



FCC TEST REPORT (15.247)

REPORT NO.: RF130726E06

MODEL NO.: AW-AM691NF

FCC ID: TLZ-AM691NF

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TESTED: Aug. 15 to 22, 2013

ISSUED: Sep. 06, 2013

APPLICANT: AzureWave Technologies, Inc.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130726E06	Original release	Sep. 06, 2013



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1. CERTIFICATION

PRODUCT: IEEE 802.11 a/b/g/n Wireless LAN and Bluetooth Combo LGA Module

BRAND NAME: AzureWave

MODEL NO.: AW-AM691NF

TEST SAMPLE: ENGINEERING SAMPLE

APPLICANT: AzureWave Technologies, Inc.

TESTED: Aug. 15 to 22, 2013

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

The above equipment (Model: AW-AM691NF) 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:** Sep. 06, 2013
(Lori Chung, Specialist)

APPROVED BY : , **DATE:** Sep. 06, 2013
(May Chen, Manager)



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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 -14.43dB at 0.15000MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.3dB at 2385.00MHz & 7386.00MHz
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 I-PEX 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 -12.16dB at 0.15000MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.8dB at 5449.00MHz
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 I-PEX not a standard connector.

NOTE:

The EUT was operating in 2.400 ~ 2.4835GHz, 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz 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 5.15~5.35GHz and 5.47~5.6GHz & 5.65~5.725GHz RF parameters was recorded in another test report.



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2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.46 dB
Radiated emissions (1GHz -6GHz)	3.73 dB
Radiated emissions (6GHz -18GHz)	3.90 dB
Radiated emissions (18GHz -40GHz)	4.11 dB



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	IEEE 802.11 a/b/g/n Wireless LAN and Bluetooth Combo LGA Module
MODEL NO.	AW-AM691NF
POWER SUPPLY	DC 3.3V
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 5GHz: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66GHz ~ 5.70GHz
	For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	For 15.407 16 for 802.11a, 802.11n (HT20) 7 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: 113.240mW 802.11n (HT20): 182.666mW 802.11n (HT40): 93.077mW
	For 15.247 (2.4GHz) 802.11b: 148.936mW 802.11g: 199.986mW 802.11n (HT20): 389.801mW 802.11n (HT40): 157.000mW
	For 15.247 (5GHz) 802.11a: 158.489mW 802.11n (HT20): 243.478mW 802.11n (HT40): 255.711mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA

I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth technology and WLAN technology used for the EUT (WLAN and Bluetooth technology cannot transmit at same time).
2. 2.4GHz and 5GHz technology cannot transmit at same time.
3. The antennas provided to the EUT, please refer to the following table:

Ant.	Brand	Model	Antenna Type	Connector	Antenna Gain <include cable lose> (dB)	Antenna Cable Loss (dB)	Cable Length (mm)	Frequency range (MHz to MHz)
1	MAG.LAYERS	MSA-4008-25GC1-A1	PIFA	I-PEX	2.98	0.5	150	2400 ~ 2500
					5.16			4900 ~ 5900
2	INPAQ	WA-C-XT-02-001	PIFA	I-PEX	2.40	1	721	2400 ~ 2500
					2.06			5150 ~ 5850
3	INPAQ	WA-P-LB-02-035	PIFA	I-PEX	2.97	1	440	2400 ~ 2500
					2.77			5150 ~ 5850
4	WHA YU	SSR-31604	PIFA	I-PEX	2.6	0.5	125	2400 ~ 2500
					4.3			4900 ~ 5825
5	Smart Approach Co., Ltd	SE-ECJH0-001	PIFA	I-PEX	-0.56	0.66	206	2400 ~ 2500
					1.25	0.98		5150 ~ 5350
					0.08	1.03		5740 ~ 5725
					0.75	1.06		5725 ~ 5850
6	Smart Approach Co., Ltd	SE-ECJH0-002	PIFA	I-PEX	-0.57	0.14	43	2400 ~ 2500
					-0.64	0.20		5150 ~ 5350
					1.79	0.22		5740 ~ 5725
					1.27	0.22		5725 ~ 5850
7	JiengtaiCorporation	JT1301209Y0311	PIFA	I-PEX	1.82	0.76	208	2400 ~ 2500
					0.45	1.22		5150 ~ 5350
					0.76	1.27		5740 ~ 5725
					0.38	1.32		5725 ~ 5850
8	JiengtaiCorporation	JT1301209Y1511	PIFA	I-PEX	-0.44	0.13	48	2400 ~ 2500
					2.08	0.25		5150 ~ 5350
					2.48	0.26		5740 ~ 5725
					1.66	0.33		5725 ~ 5850
9	Hua Chen Technology Co.,Ltd	0ACCN013008N	PIFA	I-PEX	-1.04	0.12	213	2400 ~ 2500
					-1.67	0.19		5150 ~ 5350
					-0.64	0.20		5740 ~ 5725
					-0.75	0.21		5725 ~ 5850
10	Hua Chen Technology Co.,Ltd	0ACCN013009N	PIFA	I-PEX	-5.82	0.5	49	2400 ~ 2500
					0.54	0.77		5150 ~ 5350
					2.33	0.80		5740 ~ 5725
					2.33	0.82		5725 ~ 5850

From the above antennas, antenna 1 was selected for the test and its data was recorded in this report.



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

MODULATION MODE	TX/RX FUNCTION
802.11a	1TX(Diversity)/2RX
802.11b	1TX(Diversity)/2RX
802.11g	1TX(Diversity)/2RX
802.11n (HT20) (MCS0~7)	1TX(Diversity)/2RX
802.11n (HT20) (MCS8~15)	2TX/2RX
802.11n (HT40) (MCS0~7)	1TX(Diversity)/2RX
802.11n (HT40) (MCS8~15)	2TX/2RX

5. This equipment is a slave that supports TPC function.

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.



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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



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

- NOTE:** 1. "-" means no effect.
2. For 2.4GHz: The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
3. For 5GHz: The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane** (for below 1GHz) and **Z-plane** (for 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	13
For 5 GHz 802.11n (HT40)	151 to 159	159	OFDM	BPSK	27

RADIATED EMISSION TEST (BELOW 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
For 2.4 GHz 802.11n (HT20)	1 to 11	6	OFDM	BPSK	13
For 5 GHz 802.11n (HT40)	151 to 159	159	OFDM	BPSK	27



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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	13
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27
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	13
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	27

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	13
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27
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	13
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	27



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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	13
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27
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	13
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	27

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 65%RH	120Vac, 60Hz	Barry Lee
RE<1G	24deg. C, 65%RH	120Vac, 60Hz	Andy Ho
RE ³ 1G	24deg. C, 69%RH	120Vac, 60Hz	Tim Ho
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 v03r01

662911 D01 Multiple Transmitter Output v01 r02

ANSI C63.10-2009

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

3.4 DESCRIPTION OF SUPPORT UNITS

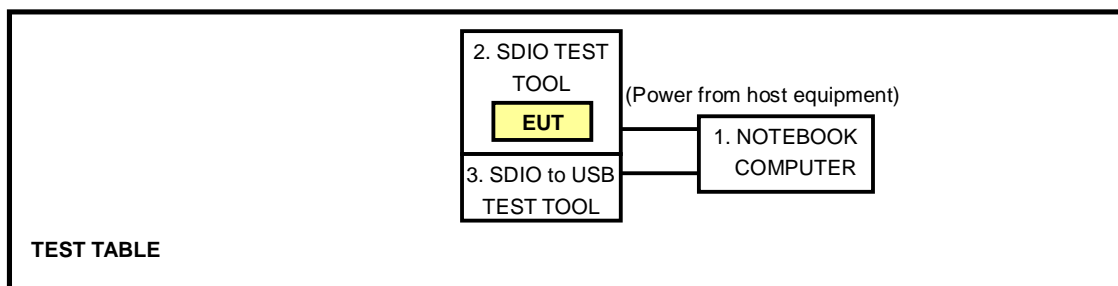
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	ASUS	NA	NA	NA
2	SDIO TEST TOOL	AzureWave	NA	NA	NA
3	SDIO to USB TEST TOOL	AzureWave	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable, 1.8m
2	NA
3	NA

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST





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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 07, 2013	June 06, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Aug. 22, 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.

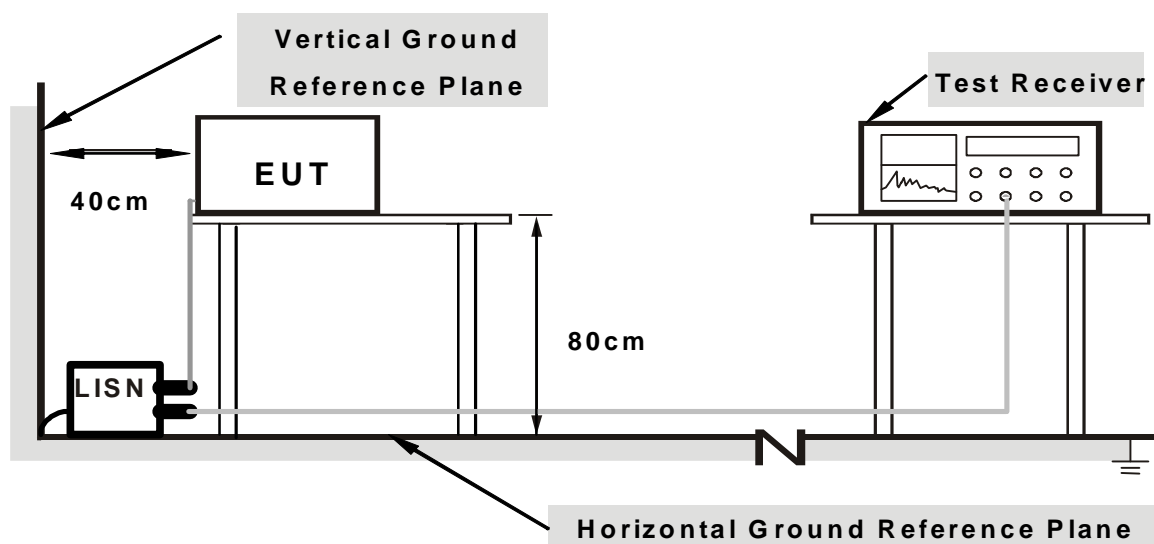
NOTE:

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

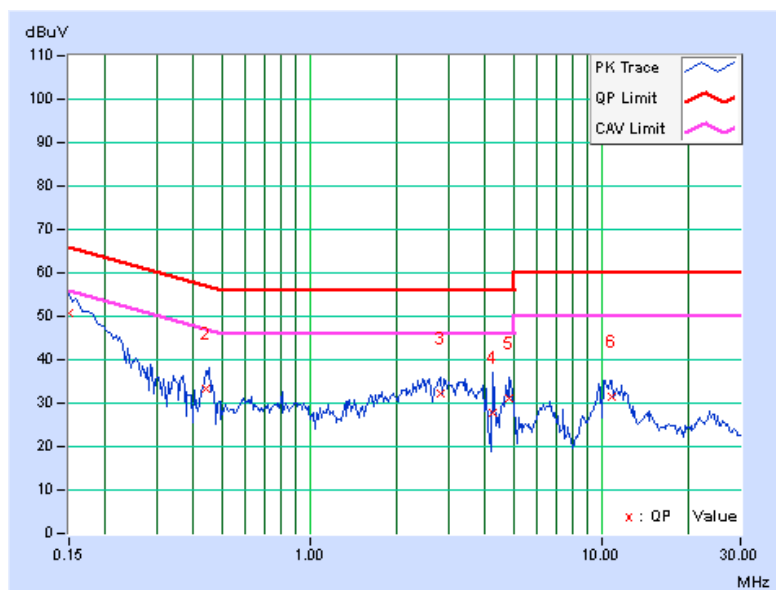
4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.12	50.67	35.77	50.79	35.89	66.00	56.00	-15.21	-20.11
2	0.44297	0.18	33.23	25.43	33.41	25.61	57.01	47.01	-23.59	-21.39
3	2.80469	0.31	31.81	27.47	32.12	27.78	56.00	46.00	-23.88	-18.22
4	4.23438	0.37	27.45	19.73	27.82	20.10	56.00	46.00	-28.18	-25.90
5	4.82422	0.40	30.79	24.68	31.19	25.08	56.00	46.00	-24.81	-20.92
6	10.85547	0.70	30.65	23.92	31.35	24.62	60.00	50.00	-28.65	-25.38

REMARKS:

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

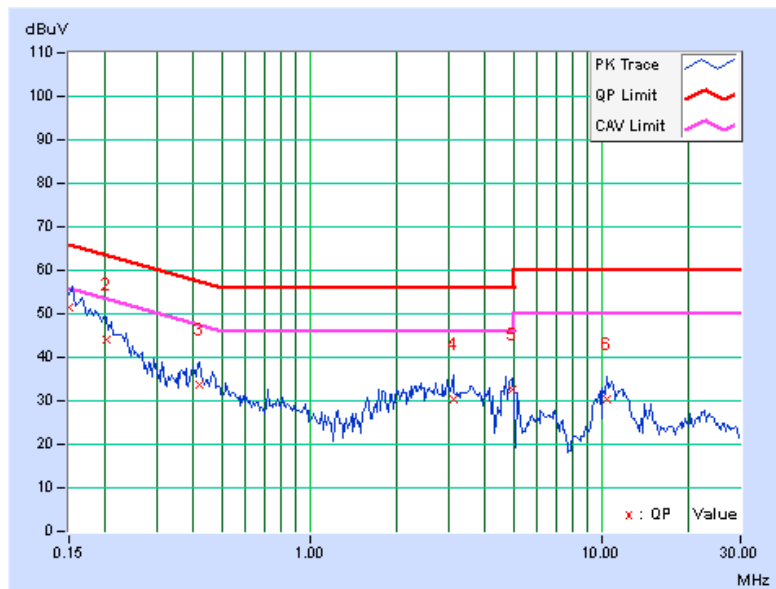


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. (dB)	AV. (dB)
1	0.15000	0.10	51.47	34.51	51.57	34.61	66.00	56.00	-14.43	-21.39
2	0.20078	0.12	44.01	28.99	44.13	29.11	63.58	53.58	-19.45	-24.47
3	0.41953	0.17	33.56	28.59	33.73	28.76	57.46	47.46	-23.73	-18.70
4	3.10156	0.30	29.95	25.30	30.25	25.60	56.00	46.00	-25.75	-20.40
5	4.92578	0.36	32.09	24.03	32.45	24.39	56.00	46.00	-23.55	-21.61
6	10.44141	0.53	29.94	22.72	30.47	23.25	60.00	50.00	-29.53	-26.75

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 BANDEGE MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION AND BANDEGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB.

