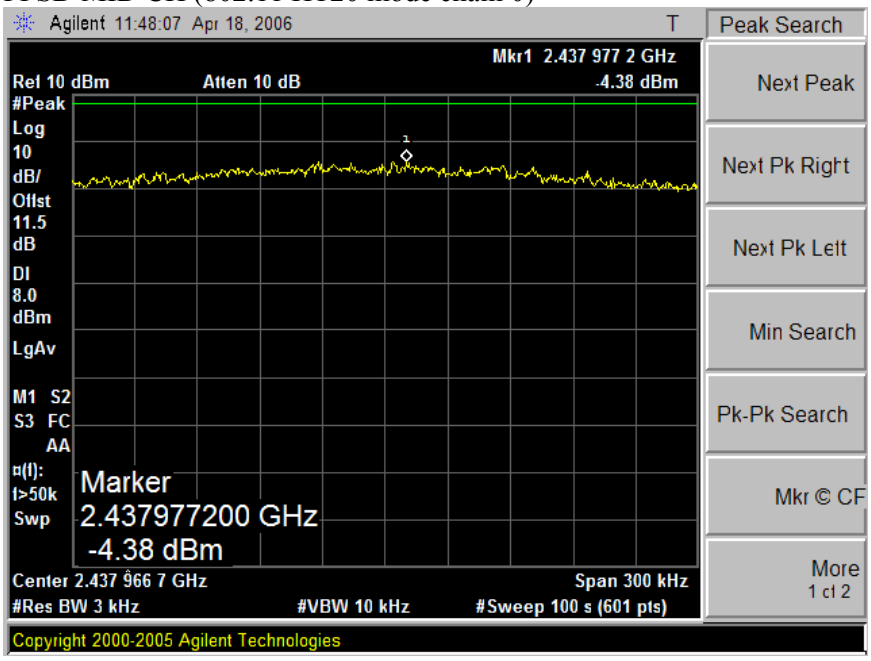
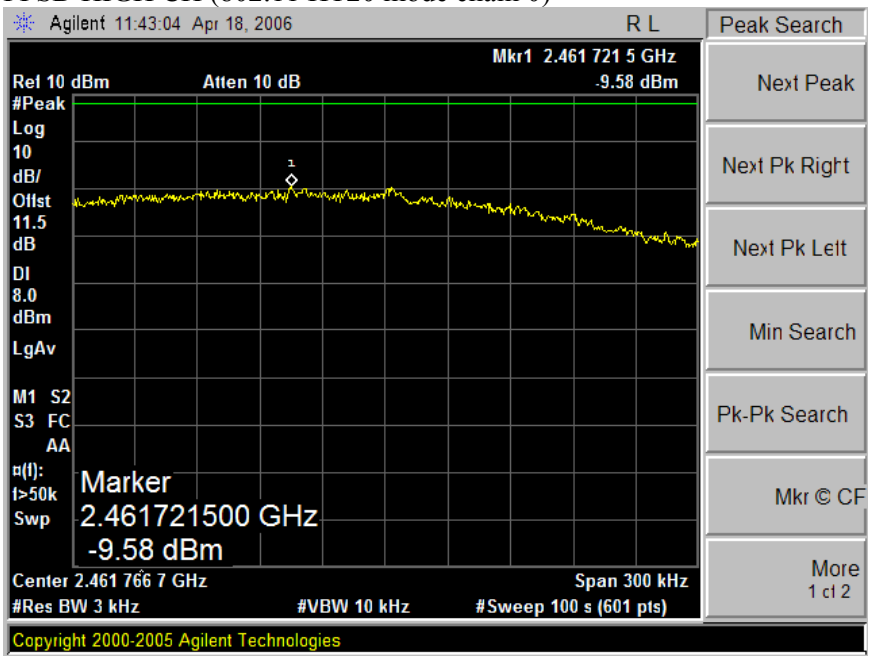
PPSD MID CH (802.11 HT20 mode chain 0)

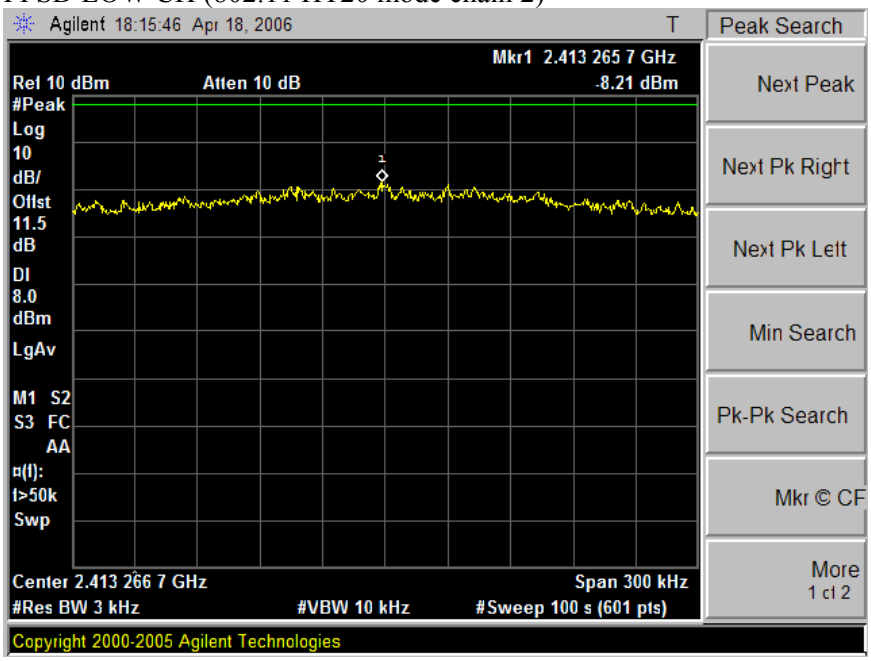


PPSD HIGH CH (802.11 HT20 mode chain 0)

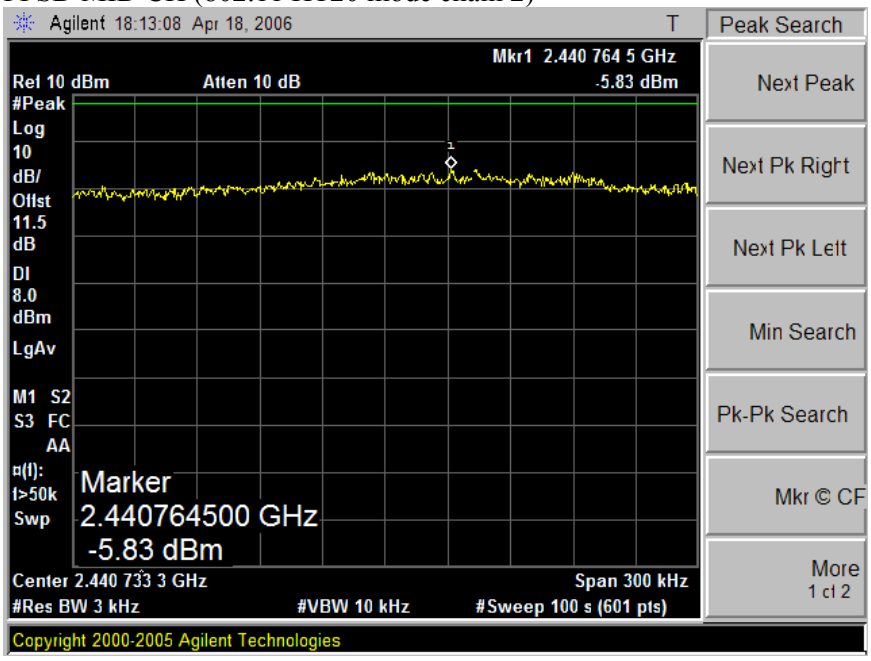


PEAK POWER SPECTRAL DENSITY (802.11 HT20 MODE CHAIN 2)

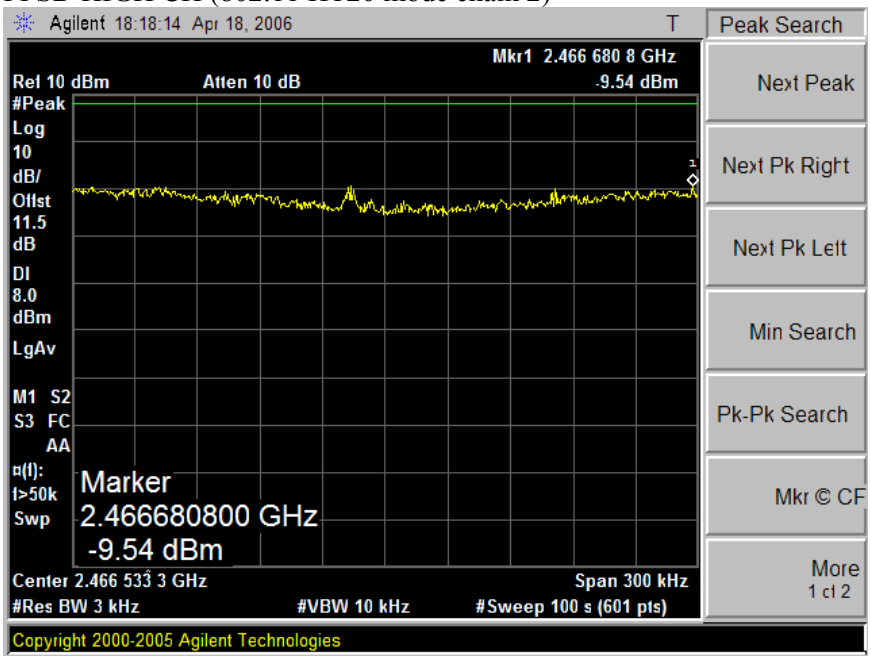
PPSD LOW CH (802.11 HT20 mode chain 2)



PPSD MID CH (802.11 HT20 mode chain 2)

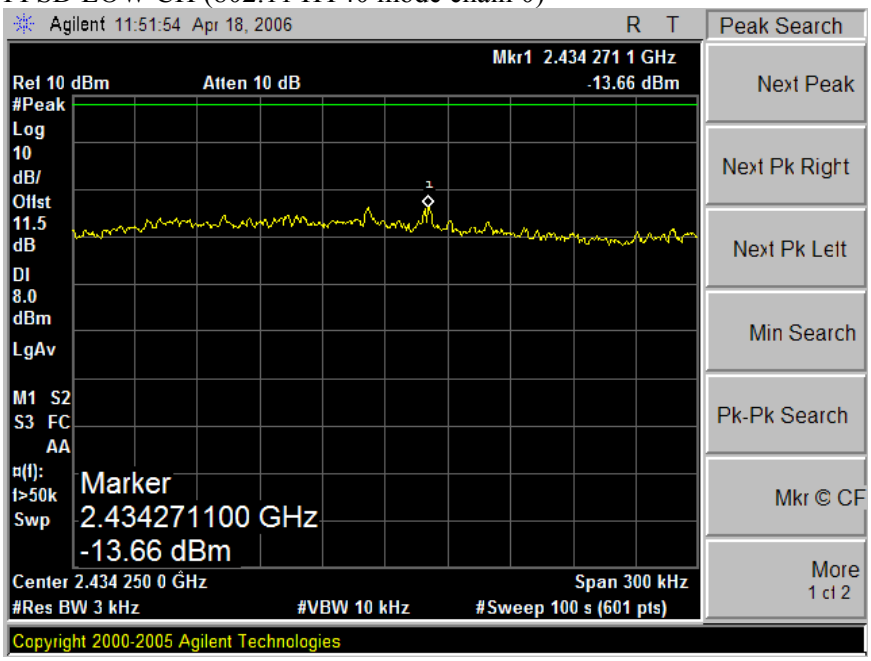


PPSD HIGH CH (802.11 HT20 mode chain 2)

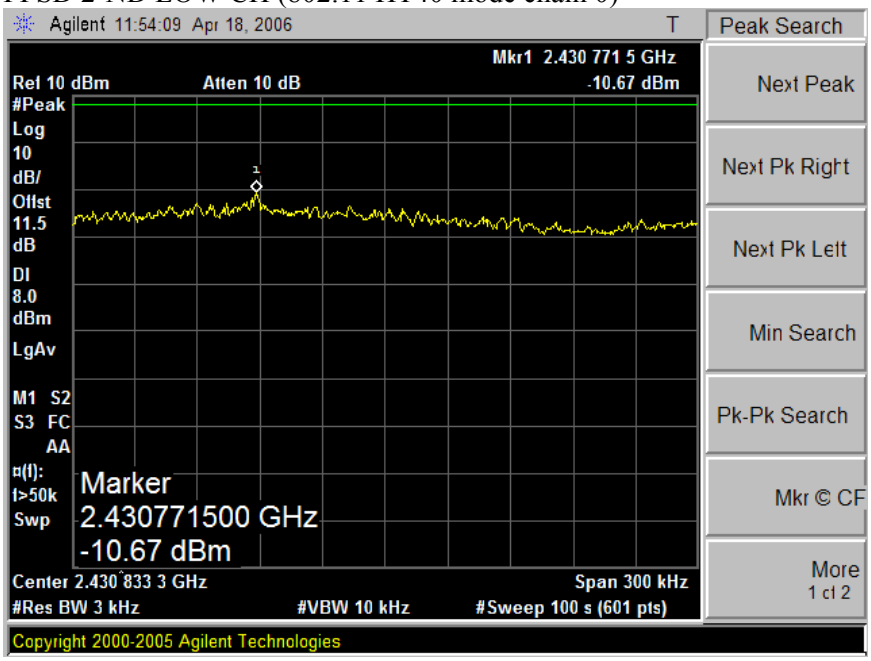


PEAK POWER SPECTRAL DENSITY (802.11 HT40 MODE CHAIN 0)

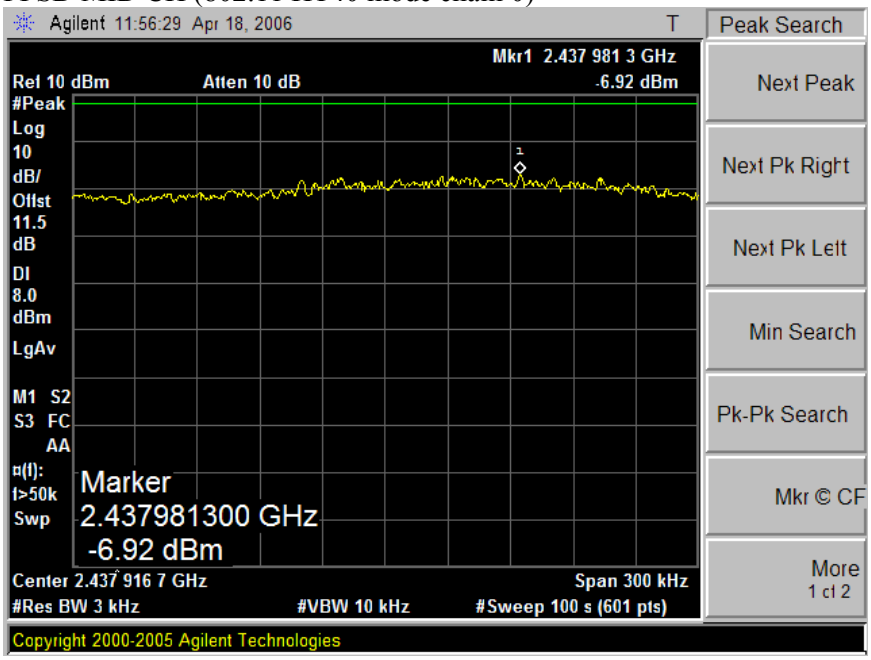
PPSD LOW CH (802.11 HT40 mode chain 0)



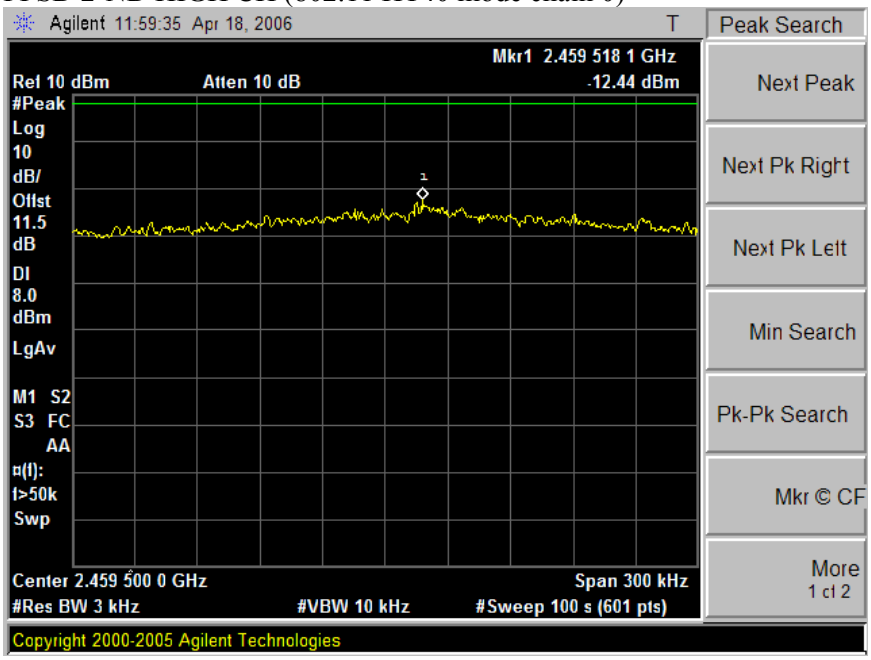
PPSD 2'ND LOW CH (802.11 HT40 mode chain 0)



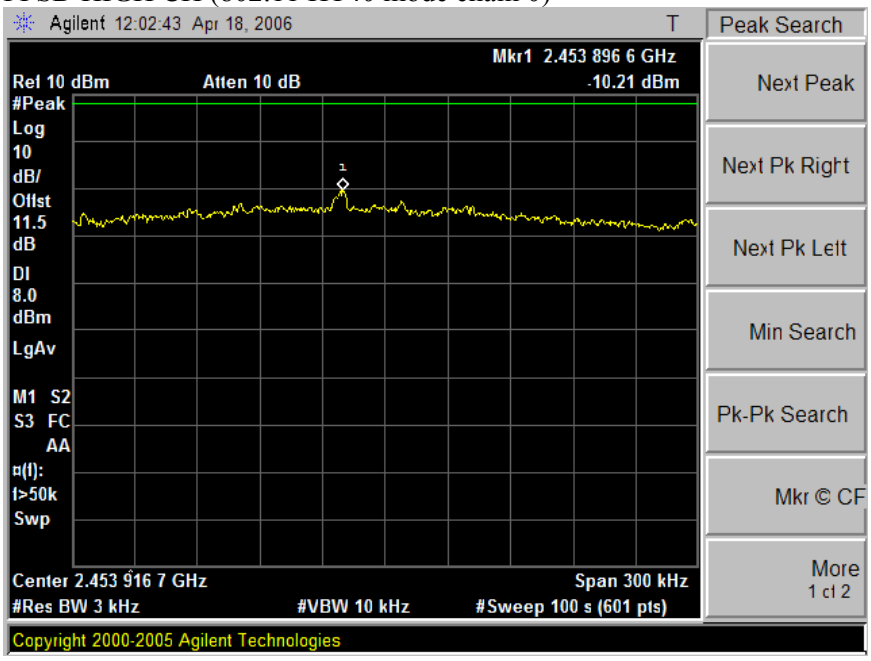
PPSD MID CH (802.11 HT40 mode chain 0)



PPSD 2'ND HIGH CH (802.11 HT40 mode chain 0)

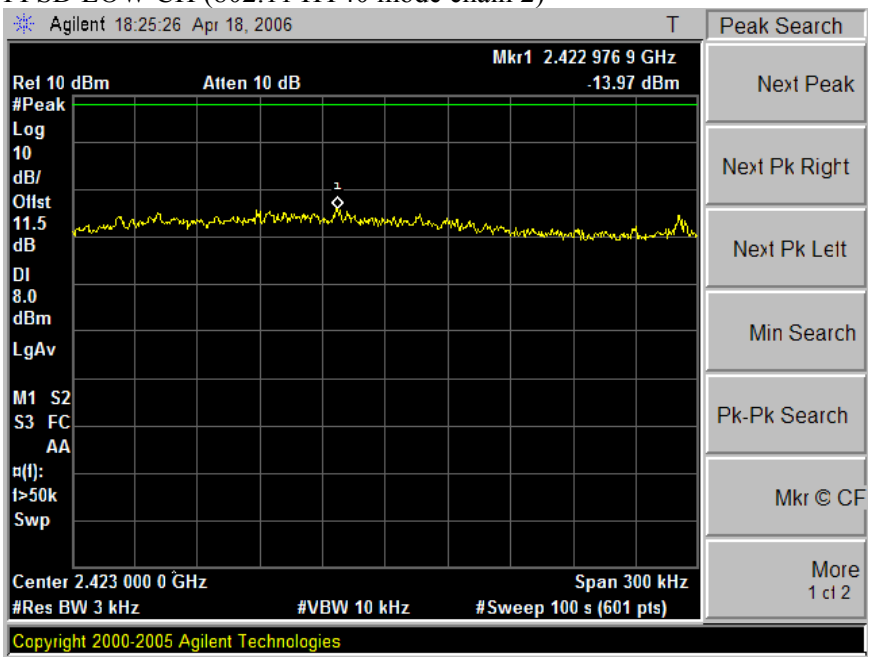


PPSD HIGH CH (802.11 HT40 mode chain 0)

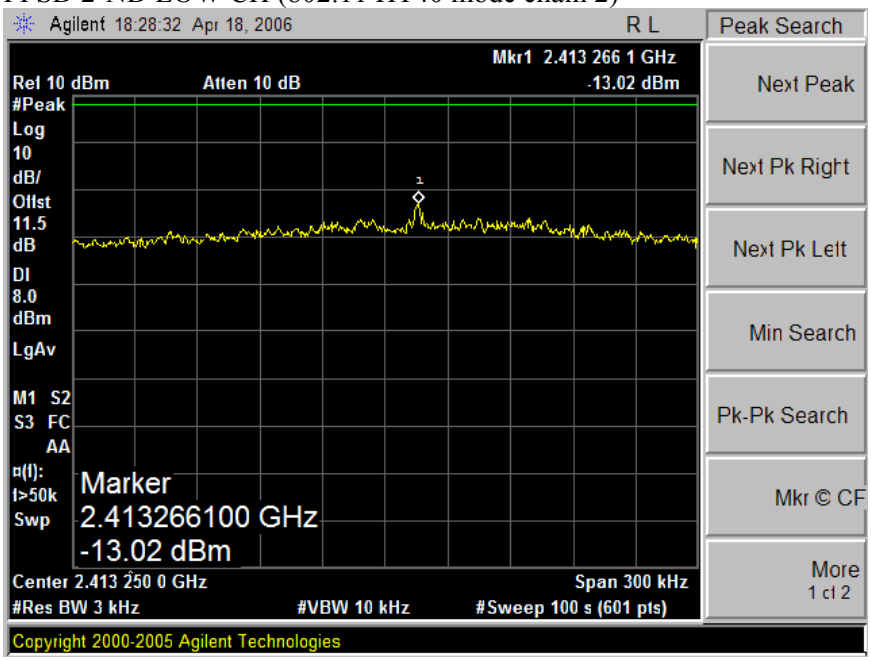


PEAK POWER SPECTRAL DENSITY (802.11 HT40 MODE CHAIN 2)

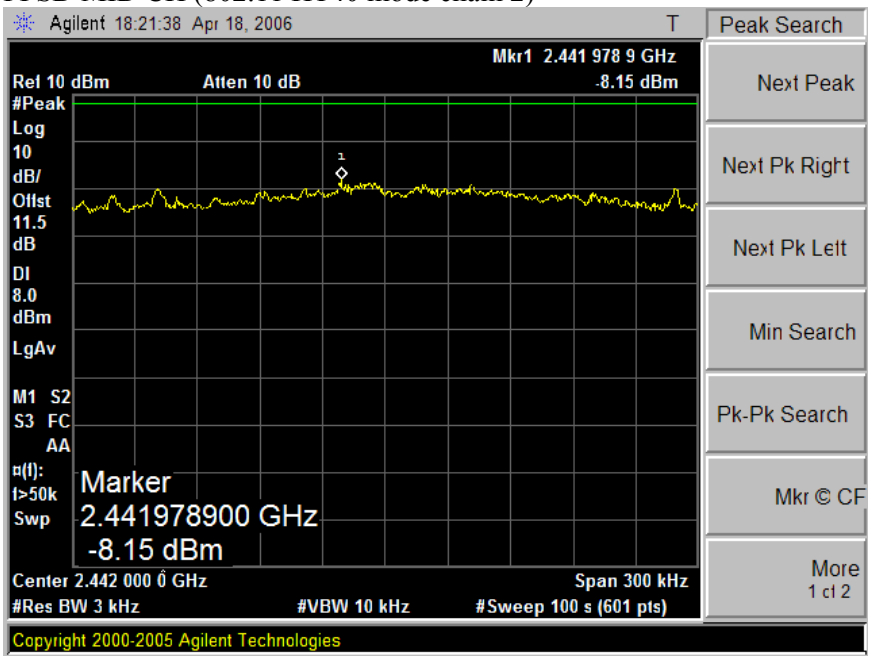
PPSD LOW CH (802.11 HT40 mode chain 2)



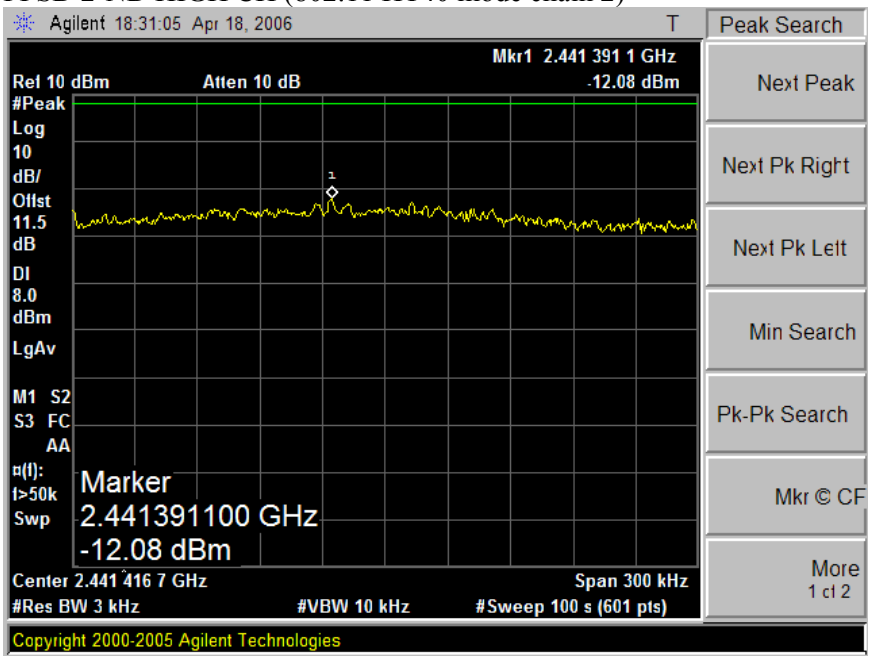
PPSD 2'ND LOW CH (802.11 HT40 mode chain 2)



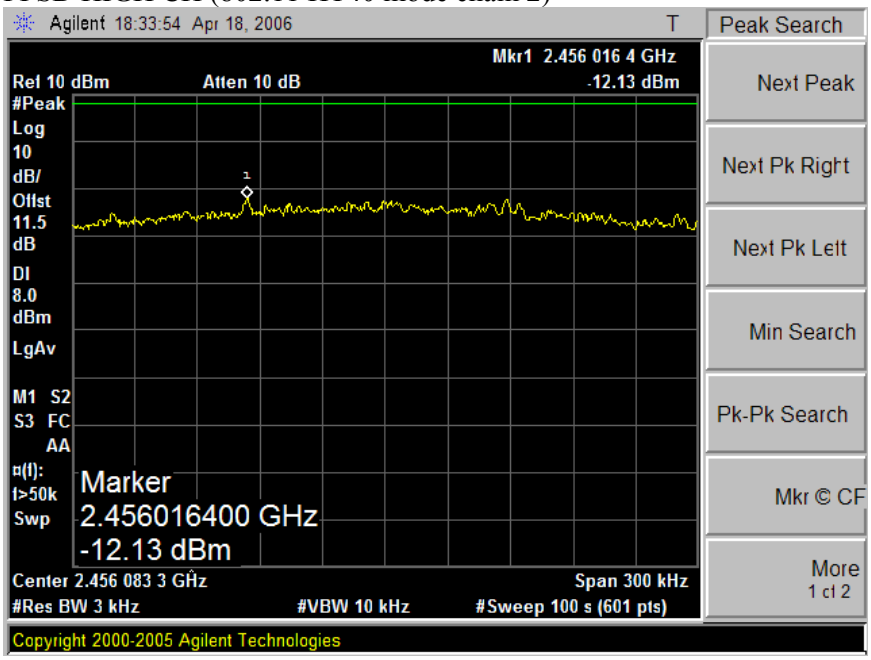
PPSD MID CH (802.11 HT40 mode chain 2)



PPSD 2'ND HIGH CH (802.11 HT40 mode chain 2)



PPSD HIGH CH (802.11 HT40 mode chain 2)



7.1.7. 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.

