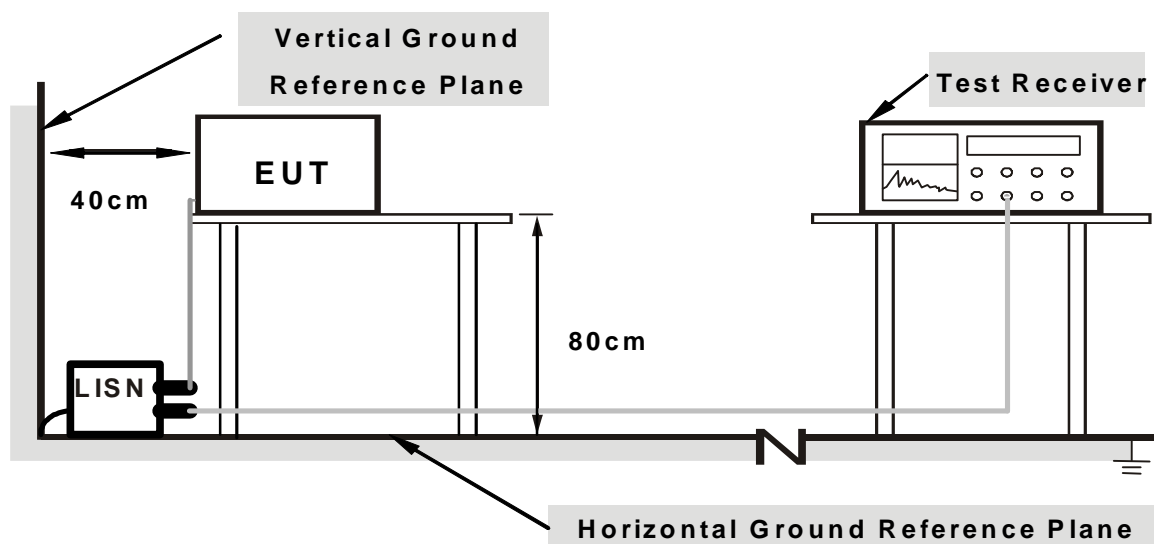
4.1.3 TEST PROCEDURES

- 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.

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

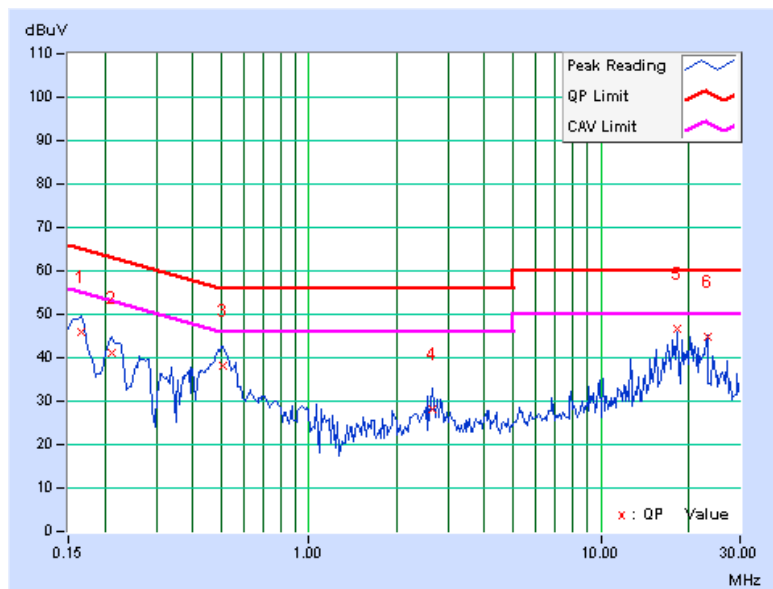
1. Turned on the power of all equipment.
2. Prepared other computer system support units 1~2 (Notebook Computer) to act as communication partner and placed it outside of testing area.
3. The communication partner ran test program “MP_TEST.exe” to enable EUT under transmission/receiving condition continuously via UTP cables.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
--------------	----------	----------------------	-------

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	0.16562	0.09	45.85	36.64	45.94	36.73	65.18	55.18	-19.23	-18.44
2	0.21250	0.11	40.83	32.13	40.94	32.24	63.11	53.11	-22.17	-20.87
3	0.50938	0.15	37.96	26.10	38.11	26.25	56.00	46.00	-17.89	-19.75
4	2.65234	0.31	27.66	19.61	27.97	19.92	56.00	46.00	-28.03	-26.08
5	18.24219	1.04	45.59	41.68	46.63	42.72	60.00	50.00	-13.37	-7.28
6	23.12891	1.18	43.55	39.29	44.73	40.47	60.00	50.00	-15.27	-9.53

- 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.



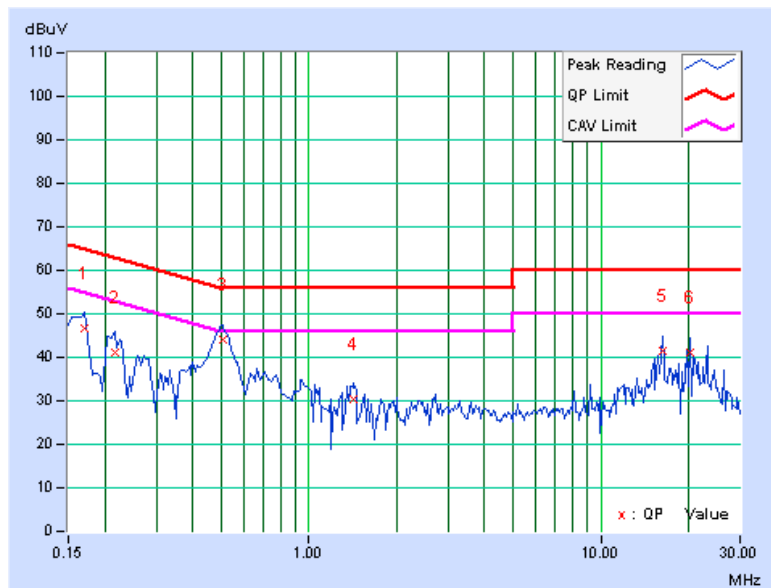


A D T

PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
-------	-------------	---------------	-------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	(dB)	(dB)
1	0.16953	0.08	46.52	32.04	46.60	32.12	64.98	54.98	-18.38	-22.86
2	0.21641	0.10	41.13	31.59	41.23	31.69	62.96	52.96	-21.72	-21.26
3	0.50547	0.13	44.03	31.88	44.16	32.01	56.00	46.00	-11.84	-13.99
4	1.42578	0.17	30.35	21.43	30.52	21.60	56.00	46.00	-25.48	-24.40
5	16.22656	0.86	40.53	36.21	41.39	37.07	60.00	50.00	-18.61	-12.93
6	20.25781	1.03	40.13	37.32	41.16	38.35	60.00	50.00	-18.84	-11.65

- 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.





