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# FCC TEST REPORT

**REPORT NO.:** RF980910H02

**MODEL NO.:** EMTA 6528-4WB, EMTA 6528-4WBe4S

**RECEIVED:** Sep. 10, 2009

**TESTED:** Oct. 05 to 26, 2009

**ISSUED:** Nov. 17, 2009

**APPLICANT:** Innomedia Inc.

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Santa Clara California United States 95054

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)  
Ltd., Taoyuan Branch Hsin Chu Laboratory

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## Table of Contents

1.	CERTIFICATION .....	4
2.	SUMMARY OF TEST RESULTS .....	5
2.1	MEASUREMENT UNCERTAINTY .....	6
3.	GENERAL INFORMATION .....	7
3.1	GENERAL DESCRIPTION OF EUT .....	7
3.2	DESCRIPTION OF TEST MODES .....	10
3.2.1	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL .....	11
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS .....	13
3.4	DESCRIPTION OF SUPPORT UNITS.....	14
3.5	CONFIGURATION OF SYSTEM UNDER TEST .....	16
4.	TEST TYPES AND RESULTS .....	18
4.1	CONDUCTED EMISSION MEASUREMENT .....	18
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	18
4.1.2	TEST INSTRUMENTS.....	18
4.1.3	TEST PROCEDURES .....	19
4.1.4	DEVIATION FROM TEST STANDARD .....	19
4.1.5	TEST SETUP .....	20
4.1.6	EUT OPERATING CONDITIONS .....	20
4.1.7	TEST RESULTS .....	21
4.2	RADIATED EMISSION MEASUREMENT .....	23
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT .....	23
4.2.2	TEST INSTRUMENTS.....	24
4.2.3	TEST PROCEDURES .....	25
4.2.4	DEVIATION FROM TEST STANDARD .....	25
4.2.5	TEST SETUP .....	26
4.2.6	EUT OPERATING CONDITIONS .....	26
4.2.7	TEST RESULTS .....	27
4.3	6dB BANDWIDTH MEASUREMENT .....	42
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT .....	42
4.3.2	TEST INSTRUMENTS.....	42
4.3.3	TEST PROCEDURE.....	43
4.3.4	DEVIATION FROM TEST STANDARD .....	43
4.3.5	TEST SETUP .....	43
4.3.6	EUT OPERATING CONDITIONS .....	43
4.3.7	TEST RESULTS .....	44
4.4	MAXIMUM PEAK OUTPUT POWER.....	46
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT .....	46
4.4.2	INSTRUMENTS.....	46
4.4.3	TEST PROCEDURES .....	46



A D T

4.4.4	DEVIATION FROM TEST STANDARD .....	46
4.4.5	TEST SETUP .....	46
4.4.6	EUT OPERATING CONDITIONS .....	47
4.4.7	TEST RESULTS .....	48
4.5	POWER SPECTRAL DENSITY MEASUREMENT .....	49
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT .....	49
4.5.2	TEST INSTRUMENTS.....	49
4.5.3	TEST PROCEDURE.....	50
4.5.4	DEVIATION FROM TEST STANDARD .....	50
4.5.5	TEST SETUP .....	50
4.5.6	EUT OPERATING CONDITION .....	50
4.5.7	TEST RESULTS .....	51
4.6	CONDUCTED OUT-BAND EMISSION MEASUREMENT .....	53
4.6.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	53
4.6.2	TEST INSTRUMENTS.....	53
4.6.3	TEST PROCEDURE.....	53
4.6.4	DEVIATION FROM TEST STANDARD .....	54
4.6.5	EUT OPERATING CONDITION .....	54
4.6.6	TEST RESULTS .....	54
5.	INFORMATION ON THE TESTING LABORATORIES .....	59
6.	APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	60



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## 1. CERTIFICATION

**PRODUCT:** Wireless VOIP Gateway  
**BRAND NAME:** innomedia  
**MODEL NO.:** EMTA 6528-4WB, EMTA 6528-4WBe4S  
**TEST SAMPLE:** R&D SAMPLE  
**TESTED:** Oct. 05 to 26, 2009  
**APPLICANT:** Innomedia Inc.  
**STANDARDS:** FCC Part 15, Subpart C (Section 15.247),  
ANSI C63.4-2003

The above equipment (Model: EMTA 6528-4WB) 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** : Midoli Peng , **DATE:** Nov. 17, 2009  
( Midoli Peng, Specialist )

**TECHNICAL ACCEPTANCE** : Hank Chung , **DATE:** Nov. 17, 2009  
( Hank Chung, Deputy Manager )

**APPROVED BY** : May Chen , **DATE:** Nov. 17, 2009  
( May Chen, Deputy Manager )

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>Remark</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.66dB at 3.754MHz
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 -0.9dB at 2390.00MHz
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.



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## 2.1 MEASUREMENT UNCERTAINTY

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

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

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



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### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Wireless VOIP Gateway
<b>MODEL NO.</b>	EMTA 6528-4WB, EMTA 6528-4WBe4S
<b>FCC ID</b>	NEN6528-4WB
<b>POWER SUPPLY</b>	DC 15V from power adapter or DC 11.1V from battery
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
<b>FREQUENCY RANGE</b>	2412 ~ 2462MHz
<b>NUMBER OF CHANNEL</b>	11
<b>MAXIMUM OUTPUT POWER</b>	802.11b: 89.1mW 802.11g: 323.6mW
<b>ANTENNA TYPE</b>	Please see note 2
<b>ANTENNA CONNECTOR</b>	Please see note 2
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	RJ-45 Port x 4 (Ethernet (10,100Mbps)) RJ-11 Port x 4 UPS Port x 1 (USB 2.0) Cable Port x 1
<b>ASSOCIATED DEVICES</b>	Adapter x 1 Battery x 1



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**NOTE:**

1. The EUT has two model names which are identical to each other in all aspects except for the following:

Brand name	Model No.
innomedia	EMTA 6528-4WB
	EMTA 6528-4WBe4S

From the above models, model: **EMTA 6528-4WB** was selected as representative model for the test and its data was recorded in this report.

2. There is one antenna provided to this EUT, please refer to the following table:

Model	Antenna Type	Gain(dBi)	Connector	Frequency range (MHz to MHz)
PRS-1180	Dipole	2.0	UFL	2400~2500

3. The EUT was powered by following power adapter or battery:

<b>Adapter</b>	
<b>Brand:</b>	Sunny
<b>Model No.:</b>	SYS1359-4515-T3
<b>Input power :</b>	100-240Vac, 50/60Hz, 1.5A
<b>Output power :</b>	15Vdc, 3A
<b>Battery 1</b>	
<b>Brand:</b>	MOLICEL
<b>Model No.:</b>	ME202CJ
<b>Output power :</b>	11.1Vdc, 6600mAh
<b>Battery 2</b>	
<b>Brand:</b>	GPI
<b>Model No.:</b>	DR202
<b>Output power :</b>	11.1Vdc, 6600mAh





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4. The EUT was pre-tested in chamber under the following modes:

Test Mode	Description
Mode A	Level-set (Put on tabletop) + LAN Port: 100Mbps + Wireless + Adapter + Battery + Phone talking + UPS cable
Mode B	Tower-set (Wall-mounted) + LAN Port: 100Mbps + Wireless + Adapter + Battery + Phone talking + UPS cable
Mode C	Level-set (Put on tabletop) + LAN Port: 10Mbps + Wireless + Adapter + Battery + Phone talking + UPS cable

For radiated test, the worse case was found in **Mode A**. Therefore only the test data of the mode was recorded in this report.

5. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.



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### 3.2 DESCRIPTION OF TEST MODES

#### Operated in 2400 ~ 2483.5MHz band:

Eleven channels are provided for 802.11b, 802.11g:

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		

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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)
802.11g	1 to 11	11	OFDM	BPSK	6

#### **RADIATED EMISSION TEST (BELOW 1 GHz):**

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6

#### **RADIATED EMISSION TEST (ABOVE 1 GHz):**

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6



**CONDUCTED OUT-BAND EMISSION MEASUREMENT:**

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 11	OFDM	BPSK	6

**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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE <sup>3</sup> 1G	24deg. C, 67%RH, 965 hPa	120Vac, 60Hz	Eric Lee
RE<1G	27deg. C, 59%RH, 965 hPa	120Vac, 60Hz	Frank Lliu
PLC	26deg. C, 70%RH, 965 hPa	120Vac, 60Hz	Leo Peng
APCM	25deg. C, 60%RH, 965 hPa	120Vac, 60Hz	Eric Lee

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless VOIP Gateway. 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**

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

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



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### 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 test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	12252644560	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PPT	17044664176	E2K24GBRL
3	TERMINATION SYSTEM	ARRIS	713918	NA	NA
4	ATTENUATOR	NA	NA	NA	NA
5	TELEPHONE	CAOKE	TC-203	TC0005431	NA
6	TELEPHONE	CAOKE	TC-203	TC0003748	NA
7	TELEPHONE	HTT	HTT-806	9545065	FCC DoC
8	TELEPHONE	HTT	HTT-806	9543663	FCC DoC

For conducted emission test	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	NA
3	NA
4	Coaxial cable (10m)
5	RJ-11 cable (1.8m)
6	RJ-11 cable (1.8m)
7	RJ-11 cable (1.8m)
8	RJ-11 cable (1.8m)

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



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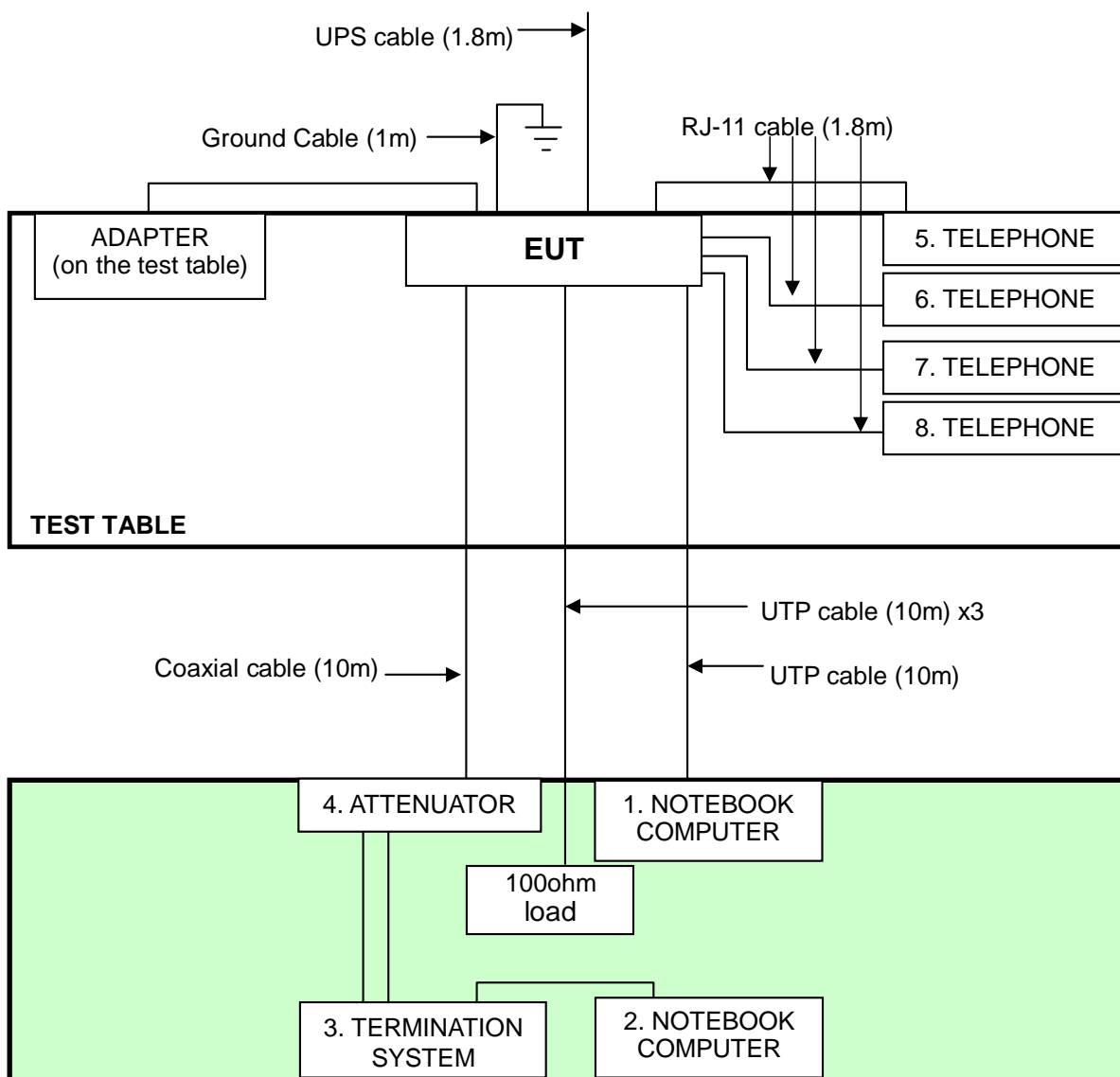
For others test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
2	NOTEBOOK COMPUTER	DELL	PP21L	CN-0GD366-70166-5B3-09ZX	QDS-BRCM1016
3	TERMINATION SYSTEM	ARRIS	713918	NA	NA
4	ATTENUATOR	NA	NA	NA	NA
5	TELEPHONE	Romeo	TE-812	97280903	NA
6	TELEPHONE	Romeo	TE-812	97280926	NA
7	TELEPHONE	DAISHO	DS-03	NA	NA
8	TELEPHONE	DAISHO	DS-03	NA	NA
9	HUB	AVSYS	110H8	01-20E-000006	FCC DoC

