



FCC TEST REPORT

REPORT NO.: RF110927E06

MODEL NO.: DWL-3600AP, DWL-3600AP(PC)

FCC ID: KA2WL3600APA1

RECEIVED: Sep. 27, 2011

TESTED: Oct. 04 to 27, 2011

ISSUED: Dec. 01, 2011

APPLICANT: D-Link Corporation

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110927E06	Original release	Dec. 01, 2011

1. CERTIFICATION

PRODUCT: 802.11n single band Unified Access Point
BRAND NAME: D-Link
MODEL NO.: DWL-3600AP, DWL-3600AP(PC)
TEST SAMPLE: MASS-PRODUCTION
TESTED: Oct. 04 to 27, 2011
APPLICANT: D-Link Corporation
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment (Model: DWL-3600AP) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY :  , **DATE:** Dec. 01, 2011
(Claire Kuan, Specialist)

APPROVED BY :  , **DATE:** Dec. 01, 2011
(May Chen, Deputy Manager)



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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 -9.45dB at 0.201MHz
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 -0.5dB at 2483.8MHz
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	Antenna connector is IPEX not a standard connector.



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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)	4.00 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

PRODUCT	802.11n single band Unified Access Point
MODEL NO.	DWL-3600AP, DWL-3600AP(PC)
FCC ID	KA2WL3600APA1
POWER SUPPLY	DC 5V from power adapter or DC 48V from PoE
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: Up to 11Mbps 802.11g: Up to 54Mbps 802.11n (20MHz, 800ns GI): Up to 130Mbps 802.11n (20MHz, 400ns GI): Up to 144.444Mbps 802.11n (40MHz, 800ns GI): Up to 270Mbps 802.11n (40MHz, 400ns GI): Up to 300Mbps
FREQUENCY OPERATING	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 380.2mW 802.11g: 533.0mW 802.11n (20MHz): 876.7mW 802.11n (40MHz): 279.4mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	Console cable (shielded, 1.8m)
I/O PORTS	Console port x 1 LAN(POE) (10, 100, 1000Mbps) port x 1
ASSOCIATED DEVICES	Adapter x 1

NOTE:

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

Brand	Model Name	Description
D-Link	DWL-3600AP	For marketing to separate difference models
	DWL-3600AP(PC)	

From the above models, model: **DWL-3600AP** was selected as representative model for the test and its data was recorded in this report.

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

Transmitter Circuit	Manufacturer	Model No.	Antenna Type	Gain (dBi)	Antenna Connector
Chain (0)	WHA YU GROUP	C037-511129-AW1	PIFA	5.8	I-PEX
Chain (1)	WHA YU GROUP	C037-511129-AW2	PIFA	5.3	I-PEX

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

Adapter				
No	Brand	Manufacturer	Model No.	Spec.
1	D-Link	Yeou Diann	AMS3-0502500FU	Input: 100-240V, 0.5A, 50/60Hz Output: 5V, 2.5A DC output cable (unshielded, 1.5m)
2	D-Link	JENTEC	CF1505-B	Input: 100-240V, 0.4A, 50-60Hz Output: +5V, 2.5A DC output cable (unshielded, 1.5m)
POE (test only not sale together and use only with adapter No.: NU20-L480040-I1)				
Brand		Model No.		Spec.
Base-Unit		EBU-101G-T2 LF		48V
* Adapter (test only not sale together and use only with PoE)				
Brand		Model No.		Spec.
LEI		NU20-L480040-I1		Input: 100-240V, 50/60Hz, 0.4A Output: 48.0V, 0.4A DC output cable (unshielded, 1.85m with one core)

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

Pre-test	Description
Mode A	Adapter 1
Mode B	Adapter 2
Mode C	PoE

From the above modes, the worst radiated emission was found in **Mode B**. Therefore only the test data of the modes were recorded in this report.

5. The EUT incorporates CDD function with 802.11g.

6. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function.

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

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



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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
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

Where **PLC**: Power Line Conducted Emission **RE < 1G**: Radiated Emission below 1GHz
RE ≥ 1G: Radiated Emission above 1GHz **APCM**: Antenna Port Conducted Measurement
OB: Conducted Out-Band Emission 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	802.11n (20MHz)	√	√
E	802.11n (40MHz)	√	√

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, D, E the worst modes, was 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)	COMBINATION MODE
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	6.5	D



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)	COMBINATION MODE
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	6.5	D

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)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	C
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	D
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	E

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)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	C
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	D
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	E



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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)	COMBINATION MODE
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	C
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	D
802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	13.5	E

※ TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 57%RH,	120Vac, 60Hz	Eagle Chen
RE ³ 1G	23deg. C, 66%RH	120Vac, 60Hz	Nick Chang
RE<1G	25deg. C, 60%RH	120Vac, 60Hz	Kent Liu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu
OB	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. (15.247)

ANSI C63.4-2003

ANSI C63.10-2009

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

NOTE: The EUT 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.

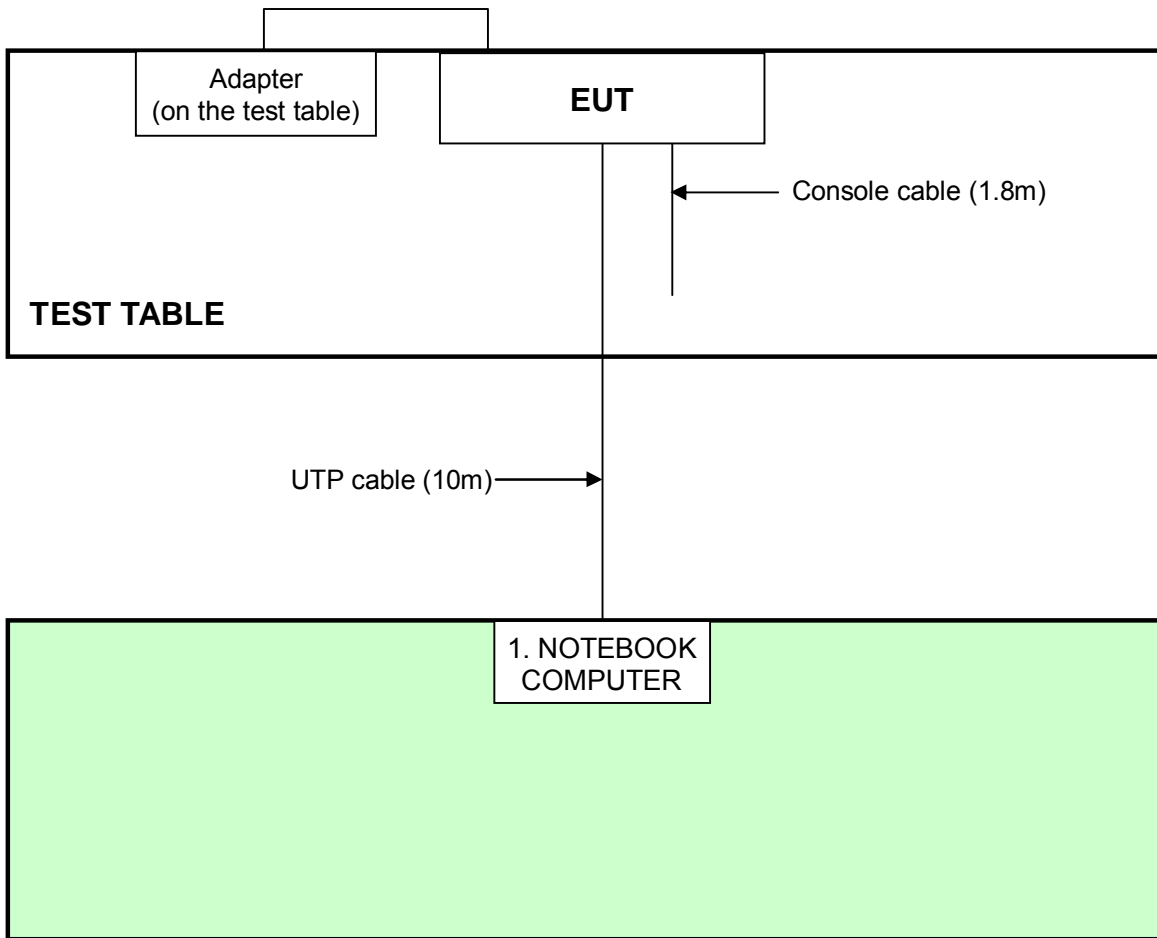
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC

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

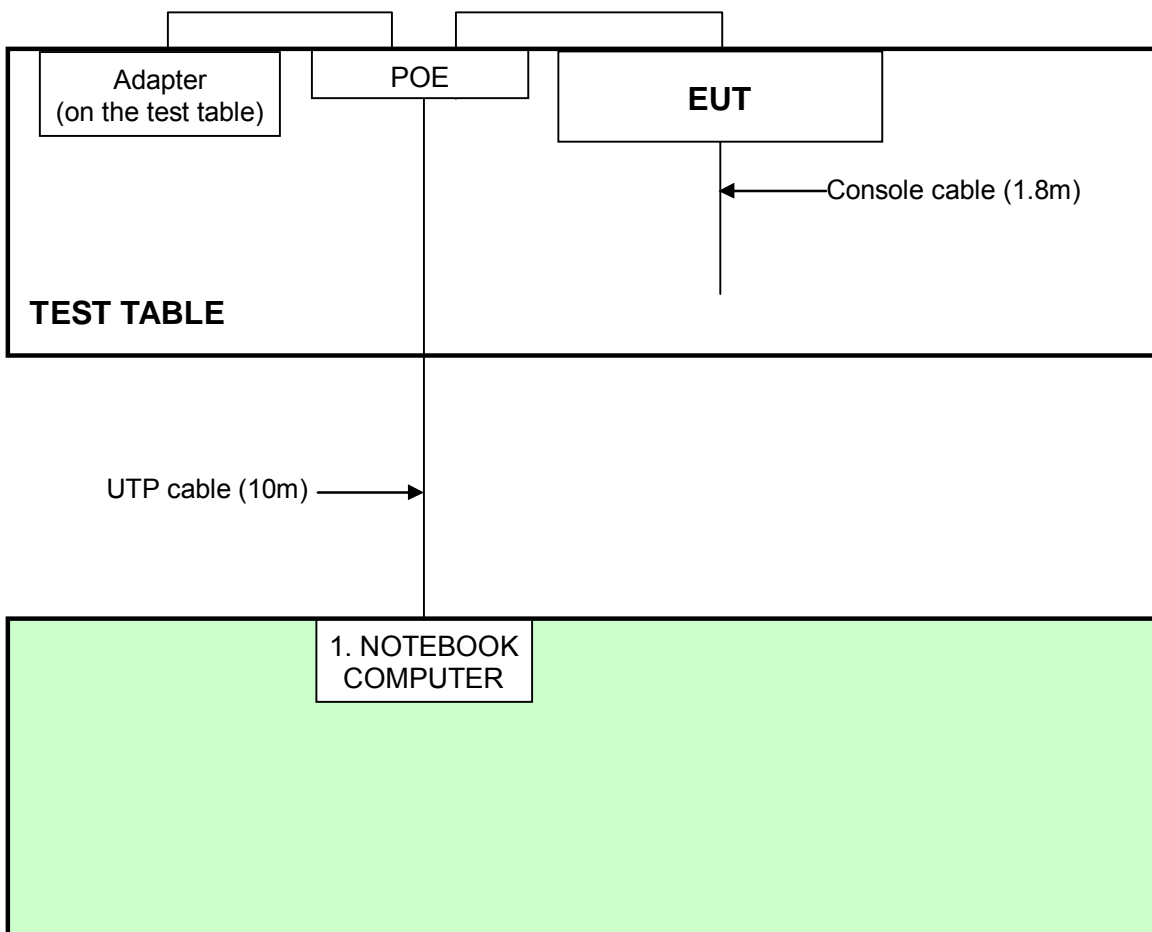
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted test mode 1~2 and other test items:



For Conducted test mode 3:





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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 (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

Test date: Oct. 04, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 02, 2011	Mar. 01, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 10, 2011	June 09, 2012
RF Cable (JYEBAO)	5DFB	CONCAB-003	Aug. 05, 2011	Aug. 04, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
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.

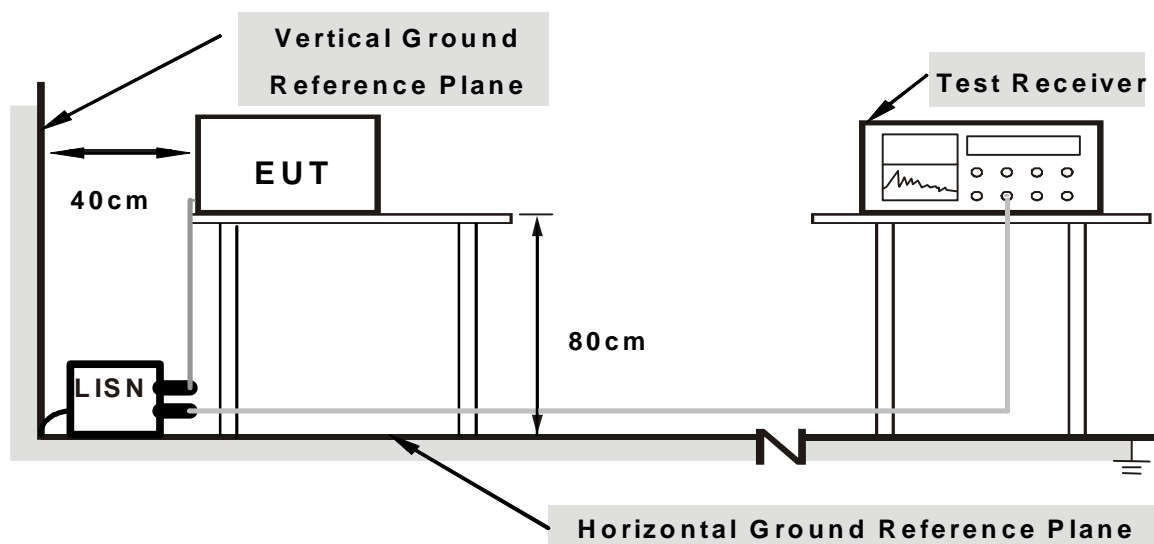
4.1.3 TEST PROCEDURES

- 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

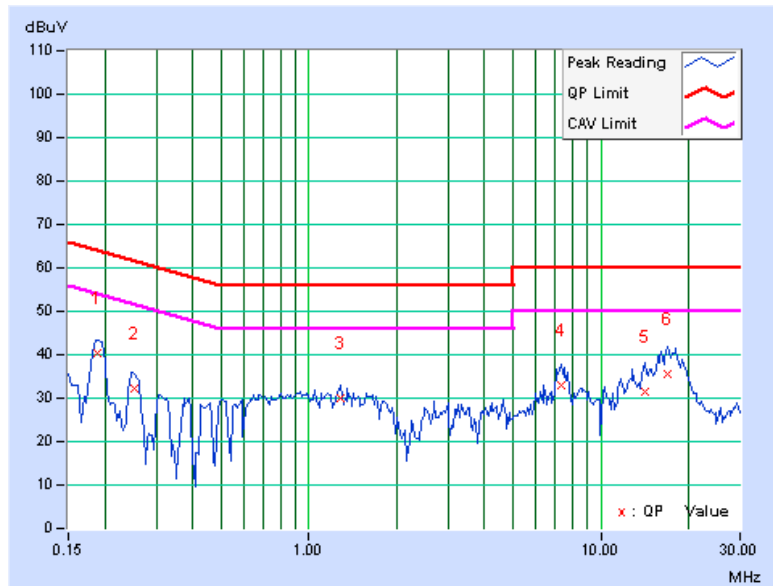
1. Placed the EUT on testing table.
2. Prepared other computer systems (support unit 1) to act as communication partners and placed them outside of testing area.
3. The communication partners ran test program “Duck1.1.8.exe” to enable EUT under transmission/receiving condition continuously via UTP cable transmission.

4.1.7 TEST RESULTS (With adapter 1)

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	0.189	0.06	40.47	29.79	40.53	29.85	64.08
2	0.252	0.07	32.18	24.06	32.25	24.13	61.71	51.71	-29.46	-27.58
3	1.289	0.13	29.72	20.76	29.85	20.89	56.00	46.00	-26.15	-25.11
4	7.305	0.45	32.46	23.53	32.91	23.98	60.00	50.00	-27.09	-26.02
5	14.184	0.78	30.71	23.25	31.49	24.03	60.00	50.00	-28.51	-25.97
6	16.902	0.89	34.56	28.19	35.45	29.08	60.00	50.00	-24.55	-20.92

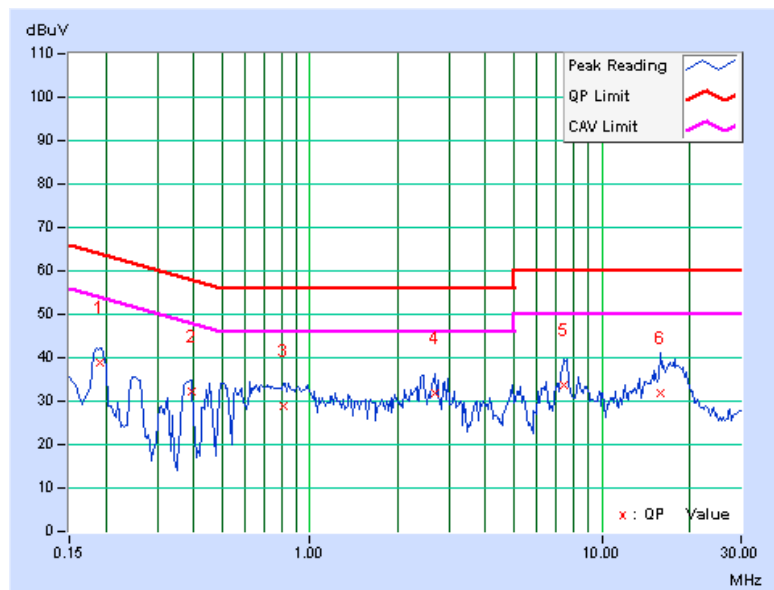
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.192	0.08	38.67	32.25	38.75	32.33	63.97	53.97	-25.22	-21.64
2	0.392	0.09	32.28	21.16	32.37	21.25	58.02	48.02	-25.65	-26.77
3	0.810	0.10	28.83	19.64	28.93	19.74	56.00	46.00	-27.07	-26.26
4	2.691	0.24	31.76	19.22	32.00	19.46	56.00	46.00	-24.00	-26.54
5	7.426	0.45	33.14	24.08	33.59	24.53	60.00	50.00	-26.41	-25.47
6	15.820	0.84	31.19	24.63	32.03	25.47	60.00	50.00	-27.97	-24.53

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

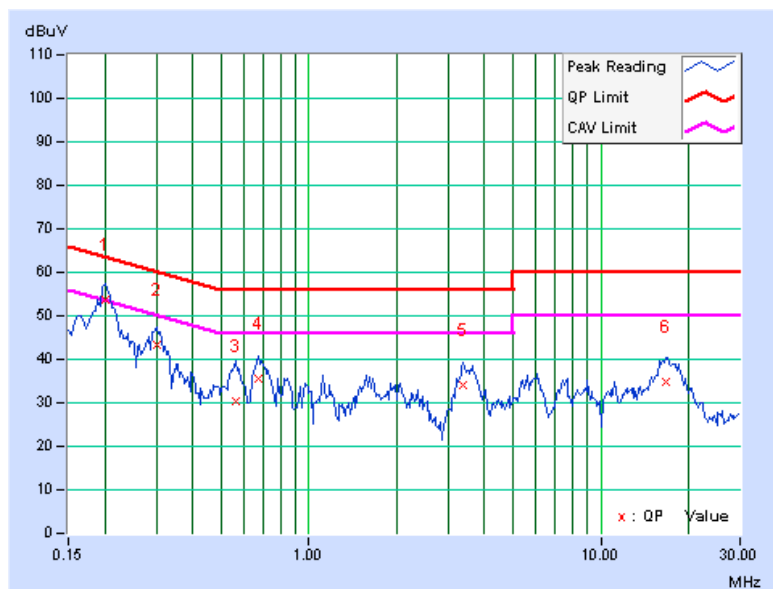


4.1.8 TEST RESULTS (With adapter 2)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.06	53.81	44.07	53.87	44.13	63.58	53.58	-9.71	-9.45
2	0.302	0.07	43.22	33.76	43.29	33.83	60.18	50.18	-16.89	-16.35
3	0.564	0.09	30.25	24.59	30.34	24.68	56.00	46.00	-25.66	-21.32
4	0.673	0.09	35.33	29.19	35.42	29.28	56.00	46.00	-20.58	-16.72
5	3.379	0.27	33.85	28.36	34.12	28.63	56.00	46.00	-21.88	-17.37
6	16.703	0.88	34.08	28.52	34.96	29.40	60.00	50.00	-25.04	-20.60

