

FCC TEST REPORT

REPORT NO.: RF990415E01

MODEL NO.: E1000

VERSION: 2

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TESTED: Apr. 16 to 21, 2010

ISSUED: Apr. 30, 2010

APPLICANT: Cisco-Linksys LLC

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ISSUED BY: Bureau Veritas Consumer Products Services (H.K.)
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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	9
3.2.1	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	10
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	13
3.4	DESCRIPTION OF SUPPORT UNITS.....	14
3.5	CONFIGURATION OF SYSTEM UNDER TEST	15
4.	TEST TYPES AND RESULTS	17
4.1	CONDUCTED EMISSION MEASUREMENT.....	17
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	17
4.1.2	TEST INSTRUMENTS	17
4.1.3	TEST PROCEDURES.....	18
4.1.4	DEVIATION FROM TEST STANDARD	18
4.1.5	TEST SETUP	19
4.1.6	EUT OPERATING CONDITIONS	19
4.1.7	TEST RESULTS	20
4.2	RADIATED EMISSION MEASUREMENT	24
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	24
4.2.2	TEST INSTRUMENTS	25
4.2.3	TEST PROCEDURES.....	27
4.2.4	DEVIATION FROM TEST STANDARD	27
4.2.5	TEST SETUP	28
4.2.6	EUT OPERATING CONDITIONS	28
4.2.7	TEST RESULTS	30
4.3	6dB BANDWIDTH MEASUREMENT	59
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	59
4.3.2	TEST INSTRUMENTS	59
4.3.3	TEST PROCEDURE.....	59
4.3.4	DEVIATION FROM TEST STANDARD	59
4.3.5	TEST SETUP	59
4.3.6	EUT OPERATING CONDITIONS	59
4.3.7	TEST RESULTS	60
4.4	MAXIMUM PEAK OUTPUT POWER.....	64
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	64
4.4.2	INSTRUMENTS.....	64
4.4.3	TEST PROCEDURES.....	64
4.4.4	DEVIATION FROM TEST STANDARD	64



A D T

4.4.5	TEST SETUP	64
4.4.6	EUT OPERATING CONDITIONS	64
4.4.7	TEST RESULTS	65
4.5	POWER SPECTRAL DENSITY MEASUREMENT.....	67
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	67
4.5.2	TEST INSTRUMENTS.....	67
4.5.3	TEST PROCEDURE.....	67
4.5.4	DEVIATION FROM TEST STANDARD	67
4.5.5	TEST SETUP	67
4.5.6	EUT OPERATING CONDITION.....	67
4.5.7	TEST RESULTS	68
4.6	CONDUCTED OUT-BAND EMISSION MEASUREMENT	72
4.6.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	72
4.6.2	TEST INSTRUMENTS.....	72
4.6.3	TEST PROCEDURE.....	72
4.6.4	DEVIATION FROM TEST STANDARD	72
4.6.5	EUT OPERATING CONDITION.....	72
4.6.6	TEST RESULTS	72
5.	INFORMATION ON THE TESTING LABORATORIES	81
6.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	82

1. CERTIFICATION

PRODUCT: Wireless-N Broadband Router
BRAND NAME: Cisco
MODEL NO.: E1000
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Apr. 16 to 21, 2010
APPLICANT: Cisco-Linksys LLC
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment (Model: E1000) 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 : Carol Liao , **DATE:** Apr. 30, 2010
(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Apr. 30, 2010
(Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Apr. 30, 2010
(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			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -1.84dB at 0.432MHz
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 -0.6dB at 7386.0MHz
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)	3.3 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	Wireless-N Broadband Router
MODEL NO.	E1000
FCC ID	Q87-E1000V2
POWER SUPPLY	DC 12V from power adapter
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 802.11n (20MHz, 800ns GI): 130 / 117 / 104 / 78 / 52 / 39 / 26 / 13 / 6.5 / 5.5 / 5.0 / 4.5 / 4.0 / 3.5 / 3.0 / 2.5 / 2.0 / 1.5 / 1.0 / 0.5 / 0.2 / 0.1Mbps 802.11n (40MHz, 800ns GI): 270 / 243 / 216 / 162 / 108 / 81 / 54 / 27 / 13.5 / 12.15 / 10.8 / 8.1 / 5.4 / 4.05 / 3.6 / 3.0 / 2.25 / 1.8 / 1.35 / 1.0 / 0.75 / 0.5 / 0.375 / 0.25 / 0.125Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 208.9mW 802.11g: 407.4mW 802.11n (20MHz): 834.0mW 802.11n (40MHz): 526.2mW
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
I/O PORTS	RJ-45 port x 4 (Ethernet (10,100Mbps)) RJ-45 port x 1 (Internet(10,100Mbps))
ASSOCIATED DEVICES	Adapter x 1

NOTE:

- There are two antennas provided to this EUT, please refer to the following table:

No.	Chain	Antenna Type	Antenna Connector	Antenna Gain (dBi)	Cable loss(dB)	Net Gain (dBi)	Cable Length (mm)	Frequency range (MHz)
1	Chain (0)	PIFA	NA	2.7	0.7	2	248	2400~2483.5
2	Chain(1)	PIFA	NA	2.1	0.1	2	55	2400~2483.5

2. There are two different types in EUT, which are identical to each other in all aspects except for the following information:

Model No.	Description
E1000	EUT with on/off switch.
	EUT without on/off switch.

From the above types, EUT without on/off switch was selected as representative type for the test and its data was recorded in this report.

3. The EUT must be supplied with a power adapter and following two different models could be chosen:

Adapter 1	
Brand:	Bestec
Model No.:	EA0061WAA
Input power :	AC100-240V, 0.5A, 50/60Hz
Output power :	DC 12V, 0.5A DC output cable (Unshielded, 1.5m)
Adapter 2	
Brand:	LEI
Model No.:	MU08-6120050-A1
Input power :	AC100-240V, 0.3A, 50/60Hz
Output power :	DC 12V, 0.5A DC output cable (Unshielded, 1.5m)

For radiated test, the EUT was pre-tested with above adapters, the worse case was found in adapter 1. Therefore only the test data of the adapter was recorded in this report.

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

Test Mode	Description
Mode A	Level-set (Put on tabletop)
Mode B	Tower-set (Wall-mounted)

From the above modes, the radiated emission worse case was found in Mode B. Therefore only the test data of the mode was recorded in this report.

5. The EUT incorporates a MIMO function with 802.11n. Physically, the EUT provides two completed transmitters and two completed receivers.
6. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function. The antenna configurations are two transmitter antennas and two receiver antennas, as there are 2 PIFA antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 2 antennas. The 11bg legacy mode is limited to single transmitter only.

7. The EUT complies with 802.11n standards and backwards compatible with 802.11b, 802.11g products.
8. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
9. 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.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided for 802.11b, 802.11g, 802.11n (20MHz):

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		

Seven channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
1	√	√	√	√	Tower-set (Wall-mounted) with Adapter 1
2	√				Tower-set (Wall-mounted) with Adapter 2

Where **PLC**: Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)
A	802.11 b	√	
B	802.11 b		√
C	802.11 g	√	
D	802.11 g		√
E	802.11n(20MHz) for MCS0~7	√	√
F	802.11n(20MHz) for MCS8~15	√	√
G	802.11n(40MHz) for MCS0~7	√	√
H	802.11n(40MHz) for MCS8~15	√	√

Note:

- The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
- Mode A, C, E & G the worst modes, were selected as representative mode for the report.

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 / COMBINATION
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	6.5	1, 2 / E

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 / COMBINATION
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	6.5	1 / E

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 / COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	1 / A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	1 / C
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	1 / E
802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	1 / G

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 / COMBINATION
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	1 / A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	1 / C
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	1 / E
802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	13.5	1 / G

✘ After verification, conducted out band emission as show worst chain in report by investigations.

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 / COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	1 / A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	1 / C
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	1 / E
802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	1 / G

- ※ After verification, bandwidth as show worst chain in report by investigations.

※ TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE ³ 1G	23deg. C, 69%RH, 1013 hPa	120Vac, 60Hz	Phoenix Huang
RE<1G	21deg. C, 67%RH, 1013 hPa	120Vac, 60Hz	Rex Huang
PLC	23deg. C, 70%RH, 1013 hPa	120Vac, 60Hz	Rex Huang
APCM	24deg. C, 67%RH, 1013 hPa	120Vac, 60Hz	Rex Huang

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

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

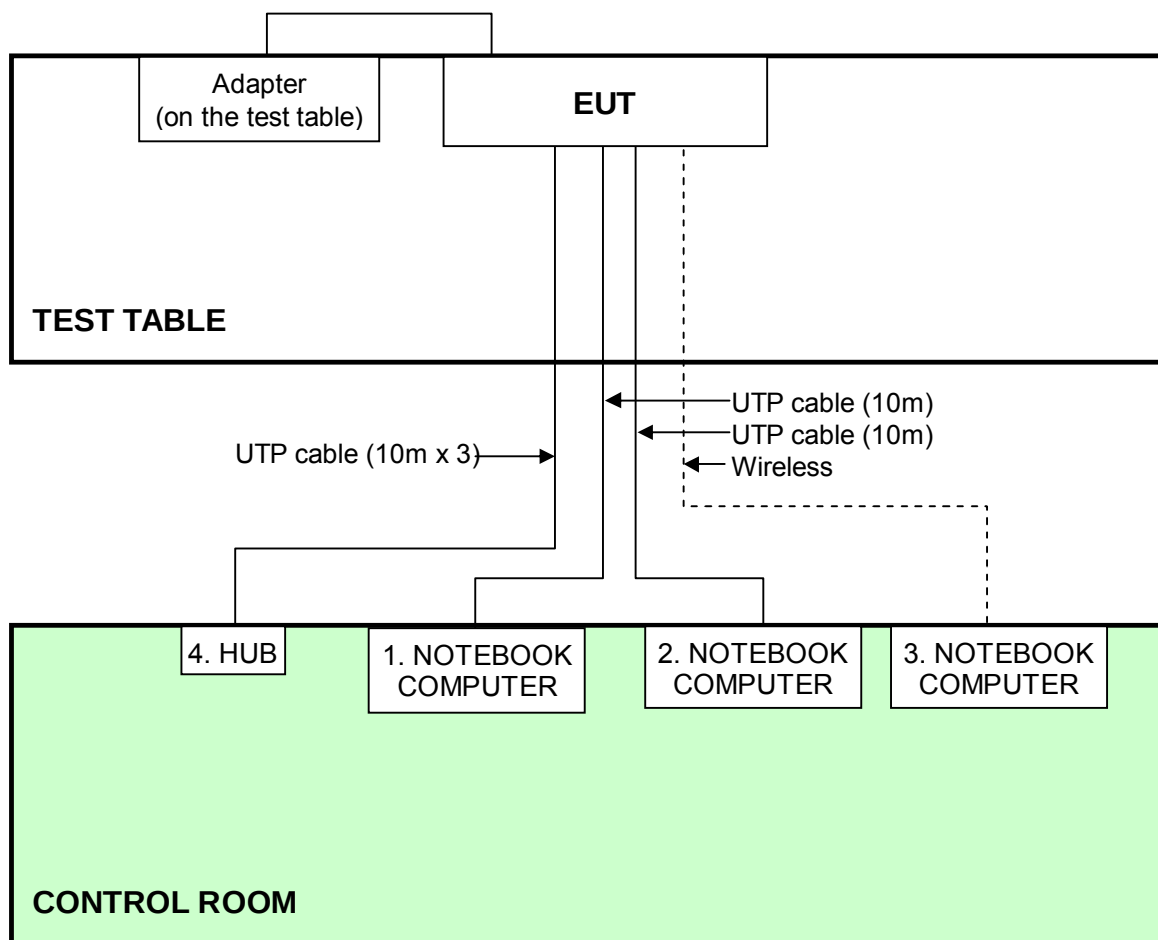
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
3	NOTEBOOK COMPUTER	DELL	PP21L	CN-0GD366-70166-5B3-09ZX	QDS-BRCM1016
4	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP Cable (10m)
2	UTP Cable (10m)
3	NA
4	UTP Cable (10m)

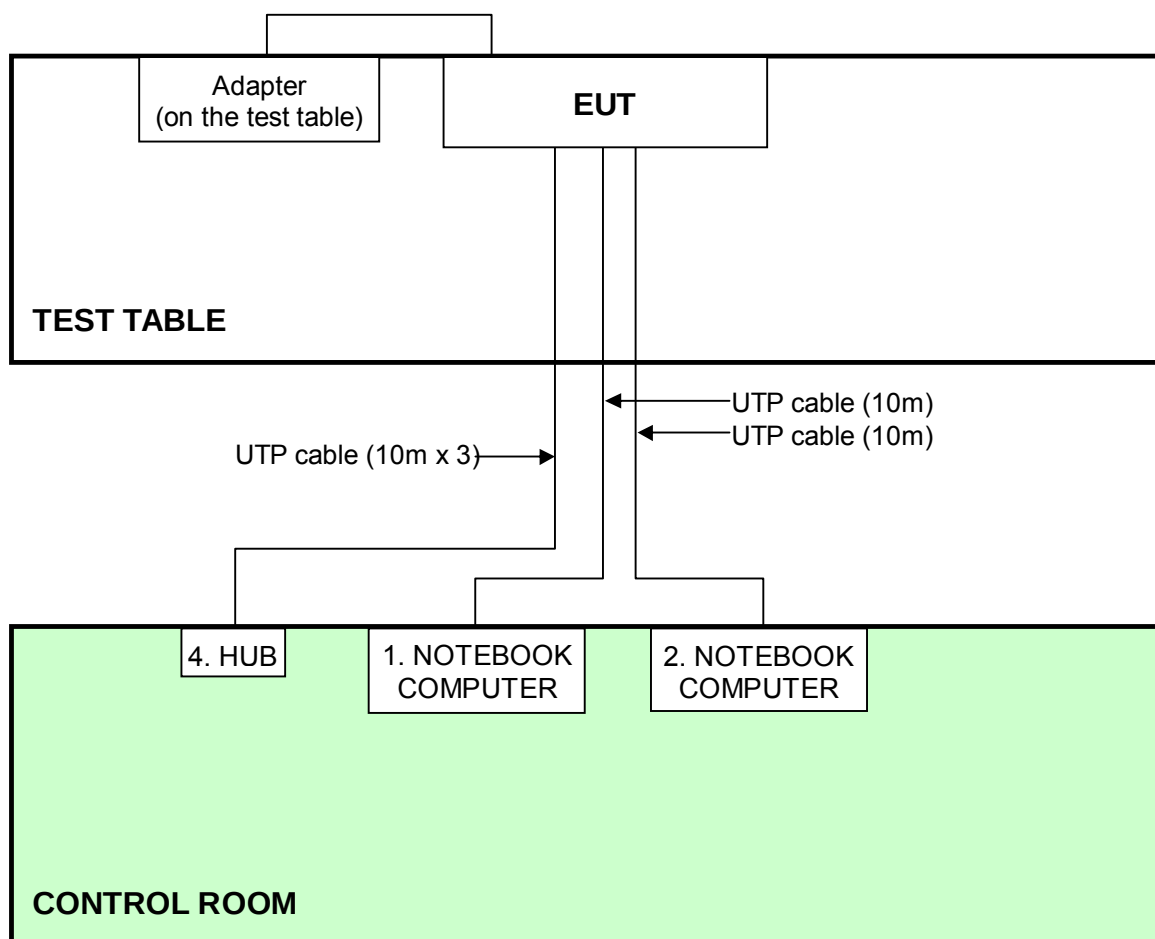
NOTE: 1. All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For conducted test:



For other test items:



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 μ 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
Test Receiver	ESCS 30	100375	Mar. 09, 2010	Mar. 08, 2011
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-522	Sep. 23, 2009	Sep. 22, 2010
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Oct. 26, 2009	Oct. 25, 2010
RF Cable (JYEBAO)	5DFB	COBCAB-001	Nov. 24, 2009	Nov. 23, 2010
50 ohms Terminator	50	3	Oct. 28, 2009	Oct. 27, 2010
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. C.
3. The VCCI Con C Registration No. is C-3611.

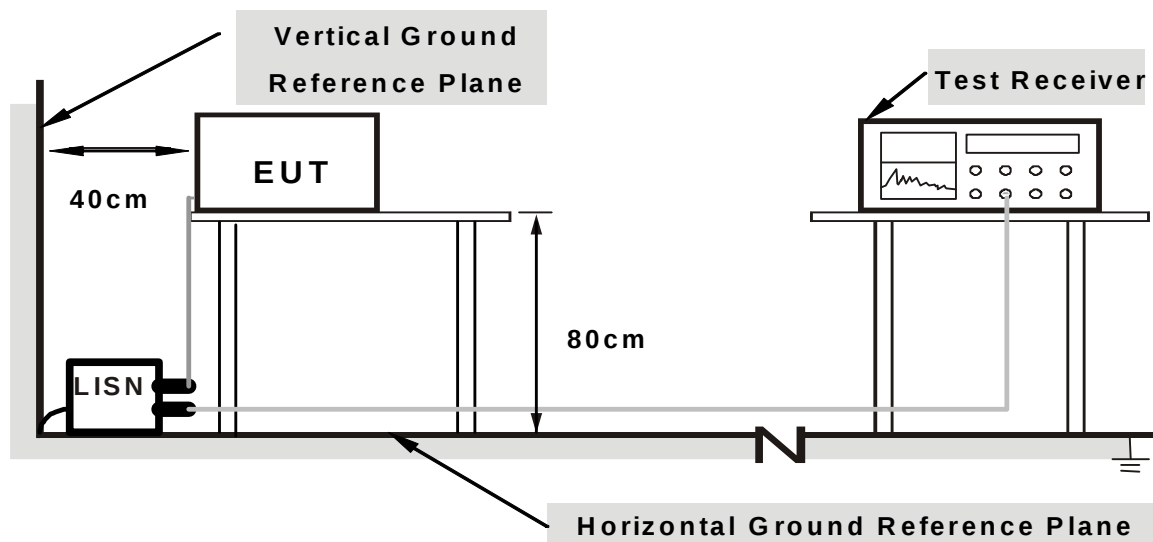
4.1.3 TEST PROCEDURES

- 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

1. Placed the EUT on testing table.
2. Prepared other computer systems (support units 1 ~ 3) to act as communication partners and placed them outside of testing area.
3. The communication partners ran test program “Ping.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cables and wireless.

