FCC 47 CFR PART 15 SUBPART C: 2008 AND ANSI C63.4: 2003

TEST REPORT

For

11n Mini Router

Model Number: BR080n

Brand: ETOP

Issued for

E-Top Network Technology Inc.

No. 82, Gongye 2nd Rd., Tainan City 70955, Taiwan, R.O.C.

Issued by

Compliance Certification Services Inc.
Tainan Lab.
No. 8, Jiu Cheng Ling, Jiaokeng Village,Sinhua Township, Tainan Hsien 712, Taiwan R.O.C.
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Testing Laboratory
1109

Total Page: 116

REVISION HISTORY

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		August 23, 2010		Initial Issue	ALL	Leah Peng

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1. TEST REPORT CERTIFICATION

Applicant	：E-Top Network Technology Inc.
Address	：No. 82, Gongye 2nd Rd., Tainan City 70955, Taiwan, R.O.C.
Manufacture	：E-Top Network Technology Inc.
Address	：No. 82, Gongye 2nd Rd., Tainan City 70955, Taiwan, R.O.C.
Equipment Under Test	：11n Mini Router
Model Number	：BR080n
Brand Name	：ETOP
Date of Test	：July 8, 2010 - July 26, 2010

APPLICABLE STANDARD	
STANDARD	**TEST RESULT**
FCC Part 15 Subpart C : 2008 AND ANSI C63.4 : 2003	No non-compliance noted

Approved by:

Jeter Wu

Jeter Wu
Assistant Manager

Reviewed by:

Eric Yang

Eric Yang
Senior Engineer

2. EUT DESCRIPTION

2.1 DESCRIPTION OF EUT & POWER

Product Name	11n Mini Router
Model Number	BR080n
Brand	ETOP
Frequency Range	IEEE 802.11b/g, 802.11n HT20 (DTS Band):2412MHz～2462MHz IEEE 802.11n HT40 (DTS Band):2422MHz～2452MHz
Transmit Power (ERP)	IEEE 802.11b Mode : 17.52dBm (DTS Band) (56.4937mW) IEEE 802.11g Mode : 20.27dBm (DTS Band) (106.414mW) IEEE 802.11n HT20 Mode : 20.37dBm (DTS Band) (108.893mW) IEEE 802.11n HT40 Mode : 19.79dBm (DTS Band) (95.2796mW)
Average Power	IEEE 802.11b Mode : 15.25dBm IEEE 802.11g Mode : 10.77dBm IEEE 802.11n HT20 Mode : 11.35dBm IEEE 802.11n HT40 Mode : 10.27dBm
Channel Spacing	IEEE 802.11b/g, 802.11n HT20/HT40: 5MHz
Channel Number	IEEE 802.11b/g, 802.11n HT20:11 Channels IEEE 802.11n HT40 :7 Channels
Transmit Data Rate	IEEE 802.11b : 11, 5.5, 2, 1 Mbps
	IEEE 802.11g : 54, 48 ,36, 24, 18, 12, 9, 6 Mbps
	IEEE 802.11n HT20 : (MCS0-MCS7) 6.5M、13M、19.5M、26M、39M、52M、58.5M、65M (MCS8-MCS15) 13M、26M、39M、52M、78M、104M、117M、130M
	IEEE 802.11n HT40 : (MCS0-MCS7) 13.5M、27M、40.5M、54M、81M、108M、121.5M、135M (MCS8-MCS15) 27M、54M、81M、108M、162M、216M、243M、270M
Type of Modulation	IEEE 802.11b：DSSS (CCK, DQPSK, DBPSK)
	IEEE 802.11g：OFDM (64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11n HT20/40：OFDM (64QAM, 16QAM, QPSK, BPSK)
Frequency Selection	By software / firmware
Antenna Type	**One antenna** Dipole Antenna (× 1) Manufacture: Cortec Technology Inc. Model: AN2400-5776RS Gain: 2.0 dBi
Power Source	SWITCHING ADAPTER; Keen Ocean Industrial Ltd. Model: S04-003-0050-00600

REMARK:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: U6A-BR080N filing to comply with Section 15.207,15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
3. This device has two external equipment shapes. For more details, please refer to the EUT photos.
4. To add a series model is for business necessary. The different of the each model is shown as below:

Multiple Listing:

Company Name/ Address	**Brand Name**	**Model Name**	**Product Name**
E-Top Network Technology Inc. / No. 82 ,Gongye 2nd Rd.,Tainan City 70955,Taiwan,R.O.C.	ETOP	BR080n,BR081n	11n Mini Router
Amigo Technology Inc. / 1F, No. 333, Sec. 1, Ti-Ding BLVD., NeiHu, Taipei 114, Taiwan	Amigo	BR080n,BR081n	11n Mini Broadband Router
CNet Technology Inc. / 1F,No.30,Industry E.RD.IX,Science-Based Industrial Park,Hsin-Chu,Taiwan,R.O.C.	CNet	CQR-980, CQR-981, CQR-982, CQR-983, CQR-984, CQR-985, CQR-986, CQR-987, CQR-988, CQR-989	Wireless-N Pico Mobile Router
Sapido Technology Inc. / No. 383., Sec. 2, Minsheng Rd., West Central District, Tainan 700, Taiwan, R.O.C.	SAPIDO	RB-1602 RB-1632	Light N+ Broadband Router Light N+ Broadband Router - All Boradbands

3. DESCRIPTION OF TEST MODES

The EUT is a router.

The RF chipset is manufactured by Realtek Semiconductor Corp.

The antenna peak gain 2.0dBi (highest gain) were chosen for full testing.

IEEE 802.11 b ,802.11g ,802.11n HT20 mode (DTS Band)

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 11Mbps data rates (worst case) were chosen for full testing.

IEEE 802.11g mode: 6Mbps data rates (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode: 6.5Mbps data rates (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode (DTS Band)

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n HT40 mode: 13.5Mbps data rates (worst case) were chosen for full testing.

The worst-case data rates are determined according to the description above, based on the investigations by measuring the PSD, peak power and average power across all the data rates, bandwidths, modulations and spatial stream modes.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 15.207, 15.209 and 15.247.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 8, Jiu Cheng Ling, Jiaokeng Village,Sinhua Township, Tainan Hsien 712, Taiwan R.O.C.

The sites are constructed in conformance with the requirements of ANSI C63.7:1992, ANSI C63.4: 2003 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 FACILITIES

The test facilities used to perform radiated and conducted emissions tests are accredited by Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 1109 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by TAF or any agency of the Government. In addition, the test facilities are listed with Federal Communications Commission.

5.4 ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

Taiwan	TAF

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
Germany	TUV Rheinland
Japan	VCCI
Taiwan	BSMI
USA	FCC

Copies of granted accreditation certificates are available for downloading from our web site, http:///www.ccsrf.com

6. CALIBRATION AND UNCERTAINTY

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

6.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz Test Site : OATS-6	±3.38dB
Radiated Emission, 200 to 1000 MHz Test Site : OATS-6	±3.04dB
Radiated Emission, 1 to 26.5 GHz	± 2.38 dB
Power Line Conducted Emission	±2.01dB
Band Edge MU	0.302dBuV
Band Width	136.49kHz
Channel Separation MU	361.69Hz
Duty Cycle MU	0.064ms
Peak Output Power MU	1.904dB
Frequency Stability MU	0.223kHz

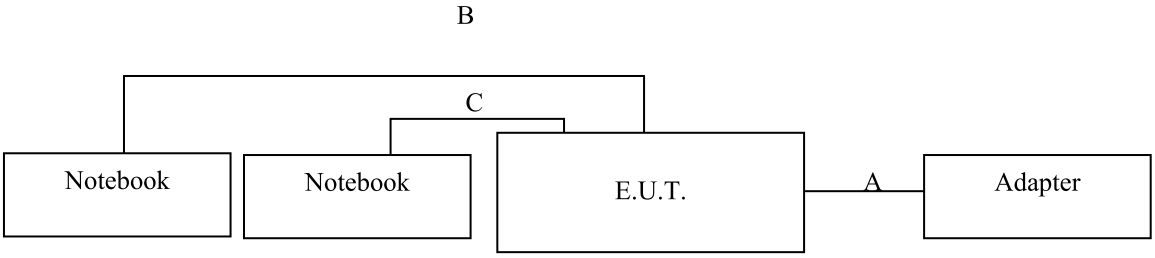
This measurement uncertainty is confidence of approximately 95%, k=2

7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

Above 1GHz Test Setup:

Below 1GHz Test Setup:



7.2 SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	FCC ID	Signal Cable
1	Notebook	IBM	R51	DoC	Power cable, unshd, 1.6m
2	Notebook	IBM	T43	DoC	Power cable, unshd, 1.6m

No.	Signal cable description	
A	DC cable	Unshielded, 1.8m, 1pcs.
B	LAN cable	Unshielded, 3m, 1pcs.
C	LAN cable	Unshielded, 1.8m, 1pcs.

REMARK:

1. All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

7.3 EUT OPERATING CONDITION

1. Set up all notebooks like the setup diagram.
2. The "**Resltek 11n Single Chip"** software was used for testing
3. Set b/g/n mode、con TX/RX、channel、bandwith、data rate、transmit power
4. Start to test

(1) **TX Mode:**

⇨ **Tx Mode:CCK 、OFDM、 HT MixMode** (Bandwidth: 20、40)

⇨ **Tx Data Rate: 11Mbps long** (IEEE 802.11b mode ,chain 0 TX)
6Mbps (IEEE 802.11g mode ,chain 0 TX)
6.5Mbps (IEEE 802.11n HT20 mode ,chain 0 TX)
13.5Mbps (IEEE 802.11n HT40 mode, chain 0 TX**)**

Power control mode

Target Power: IEEE 802.11b Channel Low (2412MHz) = **40 (Chain 0)**
IEEE 802.11b Channel Middle (2437MHz) = **40 (Chain 0)**
IEEE 802.11b Channel High (2462MHz) = **40 (Chain 0)**
Target Power: IEEE 802.11g Channel Low (2412MHz) = **40 (Chain 0)**
IEEE 802.11g Channel Middle (2437MHz) = **40 (Chain 0)**
IEEE 802.11g Channel High (2462MHz) = **40 (Chain 0)**
Target Power: IEEE 802.11n HT20 Channel Low (2412MHz) = **40 (Chain 0)**
IEEE 802.11 n HT20 Channel Middle (2437MHz) = **40 (Chain 0)**
IEEE 802.11 n HT20 Channel High (2462MHz) = **40 (Chain 0)**
Target Power: IEEE 802.11n HT40 Channel Low (2422MHz) = **40 (Chain 0)**
IEEE 802.11 n HT40 Channel Middle (2437MHz) = **40 (Chain 0)**
IEEE 802.11 n HT40 Channel High (2452MHz) = **40 (Chain 0)**

(2) **RX Mode**：

Start RX

3. All of the function are under run.
4. Start test.

Normal Link Setup

1. Set up all computers like the setup diagram.
2. All of the function are under run.
3. Notebook PC (2) ping 192.168.0.10 –t to Notebook PC (1).
4. Notebook PC (1) ping 192.168.0.20 –t to Notebook PC (2).
5. Notebook PC (1) ping 192.168.0.50 –t to Wireless Access Point (3).

Start test.

8. APPLICABLE LIMITS AND TEST RESULTS

8.1 6DB BANDWIDTH

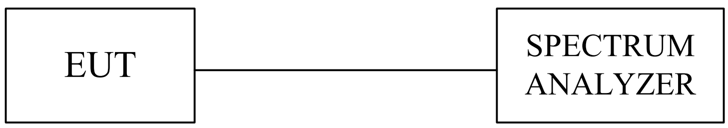
LIMIT

§ 15.207(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	835253/002	JAN. 03, 2011

TEST SETUP



TEST PROCEDURE

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 100 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

TEST RESULTS

No non-compliance noted.

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	10320	500	PASS
Middle	2437	10321	500	PASS
High	2462	10320	500	PASS

NOTE : 1. At finial test to get the worst-case emission at11Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	16720	500	PASS
Middle	2437	16675	500	PASS
High	2462	16733	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	17935	500	PASS
Middle	2437	17931	500	PASS
High	2462	17934	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

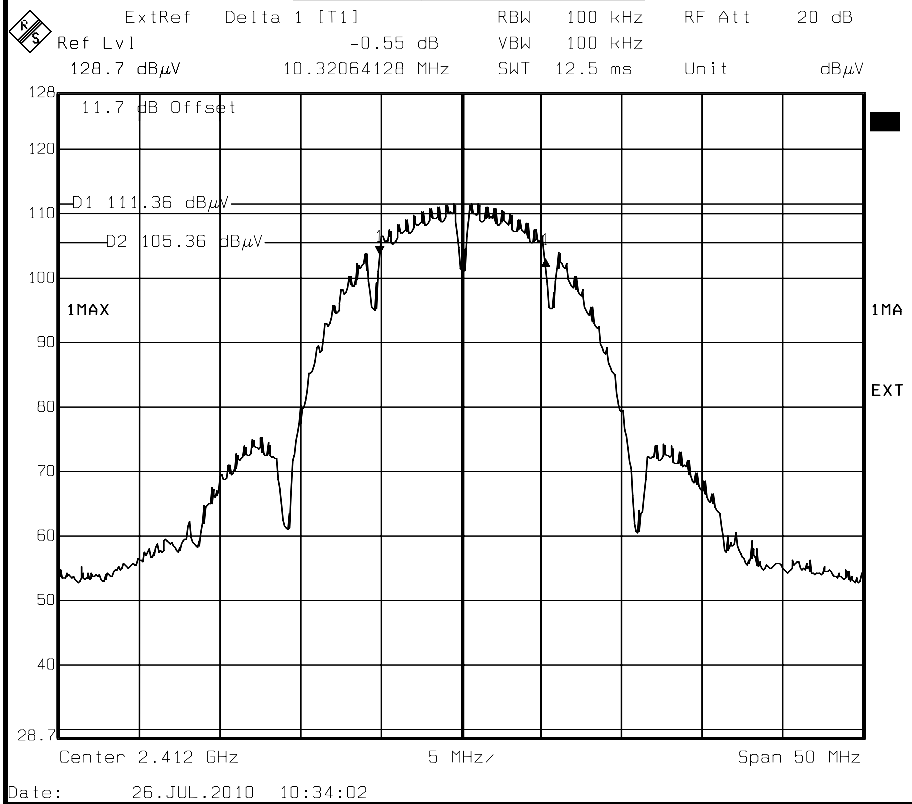
IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2422	36871	500	PASS
Middle	2437	36854	500	PASS
High	2452	36873	500	PASS

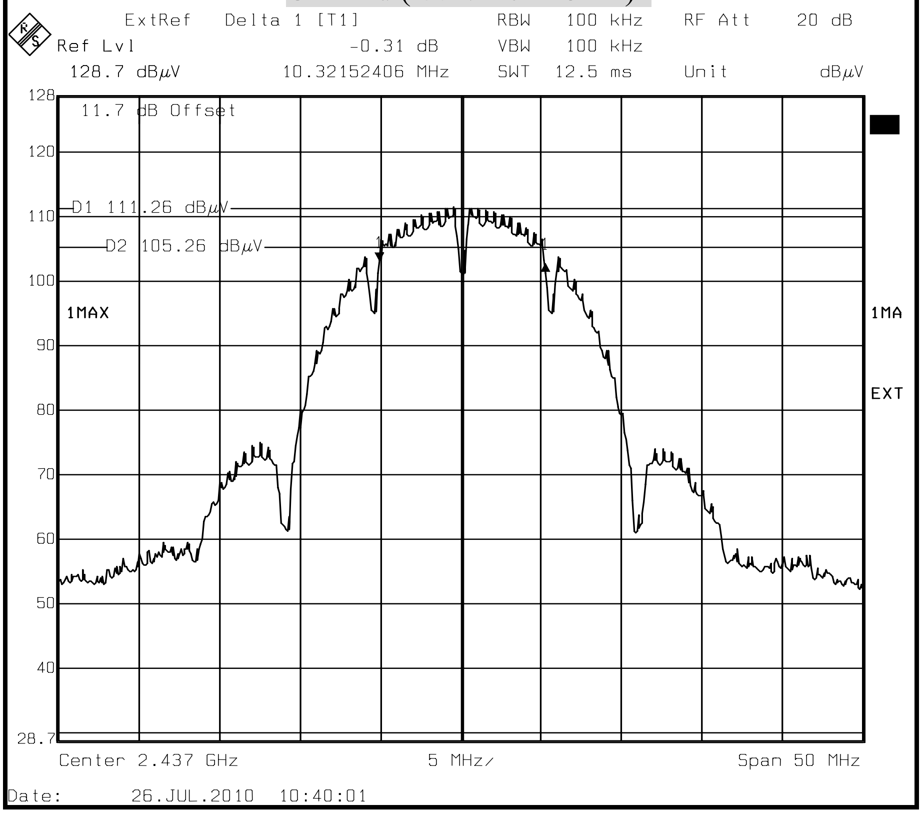
NOTE : 1. At finial test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

6dB BANDWIDTH (802.11b MODE)

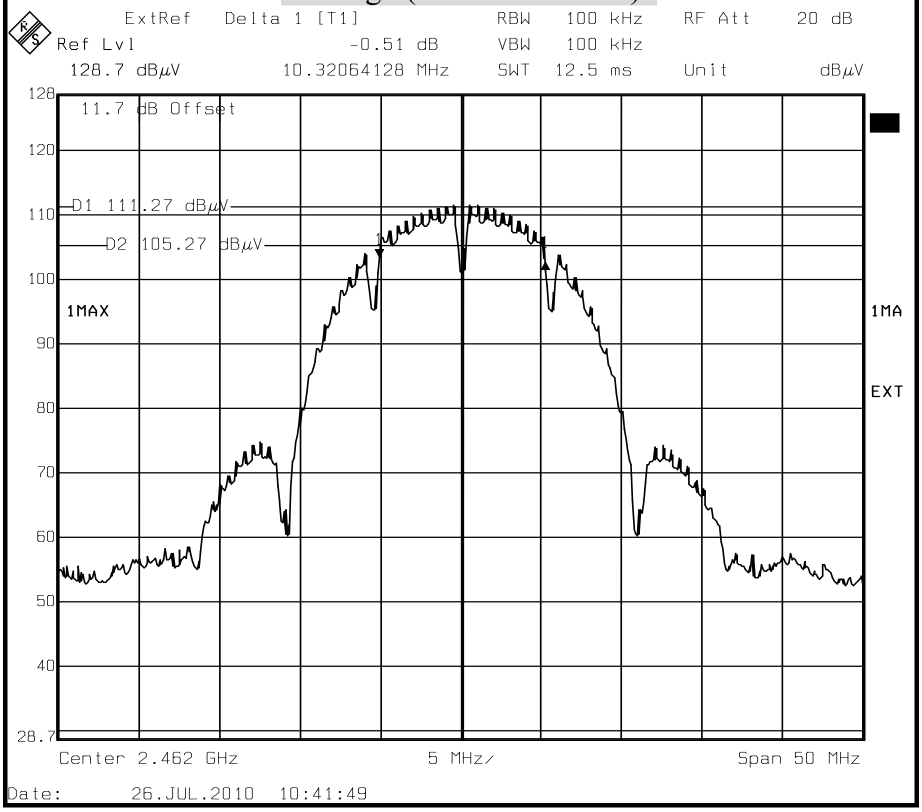
CH Low (802.11b MODE)



CH Mid (802.11b MODE)

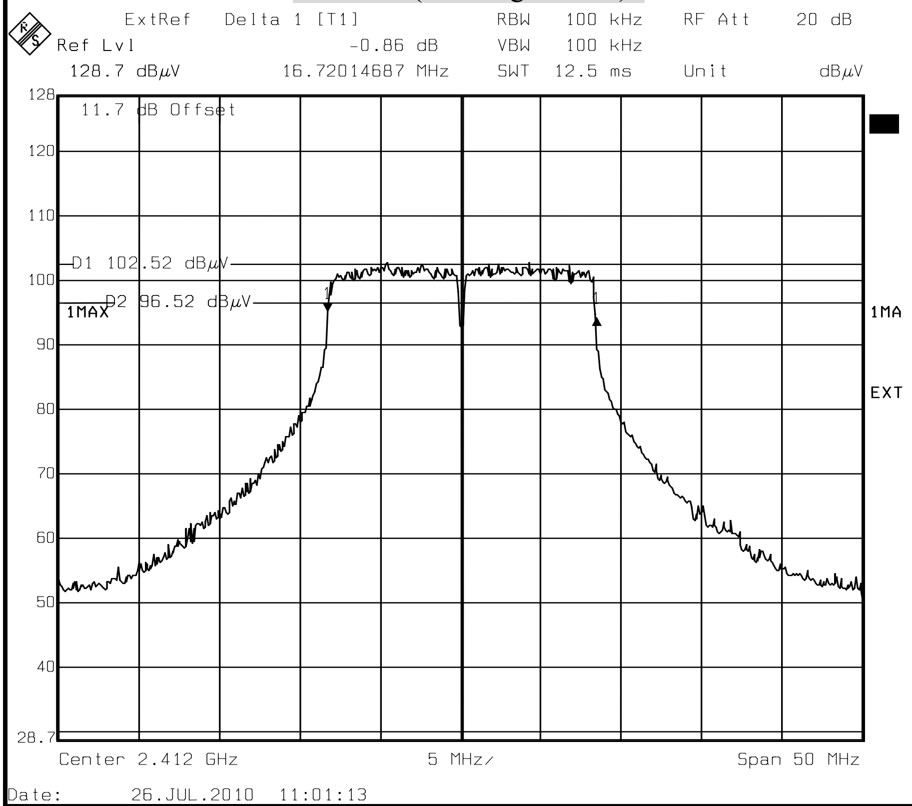


CH High (802.11b MODE)

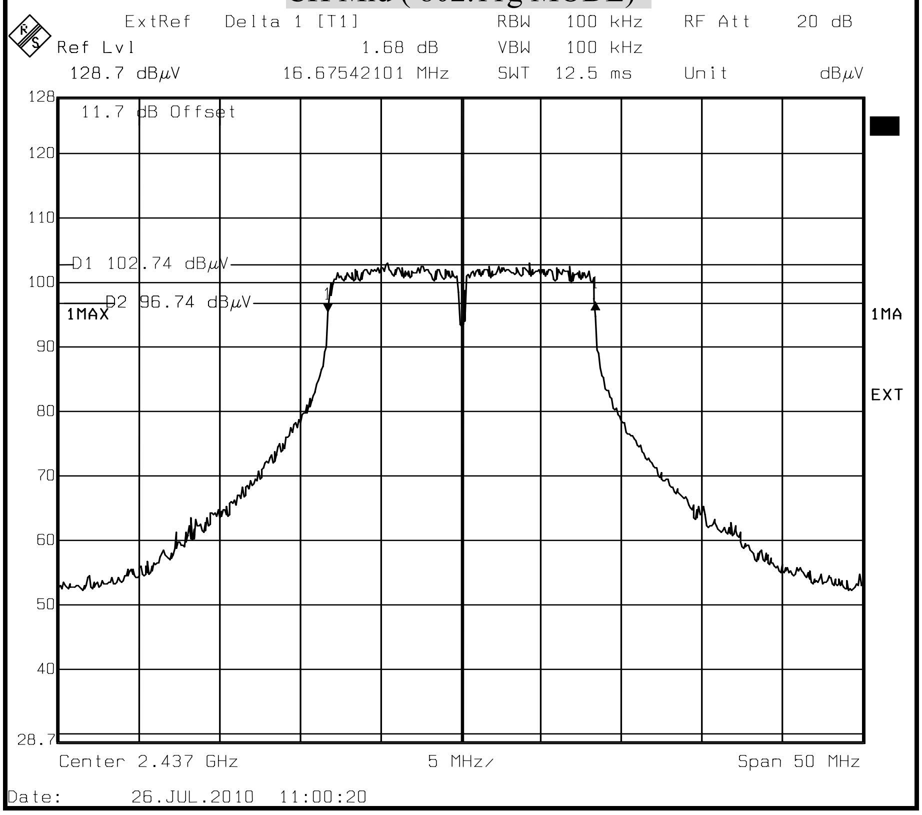


6dB BANDWIDTH (802.11g MODE)

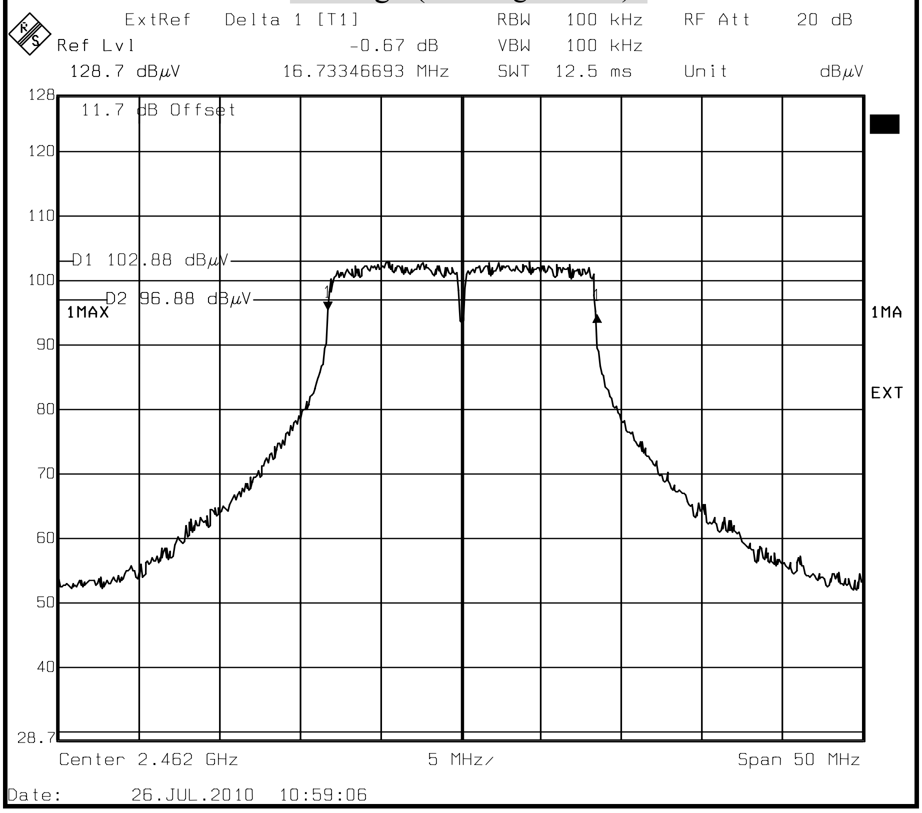
CH Low (802.11g MODE)



CH Mid (802.11g MODE)