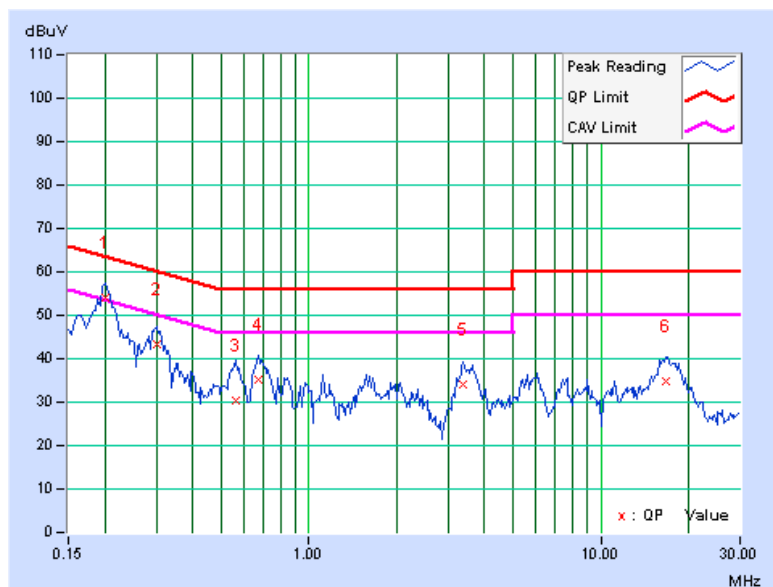
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	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	0.201	0.08	53.86	44.05	53.94	44.13	63.58	53.58	-9.64	-9.45
2	0.302	0.09	43.25	33.83	43.34	33.92	60.18	50.18	-16.84	-16.26
3	0.564	0.10	30.25	24.59	30.35	24.69	56.00	46.00	-25.65	-21.31
4	0.673	0.10	35.17	29.06	35.27	29.16	56.00	46.00	-20.73	-16.84
5	3.379	0.28	33.81	28.25	34.09	28.53	56.00	46.00	-21.91	-17.47
6	16.703	0.88	34.11	28.53	34.99	29.41	60.00	50.00	-25.01	-20.59

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

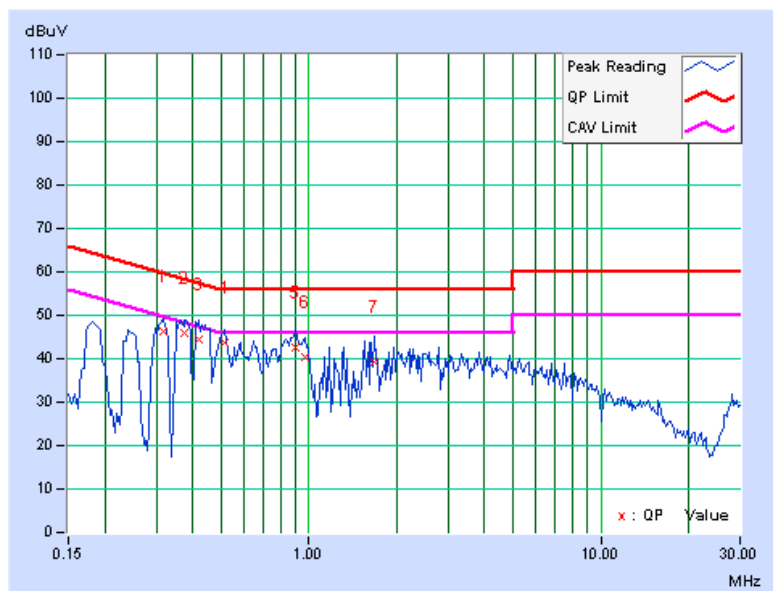


4.1.9 TEST RESULTS (With PoE)

PHASE	Line (L)	6dB BANDWIDTH	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	0.318	0.07	46.19	35.18	46.26	35.25	59.76	49.76	-13.50	-14.51
2	0.377	0.07	45.79	34.92	45.86	34.99	58.36	48.36	-12.50	-13.37
3	0.420	0.07	44.36	31.25	44.43	31.32	57.46	47.46	-13.03	-16.14
4	0.517	0.07	43.53	28.17	43.60	28.24	56.00	46.00	-12.40	-17.76
5	0.904	0.09	42.62	28.76	42.71	28.85	56.00	46.00	-13.29	-17.15
6	0.970	0.09	40.16	25.14	40.25	25.23	56.00	46.00	-15.75	-20.77
7	1.680	0.14	39.21	24.38	39.35	24.52	56.00	46.00	-16.65	-21.48

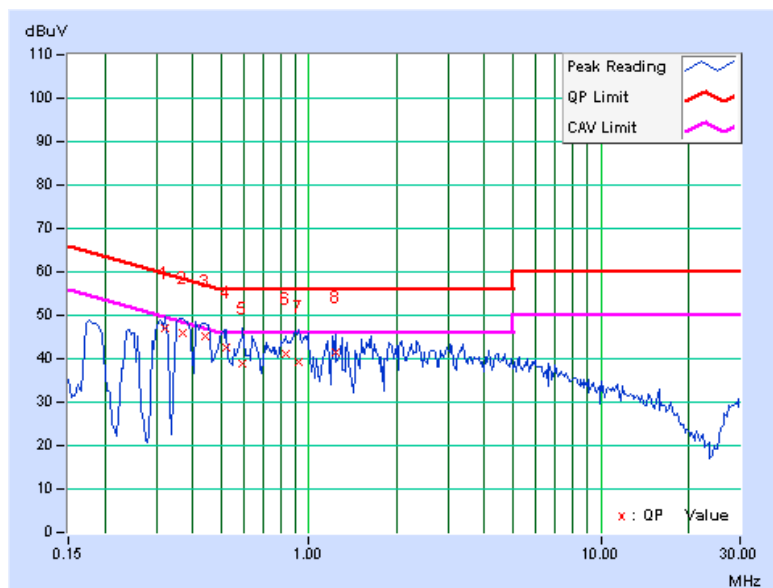
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	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	0.322	0.08	46.86	34.02	46.94	34.10	59.66
2	0.369	0.08	45.79	34.26	45.87	34.34	58.53	48.53	-12.66	-14.19
3	0.443	0.08	45.23	33.05	45.31	33.13	57.01	47.01	-11.69	-13.87
4	0.521	0.08	42.53	23.81	42.61	23.89	56.00	46.00	-13.39	-22.11
5	0.595	0.08	38.76	22.83	38.84	22.91	56.00	46.00	-17.16	-23.09
6	0.838	0.09	41.19	27.17	41.28	27.26	56.00	46.00	-14.72	-18.74
7	0.923	0.09	39.25	21.34	39.34	21.43	56.00	46.00	-16.66	-24.57
8	1.230	0.11	41.28	26.37	41.39	26.48	56.00	46.00	-14.61	-19.52

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.



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4.2.2 TEST INSTRUMENTS

Test date: Oct. 12 to 27, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2010	Nov. 29 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 02, 2011	Sep. 01, 2012
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 14, 2011	Apr. 13, 2012
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2010	Dec. 16, 2011
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2011	Jan. 16, 2012
RF Switches	EMH-011	1001	Sep. 24, 2011	Sep. 23, 2012
RF CABLE (Chaintek)	Sucoflex 106	RF106-102	Jan. 27, 2011	Jan. 26, 2012
RF Cable	8DFB	STCCAB-30M-1GHz	Sep. 24, 2011	Sep. 23, 2012
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.



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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 open field site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

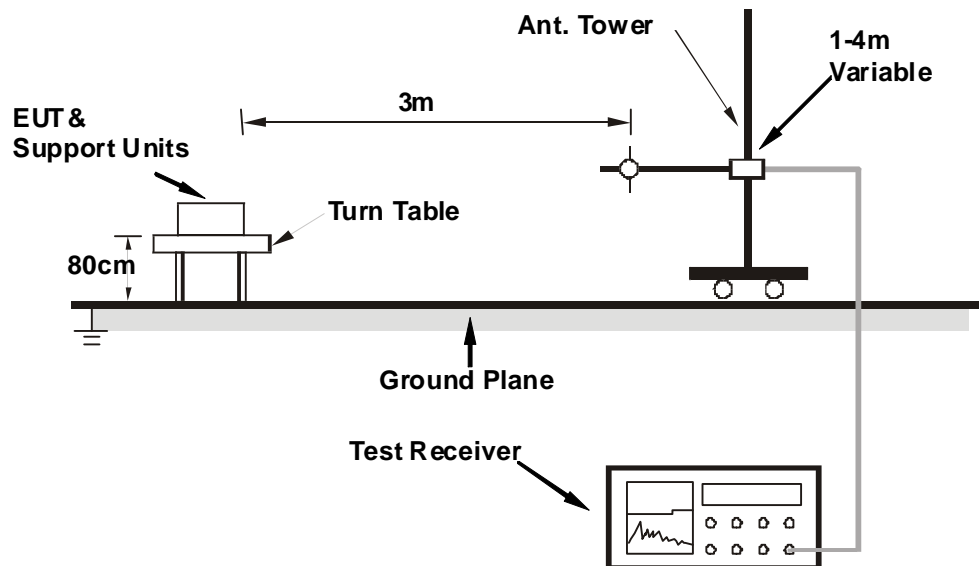
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz 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 4.1.6



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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	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH	TESTED BY	Nick Chang

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	40.44	23.9 QP	40.0	-16.1	2.00 H	292	10.18	13.72
2	125.00	31.6 QP	43.5	-11.9	1.65 H	84	18.64	12.96
3	150.00	24.4 QP	43.5	-19.1	2.00 H	109	9.31	15.09
4	375.00	40.0 QP	46.0	-6.0	1.00 H	75	21.45	18.51
5	500.00	34.6 QP	46.0	-11.4	1.66 H	348	12.51	22.06
6	625.00	40.7 QP	46.0	-5.3	1.30 H	47	14.74	25.98
7	750.00	39.4 QP	46.0	-6.6	1.00 H	37	11.90	27.46
8	875.00	38.4 QP	46.0	-7.6	1.00 H	213	9.13	29.26
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.44	34.4 QP	40.0	-5.6	1.45 V	3	20.70	13.72
2	159.76	24.2 QP	43.5	-19.3	1.35 V	70	8.84	15.32
3	197.00	24.0 QP	43.5	-19.5	1.37 V	311	11.81	12.22
4	229.59	27.1 QP	46.0	-18.9	1.23 V	253	13.68	13.38
5	250.00	29.1 QP	46.0	-16.9	1.12 V	198	14.78	14.31
6	374.99	34.3 QP	46.0	-11.7	1.03 V	126	15.77	18.51
7	499.96	30.8 QP	46.0	-15.2	1.01 V	121	8.74	22.06
8	625.00	38.5 QP	46.0	-7.5	1.00 V	223	12.51	25.98

- 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	23deg. C, 66%RH	TESTED BY	Nick Chang

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	61.9 PK	74.0	-12.1	1.96 H	9	30.58	31.32
2	2390.00	52.4 AV	54.0	-1.6	1.96 H	9	21.08	31.32
3	*2412.00	112.0 PK			1.54 H	10	80.61	31.39
4	*2412.00	109.4 AV			1.54 H	10	78.01	31.39
5	4824.00	48.9 PK	74.0	-25.1	1.56 H	296	12.73	36.17
6	4824.00	44.5 AV	54.0	-9.5	1.56 H	296	8.33	36.17

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	63.1 PK	74.0	-10.9	1.00 V	255	31.78	31.32
2	2390.00	53.4 AV	54.0	-0.6	1.00 V	255	22.08	31.32
3	*2412.00	115.1 PK			1.00 V	255	83.71	31.39
4	*2412.00	112.4 AV			1.00 V	255	81.01	31.39
5	4824.00	48.4 PK	74.0	-25.6	1.83 V	164	12.23	36.17
6	4824.00	44.5 AV	54.0	-9.5	1.83 V	164	8.33	36.17

- 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	23deg. C, 66%RH	TESTED BY	Nick Chang

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	113.6 PK			1.59 H	23	82.11	31.49
2	*2437.00	110.7 AV			1.59 H	23	79.21	31.49
3	4874.00	48.9 PK	74.0	-25.1	1.53 H	304	12.59	36.31
4	4874.00	44.6 AV	54.0	-9.4	1.53 H	304	8.29	36.31
5	7311.00	49.6 PK	74.0	-24.4	1.41 H	164	7.37	42.23
6	7311.00	39.4 AV	54.0	-14.6	1.41 H	164	-2.83	42.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	116.4 PK			1.00 V	254	84.91	31.49
2	*2437.00	113.5 AV			1.00 V	254	82.01	31.49
3	4874.00	48.4 PK	74.0	-25.6	1.82 V	156	12.09	36.31
4	4874.00	44.6 AV	54.0	-9.4	1.82 V	156	8.29	36.31
5	7311.00	50.6 PK	74.0	-23.4	1.18 V	244	8.37	42.23
6	7311.00	41.4 AV	54.0	-12.6	1.18 V	244	-0.83	42.23

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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	23deg. C, 66%RH	TESTED BY	Nick Chang

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	110.0 PK			1.51 H	23	78.42	31.58
2	*2462.00	107.6 AV			1.51 H	23	76.02	31.58
3	2483.50	60.3 PK	74.0	-13.7	1.20 H	315	28.64	31.66
4	2483.50	50.7 AV	54.0	-3.3	1.20 H	315	19.04	31.66
5	4924.00	49.4 PK	74.0	-24.6	1.57 H	289	12.98	36.42
6	4924.00	44.9 AV	54.0	-9.1	1.57 H	289	8.48	36.42
7	7386.00	49.5 PK	74.0	-24.5	1.42 H	180	6.98	42.52
8	7386.00	39.5 AV	54.0	-14.5	1.42 H	180	-3.02	42.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

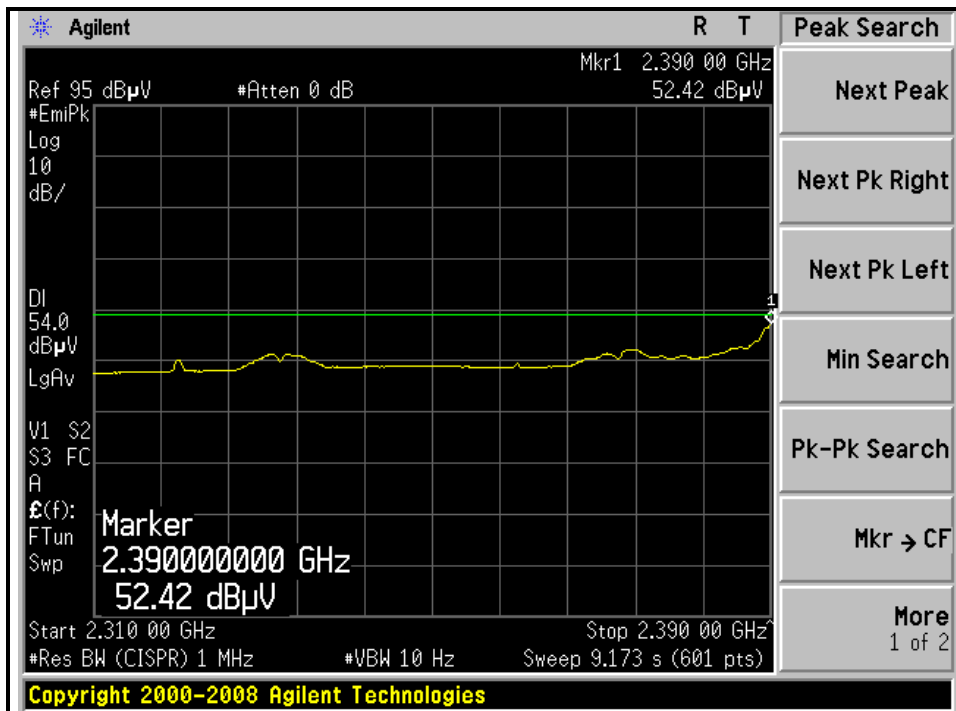
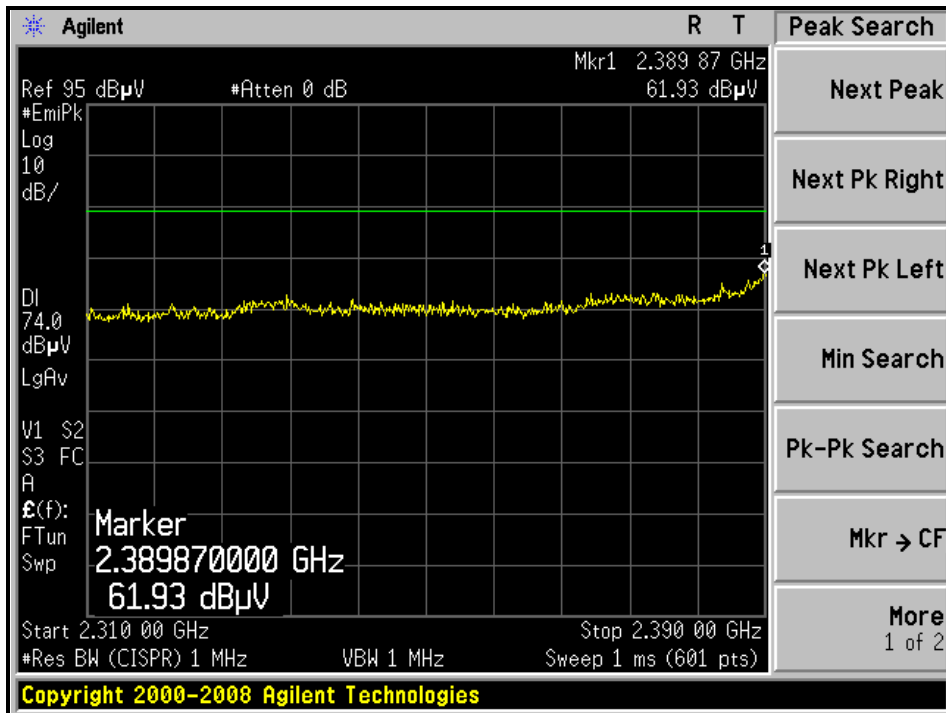
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.3 PK			1.00 V	325	80.72	31.58
2	*2462.00	109.5 AV			1.00 V	325	77.92	31.58
3	2483.50	64.1 PK	74.0	-9.9	1.00 V	327	32.44	31.66
4	2483.50	53.0 AV	54.0	-1.0	1.00 V	327	21.34	31.66
5	4924.00	48.2 PK	74.0	-25.8	1.85 V	170	11.78	36.42
6	4924.00	44.2 AV	54.0	-9.8	1.85 V	170	7.78	36.42
7	7386.00	50.5 PK	74.0	-23.5	1.16 V	258	7.98	42.52
8	7386.00	41.5 AV	54.0	-12.5	1.16 V	258	-1.02	42.52

- 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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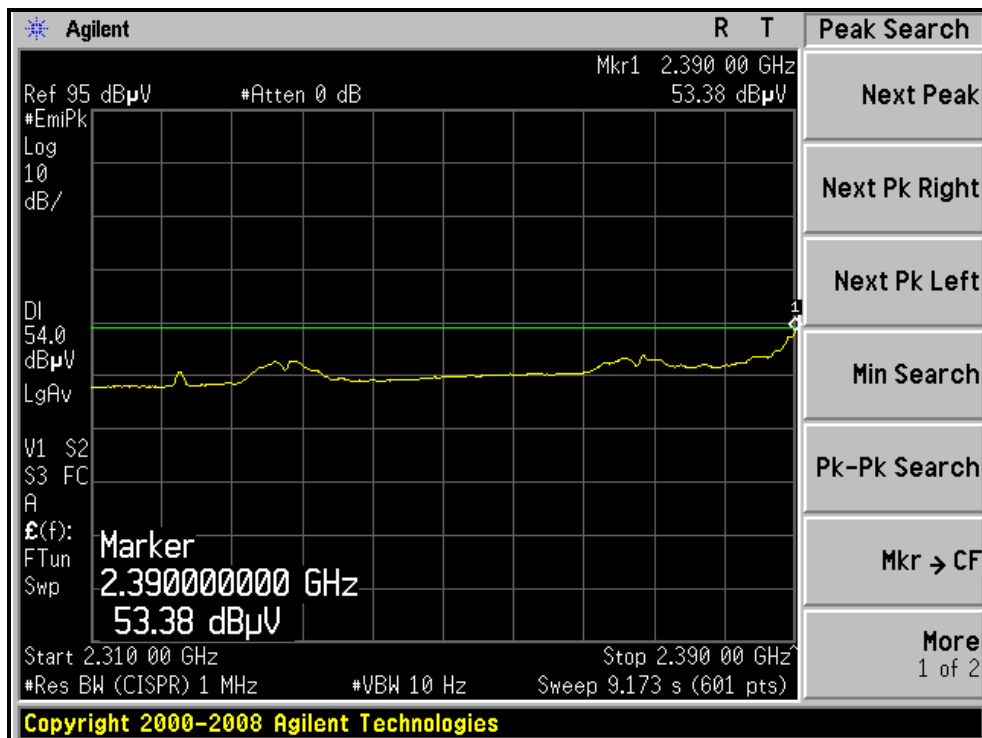
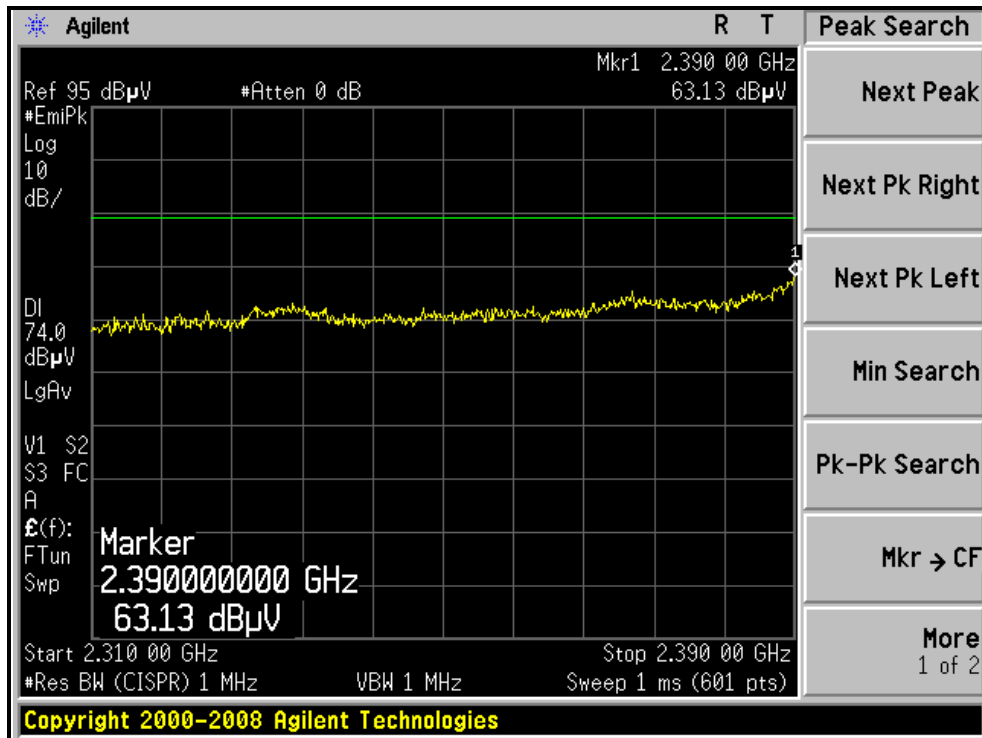
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)