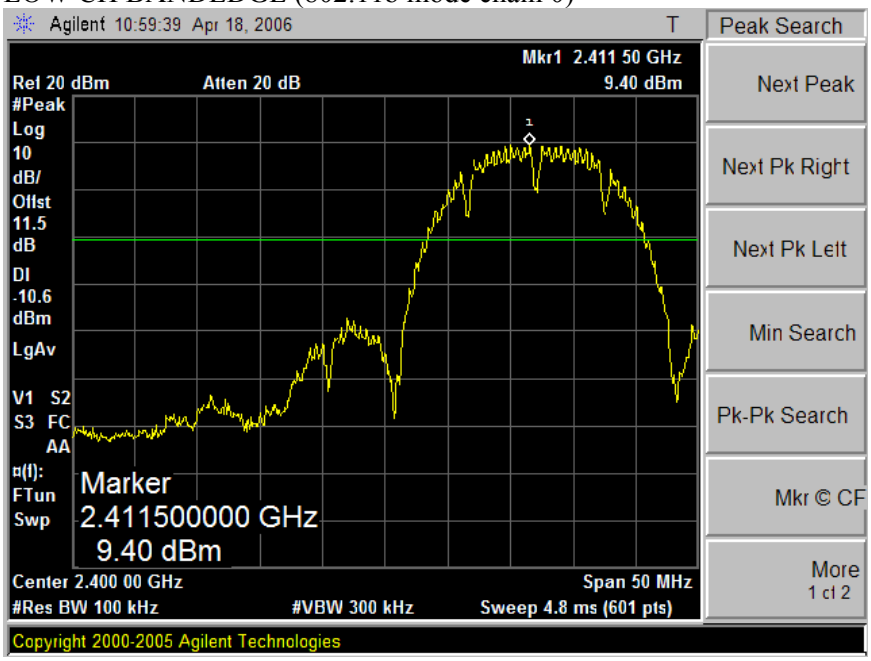
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

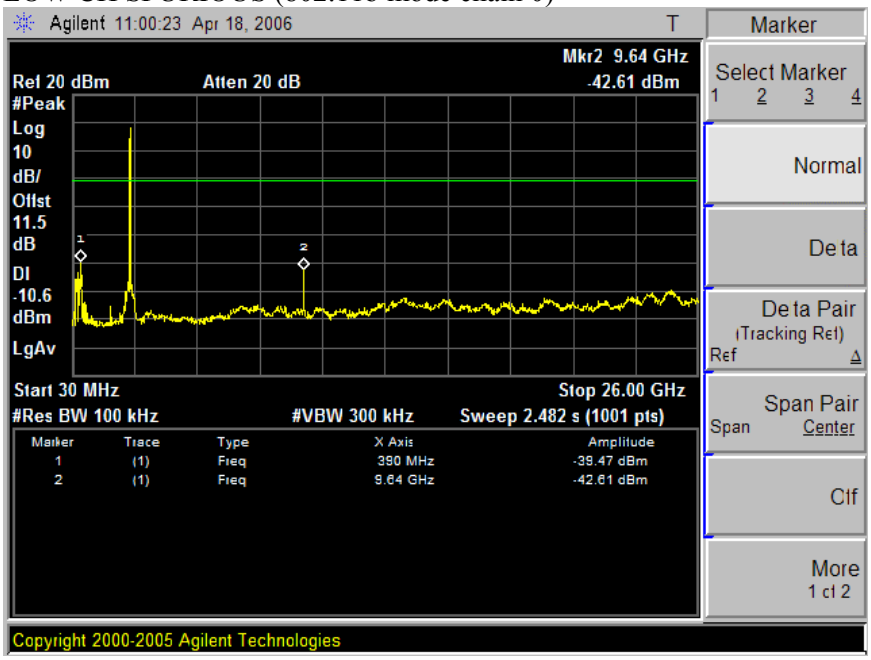
No non-compliance noted:

SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE CHAIN 0)

LOW CH BANDEDGE (802.11b mode chain 0)

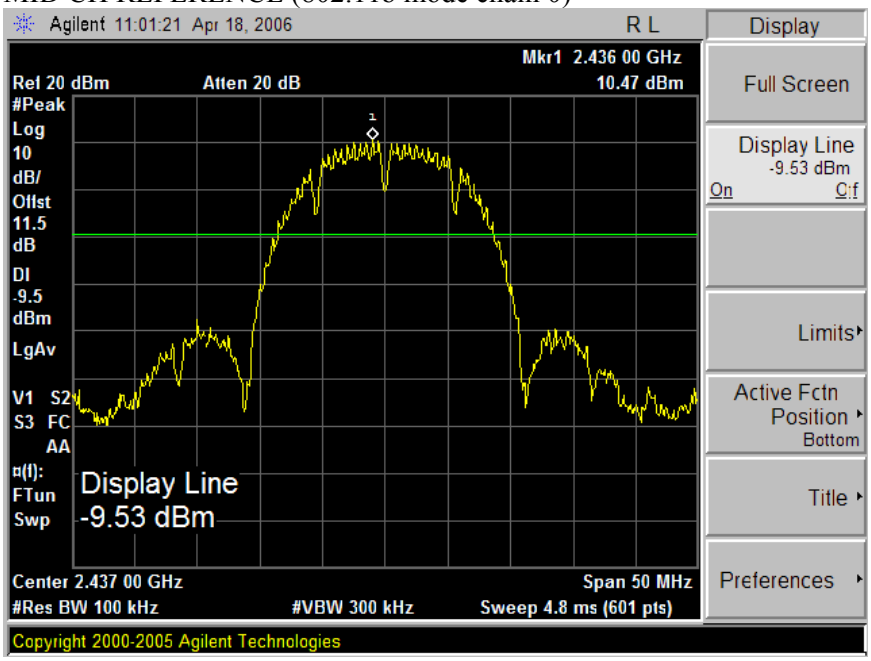


LOW CH SPURIOUS (802.11b mode chain 0)

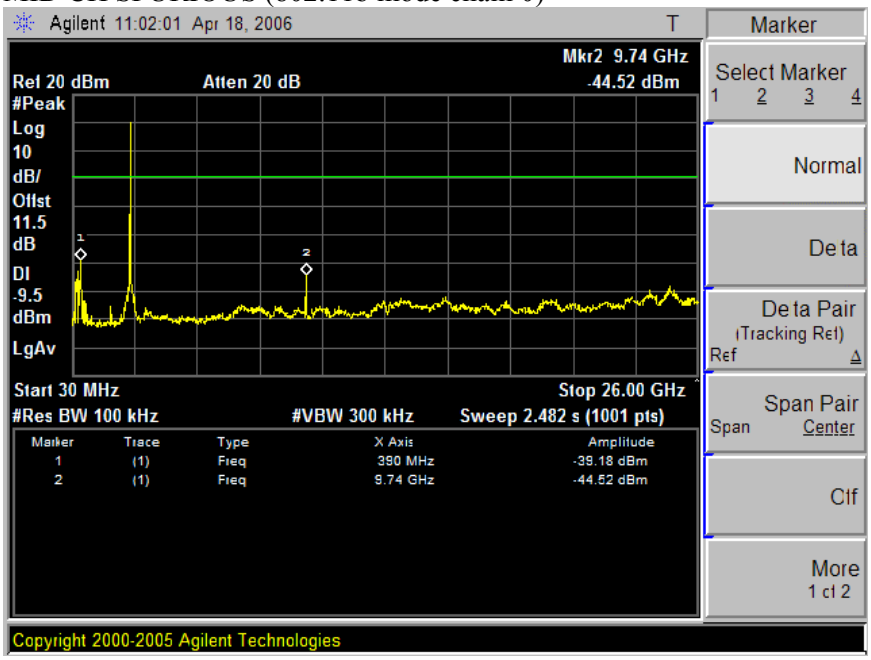


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11B MODE CHAIN 0)

MID CH REFERENCE (802.11b mode chain 0)

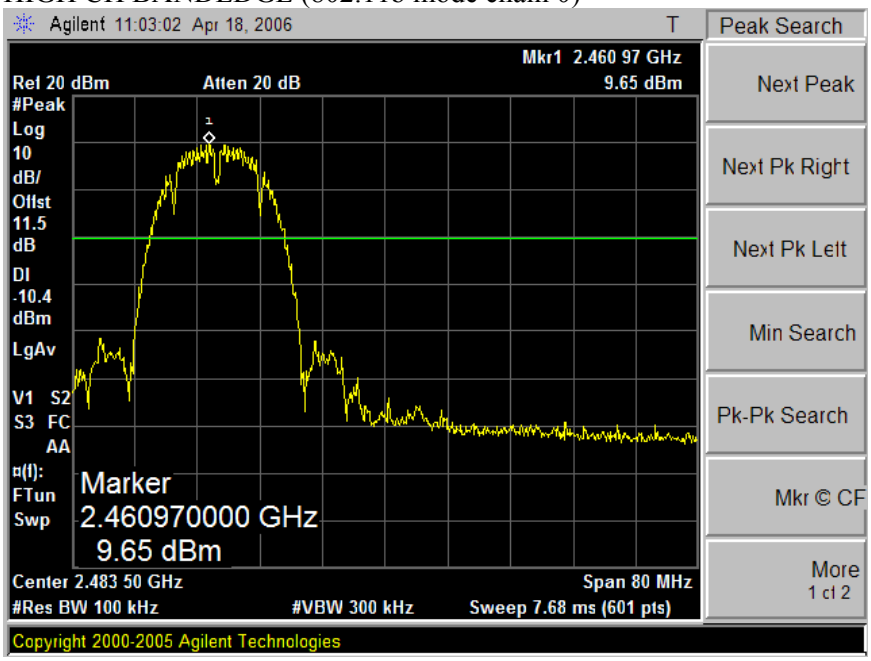


MID CH SPURIOUS (802.11b mode chain 0)

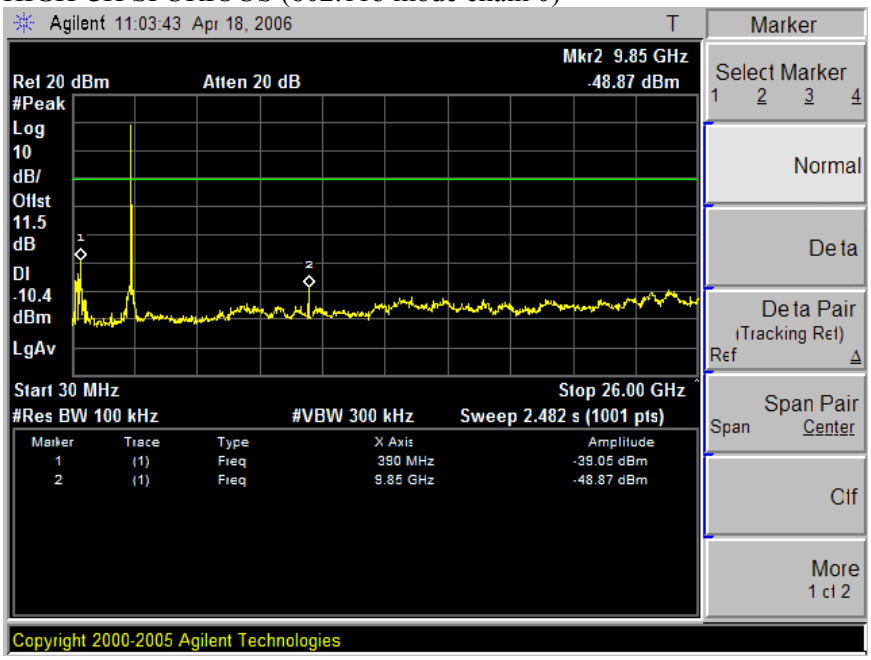


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE CHAIN 0)

HIGH CH BANDEDGE (802.11b mode chain 0)

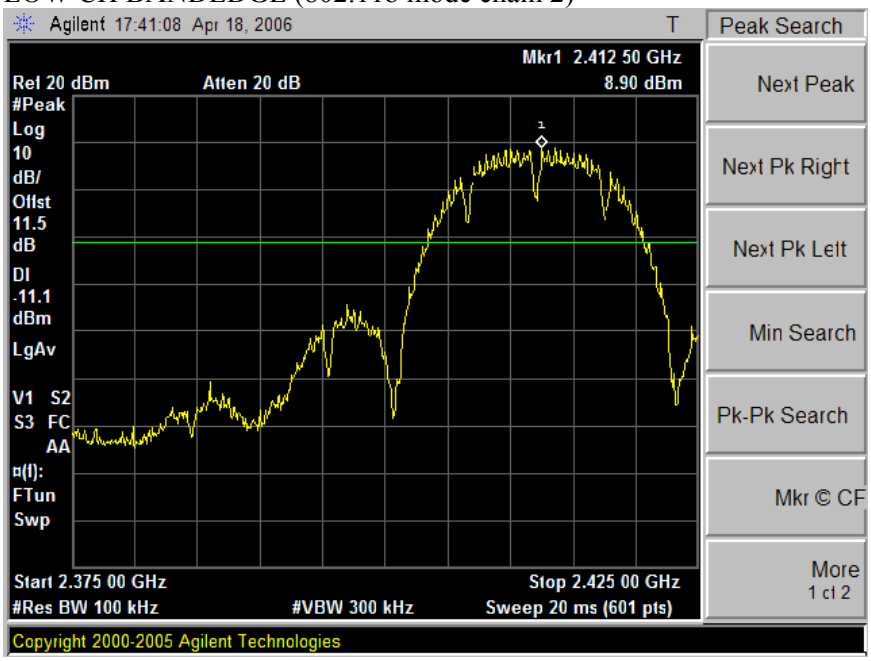


HIGH CH SPURIOUS (802.11b mode chain 0)

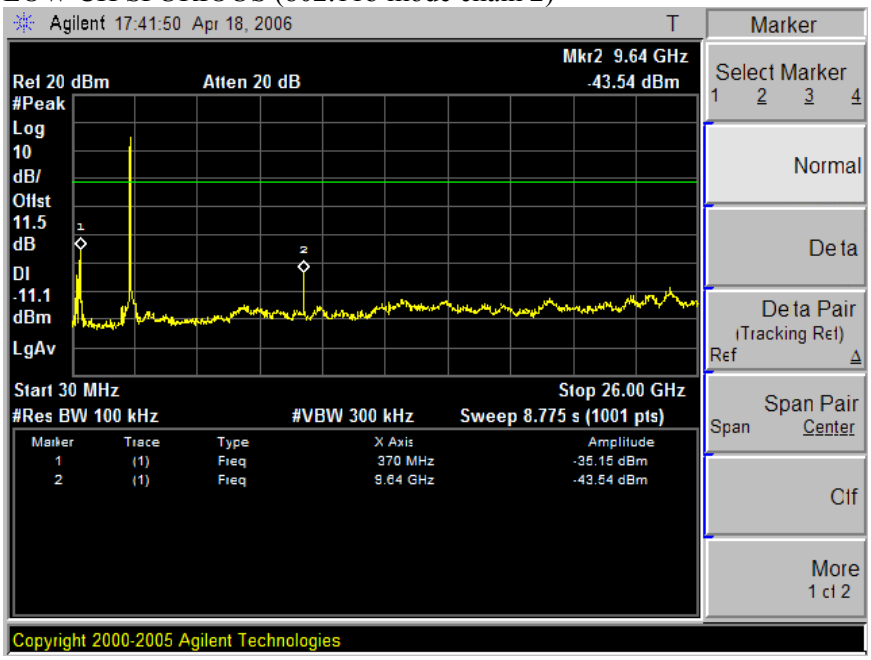


SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE CHAIN 2)

LOW CH BANDEDGE (802.11b mode chain 2)

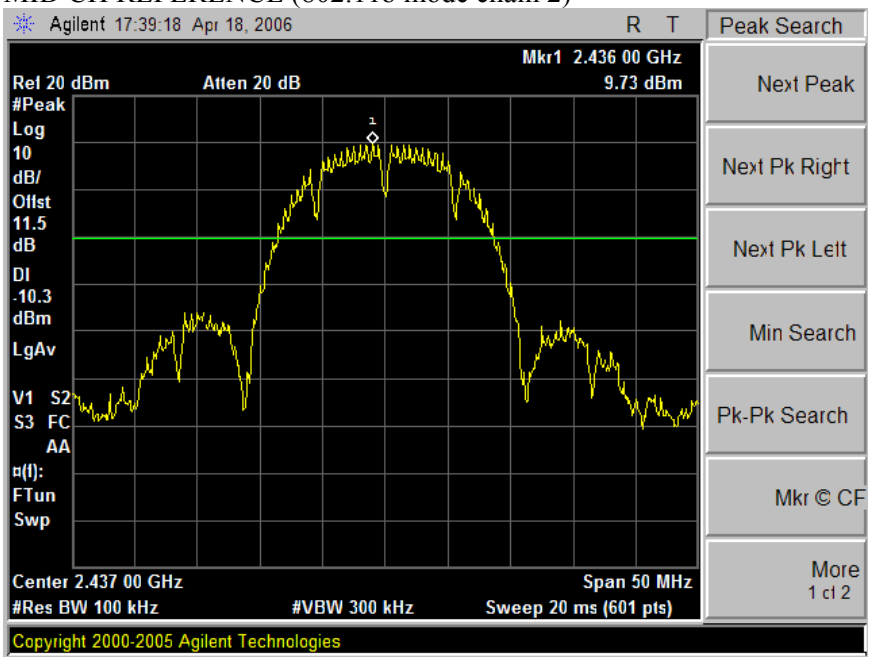


LOW CH SPURIOUS (802.11b mode chain 2)

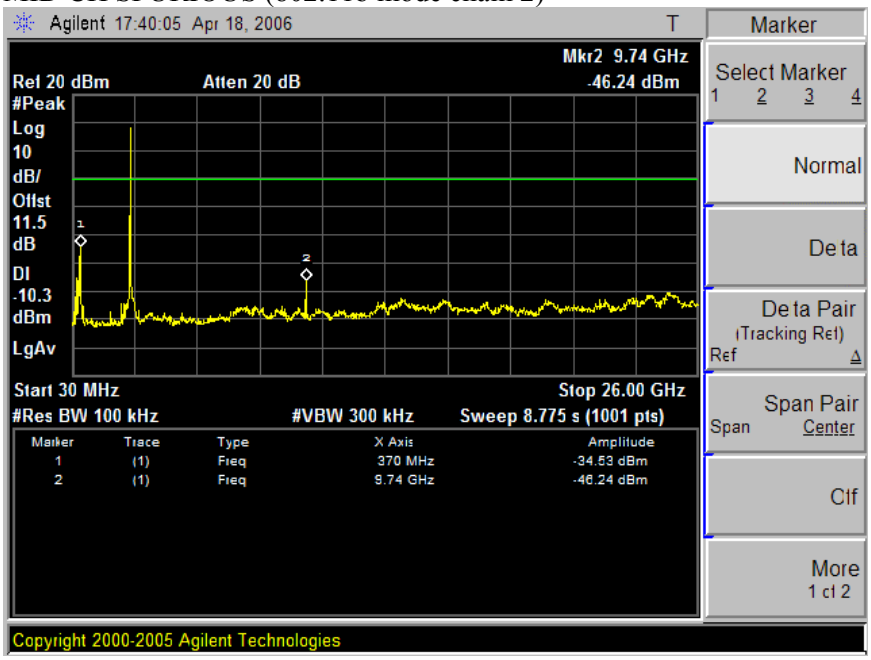


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11B MODE CHAIN 2)

MID CH REFERENCE (802.11b mode chain 2)

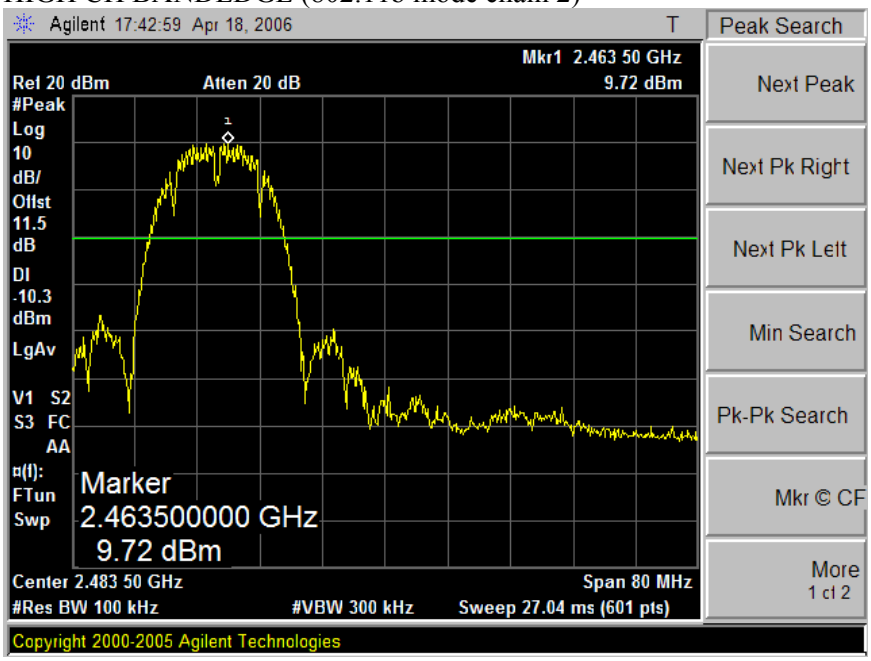


MID CH SPURIOUS (802.11b mode chain 2)

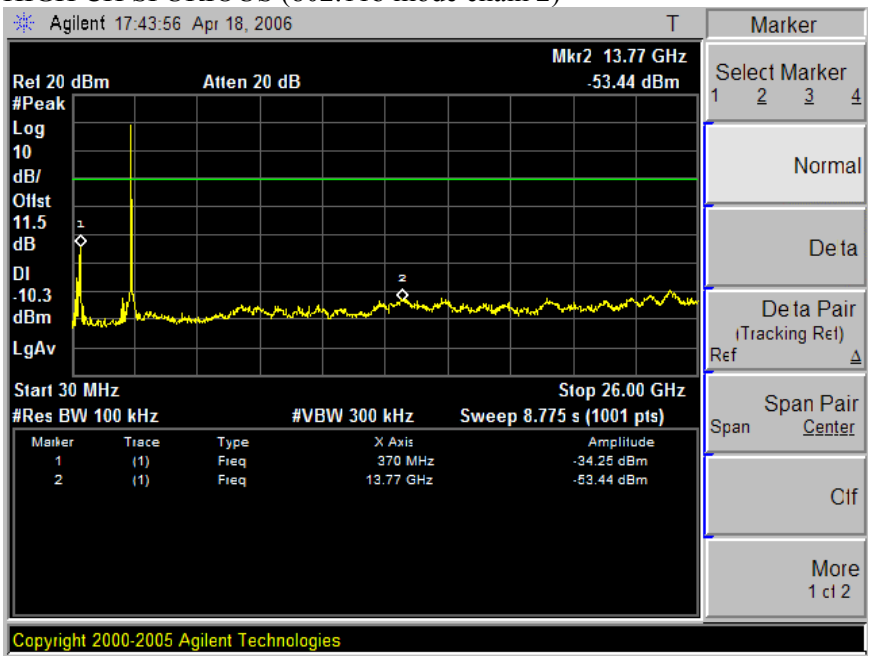


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE CHAIN 2)

HIGH CH BANDEDGE (802.11b mode chain 2)

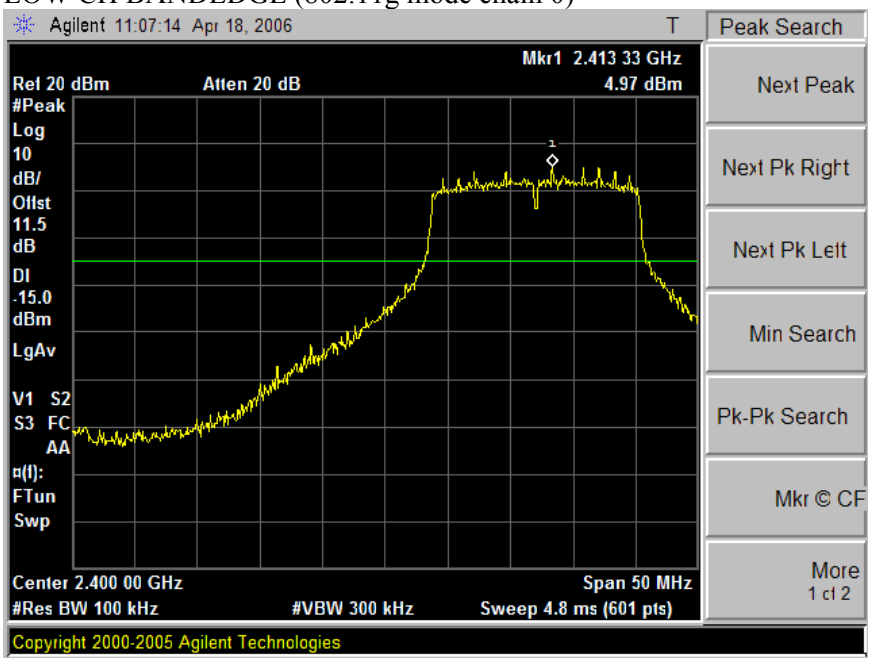


HIGH CH SPURIOUS (802.11b mode chain 2)

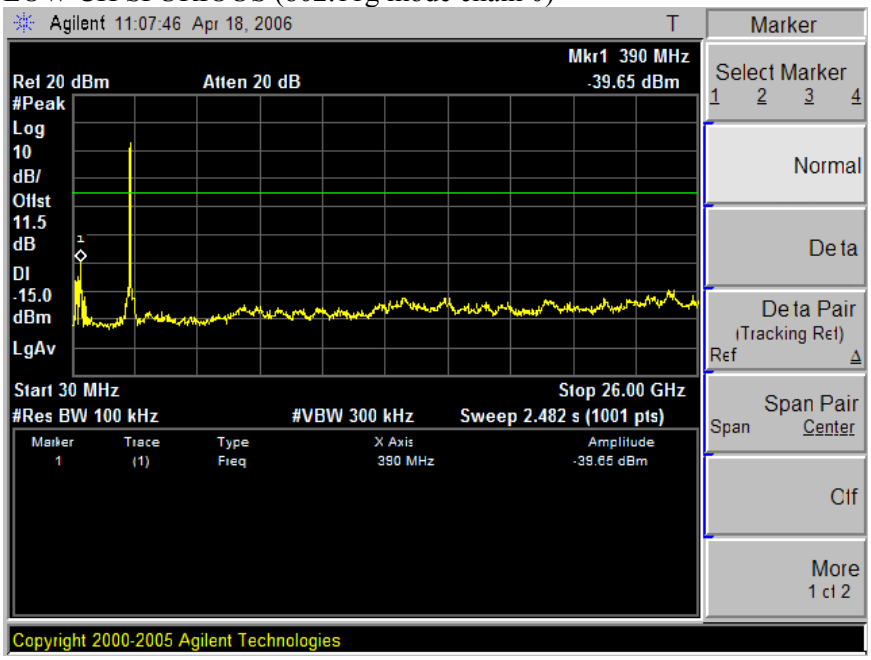


SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE CHAIN 0)

LOW CH BANDEDGE (802.11g mode chain 0)

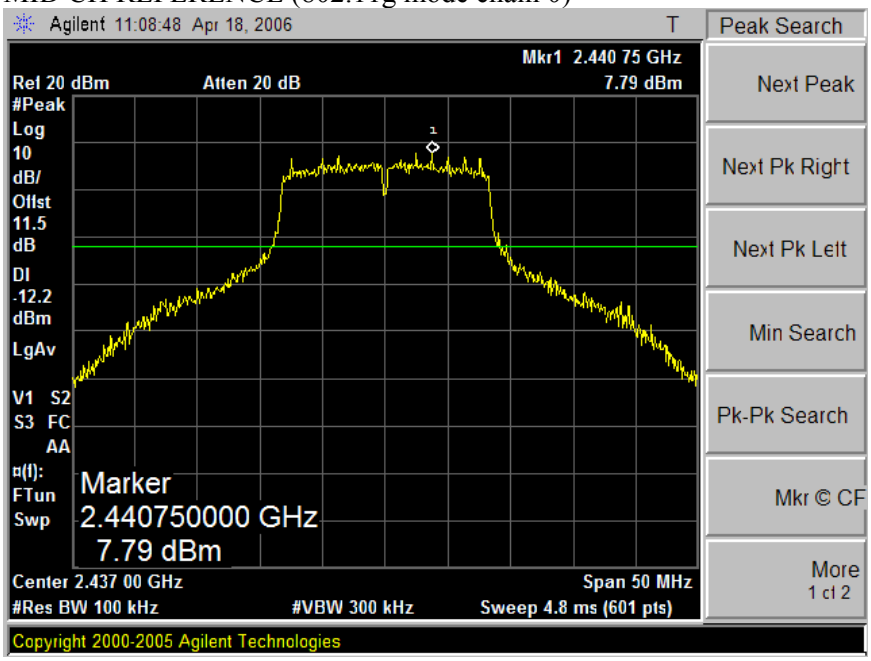


LOW CH SPURIOUS (802.11g mode chain 0)

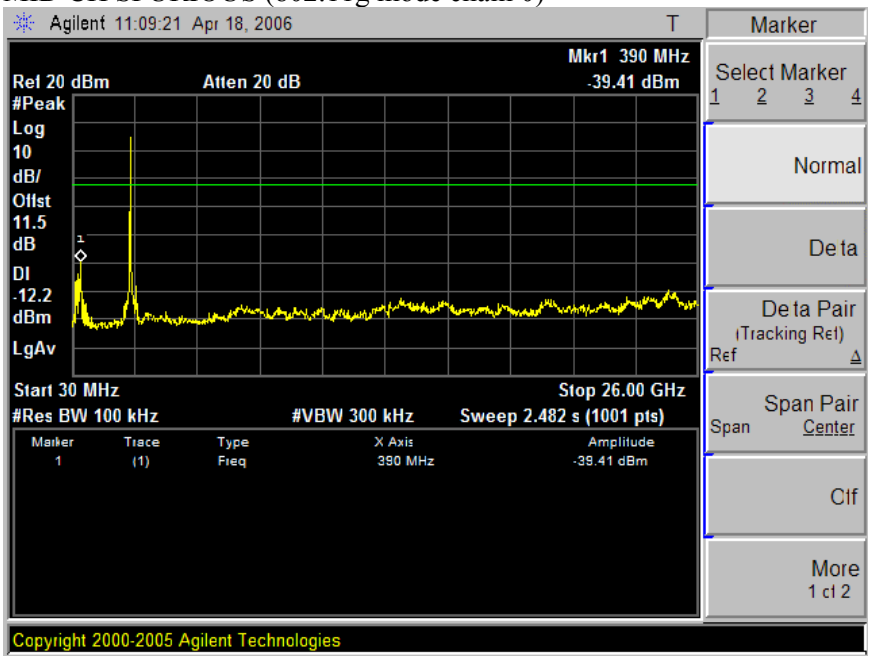


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11g MODE CHAIN 0)

