FCC TEST REPORT (15.407)

REPORT NO.:	RF130822E12-1
MODEL NO.:	DIR-816L
FCC ID:	KA2IR816LA1
RECEIVED:	Aug. 22, 2013
TESTED:	Aug. 22 to 28, 2013
ISSUED:	Sep. 05, 2013
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.

Table of Contents

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130822E12-1	Original release	Sep. 05, 2013

1. CERTIFICATION

PRODUCT:	Wireless AC750 Dual Band Cloud Router
BRAND NAME:	D-Link
MODEL NO.:	DIR-816L
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	D-Link Corporation
TESTED:	Aug. 22 to 28, 2013
STANDARDS:	**FCC Part 15, Subpart E (Section 15.407)**
	ANSI C63.10-2009

The above equipment (Model: DIR-816L) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *Sep. 05, 2013*
(Lori Chung, Specialist)

APPROVED BY : _____ , **DATE:** *Sep. 05, 2013*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -5.66dB at 0.48594MHz
15.407(b/1/2/3) (b)(5)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.8dB at 5150.00MHz.
15.407(a/1/2/3)	Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is I-pex not a standard connector.

NOTE: For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.25GHz. For the 2400 ~ 2483.5MHz and 5.725~5.850GHz 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)	5.46 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 AC750 Dual Band Cloud Router
MODEL NO.	DIR-816L
POWER SUPPLY	DC 12V from 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 300Mbps 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: 41.020mW 802.11n (HT20): 41.591mW 802.11n (HT40): 48.865mW 802.11ac (VHT80): 38.548mW **For 15.247 (2.4GHz)** 802.11b: 113.767mW 802.11g: 893.330mW 802.11n (HT20): 887.774mW 802.11n (HT40): 448.126mW **For 15.247 (5GHz)** 802.11a: 257.632mW 802.11n (HT20): 253.513mW 802.11n (HT40): 231.739mW 802.11ac (VHT80): 381.944mW
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 emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.

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

Set 1							
Ant.	Transmitter Circuit	Model	Gain (dBi) (Include cable loss)	Antenna Type	Connecter Type	Frequency range (MHz to MHz)	Cable Length (mm)
A	Chain (1)	290-20061	2.64	Dipole	NA	2400~2500	170
	Chain (0)		2.67	Dipole	I-pex	5150~5250	60
			3.67			5725~5850	
B	Chain (0)	290-20068	3.93	Dipole	NA	2400~2500	90
Set 2							
Ant.	Transmitter Circuit	Model	Gain (dBi) (Include cable loss)	Antenna Type	Connecter Type	Frequency range (MHz to MHz)	Cable Length (mm)
A	Chain (1)	290-20061	2.64	Dipole	NA	2400~2500	170
	Chain (0)		2.67	Dipole	I-pex	5150~5250	60
			3.67			5725~5850	
B	Chain (0)	290-20065	3.0	Dipole	NA	2400~2500	90
From the above antennas, antenna set 1 was selected for the test and its data was recorded in this report.							

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

No	Brand	Model No.	Spec.
1	D-Link	AMS9-1201000FU2	Input: 100-240V, 0.5A, 50/60Hz Output: 12V, 1A DC output cable (Unshielded, 1.5m)
2	D-Link	F12W3-120100SPAU	Input: 100-240V, 0.3A, 50/60Hz Output: 12V, 1A DC output cable (Unshielded, 1.5m)
Note: 1. For radiated emissions test, the EUT was pre-tested with above Adapter, the worst case was found in Adapter 2. Therefore only the test data of the Adapter 2 was recorded in this report.			

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

MODULATION MODE	TX/RX FUNCTION
802.11a	1TX/1RX
802.11b	2TX/2RX
802.11g	2TX/2RX
2.4GHz: 802.11n (HT20)	2TX/2RX
2.4GHz:802.11n (HT40)	2TX/2RX
5GHz: 802.11n (HT20)	1TX/1RX
5GHz:802.11n (HT40)	1TX/1RX
802.11ac (VHT20)	1TX/1RX
802.11ac (VHT40)	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 3.3)

6. For 2.4GHz: When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.

7. For 5GHz: When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.

8. When the EUT operating in 802.11ac, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 9.

9. 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 5150 ~ 5250MHz band:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

CHANNEL	FREQUENCY
36	5180 MHz
40	5200 MHz
44	5220 MHz
48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

CHANNEL	FREQUENCY
38	5190 MHz
46	5230 MHz

1 channel are provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
42	5210 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	
MODE 1	√	-	-	-	With adapter 1
MODE 2	√	√	√	√	With adapter 2

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

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted 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)
802.11n (HT40)	38 to 46	38	OFDM	BPSK	13.5

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT40)	38 to 46	38	OFDM	BPSK	13.5

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)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)	42	42	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)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)	42	42	OFDM	BPSK	29.3

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 63%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	25deg. C, 68%RH	120Vac, 60Hz	Tim Ho
RE≥1G	23deg. C, 67%RH	120Vac, 60Hz	Tim Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

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 E (15.407)

