FCC TEST REPORT (15.247)

REPORT NO.:	RF130321E05
MODEL NO.:	WAP5110-L, WAP5110, ECW5110-L, ECW5110, EAP9112A-FLF-17
FCC ID:	YZKWAP5110
RECEIVED:	Mar. 21, 2013
TESTED:	Mar. 26 to Apr. 15, 2013
ISSUED:	Apr. 23, 2013

APPLICANT:	Edgecore Networks Corporation.
ADDRESS:	No.1, Creation Rd. III, Hsinchu Science Park, Hsinchu 30077, 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 report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130321E05	Original release	Apr. 23, 2013

1. CERTIFICATION

PRODUCT:	IEEE 802.11a/b/g/n Enterprise Access Point
BRAND NAME:	SMC, Edge-corE, Accton
MODEL NO.:	WAP5110-L, WAP5110, ECW5110-L, ECW5110, EAP9112A-FLF-17
TEST SAMPLE:	R&D SAMPLE
APPLICANT:	Edgecore Networks Corporation.
TESTED:	Mar. 26 to Apr. 15, 2013
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: WAP5110-L) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *Apr. 23, 2013*
(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *Apr. 23, 2013*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz, 2400~2483.5MHz Band

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 -5.12dB at 0.43125MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 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 output 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 MHF not a standard connector.

For 5GHz, 5725~5850MHz Band

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 -6.63dB at 0.42734MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.7dB at 5360.00MHz.
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 output 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 MHF not a standard connector.

NOTE: The EUT was operating in 2.400 ~ 2.4835GHz, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2.400 ~ 2.4835GHz and 5.725~5.850GHz. For the 5.15~5.25GHz RF parameters was recorded in another test report.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.59 dB
Radiated emissions (1GHz -6GHz)	3.54 dB
Radiated emissions (6GHz -18GHz)	4.08 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	IEEE 802.11a/b/g/n Enterprise Access Point
MODEL NO.	WAP5110-L, WAP5110, ECW5110-L, ECW5110, EAP9112A-FLF-17
POWER SUPPLY	DC 12V from Power adapter, DC 48V or 55V from POE
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps
OPERATING FREQUENCY	**For 15.407** 5.18 ~ 5.24GHz
	For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**For 15.407** 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
	For 15.247 (2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) **For 15.247 (5GHz)** 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)

MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 43.351mW 802.11n (HT20): 43.315mW 802.11n (HT40): 44.940mW **For 15.247 (2.4GHz)** 802.11b: 366.438mW 802.11g: 248.886mW 802.11n (HT20): 449.741mW 802.11n (HT40): 103.992mW **For 15.247 (5GHz)** 802.11a: 223.357mW 802.11n (HT20): 175.224mW 802.11n (HT40): 176.243mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Console port x1 GE1/PoE port x1(10/100/1000Mbps)
ASSOCIATED DEVICES	Adapter x 1

NOTE:

1. The EUT has three brand names and five model names which are identical to each other in all aspects except for the following table:

Brand Name	Model No.	Different
SMC	WAP5110-L	Difference with FW Code. (only modify the webpage for difference customer, no any impact of RF parameter)
SMC	WAP5110	
Edge-corE	ECW5110-L	
Edge-corE	ECW5110	
Accton	EAP9112A-FLF-17	

From the above models, model: **WAP5110-L** was selected as representative model for the test and its data was recorded in this report.

2. The EUT must be supplied with a adapter or POE as below information:

Adapter		
Brand	Model No.	Spec.
Sunny	SYS1308-2412-W2	AC Input : 100-240V, 1.0A, 50-60Hz DC Output : 12V, 2.0A DC output cable(unshielded ,1.4m)

POE(only for test not for sale)			
No.	Brand	Model No.	Spec.
1	PowerDsine Ltd.	PD-3501G/AC	AC Input : 100-240V, 0.5A, 50-60Hz DC Output : 48V, 0.35A
2	MOTOROLA	PD-7001G	AC Input : 100-240V, 0.8A, 50-60Hz DC Output : 55V, 0.57A

For radiated emission: From above power sources, the worst case was found in POE (Model: PD-7001G). Therefore only the test data of the mode was recorded in this report.

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

2.4GHz							
Transmitter Circuit	Brand	Model name	Gain (dBi) Include cable loss	Antenna Type	Connector	Frequency range (MHz to MHz)	Cable Loss (dB)
Chain (0)	Accton	120G00000028A	3.90	PCB	MHF	2412~2483.5	N/A
Chain (1)	Accton	120G00000029A	2.51	PCB	MHF	2412~2483.5	N/A
5GHz							
Transmitter Circuit	Brand	Model name	Gain (dBi) Include cable loss	Antenna Type	Connector	Frequency range (MHz to MHz)	Cable Loss (dB)
Chain (0)	Accton	120G00000030A	4.66	PCB	MHF	5150~5850	N/A
Chain (1)	Accton	120G00000031A	4.05	PCB	MHF	5150~5850	N/A
Note: For 802.11abg mode will fix transmission on Chain (0).							

4. Spurious emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.

5. The EUT incorporates a MIMO function.

MODULATION MODE	TX/RX FUNCTION
802.11a	1TX/2RX
802.11b	1TX/2RX
802.11g	1TX/2RX
802.11n (HT20)	2TX/2RX
802.11n (HT40)	2TX/2RX

6. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.

7. 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

Operated in 2400 ~ 2483.5MHz band:

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		

Operated in 5725 ~ 5850MHz band:

5 channels are provided for 802.11a, 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

2 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
1	√	-	-	-	-	Adapter
2	√	-	-	-	-	POE(PD-3501G/AC)
3	-	√	√	√	√	POE(PD-7001G)

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

Note: 1. **For 2.4GHz**: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on X-plane.
2. **For 5GHz**: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on X-plane (below 1GHz) & Y-plane (above 1GHz).

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)
For 2.4 GHz 802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5
802.11a	149 to 165	149	OFDM	BPSK	6

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATIO N TYPE	DATA RATE (Mbps)
For 2.4 GHz 802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5
802.11a	149 to 165	149	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
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	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
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	25deg. C,58%RH	120Vac, 60Hz	Anderson Chen
RE<1G	22deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	James Chan
OB	25deg. C, 60%RH	120Vac, 60Hz	James Chan

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 v02
662911 D01 Multiple Transmitter Output v01 r02
ANSI C63.10-2009

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

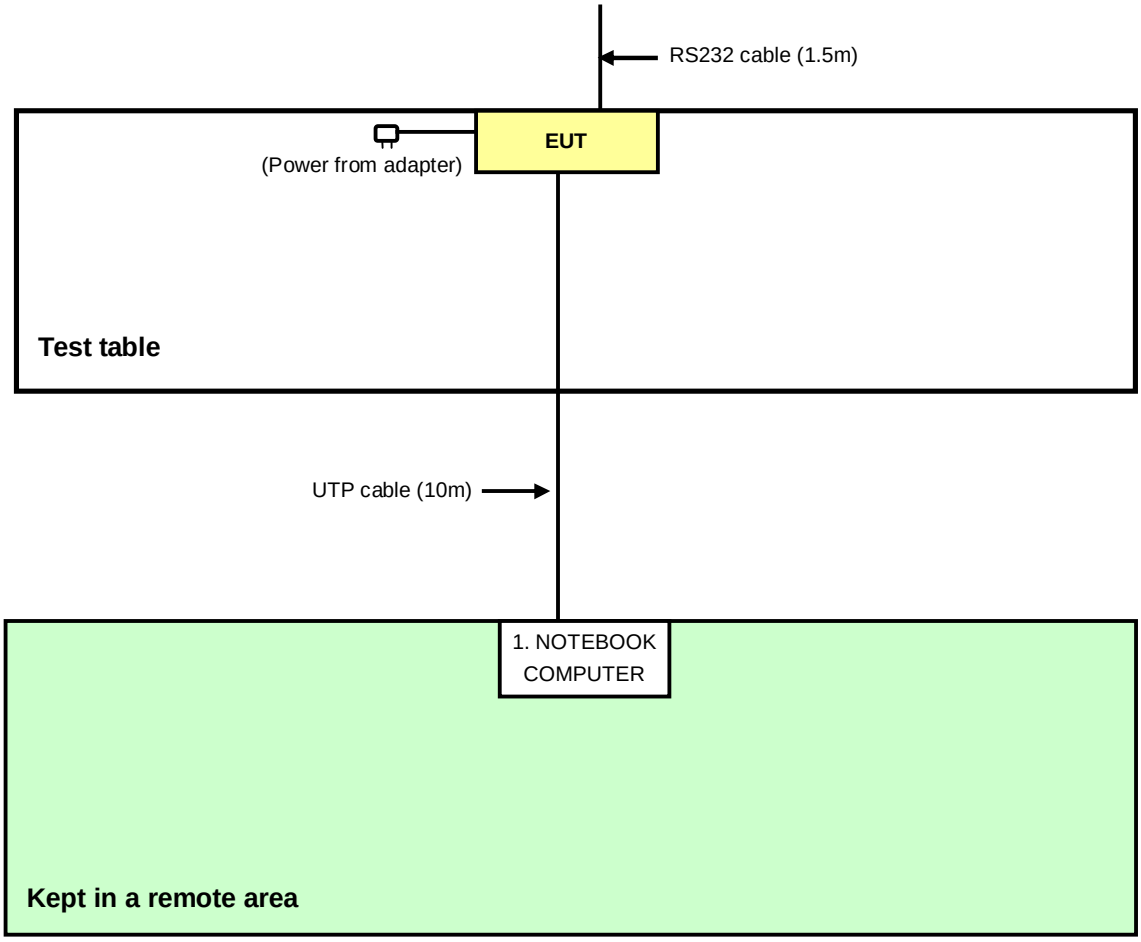
For conducted emission test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E6420	B92T3R1	FCC DoC
For other test items					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable(10m), UTP cable(3m)

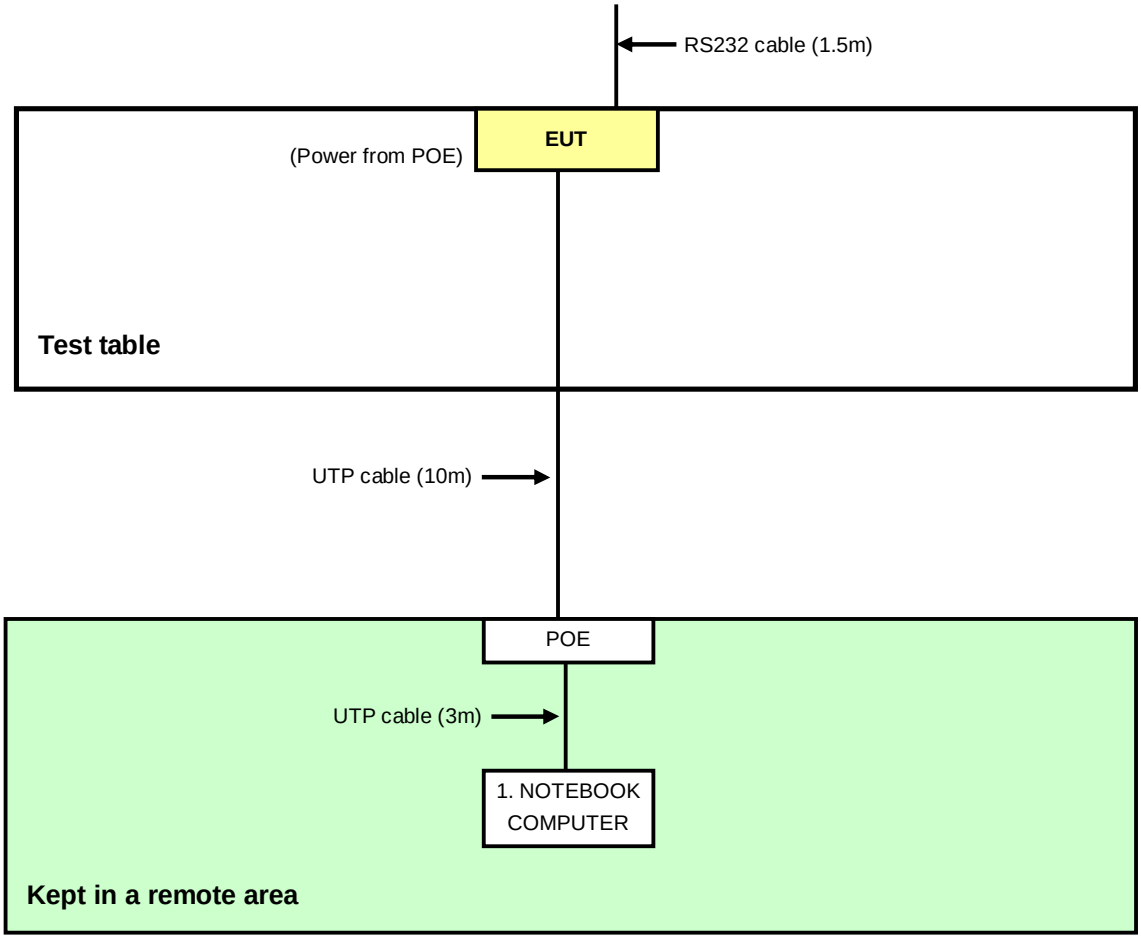
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For adapter mode :



For POE mode :


RS232 cable (1.5m)
EUT
(Power from POE)
Test table
UTP cable (10m)
POE
UTP cable (3m)
1. NOTEBOOK COMPUTER
Kept in a remote area

4. TEST TYPES AND RESULTS (FOR 2.4GHz, 2.400 ~ 2.4835GHz Band)

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 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 19, 2012	Sep. 20, 2013
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	848773/004	Oct. 29, 2012	Oct. 28, 2013
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 05, 2012	Aug. 04, 2013
50 ohms Terminator	50	3	Oct. 23, 2012	Oct. 22, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3 The VCCI Con A Registration No. is C-817.
4. Tested Date: Mar. 26, 2013

