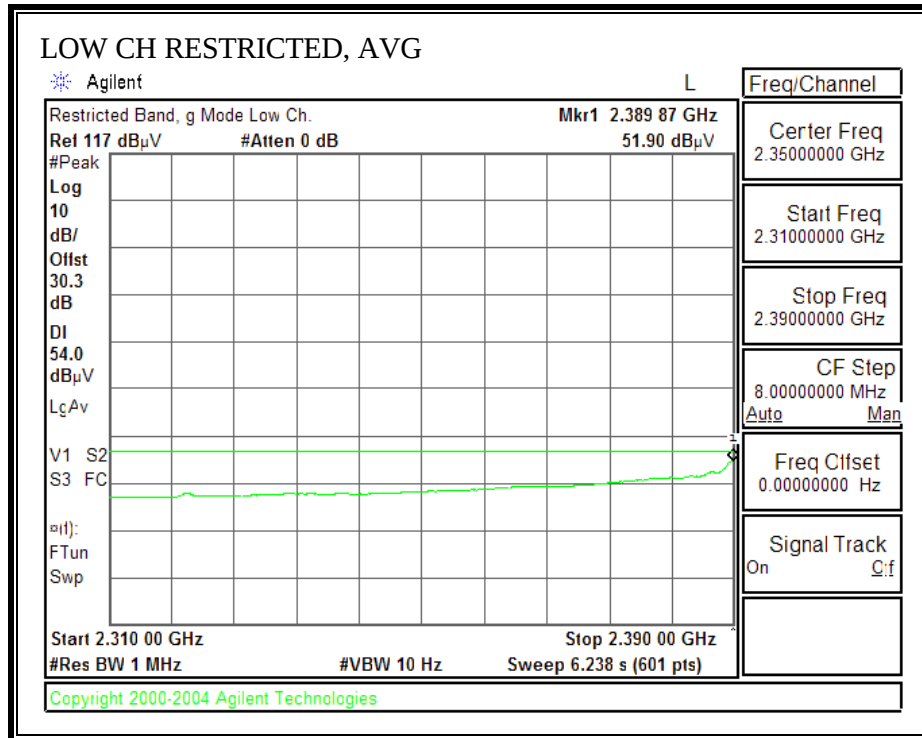
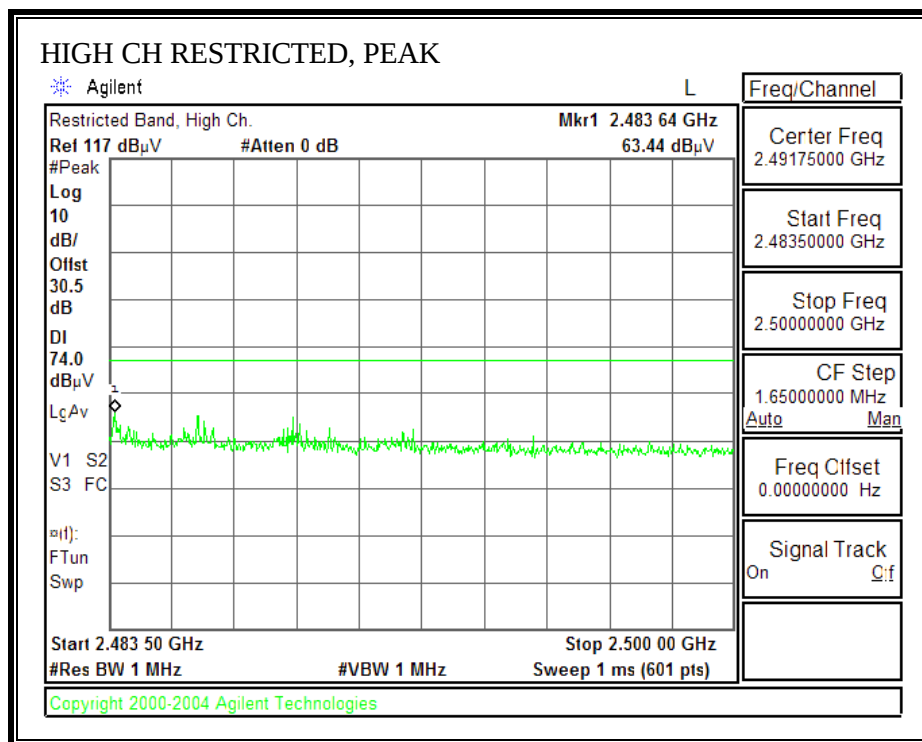
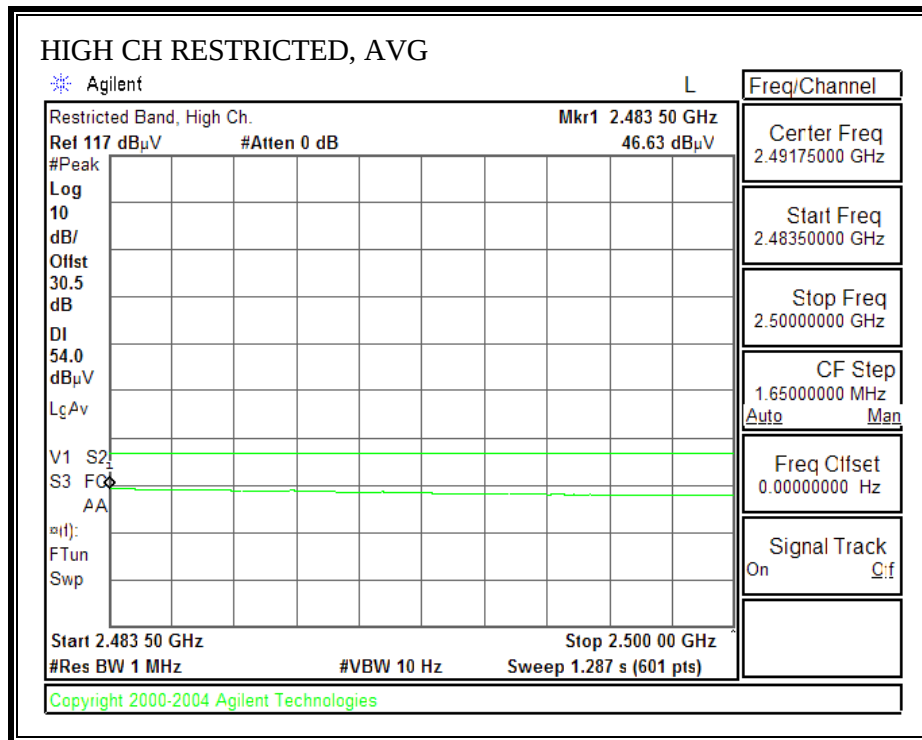
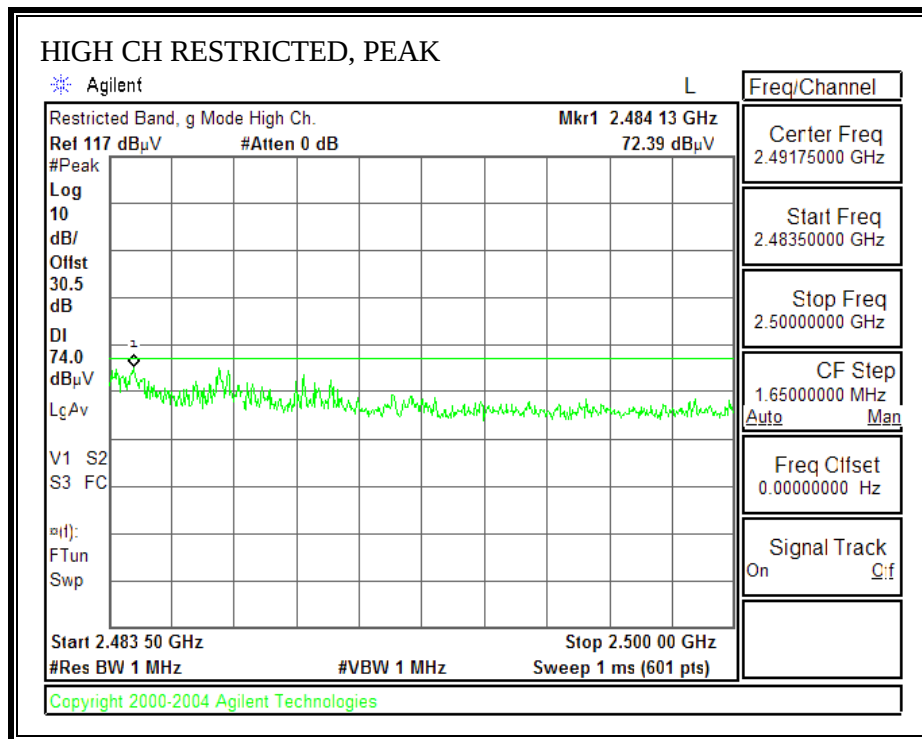
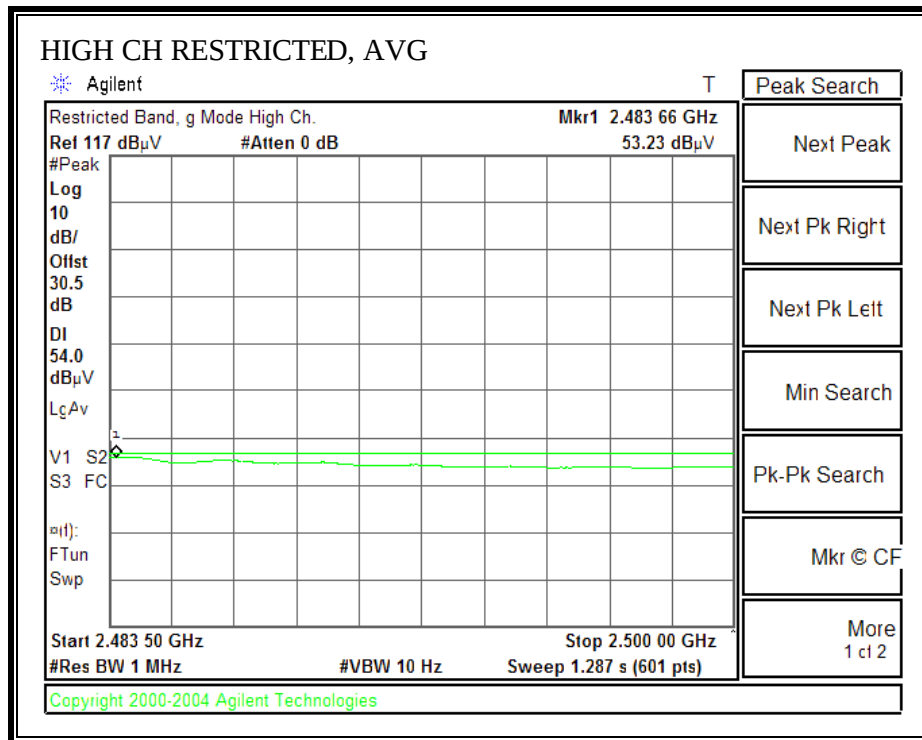


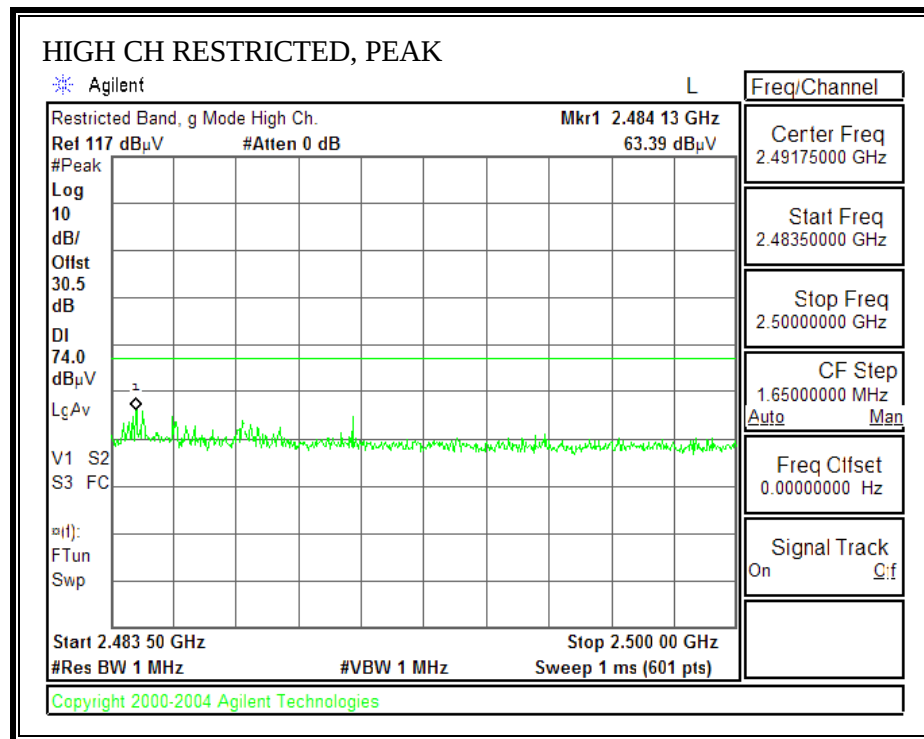


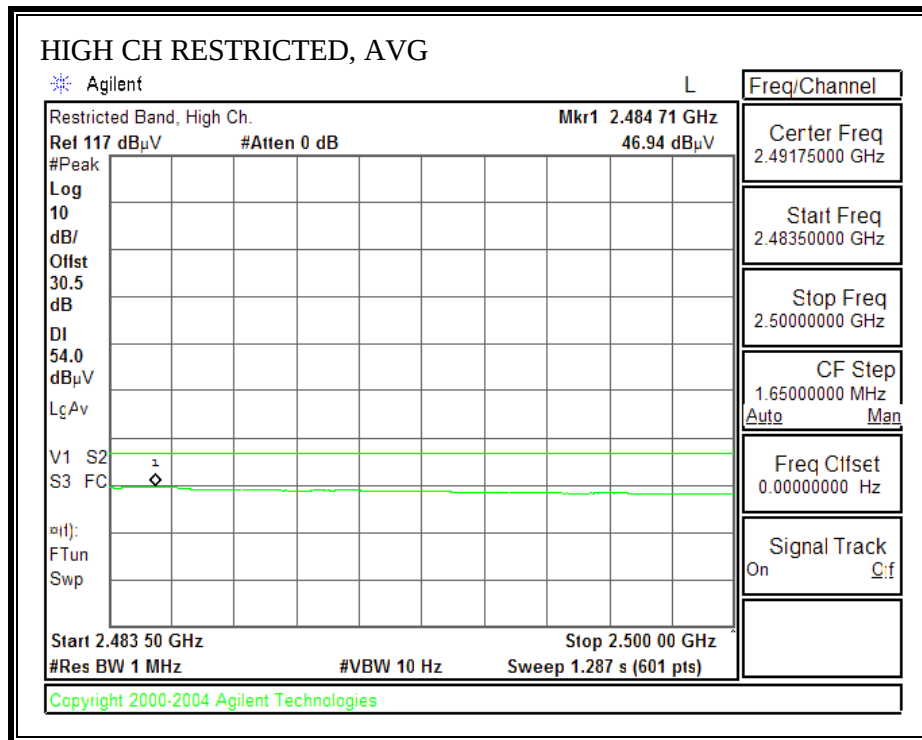
RESTRICTED BANDEDGE (HIGHCHANNEL, 2457 MHz, HORIZONTAL)

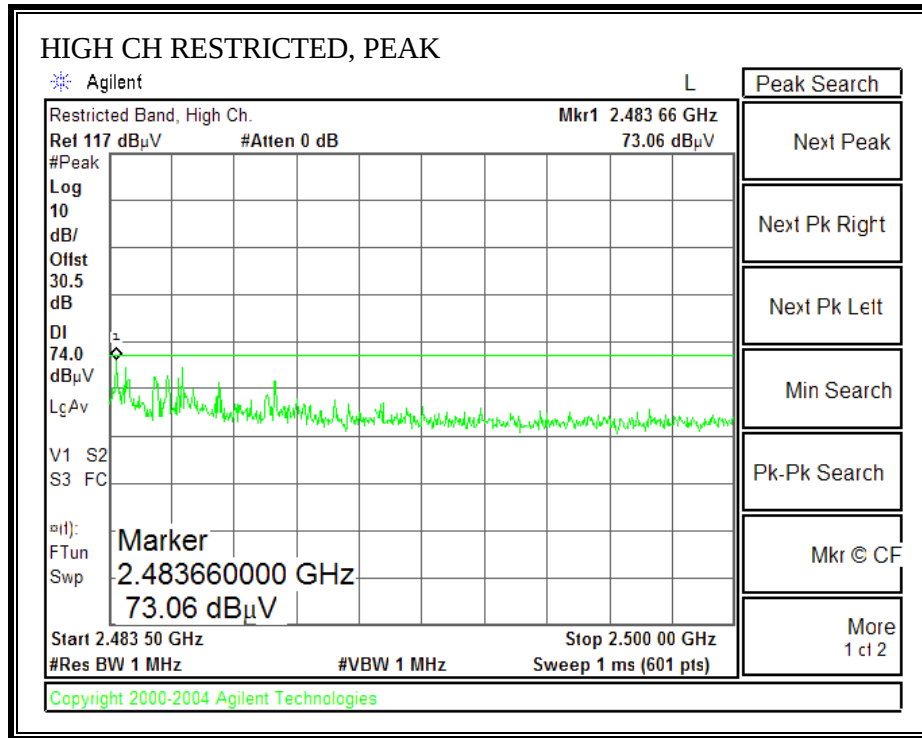


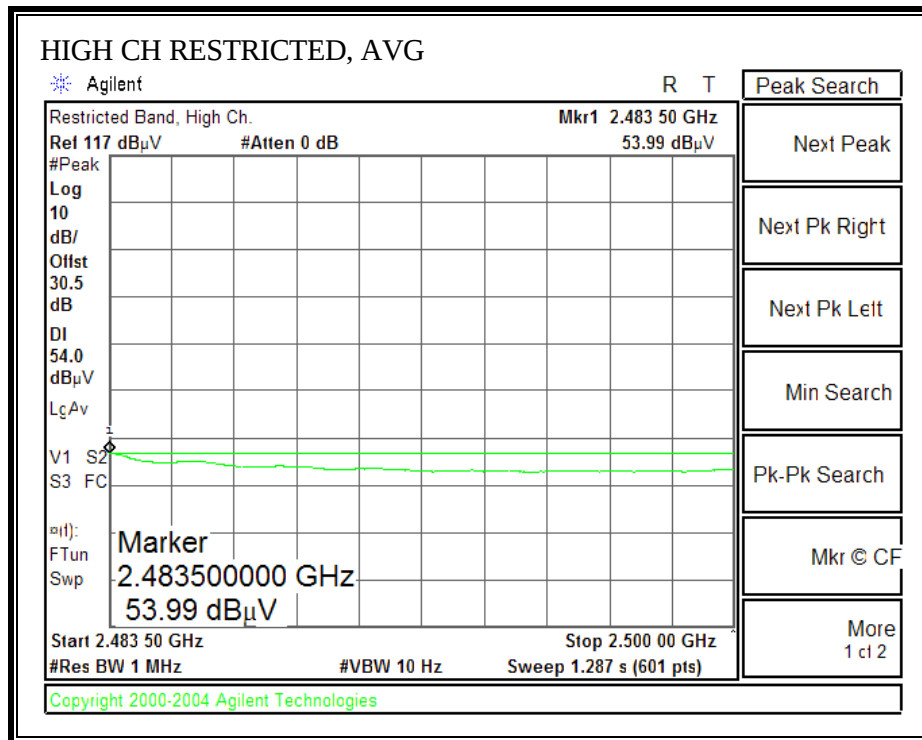
RESTRICTED BANDEDGE (HIGH CHANNEL, 2457 MHz, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, 2462 MHz, HORIZONTAL)

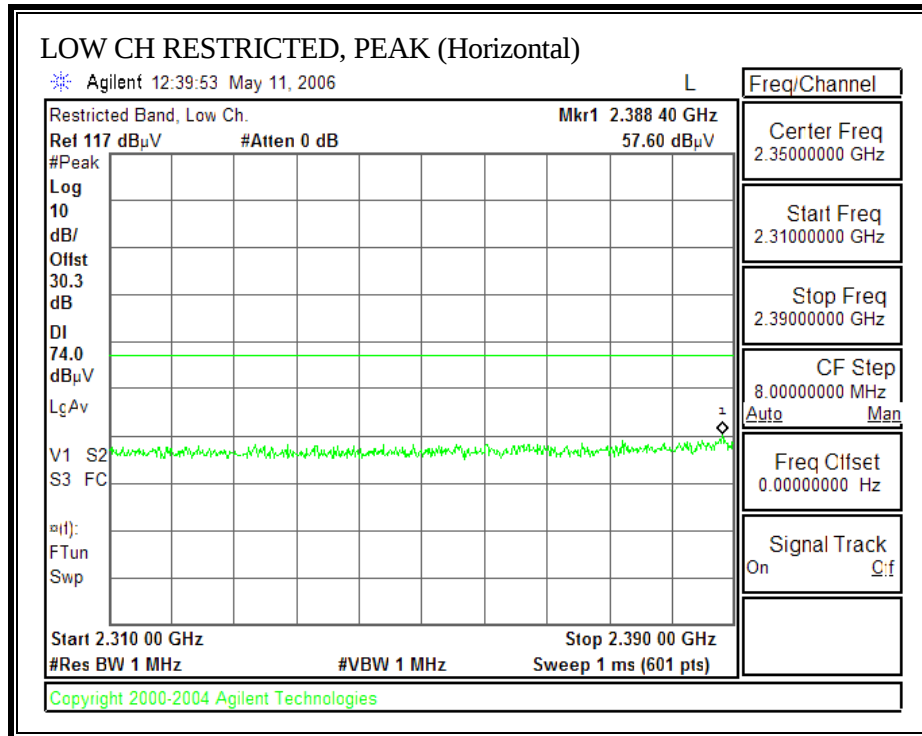


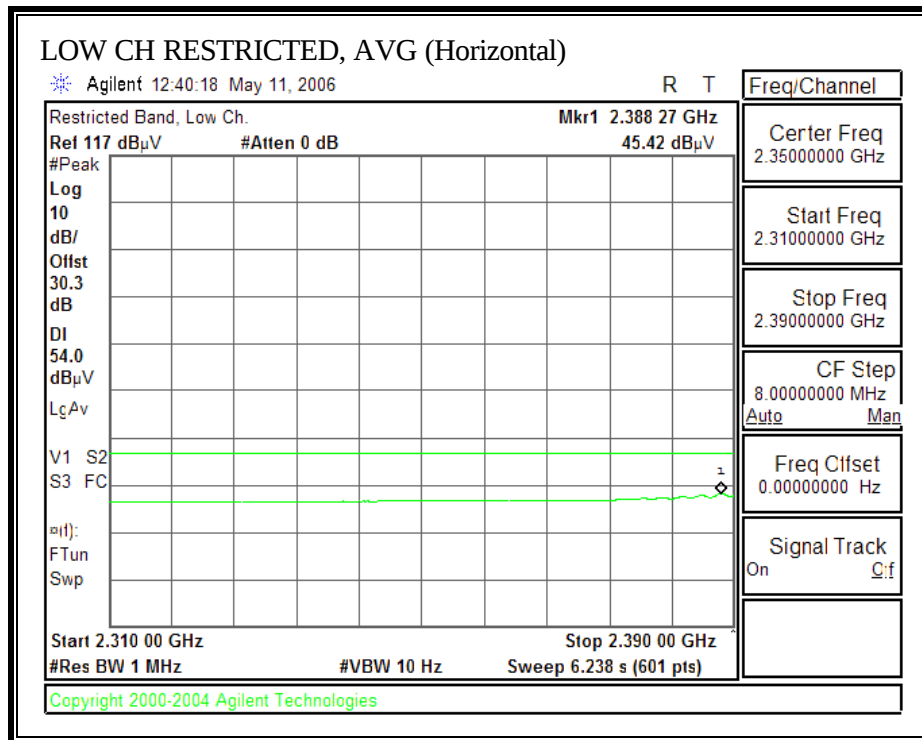
RESTRICTED BANDEDGE (HIGH CHANNEL, 2462 MHz, VERTICAL)

