



FCC TEST REPORT

REPORT NO.: RF120418E09D

MODEL NO.: DIR-610N+, DIR-610N

FCC ID: KA2IR610NA1

RECEIVED: Apr. 18, 2012

TESTED: May 09 to 11, 2012, Jan. 24 to 31 and
June 21 to July 09, 2013

ISSUED: July 19, 2013

APPLICANT: D-Link Corporation

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ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd.,
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120418E09D	Original release	July 19, 2013

1. CERTIFICATION

PRODUCT: WIRELESS N 150 HOME ROUTER

BRAND NAME: D-Link

MODEL NO.: DIR-610N+, DIR-610N

TEST SAMPLE: MASS-PRODUCTION

APPLICANT: D-Link Corporation

TESTED: May 09 to 11, 2012,
Jan. 24 to 31 and June 21 to July 09, 2013

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

The above equipment (Model: DIR-610N+) 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:** July 19, 2013
(Lori Chung, Specialist)

APPROVED BY :  , **DATE:** July 19, 2013
(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 -3.14dB at 0.34531MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2489.34MHz & 2390.00MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.



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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) – For MODE 1	5.59 dB
Radiated emissions (30MHz-1GHz) – For MODE 2 & 3	5.63 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	WIRELESS N 150 HOME ROUTER
MODEL NO.	DIR-610N+, DIR-610N
POWER SUPPLY	DC 5V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: Up to 11Mbps 802.11g: Up to 54Mbps 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: 158.489mW 802.11g: 194.984mW 802.11n (HT20): 177.828mW 802.11n (HT40): 114.815mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter × 1

NOTE:

1. The EUT have two model names, which are identical to each other in all aspects except for the following table:

Brand	Model No.	Difference
D-Link	DIR-610N+	For marketing requirement
	DIR-610N	

From the above models, model: DIR-610N+ was selected as representative model for the test and its data was recorded in this report.

2. There is one antenna provided to this EUT,, please refer to the following table:

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

3. The EUT must be supplied with a power adapter and following three different models could be chosen as following table:

No.	Manufacturer	Brand	Model No.	Spec.
1	Yeou Diann	D-Link	AMS47-0501000FU	Input: 100-240V, 0.2A, 50/60Hz Output: 5V, 1A Power core: DC output cable (1.2m, unshielded)
2	LEI	D-Link	MU03B5050055-A1	Input: 100-240V, 0.15A, 50-60Hz Output: 5V, 0.55A Power core: DC output cable (1.2m, unshielded)
3	TENPAO	D-Link	S003IU0500055	Input: 100-240V, 0.15A, 50-60Hz Output: 5V, 0.55A Power core: DC output cable (1.2m, unshielded)

4. The EUT incorporates a SISO function without beam forming function.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	1TX/1RX
802.11n (HT40)	1TX/1RX

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

3.2 DESCRIPTION OF TEST MODES

11 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		

7 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	
MODE 1	√	√	√	√	√	With adapter 1
MODE 2	√	√	-	-	-	With adapter 2
MODE 3	√	√	-	-	-	With adapter 3

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

POWER LINE CONDUCTED EMISSION TEST:

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

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

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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



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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	TESTED BY
PLC	27deg. C, 63%RH 25deg. C, 65%RH 26deg. C, 62%RH	120Vac, 60Hz	Kyle Huang Anderson Chen Jyunchun Lin
RE<1G	24deg. C, 73%RH 22deg. C, 69%RH 23deg. C, 71%RH	120Vac, 60Hz	Amos Chuang Tim Ho Chilin Lee
RE ³ 1G	25deg. C, 65%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nelson Teng
OB	25deg. C, 60%RH	120Vac, 60Hz	Nelson Teng

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C. (15.247)
558074 D01 DTS Meas Guidance v03r01
ANSI C63.10-2009

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

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



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3.4 DESCRIPTION OF SUPPORT UNITS

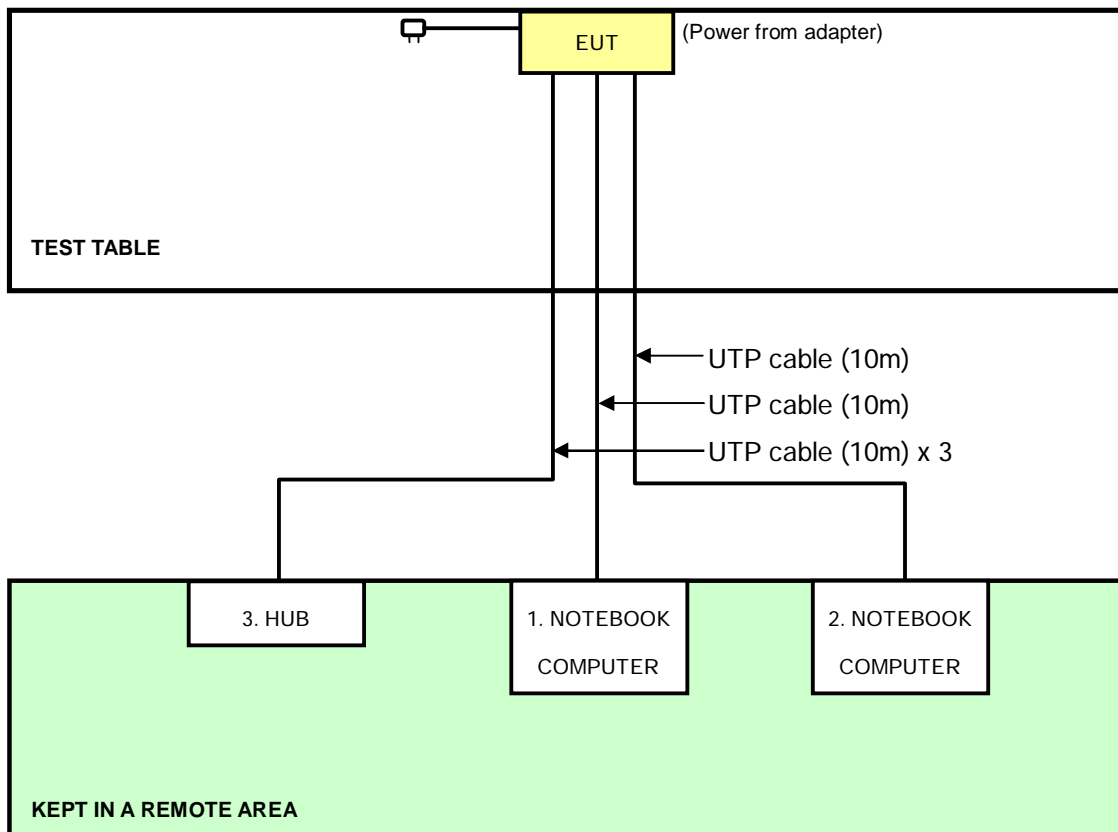
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

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

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

Note: The power cords of the above support units were unshielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST





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4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (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

For MODE 1 test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Feb. 29, 2012	Feb. 28, 2013
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 10, 2011	June 09, 2012
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 06, 2011	Aug. 05, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: May 11, 2012



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For MODE 2 & 3 test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 07, 2013	June 06, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 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. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: June 21 to July 08, 2013

4.1.3 TEST PROCEDURES

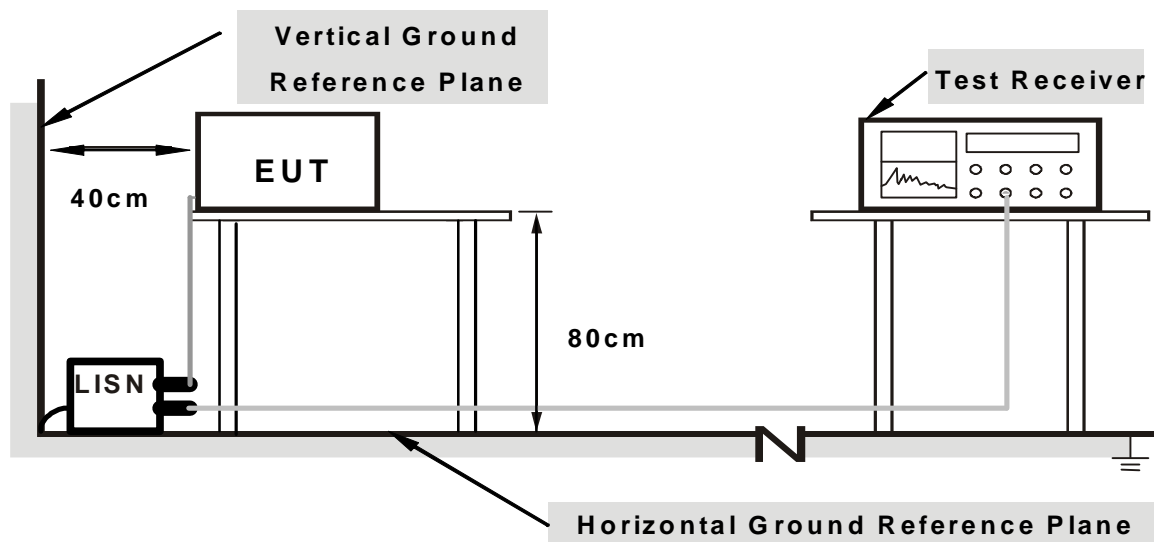
- a. The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH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

