



FCC TEST REPORT

REPORT NO.: RF980428H03

MODEL NO.: AW4042U-N

RECEIVED: April 28, 2009

TESTED: May 07 to 21, 2009

ISSUED: June 05, 2009

APPLICANT: TECOM CO., LTD

ADDRESS: NO.23, R&D ROAD 2, SCIENCE-BASED
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ISSUED BY: Bureau Veritas Consumer Products Services (H.K.)
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1. CERTIFICATION

PRODUCT : 11N WLANADSL Router
BRAND : TECOM
MODEL NO.: AW4042U-N
APPLICANT : TECOM CO., LTD
TESTED : May 07 to 21, 2009
TEST SAMPLE : ENGINEERING SAMPLE
STANDARDS : FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment (Model: AW4042U-N) 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:** June 05, 2009
(Claire Kuan, Specialist)

TECHNICAL ACCEPTANCE :  , **DATE:** June 05, 2009
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY :  , **DATE:** June 05, 2009
(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 -1.38dB at 2.520MHz.
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)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -0.50dB at 4874.00MHz.
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Conducted Out-Band Emission Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

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



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	11N WLANADSL Router
MODEL NO.	AW4042U-N
FCC ID	D6X-AW4042UN
POWER SUPPLY	DC 15V from 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 Draft 802.11n (20MHz, 800ns GI): 65 / 58.5 / 52 / 39 / 26 / 19.5 / 13 / 6.5Mbps Draft 802.11n (40MHz, 800ns GI): 135 / 121.5 / 108 / 81 / 54 / 40.5 / 27 / 13.5Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 75.858mW 802.11g: 403.645mW draft 802.11n (20MHz): 773.944mW draft 802.11n (40MHz): 320.328mW
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
I/O PORT	RJ-45(LAN) port x 4 RJ-45(ADSL) port x 1 USB port x 1
ASSOCIATED DEVICES	Antenna x 2 Adapter x 1

NOTE:

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

No.	Antenna Type	Gain (dBi)	Antenna Connector
1	Internal PCB	3.5	IPEX
2	Internal PCB	3.5	IPEX

2. The EUT must be supplied with a power adapter as following:

Brand:	TRUMP WAY
Model No.:	ZWS012GU1500080
Input power :	AC100-240V, 0.45A, 60Hz
Output power :	DC 15V, 800mA DC output cable (Unshielded, 1.2m)

3. 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 worst case was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

4. The EUT incorporates a MIMO function with draft 802.11n. Physically, the EUT provides two completed transmit and two completed receivers.
5. The EUT is 2 * 2 spatial MIMO without beam forming function. The antenna configurations are two transmitter antennas and two receiver antennas, as there are 2 Internal PCB antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 2 antennas.
6. When the EUT operating in draft 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
7. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g products.
8. 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, draft 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 draft 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	
-	√	√	√	√	-

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	802.11b	√	
B	802.11g	√	
C	DRAFT 802.11n(20MHz) for MCS 0~7	√	
D	DRAFT 802.11n(20MHz) for MCS 8~15	√	√
E	DRAFT 802.11n(40MHz) for MCS 0~7	√	
F	DRAFT 802.11n(40MHz) for MCS 8~15	√	√

Note:
1. The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
2. Antenna 1 and Antenna 2 are internal PCB antennas.

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)	EUT CONFIGURE MODE
802.11b	1 to 11	1	DSSS	DBPSK	1	A



RADIATED EMISSION TEST (BELOW 1 GHZ):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11b	1 to 11	1	DSSS	DBPSK	1	A

RADIATED EMISSION TEST (ABOVE 1 GHZ):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27	F

BANDEDGE 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)	EUT CONFIGURE MODE
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	13	D
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	27	F



ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27	F

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an 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 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.



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.

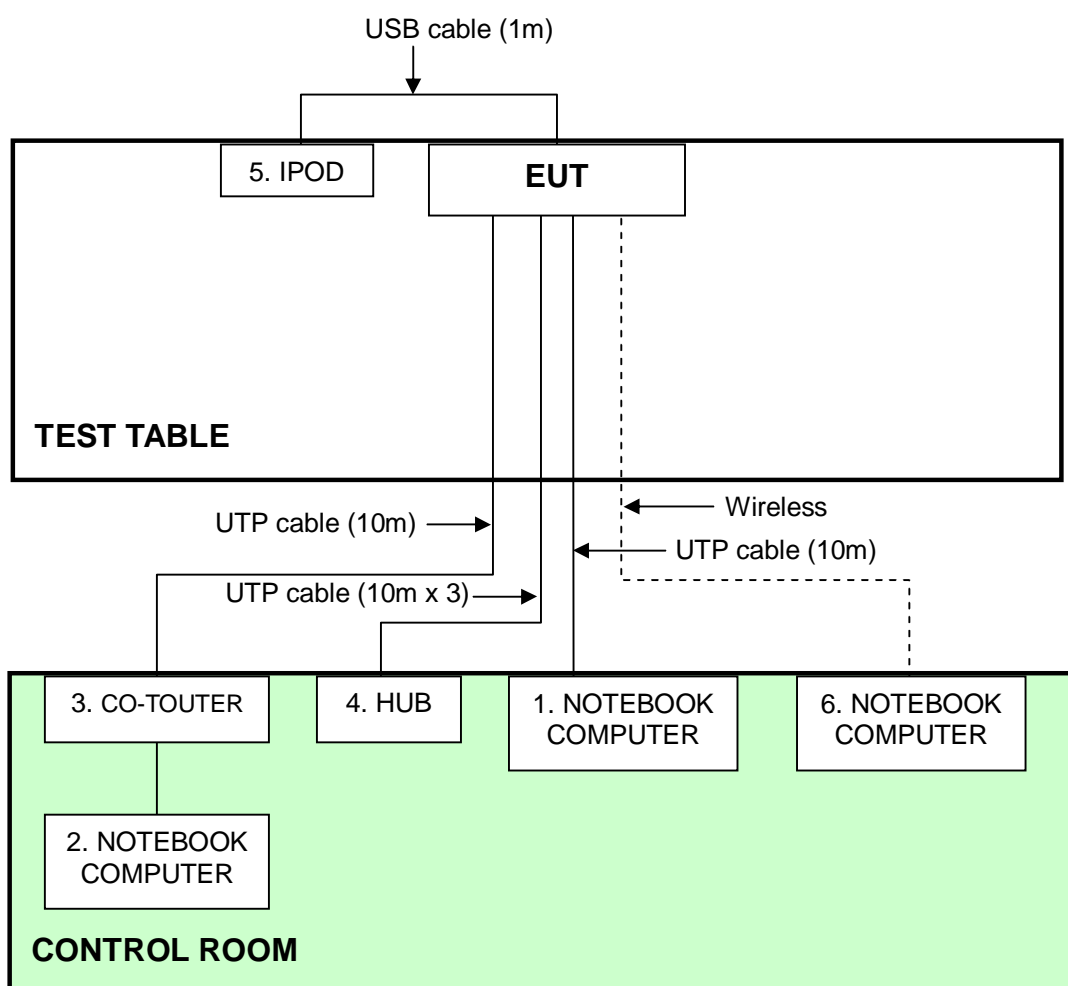
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
3	CO-ROUTER	ZyXEL	IES-1000	S4Z3112558	FCC DoC
4	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC
5	IPOD	Apple	A1137	6U6078FMUPR	FCC DoC
6	NOTEBOOK COMPUTER (For conducted test only)	DELL	PP05L	CN-04Y212-48643-38E-0145	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	UTP cable (10m)
3	UTP cable (10m)
4	UTP cable (10m)
5	1 m shielded cable, terminated with USB connector, w/o core.
6	Wireless

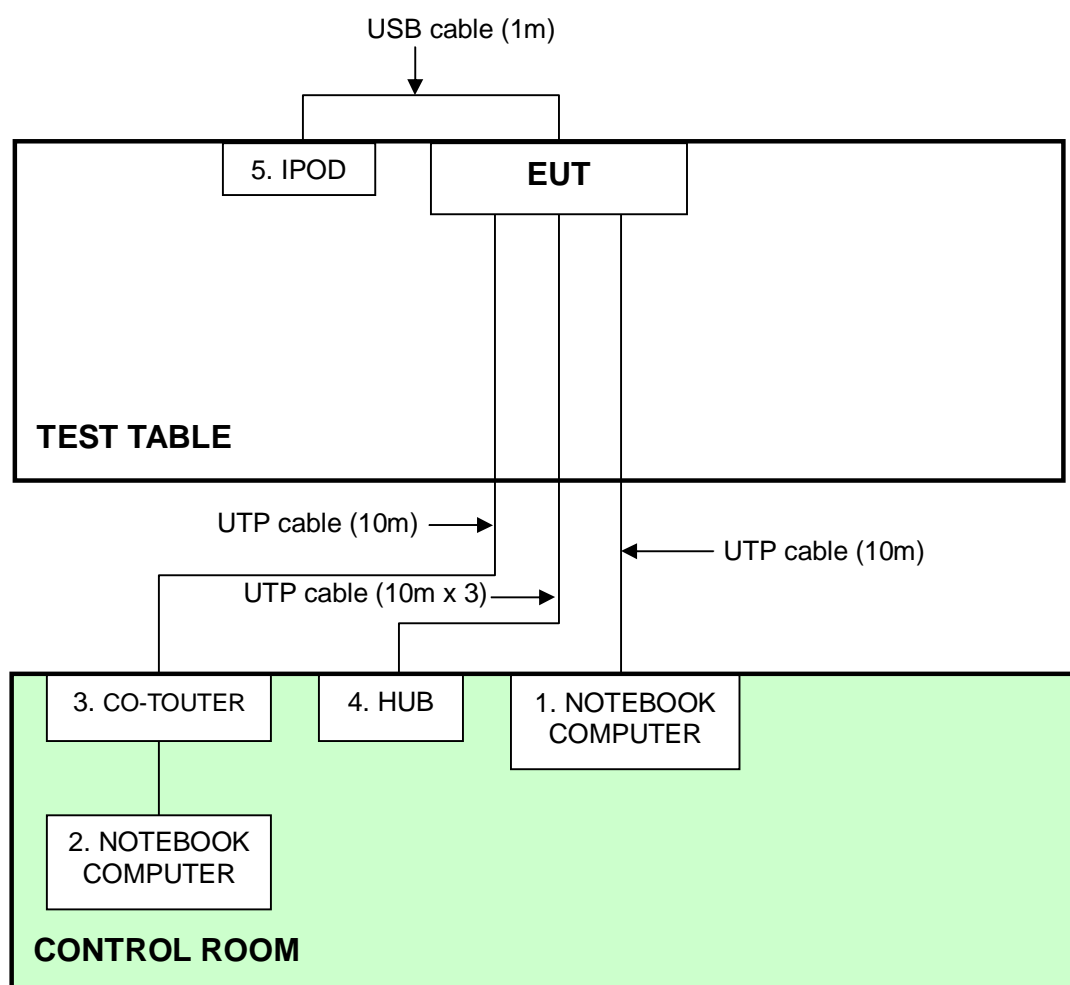
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted Emission test:



For other test:



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)	
	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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 23, 2009	Mar. 22, 2010
Line-Impedance Stabilization Network (for EUT)	ENV-216	100071	Nov. 26, 2008	Nov. 25, 2009
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 05, 2008	Nov. 04, 2009
RF Cable (JYEBAO)	5DFB	COBCAB-001	Aug. 15, 2008	Aug. 14, 2009
50 ohms Terminator	50	3	Nov. 05, 2008	Nov. 04, 2009
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. B.
3. The VCCI Con B Registration No. is C-2193.

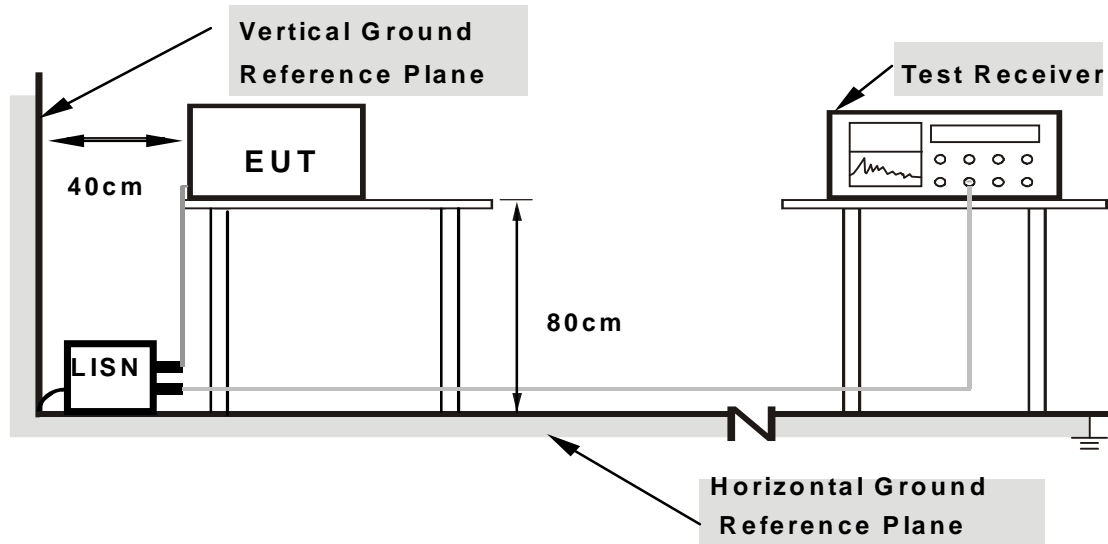
4.1.3 TEST PROCEDURES

- 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) was 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 ~ 6) to act as communication partners and placed them outside of testing area.
3. The communication partners run test program “Ping.exe” to enable EUT under transmission/receiving condition continuously via UTP cables and wireless transmission.



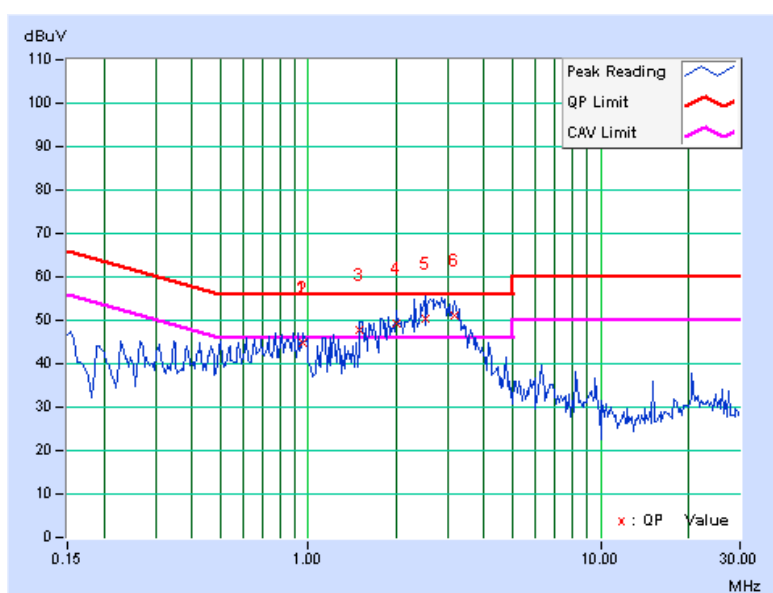
4.1.7 TEST RESULTS

802.11B OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line (L)
MODULATION TYPE	DBPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	1Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 960hPa	TESTED BY	Eric Lee

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	0.963	9.78	34.96	-	44.74	-	56.00	46.00	-11.26
2	0.963	9.78	35.10	-	44.88	-	56.00	46.00	-11.12	-
3	1.504	9.79	38.13	29.51	47.92	39.30	56.00	46.00	-8.08	-6.70
4	2.000	9.81	39.53	32.72	49.34	42.53	56.00	46.00	-6.66	-3.47
5	2.520	9.82	40.53	34.80	50.35	44.62	56.00	46.00	-5.65	-1.38
6	3.184	9.84	41.17	33.84	51.01	43.68	56.00	46.00	-4.99	-2.32

- 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.



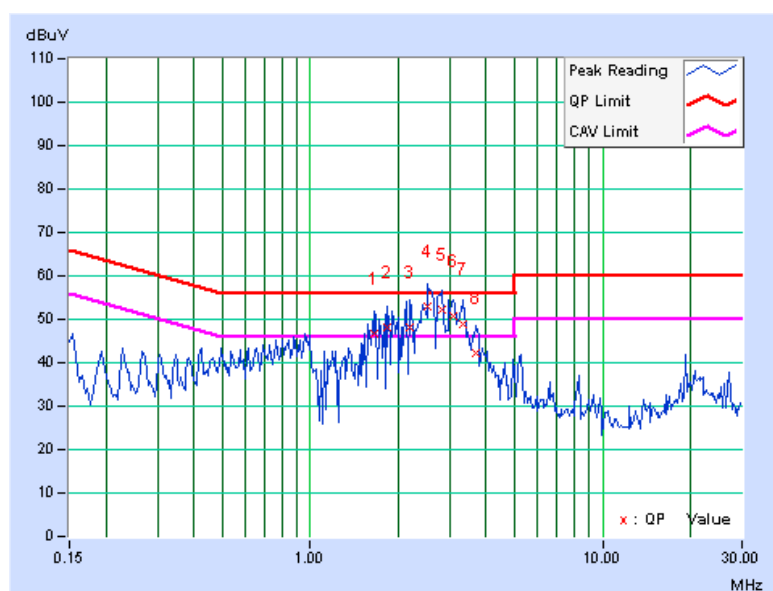


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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line (L)
MODULATION TYPE	DBPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	1Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 960hPa	TESTED BY	Eric Lee

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	1.648	9.78	37.05	25.01	46.83	34.79	56.00	46.00	-9.17
2	1.840	9.79	38.33	26.32	48.12	36.11	56.00	46.00	-7.88	-9.89
3	2.184	9.80	38.45	28.33	48.25	38.13	56.00	46.00	-7.75	-7.87
4	2.523	9.81	43.20	31.55	53.01	41.36	56.00	46.00	-2.99	-4.64
5	2.832	9.82	42.58	31.26	52.40	41.08	56.00	46.00	-3.60	-4.92
6	3.094	9.83	41.07	30.55	50.90	40.38	56.00	46.00	-5.10	-5.62
7	3.328	9.83	39.06	28.53	48.89	38.36	56.00	46.00	-7.11	-7.64
8	3.707	9.84	32.52	-	42.36	-	56.00	46.00	-13.64	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400 / F(kHz)	300
0.490 ~ 1.705	24000 / F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

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



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4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 9, 2008	Dec. 8, 2009
HP Pre_Amplifier	8449B	3008A01923	Nov. 10, 2008	Nov. 9, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 9, 2008	Sep. 8, 2009
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 29, 2009	April 28, 2010
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 09, 2008	Dec. 08, 2009
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2009	Jan. 21, 2010
R&S Loop Antenna	HFH2-Z2	100070	Jan. 14, 2008	Jan. 13, 2010
RF Switches	EMH-011	08009	Oct. 07, 2008	Oct. 06, 2009
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 15, 2008	Aug. 14, 2009
RF Cable	8DFB	STCCAB-30M-1GHz	Oct. 07, 2008	Oct. 06, 2009
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

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

2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in Open Site No. C.

4. The FCC Site Registration No. is 656396.

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

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



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

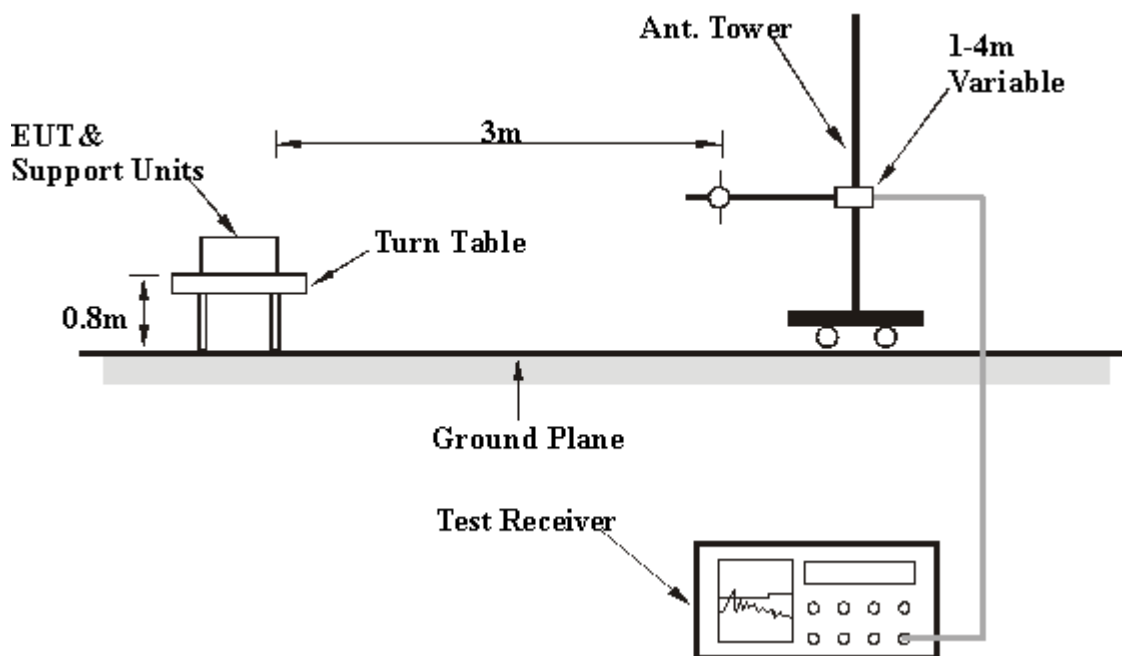
NOTE:

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

1. Placed the EUT on testing table.
2. Prepared other computer systems (support units 1 ~ 5) to act as communication partners and placed them outside of testing area.
3. The communication partner runs test program” Telnet Broadcom command” to enable EUT under transmission condition continuously at specific channel frequency via UTP cables.



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4.2.7 TEST RESULTS – Below 1GHz

BELOW 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	28.0deg. C, 59.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	151.63	34.22 QP	43.50	-9.28	2.02 H	96	17.97	16.25
2	250.01	38.01 QP	46.00	-7.99	1.00 H	109	22.59	15.42
3	300.01	33.13 QP	46.00	-12.87	1.00 H	224	16.11	17.02
4	400.01	35.89 QP	46.00	-10.11	1.00 H	131	14.75	21.14
5	500.01	37.58 QP	46.00	-8.42	1.66 H	163	14.92	22.66
6	600.02	39.63 QP	46.00	-6.37	1.32 H	151	14.86	24.77
7	700.02	41.00 QP	46.00	-5.00	1.06 H	148	13.96	27.04
8	750.02	39.68 QP	46.00	-6.32	1.00 H	214	11.22	28.46
9	800.02	40.02 QP	46.00	-5.98	1.00 H	154	10.08	29.94
10	900.02	35.27 QP	46.00	-10.73	1.00 H	39	4.26	31.01
11	959.99	37.60 QP	46.00	-8.40	1.00 H	69	5.63	31.97
12	1000.03	42.12 QP	54.00	-11.88	1.00 H	75	9.42	32.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	76.53	36.52 QP	40.00	-3.48	1.00 V	192	24.27	12.25
2	117.79	35.68 QP	43.50	-7.82	1.00 V	0	22.22	13.46
3	375.01	37.28 QP	46.00	-8.72	1.00 V	150	17.18	20.10
4	400.01	36.94 QP	46.00	-9.06	1.00 V	164	15.80	21.14
5	500.01	35.01 QP	46.00	-10.99	1.00 V	111	12.35	22.66
6	600.02	34.53 QP	46.00	-11.47	1.00 V	116	9.76	24.77
7	700.02	34.64 QP	46.00	-11.36	1.00 V	136	7.60	27.04
8	750.02	34.45 QP	46.00	-11.55	1.00 V	180	5.99	28.46
9	800.02	38.21 QP	46.00	-7.79	1.00 V	179	8.27	29.94
10	900.03	33.82 QP	46.00	-12.18	1.31 V	134	2.81	31.01
11	959.99	34.43 QP	46.00	-11.57	1.31 V	168	2.46	31.97
12	1000.03	40.61 QP	54.00	-13.39	1.33 V	177	7.91	32.70

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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4.2.8 TEST RESULTS – Above 1GHz

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	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.01 PK	74.00	-18.99	1.40 H	133	24.73	30.28
2	2390.00	43.30 AV	54.00	-10.70	1.40 H	133	13.02	30.28
3	*2412.00	98.62 PK			1.40 H	133	68.26	30.36
4	*2412.00	93.74 AV			1.40 H	133	63.38	30.36
5	2492.00	57.82 PK	74.00	-16.18	1.40 H	136	27.16	30.66
6	2492.00	46.78 AV	54.00	-7.22	1.40 H	136	16.12	30.66
7	4824.00	49.00 PK	74.00	-25.00	1.50 H	172	12.21	36.79
8	4824.00	39.96 AV	54.00	-14.04	1.50 H	172	3.17	36.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.29 PK	74.00	-16.71	1.38 V	190	27.01	30.28
2	2390.00	44.09 AV	54.00	-9.91	1.38 V	190	13.81	30.28
3	*2412.00	106.52 PK			1.35 V	192	76.16	30.36
4	*2412.00	101.82 AV			1.35 V	192	71.46	30.36
5	2491.00	62.07 PK	74.00	-11.93	1.28 V	224	31.41	30.66
6	2491.00	53.23 AV	54.00	-0.77	1.28 V	224	22.57	30.66
7	4824.00	56.39 PK	74.00	-17.61	1.12 V	171	19.60	36.79
8	4824.00	52.70 AV	54.00	-1.30	1.12 V	171	15.91	36.79

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	98.54 PK			1.36 H	134	68.08	30.46
2	*2437.00	93.86 AV			1.36 H	134	63.40	30.46
3	4874.00	50.27 PK	74.00	-23.73	1.71 H	173	13.35	36.92
4	4874.00	43.14 AV	54.00	-10.86	1.71 H	173	6.22	36.92
5	7311.00	51.79 PK	74.00	-22.21	1.20 H	135	8.65	43.14
6	7311.00	38.42 AV	54.00	-15.58	1.20 H	135	-4.72	43.14
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.00 PK			1.29 V	294	76.54	30.46
2	*2437.00	102.60 AV			1.29 V	294	72.14	30.46
3	4874.00	56.31 PK	74.00	-17.69	1.00 V	180	19.39	36.92
4	4874.00	51.90 AV	54.00	-2.10	1.00 V	180	14.98	36.92
5	7311.00	52.45 PK	74.00	-21.55	1.59 V	63	9.31	43.14
6	7311.00	38.64 AV	54.00	-15.36	1.59 V	63	-4.50	43.14