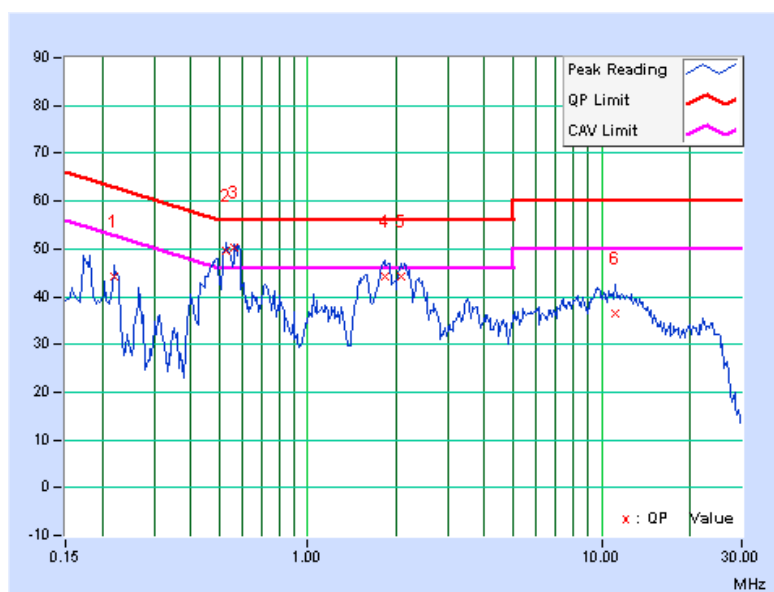
4.1.7 TEST RESULTS

802.11n (20MHz) OFDM MODULATION:

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
TEST MODE	With adapter 1		

	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	0.220	0.05	44.05	-	44.10	-	62.80	52.80	-18.70	-
2	0.529	0.07	49.52	38.60	49.59	38.67	56.00	46.00	-6.41	-7.33
3	0.564	0.07	50.14	38.77	50.21	38.84	56.00	46.00	-5.79	-7.16
4	1.827	0.12	44.13	-	44.25	-	56.00	46.00	-11.75	-
5	2.074	0.13	44.07	-	44.20	-	56.00	46.00	-11.80	-
6	11.153	0.37	36.08	-	36.45	-	60.00	50.00	-23.55	-

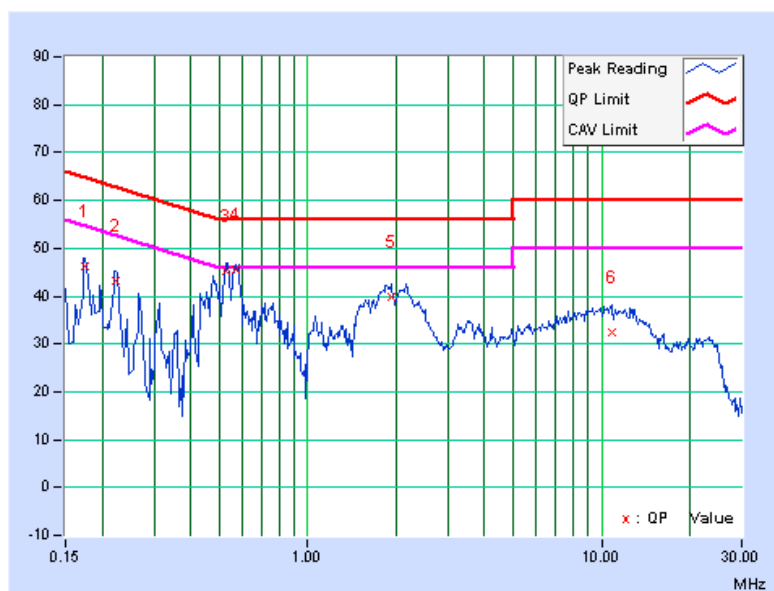
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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
TEST MODE	With adapter 1		

	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	0.174	0.06	46.22	-	46.28	-	64.77	54.77	-18.49	-
2	0.222	0.06	42.99	-	43.05	-	62.75	52.75	-19.70	-
3	0.525	0.08	45.20	-	45.28	-	56.00	46.00	-10.72	-
4	0.572	0.08	45.49	-	45.57	-	56.00	46.00	-10.43	-
5	1.921	0.14	39.61	-	39.75	-	56.00	46.00	-16.25	-
6	10.856	0.37	32.12	-	32.49	-	60.00	50.00	-27.51	-

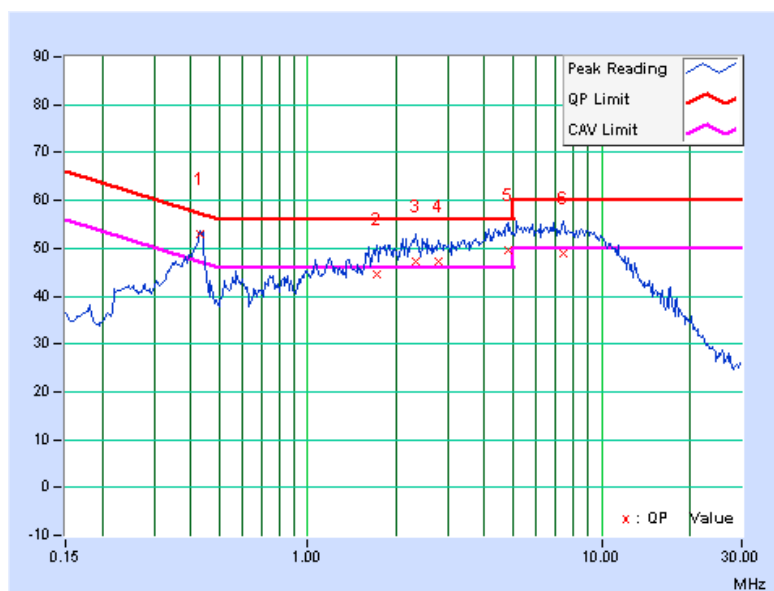
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



PHASE	Line (L)	6dB BANDWIDTH	9 kHz
TEST MODE	With adapter 2		

	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	0.432	0.06	52.74	45.32	52.80	45.38	57.22	47.22	-4.42	-1.84
2	1.722	0.12	44.54	-	44.66	-	56.00	46.00	-11.34	-
3	2.332	0.14	47.06	37.11	47.20	37.25	56.00	46.00	-8.80	-8.75
4	2.789	0.15	47.18	37.65	47.33	37.80	56.00	46.00	-8.67	-8.20
5	4.803	0.21	49.48	40.40	49.69	40.61	56.00	46.00	-6.31	-5.39
6	7.387	0.28	48.57	-	48.85	-	60.00	50.00	-11.15	-

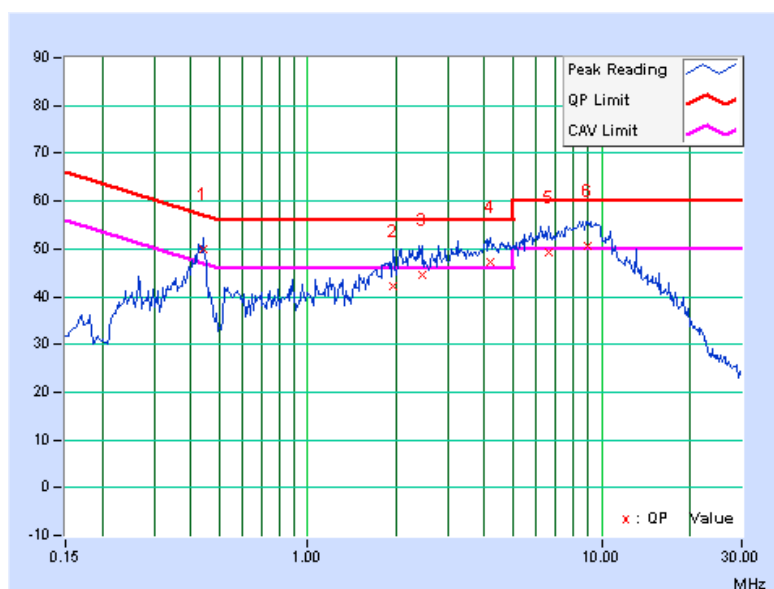
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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
TEST MODE	With adapter 2		

	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	0.439	0.07	49.76	40.34	49.83	40.41	57.07	47.07	-7.24	-6.66
2	1.949	0.14	42.18	-	42.32	-	56.00	46.00	-13.68	-
3	2.441	0.15	44.29	-	44.44	-	56.00	46.00	-11.56	-
4	4.185	0.20	47.03	37.25	47.23	37.45	56.00	46.00	-8.77	-8.55
5	6.645	0.27	49.13	-	49.40	-	60.00	50.00	-10.60	-
6	8.963	0.33	50.18	38.92	50.51	39.25	60.00	50.00	-9.49	-10.75

- 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.



A D T

4.2.2 TEST INSTRUMENTS

Below 1GHz test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 03, 2009	Aug. 02, 2010
Agilent Pre-Selector	N9039A	MY46520311	Aug. 17, 2009	Aug. 16, 2010
Agilent Signal Generator	N5181A	MY49060517	July 20, 2009	July 19, 2010
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 18, 2009	Nov. 17, 2010
Agilent Pre-Amplifier	8449B	3008A02578	July 06, 2009	July 05, 2010
Miteq Pre-Amplifier	AFS33-1800265 0-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Sep. 30, 2009	Sep. 29, 2010
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 16, 2009	Nov. 15, 2010
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Sep. 30, 2009	Sep. 29, 2010
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 24, 2009	Dec. 23, 2010
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_ V8.7.06	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) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in 966 Chamber No. G.

4. The FCC Site Registration No. is 656396.

5. The VCCI Site Registration No. is R-1626.

6. The CANADA Site Registration No. is IC 7450G-3.

**A D T****Above 1GHz test**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	Apr. 24 , 2009	Apr. 23 , 2010
HP Pre_Amplifier	8449B	300801923	Nov. 02, 2009	Nov. 01, 2010
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Aug. 28, 2009	Aug. 27, 2010
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 29, 2009	April 28, 2010
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 18, 2009	Dec. 17, 2010
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2010	Jan. 21, 2011
R&S Loop Antenna	HFH2-Z2	100070	Jan. 13, 2010	Jan. 12, 2011
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 14, 2009	Aug. 13, 2010
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 3 meters chamber room for below 1GHz test and 10 meters open field site for above 1GHz test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

NOTE:

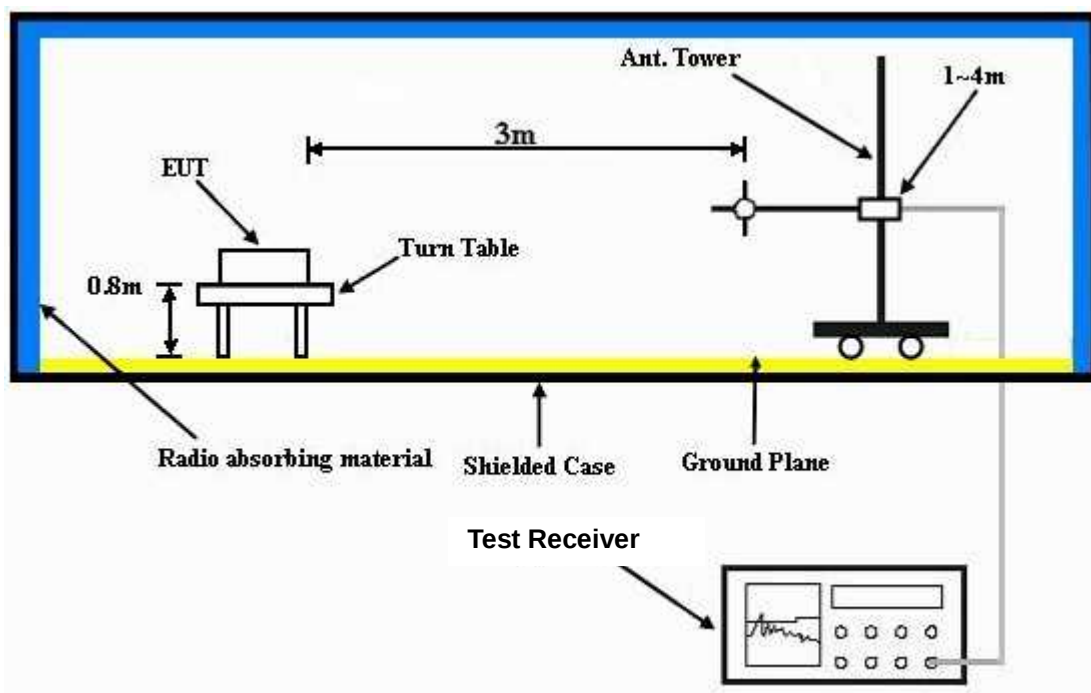
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the interference-receiving antenna.

4.2.4 DEVIATION FROM TEST STANDARD

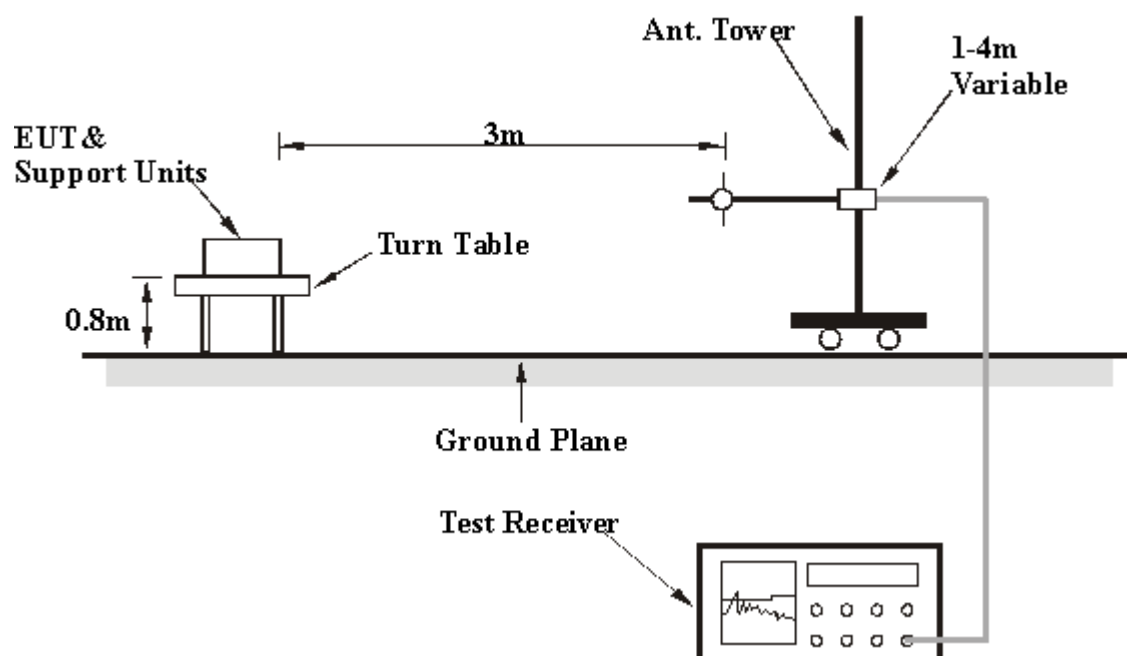
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.2.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared other computer systems (support units 1 ~ 2) to act as communication partners and placed them outside of testing area.
3. The communication partners ran test program "Broadcom wl command" to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cables.

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 67%RH 1013 hPa	TESTED BY	Rex 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	64.82	34.3 QP	40.0	-5.7	2.00 H	360	22.21	12.11
2	250.03	38.1 QP	46.0	-7.9	1.75 H	114	25.22	12.86
3	374.97	35.0 QP	46.0	-11.0	1.00 H	329	18.56	16.42
4	450.05	35.9 QP	46.0	-10.1	2.00 H	345	17.78	18.16
5	499.99	44.4 QP	46.0	-1.6	1.00 H	10	25.09	19.27
6	599.97	37.6 QP	46.0	-8.4	1.25 H	16	15.85	21.75
7	750.01	34.4 QP	46.0	-11.6	1.00 H	10	10.47	23.95
8	875.06	29.9 QP	46.0	-16.2	1.75 H	114	4.03	25.82
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.80	38.2 QP	40.0	-1.8	1.00 V	109	24.30	13.90
2	74.54	36.6 QP	40.0	-3.4	1.08 V	0	26.29	10.35
3	250.00	35.7 QP	46.0	-10.3	1.00 V	349	22.81	12.86
4	374.97	34.7 QP	46.0	-11.3	1.75 V	119	18.24	16.42
5	500.00	41.6 QP	46.0	-4.4	1.00 V	349	22.34	19.27
6	624.96	34.7 QP	46.0	-11.3	1.00 V	68	12.58	22.08
7	750.01	34.2 QP	46.0	-11.9	1.00 V	323	10.20	23.95
8	900.05	30.9 QP	46.0	-15.1	1.25 V	38	4.69	26.18

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	68.4 PK	74.0	-5.6	1.50 H	83	38.31	30.06
2	2390.00	47.3 AV	54.0	-6.7	1.50 H	83	17.27	30.06
3	*2412.00	111.2 PK			1.48 H	68	81.00	30.15
4	*2412.00	108.1 AV			1.48 H	68	77.91	30.15
5	4824.00	56.2 PK	74.0	-17.8	1.46 H	243	20.76	35.43
6	4824.00	53.0 AV	54.0	-1.0	1.46 H	243	17.56	35.43
7	14472.00	60.8 PK	74.0	-13.2	1.20 H	212	11.52	49.31
8	14472.00	49.8 AV	54.0	-4.2	1.20 H	212	0.46	49.31
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.6 PK	74.0	-17.4	1.02 V	179	26.58	30.06
2	2390.00	44.2 AV	54.0	-9.8	1.02 V	179	14.17	30.06
3	*2412.00	106.0 PK			1.02 V	179	75.82	30.15
4	*2412.00	103.3 AV			1.02 V	179	73.13	30.15
5	4824.00	56.3 PK	74.0	-17.7	1.19 V	40	20.85	35.43
6	4824.00	52.2 AV	54.0	-1.8	1.19 V	40	16.75	35.43
7	14472.00	60.0 PK	74.0	-14.0	1.32 V	220	10.71	49.31
8	14472.00	48.9 AV	54.0	-5.1	1.32 V	220	-0.39	49.31

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	110.6 PK			1.52 H	87	80.36	30.24
2	*2437.00	108.0 AV			1.52 H	87	77.76	30.24
3	4874.00	55.2 PK	74.0	-18.8	1.21 H	65	19.65	35.52
4	4874.00	52.4 AV	54.0	-1.6	1.21 H	65	16.86	35.52
5	7311.00	53.7 PK	74.0	-20.3	1.20 H	71	11.72	41.96
6	7311.00	46.8 AV	54.0	-7.2	1.20 H	71	4.84	41.96
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	101.9 PK			1.02 V	303	71.63	30.24
2	*2437.00	99.3 AV			1.02 V	303	69.04	30.24
3	4874.00	55.8 PK	74.0	-18.3	1.25 V	209	20.23	35.52
4	4874.00	52.9 AV	54.0	-1.1	1.25 V	209	17.38	35.52
5	7311.00	59.1 PK	74.0	-14.9	1.11 V	165	17.14	41.96
6	7311.00	51.6 AV	54.0	-2.4	1.11 V	165	9.63	41.96

- 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.



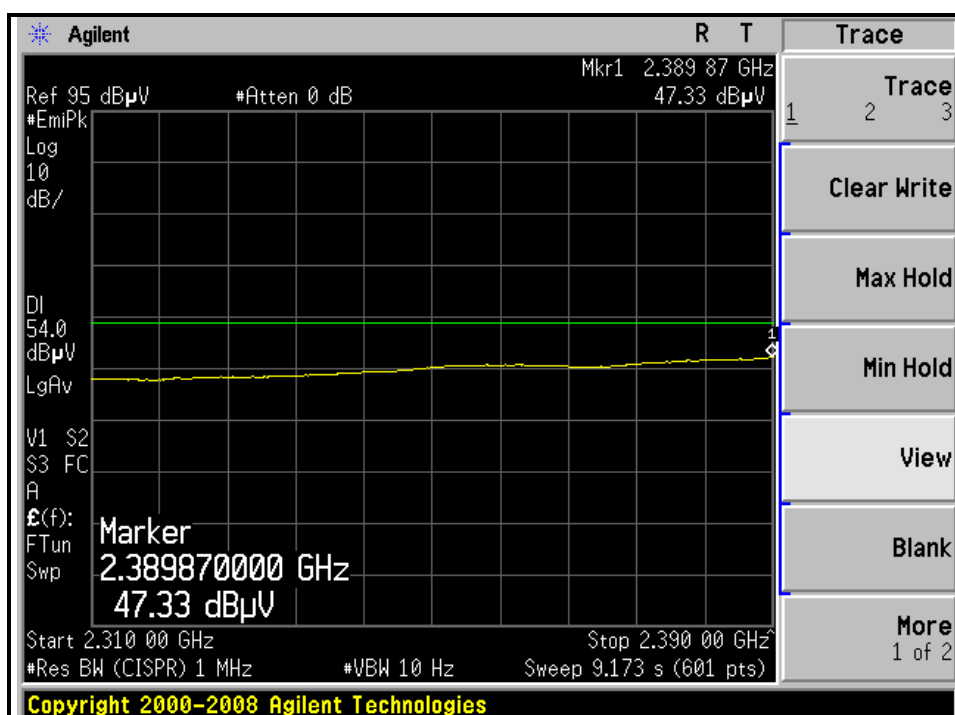
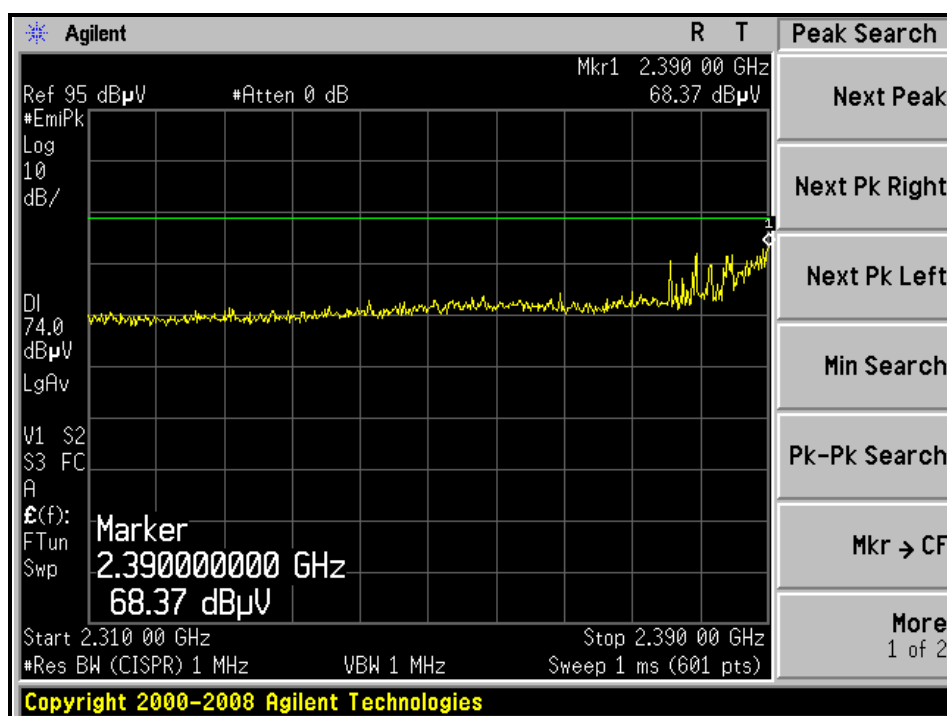
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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 hPa	TESTED BY	Phoenix Huang

