

FCC TEST REPORT (15.247)

REPORT NO.: 100643FIA01

MODEL NO.: WUS-N10M

RECEIVED: Jun. 21, 2010

TESTED: Jun. 21 – Dec. 31, 2010

ISSUED: Jan. 07, 2011

APPLICANT: Alpha Networks Inc.

ADDRESS: No.8 Li-shing 7th Rd., Science-based Industrial
Park, Hsinchu, Taiwan, R.O.C.

ISSUED BY: ADT (Shanghai) Corporation

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1. CERTIFICATION

PRODUCT: WLAN Card

MODEL: WUS-N10M

BRAND: Alpha

APPLICANT: Alpha Networks Inc.

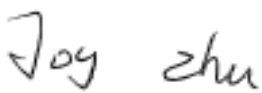
TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Jun. 21 – Jul. 04, 2010

STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003

The above equipment (Model: WUS-N10M) has been tested by **Bureau Veritas Advance Data Technology Corporation**, 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.

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Director of Operations

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -21.75dB at 1.81MHz
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 -4.46dB at 2390MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge 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 Ed 1.0.

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

This lab's measurement uncertainty U_{Lab} , is low than U_{Cispr} , Table 1 – Values of U_{Cispr} of CISPR 16-4-2 Ed. 1.0, therefore compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.

Measurement	Value
Conducted emissions	2.55 dB
Conducted emissions at telecom port	2.6180 dB
Radiated emissions	3.99 dB



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	WLAN Card
MODEL NO.	WUS-N10M
FCC ID	RRK-WUSN10M
POWER SUPPLY	DC 5V+/- 10%
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps Draft 802.11n: up to 300.0Mbps
FREQUENCY RANGE	2.4GHz: 2400 ~ 2483.5MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz)
OUTPUT POWER	196.79mW for 2400.0 ~ 2483.5MHz
ANTENNA TYPE	See note 5
I/O PORTS	N/A
ASSOCIATED DEVICES	N/A

NOTE:

1. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2400~2483.5
802.11b	√
802.11g	√
Draft 802.11n (20MHz)	√
Draft 802.11n (40MHz)	√

2. The EUT was powered by USB port or PCB board.
3. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
Draft 802.11n (20MHz)	1TX
Draft 802.11n (40MHz)	1TX

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

5.

Antenna type	Color	Manufacture	Model name	Antenna Gain(dBi) (Included cable loss)	Cable Model	Cable length (mm)	Connector type	EUT mode
dipole	White	N/A	C037-510958-A	1.8 dBi	N/A	50	I-PEX	1
dipole	White	N/A	C037-511005-A	1.6 dBi	N/A	90	I-PEX	2
dipole	Black	N/A	THW0157A	1.9dBi	505960079610G	80	I-PEX	3
dipole	Black	N/A	THW0157A	1.8 dBi	505960079510G	150	I-PEX	4
dipole	Black	N/A	THW0157A	1.9 dBi	505999998010G	80	I-PEX	5

3.2 DESCRIPTION OF TEST MODES

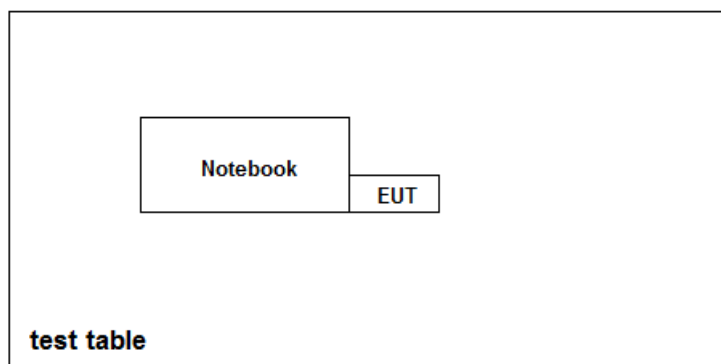
11 channels are provided for 802.11b, 802.11g and draft 802.11n (20MHz):

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		

7 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 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.400 ~ 2.4835GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
5	√	√	√	√	NA
2		√	√		NA
4		√	√		NA

Where **RE≥1G**: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

RADIATED EMISSION TEST (ABOVE 1GHz):

☒ 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	CCK	1	5
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	5
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	5
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13	5

RADIATED EMISSION TEST (BELOW 1GHz):

☒ 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	CCK	1	2, 4 & 5

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, 6, 11	DSSS	CCK	1	2, 4 & 5

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	CCK	1	5
802.11g	1 to 11	1, 11	OFDM	BPSK	6	5
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	5
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	13	5

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	CCK	1	5
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	5
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	5
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13	5

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

ANSI C63.4-2003

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

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.	FCC ID
1	Notebook	Lenovo	R61i	FCC DoC Approved

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Spectrum Agilent	E4403B	E1S1001	Aug. 03, 2011
Receiver R&S	ESCS30	E1R1001	Jan. 03, 2011
Trilog Broadband Antenna Schwarzbeck	VULB 9168	E1A1001	Aug. 03, 2011
Double Ridged Broadband Horn Antenna Schwarzbeck	BBHA 9120D	E1A1002	Oct. 31, 2011
Preamplifier Agilent	HP 8447D-CFG001	E1A2001	Nov. 11, 2011
Signal Analyzer ROHDE & SCHWARZ	FSP30	E1S1002	Aug. 03, 2011
RF signal cable Woken	RG-402	E1CBH01	Aug. 03, 2011
RF signal cable Woken	RG-412	E1CBL02	Aug. 03, 2011
RF signal cable Woken	RG-412	E1CBL03	Aug. 03, 2011
RF signal cable Woken	RG-412	E1CBL04	Aug. 03, 2011
Software ADT	ADT_Radiated_V7.5	N/A	N/A

NOTE: The calibration interval of the above test instruments is 12 months.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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.

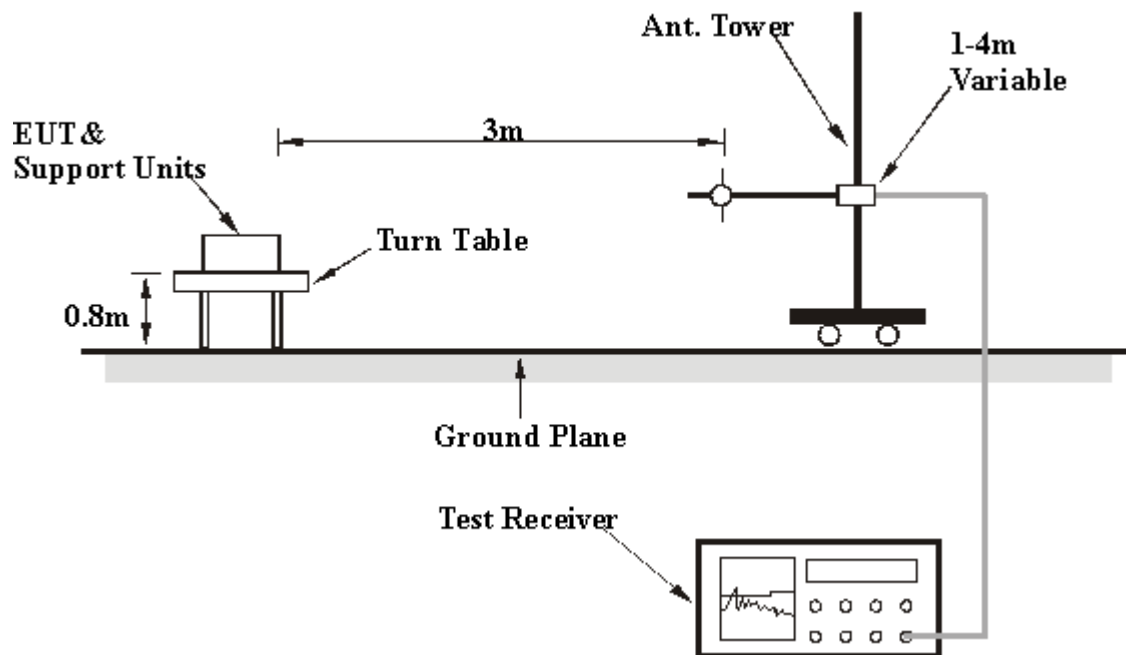
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz 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. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

- a. Put EUT onto the center of the test table, then link EUT to the Notebook.
- b. Use the software to control the EUT work on the certain channel, then do the test.



4.1.7 TEST RESULTS

EUT WORK WITH ANTENNA THW0157A

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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2390.00	PK	32.59	26.41	59.00	74.00	-15.00
2	2390.00	AV	32.59	15.12	47.70	54.00	-6.30
3	*2412.00	PK	32.61	75.82	108.43		
4	*2412.00	AV	32.61	67.52	100.13		
5	4824.00	PK	37.82	-4.25	33.57	74.00	-40.43
6	4824.00	AV	37.82	-4.35	33.46	54.00	-20.54
7	#7236.00	PK	44.64	-1.88	42.76	88.43	-45.67
8	#7236.00	AV	44.64	-4.50	40.13	80.13	-40.00
9	#9648.00	PK	47.23	-2.00	45.22	88.43	-43.21
10	#9648.00	AV	47.23	-3.77	43.46	80.13	-36.67

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2386.48	PK	32.59	23.89	56.48	74.00	-17.52
2	2386.00	AV	32.59	13.42	46.01	54.00	-7.99
3	*2412.00	PK	32.61	71.15	103.76		
4	*2412.00	AV	32.61	62.58	95.19		
5	4824.00	PK	37.82	-4.14	33.67	74.00	-40.33
6	4824.00	AV	37.82	-4.38	33.44	54.00	-20.56
7	#7236.00	PK	44.64	-1.79	42.85	83.76	-40.91
8	#7236.00	AV	44.64	-4.53	40.11	75.19	-35.08
9	#9648.00	PK	47.23	-1.62	45.60	83.76	-38.16
10	#9648.00	AV	47.23	-3.76	43.47	75.19	-31.72

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



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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.
6. “ # ”: The radiated frequency falling out the restricted band.



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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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	74.51	107.17		
2	*2437.00	AV	32.66	66.21	98.87		
3	4874.00	PK	38.00	-3.44	34.57	74.00	-39.43
4	4874.00	AV	38.00	-4.46	33.55	54.00	-20.45
5	7311.00	PK	44.65	-0.21	44.44	74.00	-29.56
6	7311.00	AV	44.65	-4.25	40.40	54.00	-13.60
7	#9748.00	PK	47.48	1.39	48.87	87.17	-38.30
8	#9748.00	AV	47.48	-3.92	43.57	78.87	-35.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	70.14	102.80		
2	*2437.00	AV	32.66	62.05	94.71		
3	4874.00	PK	38.00	-3.32	34.69	74.00	-39.31
4	4874.00	AV	38.00	-4.53	33.47	54.00	-20.53
5	7311.00	PK	44.65	-0.68	43.97	74.00	-30.03
6	7311.00	AV	44.65	-4.19	40.46	54.00	-13.54
7	#9748.00	PK	47.48	1.07	48.55	82.80	-34.25
8	#9748.00	AV	47.48	-3.93	43.55	74.71	-31.16

- 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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6. “#”: The radiated frequency falling out the restricted band.



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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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2462.00	PK	32.71	76.35	109.06		
2	*2462.00	AV	32.71	67.93	100.65		
3	2484.82	PK	32.76	25.99	58.74	74.00	-15.26
4	2484.83	AV	32.76	15.54	48.30	54.00	-5.70
5	4924.00	PK	38.19	-3.18	35.01	74.00	-38.99
6	4924.00	AV	38.19	-4.52	33.67	54.00	-20.33
7	7386.00	PK	44.64	-2.54	42.10	74.00	-31.90
8	7386.00	AV	44.64	-4.17	40.47	54.00	-13.53
9	#9848.00	PK	47.66	1.86	49.53	89.06	-39.53
10	#9848.00	AV	47.66	-3.41	44.25	80.65	-36.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2462.00	PK	32.71	70.57	103.29		
2	*2462.00	AV	32.71	61.99	94.70		
3	2487.82	PK	32.76	23.31	56.06	74.00	-17.94
4	2487.82	AV	32.76	13.28	46.03	54.00	-7.97
5	4924.00	PK	38.19	-4.18	34.01	74.00	-39.99
6	4924.00	AV	38.19	-4.56	33.63	54.00	-20.37
7	7386.00	PK	44.64	-1.78	42.86	74.00	-31.14
8	7386.00	AV	44.64	-4.13	40.51	54.00	-13.49
9	#9848.00	PK	47.66	1.41	49.07	83.29	-34.22
10	#9848.00	AV	47.66	-3.41	44.25	74.70	-30.45



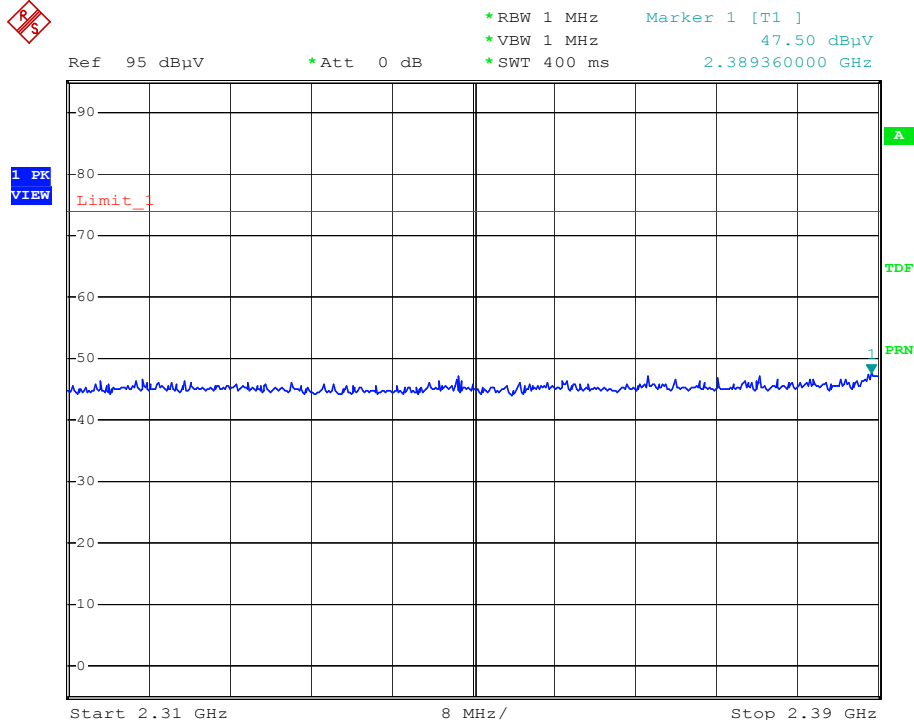
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- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission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

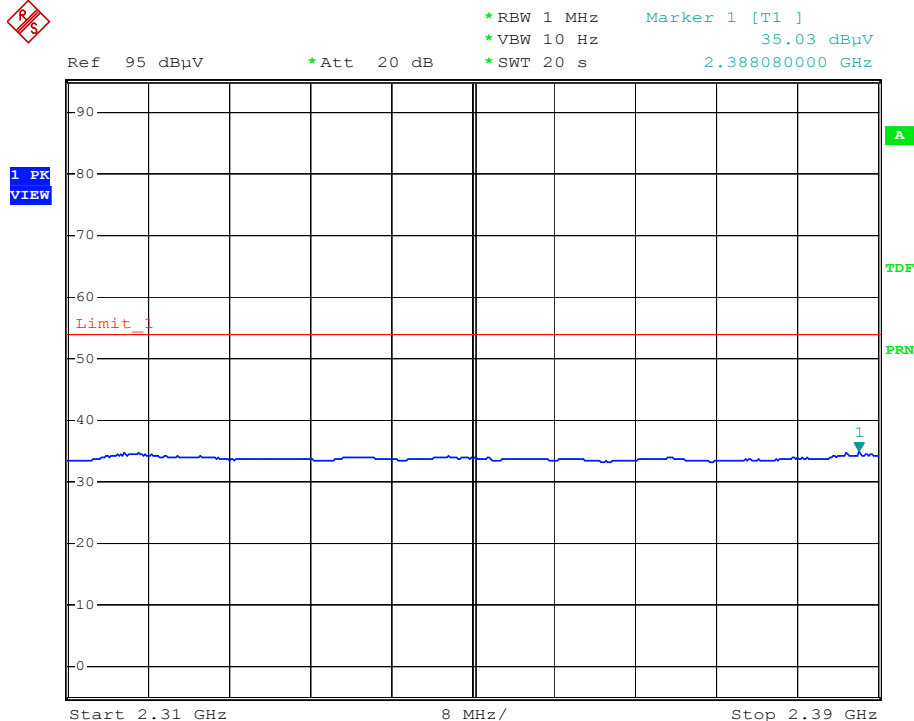


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RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)



Date: 31.DEC.2010 17:25:43



Date: 31.DEC.2010 17:22:19



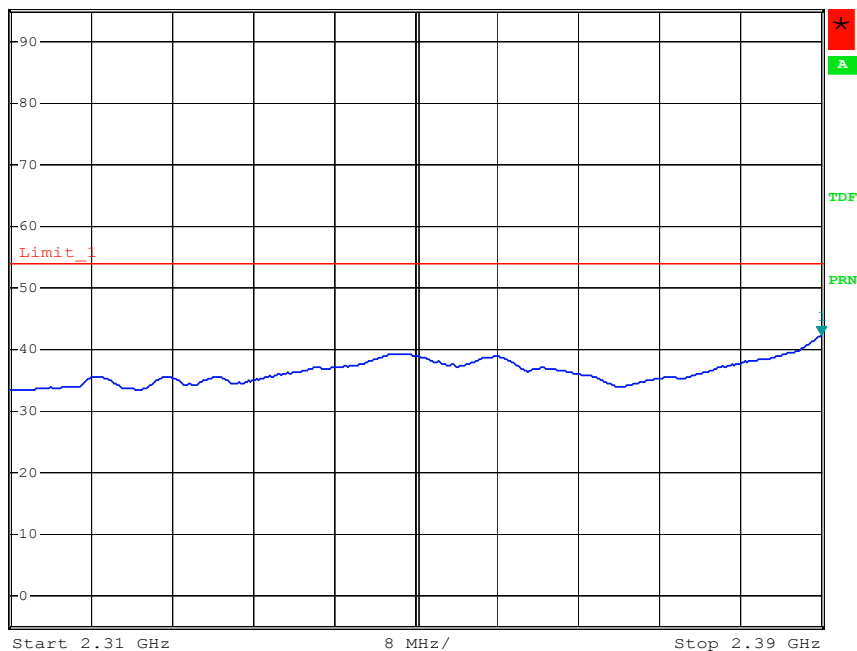
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RESTRICTED BANDEDGE (802.11b MODE,CH1, VERTICAL)



Ref 95 dB μ V *Att 20 dB *RBW 1 MHz Marker 1 [T1]
*VBW 10 Hz 42.39 dB μ V
*SWT 20 s 2.390000000 GHz

1 PK
VIEW

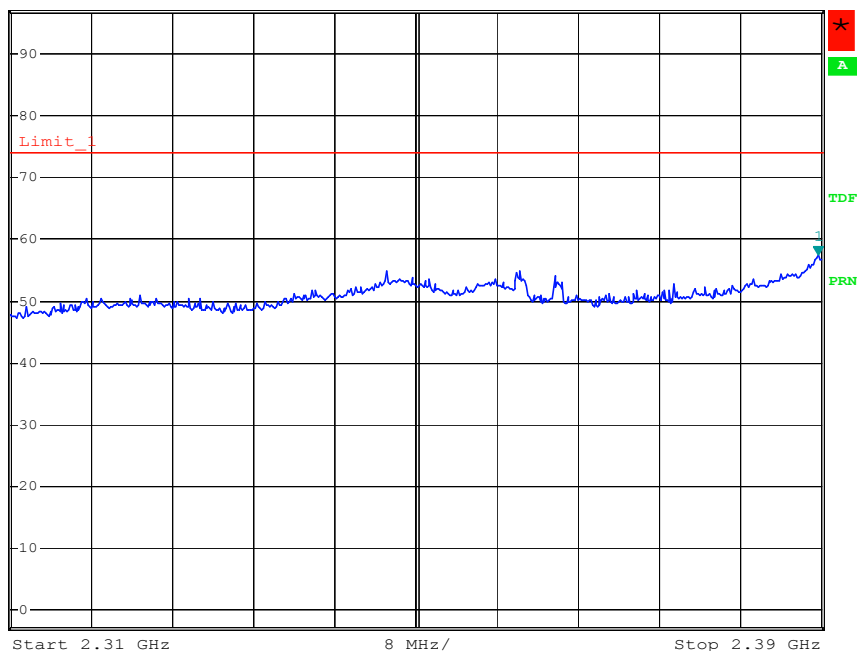


Date: 31.DEC.2010 17:14:46



Ref 97 dB μ V *Att 10 dB *RBW 1 MHz Marker 1 [T1]
*VBW 1 MHz 57.59 dB μ V
*SWT 400 ms 2.389680000 GHz

1 PK
VIEW



Date: 31.DEC.2010 17:05:54

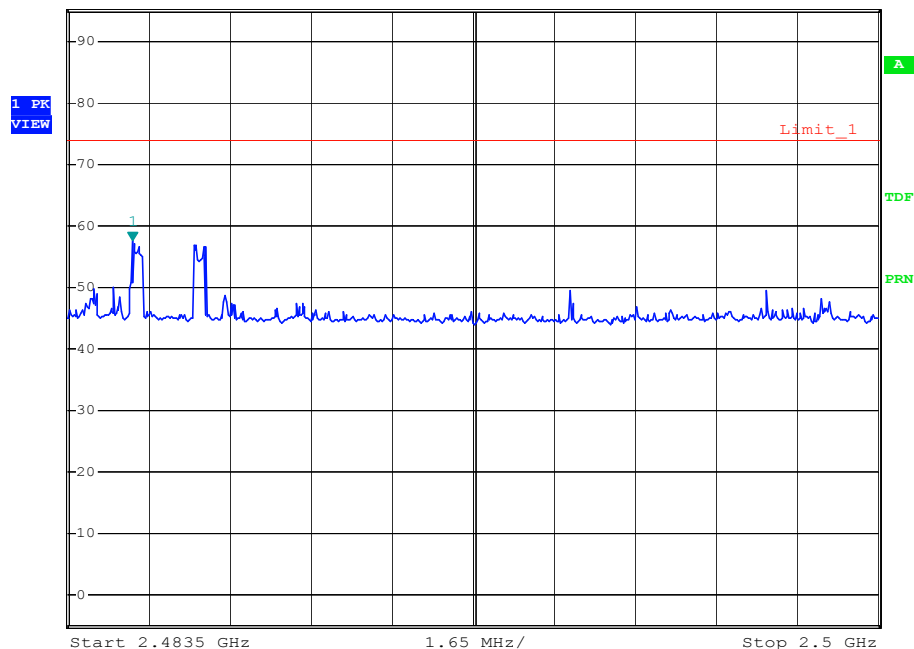


A D T

RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL)



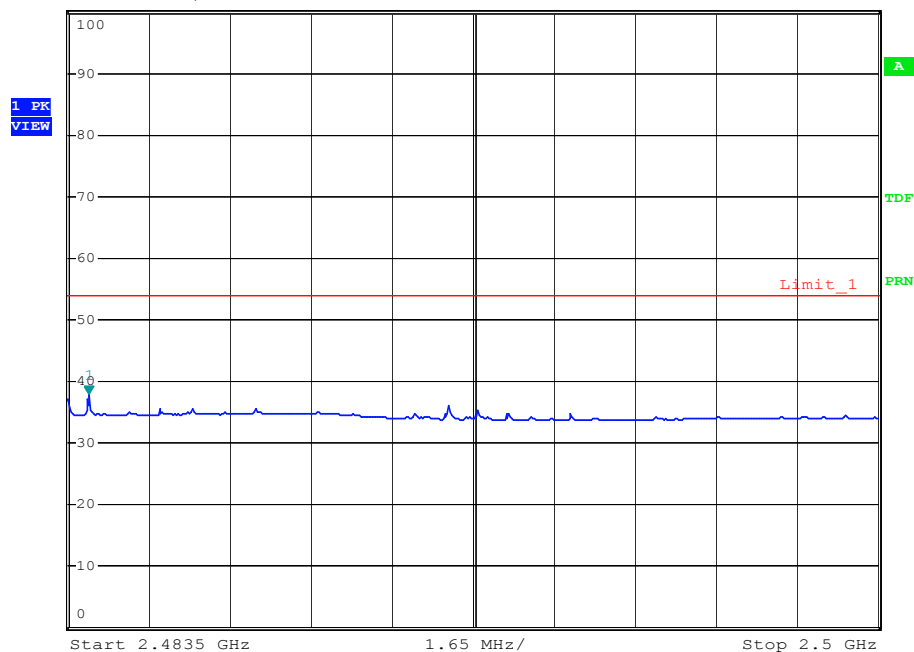
Ref 95 dB μ V *Att 0 dB *RBW 1 MHz Marker 1 [T1] 57.57 dB μ V
*VBW 1 MHz *SWT 400 ms 2.484820000 GHz



Date: 31.DEC.2010 18:19:24



Ref 100 dB μ V *Att 20 dB *RBW 1 MHz Marker 1 [T1] 37.80 dB μ V
*VBW 10 Hz *SWT 4.2 s 2.483929000 GHz

