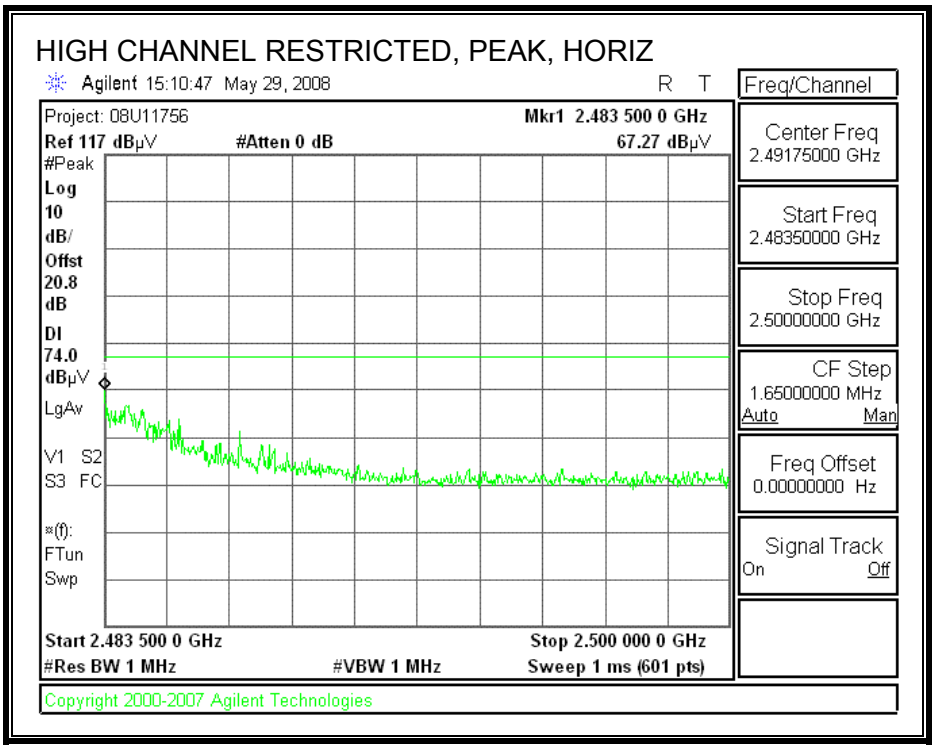
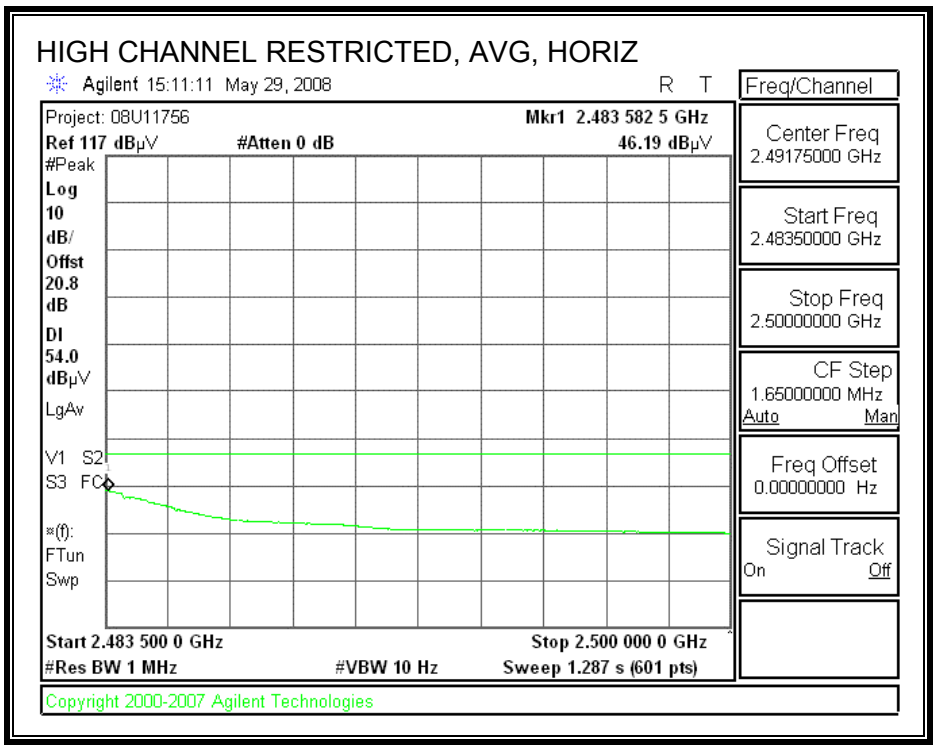
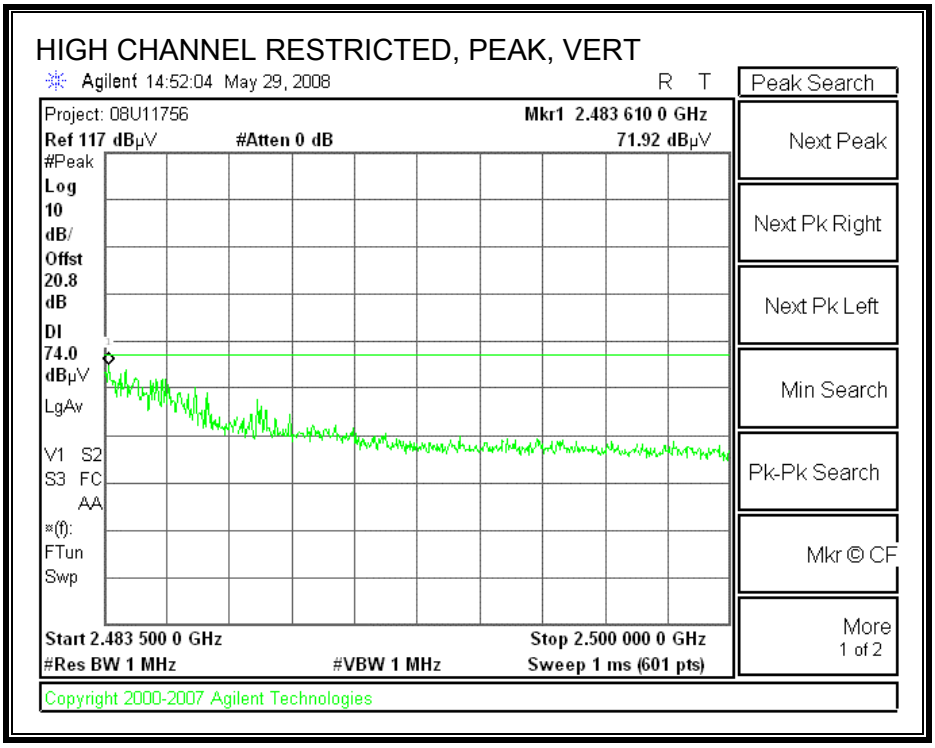
CHANNEL 11, 2462 MHz

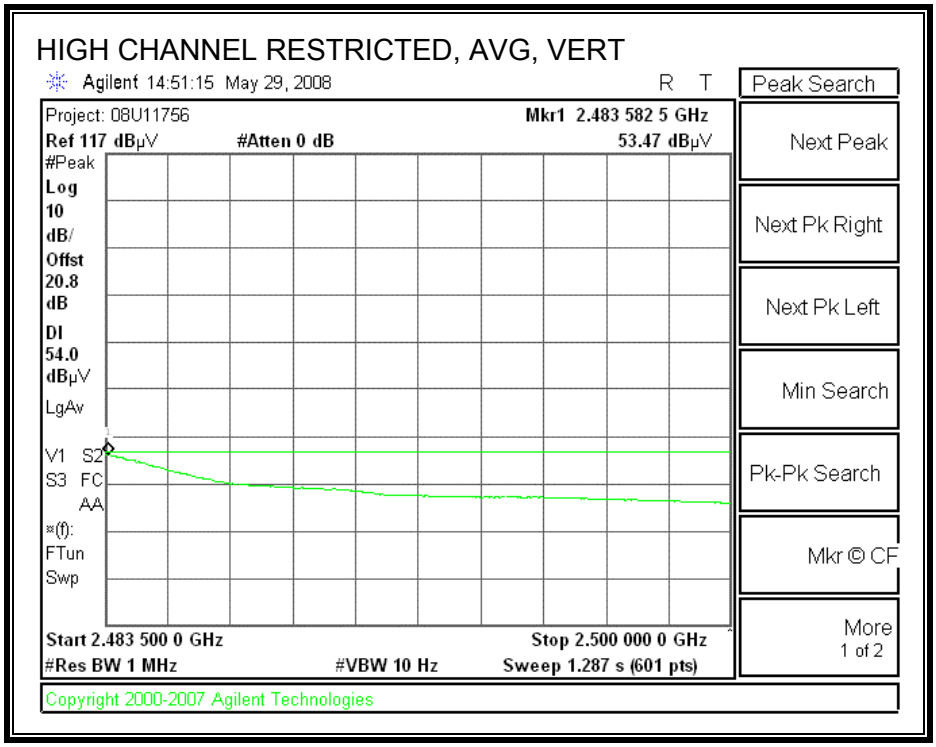
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	5/20/2008
Test Engineer:	Vien Tran
Configuration:	EUT with Slot Antenna
Mode:	Tx 11g

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

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

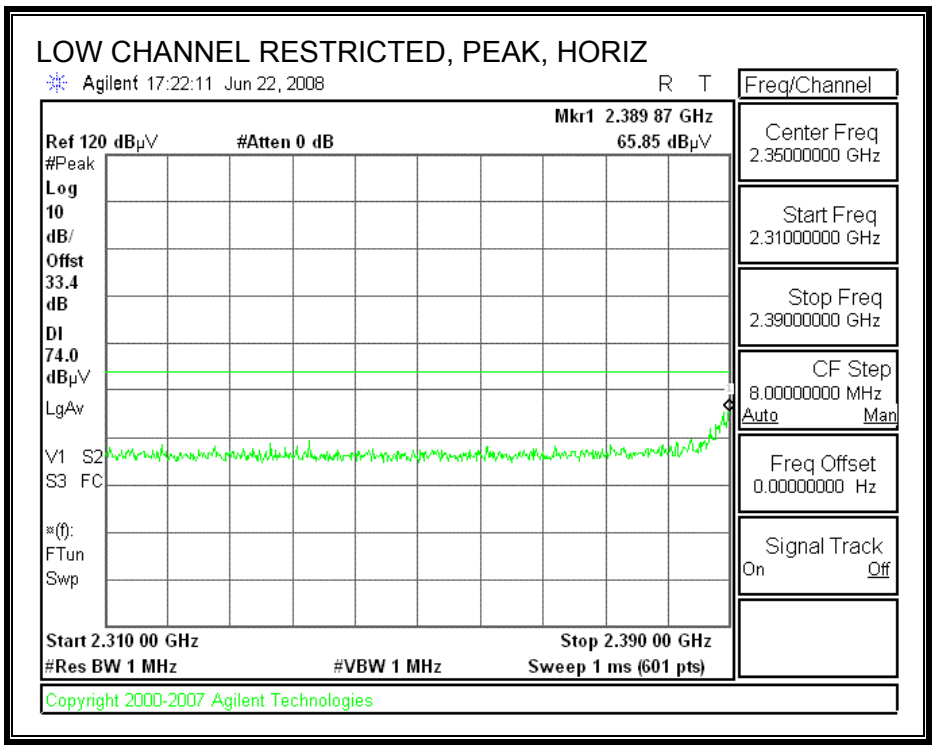
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2412MHz															
4.824	3.0	43.8	32.3	33.0	2.5	-34.8	0.0	0.6	45.1	33.6	74	54	-28.9	-20.4	H
12.060	3.0	45.1	34.1	37.4	4.0	-32.4	0.0	0.9	55.0	44.0	74	54	-19.0	-10.0	H
4.824	3.0	47.7	36.8	33.0	2.5	-34.8	0.0	0.6	49.0	38.1	74	54	-25.0	-15.9	V
12.060	3.0	43.2	33.1	37.4	4.0	-32.4	0.0	0.9	53.1	43.0	74	54	-20.9	-11.0	V
MID CHANNEL, 2437 MHz															
4.874	3.0	44.4	32.9	33.1	2.6	-34.9	0.0	0.6	45.8	34.3	74	54	-28.2	-19.7	H
7.311	3.0	45.8	34.8	35.5	3.4	-34.7	0.0	0.6	50.7	39.7	74	54	-23.3	-14.3	H
4.874	3.0	48.6	37.8	33.1	2.6	-34.9	0.0	0.6	50.0	39.2	74	54	-24.0	-14.8	V
7.311	3.0	46.6	35.5	35.5	3.4	-34.7	0.0	0.6	51.5	40.4	74	54	-22.5	-13.6	V
HIGH CHANNEL, 2462 MHz															
4.924	3.0	42.3	31.2	33.1	2.6	-34.9	0.0	0.6	43.8	32.7	74	54	-30.2	-21.3	H
7.386	3.0	43.8	32.8	35.6	3.5	-34.6	0.0	0.6	48.8	37.8	74	54	-25.2	-16.2	H
4.924	3.0	46.3	34.9	33.1	2.6	-34.9	0.0	0.6	47.8	36.4	74	54	-26.2	-17.6	V
7.386	3.0	44.4	33.7	35.6	3.5	-34.6	0.0	0.6	49.4	38.7	74	54	-24.6	-15.3	V

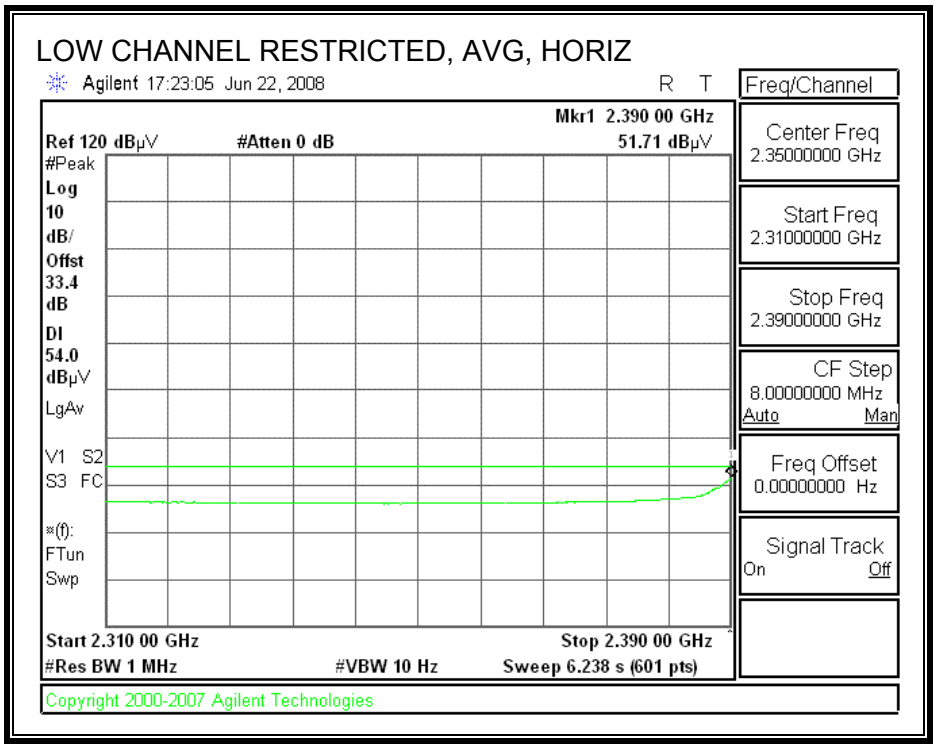
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

9.2.3. 802.11n HT20 MODE

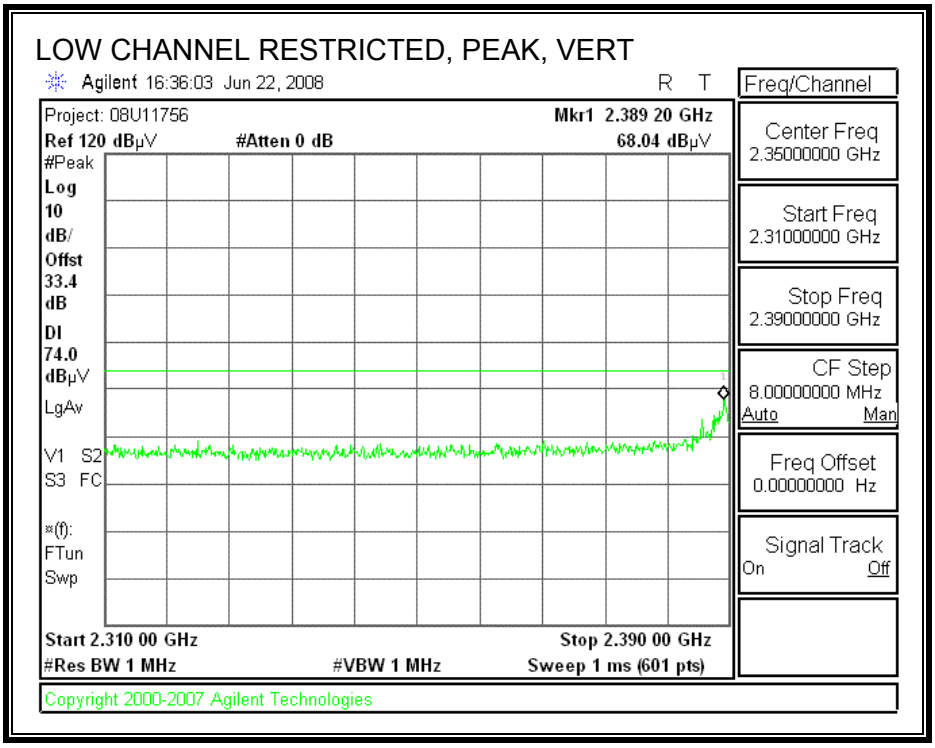
CHANNEL 1, 2412MHz

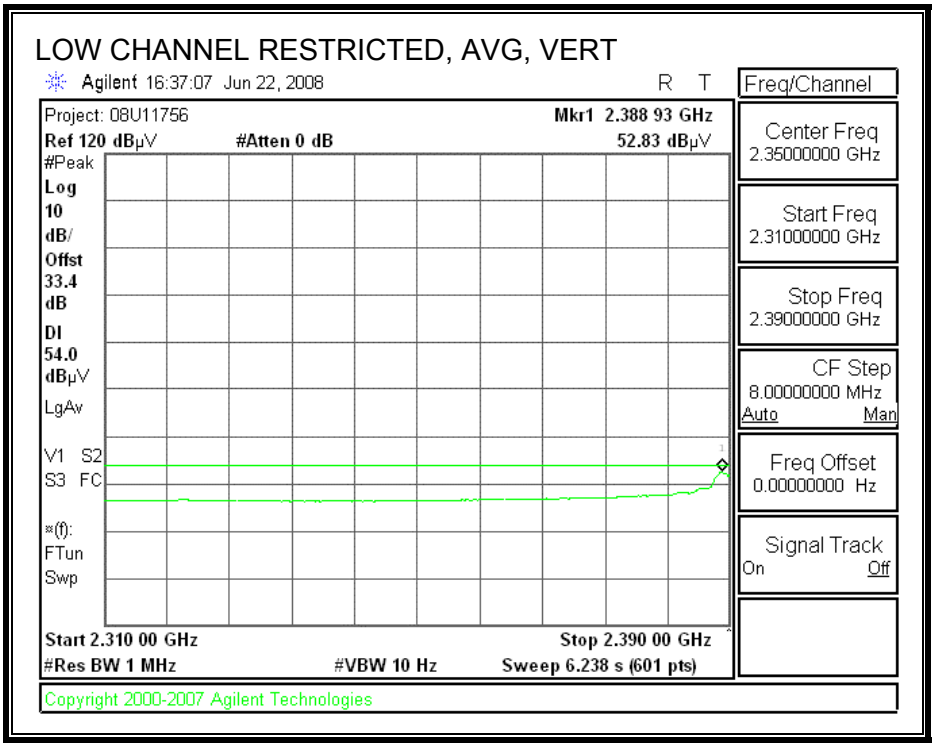
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





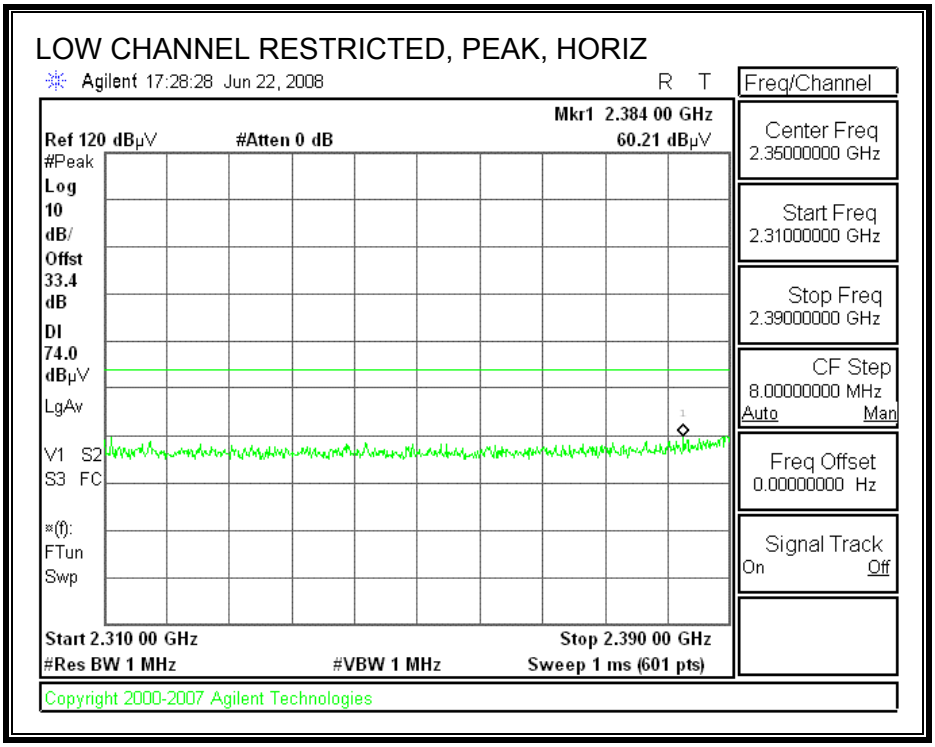
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

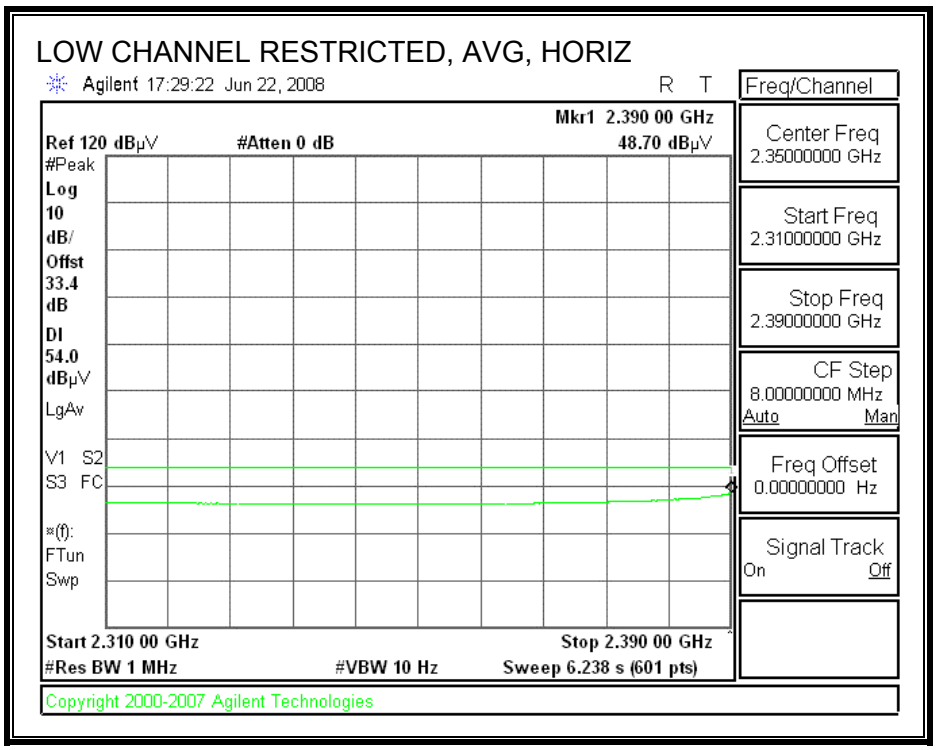




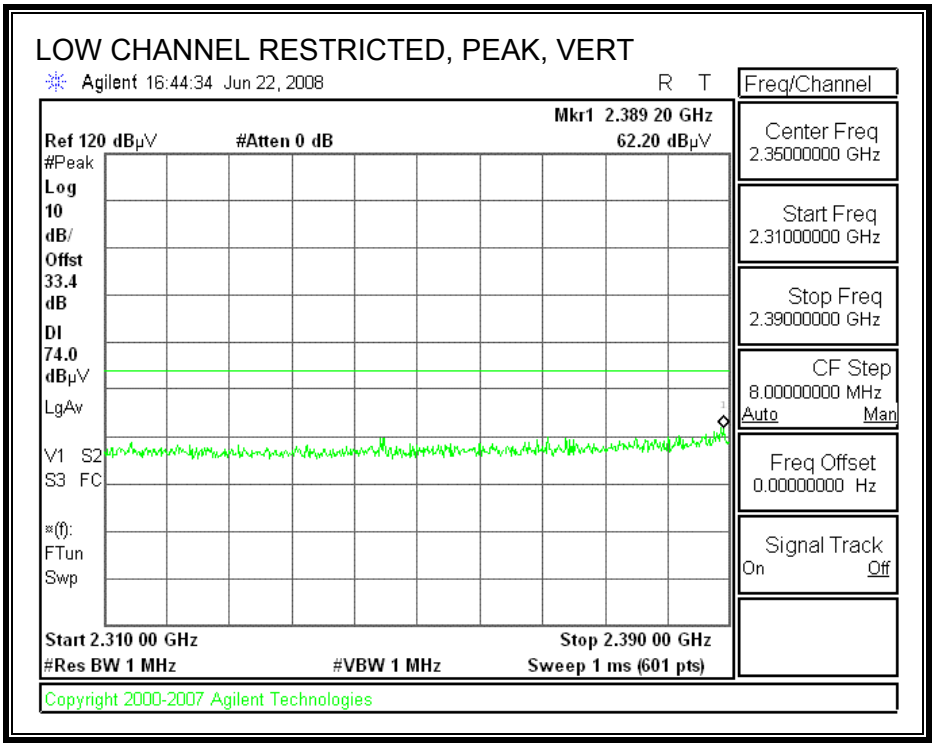
CHANNEL 2, 2417MHz

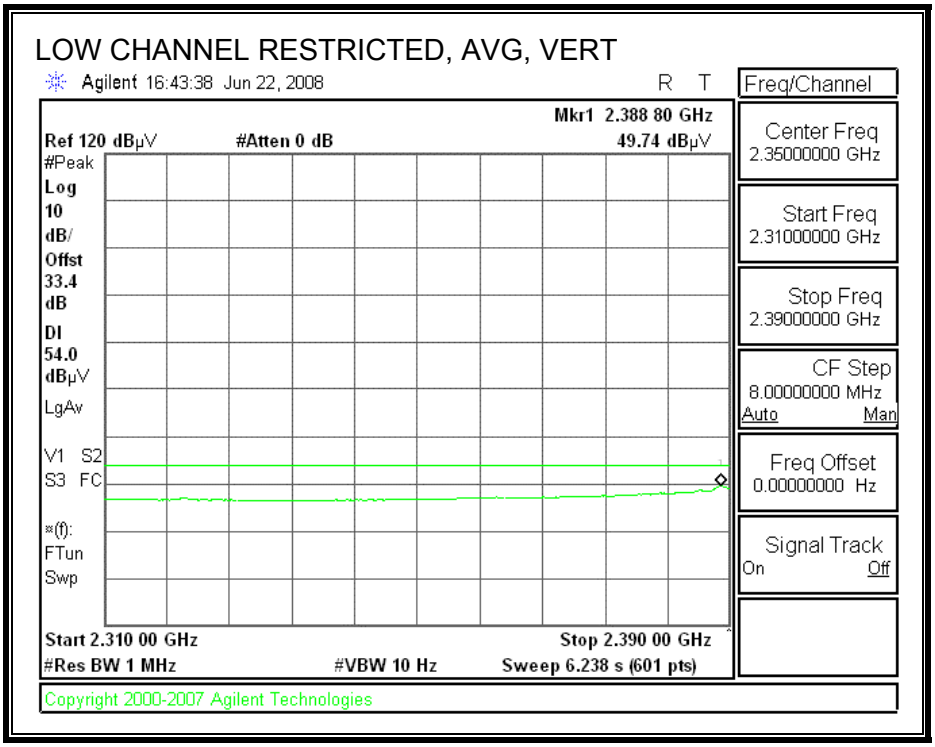
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





