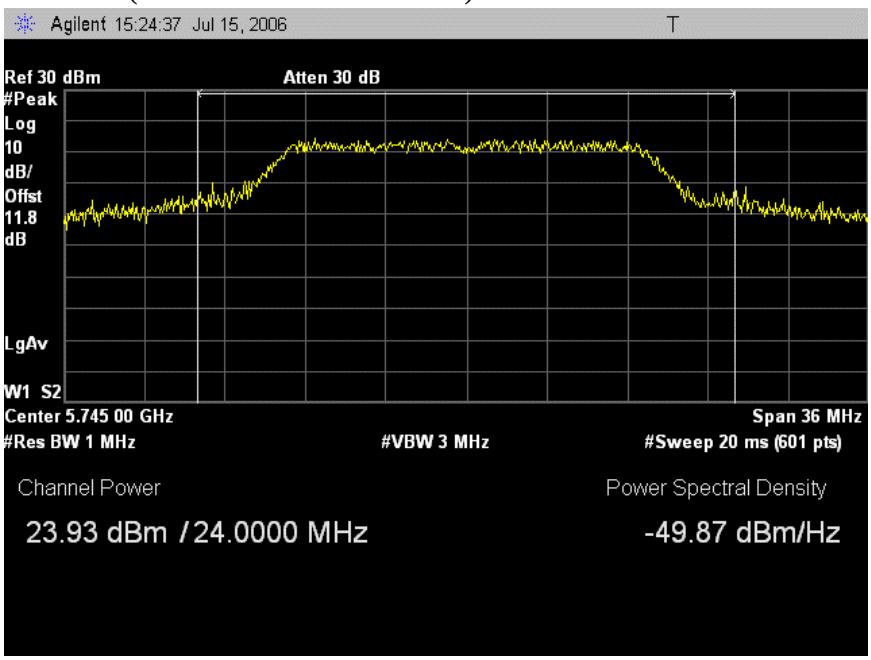
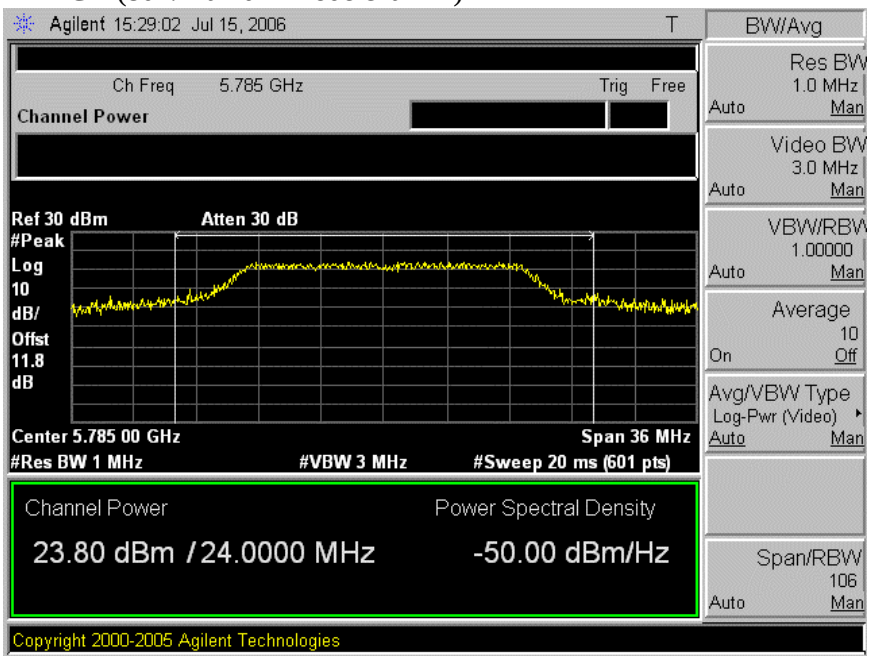
**(802.11a 20M MODE CHAIN B)**

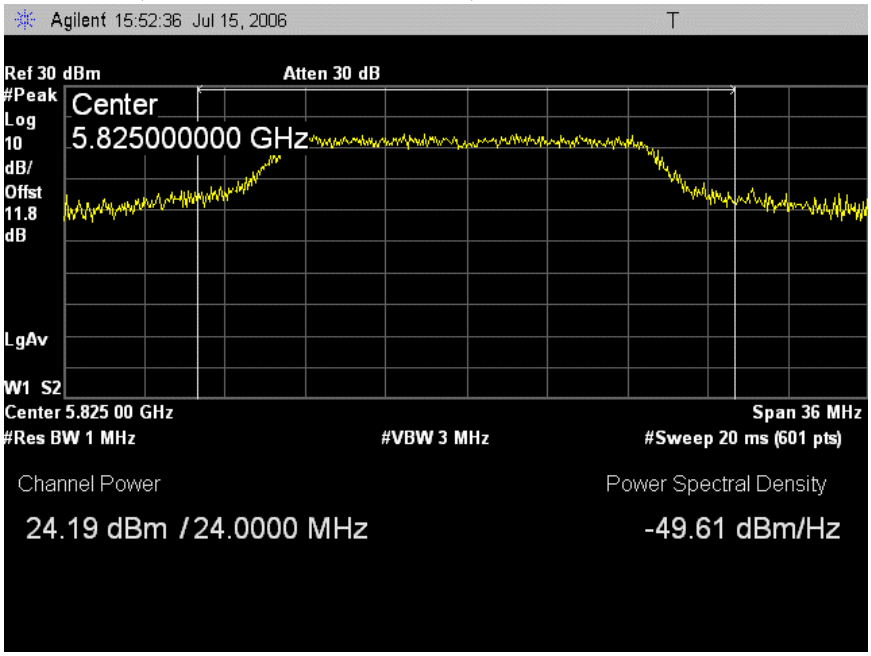
LOW CH (802.11a 20M mode chain B)



MID CH (802.11a 20M mode chain B)

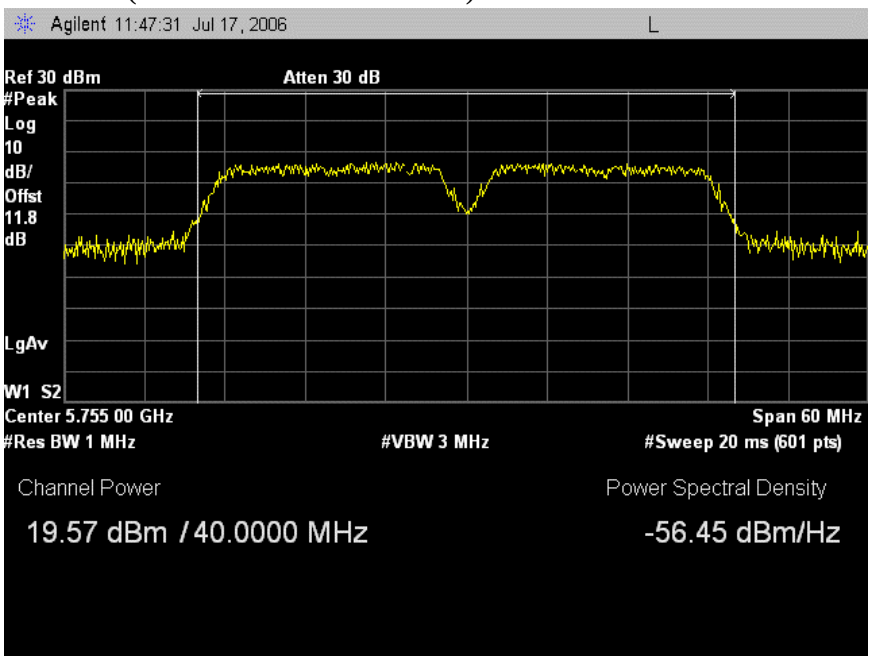


HIGH CH (802.11a 20M mode chain B)

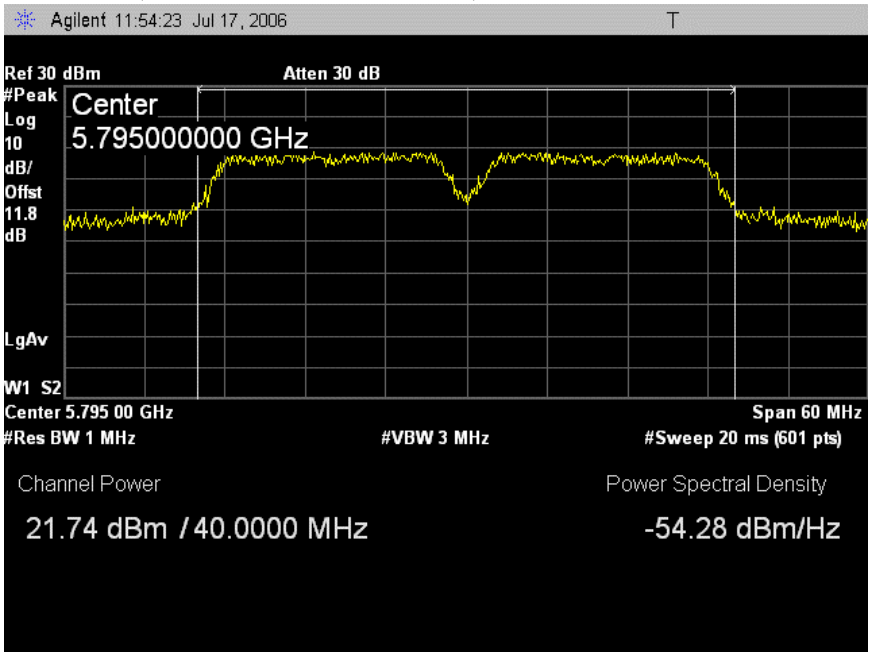


**(802.11a 40M MODE CHAIN A)**

LOW CH (802.11a mode 40M chain A)

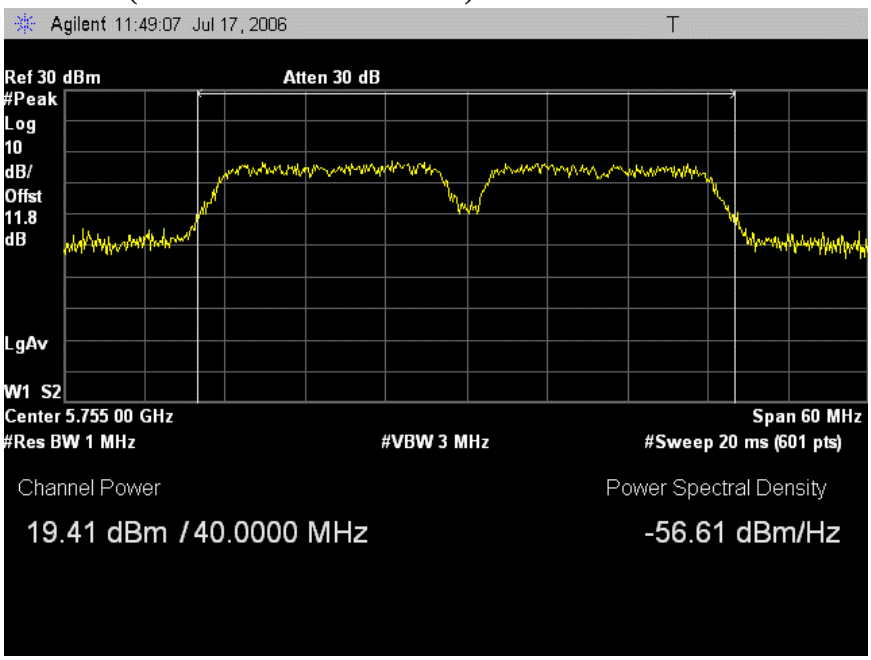


HIGH CH (802.11a 40M mode chain A)

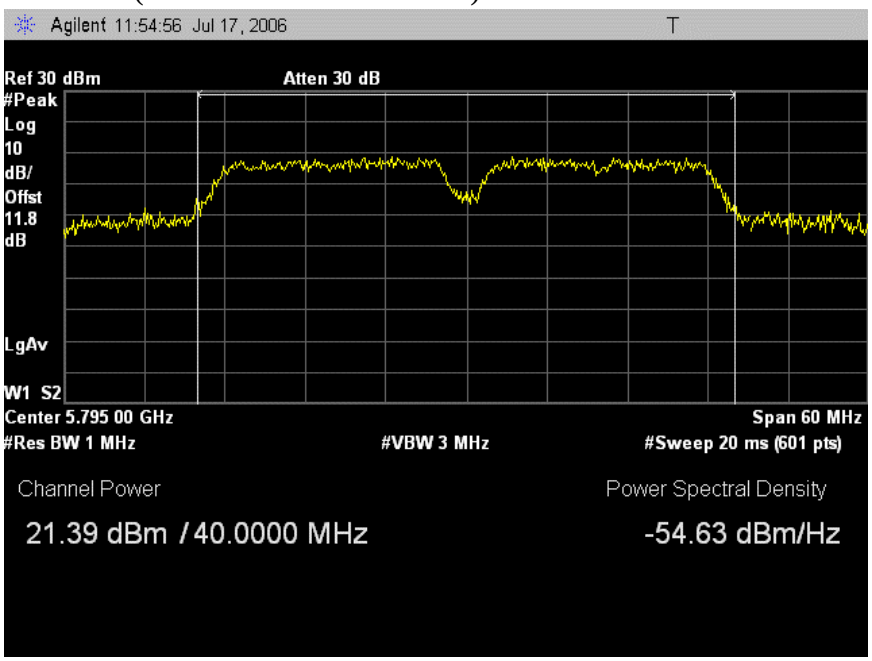


**(802.11a 40M MODE CHAIN B)**

LOW CH (802.11a 40M mode chain B)

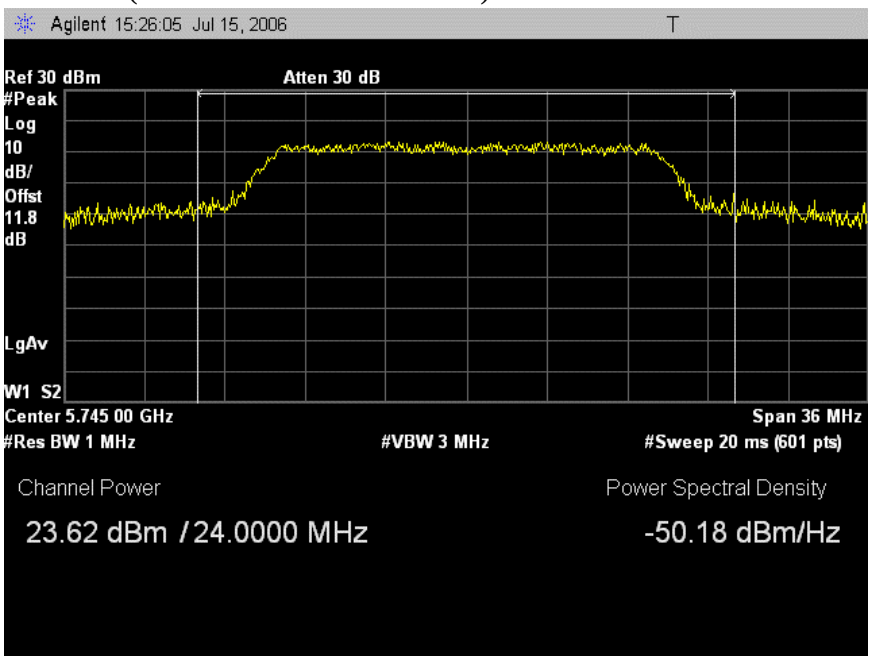


HIGH CH (802.11a 40M mode chain B)

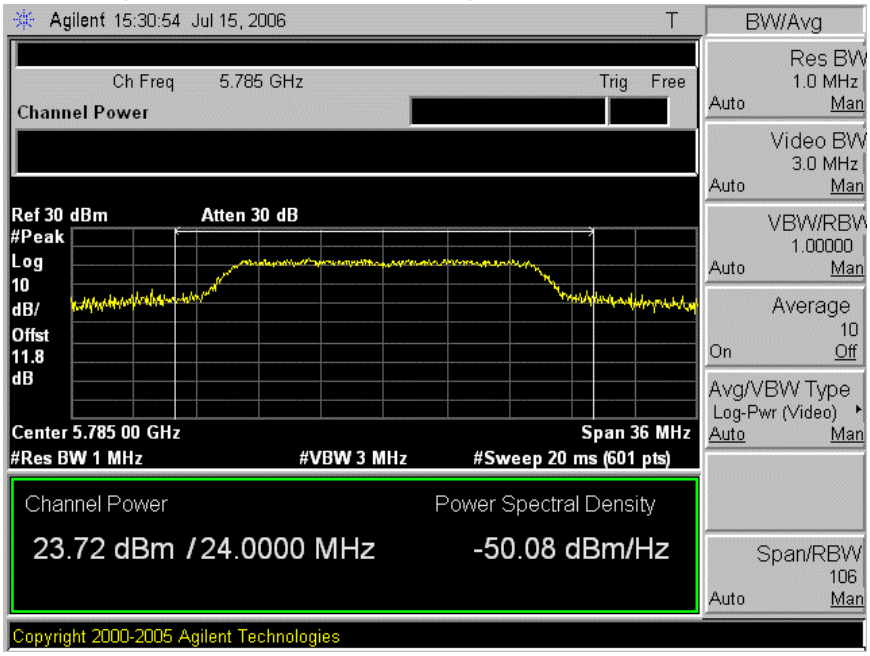


**(802.11n HT20 MODE CHAIN A)**

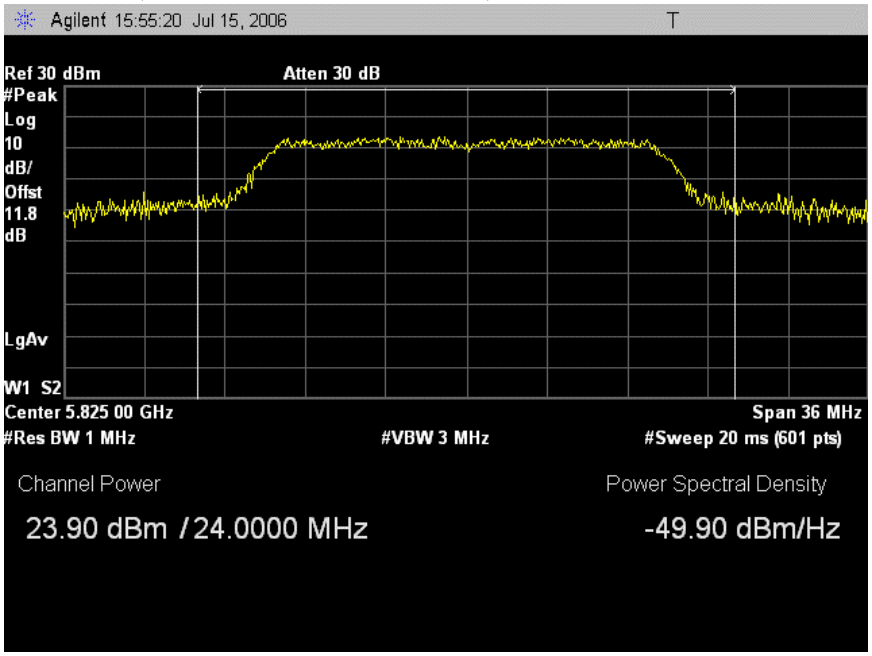
LOW CH (802.11n HT20 mode chain A)



MID CH (802.11n HT20 mode chain A)

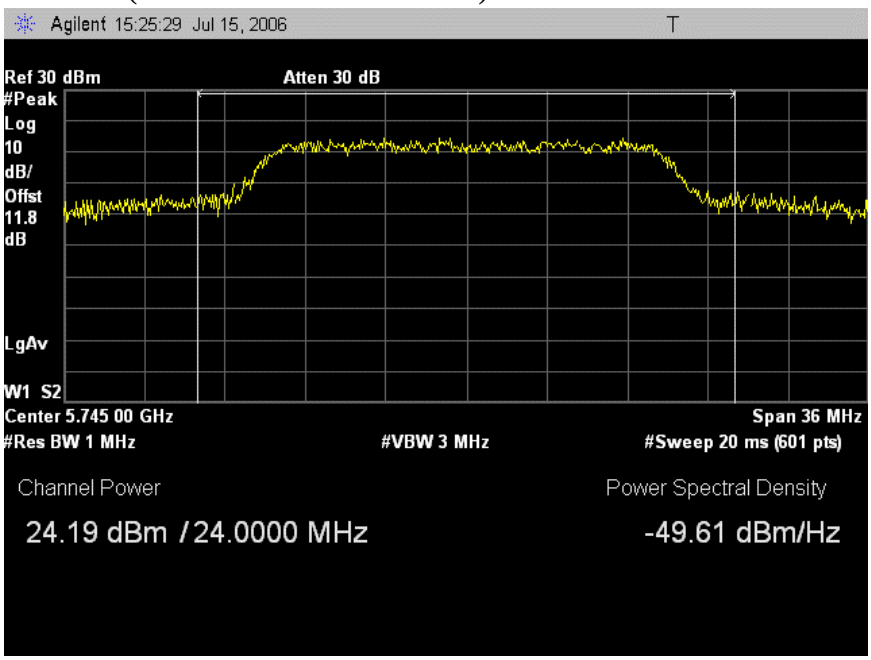


HIGH CH (802.11n HT20 mode chain A)

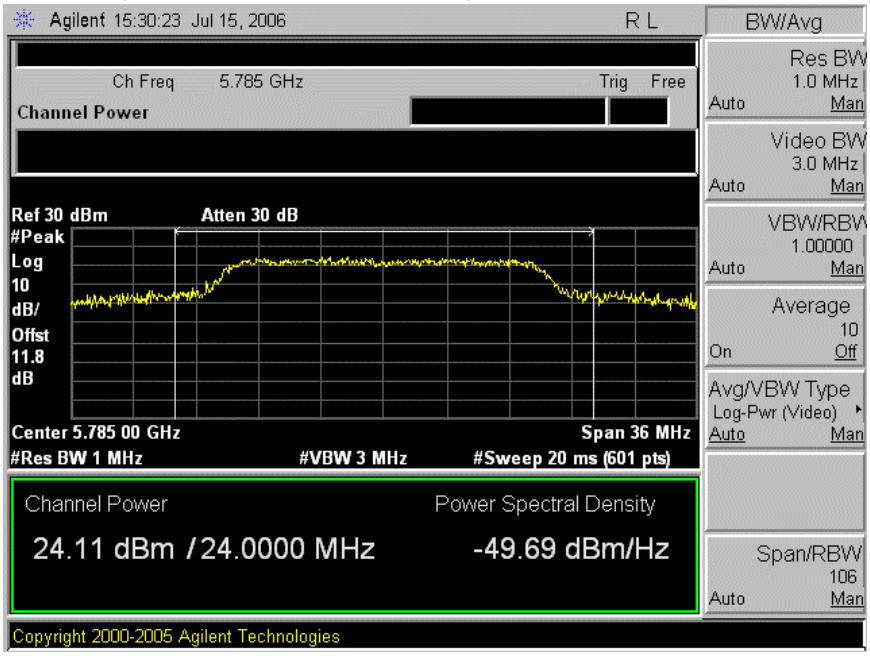


**(802.11 HT20 MODE CHAIN B)**

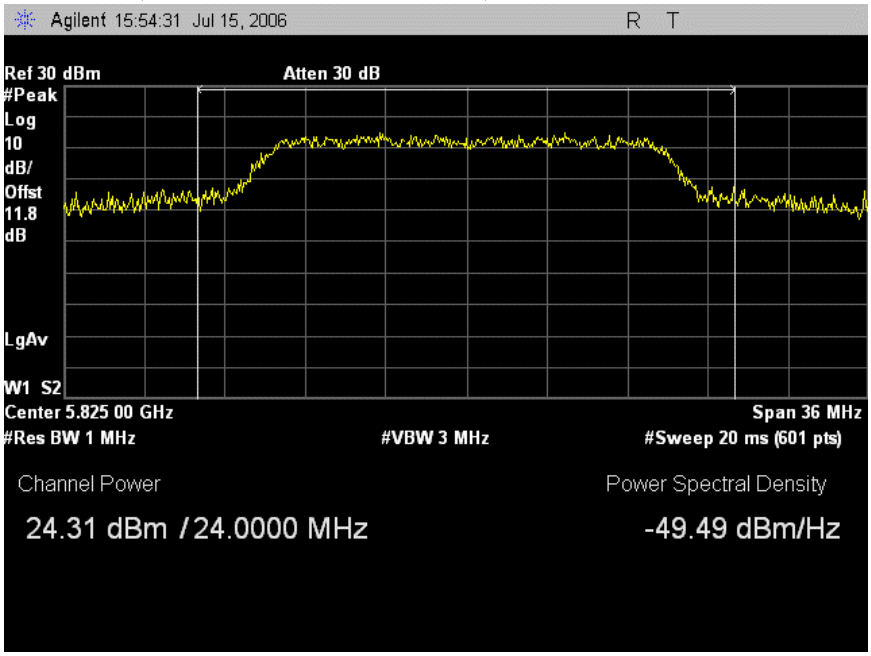
LOW CH (802.11n HT20 mode chain B)



MID CH (802.11n HT20 mode chain B)

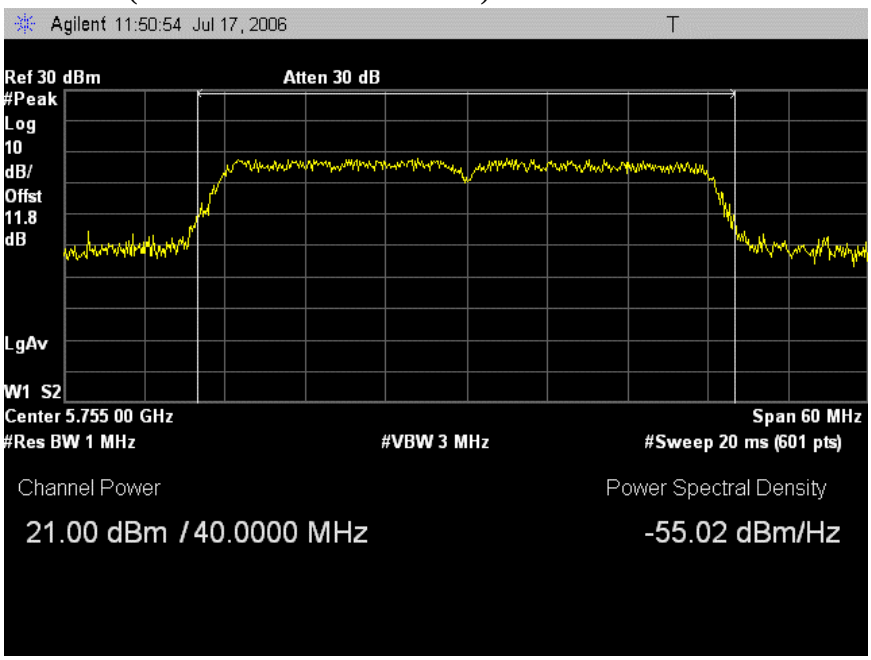


HIGH CH (802.11n HT20 mode chain B)

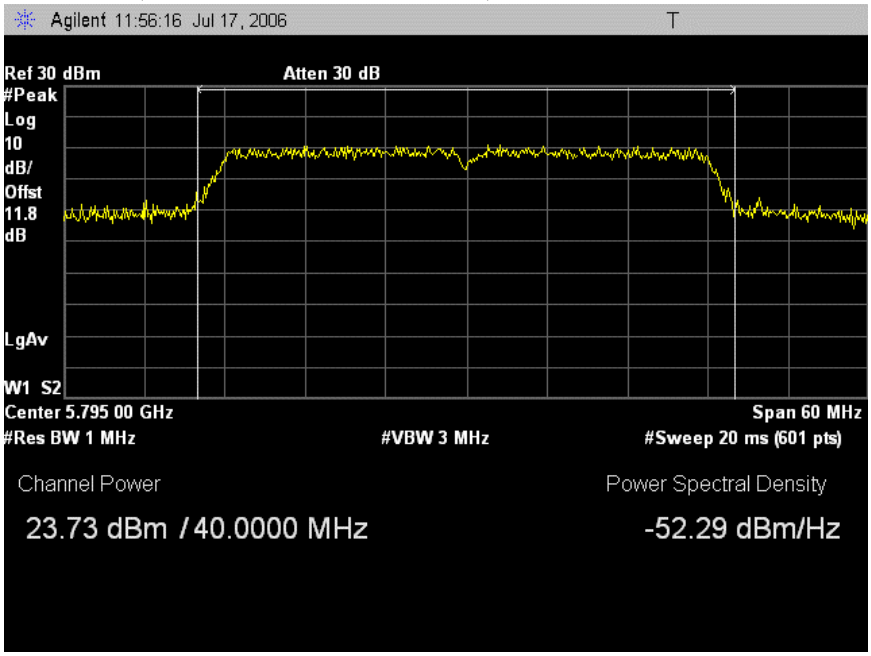


**(802.11 HT40 MODE CHAIN A)**

LOW CH (802.11n HT40 mode chain A)

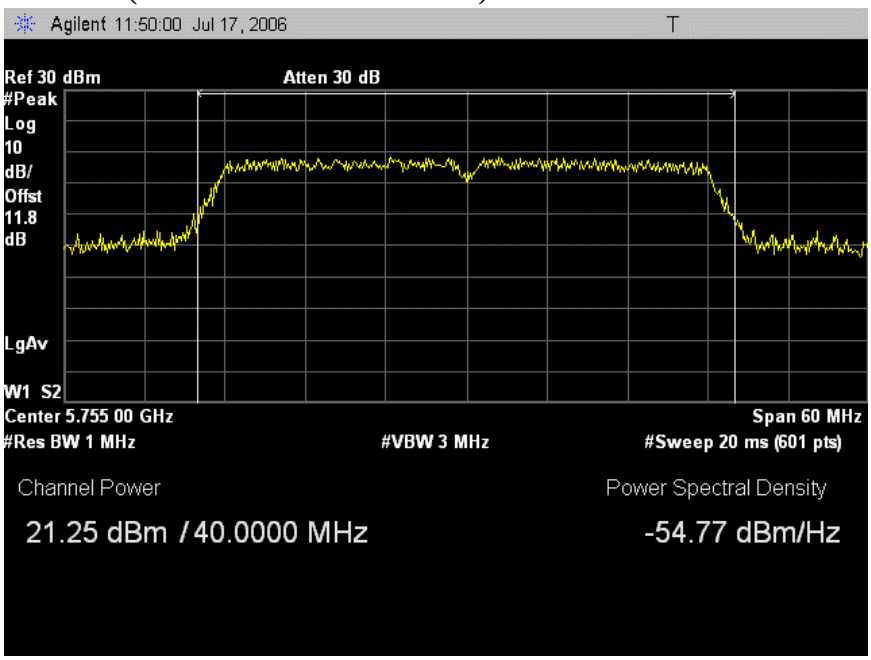


HIGH CH (802.11n HT40 mode chain A)

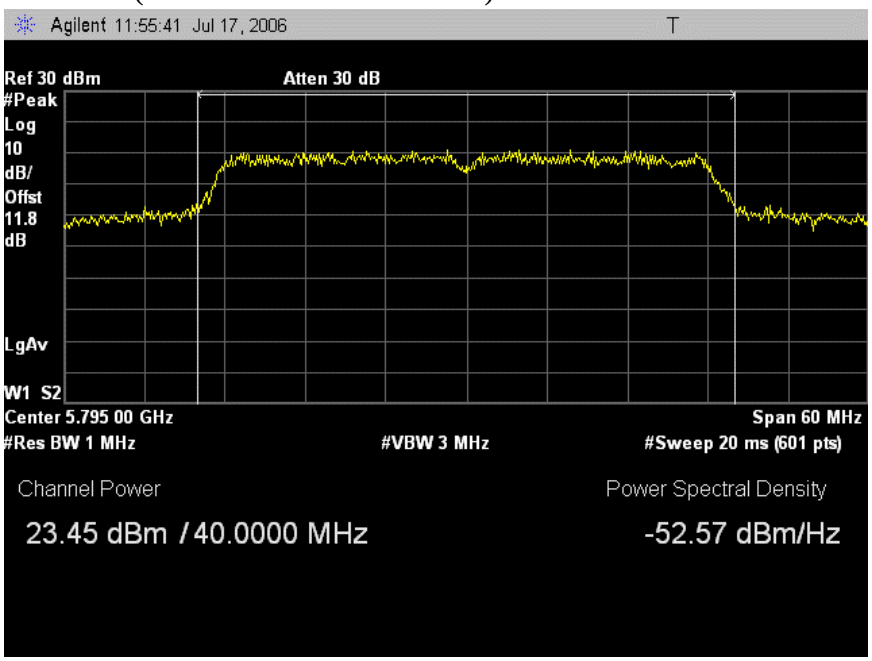


**(802.11 HT40 MODE CHAIN B)**

LOW CH (802.11n HT40 mode chain B)



HIGH CH (802.11n HT40 mode chain B)



## 7.2.4. AVERAGE POWER

**AVERAGE POWER LIMIT**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

Each chain is measured separately and the total power is calculated using:

Total Power = 10 log (10^ (Chain 0 Power / 10) + 10^ (Chain 2 Power / 10))

**RESULTS**

No non-compliance noted:

The cable assembly insertion loss of 11.8 dB (including 10 dB pad and 1.8 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Mode Channel | Frequency (MHz) | Average Power Chain A (dBm) | Average Power Chain B (dBm) | Average Power Total (dBm) |
|---|---|---|---|---|
| 802.11a 20M Mode | | | | |
| Low | 5745 | 16.9 | 17.1 | 20.0 |
| Middle | 5785 | 16.8 | 17.0 | 19.9 |
| High | 5825 | 16.9 | 17.0 | 20.0 |
| 802.11a 40M Mode | | | | |
| Low | 5755 | 12.5 | 12.6 | 15.6 |
| High | 5795 | 15.0 | 15.0 | 18.0 |
| 802.11n HT20 Mode | | | | |
| Low | 5745 | 16.9 | 17.0 | 20.0 |
| Middle | 5785 | 16.9 | 16.9 | 19.9 |
| High | 5825 | 16.8 | 16.9 | 19.8 |
| 802.11n HT40 Mode | | | | |
| Low | 5755 | 14.3 | 14.4 | 17.4 |
| High | 5795 | 17.0 | 16.9 | 19.9 |

## 7.2.5. PEAK POWER SPECTRAL DENSITY

**LIMIT**

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

**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

Each chain is measured separately and the total PPSD is calculated using:

Total PPSD = 10 log (10^ (Chain 0 PPSD / 10) + 10^ (Chain 2 PPSD / 10))

**RESULTS**

No non-compliance noted:

| Mode Channel | Frequency (MHz) | PPSD Chain A (dBm) | PPSD Chain B (dBm) | PPSD Total (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| 802.11a 20M Mode | | | | | | |
| Low | 5745 | -11.20 | -12.28 | -8.70 | 8 | -16.70 |
| Middle | 5785 | -10.84 | -12.80 | -8.70 | 8 | -16.70 |
| High | 5825 | -11.36 | -12.63 | -8.94 | 8 | -16.94 |
| 802.11a 40M Mode | | | | | | |
| Low | 5755 | -13.85 | -15.16 | -11.45 | 8 | -19.45 |
| High | 5795 | -14.42 | -15.46 | -11.90 | 8 | -19.90 |
| 802.11n HT20 Mode | | | | | | |
| Low | 5745 | -11.42 | -12.46 | -8.90 | 8 | -16.90 |
| Middle | 5785 | -13.18 | -12.46 | -9.79 | 8 | -17.79 |
| High | 5825 | -12.12 | -12.98 | -9.52 | 8 | -17.52 |
| 802.11n HT40 Mode | | | | | | |
| Low | 5755 | -14.49 | -14.70 | -11.58 | 8 | -19.58 |
| High | 5795 | -14.16 | -14.74 | -11.43 | 8 | -19.43 |

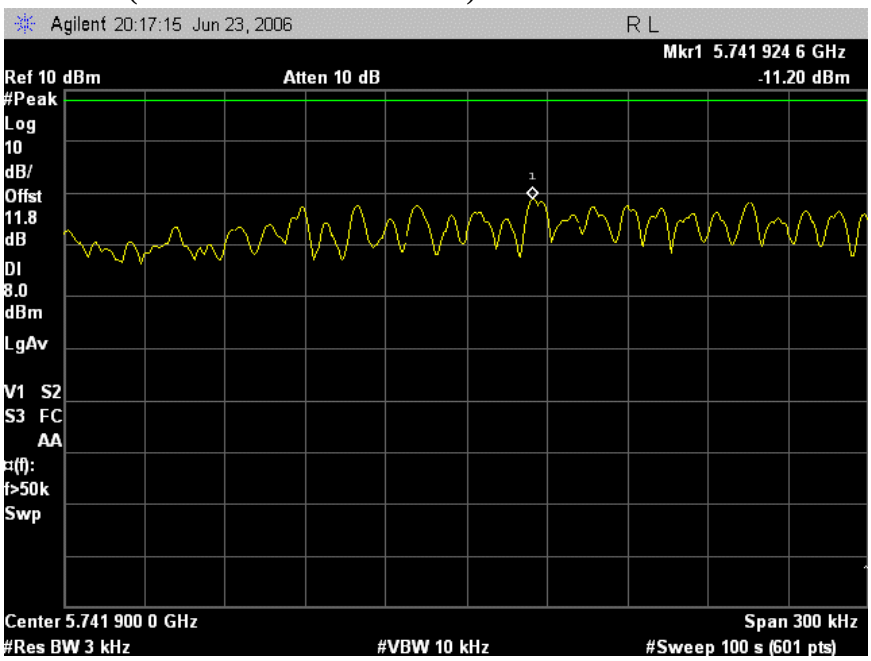
**RESULTS WITH COMBINER**

No non-compliance noted:

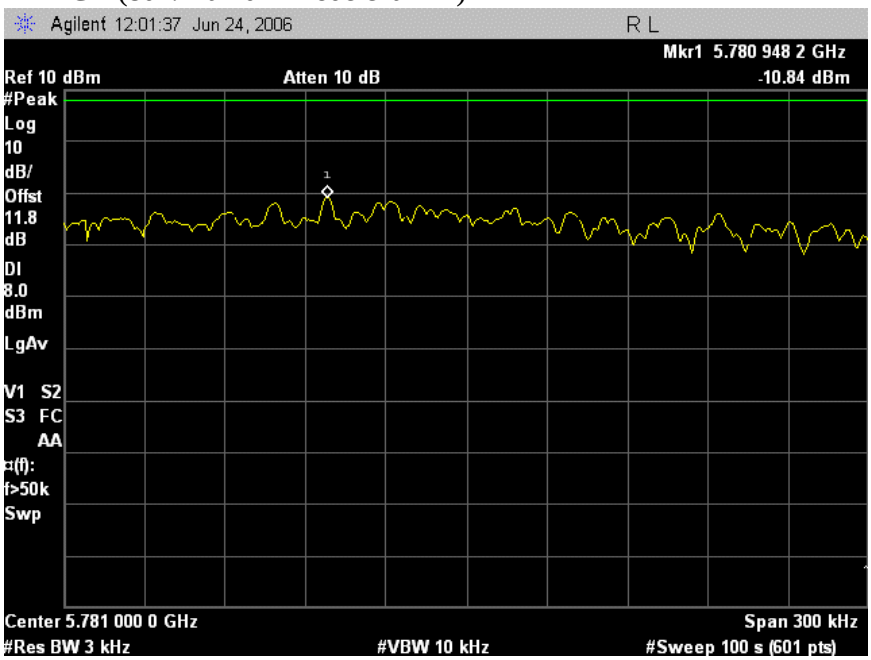
| Mode Channel | Frequency (MHz) | PPSD Using Combiner (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| 802.11a Mode | | | | |
| Low | 5745 | -6.73 | 8 | -14.73 |
| Middle | 5785 | -7.02 | 8 | -15.02 |
| High | 5825 | -5.73 | 8 | -13.73 |
| 802.11a Mode | | | | |
| Low | 5755 | -12.50 | 8 | -20.50 |
| High | 5795 | -9.40 | 8 | -17.40 |
| 802.11n HT20 Mode | | | | |
| Low | 5745 | -6.33 | 8 | -14.33 |
| Middle | 5785 | -7.65 | 8 | -15.65 |
| High | 5825 | -7.53 | 8 | -15.53 |
| 802.11n HT40 Mode | | | | |
| Low | 5755 | -10.06 | 8 | -18.06 |
| High | 5795 | -9.84 | 8 | -17.84 |

**(802.11a 20M MODE CHAIN A)**

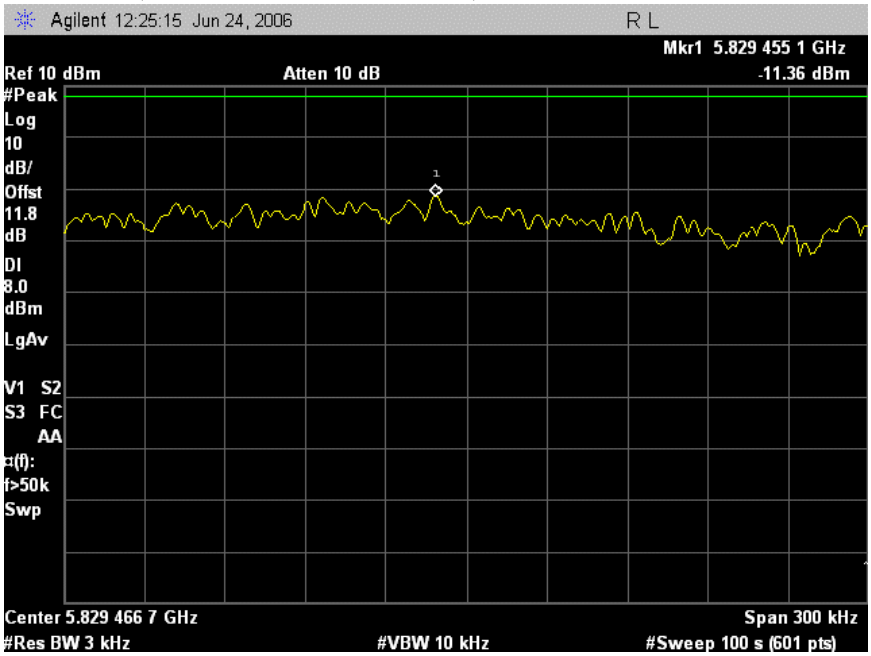
LOW CH (802.11a mode 20M chain A)



MID CH (802.11a 20M mode chain A)

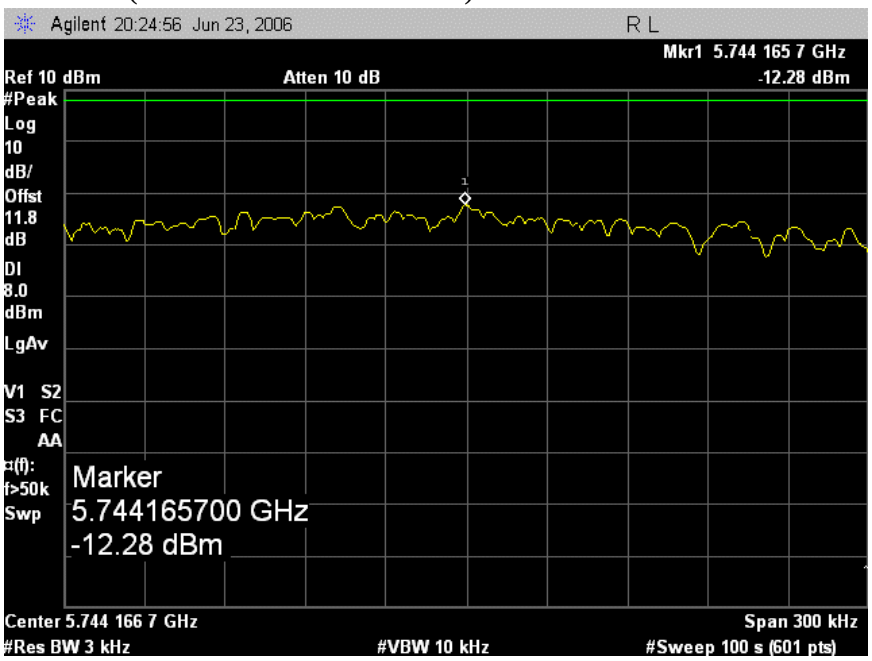


HIGH CH (802.11a 20M mode chain A)

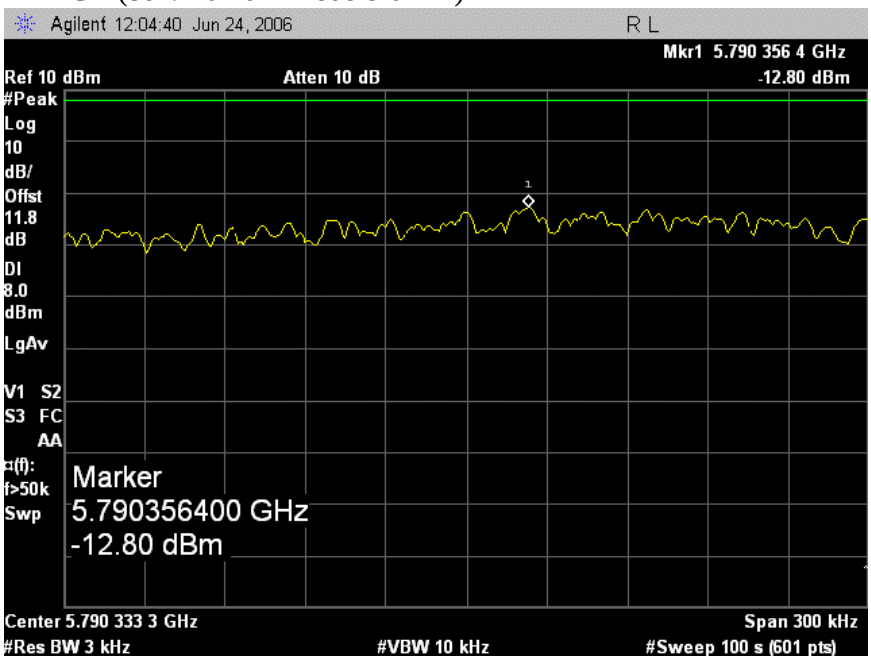


**(802.11a 20M MODE CHAIN B)**

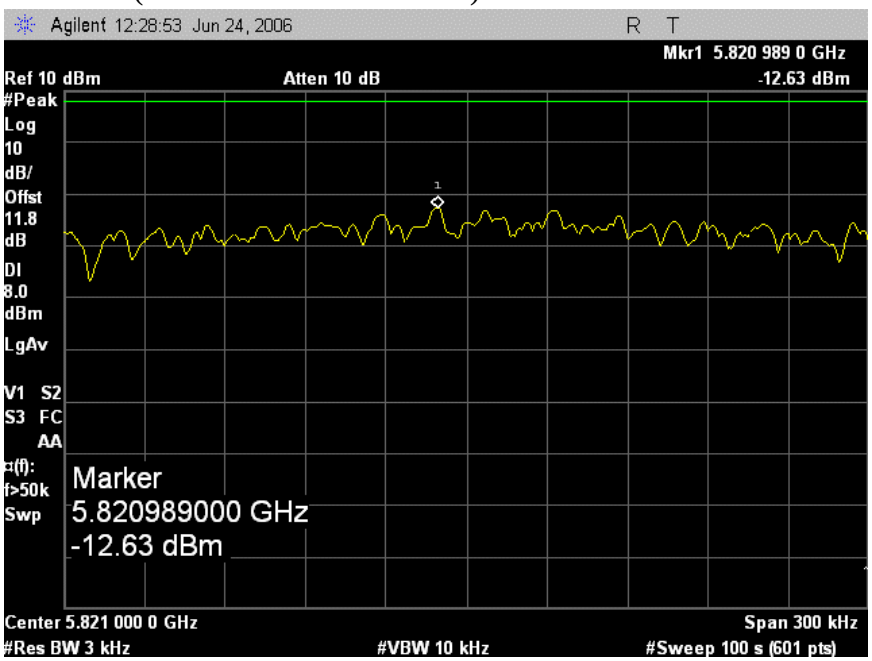
LOW CH (802.11a 20M mode chain B)



MID CH (802.11a 20M mode chain B)

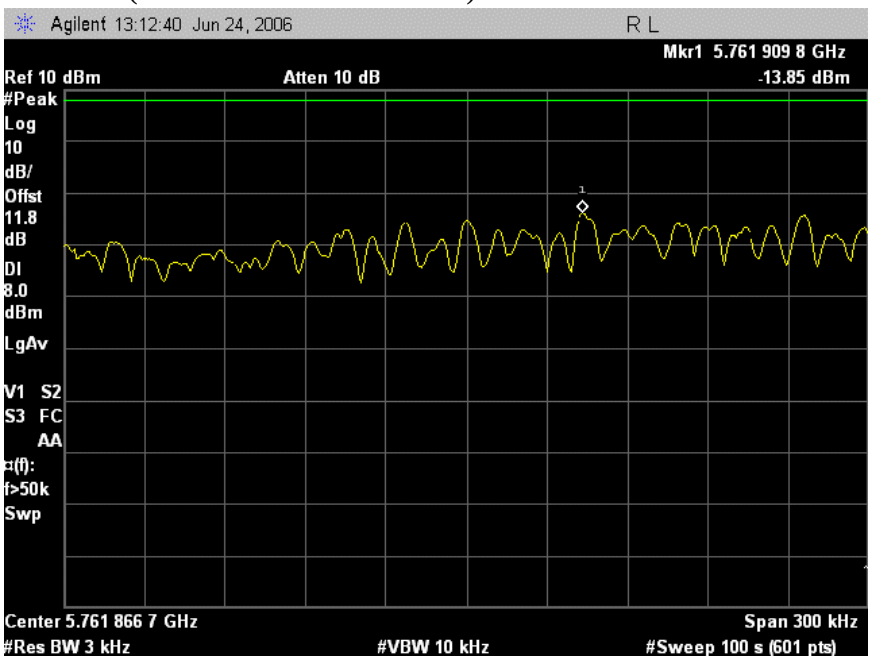


HIGH CH (802.11a 20M mode chain B)