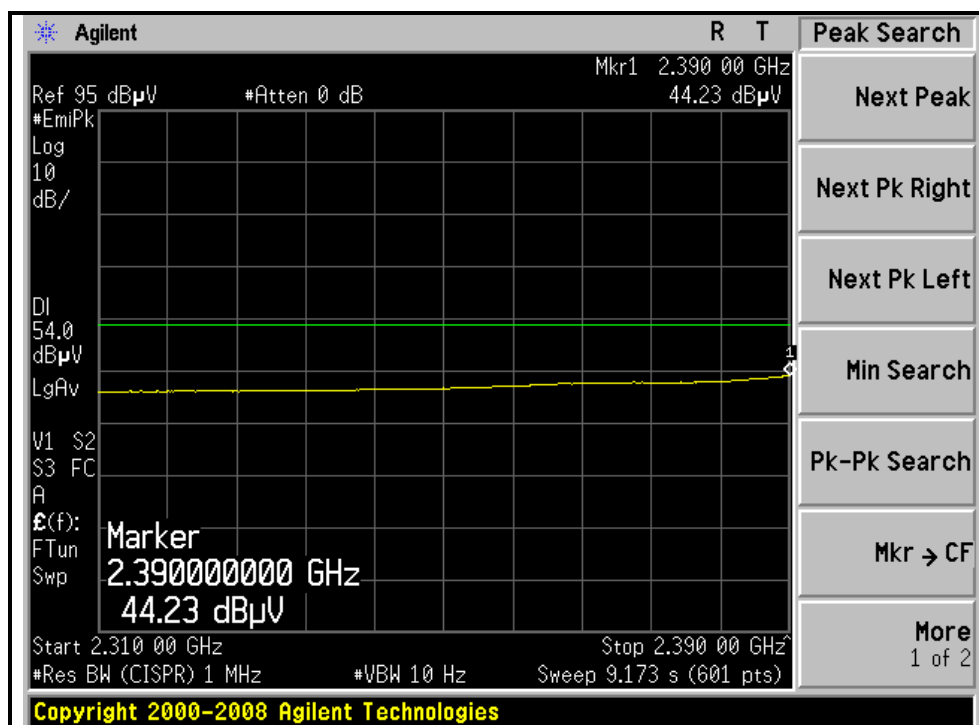
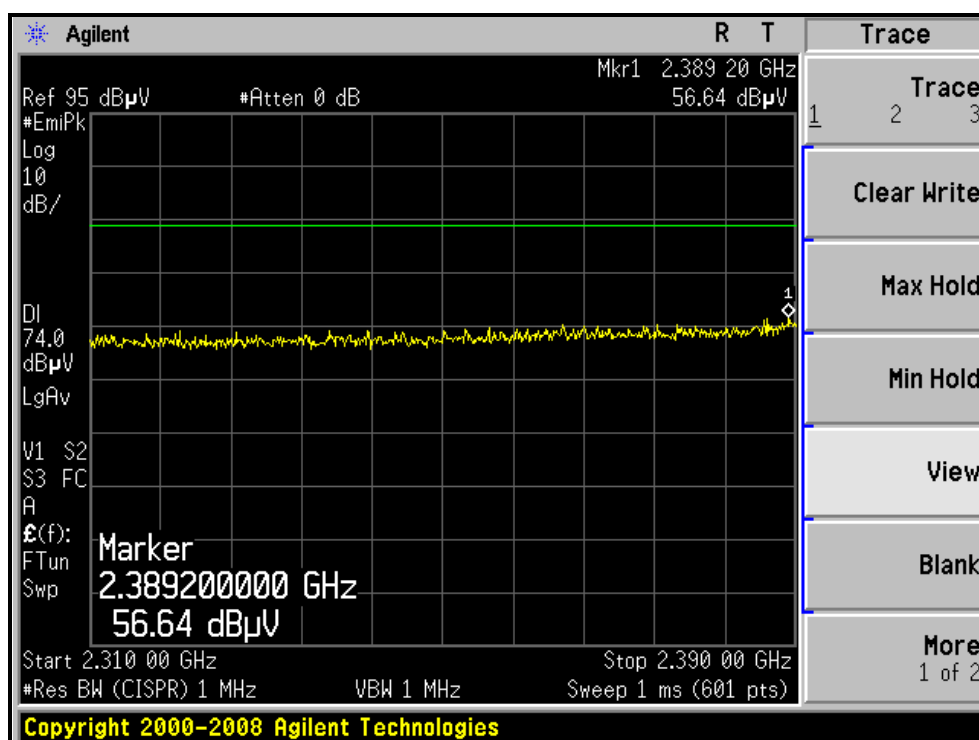
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.7 PK			1.52 H	106	81.37	30.34
2	*2462.00	109.1 AV			1.52 H	106	78.78	30.34
3	2483.50	60.2 PK	74.0	-13.8	1.72 H	77	29.78	30.43
4	2483.50	48.0 AV	54.0	-6.0	1.72 H	77	17.60	30.43
5	4924.00	54.7 PK	74.0	-19.3	1.19 H	40	19.10	35.62
6	4924.00	52.8 AV	54.0	-1.2	1.19 H	40	17.14	35.62
7	7386.00	54.9 PK	74.0	-19.1	1.16 H	48	12.77	42.10
8	7386.00	48.8 AV	54.0	-5.2	1.16 H	48	6.69	42.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.3 PK			1.00 V	304	72.93	30.34
2	*2462.00	100.5 AV			1.00 V	304	70.11	30.34
3	2483.50	56.7 PK	74.0	-17.3	1.00 V	304	26.29	30.43
4	2483.50	44.3 AV	54.0	-9.7	1.00 V	304	13.91	30.43
5	4924.00	56.3 PK	74.0	-17.7	1.25 V	210	20.65	35.62
6	4924.00	53.0 AV	54.0	-1.0	1.25 V	210	17.40	35.62
7	7386.00	60.2 PK	74.0	-13.8	1.12 V	164	18.09	42.10
8	7386.00	53.5 AV	54.0	-0.6	1.12 V	164	11.35	42.10

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.

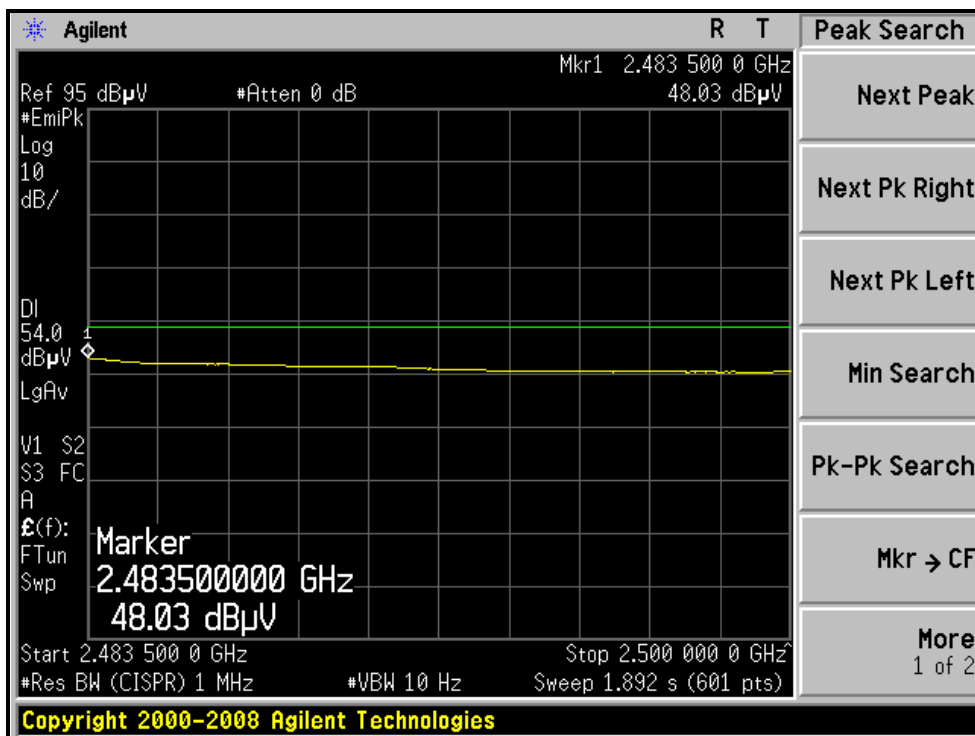
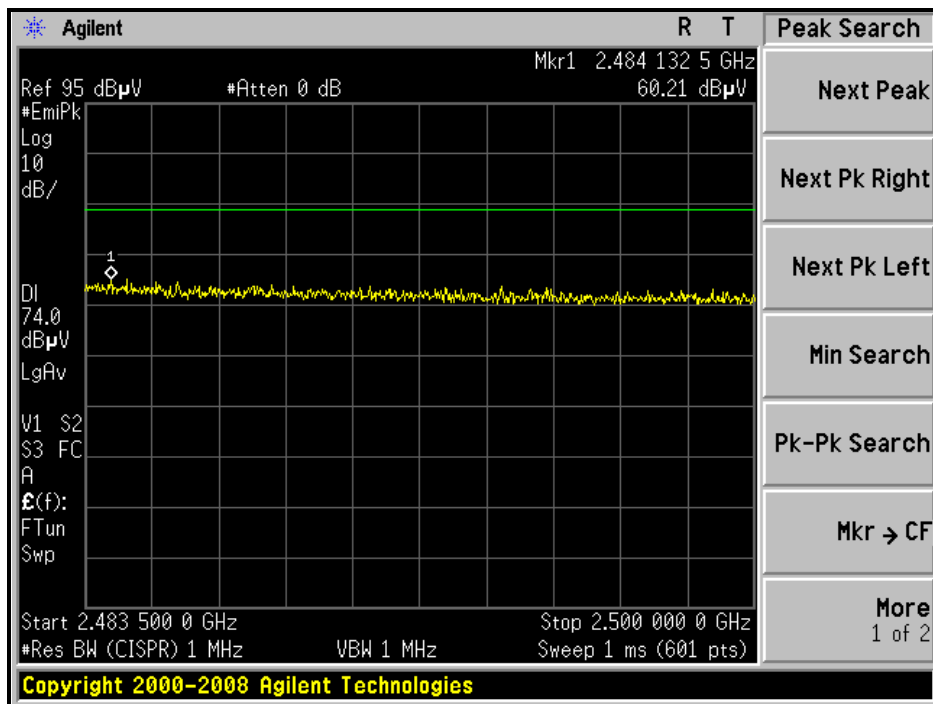
RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)



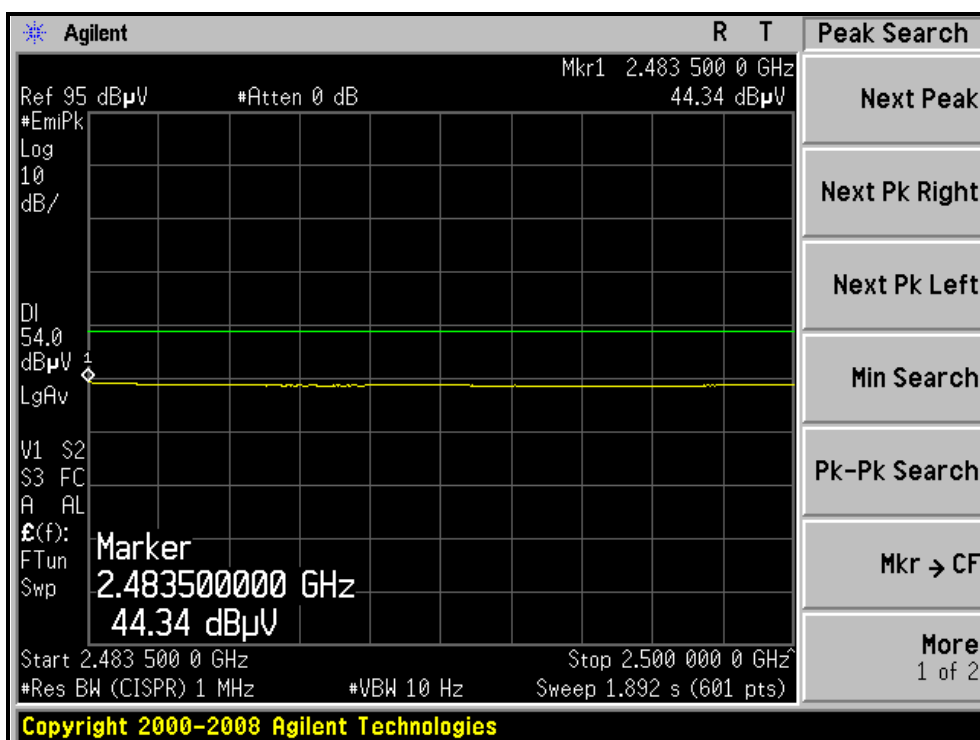
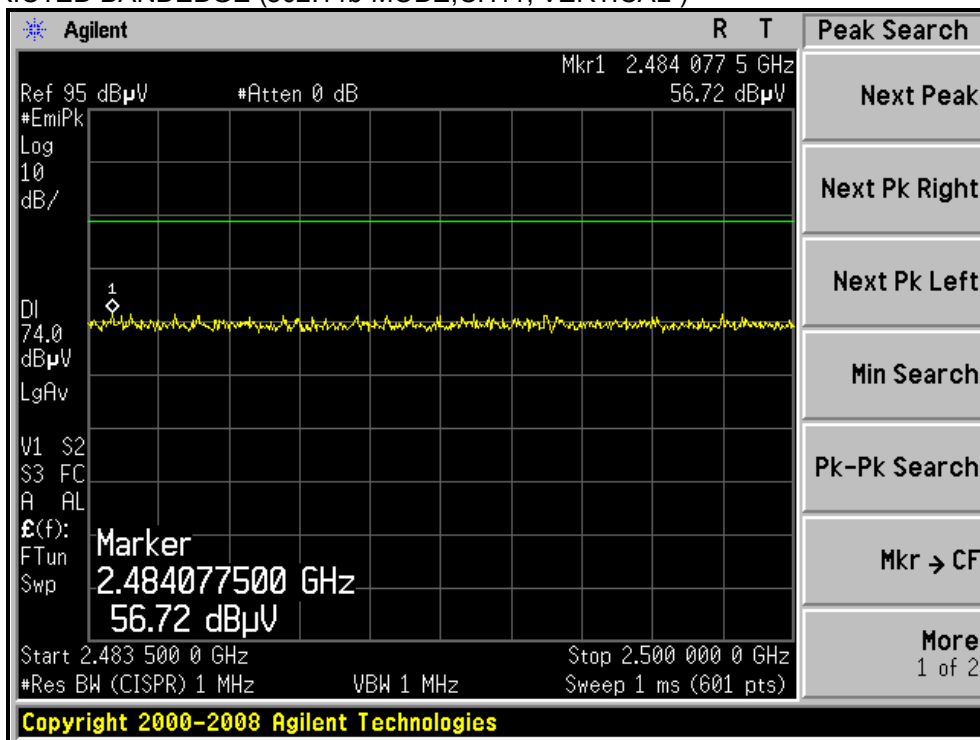
RESTRICTED BANDEDGE (802.11b MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)





A D T

802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	71.1 PK	74.0	-2.9	1.51 H	74	41.04	30.06
2	2390.00	52.4 AV	54.0	-1.6	1.51 H	74	22.38	30.06
3	*2412.00	111.6 PK			1.52 H	72	81.49	30.15
4	*2412.00	101.3 AV			1.52 H	72	71.15	30.15
5	4824.00	49.4 PK	74.0	-24.6	1.36 H	27	13.94	35.43
6	4824.00	36.2 AV	54.0	-17.8	1.36 H	27	0.80	35.43
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	61.0 PK	74.0	-13.0	1.00 V	303	30.92	30.06
2	2390.00	45.8 AV	54.0	-8.2	1.00 V	303	15.78	30.06
3	*2412.00	100.3 PK			1.00 V	303	70.13	30.15
4	*2412.00	89.7 AV			1.00 V	303	59.52	30.15
5	4824.00	50.3 PK	74.0	-23.8	1.25 V	209	14.82	35.43
6	4824.00	36.2 AV	54.0	-17.8	1.25 V	209	0.76	35.43

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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	2387.47	66.6 PK	74.0	-7.4	1.50 H	72	36.56	30.05
2	2387.47	49.3 AV	54.0	-4.7	1.50 H	72	19.21	30.05
3	*2437.00	115.8 PK			1.51 H	74	85.60	30.24
4	*2437.00	105.9 AV			1.51 H	74	75.66	30.24
5	2483.53	59.4 PK	74.0	-14.6	1.47 H	72	28.97	30.43
6	2483.53	47.8 AV	54.0	-6.2	1.47 H	72	17.39	30.43
7	4874.00	51.8 PK	74.0	-22.2	1.34 H	30	16.25	35.52
8	4874.00	37.9 AV	54.0	-16.1	1.34 H	30	2.34	35.52
9	7311.00	56.2 PK	74.0	-17.8	1.17 H	58	14.23	41.96
10	7311.00	42.5 AV	54.0	-11.5	1.17 H	58	0.56	41.96
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	104.3 PK			1.00 V	304	74.06	30.24
2	*2437.00	93.3 AV			1.00 V	304	63.08	30.24
3	4874.00	53.3 PK	74.0	-20.7	1.25 V	210	17.81	35.52
4	4874.00	39.6 AV	54.0	-14.4	1.25 V	210	4.09	35.52
5	7311.00	61.4 PK	74.0	-12.6	1.11 V	165	19.44	41.96
6	7311.00	46.2 AV	54.0	-7.8	1.11 V	165	4.24	41.96

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.



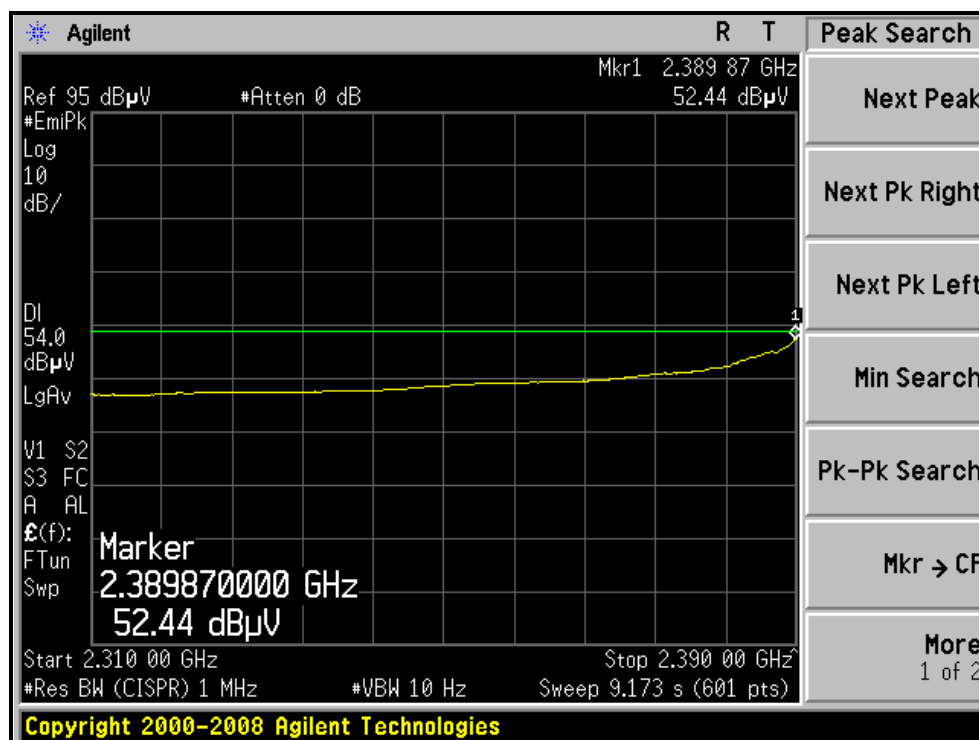
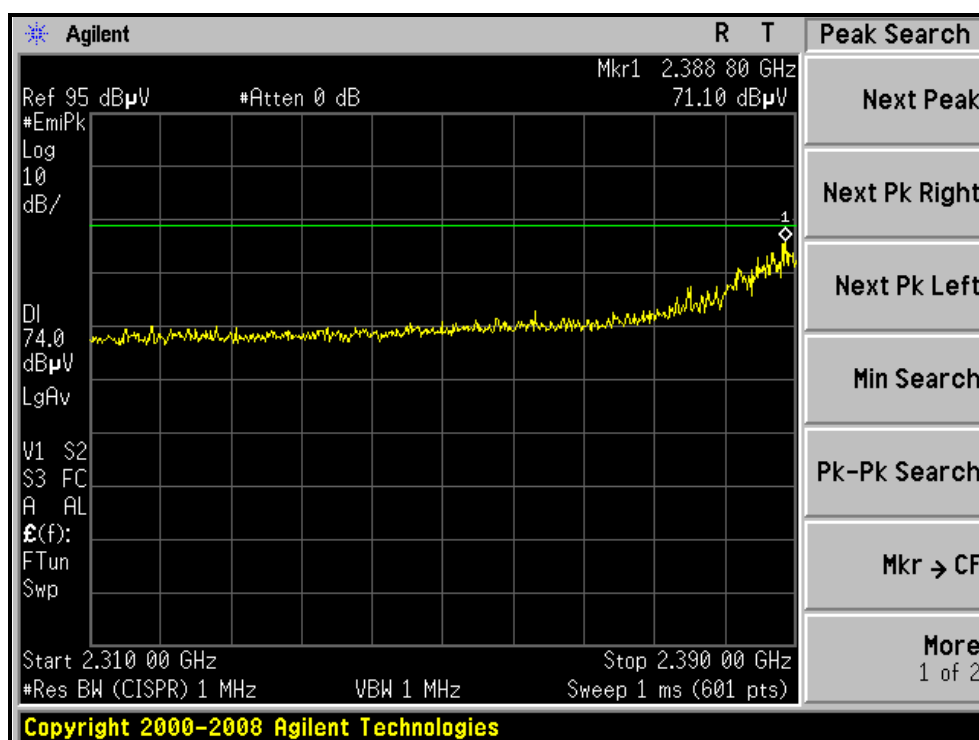
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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 hPa	TESTED BY	Phoenix Huang