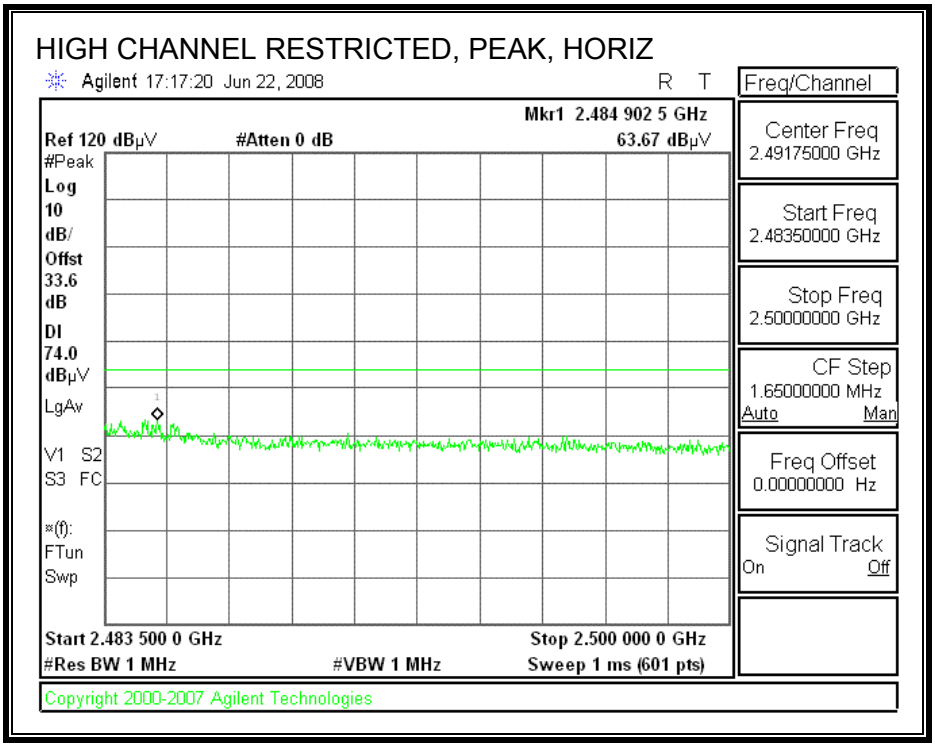
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

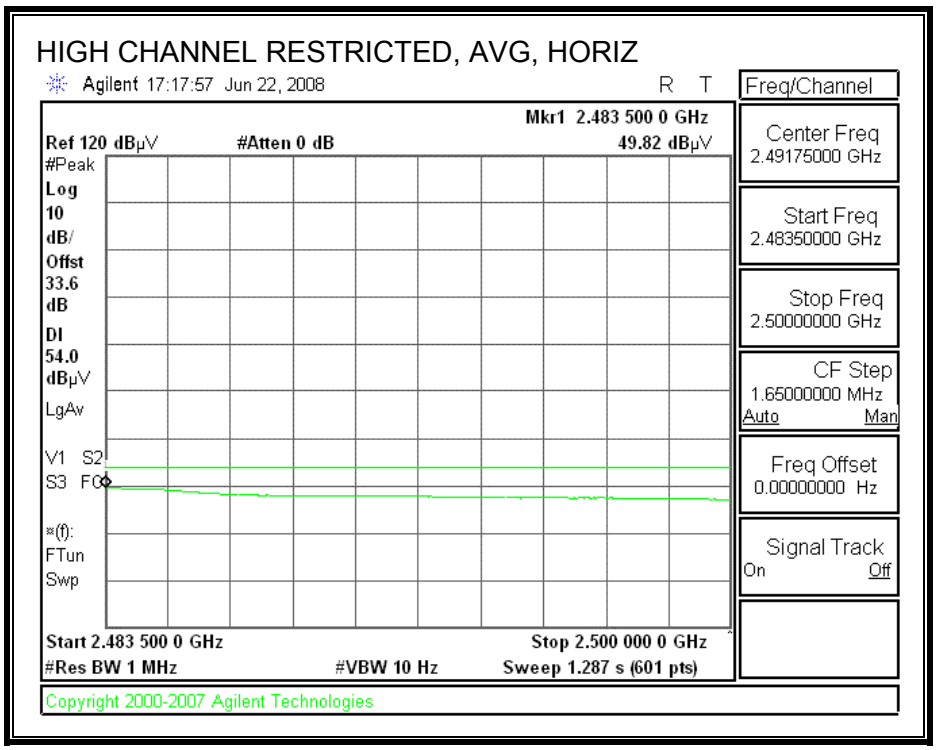




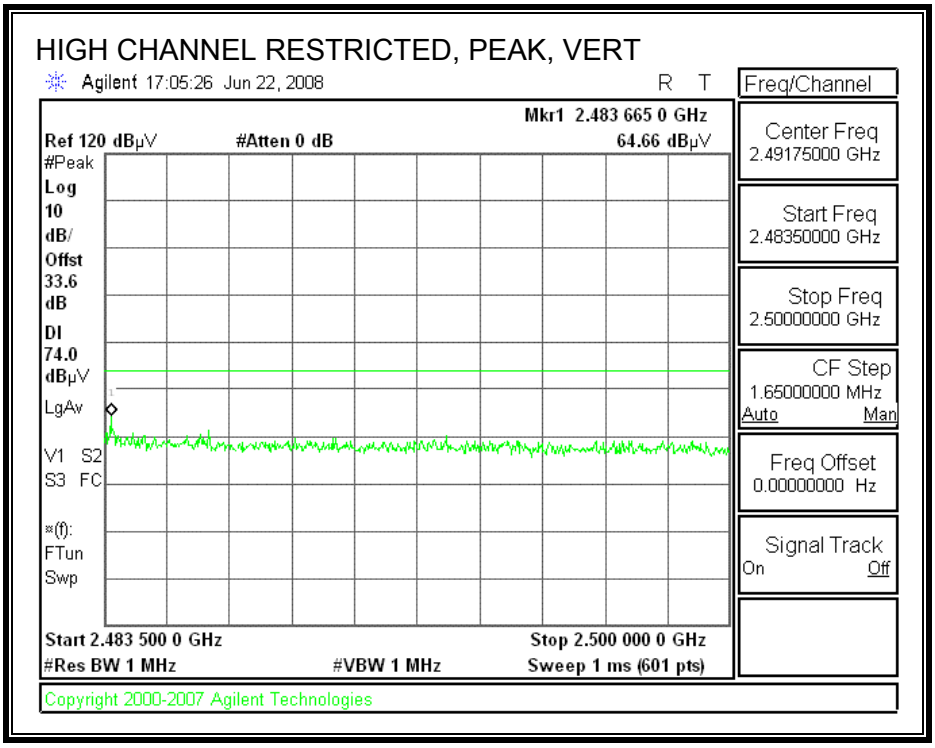
CHANNEL 10, 2457 MHz

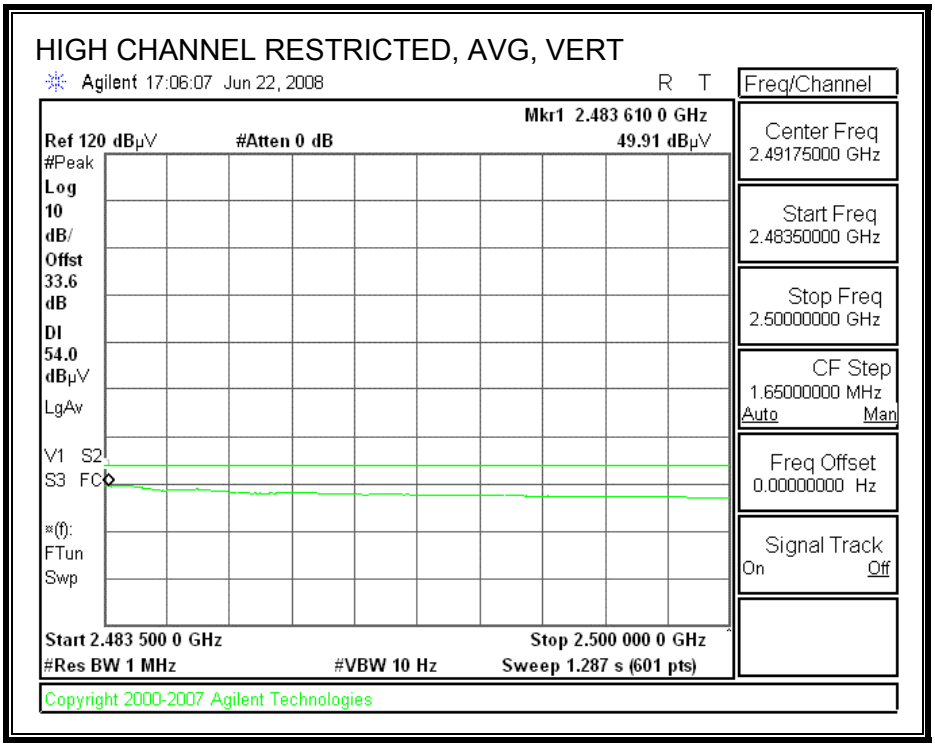
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





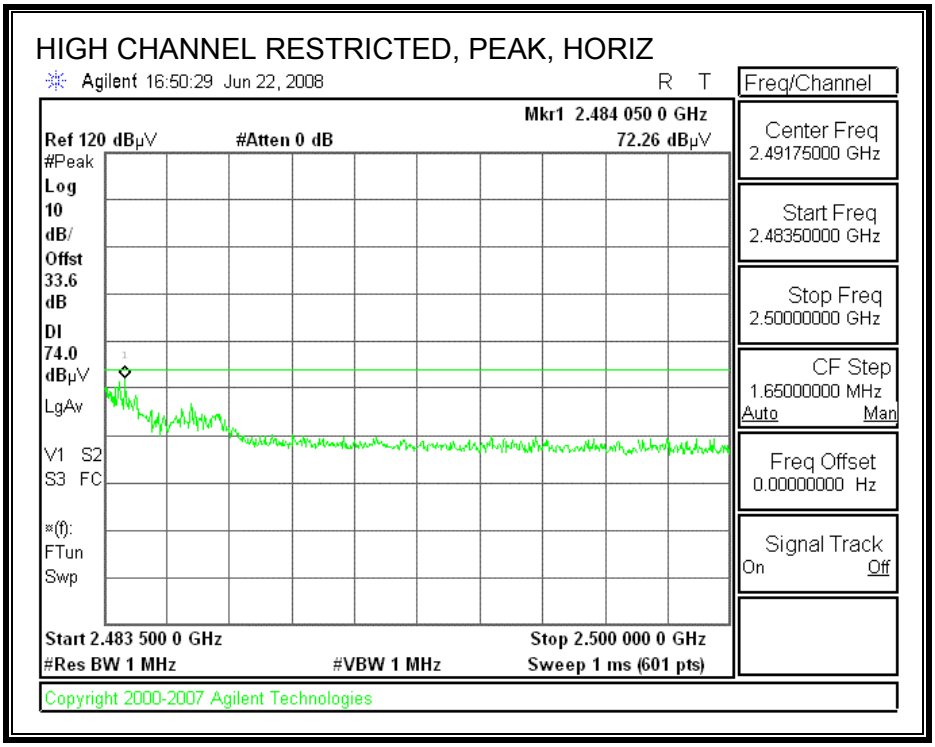
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

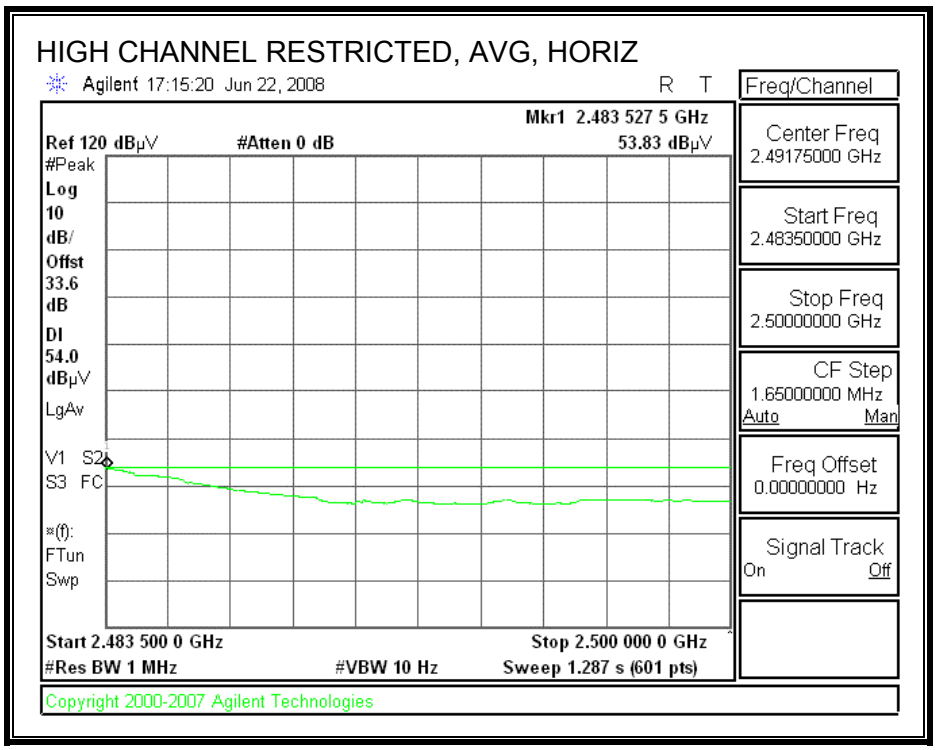




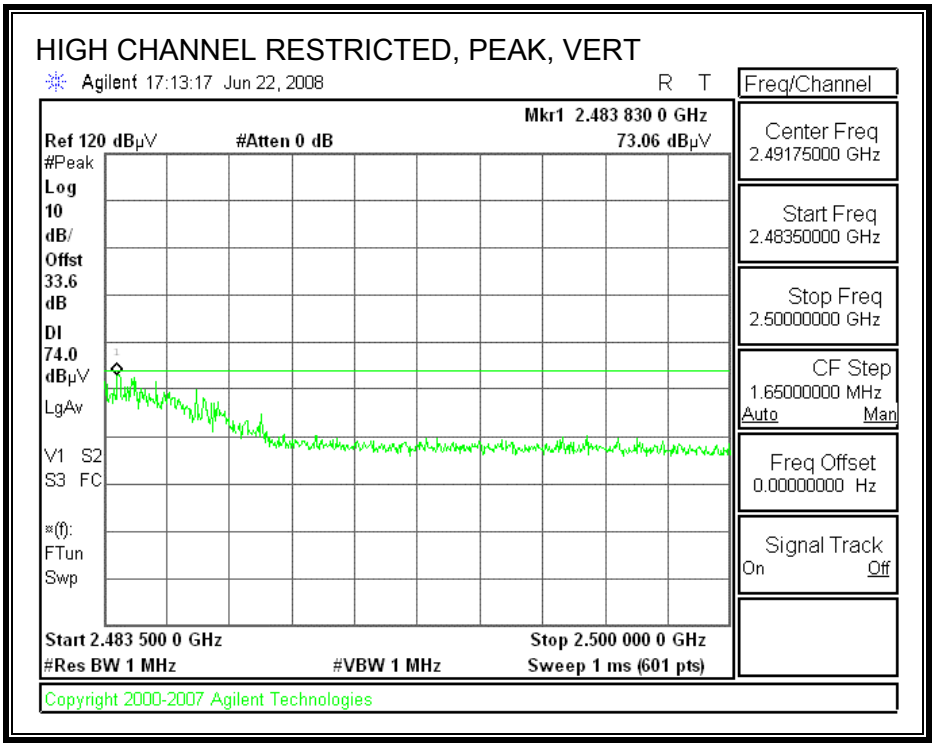
CHANNEL 11, 2462 MHz

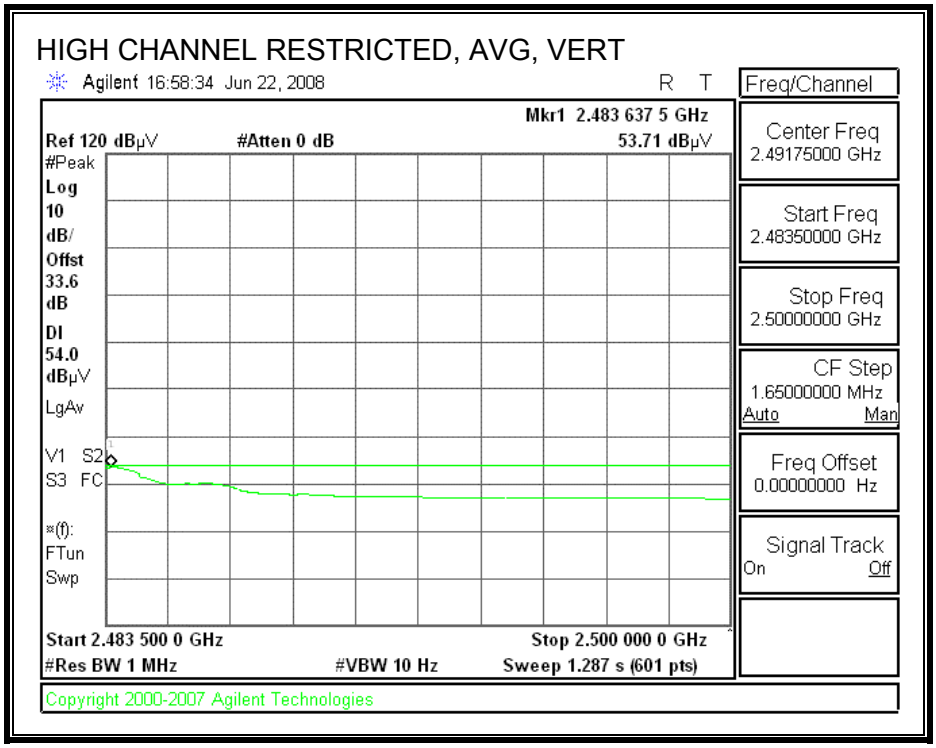
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/21/2008
Test Engineer:	Vien Tran
Configuration:	EUT with _Slot Hi Gain (3.2dBi) & PIFA Hi Gain (3.18dBi) Antennas
Mode:	Tx HT20

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

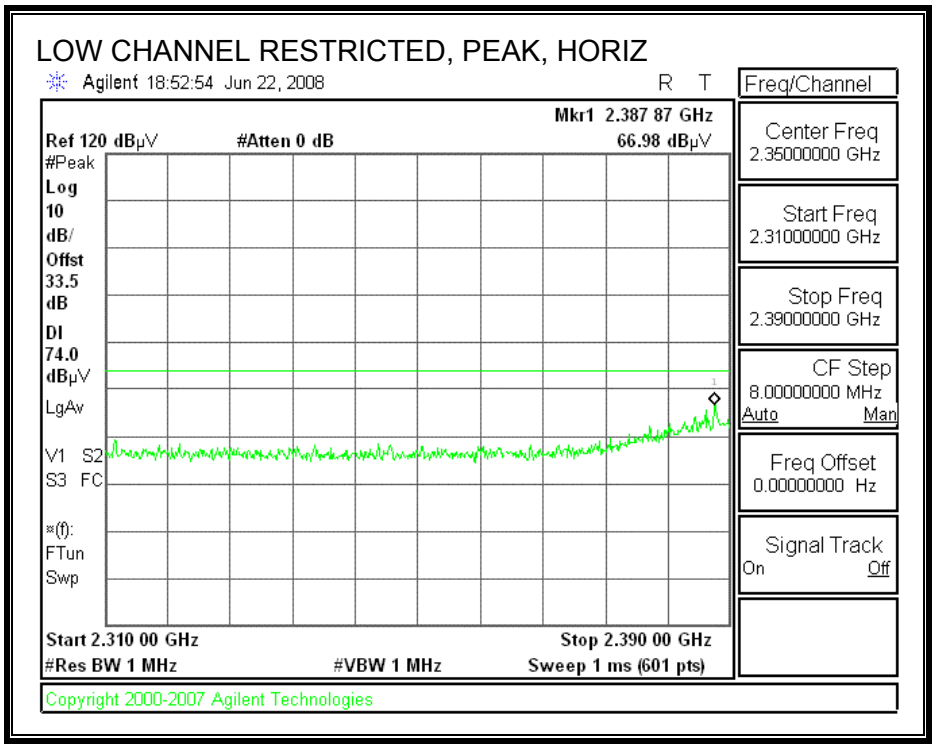
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

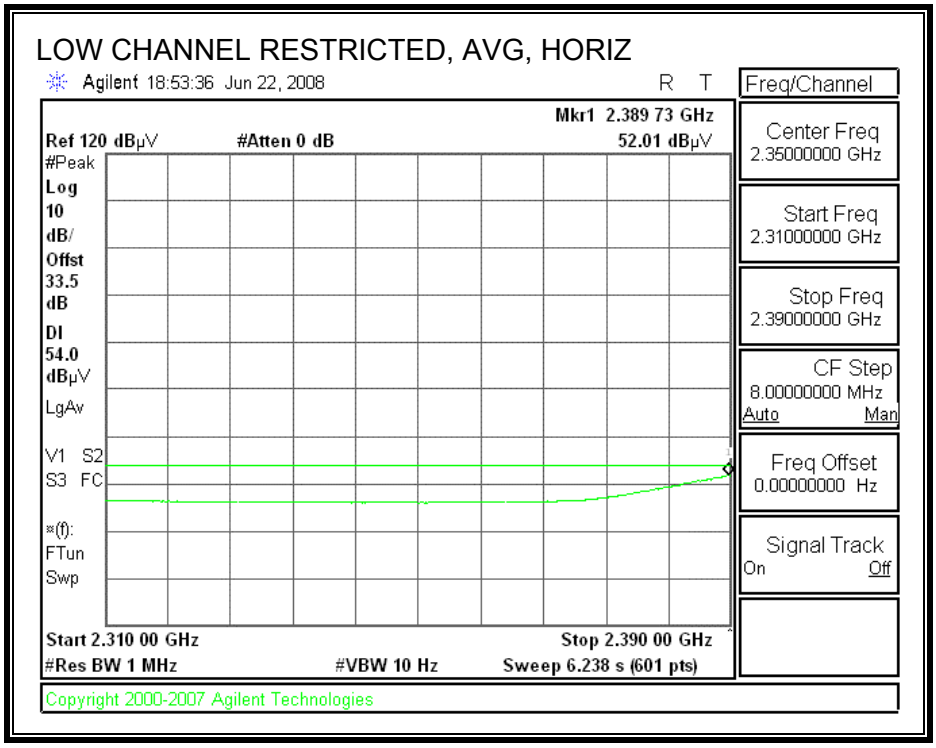
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2412MHz															
4.824	3.0	49.6	37.7	33.3	2.5	-34.8	0.0	0.6	51.2	39.3	74	54	-22.8	-14.7	H
4.824	3.0	53.5	42.4	33.3	2.5	-34.8	0.0	0.6	55.1	44.0	74	54	-18.9	-10.0	V
MID CHANNEL, 2437 MHz															
4.874	3.0	49.2	37.3	33.4	2.6	-34.9	0.0	0.6	50.9	39.0	74	54	-23.1	-15.0	H
7.311	3.0	48.6	36.6	35.0	3.4	-34.7	0.0	0.6	53.0	41.0	74	54	-21.0	-13.0	H
4.874	3.0	53.2	41.7	33.4	2.6	-34.9	0.0	0.6	54.9	43.4	74	54	-19.1	-10.6	V
7.311	3.0	54.4	42.5	35.0	3.4	-34.7	0.0	0.6	58.8	46.9	74	54	-15.2	-7.1	V
HIGH CHANNEL, 2462 MHz															
4.924	3.0	49.4	36.9	33.4	2.6	-34.9	0.0	0.6	51.2	38.7	74	54	-22.8	-15.3	H
7.386	3.0	48.2	37.7	35.0	3.5	-34.6	0.0	0.6	52.7	42.2	74	54	-21.3	-11.8	H
4.924	3.0	53.0	39.9	33.4	2.6	-34.9	0.0	0.6	54.8	41.7	74	54	-19.2	-12.3	V
7.386	3.0	52.5	40.5	35.0	3.5	-34.6	0.0	0.6	57.0	45.0	74	54	-17.0	-9.0	V

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		

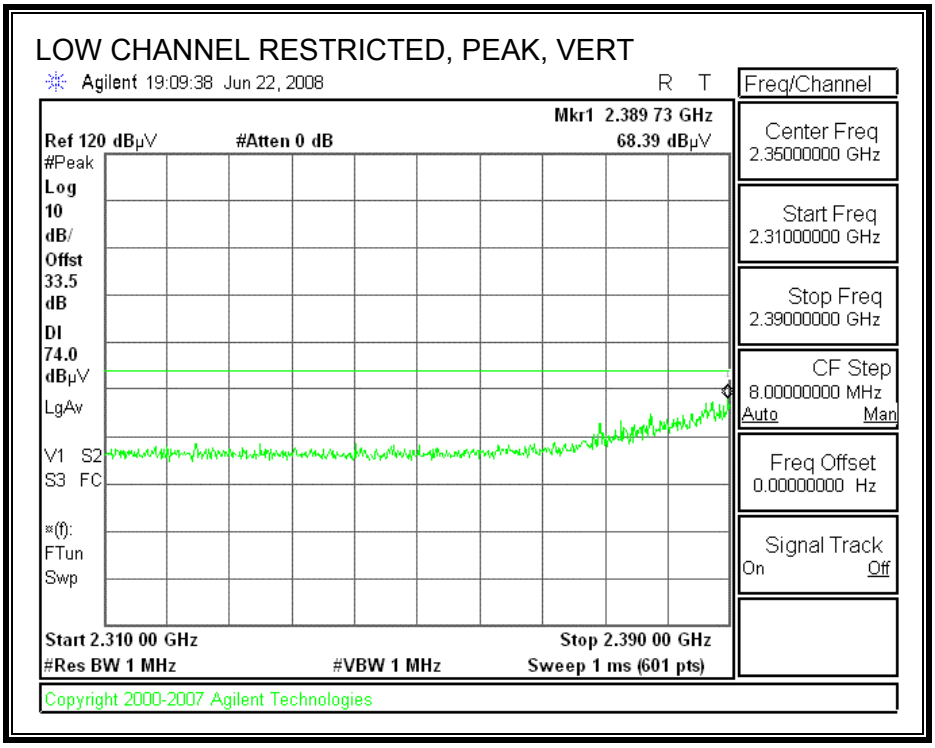
9.2.4. 802.11n HT40 SISO MODE

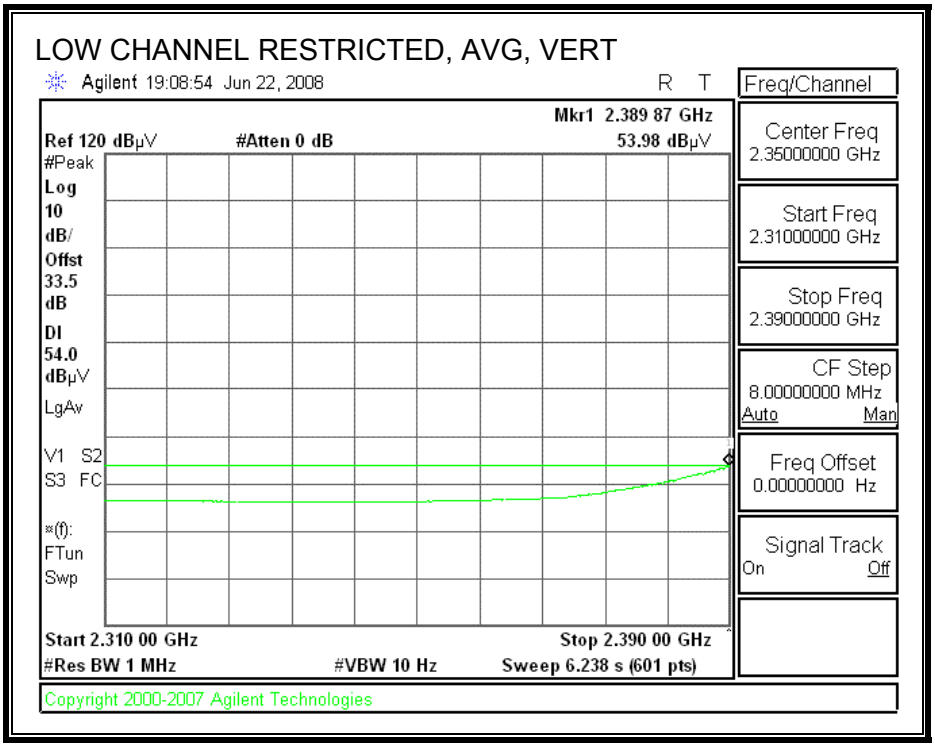
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