A D T

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.



A D T

4.2.2 TEST INSTRUMENTS

For Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 26, 2011	Dec. 25, 2012
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 2012
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in 966 Chamber No. 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.

6. Tested Date: Feb. 21, 2012



A D T

For Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2010	Nov. 29 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 03, 2010	Sep. 02, 2011
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 14, 2011	Apr. 13, 2012
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2010	Dec. 16, 2011
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2011	Jan. 16, 2012
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 104+ Sucoflex 106	RF104-101+R F106-101	Aug. 24, 2010	Aug. 23, 2011
RF Cable	8DFB	STCCAB-30M- 1GHz	NA	NA
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. Tested Date: June 21, 2011



A D T

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 meters chamber room for below 1GHz test and at a 10 meter open site for above 1GHz test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

NOTE:

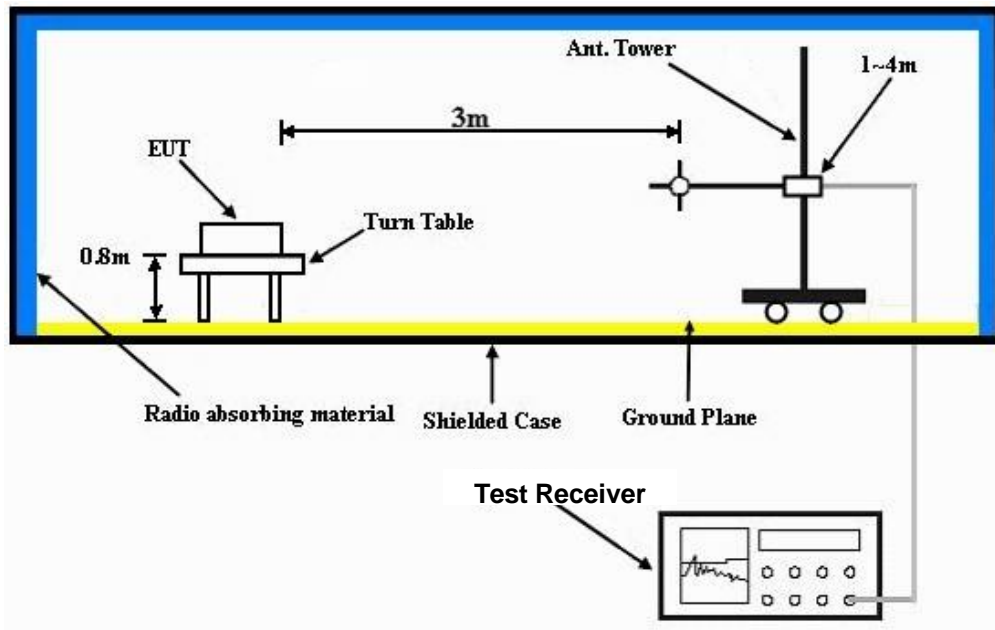
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

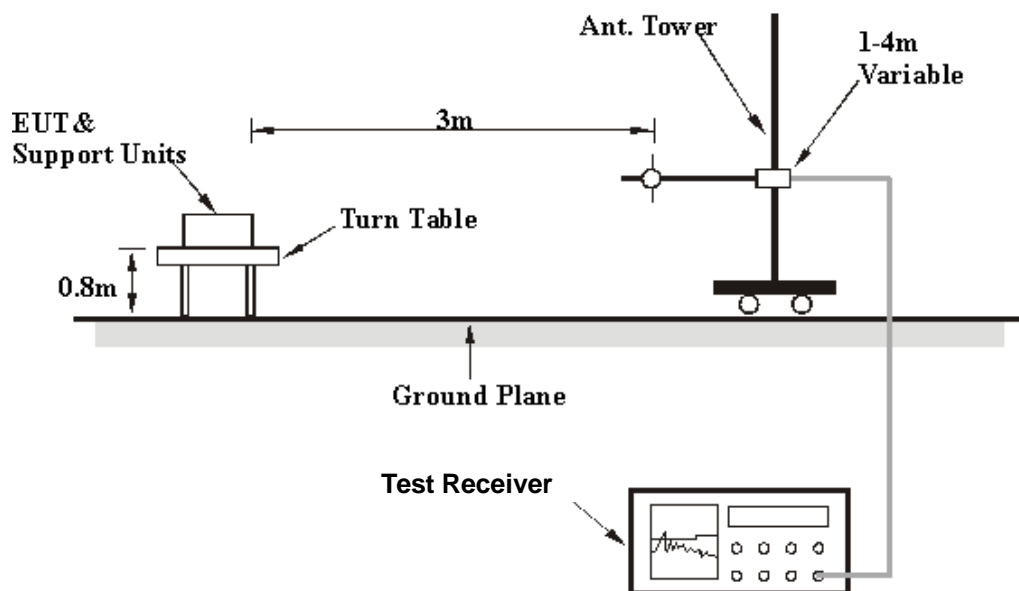
No deviation

4.2.5 TEST SETUP

< Frequency Range below 1GHz >



< Frequency Range above 1GHz >



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



A D T

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (20MHz)

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTIO N FACTOR (dB/m)
1	101.88	37.86 QP	43.50	-5.64	2.00 H	232	28.10	9.76
2	312.56	42.27 QP	46.00	-3.73	1.00 H	360	26.62	15.65
3	358.50	41.18 QP	46.00	-4.82	1.00 H	360	24.33	16.85
4	500.02	42.10 QP	46.00	-3.90	1.00 H	360	21.79	20.31
5	520.86	41.80 QP	46.00	-4.20	1.00 H	360	21.00	20.80
6	729.17	32.33 QP	46.00	-13.67	1.00 H	122	8.48	23.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTIO N FACTOR (dB/m)
1	50.37	35.01 QP	40.00	-4.99	1.50 V	360	20.68	14.33
2	66.36	35.90 QP	40.00	-4.10	1.00 V	21	23.21	12.69
3	156.24	33.91 QP	43.50	-9.59	1.00 V	188	19.33	14.58
4	312.44	38.35 QP	46.00	-7.65	2.00 V	186	22.67	15.68
5	363.60	41.98 QP	46.00	-4.02	2.00 V	67	25.15	16.83
6	500.02	39.18 QP	46.00	-6.82	2.00 V	359	19.12	20.06

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



A D T

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	2375.60	57.8 PK	74.0	-16.2	1.00 H	80	27.80	30.00
2	2375.60	46.2 AV	54.0	-7.8	1.00 H	80	16.20	30.00
3	*2412.00	107.0 PK			1.00 H	80	76.85	30.15
4	*2412.00	104.6 AV			1.00 H	80	74.45	30.15
5	4824.00	50.4 PK	74.0	-23.6	1.00 H	107	14.97	35.43
6	4824.00	44.3 AV	54.0	-9.7	1.00 H	107	8.87	35.43