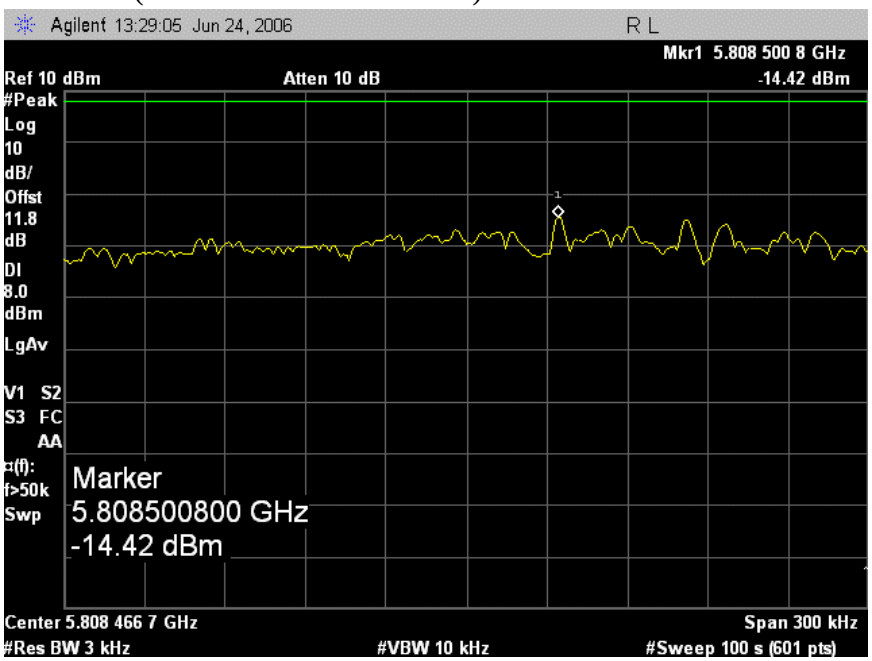


**(802.11a 40M MODE CHAIN A)**

LOW CH (802.11a mode 40M chain A)

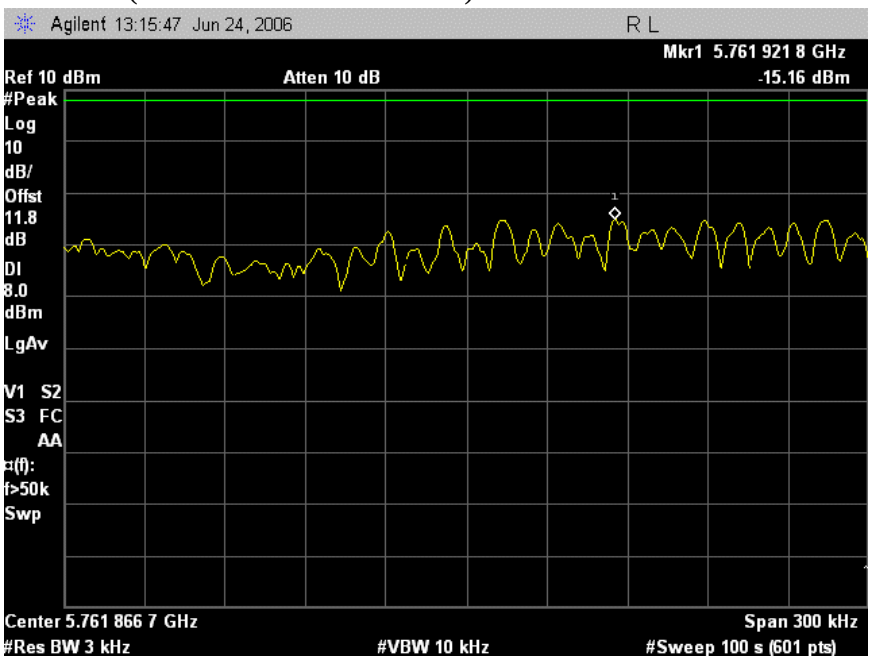


HIGH CH (802.11a 40M mode chain A)

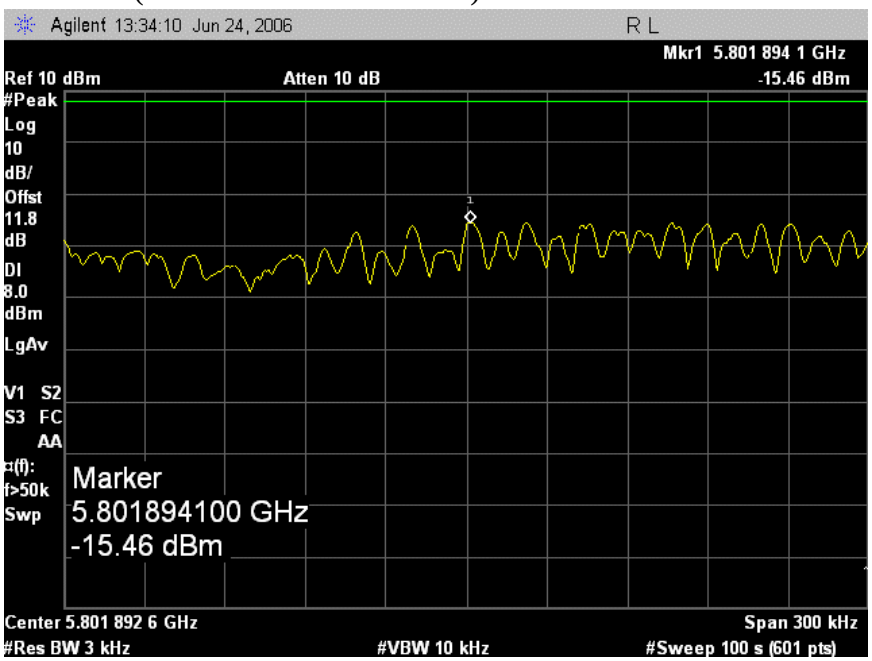


**(802.11a 40M MODE CHAIN B)**

LOW CH (802.11a 40M mode chain B)

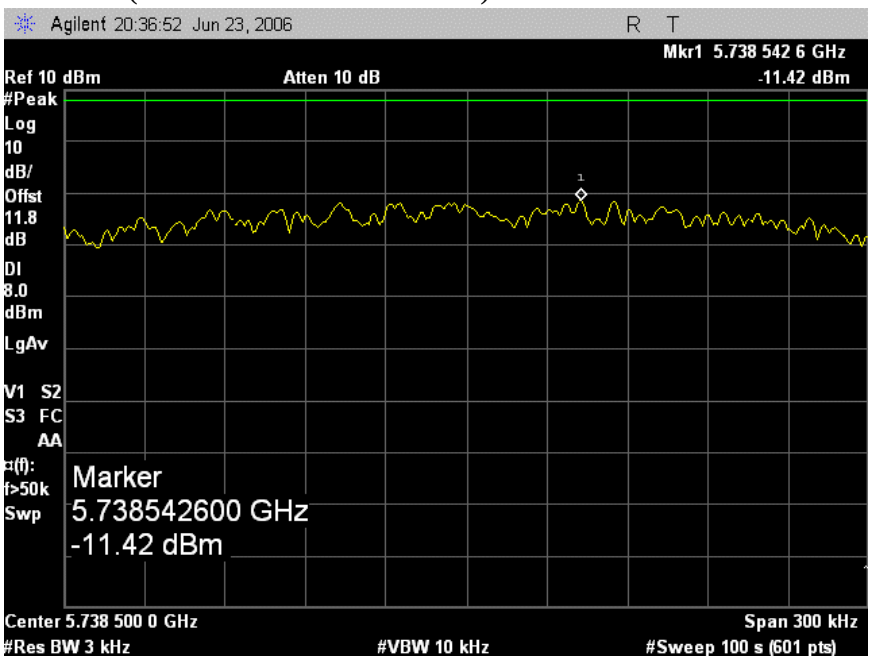


HIGH CH (802.11a 40M mode chain B)

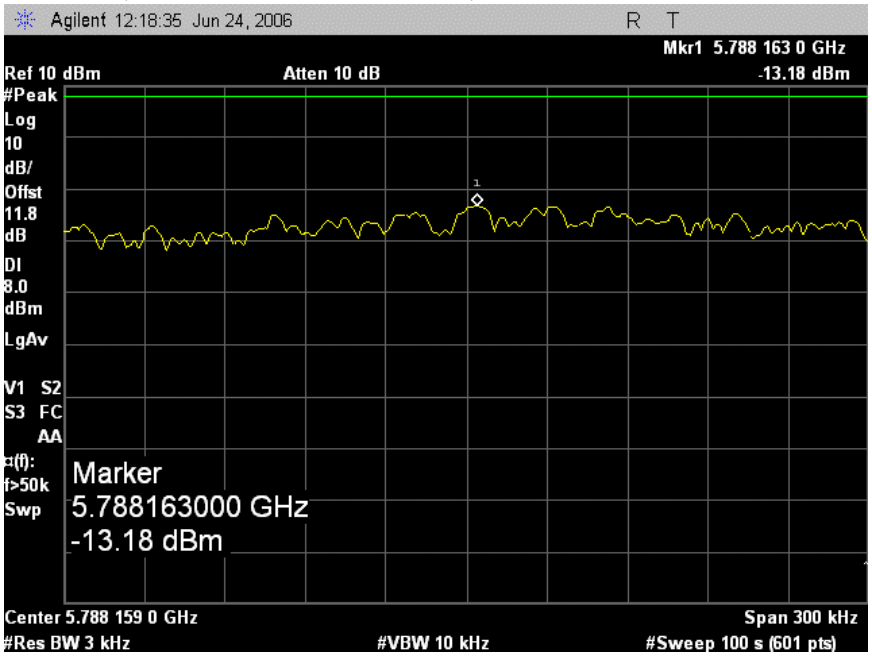


**(802.11n HT20 MODE CHAIN A)**

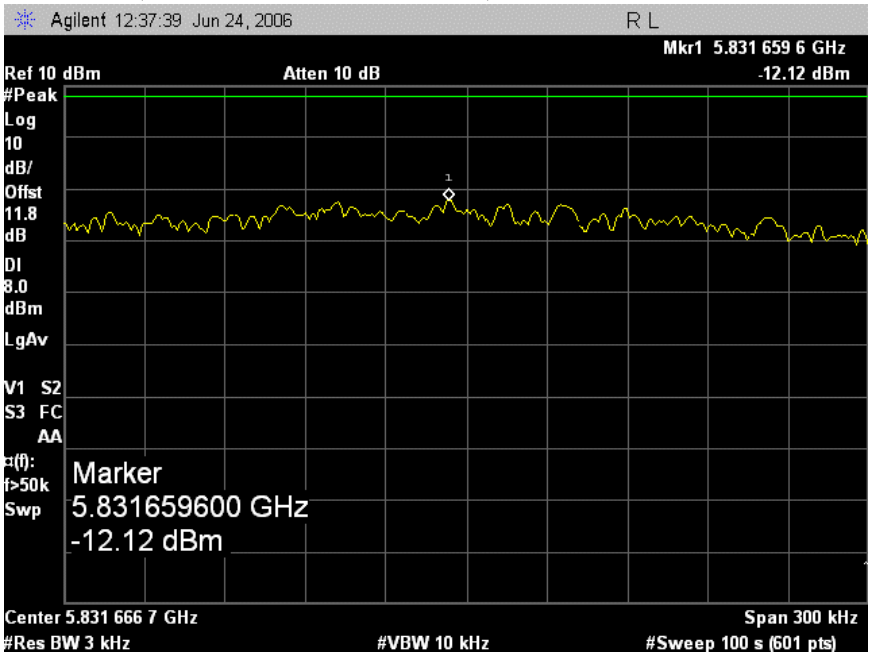
LOW CH (802.11n HT20 mode chain A)



MID CH (802.11n HT20 mode chain A)

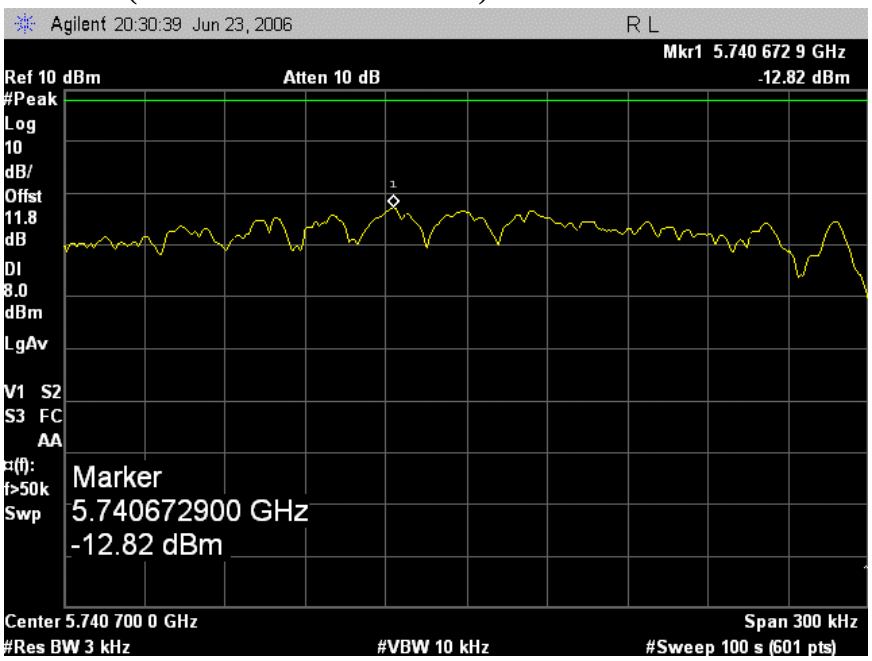


HIGH CH (802.11n HT20 mode chain A)

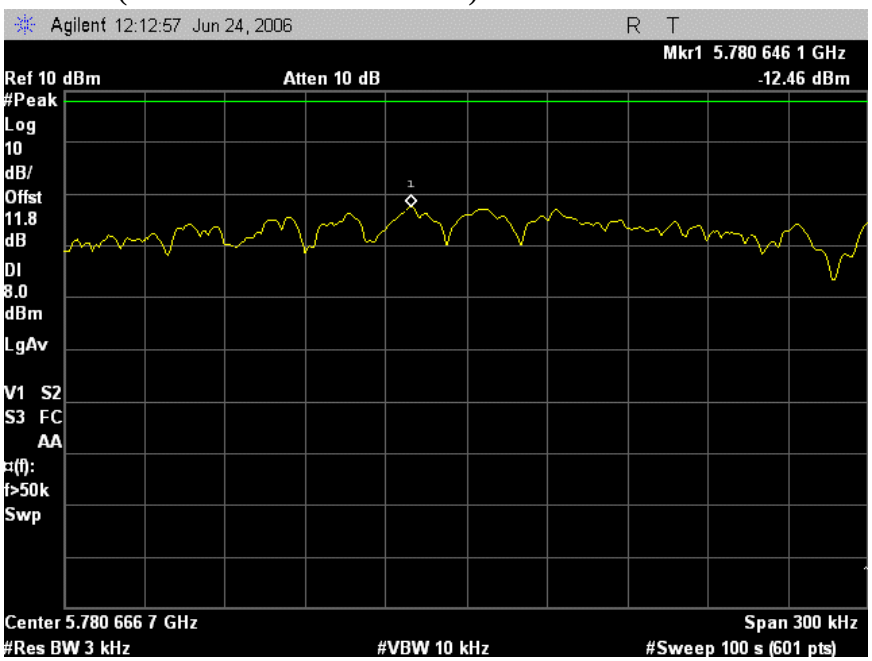


**(802.11 HT20 MODE CHAIN B)**

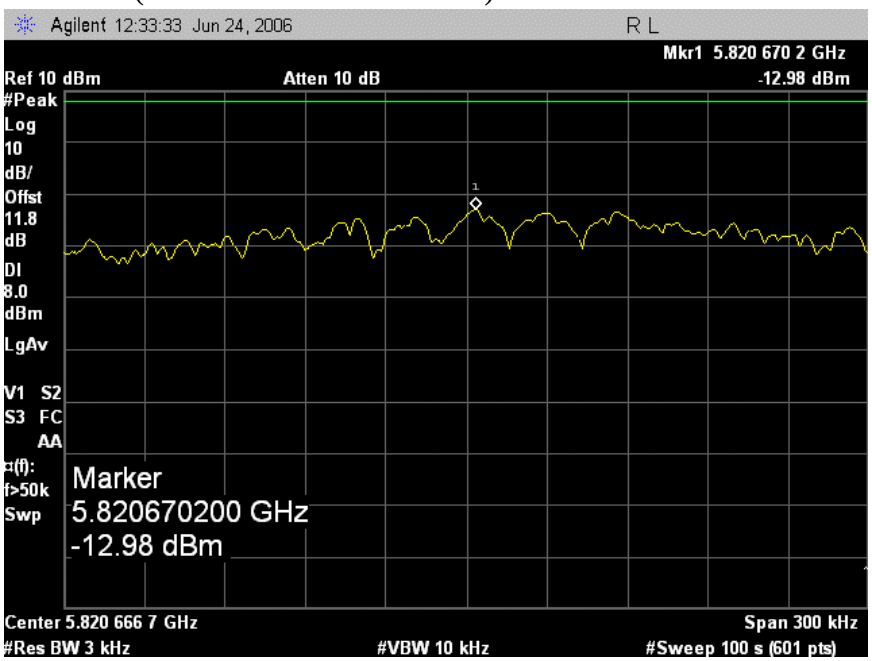
LOW CH (802.11n HT20 mode chain B)



MID CH (802.11n HT20 mode chain B)

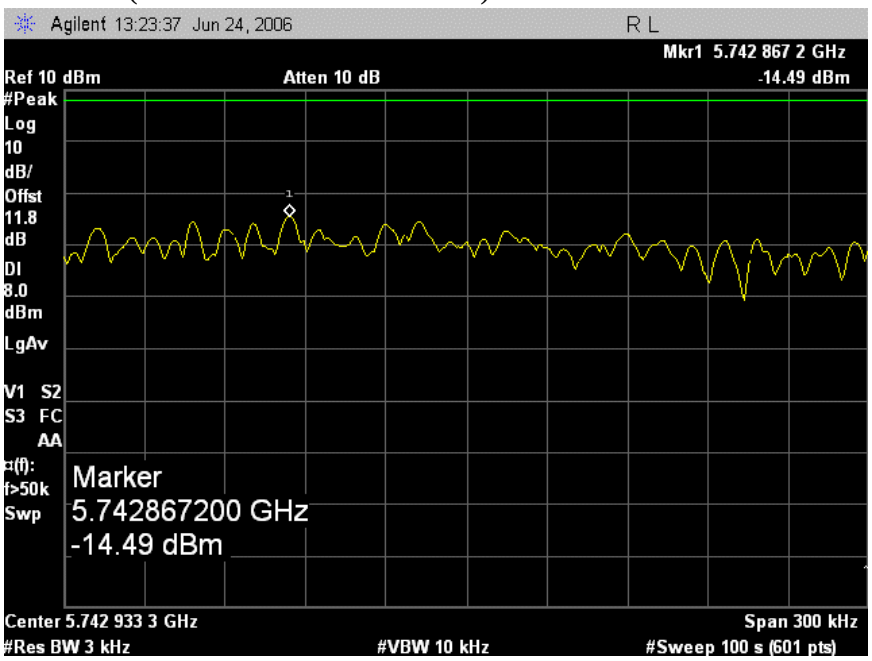


HIGH CH (802.11n HT20 mode chain B)

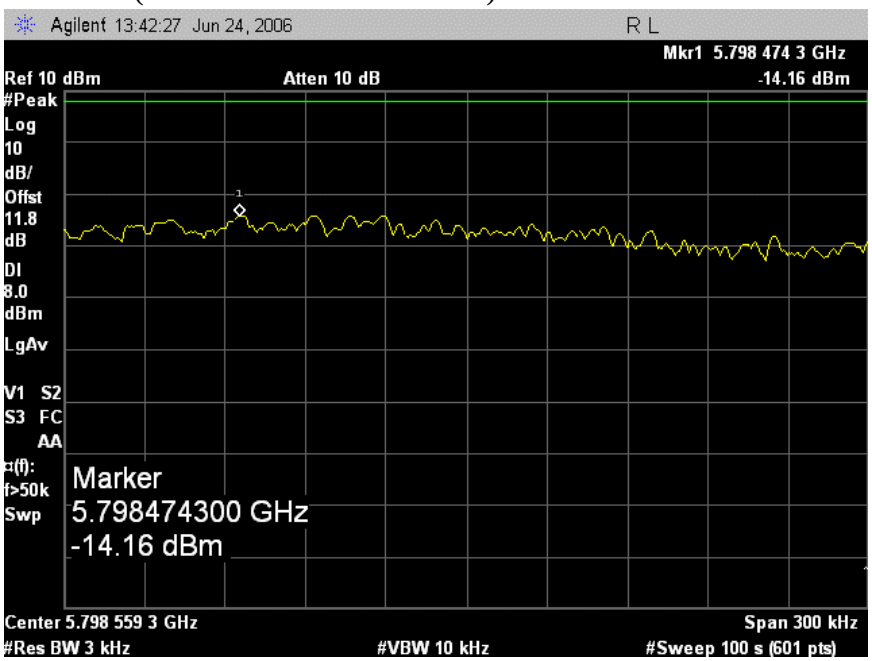


**(802.11 HT40 MODE CHAIN A)**

LOW CH (802.11n HT40 mode chain A)

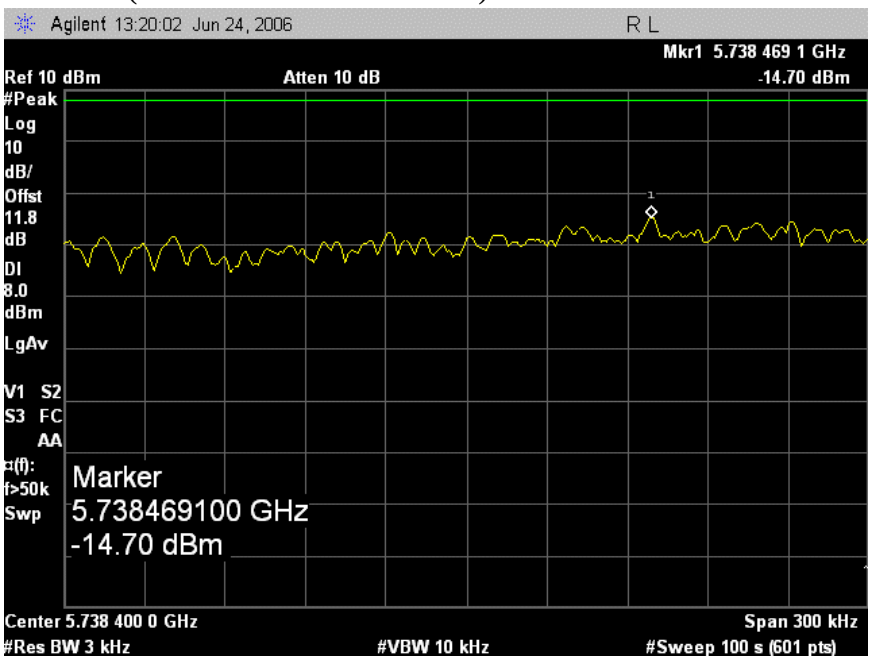


HIGH CH (802.11n HT40 mode chain A)

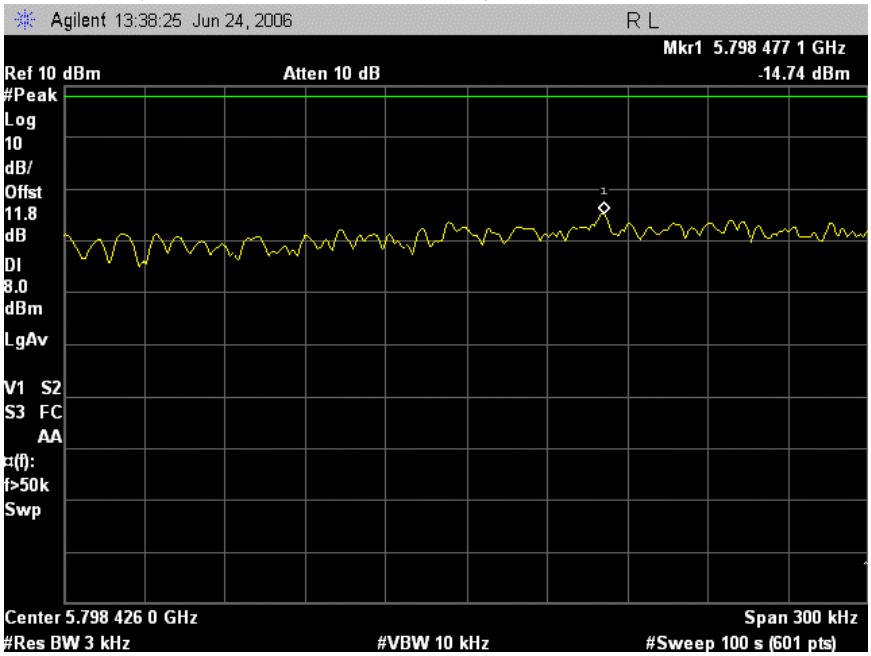


**(802.11 HT40 MODE CHAIN B)**

LOW CH (802.11n HT40 mode chain B)



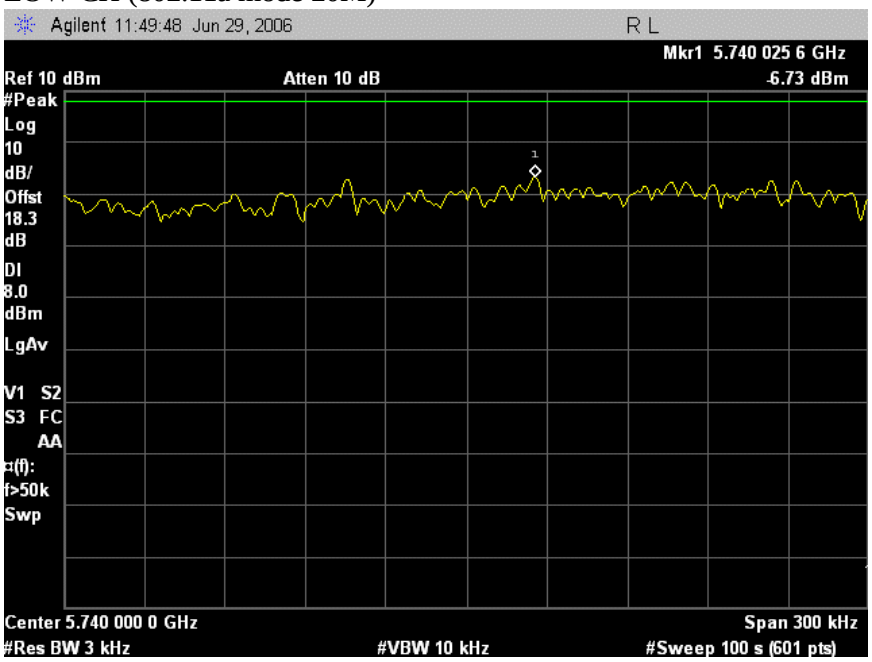
HIGH CH (802.11n HT40 mode chain B)



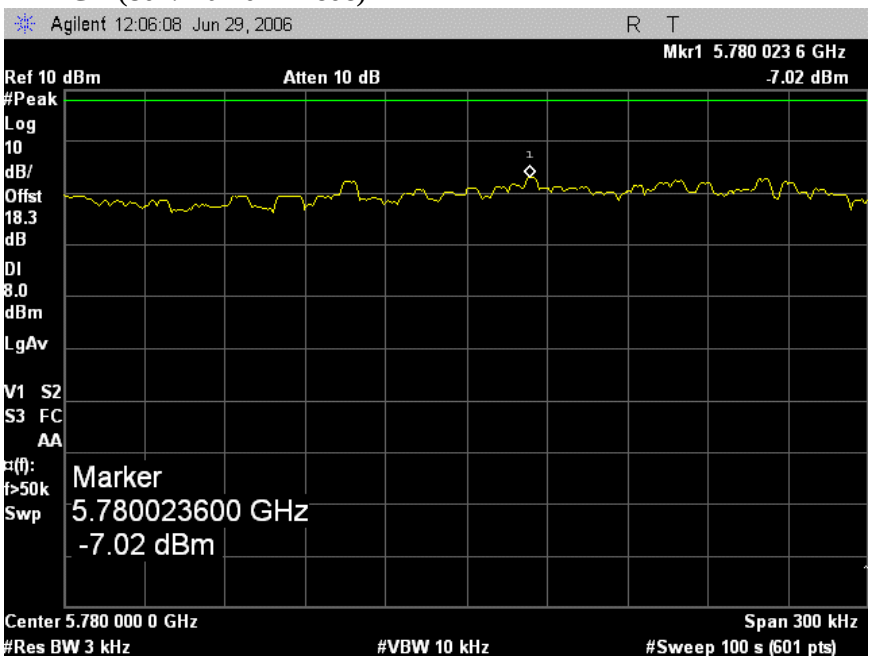
**PLOTS USING COMBINER**

**(802.11a 20M MODE)**

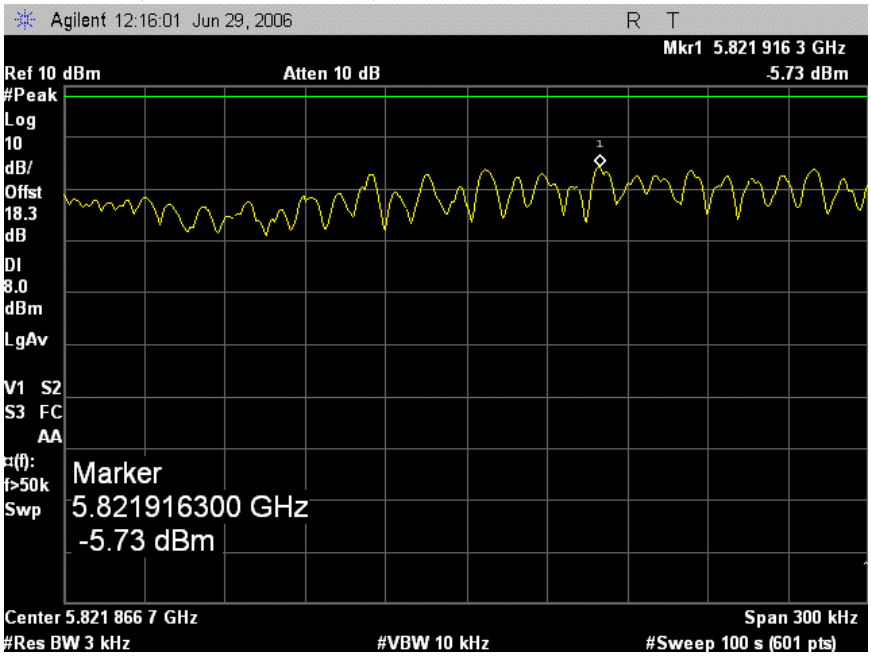
LOW CH (802.11a mode 20M)



MID CH (802.11a 20M mode)

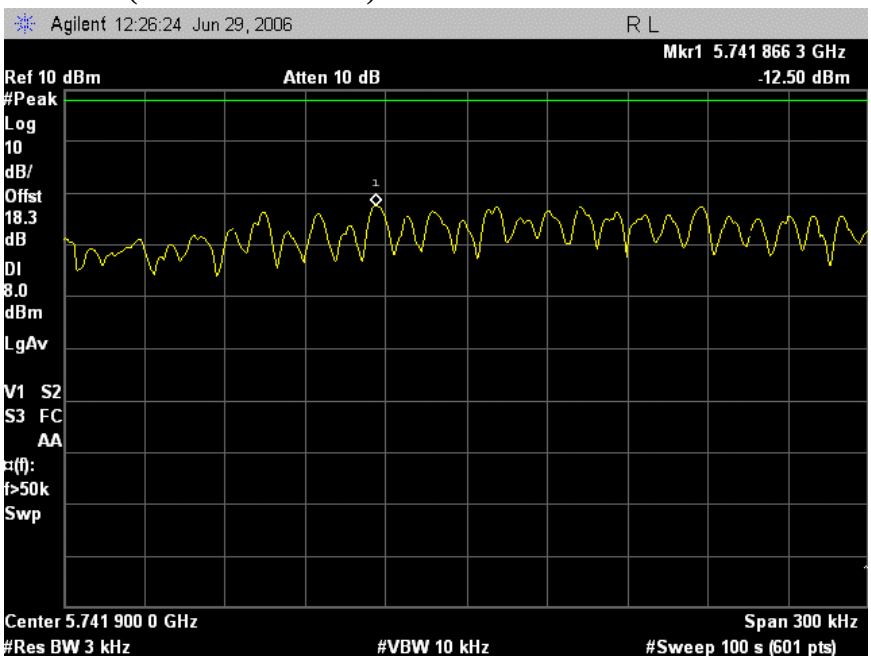


HIGH CH (802.11a 20M mode)

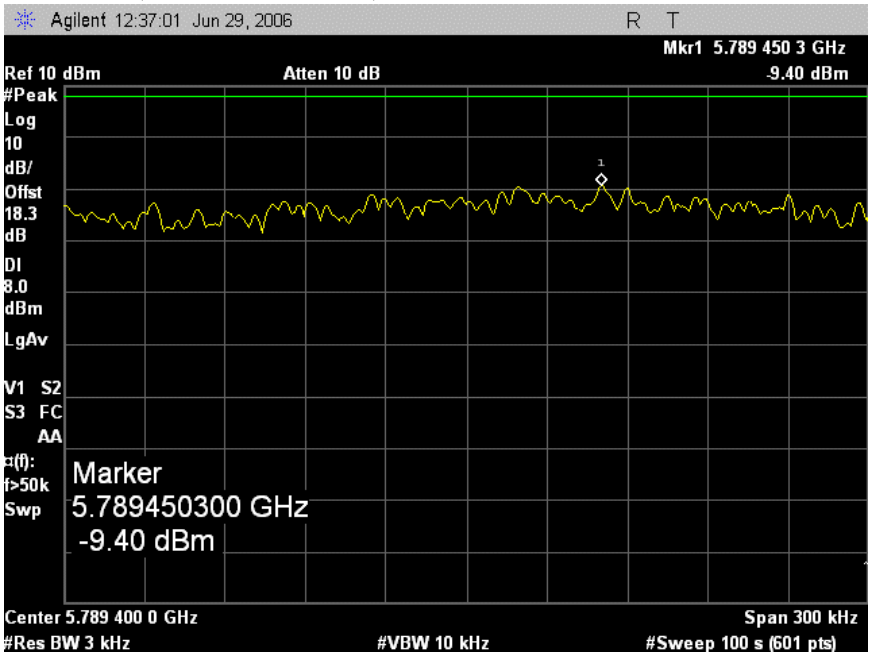


**(802.11a 40M MODE)**

LOW CH (802.11a mode 40M)

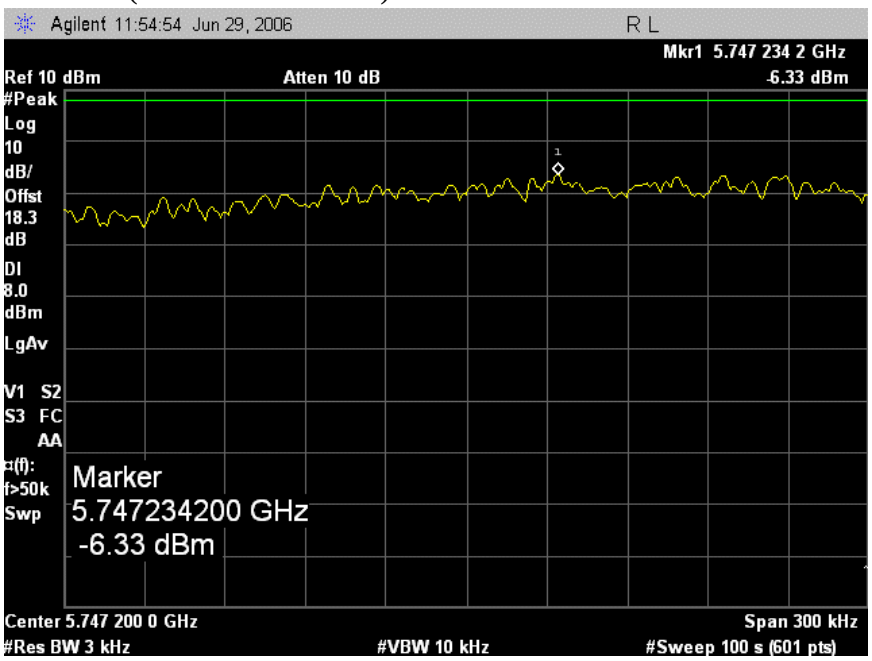


HIGH CH (802.11a 40M mode)

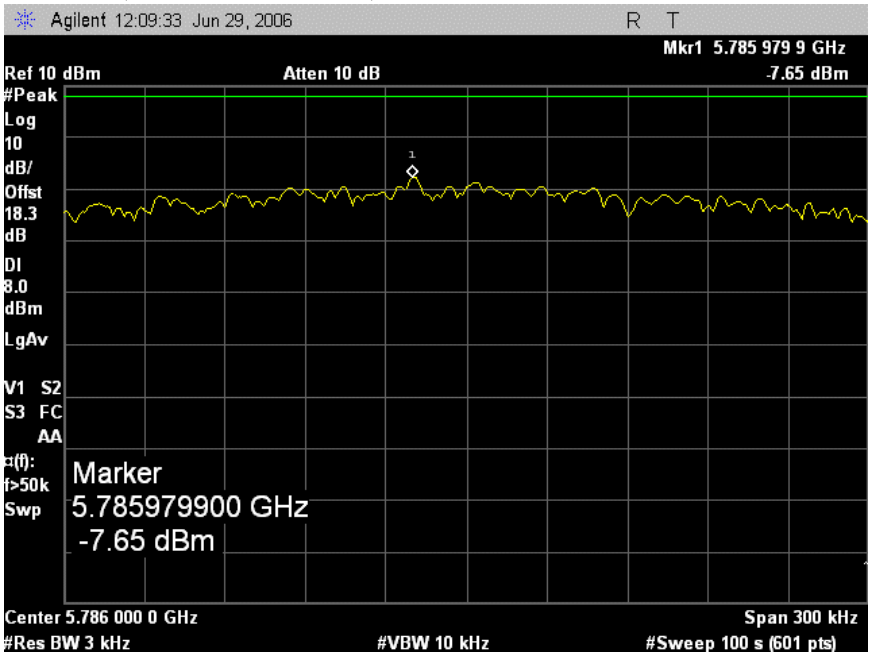


**(802.11n HT20 MODE)**

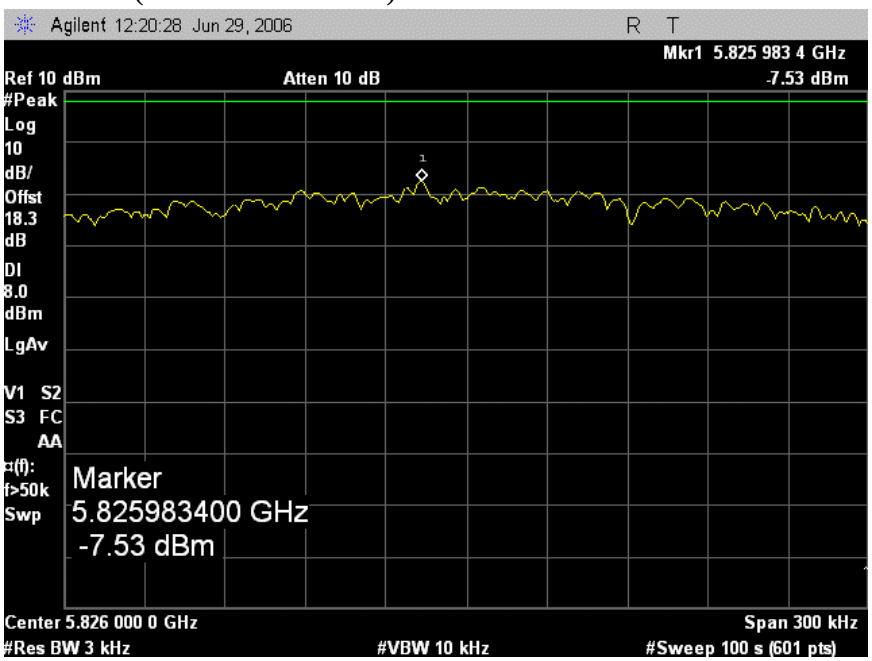
LOW CH (802.11n HT20 mode)



MID CH (802.11n HT20 mode)

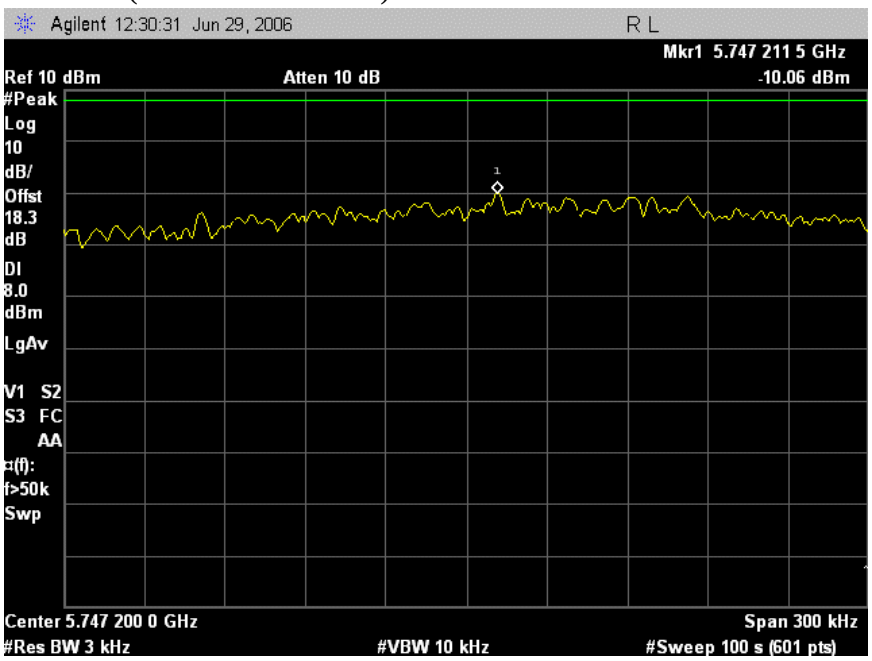


HIGH CH (802.11n HT20 mode)

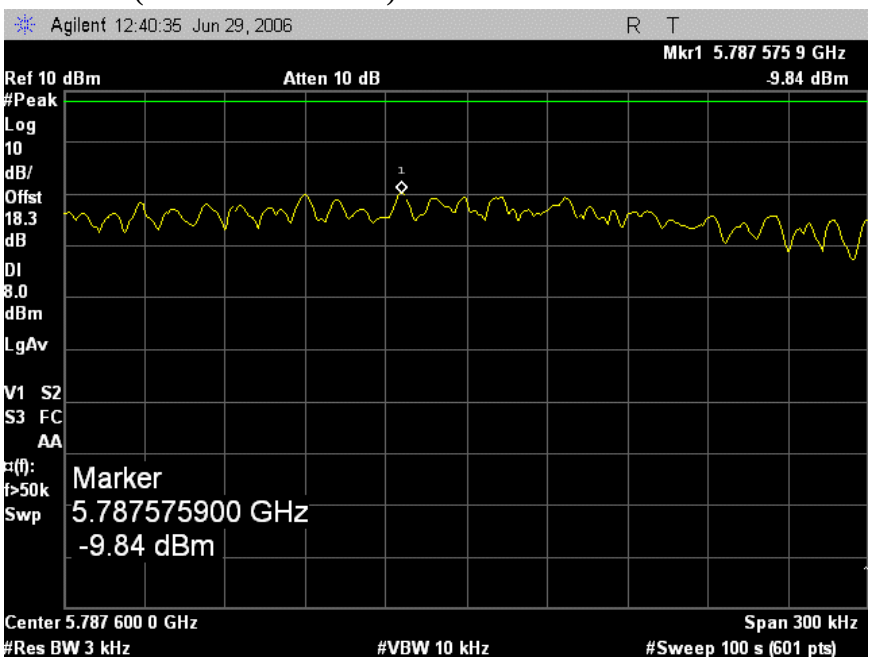


**(802.11 HT40 MODE)**

LOW CH (802.11n HT40 mode)



HIGH CH (802.11n HT40 mode)



## 7.2.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

§15.247 (c) 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 band 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 300 kHz.

