FCC TEST REPORT (WLAN)

REPORT NO.:	RF110104E07
MODEL NO.:	Dolphin 6000
FCC ID:	HD5D6000
RECEIVED:	Jan. 04, 2011
TESTED:	Jan. 04 to 24, 2011
ISSUED:	Mar. 11, 2011
APPLICANT:	Honeywell International Inc
ADDRESS:	9680 OLD BAILES RD FORT MILL SC 29707 UNITED STATES
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
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan
TEST LOCATION (2):	No.49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

Table of Contents

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Mar. 11, 2011

1. CERTIFICATION

PRODUCT:	Mobile Computer
BRAND:	Honeywell
MODEL NO.:	Dolphin 6000
TEST SAMPLE:	ENGINEERING SAMPLE
TESTED:	Jan. 04 to 24, 2011
APPLICANT:	Honeywell International Inc
STANDARDS:	FCC Part 15, Subpart C (Section 15.247) ANSI C63.4-2003 ANSI C63.10-2009

The above equipment (Model: Dolphin 6000) 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:** *Mar. 11, 2011*
(Midoli Peng, Specialist)

APPROVED BY : _____, **DATE:** *Mar. 11, 2011*
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	**Test Type and Limit**	**Result**	**Remark**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.84dB at 0.197MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -3.1dB at 240.03MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Conducted Out-Band Emission Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

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	2.45 dB
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Computer
MODEL NO.	Dolphin 6000
FCC ID	HD5D6000
POWER SUPPLY	DC 3.7V from battery or DC 5V from adapter or DC 5V from car charger
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11 / 5.5 / 2 / 1Mbps 802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
CHANNEL SPACING	5MHz
MAXIMUM OUTPUT POWER	802.11b: 29.5mW 802.11g: 93.3mW
ANTENNA TYPE	Please see note 2
ANTENNA CONNECTOR	Please see note 2
DATA CABLE	USB charger cable(Shielded, 1.2m with one core) x 1
I/O PORTS	micro SD port x 1
ASSOCIATED DEVICES	Battery, Adapter, Car Charger

NOTE:

1. There are Bluetooth technology (BT2.1+EDR), WLAN, GPS and GSM technology used for the EUT. and the functions of EUT listed as below table:

Function	Report No.
WLAN	RF110104E07
Bluetooth	RF110104E07-1
GSM	RF110104E07-2 (Part 22) RF110104E07-3 (Part 24)

2. There are three antennas provided to this EUT, please refer to the following table:

WLAN / Bluetooth Antenna Spec.				
No.	Antenna Type	Gain(dBi)	Connecter Type	Frequency range (MHz)
1	PIFA	3	NA	2.4 ~ 2.5 GHz
GPS Antenna Spec.				
No.	Antenna Type	Gain(dBi)	Connecter Type	Frequency range (MHz)
1	Patch	2	U.FL	1.575GHz
WWAM Antenna Spec.				
No.	Antenna Type	Gain(dBi)	Connecter Type	Frequency range (MHz)
1	PIFA	3	NA	850/1900

3. The EUT was manufactured by following manufacture and factory:

Manufacturer	Manufacturer Address
Honeywell International Inc	9680 OLD BAILES RD FORT MILL SC 29707 UNITED STATES
Factory	Factory Address
Universal Scientific Industrial Co., Ltd.	141, Lane 351, Taiping Rd., Sec. 1, Tsao Tuen, Nan-Tou Hsien, Taiwan
Universal Scientific Industrial de Mexico, S.A de C.V.	Periferico Manuel Gomez Morin #656 R. Santa Isabel, Anillo 44290 Guadalajara, Jal Mexico
USI Electronics (Shenzhen)Co., Ltd.	USI Electronics Park, North of High-Tech Industry Park, Nanshan District, Shenzhen, Guangdong, China
Universal Scientific Industrial (Shanghai) Co., Ltd.	NO. 1558, ZHANGDONG RD. PUDONG SHANGHAI 201203 CHINA
Universal Global Technology (Shenzhen) Co., Ltd.	1&2&4 Floor of Building B and 2 Floor of Building C, USI Electronics Park NanShan District, ShenZhen, P.R.C 518057
Universal Scientific Industrial Co., Ltd.	1F&4F No.135, Lane 351, Taiping Road, Sec. 1, Tsao Tuen Nan-Tou, Taiwan
Universal Global Scientific Industrial Co., Ltd.	B1, 1~3F & 5F, No.135, Lane 351, Taiping Road, Sec. 1, Tsao Tuen Nan-Tou, Taiwan

4. The EUT could be supplied with a power adapter, Car Charger and battery as below table:

Battery	
Brand:	Palladium
Part No.:	Dolphin 6000 Battery
Rating:	3.7V, 1530mAh, 5.7Wh
Adapter	
Brand:	Sunfone
Model No.:	ACW010A3-05Z
Input power :	100-240V, 50-60Hz, 0.4A
Output power :	5V, 2A DC output cable(unshielded, 1.4m)
Car Charger	
Brand:	Atech OEM Inc.
Model No.:	C15C-0520CD0-S3
Input power :	12-24V
Output power :	5V, 2A DC output cable (unshielded, 1.5m)

5. The EUT was pre-tested in chamber under following test modes :

Pre-test Mode	Description
Mode A	X-Y plane: EUT + Battery
Mode B	X-Z plane: EUT + Battery
Mode C	Y-Z plane: EUT + Battery
Mode D	**X-Y plane: EUT + USB charger cable + Adapter**
Mode E	**X-Z plane: EUT + USB charger cable + Adapter**
Mode F	Y-Z plane: EUT + USB charger cable + Adapter
Mode G	X-Y plane: EUT + USB charger cable + Car charger
Mode H	X-Z plane: EUT + USB charger cable + Car charger
Mode I	Y-Z plane: EUT + USB charger cable + Car charger

The worse radiated emission (Below 1GHz) was found in **Mode D**. And the radiated emission (Above 1GHz) was found in **Mode E**. Therefore only the test data of the modes were recorded in this report.

6. The above EUT information was declared by the manufacturer and for more detailed feature descriptions, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided for 802.11b, 802.11g:

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	8	2447MHz
2	2417MHz	9	2452MHz
3	2422MHz	10	2457MHz
4	2427MHz	11	2462MHz
5	2432MHz		
6	2437MHz		
7	2442MHz		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
A	√	√	-	-	X-Y plane: EUT + USB charger cable + Adapter
B	-	-	√	√	X-Z plane: EUT + USB charger cable + Adapter

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

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

POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	CONFIGURE MODE
Worse Channel	-	-	-	-	-	A

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)	CONFIGURE MODE
802.11g	1 to 11	1	OFDM	BPSK	6	A

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)	CONFIGURE MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	B
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B

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)	CONFIGURE MODE
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	B
802.11g	1 to 11	1, 11	OFDM	BPSK	6	B

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ 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)	CONFIGURE MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	B
802.11g	1 to 1	1, 6, 11	OFDM	BPSK	6	B

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 85%RH, 1023 hPa	120Vac, 60Hz	Phoenix Huang
RE<1G	16deg. C, 65%RH, 1023 hPa	120Vac, 60Hz	Wen Yu
PLC	24deg. C, 62%RH, 1023 hPa	120Vac, 60Hz	Scott Chen
APCM	25deg. C, 60%RH, 1023 hPa	120Vac, 60Hz	Wen Yu

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)
ANSI C63.4-2003
ANSI C63.10-2009

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

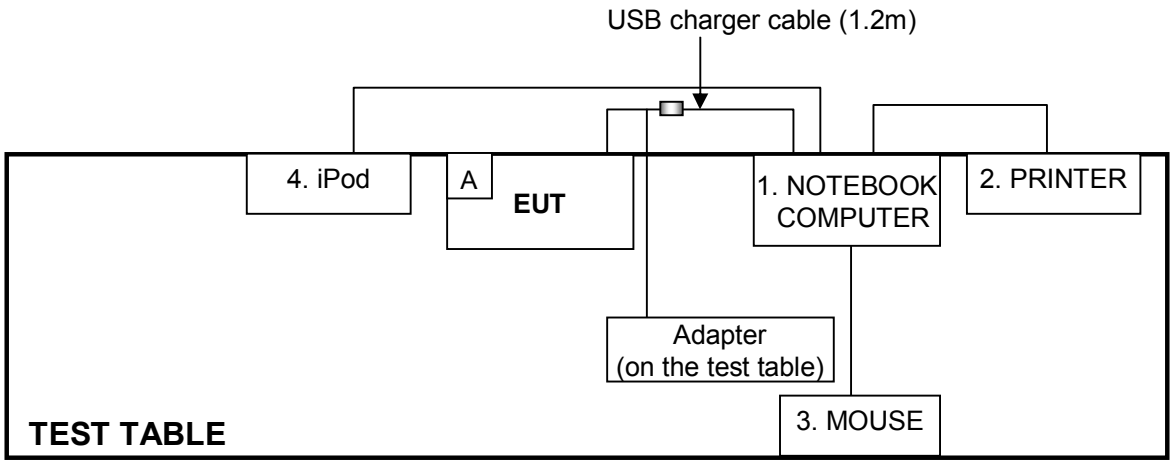
For Conducted Emission					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	HSLB32S	FCC DoC
2	PRINTER	HP	hp deskjet 3535	TH45P164GT	NA
3	MOUSE	DELL	M056UOA	FOROOBSN	FCC DoC
4	iPod	APPLE	A1199	YM712NN5VQ5	FCC DoC
For other test items					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E6400	D814C A00 APCC	FCC DoC
2	PRINTER	CANON	K10202	FASF84644	FCC DoC
3	iPod	APPLE	A1199	YM712NB3VQ5	FCC DoC

For Conducted Emission	
No.	Signal cable description
1	USB charger cable(Shielded, 1.2m with one core)
2	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.
3	1.9 m foil shielded wire, USB connector, w/o core.
4	1 m shielded cable, terminated with USB connector, w/o core.
For other test items	
No.	Signal cable description
1	USB charger cable(Shielded, 1.2m with one core)
2	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.
3	1 m shielded cable, terminated with USB connector, w/o core.

Note: 1. All power cords of the above support units are unshielded (1.8m).

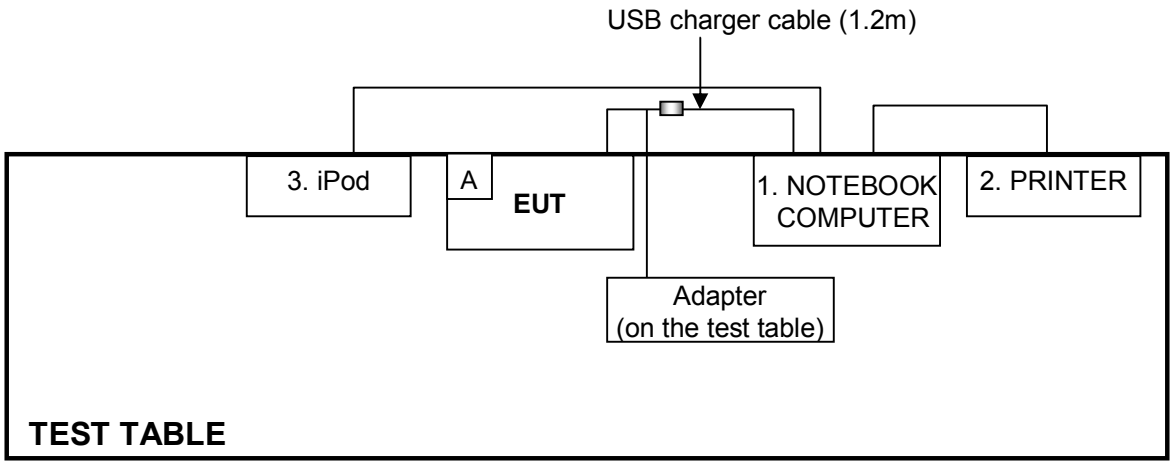
3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted Emission



NOTE: 1. Item A is the micro SD Card.

For other test items



NOTE: 1. Item A is the micro SD Card.