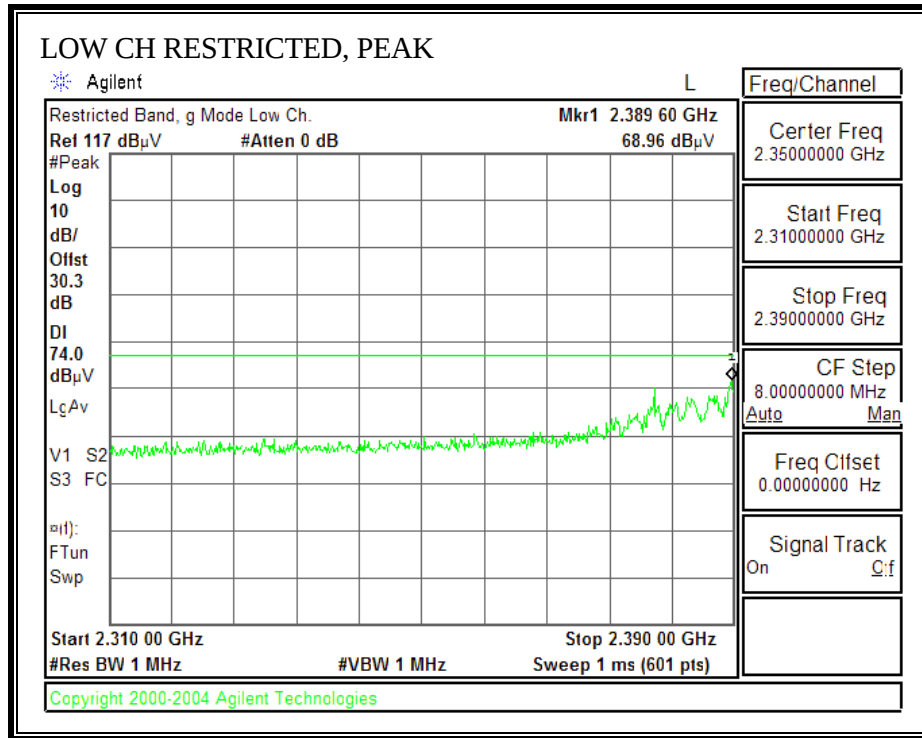


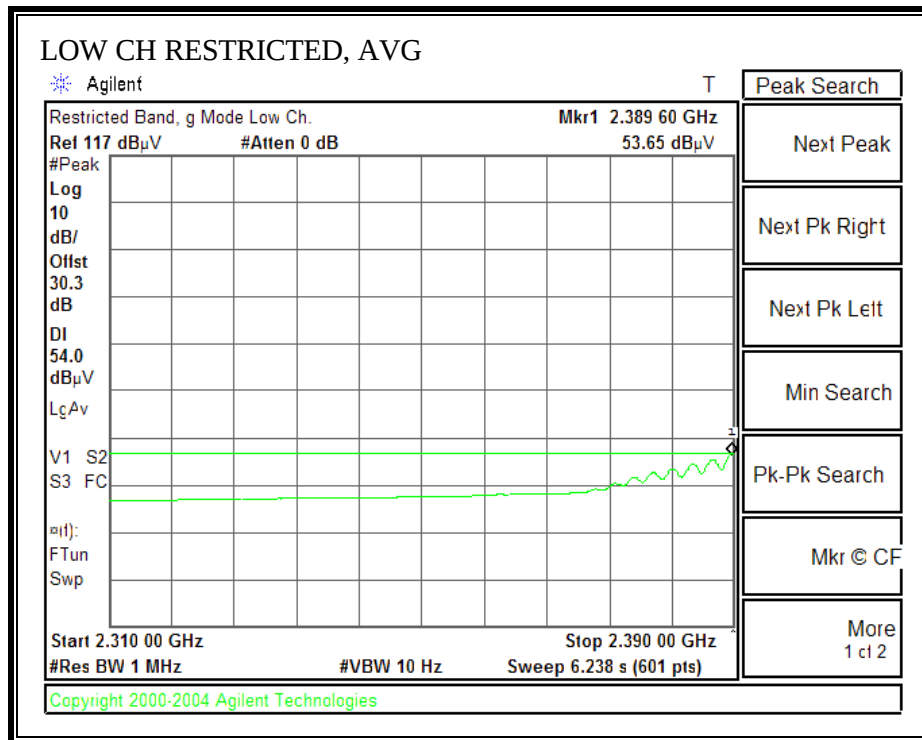
HARMONICS AND SPURIOUS EMISSIONS – 20 MHz TX BANDWIDTH

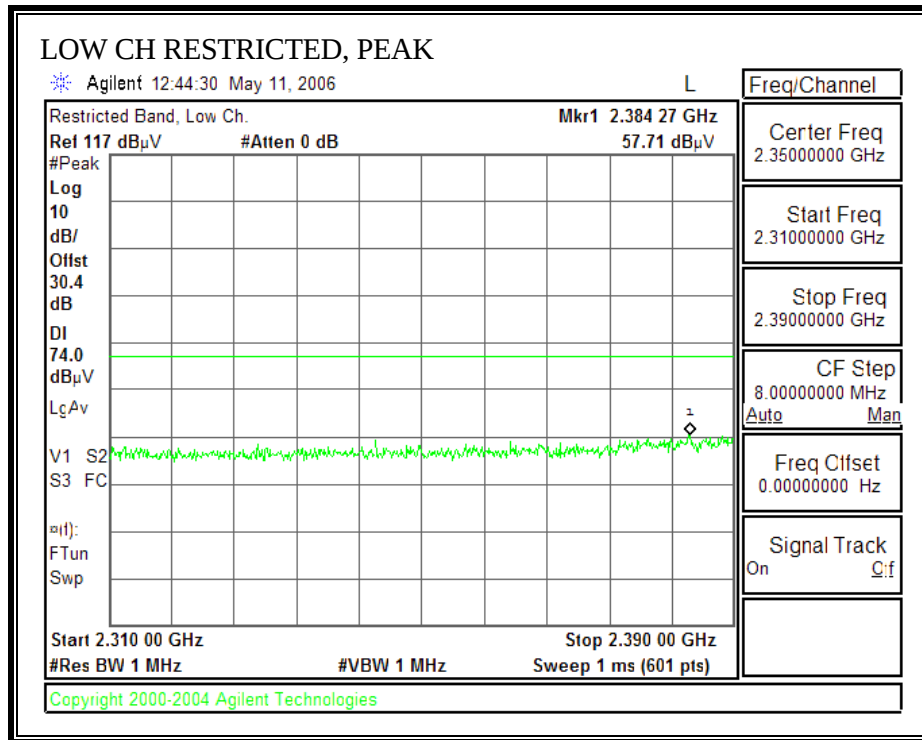
High Frequency Measurement																	
Compliance Certification Services, Morgan Hill Open Field Site																	
Company: Broadcom Project #: 06U10233 Date: 05/12/06 Test Engineer: Vien Tran Configuration: EUT (BCM94321MC, S/N 316) & Apple PCB Antenna Mode: MIMO 20MHz Tx BW 2.4 GHz Band Average Power Meter: Low = 16 dBm, Mid = 16 dBm, High = 16 dBm																	
Test Equipment:																	
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit									
T73; S/N: 6717 @3m		T144 Miteq 3008A00931						FCC 15.205									
Hi Frequency Cables																	
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz							
		Vien 187215002		Vien 197209005		HPF_4.0GHz											
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt 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	53.4	44.5	33.3	2.9	-36.5	0.0	0.6	53.8	44.9	74	54	-20.2	-9.1	V		
12.060	3.0	43.7	33.6	37.7	4.8	-35.4	0.0	0.9	51.7	41.6	74	54	-32.3	-32.4	V		
4.824	3.0	55.5	51.2	33.3	2.9	-36.5	0.0	0.6	55.9	51.6	74	54	-38.1	-32.4	H		
12.060	3.0	44.5	34.2	37.7	4.8	-35.4	0.0	0.9	52.5	42.2	74	54	-31.5	-11.8	H		
Mid Channel, 2437 MHz																	
4.874	3.0	51.5	43.5	33.4	3.0	-36.5	0.0	0.6	52.0	44.0	74	54	-32.0	-10.0	V		
7.311	3.0	43.0	32.7	35.0	4.2	-36.2	0.0	0.6	46.6	36.3	74	54	-37.4	-17.7	V		
12.185	3.0	42.4	33.8	37.6	4.9	-35.4	0.0	0.9	50.4	41.8	74	54	-33.6	-32.3	V		
4.874	3.0	54.6	51.9	33.4	3.0	-36.5	0.0	0.6	55.1	52.4	74	54	-38.9	-1.6	H		
7.311	3.0	47.0	36.4	35.0	4.2	-36.2	0.0	0.6	50.6	40.0	74	54	-33.4	-14.0	H		
12.185	3.0	43.0	32.8	37.6	4.9	-35.4	0.0	0.9	51.0	40.8	74	54	-33.0	-13.3	H		
High Channel, 2462 MHz																	
4.924	3.0	50.1	42.8	33.4	3.1	-36.5	0.0	0.6	50.7	43.4	74	54	-33.3	-10.6	V		
7.386	3.0	51.0	40.6	35.0	4.2	-36.2	0.0	0.6	54.6	44.2	74	54	-39.4	-9.8	V		
12.310	3.0	43.2	33.0	37.6	4.9	-35.4	0.0	0.9	51.2	41.0	74	54	-32.8	-13.0	V		
4.924	3.0	55.5	52.3	33.4	3.1	-36.5	0.0	0.6	56.1	52.9	74	54	-37.9	-3.1	H		
7.386	3.0	44.9	34.0	35.0	4.2	-36.2	0.0	0.6	48.5	37.6	74	54	-32.5	-16.4	H		
12.310	3.0	44.0	33.0	37.6	4.9	-35.4	0.0	0.9	52.0	41.0	74	54	-32.0	-13.0	H		
No other emissions were detected above 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										

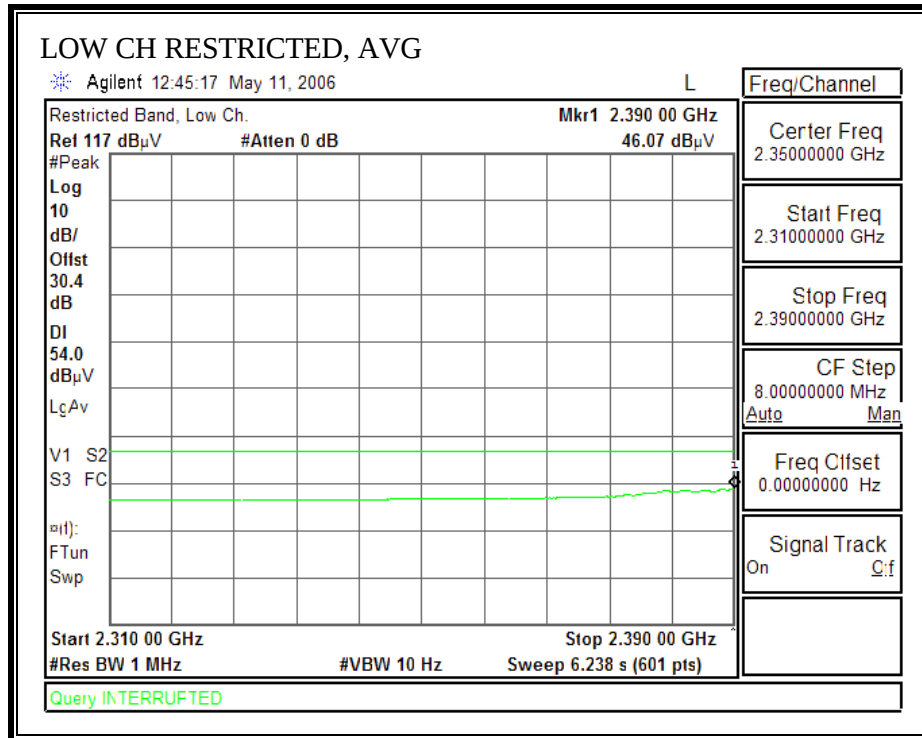
40 MHz TX BANDWIDTH**RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, HORIZONTAL)**

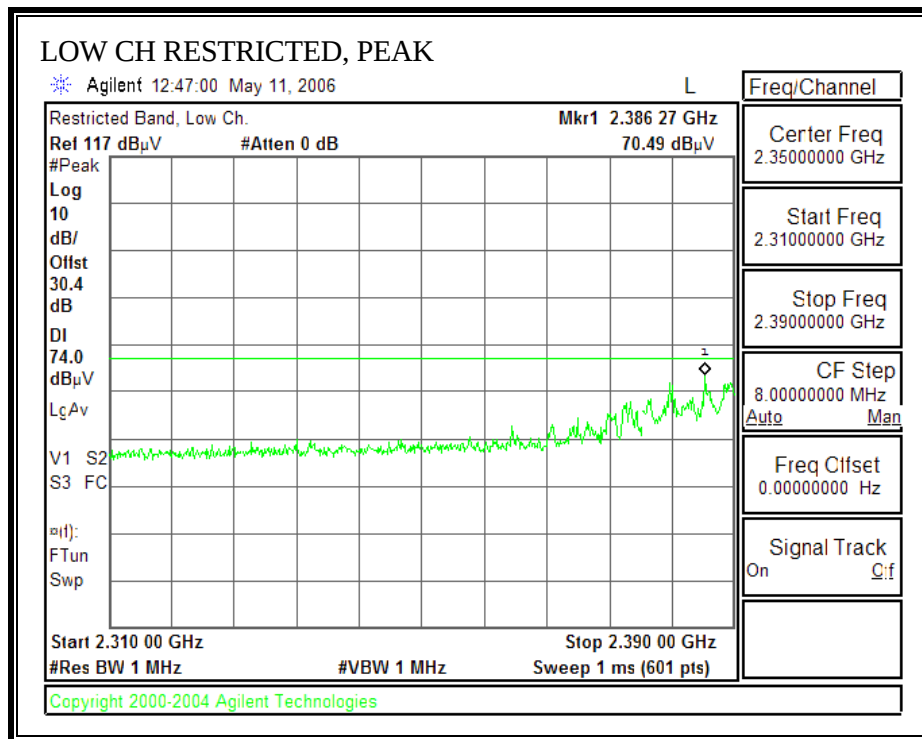


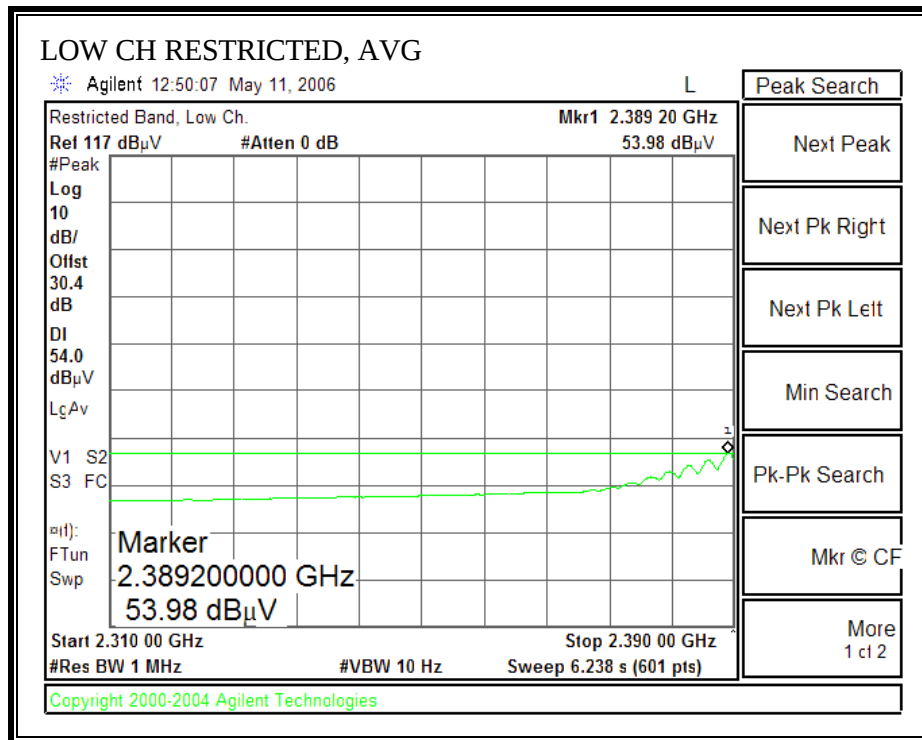
RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, VERTICAL)

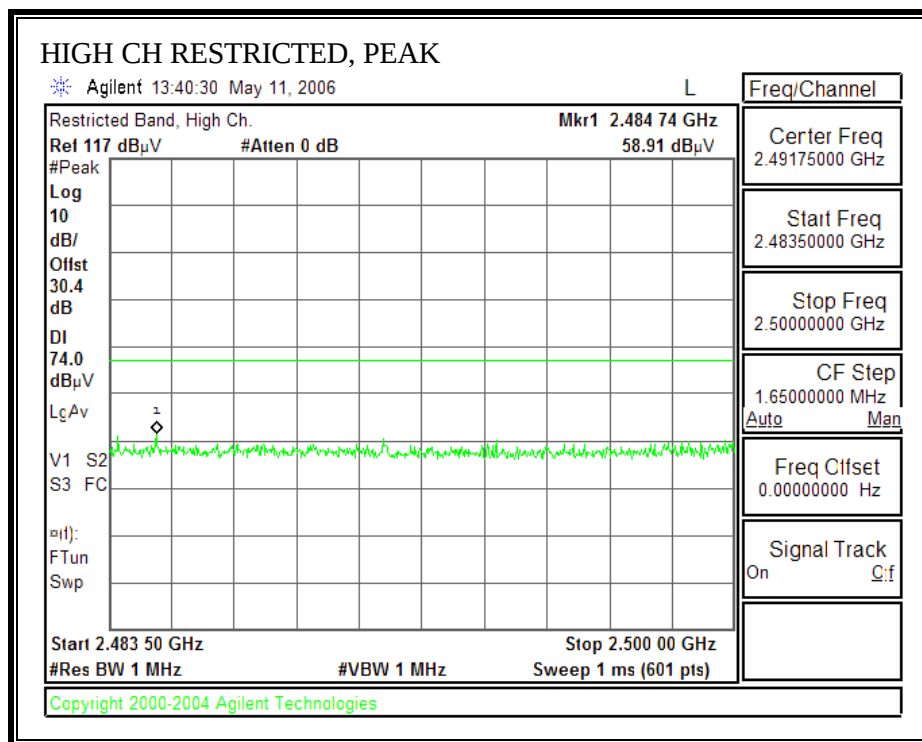


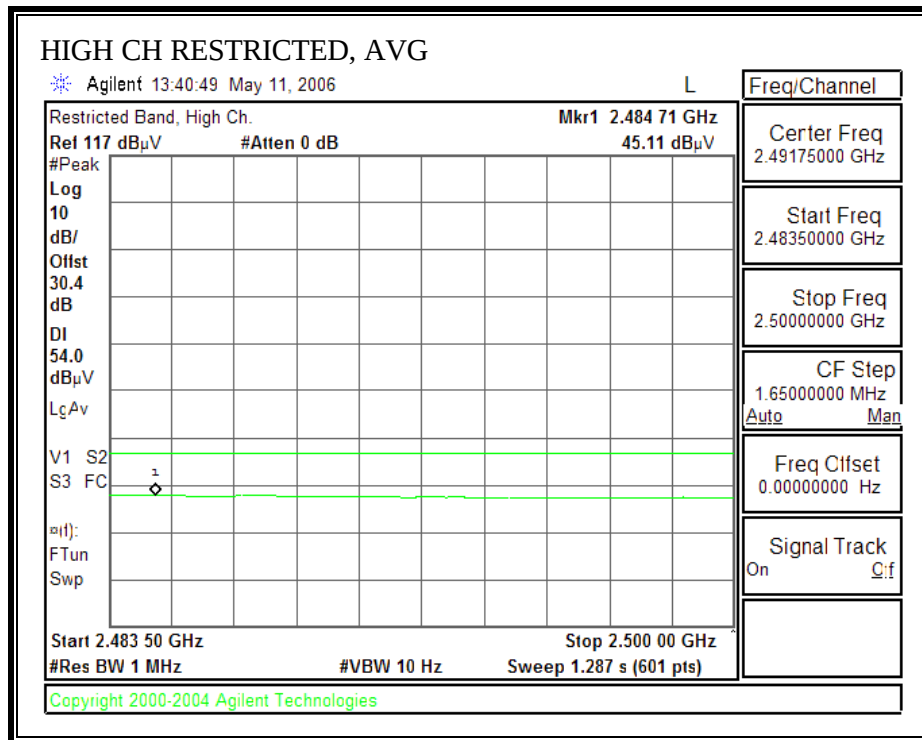
RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, HORIZONTAL)

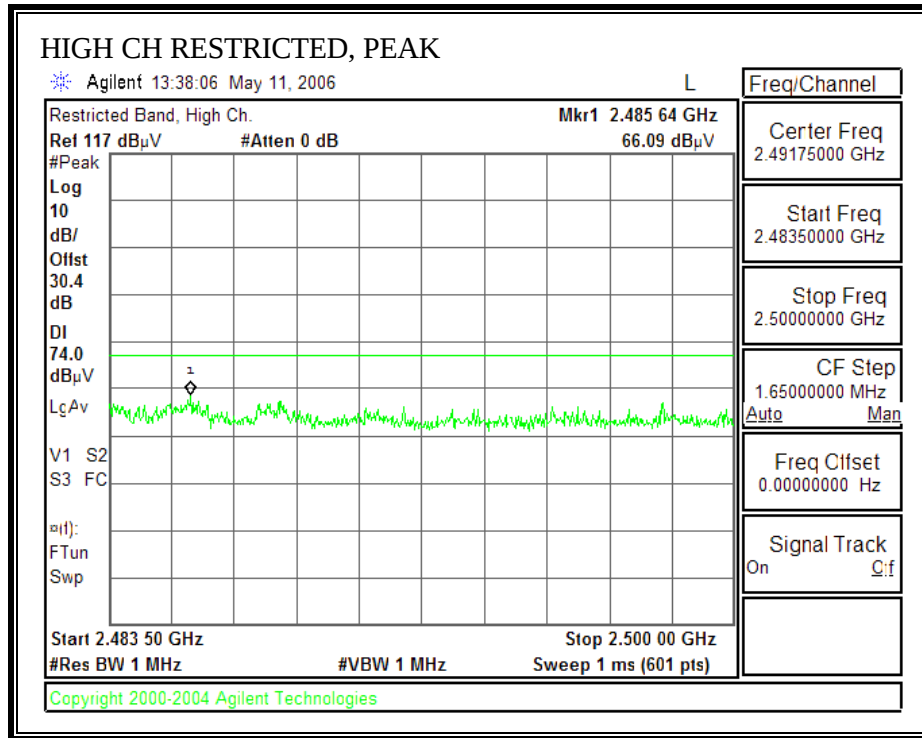


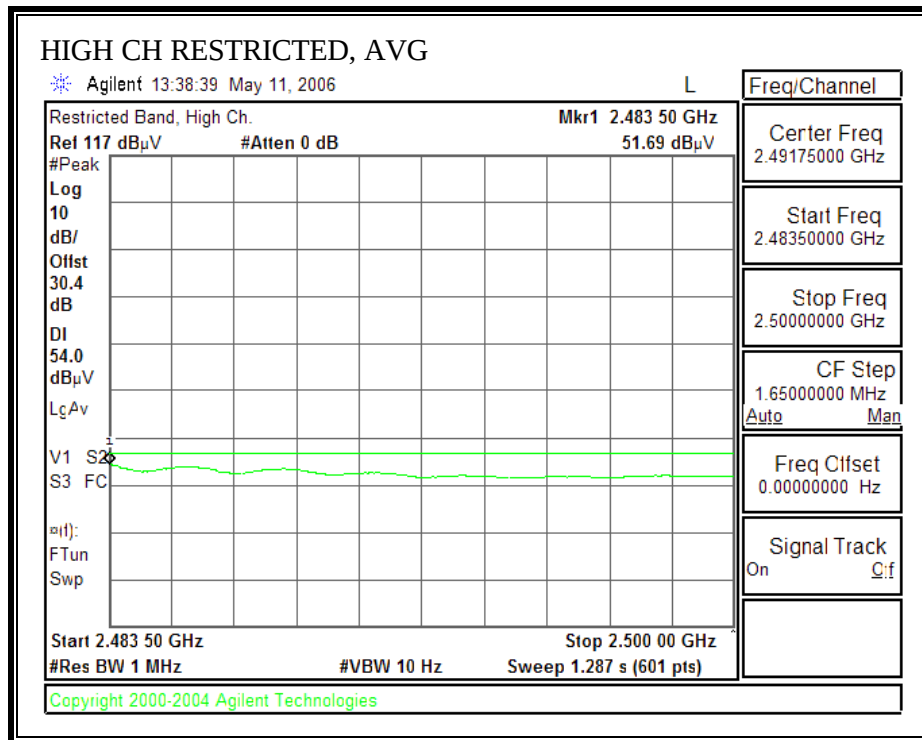
RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, VERTICAL)