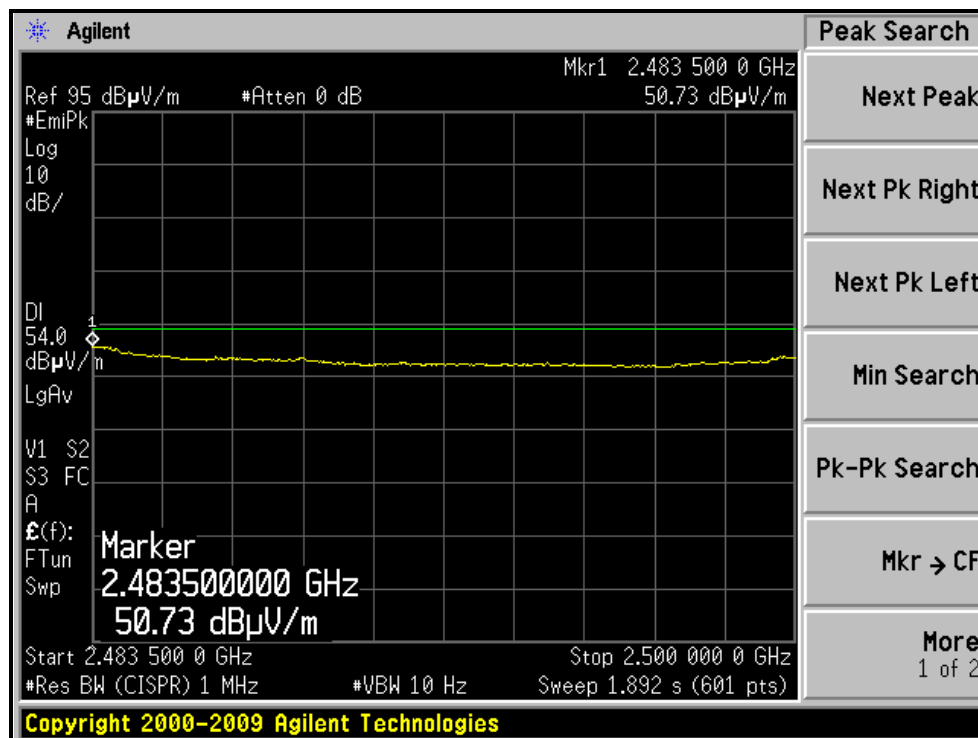
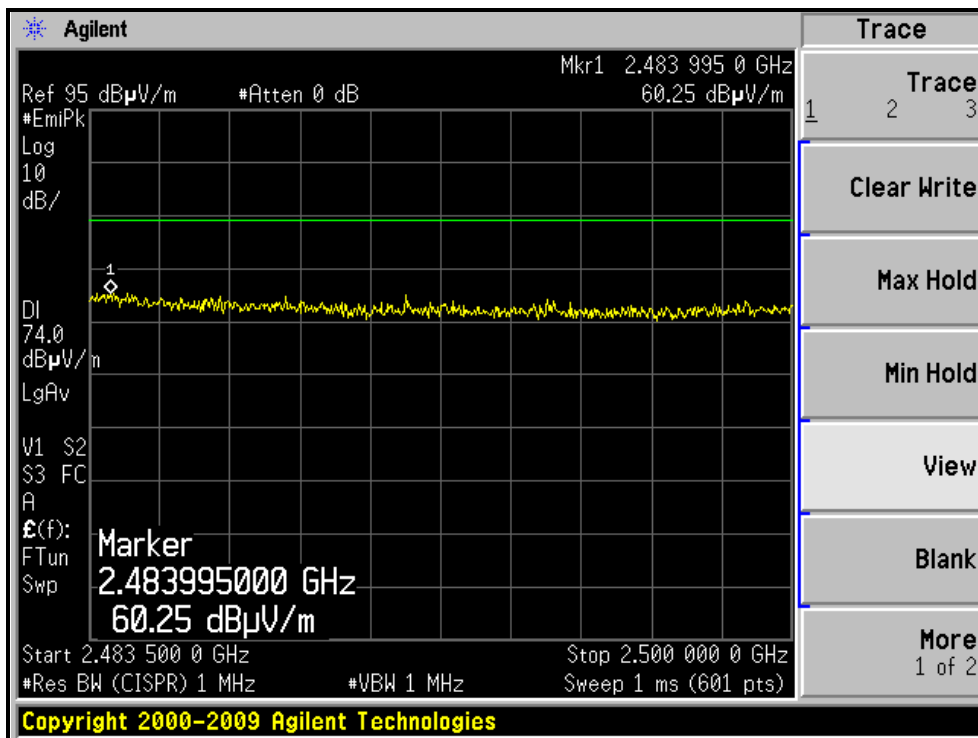


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RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)



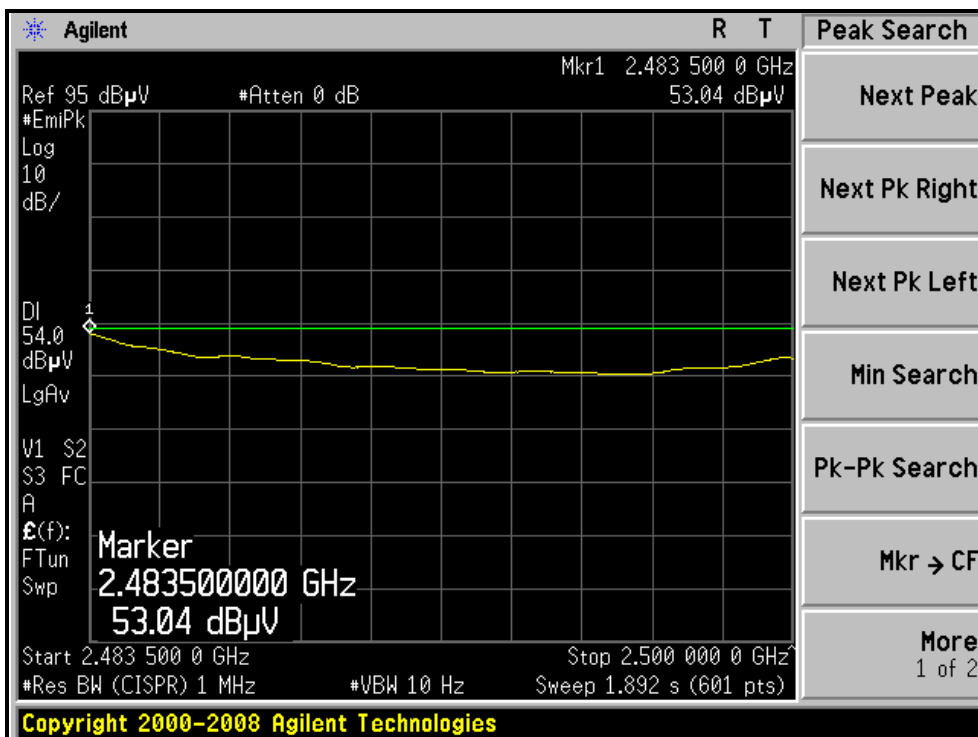
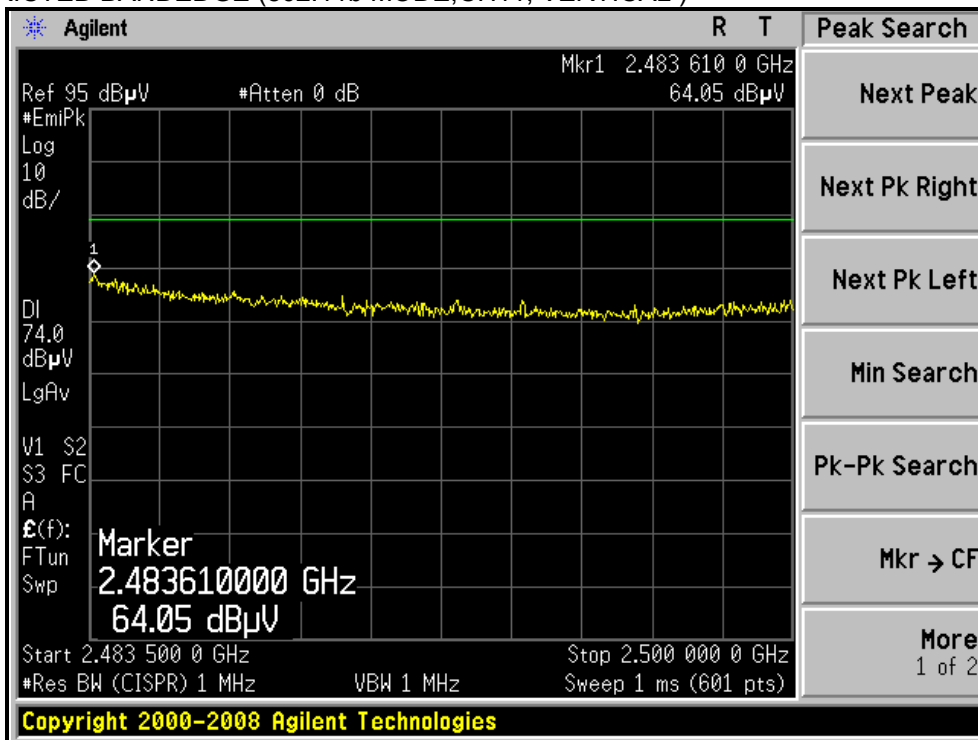
RESTRICTED BANDEDGE (802.11b MODE, CH11, HORIZONTAL)





A D T

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	23deg. C, 66%RH	TESTED BY	Nick Chang

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	70.3 PK	74.0	-3.7	1.54 H	26	38.98	31.32
2	2390.00	52.6 AV	54.0	-1.4	1.54 H	26	21.28	31.32
3	*2412.00	109.4 PK			1.54 H	26	78.01	31.39
4	*2412.00	97.3 AV			1.54 H	26	65.91	31.39
5	4824.00	45.5 PK	74.0	-28.5	1.82 H	160	9.33	36.17
6	4824.00	36.4 AV	54.0	-17.6	1.82 H	160	0.23	36.17
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.5 PK	74.0	-5.5	1.68 V	221	37.18	31.32
2	2390.00	52.9 AV	54.0	-1.1	1.68 V	221	21.58	31.32
3	*2412.00	110.4 PK			1.68 V	221	79.01	31.39
4	*2412.00	98.0 AV			1.68 V	221	66.61	31.39
5	4824.00	45.2 PK	74.0	-28.8	1.81 V	162	9.03	36.17
6	4824.00	36.3 AV	54.0	-17.7	1.81 V	162	0.13	36.17

- 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 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Nick Chang

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	111.6 PK			1.56 H	32	80.11	31.49
2	*2437.00	99.4 AV			1.56 H	32	67.91	31.49
3	4874.00	47.2 PK	74.0	-26.8	1.75 H	151	10.89	36.31
4	4874.00	41.0 AV	54.0	-13.0	1.75 H	151	4.69	36.31
5	7311.00	50.4 PK	74.0	-23.6	1.24 H	243	8.17	42.23
6	7311.00	41.3 AV	54.0	-12.7	1.24 H	243	-0.93	42.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2378.00	62.4 PK	74.0	-11.6	1.00 V	256	31.12	31.28
2	2378.00	52.9 AV	54.0	-1.1	1.00 V	256	21.62	31.28
3	*2437.00	112.6 PK			1.67 V	231	81.11	31.49
4	*2437.00	100.4 AV			1.67 V	231	68.91	31.49
5	4874.00	47.2 PK	74.0	-26.8	1.73 V	153	10.89	36.31
6	4874.00	40.7 AV	54.0	-13.3	1.73 V	153	4.39	36.31
7	7311.00	51.0 PK	74.0	-23.0	1.22 V	253	8.77	42.23
8	7311.00	41.6 AV	54.0	-12.4	1.22 V	253	-0.63	42.23

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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	23deg. C, 66%RH	TESTED BY	Nick Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

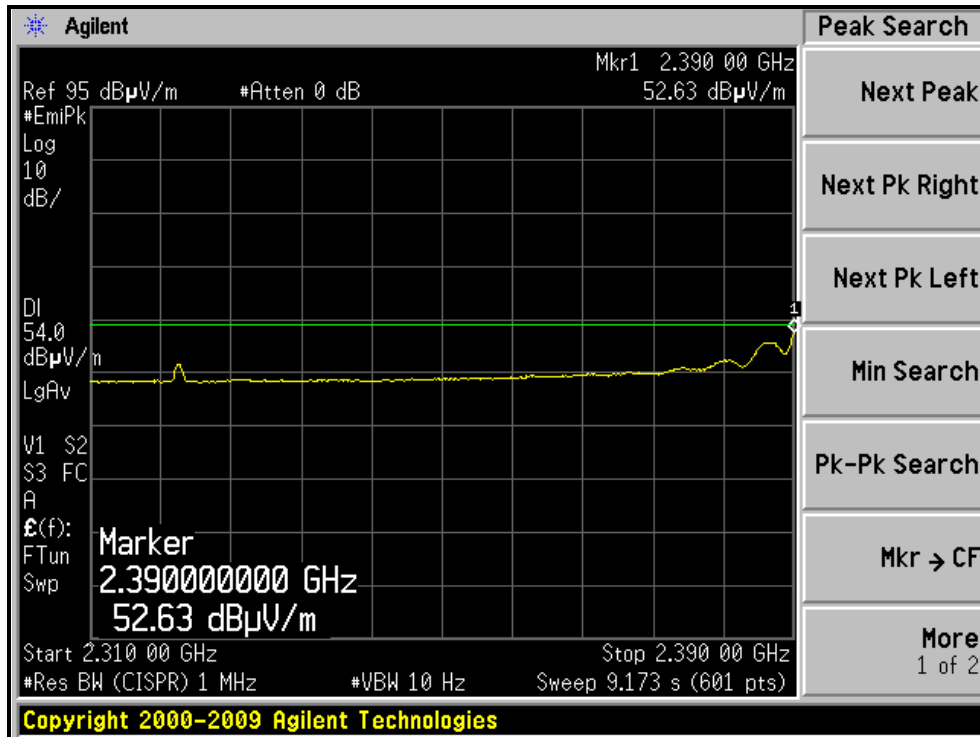
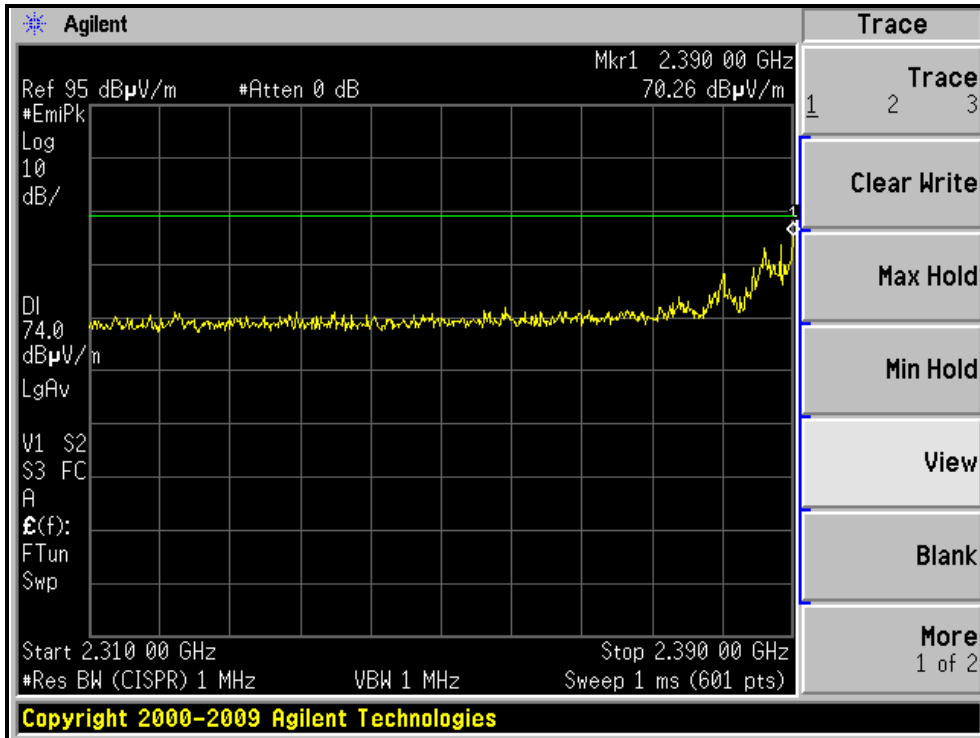
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.5 PK			1.51 H	32	77.92	31.58
2	*2462.00	97.1 AV			1.51 H	32	65.52	31.58
3	2483.50	68.2 PK	74.0	-5.8	1.51 H	62	36.54	31.66
4	2483.50	53.3 AV	54.0	-0.7	1.51 H	62	21.64	31.66
5	4924.00	47.7 PK	74.0	-26.3	1.72 H	163	11.28	36.42
6	4924.00	41.1 AV	54.0	-12.9	1.72 H	163	4.68	36.42
7	7386.00	50.8 PK	74.0	-23.2	1.19 H	242	8.28	42.52
8	7386.00	41.4 AV	54.0	-12.6	1.19 H	242	-1.12	42.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

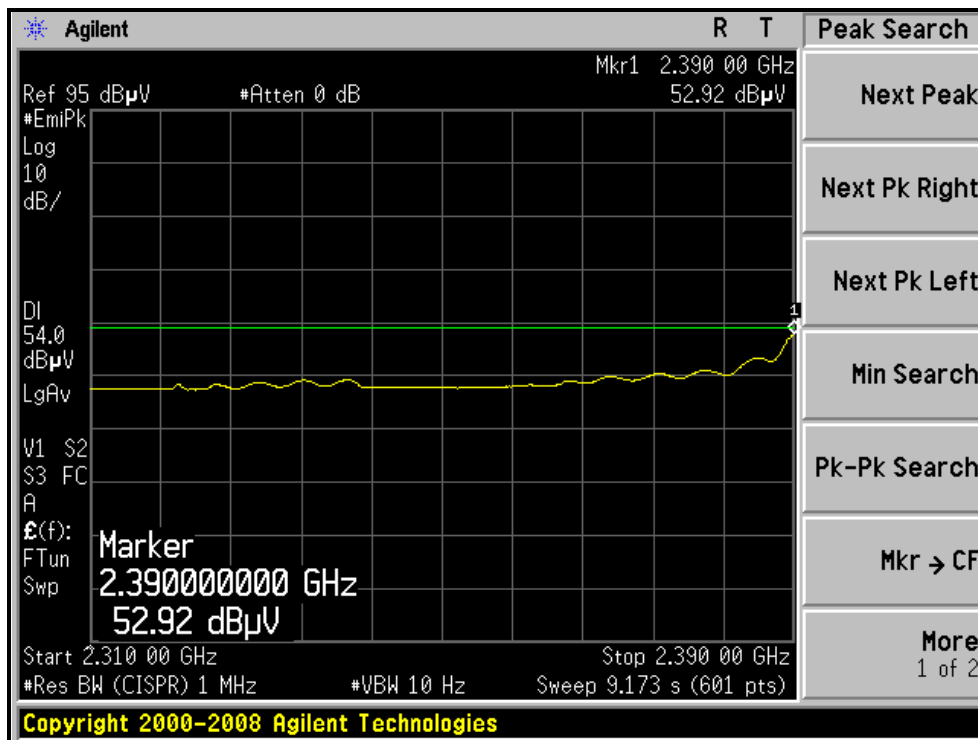
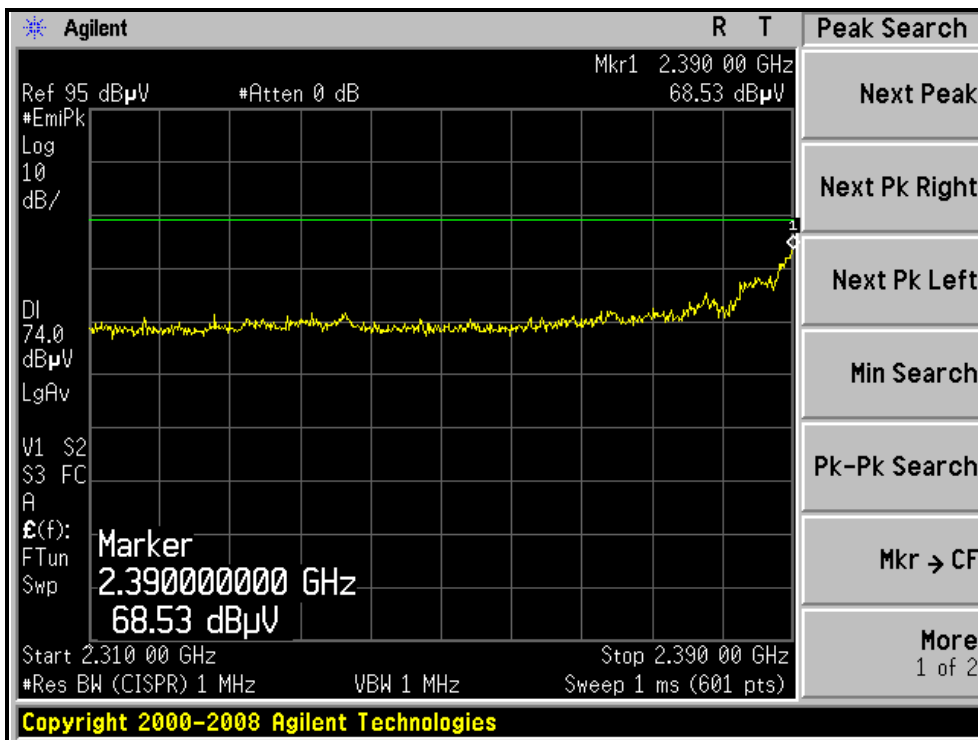
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.4 PK			1.68 V	73	79.82	31.58
2	*2462.00	98.2 AV			1.68 V	73	66.62	31.58
3	2483.50	69.1 PK	74.0	-4.9	1.68 V	73	37.44	31.66
4	2483.50	53.4 AV	54.0	-0.6	1.68 V	73	21.74	31.66
5	4924.00	47.3 PK	74.0	-26.7	1.73 V	156	10.88	36.42
6	4924.00	41.1 AV	54.0	-12.9	1.73 V	156	4.68	36.42
7	7386.00	50.6 PK	74.0	-23.4	1.21 V	247	8.08	42.52
8	7386.00	41.4 AV	54.0	-12.6	1.21 V	247	-1.12	42.52

