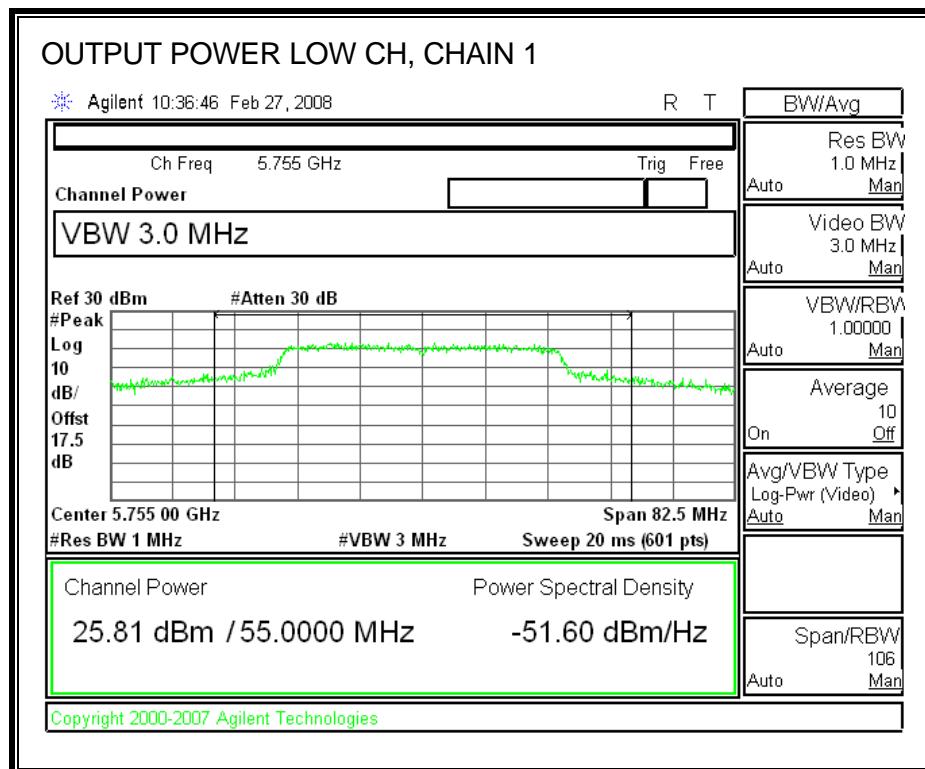
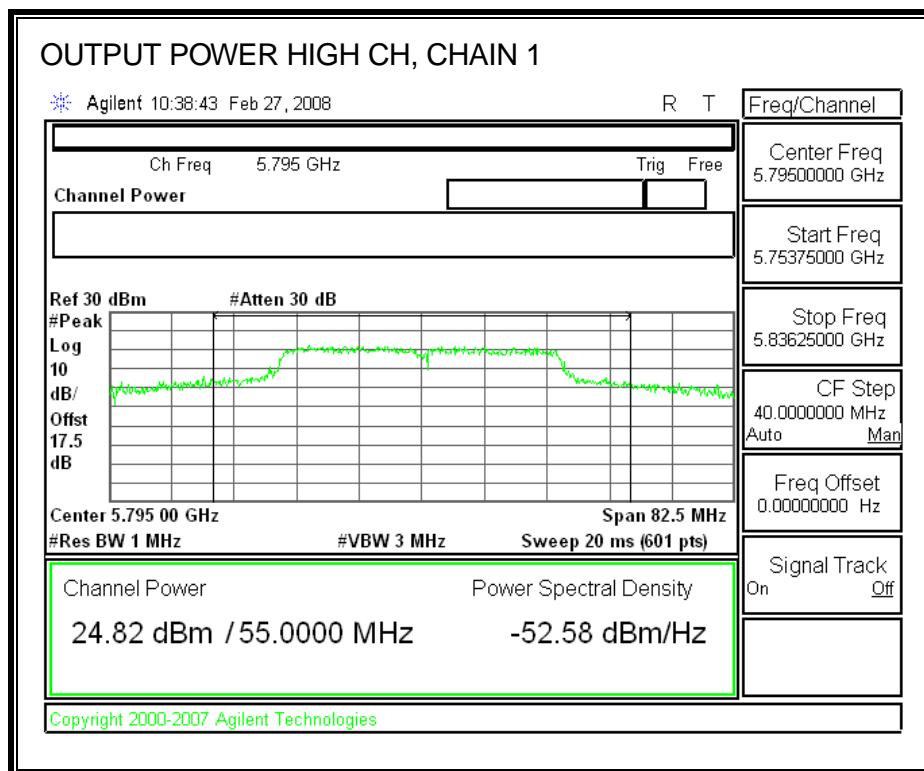


CHAIN 1 OUTPUT POWER





7.7.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 17.5 dB (including 16 dB pad and 1.5 dB cable) entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5755	17.80	19.34	21.65
High	5795	16.97	18.31	20.70

7.7.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

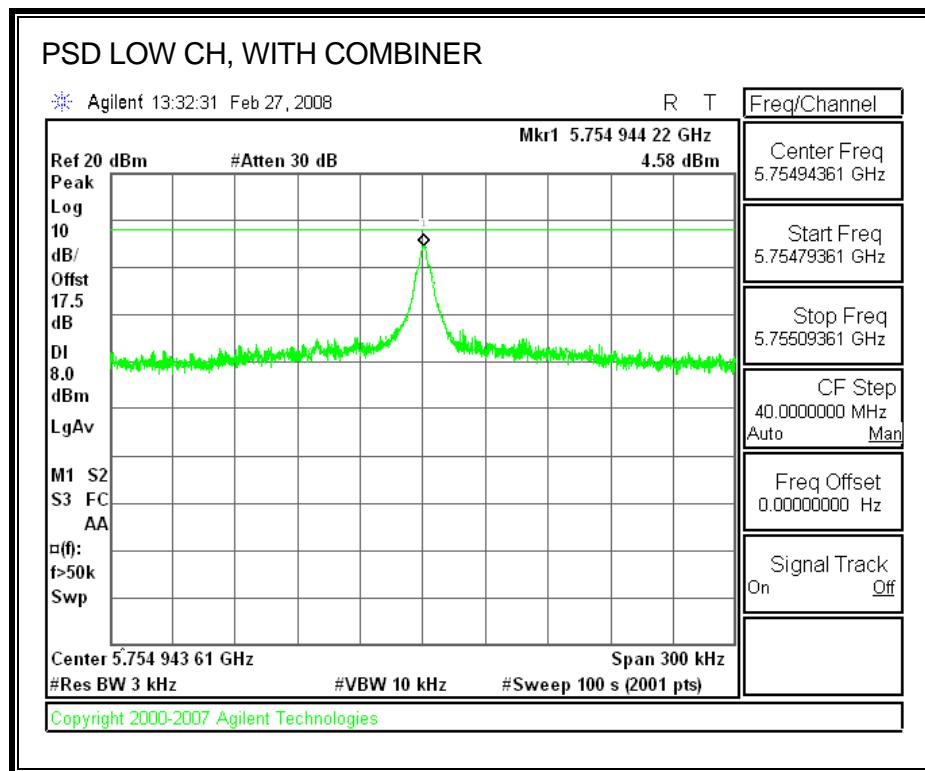
TEST PROCEDURE

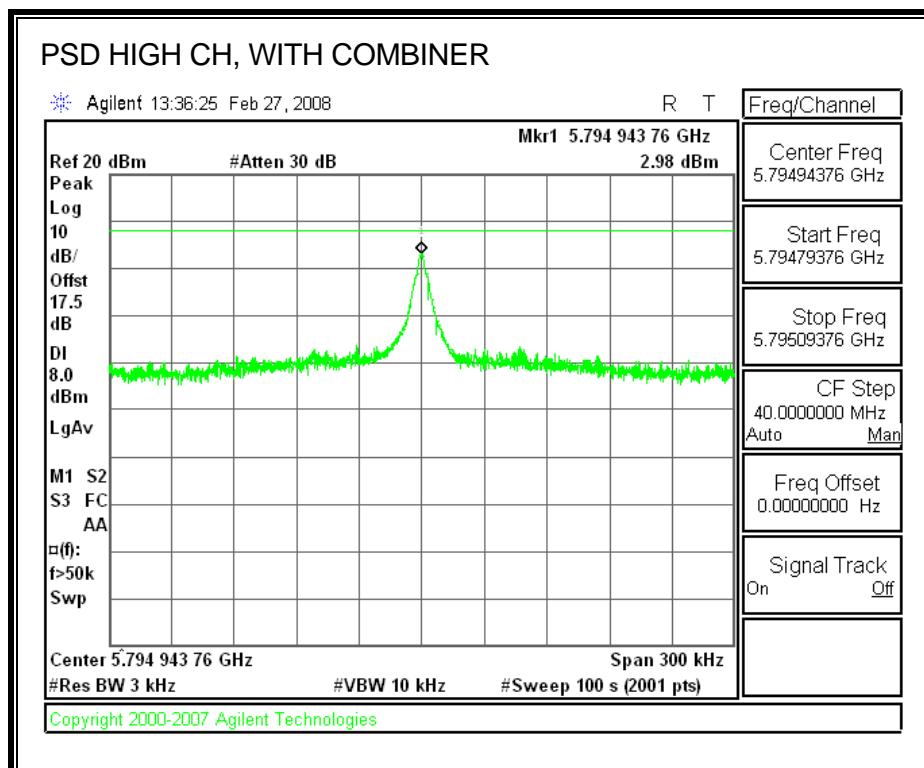
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS:

Channel	Frequency (MHz)	PSD with Combiner (dBm)	Limit (dBm)	Margin (dB)
Low	5755	4.58	8	-3.42
High	5795	2.98	8	-5.02