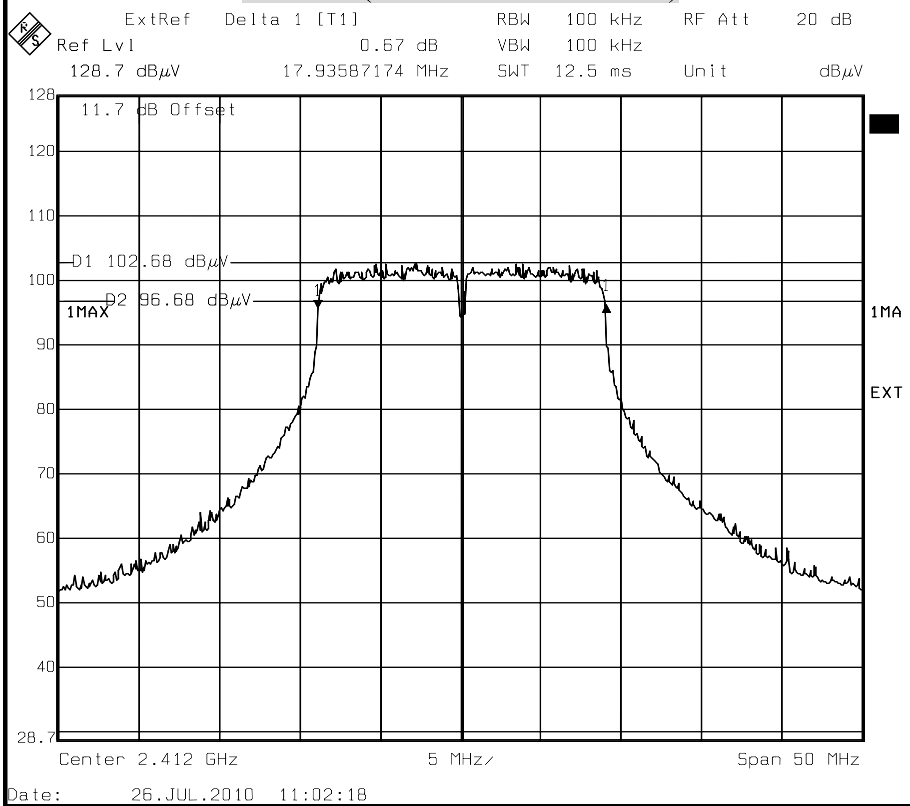


CH High (802.11g MODE)

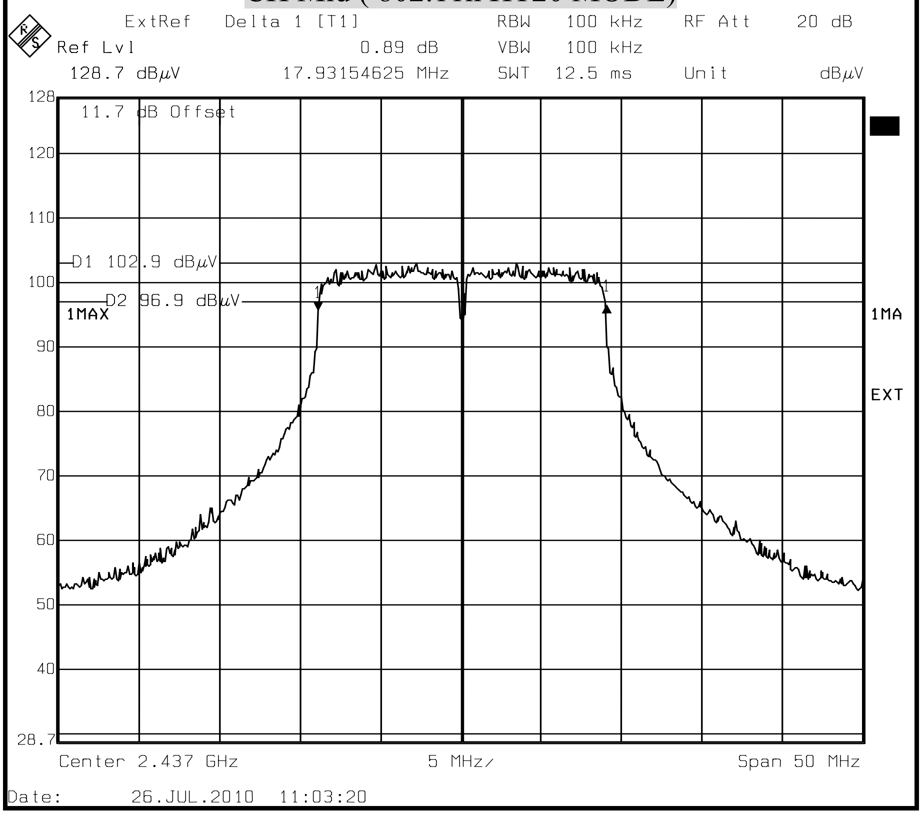


6dB BANDWIDTH (802.11n HT20 MODE)

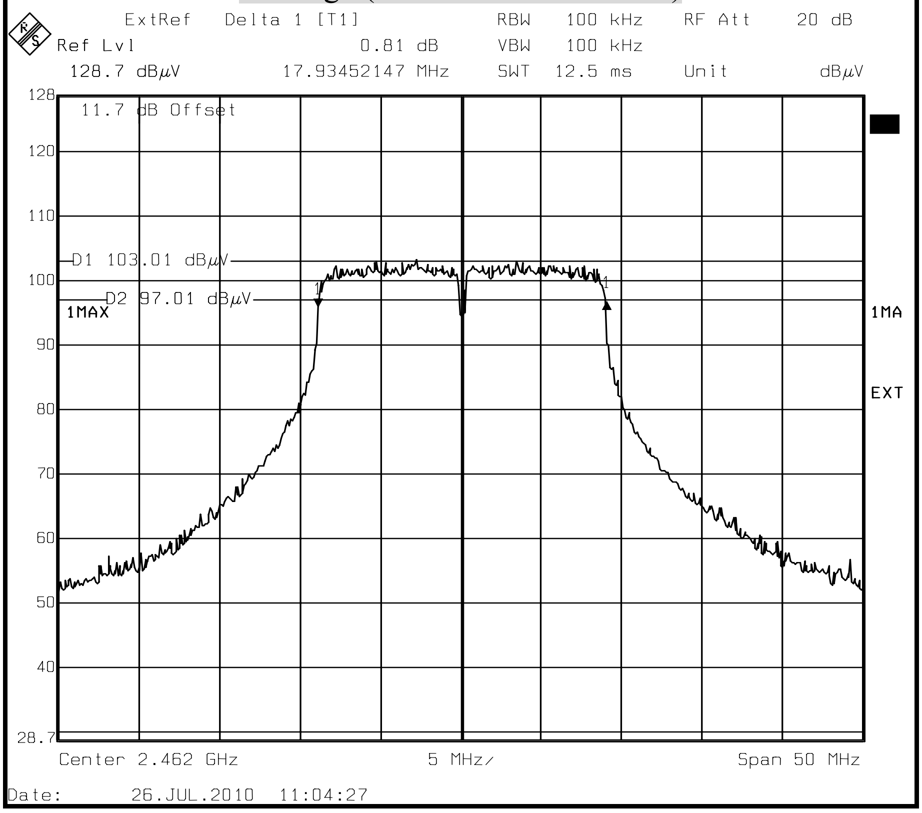
CH Low (802.11n HT20 MODE)



CH Mid (802.11n HT20 MODE)

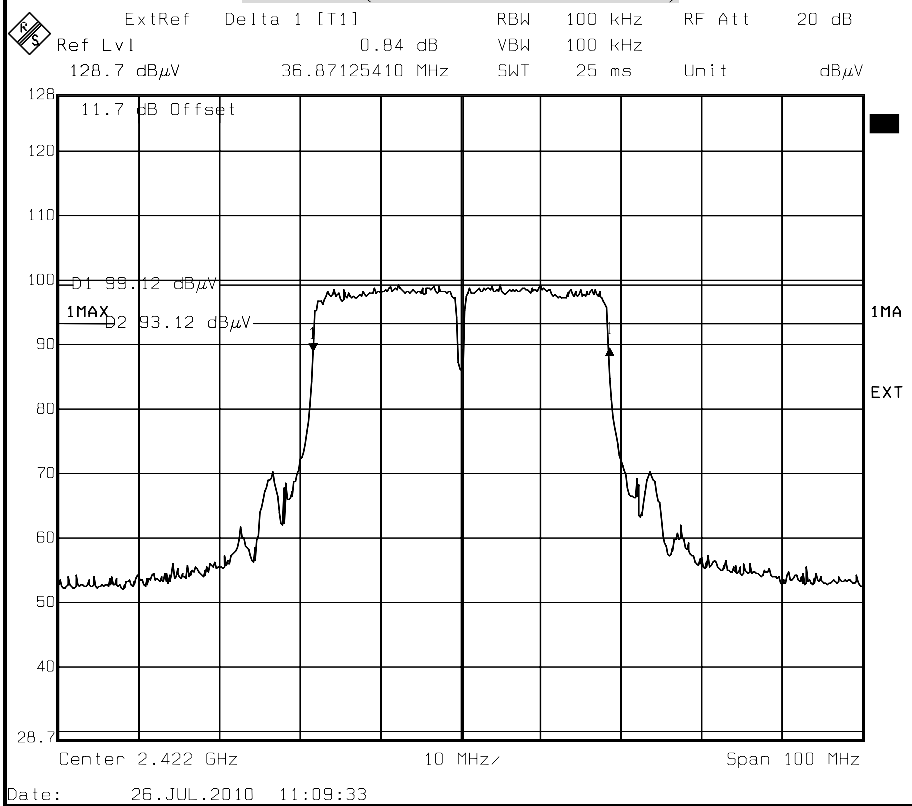


CH High (802.11n HT20 MODE)

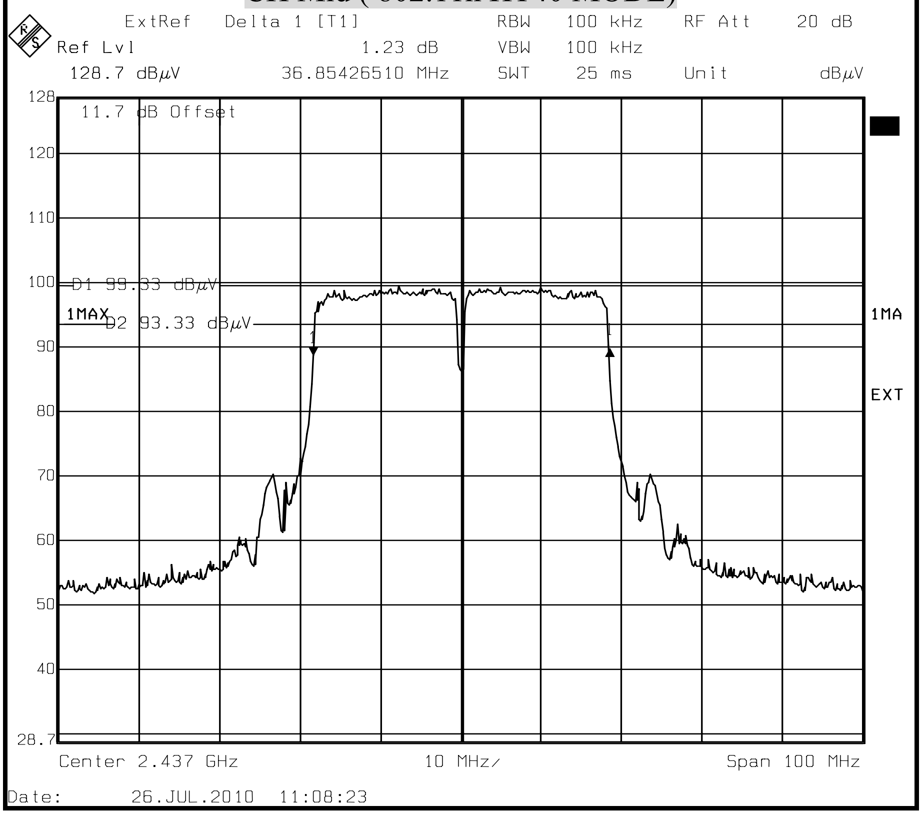


6dB BANDWIDTH (802.11n HT40 MODE)

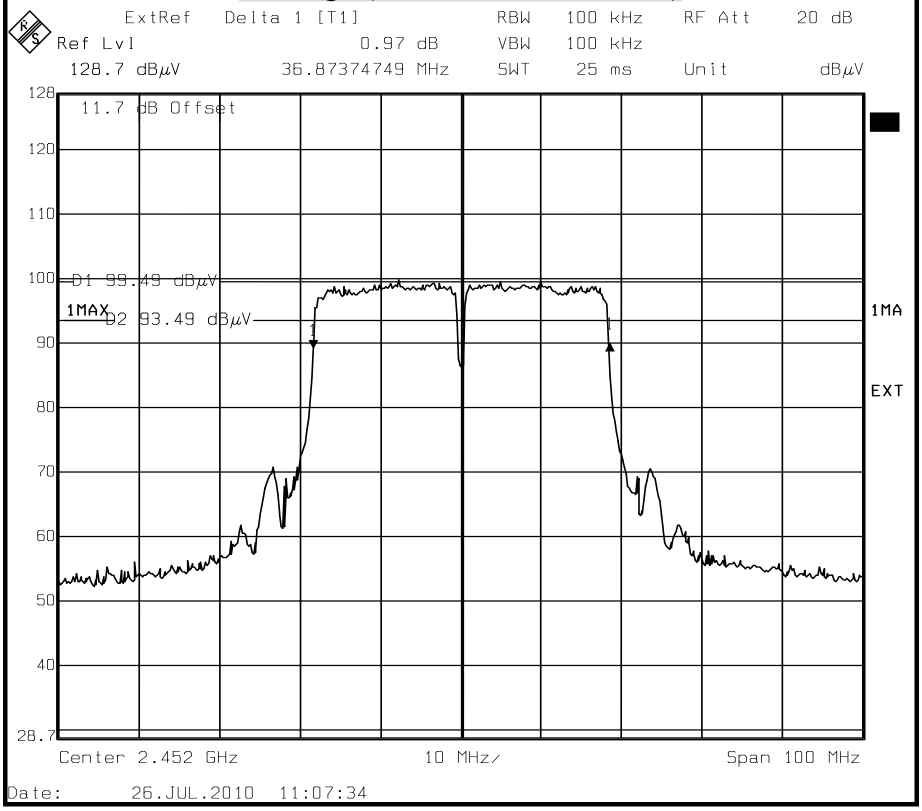
CH Low (802.11n HT40 MODE)



CH Mid (802.11n HT40 MODE)



CH High (802.11n HT40 MODE)



8.2 MAXIMUM PEAK OUTPUT POWER & AVERAGE POWER

LIMIT

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section , if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2), and (b)(3) of this section , as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§ 2.1093 Radiofrequency radiation exposure evaluation: portable devices.

(b) For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

And according to KDB447498 Section 1) c) Unless excluded by specific FCC test procedures, portable devices with output power > 60/f(GHz)mW shall include SAR data for equipment approval.

Details please refer to FCC Part 2 and attached KDB447498.

Please note the low power threshold is based upon average output power. If the average output power is below 60/f(GHz), then SAR evaluation is not required.

In addition, since this device is a Bluetooth device, you may use source-based averaging duty cycle to adjust the average power. After the adjustment, if the average power is greater than 60/f(GHz), then SAR is required.

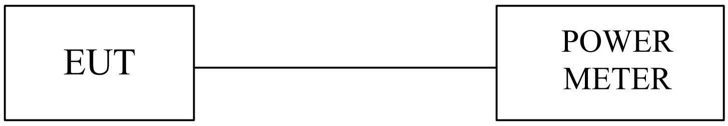
60/f(GHz)mWf f=2.462GHz

60/2.462=24.37mW=((log24.37)*10)dBm=13.8686dBm

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2487A	6K00003888	APR. 14, 2010

<u>TEST SETUP</u>



<u>TEST PROCEDURE</u>

Connect the EUT to power meter, set the center frequency of the power meter to the channel center frequency. .

Measurement of Digital Transmission Systems Operating under Section 15.247
<u>Power Output Option 1</u>
<u>Method #1</u>

<u>Use a peak power meter</u>

<u>TEST RESULTS</u>

No non-compliance noted

IEEE 802.11b mode

Peak Power Data

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	17.38	30	PASS
Middle	2437	17.52	30	PASS
High	2462	17.39	30	PASS

NOTE : 1. At finial test to get the worst-case emission at 11Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Average Power Data

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	15.13
Middle	2437	15.25
High	2462	15.13

IEEE 802.11g mode

Peak Power Data

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	20.27	30	PASS
Middle	2437	19.81	30	PASS
High	2462	20.23	30	PASS

NOTE : 1.At finial test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Average Power Data

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	10.77
Middle	2437	10.14
High	2462	10.65

IEEE 802.11n HT20 mode

Peak Power Data

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	20.14	30	PASS
Middle	2437	20.37	30	PASS
High	2462	19.90	30	PASS

NOTE : 1.At finial test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Average Power Data

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	11.18
Middle	2437	11.35
High	2462	10.69

IEEE 802.11n HT40 mode

Peak Power Data

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2422	19.38	30	PASS
Middle	2437	19.32	30	PASS
High	2452	19.79	30	PASS

NOTE : 1. At finial test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Average Power Data

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	10.13
Middle	2437	9.84
High	2462	10.27

MAXIMUM PEAK OUTPUT POWER (802.11b MODE)

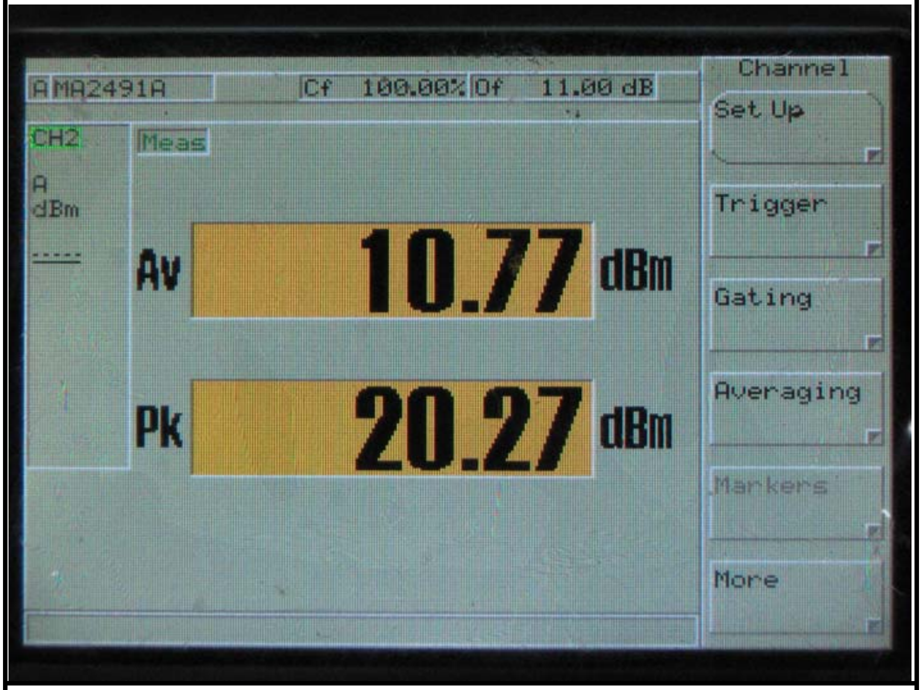
CH Low (802.11b MODE)

CH Mid (802.11b MODE)

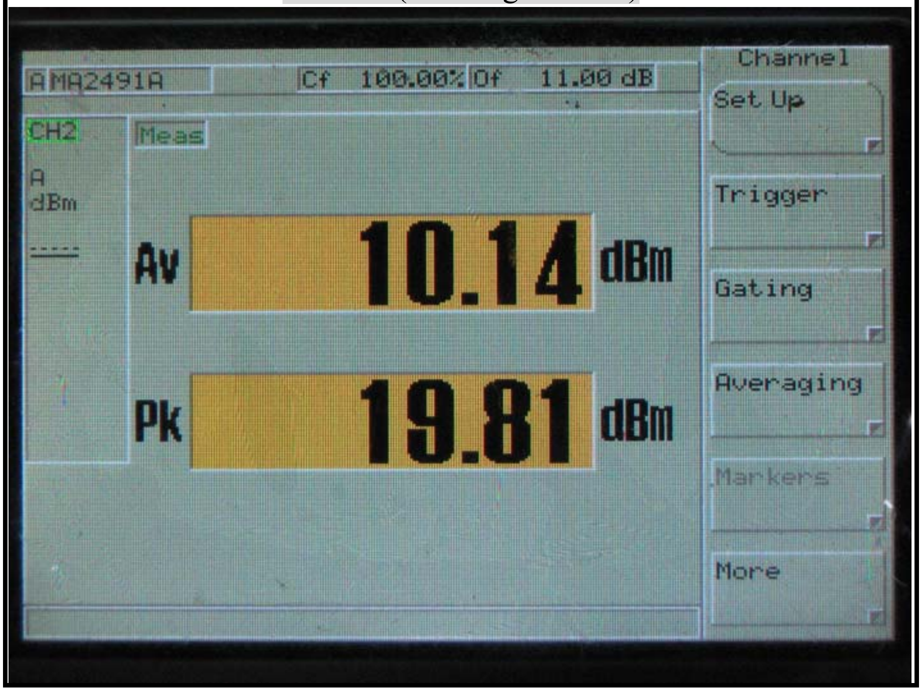
CH High (802.11b MODE)

MAXIMUM PEAK OUTPUT POWER (802.11g MODE)

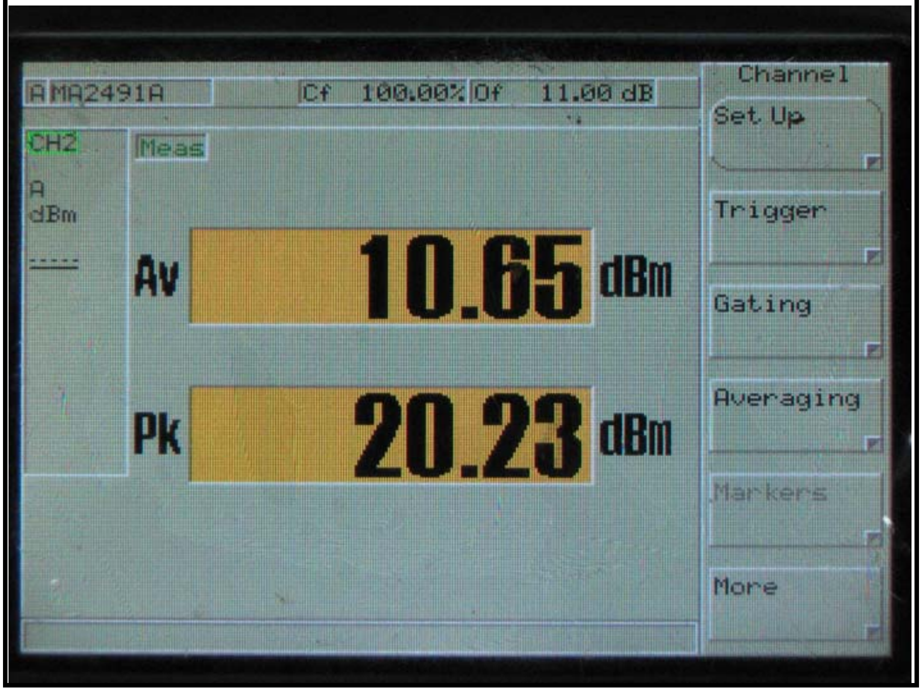
CH Low (802.11g MODE)



CH Mid (802.11g MODE)



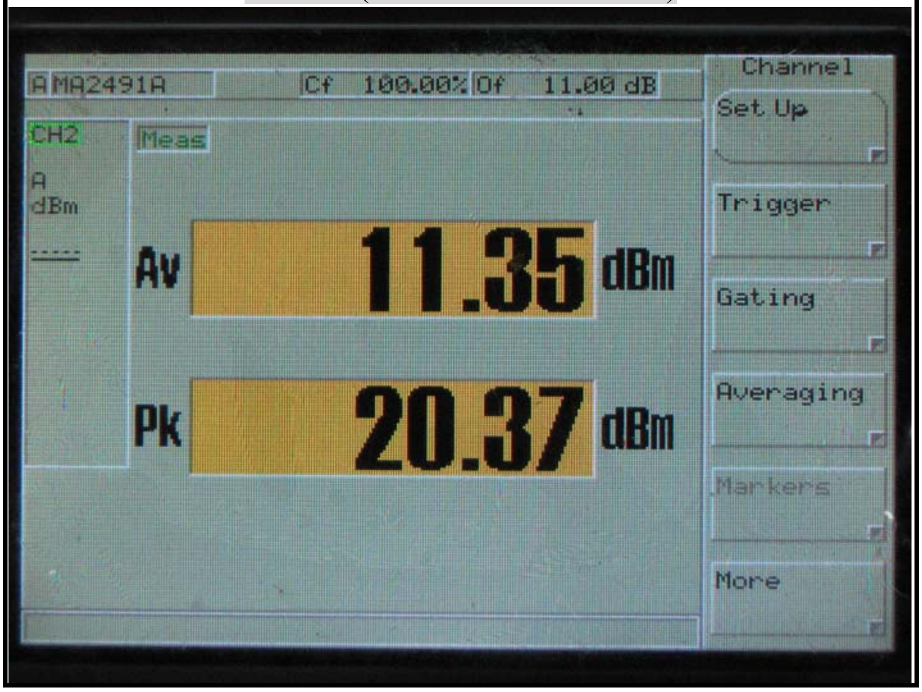
CH High (802.11g MODE)



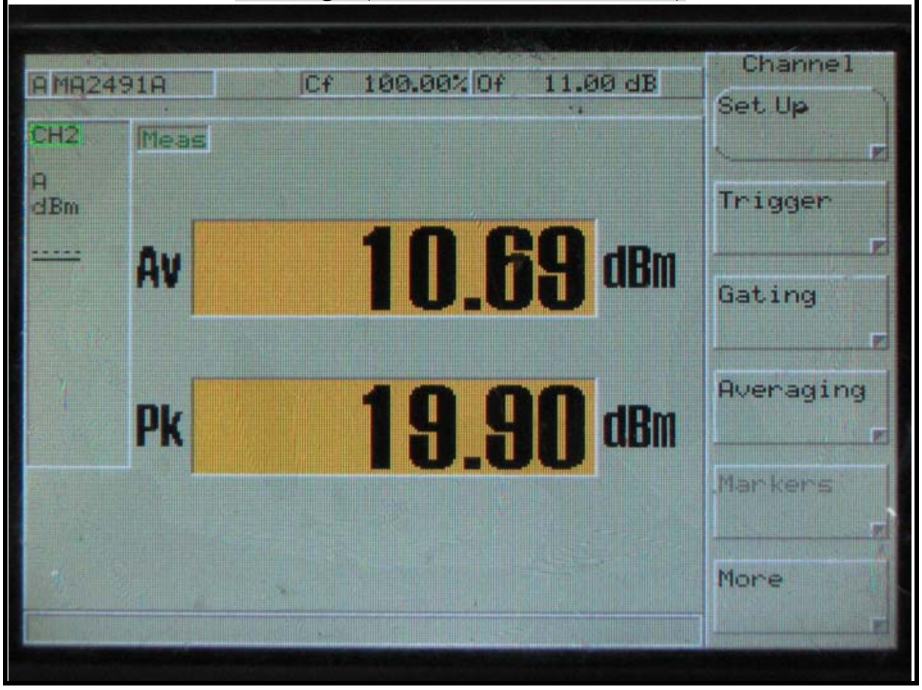
MAXIMUM PEAK OUTPUT POWER (802.11n HT20 MODE)

CH Low (802.11n HT20 MODE)

CH Mid (802.11n HT20 MODE)

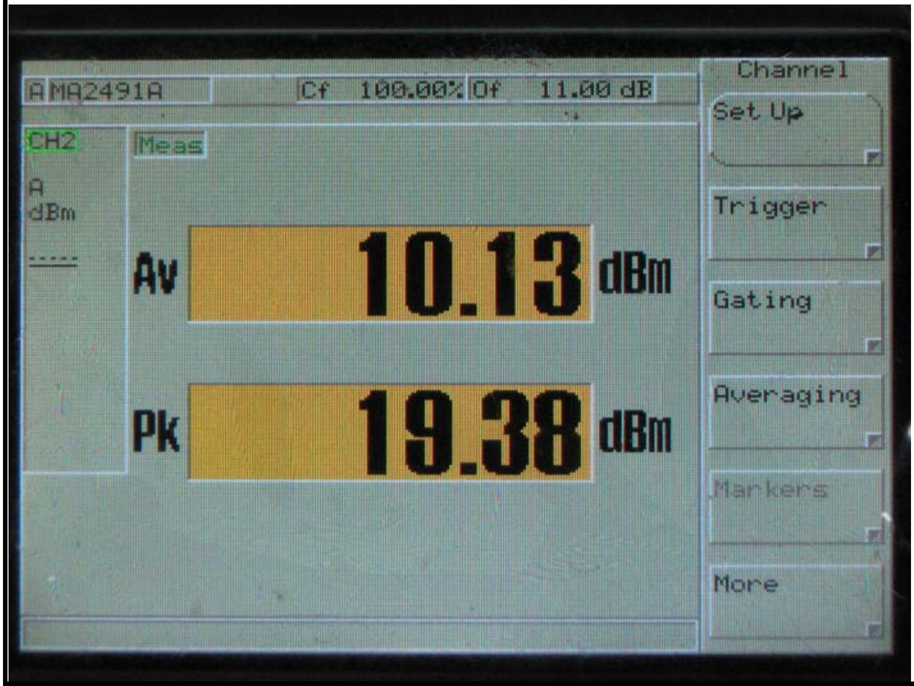


CH High (802.11n HT20 MODE)



MAXIMUM PEAK OUTPUT POWER (802.11n HT40 MODE)

CH Low (802.11n HT40 MODE)



CH Mid (802.11n HT40 MODE)

CH High (802.11n HT40 MODE)

8.3 MAXIMUM PERMISSIBLE EXPOSURE

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time
(A) Limits for Occupational / Control Exposures				
300-1,500	--	--	F/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300-1,500	--	--	F/1500	6
1,500-100,000	--	--	1	30

CALCULATIONS

Given $$E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where *E = Field strength in Volts / meter*

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$

Where *d = Distance in cm*

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm^2

LIMIT

Power Density Limit, S=1.0mW/cm^2

TEST RESULTS

No non-compliance noted.

