FCC TEST REPORT (15.247)

REPORT NO.:	RF130723E04
MODEL NO.:	T77H506
FCC ID:	MCLT77H506
RECEIVED:	July 12, 2013
TESTED:	July 12 to Aug. 08, 2013
ISSUED:	Sep. 02, 2013

APPLICANT:	Hon Hai PRECISION IND.CO.,LTD
ADDRESS:	5F-1,5 Hsin-An Road Hsinchu, Science-Based Industrial Park 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
RF130723E04	Original release	Sep. 02, 2013

1. CERTIFICATION

PRODUCT:	802.11abgn+BT4.0 module
BRAND NAME:	FOXCONN
MODEL NO.:	T77H506
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Hon Hai PRECISION IND.CO.,LTD
TESTED:	July 12 to Aug. 08, 2013
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: T77H506) 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. 02, 2013*
(Lori Chung, Specialist)

APPROVED BY : _____ , **DATE:** *Sep. 02, 2013*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz(WLAN), 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 -18.45dB at 0.36484MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 4824.00MHz & 4874.00MHz
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 MHF4 not a standard connector.

For 2.4GHz(BT-LE(GFSK))

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 -19.56dB at 0.36094MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.4dB at 199.83MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is MHF4 not a standard connector.

For 5GHz, 5725~5850MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -18.76dB at 0.36094MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.3dB at 199.84MHz
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 MHF4 not a standard connector.

NOTE:

The EUT was operating in 2.400 ~ 2.4835GHz, 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2.400 ~ 2.4835GHz and 5.725~5.850GHz. For the 5.15~5.35GHz and 5.47~5.6GHz & 5.65~5.725GHz RF parameters was recorded in another test report.

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	802.11abgn+BT4.0 module
MODEL NO.	T77H506
POWER SUPPLY	DC 3.3V
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM GFSK(BT <LE> mode) for DTS
MODULATION TECHNOLOGY	DSSS,OFDM, DTS
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps BT-LE (GFSK): 1Mbps
OPERATING FREQUENCY	**For 15.407** **5GHz:**5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66GHz ~ 5.70GHz
	For 15.247 **2.4GHz:** WLAN: 2.412 ~ 2.462GHz BT-LE(GFSK): 2.402 ~ 2.480GHz **5GHz:** 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**For 15.407** 16 for 802.11a, 802.11n (HT20) 7 for 802.11n (HT40)
	For 15.247 (2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20) 40 for BT-LE(GFSK) **For 15.247 (5GHz)** 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 237.684mW 802.11n (HT20): 173.069mW 802.11n (HT40): 180.538mW **For 15.247 (2.4GHz)** 802.11b -Chain (0): 121.060mW 802.11b -Chain (1): 207.491mW 802.11g: 286.418mW 802.11n (HT20): 577.940mW BT-LE(GFSK): 3.614mW **For 15.247 (5GHz)** 802.11a: 304.089mW 802.11n (HT20): 587.181mW 802.11n (HT40): 562.171mW

ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth technology and WLAN technology used for the EUT
2. Bluetooth and WLAN technology can't transmit at same time.
3. The antennas provided to the EUT, please refer to the following table:

Antenna	Transmitter Circuit	Brand	Model	Antenna Type	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Connecter Type
1	Chain (0)	Foxconn	NA	PIFA	-0.6	2400~2500	MHF4
					-2.3	5150~5850	
2	Chain (1)	Foxconn	NA	PIFA	-0.6	2400~2500	MHF4
					-2.3	5150~5850	
From the above antennas, Chain (1) was selected as representative antenna for the 802.11g and Chain (0) was selected as representative antenna for the 802.11a test and its data was recorded in this report.							

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

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

5. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
6. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

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		

40 channels are provided for Bluetooth LE mode:

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Operated in 5725 ~ 5850MHz band:

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

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

2 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

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

OB: Conducted Out-Band Emission Measurement

NOTE: 1. "-"means no effect.

2. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane.**

POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
For 2.4 GHz 802.11n (HT20)	1 to 11	6	OFDM	BPSK	13
BT-LE	0 to 39	19	DTS	GFSK	1
For 5 GHz 802.11n (HT20)	149 to 165	149	OFDM	BPSK	13

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
For 2.4 GHz 802.11n (HT20)	1 to 11	6	OFDM	BPSK	13
BT-LE	0 to 39	19	DTS	GFSK	1
For 5 GHz 802.11n (HT20)	149 to 165	149	OFDM	BPSK	13

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 – Chain (0)	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11b – Chain (1)	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	13
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	27

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b – Chain (0)	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11b – Chain (1)	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	13
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	27

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 – Chain (0)	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11b – Chain (1)	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	13
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	27

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C,66%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	22deg. C, 71%RH	120Vac, 60Hz	Andy Ho
RE≥1G	23deg. C, 68%RH	120Vac, 60Hz	Tim Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng
OB	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 C (15.247)

558074 D01 DTS Meas Guidance v03r01

662911 D01 Multiple Transmitter Output v01 r02

ANSI C63.10-2009

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

3.4 DESCRIPTION OF SUPPORT UNITS

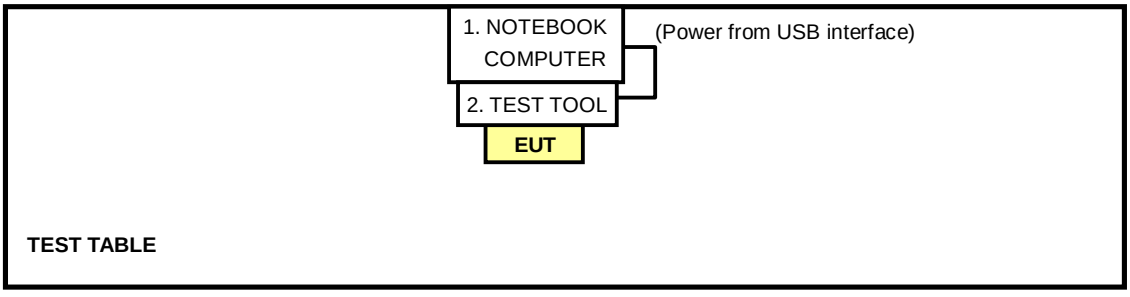
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP27L	7YLB32S	FCC DoC
2	TEST TOOL	Hon Hai	NA	NA	NA

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

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	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 07, 2013	June 06, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: July 29, 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.

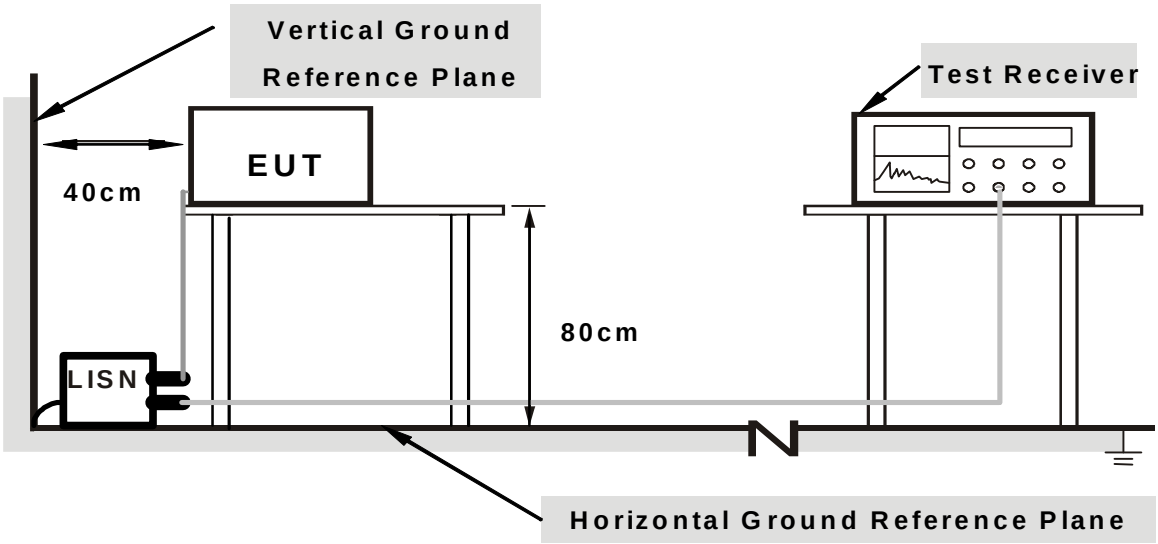
NOTE:

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

For WLAN mode:

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 “MTool.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

For BT<LE> mode:

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 “Blue tool.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

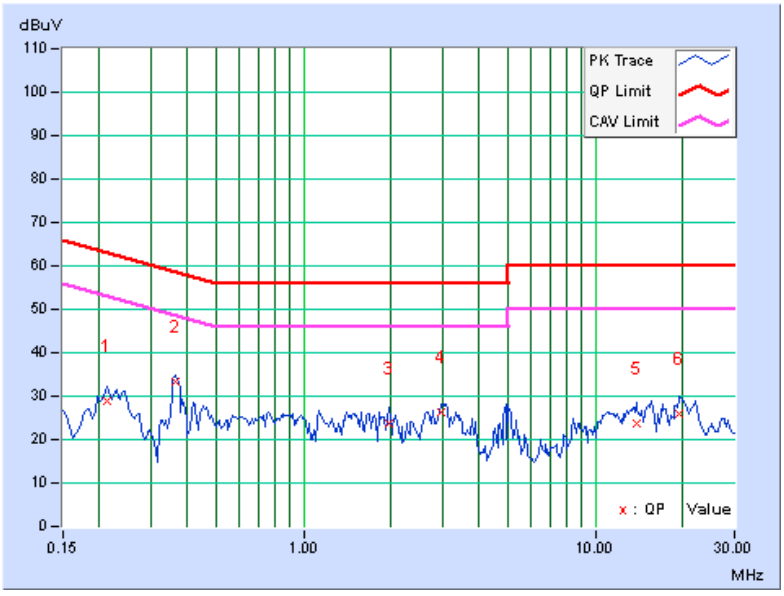
4.1.7 TEST RESULTS (WLAN mode)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21250	0.14	28.65	22.55	28.79	22.69	63.11	53.11	-34.31	-30.41
2	**0.36484**	**0.17**	**33.12**	**29.99**	**33.29**	**30.16**	**58.62**	**48.62**	**-25.32**	**-18.45**
3	1.96094	0.28	23.26	12.81	23.54	13.09	56.00	46.00	-32.46	-32.91
4	2.95313	0.32	25.93	20.19	26.25	20.51	56.00	46.00	-29.75	-25.49
5	13.84766	0.83	22.79	16.18	23.62	17.01	60.00	50.00	-36.38	-32.99
6	19.49219	1.01	24.75	18.89	25.76	19.90	60.00	50.00	-34.24	-30.10

REMARKS:

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

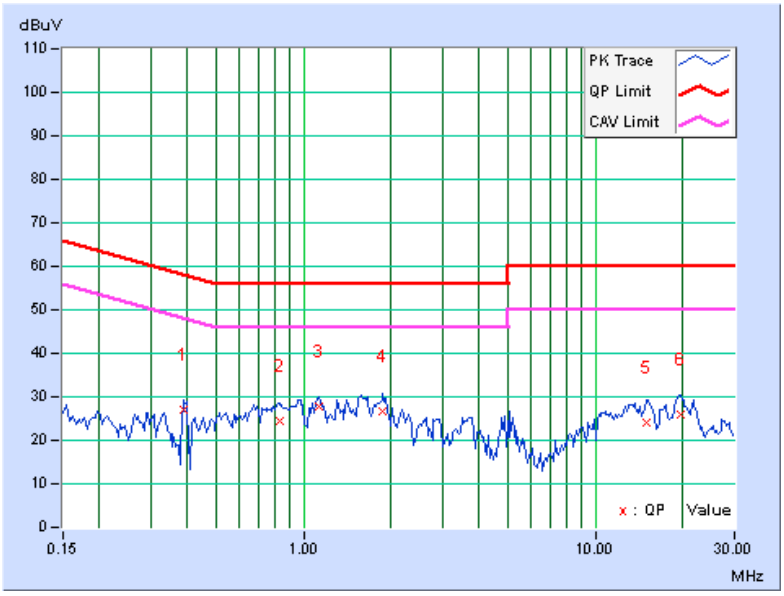


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.38828	0.17	26.98	24.71	27.15	24.88	58.10	48.10	-30.95	-23.22
2	0.82578	0.19	24.34	17.15	24.53	17.34	56.00	46.00	-31.47	-28.66
3	1.12500	0.21	27.69	20.54	27.90	20.75	56.00	46.00	-28.10	-25.25
4	1.86719	0.25	26.49	16.84	26.74	17.09	56.00	46.00	-29.26	-28.91
5	15.05078	0.65	23.35	17.80	24.00	18.45	60.00	50.00	-36.00	-31.55
6	19.56641	0.71	25.22	19.39	25.93	20.10	60.00	50.00	-34.07	-29.90

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



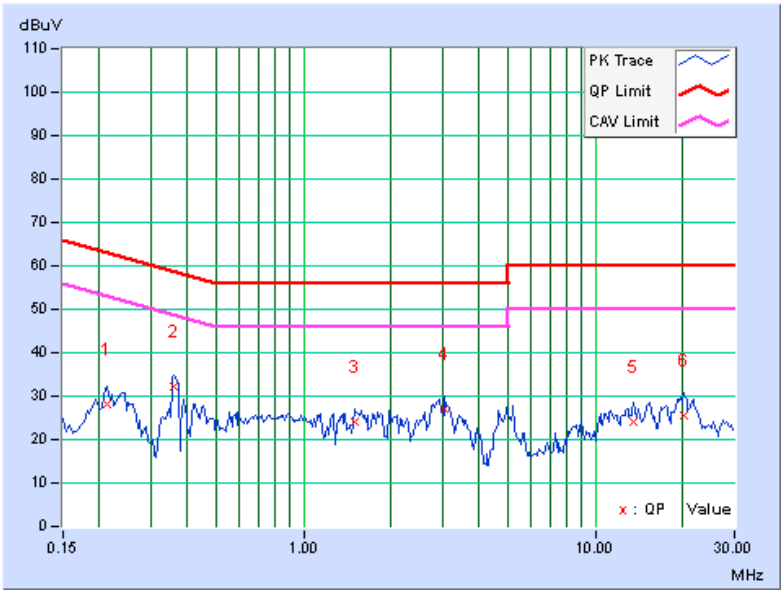
4.1.8 TEST RESULTS (BT<LE> mode)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21250	0.14	27.92	22.32	28.06	22.46	63.11	53.11	-35.04	-30.64
2	**0.36094**	**0.17**	**32.17**	**28.97**	**32.34**	**29.14**	**58.71**	**48.71**	**-26.36**	**-19.56**
3	1.50781	0.25	23.81	14.34	24.06	14.59	56.00	46.00	-31.94	-31.41
4	3.04688	0.32	26.73	19.79	27.05	20.11	56.00	46.00	-28.95	-25.89
5	13.56250	0.81	23.40	18.54	24.21	19.35	60.00	50.00	-35.79	-30.65
6	20.04688	1.03	24.52	18.98	25.55	20.01	60.00	50.00	-34.45	-29.99

REMARKS:

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

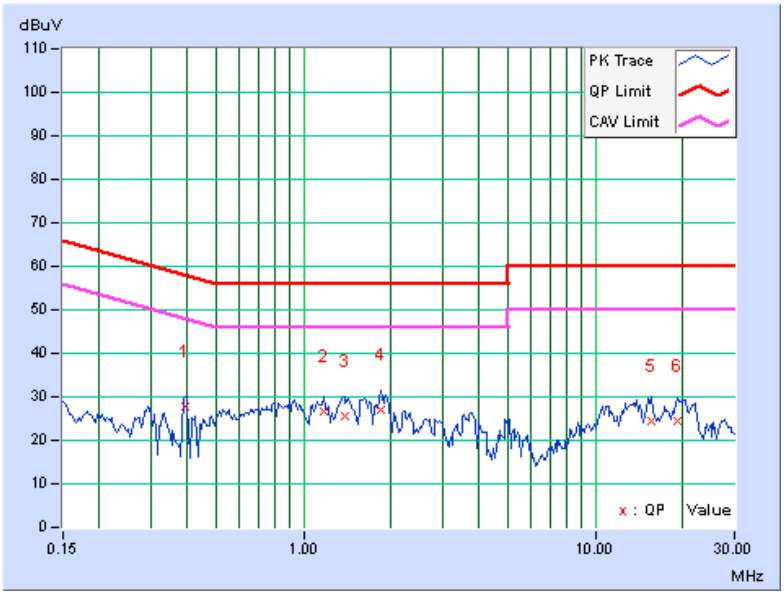


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.39219	0.17	27.79	26.43	27.96	26.60	58.02	48.02	-30.06	-21.42
2	1.17188	0.21	26.50	19.24	26.71	19.45	56.00	46.00	-29.29	-26.55
3	1.38672	0.22	25.18	20.23	25.40	20.45	56.00	46.00	-30.60	-25.55
4	1.84375	0.25	26.64	18.70	26.89	18.95	56.00	46.00	-29.11	-27.05
5	15.53516	0.66	23.87	17.70	24.53	18.36	60.00	50.00	-35.47	-31.64
6	19.05078	0.71	23.74	18.20	24.45	18.91	60.00	50.00	-35.55	-31.09

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: July 29 to Aug. 03, 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.