POWER SPECTRAL DENSITY, WITH COMBINER





7.7.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

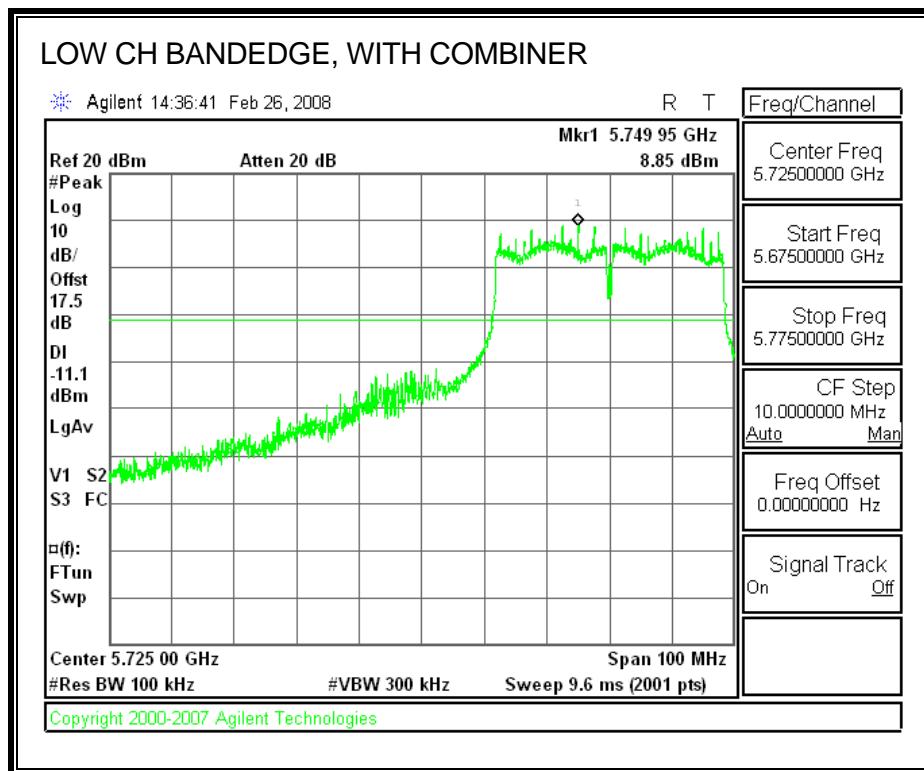
TEST PROCEDURE

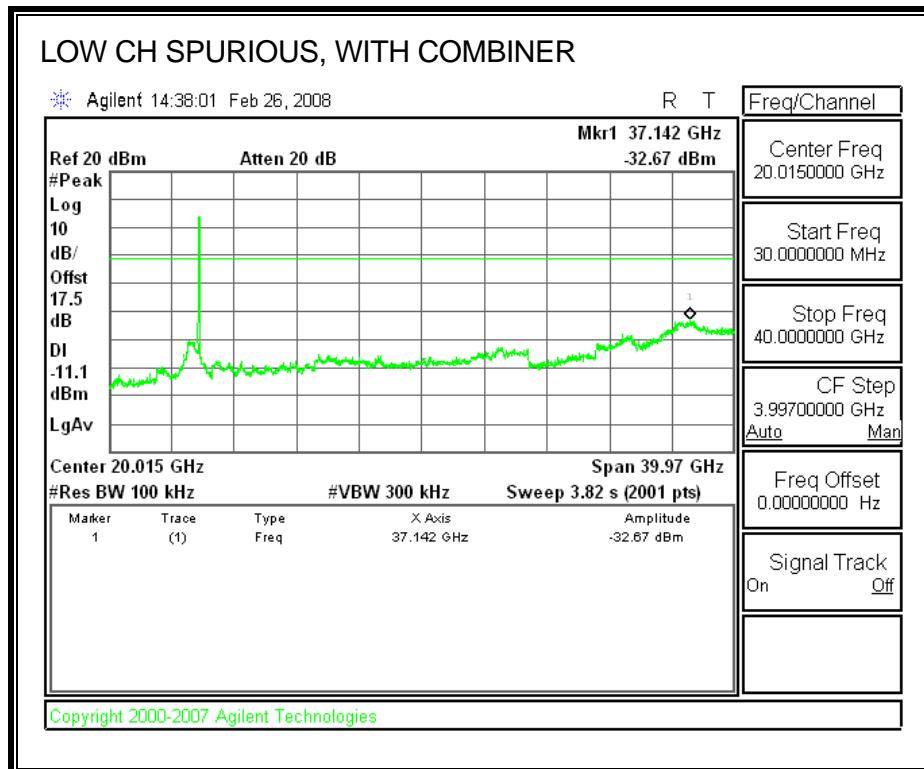
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

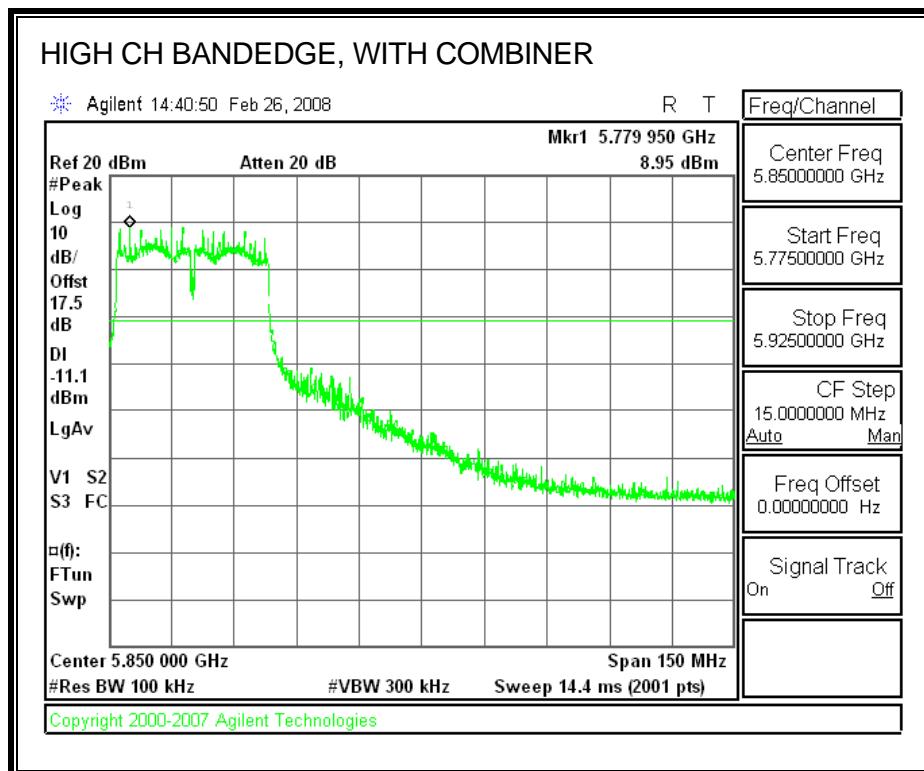
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest and highest channels.

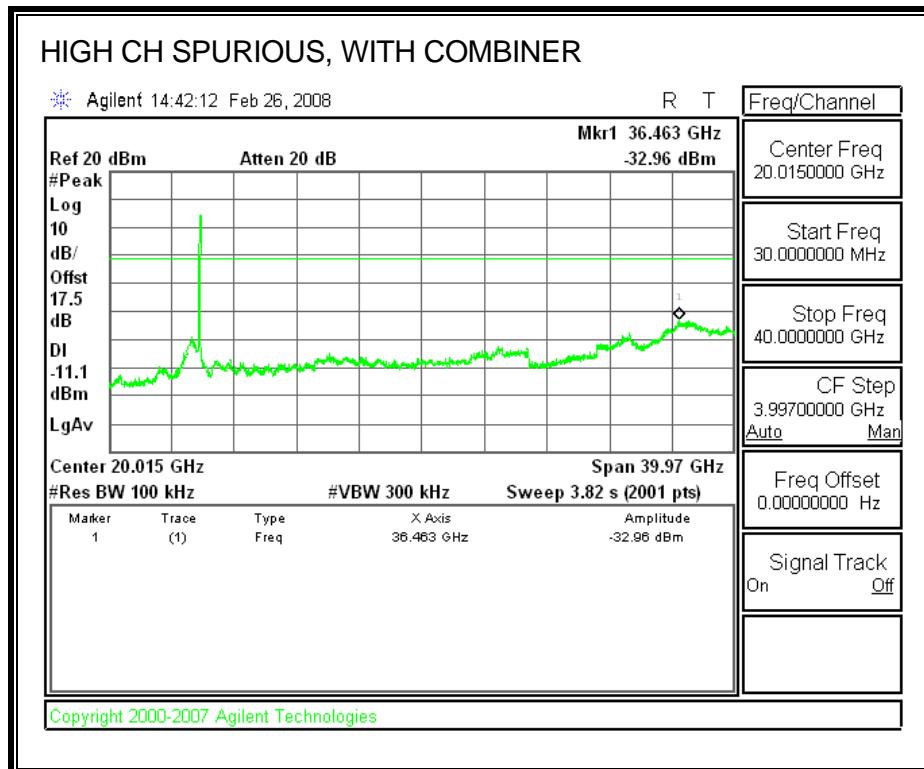
RESULTS

SPURIOUS EMISSIONS WITH COMBINER









8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

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.

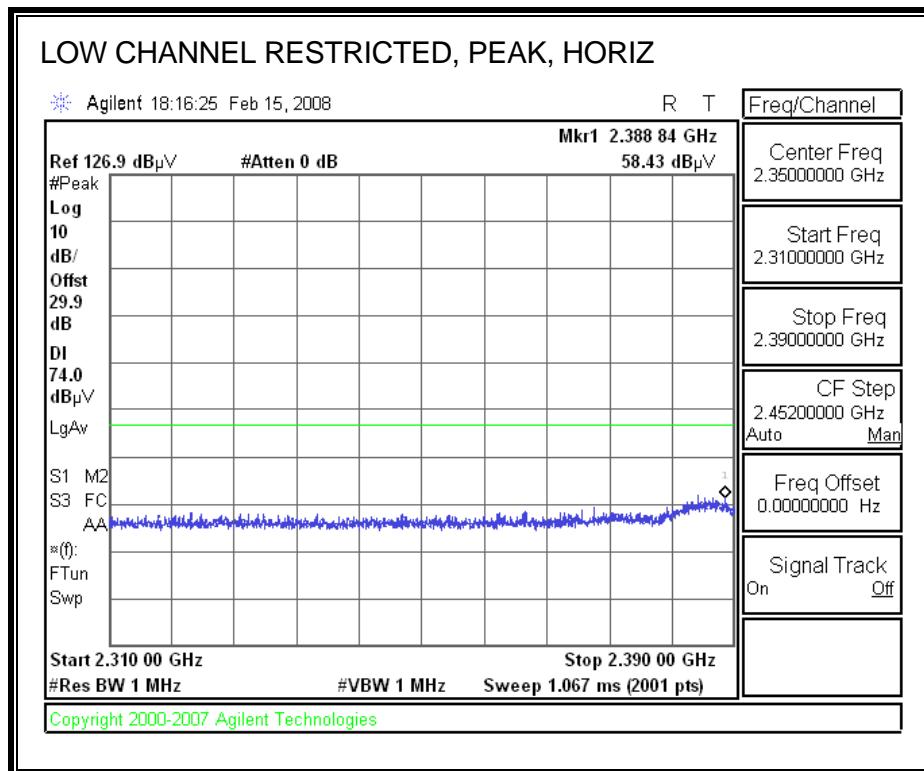
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

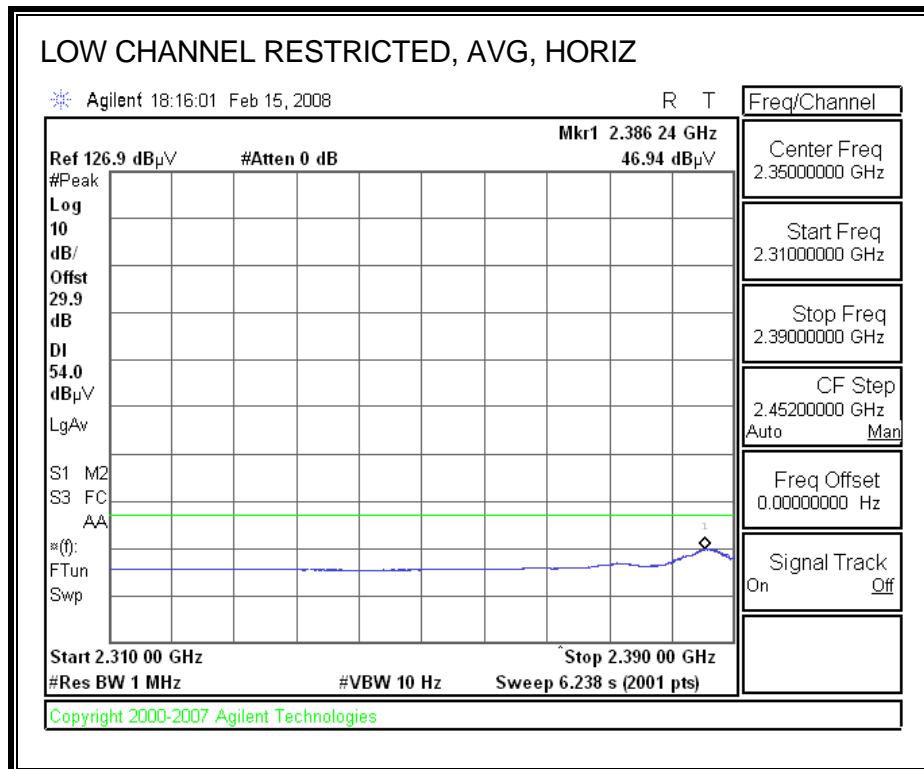
8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. TRANSMITTER ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