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.2 PK	74.0	-11.8	1.70 V	254	32.14	30.06
2	2390.00	53.3 AV	54.0	-0.7	1.70 V	254	23.24	30.06
3	*2412.00	115.2 PK			1.70 V	254	85.05	30.15
4	*2412.00	112.2 AV			1.70 V	254	82.05	30.15
5	4824.00	53.1 PK	74.0	-20.9	1.20 V	147	17.67	35.43
6	4824.00	50.1 AV	54.0	-3.9	1.20 V	147	14.67	35.43

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



A D T

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	2375.90	57.6 PK	74.0	-16.4	1.00 H	84	25.99	31.61
2	2375.90	46.2 AV	54.0	-7.8	1.00 H	84	14.59	31.61
3	*2437.00	107.6 PK			1.00 H	78	75.79	31.81
4	*2437.00	105.3 AV			1.00 H	78	73.49	31.81
5	2497.00	56.5 PK	74.0	-17.5	1.00 H	91	24.49	32.01
6	2497.00	44.0 AV	54.0	-10.0	1.00 H	91	11.99	32.01
7	4874.00	50.6 PK	74.0	-23.4	1.00 H	102	11.46	39.14
8	4874.00	44.7 AV	54.0	-9.3	1.00 H	102	5.56	39.14
9	7311.00	54.9 PK	74.0	-19.1	1.25 H	79	8.27	46.63
10	7311.00	44.7 AV	54.0	-9.3	1.25 H	79	-1.93	46.63

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	2375.80	63.8 PK	74.0	-10.2	1.73 V	8	33.79	30.01
2	2375.80	52.7 AV	54.0	-1.3	1.73 V	8	22.69	30.01
3	*2437.00	115.8 PK			1.41 V	8	85.56	30.24
4	*2437.00	113.7 AV			1.41 V	8	83.46	30.24
5	2499.70	65.7 PK	74.0	-8.3	1.38 V	10	35.21	30.49
6	2499.70	52.9 AV	54.0	-1.1	1.38 V	10	22.41	30.49
7	4874.00	53.0 PK	74.0	-21.0	1.04 V	147	17.48	35.52
8	4874.00	49.9 AV	54.0	-4.1	1.04 V	147	14.38	35.52
9	7311.00	55.9 PK	74.0	-18.1	1.54 V	290	13.94	41.96
10	7311.00	50.6 AV	54.0	-3.4	1.54 V	290	8.64	41.96

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



A D T

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	106.0 PK			1.00 H	115	75.66	30.34
2	*2462.00	103.5 AV			1.00 H	115	73.16	30.34
3	2483.50	57.5 PK	74.0	-16.5	1.00 H	115	27.07	30.43
4	2483.50	47.0 AV	54.0	-7.0	1.00 H	115	16.57	30.43
5	4924.00	50.5 PK	74.0	-23.5	1.02 H	116	14.88	35.62
6	4924.00	44.8 AV	54.0	-9.2	1.02 H	116	9.18	35.62
7	7386.00	55.3 PK	74.0	-18.7	1.27 H	66	13.20	42.10
8	7386.00	45.0 AV	54.0	-9.0	1.27 H	66	2.90	42.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.4 PK			1.64 V	30	86.06	30.34
2	*2462.00	113.4 AV			1.64 V	30	83.06	30.34
3	2483.50	64.9 PK	74.0	-9.1	1.64 V	39	34.47	30.43
4	2483.50	53.1 AV	54.0	-0.9	1.64 V	39	22.67	30.43
5	4924.00	54.5 PK	74.0	-19.5	1.18 V	148	18.88	35.62
6	4924.00	52.6 AV	54.0	-1.4	1.18 V	148	16.98	35.62
7	7386.00	55.8 PK	74.0	-18.2	1.70 V	284	13.70	42.10
8	7386.00	50.9 AV	54.0	-3.1	1.70 V	284	8.80	42.10

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



A D T

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	69.7 PK	74.0	-4.3	1.00 H	80	39.64	30.06
2	2390.00	47.5 AV	54.0	-6.5	1.00 H	80	17.44	30.06
3	*2412.00	107.1 PK			1.00 H	80	76.95	30.15
4	*2412.00	96.7 AV			1.00 H	80	66.55	30.15
5	4824.00	46.5 PK	74.0	-27.5	1.03 H	114	11.07	35.43
6	4824.00	34.2 AV	54.0	-19.8	1.03 H	114	-1.23	35.43
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	1.45 V	272	33.84	30.06
2	2390.00	52.3 AV	54.0	-1.7	1.45 V	272	22.24	30.06
3	*2412.00	114.6 PK			1.44 V	2	84.45	30.15
4	*2412.00	104.1 AV			1.44 V	2	73.95	30.15
5	4824.00	48.3 PK	74.0	-25.7	1.08 V	146	12.87	35.43
6	4824.00	35.1 AV	54.0	-18.9	1.08 V	146	-0.33	35.43

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



A D T

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	2376.80	61.3 PK	74.0	-12.7	1.02 H	80	31.29	30.01
2	2376.80	45.5 AV	54.0	-8.5	1.02 H	80	15.49	30.01
3	*2437.00	107.9 PK			1.00 H	77	77.66	30.24
4	*2437.00	97.4 AV			1.00 H	77	67.16	30.24
5	2496.90	62.2 PK	74.0	-11.8	1.05 H	88	31.72	30.48
6	2496.90	44.5 AV	54.0	-9.5	1.05 H	88	14.02	30.48
7	4874.00	46.7 PK	74.0	-27.3	1.04 H	113	11.18	35.52
8	4874.00	34.3 AV	54.0	-19.7	1.04 H	113	-1.22	35.52
9	7311.00	54.6 PK	74.0	-19.4	1.24 H	62	12.64	41.96
10	7311.00	41.5 AV	54.0	-12.5	1.24 H	62	-0.46	41.96

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	2377.00	69.5 PK	74.0	-4.5	1.41 V	45	39.49	30.01
2	2377.00	50.1 AV	54.0	-3.9	1.41 V	45	20.09	30.01
3	*2437.00	114.2 PK			1.42 V	1	83.96	30.24
4	*2437.00	105.6 AV			1.42 V	1	75.36	30.24
5	2496.90	71.9 PK	74.0	-2.1	1.38 V	9	41.42	30.48
6	2496.90	50.0 AV	54.0	-4.0	1.38 V	9	19.52	30.48
7	4874.00	47.8 PK	74.0	-26.2	1.34 V	147	12.28	35.52
8	4874.00	35.4 AV	54.0	-18.6	1.34 V	147	-0.12	35.52
9	7311.00	54.8 PK	74.0	-19.2	1.23 V	305	12.84	41.96
10	7311.00	41.7 AV	54.0	-12.3	1.23 V	305	-0.26	41.96