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	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	000022009111 0	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: Aug. 22, 2013



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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	MY51210105	Jan. 29, 2013	Jan. 28, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
Horn_Antenna AISL	AIH.8018	000032009111 0	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: Aug. 20, 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.

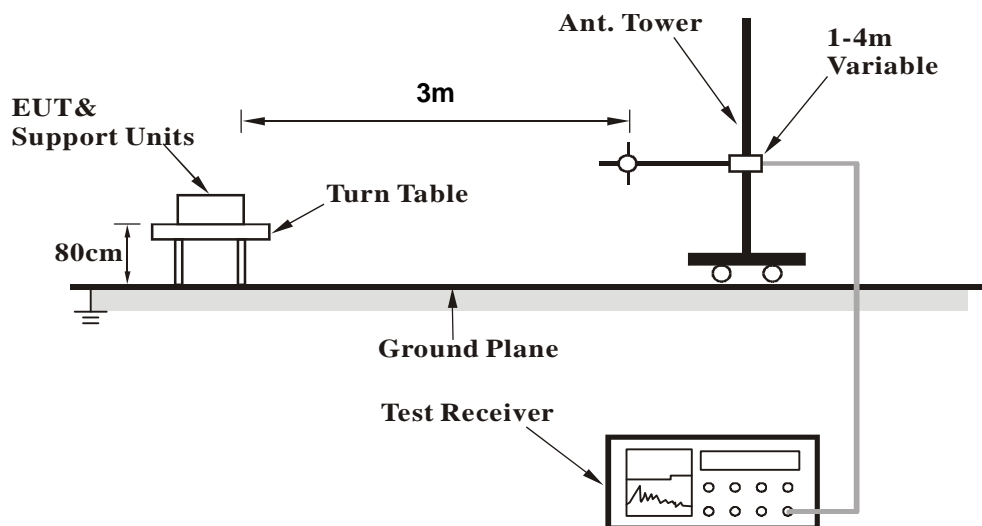
NOTE:

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	320.13	41.2 QP	46.0	-4.8	1.00 H	113	52.59	-11.39
2	355.73	39.3 QP	46.0	-6.7	1.00 H	167	50.10	-10.77
3	456.02	39.0 QP	46.0	-7.0	2.00 H	256	47.41	-8.44
4	503.99	39.1 QP	46.0	-7.0	2.00 H	126	46.59	-7.54
5	640.32	39.7 QP	46.0	-6.3	1.50 H	170	44.16	-4.48
6	782.57	41.6 QP	46.0	-4.4	1.00 H	263	43.65	-2.01
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	60.17	32.3 QP	40.0	-7.7	1.00 V	211	46.22	-13.91
2	144.02	40.3 QP	43.5	-3.2	2.00 V	340	53.30	-13.03
3	335.99	40.1 QP	46.0	-5.9	2.00 V	0	51.24	-11.15
4	432.02	40.9 QP	46.0	-5.1	2.00 V	33	49.57	-8.70
5	711.42	36.8 QP	46.0	-9.2	1.00 V	0	40.76	-3.96
6	815.99	41.7 QP	46.0	-4.3	2.00 V	25	43.37	-1.64

REMARKS:

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



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ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.00	62.0 PK	74.0	-12.0	1.11 H	358	63.21	-1.21
2	2385.00	53.7 AV	54.0	-0.3	1.11 H	358	54.91	-1.21
3	*2412.00	113.9 PK			1.11 H	358	114.99	-1.09
4	*2412.00	109.1 AV			1.11 H	358	110.19	-1.09
5	4824.00	55.2 PK	74.0	-18.8	1.56 H	292	47.61	7.59
6	4824.00	51.5 AV	54.0	-2.5	1.56 H	292	43.91	7.59

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.00	57.4 PK	74.0	-16.6	1.64 V	116	58.61	-1.21
2	2385.00	47.3 AV	54.0	-6.7	1.64 V	116	48.51	-1.21
3	*2412.00	103.9 PK			1.64 V	116	104.99	-1.09
4	*2412.00	101.2 AV			1.64 V	116	102.29	-1.09
5	4824.00	52.8 PK	74.0	-21.2	1.02 V	62	45.21	7.59
6	4824.00	47.8 AV	54.0	-6.2	1.02 V	62	40.21	7.59

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	47.8 PK	74.0	-26.2	1.36 H	243	48.99	-1.19
2	2390.00	36.1 AV	54.0	-17.9	1.36 H	243	37.29	-1.19
3	*2437.00	109.7 PK			1.36 H	243	110.69	-0.99
4	*2437.00	107.4 AV			1.36 H	243	108.39	-0.99
5	2483.50	48.4 PK	74.0	-25.6	1.36 H	243	49.20	-0.80
6	2483.50	36.4 AV	54.0	-17.6	1.36 H	243	37.20	-0.80
7	4874.00	50.8 PK	74.0	-23.2	1.51 H	300	43.03	7.77
8	4874.00	46.1 AV	54.0	-7.9	1.51 H	300	38.33	7.77
9	7311.00	51.9 PK	74.0	-22.1	1.66 H	30	36.41	15.49
10	7311.00	44.9 AV	54.0	-9.1	1.66 H	30	29.41	15.49

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	47.9 PK	74.0	-26.1	1.59 V	107	49.09	-1.19
2	2390.00	36.0 AV	54.0	-18.0	1.59 V	107	37.19	-1.19
3	*2437.00	102.1 PK			1.59 V	107	103.09	-0.99
4	*2437.00	99.8 AV			1.59 V	107	100.79	-0.99
5	2483.50	48.1 PK	74.0	-25.9	1.59 V	107	48.90	-0.80
6	2483.50	36.4 AV	54.0	-17.6	1.59 V	107	37.20	-0.80
7	4874.00	51.8 PK	74.0	-22.2	1.02 V	46	44.03	7.77
8	4874.00	46.8 AV	54.0	-7.2	1.02 V	46	39.03	7.77
9	7311.00	59.5 PK	74.0	-14.5	1.77 V	243	44.01	15.49
10	7311.00	53.4 AV	54.0	-0.6	1.77 V	243	37.91	15.49

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.4 PK			1.40 H	241	111.29	-0.89
2	*2462.00	108.0 AV			1.40 H	241	108.89	-0.89
3	2483.50	68.0 PK	74.0	-6.0	1.40 H	241	68.80	-0.80
4	2483.50	51.7 AV	54.0	-2.3	1.40 H	241	52.50	-0.80
5	4924.00	51.2 PK	74.0	-22.8	1.54 H	285	43.26	7.94
6	4924.00	46.5 AV	54.0	-7.5	1.54 H	285	38.56	7.94
7	7386.00	52.1 PK	74.0	-21.9	1.70 H	18	36.59	15.51
8	7386.00	45.2 AV	54.0	-8.8	1.70 H	18	29.69	15.51

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	102.3 PK			1.63 V	115	103.19	-0.89
2	*2462.00	99.6 AV			1.63 V	115	100.49	-0.89
3	2483.50	60.5 PK	74.0	-13.5	1.63 V	115	61.30	-0.80
4	2483.50	43.9 AV	54.0	-10.1	1.63 V	115	44.70	-0.80
5	4924.00	49.6 PK	74.0	-24.4	1.01 V	29	41.66	7.94
6	4924.00	44.1 AV	54.0	-9.9	1.01 V	29	36.16	7.94
7	7386.00	57.2 PK	74.0	-16.8	1.71 V	301	41.69	15.51
8	7386.00	53.7 AV	54.0	-0.3	1.71 V	301	38.19	15.51

REMARKS:

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

802.11g

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	73.1 PK	74.0	-0.9	1.38 H	243	74.29	-1.19
2	2390.00	48.6 AV	54.0	-5.4	1.38 H	243	49.79	-1.19
3	*2412.00	108.9 PK			1.38 H	243	109.99	-1.09
4	*2412.00	98.1 AV			1.38 H	243	99.19	-1.09
5	4824.00	49.5 PK	74.0	-24.5	1.13 H	111	41.91	7.59
6	4824.00	37.0 AV	54.0	-17.0	1.13 H	111	29.41	7.59
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	68.1 PK	74.0	-5.9	1.59 V	123	69.29	-1.19
2	2390.00	43.4 AV	54.0	-10.6	1.59 V	123	44.59	-1.19
3	*2412.00	103.6 PK			1.67 V	131	104.69	-1.09
4	*2412.00	92.9 AV			1.67 V	131	93.99	-1.09
5	4824.00	50.8 PK	74.0	-23.2	1.00 V	176	43.21	7.59
6	4824.00	37.7 AV	54.0	-16.3	1.00 V	176	30.11	7.59

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.7 PK	74.0	-2.3	1.08 H	360	72.89	-1.19
2	2390.00	53.4 AV	54.0	-0.6	1.08 H	360	54.59	-1.19
3	*2437.00	113.6 PK			1.08 H	360	114.59	-0.99
4	*2437.00	102.4 AV			1.08 H	360	103.39	-0.99
5	2486.00	68.7 PK	74.0	-5.3	1.08 H	360	69.49	-0.79
6	2486.00	50.7 AV	54.0	-3.3	1.08 H	360	51.49	-0.79
7	4874.00	49.5 PK	74.0	-24.5	1.10 H	117	41.73	7.77
8	4874.00	36.9 AV	54.0	-17.1	1.10 H	117	29.13	7.77
9	7311.00	54.7 PK	74.0	-19.3	1.00 H	235	39.21	15.49
10	7311.00	41.9 AV	54.0	-12.1	1.00 H	235	26.41	15.49

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.5 PK	74.0	-7.5	1.62 V	130	67.69	-1.19
2	2390.00	48.2 AV	54.0	-5.8	1.62 V	130	49.39	-1.19
3	*2437.00	108.2 PK			1.62 V	130	109.19	-0.99
4	*2437.00	97.2 AV			1.62 V	130	98.19	-0.99
5	2483.50	64.1 PK	74.0	-9.9	1.62 V	130	64.90	-0.80
6	2483.50	45.9 AV	54.0	-8.1	1.62 V	130	46.70	-0.80
7	4874.00	50.2 PK	74.0	-23.8	1.00 V	164	42.43	7.77
8	4874.00	37.3 AV	54.0	-16.7	1.00 V	164	29.53	7.77
9	7311.00	60.8 PK	74.0	-13.2	1.63 V	82	45.31	15.49
10	7311.00	46.2 AV	54.0	-7.8	1.63 V	82	30.71	15.49

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.8 PK			1.37 H	243	109.69	-0.89
2	*2462.00	97.2 AV			1.37 H	243	98.09	-0.89
3	2483.50	73.6 PK	74.0	-0.4	1.37 H	243	74.40	-0.80
4	2483.50	46.2 AV	54.0	-7.8	1.37 H	243	47.00	-0.80
5	4924.00	48.7 PK	74.0	-25.3	1.12 H	117	40.76	7.94
6	4924.00	36.4 AV	54.0	-17.6	1.12 H	117	28.46	7.94
7	7386.00	54.3 PK	74.0	-19.7	1.00 H	222	38.79	15.51
8	7386.00	41.5 AV	54.0	-12.5	1.00 H	222	25.99	15.51

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	104.2 PK			1.68 V	124	105.09	-0.89
2	*2462.00	92.6 AV			1.68 V	124	93.49	-0.89
3	2483.50	68.9 PK	74.0	-5.1	1.68 V	124	69.70	-0.80
4	2483.50	41.3 AV	54.0	-12.7	1.68 V	124	42.10	-0.80
5	4924.00	49.9 PK	74.0	-24.1	1.00 V	162	41.96	7.94
6	4924.00	37.2 AV	54.0	-16.8	1.00 V	162	29.26	7.94
7	7386.00	61.4 PK	74.0	-12.6	1.59 V	72	45.89	15.51
8	7386.00	46.7 AV	54.0	-7.3	1.59 V	72	31.19	15.51

REMARKS:

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



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802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.5 PK	74.0	-0.5	1.12 H	360	74.69	-1.19
2	2390.00	49.9 AV	54.0	-4.1	1.12 H	360	51.09	-1.19
3	*2412.00	109.1 PK			1.12 H	360	110.19	-1.09
4	*2412.00	97.8 AV			1.12 H	360	98.89	-1.09
5	4824.00	48.7 PK	74.0	-25.3	1.07 H	106	41.11	7.59
6	4824.00	36.3 AV	54.0	-17.7	1.07 H	106	28.71	7.59

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	65.7 PK	74.0	-8.3	1.01 V	270	66.89	-1.19
2	2390.00	44.9 AV	54.0	-9.1	1.01 V	270	46.09	-1.19
3	*2412.00	102.9 PK			1.01 V	270	103.99	-1.09
4	*2412.00	92.0 AV			1.01 V	270	93.09	-1.09
5	4824.00	50.0 PK	74.0	-24.0	1.00 V	193	42.41	7.59
6	4824.00	36.9 AV	54.0	-17.1	1.00 V	193	29.31	7.59