NOTE: The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

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

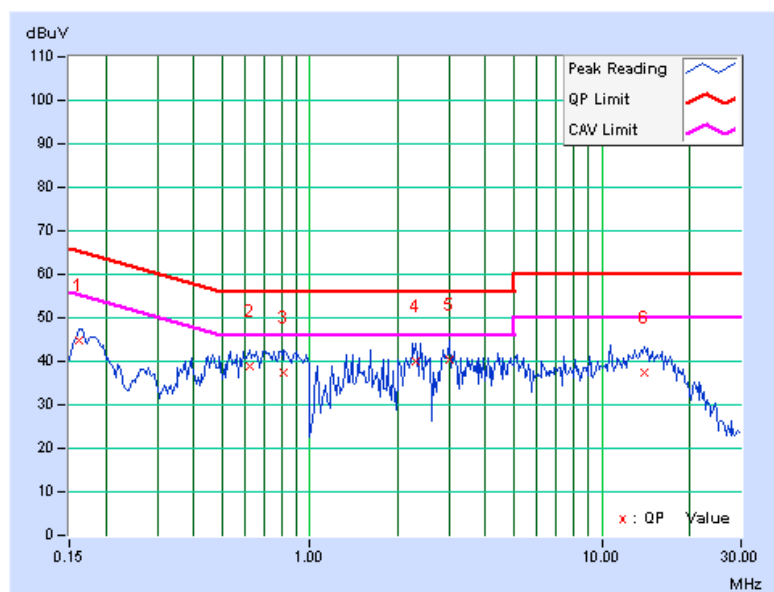
4.1.7 TEST RESULTS (MODE 1)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
--------------	----------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.16172	0.06	44.87	39.60	44.93	39.66	65.38	55.38	-20.45
2	0.62266	0.09	38.74	28.65	38.83	28.74	56.00	46.00	-17.17	-17.26
3	0.81797	0.10	37.18	27.98	37.28	28.08	56.00	46.00	-18.72	-17.92
4	2.31641	0.20	39.96	31.68	40.16	31.88	56.00	46.00	-15.84	-14.12
5	3.01172	0.23	40.08	31.82	40.31	32.05	56.00	46.00	-15.69	-13.95
6	14.00781	0.50	36.82	27.78	37.32	28.28	60.00	50.00	-22.68	-21.72

REMARKS:

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

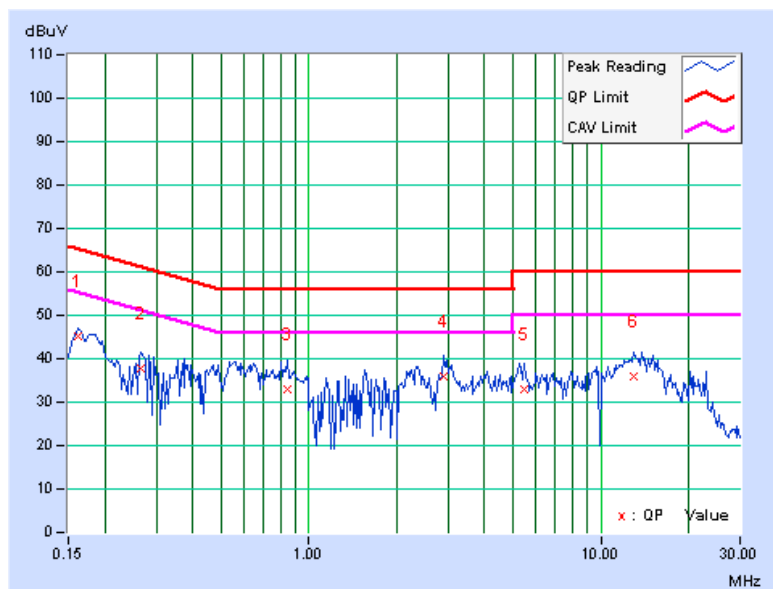


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.16172	0.07	44.97	39.64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

REMARKS:

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





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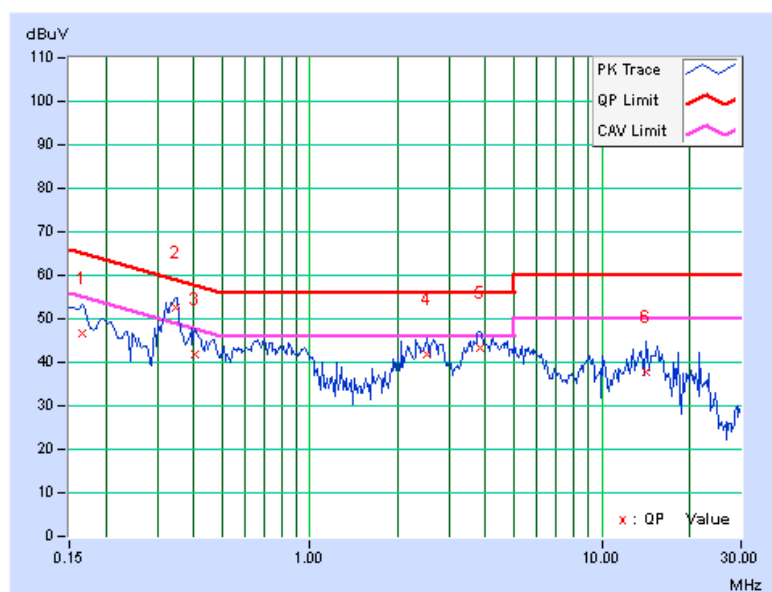
4.1.8 TEST RESULTS (MODE 2)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

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	0.13	46.59	35.46	46.72	35.59	65.18	55.18	-18.46
2	0.34531	0.17	52.48	45.77	52.65	45.94	59.07	49.07	-6.43	-3.14
3	0.40391	0.18	41.79	24.20	41.97	24.38	57.77	47.77	-15.80	-23.39
4	2.53125	0.30	41.52	32.29	41.82	32.59	56.00	46.00	-14.18	-13.41
5	3.83203	0.35	43.10	34.73	43.45	35.08	56.00	46.00	-12.55	-10.92
6	14.15234	0.84	37.01	30.68	37.85	31.52	60.00	50.00	-22.15	-18.48