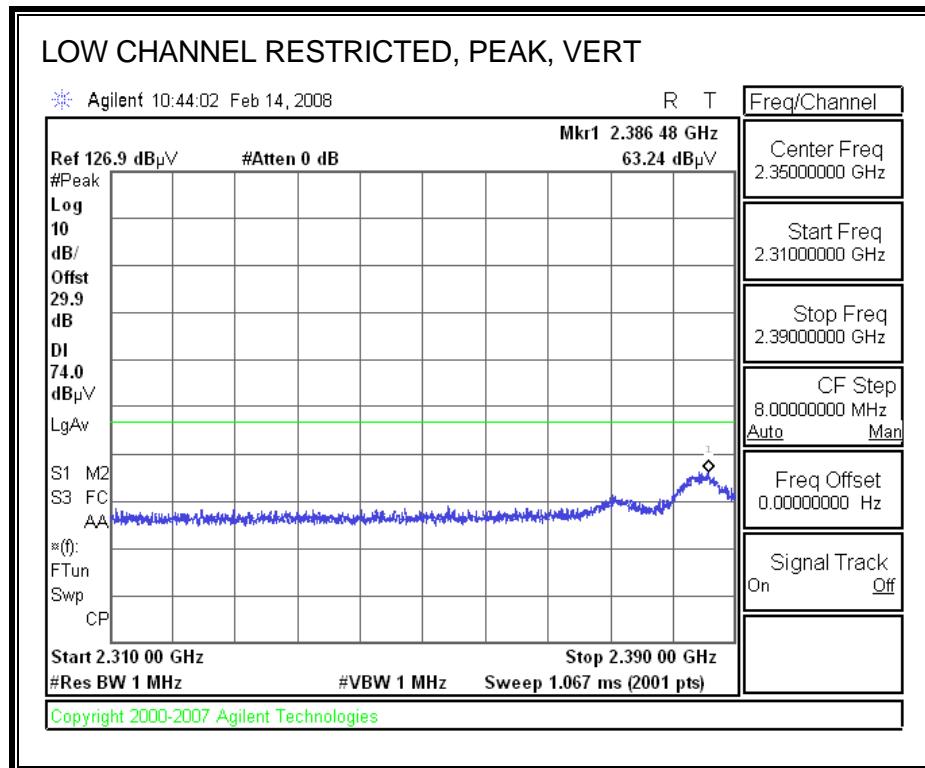
FEM #1

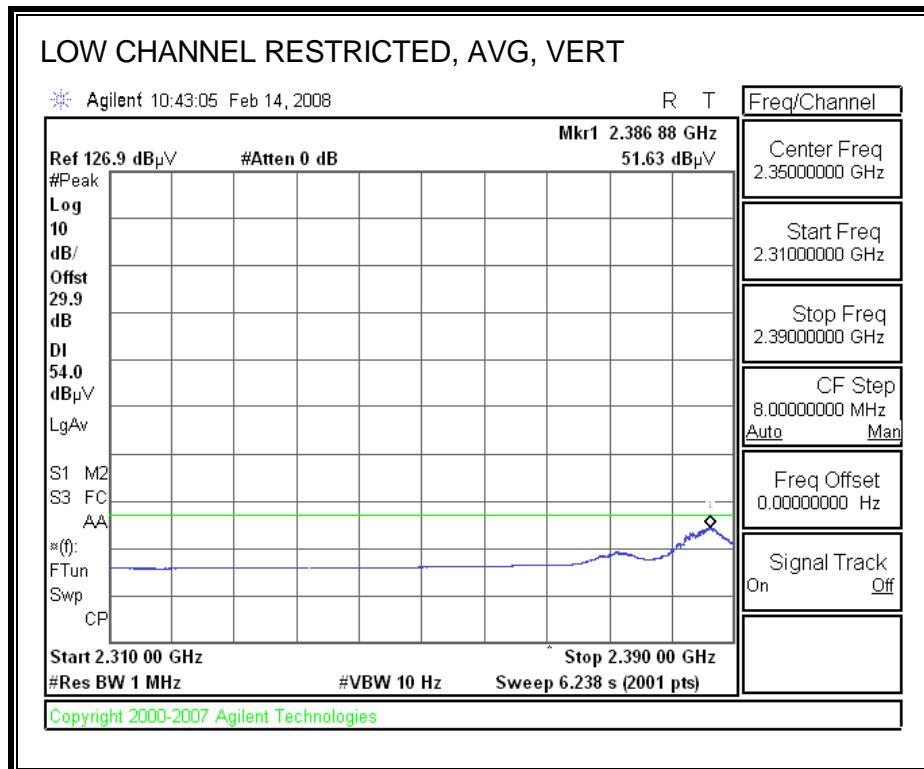
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



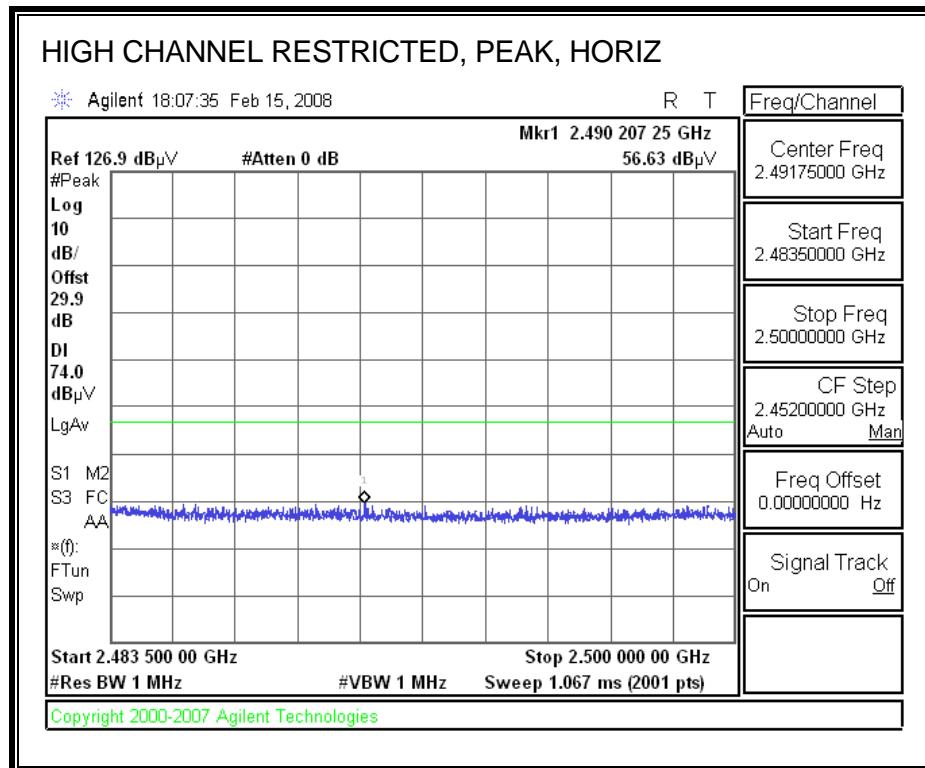


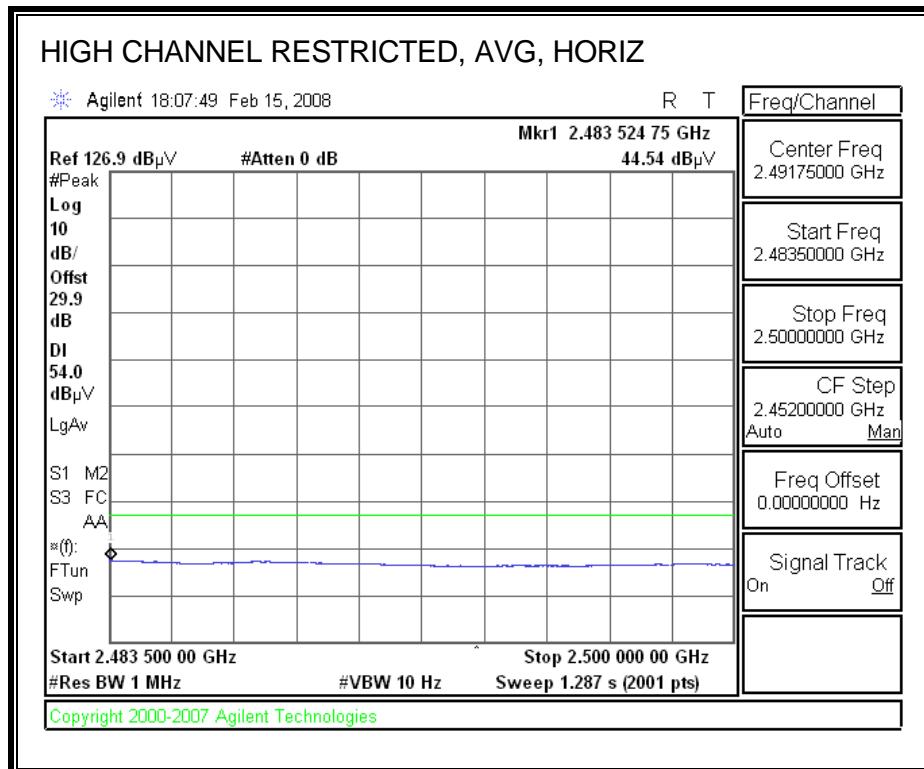
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



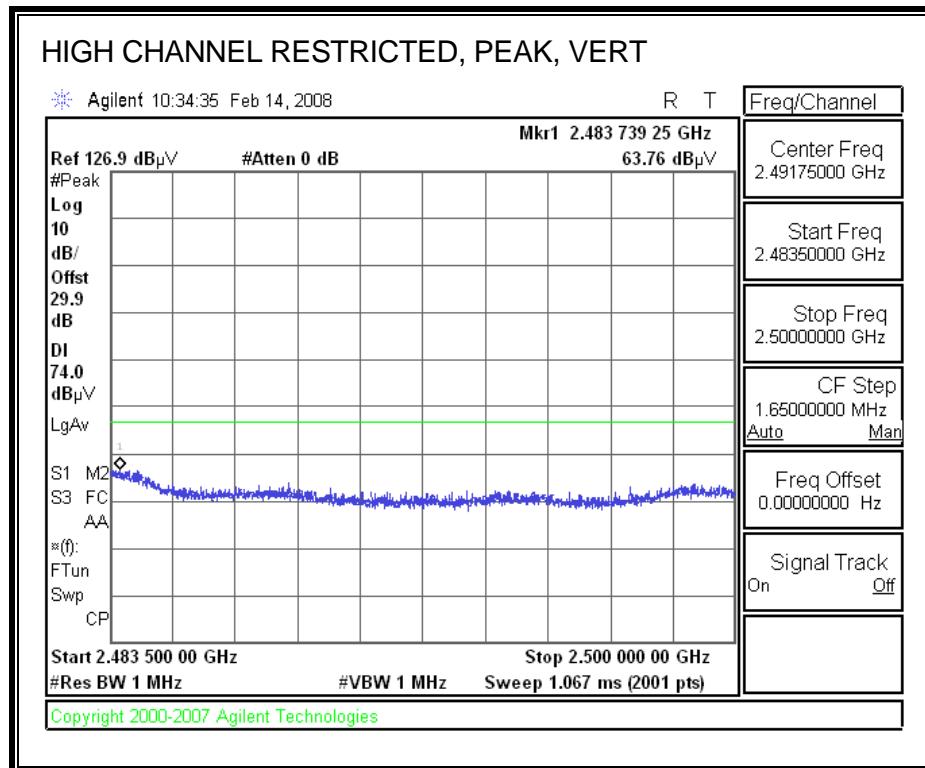


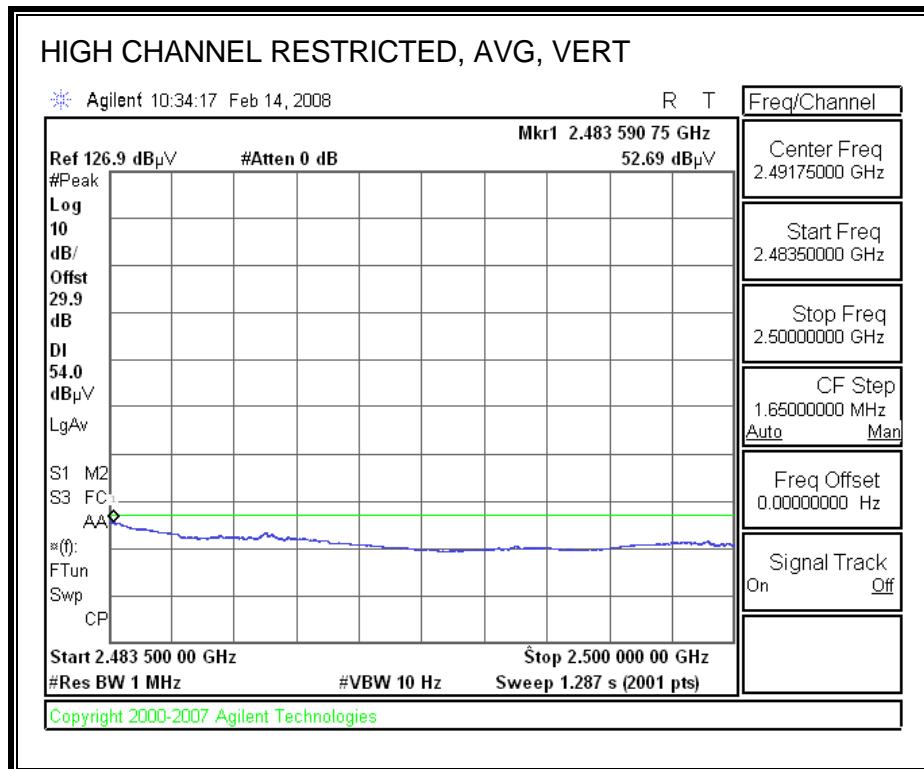
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