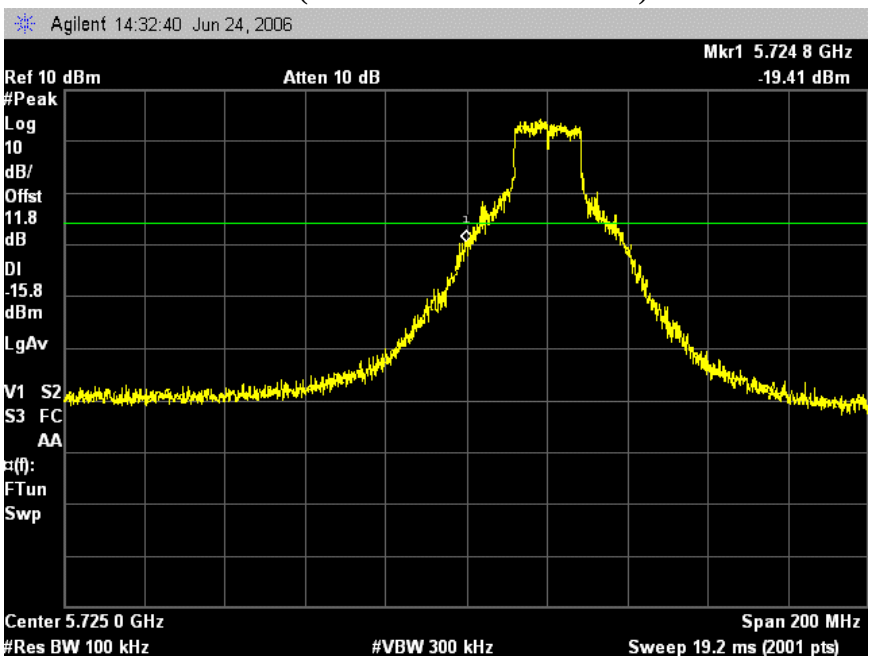
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

**RESULTS**

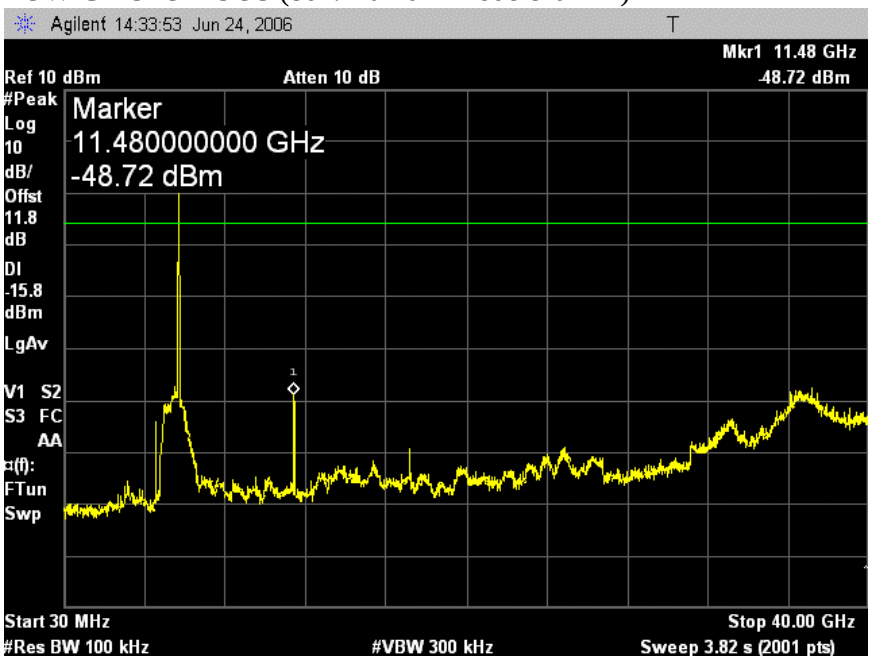
No non-compliance noted:

**SPURIOUS EMISSIONS (802.11a 20M MODE CHAIN A)**

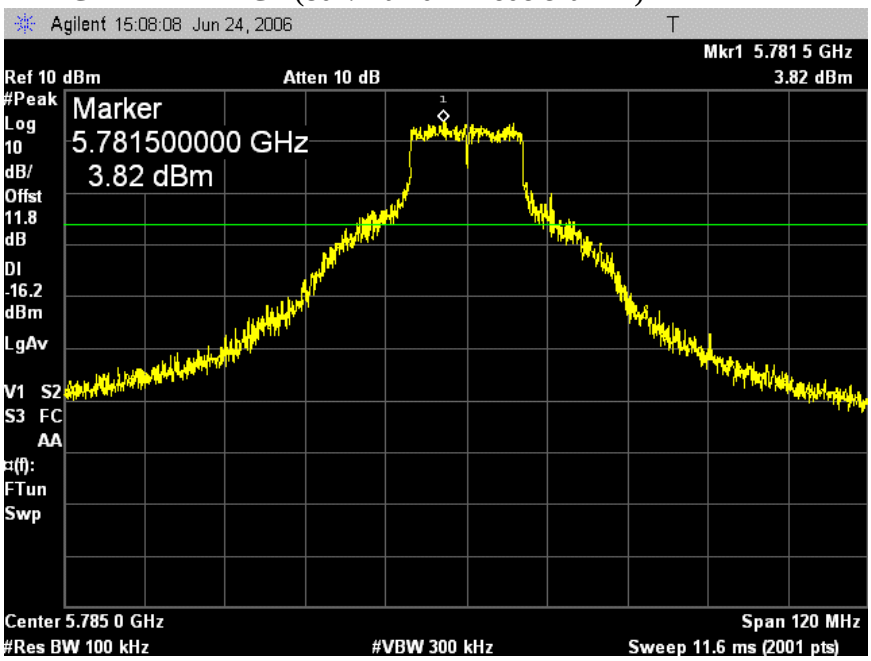
LOW CH BANDEDGE (802.11a 20M mode chain A)



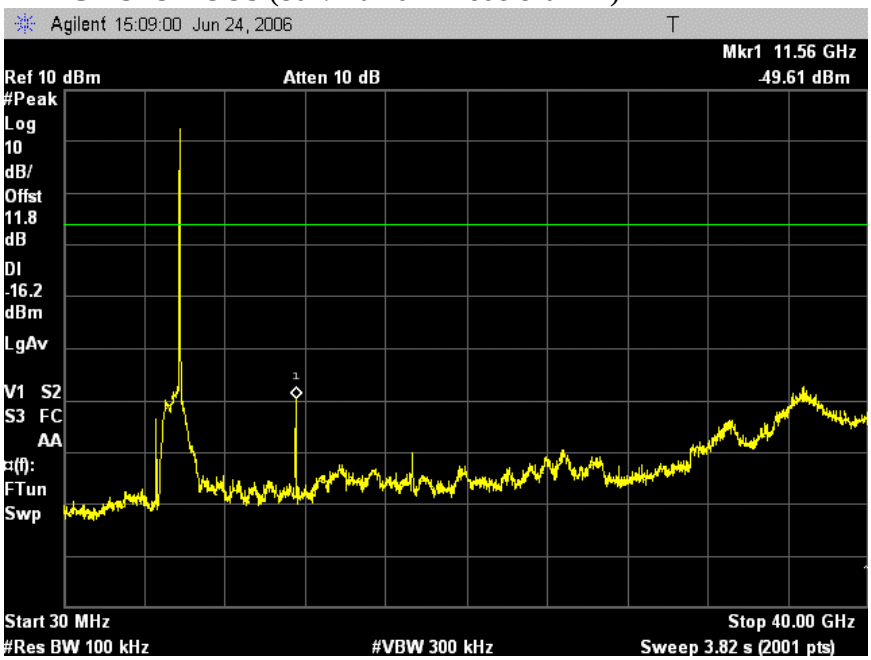
LOW CH SPURIOUS (802.11a 20M mode chain A)



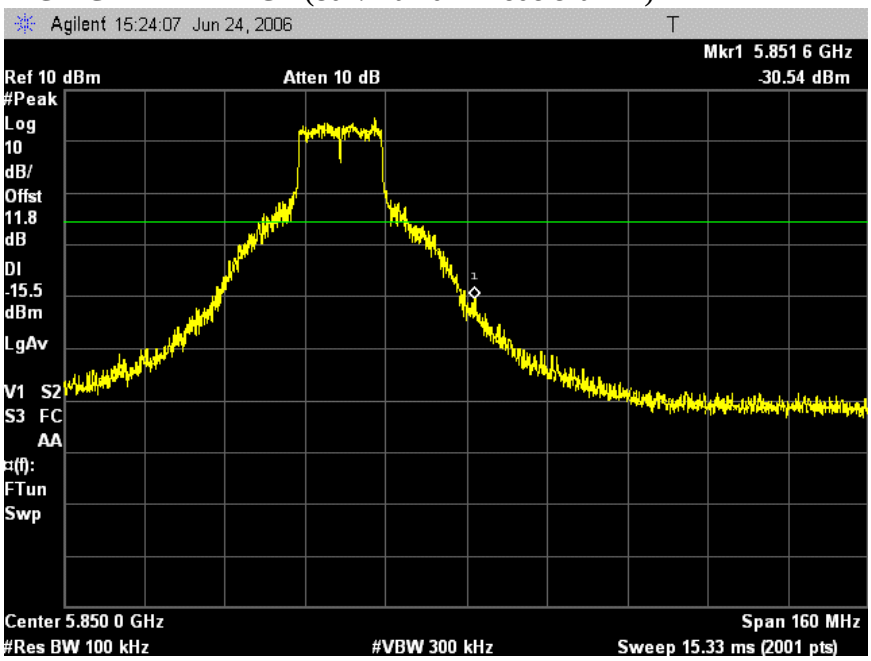
MID CH REFERENCE (802.11a 20M mode chain A)



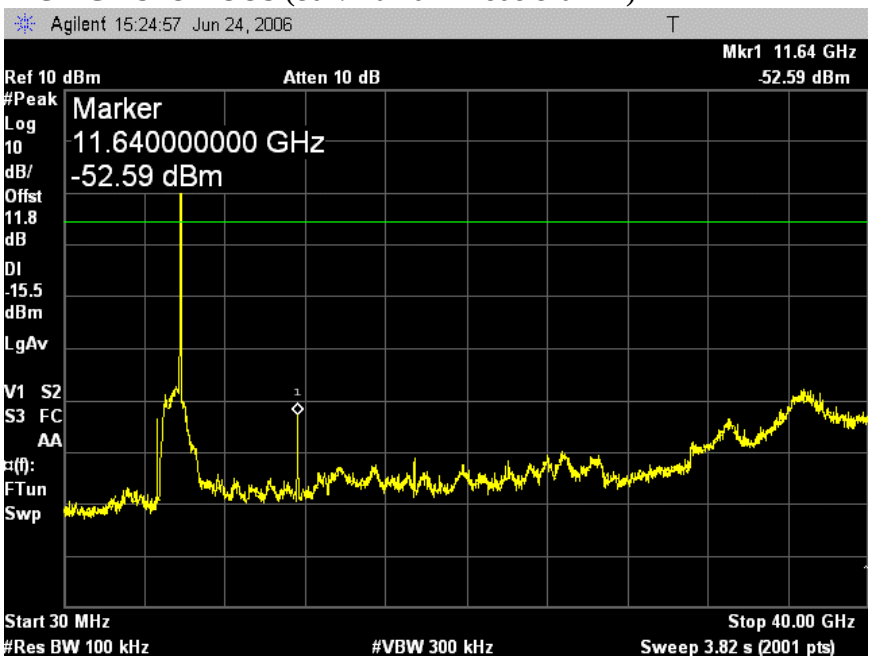
MID CH SPURIOUS (802.11a 20M mode chain A)



HIGH CH BANDEDGE (802.11a 20M mode chain A)

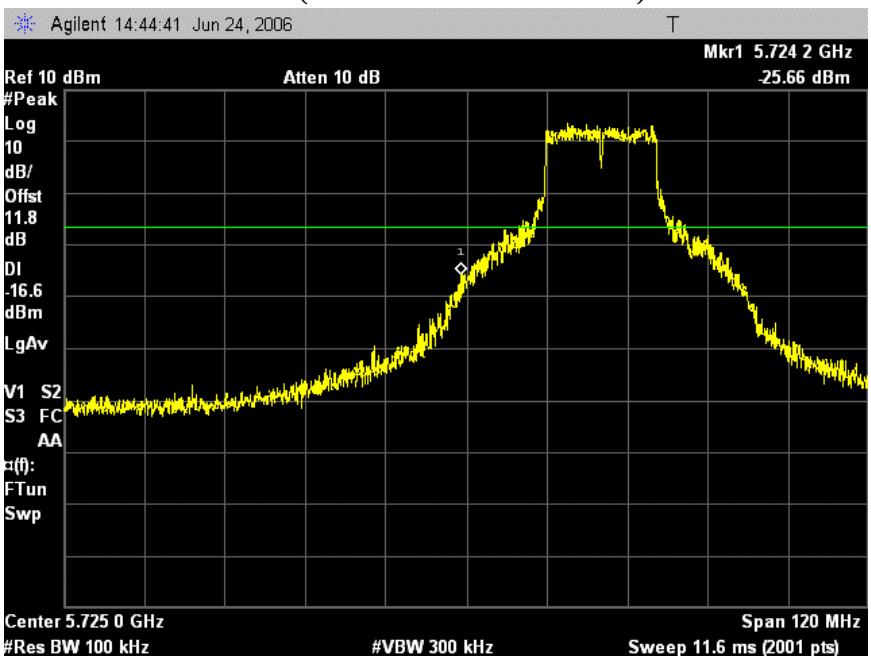


HIGH CH SPURIOUS (802.11a 20M mode chain A)

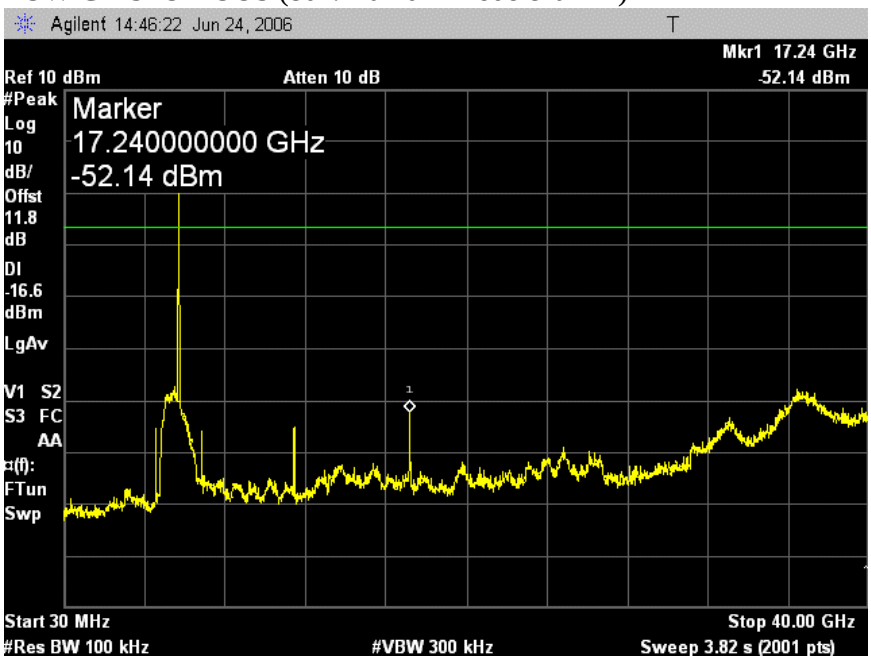


**SPURIOUS EMISSIONS (802.11a 20M MODE CHAIN B)**

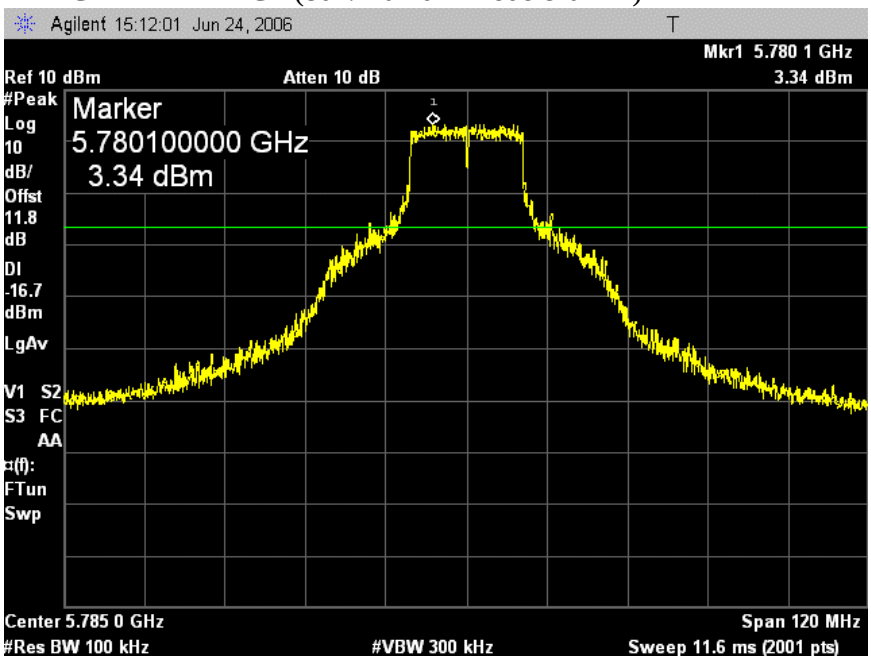
LOW CH BANDEDGE (802.11a 20M mode chain B)



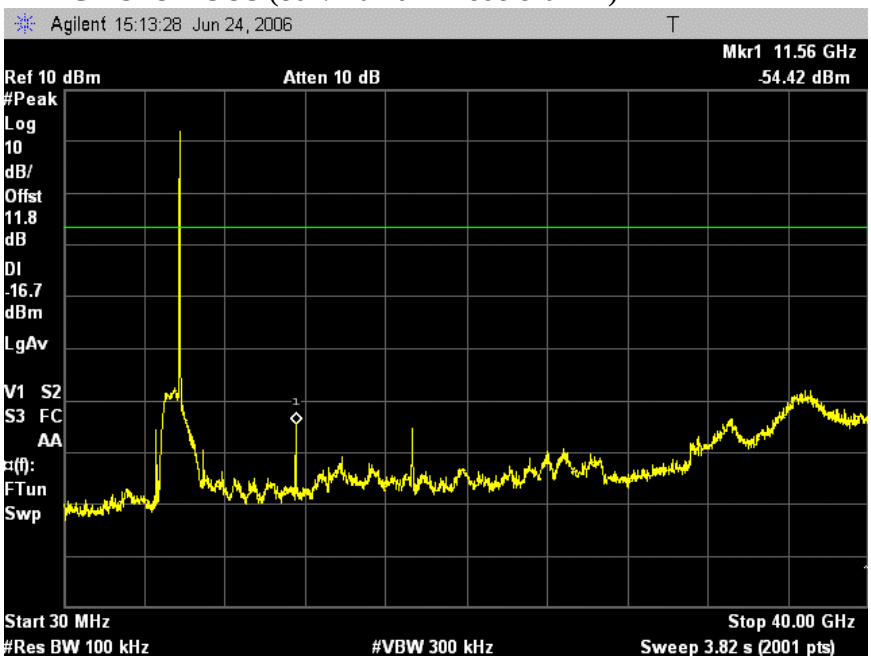
LOW CH SPURIOUS (802.11a 20M mode chain B)



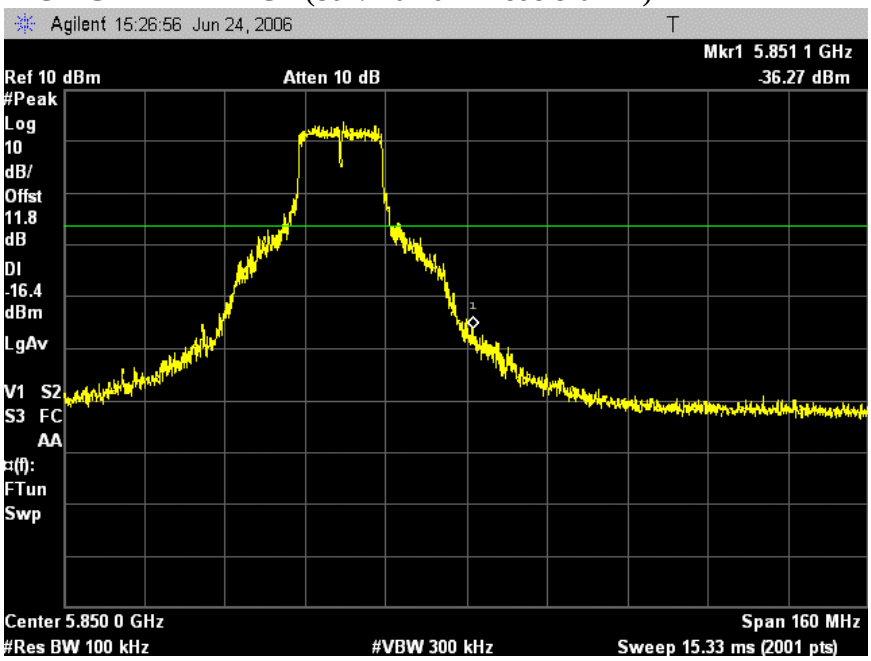
MID CH REFERENCE (802.11a 20M mode chain B)



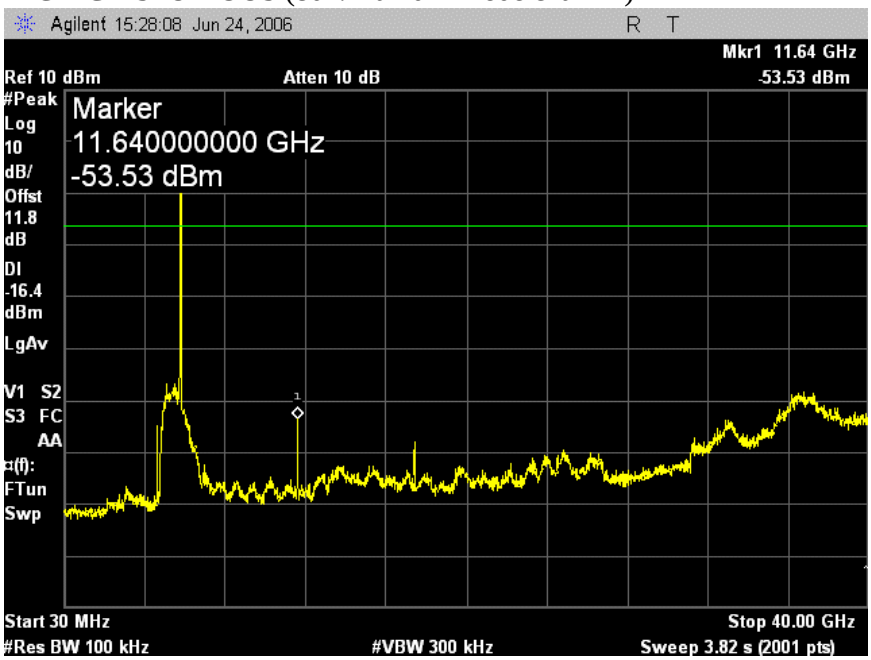
MID CH SPURIOUS (802.11a 20M mode chain B)



HIGH CH BANDEDGE (802.11a 20M mode chain B)

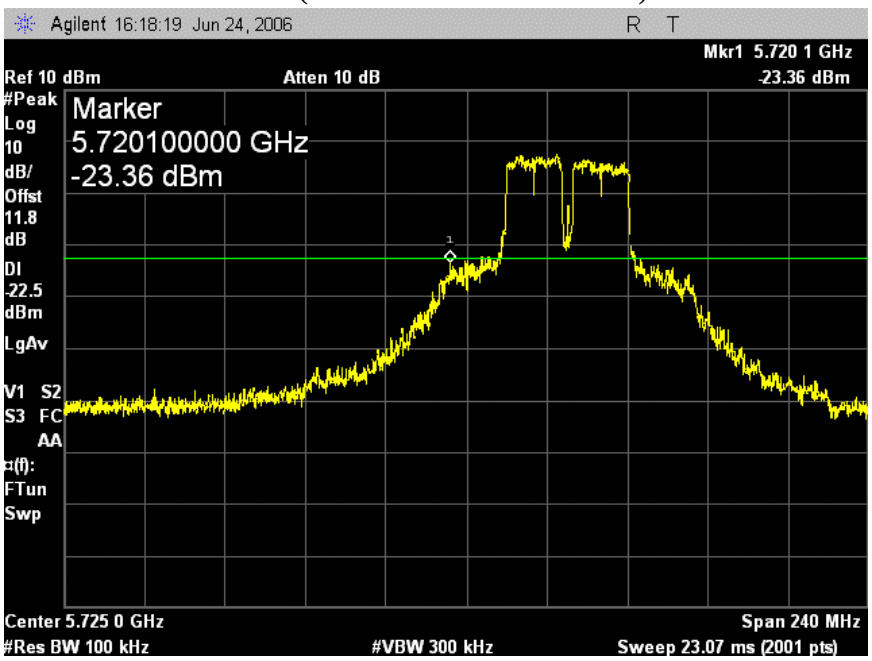


HIGH CH SPURIOUS (802.11a 20M mode chain B)

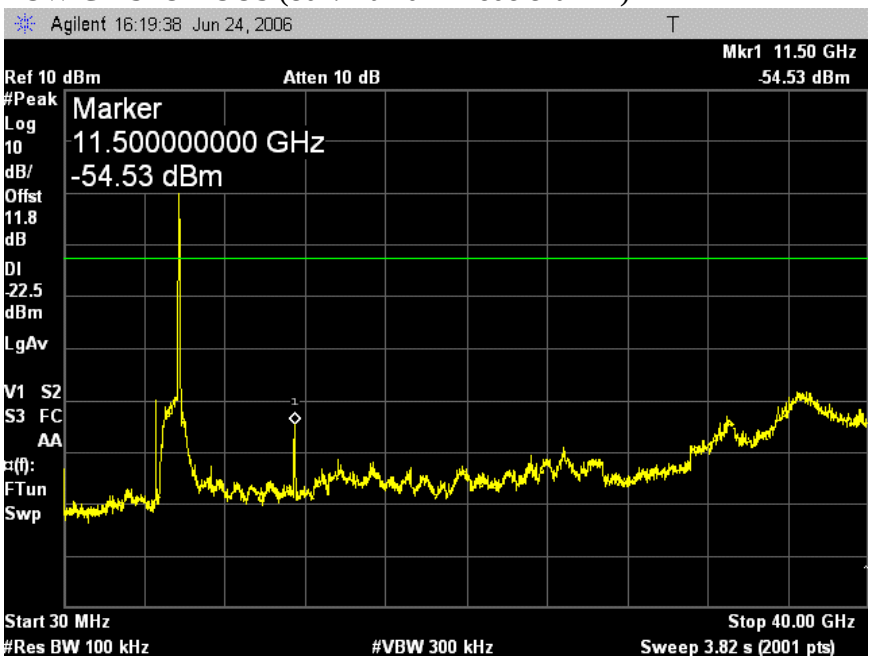


**SPURIOUS EMISSIONS (802.11a 40M MODE CHAIN A)**

LOW CH BANDEDGE (802.11a 40M mode chain A)

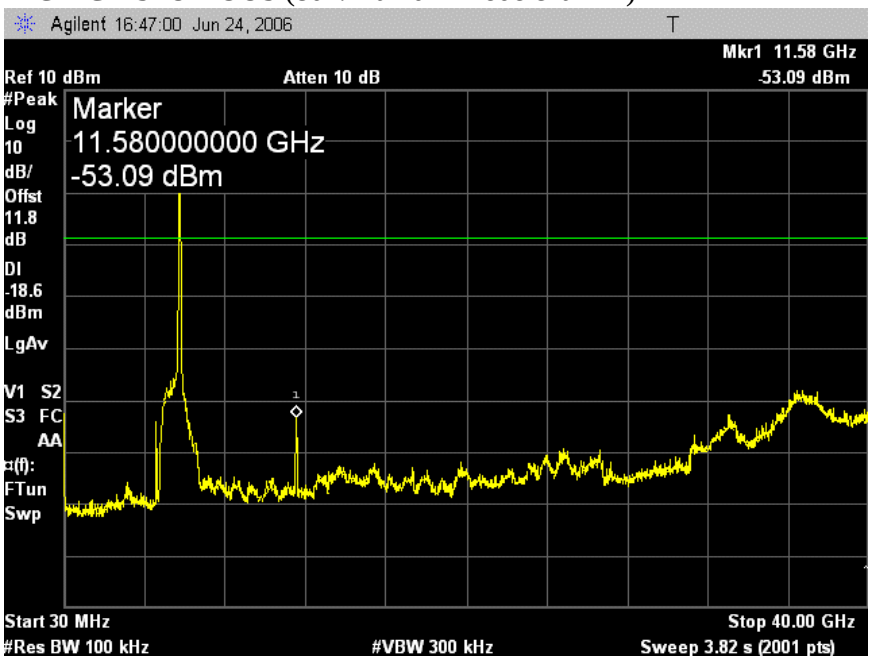


LOW CH SPURIOUS (802.11a 40M mode chain A)



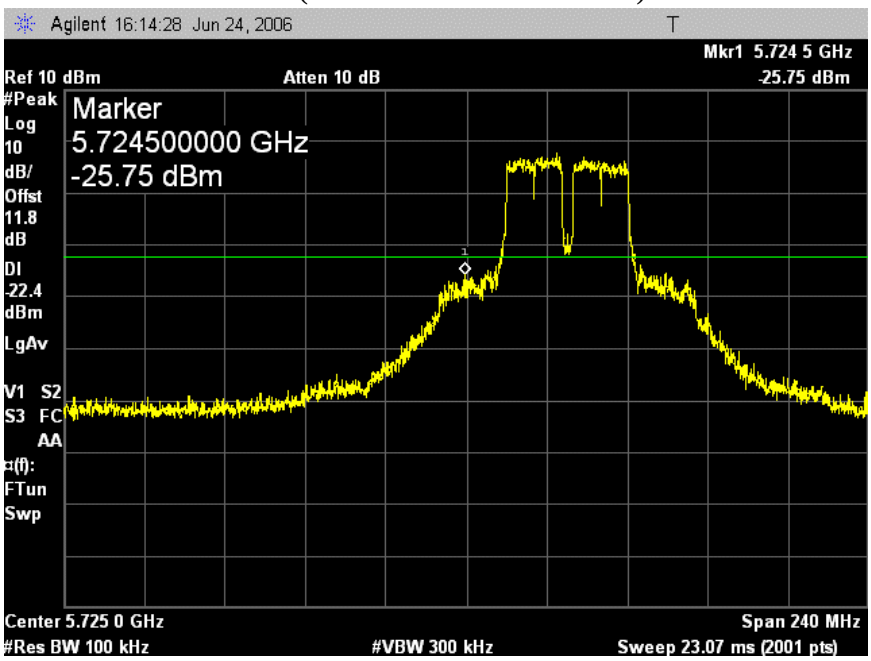
HIGH CH BANDEDGE (802.11a 40M mode chain A)

HIGH CH SPURIOUS (802.11a 40M mode chain A)

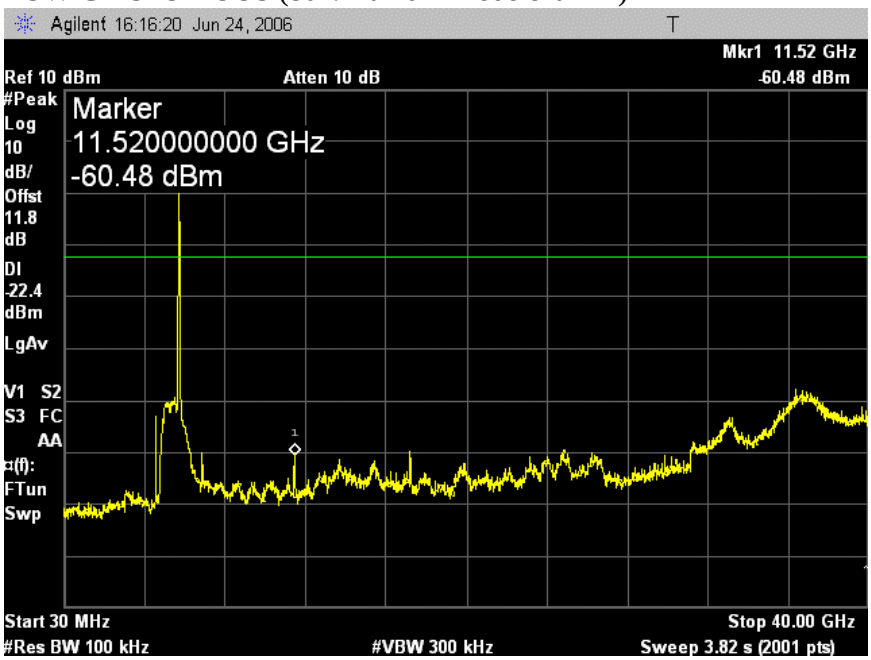


**SPURIOUS EMISSIONS (802.11a 40M MODE CHAIN B)**

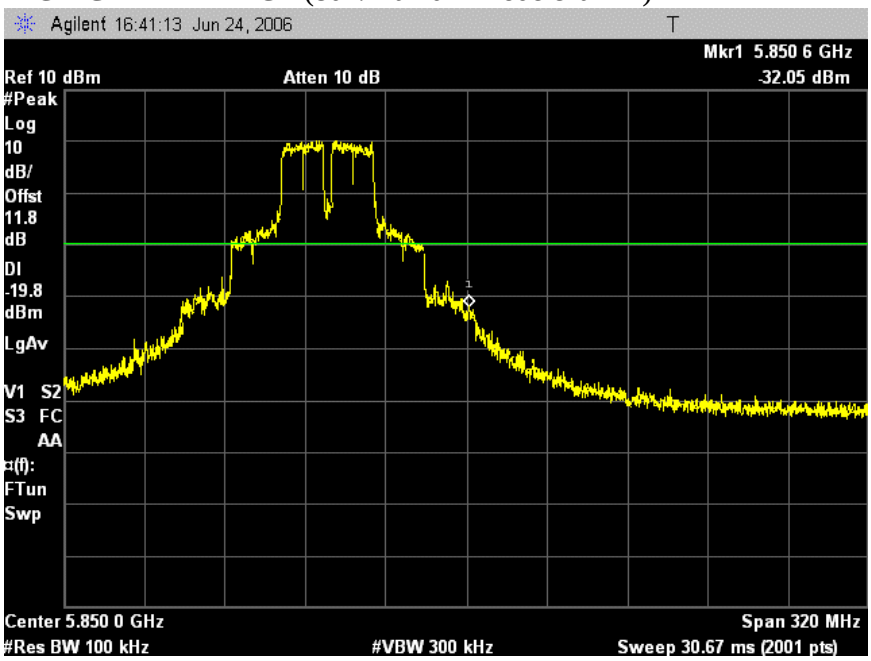
LOW CH BANDEDGE (802.11a 40M mode chain B)



LOW CH SPURIOUS (802.11a 40M mode chain B)



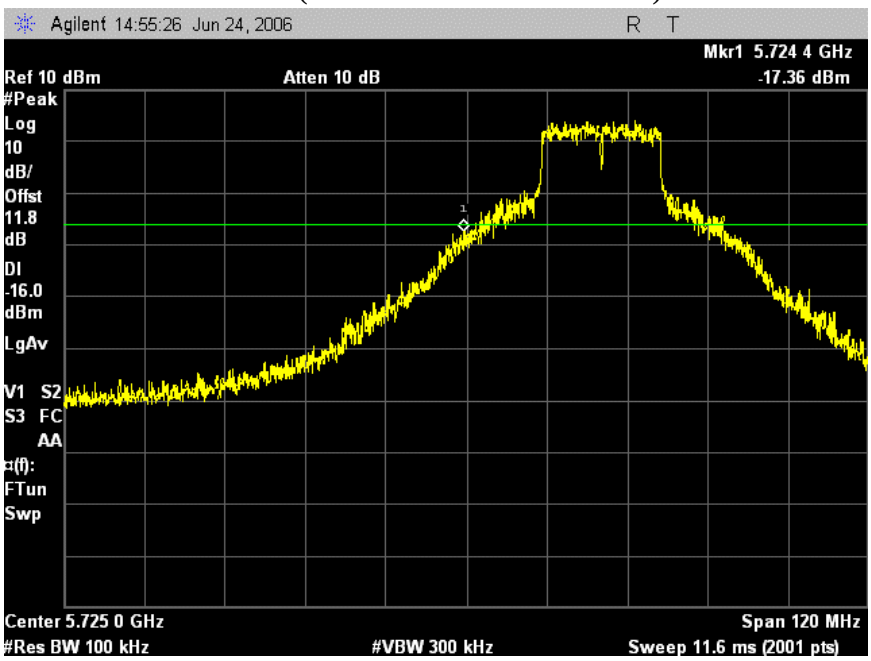
HIGH CH BANDEDGE (802.11a 40M mode chain B)



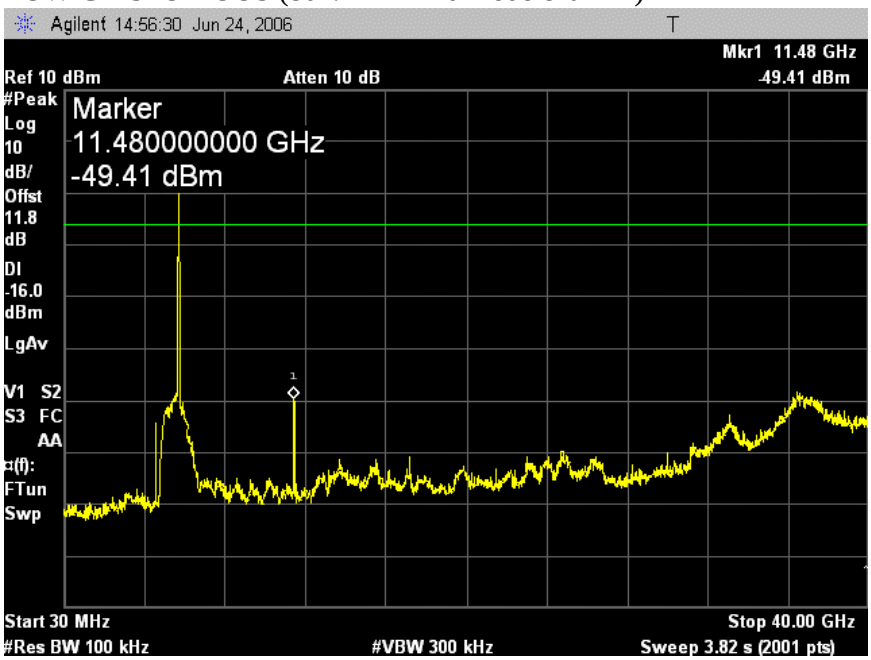
HIGH CH SPURIOUS (802.11a 40M mode chain B)

**SPURIOUS EMISSIONS (802.11n HT20 MODE CHAIN A)**

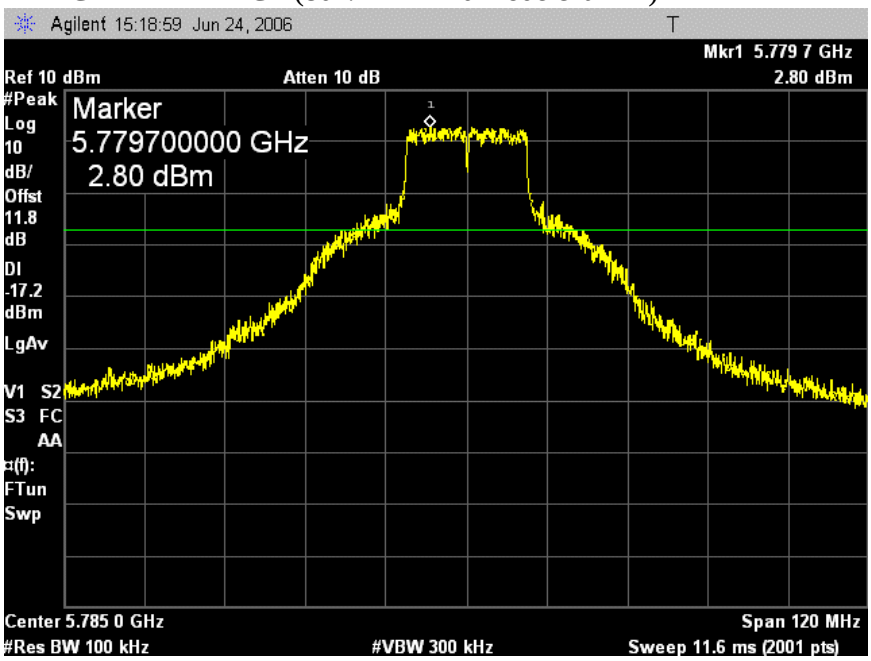
LOW CH BANDEDGE (802.11n HT20 mode chain A)



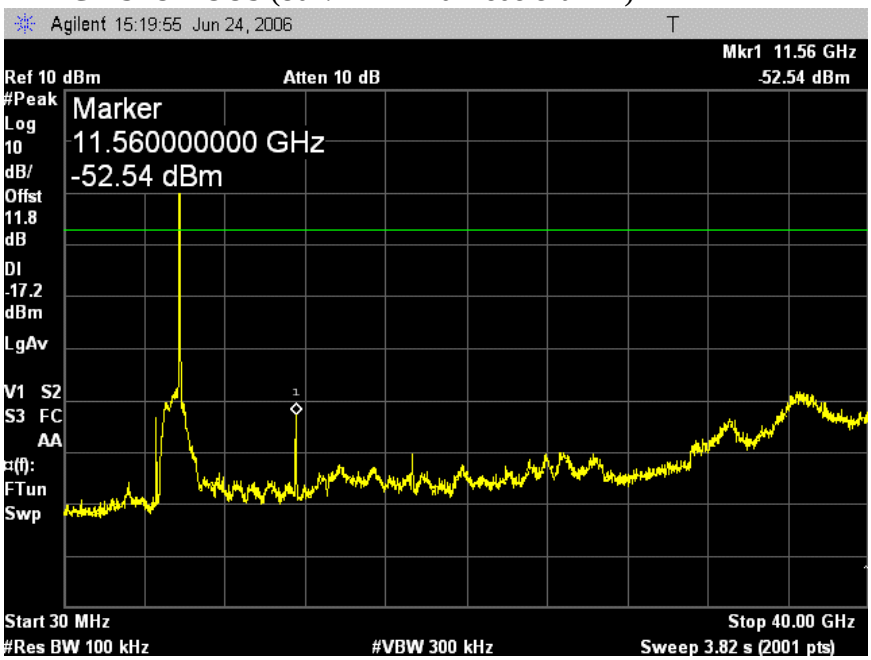
LOW CH SPURIOUS (802.11n HT20 mode chain A)



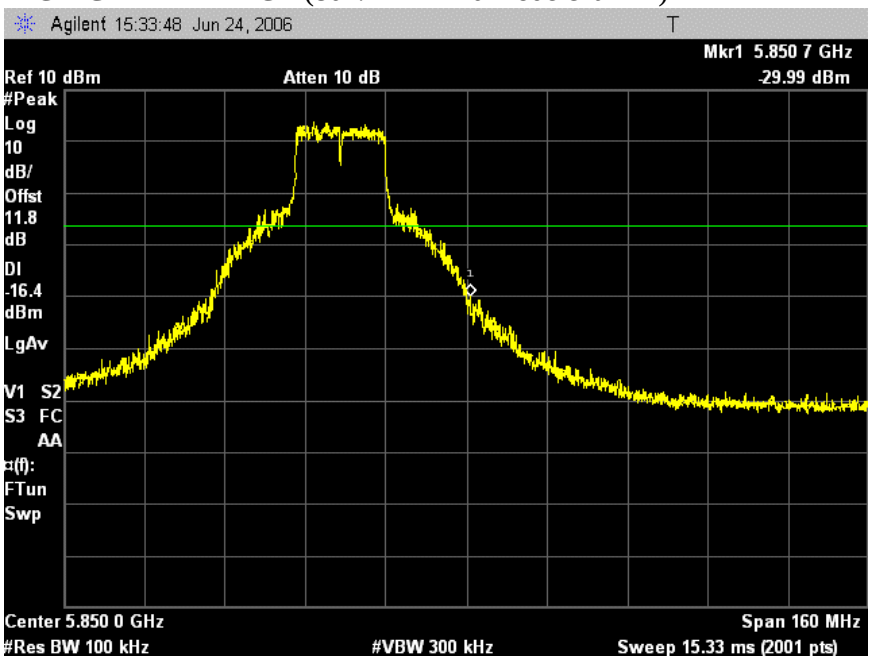
MID CH REFERENCE (802.11n HT20 mode chain A)



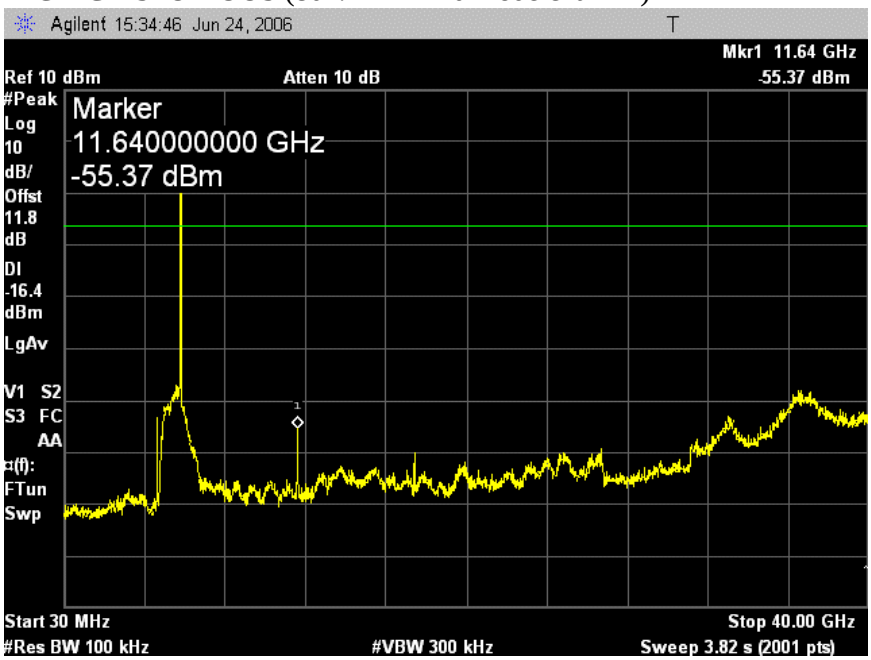
MID CH SPURIOUS (802.11n HT20 mode chain A)



HIGH CH BANDEDGE (802.11n HT20 mode chain A)

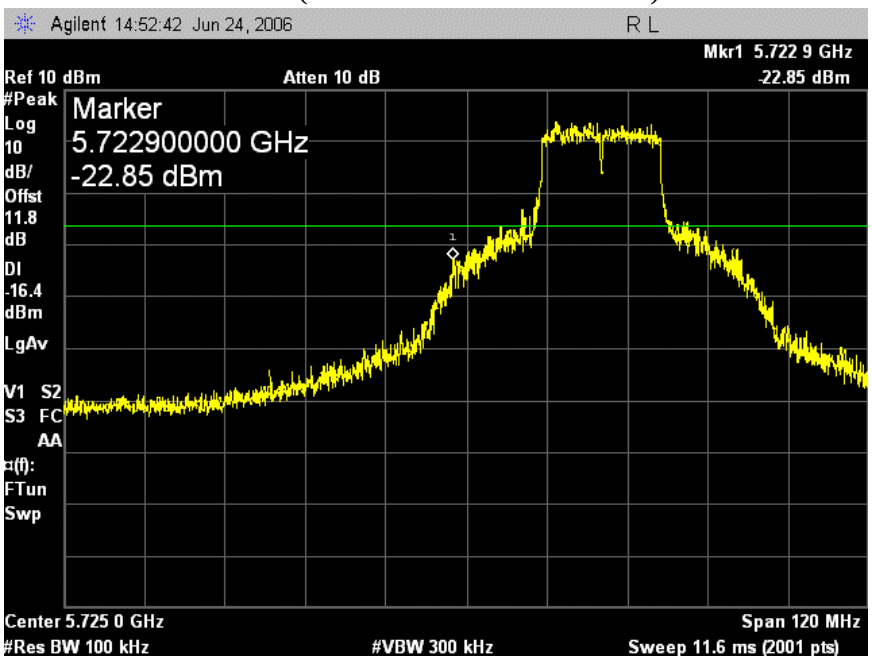


HIGH CH SPURIOUS (802.11n HT20 mode chain A)

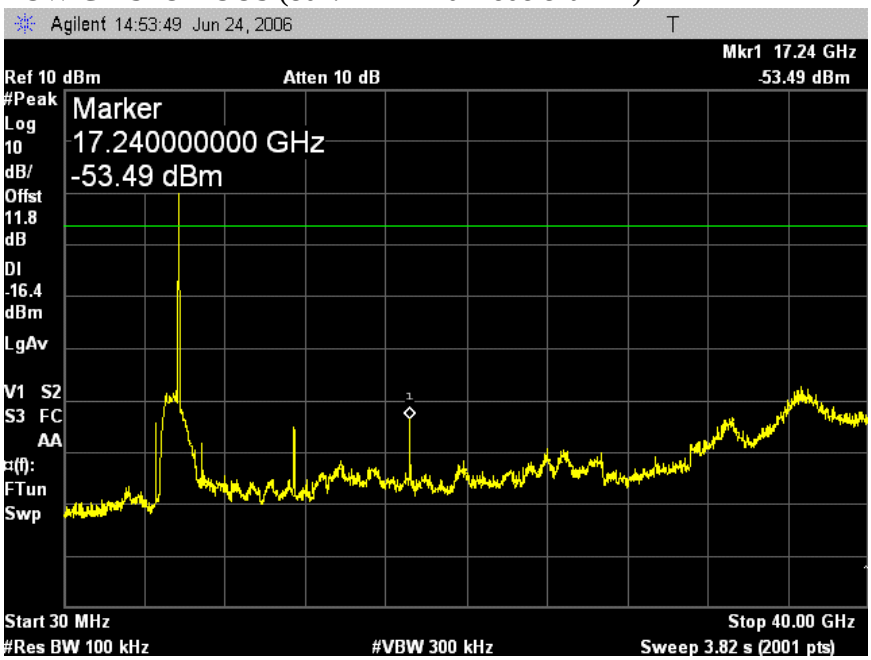


**SPURIOUS EMISSIONS (802.11 HT20 MODE CHAIN B)**

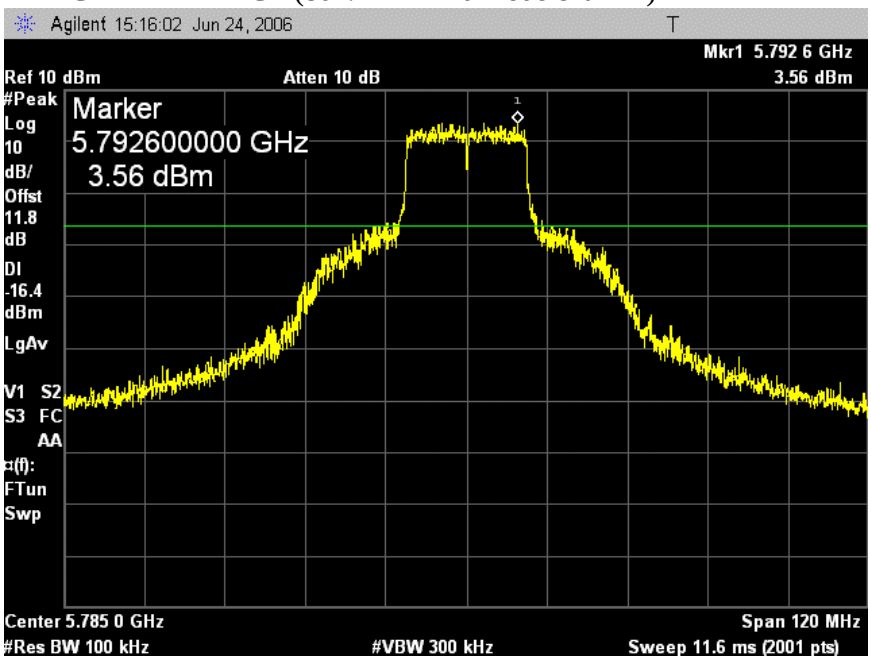
LOW CH BANDEDGE (802.11n HT20 mode chain B)



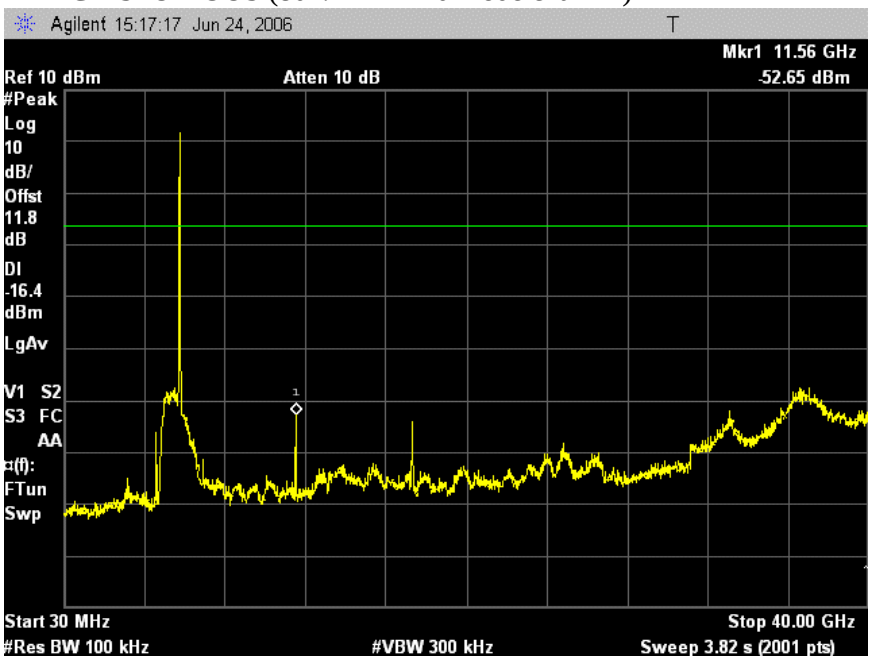
LOW CH SPURIOUS (802.11n HT20 mode chain B)



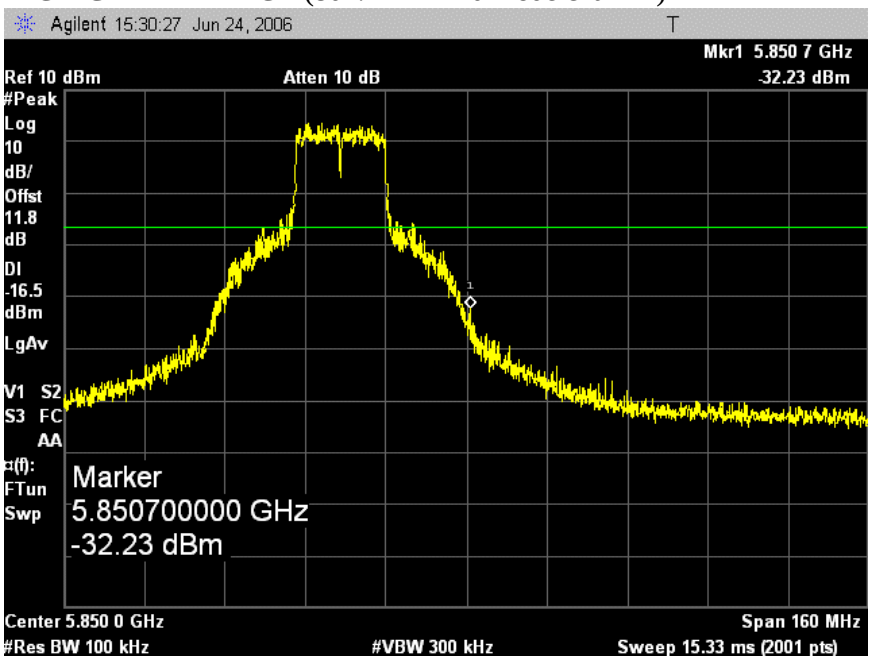
MID CH REFERENCE (802.11n HT20 mode chain B)



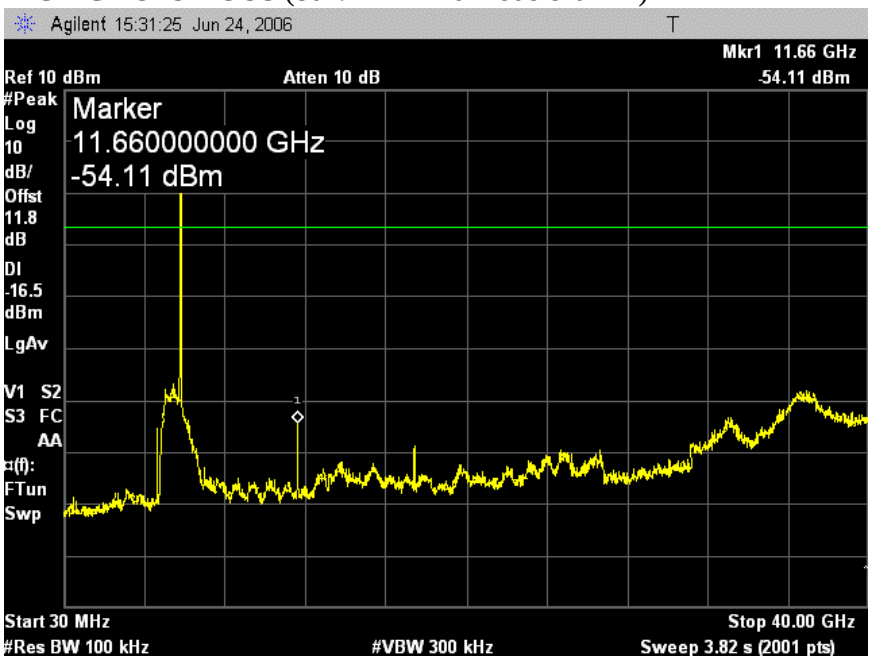
MID CH SPURIOUS (802.11n HT20 mode chain B)