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

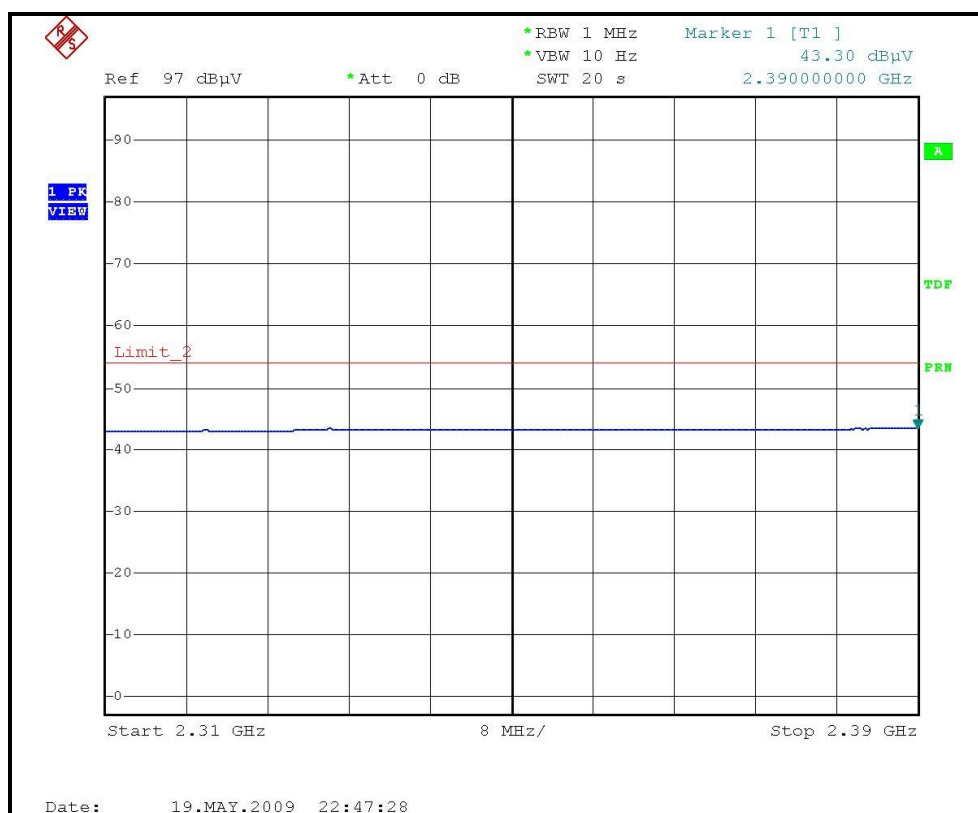
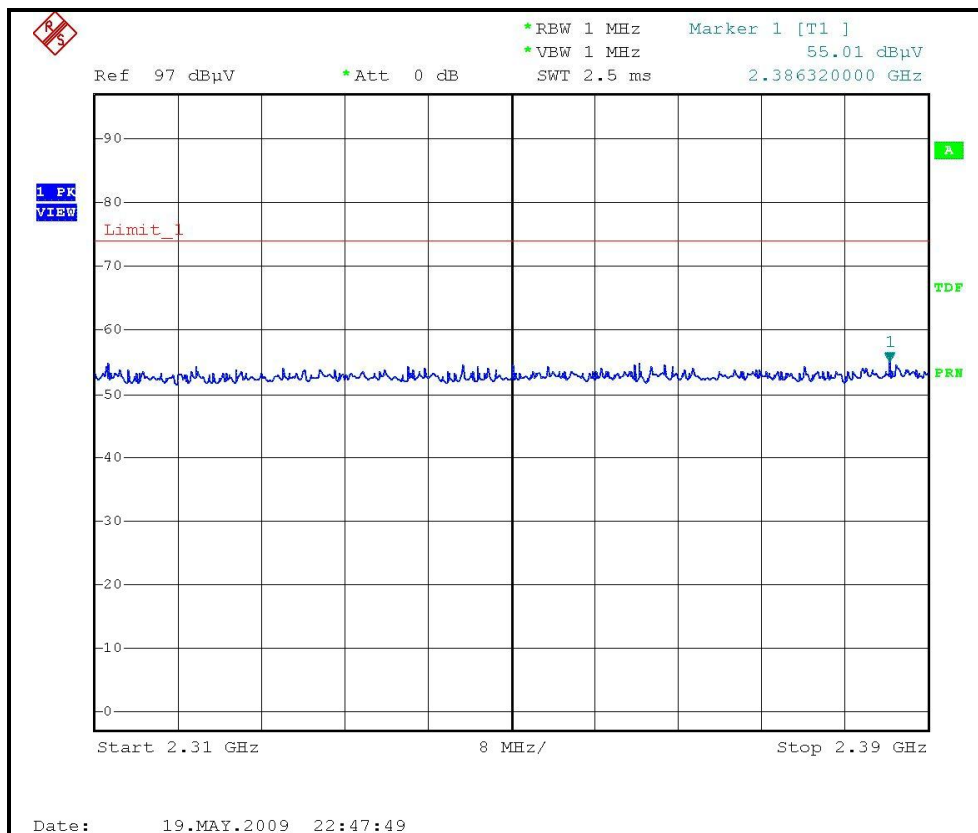
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.67 PK			1.19 H	142	72.12	30.55
2	*2462.00	98.10 AV			1.19 H	142	67.55	30.55
3	2483.50	56.62 PK	74.00	-17.38	1.37 H	134	25.99	30.63
4	2483.50	43.86 AV	54.00	-10.14	1.37 H	134	13.23	30.63
5	4924.00	48.33 PK	74.00	-25.67	1.66 H	33	11.27	37.06
6	4924.00	39.90 AV	54.00	-14.10	1.66 H	33	2.84	37.06
7	7386.00	53.09 PK	74.00	-20.91	1.10 H	108	9.96	43.13
8	7386.00	39.32 AV	54.00	-14.68	1.10 H	108	-3.81	43.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.55 PK			1.31 V	294	79.00	30.55
2	*2462.00	104.98 AV			1.31 V	294	74.43	30.55
3	2500.00	64.88 PK	74.00	-9.12	1.27 V	222	34.19	30.69
4	2500.00	48.77 AV	54.00	-5.23	1.27 V	222	18.08	30.69
5	4924.00	57.01 PK	74.00	-16.99	1.01 V	184	19.95	37.06
6	4924.00	53.38 AV	54.00	-0.62	1.01 V	184	16.32	37.06
7	7386.00	57.29 PK	74.00	-16.71	1.67 V	210	14.16	43.13
8	7386.00	41.41 AV	54.00	-12.59	1.67 V	210	-1.72	43.13

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



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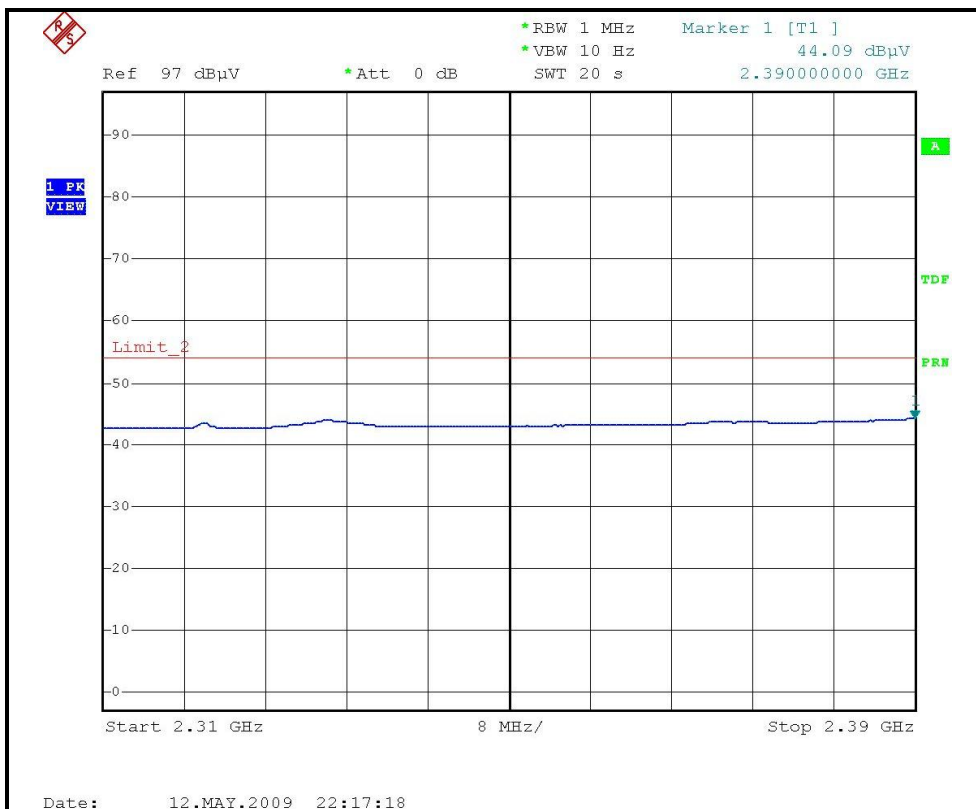
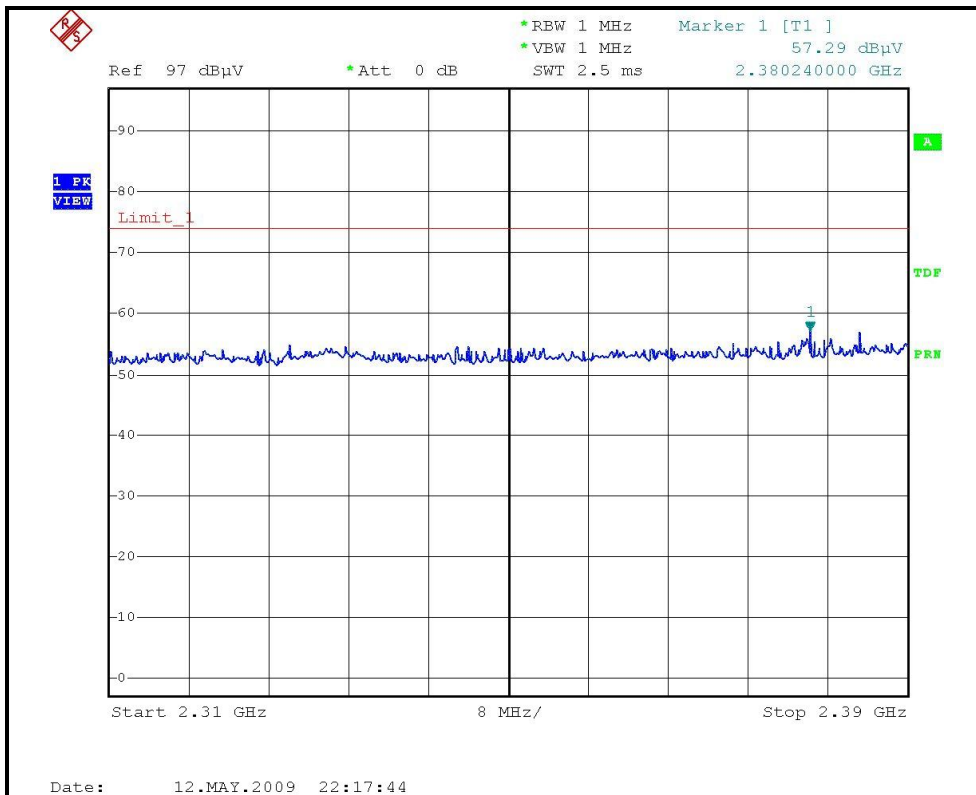
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)





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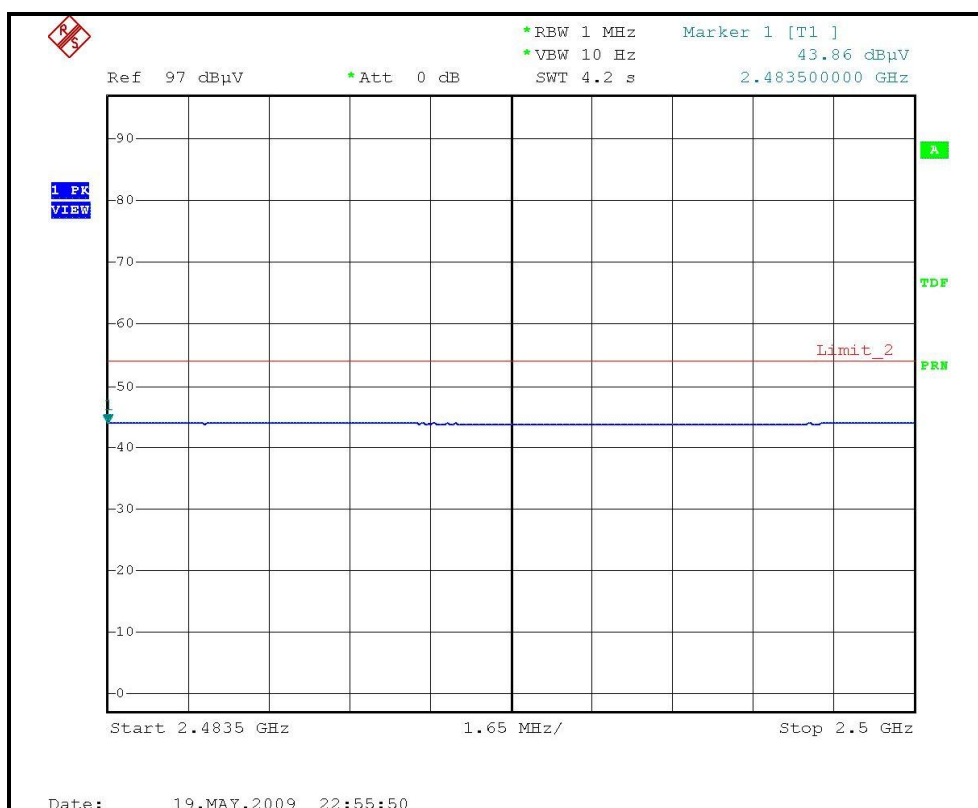
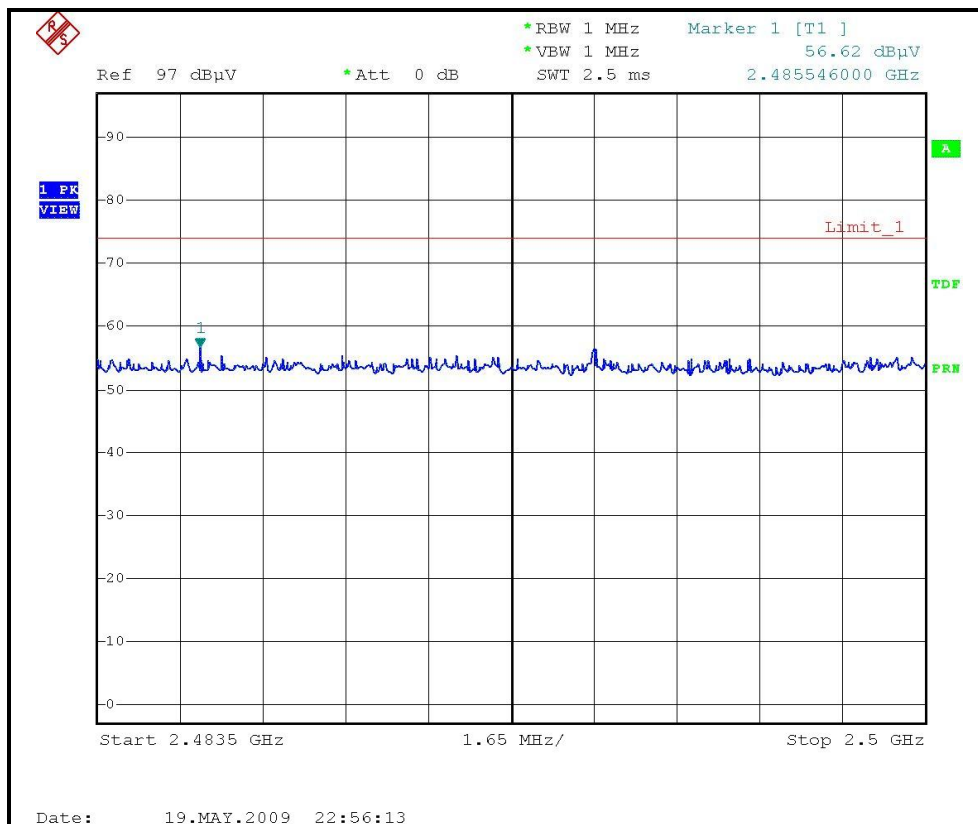
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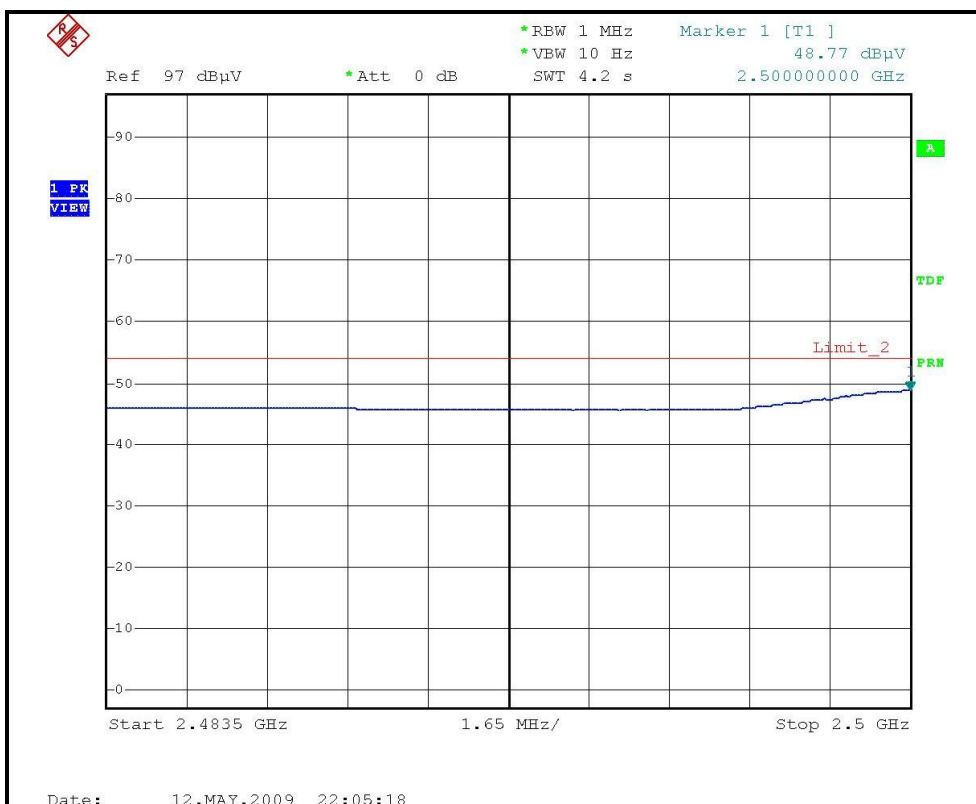
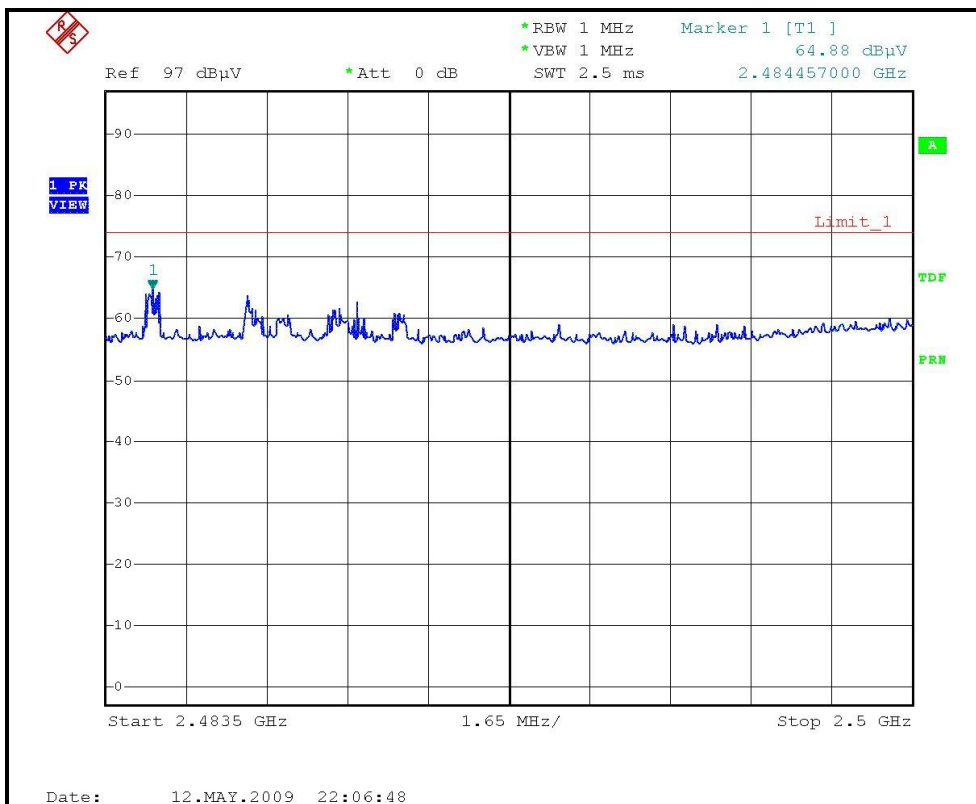
RESTRICTED BANDEDGE (802.11b MODE, CH11, HORIZONTAL)





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RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)





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	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.00 PK	74.00	-14.00	1.39 H	133	29.72	30.28
2	2390.00	47.69 AV	54.00	-6.31	1.39 H	133	17.41	30.28
3	*2412.00	105.38 PK			1.41 H	136	75.02	30.36
4	*2412.00	93.44 AV			1.41 H	136	63.08	30.36
5	2492.00	58.10 PK	74.00	-15.90	1.41 H	135	27.44	30.66
6	2492.00	45.29 AV	54.00	-8.71	1.41 H	135	14.63	30.66
7	4824.00	51.97 PK	74.00	-22.03	1.53 H	173	15.18	36.79
8	4824.00	37.68 AV	54.00	-16.32	1.53 H	173	0.89	36.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.11 PK	74.00	-7.89	1.62 V	191	35.83	30.28
2	2390.00	52.29 AV	54.00	-1.71	1.62 V	191	22.01	30.28
3	*2412.00	110.47 PK			1.38 V	191	80.11	30.36
4	*2412.00	99.64 AV			1.38 V	191	69.28	30.36
5	2492.00	63.62 PK	74.00	-10.38	1.32 V	198	32.96	30.66
6	2492.00	52.28 AV	54.00	-1.72	1.32 V	198	21.62	30.66
7	4824.00	61.70 PK	74.00	-12.30	1.40 V	9	24.91	36.79
8	4824.00	46.21 AV	54.00	-7.79	1.40 V	9	9.42	36.79

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2272.00	61.71 PK	74.00	-12.29	1.49 H	134	31.86	29.85
2	2272.00	47.32 AV	54.00	-6.68	1.49 H	134	17.47	29.85
3	2390.00	60.57 PK	74.00	-13.43	1.37 H	135	30.29	30.28
4	2390.00	45.78 AV	54.00	-8.22	1.37 H	135	15.50	30.28
5	*2437.00	108.29 PK			1.37 H	136	77.83	30.46
6	*2437.00	97.42 AV			1.37 H	136	66.96	30.46
7	2483.50	59.47 PK	74.00	-14.53	1.37 H	138	28.84	30.63
8	2483.50	46.86 AV	54.00	-7.14	1.37 H	138	16.23	30.63
9	4874.00	61.95 PK	74.00	-12.05	1.16 H	154	25.03	36.92
10	4874.00	45.88 AV	54.00	-8.12	1.16 H	154	8.96	36.92
11	7311.00	57.44 PK	74.00	-16.56	1.73 H	337	14.30	43.14
12	7311.00	40.16 AV	54.00	-13.84	1.73 H	337	-2.98	43.14
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2272.00	67.39 PK	74.00	-6.61	1.72 V	192	37.54	29.85
2	2272.00	52.67 AV	54.00	-1.33	1.72 V	192	22.82	29.85
3	2390.00	68.95 PK	74.00	-5.05	1.64 V	192	38.67	30.28
4	2390.00	51.45 AV	54.00	-2.55	1.64 V	192	21.17	30.28
5	*2437.00	115.71 PK			1.38 V	195	85.25	30.46
6	*2437.00	105.06 AV			1.38 V	195	74.60	30.46
7	2483.50	69.95 PK	74.00	-4.05	1.32 V	197	39.32	30.63
8	2483.50	53.17 AV	54.00	-0.83	1.32 V	197	22.54	30.63
9	4874.00	71.26 PK	74.00	-2.74	1.40 V	9	34.34	36.92
10	4874.00	53.50 AV	54.00	-0.50	1.40 V	9	16.58	36.92
11	7311.00	68.06 PK	74.00	-5.94	1.32 V	339	24.92	43.14
12	7311.00	46.45 AV	54.00	-7.55	1.32 V	339	3.31	43.14

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

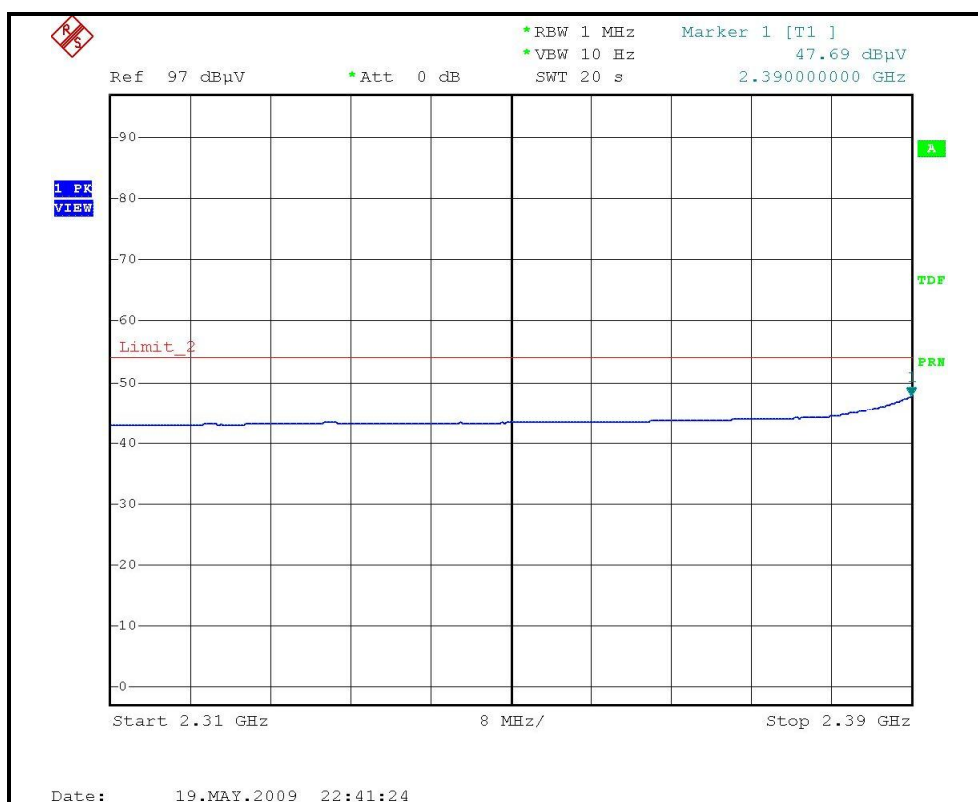
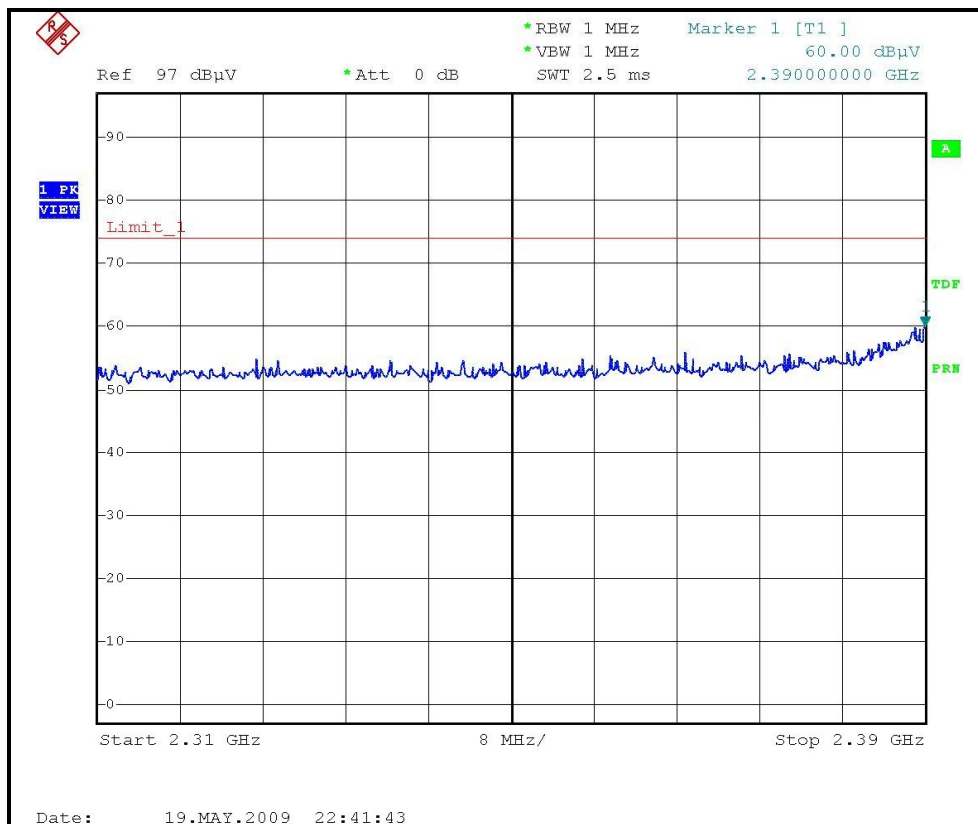
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.36 PK			1.37 H	137	71.81	30.55
2	*2462.00	91.19 AV			1.37 H	137	60.64	30.55
3	2483.50	60.90 PK	74.00	-13.10	1.38 H	137	30.27	30.63
4	2483.50	47.31 AV	54.00	-6.69	1.38 H	137	16.68	30.63
5	4924.00	49.11 PK	74.00	-24.89	1.20 H	155	12.05	37.06
6	4924.00	33.49 AV	54.00	-20.51	1.20 H	155	-3.57	37.06
7	7386.00	51.56 PK	74.00	-22.44	1.62 H	341	8.43	43.13
8	7386.00	37.98 AV	54.00	-16.02	1.62 H	341	-5.15	43.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.00 PK			1.51 V	286	79.45	30.55
2	*2462.00	98.91 AV			1.51 V	286	68.36	30.55
3	2483.50	67.63 PK	74.00	-6.37	1.49 V	284	37.00	30.63
4	2483.50	53.15 AV	54.00	-0.85	1.49 V	284	22.52	30.63
5	4924.00	60.16 PK	74.00	-13.84	1.40 V	0	23.10	37.06
6	4924.00	41.52 AV	54.00	-12.48	1.40 V	0	4.46	37.06
7	7386.00	51.82 PK	74.00	-22.18	1.39 V	319	8.69	43.13
8	7386.00	37.99 AV	54.00	-16.01	1.39 V	319	-5.14	43.13