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.7 PK	74.0	-2.3	1.07 H	360	72.89	-1.19
2	2390.00	51.6 AV	54.0	-2.4	1.07 H	360	52.79	-1.19
3	*2437.00	115.4 PK			1.07 H	360	116.39	-0.99
4	*2437.00	103.1 AV			1.07 H	360	104.09	-0.99
5	2483.50	68.5 PK	74.0	-5.5	1.07 H	360	69.30	-0.80
6	2483.50	50.4 AV	54.0	-3.6	1.07 H	360	51.20	-0.80
7	4874.00	48.8 PK	74.0	-25.2	1.08 H	116	41.03	7.77
8	4874.00	36.4 AV	54.0	-17.6	1.08 H	116	28.63	7.77
9	7311.00	55.1 PK	74.0	-18.9	1.00 H	240	39.61	15.49
10	7311.00	42.1 AV	54.0	-11.9	1.00 H	240	26.61	15.49

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	67.2 PK	74.0	-6.8	1.00 V	275	68.39	-1.19
2	2390.00	46.8 AV	54.0	-7.2	1.00 V	275	47.99	-1.19
3	*2437.00	110.2 PK			1.00 V	275	111.19	-0.99
4	*2437.00	98.0 AV			1.00 V	275	98.99	-0.99
5	2483.50	63.9 PK	74.0	-10.1	1.00 V	275	64.70	-0.80
6	2483.50	45.5 AV	54.0	-8.5	1.00 V	275	46.30	-0.80
7	4874.00	50.4 PK	74.0	-23.6	1.04 V	180	42.63	7.77
8	4874.00	37.3 AV	54.0	-16.7	1.04 V	180	29.53	7.77
9	7311.00	60.6 PK	74.0	-13.4	1.58 V	87	45.11	15.49
10	7311.00	45.9 AV	54.0	-8.1	1.58 V	87	30.41	15.49

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.3 PK			1.11 H	360	110.19	-0.89
2	*2462.00	97.2 AV			1.11 H	360	98.09	-0.89
3	2483.50	73.2 PK	74.0	-0.8	1.11 H	360	74.00	-0.80
4	2483.50	52.5 AV	54.0	-1.5	1.11 H	360	53.30	-0.80
5	4924.00	48.9 PK	74.0	-25.1	1.06 H	101	40.96	7.94
6	4924.00	36.6 AV	54.0	-17.4	1.06 H	101	28.66	7.94
7	7386.00	54.8 PK	74.0	-19.2	1.00 H	255	39.29	15.51
8	7386.00	41.7 AV	54.0	-12.3	1.00 H	255	26.19	15.51

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	104.0 PK			1.06 V	268	104.89	-0.89
2	*2462.00	92.1 AV			1.06 V	268	92.99	-0.89
3	2483.50	68.2 PK	74.0	-5.8	1.06 V	268	69.00	-0.80
4	2483.50	47.3 AV	54.0	-6.7	1.06 V	268	48.10	-0.80
5	4924.00	49.9 PK	74.0	-24.1	1.01 V	193	41.96	7.94
6	4924.00	37.1 AV	54.0	-16.9	1.01 V	193	29.16	7.94
7	7386.00	60.1 PK	74.0	-13.9	1.56 V	102	44.59	15.51
8	7386.00	45.7 AV	54.0	-8.3	1.56 V	102	30.19	15.51

REMARKS:

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



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802.11n (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	73.4 PK	74.0	-0.6	1.11 H	167	74.59	-1.19
2	2390.00	51.8 AV	54.0	-2.2	1.11 H	167	52.99	-1.19
3	*2422.00	103.7 PK			1.11 H	167	104.75	-1.05
4	*2422.00	90.6 AV			1.11 H	167	91.65	-1.05
5	4844.00	49.1 PK	74.0	-24.9	1.02 H	102	41.44	7.66
6	4844.00	36.7 AV	54.0	-17.3	1.02 H	102	29.04	7.66
7	7266.00	55.1 PK	74.0	-18.9	1.03 H	243	39.59	15.51
8	7266.00	41.9 AV	54.0	-12.1	1.03 H	243	26.39	15.51

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	67.9 PK	74.0	-6.1	1.08 V	267	69.09	-1.19
2	2390.00	46.3 AV	54.0	-7.7	1.08 V	267	47.49	-1.19
3	*2422.00	98.4 PK			1.08 V	267	99.45	-1.05
4	*2422.00	85.2 AV			1.08 V	267	86.25	-1.05
5	4844.00	50.2 PK	74.0	-23.8	1.02 V	202	42.54	7.66
6	4844.00	37.3 AV	54.0	-16.7	1.02 V	202	29.64	7.66
7	7266.00	59.7 PK	74.0	-14.3	1.58 V	118	44.19	15.51
8	7266.00	45.4 AV	54.0	-8.6	1.58 V	118	29.89	15.51

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.0 PK	74.0	-2.0	1.12 H	173	73.19	-1.19
2	2390.00	50.8 AV	54.0	-3.2	1.12 H	173	51.99	-1.19
3	*2437.00	106.8 PK			1.12 H	173	107.79	-0.99
4	*2437.00	93.9 AV			1.12 H	173	94.89	-0.99
5	2483.50	70.8 PK	74.0	-3.2	1.12 H	173	71.60	-0.80
6	2483.50	48.8 AV	54.0	-5.2	1.12 H	173	49.60	-0.80
7	4874.00	49.2 PK	74.0	-24.8	1.11 H	100	41.43	7.77
8	4874.00	36.9 AV	54.0	-17.1	1.11 H	100	29.13	7.77
9	7311.00	54.9 PK	74.0	-19.1	1.03 H	253	39.41	15.49
10	7311.00	42.1 AV	54.0	-11.9	1.03 H	253	26.61	15.49

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	67.3 PK	74.0	-6.7	1.09 V	258	68.49	-1.19
2	2390.00	46.3 AV	54.0	-7.7	1.09 V	258	47.49	-1.19
3	*2437.00	101.6 PK			1.09 V	258	102.59	-0.99
4	*2437.00	88.6 AV			1.09 V	258	89.59	-0.99
5	2483.50	66.1 PK	74.0	-7.9	1.09 V	258	66.90	-0.80
6	2483.50	44.2 AV	54.0	-9.8	1.09 V	258	45.00	-0.80
7	4874.00	49.3 PK	74.0	-24.7	1.00 V	208	41.53	7.77
8	4874.00	36.6 AV	54.0	-17.4	1.00 V	208	28.83	7.77
9	7311.00	60.2 PK	74.0	-13.8	1.58 V	116	44.71	15.49
10	7311.00	45.9 AV	54.0	-8.1	1.58 V	116	30.41	15.49

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.0 PK			1.10 H	170	104.92	-0.92
2	*2452.00	91.2 AV			1.10 H	170	92.12	-0.92
3	2483.50	73.2 PK	74.0	-0.8	1.10 H	170	74.00	-0.80
4	2483.50	50.3 AV	54.0	-3.7	1.10 H	170	51.10	-0.80
5	4904.00	49.4 PK	74.0	-24.6	1.09 H	88	41.52	7.88
6	4904.00	37.0 AV	54.0	-17.0	1.09 H	88	29.12	7.88
7	7356.00	55.0 PK	74.0	-19.0	1.00 H	244	39.51	15.49
8	7356.00	42.1 AV	54.0	-11.9	1.00 H	244	26.61	15.49

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	99.4 PK			1.05 V	244	100.32	-0.92
2	*2452.00	86.6 AV			1.05 V	244	87.52	-0.92
3	2483.50	67.8 PK	74.0	-6.2	1.05 V	244	68.60	-0.80
4	2483.50	45.1 AV	54.0	-8.9	1.05 V	244	45.90	-0.80
5	4904.00	50.2 PK	74.0	-23.8	1.00 V	182	42.32	7.88
6	4904.00	37.4 AV	54.0	-16.6	1.00 V	182	29.52	7.88
7	7356.00	60.6 PK	74.0	-13.4	1.61 V	103	45.11	15.49
8	7356.00	45.9 AV	54.0	-8.1	1.61 V	103	30.41	15.49

REMARKS:

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

4.3 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 : Aug. 15, 2013

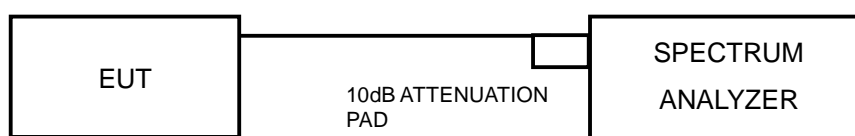
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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



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4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	7.73	0.5	PASS
6	2437	8.25	0.5	PASS
11	2462	8.34	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.87	0.5	PASS
6	2437	15.39	0.5	PASS
11	2462	15.57	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.17	15.76	0.5	PASS
6	2437	15.24	16.34	0.5	PASS
11	2462	15.38	16.35	0.5	PASS

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.45	36.45	0.5	PASS
6	2437	36.47	36.46	0.5	PASS
9	2452	36.46	36.49	0.5	PASS

4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 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 \leq 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths \geq 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 \geq 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	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

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 : Aug. 15, 2013

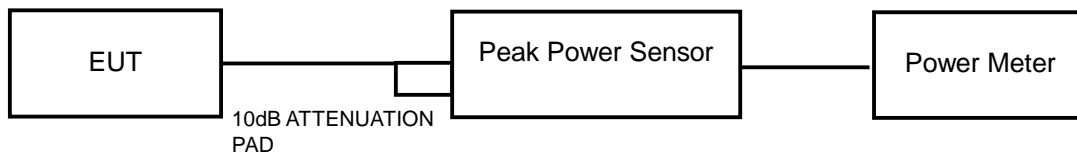
4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	148.936	21.73	30	PASS
6	2437	75.858	18.80	30	PASS
11	2462	95.940	19.82	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	123.880	20.93	30	PASS
6	2437	199.986	23.01	30	PASS
11	2462	80.538	19.06	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	19.87	20.37	205.944	23.14	30	PASS
6	2437	22.73	23.06	389.801	25.91	30	PASS
11	2462	18.11	18.26	131.702	21.20	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	16.40	16.92	92.856	19.68	30	PASS
6	2437	18.42	19.42	157.000	21.96	30	PASS
9	2452	16.15	18.20	107.279	20.31	30	PASS

4.5 AVERAGE OUTPUT POWER

4.5.1 FOR REFERENCE.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

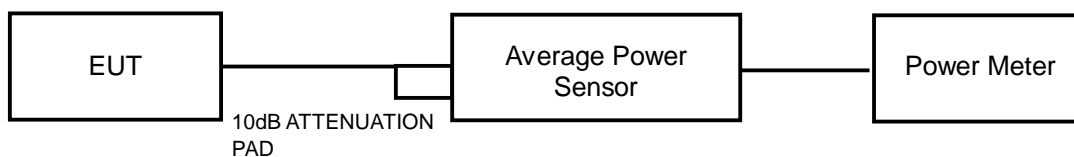
Note:

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 : Aug. 15, 2013

4.5.3 TEST PROCEDURES

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.5.4 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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4.5.6 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	70.958	18.51
6	2437	35.727	15.53
11	2462	45.814	16.61

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	19.543	12.91
6	2437	101.391	20.06
11	2462	16.672	12.22

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	11.72	12.05	30.891	14.90
6	2437	16.95	17.35	103.870	20.16
11	2462	10.52	10.81	23.322	13.68

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	8.26	8.84	14.355	11.57
6	2437	11.37	11.81	28.880	14.61
9	2452	9.29	9.77	17.976	12.55

4.6 POWER SPECTRAL DENSITY MEASUREMENT

4.6.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

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 : Aug. 15, 2013

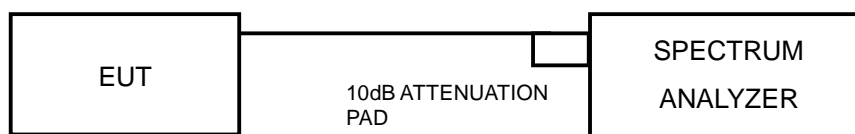
4.6.3 TEST PROCEDURE

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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4.6.7 TEST RESULTS

802.11b

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-5.77	8	PASS
6	2437	-7.03	8	PASS
11	2462	-7.54	8	PASS

802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.58	8	PASS
6	2437	-6.63	8	PASS
11	2462	-13.22	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	-13.84	3.01	-10.83	8	PASS
	6	2437	-9.76	3.01	-6.75	8	PASS
	11	2462	-15.34	3.01	-12.33	8	PASS
1	1	2412	-14.61	3.01	-11.60	8	PASS
	6	2437	-9.38	3.01	-6.37	8	PASS
	11	2462	-14.28	3.01	-11.27	8	PASS

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	-21.11	3.01	-18.10	8	PASS
	6	2437	-16.40	3.01	-13.39	8	PASS
	9	2452	-21.09	3.01	-18.08	8	PASS
1	3	2422	-19.63	3.01	-16.62	8	PASS
	6	2437	-16.71	3.01	-13.70	8	PASS
	9	2452	-18.40	3.01	-15.39	8	PASS



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4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.7.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.7.2 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 : Aug. 15, 2013

4.7.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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

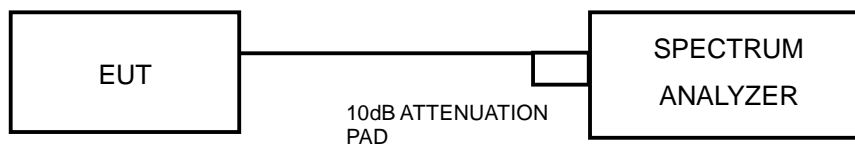
Measurement Procedure –Unwanted Emission Level