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.
b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
d. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

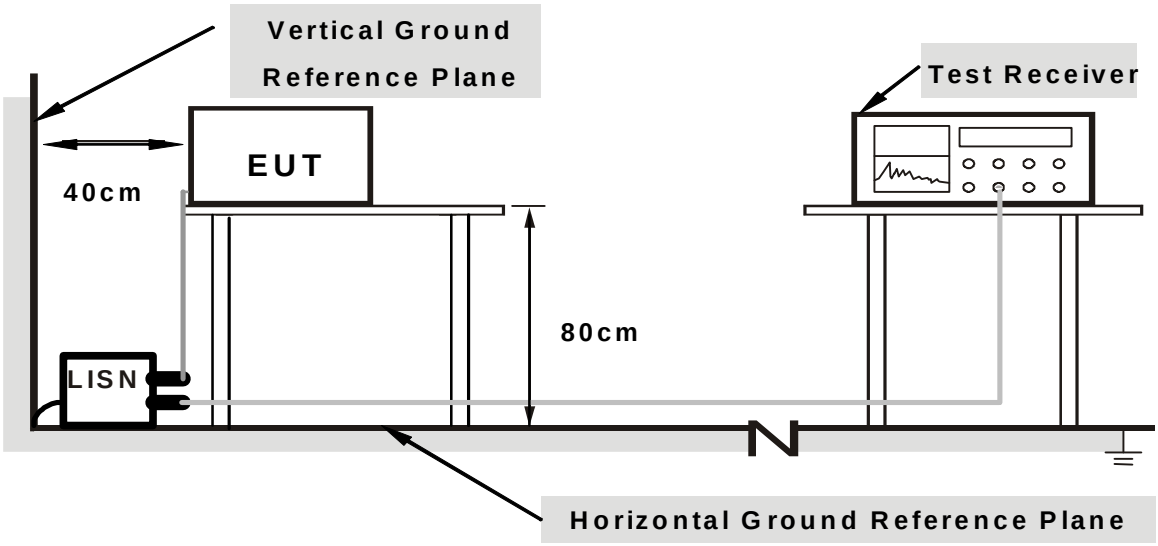
NOTE:

1. 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. Turn on the power of EUT.
2. The communication partner run test program “artgui.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

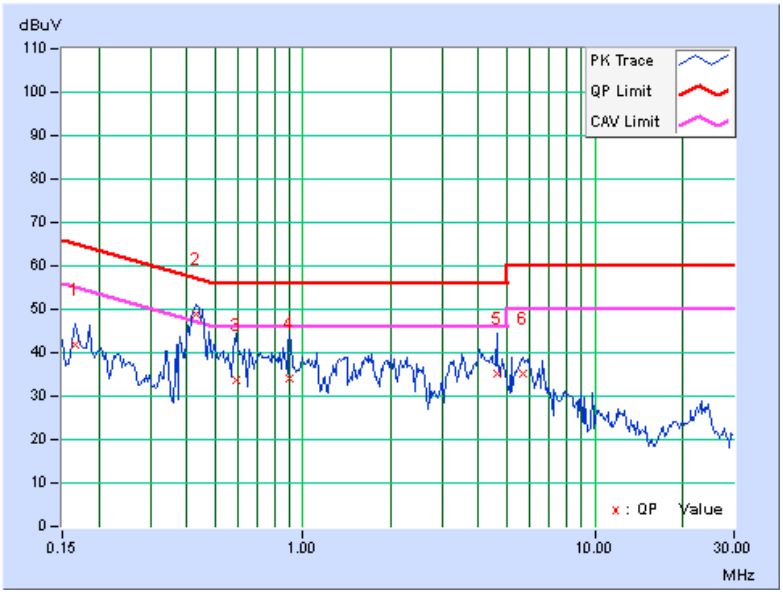
4.1.7 TEST RESULTS (MODE 1)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.10	41.72	38.84	41.82	38.94	65.18	55.18	-23.36	-16.24
2	**0.43125**	**0.16**	**48.65**	**41.95**	**48.81**	**42.11**	**57.23**	**47.23**	**-8.42**	**-5.12**
3	0.59141	0.17	33.57	19.80	33.74	19.97	56.00	46.00	-22.26	-26.03
4	0.90391	0.18	33.73	22.45	33.91	22.63	56.00	46.00	-22.09	-23.37
5	4.60547	0.35	34.83	28.98	35.18	29.33	56.00	46.00	-20.82	-16.67
6	5.70313	0.39	34.87	29.38	35.26	29.77	60.00	50.00	-24.74	-20.23

REMARKS:

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

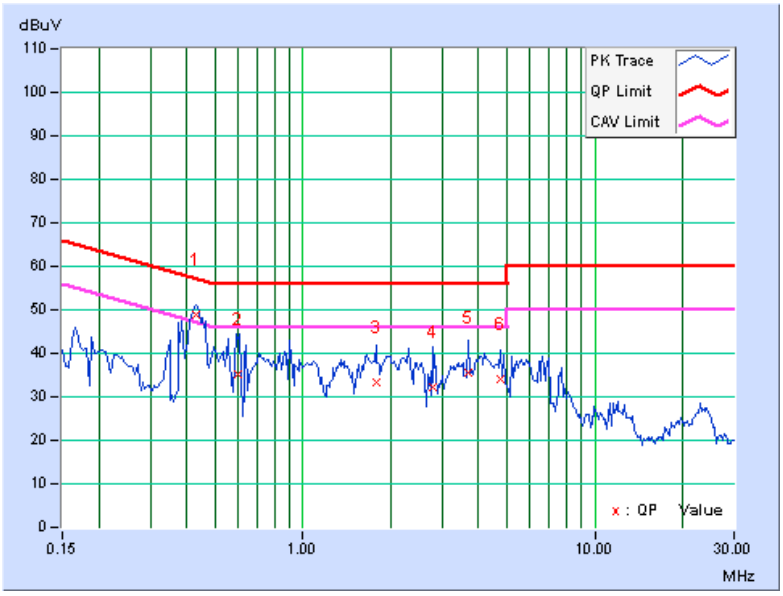


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.43125	0.19	48.61	41.14	48.80	41.33	57.23	47.23	-8.43	-5.90
2	0.59841	0.20	35.17	18.02	35.37	18.22	56.00	46.00	-20.63	-27.78
3	1.78516	0.26	33.05	30.04	33.31	30.30	56.00	46.00	-22.69	-15.70
4	2.79688	0.30	31.90	23.68	32.20	23.98	56.00	46.00	-23.80	-22.02
5	3.69531	0.34	35.26	26.77	35.60	27.11	56.00	46.00	-20.40	-18.89
6	4.77344	0.37	33.58	26.42	33.95	26.79	56.00	46.00	-22.05	-19.21

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.



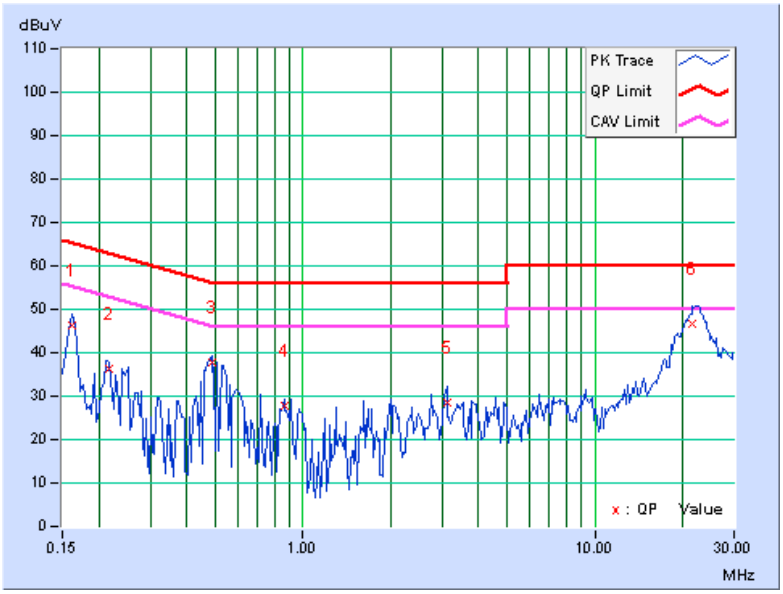
4.1.8 TEST RESULTS (MODE 2)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.10	46.12	40.61	46.22	40.71	65.38	55.38	-19.16	-14.67
2	0.21641	0.11	36.01	26.61	36.12	26.72	62.96	52.96	-26.83	-26.23
3	0.48594	0.16	37.48	35.33	37.64	35.49	56.24	46.24	-18.59	-10.74
4	0.86094	0.18	27.43	25.07	27.61	25.25	56.00	46.00	-28.39	-20.75
5	3.10938	0.28	28.30	21.56	28.58	21.84	56.00	46.00	-27.42	-24.16
6	21.67188	1.05	45.75	39.27	46.80	40.32	60.00	50.00	-13.20	-9.68

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.

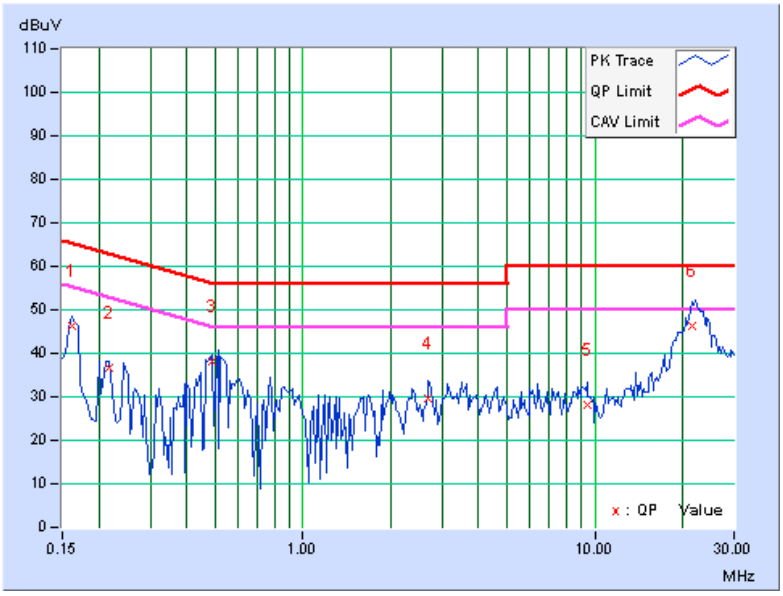


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.15	46.22	40.79	46.37	40.94	65.38	55.38	-19.01	-14.44
2	0.21641	0.15	36.51	28.19	36.66	28.34	62.96	52.96	-26.29	-24.61
3	0.48594	0.19	37.84	35.79	38.03	35.98	56.24	46.24	-18.20	-10.25
4	2.69922	0.30	29.33	22.93	29.63	23.23	56.00	46.00	-26.37	-22.77
5	9.45703	0.52	27.77	21.80	28.29	22.32	60.00	50.00	-31.71	-27.68
6	21.45703	0.82	45.58	39.24	46.40	40.06	60.00	50.00	-13.60	-9.94

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 30dB 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.

4.2.2 TEST INSTRUMENTS

For 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-1000VH2B	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_V8.7.05	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: Mar. 27, 2013

For above 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	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 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. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Apr. 12, 2013

4.2.3 TEST PROCEDURES

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

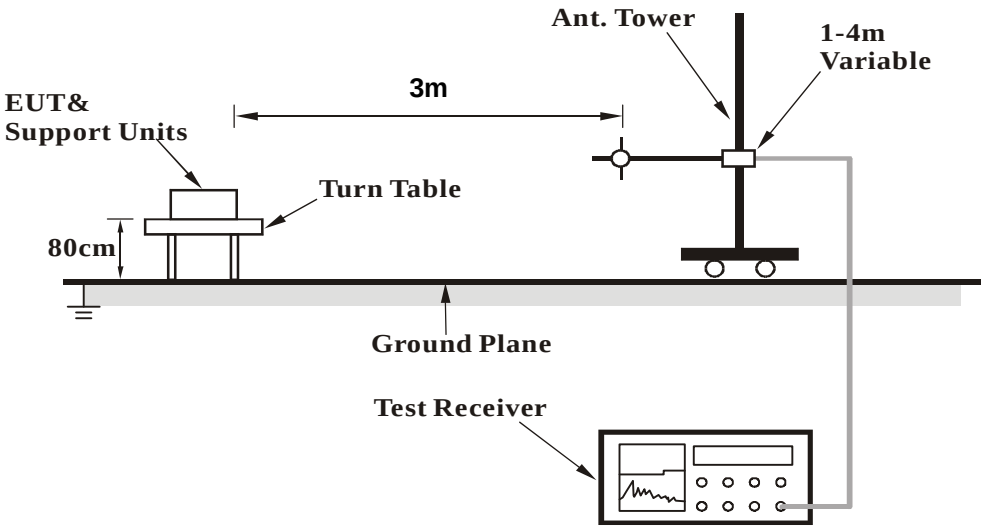
NOTE:

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

BELOW 1GHz WORST-CASE DATA

802.11n (HT20)

CHANNEL	TX Channel 6	**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	36.11	35.0 QP	40.0	-5.0	2.00 H	232	48.69	-13.70
2	81.02	35.5 QP	40.0	-4.5	1.00 H	329	53.91	-18.43
3	121.57	35.3 QP	43.5	-8.2	2.00 H	84	50.88	-15.55
4	134.81	31.6 QP	43.5	-12.0	1.50 H	319	45.68	-14.13
5	625.00	32.4 QP	46.0	-13.6	1.50 H	139	37.28	-4.85
6	875.02	41.5 QP	46.0	-4.5	1.00 H	169	42.42	-0.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	37.58	31.7 QP	40.0	-8.3	1.00 V	190	45.79	-14.09
2	76.03	34.4 QP	40.0	-5.6	2.00 V	300	51.99	-17.59
3	104.84	30.1 QP	43.5	-13.4	1.50 V	21	47.46	-17.32
4	137.57	31.3 QP	43.5	-12.2	1.50 V	0	45.47	-14.16
5	375.03	32.4 QP	46.0	-13.6	1.00 V	360	43.26	-10.87
6	875.02	38.9 QP	46.0	-7.1	1.00 V	15	39.82	-0.94