4.TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTE:
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 01, 2010	Feb. 28, 2011
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 17, 2010	Sep. 16, 2011
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 11, 2010	June 10, 2011
RF Cable (JYEBAO)	5DFB	CONCAB-003	Aug. 06, 2010	Aug. 05, 2011
50 ohms Terminator	50	3	Nov. 03, 2010	Nov. 02, 2011
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

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

4.1.3 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. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

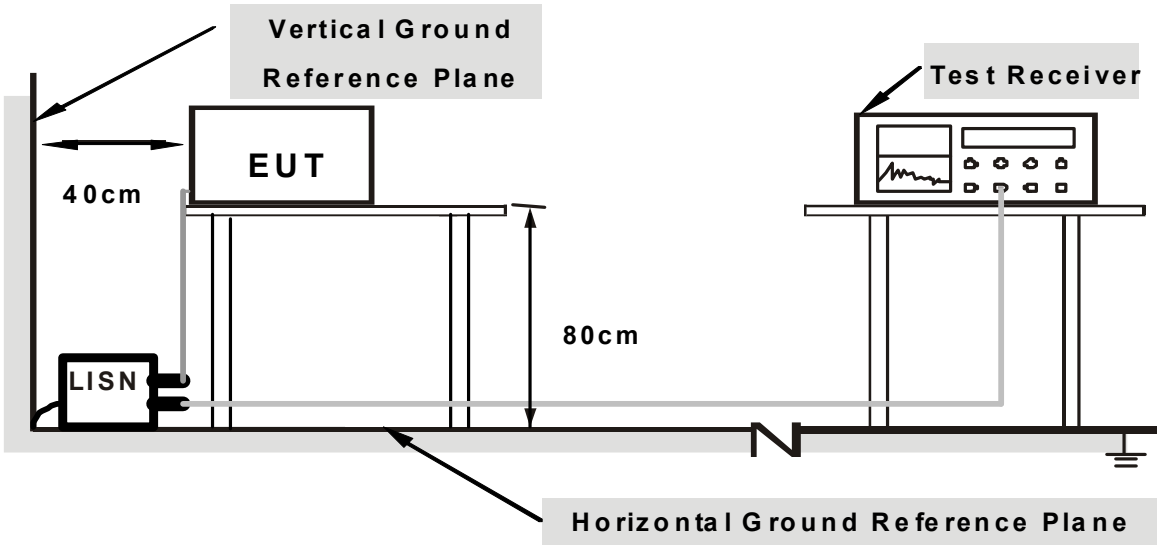
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

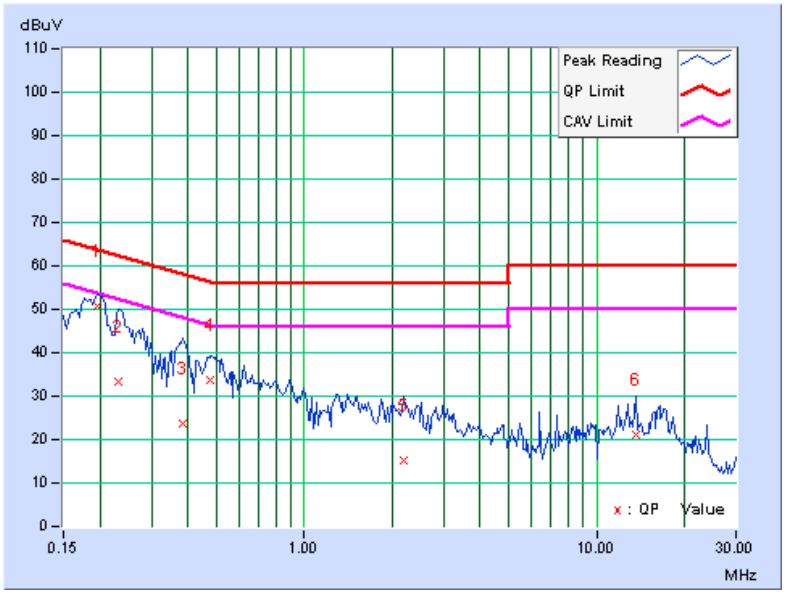
1. Turn on the power of EUT.
2. The EUT run test program “SP META” to enable EUT under transmission / receiver condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	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	**0.197**	**0.36**	**50.54**	**-**	**50.90**	**-**	**63.74**	**53.74**	**-12.84**	**-**
2	0.232	0.36	33.02	-	33.38	-	62.38	52.38	-29.00	-
3	0.384	0.36	23.29	-	23.65	-	58.18	48.18	-34.53	-
4	0.478	0.37	33.33	-	33.70	-	56.37	46.37	-22.67	-
5	2.199	0.46	14.70	-	15.16	-	56.00	46.00	-40.84	-
6	13.676	0.92	20.13	-	21.05	-	60.00	50.00	-38.95	-

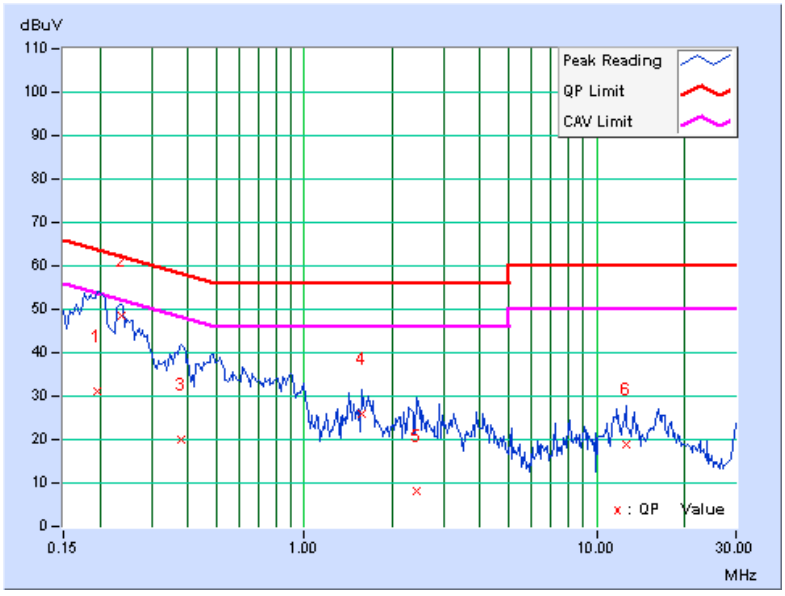
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	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	0.197	0.10	31.02	-	31.12	-	63.74	53.74	-32.62	-
2	0.236	0.10	48.39	-	48.49	-	62.24	52.24	-13.75	-
3	0.380	0.11	19.71	-	19.82	-	58.27	48.27	-38.45	-
4	1.582	0.18	25.73	-	25.91	-	56.00	46.00	-30.09	-
5	2.438	0.21	8.12	-	8.33	-	56.00	46.00	-47.67	-
6	12.613	0.72	18.27	-	18.99	-	60.00	50.00	-41.01	-

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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. As shown in 15.35(b), 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 under any condition of modulation.
4. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12, 2010	May 11, 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 03, 2010	Sep. 02, 2011
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 28, 2010	Apr. 27, 2011
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2010	Dec. 16, 2011
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2010	Jan. 21, 2011
R&S Loop Antenna	HFH2-Z2	100070	Feb. 03, 2010	Feb. 02, 2012
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 104+ Sucoflex 106	RF104-101+R F106-101	Aug. 24, 2010	Aug. 23, 2011
RF Cable	8DFB	STCCAB-30M-1GHz	NA	NA
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	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) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 7450G-3.

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10m open site. 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.

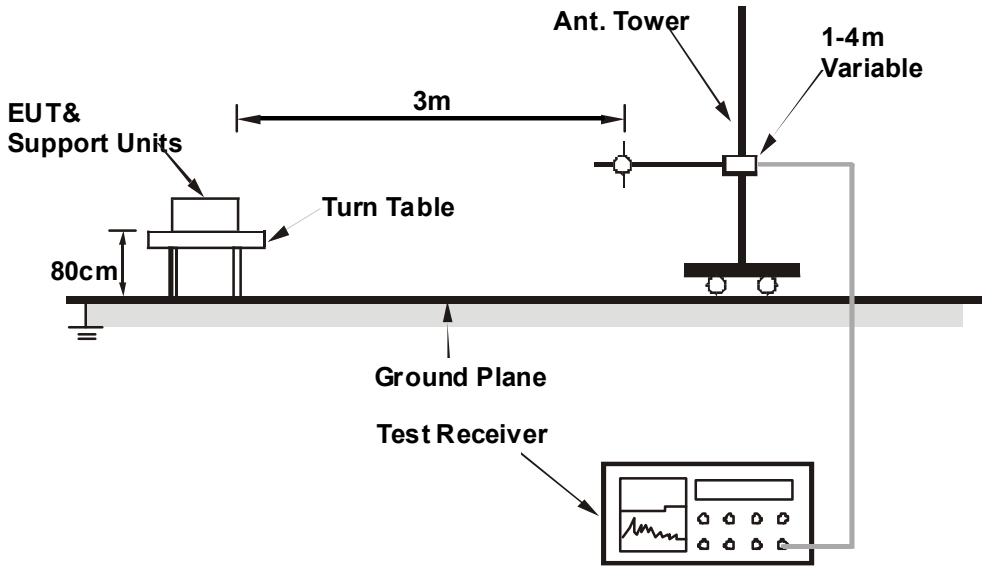
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and 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.

4.2.4 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 the 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA：802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	16deg. C, 65%RH 1023 hPa	TESTED BY	Wen Yu

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	120.03	34.7 QP	43.5	-8.8	1.34 H	188	22.54	12.20
2	**240.03**	**42.9 QP**	**46.0**	**-3.1**	**1.32 H**	**251**	**29.82**	**13.05**
3	360.03	38.9 QP	46.0	-7.1	1.26 H	153	21.78	17.16
4	480.00	42.8 QP	46.0	-3.3	1.25 H	66	22.52	20.23
5	722.80	41.9 QP	46.0	-4.1	1.05 H	61	17.10	24.79
6	960.00	42.5 QP	46.0	-3.5	1.00 H	295	14.39	28.07
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	88.01	34.5 QP	43.5	-9.0	1.00 V	52	26.26	8.26
2	129.97	36.6 QP	43.5	-6.9	1.00 V	298	23.04	13.52
3	189.85	36.5 QP	43.5	-7.0	1.00 V	200	25.12	11.36
4	240.00	36.7 QP	46.0	-9.4	1.00 V	62	23.60	13.05
5	480.00	42.4 QP	46.0	-3.6	1.00 V	20	22.13	20.23
6	720.00	38.2 QP	46.0	-7.8	1.69 V	265	13.48	24.76

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

ABOVE 1GHz WORST-CASE DATA

802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 85%RH 1023 hPa	TESTED BY	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.60	61.3 PK	74.0	-12.7	1.80 H	207	30.35	30.95
2	2385.60	47.5 AV	54.0	-6.5	1.80 H	207	16.55	30.95
3	*2412.00	105.4 PK			1.94 H	205	74.34	31.06
4	*2412.00	102.7 AV			1.94 H	205	71.64	31.06
5	4824.00	46.3 PK	74.0	-27.7	1.29 H	309	9.18	37.12
6	4824.00	39.0 AV	54.0	-15.0	1.29 H	309	1.88	37.12
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.60	61.7 PK	74.0	-12.3	1.39 V	264	30.75	30.95
2	2385.60	47.6 AV	54.0	-6.4	1.39 V	264	16.65	30.95
3	*2412.00	106.0 PK			1.38 V	257	74.94	31.06
4	*2412.00	103.3 AV			1.38 V	257	72.24	31.06
5	4824.00	47.8 PK	74.0	-26.2	1.00 V	246	10.68	37.12
6	4824.00	41.0 AV	54.0	-13.0	1.00 V	246	3.88	37.12

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	10deg. C, 89%RH 1023 hPa	TESTED BY	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.3 PK			1.23 H	333	75.83	31.47
2	*2437.00	104.4 AV			1.23 H	333	72.93	31.47
3	4874.00	48.2 PK	74.0	-25.8	1.00 H	340	10.50	37.70
4	4874.00	39.8 AV	54.0	-14.2	1.00 H	340	2.10	37.70
5	7311.00	52.4 PK	74.0	-21.6	1.37 H	4	8.41	43.99
6	7311.00	41.2 AV	54.0	-12.8	1.37 H	4	-2.79	43.99
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.5 PK			1.64 V	280	73.03	31.47
2	*2437.00	101.8 AV			1.64 V	280	70.33	31.47
3	4874.00	49.5 PK	74.0	-24.5	1.38 V	293	11.80	37.70
4	4874.00	44.1 AV	54.0	-9.9	1.38 V	293	6.40	37.70
5	7311.00	53.0 PK	74.0	-21.0	1.00 V	284	9.01	43.99
6	7311.00	43.4 AV	54.0	-10.6	1.00 V	284	-0.59	43.99

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 85%RH 1023 hPa	TESTED BY	Phoenix Huang

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	104.9 PK			1.83 H	211	73.62	31.28
2	*2462.00	102.3 AV			1.83 H	211	71.02	31.28
3	2487.68	59.7 PK	74.0	-14.3	1.70 H	212	28.31	31.39
4	2487.68	48.3 AV	54.0	-5.7	1.70 H	212	16.91	31.39
5	4924.00	46.4 PK	74.0	-27.6	1.22 H	300	9.05	37.35
6	4924.00	37.9 AV	54.0	-16.1	1.22 H	300	0.55	37.35
7	7386.00	52.5 PK	74.0	-21.5	1.00 H	301	7.90	44.60
8	7386.00	41.5 AV	54.0	-12.5	1.00 H	301	-3.10	44.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.7 PK			1.35 V	256	73.42	31.28
2	*2462.00	102.0 AV			1.35 V	256	70.72	31.28
3	2487.87	60.4 PK	74.0	-13.6	1.33 V	263	29.01	31.39
4	2487.87	46.9 AV	54.0	-7.1	1.33 V	263	15.51	31.39
5	4924.00	47.3 PK	74.0	-26.7	1.00 V	247	9.95	37.35
6	4924.00	40.0 AV	54.0	-14.0	1.00 V	247	2.65	37.35
7	7386.00	56.0 PK	74.0	-18.0	1.32 V	252	11.40	44.60
8	7386.00	49.7 AV	54.0	-4.3	1.32 V	252	5.10	44.60