For others test	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	NA
3	NA
4	Coaxial cable (10m)
5	RJ-11 cable (1.8m)
6	RJ-11 cable (1.8m)
7	RJ-11 cable (1.8m)
8	RJ-11 cable (1.8m)
9	UTP cable (10m) x2

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

### 3.5 CONFIGURATION OF SYSTEM UNDER TEST

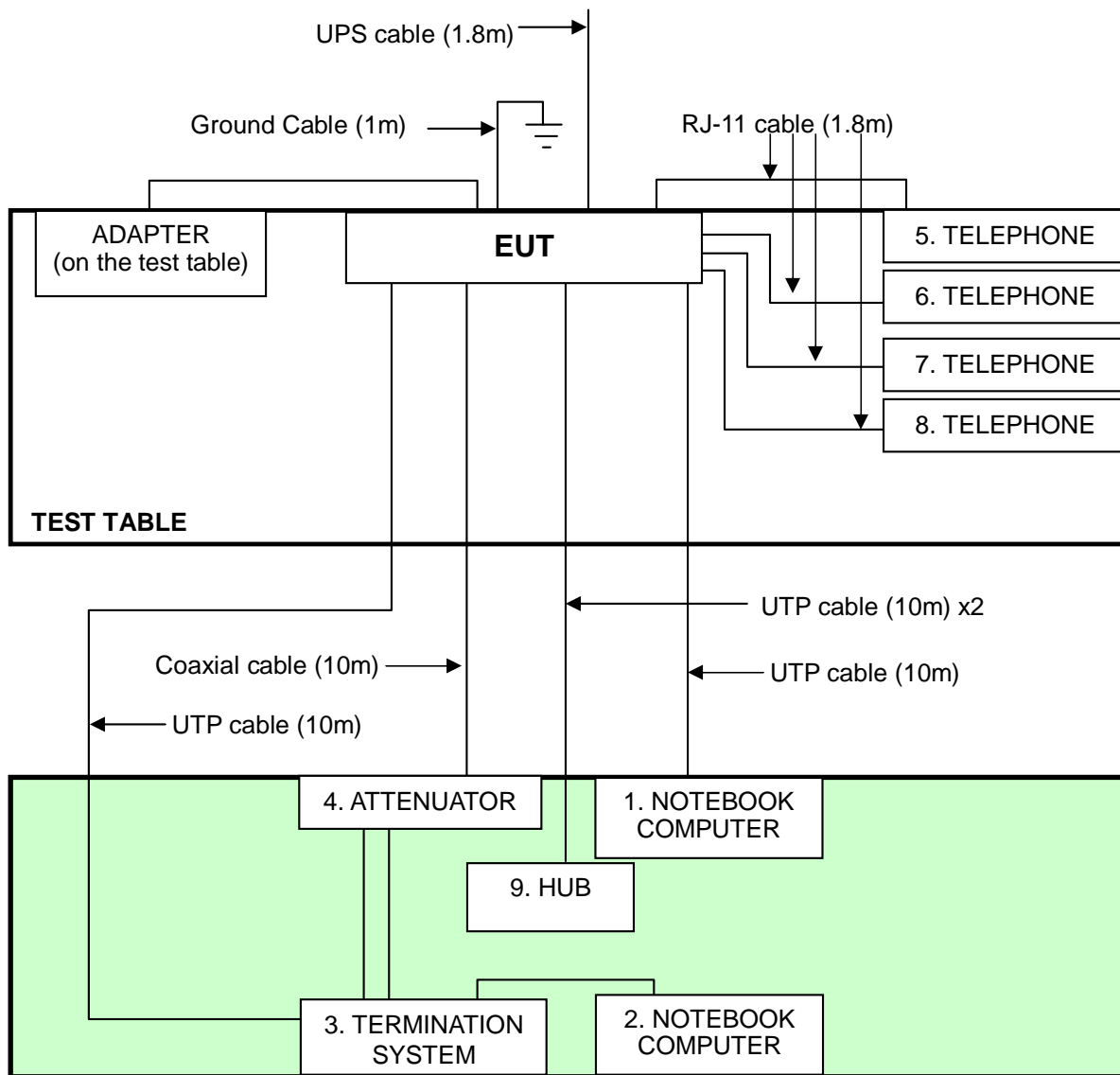
For conducted emission test



**NOTE:** 1. Support units 1-4 were kept in the control room during the test.



**For others test**



**NOTE:** 1. Support units 1-4 & 9 were kept in the control room during the test.



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## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
0.15-0.5	Quasi-peak	Average
0.5-5	66 to 56	56 to 46
5-30	56	46
	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.
  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. 05, 2009	Mar. 04, 2010
Line-Impedance Stabilization Network (for EUT)	KNW-407	8-1395-12	May 04, 2009	May 03, 2010
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 08, 2009	June 07, 2010
RF Cable (JYEBAO)	5DFB	COACAB-001	Dec 15, 2008	Dec 14, 2009
50 ohms Terminator	50	3	Nov. 05, 2008	Nov. 04, 2009
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.

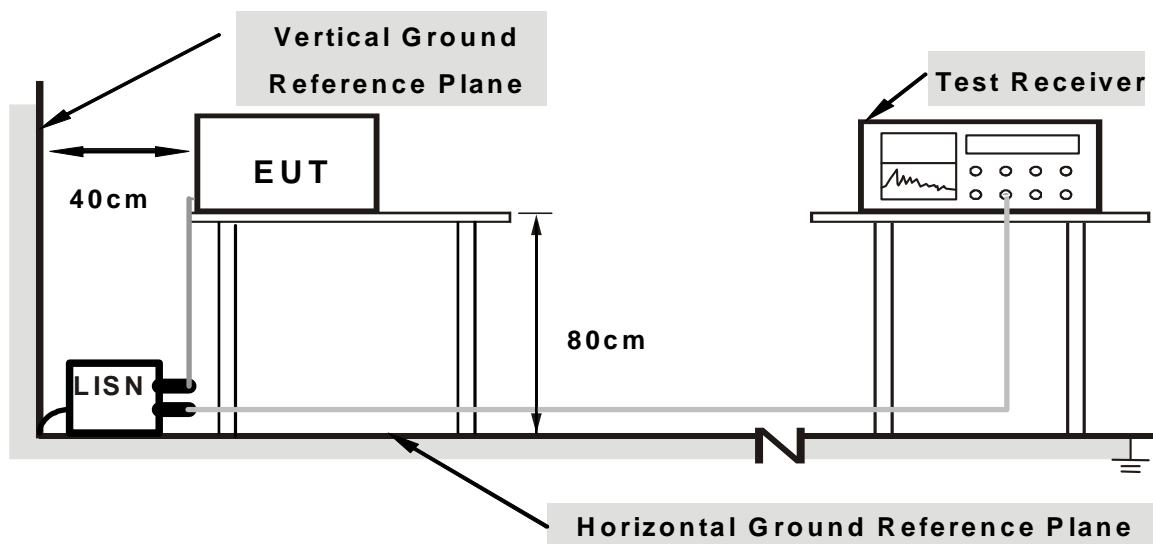
#### 4.1.3 TEST PROCEDURES

- 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 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

- a. Placed the EUT on testing table.
- b. Prepared other computer systems to act as communication partners and placed them outside of testing area.
- c. The communication partners run test program “ART 52 build 6.exe” to enable EUT under transmission/receiving condition continuously via one UTP cable and one Coaxial cable transmission.
- d. Support units 5~8 (Telephone) are calling to each other via EUT.

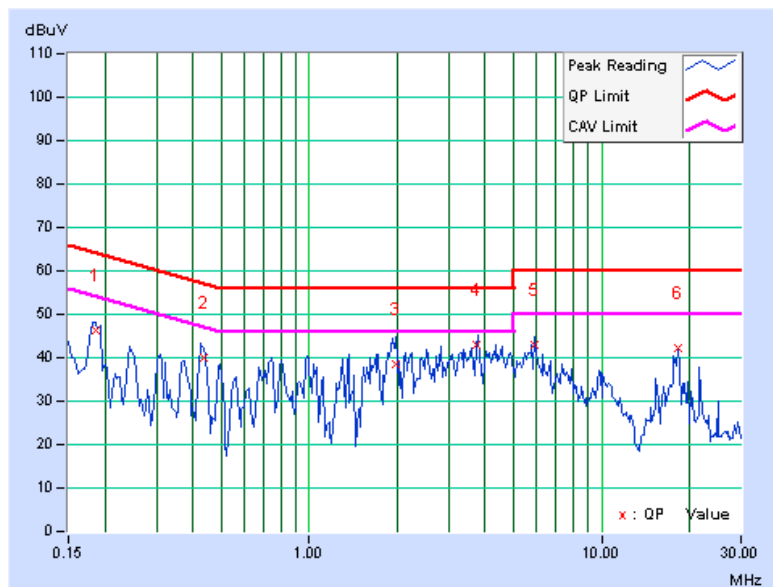
### 4.1.7 TEST RESULTS

#### 802.11b DSSS MODULATION:

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.185	0.20	45.93	-	46.13	-	64.25
2	0.435	0.08	39.86	-	39.94	-	57.15	47.15	-17.21	-
3	1.973	0.07	38.61	-	38.68	-	56.00	46.00	-17.32	-
4	3.753	0.13	42.88	-	43.01	-	56.00	46.00	-12.99	-
5	5.906	0.17	42.63	-	42.80	-	60.00	50.00	-17.20	-
6	18.242	0.44	41.61	-	42.05	-	60.00	50.00	-17.95	-

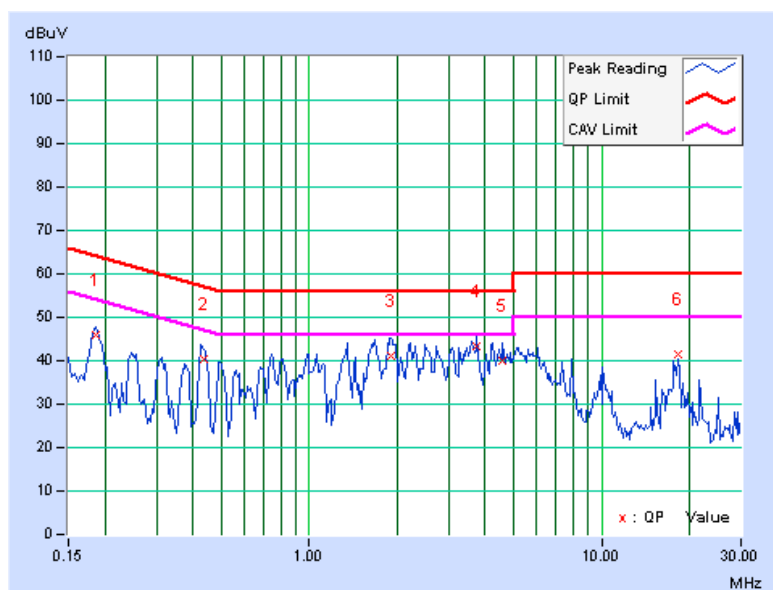
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value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



<b>PHASE</b>	Neutral (N)	<b>6dB BANDWIDTH</b>	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.21	45.69	-	45.90	-	64.25	54.25	-18.35	-
2	0.437	0.09	40.29	-	40.38	-	57.12	47.12	-16.74	-
3	1.909	0.10	41.06	-	41.16	-	56.00	46.00	-14.84	-
<b>4</b>	<b>3.754</b>	<b>0.15</b>	<b>43.19</b>	-	<b>43.34</b>	-	<b>56.00</b>	<b>46.00</b>	<b>-12.66</b>	-
5	4.602	0.17	39.85	-	40.02	-	56.00	46.00	-15.98	-
6	18.242	0.47	41.09	-	41.56	-	60.00	50.00	-18.44	-

- 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.



