FCC TEST REPORT (15.247)

REPORT NO.:	RF130802E07
MODEL NO.:	DIR-802
FCC ID:	KA2IR802A1
RECEIVED:	Aug. 02, 2013
TESTED:	Aug. 07 to 26, 2013
ISSUED:	Oct. 15, 3013
APPLICANT:	D-Link Corporation
ADDRESS:	No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C
ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130802E07	Original release	Oct. 15, 3013

1. CERTIFICATION

PRODUCT:	Wireless AC600 Dual Band Home Router
BRAND NAME:	D-Link
MODEL NO.:	DIR-802
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	D-Link Corporation
TESTED:	Aug. 07 to 26, 2013
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: DIR-802) 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:** Oct. 15, 2013
(Elsie Hsu, Specialist)

APPROVED BY : _____ , **DATE:** Oct. 15, 2013
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz, 2400~2483.5MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is - 5.11dB at 2.30078MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is - 0.2dB at 2483.50MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted 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	No antenna connector is used.

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 -5.04dB at 2.24609MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.90dB at 11650.00MHz
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, 5.15~5.24GHz 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 5.15~5.24GHz RF parameters was recorded in another test report.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.63 dB
Radiated emissions (1GHz -6GHz)	3.73 dB
Radiated emissions (6GHz -18GHz)	3.90 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless AC600 Dual Band Home Router
MODEL NO.	DIR-802
POWER SUPPLY	DC 5V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only.
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps
OPERATING FREQUENCY	**For 15.407** **5GHz:**5.18 ~ 5.24GHz
	For 15.247 **2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**For 15.407** 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
	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), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)

MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 41.783mW 802.11n (HT20): 43.351mW 802.11n (HT40): 47.424mW 802.11ac (VHT80): 47.643mW **For 15.247 (2.4GHz)** 802.11b: 226.986mW 802.11g: 287.740mW 802.11n (HT20): 280.543mW 802.11n (HT40): 202.302mW **For 15.247 (5GHz)** 802.11a: 194.536mW 802.11n (HT20): 192.752mW 802.11n (HT40): 179.061mW 802.11ac (VHT80): 532.108mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter x 1

NOTE:

1. The EUT is a 2.4GHz & 5GHz WLAN device.

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

For 2.4GHz					
Transmitter Circuit	Gain (dBi) (Include cable loss)	Antenna Type	Connecter Type	Frequency range (MHz to MHz)	Cable Length (cm)
Chain (0)	3.93	Dipole	NA	2400~2500	6.5
For 5GHz					
Transmitter Circuit	Gain (dBi) (Include cable loss)	Antenna Type	Connecter Type	Frequency range (MHz to MHz)	Cable Length (cm)
Chain (0)	3.91	Dipole	IPEX	5150~5850	6

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

MODULATION MODE	TX/RX FUNCTION
802.11a	1TX/1RX
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	1TX/1RX
802.11n (HT40)	1TX/1RX
802.11ac (VHT80)	1TX/1RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

4. The EUT must be supplied with a power adapter as following table:

No	Brand	Model No.	Spec.
1	D-Link	AMS47-0501000FU	Input: 100-240V, 0.2A, 50/60Hz Output: 5V, 1A DC output cable (Unshielded, 1.5m)
2	D-Link	F05W-050100SPAU	Input: 100-240V, 190mA, 50/60Hz Output: 5V, 1A DC output cable (Unshielded, 1.5m)
Note: For radiated emissions test, the EUT was pre-tested with above Adapter 1 & Adapter 2, the worst case was found in Adapter 1. Therefore only the test data of the Adapter 1 was recorded in this report.			

5. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
6. When the EUT operating in 802.11ac, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 9.
7. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
8. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

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), 802.11ac (VHT20):

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), 802.11ac (VHT40):

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
155	5775 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
-	√	√	√	√	√	-

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

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

OB: Conducted Out-Band Emission Measurement

POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATIO N TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	28deg. C,53%RH	120Vac, 60Hz	Eagle Chen
RE<1G	24deg. C, 67%RH	120Vac, 60Hz	Chilin Lee
RE≥1G	23deg. C, 67%RH 30deg. C, 70%RH	120Vac, 60Hz	Nelson Teng 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

ANSI C63.10-2009

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

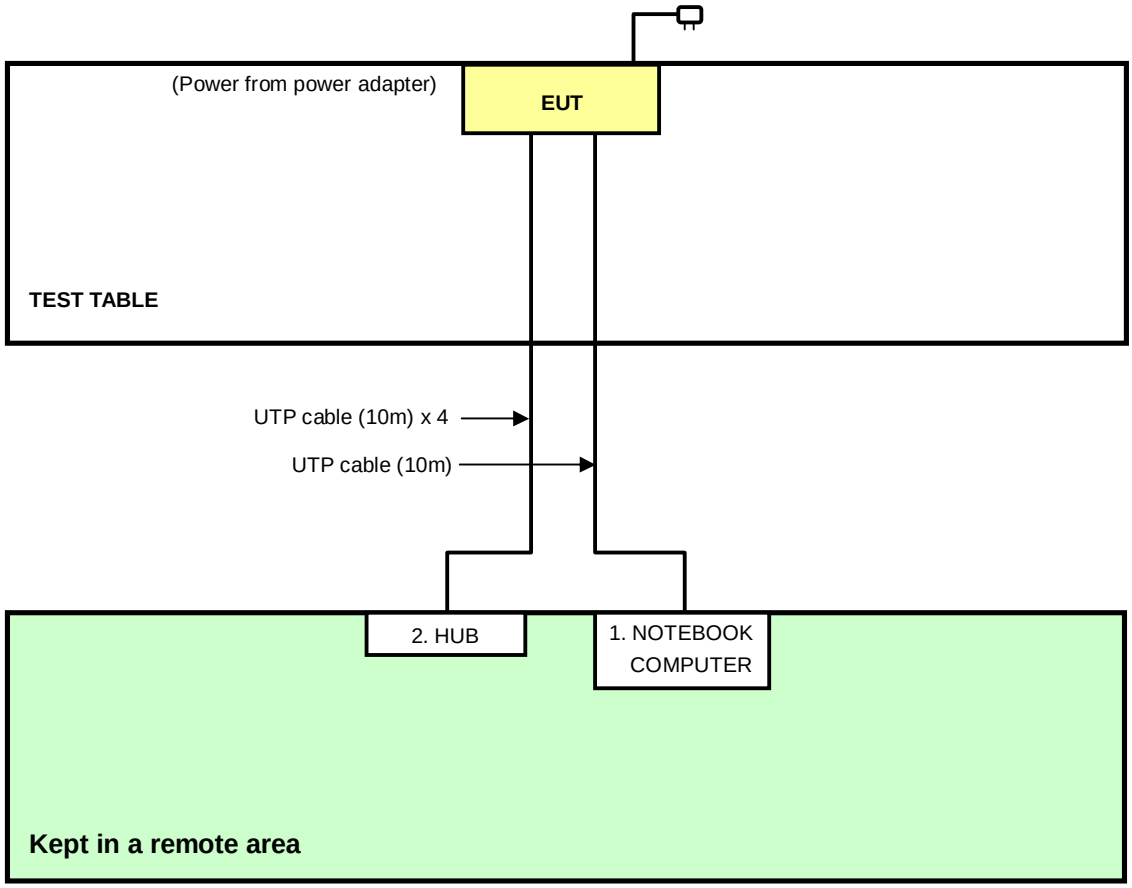
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC
2	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC

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

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



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	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 24, 2012	Sep. 23, 2013
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	8487731004	Oct. 29, 2012	Oct. 28, 2013
RF Cable (JYEBAO)	5DFB	COACAB-001	May 27, 2013	May 26, 2014
50 ohms Terminator	50	3	Oct. 16, 2012	Oct. 15, 2013
Software ADT	BV ADT_Cond_V7.3.7 .3	NA	NA	NA

Note:

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

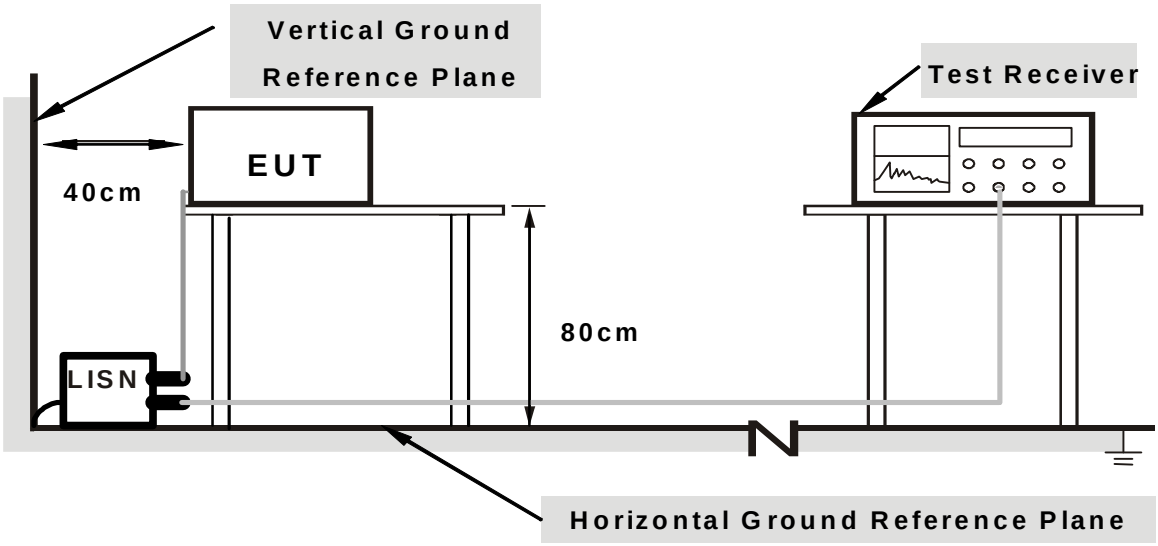
NOTE:

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 “MP_TEST_Version: 2.3” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

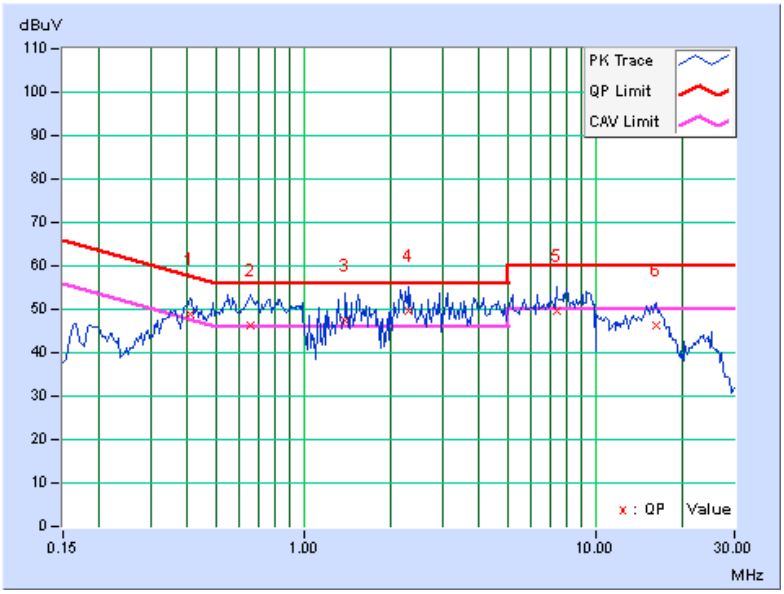
4.1.7 TEST RESULTS (MODE 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.40781	0.17	48.72	40.14	48.89	40.31	57.69	47.69	-8.80	-7.38
2	0.65781	0.18	46.16	37.76	46.34	37.94	56.00	46.00	-9.66	-8.06
3	1.39063	0.22	47.37	38.61	47.59	38.83	56.00	46.00	-8.41	-7.17
4	**2.30078**	**0.28**	**49.48**	**40.61**	**49.76**	**40.89**	**56.00**	**46.00**	**-6.24**	**-5.11**
5	7.36719	0.61	48.84	40.97	49.45	41.58	60.00	50.00	-10.55	-8.42
6	16.28125	1.17	45.02	37.67	46.19	38.84	60.00	50.00	-13.81	-11.16

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

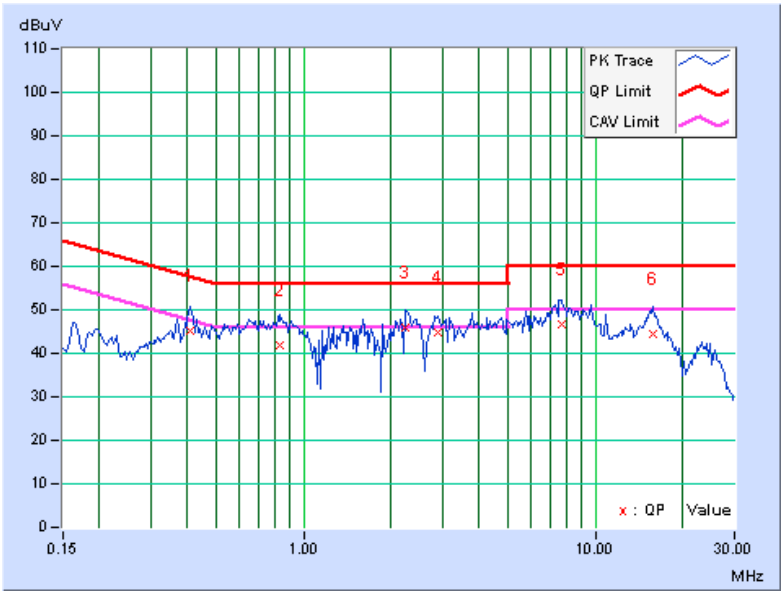


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.40781	0.20	45.08	35.30	45.28	35.50	57.69	47.69	-12.41	-12.19
2	0.82578	0.22	41.45	32.91	41.67	33.13	56.00	46.00	-14.33	-12.87
3	2.23828	0.30	45.57	36.49	45.87	36.79	56.00	46.00	-10.13	-9.21
4	2.90234	0.34	44.52	35.87	44.86	36.21	56.00	46.00	-11.14	-9.79
5	7.65625	0.60	46.23	37.69	46.83	38.29	60.00	50.00	-13.17	-11.71
6	15.68750	0.99	43.59	35.06	44.58	36.05	60.00	50.00	-15.42	-13.95