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

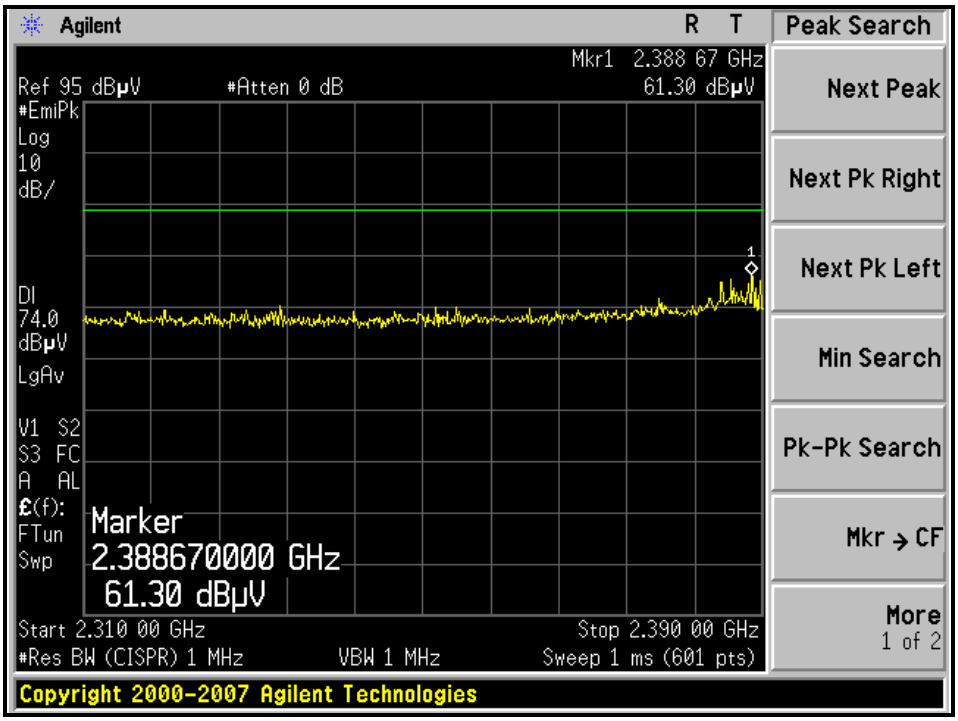
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

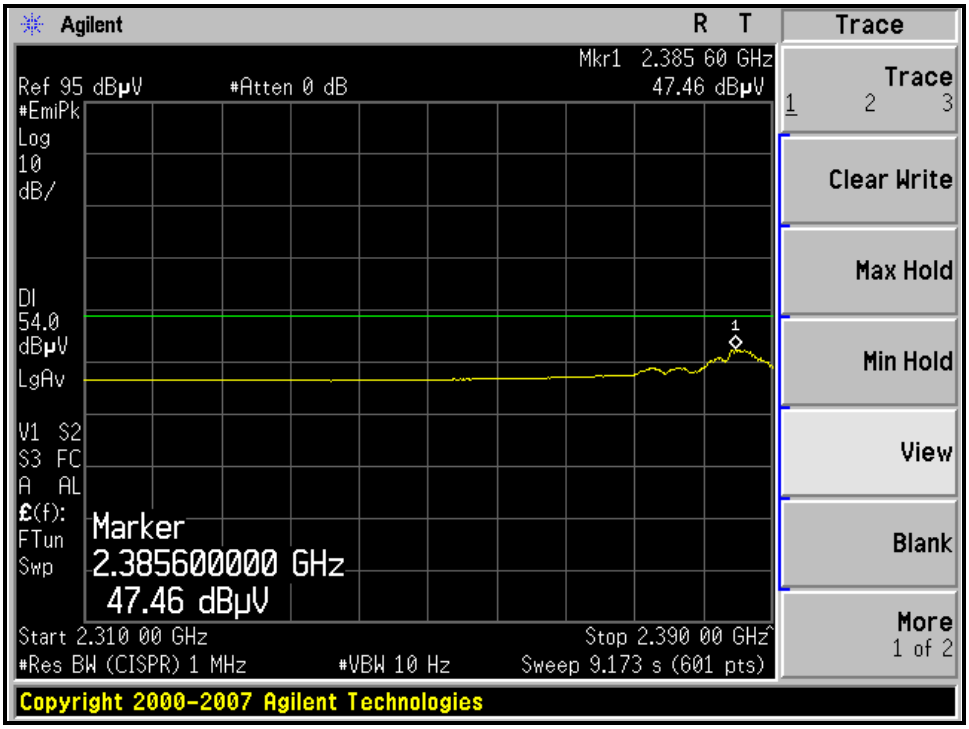
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

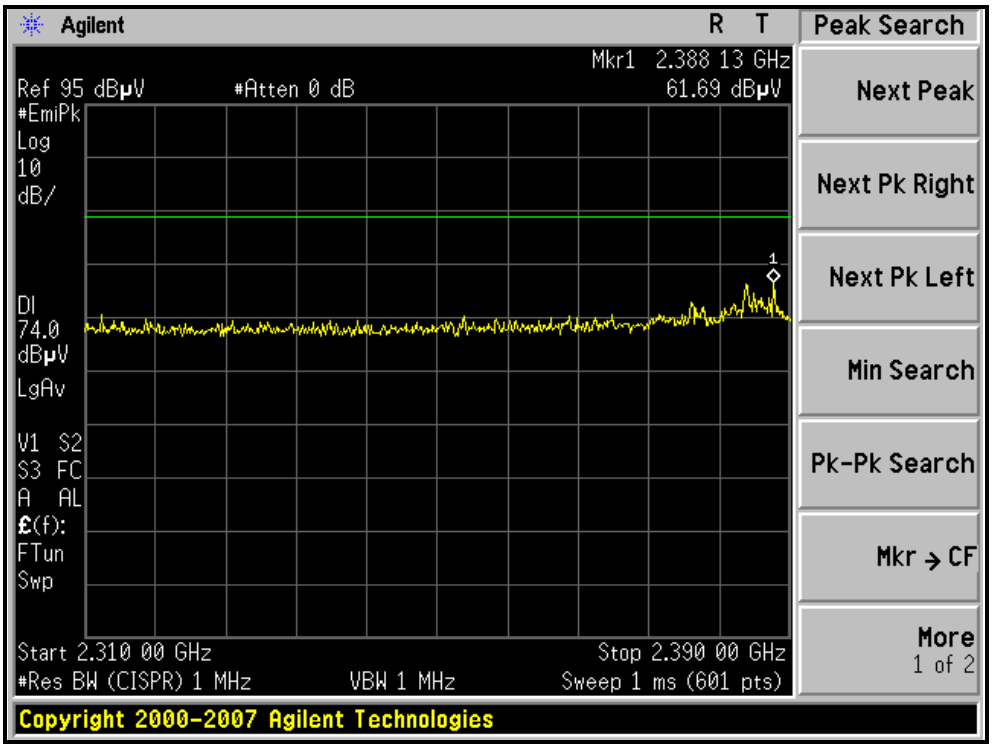
5. " * ": Fundamental frequency.

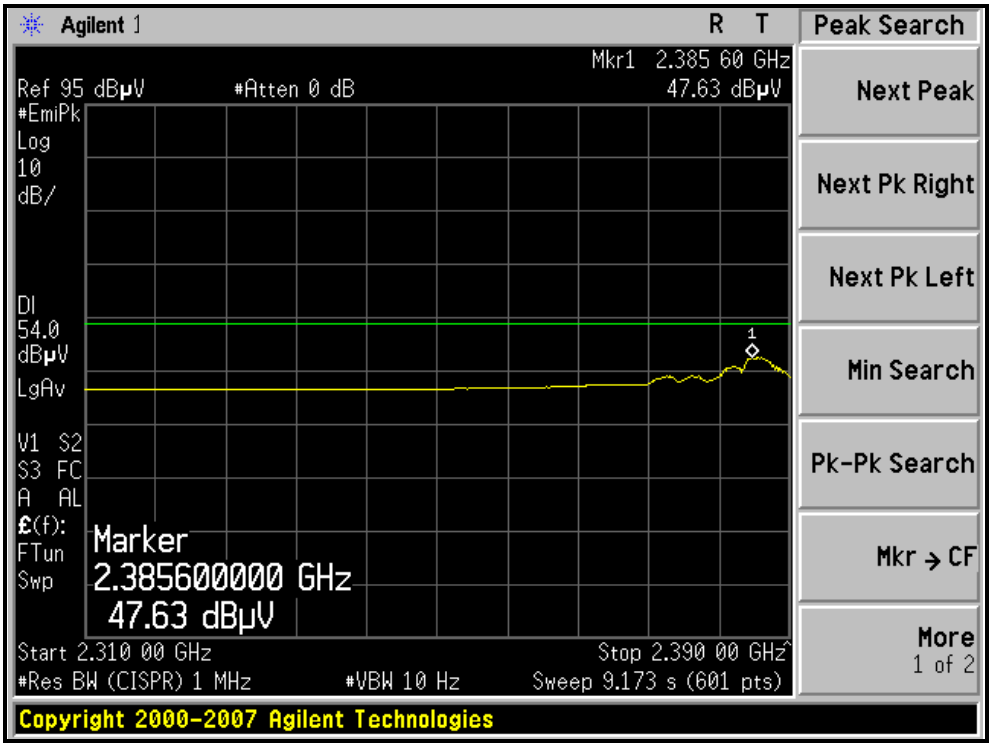
RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)





RESTRICTED BANDEDGE (802.11b MODE,CH1, VERTICAL)





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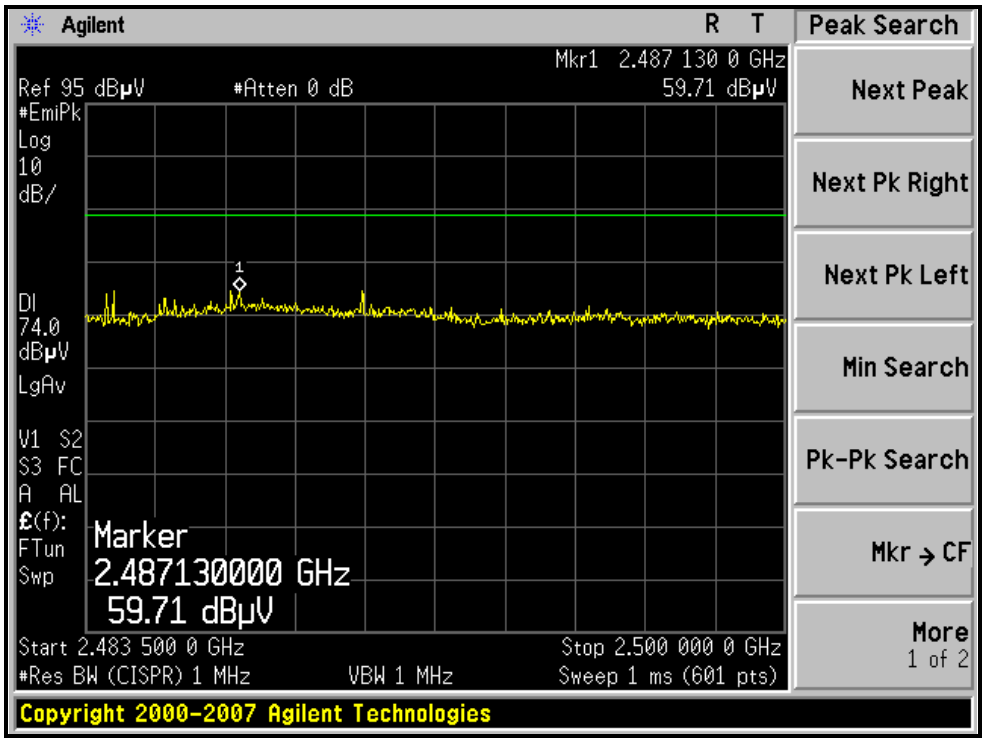