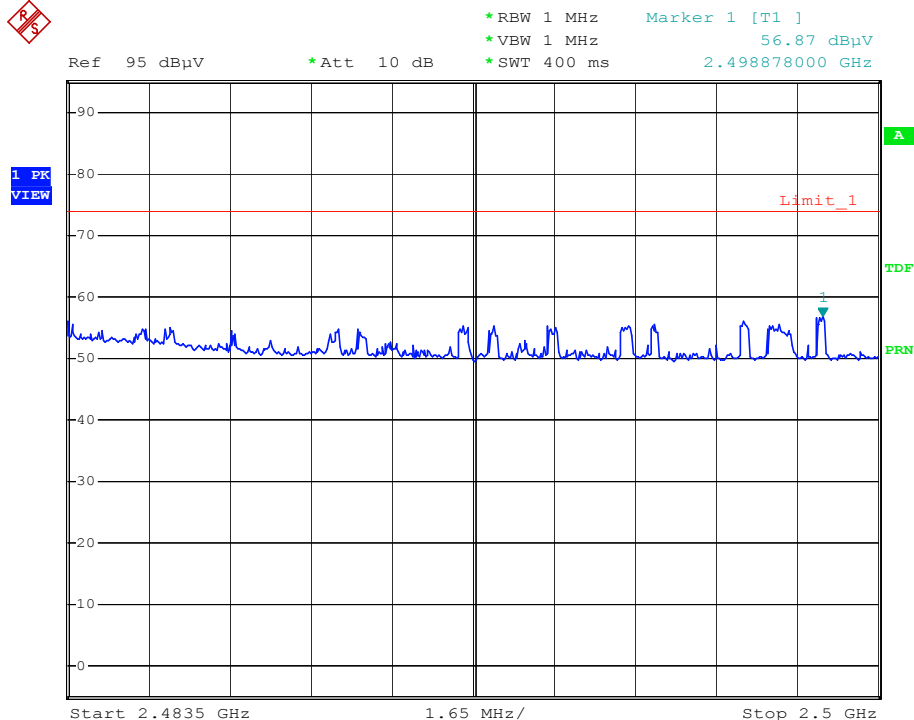


Date: 31.DEC.2010 18:17:21

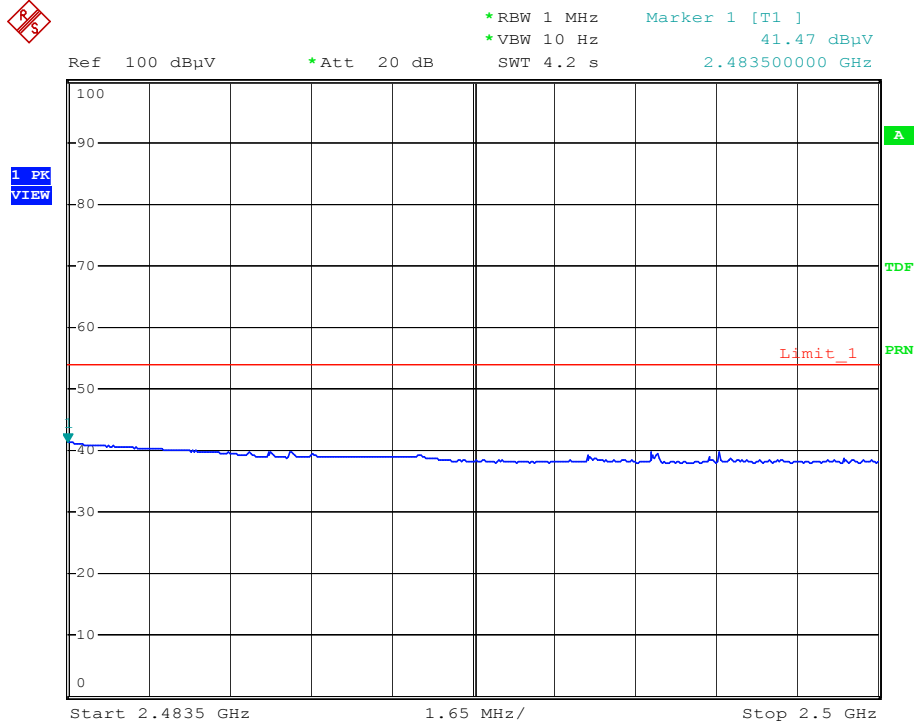


A D T

RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)



Date: 31.DEC.2010 18:23:31



Date: 31.DEC.2010 18:14:59



A D T

802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2390.00	PK	32.59	26.18	58.77	74.00	-15.23
2	2390.00	AV	32.59	15.17	47.76	54.00	-6.24
3	*2412.00	PK	32.61	75.79	108.41		
4	*2412.00	AV	32.61	67.30	99.92		
5	4824.00	PK	37.82	-4.39	33.43	74.00	-40.57
6	4824.00	AV	37.82	-4.41	33.41	54.00	-20.59
7	#7236.00	PK	44.64	-2.03	42.61	88.41	-45.80
8	#7236.00	AV	44.64	-4.51	40.13	79.92	-39.79
9	#9648.00	PK	47.23	-1.46	45.76	88.41	-42.65
10	#9648.00	AV	47.23	-3.76	43.46	79.92	-36.46

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2390.00	PK	32.59	23.86	56.45	74.00	-17.55
2	2390.00	AV	32.59	13.51	46.10	54.00	-7.90
3	*2412.00	PK	32.61	71.32	103.93		
4	*2412.00	AV	32.61	62.48	95.10		
5	4824.00	PK	37.82	-4.27	33.55	74.00	-40.45
6	4824.00	AV	37.82	-4.45	33.37	54.00	-20.63
7	#7236.00	PK	44.64	-1.81	42.83	83.93	-41.10
8	#7236.00	AV	44.64	-4.49	40.15	75.10	-34.95
9	#9648.00	PK	47.23	-1.22	46.01	83.93	-37.92
10	#9648.00	AV	47.23	-3.77	43.45	75.10	-31.65



A D T

- 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.
 6. “ # ”: The radiated frequency falling out the restricted band.



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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	74.35	107.01		
2	*2437.00	AV	32.66	66.26	98.93		
3	4874.00	PK	38.00	-2.53	35.48	74.00	-38.52
4	4874.00	AV	38.00	-4.50	33.51	54.00	-20.49
5	7311.00	PK	44.65	-1.17	43.49	74.00	-30.51
6	7311.00	AV	44.65	-4.22	40.44	54.00	-13.56
7	#9748.00	PK	47.48	1.77	49.25	87.01	-37.76
8	#9748.00	AV	47.48	-3.94	43.54	78.93	-35.39

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	70.45	103.12		
2	*2437.00	AV	32.66	61.66	94.32		
3	4874.00	AV	38.00	-3.58	34.42	74.00	-39.58
4	4874.00	PK	38.00	-4.57	33.43	54.00	-20.57
5	7311.00	AV	44.65	-1.38	43.28	74.00	-30.72
6	7311.00	PK	44.65	-4.23	40.42	54.00	-13.58
7	#9748.00	PK	47.48	1.32	48.81	83.12	-34.31
8	#9748.00	AV	47.48	-3.89	43.59	74.32	-30.73

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

6. “#”: The radiated frequency falling out the restricted band.



A D T

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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2462.00	PK	32.71	76.50	109.21		
2	*2462.00	AV	32.71	67.86	100.57		
3	2483.57	PK	32.76	23.79	56.55	74.00	-17.45
4	2483.63	AV	32.76	15.58	48.33	54.00	-5.67
5	4924.00	PK	38.19	-4.39	33.80	74.00	-40.20
6	4924.00	AV	38.19	-4.52	33.67	54.00	-20.33
7	7386.00	PK	44.64	-1.63	43.01	74.00	-30.99
8	7386.00	AV	44.64	-4.18	40.46	54.00	-13.54
9	#9848.00	PK	47.66	1.41	49.07	89.21	-40.14
10	#9848.00	AV	47.66	-3.41	44.25	80.57	-36.32

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2462.00	PK	32.71	70.79	103.50		
2	*2462.00	AV	32.71	62.05	94.76		
3	2483.63	PK	32.76	24.09	56.84	74.00	-17.16
4	2483.63	AV	32.76	13.32	46.07	54.00	-7.93
5	4924.00	PK	38.19	-5.19	32.99	74.00	-41.01
6	4924.00	AV	38.19	-4.57	33.62	54.00	-20.38
7	7386.00	PK	44.64	-2.26	42.38	74.00	-31.62
8	7386.00	AV	44.64	-4.12	40.53	54.00	-13.47
9	#9848.00	PK	47.66	3.00	50.66	83.50	-32.84
10	#9848.00	AV	47.66	-3.41	44.25	74.76	-30.51



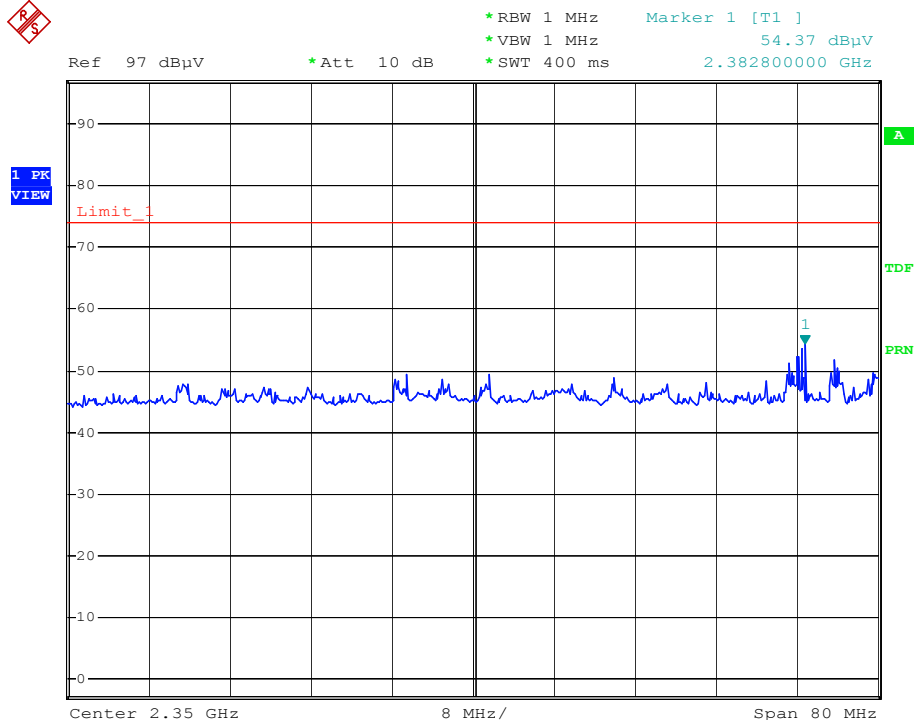
A D T

- 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.
 6. “ # ”: The radiated frequency falling out the restricted band.

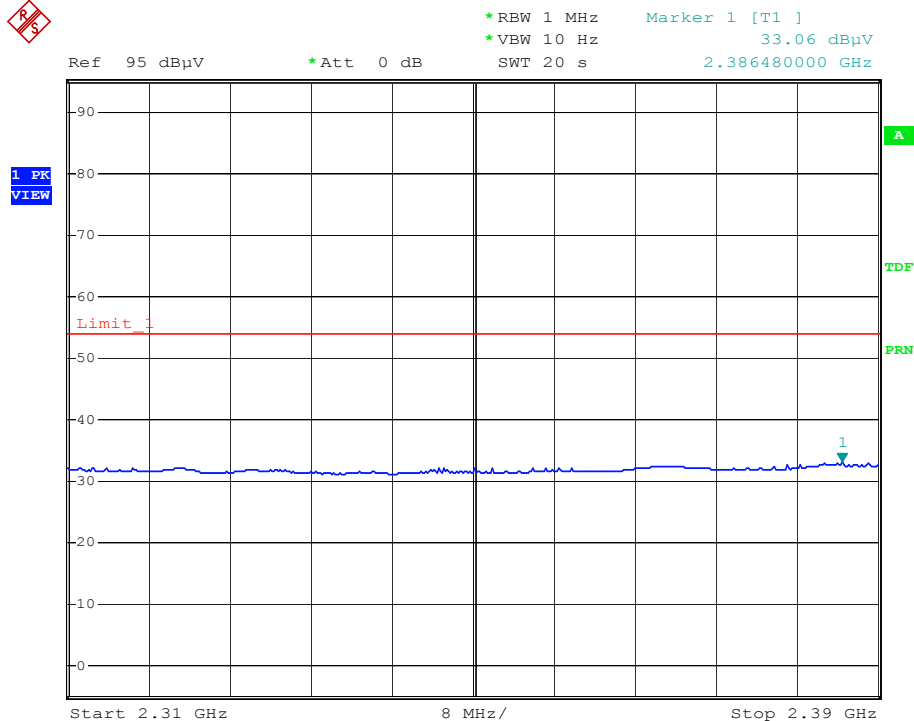


A D T

RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL)



Date: 31.DEC.2010 18:35:39



Date: 31.DEC.2010 18:43:04



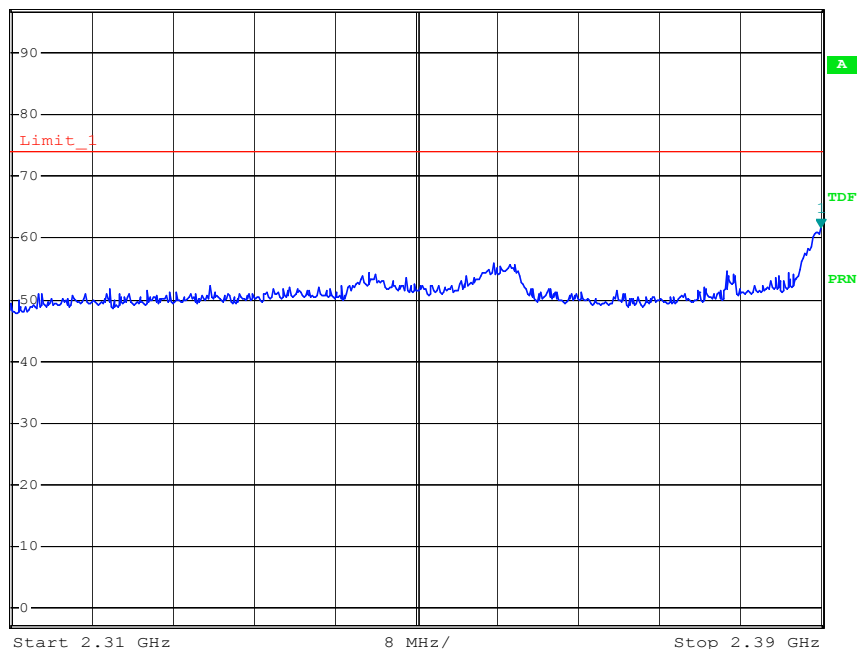
A D T

RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)



Ref 97 dBμV *Att 10 dB *RBW 1 MHz *VBW 1 MHz *SWT 400 ms Marker 1 [T1] 61.77 dBμV 2.390000000 GHz

1 PK
VIEW

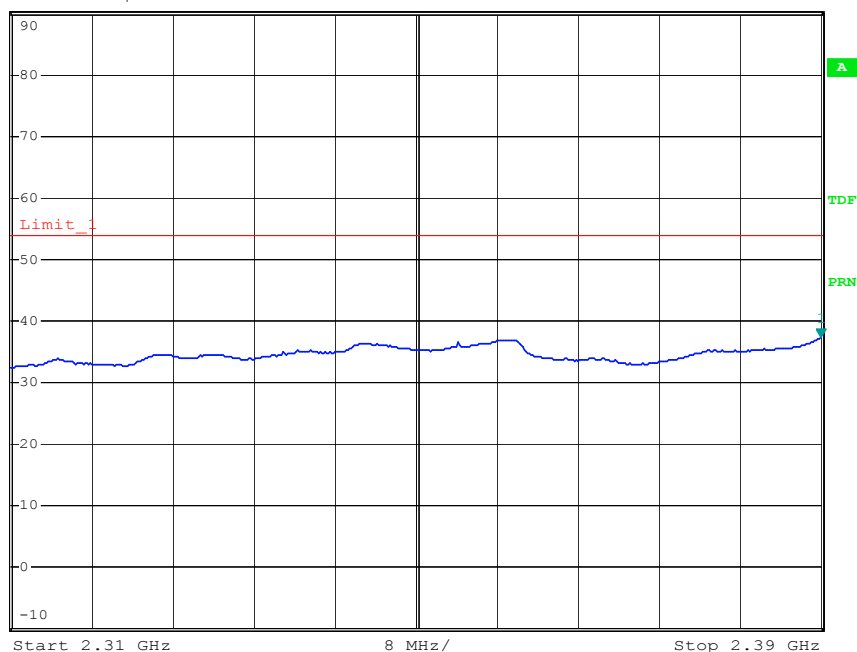


Date: 31.DEC.2010 18:33:27



Ref 90 dBμV *Att 10 dB *RBW 1 MHz *VBW 10 Hz *SWT 20 s Marker 1 [T1] 37.32 dBμV 2.390000000 GHz

1 PK
VIEW



Date: 31.DEC.2010 18:48:45

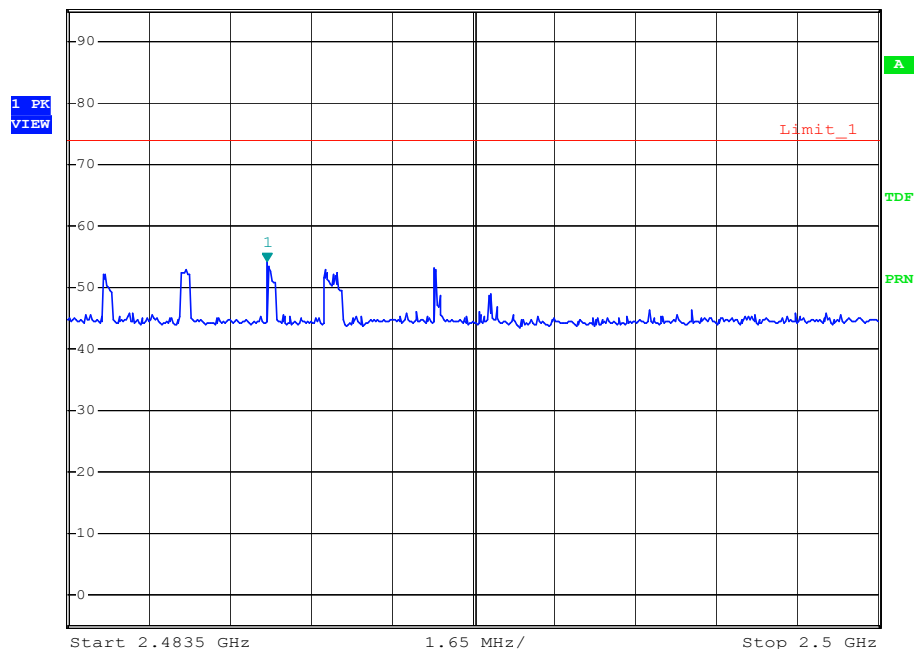


A D T

RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)



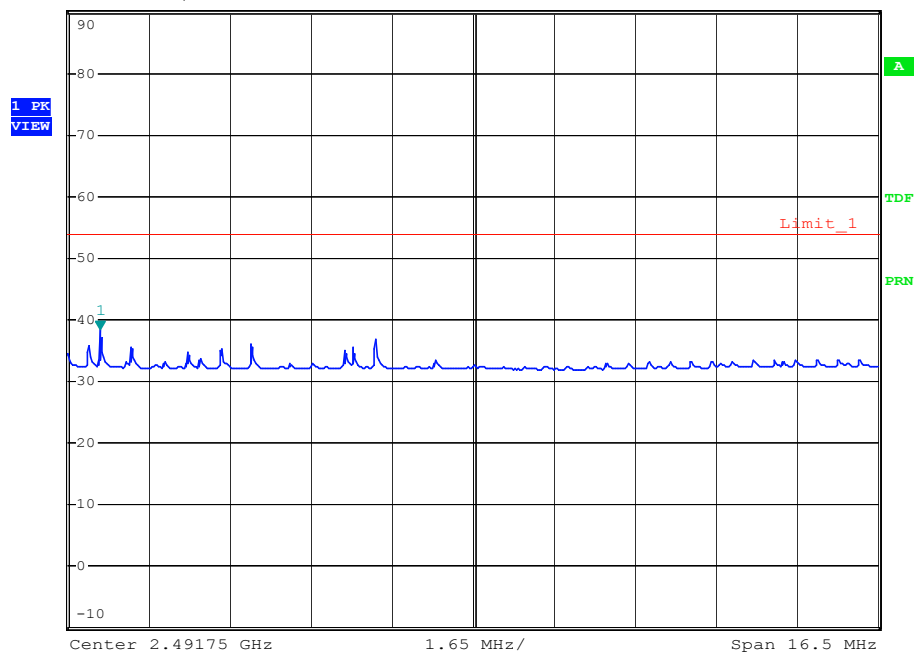
Ref 95 dB μ V *Att 0 dB *RBW 1 MHz *VBW 1 MHz *SWT 400 ms Marker 1 [T1] 54.28 dB μ V 2.487559000 GHz



Date: 31.DEC.2010 18:56:01



Ref 90 dB μ V *Att 10 dB *RBW 1 MHz *VBW 10 Hz *SWT 4.2 s Marker 1 [T1] 38.46 dB μ V 2.484160000 GHz

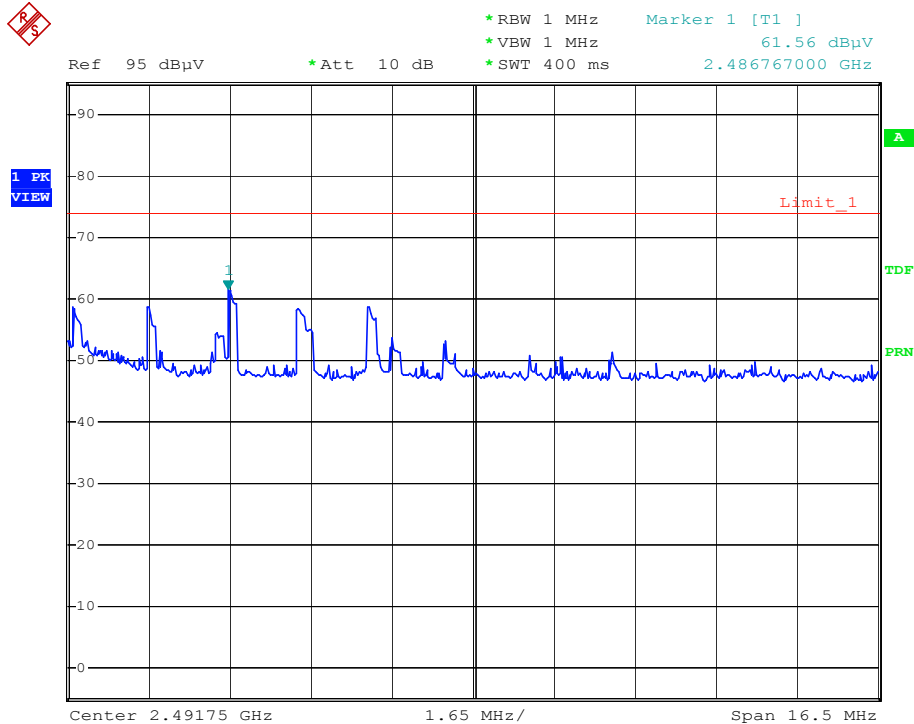


Date: 31.DEC.2010 18:53:22

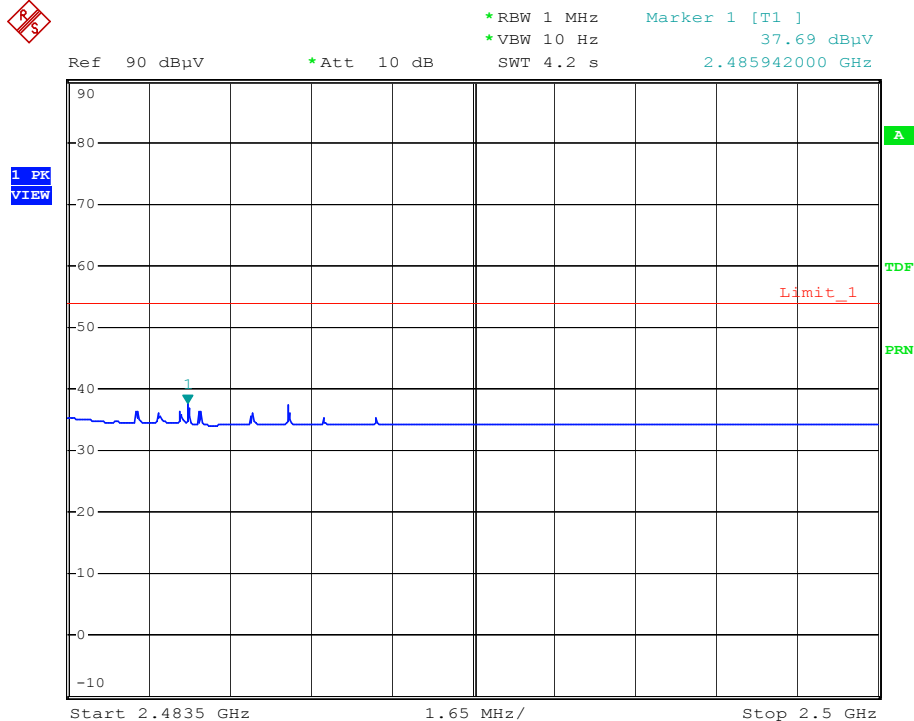


A D T

RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)



Date: 31.DEC.2010 18:57:39



Date: 31.DEC.2010 18:51:25



A D T

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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2386.00	PK	32.59	25.64	58.23	74.00	-15.77
2	2386.00	AV	32.59	15.23	47.82	54.00	-6.18
3	*2412.00	PK	32.61	75.97	108.58		
4	*2412.00	AV	32.61	67.53	100.14		
5	4824.00	PK	37.82	-3.54	34.28	74.00	-39.72
6	4824.00	AV	37.82	-4.37	33.45	54.00	-20.55
7	#7236.00	PK	44.64	-1.81	42.83	88.58	-45.75
8	#7236.00	AV	44.64	-4.50	40.14	80.14	-40.00
9	#9648.00	PK	47.23	-1.29	45.93	88.58	-42.65
10	#9648.00	AV	47.23	-3.66	43.56	80.14	-36.58

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2389.36	PK	32.59	23.87	56.46	74.00	-17.54
2	2389.36	AV	32.59	13.55	46.13	54.00	-7.87
3	*2412.00	PK	32.61	71.55	104.17		
4	*2412.00	AV	32.61	62.59	95.20		
5	4824.00	PK	37.82	-4.31	33.51	74.00	-40.49
6	4824.00	AV	37.82	-4.43	33.39	54.00	-20.61
7	#7236.00	PK	44.64	-2.32	42.32	84.17	-41.85
8	#7236.00	AV	44.64	-4.44	40.20	75.20	-35.00
9	#9648.00	PK	47.23	-1.61	45.61	84.17	-38.56
10	#9648.00	AV	47.23	-3.69	43.53	75.20	-31.67



A D T

- 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.
 6. “ # ”: The radiated frequency falling out the restricted band.