REMARKS:

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



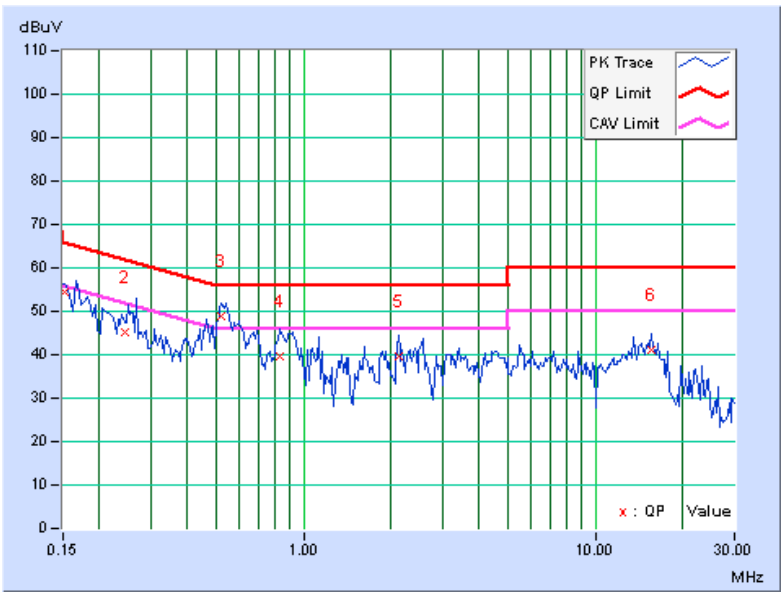
4.1.8 TEST RESULTS (MODE 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15275	0.10	54.39	47.60	54.49	47.70	65.85	55.85	-11.36	-8.15
2	0.24319	0.12	45.14	38.01	45.26	38.13	61.99	51.99	-16.72	-13.85
3	0.52425	0.18	48.58	36.88	48.76	37.06	56.00	46.00	-7.24	-8.94
4	0.83359	0.19	39.39	27.12	39.58	27.31	56.00	46.00	-16.42	-18.69
5	2.11719	0.27	39.45	28.64	39.72	28.91	56.00	46.00	-16.28	-17.09
6	15.55859	1.13	39.89	31.06	41.02	32.19	60.00	50.00	-18.98	-17.81

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

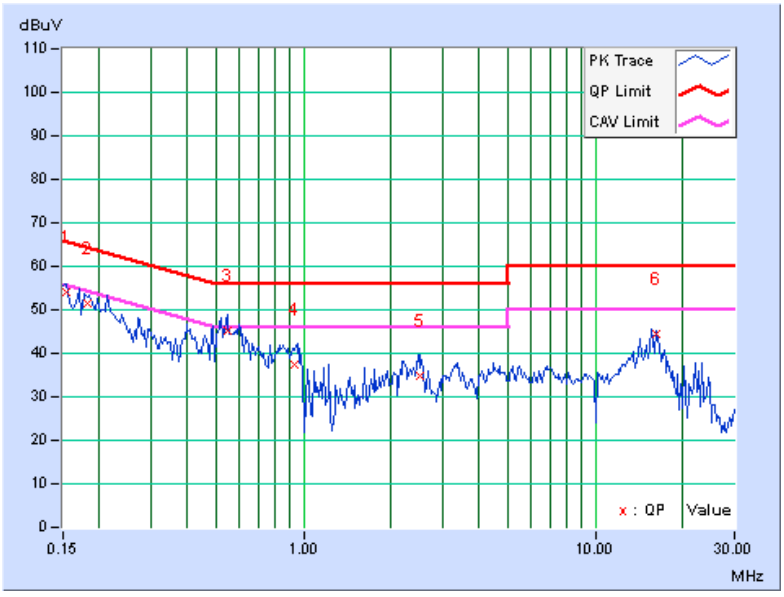


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15350	0.15	54.00	46.61	54.15	46.76	65.81	55.81	-11.66	-9.05
2	0.18225	0.15	51.42	43.54	51.57	43.69	64.38	54.38	-12.81	-10.69
3	0.54844	0.21	44.93	36.93	45.14	37.14	56.00	46.00	-10.86	-8.86
4	0.93703	0.23	37.15	27.00	37.38	27.23	56.00	46.00	-18.62	-18.77
5	2.52344	0.32	34.52	24.63	34.84	24.95	56.00	46.00	-21.16	-21.05
6	16.16797	1.01	43.49	33.01	44.50	34.02	60.00	50.00	-15.50	-15.98

REMARKS:

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



4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29,2013	Jan. 28,2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.05	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. 23 to 26, 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.

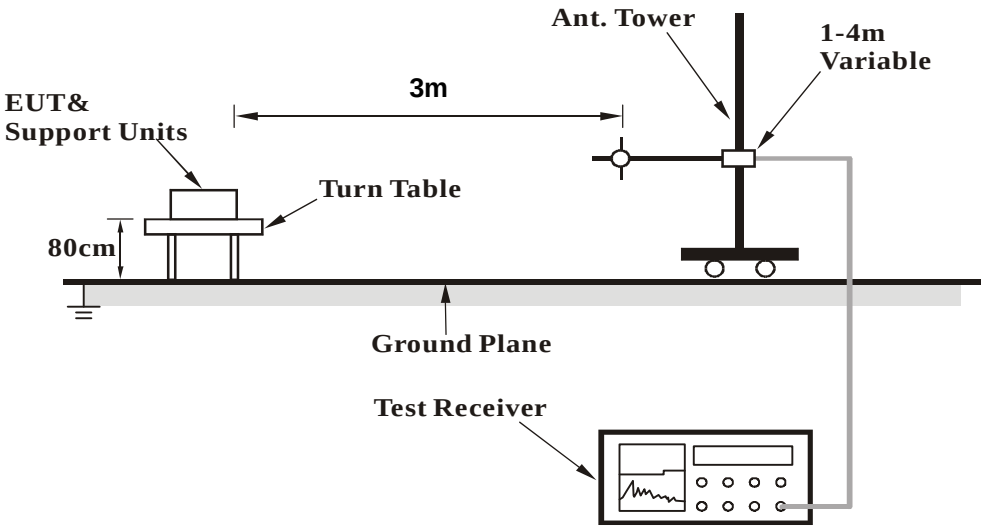
NOTE:

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

802.11g

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	34.61	32.8 QP	40.0	-7.2	1.50 H	225	47.06	-14.29
2	122.39	30.9 QP	43.5	-12.6	1.50 H	80	46.30	-15.39
3	161.24	30.6 QP	43.5	-12.9	1.50 H	67	43.76	-13.20
4	193.74	27.9 QP	43.5	-15.6	1.50 H	74	44.26	-16.38
5	581.25	31.1 QP	46.0	-14.9	1.50 H	36	37.17	-6.07
6	916.73	30.9 QP	46.0	-15.1	1.50 H	0	30.78	0.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	37.50	34.4 QP	40.0	-5.6	1.00 V	360	48.38	-13.99
2	111.38	36.1 QP	43.5	-7.4	1.00 V	0	52.26	-16.18
3	335.45	28.6 QP	46.0	-17.4	1.50 V	265	40.33	-11.70
4	639.98	33.1 QP	46.0	-12.9	1.50 V	2	37.68	-4.60
5	720.01	30.7 QP	46.0	-15.3	1.50 V	360	34.44	-3.73
6	775.01	28.6 QP	46.0	-17.4	1.50 V	307	30.70	-2.08

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

ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2386.85	51.2 PK	74.0	-22.8	1.24 H	12	52.41	-1.21
2	2386.85	42.0 AV	54.0	-12.0	1.24 H	12	43.21	-1.21
3	*2412.00	106.3 PK			1.24 H	12	107.39	-1.09
4	*2412.00	103.8 AV			1.24 H	12	104.89	-1.09
5	4824.00	52.3 PK	74.0	-21.7	1.00 H	324	44.71	7.59
6	4824.00	44.1 AV	54.0	-9.9	1.00 H	324	36.51	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	2386.85	56.2 PK	74.0	-17.8	1.00 V	347	57.41	-1.21
2	2386.85	46.0 AV	54.0	-8.0	1.00 V	347	47.21	-1.21
3	*2412.00	110.3 PK			1.00 V	347	111.39	-1.09
4	*2412.00	108.1 AV			1.00 V	347	109.19	-1.09
5	4824.00	58.5 PK	74.0	-15.5	1.05 V	85	50.91	7.59
6	4824.00	53.1 AV	54.0	-0.9	1.05 V	85	45.51	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.7 PK			1.24 H	12	106.69	-0.99
2	*2437.00	103.9 AV			1.24 H	12	104.89	-0.99
3	4874.00	52.0 PK	74.0	-22.0	1.01 H	329	44.23	7.77
4	4874.00	43.7 AV	54.0	-10.3	1.01 H	329	35.93	7.77
5	7311.00	50.4 PK	74.0	-23.6	1.55 H	133	34.91	15.49
6	7311.00	43.8 AV	54.0	-10.2	1.55 H	133	28.31	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	*2437.00	112.3 PK			1.00 V	335	113.29	-0.99
2	*2437.00	110.0 AV			1.00 V	335	110.99	-0.99
3	4874.00	57.8 PK	74.0	-16.2	1.03 V	85	50.03	7.77
4	4874.00	53.2 AV	54.0	-0.8	1.03 V	85	45.43	7.77
5	7311.00	60.0 PK	74.0	-14.0	1.11 V	102	44.51	15.49
6	7311.00	53.1 AV	54.0	-0.9	1.11 V	102	37.61	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.3 PK			1.20 H	13	107.19	-0.89
2	*2462.00	104.0 AV			1.20 H	13	104.89	-0.89
3	2483.50	59.1 PK	74.0	-14.9	1.20 H	13	59.90	-0.80
4	2483.50	53.7 AV	54.0	-0.3	1.20 H	13	54.50	-0.80
5	4924.00	51.7 PK	74.0	-22.3	1.00 H	338	43.76	7.94
6	4924.00	43.4 AV	54.0	-10.6	1.00 H	338	35.46	7.94
7	7386.00	50.8 PK	74.0	-23.2	1.57 H	131	35.29	15.51
8	7386.00	44.1 AV	54.0	-9.9	1.57 H	131	28.59	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	110.9 PK			1.00 V	345	111.79	-0.89
2	*2462.00	108.8 AV			1.00 V	345	109.69	-0.89
3	2483.50	60.4 PK	74.0	-13.6	1.00 V	345	61.20	-0.80
4	2483.50	53.3 AV	54.0	-0.7	1.00 V	345	54.10	-0.80
5	4924.00	59.3 PK	74.0	-14.7	1.09 V	73	51.36	7.94
6	4924.00	52.7 AV	54.0	-1.3	1.09 V	73	44.76	7.94
7	7386.00	60.0 PK	74.0	-14.0	1.10 V	95	44.49	15.51
8	7386.00	53.2 AV	54.0	-0.8	1.10 V	95	37.69	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	67.3 PK	74.0	-6.7	1.21 H	11	68.49	-1.19
2	2390.00	45.2 AV	54.0	-8.8	1.21 H	11	46.39	-1.19
3	*2412.00	103.2 PK			1.21 H	11	104.29	-1.09
4	*2412.00	93.8 AV			1.21 H	11	94.89	-1.09
5	4824.00	51.8 PK	74.0	-22.2	1.00 H	334	44.21	7.59
6	4824.00	43.8 AV	54.0	-10.2	1.00 H	334	36.21	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	73.5 PK	74.0	-0.5	1.02 V	348	74.69	-1.19
2	2390.00	51.0 AV	54.0	-3.0	1.02 V	348	52.19	-1.19
3	*2412.00	108.7 PK			1.02 V	348	109.79	-1.09
4	*2412.00	99.8 AV			1.02 V	348	100.89	-1.09
5	4824.00	54.5 PK	74.0	-19.5	1.05 V	321	46.91	7.59
6	4824.00	42.6 AV	54.0	-11.4	1.05 V	321	35.01	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.