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

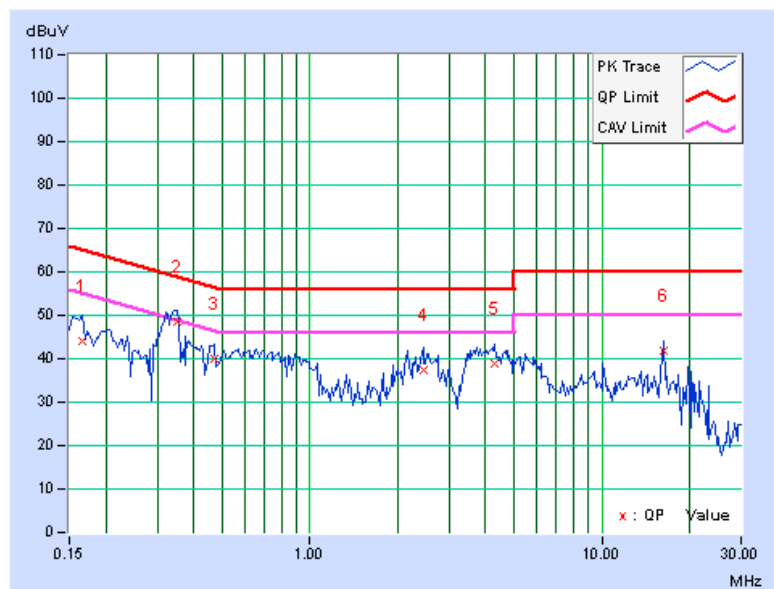


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.16562	0.11	43.98	32.44	44.09	32.55	65.18	55.18	-21.09
2	0.34966	0.16	48.40	41.98	48.56	42.14	58.97	48.97	-10.41	-6.83
3	0.47031	0.17	39.90	32.83	40.07	33.00	56.51	46.51	-16.43	-13.50
4	2.44922	0.28	37.11	29.10	37.39	29.38	56.00	46.00	-18.61	-16.62
5	4.30469	0.34	38.43	29.75	38.77	30.09	56.00	46.00	-17.23	-15.91
6	16.22772	0.67	41.32	36.41	41.99	37.08	60.00	50.00	-18.01	-12.92

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



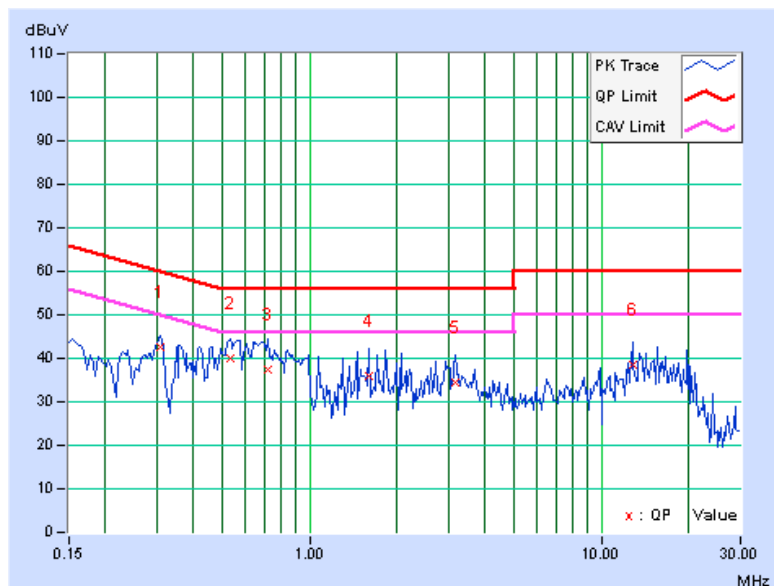
4.1.9 TEST RESULTS (MODE 3)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.30625	0.18	42.26	34.62	42.44	34.80	60.07	50.07	-17.64
2	0.53281	0.21	39.61	26.44	39.82	26.65	56.00	46.00	-16.18	-19.35
3	0.72031	0.23	37.20	23.44	37.43	23.67	56.00	46.00	-18.57	-22.33
4	1.59766	0.30	35.51	25.34	35.81	25.64	56.00	46.00	-20.19	-20.36
5	3.16016	0.42	34.03	25.55	34.45	25.97	56.00	46.00	-21.55	-20.03
6	12.80859	1.07	37.38	28.80	38.45	29.87	60.00	50.00	-21.55	-20.13

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

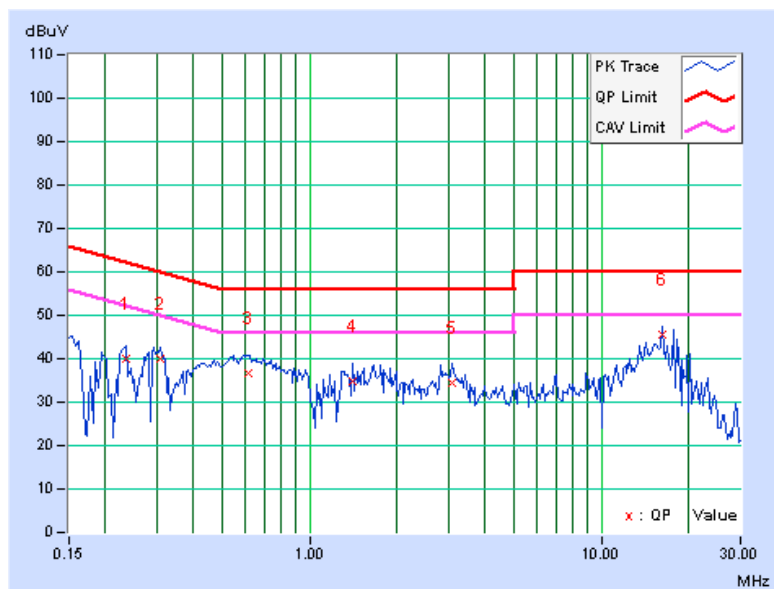


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.23594	0.14	39.89	31.46	40.03	31.60	62.24	52.24	-22.21
2	0.30778	0.16	39.77	33.87	39.93	34.03	60.03	50.03	-20.10	-16.00
3	0.61484	0.20	36.48	27.30	36.68	27.50	56.00	46.00	-19.32	-18.50
4	1.39844	0.25	34.50	25.52	34.75	25.77	56.00	46.00	-21.25	-20.23
5	3.09375	0.37	33.90	25.69	34.27	26.06	56.00	46.00	-21.73	-19.94
6	16.16797	1.00	44.69	38.31	45.69	39.31	60.00	50.00	-14.31	-10.69

REMARKS:

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



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.



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4.2.2 TEST INSTRUMENTS

For MODE 1 Below 1GHz 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	000032009111 0	Nov. 19, 2012	Nov. 20, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
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: Jan. 24, 2013



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For MODE 2 Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29, 2013	Jan. 28, 2014
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	Mar. 19, 2013	Mar. 18, 2014
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. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.07	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: June 24, 2013



A D T

For MODE 3 Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29, 2013	Jan. 28, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
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. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.07	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: July 09, 2013



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For Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2011	Nov. 29 , 2012
HP Pre_Amplifier	8449B	300801923	Oct. 31, 2011	Oct. 30, 2012
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 02, 2011	Sep. 01, 2012
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 02, 2012	Apr. 01, 2013
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 16, 2011	Dec. 15, 2012
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2012	Jan. 16, 2013
RF Switches	EMH-011	1001	Sep. 24, 2011	Sep. 23, 2012
RF CABLE (Chaintek)	Sucoflex 106	RF106-102	Jan. 19, 2012	Jan. 18, 2013
RF Cable	8DFB	STCCAB-30M-1GHz	Sep. 24, 2011	Sep. 23, 2012
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
- 5 The VCCI Site Registration No. is R-1626.
- 6 The CANADA Site Registration No. is IC 7450G-3.
- 7 Tested Date: May 09, 2012

4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room for below 1GHz test and 10 meters open field 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.

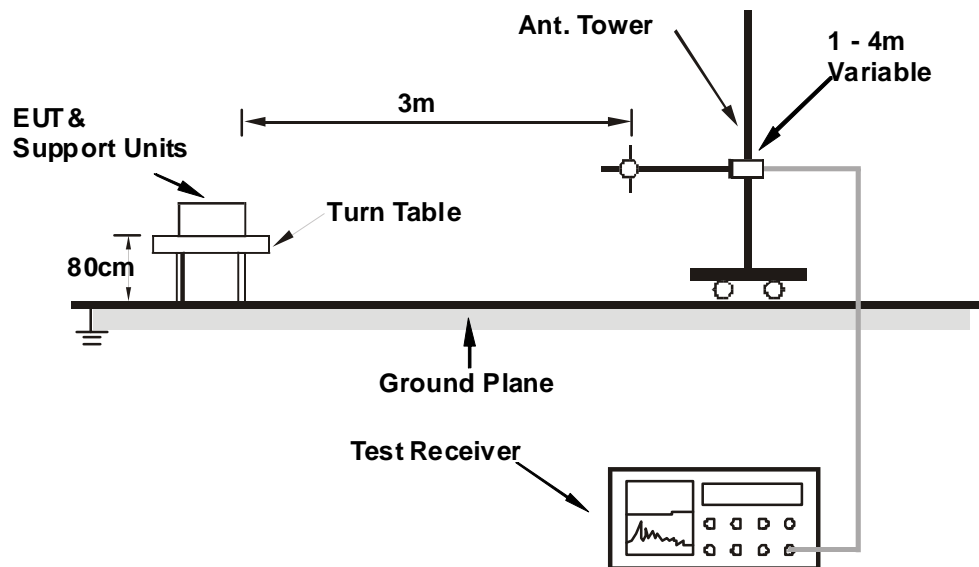
NOTE:

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



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 (MODE 1)

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	36.14	35.9 QP	40.0	-4.1	1.00 H	360	22.67	13.23
2	74.53	32.3 QP	40.0	-7.7	1.00 H	20	21.02	11.30
3	183.71	32.1 QP	43.5	-11.5	1.00 H	133	19.42	12.63
4	239.96	36.2 QP	46.0	-9.8	2.00 H	360	23.28	12.91
5	500.02	34.4 QP	46.0	-11.6	2.00 H	0	14.01	20.39
6	599.97	34.2 QP	46.0	-11.8	1.00 H	0	11.51	22.66
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	36.15	36.0 QP	40.0	-4.0	1.00 V	2	22.74	13.23
2	74.53	33.0 QP	40.0	-7.0	1.00 V	11	21.74	11.30
3	123.55	36.2 QP	43.5	-7.3	1.00 V	2	23.37	12.81
4	239.96	32.1 QP	46.0	-13.9	2.00 V	7	19.22	12.91
5	500.02	35.5 QP	46.0	-10.5	1.00 V	12	15.15	20.39
6	840.01	34.8 QP	46.0	-11.2	1.50 V	114	8.22	26.58

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



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ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.3 PK	74.0	-13.7	1.91 H	41	30.52	29.78
2	2390.00	50.9 AV	54.0	-3.1	1.91 H	41	21.12	29.78
3	*2412.00	109.4 PK			1.91 H	41	79.53	29.87
4	*2412.00	107.2 AV			1.91 H	41	77.33	29.87
5	4824.00	54.7 PK	74.0	-19.3	1.60 H	318	19.44	35.26
6	4824.00	52.6 AV	54.0	-1.4	1.60 H	318	17.34	35.26

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

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

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.8 PK			1.89 H	43	79.84	29.96
2	*2437.00	107.8 AV			1.89 H	43	77.84	29.96
3	4874.00	47.8 PK	74.0	-26.2	1.14 H	315	12.48	35.32
4	4874.00	42.5 AV	54.0	-11.5	1.14 H	315	7.18	35.32
5	7311.00	54.3 PK	74.0	-19.7	1.32 H	47	12.80	41.50
6	7311.00	48.6 AV	54.0	-5.4	1.32 H	47	7.10	41.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.5 PK			1.66 V	88	78.54	29.96
2	*2437.00	106.4 AV			1.66 V	88	76.44	29.96
3	4874.00	44.8 PK	74.0	-29.2	1.24 V	189	9.48	35.32
4	4874.00	36.5 AV	54.0	-17.5	1.24 V	189	1.18	35.32
5	7311.00	57.2 PK	74.0	-16.8	1.32 V	342	15.70	41.50
6	7311.00	52.9 AV	54.0	-1.1	1.32 V	342	11.40	41.50

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.4 PK			1.90 H	41	80.34	30.06
2	*2462.00	108.4 AV			1.90 H	41	78.34	30.06
3	2483.50	61.6 PK	74.0	-12.4	1.89 H	42	31.46	30.14
4	2483.50	53.0 AV	54.0	-1.0	1.89 H	42	22.86	30.14
5	4924.00	48.6 PK	74.0	-25.4	1.31 H	311	13.20	35.40
6	4924.00	44.1 AV	54.0	-9.9	1.31 H	311	8.70	35.40
7	7386.00	53.9 PK	74.0	-20.1	1.27 H	44	12.19	41.71
8	7386.00	48.2 AV	54.0	-5.8	1.27 H	44	6.49	41.71

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.9 PK			1.65 V	73	77.84	30.06
2	*2462.00	105.9 AV			1.65 V	73	75.84	30.06
3	2483.50	61.3 PK	74.0	-12.7	1.66 V	98	31.16	30.14
4	2483.50	52.2 AV	54.0	-1.8	1.66 V	98	22.06	30.14
5	4924.00	48.8 PK	74.0	-25.2	1.51 V	174	13.40	35.40
6	4924.00	43.9 AV	54.0	-10.1	1.51 V	174	8.50	35.40
7	7386.00	56.9 PK	74.0	-17.1	1.32 V	343	15.19	41.71
8	7386.00	52.6 AV	54.0	-1.4	1.32 V	343	10.89	41.71

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier 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	67.4 PK	74.0	-6.6	1.90 H	47	37.62	29.78
2	2390.00	53.0 AV	54.0	-1.0	1.90 H	47	23.22	29.78
3	*2412.00	110.4 PK			1.91 H	47	80.53	29.87
4	*2412.00	101.3 AV			1.91 H	47	71.43	29.87
5	4824.00	44.1 PK	74.0	-29.9	1.18 H	326	8.84	35.26
6	4824.00	31.5 AV	54.0	-22.5	1.18 H	326	-3.76	35.26

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.8 PK	74.0	-14.2	1.61 V	95	30.02	29.78
2	2390.00	47.5 AV	54.0	-6.5	1.61 V	95	17.72	29.78
3	*2412.00	106.9 PK			1.61 V	93	77.03	29.87
4	*2412.00	98.7 AV			1.61 V	93	68.83	29.87
5	4824.00	44.2 PK	74.0	-29.8	1.23 V	189	8.94	35.26
6	4824.00	32.0 AV	54.0	-22.0	1.23 V	189	-3.26	35.26

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2384.88	62.6 PK	74.0	-11.4	1.89 H	44	32.84	29.76
2	2384.88	52.7 AV	54.0	-1.3	1.89 H	44	22.94	29.76
3	*2437.00	111.1 PK			1.81 H	45	81.14	29.96
4	*2437.00	102.5 AV			1.81 H	45	72.54	29.96
5	2489.34	63.1 PK	74.0	-10.9	1.47 H	53	32.94	30.16
6	2489.34	53.5 AV	54.0	-0.5	1.47 H	53	23.34	30.16
7	4874.00	43.9 PK	74.0	-30.1	1.13 H	327	8.58	35.32
8	4874.00	31.3 AV	54.0	-22.7	1.13 H	327	-4.02	35.32
9	7311.00	57.3 PK	74.0	-16.7	1.21 H	38	15.80	41.50
10	7311.00	44.3 AV	54.0	-9.7	1.21 H	38	2.80	41.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.0 PK			1.63 V	95	77.04	29.96
2	*2437.00	98.7 AV			1.63 V	95	68.74	29.96
3	4874.00	44.1 PK	74.0	-29.9	1.20 V	188	8.78	35.32
4	4874.00	31.7 AV	54.0	-22.3	1.20 V	188	-3.62	35.32
5	7311.00	57.4 PK	74.0	-16.6	1.31 V	347	15.90	41.50
6	7311.00	44.5 AV	54.0	-9.5	1.31 V	347	3.00	41.50

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.9 PK			1.69 H	44	79.84	30.06
2	*2462.00	101.5 AV			1.69 H	44	71.44	30.06
3	2483.50	71.7 PK	74.0	-2.3	1.70 H	45	41.56	30.14
4	2483.50	53.4 AV	54.0	-0.6	1.70 H	45	23.26	30.14
5	4924.00	44.0 PK	74.0	-30.0	1.16 H	322	8.60	35.40
6	4924.00	31.5 AV	54.0	-22.5	1.16 H	322	-3.90	35.40
7	7386.00	57.0 PK	74.0	-17.0	1.26 H	42	15.29	41.71
8	7386.00	44.1 AV	54.0	-9.9	1.26 H	42	2.39	41.71

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.7 PK			1.66 V	98	76.64	30.06
2	*2462.00	97.9 AV			1.66 V	98	67.84	30.06
3	2483.50	61.9 PK	74.0	-12.1	1.66 V	99	31.76	30.14
4	2483.50	49.0 AV	54.0	-5.0	1.66 V	99	18.86	30.14
5	4924.00	44.2 PK	74.0	-29.8	1.15 V	173	8.80	35.40
6	4924.00	31.8 AV	54.0	-22.2	1.15 V	173	-3.60	35.40
7	7386.00	57.7 PK	74.0	-16.3	1.33 V	339	15.99	41.71
8	7386.00	44.4 AV	54.0	-9.6	1.33 V	339	2.69	41.71