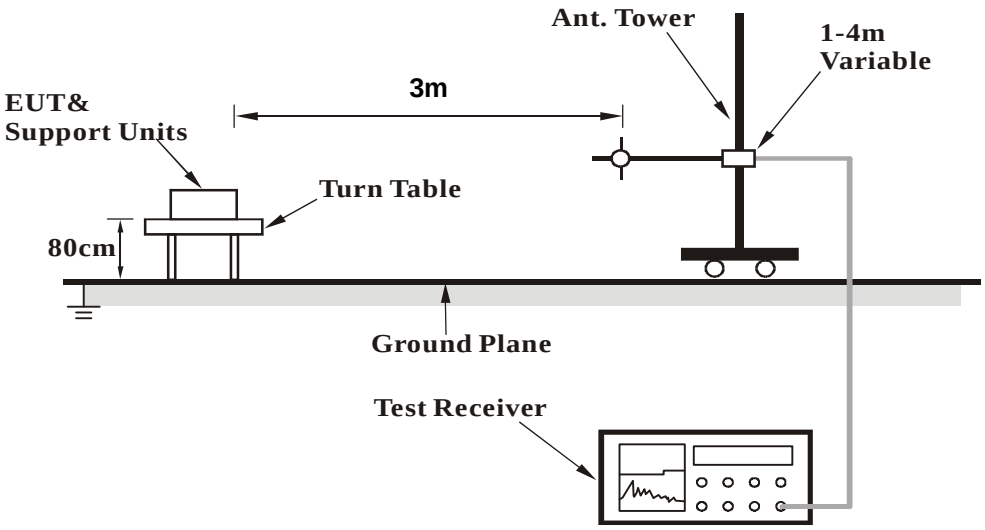
NOTE:

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 (WLAN MODE)

BELOW 1GHz WORST-CASE DATA

802.11n (HT20)

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	83.20	36.5 QP	40.0	-3.5	2.00 H	334	55.59	-19.13
2	241.90	35.8 QP	46.0	-10.2	1.00 H	153	50.60	-14.81
3	271.14	37.3 QP	46.0	-8.7	1.50 H	137	51.03	-13.73
4	763.32	34.9 QP	46.0	-11.1	1.50 H	349	37.09	-2.19
5	782.67	38.5 QP	46.0	-7.5	1.00 H	298	40.53	-2.07
6	849.36	37.3 QP	46.0	-8.7	2.00 H	360	38.63	-1.35
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	49.84	31.8 QP	40.0	-8.2	1.00 V	132	45.42	-13.58
2	199.85	40.2 QP	43.5	-3.3	2.00 V	117	56.84	-16.64
3	272.31	39.8 QP	46.0	-6.2	1.00 V	129	53.49	-13.66
4	580.81	36.1 QP	46.0	-9.9	2.00 V	220	42.21	-6.09
5	616.22	40.7 QP	46.0	-5.3	1.50 V	93	45.48	-4.80
6	649.54	41.1 QP	46.0	-5.0	1.50 V	97	45.53	-4.48

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- Chain (0)

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	48.7 PK	74.0	-25.3	1.08 H	210	49.89	-1.19
2	2390.00	36.2 AV	54.0	-17.8	1.08 H	210	37.39	-1.19
3	*2412.00	101.6 PK			1.08 H	210	102.69	-1.09
4	*2412.00	99.2 AV			1.08 H	210	100.29	-1.09
5	4824.00	54.4 PK	74.0	-19.6	1.11 H	57	46.81	7.59
6	4824.00	51.5 AV	54.0	-2.5	1.11 H	57	43.91	7.59
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	47.4 PK	74.0	-26.6	1.00 V	239	48.59	-1.19
2	2390.00	34.7 AV	54.0	-19.3	1.00 V	239	35.89	-1.19
3	*2412.00	99.8 PK			1.00 V	239	100.89	-1.09
4	*2412.00	95.7 AV			1.00 V	239	96.79	-1.09
5	4824.00	56.9 PK	74.0	-17.1	1.00 V	6	49.31	7.59
6	**4824.00**	**53.8 AV**	**54.0**	**-0.2**	**1.00 V**	**6**	**46.21**	**7.59**

REMARKS:

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

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	49.4 PK	74.0	-24.6	1.05 H	186	50.59	-1.19
2	2390.00	36.6 AV	54.0	-17.4	1.05 H	186	37.79	-1.19
3	*2437.00	105.8 PK			1.05 H	186	106.79	-0.99
4	*2437.00	101.2 AV			1.05 H	186	102.19	-0.99
5	2483.50	52.7 PK	74.0	-21.3	1.05 H	186	53.50	-0.80
6	2483.50	39.9 AV	54.0	-14.1	1.05 H	186	40.70	-0.80
7	4874.00	54.8 PK	74.0	-19.2	1.11 H	55	47.03	7.77
8	4874.00	51.1 AV	54.0	-2.9	1.11 H	55	43.33	7.77
9	7311.00	54.9 PK	74.0	-19.1	1.14 H	210	39.41	15.49
10	7311.00	43.1 AV	54.0	-10.9	1.14 H	210	27.61	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	47.4 PK	74.0	-26.6	1.05 V	243	48.59	-1.19
2	2390.00	35.1 AV	54.0	-18.9	1.05 V	243	36.29	-1.19
3	*2437.00	101.9 PK			1.05 V	243	102.89	-0.99
4	*2437.00	97.4 AV			1.05 V	243	98.39	-0.99
5	2483.50	49.9 PK	74.0	-24.1	1.05 V	243	50.70	-0.80
6	2483.50	36.9 AV	54.0	-17.1	1.05 V	243	37.70	-0.80
7	4874.00	57.0 PK	74.0	-17.0	1.84 V	190	49.23	7.77
8	**4874.00**	**53.8 AV**	**54.0**	**-0.2**	**1.84 V**	**190**	**46.03**	**7.77**
9	7311.00	55.8 PK	74.0	-18.2	1.11 V	165	40.31	15.49
10	7311.00	43.3 AV	54.0	-10.7	1.11 V	165	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 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	105.3 PK			1.06 H	212	106.19	-0.89
2	*2462.00	100.9 AV			1.06 H	212	101.79	-0.89
3	2483.50	52.3 PK	74.0	-21.7	1.06 H	212	53.10	-0.80
4	2483.50	39.6 AV	54.0	-14.4	1.06 H	212	40.40	-0.80
5	4924.00	54.5 PK	74.0	-19.5	1.17 H	47	46.56	7.94
6	4924.00	51.1 AV	54.0	-2.9	1.17 H	47	43.16	7.94
7	7386.00	55.1 PK	74.0	-18.9	1.16 H	218	39.59	15.51
8	7386.00	42.9 AV	54.0	-11.1	1.16 H	218	27.39	15.51
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.1 PK			1.04 V	263	101.99	-0.89
2	*2462.00	96.5 AV			1.04 V	263	97.39	-0.89
3	2483.50	49.8 PK	74.0	-24.2	1.04 V	263	50.60	-0.80
4	2483.50	36.4 AV	54.0	-17.6	1.04 V	263	37.20	-0.80
5	4924.00	55.7 PK	74.0	-18.3	1.00 V	11	47.76	7.94
6	4924.00	53.6 AV	54.0	-0.4	1.00 V	11	45.66	7.94
7	7386.00	55.4 PK	74.0	-18.6	1.24 V	211	39.89	15.51
8	7386.00	43.1 AV	54.0	-10.9	1.24 V	211	27.59	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.

802.11b- Chain (1)

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	51.6 PK	74.0	-22.4	1.11 H	215	52.79	-1.19
2	2390.00	39.4 AV	54.0	-14.6	1.11 H	215	40.59	-1.19
3	*2412.00	104.3 PK			1.11 H	215	105.39	-1.09
4	*2412.00	101.9 AV			1.11 H	215	102.99	-1.09
5	4824.00	52.8 PK	74.0	-21.2	1.48 H	77	45.21	7.59
6	4824.00	50.3 AV	54.0	-3.7	1.48 H	77	42.71	7.59
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	47.5 PK	74.0	-26.5	1.68 V	256	48.69	-1.19
2	2390.00	36.4 AV	54.0	-17.6	1.68 V	256	37.59	-1.19
3	*2412.00	99.8 PK			1.68 V	256	100.89	-1.09
4	*2412.00	96.8 AV			1.68 V	256	97.89	-1.09
5	4824.00	54.9 PK	74.0	-19.1	1.16 V	315	47.31	7.59
6	4824.00	52.6 AV	54.0	-1.4	1.16 V	315	45.01	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	50.8 PK	74.0	-23.2	1.09 H	216	51.99	-1.19
2	2390.00	39.1 AV	54.0	-14.9	1.09 H	216	40.29	-1.19
3	*2437.00	104.0 PK			1.09 H	216	104.99	-0.99
4	*2437.00	102.0 AV			1.09 H	216	102.99	-0.99
5	2483.50	56.0 PK	74.0	-18.0	1.09 H	216	56.80	-0.80
6	2483.50	49.6 AV	54.0	-4.4	1.09 H	216	50.40	-0.80
7	4874.00	54.5 PK	74.0	-19.5	1.47 H	77	46.73	7.77
8	4874.00	50.3 AV	54.0	-3.7	1.47 H	77	42.53	7.77
9	7311.00	54.7 PK	74.0	-19.3	1.23 H	153	39.21	15.49
10	7311.00	42.7 AV	54.0	-11.3	1.23 H	153	27.21	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	46.7 PK	74.0	-27.3	1.65 V	233	47.89	-1.19
2	2390.00	36.4 AV	54.0	-17.6	1.65 V	233	37.59	-1.19
3	*2437.00	100.0 PK			1.65 V	233	100.99	-0.99
4	*2437.00	97.8 AV			1.65 V	233	98.79	-0.99
5	2483.50	52.0 PK	74.0	-22.0	1.65 V	233	52.80	-0.80
6	2483.50	44.7 AV	54.0	-9.3	1.65 V	233	45.50	-0.80
7	4874.00	54.8 PK	74.0	-19.2	1.00 V	313	47.03	7.77
8	4874.00	52.5 AV	54.0	-1.5	1.00 V	313	44.73	7.77
9	7311.00	57.7 PK	74.0	-16.3	1.70 V	173	42.21	15.49
10	7311.00	49.1 AV	54.0	-4.9	1.70 V	173	33.61	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	104.4 PK			1.08 H	215	105.29	-0.89
2	*2462.00	102.1 AV			1.08 H	215	102.99	-0.89
3	2483.50	56.1 PK	74.0	-17.9	1.08 H	215	56.90	-0.80
4	2483.50	49.5 AV	54.0	-4.5	1.08 H	215	50.30	-0.80
5	4924.00	53.7 PK	74.0	-20.3	1.49 H	78	45.76	7.94
6	4924.00	50.8 AV	54.0	-3.2	1.49 H	78	42.86	7.94
7	7386.00	54.8 PK	74.0	-19.2	1.23 H	162	39.29	15.51
8	7386.00	42.8 AV	54.0	-11.2	1.23 H	162	27.29	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	100.1 PK			1.67 V	278	100.99	-0.89
2	*2462.00	97.4 AV			1.67 V	278	98.29	-0.89
3	2483.50	52.2 PK	74.0	-21.8	1.67 V	278	53.00	-0.80
4	2483.50	44.9 AV	54.0	-9.1	1.67 V	278	45.70	-0.80
5	4924.00	56.0 PK	74.0	-18.0	1.00 V	312	48.06	7.94
6	4924.00	53.1 AV	54.0	-0.9	1.00 V	312	45.16	7.94
7	7386.00	58.1 PK	74.0	-15.9	1.70 V	194	42.59	15.51
8	7386.00	51.1 AV	54.0	-2.9	1.70 V	194	35.59	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) 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	73.1 PK	74.0	-0.9	1.11 H	215	74.29	-1.19
2	2390.00	53.6 AV	54.0	-0.4	1.11 H	215	54.79	-1.19
3	*2412.00	105.3 PK			1.11 H	215	106.39	-1.09
4	*2412.00	94.8 AV			1.11 H	215	95.89	-1.09
5	4824.00	56.8 PK	74.0	-17.2	1.32 H	75	49.21	7.59
6	4824.00	43.3 AV	54.0	-10.7	1.32 H	75	35.71	7.59
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.1 PK	74.0	-3.9	1.68 V	275	71.29	-1.19
2	2390.00	50.8 AV	54.0	-3.2	1.68 V	275	51.99	-1.19
3	*2412.00	101.4 PK			1.68 V	275	102.49	-1.09
4	*2412.00	91.2 AV			1.68 V	275	92.29	-1.09
5	4824.00	57.5 PK	74.0	-16.5	1.05 V	11	49.91	7.59
6	4824.00	44.1 AV	54.0	-9.9	1.05 V	11	36.51	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	2390.00	57.7 PK	74.0	-16.3	1.11 H	216	58.89	-1.19
2	2390.00	40.8 AV	54.0	-13.2	1.11 H	216	41.99	-1.19
3	*2437.00	108.8 PK			1.11 H	216	109.79	-0.99
4	*2437.00	97.7 AV			1.11 H	216	98.69	-0.99
5	2483.50	58.5 PK	74.0	-15.5	1.11 H	216	59.30	-0.80
6	2483.50	41.6 AV	54.0	-12.4	1.11 H	216	42.40	-0.80
7	4874.00	57.0 PK	74.0	-17.0	1.36 H	78	49.23	7.77
8	4874.00	43.6 AV	54.0	-10.4	1.36 H	78	35.83	7.77
9	7311.00	60.5 PK	74.0	-13.5	1.18 H	166	45.01	15.49
10	7311.00	46.5 AV	54.0	-7.5	1.18 H	166	31.01	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	54.5 PK	74.0	-19.5	1.65 V	254	55.69	-1.19
2	2390.00	37.4 AV	54.0	-16.6	1.65 V	254	38.59	-1.19
3	*2437.00	105.6 PK			1.65 V	254	106.59	-0.99
4	*2437.00	94.8 AV			1.65 V	254	95.79	-0.99
5	2483.50	55.5 PK	74.0	-18.5	1.65 V	254	56.30	-0.80
6	2483.50	38.8 AV	54.0	-15.2	1.65 V	254	39.60	-0.80
7	4874.00	57.6 PK	74.0	-16.4	1.01 V	17	49.83	7.77
8	4874.00	44.1 AV	54.0	-9.9	1.01 V	17	36.33	7.77
9	7311.00	60.2 PK	74.0	-13.8	1.49 V	145	44.71	15.49
10	7311.00	46.3 AV	54.0	-7.7	1.49 V	145	30.81	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.
6. " # ": The radiated frequency is out of the restricted band.