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	61.9 PK	74.0	-12.1	1.23 H	11	63.09	-1.19
2	2390.00	48.3 AV	54.0	-5.7	1.23 H	11	49.49	-1.19
3	*2437.00	105.5 PK			1.23 H	11	106.49	-0.99
4	*2437.00	96.4 AV			1.23 H	11	97.39	-0.99
5	2483.50	65.6 PK	74.0	-8.4	1.23 H	11	66.40	-0.80
6	2483.50	50.2 AV	54.0	-3.8	1.23 H	11	51.00	-0.80
7	4874.00	52.0 PK	74.0	-22.0	1.00 H	351	44.23	7.77
8	4874.00	43.6 AV	54.0	-10.4	1.00 H	351	35.83	7.77
9	7311.00	50.9 PK	74.0	-23.1	1.57 H	126	35.41	15.49
10	7311.00	44.1 AV	54.0	-9.9	1.57 H	126	28.61	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	66.6 PK	74.0	-7.4	1.00 V	346	67.79	-1.19
2	2390.00	51.3 AV	54.0	-2.7	1.00 V	346	52.49	-1.19
3	*2437.00	112.8 PK			1.00 V	346	113.79	-0.99
4	*2437.00	103.8 AV			1.00 V	346	104.79	-0.99
5	2483.50	68.6 PK	74.0	-5.4	1.00 V	346	69.40	-0.80
6	2483.50	53.7 AV	54.0	-0.3	1.00 V	346	54.50	-0.80
7	4874.00	54.3 PK	74.0	-19.7	1.00 V	329	46.53	7.77
8	4874.00	42.3 AV	54.0	-11.7	1.00 V	329	34.53	7.77
9	7311.00	56.2 PK	74.0	-17.8	1.01 V	333	40.71	15.49
10	7311.00	43.8 AV	54.0	-10.2	1.01 V	333	28.31	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.0 PK			1.20 H	12	103.89	-0.89
2	*2462.00	93.7 AV			1.20 H	12	94.59	-0.89
3	2483.50	64.5 PK	74.0	-9.5	1.20 H	12	65.30	-0.80
4	2483.50	49.1 AV	54.0	-4.9	1.20 H	12	49.90	-0.80
5	4924.00	51.5 PK	74.0	-22.5	1.00 H	350	43.56	7.94
6	4924.00	43.1 AV	54.0	-10.9	1.00 H	350	35.16	7.94
7	7386.00	51.0 PK	74.0	-23.0	1.53 H	140	35.49	15.51
8	7386.00	44.5 AV	54.0	-9.5	1.53 H	140	28.99	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	108.4 PK			1.00 V	355	109.29	-0.89
2	*2462.00	99.4 AV			1.00 V	355	100.29	-0.89
3	2483.50	69.3 PK	74.0	-4.7	1.00 V	355	70.10	-0.80
4	2483.50	52.6 AV	54.0	-1.4	1.00 V	355	53.40	-0.80
5	4924.00	54.9 PK	74.0	-19.1	1.00 V	325	46.96	7.94
6	4924.00	42.7 AV	54.0	-11.3	1.00 V	325	34.76	7.94
7	7386.00	56.9 PK	74.0	-17.1	1.00 V	342	41.39	15.51
8	7386.00	44.2 AV	54.0	-9.8	1.00 V	342	28.69	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.

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.4 PK	74.0	-7.6	1.21 H	12	67.59	-1.19
2	2390.00	47.7 AV	54.0	-6.3	1.21 H	12	48.89	-1.19
3	*2412.00	102.4 PK			1.21 H	12	103.49	-1.09
4	*2412.00	93.4 AV			1.21 H	12	94.49	-1.09
5	4824.00	51.5 PK	74.0	-22.5	1.00 H	337	43.91	7.59
6	4824.00	43.0 AV	54.0	-11.0	1.00 H	337	35.41	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	73.1 PK	74.0	-0.9	1.04 V	355	74.29	-1.19
2	2390.00	51.6 AV	54.0	-2.4	1.04 V	355	52.79	-1.19
3	*2412.00	109.6 PK			1.04 V	355	110.69	-1.09
4	*2412.00	100.1 AV			1.04 V	355	101.19	-1.09
5	4824.00	53.8 PK	74.0	-20.2	1.05 V	329	46.21	7.59
6	4824.00	41.9 AV	54.0	-12.1	1.05 V	329	34.31	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.

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	60.3 PK	74.0	-13.7	1.21 H	13	61.49	-1.19
2	2390.00	47.0 AV	54.0	-7.0	1.21 H	13	48.19	-1.19
3	*2437.00	104.8 PK			1.21 H	13	105.79	-0.99
4	*2437.00	95.7 AV			1.21 H	13	96.69	-0.99
5	2483.50	65.7 PK	74.0	-8.3	1.21 H	13	66.50	-0.80
6	2483.50	50.5 AV	54.0	-3.5	1.21 H	13	51.30	-0.80
7	4874.00	51.2 PK	74.0	-22.8	1.00 H	355	43.43	7.77
8	4874.00	43.1 AV	54.0	-10.9	1.00 H	355	35.33	7.77
9	7311.00	50.6 PK	74.0	-23.4	1.53 H	129	35.11	15.49
10	7311.00	44.3 AV	54.0	-9.7	1.53 H	129	28.81	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	66.9 PK	74.0	-7.1	1.00 V	344	68.09	-1.19
2	2390.00	51.4 AV	54.0	-2.6	1.00 V	344	52.59	-1.19
3	*2437.00	112.6 PK			1.00 V	344	113.59	-0.99
4	*2437.00	103.4 AV			1.00 V	344	104.39	-0.99
5	2483.50	70.8 PK	74.0	-3.2	1.00 V	344	71.60	-0.80
6	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.00 V**	**344**	**54.60**	**-0.80**
7	4874.00	54.6 PK	74.0	-19.4	1.04 V	330	46.83	7.77
8	4874.00	42.6 AV	54.0	-11.4	1.04 V	330	34.83	7.77
9	7311.00	56.5 PK	74.0	-17.5	1.03 V	323	41.01	15.49
10	7311.00	44.1 AV	54.0	-9.9	1.03 V	323	28.61	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.3 PK			1.20 H	13	103.19	-0.89
2	*2462.00	93.0 AV			1.20 H	13	93.89	-0.89
3	2483.50	68.0 PK	74.0	-6.0	1.20 H	13	68.80	-0.80
4	2483.50	49.8 AV	54.0	-4.2	1.20 H	13	50.60	-0.80
5	2500.00	55.4 PK	74.0	-18.6	1.03 H	37	56.13	-0.73
6	2500.00	44.9 AV	54.0	-9.1	1.03 H	37	45.63	-0.73
7	4924.00	51.8 PK	74.0	-22.2	1.00 H	360	43.86	7.94
8	4924.00	43.1 AV	54.0	-10.9	1.00 H	360	35.16	7.94
9	7386.00	50.7 PK	74.0	-23.3	1.52 H	147	35.19	15.51
10	7386.00	44.2 AV	54.0	-9.8	1.52 H	147	28.69	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	108.3 PK			1.00 V	346	109.19	-0.89
2	*2462.00	98.7 AV			1.00 V	346	99.59	-0.89
3	2483.50	73.3 PK	74.0	-0.7	1.00 V	346	74.10	-0.80
4	2483.50	53.6 AV	54.0	-0.4	1.00 V	346	54.40	-0.80
5	2500.00	57.9 PK	74.0	-16.1	1.01 V	354	58.63	-0.73
6	2500.00	47.5 AV	54.0	-6.5	1.01 V	354	48.23	-0.73
7	4924.00	54.2 PK	74.0	-19.8	1.00 V	327	46.26	7.94
8	4924.00	42.4 AV	54.0	-11.6	1.00 V	327	34.46	7.94
9	7386.00	56.3 PK	74.0	-17.7	1.02 V	345	40.79	15.51
10	7386.00	44.0 AV	54.0	-10.0	1.02 V	345	28.49	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.

802.11n (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	68.7 PK	74.0	-5.3	1.23 H	10	69.89	-1.19
2	2390.00	47.6 AV	54.0	-6.4	1.23 H	10	48.79	-1.19
3	*2422.00	99.3 PK			1.23 H	10	100.35	-1.05
4	*2422.00	90.0 AV			1.23 H	10	91.05	-1.05
5	4844.00	51.3 PK	74.0	-22.7	1.04 H	341	43.64	7.66
6	4844.00	42.8 AV	54.0	-11.2	1.04 H	341	35.14	7.66
7	7266.00	50.3 PK	74.0	-23.7	1.54 H	132	34.79	15.51
8	7266.00	44.1 AV	54.0	-9.9	1.54 H	132	28.59	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	71.2 PK	74.0	-2.8	1.00 V	347	72.39	-1.19
2	2390.00	48.8 AV	54.0	-5.2	1.00 V	347	49.99	-1.19
3	*2422.00	106.0 PK			1.00 V	347	107.05	-1.05
4	*2422.00	96.3 AV			1.00 V	347	97.35	-1.05
5	4844.00	54.4 PK	74.0	-19.6	1.03 V	323	46.74	7.66
6	4844.00	42.4 AV	54.0	-11.6	1.03 V	323	34.74	7.66
7	7266.00	56.4 PK	74.0	-17.6	1.02 V	330	40.89	15.51
8	7266.00	44.2 AV	54.0	-9.8	1.02 V	330	28.69	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.

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	58.2 PK	74.0	-15.8	1.20 H	12	59.39	-1.19
2	2390.00	45.0 AV	54.0	-9.0	1.20 H	12	46.19	-1.19
3	*2437.00	99.5 PK			1.20 H	12	100.49	-0.99
4	*2437.00	89.6 AV			1.20 H	12	90.59	-0.99
5	2483.50	65.4 PK	74.0	-8.6	1.20 H	12	66.20	-0.80
6	2483.50	49.4 AV	54.0	-4.6	1.20 H	12	50.20	-0.80
7	4874.00	52.0 PK	74.0	-22.0	1.03 H	360	44.23	7.77
8	4874.00	43.5 AV	54.0	-10.5	1.03 H	360	35.73	7.77
9	7311.00	50.8 PK	74.0	-23.2	1.49 H	129	35.31	15.49
10	7311.00	44.4 AV	54.0	-9.6	1.49 H	129	28.91	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	65.4 PK	74.0	-8.6	1.00 V	348	66.59	-1.19
2	2390.00	43.5 AV	54.0	-10.5	1.00 V	348	44.69	-1.19
3	*2437.00	105.7 PK			1.00 V	348	106.69	-0.99
4	*2437.00	96.0 AV			1.00 V	348	96.99	-0.99
5	2483.50	69.3 PK	74.0	-4.7	1.00 V	348	70.10	-0.80
6	2483.50	52.3 AV	54.0	-1.7	1.00 V	348	53.10	-0.80
7	4874.00	54.3 PK	74.0	-19.7	1.05 V	329	46.53	7.77
8	4874.00	42.1 AV	54.0	-11.9	1.05 V	329	34.33	7.77
9	7311.00	56.0 PK	74.0	-18.0	1.00 V	339	40.51	15.49
10	7311.00	43.3 AV	54.0	-10.7	1.00 V	339	27.81	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.5 PK			1.22 H	12	99.42	-0.92
2	*2452.00	88.4 AV			1.22 H	12	89.32	-0.92
3	2483.50	65.4 PK	74.0	-8.6	1.22 H	12	66.20	-0.80
4	2483.50	48.2 AV	54.0	-5.8	1.22 H	12	49.00	-0.80
5	4904.00	51.4 PK	74.0	-22.6	1.01 H	353	43.52	7.88
6	4904.00	43.1 AV	54.0	-10.9	1.01 H	353	35.22	7.88
7	7356.00	50.5 PK	74.0	-23.5	1.48 H	125	35.01	15.49
8	7356.00	44.2 AV	54.0	-9.8	1.48 H	125	28.71	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	103.3 PK			1.00 V	349	104.22	-0.92
2	*2452.00	93.7 AV			1.00 V	349	94.62	-0.92
3	2483.50	69.2 PK	74.0	-4.8	1.00 V	349	70.00	-0.80
4	2483.50	51.6 AV	54.0	-2.4	1.00 V	349	52.40	-0.80
5	4904.00	54.7 PK	74.0	-19.3	1.03 V	325	46.82	7.88
6	4904.00	42.5 AV	54.0	-11.5	1.03 V	325	34.62	7.88
7	7356.00	55.8 PK	74.0	-18.2	1.00 V	336	40.31	15.49
8	7356.00	43.6 AV	54.0	-10.4	1.00 V	336	28.11	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. 21, 2013

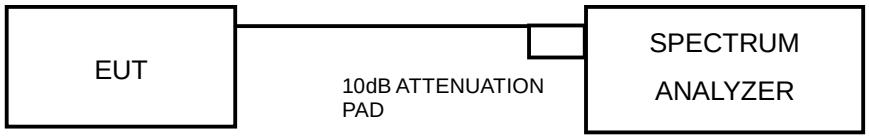
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.13	0.5	PASS
6	2437	10.14	0.5	PASS
11	2462	10.14	0.5	PASS

802.11g

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

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.87	0.5	PASS
6	2437	17.89	0.5	PASS
11	2462	17.89	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	37.79	0.5	PASS
6	2437	36.53	0.5	PASS
9	2452	36.53	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)

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. 21, 2013

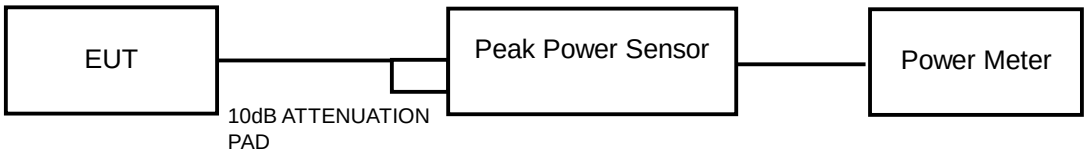
4.4.3 TEST PROCEDURES

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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	226.986	23.56	30	PASS
6	2437	205.589	23.13	30	PASS
11	2462	179.473	22.54	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	269.774	24.31	30	PASS
6	2437	287.740	24.59	30	PASS
11	2462	224.388	23.51	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	258.226	24.12	30	PASS
6	2437	280.543	24.48	30	PASS
11	2462	213.304	23.29	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	202.302	23.06	30	PASS
6	2437	188.365	22.75	30	PASS
9	2452	131.826	21.20	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