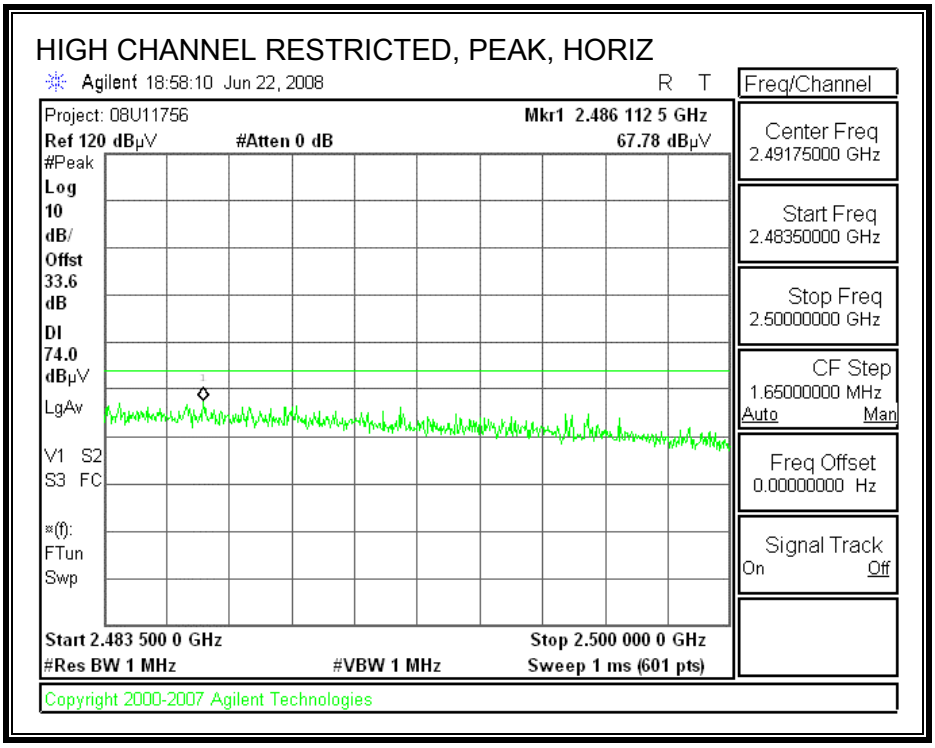


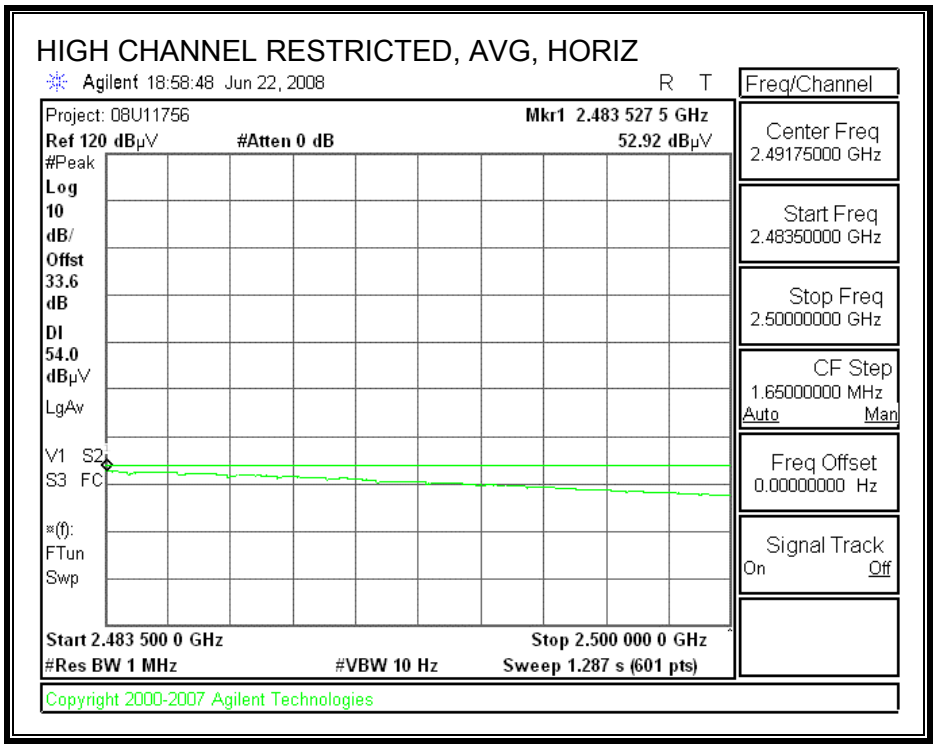
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



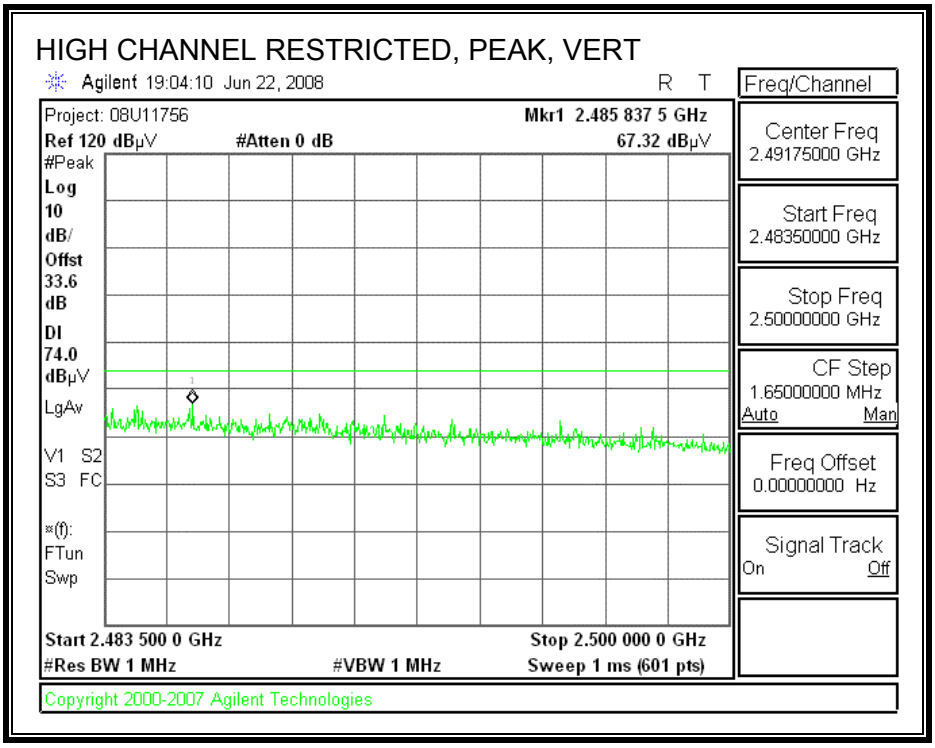


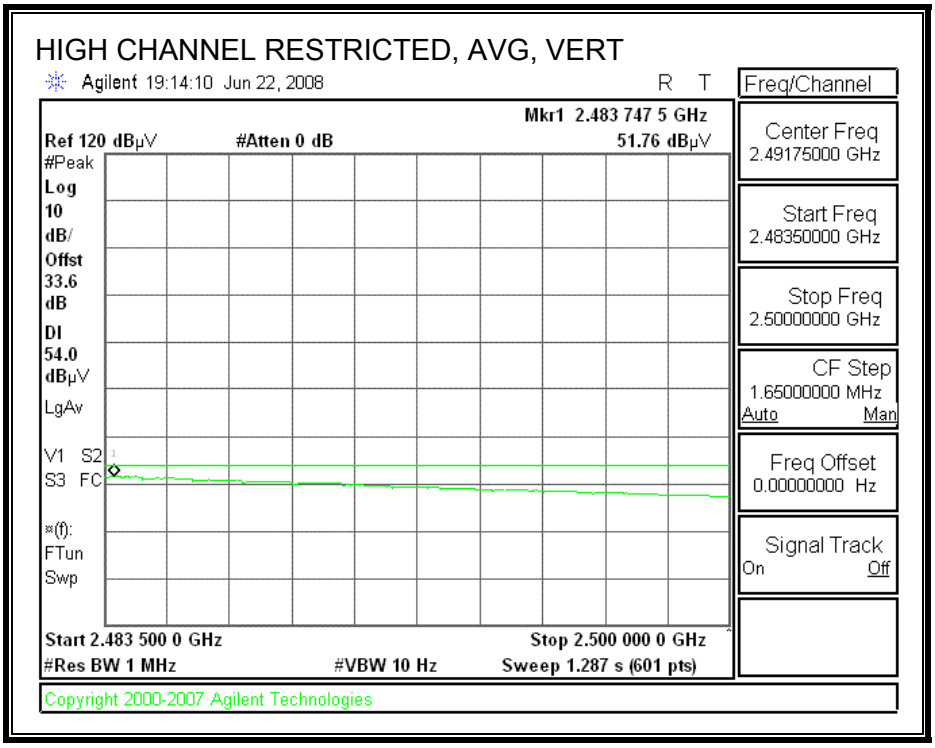
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/13/2008
Test Engineer:	Vien Tran
Configuration:	EUT with Slot Antenna
Mode:	Tx HT40

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

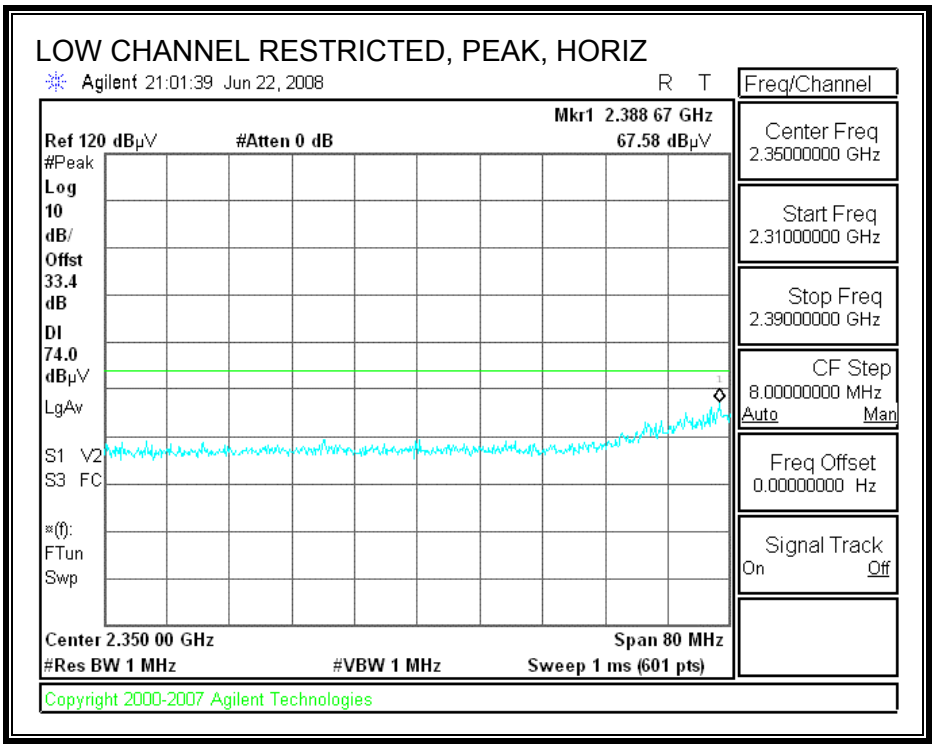
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

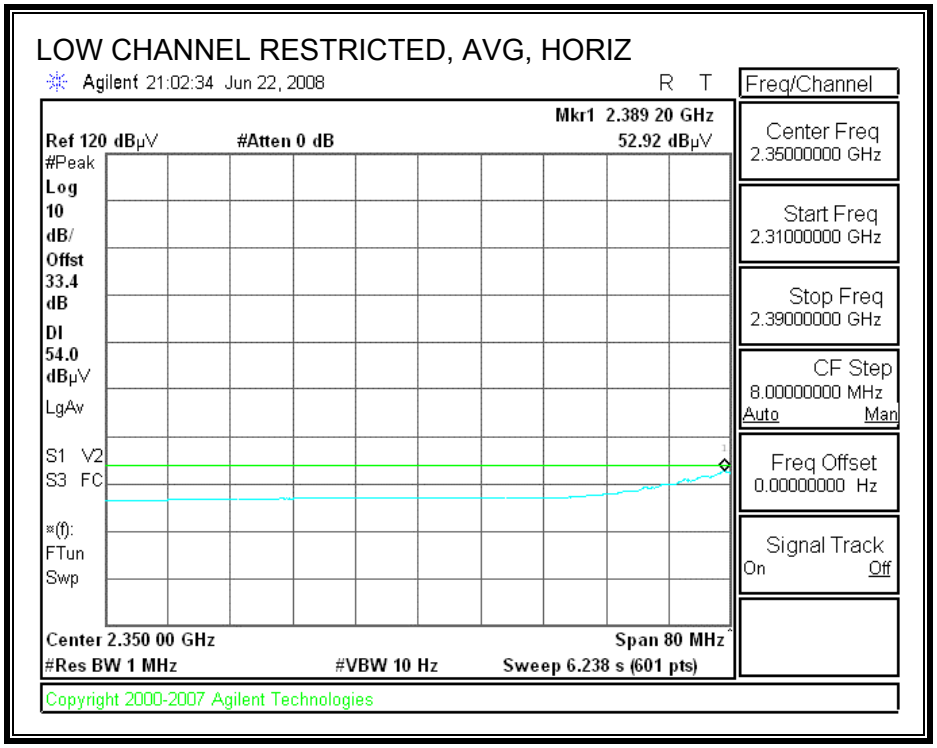
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2422MHz															
4.824	3.0	45.4	34.4	33.0	2.5	-34.8	0.0	0.6	46.7	35.7	74	54	-27.3	-18.3	H
4.824	3.0	47.0	35.7	33.0	2.5	-34.8	0.0	0.6	48.3	37.0	74	54	-25.7	-17.0	V
MID CHANNEL, 2437 MHz															
4.874	3.0	45.7	34.5	33.1	2.6	-34.9	0.0	0.6	47.1	35.9	74	54	-26.9	-18.1	H
4.874	3.0	46.7	35.5	33.1	2.6	-34.9	0.0	0.6	48.1	36.9	74	54	-25.9	-17.1	V
HIGH CHANNEL, 2452 MHz															
4.904	3.0	45.3	34.2	33.1	2.6	-34.9	0.0	0.6	46.8	35.7	74	54	-27.2	-18.3	H
4.904	3.0	46.2	35.2	33.1	2.6	-34.9	0.0	0.6	47.7	36.7	74	54	-26.3	-17.3	V

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		

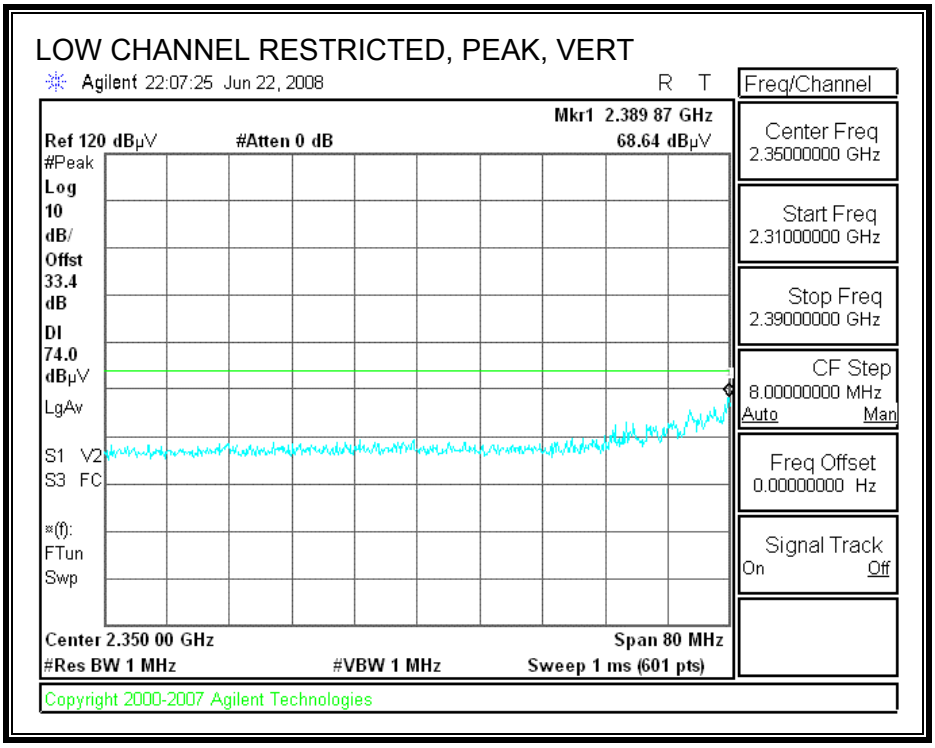
9.2.5. 802.11n HT40 MCS0

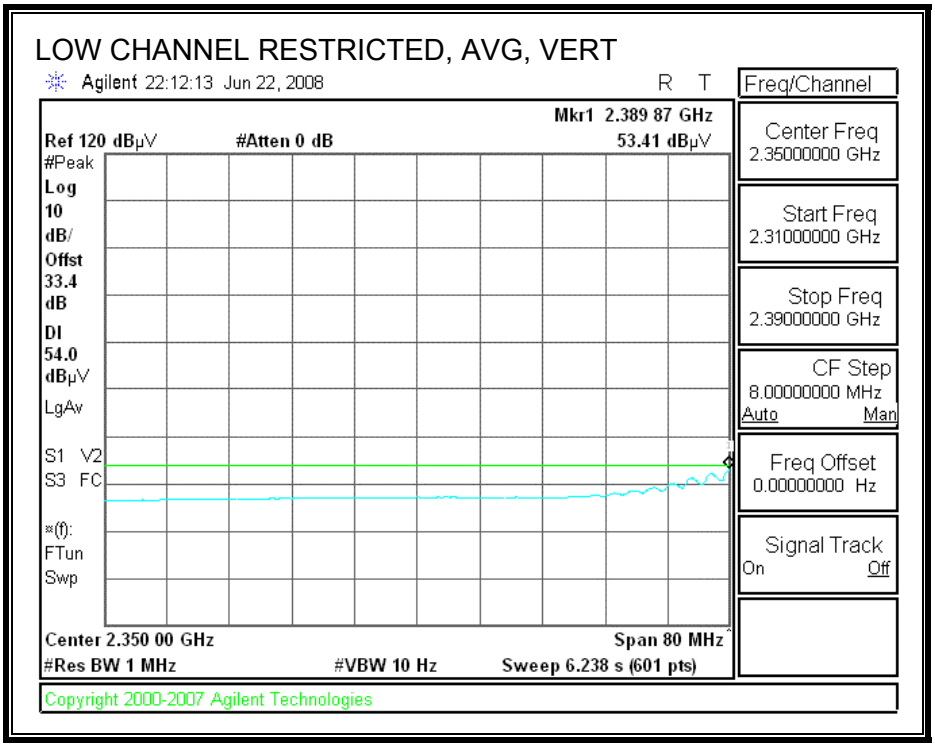
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



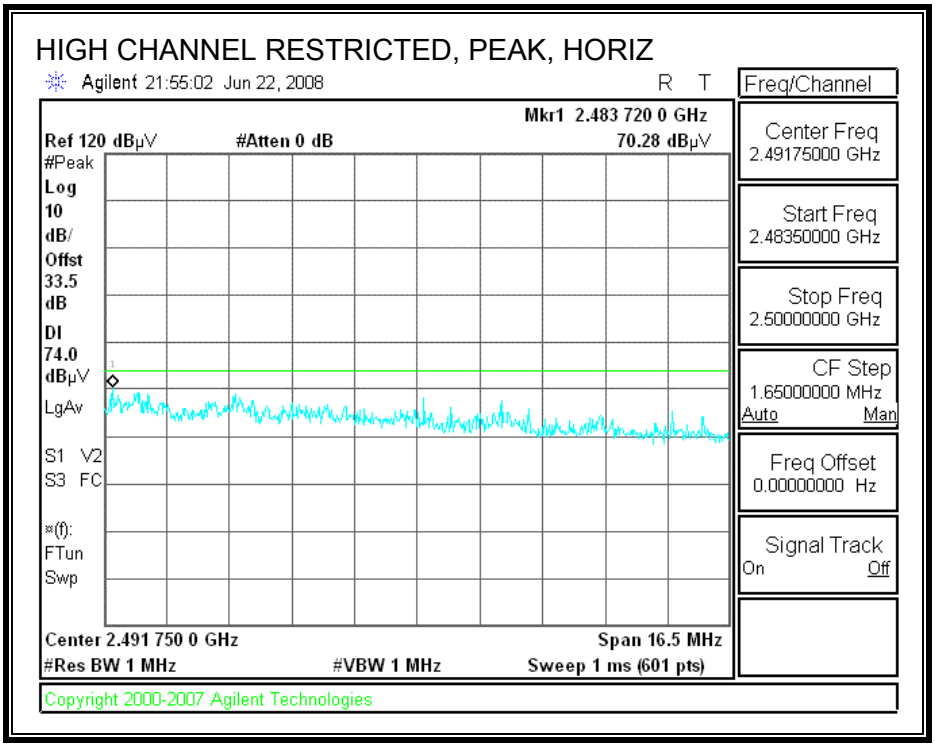


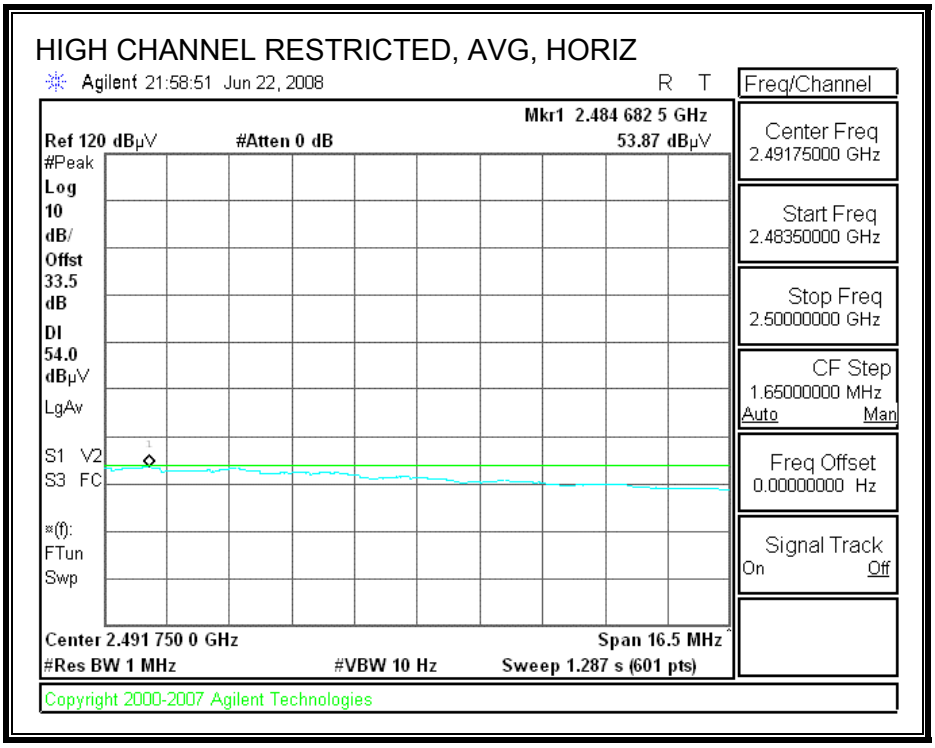
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



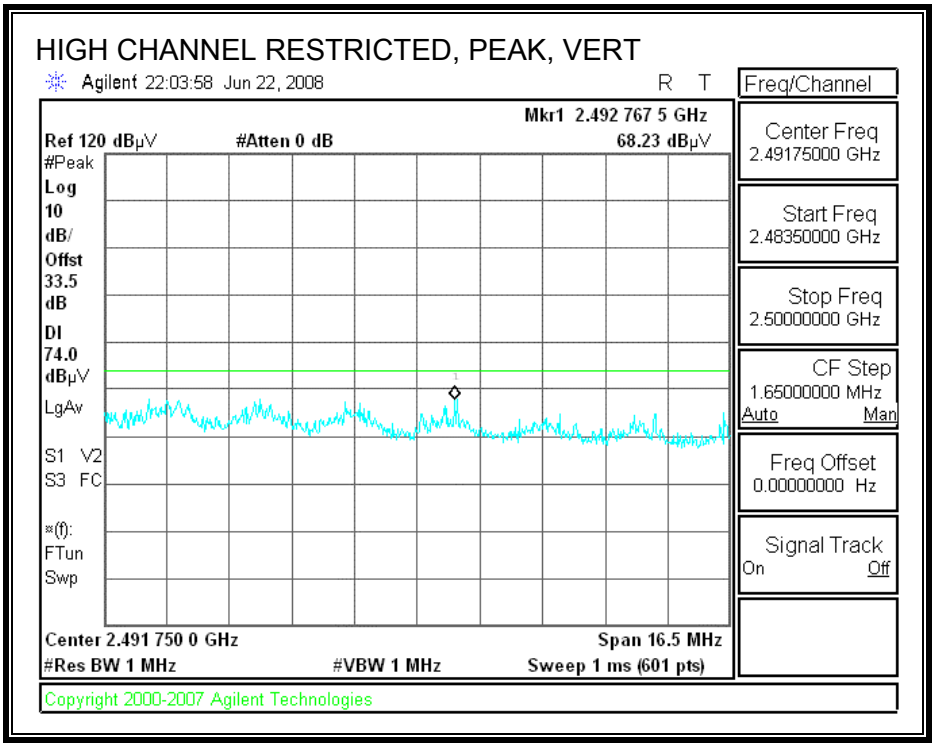


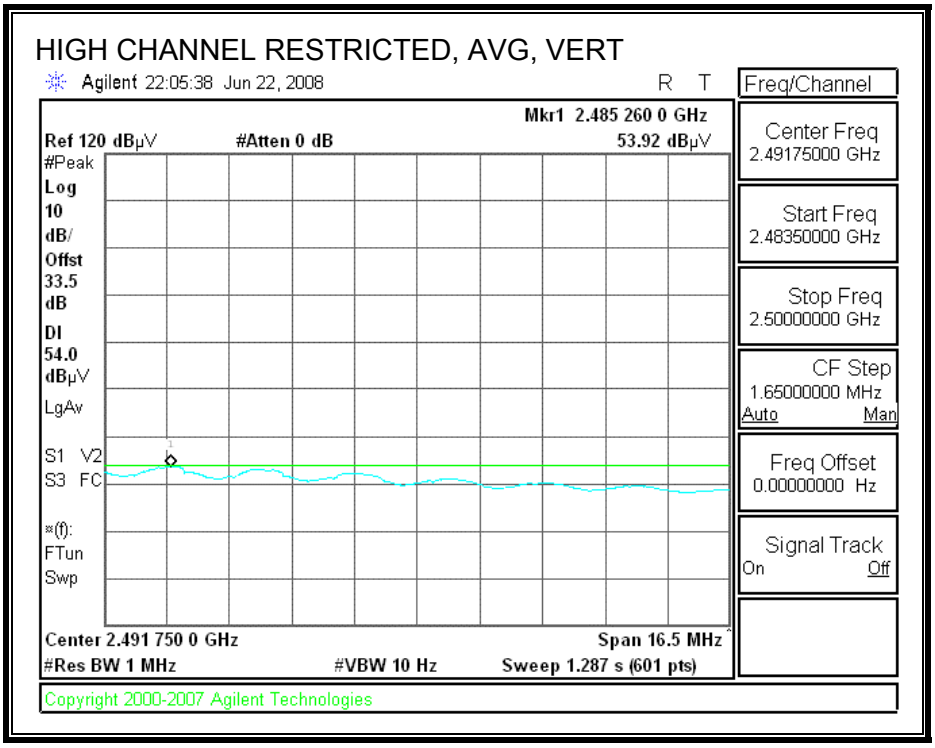
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/21/2008
Test Engineer:	Vien Tran
Configuration:	EUT with _Slot Hi Gain (3.2dBi) & PIFA Hi Gain (3.18dBi) Antennas
Mode:	Tx HT40 MIMO MCS0

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

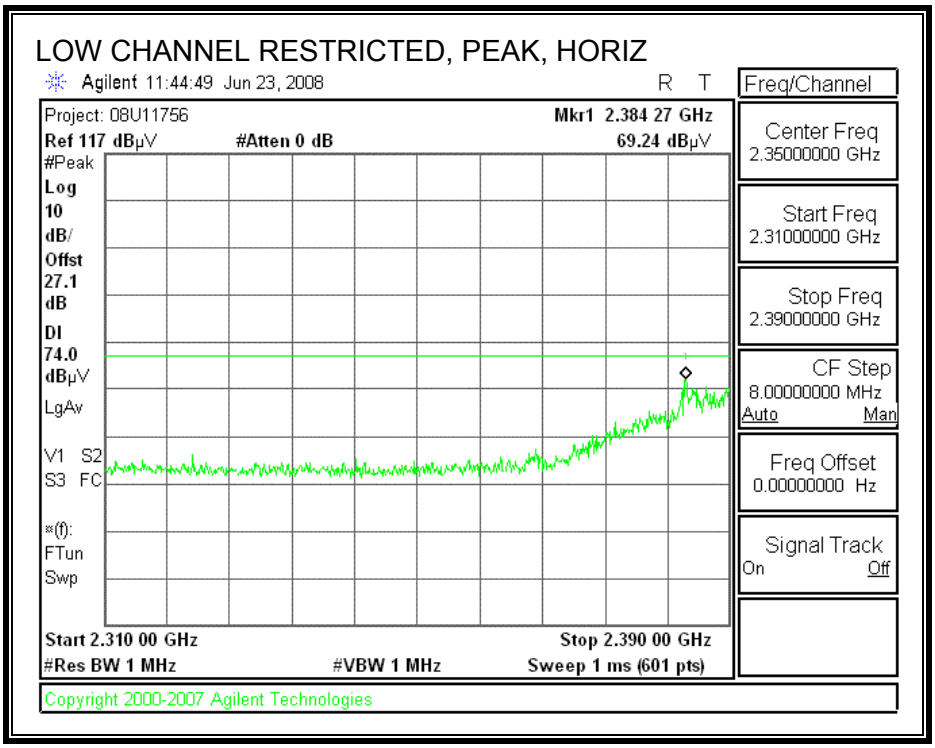
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