789033 D01 General UNII Test Procedures v01 r03

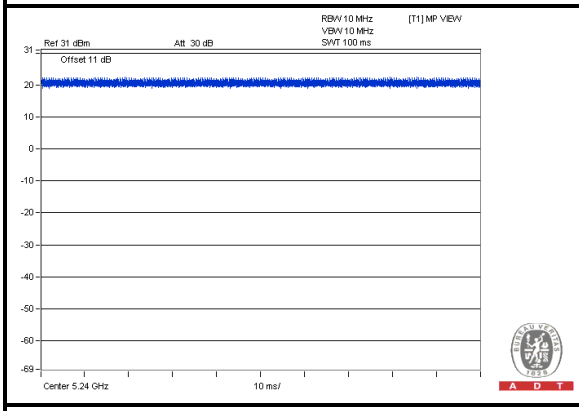
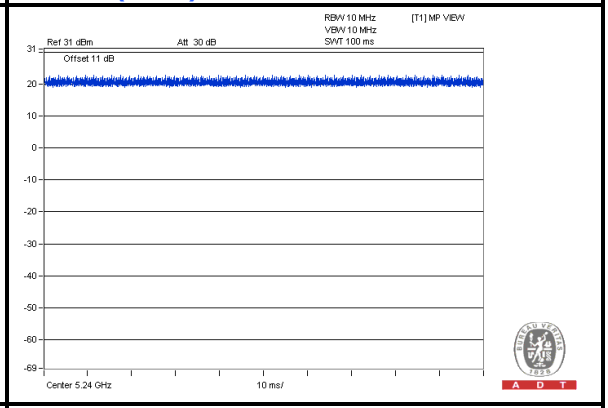
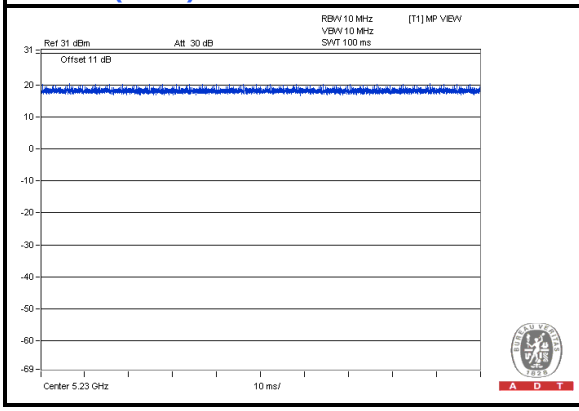
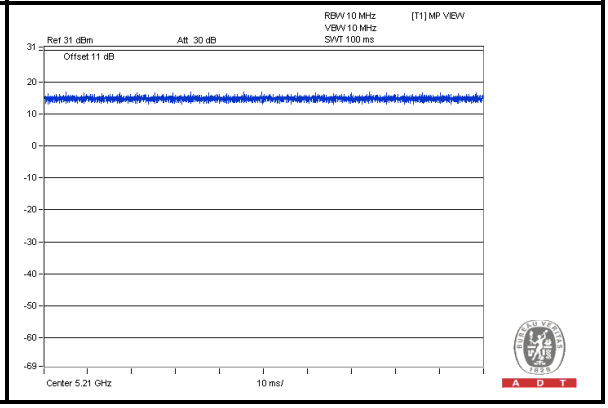
ANSI C63.10-2009

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 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is 100 %, duty factor is not required.

802.11a	802.11n (HT20)
	
802.11n (HT40)	**802.11ac (VHT80)**
	

3.5 DESCRIPTION OF SUPPORT UNITS

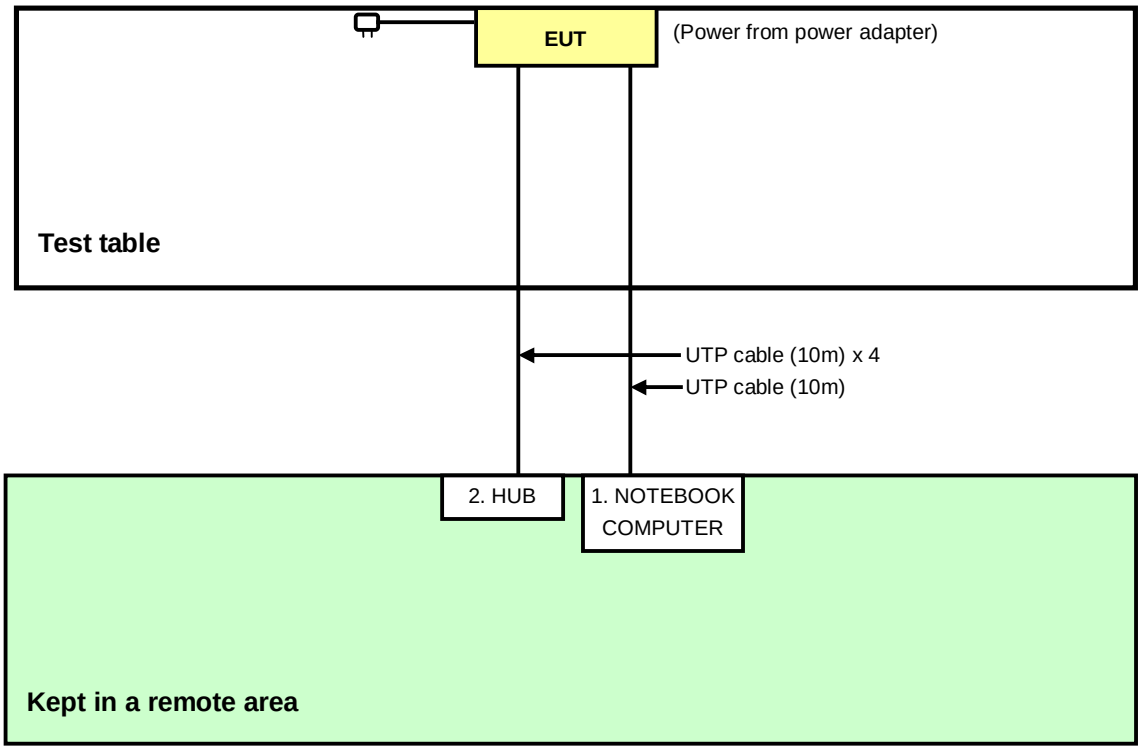
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

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

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).

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 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. 28, 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 level under (Limit – 20dB) was not recorded.

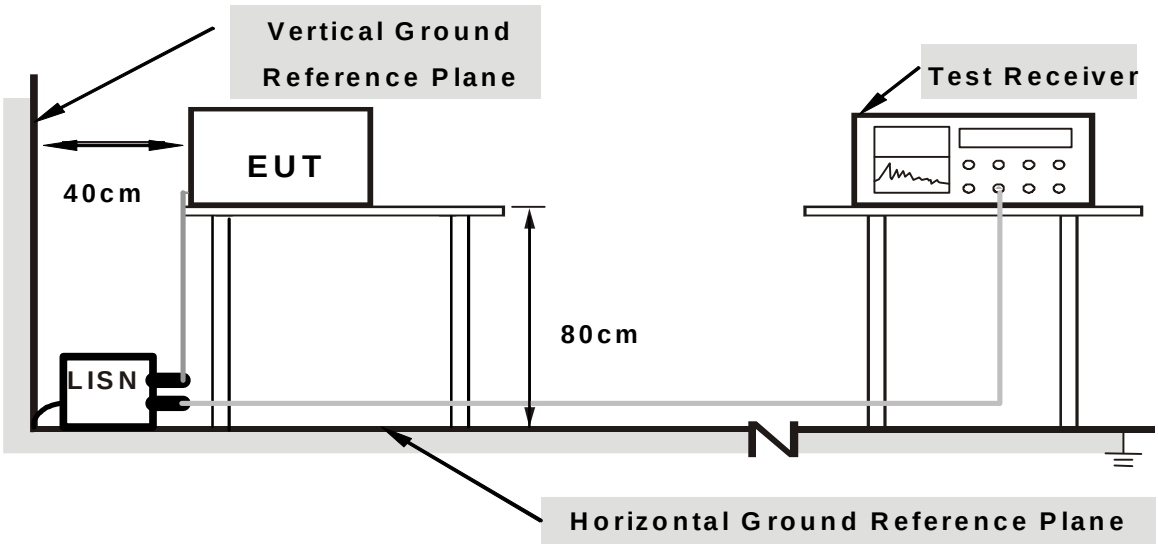
NOTE:

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

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

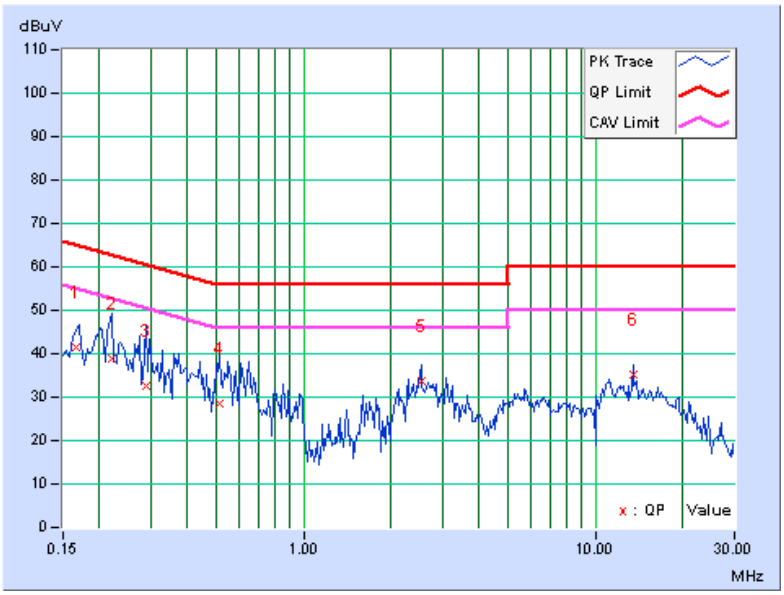
4.1.7 TEST RESULTS (MODE 1)

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

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	0.16553	0.13	41.29	38.52	41.42	38.65	65.18	55.18	-23.76	-16.53
2	0.22031	0.15	38.89	21.70	39.04	21.85	62.81	52.81	-23.77	-30.96
3	0.29063	0.17	32.45	16.77	32.62	16.94	60.51	50.51	-27.89	-33.57
4	0.51719	0.21	28.43	17.99	28.64	18.20	56.00	46.00	-27.36	-27.80
5	2.54688	0.36	33.38	24.04	33.74	24.40	56.00	46.00	-22.26	-21.60
6	13.50000	1.09	34.10	24.29	35.19	25.38	60.00	50.00	-24.81	-24.62

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

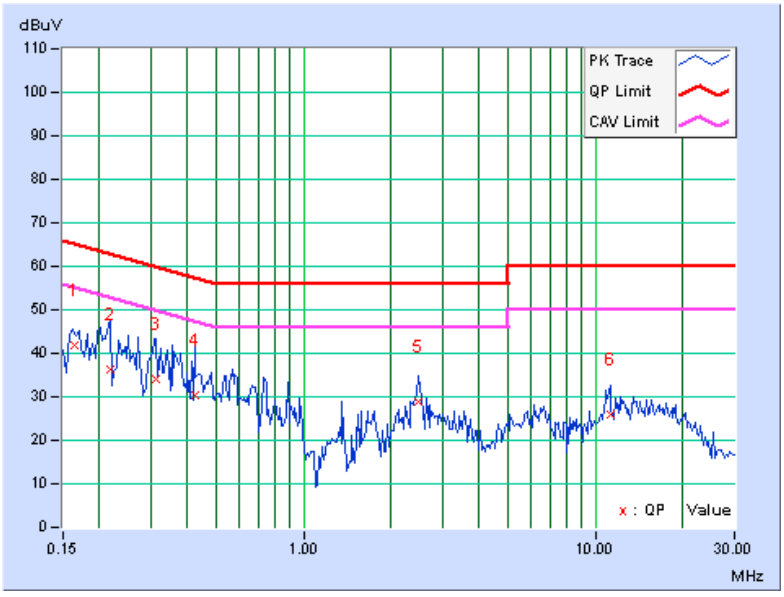


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

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	0.16484	0.11	41.67	38.70	41.78	38.81	65.22	55.22	-23.43	-16.40
2	0.21641	0.13	36.09	21.99	36.22	22.12	62.96	52.96	-26.74	-30.84
3	0.31406	0.16	33.73	11.37	33.89	11.53	59.86	49.86	-25.97	-38.33
4	0.42344	0.19	30.11	18.26	30.30	18.45	57.38	47.38	-27.08	-28.93
5	2.46484	0.31	28.55	19.39	28.86	19.70	56.00	46.00	-27.14	-26.30
6	11.24219	0.75	25.08	15.73	25.83	16.48	60.00	50.00	-34.17	-33.52

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



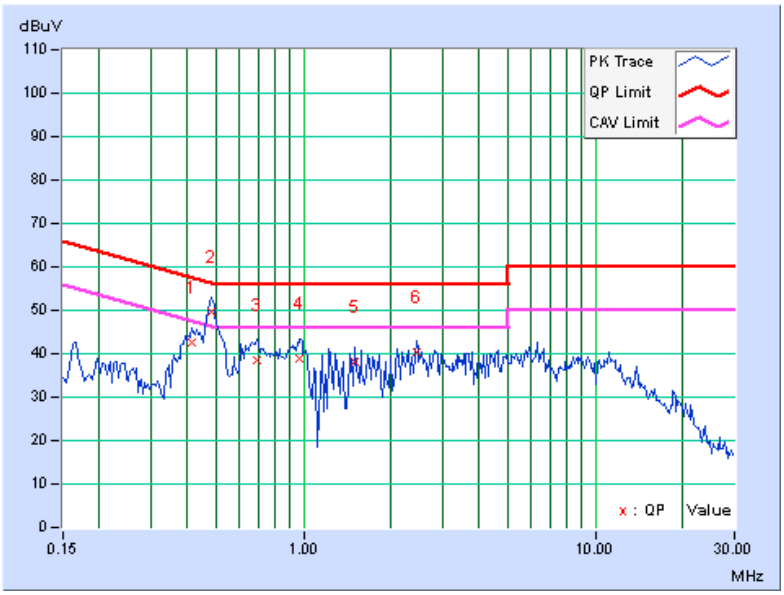
4.1.8 TEST RESULTS (MODE 2)