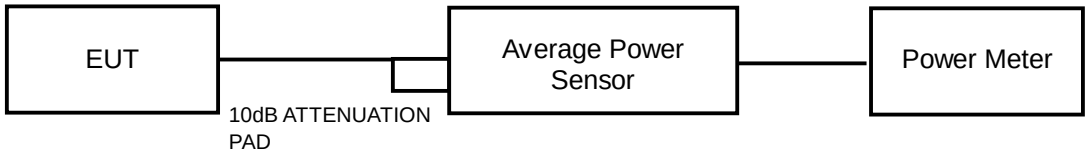
Note:

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. 21, 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

4.5.6 TEST RESULTS

802.11b

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	140.605	21.48
6	2437	124.451	20.95
11	2462	107.399	20.31

802.11g

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	55.335	17.43
6	2437	88.308	19.46
11	2462	40.832	16.11

802.11n (HT20)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	57.280	17.58
6	2437	89.331	19.51
11	2462	40.832	16.11

802.11n (HT40)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	132.130	21.21
6	2437	122.462	20.88
9	2452	87.700	19.43

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. 21, 2013

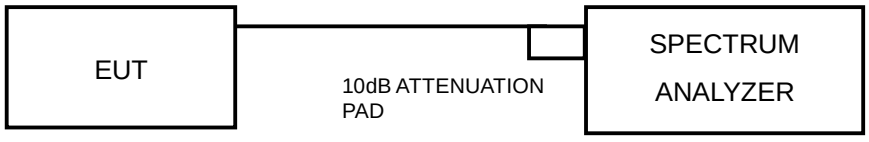
4.6.3 TEST PROCEDURE

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

4.6.7 TEST RESULTS

802.11b

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-8.74	8	PASS
6	2437	-9.55	8	PASS
11	2462	-10.31	8	PASS

802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.52	8	PASS
6	2437	-9.65	8	PASS
11	2462	-13.15	8	PASS

802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.31	8	PASS
6	2437	-9.59	8	PASS
11	2462	-12.73	8	PASS

802.11n (HT40)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-14.30	8	PASS
6	2437	-11.96	8	PASS
9	2452	-16.48	8	PASS

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. 21, 2013

4.7.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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

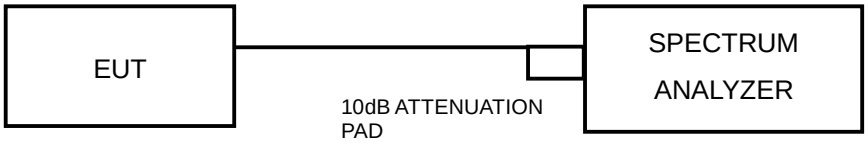
Measurement Procedure –Unwanted Emission Level

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

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 EUT OPERATING CONDITION

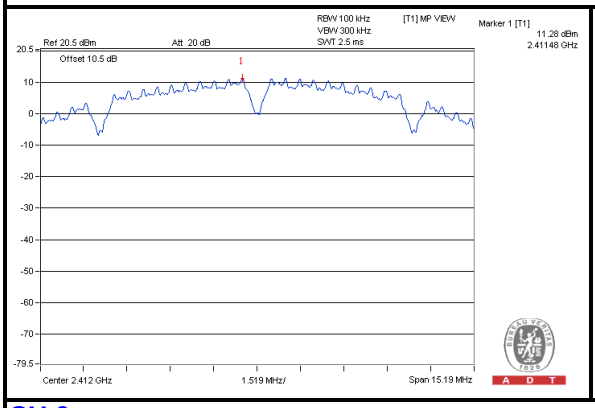
Same as Item 4.3.6

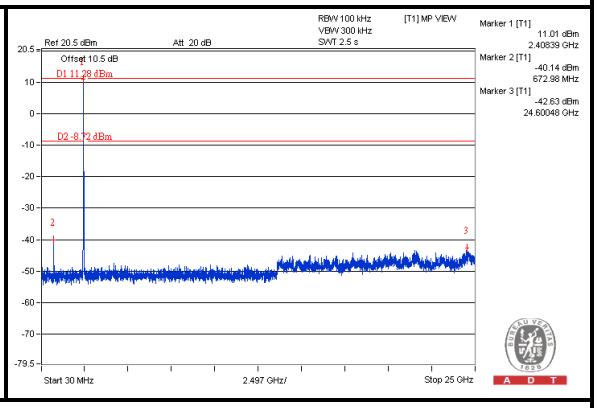
4.7.7 TEST RESULTS

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.

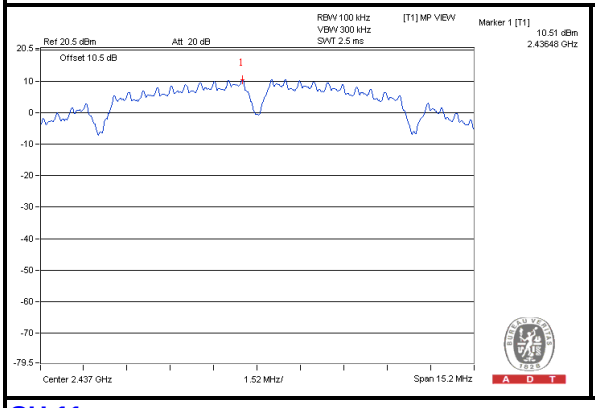
802.11b:

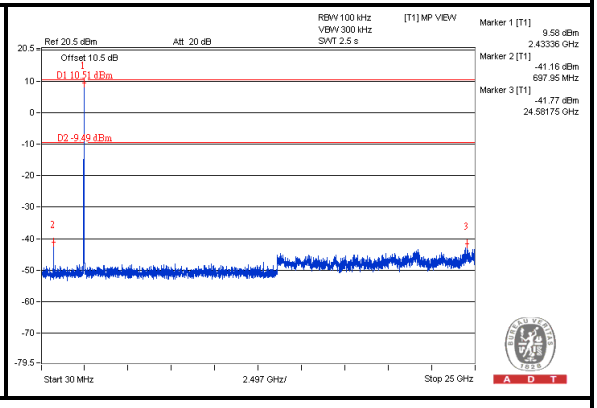
CH 1



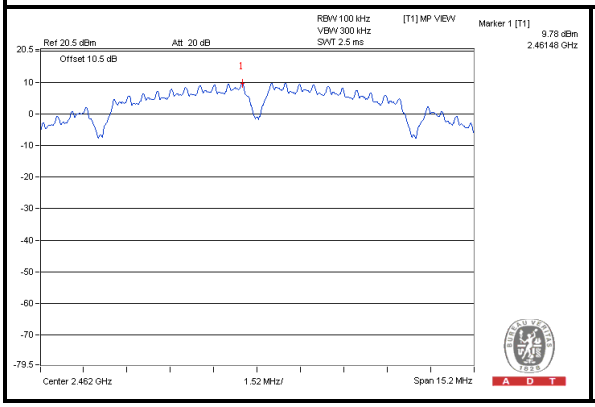


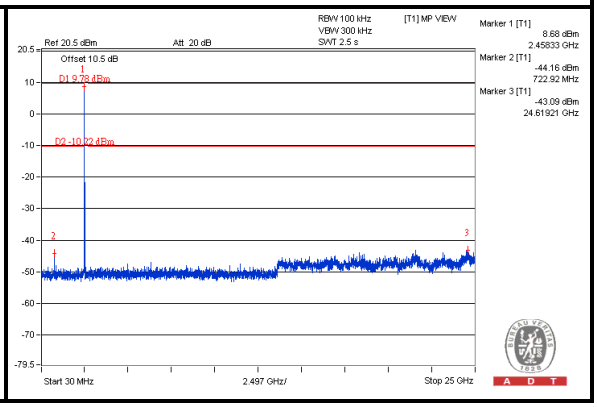
CH 6





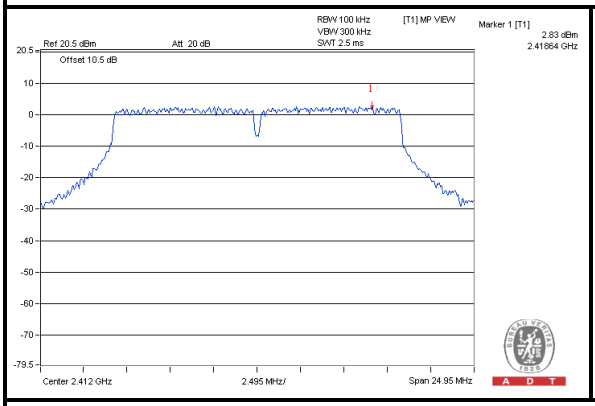
CH 11

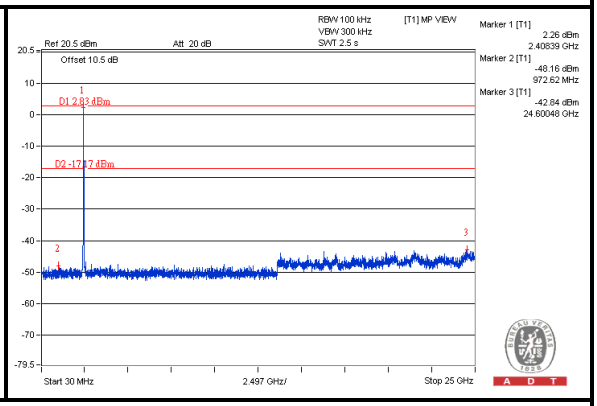




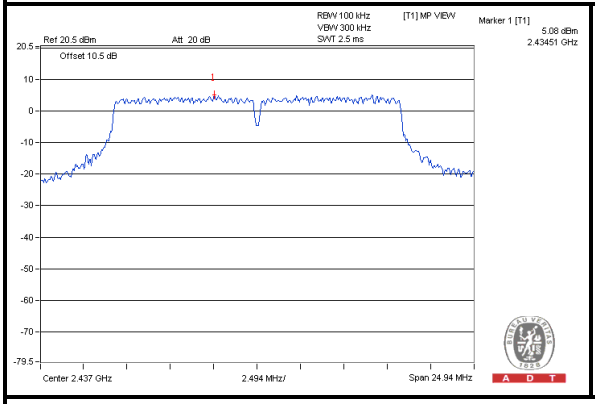
802.11g:

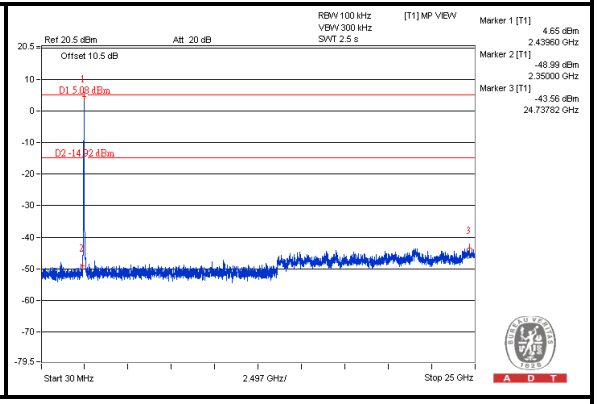
CH 1



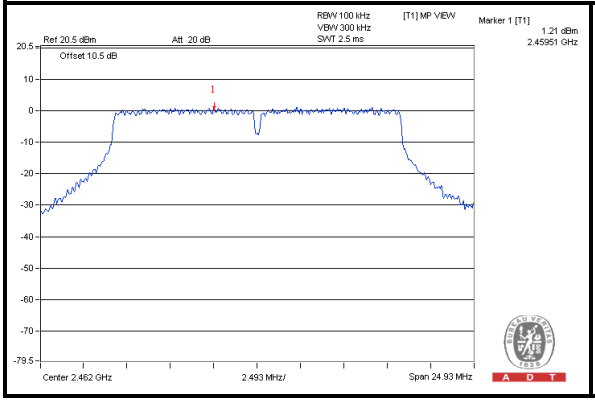


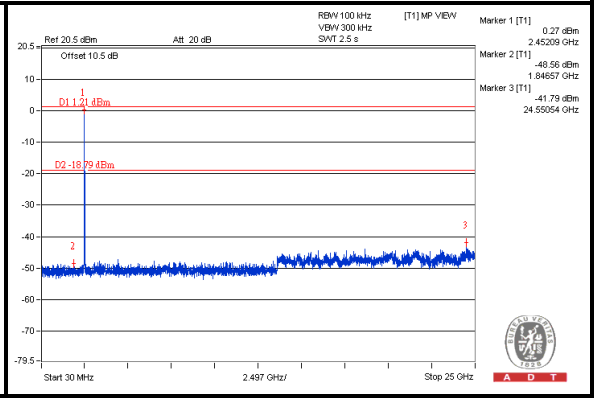
CH 6





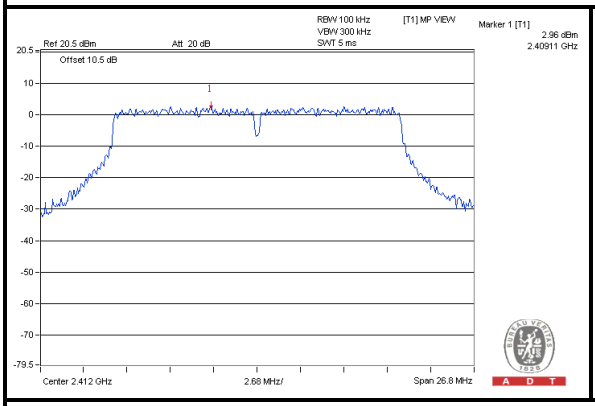
CH 11

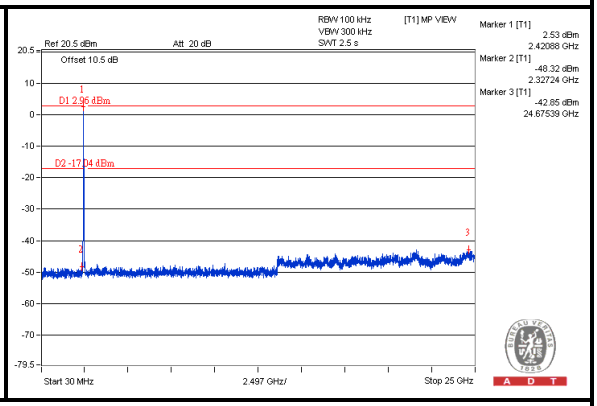




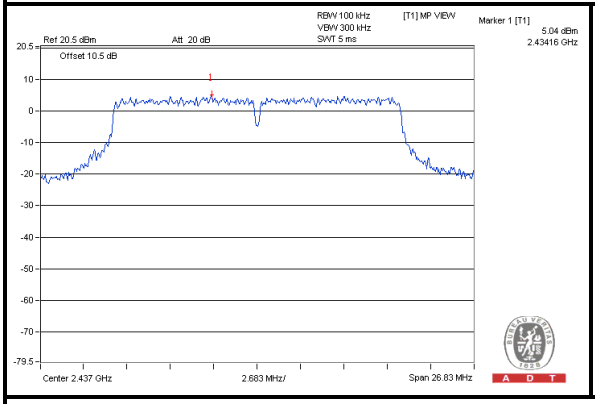
802.11n (HT20):