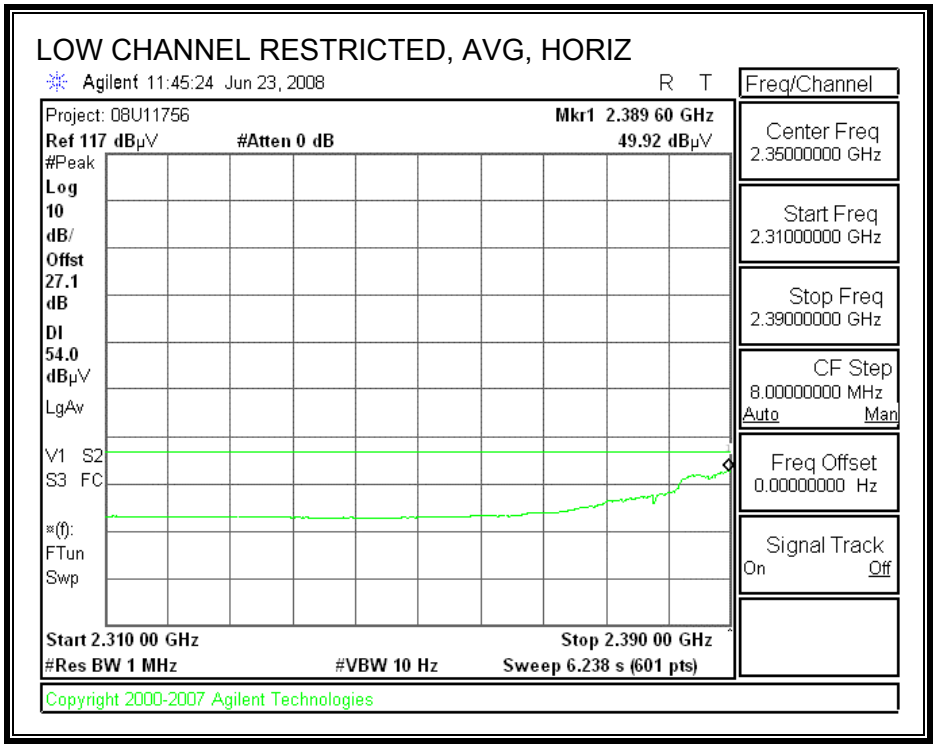
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2422MHz															
4.824	3.0	45.1	34.8	33.0	2.5	-34.8	0.0	0.6	46.4	36.1	74	54	-27.6	-17.9	H
4.824	3.0	45.5	35.1	33.0	2.5	-34.8	0.0	0.6	46.8	36.4	74	54	-27.2	-17.6	V
MID CHANNEL, 2437 MHz															
4.874	3.0	44.9	32.5	33.1	2.6	-34.9	0.0	0.6	46.3	33.9	74	54	-27.7	-20.1	H
4.874	3.0	46.0	34.7	33.1	2.6	-34.9	0.0	0.6	47.4	36.1	74	54	-26.6	-17.9	V
HIGH CHANNEL, 2452 MHz															
4.904	3.0	44.2	34.3	33.1	2.6	-34.9	0.0	0.6	45.6	35.7	74	54	-28.4	-18.3	H
4.904	3.0	46.0	34.8	33.1	2.6	-34.9	0.0	0.6	47.4	36.3	74	54	-26.6	-17.7	V

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		

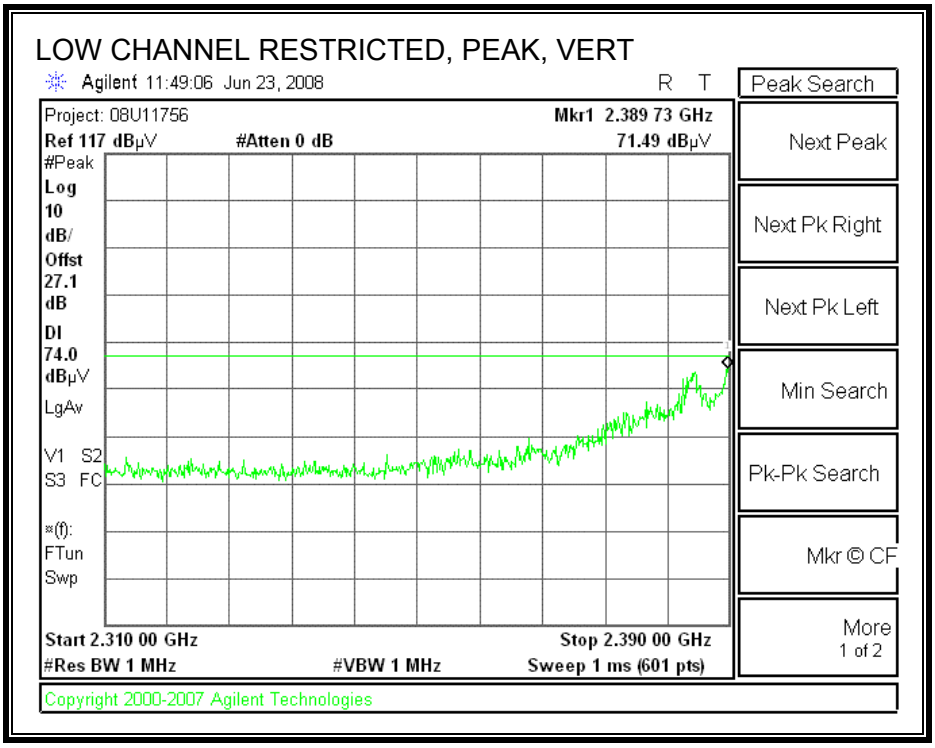
9.2.6. 802.11n HT40 MCS15

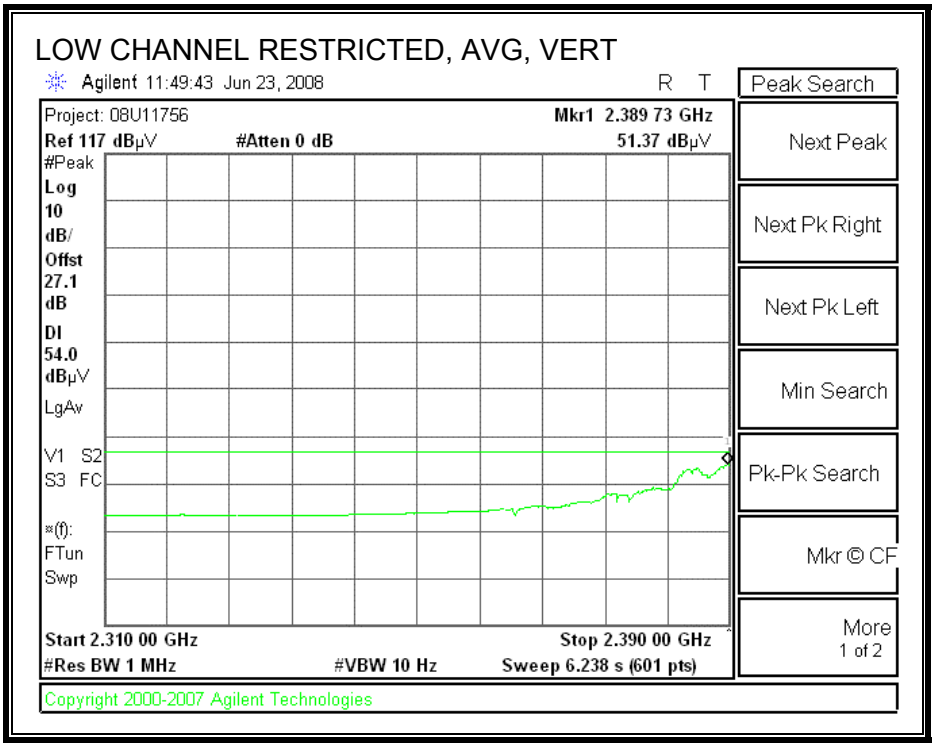
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



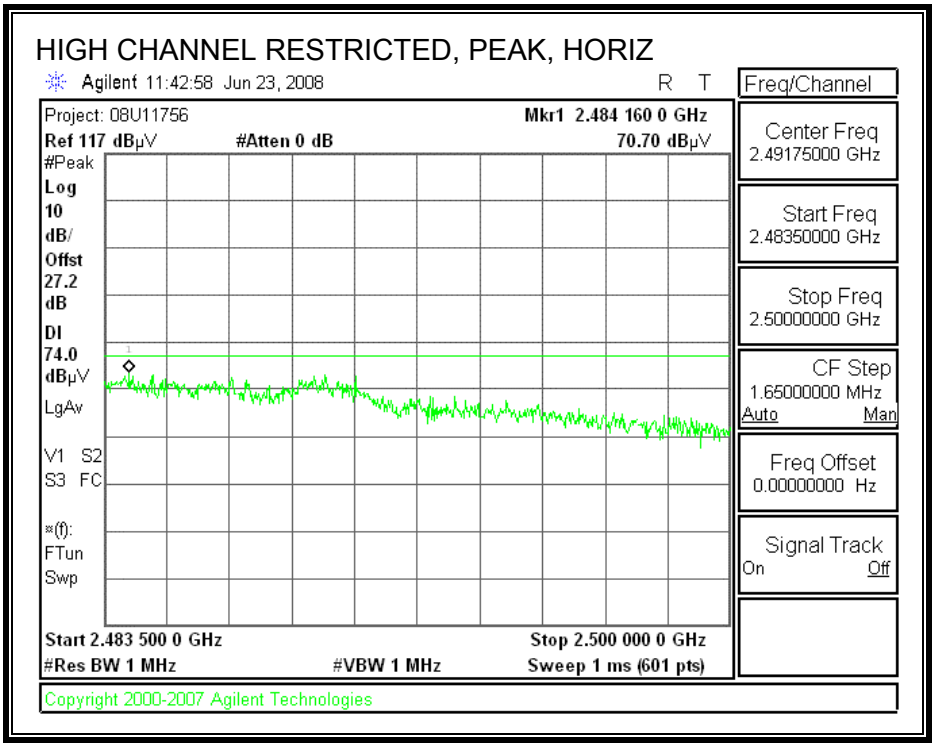


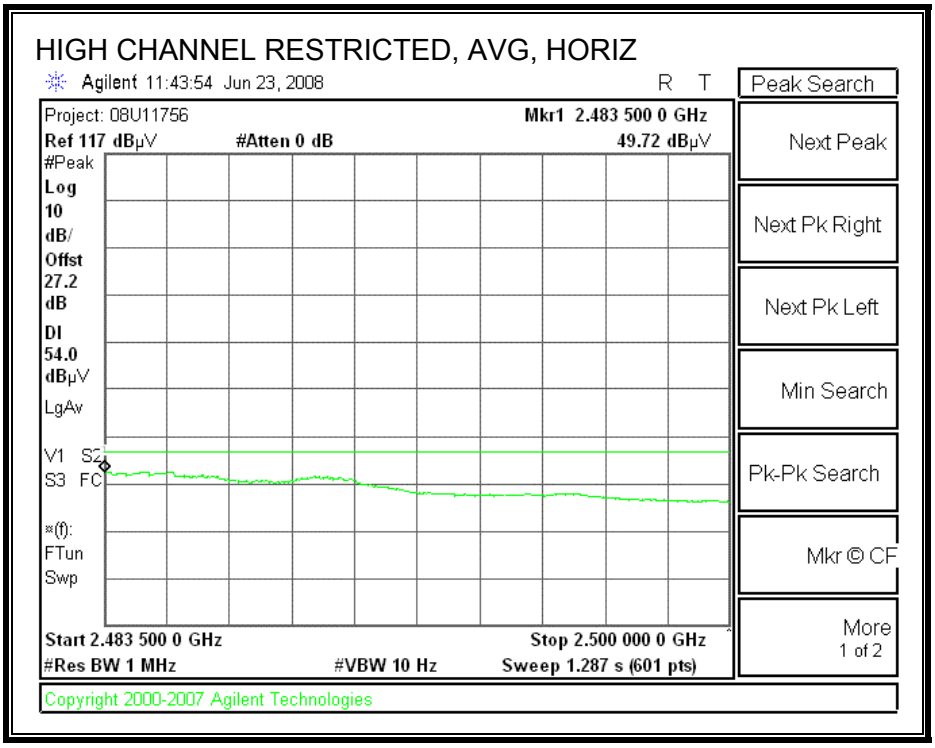
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



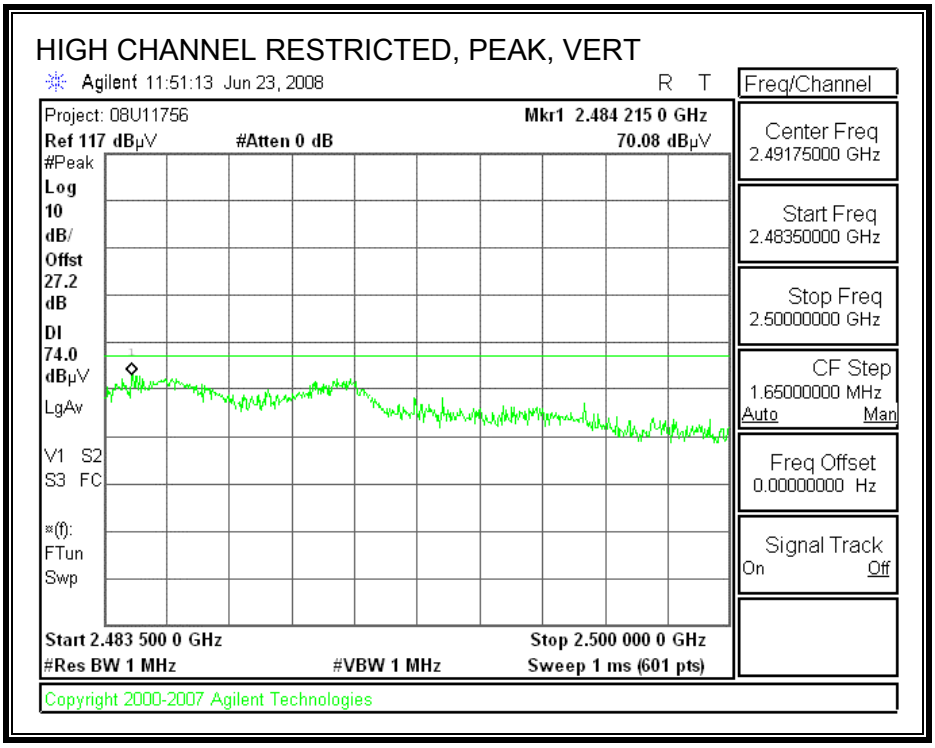


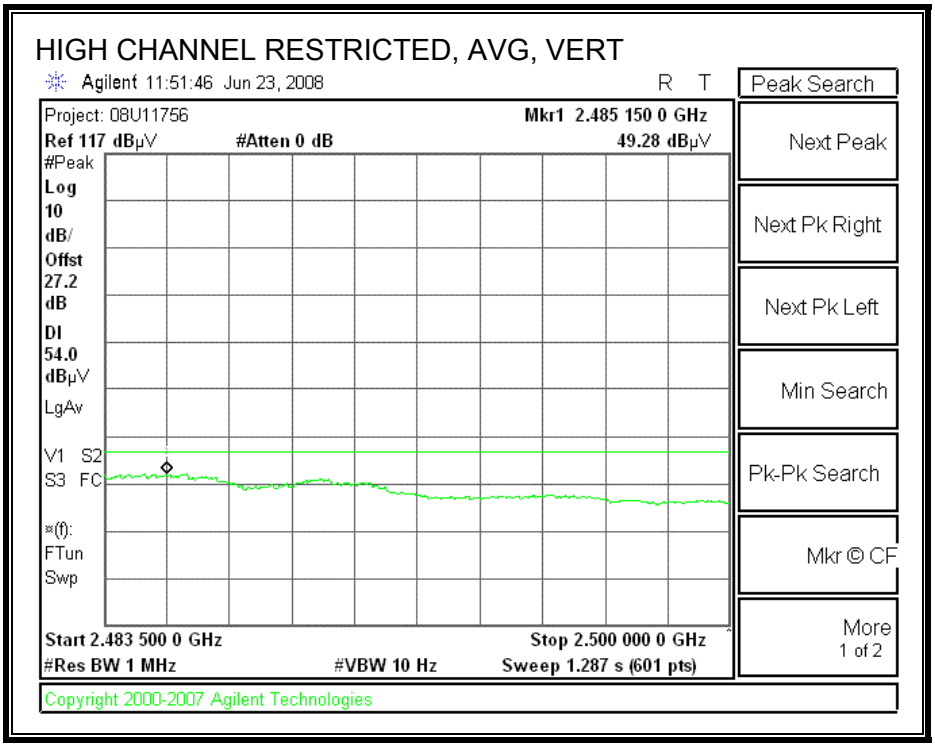
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/21/2008
Test Engineer:	Vien Tran
Configuration:	EUT with _Slot Hi Gain (3.2dBi) & PIFA Hi Gain (3.18dBi) Antennas
Mode:	Tx HT40 MIMO MCS15

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

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

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2422MHz															
4.824	3.0	45.4	35.2	33.0	2.5	-34.8	0.0	0.6	46.7	36.5	74	54	-27.3	-17.5	H
4.824	3.0	45.8	35.9	33.0	2.5	-34.8	0.0	0.6	47.1	37.2	74	54	-26.9	-16.8	V
MID CHANNEL, 2437 MHz															
4.874	3.0	45.2	33.3	33.1	2.6	-34.9	0.0	0.6	46.6	34.7	74	54	-27.4	-19.3	H
4.874	3.0	46.3	35.0	33.1	2.6	-34.9	0.0	0.6	47.7	36.4	74	54	-26.3	-17.6	V
HIGH CHANNEL, 2452 MHz															
4.904	3.0	45.0	34.5	33.1	2.6	-34.9	0.0	0.6	46.4	35.9	74	54	-27.6	-18.1	H
4.904	3.0	46.8	35.7	33.1	2.6	-34.9	0.0	0.6	48.2	37.1	74	54	-25.8	-16.9	V

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		

9.2.7. 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Broadcom
Project #: 08U11756
Date: 6/21/2008
Test Engineer: Can Ming Chung
Configuration: EUT With desktop
Mode: 5.8GHz a mode Tx, Slot Antenna

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T145 Agilent 3008A005(			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		C-5m Chamber		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. 5745MHz															
11.490	3.0	45.9	31.7	37.5	0.0	-33.1	0.0	0.0	50.3	36.0	74	54	-23.7	-18.0	H
11.490	3.0	46.6	33.3	37.5	0.0	-33.1	0.0	0.0	51.0	37.6	74	54	-23.0	-16.4	V
Mid Ch. 5785MHz															
11.570	3.0	43.6	32.0	37.5	0.0	-33.0	0.0	0.0	48.1	36.5	74	54	-25.9	-17.5	H
11.570	3.0	45.7	33.6	37.5	0.0	-33.0	0.0	0.0	50.2	38.1	74	54	-23.8	-15.9	V
High Ch. 5825MHz															
11.650	3.0	45.0	31.5	37.5	0.0	-32.9	0.0	0.0	49.6	36.1	74	54	-24.4	-17.9	H
11.650	3.0	46.1	33.1	37.5	0.0	-32.9	0.0	0.0	50.7	37.8	74	54	-23.3	-16.2	V

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		

9.2.8. 802.11n HT20 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Broadcom
Project #: 08U11756
Date: 6/23/2008
Test Engineer: Can Ming Chung
Configuration: EUT With desktop
Mode: 5.8GHz HT 20 mode Tx, Slot\PIFA Antenna

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-5m Chamber	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)
Low Ch. 5745MHz															
11.490	3.0	42.1	28.2	37.2	11.6	-32.5	0.0	0.7	59.1	45.2	74	54	-14.9	-8.8	H
11.490	3.0	41.9	28.8	37.2	11.6	-32.5	0.0	0.7	58.8	45.7	74	54	-15.2	-8.3	V
Mid Ch. 5785MHz															
11.570	3.0	40.0	28.5	37.2	11.7	-32.5	0.0	0.7	57.1	45.6	74	54	-16.9	-8.4	H
11.570	3.0	39.4	28.0	37.2	11.7	-32.5	0.0	0.7	56.5	45.0	74	54	-17.5	-9.0	V
High Ch. 5825MHz															
11.650	3.0	42.0	27.9	37.2	11.8	-32.5	0.0	0.7	59.2	45.1	74	54	-14.8	-8.9	H
11.650	3.0	43.4	29.0	37.2	11.8	-32.5	0.0	0.7	60.6	46.2	74	54	-13.4	-7.8	V

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		

9.2.9. 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Broadcom
Project #: 08U11756
Date: 6/21/2008
Test Engineer: Can Ming Chung
Configuration: EUT With desktop
Mode: 5.8GHz HT40 SISO mode Tx, Slot Antenna

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T145 Agilent 3008A005(			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	C-5m Chamber		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. 5755MHz															
11.510	3.0	43.7	31.2	37.5	0.8	-33.1	0.0	0.0	48.8	36.3	74	54	-25.2	-17.7	H
11.510	3.0	45.8	33.7	37.5	0.8	-33.1	0.0	0.0	50.9	38.9	74	54	-23.1	-15.1	V
High Ch. 5795MHz															
11.590	3.0	43.4	30.9	37.5	0.7	-33.0	0.0	0.0	48.7	36.2	74	54	-25.3	-17.8	H
11.590	3.0	46.0	32.7	37.5	0.7	-33.0	0.0	0.0	51.3	38.0	74	54	-22.7	-16.0	V

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		

9.2.10. 802.11n HT40 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Broadcom
Project #: 08U11756
Date: 6/23/2008
Test Engineer: Can Ming Chung
Configuration: EUT With desktop
Mode: 5.8GHz HT 40 mode Tx, Slot\PIFA Antenna

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-5m Chamber	HPF_7.6GHz	

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

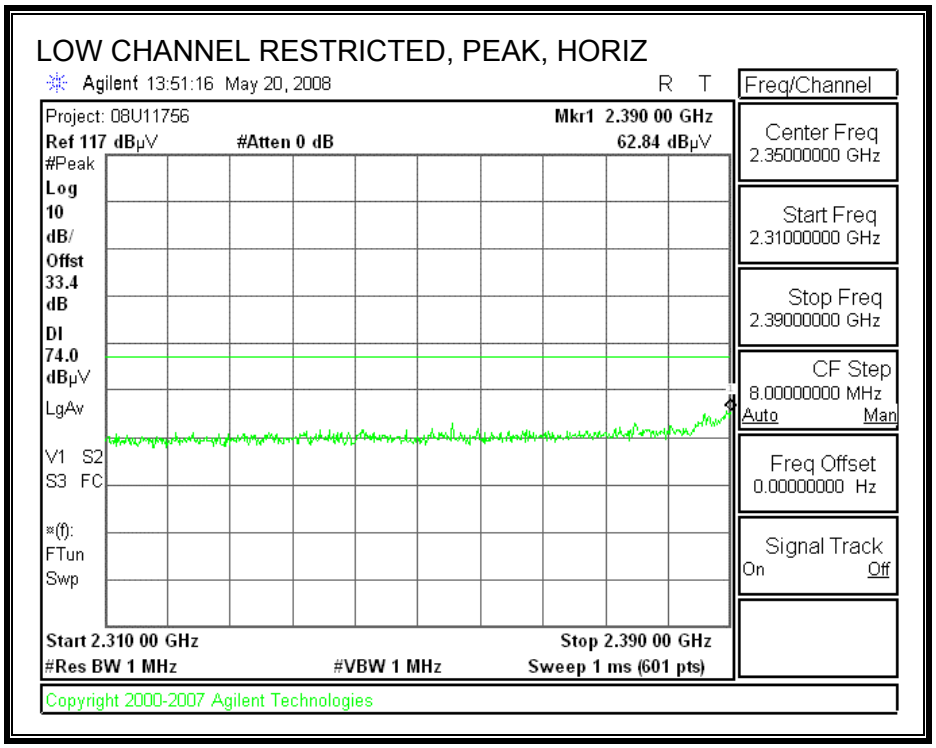
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5755MHz															
11.510	3.0	41.0	28.7	37.2	11.6	-32.5	0.0	0.7	57.9	45.7	74	54	-16.1	-8.3	H
11.510	3.0	40.8	28.4	37.2	11.6	-32.5	0.0	0.7	57.8	45.4	74	54	-16.2	-8.6	V
High Ch. 5795MHz															
11.590	3.0	39.8	28.2	37.2	11.7	-32.5	0.0	0.7	56.9	45.3	74	54	-17.1	-8.7	H
11.590	3.0	40.3	28.0	37.2	11.7	-32.5	0.0	0.7	57.4	45.1	74	54	-16.6	-8.9	V

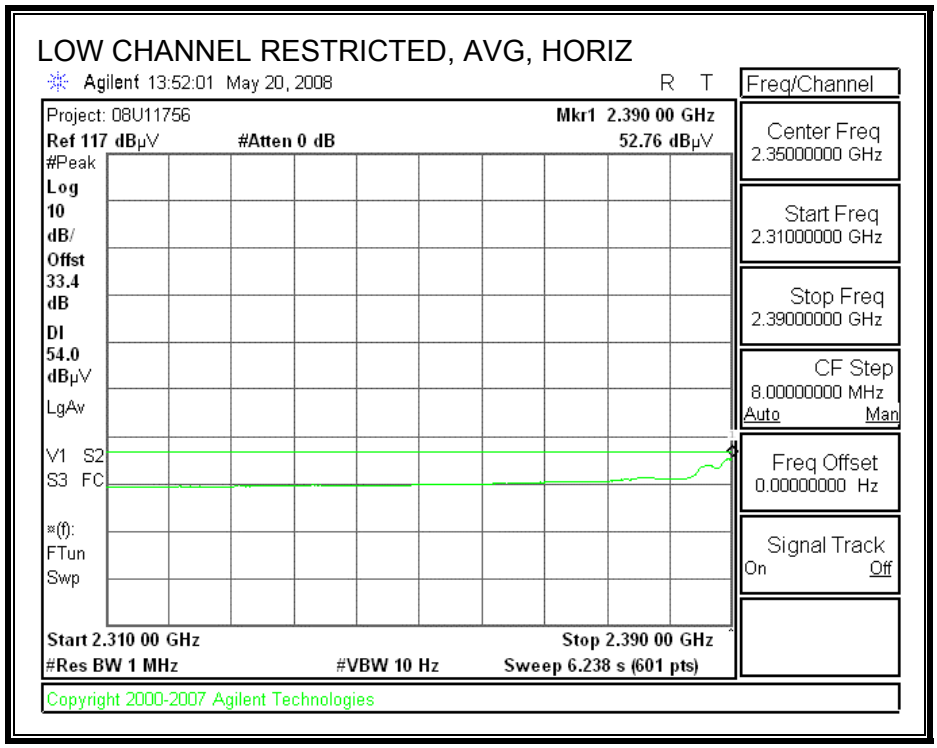
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