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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	74.53	107.19		
2	*2437.00	AV	32.66	66.27	98.93		
3	4874.00	PK	38.00	-2.85	35.16	74.00	-38.84
4	4874.00	AV	38.00	-4.50	33.50	54.00	-20.50
5	7311.00	PK	44.65	-0.85	43.80	74.00	-30.20
6	7311.00	AV	44.65	-4.16	40.49	54.00	-13.51
7	#9748.00	PK	47.48	1.58	49.06	87.19	-38.13
8	#9748.00	AV	47.48	-3.86	43.62	78.93	-35.31

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	70.50	103.16		
2	*2437.00	AV	32.66	61.65	94.32		
3	4874.00	PK	38.00	-3.83	34.18	74.00	-39.82
4	4874.00	AV	38.00	-4.49	33.51	54.00	-20.49
5	7311.00	PK	44.65	-1.34	43.31	74.00	-30.69
6	7311.00	AV	44.65	-4.18	40.47	54.00	-13.53
7	#9748.00	PK	47.48	1.75	49.23	83.16	-33.93
8	#9748.00	AV	47.48	-3.86	43.62	74.32	-30.70

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.
5. “ * ”: Fundamental frequency.



A D T

6. “#”: The radiated frequency falling out the restricted band.



A D T

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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2462.00	PK	32.71	76.58	109.30		
2	*2462.00	AV	32.71	67.88	100.60		
3	2484.95	PK	32.76	26.01	58.77	74.00	-15.23
4	2484.95	AV	32.76	15.54	48.30	54.00	-5.70
5	4924.00	PK	38.19	-4.03	34.15	74.00	-39.85
6	4924.00	AV	38.19	-4.51	33.68	54.00	-20.32
7	7386.00	PK	44.64	-0.92	43.72	74.00	-30.28
8	7386.00	AV	44.64	-4.12	40.52	54.00	-13.48
9	#9848.00	PK	47.66	1.66	49.32	89.30	-39.98
10	#9848.00	AV	47.66	-3.37	44.29	80.60	-36.31

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2462.00	PK	32.71	70.97	103.68		
2	*2462.00	AV	32.71	62.10	94.82		
3	2485.22	PK	32.76	24.12	56.87	74.00	-17.13
4	2485.22	AV	32.76	13.29	46.05	54.00	-7.95
5	4924.00	PK	38.19	-4.82	33.37	74.00	-40.63
6	4924.00	AV	38.19	-4.51	33.68	54.00	-20.32
7	7386.00	PK	44.64	-1.67	42.97	74.00	-31.03
8	7386.00	AV	44.64	-4.15	40.49	54.00	-13.51
9	#9848.00	PK	47.66	1.80	49.46	83.68	-34.22
10	#9848.00	AV	47.66	-3.36	44.30	74.82	-30.52



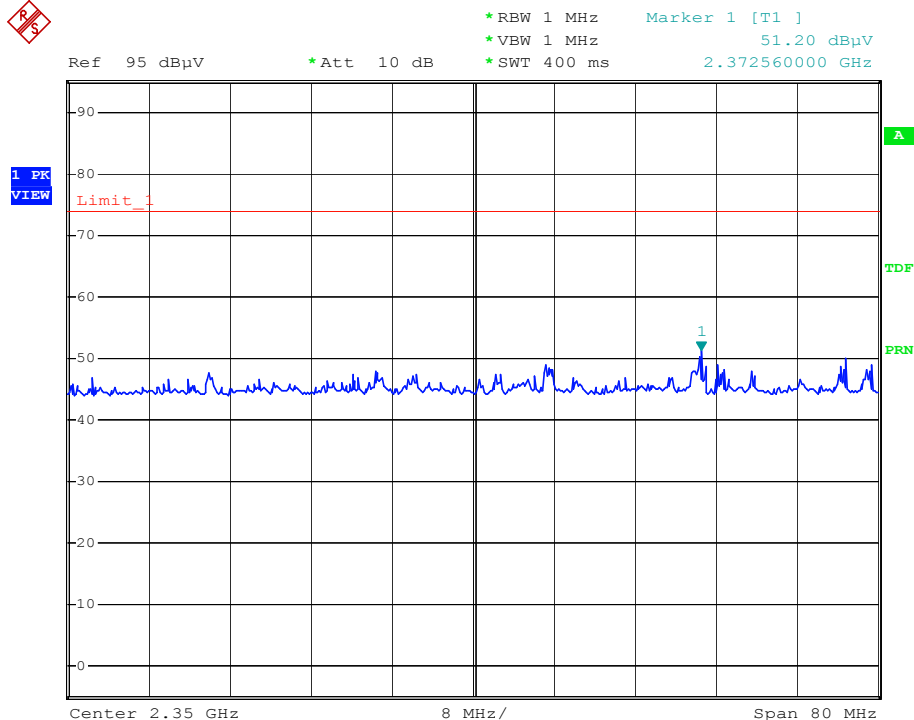
A D T

- 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.
 6. “ # ”: The radiated frequency falling out the restricted band.

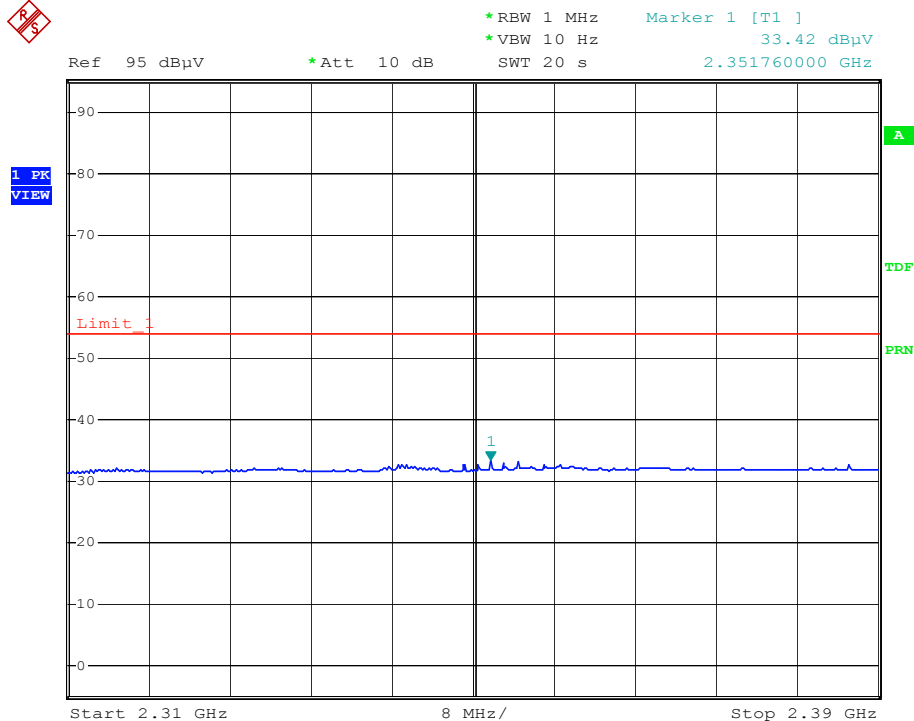


A D T

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



Date: 31.DEC.2010 19:08:37



Date: 31.DEC.2010 19:11:56



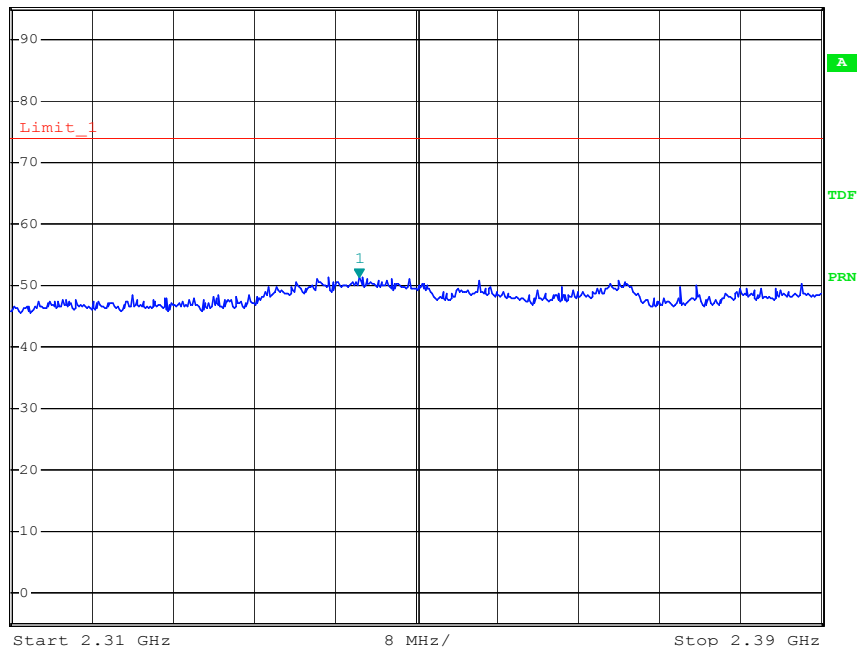
A D T

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



Ref 95 dBμV *Att 10 dB *RBW 1 MHz *VBW 1 MHz *SWT 400 ms Marker 1 [T1] 51.42 dBμV 2.344400000 GHz

1 PK
VIEW

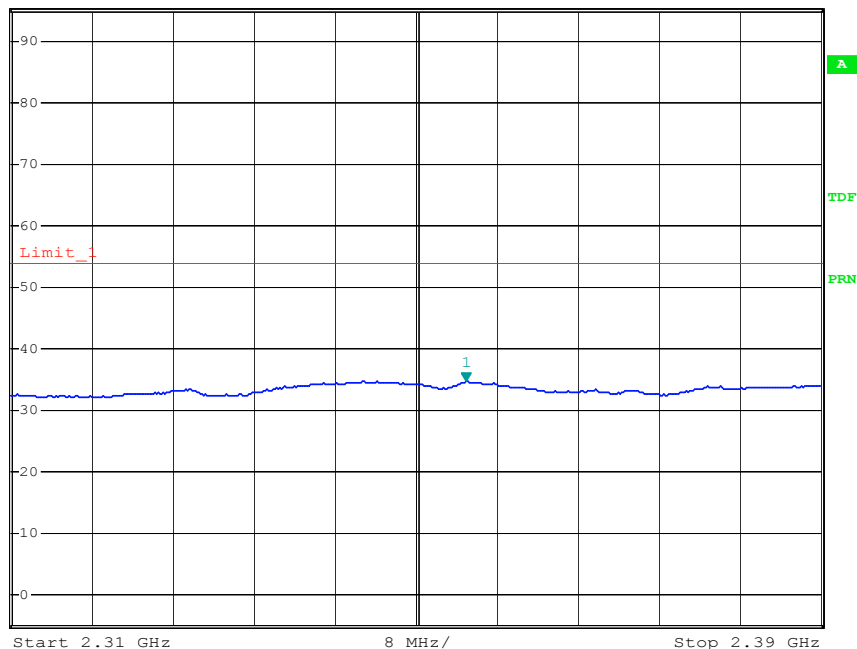


Date: 31.DEC.2010 19:06:47



Ref 95 dBμV *Att 10 dB *RBW 1 MHz *VBW 10 Hz *SWT 20 s Marker 1 [T1] 34.70 dBμV 2.354960000 GHz

1 PK
VIEW



Date: 31.DEC.2010 19:14:13

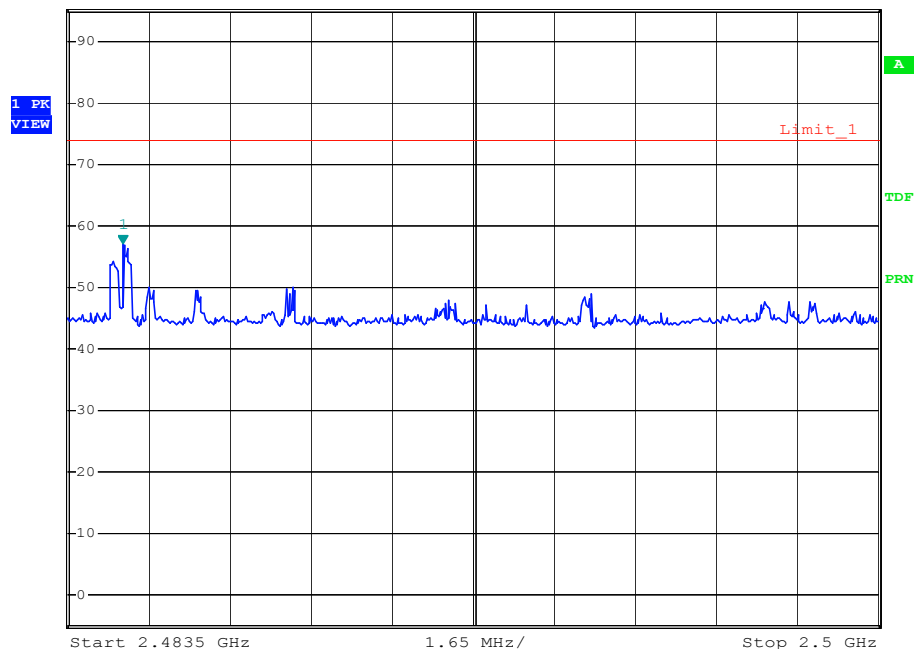


A D T

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



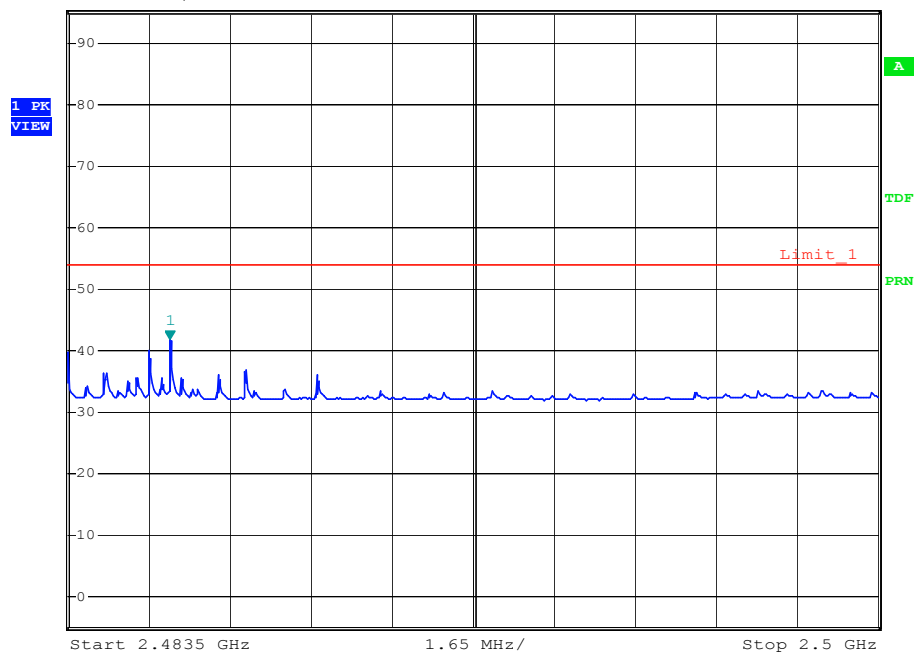
Ref 95 dB μ V *Att 10 dB *RBW 1 MHz Marker 1 [T1]
*VBW 1 MHz 56.97 dB μ V
*SWT 400 ms 2.484622000 GHz



Date: 31.DEC.2010 19:23:27



Ref 95 dB μ V *Att 10 dB *RBW 1 MHz Marker 1 [T1]
*VBW 10 Hz 41.73 dB μ V
SWT 4.2 s 2.485579000 GHz

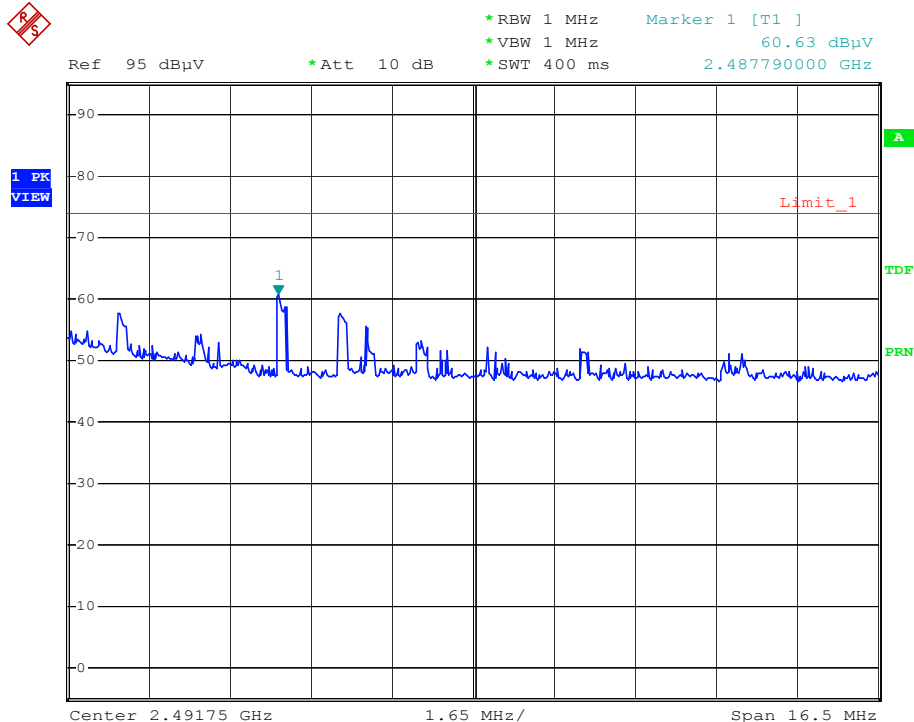


Date: 31.DEC.2010 19:21:16

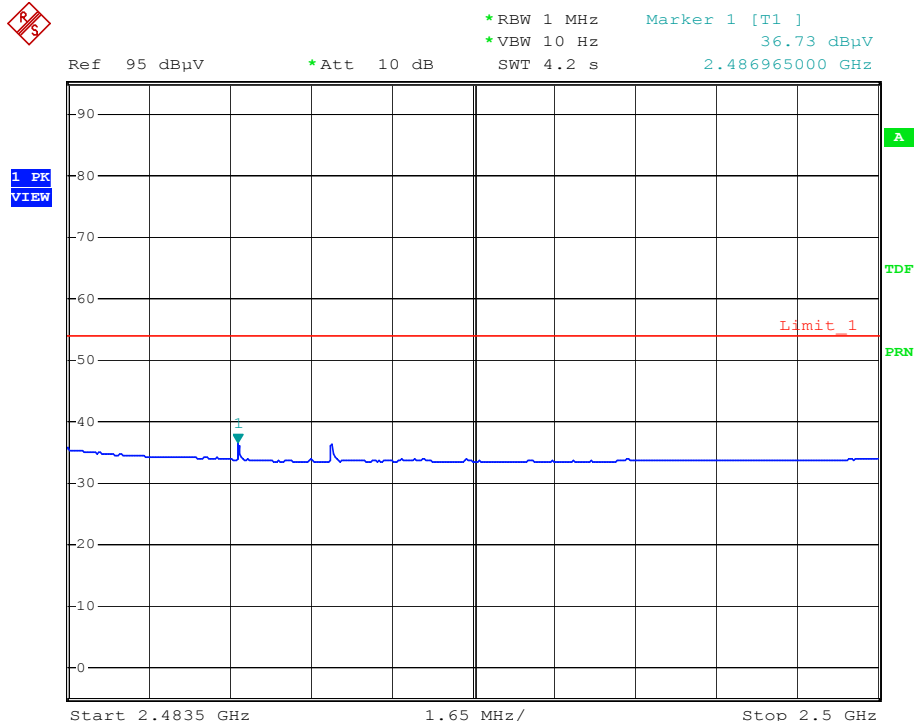


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RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, VERTICAL)



Date: 31.DEC.2010 19:25:09



Date: 31.DEC.2010 19:19:33



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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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2390.00	PK	32.59	24.24	56.83	74.00	-17.17
2	2390.00	AV	32.59	12.02	44.61	54.00	-9.39
3	*2422.00	PK	32.63	55.72	88.36		
4	*2422.00	AV	32.63	44.76	77.39		
5	4844.00	PK	37.89	7.67	45.56	74.00	-28.44
6	4844.00	AV	37.89	-4.20	33.69	54.00	-20.31
7	7266.00	PK	44.66	7.83	52.50	74.00	-21.50
8	7266.00	AV	44.66	-4.37	40.30	54.00	-13.70
9	#9688.00	PK	47.33	9.38	56.71	68.36	-11.65
10	#9688.00	AV	47.33	-3.58	43.75	57.39	-13.64

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2390.00	PK	32.59	28.33	60.92	74.00	-13.08
2	2390.00	AV	32.59	16.96	49.54	54.00	-4.46
3	*2422.00	PK	32.63	67.46	100.10		
4	*2422.00	AV	32.63	56.86	89.49		
5	4844.00	PK	37.89	8.81	46.70	74.00	-27.30
6	4844.00	AV	37.89	-4.21	33.68	54.00	-20.32
7	7266.00	PK	44.66	8.33	52.99	74.00	-21.01
8	7266.00	AV	44.66	-4.52	40.14	54.00	-13.86
9	#9688.00	PK	47.33	9.74	57.07	80.10	-23.03
10	#9688.00	AV	47.33	-3.59	43.74	69.49	-25.75



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- 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.
 6. “ # ”: The radiated frequency falling out the restricted band.

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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	57.17	89.84		
2	*2437.00	AV	32.66	46.53	79.19		
3	4874.00	PK	38.00	8.06	46.06	74.00	-27.94
4	4874.00	AV	38.00	-4.47	33.53	54.00	-20.47
5	7311.00	PK	44.65	8.55	53.20	74.00	-20.80
6	7311.00	AV	44.65	-4.24	40.42	54.00	-13.58
7	#9748.00	PK	47.48	9.06	56.54	69.84	-13.30
8	#9748.00	AV	47.48	-3.85	43.63	59.19	-15.56

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2437.00	PK	32.66	66.75	99.42		
2	*2437.00	AV	32.66	56.38	89.04		
3	4874.00	PK	38.00	8.20	46.21	74.00	-27.79
4	4874.00	AV	38.00	-4.47	33.53	54.00	-20.47
5	7311.00	PK	44.65	8.66	53.32	74.00	-20.68
6	7311.00	AV	44.65	-4.15	40.50	54.00	-13.50
7	#9748.00	PK	47.48	8.63	56.11	79.42	-23.31
8	#9748.00	AV	47.48	-3.82	43.66	69.04	-25.38

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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6. “#”: The radiated frequency falling out the restricted band.



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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	24deg. C, 70%RH 999hPa	TESTED BY	Ray

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2452.00	PK	32.69	56.12	88.81		
2	*2452.00	AV	32.69	45.70	78.40		
3	2483.50	PK	32.76	24.36	57.11	74.00	-16.89
4	2483.50	AV	32.76	11.62	44.37	54.00	-9.63
5	4904.00	PK	38.11	8.29	46.40	74.00	-27.60
6	4904.00	AV	38.11	-4.52	33.60	54.00	-20.40
7	7356.00	PK	44.65	8.71	53.36	74.00	-20.64
8	7356.00	AV	44.65	-4.13	40.52	54.00	-13.48
9	#9808.00	PK	47.62	9.39	57.02	68.81	-11.79
10	#9808.00	AV	47.62	-3.20	44.42	58.40	-13.98

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	Frequency (MHz)	Detector	Factor (dB)	Reading (dBuV/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	*2452.00	PK	32.69	67.17	99.86		
2	*2452.00	AV	32.69	56.76	89.46		
3	2483.50	PK	32.76	30.61	63.37	74.00	-10.63
4	2483.50	AV	32.76	18.64	51.39	54.00	-2.61
5	4904.00	PK	38.11	8.81	46.93	74.00	-27.07
6	4904.00	AV	38.11	-4.55	33.57	54.00	-20.43
7	7356.00	PK	44.65	9.69	54.34	74.00	-19.66
8	7356.00	AV	44.65	-4.11	40.54	54.00	-13.46
9	#9808.00	PK	47.62	10.62	58.24	79.86	-21.62
10	#9808.00	AV	47.62	-3.19	44.43	69.46	-25.03



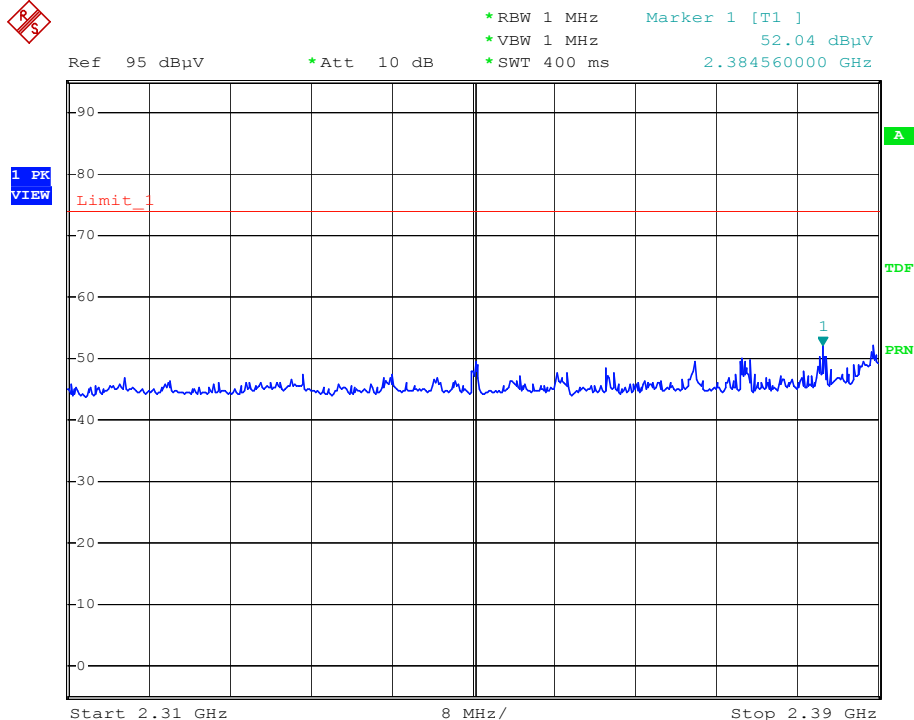
A D T

- 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.
 6. “ # ”: The radiated frequency falling out the restricted band.