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



A D T

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	105.9 PK			1.00 H	114	75.56	30.34
2	*2462.00	94.4 AV			1.00 H	114	64.06	30.34
3	2483.50	66.6 PK	74.0	-7.4	1.00 H	114	36.17	30.43
4	2483.50	46.2 AV	54.0	-7.8	1.00 H	114	15.77	30.43
5	4924.00	46.9 PK	74.0	-27.1	1.00 H	103	11.28	35.62
6	4924.00	34.4 AV	54.0	-19.6	1.00 H	103	-1.22	35.62
7	7386.00	54.4 PK	74.0	-19.6	1.20 H	60	12.30	42.10
8	7386.00	41.2 AV	54.0	-12.8	1.20 H	60	-0.90	42.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.4 PK			1.37 V	34	84.06	30.34
2	*2462.00	105.3 AV			1.37 V	34	74.96	30.34
3	2483.50	65.8 PK	74.0	-8.2	1.42 V	9	35.37	30.43
4	2483.50	53.3 AV	54.0	-0.7	1.42 V	9	22.87	30.43
5	4924.00	48.6 PK	74.0	-25.4	1.33 V	149	12.98	35.62
6	4924.00	35.9 AV	54.0	-18.1	1.33 V	149	0.28	35.62
7	7386.00	54.1 PK	74.0	-19.9	1.64 V	300	12.00	42.10
8	7386.00	40.7 AV	54.0	-13.3	1.64 V	300	-1.40	42.10

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



A D T

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	2360.00	58.0 PK	74.0	-16.0	1.00 H	92	28.06	29.94
2	2360.00	46.2 AV	54.0	-7.8	1.00 H	92	16.26	29.94
3	*2412.00	105.5 PK			1.00 H	77	75.35	30.15
4	*2412.00	93.1 AV			1.00 H	77	62.95	30.15
5	4824.00	46.6 PK	74.0	-27.4	1.00 H	105	11.17	35.43
6	4824.00	31.3 AV	54.0	-22.7	1.00 H	105	-4.13	35.43
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.5 PK	74.0	-6.5	1.48 V	80	37.44	30.06
2	2390.00	53.2 AV	54.0	-0.8	1.48 V	80	23.14	30.06
3	*2412.00	112.7 PK			1.46 V	92	82.55	30.15
4	*2412.00	101.9 AV			1.46 V	92	71.75	30.15
5	4824.00	47.3 PK	74.0	-26.7	1.06 V	159	11.87	35.43
6	4824.00	32.7 AV	54.0	-21.3	1.06 V	159	-2.73	35.43

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



A D T

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	2360.00	57.9 PK	74.0	-16.1	1.03 H	163	27.96	29.94
2	2360.00	45.6 AV	54.0	-8.4	1.03 H	163	15.66	29.94
3	*2437.00	105.9 PK			1.00 H	182	75.66	30.24
4	*2437.00	93.5 AV			1.00 H	182	63.26	30.24
5	2497.00	57.9 PK	74.0	-16.1	1.04 H	192	27.42	30.48
6	2497.00	45.9 AV	54.0	-8.1	1.04 H	192	15.42	30.48
7	4874.00	48.4 PK	74.0	-25.6	1.00 H	49	12.88	35.52
8	4874.00	33.5 AV	54.0	-20.5	1.00 H	49	-2.02	35.52
9	7311.00	58.7 PK	74.0	-15.3	1.24 H	56	16.74	41.96
10	7311.00	42.1 AV	54.0	-11.9	1.24 H	56	0.14	41.96

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	2377.10	62.3 PK	74.0	-11.7	1.44 V	43	32.29	30.01
2	2377.10	52.0 AV	54.0	-2.0	1.44 V	43	21.99	30.01
3	*2437.00	115.5 PK			1.67 V	323	85.26	30.24
4	*2437.00	104.6 AV			1.67 V	323	74.36	30.24
5	2497.00	61.8 PK	74.0	-12.2	1.43 V	99	31.32	30.48
6	2497.00	53.2 AV	54.0	-0.8	1.43 V	99	22.72	30.48
7	4874.00	49.9 PK	74.0	-24.1	1.00 V	21	14.38	35.52
8	4874.00	34.2 AV	54.0	-19.8	1.00 V	21	-1.32	35.52
9	7311.00	59.9 PK	74.0	-14.1	1.00 V	255	17.94	41.96
10	7311.00	43.3 AV	54.0	-10.7	1.00 V	255	1.34	41.96

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



A D T

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	105.3 PK			1.00 H	78	74.96	30.34
2	*2462.00	92.8 AV			1.00 H	78	62.46	30.34
3	2483.50	63.2 PK	74.0	-10.8	1.00 H	77	32.77	30.43
4	2483.50	45.8 AV	54.0	-8.2	1.00 H	77	15.37	30.43
5	4924.00	48.3 PK	74.0	-25.7	1.06 H	55	12.68	35.62
6	4924.00	33.3 AV	54.0	-20.7	1.06 H	55	-2.32	35.62
7	7386.00	58.7 PK	74.0	-15.3	1.29 H	48	16.60	42.10
8	7386.00	42.3 AV	54.0	-11.7	1.29 H	48	0.20	42.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.6 PK			1.40 V	340	83.26	30.34
2	*2462.00	103.6 AV			1.40 V	340	73.26	30.34
3	2483.50	65.8 PK	74.0	-8.2	1.64 V	340	35.37	30.43
4	2483.50	53.0 AV	54.0	-1.0	1.64 V	340	22.57	30.43
5	4924.00	50.1 PK	74.0	-23.9	1.14 V	152	14.48	35.62
6	4924.00	34.3 AV	54.0	-19.7	1.14 V	152	-1.32	35.62
7	7386.00	57.4 PK	74.0	-16.6	1.01 V	288	15.30	42.10
8	7386.00	40.9 AV	54.0	-13.1	1.01 V	288	-1.20	42.10

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



A D T

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	2388.90	62.7 PK	74.0	-11.3	1.00 H	77	32.64	30.06
2	2388.90	46.7 AV	54.0	-7.3	1.00 H	77	16.64	30.06
3	*2422.00	100.2 PK			1.00 H	77	70.01	30.19
4	*2422.00	88.2 AV			1.00 H	77	58.01	30.19
5	4844.00	42.8 PK	74.0	-31.2	1.00 H	53	7.33	35.47
6	4844.00	30.1 AV	54.0	-23.9	1.00 H	53	-5.37	35.47
7	7266.00	51.4 PK	74.0	-22.6	1.21 H	53	9.53	41.87
8	7266.00	36.4 AV	54.0	-17.6	1.21 H	53	-5.47	41.87