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



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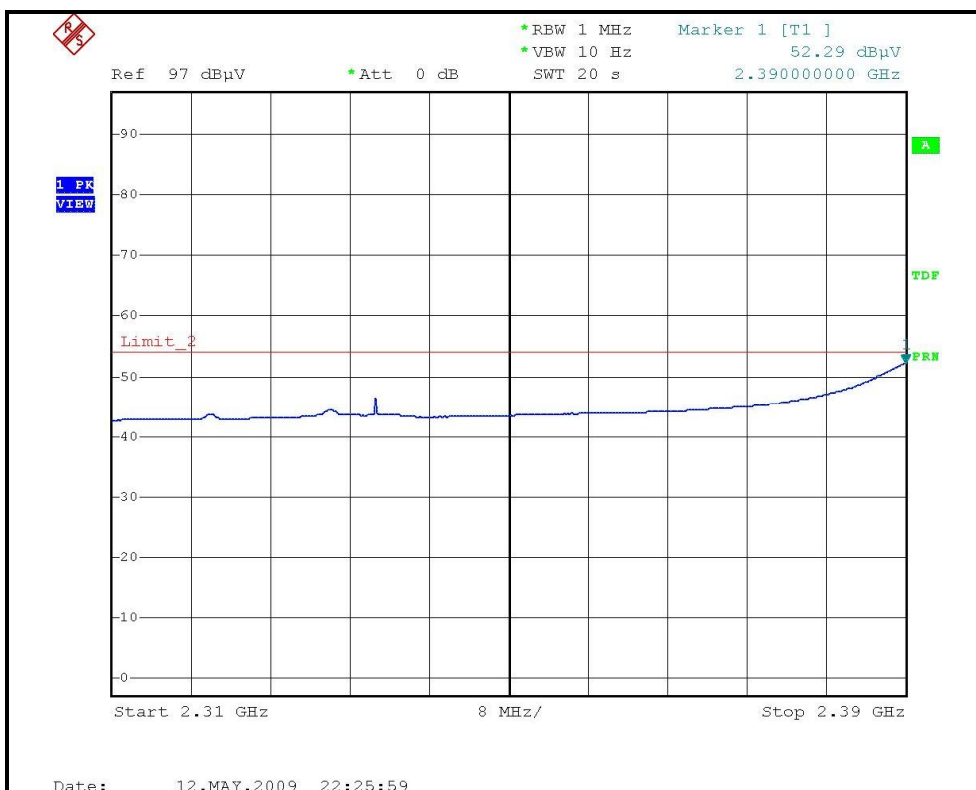
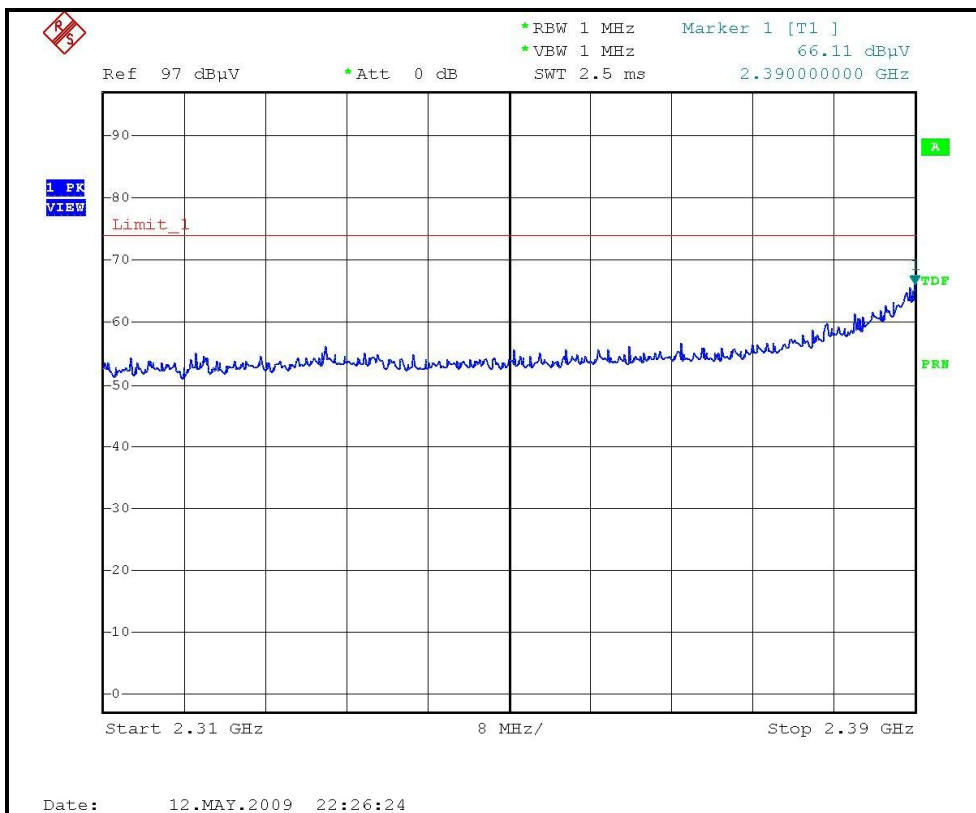
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)





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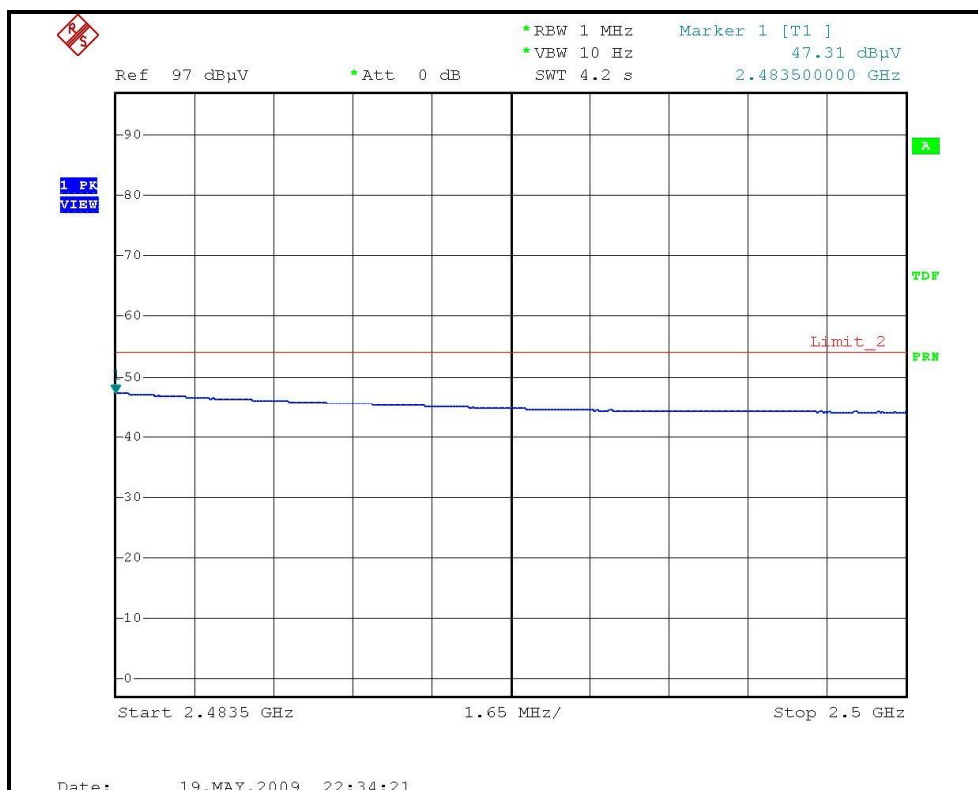
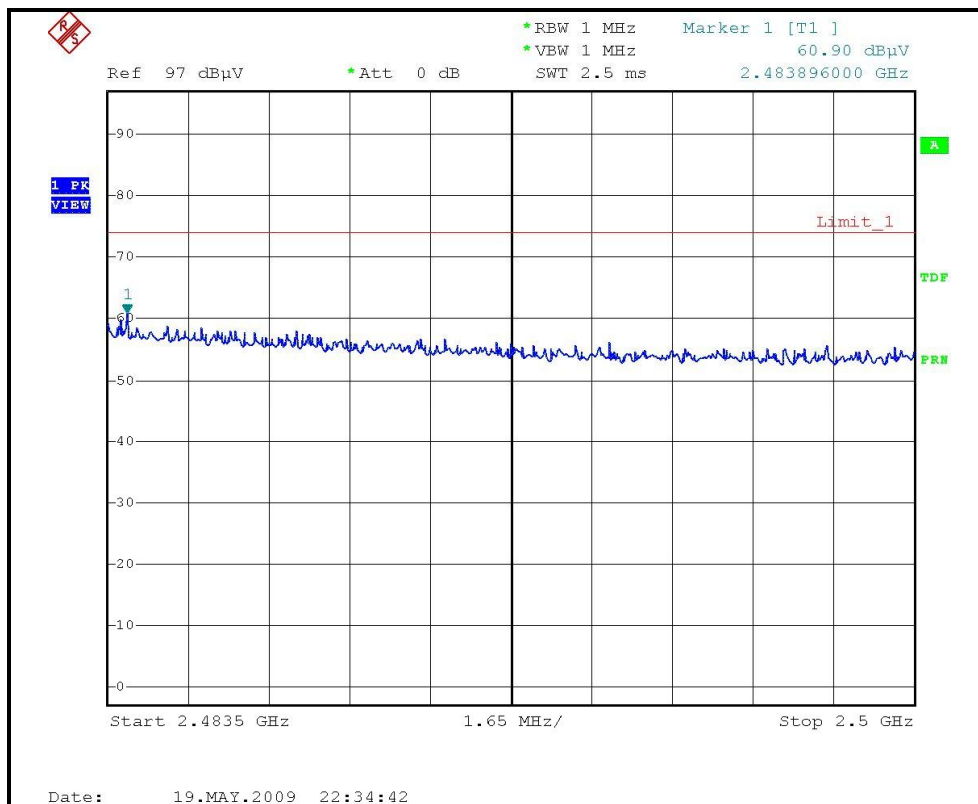
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)





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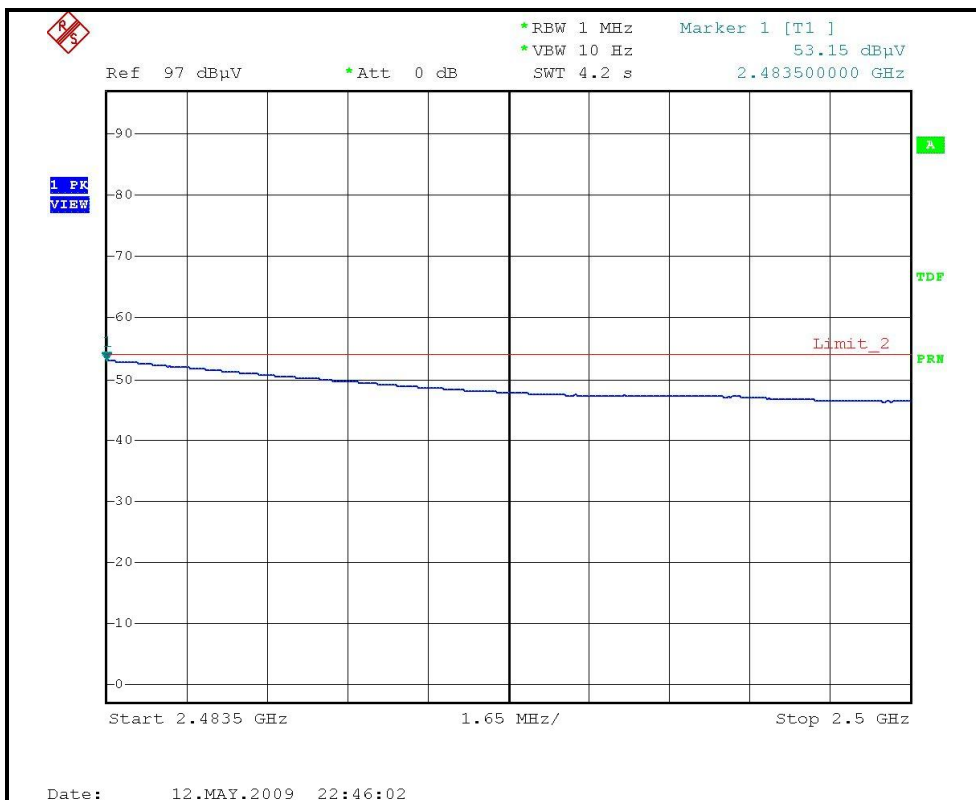
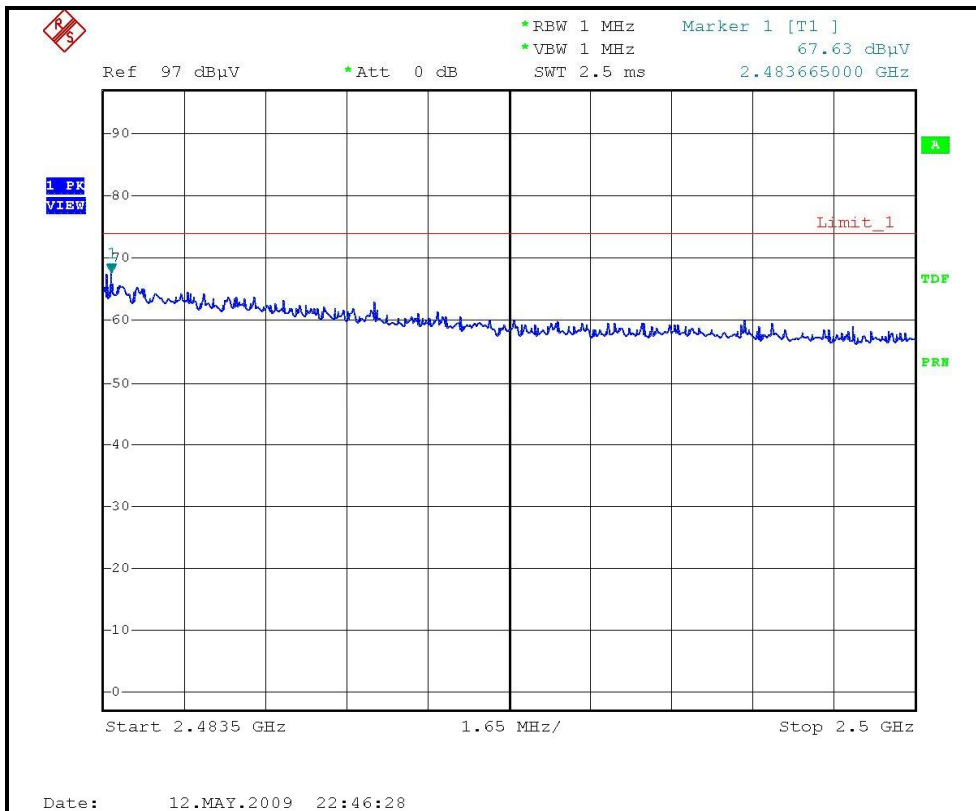
RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)





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RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





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DRAFT 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	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.43 PK	74.00	-14.57	1.49 H	130	29.15	30.28
2	2390.00	46.89 AV	54.00	-7.11	1.49 H	130	16.61	30.28
3	*2412.00	101.58 PK			1.38 H	131	71.22	30.36
4	*2412.00	89.61 AV			1.38 H	131	59.25	30.36
5	2492.00	58.26 PK	74.00	-15.74	1.40 H	137	27.60	30.66
6	2492.00	45.78 AV	54.00	-8.22	1.40 H	137	15.12	30.66
7	4824.00	46.05 PK	74.00	-27.95	1.15 H	152	9.26	36.79
8	4824.00	32.38 AV	54.00	-21.62	1.15 H	152	-4.41	36.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.71 PK	74.00	-7.29	1.33 V	146	36.43	30.28
2	2390.00	52.66 AV	54.00	-1.34	1.33 V	146	22.38	30.28
3	*2412.00	110.10 PK			1.31 V	114	79.74	30.36
4	*2412.00	98.10 AV			1.31 V	114	67.74	30.36
5	2492.00	65.49 PK	74.00	-8.51	1.51 V	103	34.83	30.66
6	2492.00	53.17 AV	54.00	-0.83	1.51 V	103	22.51	30.66
7	4824.00	51.50 PK	74.00	-22.50	1.38 V	1	14.71	36.79
8	4824.00	36.01 AV	54.00	-17.99	1.38 V	1	-0.78	36.79

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



A D T

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	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2272.00	60.46 PK	74.00	-13.54	1.47 H	112	30.61	29.85
2	2272.00	47.63 AV	54.00	-6.37	1.47 H	112	17.78	29.85
3	2390.00	63.01 PK	74.00	-10.99	1.36 H	137	32.73	30.28
4	2390.00	46.78 AV	54.00	-7.22	1.36 H	137	16.50	30.28
5	*2437.00	110.08 PK			1.38 H	131	79.62	30.46
6	*2437.00	97.84 AV			1.38 H	131	67.38	30.46
7	2483.50	64.07 PK	74.00	-9.93	1.38 H	136	33.44	30.63
8	2483.50	47.33 AV	54.00	-6.67	1.38 H	136	16.70	30.63
9	4874.00	58.92 PK	74.00	-15.08	1.16 H	156	22.00	36.92
10	4874.00	42.33 AV	54.00	-11.67	1.16 H	156	5.41	36.92
11	7311.00	62.08 PK	74.00	-11.92	1.37 H	323	18.94	43.14
12	7311.00	45.83 AV	54.00	-8.17	1.37 H	323	2.69	43.14

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2272.00	67.01 PK	74.00	-6.99	1.39 V	268	37.16	29.85
2	2272.00	53.04 AV	54.00	-0.96	1.39 V	268	23.19	29.85
3	2390.00	72.40 PK	74.00	-1.60	1.63 V	189	42.12	30.28
4	2390.00	52.75 AV	54.00	-1.25	1.63 V	189	22.47	30.28
5	*2437.00	118.57 PK			1.63 V	191	88.11	30.46
6	*2437.00	105.34 AV			1.63 V	191	74.88	30.46
7	2483.50	66.23 PK	74.00	-7.77	1.26 V	115	35.60	30.63
8	2483.50	53.01 AV	54.00	-0.99	1.26 V	115	22.38	30.63
9	4874.00	66.98 PK	74.00	-7.02	1.00 V	180	30.06	36.92
10	4874.00	50.82 AV	54.00	-3.18	1.00 V	180	13.90	36.92
11	7311.00	66.01 PK	74.00	-7.99	1.14 V	170	22.87	43.14
12	7311.00	50.56 AV	54.00	-3.44	1.14 V	170	7.42	43.14

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

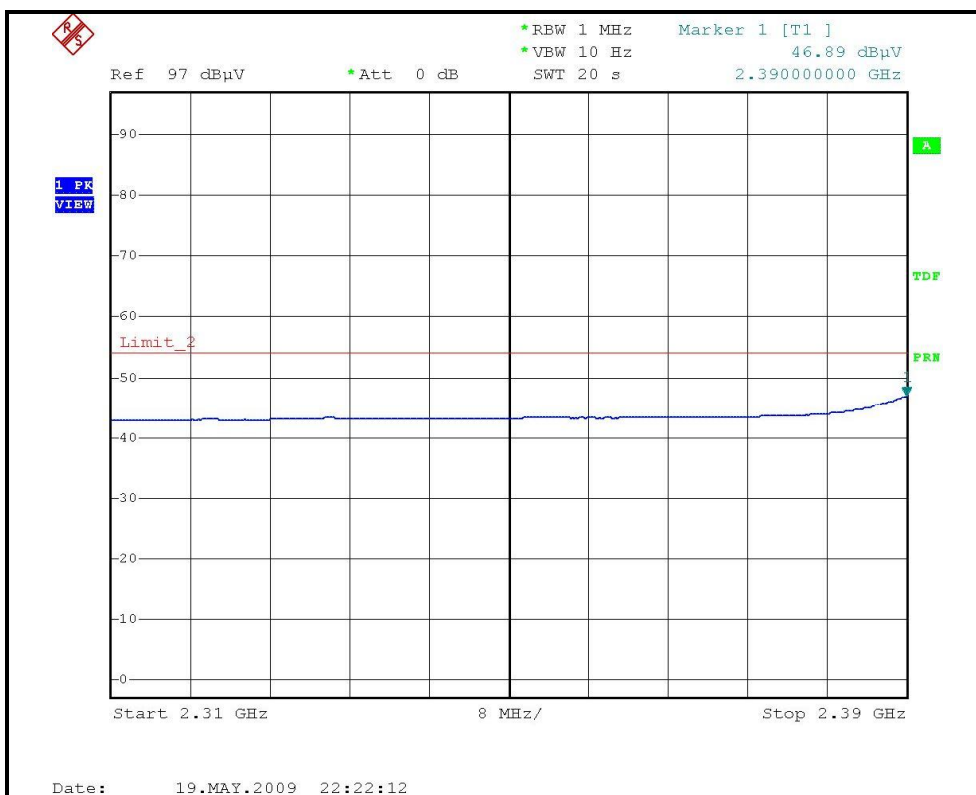
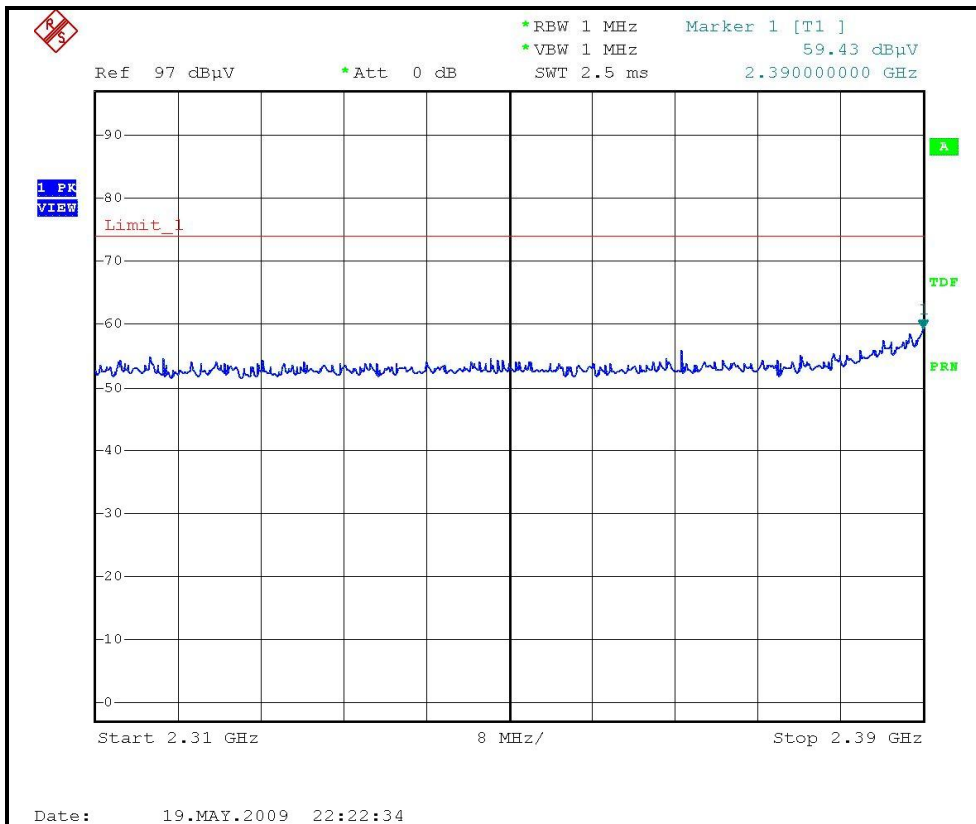
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.06 PK			1.37 H	136	70.51	30.55
2	*2462.00	88.48 AV			1.37 H	136	57.93	30.55
3	2483.50	58.65 PK	74.00	-15.35	1.39 H	136	28.02	30.63
4	2483.50	46.07 AV	54.00	-7.93	1.39 H	136	15.44	30.63
5	4924.00	45.79 PK	74.00	-28.21	1.20 H	156	8.73	37.06
6	4924.00	32.15 AV	54.00	-21.85	1.20 H	156	-4.91	37.06
7	7386.00	52.32 PK	74.00	-21.68	1.66 H	353	9.19	43.13
8	7386.00	37.95 AV	54.00	-16.05	1.66 H	353	-5.18	43.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.34 PK			1.51 V	113	77.79	30.55
2	*2462.00	96.41 AV			1.51 V	113	65.86	30.55
3	2483.50	68.79 PK	74.00	-5.21	1.52 V	103	38.16	30.63
4	2483.50	53.12 AV	54.00	-0.88	1.52 V	103	22.49	30.63
5	4924.00	52.49 PK	74.00	-21.51	1.39 V	0	15.43	37.06
6	4924.00	37.18 AV	54.00	-16.82	1.39 V	0	0.12	37.06
7	7386.00	51.67 PK	74.00	-22.33	1.00 V	20	8.54	43.13
8	7386.00	37.82 AV	54.00	-16.18	1.00 V	20	-5.31	43.13