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$

G=2dBi=1.58489319 dB

IEEE 802.11b =0.0796*56.4937*1.58489319/400=0.017818

IEEE 802.11g =0.0796*106.4143*1.58489319/400=0.033562

IEEE 802.11n HT20 =0.0796*108.893*1.58489319/400=0.034344

IEEE 802.11n HT40 =0.0796*95.27962*1.58489319/400=0.030051

Mode	Minimum separation distance (cm)	Output Power (dBm)	Output Power (mw)	Antenna Gain (dBi)	Power Density Limit (mW/cm^2)	Power Density at 20cm (mW/cm^2)
IEEE 802.11b	20.0	17.52	56.49	2.00	1	0.017818
IEEE 802.11g	20.0	20.27	106.41	2.00	1	0.033562
IEEE 802.11n HT20	20.0	20.37	108.89	2.00	1	0.034344
IEEE 802.11n HT40	20.0	19.79	95.28	2.00	1	0.030051

REMARK: For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm^2 even if the calculation indicates that the power density would be larger.

8.4 POWER SPECTRAL DENSITY

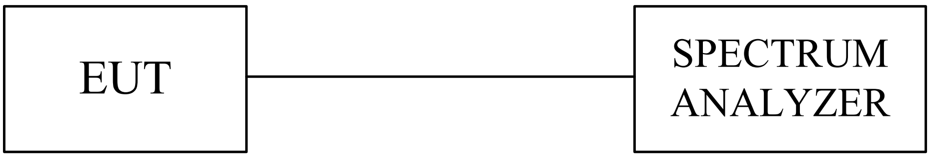
LIMIT

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	835253/002	JAN. 03, 2011

TEST SETUP



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using RBW=3KHz and VBW≧RBW, 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.

TEST RESULTS

No non-compliance noted.

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	PPSD Total (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2412	-15.09	-15.09	8	PASS
Middle	2437	-14.89	-14.89	8	PASS
High	2462	-14.78	-14.78	8	PASS

NOTE : 1. At finial test to get the worst-case emission at 11Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	PPSD Total (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2412	-19.37	-19.37	8	PASS
Middle	2437	-19.20	-19.20	8	PASS
High	2462	-18.96	-18.96	8	PASS

NOTE : 1. At finial test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	PPSD Total (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2412	-19.10	-19.10	8	PASS
Middle	2437	-18.92	-18.92	8	PASS
High	2462	-18.75	-18.75	8	PASS

NOTE : 1. At finial test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

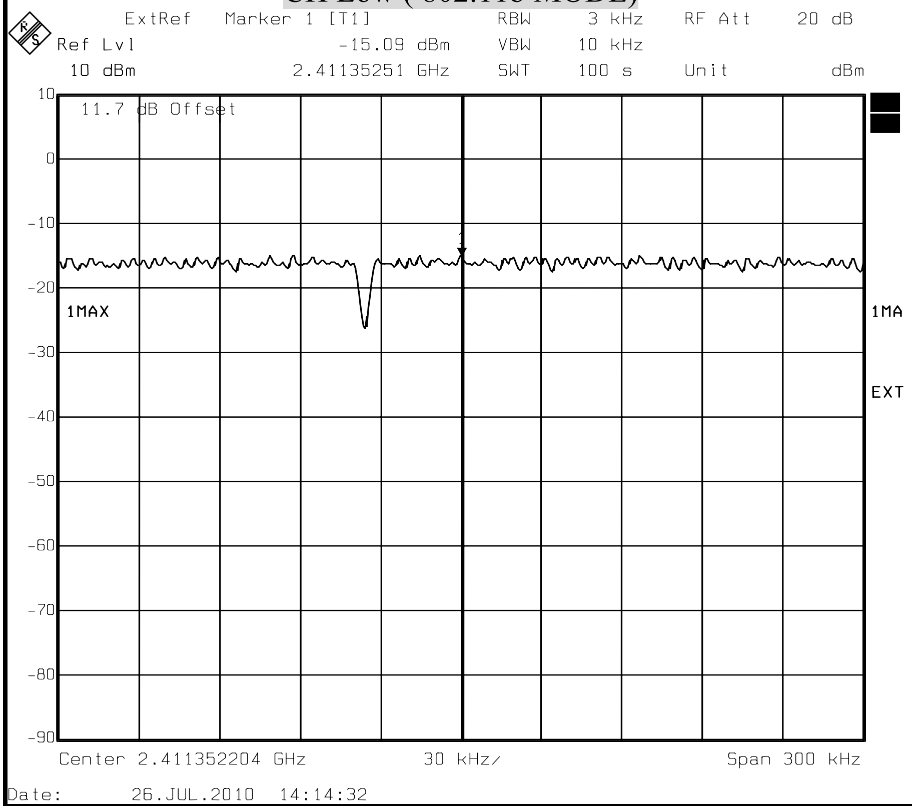
IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	PPSD Total (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2422	-22.75	-22.75	8	PASS
Middle	2437	-22.88	-22.88	8	PASS
High	2452	-23.52	-23.52	8	PASS

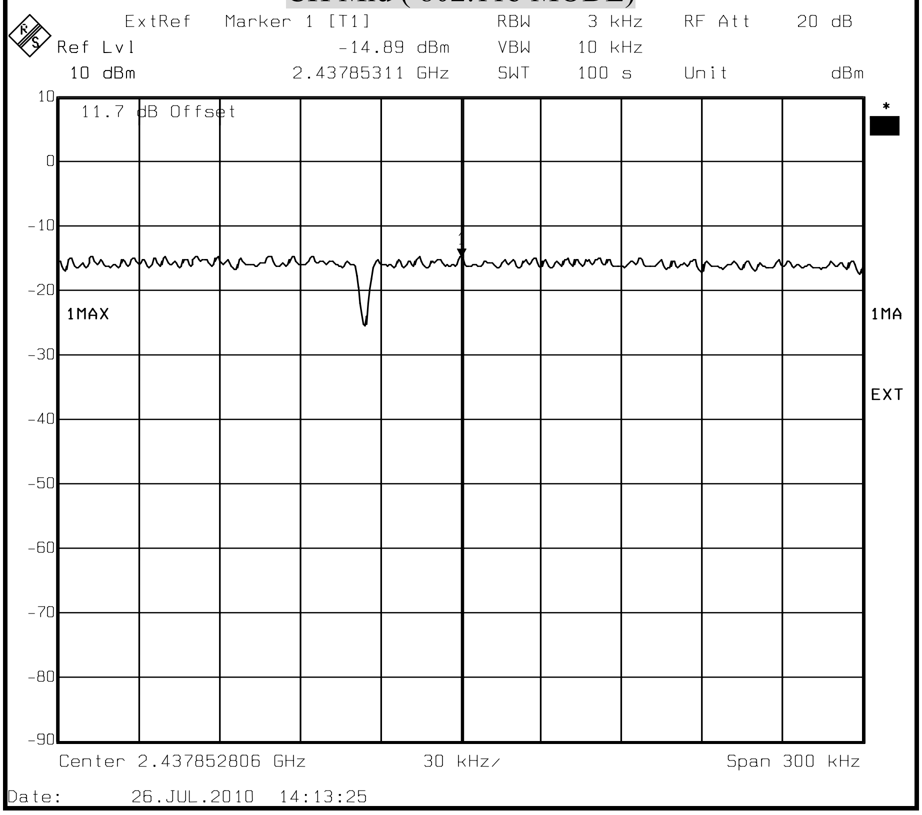
NOTE : 1. At finial test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

POWER SPECTRAL DENSITY (IEEE 802.11b MODE)

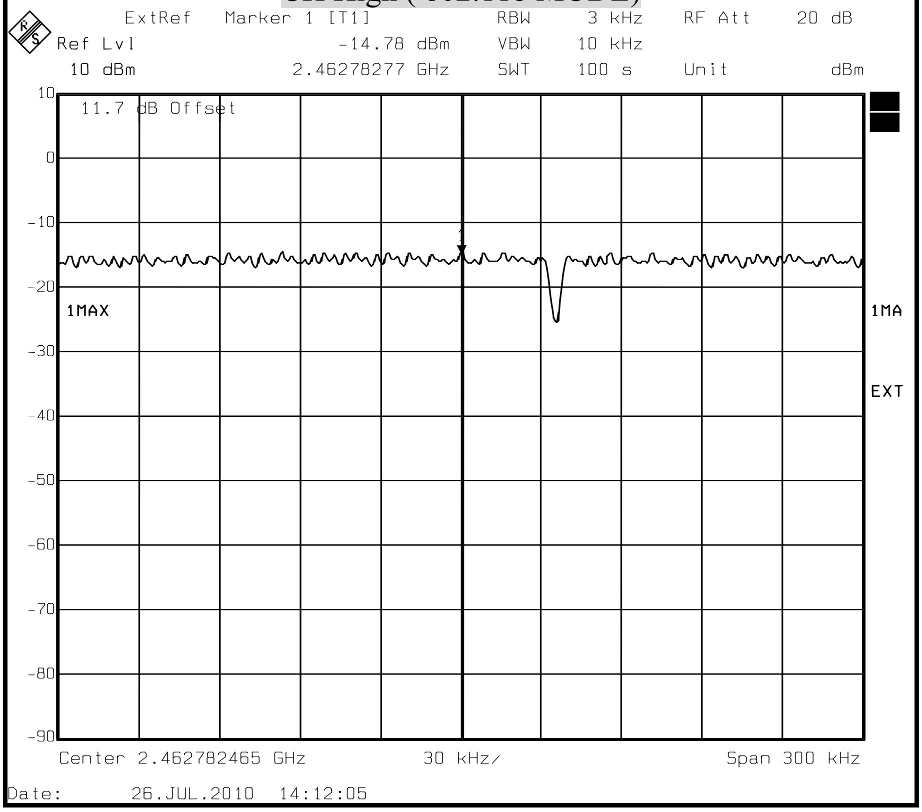
CH Low (802.11b MODE)



CH Mid (802.11b MODE)

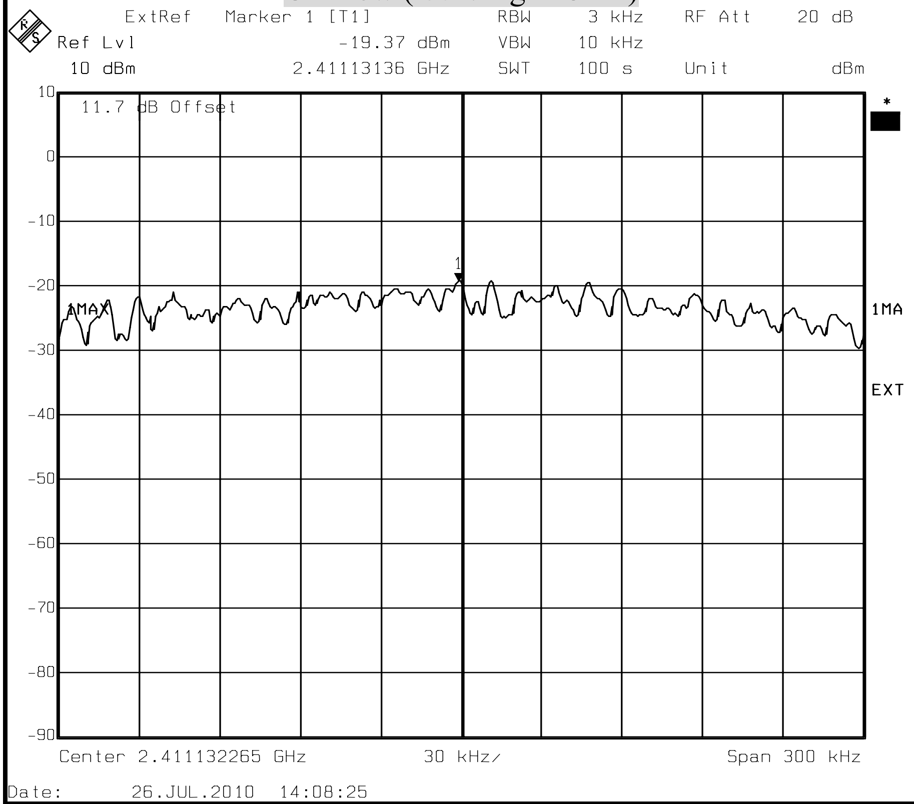


CH High (802.11b MODE)

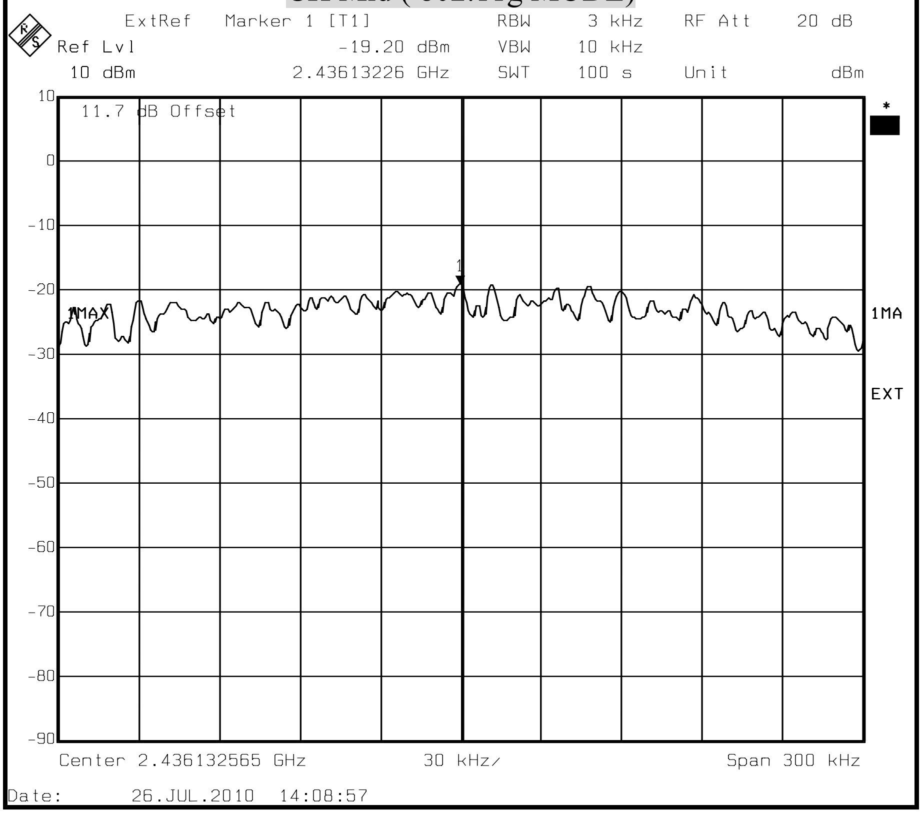


POWER SPECTRAL DENSITY (IEEE 802.11g MODE)

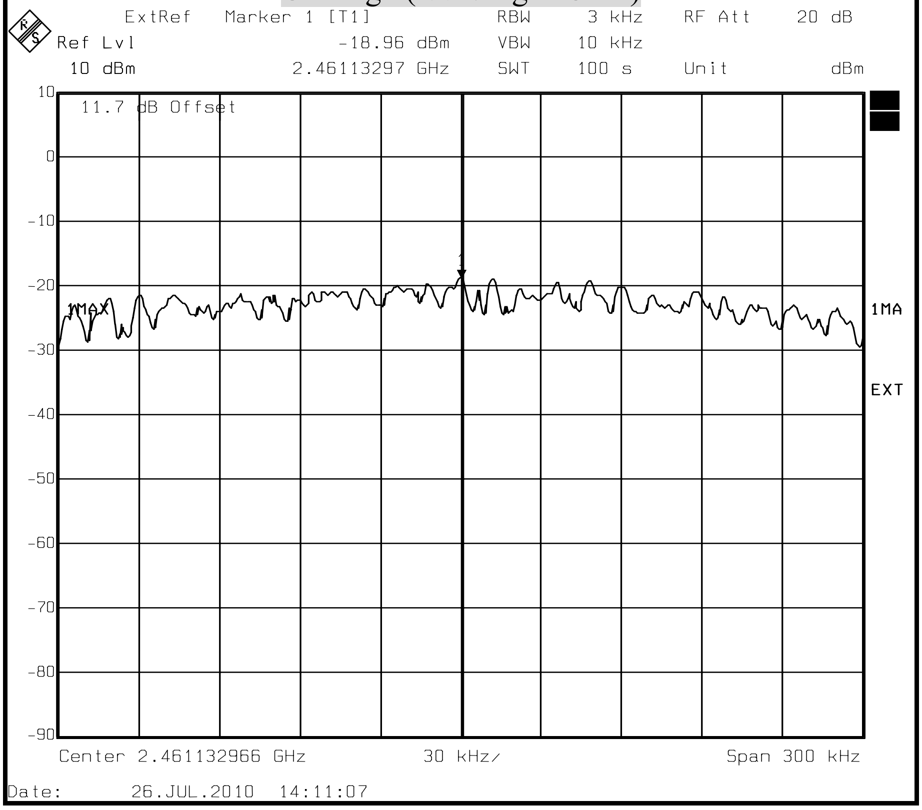
CH Low (802.11g MODE)



CH Mid (802.11g MODE)

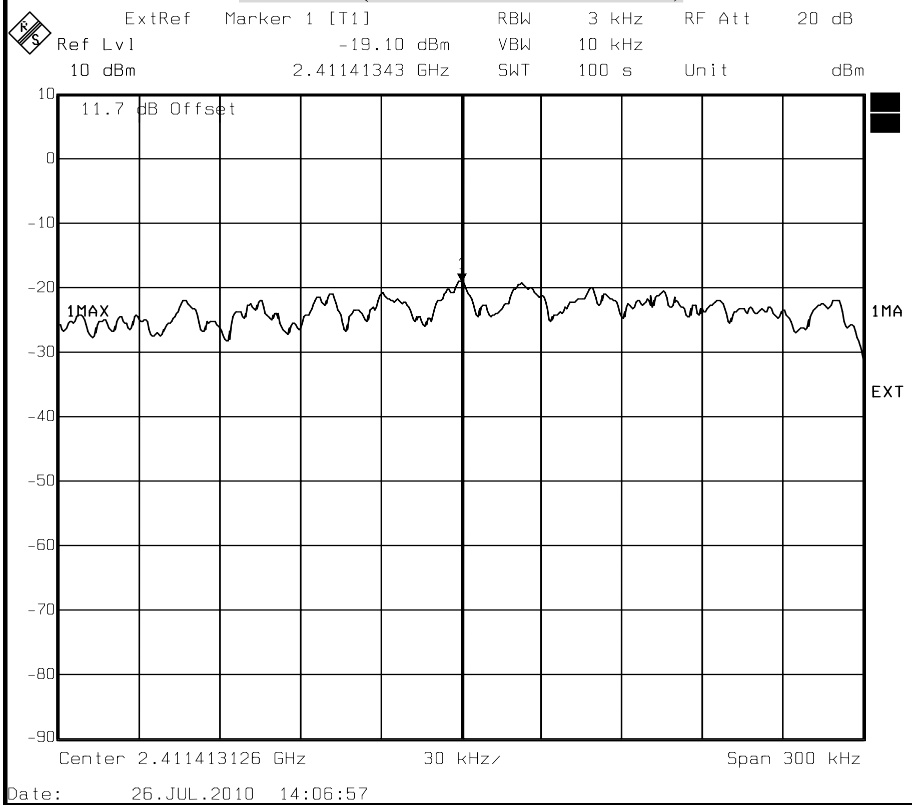


CH High (802.11g MODE)

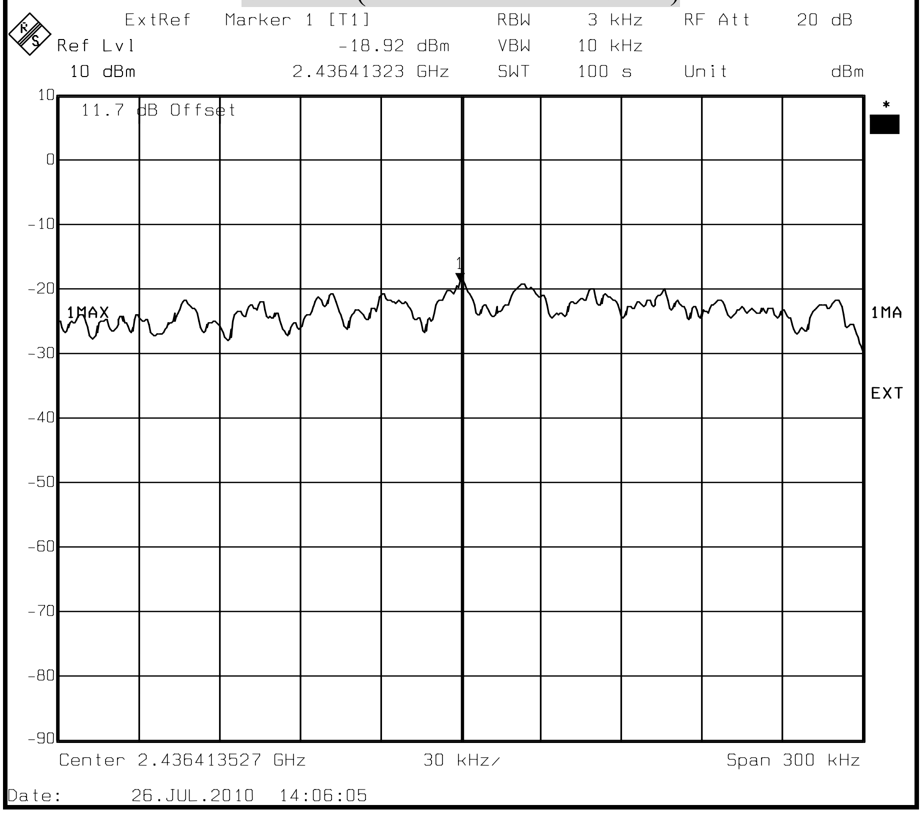


POWER SPECTRAL DENSITY (802.11n HT20 MODE)

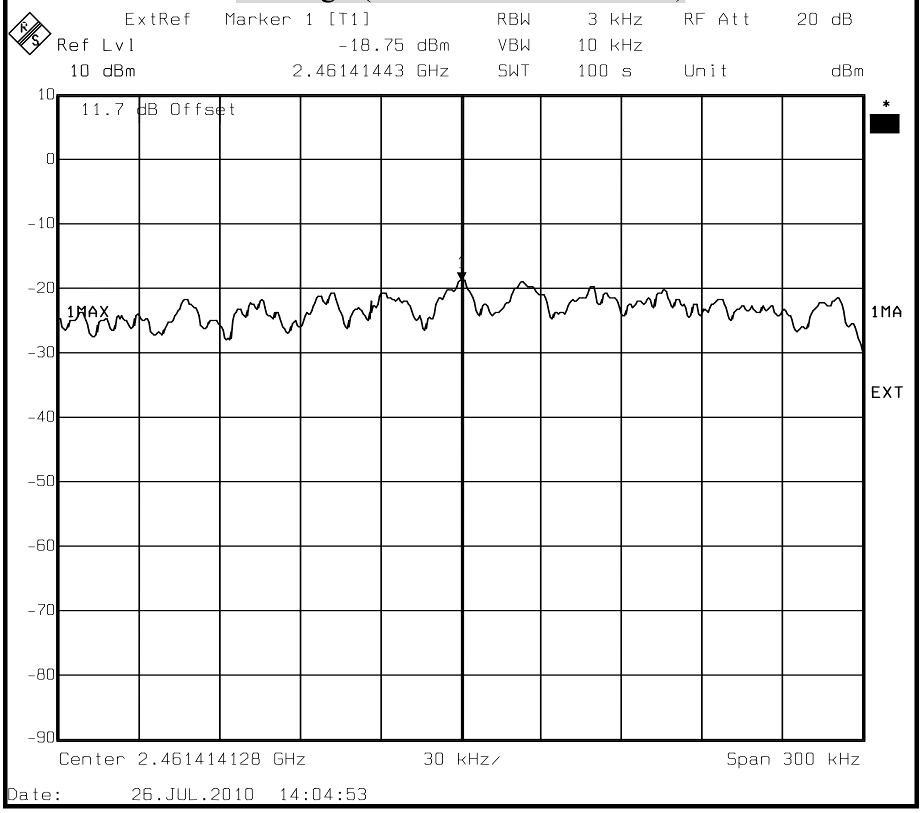
CH Low (802.11n HT20 MODE)



CH Mid (802.11n HT20 MODE)