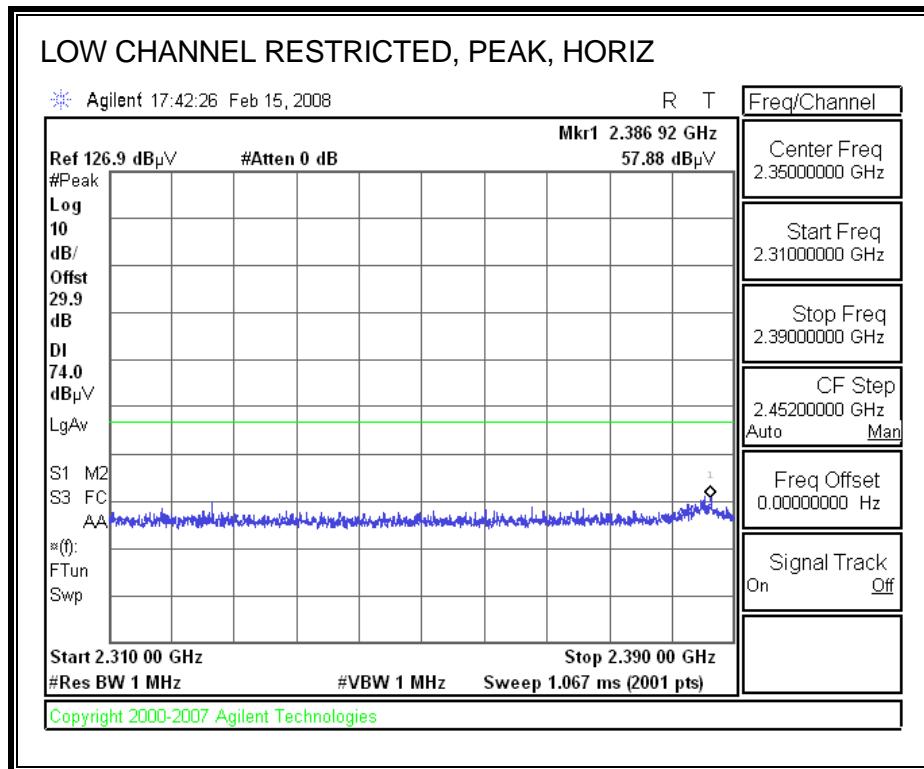
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

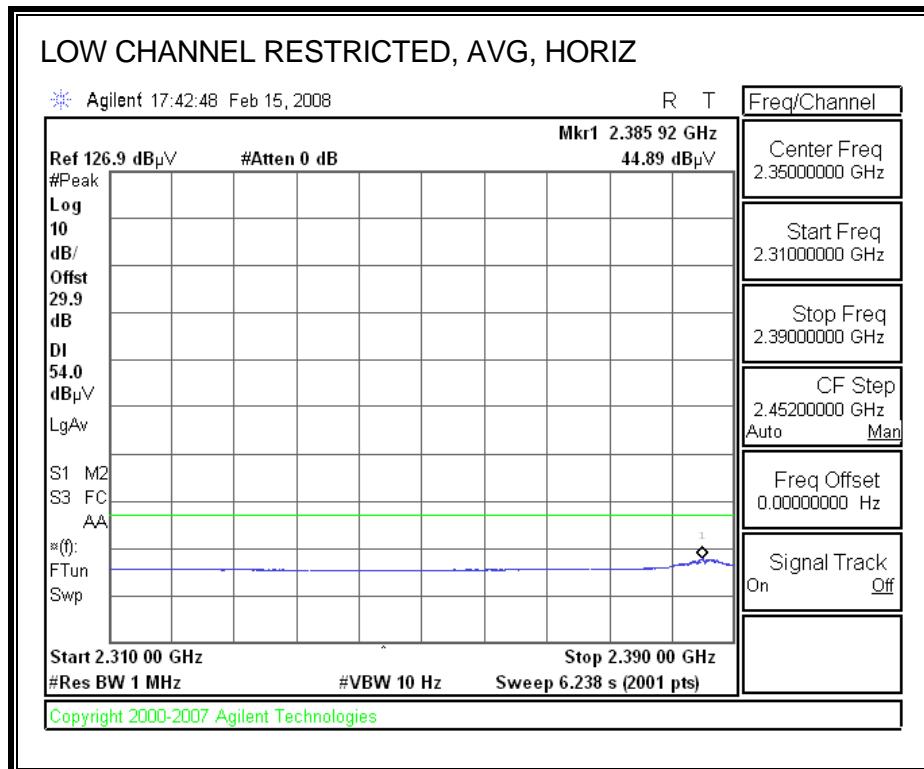




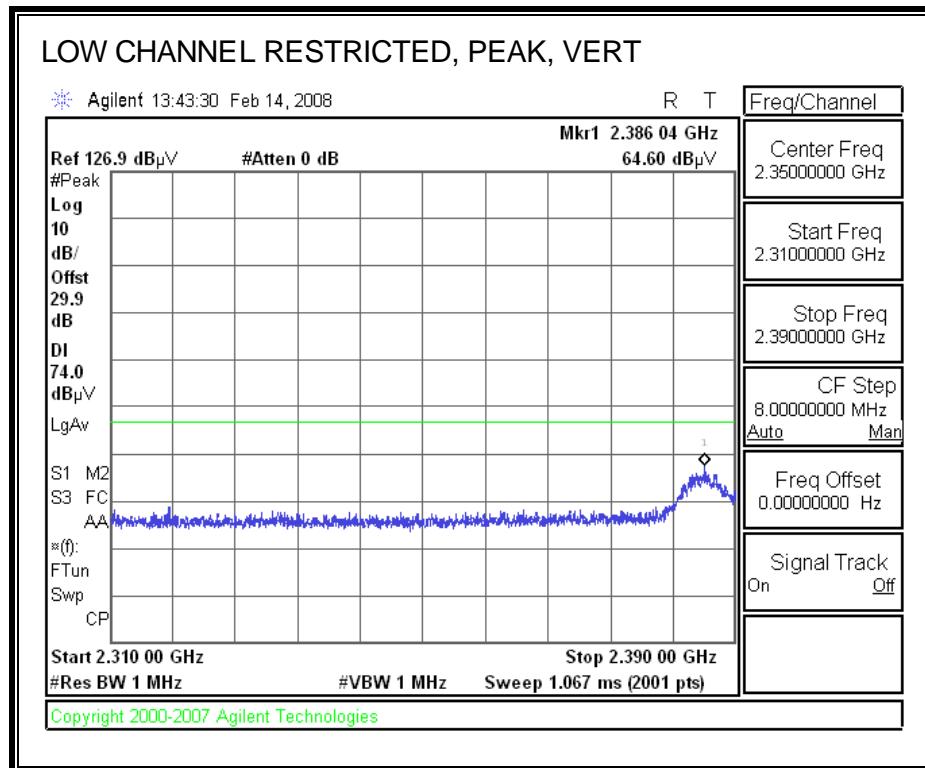
FEM #2

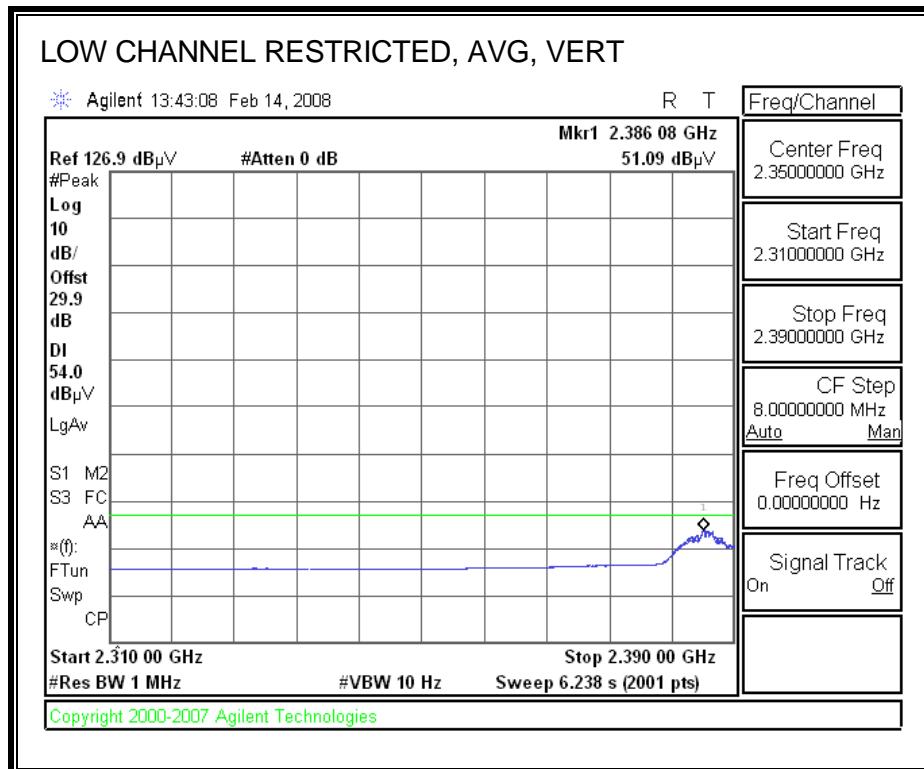
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