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	104.4 PK			1.10 H	216	105.29	-0.89
2	*2462.00	93.6 AV			1.10 H	216	94.49	-0.89
3	2483.50	72.9 PK	74.0	-1.1	1.10 H	216	73.70	-0.80
4	2483.50	53.1 AV	54.0	-0.9	1.10 H	216	53.90	-0.80
5	4924.00	57.1 PK	74.0	-16.9	1.33 H	66	49.16	7.94
6	4924.00	43.4 AV	54.0	-10.6	1.33 H	66	35.46	7.94
7	7386.00	60.0 PK	74.0	-14.0	1.14 H	179	44.49	15.51
8	7386.00	46.1 AV	54.0	-7.9	1.14 H	179	30.59	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	101.2 PK			1.55 V	255	102.09	-0.89
2	*2462.00	90.3 AV			1.55 V	255	91.19	-0.89
3	2483.50	69.7 PK	74.0	-4.3	1.55 V	255	70.50	-0.80
4	2483.50	50.2 AV	54.0	-3.8	1.55 V	255	51.00	-0.80
5	4924.00	57.0 PK	74.0	-17.0	1.00 V	13	49.06	7.94
6	4924.00	43.7 AV	54.0	-10.3	1.00 V	13	35.76	7.94
7	7386.00	59.6 PK	74.0	-14.4	1.52 V	129	44.09	15.51
8	7386.00	46.3 AV	54.0	-7.7	1.52 V	129	30.79	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	73.4 PK	74.0	-0.6	1.34 H	229	74.59	-1.19
2	2390.00	53.5 AV	54.0	-0.5	1.34 H	229	54.69	-1.19
3	*2412.00	107.7 PK			1.34 H	229	108.79	-1.09
4	*2412.00	95.4 AV			1.34 H	229	96.49	-1.09
5	4824.00	56.7 PK	74.0	-17.3	1.25 H	81	49.11	7.59
6	4824.00	43.2 AV	54.0	-10.8	1.25 H	81	35.61	7.59
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.1 PK	74.0	-5.9	1.76 V	277	69.29	-1.19
2	2390.00	49.7 AV	54.0	-4.3	1.76 V	277	50.89	-1.19
3	*2412.00	104.0 PK			1.76 V	277	105.09	-1.09
4	*2412.00	92.0 AV			1.76 V	277	93.09	-1.09
5	4824.00	57.4 PK	74.0	-16.6	1.01 V	1	49.81	7.59
6	4824.00	44.0 AV	54.0	-10.0	1.01 V	1	36.41	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	54.1 PK	74.0	-19.9	1.29 H	231	55.29	-1.19
2	2390.00	39.8 AV	54.0	-14.2	1.29 H	231	40.99	-1.19
3	*2437.00	111.3 PK			1.29 H	231	112.29	-0.99
4	*2437.00	99.2 AV			1.29 H	231	100.19	-0.99
5	2483.50	57.2 PK	74.0	-16.8	1.29 H	231	58.00	-0.80
6	2483.50	42.8 AV	54.0	-11.2	1.29 H	231	43.60	-0.80
7	4874.00	56.8 PK	74.0	-17.2	1.24 H	71	49.03	7.77
8	4874.00	42.8 AV	54.0	-11.2	1.24 H	71	35.03	7.77
9	7311.00	59.0 PK	74.0	-15.0	1.04 H	172	43.51	15.49
10	7311.00	45.3 AV	54.0	-8.7	1.04 H	172	29.81	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	53.1 PK	74.0	-20.9	1.82 V	279	54.29	-1.19
2	2390.00	39.2 AV	54.0	-14.8	1.82 V	279	40.39	-1.19
3	*2437.00	108.4 PK			1.82 V	279	109.39	-0.99
4	*2437.00	96.4 AV			1.82 V	279	97.39	-0.99
5	2483.50	56.4 PK	74.0	-17.6	1.82 V	279	57.20	-0.80
6	2483.50	42.5 AV	54.0	-11.5	1.82 V	279	43.30	-0.80
7	4874.00	57.5 PK	74.0	-16.5	1.00 V	11	49.73	7.77
8	4874.00	44.1 AV	54.0	-9.9	1.00 V	11	36.33	7.77
9	7311.00	59.7 PK	74.0	-14.3	1.57 V	168	44.21	15.49
10	7311.00	47.0 AV	54.0	-7.0	1.57 V	168	31.51	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	106.6 PK			1.29 H	231	107.49	-0.89
2	*2462.00	95.5 AV			1.29 H	231	96.39	-0.89
3	2483.50	73.3 PK	74.0	-0.7	1.29 H	231	74.10	-0.80
4	2483.50	53.6 AV	54.0	-0.4	1.29 H	231	54.40	-0.80
5	4924.00	56.4 PK	74.0	-17.6	1.28 H	55	48.46	7.94
6	4924.00	42.6 AV	54.0	-11.4	1.28 H	55	34.66	7.94
7	7386.00	60.2 PK	74.0	-13.8	1.10 H	171	44.69	15.51
8	7386.00	46.3 AV	54.0	-7.7	1.10 H	171	30.79	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	103.6 PK			1.87 V	273	104.49	-0.89
2	*2462.00	92.6 AV			1.87 V	273	93.49	-0.89
3	2483.50	69.6 PK	74.0	-4.4	1.87 V	273	70.40	-0.80
4	2483.50	50.3 AV	54.0	-3.7	1.87 V	273	51.10	-0.80
5	4924.00	57.7 PK	74.0	-16.3	1.00 V	1	49.76	7.94
6	4924.00	44.3 AV	54.0	-9.7	1.00 V	1	36.36	7.94
7	7386.00	59.4 PK	74.0	-14.6	1.59 V	165	43.89	15.51
8	7386.00	46.8 AV	54.0	-7.2	1.59 V	165	31.29	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.

4.2.8 TEST RESULTS (BT <LE> MODE)

BELOW 1GHz WORST-CASE DATA

BT_LE-GFSK

CHANNEL	TX Channel 19	**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	83.24	36.5 QP	40.0	-3.5	2.00 H	187	55.63	-19.14
2	241.92	35.7 QP	46.0	-10.3	1.00 H	223	50.52	-14.80
3	271.12	37.3 QP	46.0	-8.7	1.00 H	179	51.03	-13.73
4	763.32	34.9 QP	46.0	-11.1	1.00 H	226	37.09	-2.19
5	782.63	38.5 QP	46.0	-7.5	1.00 H	233	40.55	-2.07
6	849.34	37.2 QP	46.0	-8.8	1.00 H	115	38.57	-1.35
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	49.82	31.9 QP	40.0	-8.2	1.50 V	162	45.43	-13.58
2	**199.83**	**40.1 QP**	**43.5**	**-3.4**	**1.55 V**	**248**	**56.73**	**-16.63**
3	272.32	39.9 QP	46.0	-6.2	1.00 V	223	53.51	-13.66
4	580.82	36.2 QP	46.0	-9.8	1.50 V	264	42.28	-6.09
5	616.22	40.7 QP	46.0	-5.4	1.00 V	262	45.45	-4.80
6	649.52	41.2 QP	46.0	-4.9	1.00 V	116	45.63	-4.48

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

BT_LE-GFSK

CHANNEL	TX Channel 0	**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	46.7 PK	74.0	-27.3	1.07 H	184	47.89	-1.19
2	2390.00	33.9 AV	54.0	-20.1	1.07 H	184	35.09	-1.19
3	*2402.00	100.9 PK			1.07 H	184	102.03	-1.13
4	*2402.00	87.2 AV			1.07 H	184	88.33	-1.13
5	4804.00	51.0 PK	74.0	-23.0	1.01 H	360	43.49	7.51
6	4804.00	39.8 AV	54.0	-14.2	1.01 H	360	32.29	7.51
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	47.1 PK	74.0	-26.9	1.00 V	160	48.29	-1.19
2	2390.00	34.0 AV	54.0	-20.0	1.00 V	160	35.19	-1.19
3	*2402.00	90.7 PK			1.00 V	160	91.83	-1.13
4	*2402.00	80.0 AV			1.00 V	160	81.13	-1.13
5	4804.00	52.4 PK	74.0	-21.6	1.00 V	270	44.89	7.51
6	4804.00	40.5 AV	54.0	-13.5	1.00 V	270	32.99	7.51

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 19	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	*2440.00	100.5 PK			1.00 H	184	101.48	-0.98
2	*2440.00	87.2 AV			1.00 H	184	88.18	-0.98
3	4880.00	49.8 PK	74.0	-24.2	1.00 H	360	42.00	7.80
4	4880.00	38.8 AV	54.0	-15.2	1.00 H	360	31.00	7.80
5	7320.00	53.8 PK	74.0	-20.2	1.07 H	235	38.31	15.49
6	7320.00	41.6 AV	54.0	-12.4	1.07 H	235	26.11	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	*2440.00	90.6 PK			1.00 V	160	91.58	-0.98
2	*2440.00	79.9 AV			1.00 V	160	80.88	-0.98
3	4880.00	53.5 PK	74.0	-20.5	1.00 V	281	45.70	7.80
4	4880.00	41.4 AV	54.0	-12.6	1.00 V	281	33.60	7.80
5	7320.00	54.2 PK	74.0	-19.8	1.12 V	38	38.71	15.49
6	7320.00	42.3 AV	54.0	-11.7	1.12 V	38	26.81	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 39	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	*2480.00	100.5 PK			1.14 H	195	101.31	-0.81
2	*2480.00	87.2 AV			1.14 H	195	88.01	-0.81
3	2483.50	49.6 PK	74.0	-24.4	1.14 H	195	50.40	-0.80
4	2483.50	36.6 AV	54.0	-17.4	1.14 H	195	37.40	-0.80
5	4960.00	49.9 PK	74.0	-24.1	1.00 H	348	41.86	8.04
6	4960.00	39.4 AV	54.0	-14.6	1.00 H	348	31.36	8.04
7	7440.00	52.6 PK	74.0	-21.4	1.12 H	229	37.16	15.44
8	7440.00	40.5 AV	54.0	-13.5	1.12 H	229	25.06	15.44
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	*2480.00	90.9 PK			1.06 V	183	91.71	-0.81
2	*2480.00	79.9 AV			1.06 V	183	80.71	-0.81
3	2483.50	48.3 PK	74.0	-25.7	1.06 V	183	49.10	-0.80
4	2483.50	35.6 AV	54.0	-18.4	1.06 V	183	36.40	-0.80
5	4960.00	52.8 PK	74.0	-21.2	1.05 V	266	44.76	8.04
6	4960.00	40.9 AV	54.0	-13.1	1.05 V	266	32.86	8.04
7	7440.00	53.6 PK	74.0	-20.4	1.19 V	31	38.16	15.44
8	7440.00	41.5 AV	54.0	-12.5	1.19 V	31	26.06	15.44

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 : July 12 and Aug. 08, 2013

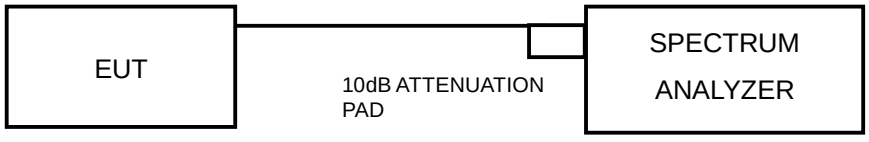
4.3.3 TEST PROCEDURE

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- Chain (0)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.05	0.5	PASS
6	2437	8.85	0.5	PASS
11	2462	8.25	0.5	PASS

802.11b- Chain (1)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.49	0.5	PASS
6	2437	8.63	0.5	PASS
11	2462	9.02	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.50	0.5	PASS
6	2437	16.44	0.5	PASS
11	2462	16.47	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.69	17.67	0.5	PASS
6	2437	17.63	17.67	0.5	PASS
11	2462	17.69	17.68	0.5	PASS

BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.52	0.5	PASS
19	2440	0.51	0.5	PASS
39	2480	0.51	0.5	PASS

4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

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

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

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

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

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

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	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 : July 12 and Aug. 08, 2013

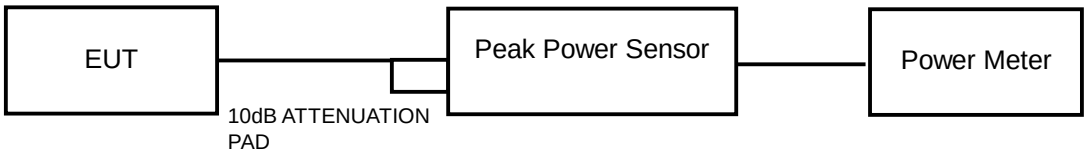
4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b- Chain (0)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	97.499	19.89	30	PASS
6	2437	121.060	20.83	30	PASS
11	2462	113.240	20.54	30	PASS

802.11b- Chain (1)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	154.170	21.88	30	PASS
6	2437	181.134	22.58	30	PASS
11	2462	207.491	23.17	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	226.464	23.55	30	PASS
6	2437	286.418	24.57	30	PASS
11	2462	244.906	23.89	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	23.32	22.86	407.980	26.11	30	PASS
6	2437	24.78	24.43	577.940	27.62	30	PASS
11	2462	22.55	22.45	355.679	25.51	30	PASS

BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
0	2402	3.258	5.13	30	PASS
19	2440	3.614	5.58	30	PASS
39	2480	2.931	4.67	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

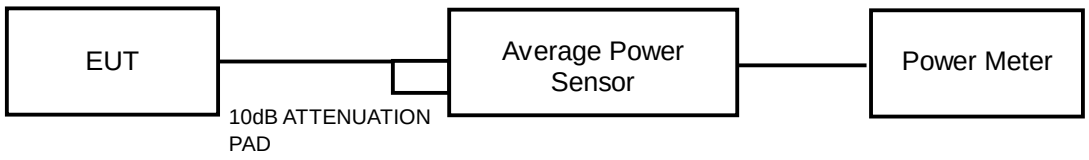
Note:

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 : July 12 and Aug. 08, 2013

4.5.3 TEST PROCEDURES

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

4.5.4 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.5.6 TEST RESULTS

802.11b- Chain (0)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	46.238	16.65
6	2437	58.749	17.69
11	2462	54.200	17.34

802.11b- Chain (1)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	76.913	18.86
6	2437	92.683	19.67
11	2462	113.763	20.56

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	64.714	18.11
6	2437	164.816	22.17
11	2462	67.764	18.31

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	17.23	16.22	94.724	19.76
6	2437	21.25	21.61	278.229	24.44
11	2462	15.88	15.32	72.767	18.62

BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
0	2402	3.090	4.90
19	2440	3.396	5.31
39	2480	2.805	4.48

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 : July 12 and Aug. 08, 2013

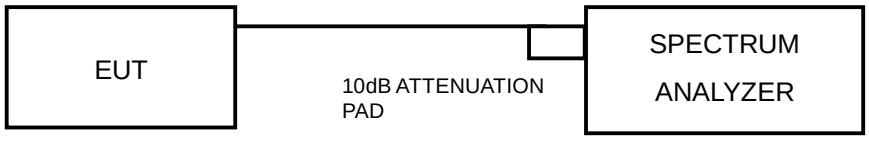
4.6.3 TEST PROCEDURE

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- Chain (0)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-8.20	8	PASS
6	2437	-6.45	8	PASS
11	2462	-6.90	8	PASS

802.11b- Chain (1)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-5.37	8	PASS
6	2437	-5.18	8	PASS
11	2462	-3.52	8	PASS

802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-9.02	8	PASS
6	2437	-4.94	8	PASS
11	2462	-8.79	8	PASS

802.11n (HT20)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-9.18	3.01	-6.17	8	PASS
	6	2437	-6.05	3.01	-3.04	8	PASS
	11	2462	-10.53	3.01	-7.52	8	PASS
1	1	2412	-10.82	3.01	-7.81	8	PASS
	6	2437	-6.32	3.01	-3.31	8	PASS
	11	2462	-12.03	3.01	-9.02	8	PASS

BT_LE-GFSK

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-12.57	8	PASS
19	2440	-13.33	8	PASS
39	2480	-13.59	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 : July 12 and Aug. 08, 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.