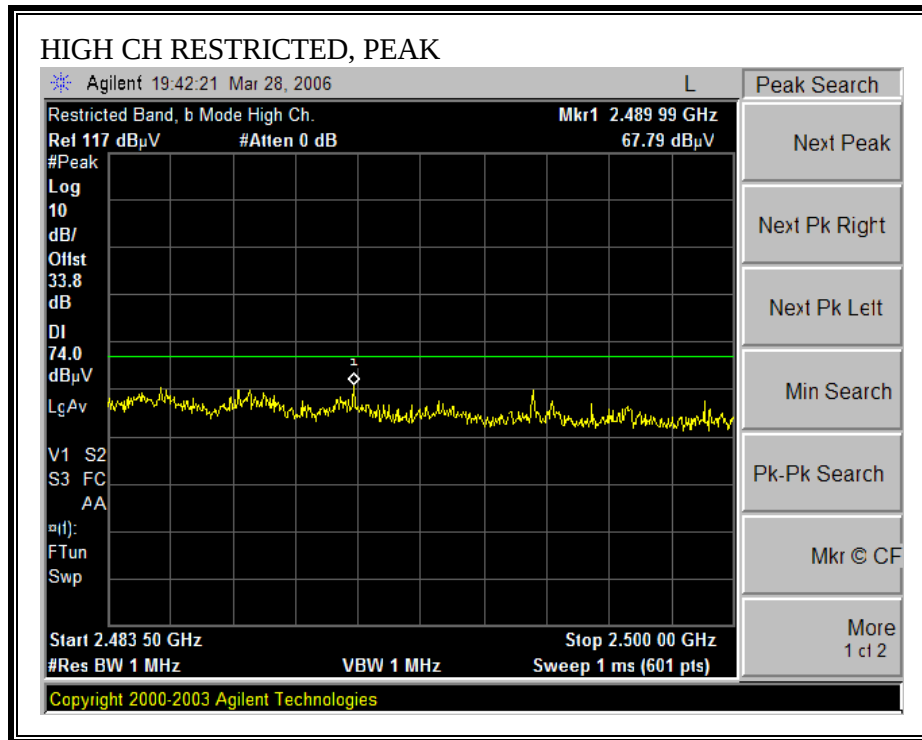


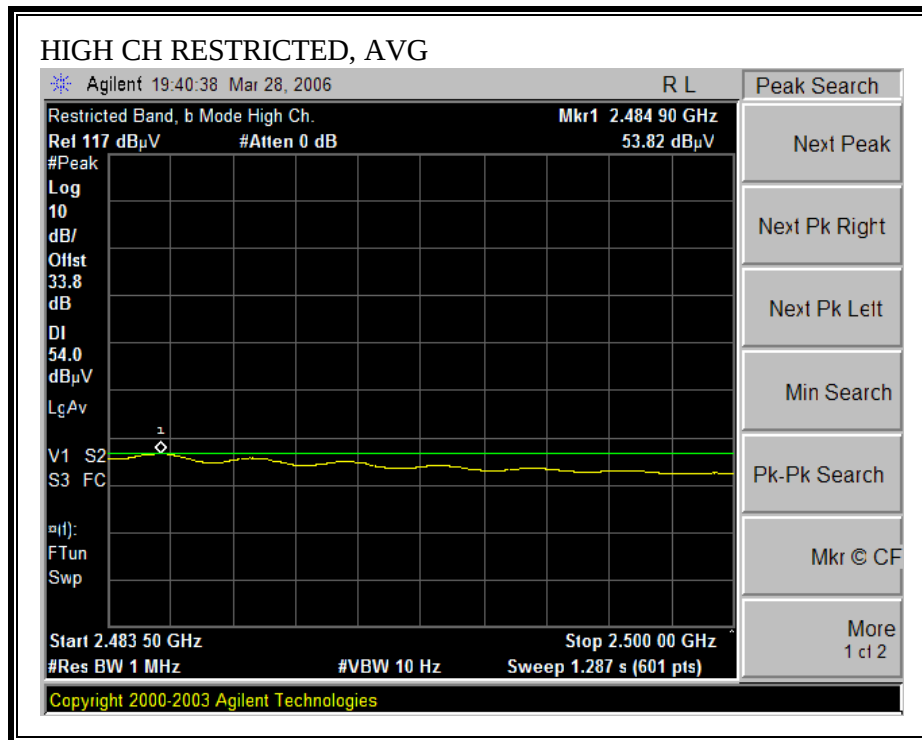
RESTRICTED BANDEDGE (HIGHCHANNEL, 2442 MHz, HORIZONTAL)

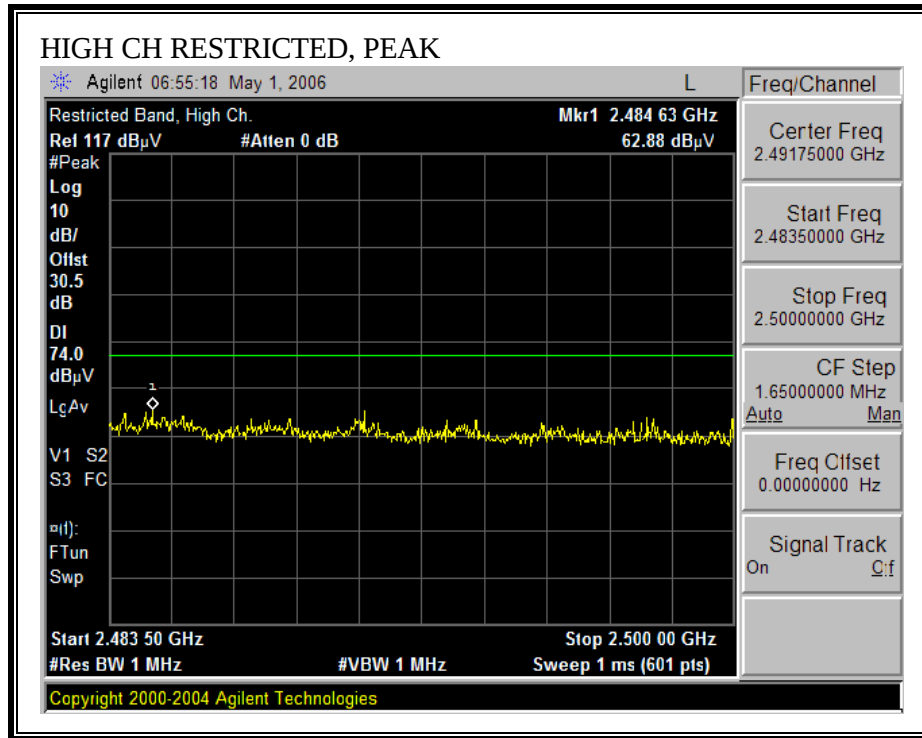


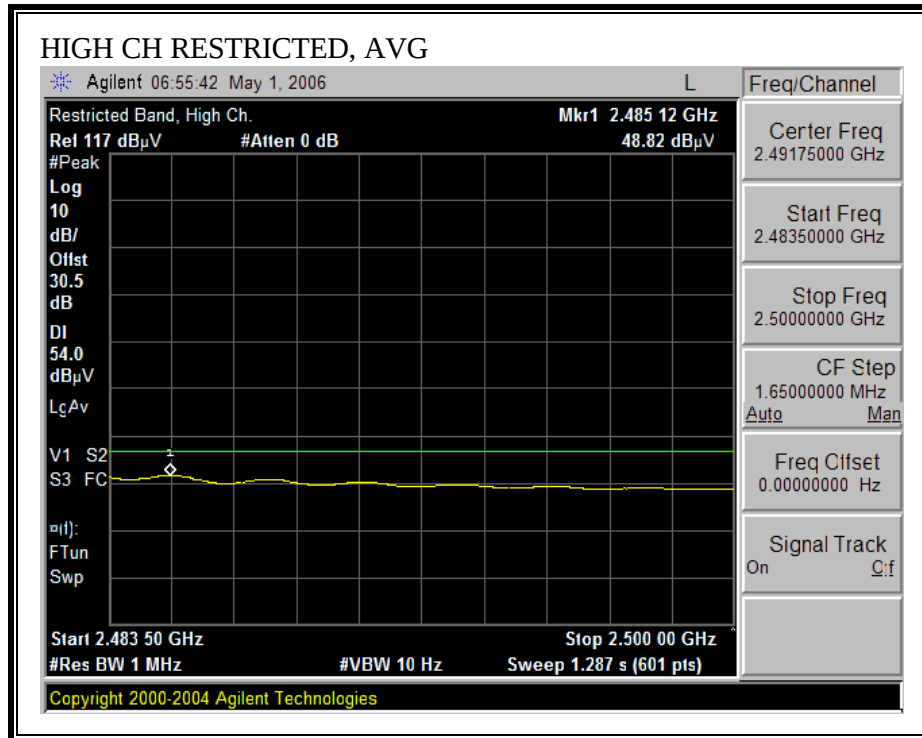
RESTRICTED BANDEDGE (HIGH CHANNEL, 2442 MHz, VERTICAL)

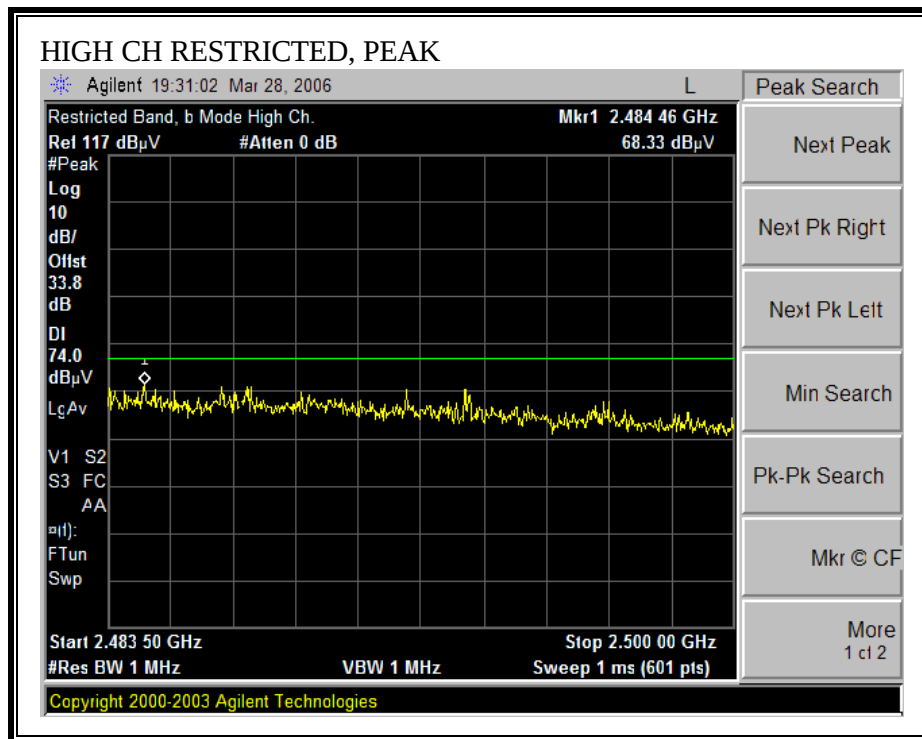


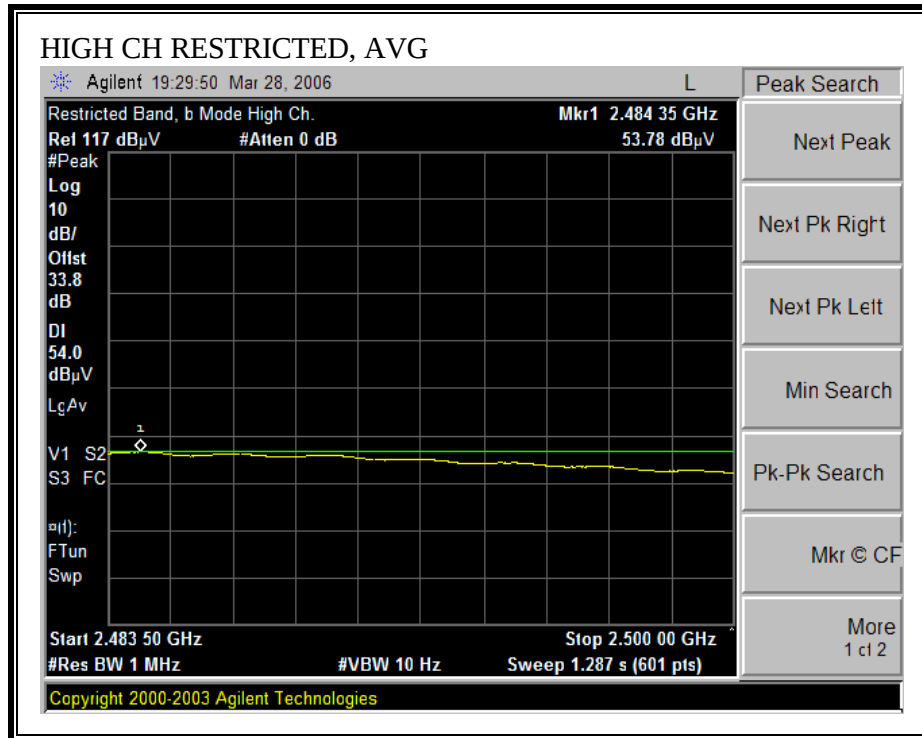
RESTRICTED BANDEDGE (HIGHCHANNEL, 2447 MHz, HORIZONTAL)

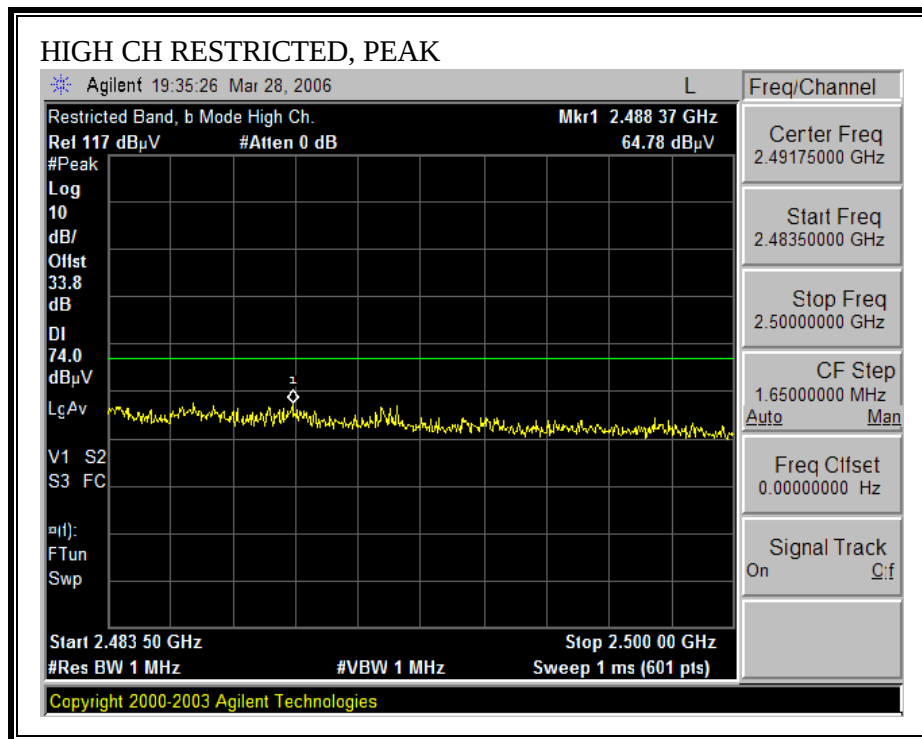


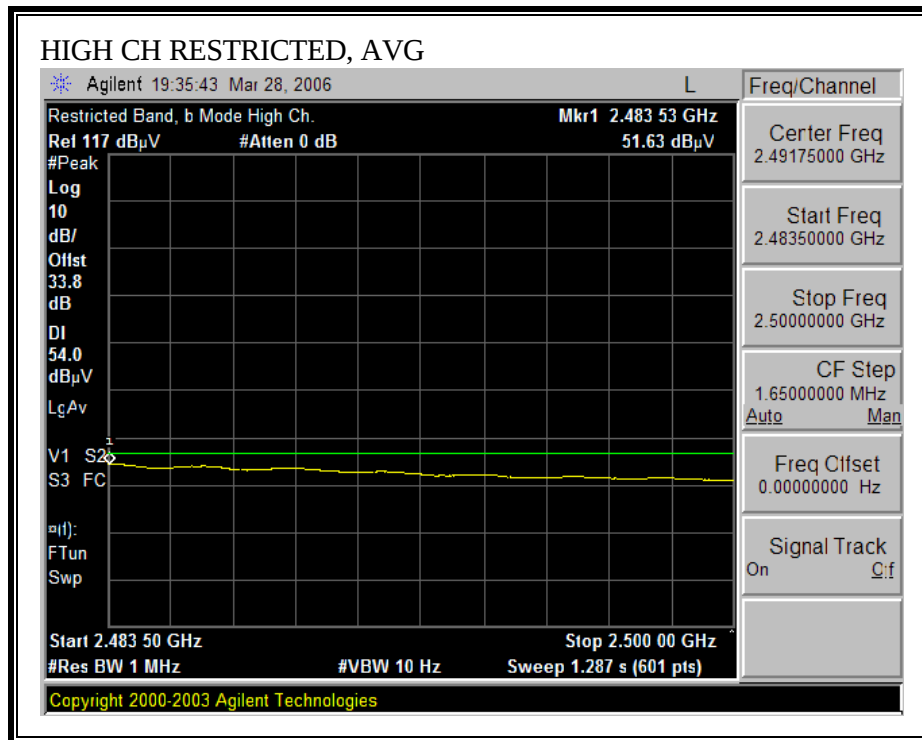
RESTRICTED BANDEDGE (HIGH CHANNEL, 2447 MHz, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, 2452 MHz, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, 2452 MHz, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – 40 MHz TX BANDWIDTH

High Frequency Measurement															
Compliance Certification Services, Morgan Hill Open Field Site															
Company: Broadcom Project #: 06U10233 Date: 05/15/06 Test Engineer: Vien Tran Configuration: EUT (BCM94321MC, S/N 316) & Apple PCB Antenna Mode: MIMO 40MHz Tx BW 2.4 GHz Band Average Power Meter: Low = 14 dBm, Mid = 14 dBm, High = 14dBm															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T144 Miteq 3008A00931						FCC 15.209							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz					
		Vien 187215002		Vien 197209005		HPF_4.0GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr 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 3, 2422 MHz															
4.844	3.0	49.1	42.0	33.3	3.0	-36.5	0.0	0.6	49.5	42.4	74	54	-24.5	-11.6	V
7.266	3.0	47.2	35.5	35.0	4.2	-36.2	0.0	0.6	50.7	39.0	74	54	-23.3	-15.0	V
9.688	3.0	46.8	33.2	36.7	4.7	-37.0	0.0	0.8	52.1	38.5	74	54	-20.9	-15.0	V
4.844	3.0	53.1	50.9	33.3	3.0	-36.5	0.0	0.6	53.5	51.3	74	54	-20.2	-2.9	H
7.266	3.0	43.0	32.1	35.0	4.2	-36.2	0.0	0.6	46.5	35.6	74	54	-27.5	-18.4	H
9.688	3.0	43.8	33.3	36.7	4.7	-37.0	0.0	0.8	49.1	38.6	74	54	-24.9	-15.4	H
Mid Ch, 2437 MHz															
4.874	3.0	49.3	42.2	33.4	3.0	-36.5	0.0	0.6	49.7	42.6	74	54	-24.3	-11.4	V
7.311	3.0	47.4	35.7	35.0	4.2	-36.2	0.0	0.6	50.9	39.2	74	54	-23.1	-14.8	V
9.748	3.0	47.0	33.4	36.8	4.7	-37.0	0.0	0.8	52.2	38.6	74	54	-20.8	-15.4	V
4.874	3.0	54.0	51.6	33.4	3.0	-36.5	0.0	0.6	54.5	52.1	74	54	-19.5	-1.9	H
7.311	3.0	43.5	32.5	35.0	4.2	-36.2	0.0	0.6	47.1	36.1	74	54	-26.9	-17.9	H
9.748	3.0	44.0	33.6	36.8	4.7	-37.0	0.0	0.8	49.3	38.9	74	54	-24.7	-15.1	H
High Ch 9, 2452 MHz															
4.904	3.0	49.8	42.7	33.4	3.0	-36.5	0.0	0.6	50.4	43.3	74	54	-23.6	-10.7	V
7.356	3.0	47.9	36.2	35.0	4.2	-36.2	0.0	0.6	51.5	39.8	74	54	-22.5	-14.2	V
9.808	3.0	47.5	33.9	36.8	4.7	-37.0	0.0	0.8	52.8	39.2	74	54	-20.2	-14.8	V
4.904	3.0	55.0	52.2	33.4	3.0	-36.5	0.0	0.6	55.6	52.8	74	54	-18.4	-1.2	H
7.356	3.0	45.1	32.8	35.0	4.2	-36.2	0.0	0.6	48.7	36.4	74	54	-25.3	-17.6	H
9.808	3.0	43.8	32.9	36.8	4.7	-37.0	0.0	0.8	49.1	38.2	74	54	-24.9	-15.8	H
Note: No other emissions were detected above the 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											

7.13.12. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND**HARMONICS AND SPURIOUS EMISSIONS – 20 MHz TX BANDWIDTH**