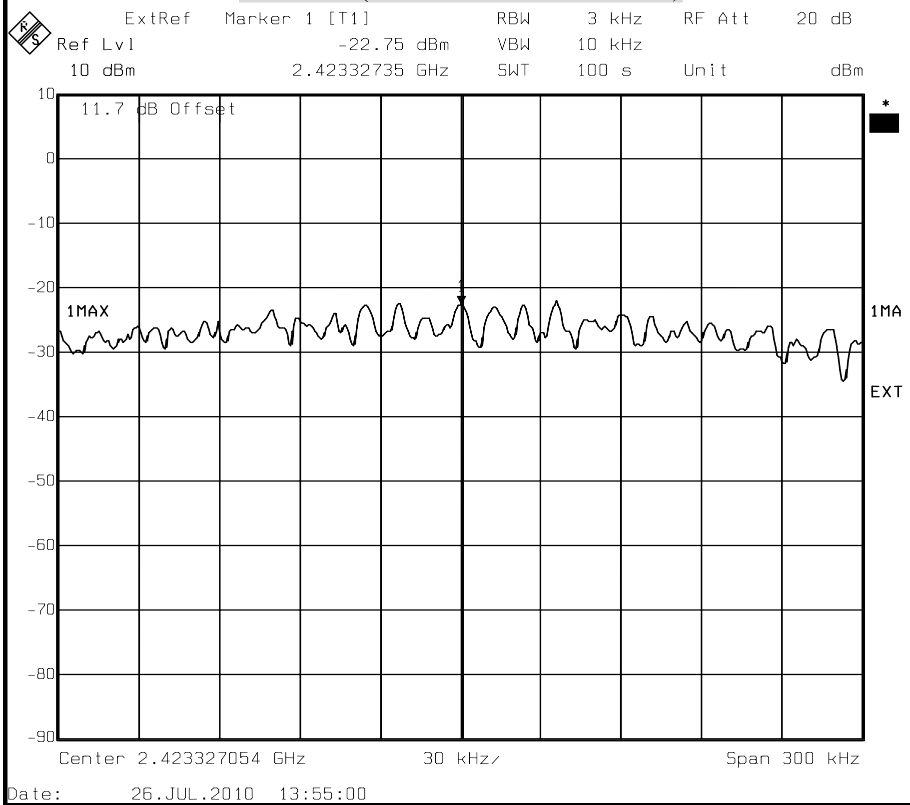


CH High (802.11n HT20 MODE)

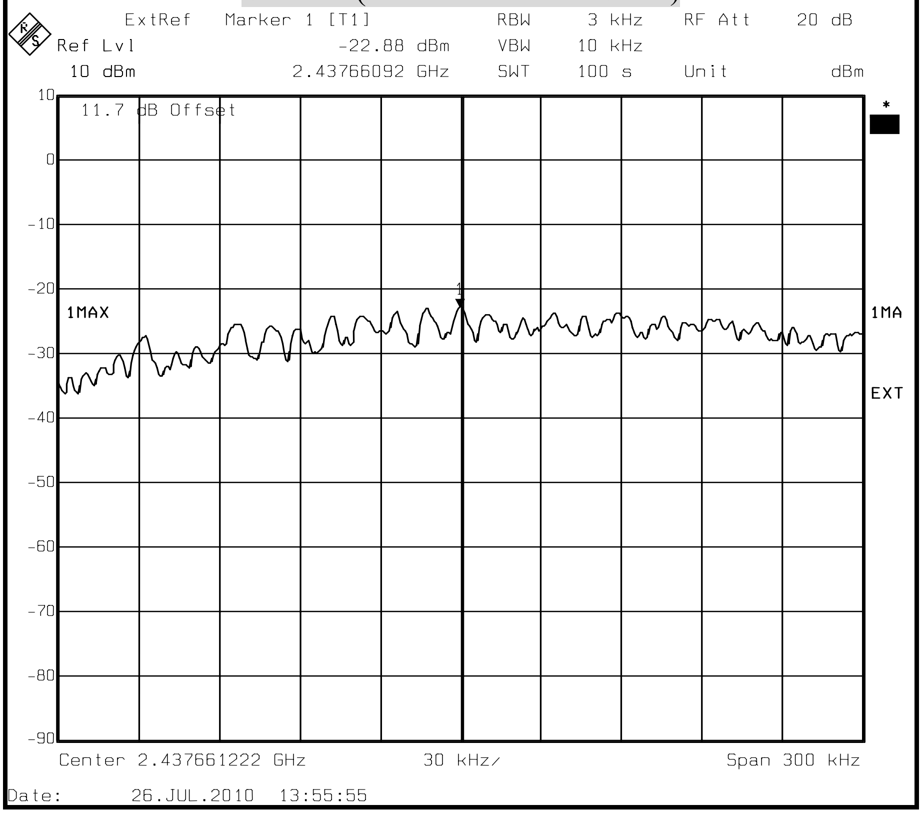


POWER SPECTRAL DENSITY (802.11n HT40 MODE)

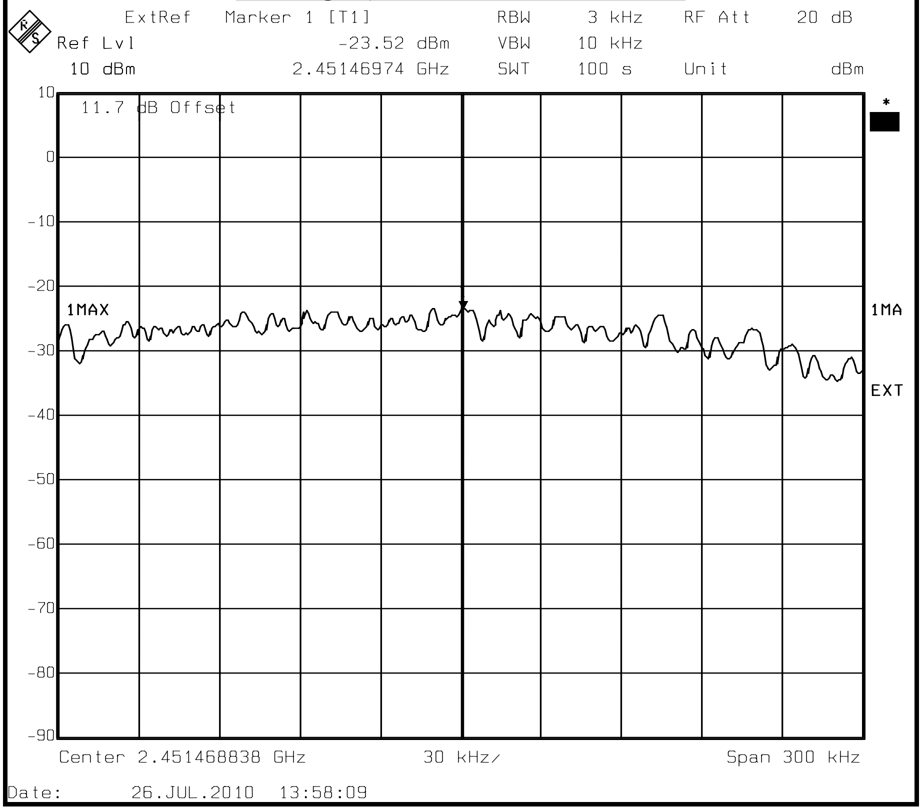
CH Low (802.11n HT40 MODE)



CH Mid (802.11n HT40 MODE)



CH High (802.11n HT40 MODE)



8.5 CONDUCTED SPURIOUS EMISSION

LIMITS

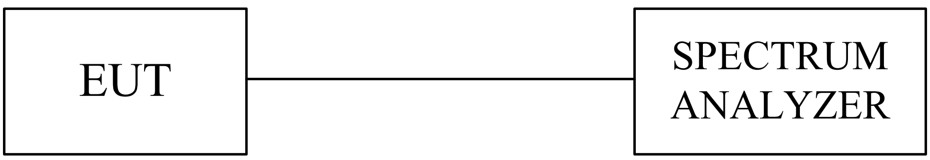
§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the and that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

TEST SETUP



TEST RESULTS

No non-compliance noted.

TEST DATA

IEEE 802.11b mode

Low

Frequency (MHz)	Offset (dB)	Reading (dBµV)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Pass/Fail
2412.0136	11.7	97.49	109.19	N/A	N/A	--
4804.1483	11.7	47.76	59.46	89.19	-29.73	PASS
6925.9919	11.7	45.28	56.98	89.19	-32.21	PASS
13768.9378	11.7	43.79	55.49	89.19	-33.70	PASS

Mid

Frequency (MHz)	Offset (dB)	Reading (dBµV)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Pass/Fail
2437.6532	11.7	97.62	109.32	N/A	N/A	--
4857.1943	11.7	47.45	59.15	89.32	-30.17	PASS
6979.038	11.7	44.00	55.7	89.32	-33.62	PASS
13609.7996	11.7	42.50	54.2	89.32	-35.12	PASS

High

Frequency (MHz)	Offset (dB)	Reading (dBµV)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Pass/Fail
2461.5411	11.7	97.39	109.09	N/A	N/A	--
4910.2404	11.7	45.82	57.52	89.09	-31.57	PASS
6979.038	11.7	45.57	57.27	89.09	-31.82	PASS
13928.0761	11.7	44.95	56.65	89.09	-32.44	PASS

IEEE 802.11g mode

Low

Frequency (MHz)	Offset (dB)	Reading (dBμV)	Level (dBμV)	Limit (dBμV)	Margin (dB)	Pass/Fail
2412.3551	11.7	90.65	102.35	N/A	N/A	--
5546.7935	11.7	43.07	54.77	82.35	-27.58	PASS
6925.9919	11.7	46.15	57.85	82.35	-24.50	PASS
14140.2605	11.7	44.06	55.76	82.35	-26.59	PASS

Mid

Frequency (MHz)	Offset (dB)	Reading (dBμV)	Level (dBμV)	Limit (dBμV)	Margin (dB)	Pass/Fail
24356.5416	11.7	90.72	102.42	N/A	N/A	--
6077.2545	11.7	44.19	55.89	82.42	-26.53	PASS
6925.9919	11.7	45.19	56.89	82.42	-25.53	PASS
13344.5691	11.7	44.17	55.87	82.42	-26.55	PASS

High

Frequency (MHz)	Offset (dB)	Reading (dBμV)	Level (dBμV)	Limit (dBμV)	Margin (dB)	Pass/Fail
2461.5411	11.7	91.21	102.91	N/A	N/A	--
5546.7935	11.7	44.07	55.77	82.91	-27.14	PASS
6979.038	11.7	45.68	57.38	82.91	-25.53	PASS
13344.5691	11.7	44.93	56.63	82.91	-26.28	PASS

IEEE 802.1120 mode

Low

Frequency (MHz)	Offset (dB)	Reading (dBµV)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Pass/Fail
2412.0366	11.7	89.73	101.43	N/A	N/A	--
5599.8396	11.7	42.75	54.45	81.43	-26.98	PASS
6979.038	11.7	45.98	57.68	81.43	-23.75	PASS
14140.2605	11.7	44.07	55.77	81.43	-25.66	PASS

Mid

Frequency (MHz)	Offset (dB)	Reading (dBµV)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Pass/Fail
2436.8596	11.7	90.19	101.89	N/A	N/A	--
5971.1623	11.7	43.83	55.53	81.89	-26.36	PASS
6660.7615	11.7	44.49	56.19	81.89	-25.70	PASS
13397.6152	11.7	44.64	56.34	81.89	-25.55	PASS

High

Frequency (MHz)	Offset (dB)	Reading (dBµV)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Pass/Fail
2462.5398	11.7	90.70	102.4	N/A	N/A	--
6077.2545	11.7	43.52	55.22	82.40	-27.18	PASS
6660.7615	11.7	44.59	56.29	82.40	-26.11	PASS
13821.9839	11.7	44.54	56.24	82.40	-26.16	PASS

IEEE 802.1140 mode

Low

Frequency (MHz)	Offset (dB)	Reading (dBμV)	Level (dBμV)	Limit (dBμV)	Margin (dB)	Pass/Fail
2422.3203	11.7	86.58	98.28	N/A	N/A	--
5652.8857	11.7	42.27	53.97	78.28	-24.31	PASS
6979.038	11.7	44.47	56.17	78.28	-22.11	PASS
13715.8917	11.7	43.95	55.65	78.28	-22.63	PASS

Mid

Frequency (MHz)	Offset (dB)	Reading (dBμV)	Level (dBμV)	Limit (dBμV)	Margin (dB)	Pass/Fail
2436.5103	11.7	87.14	98.84	N/A	N/A	--
1939.6593	11.7	41.95	53.65	78.84	-25.19	PASS
6660.7615	11.7	45.30	57	78.84	-21.84	PASS
13344.5691	11.7	44.18	55.88	78.84	-22.96	PASS

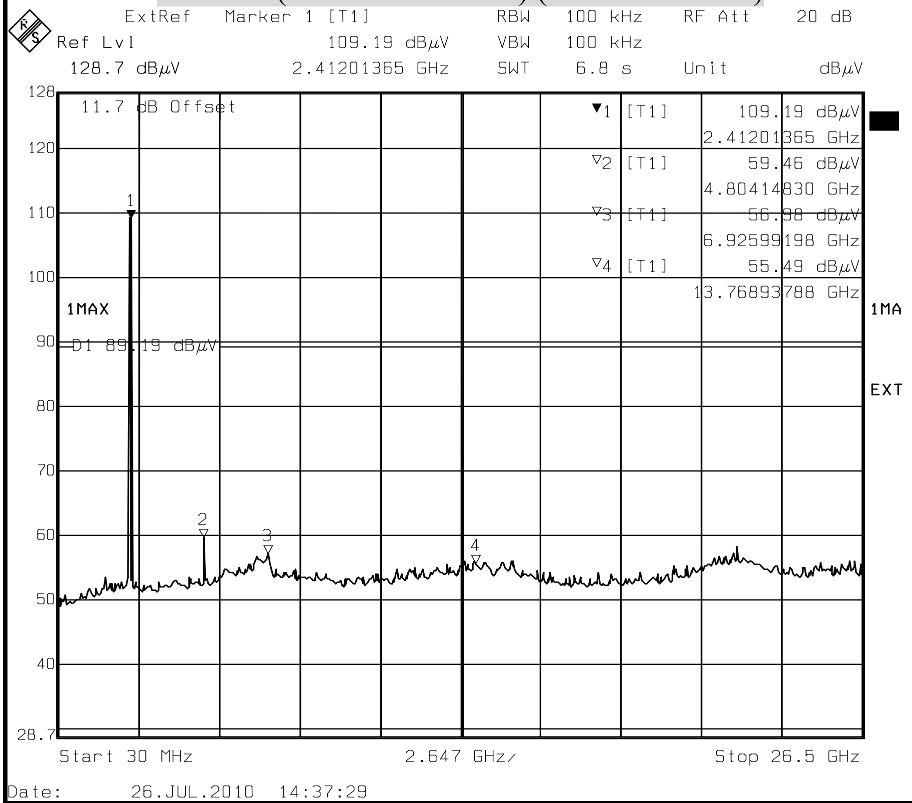
High

Frequency (MHz)	Offset (dB)	Reading (dBμV)	Level (dBμV)	Limit (dBμV)	Margin (dB)	Pass/Fail
2453.6513	11.7	86.82	98.52	N/A	N/A	--
5865.0701	11.7	43.94	55.64	78.52	-22.88	PASS
6925.9919	11.7	45.59	57.29	78.52	-21.23	PASS
13397.6152	11.7	44.22	55.92	78.52	-22.60	PASS

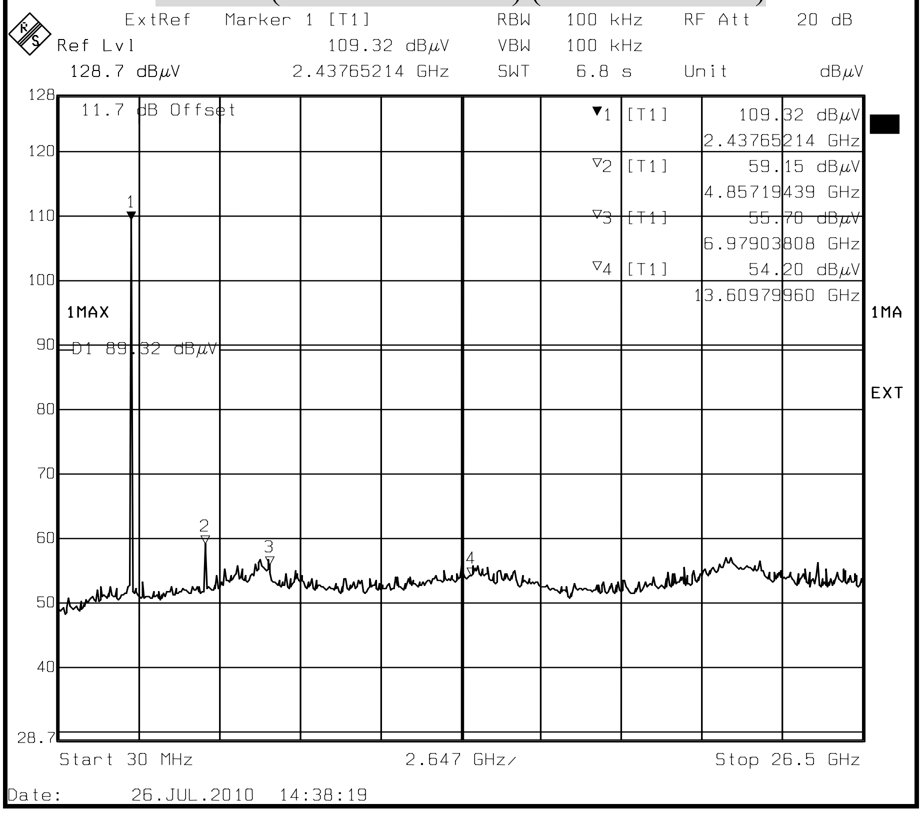
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11b MODE)

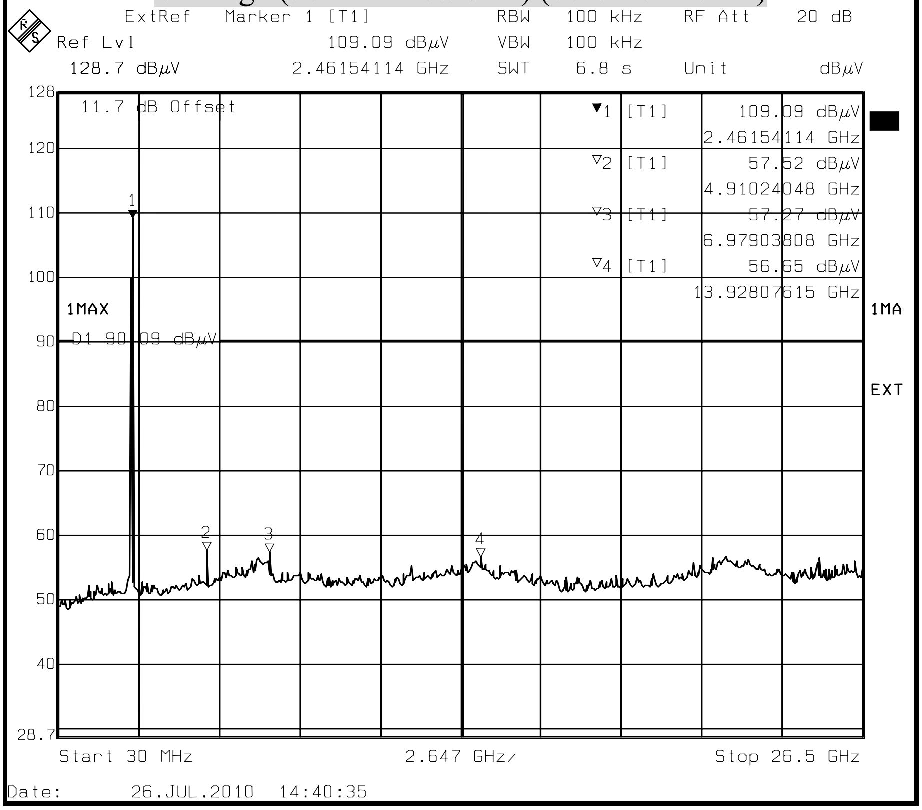
CH Low (30MHz~26.5GHz) (802.11b MODE)



CH Mid (30MHz~26.5GHz) (802.11b MODE)



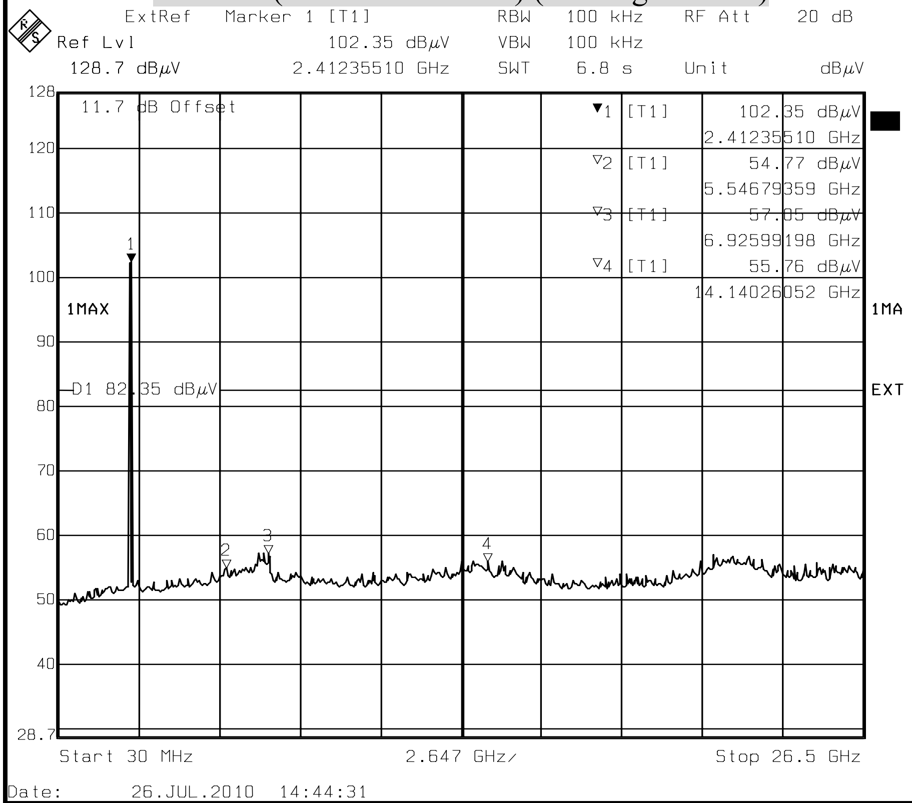
CH High (30MHz~26.5GHz) (802.11b MODE)



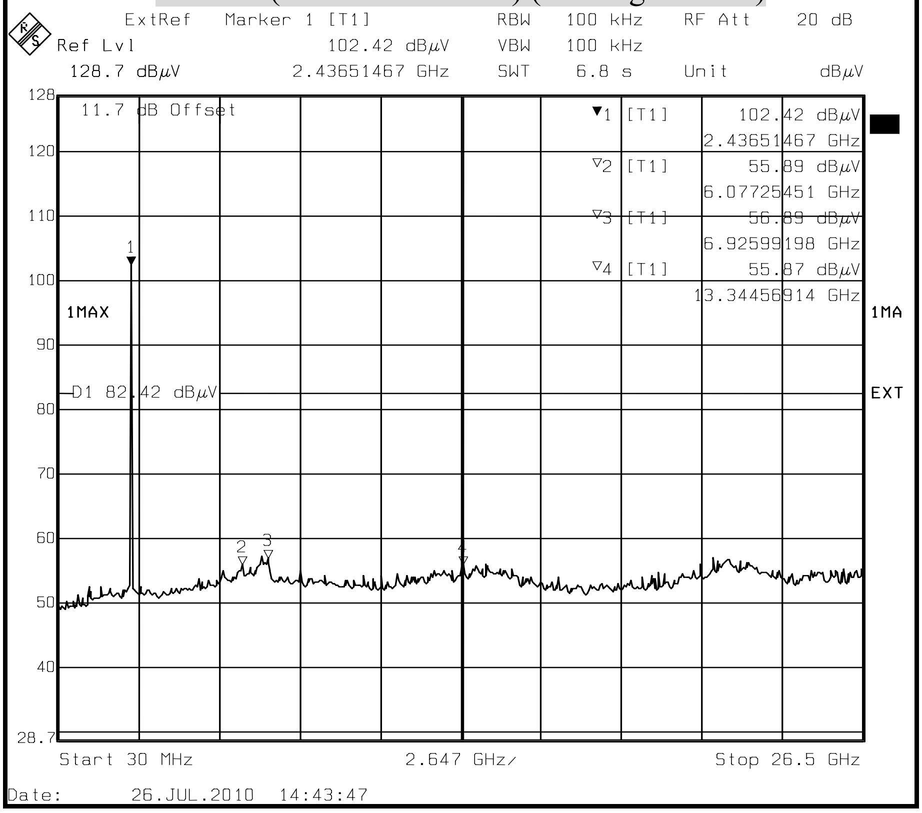
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(802.11g MODE)

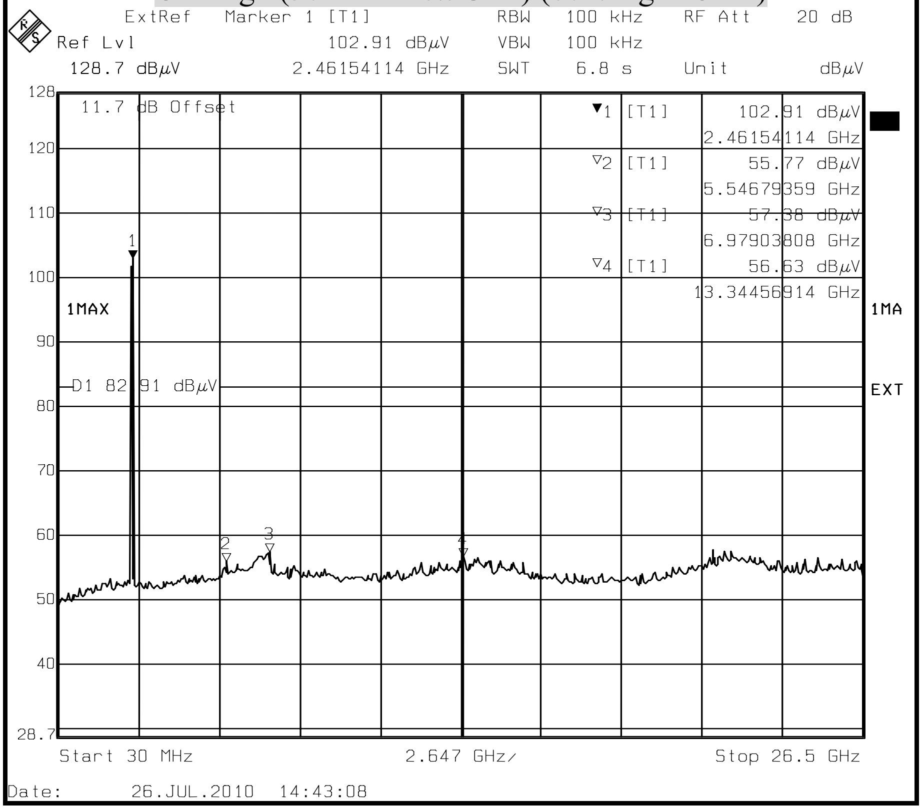
CH Low (30MHz~26.5GHz) (802.11g MODE)



CH Mid (30MHz~26.5GHz) (802.11g MODE)