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#### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 9, 2008	Dec. 8, 2009
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	Apr. 24 , 2009	Apr. 23 , 2010
HP Pre_Amplifier	8449B	3008A01923	Nov. 10, 2008	Nov. 9, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Aug. 28, 2009	Aug. 28, 2010
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 29, 2009	April 28, 2010
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 09, 2008	Dec. 08, 2009
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2009	Jan. 21, 2010
RF Switches	EMH-011	08009	Sep. 26, 2009	Sep. 25, 2010
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 14, 2009	Aug. 13, 2010
RF Cable	8D	STCCAB-001	Sep. 26, 2009	Sep. 25, 2010
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, HP 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 10 meter open area test 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

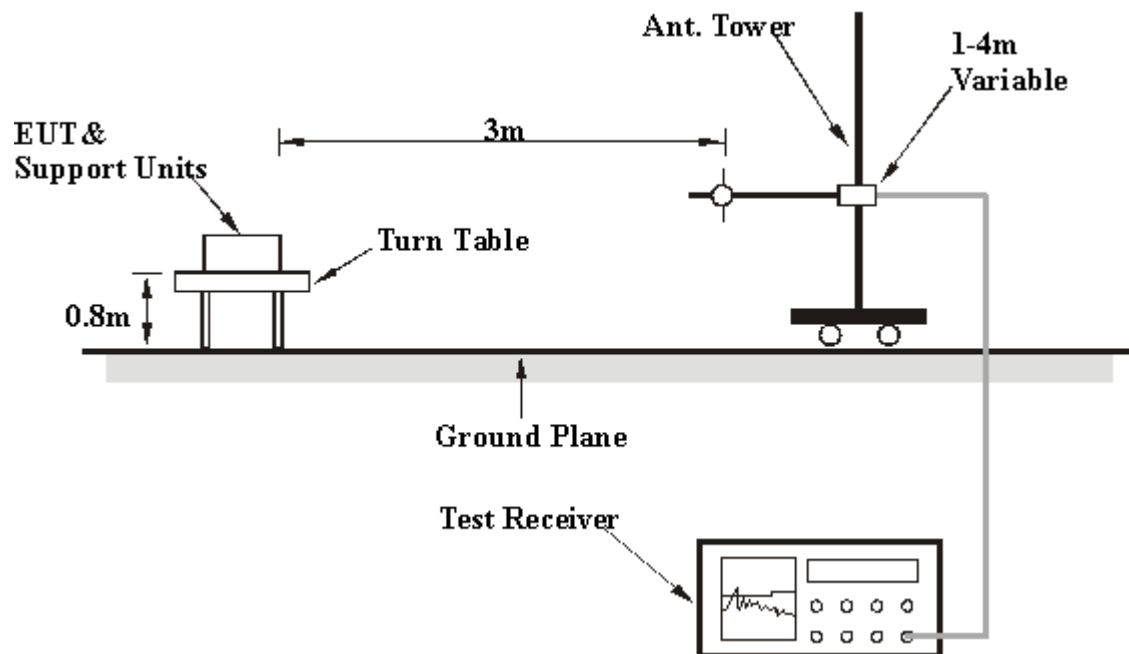
**NOTE:**

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



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### 4.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH 965 hPa	TESTED BY	Eric Lee

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	125.01	24.5 QP	43.50	-19.1	1.85 H	226	11.97	12.48
2	200.00	28.9 QP	43.50	-14.6	1.51 H	19	17.00	11.86
3	300.01	29.6 QP	46.00	-16.4	1.07 H	91	13.62	16.01
4	375.04	25.8 QP	46.00	-20.2	1.64 H	154	7.94	17.90
5	400.01	35.0 QP	46.00	-11.0	1.00 H	122	16.43	18.54
6	600.01	34.4 QP	46.00	-11.6	1.40 H	133	10.53	23.87
7	625.06	30.4 QP	46.00	-15.6	1.54 H	62	6.29	24.12
8	700.01	36.8 QP	46.00	-9.2	1.19 H	63	11.94	24.89
9	800.02	39.0 QP	46.00	-7.0	1.08 H	341	12.40	26.63
10	900.02	39.5 QP	46.00	-6.6	1.00 H	135	11.26	28.19

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	75.68	28.1 QP	40.00	-11.9	1.53 V	300	16.65	11.47
2	120.00	29.7 QP	43.50	-13.8	1.00 V	117	17.75	11.95
3	125.01	27.9 QP	43.50	-15.6	1.14 V	249	15.40	12.48
4	250.01	27.9 QP	46.00	-18.1	1.00 V	259	14.23	13.70
5	300.01	31.3 QP	46.00	-14.8	1.46 V	201	15.24	16.01
6	374.99	30.1 QP	46.00	-16.0	1.16 V	299	12.15	17.90
7	400.01	34.9 QP	46.00	-11.1	1.24 V	230	16.33	18.54
8	500.01	30.1 QP	46.00	-15.9	1.13 V	250	8.80	21.31
9	700.02	36.3 QP	46.00	-9.7	1.37 V	259	11.40	24.89
10	875.09	32.1 QP	46.00	-13.9	1.46 V	233	4.34	27.78
11	900.02	36.0 QP	46.00	-10.0	1.25 V	281	7.82	28.19

- 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.



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**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	27deg. C, 59%RH 965 hPa	TESTED BY	Frank Liu

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	54.6 PK	74.00	-19.4	1.00 H	331	24.30	30.27
2	2385.60	43.6 AV	54.00	-10.4	1.00 H	331	13.29	30.27
3	*2412.00	99.2 PK			1.00 H	352	68.87	30.36
4	*2412.00	97.3 AV			1.00 H	352	66.94	30.36
5	4824.00	44.5 PK	74.00	-29.5	1.00 H	296	7.71	36.79
6	4824.00	33.8 AV	54.00	-20.2	1.00 H	296	-2.99	36.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.27	58.2 PK	74.00	-15.8	1.35 V	229	27.97	30.27
2	2386.27	49.9 AV	54.00	-4.1	1.35 V	229	19.60	30.27
3	*2412.00	106.3 PK			1.33 V	127	75.94	30.36
4	*2412.00	103.9 AV			1.33 V	127	73.54	30.36
5	4824.00	45.1 PK	74.00	-28.9	1.00 V	181	8.31	36.79
6	4824.00	36.2 AV	54.00	-17.8	1.00 V	181	-0.59	36.79

- 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.



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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	27deg. C, 59%RH 965 hPa	TESTED BY	Frank Liu

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	99.4 PK			1.00 H	342	68.97	30.46
2	*2437.00	97.6 AV			1.00 H	342	67.14	30.46
3	4874.00	44.9 PK	74.00	-29.1	1.00 H	313	7.98	36.92
4	4874.00	34.2 AV	54.00	-19.8	1.00 H	313	-2.72	36.92
5	7311.00	53.4 PK	74.00	-20.6	1.74 H	169	10.26	43.14
6	7311.00	46.9 AV	54.00	-7.1	1.74 H	169	3.76	43.14
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	106.0 PK			1.32 V	126	75.54	30.46
2	*2437.00	103.2 AV			1.32 V	126	72.74	30.46
3	4874.00	45.8 PK	74.00	-28.2	1.04 V	157	8.88	36.92
4	4874.00	36.9 AV	54.00	-17.1	1.04 V	157	-0.02	36.92
5	7311.00	52.1 PK	74.00	-21.9	1.00 V	26	8.96	43.14
6	7311.00	41.4 AV	54.00	-12.6	1.00 V	26	-1.74	43.14

- 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.



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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	27deg. C, 59%RH 965 hPa	TESTED BY	Frank Liu

**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	99.6 PK			1.00 H	333	69.04	30.55
2	*2462.00	97.8 AV			1.00 H	333	67.25	30.55
3	2487.46	53.5 PK	74.00	-20.5	1.00 H	321	22.88	30.64
4	2487.46	42.9 AV	54.00	-11.1	1.00 H	321	12.24	30.64
5	4924.00	44.7 PK	74.00	-29.3	1.00 H	284	7.64	37.06
6	4924.00	34.1 AV	54.00	-19.9	1.00 H	284	-2.96	37.06
7	7386.00	52.8 PK	74.00	-21.2	1.76 H	173	9.67	43.13
8	7386.00	46.0 AV	54.00	-8.0	1.76 H	173	2.87	43.13

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

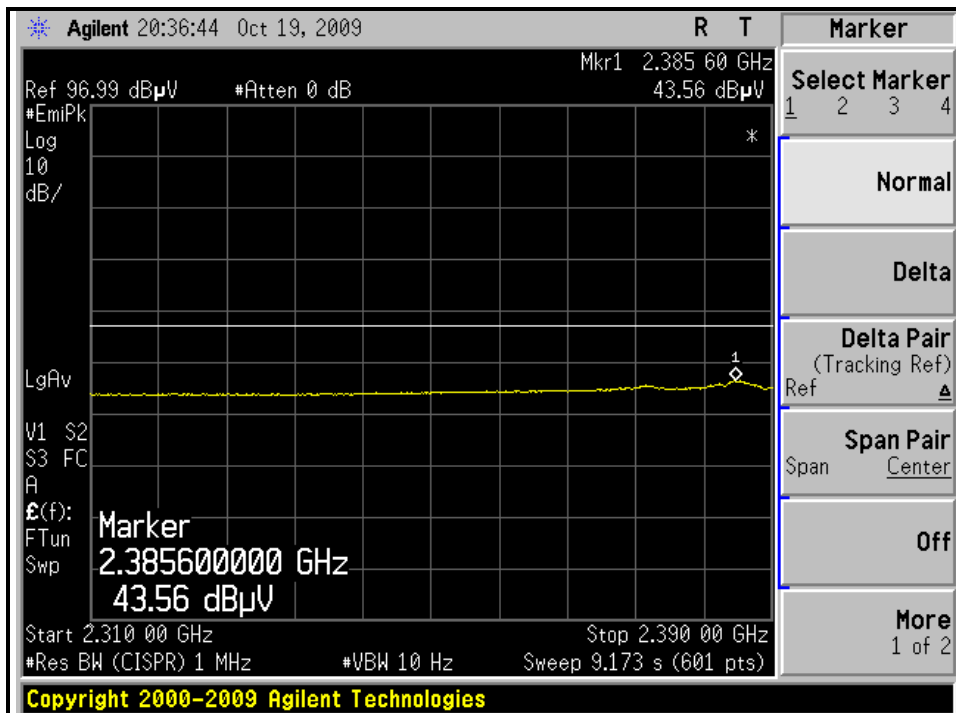
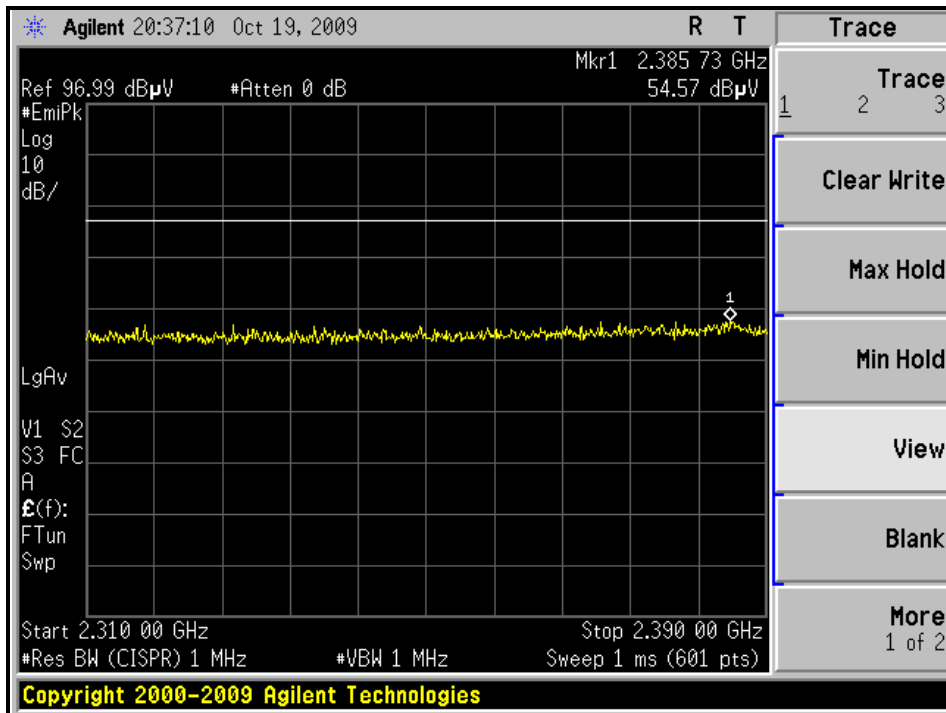
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1	*2462.00	105.8 PK			1.20 V	113	75.25	30.55
2	*2462.00	103.2 AV			1.20 V	113	72.65	30.55
3	2487.68	57.4 PK	74.00	-16.6	1.33 V	287	26.78	30.64
4	2487.68	47.8 AV	54.00	-6.3	1.33 V	287	17.11	30.64
5	4924.00	45.9 PK	74.00	-28.1	1.04 V	163	8.84	37.06
6	4924.00	37.4 AV	54.00	-16.6	1.04 V	163	0.34	37.06
7	7386.00	52.3 PK	74.00	-21.7	1.00 V	23	9.17	43.13
8	7386.00	41.9 AV	54.00	-12.1	1.00 V	23	-1.23	43.13

- 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.