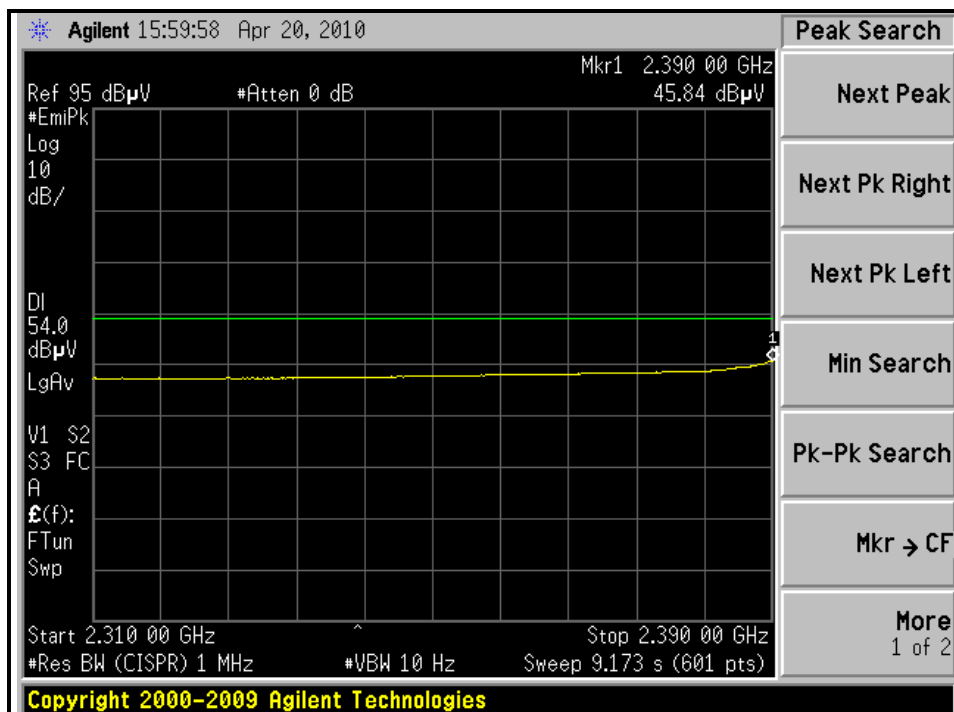
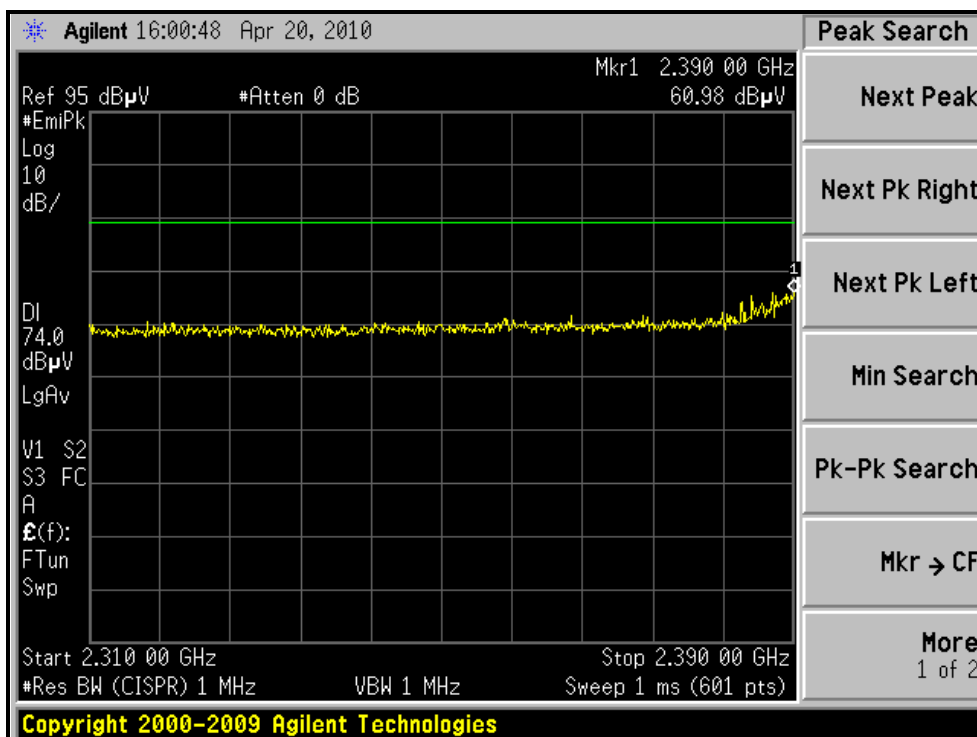
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NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.2 PK			1.73 H	74	81.86	30.34
2	*2462.00	101.8 AV			1.73 H	74	71.46	30.34
3	2483.50	72.2 PK	74.0	-1.8	1.47 H	71	41.79	30.43
4	2483.50	51.7 AV	54.0	-2.3	1.47 H	71	21.29	30.43
5	4924.00	50.3 PK	74.0	-23.7	1.34 H	30	14.72	35.62
6	4924.00	37.7 AV	54.0	-16.3	1.34 H	30	2.07	35.62
7	7386.00	55.9 PK	74.0	-18.1	1.15 H	49	13.82	42.10
8	7386.00	42.4 AV	54.0	-11.6	1.15 H	49	0.29	42.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.9 PK			1.01 V	305	71.54	30.34
2	*2462.00	91.5 AV			1.01 V	305	61.13	30.34
3	2483.58	60.6 PK	74.0	-13.4	1.01 V	305	30.18	30.43
4	2483.58	45.5 AV	54.0	-8.5	1.01 V	305	15.05	30.43
5	4924.00	51.6 PK	74.0	-22.4	1.24 V	209	15.96	35.62
6	4924.00	38.2 AV	54.0	-15.8	1.24 V	209	2.59	35.62
7	7386.00	58.9 PK	74.0	-15.1	1.12 V	164	16.81	42.10
8	7386.00	43.9 AV	54.0	-10.1	1.12 V	164	1.81	42.10

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.

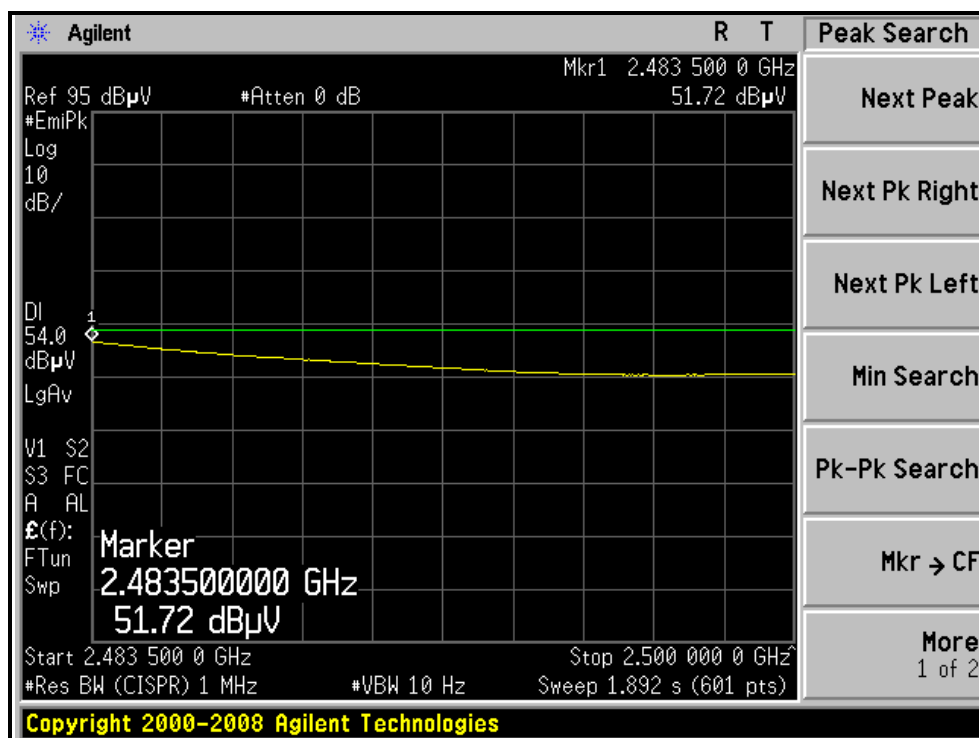
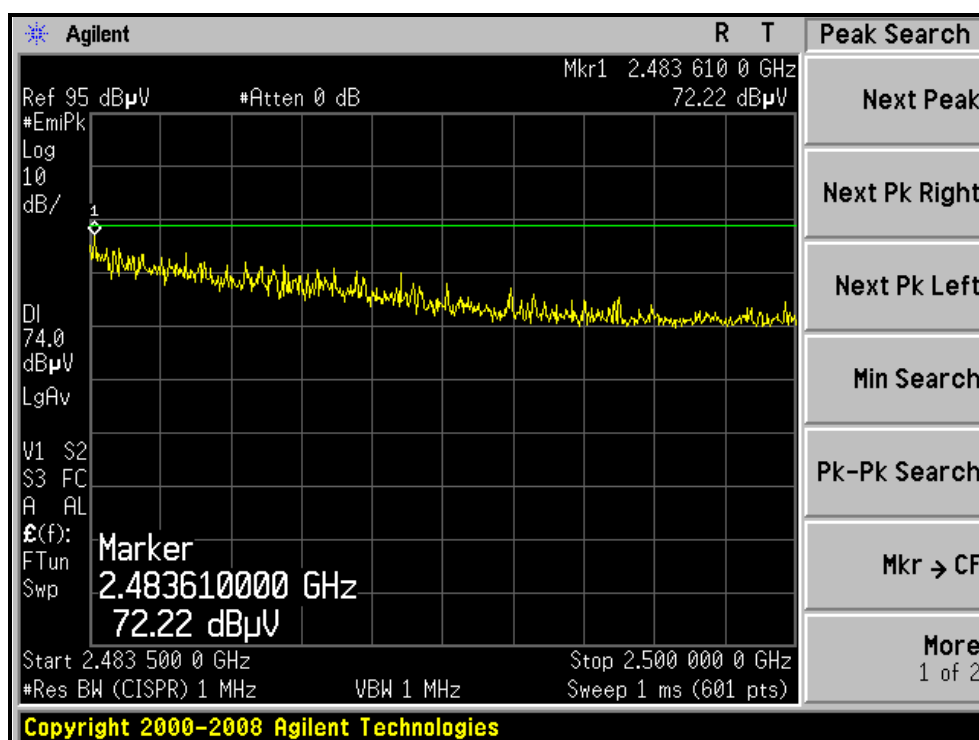
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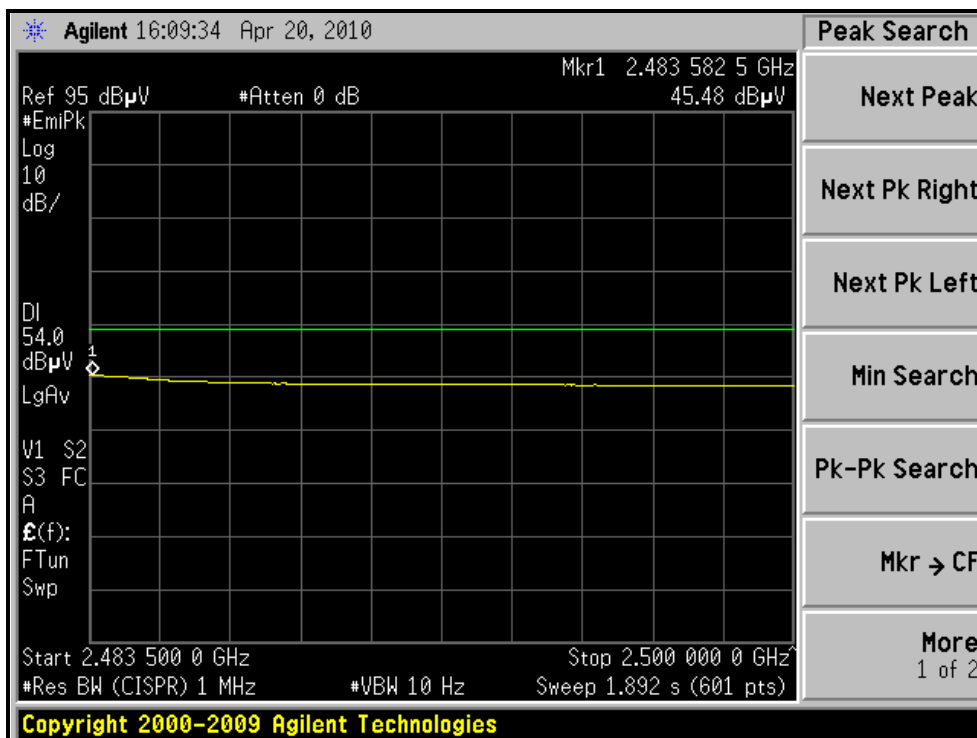
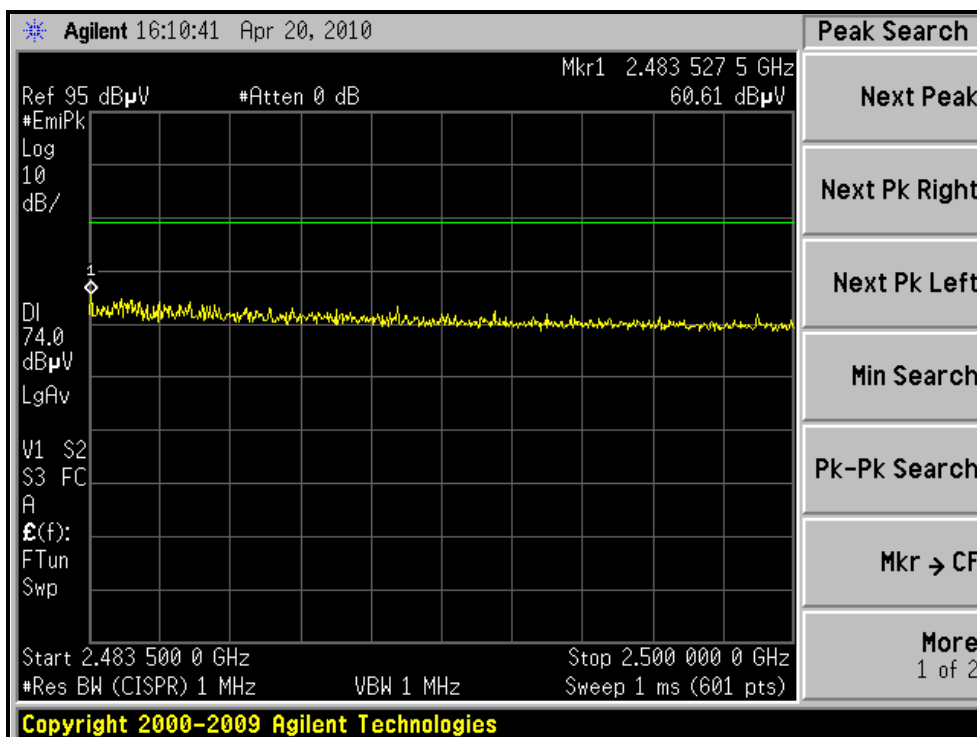
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





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802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	2389.20	71.5 PK	74.0	-2.5	1.58 H	71	41.43	30.06
2	2389.20	53.3 AV	54.0	-0.7	1.58 H	71	23.26	30.06
3	*2412.00	112.1 PK			1.59 H	80	81.90	30.15
4	*2412.00	101.1 AV			1.59 H	80	70.92	30.15
5	4824.00	50.7 PK	74.0	-23.3	1.47 H	115	15.28	35.43
6	4824.00	36.9 AV	54.0	-17.1	1.47 H	115	1.50	35.43
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	2388.93	66.4 PK	74.0	-7.6	1.59 V	157	36.33	30.06
2	2388.93	48.7 AV	54.0	-5.3	1.59 V	157	18.67	30.06
3	*2412.00	105.1 PK			1.59 V	157	74.94	30.15
4	*2412.00	94.2 AV			1.59 V	157	64.00	30.15
5	4824.00	53.2 PK	74.0	-20.8	1.39 V	15	17.77	35.43
6	4824.00	38.9 AV	54.0	-15.1	1.39 V	15	3.49	35.43

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	62.2 PK	74.0	-11.8	1.48 H	73	32.17	30.06
2	2390.00	47.8 AV	54.0	-6.2	1.48 H	73	17.77	30.06
3	*2437.00	115.6 PK			1.51 H	86	85.36	30.24
4	*2437.00	105.2 AV			1.51 H	86	74.96	30.24
5	2483.99	59.0 PK	74.0	-15.0	1.50 H	74	28.57	30.43
6	2483.99	46.9 AV	54.0	-7.1	1.50 H	74	16.47	30.43
7	4874.00	51.4 PK	74.0	-22.6	1.45 H	118	15.91	35.52
8	4874.00	37.8 AV	54.0	-16.2	1.45 H	118	2.32	35.52
9	7311.00	56.2 PK	74.0	-17.8	1.48 H	73	14.28	41.96
10	7311.00	42.6 AV	54.0	-11.4	1.48 H	73	0.68	41.96
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	107.0 PK			1.52 V	155	76.78	30.24
2	*2437.00	94.6 AV			1.52 V	155	64.35	30.24
3	4874.00	53.5 PK	74.0	-20.5	1.40 V	19	18.00	35.52
4	4874.00	39.5 AV	54.0	-14.5	1.40 V	19	3.96	35.52
5	7311.00	61.8 PK	74.0	-12.2	1.00 V	59	19.88	41.96
6	7311.00	46.9 AV	54.0	-7.1	1.00 V	59	4.90	41.96

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.