MID CH REFERENCE (802.11g mode chain 0)

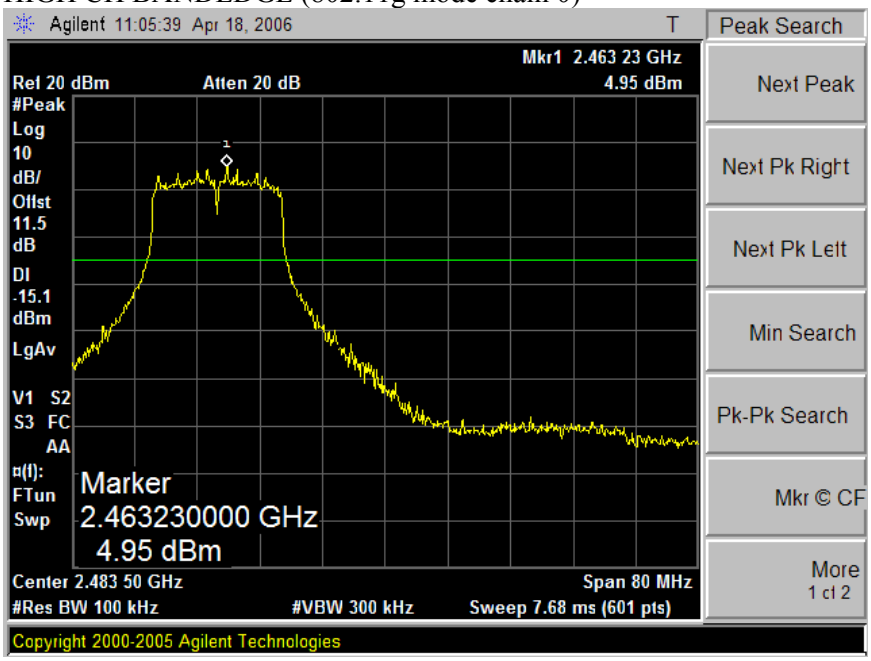


MID CH SPURIOUS (802.11g mode chain 0)

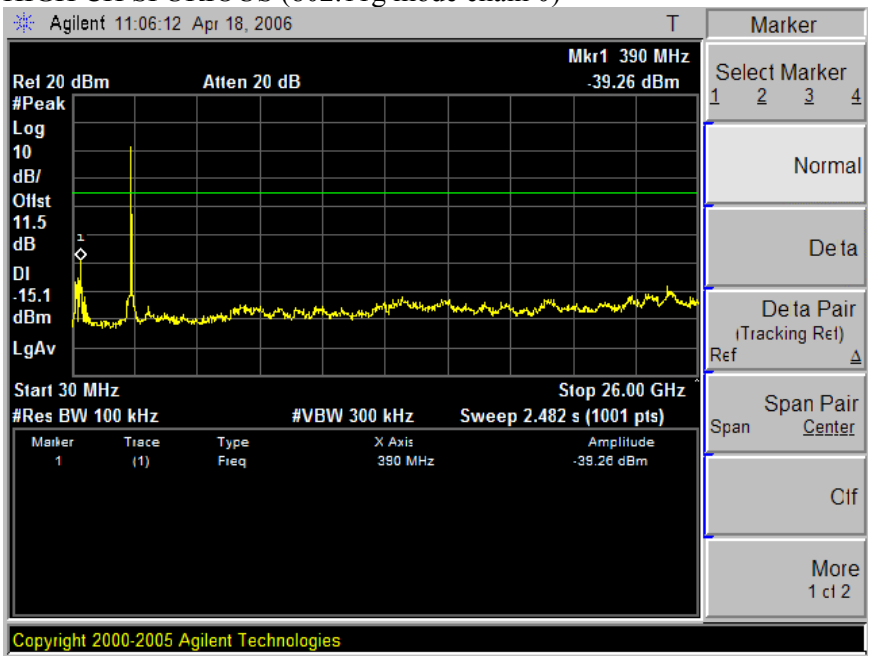


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE CHAIN 0)

HIGH CH BANDEDGE (802.11g mode chain 0)

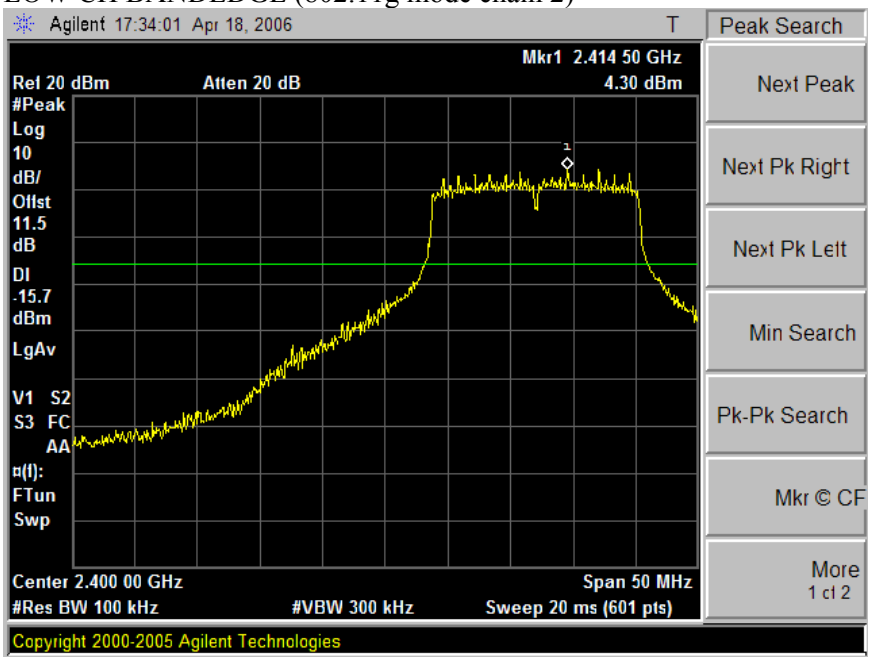


HIGH CH SPURIOUS (802.11g mode chain 0)

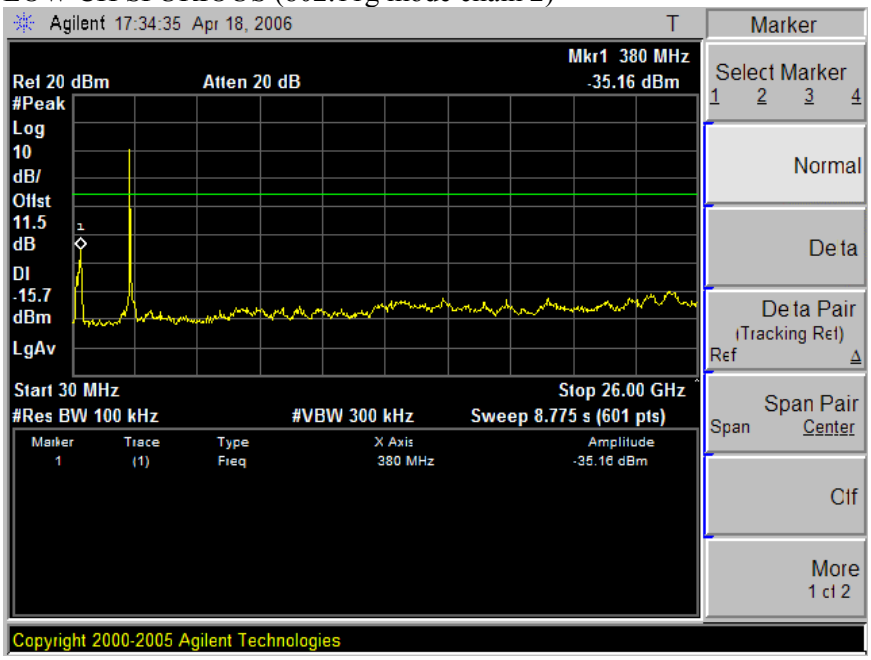


SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE CHAIN 2)

LOW CH BANDEDGE (802.11g mode chain 2)

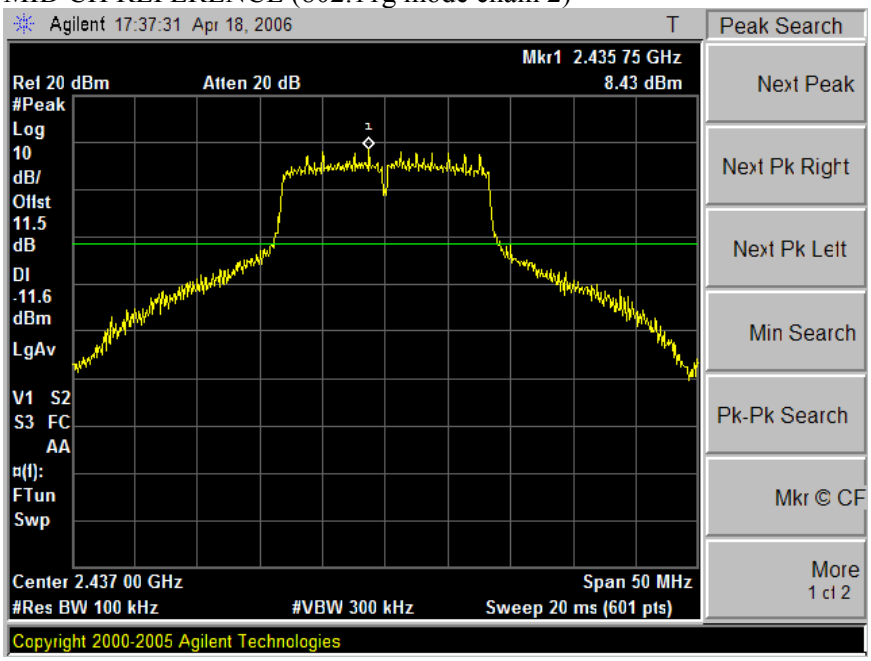


LOW CH SPURIOUS (802.11g mode chain 2)

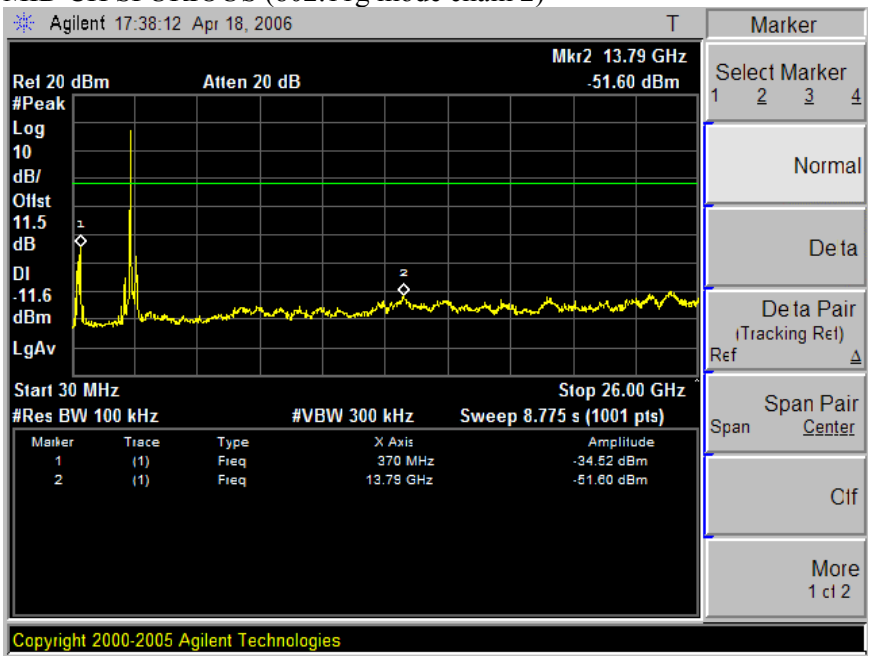


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11g MODE CHAIN 2)

MID CH REFERENCE (802.11g mode chain 2)

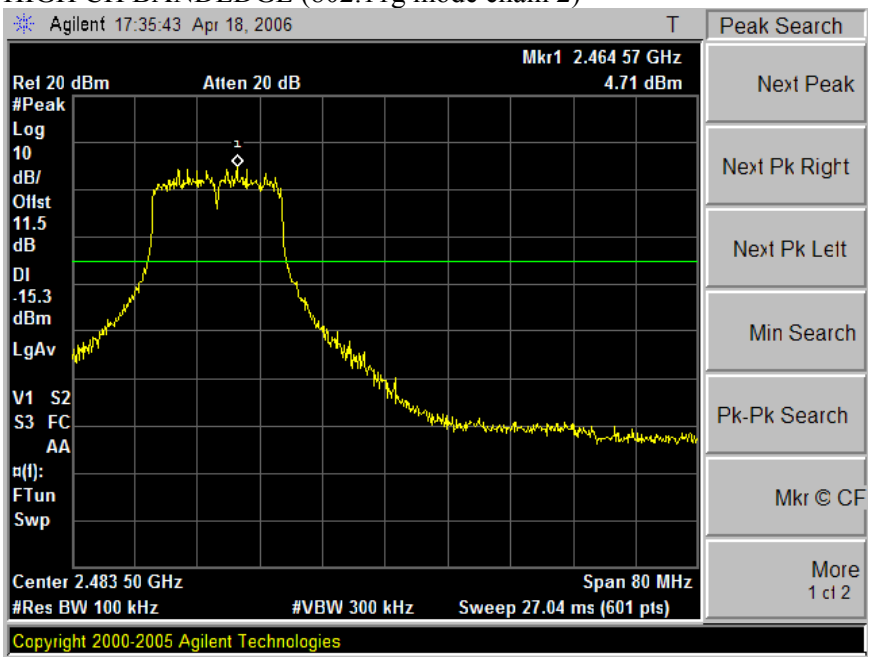


MID CH SPURIOUS (802.11g mode chain 2)

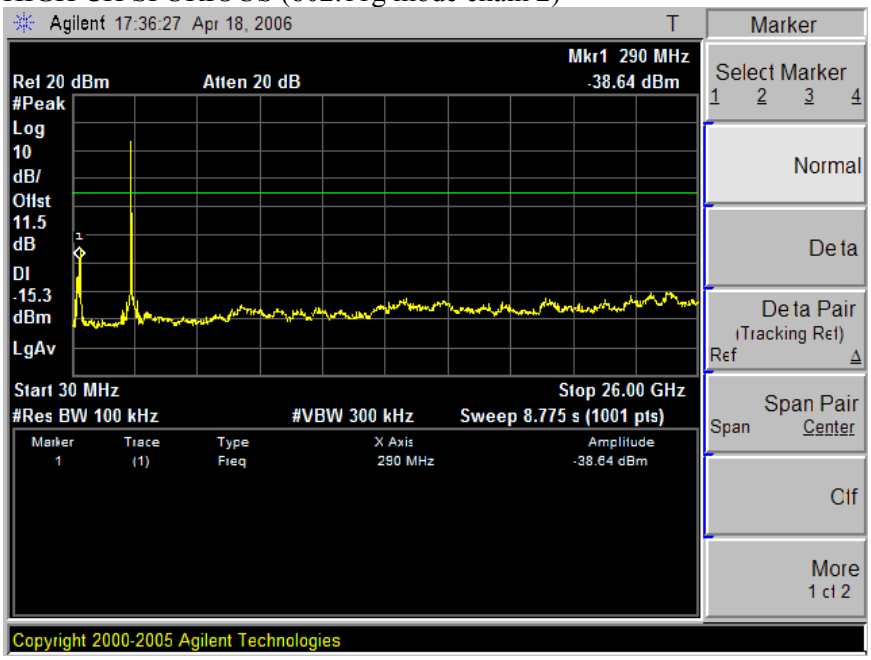


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE CHAIN 2)

HIGH CH BANDEDGE (802.11g mode chain 2)

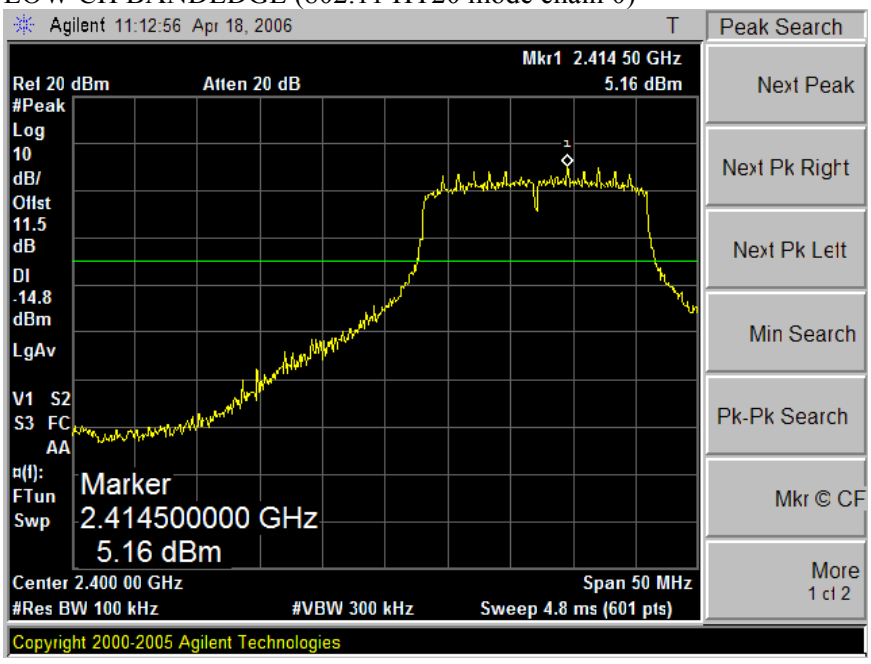


HIGH CH SPURIOUS (802.11g mode chain 2)

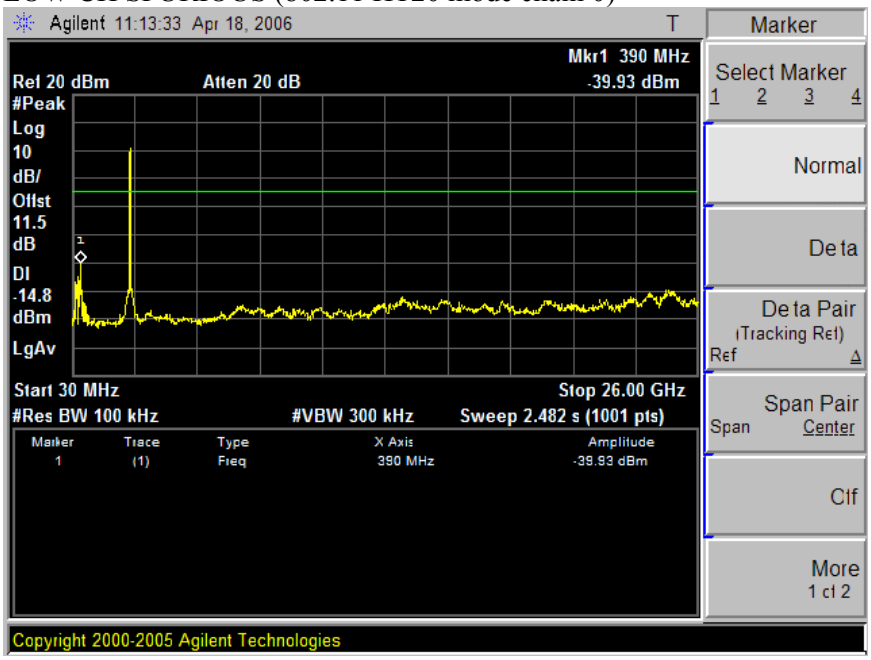


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT20 MODE CHAIN 0)

LOW CH BANDEDGE (802.11 HT20 mode chain 0)

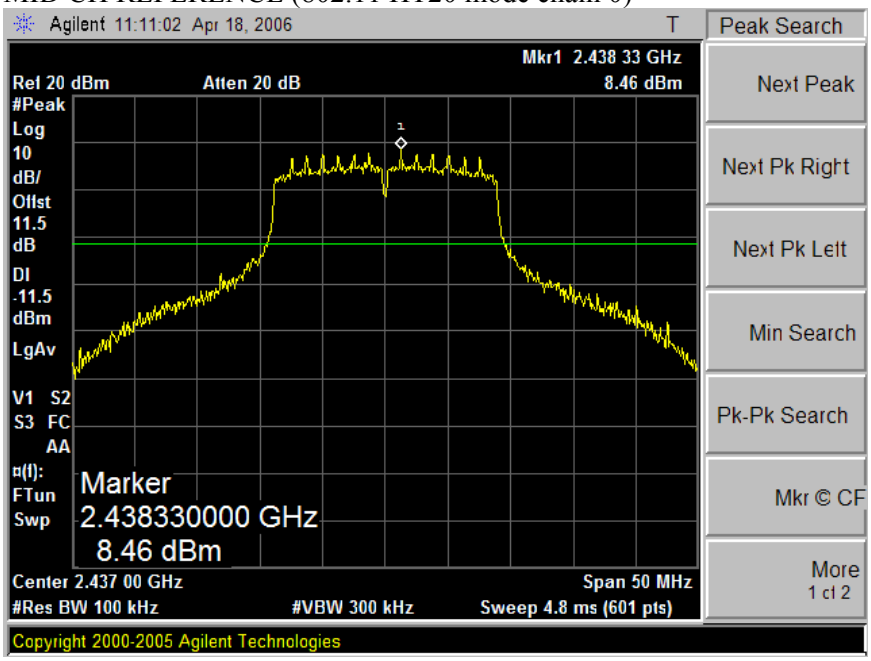


LOW CH SPURIOUS (802.11 HT20 mode chain 0)

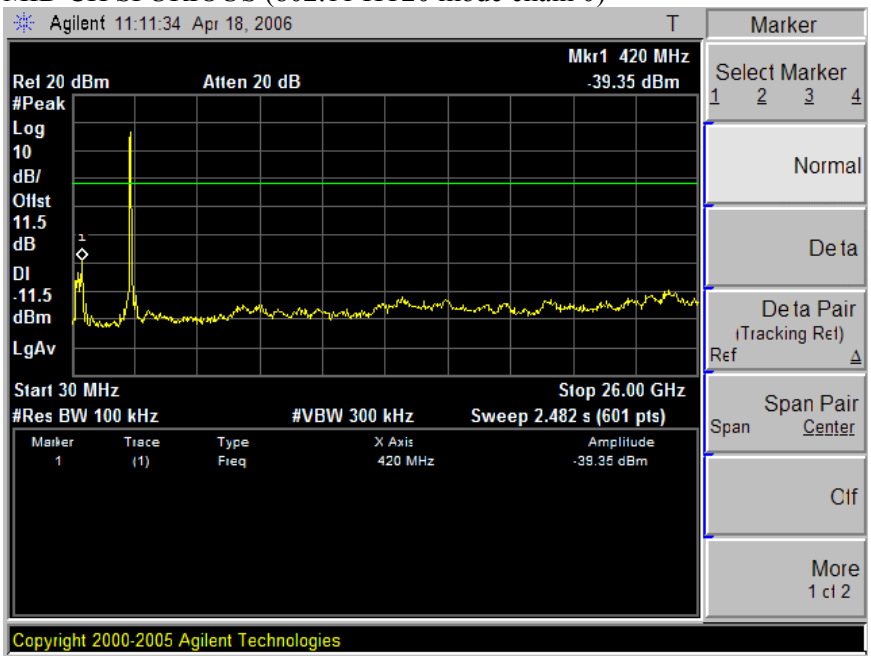


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 HT20 MODE CHAIN 0)

MID CH REFERENCE (802.11 HT20 mode chain 0)

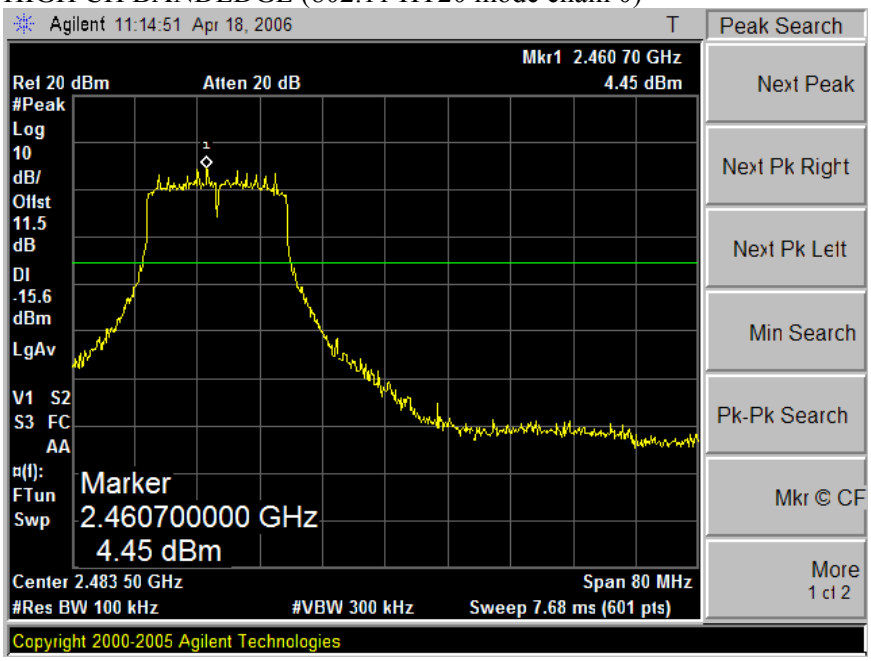


MID CH SPURIOUS (802.11 HT20 mode chain 0)

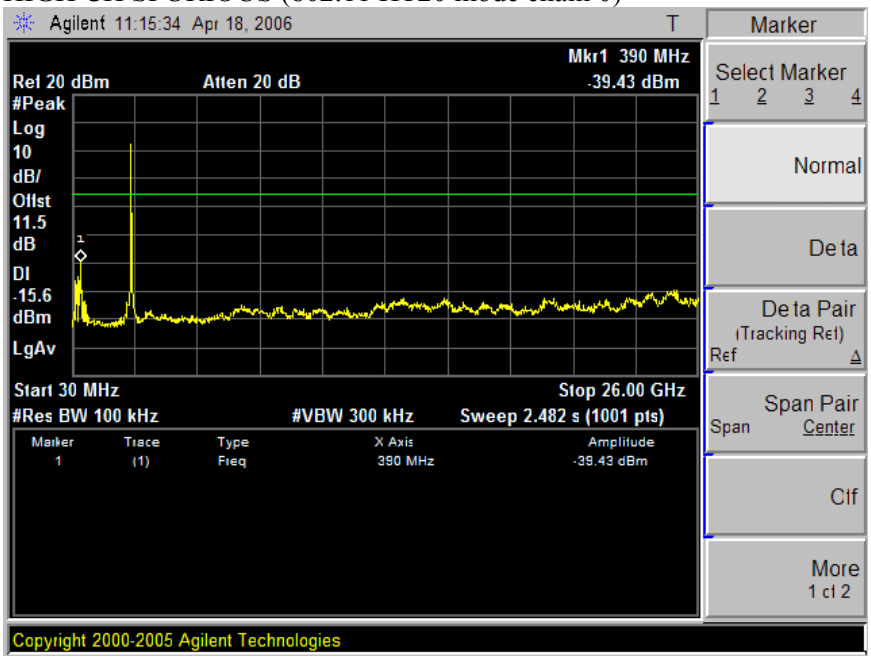


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT20 MODE CHAIN 0)

HIGH CH BANDEDGE (802.11 HT20 mode chain 0)

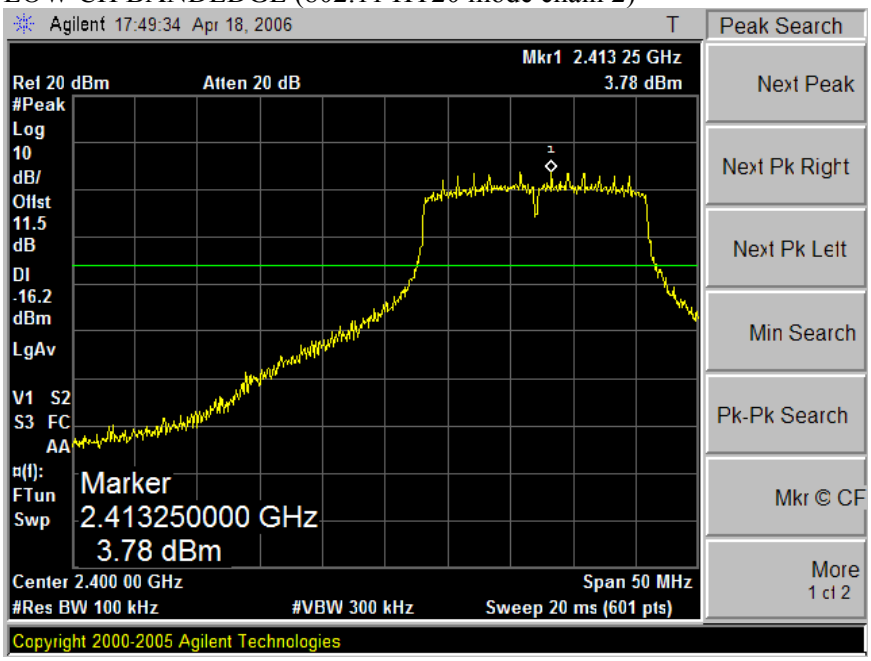


HIGH CH SPURIOUS (802.11 HT20 mode chain 0)