REMARKS:

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



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802.11n (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	68.8 PK	74.0	-5.2	1.89 H	45	39.02	29.78
2	2390.00	53.5 AV	54.0	-0.5	1.89 H	45	23.72	29.78
3	*2412.00	109.0 PK			1.89 H	45	79.13	29.87
4	*2412.00	100.5 AV			1.89 H	45	70.63	29.87
5	4824.00	43.6 PK	74.0	-30.4	1.17 H	329	8.34	35.26
6	4824.00	31.0 AV	54.0	-23.0	1.17 H	329	-4.26	35.26

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.4 PK	74.0	-10.6	1.69 V	94	33.62	29.78
2	2390.00	48.7 AV	54.0	-5.3	1.69 V	94	18.92	29.78
3	*2412.00	106.0 PK			1.69 V	97	76.13	29.87
4	*2412.00	97.5 AV			1.69 V	97	67.63	29.87
5	4824.00	43.9 PK	74.0	-30.1	1.28 V	195	8.64	35.26
6	4824.00	32.0 AV	54.0	-22.0	1.28 V	195	-3.26	35.26

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.30	61.1 PK	74.0	-12.9	1.89 H	49	31.34	29.76
2	2385.30	50.7 AV	54.0	-3.3	1.89 H	49	20.94	29.76
3	*2437.00	110.6 PK			1.82 H	44	80.64	29.96
4	*2437.00	101.8 AV			1.82 H	44	71.84	29.96
5	2488.74	63.5 PK	74.0	-10.5	1.47 H	50	33.34	30.16
6	2488.74	53.2 AV	54.0	-0.8	1.47 H	50	23.04	30.16
7	4874.00	43.9 PK	74.0	-30.1	1.12 H	328	8.58	35.32
8	4874.00	31.3 AV	54.0	-22.7	1.12 H	328	-4.02	35.32
9	7311.00	56.9 PK	74.0	-17.1	1.21 H	37	15.40	41.50
10	7311.00	44.3 AV	54.0	-9.7	1.21 H	37	2.80	41.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.29	59.2 PK	74.0	-14.8	1.75 V	98	29.44	29.76
2	2385.29	47.7 AV	54.0	-6.3	1.75 V	98	17.94	29.76
3	*2437.00	105.7 PK			1.71 V	86	75.74	29.96
4	*2437.00	97.4 AV			1.71 V	86	67.44	29.96
5	2488.74	61.4 PK	74.0	-12.6	1.66 V	99	31.24	30.16
6	2488.74	50.7 AV	54.0	-3.3	1.66 V	99	20.54	30.16
7	4874.00	44.0 PK	74.0	-30.0	1.21 V	198	8.68	35.32
8	4874.00	31.6 AV	54.0	-22.4	1.21 V	198	-3.72	35.32
9	7311.00	57.3 PK	74.0	-16.7	1.31 V	348	15.80	41.50
10	7311.00	44.5 AV	54.0	-9.5	1.31 V	348	3.00	41.50

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.6 PK			1.68 H	43	78.54	30.06
2	*2462.00	100.1 AV			1.68 H	43	70.04	30.06
3	2483.50	69.7 PK	74.0	-4.3	1.69 H	44	39.56	30.14
4	2483.50	52.4 AV	54.0	-1.6	1.69 H	44	22.26	30.14
5	4924.00	44.2 PK	74.0	-29.8	1.17 H	340	8.80	35.40
6	4924.00	31.6 AV	54.0	-22.4	1.17 H	340	-3.80	35.40
7	7386.00	56.7 PK	74.0	-17.3	1.23 H	33	14.99	41.71
8	7386.00	44.0 AV	54.0	-10.0	1.23 H	33	2.29	41.71

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.1 PK			1.66 V	97	75.04	30.06
2	*2462.00	96.7 AV			1.66 V	97	66.64	30.06
3	2483.50	63.9 PK	74.0	-10.1	1.66 V	96	33.76	30.14
4	2483.50	48.7 AV	54.0	-5.3	1.66 V	96	18.56	30.14
5	4924.00	43.9 PK	74.0	-30.1	1.16 V	187	8.50	35.40
6	4924.00	31.8 AV	54.0	-22.2	1.16 V	187	-3.60	35.40
7	7386.00	56.8 PK	74.0	-17.2	1.30 V	328	15.09	41.71
8	7386.00	43.8 AV	54.0	-10.2	1.30 V	328	2.09	41.71

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier 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	67.8 PK	74.0	-6.2	1.89 H	46	38.02	29.78
2	2390.00	52.7 AV	54.0	-1.3	1.89 H	46	22.92	29.78
3	*2422.00	103.7 PK			1.82 H	43	73.80	29.90
4	*2422.00	95.8 AV			1.82 H	43	65.90	29.90
5	4844.00	43.4 PK	74.0	-30.6	1.20 H	319	8.12	35.28
6	4844.00	30.9 AV	54.0	-23.1	1.20 H	319	-4.38	35.28
7	7266.00	57.3 PK	74.0	-16.7	1.27 H	45	15.88	41.42
8	7266.00	44.5 AV	54.0	-9.5	1.27 H	45	3.08	41.42

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.1 PK	74.0	-7.9	1.58 V	86	36.32	29.78
2	2390.00	50.5 AV	54.0	-3.5	1.58 V	86	20.72	29.78
3	*2422.00	100.4 PK			1.58 V	86	70.50	29.90
4	*2422.00	92.3 AV			1.58 V	86	62.40	29.90
5	4844.00	43.6 PK	74.0	-30.4	1.18 V	201	8.32	35.28
6	4844.00	31.2 AV	54.0	-22.8	1.18 V	201	-4.08	35.28
7	7266.00	57.1 PK	74.0	-16.9	1.27 V	335	15.68	41.42
8	7266.00	44.7 AV	54.0	-9.3	1.27 V	335	3.28	41.42

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.9 PK	74.0	-11.1	1.90 H	45	33.12	29.78
2	2390.00	49.8 AV	54.0	-4.2	1.90 H	45	20.02	29.78
3	*2437.00	106.4 PK			1.80 H	44	76.44	29.96
4	*2437.00	98.3 AV			1.80 H	44	68.34	29.96
5	2483.50	67.5 PK	74.0	-6.5	1.68 H	43	37.36	30.14
6	2483.50	52.8 AV	54.0	-1.2	1.68 H	43	22.66	30.14
7	4874.00	43.3 PK	74.0	-30.7	1.24 H	315	7.98	35.32
8	4874.00	31.4 AV	54.0	-22.6	1.24 H	315	-3.92	35.32
9	7311.00	56.8 PK	74.0	-17.2	1.32 H	49	15.30	41.50
10	7311.00	44.2 AV	54.0	-9.8	1.32 H	49	2.70	41.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.7 PK			1.60 V	89	73.74	29.96
2	*2437.00	95.6 AV			1.60 V	89	65.64	29.96
3	4874.00	43.9 PK	74.0	-30.1	1.20 V	213	8.58	35.32
4	4874.00	31.3 AV	54.0	-22.7	1.20 V	213	-4.02	35.32
5	7311.00	56.8 PK	74.0	-17.2	1.21 V	333	15.30	41.50
6	7311.00	44.4 AV	54.0	-9.6	1.21 V	333	2.90	41.50

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	102.4 PK			1.69 H	43	72.38	30.02
2	*2452.00	94.2 AV			1.69 H	43	64.18	30.02
3	2483.50	68.3 PK	74.0	-5.7	1.69 H	43	38.16	30.14
4	2483.50	52.8 AV	54.0	-1.2	1.69 H	43	22.66	30.14
5	4904.00	42.9 PK	74.0	-31.1	1.27 H	315	7.54	35.36
6	4904.00	30.8 AV	54.0	-23.2	1.27 H	315	-4.56	35.36
7	7356.00	57.4 PK	74.0	-16.6	1.35 H	38	15.77	41.63
8	7356.00	44.5 AV	54.0	-9.5	1.35 H	38	2.87	41.63