High Frequency Measurement															
Compliance Certification Services, Morgan Hill Open Field Site															
Company: Broadcom Project #: 06U10233 Date: 05/10/06 Test Engineer: Vien Tran Configuration: EUT (BCM94321MC, S/N 316) & Apple PCB Antenna Mode: MIMO 20MHz Tx Bandwidth_11a Mode_5.8 GHz Band Average Power Meter: Low = 15dBm, Mid = 15dBm, High = 15dBm															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T144 Miteq 3008A00931		T88 Miteq 26-40GHz		T89; ARA 18-26GHz; S/N:1049		FCC 15.209							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz					
		Vien 187215002		Vien 197209005		HPF_7.6GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr 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, 5745 MHz															
11.490	3.0	47.9	38.6	37.5	4.8	-35.9	0.0	0.7	55.0	45.7	74	54	-19.0	-8.3	V
17.235	3.0	44.0	33.2	41.7	6.1	-33.8	0.0	0.6	58.8	48.0	74	54	-15.2	-6.0	V
11.490	3.0	49.4	39.8	37.5	4.8	-35.9	0.0	0.7	56.5	46.9	74	54	-17.5	-7.1	H
17.235	3.0	44.1	33.9	41.7	6.1	-33.8	0.0	0.6	58.9	48.7	74	54	-15.1	-5.3	H
MID CH, 5785 MHz															
11.570	3.0	46.6	38.3	37.5	4.8	-35.8	0.0	0.7	53.8	45.5	74	54	-20.2	-8.5	H
17.355	3.0	43.6	32.8	42.2	6.1	-33.8	0.0	0.6	58.8	48.0	74	54	-15.2	-6.0	V
11.570	3.0	48.5	39.2	37.5	4.8	-35.8	0.0	0.7	55.7	46.4	74	54	-18.3	-7.6	V
17.355	3.0	43.5	33.1	42.2	6.1	-33.8	0.0	0.6	58.7	48.3	74	54	-15.3	-5.7	H
HI CH, 5825 MHz															
11.650	3.0	46.8	37.1	37.5	4.8	-35.7	0.0	0.7	54.1	44.4	74	54	-19.9	-9.6	V
17.475	3.0	43.5	32.2	42.7	6.2	-33.8	0.0	0.6	59.1	47.8	74	54	-14.9	-6.2	V
11.650	3.0	49.7	38.6	37.5	4.8	-35.7	0.0	0.7	57.0	45.9	74	54	-17.0	-8.1	H
17.475	3.0	43.2	31.6	42.7	6.2	-33.8	0.0	0.6	58.8	47.2	74	54	-15.2	-6.8	H
No other emissions were detected above 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											

HARMONICS AND SPURIOUS EMISSIONS – 40 MHz TX BANDWIDTH

High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Company: Broadcom Project #: 06U10233 Date: 05/12/06 Test Engineer: Vien Tran Configuration: EUT (BCM94321MC, S/N 316) & Apple PCB Antenna Mode: MIMO 40MHz Tx BW 11a Mode 5.8 GHz Band Average Power Meter: Low = 15 dBm, Mid = 15 dBm, High = 15 dBm																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T73; S/N: 6717 @3m			T144 Miteq 3008A00931									FCC 15.209				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter				
			Vien 187215002			Vien 197209005			HPF_7.6GHz							
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)	
Ch 151, 5755 MHz																
11.510	3.0	46.3	35.5	38.3	4.8	-35.8	0.0	0.7	54.3	43.5	74	54	-19.7	-10.5	V	
17.265	3.0	44.6	34.3	42.5	6.1	-33.8	0.0	0.6	60.1	49.8	74	54	-13.9	-4.2	V, Noise Floor	
11.510	3.0	50.5	40.6	38.3	4.8	-35.8	0.0	0.7	58.5	48.6	74	54	-15.5	-5.4	H	
17.265	3.0	44.3	34.3	42.5	6.1	-33.8	0.0	0.6	59.8	49.8	74	54	-14.2	-4.2	H, Noise Floor	
Ch 159, 5795 MHz																
11.590	3.0	44.5	35.2	38.3	4.8	-35.8	0.0	0.7	52.6	43.3	74	54	-21.4	-10.7	V	
17.385	3.0	43.7	33.5	43.2	6.1	-33.8	0.0	0.6	59.9	49.7	74	54	-14.1	-4.3	V, Noise Floor	
11.590	3.0	51.2	41.0	38.3	4.8	-35.8	0.0	0.7	59.3	49.1	74	54	-14.7	-4.9	H	
17.385	3.0	44.0	32.8	43.2	6.1	-33.8	0.0	0.6	60.2	49.0	74	54	-13.8	-5.0	H, Noise Floor	
Note: No other emissions were detected above the 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									

7.13.13. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz**2.4 GHz BAND****SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)****HORIZONTAL**

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

Data#: 6 File#: 30-1000.EMI Date: 04-22-2006 Time: 10:32:49
Audix ATC

Condition: FCC CLASS-B HORIZONTAL

Test Operator : Vien Tran
Project # : 06U10233
Company : Broadcom
EUT : 2x2 Dual Band MIMO Device
Model No : BCM94321MCAG Rev. 3
S/N : 107
Configuration : EUT and Laptop
Mode of operation: Tx 2.4 GHz Band MIMO_Worst Case

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.000	9.20	20.45	29.65	40.00	-10.35	Peak
2	208.480	22.72	13.30	36.02	43.50	-7.48	Peak
3	290.930	26.73	15.33	42.06	46.00	-3.94	Peak
4	406.360	22.28	18.20	40.47	46.00	-5.53	Peak
5	434.490	20.13	18.84	38.97	46.00	-7.03	Peak
6	574.170	16.09	21.18	37.27	46.00	-8.73	Peak

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

VERTICAL



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

Data#: 3 File#: 30-1000.EMI Date: 04-22-2006 Time: 10:22:22
Audix ATC

Condition: FCC CLASS-B VERTICAL

Test Operator : Vien Tran
Project # : 06U10233
Company : Broadcom
EUT : 2x2 Dual Band MIMO Device
Model No : BCM94321MCAG Rev. 3
S/N : 107
Configuration : EUT and Laptop
Mode of operation: Tx 2.4 GHz Band MIMO_Worst Case

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	51.340	26.16	9.05	35.21	40.00	-4.79	Peak
2	126.030	20.49	15.25	35.74	43.50	-7.76	Peak
3	293.840	22.97	15.42	38.39	46.00	-7.61	Peak
4	343.310	18.64	16.68	35.33	46.00	-10.67	Peak
5	406.360	22.22	18.20	40.41	46.00	-5.59	Peak
6	574.170	17.16	21.18	38.33	46.00	-7.67	Peak

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

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

Data#: 16 File#: 30-1000.EMI Date: 04-22-2006 Time: 11:48:19
Audix ATC

Condition: FCC CLASS-B HORIZONTAL

Test Operator : Vien Tran
Project # : 06U10233
Company : Broadcom
EUT : 2x2 Dual Band MIMO Device
Model No : BCM94321MCAG Rev. 3
S/N : 107
Configuration : EUT and Laptop
Mode of operation: Tx 5 GHz Band MIMO_Worst Case

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.000	10.02	20.45	30.47	40.00	-9.53	Peak
2	124.090	21.68	15.23	36.91	43.50	-6.59	Peak
3	290.930	23.93	15.33	39.26	46.00	-6.74	Peak
4	361.740	21.45	17.20	38.65	46.00	-7.35	Peak
5	643.040	21.88	22.23	44.11	46.00	-1.89	Peak
6	681.840	19.55	22.86	42.41	46.00	-3.59	Peak

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

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

Data#: 18 File#: 30-1000.EMI Date: 04-22-2006 Time: 11:52:24
Audix ATC

Condition: FCC CLASS-B VERTICAL

Test Operator : Vien Tran

Project # : 06U10233

Company : Broadcom

EUT : 2x2 Dual Band MIMO Device

Model No : BCM94321MCAG Rev. 3

S/N : 107

Configuration : EUT and Laptop

Mode of operation: Tx 5 GHz Band MIMO_Worst Case

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	62.980	24.18	8.90	33.08	40.00	-6.92	Peak
2	126.030	20.38	15.25	35.63	43.50	-7.87	Peak
3	406.360	20.65	18.20	38.85	46.00	-7.15	Peak
4	573.200	20.48	21.16	41.64	46.00	-4.36	Peak
5	642.070	19.87	22.21	42.08	46.00	-3.92	Peak
6	707.060	17.27	23.20	40.47	46.00	-5.53	Peak

PHYCOMP PCB ANTENNA**LEGACY MODE****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.

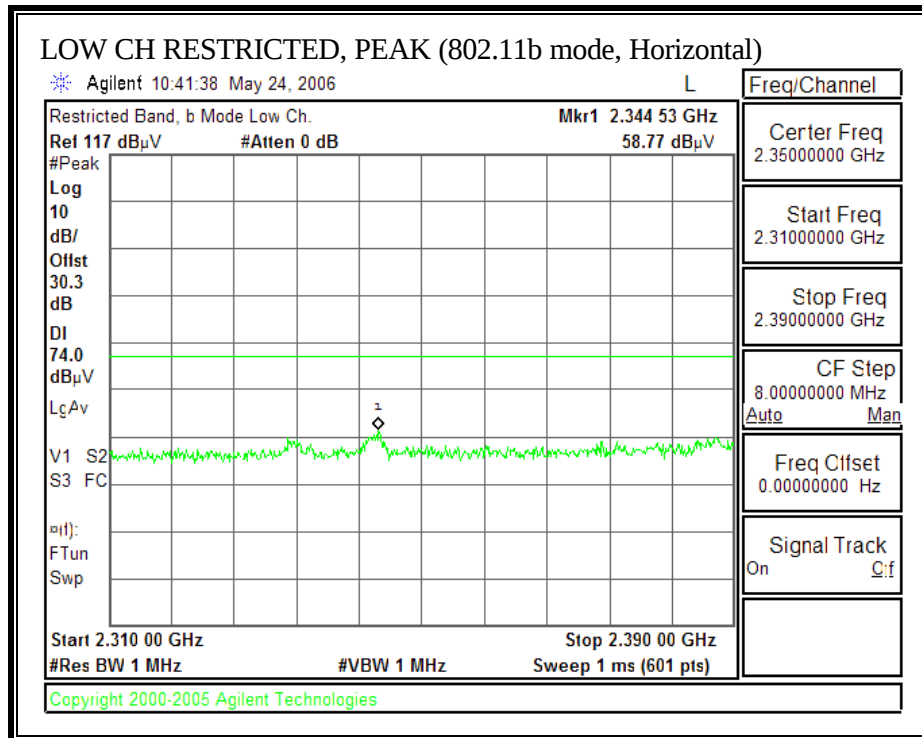
For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

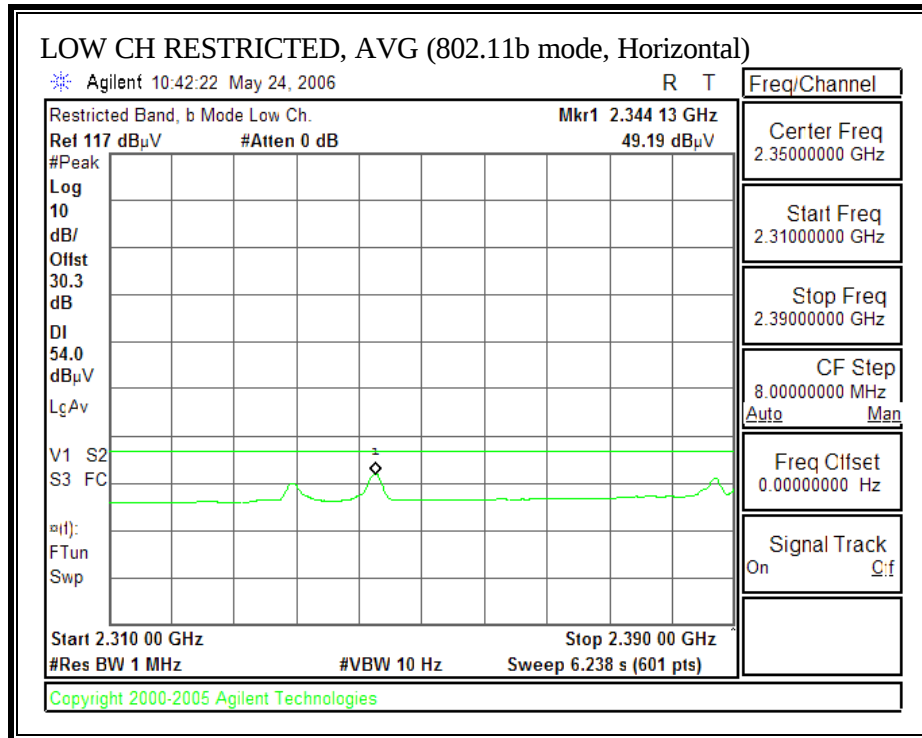
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

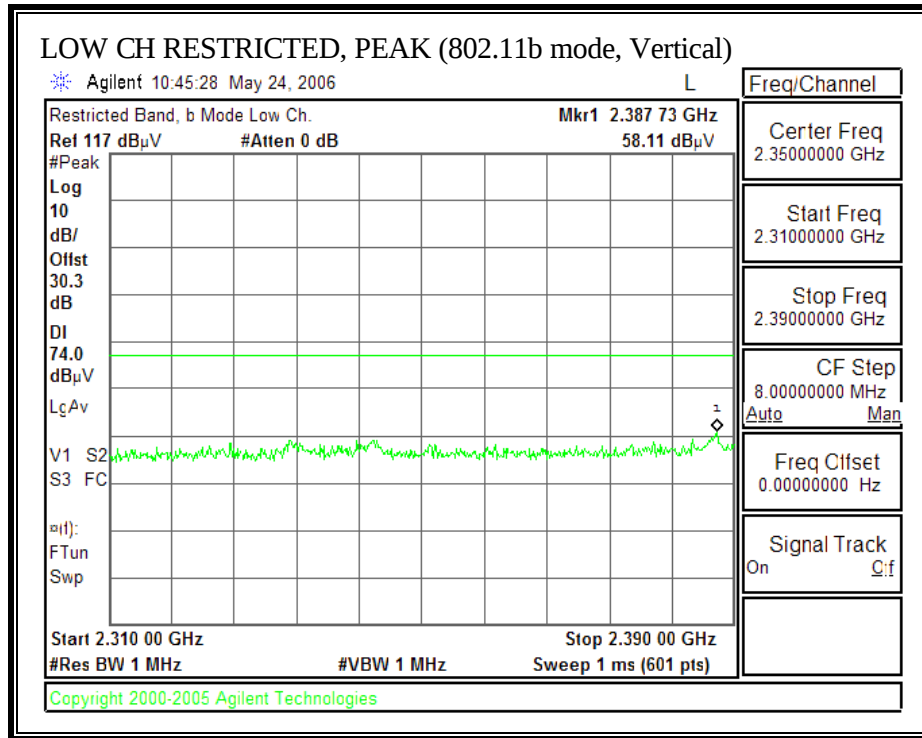
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

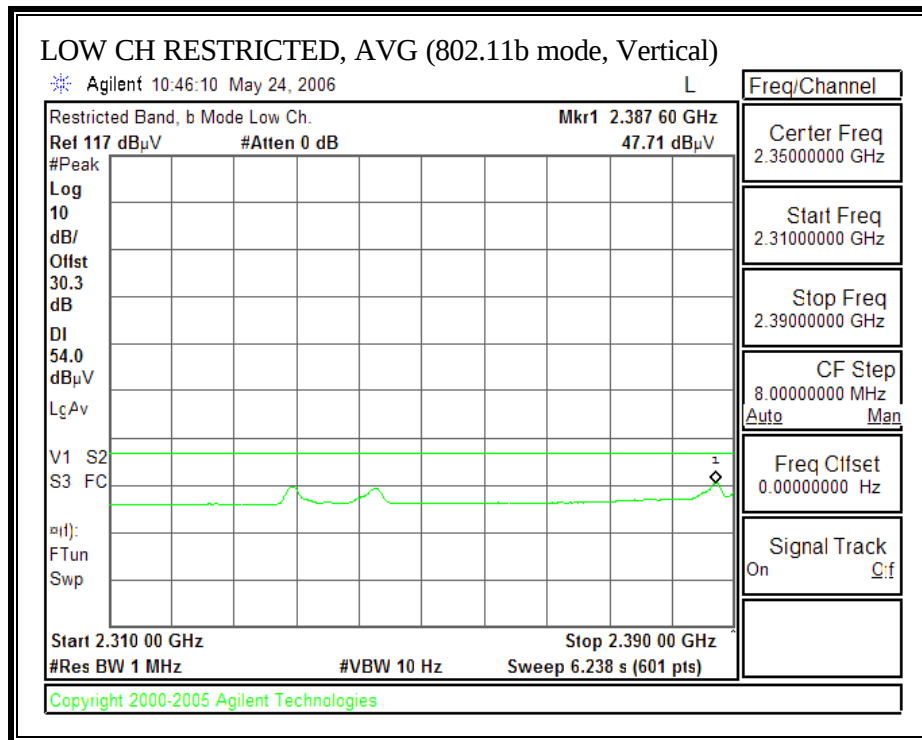
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

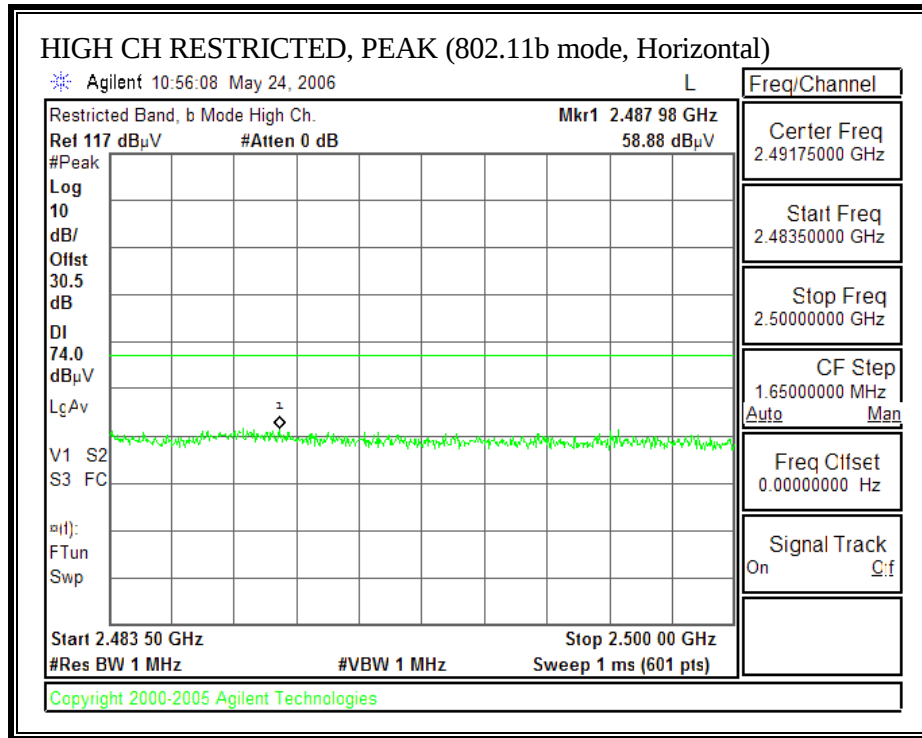
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

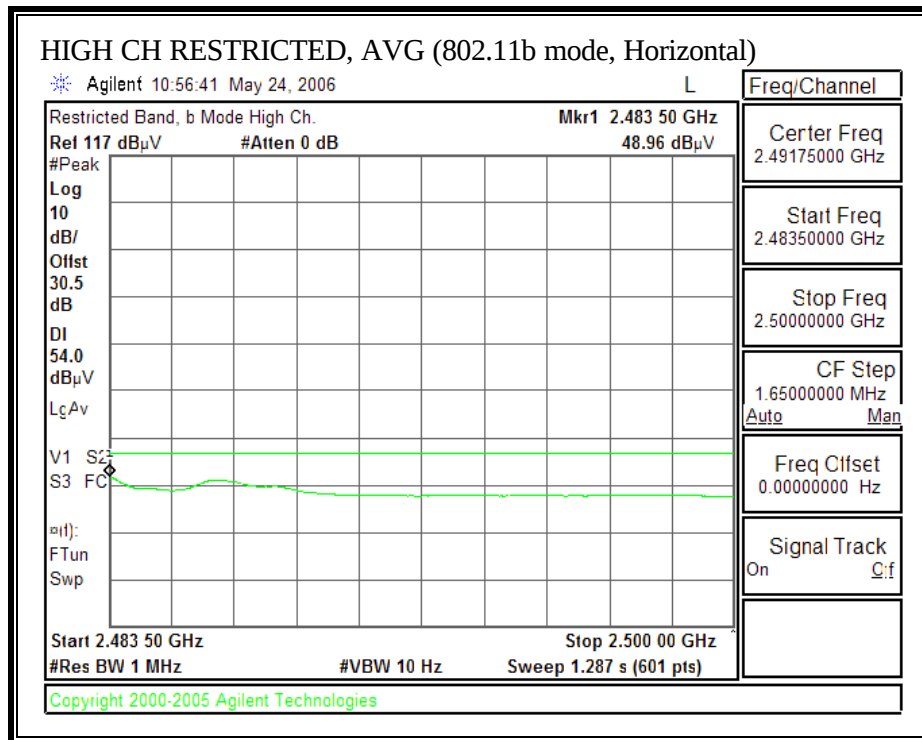
7.13.14. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND**RESTRICTED BANDEGE (b MODE, LOW CHANNEL, 2412 MHz, HORIZONTAL)**

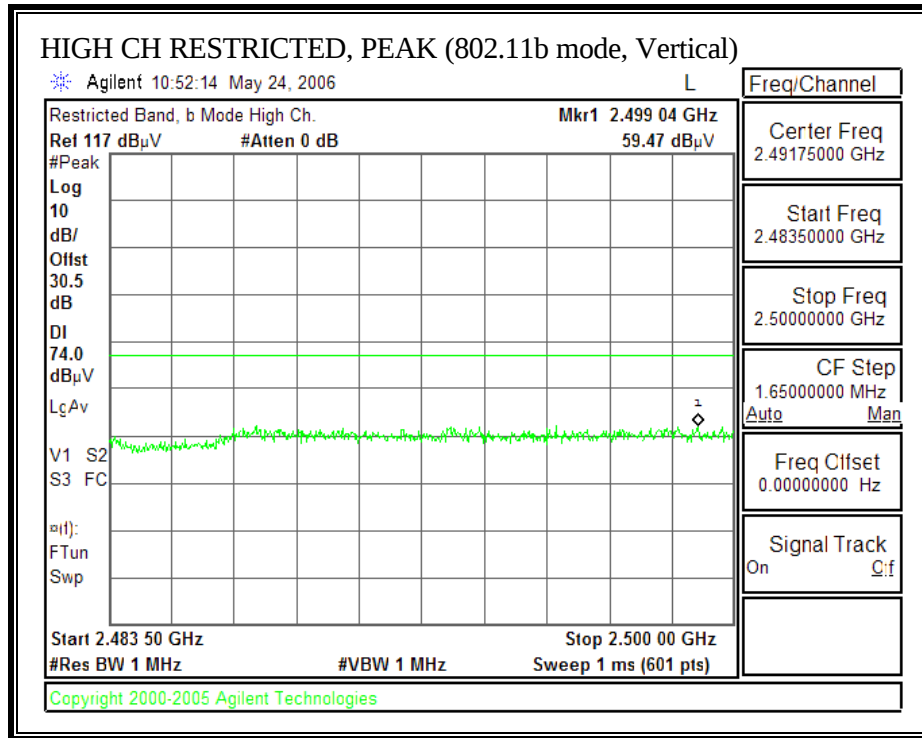


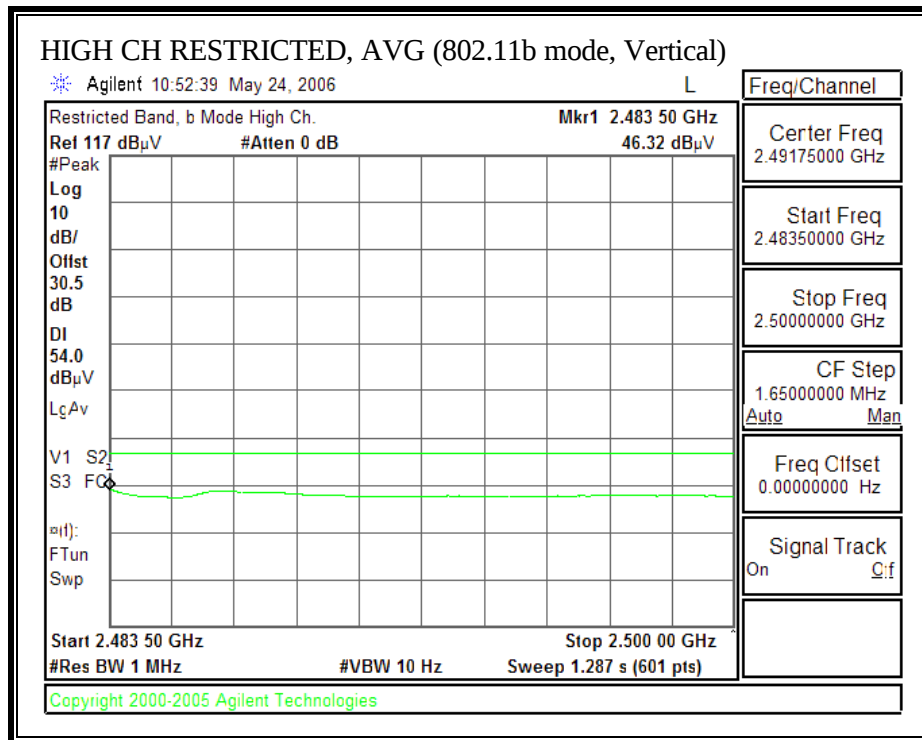
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, 2412 MHz, VERTICAL)