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



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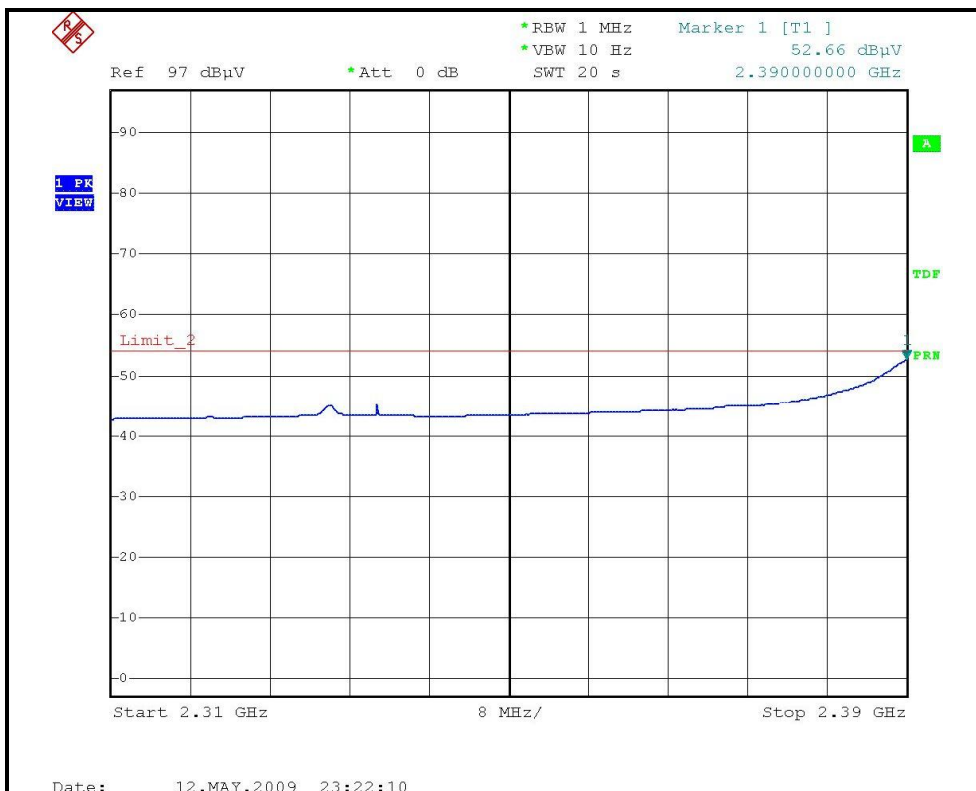
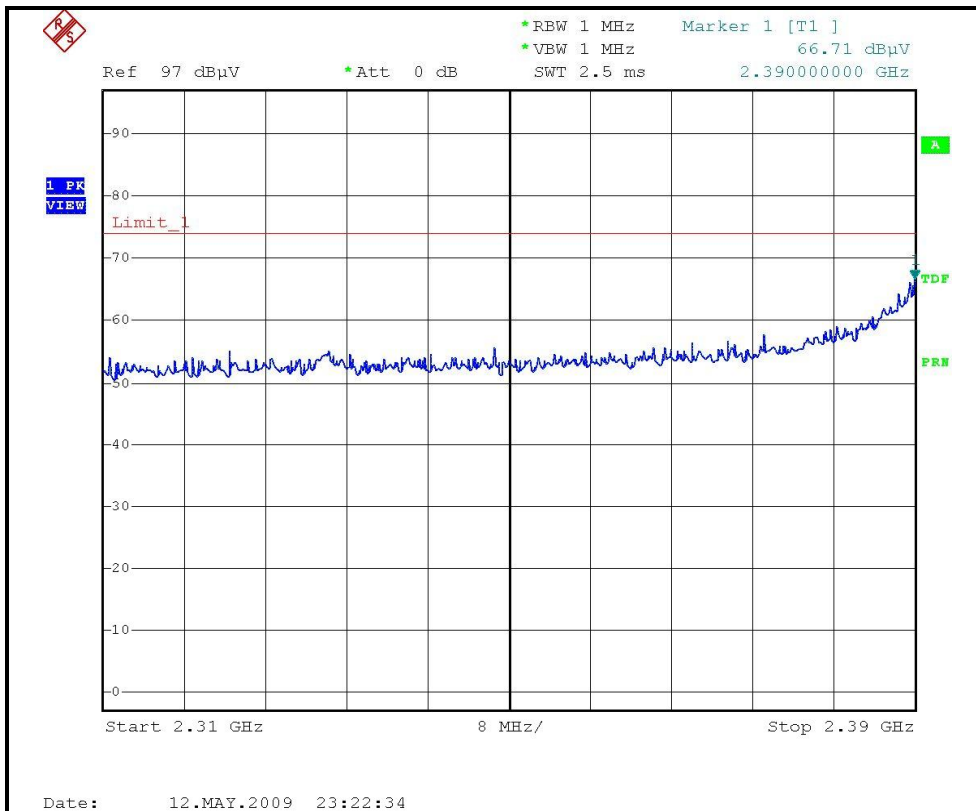
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, HORIZONTAL)





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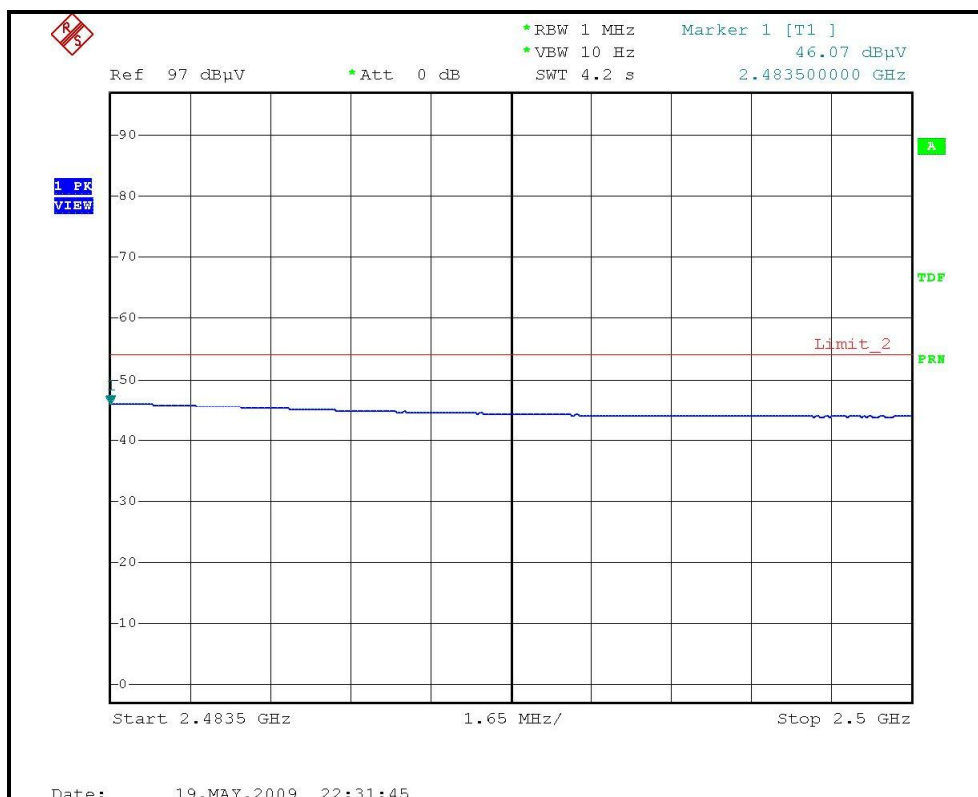
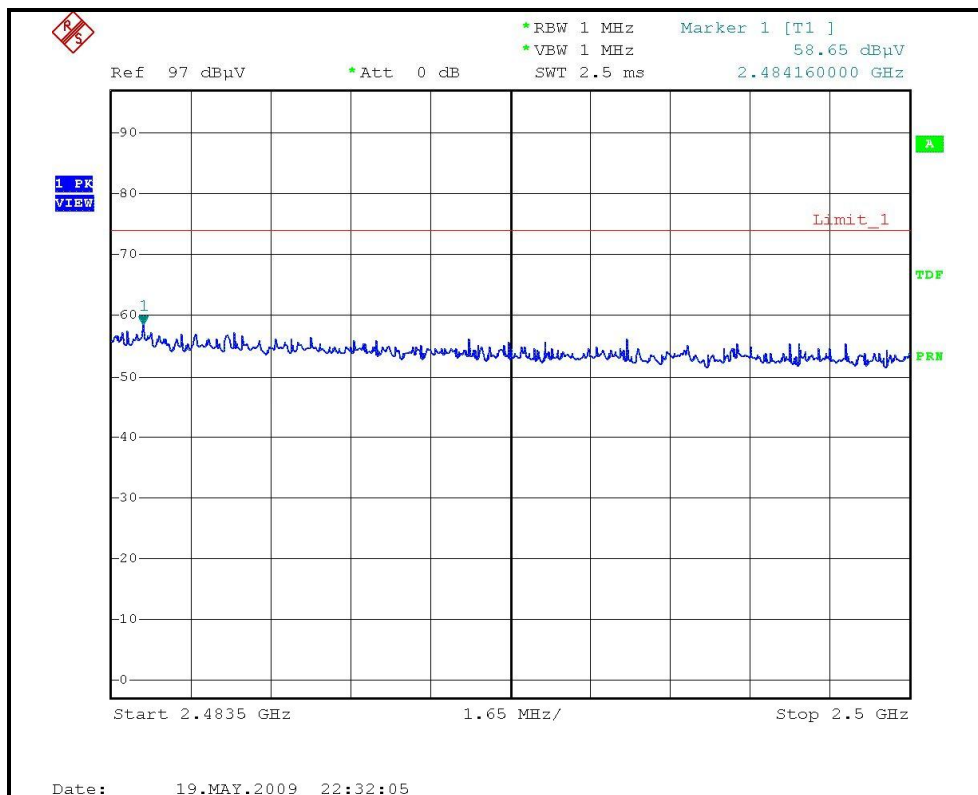
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)





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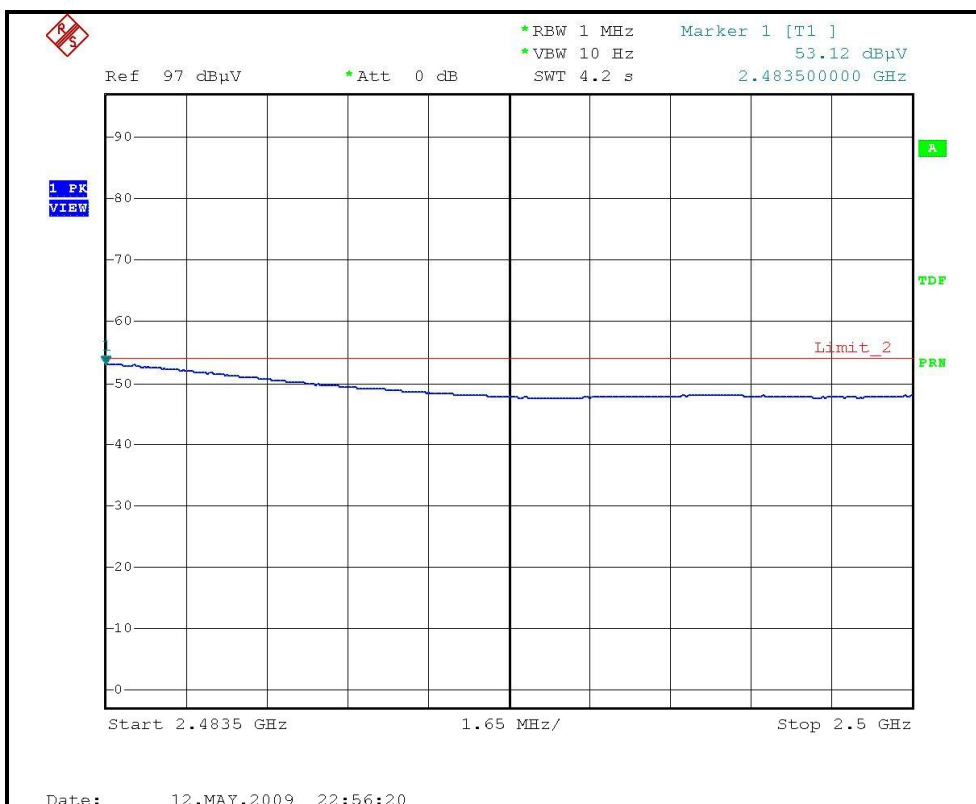
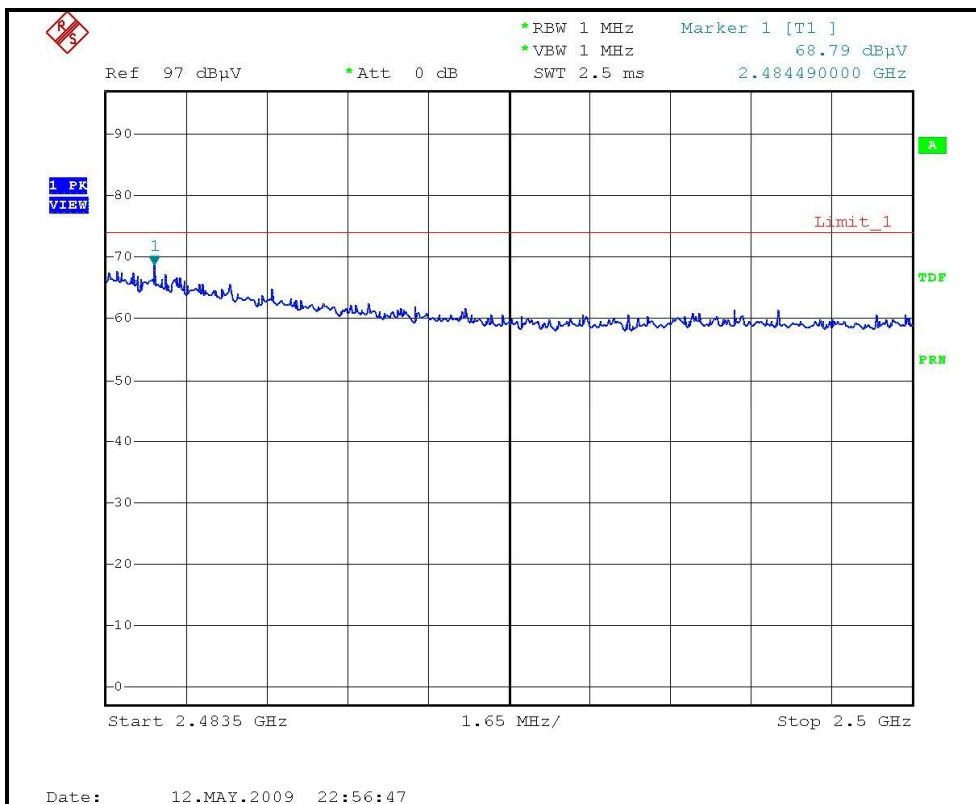
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH11, HORIZONTAL)





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





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DRAFT 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	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.85 PK	74.00	-12.15	1.49 H	130	31.57	30.28
2	2390.00	46.57 AV	54.00	-7.43	1.49 H	130	16.29	30.28
3	*2422.00	97.80 PK			1.37 H	129	67.40	30.40
4	*2422.00	83.59 AV			1.37 H	129	53.19	30.40
5	2500.00	55.75 PK	74.00	-18.25	1.34 H	209	25.06	30.69
6	2500.00	44.24 AV	54.00	-9.76	1.34 H	209	13.55	30.69
7	4844.00	47.01 PK	74.00	-26.99	1.16 H	156	10.17	36.84
8	4844.00	32.26 AV	54.00	-21.74	1.16 H	156	-4.58	36.84
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	72.02 PK	74.00	-1.98	1.33 V	99	41.74	30.28
2	2390.00	53.30 AV	54.00	-0.70	1.33 V	99	23.02	30.28
3	*2422.00	106.01 PK			1.31 V	114	75.61	30.40
4	*2422.00	92.10 AV			1.31 V	114	61.70	30.40
5	2500.00	63.04 PK	74.00	-10.96	1.50 V	103	32.35	30.69
6	2500.00	50.32 AV	54.00	-3.68	1.50 V	103	19.63	30.69
7	4844.00	48.94 PK	74.00	-25.06	1.41 V	358	12.10	36.84
8	4844.00	33.99 AV	54.00	-20.01	1.41 V	358	-2.85	36.84

- 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	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2277.00	56.66 PK	74.00	-17.34	1.53 H	237	26.80	29.86
2	2277.00	44.25 AV	54.00	-9.75	1.53 H	237	14.39	29.86
3	2390.00	69.67 PK	74.00	-4.33	1.36 H	119	39.39	30.28
4	2390.00	48.90 AV	54.00	-5.10	1.36 H	119	18.62	30.28
5	*2437.00	102.30 PK			1.36 H	134	71.84	30.46
6	*2437.00	87.62 AV			1.36 H	134	57.16	30.46
7	2483.50	61.64 PK	74.00	-12.36	1.36 H	120	31.01	30.63
8	2483.50	45.89 AV	54.00	-8.11	1.36 H	120	15.26	30.63
9	4874.00	46.98 PK	74.00	-27.02	1.15 H	159	10.06	36.92
10	4874.00	33.84 AV	54.00	-20.16	1.15 H	159	-3.08	36.92
11	7311.00	53.42 PK	74.00	-20.58	1.37 H	321	10.28	43.14
12	7311.00	39.29 AV	54.00	-14.71	1.37 H	321	-3.85	43.14

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2277.00	59.66 PK	74.00	-14.34	1.34 V	299	29.80	29.86
2	2277.00	46.48 AV	54.00	-7.52	1.34 V	299	16.62	29.86
3	2390.00	73.31 PK	74.00	-0.69	1.63 V	189	43.03	30.28
4	2390.00	53.41 AV	54.00	-0.59	1.63 V	189	23.13	30.28
5	*2437.00	109.85 PK			1.63 V	191	79.39	30.46
6	*2437.00	95.47 AV			1.63 V	191	65.01	30.46
7	2483.50	71.45 PK	74.00	-2.55	1.51 V	105	40.82	30.63
8	2483.50	53.14 AV	54.00	-0.86	1.51 V	105	22.51	30.63
9	4874.00	54.30 PK	74.00	-19.70	1.28 V	15	17.38	36.92
10	4874.00	37.96 AV	54.00	-16.04	1.28 V	15	1.04	36.92
11	7311.00	58.18 PK	74.00	-15.82	1.22 V	0	15.04	43.14
12	7311.00	42.27 AV	54.00	-11.73	1.22 V	0	-0.87	43.14

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28.0deg. C, 70.0%RH 960hPa	TESTED BY	Wen Yu

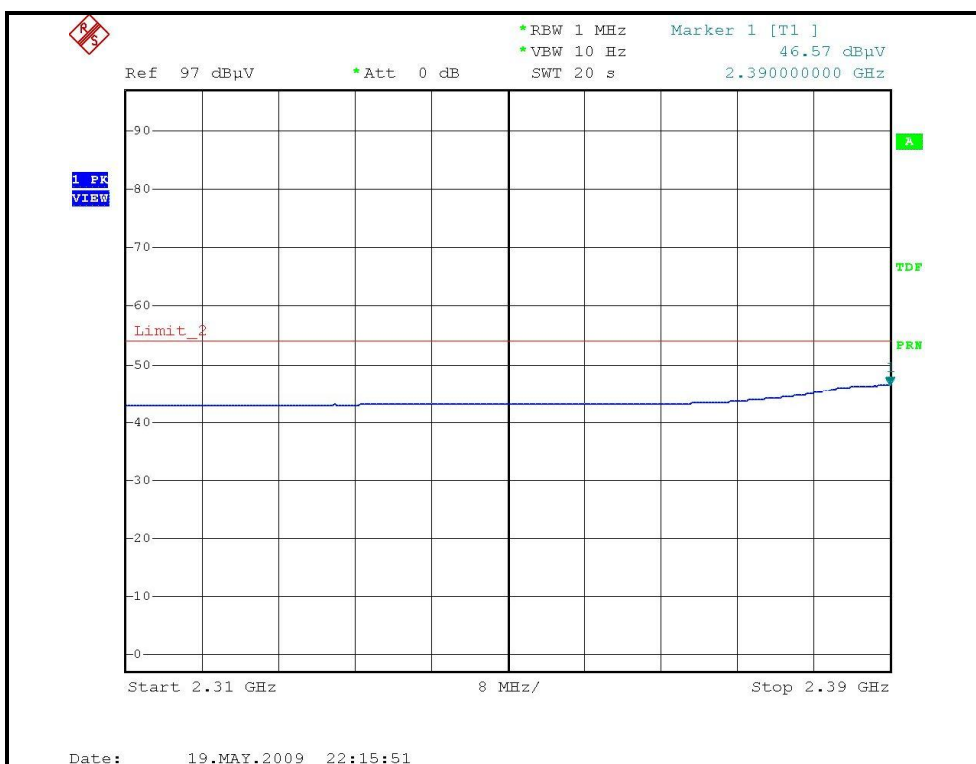
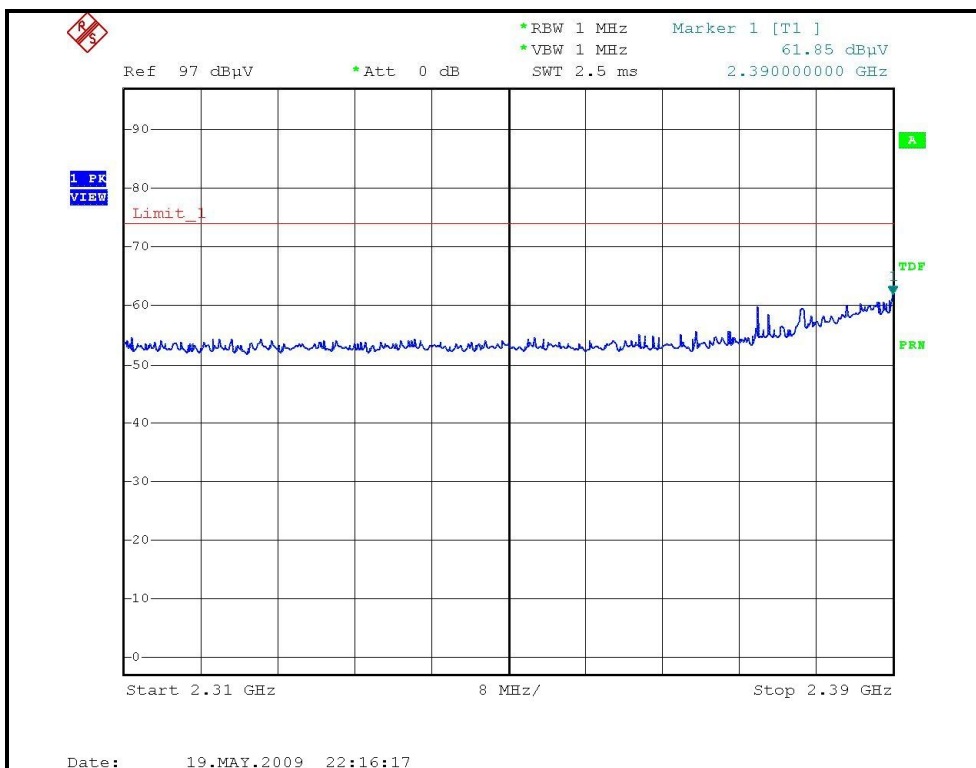
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	97.46 PK			1.38 H	132	66.95	30.51
2	*2452.00	83.86 AV			1.38 H	132	53.35	30.51
3	2484.90	58.08 PK	74.00	-15.92	1.36 H	136	27.45	30.63
4	2484.90	45.09 AV	54.00	-8.91	1.36 H	136	14.46	30.63
5	4904.00	46.09 PK	74.00	-27.91	1.16 H	154	9.09	37.00
6	4904.00	32.45 AV	54.00	-21.55	1.16 H	154	-4.55	37.00
7	7356.00	51.01 PK	74.00	-22.99	1.41 H	298	7.88	43.13
8	7356.00	37.59 AV	54.00	-16.41	1.41 H	298	-5.54	43.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	106.21 PK			1.30 V	115	75.70	30.51
2	*2452.00	91.98 AV			1.30 V	115	61.47	30.51
3	2483.50	70.94 PK	74.00	-3.06	1.28 V	114	40.31	30.63
4	2483.50	52.68 AV	54.00	-1.32	1.28 V	114	22.05	30.63
5	4904.00	49.08 PK	74.00	-24.92	1.00 V	22	12.08	37.00
6	4904.00	34.47 AV	54.00	-19.53	1.00 V	22	-2.53	37.00
7	7356.00	51.35 PK	74.00	-22.65	1.40 V	0	8.22	43.13
8	7356.00	38.24 AV	54.00	-15.76	1.40 V	0	-4.89	43.13

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



A D T

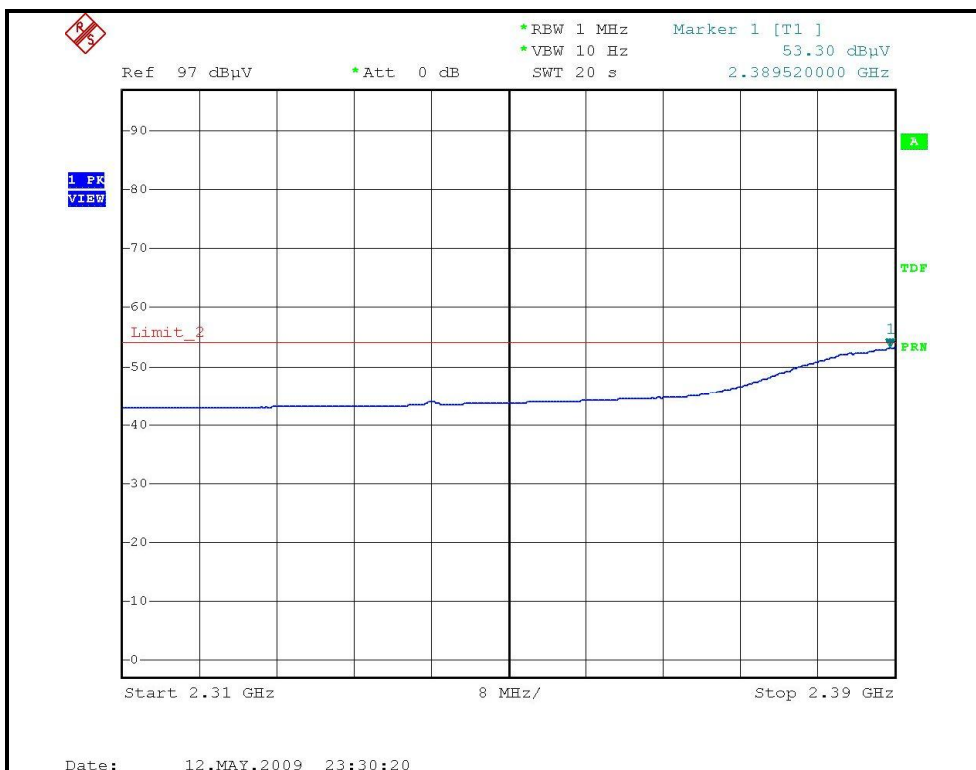
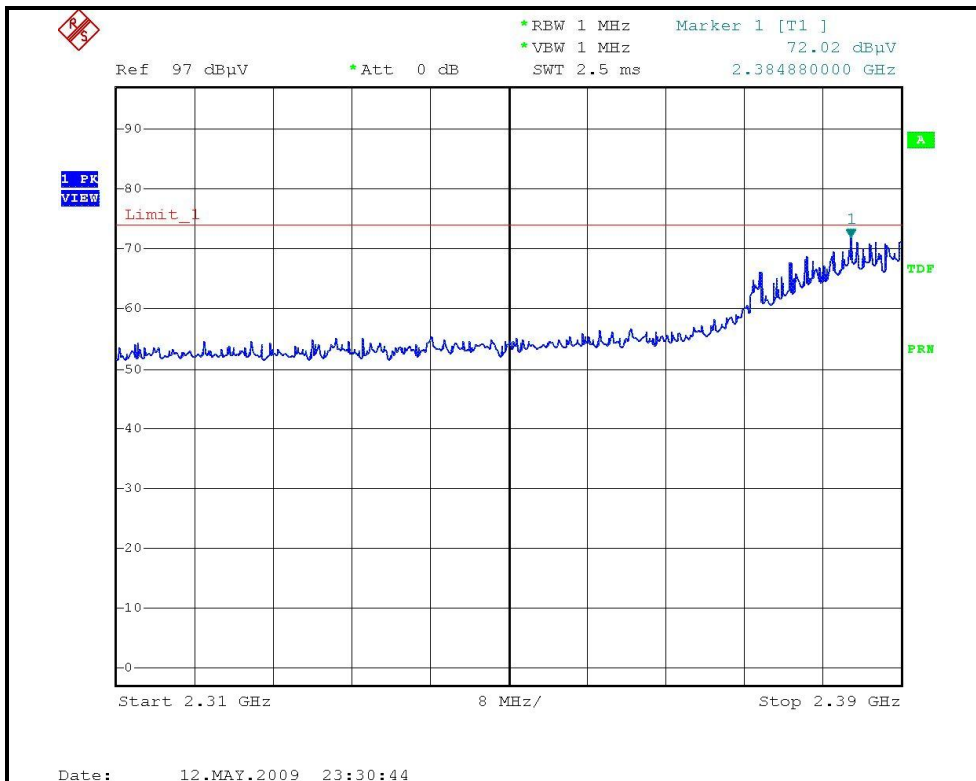
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, HORIZONTAL)