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	0.41172	0.20	42.25	32.36	42.45	32.56	57.61	47.61	-15.16	-15.05
2	**0.48594**	**0.21**	**49.32**	**40.37**	**49.53**	**40.58**	**56.24**	**46.24**	**-6.71**	**-5.66**
3	0.69297	0.22	38.14	29.18	38.36	29.40	56.00	46.00	-17.64	-16.60
4	0.97422	0.25	38.58	29.42	38.83	29.67	56.00	46.00	-17.17	-16.33
5	1.50391	0.29	37.69	28.01	37.98	28.30	56.00	46.00	-18.02	-17.70
6	2.42969	0.35	40.00	30.22	40.35	30.57	56.00	46.00	-15.65	-15.43

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

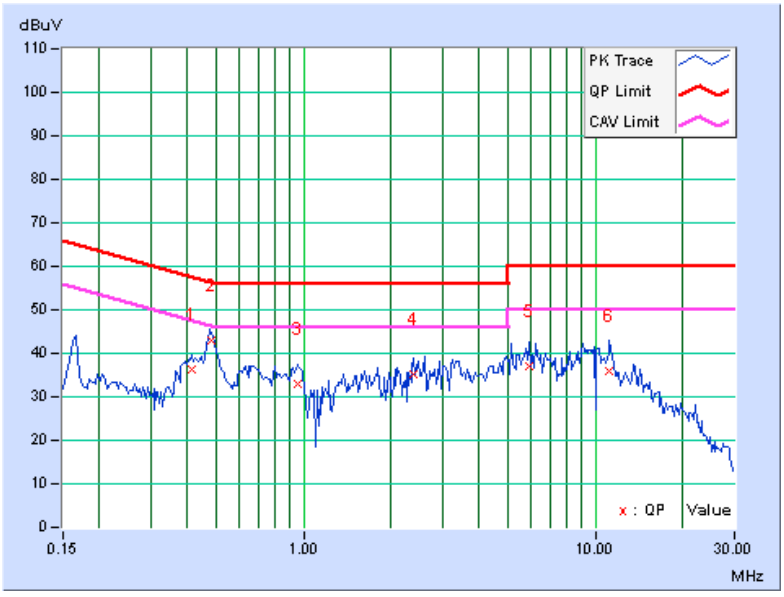


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

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	0.41172	0.19	36.08	29.34	36.27	29.53	57.61	47.61	-21.34	-18.08
2	0.48087	0.19	42.59	37.56	42.78	37.75	56.32	46.32	-13.54	-8.57
3	0.95141	0.22	32.60	24.52	32.82	24.74	56.00	46.00	-23.18	-21.26
4	2.39453	0.30	35.03	25.48	35.33	25.78	56.00	46.00	-20.67	-20.22
5	5.90625	0.50	36.53	26.51	37.03	27.01	60.00	50.00	-22.97	-22.99
6	11.18750	0.75	35.28	25.61	36.03	26.36	60.00	50.00	-23.97	-23.64

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:

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 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
√	FIELD STRENGTH AT 3m (dBμV/m)	
	PK	AV
	74	54
	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m)
	PK	PK
	-27	68.3

NOTE:

1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \quad \mu V/m, \text{ where P is the eirp (Watts).}$$

4.2.3 TEST INSTRUMENTS

For below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated_V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Aug. 23, 2013

For above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29, 2013	Jan. 28, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 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, 2013

4.2.4 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.

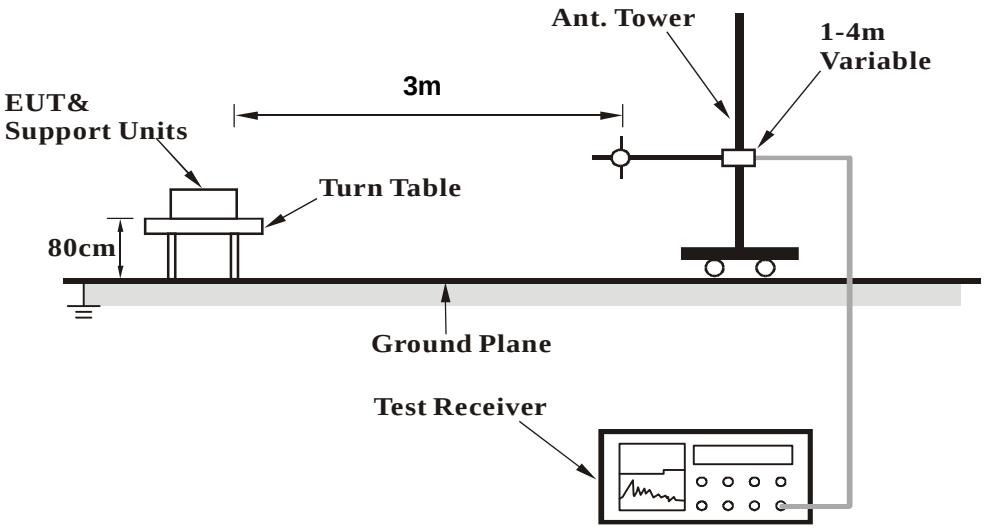
NOTE:

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.