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

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.7.7 TEST RESULTS

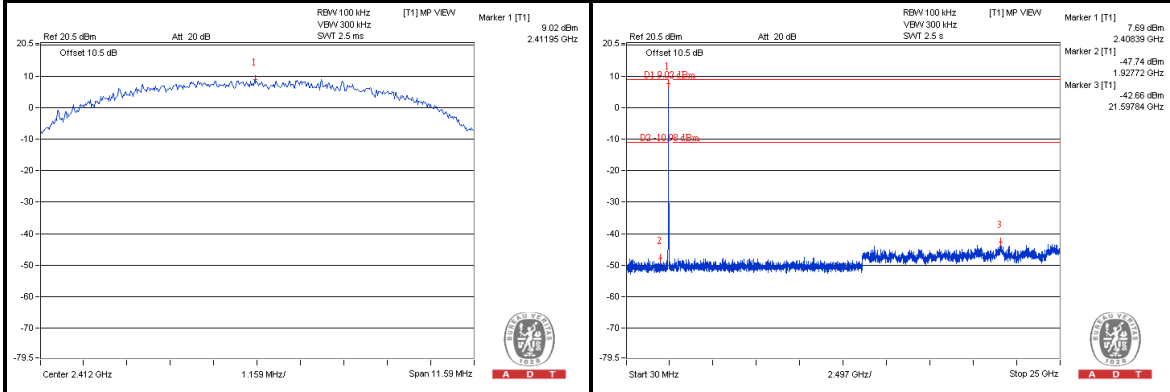
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



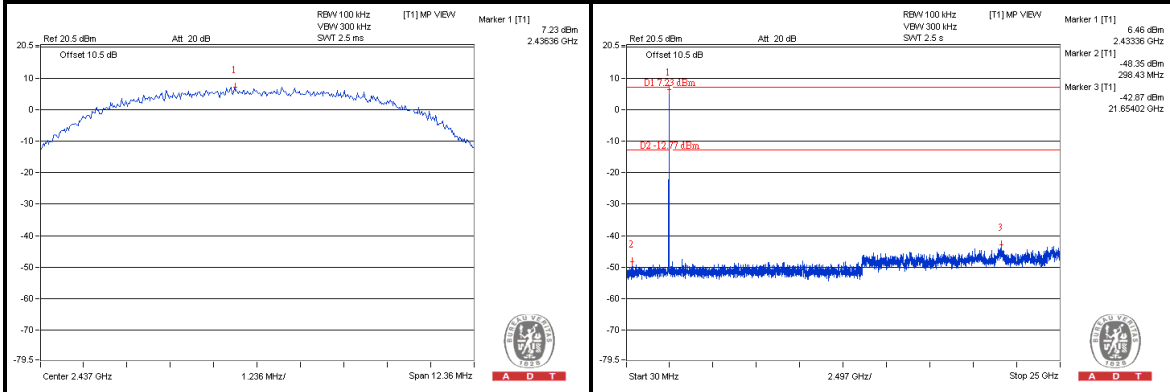
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802.11b:

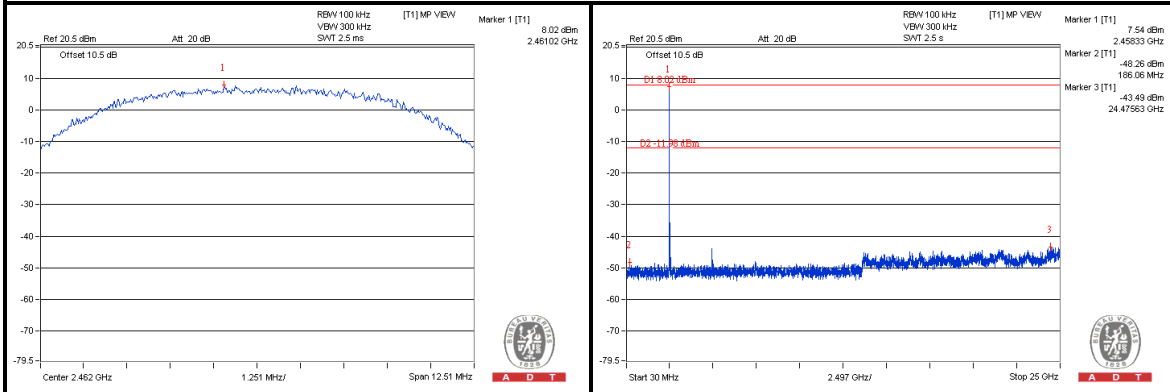
CH 1



CH 6



CH 11

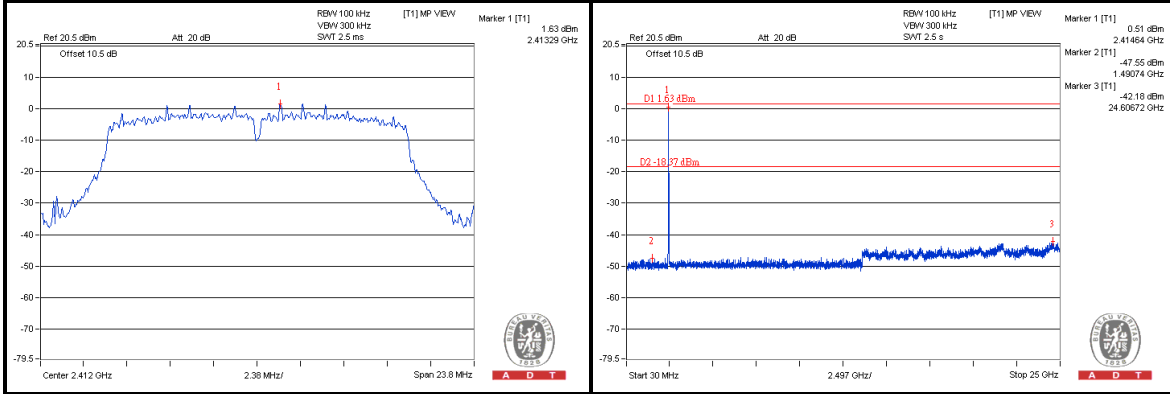




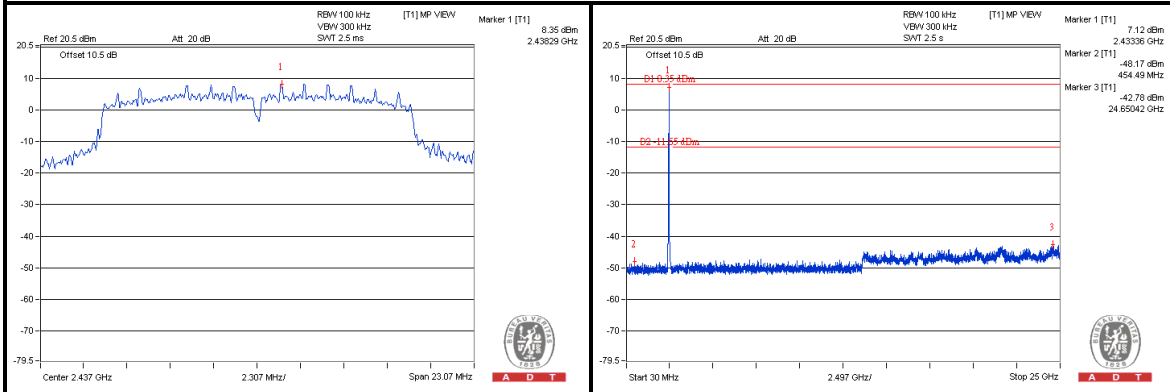
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802.11g:

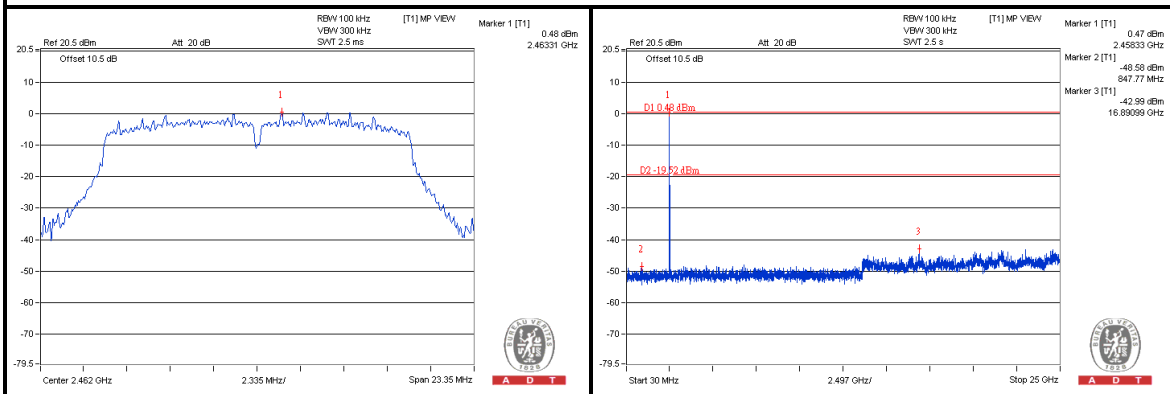
CH 1



CH 6



CH 11



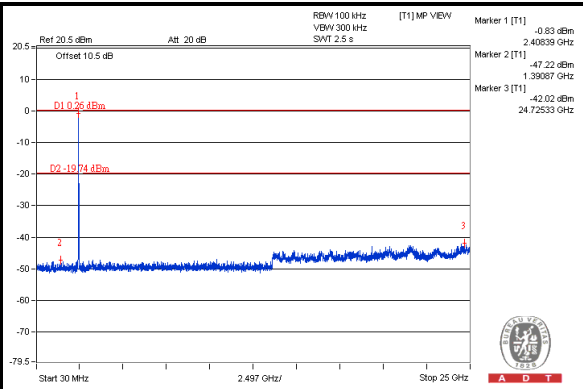
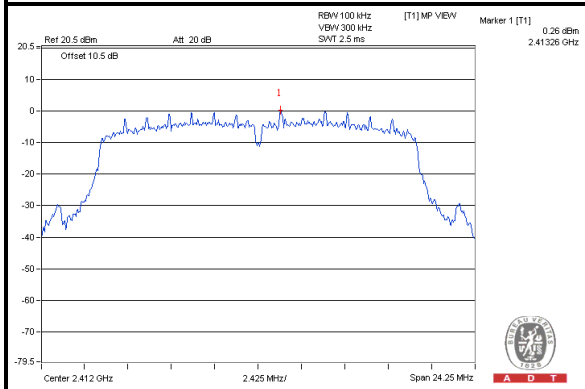


A D T

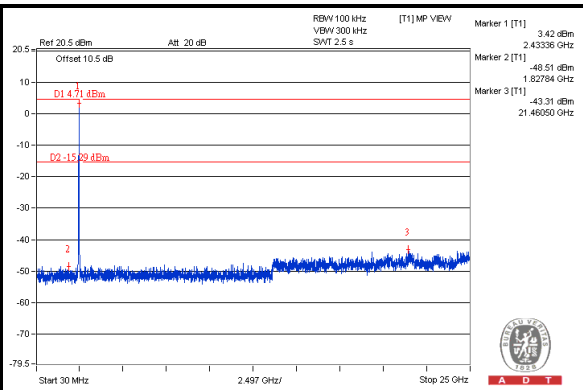
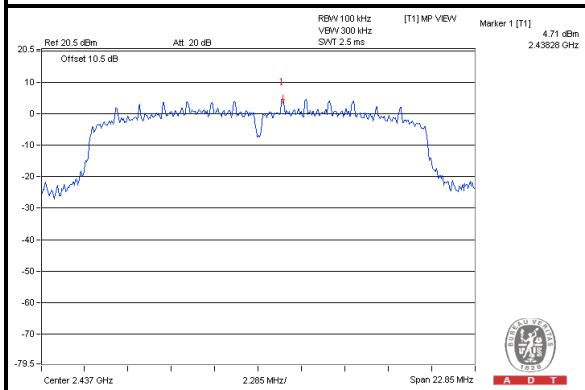
802.11n (HT20):

For Chain (0)

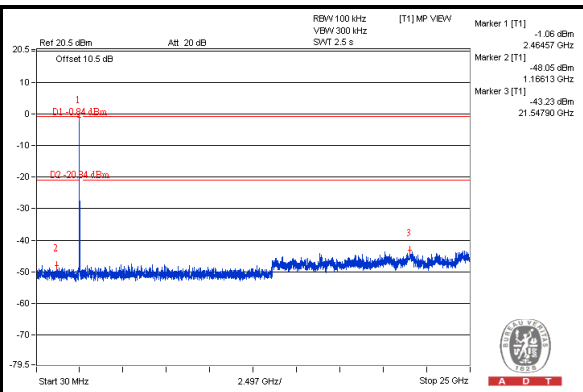
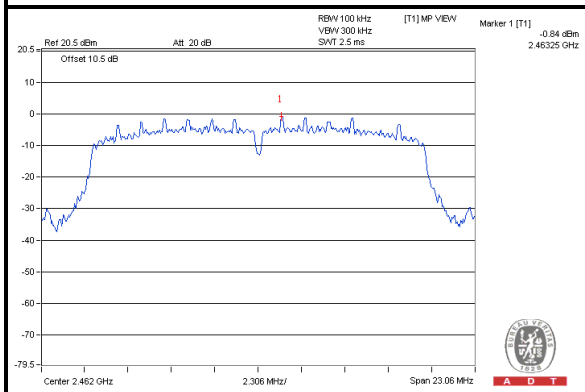
CH 1