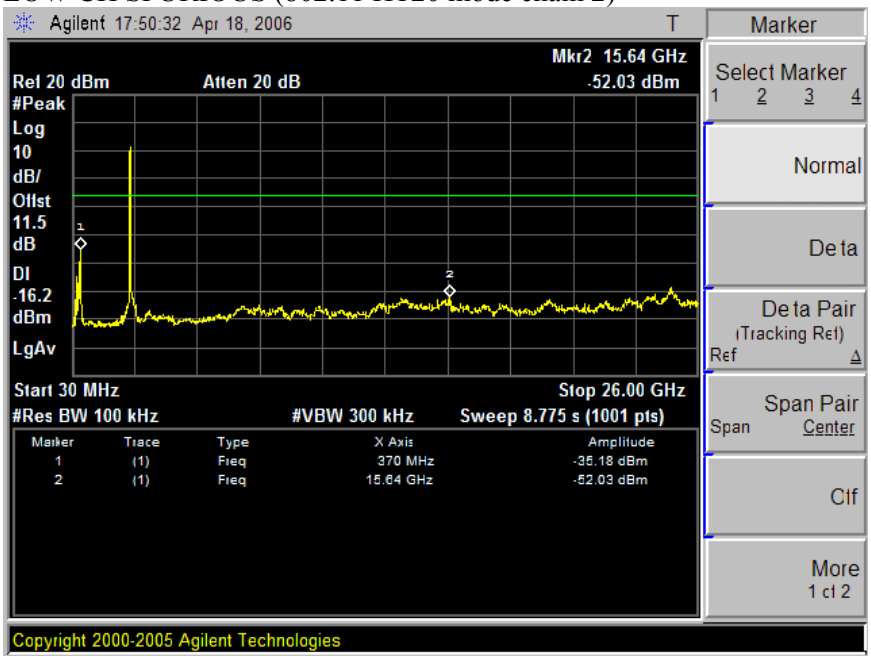


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT20 MODE CHAIN 2)

LOW CH BANDEDGE (802.11 HT20 mode chain 2)

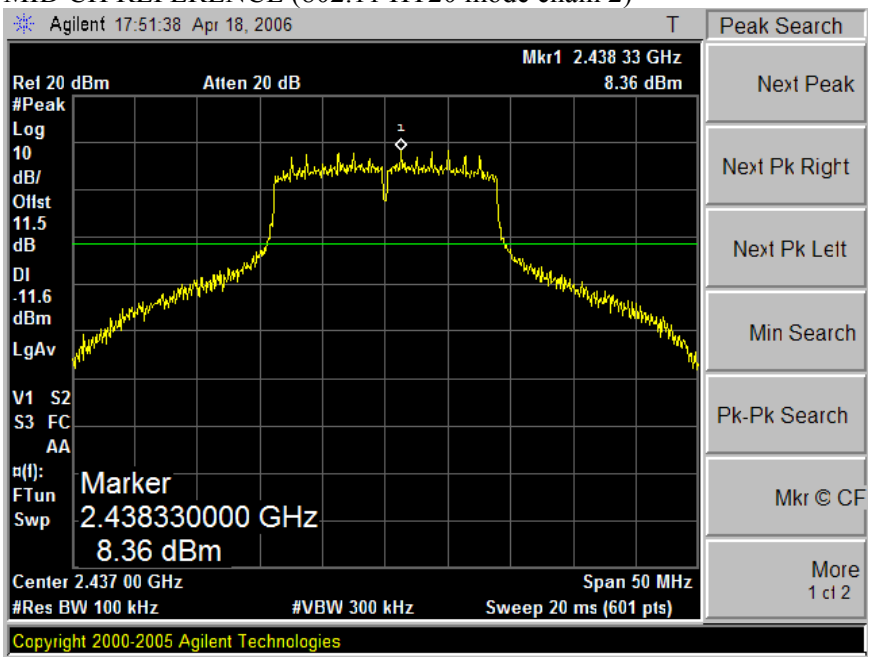


LOW CH SPURIOUS (802.11 HT20 mode chain 2)

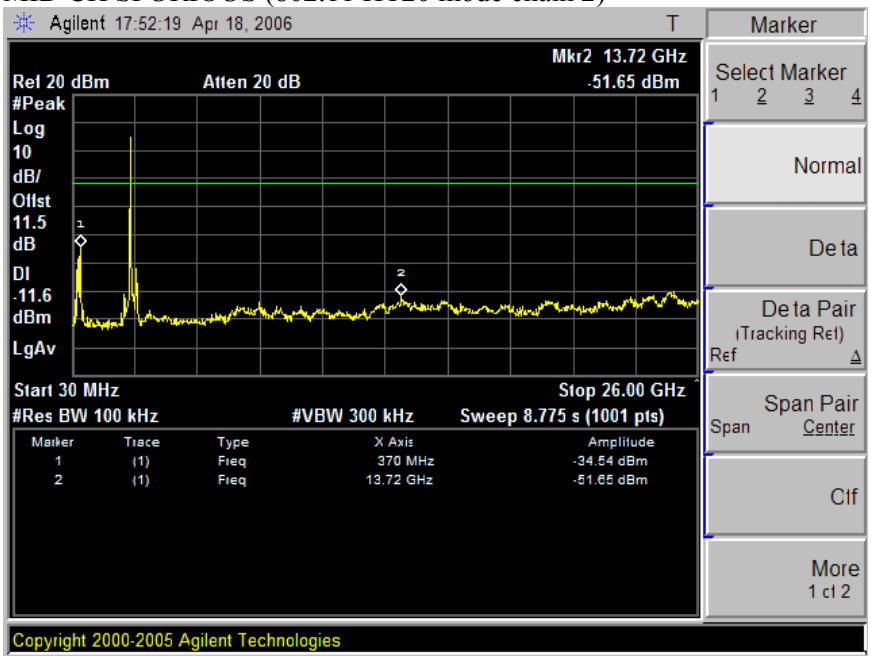


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 HT20 MODE CHAIN 2)

MID CH REFERENCE (802.11 HT20 mode chain 2)

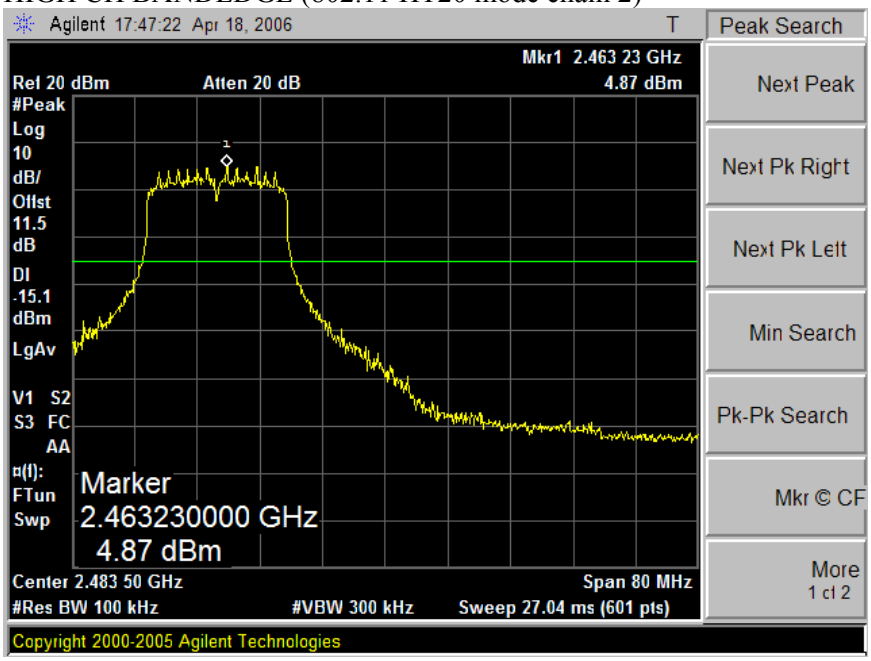


MID CH SPURIOUS (802.11 HT20 mode chain 2)

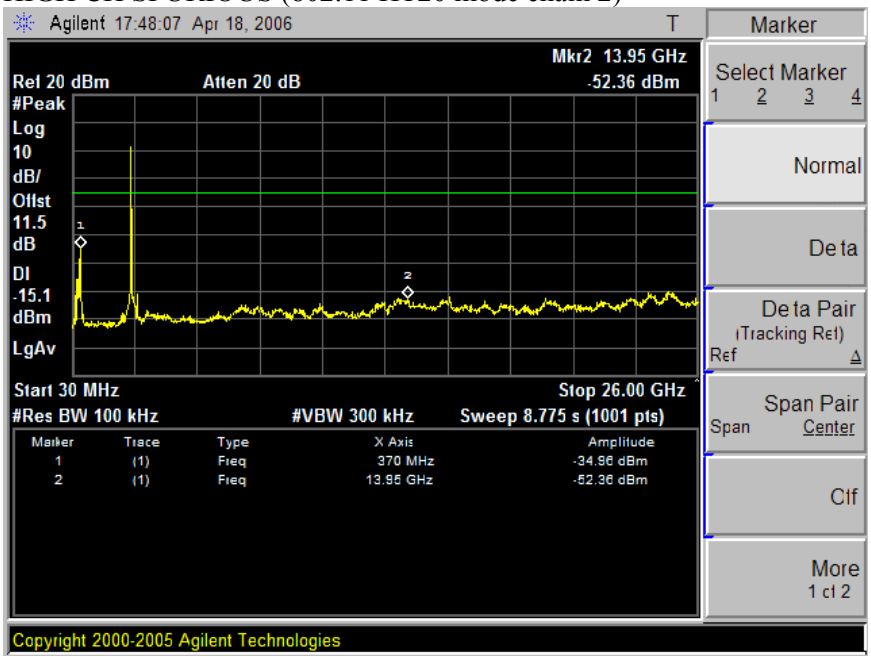


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT20 MODE CHAIN 2)

HIGH CH BANDEDGE (802.11 HT20 mode chain 2)

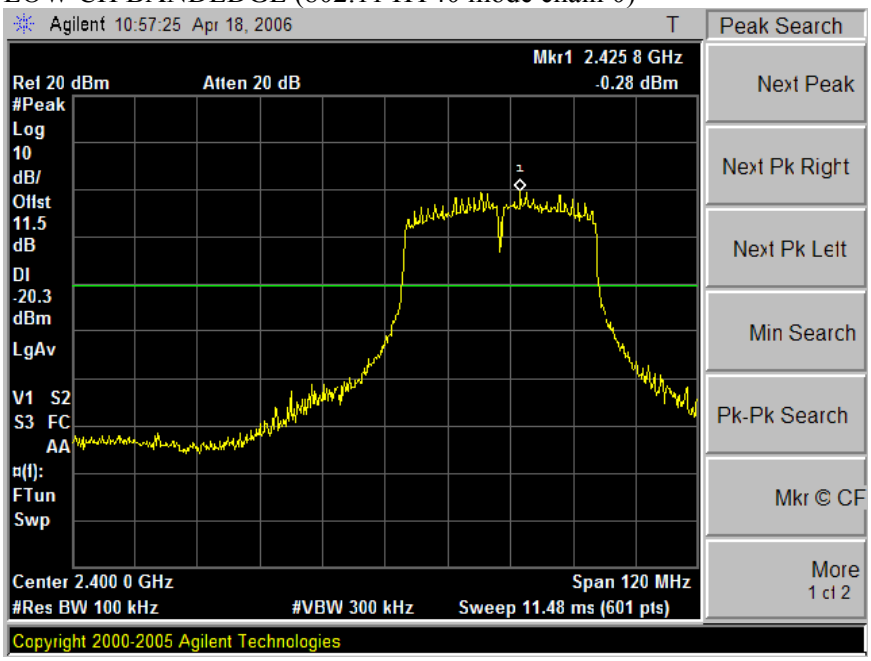


HIGH CH SPURIOUS (802.11 HT20 mode chain 2)

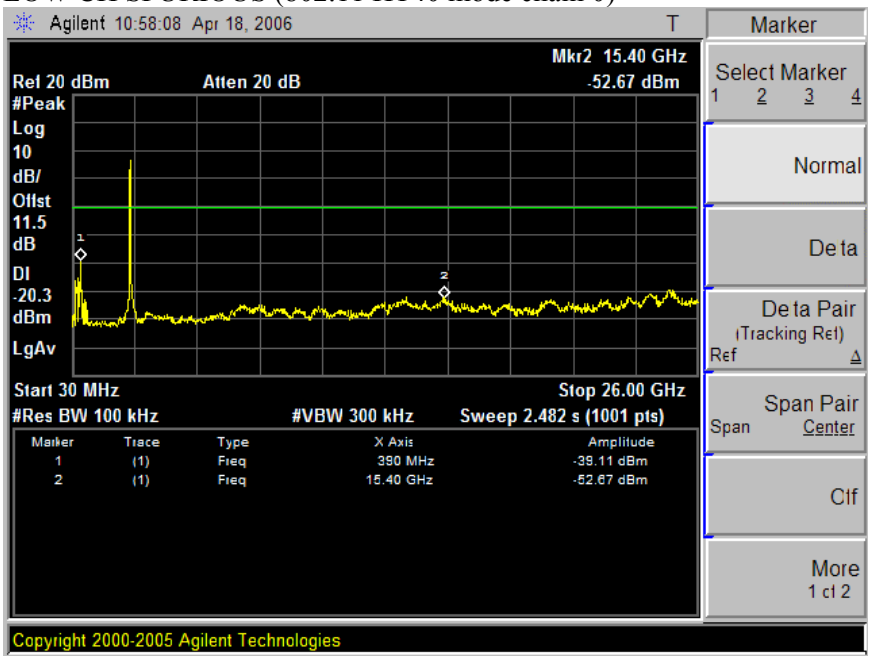


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE CHAIN 0)

LOW CH BANDEDGE (802.11 HT40 mode chain 0)

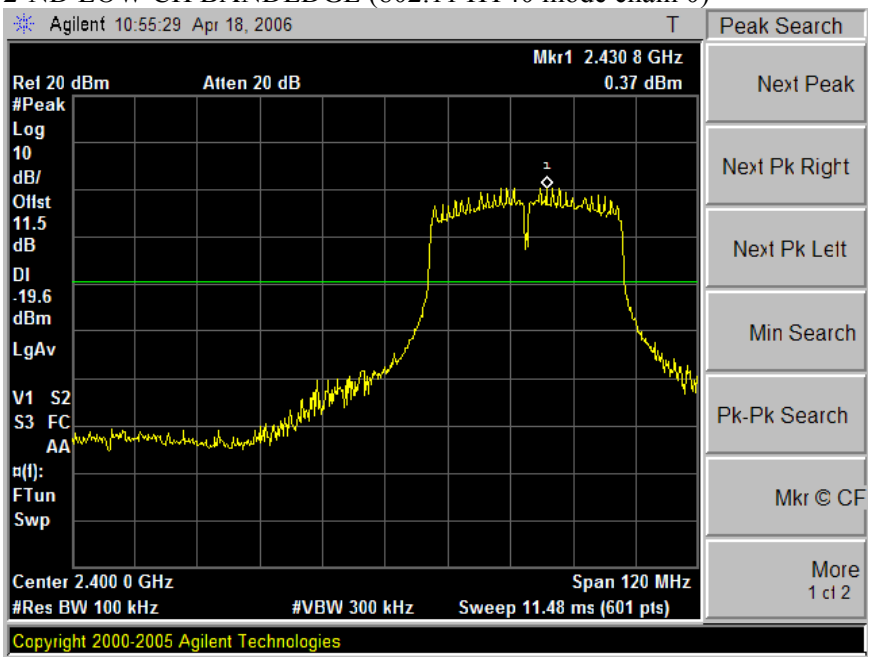


LOW CH SPURIOUS (802.11 HT40 mode chain 0)

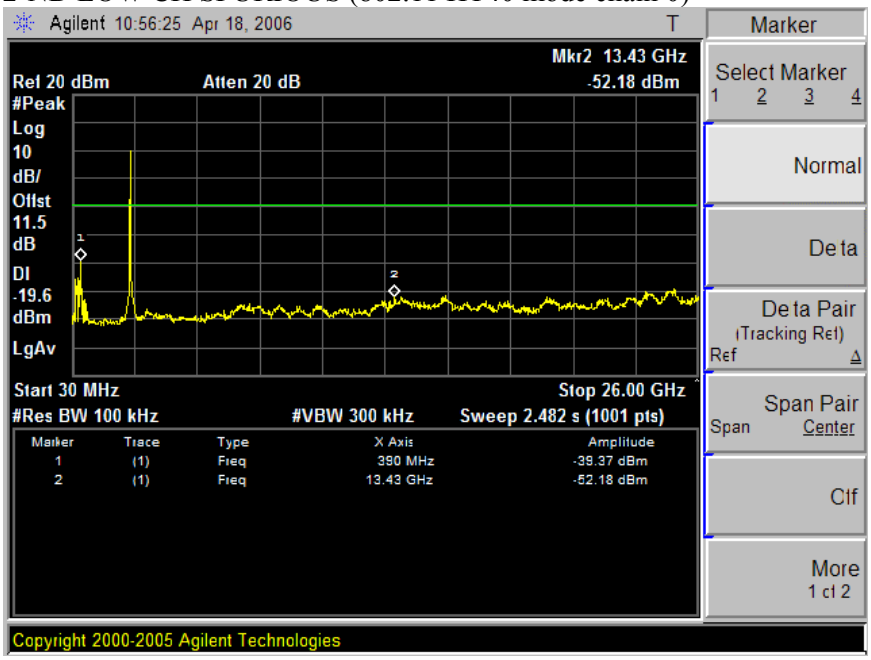


SPURIOUS EMISSIONS, 2'ND LOW CHANNEL (802.11 HT40 MODE CHAIN 0)

2'ND LOW CH BANDEDGE (802.11 HT40 mode chain 0)

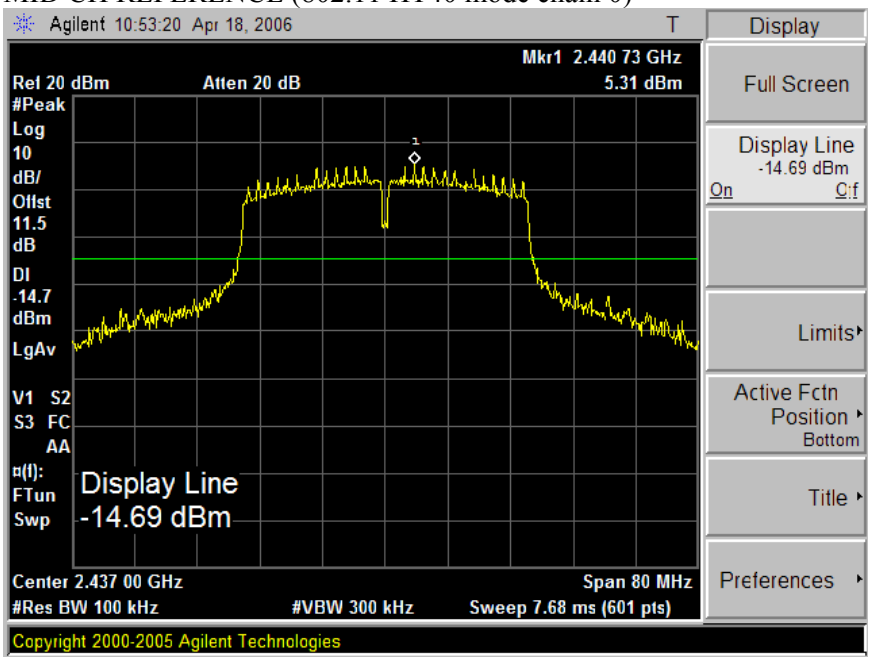


2'ND LOW CH SPURIOUS (802.11 HT40 mode chain 0)

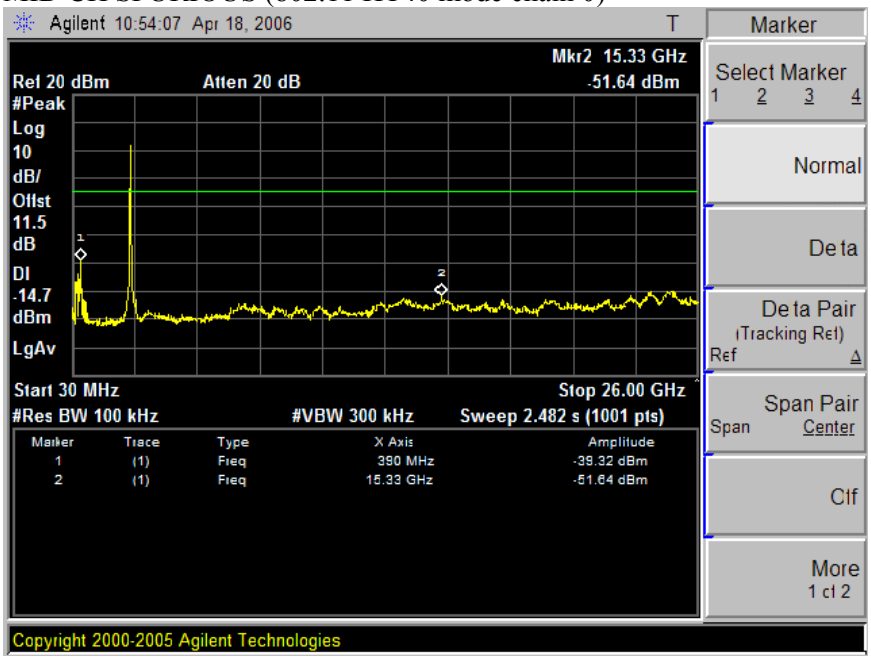


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 HT40 MODE CHAIN 0)

MID CH REFERENCE (802.11 HT40 mode chain 0)

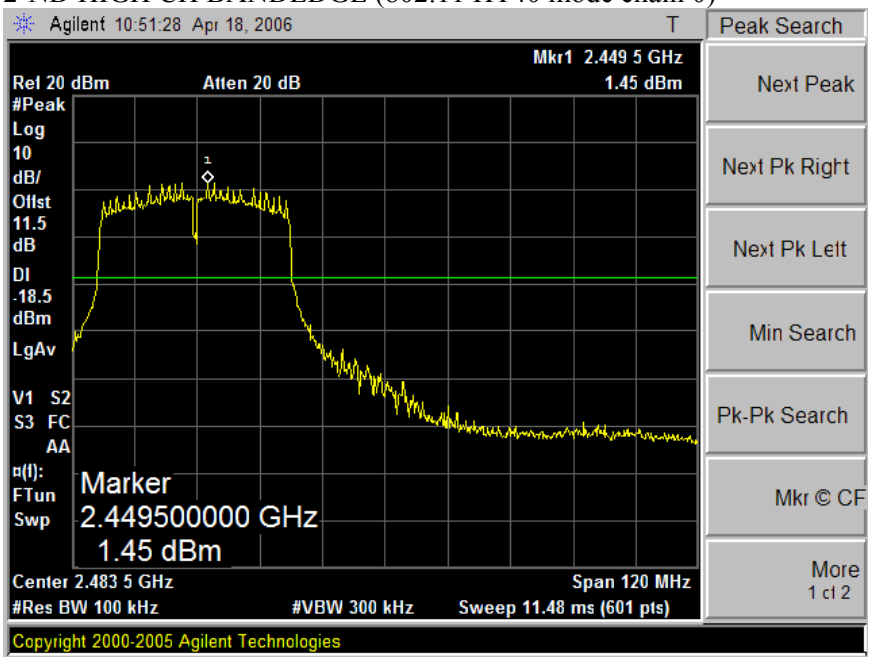


MID CH SPURIOUS (802.11 HT40 mode chain 0)

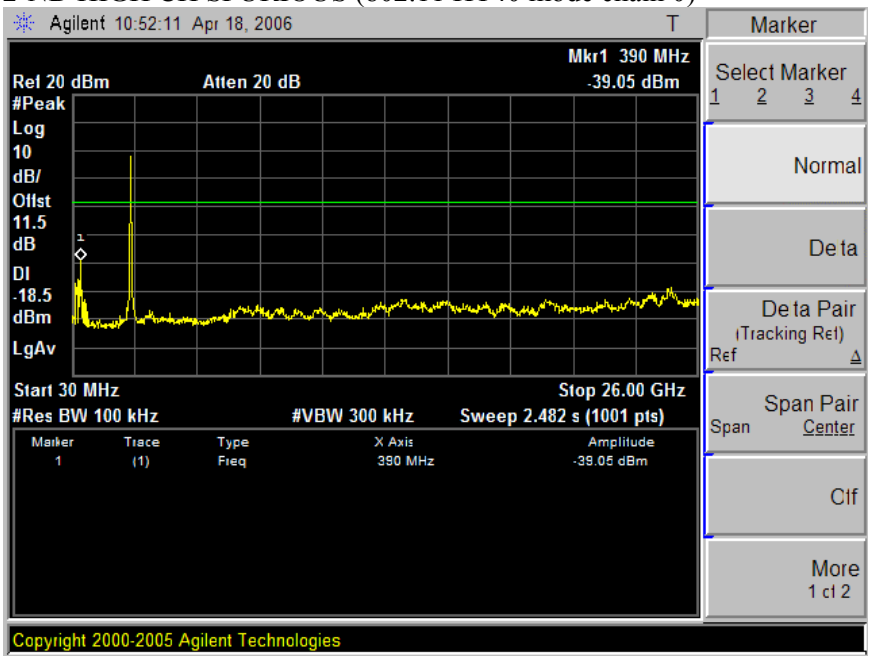


SPURIOUS EMISSIONS, 2'ND HIGH CHANNEL (802.11 HT40 MODE CHAIN 0)

2'ND HIGH CH BANDEDGE (802.11 HT40 mode chain 0)

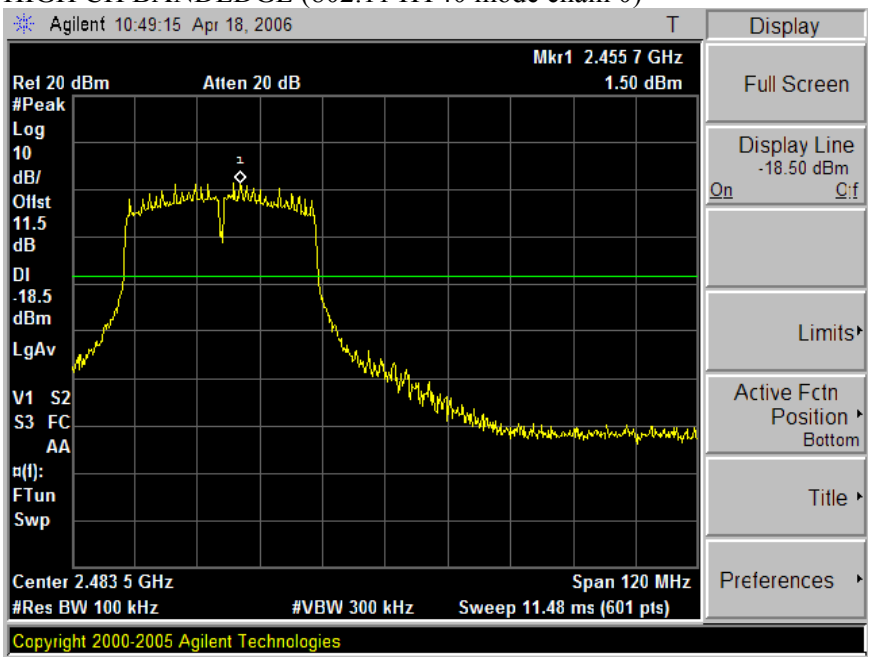


2'ND HIGH CH SPURIOUS (802.11 HT40 mode chain 0)

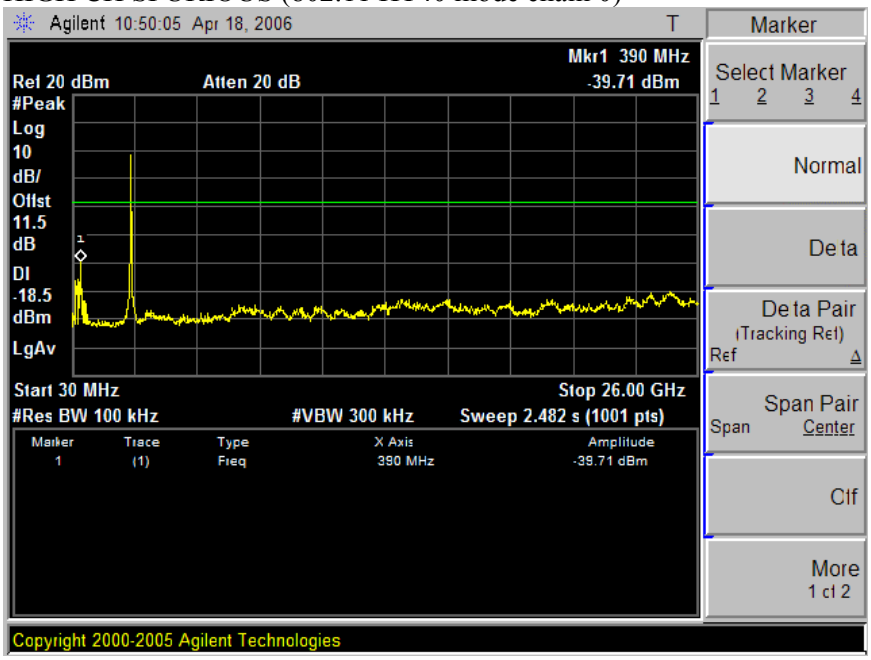


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE CHAIN 0)