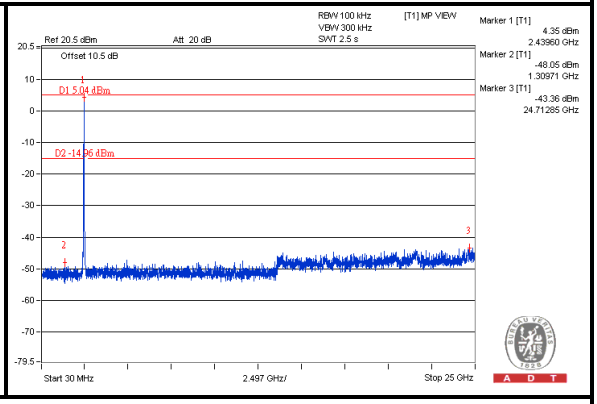
CH 1



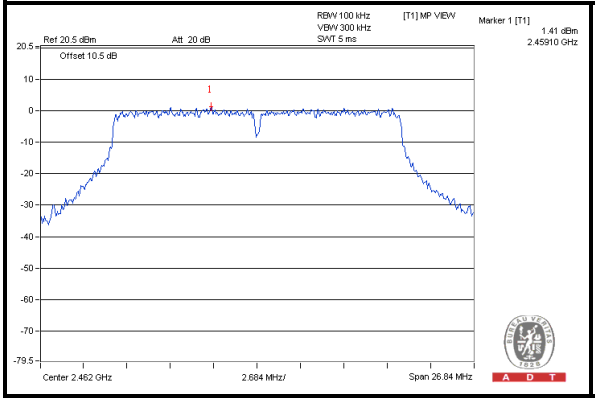


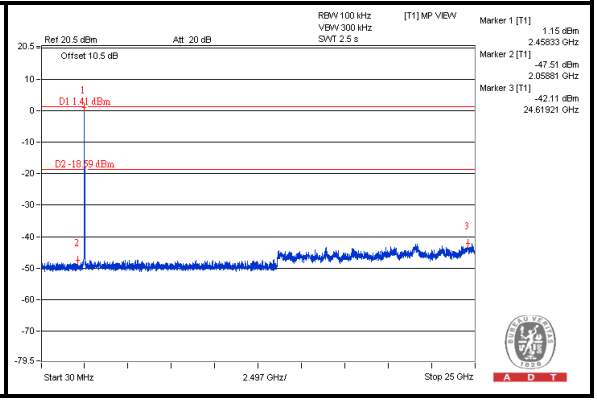
CH 6





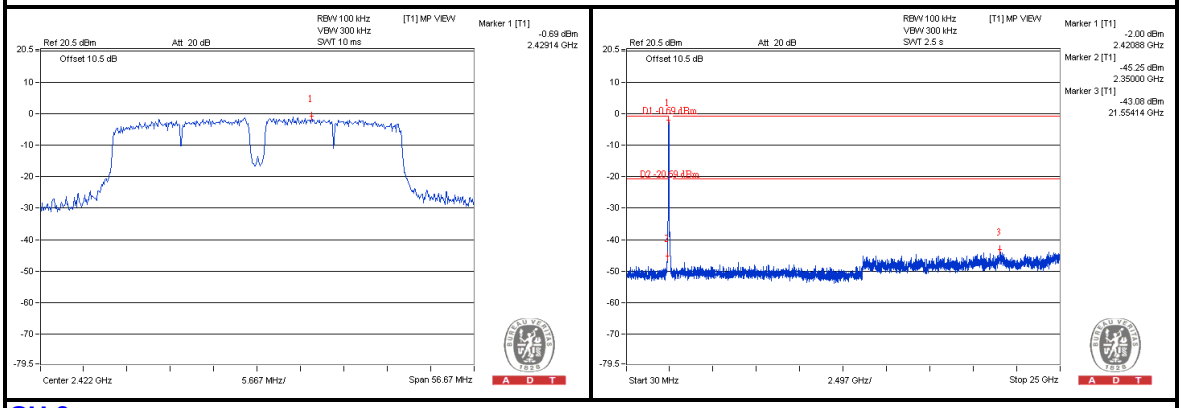
CH 11



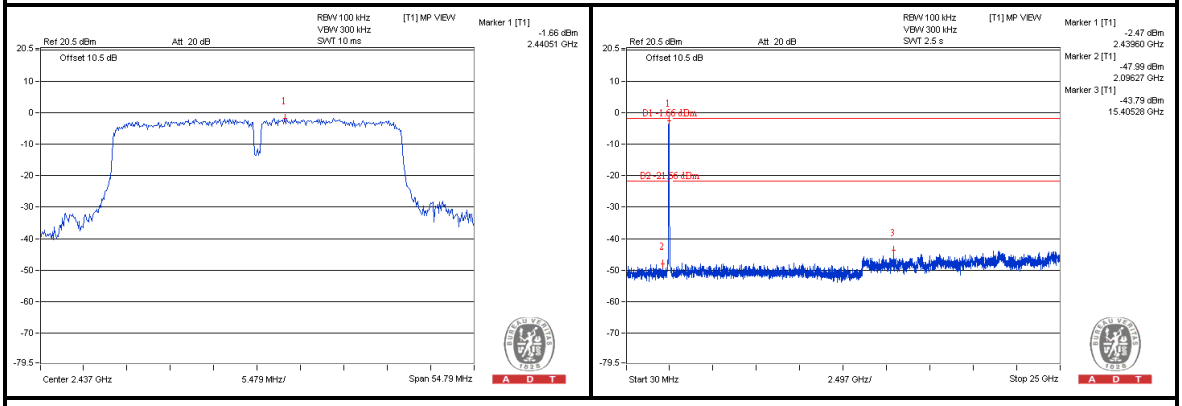


802.11n (HT40):

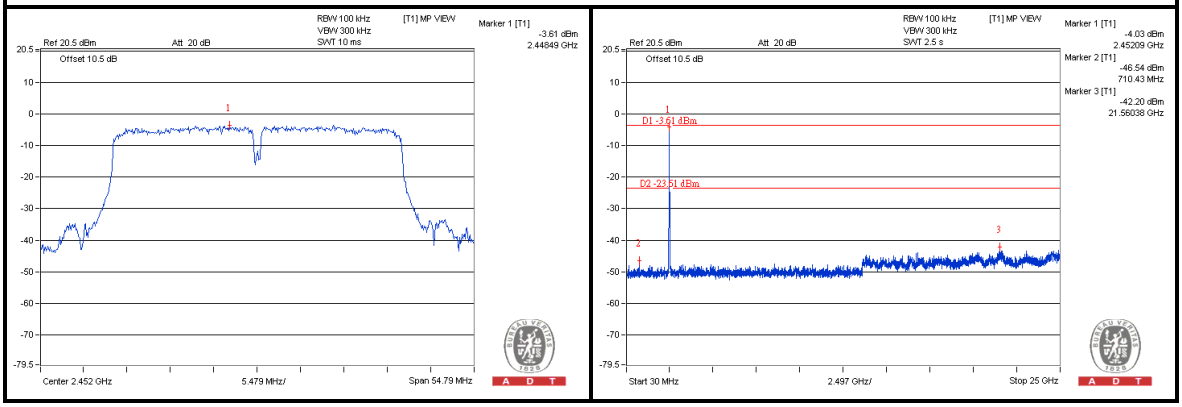
CH 3



CH 6



CH 9



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

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 24, 2012	Sep. 23, 2013
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	8487731004	Oct. 29, 2012	Oct. 28, 2013
RF Cable (JYEBAO)	5DFB	COACAB-001	May 27, 2013	May 26, 2014
50 ohms Terminator	50	3	Oct. 16, 2012	Oct. 15, 2013
Software ADT	BV ADT_Cond_V7.3.7 .3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3 The VCCI Con A Registration No. is C-817.
4. Tested Date: Aug. 07, 2013

5.1.3 TEST PROCEDURES

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

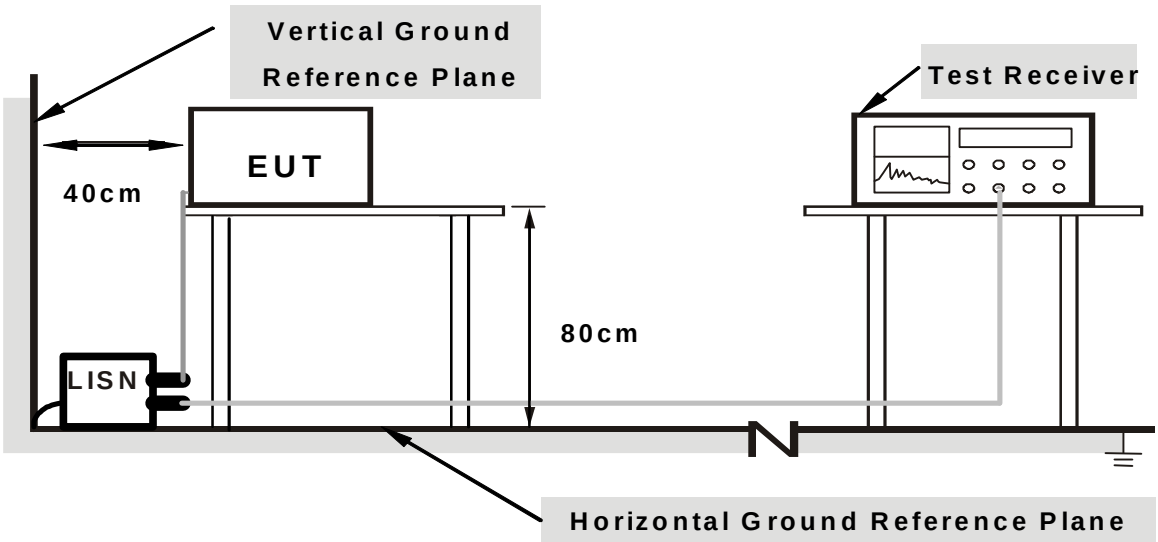
NOTE:

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



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

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

5.1.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

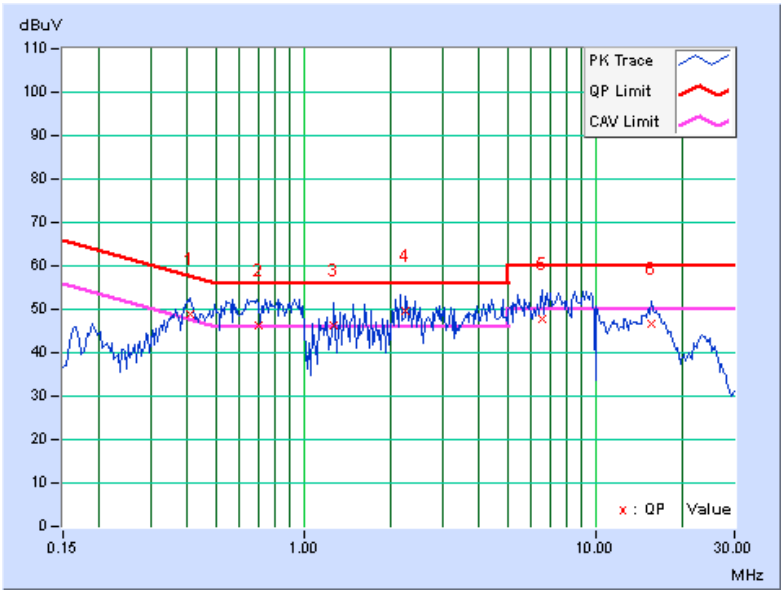
5.1.7 TEST RESULTS (MODE 1)