HIGH CH BANDEDGE (802.11n HT20 mode chain B)

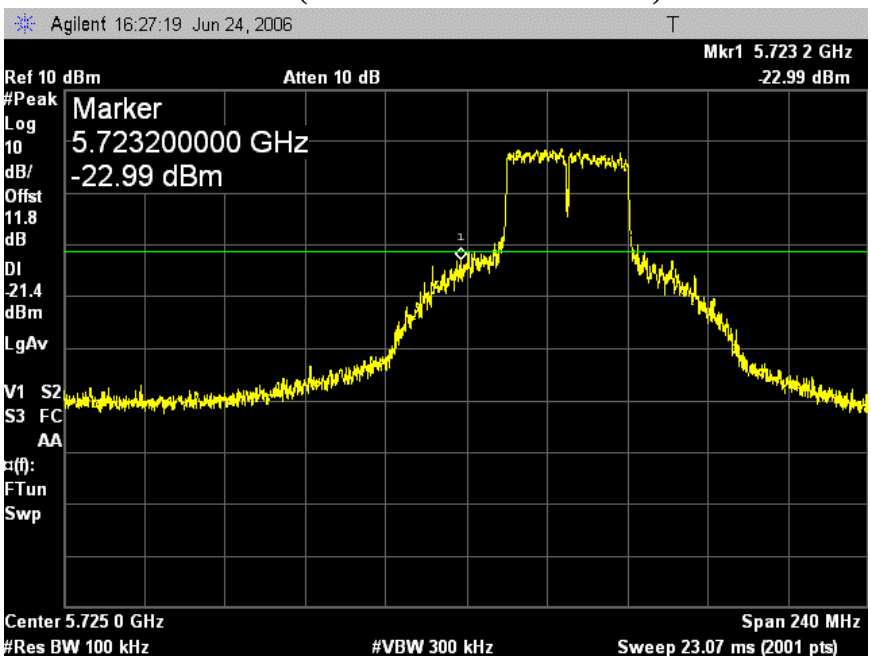


HIGH CH SPURIOUS (802.11n HT20 mode chain B)

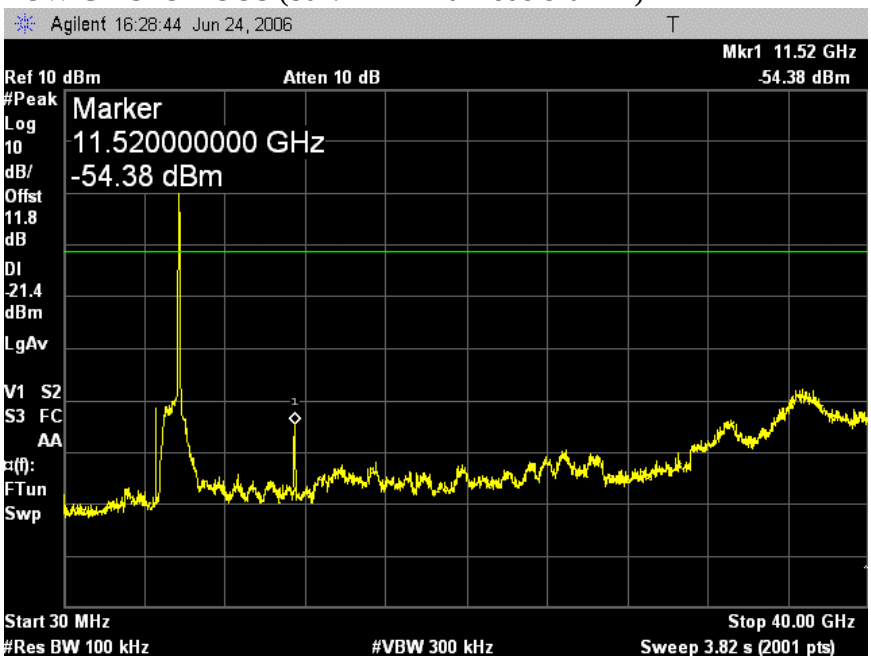


**SPURIOUS EMISSIONS (802.11 HT40 MODE CHAIN A)**

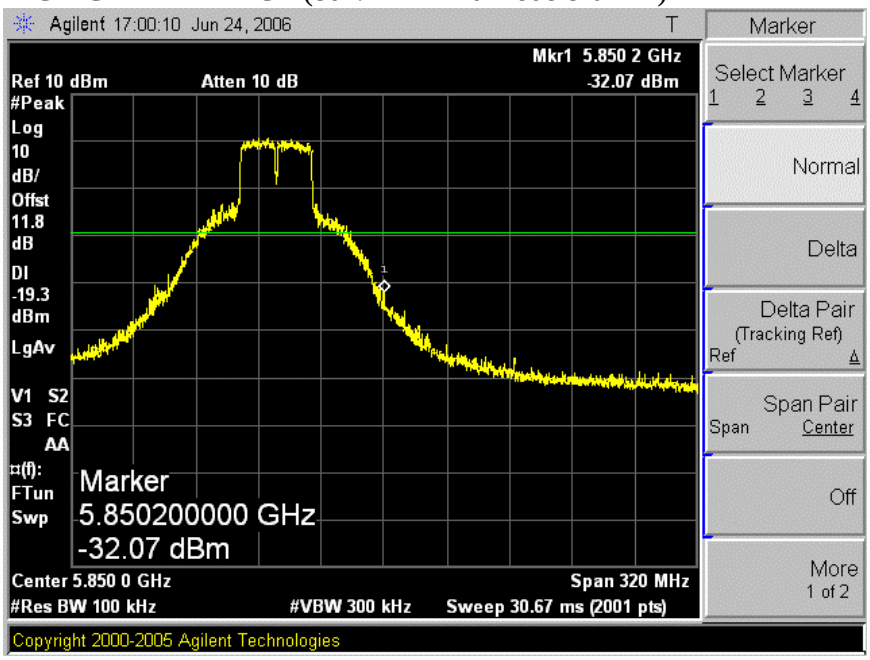
LOW CH BANDEDGE (802.11n HT40 mode chain A)



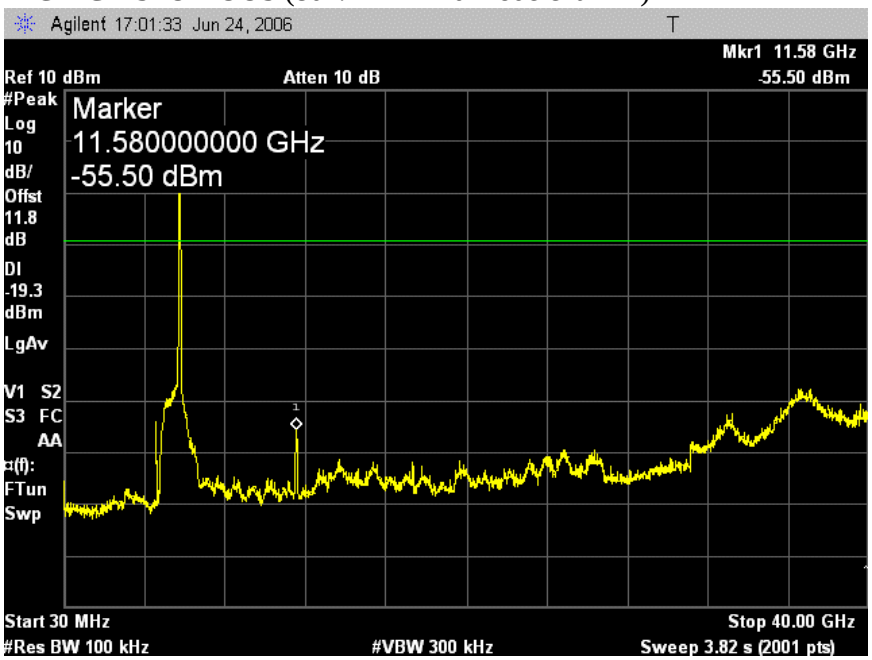
LOW CH SPURIOUS (802.11n HT40 mode chain A)



HIGH CH BANDEDGE (802.11n HT40 mode chain A)

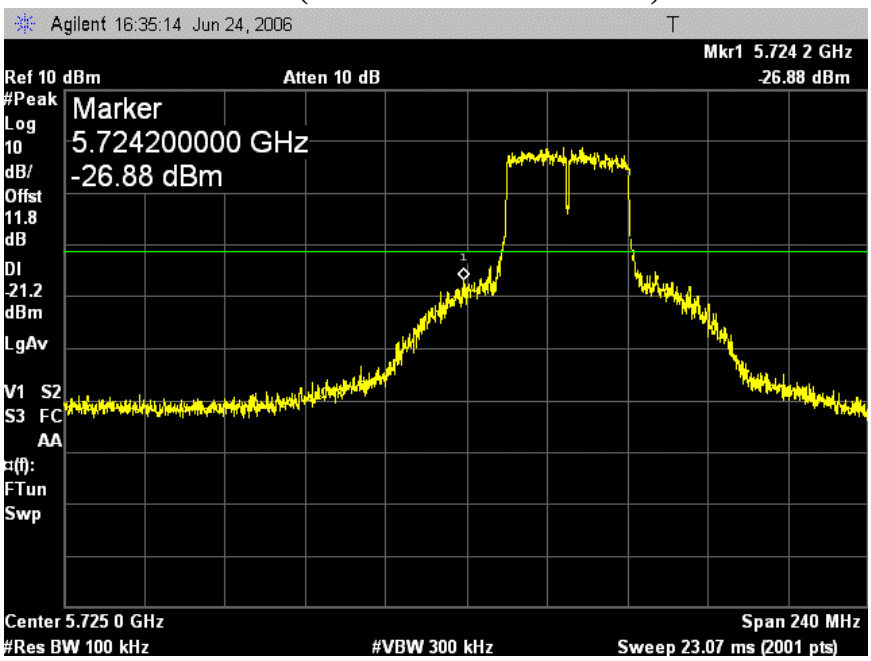


HIGH CH SPURIOUS (802.11n HT40 mode chain A)

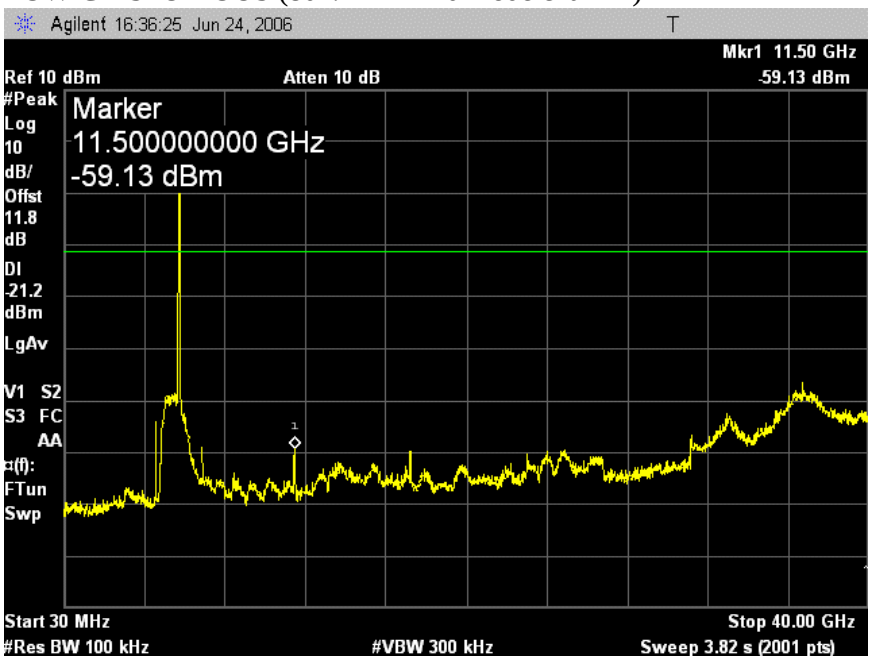


**SPURIOUS EMISSIONS (802.11 HT40 MODE CHAIN B)**

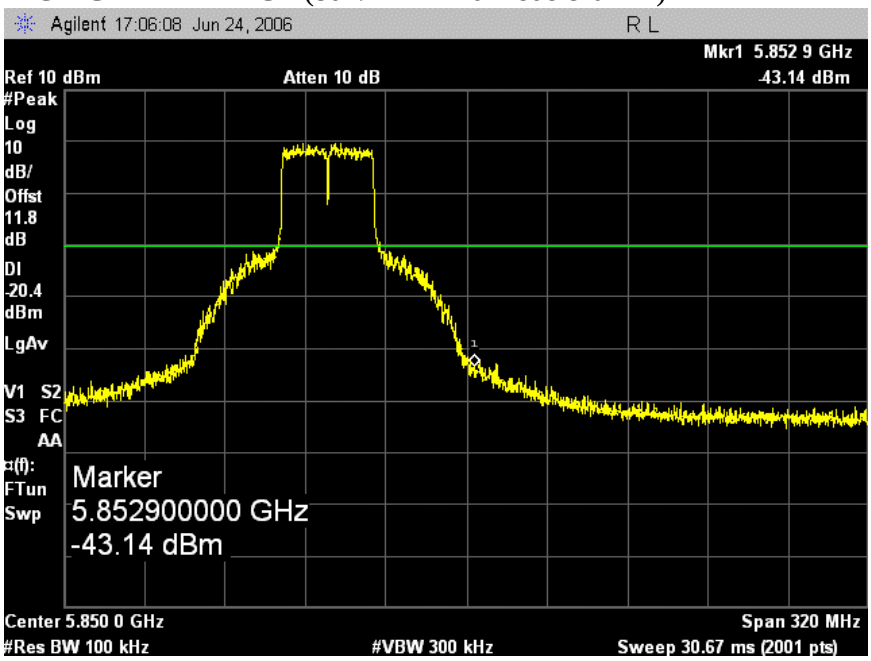
LOW CH BANDEDGE (802.11n HT40 mode chain B)



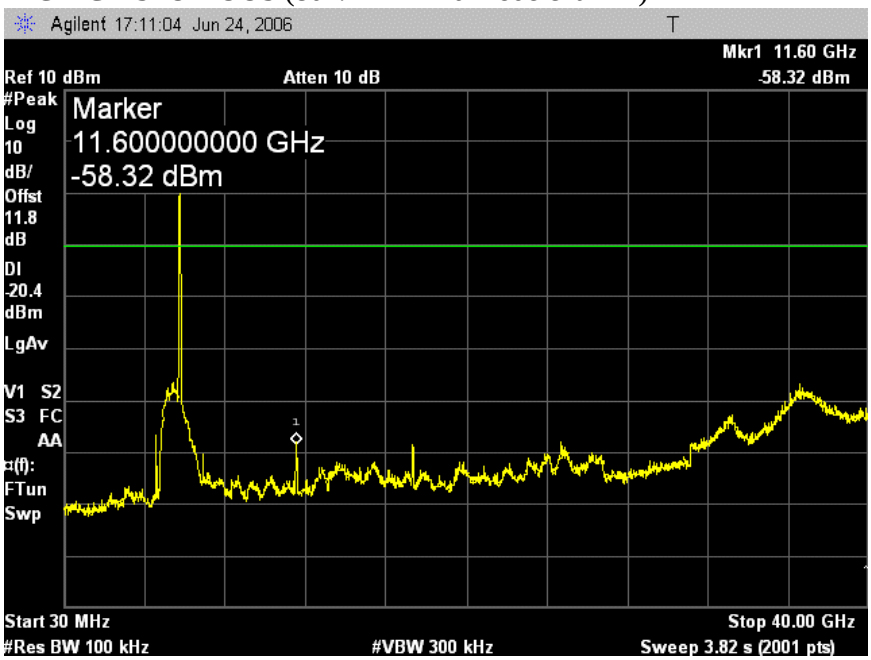
LOW CH SPURIOUS (802.11n HT40 mode chain B)



HIGH CH BANDEDGE (802.11n HT40 mode chain B)

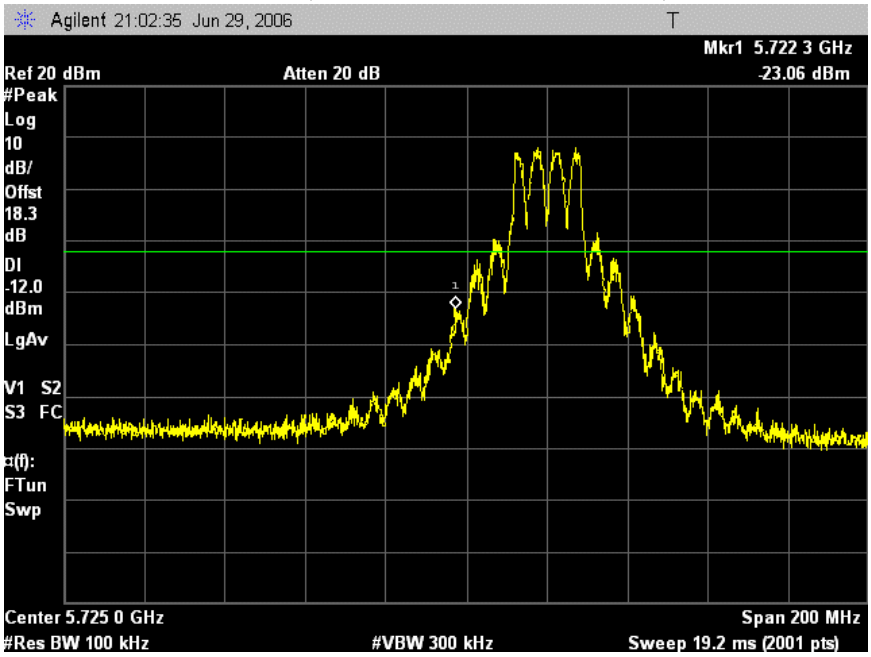


HIGH CH SPURIOUS (802.11n HT40 mode chain B)

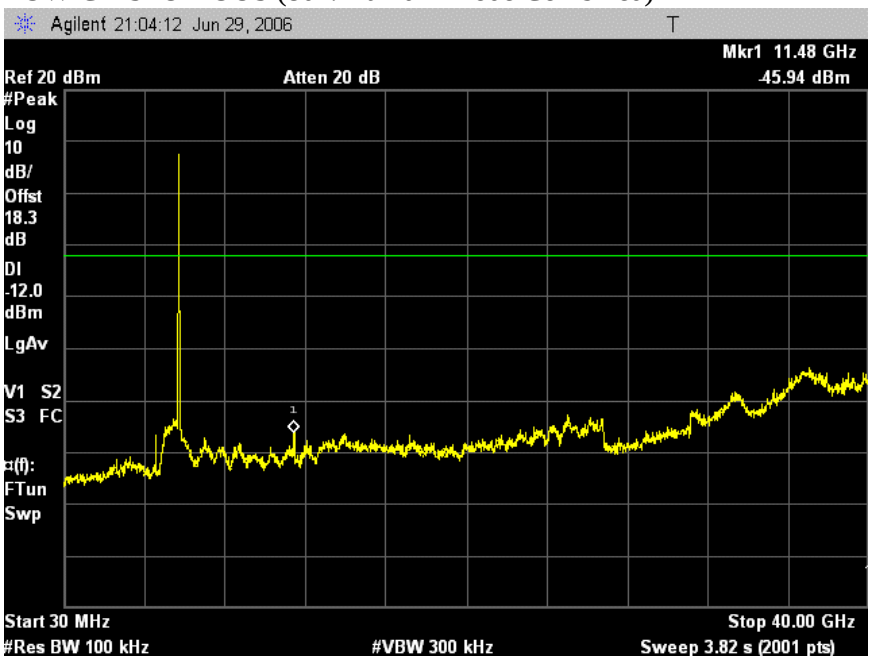


**COMBINED SPURIOUS EMISSIONS (802.11a 20M MODE)**

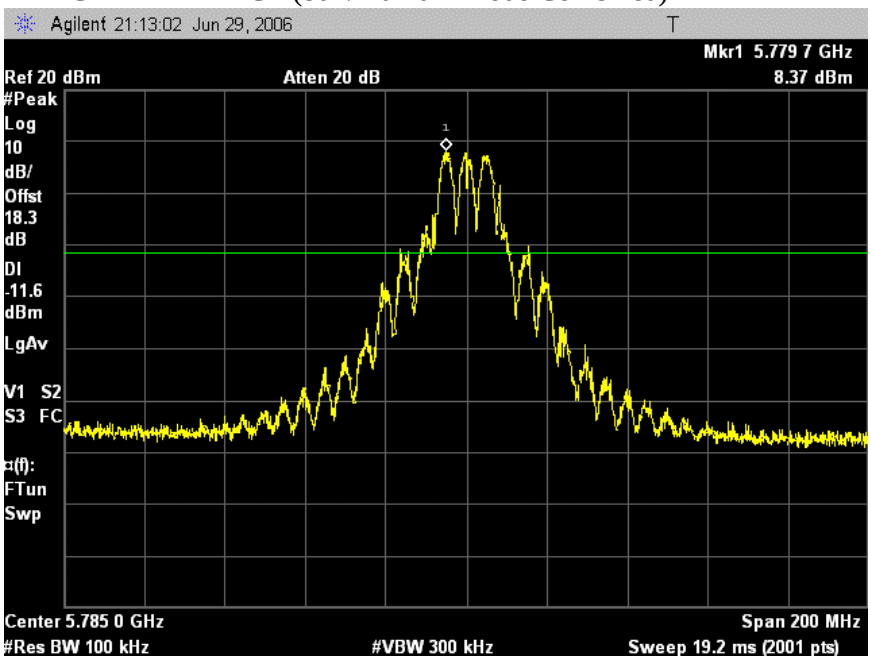
LOW CH BANDEDGE (802.11a 20M mode Combined)



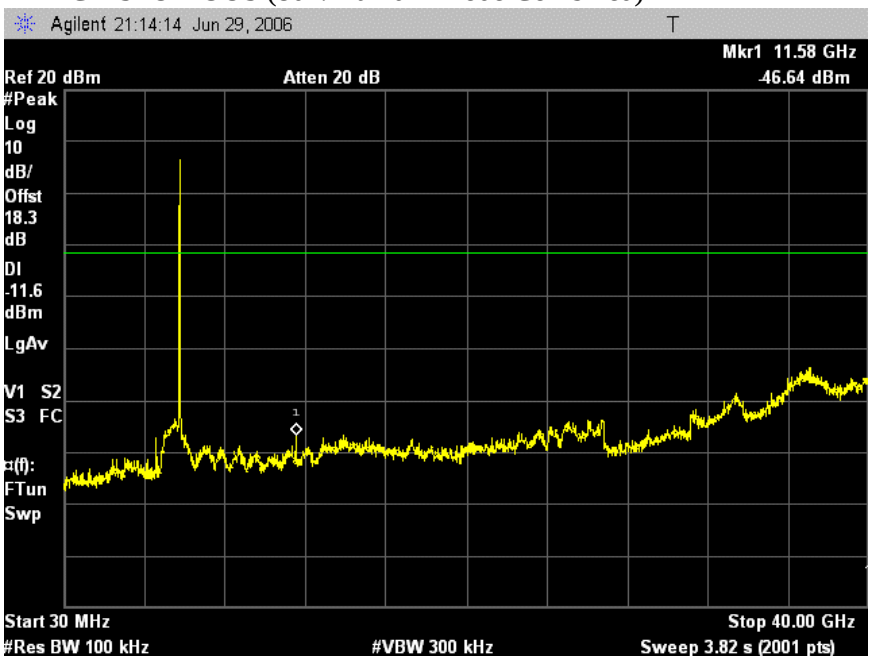
LOW CH SPURIOUS (802.11a 20M mode Combined)



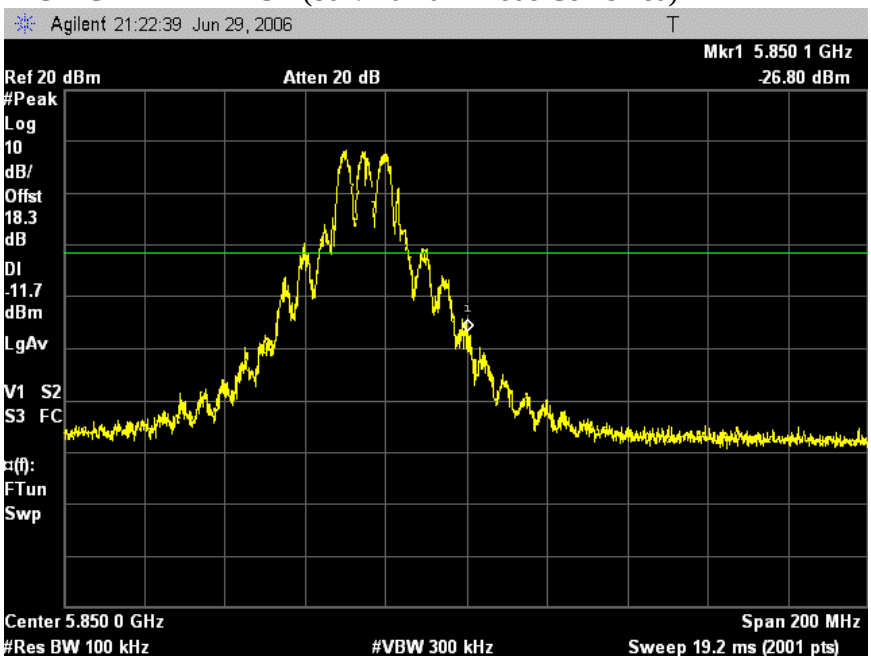
MID CH REFERENCE (802.11a 20M mode Combined)



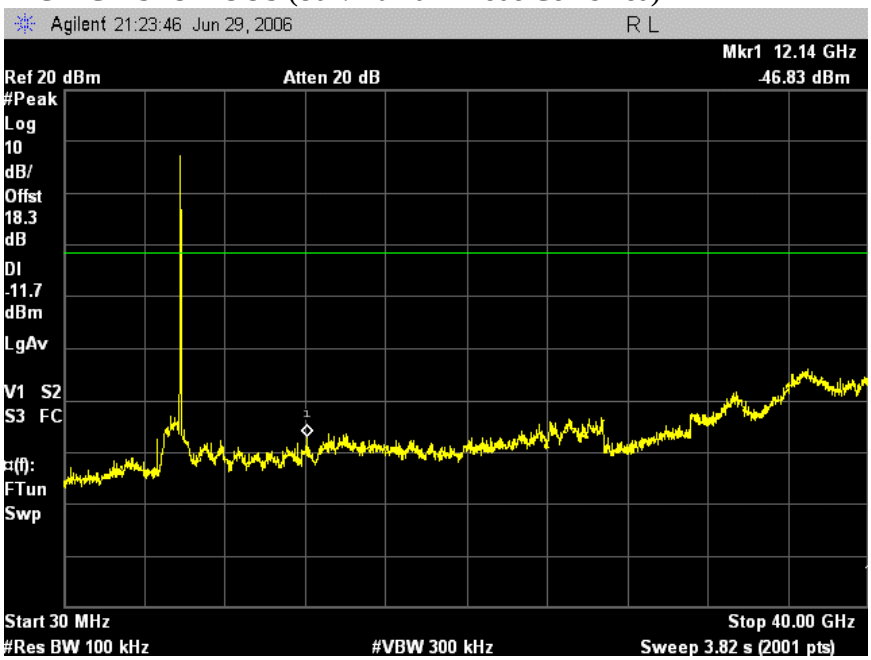
MID CH SPURIOUS (802.11a 20M mode Combined)



HIGH CH BANDEDGE (802.11a 20M mode Combined)

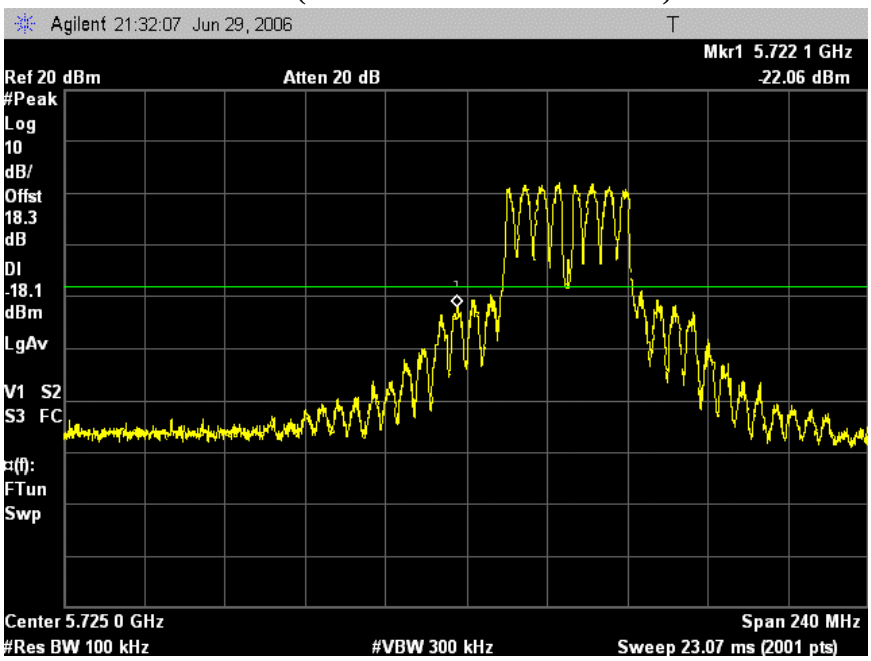


HIGH CH SPURIOUS (802.11a 20M mode Combined)

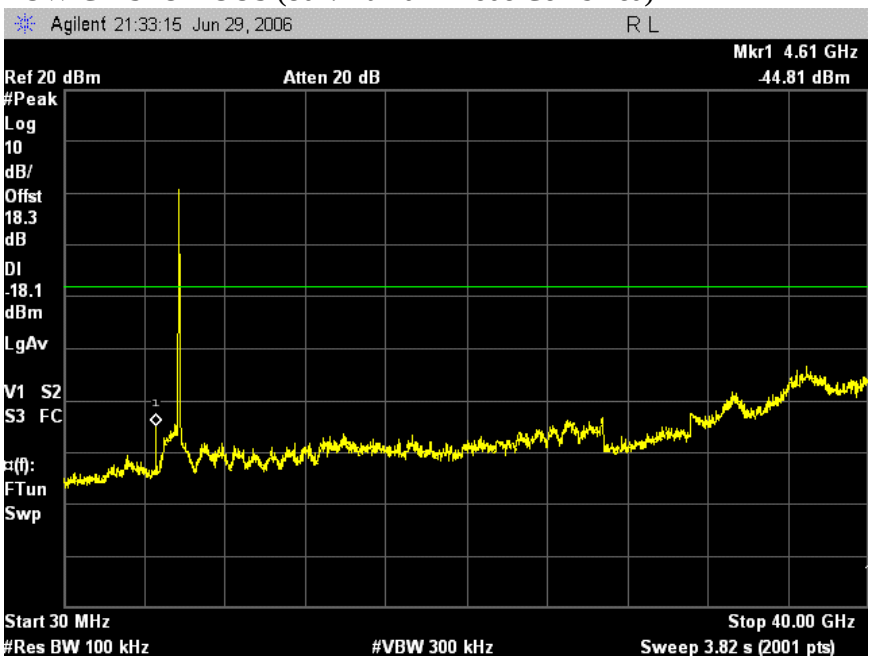


**COMBINED SPURIOUS EMISSIONS (802.11a 40M MODE)**

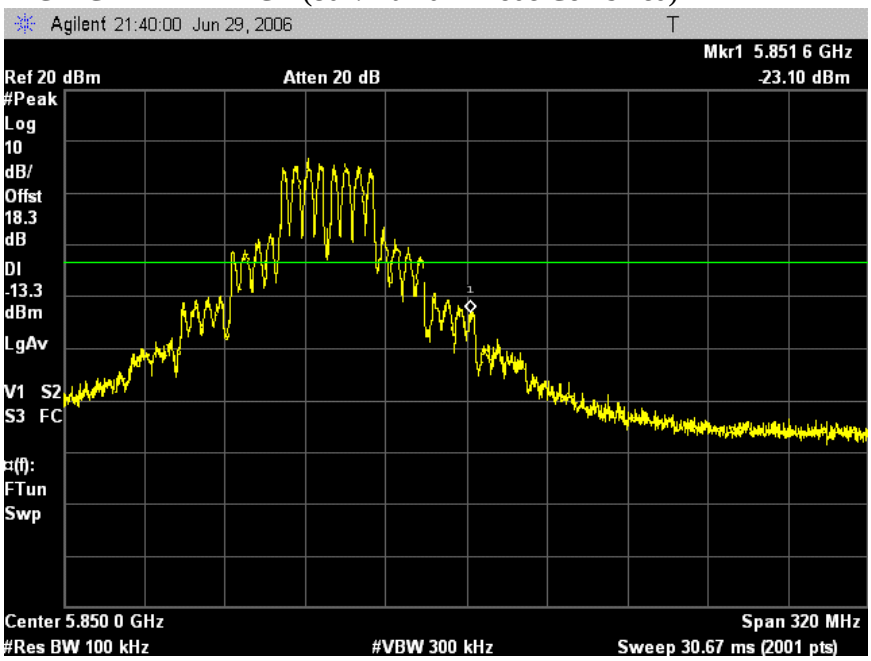
LOW CH BANDEDGE (802.11a 40M mode Combined)



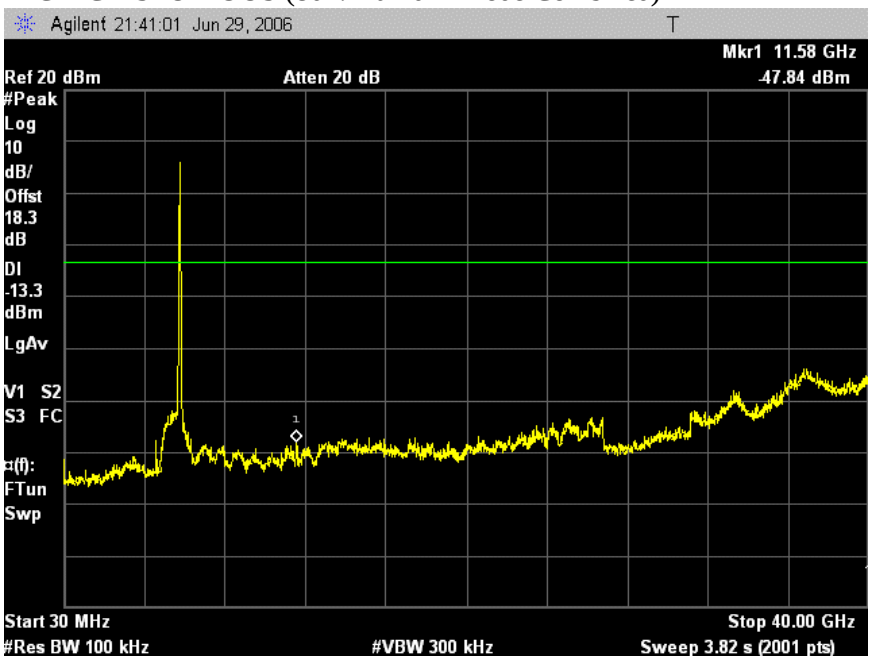
LOW CH SPURIOUS (802.11a 40M mode Combined)



HIGH CH BANDEDGE (802.11a 40M mode Combined)

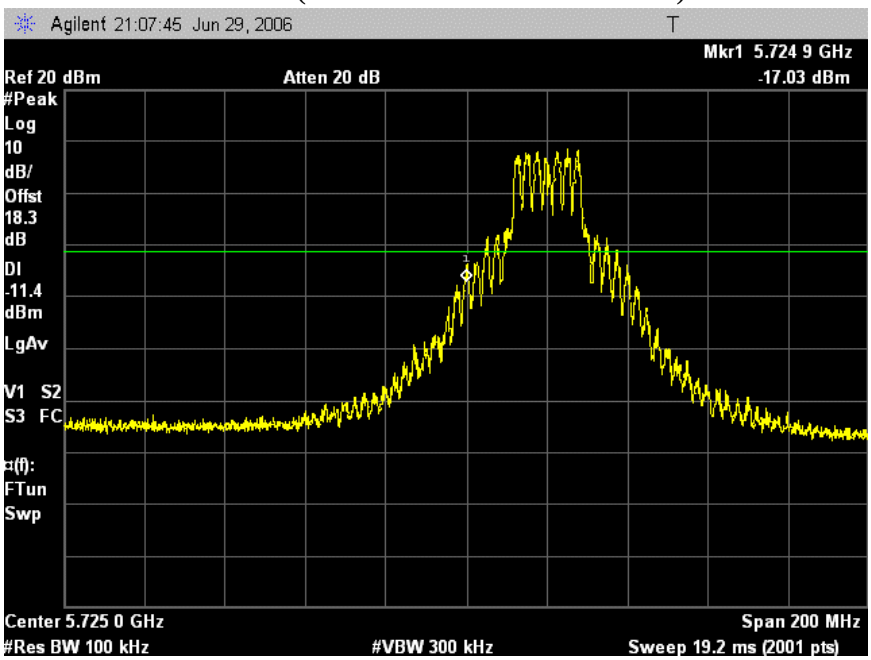


HIGH CH SPURIOUS (802.11a 40M mode Combined)

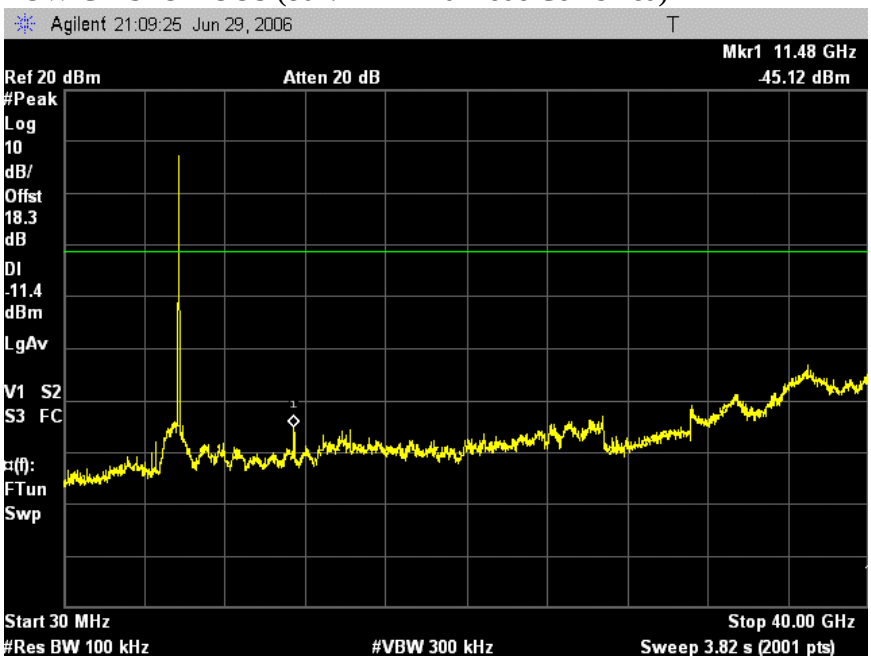


**COMBINED SPURIOUS EMISSIONS (802.11n HT20 MODE)**

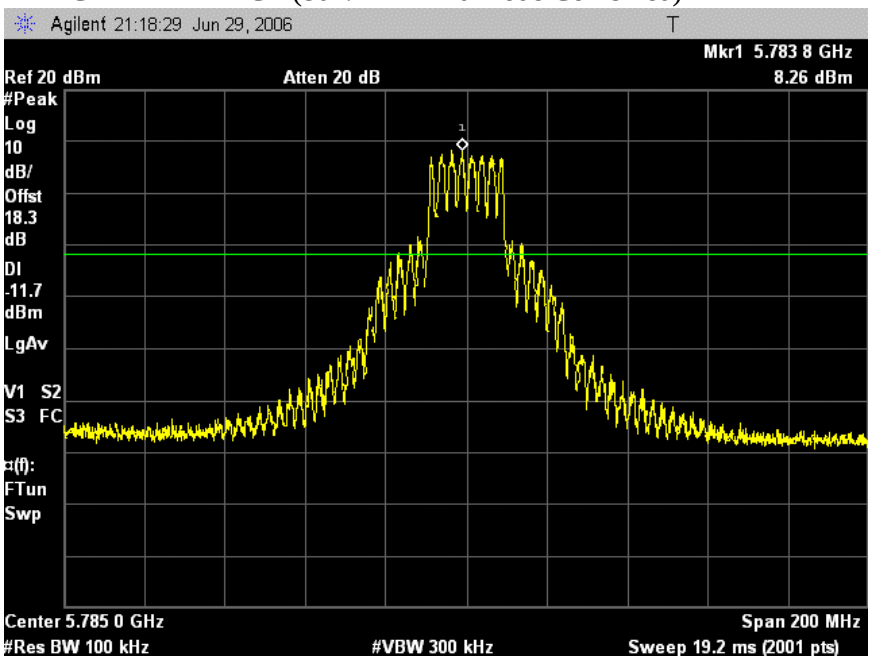
LOW CH BANDEDGE (802.11n HT20 mode Combined)



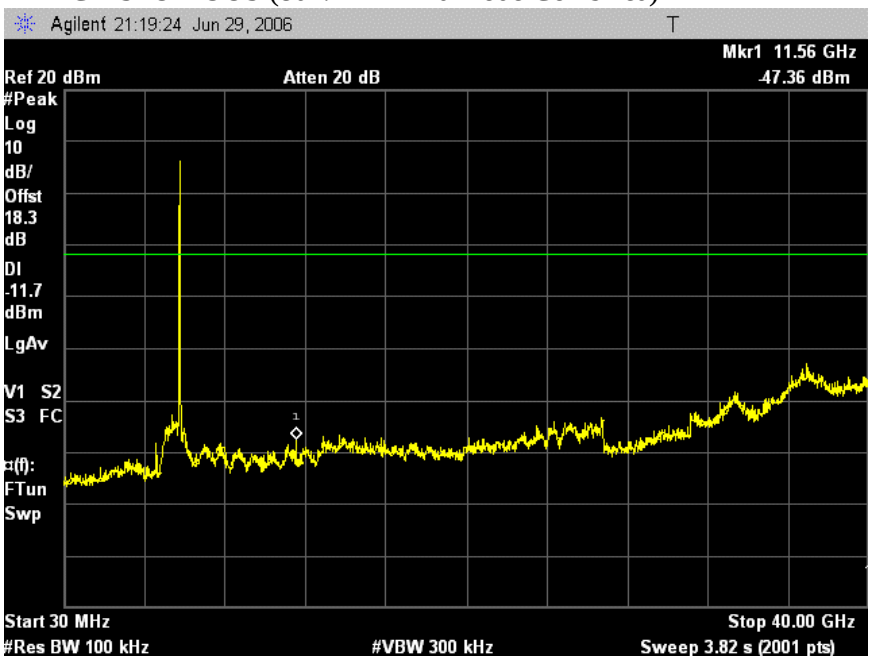
LOW CH SPURIOUS (802.11n HT20 mode Combined)



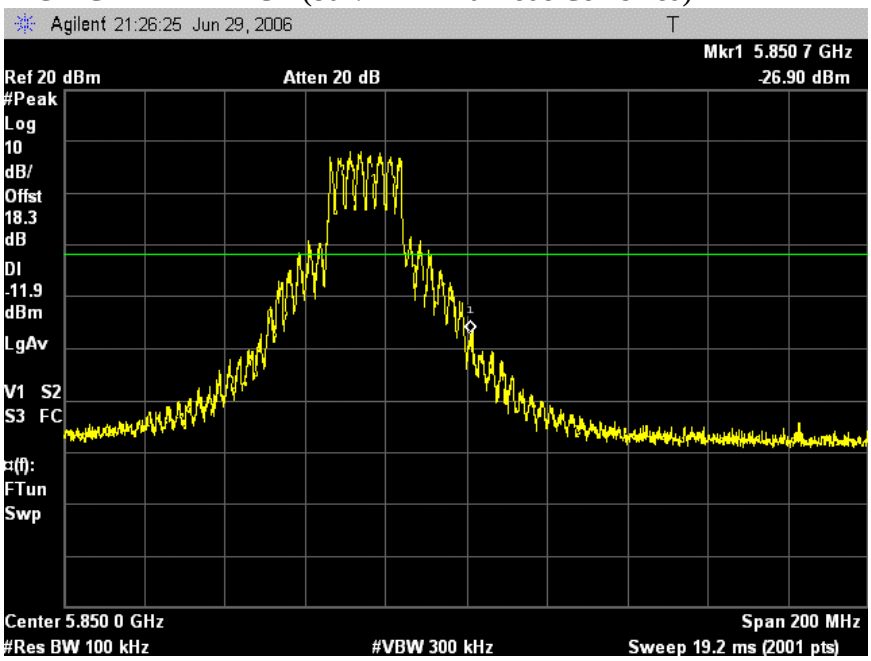
MID CH REFERENCE (802.11n HT20 mode Combined)



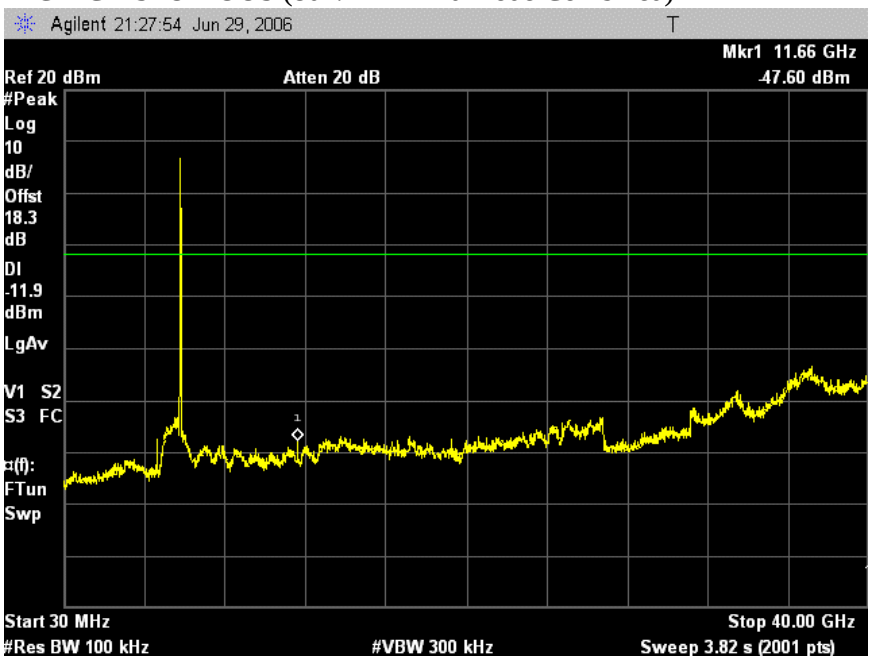
MID CH SPURIOUS (802.11n HT20 mode Combined)



HIGH CH BANDEDGE (802.11n HT20 mode Combined)

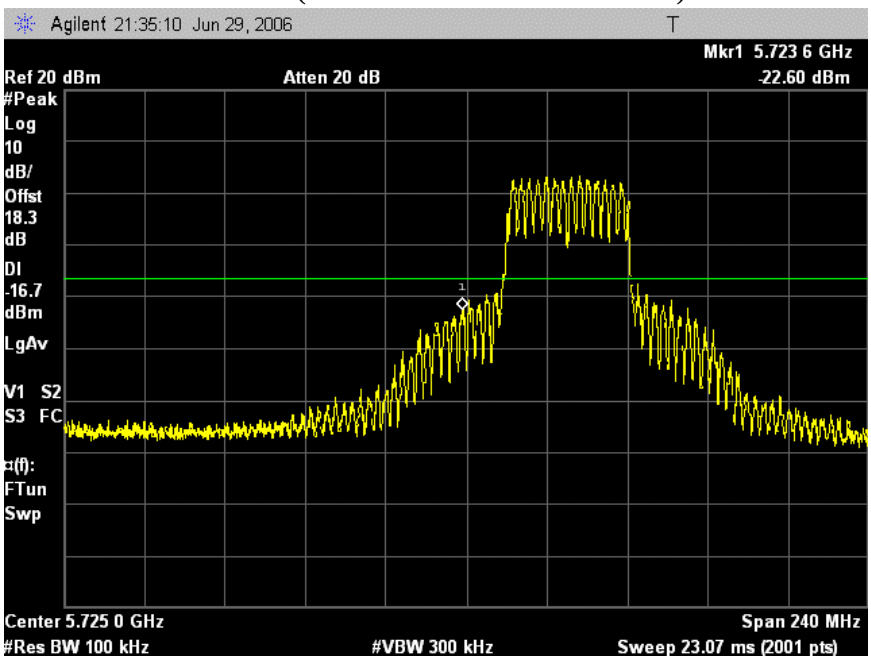


HIGH CH SPURIOUS (802.11n HT20 mode Combined)



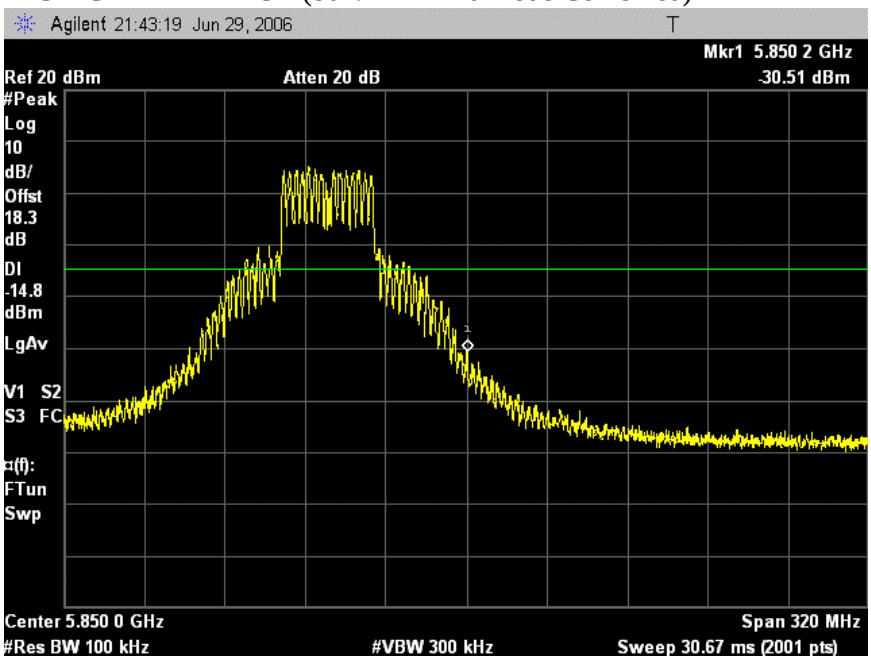
**COMBINED SPURIOUS EMISSIONS (802.11 HT40 MODE)**