HIGH CH BANDEDGE (802.11 HT40 mode chain 0)

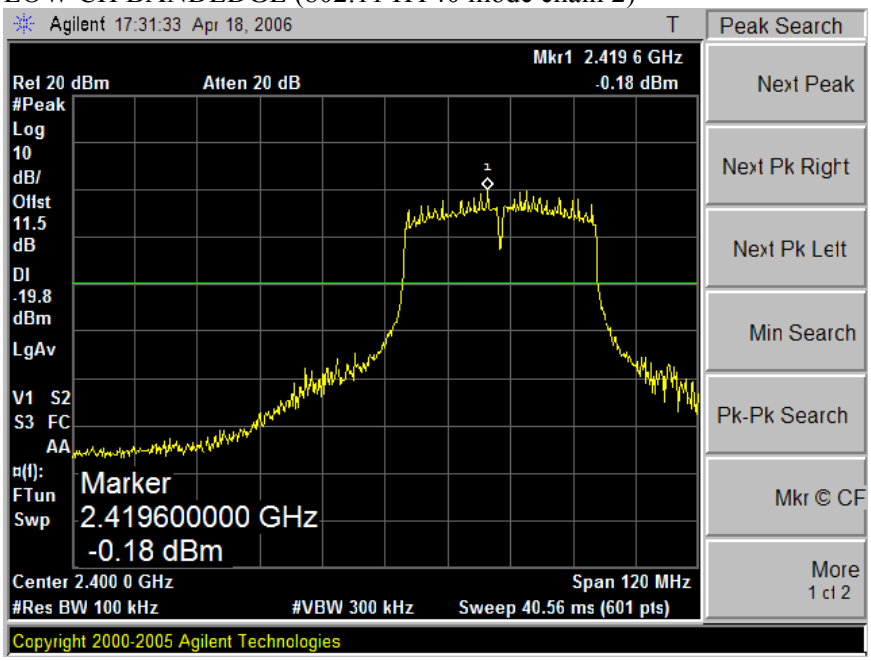


HIGH CH SPURIOUS (802.11 HT40 mode chain 0)

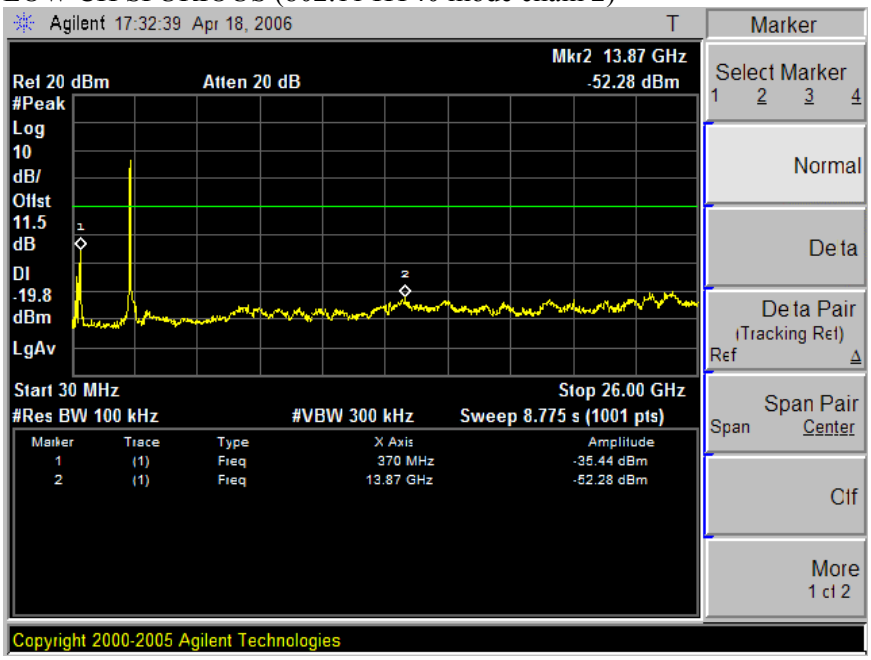


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE CHAIN 2)

LOW CH BANDEDGE (802.11 HT40 mode chain 2)

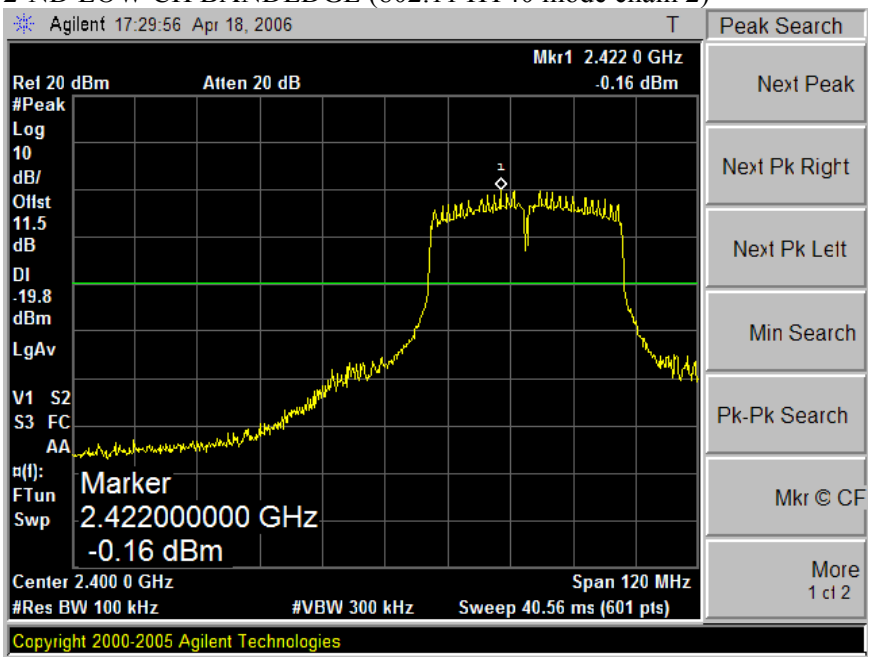


LOW CH SPURIOUS (802.11 HT40 mode chain 2)

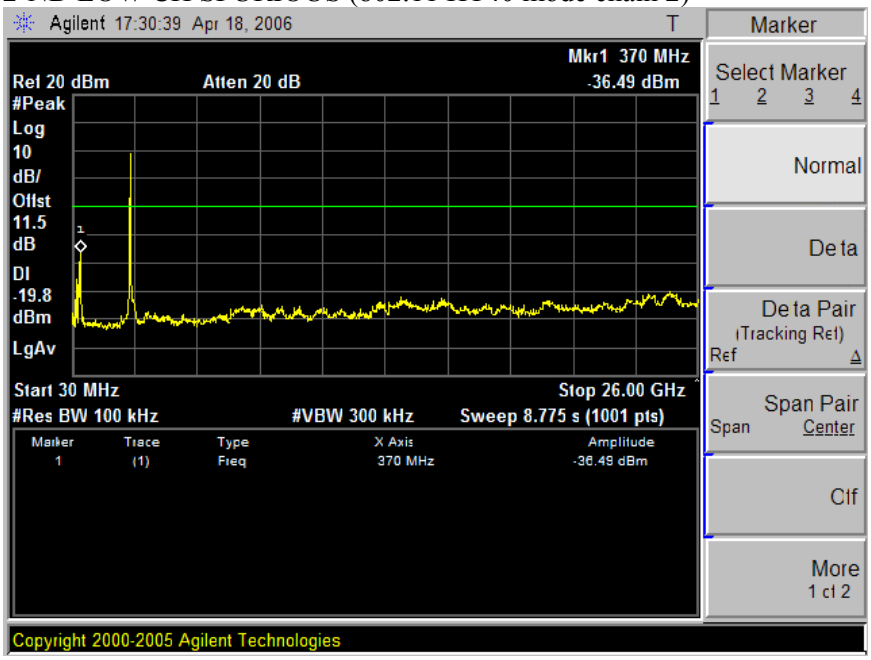


SPURIOUS EMISSIONS, 2'ND LOW CHANNEL (802.11 HT40 MODE CHAIN 2)

2'ND LOW CH BANDEDGE (802.11 HT40 mode chain 2)

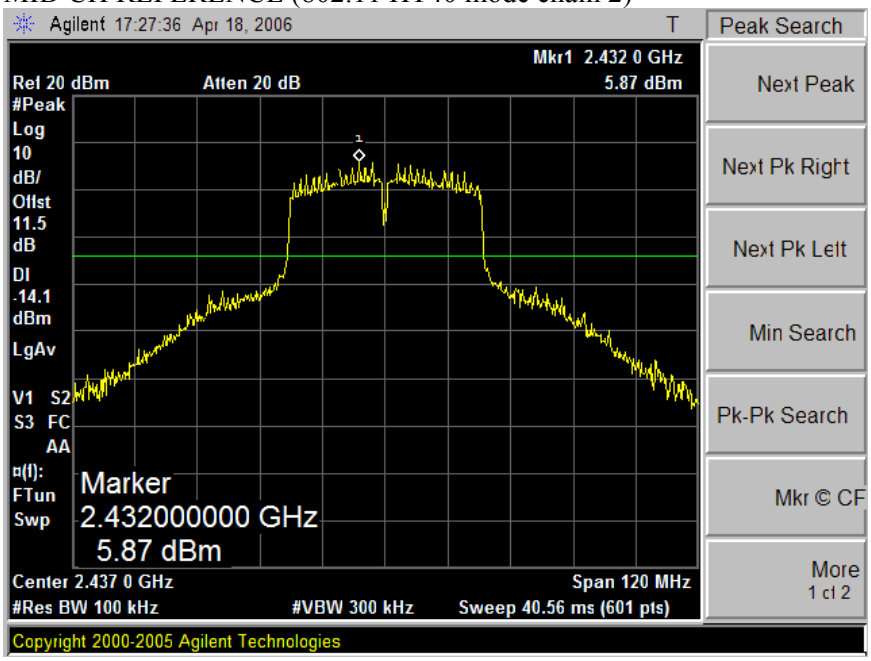


2'ND LOW CH SPURIOUS (802.11 HT40 mode chain 2)

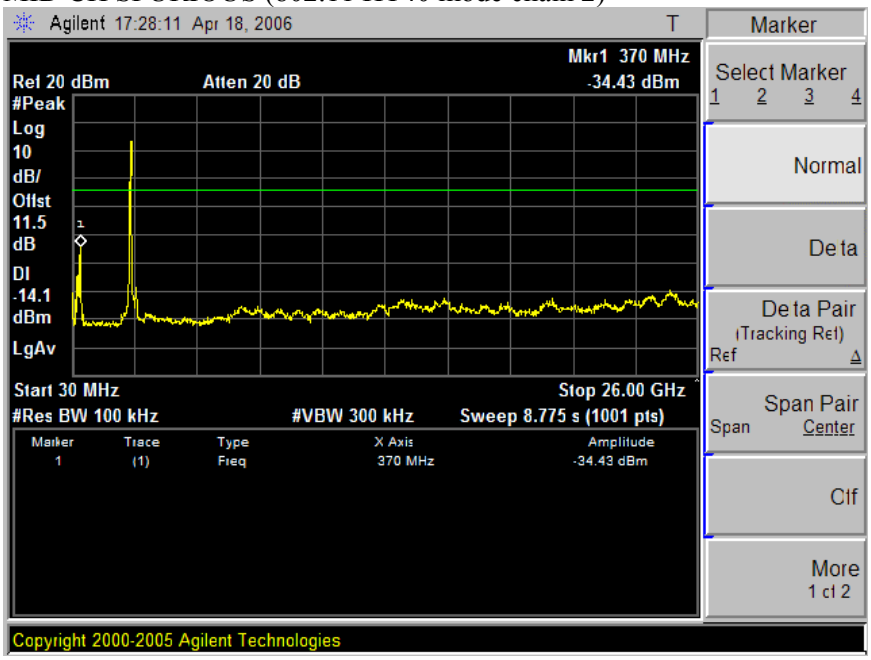


SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 HT40 MODE CHAIN 2)

MID CH REFERENCE (802.11 HT40 mode chain 2)

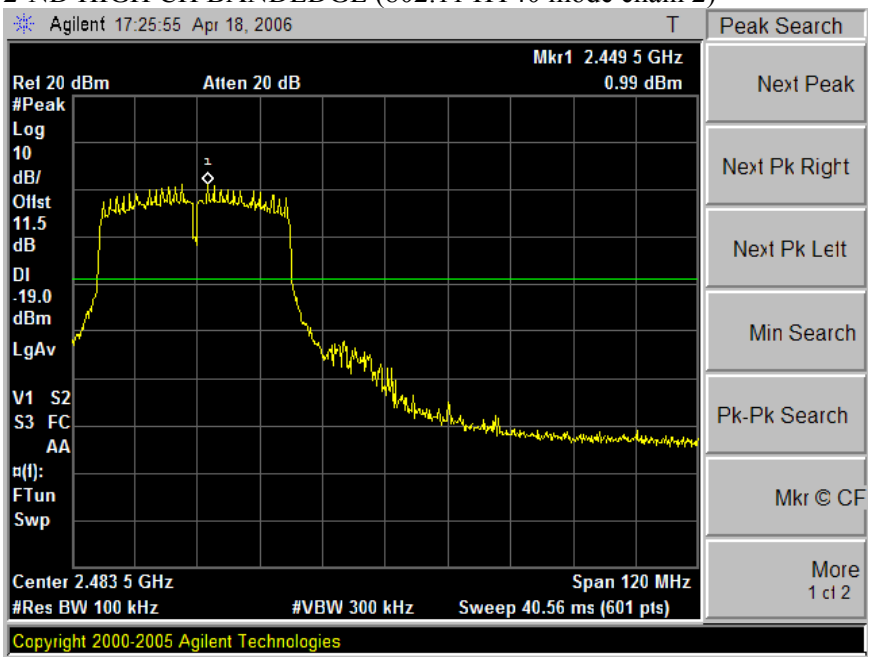


MID CH SPURIOUS (802.11 HT40 mode chain 2)

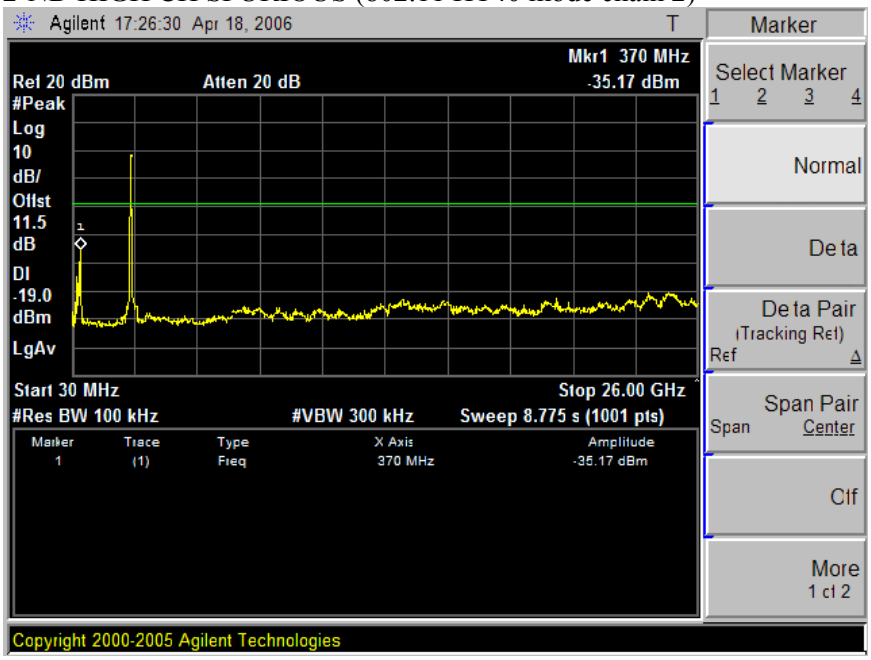


SPURIOUS EMISSIONS, 2'ND HIGH CHANNEL (802.11 HT40 MODE CHAIN 2)

2'ND HIGH CH BANDEDGE (802.11 HT40 mode chain 2)

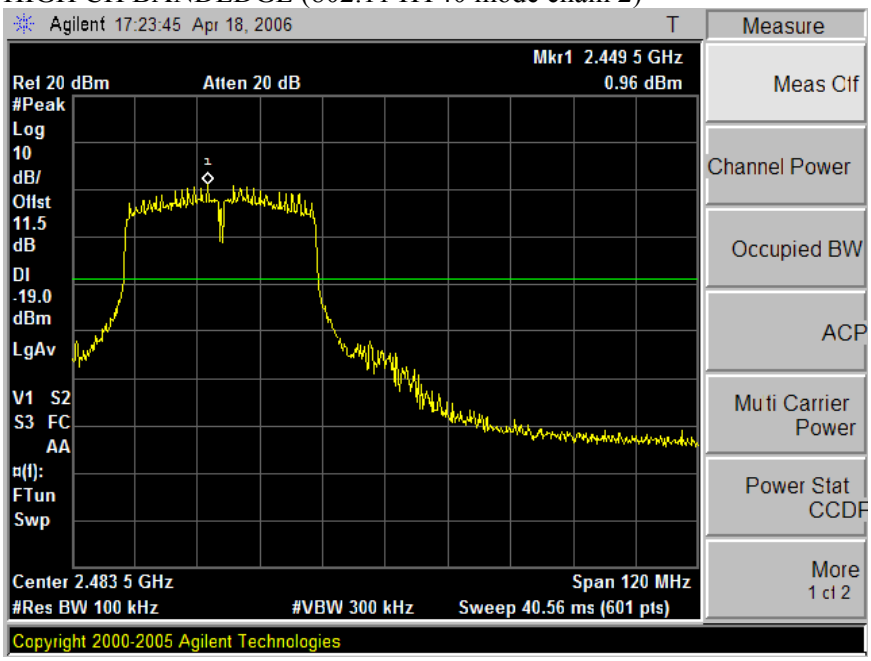


2'ND HIGH CH SPURIOUS (802.11 HT40 mode chain 2)

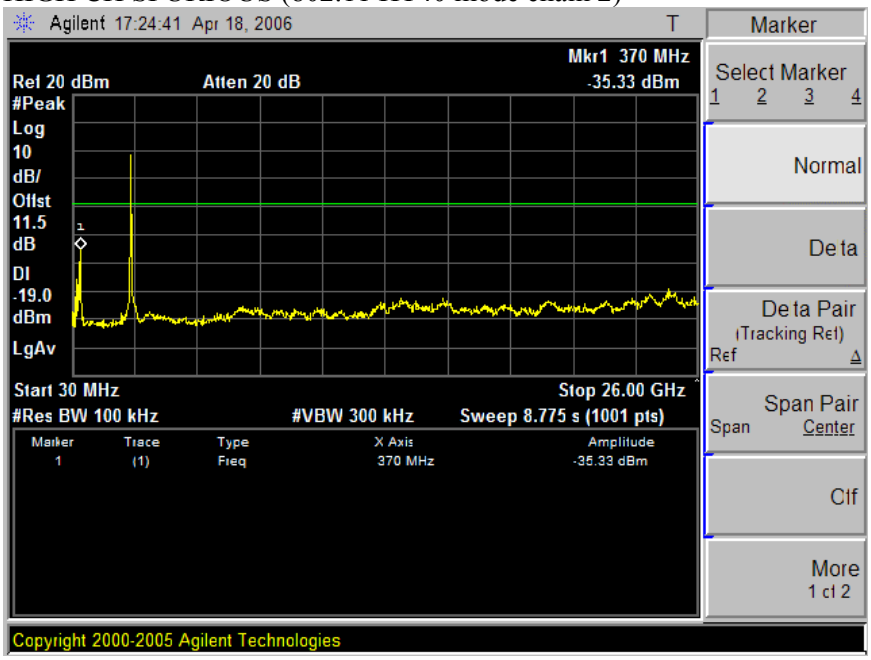


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE CHAIN 2)

HIGH CH BANDEDGE (802.11 HT40 mode chain 2)



HIGH CH SPURIOUS (802.11 HT40 mode chain 2)



7.2. RADIATED EMISSIONS

7.2.1. 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.

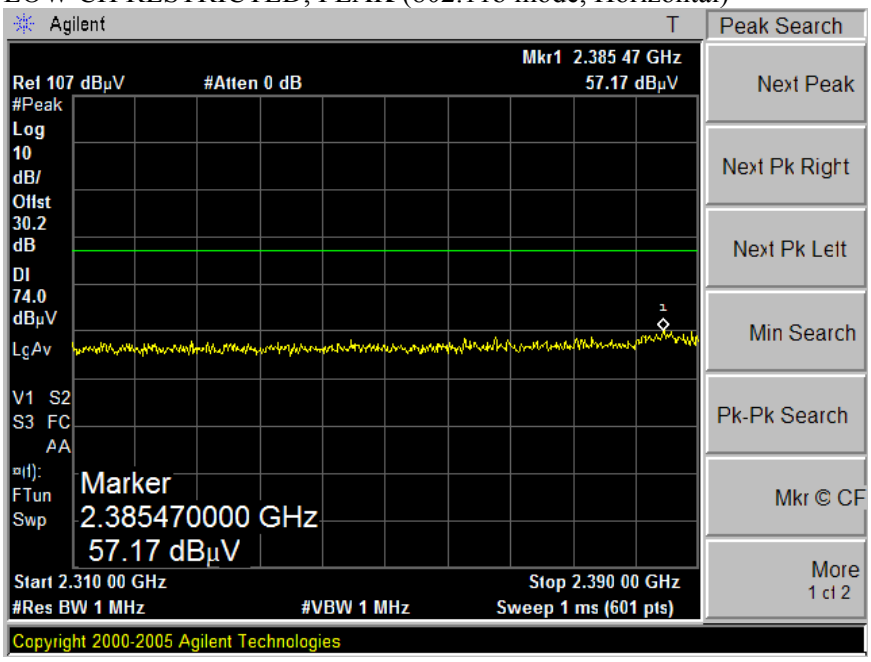
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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.

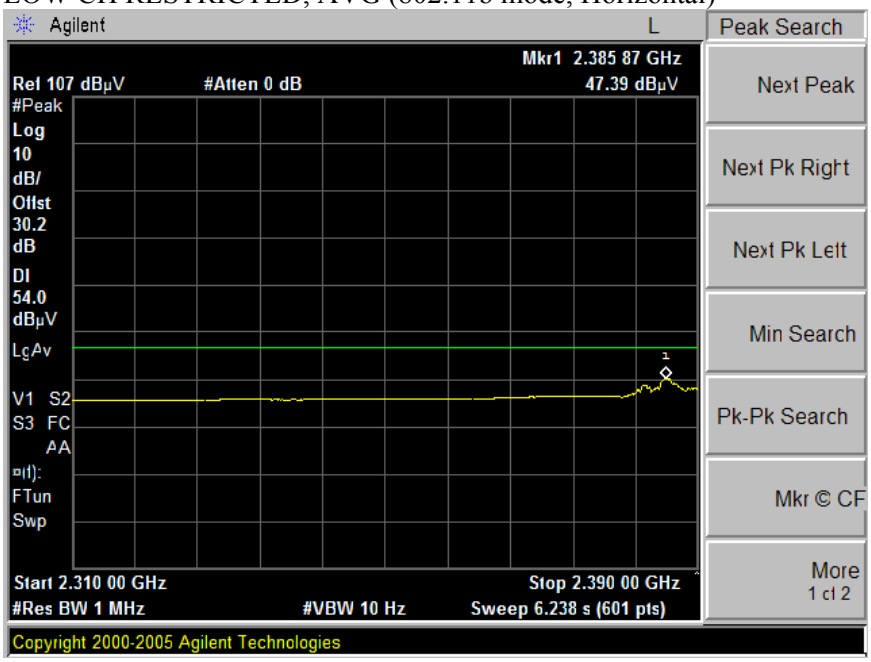
7.2.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

CH 0, RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Horizontal)

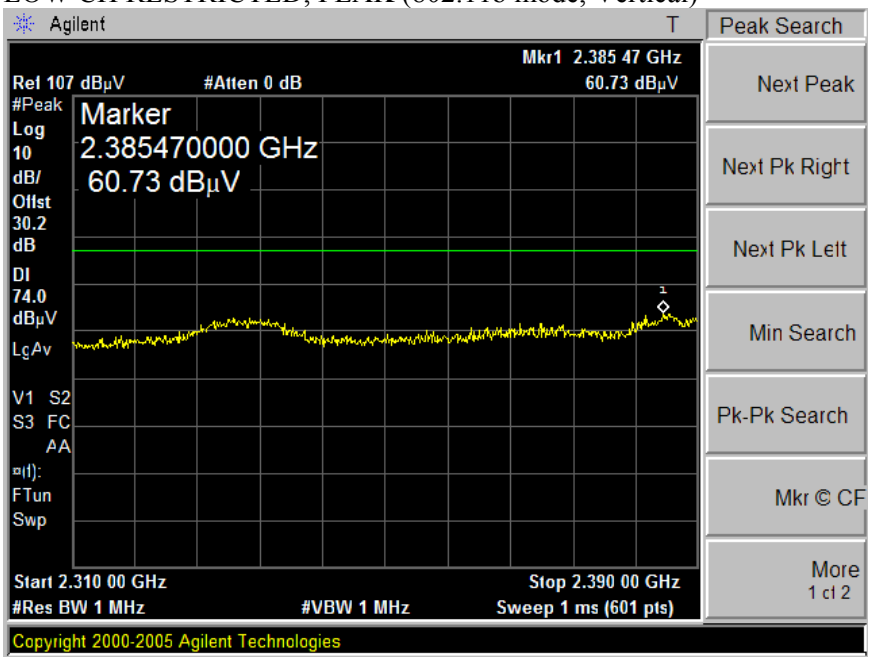


LOW CH RESTRICTED, AVG (802.11b mode, Horizontal)

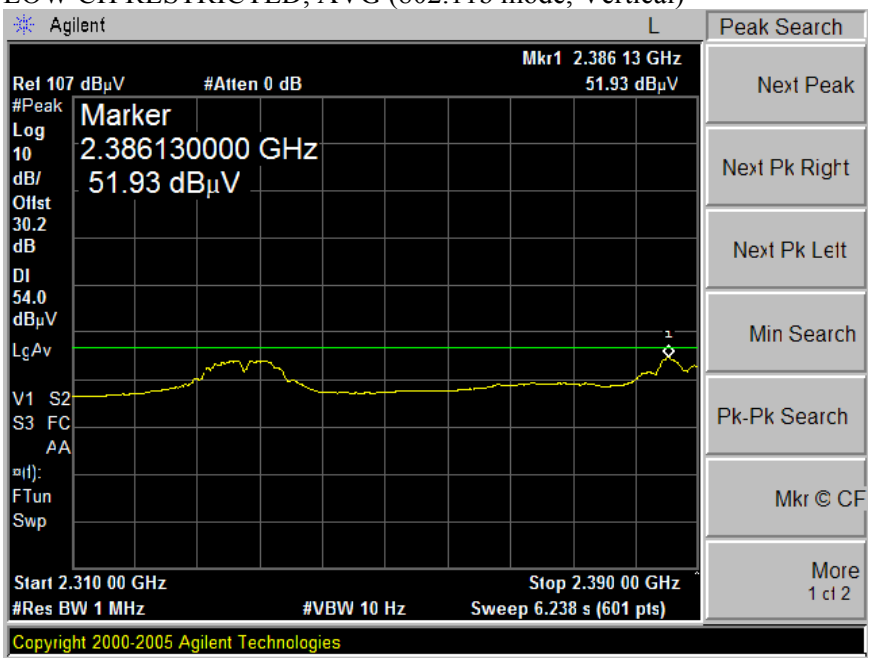


RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Vertical)

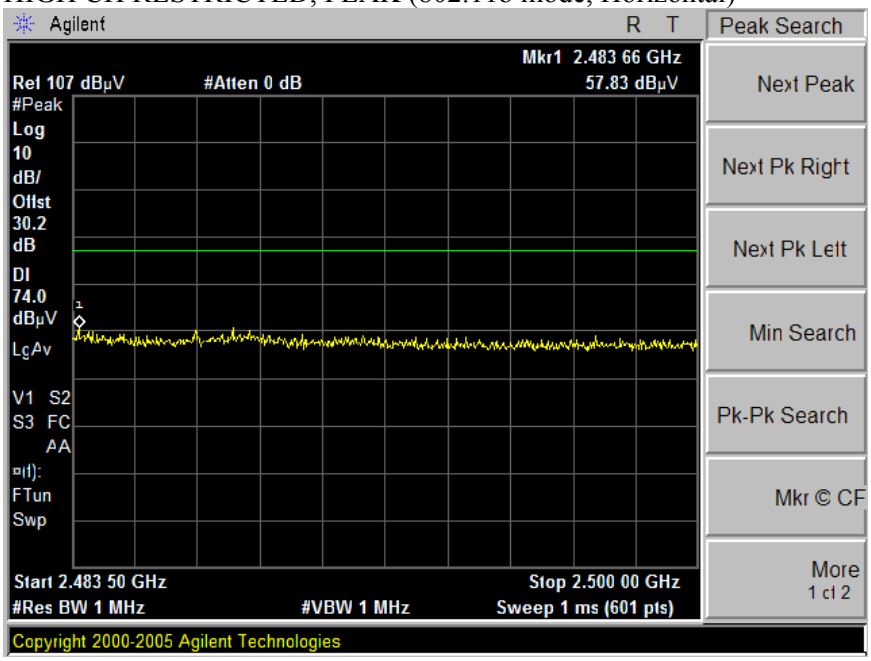


LOW CH RESTRICTED, AVG (802.11b mode, Vertical)