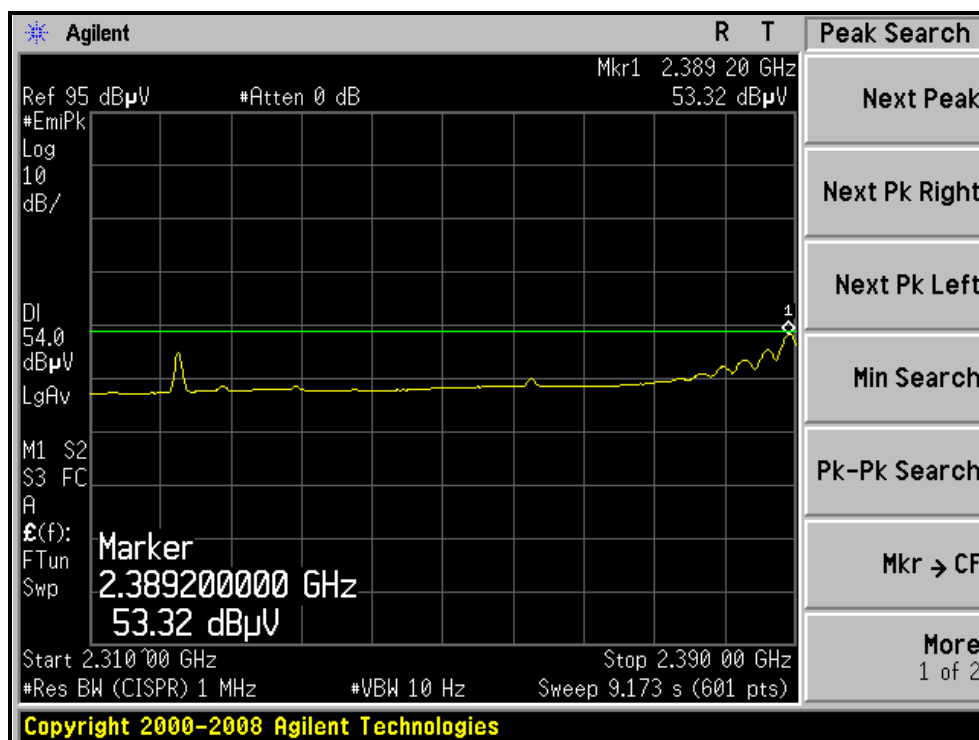
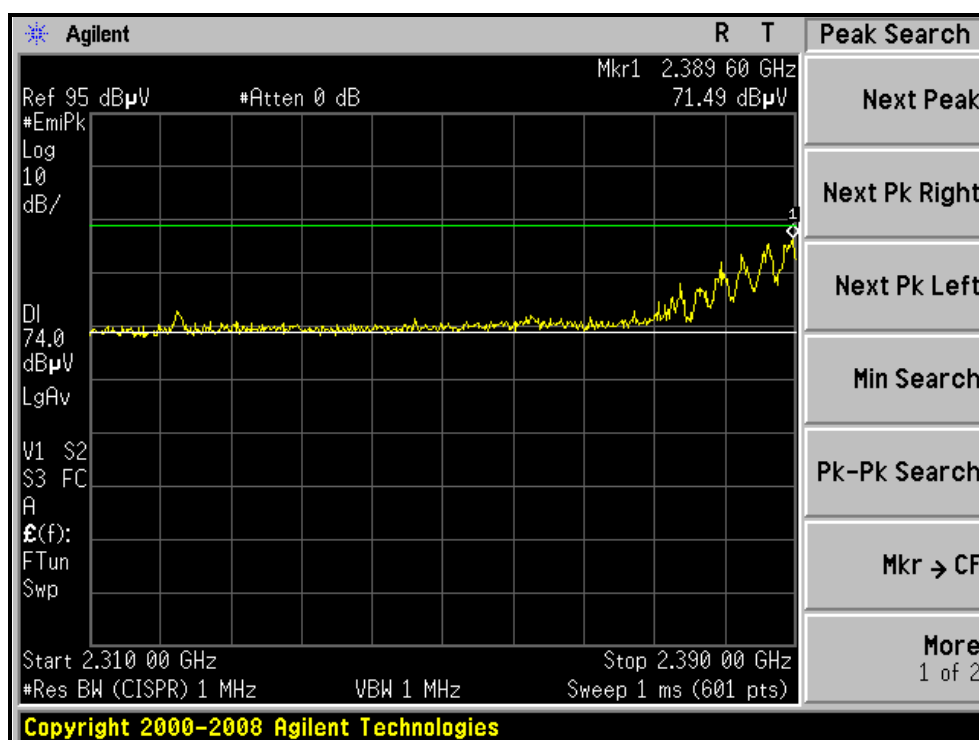
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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 hPa	TESTED BY	Phoenix Huang

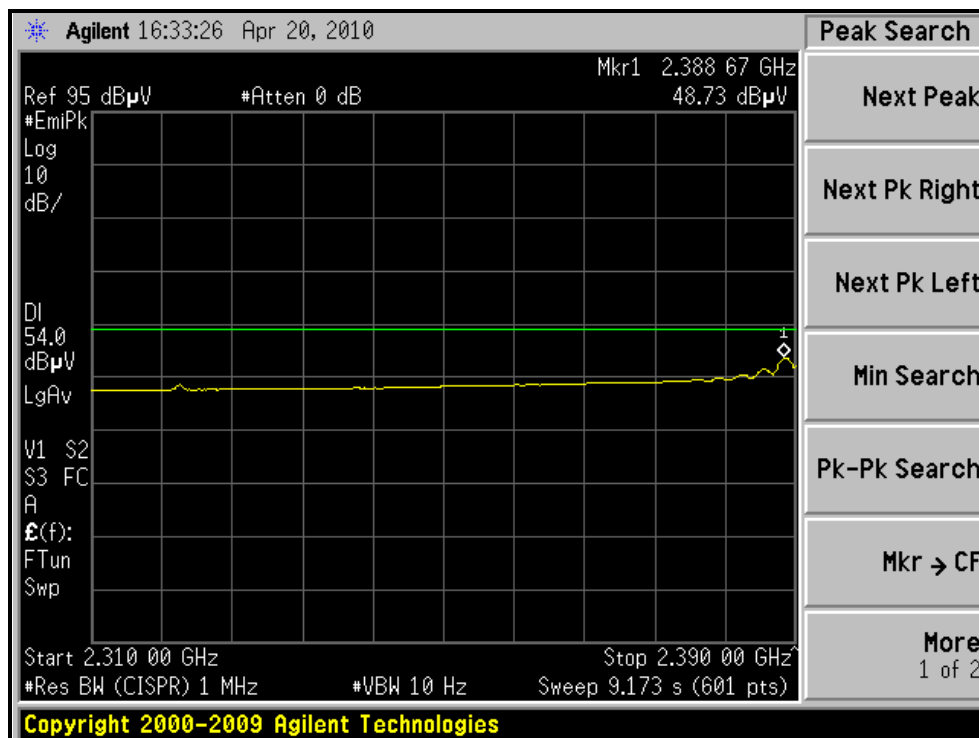
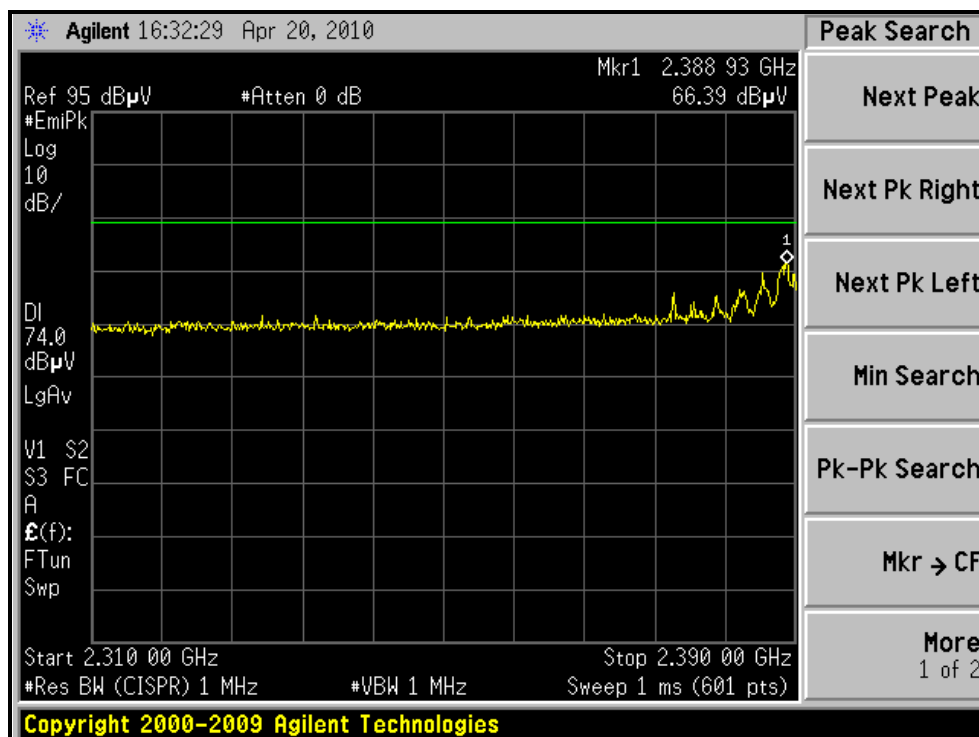
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.7 PK			1.51 H	82	81.36	30.34
2	*2462.00	102.1 AV			1.51 H	82	71.76	30.34
3	2484.08	70.3 PK	74.0	-3.7	1.51 H	107	39.89	30.43
4	2484.08	51.1 AV	54.0	-2.9	1.51 H	107	20.67	30.43
5	4924.00	50.4 PK	74.0	-23.6	1.49 H	121	14.79	35.62
6	4924.00	37.5 AV	54.0	-16.5	1.49 H	121	1.84	35.62
7	7386.00	55.6 PK	74.0	-18.4	1.05 H	162	13.54	42.10
8	7386.00	42.2 AV	54.0	-11.8	1.05 H	162	0.07	42.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.9 PK			1.57 V	150	71.52	30.34
2	*2462.00	91.1 AV			1.57 V	150	60.73	30.34
3	2483.50	64.6 PK	74.0	-9.4	1.67 V	163	34.16	30.43
4	2483.50	46.1 AV	54.0	-7.9	1.67 V	163	15.63	30.43
5	4924.00	53.2 PK	74.0	-20.8	1.41 V	18	17.55	35.62
6	4924.00	39.9 AV	54.0	-14.1	1.41 V	18	4.32	35.62
7	7386.00	56.3 PK	74.0	-17.7	1.00 V	61	14.17	42.10
8	7386.00	43.7 AV	54.0	-10.4	1.00 V	61	1.55	42.10

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.

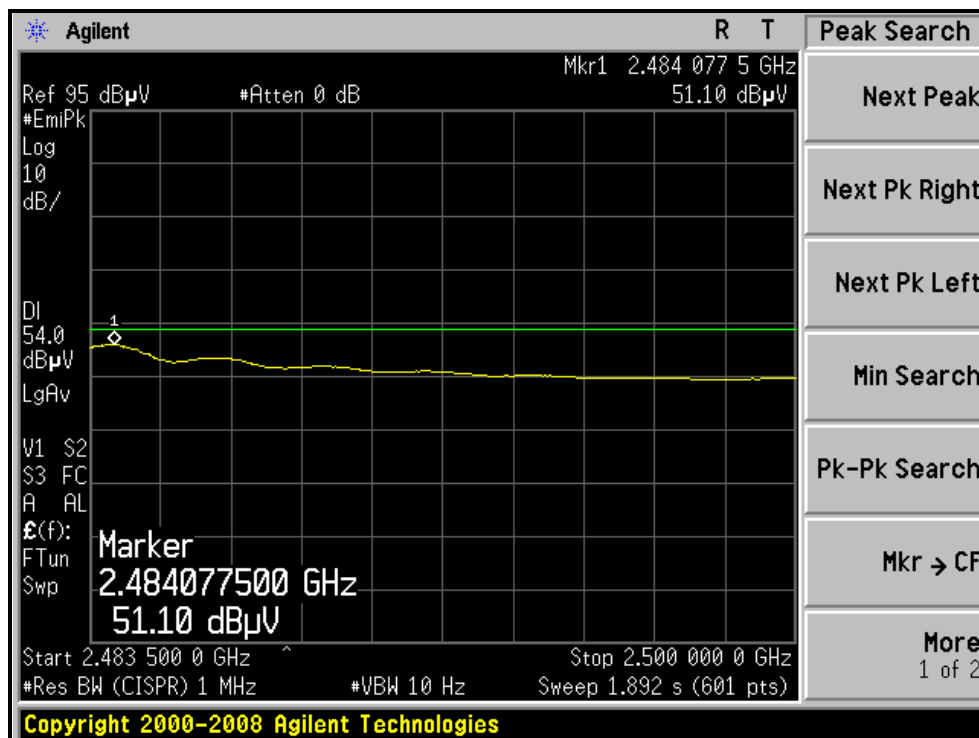
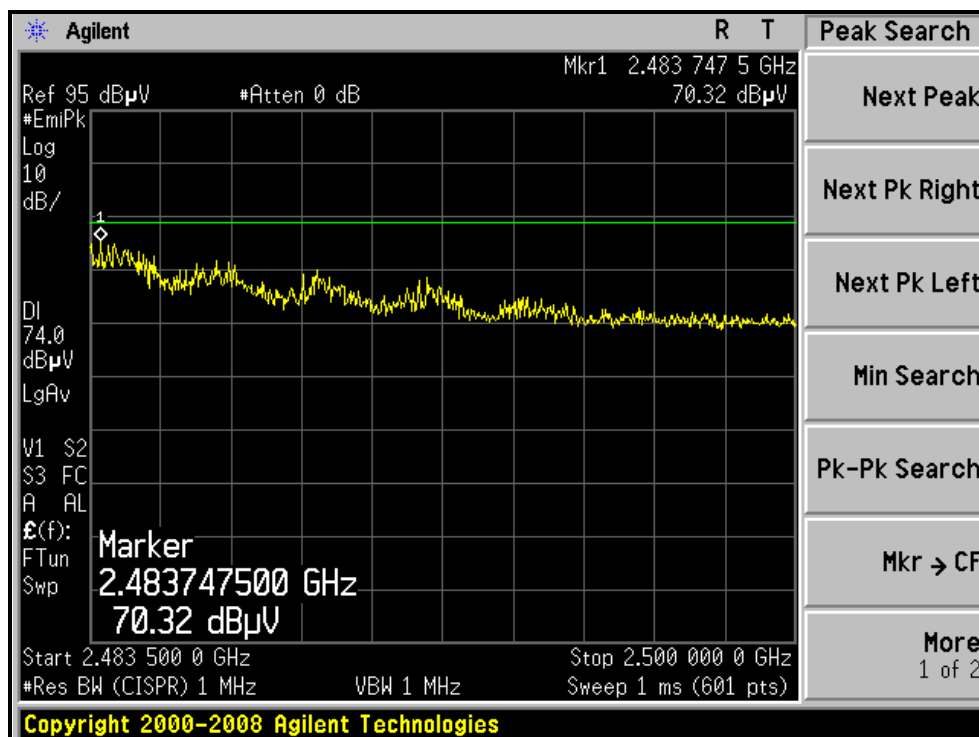
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, HORIZONTAL)



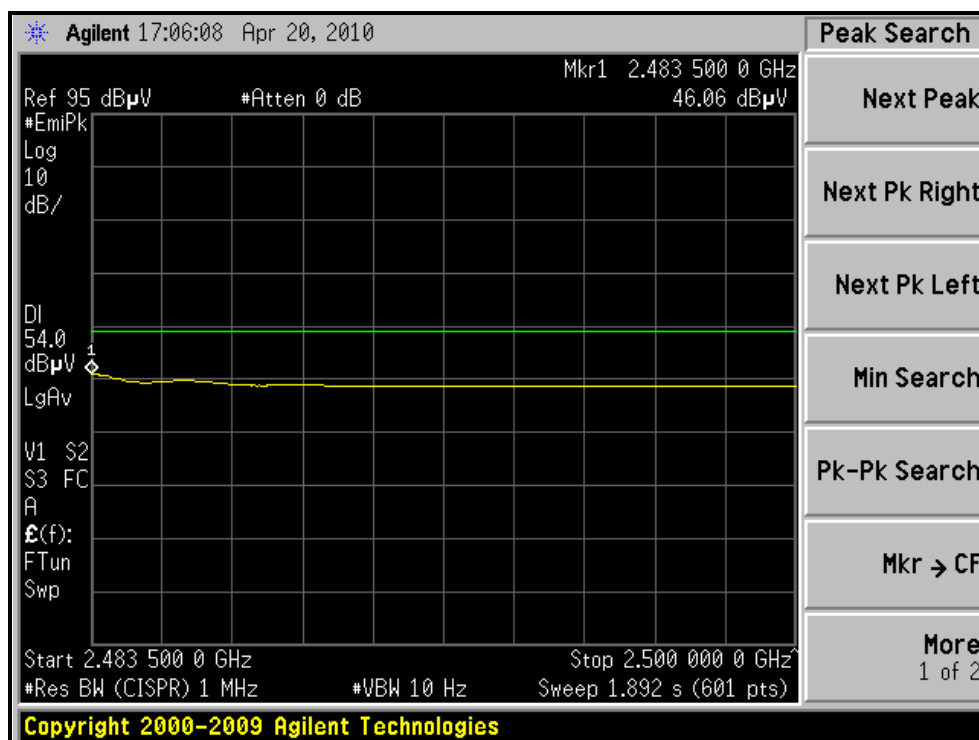
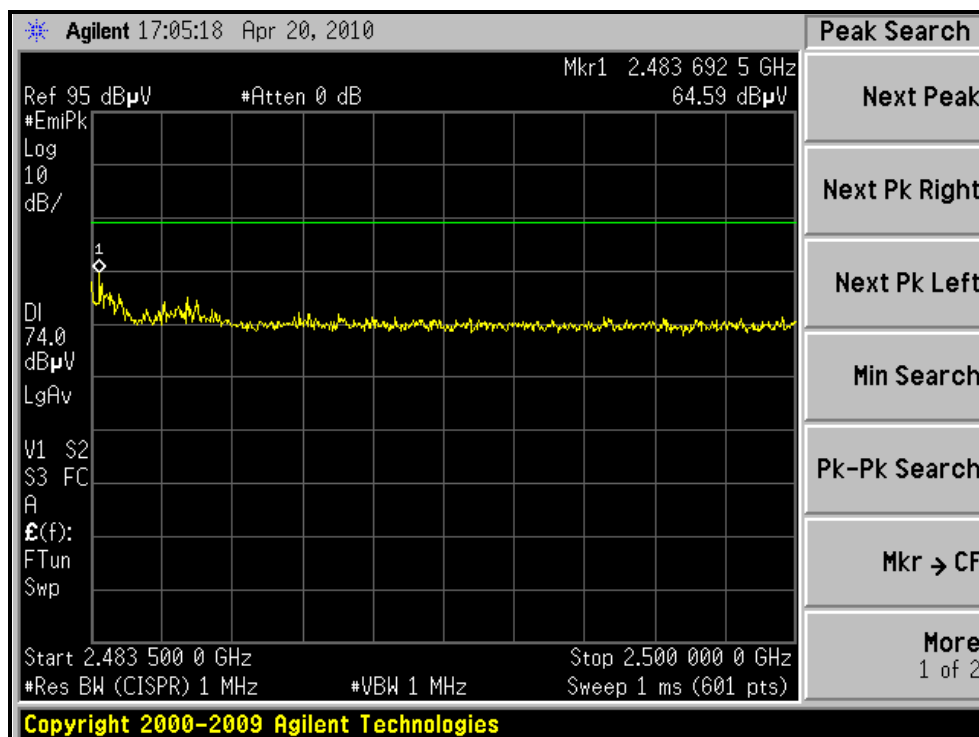
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, VERTICAL)



802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	2388.96	66.2 PK	74.0	-7.8	1.61 H	78	36.10	30.06
2	2388.96	52.1 AV	54.0	-1.9	1.61 H	78	22.00	30.06
3	*2422.00	103.9 PK			1.52 H	78	73.73	30.19
4	*2422.00	93.8 AV			1.52 H	78	63.61	30.19
5	4844.00	47.0 PK	74.0	-27.0	1.48 H	118	11.49	35.47
6	4844.00	33.7 AV	54.0	-20.3	1.48 H	118	-1.81	35.47
7	7266.00	55.6 PK	74.0	-18.4	1.00 H	160	13.70	41.87
8	7266.00	41.5 AV	54.0	-12.5	1.00 H	160	-0.39	41.87
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	2389.07	63.3 PK	74.0	-10.7	1.30 V	162	33.24	30.06
2	2389.07	48.9 AV	54.0	-5.1	1.30 V	162	18.85	30.06
3	*2422.00	97.7 PK			1.30 V	161	67.50	30.19
4	*2422.00	88.3 AV			1.30 V	161	58.11	30.19
5	4844.00	49.2 PK	74.0	-24.8	1.39 V	17	13.72	35.47
6	4844.00	36.6 AV	54.0	-17.4	1.39 V	17	1.09	35.47
7	7266.00	55.9 PK	74.0	-18.1	1.00 V	50	14.05	41.87
8	7266.00	41.8 AV	54.0	-12.2	1.00 V	50	-0.05	41.87

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 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 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	2389.47	68.8 PK	74.0	-5.2	1.50 H	74	38.71	30.06
2	2389.47	52.9 AV	54.0	-1.1	1.50 H	74	22.87	30.06
3	*2437.00	109.2 PK			1.51 H	78	78.96	30.24
4	*2437.00	99.5 AV			1.51 H	78	69.26	30.24
5	2483.50	63.4 PK	74.0	-10.6	1.72 H	314	32.97	30.43
6	2483.50	48.7 AV	54.0	-5.3	1.72 H	314	18.27	30.43
7	4874.00	48.6 PK	74.0	-25.4	1.46 H	116	13.12	35.52
8	4874.00	35.8 AV	54.0	-18.2	1.46 H	116	0.27	35.52
9	7311.00	56.1 PK	74.0	-17.9	1.00 H	165	14.11	41.96
10	7311.00	42.4 AV	54.0	-11.6	1.00 H	165	0.45	41.96
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	100.6 PK			1.32 V	160	70.33	30.24
2	*2437.00	90.6 AV			1.32 V	160	60.31	30.24
3	4874.00	49.2 PK	74.0	-24.9	1.42 V	17	13.63	35.52
4	4874.00	36.8 AV	54.0	-17.2	1.42 V	17	1.24	35.52
5	7311.00	60.2 PK	74.0	-13.8	1.02 V	64	18.27	41.96
6	7311.00	45.3 AV	54.0	-8.8	1.02 V	64	3.29	41.96

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.