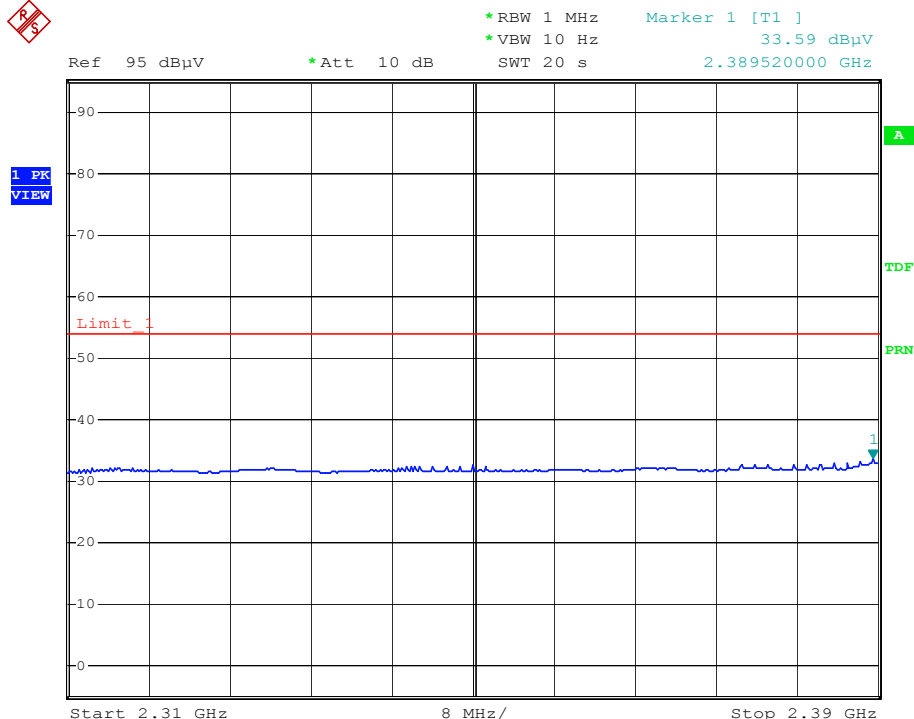


A D T

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



Date: 31.DEC.2010 19:34:53



Date: 31.DEC.2010 19:40:23



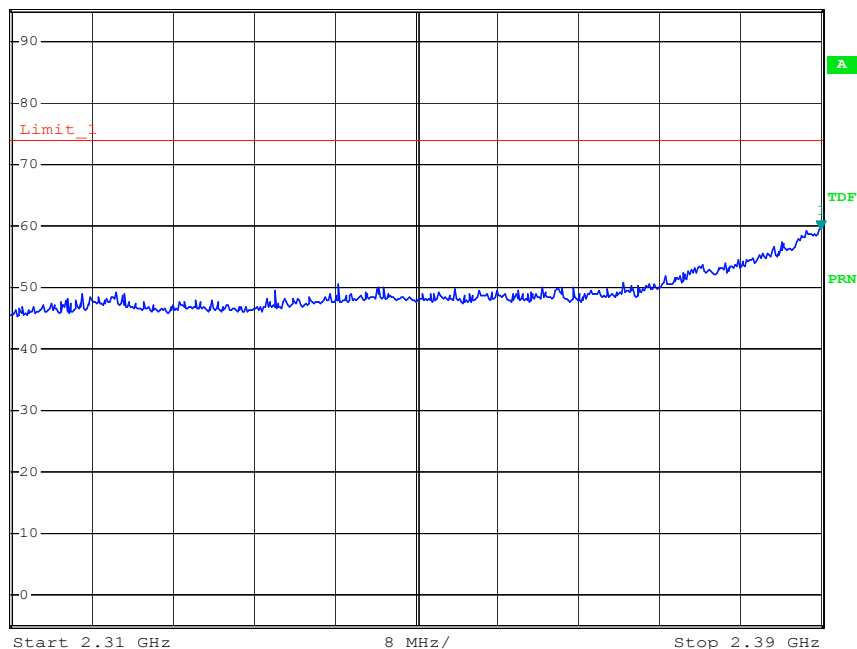
A D T

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



Ref 95 dBμV *Att 10 dB *RBW 1 MHz *VBW 1 MHz *SWT 400 ms Marker 1 [T1] 59.41 dBμV 2.390000000 GHz

1 PK
VIEW

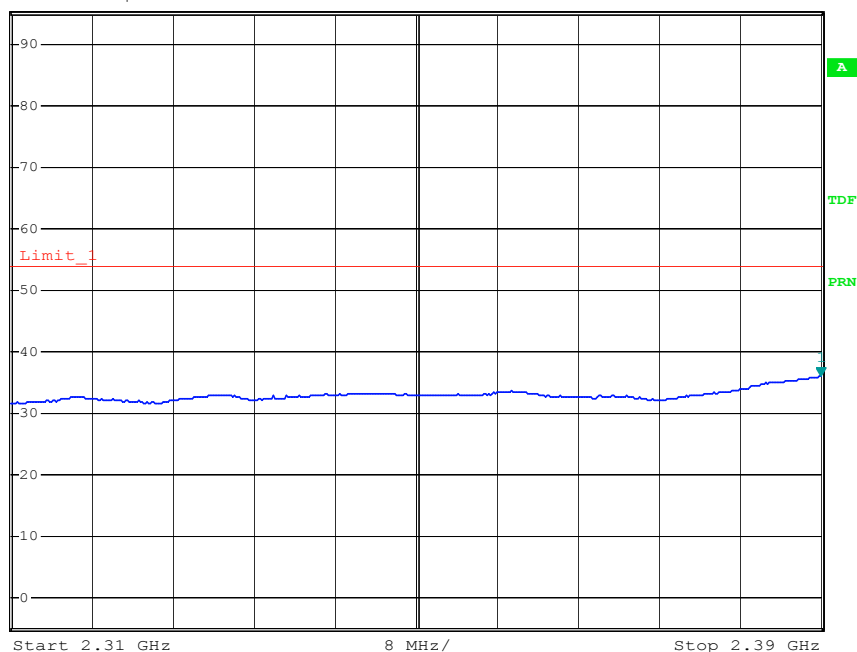


Date: 31.DEC.2010 19:32:07



Ref 95 dBμV *Att 10 dB *RBW 1 MHz *VBW 10 Hz *SWT 20 s Marker 1 [T1] 36.17 dBμV 2.390000000 GHz

1 PK
VIEW

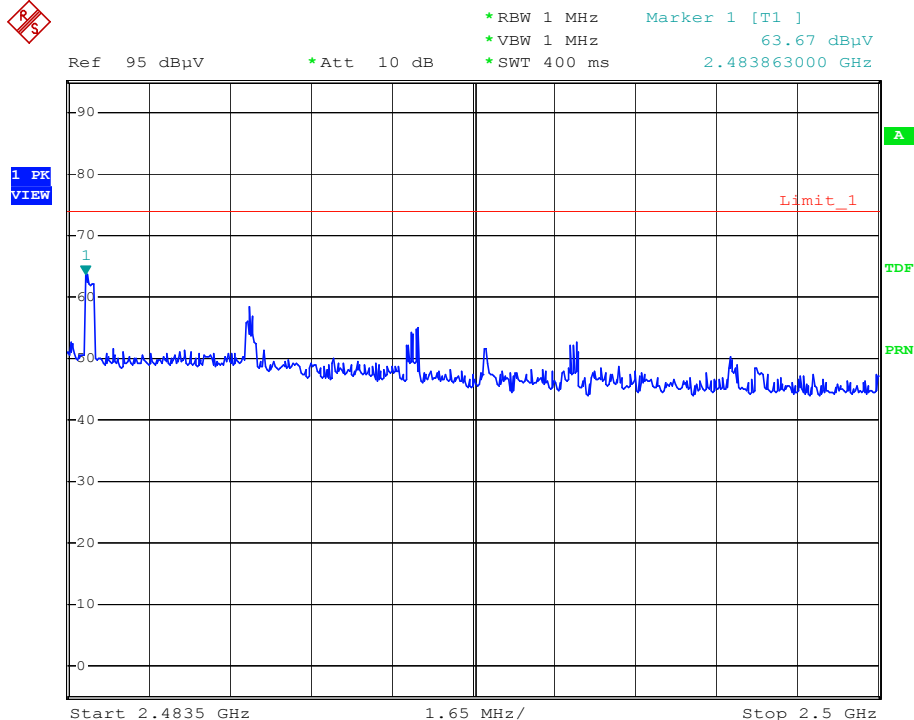


Date: 31.DEC.2010 19:42:34

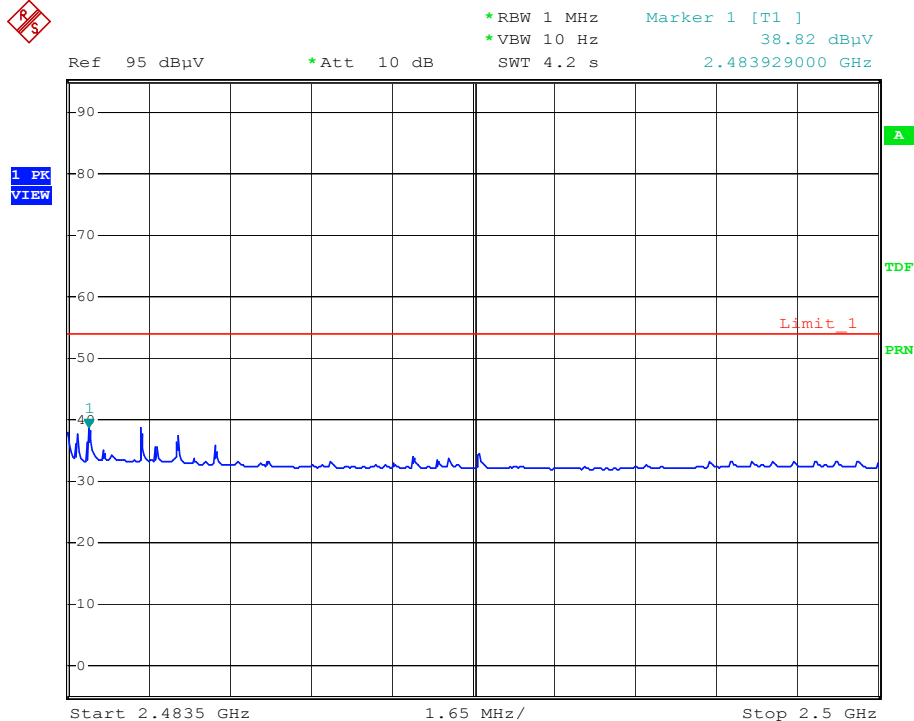


A D T

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



Date: 31.DEC.2010 19:50:58



Date: 31.DEC.2010 19:47:34

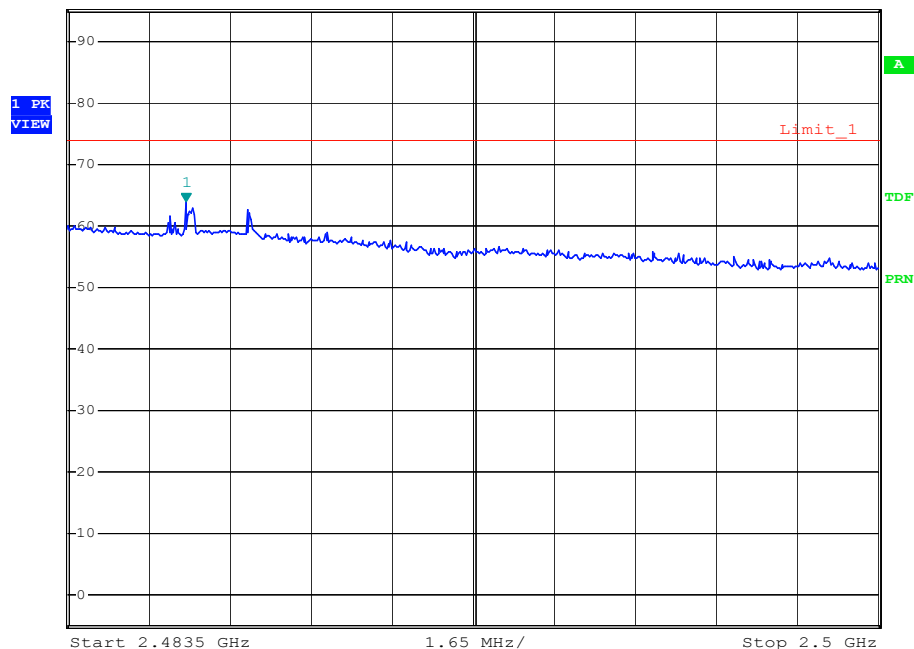


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RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH7, VERTICAL)



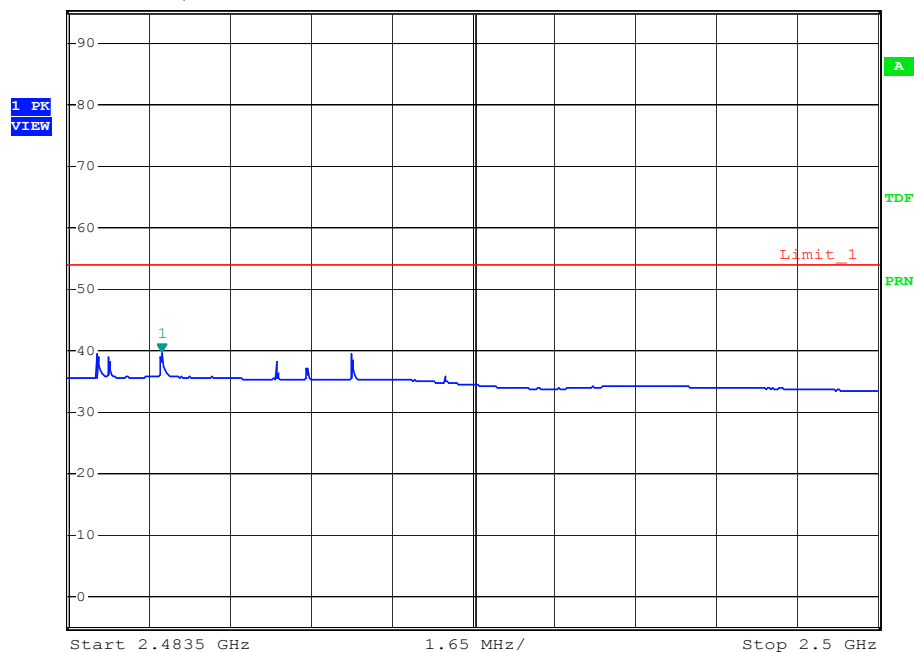
Ref 95 dB μ V *Att 10 dB *RBW 1 MHz *VBW 1 MHz *SWT 400 ms Marker 1 [T1] 63.93 dB μ V 2.485909000 GHz



Date: 31.DEC.2010 19:52:48



Ref 95 dB μ V *Att 10 dB *RBW 1 MHz *VBW 10 Hz *SWT 4.2 s Marker 1 [T1] 39.67 dB μ V 2.485414000 GHz



Date: 31.DEC.2010 19:45:33

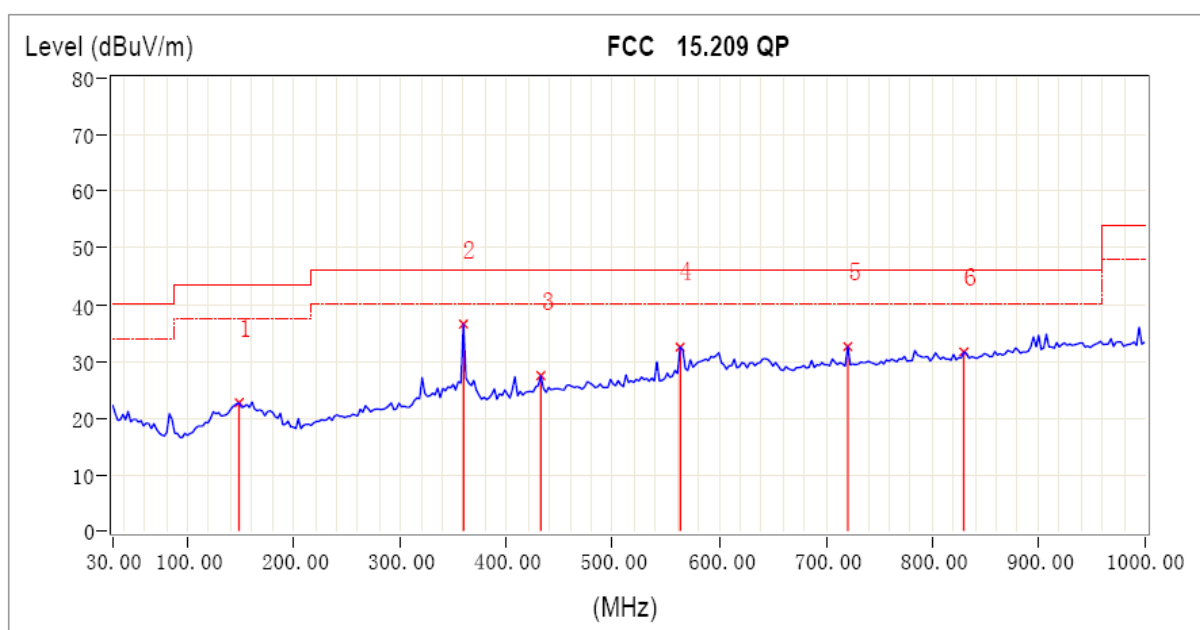
BELOW 1GHz WORST-CASE DATA : CCK MODULATION

EUT work with Antenna C037-511005-A

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH 999hPa	TESTED BY	Kevin Jiang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	148.82	16.88	5.74	22.62	43.50	-20.88	100	274
2	359.80	17.74	18.77	36.52	46.00	-9.48	120	21
3	432.55	19.67	7.74	27.41	46.00	-18.59	100	0
4	563.50	22.36	10.11	32.47	46.00	-13.53	100	83
5	721.12	25.01	7.54	32.55	46.00	-13.45	100	207
6	830.25	26.31	5.30	31.61	46.00	-14.39	100	336

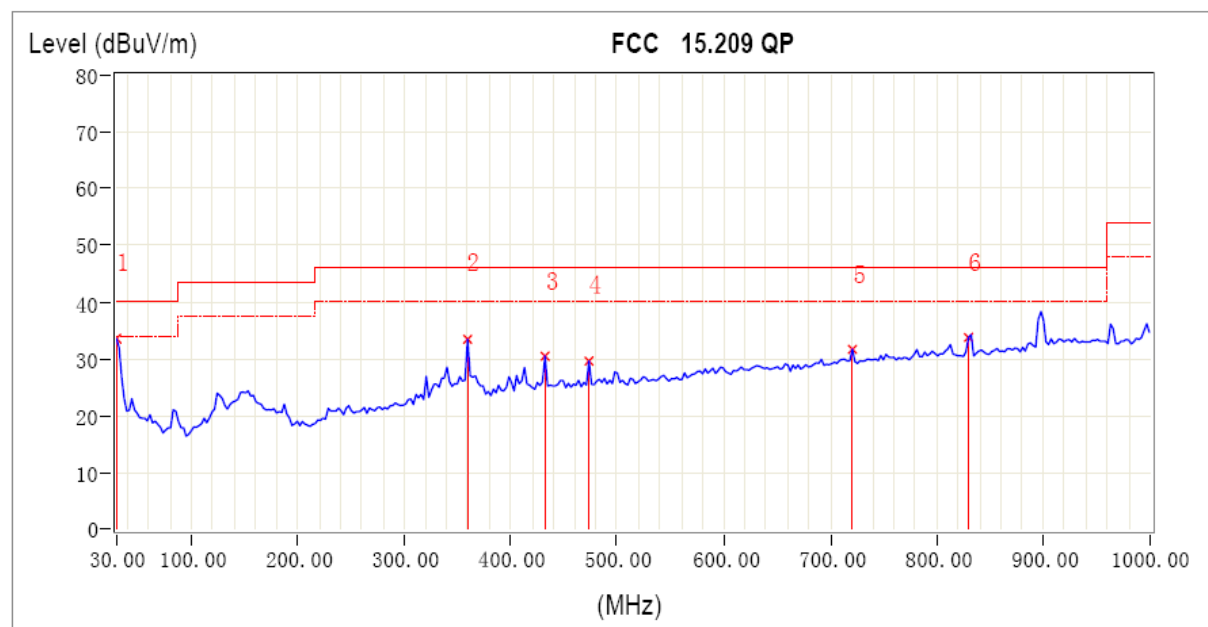
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH 999hPa	TESTED BY	Kevin Jiang

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	30.00	14.99	18.56	33.55	40.00	-6.45	200	164
2	359.80	17.74	15.67	33.41	46.00	-12.59	100	224
3	432.55	19.67	10.77	30.44	46.00	-15.56	100	151
4	473.77	20.49	9.07	29.56	46.00	-16.44	100	186
5	721.12	25.01	6.62	31.63	46.00	-14.37	100	28
6	830.25	26.31	7.40	33.71	46.00	-12.29	100	66

- 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.