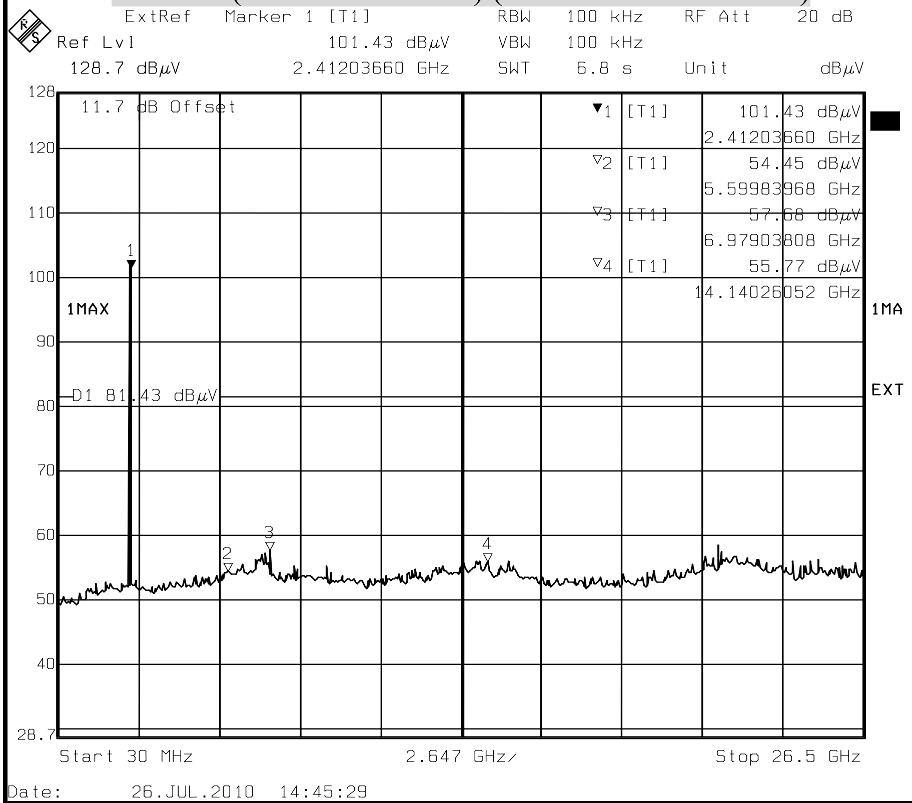
CH High (30MHz~26.5GHz) (802.11g MODE)



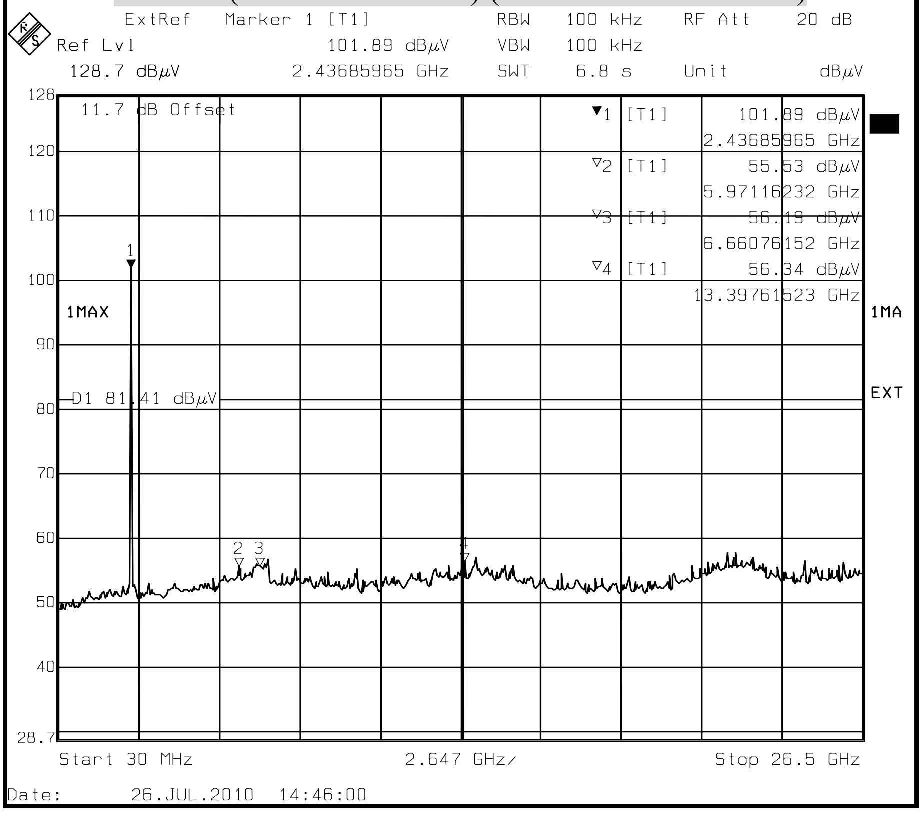
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(802.11n HT20 MODE)

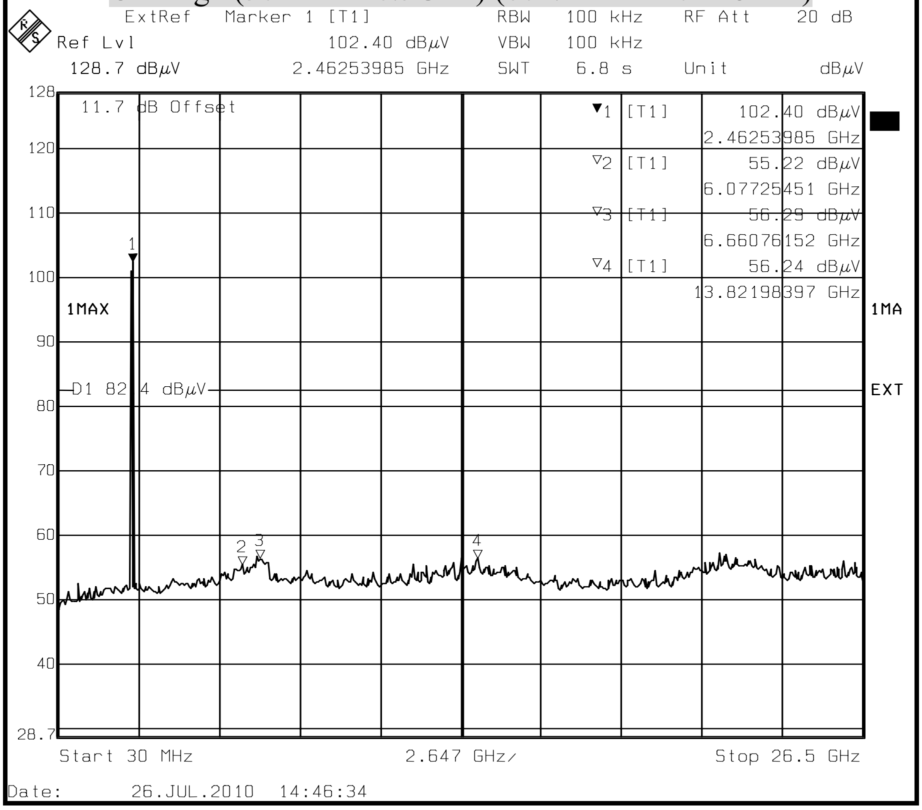
CH Low (30MHz~26.5GHz) (802.11n HT20 MODE)



CH Mid (30MHz~26.5GHz) (802.11n HT20 MODE)



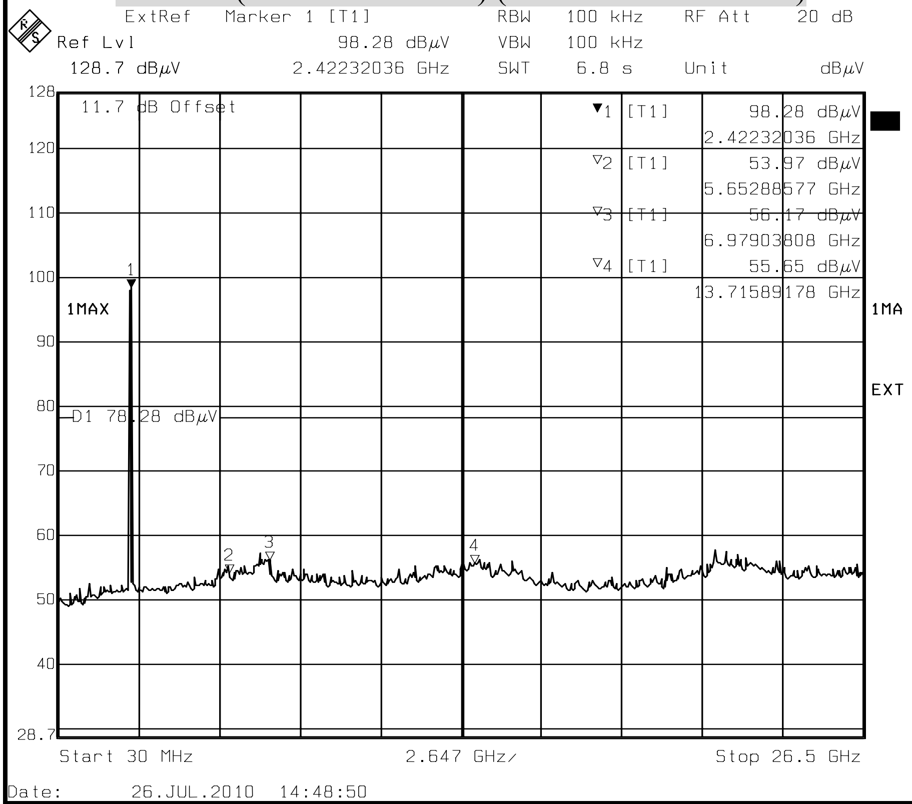
CH High (30MHz~26.5GHz) (802.11n HT20 MODE)



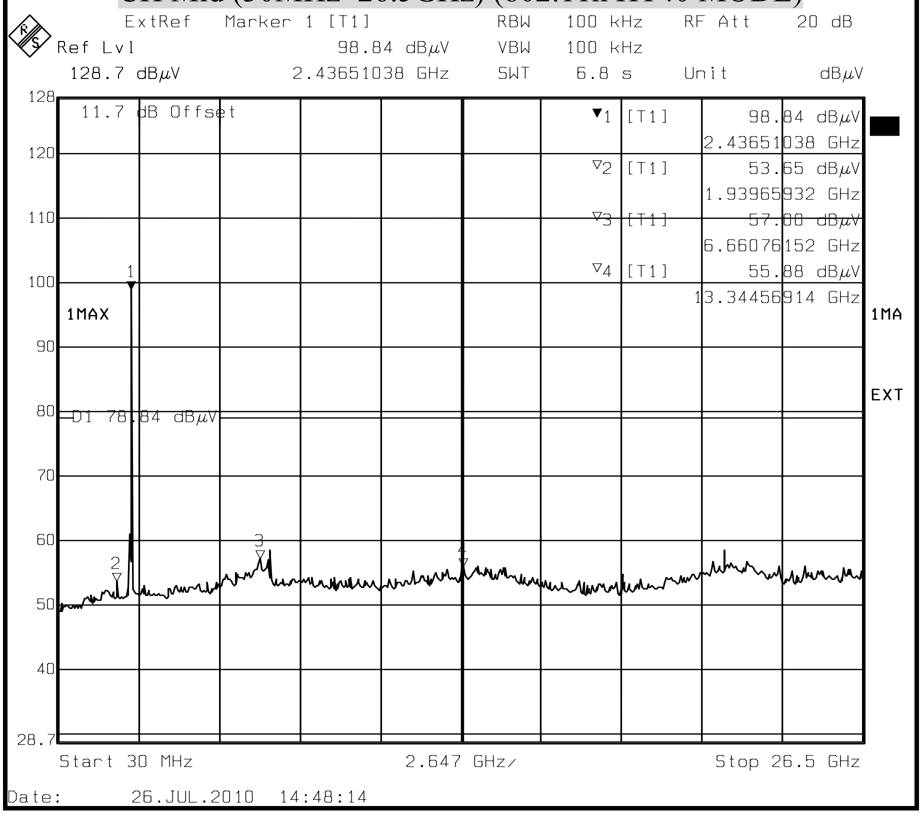
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(802.11n HT40 MODE)

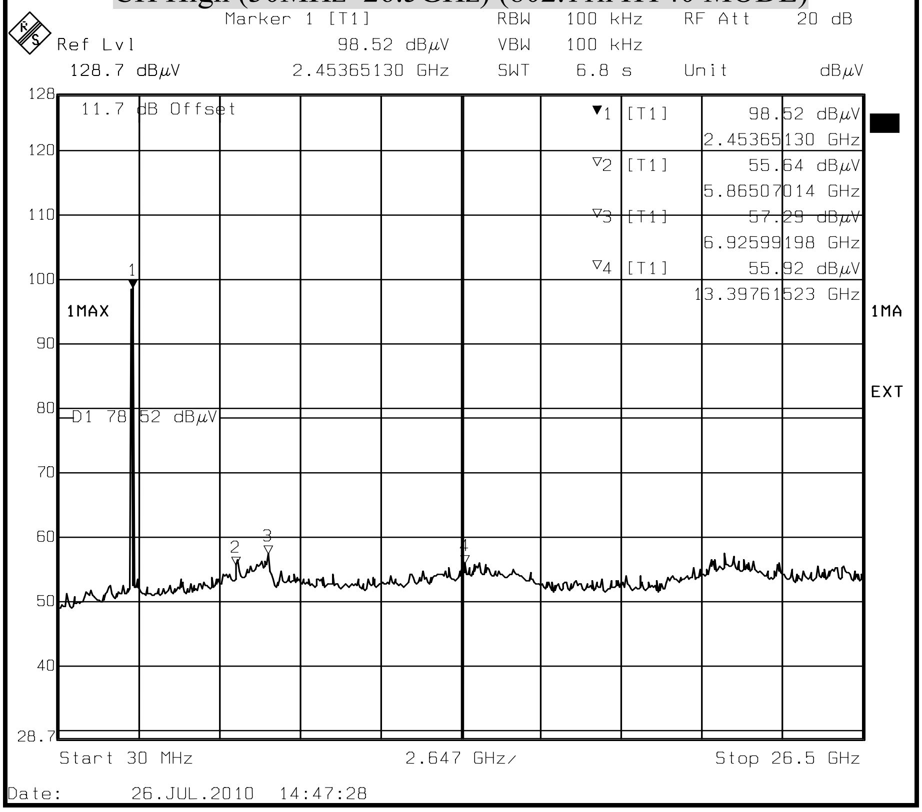
CH Low (30MHz~26.5GHz) (802.11n HT40 MODE)



CH Mid (30MHz~26.5GHz) (802.11n HT40 MODE)



CH High (30MHz~26.5GHz) (802.11n HT40 MODE)



8.6 RADIATED EMISSIONS

8.6.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS

LIMITS

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 -1710	10.6 -12.7
6.26775 - 6.26825	108 -121.94	1718.8 - 1722.2	13.25 -13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 – 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 -16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 -335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown is Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§ 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz, However, operation within these frequency bands is permitted under other sections of this Part, e-g, Sections 15.231 and 15.241.

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

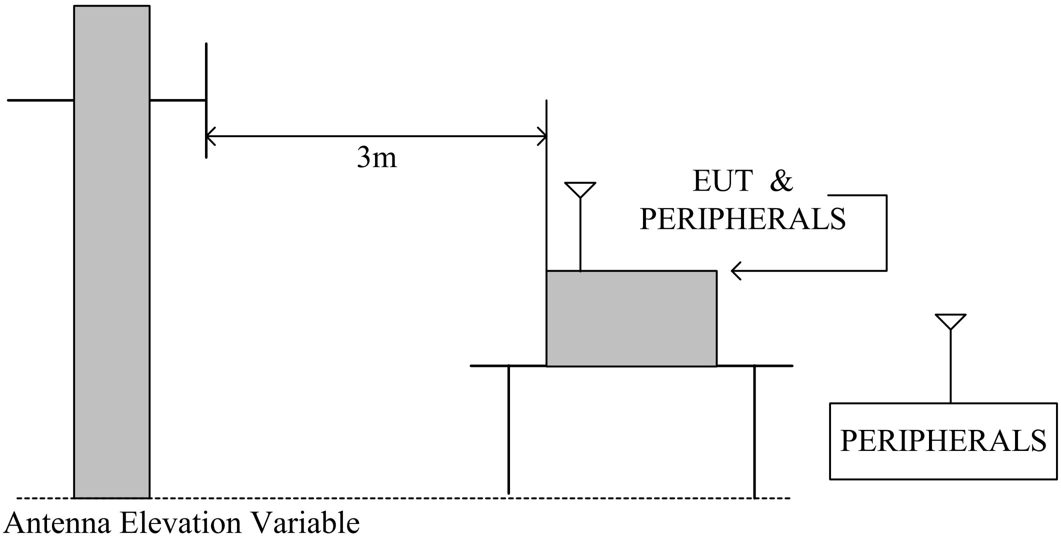
TEST EQUIPMENTS

The following test equipments are utilized in making the measurements contained in this report.

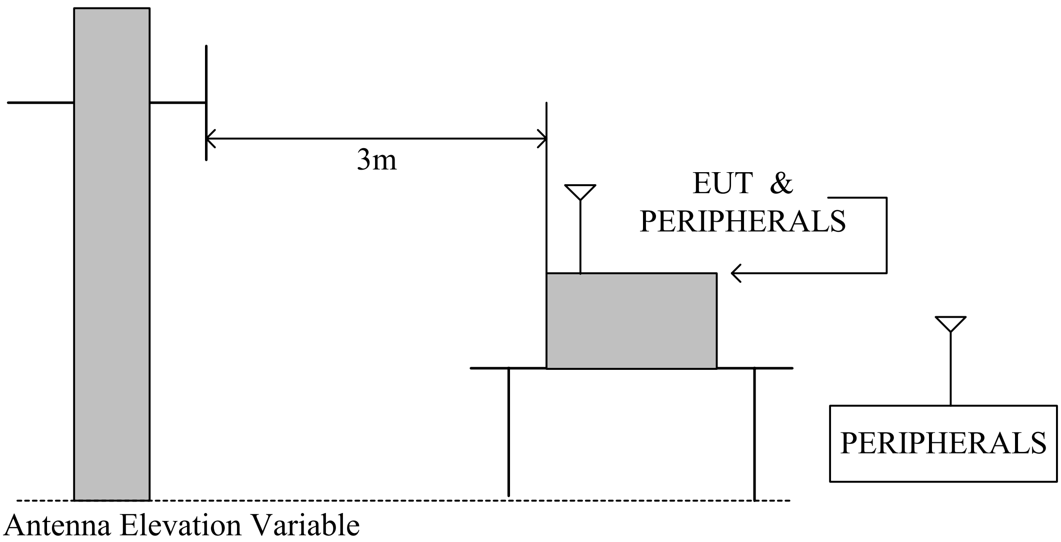
Open Area Test Site # 6				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
TYPE N COAXIAL CABLE	SUHNER	CHA9513	6	AUG. 31, 2010
BI-LOG Antenna	Sunol	JB1	A070506-2	NOV. 12, 2010
LOOP ANTENNA	EMCO	6502	8905-2356	JUN. 10, 2011
Pre-Amplifier	HP	8447F	2944A03817	AUG. 31, 2010
EMI Receiver	R&S	ESVS10	833206/012	MAY 10, 2011
RF Cable	SUHNER	SUCOFLEX104PEA	20520/4PEA	NOV. 10, 2010
Horn Antenna	Com-Power	AH-118	071032	DEC. 29, 2010
Spectrum Analyzer	R&S	FSEK 30	835253/002	JAN. 03, 2011
Pre-Amplifier	MITEQ	AFS44-00108650-42-10P-44	1205908	NOV. 10, 2010
Turn Table	Yo Chen	001	----------	N.C.R.
Antenna Tower	AR	TP1000A	309874	N.C.R.
Controller	CT	SC101	----------	N.C.R.
RF Swicth	E-INSTRUMENT TELH LTD	ERS-180A	EC1204141	N.C.R
Power Meter	Anritsu	ML2487A	6K00003888	MAY 11, 2011
Power Sensor	Anritsu	MA2491A	33265	MAY 10, 2011
AC Power Source	T-POWER	TFC-3020	N930010	N.C.R
Temp./Humidity Chamber	K.SON	THS-M1	242	AUG. 12, 2010
Signal Generator	HP	8673C	2938A00663	AUG. 25, 2010
DC Power Source	LOKO	DSP-5050	L1507009282	N.C.R

TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 to 1GHz.



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

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. White measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. White measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna

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 polarization 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 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 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

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

2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

4. **No emission is found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)**

TEST RESULTS

No non-compliance noted.

8.6.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

Product Name	11n Mini Router	Test Date	2010/7/26
Model	BR080n	Test By	Eric Yang
Test Mode	Normal operating / worst case	TEMP& Humidity	27.8℃, 58%

Horizontal

Frequency	**Meter Reading**	**Antenna Factor**	**Cable Loss**	**Emission Level**	**Limits**	**Margin**	**Detector Mode**
(MHz)	**(dBμV)**	**(dB/M)**	**(dB)**	**(dBμV/M)**	**(dB μ V/M)**	**(dB)**	**PK/QP**
125.00	15.20	12.42	1.84	29.45	43.50	-14.05	QP
156.27	21.33	13.41	2.15	36.88	43.50	-6.62	QP
200.00	17.60	13.32	2.45	33.37	43.50	-10.13	QP
313.21	20.90	14.46	3.42	38.78	46.00	-7.22	QP
468.73	21.10	17.58	4.53	43.21	46.00	-2.79	QP
781.25	10.50	21.73	5.94	38.17	46.00	-7.83	QP
N/A	-----	-----	-----	-----	-----	-----	-----

Vertical

Frequency	**Meter Reading**	**Antenna Factor**	**Cable Loss**	**Emission Level**	**Limits**	**Margin**	**Detector Mode**
(MHz)	**(dBμV)**	**(dB/M)**	**(dB)**	**(dBμV/M)**	**(dB μ V/M)**	**(dB)**	**PK/QP**
125.00	21.68	12.42	1.84	35.93	43.50	-7.57	QP
156.25	23.11	13.41	2.15	38.67	43.50	-4.84	QP
200.00	23.62	13.32	2.45	39.39	43.50	-4.11	QP
298.65	22.14	14.12	3.34	39.60	46.00	-6.40	QP
468.75	20.65	17.58	4.53	42.76	46.00	-3.24	QP
781.24	10.80	21.73	5.94	38.47	46.00	-7.53	QP
N/A	-----	-----	-----	-----	-----	-----	-----

REMARK: Emission level (dBμV/m) =Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).

8.6.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11b TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11b mode / CH Low				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4824.09	51.42	33.17	3.73	42.38	0.69	46.63	74.00	-27.37	P
*	4824.09	45.73	33.17	3.73	42.38	0.69	40.94	54.00	-13.06	A
	7235.92	51.11	38.61	4.67	41.84	1.43	53.98	74.00	-20.02	P
	7235.92	42.08	38.61	4.67	41.84	1.43	44.95	54.00	-9.05	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11b TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11b mode / CH Low				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4824.12	53.43	33.17	3.73	42.38	0.69	48.64	74.00	-25.36	P
*	4824.12	48.20	33.17	3.73	42.38	0.69	43.41	54.00	-10.59	A
	7235.89	52.44	38.61	4.67	41.84	1.43	55.31	74.00	-18.69	P
	7235.89	43.69	38.61	4.67	41.84	1.43	46.56	54.00	-7.44	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	**Test Date**	2010/7/25
Model	BR080n	**Test By**	Eric Yang
Test Mode	IEEE 802.11b TX (CH Middle)	**TEMP& Humidity**	26.7℃, 49%

Horizontal

	TX / IEEE 802.11b mode / CH Middle				**Measurement Distance at 3m Horizontal polarity**					
	Freq.	**Reading**	**AF**	Cable Loss	**Pre-amp**	**Filter**	**Level**	**Limit**	**Margin**	**Mark**
	(MHz)	**(dBμV)**	**(dB/m)**	**(dB)**	**(dB)**	**(dB)**	**(dBμV/m)**	**(dBμV/m)**	**(dB)**	**(P/Q/A)**
*	4873.89	51.47	33.32	3.74	42.43	0.71	46.81	74.00	-27.19	P
*	4873.89	46.38	33.32	3.74	42.43	0.71	41.72	54.00	-12.28	A
*	7311.48	52.05	38.83	4.71	41.72	1.60	55.47	74.00	-18.53	P
*	7311.48	40.89	38.83	4.71	41.72	1.60	44.31	54.00	-9.69	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11b TX (CH Middle)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11b mode / CH Middle				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4874.12	53.98	33.32	3.74	42.43	0.71	49.33	74.00	-24.67	P
*	4874.12	48.74	33.32	3.74	42.43	0.71	44.09	54.00	-9.91	A
*	7311.56	53.65	38.83	4.71	41.72	1.60	57.07	74.00	-16.93	P
*	7311.56	42.87	38.83	4.71	41.72	1.60	46.29	54.00	-7.71	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	**Test Date**	2010/7/25
Model	BR080n	**Test By**	Eric Yang
Test Mode	IEEE 802.11b TX (CH High)	**TEMP& Humidity**	26.7℃, 49%

Horizontal

	TX / IEEE 802.11b mode / CH High				**Measurement Distance at 3m Horizontal polarity**					
	Freq.	**Reading**	**AF**	Cable Loss	**Pre-amp**	**Filter**	**Level**	**Limit**	**Margin**	**Mark**
	(MHz)	**(dBµV)**	**(dB/m)**	**(dB)**	**(dB)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**	**(P/Q/A)**
*	4924.19	51.42	33.47	3.76	42.48	0.73	46.90	74.00	-27.10	P
*	4924.19	45.73	33.47	3.76	42.48	0.73	41.20	54.00	-12.80	A
*	7385.42	50.24	39.06	4.75	41.61	1.75	54.19	74.00	-19.81	P
*	7385.42	39.98	39.06	4.75	41.61	1.75	43.93	54.00	-10.07	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11b TX (CH High)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11b mode / CH High				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4924.23	53.62	33.47	3.76	42.48	0.73	49.10	74.00	-24.90	P
*	4924.23	47.71	33.47	3.76	42.48	0.73	43.19	54.00	-10.81	A
*	7385.54	51.44	39.06	4.75	41.61	1.76	55.39	74.00	-18.61	P
*	7385.54	41.68	39.06	4.75	41.61	1.76	45.63	54.00	-8.37	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11g TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11g mode / CH Low				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4824.16	51.42	33.17	3.73	42.38	0.69	46.63	74.00	-27.37	P
*	4824.16	42.36	33.17	3.73	42.38	0.69	37.57	54.00	-16.43	A
	7235.74	50.24	38.61	4.67	41.84	1.43	53.11	74.00	-20.89	P
	7235.74	39.86	38.61	4.67	41.84	1.43	42.73	54.00	-11.27	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11g TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11g mode / CH Low				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4823.97	53.24	33.17	3.73	42.38	0.69	48.45	74.00	-25.55	P
*	4823.97	44.65	33.17	3.73	42.38	0.69	39.86	54.00	-14.14	A
	7235.86	52.02	38.61	4.67	41.84	1.43	54.89	74.00	-19.11	P
	7235.86	41.87	38.61	4.67	41.84	1.43	44.74	54.00	-9.26	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11g TX (CH Middle)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11g mode / CH Middle				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4874.16	50.42	33.32	3.74	42.43	0.71	45.77	74.00	-28.23	P
*	4874.16	41.68	33.32	3.74	42.43	0.71	37.03	54.00	-16.97	A
*	7312.02	51.42	38.84	4.71	41.72	1.60	54.84	74.00	-19.16	P
*	7312.02	39.46	38.84	4.71	41.72	1.60	42.88	54.00	-11.12	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11g TX (CH Middle)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11g mode / CH Middle				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4874.27	51.42	33.32	3.74	42.43	0.71	46.77	74.00	-27.23	P
*	4874.27	43.26	33.32	3.74	42.43	0.71	38.61	54.00	-15.39	A
*	7312.06	52.85	38.84	4.71	41.72	1.60	56.27	74.00	-17.73	P
*	7312.06	40.87	38.84	4.71	41.72	1.60	44.29	54.00	-9.71	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11g TX (CH High)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11g mode / CH High				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4923.97	50.65	33.47	3.76	42.48	0.73	46.13	74.00	-27.87	P
*	4923.97	40.98	33.47	3.76	42.48	0.73	36.46	54.00	-17.54	A
*	7385.16	50.98	39.06	4.74	41.61	1.75	54.93	74.00	-19.07	P
*	7385.16	39.88	39.06	4.74	41.61	1.75	43.83	54.00	-10.17	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11g TX (CH High)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11g mode / CH High				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4924.19	52.65	33.47	3.76	42.48	0.73	48.13	74.00	-25.87	P
*	4924.19	43.25	33.47	3.76	42.48	0.73	38.73	54.00	-15.27	A
*	7385.22	51.41	39.06	4.74	41.61	1.75	55.36	74.00	-18.64	P
*	7385.22	40.87	39.06	4.74	41.61	1.75	44.82	54.00	-9.18	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11n HT20 mode / CH Low				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4824.26	50.65	33.17	3.73	42.38	0.69	45.86	74.00	-28.14	P
*	4824.26	38.97	33.17	3.73	42.38	0.69	34.18	54.00	-19.82	A
	7235.94	50.36	38.61	4.67	41.84	1.43	53.23	74.00	-20.77	P
	7235.94	38.26	38.61	4.67	41.84	1.43	41.13	54.00	-12.87	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11n HT20 mode / CH Low				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4824.08	52.41	33.17	3.73	42.38	0.69	47.62	74.00	-26.38	P
*	4824.08	43.25	33.17	3.73	42.38	0.69	38.46	54.00	-15.54	A
	7235.69	51.74	38.61	4.67	41.84	1.43	54.61	74.00	-19.39	P
	7235.69	40.68	38.61	4.67	41.84	1.43	43.55	54.00	-10.45	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11n HT20 mode / CH Middle				Measurement Distance at 3m			Horizontal polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4874.79	51.24	33.32	3.74	42.43	0.71	46.59	74.00	-27.41	P
*	4874.79	39.87	33.32	3.74	42.43	0.71	35.22	54.00	-18.78	A
*	7312.09	51.22	38.84	4.71	41.72	1.60	54.64	74.00	-19.36	P
*	7312.09	38.97	38.84	4.71	41.72	1.60	42.39	54.00	-11.61	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	**Test Date**	2010/7/25
Model	BR080n	**Test By**	Eric Yang
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	**TEMP& Humidity**	26.7℃, 49%