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	66.5 PK	74.0	-7.5	1.47 V	81	36.44	30.06
2	2390.00	53.3 AV	54.0	-0.7	1.47 V	81	23.24	30.06
3	*2422.00	107.5 PK			1.43 V	271	77.31	30.19
4	*2422.00	97.4 AV			1.43 V	271	67.21	30.19
5	4844.00	43.1 PK	74.0	-30.9	1.47 V	168	7.63	35.47
6	4844.00	30.7 AV	54.0	-23.3	1.47 V	168	-4.77	35.47
7	7266.00	51.5 PK	74.0	-22.5	1.00 V	258	9.63	41.87
8	7266.00	37.5 AV	54.0	-16.5	1.00 V	258	-4.37	41.87

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



A D T

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	2389.50	59.2 PK	74.0	-14.8	1.03 H	69	29.14	30.06
2	2389.50	46.5 AV	54.0	-7.5	1.03 H	69	16.44	30.06
3	*2437.00	105.1 PK			1.00 H	78	74.86	30.24
4	*2437.00	92.3 AV			1.00 H	78	62.06	30.24
5	2496.90	60.5 PK	74.0	-13.5	1.05 H	80	30.02	30.48
6	2496.90	46.1 AV	54.0	-7.9	1.05 H	80	15.62	30.48
7	4874.00	48.3 PK	74.0	-25.7	1.00 H	52	12.78	35.52
8	4874.00	33.5 AV	54.0	-20.5	1.00 H	52	-2.02	35.52
9	7311.00	60.1 PK	74.0	-13.9	1.21 H	62	18.14	41.96
10	7311.00	43.5 AV	54.0	-10.5	1.21 H	62	1.54	41.96

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	2376.70	62.8 PK	74.0	-11.2	1.41 V	43	32.79	30.01
2	2376.70	52.1 AV	54.0	-1.9	1.41 V	43	22.09	30.01
3	*2437.00	110.1 PK			1.65 V	42	79.86	30.24
4	*2437.00	101.0 AV			1.65 V	42	70.76	30.24
5	2484.00	64.7 PK	74.0	-9.3	1.66 V	360	34.27	30.43
6	2484.00	53.3 AV	54.0	-0.7	1.66 V	360	22.87	30.43
7	4874.00	48.7 PK	74.0	-25.3	1.30 V	152	13.18	35.52
8	4874.00	34.1 AV	54.0	-19.9	1.30 V	152	-1.42	35.52
9	7311.00	60.3 PK	74.0	-13.7	1.00 V	258	18.34	41.96
10	7311.00	44.1 AV	54.0	-9.9	1.00 V	258	2.14	41.96

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	101.2 PK			1.00 H	76	70.90	30.30
2	*2452.00	88.8 AV			1.00 H	76	58.50	30.30
3	2483.50	61.5 PK	74.0	-12.5	1.00 H	76	31.07	30.43
4	2483.50	46.4 AV	54.0	-7.6	1.00 H	76	15.97	30.43
5	4904.00	45.6 PK	74.0	-28.4	1.00 H	43	10.02	35.58
6	4904.00	34.1 AV	54.0	-19.9	1.00 H	43	-1.48	35.58
7	7356.00	53.7 PK	74.0	-20.3	1.24 H	51	11.66	42.04
8	7356.00	41.3 AV	54.0	-12.7	1.24 H	51	-0.74	42.04

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	108.8 PK			1.67 V	37	78.50	30.30
2	*2452.00	99.2 AV			1.67 V	37	68.92	30.30
3	2483.50	66.5 PK	74.0	-7.5	1.66 V	105	36.07	30.43
4	2483.50	53.5 AV	54.0	-0.5	1.66 V	105	23.07	30.43
5	4904.00	46.2 PK	74.0	-27.8	1.17 V	164	10.62	35.58
6	4904.00	32.1 AV	54.0	-21.9	1.17 V	164	-3.48	35.58
7	7356.00	53.1 PK	74.0	-20.9	1.02 V	289	11.06	42.04
8	7356.00	39.3 AV	54.0	-14.7	1.02 V	289	-2.74	42.04

- 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 : Mar. 21, 2012

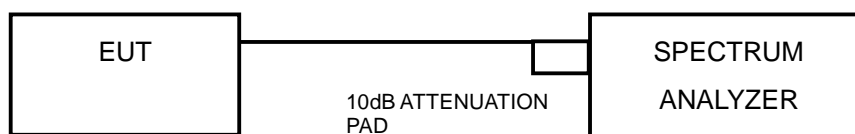
4.3.3 TEST PROCEDURE

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





A D T

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.



A D T

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.68	0.5	PASS
6	2437	9.88	0.5	PASS
11	2462	10.42	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.46	0.5	PASS
6	2437	16.48	0.5	PASS
11	2462	16.46	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 2		
1	2412	17.70	17.75	0.5	PASS
6	2437	17.73	17.70	0.5	PASS
11	2462	17.72	17.68	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 2		
3	2422	36.72	36.21	0.5	PASS
6	2437	36.74	36.17	0.5	PASS
9	2452	36.72	36.27	0.5	PASS



A D T

4.4 CONDUCTED OUTPUT POWER

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
Peak Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 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 : Mar. 21, 2012

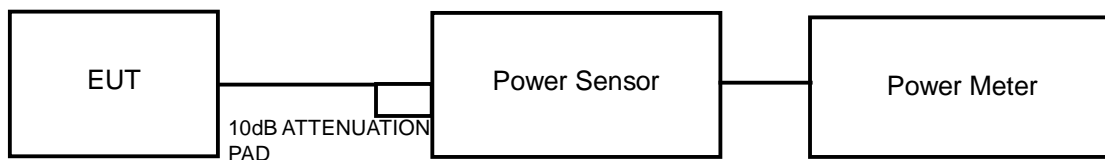
4.4.3 TEST PROCEDURES

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



A D T

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	323.59	25.10	30	PASS
6	2437	371.54	25.70	30	PASS
11	2462	407.38	26.10	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	691.83	28.40	30	PASS
6	2437	691.83	28.40	30	PASS
11	2462	616.6	27.90	30	PASS

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 2				
1	2412	24.90	24.00	560.22	27.48	30	PASS
6	2437	26.60	26.50	903.77	29.56	30	PASS
11	2462	25.70	25.90	760.58	28.81	30	PASS

802.11n (40MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 2				
3	2422	23.40	23.50	442.65	26.46	30	PASS
6	2437	26.50	26.80	925.31	29.66	30	PASS
9	2452	25.00	25.10	639.82	28.06	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 : Mar. 21, 2012