LOW CH BANDEDGE (802.11n HT40 mode Combined)

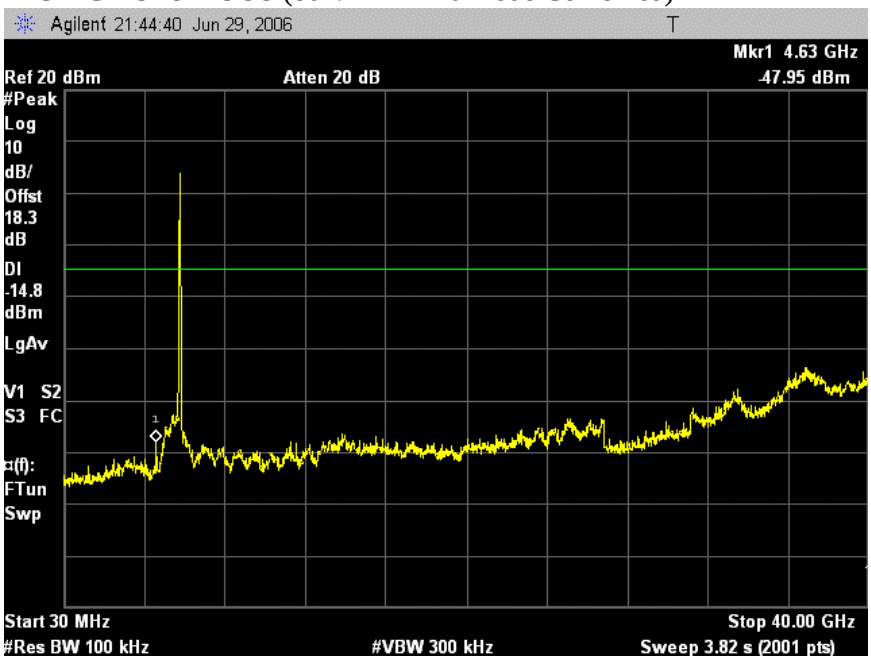


LOW CH SPURIOUS (802.11n HT40 mode Combined)

HIGH CH BANDEDGE (802.11n HT40 mode Combined)



HIGH CH SPURIOUS (802.11n HT40 mode Combined)



## 7.2.7. MAXIMUM PERMISSIBLE EXPOSURE

**LIMITS**

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *($900/f^2$) | 6 |
| 30–300 | 61.4 | 0.163 | 1.0 | 6 |
| 300–1500 | | | f/300 | 6 |
| 1500–100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *($180/f^2$) | 30 |

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | | | f/1500 | 30 |
| 1500–100,000 | | | 1.0 | 30 |

f = frequency in MHz
* = Plane-wave equivalent power density
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

**CALCULATIONS**

Given

$E = \sqrt{(30 * P * G)} / d$

and

$S = E \wedge 2 / 3770$

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 yields:

$S = (30 * P * G) / (3770 * (d \wedge 2))$

Changing to units of Power to mW and Distance to cm, using:

P (W) = P (mW) / 1000 and
d (m) = d (cm) / 100

and substituting the logarithmic form of power and gain using:

P (mW) = 10 ^ (P (dBm) / 10) and
G (numeric) = 10 ^ (G (dBi) / 10)

yields

$S = 0.0795 * 10 \wedge ((P + G) / 10) / (d\wedge2)$

where

d = MPE distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW/cm^2

**LIMITS**

From §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm^2

**RESULTS**

No non-compliance noted:

| Band (MHz) | Power Density Limit (mW/cm^2) | Total Power (dBm) | Antenna Gain (dBi) | MPE Distance (cm) |
|---|---|---|---|---|
| 5725 to 5850 | 1.0 | 25.76 | 4.40 | 9.08 |

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

## 7.3. RADIATED EMISSIONS

### 7.3.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

**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 - 3358 | 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 in 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 PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

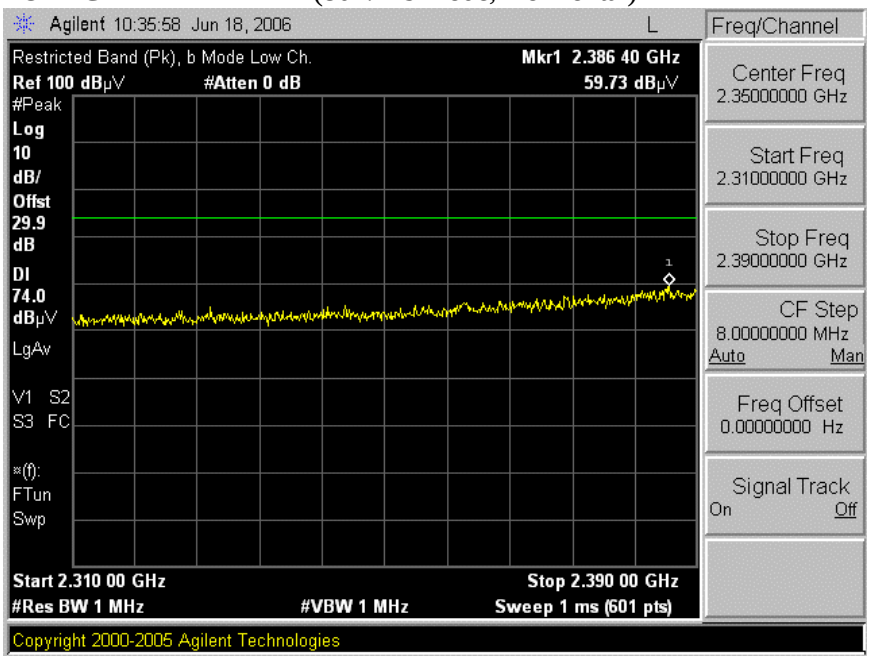
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

## 7.3.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

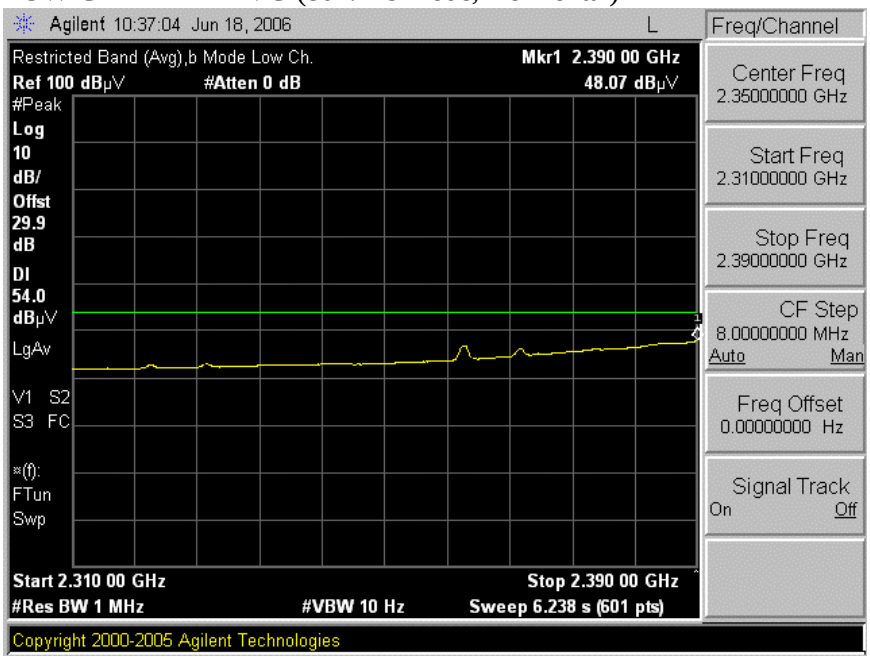
**RESTRICTED BANDEDGE (802.11b MODE, LOW CHANNEL)**

1) **FOXCONN ANTENNA**

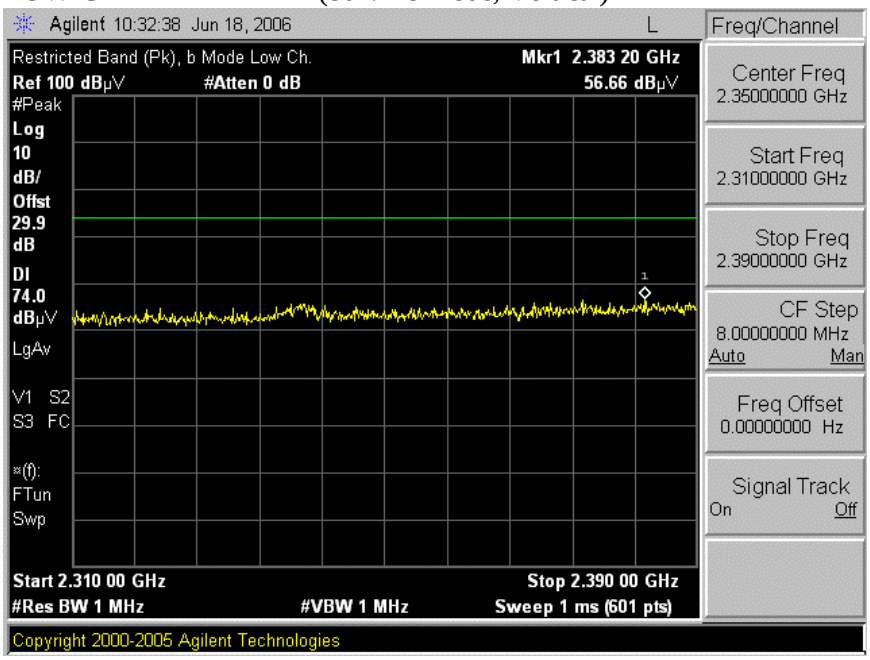
LOW CHANNEL PEAK (802.11b mode, Horizontal)



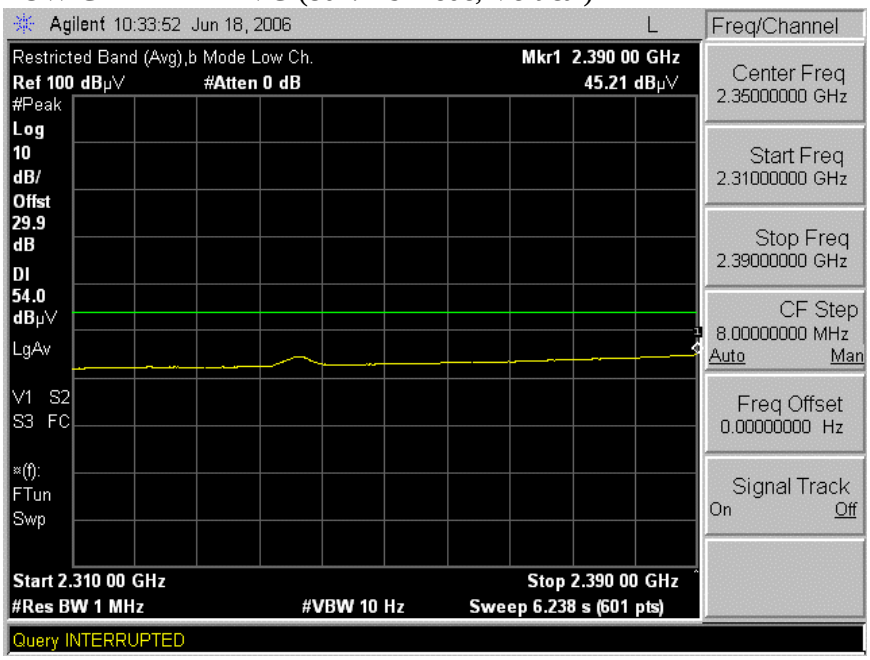
LOW CHANNEL AVG (802.11b mode, Horizontal)



LOW CHANNEL PEAK (802.11b mode, Vertical)

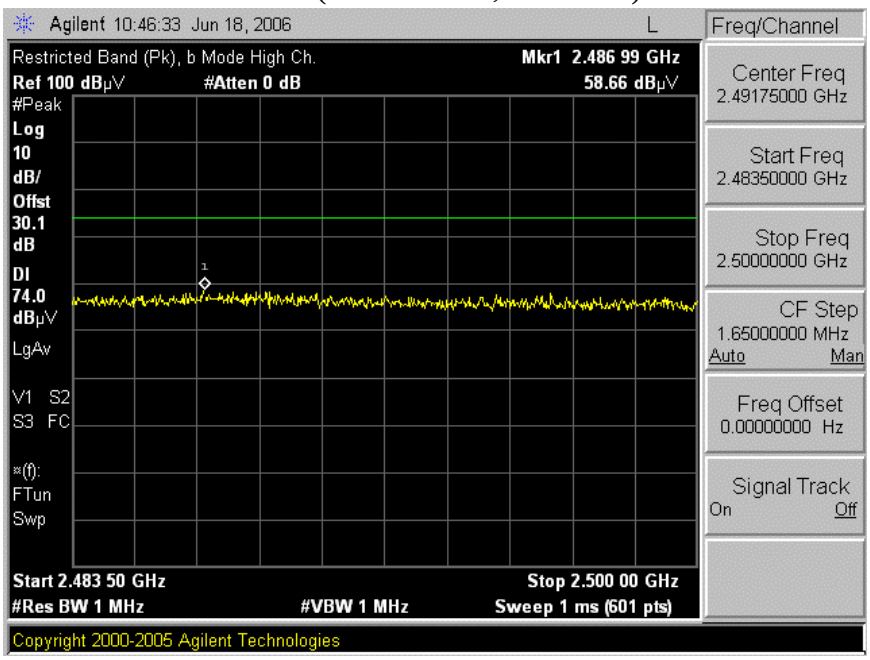


LOW CHANNEL AVG (802.11b mode, Vertical)

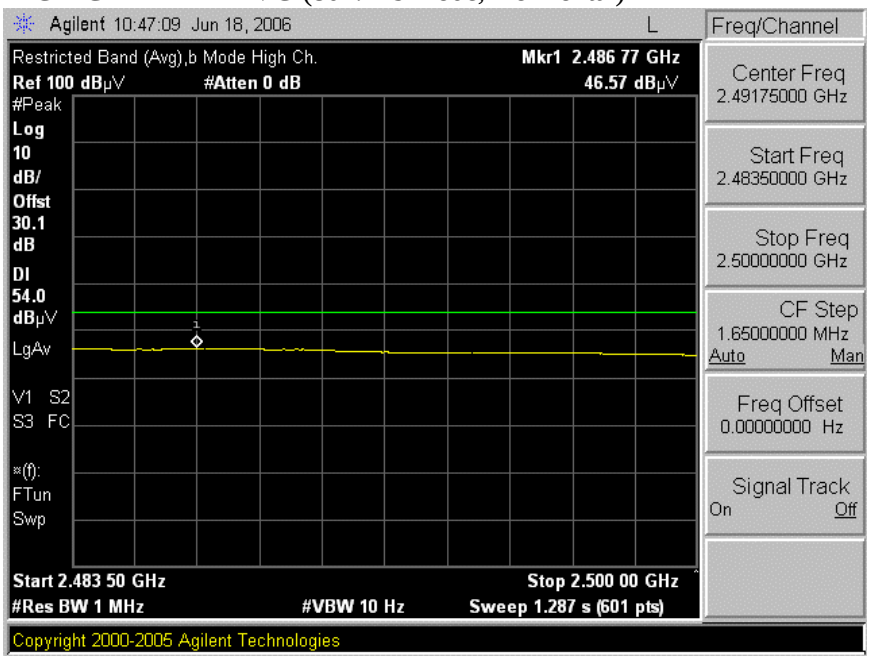


**RESTRICTED BANDEDGE (802.11b MODE, HIGH CHANNEL)**

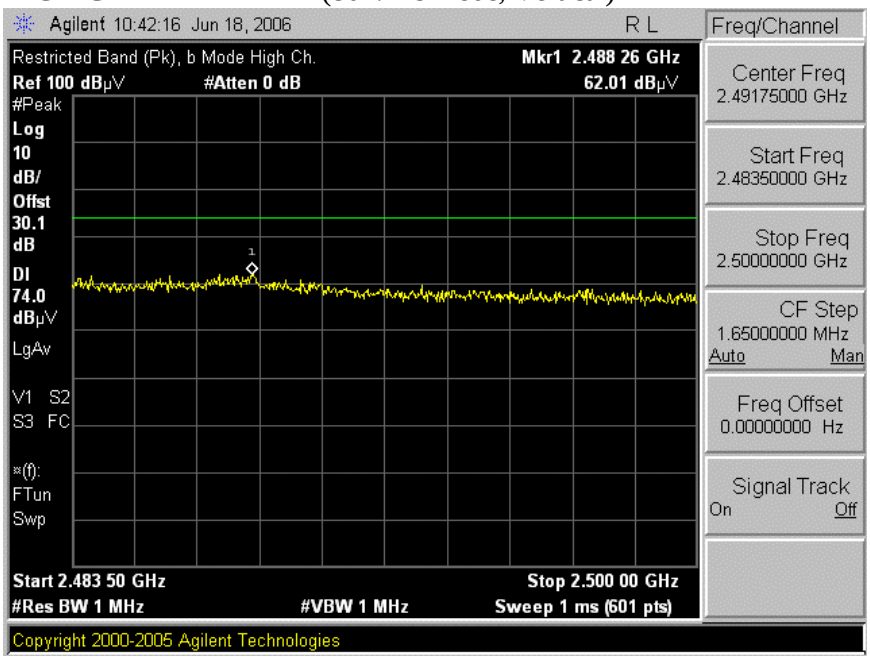
HIGH CHANNEL PEAK (802.11b mode, Horizontal)



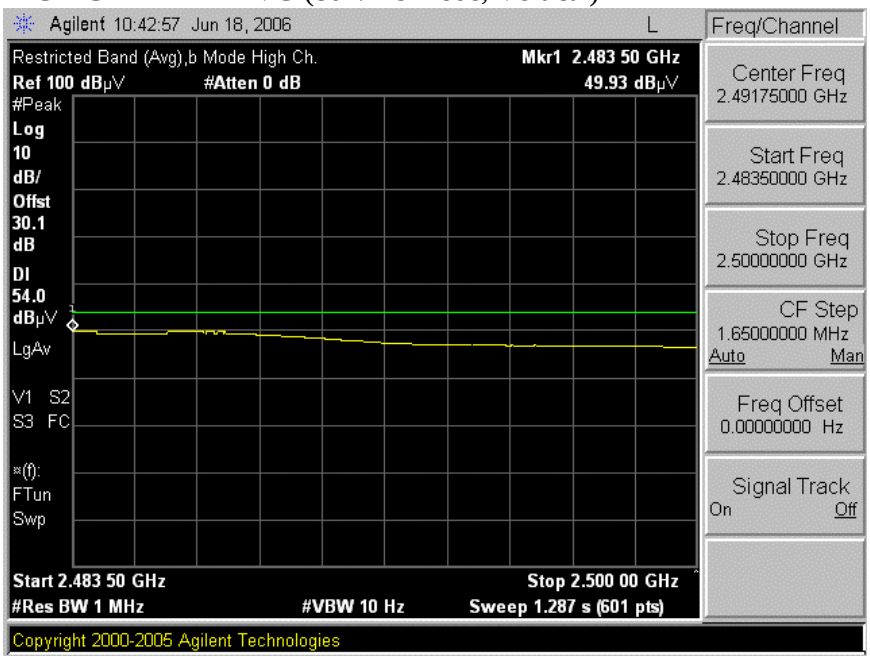
HIGH CHANNEL AVG (802.11b mode, Horizontal)



HIGH CHANNEL PEAK (802.11b mode, Vertical)



HIGH CHANNEL AVG (802.11b mode, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11b MODE)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company: MARVELL SEMICONDUCTOR INC.**
**Project #: 06U10359**
**Date:06/17/2006**
**Test Engineer: THANH NGUYEN**
**Configuration:EUT , Extender card, Support Laptop.**
**Mode: Continously Transmitting b mode/ wth Foxconn antenna.**

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | | |

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| Thanh 177079008 | | Thanh 208946003 | HPF_4.0GHz | |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

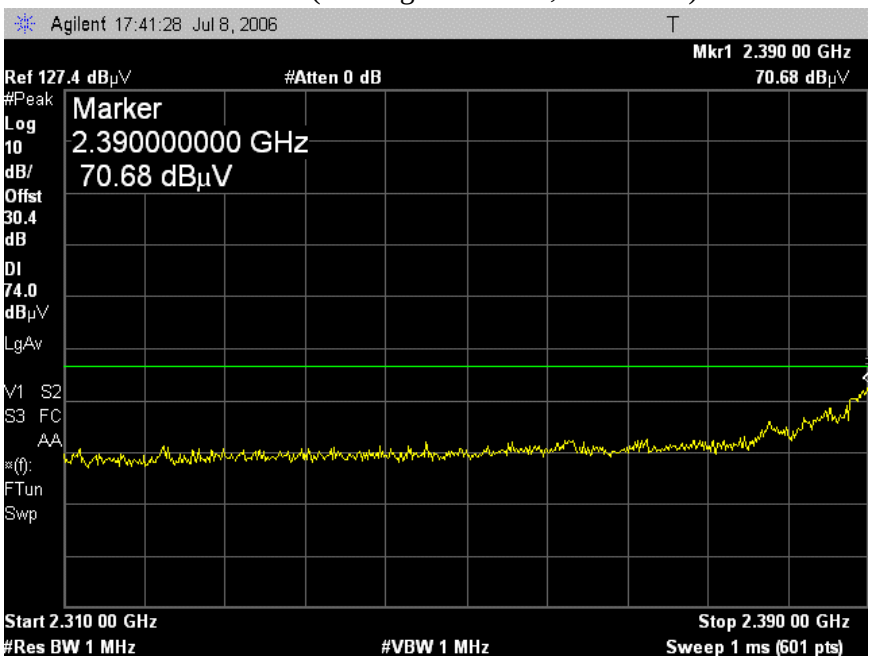
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tx Ch 1 | | | | | | | | | | | | | | | |
| 4.824 | 3.0 | 52.80 | 40.83 | 33.3 | 2.8 | -36.5 | 0.0 | 0.6 | 53.0 | 41.0 | 74 | 54 | -21.0 | -13.0 | V |
| 7.236 | 3.0 | 47.43 | 37.35 | 34.9 | 3.3 | -36.2 | 0.0 | 0.6 | 50.1 | 40.0 | 74 | 54 | -23.9 | -14.0 | V |
| 9.648 | 3.0 | 44.24 | 35.60 | 36.7 | 3.7 | -37.0 | 0.0 | 0.8 | 48.5 | 39.9 | 74 | 54 | -25.5 | -14.1 | Noise floor |
| 4.824 | 3.0 | 55.30 | 42.55 | 33.3 | 2.8 | -36.5 | 0.0 | 0.6 | 55.5 | 42.8 | 74 | 54 | -18.5 | -11.2 | H |
| 7.236 | 3.0 | 45.45 | 35.51 | 34.9 | 3.3 | -36.2 | 0.0 | 0.6 | 48.1 | 38.2 | 74 | 54 | -25.9 | -15.8 | H |
| 9.648 | 3.0 | 42.83 | 31.20 | 36.7 | 3.7 | -37.0 | 0.0 | 0.8 | 47.1 | 35.5 | 74 | 54 | -26.9 | -18.5 | Noise floor |
| Tx Ch 6 | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 53.25 | 40.69 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 53.5 | 41.0 | 74 | 54 | -20.5 | -13.0 | V |
| 7.311 | 3.0 | 52.64 | 40.02 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 55.4 | 42.8 | 74 | 54 | -18.6 | -11.2 | V |
| 9.784 | 3.0 | 42.78 | 33.98 | 36.8 | 3.7 | -37.0 | 0.0 | 0.8 | 47.1 | 38.3 | 74 | 54 | -26.9 | -15.7 | V |
| 12.185 | 3.0 | 41.71 | 31.11 | 37.6 | 4.3 | -35.4 | 0.0 | 0.9 | 49.2 | 38.6 | 74 | 54 | -24.8 | -15.4 | Noise floor |
| 4.874 | 3.0 | 50.27 | 34.95 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 50.6 | 35.2 | 74 | 54 | -23.4 | -18.8 | H |
| 7.311 | 3.0 | 45.02 | 33.25 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 47.8 | 36.0 | 74 | 54 | -26.2 | -18.0 | H |
| 9.784 | 3.0 | 50.26 | 43.20 | 36.8 | 3.7 | -37.0 | 0.0 | 0.8 | 54.6 | 47.5 | 74 | 54 | -19.4 | -6.5 | H |
| 12.185 | 3.0 | 42.75 | 32.40 | 37.6 | 4.3 | -35.4 | 0.0 | 0.9 | 50.2 | 39.9 | 74 | 54 | -23.8 | -14.1 | Noise floor |
| Tx Ch11 | | | | | | | | | | | | | | | |
| 4.924 | 3.0 | 51.19 | 39.44 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 51.6 | 39.8 | 74 | 54 | -22.4 | -14.2 | V |
| 7.386 | 3.0 | 53.14 | 42.42 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 55.9 | 45.2 | 74 | 54 | -18.1 | -8.8 | V |
| 9.848 | 3.0 | 43.10 | 31.33 | 36.8 | 3.7 | -37.0 | 0.0 | 0.8 | 47.4 | 35.7 | 74 | 54 | -26.6 | -18.3 | Noise floor |
| 4.924 | 3.0 | 45.44 | 33.54 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 45.8 | 33.9 | 74 | 54 | -28.2 | -20.1 | H |
| 7.386 | 3.0 | 45.01 | 32.10 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 47.8 | 34.9 | 74 | 54 | -26.2 | -19.1 | H |
| 9.848 | 3.0 | 43.88 | 31.38 | 36.8 | 3.7 | -37.0 | 0.0 | 0.8 | 48.2 | 35.7 | 74 | 54 | -25.8 | -18.3 | Noise floor |
| No other emissions were detected above 12GHz | | | | | | | | | | | | | | | |

Rev. 5.1.6

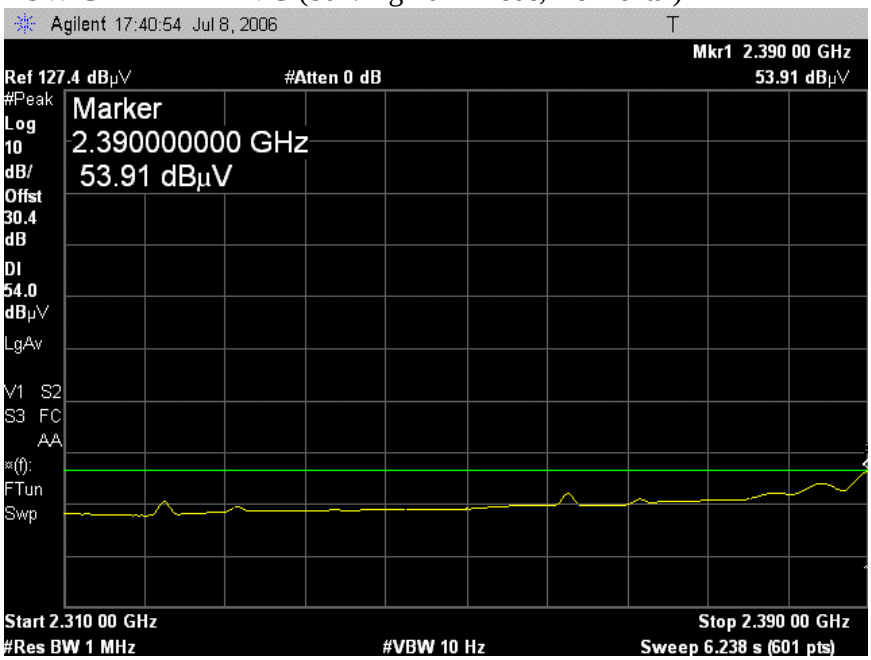
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

**RESTRICTED BANDEDGE (802.11g 20M MODE, LOW CHANNEL)**

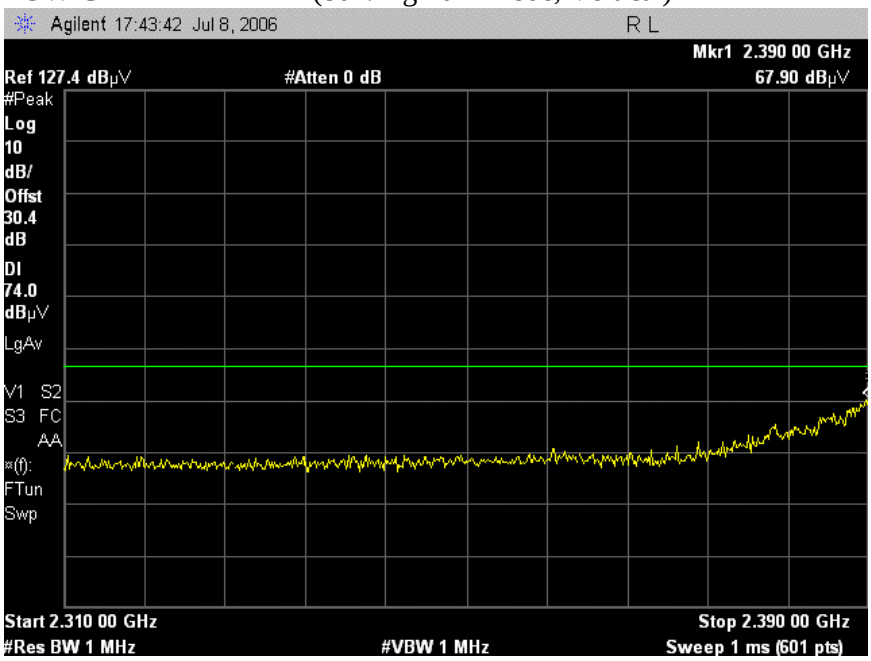
LOW CHANNEL PEAK (802.11g 20M mode, Horizontal)



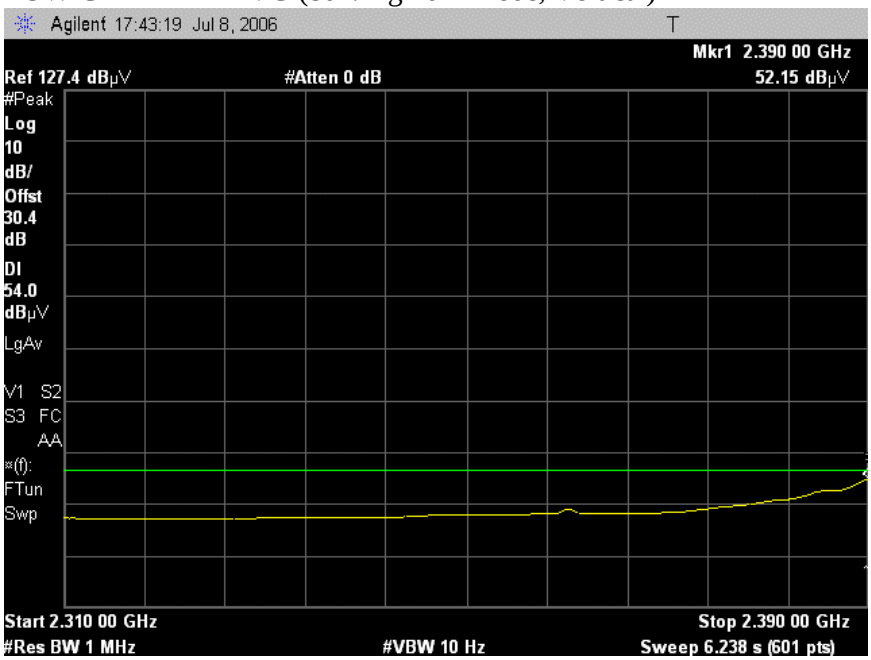
LOW CHANNEL AVG (802.11g 20M mode, Horizontal)



LOW CHANNEL PEAK (802.11g 20M mode, Vertical)

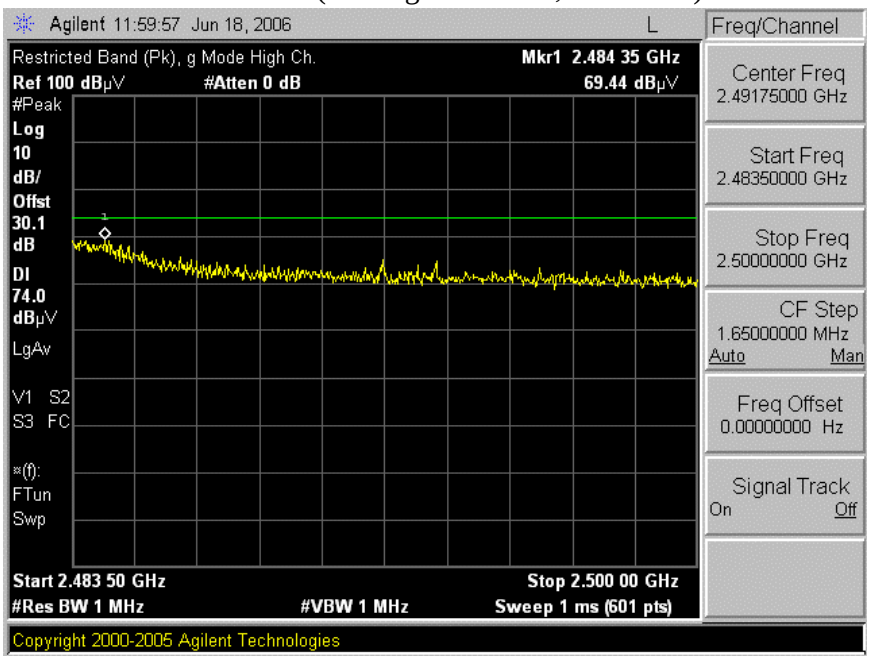


LOW CHANNEL AVG (802.11g 20M mode, Vertical)

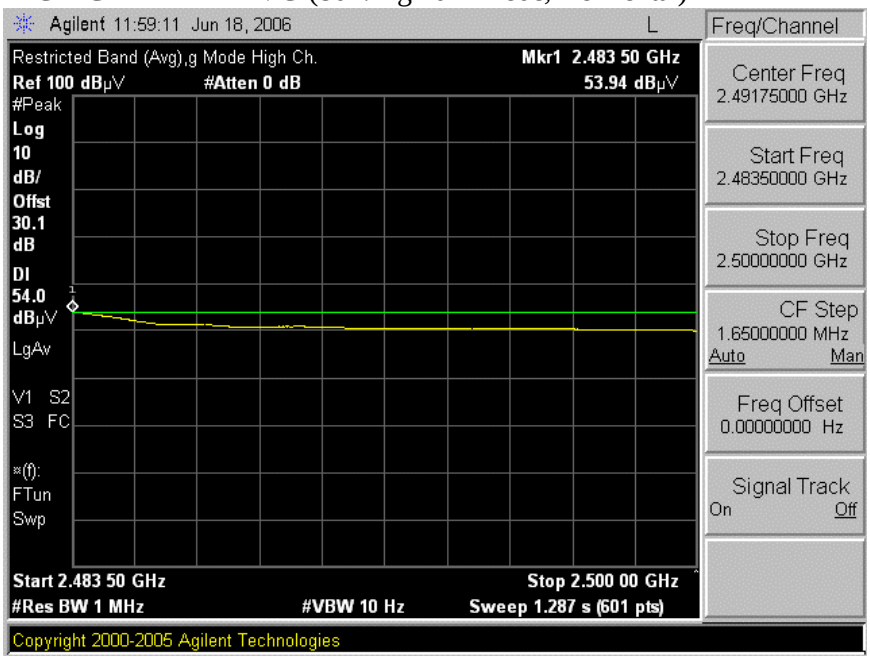


**RESTRICTED BANDEDGE (802.11g 20M MODE, HIGH CHANNEL)**

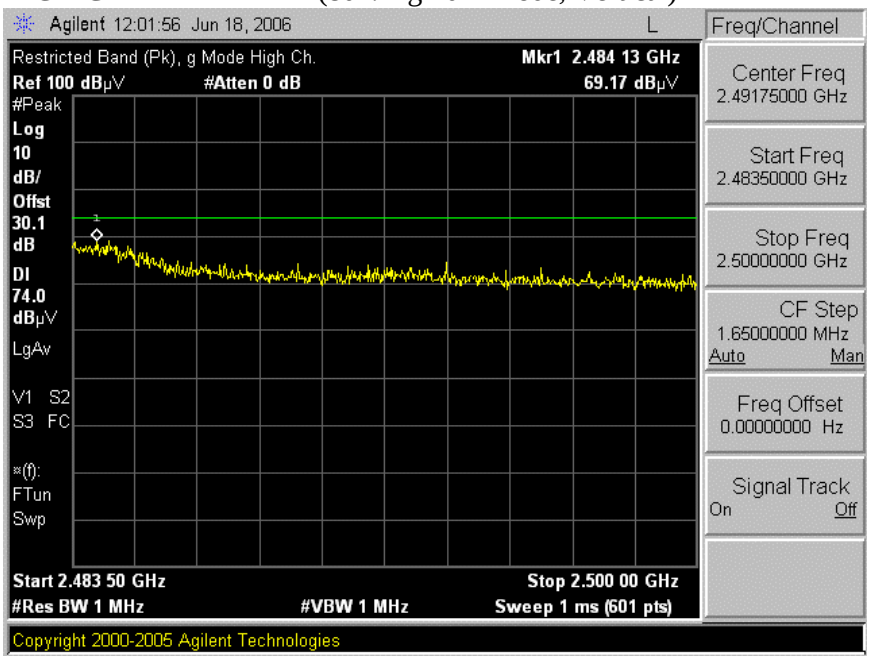
HIGH CHANNEL PEAK (802.11g 20M mode, Horizontal)



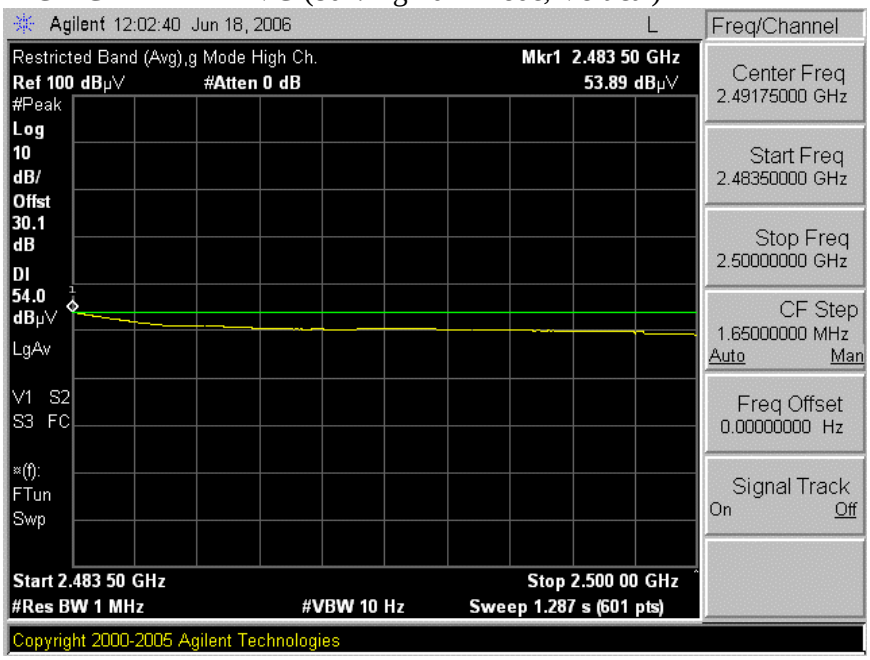
HIGH CHANNEL AVG (802.11g 20M mode, Horizontal)



HIGH CHANNEL PEAK (802.11g 20M mode, Vertical)



HIGH CHANNEL AVG (802.11g 20M mode, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11g MODE)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

| | |
|---|---|
| **Company:** | MARVELL SEMICONDUCTOR INC. |
| **Project #:** | 06U10359 |
| **Date:** | 07/08/06 |
| **Test Engineer:** | Frank Ibrahim |
| **Configuration:** | EUT , Extender card, Support Laptop. |
| **Mode:** | Continuously Transmitting in 11g 20M mode, 54Mbps, w/Foxconn Antenna |
| **EUT S/N:** | 010 |

~~Test Equipment~~:

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T60; S/N: 2238 @3m | T34 HP 8449B | | T89; ARA 18-26GHz; S/N:1049 |

Hi Frequency Cables

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| | Frank 177080001 | Frank 187209001 | | R_001 |

~~Peak Measurements~~
RBW=VBW=1MHz
~~Average Measurements~~
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (2412 MHz)** | | | | | | | | | | | | | | | |
| 4.824 | 3.0 | 47.42 | 34.52 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 49.6 | 36.7 | 74 | 54 | -24.4 | -17.3 | V, PowerSetting 63 64 |
| 4.824 | 3.0 | 50.51 | 34.23 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 52.7 | 36.4 | 74 | 54 | -21.3 | -17.6 | H, PowerSetting 63 64 |
| **Mid Channel (2437 MHz)** | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 47.80 | 33.34 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 50.0 | 35.6 | 74 | 54 | -24.0 | -18.4 | V, PowerSetting 66 66 |
| 7.311 | 3.0 | 52.06 | 38.80 | 35.5 | 4.6 | -34.1 | 0.0 | 0.0 | 58.0 | 44.8 | 74 | 54 | -16.0 | -9.2 | V, PowerSetting 66 66 |
| 4.874 | 3.0 | 54.74 | 38.76 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 57.0 | 41.0 | 74 | 54 | -17.0 | -13.0 | H, PowerSetting 66 66 |
| 7.311 | 3.0 | 54.67 | 41.19 | 35.5 | 4.6 | -34.1 | 0.0 | 0.0 | 60.7 | 47.2 | 74 | 54 | -13.3 | -6.8 | H, PowerSetting 66 66 |
| **High Channel (2462 MHz)** | | | | | | | | | | | | | | | |
| 4.924 | 3.0 | 48.78 | 33.71 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 51.1 | 36.0 | 74 | 54 | -22.9 | -18.0 | V, PowerSetting 17 dBm |
| 7.386 | 3.0 | 52.60 | 38.00 | 35.6 | 4.6 | -34.1 | 0.0 | 0.0 | 58.7 | 44.1 | 74 | 54 | -15.3 | -9.9 | V, PowerSetting 17 dBm |
| 4.924 | 3.0 | 46.49 | 31.17 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 48.8 | 33.5 | 74 | 54 | -25.2 | -20.5 | H, PowerSetting 17 dBm |
| 7.386 | 3.0 | 45.76 | 32.72 | 35.6 | 4.6 | -34.1 | 0.0 | 0.0 | 51.9 | 38.8 | 74 | 54 | -22.1 | -15.2 | H, PowerSetting 17 dBm |

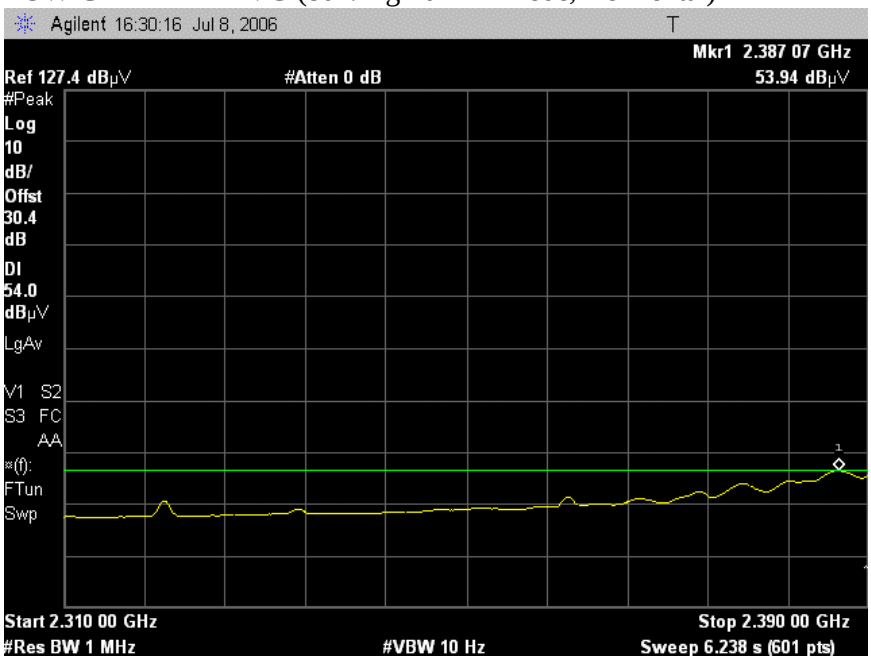
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

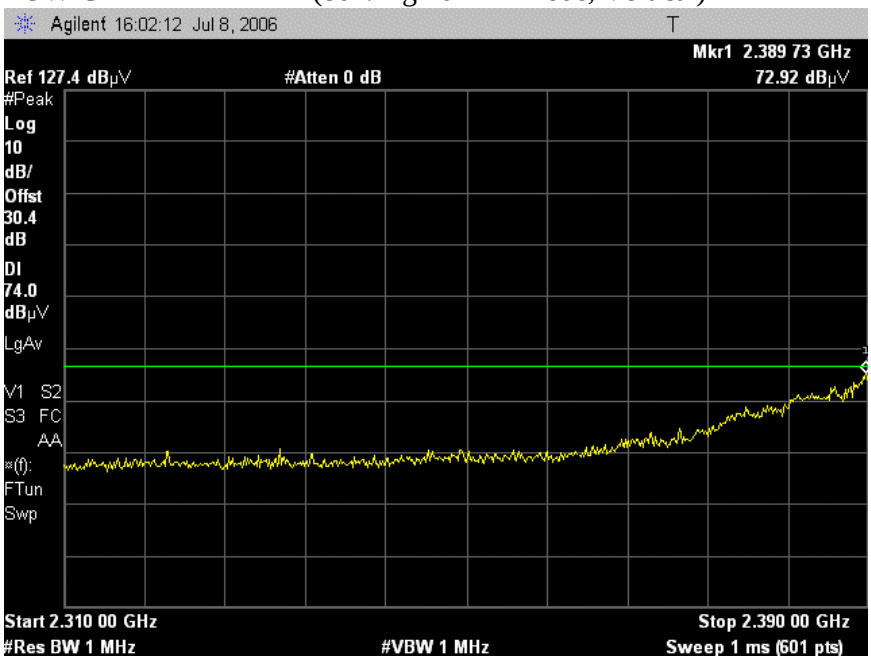
**RESTRICTED BANDEDGE (802.11g, 40MHz MODE, LOW CHANNEL)**

LOW CHANNEL PEAK (802.11g 40MHz mode, Horizontal)

LOW CHANNEL AVG (802.11g 40MHz mode, Horizontal)



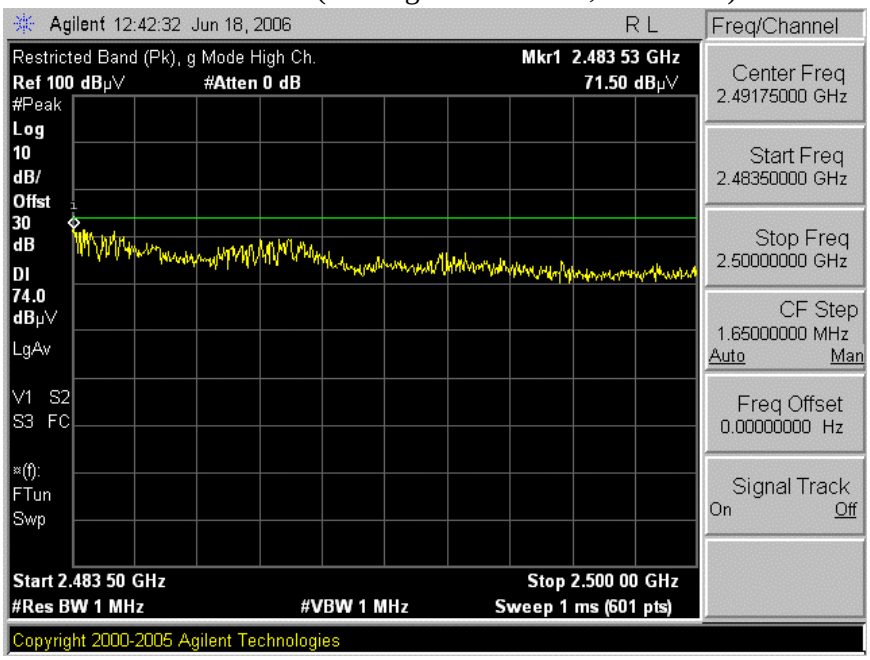
LOW CHANNEL PEAK (802.11g 40MHz mode, Vertical)



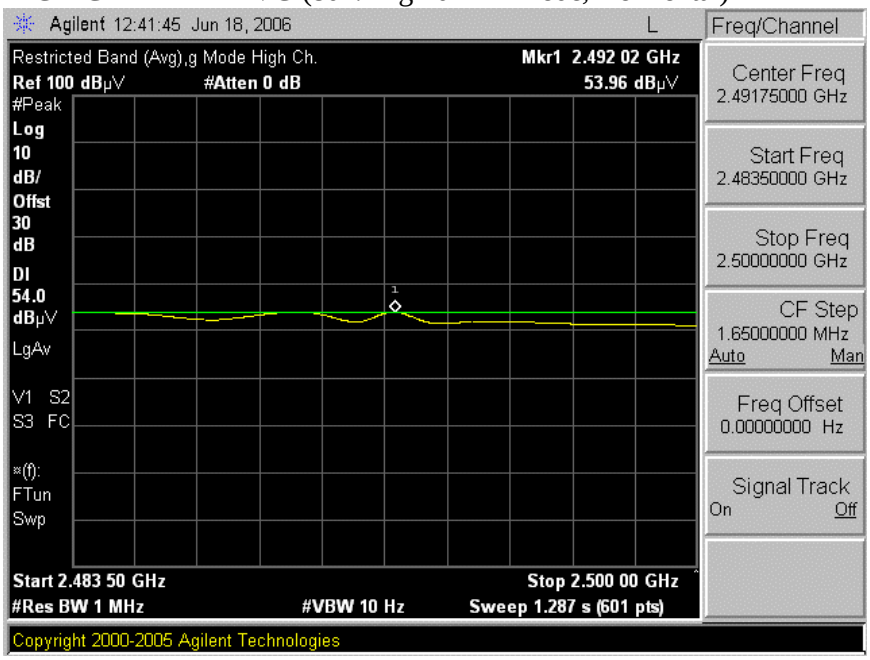
LOW CHANNEL AVG (802.11g 40MHz mode, Vertical)