CH 6



CH 11

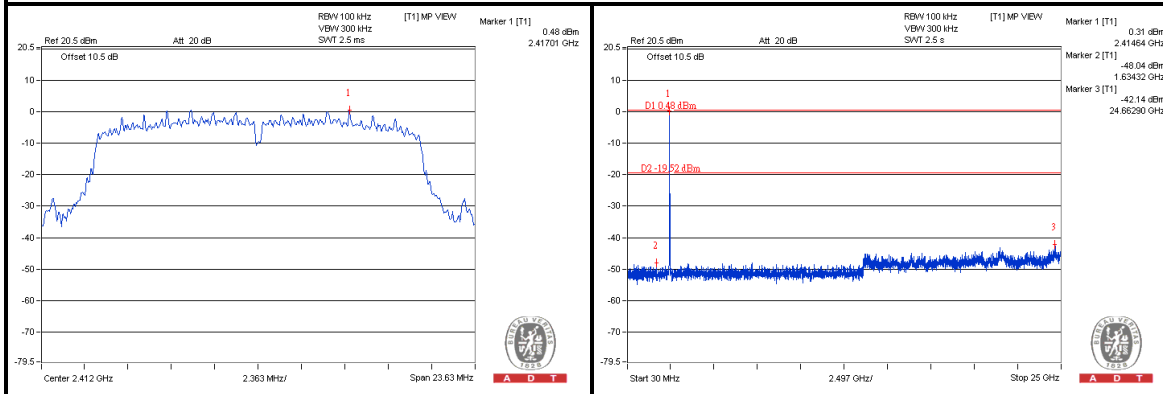




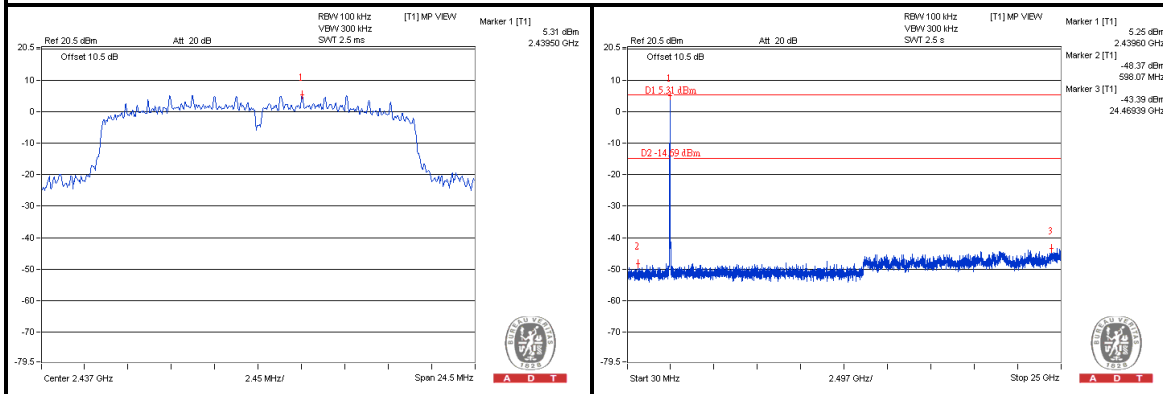
A D T

For Chain (1)

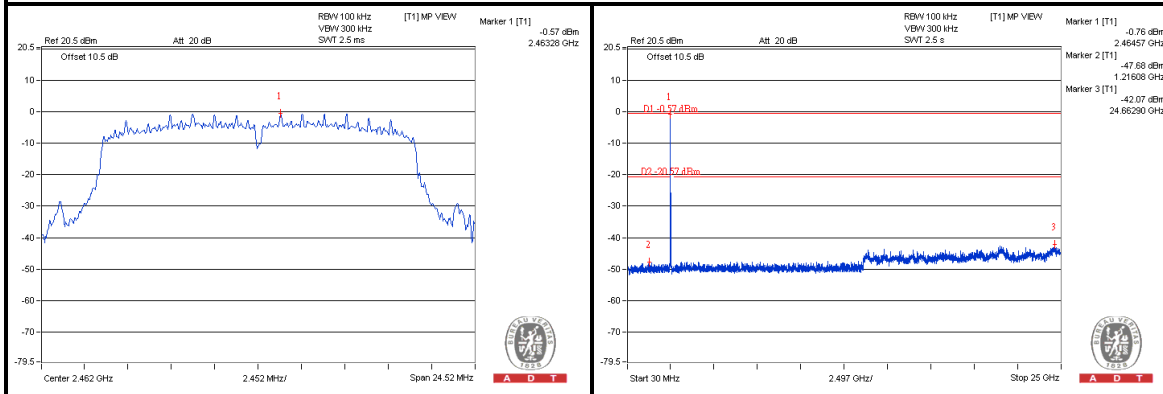
CH 1



CH 6



CH 11



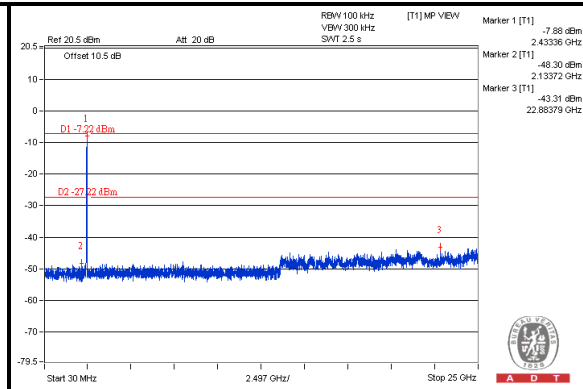
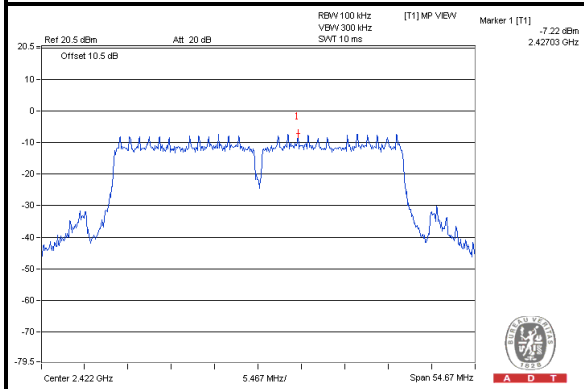


A D T

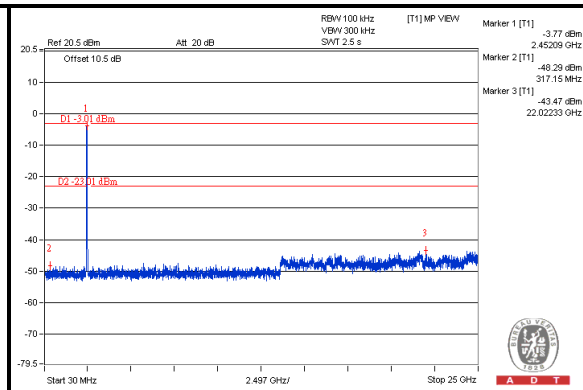
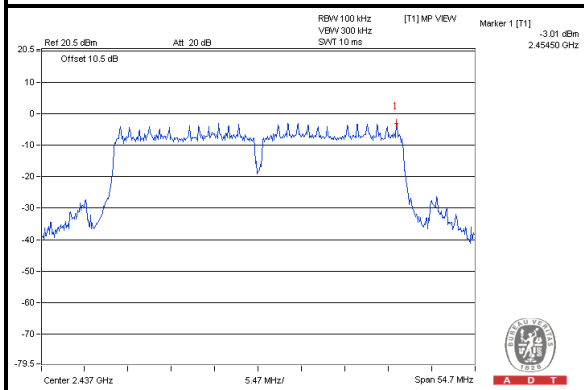
802.11n (HT40):

For Chain (0)

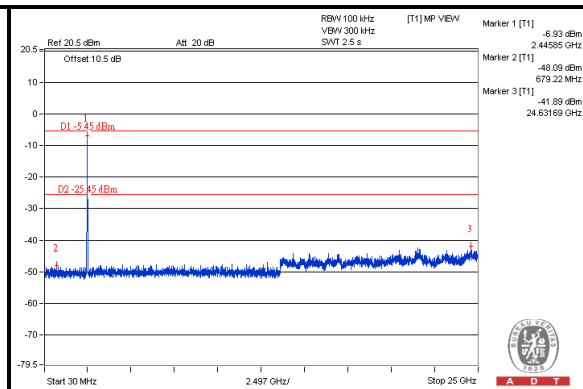
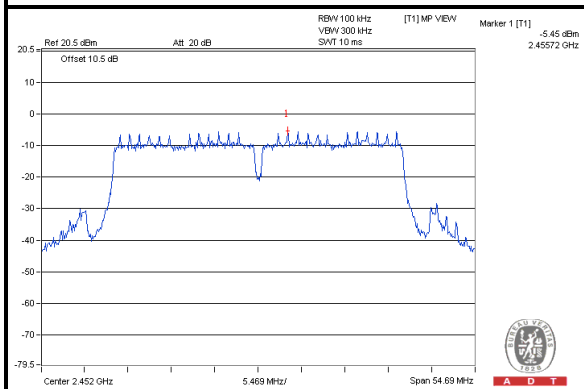
CH 3



CH 6



CH 9

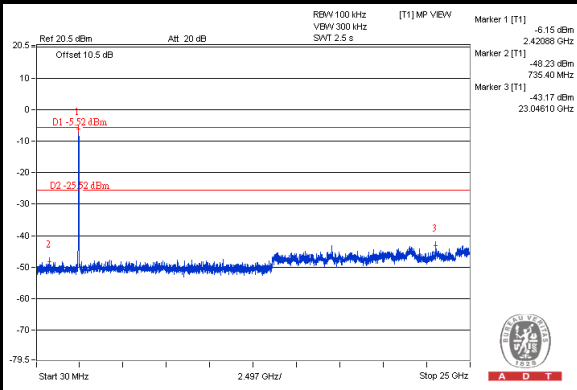
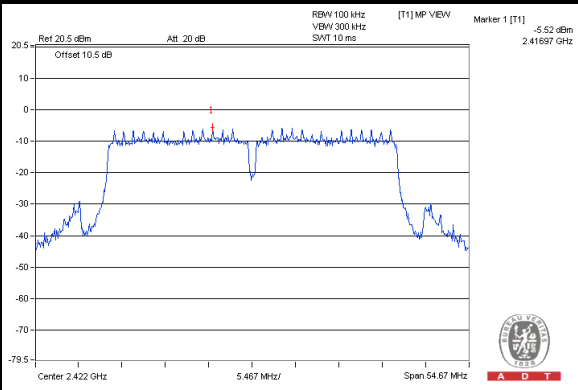




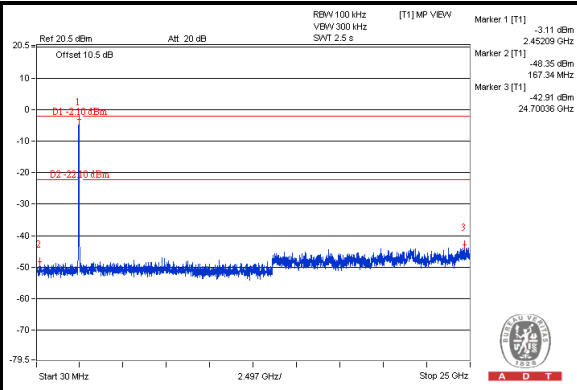
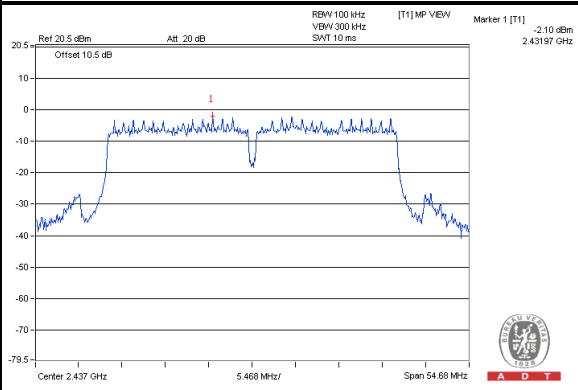
A D T

For Chain (1)

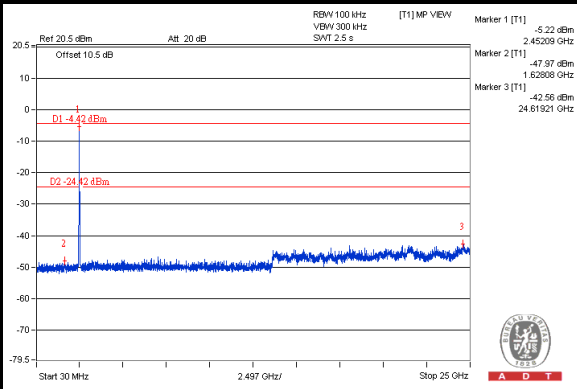
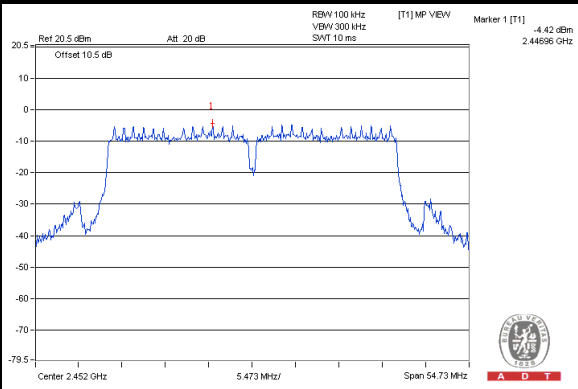
CH 3



CH 6



CH 9





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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 (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 07, 2013	June 06, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Aug. 22, 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.