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	99.7 PK			1.57 V	77	69.68	30.02
2	*2452.00	91.5 AV			1.57 V	77	61.48	30.02
3	2483.50	65.8 PK	74.0	-8.2	1.52 V	77	35.66	30.14
4	2483.50	50.6 AV	54.0	-3.4	1.52 V	77	20.46	30.14
5	4904.00	43.8 PK	74.0	-30.2	1.14 V	204	8.44	35.36
6	4904.00	31.5 AV	54.0	-22.5	1.14 V	204	-3.86	35.36
7	7356.00	57.1 PK	74.0	-16.9	1.22 V	343	15.47	41.63
8	7356.00	44.5 AV	54.0	-9.5	1.22 V	343	2.87	41.63

REMARKS:

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

4.2.8 TEST RESULTS (MODE 2)

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	73.80	34.3 QP	40.0	-5.7	1.00 H	232	50.92	-16.61
2	98.05	34.5 QP	43.5	-9.0	2.00 H	255	53.57	-19.04
3	250.00	37.7 QP	46.0	-8.4	1.00 H	80	52.09	-14.44
4	300.10	40.4 QP	46.0	-5.6	1.50 H	40	53.15	-12.72
5	359.99	36.5 QP	46.0	-9.5	1.00 H	45	47.69	-11.22
6	840.00	35.1 QP	46.0	-10.9	1.00 H	324	36.48	-1.40
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	56.77	26.9 QP	40.0	-13.1	1.00 V	110	40.94	-14.02
2	95.80	28.6 QP	43.5	-15.0	1.00 V	28	47.28	-18.73
3	183.08	23.8 QP	43.5	-19.8	1.00 V	235	39.23	-15.48
4	250.00	32.7 QP	46.0	-13.3	2.00 V	360	47.10	-14.44
5	359.99	33.8 QP	46.0	-12.3	1.50 V	360	44.97	-11.22
6	500.01	36.0 QP	46.0	-10.1	1.50 V	194	43.71	-7.76

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)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2.9 TEST RESULTS (MODE 3)

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.78	28.0 QP	40.0	-12.0	1.00 H	8	42.11	-14.11
2	109.10	29.7 QP	43.5	-13.8	2.00 H	205	46.07	-16.33
3	250.00	39.3 QP	46.0	-6.7	1.00 H	300	53.77	-14.44
4	299.90	37.7 QP	46.0	-8.3	1.50 H	42	50.38	-12.72
5	540.37	33.2 QP	46.0	-12.8	1.50 H	360	40.33	-7.17
6	840.00	34.8 QP	46.0	-11.2	1.00 H	316	36.23	-1.40
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	58.76	32.5 QP	40.0	-7.5	1.00 V	150	46.74	-14.21
2	95.33	33.0 QP	43.5	-10.6	1.00 V	175	51.71	-18.76
3	250.00	32.3 QP	46.0	-13.7	1.50 V	350	46.77	-14.44
4	359.99	32.1 QP	46.0	-13.9	1.00 V	330	43.34	-11.22
5	541.04	30.0 QP	46.0	-16.0	1.00 V	314	37.15	-7.18
6	940.54	32.3 QP	46.0	-13.7	1.00 V	260	32.07	0.19

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

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	100060	May 09, 2012	May 10, 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 : Jan. 31, 2013

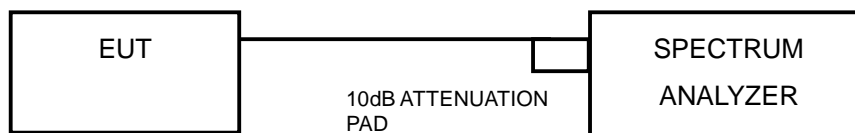
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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



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4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	11.58	0.5	PASS
6	2437	11.58	0.5	PASS
11	2462	11.59	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.37	0.5	PASS
6	2437	16.42	0.5	PASS
11	2462	16.41	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.04	0.5	PASS
6	2437	17.06	0.5	PASS
11	2462	17.13	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	35.35	0.5	PASS
6	2437	35.34	0.5	PASS
9	2452	35.35	0.5	PASS



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4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 10, 2012	May 09, 2013
Peak Power Sensor	MA2411B	0738172	May 10, 2012	May 09, 2013

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Jan. 31, 2013

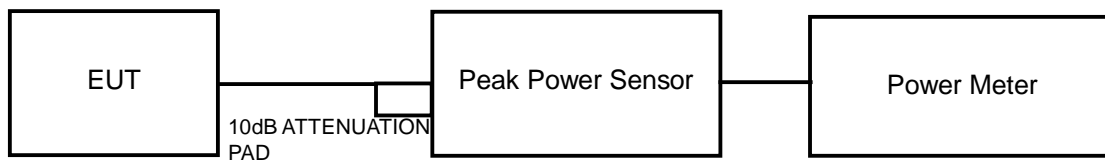
4.4.3 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the peak power level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	158.489	22.00	30	PASS
6	2437	141.254	21.50	30	PASS
11	2462	120.226	20.80	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	194.984	22.90	30	PASS
6	2437	169.824	22.30	30	PASS
11	2462	125.893	21.00	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	177.828	22.50	30	PASS
6	2437	144.544	21.60	30	PASS
11	2462	102.329	20.10	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
3	2422	91.201	19.60	30	PASS
6	2437	114.815	20.60	30	PASS
9	2452	63.096	18.00	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	100060	May 09, 2012	May 10, 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 : Jan. 31, 2013

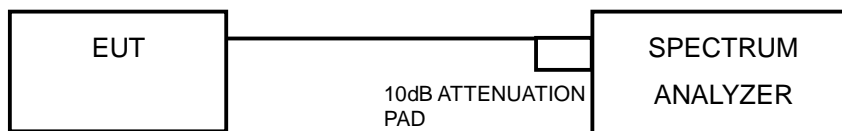
4.5.3 TEST PROCEDURE

- a. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
- b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- c. 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



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4.5.7 TEST RESULTS

802.11b

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-4.26	8	PASS
6	2437	-4.74	8	PASS
11	2462	-5.64	8	PASS

802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.29	8	PASS
6	2437	-13.05	8	PASS
11	2462	-14.74	8	PASS

802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.45	8	PASS
6	2437	-12.79	8	PASS
11	2462	-14.20	8	PASS

802.11n (HT40)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-16.09	8	PASS
6	2437	-16.36	8	PASS
9	2452	-17.90	8	PASS



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4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100060	May 09, 2012	May 10, 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 : Jan. 31, 2013

4.6.3 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

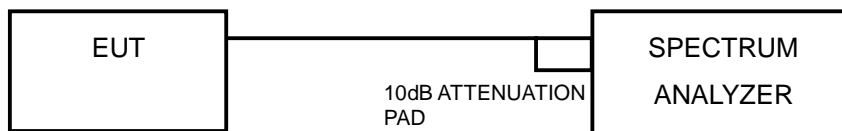
MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

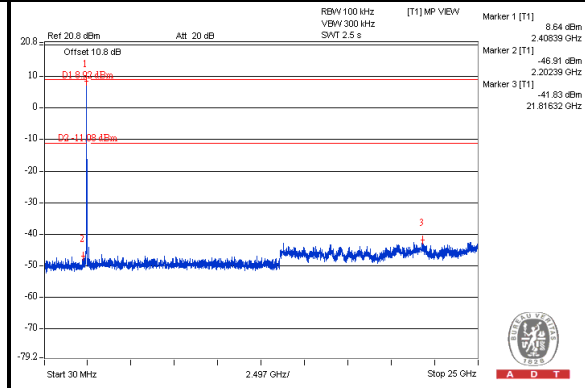
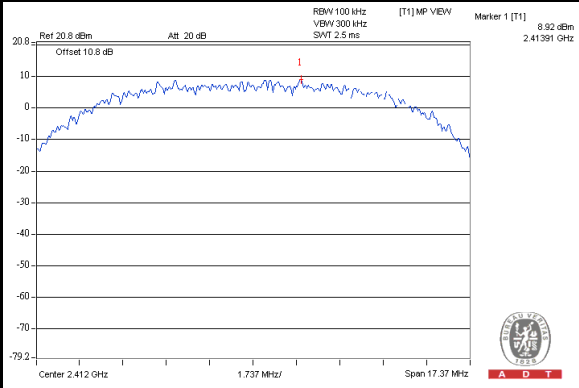
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