**RESTRICTED BANDEDGE (802.11g, 40MGHz MODE, HIGH CHANNEL)**

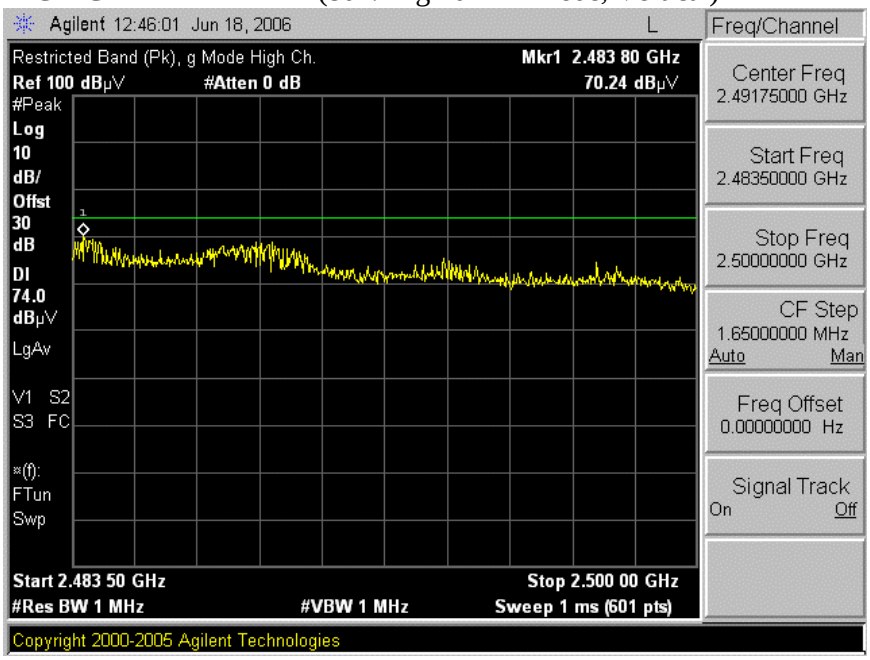
HIGH CHANNEL PEAK (802.11g 40MHz mode, Horizontal)



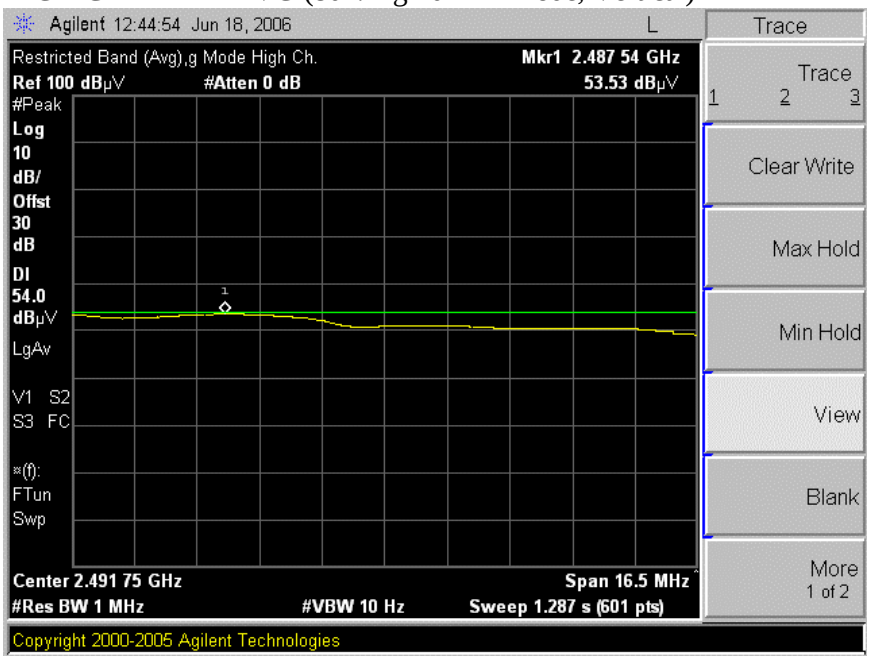
HIGH CHANNEL AVG (802.11 g 40MHz mode, Horizontal)



HIGH CHANNEL PEAK (802.11 g 40MHz mode, Vertical)



HIGH CHANNEL AVG (802.11g 40MHz mode, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11g 40MHz mode)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** MARVELL SEMICONDUCTOR INC.
**Project #:** 06U10359
**Date:** 07/10/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT , Extender card, Support Laptop.
**Mode:** Continuously Transmitting in 11g 40M mode, 54Mbps, w/Foxconn Antenna
**EUT S/N:** 010

**~~Test Equipment~~:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T60; S/N: 2238 @3m | T145 Agilent 3008A0 056 | | T89; ARA 18-26GHz; S/N:1049 |

Hi Frequency Cables

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| | Frank 177080001 | Frank 187209001 | | R_001 |

**~~Peak Measurements~~**
RBW=VBW=1MHz
**~~Average Measurements~~**
RBW=1MHz ; VBW=10Hz

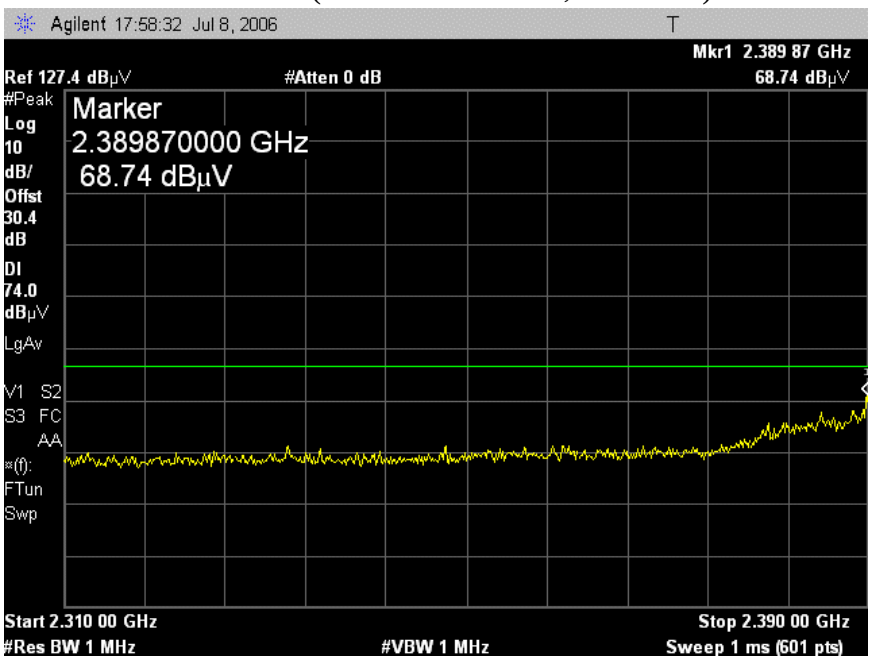
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (2422 MHz)** | | | | | | | | | | | | | | | |
| 4.844 | 3.0 | 48.25 | 32.65 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 50.4 | 34.8 | 74 | 54 | -23.6 | -19.2 | V, PowerSetting 5F 60 |
| 7.266 | 3.0 | 45.71 | 33.20 | 35.4 | 4.6 | -34.7 | 0.0 | 0.0 | 51.1 | 38.6 | 74 | 54 | -22.9 | -15.4 | V, PowerSetting 5F 60 |
| 4.844 | 3.0 | 43.84 | 30.60 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 46.0 | 32.8 | 74 | 54 | -28.0 | -21.2 | H, PowerSetting 5F 60 |
| **Mid Channel (2437 MHz)** | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 47.97 | 33.48 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 50.2 | 35.7 | 74 | 54 | -23.8 | -18.3 | V, PowerSetting 5E 5E |
| 7.311 | 3.0 | 44.89 | 31.50 | 35.5 | 4.6 | -34.7 | 0.0 | 0.0 | 50.3 | 36.9 | 74 | 54 | -23.7 | -17.1 | V, PowerSetting 5E 5E |
| 4.874 | 3.0 | 46.19 | 34.34 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 48.4 | 36.5 | 74 | 54 | -25.6 | -17.5 | H, PowerSetting 5E 5E |
| 7.311 | 3.0 | 46.80 | 33.38 | 35.5 | 4.6 | -34.7 | 0.0 | 0.0 | 52.2 | 38.8 | 74 | 54 | -21.8 | -15.2 | H, PowerSetting 5E 5E |
| **High Channel (2452 MHz)** | | | | | | | | | | | | | | | |
| 4.904 | 3.0 | 42.60 | 30.00 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 44.8 | 32.2 | 74 | 54 | -29.2 | -21.8 | V, PowerSetting 15 dBm |
| 7.356 | 3.0 | 43.20 | 30.20 | 35.5 | 4.6 | -34.6 | 0.0 | 0.0 | 48.7 | 35.7 | 74 | 54 | -25.3 | -18.3 | V, PowerSetting 15 dBm |
| 4.904 | 3.0 | 42.70 | 31.17 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 44.9 | 33.4 | 74 | 54 | -29.1 | -20.6 | H, PowerSetting 15 dBm |
| 7.356 | 3.0 | 42.60 | 30.30 | 35.5 | 4.6 | -34.6 | 0.0 | 0.0 | 48.1 | 35.8 | 74 | 54 | -25.9 | -18.2 | H, PowerSetting 15 dBm |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

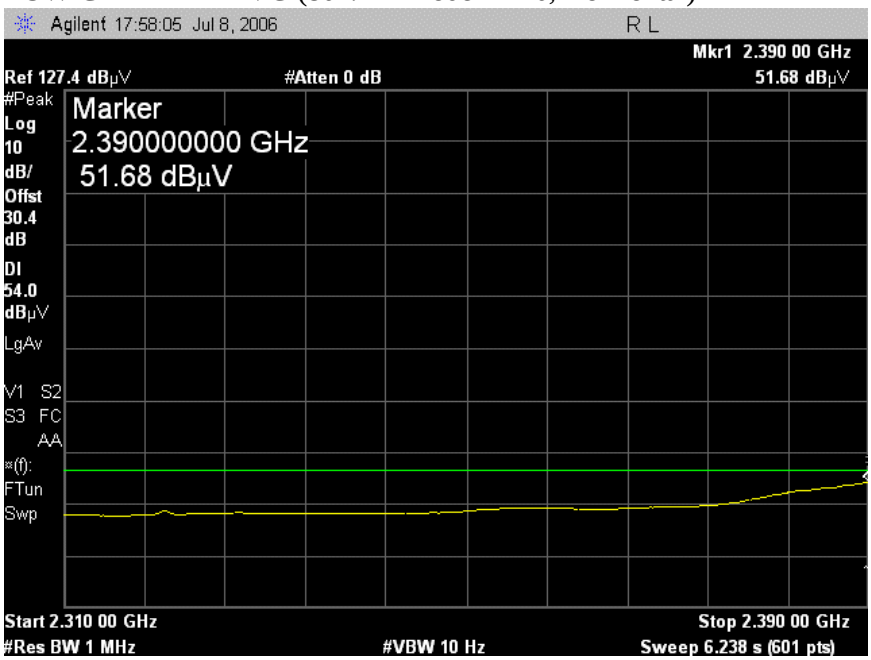
EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

**RESTRICTED BANDEDGE (802.11n MODE HT20, LOW CHANNEL)**

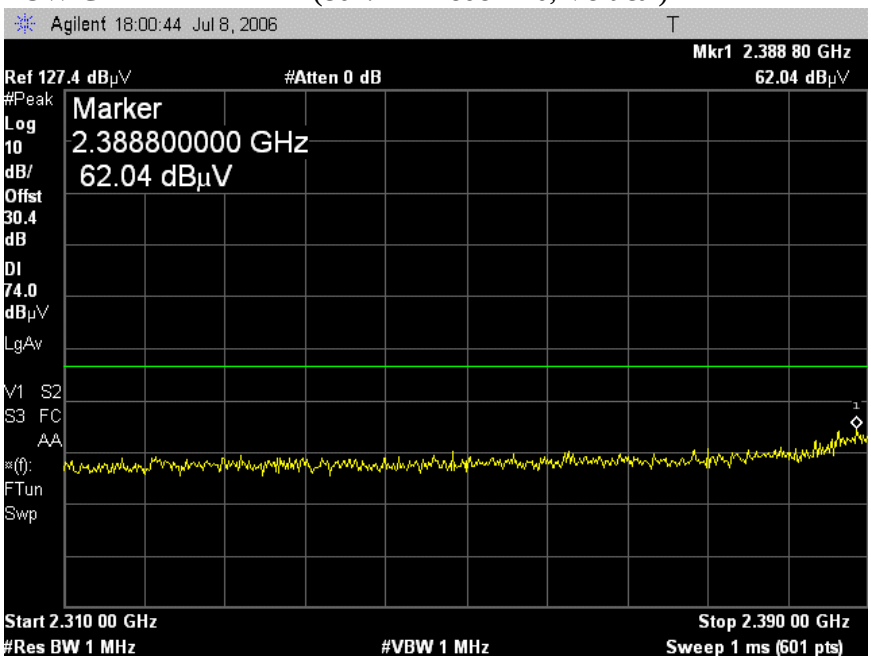
LOW CHANNEL PEAK (802.11n mode HT20, Horizontal)



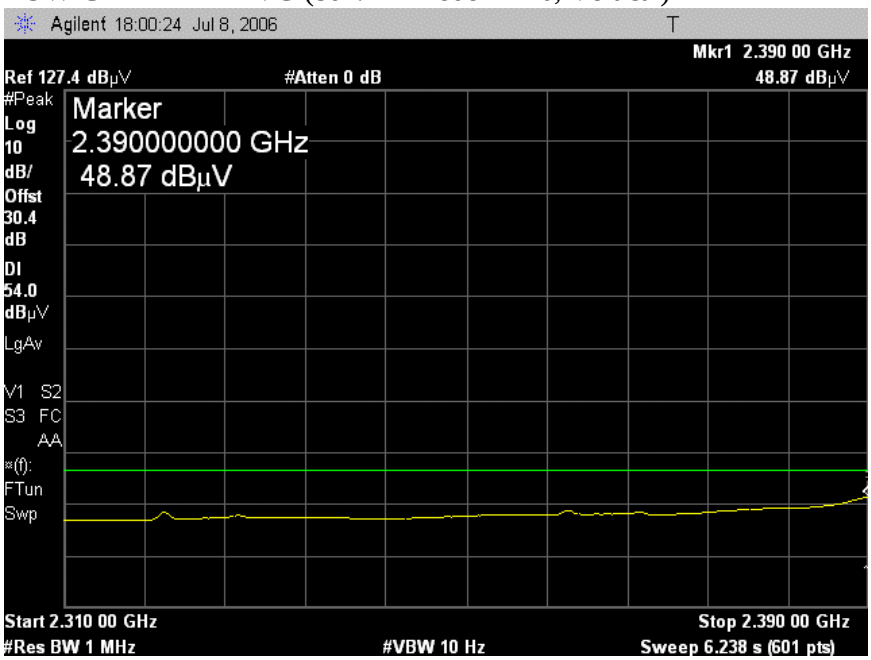
LOW CHANNEL AVG (802.11n mode HT20, Horizontal)



LOW CHANNEL PEAK (802.11n mode H20, Vertical)

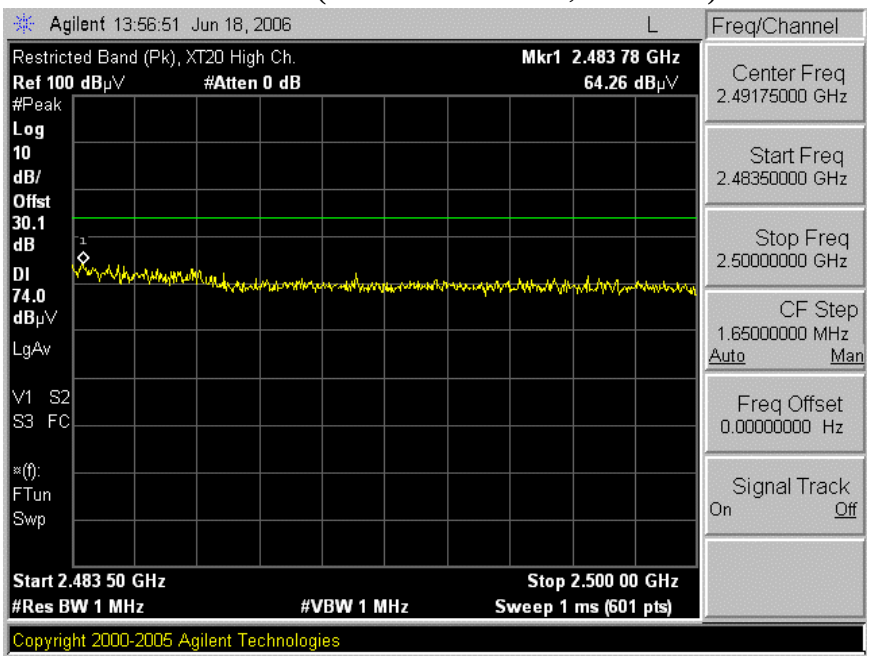


LOW CHANNEL AVG (802.11n mode HT20, Vertical)

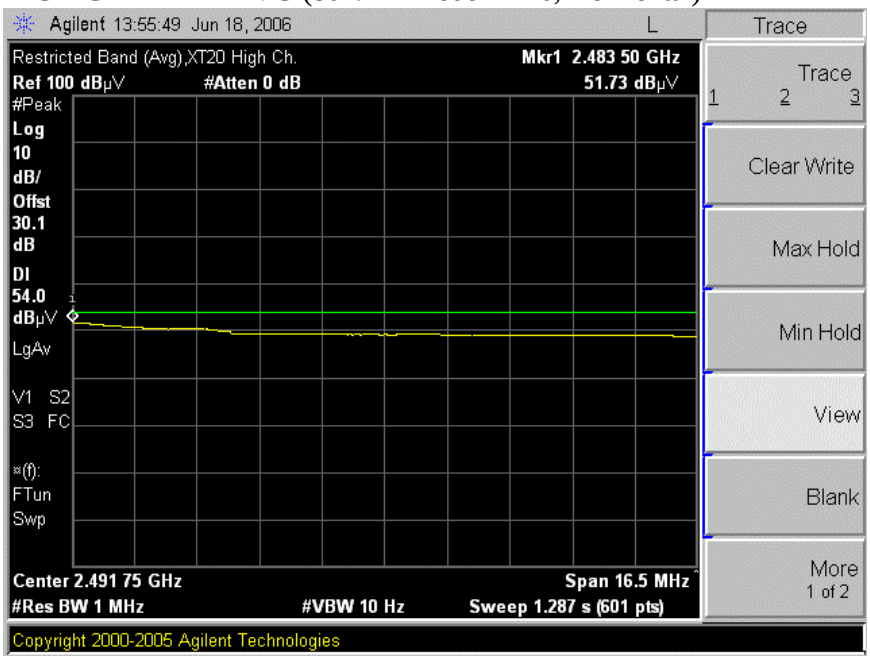


**RESTRICTED BANDEDGE (802.11n MODE HT20, HIGH CHANNEL)**

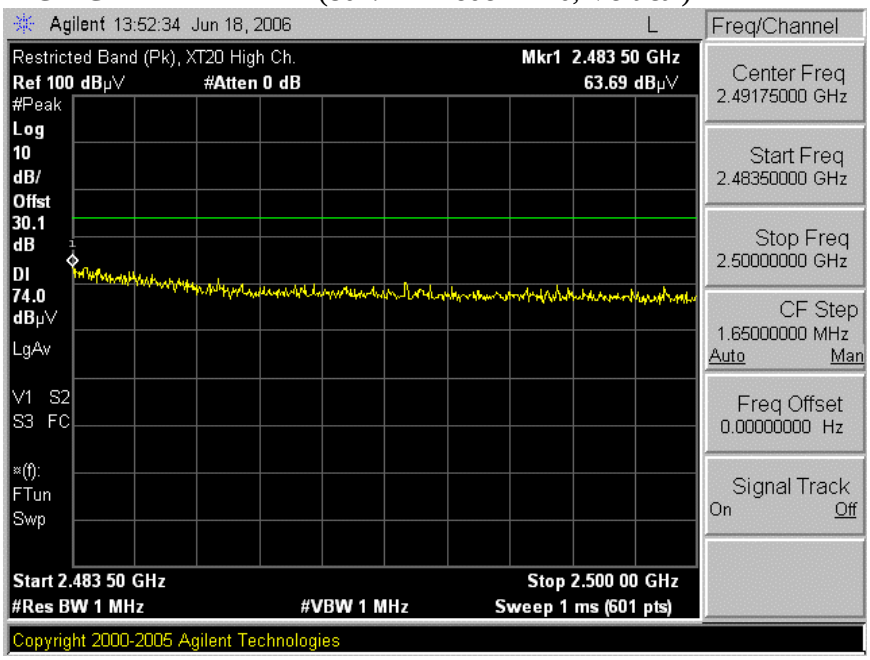
HIGH CHANNEL PEAK (802.11n mode HT20, Horizontal)



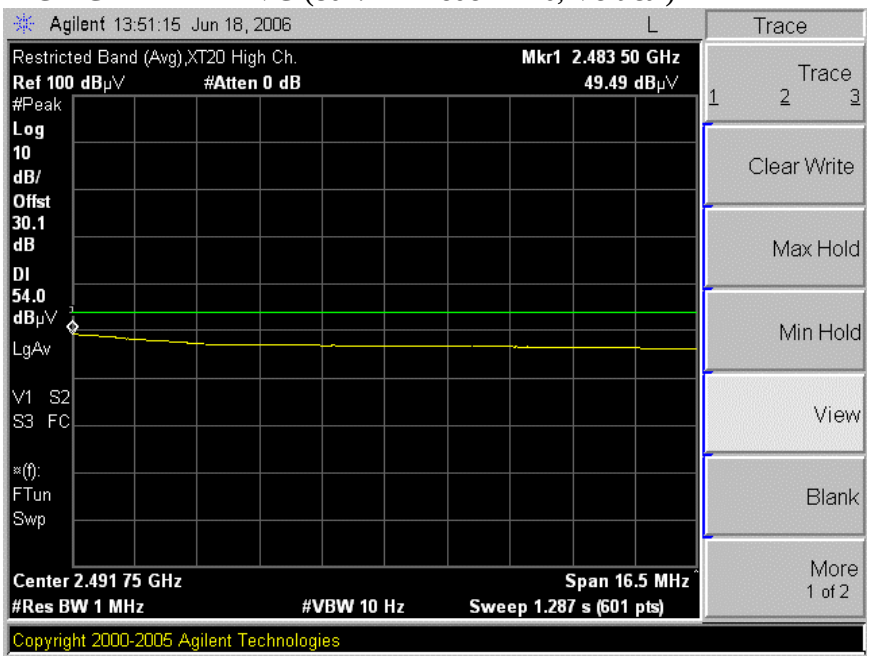
HIGH CHANNEL AVG (802.11n mode HT20, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT20, Vertical)



HIGH CHANNEL AVG (802.11n mode HT20, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT20)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** MARVELL SEMICONDUCTOR INC.
**Project #:** 06U10359
**Date:** 07/08/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT , Extender card, Support Laptop.
**Mode:** Continuously Transmitting in HT 20M mode, MCS11, w/Foxconn Antenna
**EUT S/N:** 010

~~Test Equipment~~:

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T60; S/N: 2238 @3m | T34 HP 8449B | | T89; ARA 18-26GHz; S/N:1049 |

Hi Frequency Cables

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| | Frank 177080001 | Frank 187209001 | | R_001 |

~~Peak Measurements~~
RBW=VBW=1MHz
~~Average Measurements~~
RBW=1MHz ; VBW=10Hz

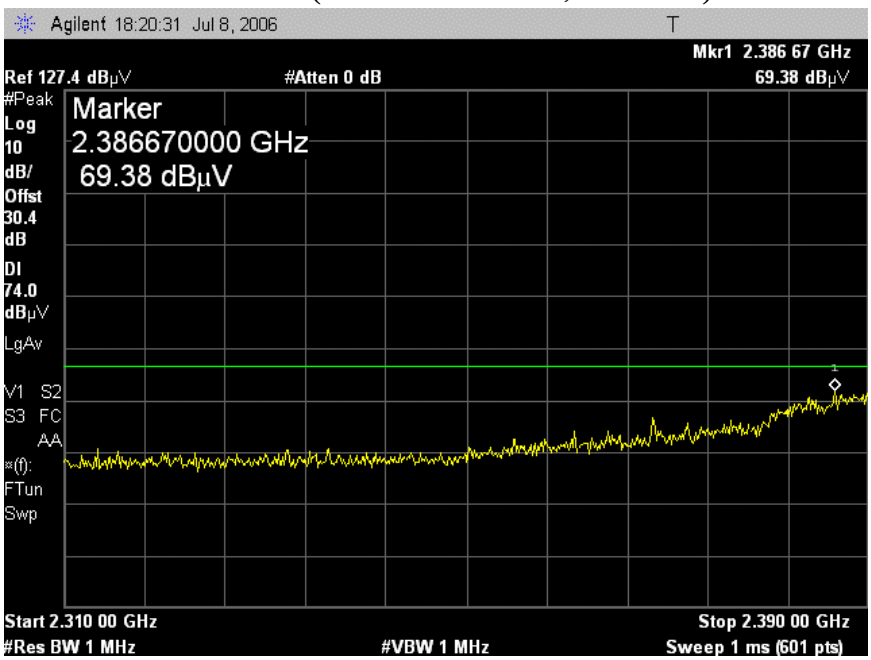
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (2412 MHz) | | | | | | | | | | | | | | | |
| 4.824 | 3.0 | 43.34 | 30.60 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 45.5 | 32.8 | 74 | 54 | -28.5 | -21.2 | V, PowerSetting 60 60 |
| 4.824 | 3.0 | 45.30 | 31.38 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 47.5 | 33.5 | 74 | 54 | -26.5 | -20.5 | H, PowerSetting 60 60 |
| Mid Channel (2437 MHz) | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 47.05 | 35.36 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 49.3 | 37.6 | 74 | 54 | -24.7 | -16.4 | V, PowerSetting 64 65 |
| 7.311 | 3.0 | 50.98 | 38.29 | 35.5 | 4.6 | -34.1 | 0.0 | 0.0 | 57.0 | 44.3 | 74 | 54 | -17.0 | -9.7 | V, PowerSetting 64 65 |
| 4.874 | 3.0 | 53.13 | 38.04 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 55.4 | 40.3 | 74 | 54 | -18.6 | -13.7 | H, PowerSetting 64 65 |
| 7.311 | 3.0 | 52.13 | 38.71 | 35.5 | 4.6 | -34.1 | 0.0 | 0.0 | 58.1 | 44.7 | 74 | 54 | -15.9 | -9.3 | H, PowerSetting 64 65 |
| High Channel (2462 MHz) | | | | | | | | | | | | | | | |
| 4.924 | 3.0 | 45.80 | 31.70 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 48.1 | 34.0 | 74 | 54 | -25.9 | -20.0 | V, PowerSetting 15 dBm |
| 7.386 | 3.0 | 49.60 | 37.50 | 35.6 | 4.6 | -34.1 | 0.0 | 0.0 | 55.7 | 43.6 | 74 | 54 | -18.3 | -10.4 | V, PowerSetting 15 dBm |
| 4.924 | 3.0 | 42.40 | 31.50 | 33.1 | 4.0 | -34.8 | 0.0 | 0.0 | 44.7 | 33.8 | 74 | 54 | -29.3 | -20.2 | H, PowerSetting 15 dBm |
| 7.386 | 3.0 | 42.10 | 30.00 | 35.6 | 4.6 | -34.1 | 0.0 | 0.0 | 48.2 | 36.1 | 74 | 54 | -25.8 | -17.9 | H, PowerSetting 15 dBm |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

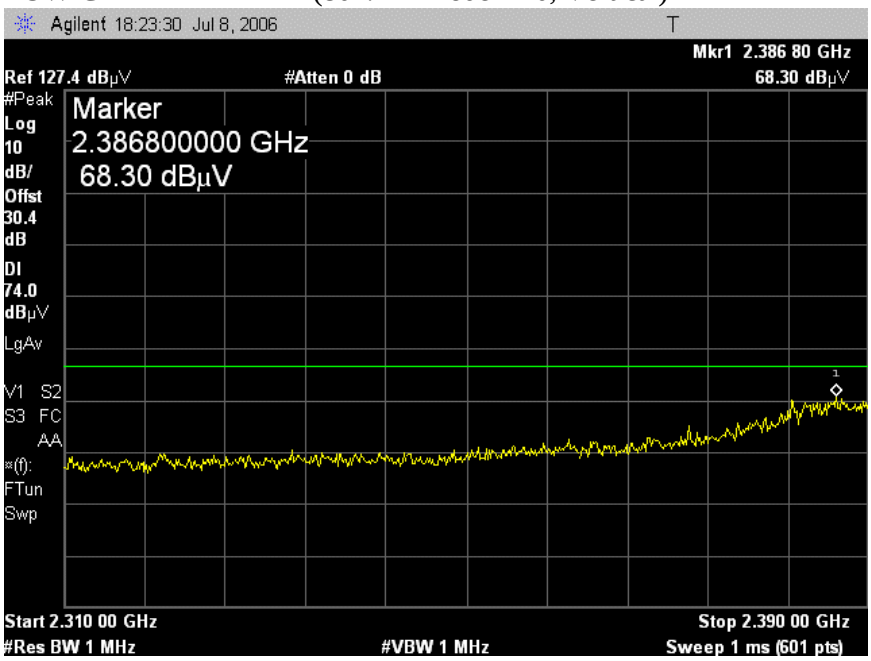
**RESTRICTED BANDEDGE (802.11n MODE HT40, LOW CHANNEL)**

LOW CHANNEL PEAK (802.11n mode HT40, Horizontal)



LOW CHANNEL AVG (802.11n mode HT40, Horizontal)

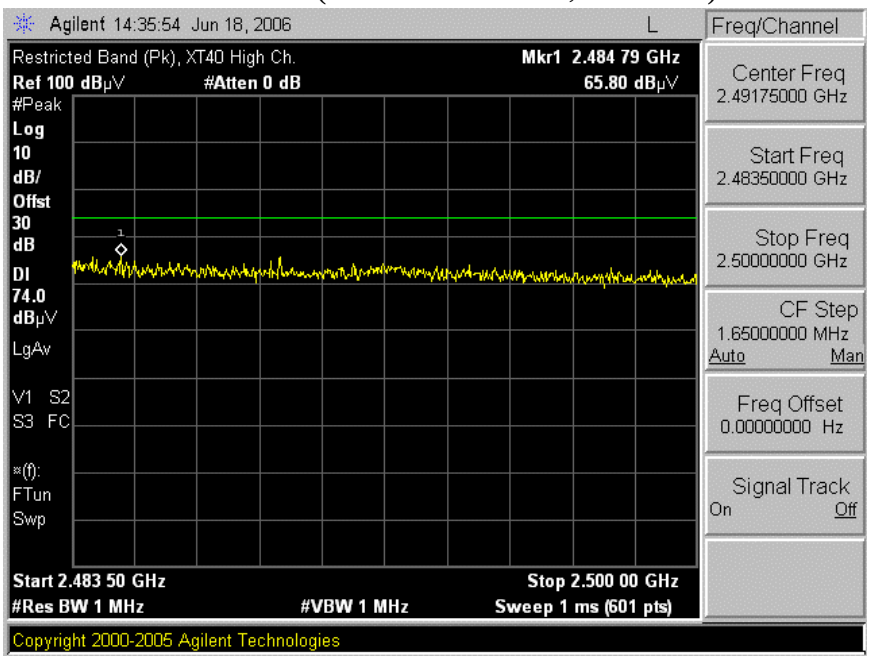
LOW CHANNEL PEAK (802.11n mode H40, Vertical)



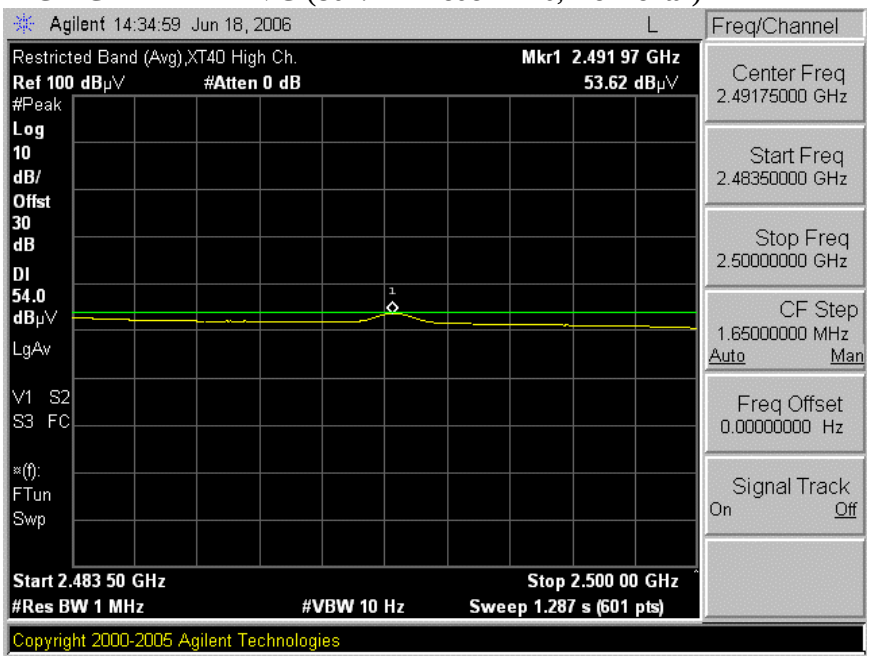
LOW CHANNEL AVG (802.11n mode HT40, Vertical)

**RESTRICTED BANDEDGE (802.11n MODE HT40, HIGH CHANNEL)**

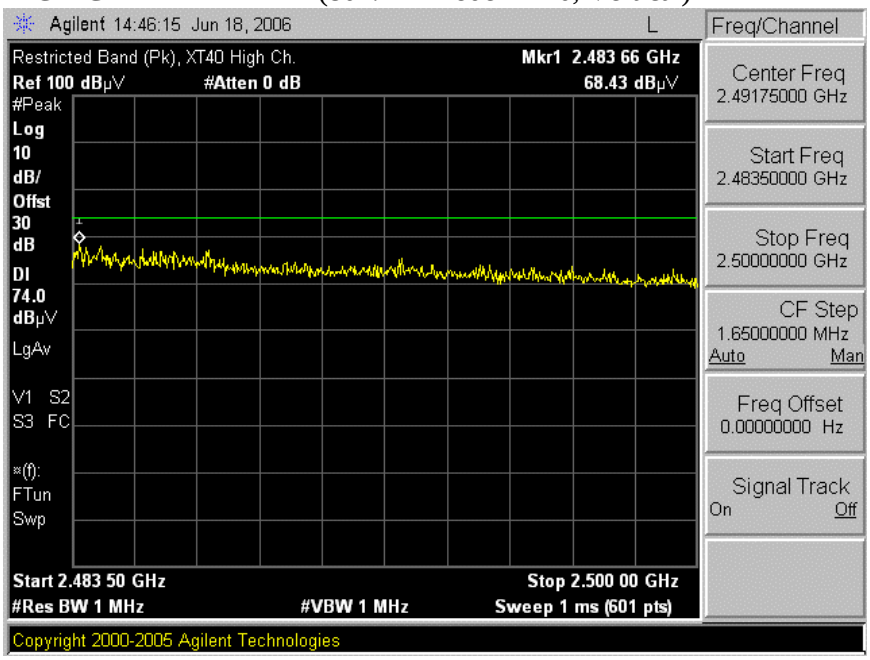
HIGH CHANNEL PEAK (802.11n mode HT40, Horizontal)



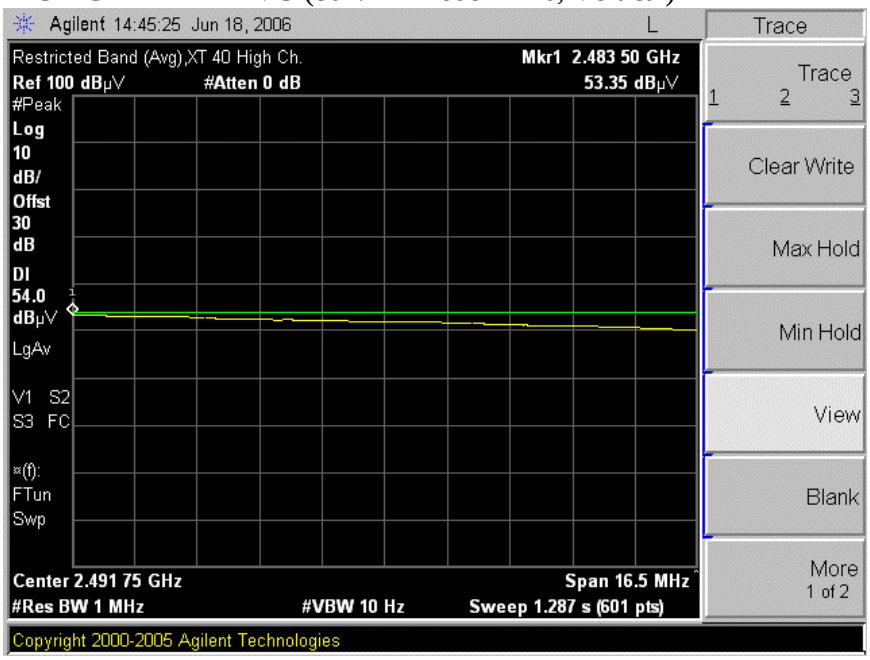
HIGH CHANNEL AVG (802.11n mode HT40, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT40, Vertical)



HIGH CHANNEL AVG (802.11n mode HT40, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT40)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** MARVELL SEMICONDUCTOR INC.
**Project #:** 06U10359
**Date:** 07/10/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT , Extender card, Support Laptop.
**Mode:** Continuously Transmitting in HT 40M mode, MCS15, w/Foxconn Antenna
**EUT S/N:** 010

~~Test Equipment~~:

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T60; S/N: 2238 @3m | T145 Agilent 3008A0056 | | T89; ARA 18-26GHz; S/N:1049 |

Hi Frequency Cables

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| | Frank 177080001 | Frank 187209001 | | R_001 |

~~Peak Measurements~~
RBW=VBW=1MHz
~~Average Measurements~~
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (2422 MHz)** | | | | | | | | | | | | | | | |
| 4.844 | 3.0 | 49.15 | 33.45 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 51.3 | 35.6 | 74 | 54 | -22.7 | -18.4 | V, PowerSetting 62 63 |
| 7.266 | 3.0 | 45.70 | 33.50 | 35.4 | 4.6 | -34.7 | 0.0 | 0.0 | 51.1 | 38.9 | 74 | 54 | -22.9 | -15.1 | V, PowerSetting 62 63 |
| 4.844 | 3.0 | 44.49 | 30.90 | 33.0 | 4.0 | -34.8 | 0.0 | 0.0 | 46.7 | 33.1 | 74 | 54 | -27.3 | -20.9 | H, PowerSetting 62 63 |
| 7.266 | 3.0 | 43.97 | 30.40 | 35.4 | 4.6 | -34.7 | 0.0 | 0.0 | 49.3 | 35.8 | 74 | 54 | -24.7 | -18.2 | H, PowerSetting 62 63 |
| **Mid Channel (2437 MHz)** | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 46.80 | 31.40 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 49.0 | 33.6 | 74 | 54 | -25.0 | -20.4 | V, PowerSetting 14 dBm |
| 7.311 | 3.0 | 41.80 | 30.00 | 35.5 | 4.6 | -34.7 | 0.0 | 0.0 | 47.2 | 35.4 | 74 | 54 | -26.8 | -18.6 | V, PowerSetting 14 dBm |
| 4.874 | 3.0 | 44.60 | 30.10 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 46.8 | 32.3 | 74 | 54 | -27.2 | -21.7 | H, PowerSetting 14 dBm |
| 7.311 | 3.0 | 40.50 | 30.00 | 35.5 | 4.6 | -34.7 | 0.0 | 0.0 | 45.9 | 35.4 | 74 | 54 | -28.1 | -18.6 | H, PowerSetting 14 dBm |
| **High Channel (2452 MHz)** | | | | | | | | | | | | | | | |
| 4.904 | 3.0 | 41.50 | 29.70 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 43.7 | 31.9 | 74 | 54 | -30.3 | -22.1 | V, PowerSetting 14 dBm |
| 7.356 | 3.0 | 43.20 | 29.50 | 35.5 | 4.6 | -34.6 | 0.0 | 0.0 | 48.7 | 35.0 | 74 | 54 | -25.3 | -19.0 | V, PowerSetting 14 dBm |
| 4.904 | 3.0 | 42.70 | 29.50 | 33.1 | 4.0 | -34.9 | 0.0 | 0.0 | 44.9 | 31.7 | 74 | 54 | -29.1 | -22.3 | H, PowerSetting 14 dBm |
| 7.356 | 3.0 | 42.90 | 30.10 | 35.5 | 4.6 | -34.6 | 0.0 | 0.0 | 48.4 | 35.6 | 74 | 54 | -25.6 | -18.4 | H, PowerSetting 14 dBm |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

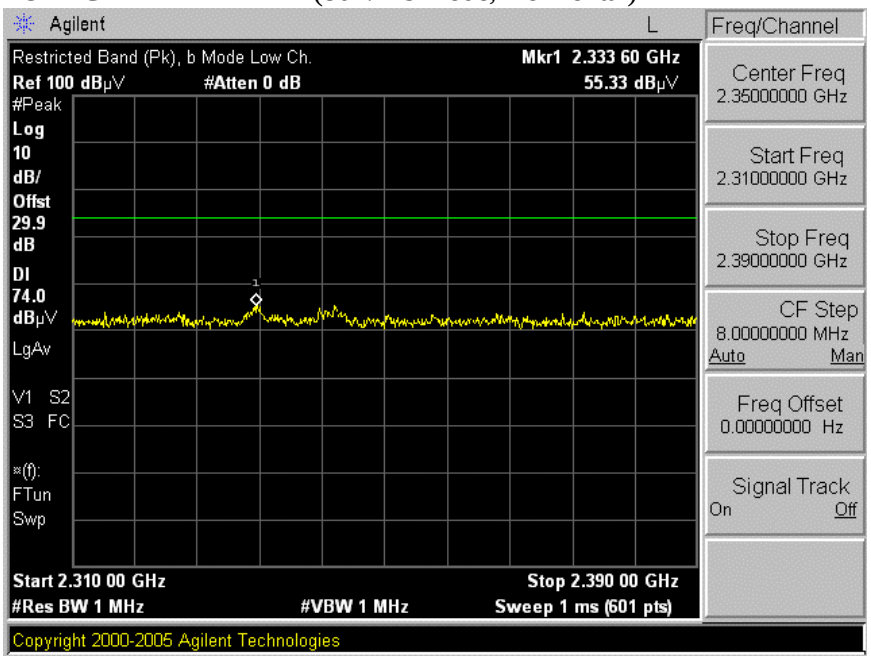
EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

## 7.3.3. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

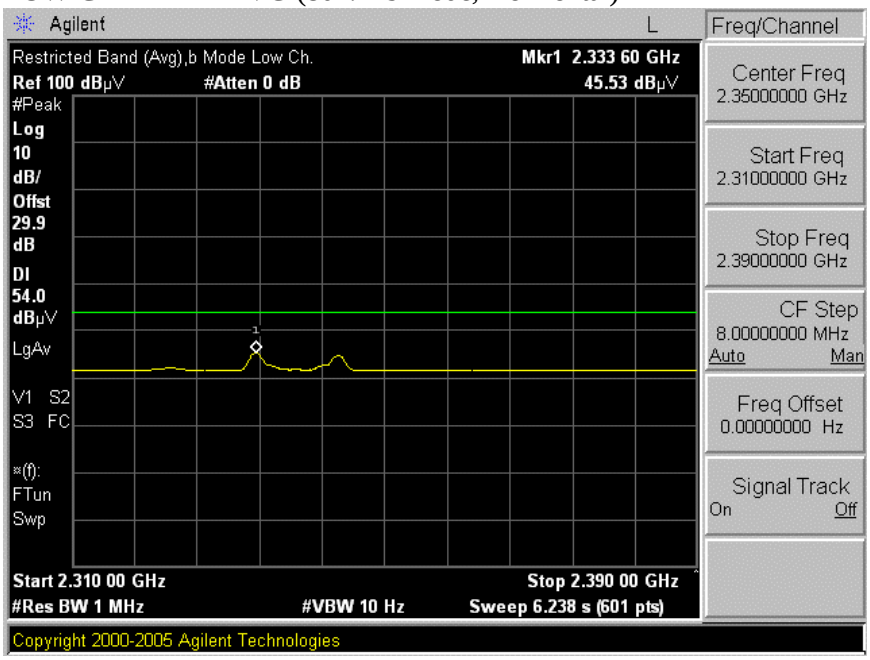
**RESTRICTED BANDEDGE (802.11b MODE, LOW CHANNEL)**

**DUCK ANTENNA**

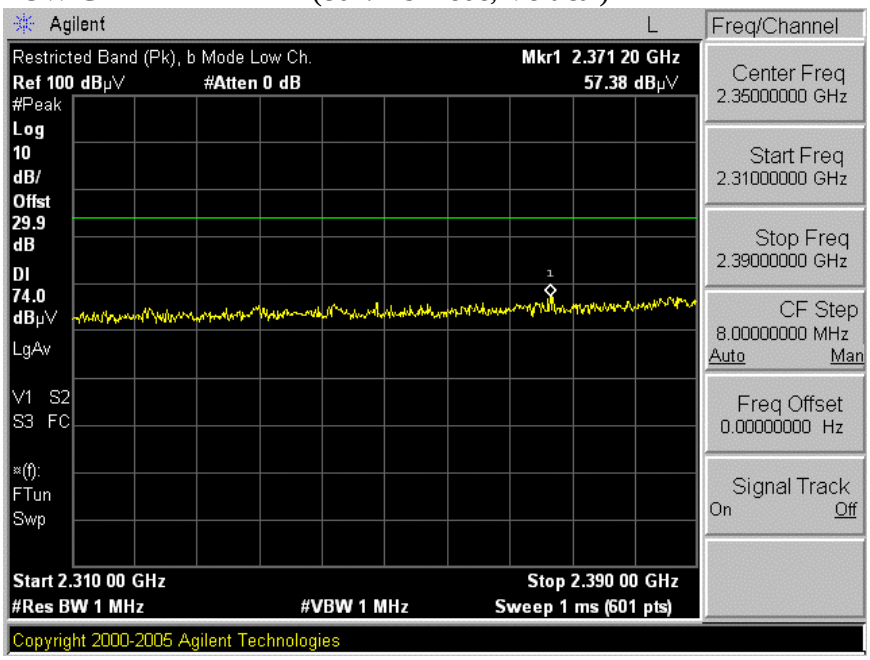
LOW CHANNEL PEAK (802.11b mode, Horizontal)



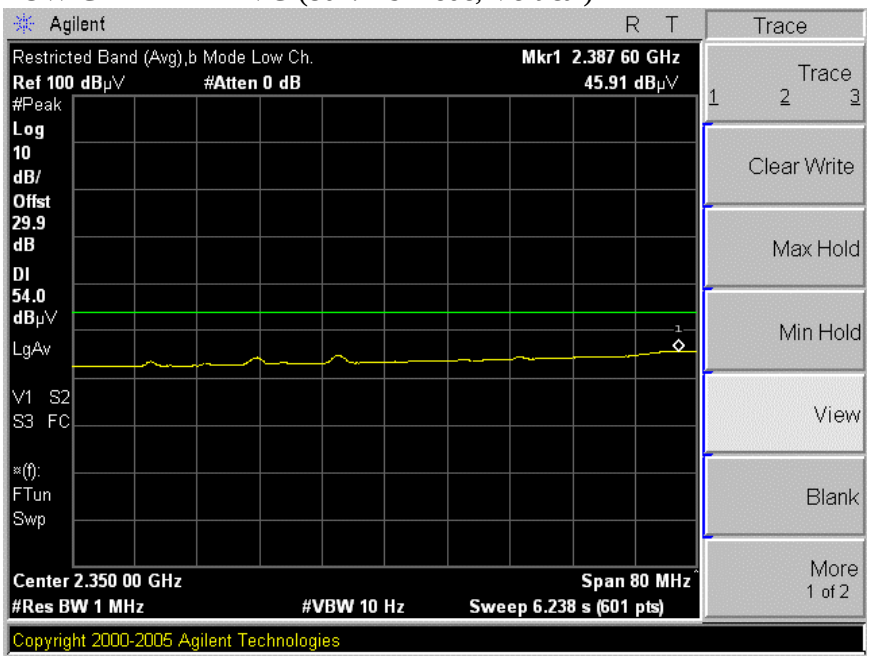
LOW CHANNEL AVG (802.11b mode, Horizontal)



LOW CHANNEL PEAK (802.11b mode, Vertical)

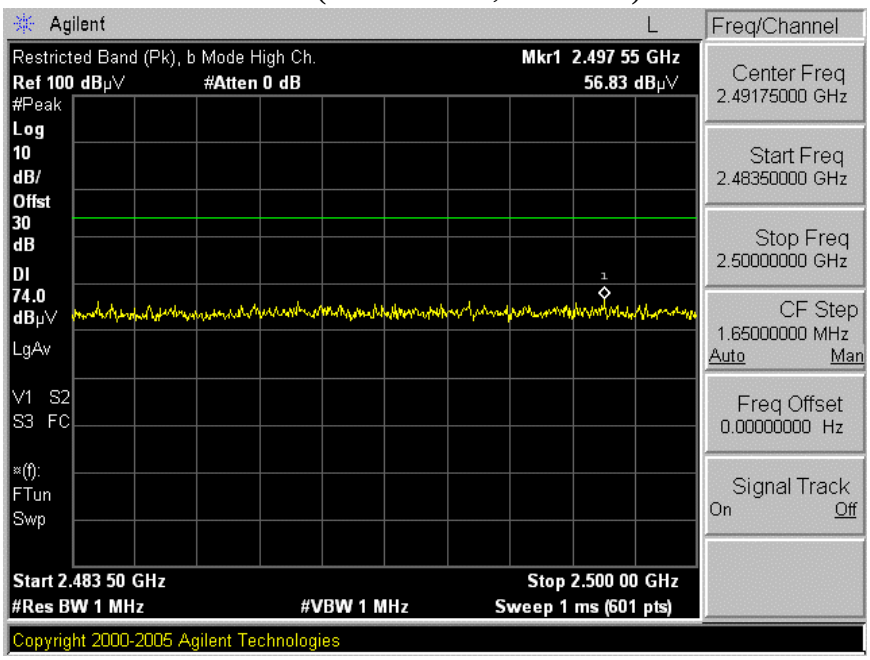


LOW CHANNEL AVG (802.11b mode, Vertical)