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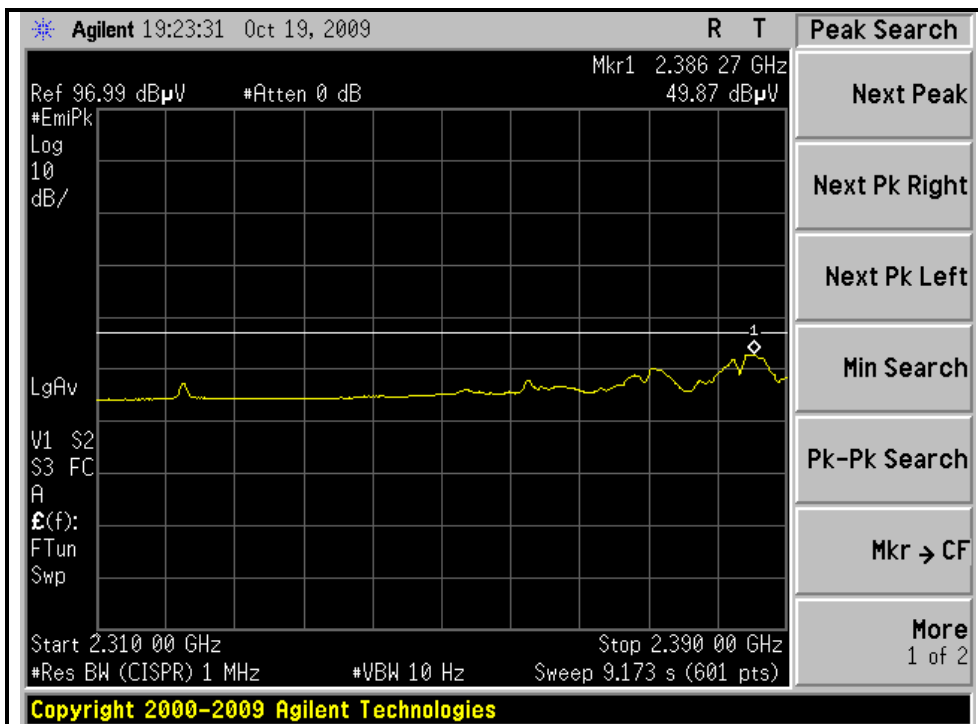
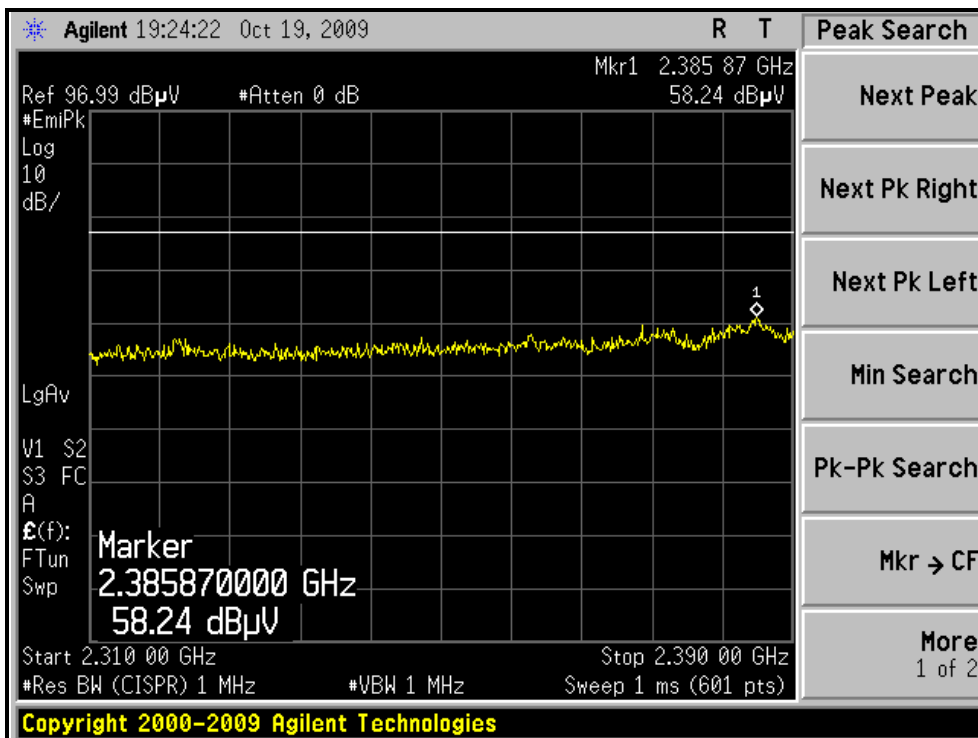
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RESTRICTED BANDEDGE (802.11b MODE,CH1, VERTICAL )

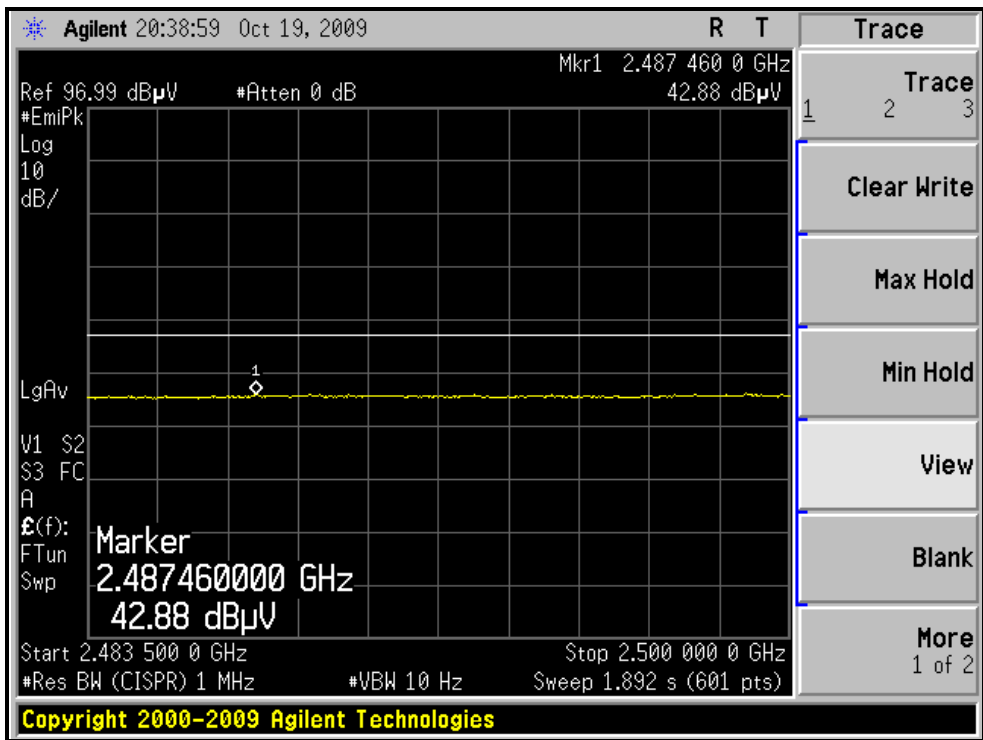
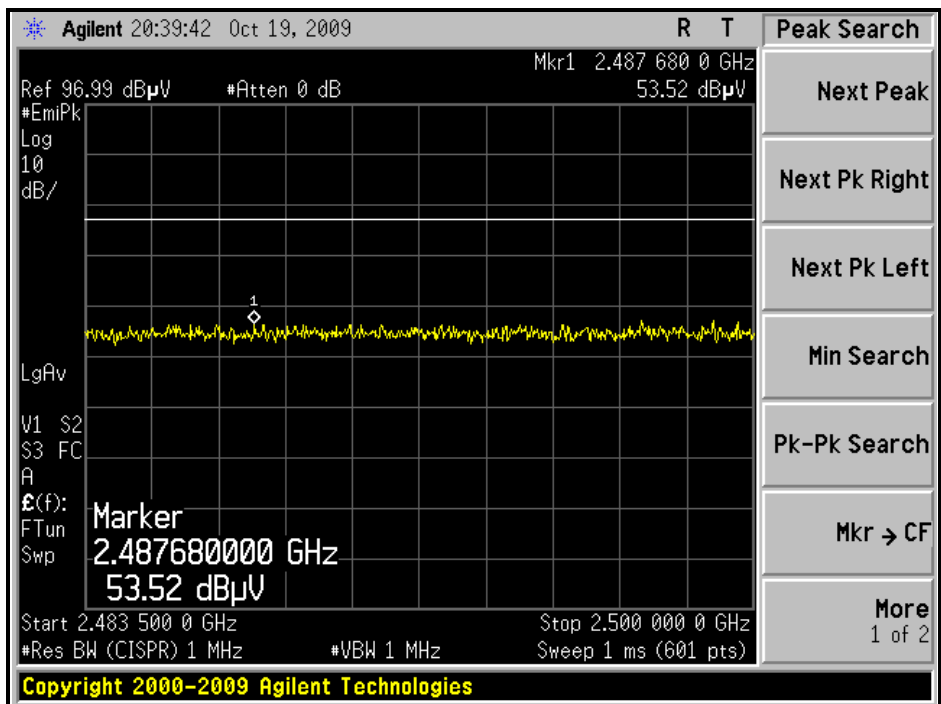