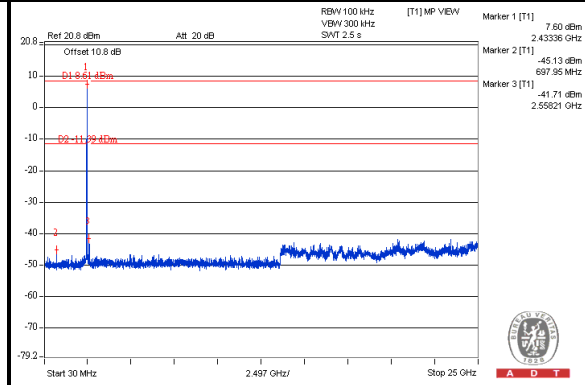
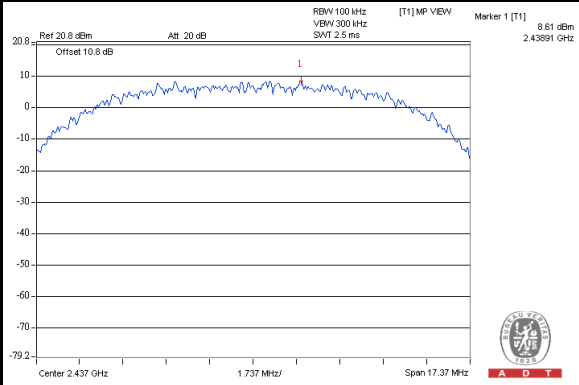
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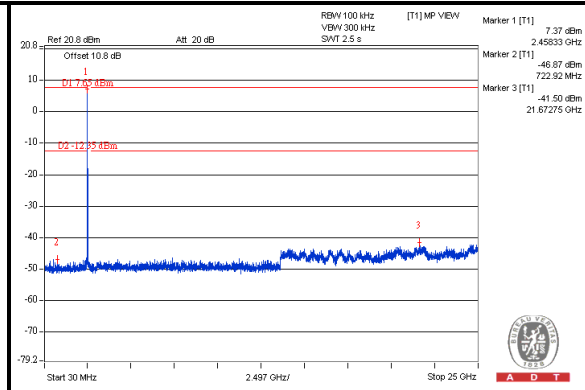
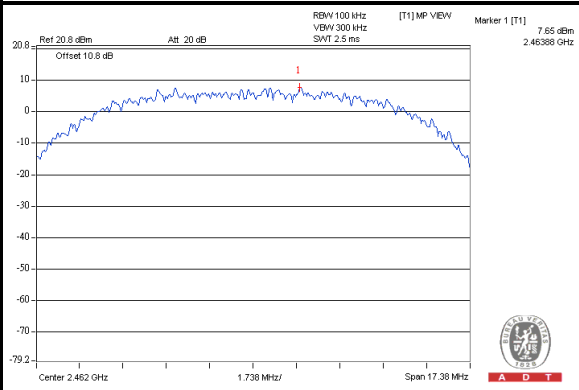
CH 1



CH 6



CH 11

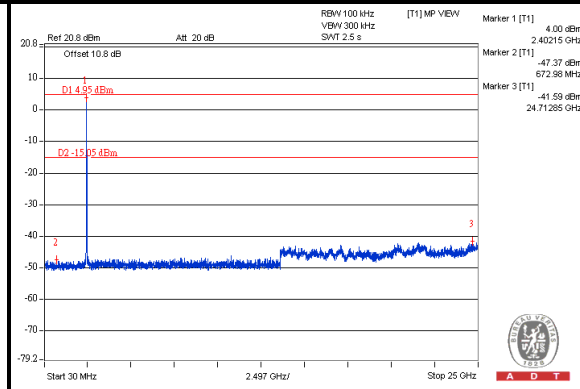
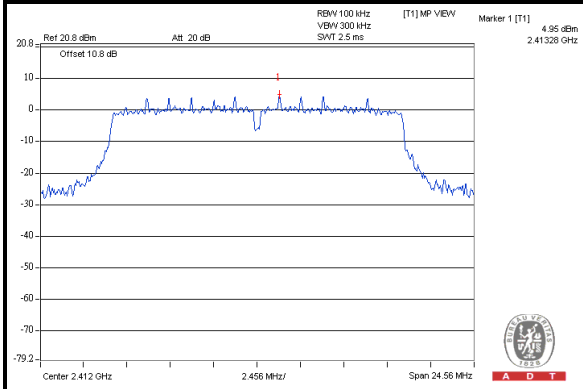




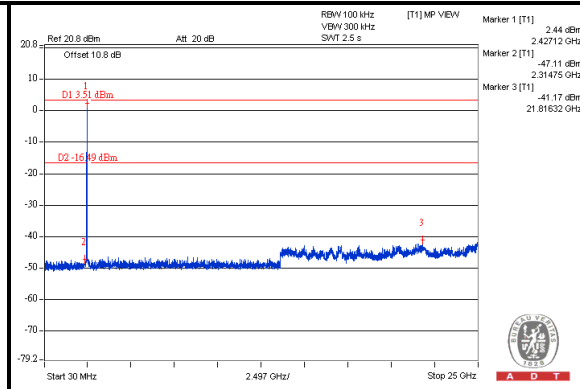
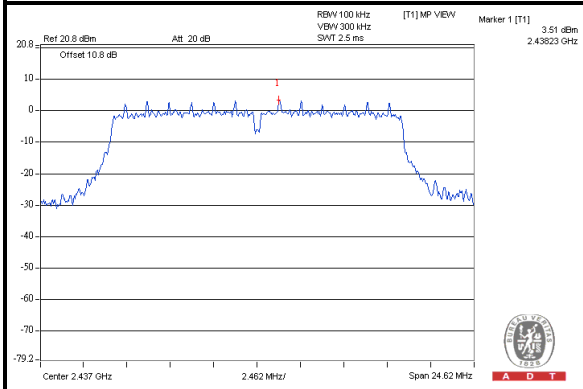
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802.11g

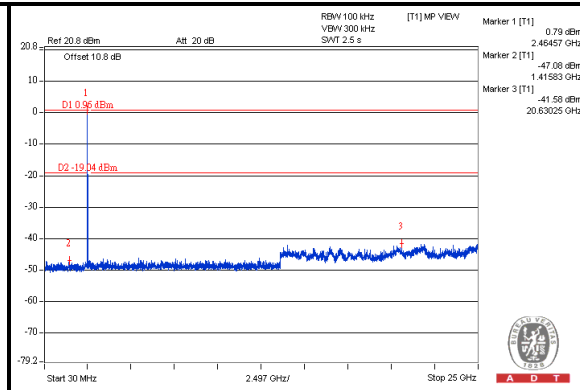
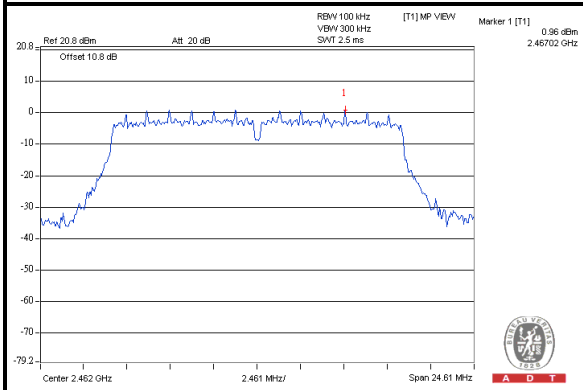
CH 1



CH 6



CH 11

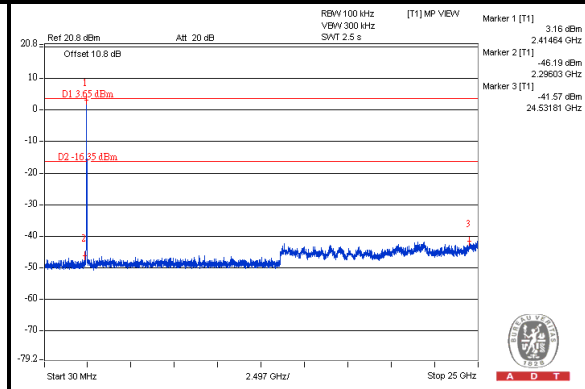
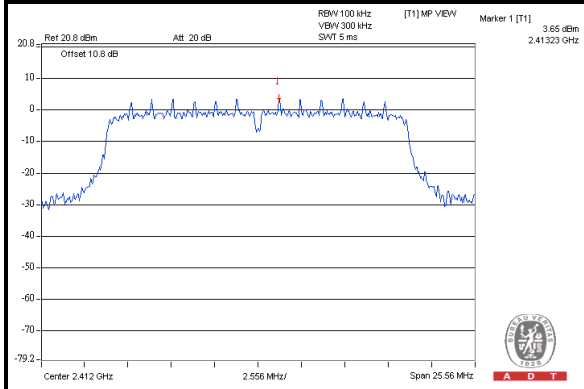