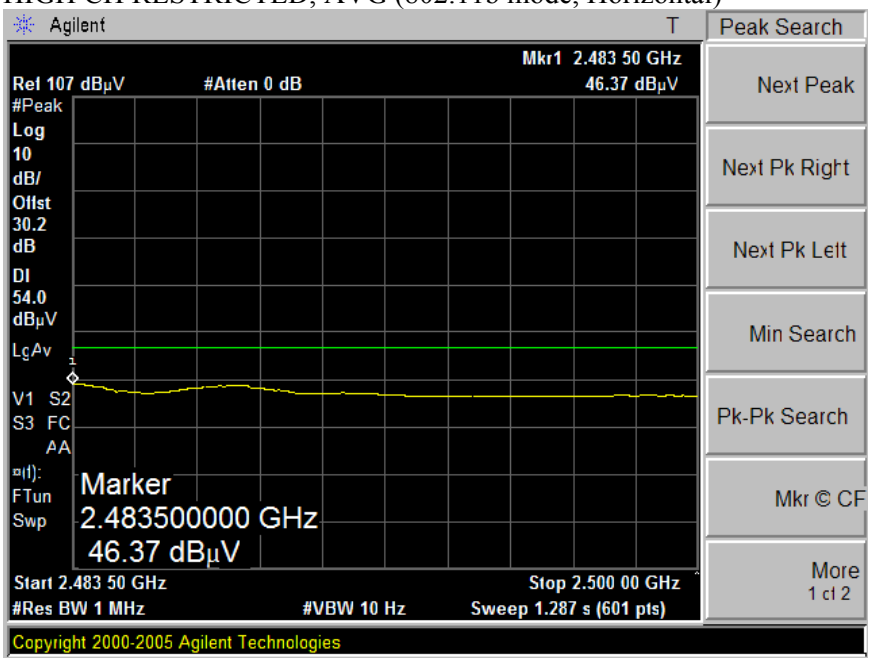


RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Horizontal)

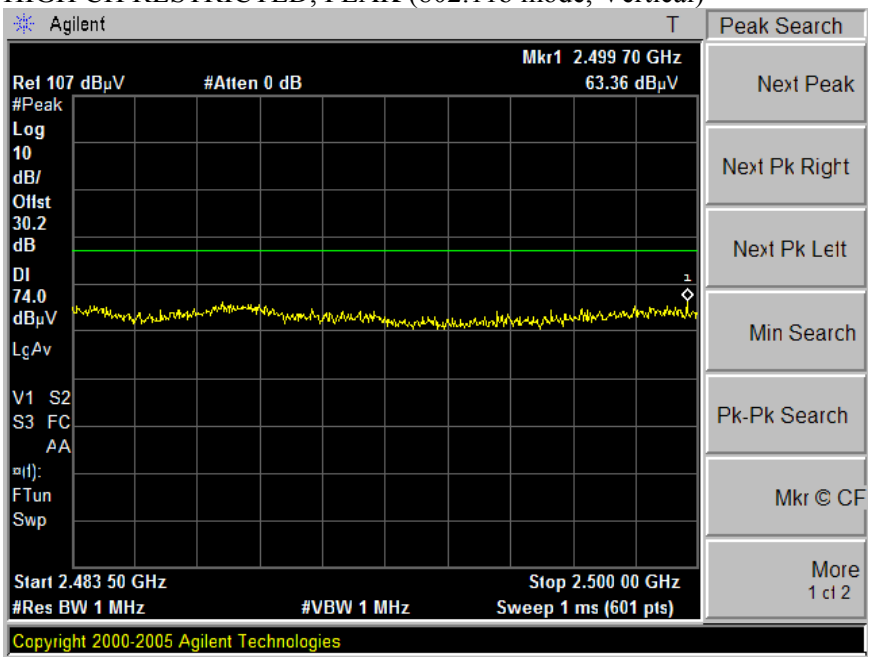


HIGH CH RESTRICTED, AVG (802.11b mode, Horizontal)

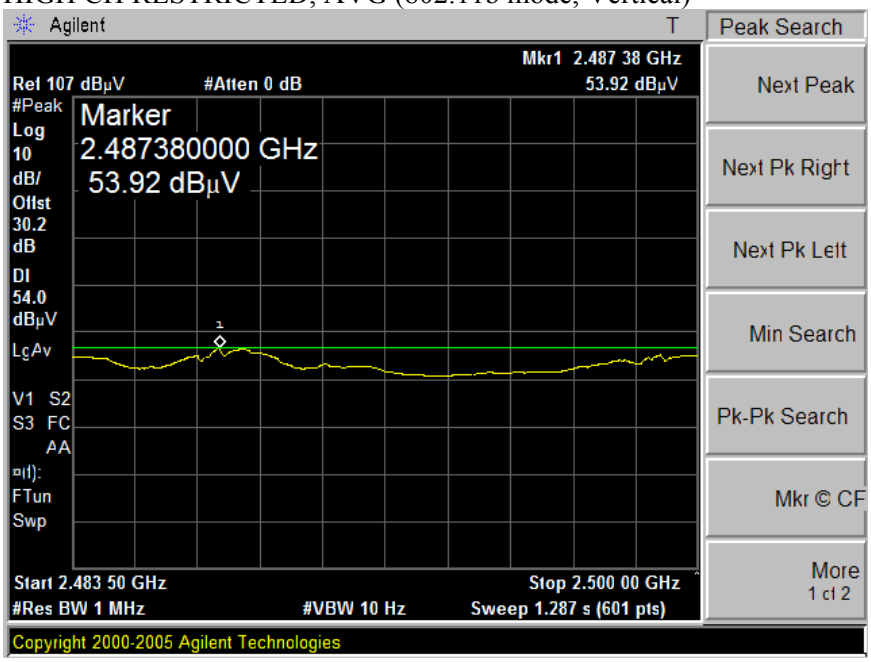


RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11b mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (b MODE)

04/13/06 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10242
Company:Cameo
EUT Description:2.4GHz 802.11n MPCI Module
EUT M/N:WLN-1306
EUT S/N:
Test Target:FCC 15.247
Mode Of Operation:TX. 11b

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T73; S/N: 6717 @3m	T145 Agilent 3008A005(		

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		R_001

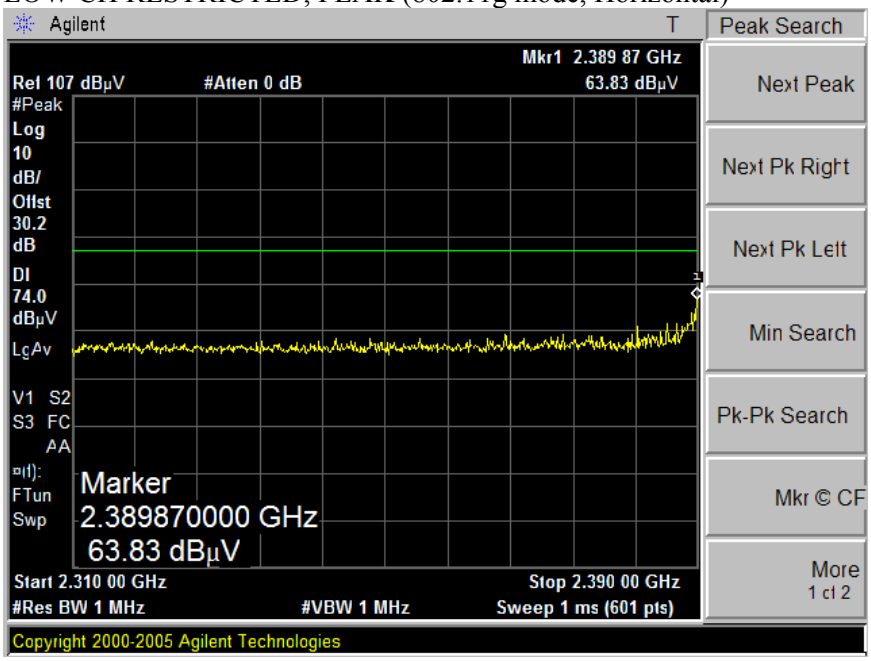
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

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 Ch, 2412MHz															
4.824	3.0	50.0	46.5	33.7	3.2	-34.8	0.0	0.0	52.1	48.6	74	54	-21.9	-5.4	V
4.824	3.0	51.3	47.7	33.7	3.2	-34.8	0.0	0.0	53.4	49.8	74	54	-20.6	-4.2	H
Mid Ch, 2437MHz															
4.874	3.0	54.0	51.0	33.8	3.2	-34.9	0.0	0.0	56.1	53.1	74	54	-17.9	-0.9	V
7.311	3.0	46.1	37.4	35.5	3.6	-34.7	0.0	0.0	50.5	41.8	74	54	-23.5	-12.2	V
4.874	3.0	51.6	47.7	33.8	3.2	-34.9	0.0	0.0	53.7	49.8	74	54	-20.3	-4.2	H
7.311	3.0	45.0	32.0	35.5	3.6	-34.7	0.0	0.0	49.4	36.4	74	54	-24.6	-17.6	H
High Ch, 2462MHz															
4.924	3.0	52.5	50.0	33.8	3.2	-34.9	0.0	0.0	54.7	52.2	74	54	-19.3	-1.8	V
7.386	3.0	47.5	37.6	35.6	3.6	-34.6	0.0	0.0	52.1	42.2	74	54	-21.9	-11.8	V
4.924	3.0	48.0	43.0	33.8	3.2	-34.9	0.0	0.0	50.2	45.2	74	54	-23.8	-8.8	H
7.386	3.0	45.0	33.0	35.6	3.6	-34.6	0.0	0.0	49.6	37.6	74	54	-24.4	-16.4	H
Note: No other emissions were detected above the system noise floor.															

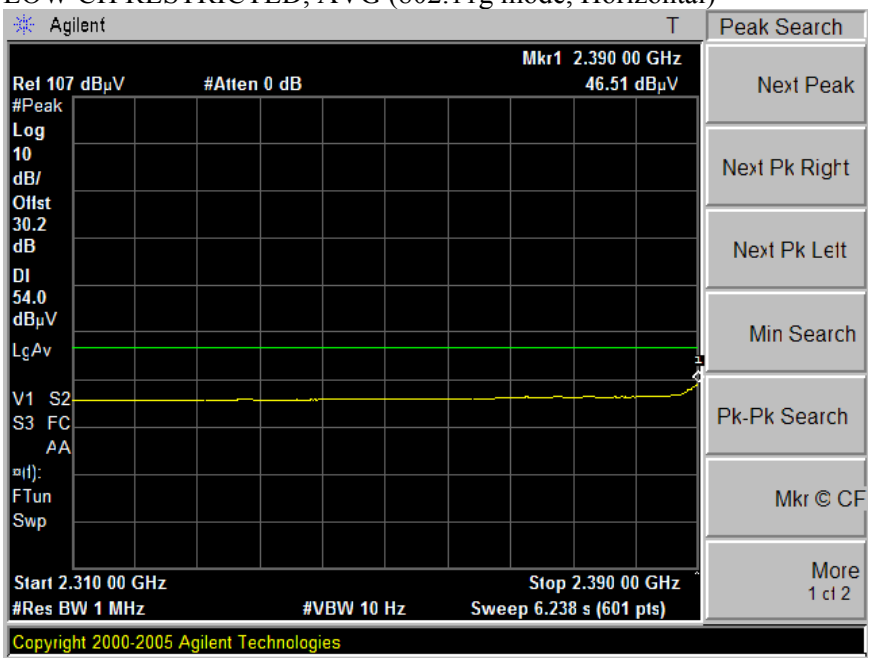
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11g mode, Horizontal)

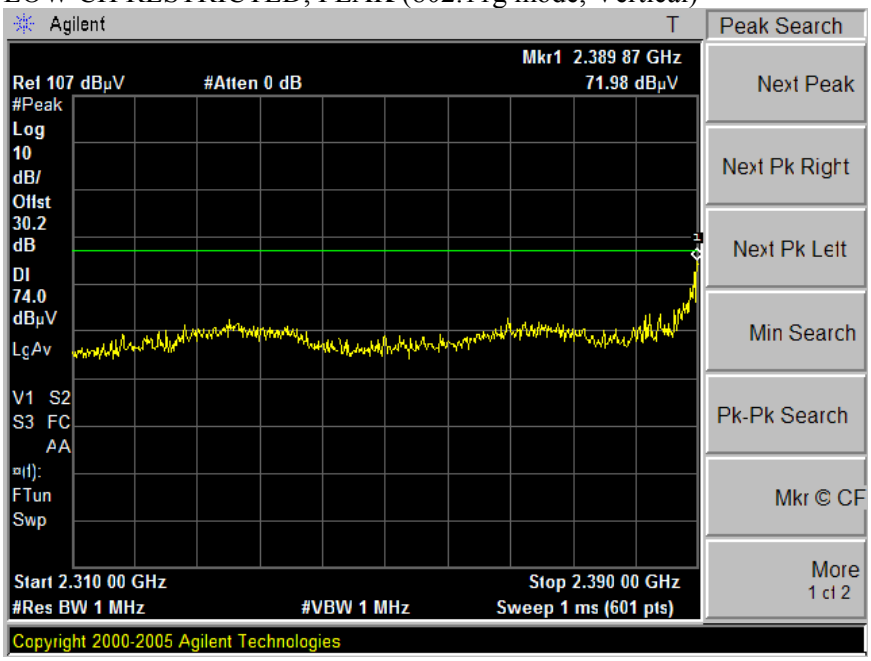


LOW CH RESTRICTED, AVG (802.11g mode, Horizontal)

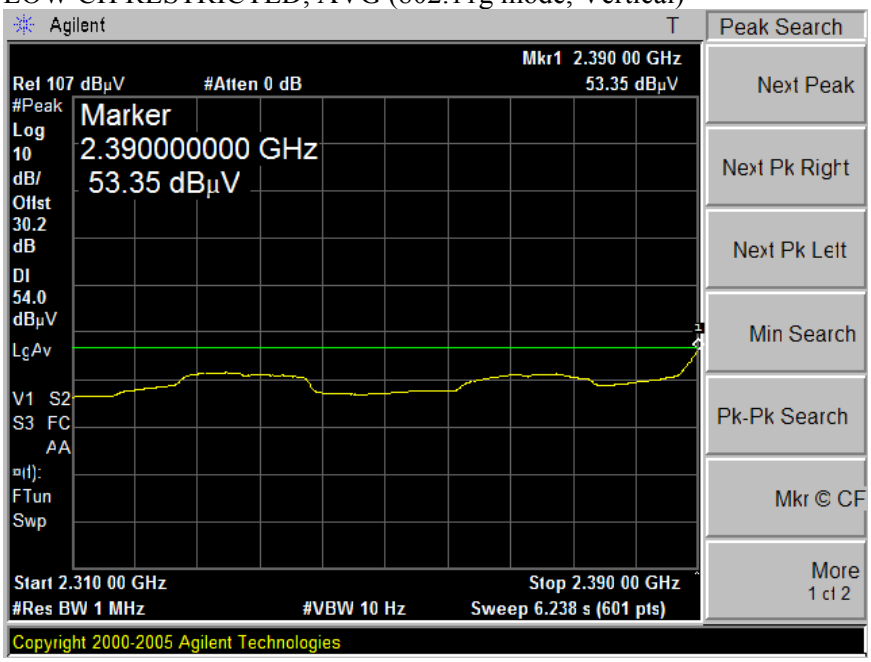


RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11g mode, Vertical)

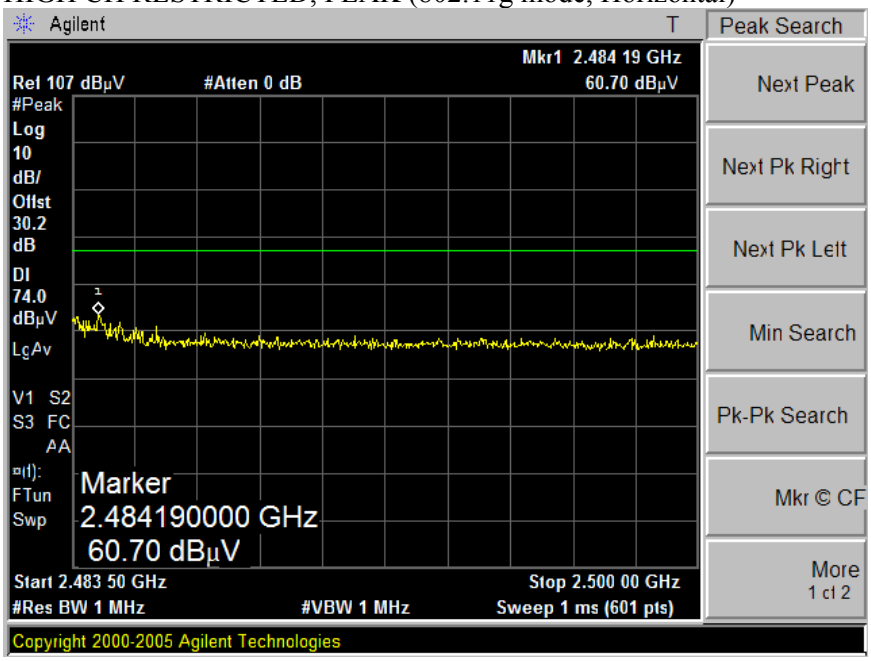


LOW CH RESTRICTED, AVG (802.11g mode, Vertical)

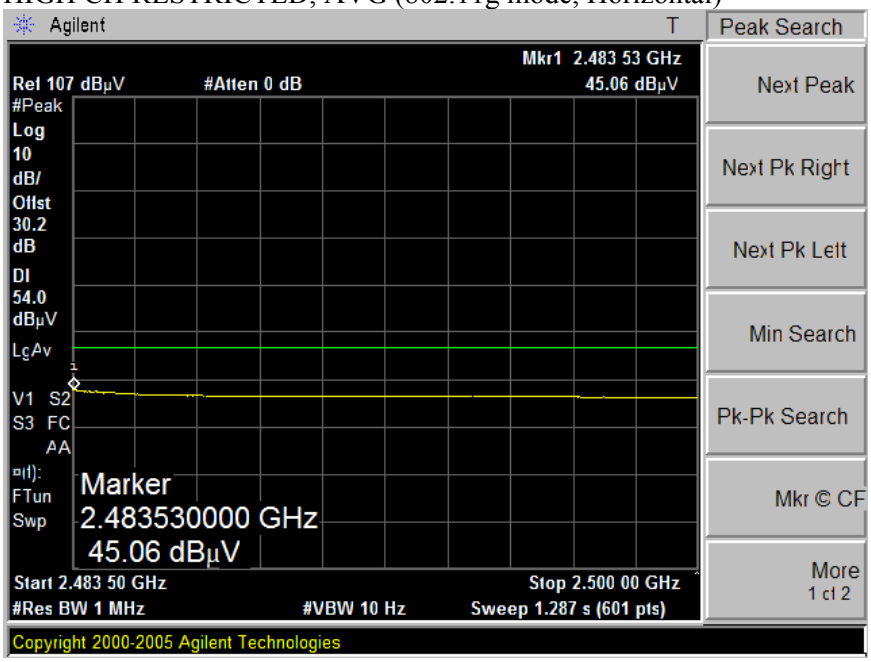


RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11g mode, Horizontal)

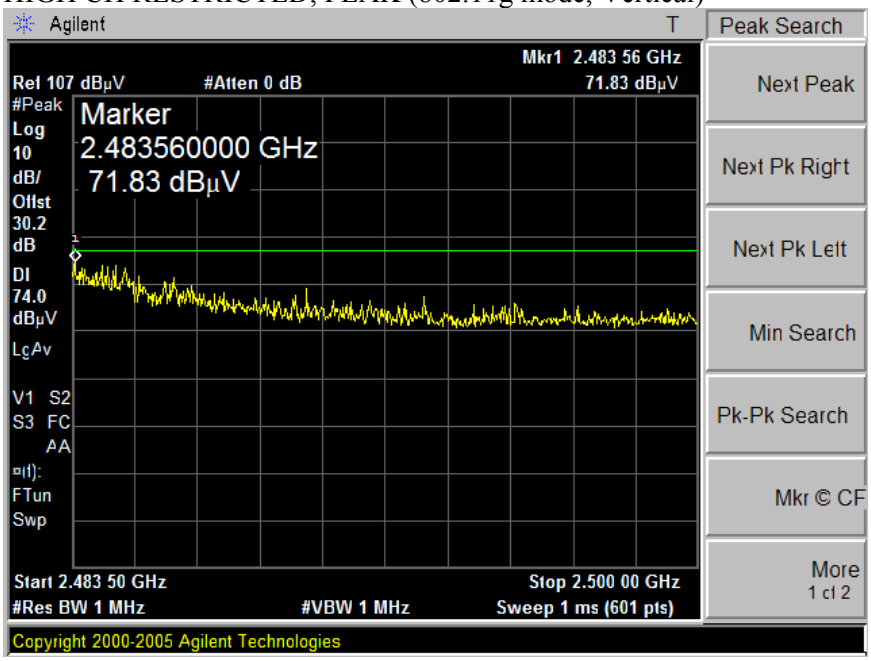


HIGH CH RESTRICTED, AVG (802.11g mode, Horizontal)

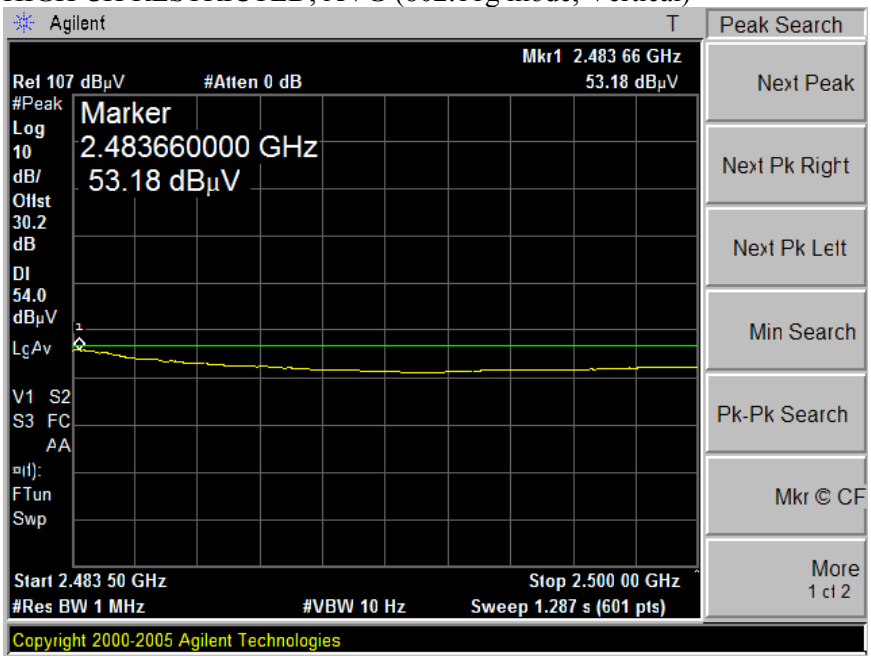


RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11g mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11g mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (g MODE)

04/12/06 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10242
Company:Cameo
EUT Description:2.4GHz 802.11n MPCI Module
EUT M/N:WLN-1306
EUT S/N:
Test Target:FCC 15.247
Mode Of Operation:TX. 11g

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T73; S/N: 6717 @3m	T145 Agilent 3008A005(		

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		R_001

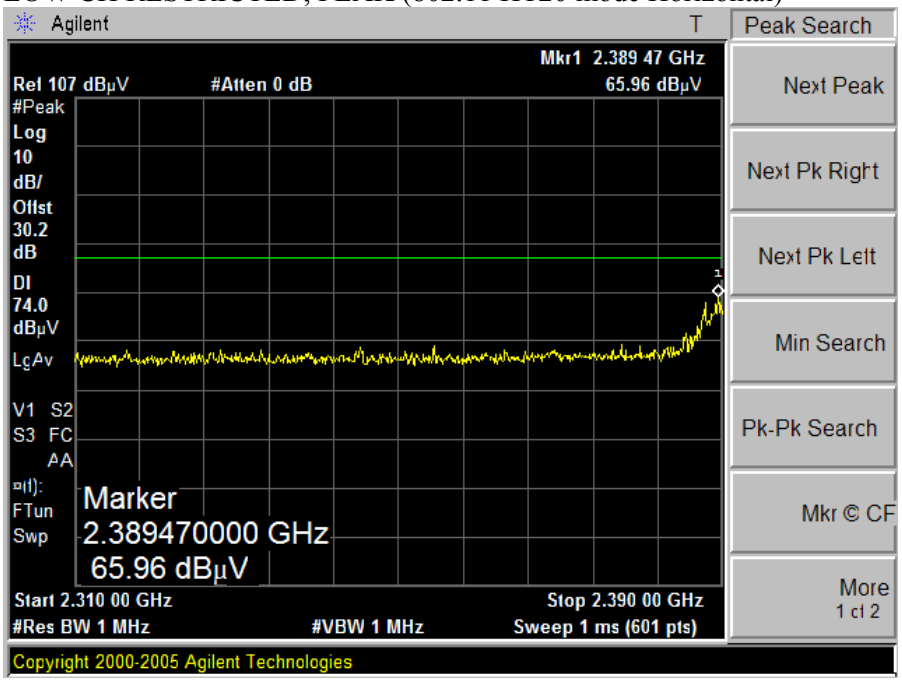
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

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 Ch, 2412MHz															
4.824	3.0	51.3	38.0	33.7	3.2	-34.8	0.0	0.0	53.4	40.1	74	54	-20.6	-13.9	V
4.824	3.0	46.7	35.1	33.7	3.2	-34.8	0.0	0.0	48.8	37.2	74	54	-25.2	-16.8	H
Nid Ch, 2437MHz															
4.874	3.0	52.3	38.5	33.8	3.2	-34.9	0.0	0.0	54.4	40.6	74	54	-19.6	-13.4	V
7.311	3.0	50.5	37.5	35.5	3.6	-34.7	0.0	0.0	54.9	41.9	74	54	-19.1	-12.1	V
4.874	3.0	47.8	35.6	33.8	3.2	-34.9	0.0	0.0	49.9	37.7	74	54	-24.1	-16.3	H
7.311	3.0	52.5	37.0	35.5	3.6	-34.7	0.0	0.0	56.9	41.4	74	54	-17.1	-12.6	H
High Ch, 2462MHz															
4.924	3.0	48.7	36.6	33.8	3.2	-34.9	0.0	0.0	50.9	38.8	74	54	-23.1	-15.2	V
7.386	3.0	52.4	39.6	35.6	3.6	-34.6	0.0	0.0	57.0	44.2	74	54	-17.0	-9.8	V
4.924	3.0	45.0	31.6	33.8	3.2	-34.9	0.0	0.0	47.2	33.8	74	54	-26.8	-20.2	H
7.386	3.0	51.0	36.5	35.6	3.6	-34.6	0.0	0.0	55.6	41.1	74	54	-18.4	-12.9	H
Note: No other emissions were detected above the system noise floor.															