PIFA ANTENNA

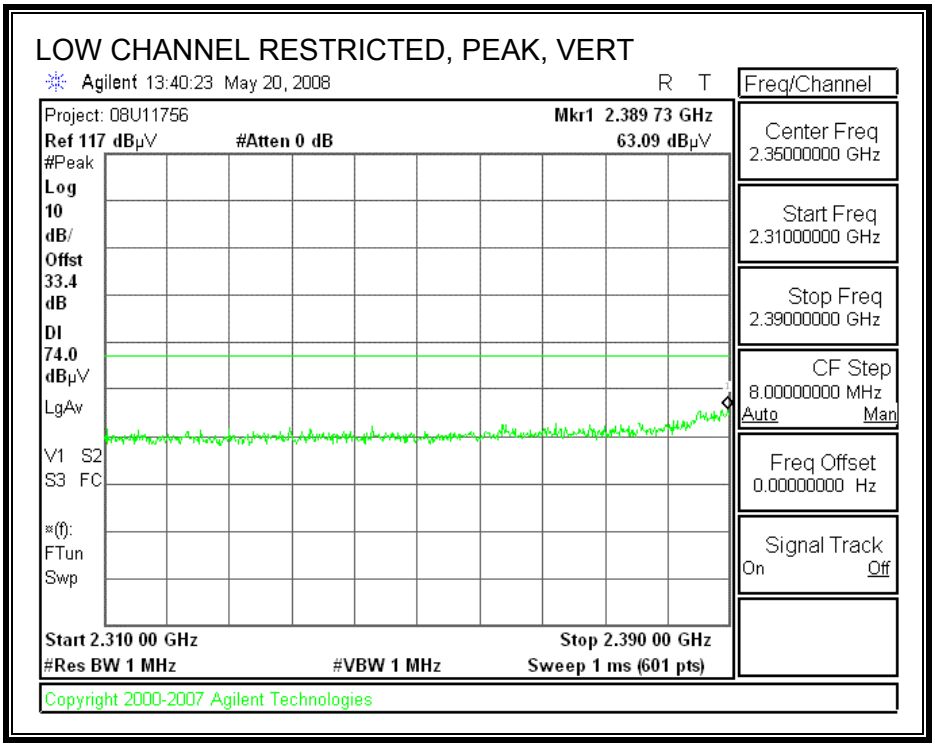
9.2.11. 802.11b MODE

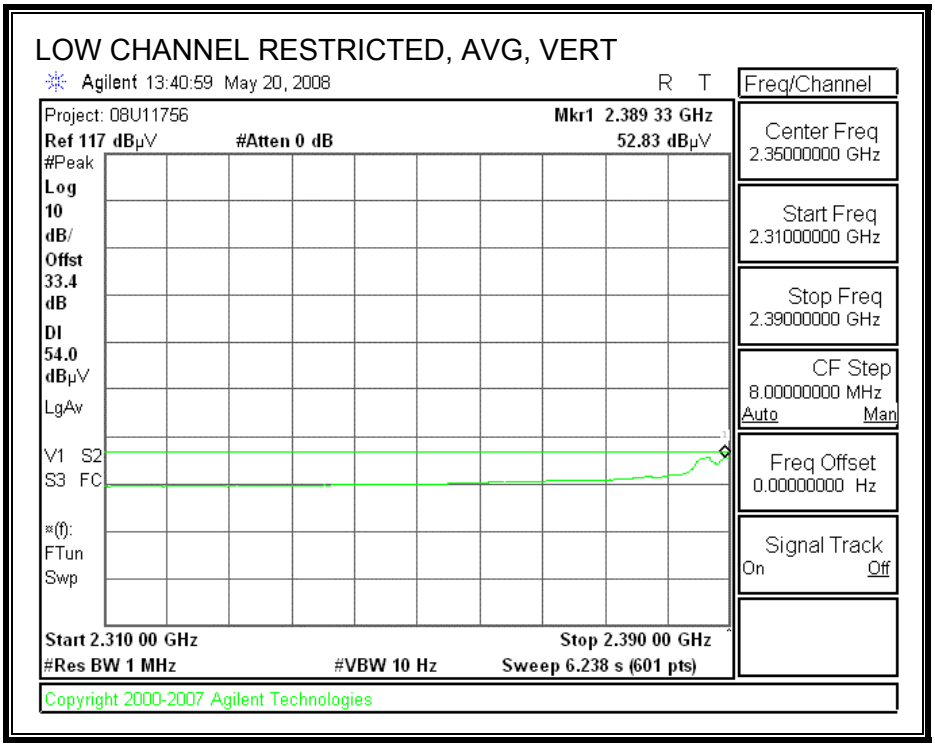
CHANNEL 1, 2412MHz
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





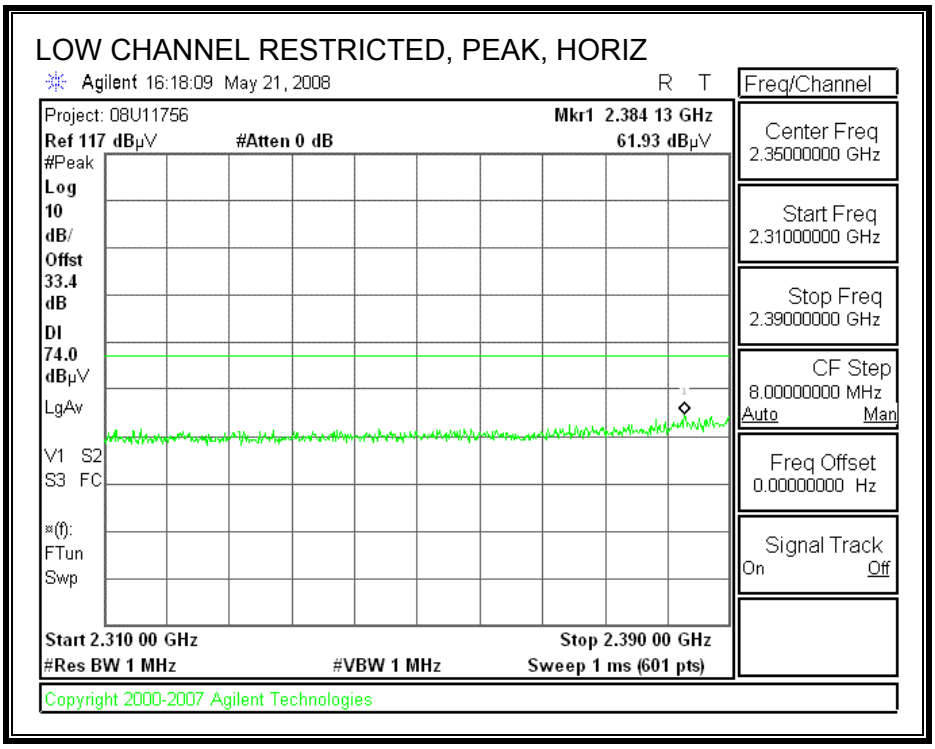
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

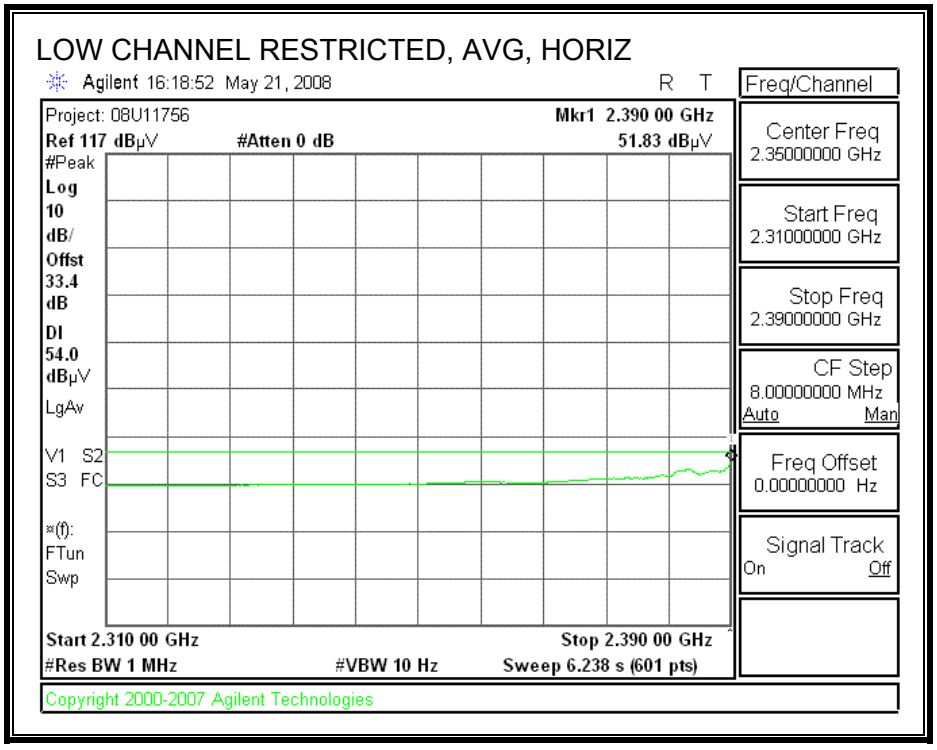




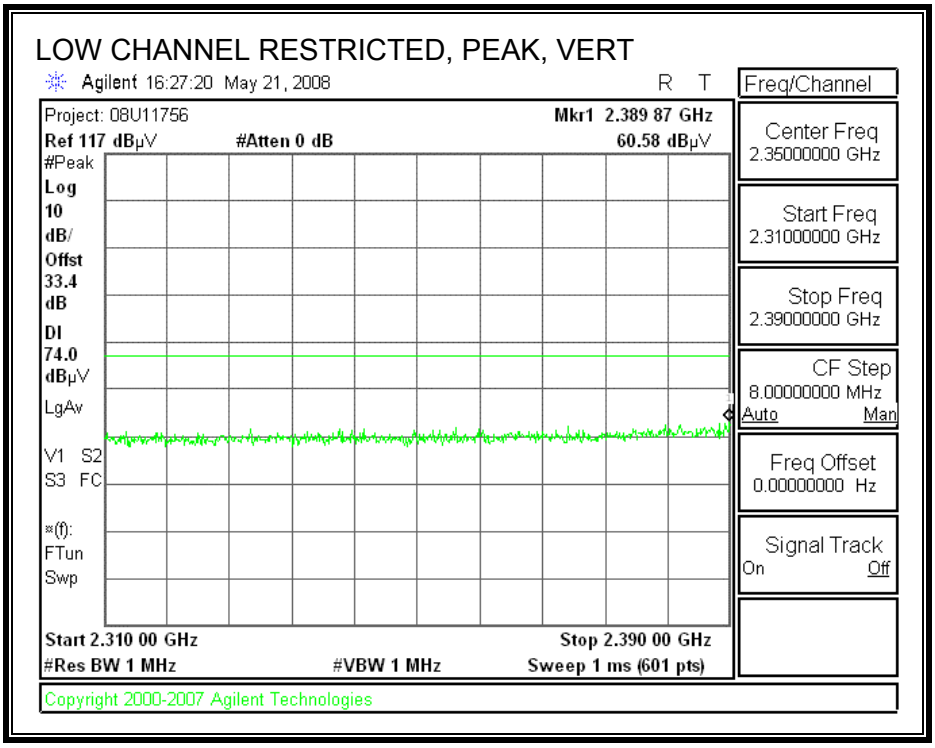
CHANNEL 2, 2417MHz

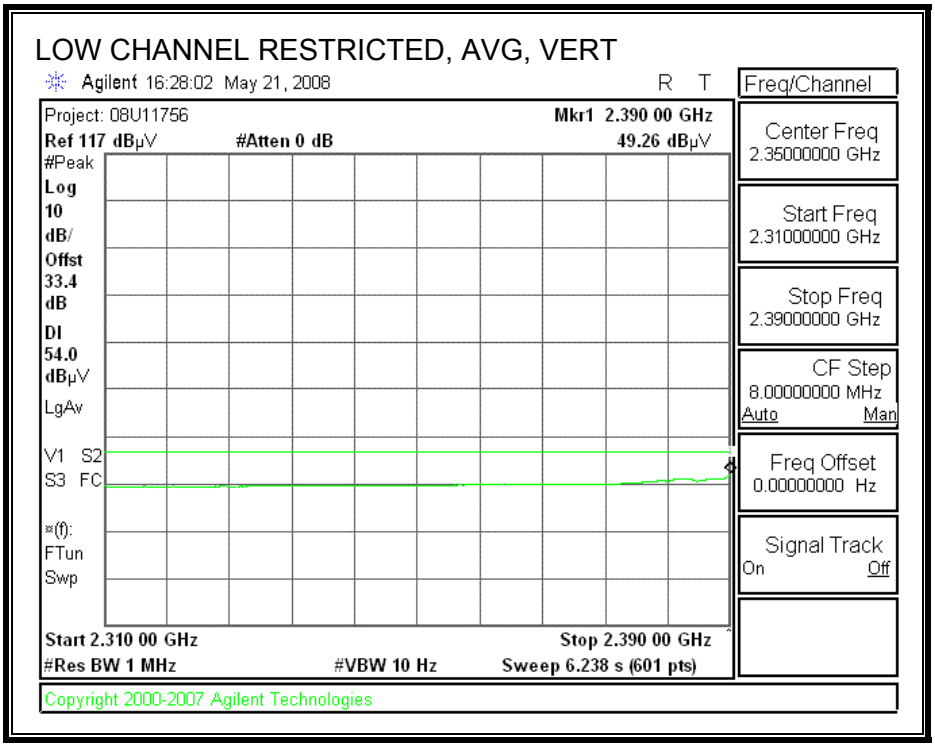
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





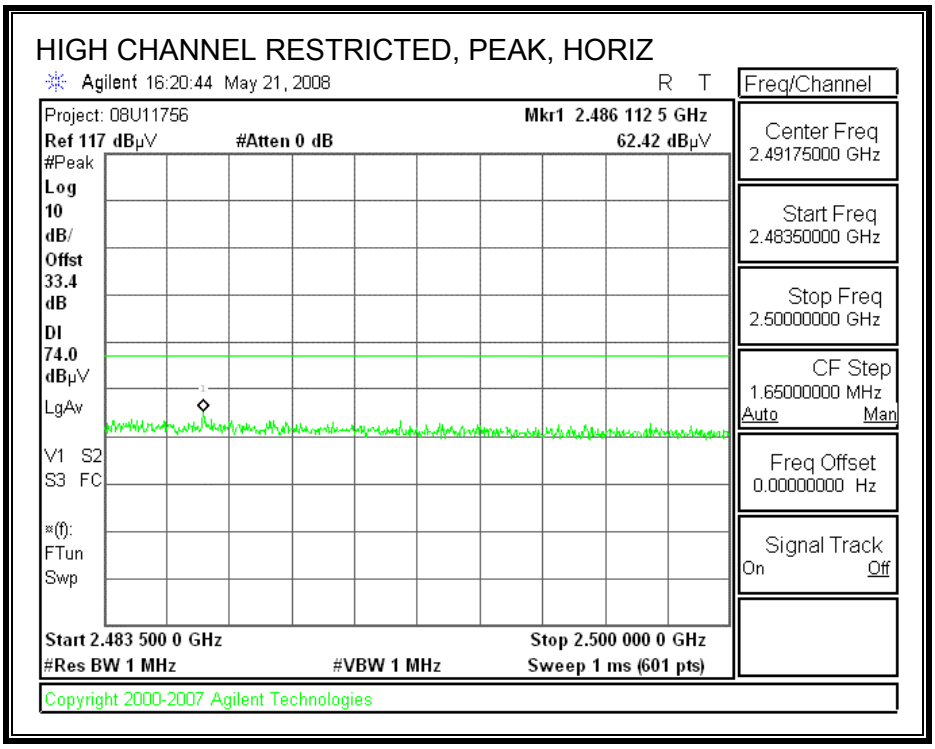
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

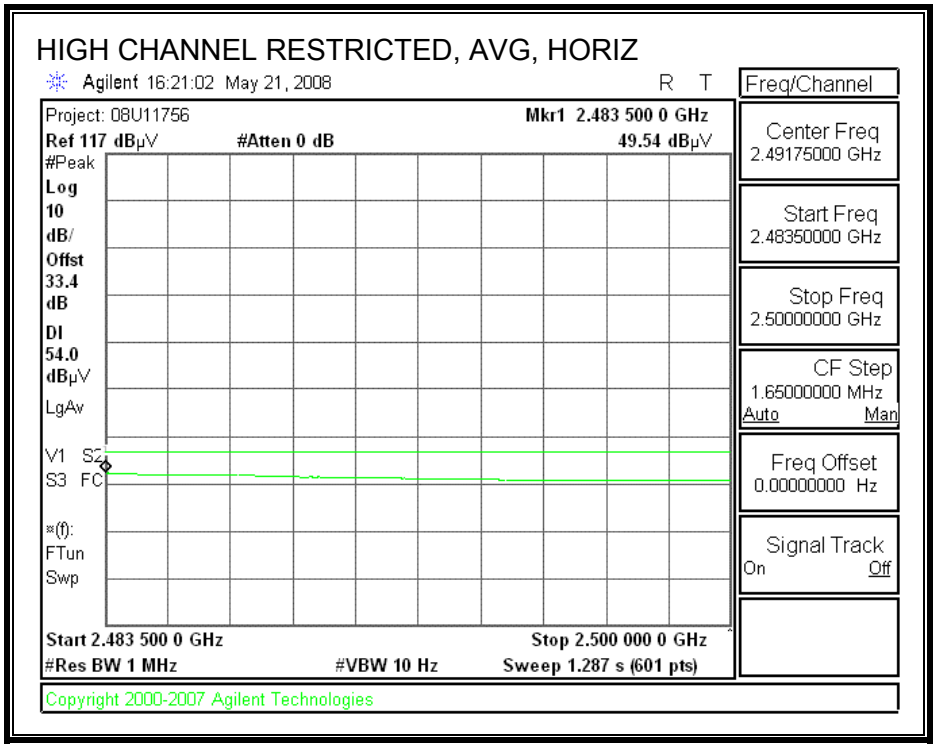




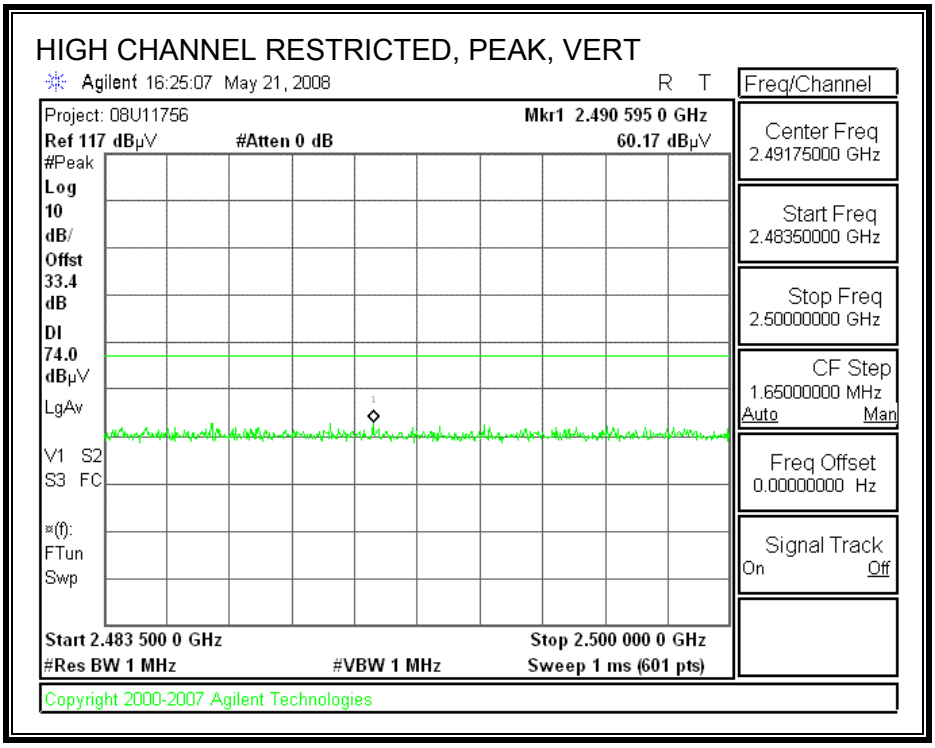
CHANNEL 10, 2457 MHz

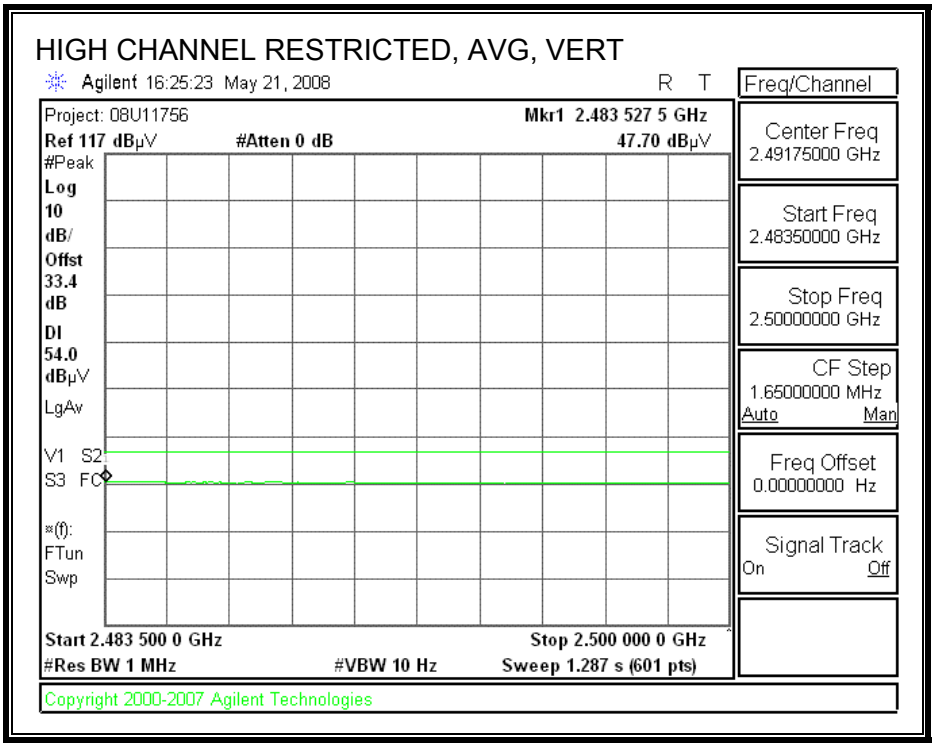
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





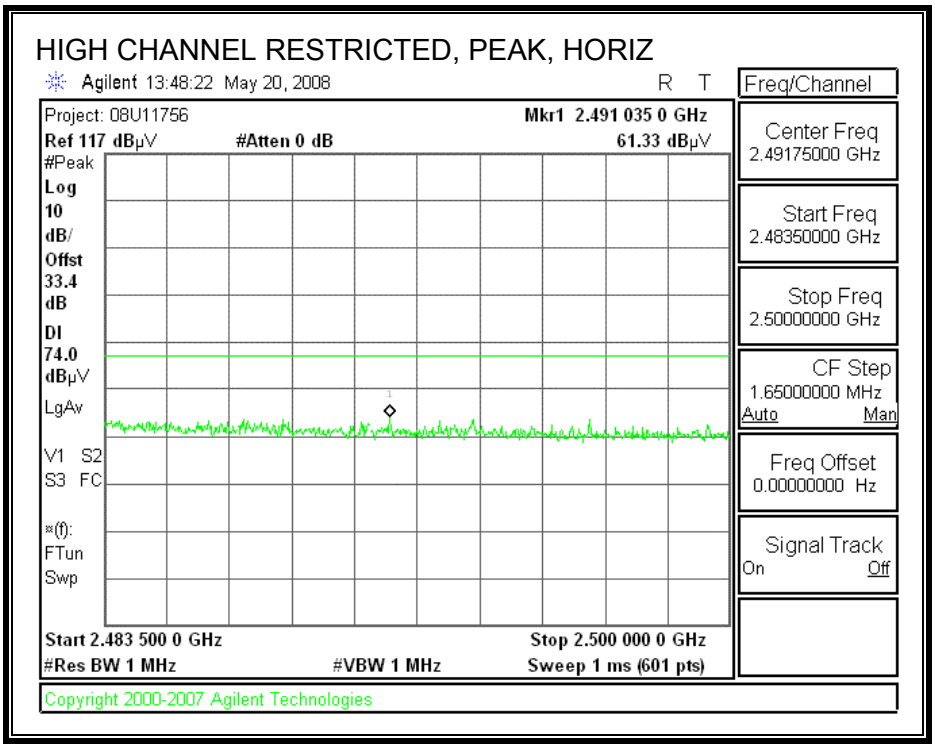
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

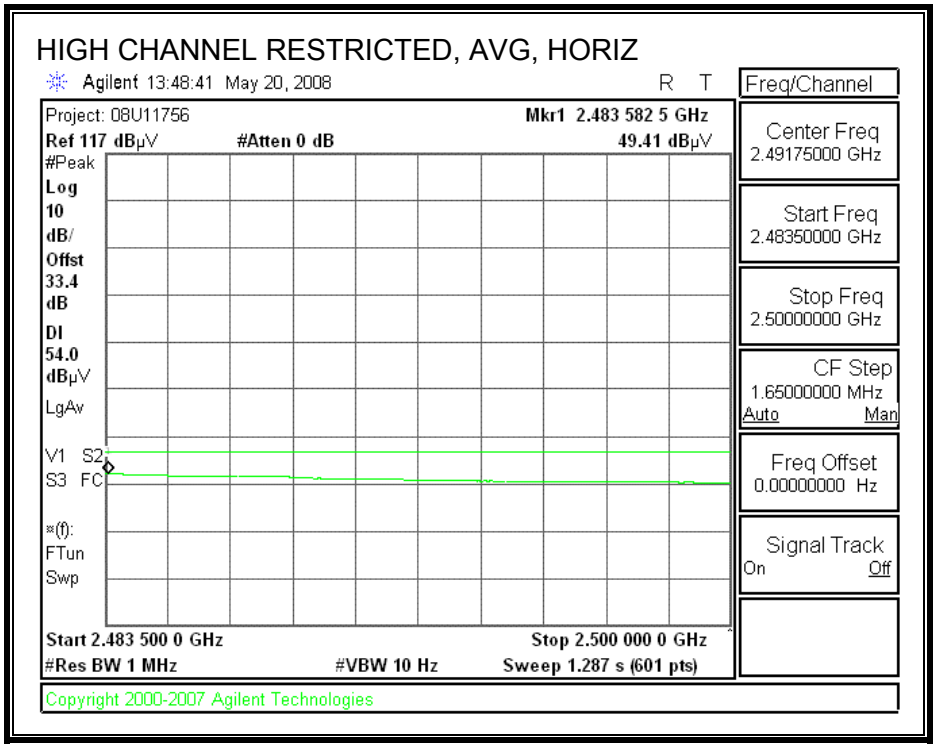




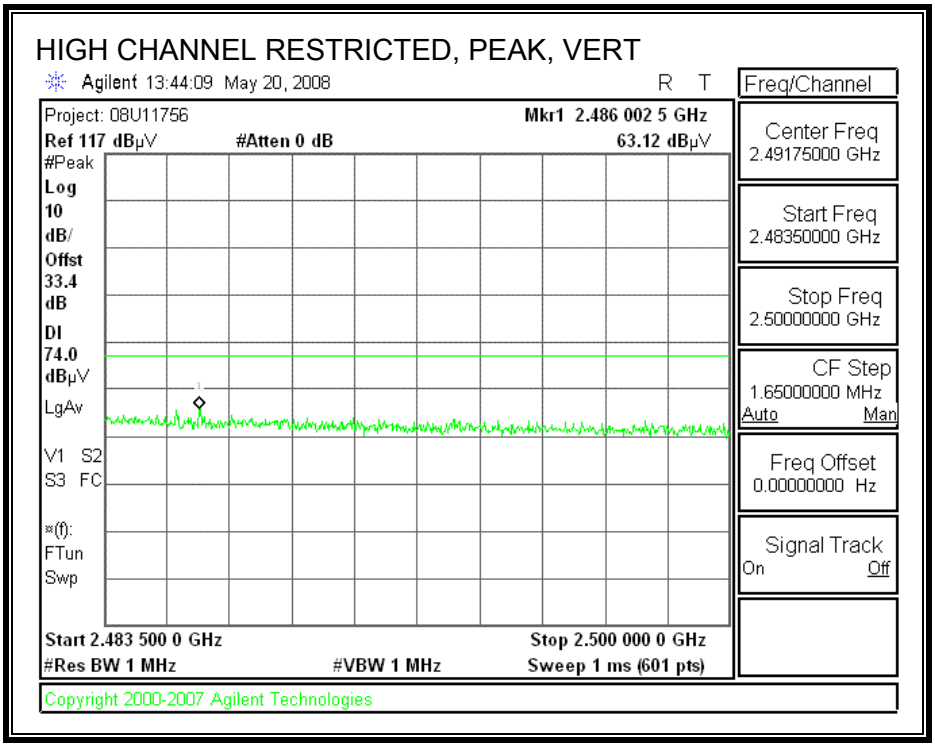
CHANNEL 11, 2462 MHz

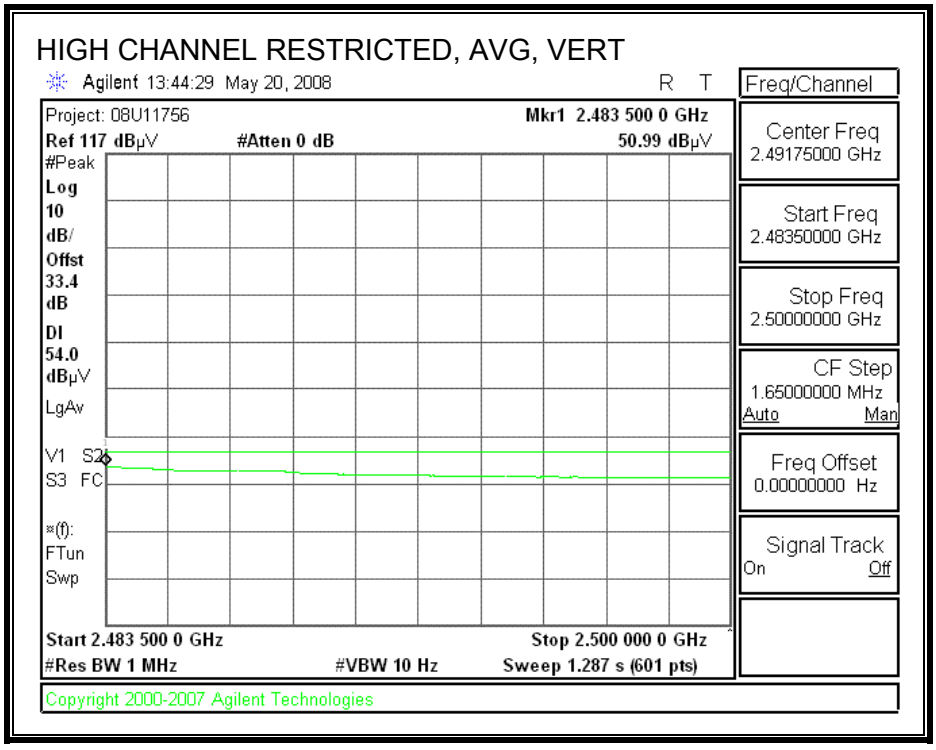
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/12/2008
Test Engineer:	Vien Tran
Configuration:	EUT with PIFA Antenna
Mode:	Tx 11b