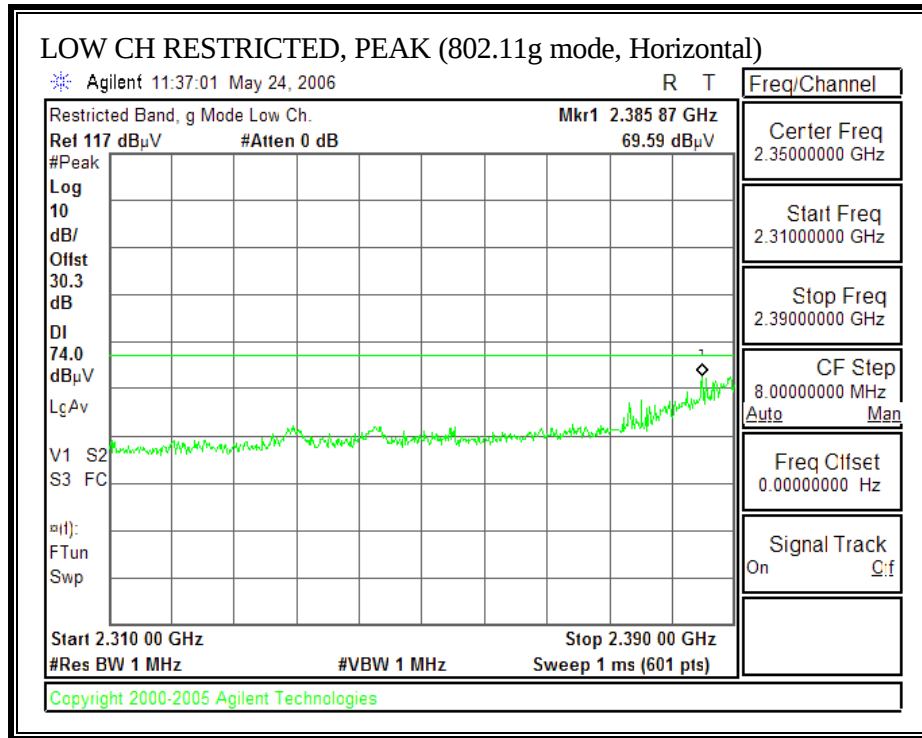


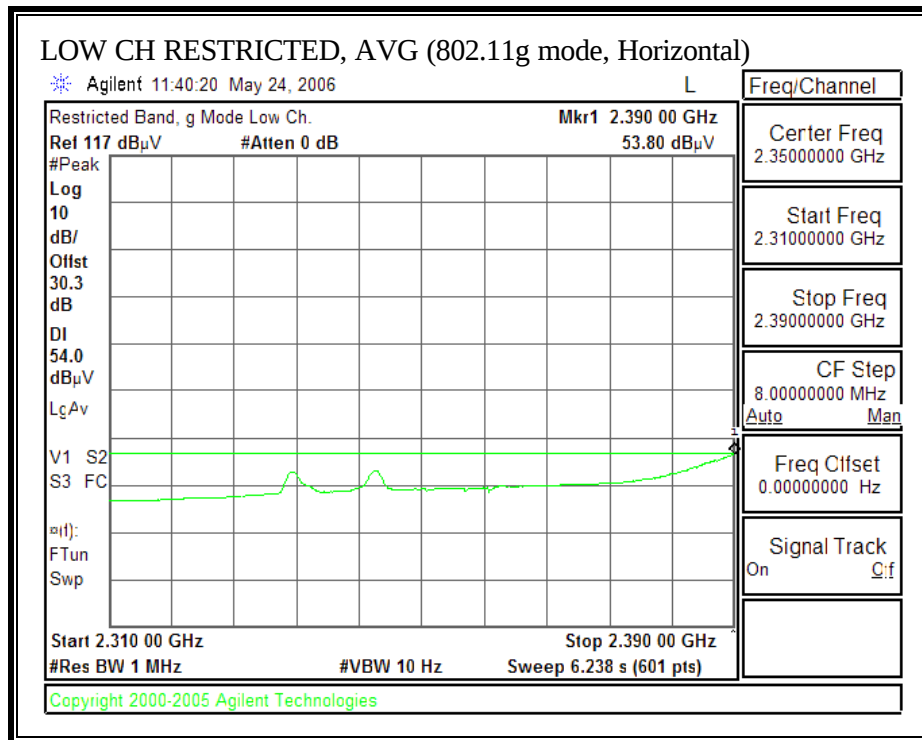
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, 2462 MHz, HORIZONTAL)

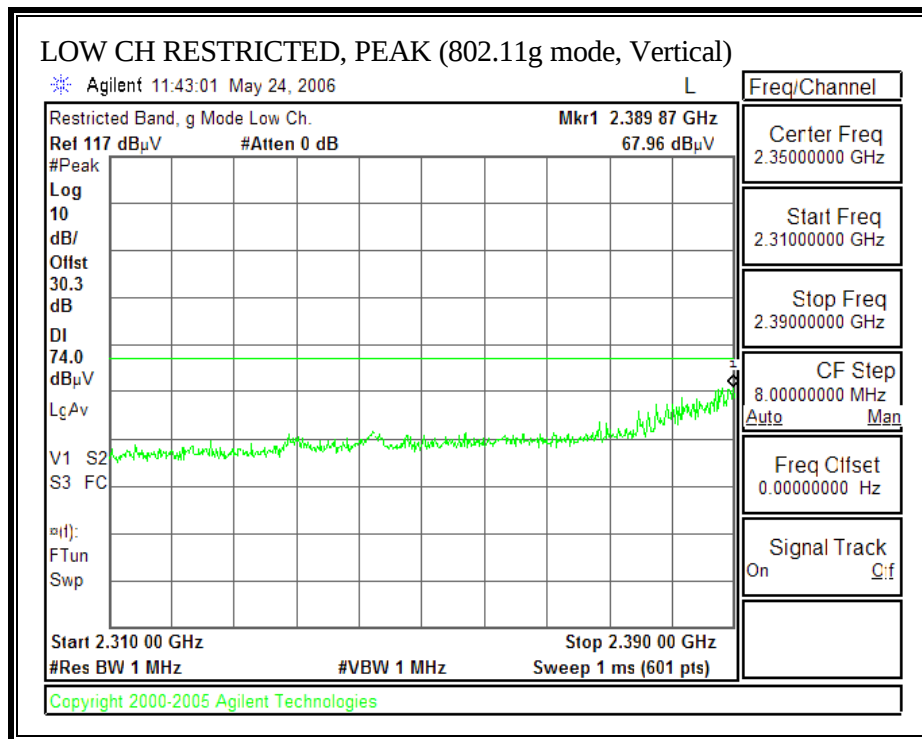


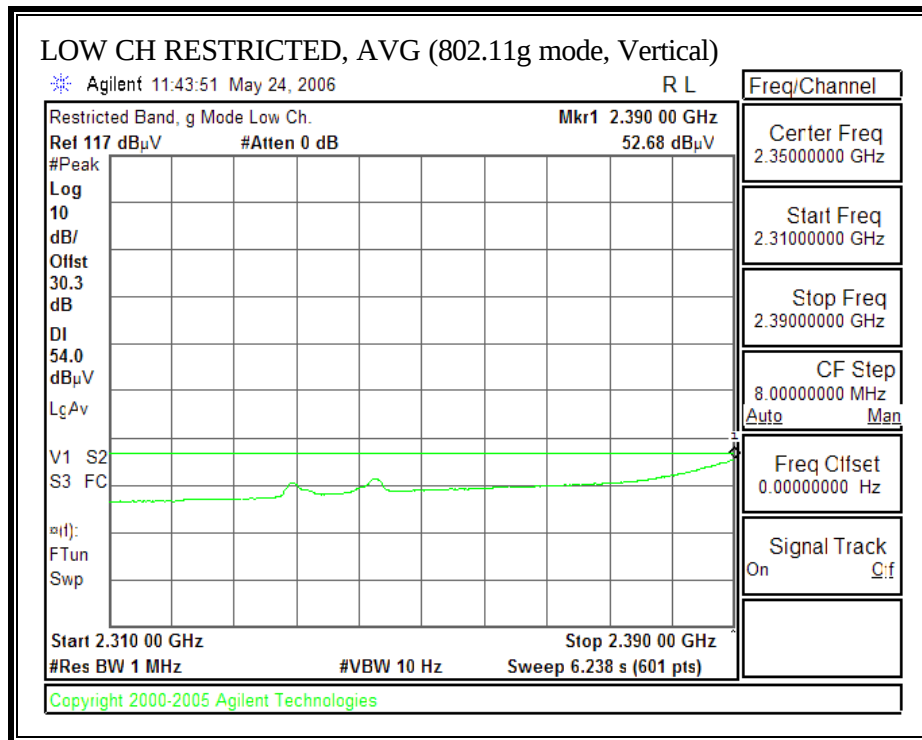
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, 2462 MHz, VERTICAL)

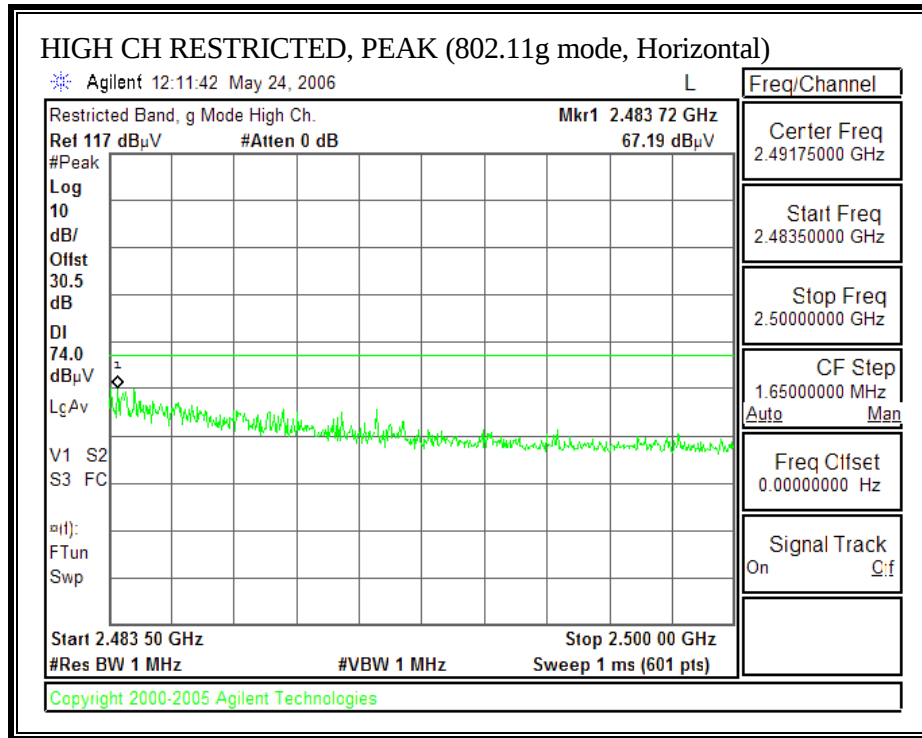


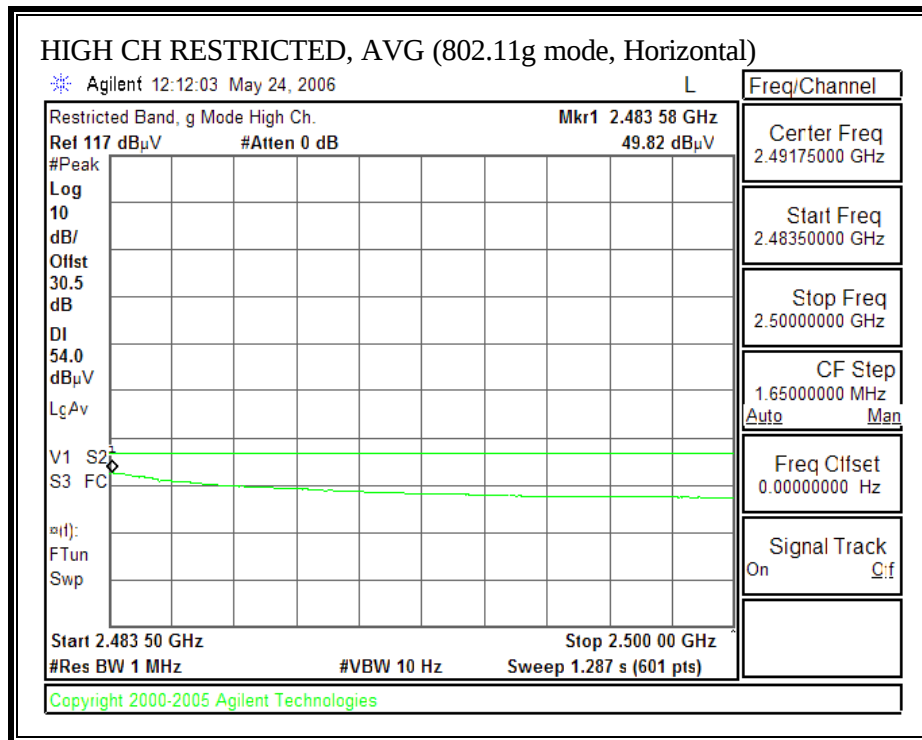
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2412 MHz, HORIZONTAL)

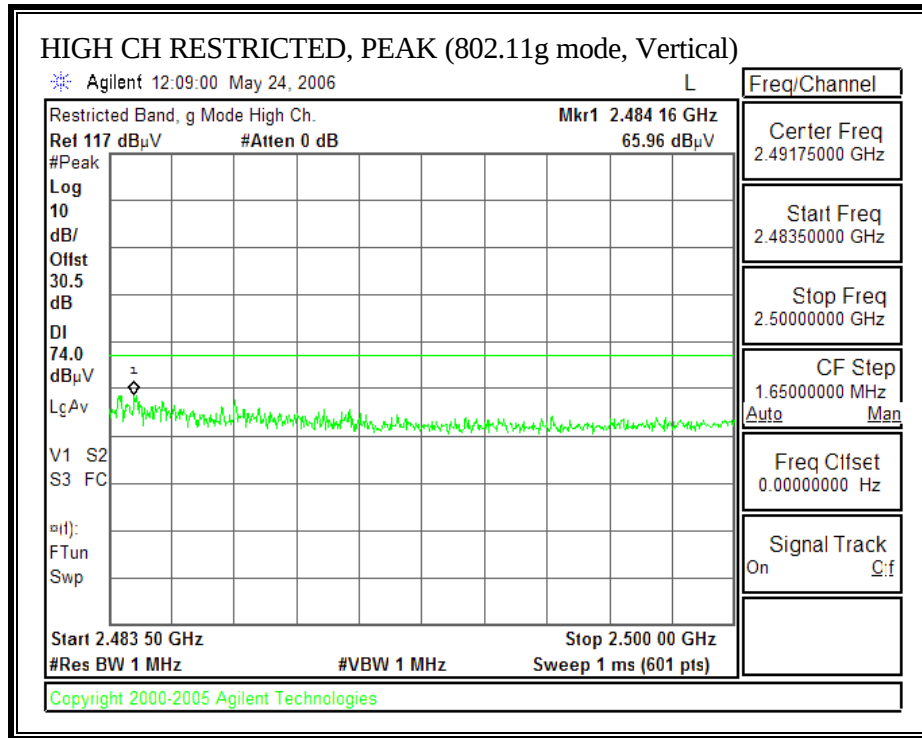


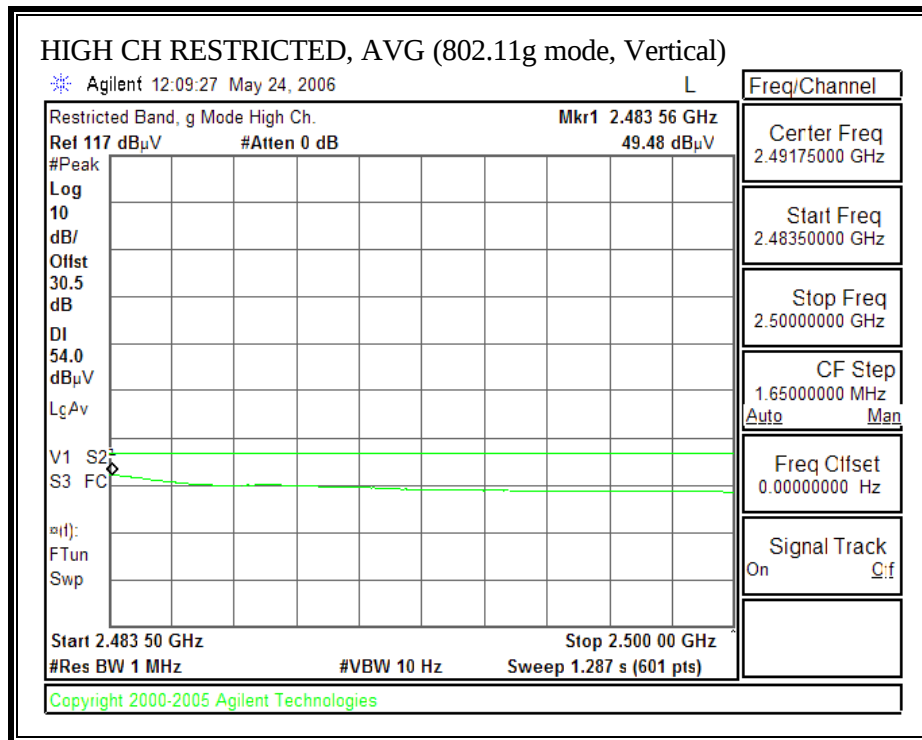
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2412 MHz, VERTICAL)



RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2462 MHz, HORIZONTAL)



RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2462 MHz, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS (b MODE)

Please refer to Hitachi antenna section.

HARMONICS AND SPURIOUS EMISSIONS (g MODE)

Please refer to Hitachi antenna section.

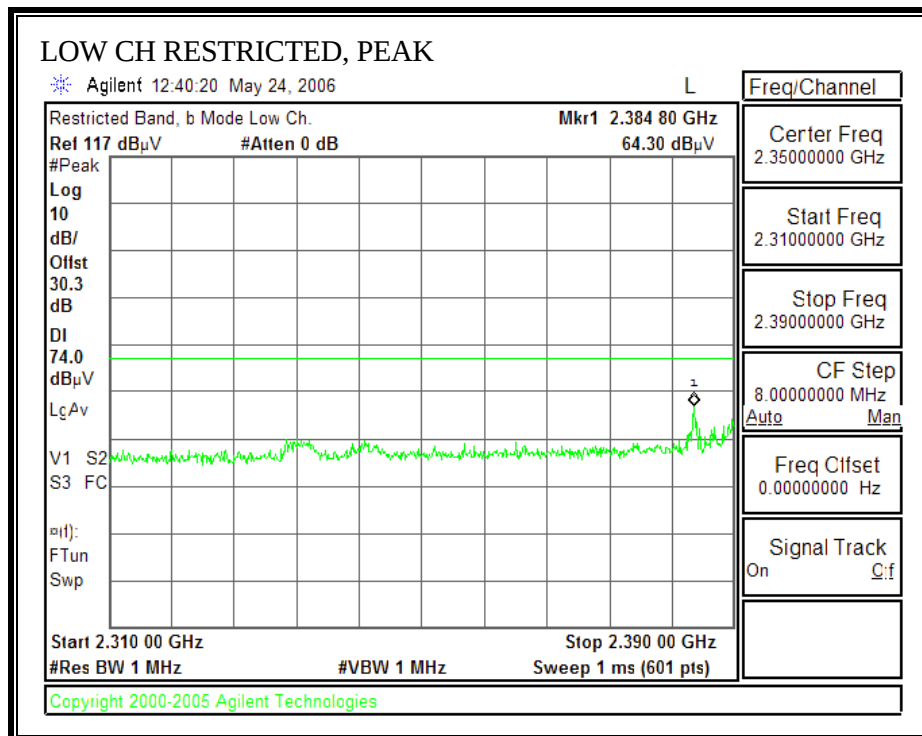
7.13.15. TRANSMITTER ABOVE 1 GHz FOR 5.725 to 5850 MHz BAND

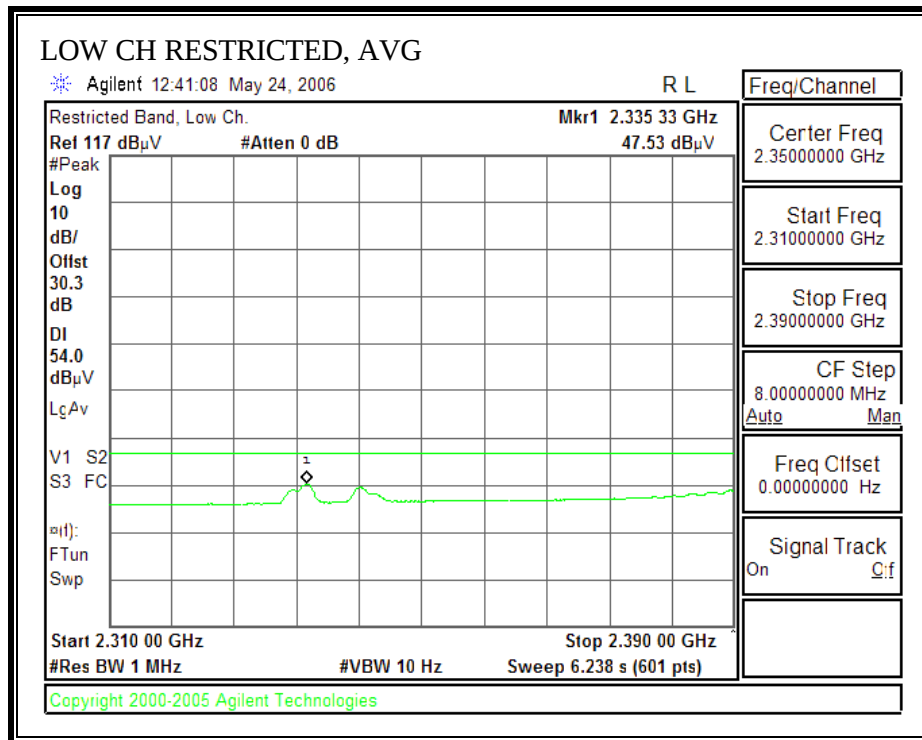
HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

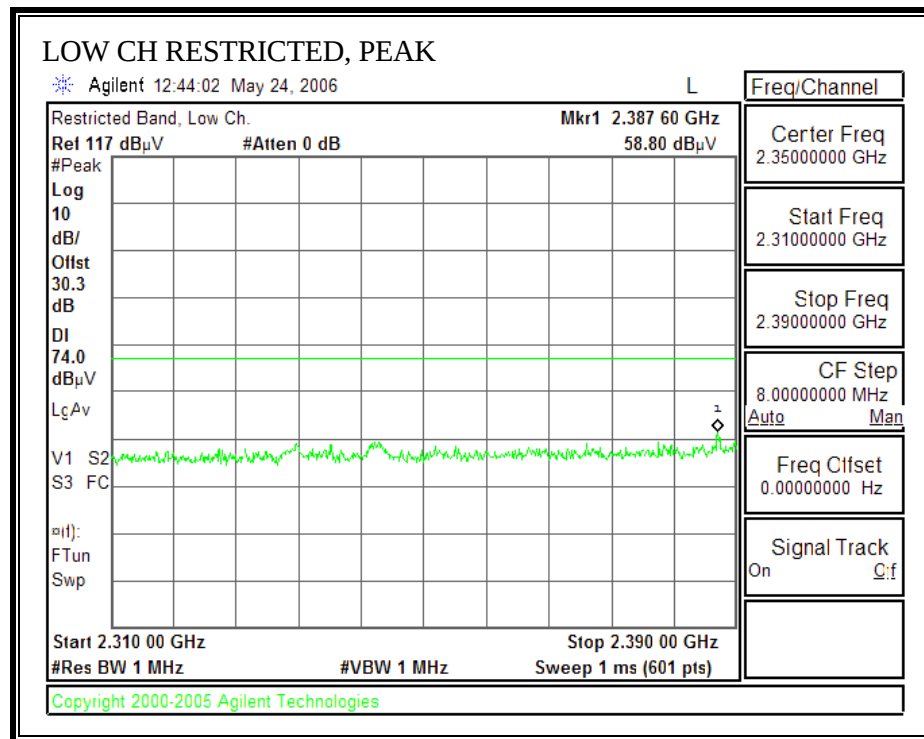
Please refer to Hitachi antenna section.