A D T

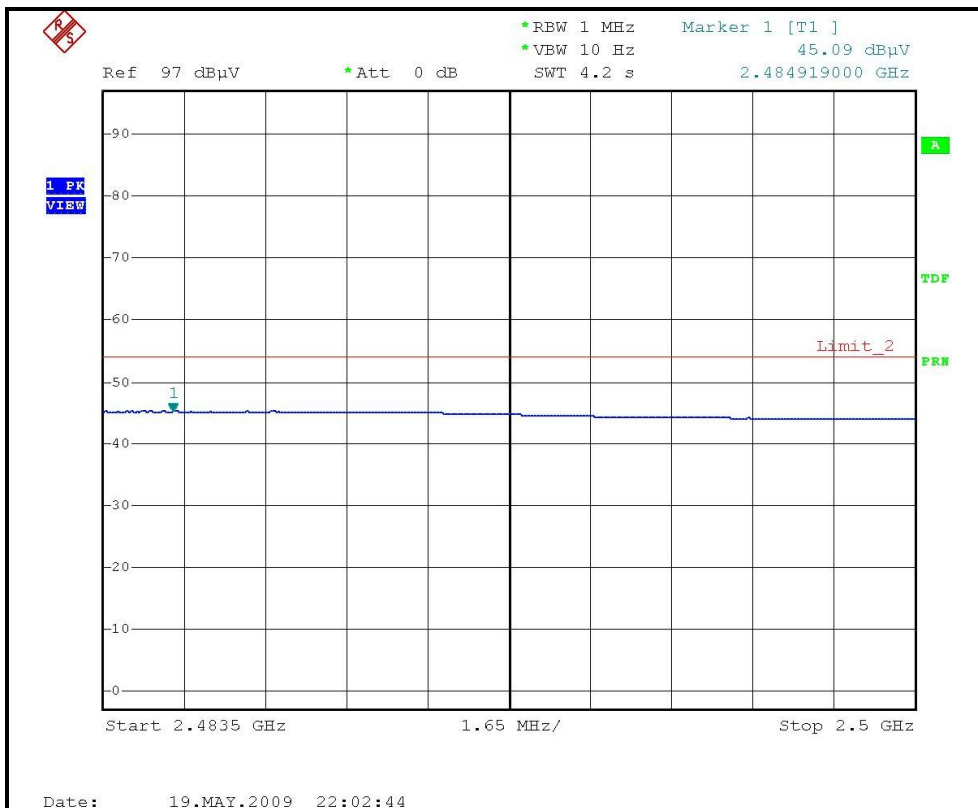
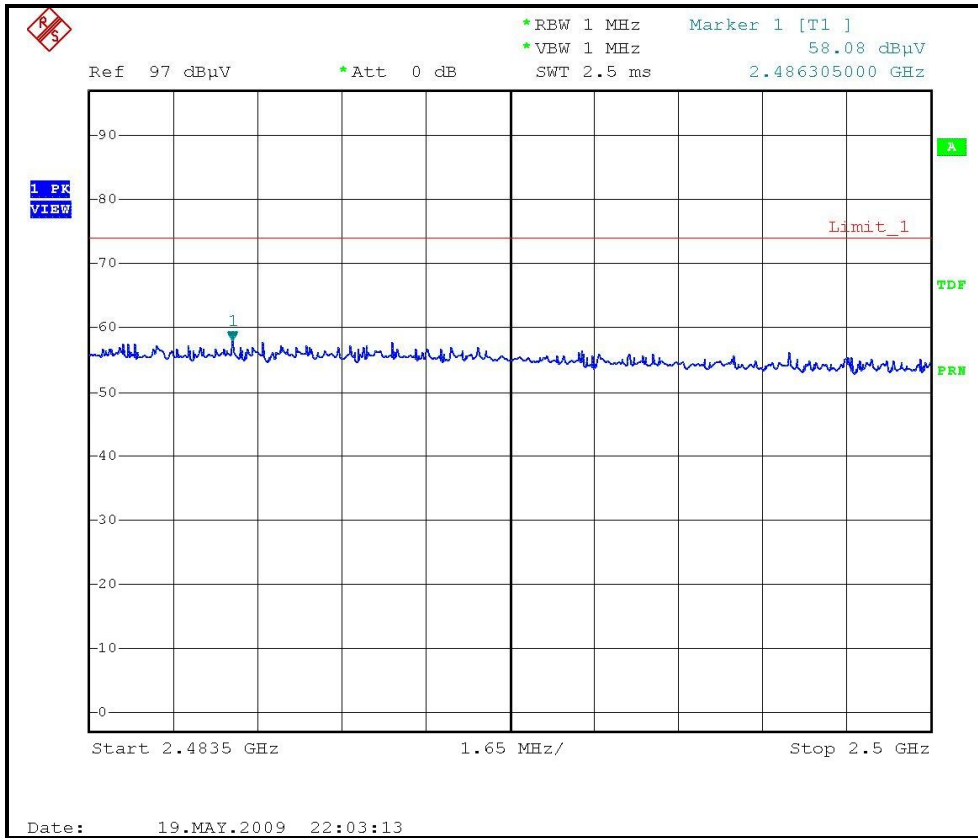
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, VERTICAL)





A D T

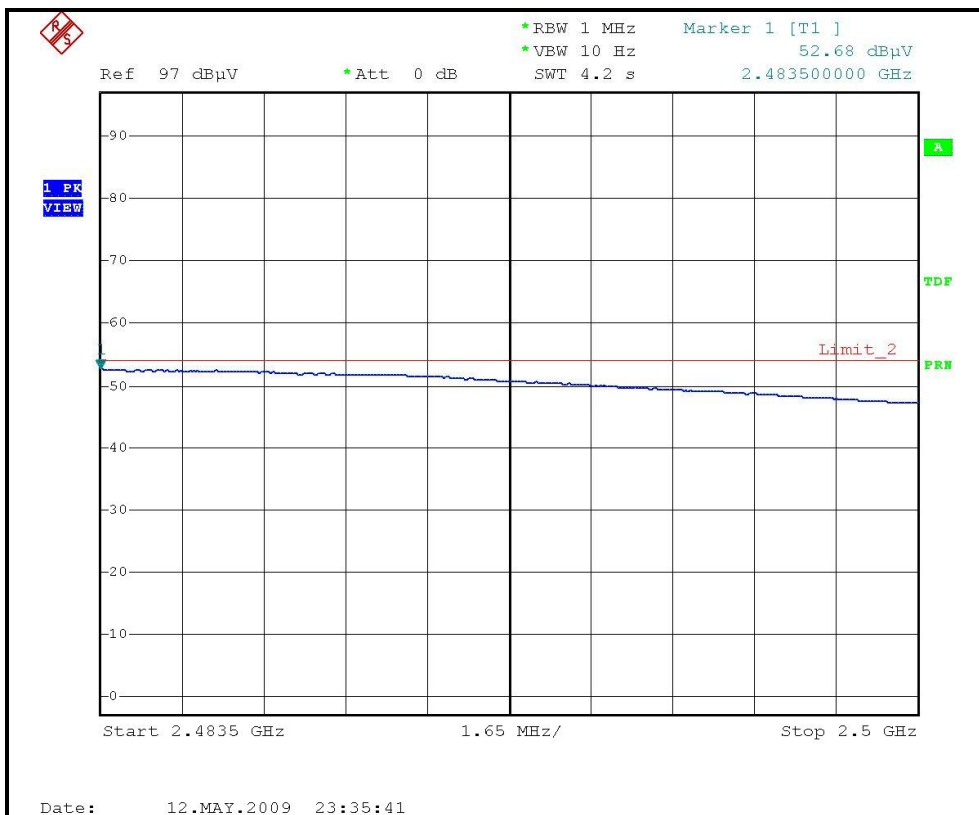
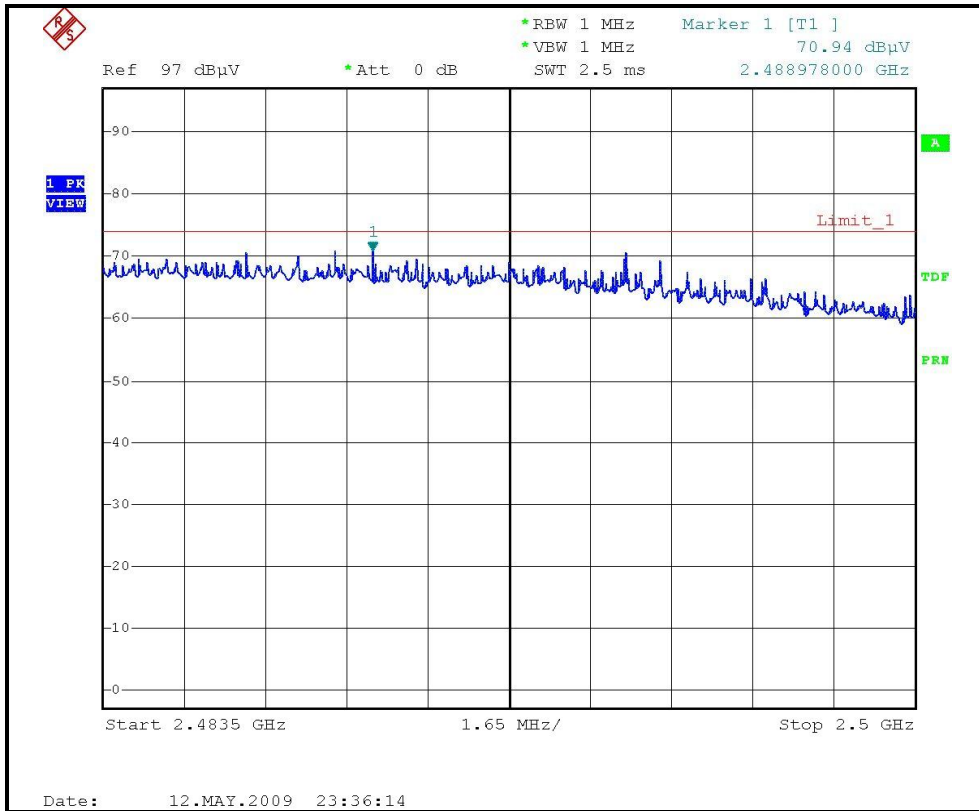
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, HORIZONTAL)





A D T

RESTRICTED BANDEDGE (DRAFT 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	100036	Dec. 09, 2008	Dec. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.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.



A D T

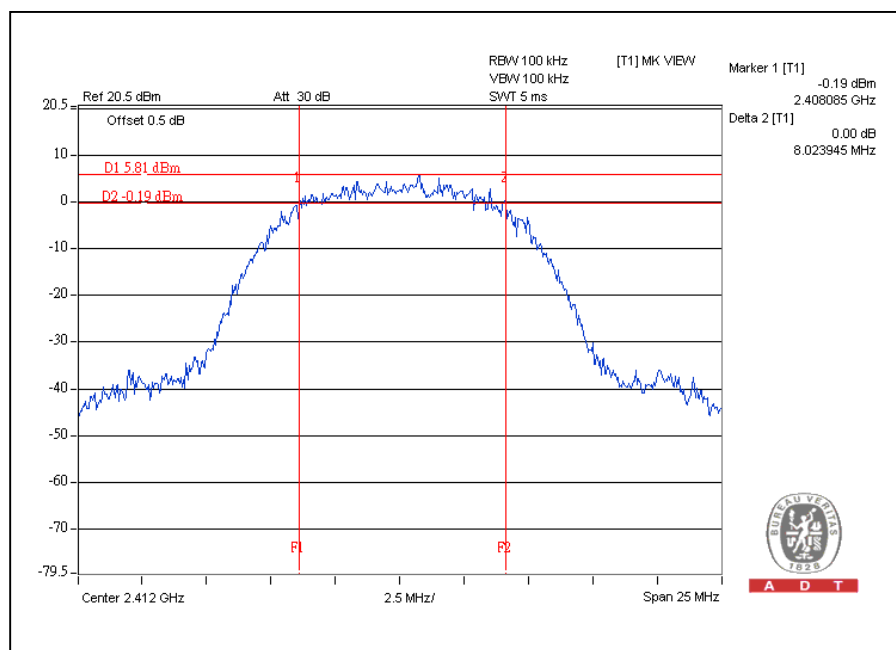
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.02	0.5	PASS
6	2437	7.06	0.5	PASS
11	2462	7.68	0.5	PASS

CH1





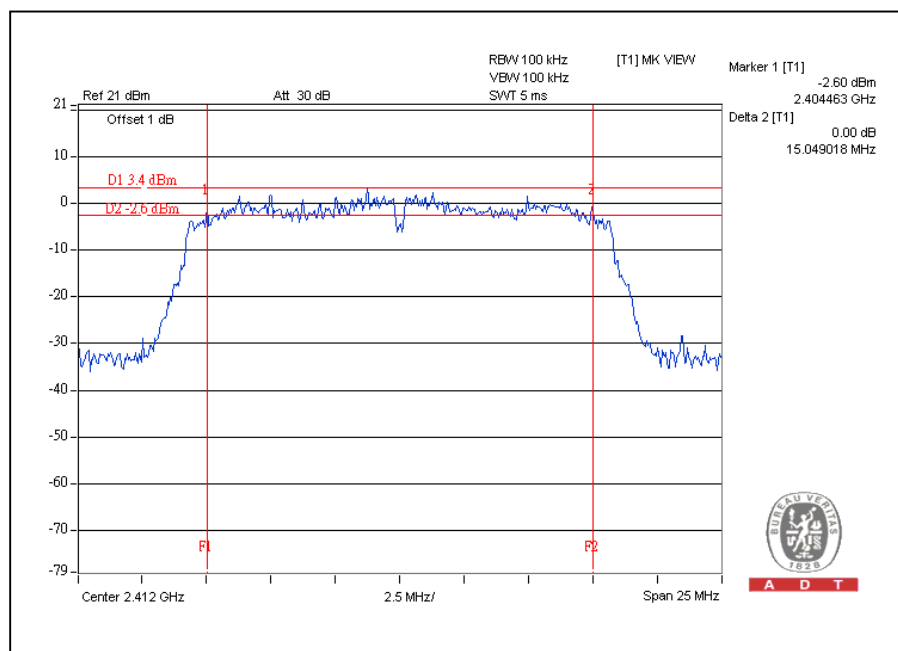
A D T

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.05	0.5	PASS
6	2437	15.07	0.5	PASS
11	2462	15.16	0.5	PASS

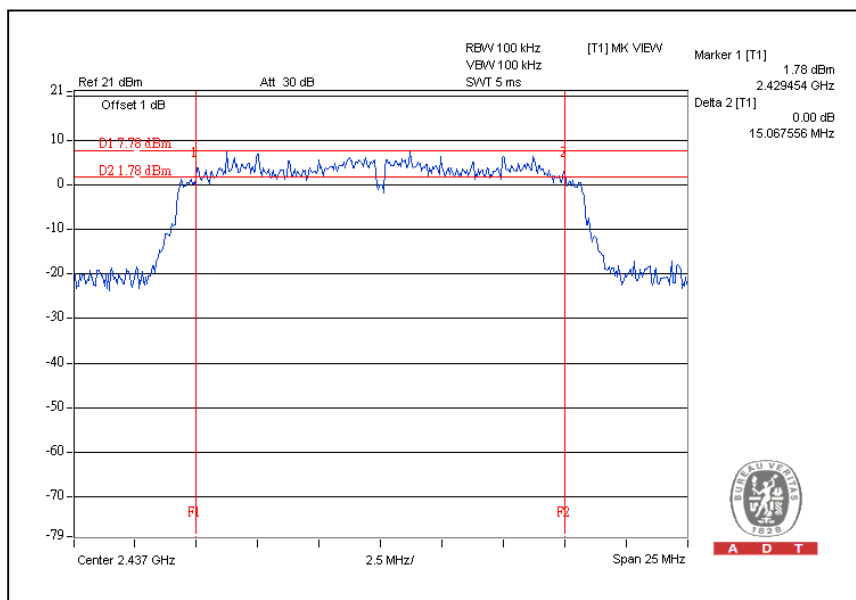
CH1



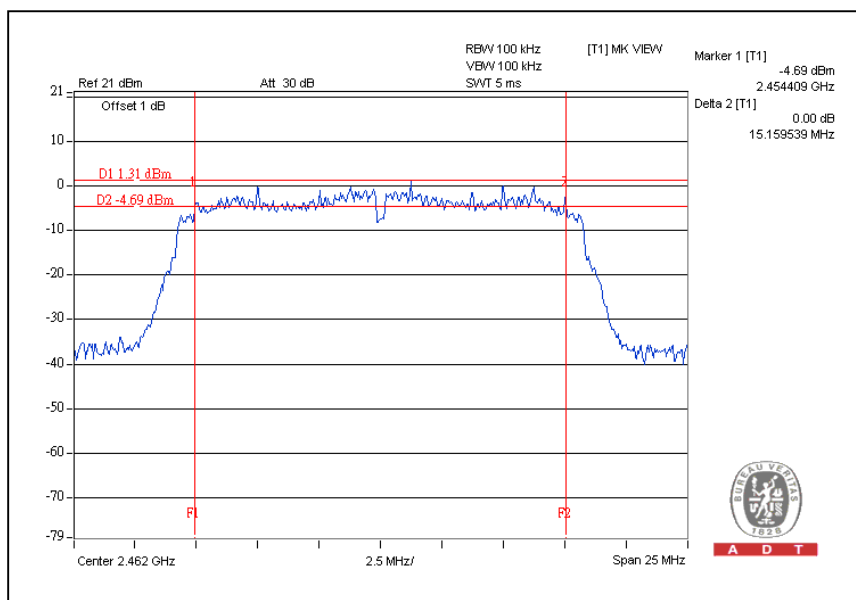


A D T

CH6



CH11





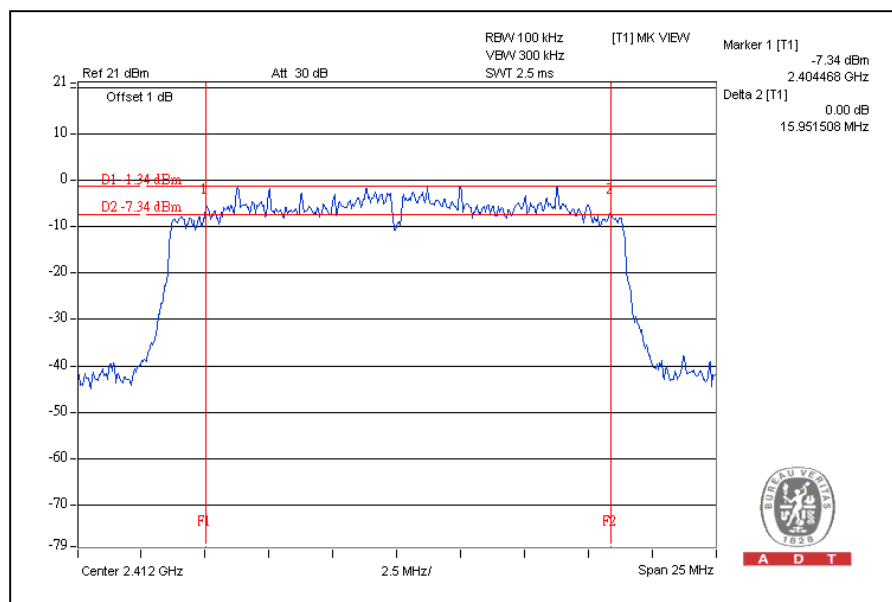
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	15.95	15.11	0.5	PASS
6	2437	16.06	15.14	0.5	PASS
11	2462	15.18	16.13	0.5	PASS

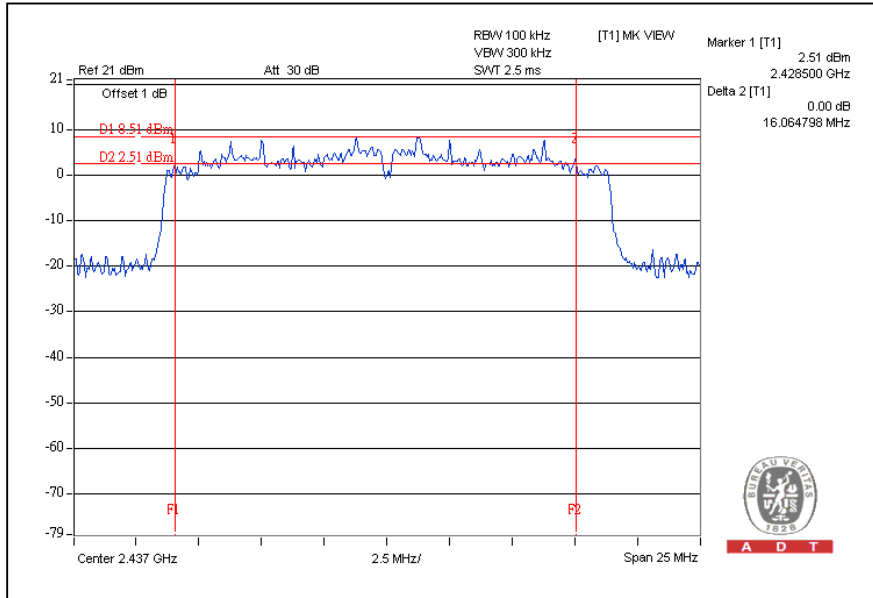
For Chain(0): CH1



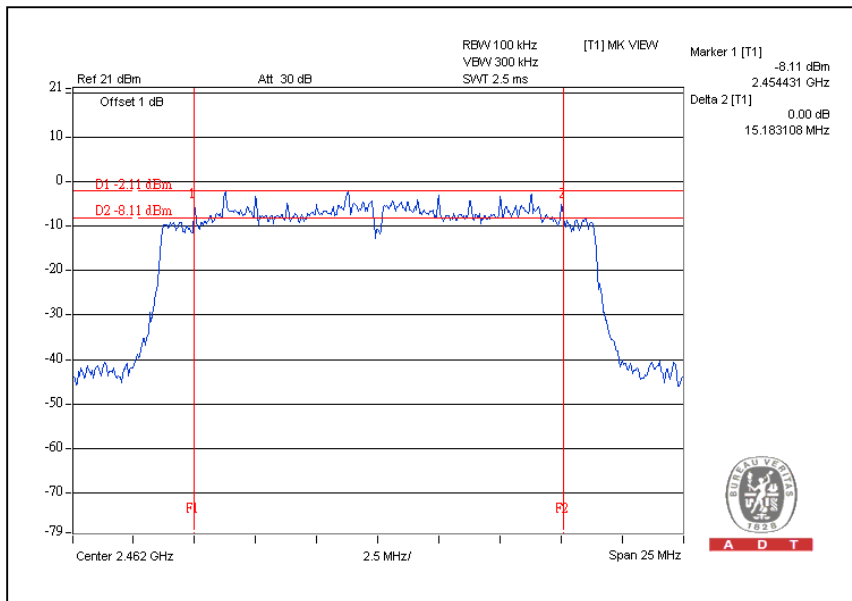


A D T

CH6



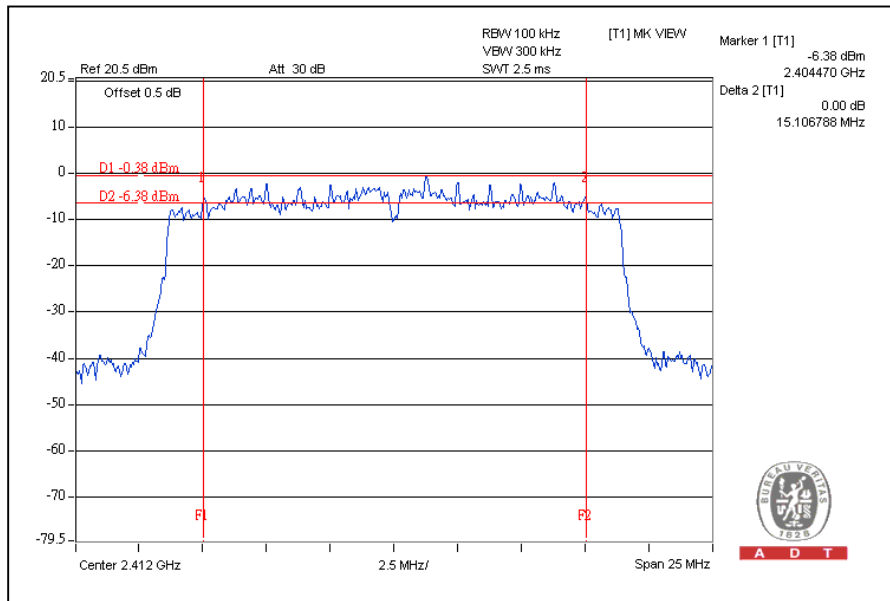
CH11





A D T

For CHAIN(1): CH1



A D T

CH6

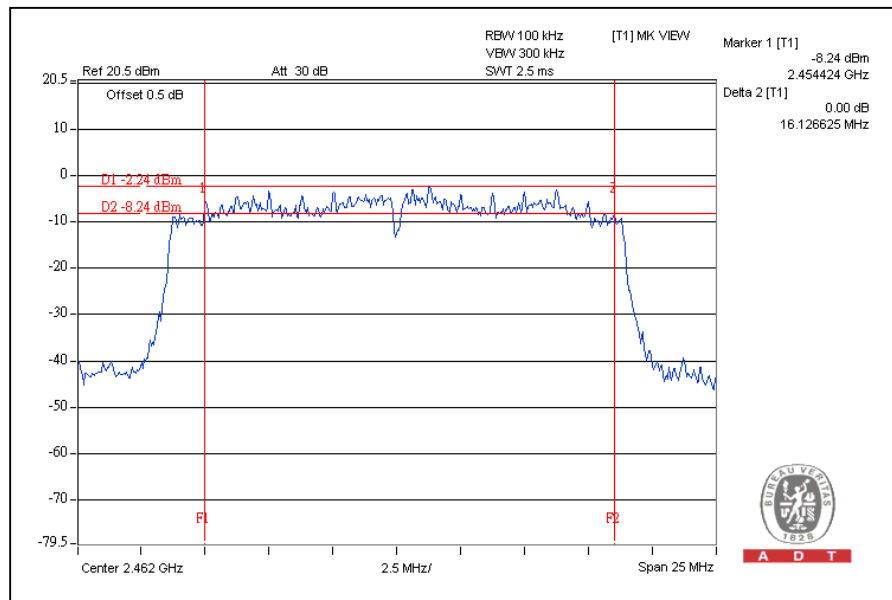


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CH11





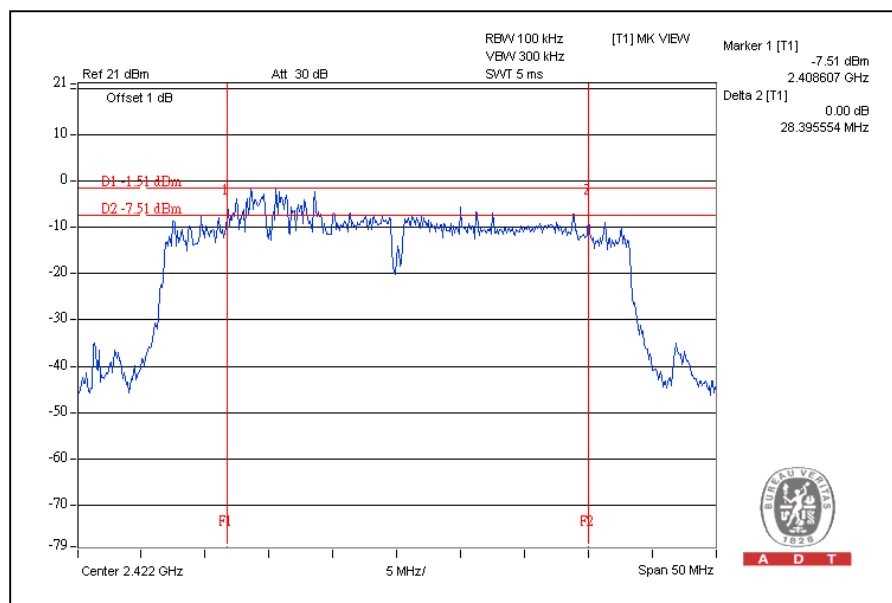
A D T

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	27Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2422	28.40	35.15	0.5	PASS
4	2437	35.54	22.94	0.5	PASS
7	2452	23.84	30.83	0.5	PASS