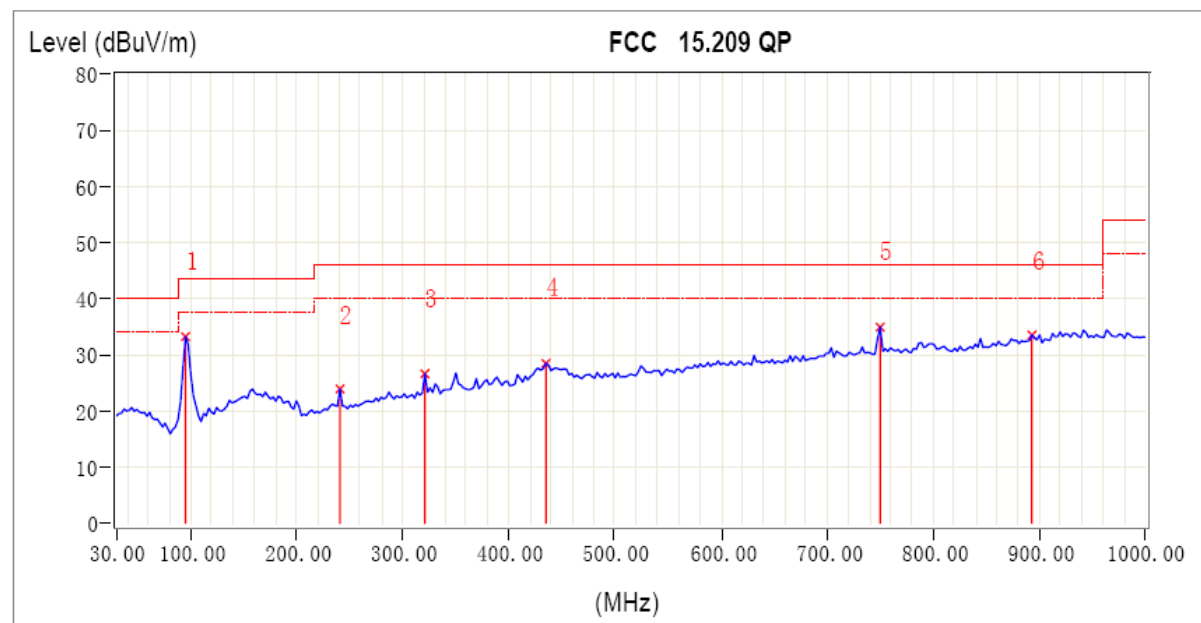


EUT work with Antenna THW0157A

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH 999hPa	TESTED BY	Ray Xue

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	95.47	12.20	21.02	33.22	43.50	-10.28	300	0
2	240.97	14.76	9.18	23.94	46.00	-22.06	200	98
3	321.00	17.31	9.32	26.63	46.00	-19.37	256	33
4	434.98	19.74	8.70	28.44	46.00	-17.56	200	128
5	750.23	25.33	9.57	34.90	46.00	-11.10	216	60
6	893.30	27.05	6.48	33.53	46.00	-12.47	200	167

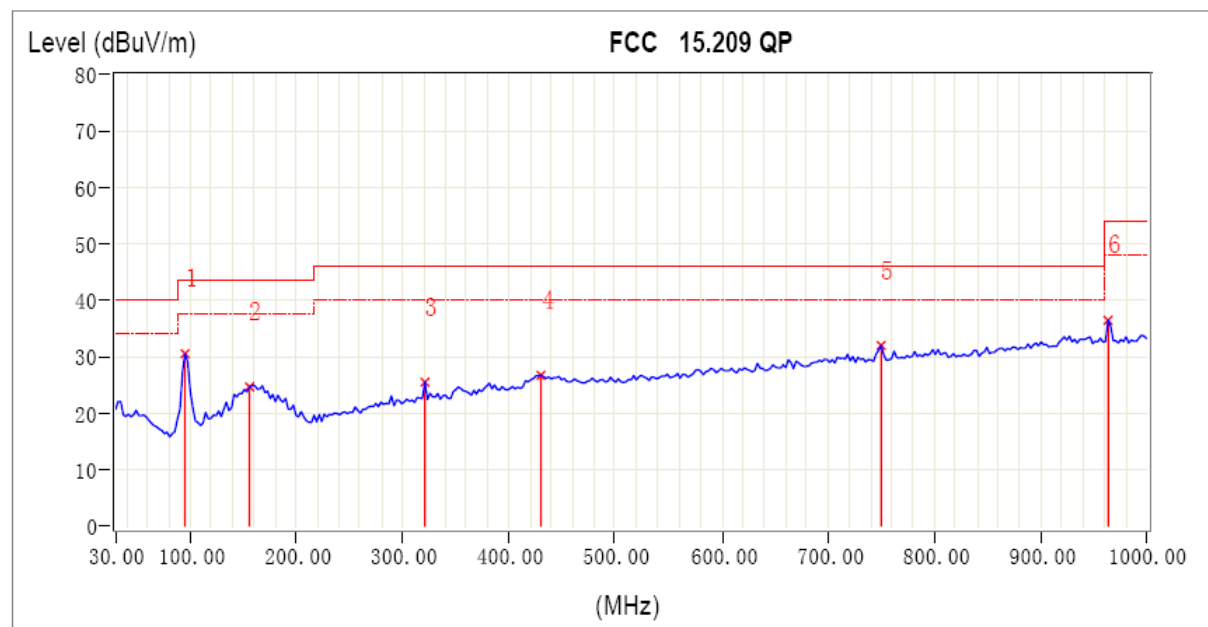
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH 999hPa	TESTED BY	Ray Xue

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	95.47	12.20	18.32	30.52	43.50	-12.98	200	0
2	156.10	17.03	7.66	24.69	43.50	-18.81	117	297
3	321.00	17.31	8.17	25.48	46.00	-20.52	200	0
4	430.12	19.61	7.10	26.71	46.00	-19.29	100	269
5	750.23	25.33	6.67	32.00	46.00	-14.00	200	0
6	963.62	27.76	8.71	36.47	54.00	-17.53	200	0

- 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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EUT work with Antenna THW0157A

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH 999hPa	TESTED BY	Kevin Jiang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

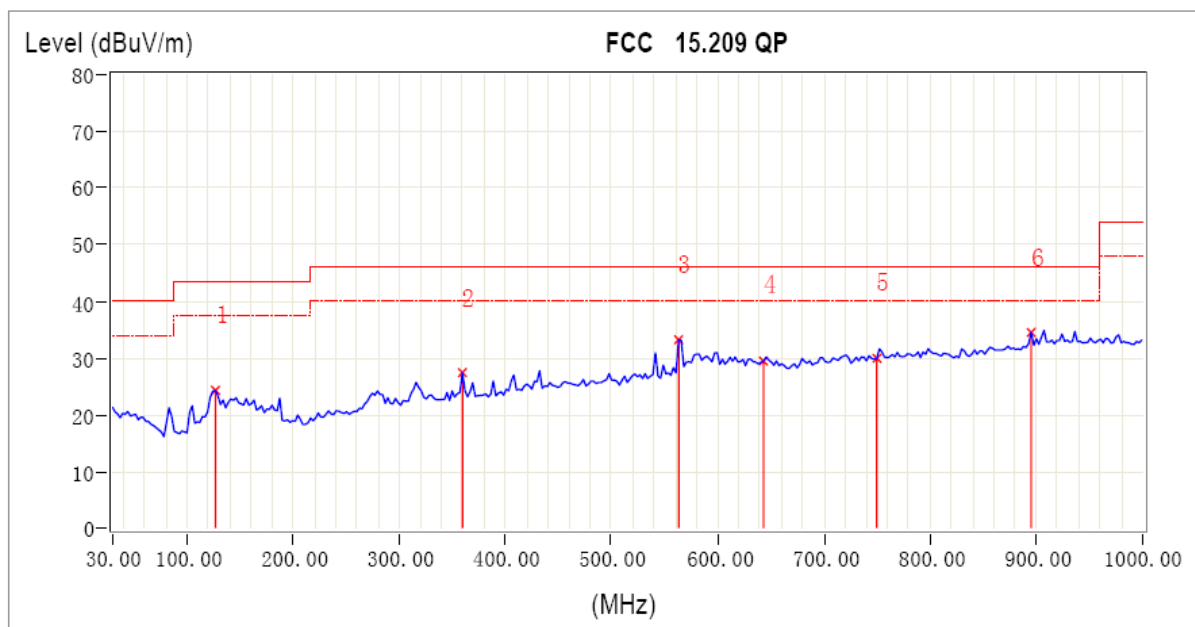
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	127.00	15.18	9.12	24.31	43.50	-19.19	200	0
2	359.80	17.74	9.69	27.43	46.00	-18.57	200	0
3	563.50	22.36	10.84	33.20	46.00	-12.80	200	0
4	643.52	23.81	5.64	29.46	46.00	-16.54	200	0
5	750.23	25.33	4.62	29.95	46.00	-16.05	200	0
6	895.73	27.11	7.39	34.50	46.00	-11.50	200	0

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.

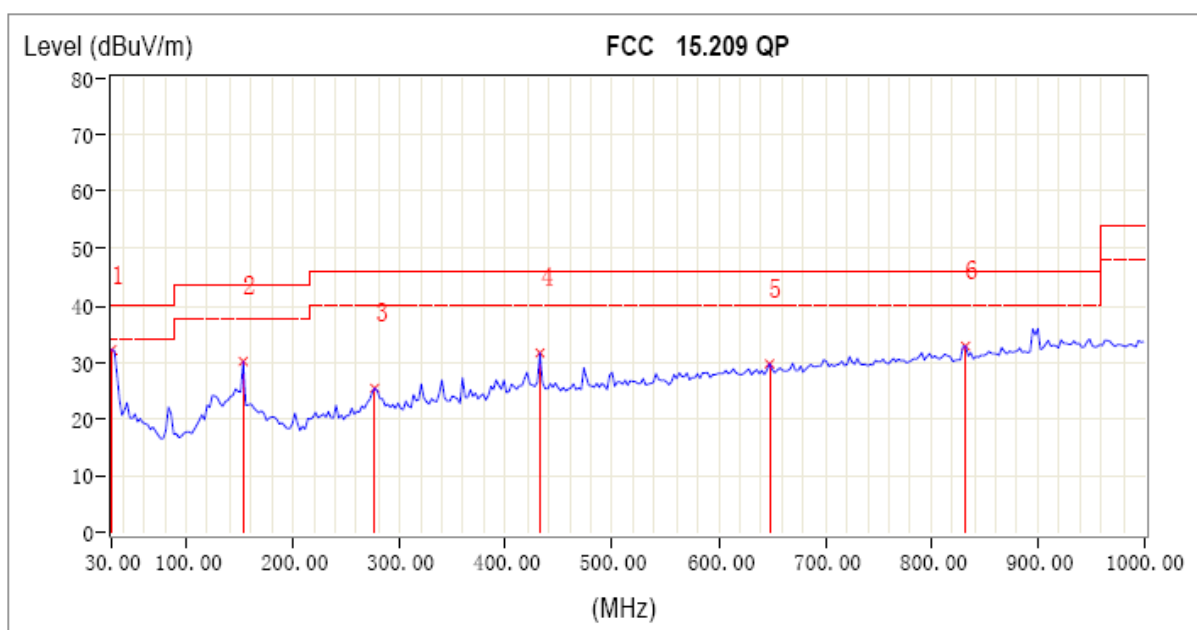
4. Margin value = Emission level – Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH 999hPa	TESTED BY	Kevin Jiang

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	30.00	14.99	17.13	32.12	40.00	-7.88	100	0
2	153.68	17.01	13.04	30.04	43.50	-13.46	100	0
3	277.35	15.74	9.59	25.33	46.00	-20.67	100	0
4	432.55	19.67	11.87	31.54	46.00	-14.46	100	0
5	648.37	23.87	5.77	29.65	46.00	-16.35	100	0
6	832.67	26.29	6.46	32.75	46.00	-13.25	100	0

- 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.



4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 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 0.50MHz.
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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Receiver R&S	ESCS30	E1R1002	Dec. 27, 2010
LISN Schwarzbeck	ENV216	E1L1011	Mar. 31, 2011
RF signal cable Woken	RG-58	E1CBL09	Mar. 31, 2011
Software ADT	ADT_Conc_ V7.3.0	N/A	N/A

NOTE: The calibration interval of the above test instruments is 12 months.

4.2.3 TEST PROCEDURES

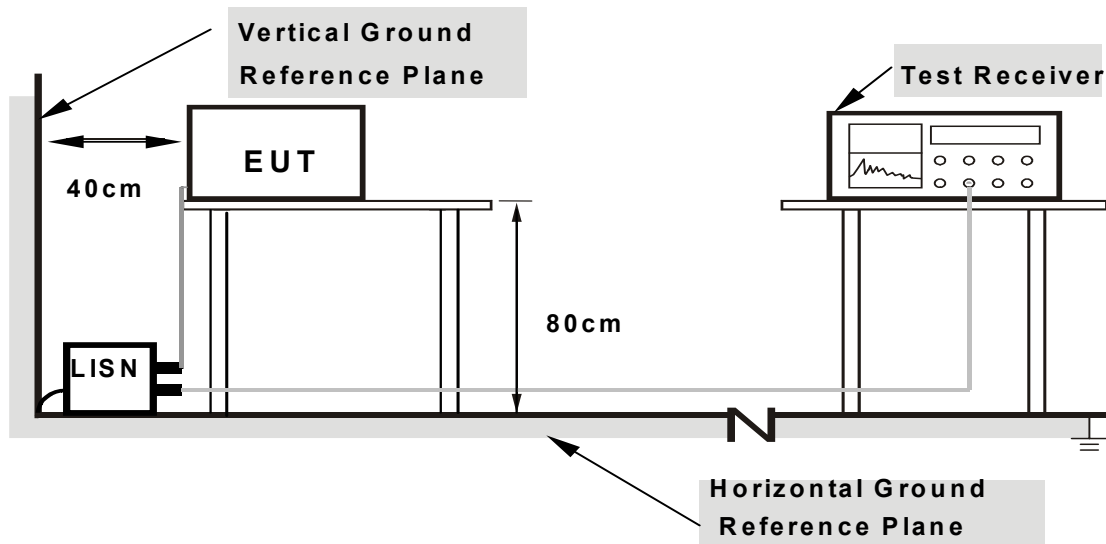
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 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 attached file (Test Setup Photo).

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

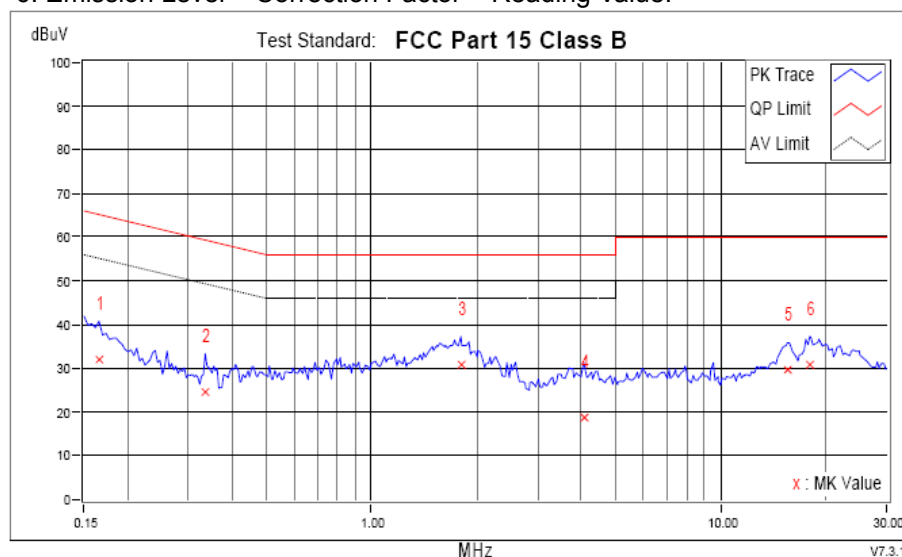
EUT work with Antenna C037-511005-A

CONDUCTED WORST-CASE DATA : CCK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	L
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	21deg. C, 66%RH, 988hPa	TESTED BY	Ray

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	0.17	9.71	22.21	7.50	31.92	17.21	65.18	55.18	-33.26	-37.97
2	0.33	9.61	15.08	6.42	24.69	16.03	59.36	49.36	-34.66	-33.32
3	1.81	9.61	21.15	14.64	30.76	24.25	56.00	46.00	-25.24	-21.75
4	4.06	9.62	8.96	1.35	18.58	10.97	56.00	46.00	-37.42	-35.03
5	15.56	9.70	20.12	14.48	29.82	24.18	60.00	50.00	-30.18	-25.82
6	18.05	9.70	21.22	15.78	30.92	25.48	60.00	50.00	-29.08	-24.52

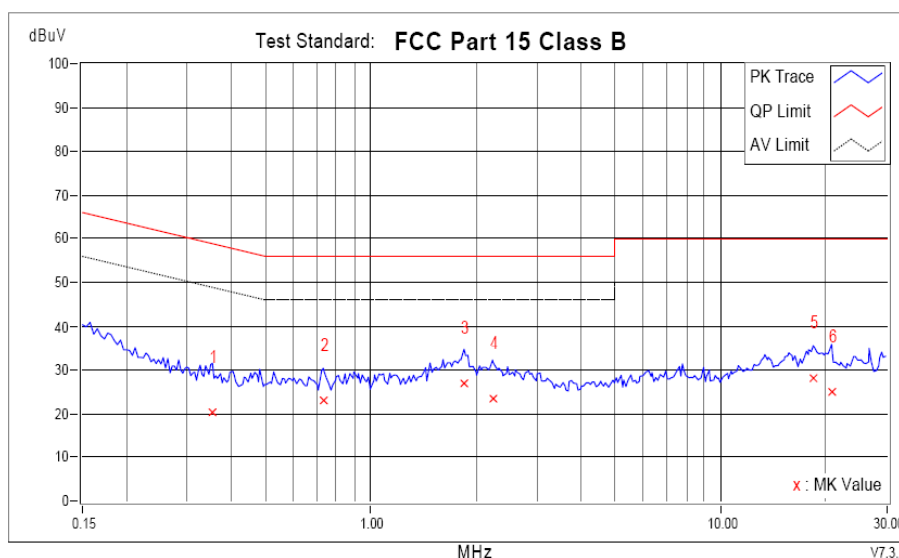
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	N
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	21deg. C, 66%RH, 988hPa	TESTED BY	Ray

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB]	AV. [dB]
1	0.35	9.61	10.72	6.05	20.33	15.66	58.88	48.88	-38.55	-33.22
2	0.73	9.64	13.30	4.46	22.94	14.10	56.00	46.00	-33.06	-31.90
3	1.85	9.63	17.25	9.96	26.88	19.59	56.00	46.00	-29.12	-26.41
4	2.24	9.63	13.79	6.65	23.42	16.28	56.00	46.00	-32.58	-29.72
5	18.45	9.90	18.13	12.99	28.03	22.89	60.00	50.00	-31.97	-27.11
6	20.84	9.94	15.02	8.69	24.96	18.63	60.00	50.00	-35.04	-31.37

- 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.

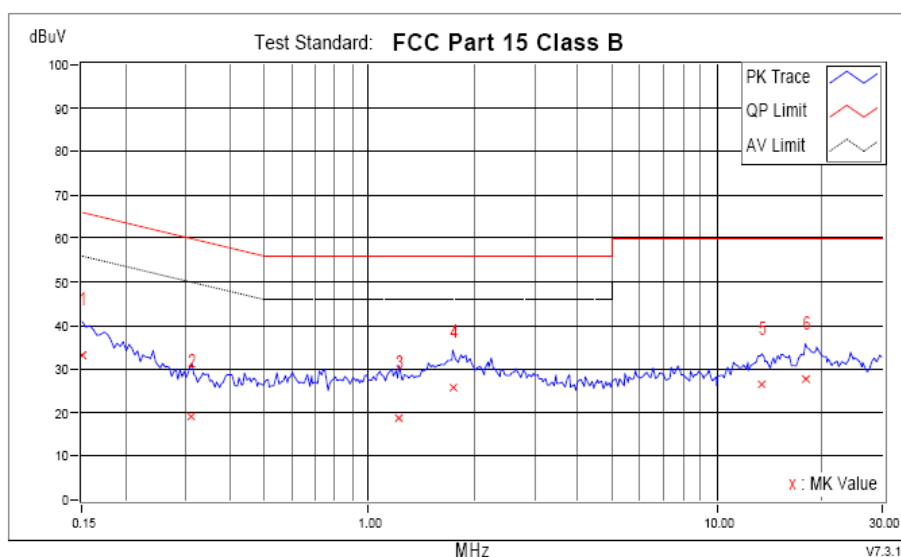


CONDUCTED WORST-CASE DATA : CCK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	N
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	21deg. C, 66%RH, 988hPa	TESTED BY	Ray

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15	9.72	23.32	6.83	33.04	16.55	66.00	56.00	-32.96	-39.45
2	0.31	9.62	9.34	2.61	18.96	12.23	59.96	49.96	-41.01	-37.74
3	1.22	9.64	8.97	3.79	18.61	13.43	56.00	46.00	-37.39	-32.57
4	1.74	9.63	16.17	11.56	25.80	21.19	56.00	46.00	-30.20	-24.81
5	13.50	9.78	16.97	8.78	26.75	18.56	60.00	50.00	-33.25	-31.44
6	17.99	9.88	17.84	12.57	27.72	22.45	60.00	50.00	-32.28	-27.55

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



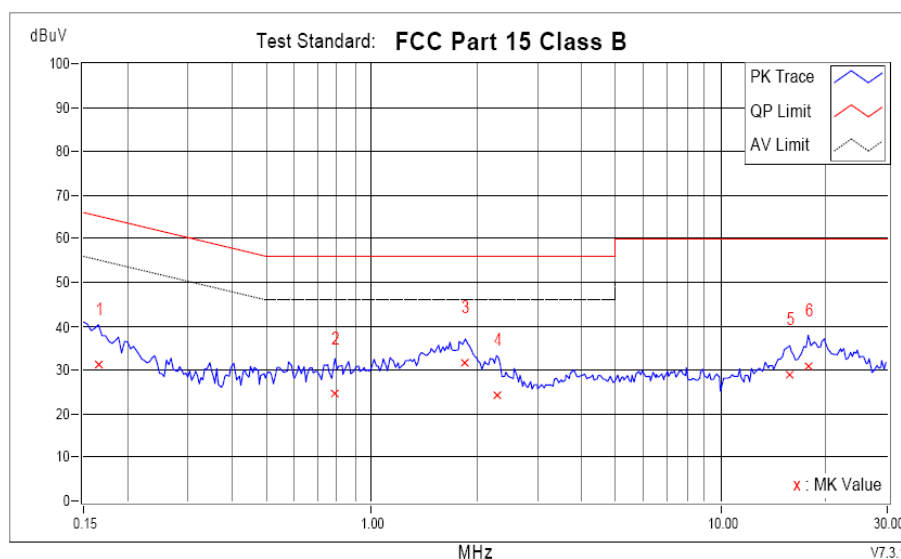
EUT work with Antenna THW0157A

CONDUCTED WORST-CASE DATA : CCK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	L
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	21deg. C, 66%RH, 988hPa	TESTED BY	Ray

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17	9.71	21.60	7.42	31.31	17.13	65.18	55.18	-33.87	-38.05
2	0.79	9.60	14.91	10.02	24.51	19.62	56.00	46.00	-31.49	-26.38
3	1.86	9.61	21.89	13.30	31.50	22.91	56.00	46.00	-24.50	-23.09
4	2.29	9.61	14.49	6.12	24.10	15.73	56.00	46.00	-31.90	-30.27
5	15.79	9.70	19.30	13.36	29.00	23.06	60.00	50.00	-31.00	-26.94
6	17.83	9.70	21.01	15.67	30.71	25.37	60.00	50.00	-29.29	-24.63

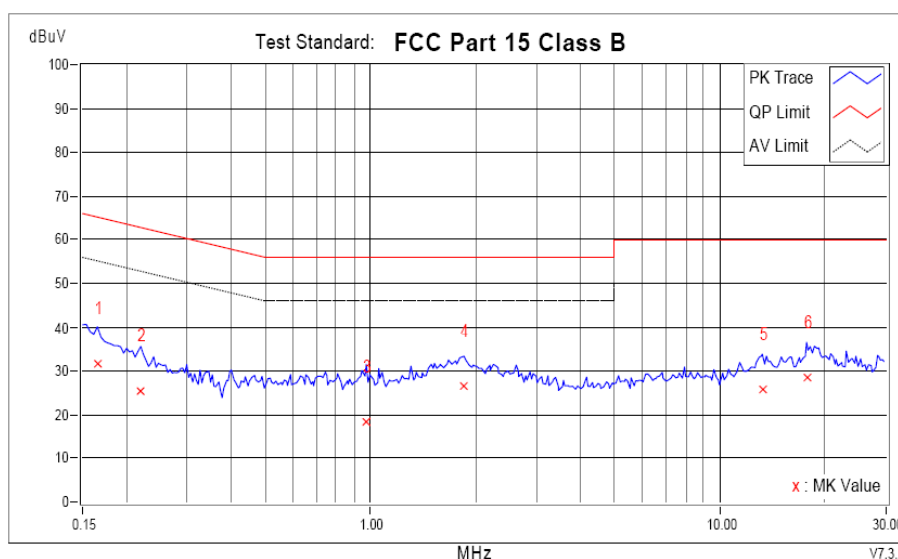
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	N
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	21deg. C, 66%RH, 988hPa	TESTED BY	Ray

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17	9.69	21.93	5.50	31.62	15.19	65.18	55.18	-33.56	-39.99
2	0.22	9.62	15.71	5.41	25.33	15.03	62.80	52.80	-37.48	-37.78
3	0.98	9.64	8.79	3.31	18.43	12.95	56.00	46.00	-37.57	-33.05
4	1.86	9.63	17.00	9.89	26.63	19.52	56.00	46.00	-29.37	-26.48
5	13.26	9.77	15.93	10.44	25.70	20.21	60.00	50.00	-34.30	-29.79
6	17.76	9.86	18.57	13.69	28.43	23.55	60.00	50.00	-31.57	-26.45

- 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.



4.3 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 UNTIL
Signal Analyzer ROHDE & SCHWARZ	FSP30	E1S1002	Aug. 04, 2010

NOTE: The calibration interval of the above test instruments is 12 months.