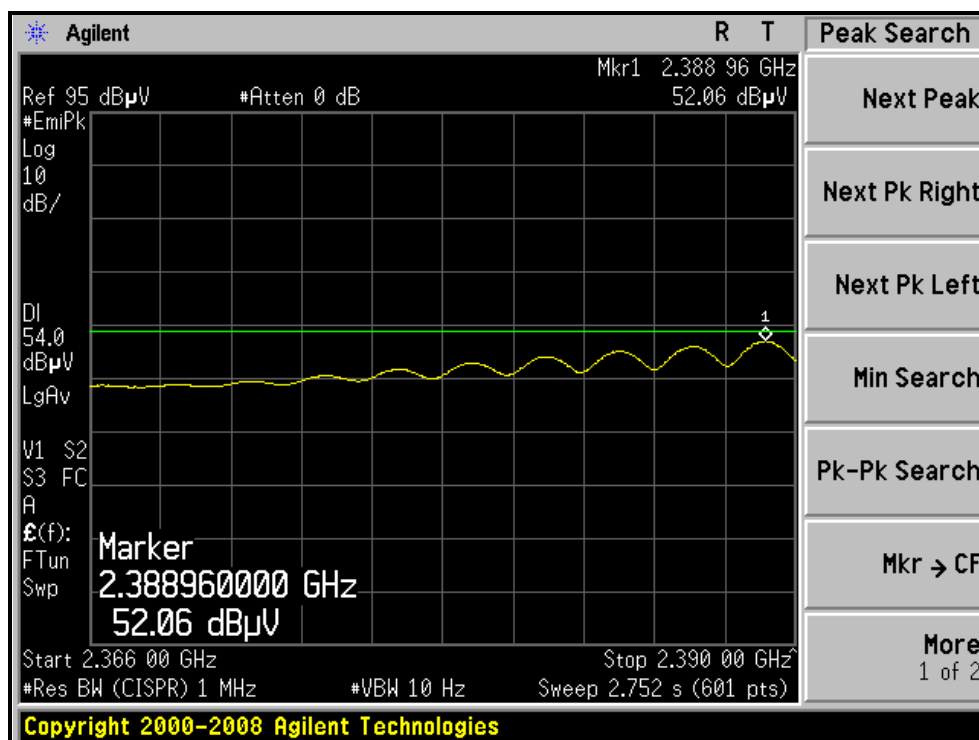
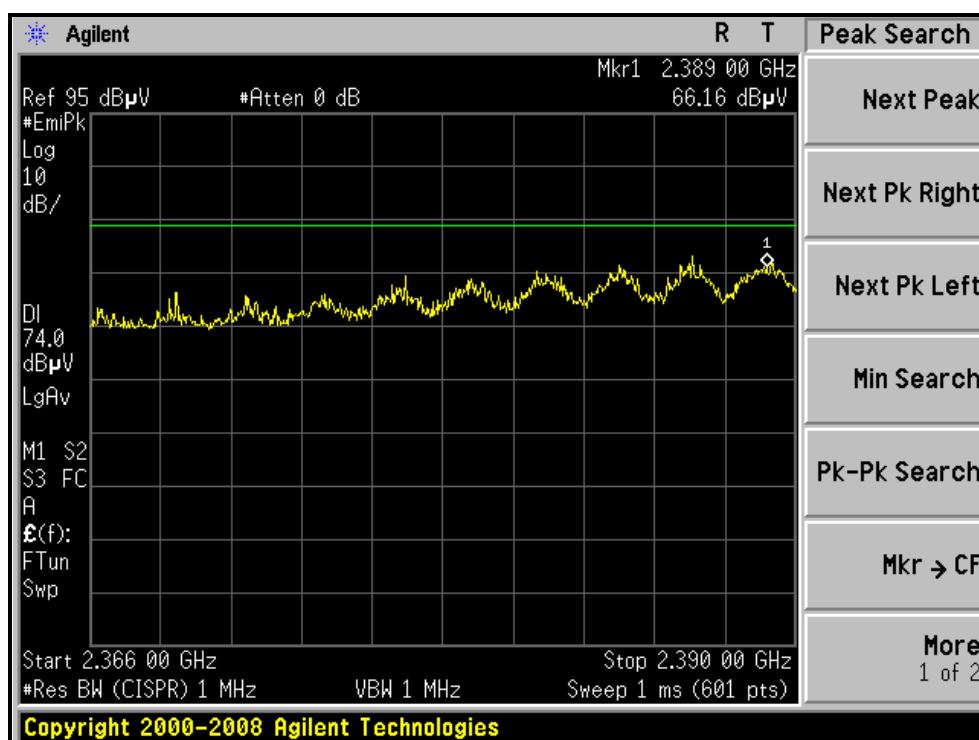
A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 1013 hPa	TESTED BY	Phoenix Huang

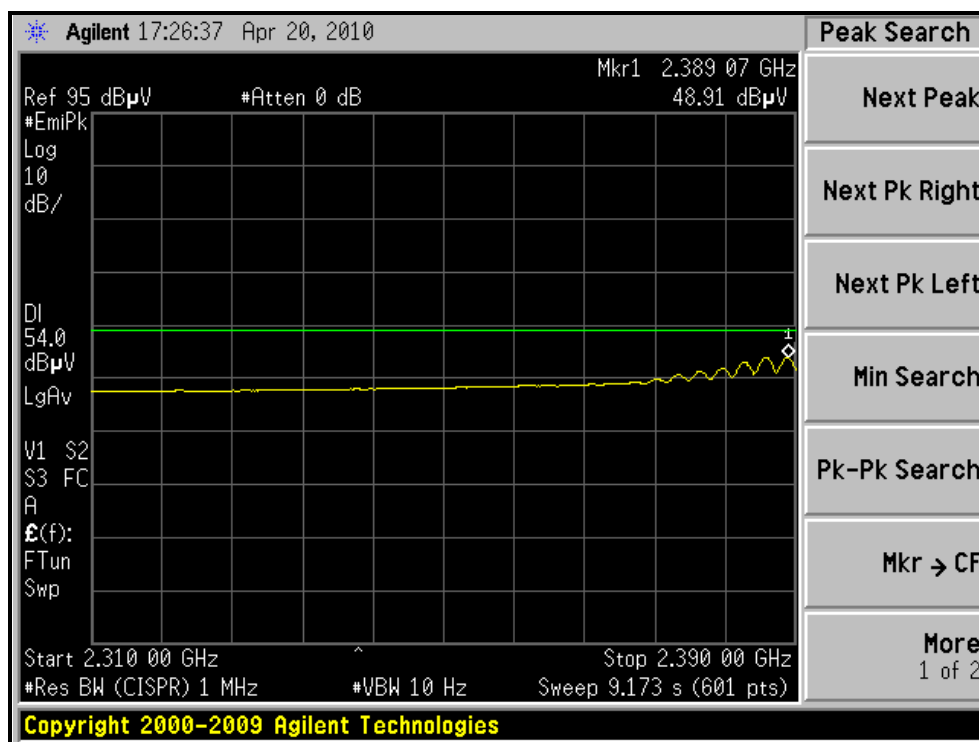
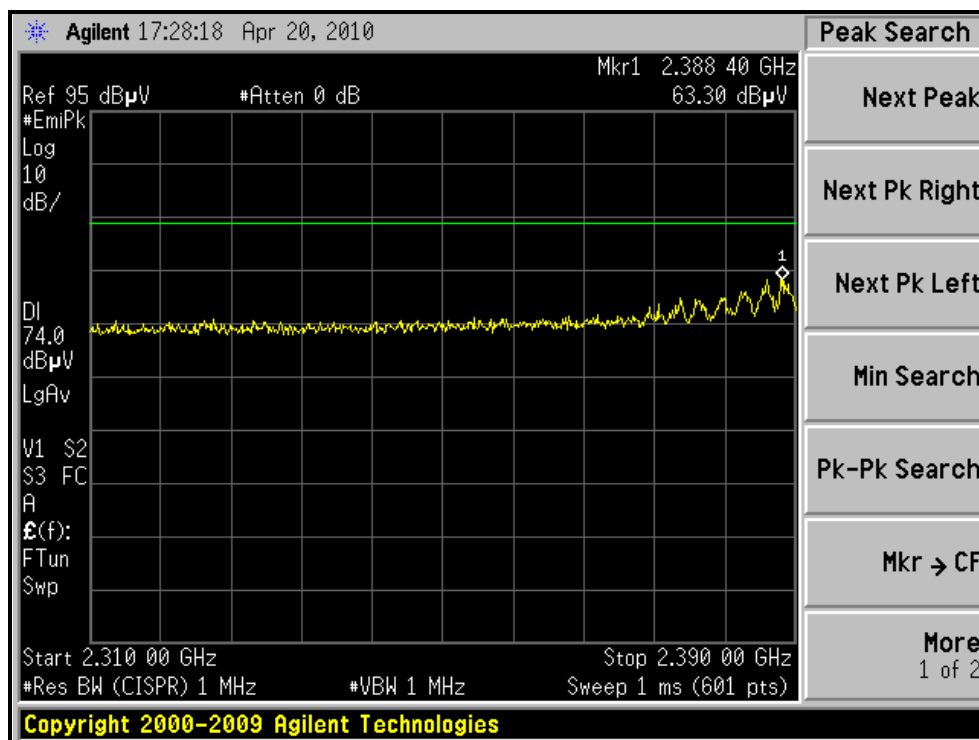
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	107.6 PK			1.74 H	75	77.30	30.30
2	*2452.00	97.7 AV			1.74 H	75	67.38	30.30
3	2483.50	72.2 PK	74.0	-1.9	1.70 H	315	41.72	30.43
4	2483.50	53.1 AV	54.0	-0.9	1.70 H	315	22.69	30.43
5	4904.00	47.5 PK	74.0	-26.5	1.50 H	118	11.96	35.58
6	4904.00	34.9 AV	54.0	-19.1	1.50 H	118	-0.69	35.58
7	7356.00	55.8 PK	74.0	-18.2	1.06 H	147	13.74	42.04
8	7356.00	42.4 AV	54.0	-11.7	1.06 H	147	0.31	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	100.2 PK			1.31 V	160	69.92	30.30
2	*2452.00	90.0 AV			1.31 V	160	59.74	30.30
3	2483.50	64.6 PK	74.0	-9.4	1.69 V	161	34.16	30.43
4	2483.50	47.2 AV	54.0	-6.8	1.69 V	161	16.74	30.43
5	4904.00	49.6 PK	74.0	-24.4	1.41 V	16	14.04	35.58
6	4904.00	36.7 AV	54.0	-17.4	1.41 V	16	1.07	35.58
7	7356.00	55.9 PK	74.0	-18.1	1.03 V	62	13.83	42.04
8	7356.00	43.0 AV	54.0	-11.0	1.03 V	62	1.00	42.04

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.

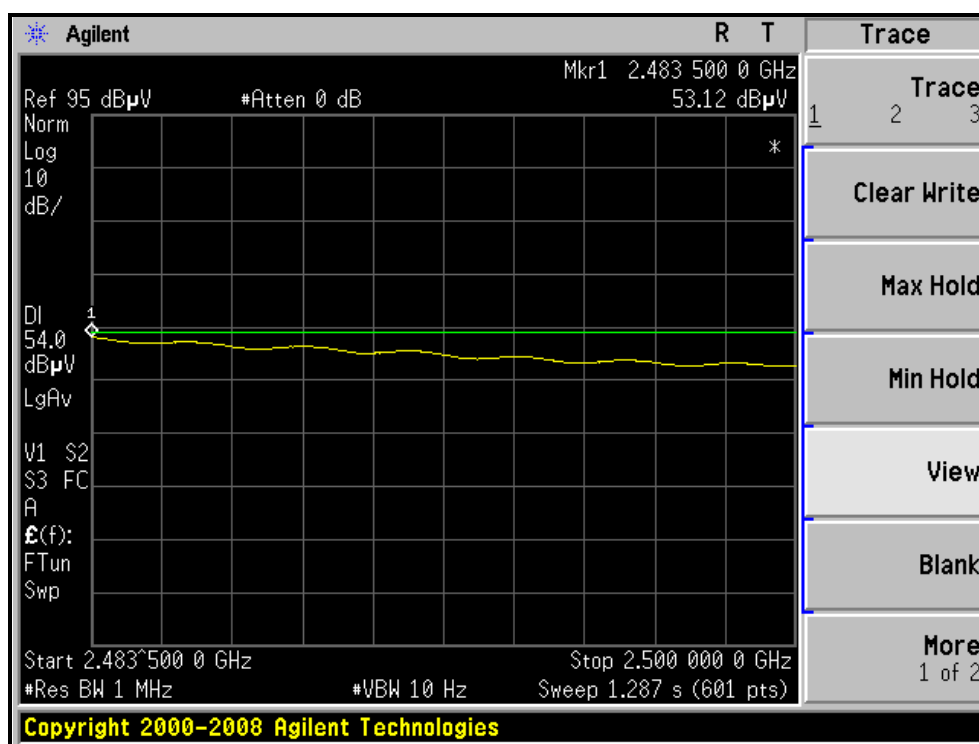
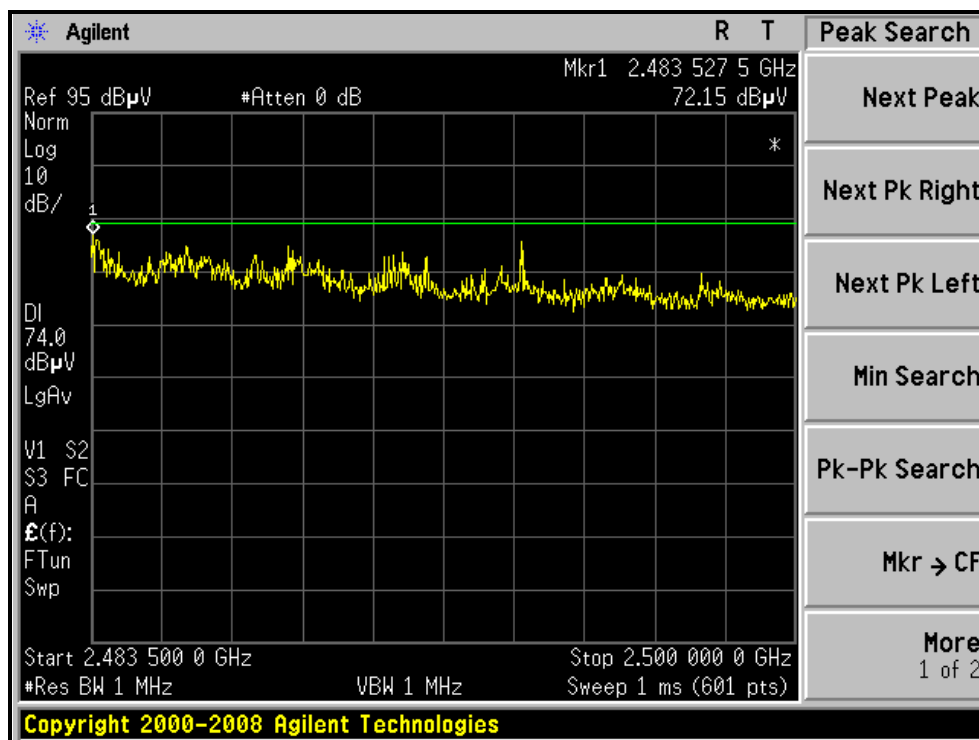
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH1, HORIZONTAL)



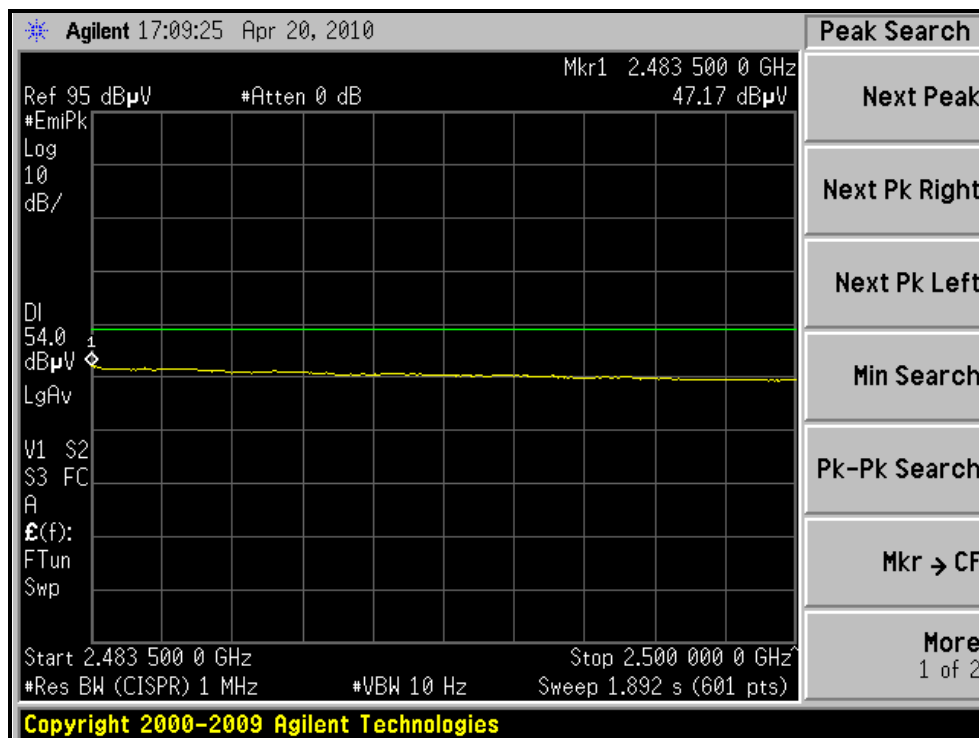
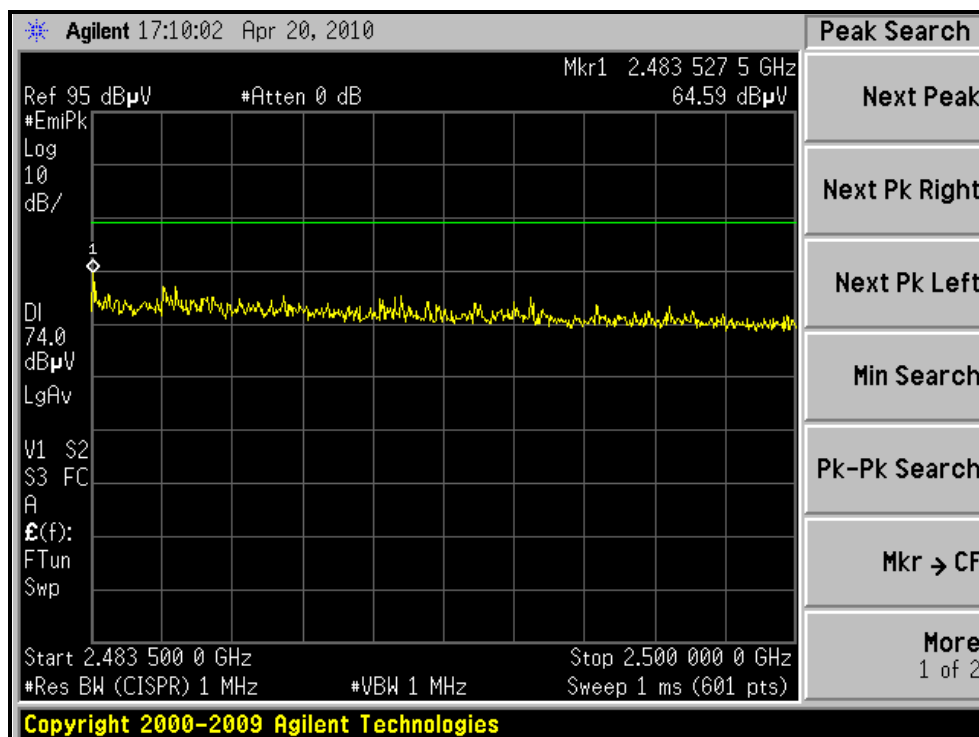
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH7, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH7, 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

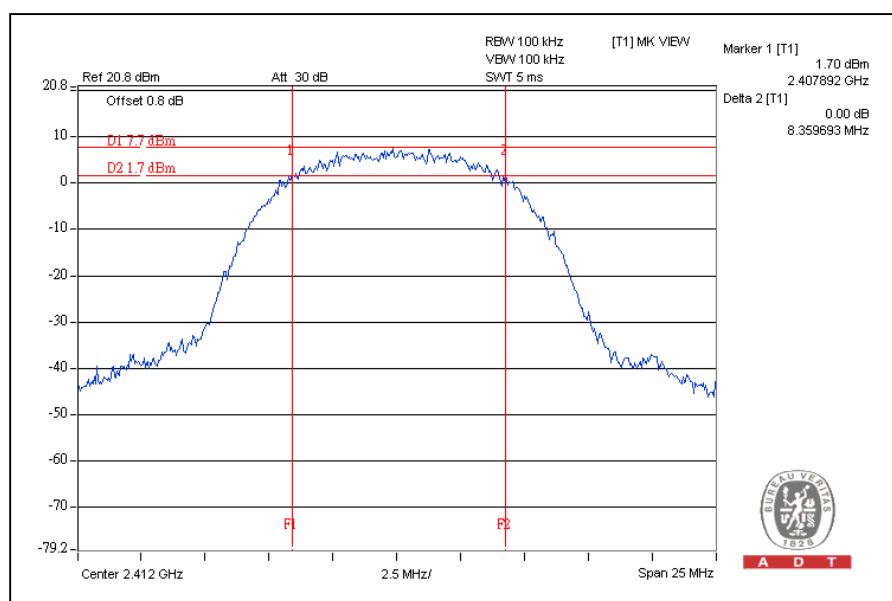
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.35	0.5	PASS
6	2437	8.18	0.5	PASS
11	2462	7.97	0.5	PASS