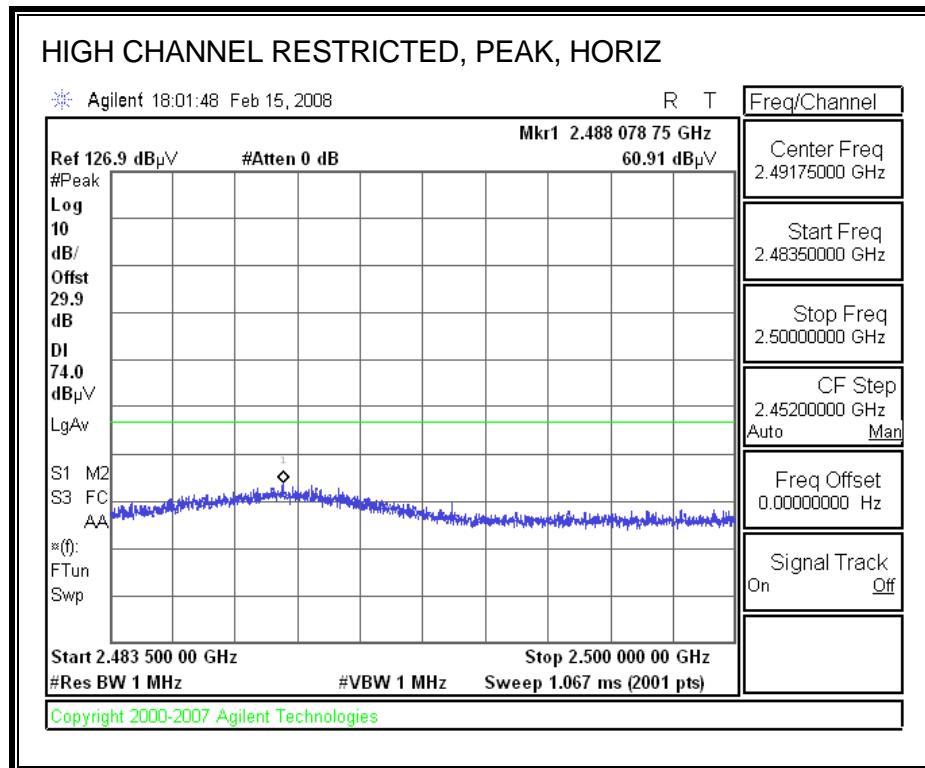


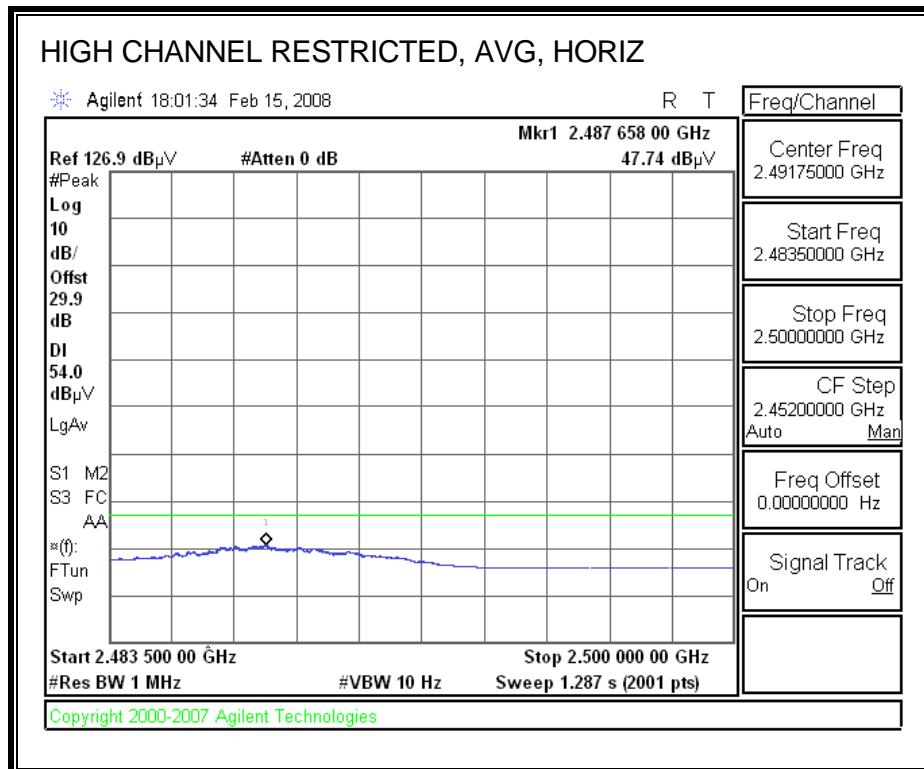
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