For Chain (0): CH1

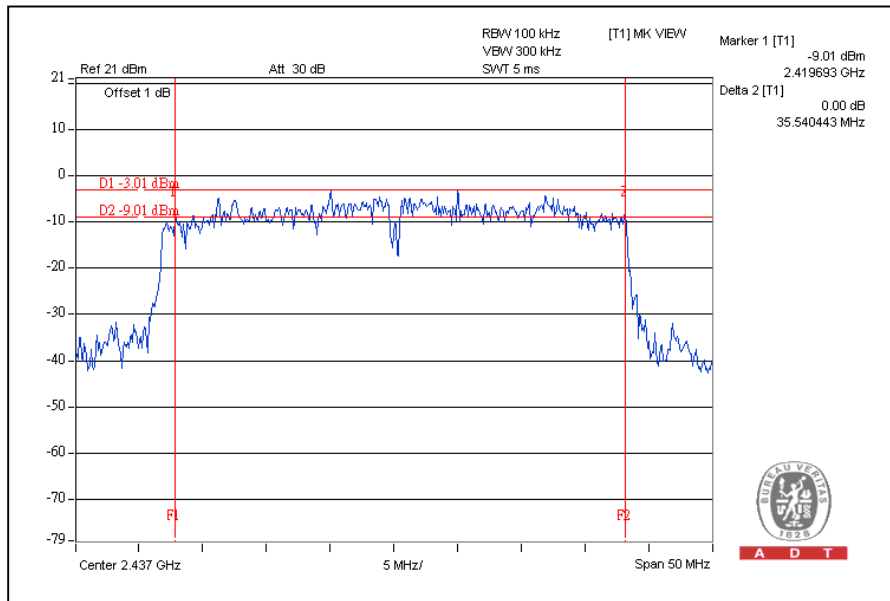


A D T

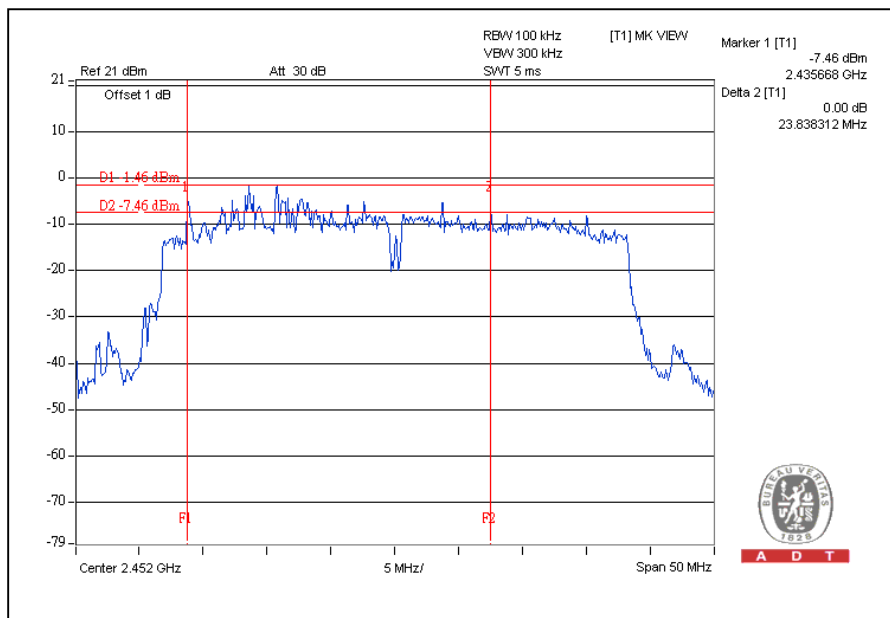


A D T

CH4



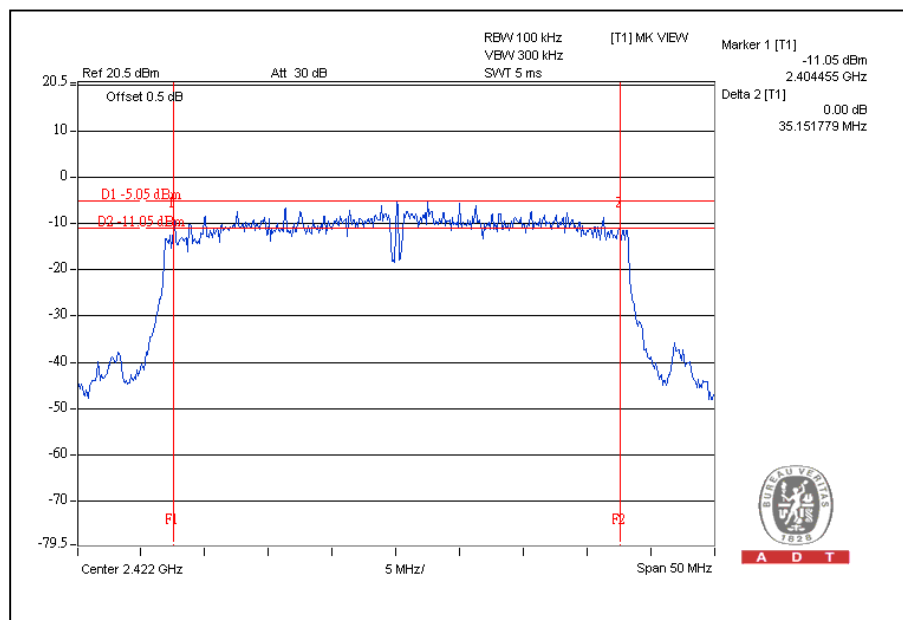
CH7



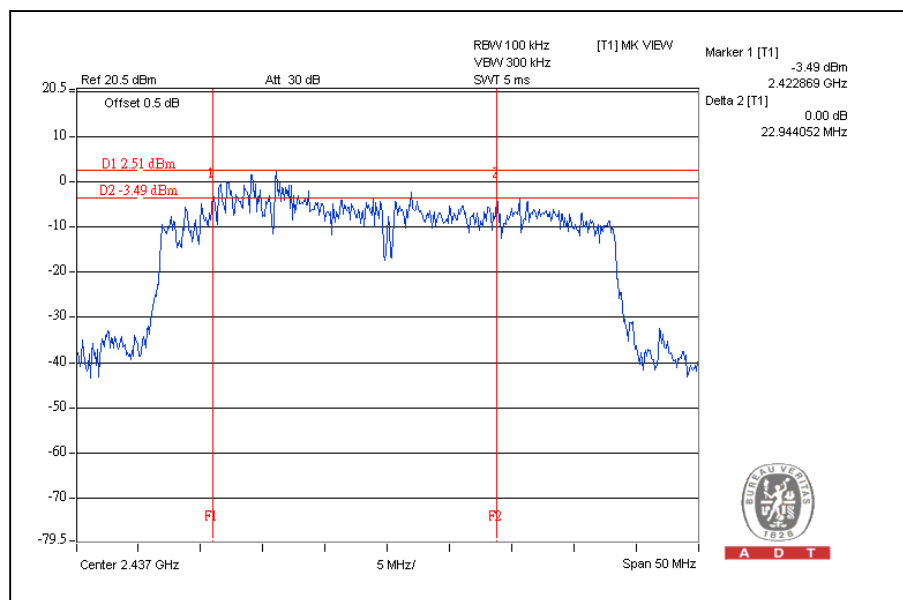


A D T

For Chain (1): CH1



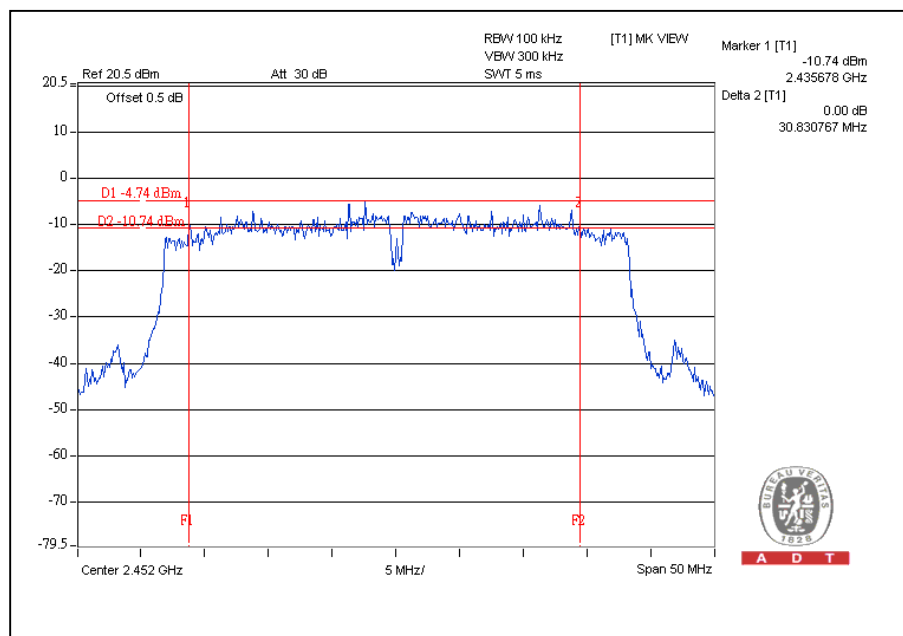
CH4





A D T

CH7





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	June 14, 2008	June 13, 2009
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.

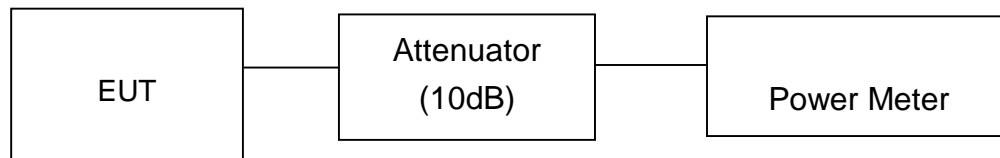
4.4.3 TEST PROCEDURES

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 4.2.6



4.4.7 TEST RESULTS

802.11b DSSS MODULATION:

MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	16.65	46.238	30	PASS
6	2437	17.68	58.614	30	PASS
11	2462	18.80	75.858	30	PASS

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	23.84	242.103	30	PASS
6	2437	26.06	403.645	30	PASS
11	2462	21.12	129.420	30	PASS



DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	73.451	97.499	18.66	19.89	170.950	22.33	30	PASS
6	2437	398.107	375.837	26.00	25.75	773.944	28.89	30	PASS
11	2462	55.976	59.429	17.48	17.74	115.405	20.62	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	27Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	58.749	74.817	17.69	18.74	133.566	21.26	30	PASS
4	2437	157.398	162.930	21.97	22.12	320.328	25.06	30	PASS
7	2452	52.602	69.823	17.21	18.44	122.425	20.88	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	100036	Dec. 09, 2008	Dec. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.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

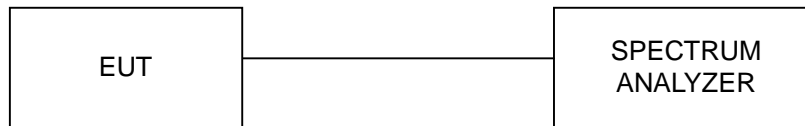
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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 4.2.6



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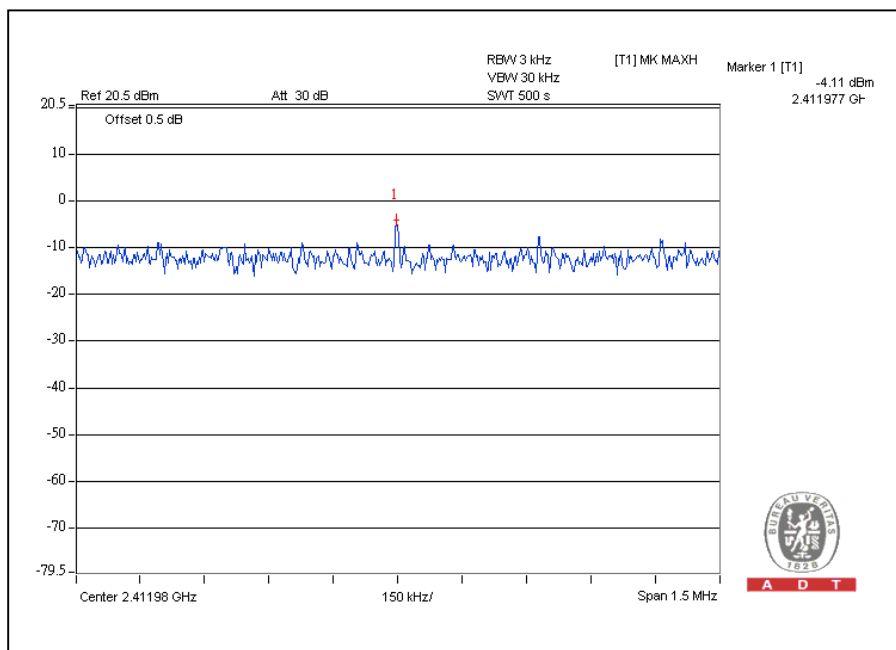
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-4.11	8	PASS
6	2437	-4.35	8	PASS
11	2462	-4.42	8	PASS

CH1

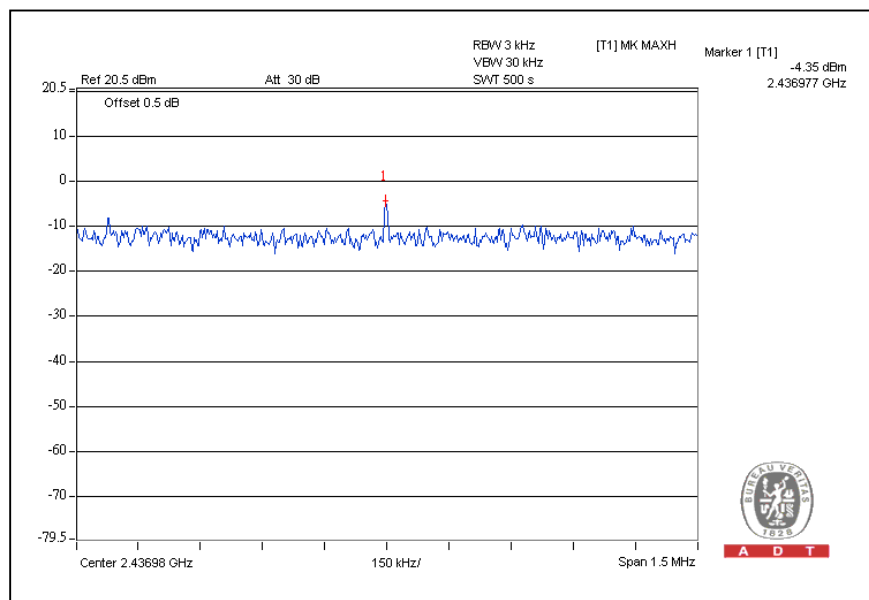


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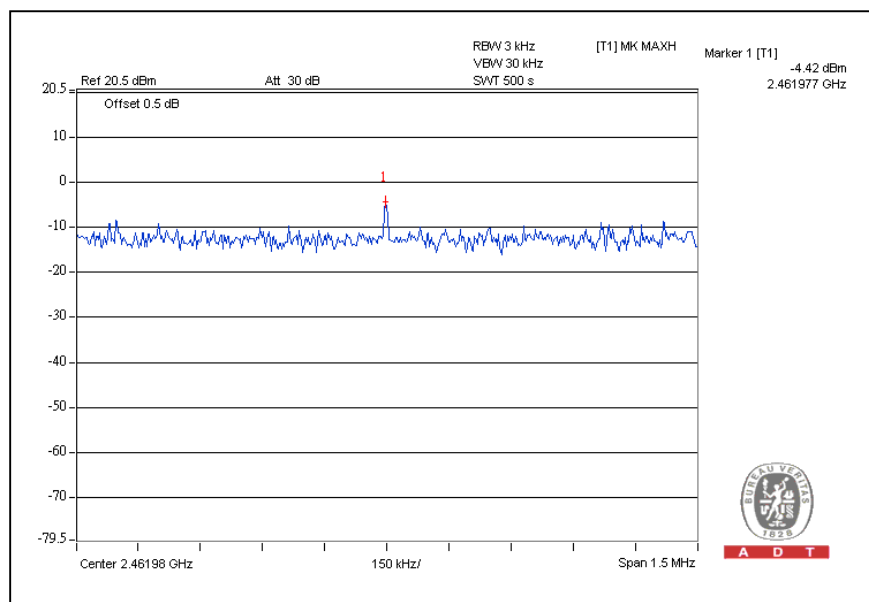


A D T

CH6



CH11





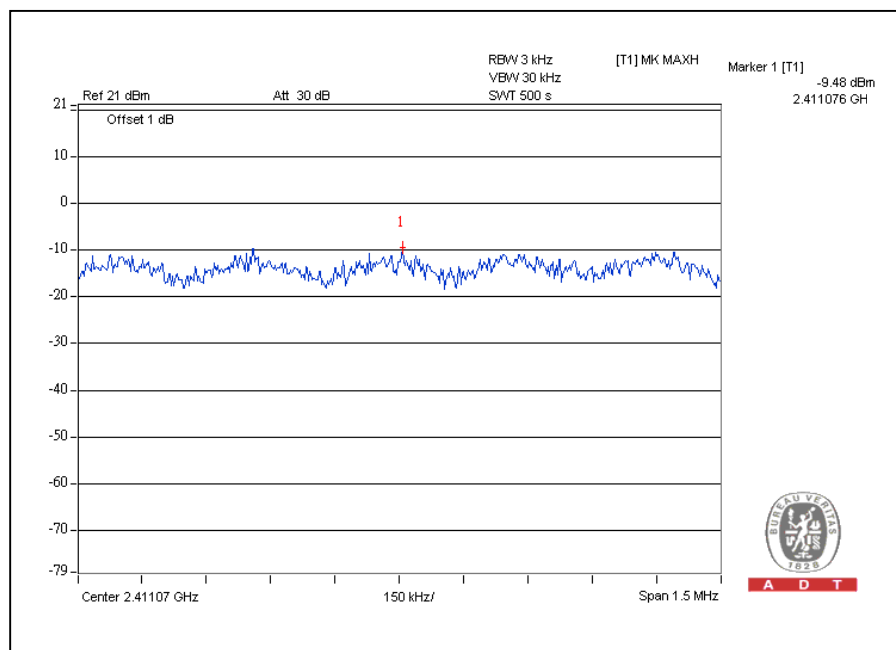
A D T

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-9.48	8	PASS
6	2437	-6.60	8	PASS
11	2462	-11.93	8	PASS

CH1

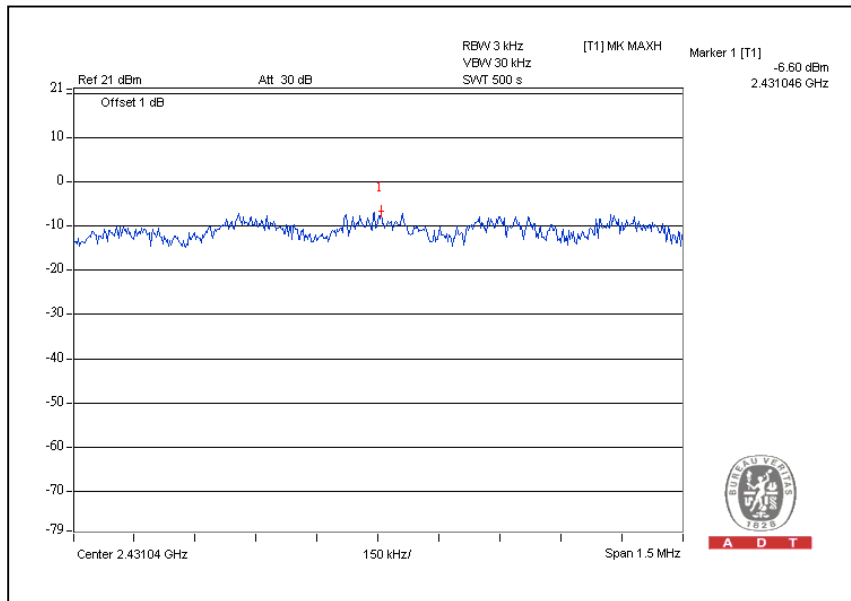


A D T

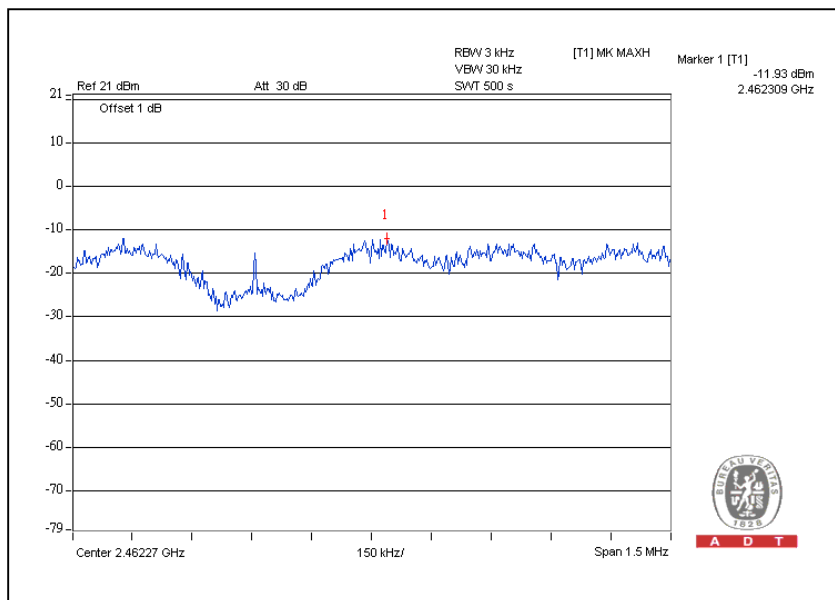


A D T

CH6



CH11





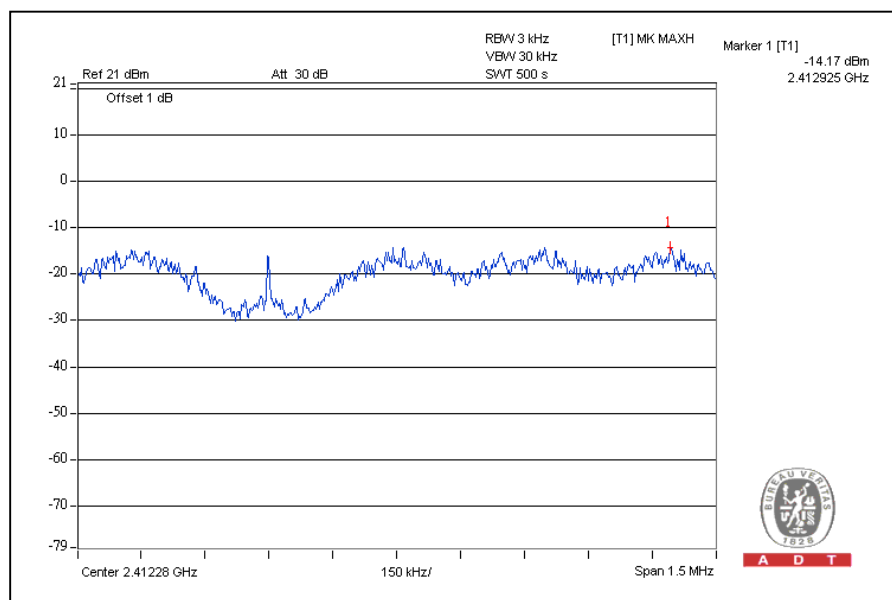
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	0.038	0.037	-14.17	-14.34	0.075	-11.25	8	PASS
6	2437	0.354	0.269	-4.51	-5.71	0.623	-2.06	8	PASS
11	2462	0.031	0.035	-15.02	-14.62	0.066	-11.80	8	PASS