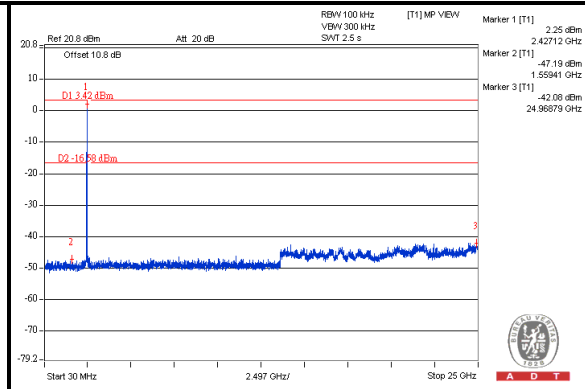
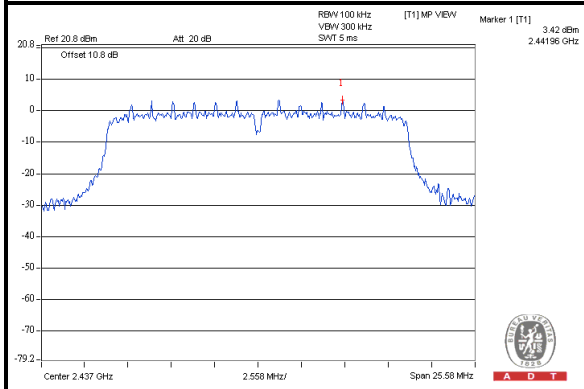
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802.11n (HT20)

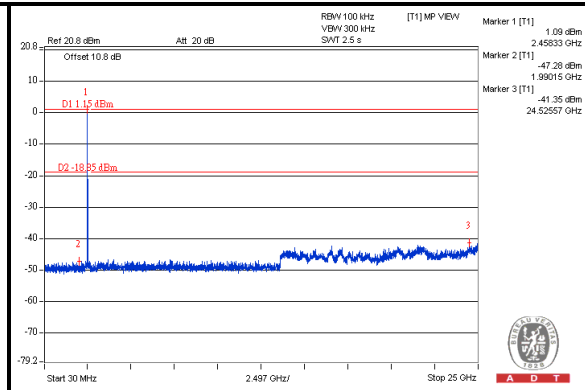
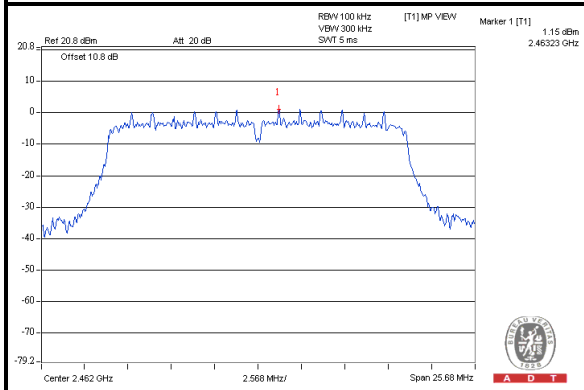
CH 1



CH 6



CH 11

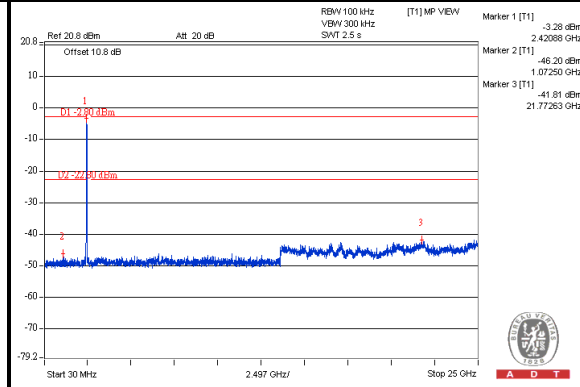
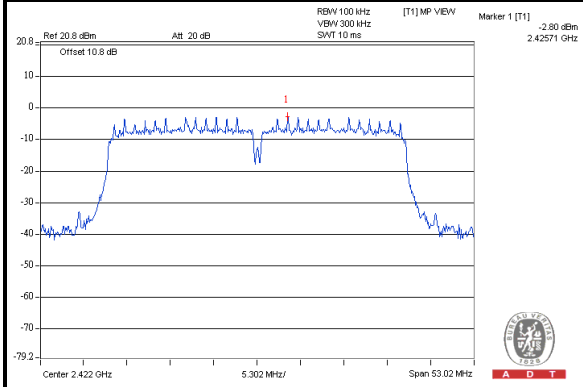




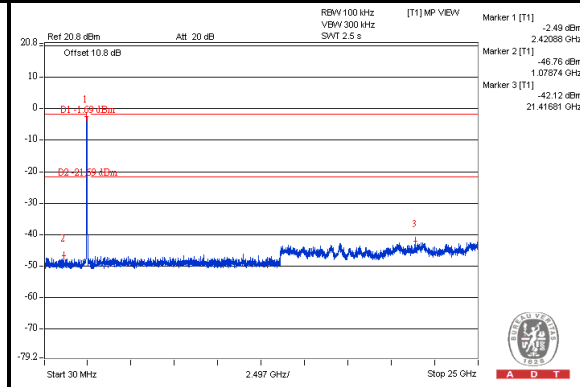
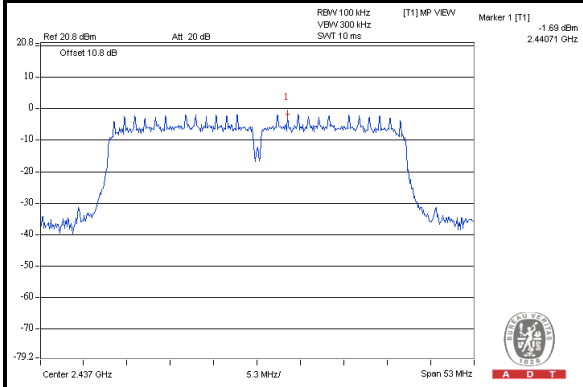
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802.11n (HT40)

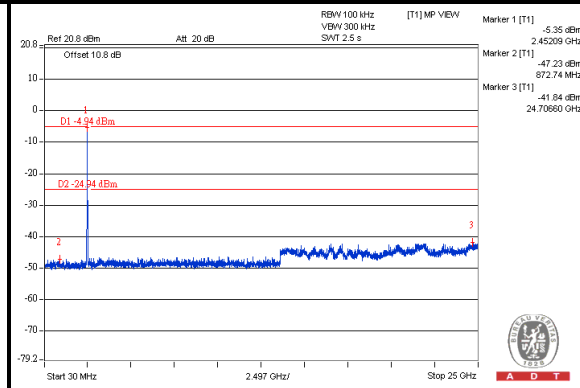
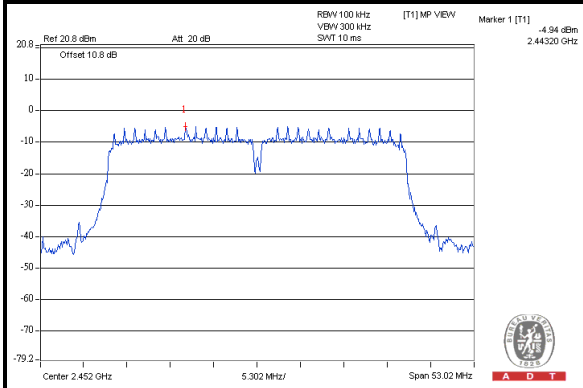
CH 3



CH 6



CH 9





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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 Lab:

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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.



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

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

--- END ---