4.2.5 DEVIATION FROM TEST STANDARD

No deviation

4.2.6 TEST SETUP



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

4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

4.2.8 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (HT40)

CHANNEL	TX Channel 38	**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	147.47	32.2 QP	43.5	-11.3	2.00 H	77	45.64	-13.42
2	177.52	33.1 QP	43.5	-10.4	1.50 H	104	47.65	-14.54
3	321.18	27.6 QP	46.0	-18.4	1.00 H	323	38.87	-11.29
4	335.25	27.6 QP	46.0	-18.4	1.00 H	133	38.73	-11.13
5	387.30	30.4 QP	46.0	-15.6	1.00 H	321	40.51	-10.11
6	722.76	30.2 QP	46.0	-15.8	1.00 H	246	34.05	-3.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	47.64	32.0 QP	40.0	-8.0	1.00 V	3	45.46	-13.44
2	106.56	27.1 QP	43.5	-16.4	1.00 V	231	43.70	-16.61
3	184.23	32.5 QP	43.5	-11.0	1.00 V	73	47.93	-15.46
4	335.42	27.8 QP	46.0	-18.2	1.00 V	2	38.94	-11.14
5	439.34	27.7 QP	46.0	-18.3	2.00 V	202	36.23	-8.49
6	529.16	29.9 QP	46.0	-16.1	1.00 V	80	37.02	-7.12

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 36	**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	5150.00	59.4 PK	74.0	-14.6	1.11 H	226	50.80	8.60
2	5150.00	46.0 AV	54.0	-8.0	1.11 H	226	37.40	8.60
3	*5180.00	100.2 PK			1.11 H	226	91.44	8.76
4	*5180.00	91.5 AV			1.11 H	226	82.74	8.76
5	#10360.00	54.3 PK	74.0	-19.7	1.28 H	1	38.76	15.54
6	#10360.00	42.5 AV	54.0	-11.5	1.28 H	1	26.96	15.54
7	15540.00	54.2 PK	74.0	-19.8	1.00 H	248	31.83	22.37
8	15540.00	41.9 AV	54.0	-12.1	1.00 H	248	19.53	22.37
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	5150.00	67.0 PK	74.0	-7.0	1.00 V	360	58.40	8.60
2	5150.00	49.6 AV	54.0	-4.4	1.00 V	360	41.00	8.60
3	*5180.00	110.9 PK			1.00 V	360	102.14	8.76
4	*5180.00	102.4 AV			1.00 V	360	93.64	8.76
5	#10360.00	59.3 PK	74.0	-14.7	1.14 V	360	43.76	15.54
6	#10360.00	45.7 AV	54.0	-8.3	1.14 V	360	30.16	15.54
7	15540.00	60.3 PK	74.0	-13.7	1.13 V	105	37.93	22.37
8	15540.00	47.3 AV	54.0	-6.7	1.13 V	105	24.93	22.37

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 radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	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	5079.00	51.6 PK	74.0	-22.4	1.09 H	215	43.32	8.28
2	5079.00	44.5 AV	54.0	-9.5	1.09 H	215	36.22	8.28
3	*5200.00	102.0 PK			1.09 H	215	93.13	8.87
4	*5200.00	92.9 AV			1.09 H	215	84.03	8.87
5	#10400.00	55.0 PK	74.0	-19.0	1.35 H	12	39.82	15.18
6	#10400.00	42.9 AV	54.0	-11.1	1.35 H	12	27.72	15.18
7	15600.00	53.5 PK	74.0	-20.5	1.06 H	273	31.38	22.12
8	15600.00	41.3 AV	54.0	-12.7	1.06 H	273	19.18	22.12
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	5079.00	59.6 PK	74.0	-14.4	1.00 V	360	51.32	8.28
2	5079.00	48.5 AV	54.0	-5.5	1.00 V	360	40.22	8.28
3	*5200.00	111.6 PK			1.00 V	360	102.73	8.87
4	*5200.00	102.5 AV			1.00 V	360	93.63	8.87
5	#10400.00	58.3 PK	74.0	-15.7	1.06 V	360	43.12	15.18
6	#10400.00	45.0 AV	54.0	-9.0	1.06 V	360	29.82	15.18
7	15600.00	60.2 PK	74.0	-13.8	1.08 V	100	38.08	22.12
8	15600.00	47.2 AV	54.0	-6.8	1.08 V	100	25.08	22.12

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 radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	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	5119.00	48.3 PK	74.0	-25.7	1.07 H	207	39.87	8.43
2	5119.00	45.0 AV	54.0	-9.0	1.07 H	207	36.57	8.43
3	*5240.00	101.8 PK			1.07 H	207	92.79	9.01
4	*5240.00	92.9 AV			1.07 H	207	83.89	9.01
5	5359.00	50.5 PK	74.0	-23.5	1.07 H	207	41.17	9.33
6	5359.00	44.4 AV	54.0	-9.6	1.07 H	207	35.07	9.33
7	#10480.00	54.4 PK	74.0	-19.6	1.31 H	10	38.60	15.80
8	#10480.00	42.6 AV	54.0	-11.4	1.31 H	10	26.80	15.80
9	15720.00	53.8 PK	74.0	-20.2	1.00 H	262	32.00	21.80
10	15720.00	41.6 AV	54.0	-12.4	1.00 H	262	19.80	21.80
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	5119.00	56.3 PK	74.0	-17.7	1.00 V	360	47.87	8.43
2	5119.00	48.8 AV	54.0	-5.2	1.00 V	360	40.37	8.43
3	*5240.00	112.1 PK			1.00 V	360	103.09	9.01
4	*5240.00	103.3 AV			1.00 V	360	94.29	9.01
5	5359.00	58.2 PK	74.0	-15.8	1.00 V	360	48.87	9.33
6	5359.00	47.9 AV	54.0	-6.1	1.00 V	360	38.57	9.33
7	#10480.00	60.0 PK	74.0	-14.0	1.12 V	360	44.20	15.80
8	#10480.00	46.4 AV	54.0	-7.6	1.12 V	360	30.60	15.80
9	15720.00	59.8 PK	74.0	-14.2	1.14 V	84	38.00	21.80
10	15720.00	46.6 AV	54.0	-7.4	1.14 V	84	24.80	21.80

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 radiated frequency is out of the restricted band.