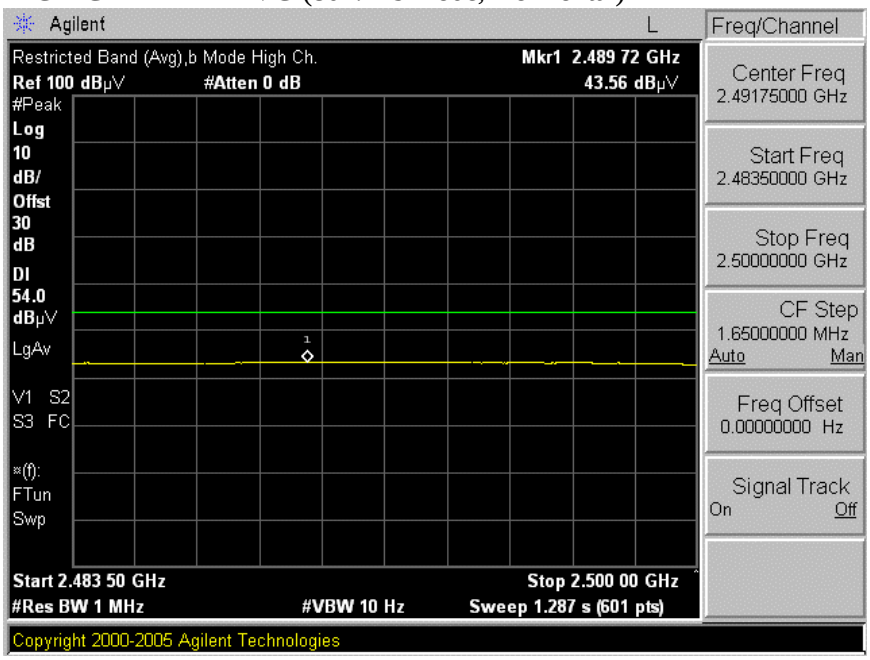


**RESTRICTED BANDEDGE (802.11b MODE, HIGH CHANNEL)**

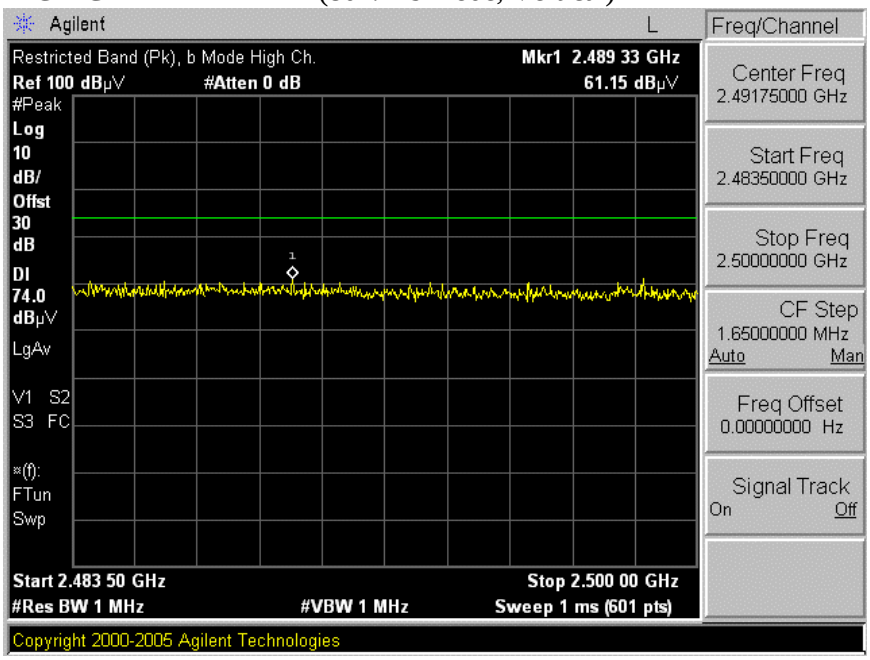
HIGH CHANNEL PEAK (802.11b mode, Horizontal)



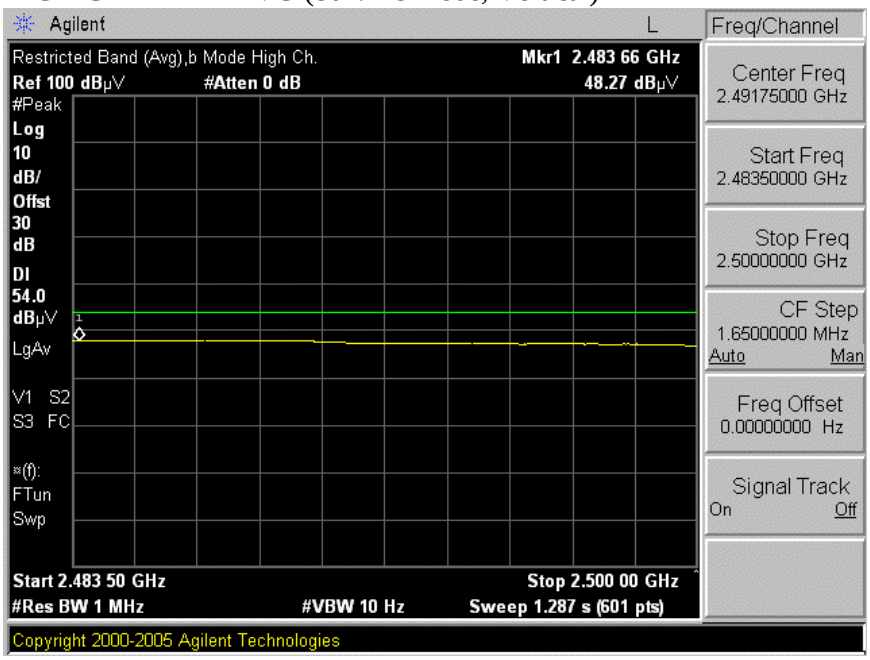
HIGH CHANNEL AVG (802.11b mode, Horizontal)



HIGH CHANNEL PEAK (802.11b mode, Vertical)



HIGH CHANNEL AVG (802.11b mode, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11b MODE)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company: MARVELL SEMICONDUCTOR INC.**
**Project #: 06U10359**
**Date:06/17/2006**
**Test Engineer: THANH NGUYEN**
**Configuration:EUT , Extender card, Support Laptop.**
**Mode: Continously Transmitting b mode**

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | | |

| Hi Frequency Cables | | | | | |
|---|---|---|---|---|---|
| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter | |
| Thanh 177079008 | | Thanh 208946003 | HPF_4.0GHz | | |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

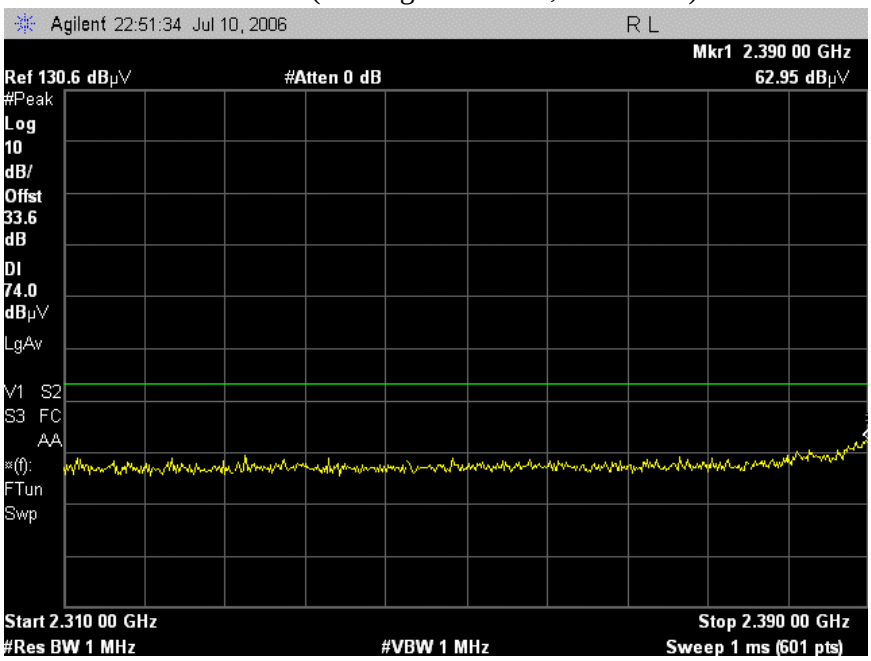
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tx Ch 11 | | | | | | | | | | | | | | | |
| 4.924 | 3.0 | 47.55 | 36.05 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 47.9 | 36.4 | 74 | 54 | -26.1 | -17.6 | V |
| 7.386 | 3.0 | 46.83 | 35.73 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 49.6 | 38.5 | 74 | 54 | -24.4 | -15.5 | V |
| 9.848 | 3.0 | 44.73 | 35.65 | 36.8 | 3.7 | -37.0 | 0.0 | 0.8 | 49.1 | 40.0 | 74 | 54 | -24.9 | -14.0 | V |
| 12.310 | 3.0 | 44.32 | 31.70 | 37.6 | 4.4 | -35.4 | 0.0 | 0.9 | 51.7 | 39.1 | 74 | 54 | -22.3 | -14.9 | Noise floor |
| 4.924 | 3.0 | 44.26 | 31.56 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 44.6 | 31.9 | 74 | 54 | -29.4 | -22.1 | H |
| 7.386 | 3.0 | 42.11 | 30.66 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 44.9 | 33.5 | 74 | 54 | -29.1 | -20.5 | Noise floor |
| Tx Ch 6 | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 47.39 | 34.53 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 47.7 | 34.8 | 74 | 54 | -26.3 | -19.2 | V |
| 7.311 | 3.0 | 45.60 | 34.05 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 48.3 | 36.8 | 74 | 54 | -25.7 | -17.2 | V |
| 9.784 | 3.0 | 47.83 | 41.13 | 36.8 | 3.7 | -37.0 | 0.0 | 0.8 | 52.2 | 45.5 | 74 | 54 | -21.8 | -8.5 | V |
| 12.185 | 3.0 | 43.88 | 32.26 | 37.6 | 4.3 | -35.4 | 0.0 | 0.9 | 51.3 | 39.7 | 74 | 54 | -22.7 | -14.3 | Noise floor |
| 4.874 | 3.0 | 43.58 | 31.09 | 33.4 | 2.8 | -36.5 | 0.0 | 0.6 | 43.9 | 31.4 | 74 | 54 | -30.1 | -22.6 | H |
| 7.311 | 3.0 | 44.59 | 31.28 | 35.0 | 3.3 | -36.2 | 0.0 | 0.6 | 47.3 | 34.0 | 74 | 54 | -26.7 | -20.0 | H |
| 9.784 | 3.0 | 49.12 | 42.81 | 36.8 | 3.7 | -37.0 | 0.0 | 0.8 | 53.4 | 47.1 | 74 | 54 | -20.6 | -6.9 | H |
| 12.185 | 3.0 | 43.75 | 31.78 | 37.6 | 4.3 | -35.4 | 0.0 | 0.9 | 51.2 | 39.2 | 74 | 54 | -22.8 | -14.8 | Noise floor |
| Tx Ch1 | | | | | | | | | | | | | | | |
| 4.824 | 3.0 | 47.03 | 33.84 | 33.3 | 2.8 | -36.5 | 0.0 | 0.6 | 47.2 | 34.1 | 74 | 54 | -26.8 | -19.9 | V |
| 7.236 | 3.0 | 46.82 | 33.55 | 34.9 | 3.3 | -36.2 | 0.0 | 0.6 | 49.5 | 36.2 | 74 | 54 | -24.5 | -17.8 | V |
| 9.648 | 3.0 | 44.97 | 35.27 | 36.7 | 3.7 | -37.0 | 0.0 | 0.8 | 49.3 | 39.6 | 74 | 54 | -24.7 | -14.4 | V |
| 12.060 | 3.0 | 43.83 | 32.17 | 37.7 | 4.3 | -35.4 | 0.0 | 0.9 | 51.3 | 39.7 | 74 | 54 | -22.7 | -14.3 | Noise floor |
| 4.824 | 3.0 | 46.62 | 34.16 | 33.3 | 2.8 | -36.5 | 0.0 | 0.6 | 46.8 | 34.4 | 74 | 54 | -27.2 | -19.6 | H |
| 7.236 | 3.0 | 43.71 | 31.90 | 34.9 | 3.3 | -36.2 | 0.0 | 0.6 | 46.4 | 34.6 | 74 | 54 | -27.6 | -19.4 | H |
| 9.648 | 3.0 | 48.14 | 40.65 | 36.7 | 3.7 | -37.0 | 0.0 | 0.8 | 52.4 | 44.9 | 74 | 54 | -21.6 | -9.1 | H |
| 12.060 | 3.0 | 44.22 | 32.01 | 37.7 | 4.3 | -35.4 | 0.0 | 0.9 | 51.7 | 39.5 | 74 | 54 | -22.3 | -14.5 | Noise floor |
| No other emissions were detected above 12GHz | | | | | | | | | | | | | | | |

Rev. 5.1.6

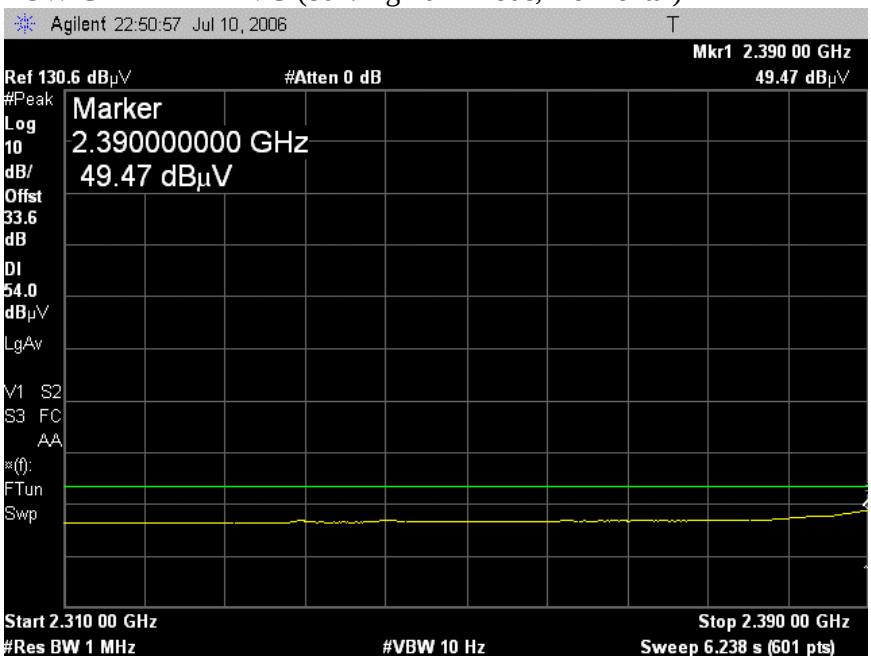
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

**RESTRICTED BANDEDGE (802.11g 20M MODE, LOW CHANNEL)**

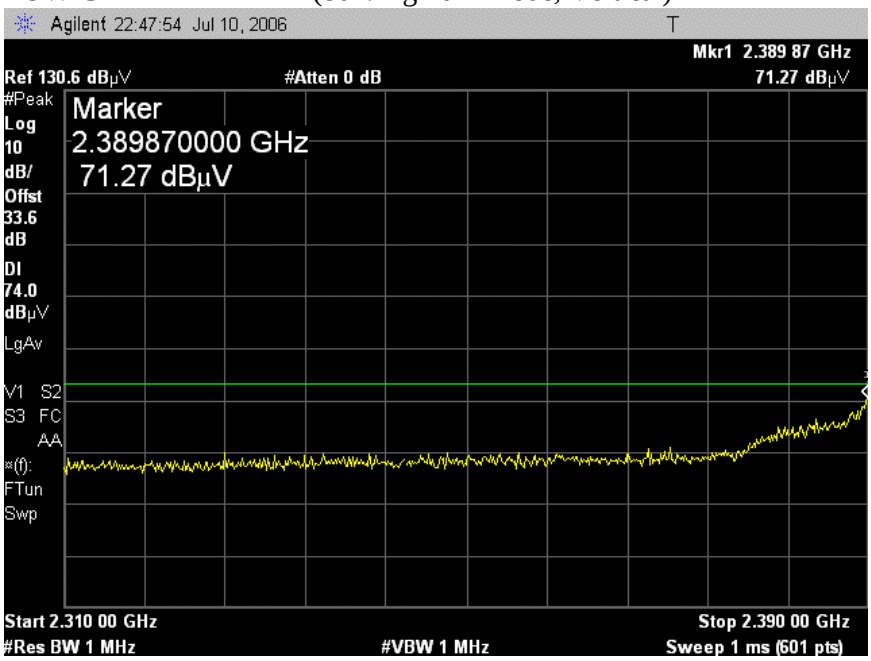
LOW CHANNEL PEAK (802.11g 20M mode, Horizontal)



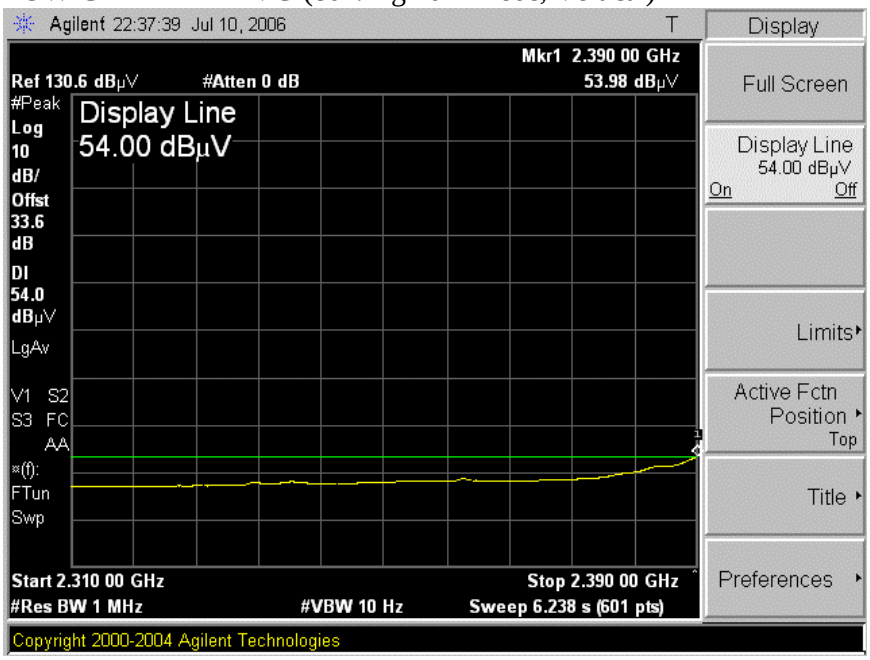
LOW CHANNEL AVG (802.11g 20M mode, Horizontal)



LOW CHANNEL PEAK (802.11g 20M mode, Vertical)

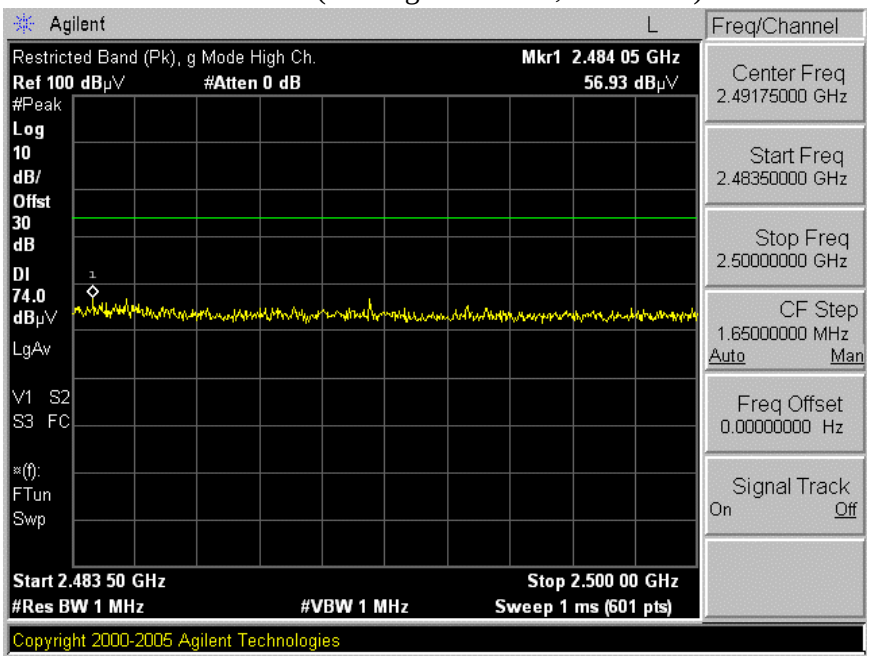


LOW CHANNEL AVG (802.11g 20M mode, Vertical)

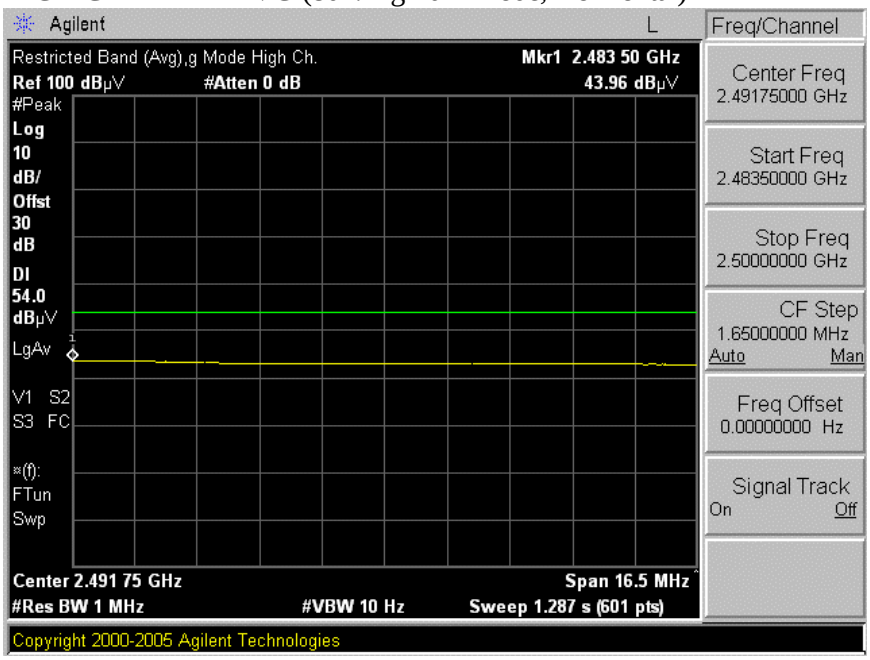


**RESTRICTED BANDEDGE (802.11g 20M MODE, HIGH CHANNEL)**

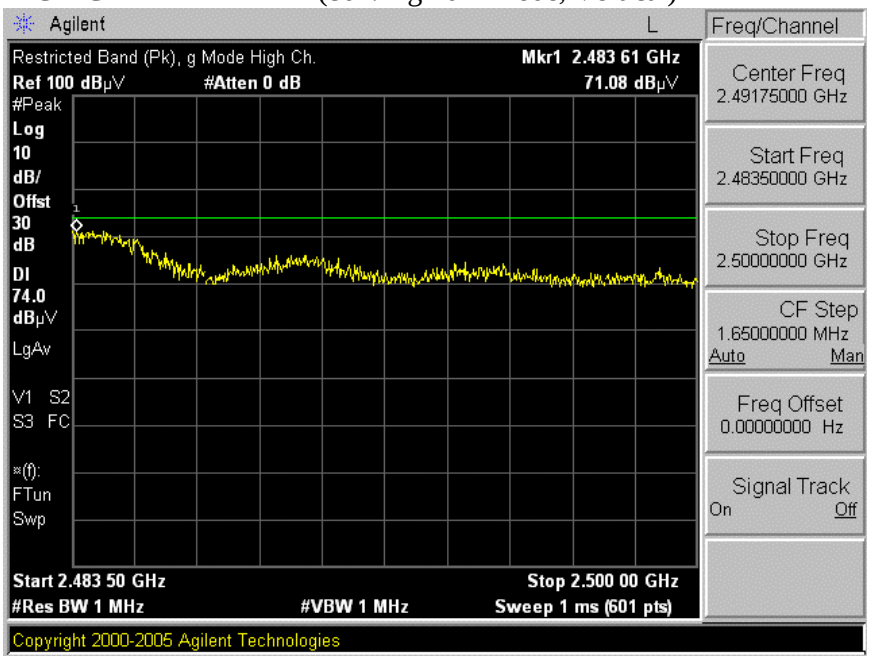
HIGH CHANNEL PEAK (802.11g 20M mode, Horizontal)



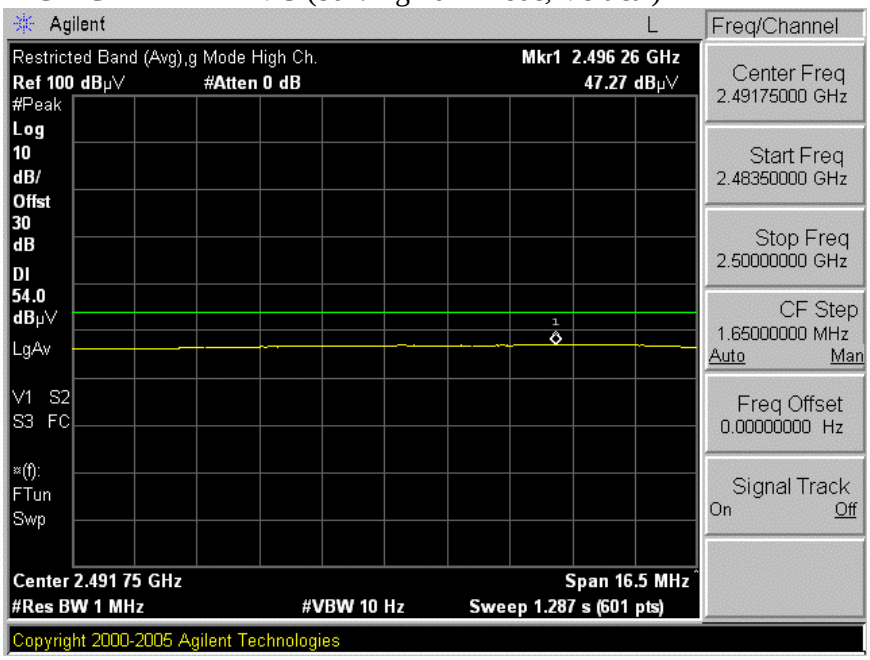
HIGH CHANNEL AVG (802.11g 20M mode, Horizontal)



HIGH CHANNEL PEAK (802.11g 20M mode, Vertical)



HIGH CHANNEL AVG (802.11g 20M mode, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11g 20M MODE)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** MARVELL SEMICONDUCTOR INC.
**Project #:** 06U10359
**Date:** 07/11/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT , Extender card, Support Laptop.
**Mode:** Continuously Transmitting in 11g 20M mode, 54Mbps, w/Duck Antenna
**EUT S/N:** 010

**Test Equipment:**

Horn 1-18GHz: T136; M/N: 3117 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable:
3 foot cable: Frank 177080001
12 foot cable: Frank 187209001
HPF:
Reject Filter: R_001

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

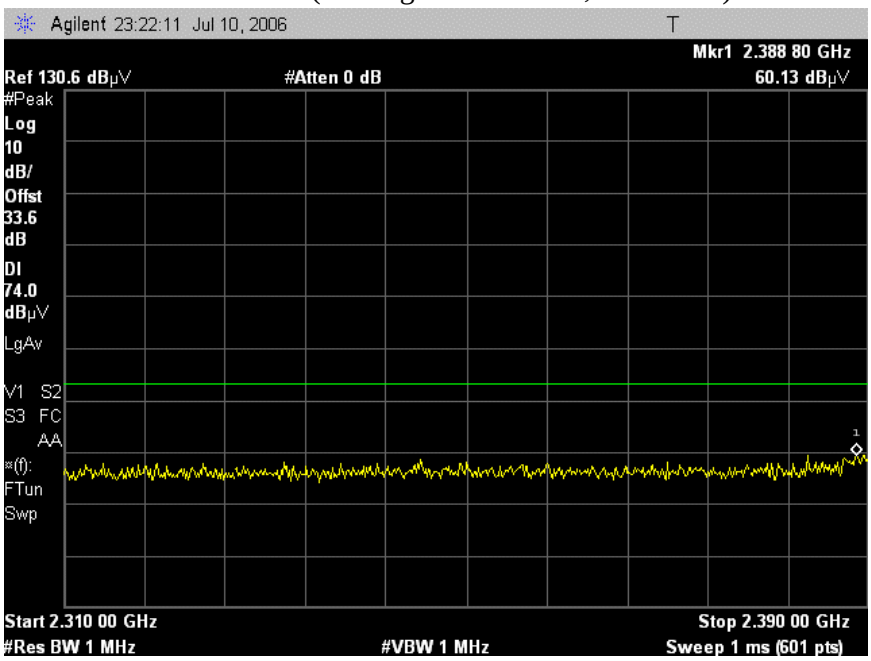
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (2412 MHz)** | | | | | | | | | | | | | | | |
| 4.824 | 3.0 | 58.96 | 42.90 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 51.3 | 35.3 | 74 | 54 | -22.7 | -18.7 | V, PowerSetting 61 62 |
| 4.824 | 3.0 | 52.08 | 39.60 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 44.5 | 32.0 | 74 | 54 | -29.5 | -22.0 | H, PowerSetting 61 62 |
| **Mid Channel (2437 MHz)** | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 66.85 | 54.74 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 59.3 | 47.1 | 74 | 54 | -14.7 | -6.9 | V, PowerSetting 66 66 |
| 7.311 | 3.0 | 61.53 | 48.70 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 58.2 | 45.3 | 74 | 54 | -15.8 | -8.7 | V, PowerSetting 66 66 |
| 4.874 | 3.0 | 57.09 | 43.51 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 49.5 | 35.9 | 74 | 54 | -24.5 | -18.1 | H, PowerSetting 66 66 |
| 7.311 | 3.0 | 53.64 | 41.15 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 50.3 | 37.8 | 74 | 54 | -23.7 | -16.2 | H, PowerSetting 66 66 |
| **High Channel (2462 MHz)** | | | | | | | | | | | | | | | |
| 4.924 | 3.0 | 55.70 | 41.00 | 33.8 | 4.0 | -45.4 | 0.0 | 0.0 | 48.1 | 33.4 | 74 | 54 | -25.9 | -20.6 | V, PowerSetting 16dBm |
| 7.386 | 3.0 | 53.20 | 40.10 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 50.0 | 36.9 | 74 | 54 | -24.0 | -17.1 | V, PowerSetting 16dBm |
| 4.924 | 3.0 | 52.10 | 41.20 | 33.8 | 4.0 | -45.4 | 0.0 | 0.0 | 44.5 | 33.6 | 74 | 54 | -29.5 | -20.4 | H, PowerSetting 16dBm |
| 7.386 | 3.0 | 52.80 | 39.40 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 49.6 | 36.2 | 74 | 54 | -24.4 | -17.8 | H, PowerSetting 16dBm |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

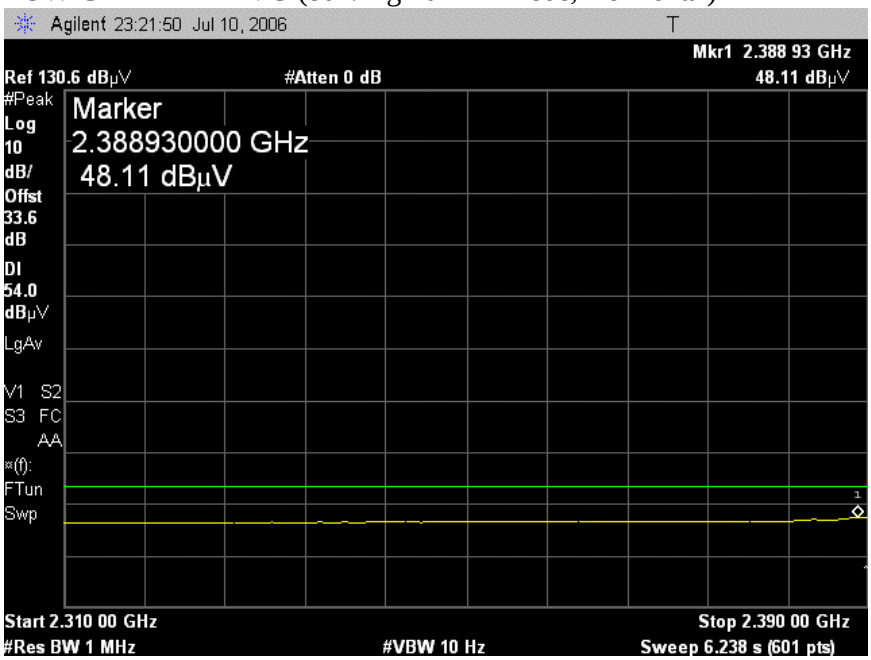
EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

**RESTRICTED BANDEDGE (802.11g, 40MGHz MODE, LOW CHANNEL)**

LOW CHANNEL PEAK (802.11g 40MHz mode, Horizontal)

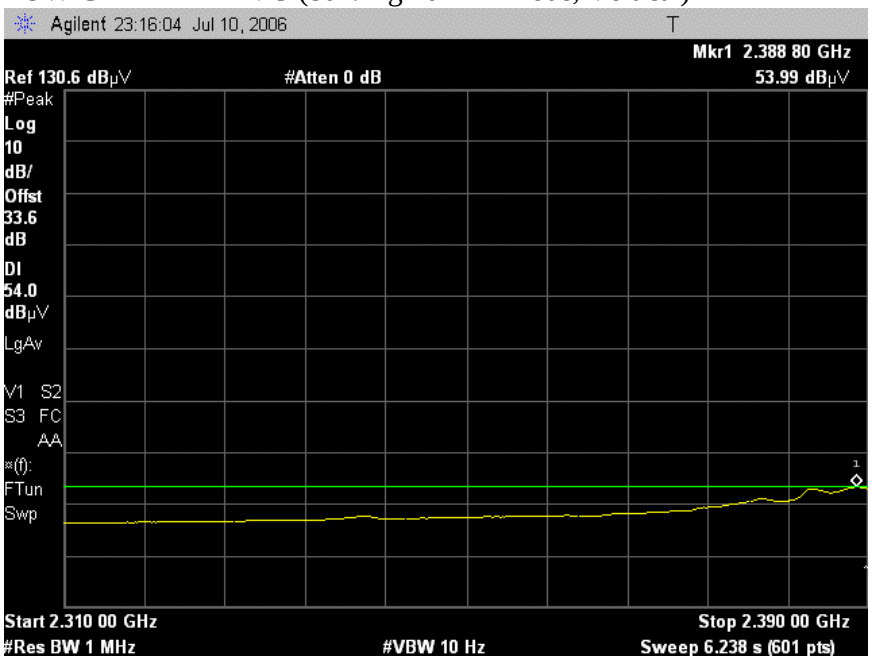


LOW CHANNEL AVG (802.11g 40MHz mode, Horizontal)



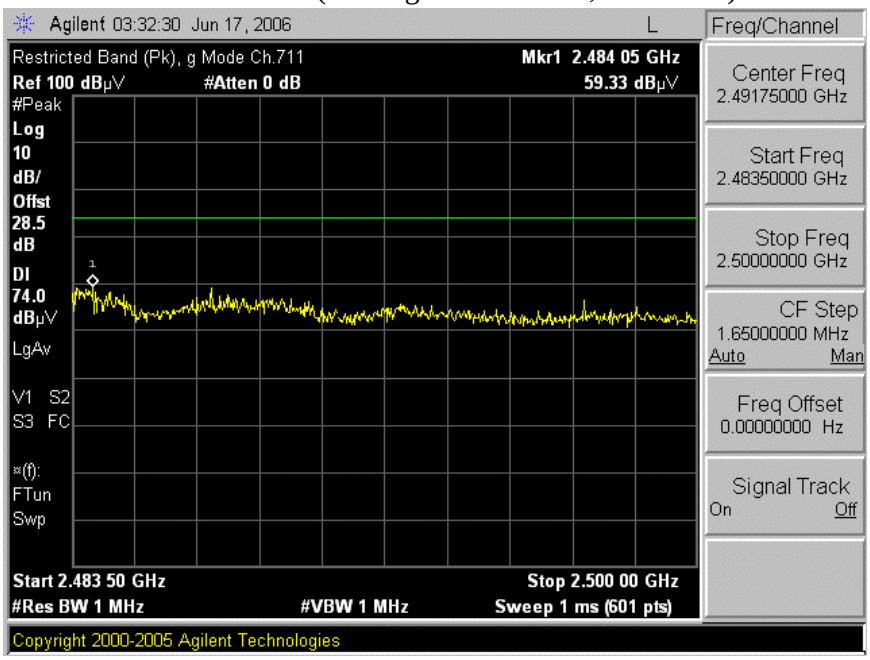
LOW CHANNEL PEAK (802.11g 40MHz mode, Vertical)

LOW CHANNEL AVG (802.11g 40MHz mode, Vertical)

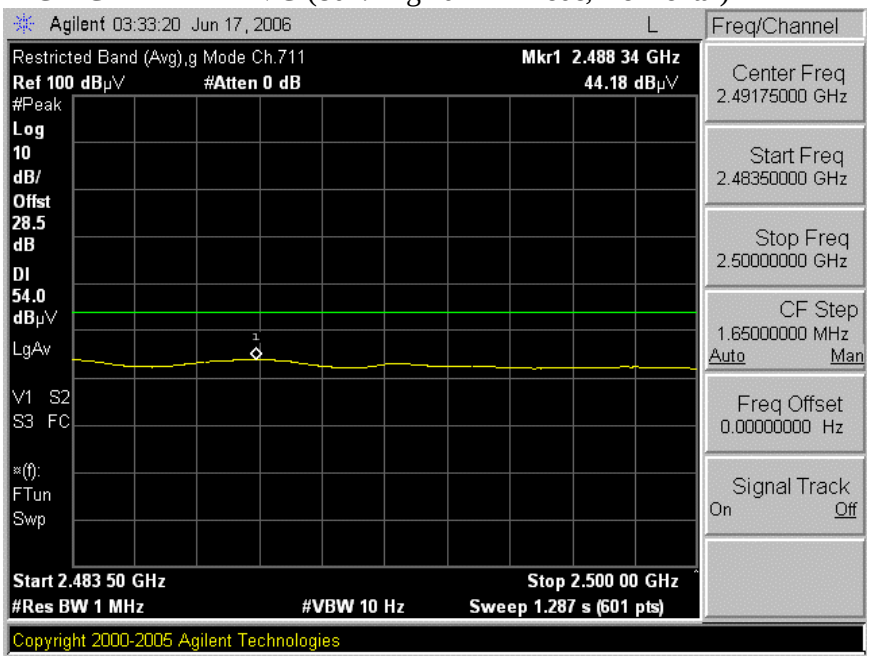


**RESTRICTED BANDEDGE (802.11g, 40MGHz MODE, HIGH CHANNEL)**

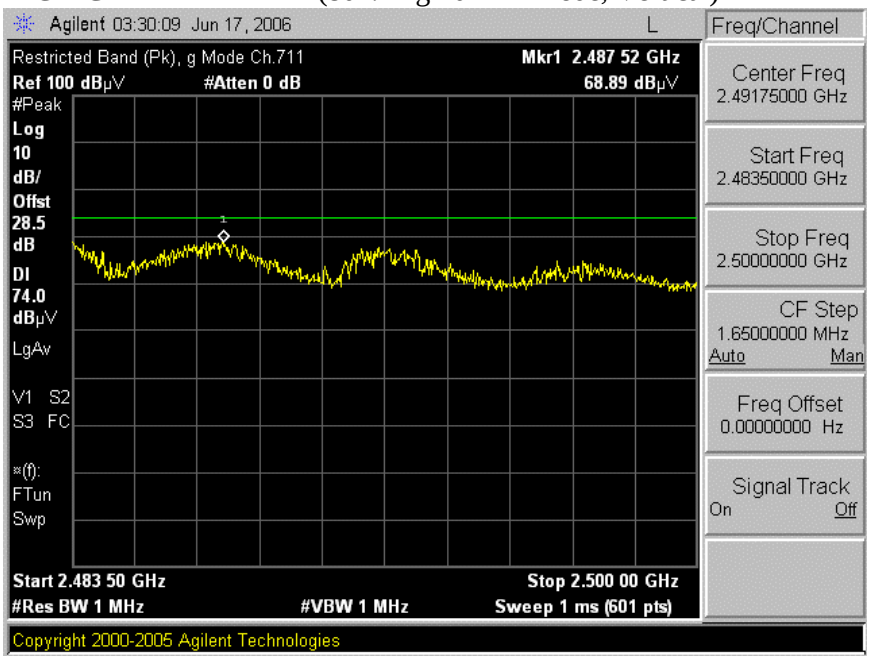
HIGH CHANNEL PEAK (802.11g 40MHz mode, Horizontal)



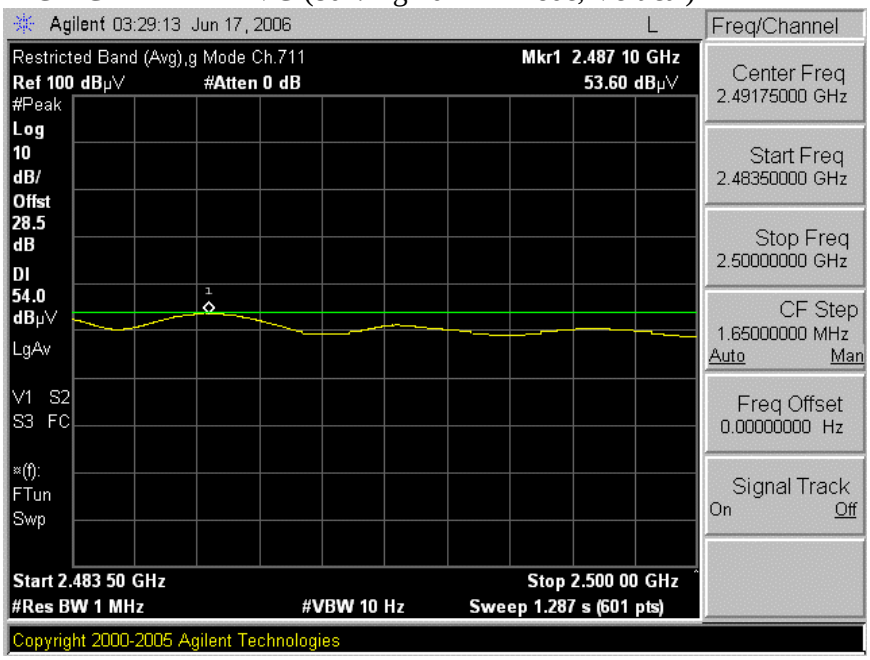
HIGH CHANNEL AVG (802.11 g 40MHz mode, Horizontal)



HIGH CHANNEL PEAK (802.11 g 40MHz mode, Vertical)



HIGH CHANNEL AVG (802.11g 40MHz mode, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11g 40MHz mode)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

| | |
|---|---|
| **Company:** | MARVELL SEMICONDUCTOR INC. |
| **Project #:** | 06U10359 |
| **Date:** | 07/11/06 |
| **Test Engineer:** | Frank Ibrahim |
| **Configuration:** | EUT , Extender card, Support Laptop. |
| **Mode:** | Continuously Transmitting in 11g 40M mode, 54Mbps, w/Duck Antenna |
| **EUT S/N:** | 010 |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T136; M/N: 3117 @3m | T87 Miteq 924342 | | T89; ARA 18-26GHz; S/N:1049 |

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| | Frank 177080001 | Frank 187209001 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

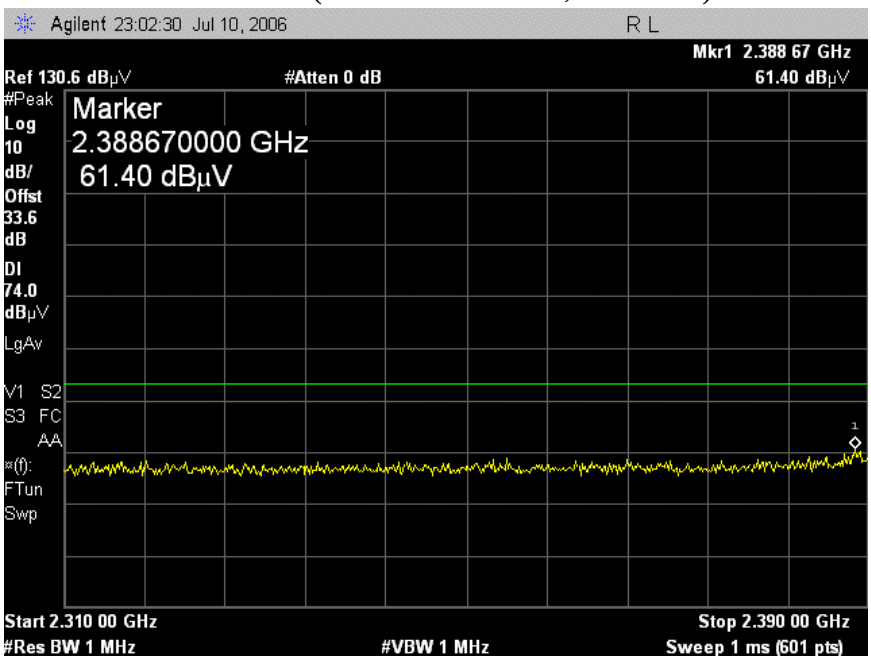
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (2422 MHz)** | | | | | | | | | | | | | | | |
| 4.844 | 3.0 | 54.20 | 40.40 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 46.6 | 32.8 | 74 | 54 | -27.4 | -21.2 | V, PowerSetting 5F 60 |
| 7.266 | 3.0 | 52.09 | 39.80 | 35.2 | 4.6 | -43.3 | 0.0 | 0.0 | 48.6 | 36.3 | 74 | 54 | -25.4 | -17.7 | V, PowerSetting 5F 60 |
| 4.844 | 3.0 | 52.80 | 39.30 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 45.2 | 31.7 | 74 | 54 | -28.8 | -22.3 | H, PowerSetting 5F 60 |
| **Mid Channel (2437 MHz)** | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 54.05 | 40.50 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 46.5 | 32.9 | 74 | 54 | -27.5 | -21.1 | V, PowerSetting 5E 5E |
| 7.311 | 3.0 | 50.98 | 37.60 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 47.6 | 34.2 | 74 | 54 | -26.4 | -19.8 | V, PowerSetting 5E 5E |
| 4.874 | 3.0 | 51.10 | 38.70 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 43.5 | 31.1 | 74 | 54 | -30.5 | -22.9 | H, PowerSetting 5E 5E |
| 7.311 | 3.0 | 50.20 | 37.70 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 46.8 | 34.3 | 74 | 54 | -27.2 | -19.7 | H, PowerSetting 5E 5E |
| **High Channel (2452 MHz)** | | | | | | | | | | | | | | | |
| 4.904 | 3.0 | 54.40 | 42.00 | 33.8 | 4.0 | -45.3 | 0.0 | 0.0 | 46.8 | 34.4 | 74 | 54 | -27.2 | -19.6 | V, PowerSetting 15dBm |
| 7.356 | 3.0 | 52.30 | 40.30 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 49.0 | 37.0 | 74 | 54 | -25.0 | -17.0 | V, PowerSetting 15dBm |
| 4.904 | 3.0 | 52.10 | 41.10 | 33.8 | 4.0 | -45.3 | 0.0 | 0.0 | 44.5 | 33.5 | 74 | 54 | -29.5 | -20.5 | H, PowerSetting 15dBm |
| 7.356 | 3.0 | 51.10 | 39.00 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 47.8 | 35.7 | 74 | 54 | -26.2 | -18.3 | H, PowerSetting 15dBm |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

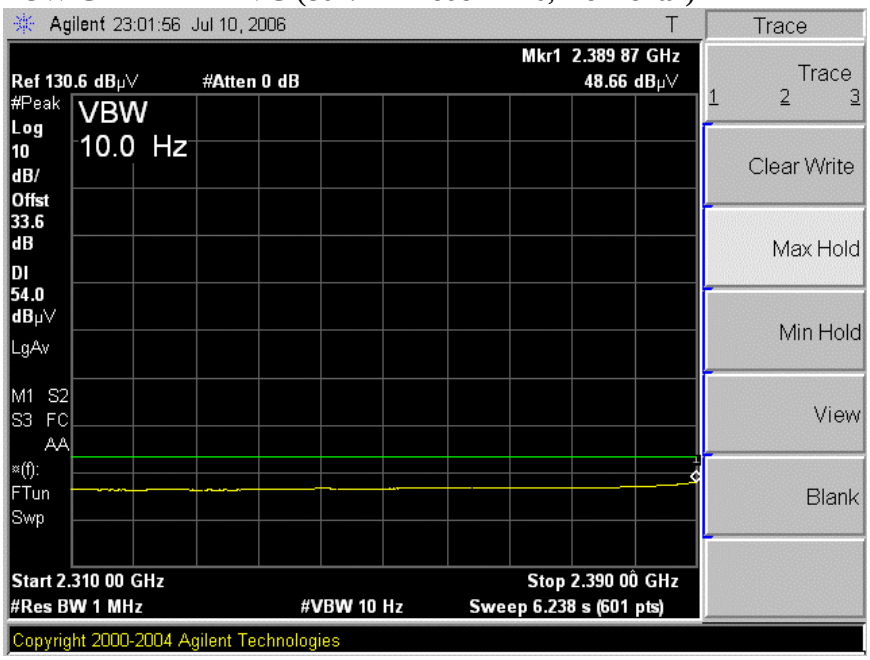
EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