REMARKS:

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

ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2386.18	61.8 PK	74.0	-12.2	1.09 H	197	29.03	32.77
2	2386.18	52.0 AV	54.0	-2.0	1.09 H	197	19.23	32.77
3	*2412.00	109.4 PK			1.09 H	197	76.56	32.84
4	*2412.00	107.4 AV			1.09 H	197	74.56	32.84
5	4824.00	54.4 PK	74.0	-19.6	1.79 H	295	12.13	42.27
6	4824.00	48.2 AV	54.0	-5.8	1.79 H	295	5.93	42.27
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	2386.24	59.8 PK	74.0	-14.2	1.00 V	261	27.03	32.77
2	2386.24	50.3 AV	54.0	-3.7	1.00 V	261	17.53	32.77
3	*2412.00	106.4 PK			1.00 V	261	73.56	32.84
4	*2412.00	104.2 AV			1.00 V	261	71.36	32.84
5	4824.00	56.7 PK	74.0	-17.3	1.00 V	236	14.43	42.27
6	4824.00	51.8 AV	54.0	-2.2	1.00 V	236	9.53	42.27

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.24	62.7 PK	74.0	-11.3	1.08 H	202	29.92	32.78
2	2389.24	53.1 AV	54.0	-0.9	1.08 H	202	20.32	32.78
3	*2437.00	115.3 PK			1.08 H	202	82.39	32.91
4	*2437.00	113.4 AV			1.08 H	202	80.49	32.91
5	2484.87	61.4 PK	74.0	-12.6	1.08 H	202	28.37	33.03
6	2484.87	50.6 AV	54.0	-3.4	1.08 H	202	17.57	33.03
7	4874.00	54.5 PK	74.0	-19.5	1.82 H	281	12.18	42.32
8	4874.00	47.9 AV	54.0	-6.1	1.82 H	281	5.58	42.32
9	7311.00	56.8 PK	74.0	-17.2	1.71 H	98	9.85	46.95
10	7311.00	45.6 AV	54.0	-8.4	1.71 H	98	-1.35	46.95
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	112.5 PK			1.00 V	196	79.59	32.91
2	*2437.00	110.3 AV			1.00 V	196	77.39	32.91
3	4874.00	57.1 PK	74.0	-16.9	1.00 V	239	14.78	42.32
4	4874.00	52.3 AV	54.0	-1.7	1.00 V	239	9.98	42.32
5	7311.00	58.1 PK	74.0	-15.9	1.19 V	183	11.15	46.95
6	7311.00	46.2 AV	54.0	-7.8	1.19 V	183	-0.75	46.95

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.5 PK			1.07 H	200	75.53	32.97
2	*2462.00	106.6 AV			1.07 H	200	73.63	32.97
3	2487.76	62.8 PK	74.0	-11.2	1.07 H	200	29.76	33.04
4	2487.76	52.9 AV	54.0	-1.1	1.07 H	200	19.86	33.04
5	4924.00	54.4 PK	74.0	-19.6	1.77 H	295	12.08	42.32
6	4924.00	48.1 AV	54.0	-5.9	1.77 H	295	5.78	42.32
7	7386.00	55.3 PK	74.0	-18.7	1.74 H	107	8.11	47.19
8	7386.00	44.2 AV	54.0	-9.8	1.74 H	107	-2.99	47.19
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	106.3 PK			1.00 V	40	73.33	32.97
2	*2462.00	103.4 AV			1.00 V	40	70.43	32.97
3	2487.74	60.6 PK	74.0	-13.4	1.00 V	40	27.56	33.04
4	2487.74	49.3 AV	54.0	-4.7	1.00 V	40	16.26	33.04
5	4924.00	57.5 PK	74.0	-16.5	1.11 V	237	15.18	42.32
6	4924.00	52.9 AV	54.0	-1.1	1.11 V	237	10.58	42.32
7	7386.00	55.9 PK	74.0	-18.1	1.21 V	195	8.71	47.19
8	7386.00	44.1 AV	54.0	-9.9	1.21 V	195	-3.09	47.19

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.6 PK	74.0	-7.4	1.11 H	199	33.82	32.78
2	2390.00	52.9 AV	54.0	-1.1	1.11 H	199	20.12	32.78
3	*2412.00	110.1 PK			1.10 H	197	77.26	32.84
4	*2412.00	101.0 AV			1.10 H	197	68.16	32.84
5	4824.00	51.7 PK	74.0	-22.3	1.76 H	308	9.43	42.27
6	4824.00	39.0 AV	54.0	-15.0	1.76 H	308	-3.27	42.27
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	61.9 PK	74.0	-12.1	1.00 V	199	29.12	32.78
2	2390.00	49.9 AV	54.0	-4.1	1.00 V	199	17.12	32.78
3	*2412.00	105.1 PK			1.00 V	199	72.26	32.84
4	*2412.00	95.2 AV			1.00 V	199	62.36	32.84
5	4824.00	52.1 PK	74.0	-21.9	1.12 V	222	9.83	42.27
6	4824.00	39.5 AV	54.0	-14.5	1.12 V	222	-2.77	42.27

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.8 PK	74.0	-8.2	1.10 H	199	33.02	32.78
2	2390.00	51.5 AV	54.0	-2.5	1.10 H	199	18.72	32.78
3	*2437.00	117.6 PK			1.08 H	202	84.69	32.91
4	*2437.00	107.6 AV			1.08 H	202	74.69	32.91
5	2483.50	65.7 PK	74.0	-8.3	1.04 H	202	32.67	33.03
6	2483.50	49.6 AV	54.0	-4.4	1.04 H	202	16.57	33.03
7	4874.00	52.3 PK	74.0	-21.7	1.78 H	298	9.98	42.32
8	4874.00	39.9 AV	54.0	-14.1	1.78 H	298	-2.42	42.32
9	7311.00	56.9 PK	74.0	-17.1	1.76 H	114	9.95	46.95
10	7311.00	45.8 AV	54.0	-8.2	1.76 H	114	-1.15	46.95
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	110.5 PK			1.00 V	196	77.59	32.91
2	*2437.00	101.5 AV			1.00 V	196	68.59	32.91
3	4874.00	52.7 PK	74.0	-21.3	1.17 V	237	10.38	42.32
4	4874.00	40.2 AV	54.0	-13.8	1.17 V	237	-2.12	42.32
5	7311.00	58.4 PK	74.0	-15.6	1.24 V	187	11.45	46.95
6	7311.00	46.3 AV	54.0	-7.7	1.24 V	187	-0.65	46.95

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.3 PK			1.06 H	200	76.33	32.97
2	*2462.00	100.4 AV			1.06 H	200	67.43	32.97
3	2483.50	66.0 PK	74.0	-8.0	1.05 H	201	32.97	33.03
4	2483.50	52.8 AV	54.0	-1.2	1.05 H	201	19.77	33.03
5	4924.00	51.6 PK	74.0	-22.4	1.76 H	320	9.28	42.32
6	4924.00	39.2 AV	54.0	-14.8	1.76 H	320	-3.12	42.32
7	7386.00	55.0 PK	74.0	-19.0	1.76 H	100	7.81	47.19
8	7386.00	44.0 AV	54.0	-10.0	1.76 H	100	-3.19	47.19
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	104.4 PK			1.00 V	13	71.43	32.97
2	*2462.00	95.0 AV			1.00 V	13	62.03	32.97
3	2483.50	61.9 PK	74.0	-12.1	1.00 V	13	28.87	33.03
4	2483.50	50.1 AV	54.0	-3.9	1.00 V	13	17.07	33.03
5	4924.00	51.6 PK	74.0	-22.4	1.07 V	218	9.28	42.32
6	4924.00	39.0 AV	54.0	-15.0	1.07 V	218	-3.32	42.32
7	7386.00	56.4 PK	74.0	-17.6	1.20 V	199	9.21	47.19
8	7386.00	44.5 AV	54.0	-9.5	1.20 V	199	-2.69	47.19

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.5 PK	74.0	-6.5	1.09 H	196	34.72	32.78
2	2390.00	53.3 AV	54.0	-0.7	1.09 H	196	20.52	32.78
3	*2412.00	110.8 PK			1.08 H	196	77.96	32.84
4	*2412.00	101.6 AV			1.08 H	196	68.76	32.84
5	4824.00	52.0 PK	74.0	-22.0	1.72 H	315	9.73	42.27
6	4824.00	39.1 AV	54.0	-14.9	1.72 H	315	-3.17	42.27
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	65.8 PK	74.0	-8.2	1.23 V	214	33.02	32.78
2	2390.00	52.2 AV	54.0	-1.8	1.23 V	214	19.42	32.78
3	*2412.00	108.6 PK			1.23 V	216	75.76	32.84
4	*2412.00	100.3 AV			1.23 V	216	67.46	32.84
5	4824.00	52.0 PK	74.0	-22.0	1.14 V	227	9.73	42.27
6	4824.00	39.1 AV	54.0	-14.9	1.14 V	227	-3.17	42.27

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	**2390.00**	**73.5 PK**	**74.0**	**-0.5**	**1.08 H**	**154**	**40.72**	**32.78**
2	2390.00	53.0 AV	54.0	-1.0	1.08 H	154	20.22	32.78
3	*2437.00	116.2 PK			1.06 H	327	83.29	32.91
4	*2437.00	107.1 AV			1.06 H	327	74.19	32.91
5	2483.50	65.3 PK	74.0	-8.7	1.00 H	353	32.27	33.03
6	2483.50	51.2 AV	54.0	-2.8	1.00 H	353	18.17	33.03
7	4874.00	52.0 PK	74.0	-22.0	1.73 H	295	9.68	42.32
8	4874.00	39.8 AV	54.0	-14.2	1.73 H	295	-2.52	42.32
9	7311.00	57.2 PK	74.0	-16.8	1.71 H	105	10.25	46.95
10	7311.00	45.9 AV	54.0	-8.1	1.71 H	105	-1.05	46.95
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	67.1 PK	74.0	-6.9	1.00 V	202	34.32	32.78
2	2390.00	50.6 AV	54.0	-3.4	1.00 V	202	17.82	32.78
3	*2437.00	115.1 PK			1.00 V	150	82.19	32.91
4	*2437.00	106.3 AV			1.00 V	150	73.39	32.91
5	2483.50	64.1 PK	74.0	-9.9	1.26 V	224	31.07	33.03
6	2483.50	51.0 AV	54.0	-3.0	1.26 V	224	17.97	33.03
7	4874.00	52.6 PK	74.0	-21.4	1.22 V	238	10.28	42.32
8	4874.00	40.3 AV	54.0	-13.7	1.22 V	238	-2.02	42.32
9	7311.00	58.2 PK	74.0	-15.8	1.26 V	200	11.25	46.95
10	7311.00	46.3 AV	54.0	-7.7	1.26 V	200	-0.65	46.95

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.8 PK			1.05 H	325	75.83	32.97
2	*2462.00	100.2 AV			1.05 H	325	67.23	32.97
3	2483.50	68.3 PK	74.0	-5.7	1.01 H	324	35.27	33.03
4	2483.50	53.0 AV	54.0	-1.0	1.01 H	324	19.97	33.03
5	4924.00	51.9 PK	74.0	-22.1	1.75 H	324	9.58	42.32
6	4924.00	39.1 AV	54.0	-14.9	1.75 H	324	-3.22	42.32
7	7386.00	55.3 PK	74.0	-18.7	1.79 H	112	8.11	47.19
8	7386.00	44.2 AV	54.0	-9.8	1.79 H	112	-2.99	47.19
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	108.2 PK			1.23 V	199	75.23	32.97
2	*2462.00	99.6 AV			1.23 V	199	66.63	32.97
3	2483.50	67.0 PK	74.0	-7.0	1.19 V	199	33.97	33.03
4	2483.50	52.8 AV	54.0	-1.2	1.19 V	199	19.77	33.03
5	4924.00	52.6 PK	74.0	-21.4	1.14 V	219	10.28	42.32
6	4924.00	39.5 AV	54.0	-14.5	1.14 V	219	-2.82	42.32
7	7386.00	55.9 PK	74.0	-18.1	1.22 V	209	8.71	47.19
8	7386.00	44.1 AV	54.0	-9.9	1.22 V	209	-3.09	47.19

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)
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	67.5 PK	74.0	-6.5	1.05 H	318	34.72	32.78
2	2390.00	52.9 AV	54.0	-1.1	1.05 H	318	20.12	32.78
3	*2422.00	104.9 PK			1.04 H	325	72.03	32.87
4	*2422.00	95.5 AV			1.04 H	325	62.63	32.87
5	4844.00	52.4 PK	74.0	-21.6	1.71 H	317	10.11	42.29
6	4844.00	39.4 AV	54.0	-14.6	1.71 H	317	-2.89	42.29
7	7266.00	54.9 PK	74.0	-19.1	1.75 H	112	8.09	46.81
8	7266.00	43.8 AV	54.0	-10.2	1.75 H	112	-3.01	46.81
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	66.2 PK	74.0	-7.8	1.25 V	217	33.42	32.78
2	2390.00	53.0 AV	54.0	-1.0	1.25 V	217	20.22	32.78
3	*2422.00	102.3 PK			1.22 V	218	69.43	32.87
4	*2422.00	93.3 AV			1.22 V	218	60.43	32.87
5	4844.00	52.4 PK	74.0	-21.6	1.10 V	223	10.11	42.29
6	4844.00	39.3 AV	54.0	-14.7	1.10 V	223	-2.99	42.29
7	7266.00	55.9 PK	74.0	-18.1	1.22 V	220	9.09	46.81
8	7266.00	44.2 AV	54.0	-9.8	1.22 V	220	-2.61	46.81