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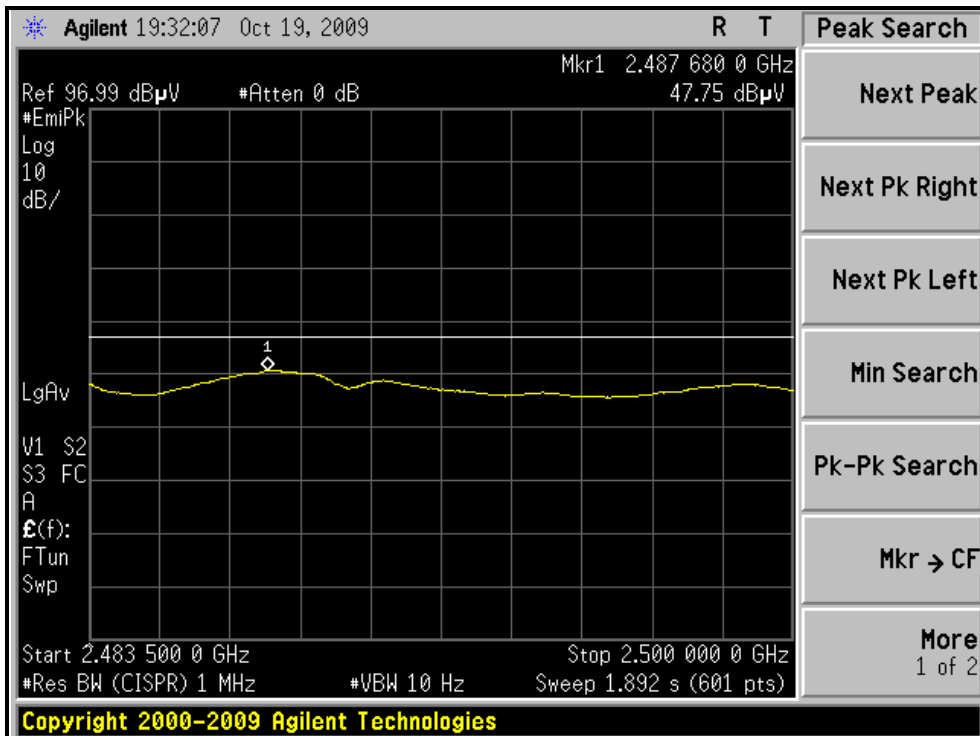
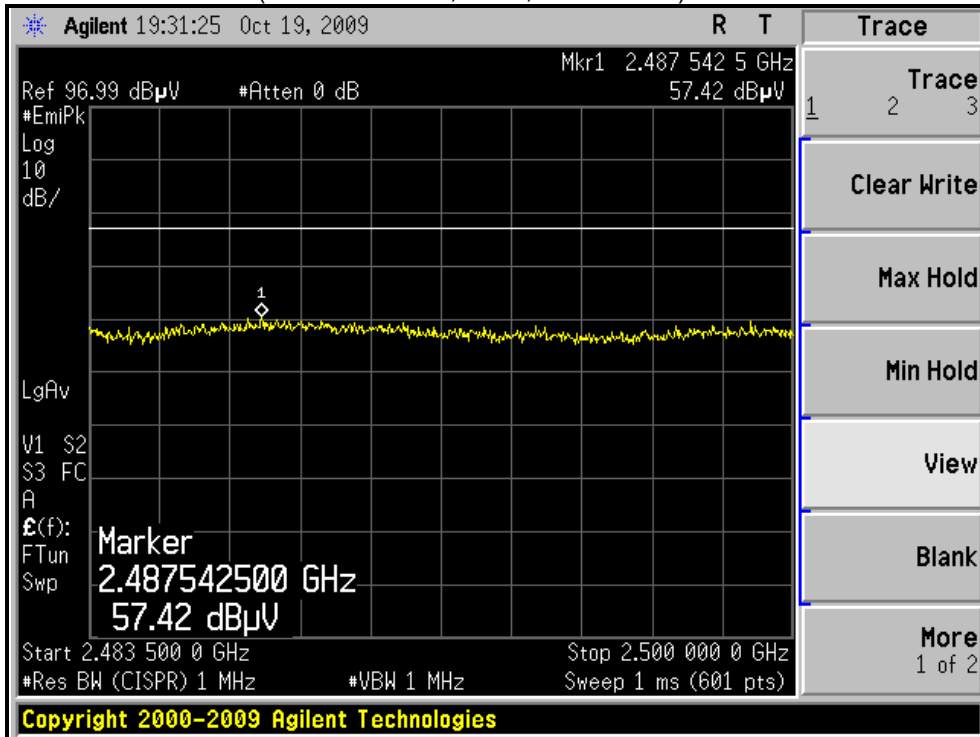
RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL )





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RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL )





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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	27deg. C, 59%RH 965 hPa	TESTED BY	Frank Liu

#### 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	57.6 PK	74.00	-16.4	1.00 H	332	27.29	30.28
2	2390.00	44.1 AV	54.00	-9.9	1.00 H	332	13.86	30.28
3	*2412.00	100.2 PK			1.00 H	351	69.84	30.36
4	*2412.00	87.6 AV			1.00 H	351	57.24	30.36
5	4824.00	43.7 PK	74.00	-30.3	1.03 H	234	6.91	36.79
6	4824.00	33.5 AV	54.00	-20.5	1.03 H	234	-3.29	36.79

#### 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	70.3 PK	74.00	-3.7	1.32 V	185	40.02	30.28
2	<b>2390.00</b>	<b>53.1 AV</b>	<b>54.00</b>	<b>-0.9</b>	<b>1.32 V</b>	<b>185</b>	<b>22.83</b>	<b>30.28</b>
3	*2412.00	108.6 PK			1.34 V	187	78.24	30.36
4	*2412.00	98.9 AV			1.34 V	187	68.54	30.36
5	4824.00	42.8 PK	74.00	-31.2	1.00 V	29	6.01	36.79
6	4824.00	31.4 AV	54.00	-22.6	1.00 V	29	-5.39	36.79

- 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.



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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	27deg. C, 59%RH 965 hPa	TESTED BY	Frank Liu

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	102.3 PK			1.00 H	352	71.84	30.46
2	*2437.00	89.4 AV			1.00 H	352	58.94	30.46
3	4874.00	45.1 PK	74.00	-28.9	1.02 H	231	8.18	36.92
4	4874.00	34.9 AV	54.00	-19.1	1.02 H	231	-2.02	36.92
5	7311.00	50.8 PK	74.00	-23.2	1.00 H	224	7.66	43.14
6	7311.00	38.2 AV	54.00	-15.8	1.00 H	224	-4.94	43.14
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	110.4 PK			1.35 V	166	79.94	30.46
2	*2437.00	100.1 AV			1.35 V	166	69.64	30.46
3	4874.00	42.4 PK	74.00	-31.6	1.06 V	154	5.48	36.92
4	4874.00	31.7 AV	54.00	-22.3	1.06 V	154	-5.22	36.92
5	7311.00	49.4 PK	74.00	-24.6	1.00 V	31	6.26	43.14
6	7311.00	36.9 AV	54.00	-17.1	1.00 V	31	-6.24	43.14

- 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.



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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	27deg. C, 59%RH 965 hPa	TESTED BY	Frank Liu

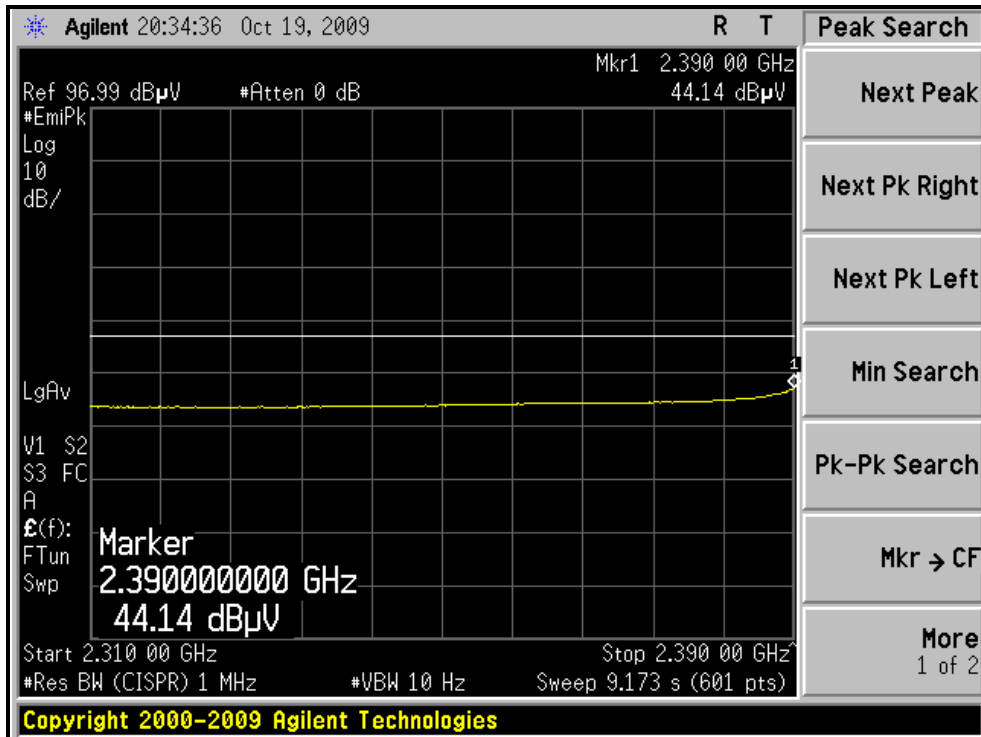
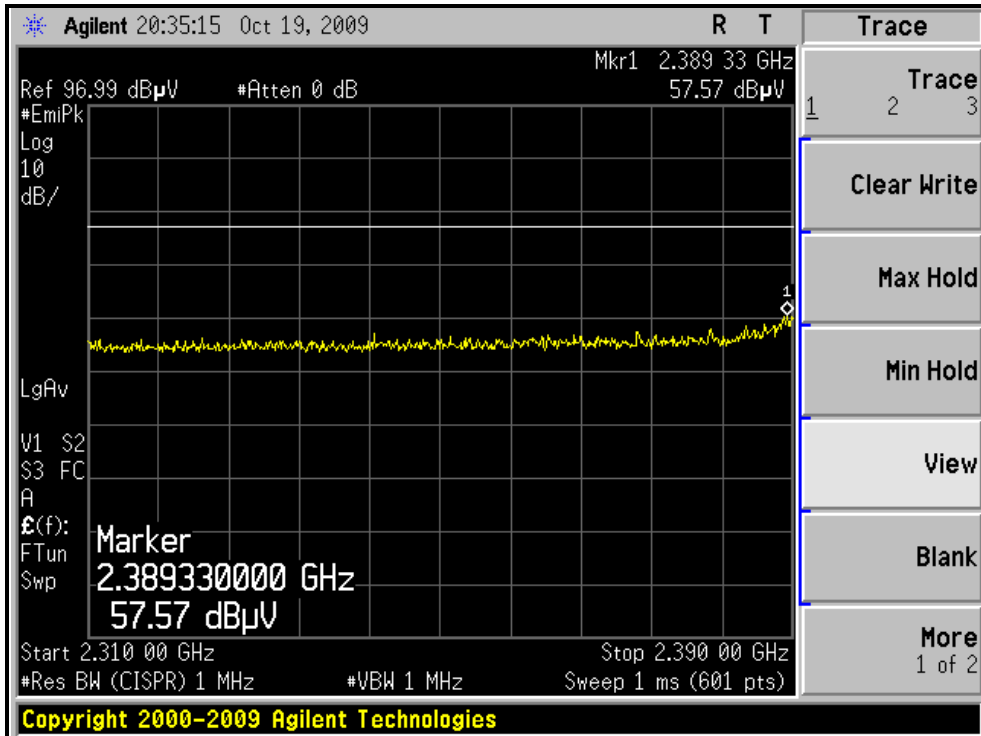
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.6 PK			1.00 H	343	69.05	30.55
2	*2462.00	86.6 AV			1.00 H	343	56.05	30.55
3	2483.50	59.6 PK	74.00	-14.4	1.00 H	352	28.95	30.63
4	2483.50	45.4 AV	54.00	-8.6	1.00 H	352	14.78	30.63
5	4924.00	45.2 PK	74.00	-28.8	1.02 H	251	8.14	37.06
6	4924.00	34.8 AV	54.00	-19.2	1.02 H	251	-2.26	37.06
7	7386.00	51.3 PK	74.00	-22.7	1.12 H	222	8.17	43.13
8	7386.00	38.4 AV	54.00	-15.6	1.12 H	222	-4.73	43.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.9 PK			1.32 V	185	78.35	30.55
2	*2462.00	99.4 AV			1.32 V	185	68.85	30.55
3	2483.50	73.0 PK	74.00	-1.0	1.32 V	185	42.38	30.63
4	2483.50	53.0 AV	54.00	-1.0	1.32 V	185	22.38	30.63
5	4924.00	43.0 PK	74.00	-31.0	1.02 V	152	5.94	37.06
6	4924.00	31.6 AV	54.00	-22.4	1.02 V	152	-5.46	37.06
7	7386.00	49.7 PK	74.00	-24.3	1.00 V	29	6.57	43.13
8	7386.00	37.8 AV	54.00	-16.2	1.00 V	29	-5.33	43.13

- 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.