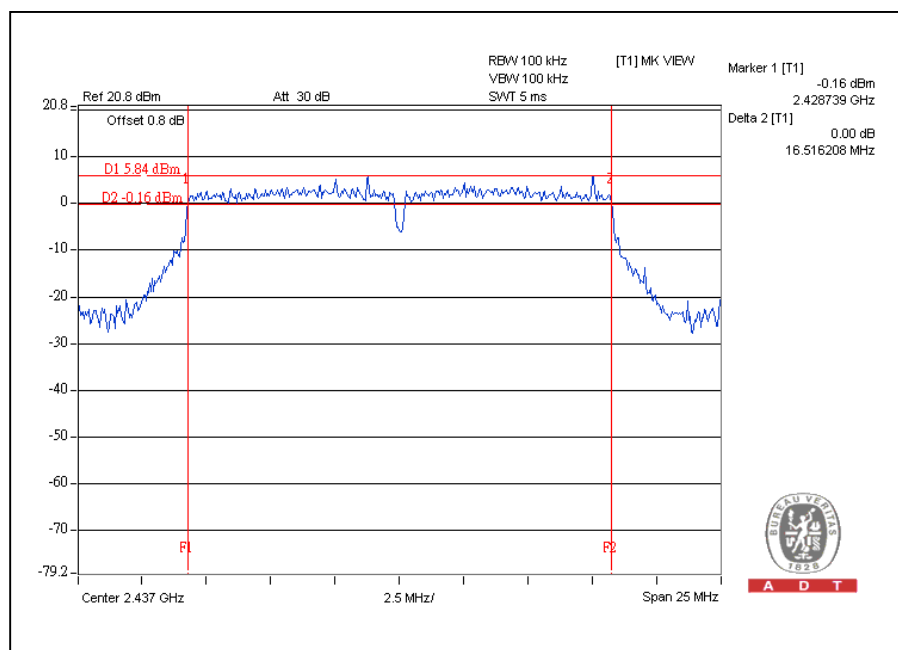
CH1



802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.44	0.5	PASS
6	2437	16.51	0.5	PASS
11	2462	16.49	0.5	PASS

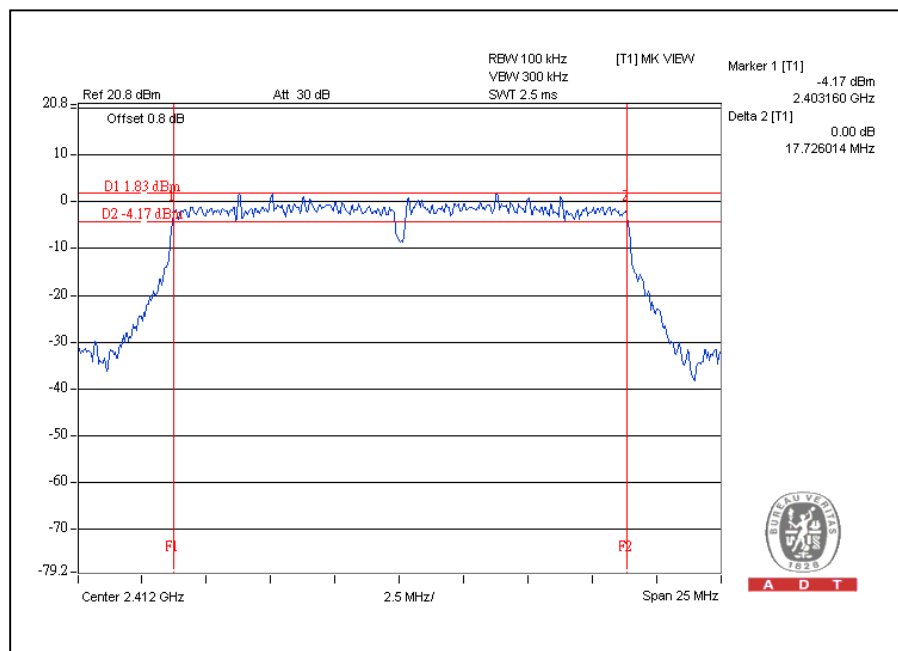
CH6



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.72	0.5	PASS
6	2437	17.65	0.5	PASS
11	2462	17.63	0.5	PASS

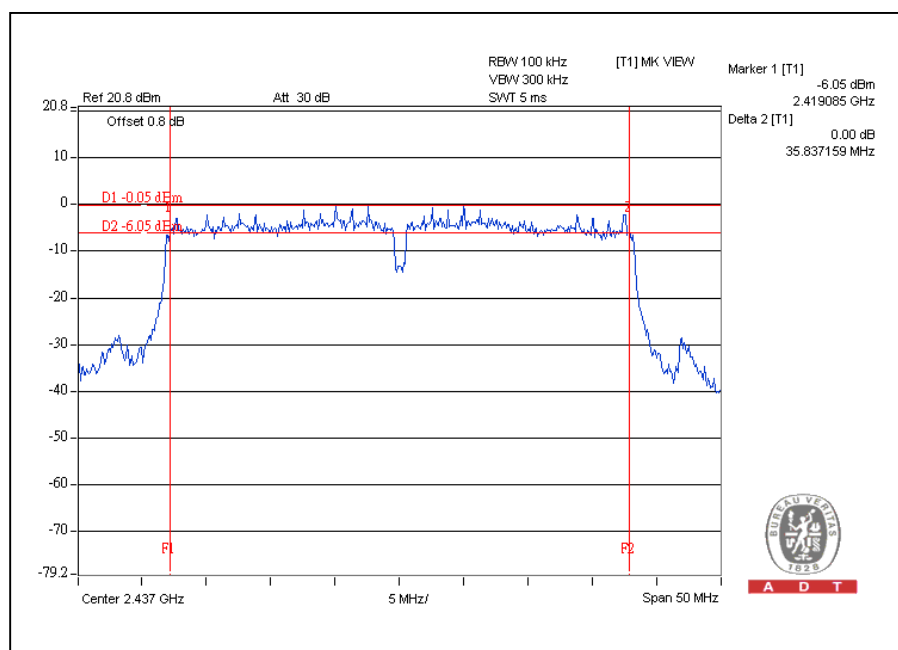
CH1



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2422	35.79	0.5	PASS
4	2437	35.84	0.5	PASS
7	2452	35.78	0.5	PASS

CH4



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.

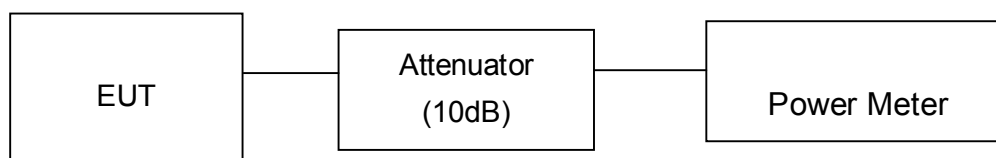
4.4.3 TEST PROCEDURES

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

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	22.2	166.0	30	PASS
6	2437	22.8	190.5	30	PASS
11	2462	23.2	208.9	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	25.0	316.2	30	PASS
6	2437	26.1	407.4	30	PASS
11	2462	25.3	338.8	30	PASS

802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	25.5	25.4	701.6	28.5	30	PASS
6	2437	26.3	26.1	834.0	29.2	30	PASS
11	2462	25.6	24.9	672.1	28.3	30	PASS

802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2422	22.6	22.3	351.8	25.5	30	PASS
4	2437	24.3	24.1	526.2	27.2	30	PASS
7	2452	23.8	23.4	458.7	26.6	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.

4.5.3 TEST PROCEDURE

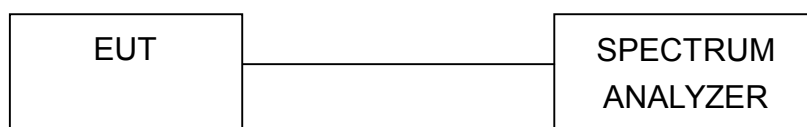
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

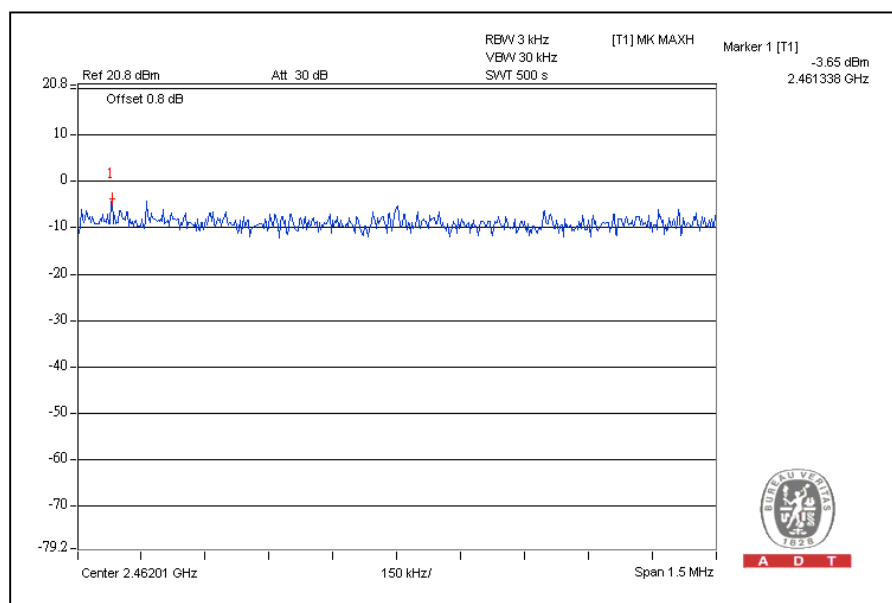
Same as Item 4.3.6

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	-6.9	8	PASS
6	2437	-4.7	8	PASS
11	2462	-3.7	8	PASS

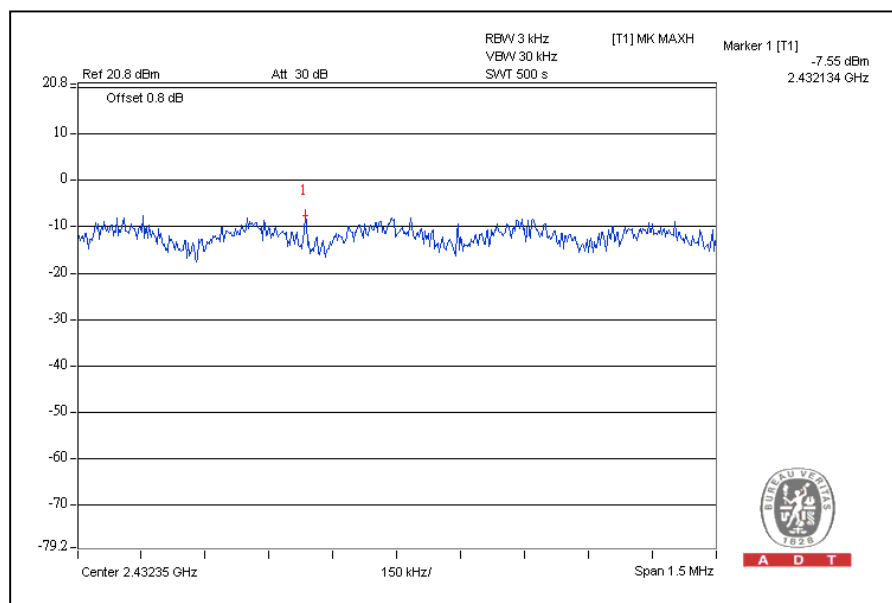
CH11



802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-10.6	8	PASS
6	2437	-7.6	8	PASS
11	2462	-9.7	8	PASS

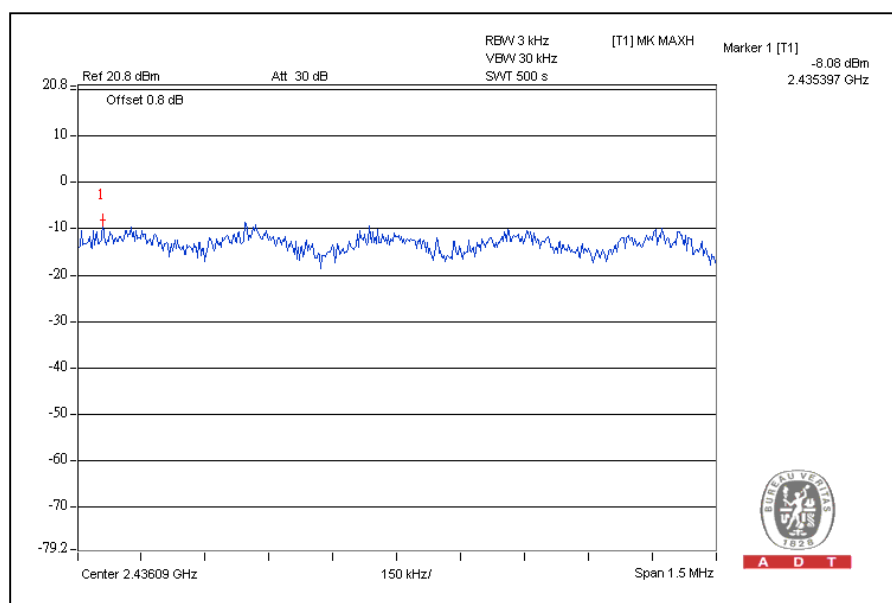
CH6



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
1	2412	-12.1	-12.0	-9.0	8	PASS
6	2437	-8.1	-8.4	-5.2	8	PASS
11	2462	-11.4	-11.4	-8.4	8	PASS

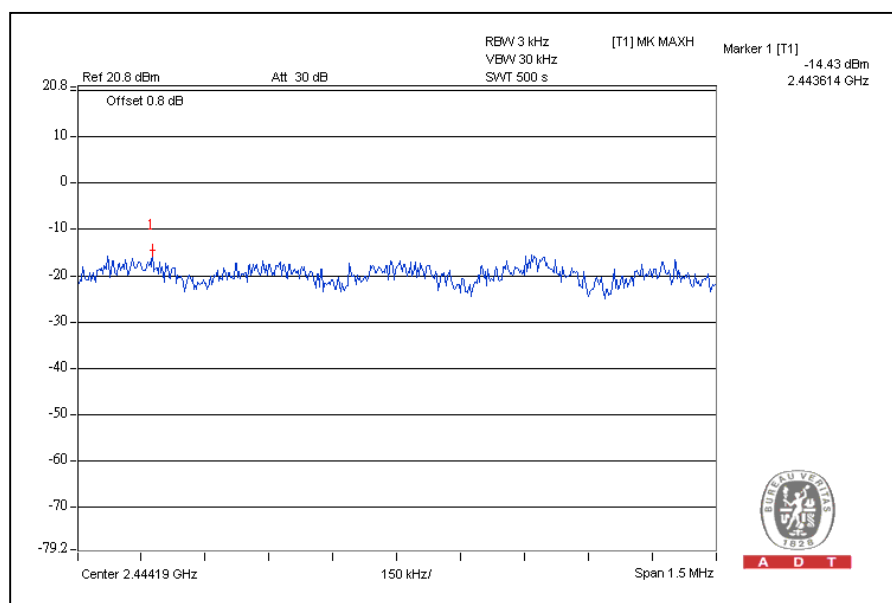
For Chain(0): CH6



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
1	2422	-16.2	-17.6	-13.8	8	PASS
4	2437	-14.4	-14.5	-11.4	8	PASS
7	2452	-15.0	-15.2	-12.1	8	PASS

For Chain (0): CH4



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
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 was 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

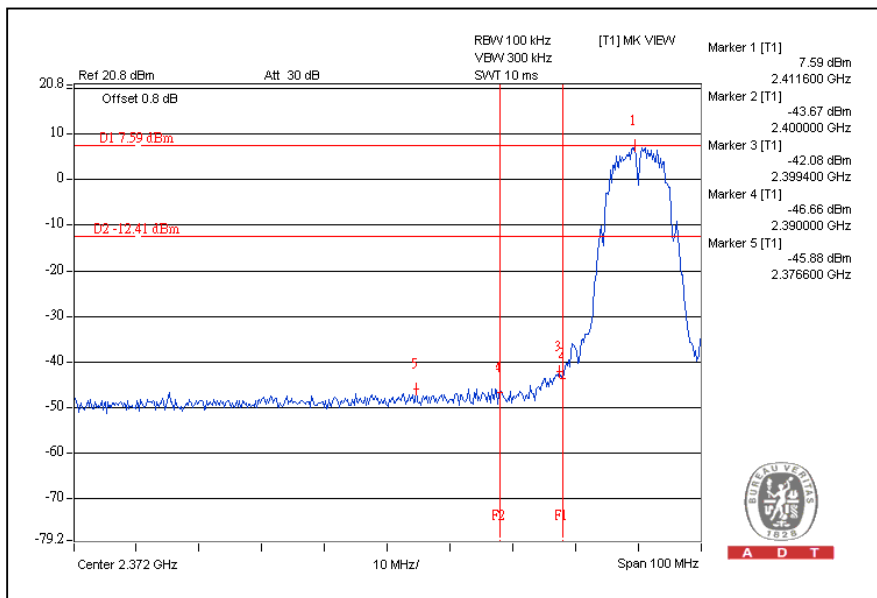
Same as Item 4.3.6

4.6.6 TEST RESULTS

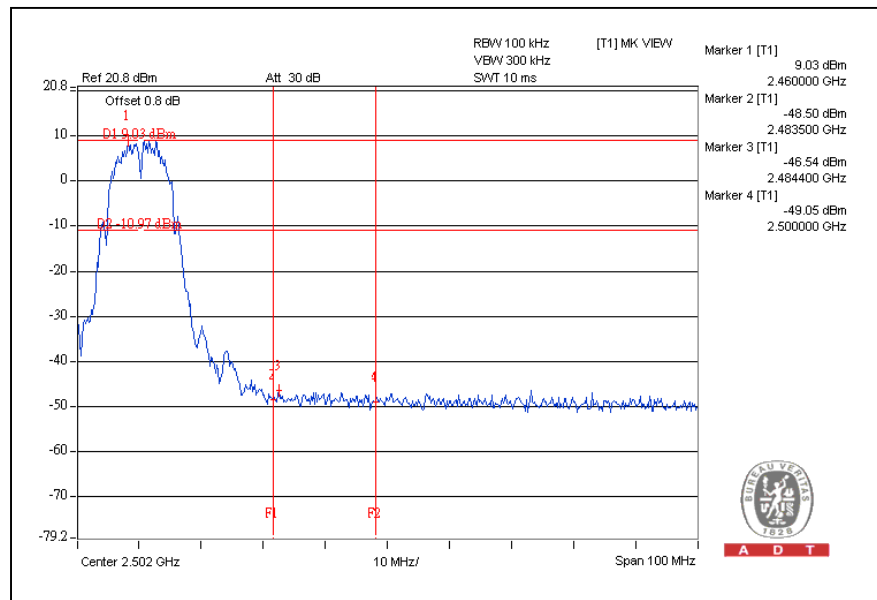
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