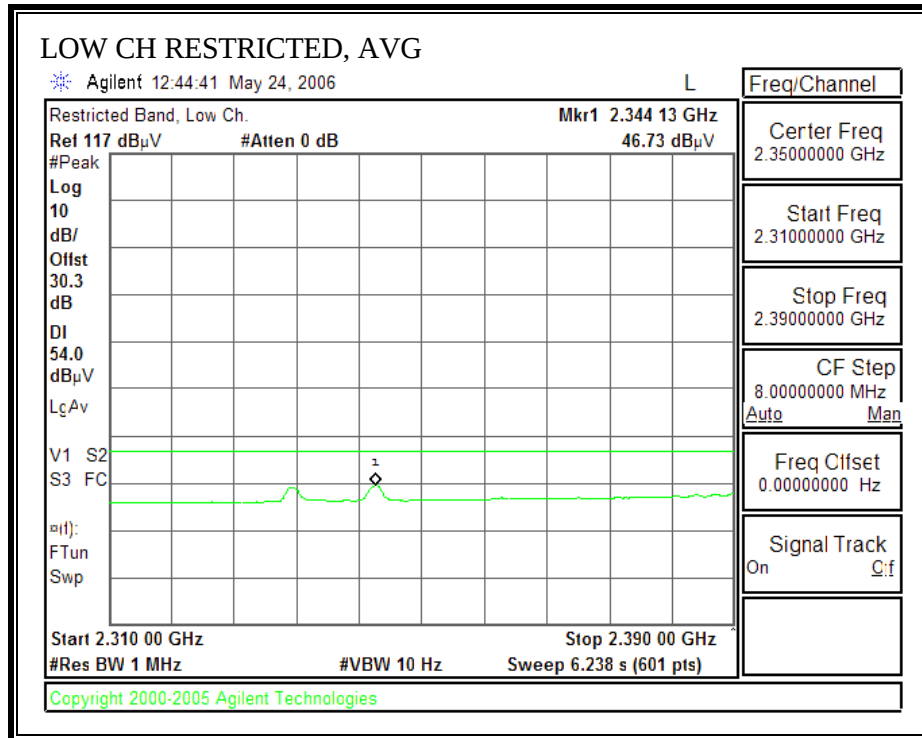
7.13.16. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

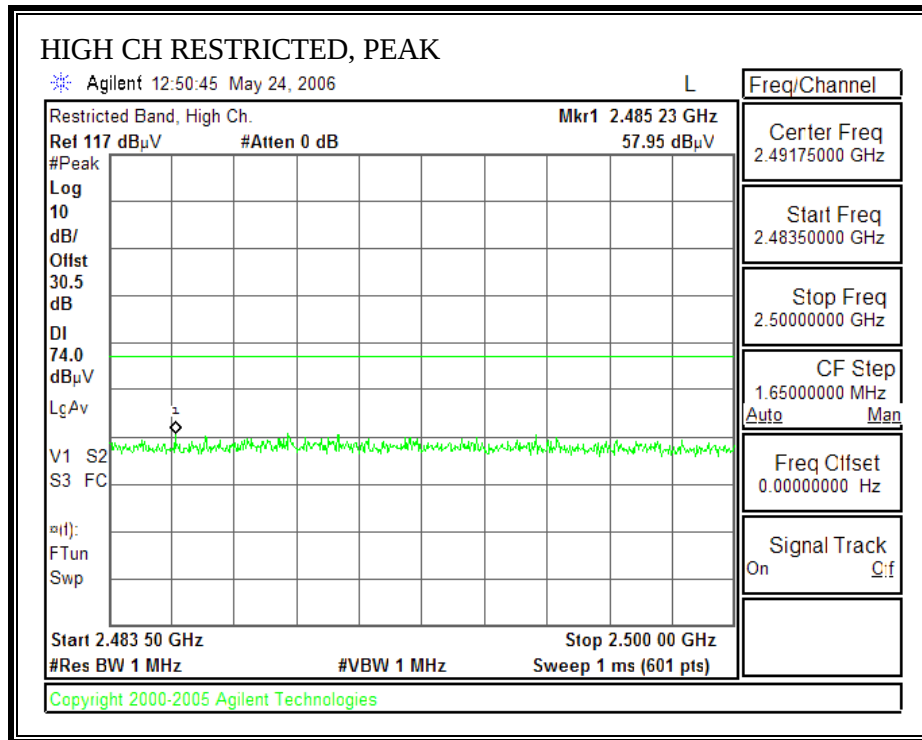
Please refer to Hitachi antenna section.

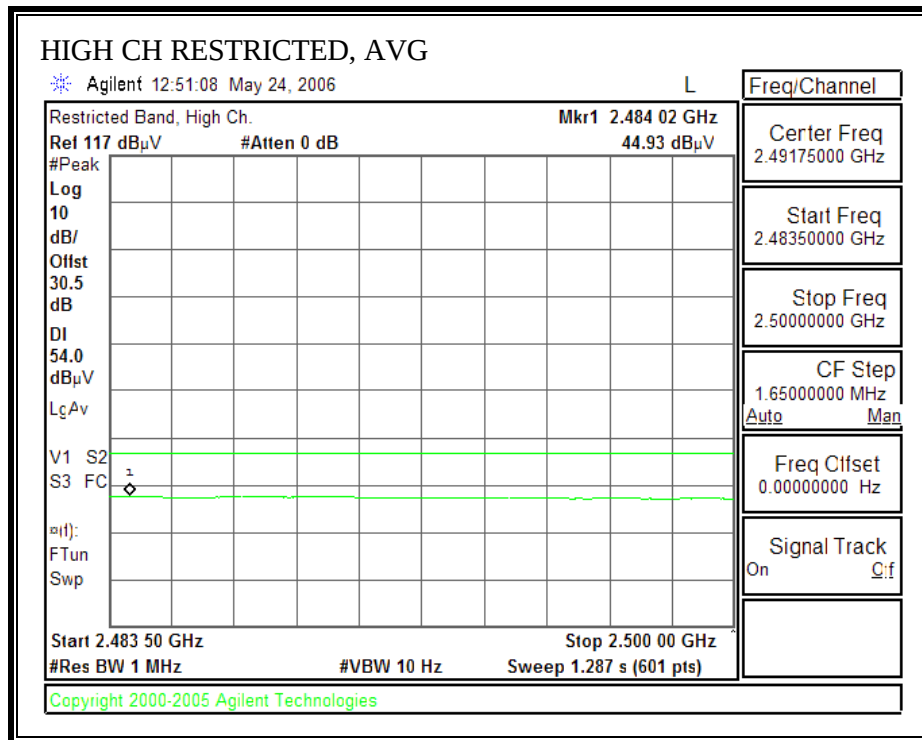
MIMO MODE**7.13.17. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND****20 MHz TX BANDWIDTH****RESTRICTED BANDEDGE (LOW CHANNEL, 2417 MHz, HORIZONTAL)**

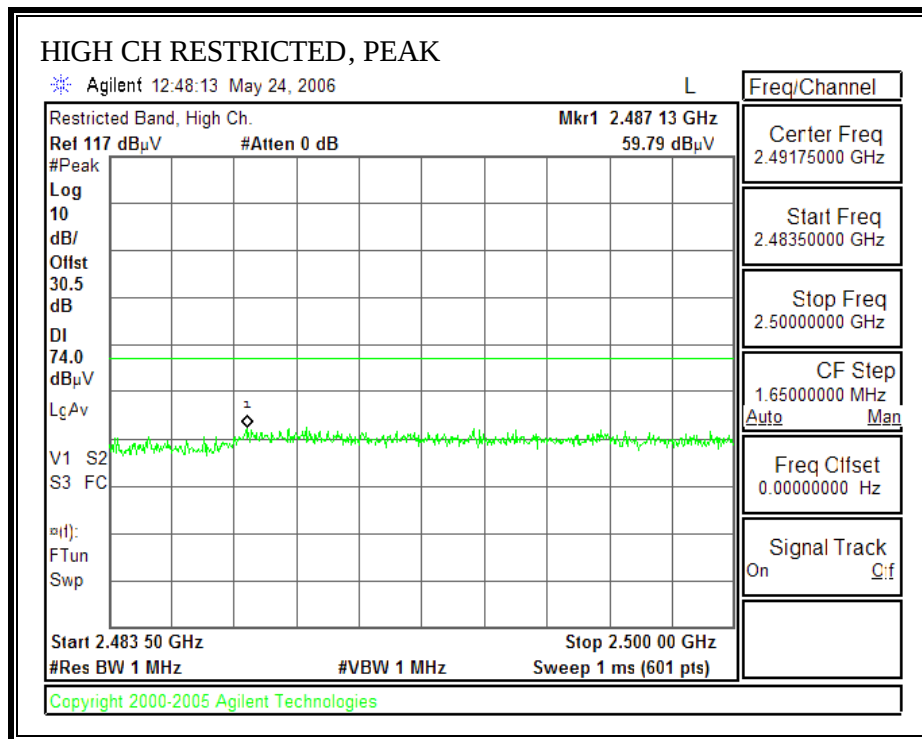


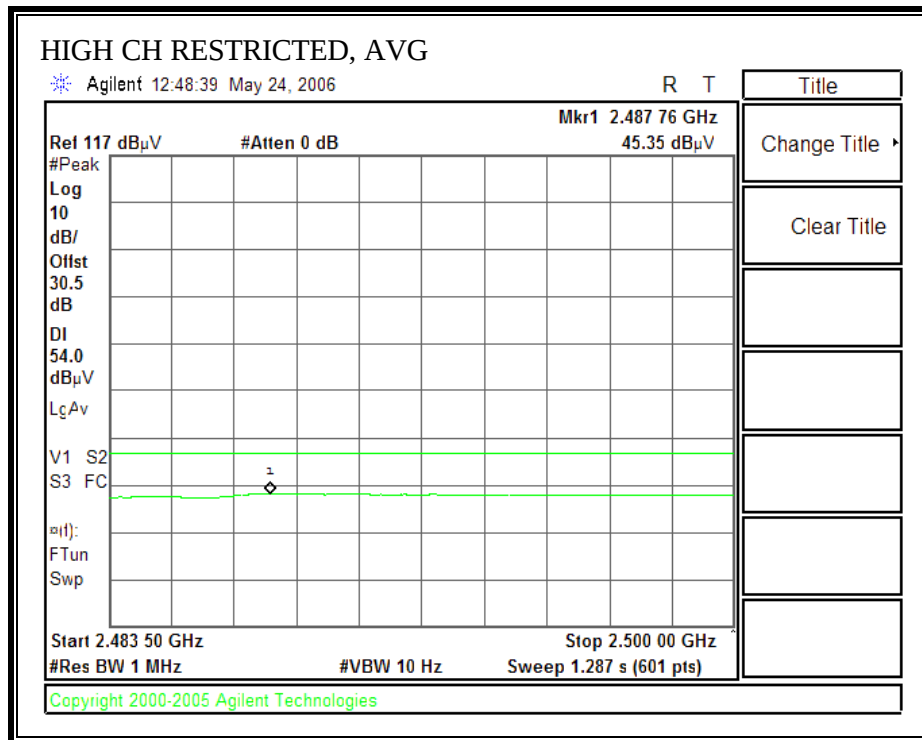
RESTRICTED BANDEDGE (LOW CHANNEL, 2417 MHz, VERTICAL)

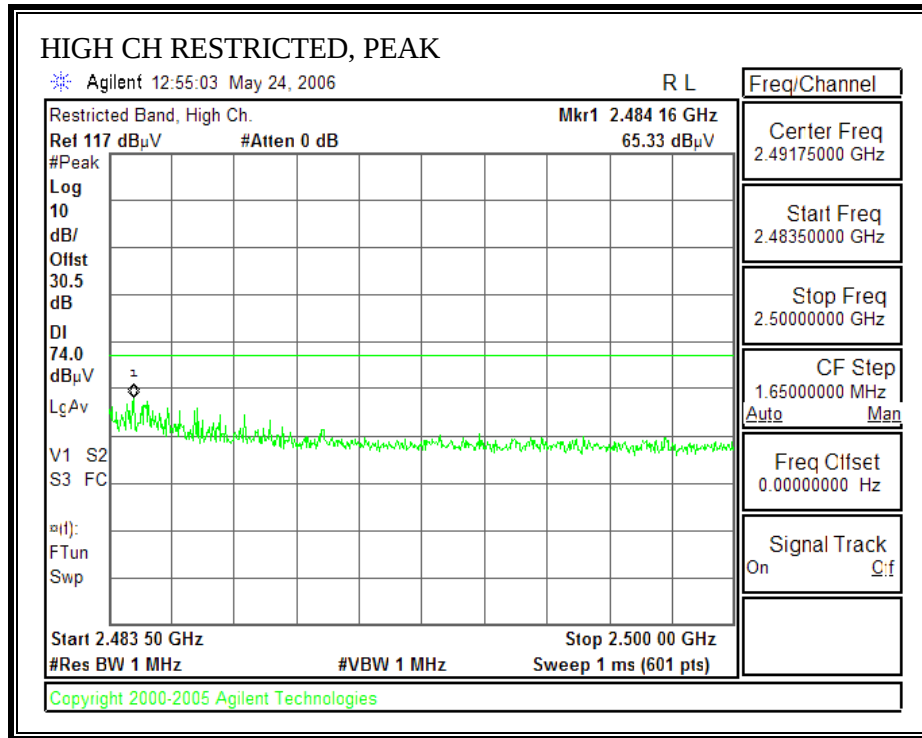


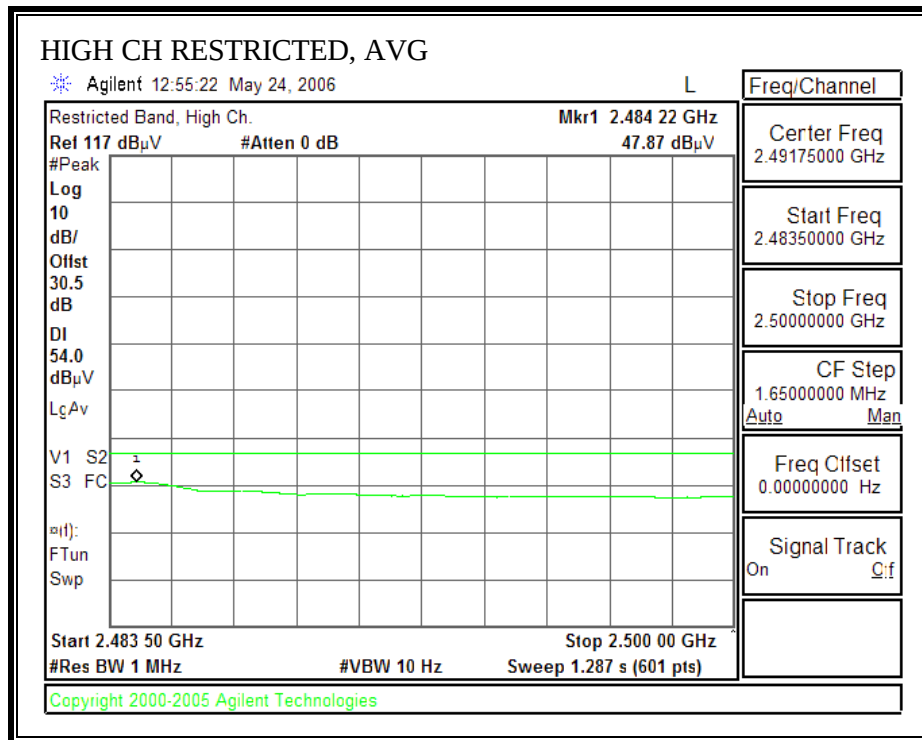
RESTRICTED BANDEDGE (HIGHCHANNEL, 2457 MHz, HORIZONTAL)

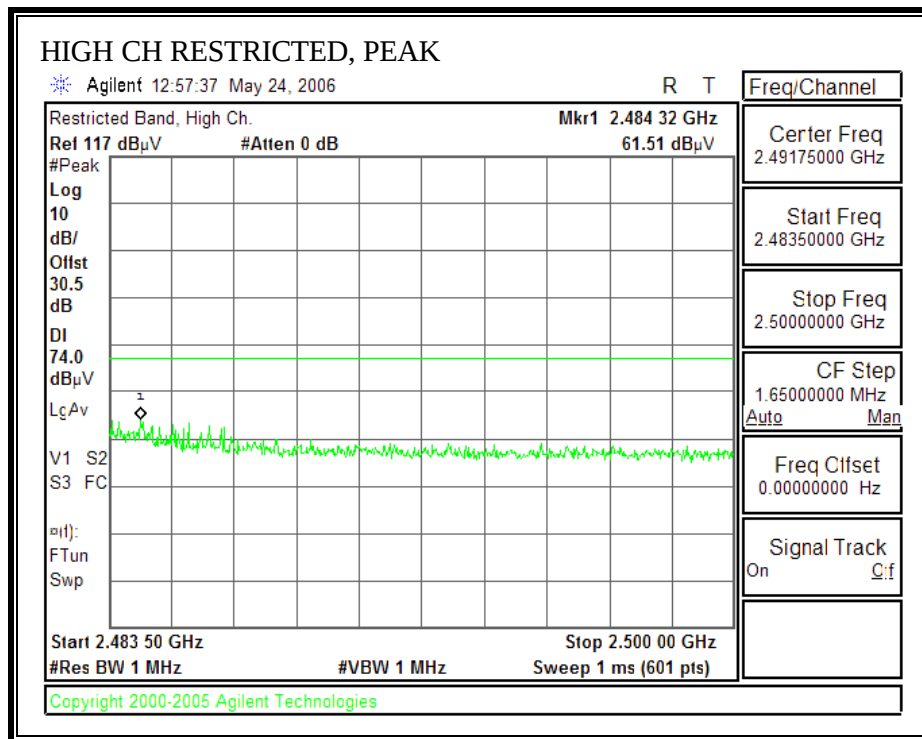


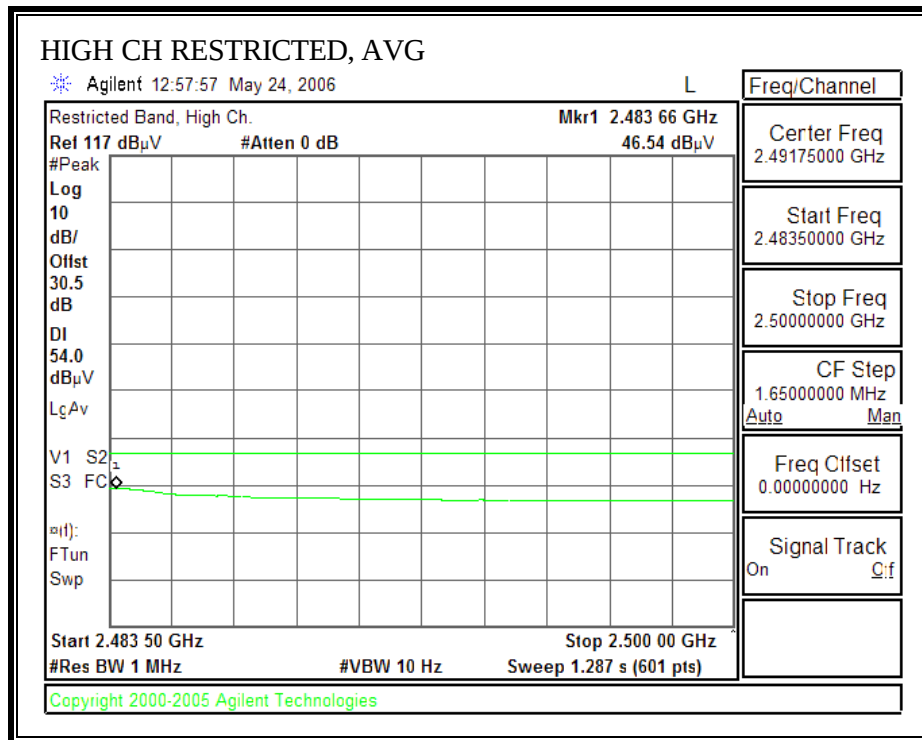
RESTRICTED BANDEDGE (HIGH CHANNEL, 2457 MHz, VERTICAL)

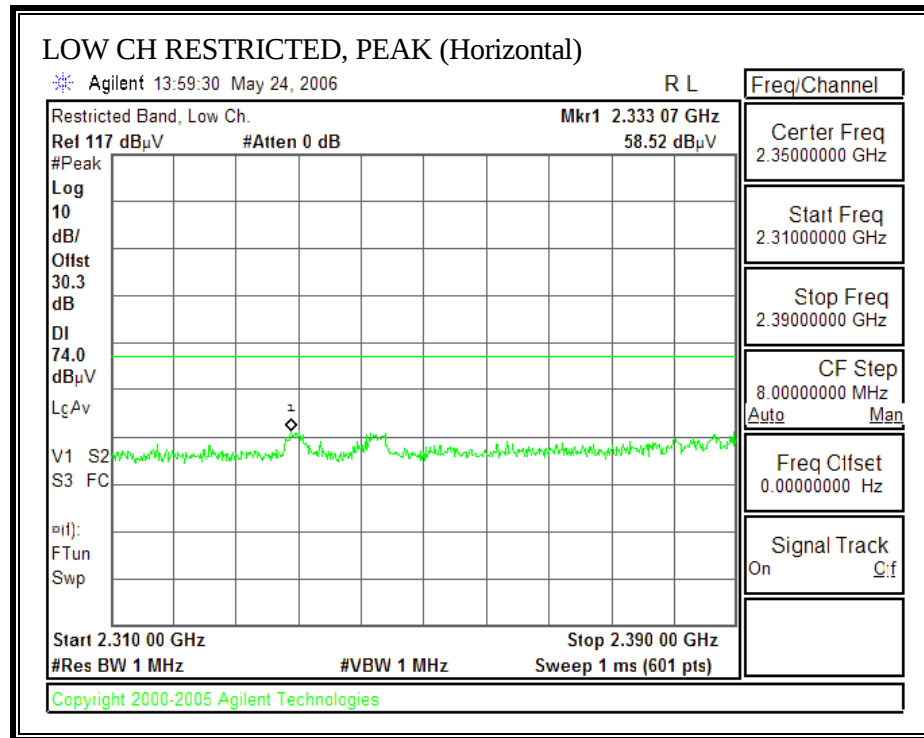


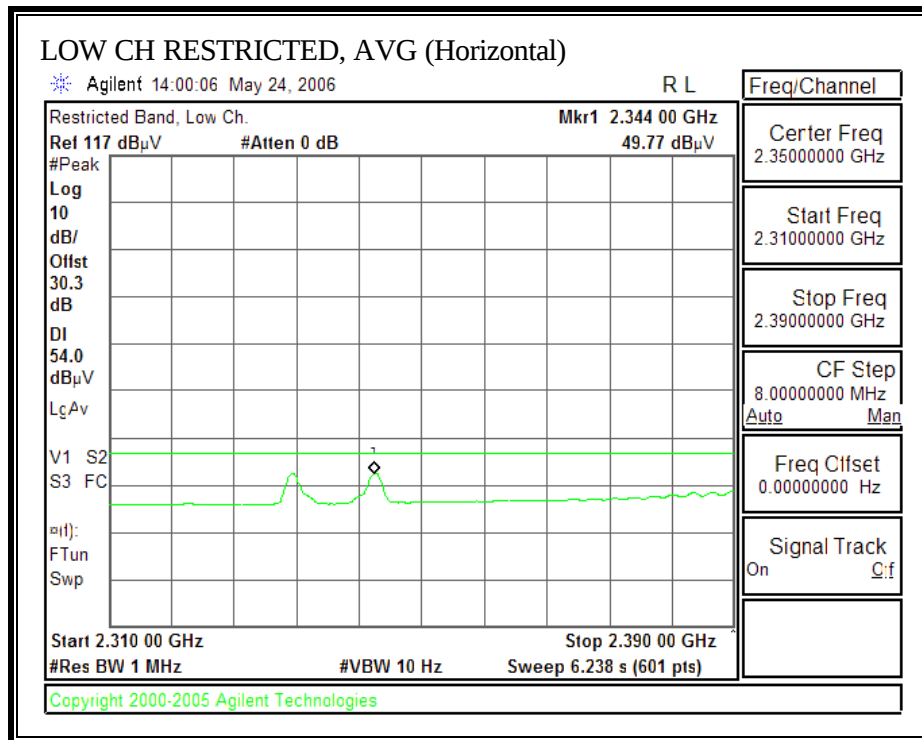
RESTRICTED BANDEDGE (HIGH CHANNEL, 2462 MHz, HORIZONTAL)