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.1 PK	74.0	-8.9	1.09 H	346	32.32	32.78
2	2390.00	52.6 AV	54.0	-1.4	1.09 H	346	19.82	32.78
3	*2437.00	108.8 PK			1.05 H	327	75.89	32.91
4	*2437.00	99.4 AV			1.05 H	327	66.49	32.91
5	2483.50	63.1 PK	74.0	-10.9	1.03 H	346	30.07	33.03
6	2483.50	50.8 AV	54.0	-3.2	1.03 H	346	17.77	33.03
7	4874.00	51.8 PK	74.0	-22.2	1.72 H	305	9.48	42.32
8	4874.00	39.9 AV	54.0	-14.1	1.72 H	305	-2.42	42.32
9	7311.00	57.4 PK	74.0	-16.6	1.71 H	109	10.45	46.95
10	7311.00	46.2 AV	54.0	-7.8	1.71 H	109	-0.75	46.95
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	64.4 PK	74.0	-9.6	1.23 V	217	31.62	32.78
2	2390.00	51.4 AV	54.0	-2.6	1.23 V	217	18.62	32.78
3	*2437.00	106.5 PK			1.24 V	220	73.59	32.91
4	*2437.00	97.7 AV			1.24 V	220	64.79	32.91
5	2483.50	63.5 PK	74.0	-10.5	1.22 V	198	30.47	33.03
6	2483.50	51.3 AV	54.0	-2.7	1.22 V	198	18.27	33.03
7	4874.00	52.4 PK	74.0	-21.6	1.20 V	250	10.08	42.32
8	4874.00	40.3 AV	54.0	-13.7	1.20 V	250	-2.02	42.32
9	7311.00	58.4 PK	74.0	-15.6	1.23 V	205	11.45	46.95
10	7311.00	46.4 AV	54.0	-7.6	1.23 V	205	-0.55	46.95

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.4 PK			1.07 H	327	71.45	32.95
2	*2452.00	95.7 AV			1.07 H	327	62.75	32.95
3	2483.50	66.2 PK	74.0	-7.8	1.05 H	351	33.17	33.03
4	2483.50	53.3 AV	54.0	-0.7	1.05 H	351	20.27	33.03
5	4904.00	52.2 PK	74.0	-21.8	1.76 H	318	9.86	42.34
6	4904.00	39.5 AV	54.0	-14.5	1.76 H	318	-2.84	42.34
7	7356.00	55.9 PK	74.0	-18.1	1.77 H	98	8.81	47.09
8	7356.00	44.6 AV	54.0	-9.4	1.77 H	98	-2.49	47.09
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	100.8 PK			1.22 V	195	67.85	32.95
2	*2452.00	91.8 AV			1.22 V	195	58.85	32.95
3	2483.50	64.9 PK	74.0	-9.1	1.19 V	199	31.87	33.03
4	2483.50	52.7 AV	54.0	-1.3	1.19 V	199	19.67	33.03
5	4904.00	52.2 PK	74.0	-21.8	1.10 V	232	9.86	42.34
6	4904.00	39.1 AV	54.0	-14.9	1.10 V	232	-3.24	42.34
7	7356.00	55.5 PK	74.0	-18.5	1.24 V	197	8.41	47.09
8	7356.00	43.9 AV	54.0	-10.1	1.24 V	197	-3.19	47.09

REMARKS:

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

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Nov. 01, 2012	Oct. 31, 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 : Apr. 15, 2013

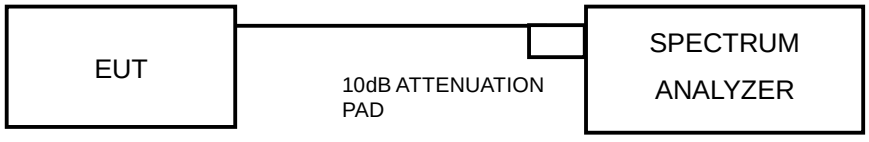
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.04	0.5	PASS
6	2437	9.34	0.5	PASS
11	2462	8.92	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.63	0.5	PASS
6	2437	16.39	0.5	PASS
11	2462	16.62	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.67	17.65	0.5	PASS
6	2437	17.41	17.64	0.5	PASS
11	2462	17.65	17.64	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.60	36.43	0.5	PASS
6	2437	36.43	36.41	0.5	PASS
9	2452	36.63	36.47	0.5	PASS

4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.4.2 INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Apr. 15, 2013

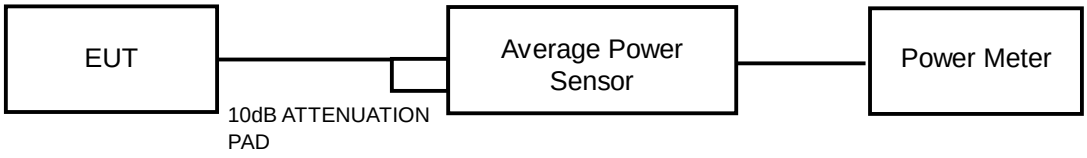
4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	73.621	18.67	30	PASS
6	2437	366.438	25.64	30	PASS
11	2462	87.700	19.43	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	40.832	16.11	30	PASS
6	2437	248.886	23.96	30	PASS
11	2462	52.000	17.16	30	PASS

802.11n (HT20)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	15.91	15.99	78.713	18.96	30	PASS
6	2437	23.09	23.91	449.741	26.53	30	PASS
11	2462	14.82	15.45	65.414	18.16	30	PASS

802.11n (HT40)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	12.51	12.38	35.122	15.46	30	PASS
6	2437	16.86	17.44	103.992	20.17	30	PASS
9	2452	13.05	13.42	42.163	16.25	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	100037	Nov. 01, 2012	Oct. 31, 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 : Apr. 15, 2013

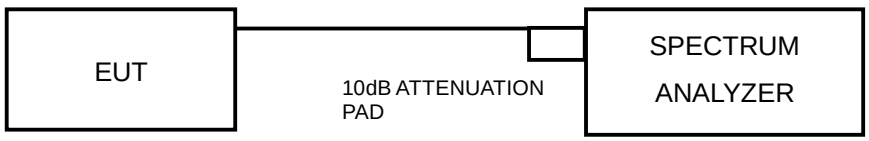
4.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz,Detector = power averaging (RMS) .
2. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW
3. Sweep time = auto couple,
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
5. Use the peak marker function to determine the maximum amplitude level.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-6.49	8	PASS
6	2437	-0.58	8	PASS
11	2462	-7.13	8	PASS

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.65	8	PASS
6	2437	-4.11	8	PASS
11	2462	-11.51	8	PASS

802.11n (HT20)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-12.72	3.01	-9.71	7.76	PASS
	6	2437	-5.61	3.01	-2.60	7.76	PASS
	11	2462	-13.59	3.01	-10.58	7.76	PASS
1	1	2412	-12.39	3.01	-9.38	7.76	PASS
	6	2437	-4.87	3.01	-1.86	7.76	PASS
	11	2462	-13.79	3.01	-10.78	7.76	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.24dBi > 6dBi , so the power density limit shall be reduced to 8-(6.24-6) = 7.76dBm

802.11n (HT40)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-19.15	3.01	-16.14	7.76	PASS
	6	2437	-13.91	3.01	-10.90	7.76	PASS
	9	2452	-18.96	3.01	-15.95	7.76	PASS
1	3	2422	-17.97	3.01	-14.96	7.76	PASS
	6	2437	-13.52	3.01	-10.51	7.76	PASS
	9	2452	-17.05	3.01	-14.04	7.76	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.24dBi > 6dBi , so the power density limit shall be reduced to 8-(6.24-6) = 7.76dBm

4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 30dB 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	100037	Nov. 01, 2012	Oct. 31, 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 : Apr. 15, 2013

4.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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

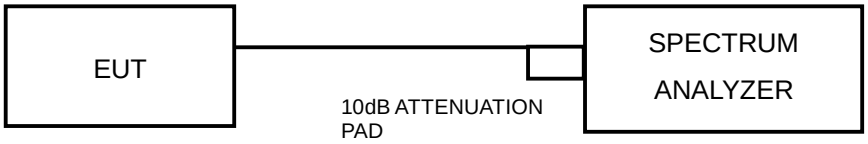
Measurement Procedure –Unwanted Emission Level

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

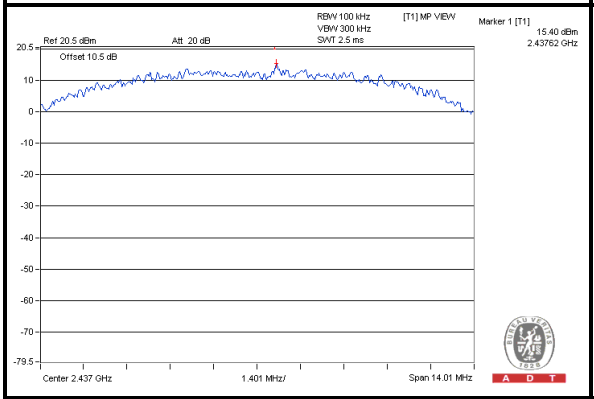
Same as Item 4.3.6

4.6.7 TEST RESULTS

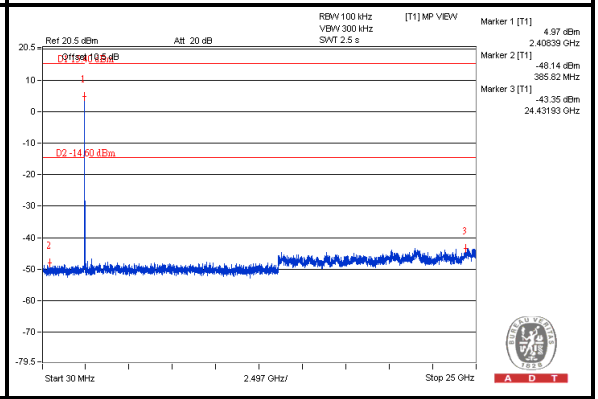
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b:

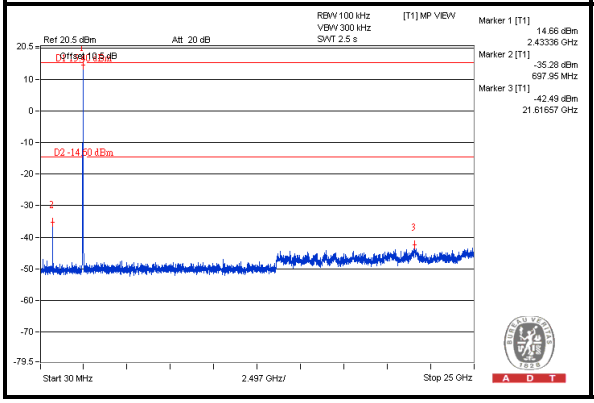
Maximum REF



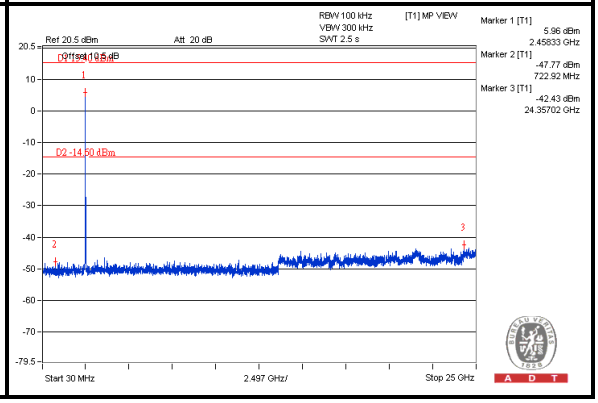
CH 1



CH 6

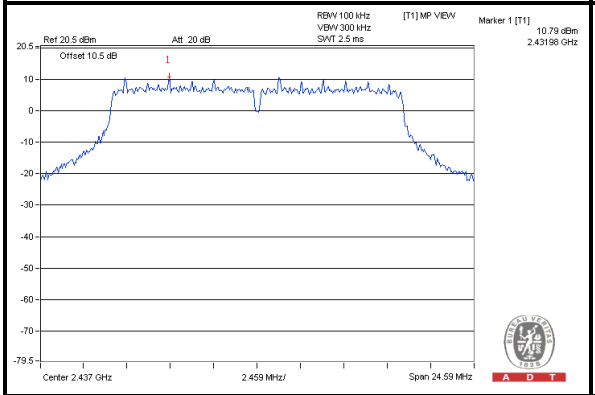


CH 11

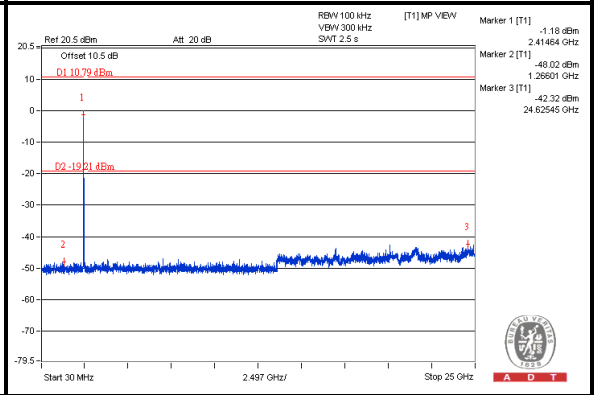


802.11g:

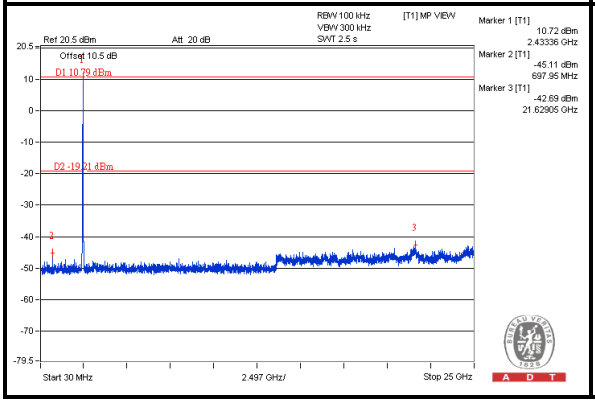
Maximum REF



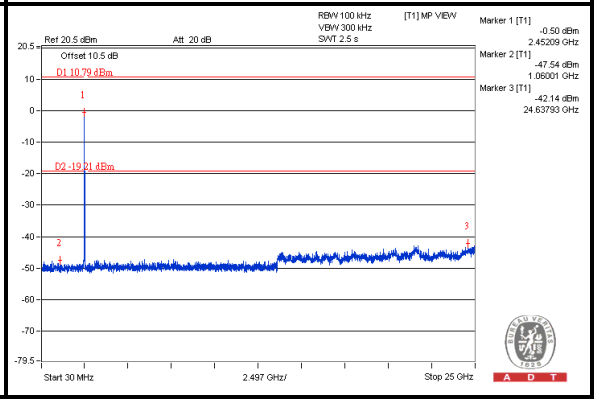
CH 1



CH 6



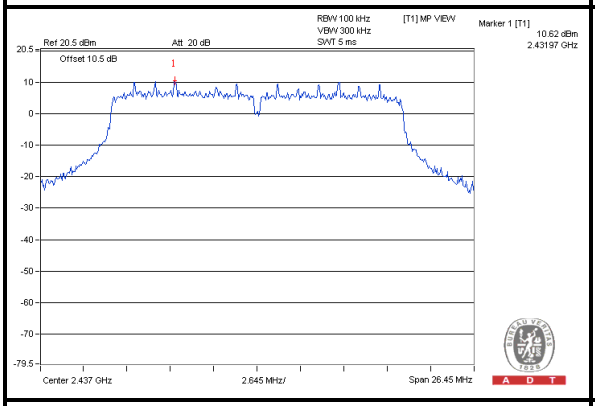
CH 11



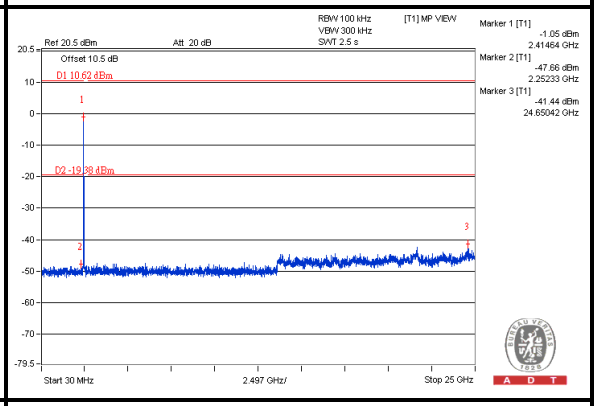
802.11n (HT20):

For Chain 0

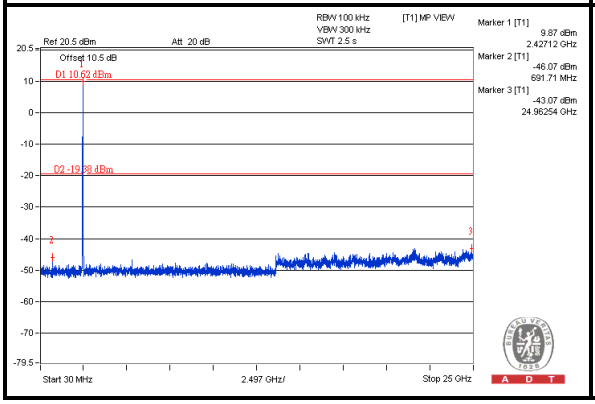
Maximum REF



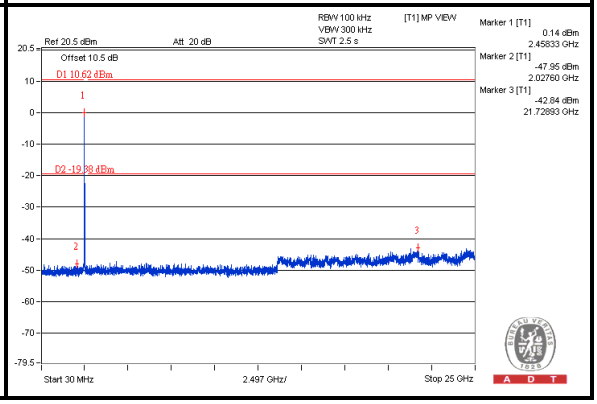
CH 1



CH 6

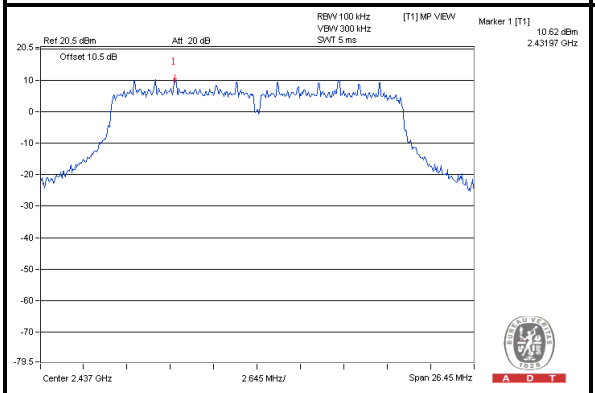


CH 11

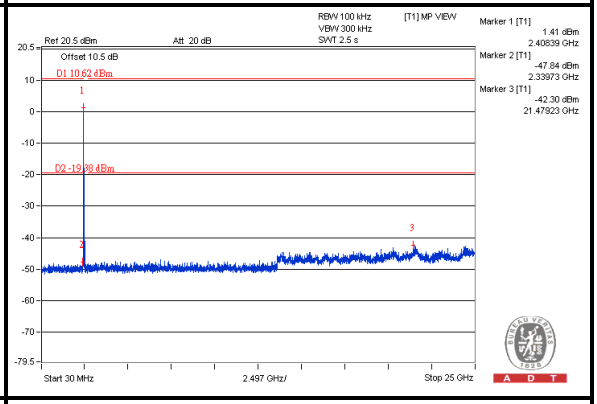


For Chain 1

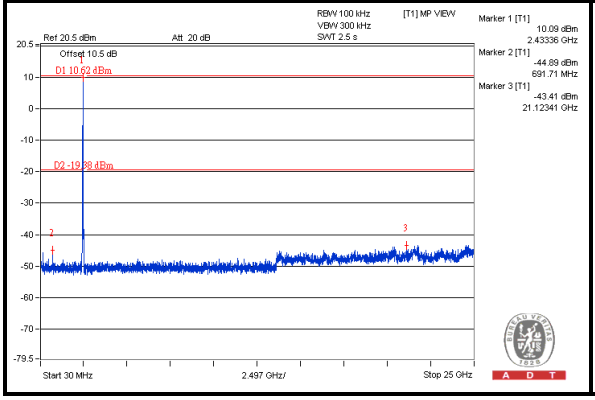
Maximum REF



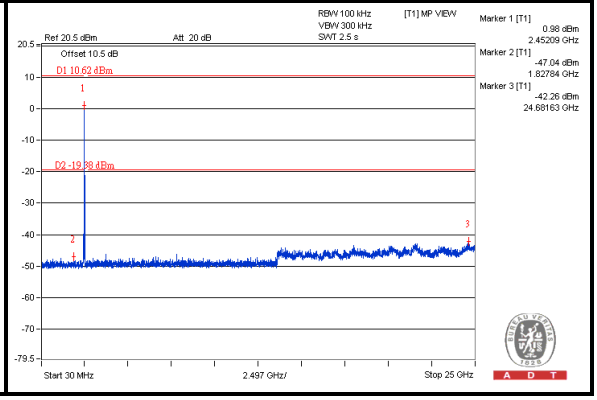
CH 1



CH 6



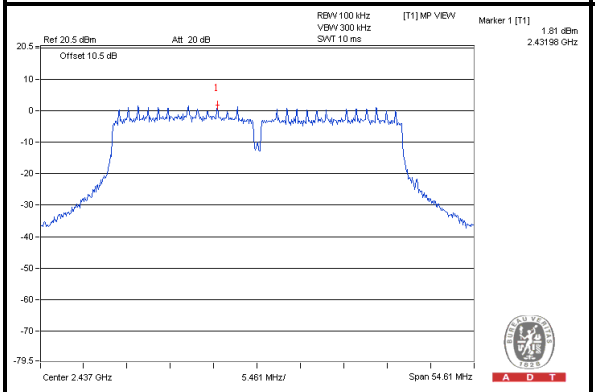
CH 11



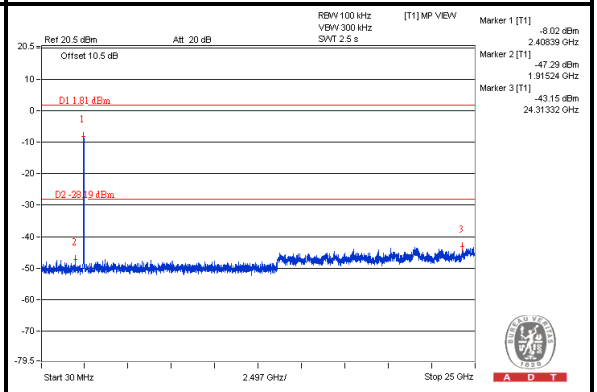
802.11n (HT40):

For Chain 0

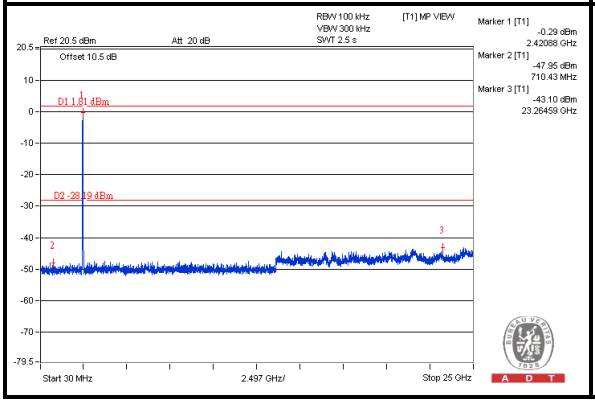
Maximum REF



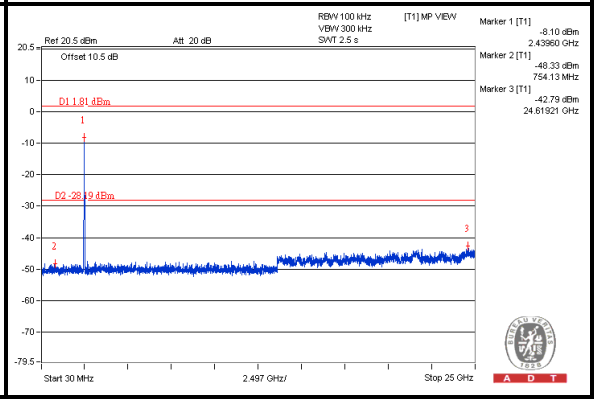
CH 3



CH 6

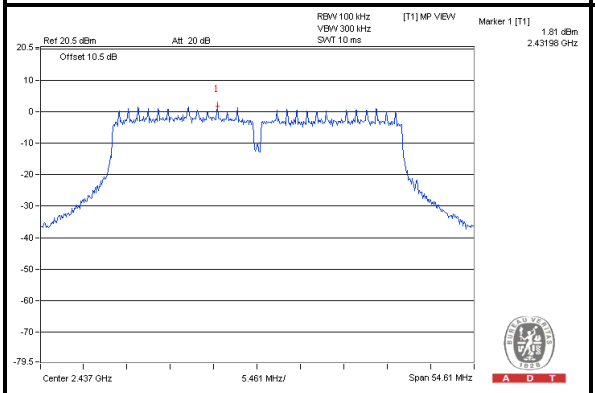


CH 9

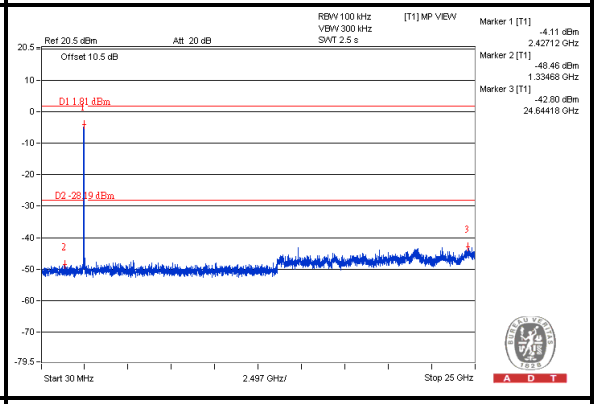


For Chain 1

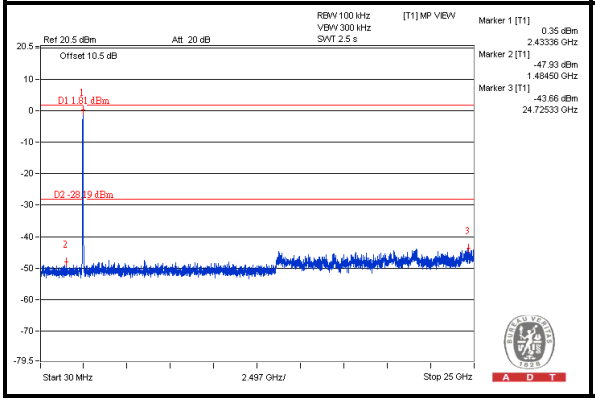
Maximum REF



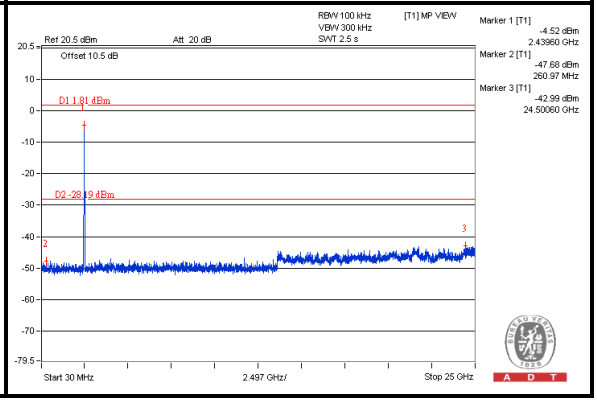
CH 3



CH 6



CH 9



5. TEST TYPES AND RESULTS (FOR 5GHz, 5.725~5.850GHz Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 19, 2012	Sep. 20, 2013
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	848773/004	Oct. 29, 2012	Oct. 28, 2013
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 05, 2012	Aug. 04, 2013
50 ohms Terminator	50	3	Oct. 23, 2012	Oct. 22, 2013
Software ADT	BV ADT_Cond_V7.3.7 .3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3 The VCCI Con A Registration No. is C-817.
4. Tested Date: Mar. 26, 2013

5.1.3 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.
b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
d. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit – 20dB) were not recorded.