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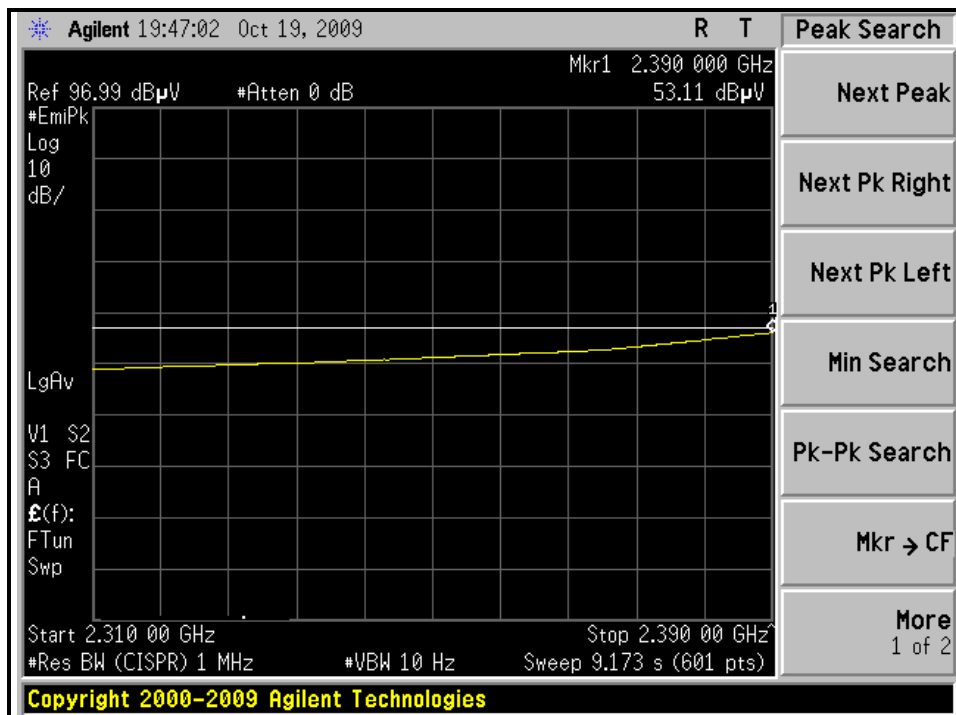
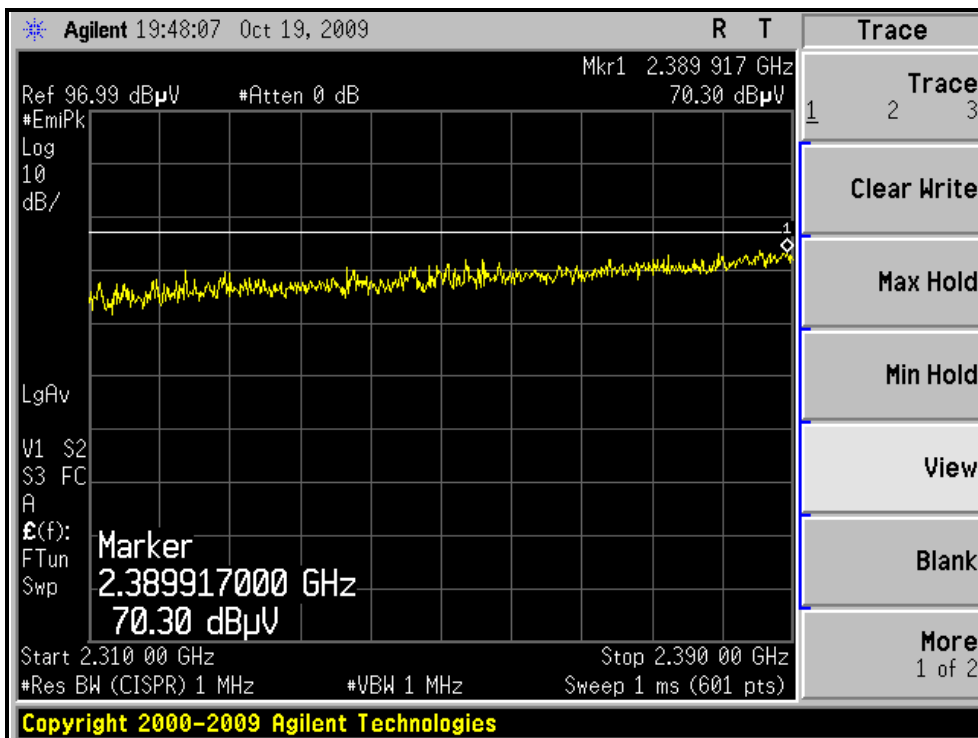
RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL )





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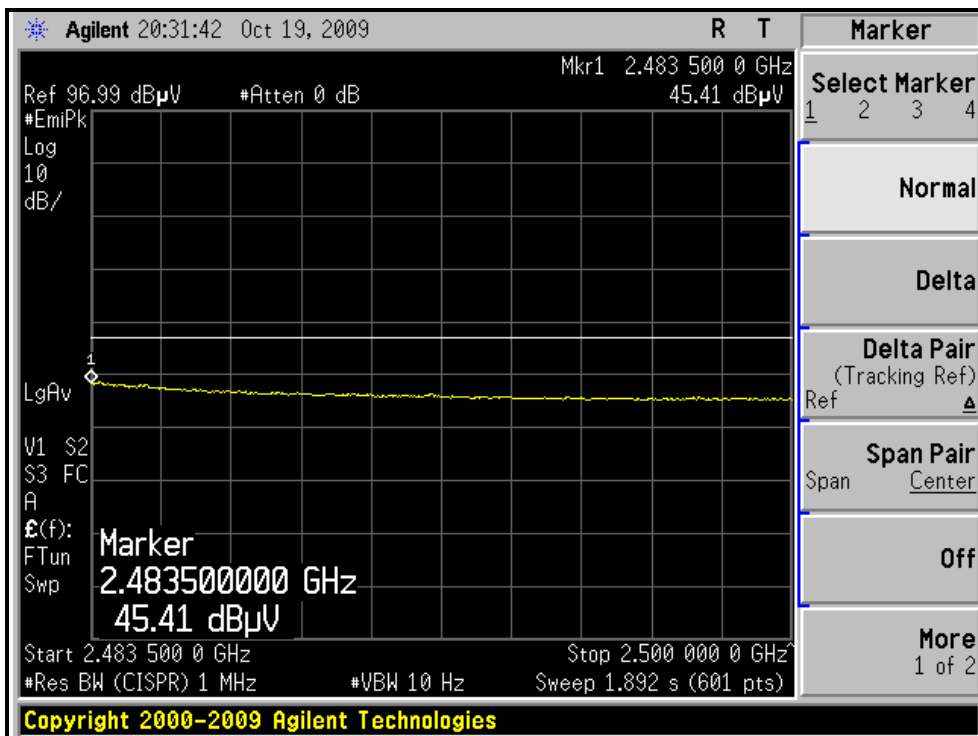
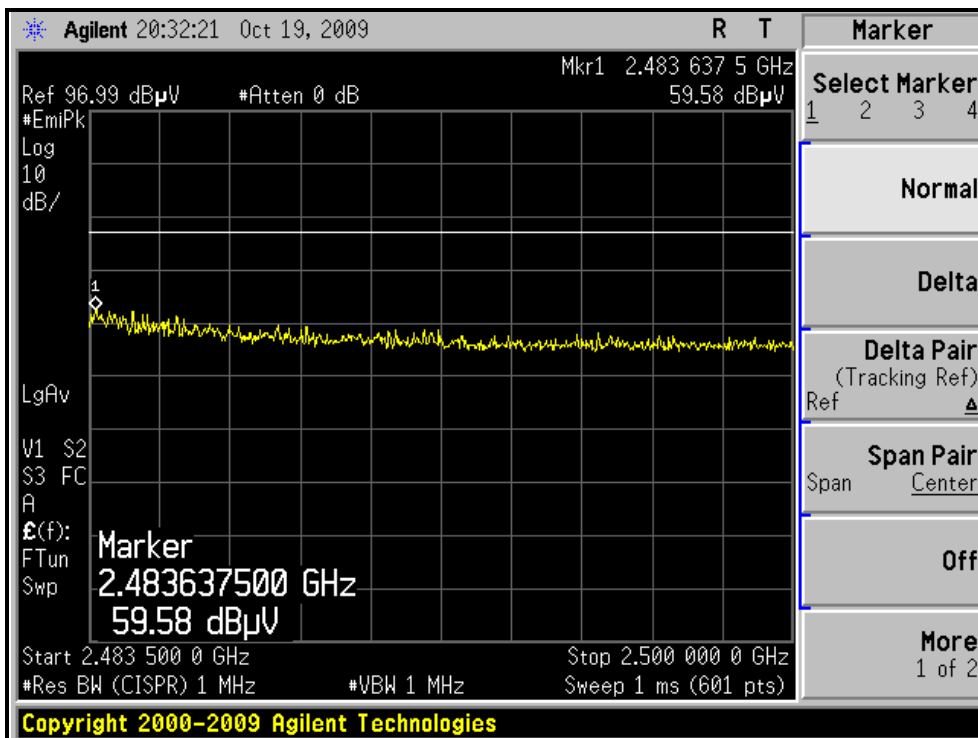
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL )





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RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL )

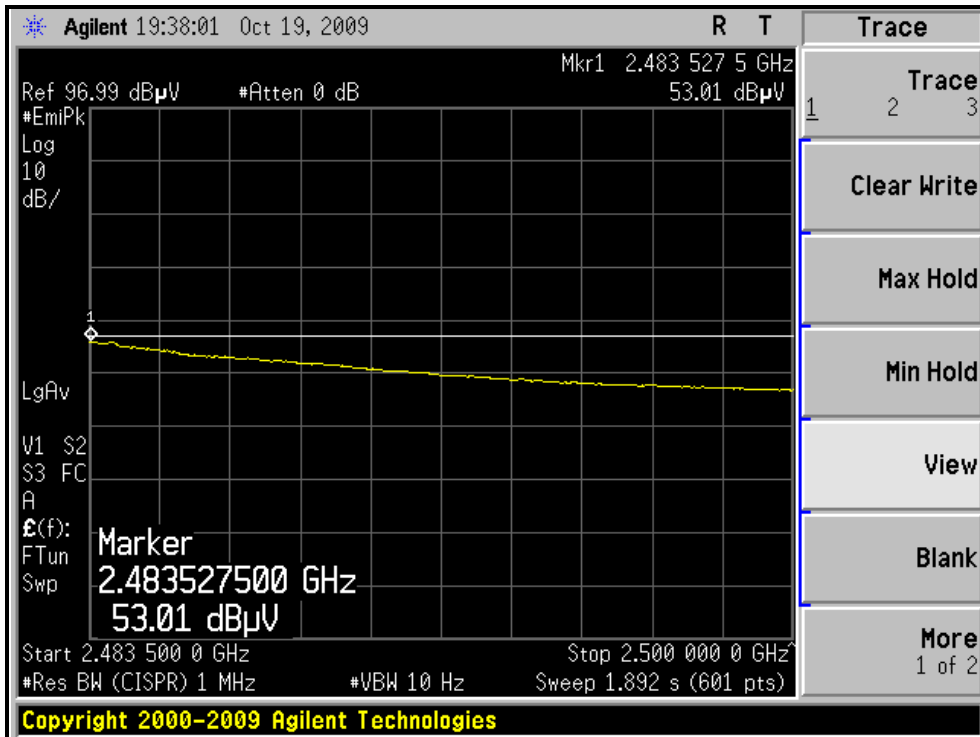
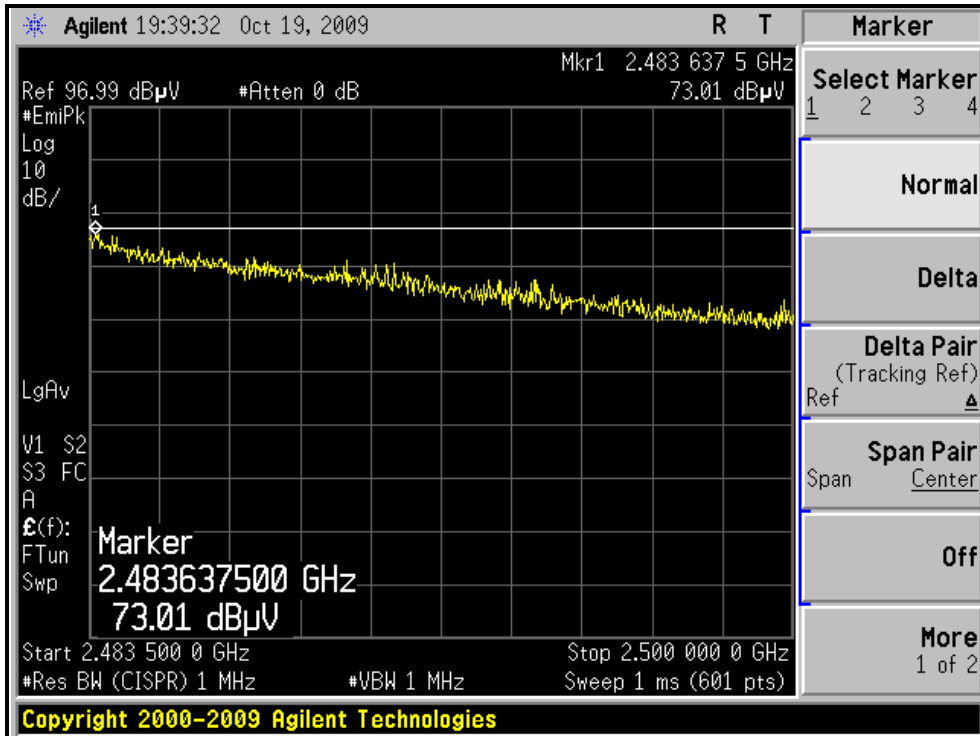