Vertical

	TX / IEEE 802.11n HT20 mode / CH Middle				**Measurement Distance at 3m Vertical polarity**					
	Freq.	**Reading**	**AF**	**Cable Loss**	**Pre-amp**	**Filter**	**Level**	**Limit**	**Margin**	**Mark**
	(MHz)	**(dBµV)**	**(dB/m)**	**(dB)**	**(dB)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**	**(P/Q/A)**
*	4873.82	52.42	33.32	3.74	42.43	0.71	47.76	74.00	-26.24	P
*	4873.82	41.68	33.32	3.74	42.43	0.71	37.02	54.00	-16.98	A
*	7312.16	52.06	38.84	4.71	41.72	1.60	55.48	74.00	-18.52	P
*	7312.16	40.25	38.84	4.71	41.72	1.60	43.67	54.00	-10.33	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11n HT20 mode / CH High				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4924.03	50.65	33.47	3.76	42.48	0.73	46.13	74.00	-27.87	P
*	4924.03	38.69	33.47	3.76	42.48	0.73	34.17	54.00	-19.83	A
*	7385.16	51.42	39.06	4.74	41.61	1.75	55.37	74.00	-18.63	P
*	7385.16	38.96	39.06	4.74	41.61	1.75	42.91	54.00	-11.09	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11n HT20 mode / CH High				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4924.17	52.24	33.47	3.76	42.48	0.73	47.72	74.00	-26.28	P
*	4924.17	41.36	33.47	3.76	42.48	0.73	36.84	54.00	-17.16	A
*	7385.26	52.33	39.06	4.74	41.61	1.75	56.28	74.00	-17.72	P
*	7385.26	40.26	39.06	4.74	41.61	1.75	44.21	54.00	-9.79	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT40 TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11n HT40 mode / CH Low				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4844.37	51.42	33.23	3.74	42.40	0.70	46.69	74.00	-27.31	P
*	4844.37	38.69	33.23	3.74	42.40	0.70	33.96	54.00	-20.04	A
*	7265.86	50.22	38.70	4.69	41.80	1.50	53.31	74.00	-20.69	P
*	7265.86	37.69	38.70	4.69	41.80	1.50	40.78	54.00	-13.22	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT40 TX (CH Low)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11n HT40 mode / CH Low				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4843.86	52.87	33.23	3.74	42.40	0.70	48.13	74.00	-25.87	P
*	4843.86	40.36	33.23	3.74	42.40	0.70	35.62	54.00	-18.38	A
*	7264.83	52.14	38.69	4.69	41.80	1.50	55.22	74.00	-18.78	P
*	7264.83	40.66	38.69	4.69	41.80	1.50	43.74	54.00	-10.26	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT40 TX (CH Middle)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11n HT40 mode / CH Middle				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4874.25	50.42	33.32	3.74	42.43	0.71	45.77	74.00	-28.23	P
*	4874.25	38.65	33.32	3.74	42.43	0.71	34.00	54.00	-20.00	A
*	7311.29	51.22	38.83	4.71	41.72	1.60	54.64	74.00	-19.36	P
*	7311.29	39.87	38.83	4.71	41.72	1.60	43.29	54.00	-10.71	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT40 TX (CH Middle)	TEMP& Humidity	26.7℃, 49%

Vertical

	TX / IEEE 802.11n HT40 mode / CH Middle				Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	4874.05	52.14	33.32	3.74	42.43	0.71	47.48	74.00	-26.52	P
*	4874.05	40.65	33.32	3.74	42.43	0.71	35.99	54.00	-18.01	A
*	7311.26	53.24	38.83	4.71	41.72	1.60	56.65	74.00	-17.35	P
*	7311.26	41.77	38.83	4.71	41.72	1.60	45.18	54.00	-8.82	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	Test Date	2010/7/25
Model	BR080n	Test By	Eric Yang
Test Mode	IEEE 802.11n HT40 TX (CH High)	TEMP& Humidity	26.7℃, 49%

Horizontal

	TX / IEEE 802.11n HT40 mode / CH High				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	4903.89	51.24	33.41	3.75	42.46	0.72	46.66	74.00	-27.34	P
*	4903.89	40.36	33.41	3.75	42.46	0.72	35.78	54.00	-18.22	A
*	7355.86	50.25	38.97	4.73	41.65	1.69	53.99	74.00	-20.01	P
*	7355.86	38.77	38.97	4.73	41.65	1.69	42.51	54.00	-11.49	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

Product Name	11n Mini Router	**Test Date**	2010/7/25
Model	BR080n	**Test By**	Eric Yang
Test Mode	IEEE 802.11n HT40 TX (CH High)	**TEMP& Humidity**	26.7℃, 49%

Vertical

	TX / IEEE 802.11n HT40 mode / CH High				**Measurement Distance at 3m Vertical polarity**					
	Freq.	**Reading**	**AF**	**Cable Loss**	**Pre-amp**	**Filter**	**Level**	**Limit**	**Margin**	**Mark**
	(MHz)	**(dBµV)**	**(dB/m)**	**(dB)**	**(dB)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**	**(P/Q/A)**
*	4904.56	52.87	33.41	3.75	42.46	0.72	48.30	74.00	-25.70	P
*	4904.56	41.76	33.41	3.75	42.46	0.72	37.19	54.00	-16.81	A
*	7355.82	52.11	38.97	4.73	41.65	1.69	55.84	74.00	-18.16	P
*	7355.82	40.68	38.97	4.73	41.65	1.69	44.41	54.00	-9.59	A
	N/A	------	------	------	------	------	------	------	------	P
	N/A	------	------	------	------	------	------	------	------	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

8.6.4 RESTRICTED BAND EDGES

IEEE 802.11b mode

Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
LOW	H	2390.00	57.53	74	-16.47	Peak
	H	2390.00	45.28	54	-8.72	Average
	V	2390.00	57.48	74	-16.52	Peak
	V	2390.00	45.91	54	-8.09	Average
HIGH	H	2483.50	57.66	74	-16.34	Peak
	H	2483.50	45.01	54	-8.99	Average
	V	2483.50	59.45	74	-14.55	Peak
	V	2483.50	46.01	54	-7.99	Average

IEEE 802.11g mode

Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
LOW	H	2390.00	57.87	74	-16.13	Peak
	H	2390.00	45.2	54	-8.80	Average
	V	2390.00	59.29	74	-14.71	Peak
	V	2390.00	45.96	54	-8.04	Average
HIGH	H	2483.50	59.25	74	-14.75	Peak
	H	2483.50	44.97	54	-9.03	Average
	V	2483.50	59.31	74	-14.69	Peak
	V	2483.50	46.02	54	-7.98	Average

IEEE 802.11n HT20 mode

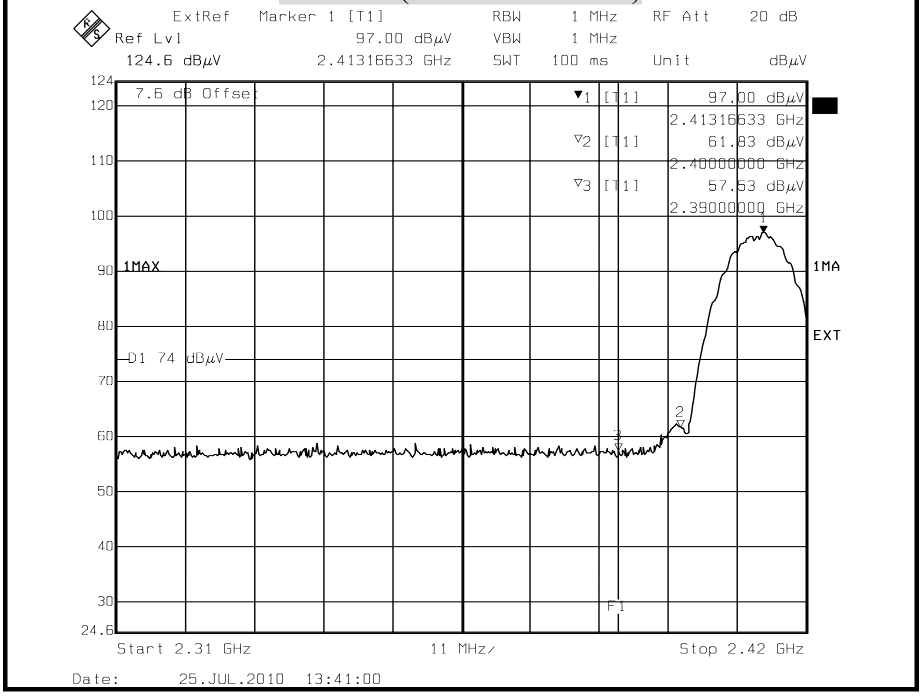
Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
LOW	H	2390.00	57.09	74	-16.91	Peak
	H	2390.00	45.24	54	-8.76	Average
	V	2390.00	61.07	74	-12.93	Peak
	V	2390.00	46.29	54	-7.71	Average
HIGH	H	2483.50	57.52	74	-16.48	Peak
	H	2483.50	44.89	54	-9.11	Average
	V	2483.50	61.43	74	-12.57	Peak
	V	2483.50	46.09	54	-7.91	Average

IEEE 802.11n HT40 mode

Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
LOW	H	2390.00	58.5	74	-15.50	Peak
	H	2390.00	45.22	54	-8.78	Average
	V	2390.00	61.33	74	-12.67	Peak
	V	2390.00	47.07	54	-6.93	Average
HIGH	H	2483.50	57.64	74	-16.36	Peak
	H	2483.50	44.93	54	-9.07	Average
	V	2483.50	60.12	74	-13.88	Peak
	V	2483.50	46.61	54	-7.39	Average

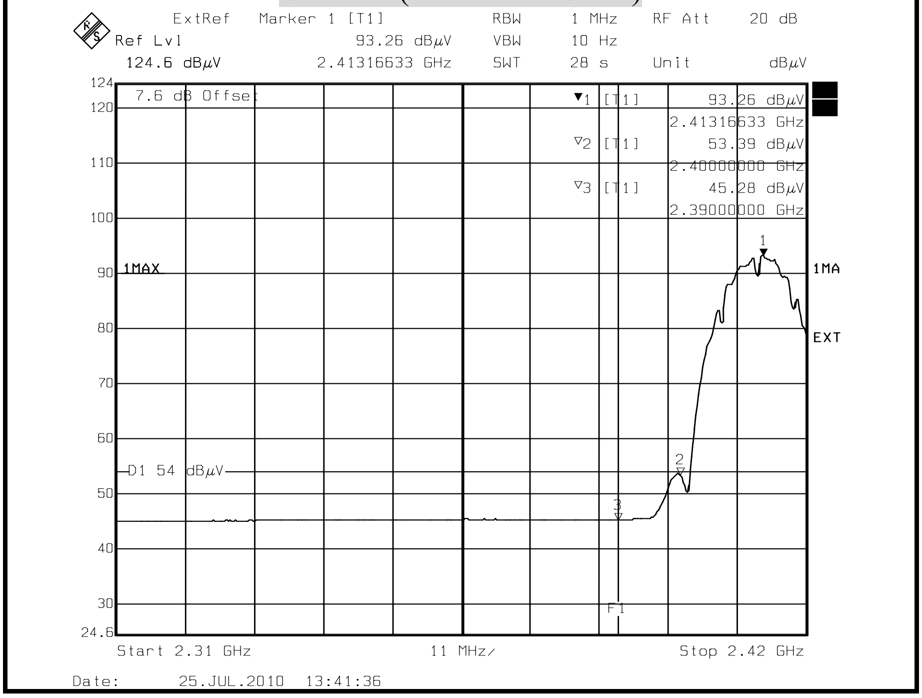
Detector mode : Peak **Polarity : Horizontal**

CH Low (802.11b MODE)



Detector mode : Average **Polarity : Horizontal**

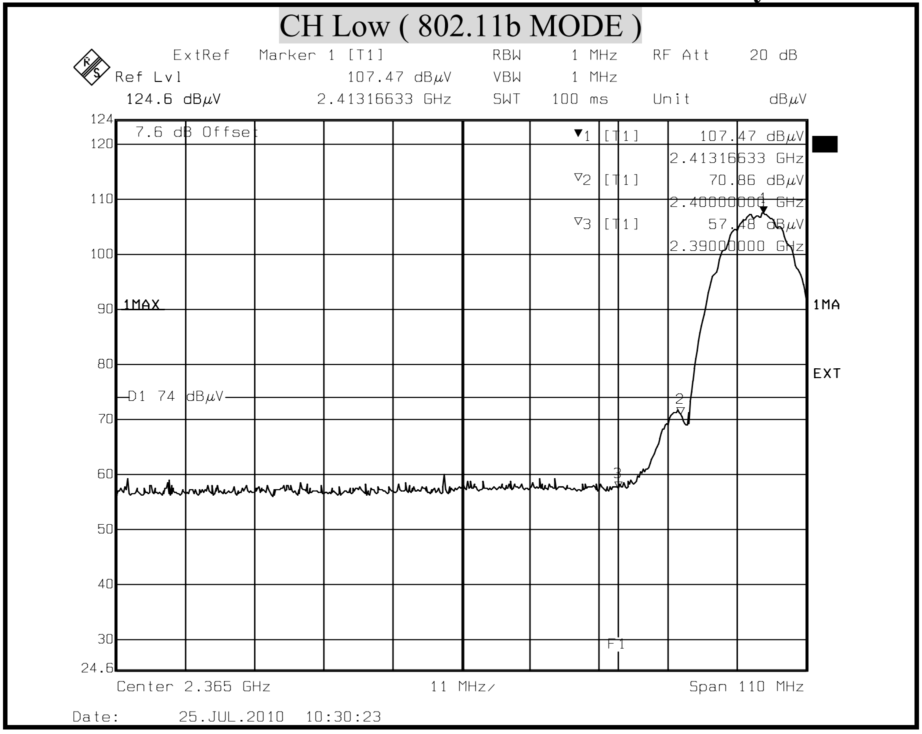
CH Low (802.11b MODE)



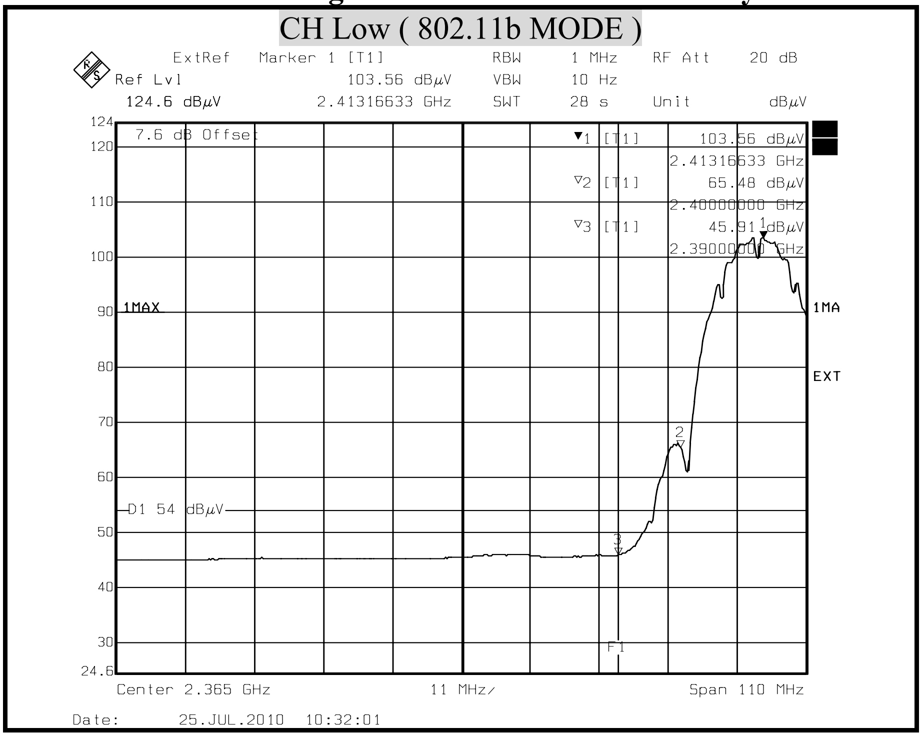
Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

Detector mode : Peak **Polarity : Vertical**



Detector mode : Average **Polarity : Vertical**

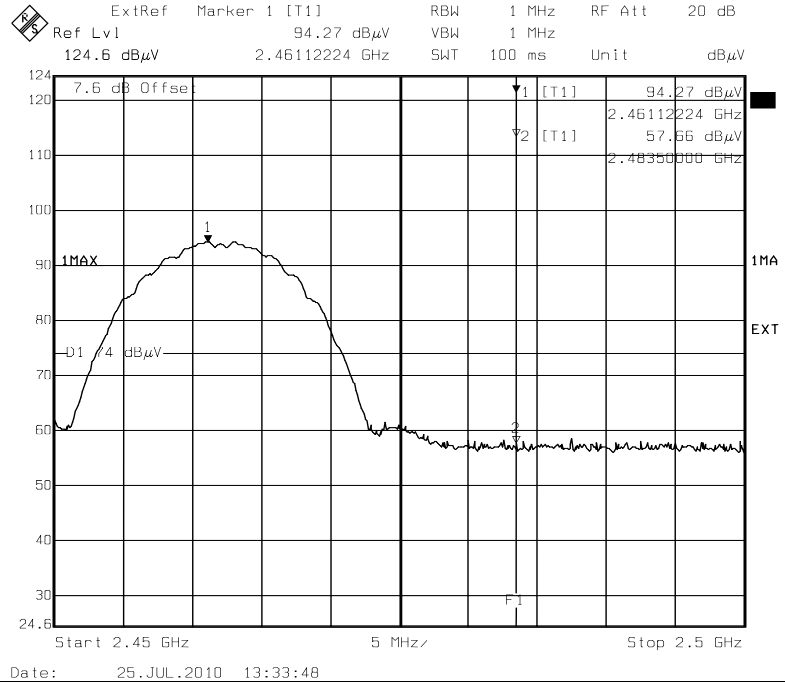


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

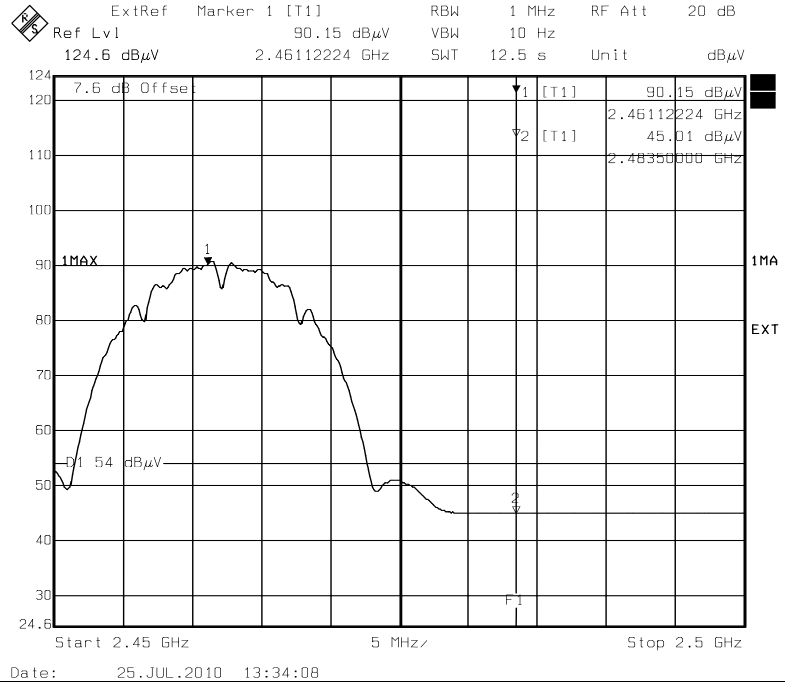
Detector mode : Peak **Polarity : Horizontal**

CH High (802.11b MODE)



Detector mode : Average **Polarity : Horizontal**

CH High (802.11b MODE)

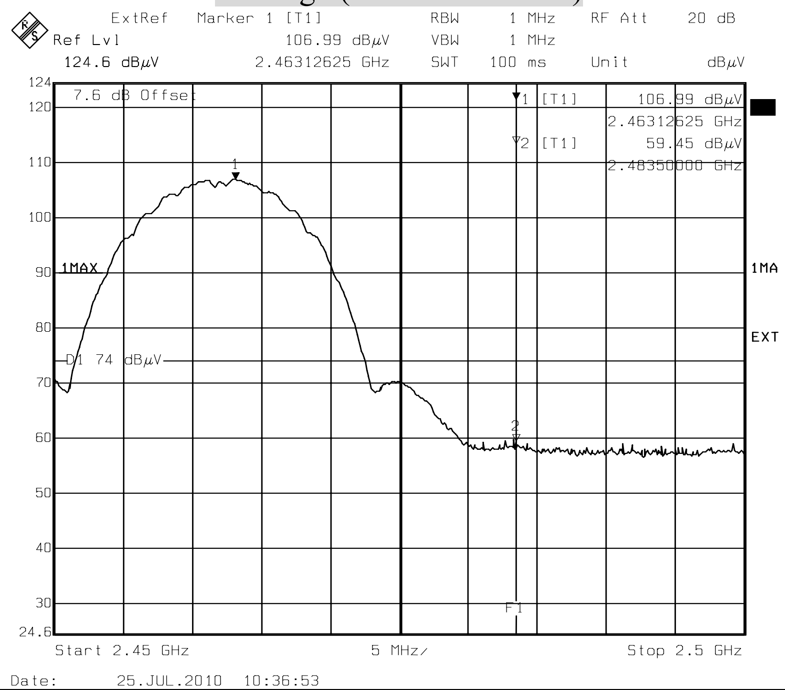


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

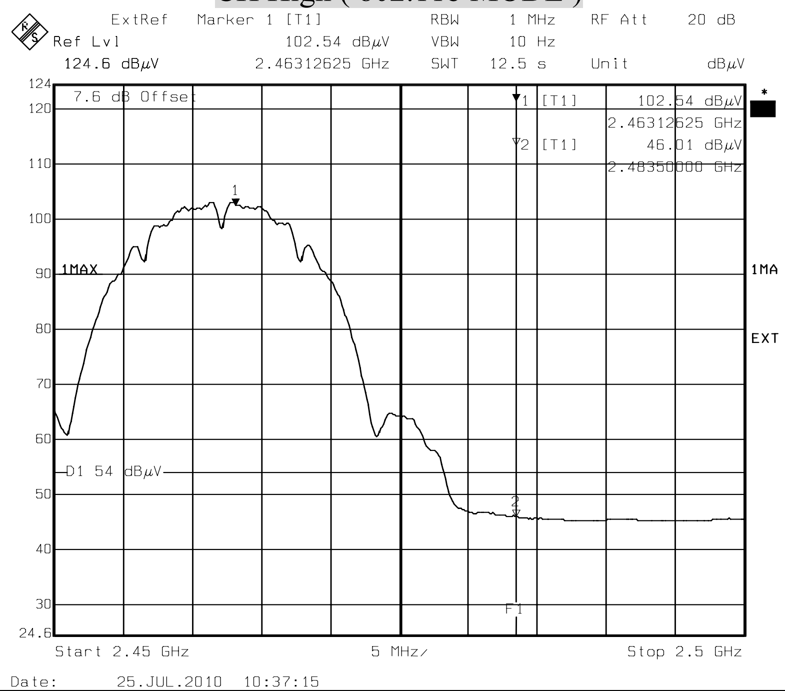
Detector mode : Peak **Polarity : Vertical**

CH High (802.11b MODE)



Detector mode : Average **Polarity : Vertical**

CH High (802.11b MODE)