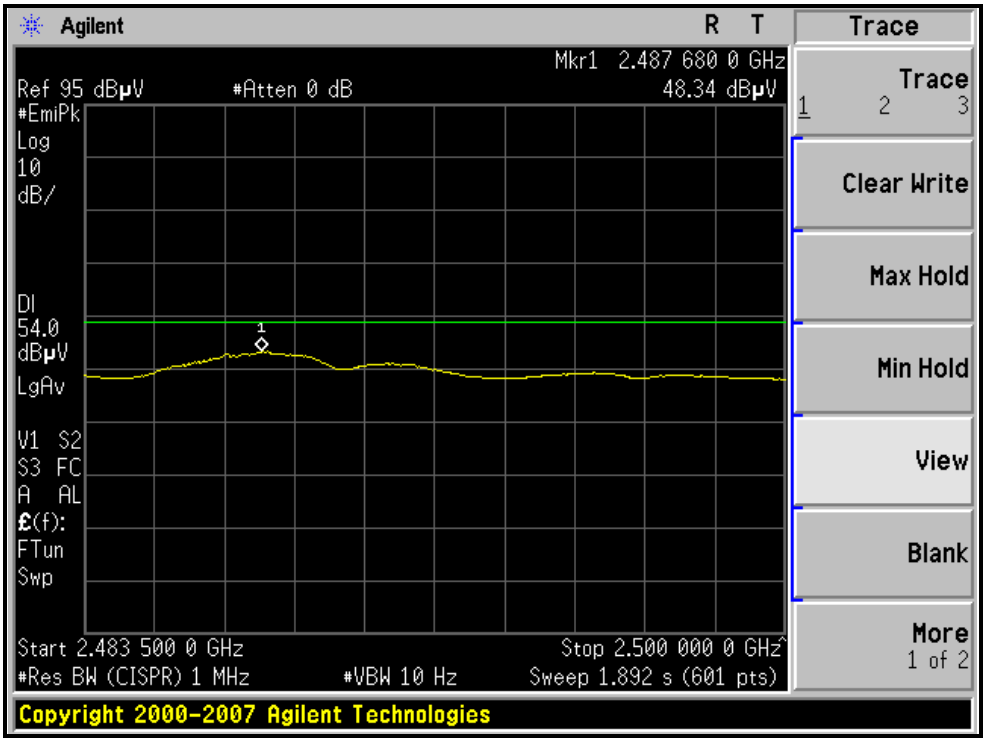

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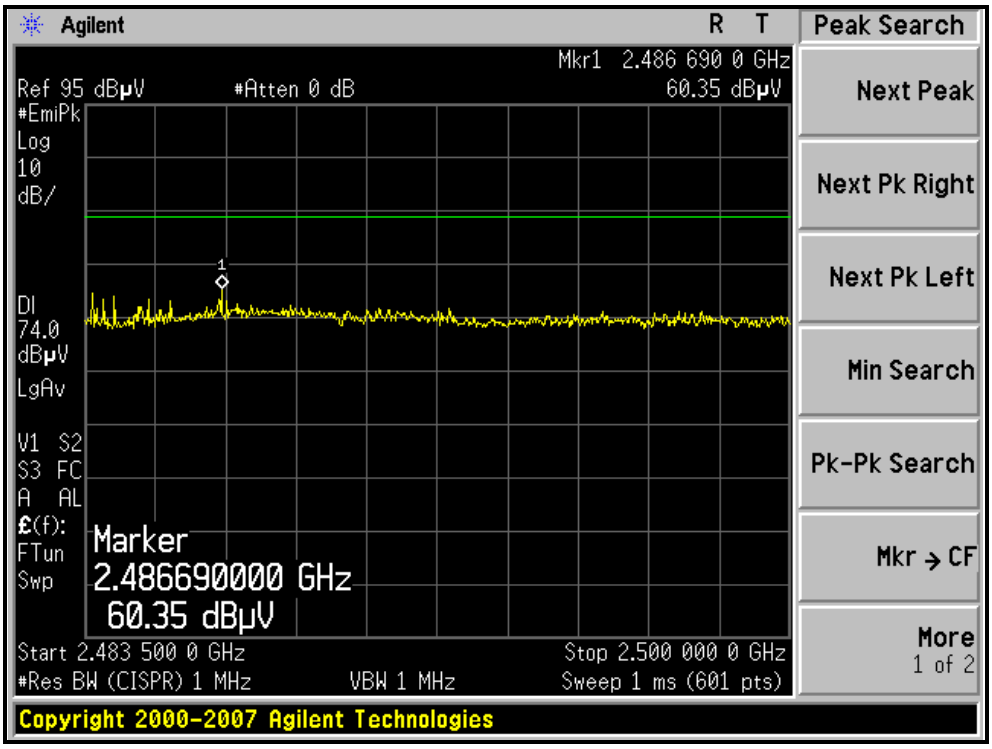
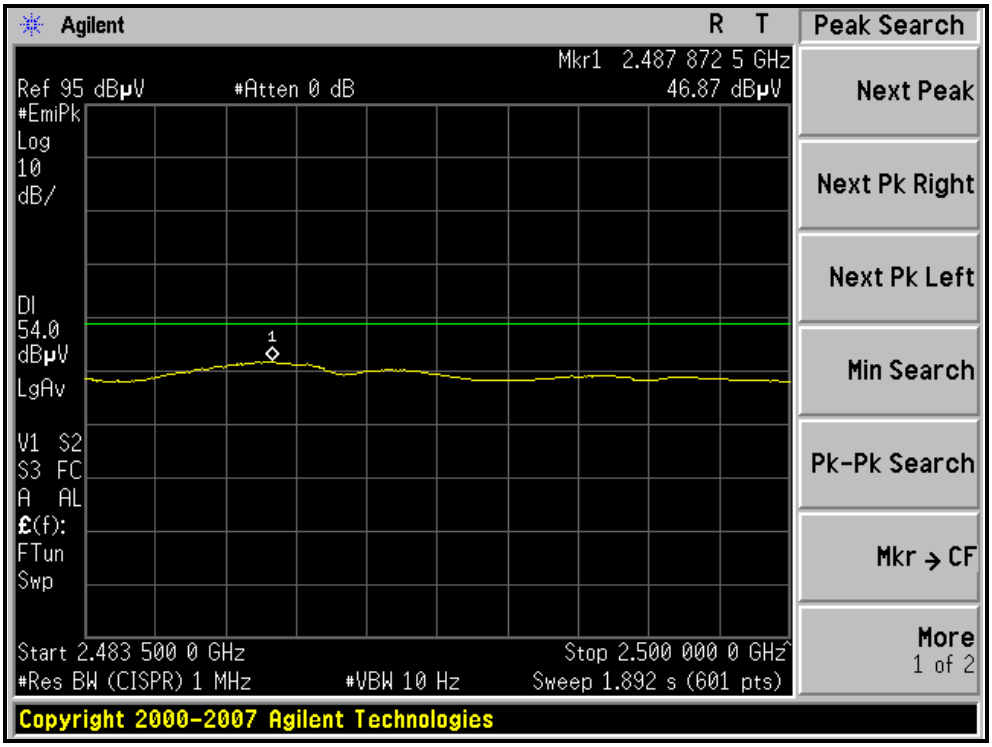




802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	10deg. C, 89%RH 1023 hPa	TESTED BY	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.5 PK	74.0	-5.5	1.80 H	217	37.23	31.27
2	2390.00	50.1 AV	54.0	-3.9	1.80 H	217	18.83	31.27
3	*2412.00	106.5 PK			1.81 H	214	75.14	31.36
4	*2412.00	95.8 AV			1.81 H	214	64.44	31.36
5	4874.00	45.1 PK	74.0	-28.9	1.00 H	41	7.40	37.70
6	4874.00	33.3 AV	54.0	-20.7	1.00 H	41	-4.40	37.70
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	69.9 PK	74.0	-4.1	1.37 V	255	38.63	31.27
2	2390.00	50.7 AV	54.0	-3.3	1.37 V	255	19.43	31.27
3	*2412.00	106.6 PK			1.37 V	255	75.24	31.36
4	*2412.00	96.4 AV			1.37 V	255	65.04	31.36
5	4824.00	45.2 PK	74.0	-28.8	1.30 V	298	7.62	37.58
6	4824.00	33.5 AV	54.0	-20.5	1.30 V	298	-4.08	37.58

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	10deg. C, 89%RH 1023 hPa	TESTED BY	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.5 PK			1.41 H	328	76.03	31.47
2	*2437.00	97.3 AV			1.41 H	328	65.83	31.47
3	4874.00	45.7 PK	74.0	-28.3	1.29 H	106	8.00	37.70
4	4874.00	34.8 AV	54.0	-19.2	1.29 H	106	-2.90	37.70
5	7311.00	53.7 PK	74.0	-20.3	1.09 H	162	9.70	43.99
6	7311.00	40.1 AV	54.0	-13.9	1.09 H	162	-3.89	43.99
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.1 PK			1.36 V	267	73.63	31.47
2	*2437.00	94.7 AV			1.36 V	267	63.23	31.47
3	4874.00	44.9 PK	74.0	-29.1	1.32 V	283	7.20	37.70
4	4874.00	33.7 AV	54.0	-20.3	1.32 V	283	-4.00	37.70
5	7311.00	52.5 PK	74.0	-21.5	1.32 V	255	8.51	43.99
6	7311.00	39.6 AV	54.0	-14.4	1.32 V	255	-4.39	43.99

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 85%RH 1023 hPa	TESTED BY	Phoenix Huang

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	105.7 PK			1.52 H	216	74.42	31.28
2	*2462.00	95.2 AV			1.52 H	216	63.92	31.28
3	2483.50	67.8 PK	74.0	-6.2	1.51 H	210	36.43	31.37
4	2483.50	48.4 AV	54.0	-5.6	1.51 H	210	17.03	31.37
5	4924.00	45.2 PK	74.0	-28.8	1.00 H	135	7.85	37.35
6	4924.00	33.0 AV	54.0	-21.0	1.00 H	135	-4.35	37.35
7	7386.00	52.6 PK	74.0	-21.4	1.33 H	323	8.00	44.60
8	7386.00	39.5 AV	54.0	-14.5	1.33 H	323	-5.10	44.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.8 PK			1.35 V	264	73.22	31.58
2	*2462.00	94.3 AV			1.35 V	264	62.72	31.58
3	2483.50	66.9 PK	74.0	-7.1	1.35 V	264	35.23	31.67
4	2483.50	48.0 AV	54.0	-6.0	1.35 V	264	16.33	31.67
5	4924.00	45.5 PK	74.0	-28.5	1.53 V	272	7.67	37.83
6	4924.00	34.6 AV	54.0	-19.4	1.53 V	272	-3.23	37.83
7	7386.00	52.5 PK	74.0	-21.5	1.38 V	205	8.25	44.25
8	7386.00	39.1 AV	54.0	-14.9	1.38 V	205	-5.15	44.25

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

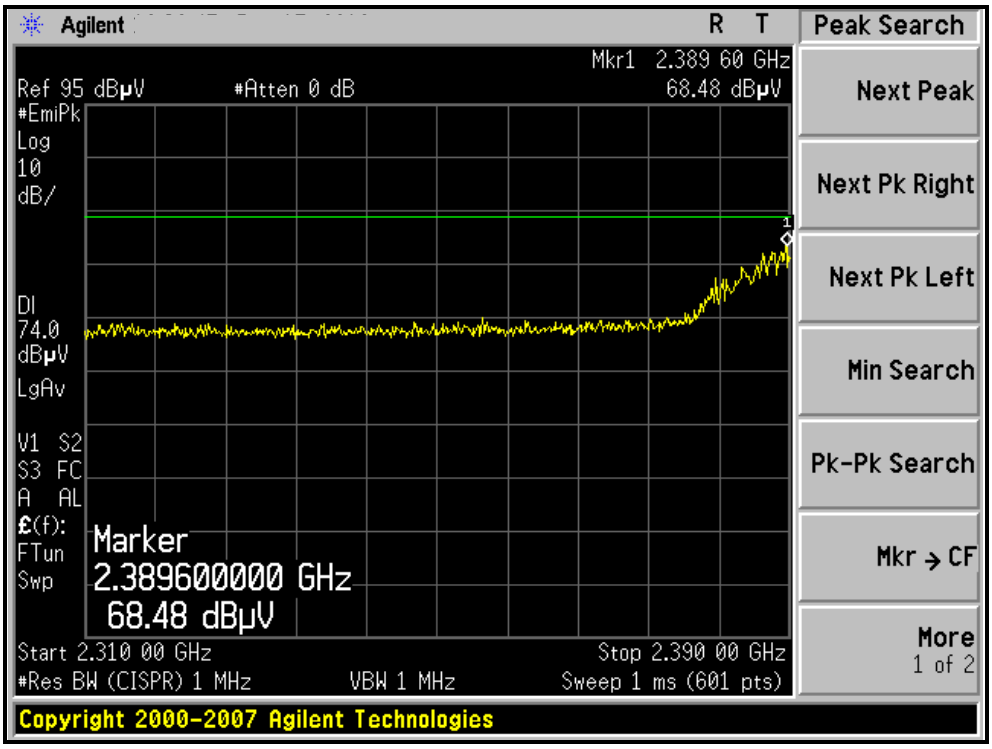
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

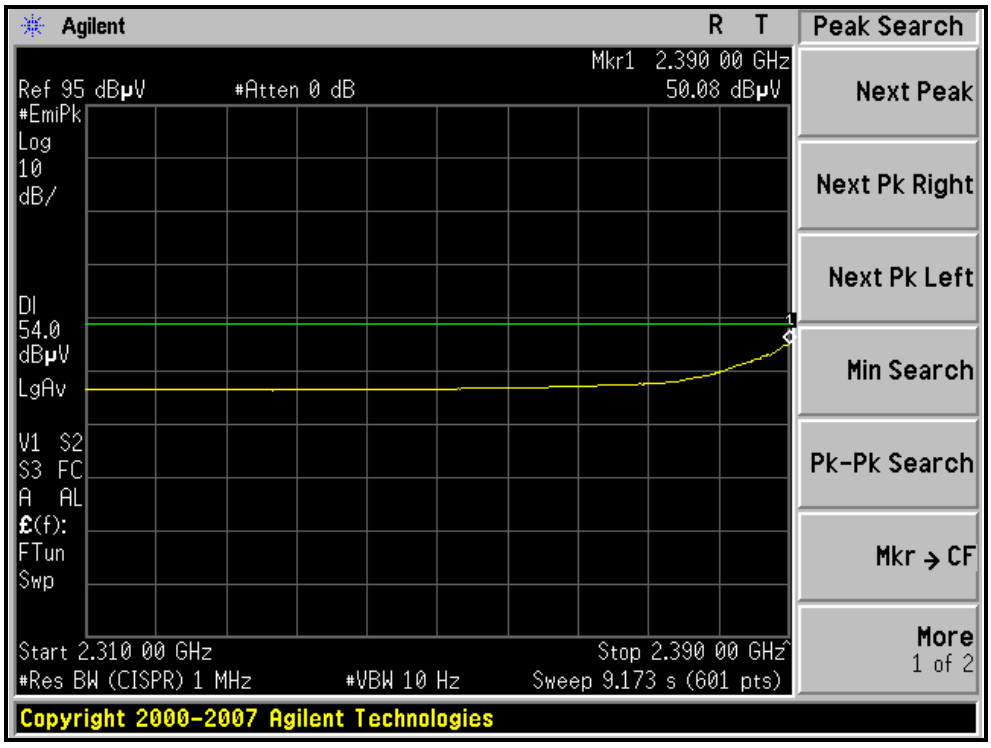
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

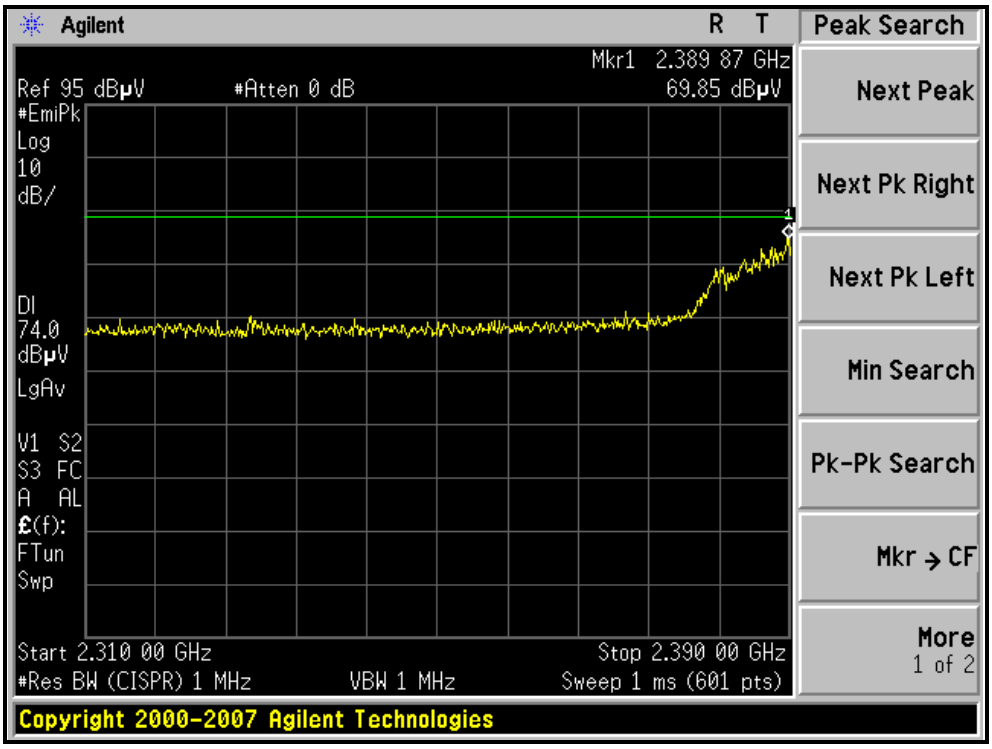
5. " * ": Fundamental frequency.