802.11n (HT20)

CHANNEL	TX Channel 36	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	5150.00	61.0 PK	74.0	-13.0	1.10 H	195	52.40	8.60
2	5150.00	45.3 AV	54.0	-8.7	1.10 H	195	36.70	8.60
3	*5180.00	100.6 PK			1.10 H	195	91.84	8.76
4	*5180.00	91.4 AV			1.10 H	195	82.64	8.76
5	#10360.00	54.7 PK	74.0	-19.3	1.31 H	17	39.16	15.54
6	#10360.00	42.9 AV	54.0	-11.1	1.31 H	17	27.36	15.54
7	15540.00	53.4 PK	74.0	-20.6	1.01 H	274	31.03	22.37
8	15540.00	41.5 AV	54.0	-12.5	1.01 H	274	19.13	22.37
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	5150.00	68.8 PK	74.0	-5.2	1.00 V	360	60.20	8.60
2	5150.00	49.2 AV	54.0	-4.8	1.00 V	360	40.60	8.60
3	*5180.00	110.6 PK			1.00 V	360	101.84	8.76
4	*5180.00	101.6 AV			1.00 V	360	92.84	8.76
5	#10360.00	59.7 PK	74.0	-14.3	1.01 V	360	44.16	15.54
6	#10360.00	46.2 AV	54.0	-7.8	1.01 V	360	30.66	15.54
7	15540.00	59.8 PK	74.0	-14.2	1.15 V	121	37.43	22.37
8	15540.00	46.9 AV	54.0	-7.1	1.15 V	121	24.53	22.37

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 radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	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	5120.00	48.5 PK	74.0	-25.5	1.14 H	182	40.07	8.43
2	5120.00	42.7 AV	54.0	-11.3	1.14 H	182	34.27	8.43
3	*5200.00	101.9 PK			1.14 H	182	93.03	8.87
4	*5200.00	92.5 AV			1.14 H	182	83.63	8.87
5	#10400.00	55.2 PK	74.0	-18.8	1.32 H	21	40.02	15.18
6	#10400.00	43.1 AV	54.0	-10.9	1.32 H	21	27.92	15.18
7	15600.00	53.8 PK	74.0	-20.2	1.00 H	248	31.68	22.12
8	15600.00	41.8 AV	54.0	-12.2	1.00 H	248	19.68	22.12
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	5120.00	56.3 PK	74.0	-17.7	1.00 V	360	47.87	8.43
2	5120.00	46.7 AV	54.0	-7.3	1.00 V	360	38.27	8.43
3	*5200.00	111.6 PK			1.00 V	360	102.73	8.87
4	*5200.00	102.3 AV			1.00 V	360	93.43	8.87
5	#10400.00	59.0 PK	74.0	-15.0	1.04 V	360	43.82	15.18
6	#10400.00	45.4 AV	54.0	-8.6	1.04 V	360	30.22	15.18
7	15600.00	59.8 PK	74.0	-14.2	1.13 V	113	37.68	22.12
8	15600.00	46.9 AV	54.0	-7.1	1.13 V	113	24.78	22.12

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 radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	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	5150.00	46.6 PK	74.0	-27.4	1.18 H	191	38.00	8.60
2	5150.00	43.0 AV	54.0	-11.0	1.18 H	191	34.40	8.60
3	*5240.00	101.5 PK			1.18 H	191	92.49	9.01
4	*5240.00	92.3 AV			1.18 H	191	83.29	9.01
5	5350.00	49.6 PK	74.0	-24.4	1.18 H	191	40.29	9.31
6	5350.00	43.5 AV	54.0	-10.5	1.18 H	191	34.19	9.31
7	#10480.00	54.3 PK	74.0	-19.7	1.28 H	10	38.50	15.80
8	#10480.00	42.5 AV	54.0	-11.5	1.28 H	10	26.70	15.80
9	15720.00	54.0 PK	74.0	-20.0	1.06 H	264	32.20	21.80
10	15720.00	41.5 AV	54.0	-12.5	1.06 H	264	19.70	21.80
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	5150.00	55.0 PK	74.0	-19.0	1.00 V	360	46.40	8.60
2	5150.00	47.2 AV	54.0	-6.8	1.00 V	360	38.60	8.60
3	*5240.00	111.8 PK			1.00 V	360	102.79	9.01
4	*5240.00	102.8 AV			1.00 V	360	93.79	9.01
5	5350.00	58.0 PK	74.0	-16.0	1.00 V	360	48.69	9.31
6	5350.00	47.8 AV	54.0	-6.2	1.00 V	360	38.49	9.31
7	#10480.00	59.6 PK	74.0	-14.4	1.09 V	360	43.80	15.80
8	#10480.00	46.0 AV	54.0	-8.0	1.09 V	360	30.20	15.80
9	15720.00	60.1 PK	74.0	-13.9	1.17 V	107	38.30	21.80
10	15720.00	47.1 AV	54.0	-6.9	1.17 V	107	25.30	21.80

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 radiated frequency is out of the restricted band.

802.11n (HT40)

CHANNEL	TX Channel 38	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	5150.00	59.6 PK	74.0	-14.4	1.16 H	203	51.00	8.60
2	5150.00	48.9 AV	54.0	-5.1	1.16 H	203	40.30	8.60
3	*5190.00	95.9 PK			1.16 H	203	87.08	8.82
4	*5190.00	86.6 AV			1.16 H	203	77.78	8.82
5	#10380.00	54.5 PK	74.0	-19.5	1.32 H	20	39.13	15.37
6	#10380.00	42.5 AV	54.0	-11.5	1.32 H	20	27.13	15.37
7	15570.00	53.9 PK	74.0	-20.1	1.00 H	276	31.66	22.24
8	15570.00	41.9 AV	54.0	-12.1	1.00 H	276	19.66	22.24
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	5150.00	67.7 PK	74.0	-6.3	1.00 V	360	59.10	8.60
2	**5150.00**	**53.2 AV**	**54.0**	**-0.8**	**1.00 V**	**360**	**44.60**	**8.60**
3	*5190.00	105.9 PK			1.00 V	360	97.08	8.82
4	*5190.00	96.6 AV			1.00 V	360	87.78	8.82
5	#10380.00	58.5 PK	74.0	-15.5	1.01 V	360	43.13	15.37
6	#10380.00	45.4 AV	54.0	-8.6	1.01 V	360	30.03	15.37
7	15570.00	60.7 PK	74.0	-13.3	1.07 V	116	38.46	22.24
8	15570.00	47.4 AV	54.0	-6.6	1.07 V	116	25.16	22.24

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 radiated frequency is out of the restricted band.