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

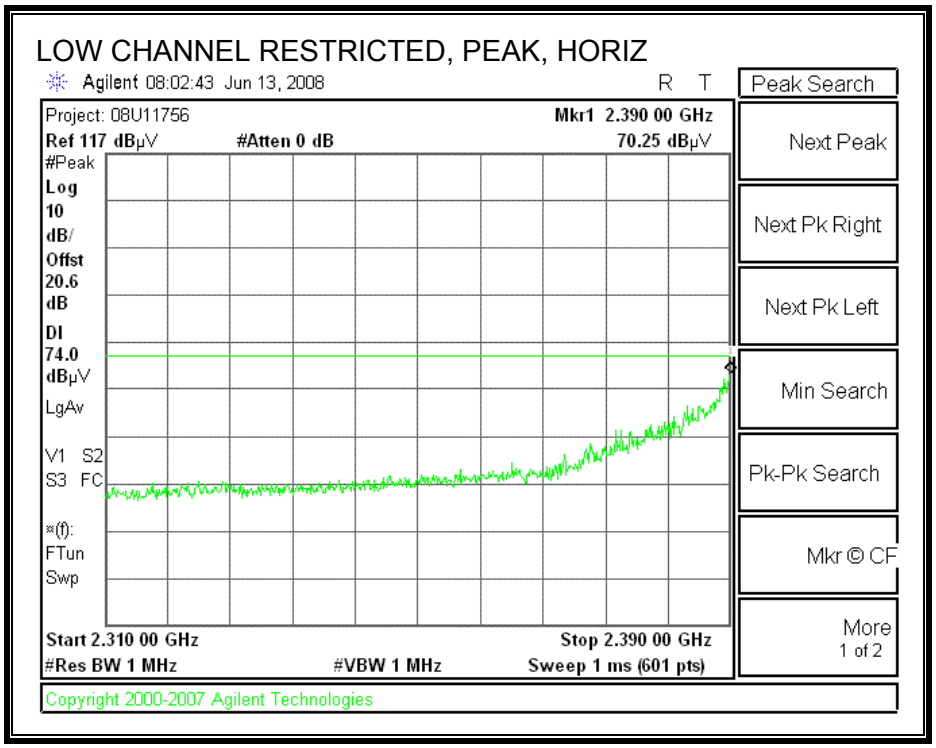
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

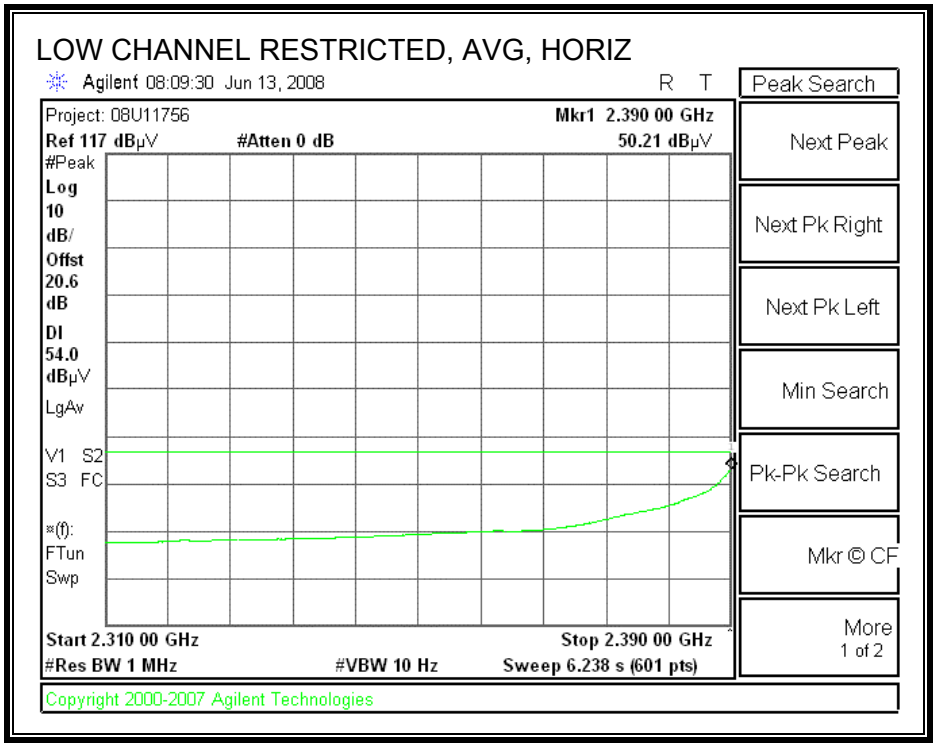
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2412MHz															
4.824	3.0	48.6	44.5	33.7	2.5	-34.8	0.0	0.6	50.6	46.5	74	54	-23.4	-7.5	H
12.060	3.0	43.4	33.5	37.5	4.0	-32.4	0.0	0.9	53.4	43.5	74	54	-20.6	-10.5	H
4.824	3.0	51.1	49.2	33.7	2.5	-34.8	0.0	0.6	53.1	51.2	74	54	-20.9	-2.8	V
12.060	3.0	43.7	32.9	37.5	4.0	-32.4	0.0	0.9	53.7	42.9	74	54	-20.3	-11.1	V
MID CHANNEL, 2437 MHz															
4.874	3.0	49.1	45.5	33.7	2.6	-34.9	0.0	0.6	51.2	47.6	74	54	-22.8	-6.4	H
7.311	3.0	46.0	37.1	35.2	3.4	-34.7	0.0	0.6	50.7	41.8	74	54	-23.3	-12.2	H
12.185	3.0	42.2	31.3	37.5	4.0	-32.4	0.0	0.9	52.3	41.4	74	54	-21.7	-12.6	H
4.874	3.0	50.6	45.8	33.7	2.6	-34.9	0.0	0.6	52.7	47.9	74	54	-21.3	-6.1	V
7.311	3.0	49.8	45.2	35.2	3.4	-34.7	0.0	0.6	54.5	49.9	74	54	-19.5	-4.1	V
12.185	3.0	42.6	32.1	37.5	4.0	-32.4	0.0	0.9	52.7	42.2	74	54	-21.3	-11.8	V
HIGH CHANNEL, 2462 MHz															
4.924	3.0	47.2	41.1	33.8	2.6	-34.9	0.0	0.6	49.4	43.3	74	54	-24.6	-10.7	H
7.386	3.0	45.8	35.6	35.3	3.5	-34.6	0.0	0.6	50.5	40.3	74	54	-23.5	-13.7	H
9.484	3.0	42.0	32.2	36.2	3.8	-35.0	0.0	0.8	47.9	38.1	74	54	-26.1	-15.9	H
4.924	3.0	48.2	41.7	33.8	2.6	-34.9	0.0	0.6	50.4	43.9	74	54	-23.6	-10.1	V
7.386	3.0	48.5	41.6	35.3	3.5	-34.6	0.0	0.6	53.2	46.3	74	54	-20.8	-7.7	V
9.484	3.0	44.7	36.5	36.2	3.8	-35.0	0.0	0.8	50.6	42.4	74	54	-23.4	-11.6	V
12.310	3.0	42.2	32.0	37.5	4.1	-32.4	0.0	0.9	52.3	42.1	74	54	-21.7	-11.9	V

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		

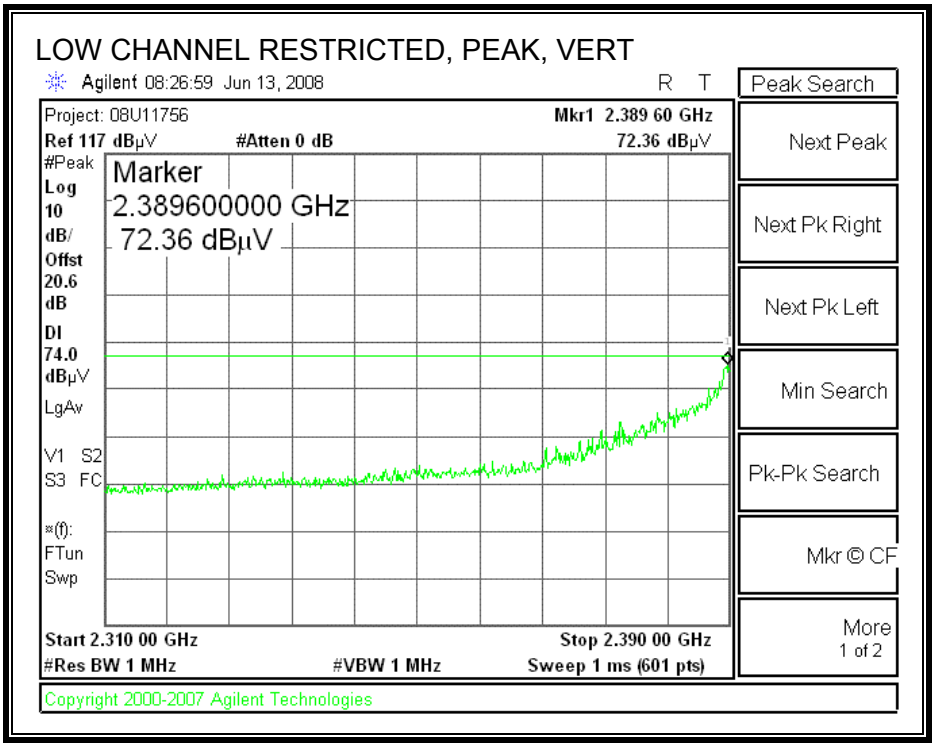
9.2.12. 802.11g MODE

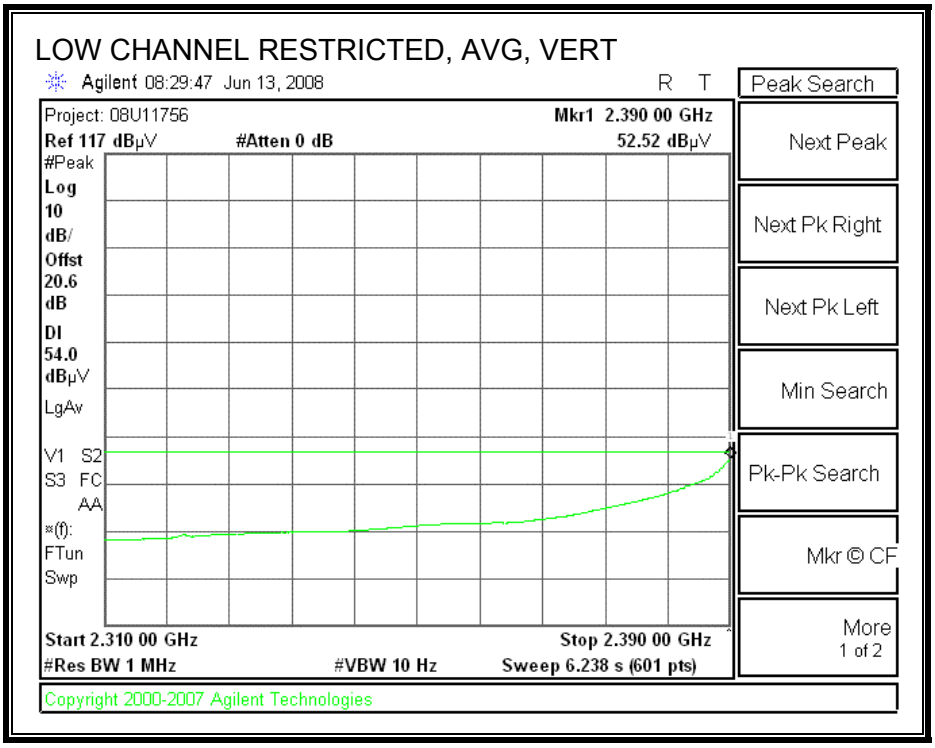
CHANNEL 1, 2412MHz
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





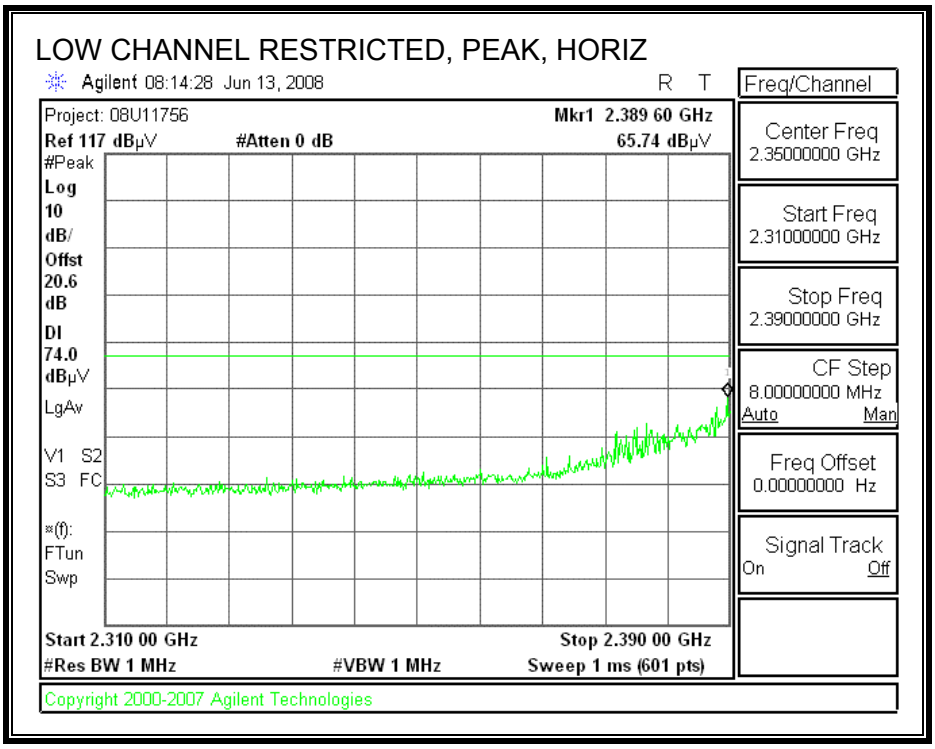
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

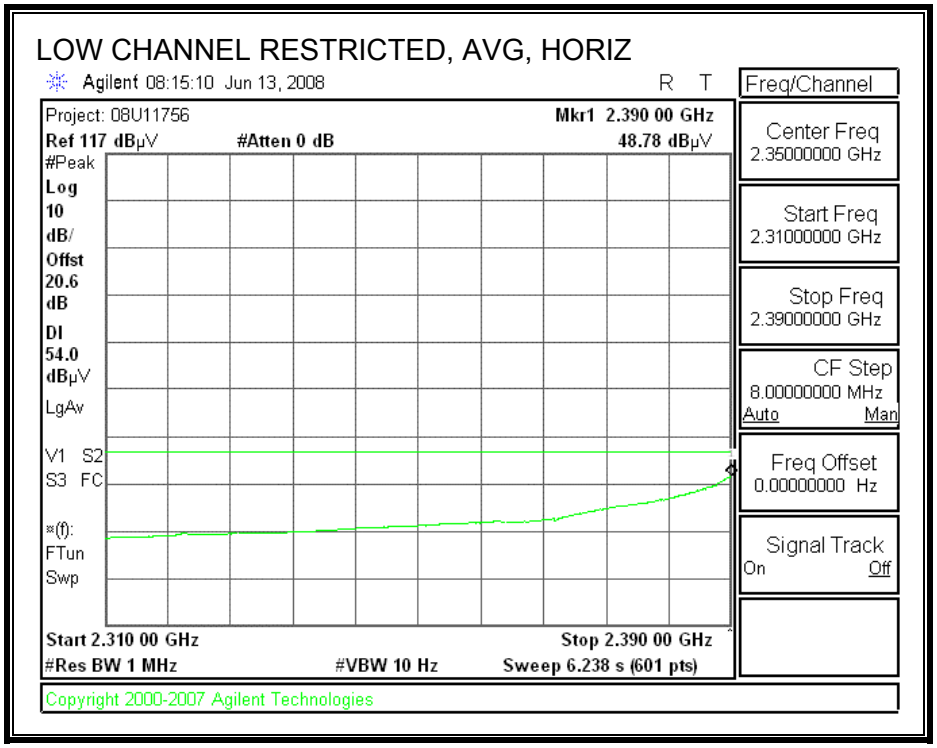




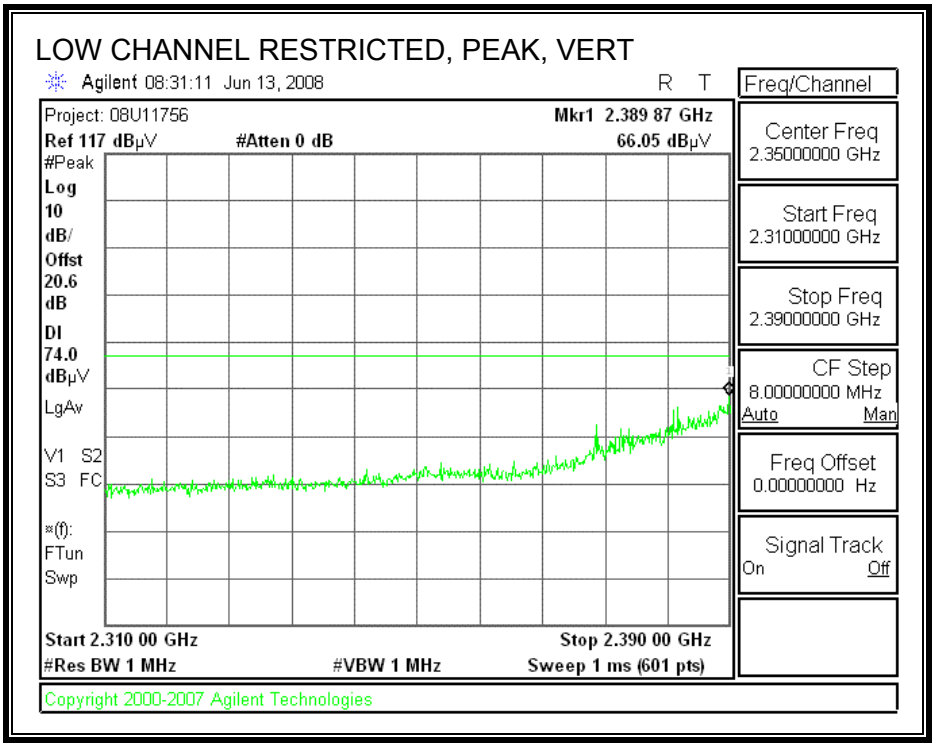
CHANNEL 2, 2417MHz

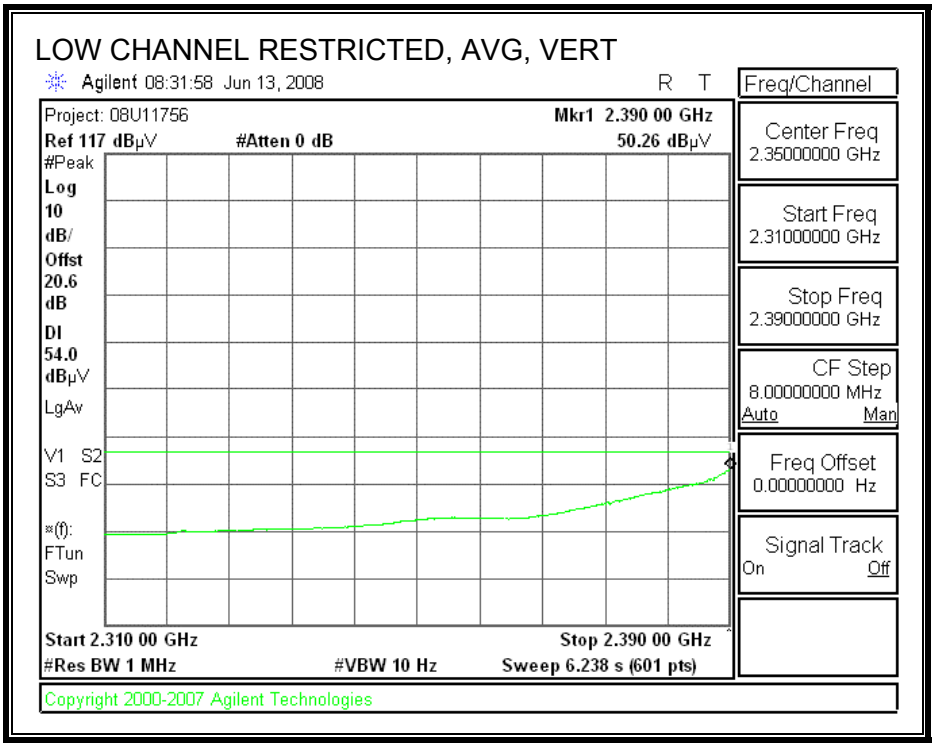
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





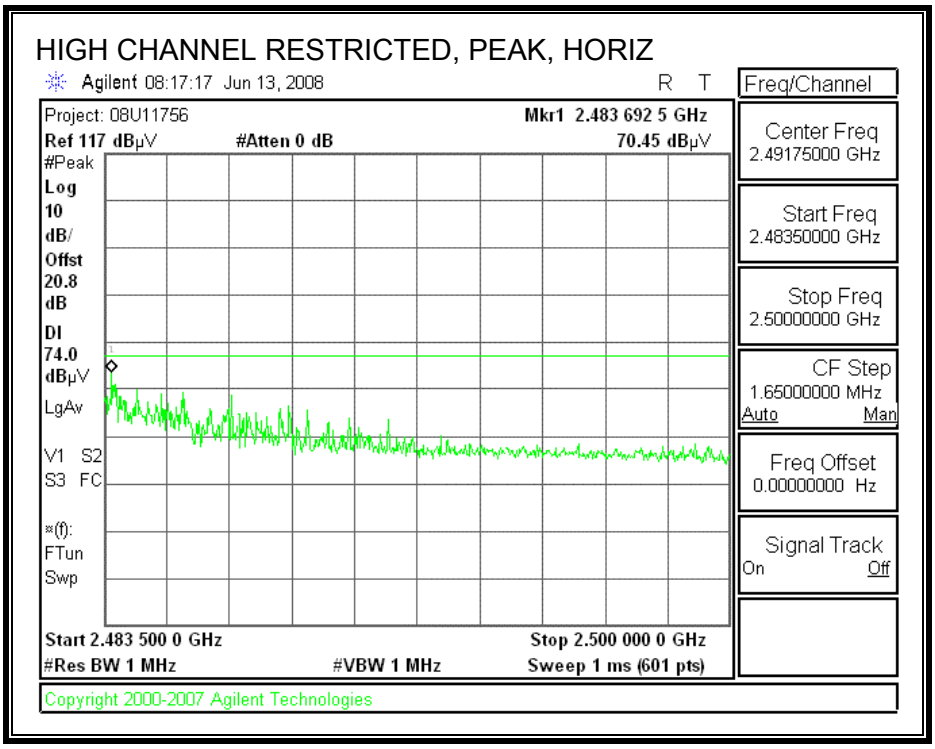
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

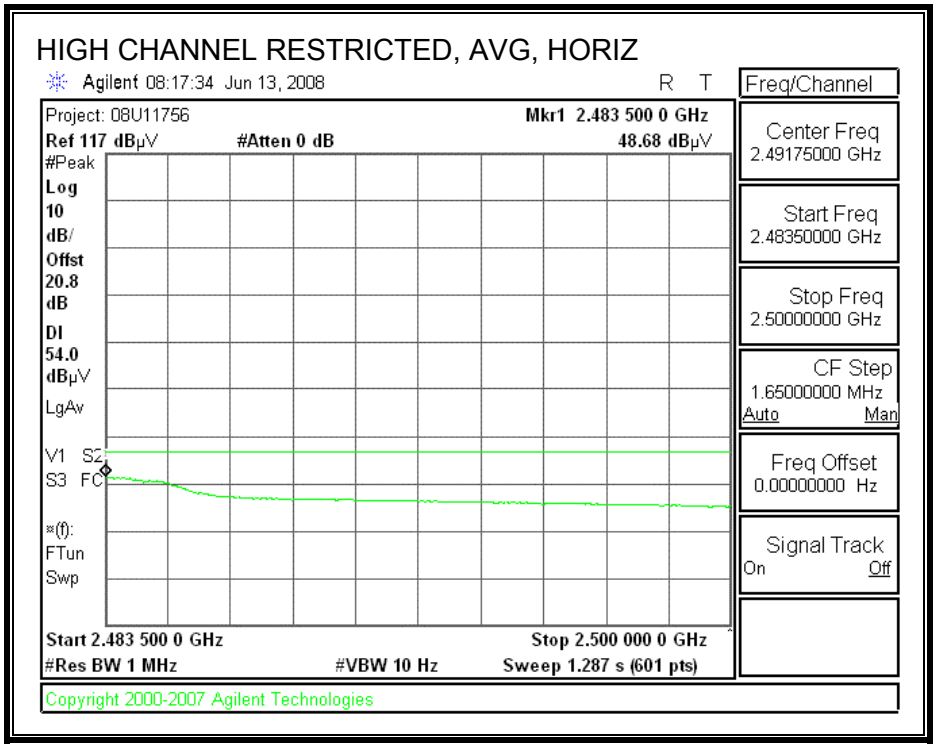




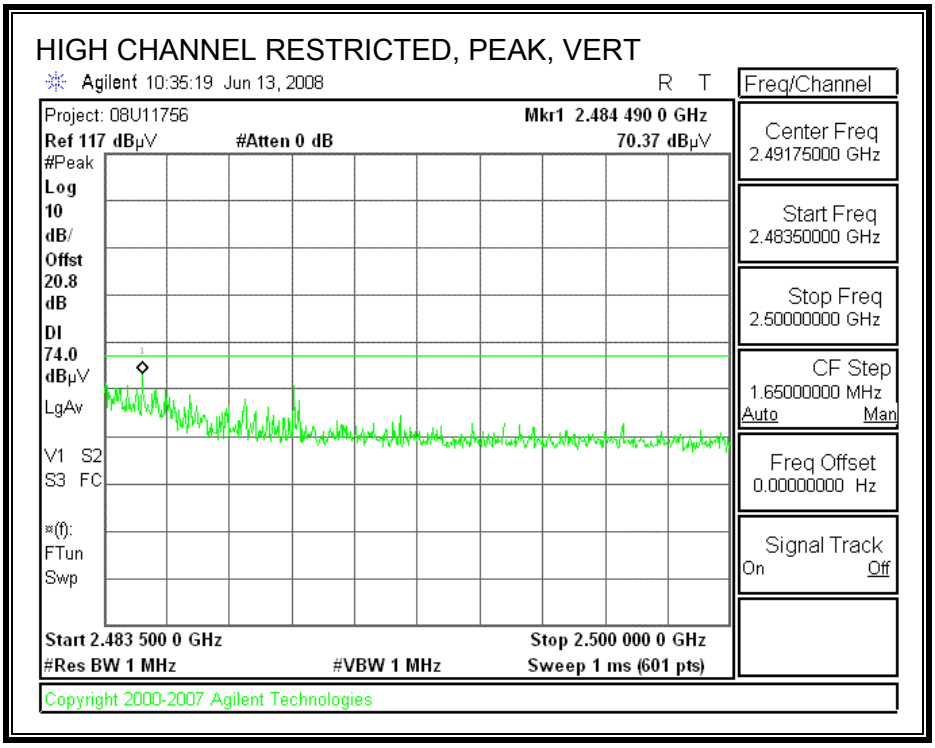
CHANNEL 10, 2457 MHz

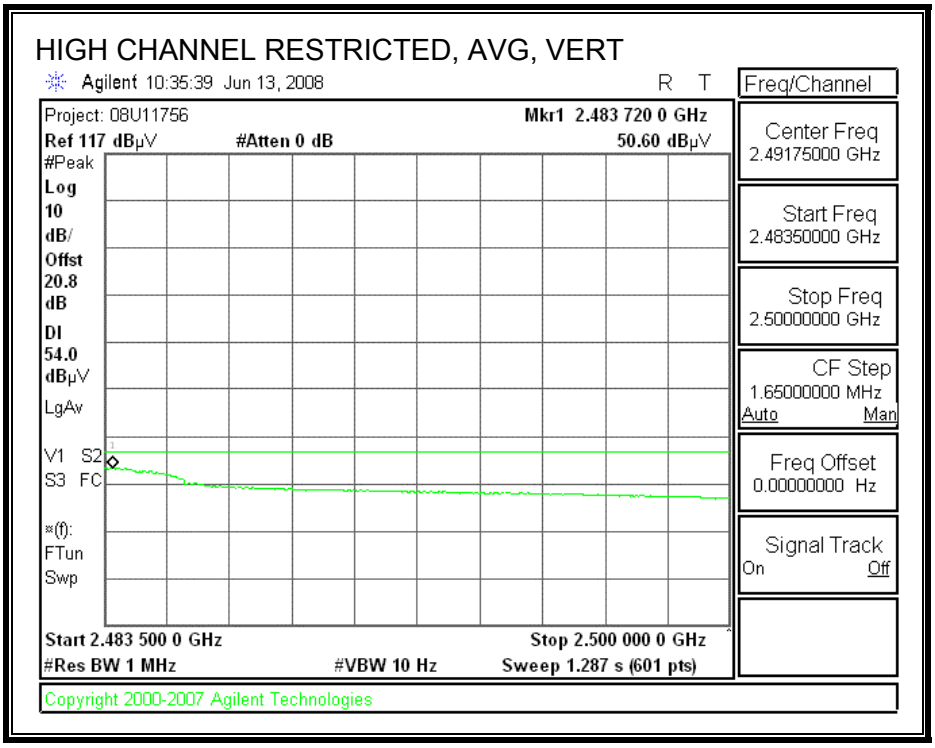
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