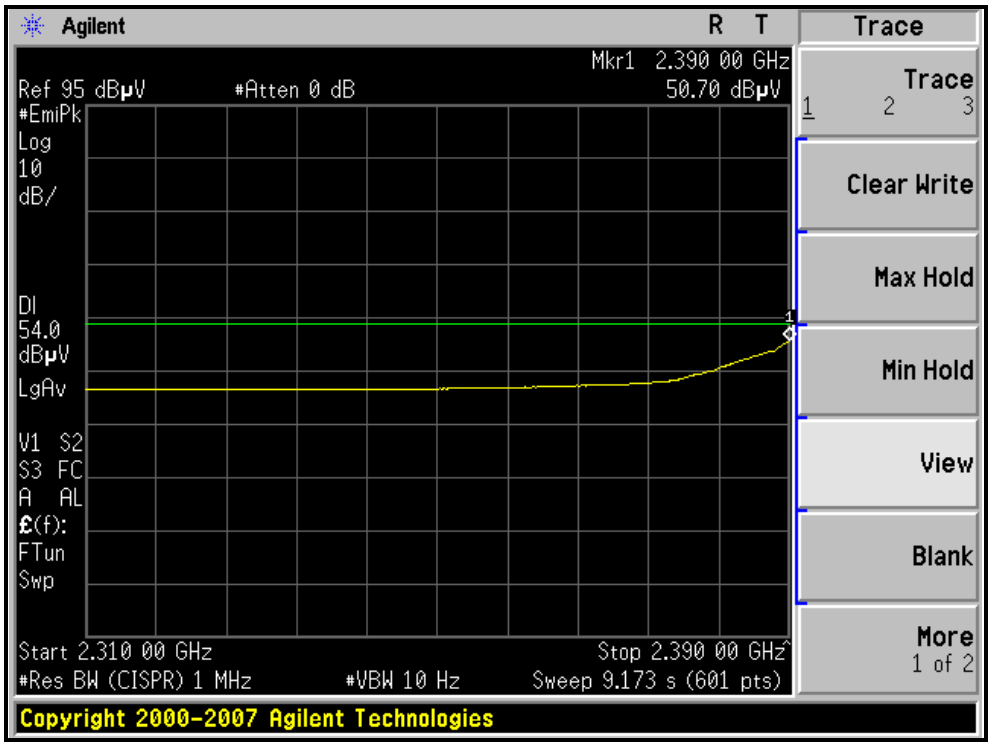
RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL)



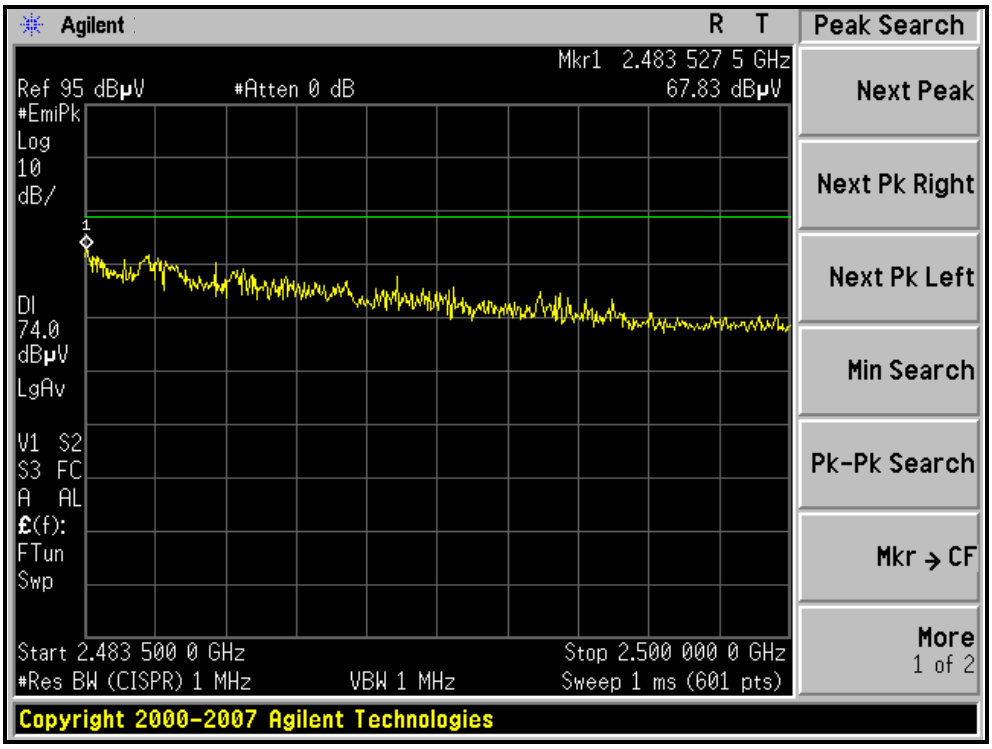


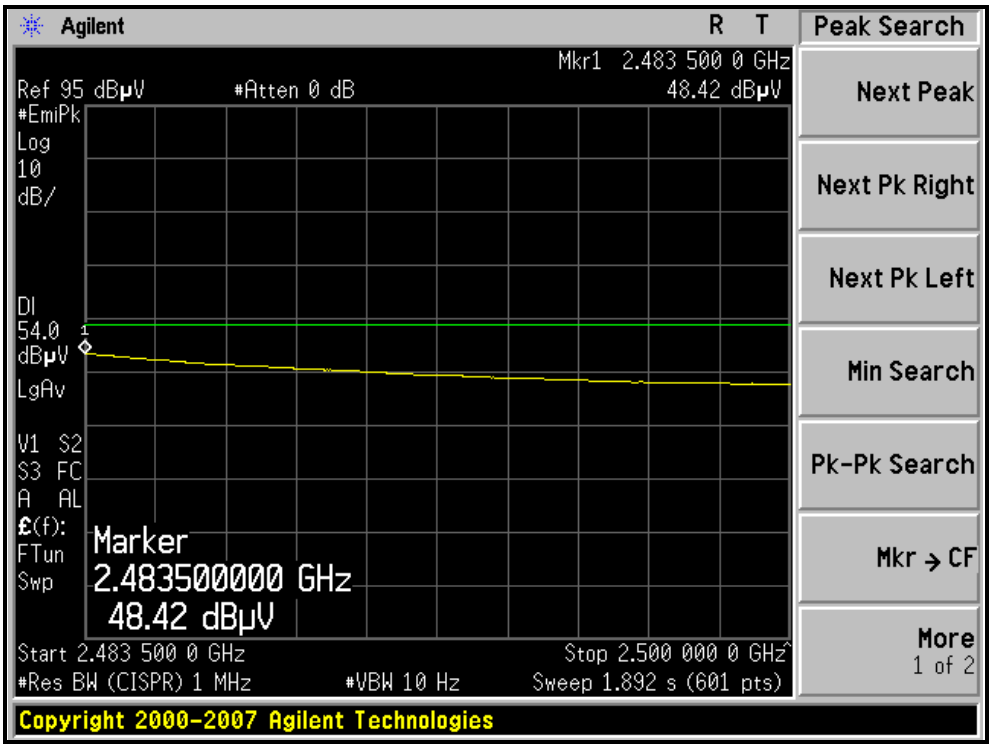
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)



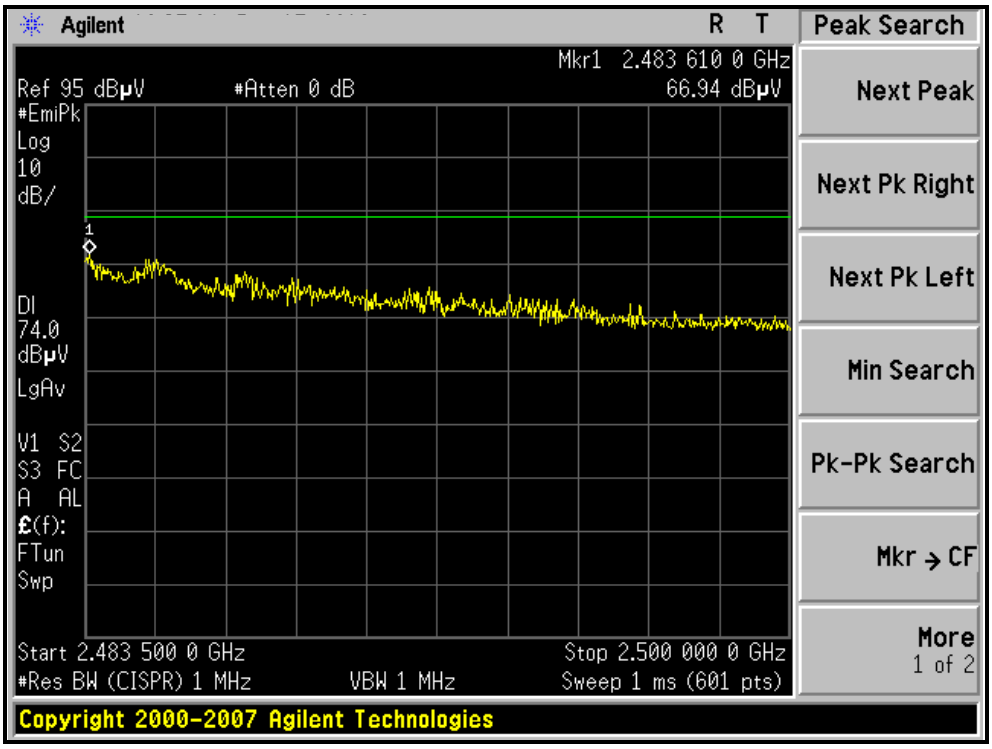


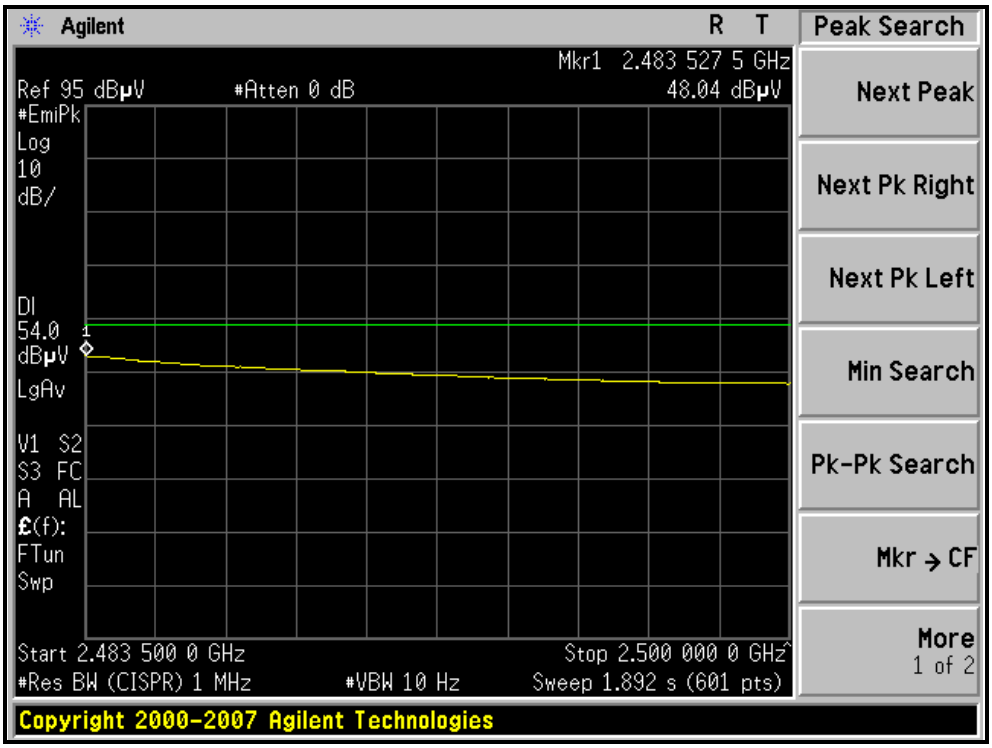
RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)





RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





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
Spectrum Analyzer	FSP 40	100060	May 17, 2010	May 16, 2011

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

NOTE:

The EUT was setup to ANSI C63.4, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP

4.3.6 EUT OPERATING CONDITIONS

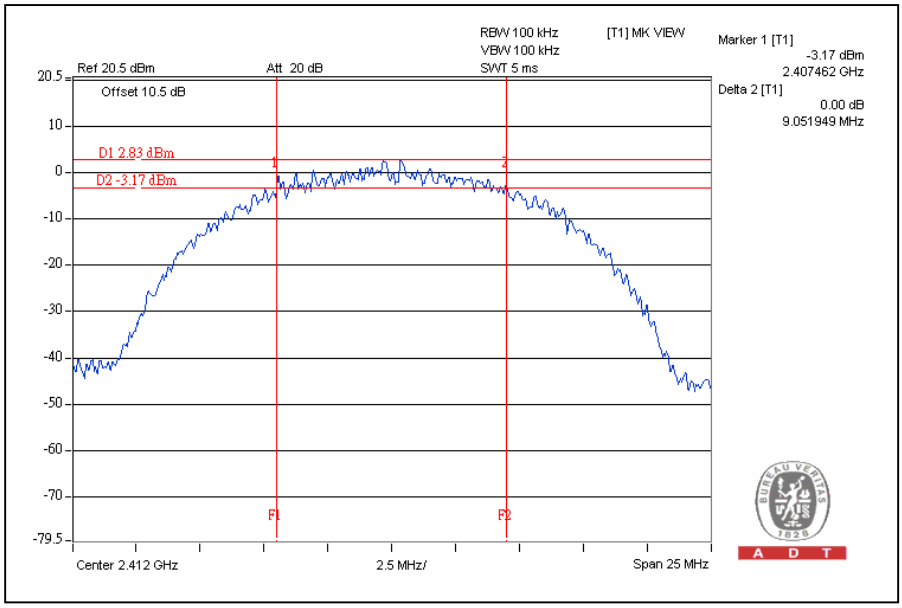
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

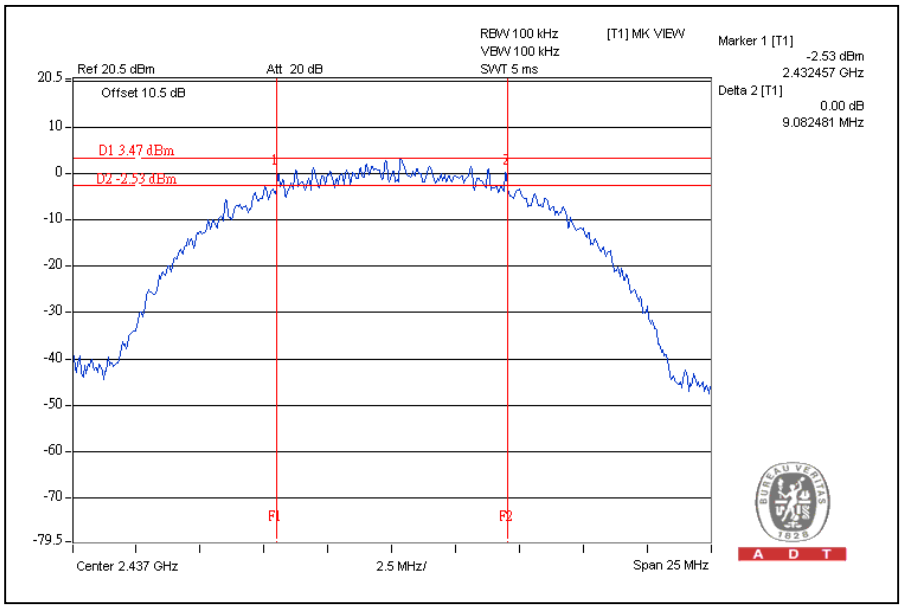
802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.05	0.5	PASS
6	2437	9.08	0.5	PASS
11	2462	9.57	0.5	PASS

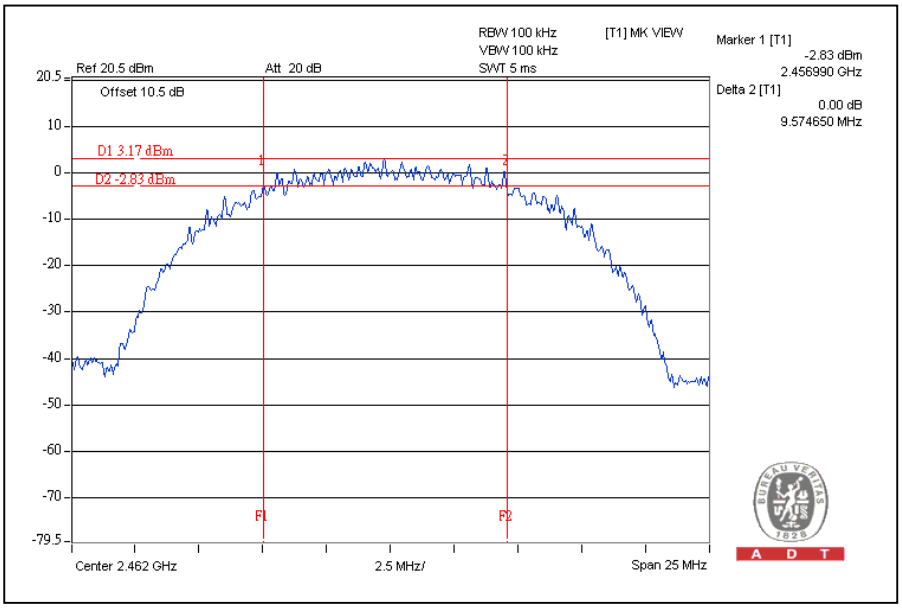
CH1



CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.53 dBm
2.432457 GHz
Delta 2 [T1]
0.00 dB
9.082481 MHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 3.47 dBm
D2 -2.53 dBm
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

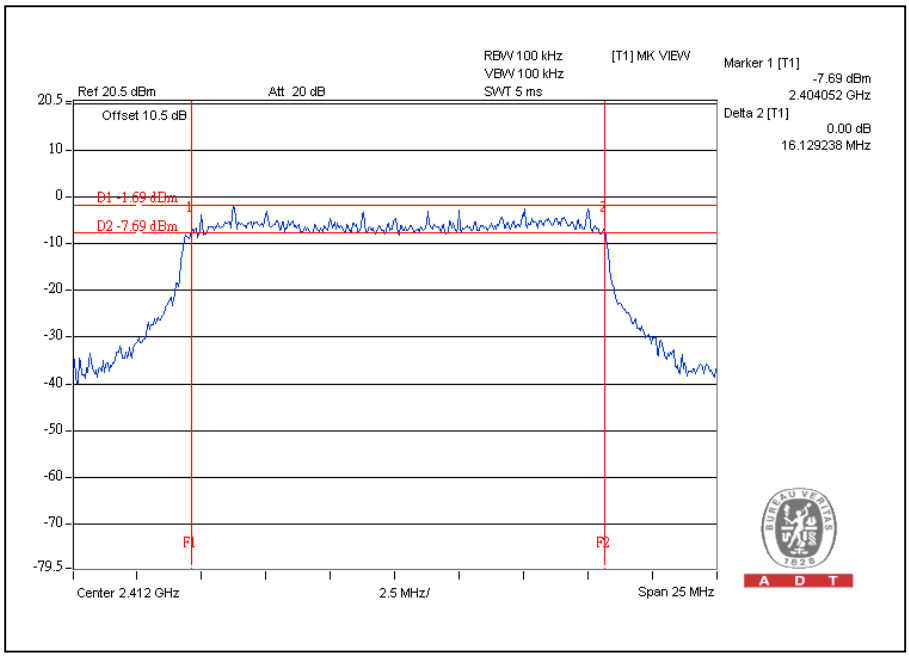
CH11


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.83 dBm
2.456990 GHz
Delta 2 [T1]
0.00 dB
9.574650 MHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 3.17 dBm
D2 -2.83 dBm
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

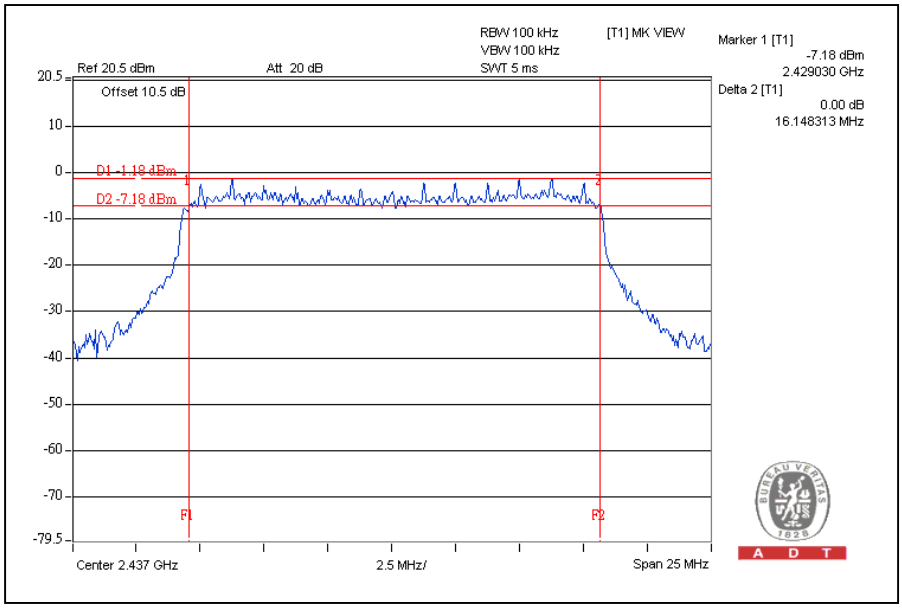
802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.12	0.5	PASS
6	2437	16.14	0.5	PASS
11	2462	16.14	0.5	PASS

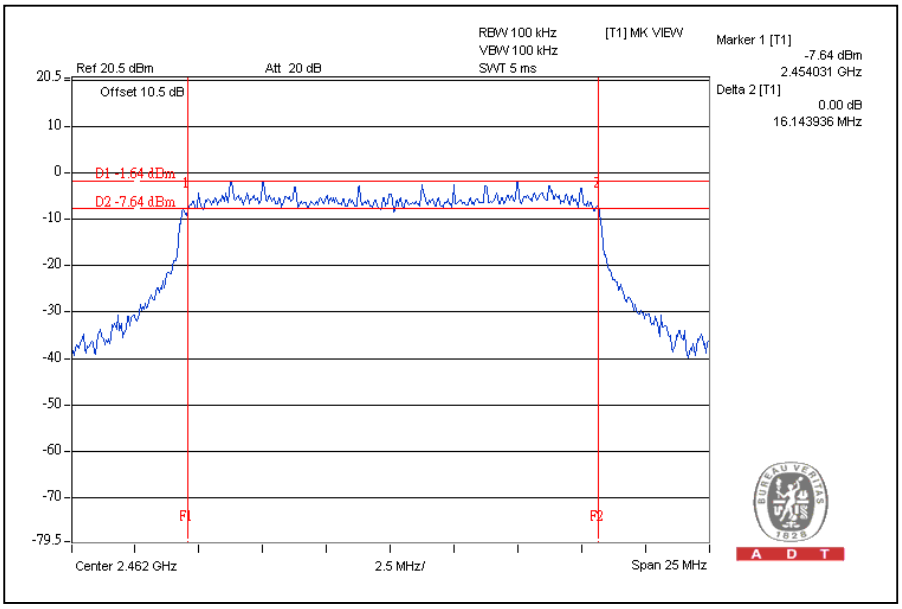
CH1



CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.18 dBm
2.429030 GHz
Delta 2 [T1]
0.00 dB
16.148313 MHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 -1.18 dBm
D2 -7.18 dBm
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

CH11


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.64 dBm
2.454031 GHz
Delta 2 [T1]
0.00 dB
16.143936 MHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 -1.64 dBm
D2 -7.64 dBm
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Peak Power Meter	ML2495A	0824006	May 04, 2010	May 03, 2011
Power Sensor	MA2411B	0738172	May 04, 2010	May 03, 2011

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST PROCEDURES

1. The transmitter output was connected to the power meter through an attenuator; the bandwidth of the fundamental frequency was measured with the power meter.
2. Record the power level.