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.40781	0.17	48.72	40.16	48.89	40.33	57.69	47.69	-8.80	-7.36
2	0.70037	0.19	46.22	36.48	46.41	36.67	56.00	46.00	-9.59	-9.33
3	1.26563	0.22	46.13	37.61	46.35	37.83	56.00	46.00	-9.65	-8.17
4	**2.24609**	**0.28**	**49.53**	**40.68**	**49.81**	**40.96**	**56.00**	**46.00**	**-6.19**	**-5.04**
5	6.55959	0.56	47.09	39.07	47.65	39.63	60.00	50.00	-12.35	-10.37
6	15.62500	1.13	45.40	37.76	46.53	38.89	60.00	50.00	-13.47	-11.11

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

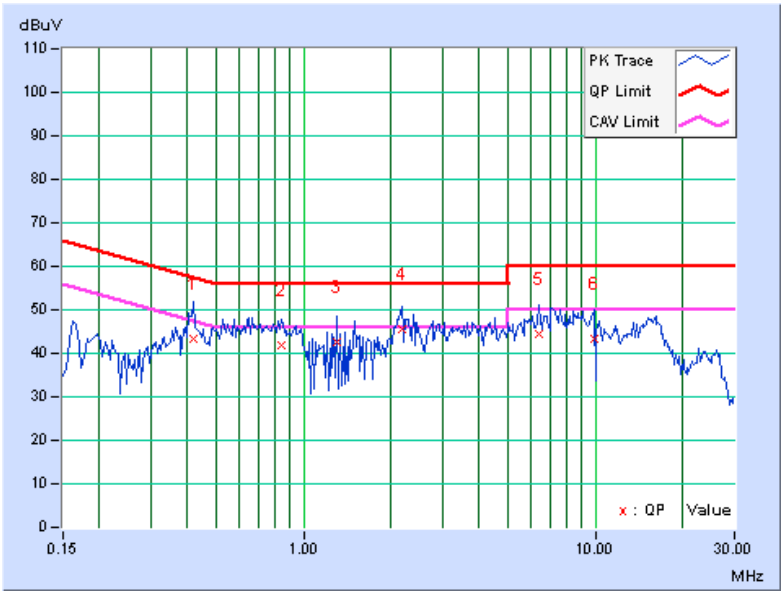


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.41953	0.20	43.28	34.02	43.48	34.22	57.46	47.46	-13.98	-13.24
2	0.84531	0.22	41.47	32.77	41.69	32.99	56.00	46.00	-14.31	-13.01
3	1.30859	0.25	42.49	33.96	42.74	34.21	56.00	46.00	-13.26	-11.79
4	2.17578	0.29	45.14	36.49	45.43	36.78	56.00	46.00	-10.57	-9.22
5	6.40234	0.54	44.03	35.88	44.57	36.42	60.00	50.00	-15.43	-13.58
6	9.91797	0.72	42.45	34.63	43.17	35.35	60.00	50.00	-16.83	-14.65

REMARKS:

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



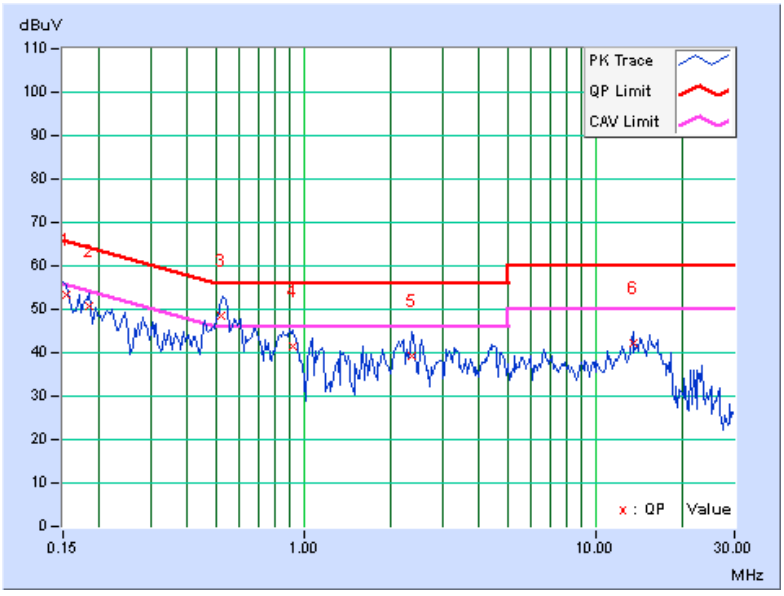
5.1.8 TEST RESULTS (MODE 2)

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15475	0.10	53.28	46.01	53.38	46.11	65.74	55.74	-12.36	-9.63
2	0.18516	0.11	50.49	42.27	50.60	42.38	64.25	54.25	-13.65	-11.87
3	0.52500	0.18	48.24	36.38	48.42	36.56	56.00	46.00	-7.58	-9.44
4	0.91563	0.20	41.14	30.75	41.34	30.95	56.00	46.00	-14.66	-15.05
5	2.34766	0.28	38.98	28.65	39.26	28.93	56.00	46.00	-16.74	-17.07
6	13.51172	1.00	41.12	33.29	42.12	34.29	60.00	50.00	-17.88	-15.71

REMARKS:

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

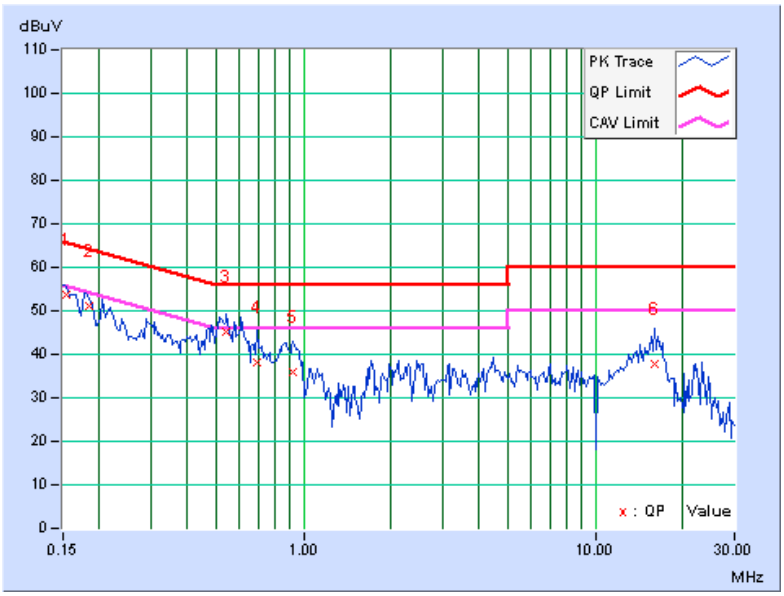


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15425	0.15	53.66	45.97	53.81	46.12	65.77	55.77	-11.96	-9.65
2	0.18369	0.15	51.04	43.07	51.19	43.22	64.32	54.32	-13.13	-11.10
3	0.54453	0.21	45.15	36.84	45.36	37.05	56.00	46.00	-10.64	-8.95
4	0.69688	0.21	37.82	29.15	38.03	29.36	56.00	46.00	-17.97	-16.64
5	0.92344	0.23	35.87	25.54	36.10	25.77	56.00	46.00	-19.90	-20.23
6	15.92812	1.00	36.93	26.87	37.93	27.87	60.00	50.00	-22.07	-22.13

REMARKS:

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



5.2 RADIATED AND BANDEDGE EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED AND BANDEDGE EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29,2013	Jan. 28,2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.05	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. 23 to 26, 2013

5.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

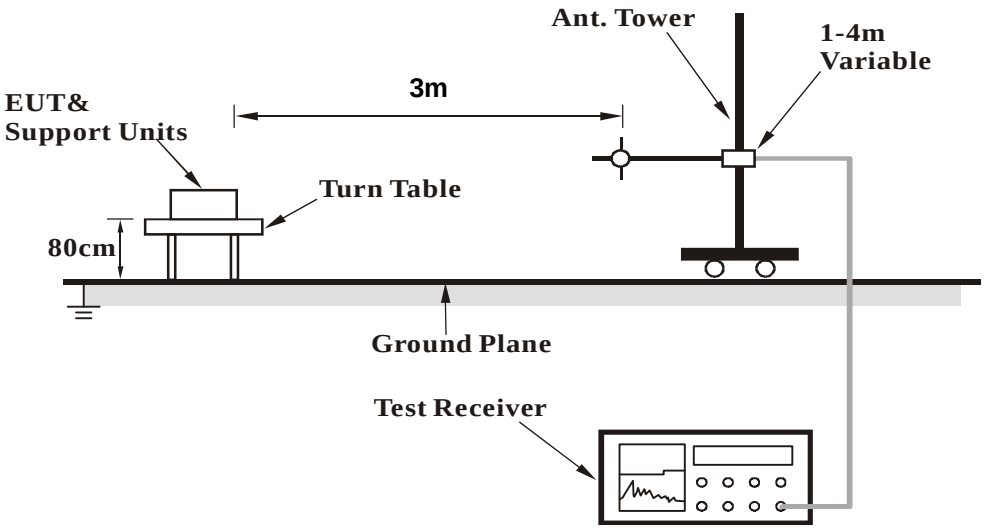
NOTE:

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

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11ac BW80

CHANNEL	TX Channel 155	**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	34.31	33.2 QP	40.0	-6.8	1.50 H	225	47.62	-14.44
2	122.86	30.4 QP	43.5	-13.1	1.50 H	60	45.78	-15.34
3	162.26	29.9 QP	43.5	-13.6	1.50 H	67	43.20	-13.28
4	194.59	28.2 QP	43.5	-15.3	1.50 H	54	44.58	-16.36
5	580.15	32.3 QP	46.0	-13.7	1.50 H	36	38.41	-6.11
6	917.31	30.0 QP	46.0	-16.0	1.50 H	18	29.85	0.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	37.50	33.4 QP	40.0	-6.6	1.00 V	340	47.38	-13.99
2	112.00	35.8 QP	43.5	-7.7	1.00 V	0	52.00	-16.23
3	334.74	29.3 QP	46.0	-16.7	1.50 V	265	41.03	-11.72
4	641.07	32.7 QP	46.0	-13.3	1.50 V	2	37.25	-4.58
5	719.76	30.2 QP	46.0	-15.8	1.50 V	350	33.96	-3.73
6	774.36	29.2 QP	46.0	-16.9	1.50 V	307	31.24	-2.09

REMARKS:

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

ABOVE 1GHz DATA

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5460.00	53.3 PK	74.0	-20.7	1.29 H	29	43.65	9.65
2	5460.00	41.9 AV	54.0	-12.1	1.29 H	29	32.25	9.65
3	*5745.00	106.9 PK			1.29 H	29	96.48	10.42
4	*5745.00	97.5 AV			1.29 H	29	87.08	10.42
5	11490.00	58.6 PK	74.0	-15.4	1.00 H	356	41.34	17.26
6	11490.00	46.3 AV	54.0	-7.7	1.00 H	356	29.04	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	5460.00	53.9 PK	74.0	-20.1	1.05 V	341	44.25	9.65
2	5460.00	42.2 AV	54.0	-11.8	1.05 V	341	32.55	9.65
3	*5745.00	117.1 PK			1.05 V	341	106.68	10.42
4	*5745.00	107.6 AV			1.05 V	341	97.18	10.42
5	11490.00	63.1 PK	74.0	-10.9	1.53 V	40	45.84	17.26
6	11490.00	51.3 AV	54.0	-2.7	1.53 V	40	34.04	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.

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	5460.00	53.6 PK	74.0	-20.4	1.51 H	30	43.95	9.65
2	5460.00	42.2 AV	54.0	-11.8	1.51 H	30	32.55	9.65
3	*5785.00	105.4 PK			1.51 H	30	94.91	10.49
4	*5785.00	96.9 AV			1.51 H	30	86.41	10.49
5	11570.00	58.6 PK	74.0	-15.4	1.18 H	195	41.31	17.29
6	11570.00	46.6 AV	54.0	-7.4	1.18 H	195	29.31	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	5460.00	53.4 PK	74.0	-20.6	1.05 V	353	43.75	9.65
2	5460.00	42.0 AV	54.0	-12.0	1.05 V	353	32.35	9.65
3	*5785.00	117.1 PK			1.05 V	353	106.61	10.49
4	*5785.00	107.7 AV			1.05 V	353	97.21	10.49
5	11570.00	62.6 PK	74.0	-11.4	1.30 V	221	45.31	17.29
6	11570.00	51.1 AV	54.0	-2.9	1.30 V	221	33.81	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.

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	52.7 PK	74.0	-21.3	1.57 H	20	43.05	9.65
2	5460.00	41.4 AV	54.0	-12.6	1.57 H	20	31.75	9.65
3	*5825.00	105.9 PK			1.57 H	20	95.25	10.65
4	*5825.00	97.3 AV			1.57 H	20	86.65	10.65
5	11650.00	58.5 PK	74.0	-15.5	1.14 H	209	40.84	17.66
6	11650.00	46.7 AV	54.0	-7.3	1.14 H	209	29.04	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	53.8 PK	74.0	-20.2	1.04 V	342	44.15	9.65
2	5460.00	42.2 AV	54.0	-11.8	1.04 V	342	32.55	9.65
3	*5825.00	116.5 PK			1.04 V	342	105.85	10.65
4	*5825.00	107.2 AV			1.04 V	342	96.55	10.65
5	11650.00	64.9 PK	74.0	-9.1	1.60 V	217	47.24	17.66
6	**11650.00**	**53.1 AV**	**54.0**	**-0.9**	**1.60 V**	**217**	**35.44**	**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.