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

RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)



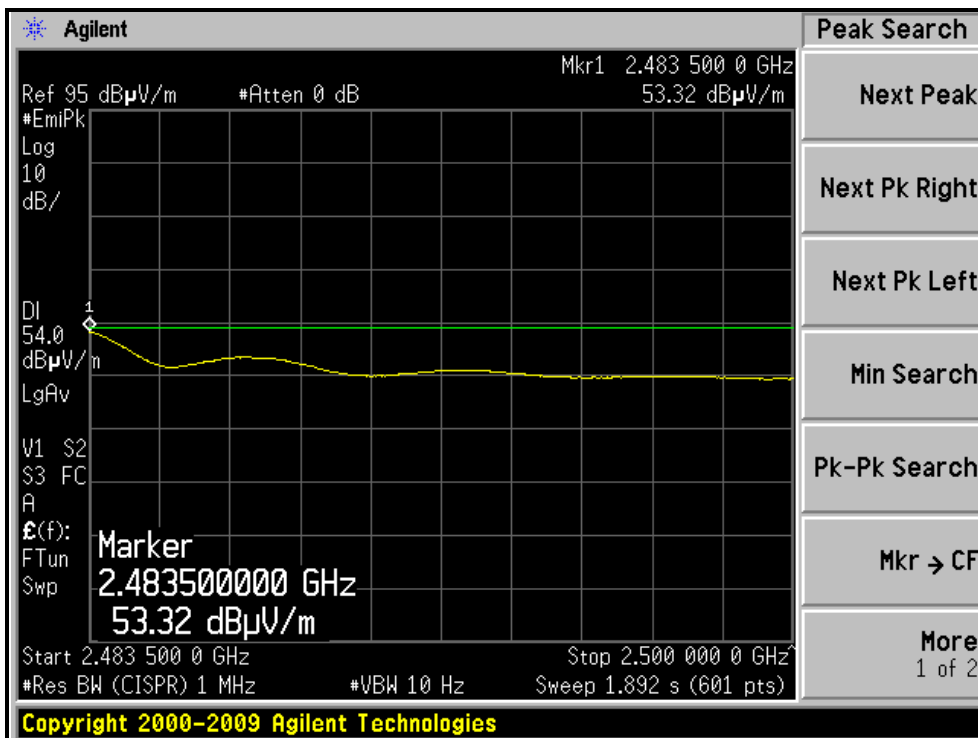
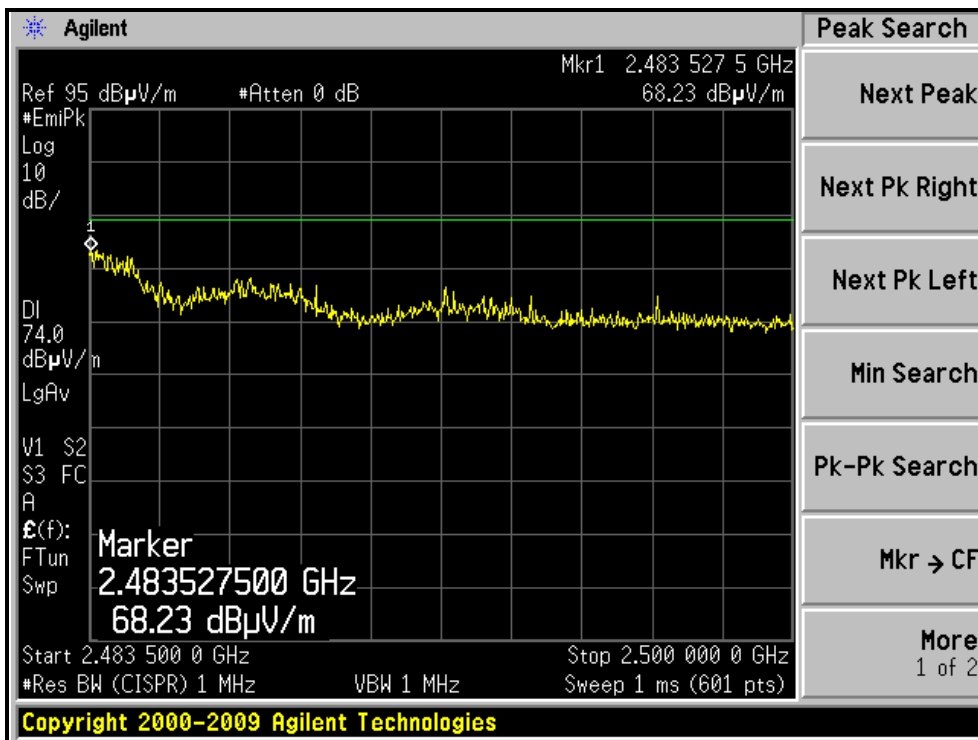
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)





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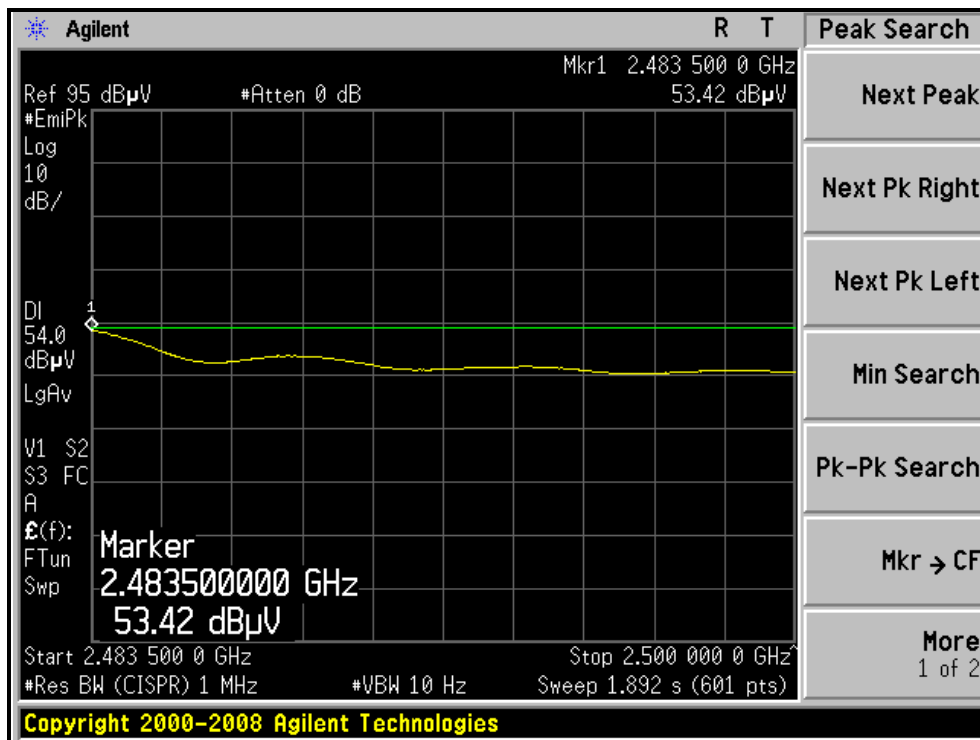
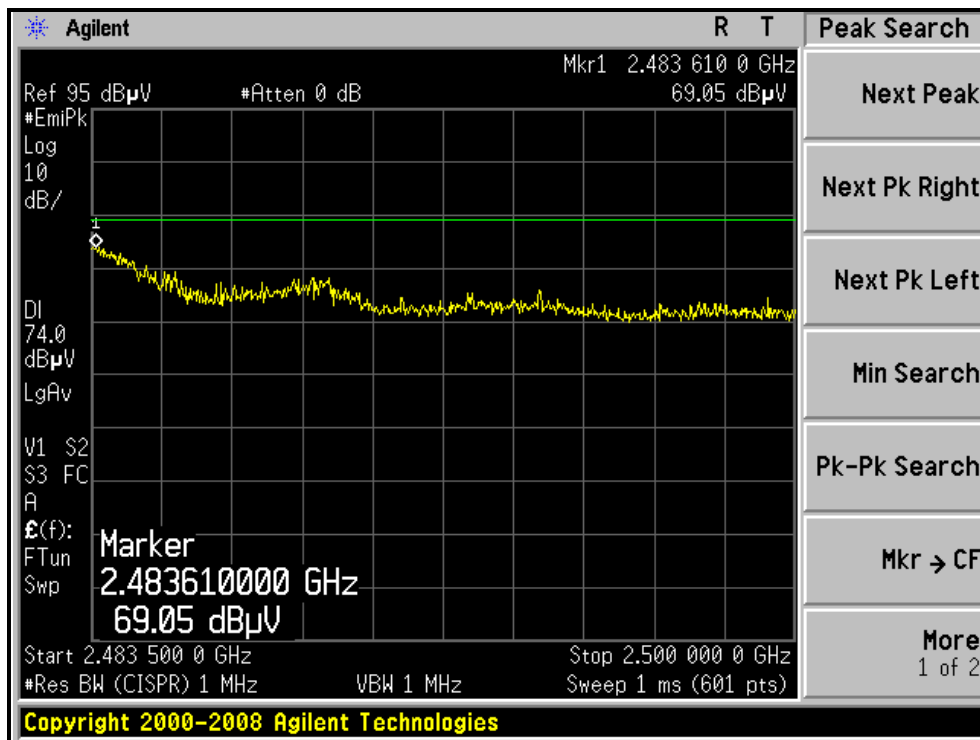
RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL)





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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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Nick Chang

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	2389.60	71.3 PK	74.0	-2.7	1.56 H	62	39.98	31.32
2	2389.60	53.2 AV	54.0	-0.8	1.56 H	62	21.88	31.32
3	*2412.00	110.3 PK			1.54 H	62	78.91	31.39
4	*2412.00	97.6 AV			1.54 H	62	66.21	31.39
5	4824.00	45.8 PK	74.0	-28.2	1.79 H	141	9.63	36.17
6	4824.00	39.8 AV	54.0	-14.2	1.79 H	141	3.63	36.17
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	2389.60	70.2 PK	74.0	-3.8	1.00 V	255	38.88	31.32
2	2389.60	52.9 AV	54.0	-1.1	1.00 V	255	21.58	31.32
3	*2412.00	111.2 PK			1.00 V	255	79.81	31.39
4	*2412.00	98.3 AV			1.00 V	255	66.91	31.39
5	4824.00	46.9 PK	74.0	-27.1	1.69 V	137	10.73	36.17
6	4824.00	40.2 AV	54.0	-13.8	1.69 V	137	4.03	36.17

- 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	23deg. C, 66%RH	TESTED BY	Nick Chang

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	111.3 PK			1.54 H	62	79.81	31.49
2	*2437.00	99.2 AV			1.54 H	62	67.71	31.49
3	4874.00	47.1 PK	74.0	-26.9	1.72 H	143	10.79	36.31
4	4874.00	41.4 AV	54.0	-12.6	1.72 H	143	5.09	36.31
5	7311.00	51.1 PK	74.0	-22.9	1.20 H	258	8.87	42.23
6	7311.00	41.9 AV	54.0	-12.1	1.20 H	258	-0.33	42.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.3 PK			1.64 V	234	80.81	31.49
2	*2437.00	100.4 AV			1.64 V	234	68.91	31.49
3	4874.00	47.2 PK	74.0	-26.8	1.72 V	125	10.89	36.31
4	4874.00	41.3 AV	54.0	-12.7	1.72 V	125	4.99	36.31
5	7311.00	50.6 PK	74.0	-23.4	1.19 V	237	8.37	42.23
6	7311.00	41.3 AV	54.0	-12.7	1.19 V	237	-0.93	42.23

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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	23deg. C, 66%RH	TESTED BY	Nick Chang

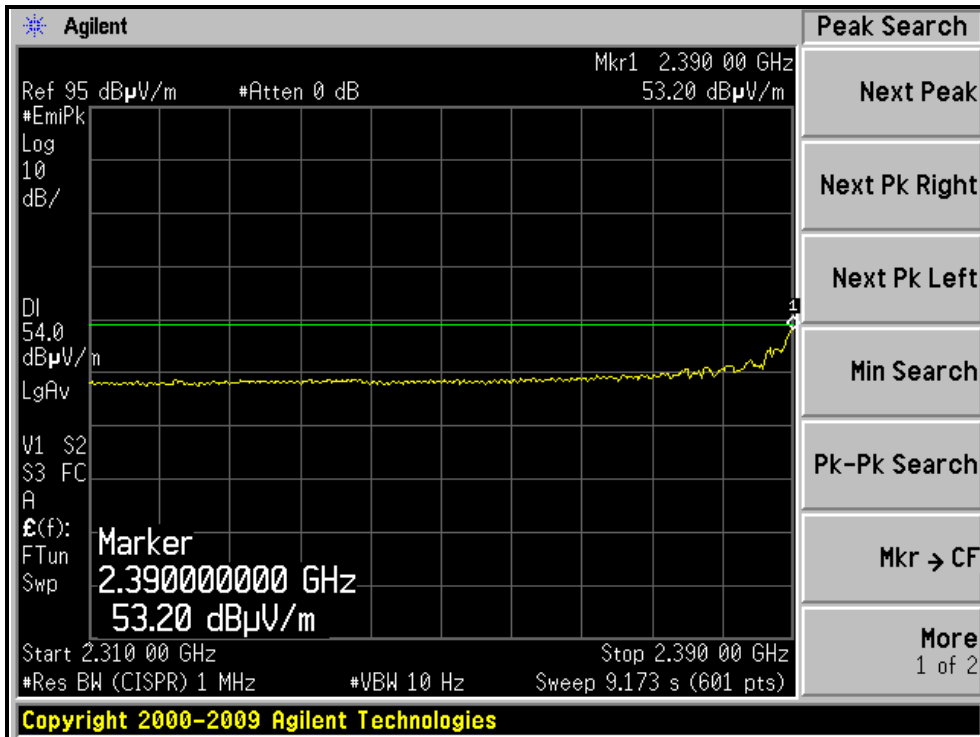
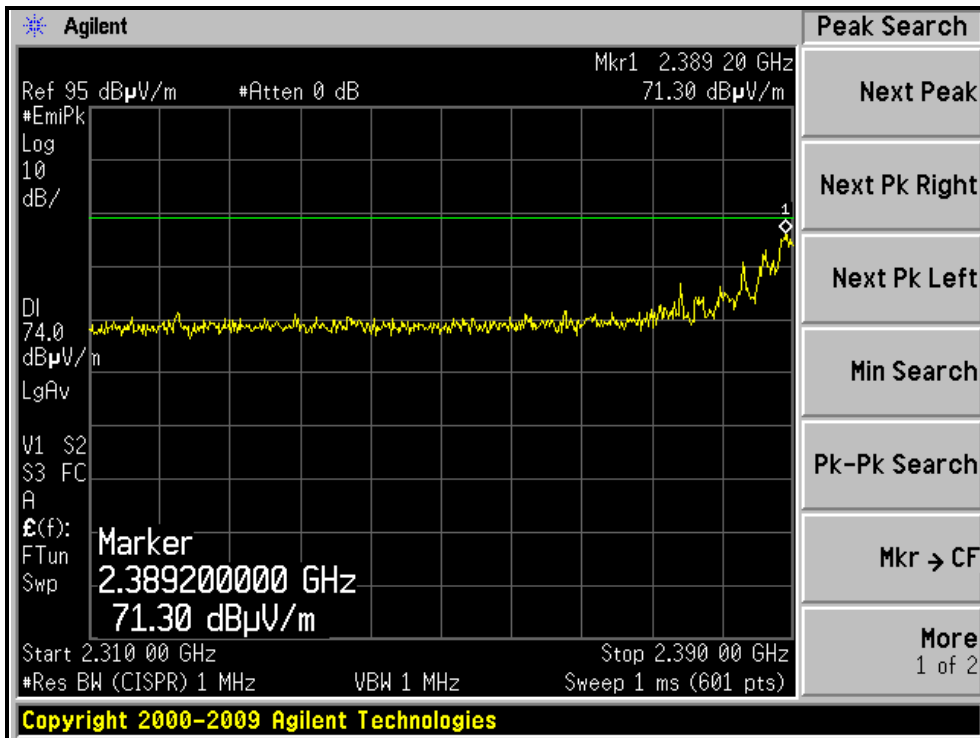
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.6 PK			1.51 H	59	76.02	31.58
2	*2462.00	94.3 AV			1.51 H	59	62.72	31.58
3	2484.20	67.0 PK	74.0	-7.0	1.87 H	344	35.34	31.66
4	2484.20	49.5 AV	54.0	-4.5	1.87 H	344	17.84	31.66
5	4924.00	47.1 PK	74.0	-26.9	1.73 H	135	10.68	36.42
6	4924.00	41.1 AV	54.0	-12.9	1.73 H	135	4.68	36.42
7	7386.00	50.4 PK	74.0	-23.6	1.18 H	250	7.88	42.52
8	7386.00	41.3 AV	54.0	-12.7	1.18 H	250	-1.22	42.52
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	108.6 PK			1.66 V	306	77.02	31.58
2	*2462.00	95.6 AV			1.66 V	306	64.02	31.58
3	2483.80	70.8 PK	74.0	-3.2	1.66 V	306	39.14	31.66
4	2483.80	53.5 AV	54.0	-0.5	1.66 V	306	21.84	31.66
5	4924.00	47.6 PK	74.0	-26.4	1.64 V	120	11.18	36.42
6	4924.00	41.5 AV	54.0	-12.5	1.64 V	120	5.08	36.42
7	7386.00	49.5 PK	74.0	-24.5	1.19 V	262	6.98	42.52
8	7386.00	40.3 AV	54.0	-13.7	1.19 V	262	-2.22	42.52

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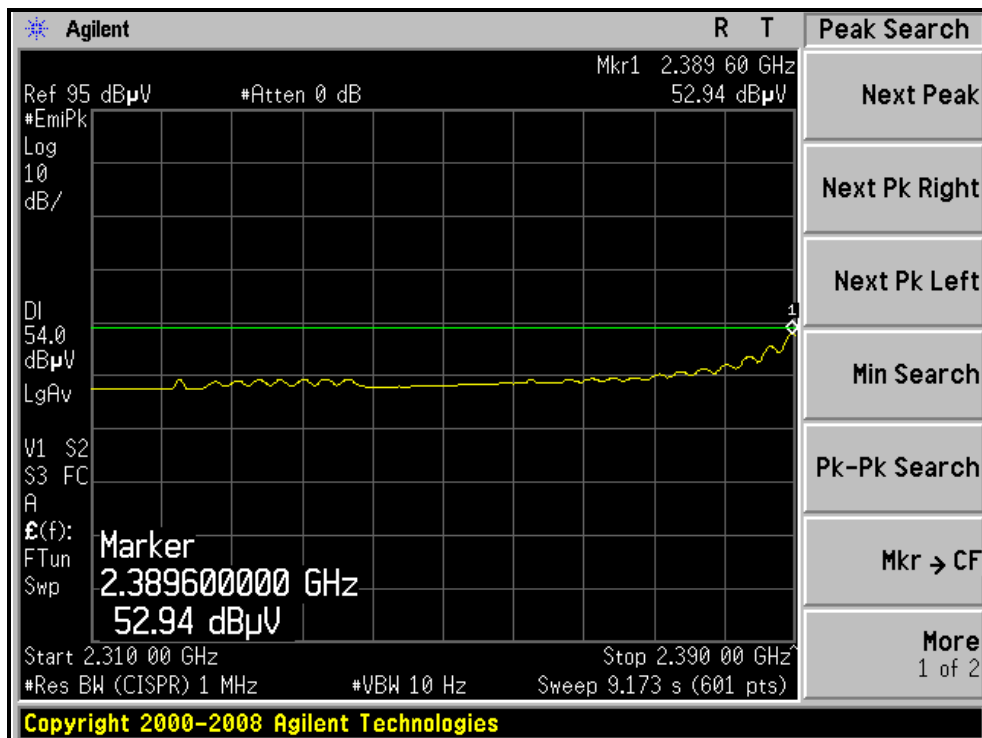
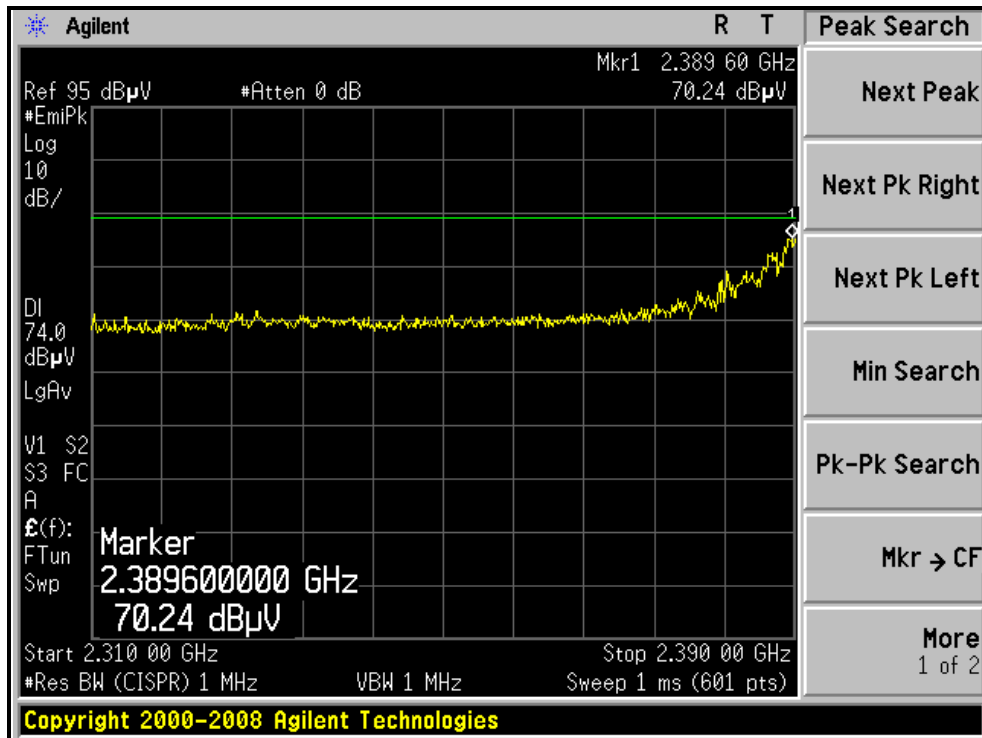
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, HORIZONTAL)