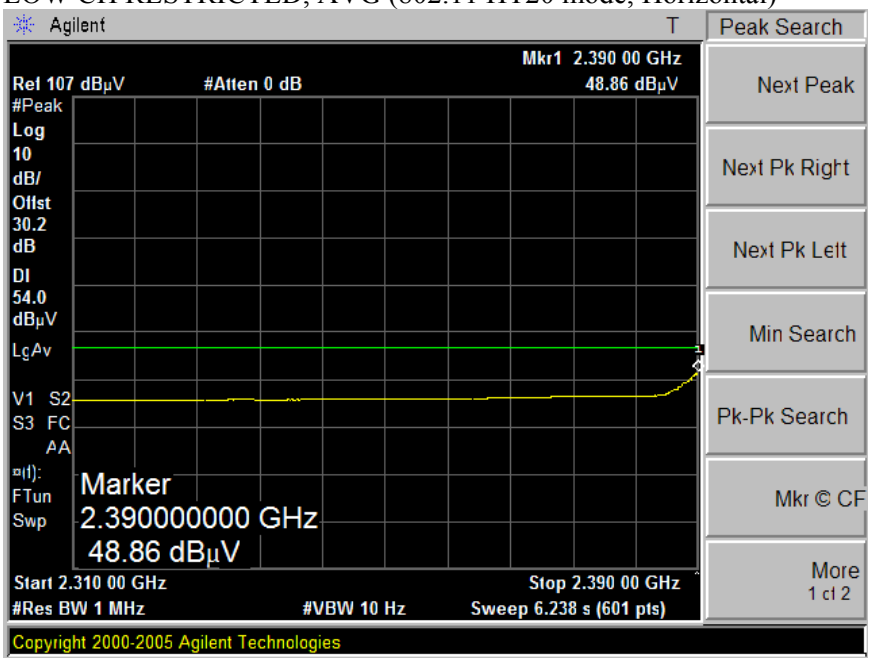
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

RESTRICTED BANDEDGE (HT20 MODE, LOW CHANNEL, HORIZONTAL

LOW CH RESTRICTED, PEAK (802.11 HT20 mode Horizontal)

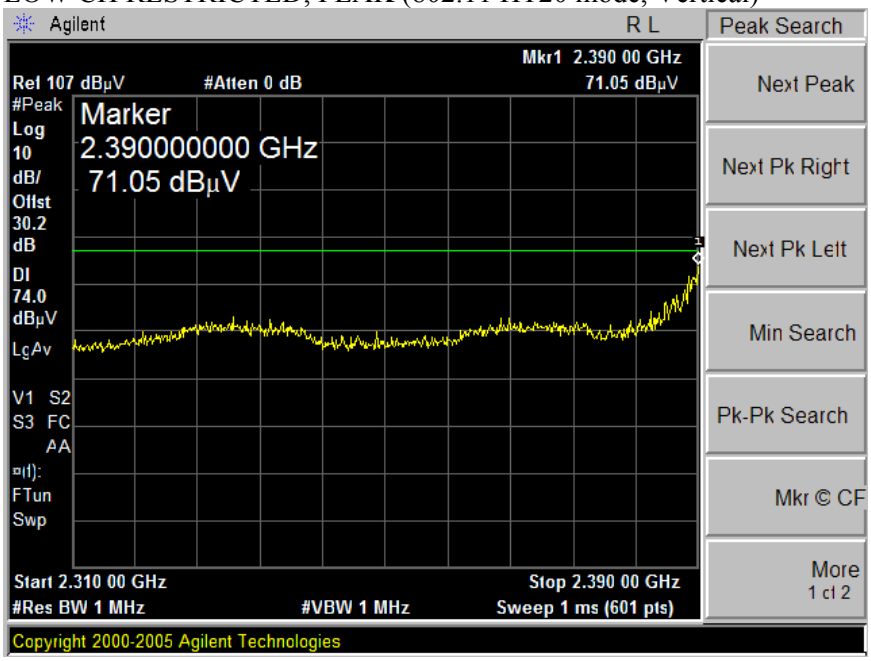


LOW CH RESTRICTED, AVG (802.11 HT20 mode, Horizontal)

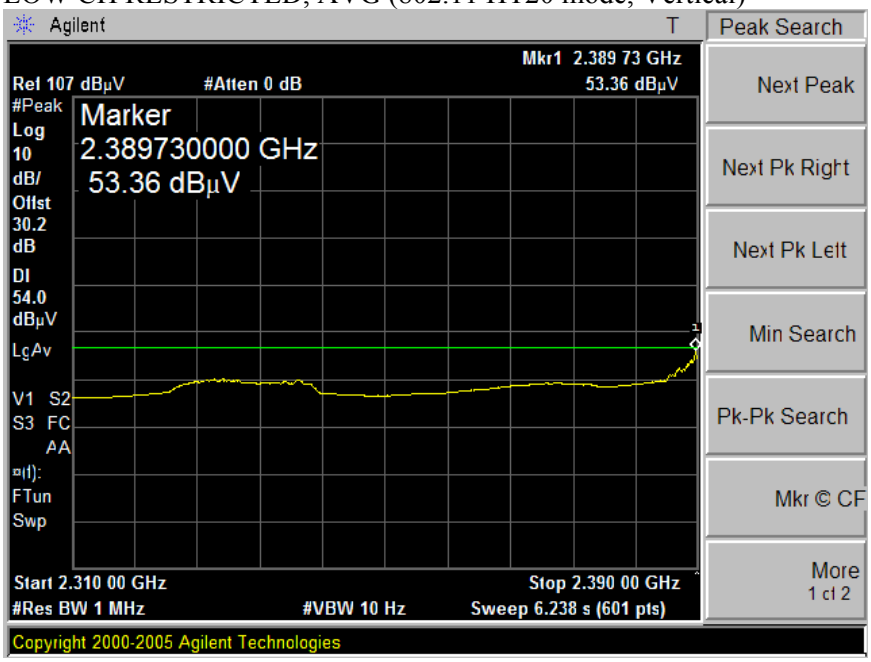


RESTRICTED BANDEDGE (HT20 MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11 HT20 mode, Vertical)

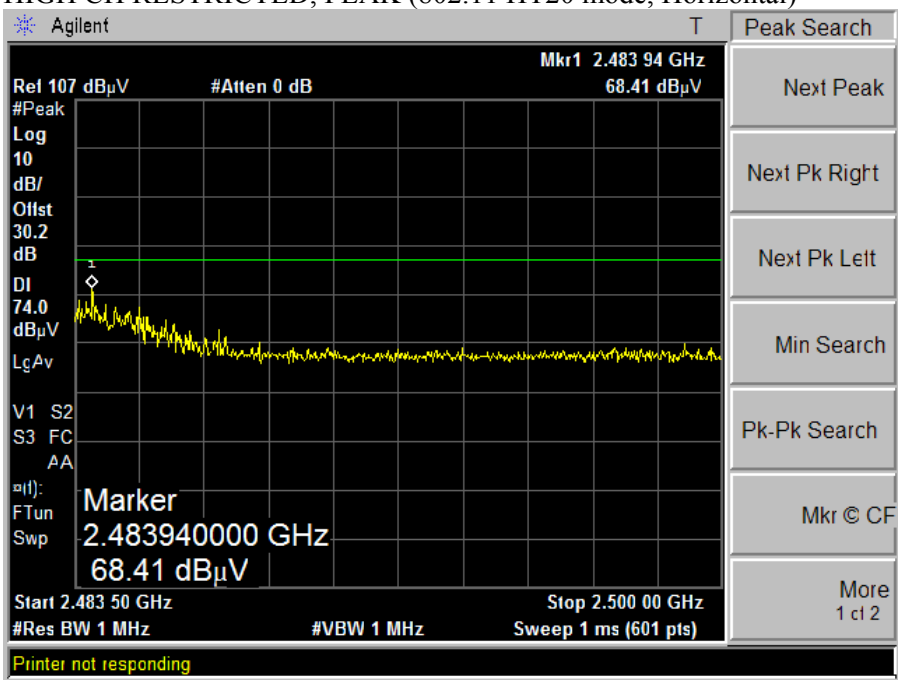


LOW CH RESTRICTED, AVG (802.11 HT20 mode, Vertical)

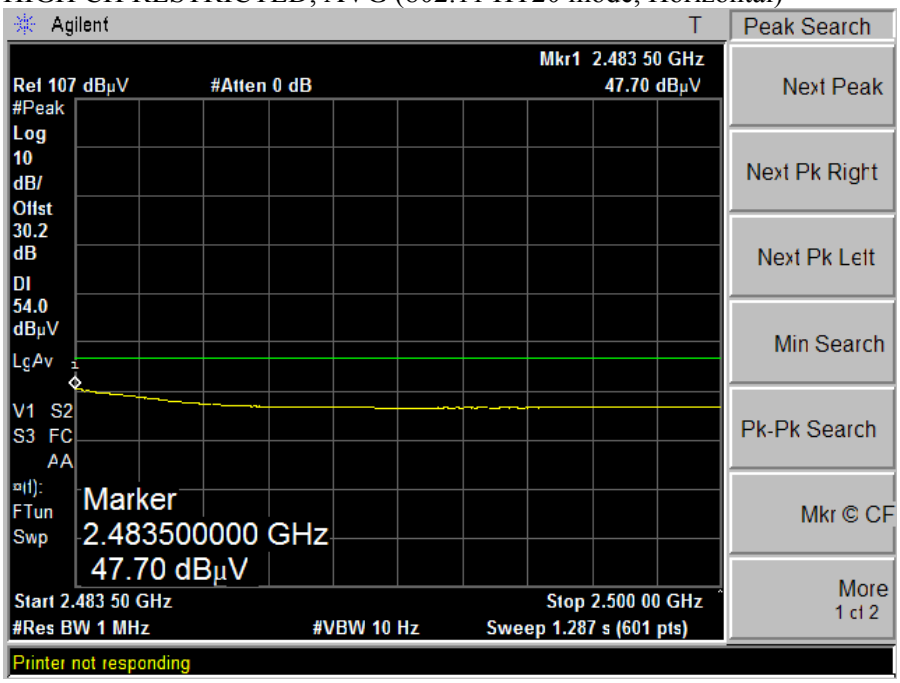


RESTRICTED BANDEDGE (HT20 MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11 HT20 mode, Horizontal)

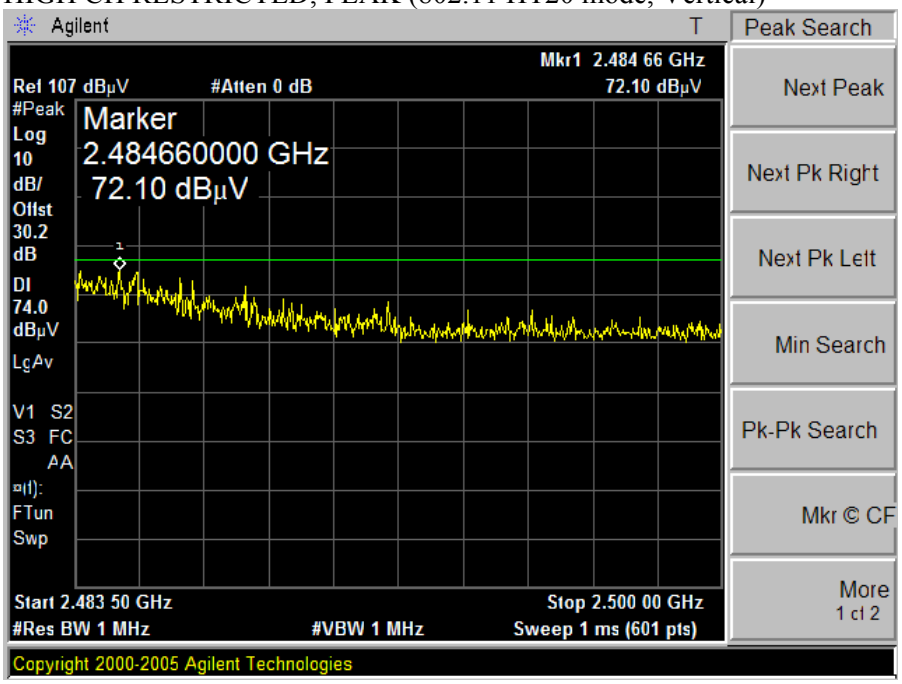


HIGH CH RESTRICTED, AVG (802.11 HT20 mode, Horizontal)

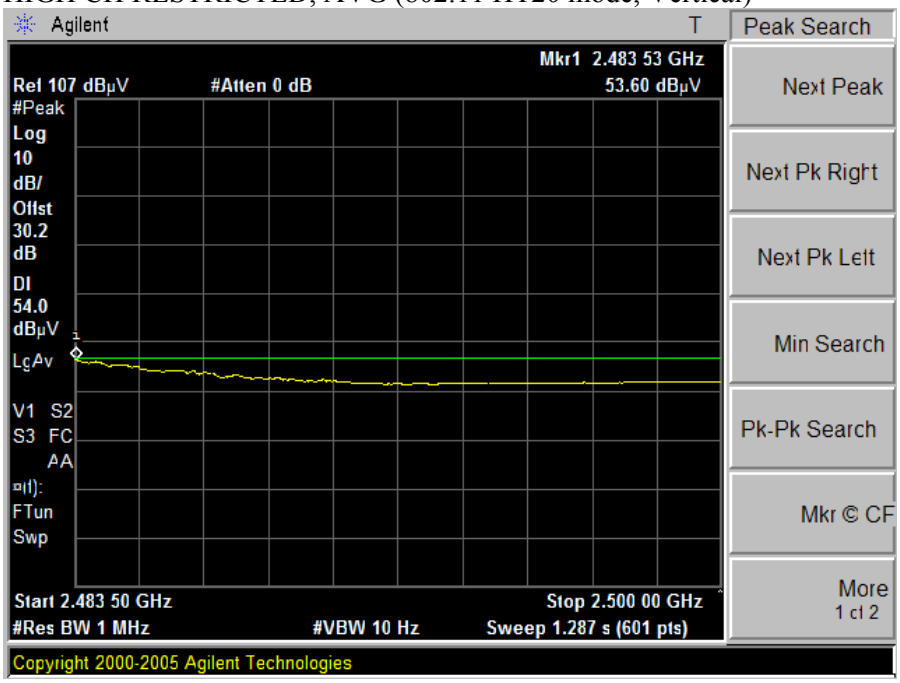


RESTRICTED BANDEDGE (HT20 MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11 HT20 mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11 HT20 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (g HT20 MODE)

04/17/06 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10242
Company:Cameo
EUT Description:2.4GHz 802.11n MPCI Module
EUT M/N:WLN-1306
EUT S/N:
Test Target:FCC 15.247
Mode Of Operation:TX. HT20

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T73; S/N: 6717 @3m	T145 Agilent 3008A005(		

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		R_001

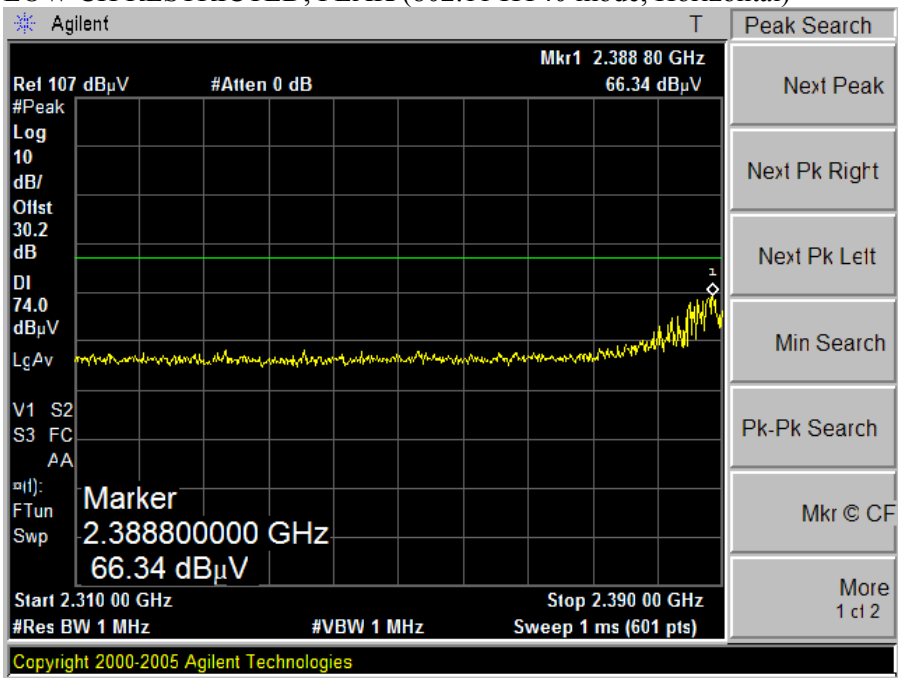
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

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 Ch, 2412MHz															
4.824	3.0	48.5	37.6	33.7	3.2	-34.8	0.0	0.0	50.6	39.7	74	54	-23.4	-14.3	V
4.824	3.0	45.8	33.4	33.7	3.2	-34.8	0.0	0.0	47.9	35.5	74	54	-26.1	-18.5	H
Nid Ch, 2437MHz															
4.874	3.0	51.5	38.4	33.8	3.2	-34.9	0.0	0.0	53.6	40.5	74	54	-20.4	-13.5	V
7.311	3.0	49.7	36.0	35.5	3.6	-34.7	0.0	0.0	54.1	40.4	74	54	-19.9	-13.6	V
4.874	3.0	48.2	35.4	33.8	3.2	-34.9	0.0	0.0	50.3	37.5	74	54	-23.7	-16.5	H
7.311	3.0	49.0	35.4	35.5	3.6	-34.7	0.0	0.0	53.4	39.8	74	54	-20.6	-14.2	H
High Ch, 2462MHz															
4.924	3.0	48.8	37.4	33.8	3.2	-34.9	0.0	0.0	51.0	39.6	74	54	-23.0	-14.4	V
7.386	3.0	50.0	39.6	35.6	3.6	-34.6	0.0	0.0	54.6	44.2	74	54	-19.4	-9.8	V
4.924	3.0	45.2	32.7	33.8	3.2	-34.9	0.0	0.0	47.4	34.9	74	54	-26.6	-19.1	H
7.386	3.0	48.8	36.5	35.6	3.6	-34.6	0.0	0.0	53.4	41.1	74	54	-20.6	-12.9	H
Note: No other emissions were detected above the system noise floor.															

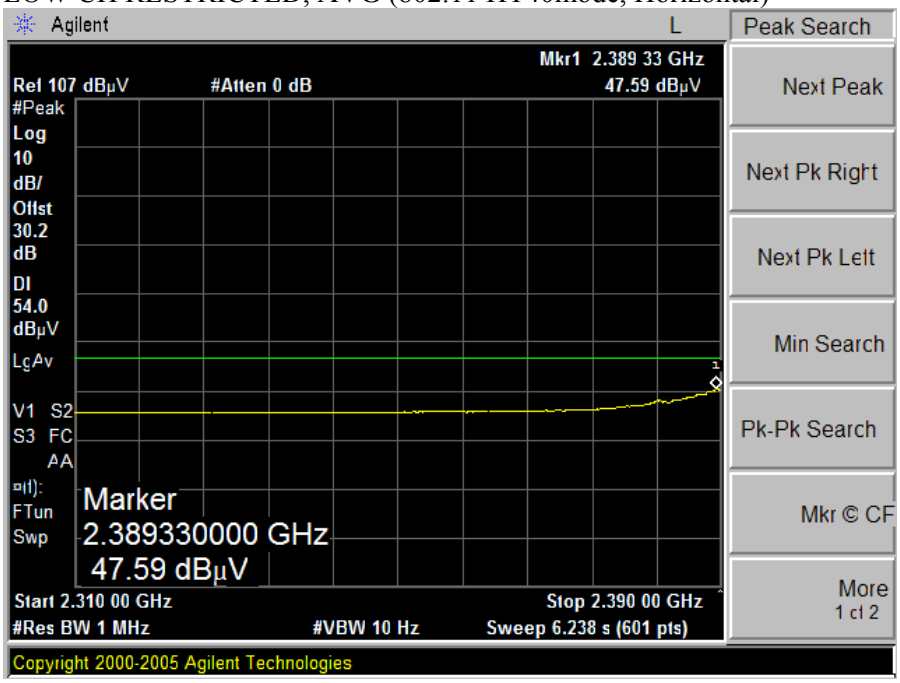
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

LOW CH, 2422MHz RESTRICTED BANDEDGE (HT40 MODE, LOW CHANNEL, HORIZONTAL

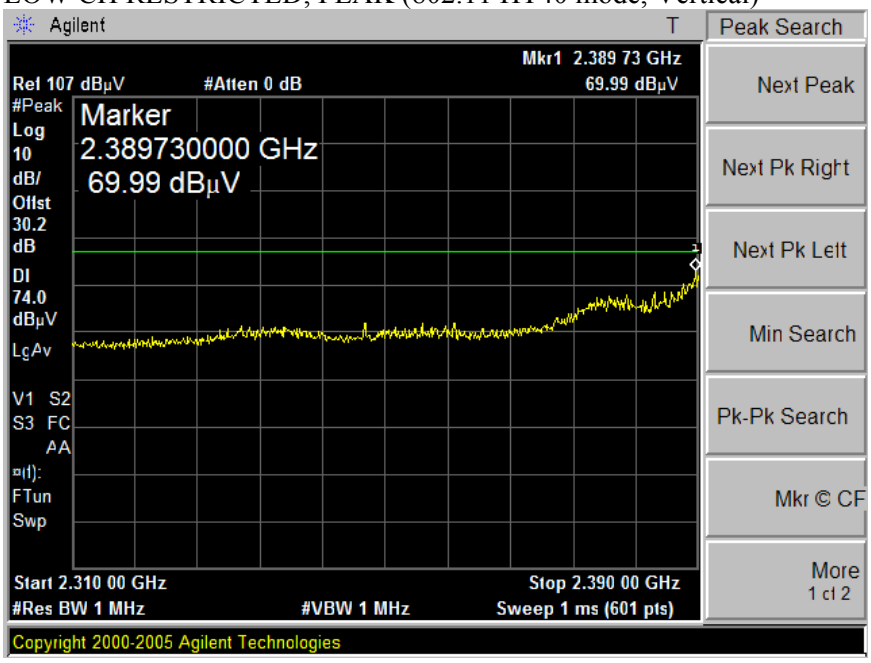
LOW CH RESTRICTED, PEAK (802.11 HT40 mode, Horizontal)



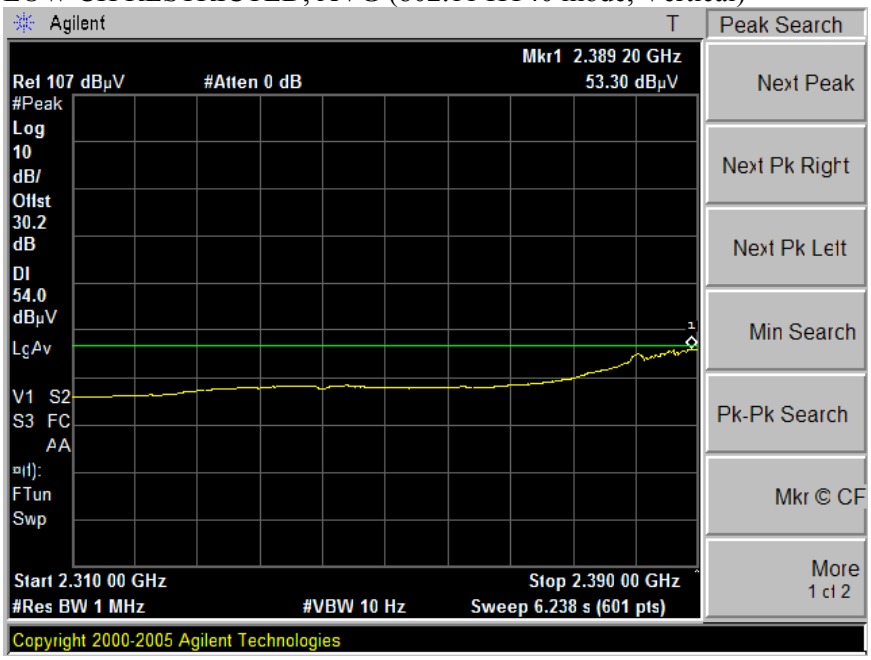
LOW CH RESTRICTED, AVG (802.11 HT40mode, Horizontal)



LOW CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)

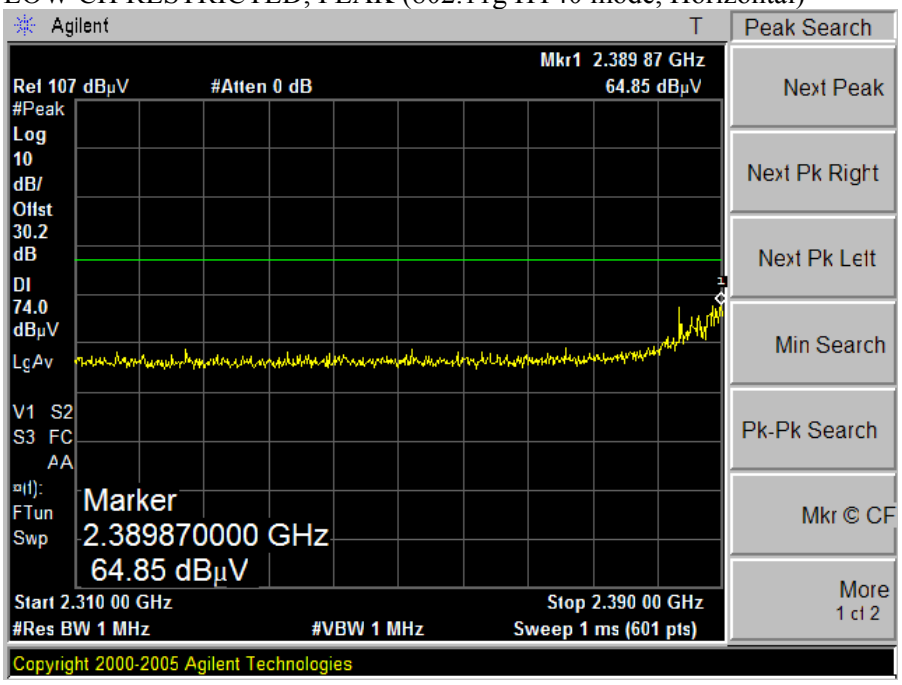


LOW CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)

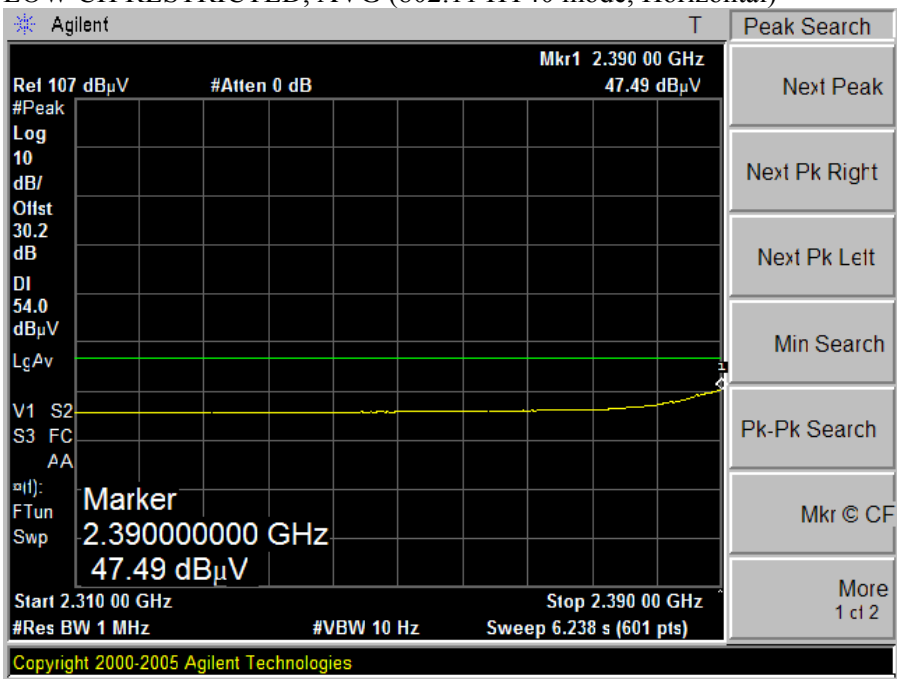


SECOND CH, 2427MHz RESTRICTED BANDEDGE (g HT40 MODE, LOW CHANNEL, HORIZONTAL

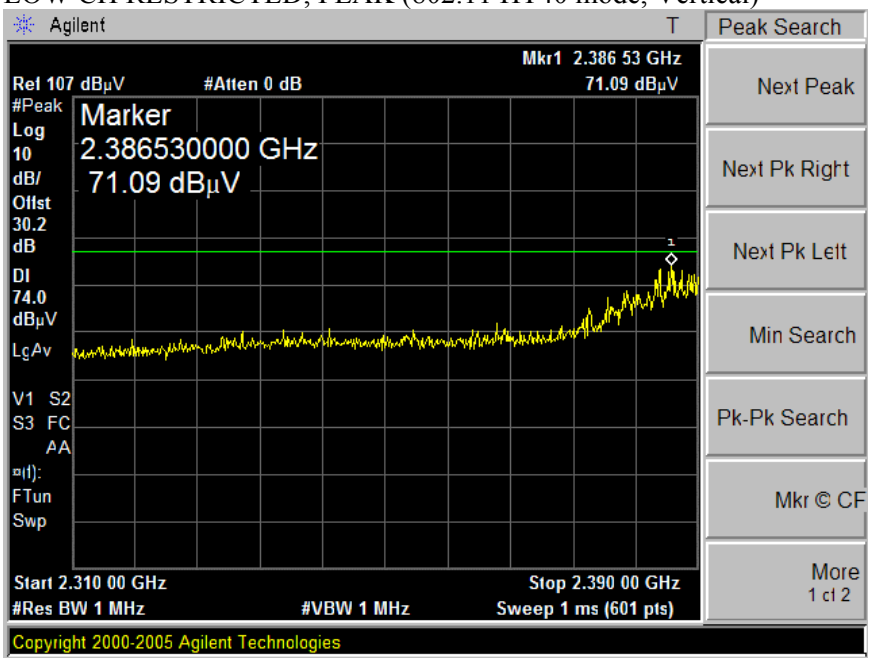
LOW CH RESTRICTED, PEAK (802.11g HT40 mode, Horizontal)



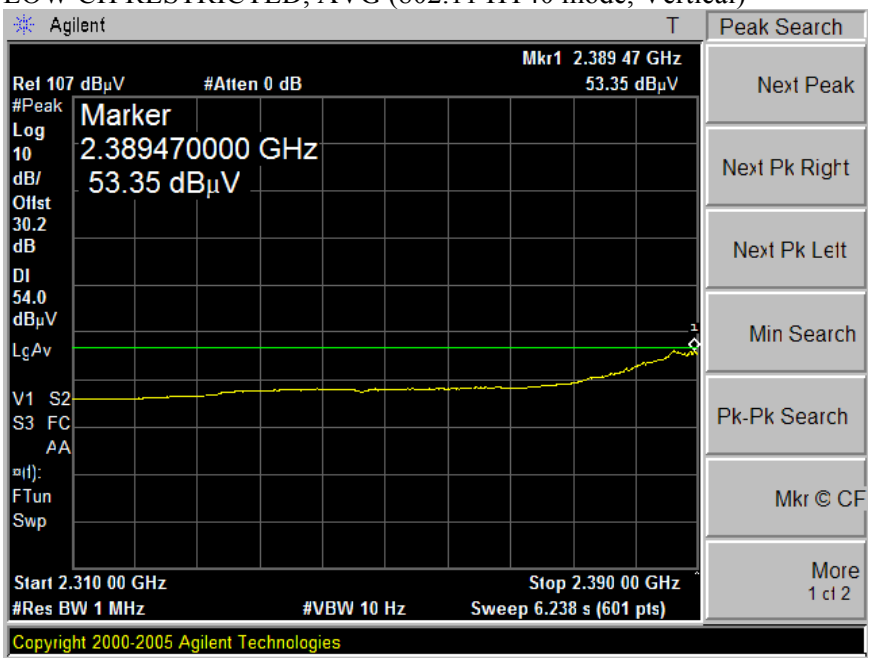
LOW CH RESTRICTED, AVG (802.11 HT40 mode, Horizontal)



LOW CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)