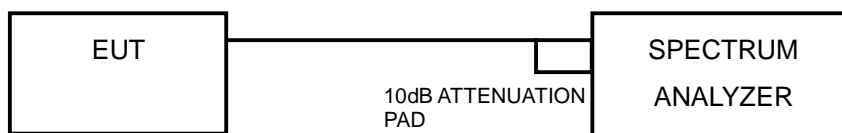
4.5.3 TEST PROCEDURE

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



A D T

4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	13.77	-1.46	8	PASS
6	2437	14.75	-0.48	8	PASS
11	2462	14.64	-0.59	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	7.68	-7.55	8	PASS
6	2437	8.11	-7.12	8	PASS
11	2462	6.30	-8.93	8	PASS

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	4.08	-11.15	3.01	-8.14	8	PASS
	6	2437	6.31	-8.92	3.01	-5.91	8	PASS
	11	2462	5.30	-9.93	3.01	-6.92	8	PASS
2	1	2412	4.52	-10.71	3.01	-7.70	8	PASS
	6	2437	5.66	-9.57	3.01	-6.56	8	PASS
	11	2462	5.18	-10.05	3.01	-7.04	8	PASS

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	0.12	-15.11	3.01	-12.10	8	PASS
	6	2437	4.44	-10.79	3.01	-7.78	8	PASS
	9	2452	1.10	-14.13	3.01	-11.12	8	PASS
2	3	2422	-0.41	-15.64	3.01	-12.63	8	PASS
	6	2437	4.61	-10.62	3.01	-7.61	8	PASS
	9	2452	1.31	-13.92	3.01	-10.91	8	PASS



A D T

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 : Mar. 21, 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.

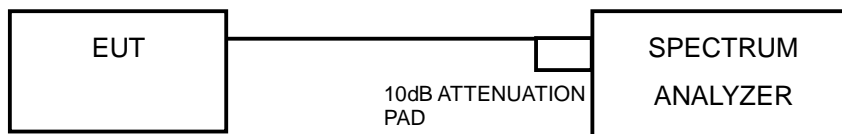
MEASUREMENT PROCEDURE OOB

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

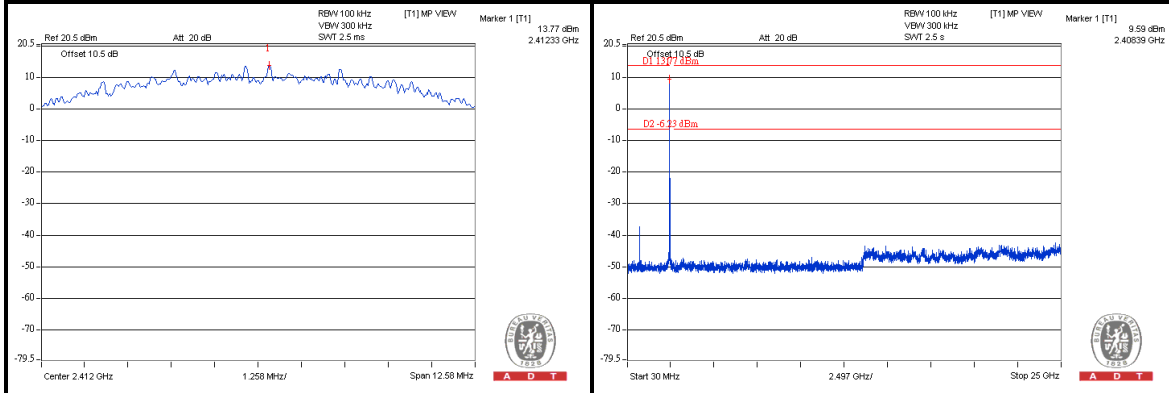
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