CHANNEL	TX Channel 46	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	5150.00	47.1 PK	74.0	-26.9	1.12 H	199	38.50	8.60
2	5150.00	40.9 AV	54.0	-13.1	1.12 H	199	32.30	8.60
3	*5230.00	99.6 PK			1.12 H	199	90.63	8.97
4	*5230.00	89.9 AV			1.12 H	199	80.93	8.97
5	5374.00	48.5 PK	74.0	-25.5	1.12 H	199	39.15	9.35
6	5374.00	43.0 AV	54.0	-11.0	1.12 H	199	33.65	9.35
7	#10460.00	54.6 PK	74.0	-19.4	1.28 H	8	38.96	15.64
8	#10460.00	42.8 AV	54.0	-11.2	1.28 H	8	27.16	15.64
9	15690.00	53.8 PK	74.0	-20.2	1.00 H	255	32.02	21.78
10	15690.00	41.6 AV	54.0	-12.4	1.00 H	255	19.82	21.78
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	5150.00	55.2 PK	74.0	-18.8	1.00 V	360	46.60	8.60
2	5150.00	45.0 AV	54.0	-9.0	1.00 V	360	36.40	8.60
3	*5230.00	109.1 PK			1.00 V	360	100.13	8.97
4	*5230.00	99.6 AV			1.00 V	360	90.63	8.97
5	5374.00	56.5 PK	74.0	-17.5	1.00 V	360	47.15	9.35
6	5374.00	46.7 AV	54.0	-7.3	1.00 V	360	37.35	9.35
7	#10460.00	57.9 PK	74.0	-16.1	1.10 V	360	42.26	15.64
8	#10460.00	44.7 AV	54.0	-9.3	1.10 V	360	29.06	15.64
9	15690.00	60.4 PK	74.0	-13.6	1.05 V	93	38.62	21.78
10	15690.00	47.3 AV	54.0	-6.7	1.05 V	93	25.52	21.78

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 radiated frequency is out of the restricted band.

802.11ac (VHT80)

CHANNEL	TX Channel 42	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	5150.00	57.3 PK	74.0	-16.7	1.17 H	188	48.70	8.60
2	5150.00	48.4 AV	54.0	-5.6	1.17 H	188	39.80	8.60
3	*5210.00	93.3 PK			1.17 H	188	84.40	8.90
4	*5210.00	83.6 AV			1.17 H	188	74.70	8.90
5	5350.00	49.2 PK	74.0	-24.8	1.17 H	188	39.89	9.31
6	5350.00	40.6 AV	54.0	-13.4	1.17 H	188	31.29	9.31
7	#10420.00	54.3 PK	74.0	-19.7	1.29 H	23	38.97	15.33
8	#10420.00	42.3 AV	54.0	-11.7	1.29 H	23	26.97	15.33
9	15630.00	53.4 PK	74.0	-20.6	1.00 H	266	31.39	22.01
10	15630.00	41.4 AV	54.0	-12.6	1.00 H	266	19.39	22.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.5 PK	74.0	-8.5	1.00 V	360	56.90	8.60
2	5150.00	52.5 AV	54.0	-1.5	1.00 V	360	43.90	8.60
3	*5210.00	102.8 PK			1.00 V	360	93.90	8.90
4	*5210.00	93.1 AV			1.00 V	360	84.20	8.90
5	5350.00	56.8 PK	74.0	-17.2	1.00 V	360	47.49	9.31
6	5350.00	44.5 AV	54.0	-9.5	1.00 V	360	35.19	9.31
7	#10420.00	58.5 PK	74.0	-15.5	1.03 V	360	43.17	15.33
8	#10420.00	45.2 AV	54.0	-8.8	1.03 V	360	29.87	15.33
9	15630.00	59.9 PK	74.0	-14.1	1.05 V	90	37.89	22.01
10	15630.00	47.1 AV	54.0	-6.9	1.05 V	90	25.09	22.01

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 radiated frequency is out of the restricted band.

4.3 TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47 – 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

NOTE: Where B is the 26dB bandwidth in MHz.

4.3.2 TEST INSTRUMENTS

FOR POWER OUTPUT MEASUREMENT

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. 22, 2013

FOR 26dB OCCUPIED BANDWIDTH

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. 22, 2013

4.3.3 TEST PROCEDURE

FOR POWER OUTPUT MEASUREMENT

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.

FOR 26dB OCCUPIED BANDWIDTH

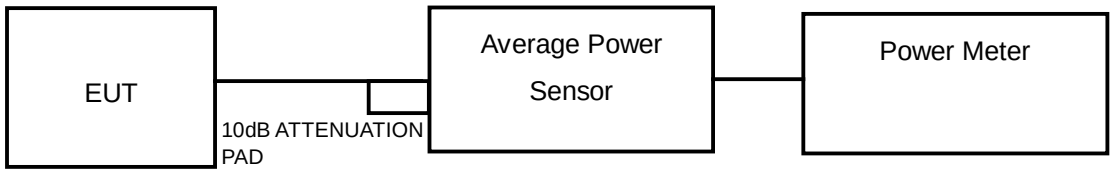
1) Set RBW = approximately 1% of the emission bandwidth.
2) Set the VBW > RBW.
3) Detector = Peak.
4) Trace mode = max hold.
5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.4 DEVIATION FROM TEST STANDARD

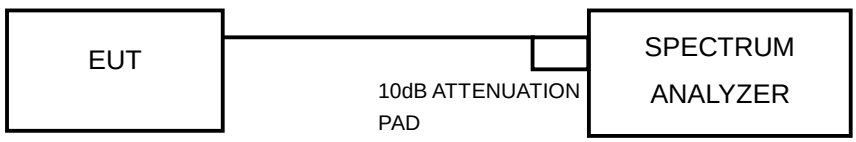
No deviation

4.3.5 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.3.7 TEST RESULTS

POWER OUTPUT:
802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	38.637	15.87	17	PASS
40	5200	38.282	15.83	17	PASS
48	5240	41.020	16.13	17	PASS

26dB OCCUPIED BANDWIDTH:
802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
36	5180	21.77
40	5200	21.84
48	5240	23.40

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 4dBm + 10logB < Band 1>			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Limit (dBm)
36	5180	21.77	17.37 > 17
40	5200	21.84	17.39 > 17
48	5240	23.40	17.69 > 17

POWER OUTPUT:
802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	39.355	15.95	17	PASS
40	5200	39.084	15.92	17	PASS
48	5240	41.591	16.19	17	PASS

26dB OCCUPIED BANDWIDTH:
802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
36	5180	22.65
40	5200	22.61
48	5240	22.75

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 4dBm + 10logB < Band 1>			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Limit (dBm)
36	5180	22.65	17.55 > 17
40	5200	22.61	17.54 > 17
48	5240	22.75	17.56 > 17

POWER OUTPUT:
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	48.865	16.89	17	PASS
46	5230	48.641	16.87	17	PASS

26dB OCCUPIED BANDWIDTH:
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
38	5190	45.70
46	5230	51.67

Note: For FCC output power limitation is determined based on 26dB bandwidth.