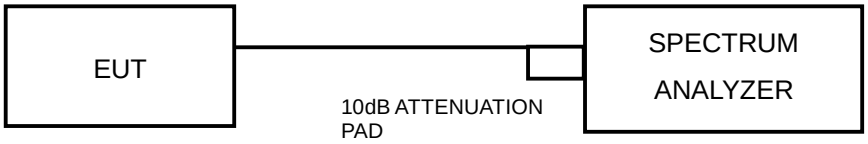
Measurement Procedure –Unwanted Emission Level

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

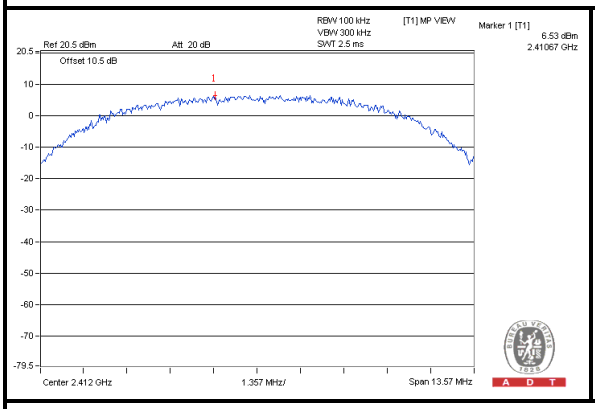
4.7.7 TEST RESULTS

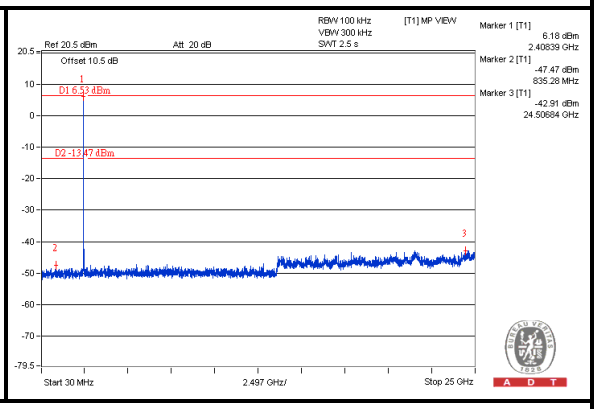
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b:

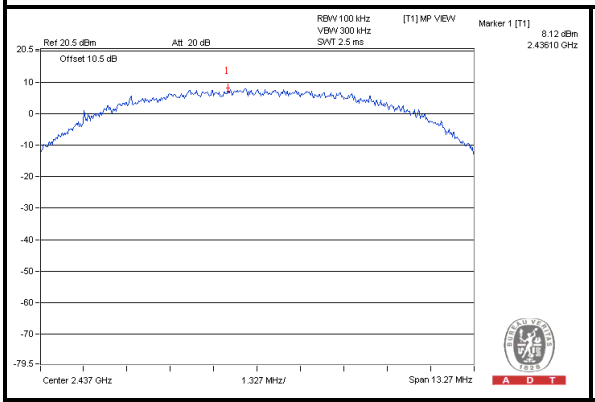
For Chain (0)

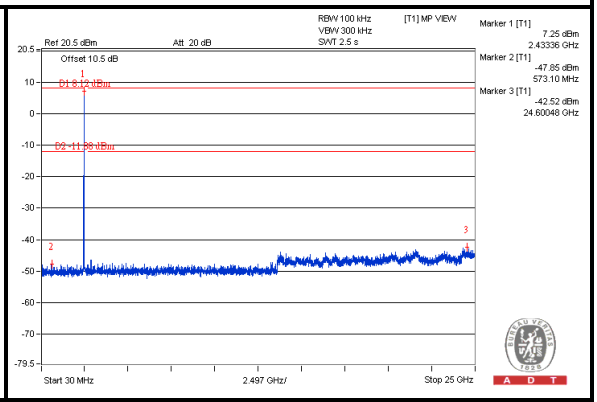
CH 1



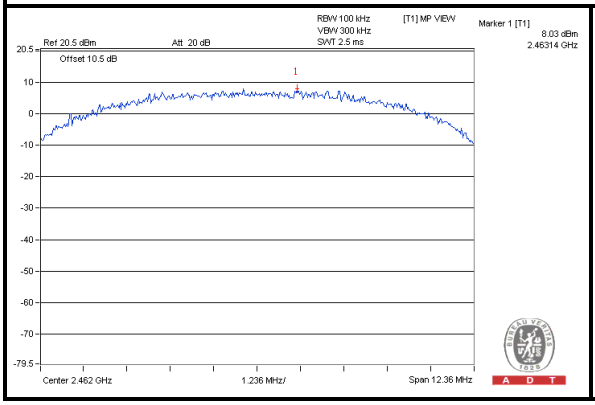


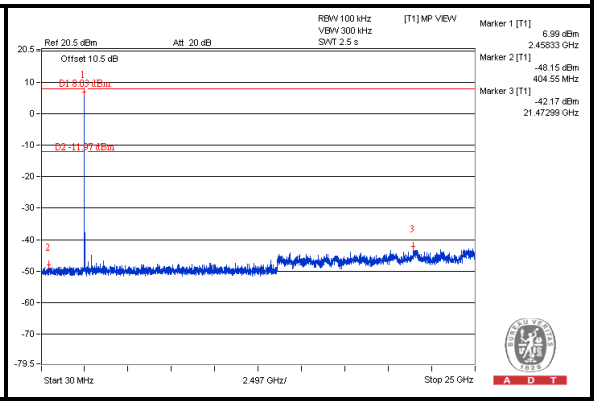
CH 6





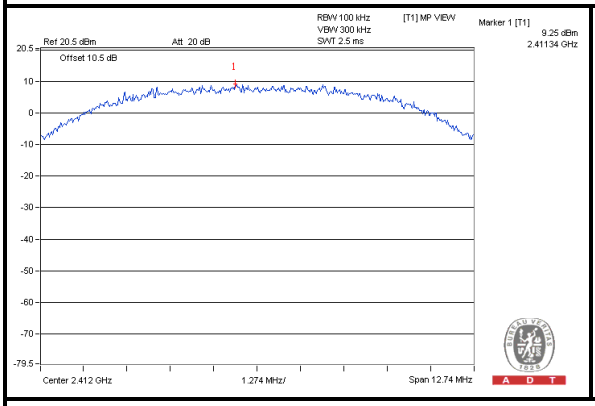
CH 11

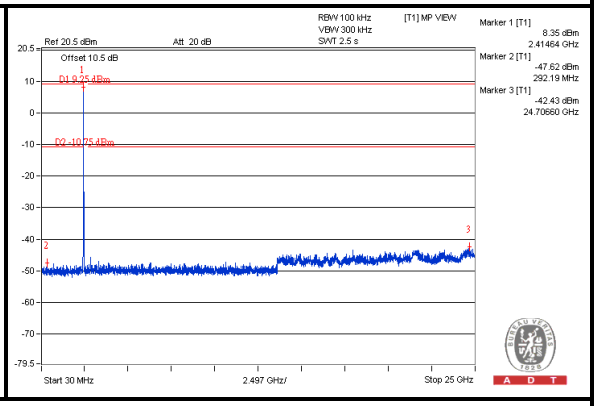




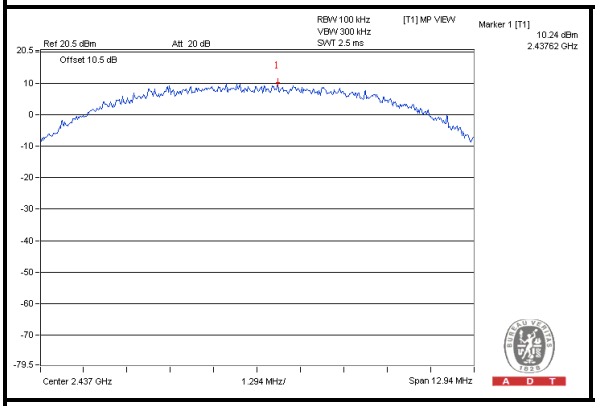
For Chain (1)

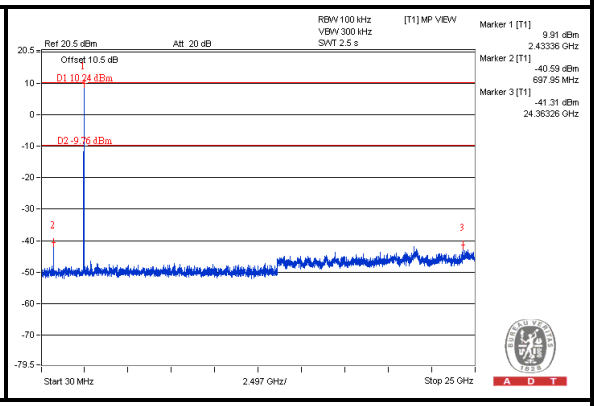
CH 1



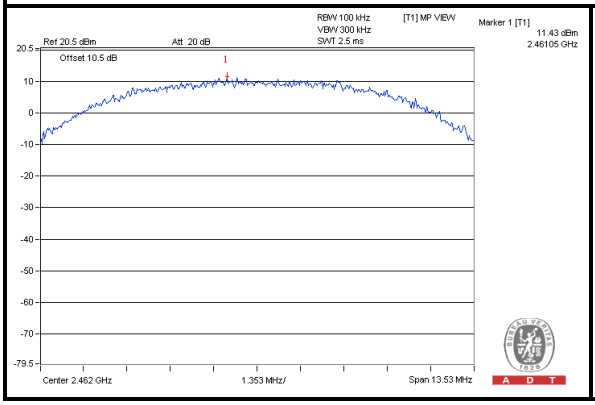


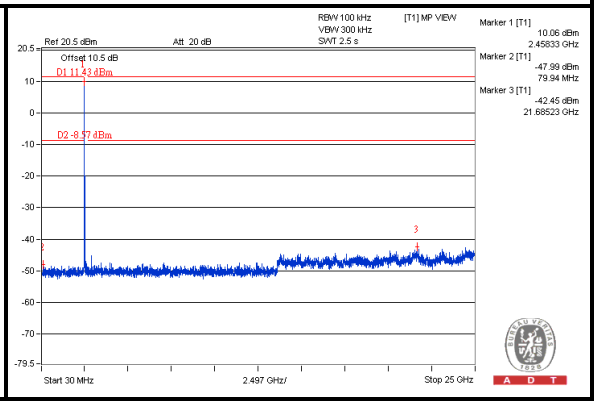
CH 6





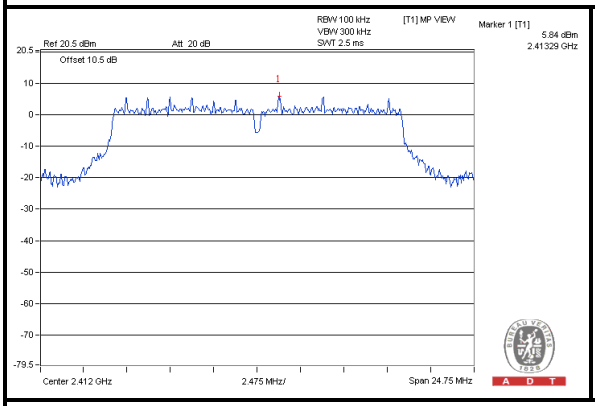
CH 11

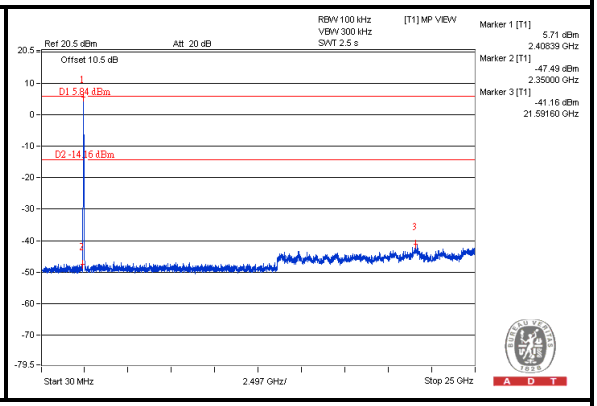




802.11g:

CH 1





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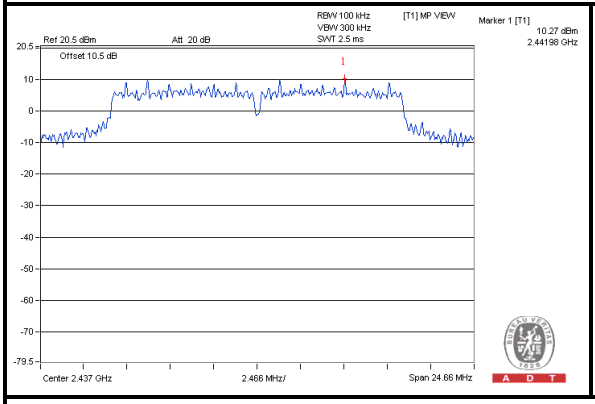