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RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL )



### 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
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 03, 2009	Aug. 02, 2010

**NOTE:**

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

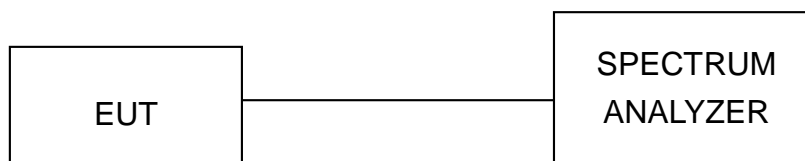
#### 4.3.3 TEST PROCEDURE

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.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

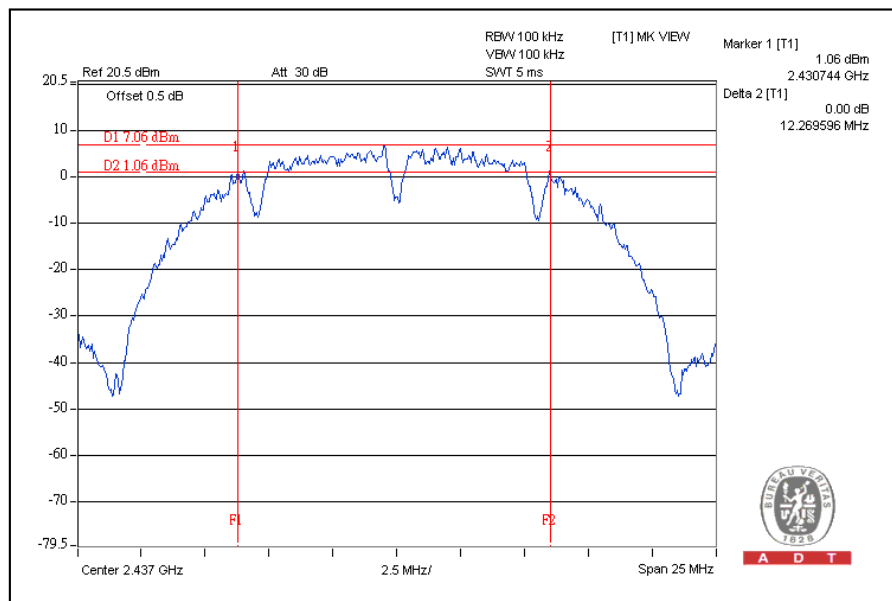
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

### 4.3.7 TEST RESULTS

#### 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.11	0.5	PASS
6	2437	12.27	0.5	PASS
11	2462	11.14	0.5	PASS

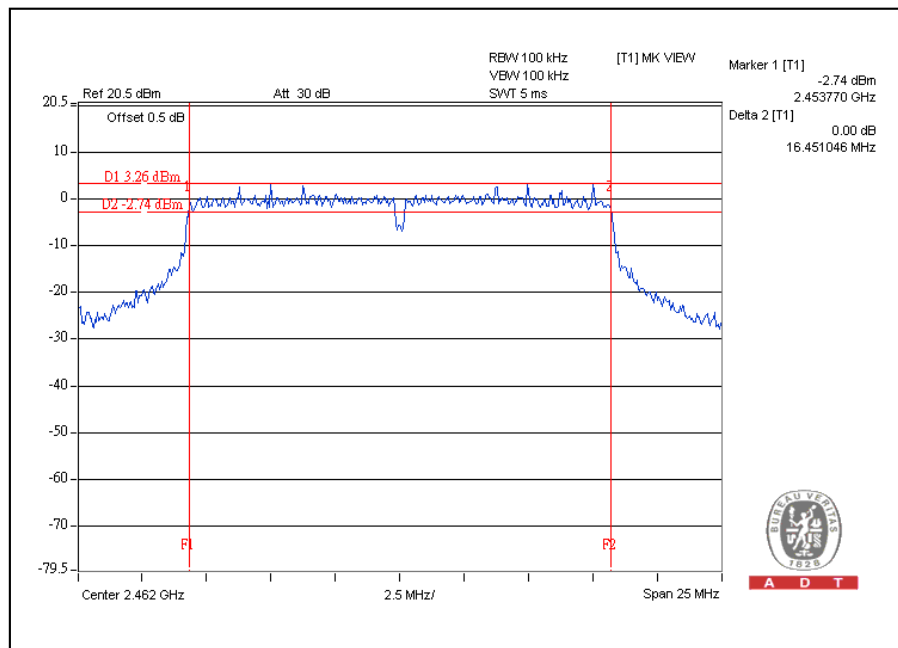
#### CH6



### 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.42	0.5	PASS
6	2437	16.40	0.5	PASS
11	2462	16.45	0.5	PASS

### CH11



#### 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
Anritsu Power Meter	ML2495A	0824006	April 25, 2009	April 24, 2010
Pulse Power Sensor	MA2411B	0738172	April 25, 2009	April 24, 2010

**NOTE:**

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

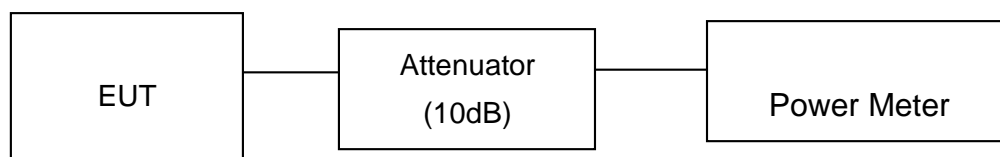
##### 4.4.3 TEST PROCEDURES

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.

##### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

##### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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#### 4.4.7 TEST RESULTS

##### 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	19.5	89.1	30	PASS
6	2437	19.2	83.2	30	PASS
11	2462	19.4	87.1	30	PASS

##### 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	23.6	229.1	30	PASS
6	2437	24.5	281.8	30	PASS
11	2462	25.1	323.6	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
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 03, 2009	Aug. 02, 2010

**NOTE:**

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



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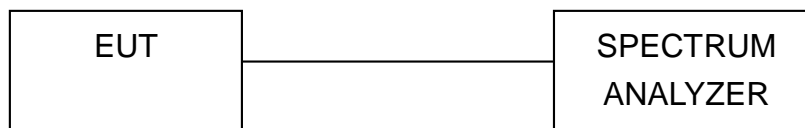
#### 4.5.3 TEST PROCEDURE

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.

#### 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



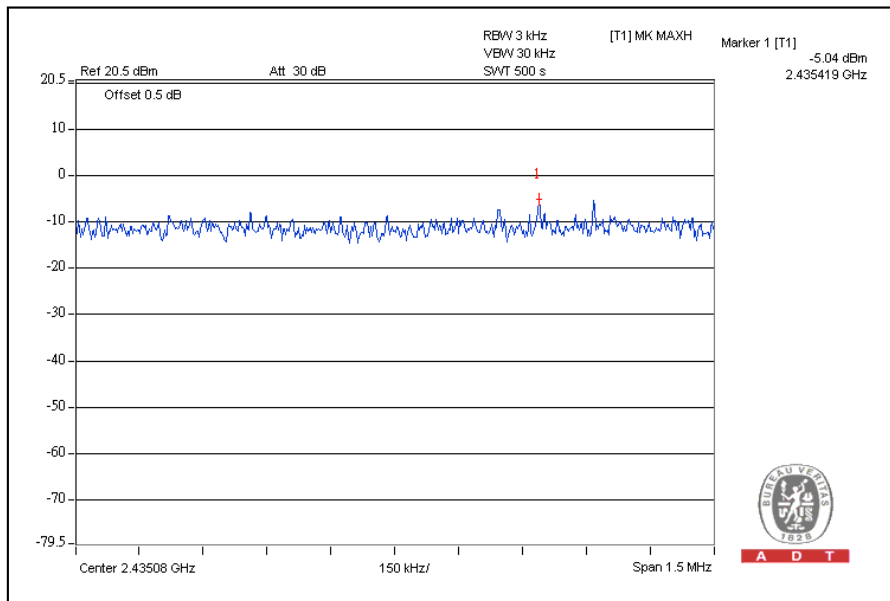
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### 4.5.7 TEST RESULTS

#### 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-6.4	8	PASS
6	2437	-5.0	8	PASS
11	2462	-5.1	8	PASS

#### CH6



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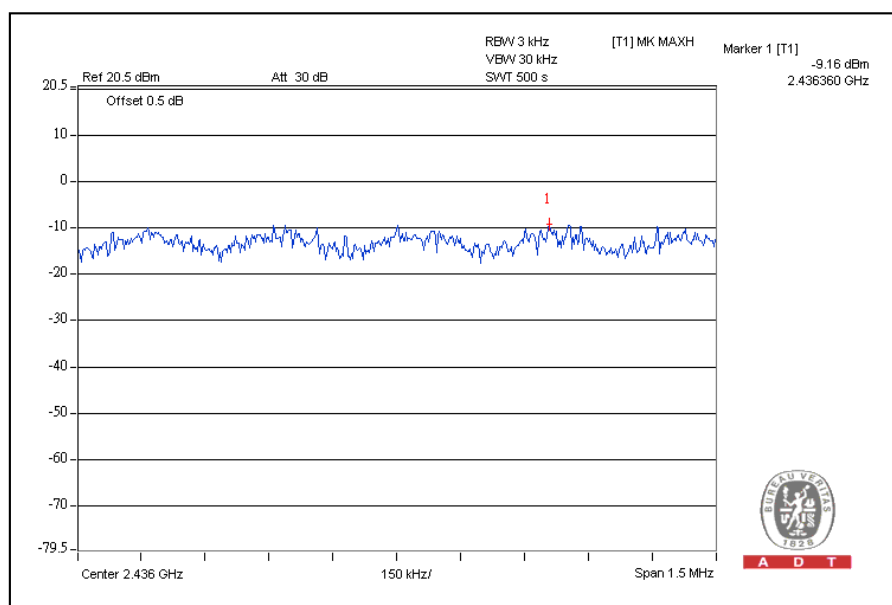


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### 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-10.5	8	PASS
6	2437	-9.2	8	PASS
11	2462	-10.0	8	PASS

### CH6



## 4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below  $-20\text{dB}$  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
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 03, 2009	Aug. 02, 2010

**NOTE:**

1. 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 loss 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 were measured and recorded.

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

#### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.6.5 EUT OPERATING CONDITION

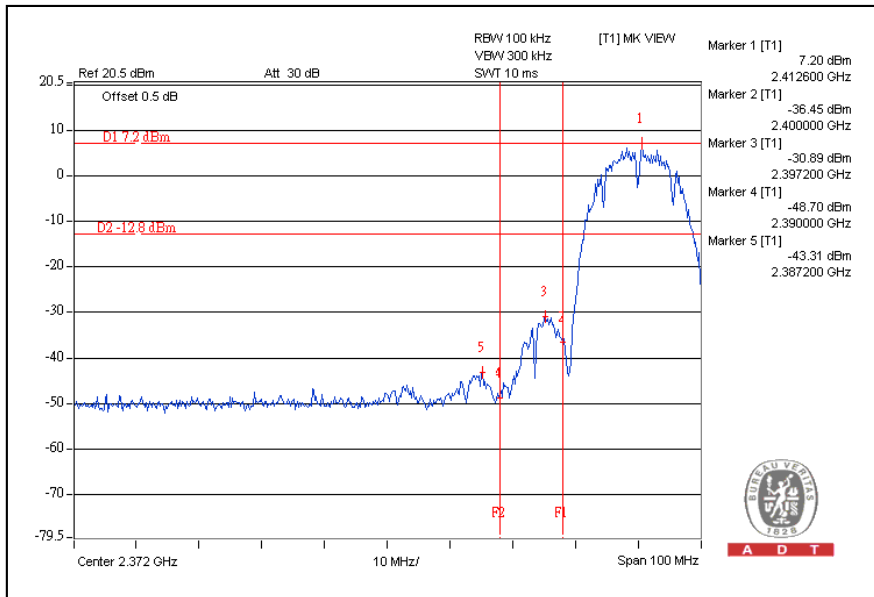
Same as Item 4.3.6

#### 4.6.6 TEST RESULTS

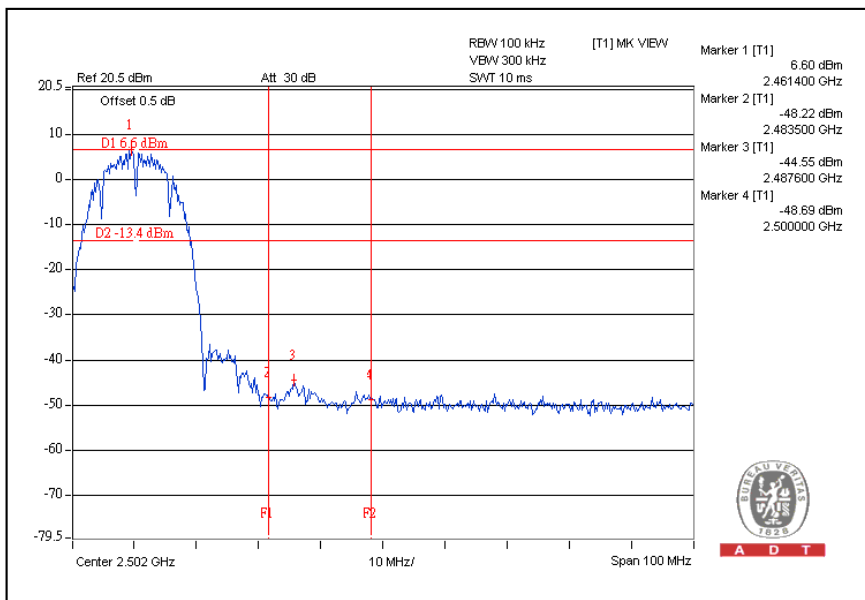
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