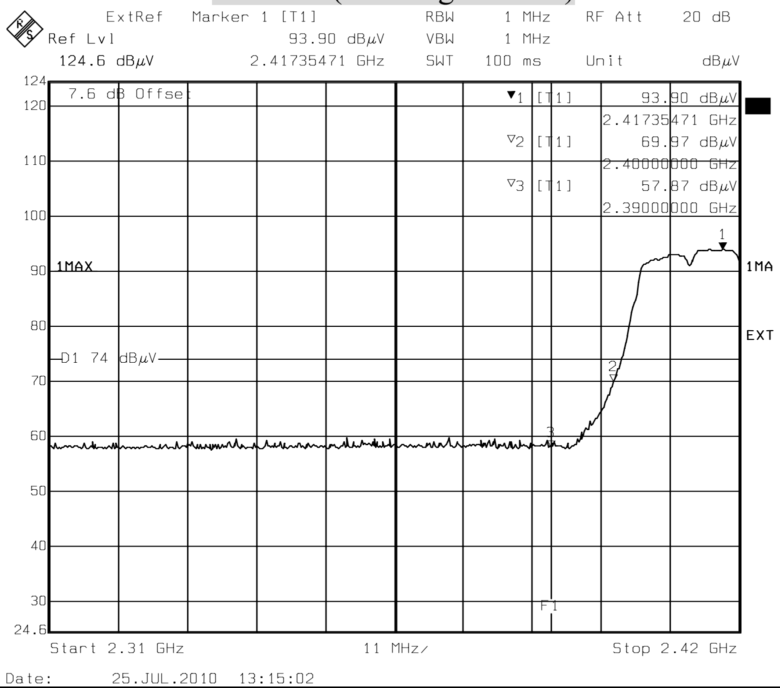


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

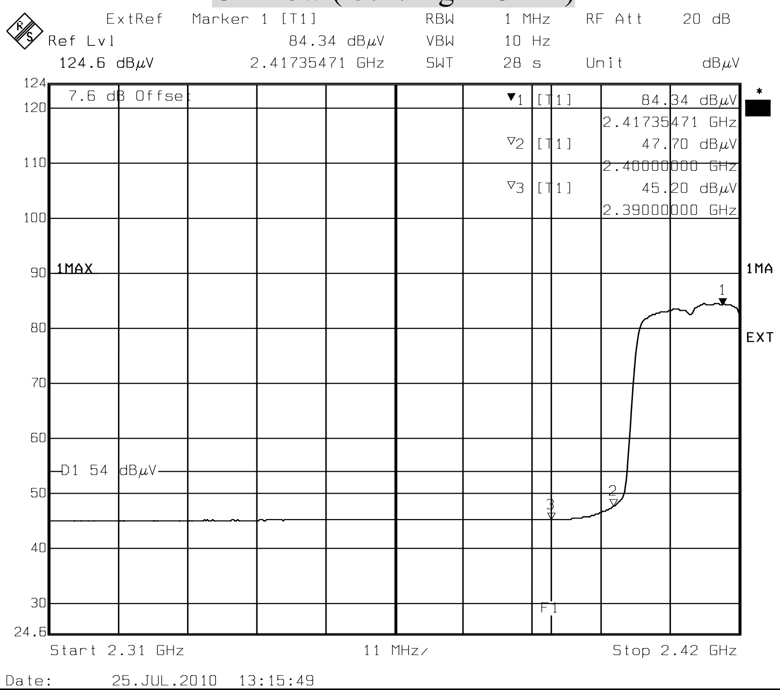
Detector mode : Peak **Polarity : Horizontal**

CH Low (802.11g MODE)



Detector mode : Average **Polarity : Horizontal**

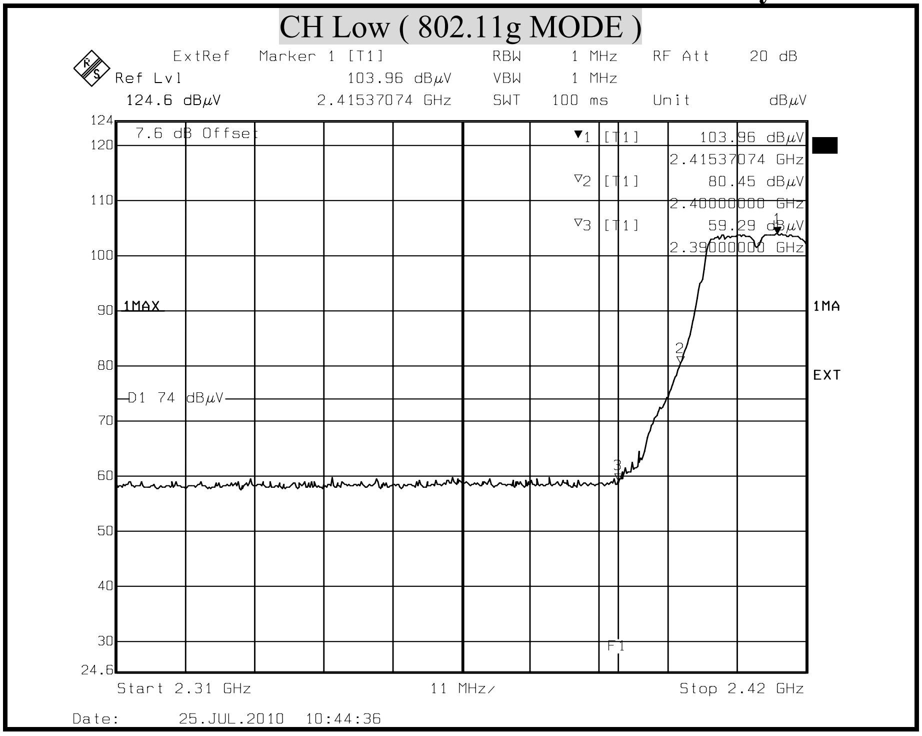
CH Low (802.11g MODE)



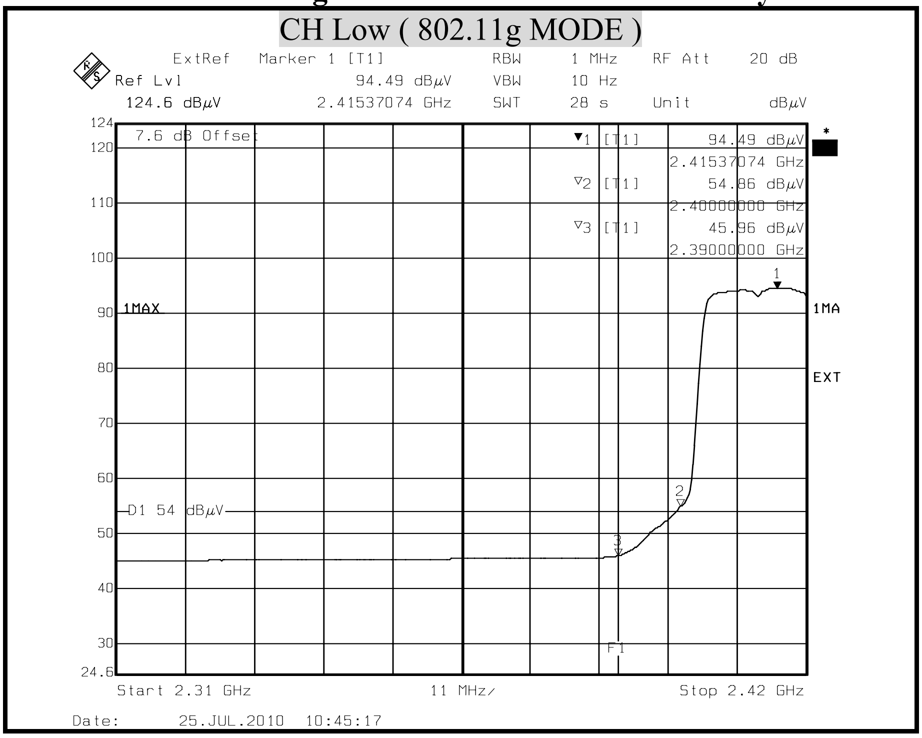
Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

Detector mode : Peak **Polarity : Vertical**



Detector mode : Average **Polarity : Vertical**

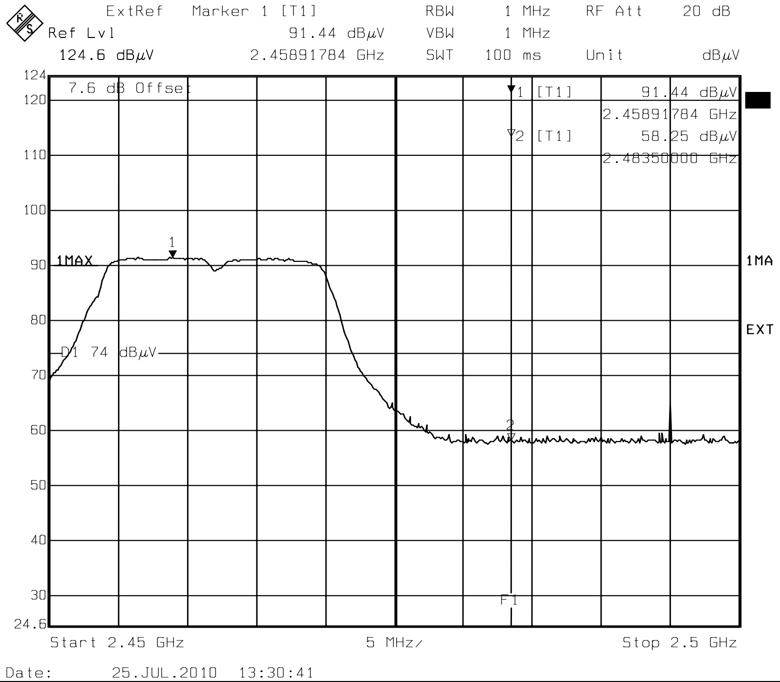


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

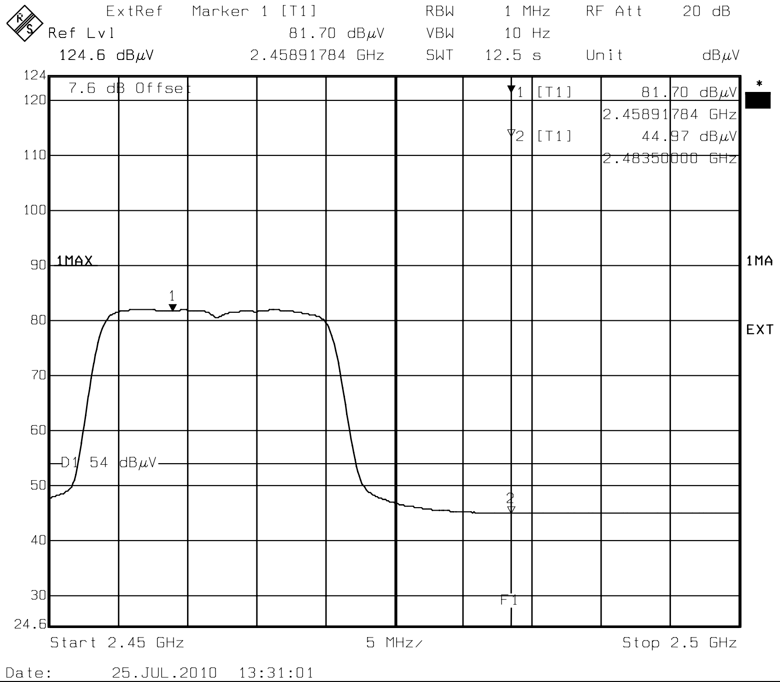
Detector mode : Peak **Polarity : Horizontal**

CH High (802.11g MODE)



Detector mode : Average **Polarity : Horizontal**

CH High (802.11g MODE)

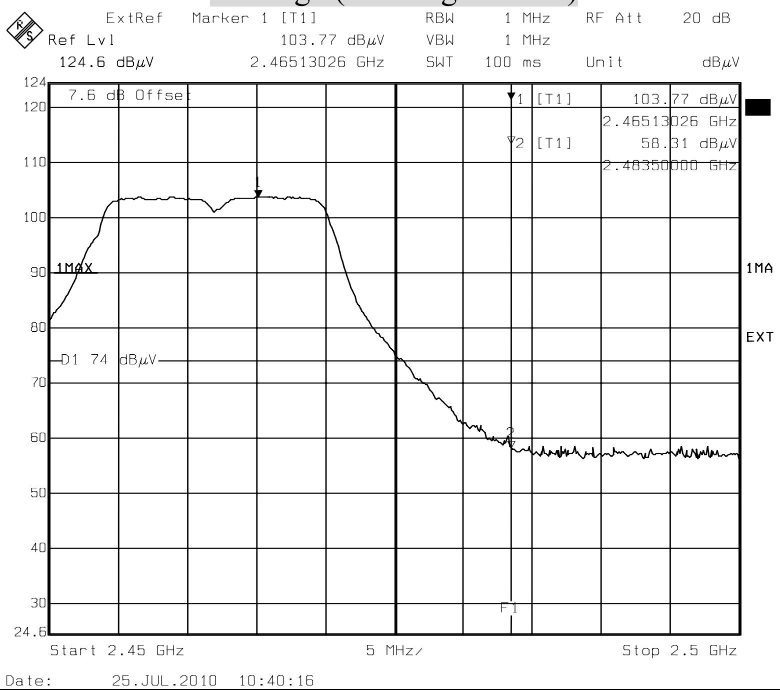


Remark:

1. Display Line = 54/74 dB µ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

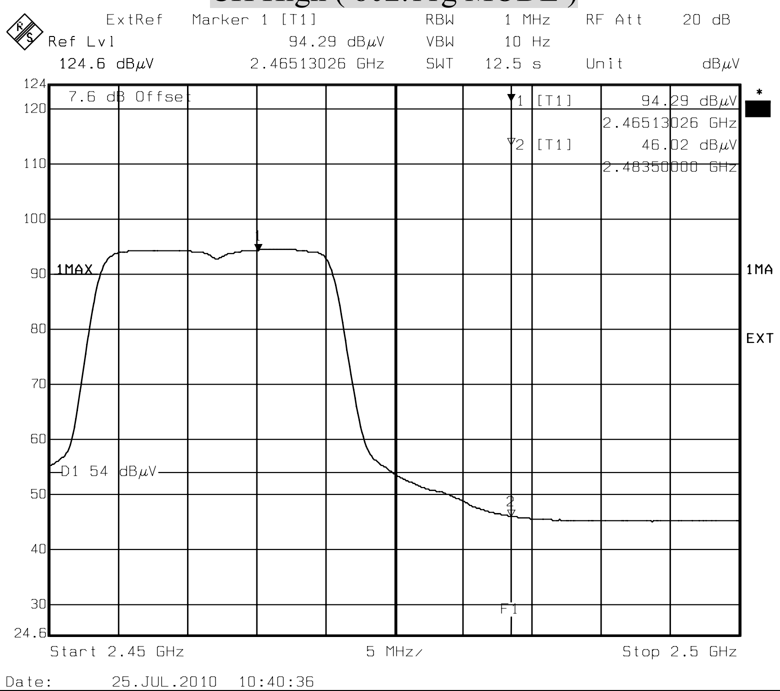
Detector mode : Peak **Polarity : Vertical**

CH High (802.11g MODE)



Detector mode : Average **Polarity : Vertical**

CH High (802.11g MODE)

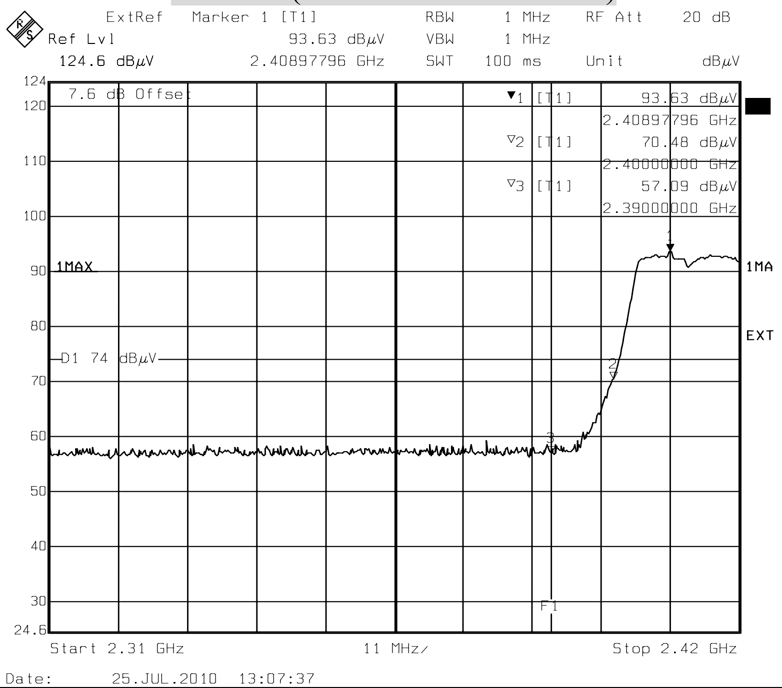


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

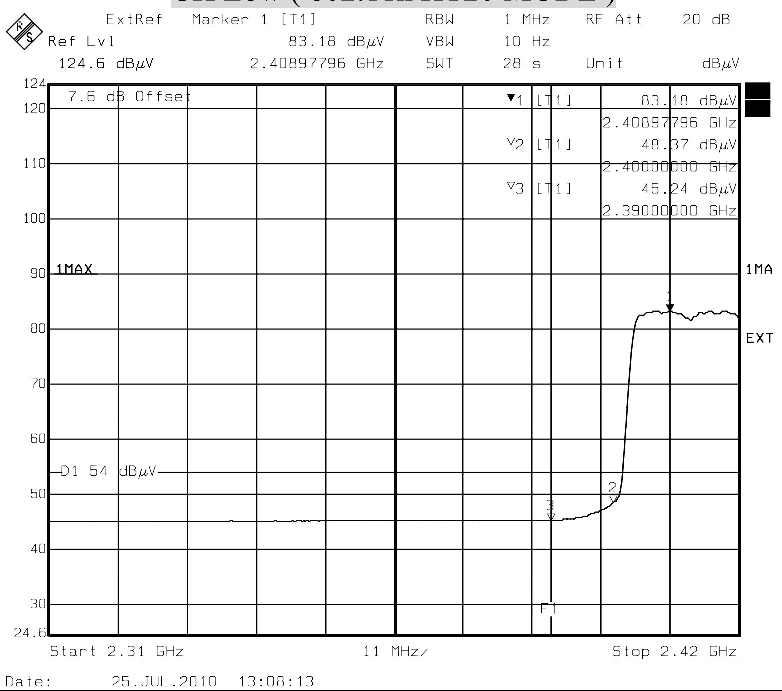
Detector mode : Peak **Polarity : Horizontal**

CH Low (802.11n HT20 MODE)



Detector mode : Average **Polarity : Horizontal**

CH Low (802.11n HT20 MODE)

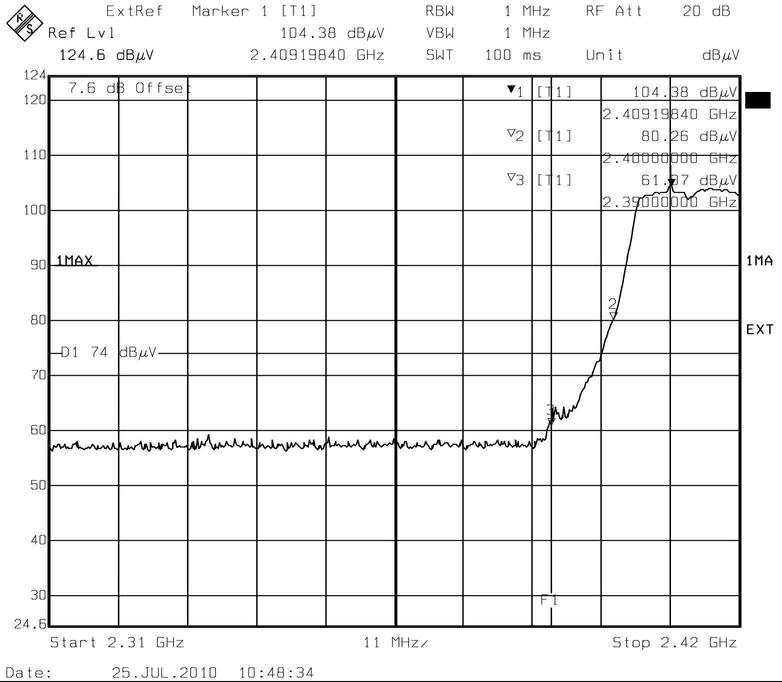


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

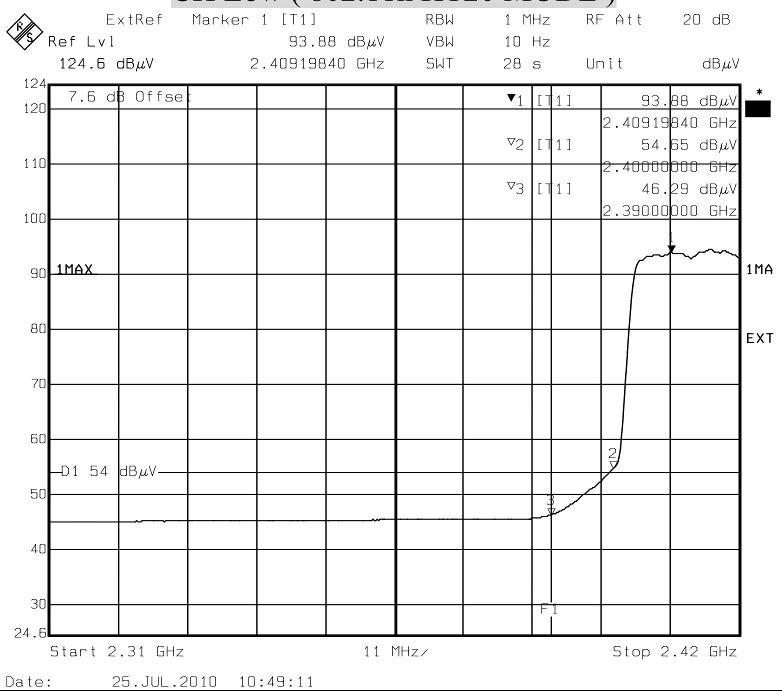
Detector mode : Peak **Polarity : Vertical**

CH Low (802.11n HT20 MODE)



Detector mode : Average **Polarity : Vertical**

CH Low (802.11n HT20 MODE)

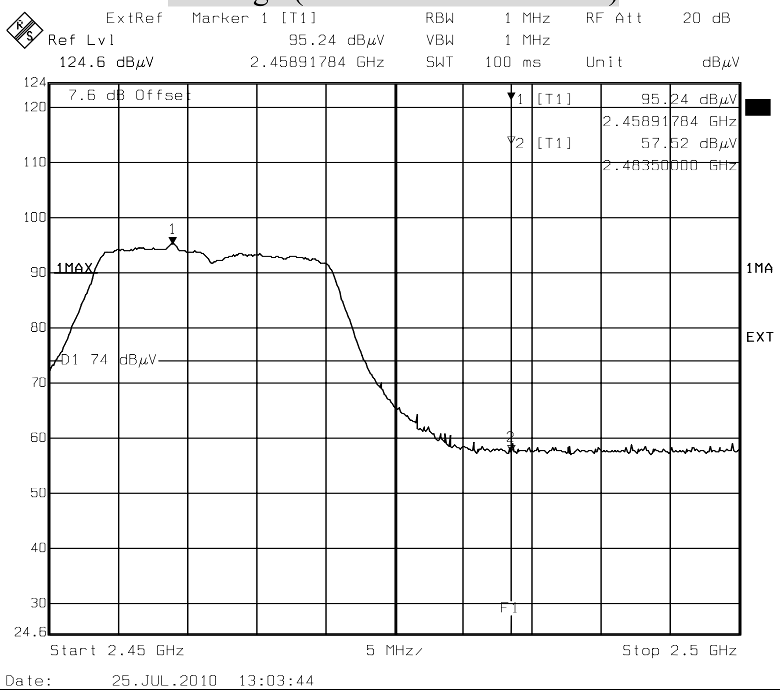


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

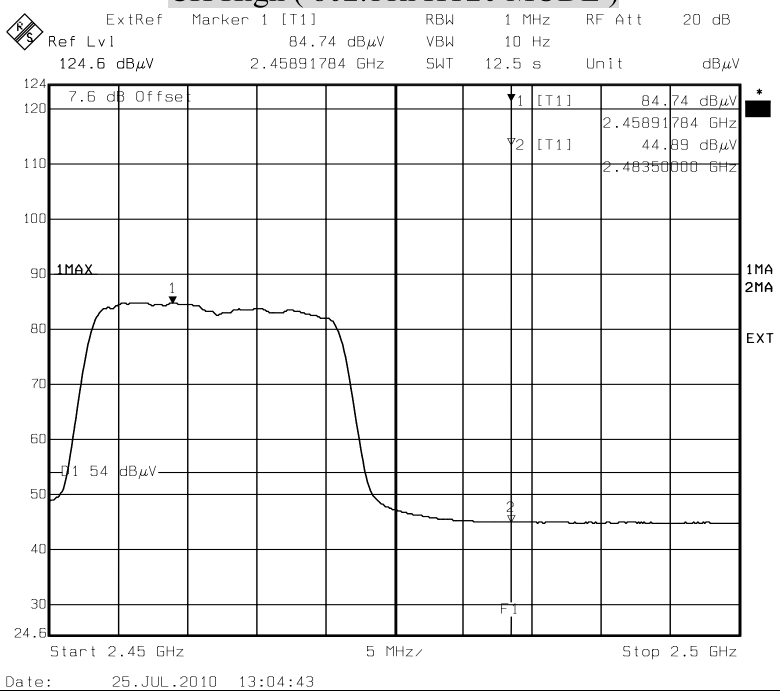
Detector mode : Peak **Polarity : Horizontal**

CH High (802.11n HT20 MODE)



Detector mode : Average **Polarity : Horizontal**

CH High (802.11n HT20 MODE)



Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
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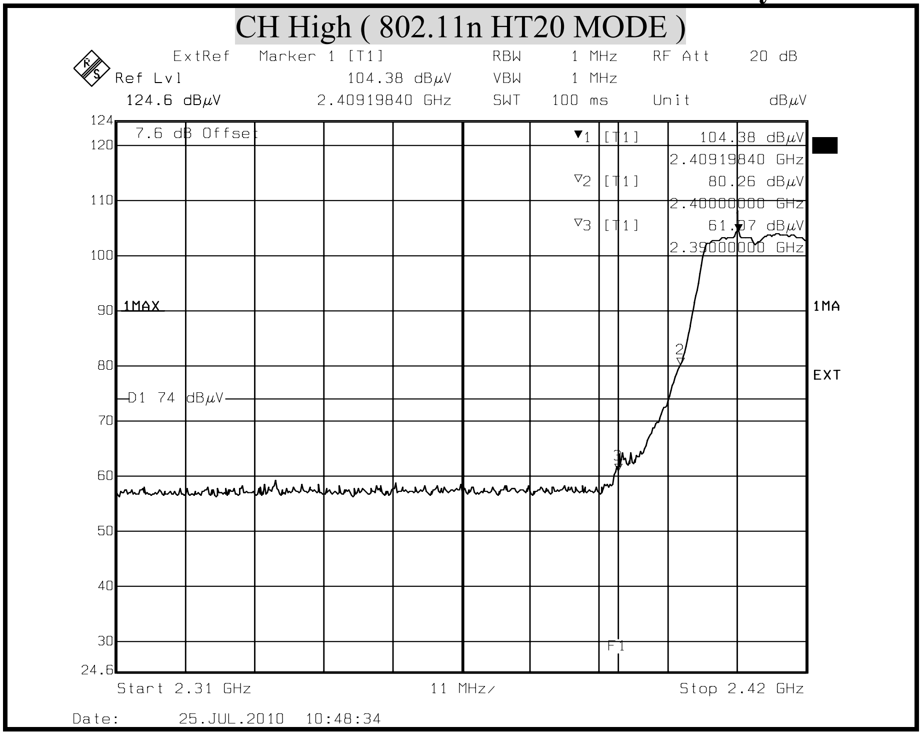
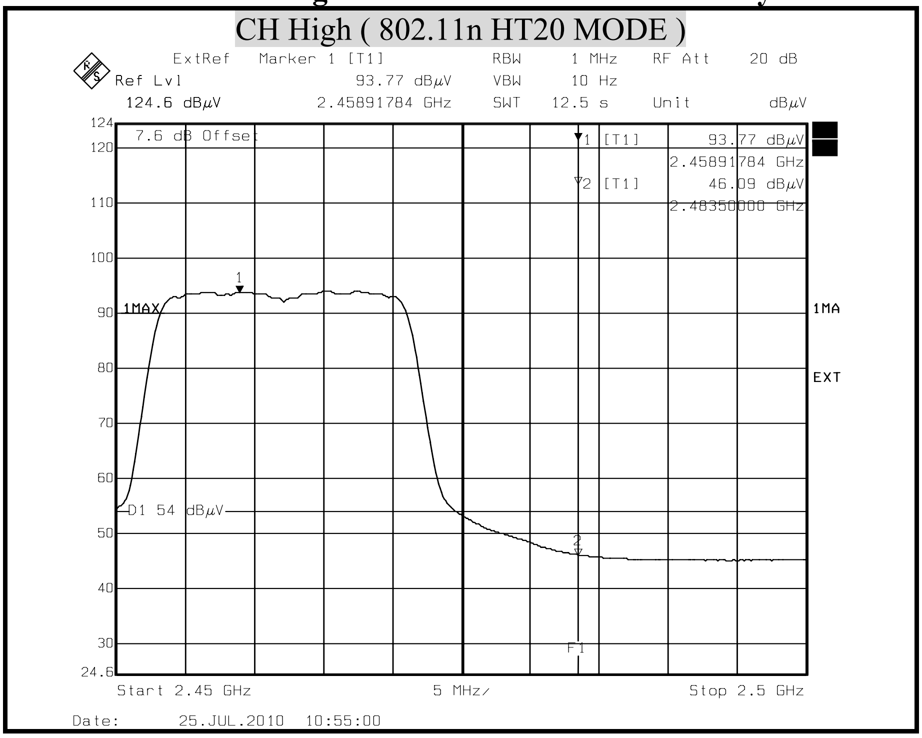
Detector mode : Peak **Polarity : Vertical**