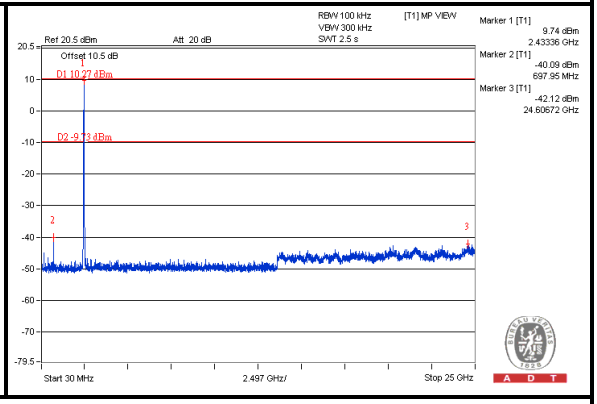

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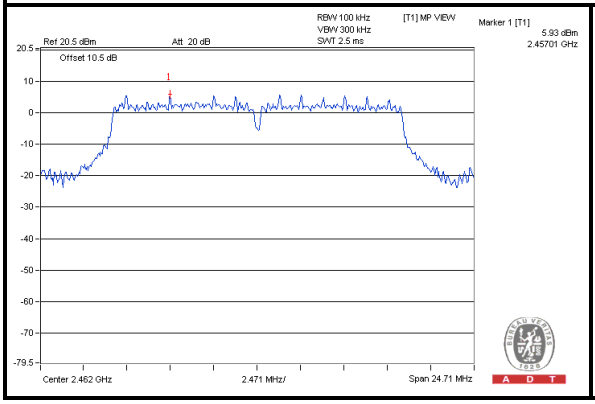
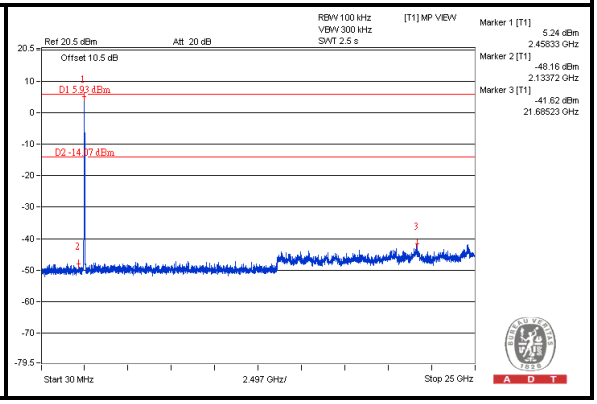
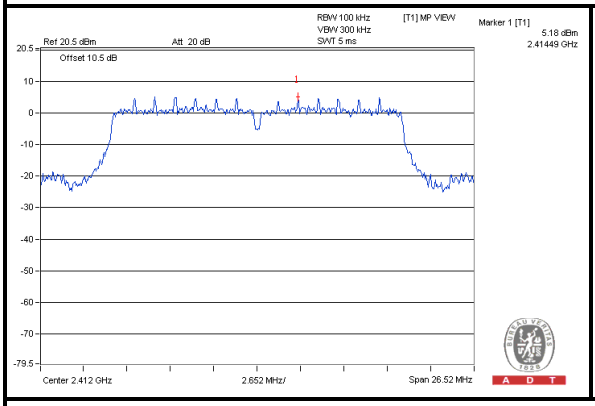


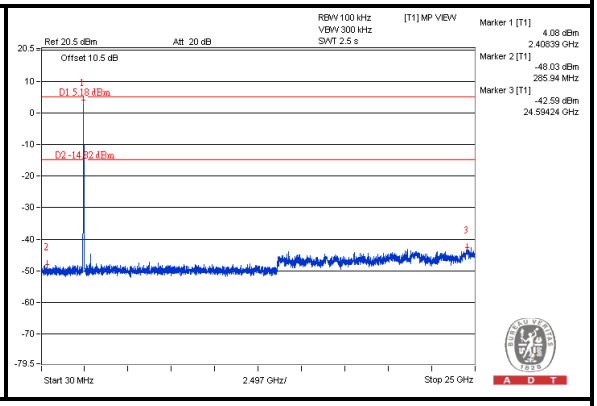


802.11n (HT20):

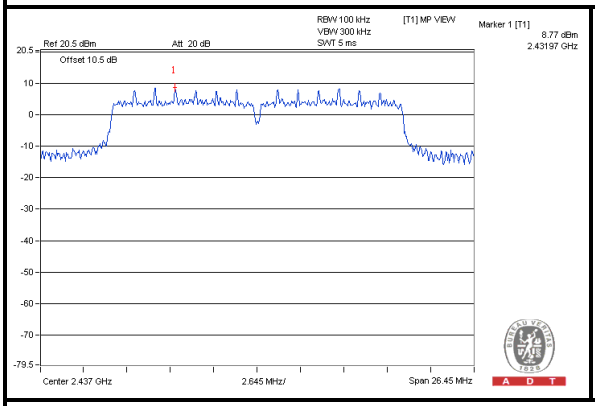
For Chain (0)

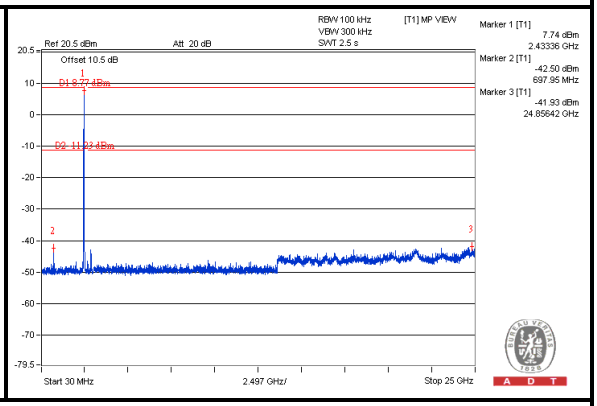
CH 1





CH 6





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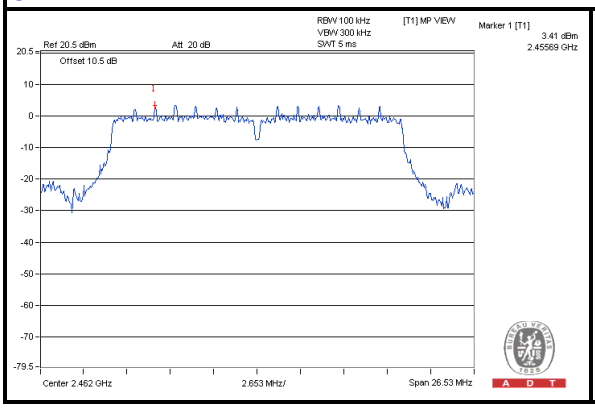

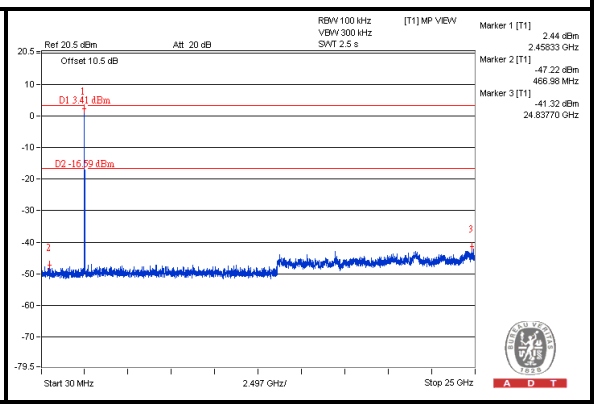

For Chain (1)

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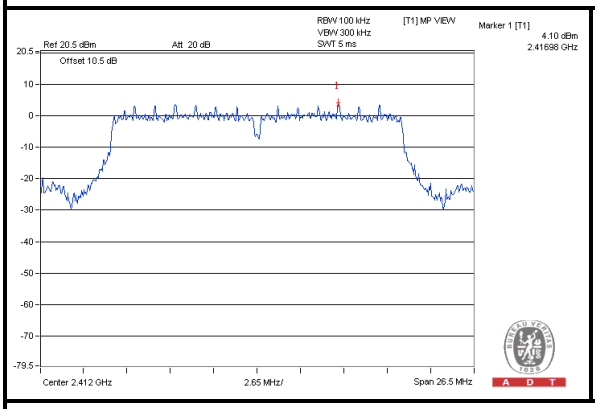

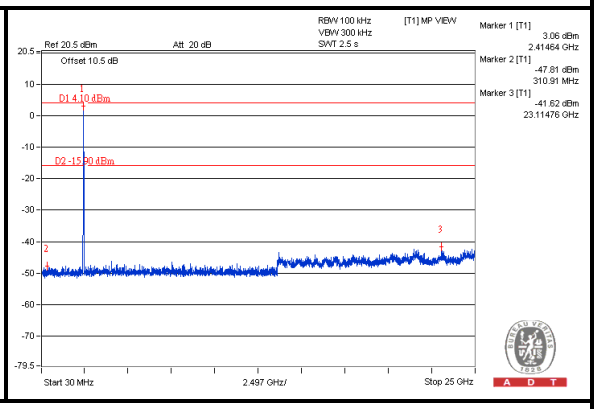

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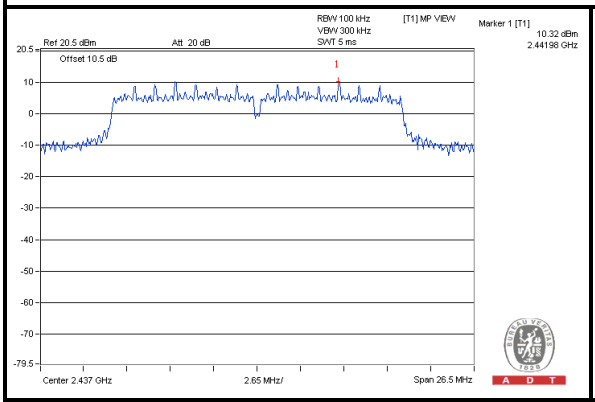

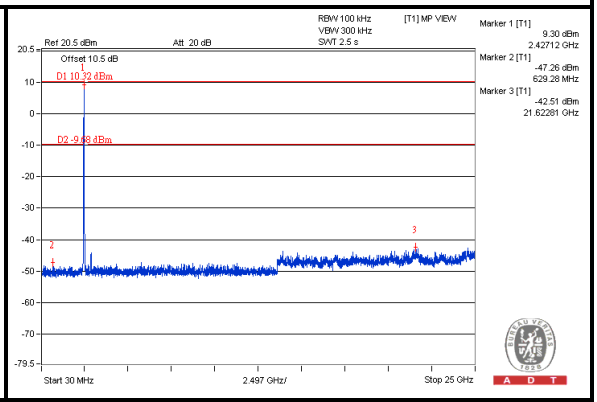

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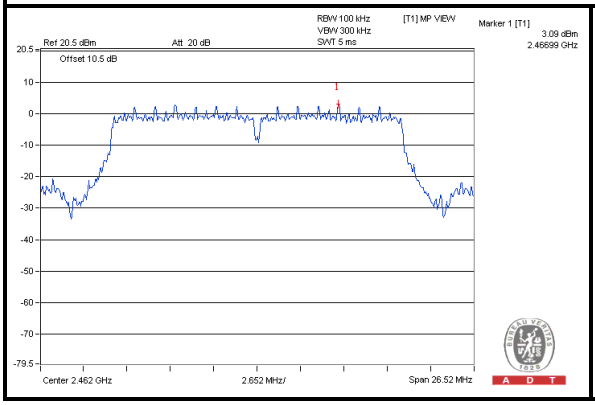
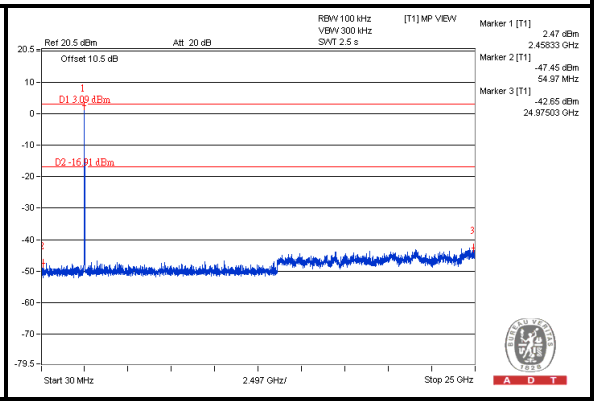
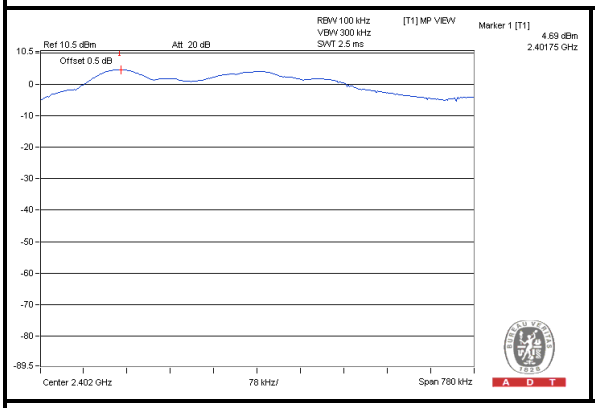
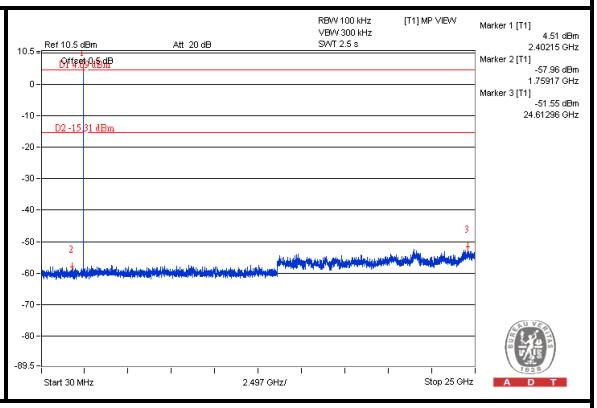




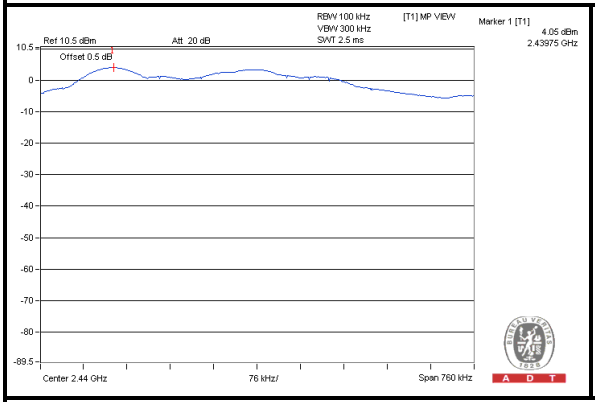
BT_LE-GFSK:

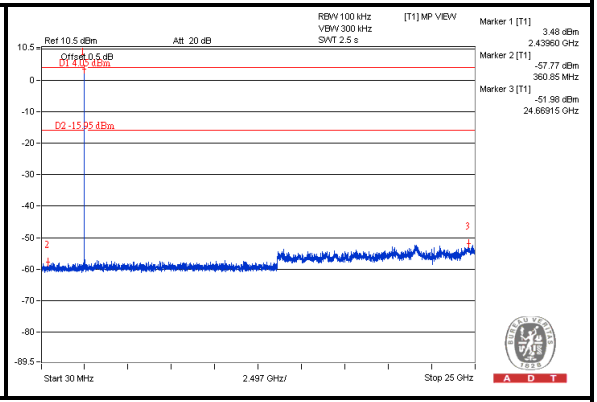
CH 0



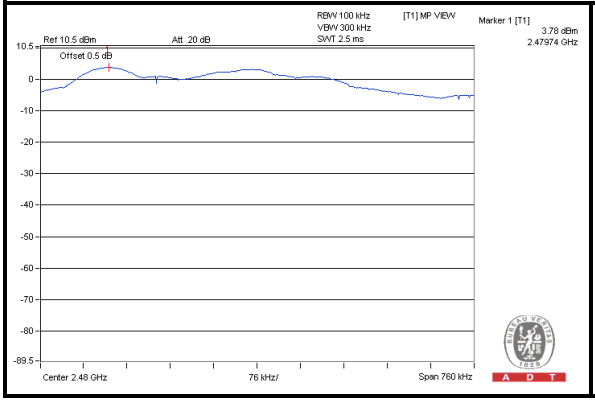


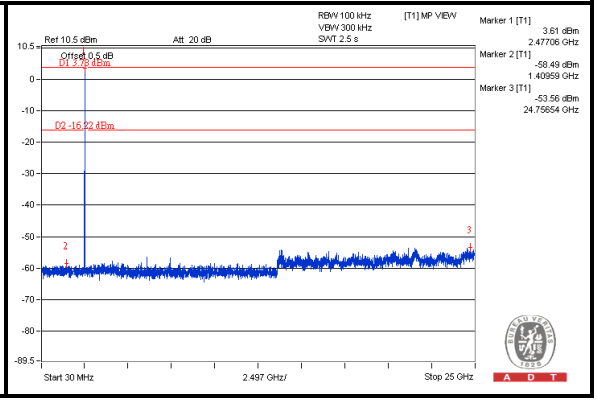
CH 19





CH 39





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	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 07, 2013	June 06, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: July 29, 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.