### 802.11b DSSS MODULATION:

#### CH1



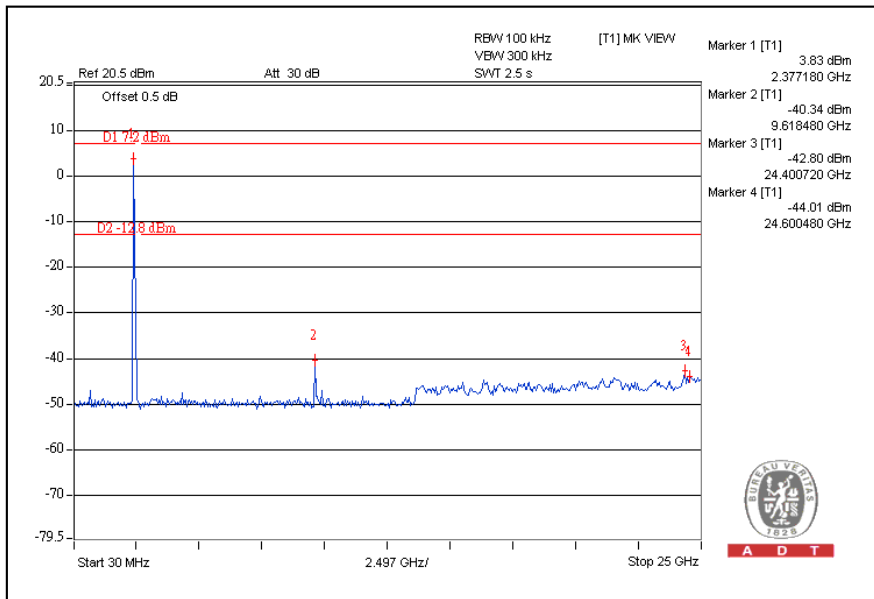
#### CH11



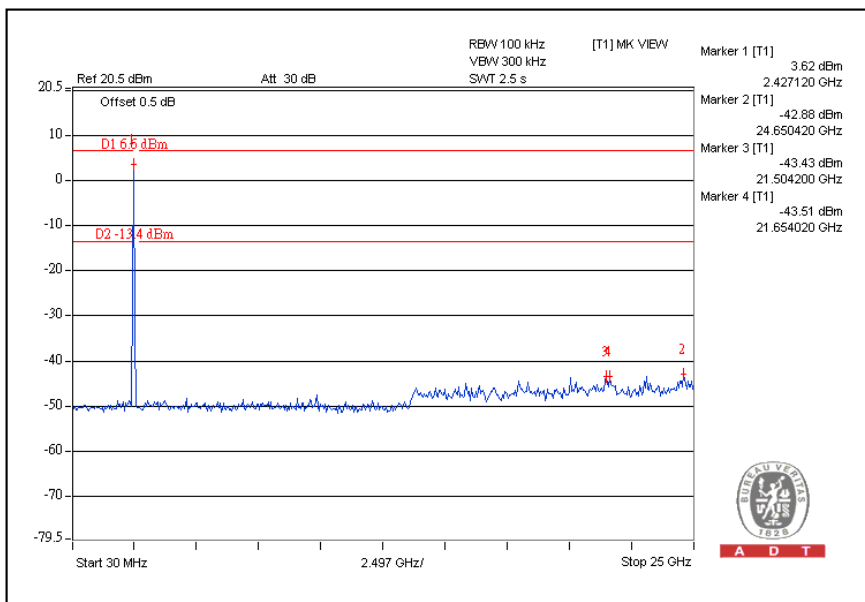


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### CH1



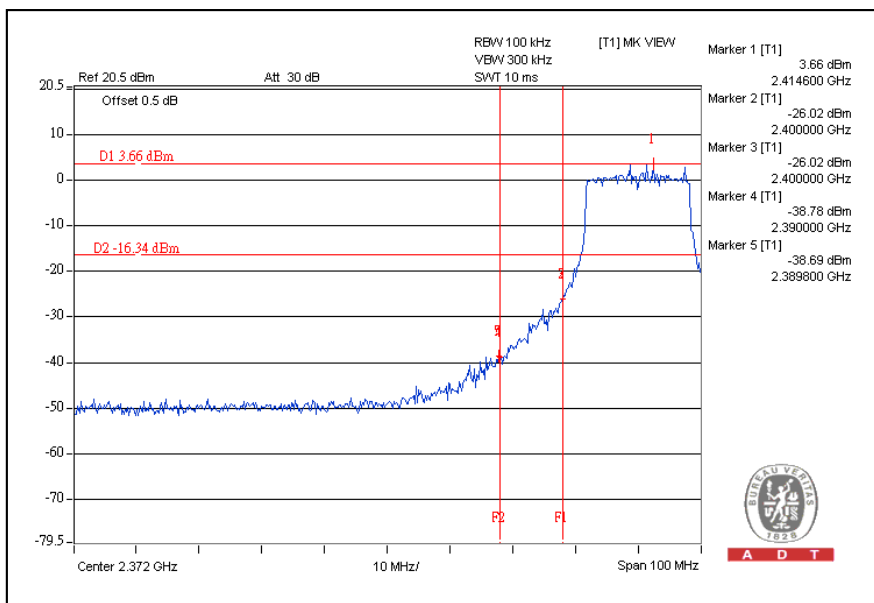
### CH11



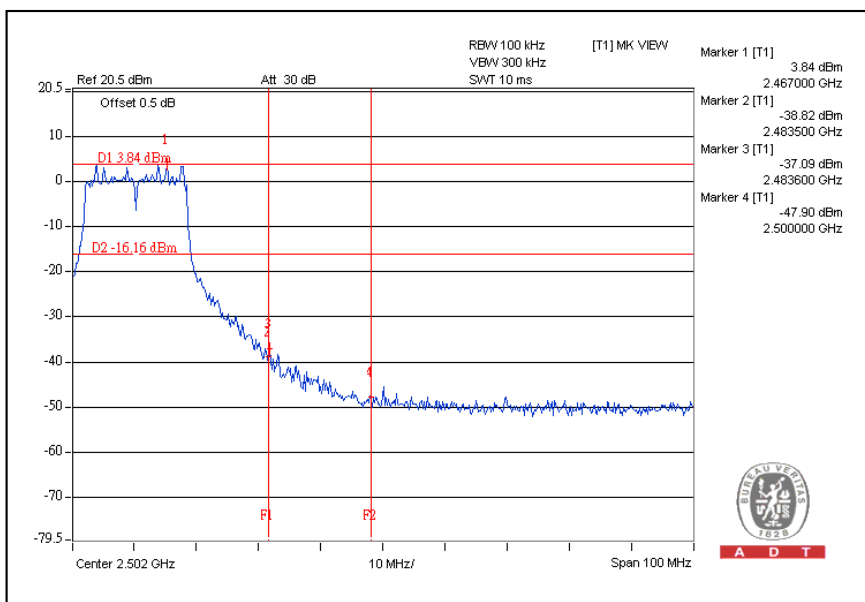


## 802.11g OFDM MODULATION::

### CH1



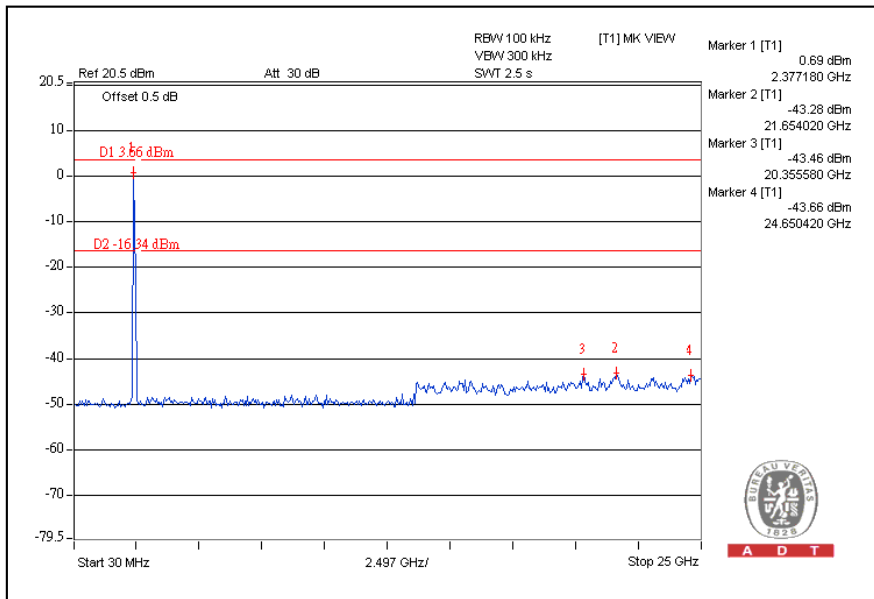
### CH11



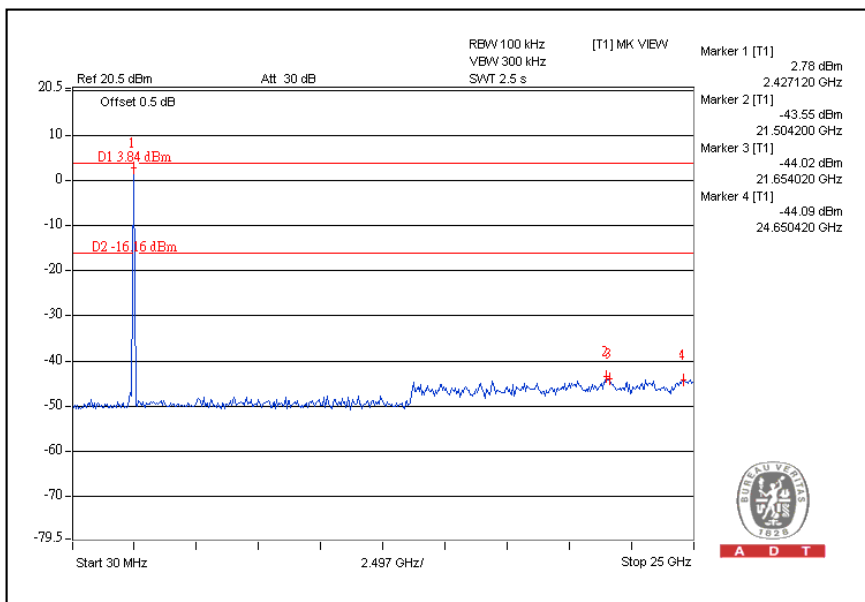


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### CH1



### CH11





## 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 by the following approval agencies according to ISO/IEC 17025:

<b>USA</b>	FCC, NVLAP
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>Norway</b>	NEMKO
<b>Canada</b>	INDUSTRY CANADA, CSA
<b>R.O.C.</b>	TAF, BSMI, NCC
<b>Netherlands</b>	Telefication
<b>Singapore</b>	GOST-ASIA (MOU)
<b>Russia</b>	CERTIS (MOU)

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](http://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

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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



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## **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---