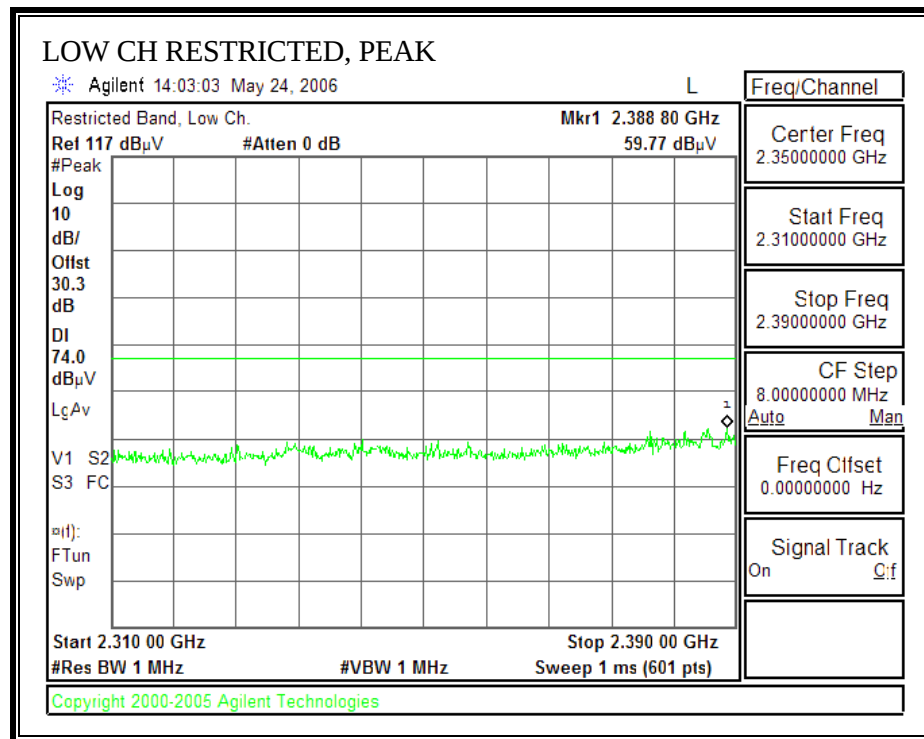


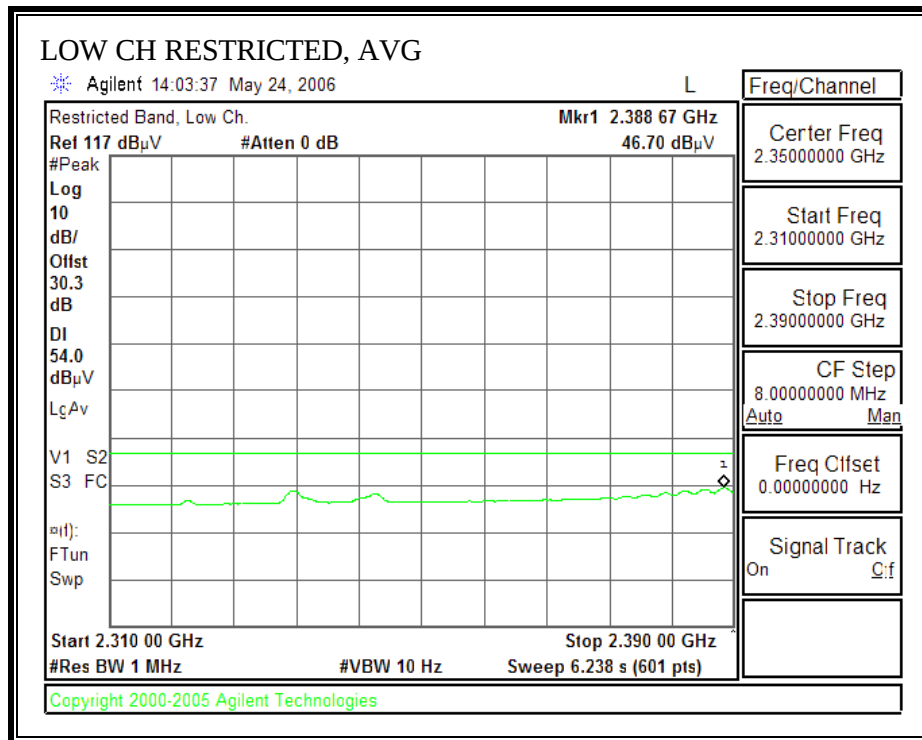
RESTRICTED BANDEDGE (HIGH CHANNEL, 2462 MHz, VERTICAL)

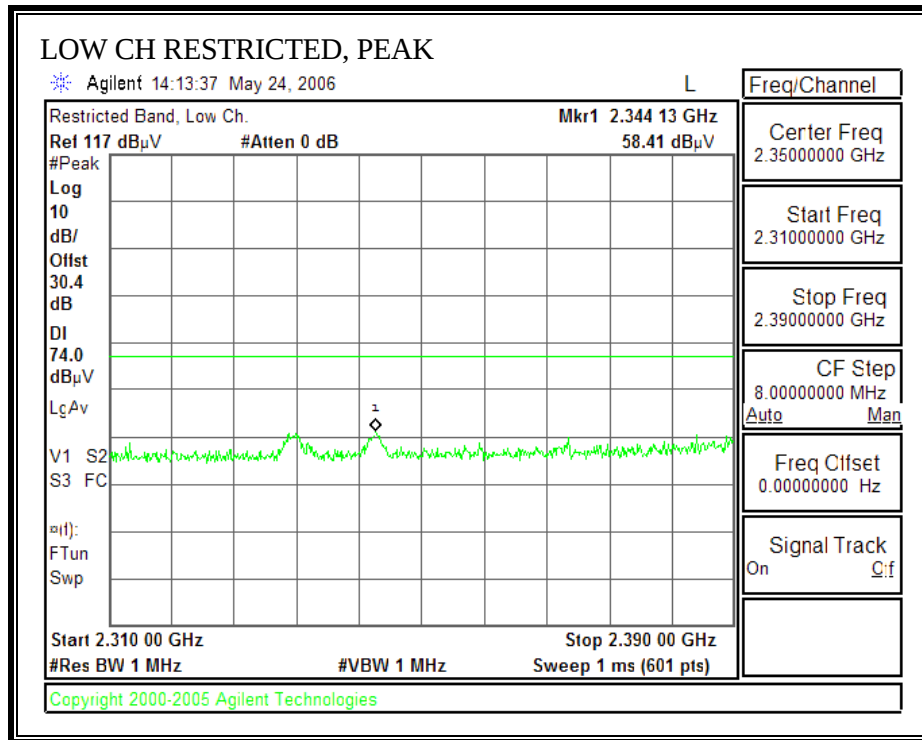


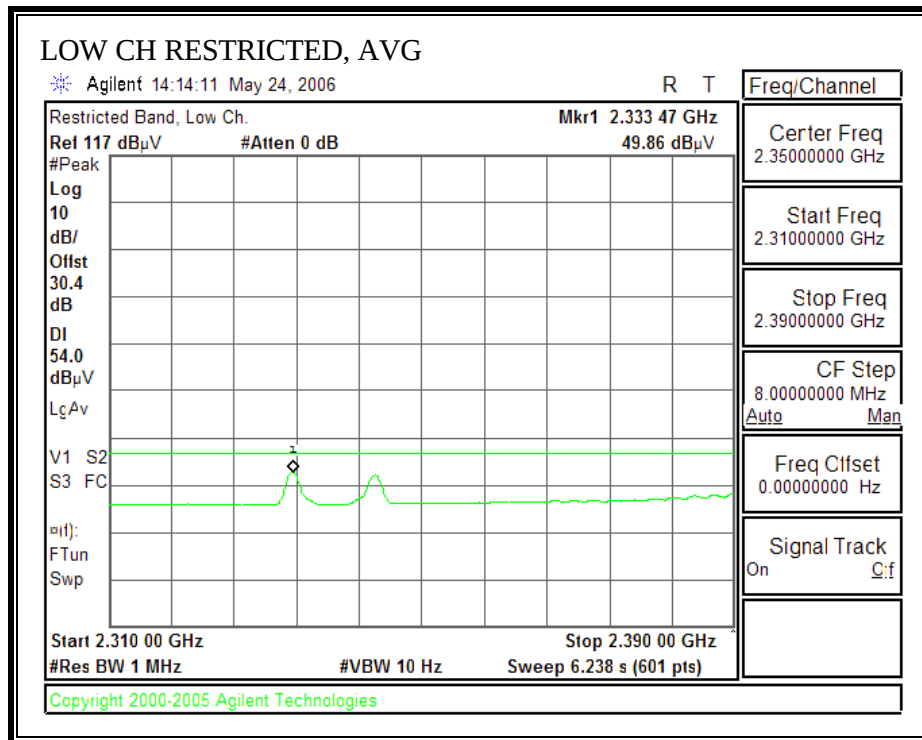
40 MHz TX BANDWIDTH**RESTRICTED BANDEGE (LOW CHANNEL, 2422 MHz, HORIZONTAL)**

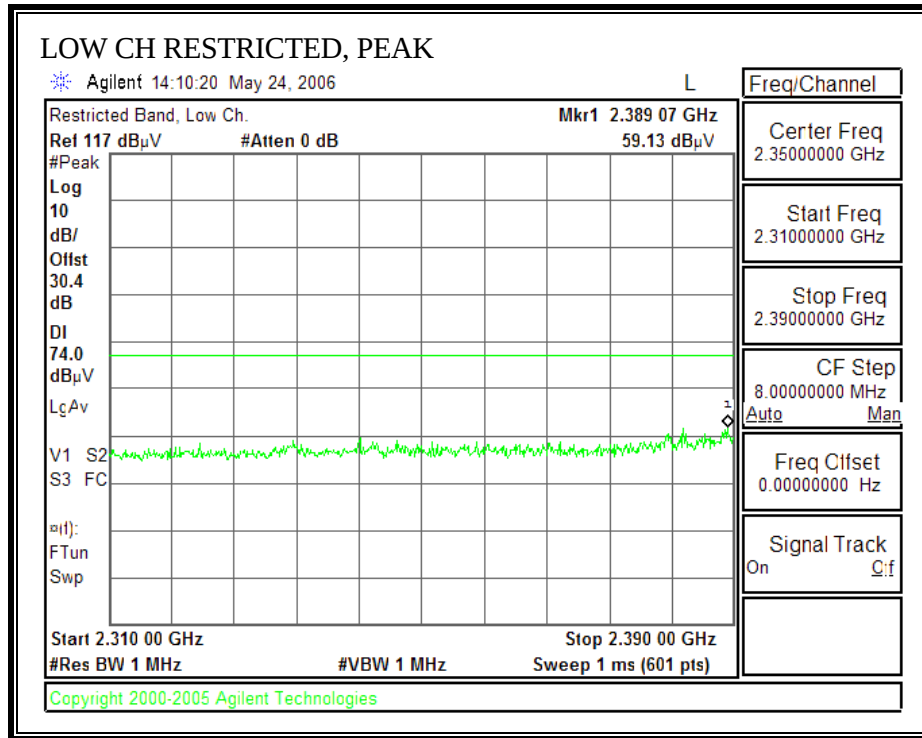


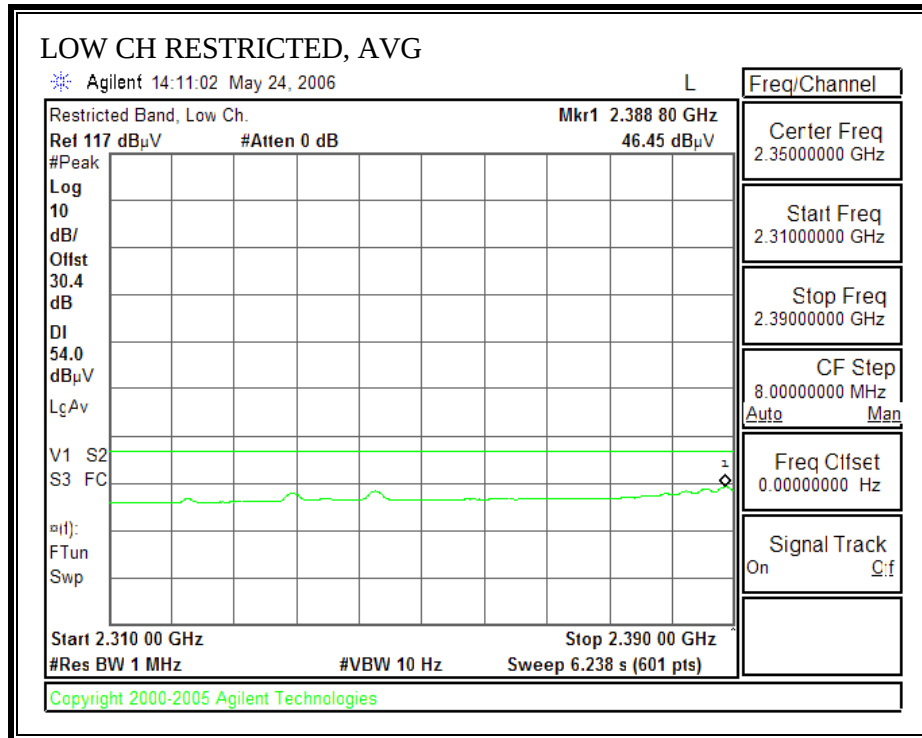
RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, VERTICAL)

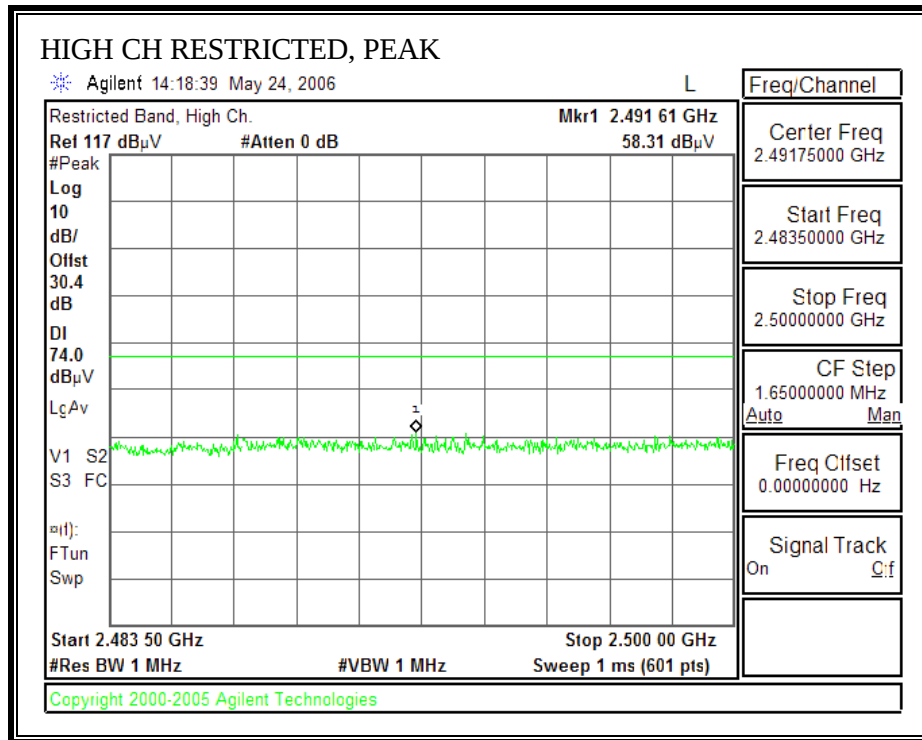


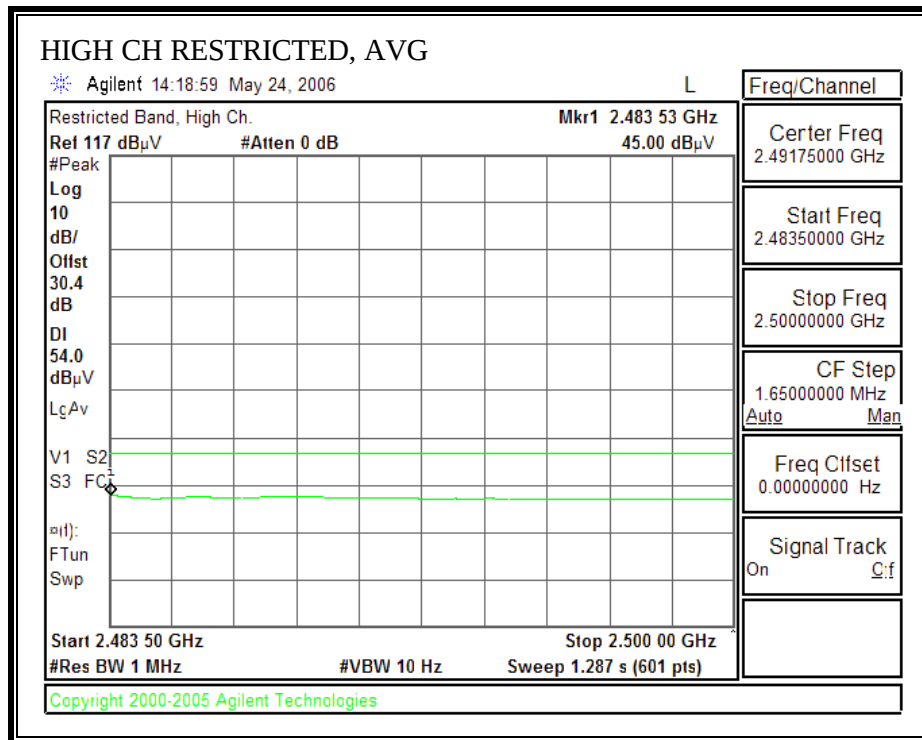
RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, HORIZONTAL)

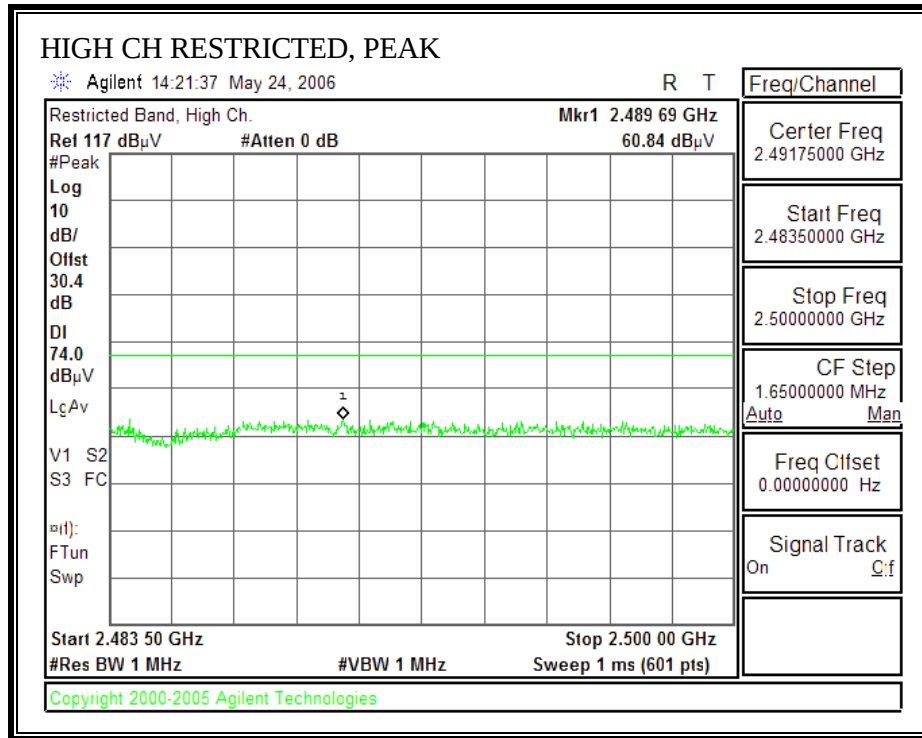


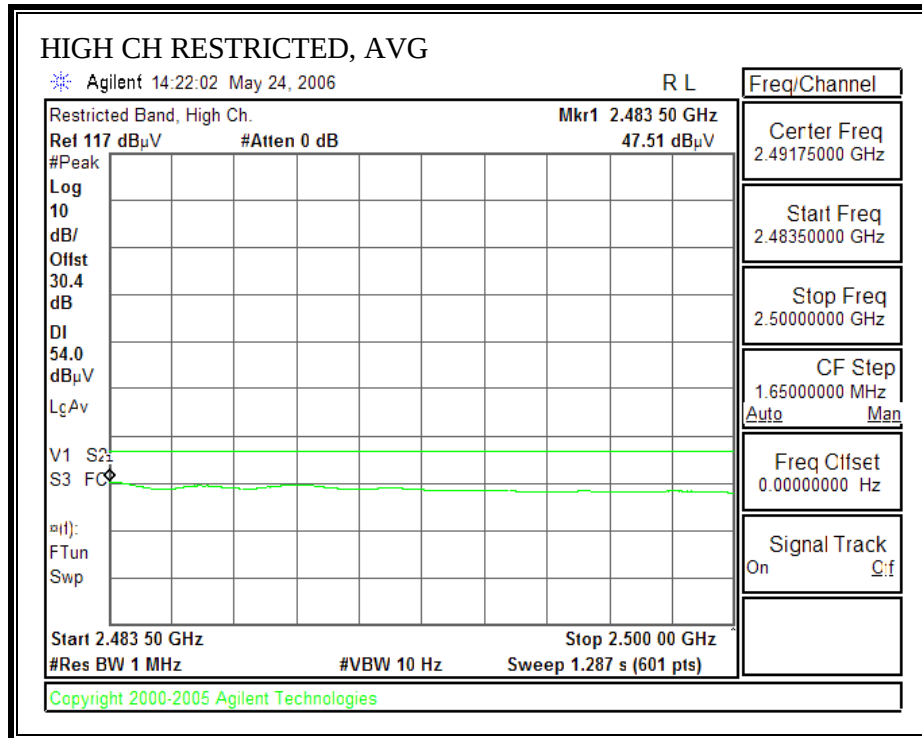
RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, VERTICAL)



RESTRICTED BANDEDGE (HIGHCHANNEL, 2442 MHz, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, 2442 MHz, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – 20 MHz TX BANDWIDTH

Please refer to Hitachi antenna section.