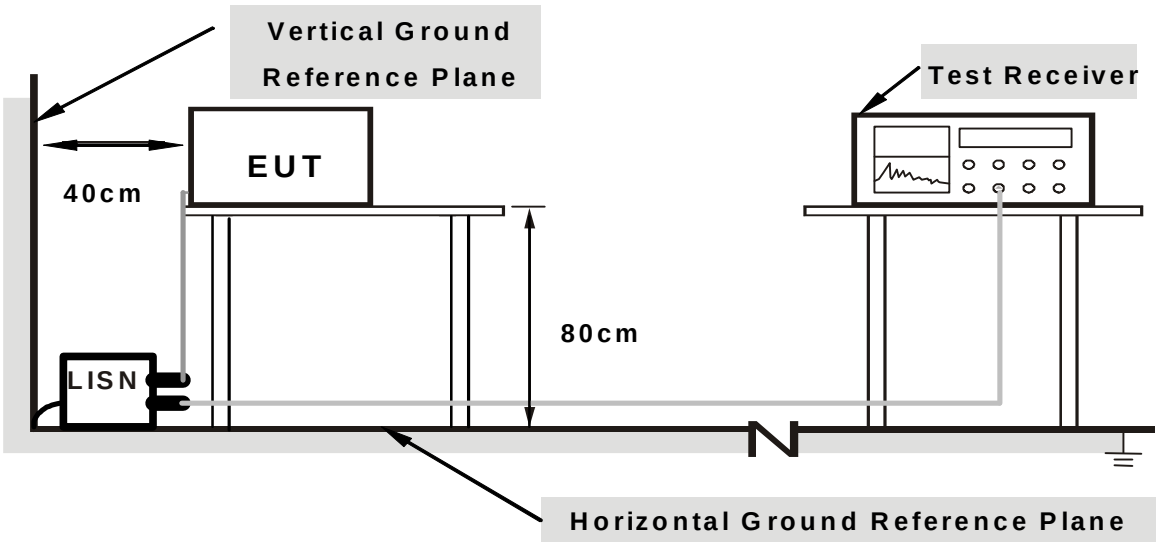
NOTE:

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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.

5.1.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

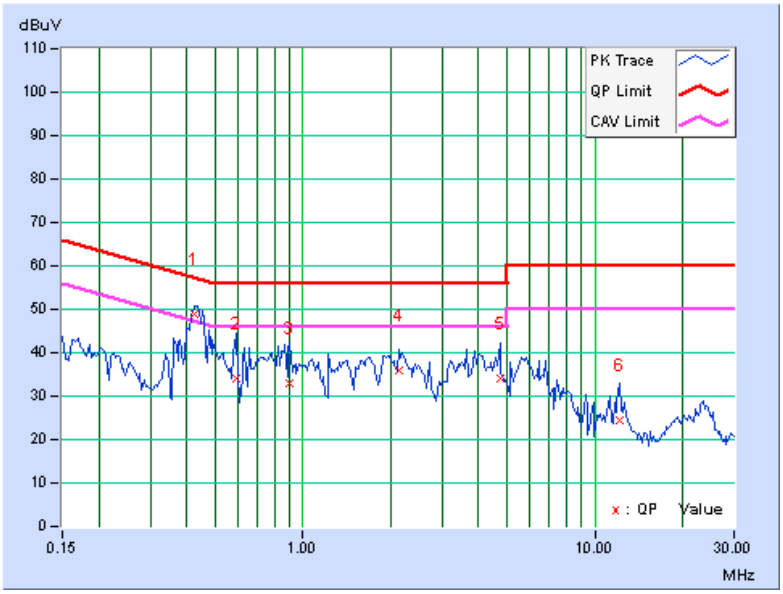
5.1.7 TEST RESULTS (MODE 1)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.42734	0.16	48.55	40.28	48.71	40.44	57.30	47.30	-8.59	-6.86
2	0.59141	0.17	33.83	19.08	34.00	19.25	56.00	46.00	-22.00	-26.75
3	0.90000	0.18	32.65	22.19	32.83	22.37	56.00	46.00	-23.17	-23.63
4	2.14453	0.24	35.66	29.16	35.90	29.40	56.00	46.00	-20.10	-16.60
5	4.75781	0.35	33.88	26.66	34.23	27.01	56.00	46.00	-21.77	-18.99
6	12.13672	0.66	23.80	18.57	24.46	19.23	60.00	50.00	-35.54	-30.77

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.

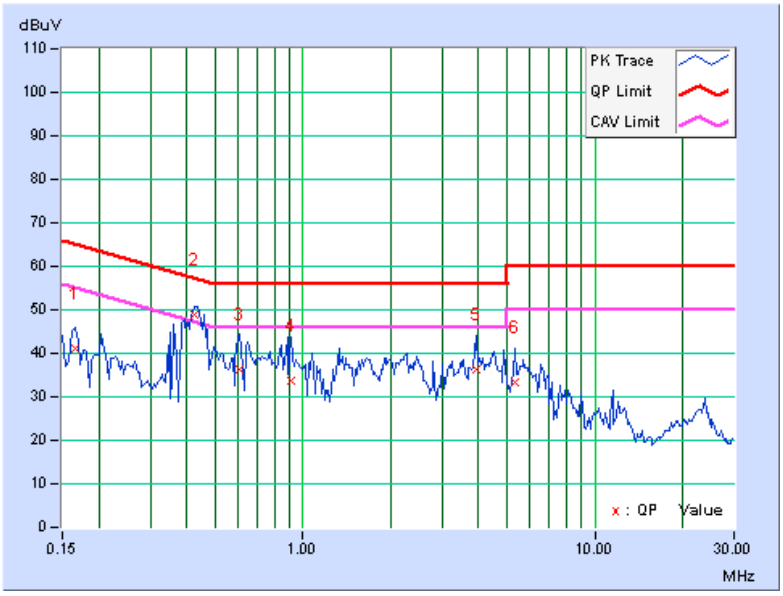


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.15	40.84	38.85	40.99	39.00	65.18	55.18	-24.19	-16.18
2	**0.42734**	**0.19**	**48.68**	**40.48**	**48.87**	**40.67**	**57.30**	**47.30**	**-8.43**	**-6.63**
3	0.60703	0.20	36.17	18.04	36.37	18.24	56.00	46.00	-19.63	-27.76
4	0.90781	0.22	33.40	22.67	33.62	22.89	56.00	46.00	-22.38	-23.11
5	3.93359	0.35	35.94	29.82	36.29	30.17	56.00	46.00	-19.71	-15.83
6	5.30078	0.39	32.84	25.90	33.23	26.29	60.00	50.00	-26.77	-23.71

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.



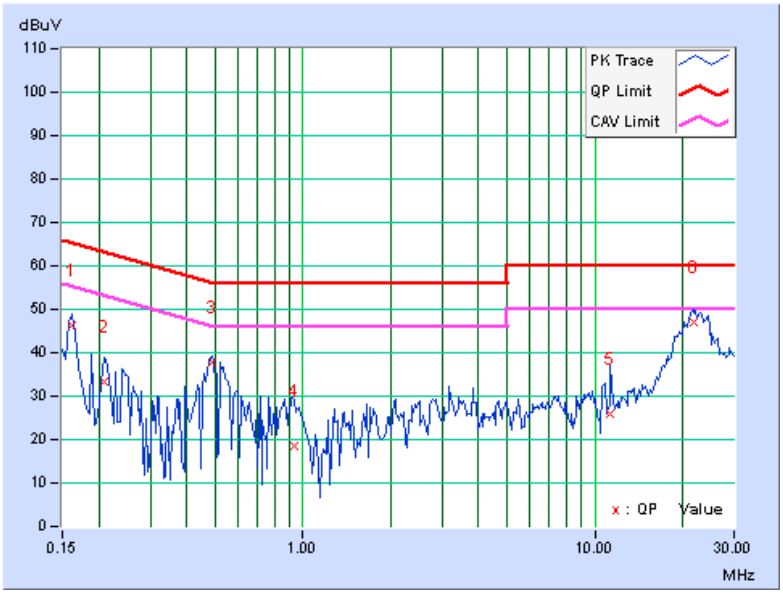
5.1.8 TEST RESULTS (MODE 2)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.10	46.20	40.73	46.30	40.83	65.38	55.38	-19.08	-14.55
2	0.20859	0.11	33.25	23.68	33.36	23.79	63.26	53.26	-29.90	-29.47
3	0.48594	0.16	37.50	35.05	37.66	35.21	56.24	46.24	-18.57	-11.02
4	0.93125	0.18	18.41	8.93	18.59	9.11	56.00	46.00	-37.41	-36.89
5	11.28125	0.63	25.48	18.89	26.11	19.52	60.00	50.00	-33.89	-30.48
6	21.72656	1.05	46.02	39.24	47.07	40.29	60.00	50.00	-12.93	-9.71

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.

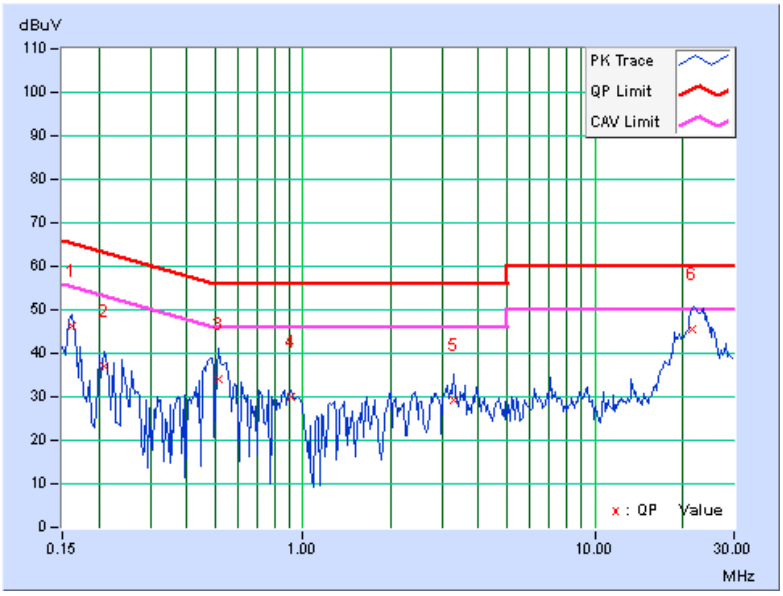


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.15	46.14	40.71	46.29	40.86	65.38	55.38	-19.09	-14.52
2	0.20859	0.15	36.99	28.01	37.14	28.16	63.26	53.26	-26.12	-25.10
3	0.51719	0.20	33.91	17.41	34.11	17.61	56.00	46.00	-21.89	-28.39
4	0.90781	0.22	29.73	26.39	29.95	26.61	56.00	46.00	-26.05	-19.39
5	3.28516	0.32	28.87	21.74	29.19	22.06	56.00	46.00	-26.81	-23.94
6	21.44922	0.82	44.67	41.49	45.49	42.31	60.00	50.00	-14.51	-7.69

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.



5.2 RADIATED AND BANDEDGE EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED AND BANDEDGE EMISSION 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 30dB 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.