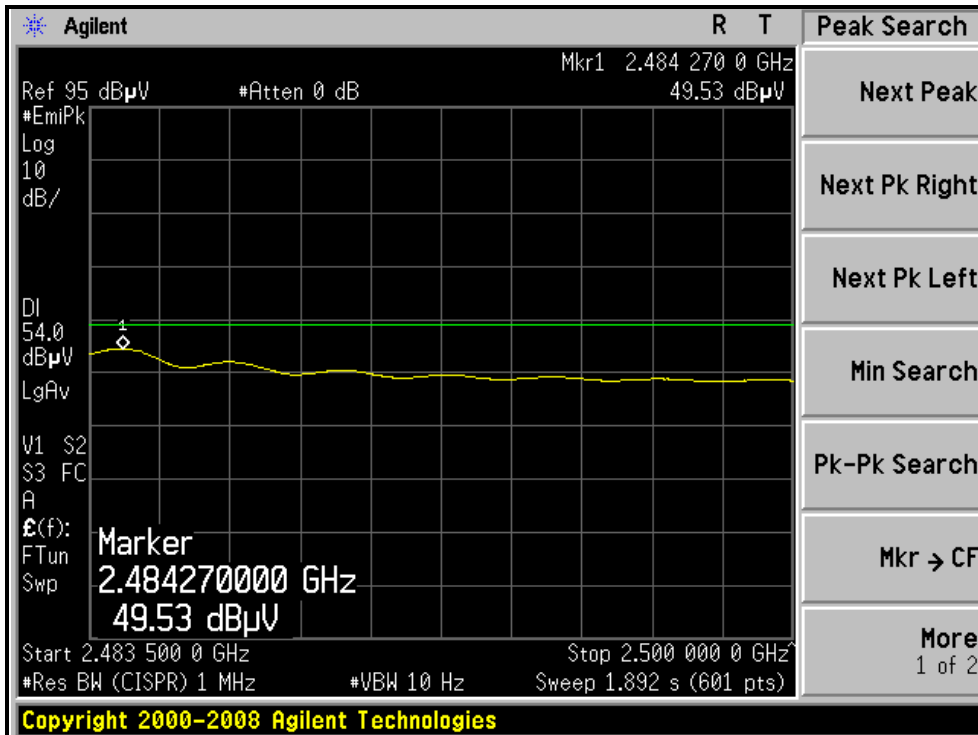
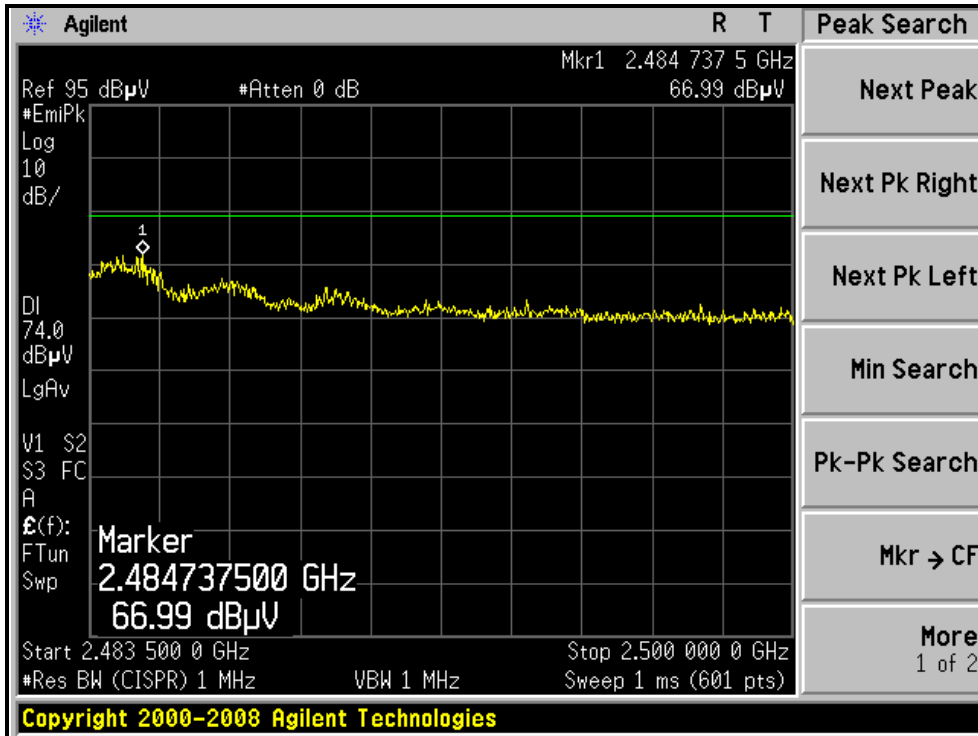


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RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, VERTICAL)



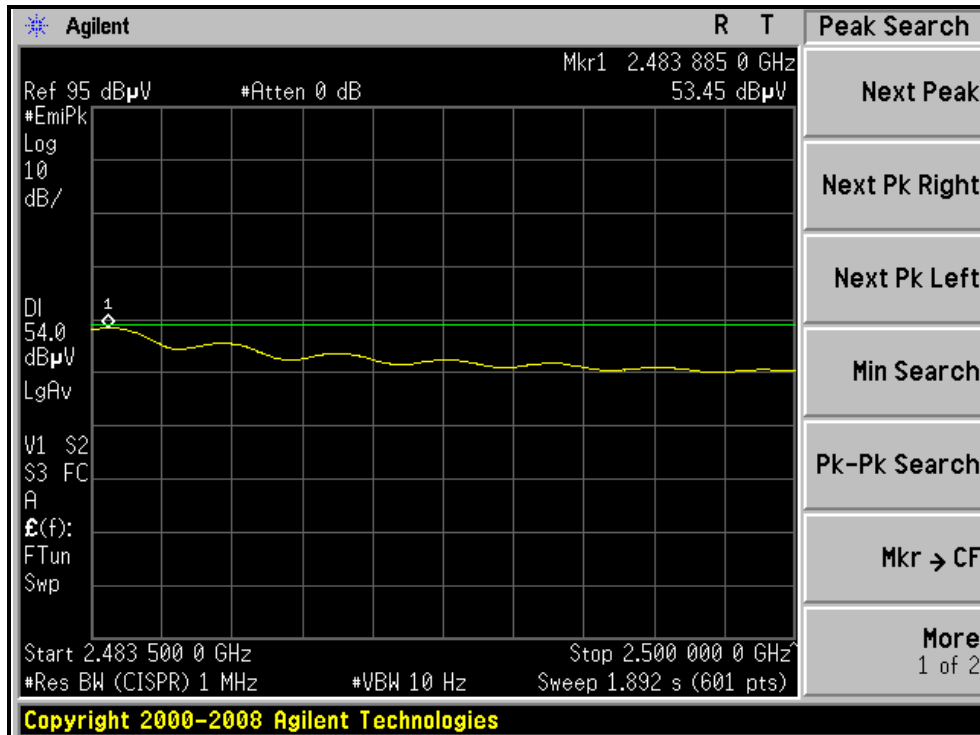
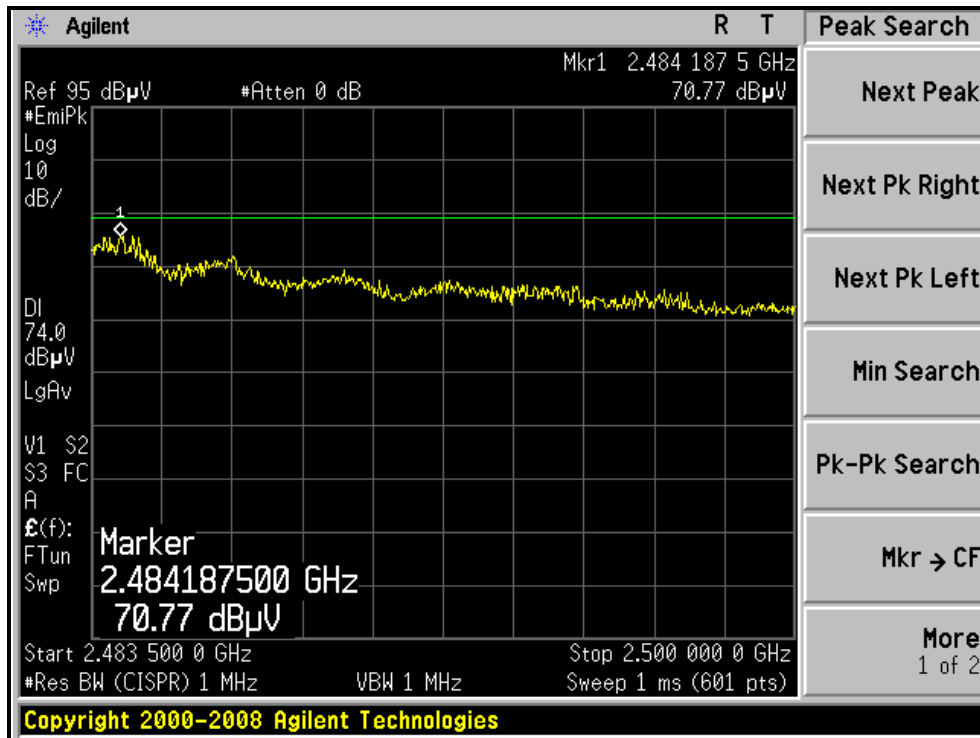
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, HORIZONTAL)





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





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802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Nick Chang

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	65.4 PK	74.0	-8.6	1.96 H	20	34.08	31.32
2	2390.00	49.7 AV	54.0	-4.3	1.96 H	20	18.38	31.32
3	*2422.00	102.1 PK			1.96 H	20	70.67	31.43
4	*2422.00	87.4 AV			1.96 H	20	55.97	31.43
5	4844.00	43.7 PK	74.0	-30.3	1.54 H	117	7.48	36.22
6	4844.00	34.5 AV	54.0	-19.5	1.54 H	117	-1.72	36.22
7	7266.00	49.5 PK	74.0	-24.5	1.17 H	256	7.37	42.13
8	7266.00	41.1 AV	54.0	-12.9	1.17 H	256	-1.03	42.13
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	2389.40	72.3 PK	74.0	-1.7	1.00 V	258	40.98	31.32
2	2389.40	52.9 AV	54.0	-1.1	1.00 V	258	21.58	31.32
3	*2422.00	106.1 PK			1.00 V	258	74.67	31.43
4	*2422.00	90.4 AV			1.00 V	258	58.97	31.43
5	4844.00	43.6 PK	74.0	-30.4	1.59 V	121	7.38	36.22
6	4844.00	34.3 AV	54.0	-19.7	1.59 V	121	-1.92	36.22
7	7266.00	49.4 PK	74.0	-24.6	1.15 V	253	7.27	42.13
8	7266.00	40.6 AV	54.0	-13.4	1.15 V	253	-1.53	42.13

- 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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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	23deg. C, 66%RH	TESTED BY	Nick Chang

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	104.2 PK			1.88 H	342	72.71	31.49
2	*2437.00	88.9 AV			1.88 H	342	57.41	31.49
3	2483.50	66.7 PK	74.0	-7.3	1.88 H	342	35.04	31.66
4	2483.50	51.1 AV	54.0	-2.9	1.88 H	342	19.44	31.66
5	4874.00	43.3 PK	74.0	-30.7	1.58 H	125	6.99	36.31
6	4874.00	34.0 AV	54.0	-20.0	1.58 H	125	-2.31	36.31
7	7311.00	49.1 PK	74.0	-24.9	1.03 H	254	6.87	42.23
8	7311.00	40.1 AV	54.0	-13.9	1.03 H	254	-2.13	42.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.4 PK			1.00 V	278	76.91	31.49
2	*2437.00	92.2 AV			1.00 V	278	60.71	31.49
3	2483.50	71.2 PK	74.0	-2.8	1.65 V	100	39.54	31.66
4	2483.50	53.2 AV	54.0	-0.8	1.65 V	100	21.54	31.66
5	4874.00	42.7 PK	74.0	-31.3	1.54 V	106	6.39	36.31
6	4874.00	33.7 AV	54.0	-20.3	1.54 V	106	-2.61	36.31
7	7311.00	49.0 PK	74.0	-25.0	1.15 V	261	6.77	42.23
8	7311.00	40.5 AV	54.0	-13.5	1.15 V	261	-1.73	42.23

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Nick Chang

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	101.0 PK			1.89 H	341	69.46	31.54
2	*2452.00	85.3 AV			1.89 H	341	53.76	31.54
3	2484.10	66.0 PK	74.0	-8.0	1.89 H	341	34.34	31.66
4	2484.10	51.1 AV	54.0	-2.9	1.89 H	341	19.44	31.66
5	4904.00	43.5 PK	74.0	-30.5	1.59 H	122	7.11	36.39
6	4904.00	34.6 AV	54.0	-19.4	1.59 H	122	-1.79	36.39
7	7356.00	49.1 PK	74.0	-24.9	1.18 H	217	6.70	42.40
8	7356.00	40.3 AV	54.0	-13.7	1.18 H	217	-2.10	42.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

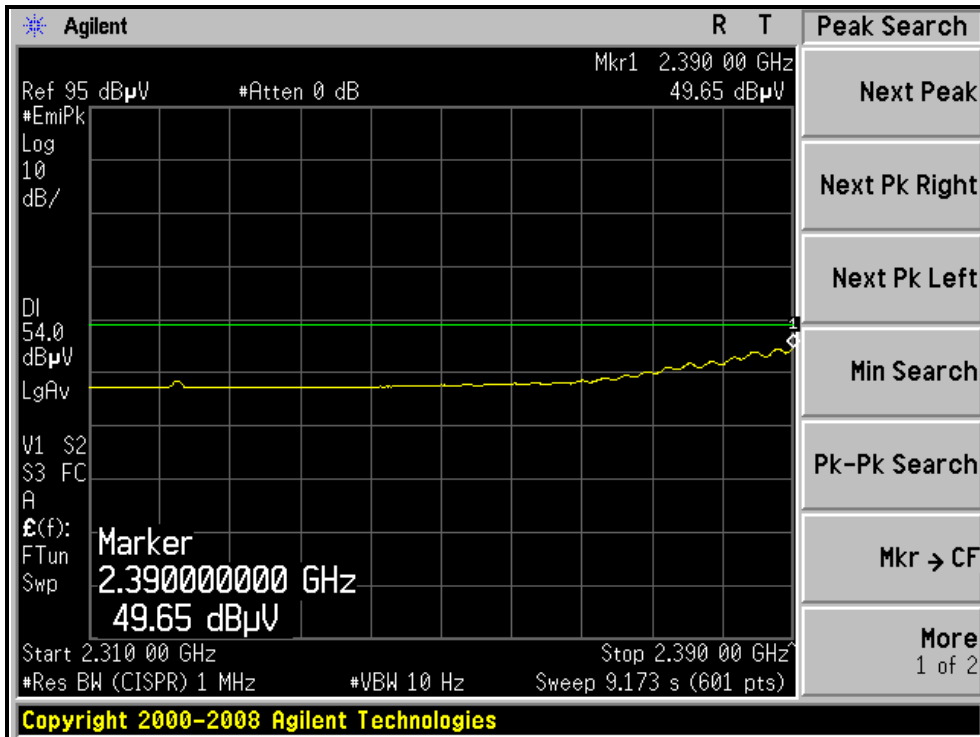
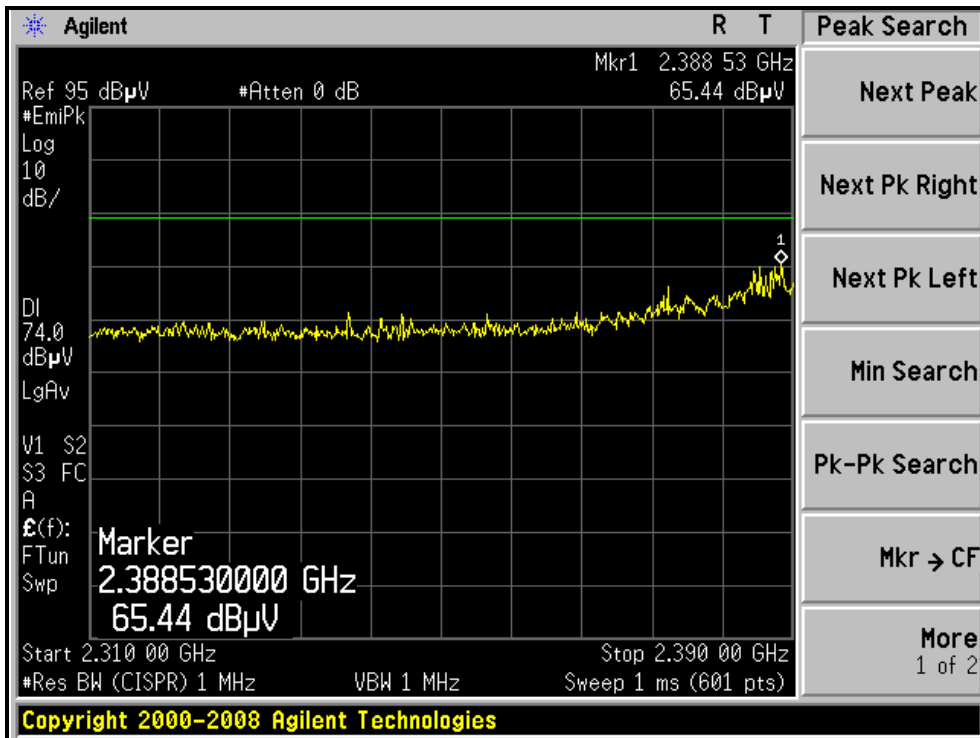
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.4 PK			1.00 V	277	73.86	31.54
2	*2452.00	89.5 AV			1.00 V	277	57.96	31.54
3	2483.80	69.4 PK	74.0	-4.6	1.64 V	101	37.74	31.66
4	2483.80	53.0 AV	54.0	-1.0	1.64 V	101	21.34	31.66
5	4904.00	43.5 PK	74.0	-30.5	1.58 V	111	7.11	36.39
6	4904.00	34.2 AV	54.0	-19.8	1.58 V	111	-2.19	36.39
7	7356.00	48.7 PK	74.0	-25.3	1.19 V	234	6.30	42.40
8	7356.00	39.9 AV	54.0	-14.1	1.19 V	234	-2.50	42.40