HARMONICS AND SPURIOUS EMISSIONS – 40 MHz TX BANDWIDTH

Please refer to Hitachi antenna section.

7.13.18. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND

HARMONICS AND SPURIOUS EMISSIONS – 20 MHz TX BANDWIDTH

Please refer to Hitachi antenna section.

HARMONICS AND SPURIOUS EMISSIONS – 40 MHz TX BANDWIDTH

Please refer to Hitachi antenna section.

7.13.19. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

Please refer to Hitachi antenna section.

7.14. 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 μ H/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.

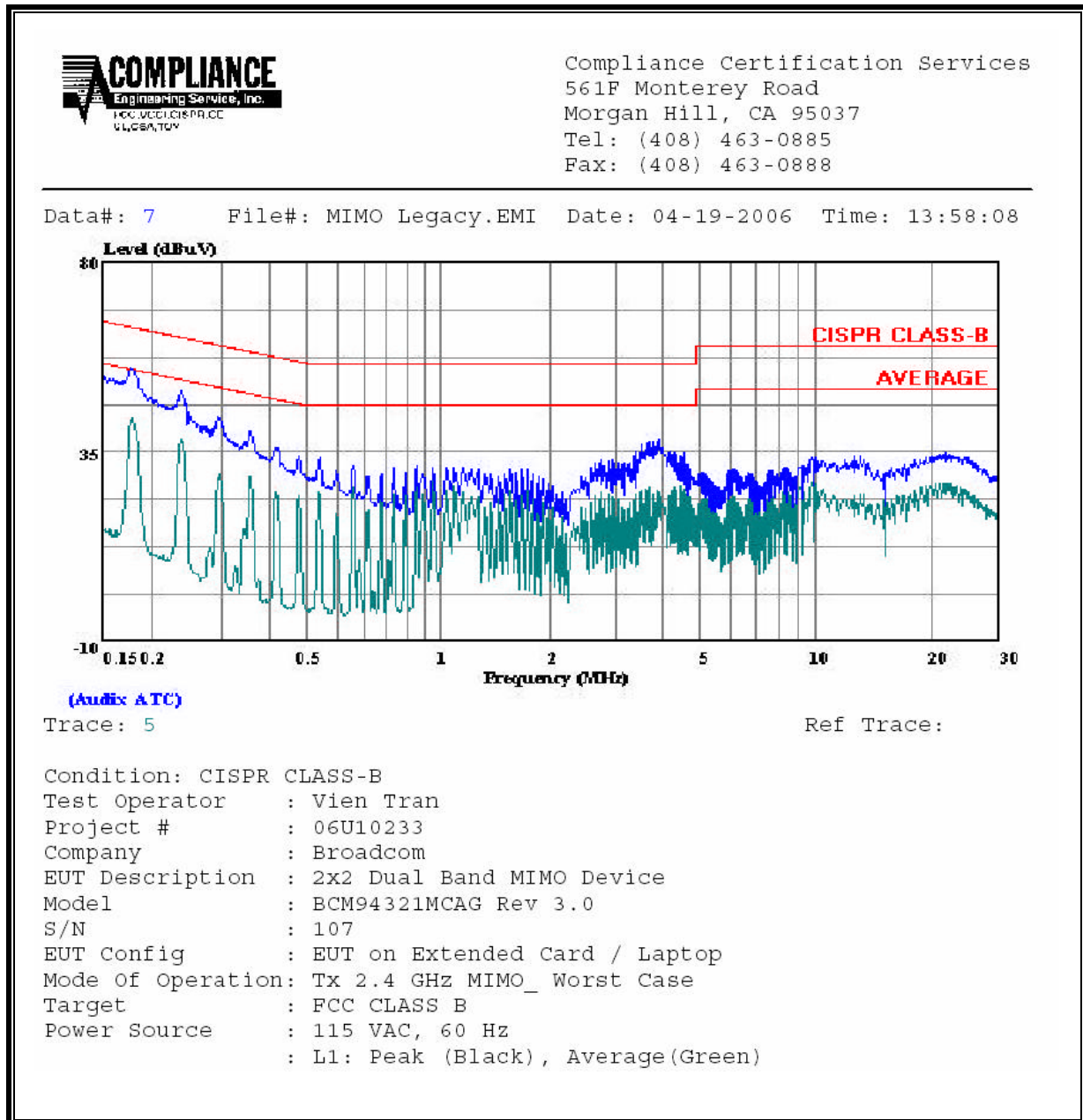
Line conducted data is recorded for both NEUTRAL and HOT lines.

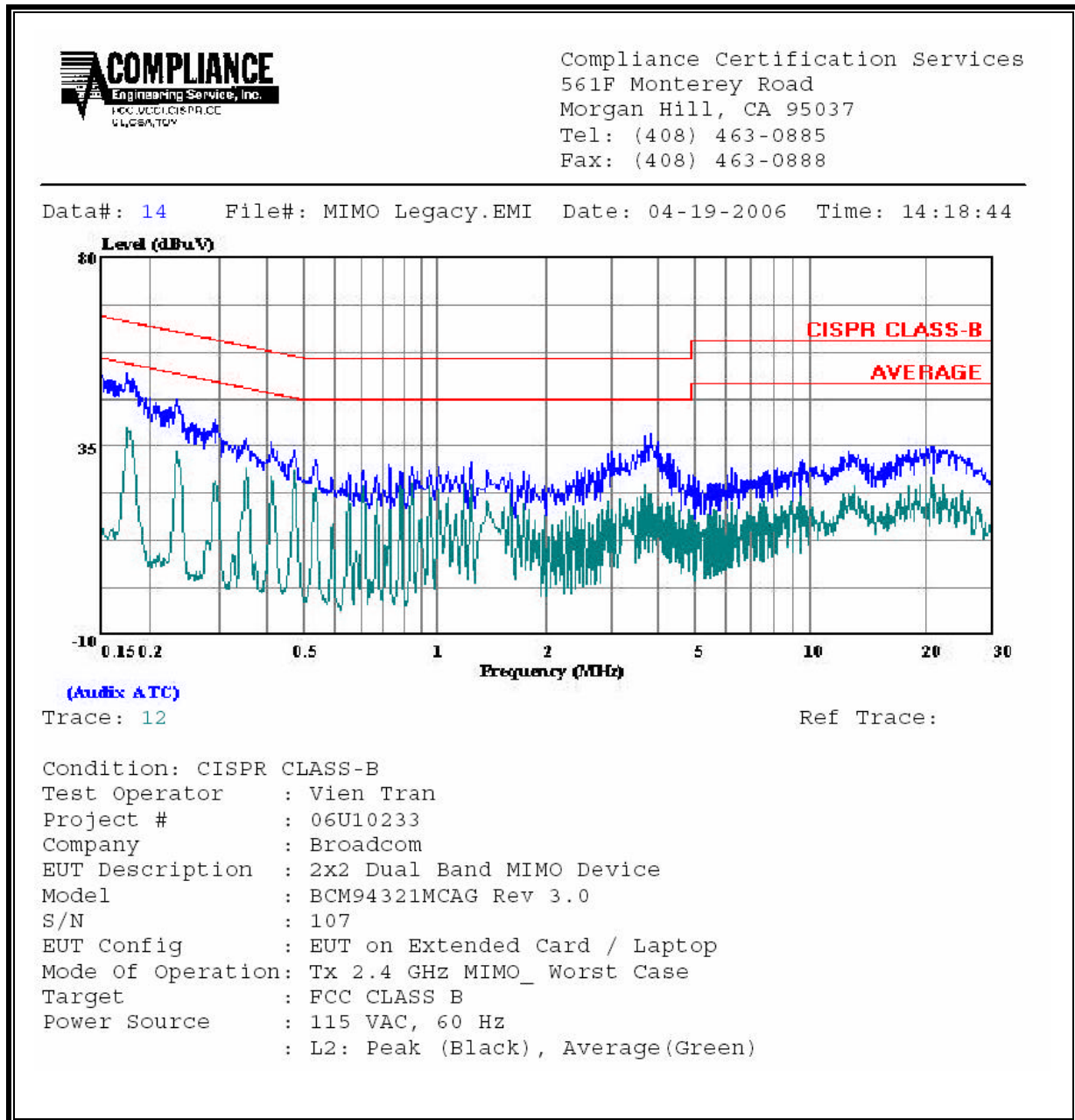
RESULTS

No non-compliance noted:

2.4 GH z BAND**6 WORST EMISSIONS****2.4 GHz MIMO _ Worst Case**

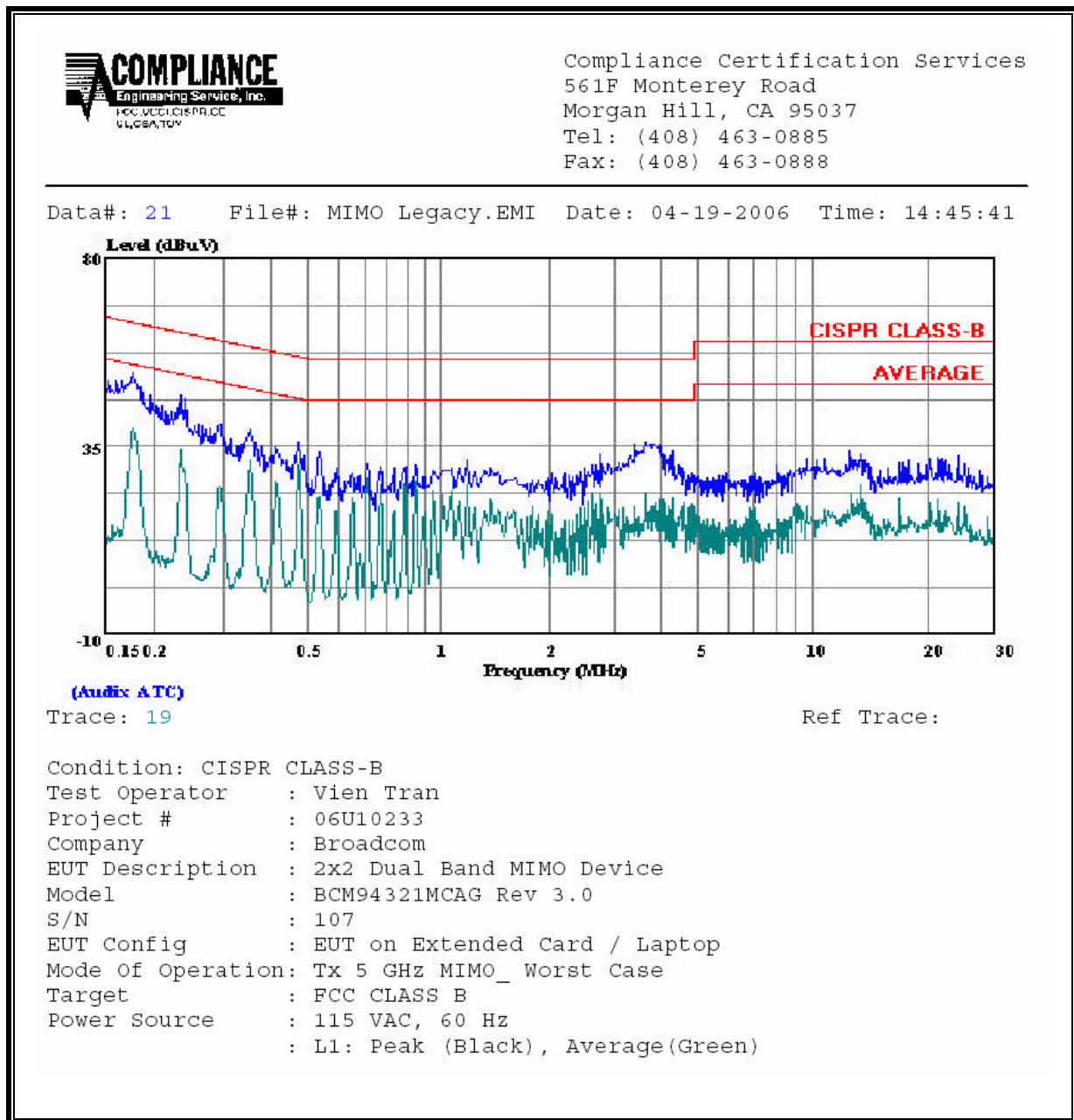
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.18	54.86	--	42.85	0.00	64.58	54.58	-9.72	-11.73	L1
0.24	49.48	--	37.45	0.00	62.20	52.20	-12.72	-14.75	L1
3.88	37.78	--	26.62	0.00	56.00	46.00	-18.22	-19.38	L1
0.18	52.20	--	39.55	0.00	64.58	54.58	-12.38	-15.03	L2
0.24	45.88	--	33.58	0.00	62.20	52.20	-16.32	-18.62	L2
3.88	37.80	--	26.00	0.00	56.00	46.00	-18.20	-20.00	L2
6 Worst Data									

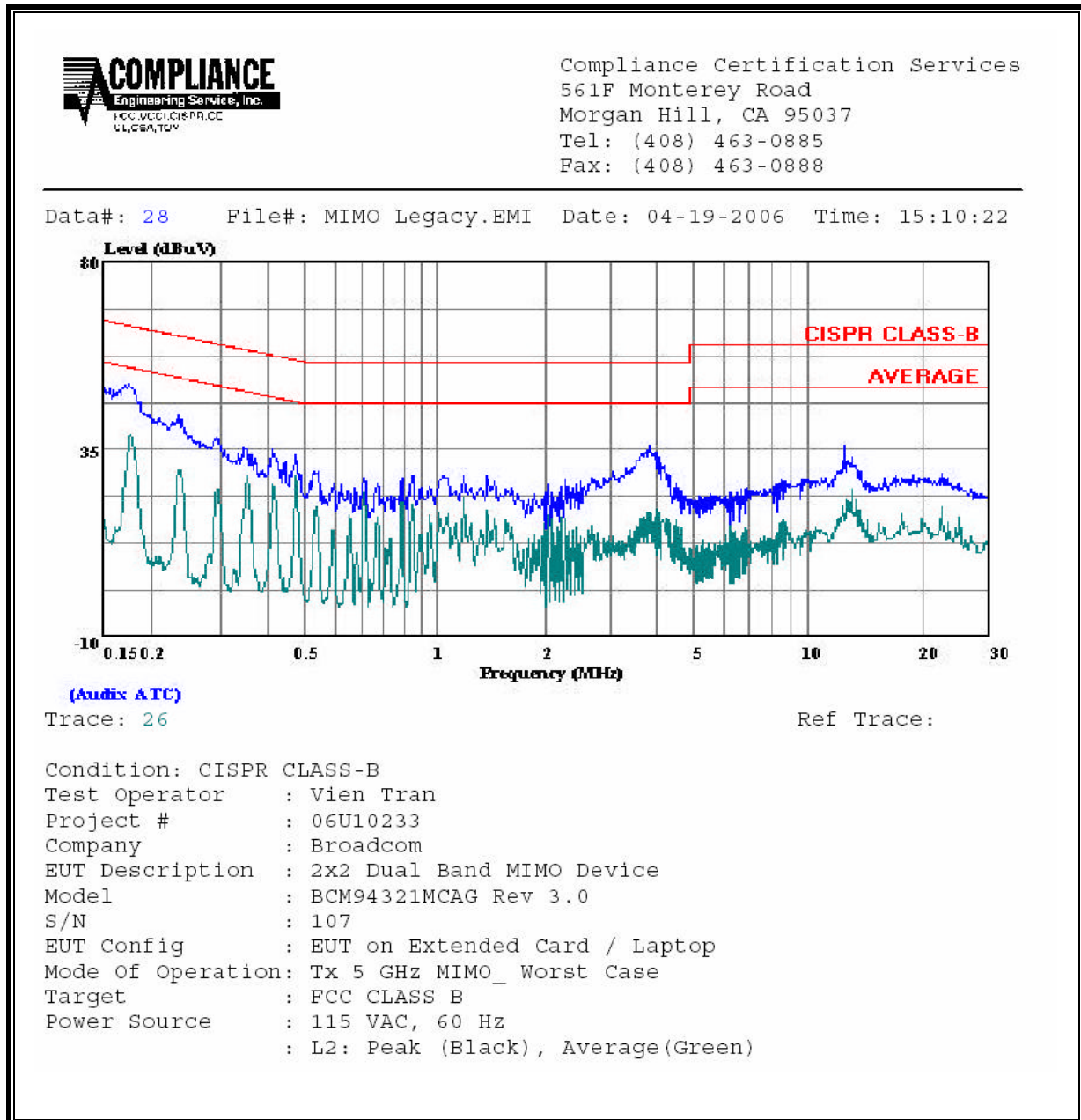
LINE 1 RESULTS

LINE 2 RESULTS

5 GHz BAND**6 WORST EMISSIONS****5 GHz BAND _ MIMO _ WORST CASE**

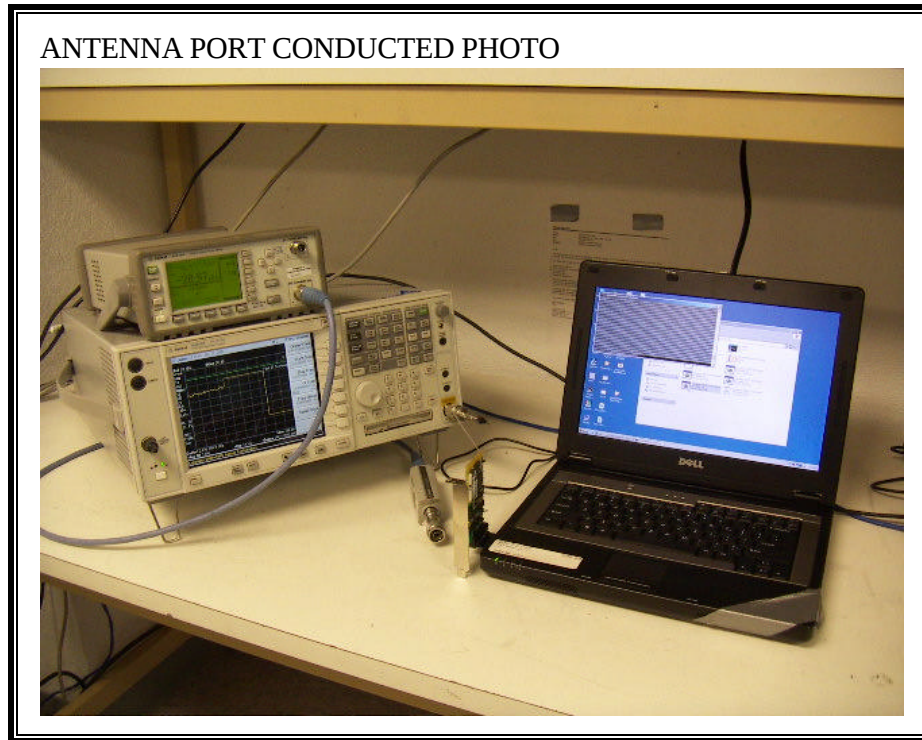
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.18	52.88	--	39.62	0.00	64.67	54.67	-11.79	-15.05	L1
0.23	47.40	--	34.36	0.00	62.31	52.31	-14.91	-17.95	L1
3.74	35.94	--	24.00	0.00	56.00	46.00	-20.06	-22.00	L1
0.18	50.76	--	38.68	0.00	64.67	54.67	-13.91	-15.99	L2
0.23	43.24	--	29.90	0.00	62.31	52.31	-19.07	-22.41	L2
3.74	35.80	--	21.00	0.00	56.00	46.00	-20.20	-25.00	L2
6 Worst Data									

LINE 1 RESULTS

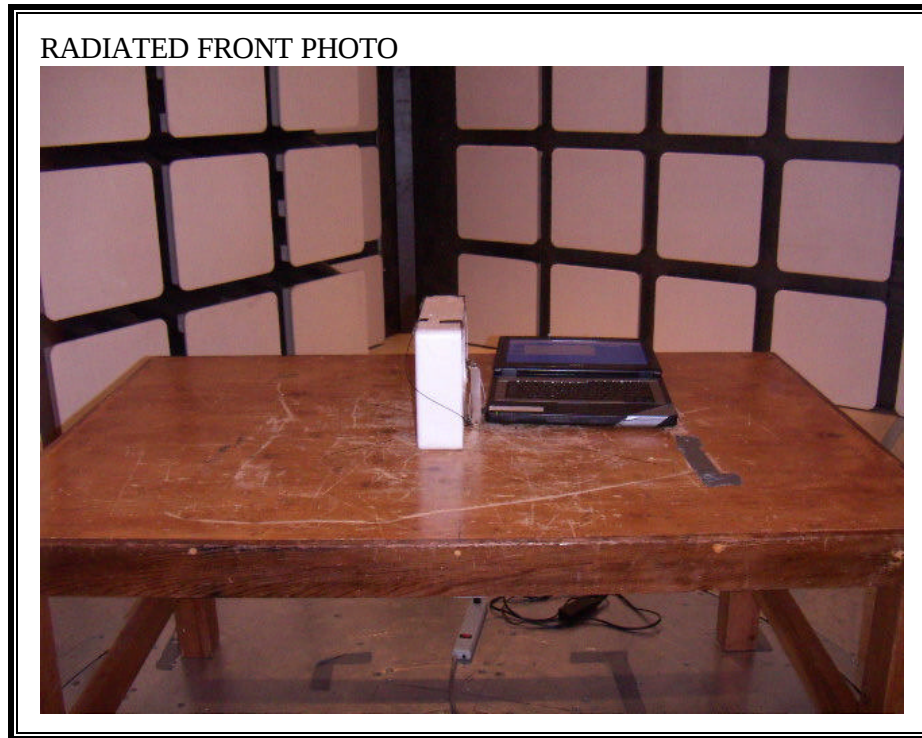
LINE 2 RESULTS

8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



RADIATED RF MEASUREMENT SETUP



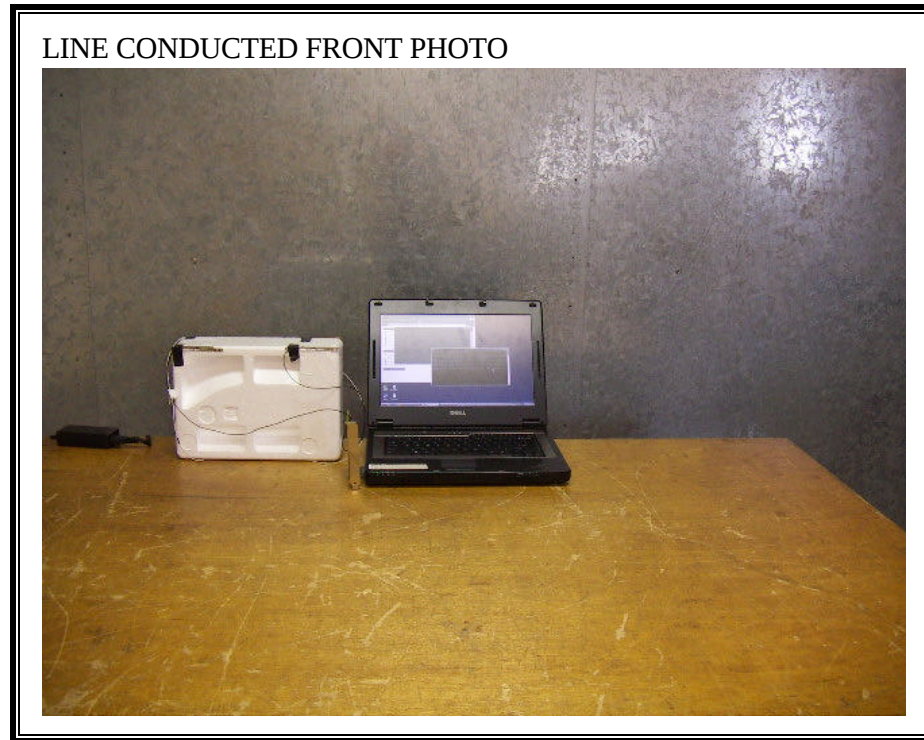
RADIATED BACK PHOTO



RADIATED SIDE PHOTO



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



LINE CONDUCTED BACK PHOTO



END OF REPORT