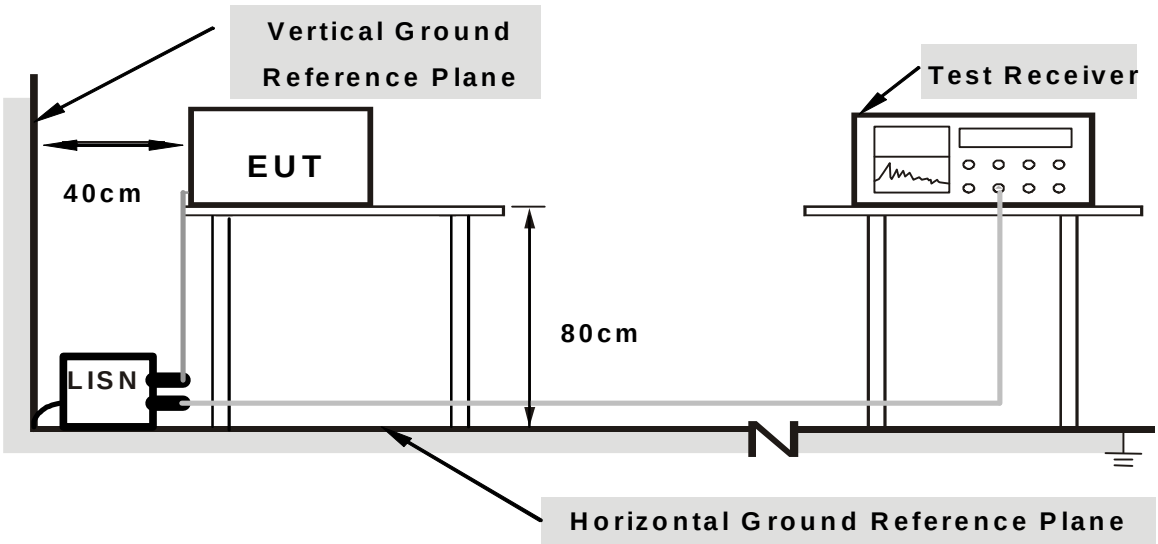
NOTE:

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

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 “MTool.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

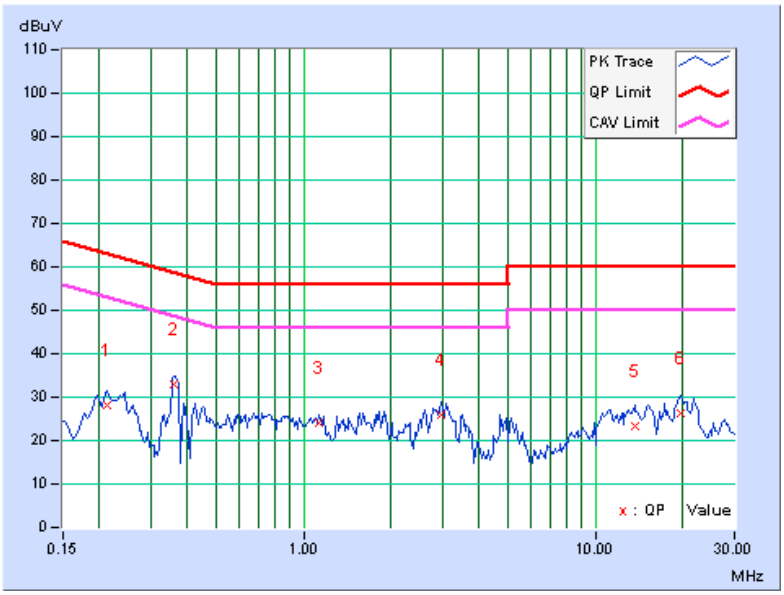
5.1.7 TEST RESULTS

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21250	0.14	28.06	20.42	28.20	20.56	63.11	53.11	-34.90	-32.54
2	**0.36094**	**0.17**	**32.90**	**29.77**	**33.07**	**29.94**	**58.71**	**48.71**	**-25.63**	**-18.76**
3	1.12500	0.23	23.89	17.07	24.12	17.30	56.00	46.00	-31.88	-28.70
4	2.96484	0.32	25.76	19.74	26.08	20.06	56.00	46.00	-29.92	-25.94
5	13.67969	0.82	22.44	16.42	23.26	17.24	60.00	50.00	-36.74	-32.76
6	19.50781	1.01	25.17	18.71	26.18	19.72	60.00	50.00	-33.82	-30.28

REMARKS:

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

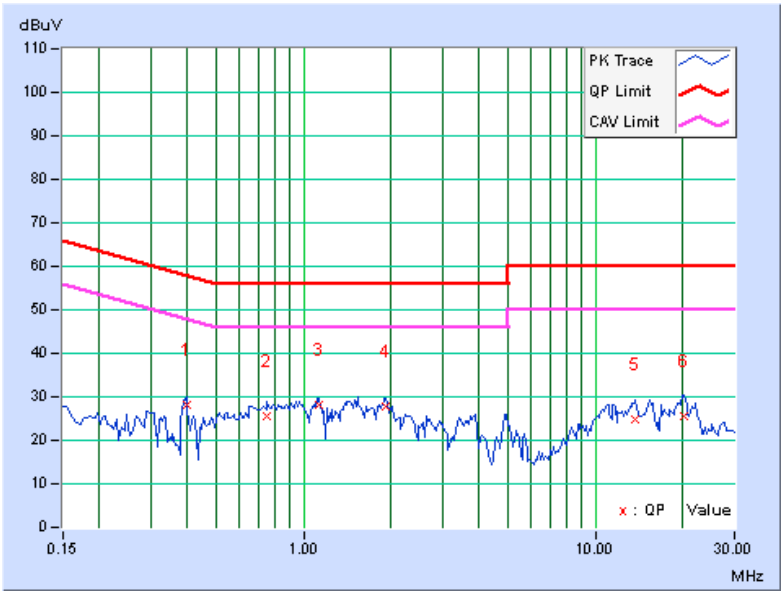


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.39609	0.17	28.04	22.63	28.21	22.80	57.93	47.93	-29.73	-25.14
2	0.75156	0.19	25.21	19.05	25.40	19.24	56.00	46.00	-30.60	-26.76
3	1.12500	0.21	27.77	20.80	27.98	21.01	56.00	46.00	-28.02	-24.99
4	1.91406	0.25	27.60	21.16	27.85	21.41	56.00	46.00	-28.15	-24.59
5	13.77344	0.62	24.09	18.06	24.71	18.68	60.00	50.00	-35.29	-31.32
6	20.05078	0.72	24.78	19.49	25.50	20.21	60.00	50.00	-34.50	-29.79

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: July 31 to Aug. 03, 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.

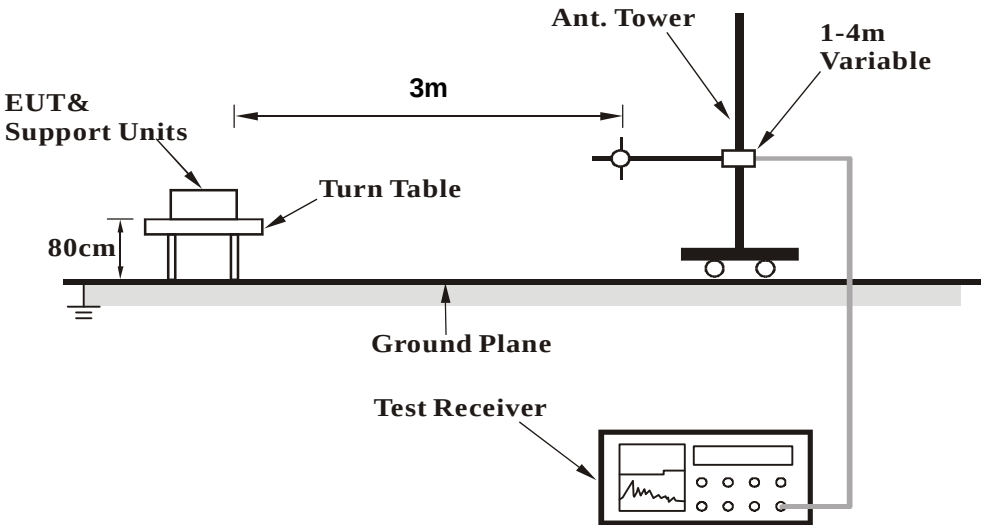
NOTE:

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 5.1.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (HT20)

CHANNEL	TX Channel 149	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	83.20	36.5 QP	40.0	-3.5	2.00 H	320	55.59	-19.13
2	241.90	35.7 QP	46.0	-10.3	1.00 H	152	50.55	-14.81
3	271.14	37.3 QP	46.0	-8.7	1.50 H	142	51.04	-13.73
4	763.32	34.9 QP	46.0	-11.2	1.00 H	241	37.04	-2.19
5	782.67	38.5 QP	46.0	-7.5	1.00 H	295	40.54	-2.07
6	849.36	37.3 QP	46.0	-8.8	2.00 H	144	38.60	-1.35
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	49.82	31.8 QP	40.0	-8.2	1.02 V	166	45.40	-13.58
2	**199.84**	**40.2 QP**	**43.5**	**-3.3**	**1.52 V**	**201**	**56.84**	**-16.64**
3	272.30	39.8 QP	46.0	-6.2	1.00 V	124	53.46	-13.66
4	580.80	36.1 QP	46.0	-9.9	1.00 V	165	42.19	-6.09
5	616.22	40.7 QP	46.0	-5.3	2.00 V	46	45.47	-4.80
6	649.54	41.1 QP	46.0	-5.0	1.50 V	97	45.53	-4.48

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	55.4 PK	74.0	-18.6	1.80 H	2	45.75	9.65
2	5460.00	43.1 AV	54.0	-10.9	1.80 H	2	33.45	9.65
3	*5745.00	108.7 PK			1.80 H	2	98.28	10.42
4	*5745.00	98.4 AV			1.80 H	2	87.98	10.42
5	11490.00	56.8 PK	74.0	-17.2	1.55 H	258	39.54	17.26
6	11490.00	45.3 AV	54.0	-8.7	1.55 H	258	28.04	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	55.1 PK	74.0	-18.9	1.81 V	44	45.45	9.65
2	5460.00	43.2 AV	54.0	-10.8	1.81 V	44	33.55	9.65
3	*5745.00	108.3 PK			1.81 V	44	97.88	10.42
4	*5745.00	98.6 AV			1.81 V	44	88.18	10.42
5	11490.00	55.3 PK	74.0	-18.7	1.00 V	315	38.04	17.26
6	11490.00	42.7 AV	54.0	-11.3	1.00 V	315	25.44	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	55.4 PK	74.0	-18.6	1.77 H	4	45.75	9.65
2	5460.00	43.0 AV	54.0	-11.0	1.77 H	4	33.35	9.65
3	*5785.00	108.1 PK			1.77 H	4	97.61	10.49
4	*5785.00	98.0 AV			1.77 H	4	87.51	10.49
5	11570.00	57.1 PK	74.0	-16.9	1.59 H	265	39.81	17.29
6	11570.00	45.3 AV	54.0	-8.7	1.59 H	265	28.01	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	54.4 PK	74.0	-19.6	1.82 V	53	44.75	9.65
2	5460.00	42.7 AV	54.0	-11.3	1.82 V	53	33.05	9.65
3	*5785.00	108.3 PK			1.82 V	53	97.81	10.49
4	*5785.00	98.3 AV			1.82 V	53	87.81	10.49
5	11570.00	55.2 PK	74.0	-18.8	1.02 V	307	37.91	17.29
6	11570.00	42.4 AV	54.0	-11.6	1.02 V	307	25.11	17.29

REMARKS:

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

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.4 PK	74.0	-18.6	1.80 H	9	45.75	9.65
2	5460.00	42.9 AV	54.0	-11.1	1.80 H	9	33.25	9.65
3	*5825.00	108.5 PK			1.80 H	9	97.85	10.65
4	*5825.00	98.2 AV			1.80 H	9	87.55	10.65
5	11650.00	56.6 PK	74.0	-17.4	1.51 H	267	38.94	17.66
6	11650.00	44.9 AV	54.0	-9.1	1.51 H	267	27.24	17.66
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.5 PK	74.0	-18.5	1.82 V	40	45.85	9.65
2	5460.00	43.5 AV	54.0	-10.5	1.82 V	40	33.85	9.65
3	*5825.00	108.6 PK			1.82 V	40	97.95	10.65
4	*5825.00	98.9 AV			1.82 V	40	88.25	10.65
5	11650.00	55.7 PK	74.0	-18.3	1.00 V	316	38.04	17.66
6	11650.00	43.1 AV	54.0	-10.9	1.00 V	316	25.44	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	55.6 PK	74.0	-18.4	1.37 H	40	45.95	9.65
2	5460.00	43.5 AV	54.0	-10.5	1.37 H	40	33.85	9.65
3	*5745.00	112.6 PK			1.37 H	40	102.18	10.42
4	*5745.00	102.0 AV			1.37 H	40	91.58	10.42
5	11490.00	60.2 PK	74.0	-13.8	1.27 H	254	42.94	17.26
6	11490.00	47.4 AV	54.0	-6.6	1.27 H	254	30.14	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	54.8 PK	74.0	-19.2	1.80 V	75	45.15	9.65
2	5460.00	43.1 AV	54.0	-10.9	1.80 V	75	33.45	9.65
3	*5745.00	111.1 PK			1.80 V	75	100.68	10.42
4	*5745.00	99.4 AV			1.80 V	75	88.98	10.42
5	11490.00	59.7 PK	74.0	-14.3	1.00 V	316	42.44	17.26
6	11490.00	45.7 AV	54.0	-8.3	1.00 V	316	28.44	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	56.0 PK	74.0	-18.0	1.33 H	44	46.35	9.65
2	5460.00	43.8 AV	54.0	-10.2	1.33 H	44	34.15	9.65
3	*5785.00	112.9 PK			1.33 H	44	102.41	10.49
4	*5785.00	102.0 AV			1.33 H	44	91.51	10.49
5	11570.00	60.5 PK	74.0	-13.5	1.26 H	243	43.21	17.29
6	11570.00	47.9 AV	54.0	-6.1	1.26 H	243	30.61	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	54.4 PK	74.0	-19.6	1.81 V	64	44.75	9.65
2	5460.00	42.7 AV	54.0	-11.3	1.81 V	64	33.05	9.65
3	*5785.00	110.8 PK			1.81 V	64	100.31	10.49
4	*5785.00	98.9 AV			1.81 V	64	88.41	10.49
5	11570.00	59.4 PK	74.0	-14.6	1.02 V	320	42.11	17.29
6	11570.00	45.5 AV	54.0	-8.5	1.02 V	320	28.21	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	55.2 PK	74.0	-18.8	1.39 H	49	45.55	9.65
2	5460.00	43.3 AV	54.0	-10.7	1.39 H	49	33.65	9.65
3	*5825.00	113.1 PK			1.39 H	49	102.45	10.65
4	*5825.00	102.4 AV			1.39 H	49	91.75	10.65
5	11650.00	60.1 PK	74.0	-13.9	1.26 H	247	42.44	17.66
6	11650.00	47.4 AV	54.0	-6.6	1.26 H	247	29.74	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	54.3 PK	74.0	-19.7	1.77 V	84	44.65	9.65
2	5460.00	42.6 AV	54.0	-11.4	1.77 V	84	32.95	9.65
3	*5825.00	110.8 PK			1.76 V	84	100.15	10.65
4	*5825.00	99.1 AV			1.76 V	84	88.45	10.65
5	11650.00	59.7 PK	74.0	-14.3	1.06 V	309	42.04	17.66
6	11650.00	45.7 AV	54.0	-8.3	1.06 V	309	28.04	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	55.9 PK	74.0	-18.1	1.02 H	32	46.25	9.65
2	5460.00	42.9 AV	54.0	-11.1	1.02 H	32	33.25	9.65
3	*5755.00	108.3 PK			1.02 H	32	97.87	10.43
4	*5755.00	95.8 AV			1.02 H	32	85.37	10.43
5	11510.00	60.1 PK	74.0	-13.9	1.28 H	247	42.87	17.23
6	11510.00	47.6 AV	54.0	-6.4	1.28 H	247	30.37	17.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.4 PK	74.0	-18.6	1.92 V	72	45.75	9.65
2	5460.00	42.6 AV	54.0	-11.4	1.92 V	72	32.95	9.65
3	*5755.00	106.8 PK			1.92 V	72	96.37	10.43
4	*5755.00	95.4 AV			1.92 V	72	84.97	10.43
5	11510.00	59.6 PK	74.0	-14.4	1.01 V	306	42.37	17.23
6	11510.00	45.5 AV	54.0	-8.5	1.01 V	306	28.27	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	56.2 PK	74.0	-17.8	1.00 H	39	46.55	9.65
2	5460.00	42.9 AV	54.0	-11.1	1.00 H	39	33.25	9.65
3	*5795.00	108.5 PK			1.00 H	39	98.00	10.50
4	*5795.00	95.7 AV			1.00 H	39	85.20	10.50
5	11590.00	60.8 PK	74.0	-13.2	1.31 H	234	43.49	17.31
6	11590.00	48.1 AV	54.0	-5.9	1.31 H	234	30.79	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	55.5 PK	74.0	-18.5	1.86 V	83	45.85	9.65
2	5460.00	42.4 AV	54.0	-11.6	1.86 V	83	32.75	9.65
3	*5795.00	106.3 PK			1.86 V	83	95.80	10.50
4	*5795.00	94.9 AV			1.86 V	83	84.40	10.50
5	11590.00	59.1 PK	74.0	-14.9	1.00 V	311	41.79	17.31
6	11590.00	45.2 AV	54.0	-8.8	1.00 V	311	27.89	17.31

REMARKS:

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

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 08, 2013

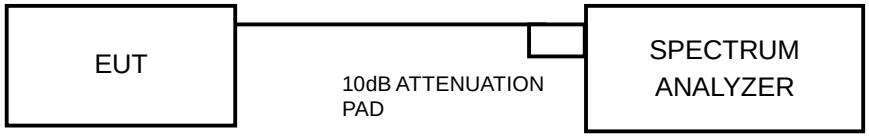
5.3.3 TEST PROCEDURE

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	16.38	0.5	PASS
157	5785	16.43	0.5	PASS
165	5825	16.42	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.66	17.60	0.5	PASS
157	5785	17.35	17.58	0.5	PASS
165	5825	17.59	17.57	0.5	PASS

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.94	36.46	0.5	PASS
159	5795	36.45	36.40	0.5	PASS

5.4 CONDUCTED OUTPUT POWER MEASUREMENT

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

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

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

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

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

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

5.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	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. 08, 2013

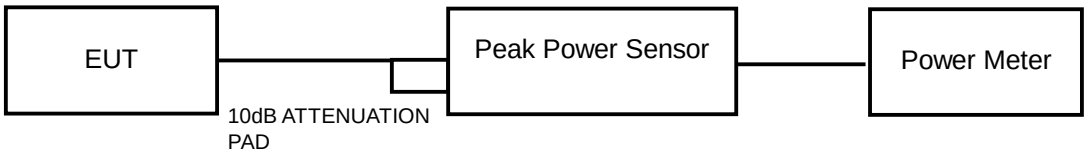
5.4.3 TEST PROCEDURES

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

5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

5.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	304.089	24.83	30	PASS
157	5785	286.418	24.57	30	PASS
165	5825	268.534	24.29	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	24.53	24.82	587.181	27.69	30	PASS
157	5785	24.16	24.79	561.916	27.50	30	PASS
165	5825	23.91	24.70	541.158	27.33	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	24.21	24.75	562.171	27.50	30	PASS
159	5795	24.14	24.65	551.161	27.41	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

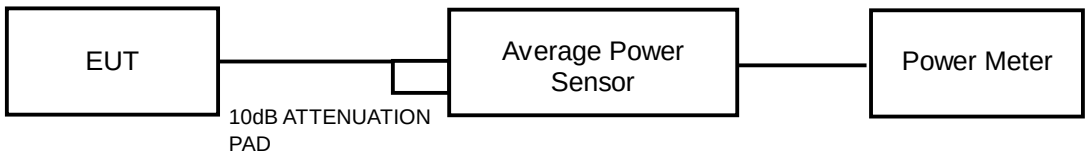
Note:

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. 08, 2013

5.5.3 TEST PROCEDURES

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

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	206.063	23.14
157	5785	191.426	22.82
165	5825	181.134	22.58

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	22.46	22.87	369.840	25.68
157	5785	22.11	23.21	371.966	25.71
165	5825	21.73	22.73	336.435	25.27

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	21.97	22.82	348.824	25.43
159	5795	22.19	22.71	352.215	25.47

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. 08, 2013

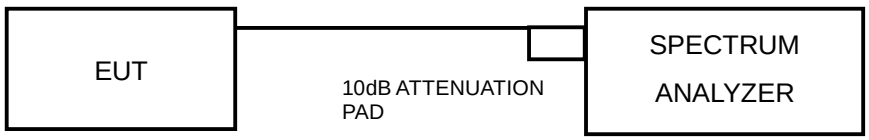
5.6.3 TEST PROCEDURE

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	-2.74	8	PASS
157	5785	-2.70	8	PASS
165	5825	-3.65	8	PASS

802.11n (HT20)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-3.87	3.01	-0.86	8	PASS
	157	5785	-4.07	3.01	-1.06	8	PASS
	165	5825	-3.32	3.01	-0.31	8	PASS
1	149	5745	-2.82	3.01	0.19	8	PASS
	157	5785	-3.53	3.01	-0.52	8	PASS
	165	5825	-5.14	3.01	-2.13	8	PASS

802.11n (HT40)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-6.52	3.01	-3.51	8	PASS
	159	5795	-7.81	3.01	-4.80	8	PASS
1	151	5755	-8.42	3.01	-5.41	8	PASS
	159	5795	-7.44	3.01	-4.43	8	PASS

5.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.7.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

5.7.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 08, 2013

5.7.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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.

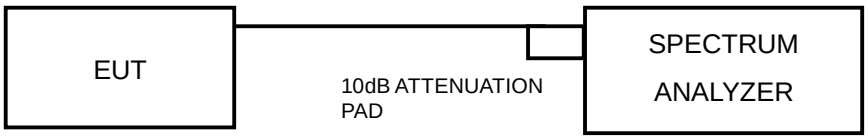
Measurement Procedure –Unwanted Emission Level

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

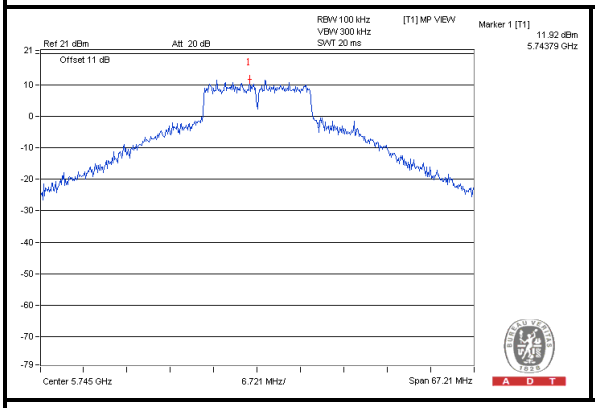
Same as Item 4.3.6

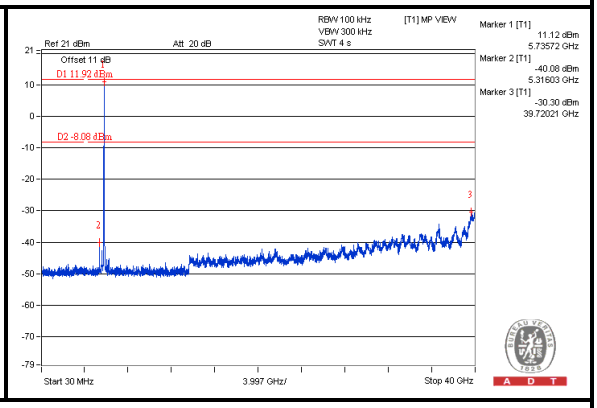
5.7.7 TEST RESULTS

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.

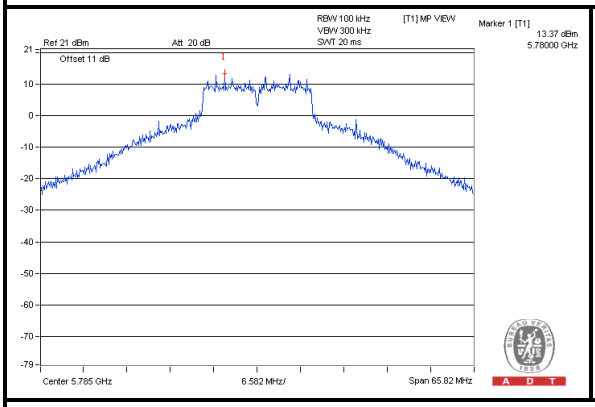
802.11a

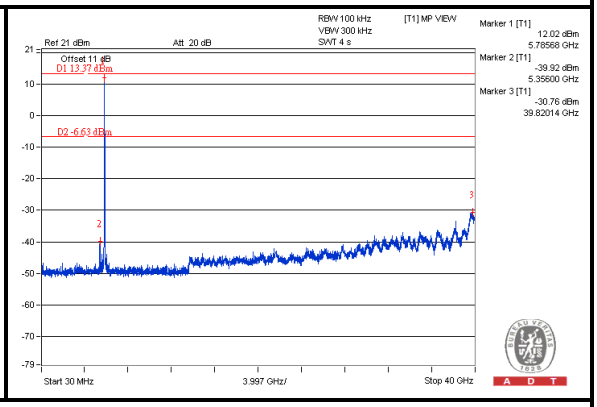
CH 149



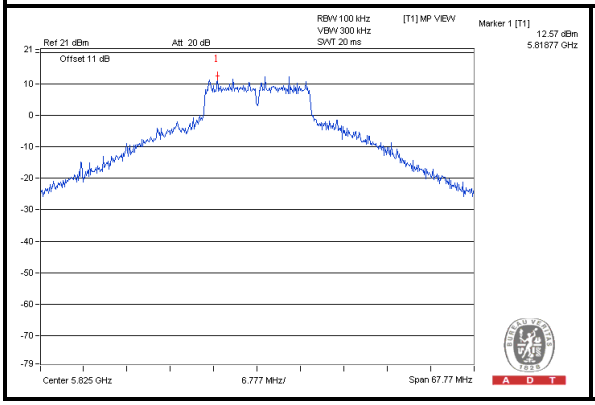


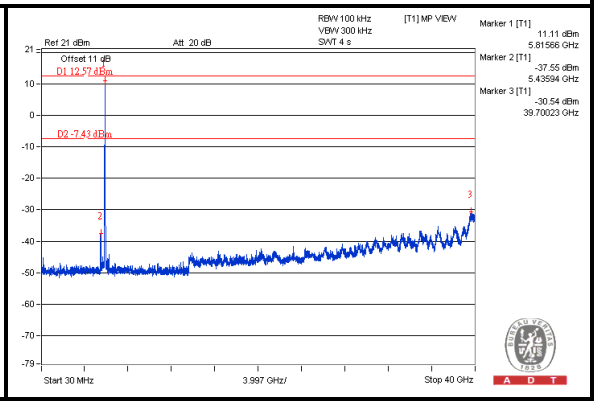
CH 157





CH 165

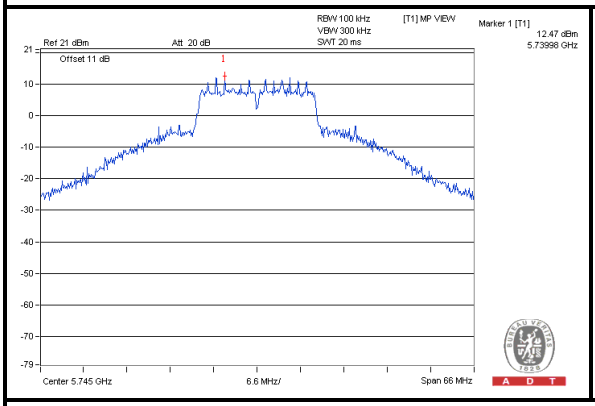


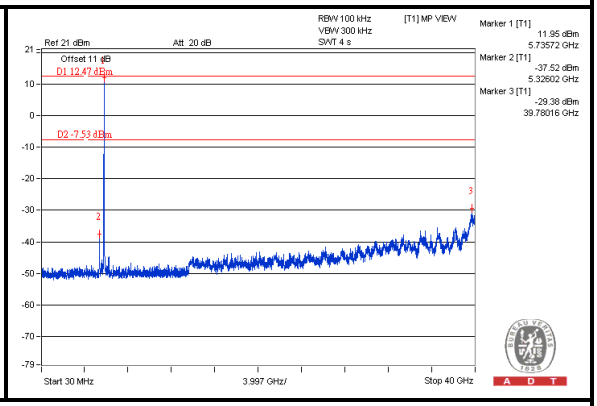


802.11n (HT20):