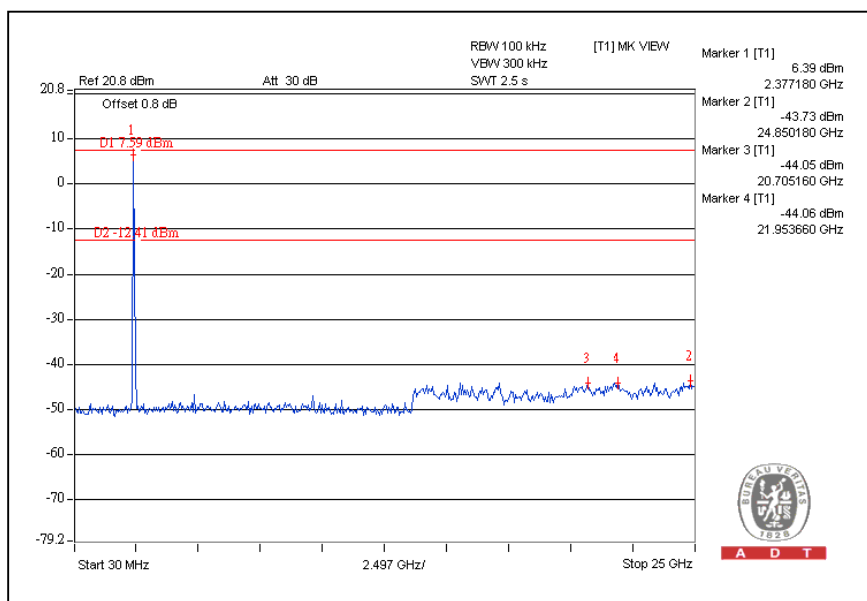
CH1



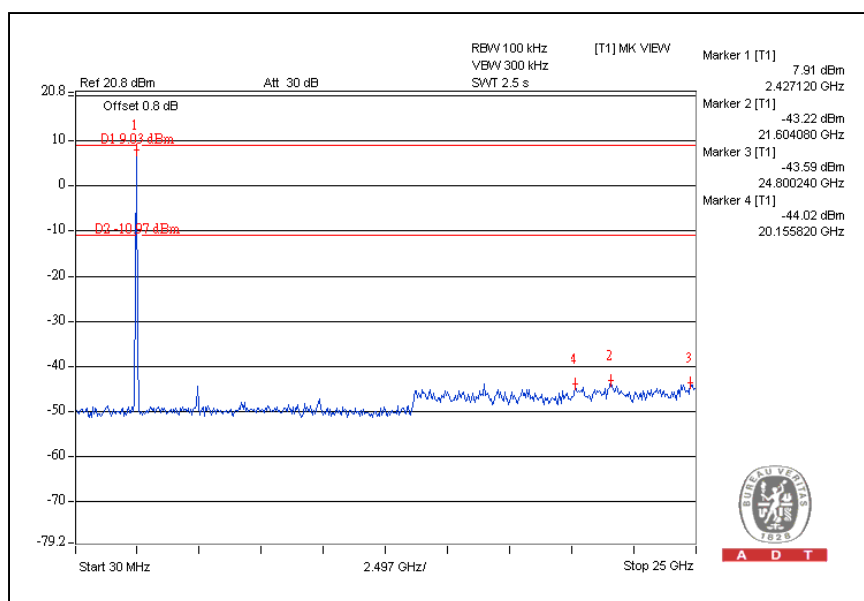
CH11



CH1

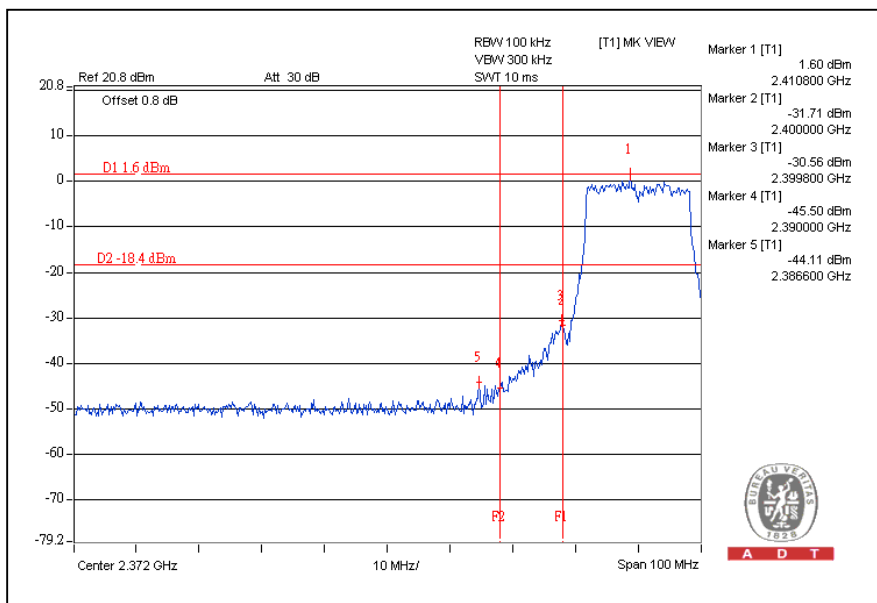


CH11

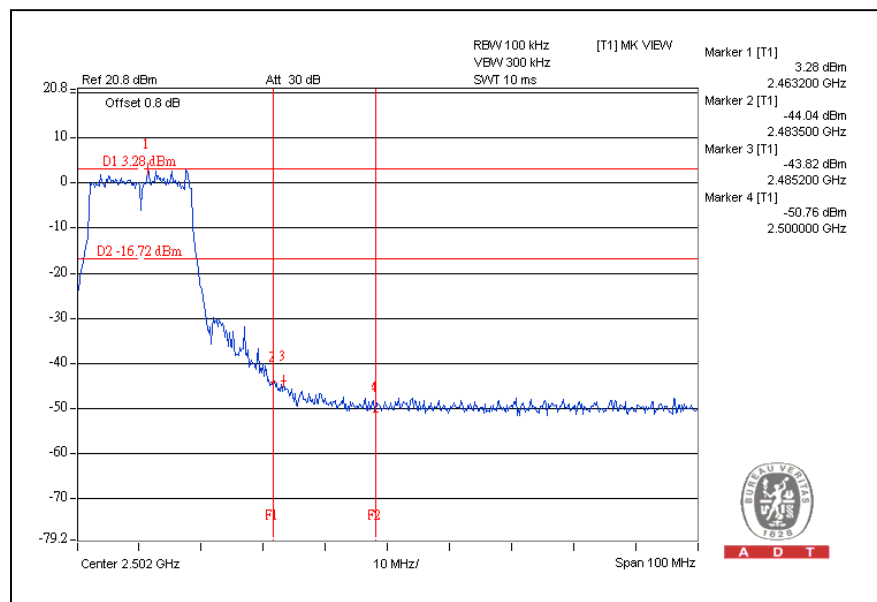


802.11g OFDM MODULATION:

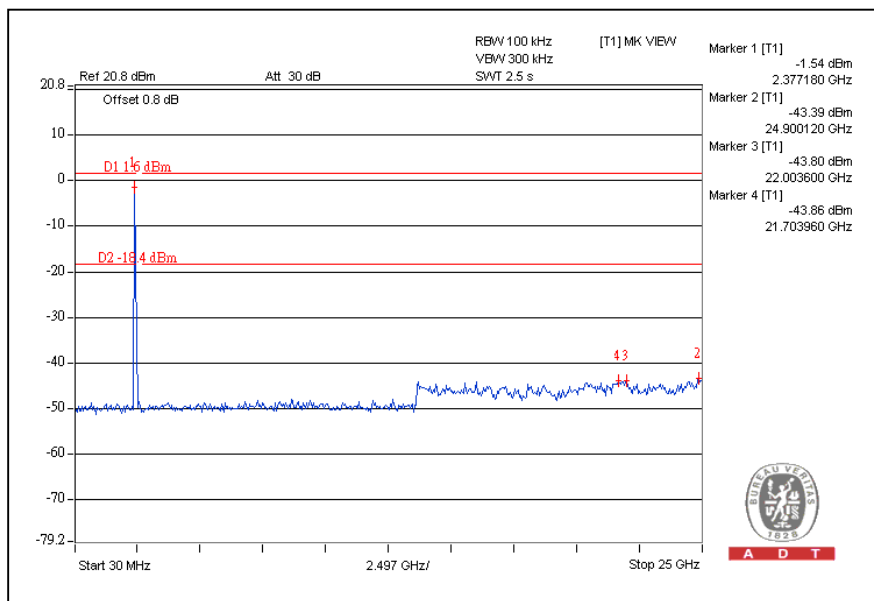
CH1



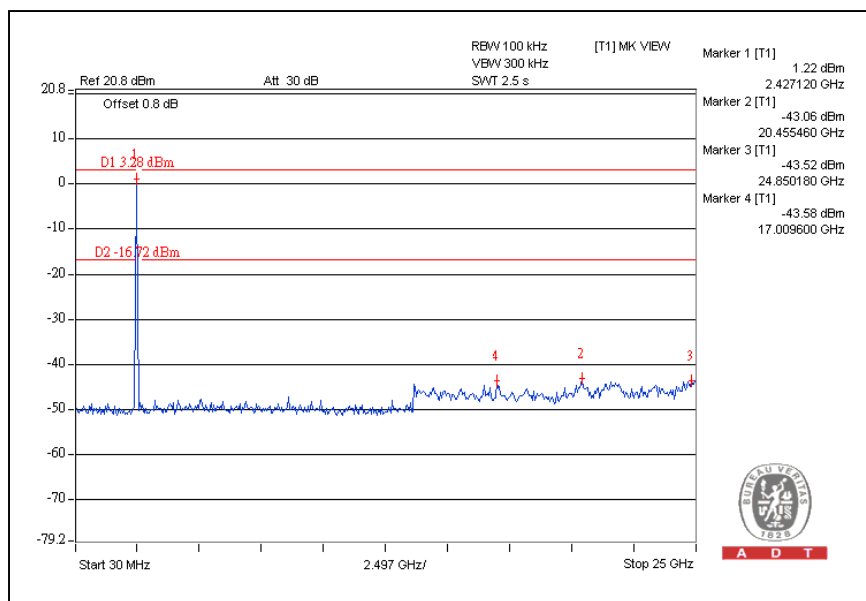
CH11



CH1

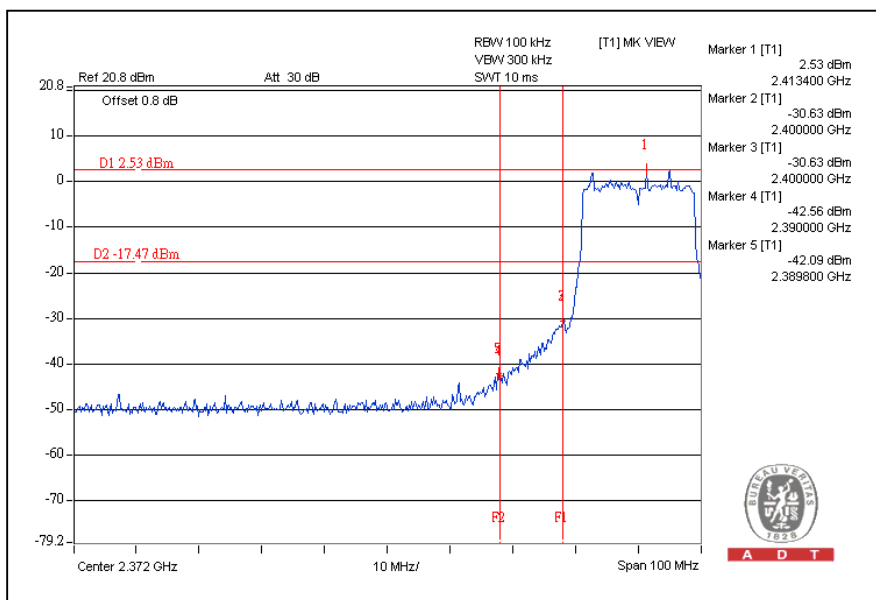


CH11

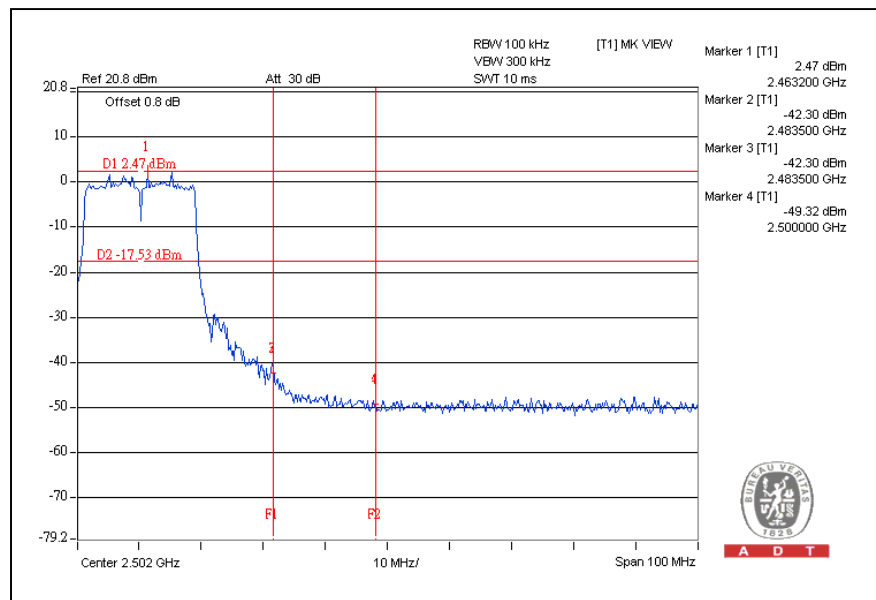


802.11n (20MHz) OFDM MODULATION:

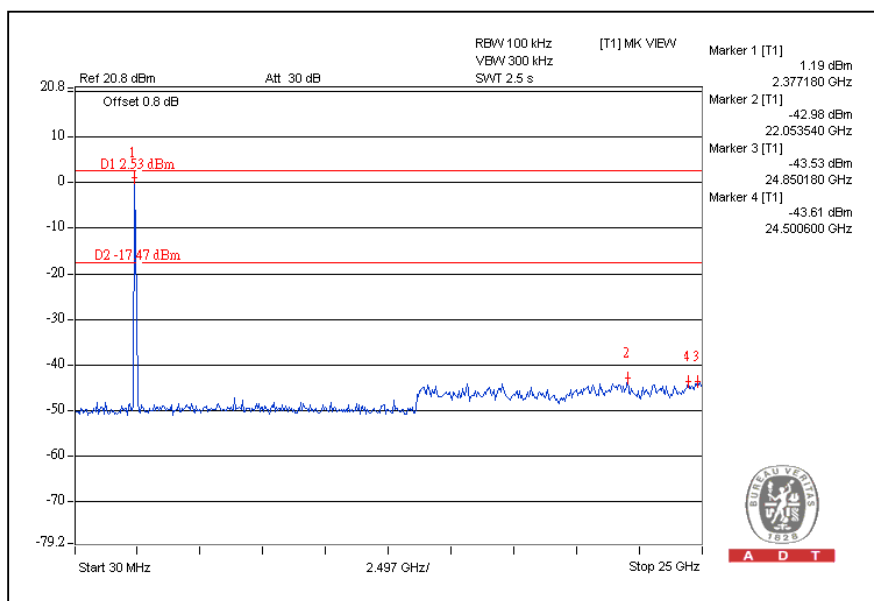
CH1



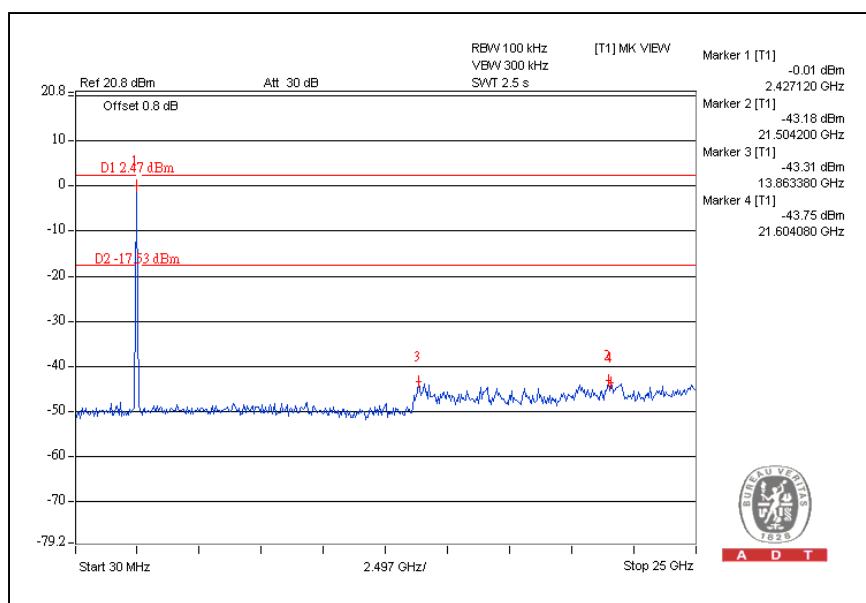
CH11



CH1

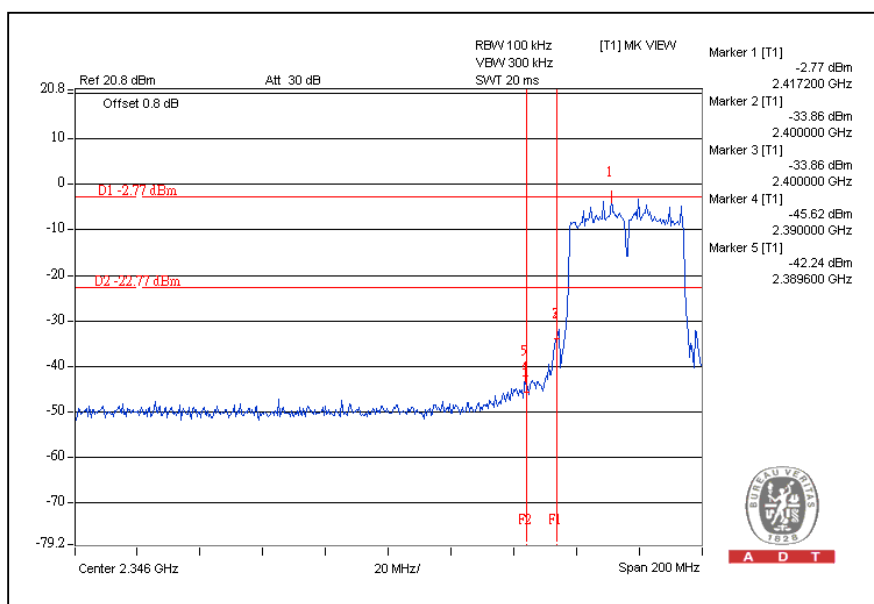


CH11

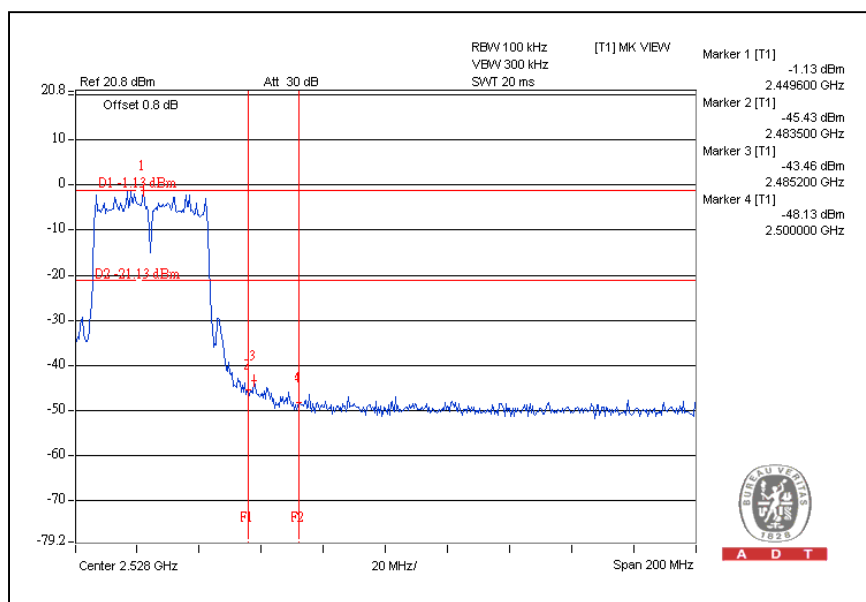


802.11n (40MHz) OFDM MODULATION:

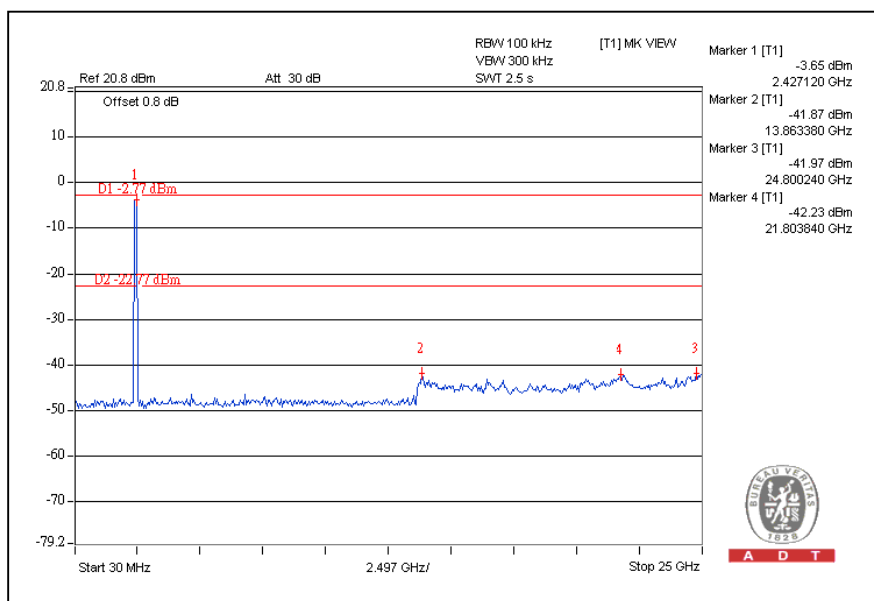
CH1



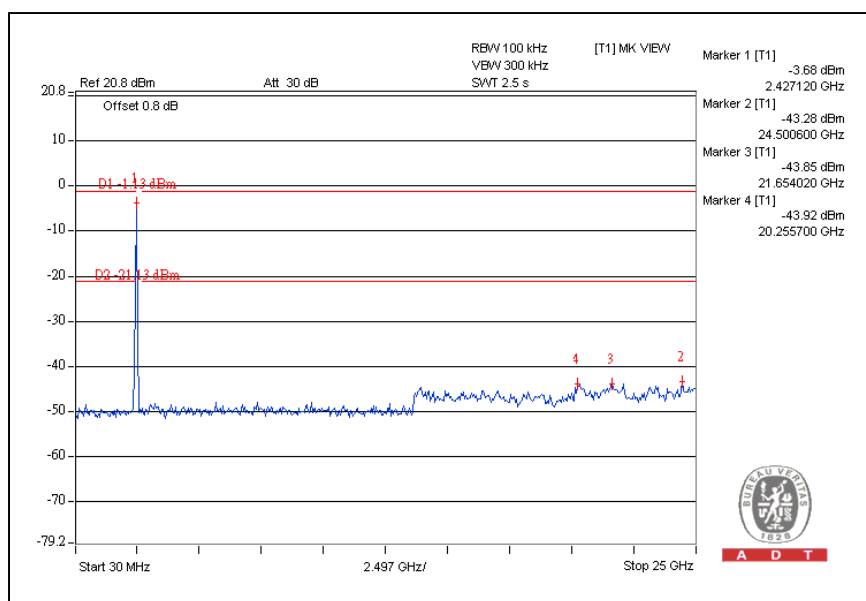
CH7



CH1



CH7



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.



A D T

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 ---