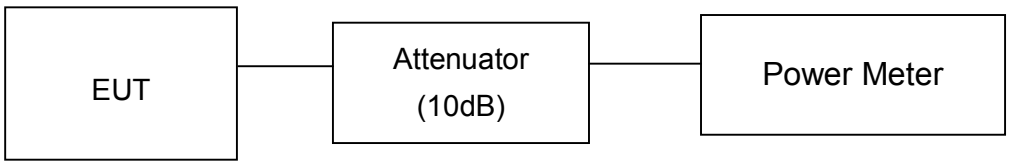
NOTE:

The EUT was setup to ANSI C63.4, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

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 DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	24.5	13.9	30	PASS
6	2437	27.5	14.4	30	PASS
11	2462	29.5	14.7	30	PASS

802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	93.3	19.7	30	PASS
6	2437	91.2	19.6	30	PASS
11	2462	83.2	19.2	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	FSP 40	100060	May 17, 2010	May 16, 2011

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

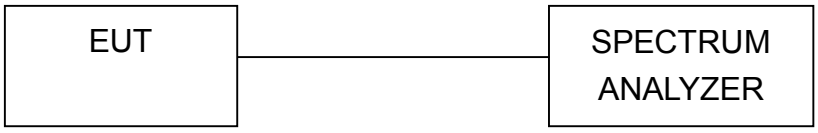
NOTE:

The EUT was setup to ANSI C63.4, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

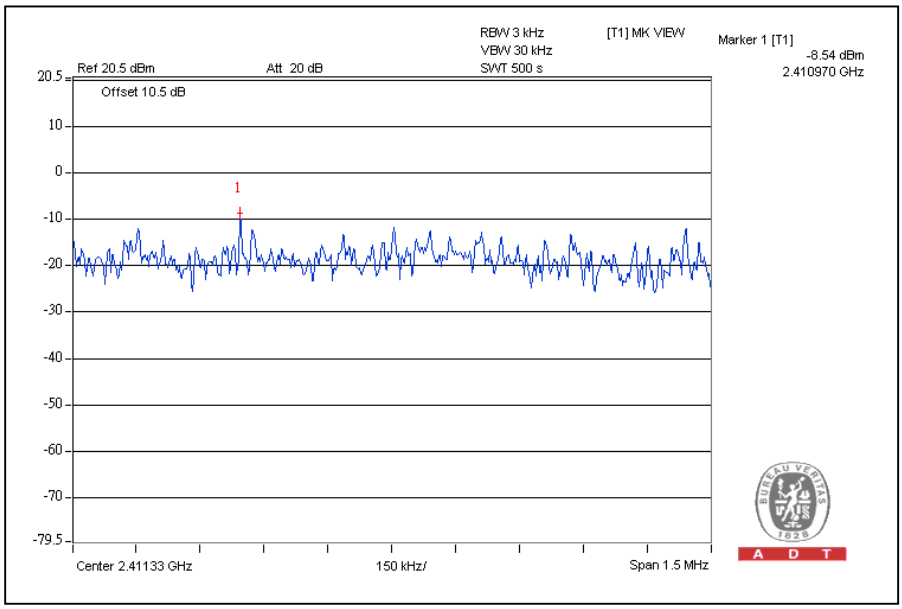
Same as Item 4.3.6

4.5.7 TEST RESULTS

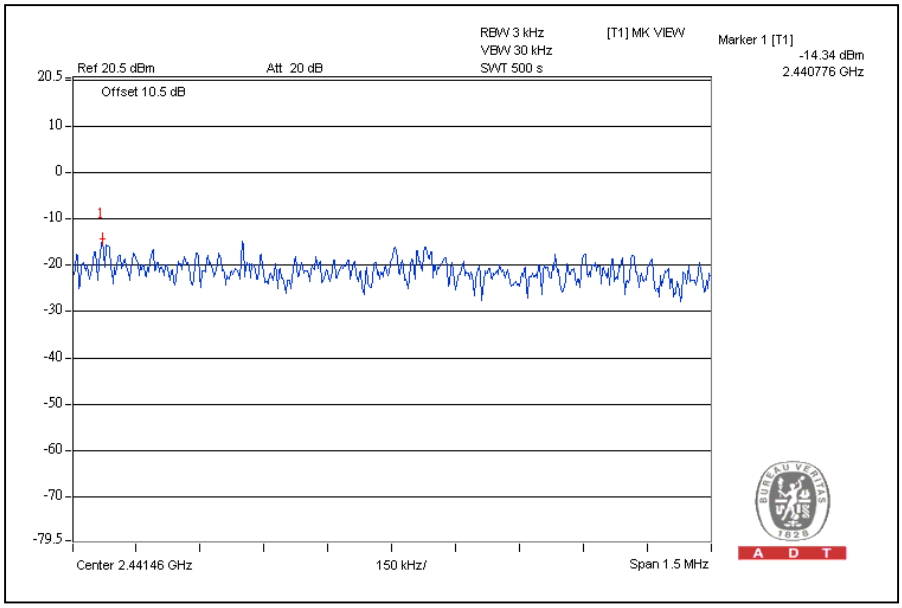
802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-8.5	8	PASS
6	2437	-14.3	8	PASS
11	2462	-10.5	8	PASS

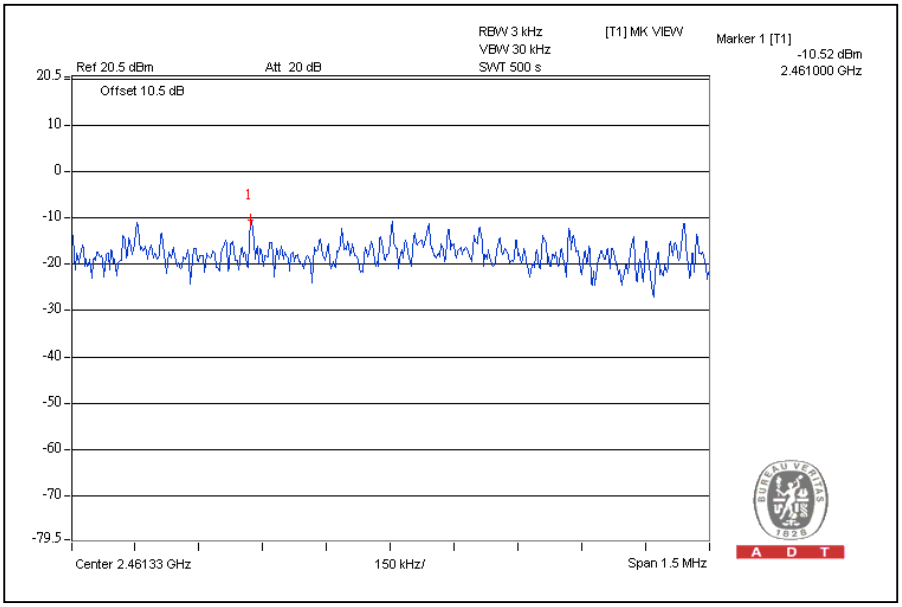
CH1



CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK VIEW
Marker 1 [T1]
-14.34 dBm
2.440776 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.44146 GHz
150 kHz/
Span 1.5 MHz

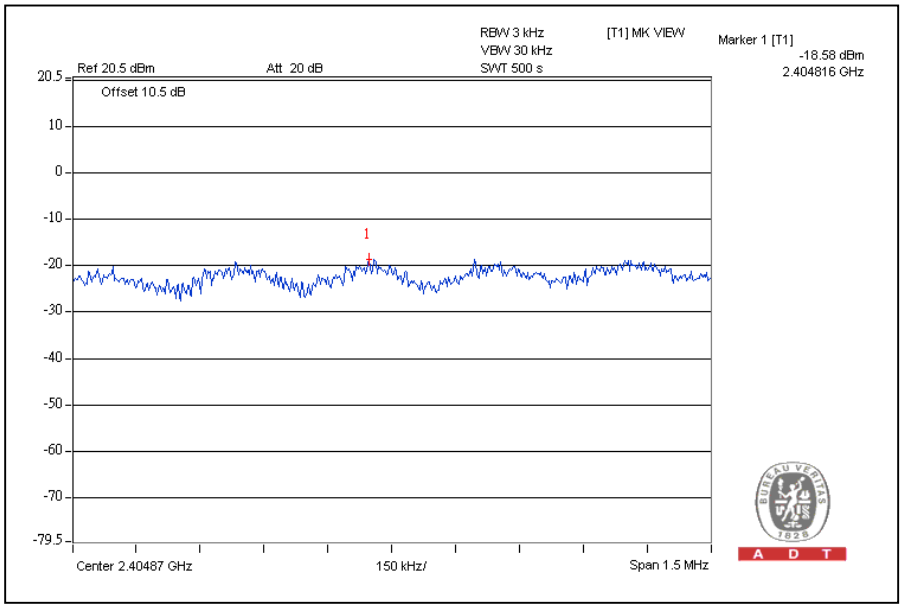
CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK VIEW
Marker 1 [T1]
-10.52 dBm
2.461000 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.46133 GHz
150 kHz/
Span 1.5 MHz

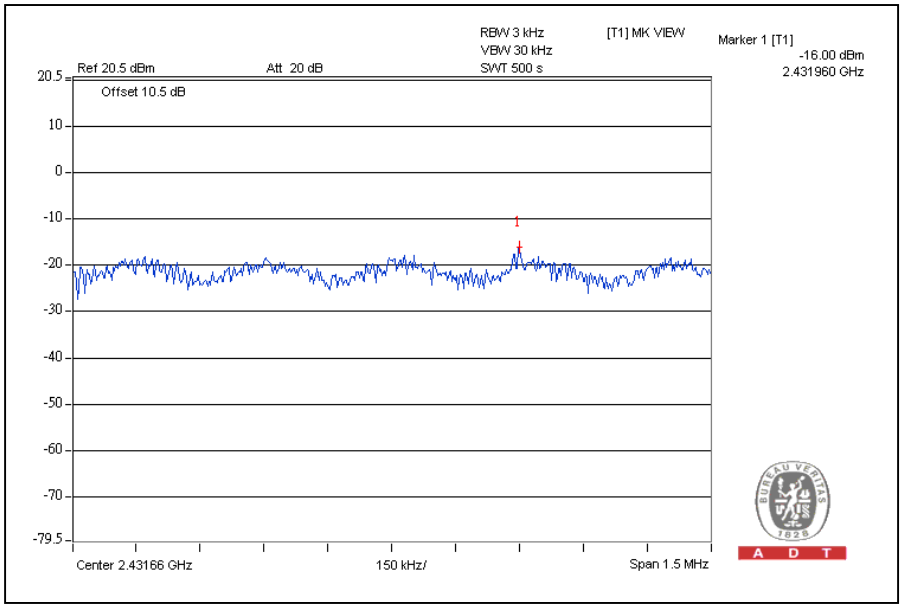
802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-18.6	8	PASS
6	2437	-16.0	8	PASS
11	2462	-17.8	8	PASS

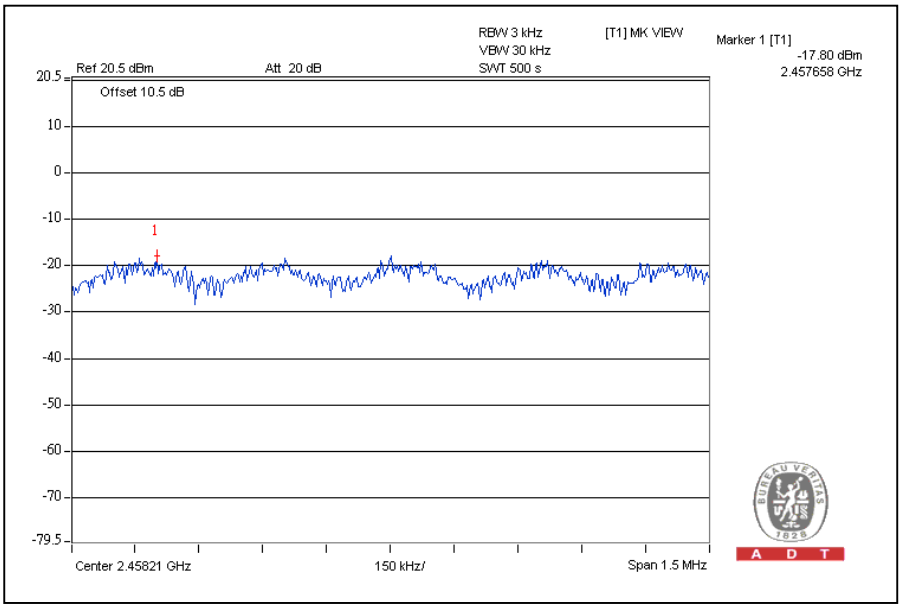
CH1



CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK VIEW
Marker 1 [T1]
-16.00 dBm
2.431960 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.43166 GHz
150 kHz/
Span 1.5 MHz

CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK VIEW
Marker 1 [T1]
-17.80 dBm
2.457658 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.45821 GHz
150 kHz/
Span 1.5 MHz

4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	FSP 40	100060	May 17, 2010	May 16, 2011

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set RBW of spectrum analyzer to 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

NOTE:

The EUT was setup to ANSI C63.4, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

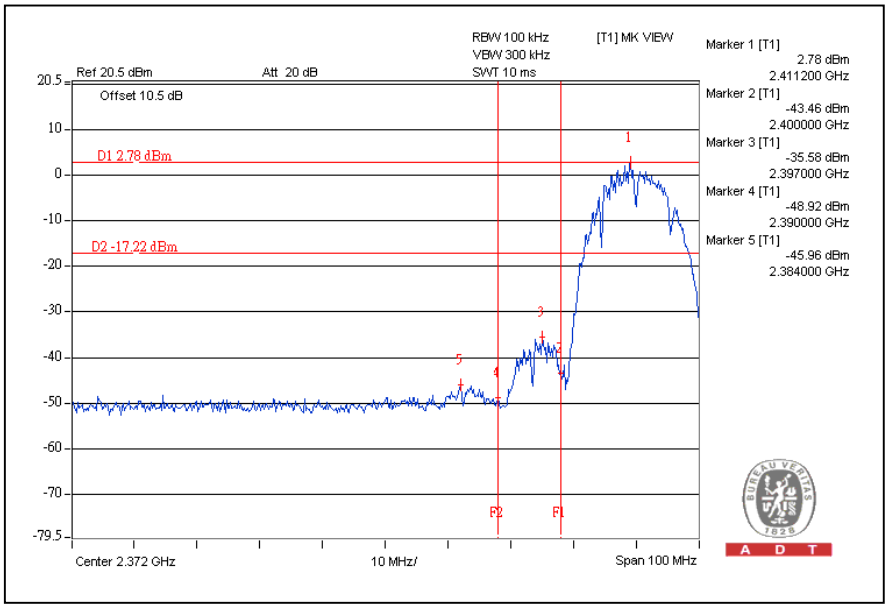
Same as Item 4.3.6

4.6.6 TEST RESULTS

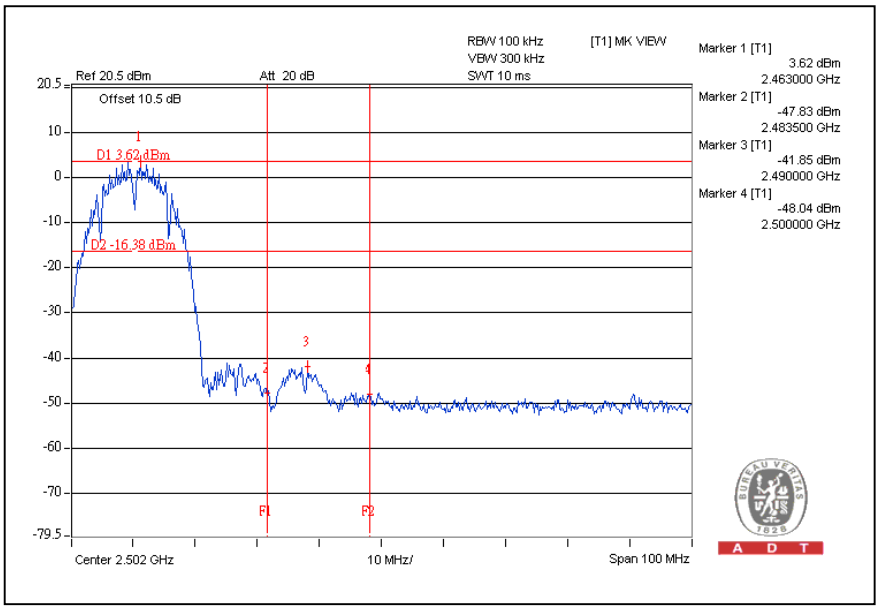
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