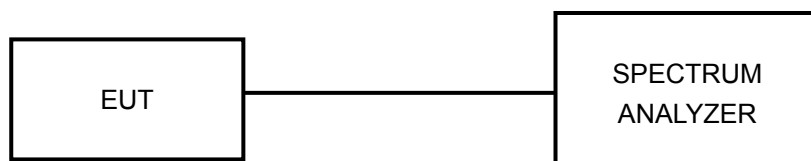
4.3.3 TEST PROCEDURE

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

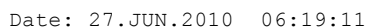


4.3.6 EUT OPERATING CONDITIONS

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

802.11b DSSS MODULATION

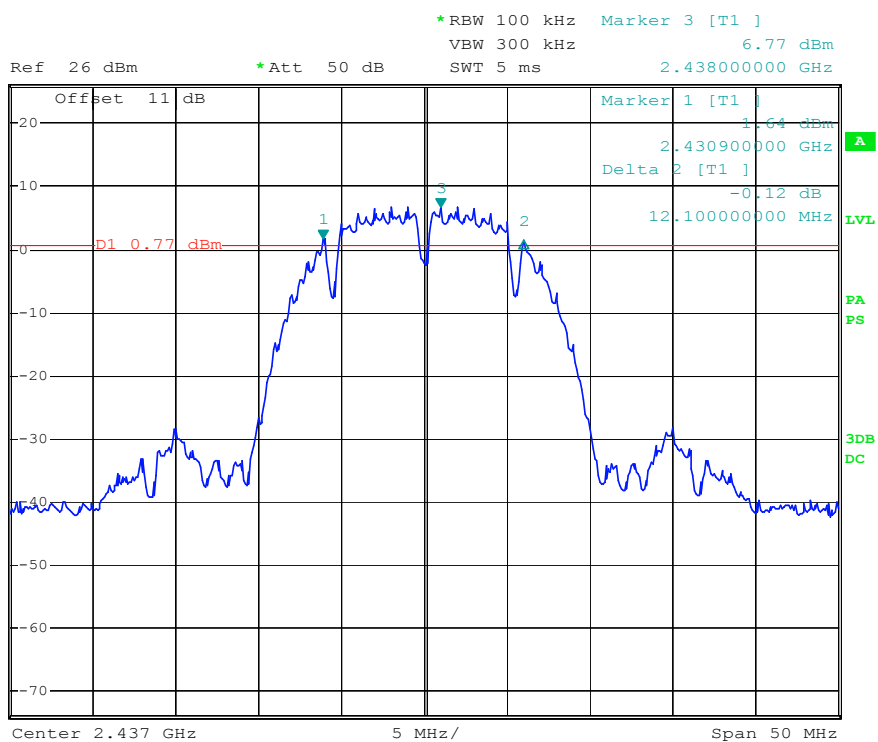
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.2	0.5	PASS
6	2437	12.1	0.5	PASS
11	2462	12.1	0.5	PASS





A D T

CH 6

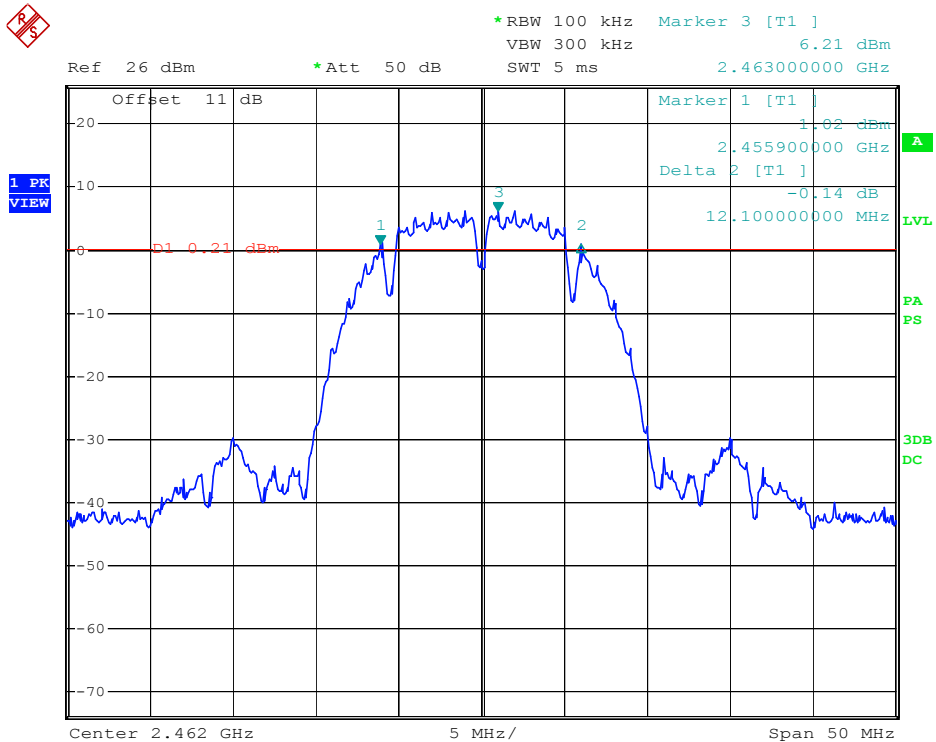


Date: 27.JUN.2010 06:21:21

CH 11



A D T



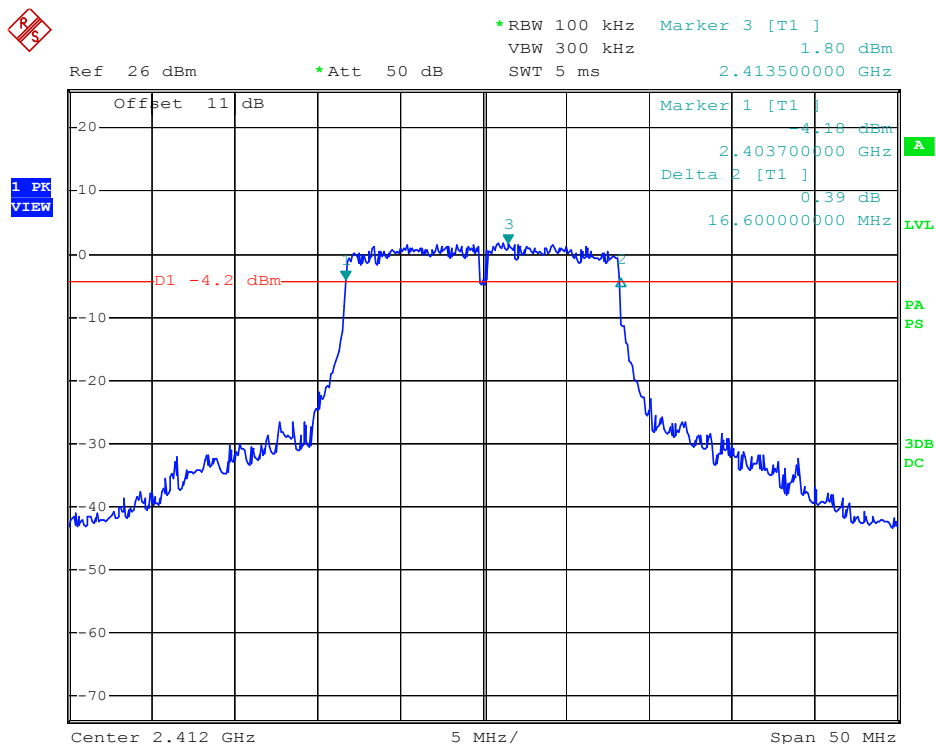
Date: 27.JUN.2010 06:22:18

802.11g OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.6	0.5	PASS
6	2437	16.6	0.5	PASS
11	2462	16.5	0.5	PASS

CH 1

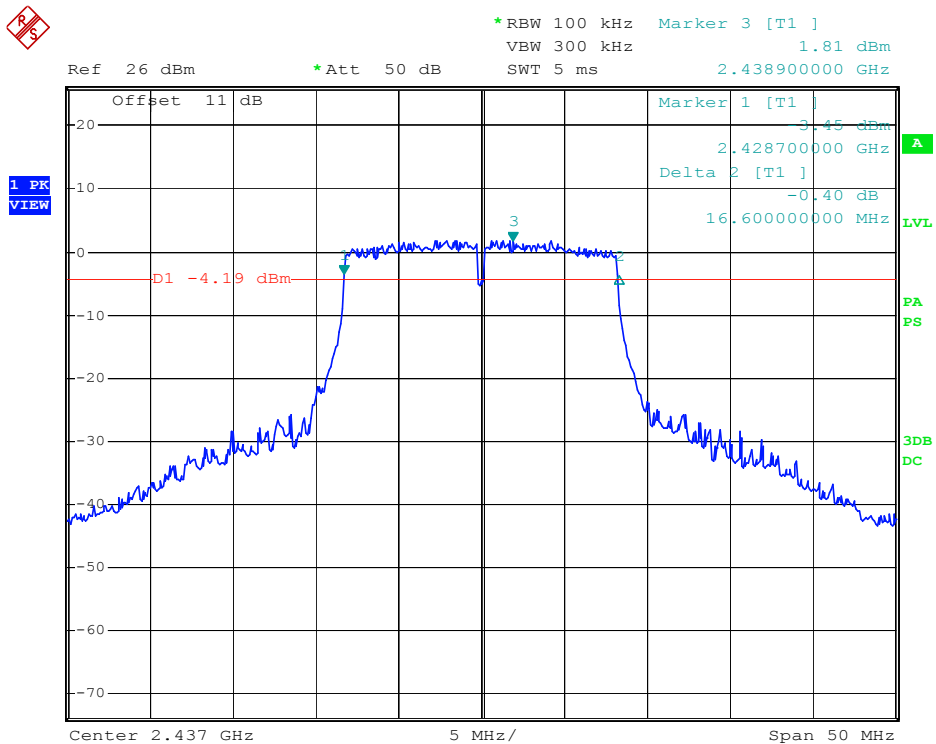


Date: 27.JUN.2010 06:23:41



A D T

CH 6

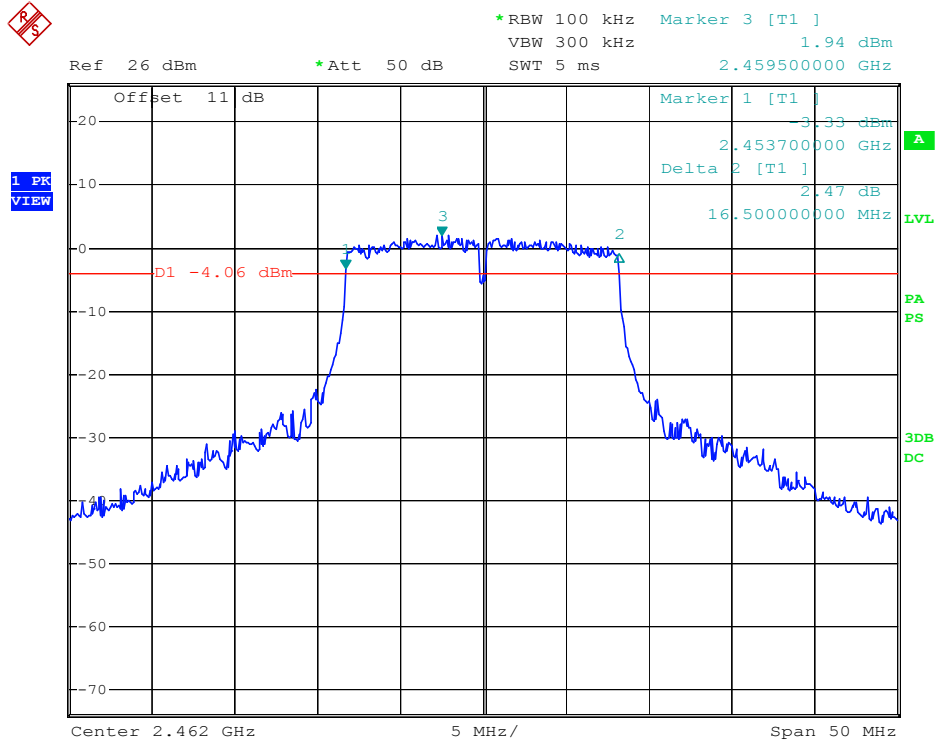


Date: 27.JUN.2010 06:24:47

CH 11



A D T



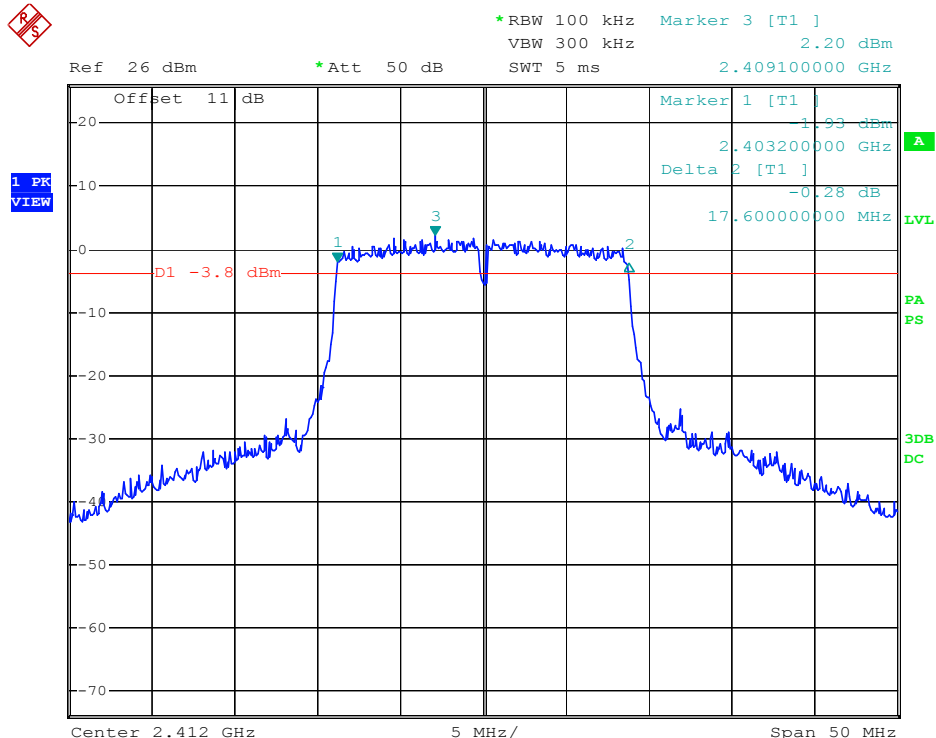
Date: 27.JUN.2010 06:26:24

DRAFT 802.11n (20MHz) OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

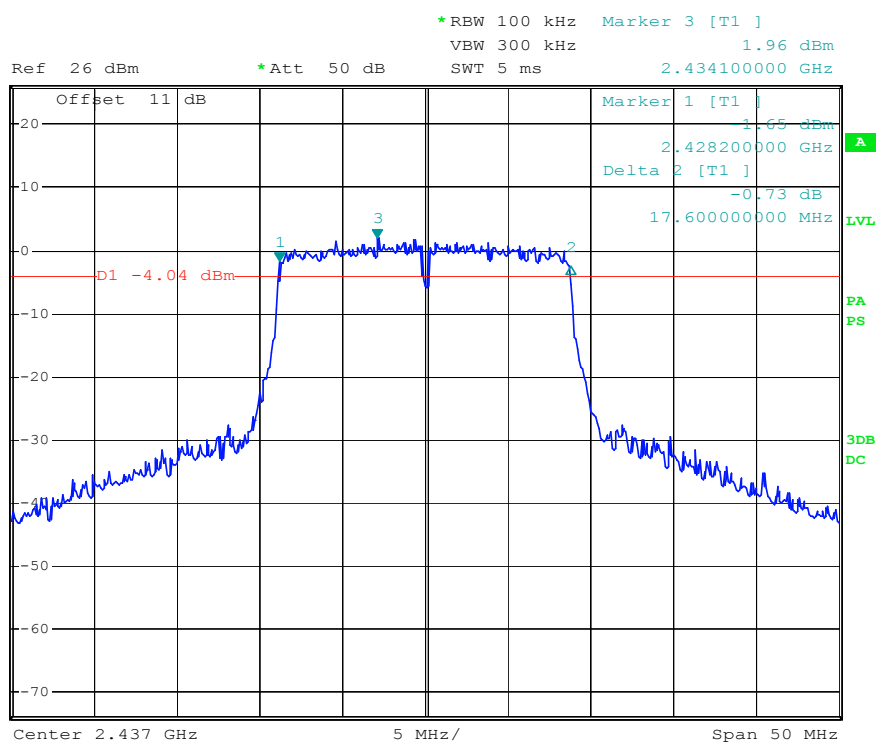
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.6	0.5	PASS
6	2437	17.6	0.5	PASS
11	2462	17.7	0.5	PASS

CH1



Date: 27.JUN.2010 06:27:58

CH6


1 PK
VIEW


Date: 27.JUN.2010 06:29:05

CH11



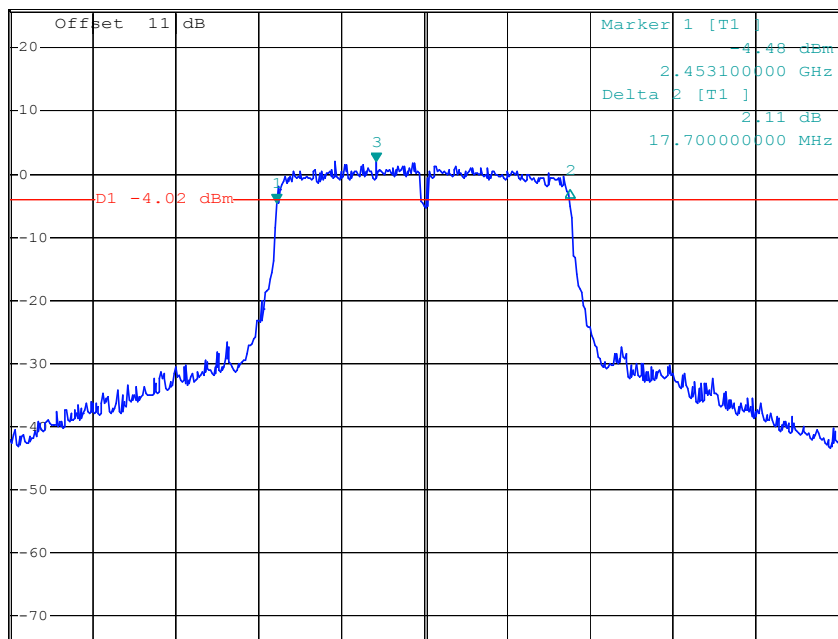
A D T



*RBW 100 kHz Marker 3 [T1]
VBW 300 kHz 1.98 dBm
SWT 5 ms 2.459100000 GHz

Ref 26 dBm *Att 50 dB

1 PK
VIEW



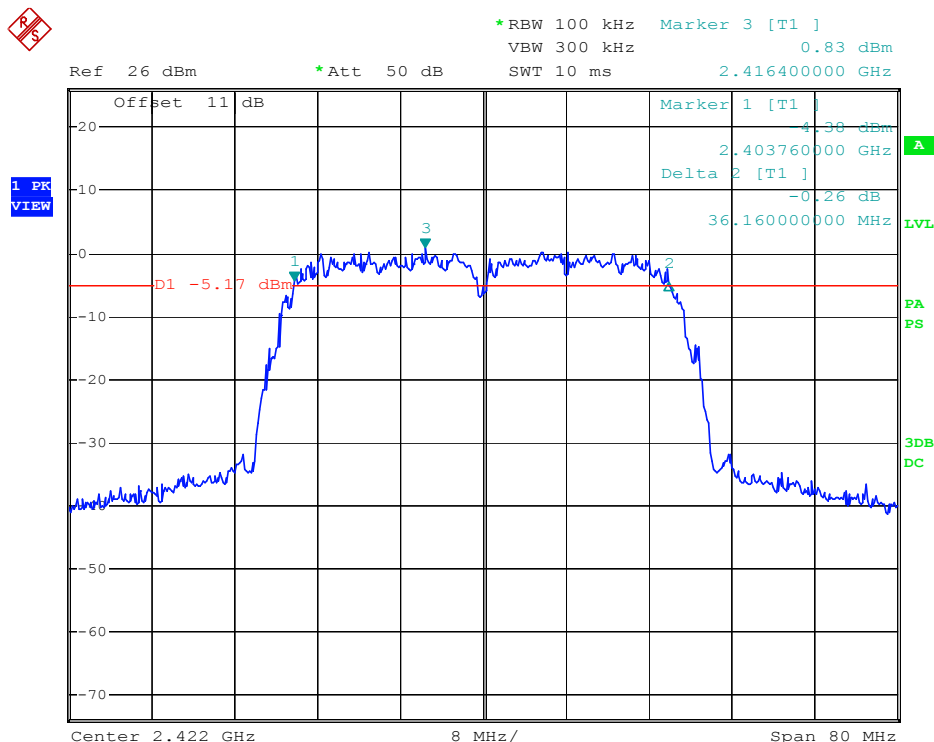
Date: 27.JUN.2010 06:30:30

DRAFT 802.11n (40MHz) OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2422	36.16	0.5	PASS
4	2437	36.48	0.5	PASS
7	2452	36.48	0.5	PASS

CH1

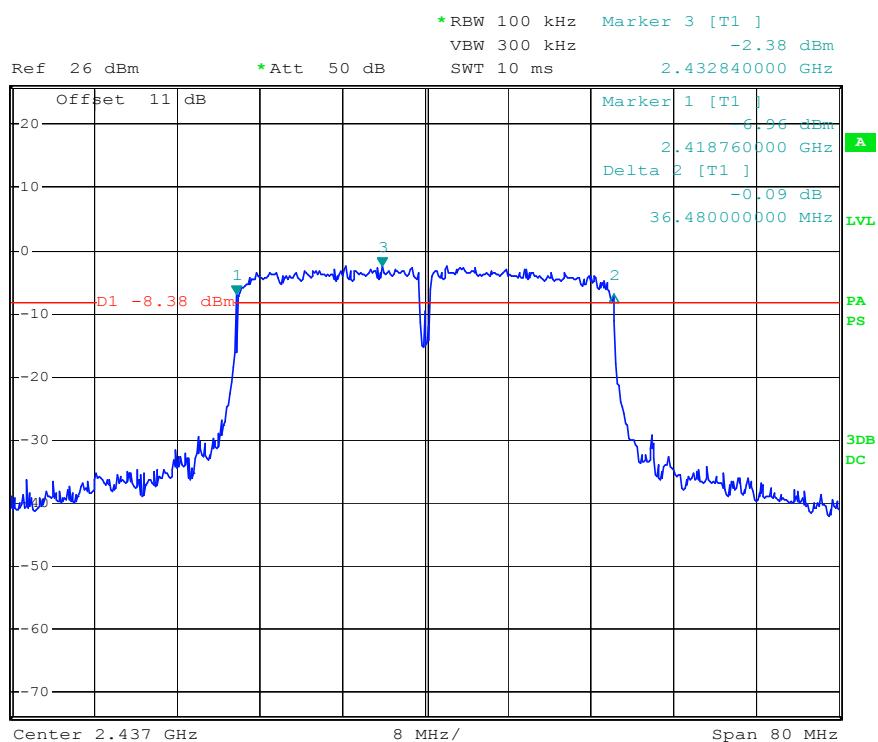


Date: 27.JUN.2010 06:32:16

CH4



1 PK
VIEW



Date: 27.JUN.2010 06:33:17

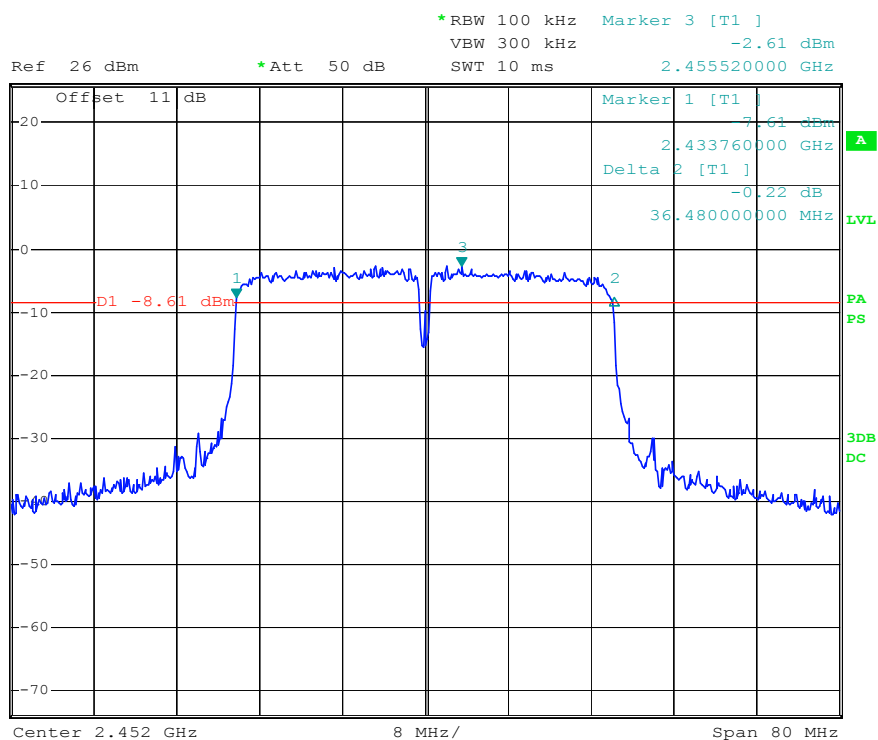


A D T

CH7



1 PK
VIEW



Date: 27.JUN.2010 06:34:27

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 UNTIL
Signal Analyzer ROHDE & SCHWARZ	FSP30	E1S1002	Aug. 04, 2010

NOTE: The calibration interval of the above test instruments is 12 months.

4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



4.4.7 TEST RESULTS

802.11b DSSS MODULATION

MODULATION TYPE	CCK	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	87.50	19.42	30	PASS
6	2437	80.72	19.07	30	PASS
11	2462	81.10	19.09	30	PASS

802.11g OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	196.79	22.94	30	PASS
6	2437	169.82	22.30	30	PASS
11	2462	181.55	22.59	30	PASS



A D T

DRAFT 802.11n (20MHz) OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	194.98	22.90	30	PASS
6	2437	182.81	22.62	30	PASS
11	2462	187.07	22.72	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2422	192.75	22.85	30	PASS
4	2437	184.08	22.65	30	PASS
7	2452	178.24	22.51	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 UNTIL
Signal Analyzer ROHDE & SCHWARZ	FSP30	E1S1002	Aug. 04, 2010

NOTE: The calibration interval of the above test instruments is 12 months.