5.2.2 TEST INSTRUMENTS

For 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-1000VH2B	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_V8.7.05	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: Mar. 27, 2013

For above 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	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 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. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Apr. 12, 2013

5.2.3 TEST PROCEDURES

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

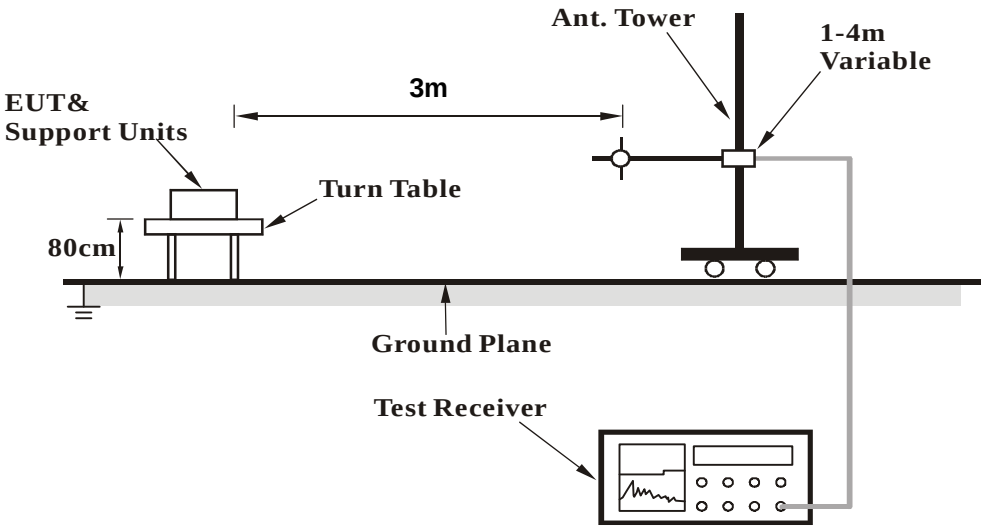
NOTE:

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.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11a

CHANNEL	TX Channel 149	**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	47.80	19.2 QP	40.0	-20.8	1.00 H	237	32.72	-13.53
2	104.74	26.9 QP	43.5	-16.6	2.00 H	75	43.82	-16.90
3	148.15	29.1 QP	43.5	-14.4	2.00 H	263	42.64	-13.57
4	173.41	26.6 QP	43.5	-16.9	2.00 H	78	40.83	-14.22
5	325.03	23.2 QP	46.0	-22.8	1.00 H	37	34.58	-11.35
6	400.01	25.4 QP	46.0	-20.6	2.00 H	307	35.38	-9.98
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	32.62	32.5 QP	40.0	-7.5	1.00 V	0	47.37	-14.91
2	58.71	28.8 QP	40.0	-11.2	1.00 V	28	42.89	-14.06
3	101.93	26.3 QP	43.5	-17.2	1.00 V	0	43.60	-17.28
4	148.15	27.4 QP	43.5	-16.1	1.00 V	335	40.94	-13.57
5	294.47	27.7 QP	46.0	-18.3	1.50 V	360	40.16	-12.44
6	850.04	26.9 QP	46.0	-19.1	1.00 V	346	28.16	-1.27

REMARKS:

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

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 149	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5745.00	114.7 PK			1.31 H	247	71.22	43.48
2	*5745.00	106.5 AV			1.31 H	247	63.02	43.48
3	11490.00	59.7 PK	74.0	-14.3	1.46 H	282	9.52	50.18
4	11490.00	48.2 AV	54.0	-5.8	1.46 H	282	-1.98	50.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	111.8 PK			1.12 V	96	68.32	43.48
2	*5745.00	104.0 AV			1.12 V	96	60.52	43.48
3	11490.00	59.7 PK	74.0	-14.3	1.29 V	143	9.52	50.18
4	11490.00	48.0 AV	54.0	-6.0	1.29 V	143	-2.18	50.18

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5785.00	115.0 PK			1.30 H	244	71.48	43.52
2	*5785.00	106.6 AV			1.30 H	244	63.08	43.52
3	11570.00	59.4 PK	74.0	-14.6	1.45 H	295	9.22	50.18
4	11570.00	47.8 AV	54.0	-6.2	1.45 H	295	-2.38	50.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	112.0 PK			1.17 V	102	68.48	43.52
2	*5785.00	104.3 AV			1.17 V	102	60.78	43.52
3	11570.00	60.0 PK	74.0	-14.0	1.23 V	146	9.82	50.18
4	11570.00	48.5 AV	54.0	-5.5	1.23 V	146	-1.68	50.18

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5825.00	115.2 PK			1.28 H	233	71.59	43.61
2	*5825.00	106.9 AV			1.28 H	233	63.29	43.61
3	11650.00	59.2 PK	74.0	-14.8	1.50 H	277	8.78	50.42
4	11650.00	48.0 AV	54.0	-6.0	1.50 H	277	-2.42	50.42
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	*5825.00	111.2 PK			1.14 V	109	67.59	43.61
2	*5825.00	103.5 AV			1.14 V	109	59.89	43.61
3	11650.00	60.0 PK	74.0	-14.0	1.26 V	149	9.58	50.42
4	11650.00	48.1 AV	54.0	-5.9	1.26 V	149	-2.32	50.42

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (HT20)

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	5360.00	63.9 PK	74.0	-10.1	1.13 H	260	21.07	42.83
2	5360.00	53.1 AV	54.0	-0.9	1.13 H	260	10.27	42.83
3	*5745.00	112.4 PK			1.03 H	311	68.92	43.48
4	*5745.00	103.0 AV			1.03 H	311	59.52	43.48
5	11490.00	59.8 PK	74.0	-14.2	1.51 H	283	9.62	50.18
6	11490.00	48.1 AV	54.0	-5.9	1.51 H	283	-2.08	50.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	111.2 PK			1.11 V	231	67.72	43.48
2	*5745.00	103.1 AV			1.11 V	231	59.62	43.48
3	11490.00	59.5 PK	74.0	-14.5	1.26 V	157	9.32	50.18
4	11490.00	48.0 AV	54.0	-6.0	1.26 V	157	-2.18	50.18

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	5360.00	63.9 PK	74.0	-10.1	1.11 H	264	21.07	42.83
2	5360.00	53.2 AV	54.0	-0.8	1.11 H	264	10.37	42.83
3	*5785.00	112.9 PK			1.00 H	321	69.38	43.52
4	*5785.00	103.3 AV			1.00 H	321	59.78	43.52
5	11570.00	59.6 PK	74.0	-14.4	1.49 H	297	9.42	50.18
6	11570.00	48.4 AV	54.0	-5.6	1.49 H	297	-1.78	50.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	110.6 PK			1.16 V	232	67.08	43.52
2	*5785.00	102.8 AV			1.16 V	232	59.28	43.52
3	11570.00	59.4 PK	74.0	-14.6	1.32 V	158	9.22	50.18
4	11570.00	47.9 AV	54.0	-6.1	1.32 V	158	-2.28	50.18

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	5360.00	63.3 PK	74.0	-10.7	1.17 H	271	20.47	42.83
2	5360.00	52.8 AV	54.0	-1.2	1.17 H	271	9.97	42.83
3	*5825.00	112.8 PK			1.07 H	296	69.19	43.61
4	*5825.00	103.5 AV			1.07 H	296	59.89	43.61
5	11650.00	59.2 PK	74.0	-14.8	1.52 H	284	8.78	50.42
6	11650.00	47.9 AV	54.0	-6.1	1.52 H	284	-2.52	50.42
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	*5825.00	110.9 PK			1.12 V	222	67.29	43.61
2	*5825.00	103.1 AV			1.12 V	222	59.49	43.61
3	11650.00	60.1 PK	74.0	-13.9	1.32 V	141	9.68	50.42
4	11650.00	48.4 AV	54.0	-5.6	1.32 V	141	-2.02	50.42

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (HT40)

CHANNEL	TX Channel 151	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5360.00	63.5 PK	74.0	-10.5	1.13 H	278	20.67	42.83
2	5360.00	52.9 AV	54.0	-1.1	1.13 H	278	10.07	42.83
3	*5755.00	108.4 PK			1.00 H	320	64.92	43.48
4	*5755.00	100.1 AV			1.00 H	320	56.62	43.48
5	11510.00	59.5 PK	74.0	-14.5	1.52 H	308	9.33	50.17
6	11510.00	48.5 AV	54.0	-5.5	1.52 H	308	-1.67	50.17
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	*5755.00	108.6 PK			1.10 V	230	65.12	43.48
2	*5755.00	100.5 AV			1.10 V	230	57.02	43.48
3	11510.00	60.1 PK	74.0	-13.9	1.28 V	149	9.93	50.17
4	11510.00	48.1 AV	54.0	-5.9	1.28 V	149	-2.07	50.17

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.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	5360.00	63.9 PK	74.0	-10.1	1.09 H	272	21.07	42.83
2	**5360.00**	**53.3 AV**	**54.0**	**-0.7**	**1.09 H**	**272**	**10.47**	**42.83**
3	*5795.00	108.5 PK			1.00 H	326	64.97	43.53
4	*5795.00	100.4 AV			1.00 H	326	56.87	43.53
5	11590.00	59.9 PK	74.0	-14.1	1.54 H	295	9.71	50.19
6	11590.00	48.7 AV	54.0	-5.3	1.54 H	295	-1.49	50.19
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	*5795.00	108.2 PK			1.09 V	227	64.67	43.53
2	*5795.00	100.1 AV			1.09 V	227	56.57	43.53
3	11590.00	60.4 PK	74.0	-13.6	1.34 V	128	10.21	50.19
4	11590.00	48.4 AV	54.0	-5.6	1.34 V	128	-1.79	50.19

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Nov. 01, 2012	Oct. 31, 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 : Apr. 15, 2013

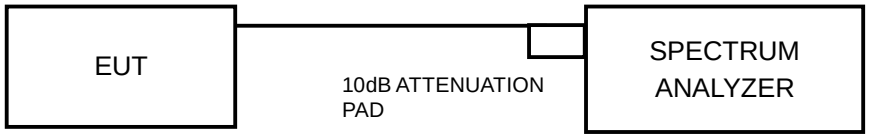
5.3.3 TEST PROCEDURE

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

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

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

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.44	0.5	PASS
157	5785	16.50	0.5	PASS
165	5825	16.43	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.70	17.67	0.5	PASS
157	5785	17.64	17.70	0.5	PASS
165	5825	17.66	17.64	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.52	36.52	0.5	PASS
159	5795	36.44	36.52	0.5	PASS

5.4 CONDUCTED OUTPUT POWER MEASUREMENT

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz band: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

5.4.2 INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Apr. 15, 2013

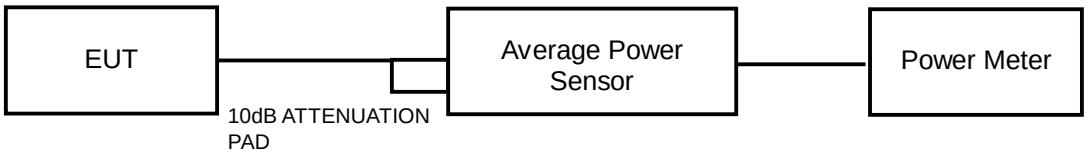
5.4.3 TEST PROCEDURES

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

5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

5.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	223.357	23.49	30	PASS
157	5785	217.270	23.37	30	PASS
165	5825	198.609	22.98	30	PASS

802.11n (HT20)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.50	19.35	175.224	22.44	30	PASS
157	5785	19.06	19.43	168.238	22.26	30	PASS
165	5825	18.03	18.72	138.006	21.40	30	PASS

802.11n (HT40)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	19.12	19.58	172.440	22.37	30	PASS
159	5795	19.22	19.67	176.243	22.46	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 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 : Apr. 15, 2013

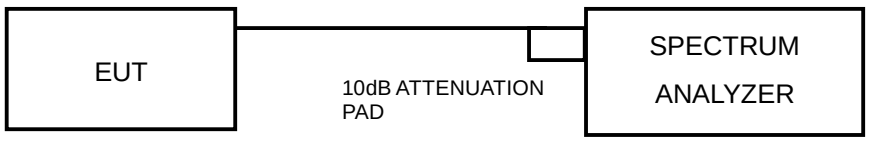
5.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz,Detector = power averaging (RMS) .
2. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW
3. Sweep time = auto couple,
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
5. Use the peak marker function to determine the maximum amplitude level.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.5.7 TEST RESULTS

802.11a

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-4.02	8	PASS
157	5785	-4.01	8	PASS
165	5825	-3.76	8	PASS

802.11n (HT20)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-8.87	3.01	-5.86	6.63	PASS
	157	5785	-9.07	3.01	-6.06	6.63	PASS
	165	5825	-9.19	3.01	-6.18	6.63	PASS
1	149	5745	-7.72	3.01	-4.71	6.63	PASS
	157	5785	-8.10	3.01	-5.09	6.63	PASS
	165	5825	-8.78	3.01	-5.77	6.63	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.37dBi > 6dBi , so the power density limit shall be reduced to 8-(7.37-6) = 6.63dBm

802.11n (HT40)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-10.98	3.01	-7.97	6.63	PASS
	159	5795	-10.93	3.01	-7.92	6.63	PASS
1	151	5755	-10.22	3.01	-7.21	6.63	PASS
	159	5795	-11.31	3.01	-8.30	6.63	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.37dBi > 6dBi , so the power density limit shall be reduced to 8-(7.37-6) = 6.63dBm

5.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 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 : Apr. 15, 2013

5.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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

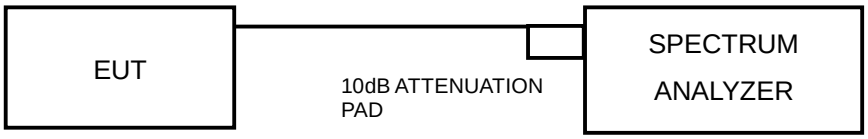
Measurement Procedure –Unwanted Emission Level

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

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP



5.6.6 EUT OPERATING CONDITION

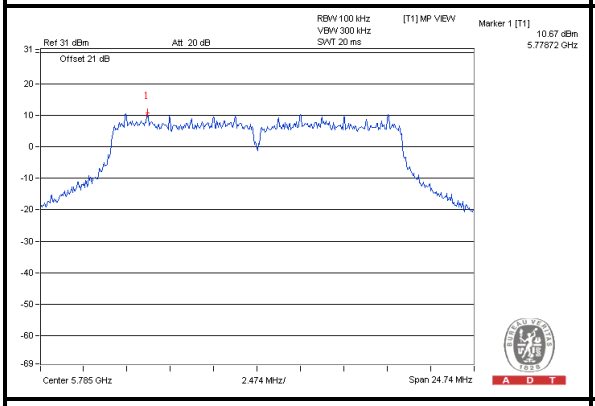
Same as Item 4.3.6

5.6.7 TEST RESULTS

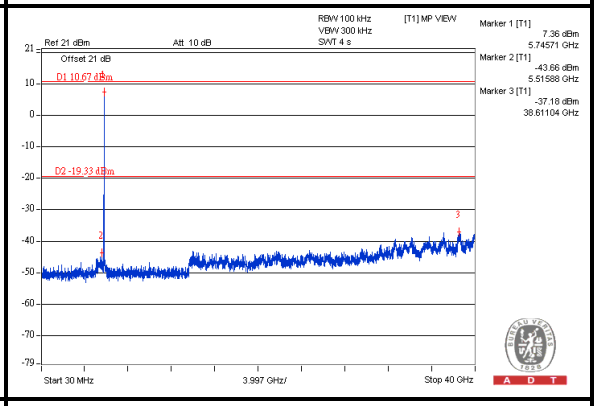
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11a