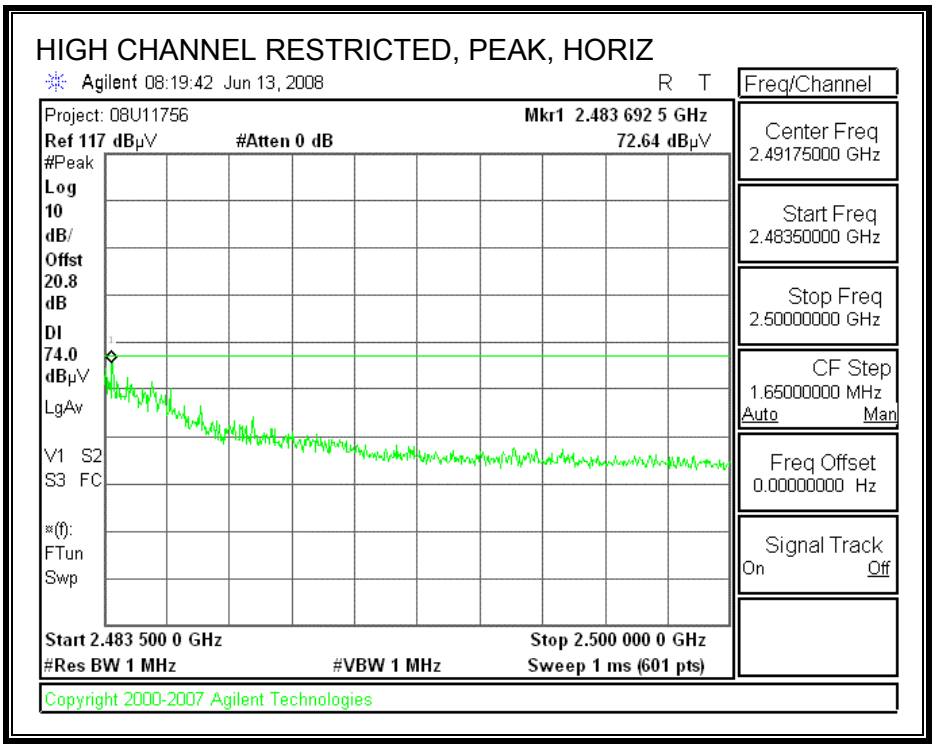
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

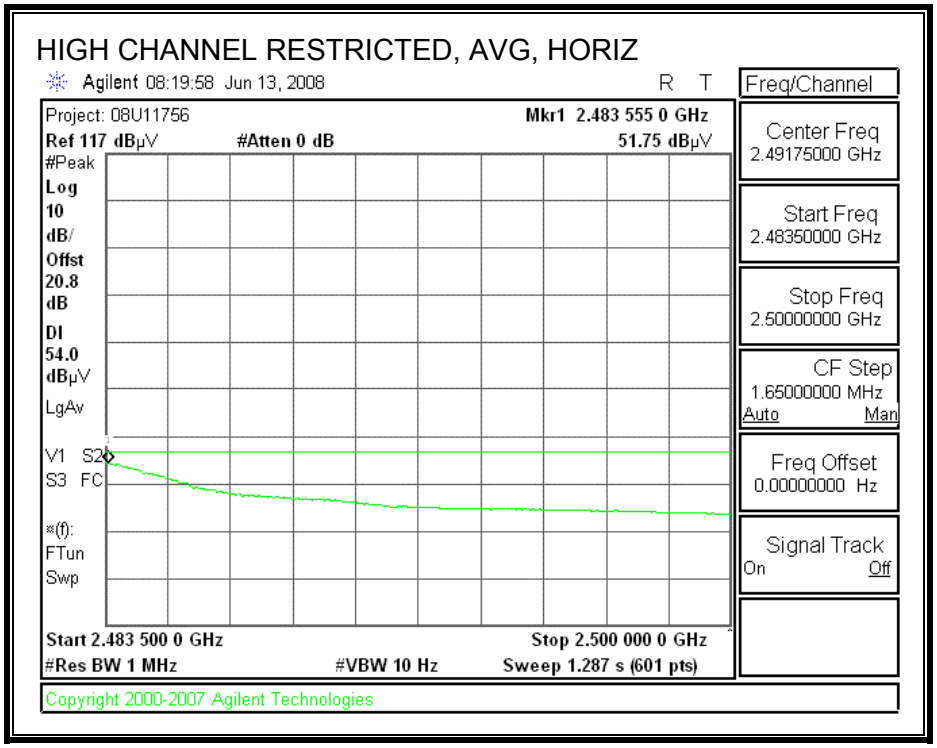




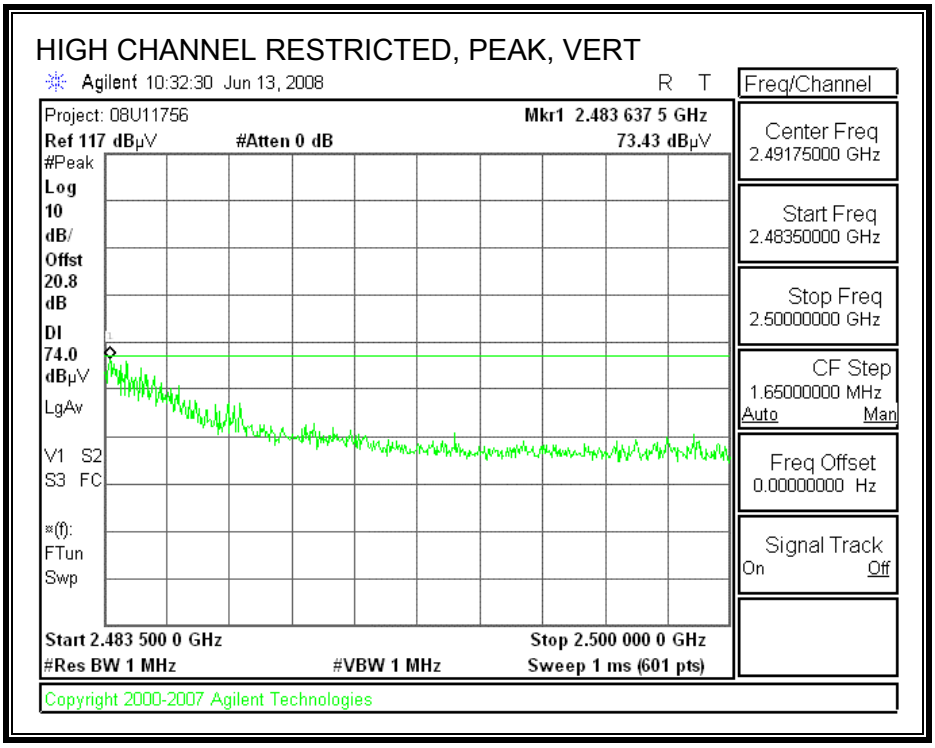
CHANNEL 11, 2462 MHz

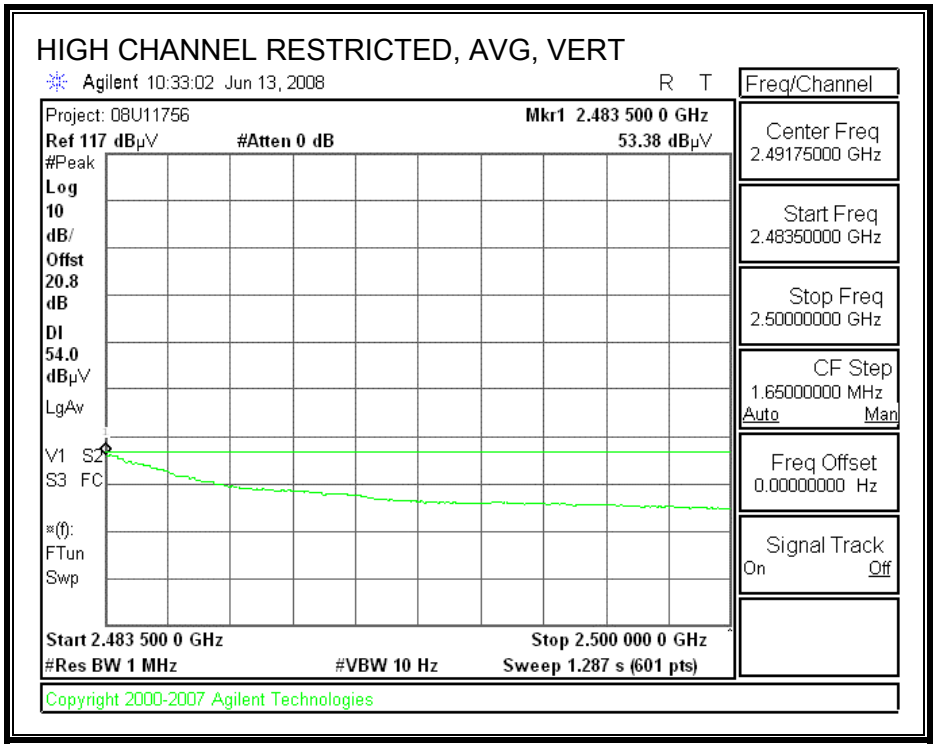
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/12/2008
Test Engineer:	Vien Tran
Configuration:	EUT with PIFA Antenna
Mode:	Tx 11g

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

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

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2412MHz															
4.824	3.0	47.3	35.2	33.7	2.5	-34.8	0.0	0.6	49.3	37.2	74	54	-24.7	-16.8	H
12.060	3.0	42.8	32.2	37.5	4.0	-32.4	0.0	0.9	52.8	42.2	74	54	-21.2	-11.8	H
4.824	3.0	46.6	36.7	33.7	2.5	-34.8	0.0	0.6	48.6	38.7	74	54	-25.4	-15.3	V
12.060	3.0	43.4	32.8	37.5	4.0	-32.4	0.0	0.9	53.4	42.8	74	54	-20.6	-11.2	V
MID CHANNEL, 2437 MHz															
4.874	3.0	47.9	35.8	33.7	2.6	-34.9	0.0	0.6	50.0	37.9	74	54	-24.0	-16.1	H
7.311	3.0	49.3	37.8	35.2	3.4	-34.7	0.0	0.6	54.0	42.5	74	54	-20.0	-11.5	H
12.185	3.0	42.0	32.0	37.5	4.0	-32.4	0.0	0.9	52.1	42.1	74	54	-21.9	-11.9	H
4.874	3.0	47.6	37.6	33.7	2.6	-34.9	0.0	0.6	49.7	39.6	74	54	-24.3	-14.4	V
7.311	3.0	54.6	42.4	35.2	3.4	-34.7	0.0	0.6	59.3	47.1	74	54	-14.7	-6.9	V
12.185	3.0	43.1	32.5	37.5	4.0	-32.4	0.0	0.9	53.2	42.6	74	54	-20.8	-11.4	V
HIGH CHANNEL, 2462 MHz															
4.924	3.0	45.5	33.8	33.8	2.6	-34.9	0.0	0.6	47.7	36.0	74	54	-26.3	-18.0	H
7.386	3.0	46.5	34.4	35.3	3.5	-34.6	0.0	0.6	51.2	39.1	74	54	-22.8	-14.9	H
9.484	3.0	42.0	32.0	36.2	3.8	-35.0	0.0	0.8	47.9	37.9	74	54	-26.1	-16.1	H
4.924	3.0	44.5	33.8	33.8	2.6	-34.9	0.0	0.6	46.7	36.0	74	54	-27.3	-18.0	V
7.386	3.0	49.5	37.2	35.3	3.5	-34.6	0.0	0.6	54.2	41.9	74	54	-19.8	-12.1	V
9.484	3.0	43.0	33.0	36.2	3.8	-35.0	0.0	0.8	48.9	38.9	74	54	-25.1	-15.1	V

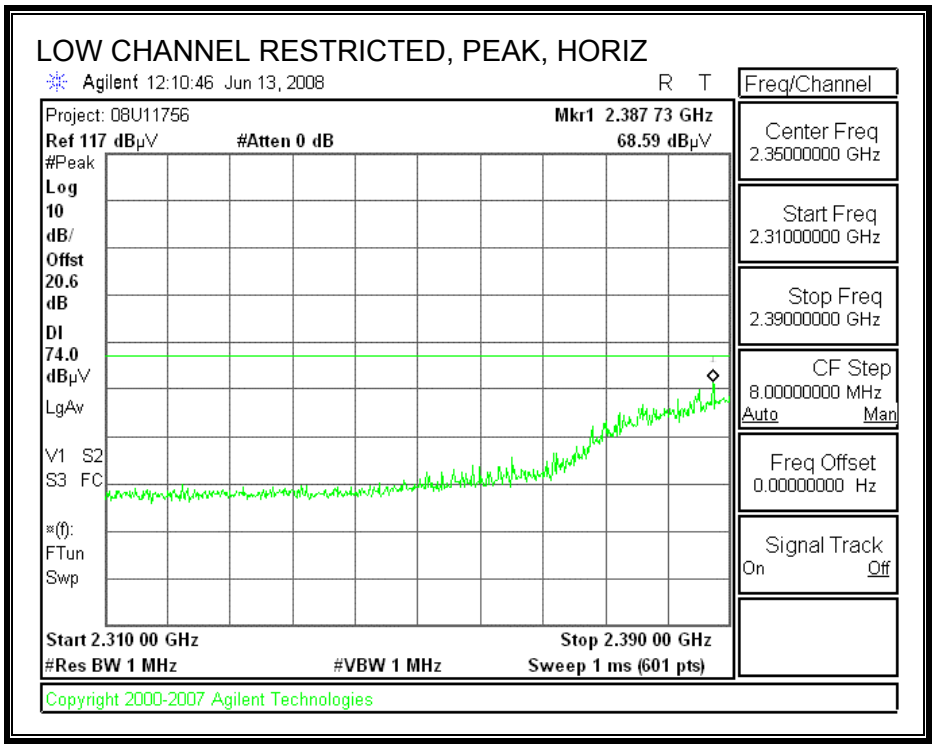
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

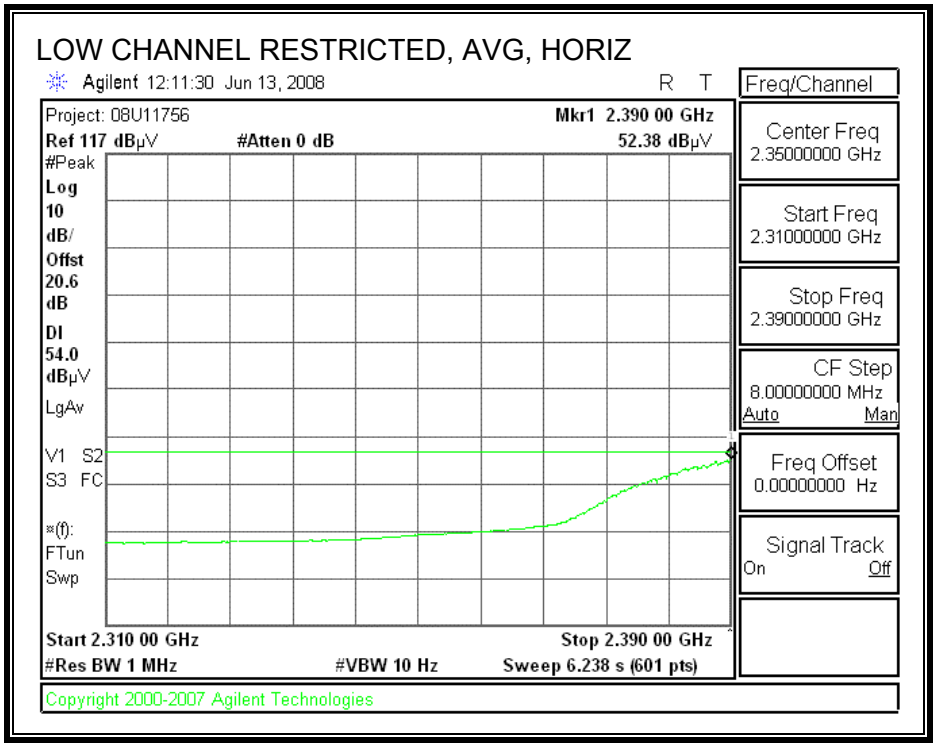
9.2.13. 802.11n HT20 MODE

Please refer to Slot antenna section for worst-case composite antenna gains.

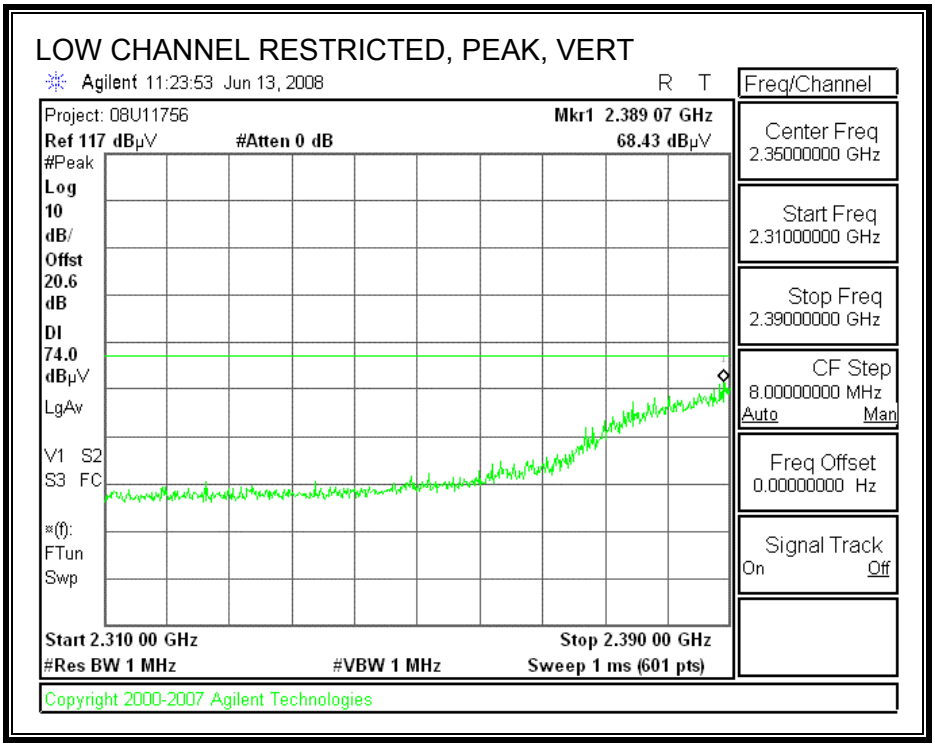
9.2.14. 802.11n HT40 SISO MODE

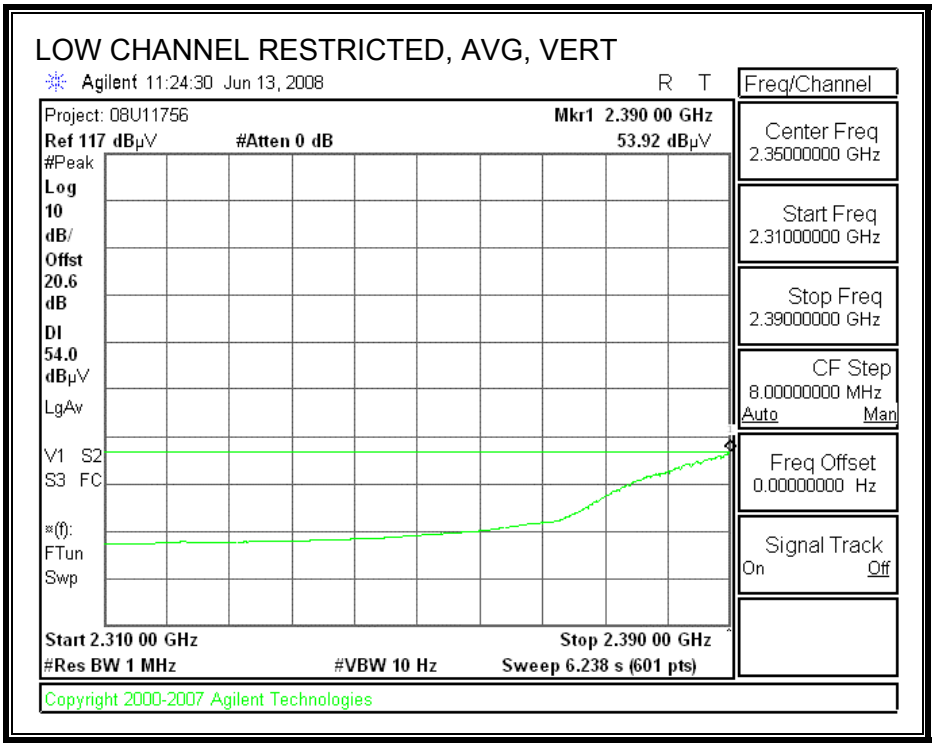
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



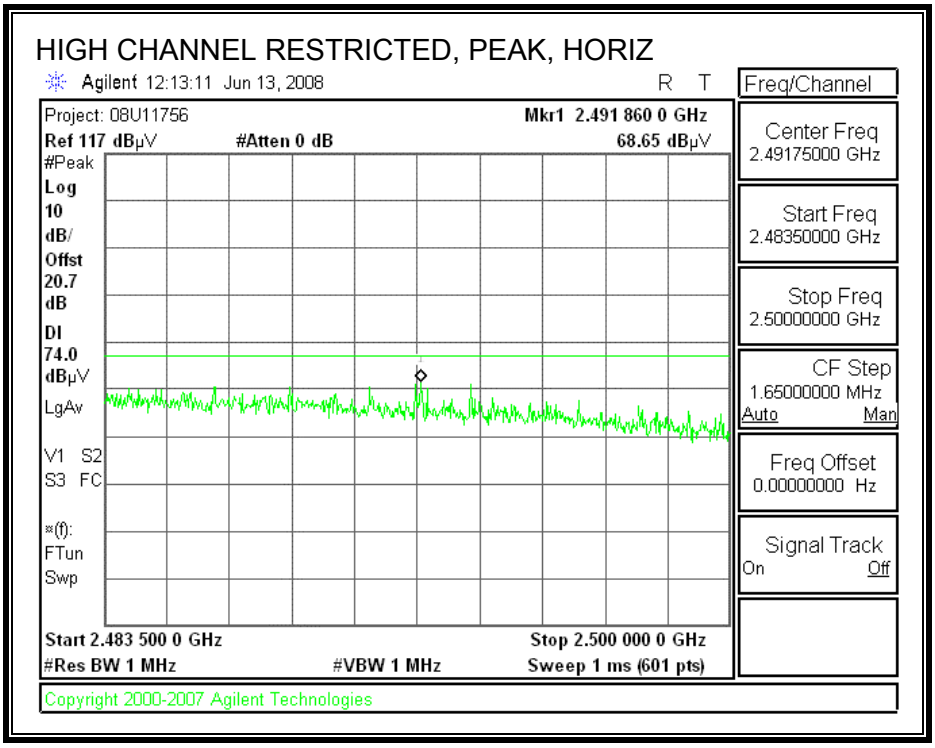


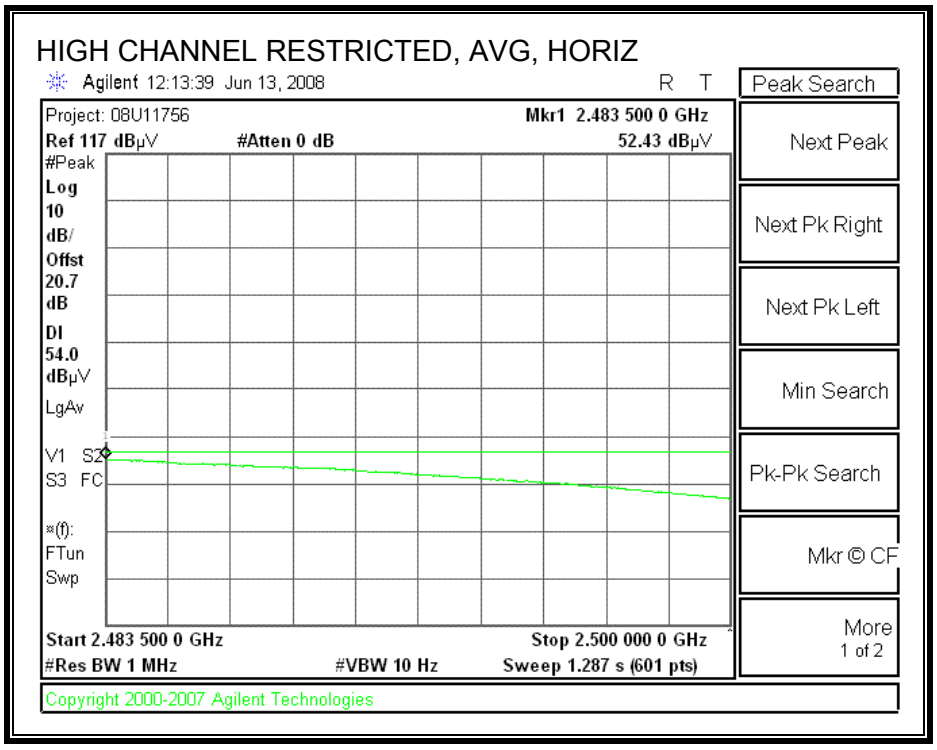
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



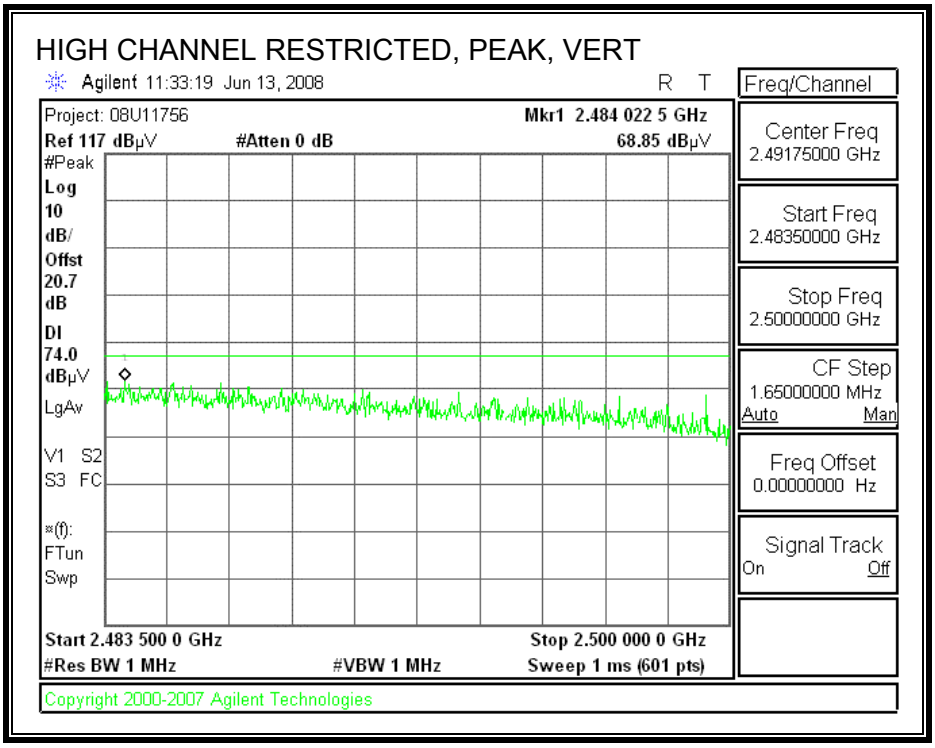


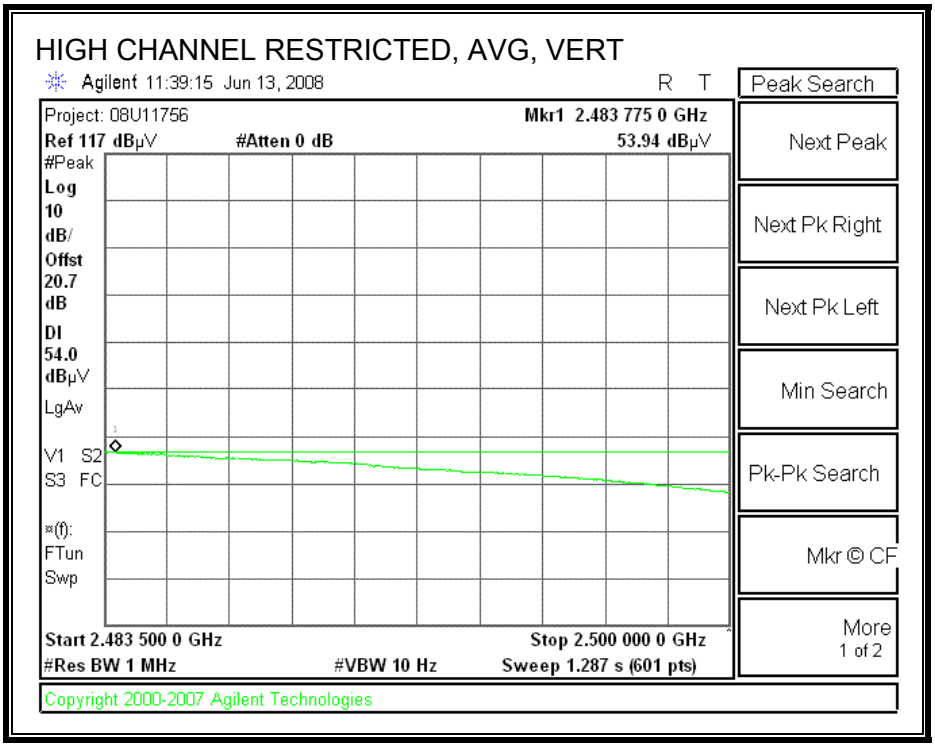
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company: Broadcom
Project #: 08U11756
Date: 6/13/2008
Test Engineer: Vien Tran
Configuration: EUT with PIFA Antenna
Mode: Tx HT40 SISO

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002	HPF_4.0GHz	

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

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 2422MHz															
4.824	3.0	43.8	33.3	33.0	2.5	-34.8	0.0	0.6	45.1	34.6	74	54	-28.9	-19.4	H
4.824	3.0	44.9	33.9	33.0	2.5	-34.8	0.0	0.6	46.2	35.2	74	54	-27.8	-18.8	V
MID CHANNEL, 2437 MHz															
4.874	3.0	43.4	31.9	33.1	2.6	-34.9	0.0	0.6	44.8	33.3	74	54	-29.2	-20.7	H
4.874	3.0	44.1	32.8	33.1	2.6	-34.9	0.0	0.6	45.5	34.2	74	54	-28.5	-19.8	V
HIGH CHANNEL, 2452 MHz															
4.904	3.0	43.4	32.3	33.1	2.6	-34.9	0.0	0.6	44.9	33.8	74	54	-29.1	-20.2	H
4.904	3.0	44.0	32.7	33.1	2.6	-34.9	0.0	0.6	45.5	34.2	74	54	-28.5	-19.8	V

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		

9.2.15. 802.11n HT40 MCS0

Please refer to Slot antenna section for worst-case composite antenna gains.