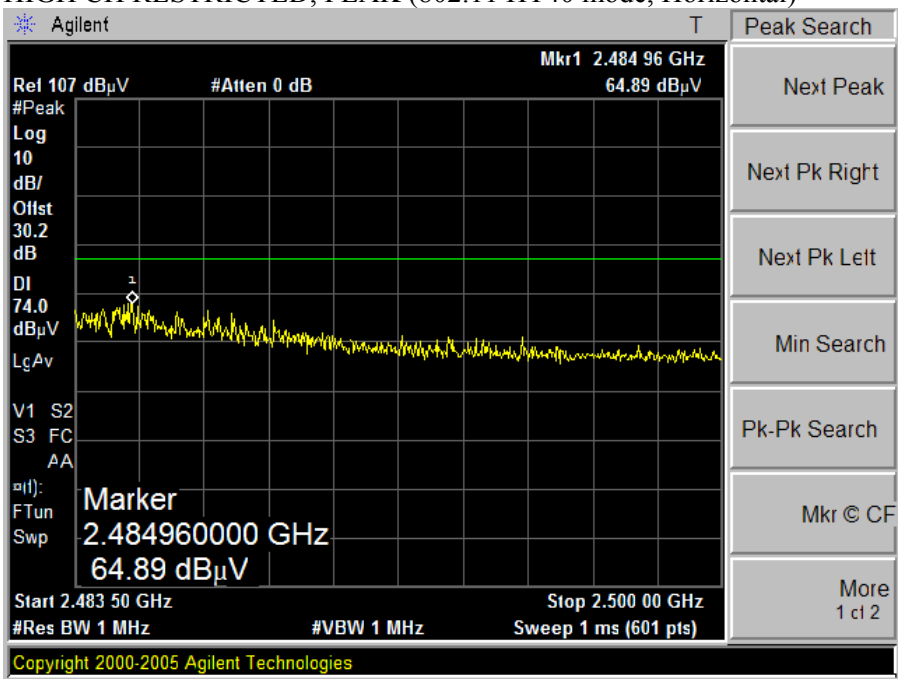


LOW CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)

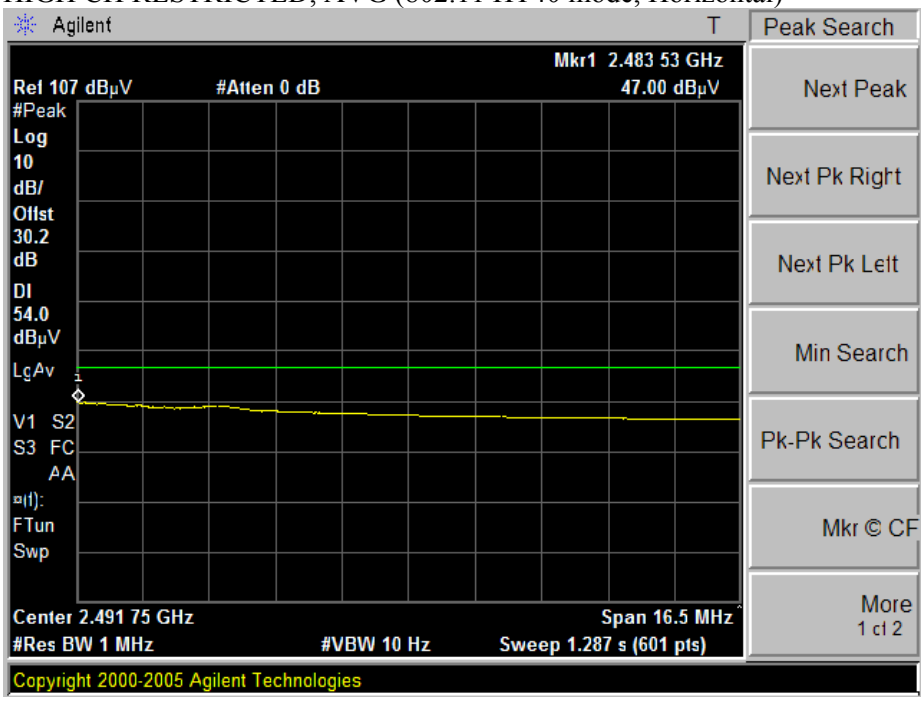


SECOND HIGH CH, 2447MHz RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Horizontal)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Horizontal)

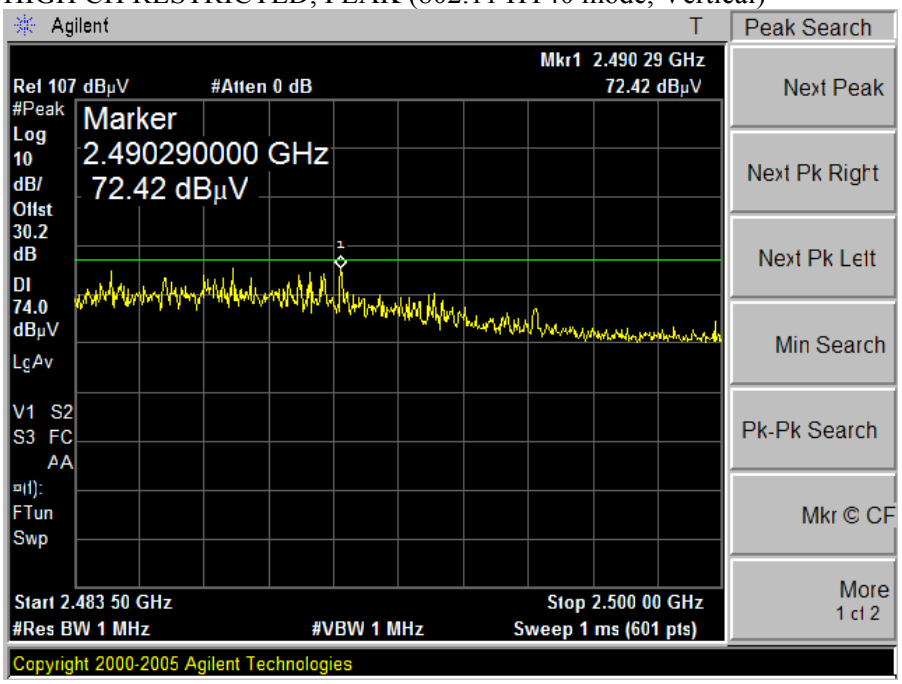


HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Horizontal)

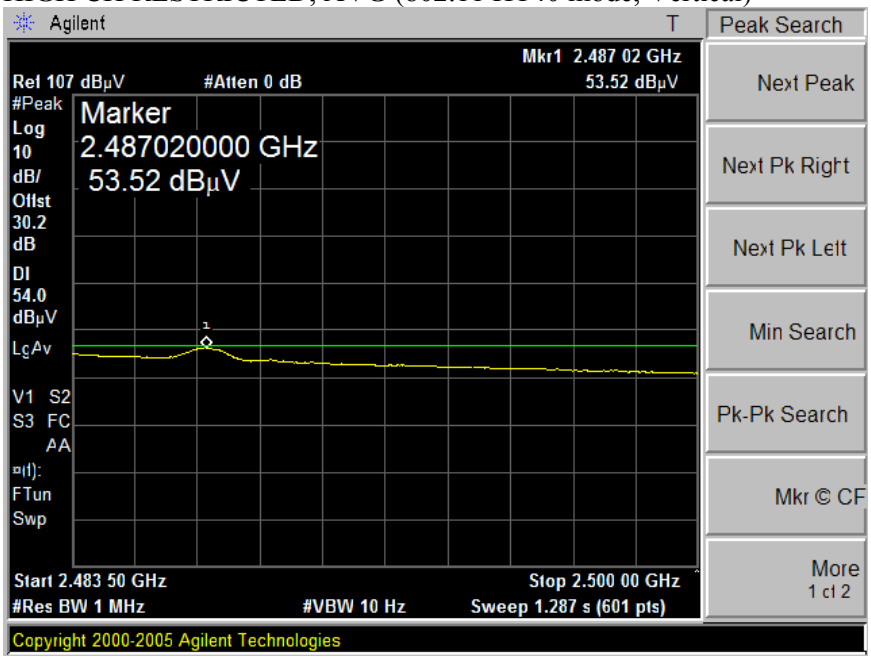


RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Vertical)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)

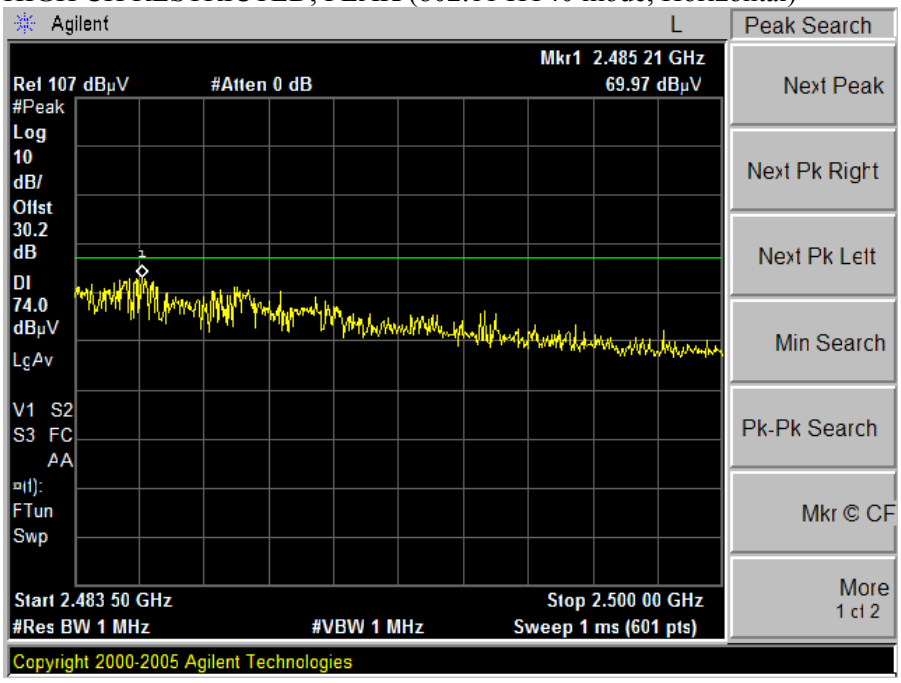


HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)

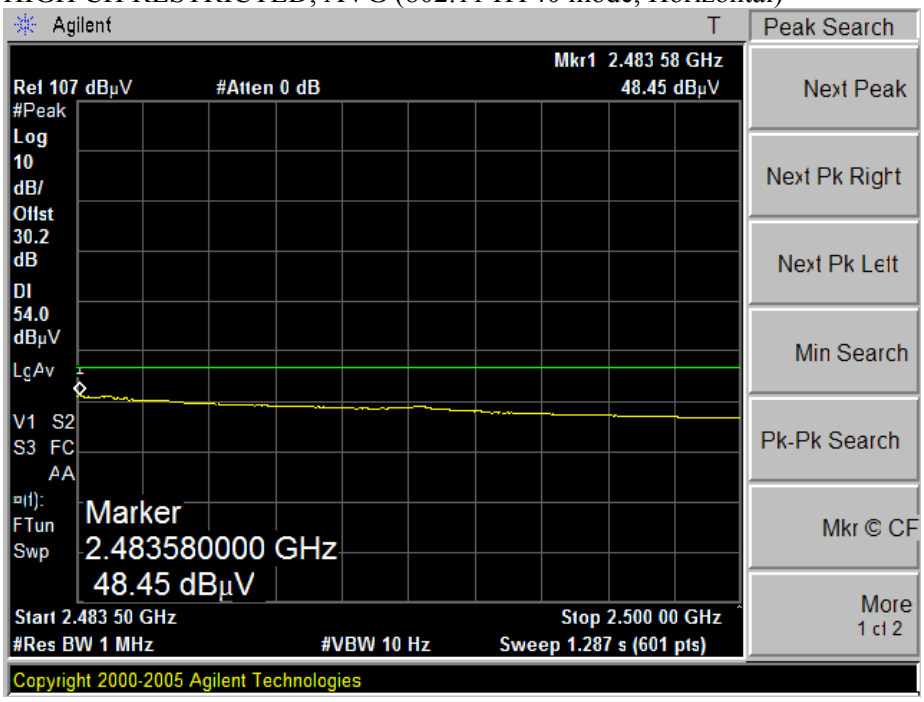


HIGH CH, 2452MHz RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Horizontal)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Horizontal)

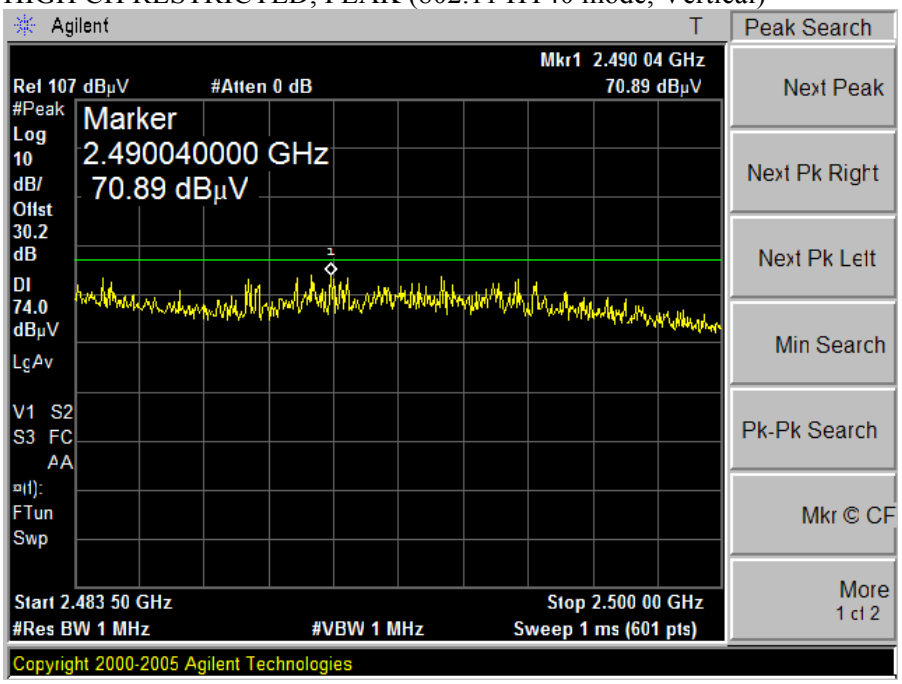


HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Horizontal)

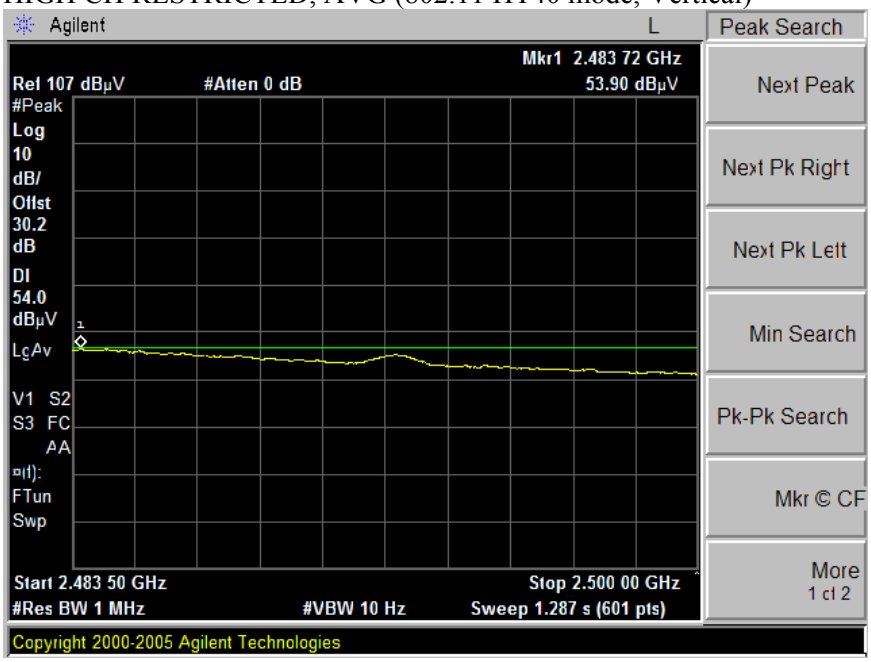


RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Vertical)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (g HT40 MODE)

04/17/06 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10235
Company:Cameo
EUT Description:2.4GHz 802.11n MPCI Module
EUT M/N:WLN-1305
EUT S/N:
Test Target:FCC 15.247
Mode Of Operation:TX. HT40

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T73; S/N: 6717 @3m	T145 Agilent 3008A005(		

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		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 Ch, 2422MHz															
4.844	3.0	46.0	33.0	33.7	3.2	-34.8	0.0	0.0	48.1	35.1	74	54	-25.9	-18.9	V
7.266	3.0	48.1	35.0	35.4	3.6	-34.7	0.0	0.0	52.5	39.4	74	54	-21.5	-14.6	H
4.844	3.0	43.4	31.2	33.7	3.2	-34.8	0.0	0.0	45.5	33.3	74	54	-28.5	-20.7	H
7.266	3.0	46.8	32.0	35.4	3.6	-34.7	0.0	0.0	51.2	36.4	74	54	-22.8	-17.6	H
Second Low ch, 2427MHz															
4.854	3.0	47.5	36.0	33.7	3.2	-34.8	0.0	0.0	49.6	38.1	74	54	-24.4	-15.9	V
7.281	3.0	46.9	34.0	35.5	3.6	-34.7	0.0	0.0	51.3	38.4	74	54	-22.7	-15.6	V
4.854	3.0	45.6	33.0	33.7	3.2	-34.8	0.0	0.0	47.7	35.1	74	54	-26.3	-18.9	H
7.281	3.0	46.4	32.0	35.5	3.6	-34.7	0.0	0.0	50.8	36.4	74	54	-23.2	-17.6	H
Mid Ch, 2437MHz															
4.874	3.0	52.3	41.0	33.8	3.2	-34.9	0.0	0.0	54.4	43.1	74	54	-19.6	-10.9	V
7.311	3.0	50.0	37.0	35.5	3.6	-34.7	0.0	0.0	54.4	41.4	74	54	-19.6	-12.6	V
4.874	3.0	50.2	42.3	33.8	3.2	-34.9	0.0	0.0	52.3	44.4	74	54	-21.7	-9.6	H
7.311	3.0	49.5	39.7	35.5	3.6	-34.7	0.0	0.0	53.9	44.1	74	54	-20.1	-9.9	H
Second High Ch, 2447MHz															
4.894	3.0	47.0	34.3	33.8	3.2	-34.9	0.0	0.0	49.2	36.5	74	54	-24.8	-17.5	V
7.386	3.0	46.7	34.8	35.6	3.6	-34.6	0.0	0.0	51.3	39.4	74	54	-22.7	-14.6	V
4.894	3.0	46.3	32.0	33.8	3.2	-34.9	0.0	0.0	48.5	34.2	74	54	-25.5	-19.8	H
7.341	3.0	47.8	33.7	35.5	3.6	-34.6	0.0	0.0	52.3	38.2	74	54	-21.7	-15.8	H
High Ch, 2452MHz															
4.904	3.0	47.3	35.5	33.8	3.2	-34.9	0.0	0.0	49.5	37.7	74	54	-24.5	-16.3	V
7.356	3.0	47.0	35.4	35.6	3.6	-34.6	0.0	0.0	51.5	39.9	74	54	-22.5	-14.1	V
4.904	3.0	42.5	31.0	33.8	3.2	-34.9	0.0	0.0	44.7	33.2	74	54	-29.3	-20.8	H
7.356	3.0	46.6	32.7	35.6	3.6	-34.6	0.0	0.0	51.1	37.2	74	54	-22.9	-16.8	H
Note: No other emissions were detected above the system noise floor.															

46.6

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				

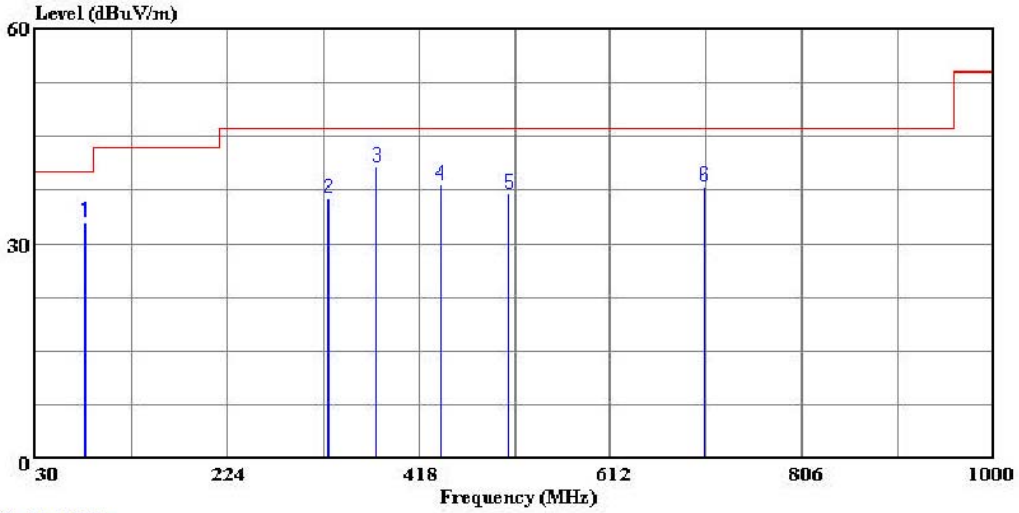
7.2.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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

HORIZONTAL PLOT

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

Data#: 19 File#: 06U10242emi.EMI Date: 04-18-2006 Time: 15:55:26



(Audix ATC)

Trace: Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator : Chin Pang
Project # : 06U10242-1
Company : Cameo Communications Inc.
EUT : 2.4GHz 802.11nMPCI Module
Model No : WLN-1306, 2x2 Version
S/N :
Configuration : EUT/Laptop
Mode of operation: TX, (Worst Case)
Target of Test : FCC Class B

HORIZONTAL DATA

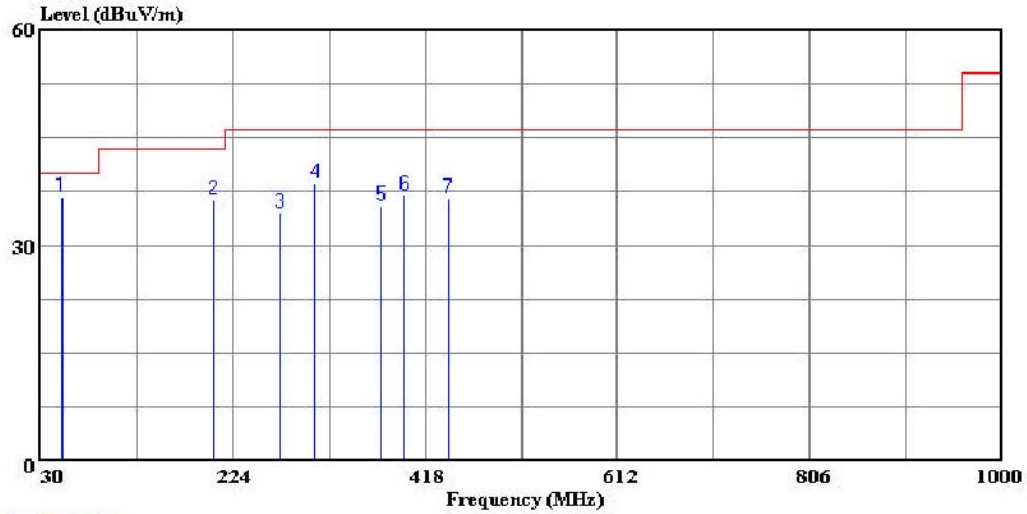
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	80.440	24.11	8.81	32.93	40.00	-7.08	Peak
2	326.820	20.03	16.32	36.36	46.00	-9.64	Peak
3	375.320	23.18	17.52	40.70	46.00	-5.30	Peak
4	440.310	19.24	18.98	38.22	46.00	-7.78	Peak
5	509.180	16.65	20.36	37.01	46.00	-8.99	Peak
6	707.060	14.73	23.20	37.93	46.00	-8.07	Peak

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

VERTICAL PLOT

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

Data#: 21 File#: 06U10242emi.EMI Date: 04-18-2006 Time: 15:58:25



(Audix ATC)

Trace: Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator : Chin Pang
Project # : 06U10242-1
Company : Cameo Communications Inc.
EUT : 2.4GHz 802.11nMPCI Module
Model No : WLN-1306, 2x2 Version
S/N :
Configuration : EUT/Laptop
Mode of operation: TX, (Worst Case)
Target of Test : FCC Class B

VERTICAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	51.340	27.64	9.05	36.69	40.00	-3.31	Peak
2	204.600	22.43	13.91	36.34	43.50	-7.16	Peak
3	271.530	19.79	14.65	34.44	46.00	-11.56	Peak
4	306.450	22.73	15.82	38.56	46.00	-7.44	Peak
5	373.380	17.96	17.46	35.42	46.00	-10.58	Peak
6	397.630	18.91	17.99	36.90	46.00	-9.10	Peak
7	441.280	17.44	19.02	36.46	46.00	-9.54	Peak

7.3. 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:

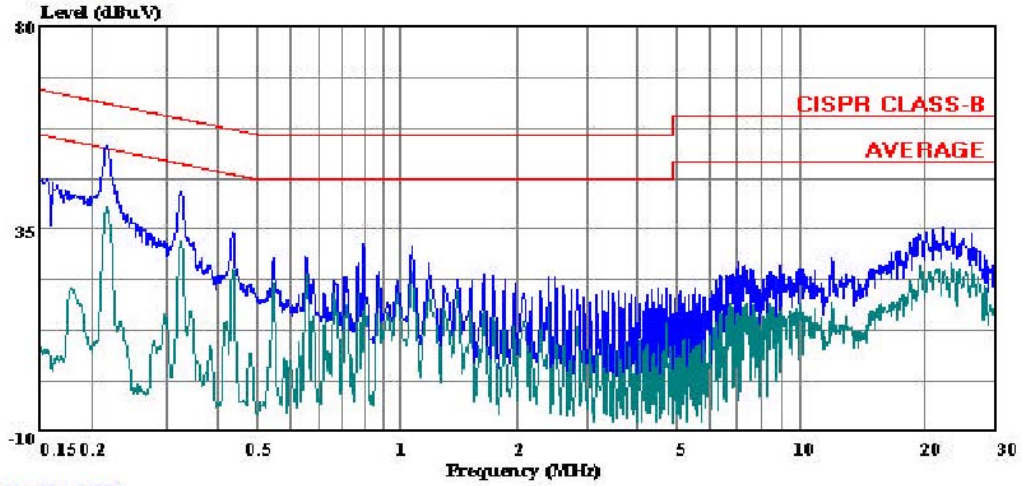
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (110VAC 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
0.22	52.88	--	39.82	0.00	62.86	52.86	-9.98	-13.04	L1
0.33	42.92	--	32.61	0.00	59.53	49.53	-16.61	-16.92	L1
22.18	35.74	--	26.91	0.00	60.00	50.00	-24.26	-23.09	L1
0.22	53.32	--	40.88	0.00	62.97	52.97	-9.65	-12.09	L2
0.33	42.82	--	31.38	0.00	59.53	49.53	-16.71	-18.15	L2
7.41	30.08	--	25.62	0.00	60.00	50.00	-29.92	-24.38	L2
6 Worst Data									

LINE 1 RESULTS

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

Data#: 7 File#: 06U10242LC.EMI Date: 04-18-2006 Time: 18:56:38



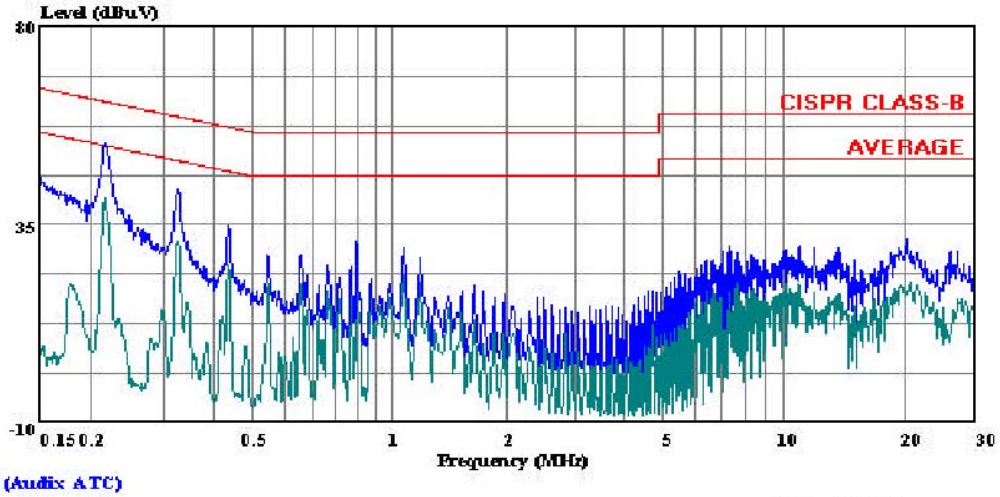
Trace: 5 Ref Trace:

Condition: CISPR CLASS-B
Test Operator : Chin Pang
Project # : 06U10242
Company : Cameo
EUT Description : 2.4GHz 802.11n MPCI Module
Model : WLN-1306
EUT Config : EUT/Laptop
Mode Of Operation: TX (Worst Case)
Target : FCC CLASS B
Power Source : 115 VAC, 60 Hz
: Line 1 : Peak(Blue); Ave(Green)

LINE 2 RESULTS

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

Data#: 14 File#: 06U10242LC.EMI Date: 04-18-2006 Time: 19:05:47



Trace: 12 Ref Trace:

Condition: CISPR CLASS-B
Test Operator : Chin Pang
Project # : 06U10242
Company : Cameo
EUT Description : 2.4GHz 802.11n MPCI Module
Model : WLN-1306
EUT Config : EUT/Laptop
Mode Of Operation: TX (Worst Case)
Target : FCC CLASS B
Power Source : 115 VAC, 60 Hz
: Line 2 : Peak(Blue); Ave(Green)