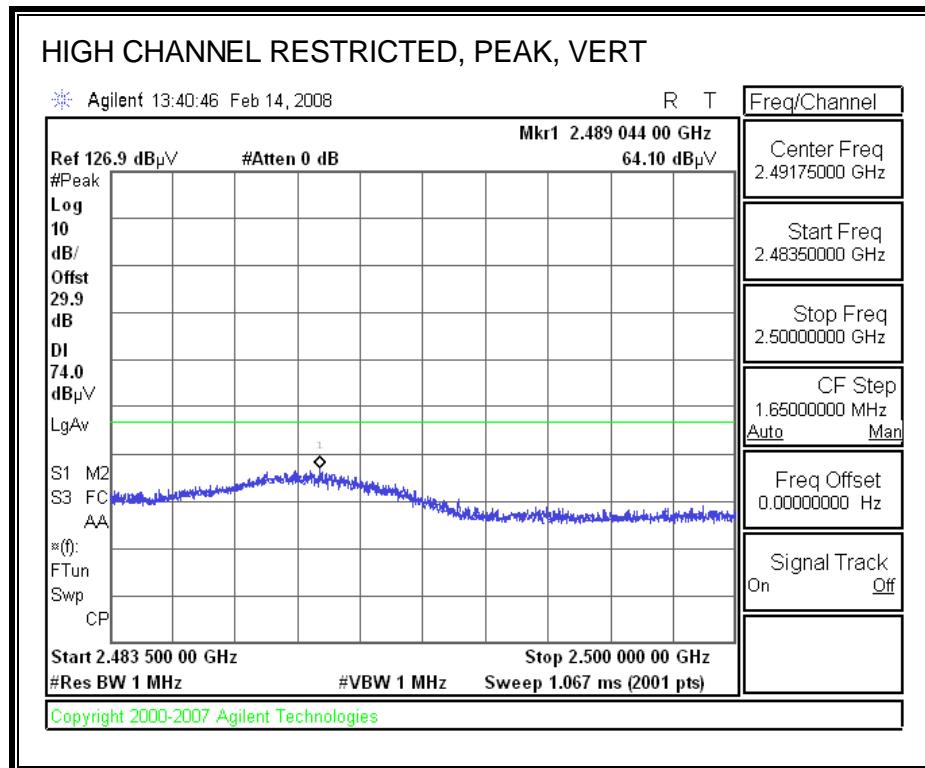


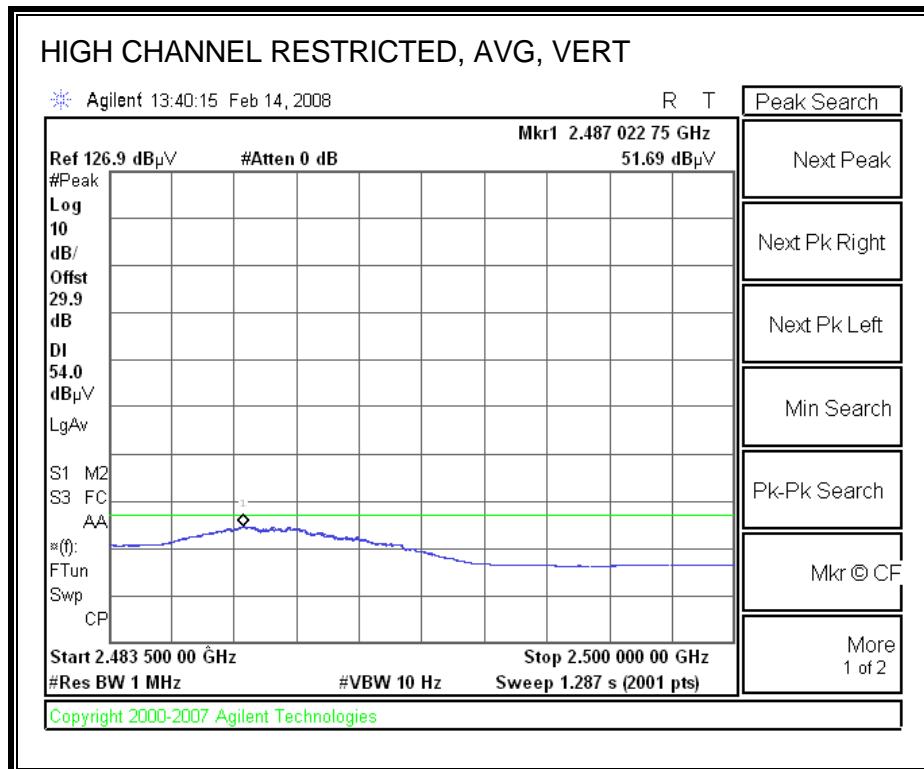
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																																																																																																																																																																																																																																																																																																																																																																																																																																												
<p>Company: Atheros Project #: 08U11571 Date: 2/22/2008 Test Engineer: Devin Chang Configuration: B mode Tx Mode: XB92-040-S0660 (b mode)</p> <p><u>Test Equipment:</u></p> <table border="1"> <tr> <th>Horn 1-18GHz</th> <th>Pre-amplifier 1-26GHz</th> <th>Pre-amplifier 26-40GHz</th> <th colspan="4">Horn > 18GHz</th> <th>Limit</th> </tr> <tr> <td>T73; S/N: 6717 @3m</td> <td>T34 HP 8449B</td> <td></td> <td colspan="4"></td> <td>FCC 15.205</td> </tr> <tr> <td colspan="14">Hi Frequency Cables</td> </tr> <tr> <td colspan="2">2 foot cable</td> <td colspan="2">3 foot cable</td> <td colspan="2">12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="5"> <u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz </td> </tr> <tr> <td>f GHz</td> <td>Dist (m)</td> <td>Read Ph dBuV</td> <td>Read Avg dBuV</td> <td>AF dB/m</td> <td>CL dB</td> <td>Amp dB</td> <td>D Corr dB</td> <td>Fltr dB</td> <td>Peak dBuV/m</td> <td>Avg dBuV/m</td> <td>Pk Lim dBuV/m</td> <td>Avg Lim dBuV/m</td> <td>Pk Mar dB</td> <td>Avg Mar dB</td> <td>Notes (V/H)</td> </tr> </table> <p>Low band (2412MHz)</p> <table border="1"> <tr><td>4.824</td><td>3.0</td><td>48.9</td><td>34.1</td><td>33.3</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>54.2</td><td>39.5</td><td>74</td><td>54</td><td>-19.8</td><td>-14.5</td><td>V</td></tr> <tr><td>7.326</td><td>3.0</td><td>43.0</td><td>31.2</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>52.3</td><td>40.5</td><td>74</td><td>54</td><td>-21.7</td><td>-13.5</td><td>V</td></tr> <tr><td>4.824</td><td>3.0</td><td>45.9</td><td>32.0</td><td>33.3</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>51.2</td><td>37.3</td><td>74</td><td>54</td><td>-22.8</td><td>-16.7</td><td>H</td></tr> <tr><td>7.326</td><td>3.0</td><td>40.8</td><td>29.2</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>50.2</td><td>38.5</td><td>74</td><td>54</td><td>-23.8</td><td>-15.5</td><td>H</td></tr> <tr><td colspan="15"> </td></tr> <p>Mid band (2437MHz)</p> <table border="1"> <tr><td>4.874</td><td>3.0</td><td>50.0</td><td>35.8</td><td>33.4</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>55.5</td><td>41.3</td><td>74</td><td>54</td><td>-18.5</td><td>-12.7</td><td>V</td></tr> <tr><td>7.311</td><td>3.0</td><td>44.4</td><td>33.0</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>53.7</td><td>42.3</td><td>74</td><td>54</td><td>-20.3</td><td>-11.7</td><td>V</td></tr> <tr><td>4.874</td><td>3.0</td><td>46.6</td><td>32.8</td><td>33.4</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>52.1</td><td>38.3</td><td>74</td><td>54</td><td>-21.9</td><td>-15.7</td><td>H</td></tr> <tr><td>7.311</td><td>3.0</td><td>46.7</td><td>37.0</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>56.0</td><td>46.3</td><td>74</td><td>54</td><td>-18.0</td><td>-7.7</td><td>H</td></tr> <tr><td colspan="15"> </td></tr> <p>High band (2462MHz)</p> <table border="1"> <tr><td>4.924</td><td>3.0</td><td>52.5</td><td>38.3</td><td>33.4</td><td>7.0</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>58.1</td><td>43.9</td><td>74</td><td>54</td><td>-15.9</td><td>-10.1</td><td>V</td></tr> <tr><td>7.386</td><td>3.0</td><td>47.5</td><td>35.2</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>56.9</td><td>44.6</td><td>74</td><td>54</td><td>-17.1</td><td>-9.4</td><td>V</td></tr> <tr><td>4.924</td><td>3.0</td><td>49.4</td><td>35.3</td><td>33.4</td><td>7.0</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>54.9</td><td>40.9</td><td>74</td><td>54</td><td>-19.1</td><td>-13.1</td><td>V</td></tr> <tr><td>7.386</td><td>3.0</td><td>45.8</td><td>34.8</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>55.2</td><td>44.1</td><td>74</td><td>54</td><td>-18.8</td><td>-9.9</td><td>V</td></tr> <tr><td colspan="15"> </td></tr> <tr><td colspan="15"> </td></tr> <tr><td colspan="15"> </td></tr> <tr><td colspan="15"> </td></tr> <tr> <td>Rev. 4.12.7</td> <td colspan="14"></td> </tr> <tr> <td>f</td> <td colspan="3">Measurement Frequency</td> <td>Amp</td> <td colspan="3">Preamp Gain</td> <td colspan="3"></td> <td>Avg Lim</td> <td colspan="3">Average Field Strength Limit</td> </tr> <tr> <td>Dist</td> <td colspan="3">Distance to Antenna</td> <td>D Corr</td> <td colspan="3">Distance Correct to 3 meters</td> <td colspan="3"></td> <td>Pk Lim</td> <td colspan="3">Peak Field Strength Limit</td> </tr> <tr> <td>Read</td> <td colspan="3">Analyzer Reading</td> <td>Avg</td> <td colspan="3">Average Field Strength @ 3 m</td> <td colspan="3"></td> <td>Avg Mar</td> <td colspan="3">Margin vs. Average Limit</td> </tr> <tr> <td>AF</td> <td colspan="3">Antenna Factor</td> <td>Peak</td> <td colspan="3">Calculated Peak Field Strength</td> <td colspan="3"></td> <td>Pk Mar</td> <td colspan="3">Margin vs. Peak Limit</td> </tr> <tr> <td>CL</td> <td colspan="3">Cable Loss</td> <td>HPF</td> <td colspan="3">High Pass Filter</td> <td colspan="3"></td> <td></td> <td 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(V/H)	4.824	3.0	48.9	34.1	33.3	6.9	-34.8	0.0	0.0	54.2	39.5	74	54	-19.8	-14.5	V	7.326	3.0	43.0	31.2	35.0	8.4	-34.1	0.0	0.0	52.3	40.5	74	54	-21.7	-13.5	V	4.824	3.0	45.9	32.0	33.3	6.9	-34.8	0.0	0.0	51.2	37.3	74	54	-22.8	-16.7	H	7.326	3.0	40.8	29.2	35.0	8.4	-34.1	0.0	0.0	50.2	38.5	74	54	-23.8	-15.5	H																4.874	3.0	50.0	35.8	33.4	6.9	-34.8	0.0	0.0	55.5	41.3	74	54	-18.5	-12.7	V	7.311	3.0	44.4	33.0	35.0	8.4	-34.1	0.0	0.0	53.7	42.3	74	54	-20.3	-11.7	V	4.874	3.0	46.6	32.8	33.4	6.9	-34.8	0.0	0.0	52.1	38.3	74	54	-21.9	-15.7	H	7.311	3.0	46.7	37.0	35.0	8.4	-34.1	0.0	0.0	56.0	46.3	74	54	-18.0	-7.7	H																4.924	3.0	52.5	38.3	33.4	7.0	-34.8	0.0	0.0	58.1	43.9	74	54	-15.9	-10.1	V	7.386	3.0	47.5	35.2	35.0	8.4	-34.1	0.0	0.0	56.9	44.6	74	54	-17.1	-9.4	V	4.924	3.0	49.4	35.3	33.4	7.0	-34.8	0.0	0.0	54.9	40.9	74	54	-19.1	-13.1	V	7.386	3.0	45.8	34.8	35.0	8.4	-34.1	0.0	0.0	55.2	44.1	74	54	-18.8	-9.9	V																																																													Rev. 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4.874	3.0	50.0	35.8	33.4	6.9	-34.8	0.0	0.0	55.5	41.3	74	54	-18.5	-12.7	V																																																																																																																																																																																																																																																																																																																																																																																																																																													
7.311	3.0	44.4	33.0	35.0	8.4	-34.1	0.0	0.0	53.7	42.3	74	54	-20.3	-11.7	V																																																																																																																																																																																																																																																																																																																																																																																																																																													
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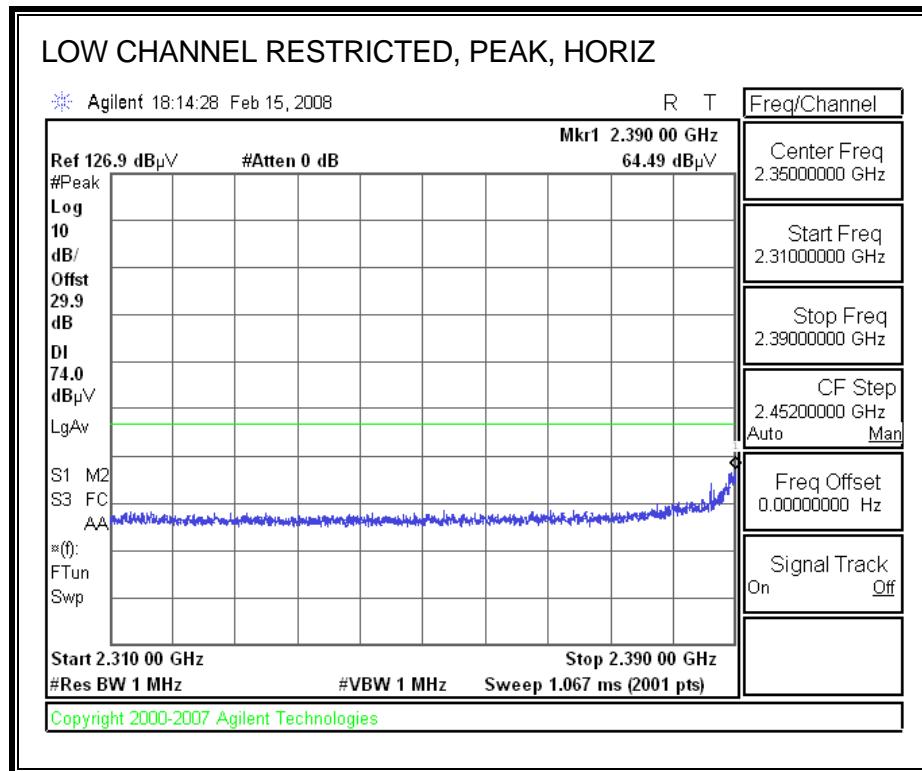
HARMONICS AND SPURIOUS EMISSIONS