4.5.3 TEST PROCEDURE

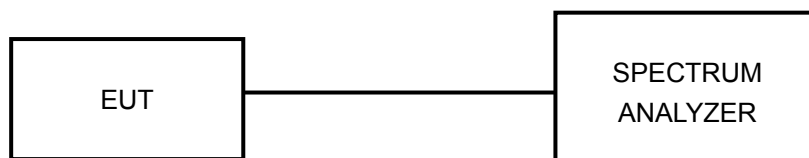
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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



A D T

4.5.7 TEST RESULTS

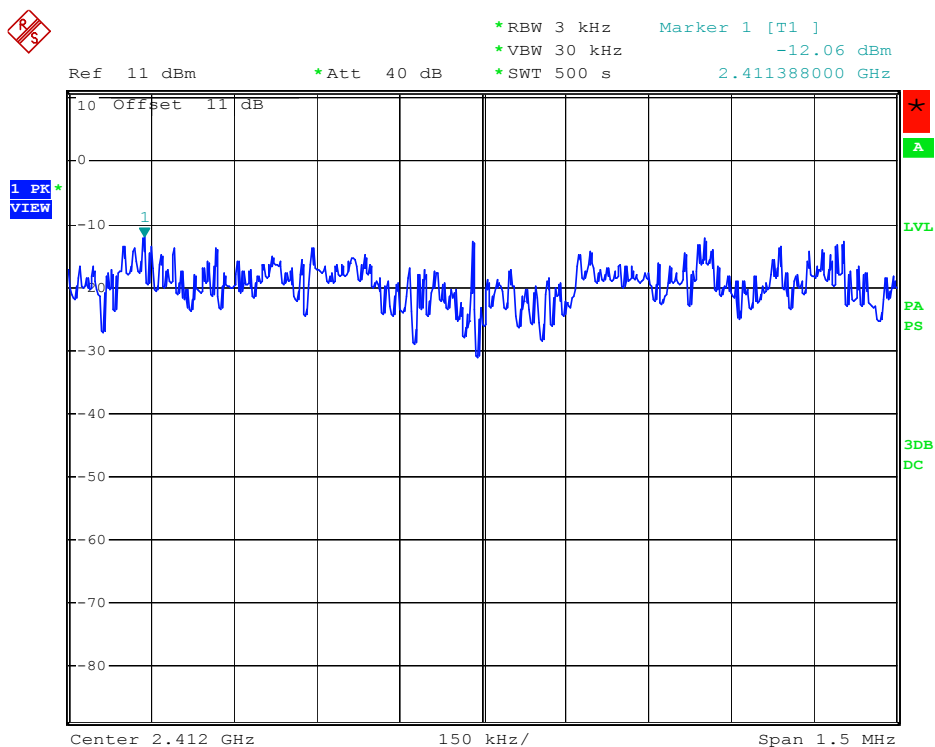
EUT work with Antenna THW0157A

802.11b DSSS MODULATION

MODULATION TYPE	CCK	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-12.06	8	PASS
6	2437	-12.63	8	PASS
11	2462	-12.25	8	PASS

CH1

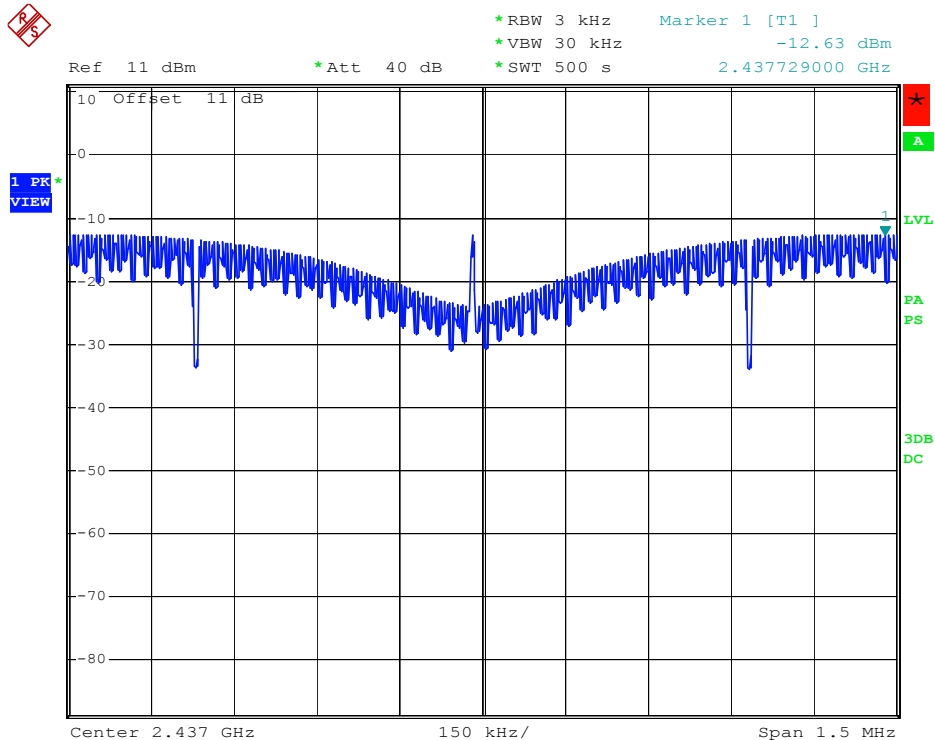


Date: 27.JUN.2010 06:43:44



A D T

CH6

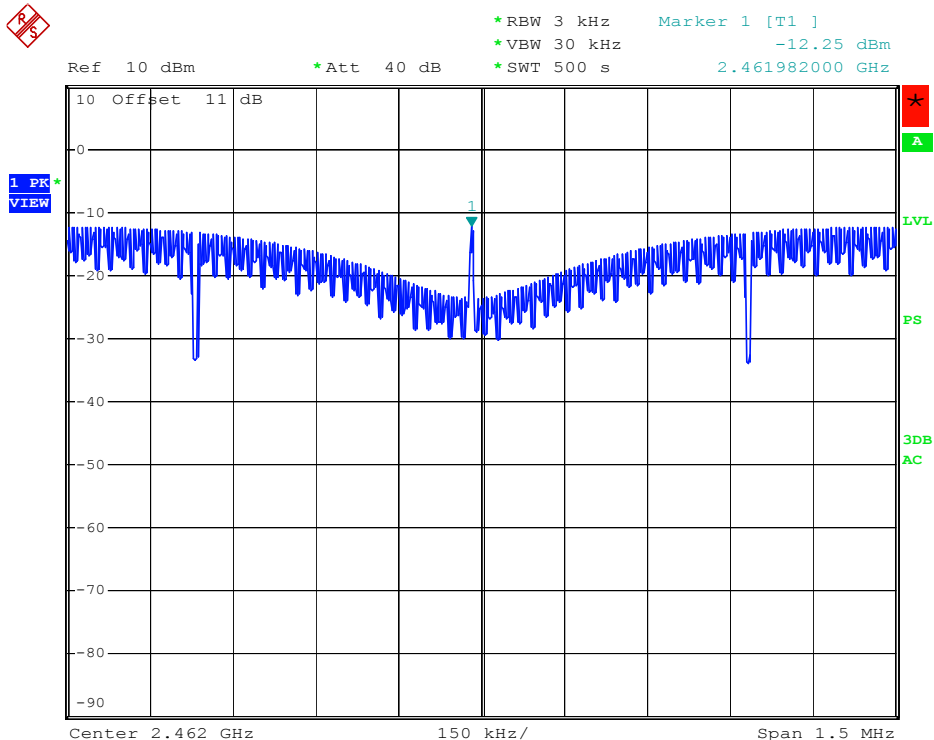


Date: 27.JUN.2010 06:45:21

CH11



A D T



Date: 27.JUN.2010 06:49:59

802.11g OFDM MODULATION

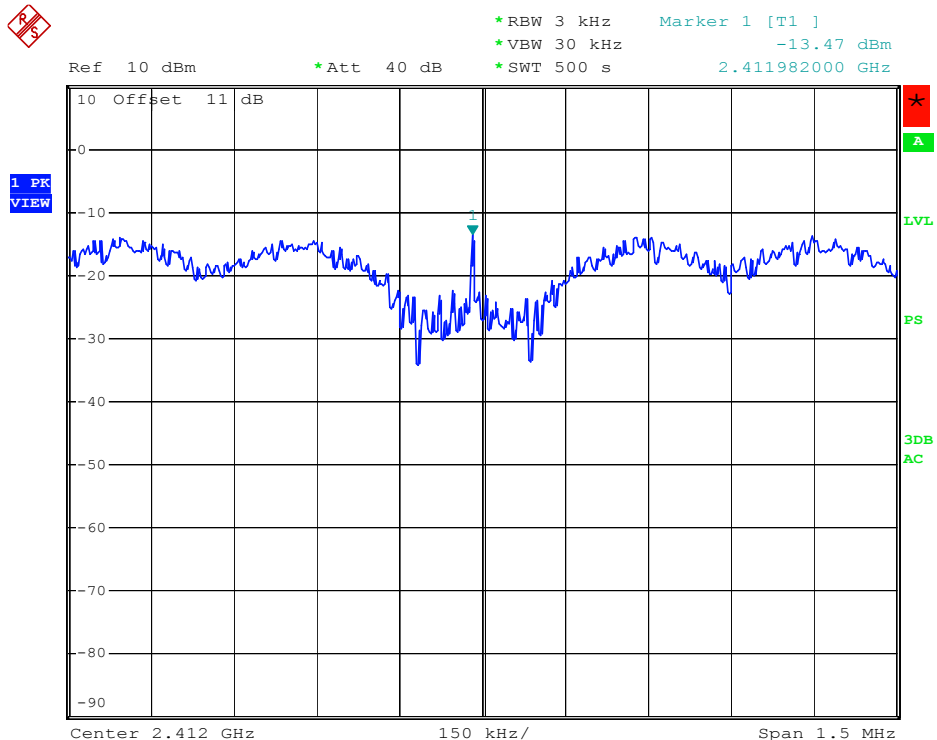
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-13.47	8	PASS
6	2437	-13.63	8	PASS
11	2462	-13.07	8	PASS



A D T

CH1

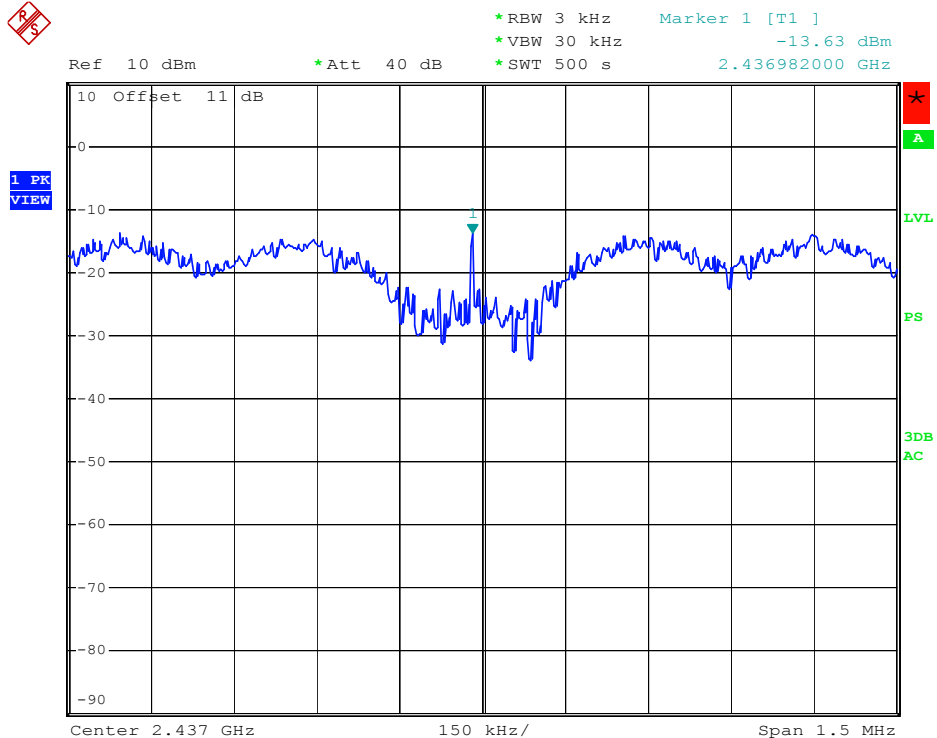


Date: 27.JUN.2010 06:51:43



A D T

CH6

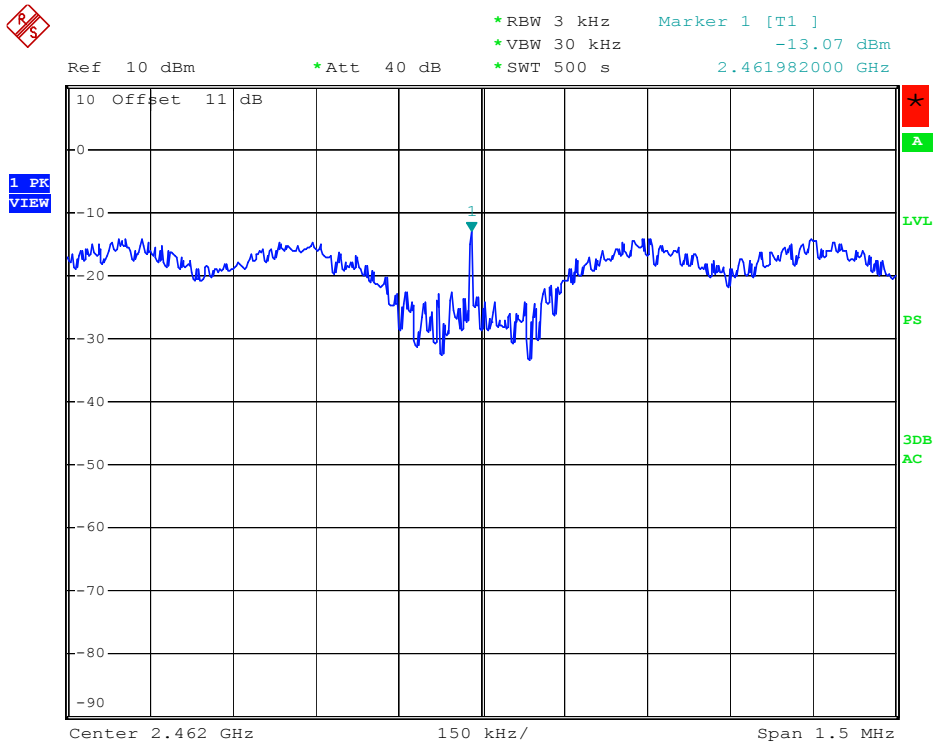


Date: 27.JUN.2010 06:52:48

CH11



A D T



Date: 27.JUN.2010 06:53:52

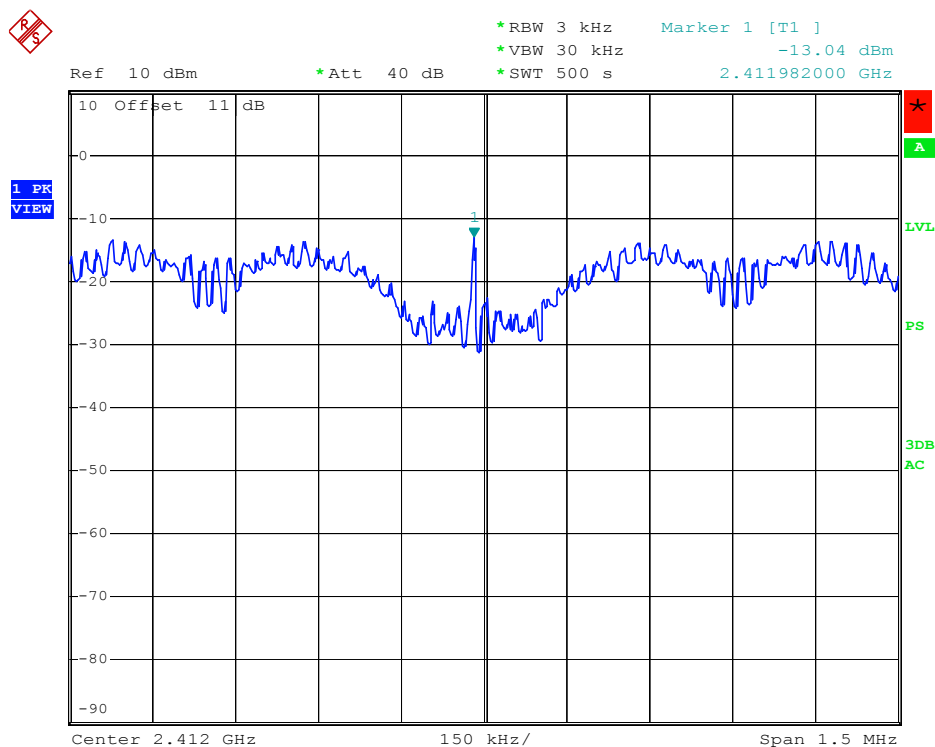


A D T

DRAFT 802.11n (20MHz) OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-13.04	8	PASS
6	2437	-13.23	8	PASS
11	2462	-12.75	8	PASS

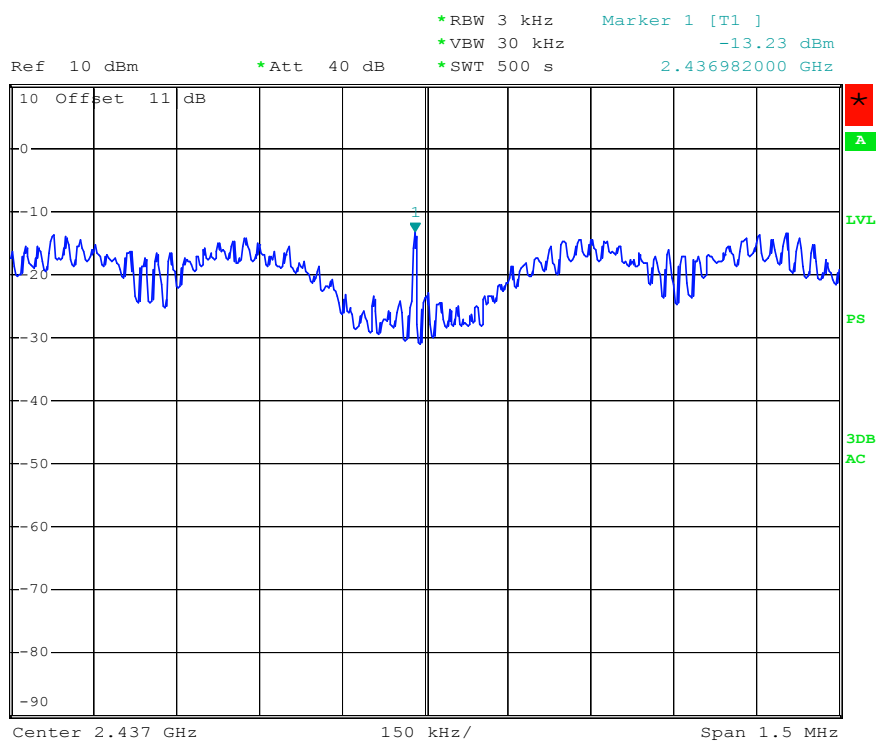
CH1

Date: 27.JUN.2010 06:55:17



A D T

CH6

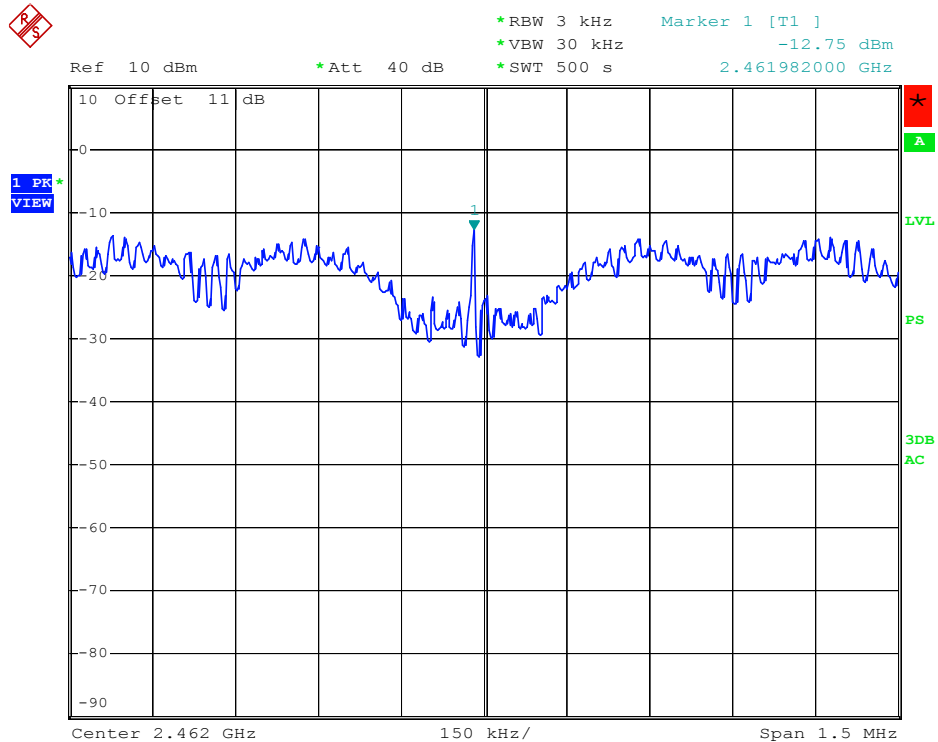


Date: 27.JUN.2010 06:56:29

CH11



A D T



Date: 27.JUN.2010 06:57:49

DRAFT 802.11n (40MHz) OFDM MODULATION

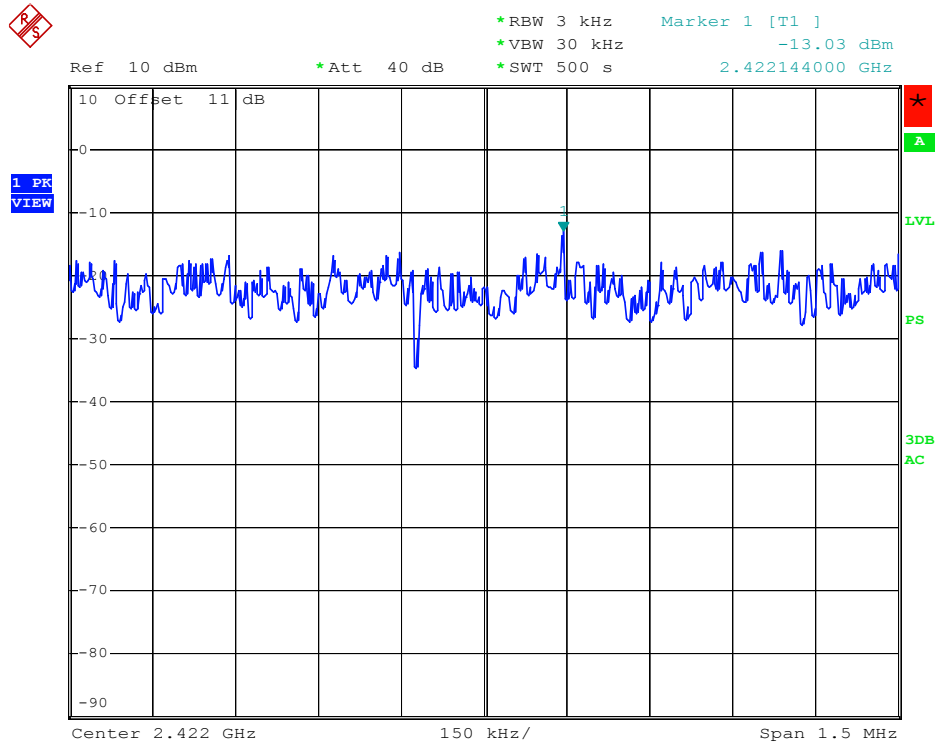
MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Ray		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2422	-13.03	8	PASS
4	2437	-17.20	8	PASS
7	2452	-14.67	8	PASS

CH1



A D T

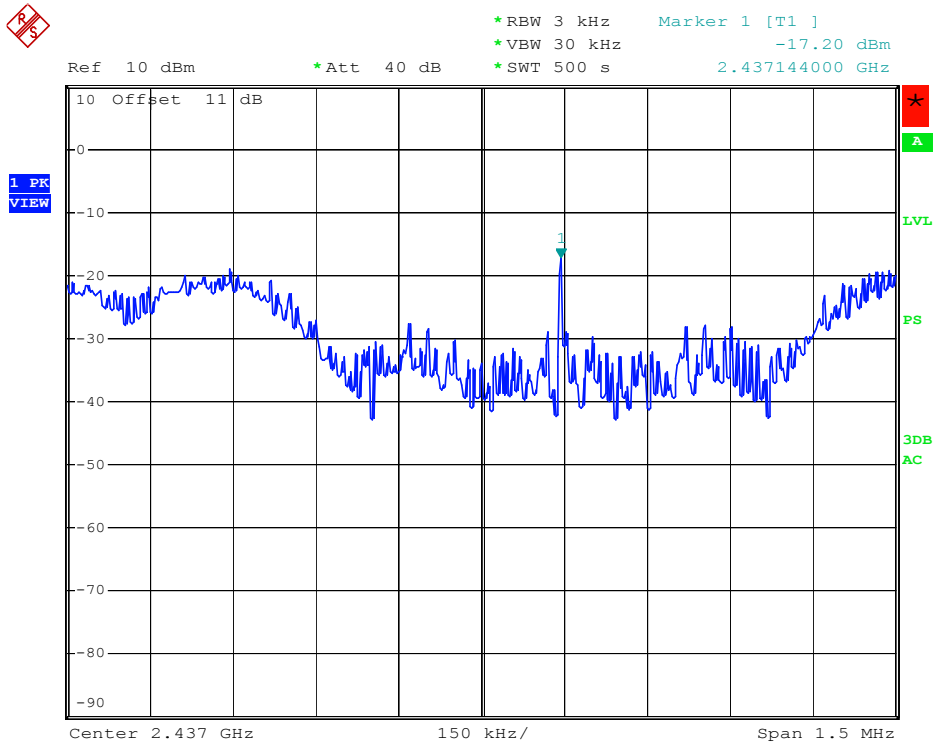


Date: 27.JUN.2010 07:00:58

CH4



A D T

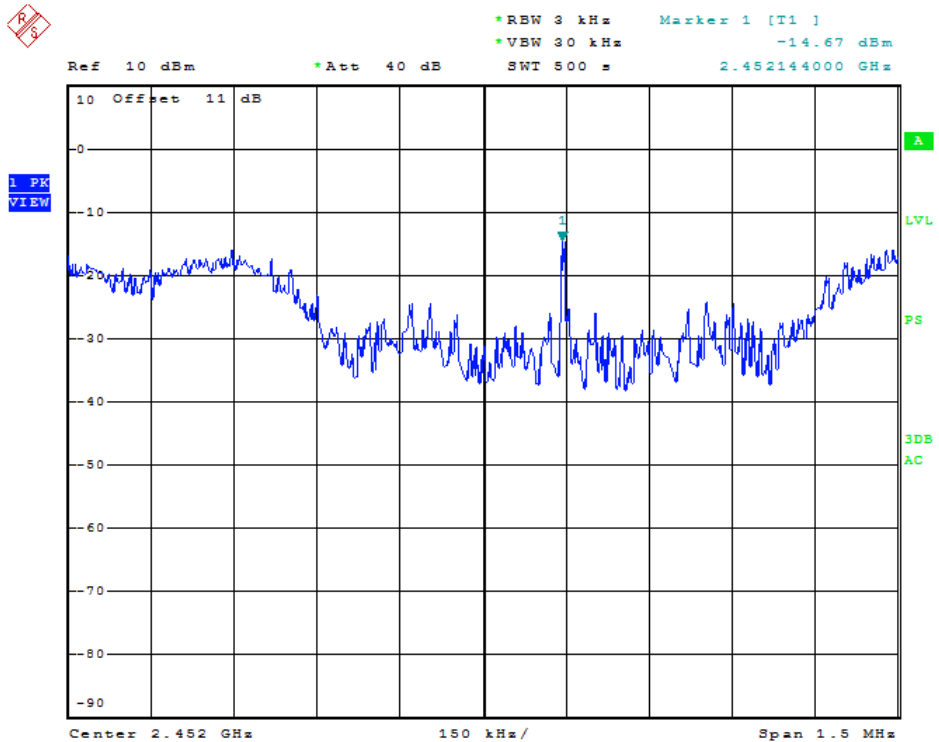


Date: 27.JUN.2010 07:02:25

CH7



A D T



Date: 27.JUN.2010 07:03:47



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES 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 UNTIL
Signal Analyzer ROHDE & SCHWARZ	FSP30	E1S1002	Aug. 04, 2010

NOTE: The calibration interval of the above test instruments is 12 months.