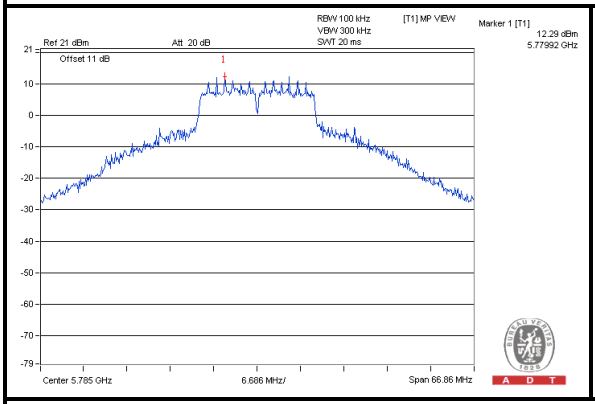
For Chain (0)

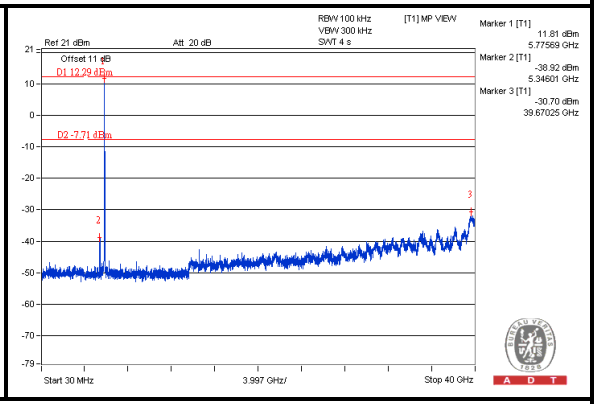
CH 149



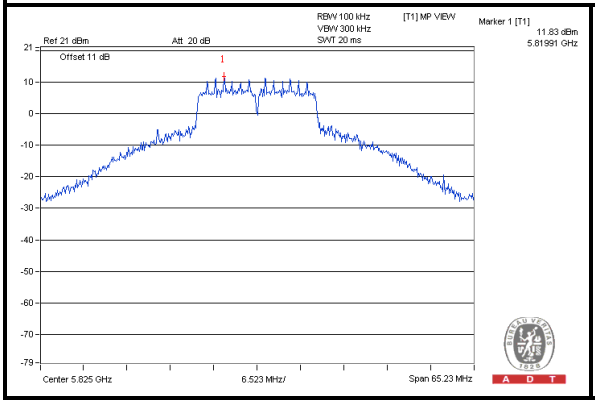


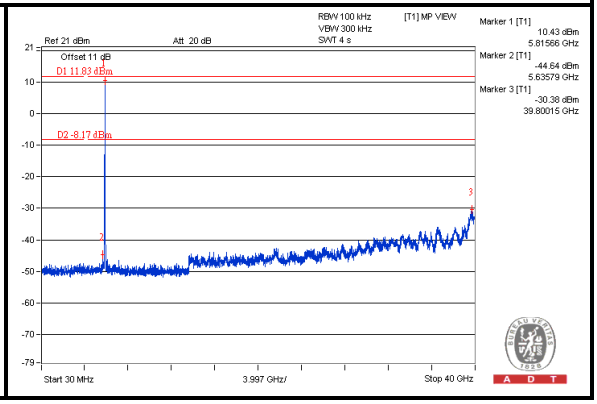
CH 157





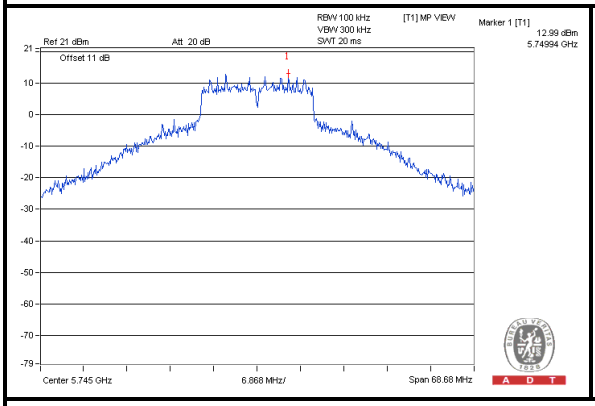
CH 165

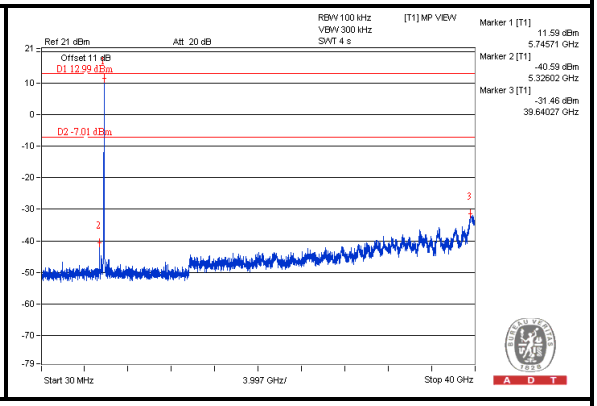




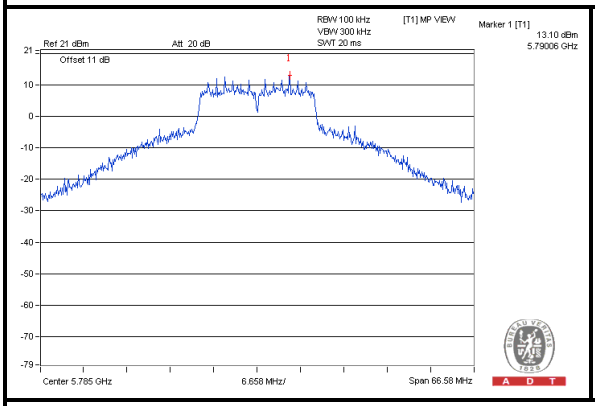
For Chain (1)

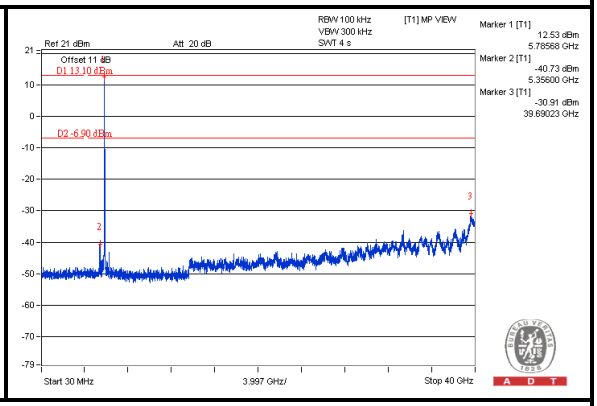
CH 149



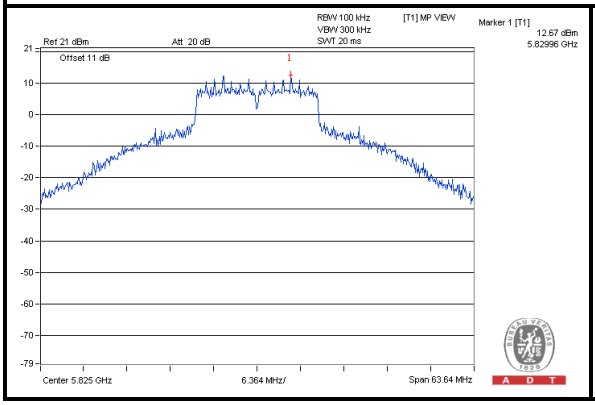


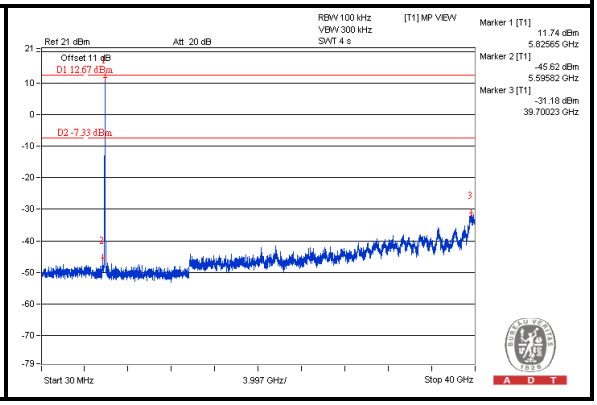
CH 157





CH 165

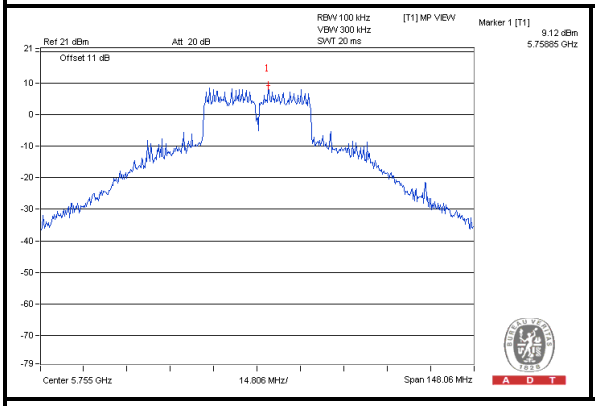


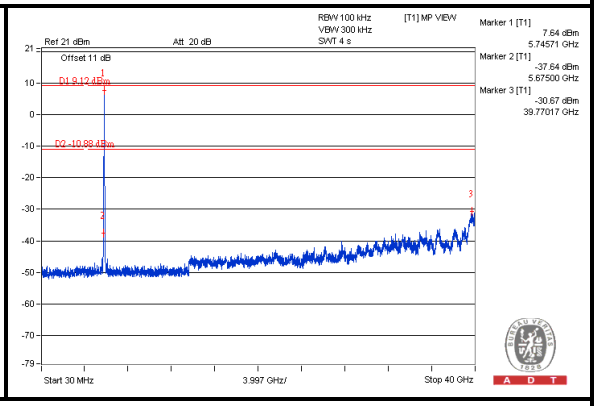


802.11n (HT40):

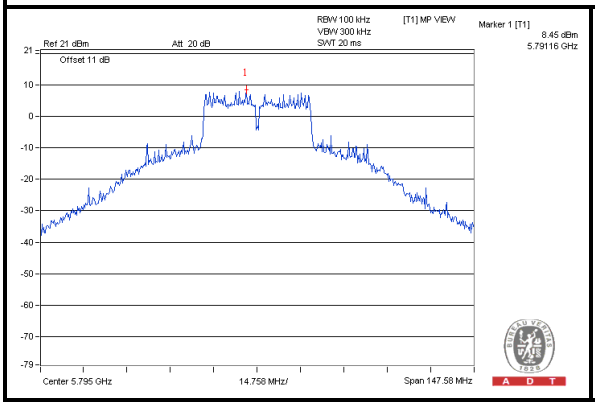
For Chain (0)

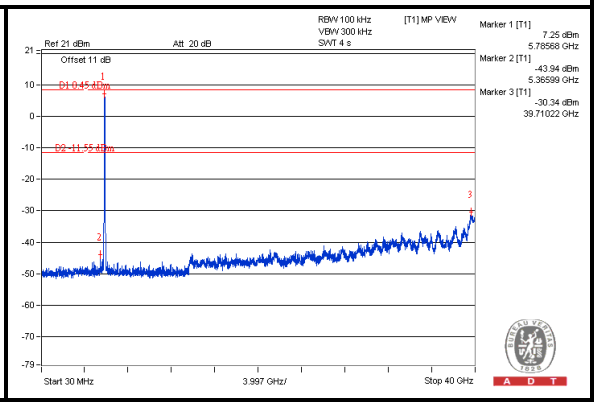
CH 151





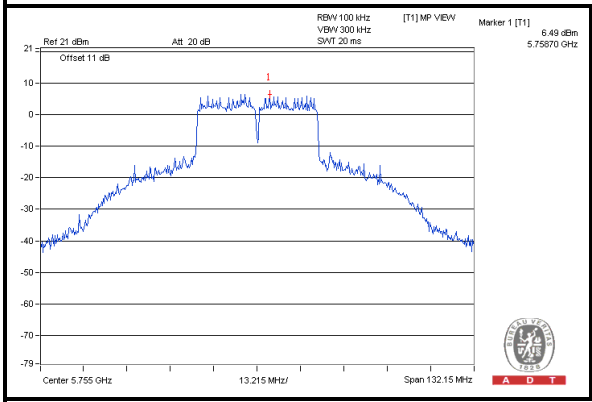
CH 159

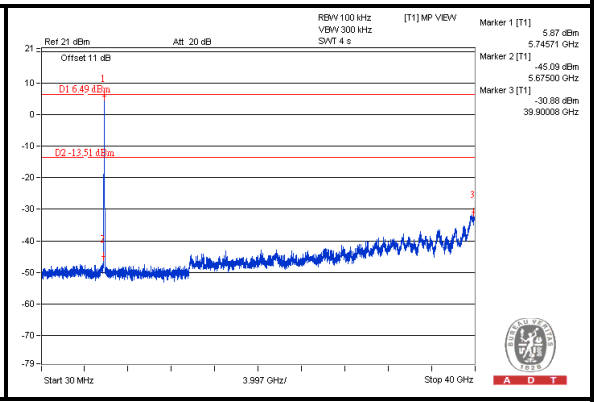




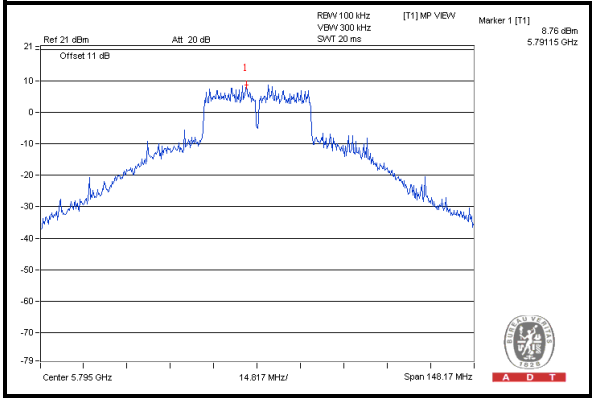
For Chain (1)

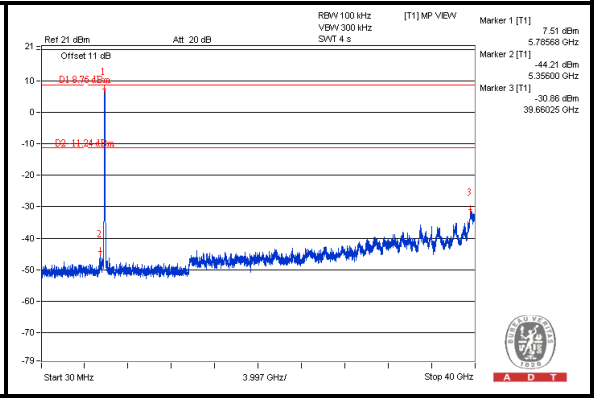
CH 151





CH 159





6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. INFORMATION ON THE TESTING LABORATORIES

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

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

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Web Site: www.bureauveritas-adt.com

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

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

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

--- END ---