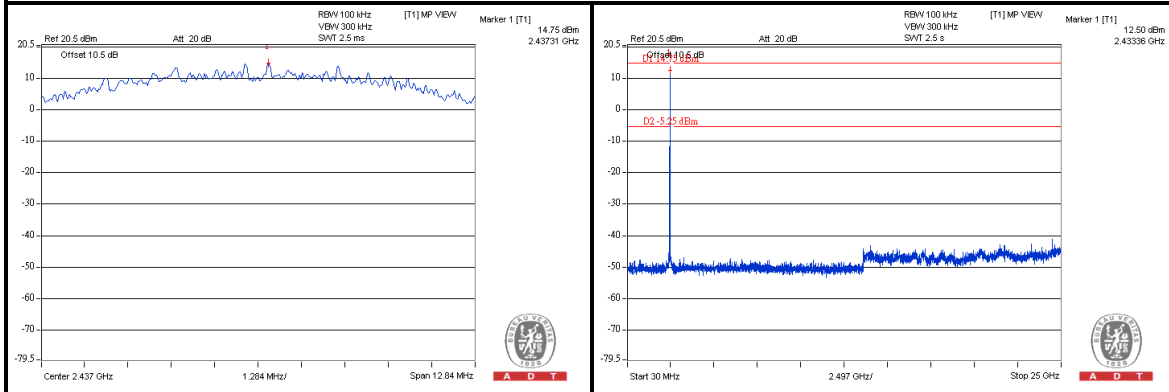
A D T

802.11b

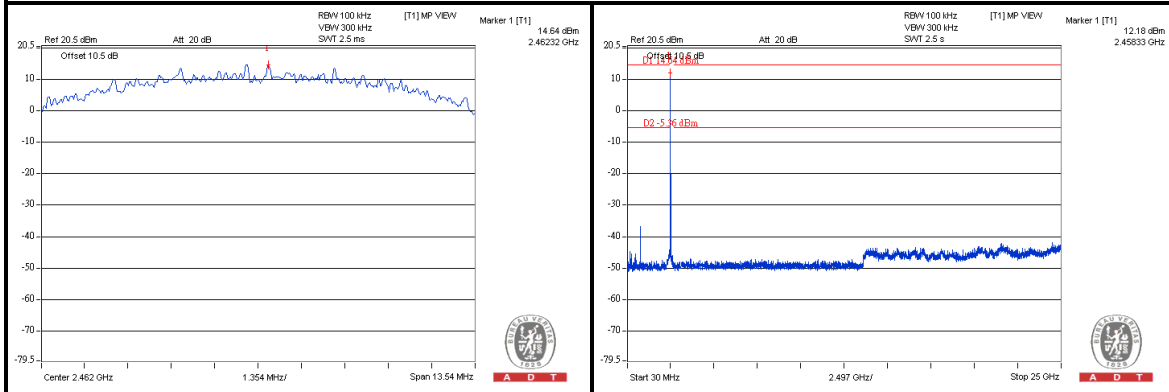
CH 1



CH 6



CH 11

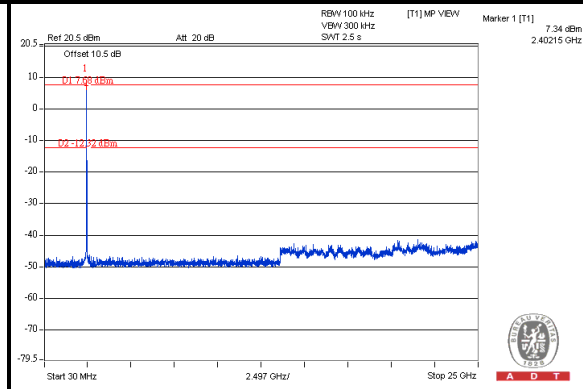
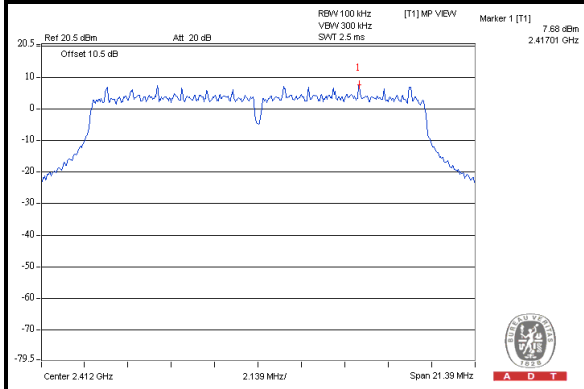




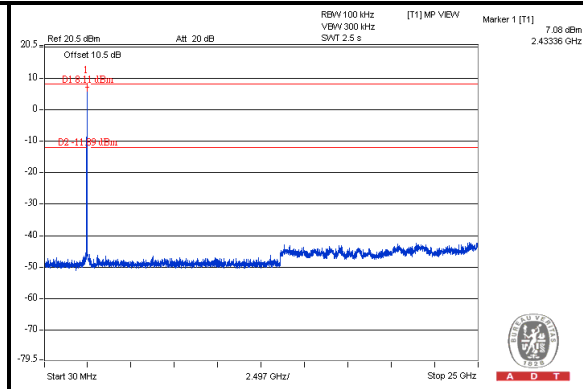
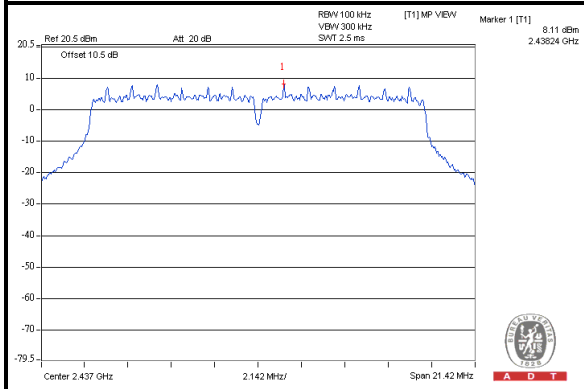
A D T

802.11g

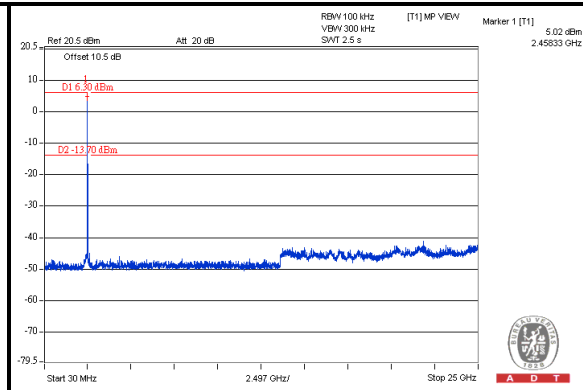
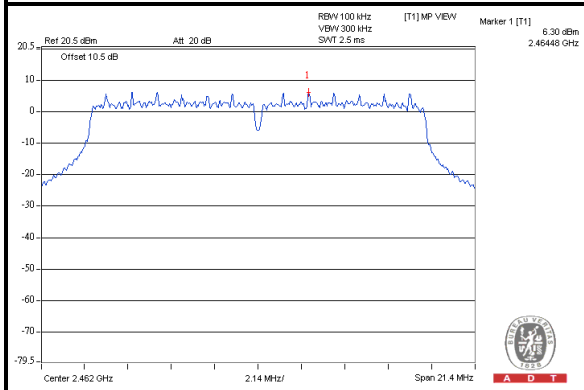
CH 1



CH 6



CH 11

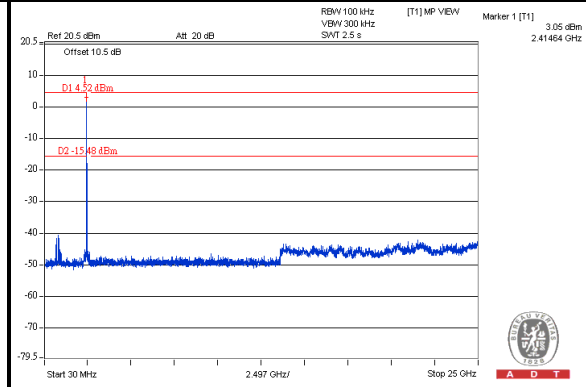
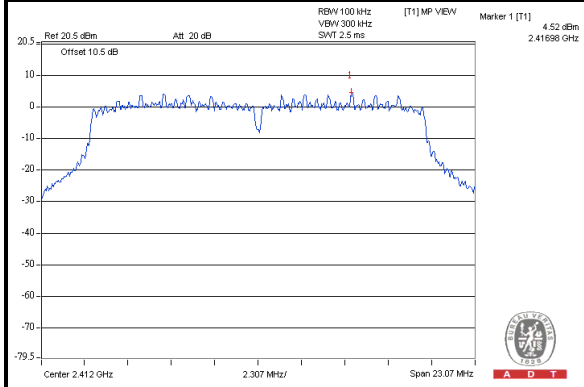




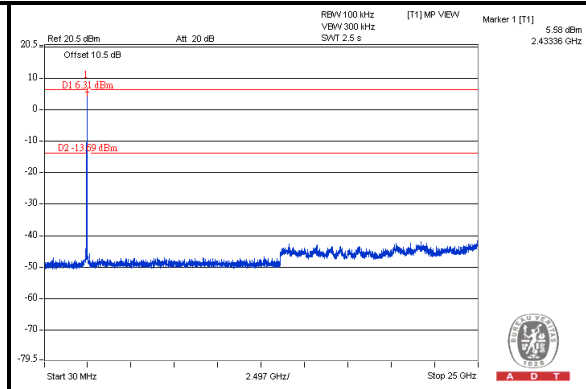
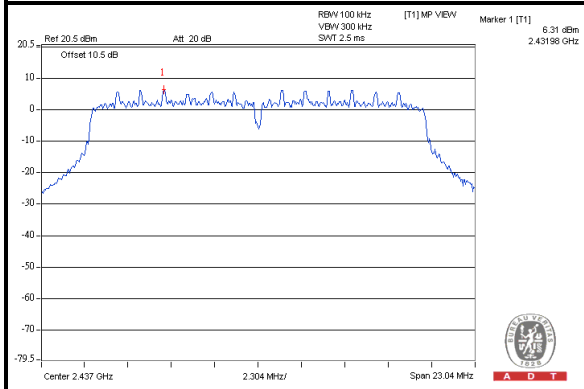
A D T