- 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

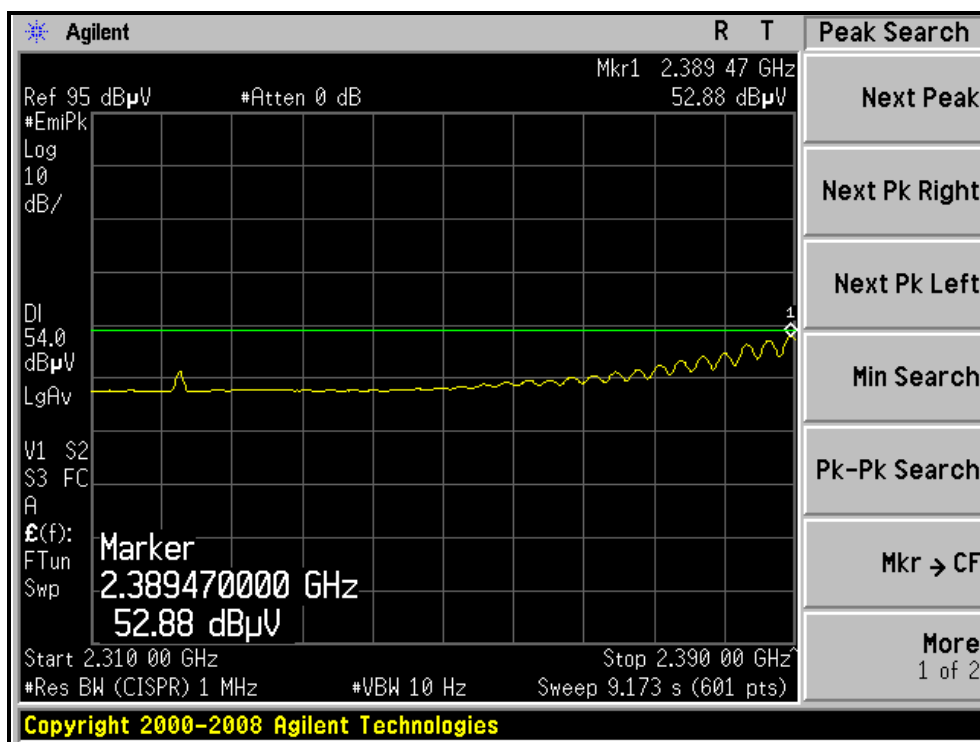
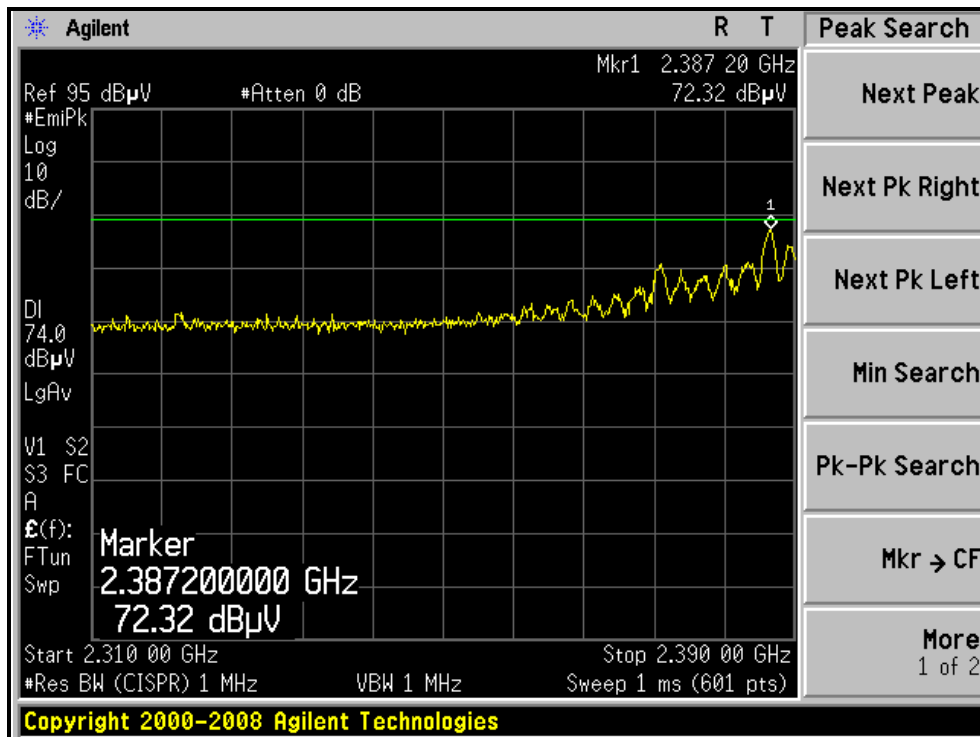
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, HORIZONTAL)





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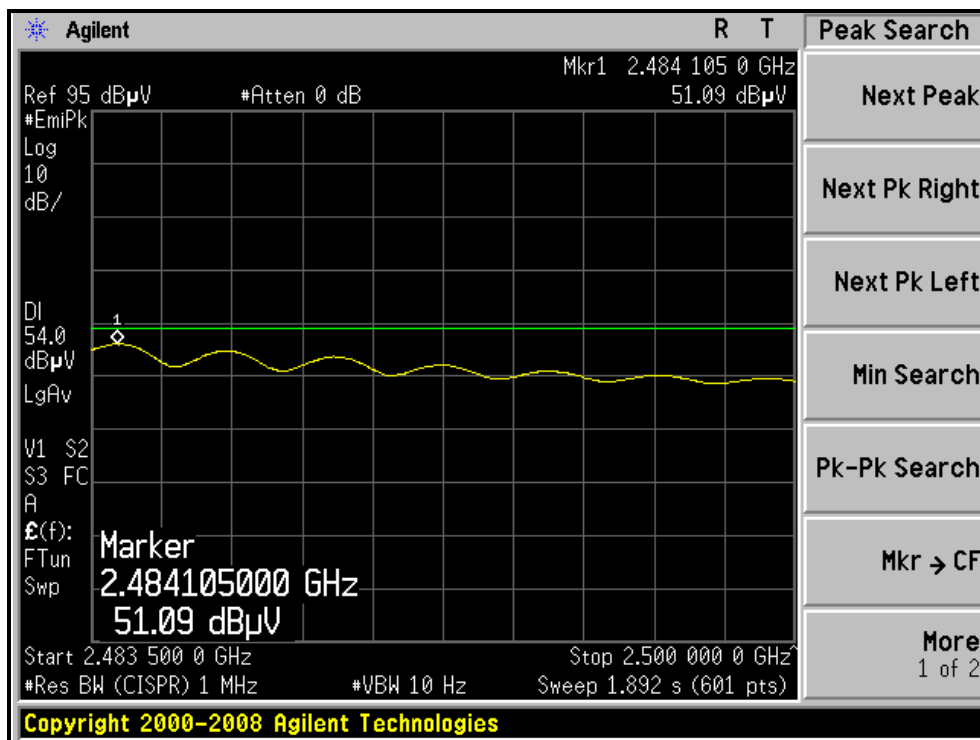
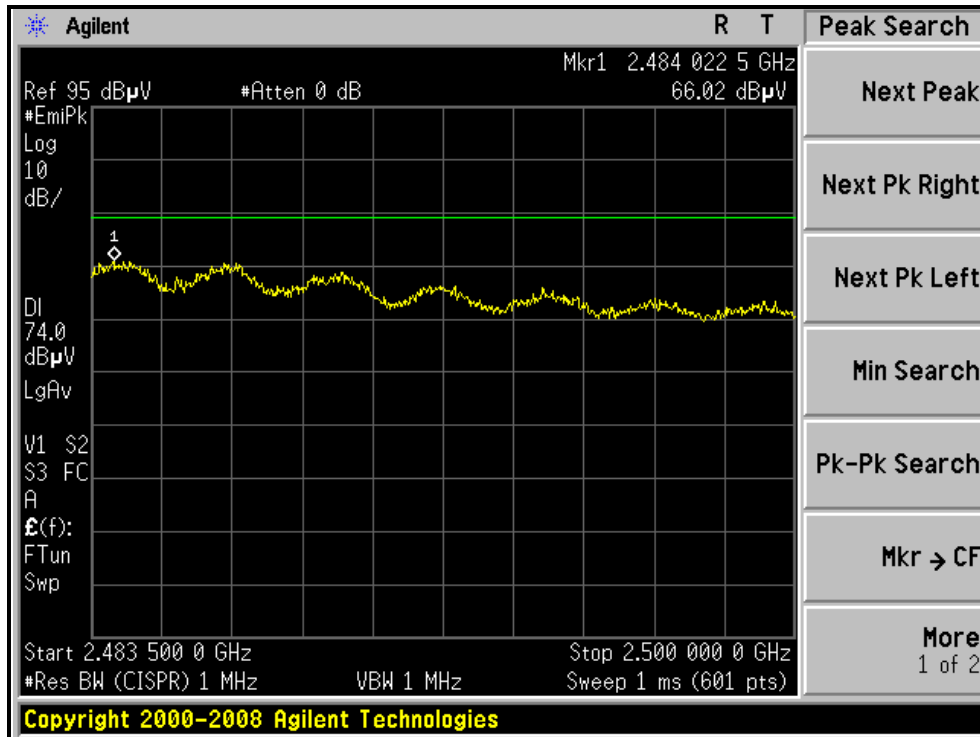
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, VERTICAL)





A D T

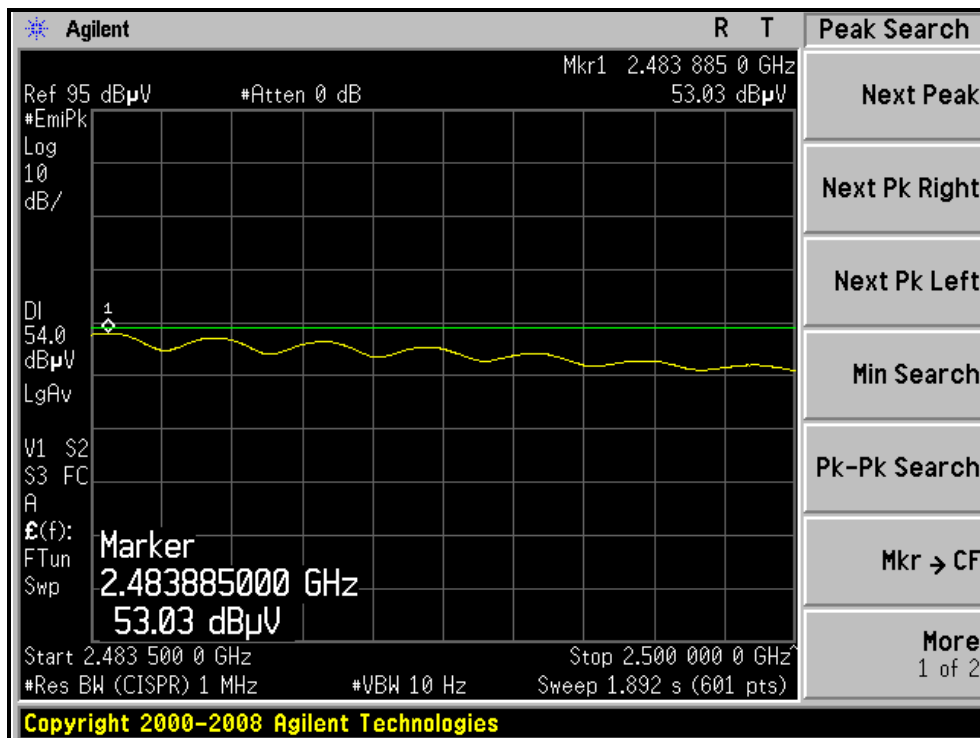
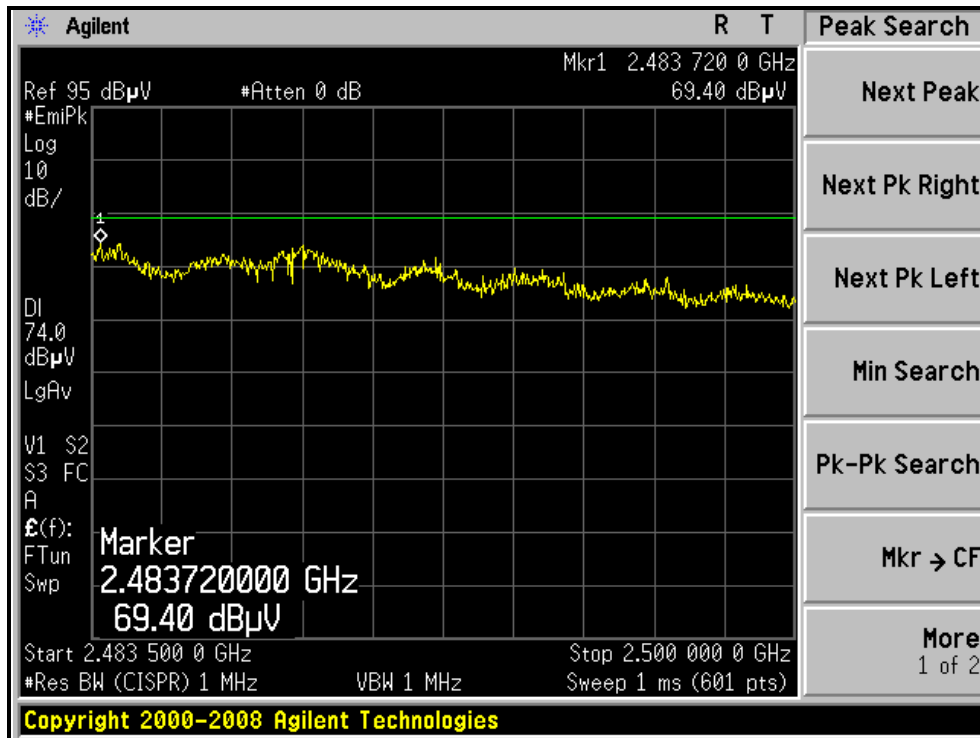
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, HORIZONTAL)





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RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, 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

Test date: Oct. 22, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz 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

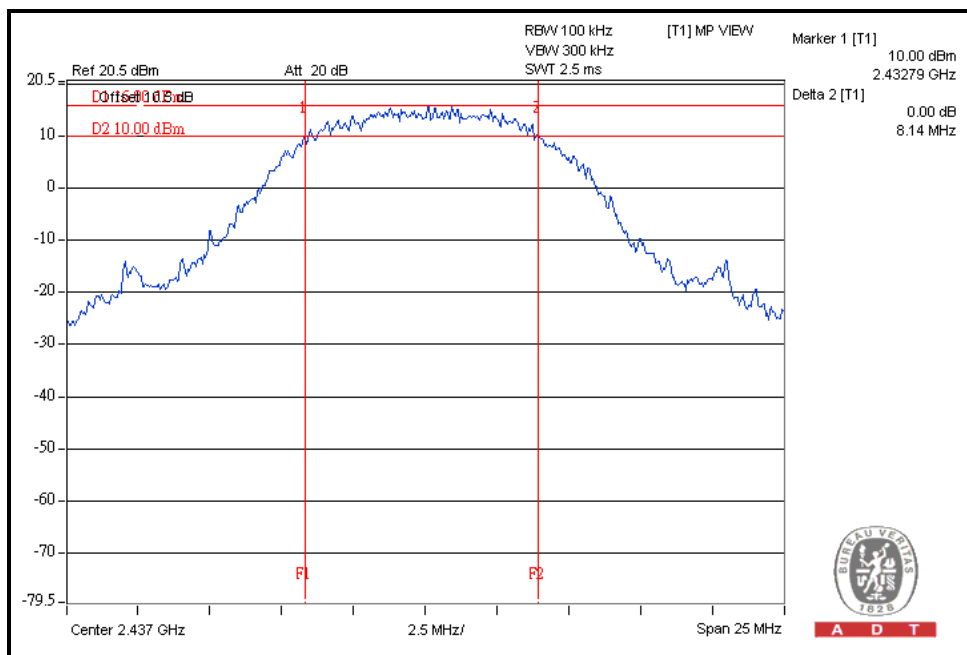
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	7.77	0.5	PASS
6	2437	8.14	0.5	PASS
11	2462	7.70	0.5	PASS

CH6



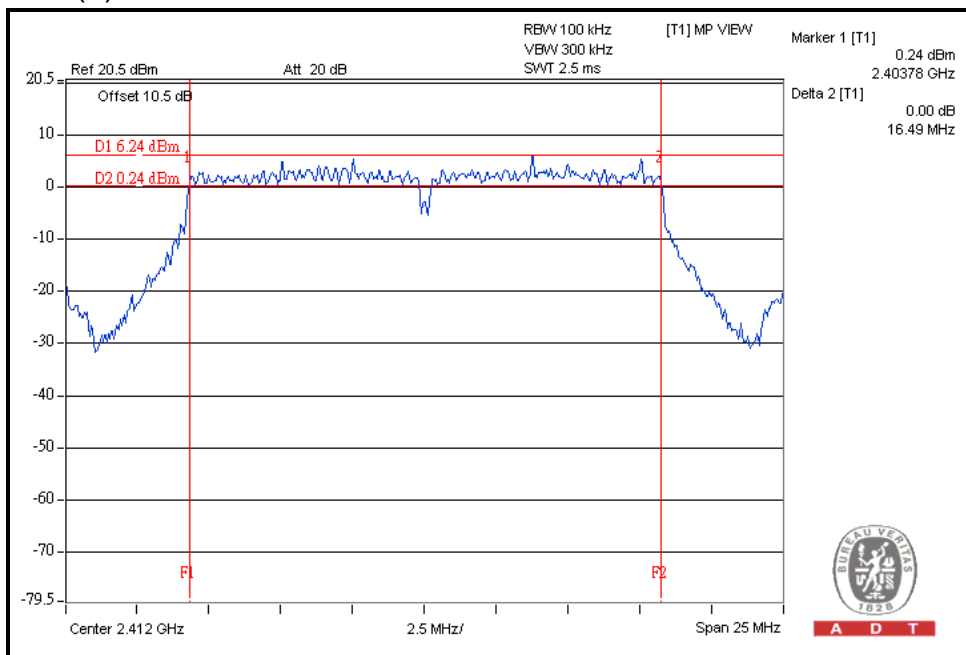


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802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	16.49	16.47	0.5	PASS
6	2437	16.44	16.48	0.5	PASS
11	2462	16.49	16.43	0.5	PASS

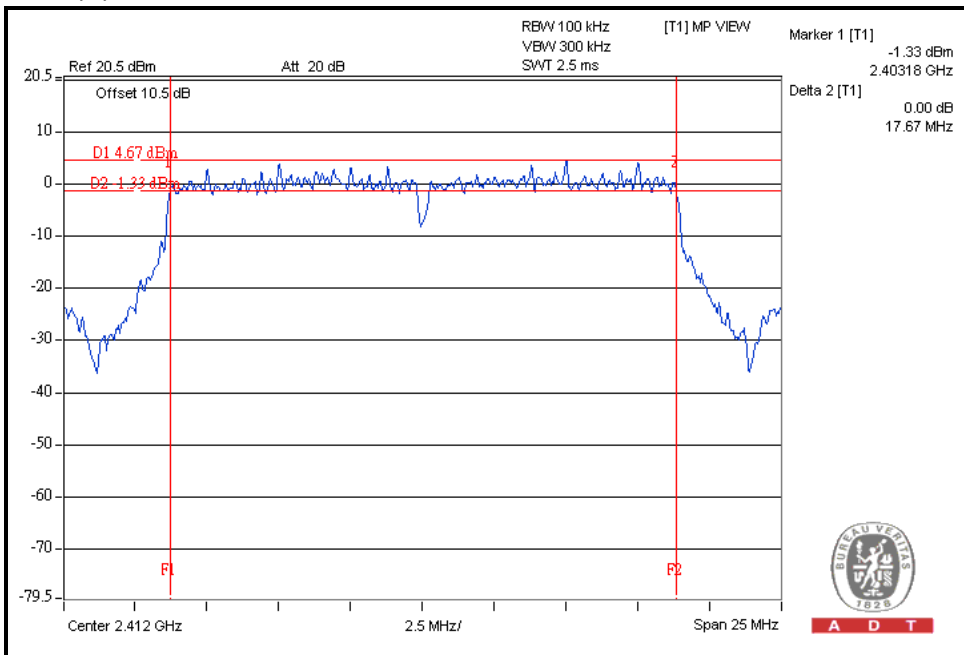
CHAIN (0):CH1



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	17.65	17.67	0.5	PASS
6	2437	17.63	17.66	0.5	PASS
11	2462	17.67	17.67	0.5	PASS

CHAIN (1):CH1



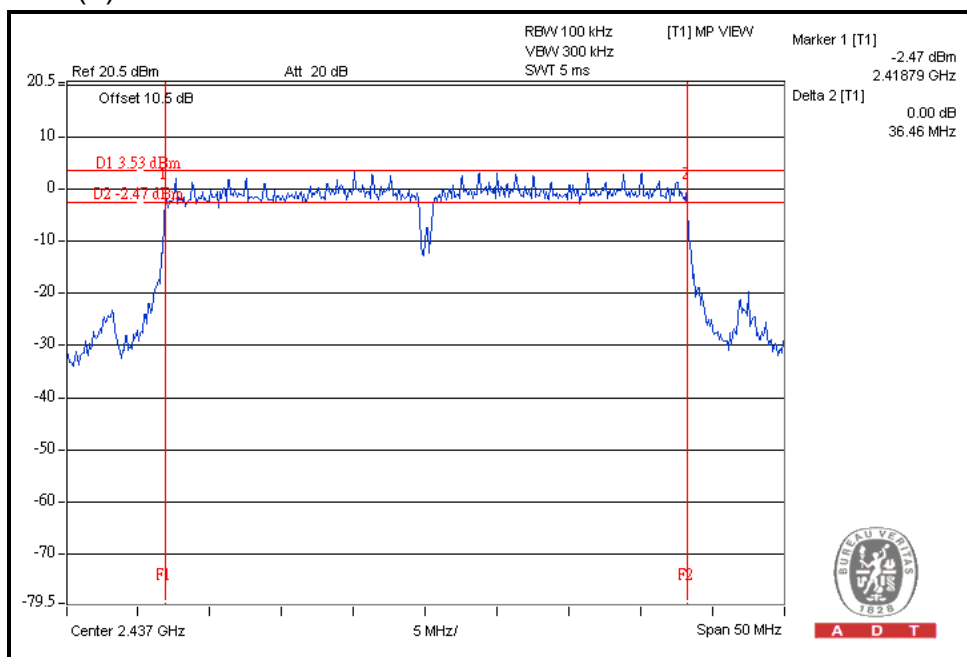


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802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
3	2422	36.17	36.40	0.5	PASS
6	2437	36.18	36.46	0.5	PASS
9	2452	35.98	36.37	0.5	PASS

CHAIN (1):CH6





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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

Test date: Oct. 22, 2011

Description & Manufacturer	Model No.	Serial No.	Calibrated DATE	Calibrated Until
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 27, 2010	Dec. 26, 2011
TEKTRONIX OSCILLOSCOPE	TDS 5104	BO51450	May. 17, 2011	May. 16, 2012
NARDA DETECTOR	4503A	FSCM99899	NA	NA

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. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

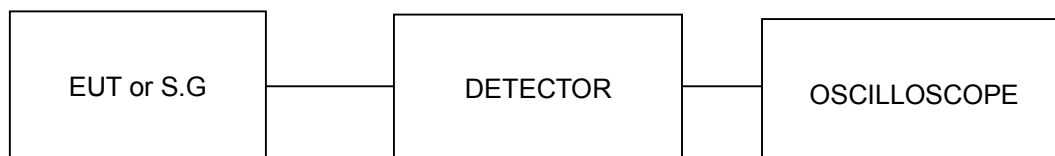
4.4.4 DEVIATION FROM TEST STANDARD

No deviation



A D T

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 (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	338.8	25.3	30	PASS
6	2437	380.2	25.8	30	PASS
11	2462	234.4	23.7	30	PASS