Detector mode : Average **Polarity : Vertical**

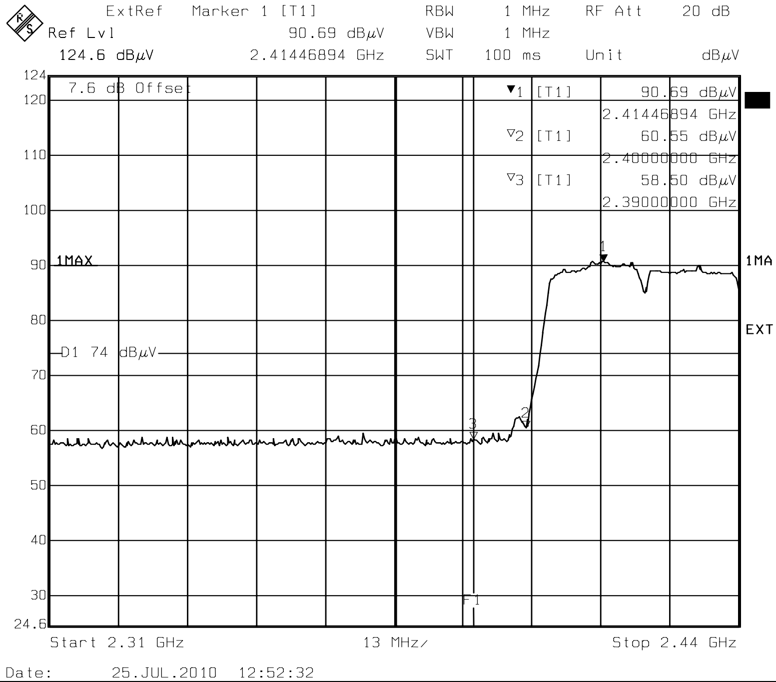


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

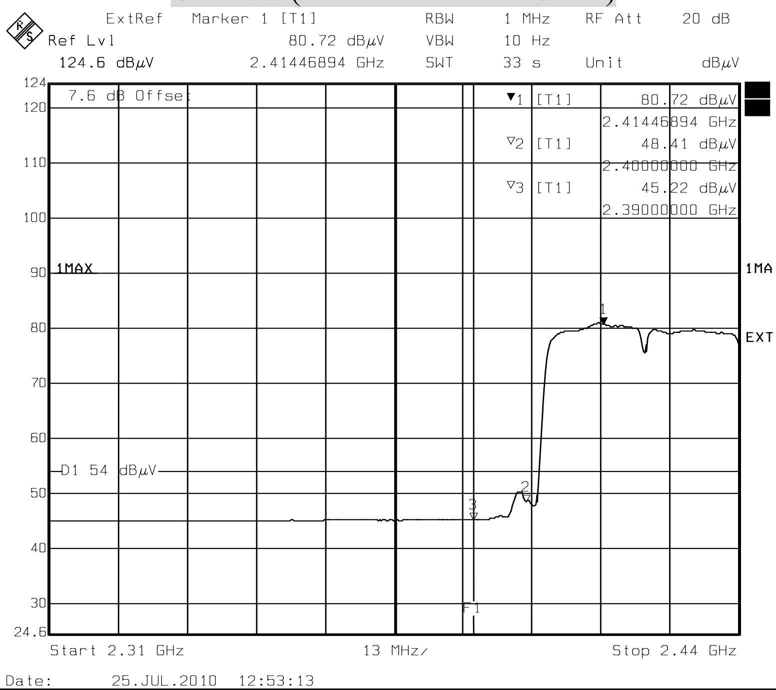
Detector mode : Peak **Polarity : Horizontal**

CH Low (802.11n HT40 MODE)



Detector mode : Average **Polarity : Horizontal**

CH Low (802.11n HT40 MODE)

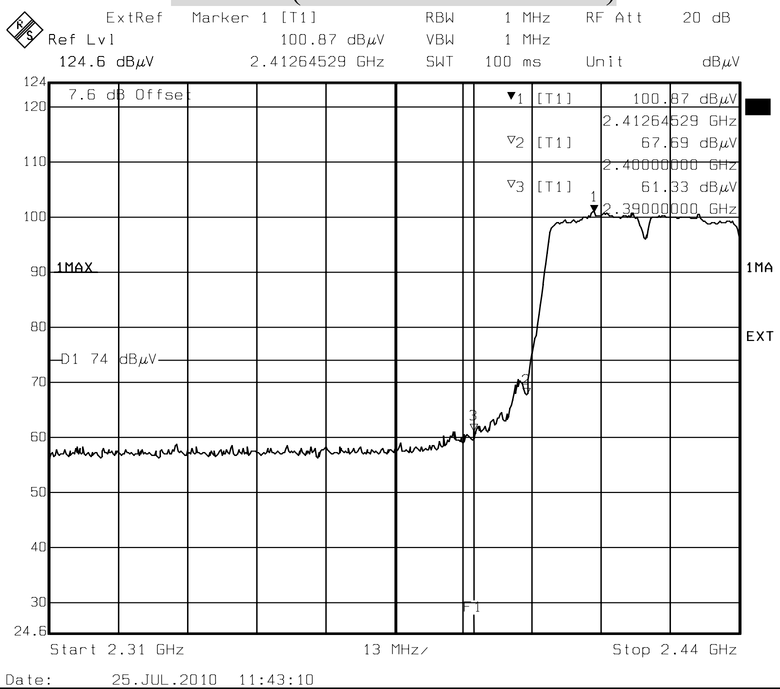


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

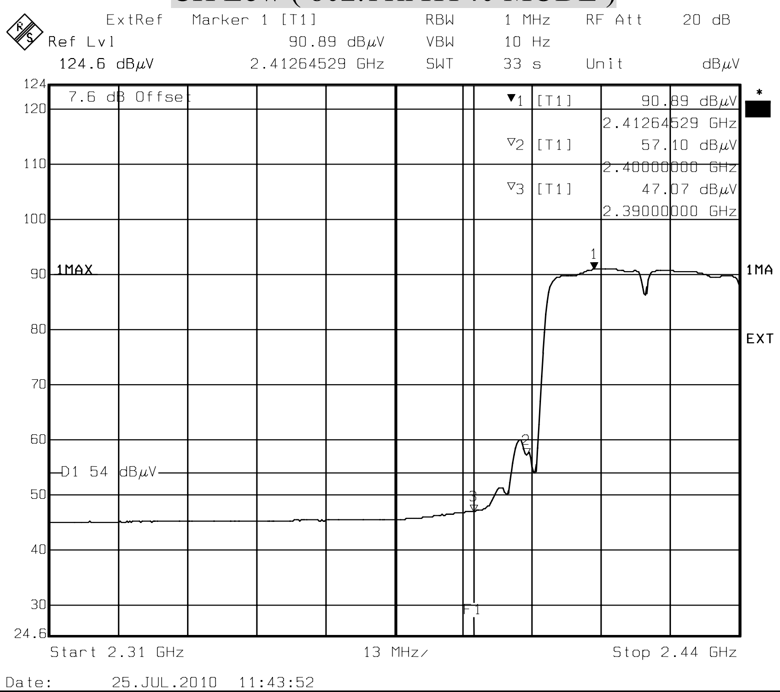
Detector mode : Peak **Polarity : Vertical**

CH Low (802.11n HT40 MODE)



Detector mode : Average **Polarity : Vertical**

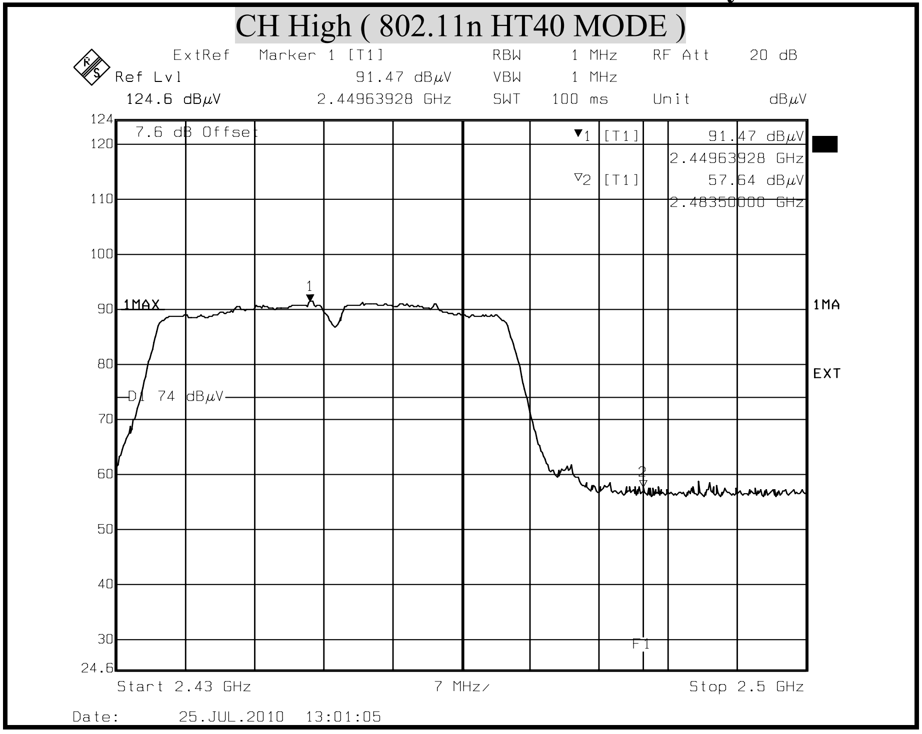
CH Low (802.11n HT40 MODE)



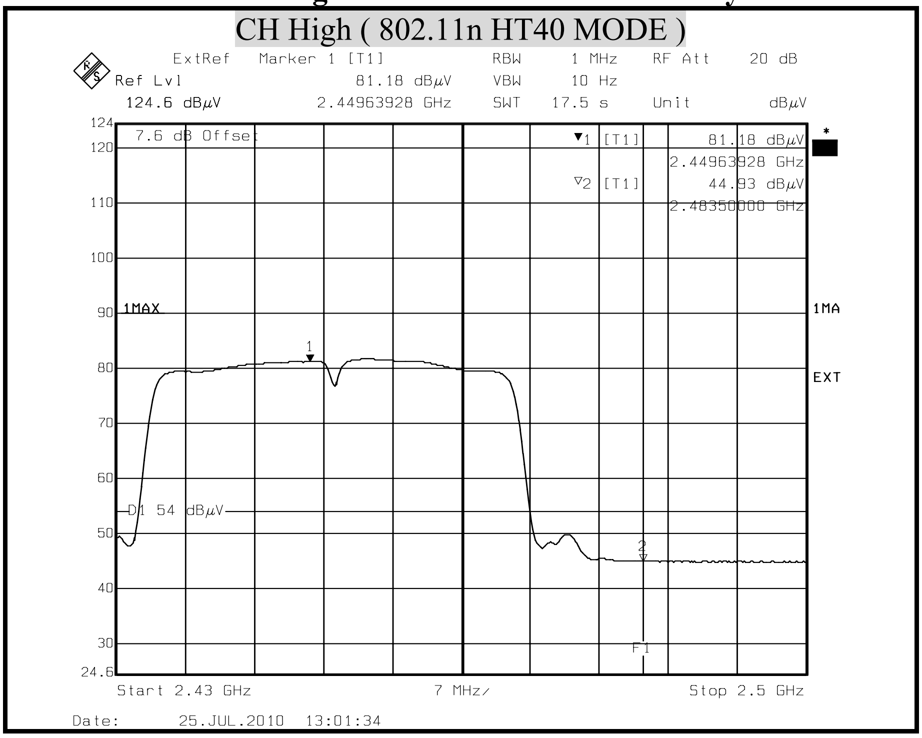
Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

Detector mode : Peak **Polarity : Horizontal**



Detector mode : Average **Polarity : Horizontal**

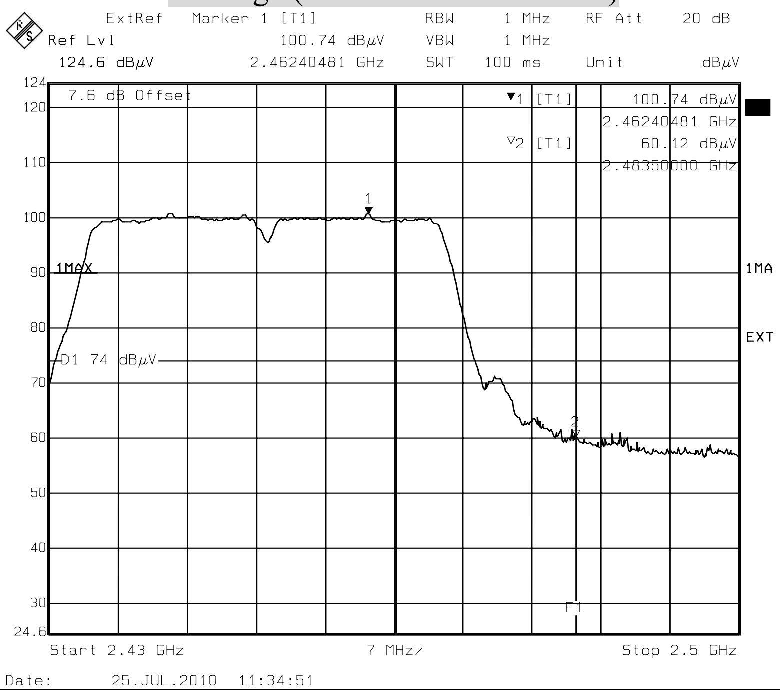


Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

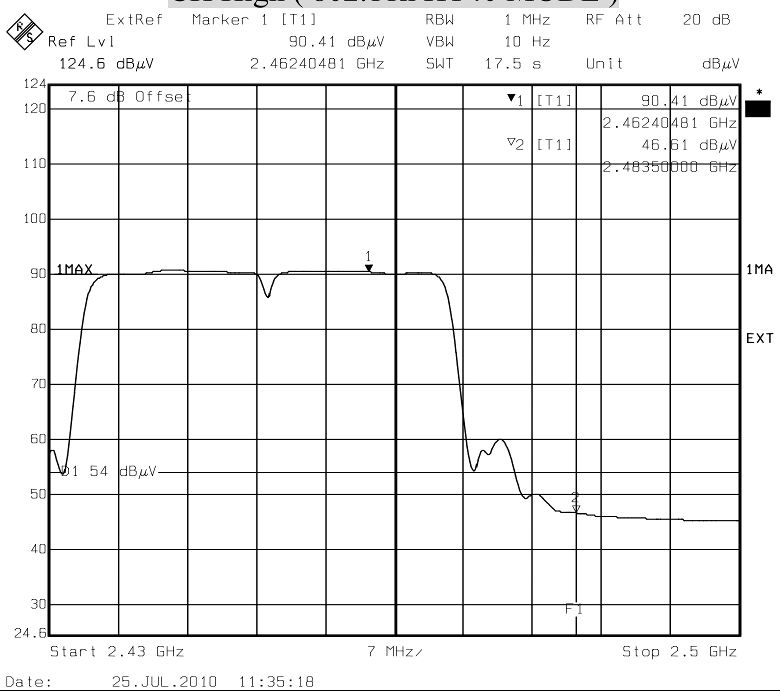
Detector mode : Peak **Polarity : Vertical**

CH High (802.11n HT40 MODE)



Detector mode : Average **Polarity : Vertical**

CH High (802.11n HT40 MODE)



Remark:

1. Display Line = 54/74 dB μ V/m.
2. 2390MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.6(dB)
3. 2483.5MHz Offset(dB) = Antenna Factor(dB/m) + Cable Loss(dB) - Pre-Amplifier(dB) + Attenuator(dB)=7.62(dB)

8.7 POWERLINE CONDUCTED EMISSIONS

LIMITS

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

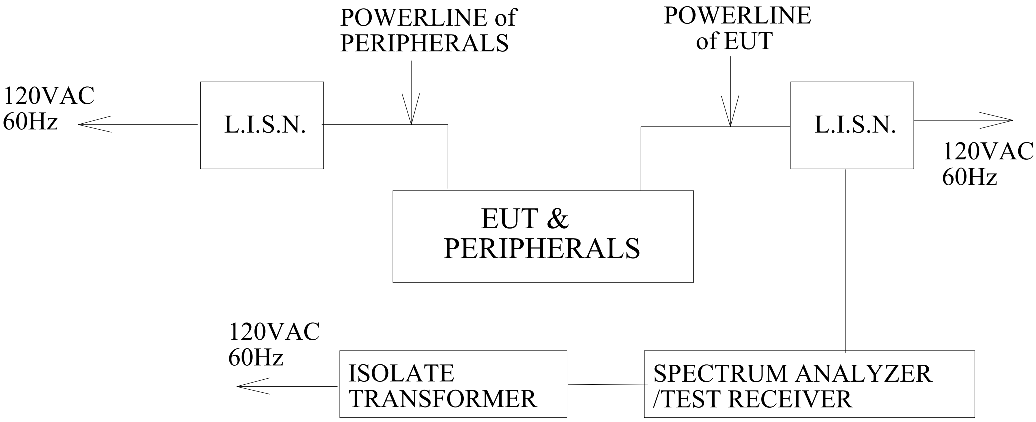
Frequency of Emission (MHz)	Conducted limit (dBµv)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.5 - 5	56	46
5 - 30	60	50

TEST EQUIPMENTS

The following test equipments are used during the conducted power line tests：

Conducted Emission room #1				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
L.I.S.N.	SCHWARZBECK	NNLK 8121	8121-308	MAR. 09, 2011
	Rohde & Schwarz	ESH 3-Z5	840062/021	NOV. 29, 2010
TEST RECEIVER	Rohde & Schwarz	ESCS 30	100348	JUL. 13, 2011
TYPE N COAXIAL CABLE	CCS	BNC50	11	AUG. 26, 2010
Test S/W	e-3 (5.04211c) R&S (2.27)			

TEST SETUP



TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

Line conducted data is recorded for both NEUTRAL and LINE.

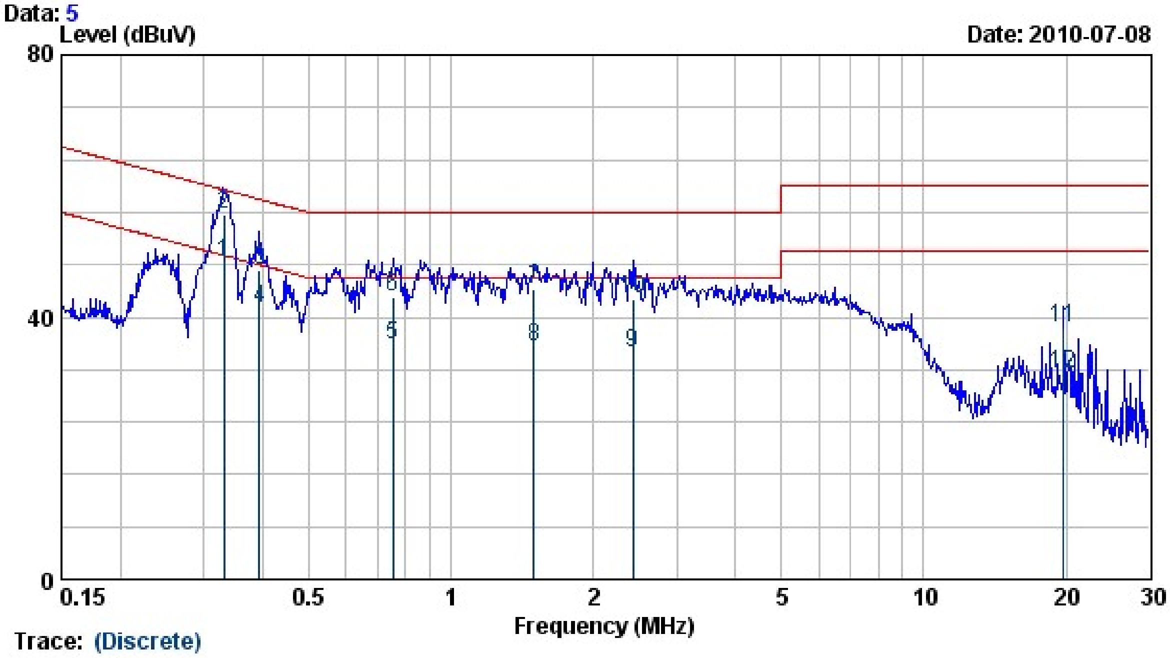
TEST RESULTS

No non-compliance noted.

CONDUCTED RF VOLTAGE MEASUREMENT

Product Name	11n Mini Router	Test Date	2010/7/8
Model	BR080n	Test By	Hong Tsai
Test Mode	Normal operating / worst case	TEMP& Humidity	24.4°C, 59%

LINE

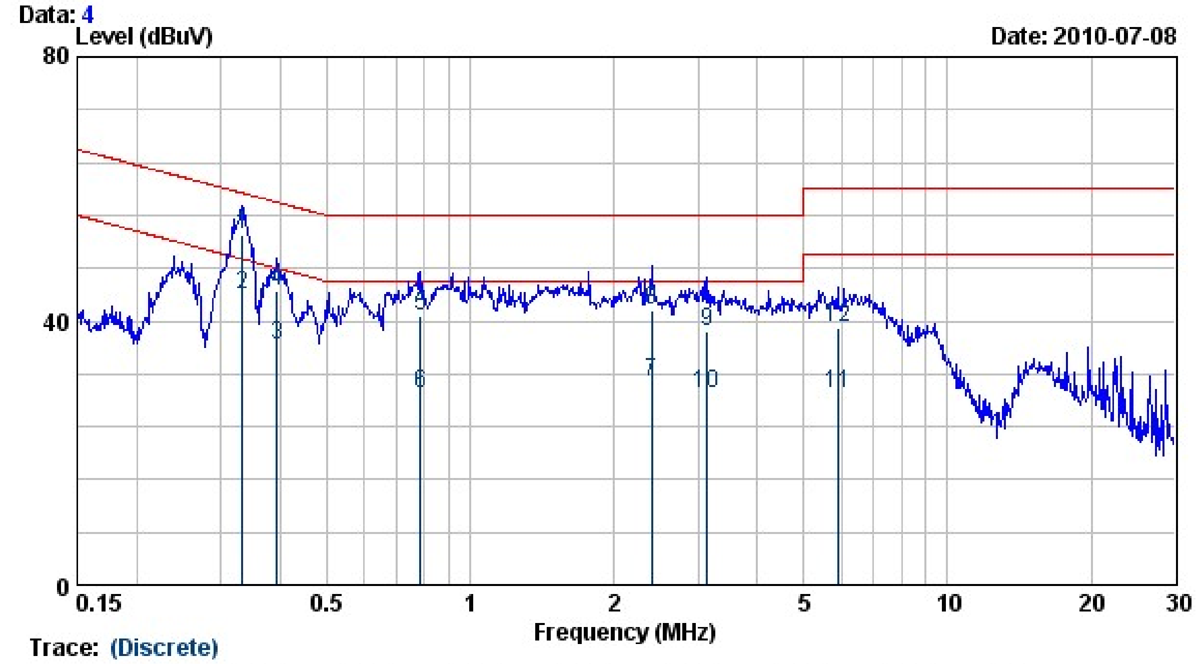


Freq. MHz	LISN Factor dB	Cable Loss dB	Meter Reading dBuV	Measured Level dBuV	Limits dBuV	Over Limits dBuV	Detector
0.331	9.81	0.02	38.49	48.32	49.42	-1.09	AVERAGE
0.331	9.81	0.02	45.88	55.71	59.42	-3.70	QP
0.393	9.82	0.02	37.28	47.12	57.99	-10.87	QP
0.393	9.82	0.02	31.35	41.19	47.99	-6.80	AVERAGE
0.755	9.81	0.02	25.99	35.82	46.00	-10.18	AVERAGE
0.755	9.81	0.02	33.18	43.01	56.00	-12.99	QP
1.495	9.79	0.03	34.44	44.26	56.00	-11.74	QP
1.495	9.79	0.03	25.76	35.58	46.00	-10.42	AVERAGE
2.422	9.82	0.03	24.82	34.67	46.00	-11.33	AVERAGE
2.422	9.82	0.03	33.04	42.89	56.00	-13.11	QP
19.711	10.92	0.17	27.17	38.26	60.00	-21.74	QP
19.711	10.92	0.17	20.27	31.36	50.00	-18.64	AVERAGE

REMARK:
1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level – Limit value

Product Name	11n Mini Router	**Test Date**	2010/7/8
Model	BR080n	**Test By**	Hong Tsai
Test Mode	Normal operating / worst case	**TEMP& Humidity**	24.4°C, 59%

NEUTRAL



Freq. MHz	LISN Factor dB	Cable Loss dB	Meter Reading dBuV	Measured Level dBuV	Limits dBuV	Over Limits dBuV	Detector
0.332	9.80	0.02	43.23	53.05	59.40	-6.35	QP
0.332	9.80	0.02	34.19	44.01	49.40	-5.39	AVERAGE
0.393	9.81	0.02	26.38	36.21	47.99	-11.78	AVERAGE
0.393	9.81	0.02	34.85	44.68	57.99	-13.31	QP
0.788	9.83	0.02	30.75	40.60	56.00	-15.40	QP
0.788	9.83	0.02	19.26	29.11	46.00	-16.89	AVERAGE
2.396	9.84	0.03	20.88	30.75	46.00	-15.25	AVERAGE
2.396	9.84	0.03	31.64	41.51	56.00	-14.49	QP
3.140	9.88	0.04	28.59	38.51	56.00	-17.49	QP
3.140	9.88	0.04	19.17	29.09	46.00	-16.91	AVERAGE
5.898	9.98	0.08	19.02	29.08	50.00	-20.92	AVERAGE
5.898	9.98	0.08	28.90	38.96	60.00	-21.04	QP

REMARK:
1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level – Limit value

9. ANTENNA REQUIREMENT

9.1 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.

9.2 ANTENNA CONNECTED CONSTRUCTION

One antenna
Dipole Antenna (× 1)
Manufacture: Cortec Technology Inc.
Model: AN2400-5776RS
Gain: 2.0 dBi.