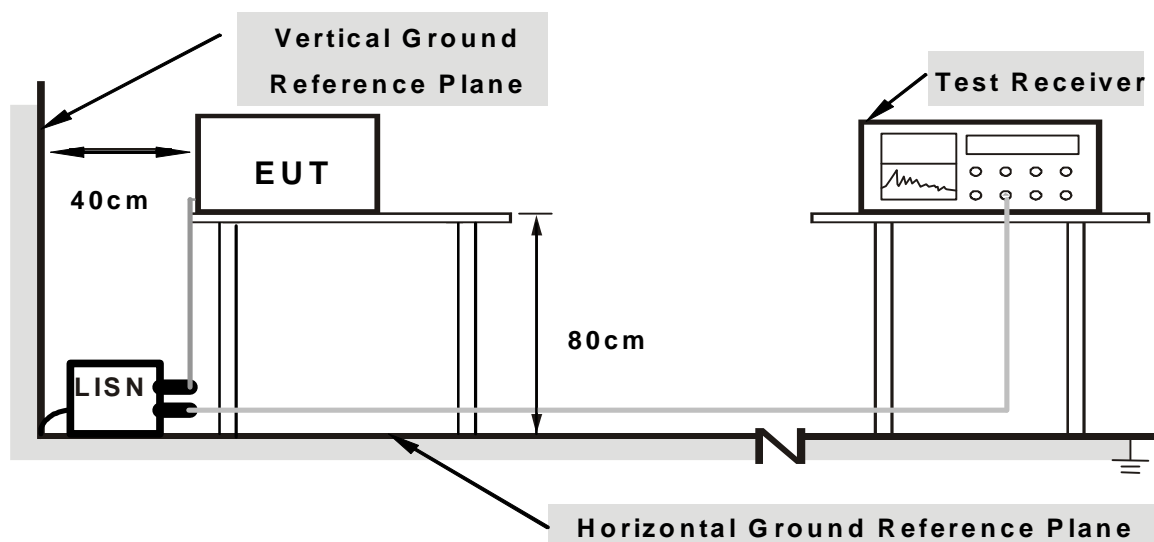
NOTE:

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 4.1.6

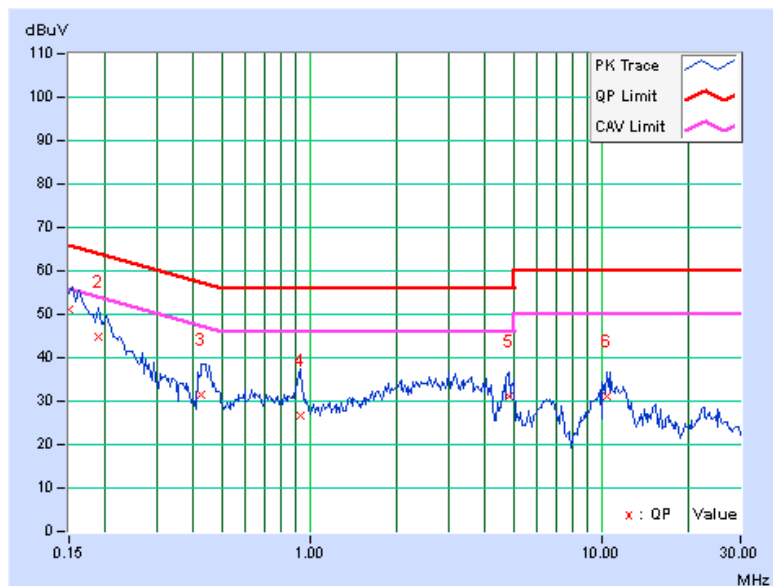
5.1.7 TEST RESULTS

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

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.15000	0.12	50.91	34.31	51.03	34.43	66.00
2	0.18906	0.14	44.59	30.46	44.73	30.60	64.08	54.08	-19.35	-23.48
3	0.42734	0.18	31.32	23.49	31.50	23.67	57.30	47.30	-25.80	-23.63
4	0.92734	0.22	26.29	21.52	26.51	21.74	56.00	46.00	-29.49	-24.26
5	4.82031	0.40	30.85	24.70	31.25	25.10	56.00	46.00	-24.75	-20.90
6	10.43750	0.68	30.57	24.05	31.25	24.73	60.00	50.00	-28.75	-25.27

REMARKS:

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

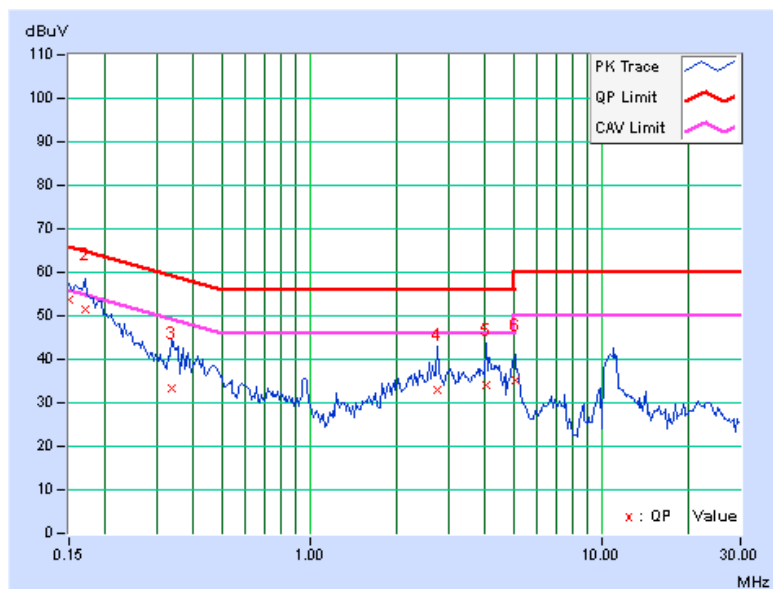


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.10	53.74	33.99	53.84	34.09	66.00	56.00	-12.16	-21.91
2	0.16953	0.11	51.32	34.30	51.43	34.41	64.98	54.98	-13.56	-20.58
3	0.33750	0.15	33.34	22.04	33.49	22.19	59.26	49.26	-25.77	-27.07
4	2.75391	0.29	32.68	27.77	32.97	28.06	56.00	46.00	-23.03	-17.94
5	4.04688	0.33	33.90	28.41	34.23	28.74	56.00	46.00	-21.77	-17.26
6	5.07031	0.36	34.74	28.46	35.10	28.82	60.00	50.00	-24.90	-21.18

REMARKS:

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





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5.2 RADIATED AND BANDEGE EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED AND BANDEGE 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 20dB below the highest level of the desired power:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB.

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	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	000022009111 0	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: Aug. 22, 2013



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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	MY51210105	Jan. 29, 2013	Jan. 28, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
Pre-Amplifier SPACEK LABS	SLKka-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
Horn_Antenna AISL	AIH.8018	000032009111 0	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: Aug. 20, 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.

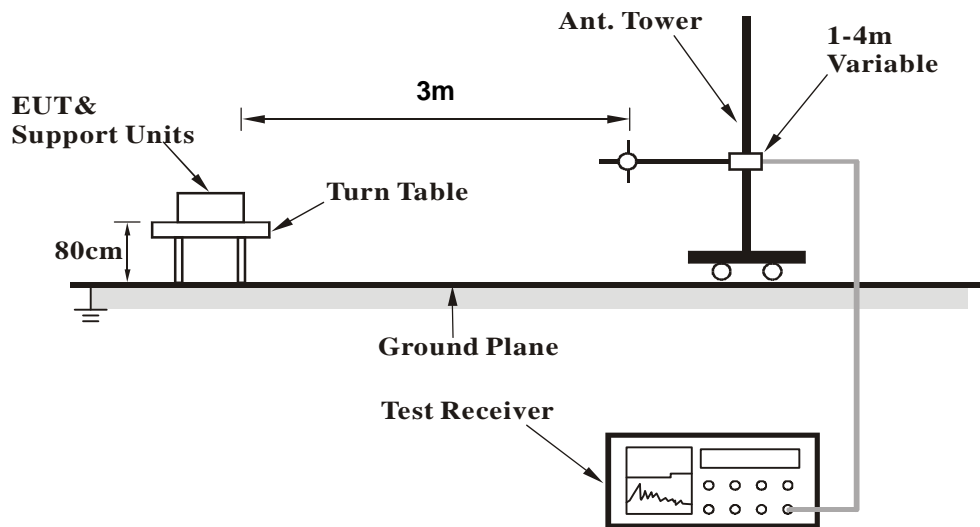
NOTE:

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 4.1.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (HT40)

CHANNEL	TX Channel 159	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	60.17	26.7 QP	40.0	-13.4	2.00 H	332	40.56	-13.91
2	128.41	31.7 QP	43.5	-11.8	2.00 H	318	46.16	-14.42
3	272.99	40.1 QP	46.0	-5.9	1.00 H	121	53.34	-13.20
4	503.99	39.7 QP	46.0	-6.3	2.00 H	207	47.28	-7.54
5	542.16	41.9 QP	46.0	-4.1	1.00 H	268	48.90	-7.02
6	864.01	38.8 QP	46.0	-7.2	1.00 H	54	39.80	-0.99
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	60.17	32.3 QP	40.0	-7.7	1.00 V	211	46.22	-13.91
2	144.02	40.3 QP	43.5	-3.2	2.00 V	340	53.30	-13.03
3	335.99	40.1 QP	46.0	-5.9	2.00 V	0	51.24	-11.15
4	432.02	40.9 QP	46.0	-5.1	2.00 V	33	49.57	-8.70
5	815.99	41.7 QP	46.0	-4.3	2.00 V	25	43.37	-1.64
6	924.87	36.7 QP	46.0	-9.3	1.00 V	217	36.32	0.40

REMARKS:

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



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ABOVE 1GHz DATA

802.11a

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	5369.00	55.6 PK	74.0	-18.4	1.00 H	139	46.25	9.35
2	5369.00	43.4 AV	54.0	-10.6	1.00 H	139	34.05	9.35
3	*5745.00	111.3 PK			1.00 H	139	100.88	10.42
4	*5745.00	101.0 AV			1.00 H	139	90.58	10.42
5	11490.00	53.1 PK	74.0	-20.9	1.35 H	158	35.84	17.26
6	11490.00	42.0 AV	54.0	-12.0	1.35 H	158	24.74	17.26

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5369.00	55.2 PK	74.0	-18.8	1.00 V	86	45.85	9.35
2	5369.00	43.4 AV	54.0	-10.6	1.00 V	86	34.05	9.35
3	*5745.00	113.5 PK			1.00 V	86	103.08	10.42
4	*5745.00	103.5 AV			1.00 V	86	93.08	10.42
5	11490.00	52.5 PK	74.0	-21.5	1.42 V	344	35.24	17.26
6	11490.00	39.8 AV	54.0	-14.2	1.42 V	344	22.54	17.26

REMARKS:

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



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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	5407.00	55.2 PK	74.0	-18.8	1.00 H	147	45.77	9.43
2	5407.00	43.0 AV	54.0	-11.0	1.00 H	147	33.57	9.43
3	*5785.00	111.0 PK			1.06 H	135	100.51	10.49
4	*5785.00	100.9 AV			1.06 H	135	90.41	10.49
5	11570.00	53.1 PK	74.0	-20.9	1.33 H	143	35.81	17.29
6	11570.00	42.1 AV	54.0	-11.9	1.33 H	143	24.81	17.29

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	5407.00	54.7 PK	74.0	-19.3	1.02 V	101	45.27	9.43
2	5407.00	43.1 AV	54.0	-10.9	1.02 V	101	33.67	9.43
3	*5785.00	112.8 PK			1.02 V	101	102.31	10.49
4	*5785.00	103.0 AV			1.02 V	101	92.51	10.49
5	11570.00	52.9 PK	74.0	-21.1	1.46 V	335	35.61	17.29
6	11570.00	40.0 AV	54.0	-14.0	1.46 V	335	22.71	17.29

REMARKS:

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



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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	5460.00	55.8 PK	74.0	-18.2	1.00 H	155	46.15	9.65
2	5460.00	43.7 AV	54.0	-10.3	1.00 H	155	34.05	9.65
3	*5825.00	110.9 PK			1.05 H	150	100.25	10.65
4	*5825.00	100.8 AV			1.05 H	150	90.15	10.65
5	11650.00	53.1 PK	74.0	-20.9	1.34 H	163	35.44	17.66
6	11650.00	42.0 AV	54.0	-12.0	1.34 H	163	24.34	17.66

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.3 PK	74.0	-18.7	1.00 V	75	45.65	9.65
2	5460.00	43.7 AV	54.0	-10.3	1.00 V	75	34.05	9.65
3	*5825.00	113.1 PK			1.00 V	75	102.45	10.65
4	*5825.00	103.2 AV			1.00 V	75	92.55	10.65
5	11650.00	53.1 PK	74.0	-20.9	1.42 V	331	35.44	17.66
6	11650.00	40.3 AV	54.0	-13.7	1.42 V	331	22.64	17.66

REMARKS:

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



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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	5449.00	62.9 PK	74.0	-11.1	1.13 H	58	53.30	9.60
2	5449.00	52.2 AV	54.0	-1.8	1.13 H	58	42.60	9.60
3	*5745.00	113.2 PK			1.17 H	58	102.78	10.42
4	*5745.00	101.5 AV			1.17 H	58	91.08	10.42
5	11490.00	53.1 PK	74.0	-20.9	1.39 H	155	35.84	17.26
6	11490.00	42.0 AV	54.0	-12.0	1.39 H	155	24.74	17.26

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5449.00	62.4 PK	74.0	-11.6	1.12 V	84	52.80	9.60
2	5449.00	49.4 AV	54.0	-4.6	1.12 V	84	39.80	9.60
3	*5745.00	114.9 PK			1.12 V	84	104.48	10.42
4	*5745.00	102.9 AV			1.12 V	84	92.48	10.42
5	11490.00	52.8 PK	74.0	-21.2	1.45 V	328	35.54	17.26
6	11490.00	40.6 AV	54.0	-13.4	1.45 V	328	23.34	17.26

REMARKS:

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



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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	5407.00	62.5 PK	74.0	-11.5	1.20 H	64	53.07	9.43
2	5407.00	51.8 AV	54.0	-2.2	1.20 H	64	42.37	9.43
3	*5785.00	113.1 PK			1.20 H	64	102.61	10.49
4	*5785.00	101.3 AV			1.20 H	64	90.81	10.49
5	11570.00	52.9 PK	74.0	-21.1	1.34 H	152	35.61	17.29
6	11570.00	41.8 AV	54.0	-12.2	1.34 H	152	24.51	17.29

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	5407.00	62.3 PK	74.0	-11.7	1.06 V	94	52.87	9.43
2	5407.00	49.0 AV	54.0	-5.0	1.06 V	94	39.57	9.43
3	*5785.00	115.7 PK			1.06 V	94	105.21	10.49
4	*5785.00	103.4 AV			1.06 V	94	92.91	10.49
5	11570.00	52.4 PK	74.0	-21.6	1.40 V	319	35.11	17.29
6	11570.00	40.4 AV	54.0	-13.6	1.40 V	319	23.11	17.29

REMARKS:

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



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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	5393.00	63.0 PK	74.0	-11.0	1.12 H	53	53.62	9.38
2	5393.00	52.0 AV	54.0	-2.0	1.12 H	53	42.62	9.38
3	*5825.00	113.4 PK			1.12 H	53	102.75	10.65
4	*5825.00	101.4 AV			1.12 H	53	90.75	10.65
5	11650.00	53.0 PK	74.0	-21.0	1.40 H	146	35.34	17.66
6	11650.00	41.8 AV	54.0	-12.2	1.40 H	146	24.14	17.66

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5393.00	62.3 PK	74.0	-11.7	1.14 V	87	52.92	9.38
2	5393.00	49.0 AV	54.0	-5.0	1.14 V	87	39.62	9.38
3	*5825.00	114.5 PK			1.14 V	87	103.85	10.65
4	*5825.00	102.5 AV			1.14 V	87	91.85	10.65
5	11650.00	52.7 PK	74.0	-21.3	1.47 V	343	35.04	17.66
6	11650.00	40.6 AV	54.0	-13.4	1.47 V	343	22.94	17.66

REMARKS:

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



A D T

802.11n (HT40)

CHANNEL	TX Channel 151	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	5367.00	60.7 PK	74.0	-13.3	1.16 H	58	51.37	9.33
2	5367.00	49.2 AV	54.0	-4.8	1.16 H	58	39.87	9.33
3	*5755.00	111.1 PK			1.16 H	58	100.67	10.43
4	*5755.00	98.4 AV			1.16 H	58	87.97	10.43
5	11510.00	52.5 PK	74.0	-21.5	1.36 H	164	35.27	17.23
6	11510.00	41.6 AV	54.0	-12.4	1.36 H	164	24.37	17.23

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	5367.00	61.1 PK	74.0	-12.9	1.10 V	95	51.77	9.33
2	5367.00	48.6 AV	54.0	-5.4	1.10 V	95	39.27	9.33
3	*5755.00	112.4 PK			1.10 V	95	101.97	10.43
4	*5755.00	98.9 AV			1.10 V	95	88.47	10.43
5	11510.00	52.5 PK	74.0	-21.5	1.48 V	348	35.27	17.23
6	11510.00	39.8 AV	54.0	-14.2	1.48 V	348	22.57	17.23

REMARKS:

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



A D T

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	5417.00	60.5 PK	74.0	-13.5	1.12 H	74	51.03	9.47
2	5417.00	48.9 AV	54.0	-5.1	1.12 H	74	39.43	9.47
3	*5795.00	111.1 PK			1.15 H	47	100.60	10.50
4	*5795.00	98.1 AV			1.15 H	47	87.60	10.50
5	11590.00	52.2 PK	74.0	-21.8	1.30 H	169	34.89	17.31
6	11590.00	41.3 AV	54.0	-12.7	1.30 H	169	23.99	17.31

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	5417.00	59.8 PK	74.0	-14.2	1.07 V	108	50.33	9.47
2	5417.00	47.1 AV	54.0	-6.9	1.07 V	108	37.63	9.47
3	*5795.00	111.8 PK			1.07 V	108	101.30	10.50
4	*5795.00	98.2 AV			1.07 V	108	87.70	10.50
5	11590.00	52.0 PK	74.0	-22.0	1.38 V	334	34.69	17.31
6	11590.00	39.3 AV	54.0	-14.7	1.38 V	334	21.99	17.31

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
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 : Aug. 15, 2013

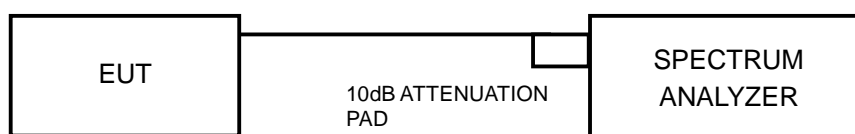
5.3.3 TEST PROCEDURE

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

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.



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5.3.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.75	0.5	PASS
157	5785	15.69	0.5	PASS
165	5825	15.91	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.17	15.44	0.5	PASS
157	5785	15.20	16.31	0.5	PASS
165	5825	15.79	16.32	0.5	PASS

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.93	36.44	0.5	PASS
159	5795	36.32	36.45	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 \leq 4;

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

Array Gain = $5 \log(\text{NANT}/\text{NSS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with NANT \geq 5.

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

5.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

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 : Aug. 15, 2013

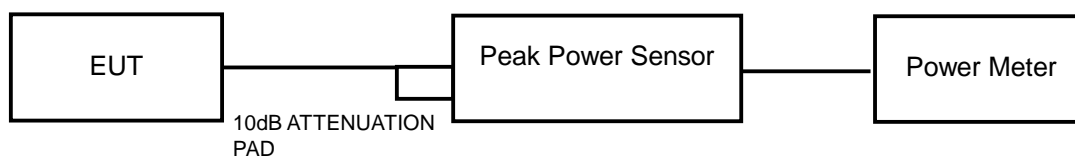
5.4.3 TEST PROCEDURES

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

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



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5.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	145.211	21.62	30	PASS
157	5785	157.398	21.97	30	PASS
165	5825	158.489	22.00	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	20.80	20.87	242.406	23.85	30	PASS
157	5785	21.33	20.32	243.478	23.86	30	PASS
165	5825	20.52	20.80	232.946	23.67	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	19.12	20.11	184.223	22.65	30	PASS
159	5795	20.81	21.31	255.711	24.08	30	PASS

5.5 AVERAGE OUTPUT POWER

5.5.1 FOR REFERENCE.

5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

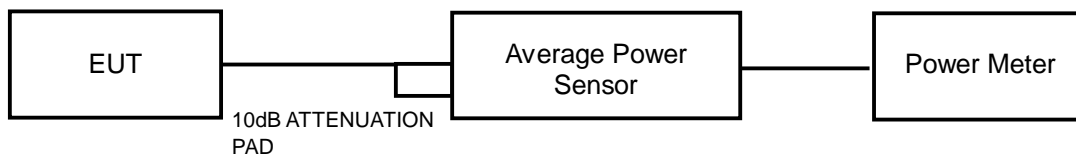
Note:

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 : Aug. 15, 2013

5.5.3 TEST PROCEDURES

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

5.5.4 TEST SETUP



5.5.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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5.5.6 TEST RESULTS

802.11a

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	102.329	20.10
157	5785	112.720	20.52
165	5825	112.980	20.53

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	18.20	19.18	148.863	21.73
157	5785	18.43	19.11	151.133	21.79
165	5825	18.08	19.00	143.702	21.57

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	16.43	17.55	100.839	20.04
159	5795	18.31	20.25	173.689	22.40

5.6 POWER SPECTRAL DENSITY MEASUREMENT

5.6.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

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 : Aug. 15, 2013

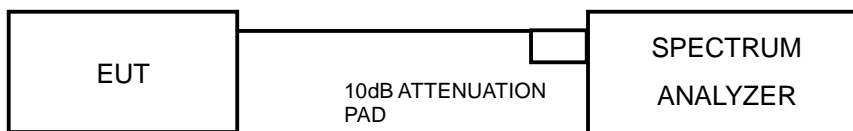
5.6.3 TEST PROCEDURE

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

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



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5.6.7 TEST RESULTS

802.11a

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-6.50	8	PASS
157	5785	-5.70	8	PASS
165	5825	-7.13	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	-8.25	3.01	-5.24	8	PASS
	157	5785	-7.81	3.01	-4.80	8	PASS
	165	5825	-8.25	3.01	-5.24	8	PASS
1	149	5745	-7.11	3.01	-4.10	8	PASS
	157	5785	-6.67	3.01	-3.66	8	PASS
	165	5825	-5.70	3.01	-2.69	8	PASS

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	-13.54	3.01	-10.53	8	PASS
	159	5795	-11.34	3.01	-8.33	8	PASS
1	151	5755	-12.24	3.01	-9.23	8	PASS
	159	5795	-10.90	3.01	-7.89	8	PASS

5.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.7.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

5.7.2 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 : Aug. 08, 2013

5.7.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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

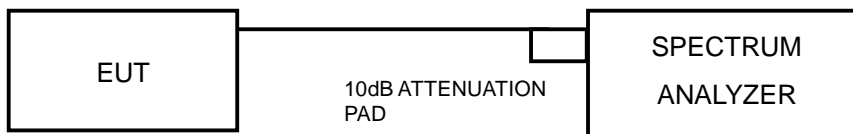
Measurement Procedure –Unwanted Emission Level

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

5.7.4 DEVIATION FROM TEST STANDARD

No deviation

5.7.5 TEST SETUP



5.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.7.7 TEST RESULTS

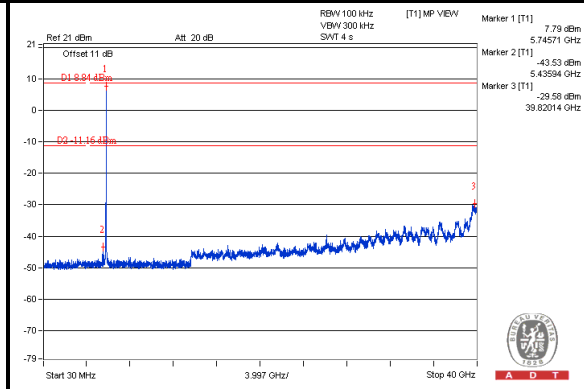
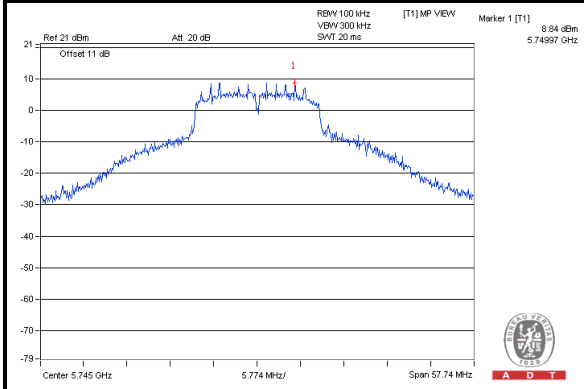
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



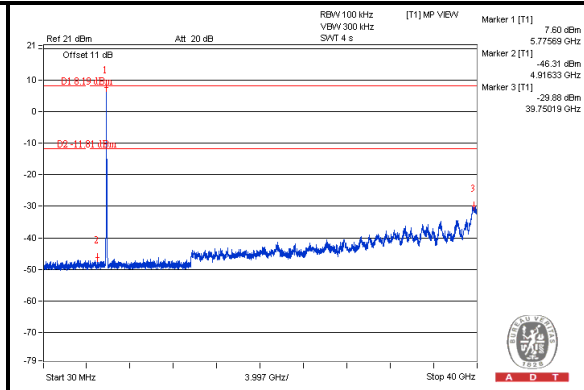
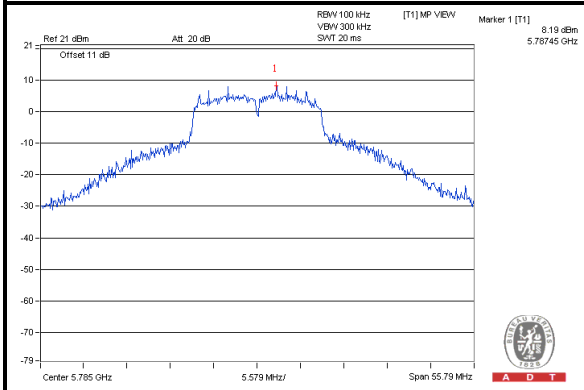
A D T

802.11a

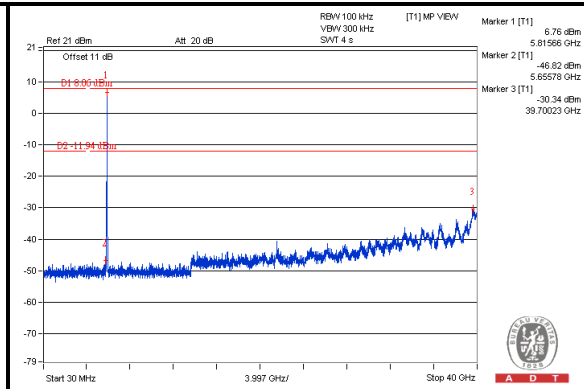
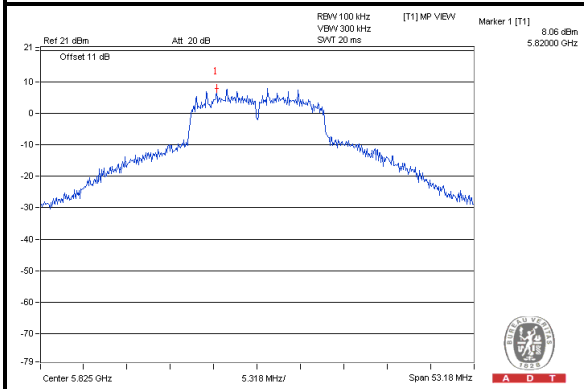
CH 149



CH 157



CH 165



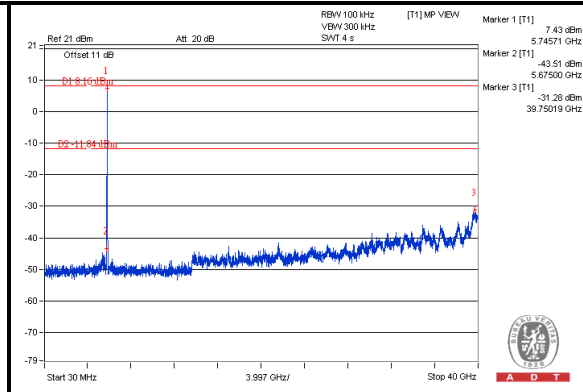
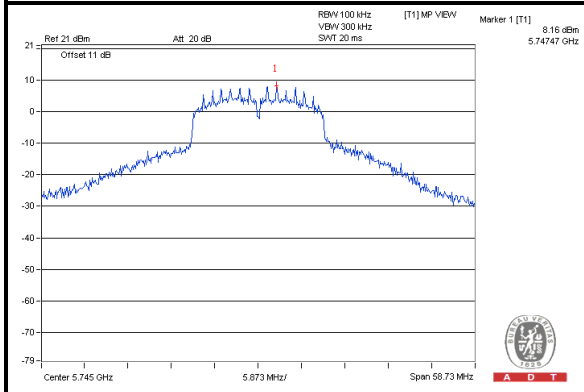