**RESTRICTED BANDEDGE (802.11n MODE HT20, LOW CHANNEL)**

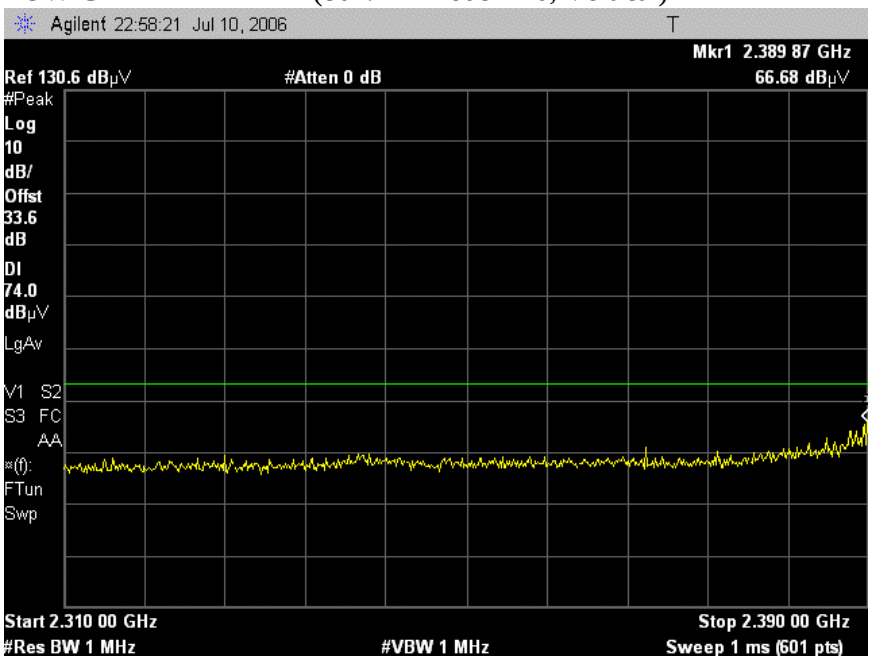
LOW CHANNEL PEAK (802.11n mode HT20, Horizontal)



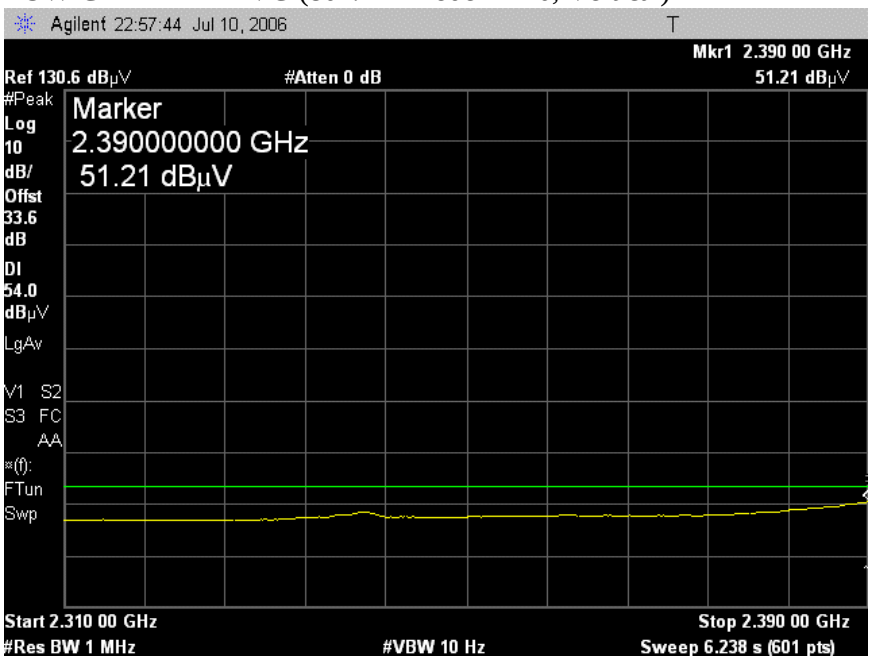
LOW CHANNEL AVG (802.11n mode HT20, Horizontal)



LOW CHANNEL PEAK (802.11n mode H20, Vertical)

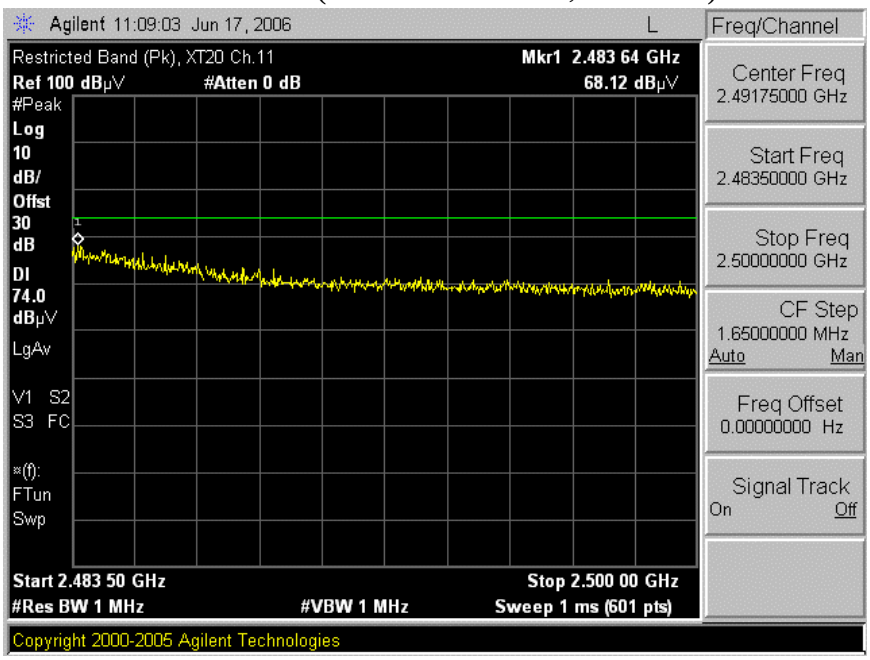


LOW CHANNEL AVG (802.11n mode HT20, Vertical)

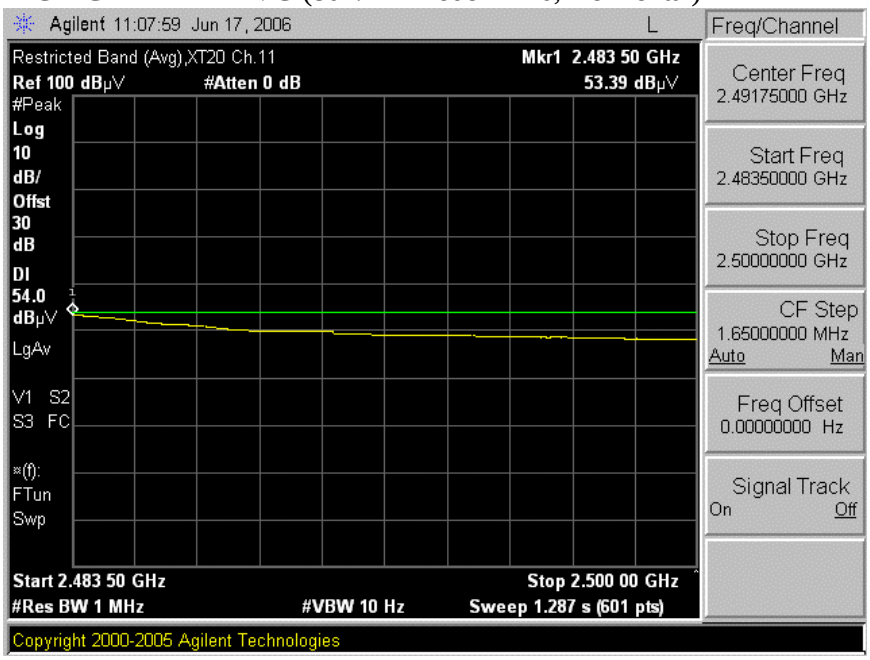


**RESTRICTED BANDEDGE (802.11n MODE HT20, HIGH CHANNEL)**

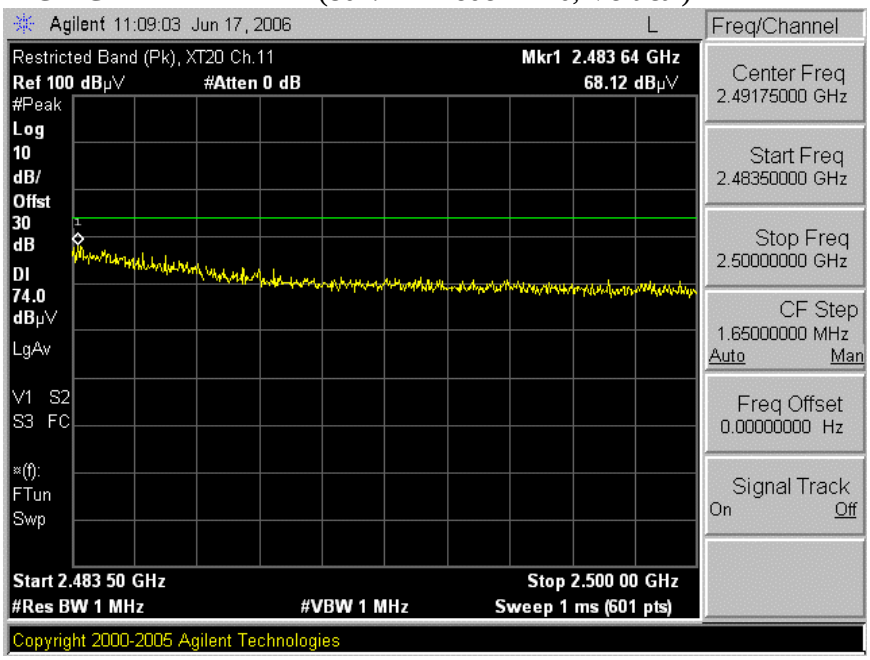
HIGH CHANNEL PEAK (802.11n mode HT20, Horizontal)



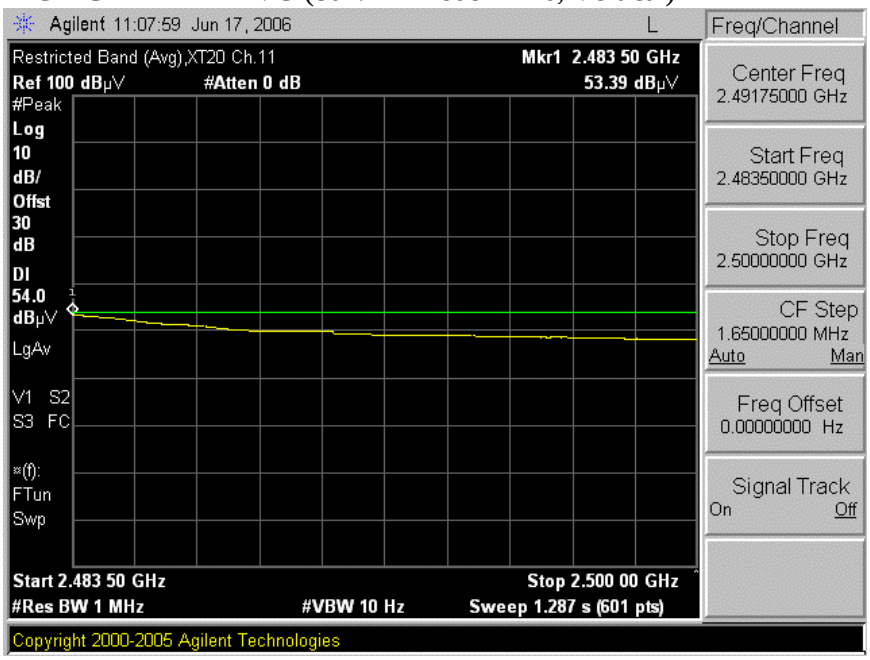
HIGH CHANNEL AVG (802.11n mode HT20, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT20, Vertical)



HIGH CHANNEL AVG (802.11n mode HT20, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT20)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** MARVELL SEMICONDUCTOR INC.
**Project #:** 06U10359
**Date:** 07/11/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT , Extender card, Support Laptop.
**Mode:** Continuously Transmitting in HT 20M mode, MCS11, w/Duck Antenna
**EUT S/N:** 010

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T136; M/N: 3117 @3m | T87 Miteq 924342 | | T89; ARA 18-26GHz; S/N:1049 |

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| | Frank 177080001 | Frank 187209001 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

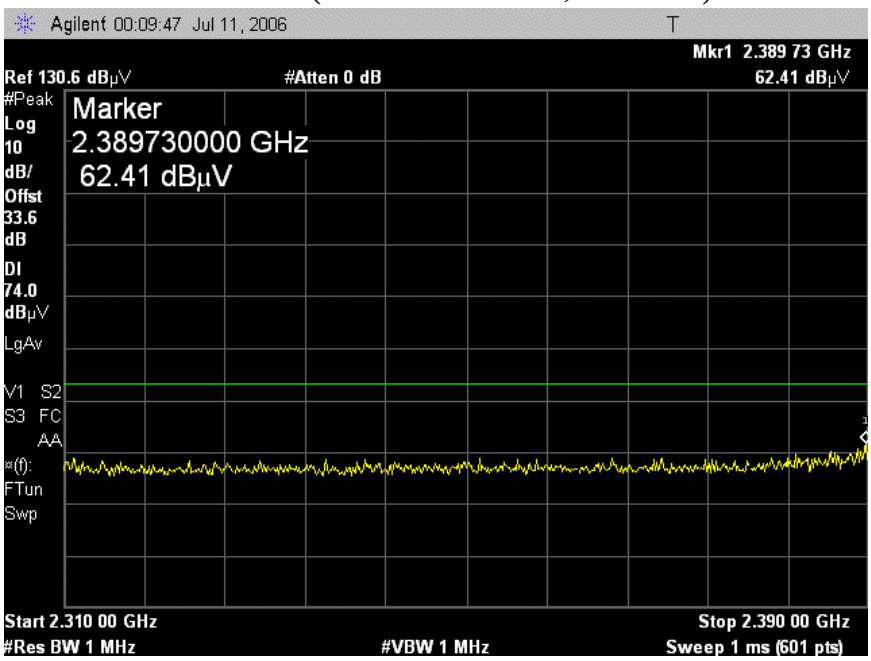
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (2412 MHz)** | | | | | | | | | | | | | | | |
| 4.824 | 3.0 | 54.33 | 40.04 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 46.7 | 32.4 | 74 | 54 | -27.3 | -21.6 | V, PowerSetting 60 60 |
| 4.824 | 3.0 | 51.50 | 38.90 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 43.9 | 31.3 | 74 | 54 | -30.1 | -22.7 | H, PowerSetting 60 60 |
| **Mid Channel (2437 MHz)** | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 65.10 | 51.90 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 57.5 | 44.3 | 74 | 54 | -16.5 | -9.7 | V, PowerSetting 64 65 |
| 7.311 | 3.0 | 58.36 | 45.90 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 55.0 | 42.5 | 74 | 54 | -19.0 | -11.5 | V, PowerSetting 64 65 |
| 4.874 | 3.0 | 52.02 | 39.50 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 44.4 | 31.9 | 74 | 54 | -29.6 | -22.1 | H, PowerSetting 64 65 |
| 7.311 | 3.0 | 51.50 | 38.70 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 48.1 | 35.3 | 74 | 54 | -25.9 | -18.7 | H, PowerSetting 64 65 |
| **High Channel (2462 MHz)** | | | | | | | | | | | | | | | |
| 4.924 | 3.0 | 53.30 | 42.00 | 33.8 | 4.0 | -45.4 | 0.0 | 0.0 | 45.7 | 34.4 | 74 | 54 | -28.3 | -19.6 | V, PowerSetting 16dBm |
| 7.386 | 3.0 | 51.20 | 40.10 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 48.0 | 36.9 | 74 | 54 | -26.0 | -17.1 | V, PowerSetting 16dBm |
| 4.924 | 3.0 | 53.60 | 41.50 | 33.8 | 4.0 | -45.4 | 0.0 | 0.0 | 46.0 | 33.9 | 74 | 54 | -28.0 | -20.1 | H, PowerSetting 16dBm |
| 7.386 | 3.0 | 52.10 | 39.20 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 48.9 | 36.0 | 74 | 54 | -25.1 | -18.0 | H, PowerSetting 16dBm |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

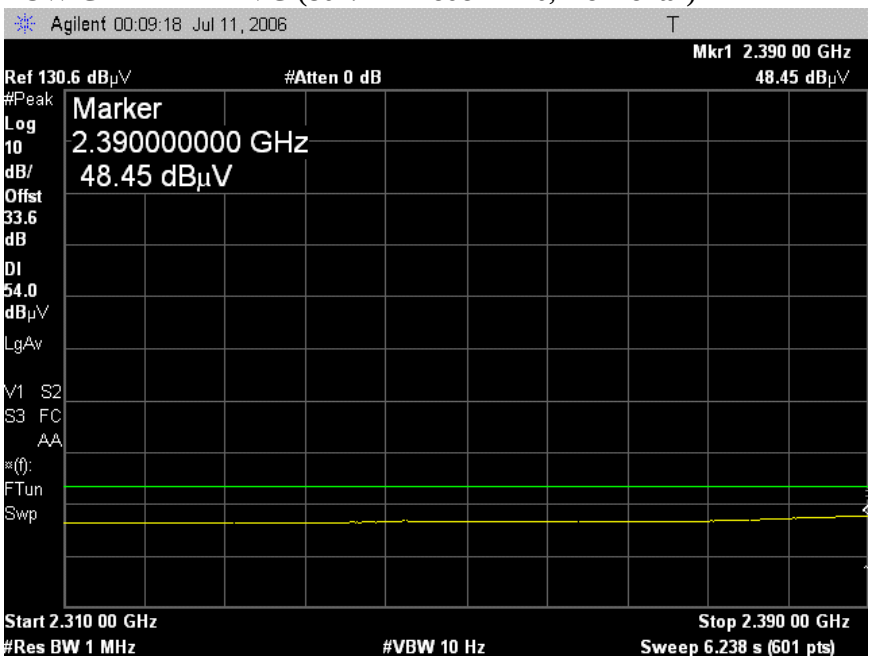
EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

**RESTRICTED BANDEDGE (802.11n MODE HT40, LOW CHANNEL)**

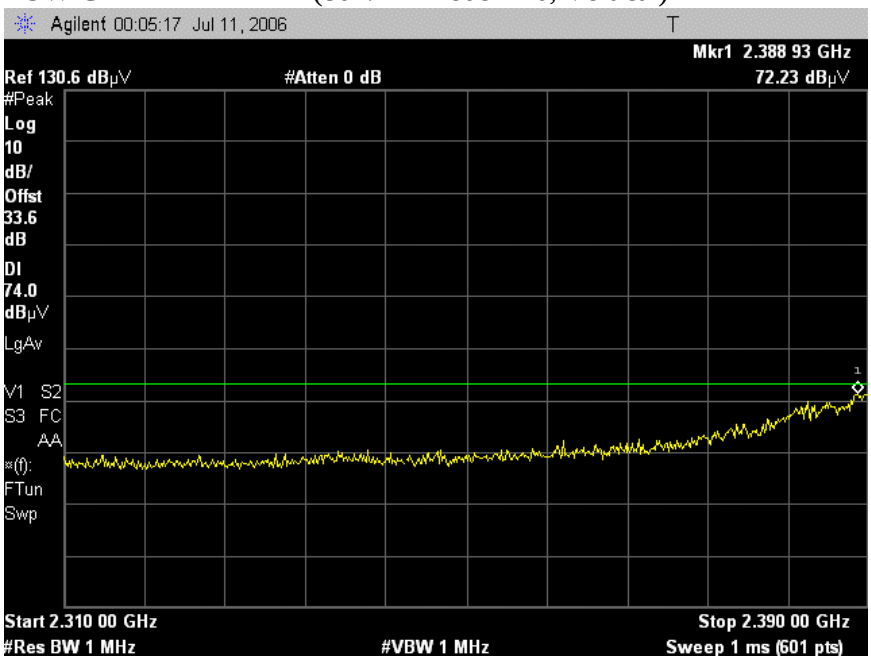
LOW CHANNEL PEAK (802.11n mode HT40, Horizontal)



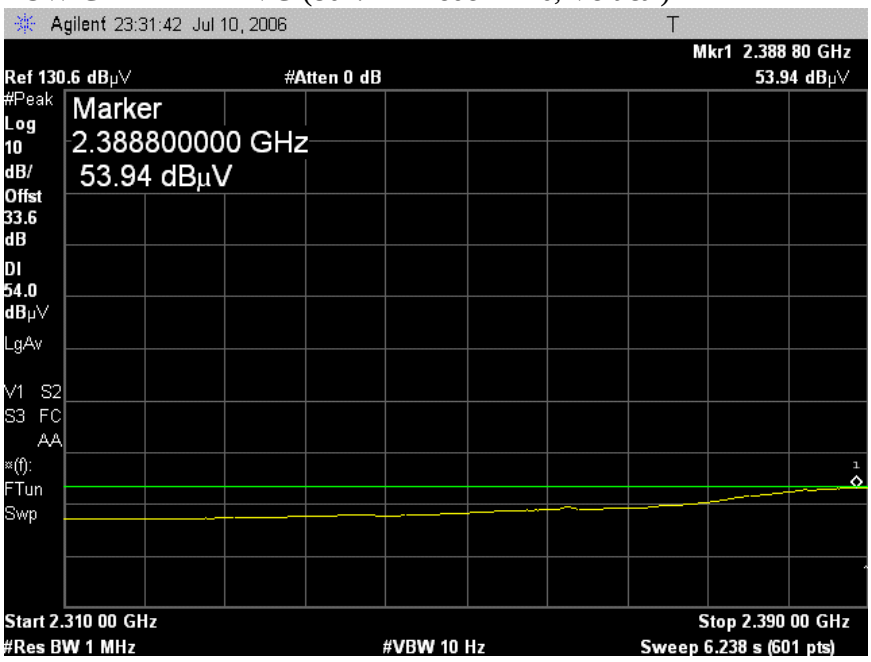
LOW CHANNEL AVG (802.11n mode HT40, Horizontal)



LOW CHANNEL PEAK (802.11n mode H40, Vertical)

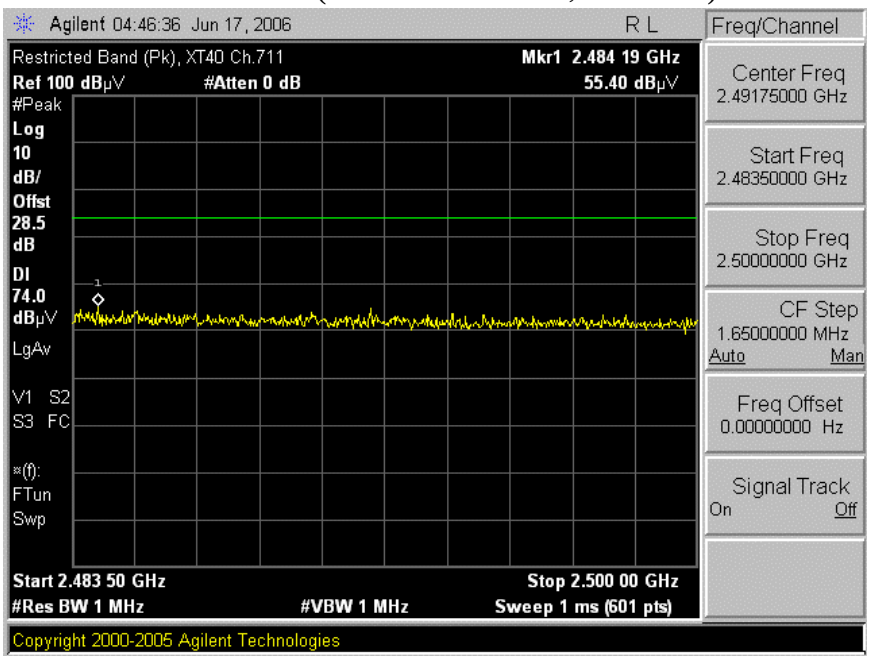


LOW CHANNEL AVG (802.11n mode HT40, Vertical)

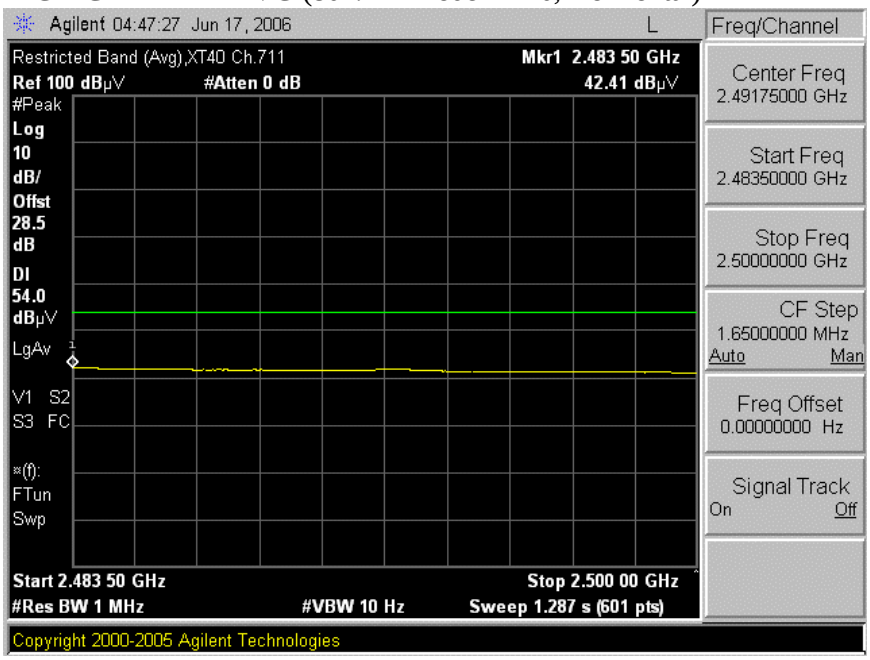


**RESTRICTED BANDEDGE (802.11n MODE HT40, HIGH CHANNEL)**

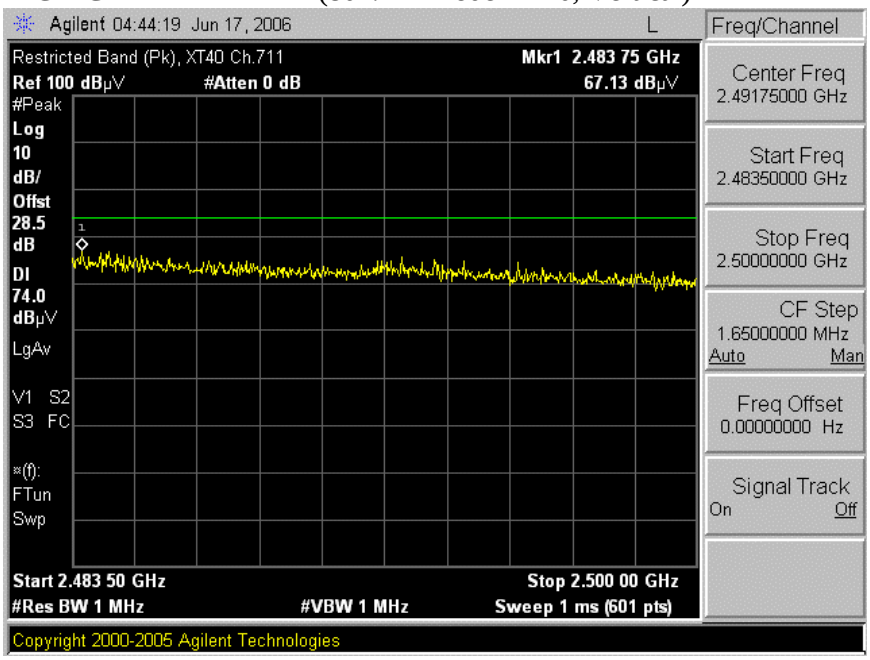
HIGH CHANNEL PEAK (802.11n mode HT40, Horizontal)



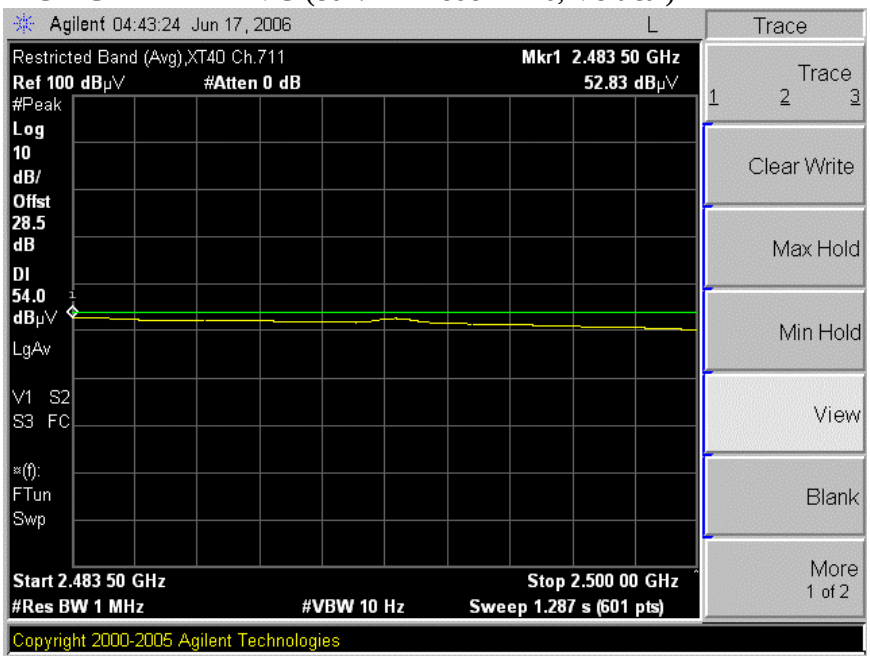
HIGH CHANNEL AVG (802.11n mode HT40, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT40, Vertical)



HIGH CHANNEL AVG (802.11n mode HT40, Vertical)



## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT40)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** MARVELL SEMICONDUCTOR INC.
**Project #:** 06U10359
**Date:** 07/11/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT , Extender card, Support Laptop.
**Mode:** Continuously Transmitting in HT 40M mode, MCS15, w/Duck Antenna
**EUT S/N:** 010

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T136; M/N: 3117 @3m | T87 Miteq 924342 | | T89; ARA 18-26GHz; S/N:1049 |

| 2 foot cable | 3 foot cable | 12 foot cable | HPF | Reject Filter |
|---|---|---|---|---|
| | Frank 177080001 | Frank 187209001 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (2422 MHz)** | | | | | | | | | | | | | | | |
| 4.844 | 3.0 | 54.92 | 40.78 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 47.3 | 33.2 | 74 | 54 | -26.7 | -20.8 | V, PowerSetting 62 63 |
| 7.266 | 3.0 | 52.48 | 40.46 | 35.2 | 4.6 | -43.3 | 0.0 | 0.0 | 49.0 | 37.0 | 74 | 54 | -25.0 | -17.0 | V, PowerSetting 62 63 |
| 4.844 | 3.0 | 51.60 | 39.60 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 44.0 | 32.0 | 74 | 54 | -30.0 | -22.0 | H, PowerSetting 62 63 |
| 7.266 | 3.0 | 50.70 | 38.90 | 35.2 | 4.6 | -43.3 | 0.0 | 0.0 | 47.2 | 35.4 | 74 | 54 | -26.8 | -18.6 | H, PowerSetting 62 63 |
| **Mid Channel (2437 MHz)** | | | | | | | | | | | | | | | |
| 4.874 | 3.0 | 54.00 | 40.00 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 46.4 | 32.4 | 74 | 54 | -27.6 | -21.6 | V, PowerSetting 17dBm |
| 7.311 | 3.0 | 51.10 | 38.20 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 47.7 | 34.8 | 74 | 54 | -26.3 | -19.2 | V, PowerSetting 17dBm |
| 4.874 | 3.0 | 52.50 | 40.10 | 33.7 | 4.0 | -45.3 | 0.0 | 0.0 | 44.9 | 32.5 | 74 | 54 | -29.1 | -21.5 | H, PowerSetting 17dBm |
| 7.311 | 3.0 | 51.10 | 39.40 | 35.2 | 4.6 | -43.2 | 0.0 | 0.0 | 47.7 | 36.0 | 74 | 54 | -26.3 | -18.0 | H, PowerSetting 17dBm |
| **High Channel (2452 MHz)** | | | | | | | | | | | | | | | |
| 4.904 | 3.0 | 54.30 | 42.20 | 33.8 | 4.0 | -45.3 | 0.0 | 0.0 | 46.7 | 34.6 | 74 | 54 | -27.3 | -19.4 | V, PowerSetting 15dBm |
| 7.356 | 3.0 | 52.20 | 40.20 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 48.9 | 36.9 | 74 | 54 | -25.1 | -17.1 | V, PowerSetting 15dBm |
| 4.904 | 3.0 | 53.30 | 41.30 | 33.8 | 4.0 | -45.3 | 0.0 | 0.0 | 45.7 | 33.7 | 74 | 54 | -28.3 | -20.3 | H, PowerSetting 15dBm |
| 7.356 | 3.0 | 51.10 | 39.30 | 35.3 | 4.6 | -43.1 | 0.0 | 0.0 | 47.8 | 36.0 | 74 | 54 | -26.2 | -18.0 | H, PowerSetting 15dBm |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 26 GHz, no other emissions above noise floor were detected.

# 7.3.4. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND

## HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

Foxconn Antenna

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/24/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in 11a mode, 20 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable:
3 foot cable: Frank 177080001
12 foot cable: Frank 187209001
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5745 MHz) | | | | | | | | | | | | | | | |
| 11.490 | 3.0 | 60.9 | 48.1 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 64.2 | 51.5 | 74 | 54 | -9.8 | -2.5 | V, Settings 6F 6C |
| 11.490 | 3.0 | 57.2 | 45.5 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.5 | 48.9 | 74 | 54 | -13.5 | -5.1 | H, Settings 6F 6C |
| Middle Channel (5785 MHz) | | | | | | | | | | | | | | | |
| 11.570 | 3.0 | 57.2 | 44.2 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.5 | 47.5 | 74 | 54 | -13.5 | -6.5 | V, Settings 6E 6D |
| 11.570 | 3.0 | 57.3 | 44.5 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.6 | 47.8 | 74 | 54 | -13.4 | -6.2 | H, Settings 6E 6D |
| High Channel (5825 MHz) | | | | | | | | | | | | | | | |
| 11.650 | 3.0 | 56.6 | 43.1 | 37.2 | 5.3 | -39.8 | 0.0 | 0.7 | 60.0 | 46.4 | 74 | 54 | -14.0 | -7.6 | V, Settings 70 6D |
| 11.650 | 3.0 | 54.3 | 42.1 | 37.2 | 5.3 | -39.8 | 0.0 | 0.7 | 57.6 | 45.5 | 74 | 54 | -16.4 | -8.5 | H, Settings 70 6D |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

## HARMONICS AND SPURIOUS EMISSIONS (802.11a 40MHz MODE)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/24/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in 11a mode, 40 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable:
3 foot cable: Frank 177080001
12 foot cable: Frank 187209001
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5755 MHz) | | | | | | | | | | | | | | | |
| 11.510 | 3.0 | 52.1 | 40.6 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 55.4 | 43.9 | 74 | 54 | -18.6 | -10.1 | V, Settings 65 66 |
| 11.510 | 3.0 | 52.7 | 41.6 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 56.0 | 44.9 | 74 | 54 | -18.0 | -9.1 | H, Settings 65 66 |
| High Channel (5795 MHz) | | | | | | | | | | | | | | | |
| 11.590 | 3.0 | 57.0 | 45.2 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.3 | 48.5 | 74 | 54 | -13.7 | -5.5 | V, Settings 76 70 |
| 11.590 | 3.0 | 58.7 | 45.5 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 62.0 | 48.8 | 74 | 54 | -12.0 | -5.2 | H, Settings 76 70 |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT20)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/24/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in HT mode, 20 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable:
3 foot cable: Frank 177080001
12 foot cable: Frank 187209001
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5745 MHz) | | | | | | | | | | | | | | | |
| 11.490 | 3.0 | 60.5 | 47.1 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 63.8 | 50.4 | 74 | 54 | -10.2 | -3.6 | V, Settings 6F 6B |
| 11.490 | 3.0 | 58.8 | 45.5 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 62.1 | 48.8 | 74 | 54 | -11.9 | -5.2 | H, Settings 6F 6B |
| Middle Channel (5785 MHz) | | | | | | | | | | | | | | | |
| 11.570 | 3.0 | 56.8 | 44.8 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.2 | 48.2 | 74 | 54 | -13.8 | -5.8 | V, Settings 6E 6C |
| 11.570 | 3.0 | 56.7 | 44.5 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.1 | 47.8 | 74 | 54 | -13.9 | -6.2 | H, Settings 6E 6C |
| High Channel (5825 MHz) | | | | | | | | | | | | | | | |
| 11.650 | 3.0 | 57.1 | 44.2 | 37.2 | 5.3 | -39.8 | 0.0 | 0.7 | 60.4 | 47.6 | 74 | 54 | -13.6 | -6.4 | V, Settings 6F 6C |
| 11.650 | 3.0 | 54.1 | 42.3 | 37.2 | 5.3 | -39.8 | 0.0 | 0.7 | 57.4 | 45.6 | 74 | 54 | -16.6 | -8.4 | H, Settings 6F 6C |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT40)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/24/06
**Test Engineer:** Frank Ibrahim
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in HT mode, 40 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable:
3 foot cable: Frank 177080001
12 foot cable: Frank 187209001
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5755 MHz) | | | | | | | | | | | | | | | |
| 11.510 | 3.0 | 52.4 | 40.2 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 55.7 | 43.6 | 74 | 54 | -18.3 | -10.4 | V, Settings 68 68 |
| 11.510 | 3.0 | 52.8 | 41.0 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 56.1 | 44.3 | 74 | 54 | -17.9 | -9.7 | H, Settings 68 68 |
| High Channel (5795 MHz) | | | | | | | | | | | | | | | |
| 11.590 | 3.0 | 56.7 | 44.7 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.0 | 48.0 | 74 | 54 | -14.0 | -6.0 | V, Settings 71 6D |
| 11.590 | 3.0 | 57.4 | 45.6 | 37.2 | 5.2 | -39.8 | 0.0 | 0.7 | 60.7 | 48.9 | 74 | 54 | -13.3 | -5.1 | H, Settings 71 6D |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

# 7.3.5. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND

## HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

Duck Antenna

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/26/06
**Test Engineer:** Thanh Nguyen
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in 11a mode, 20 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable: Thanh 177079008
3 foot cable:
12 foot cable: Thanh 208946003
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5745 MHz) | | | | | | | | | | | | | | | |
| 11.490 | 3.0 | 57.3 | 46.1 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 59.6 | 48.4 | 74 | 54 | -14.4 | -5.6 | V, Settings 6F 6C |
| 11.490 | 3.0 | 57.2 | 45.5 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 59.5 | 47.8 | 74 | 54 | -14.5 | -6.2 | H, Settings 6F 6C |
| Middle Channel (5785 MHz) | | | | | | | | | | | | | | | |
| 11.570 | 3.0 | 57.2 | 44.2 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 59.5 | 46.5 | 74 | 54 | -14.5 | -7.5 | V, Settings 6E 6D |
| 11.570 | 3.0 | 57.3 | 44.5 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 59.6 | 46.8 | 74 | 54 | -14.4 | -7.2 | H, Settings 6E 6D |
| High Channel (5825 MHz) | | | | | | | | | | | | | | | |
| 11.650 | 3.0 | 56.6 | 43.1 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 58.9 | 45.4 | 74 | 54 | -15.1 | -8.6 | V, Settings 70 6D |
| 11.650 | 3.0 | 54.3 | 42.1 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 56.6 | 44.4 | 74 | 54 | -17.4 | -9.6 | H, Settings 70 6D |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

## HARMONICS AND SPURIOUS EMISSIONS (802.11a 40MHz MODE)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/26/06
**Test Engineer:** Thanh Nguyen
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in 11a mode, 40 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable: Thanh 177079008
3 foot cable:
12 foot cable: Thanh 208946003
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5755 MHz) | | | | | | | | | | | | | | | |
| 11.510 | 3.0 | 58.8 | 47.5 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 61.1 | 49.8 | 74 | 54 | -12.9 | -4.2 | V, Settings 65 66 |
| 11.510 | 3.0 | 58.0 | 44.4 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 60.3 | 46.7 | 74 | 54 | -13.7 | -7.3 | H, Settings 65 66 |
| High Channel (5795 MHz) | | | | | | | | | | | | | | | |
| 11.590 | 3.0 | 54.7 | 42.3 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 57.0 | 44.6 | 74 | 54 | -17.0 | -9.4 | V, Settings 76 70 |
| 11.590 | 3.0 | 57.8 | 46.2 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 60.1 | 48.5 | 74 | 54 | -13.9 | -5.5 | H, Settings 76 70 |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT20)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/26/06
**Test Engineer:** Thanh Nguyen
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in HT mode, 20 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable: Thanh 177079008
3 foot cable:
12 foot cable: Thanh 208946003
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5745 MHz) | | | | | | | | | | | | | | | |
| 11.490 | 3.0 | 57.6 | 45.3 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 59.9 | 47.6 | 74 | 54 | -14.1 | -6.4 | V, Settings 6F 6B |
| 11.490 | 3.0 | 53.5 | 40.5 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 55.7 | 42.8 | 74 | 54 | -18.3 | -11.2 | H, Settings 6F 6B |
| Middle Channel (5785 MHz) | | | | | | | | | | | | | | | |
| 11.570 | 3.0 | 56.2 | 42.9 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 58.5 | 45.2 | 74 | 54 | -15.5 | -8.8 | V, Settings 6E 6C |
| 11.570 | 3.0 | 52.1 | 40.1 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 54.4 | 42.4 | 74 | 54 | -19.6 | -11.6 | H, Settings 6E 6C |
| High Channel (5825 MHz) | | | | | | | | | | | | | | | |
| 11.650 | 3.0 | 56.4 | 42.3 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 58.7 | 44.6 | 74 | 54 | -15.3 | -9.4 | V, Settings 6F 6C |
| 11.650 | 3.0 | 50.5 | 38.3 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 52.8 | 40.6 | 74 | 54 | -21.2 | -13.4 | H, Settings 6F 6C |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

## HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT40)

**High Frequency Measurement**
**Compliance Certification Services, Morgan Hill Open Field Site**

**Company:** Marvell
**Project #:** 06U10359
**Date:** 06/26/06
**Test Engineer:** Thanh Nguyen
**Configuration:** EUT connected to Host laptop PC, EUT connected to two TX antennas (InputA=4, InputB=1)
**S/N:** 099 (Modified EUT)
**Mode:** TX ON in HT40 mode, 40 MHz BW

**Test Equipment:**

Horn 1-18GHz: T119; S/N: 29301 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T89; ARA 18-26GHz; S/N:1049
2 foot cable: Thanh 177079008
3 foot cable:
12 foot cable: Thanh 208946003
HPF: HPF_7.6GHz
Reject Filter:

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5755 MHz) | | | | | | | | | | | | | | | |
| 11.510 | 3.0 | 54.0 | 43.0 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 56.3 | 45.3 | 74 | 54 | -17.7 | -8.7 | V, Settings 68 68 |
| 11.510 | 3.0 | 49.6 | 38.7 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 51.9 | 41.0 | 74 | 54 | -22.1 | -13.0 | H, Settings 68 68 |
| High Channel (5795 MHz) | | | | | | | | | | | | | | | |
| 11.590 | 3.0 | 52.3 | 41.9 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 54.6 | 44.2 | 74 | 54 | -19.4 | -9.8 | V, Settings 71 6D |
| 11.590 | 3.0 | 55.7 | 44.1 | 37.2 | 4.2 | -39.8 | 0.0 | 0.7 | 58.0 | 46.4 | 74 | 54 | -16.0 | -7.6 | H, Settings 71 6D |

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

EUT was scanned from 1 GHz to 40 GHz, no other signals from EUT were detected above the noise floor.

## 7.3.6. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)**

HORIZONTAL DATA

561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 7 File#: new.EMI Date: 06-22-2006 Time: 19:22:48
Audix ATC

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Thanh Nguyen
Company: : Marvell Semiconductor
Project #: : 06U10359
Model: : MC85
Configuration: : EUT,Extender card, Laptop .
Mode of Operation: Tx Worst case

Page: 1

| | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | |
| 1 | 90.140 | 21.21 | 8.79 | 30.00 | 43.50 | -13.50 | Peak |
| 2 | 135.730 | 20.64 | 14.96 | 35.60 | 43.50 | -7.90 | Peak |
| 3 | 324.880 | 16.93 | 16.28 | 33.21 | 46.00 | -12.79 | Peak |
| 4 | 509.180 | 15.75 | 20.36 | 36.11 | 46.00 | -9.89 | Peak |
| 5 | 727.430 | 12.38 | 23.53 | 35.91 | 46.00 | -10.09 | Peak |

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**

VERTICAL DATA

561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 5 File#: new.EMI Date: 06-22-2006 Time: 18:52:34
Audix ATC

Condition: FCC CLASS-B VERTICAL
Test Operator: : Thanh Nguyen
Company: : Marvell Semiconductor
Project #: : 06U10359
Model: : MC85
Configuration: : EUT,Extender card, Laptop .
Mode of Operation: Tx Worst case

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| | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | |
| 1 | 167.740 | 17.00 | 13.51 | 30.51 | 43.50 | -12.99 | Peak |
| 2 | 221.090 | 17.62 | 12.67 | 30.29 | 46.00 | -15.71 | Peak |
| 3 | 269.590 | 16.54 | 14.61 | 31.15 | 46.00 | -14.85 | Peak |
| 4 | 340.400 | 15.22 | 16.64 | 31.86 | 46.00 | -14.14 | Peak |
| 5 | 470.380 | 12.87 | 19.65 | 32.52 | 46.00 | -13.48 | Peak |

## 7.4. POWERLINE CONDUCTED EMISSIONS

**LIMIT**

§15.207 (a) Except as shown in paragraphs (b) and (c) of 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 (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 * | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm 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 peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

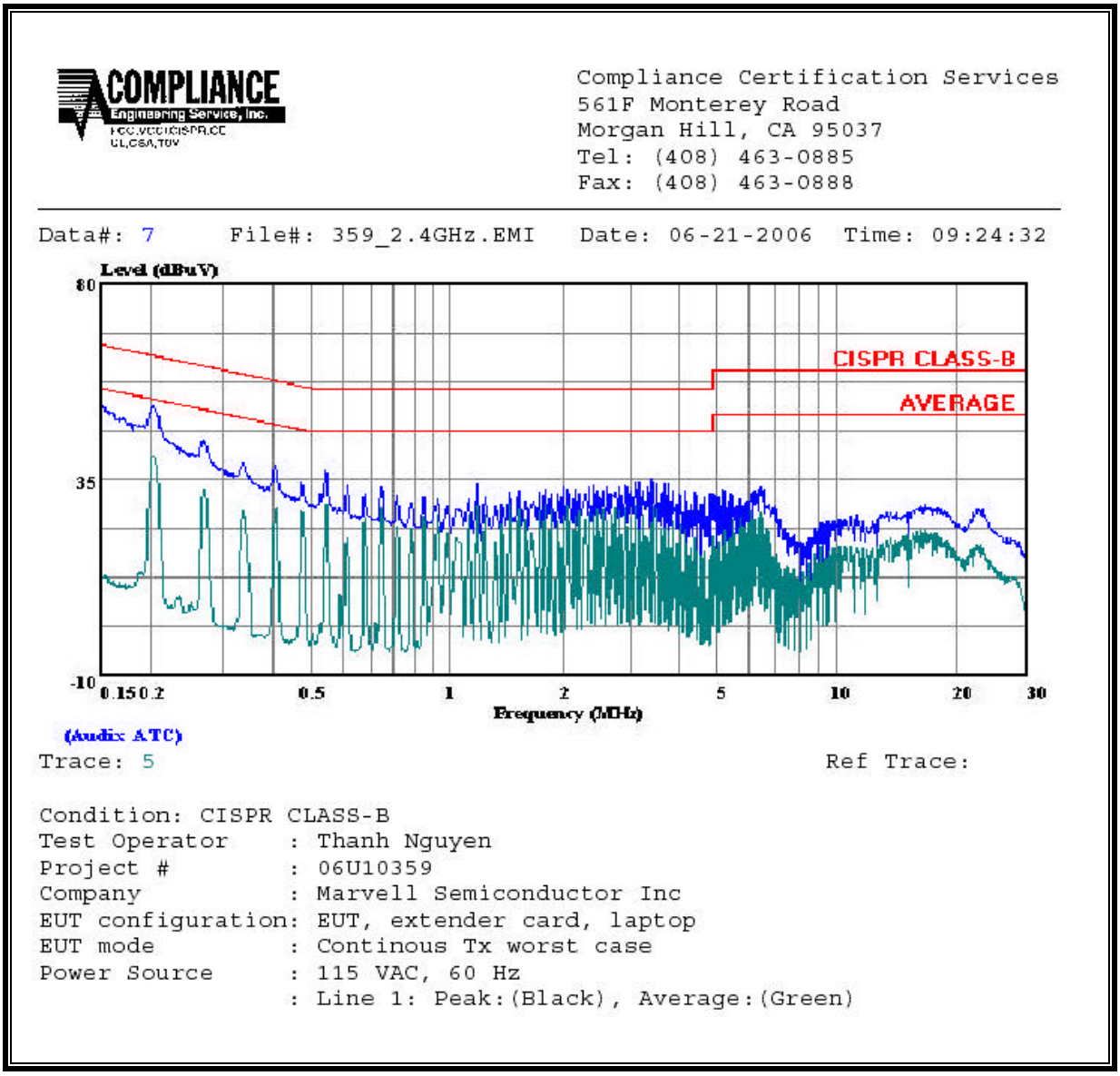
**RESULTS**

No non-compliance noted:

## 6 WORST EMISSIONS

| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Freq. | Reading | | | Closs | Limit | EN_B | Margin | | Remark |
| (MHz) | PK (dBuV) | QP (dBuV) | AV (dBuV) | (dB) | QP | AV | QP (dB) | AV (dB) | L1 / L2 |
| 0.20 | 52.04 | -- | 40.35 | 0.00 | 63.53 | 53.53 | -11.49 | -13.18 | L1 |
| 0.54 | 36.96 | -- | 27.80 | 0.00 | 56.00 | 46.00 | -19.04 | -18.20 | L1 |
| 3.53 | 34.56 | -- | -- | 0.00 | 56.00 | 46.00 | -21.44 | -11.44 | L1 |
| 0.20 | 48.92 | -- | 37.32 | 0.00 | 63.57 | 53.57 | -14.65 | -16.25 | L2 |
| 0.55 | 34.64 | -- | 27.67 | 0.00 | 56.00 | 46.00 | -21.36 | -18.33 | L2 |
| 5.14 | 36.28 | -- | -- | 0.00 | 60.00 | 50.00 | -23.72 | -13.72 | L2 |
| 6 Worst Data | | | | | | | | | |

**LINE 1 RESULTS**



**LINE 2 RESULTS**