802.11g 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	21.6	21.2	276.4	24.4	27.4	PASS
6	2437	24.5	24.0	533.0	27.3	27.4	PASS
11	2462	19.8	18.2	161.6	22.1	27.4	PASS

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$

Effective Legacy Gain (dBi)=8.6

The effective legacy gain is 8.6dBi, therefore the limit needs to reduce

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	21.4	21.0	263.9	24.2	30	PASS
6	2437	26.8	26.0	876.7	29.4	30	PASS
11	2462	19.1	18.4	150.5	21.8	30	PASS



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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)				
3	2422	19.7	20.0	193.3	22.9	30	PASS
6	2437	21.6	21.3	279.4	24.5	30	PASS
9	2452	18.2	18.7	140.2	21.5	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

Test date: Oct. 22, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

4.5.3 TEST PROCEDURE

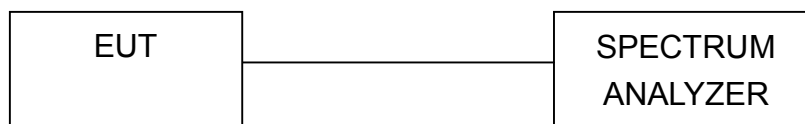
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

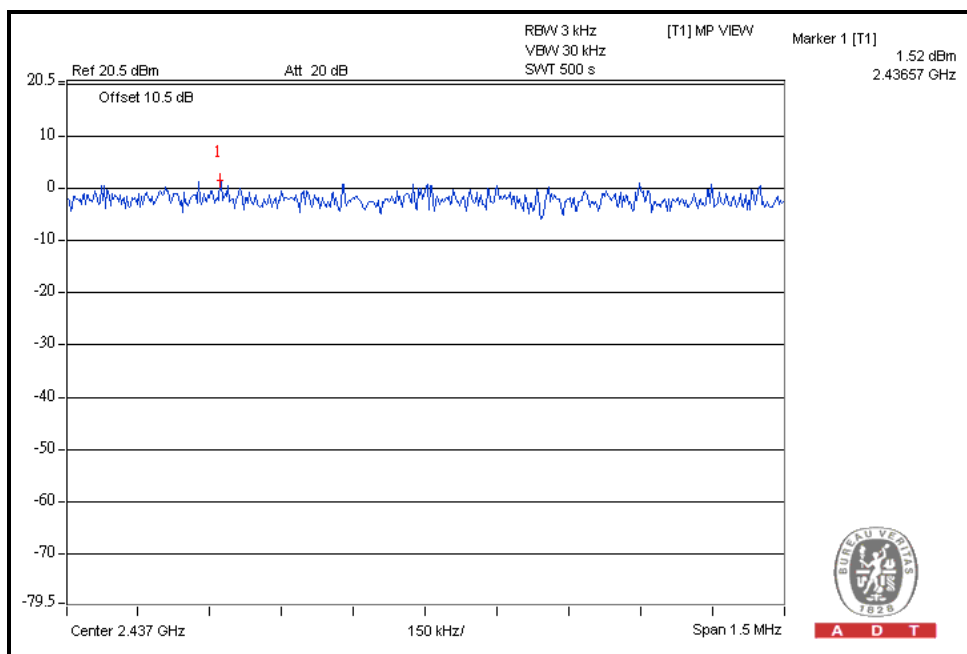
Same as Item 4.3.6

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	-0.1	8	PASS
6	2437	1.5	8	PASS
11	2462	-1.1	8	PASS

CH6



802.11g OFDM MODULATION:

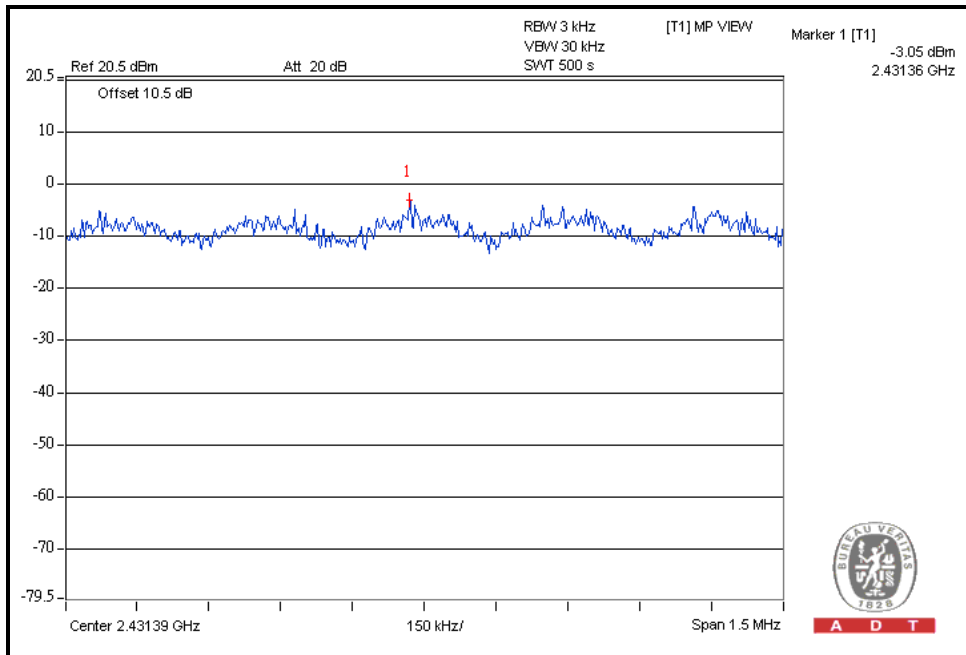
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
1	2412	-7.3	-8.9	-5.0	5.4	PASS
6	2437	-3.1	-5.4	-1.1	5.4	PASS
11	2462	-9.9	-11.0	-7.4	5.4	PASS

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$

Effective Legacy Gain (dBi)=8.6

The effective legacy gain is 8.6dBi, therefore the limit needs to reduce

Chain(0): CH6



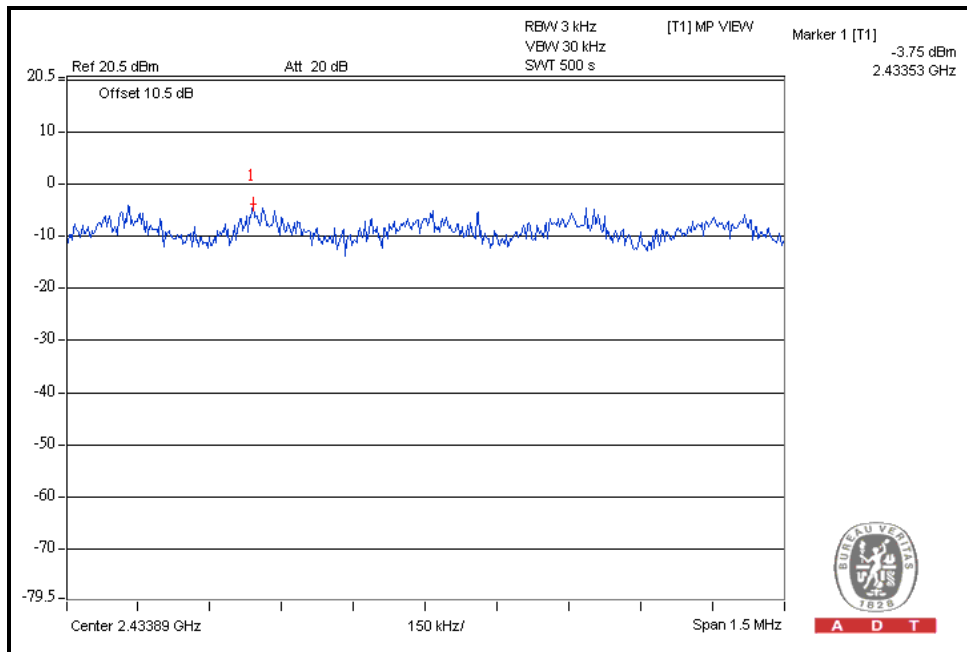


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802.11n (20MHz) OFDM MODULATION:

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	-9.2	-9.8	-7.5	8	PASS
6	2437	-3.8	-3.8	-4.4	8	PASS
11	2462	-10.6	-10.5	-8.2	8	PASS

Chain(1): CH6



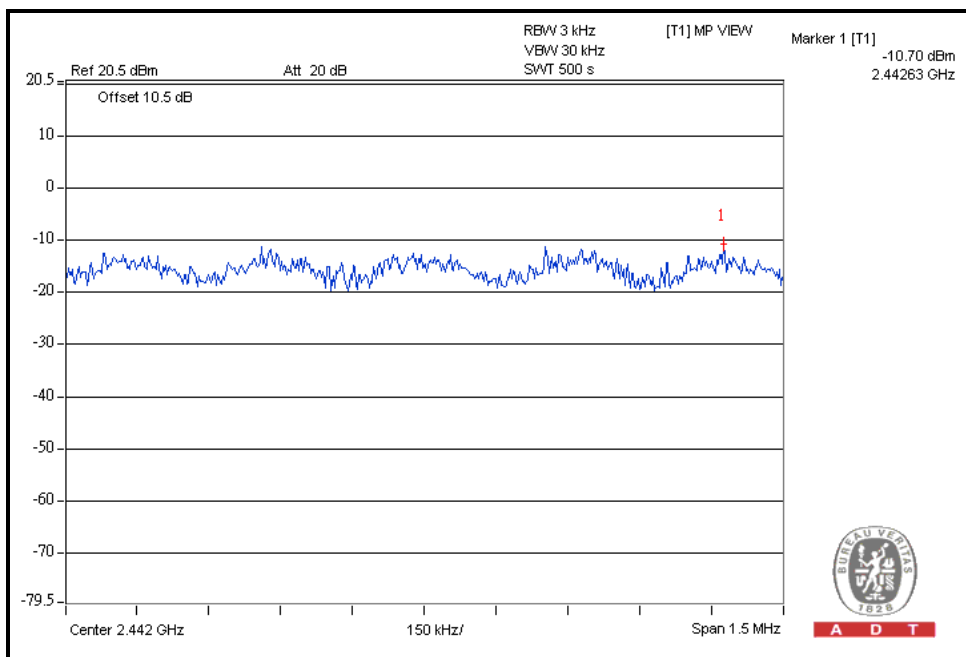


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802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
3	2422	-14.7	-14.3	-11.5	8	PASS
6	2437	-12.8	-10.7	-8.6	8	PASS
9	2452	-15.5	-11.4	-10.0	8	PASS

Chain(1): CH6



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

Test date: Oct. 22, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set RBW of spectrum analyzer to 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 100 MHz or 200 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

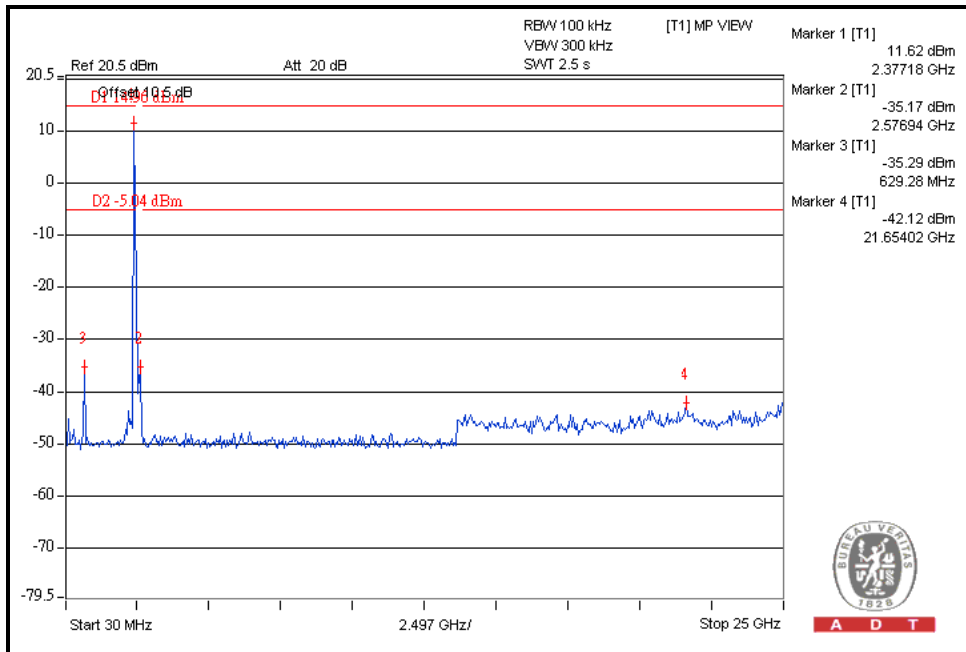
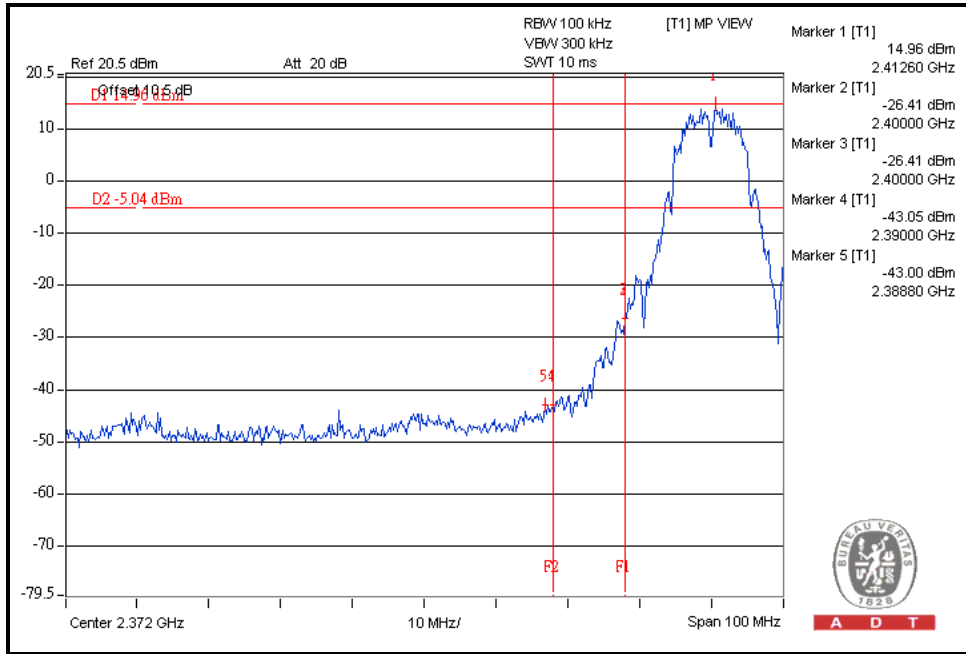
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).



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Performing measurements: Measure and add 10 log(N) dB 802.11b DSSS MODULATION:

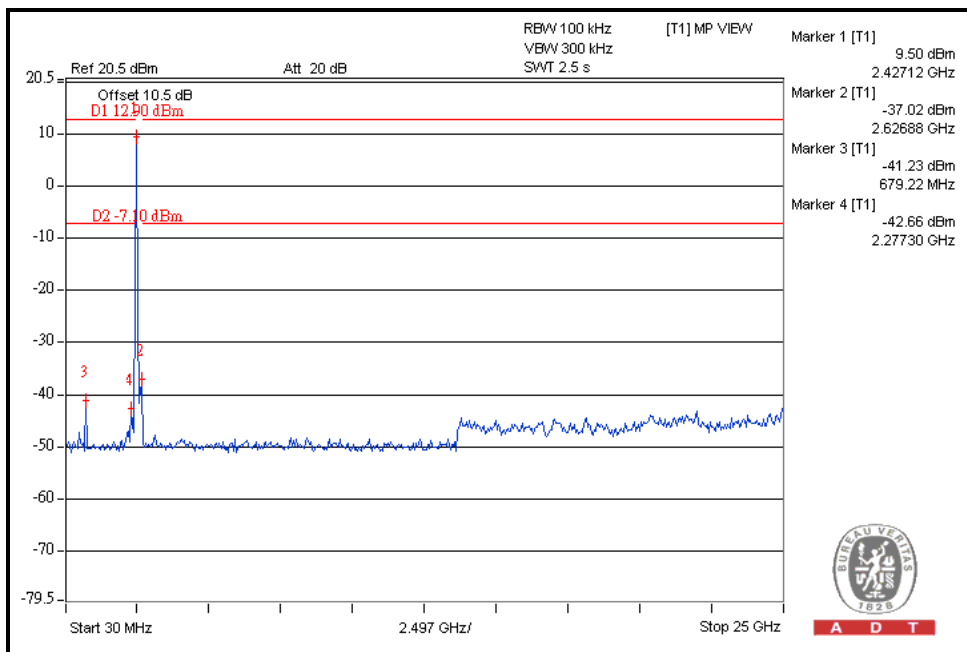
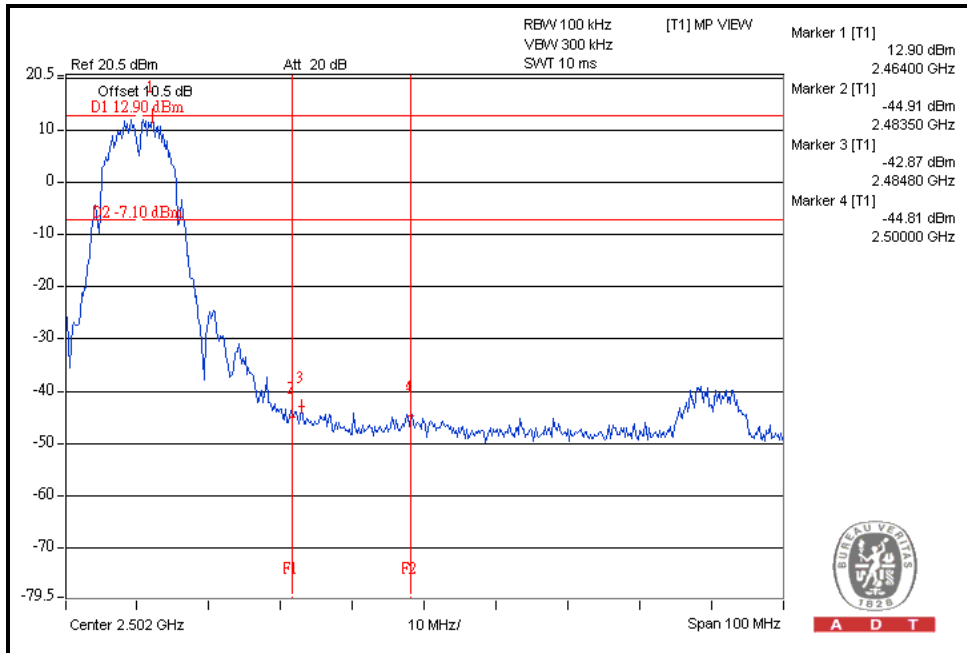
CH1





A D T

CH11

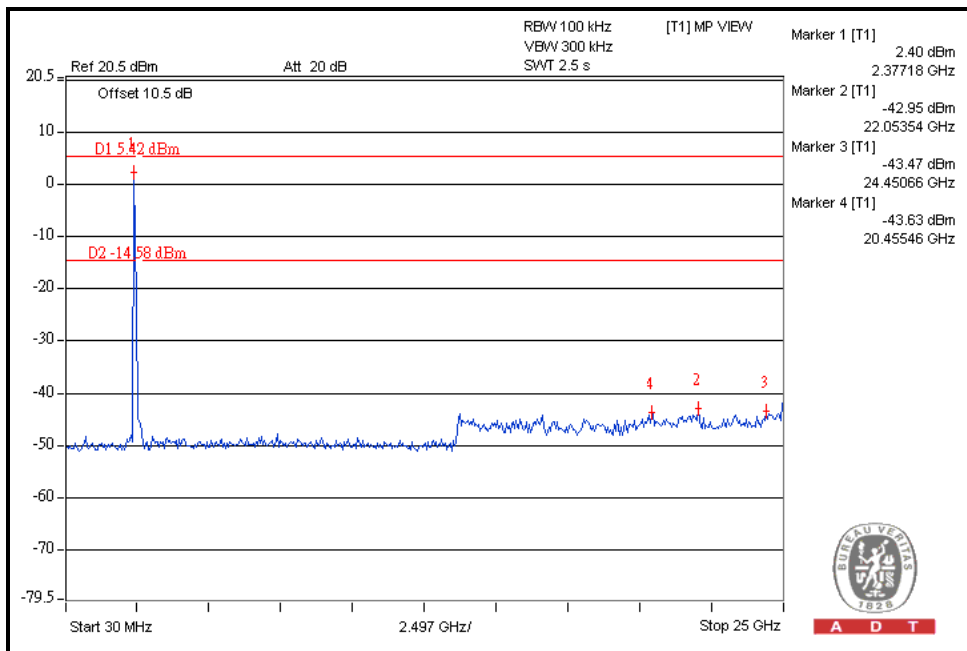
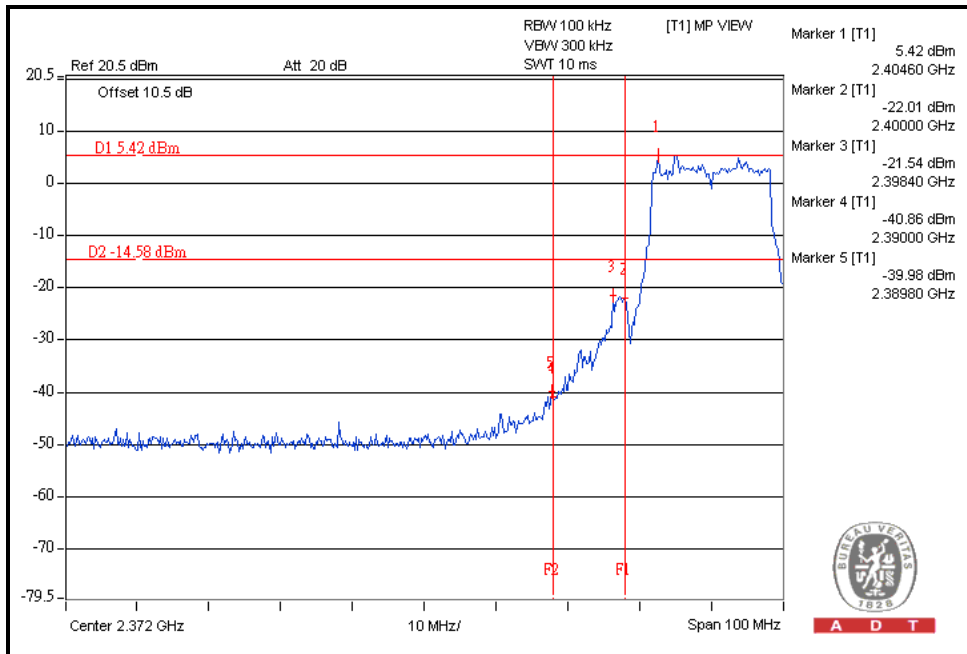