A D T

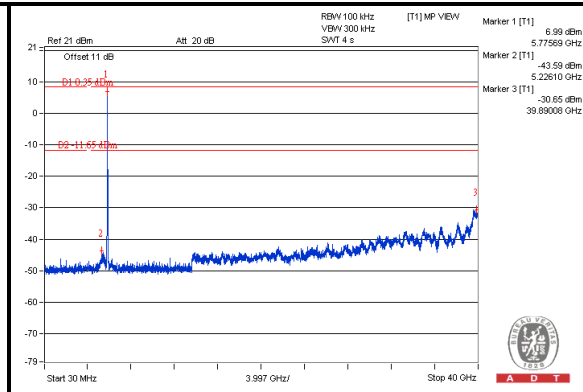
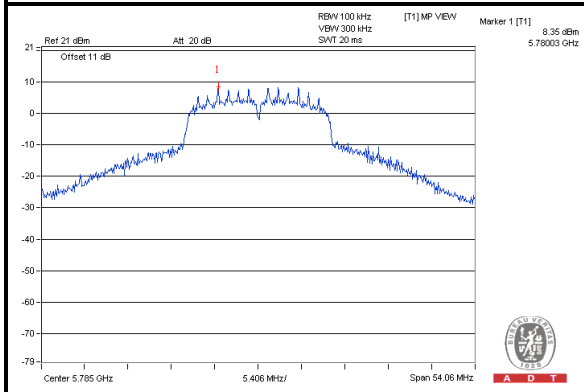
802.11n (HT20):

For Chain (0)

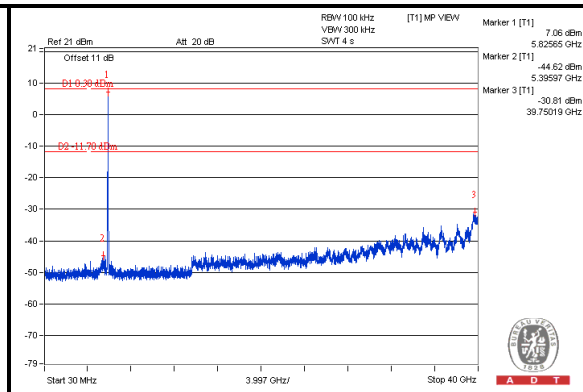
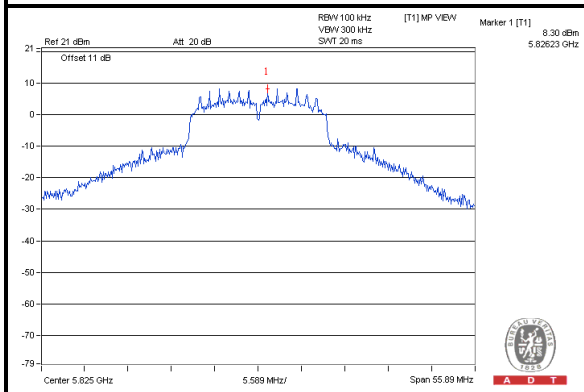
CH 149



CH 157



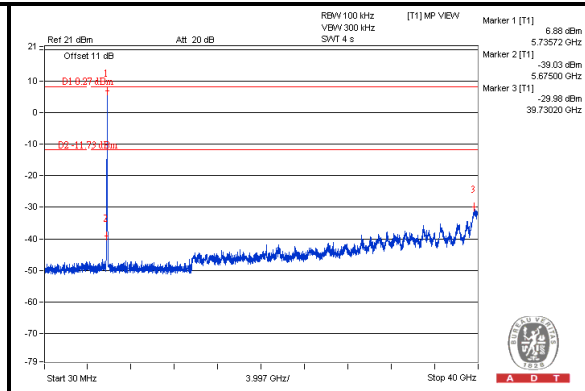
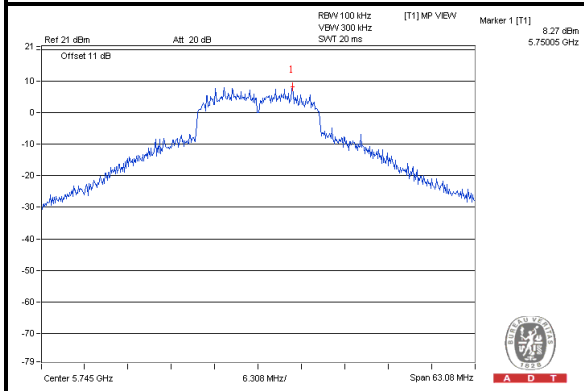
CH 165



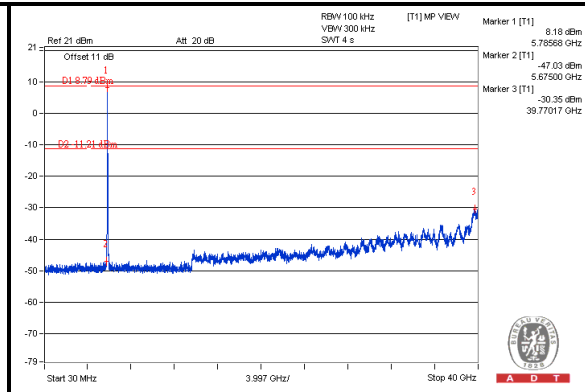
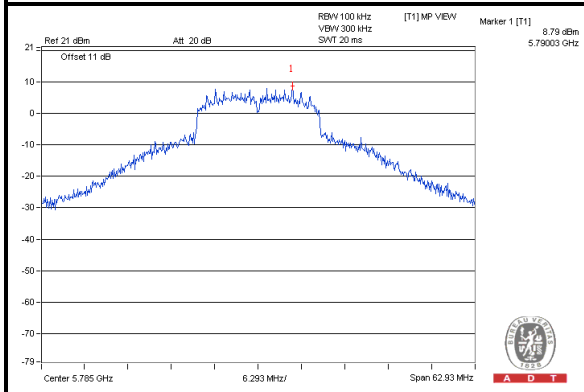


A D T

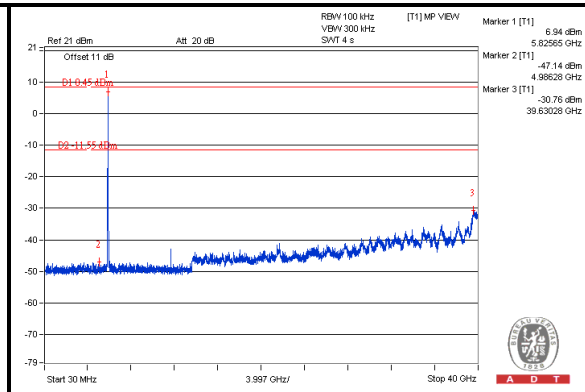
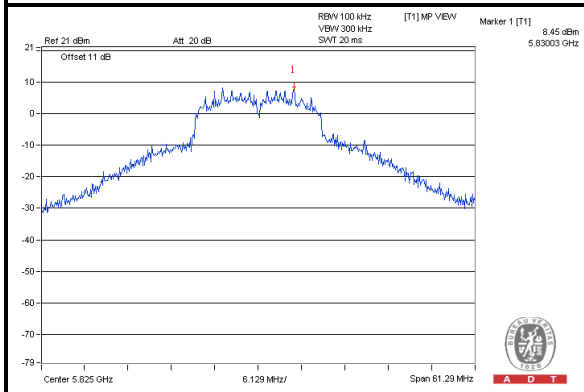
For Chain (1) CH 149



CH 157



CH 165



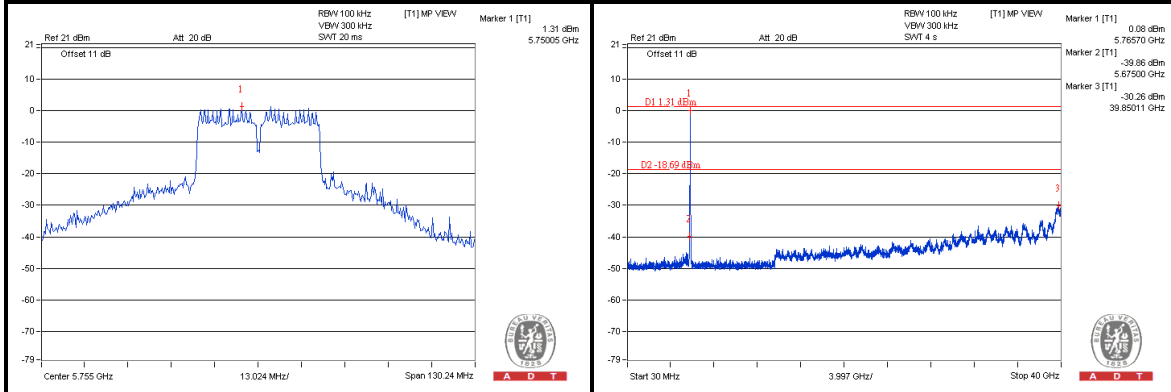


A D T

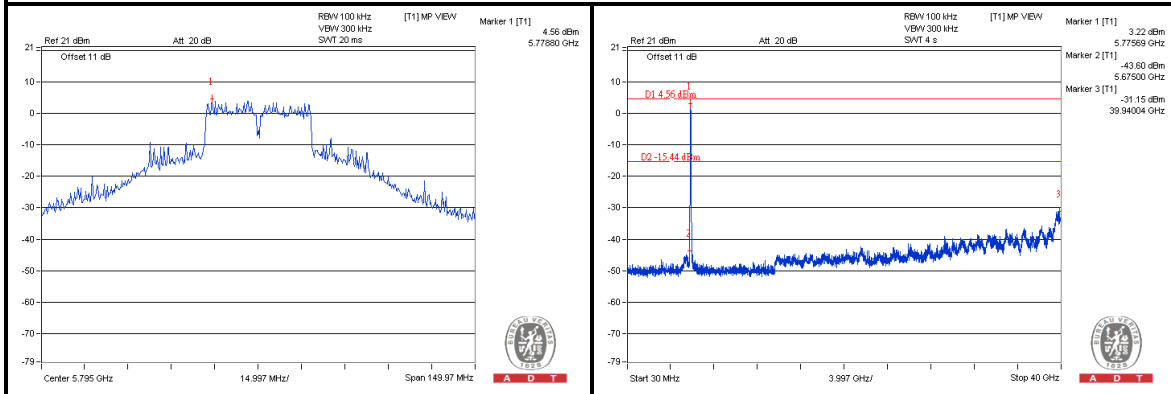
802.11n (HT40):

For Chain (0)

CH 151



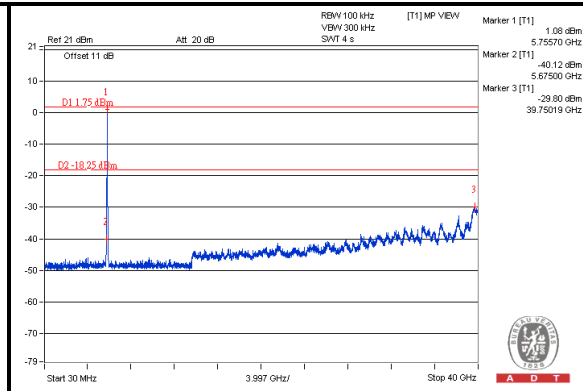
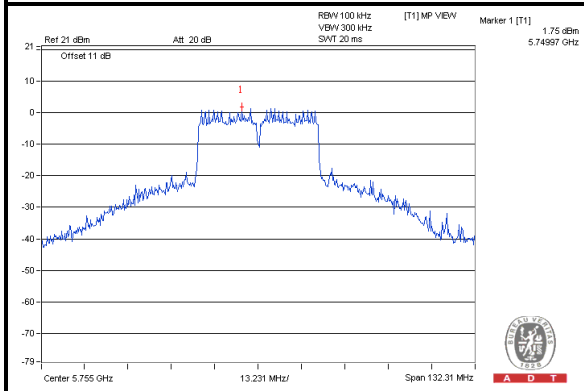
CH 159



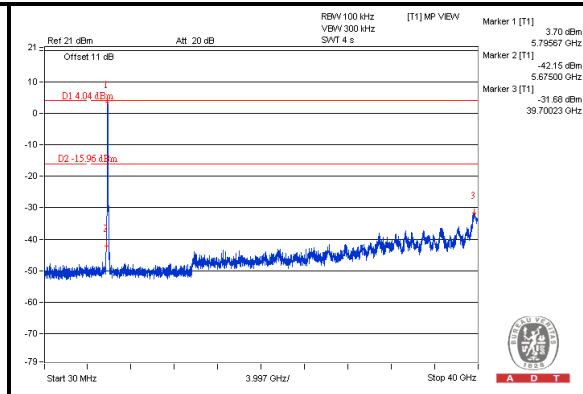
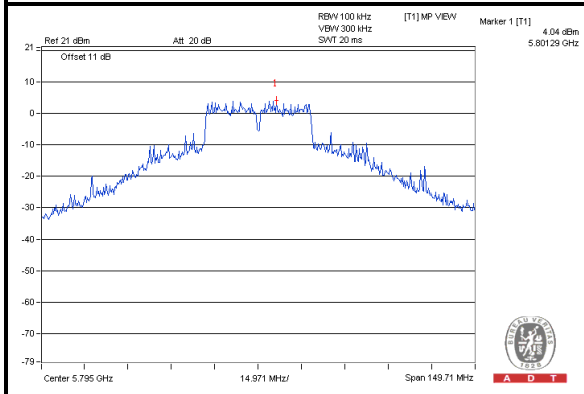


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For Chain (1) CH 151



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

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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.



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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 ---