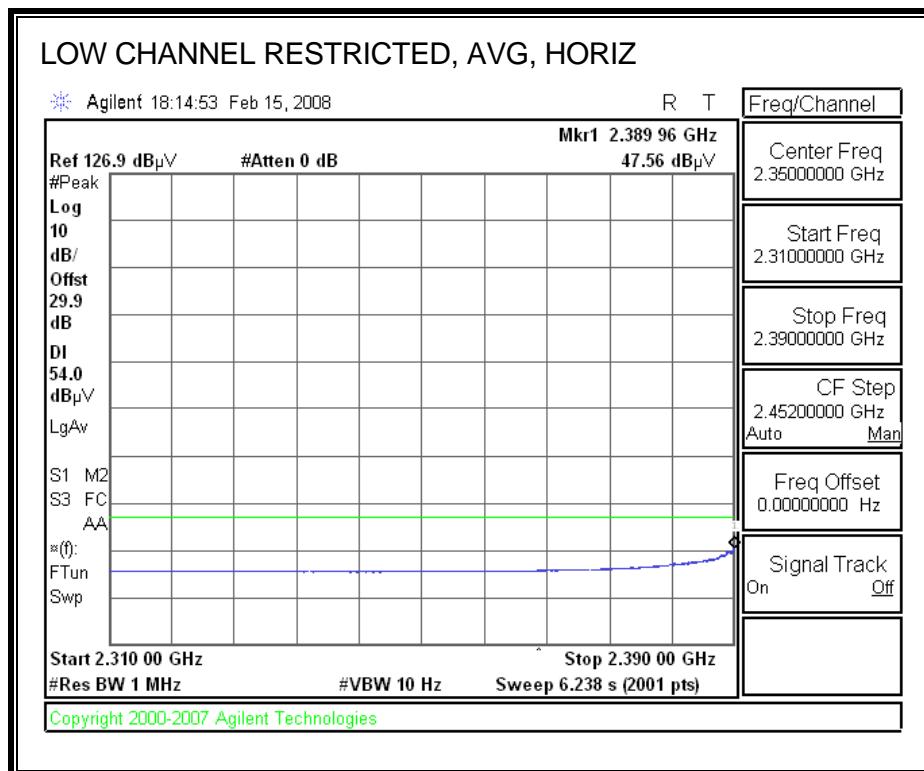
High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																																																																																																																																																																																																																																																																																																																											
<p>Company: Atheros Project #: 08U11571 Date: 2/14/2008 Test Engineer: Devin Chang Configuration: B mode Tx Mode: XB92-040-S0580 (b mode)</p> <p>Test Equipment:</p> <table border="1"> <tr> <th>Horn 1-18GHz</th> <th>Pre-amplifier 1-26GHz</th> <th>Pre-amplifier 26-40GHz</th> <th colspan="3">Horn > 18GHz</th> <th>Limit</th> </tr> <tr> <td>T73; S/N: 6717 @3m</td> <td>T34 HP 8449B</td> <td></td> <td></td> <td></td> <td></td> <td>FCC 15.205</td> </tr> <tr> <td colspan="7">Hi Frequency Cables</td> </tr> <tr> <td>2 foot cable</td> <td>3 foot cable</td> <td>12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="2"> Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz </td> </tr> <tr> <td></td> <td></td> <td>A-5m Chamber</td> <td></td> <td>R_001</td> <td colspan="2"></td> </tr> </table> <p>Measurement Data:</p> <table border="1"> <thead> <tr> <th>f GHz</th> <th>Dist (m)</th> <th>Read Pl dBuV</th> <th>Read Avg. dBuV</th> <th>AF dB/m</th> <th>CL dB</th> <th>Amp dB</th> <th>D Corr dB</th> <th>Fltr dB</th> <th>Peak dBuV/m</th> <th>Avg dBuV/m</th> <th>Pk Lim dBuV/m</th> <th>Avg Lim dBuV/m</th> <th>Pk Mar dB</th> <th>Avg Mar dB</th> <th>Notes (V/H)</th> </tr> </thead> <tbody> <tr> <td colspan="15">Low band (2412MHz)</td> </tr> <tr> <td>4.824</td> <td>3.0</td> <td>44.1</td> <td>30.2</td> <td>33.3</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>49.4</td> <td>35.5</td> <td>74</td> <td>54</td> <td>-24.6</td> <td>-18.5</td> <td>V</td> </tr> <tr> <td>7.326</td> <td>3.0</td> <td>41.6</td> <td>28.8</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>50.9</td> <td>38.1</td> <td>74</td> <td>54</td> <td>-23.1</td> <td>-15.9</td> <td>V</td> </tr> <tr> <td>4.824</td> <td>3.0</td> <td>42.9</td> <td>28.6</td> <td>33.3</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>48.2</td> <td>33.9</td> <td>74</td> <td>54</td> <td>-25.8</td> <td>-20.1</td> <td>H</td> </tr> <tr> <td>7.326</td> <td>3.0</td> <td>36.9</td> <td>26.0</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>48.2</td> <td>35.3</td> <td>74</td> <td>54</td> <td>-25.8</td> <td>-18.7</td> <td>H</td> </tr> <tr> <td colspan="15">Mid band (2437MHz)</td> </tr> <tr> <td>4.874</td> <td>3.0</td> <td>47.1</td> <td>32.4</td> <td>33.4</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>52.6</td> <td>37.9</td> <td>74</td> <td>54</td> <td>-21.4</td> <td>-16.1</td> <td>V</td> </tr> <tr> <td>7.311</td> <td>3.0</td> <td>46.7</td> <td>35.5</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>56.0</td> <td>44.8</td> <td>74</td> <td>54</td> <td>-18.0</td> <td>-9.2</td> <td>V</td> </tr> <tr> <td>4.874</td> <td>3.0</td> <td>43.7</td> <td>29.9</td> <td>33.4</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>49.2</td> <td>35.3</td> <td>74</td> <td>54</td> <td>-24.8</td> <td>-18.7</td> <td>H</td> </tr> <tr> <td>7.311</td> <td>3.0</td> <td>44.5</td> <td>33.5</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>53.8</td> <td>42.8</td> <td>74</td> <td>54</td> <td>-20.2</td> <td>-11.2</td> <td>H</td> </tr> <tr> <td colspan="15">High band (2462MHz)</td> </tr> <tr> <td>4.924</td> <td>3.0</td> <td>45.4</td> <td>31.4</td> <td>33.4</td> <td>7.0</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>50.9</td> <td>36.9</td> <td>74</td> <td>54</td> <td>-23.1</td> <td>-17.1</td> <td>V</td> </tr> <tr> <td>7.386</td> <td>3.0</td> <td>46.1</td> <td>36.1</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>55.5</td> <td>45.4</td> <td>74</td> <td>54</td> <td>-18.5</td> <td>-8.6</td> <td>V</td> </tr> <tr> <td>4.924</td> <td>3.0</td> <td>42.1</td> <td>27.1</td> <td>33.4</td> <td>7.0</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>47.6</td> <td>32.6</td> <td>74</td> <td>54</td> <td>-26.4</td> <td>-21.4</td> <td>H</td> </tr> <tr> <td>7.386</td> <td>3.0</td> <td>44.1</td> <td>33.1</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>53.5</td> <td>42.4</td> <td>74</td> <td>54</td> <td>-20.5</td> <td>-11.6</td> <td>H</td> </tr> </tbody> </table> <p>Rev. 4.12.7</p> <table border="1"> <tr> <td>f</td> <td>Measurement Frequency</td> <td>Amp</td> <td>Preamp Gain</td> <td>Avg Lim</td> <td>Average Field Strength Limit</td> </tr> <tr> <td>Dist</td> <td>Distance to Antenna</td> <td>D Corr</td> <td>Distance Correct to 3 meters</td> <td>Pk Lim</td> <td>Peak Field Strength Limit</td> </tr> <tr> <td>Read</td> <td>Analyzer Reading</td> <td>Avg</td> <td>Average Field Strength @ 3 m</td> <td>Avg Mar</td> <td>Margin vs. Average Limit</td> </tr> <tr> <td>AF</td> <td>Antenna Factor</td> <td>Peak</td> <td>Calculated Peak Field Strength</td> <td>Pk Mar</td> <td>Margin vs. Peak Limit</td> </tr> <tr> <td>CL</td> <td>Cable Loss</td> <td>HPF</td> <td>High Pass Filter</td> <td></td> <td></td> </tr> </table>														Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz			Limit	T73; S/N: 6717 @3m	T34 HP 8449B					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				A-5m Chamber		R_001			f GHz	Dist (m)	Read Pl 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 band (2412MHz)															4.824	3.0	44.1	30.2	33.3	6.9	-34.8	0.0	0.0	49.4	35.5	74	54	-24.6	-18.5	V	7.326	3.0	41.6	28.8	35.0	8.4	-34.1	0.0	0.0	50.9	38.1	74	54	-23.1	-15.9	V	4.824	3.0	42.9	28.6	33.3	6.9	-34.8	0.0	0.0	48.2	33.9	74	54	-25.8	-20.1	H	7.326	3.0	36.9	26.0	35.0	8.4	-34.1	0.0	0.0	48.2	35.3	74	54	-25.8	-18.7	H	Mid band (2437MHz)															4.874	3.0	47.1	32.4	33.4	6.9	-34.8	0.0	0.0	52.6	37.9	74	54	-21.4	-16.1	V	7.311	3.0	46.7	35.5	35.0	8.4	-34.1	0.0	0.0	56.0	44.8	74	54	-18.0	-9.2	V	4.874	3.0	43.7	29.9	33.4	6.9	-34.8	0.0	0.0	49.2	35.3	74	54	-24.8	-18.7	H	7.311	3.0	44.5	33.5	35.0	8.4	-34.1	0.0	0.0	53.8	42.8	74	54	-20.2	-11.2	H	High band (2462MHz)															4.924	3.0	45.4	31.4	33.4	7.0	-34.8	0.0	0.0	50.9	36.9	74	54	-23.1	-17.1	V	7.386	3.0	46.1	36.1	35.0	8.4	-34.1	0.0	0.0	55.5	45.4	74	54	-18.5	-8.6	V	4.924	3.0	42.1	27.1	33.4	7.0	-34.8	0.0	0.0	47.6	32.6	74	54	-26.4	-21.4	H	7.386	3.0	44.1	33.1	35.0	8.4	-34.1	0.0	0.0	53.5	42.4	74	54	-20.5	-11.6	H	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		
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8.2.2. TRANSMITTER ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND

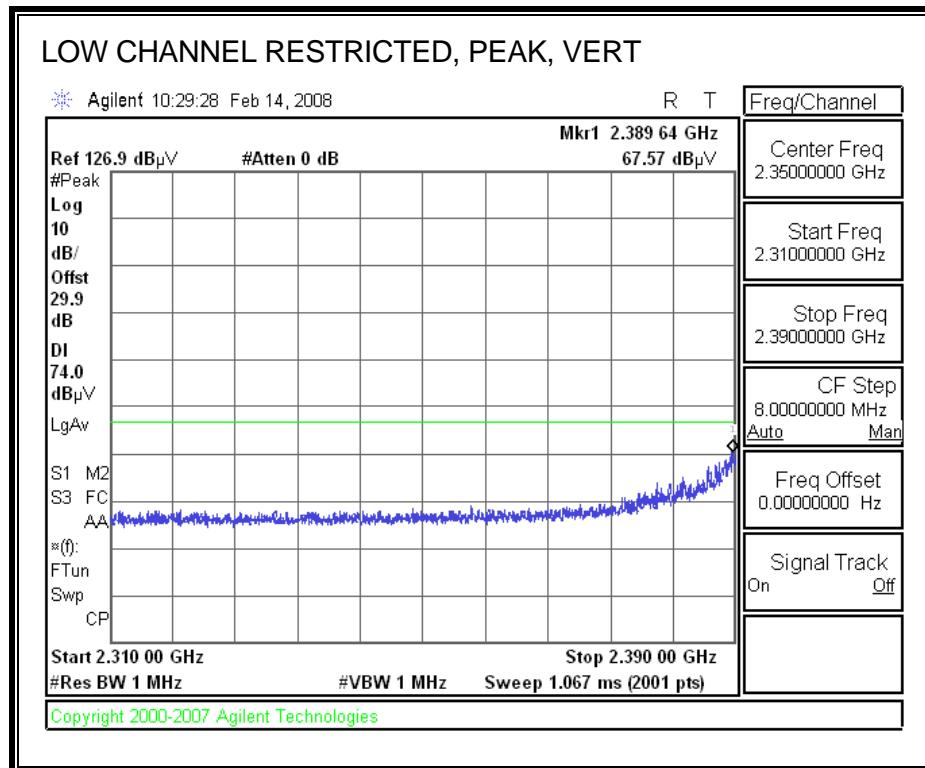
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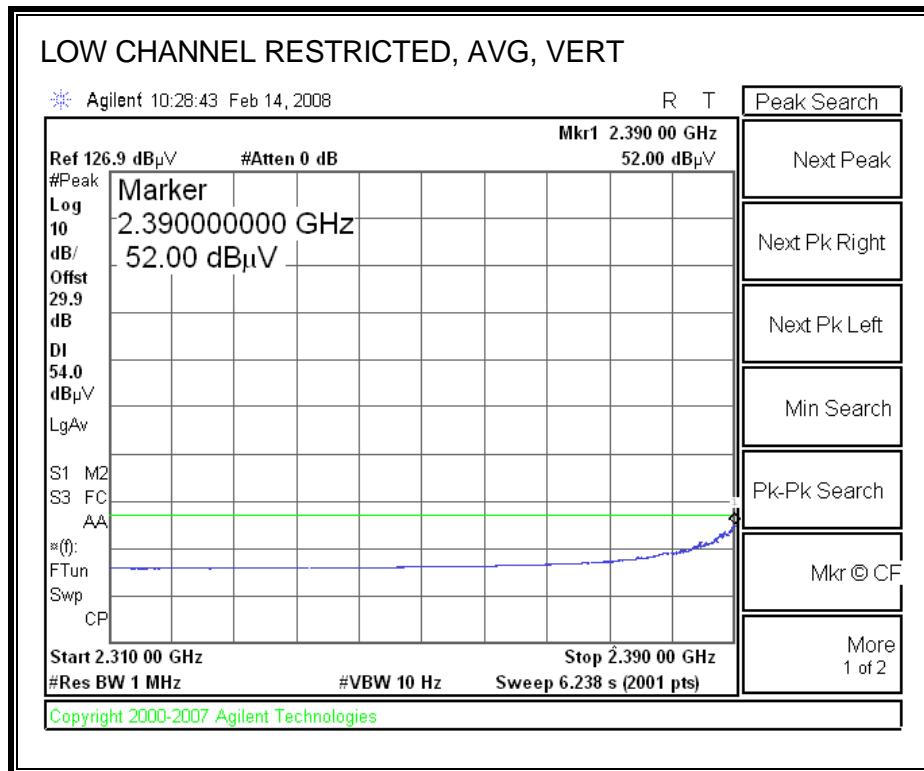
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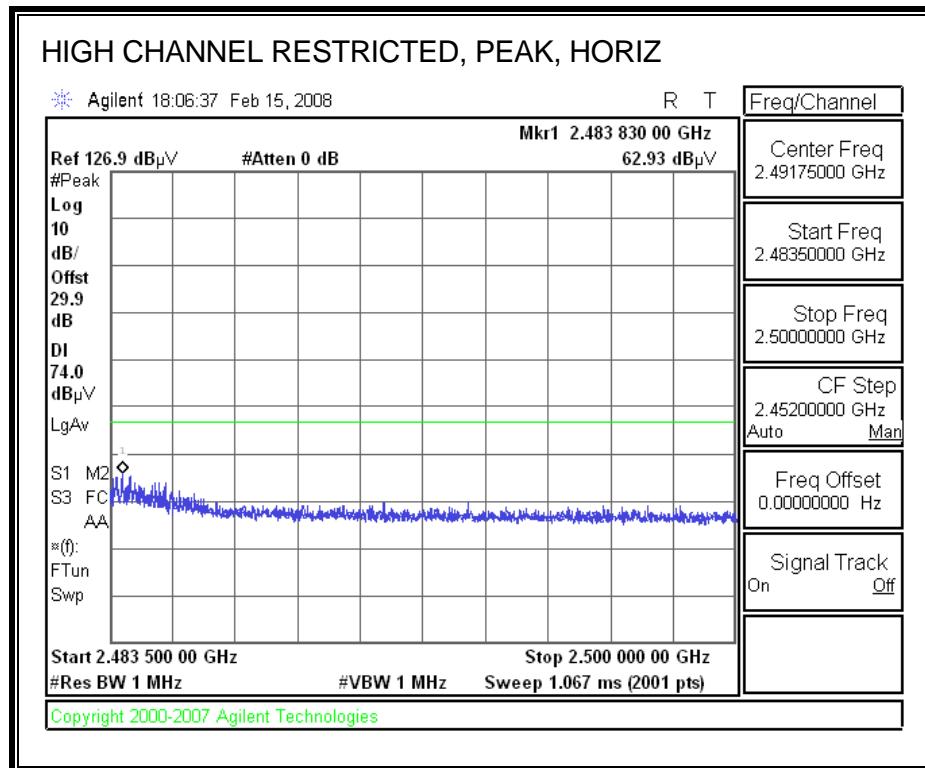