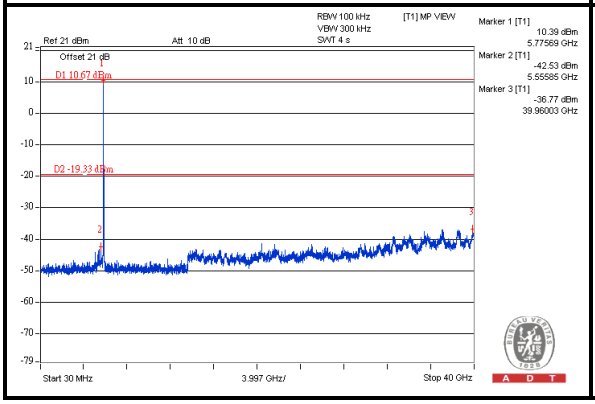
Maximum REF



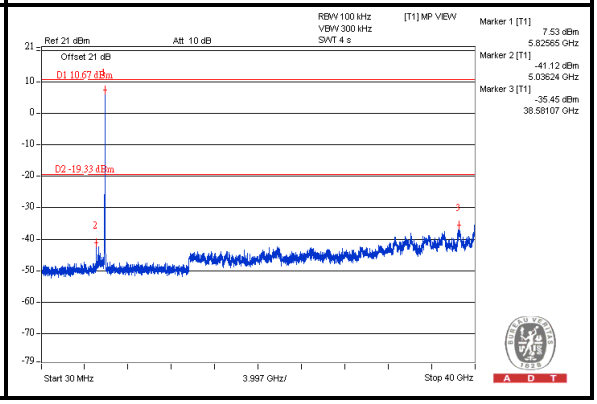
CH 149



CH 157



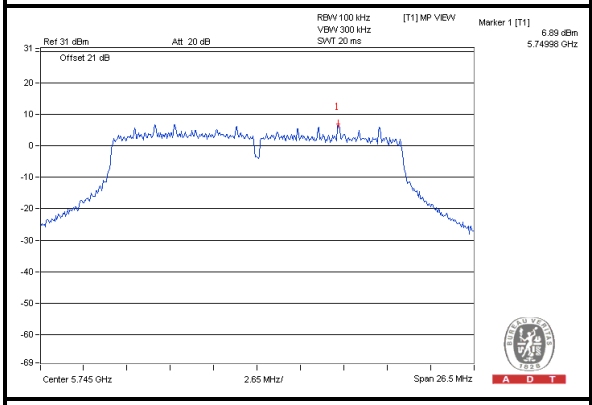
CH 165



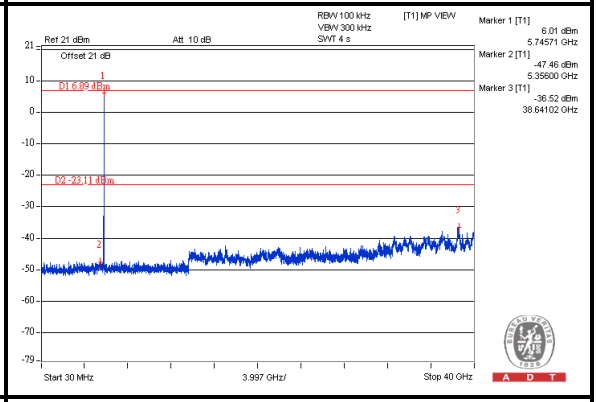
802.11n (HT20)

For Chain 0

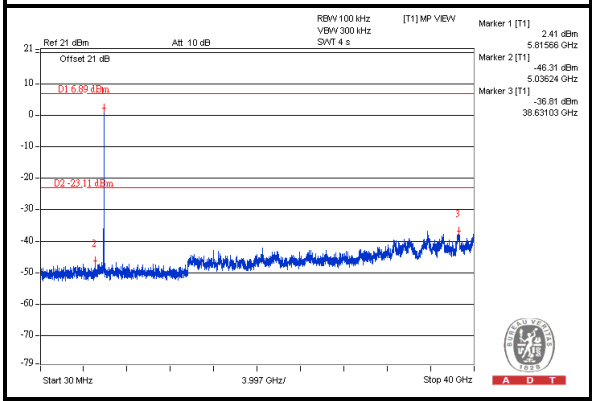
Maximum REF



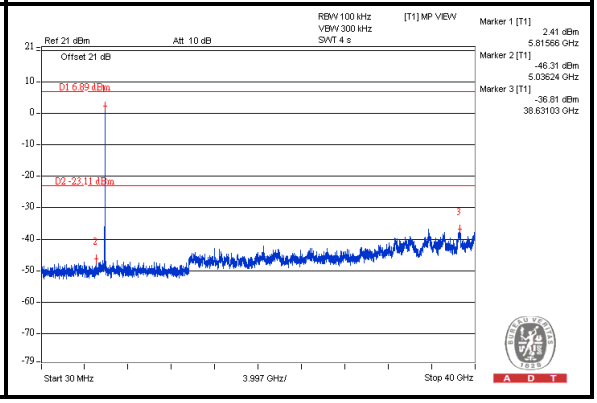
CH 149



CH 157

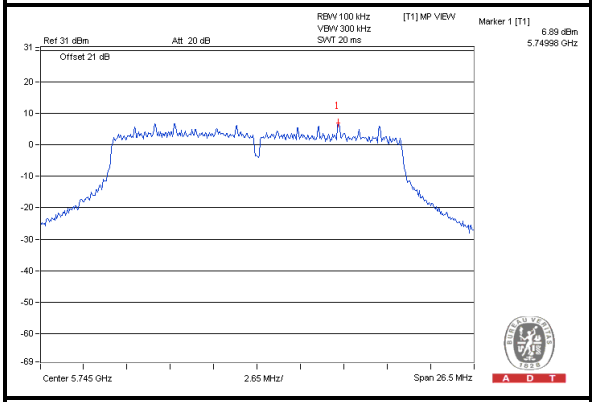


CH 165

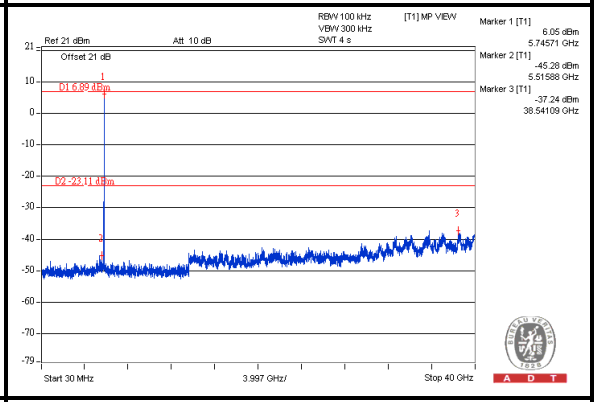


For Chain 1

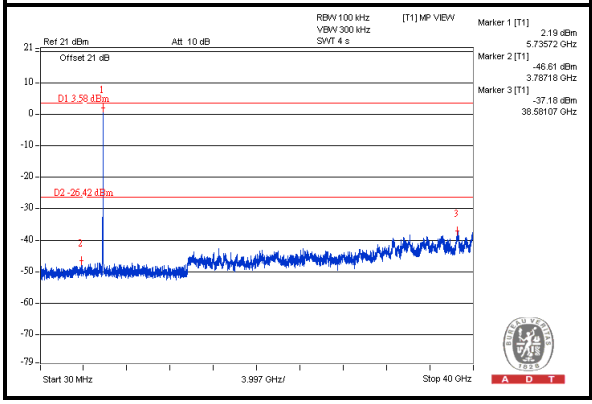
Maximum REF



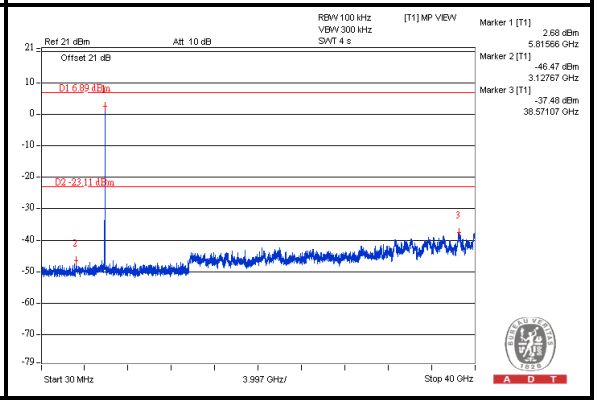
CH 149



CH 157



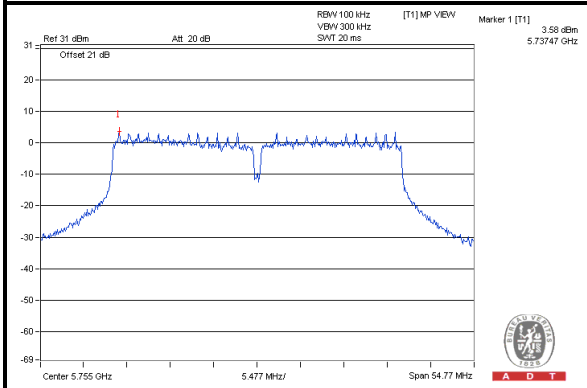
CH 165



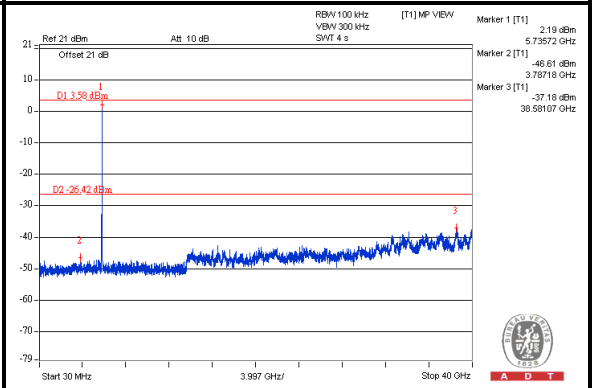
802.11n (HT40)

For Chain 0

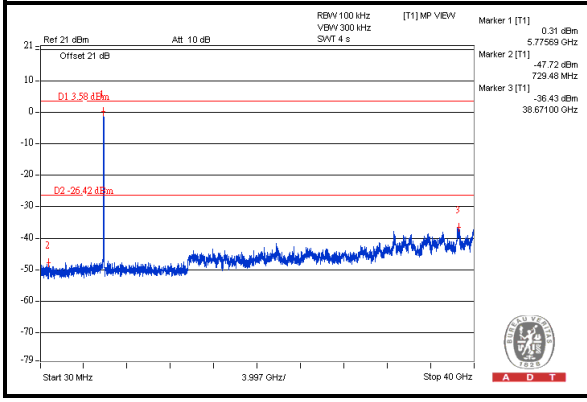
Maximum REF



CH 151

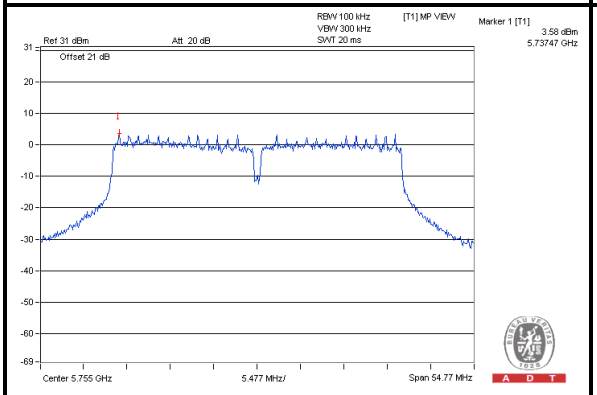


CH 159

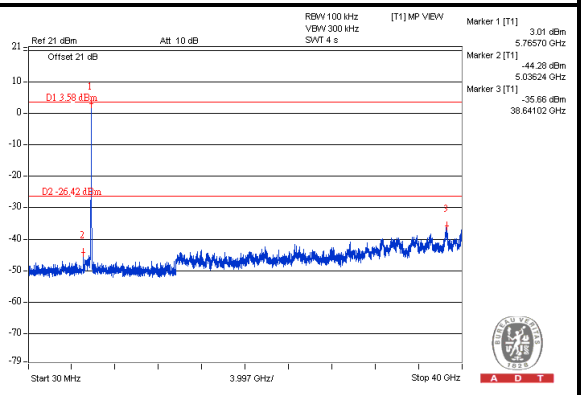


For Chain 1

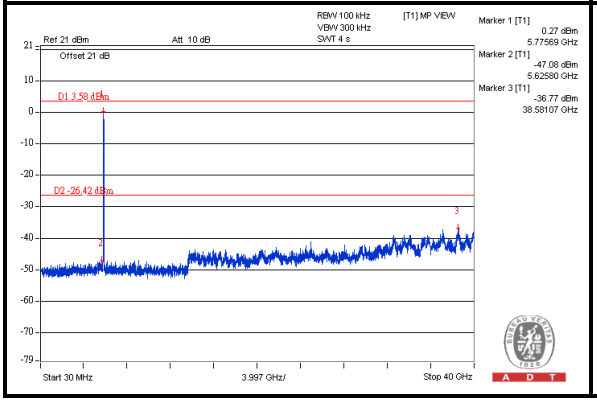
Maximum REF



CH 151



CH 159



6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. 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:
Tel: 886-3-5935343
Fax: 886-3-5935342

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

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

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

8. 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 ---