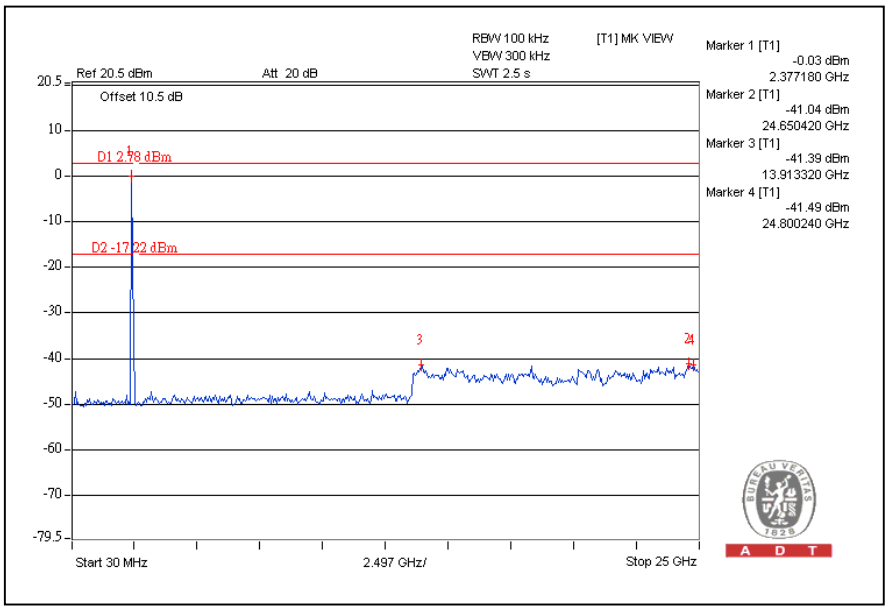
CH1



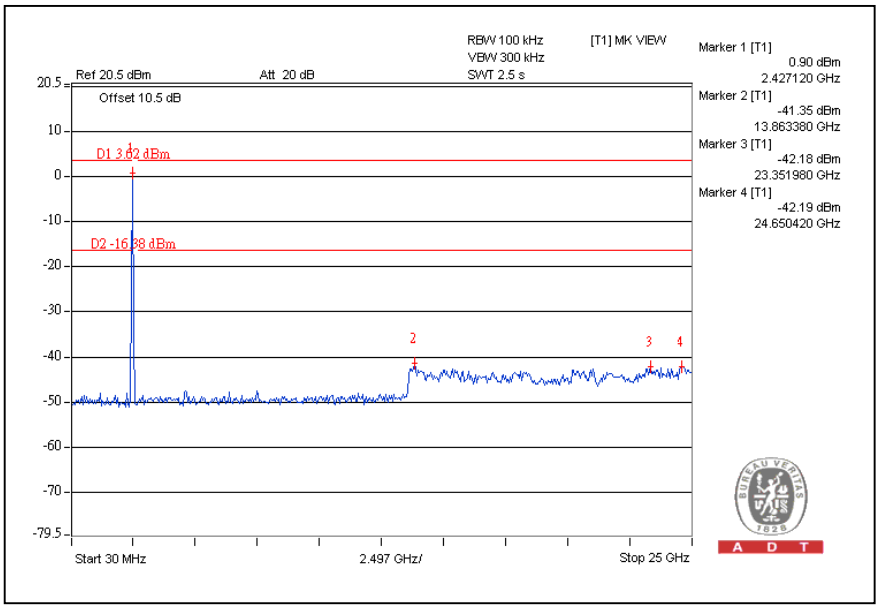
CH11



CH1

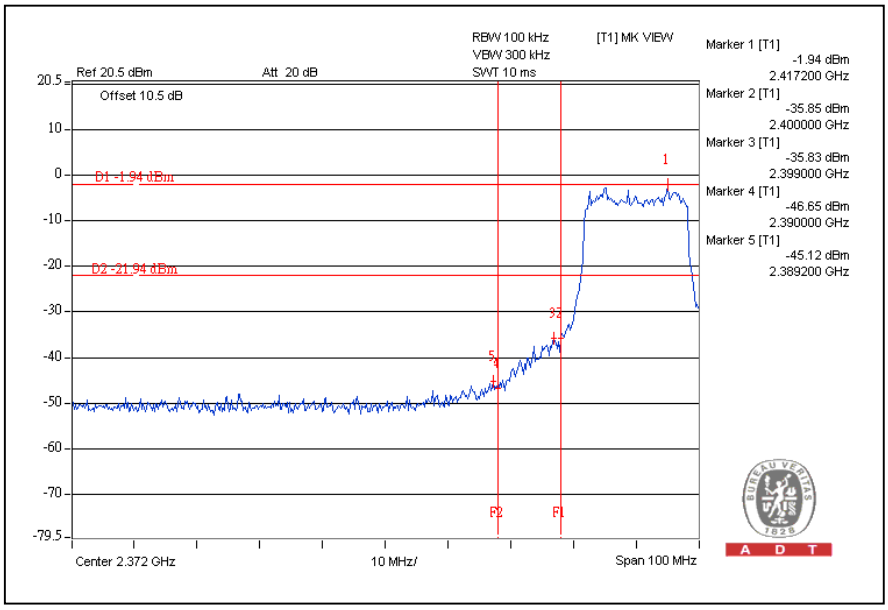

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 2.78 dBm
D2 -17.22 dBm
Marker 1 [T1]
-0.03 dBm
2.377180 GHz
Marker 2 [T1]
-41.04 dBm
24.650420 GHz
Marker 3 [T1]
-41.39 dBm
13.913320 GHz
Marker 4 [T1]
-41.49 dBm
24.800240 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

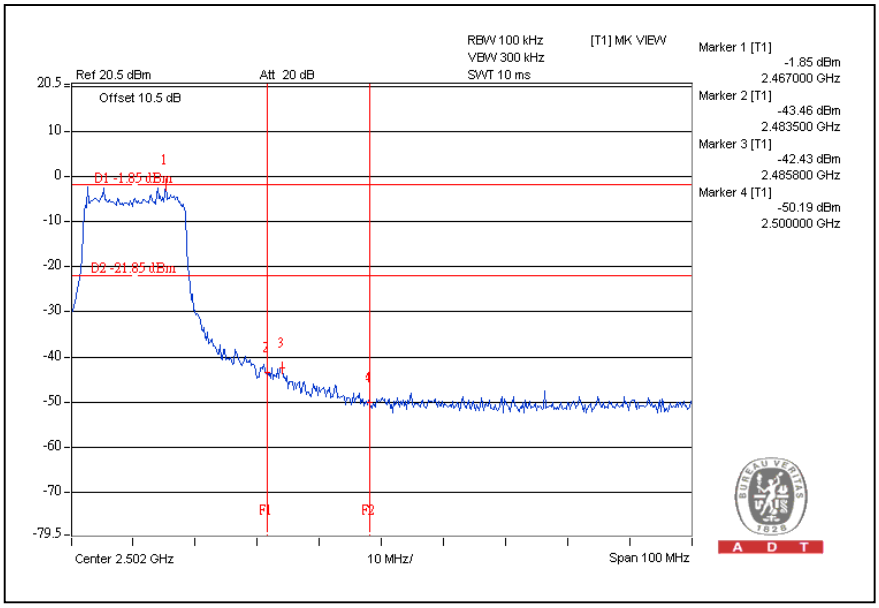

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 3.62 dBm
D2 -16.38 dBm
Marker 1 [T1]
0.90 dBm
2.427120 GHz
Marker 2 [T1]
-41.35 dBm
13.863380 GHz
Marker 3 [T1]
-42.18 dBm
23.351980 GHz
Marker 4 [T1]
-42.19 dBm
24.650420 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM MODULATION:

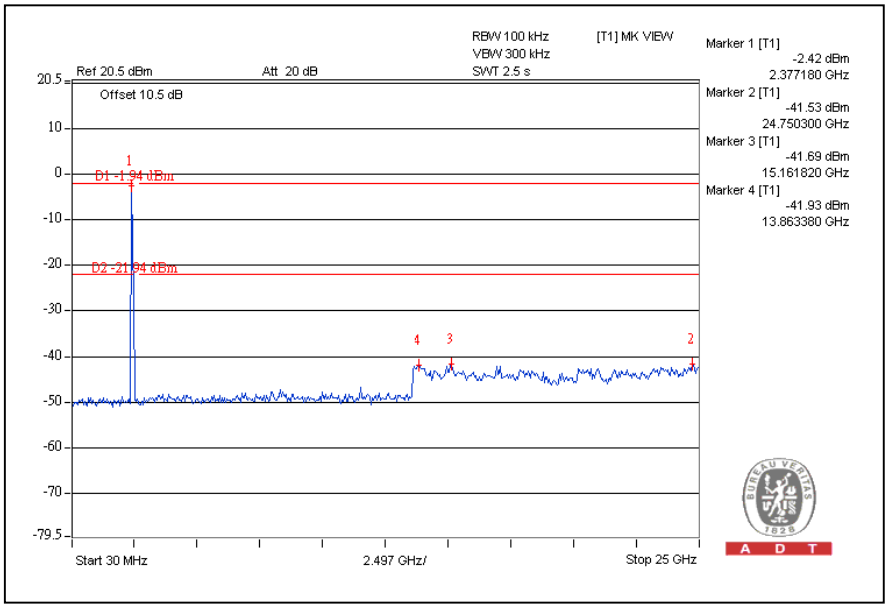
CH1



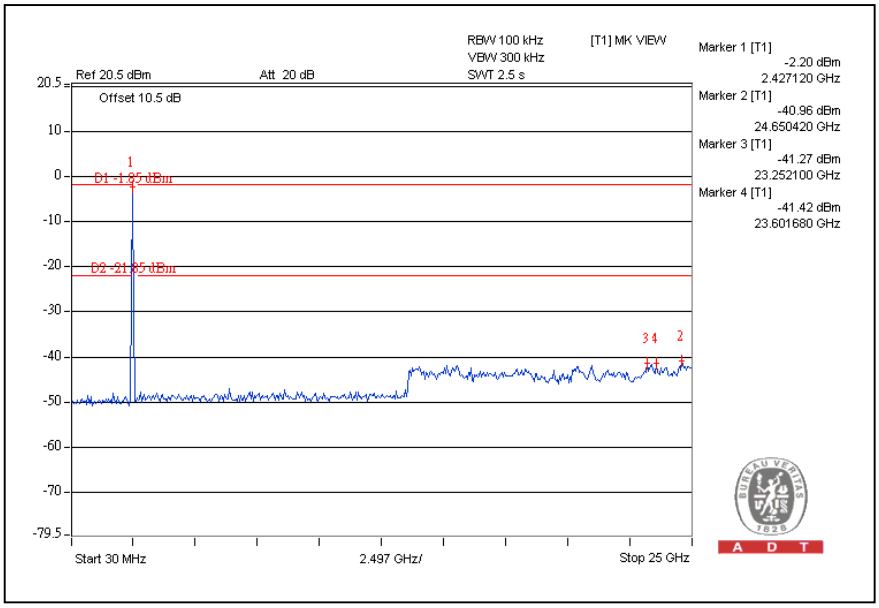
CH11



CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 -1.94 dBm
D2 -21.94 dBm
Marker 1 [T1]
-2.42 dBm
2.377180 GHz
Marker 2 [T1]
-41.53 dBm
24.750300 GHz
Marker 3 [T1]
-41.69 dBm
15.161820 GHz
Marker 4 [T1]
-41.93 dBm
13.863380 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
D1 -1.85 dBm
D2 -21.85 dBm
Marker 1 [T1]
-2.20 dBm
2.427120 GHz
Marker 2 [T1]
-40.96 dBm
24.650420 GHz
Marker 3 [T1]
-41.27 dBm
23.252100 GHz
Marker 4 [T1]
-41.42 dBm
23.601680 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz

5.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.

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml.
If you have any comments, please feel free to contact us at the following:

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

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

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

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

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

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

No any modifications are made to the EUT by the lab during the test.

--- END ---