4.6.3 TEST PROCEDURE

FOR CONDUCTED MEASUREMENT:

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

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

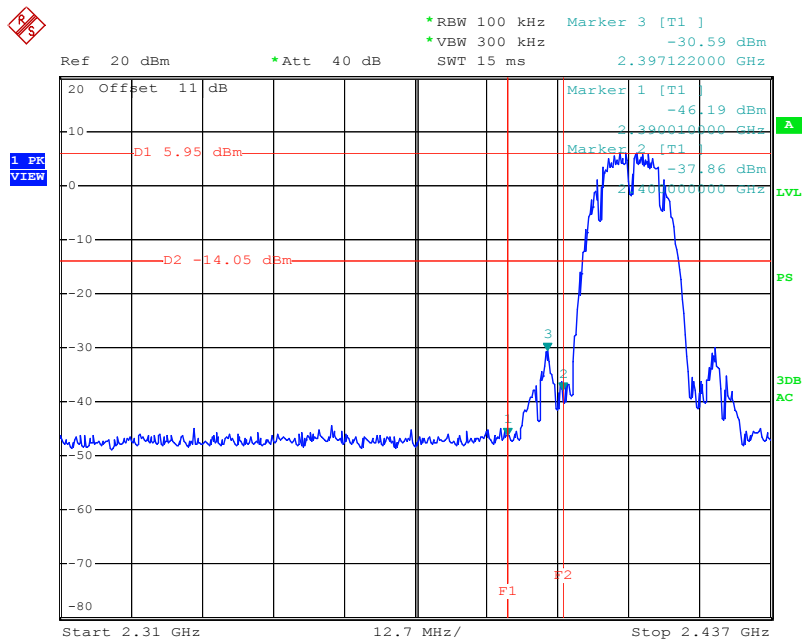
4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

802.11b DSSS modulation

CH 1



Date: 27.JUN.2010 07:10:36



A D T

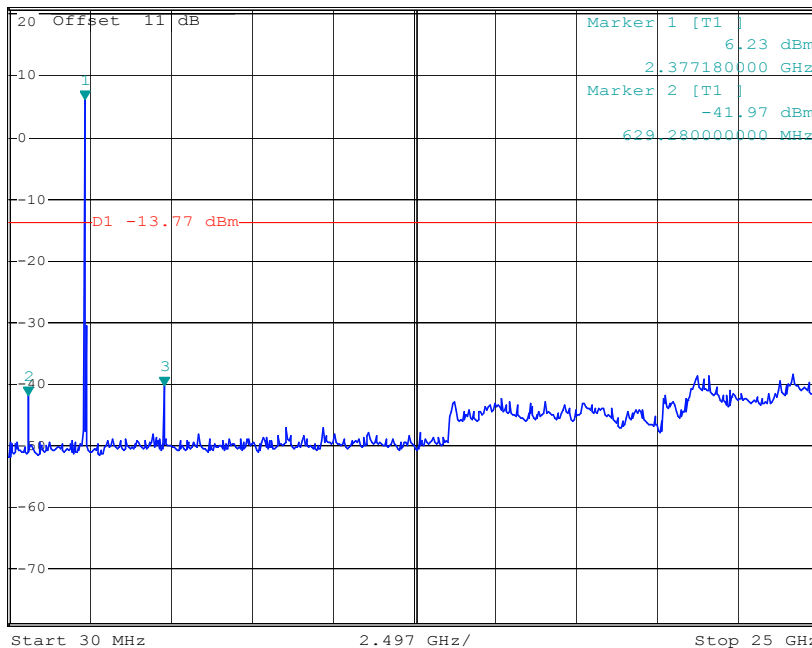


*RBW 100 kHz Marker 3 [T1]
*VBW 300 kHz -40.38 dBm
SWT 2.5 s 4.824240000 GHz

Ref 21 dBm

*Att 20 dB

1 PK
VIEW

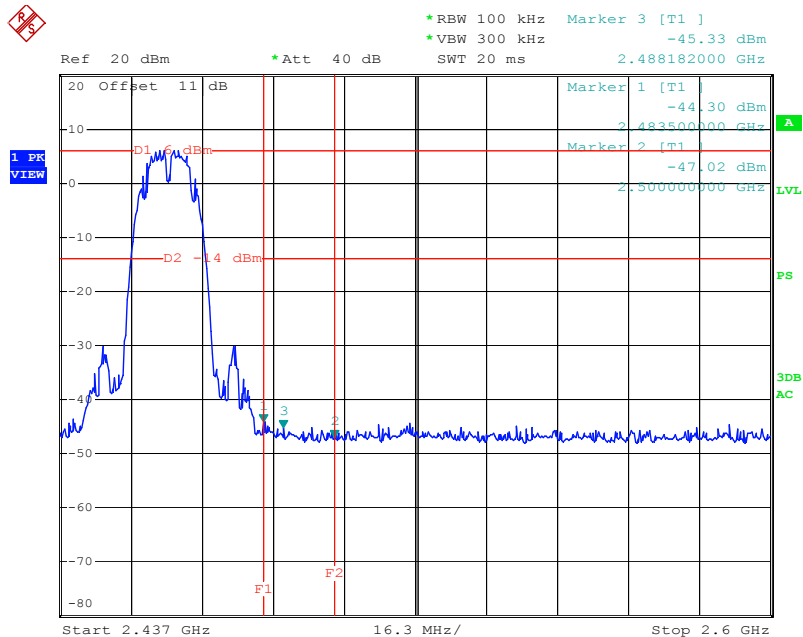


Date: 29.JUN.2010 12:19:01

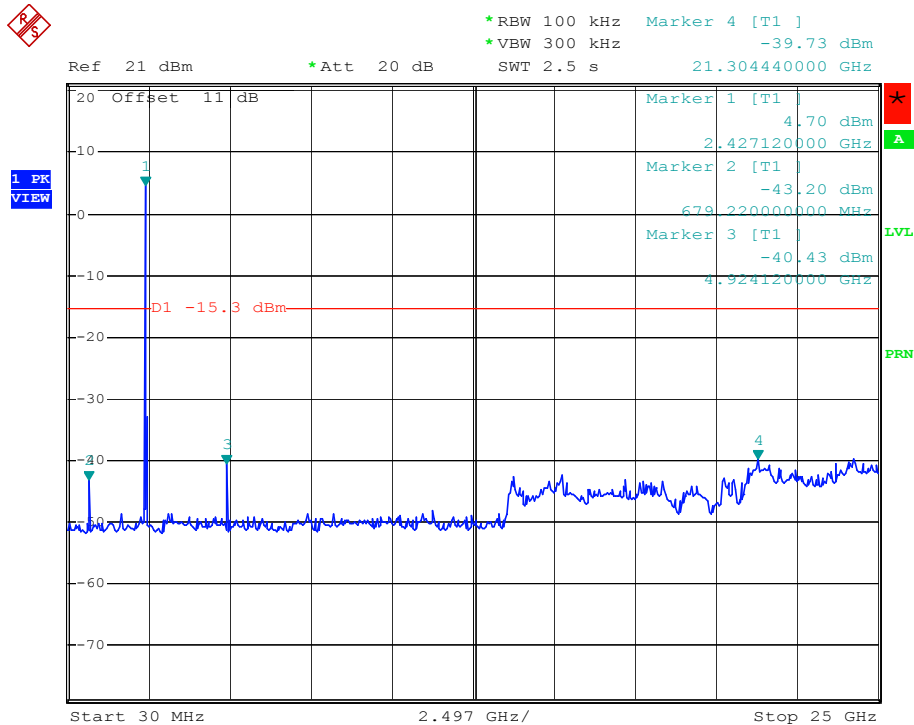


A D T

CH 11



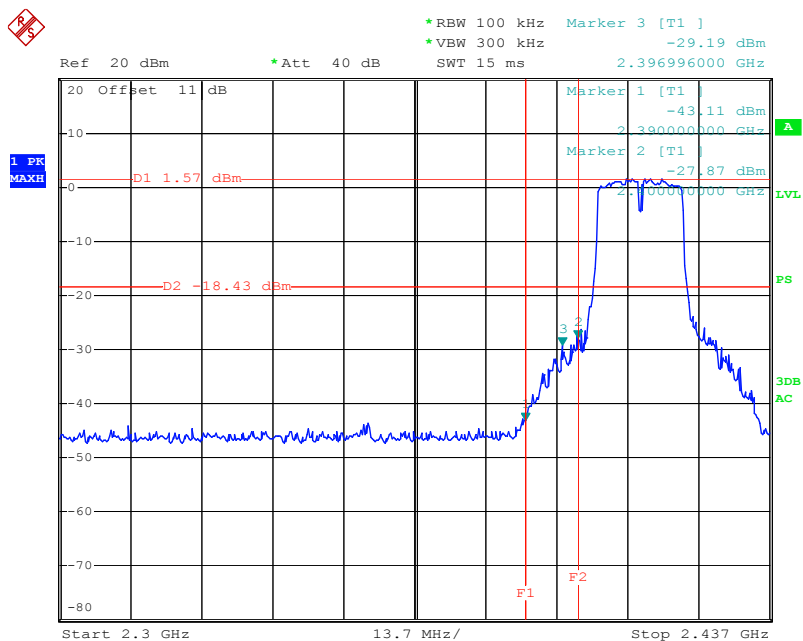
Date: 27.JUN.2010 07:18:03



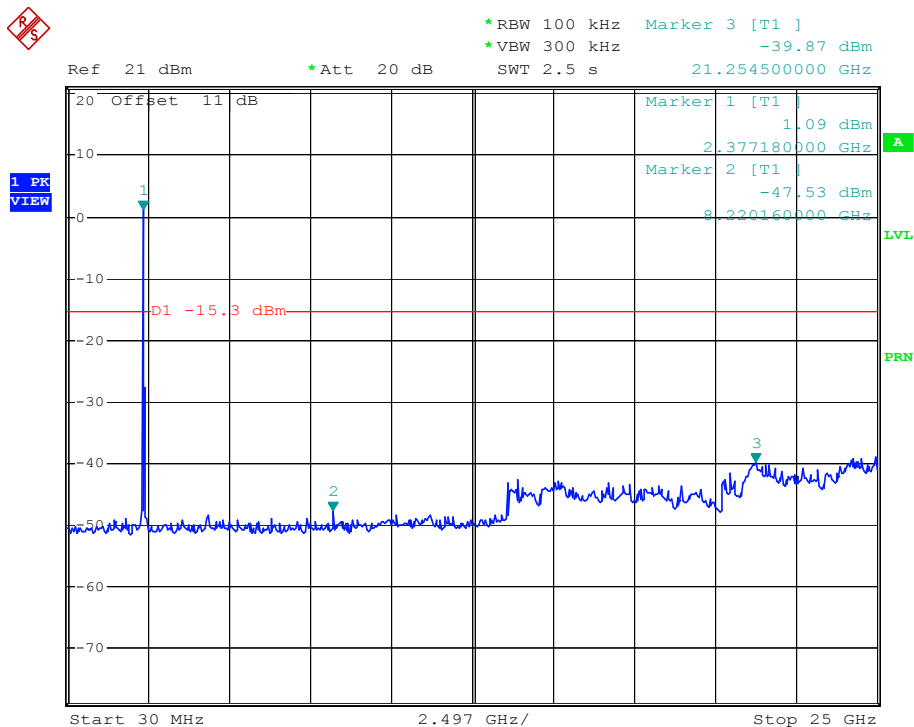
Date: 29.JUN.2010 12:20:08

802.11g OFDM MODULATION

CH 1

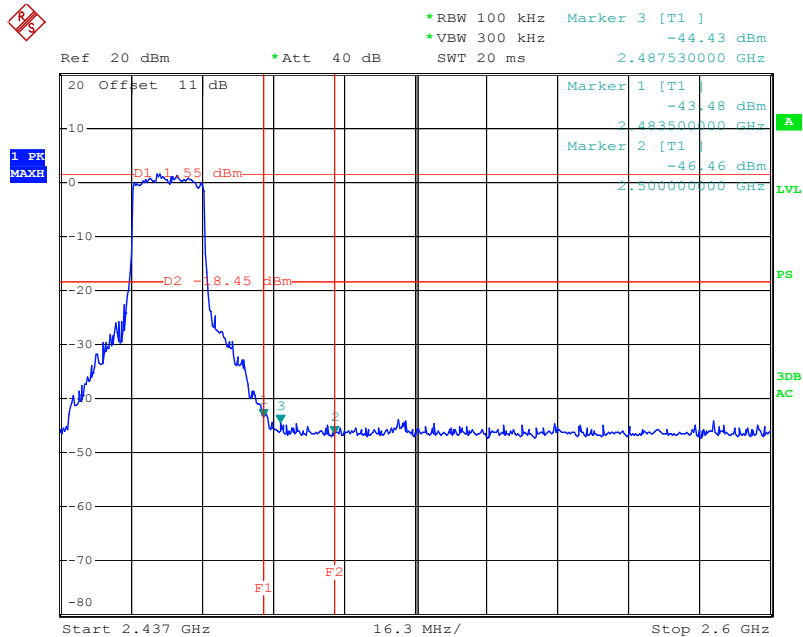


Date: 27.JUN.2010 07:19:57

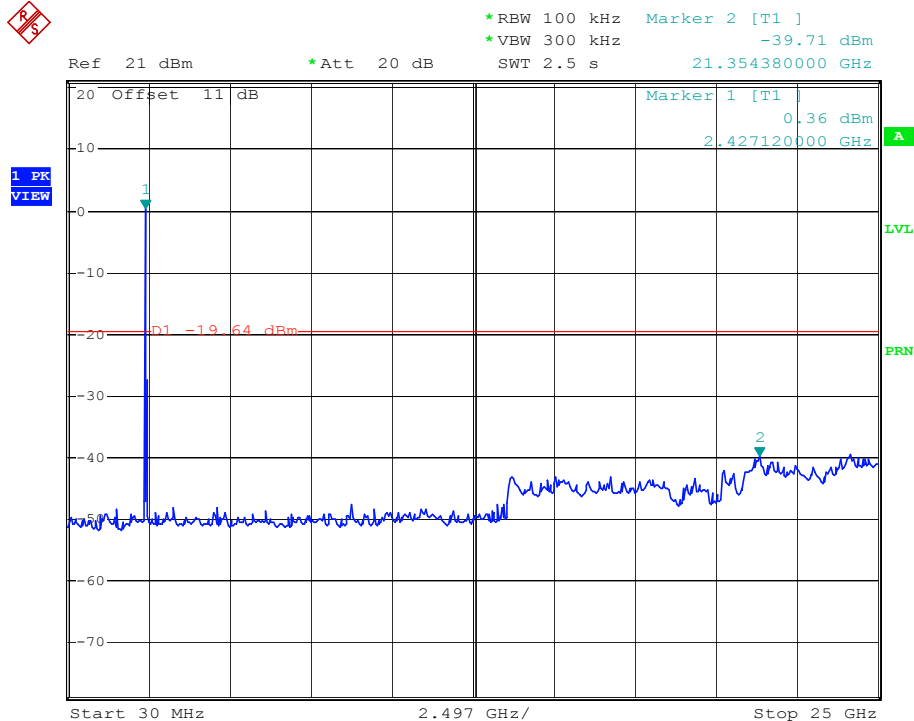


Date: 29.JUN.2010 12:21:17

CH 11



Date: 27.JUN.2010 07:21:17



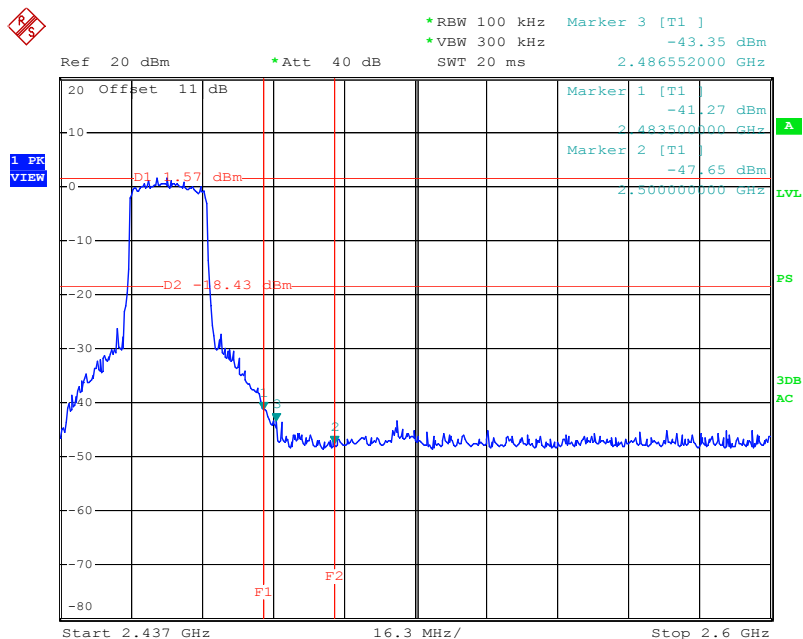
Date: 29.JUN.2010 12:22:04



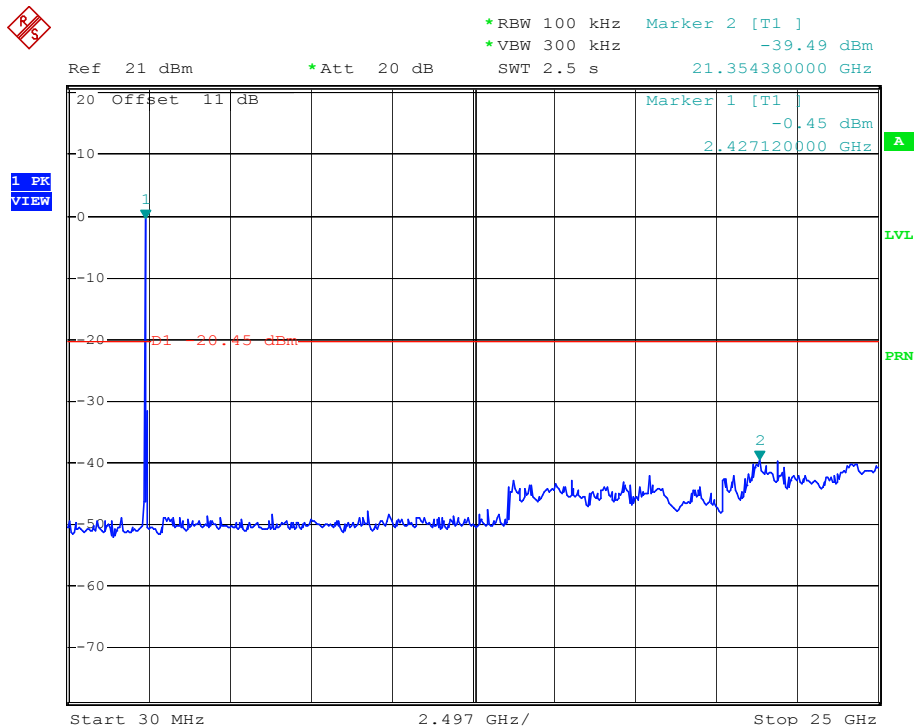


A D T

CH11



Date: 27.JUN.2010 07:24:14



Date: 29.JUN.2010 12:23:47

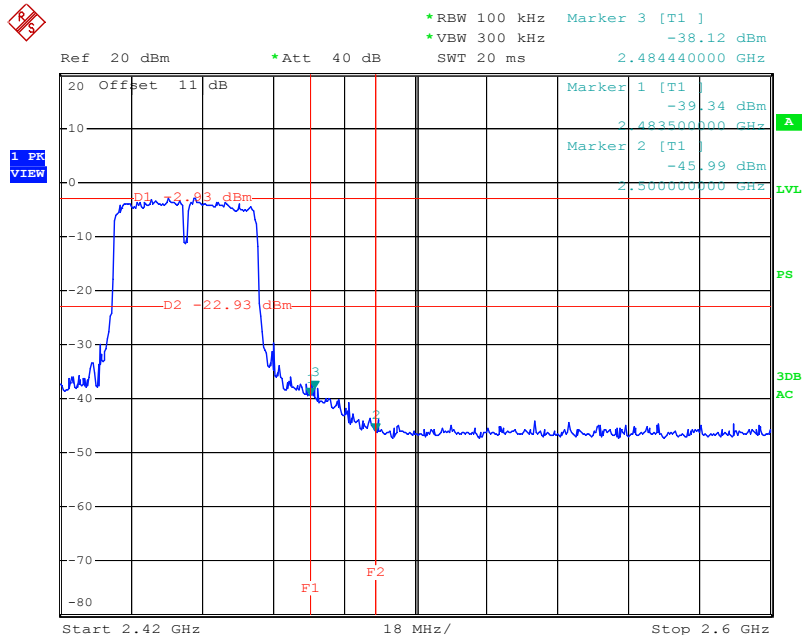
CH1



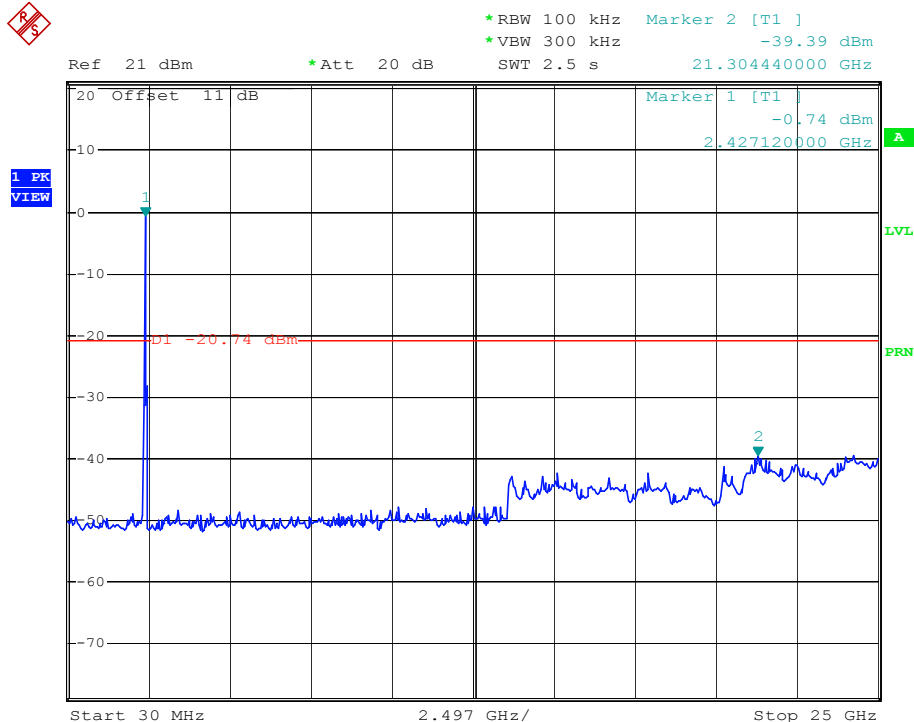


A D T

CH7



Date: 27.JUN.2010 07:29:05



Date: 29.JUN.2010 12:27:54

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

The antenna used in this product is dipole antenna. The maximum Gain of the antenna is 1.9dBi.

5. APPENDIX - INFORMATION ON THE TESTING LABORATORIES

We, ADT (Shanghai) Corporation, were founded in 2004 to provide our best service in EMC, Radio and Vehicle consultation. Our laboratories are accredited by the following accreditation bodies according to ISO/IEC 17025 (2005) .

USA	A2LA Certificate No.: 2343.01
China	CNAS Certificate No.: L2810

Copies of accreditation certificates could be inquired from our office. If you have any comments, please feel free to contact us at the following:

EMC / RF / Vehicle Lab:

Tel: +86 21 6465 9091

Fax: +86 21 6465 9092

Email: bvadtshmail@cn.bureauveritas.com

--END--