9.2.16. 802.11n HT40 MCS15

Please refer to Slot antenna section for worst-case composite antenna gains.

9.2.17. 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meters_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/21/2008
Test Engineer:	Vien Tran
Configuration:	EUT With desktop
Mode:	Tx 11a Legacy Mode_PIFA Antenna

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002		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. 5745MHz															
11.490	3.0	43.0	32.4	37.5	3.9	-33.1	0.0	0.0	51.3	40.7	74	54	-22.7	-13.3	H
11.490	3.0	43.4	32.9	37.5	3.9	-33.1	0.0	0.0	51.7	41.2	74	54	-22.3	-12.8	V
Mid Ch. 5785MHz															
11.570	3.0	43.6	32.9	37.5	3.9	-33.0	0.0	0.0	52.0	41.3	74	54	-22.0	-12.7	H
11.570	3.0	44.7	33.5	37.5	3.9	-33.0	0.0	0.0	53.1	41.9	74	54	-20.9	-12.1	V
High Ch. 5825MHz															
11.650	3.0	42.8	32.6	37.5	3.9	-32.9	0.0	0.0	51.4	41.2	74	54	-22.6	-12.8	H
11.650	3.0	43.5	33.4	37.5	3.9	-32.9	0.0	0.0	52.1	42.0	74	54	-21.9	-12.0	V

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		

9.2.18. 802.11n HT20 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

Please refer to Slot antenna section for worst-case composite antenna gains.

9.2.19. 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, 3 Meters_C Chamber

Company: Broadcom
Project #: 08U11756
Date: 6/21/2008
Test Engineer: Vien Tran
Configuration: EUT With desktop
Mode: Tx HT40 SISO_PIFA Antenna

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T145 Agilent 3008A005(			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002		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. 5755MHz															
11.510	3.0	43.1	31.2	37.5	3.9	-33.1	0.0	0.0	51.4	39.5	74	54	-22.6	-14.5	H
11.510	3.0	44.3	33.2	37.5	3.9	-33.1	0.0	0.0	52.6	41.5	74	54	-21.4	-12.5	V
High Ch. 5795MHz															
11.590	3.0	44.1	32.2	37.5	3.9	-33.0	0.0	0.0	52.6	40.7	74	54	-21.4	-13.3	H
11.590	3.0	45.7	33.8	37.5	3.9	-33.0	0.0	0.0	54.2	42.3	74	54	-19.8	-11.7	V

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		

9.2.20. 802.11n HT40 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

Please refer to Slot antenna section for worst-case composite antenna gains.

9.3. RECEIVER ABOVE 1 GHz

WORST-CASE COMPOSITE ANTENNA GAIN

9.3.1. 20 MHz BANDWIDTH IN THE 2.4 GHz BAND

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/23/2008
Test Engineer:	Vien Tran
Configuration:	EUT with Worst-case Antenna
Mode:	Rx Mode_2.4GHz Band_HT20

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			60.05FCC 15.20

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002		

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)
1.205	3.0	57.8	44.7	25.9	1.6	-36.0	0.0	0.0	49.4	36.3	74	54	-24.6	-17.7	H
2.494	3.0	62.3	43.2	28.9	2.0	-35.1	0.0	0.0	58.1	39.0	74	54	-15.9	-15.0	H
4.987	3.0	53.0	34.6	33.1	2.7	-34.9	0.0	0.0	54.0	35.6	74	54	-20.0	-18.4	H
1.205	3.0	60.1	46.4	25.9	1.6	-36.0	0.0	0.0	51.6	37.9	74	54	-22.4	-16.1	V
2.494	3.0	62.3	43.4	28.9	2.0	-35.1	0.0	0.0	58.1	39.2	74	54	-15.9	-14.8	V
4.987	3.0	51.2	33.6	33.1	2.7	-34.9	0.0	0.0	52.2	34.5	74	54	-21.8	-19.5	V

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		

9.3.2. 40 MHz BANDWIDTH IN THE 2.4 GHz BAND

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/23/2008
Test Engineer:	Vien Tran
Configuration:	EUT with Worst-case Antenna
Mode:	Rx Mode_2.4GHz Band_HT40

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T145 Agilent 3008A005(			60.05FCC 15.20

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002		

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)
2.494	3.0	62.3	43.2	28.6	2.0	-35.1	0.0	0.0	57.8	38.7	74	54	-16.2	-15.3	H
4.987	3.0	53.0	34.6	33.5	2.7	-34.9	0.0	0.0	54.3	35.9	74	54	-19.7	-18.1	H
1.205	3.0	60.1	46.4	24.5	1.6	-36.0	0.0	0.0	50.2	36.5	74	54	-23.8	-17.5	V
2.494	3.0	62.3	43.4	28.6	2.0	-35.1	0.0	0.0	57.8	38.9	74	54	-16.2	-15.1	V

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		

9.3.3. 20 MHz BANDWIDTH IN THE 5.8 GHz BAND

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company:	Broadcom
Project #:	08U11756
Date:	6/23/2008
Test Engineer:	Vien Tran
Configuration:	EUT with Worst-case Antenna
Mode:	Rx Mode_5GHz Band_HT20

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			60.05FCC 15.20

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002		

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)
1.205	3.0	57.8	44.7	25.9	1.6	-36.0	0.0	0.0	49.4	36.3	74	54	-24.6	-17.7	H
1.607	3.0	53.2	37.3	27.0	1.8	-35.7	0.0	0.0	46.2	30.3	74	54	-27.8	-23.7	H
2.494	3.0	62.3	43.2	28.9	2.0	-35.1	0.0	0.0	58.1	39.0	74	54	-15.9	-15.0	H
4.987	3.0	53.0	34.6	33.1	2.7	-34.9	0.0	0.0	54.0	35.6	74	54	-20.0	-18.4	H
1.205	3.0	60.1	46.4	25.9	1.6	-36.0	0.0	0.0	51.6	37.9	74	54	-22.4	-16.1	V
1.607	3.0	56.2	41.5	27.0	1.8	-35.7	0.0	0.0	49.2	34.5	74	54	-24.8	-19.5	V
2.494	3.0	62.3	43.4	28.9	2.0	-35.1	0.0	0.0	58.1	39.2	74	54	-15.9	-14.8	V
4.987	3.0	51.2	33.6	33.1	2.7	-34.9	0.0	0.0	52.2	34.5	74	54	-21.8	-19.5	V

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		

9.3.4. 40 MHz BANDWIDTH IN THE 5.8 GHz BAND

High Frequency Measurement
Compliance Certification Services, 3 Meter_C Chamber

Company: Broadcom
Project #: 08U11756
Date: 6/23/2008
Test Engineer: Vien Tran
Configuration: EUT with Worst-case Antenna
Mode: Rx Mode_5GHz Band_HT40

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T145 Agilent 3008A005(			60.05FCC 15.20

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Ninous 208946002		

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)
1.205	3.0	57.8	44.7	24.5	1.6	-36.0	0.0	0.0	48.0	34.9	74	54	-26.0	-19.1	H
2.494	3.0	62.3	43.2	28.6	2.0	-35.1	0.0	0.0	57.8	38.7	74	54	-16.2	-15.3	H
4.987	3.0	53.0	34.6	33.5	2.7	-34.9	0.0	0.0	54.3	35.9	74	54	-19.7	-18.1	H
1.205	3.0	60.1	46.4	24.5	1.6	-36.0	0.0	0.0	50.2	36.5	74	54	-23.8	-17.5	V
1.607	3.0	56.2	41.5	26.0	1.8	-35.7	0.0	0.0	48.3	33.5	74	54	-25.7	-20.5	V
2.494	3.0	62.3	43.4	28.6	2.0	-35.1	0.0	0.0	57.8	38.9	74	54	-16.2	-15.1	V

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		

9.4. WORST-CASE BELOW 1 GHz

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

2.4 GHz BAND

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 15 File#: 08u11756.emi Date: 06-16-2008 Time: 14:06:16

Condition: FCC CLASS-B HORIZONTAL
Test Operator:: Vien Tran
Project #: : 08U11756
Company: : Broadcom
Configuration:: EUT with PIFA antenna
Mode : : Normal Tx in 2.4GHz band :
Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	294.810	52.17	-12.53	39.64	46.00	-6.36	Peak
2	336.520	50.00	-11.43	38.57	46.00	-7.43	Peak
3	500.450	44.00	-7.30	36.70	46.00	-9.30	Peak
4	589.690	43.33	-5.21	38.12	46.00	-7.88	Peak
5	796.300	42.00	-2.50	39.50	46.00	-6.50	Peak
6	995.150	42.67	-0.26	42.41	54.00	-11.59	Peak

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 18 File#: 08u11756.emi Date: 06-16-2008 Time: 14:11:31

Condition: FCC CLASS-B VERTICAL
Test Operator:: Vien Tran
Project #: : 08U11756
Company: : Broadcom
Configuration:: EUT with PIFA antenna
Mode : : Normal Tx in 2.4GHz band :
Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	110.510	52.67	-15.06	37.61	43.50	-5.89	Peak
2	253.100	52.33	-14.17	38.16	46.00	-7.84	Peak
3	442.250	45.33	-8.85	36.49	46.00	-9.51	Peak
4	699.300	41.33	-3.75	37.58	46.00	-8.42	Peak
5	995.150	44.50	-0.26	44.24	54.00	-9.76	Peak

5 GHz BAND

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 30 File#: 08u11756.emi Date: 06-16-2008 Time: 15:41:11

Condition: FCC CLASS-B HORIZONTAL
Test Operator:: Vien Tran
Project #: : 08U11756
Company: : Broadcom
Configuration:: EUT with Worst-case Antenna Gain
Mode : : Normal Tx in 5 GHz Band
Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	294.810	51.67	-12.53	39.14	46.00	-6.86	Peak
2	336.520	49.83	-11.43	38.40	46.00	-7.60	Peak
3	499.480	43.83	-7.31	36.52	46.00	-9.48	Peak
4	589.690	43.83	-5.21	38.62	46.00	-7.38	Peak
5	799.210	42.33	-2.55	39.78	46.00	-6.22	Peak
6	996.120	43.67	-0.28	43.39	54.00	-10.61	Peak

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 33 File#: 08u11756.emi Date: 06-16-2008 Time: 15:50:20

Condition: FCC CLASS-B VERTICAL
Test Operator:: Vien Tran
Project #: : 08U11756
Company: : Broadcom
Configuration:: EUT with Worst-case Antenna Gain
Mode : : Normal Tx in 5 GHz Band
Target: : CISPR Class B

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	253.100	52.00	-14.17	37.83	46.00	-8.17	Peak
2	294.810	52.50	-12.53	39.97	46.00	-6.03	Peak
3	413.150	46.67	-9.64	37.03	46.00	-8.97	Peak
4	500.450	43.00	-7.30	35.70	46.00	-10.30	Peak
5	698.330	41.42	-3.73	37.69	46.00	-8.31	Peak
6	995.150	43.17	-0.26	42.91	54.00	-11.09	Peak

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

ANSI C63.4

RESULTS

2.4 GHz BAND

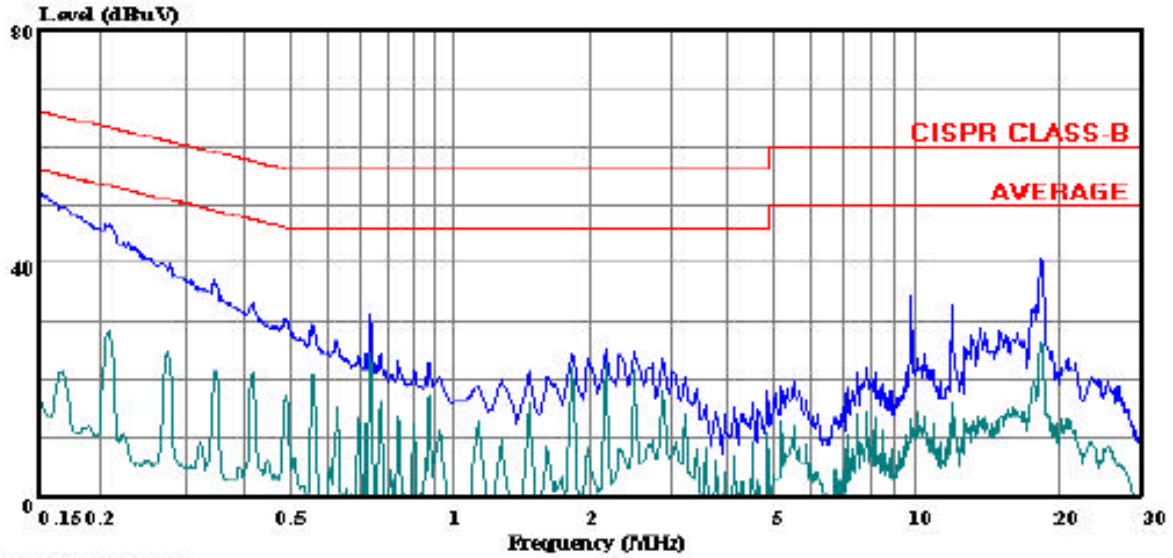
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.21	46.67	--	27.59	0.00	63.24	53.24	-16.57	-25.65	L1
0.73	31.15	--	27.69	0.00	56.00	46.00	-24.85	-18.31	L1
18.43	40.42	--	26.26	0.00	60.00	50.00	-19.58	-23.74	L1
0.21	45.99	--	28.02	0.00	63.37	53.37	-17.38	-25.35	L2
0.73	30.64	--	27.32	0.00	56.00	46.00	-25.36	-18.68	L2
18.52	41.57	--	26.88	0.00	60.00	50.00	-18.43	-23.12	L2
6 Worst Data									

LINE 1 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 14 File#: 08U11756.EMI Date: 05-23-2008 Time: 09:27:32



(Line Conduction)

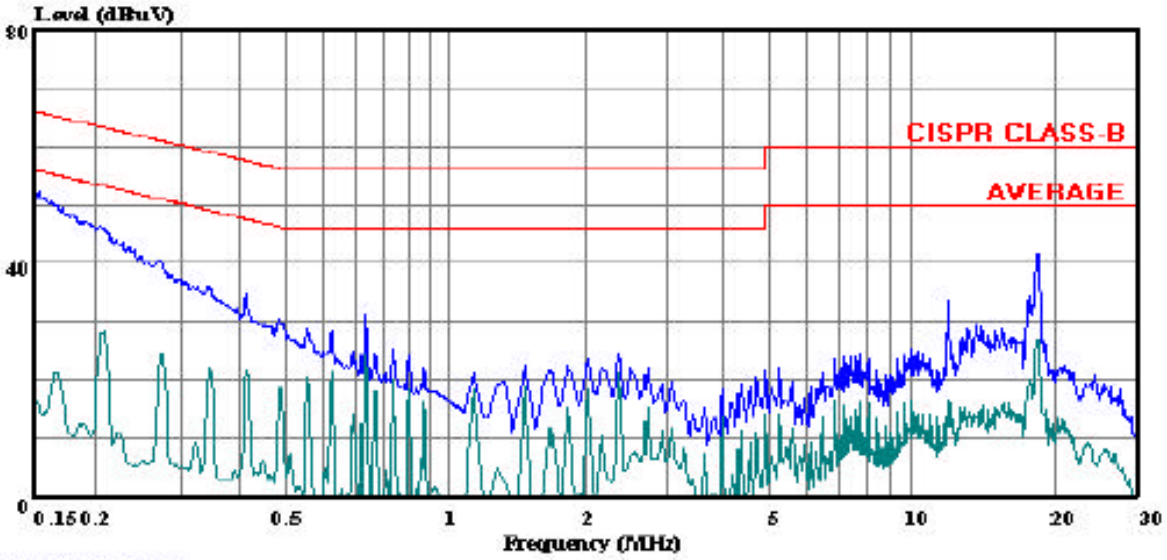
Trace: 12 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Devin Chang
Project #: : 08U11756
Company: : Broadcom Corporation
Configuration:: EUT and support Equipment
Mode: : BCM94322USA
Target: : CISPR Class B
Voltage: : 115VAC/ 60Hz
: L1: Peak (Blue); Avg (Green)

LINE 2 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 7 File#: 08U11756.EMI Date: 05-23-2008 Time: 09:14:59



(Line Conduction)

Trace: 5 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Devin Chang
Project #: : 08U11756
Company: : Broadcom Corporation
Configuration:: EUT and support Equipment
Mode: : BCM94322USA
Target: : CISPR Class B
Voltage: : 115VAC/ 60Hz
: L2: Peak (Blue); Avg (Green)

5 GHz BAND

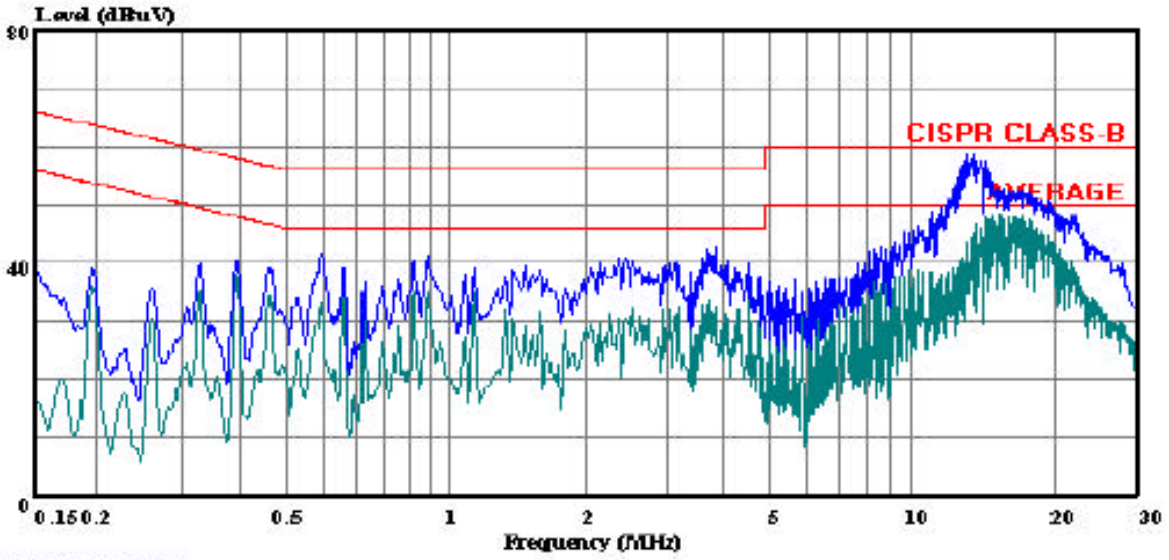
6 WORST EMISSIONS

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
0.40	40.51	--	32.32	0.00	57.94	47.94	-17.43	-15.62	L1
3.94	42.51	--	32.50	0.00	56.00	46.00	-13.49	-13.50	L1
13.48	58.48	--	42.80	0.00	60.00	50.00	-1.52	-7.20	L1
0.40	38.49	--	35.90	0.00	57.94	47.94	-19.45	-12.04	L2
3.94	41.55	--	31.14	0.00	56.00	46.00	-14.45	-14.86	L2
13.48	57.48	--	45.11	0.00	60.00	50.00	-2.52	-4.89	L2
6 Worst Data									

LINE 1 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 36 File#: LC 08U11756.EMI Date: 06-17-2008 Time: 09:35:30



(Line Conduction)

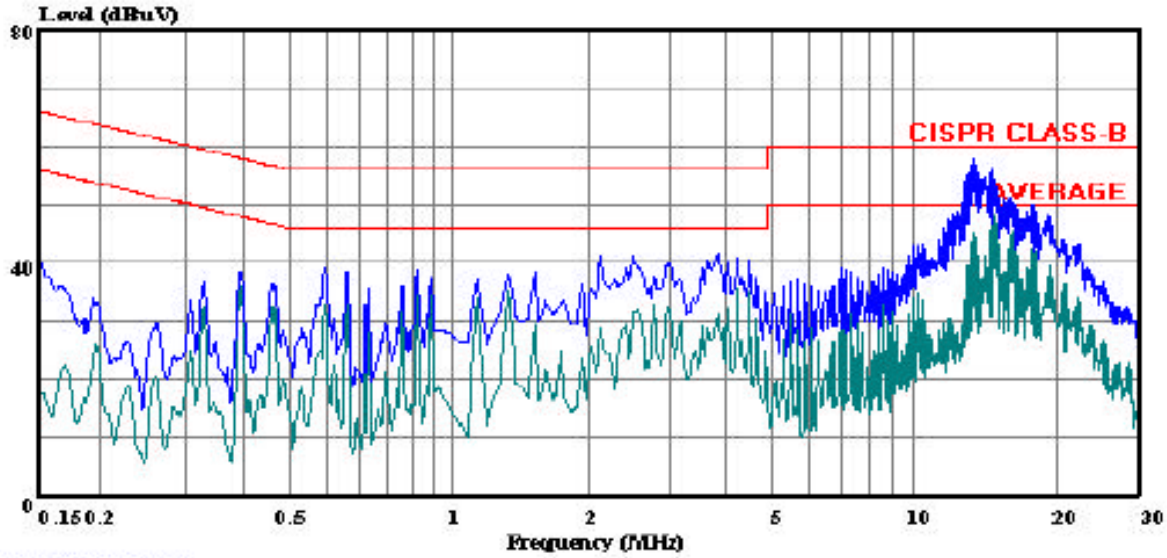
Trace: 26 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Vien Tran
Project #: : 08U11756
Company: : Broadcom
Configuration:: EUT with antenna
Mode: : Normal Tx in 5 GHz band
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: L1: Peak (Blue); Avg (Green)

LINE 2 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 37 File#: LC 08U11756.EMI Date: 06-17-2008 Time: 09:54:11



(Line Conduction)

Trace: 33 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Vien Tran
Project #: : 08U11756
Company: : Broadcom
Configuration:: EUT with antenna
Mode: : Normal Tx in 5 GHz band
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: L2: Peak (Blue); Avg (Green)

11. MAXIMUM PERMISSIBLE EXPOSURE

FCC RULES

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

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

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

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

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

IC RULES

IC Safety Code 6, Section 2.2.1 (a) A person other than an RF and microwave exposed worker shall not be exposed to electromagnetic radiation in a frequency band listed in Column 1 of Table 5, if the field strength exceeds the value given in Column 2 or 3 of Table 5, when averaged spatially and over time, or if the power density exceeds the value given in Column 4 of Table 5, when averaged spatially and over time.

Table 5
Exposure Limits for Persons Not Classed As RF and Microwave Exposed Workers (Including the General Public)

1 Frequency (MHz)	2 Electric Field Strength; rms (V/m)	3 Magnetic Field Strength; rms (A/m)	4 Power Density (W/m^2)	5 Averaging Time (min)
0.003–1	280	2.19		6
1–10	$280/f$	$2.19/f$		6
10–30	28	$2.19/f$		6
30–300	28	0.073	2*	6
300–1 500	$1.585f^{0.5}$	$0.0042f^{0.5}$	$f/150$	6
1 500–15 000	61.4	0.163	10	6
15 000–150 000	61.4	0.163	10	$616\,000/f^{1.2}$
150 000–300 000	$0.158f^{0.5}$	$4.21 \times 10^{-4}f^{0.5}$	$6.67 \times 10^{-5}f$	$616\,000/f^{1.2}$

* Power density limit is applicable at frequencies greater than 100 MHz.

Notes: 1. Frequency, f, is in MHz.
2. A power density of 10 W/m^2 is equivalent to 1 mW/cm^2.
3. A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μT) or 12.57 milligauss (mG).

CALCULATIONS

Given

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

and

$S = E ^ 2 / 3770$

where

E = Field Strength in Volts/meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power Density in milliwatts/square centimeter

Combining equations, rearranging the terms to express the distance as a function of the remaining variables, changing to units of Power to mW and Distance to cm, and substituting the logarithmic form of power and gain yields:

$d = 0.282 * 10 ^ ((P + G) / 20) / \sqrt{S}$

where

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

Rearranging terms to calculate the power density at a specific distance yields

$S = 0.0795 * 10 ^ ((P + G) / 10) / (d^2)$

The power density in units of mW/cm^2 is converted to units of W/m^2 by multiplying by a factor of 10.

LIMITS

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

From IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m^2

RESULTS

(MPE distance equals 20 cm)

With Low Slot & Hi PIFA Antenna Combinations

Mode	Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	FCC Power Density (mW/cm^2)	IC Power Density (W/m^2)
WLAN	5 GHz HT40	20.0	27.75	8.04	0.75	7.54

With Hi Slot & Low PIFA Antenna Combinations

Mode	Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	FCC Power Density (mW/cm^2)	IC Power Density (W/m^2)
WLAN	5 GHz 40MHz SISO	20.0	25.56	7.18	0.37	3.74

With Hi Slot & Low PIFA Antenna Combinations

Mode	Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	FCC Power Density (mW/cm^2)	IC Power Density (W/m^2)
WLAN	5 GHz HT40	20.0	29.40	5.19	0.57	5.72

With Low Slot & Hi PIFA Antenna Combinations

Mode	Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	FCC Power Density (mW/cm^2)	IC Power Density (W/m^2)
WLAN	5 GHz HT40	20.0	27.75	8.04	0.75	7.54