802.11n (20MHz)

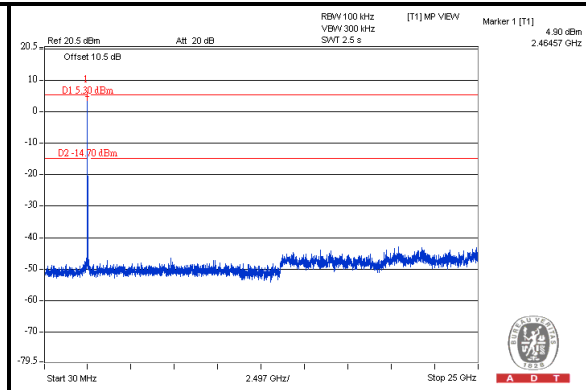
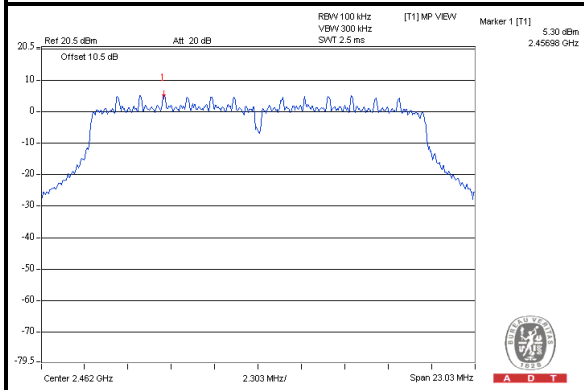
CH 1



CH 6

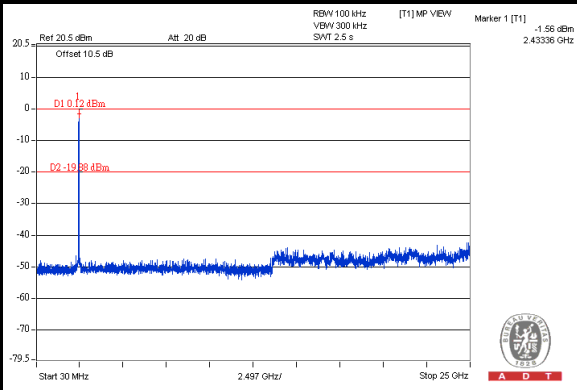
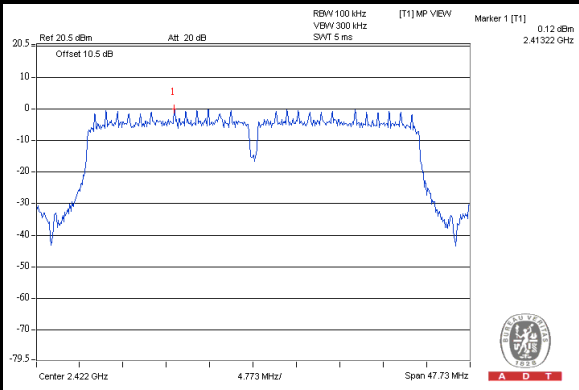


CH 11

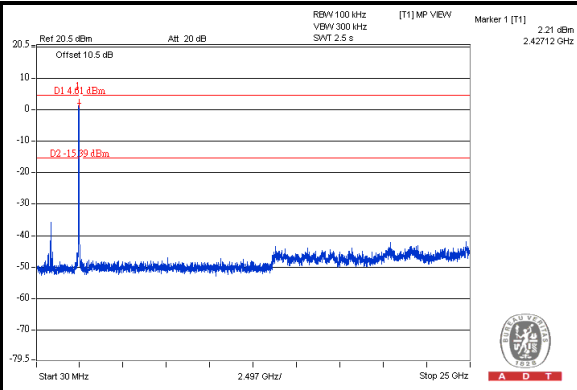
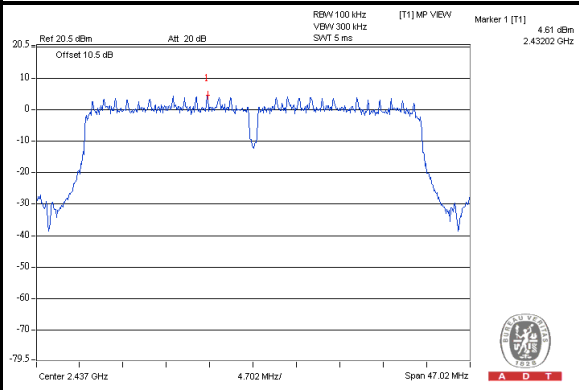


802.11n (20MHz)

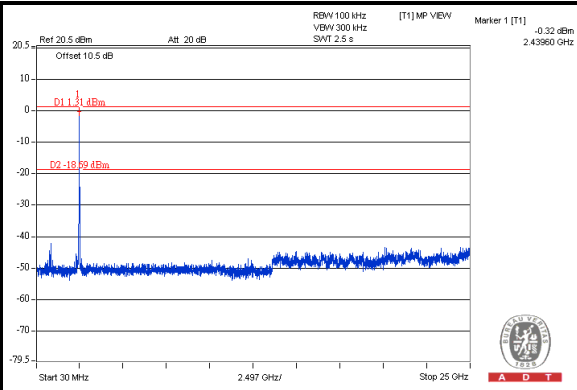
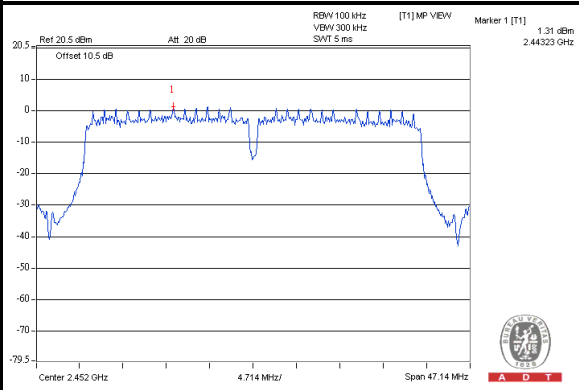
CH 3



CH 6



CH 9





A D T

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:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Email: service.adt@tw.bureauveritas.com

Web Site: www.adt.com.tw

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



A D T

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 ---