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5460.00	53.3 PK	74.0	-20.7	1.30 H	43	43.65	9.65
2	5460.00	41.9 AV	54.0	-12.1	1.30 H	43	32.25	9.65
3	*5745.00	107.0 PK			1.30 H	43	96.58	10.42
4	*5745.00	97.8 AV			1.30 H	43	87.38	10.42
5	11490.00	58.4 PK	74.0	-15.6	1.04 H	352	41.14	17.26
6	11490.00	46.2 AV	54.0	-7.8	1.04 H	352	28.94	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	5460.00	53.7 PK	74.0	-20.3	1.02 V	357	44.05	9.65
2	5460.00	42.3 AV	54.0	-11.7	1.02 V	357	32.65	9.65
3	*5745.00	117.3 PK			1.02 V	357	106.88	10.42
4	*5745.00	107.1 AV			1.02 V	357	96.68	10.42
5	11490.00	64.2 PK	74.0	-9.8	1.43 V	228	46.94	17.26
6	11490.00	51.7 AV	54.0	-2.3	1.43 V	228	34.44	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.

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	5460.00	52.8 PK	74.0	-21.2	1.55 H	19	43.15	9.65
2	5460.00	41.6 AV	54.0	-12.4	1.55 H	19	31.95	9.65
3	*5785.00	105.8 PK			1.55 H	19	95.31	10.49
4	*5785.00	97.1 AV			1.55 H	19	86.61	10.49
5	11570.00	58.9 PK	74.0	-15.1	1.14 H	190	41.61	17.29
6	11570.00	46.9 AV	54.0	-7.1	1.14 H	190	29.61	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	5460.00	53.7 PK	74.0	-20.3	1.04 V	332	44.05	9.65
2	5460.00	41.9 AV	54.0	-12.1	1.04 V	332	32.25	9.65
3	*5785.00	117.8 PK			1.04 V	332	107.31	10.49
4	*5785.00	107.4 AV			1.04 V	332	96.91	10.49
5	11570.00	64.7 PK	74.0	-9.3	1.60 V	227	47.41	17.29
6	11570.00	51.8 AV	54.0	-2.2	1.60 V	227	34.51	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.

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	52.6 PK	74.0	-21.4	1.51 H	35	42.95	9.65
2	5460.00	41.4 AV	54.0	-12.6	1.51 H	35	31.75	9.65
3	*5825.00	106.0 PK			1.51 H	35	95.35	10.65
4	*5825.00	97.3 AV			1.51 H	35	86.65	10.65
5	11650.00	58.9 PK	74.0	-15.1	1.18 H	200	41.24	17.66
6	11650.00	46.8 AV	54.0	-7.2	1.18 H	200	29.14	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	5460.00	54.1 PK	74.0	-19.9	1.05 V	341	44.45	9.65
2	5460.00	42.2 AV	54.0	-11.8	1.05 V	341	32.55	9.65
3	*5825.00	117.2 PK			1.05 V	341	106.55	10.65
4	*5825.00	107.0 AV			1.05 V	341	96.35	10.65
5	11650.00	64.9 PK	74.0	-9.1	1.61 V	216	47.24	17.66
6	11650.00	52.5 AV	54.0	-1.5	1.61 V	216	34.84	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.

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	53.2 PK	74.0	-20.8	1.31 H	25	43.55	9.65
2	5460.00	41.6 AV	54.0	-12.4	1.31 H	25	31.95	9.65
3	*5755.00	104.1 PK			1.31 H	25	93.67	10.43
4	*5755.00	94.3 AV			1.31 H	25	83.87	10.43
5	11510.00	58.9 PK	74.0	-15.1	1.15 H	197	41.67	17.23
6	11510.00	46.5 AV	54.0	-7.5	1.15 H	197	29.27	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	5460.00	54.0 PK	74.0	-20.0	1.08 V	340	44.35	9.65
2	5460.00	42.1 AV	54.0	-11.9	1.08 V	340	32.45	9.65
3	*5755.00	114.7 PK			1.08 V	340	104.27	10.43
4	*5755.00	104.4 AV			1.08 V	340	93.97	10.43
5	11510.00	62.3 PK	74.0	-11.7	1.65 V	206	45.07	17.23
6	11510.00	50.4 AV	54.0	-3.6	1.65 V	206	33.17	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.

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	5460.00	52.9 PK	74.0	-21.1	1.32 H	10	43.25	9.65
2	5460.00	41.5 AV	54.0	-12.5	1.32 H	10	31.85	9.65
3	*5795.00	103.9 PK			1.32 H	10	93.40	10.50
4	*5795.00	94.3 AV			1.32 H	10	83.80	10.50
5	11590.00	59.0 PK	74.0	-15.0	1.15 H	199	41.69	17.31
6	11590.00	46.5 AV	54.0	-7.5	1.15 H	199	29.19	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	5460.00	53.7 PK	74.0	-20.3	1.04 V	341	44.05	9.65
2	5460.00	41.9 AV	54.0	-12.1	1.04 V	341	32.25	9.65
3	*5795.00	113.8 PK			1.04 V	341	103.30	10.50
4	*5795.00	103.8 AV			1.04 V	341	93.30	10.50
5	11590.00	63.1 PK	74.0	-10.9	1.60 V	226	45.79	17.31
6	11590.00	50.6 AV	54.0	-3.4	1.60 V	226	33.29	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.

802.11ac(VHT80)

CHANNEL	TX Channel 155	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5460.00	53.2 PK	74.0	-20.8	1.33 H	30	43.55	9.65
2	5460.00	42.0 AV	54.0	-12.0	1.33 H	30	32.35	9.65
3	*5775.00	101.8 PK			1.33 H	30	91.33	10.47
4	*5775.00	92.2 AV			1.33 H	30	81.73	10.47
5	11550.00	59.3 PK	74.0	-14.7	1.14 H	198	42.03	17.27
6	11550.00	46.7 AV	54.0	-7.3	1.14 H	198	29.43	17.27
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5460.00	53.3 PK	74.0	-20.7	1.06 V	341	43.65	9.65
2	5460.00	41.7 AV	54.0	-12.3	1.06 V	341	32.05	9.65
3	*5775.00	111.9 PK			1.06 V	341	101.43	10.47
4	*5775.00	102.3 AV			1.06 V	341	91.83	10.47
5	11550.00	59.5 PK	74.0	-14.5	1.63 V	216	42.23	17.27
6	11550.00	48.4 AV	54.0	-5.6	1.63 V	216	31.13	17.27

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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. 21, 2013

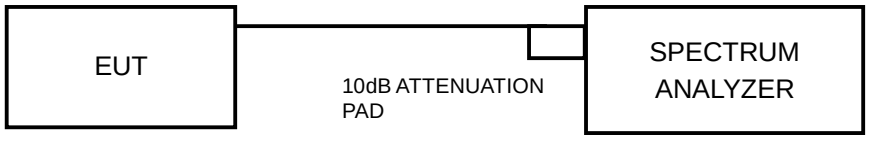
5.3.3 TEST PROCEDURE

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

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

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

5.3.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.55	0.5	PASS
157	5785	16.57	0.5	PASS
165	5825	16.57	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.83	0.5	PASS
157	5785	17.81	0.5	PASS
165	5825	17.80	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	36.60	0.5	PASS
159	5795	36.55	0.5	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
155	5775	76.62	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)

5.4.2 INSTRUMENTS

For 11ac (VHT80) test:

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. 21, 2013

For other test:

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. 21, 2013

5.4.3 TEST PROCEDURES

For 11ac (VHT80) test:

Follow FCC KDB 558074 DTS test procedure:

Measurement Procedure Peak 2

1. Set the RBW = 1 MHz.
2. Set the VBW ≥ 3 RBW.
3. Set the span ≥ 1.5 x DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the DTS bandwidth edges.

For other test:

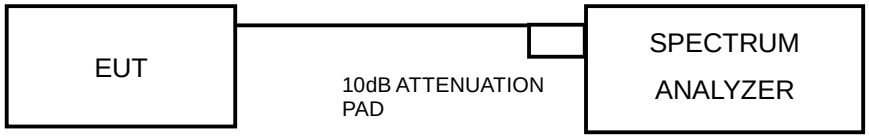
Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

5.4.4 DEVIATION FROM TEST STANDARD

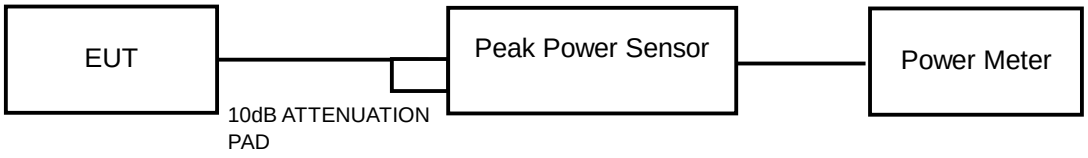
No deviation.

5.4.5 TEST SETUP

For 11ac (VHT80) test:



For other test:



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

5.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	176.198	22.46	30	PASS
157	5785	189.234	22.77	30	PASS
165	5825	194.536	22.89	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	132.434	21.22	30	PASS
157	5785	187.068	22.72	30	PASS
165	5825	192.752	22.85	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	171.002	22.33	30	PASS
159	5795	179.061	22.53	30	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
155	5775	532.108	27.26	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

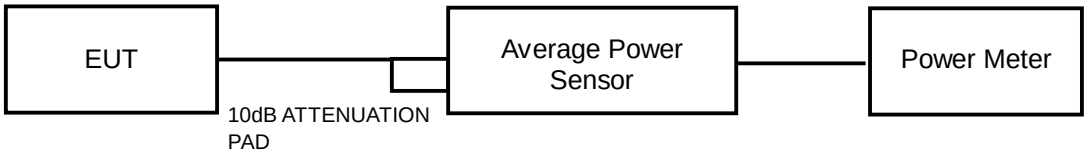
Note:

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. 21, 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

5.5.6 TEST RESULTS

802.11a

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	133.352	21.25
157	5785	137.088	21.37
165	5825	138.995	21.43

802.11n (HT20)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	112.720	20.52
157	5785	132.739	21.23
165	5825	133.968	21.27

802.11n (HT40)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
151	5755	102.802	20.12
159	5795	126.474	21.02

802.11ac (VHT80)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
155	5775	79.799	19.02

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. 21, 2013

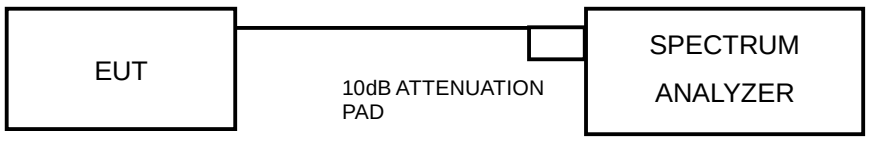
5.6.3 TEST PROCEDURE

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

5.6.7 TEST RESULTS

802.11a

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-6.06	8	PASS
157	5785	-6.22	8	PASS
165	5825	-6.29	8	PASS

802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-6.01	8	PASS
157	5785	-6.71	8	PASS
165	5825	-6.61	8	PASS

802.11n (HT40)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	-6.75	8	PASS
159	5795	-9.36	8	PASS

802.11ac (VHT80)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
155	5775	-13.00	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. 21, 2013

5.7.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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

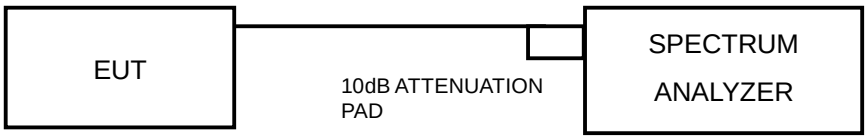
Measurement Procedure –Unwanted Emission Level

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

5.7.4 DEVIATION FROM TEST STANDARD

No deviation

5.7.5 TEST SETUP



5.7.6 EUT OPERATING CONDITION

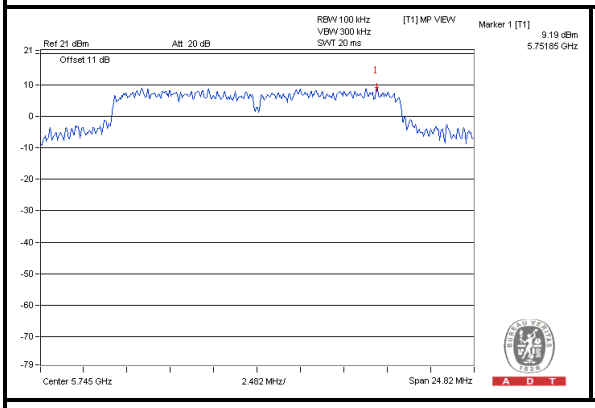
Same as Item 4.3.6

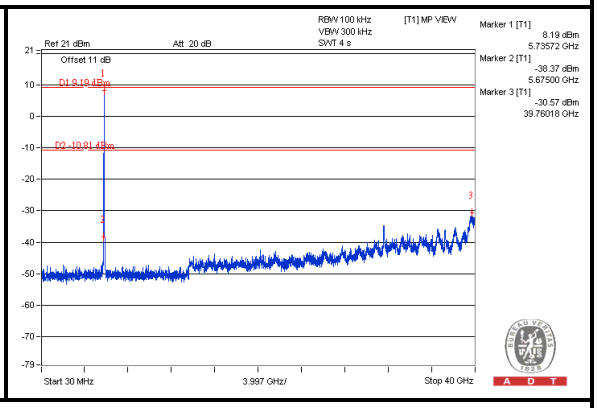
5.7.7 TEST RESULTS

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.