Power Limit = 4dBm + 10logB < Band 1>			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Limit (dBm)
38	5190	45.70	20.59 > 17
46	5230	51.67	21.13 > 17

POWER OUTPUT:
802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
42	5210	38.548	15.86	17	PASS

26dB OCCUPIED BANDWIDTH:
802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
42	5210	84.81

Note: For IC output power limitation is determined based on 99% bandwidth.

Power Limit = 4dBm + 10logB < Band 1>			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Limit (dBm)
42	5210	84.81	23.28 > 17

4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 – 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

4.4.2 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. 22, 2013

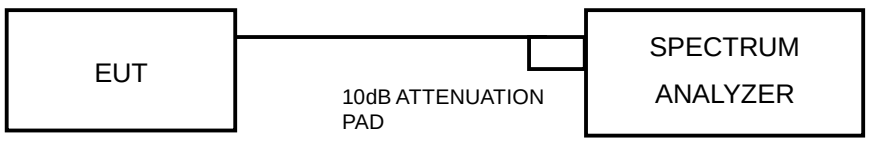
4.4.3 TEST PROCEDURES

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6

4.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	3.12	4	PASS
40	5200	3.36	4	PASS
48	5240	3.60	4	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	2.33	4	PASS
40	5200	2.90	4	PASS
48	5240	3.34	4	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
38	5190	1.12	4	PASS
46	5230	1.22	4	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
42	5210	-1.54	4	PASS

4.5 PEAK POWER EXCURSION MEASUREMENT

4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB

4.5.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 22, 2013

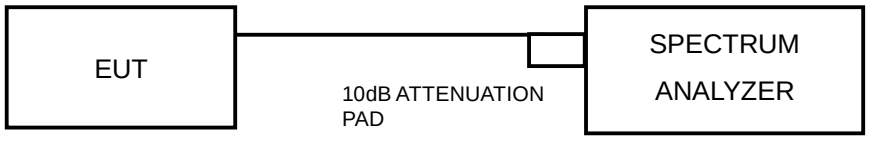
4.5.3 TEST PROCEDURE

1. Set RBW = 1 MHz, VBW ≥ 3 MHz, Detector = peak.
2. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak search function to find the peak of the spectrum.
4. Measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.5.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/FAIL
36	5180	10.46	3.12	7.34	13	PASS
40	5200	10.70	3.36	7.34	13	PASS
48	5240	11.13	3.60	7.53	13	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/FAIL
36	5180	10.09	2.33	7.76	13	PASS
40	5200	10.64	2.90	7.74	13	PASS
48	5240	11.07	3.34	7.73	13	PASS

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/FAIL
38	5190	9.19	1.12	8.07	13	PASS
46	5230	9.37	1.22	8.15	13	PASS

802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/FAIL
42	5210	6.53	-1.54	8.07	13	PASS

4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation

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
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-SP-AR	MAA0812-008	Jan. 17, 2013	Jan. 16, 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. 22, 2013

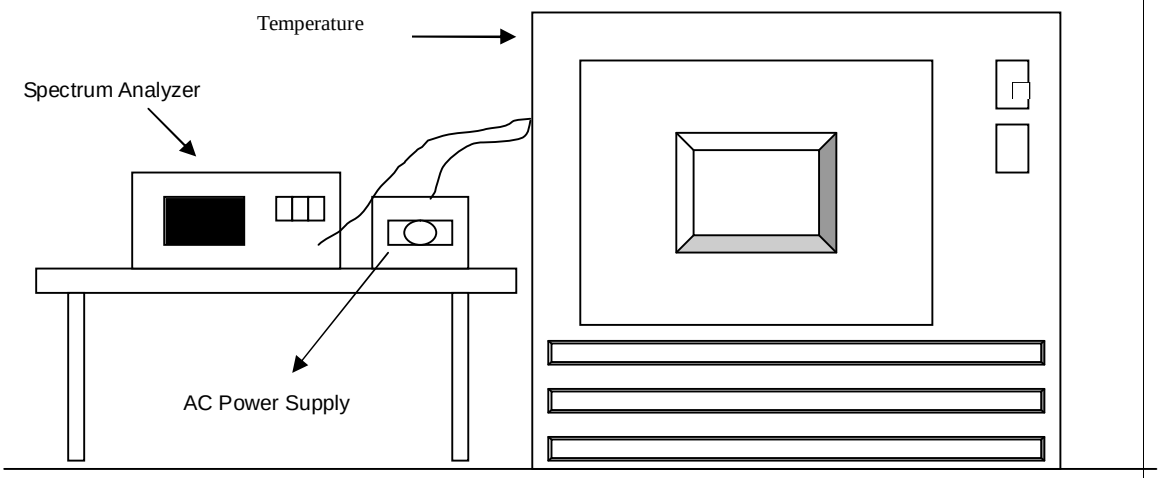
4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 TEST RESULTS

FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
50	120	5239.9868	-0.00025	5239.9888	-0.00021	5239.9922	-0.00015	5239.9899	-0.00019
40	120	5240.0067	0.00013	5239.9996	-0.00001	5240.0027	0.00005	5240.0041	0.00008
30	120	5239.977	-0.00044	5239.9811	-0.00036	5239.9806	-0.00037	5239.976	-0.00046
20	120	5240.0217	0.00041	5240.0194	0.00037	5240.0184	0.00035	5240.0253	0.00048
10	120	5240.0143	0.00027	5240.0245	0.00047	5240.0166	0.00032	5240.0149	0.00028
0	120	5240.0015	0.00003	5240.0081	0.00015	5240.01	0.00019	5240.0112	0.00021
-10	120	5239.988	-0.00023	5239.9882	-0.00023	5239.9928	-0.00014	5239.9868	-0.00025
-20	120	5239.9983	-0.00003	5240.002	0.00004	5240	0.00000	5240.002	0.00004
-30	120	5239.9949	-0.00010	5239.9966	-0.00006	5239.9982	-0.00003	5239.9995	-0.00001

FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
20	138	5240.021	0.00040	5240.0186	0.00035	5240.0184	0.00035	5240.0257	0.00049
	120	5240.0217	0.00041	5240.0194	0.00037	5240.0184	0.00035	5240.0253	0.00048
	102	5240.0213	0.00041	5240.0196	0.00037	5240.0175	0.00033	5240.0254	0.00048

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

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

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

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

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