For Chain(0): CH1

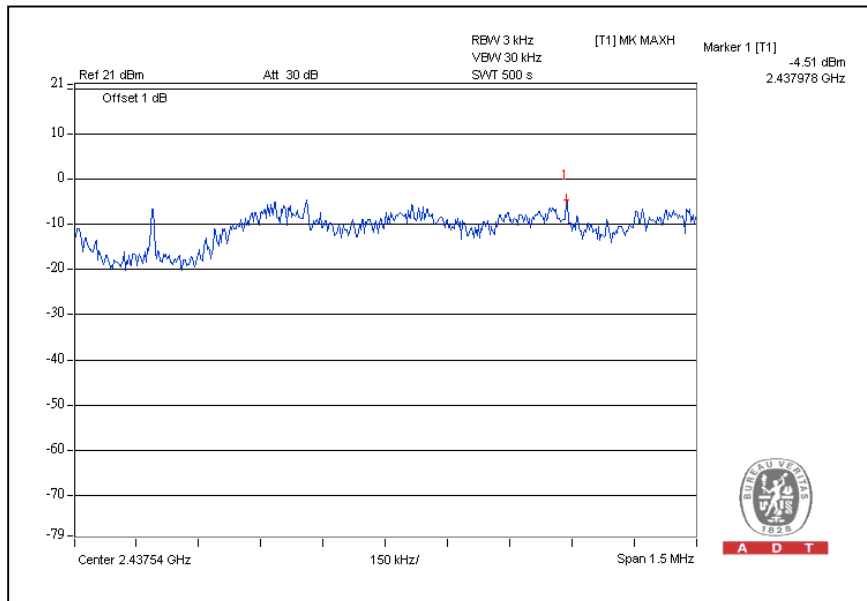


A D T

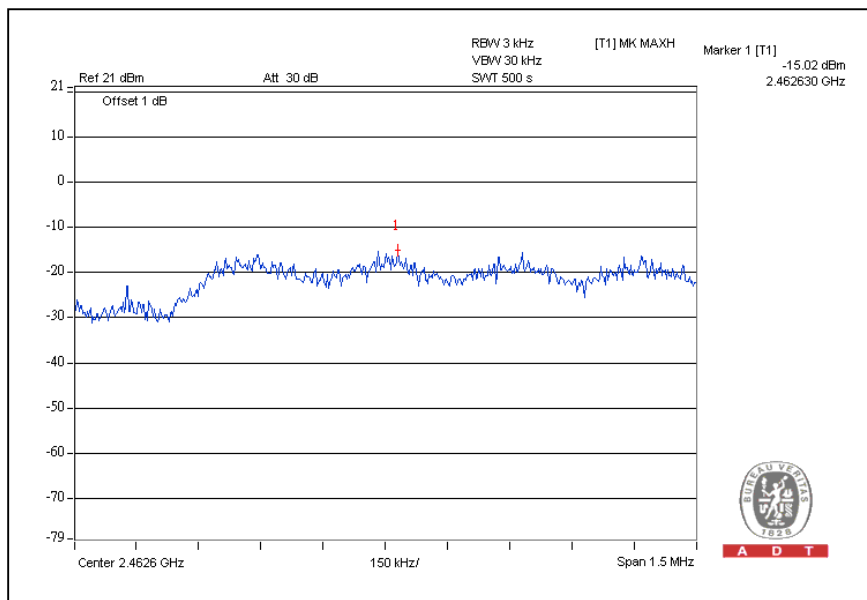


A D T

CH6



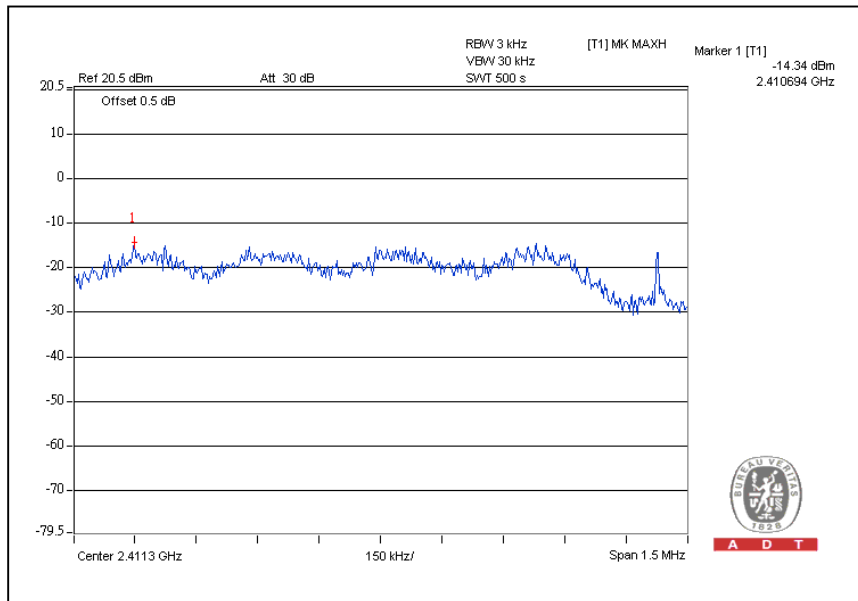
CH11



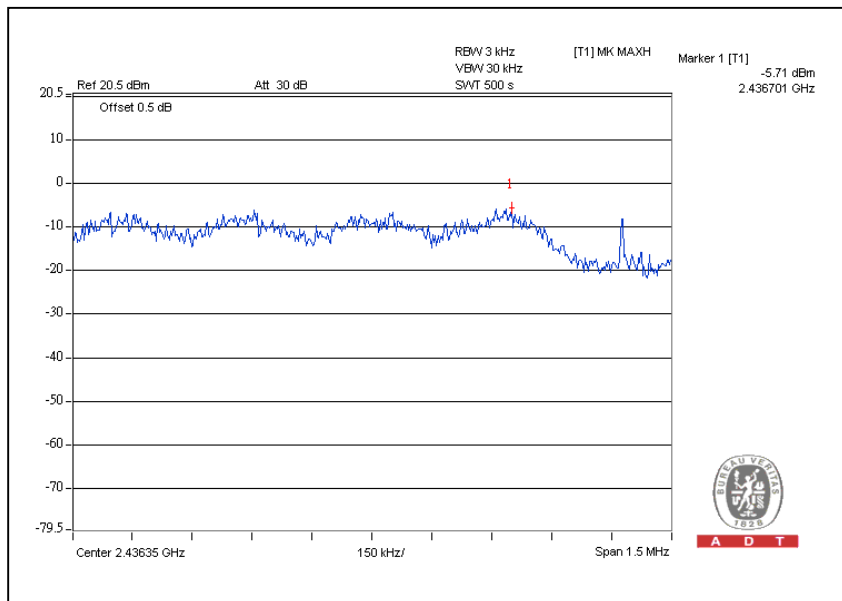


A D T

For Chain (1): CH1



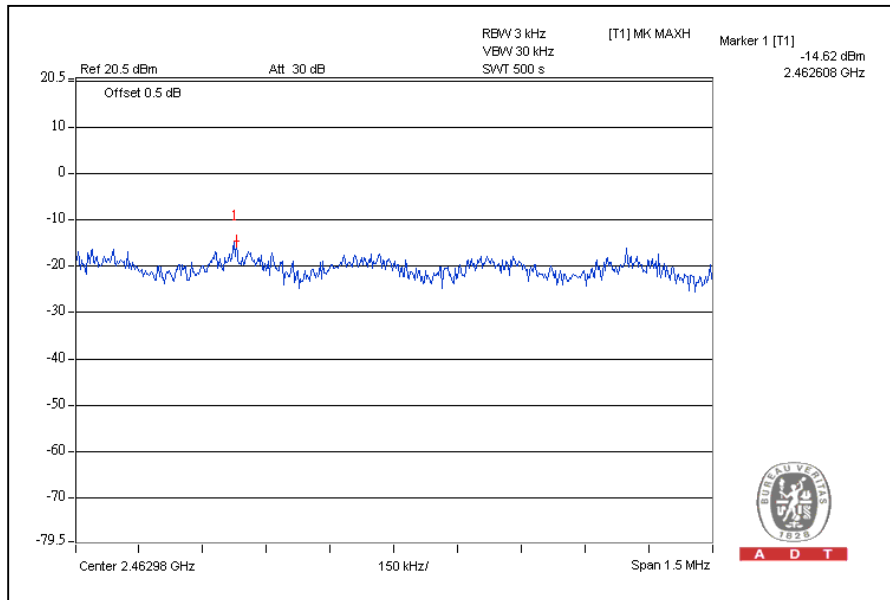
CH6





A D T

CH11





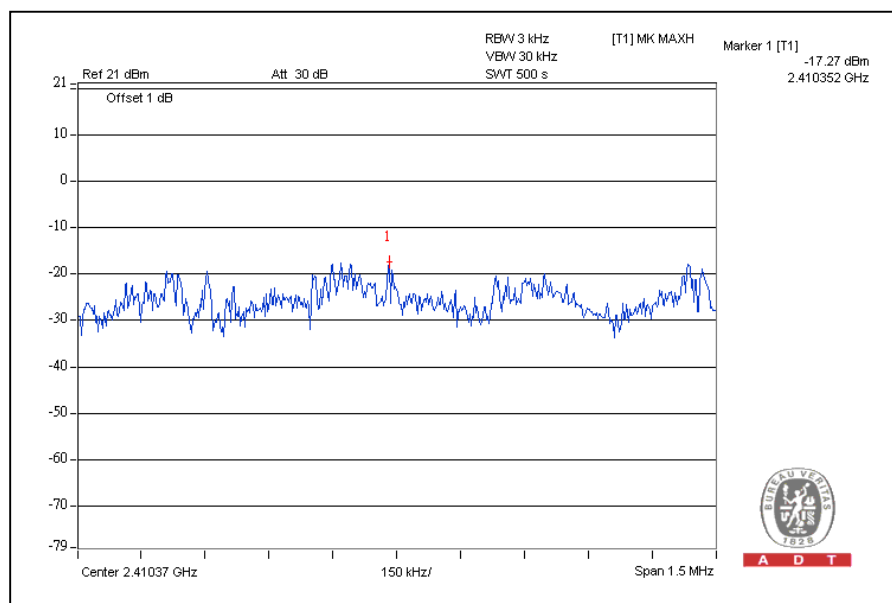
A D T

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	27Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 960hPa
TESTED BY	Wen Yeh		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	0.019	0.012	-17.27	-19.35	0.031	-15.09	8	PASS
4	2437	0.049	0.049	-13.12	-13.10	0.098	-10.09	8	PASS
7	2452	0.039	0.008	-14.08	-20.99	0.047	-13.28	8	PASS

For Chain (0): CH1

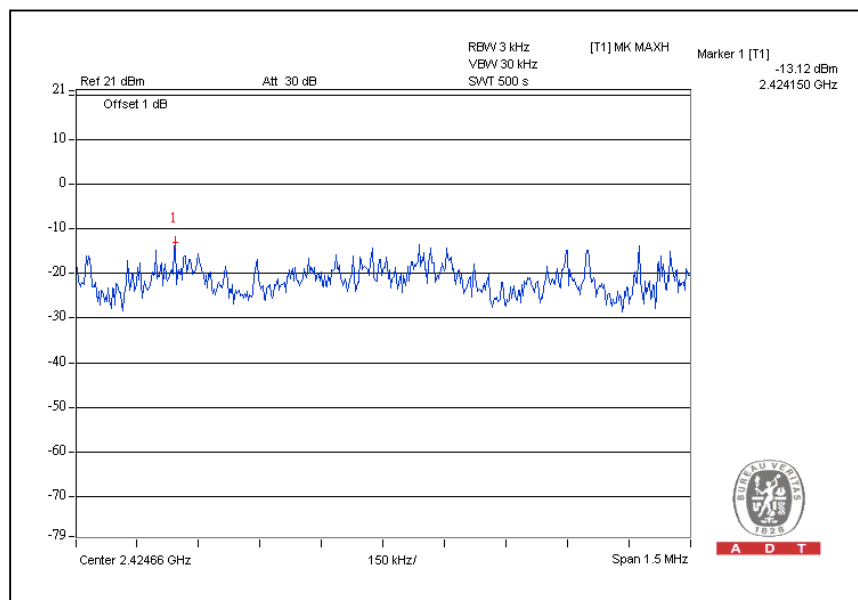


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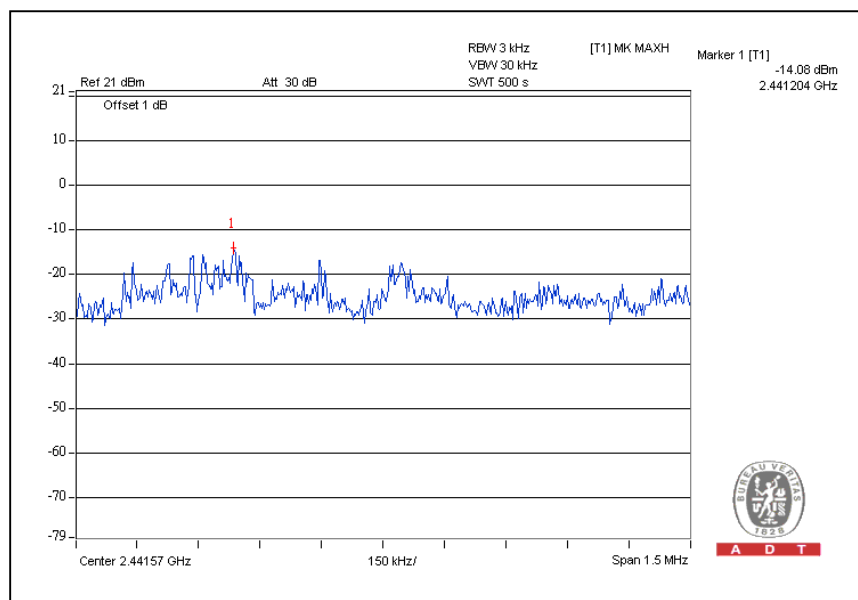


A D T

CH4



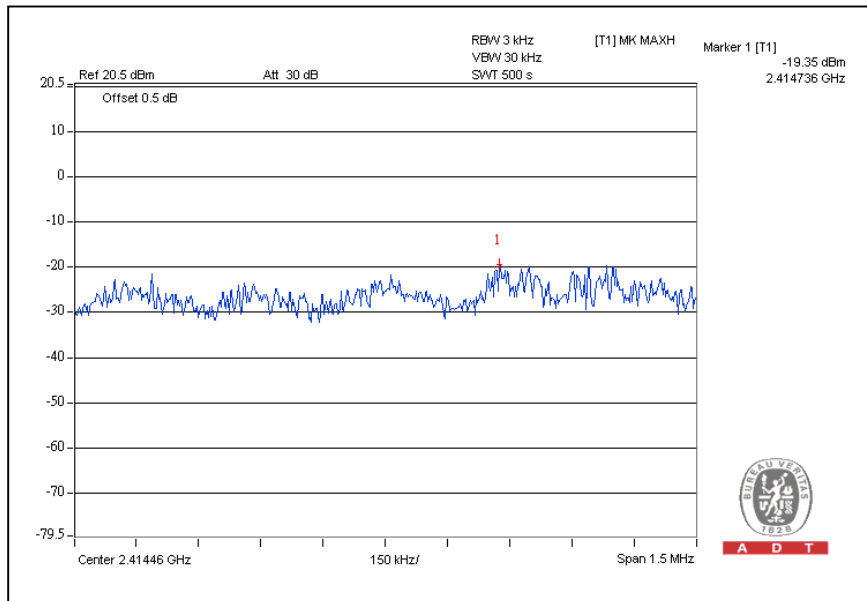
CH7



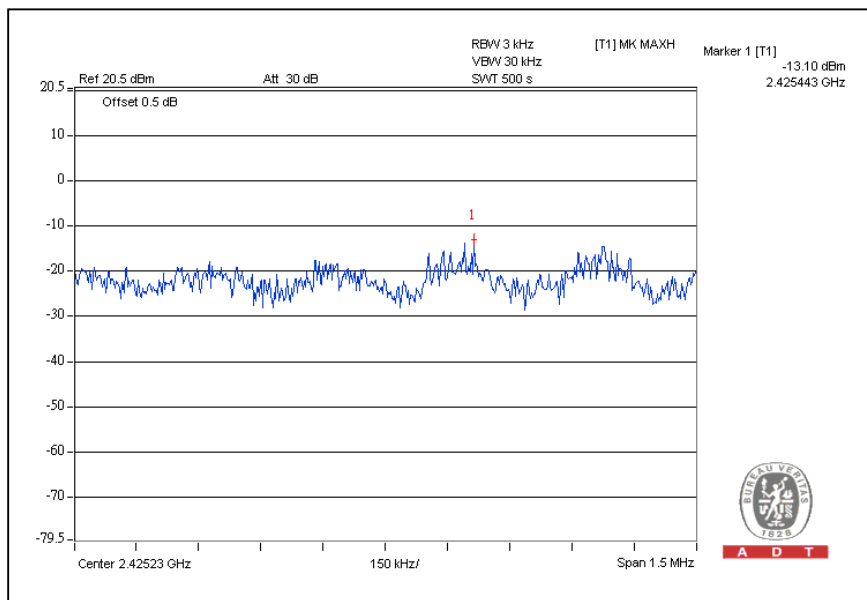


A D T

For Chain (1): CH1



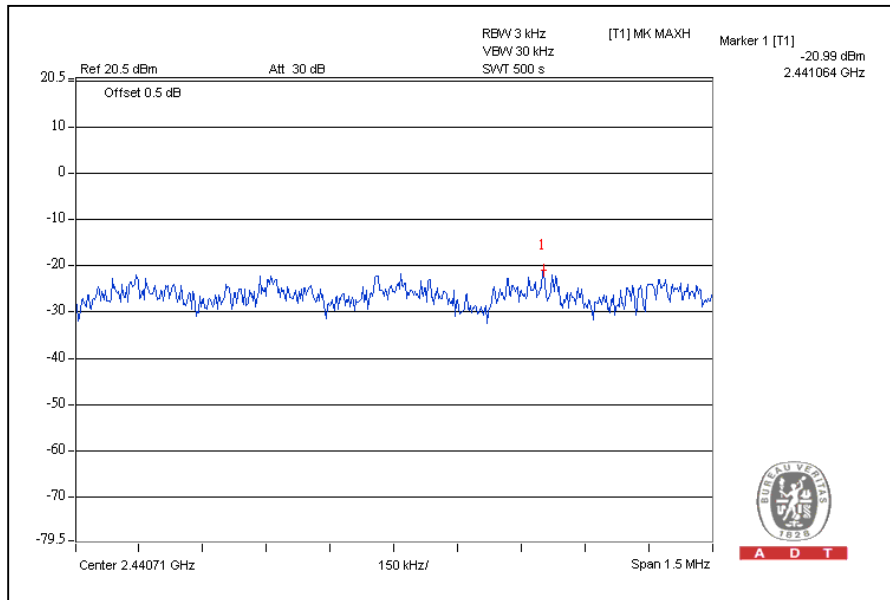
CH4





A D T

CH7



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	100036	Dec. 09, 2008	Dec. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than $\pm 2.6\text{dB}$, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

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

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

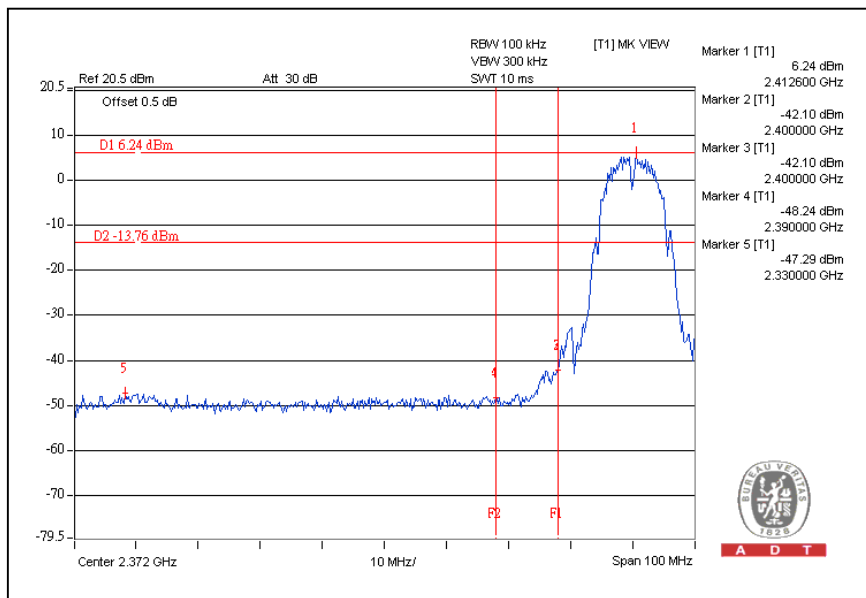
Same as Item 4.2.6

4.6.6 TEST RESULTS

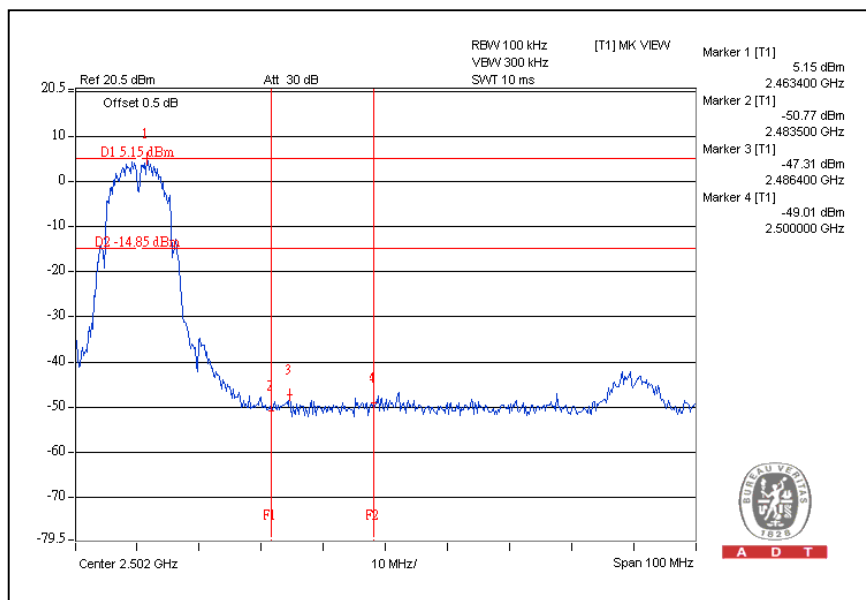
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

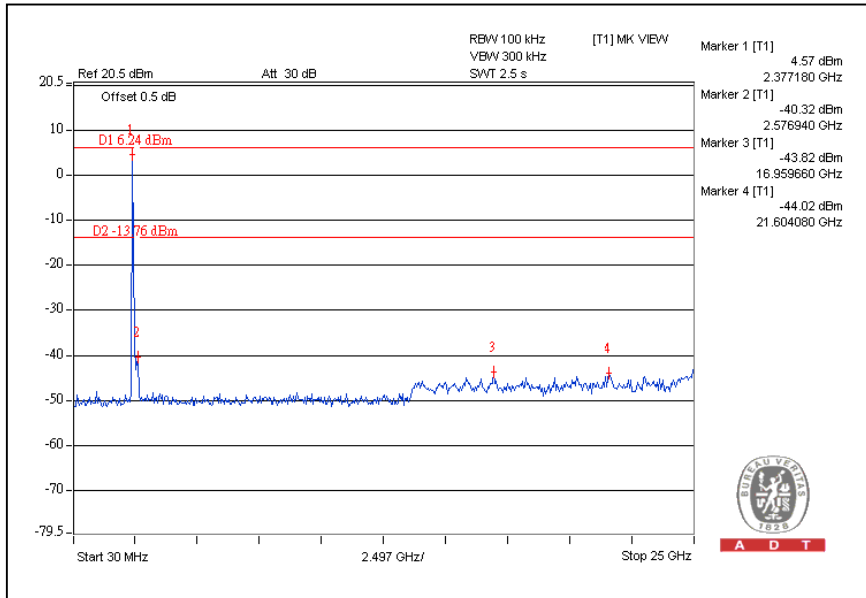
CH1



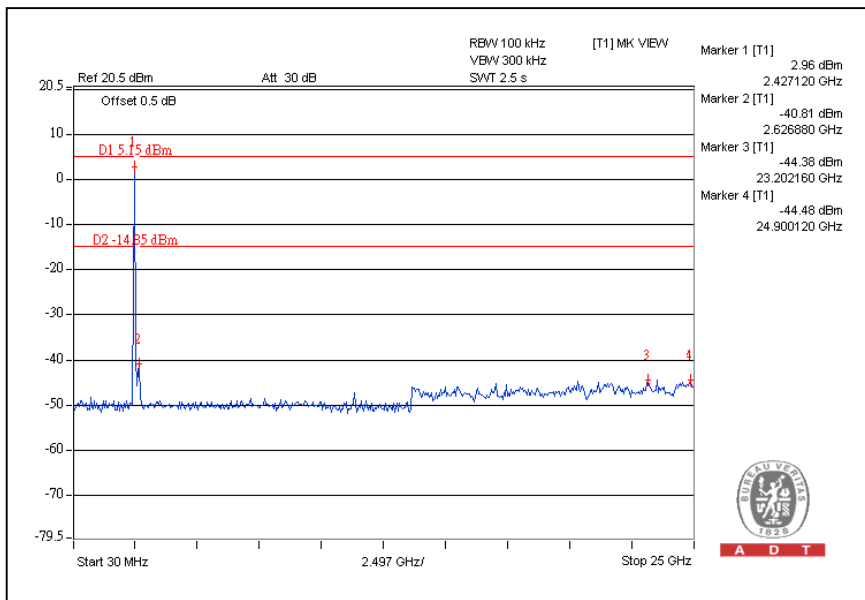
CH11



CH1



CH11

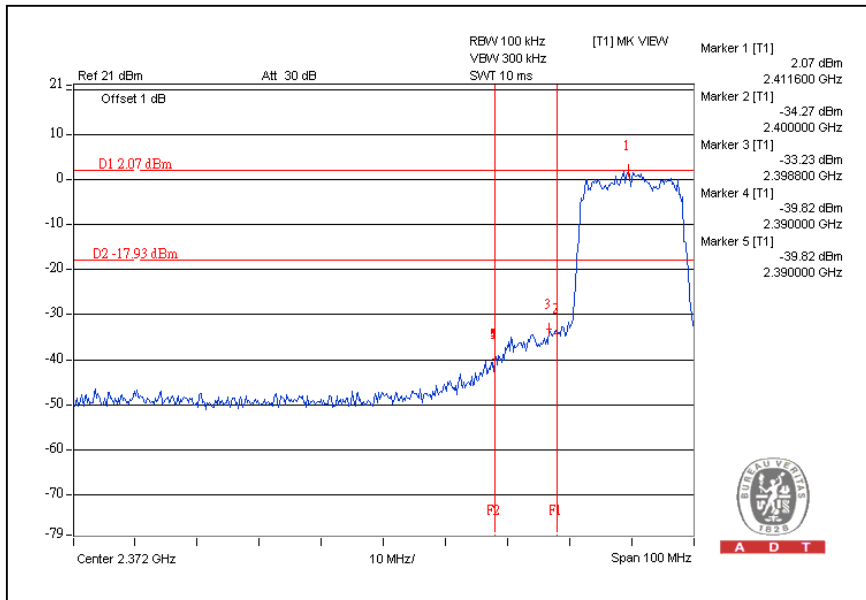




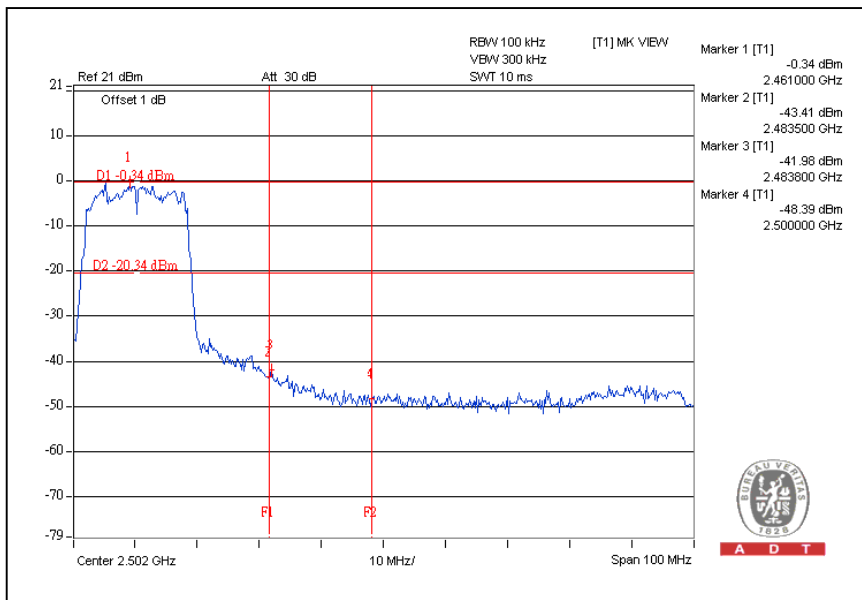
A D T

802.11g OFDM MODULATION:

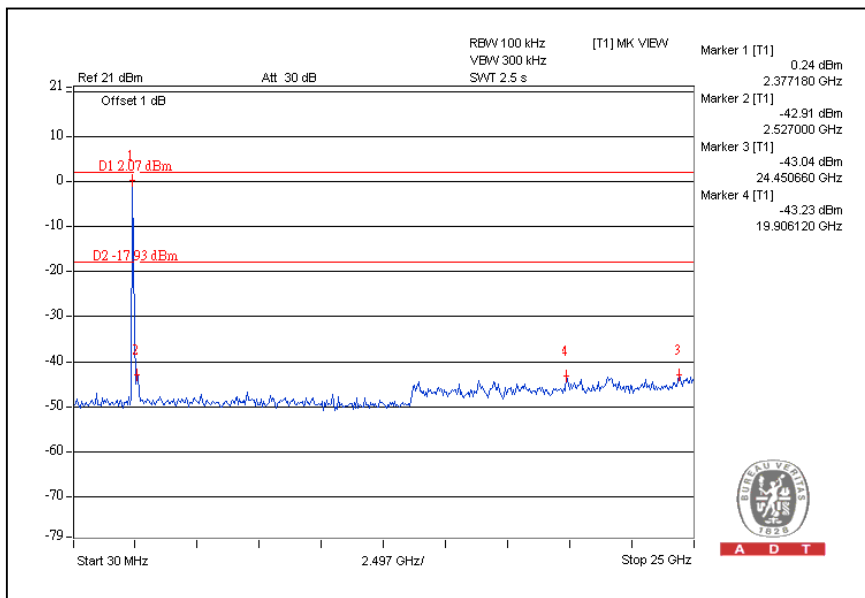
CH 1



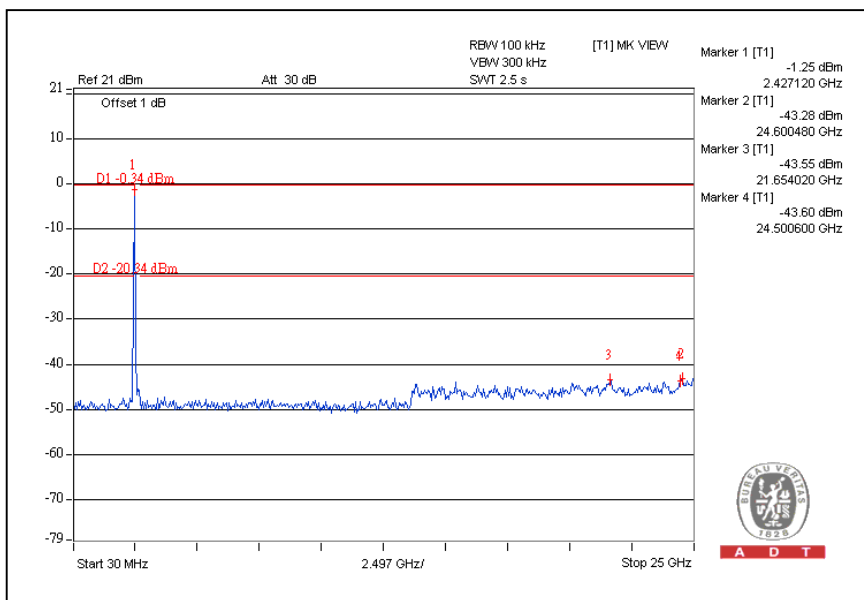
CH11



CH1



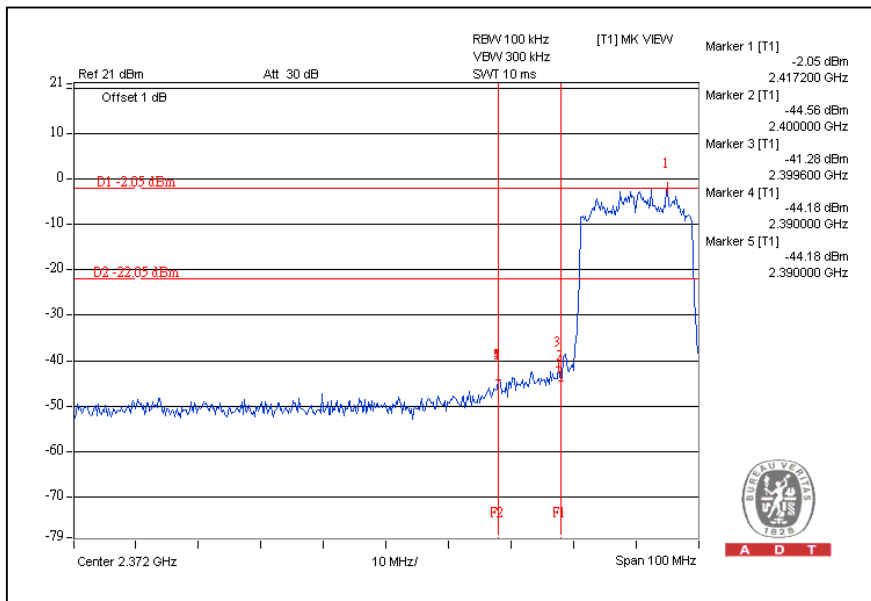
CH11



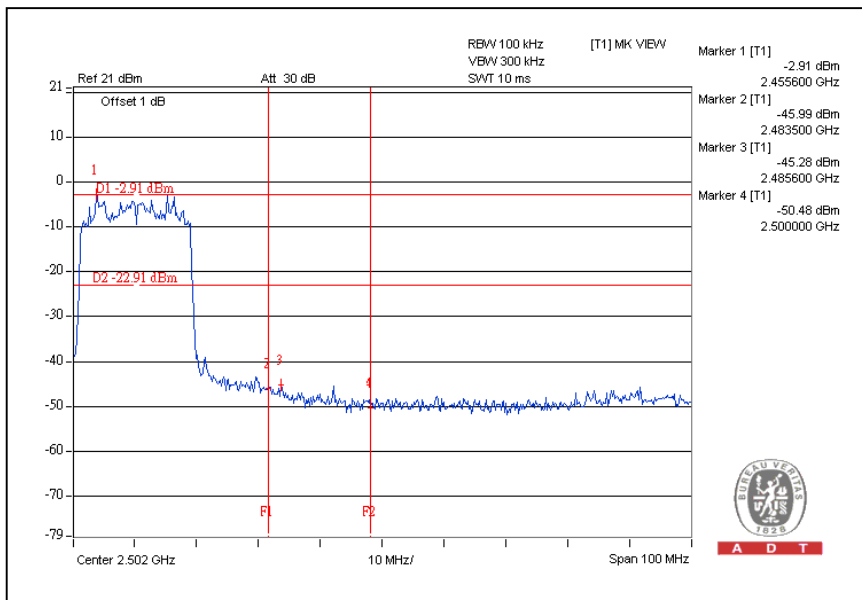


A D T

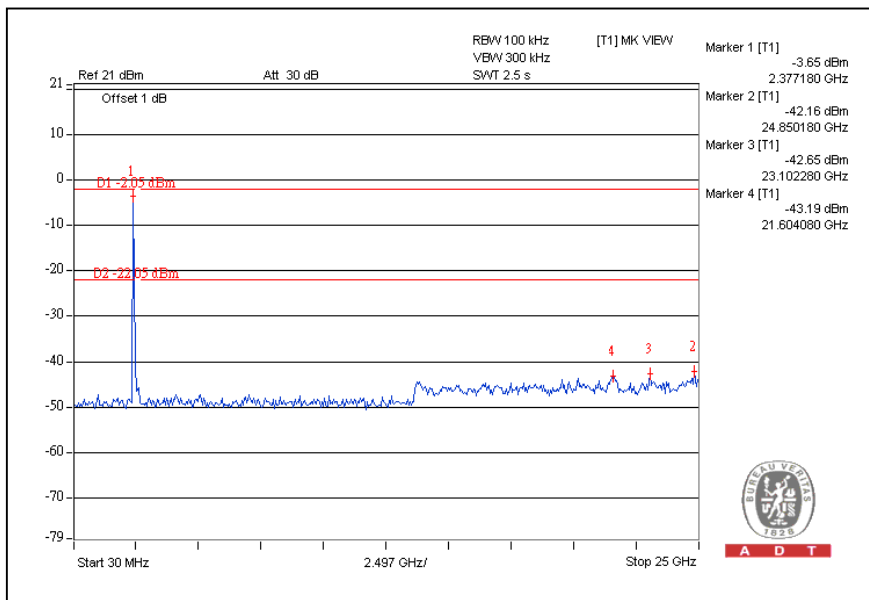
DRAFT 802.11n (20MHz) OFDM MODULATION: For Chain (0):CH1



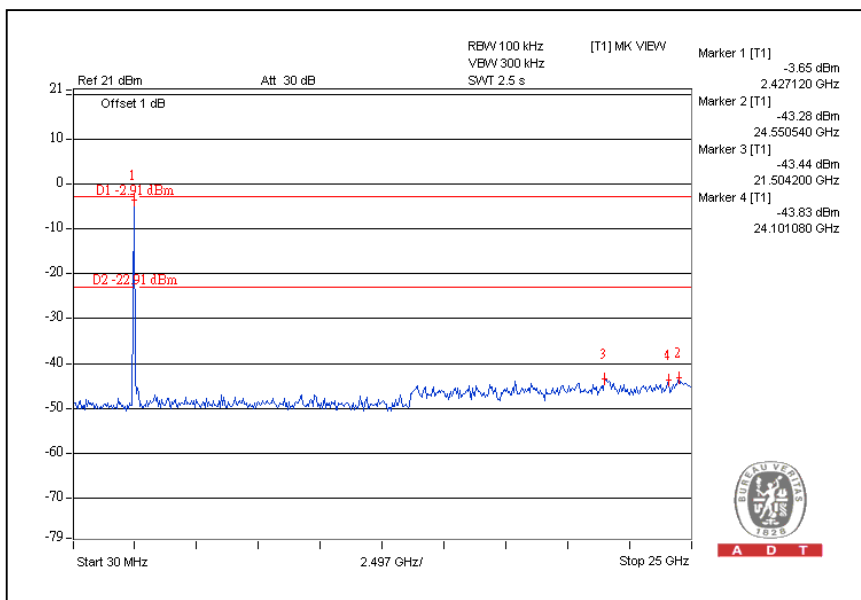
CH11



CH1



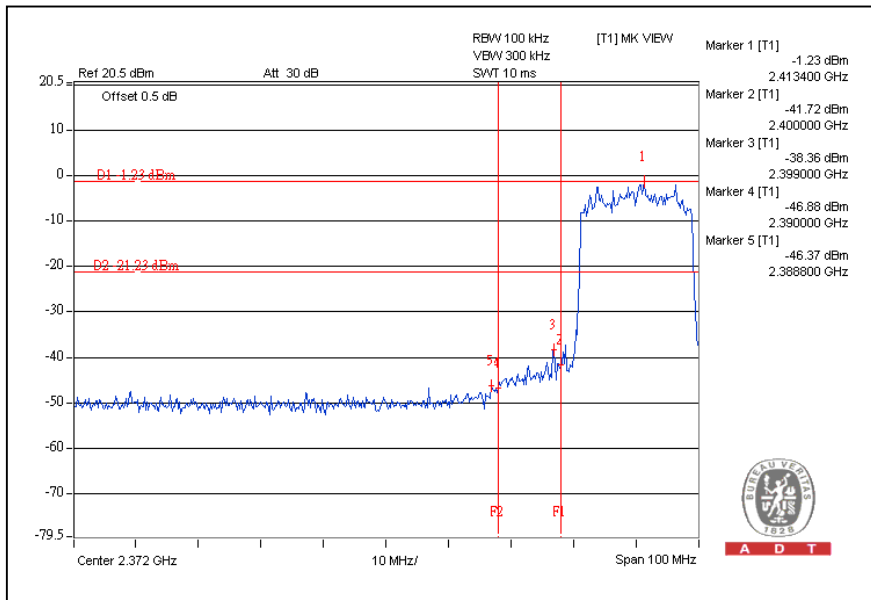
CH11



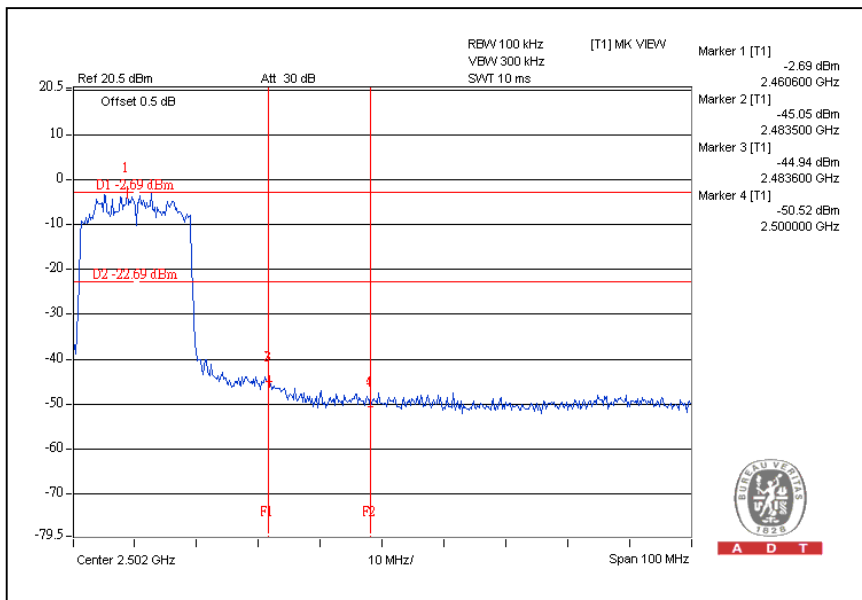


A D T

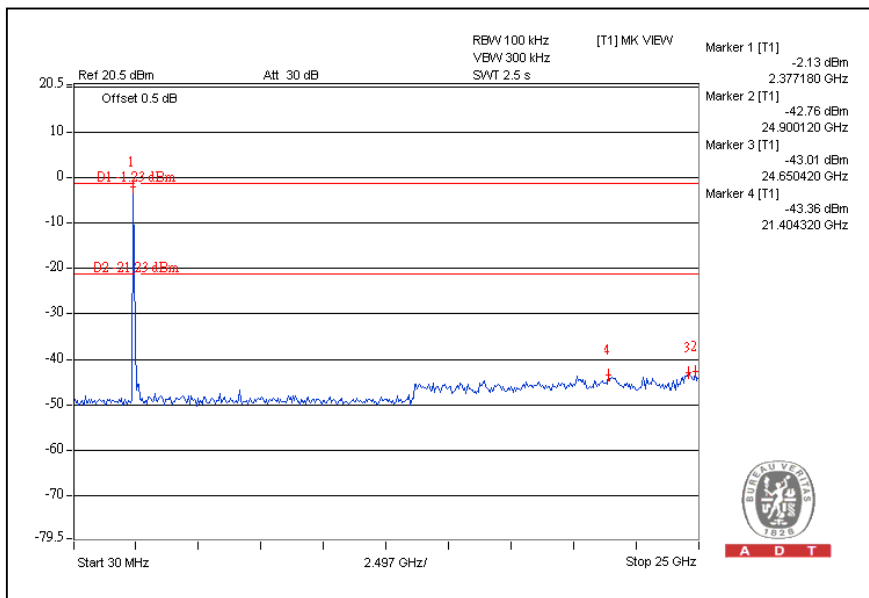
For Chain (1):CH1



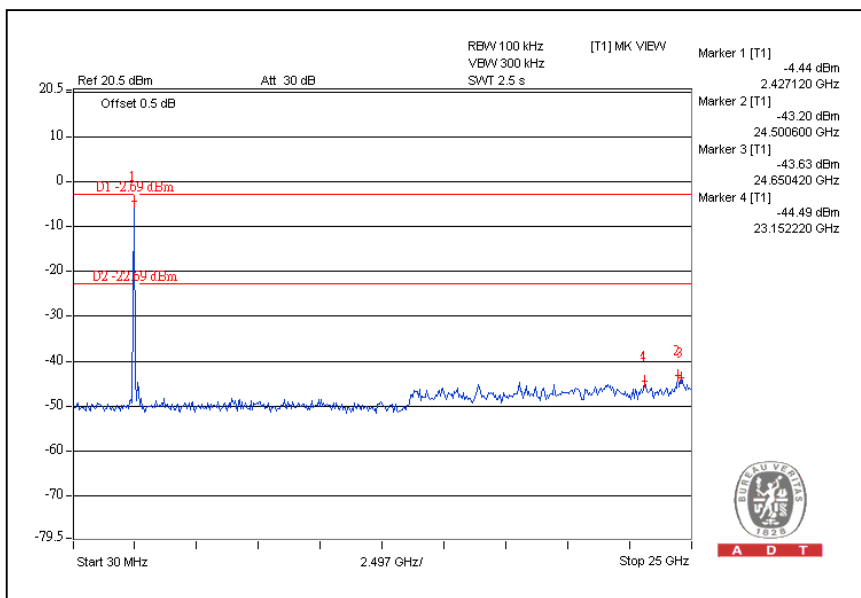
CH11



CH1



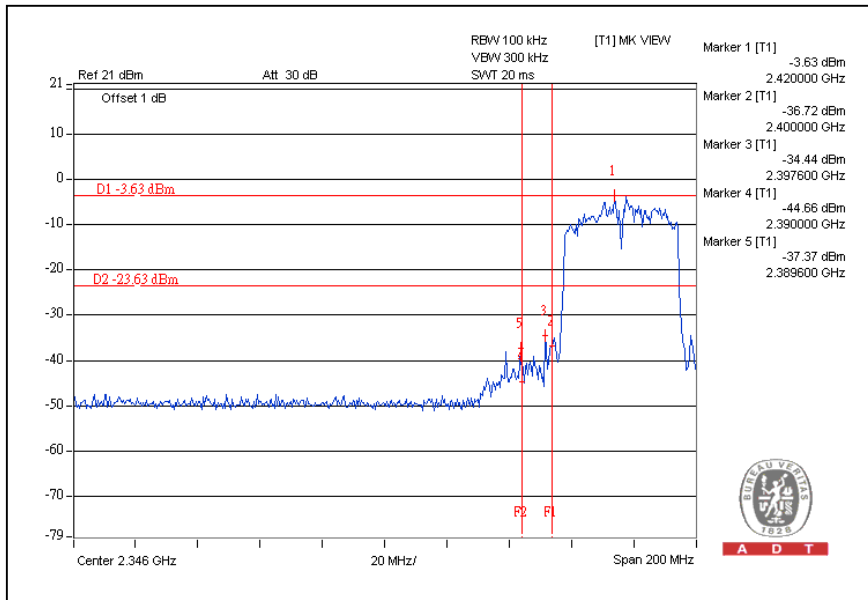
CH11



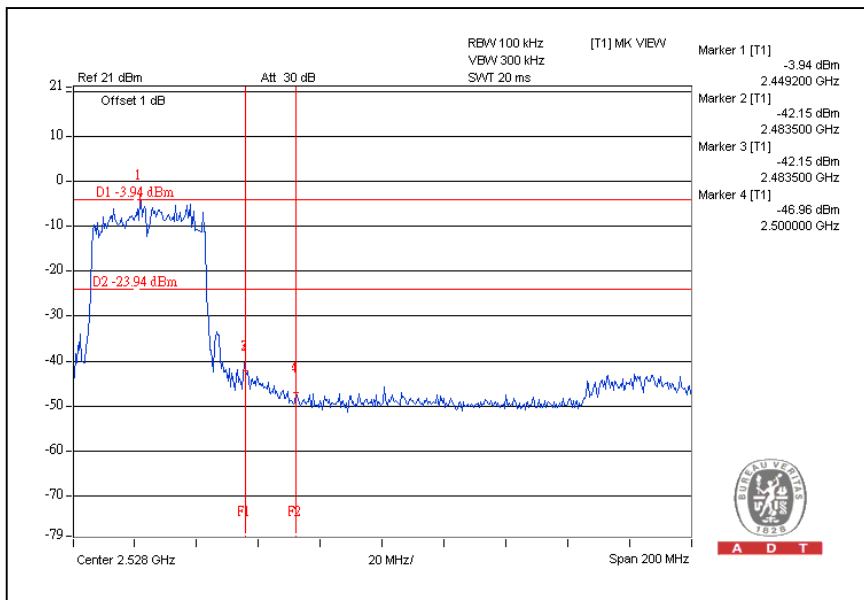


A D T

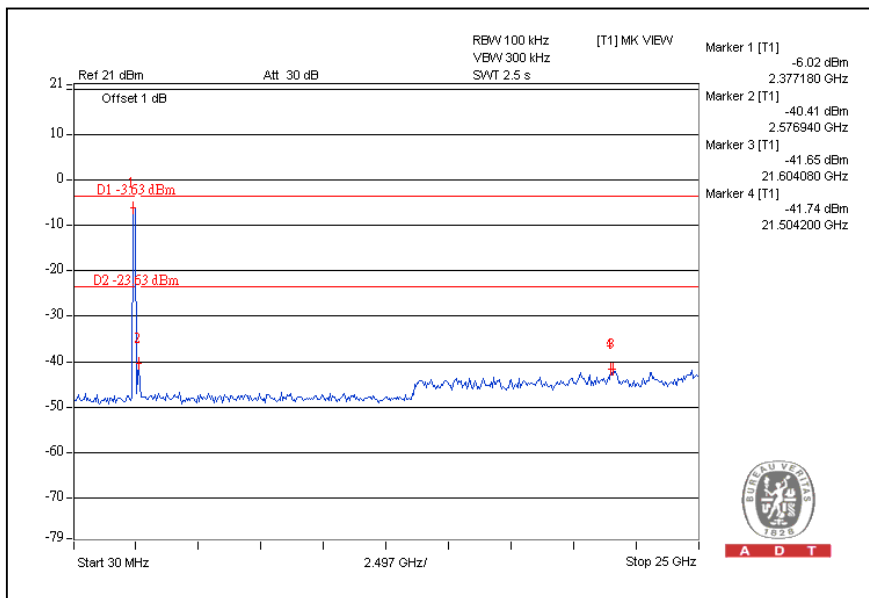
DRAFT 802.11n (40MHz) OFDM MODULATION: For Chain (0):CH1



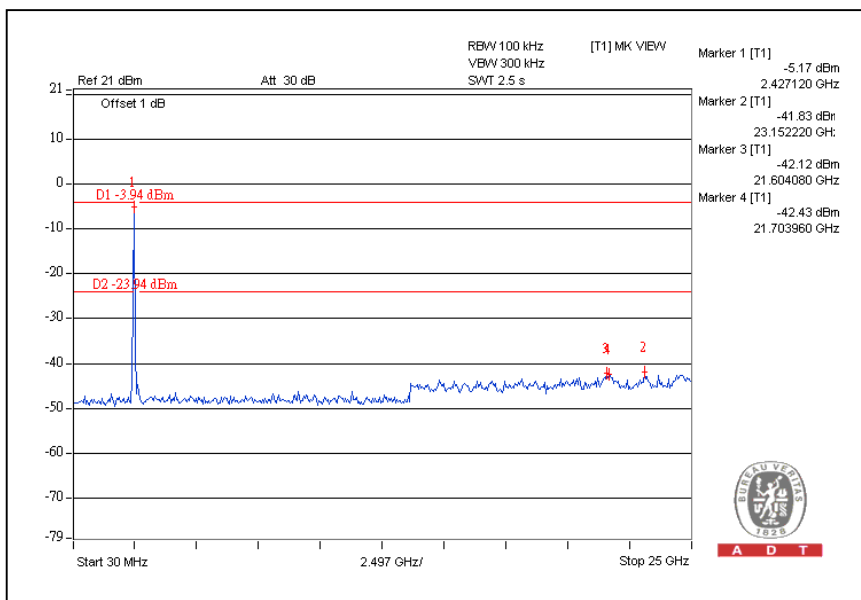
CH7



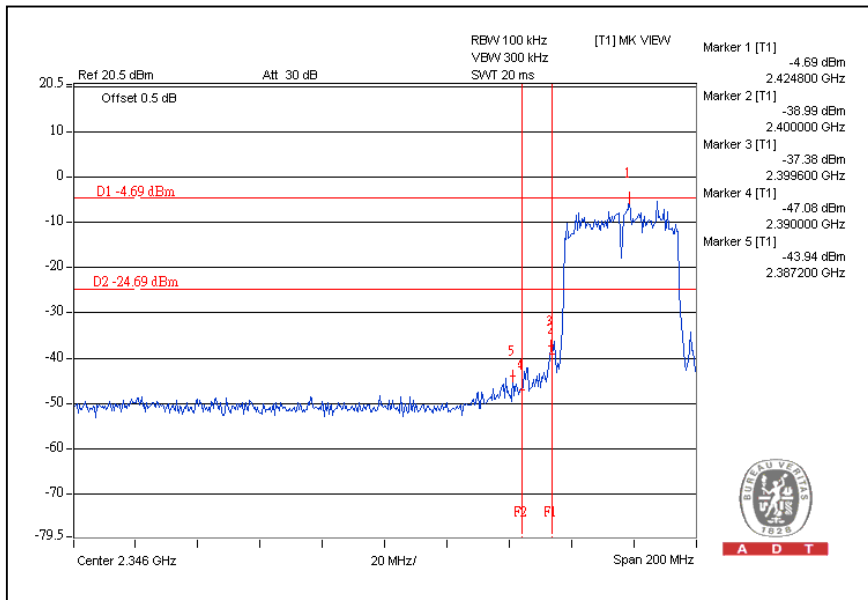
CH1



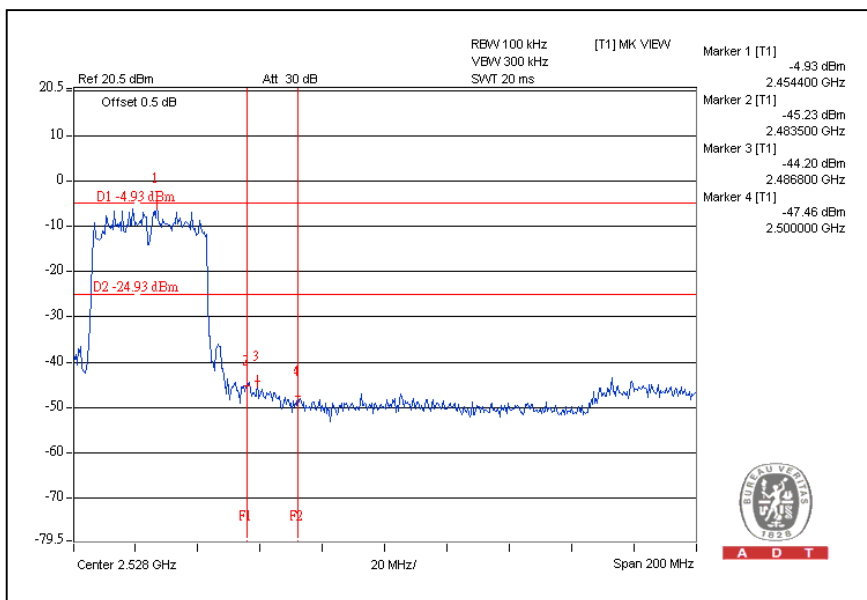
CH7



For Chain (1):CH1



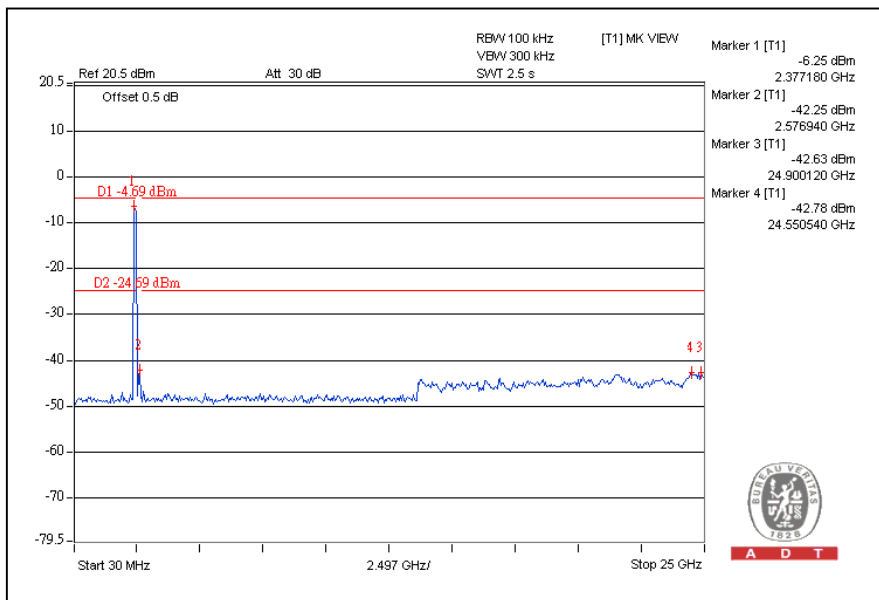
CH7



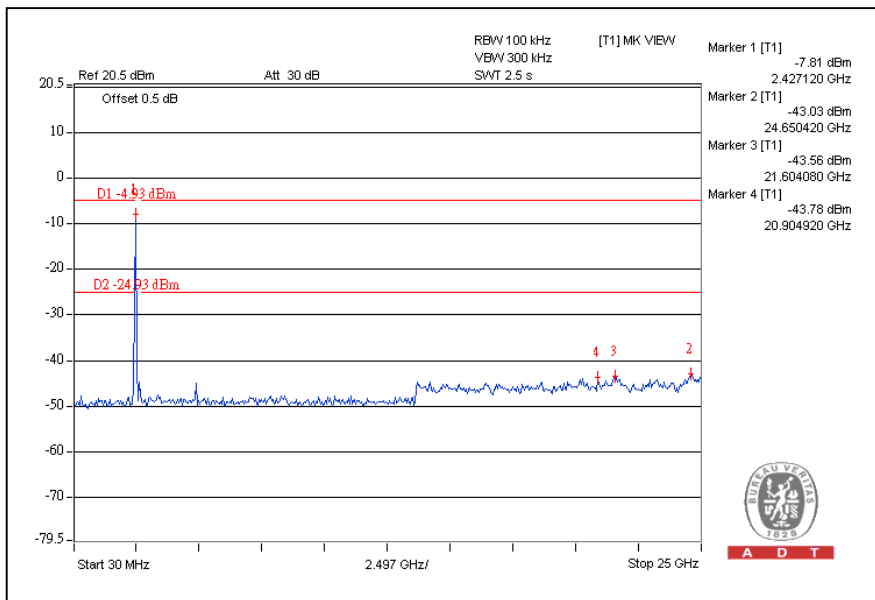


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CH1



CH7



4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

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

No.	Antenna Type	Gain (dBi)	Antenna Connector
1	Internal PCB	3.5	IPEX
2	Internal PCB	3.5	IPEX



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5. INFORMATION ON THE TESTING LABORATORIES

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

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

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.

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

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Web Site: www.adt.com.tw

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



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

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

--- END ---