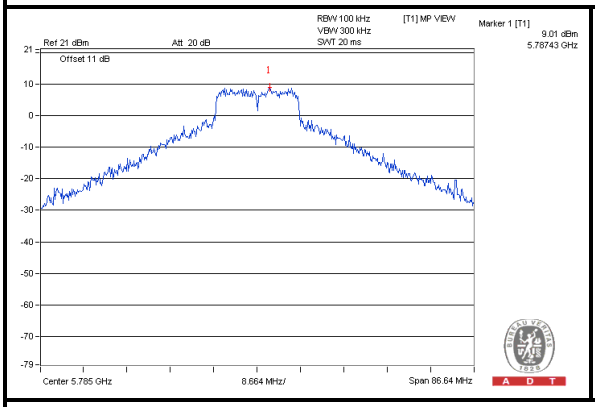
802.11a

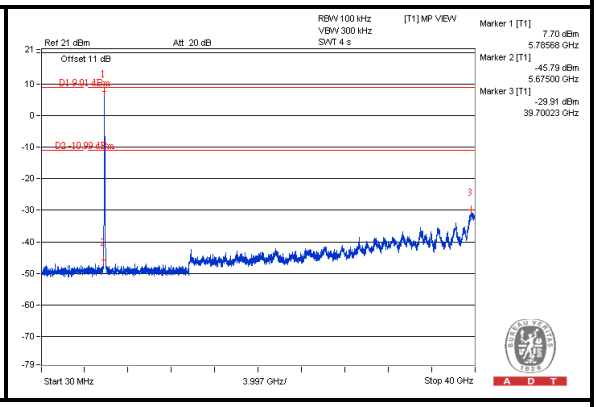
CH 149



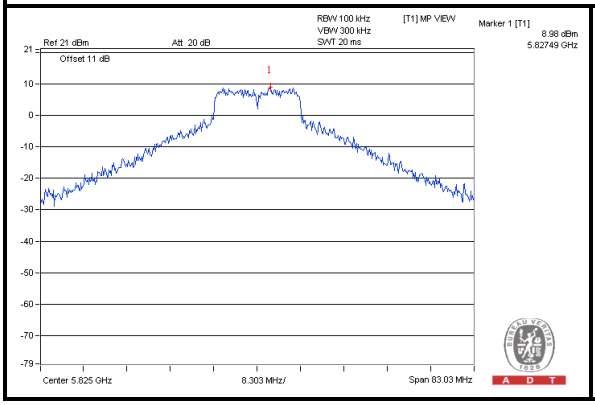


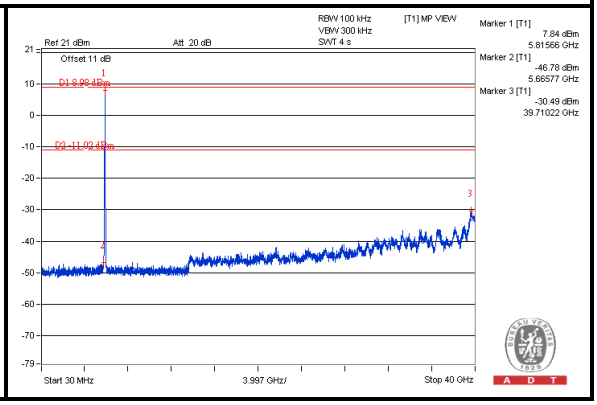
CH 157





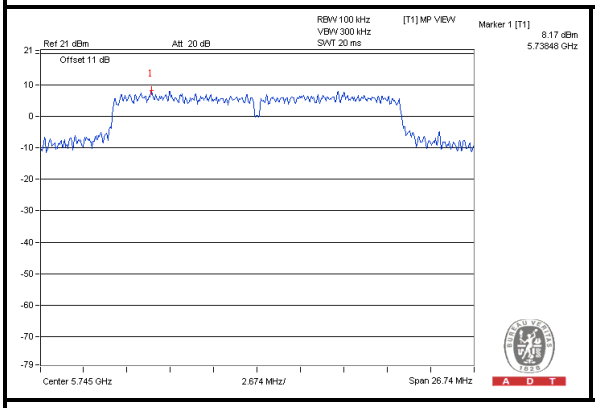
CH 165

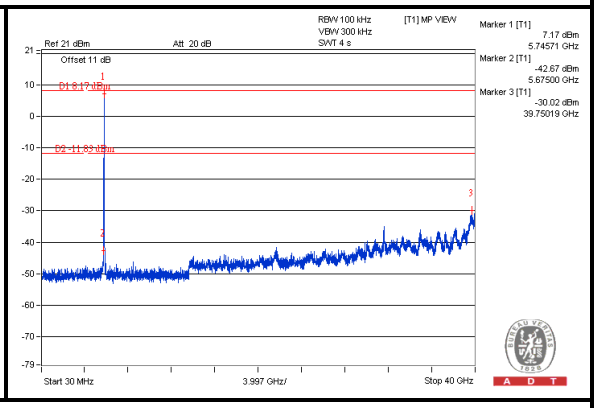




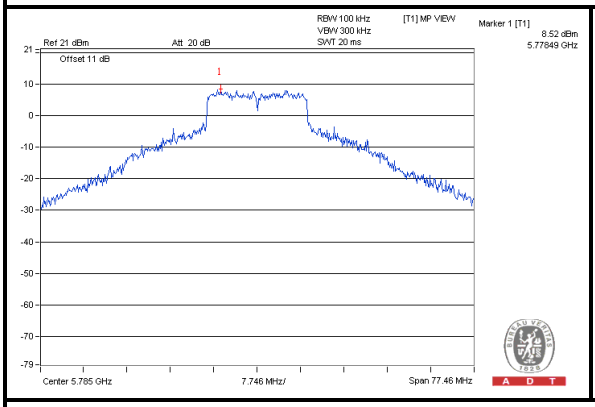
802.11n (HT20):

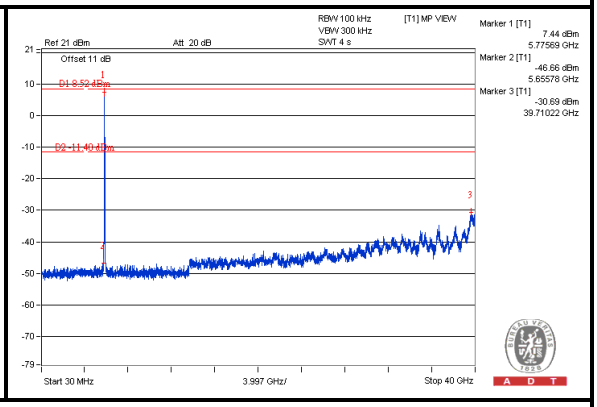
CH 149



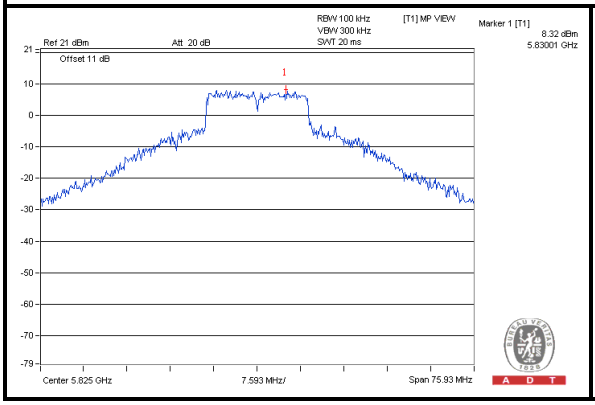


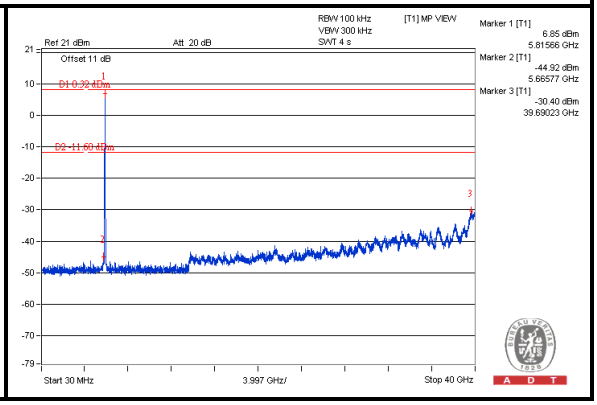
CH 157





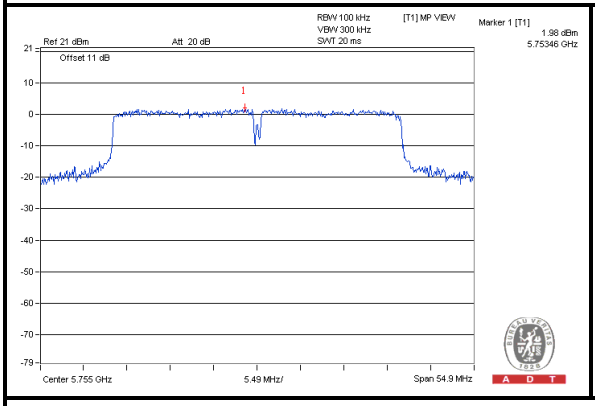
CH 165

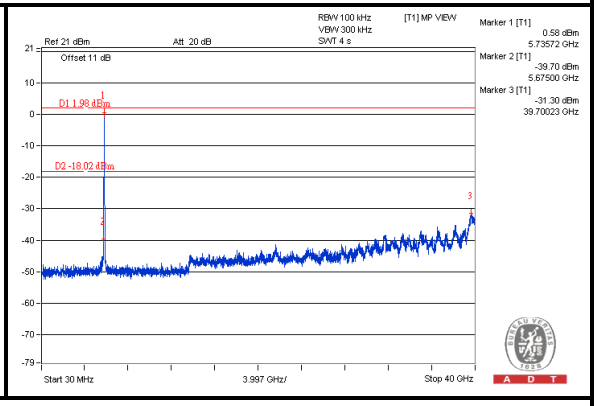




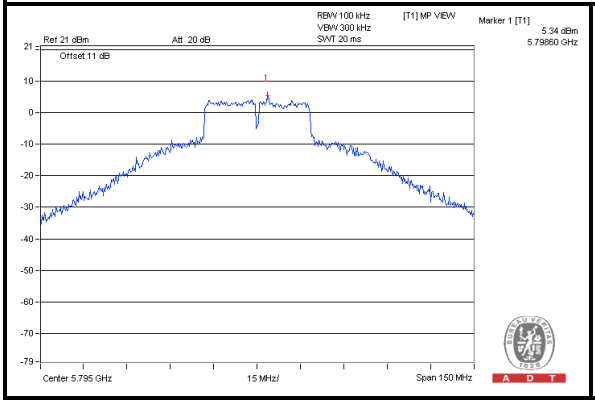
802.11n (HT40):

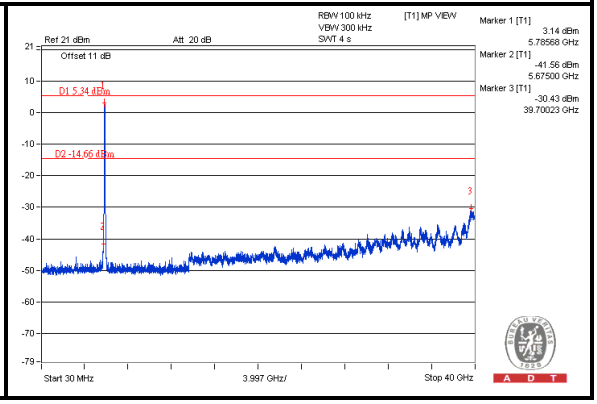
CH 151





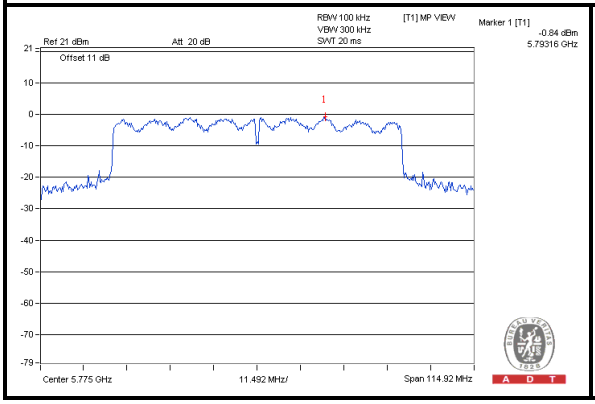
CH 159

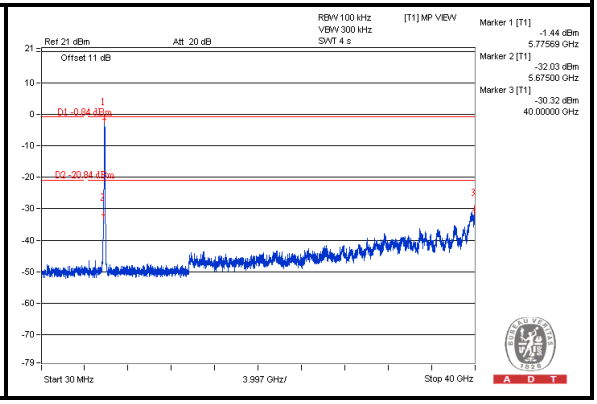




802.11ac (VHT80):

CH 155





6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. INFORMATION ON THE TESTING LABORATORIES

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

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

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

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

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

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

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

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

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

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