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802.11g OFDM MODULATION:

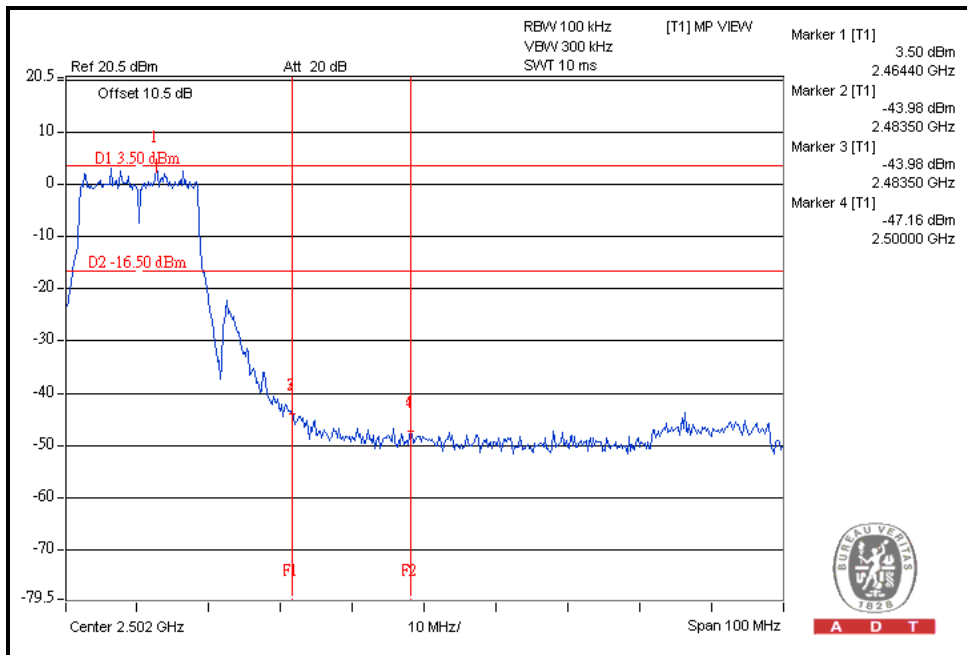
CH1



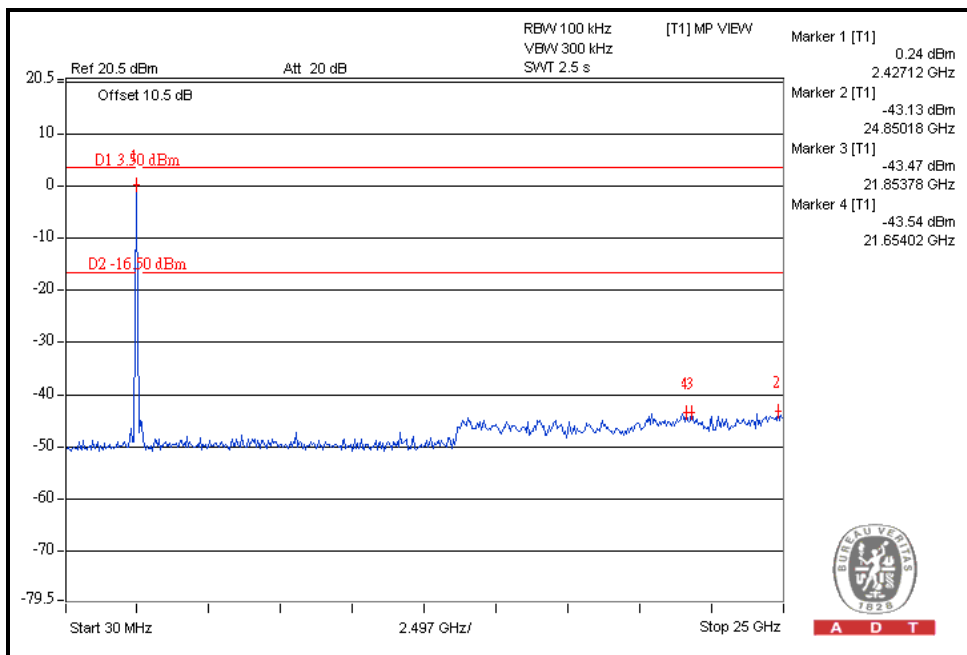


A D T

CH11



A D T



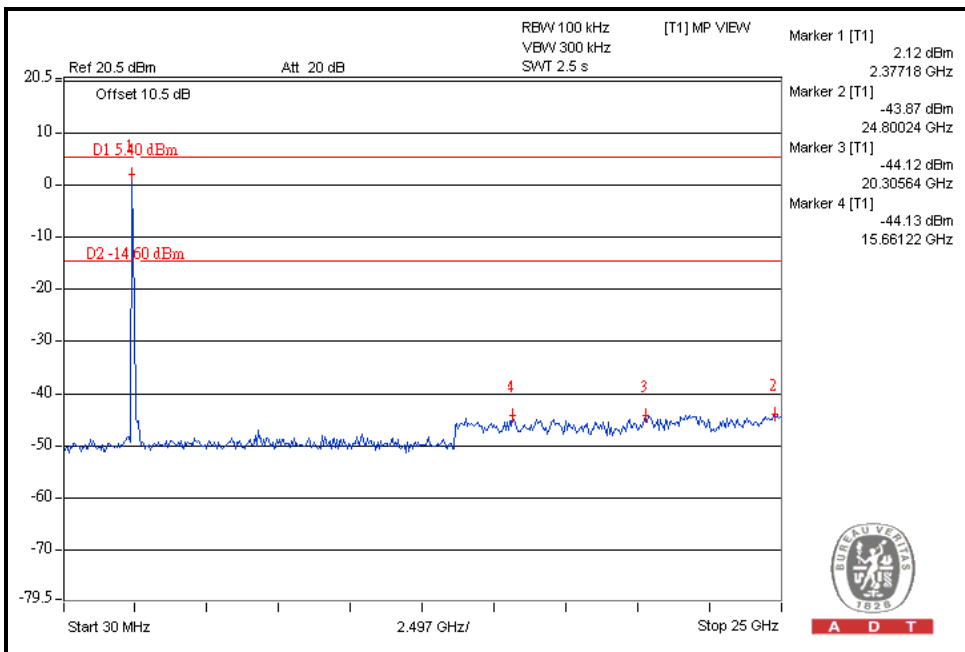
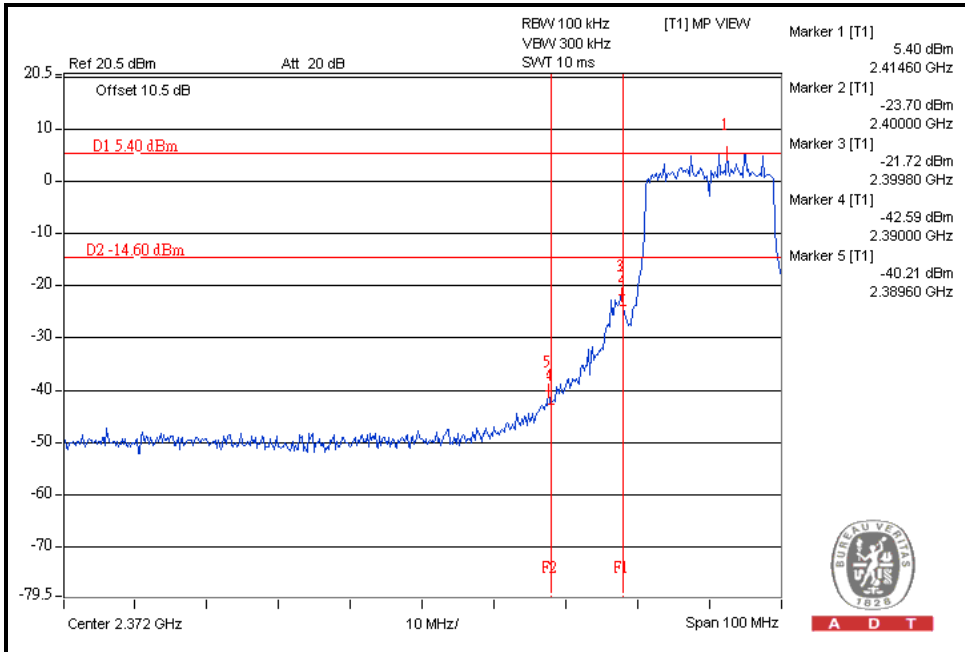
A D T



A D T

802.11n (20MHz) OFDM MODULATION:

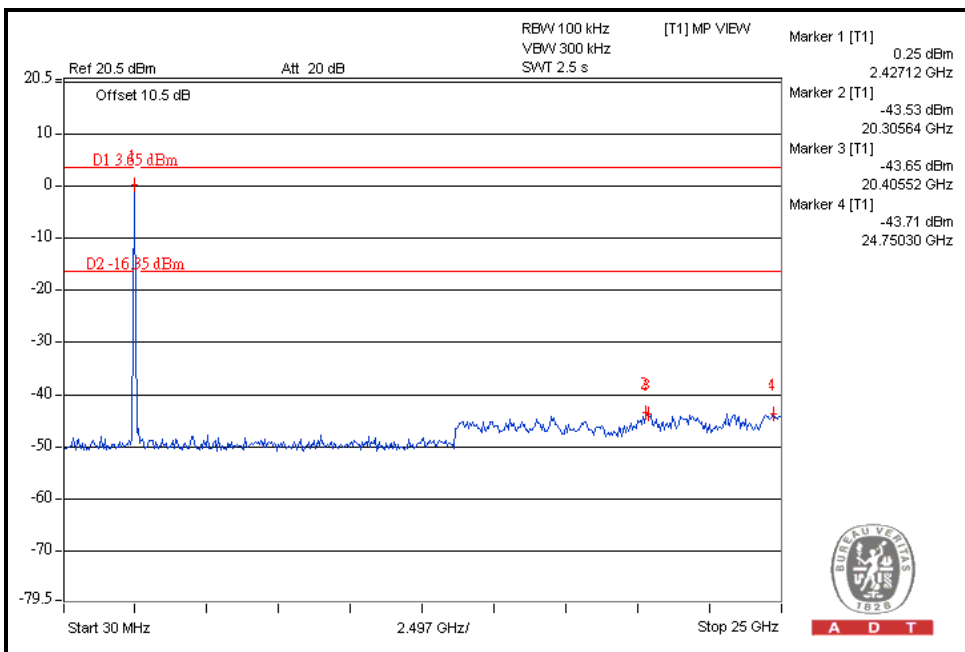
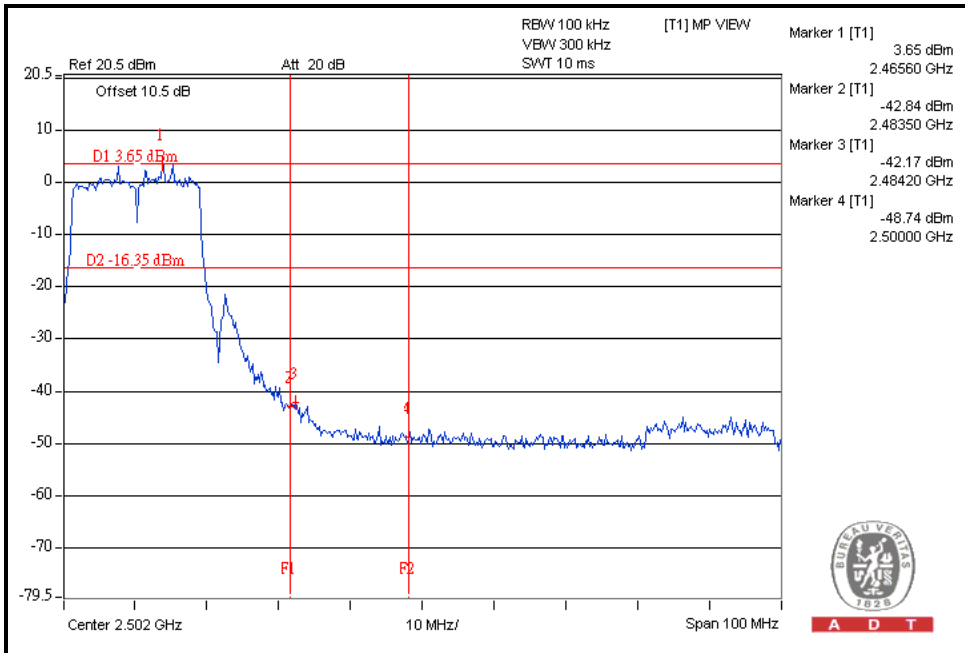
CH1





A D T

CH11

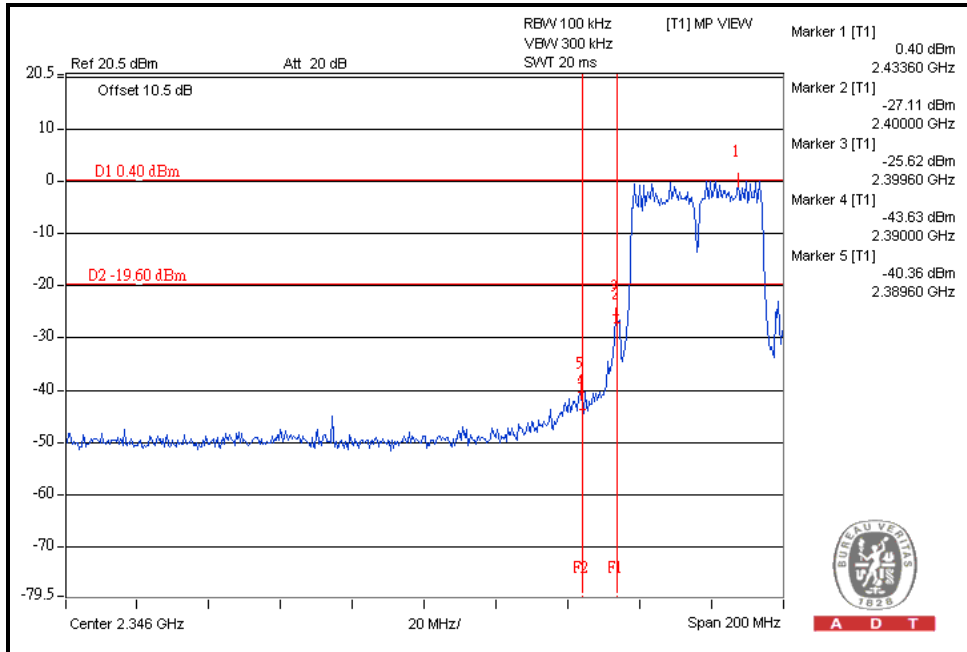




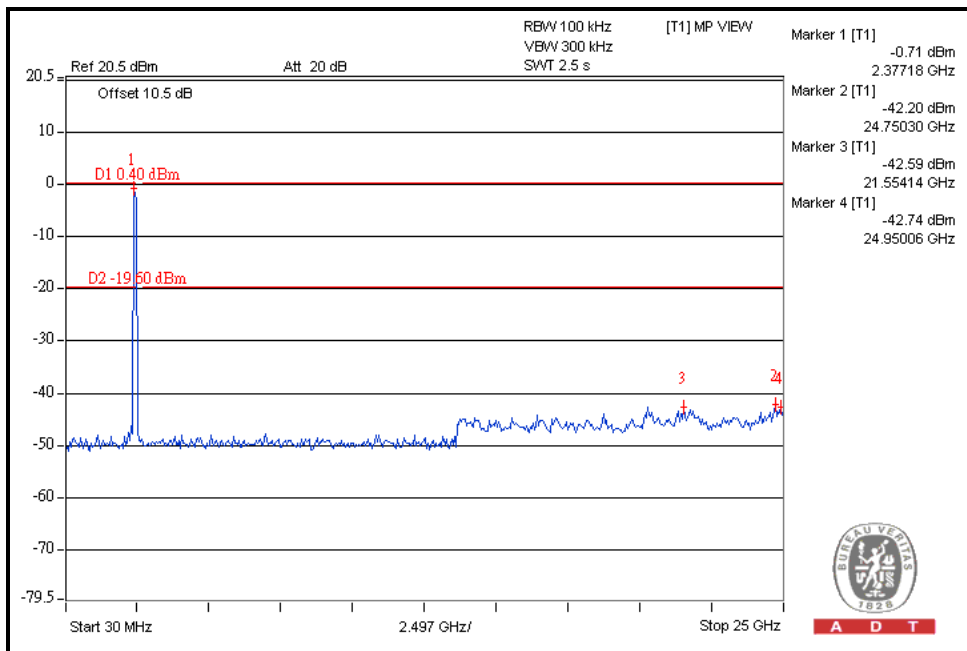
A D T

802.11n (40MHz) OFDM MODULATION:

CH3



A D T

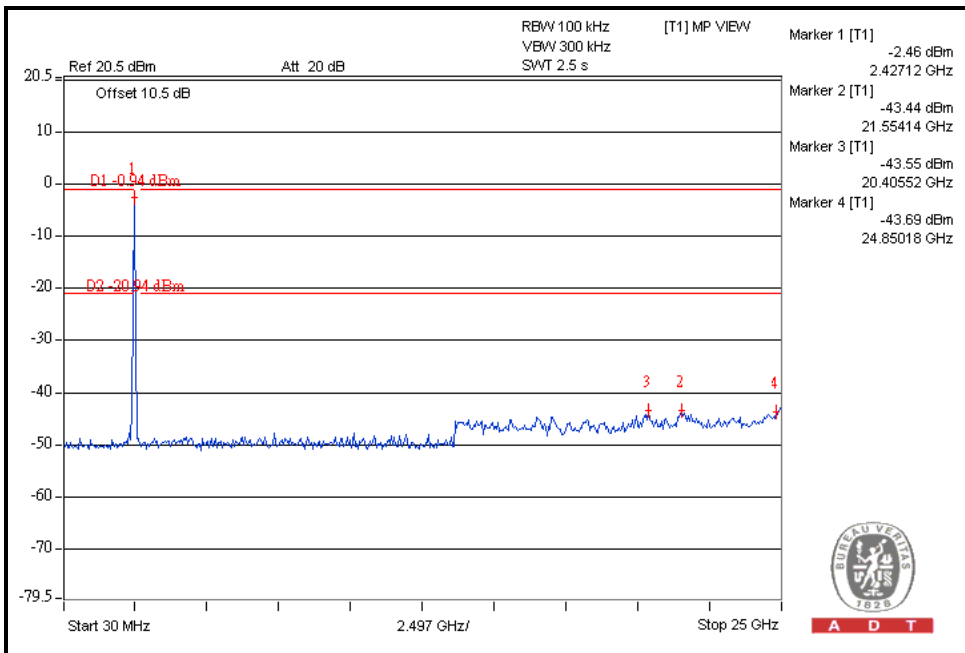
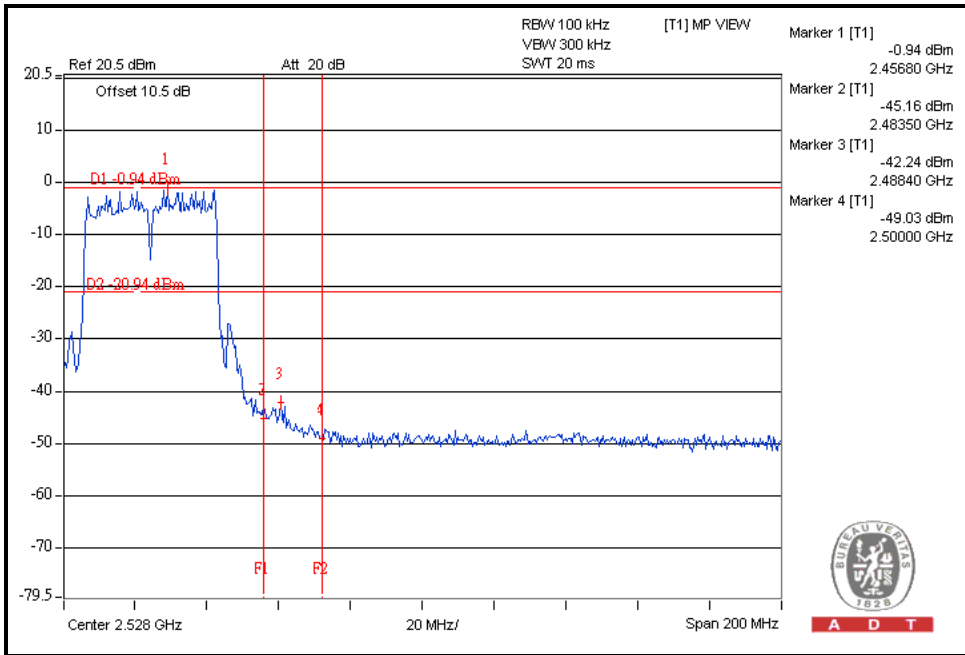


A D T



A D T

CH9





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 and authorization 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

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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.

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