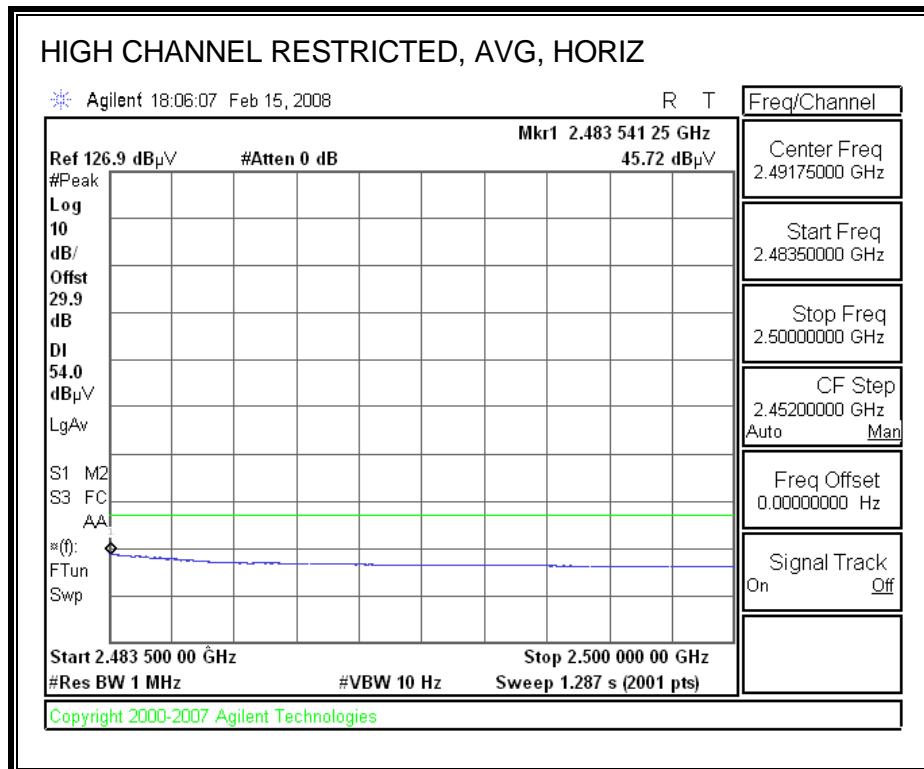
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



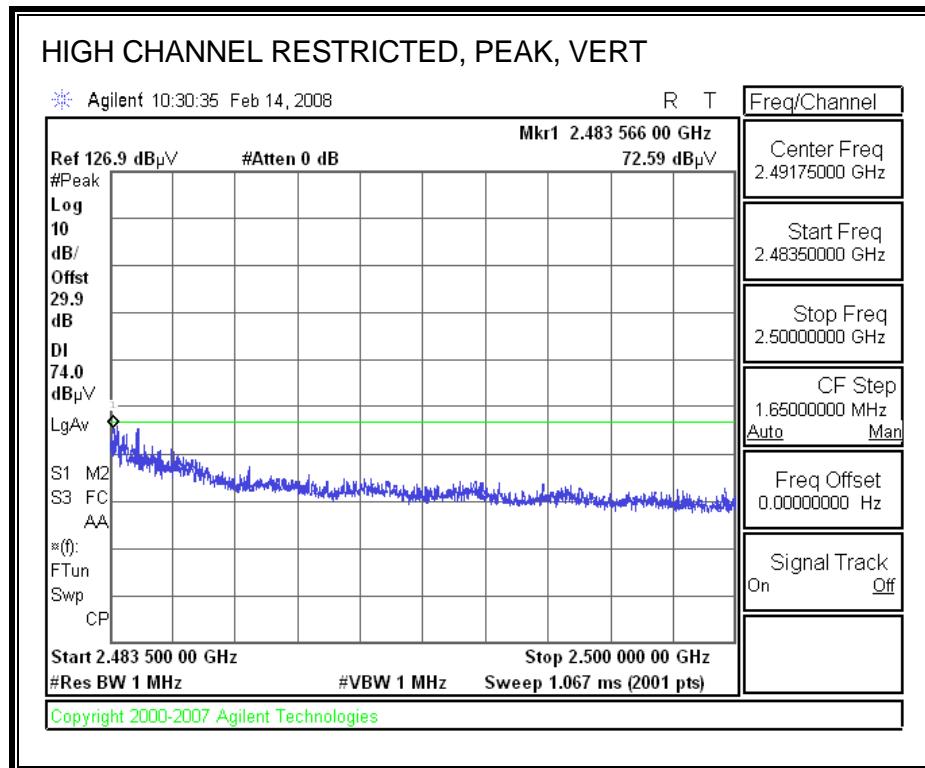


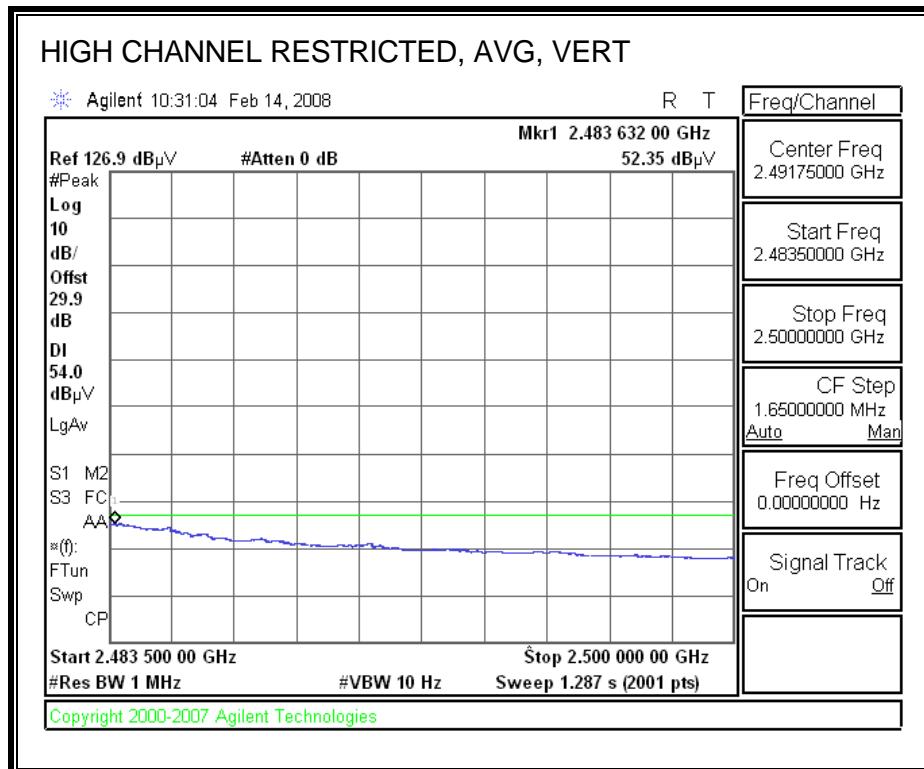
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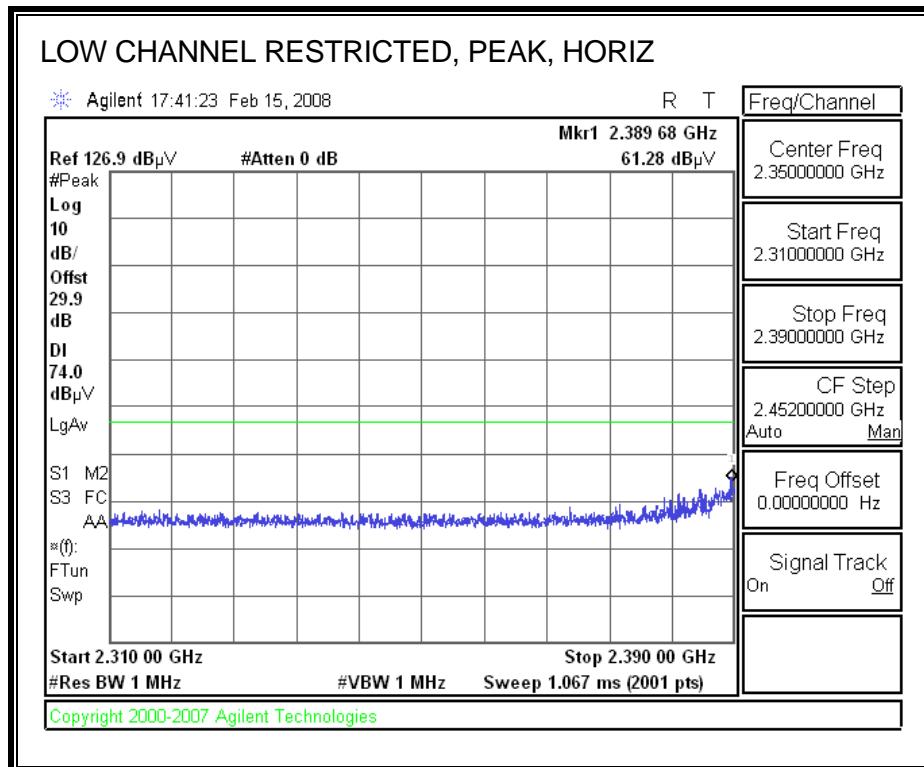
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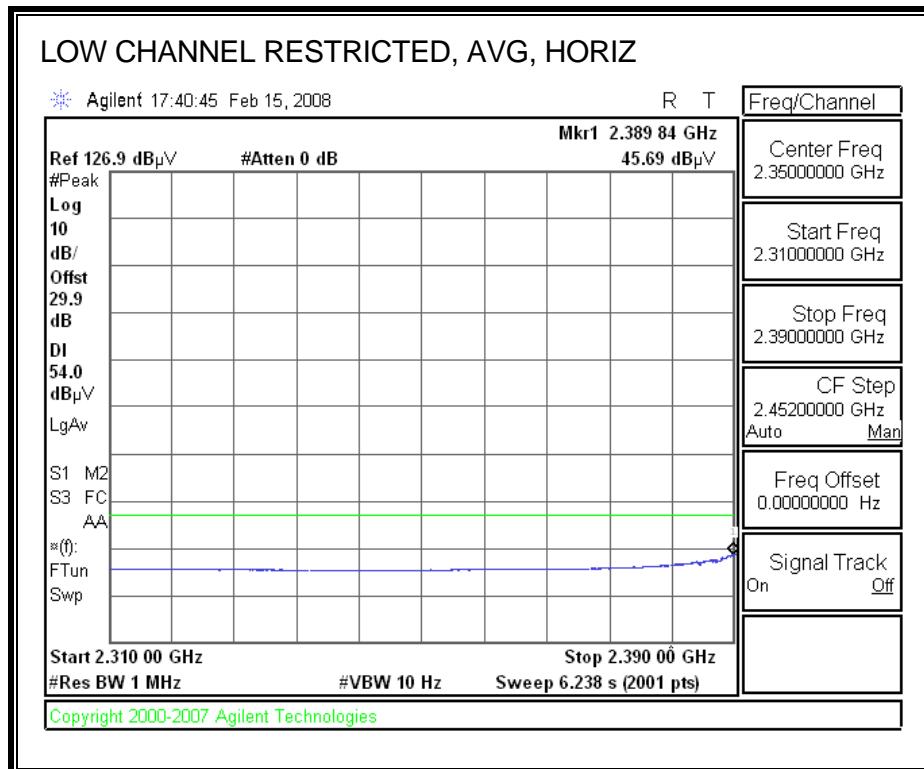




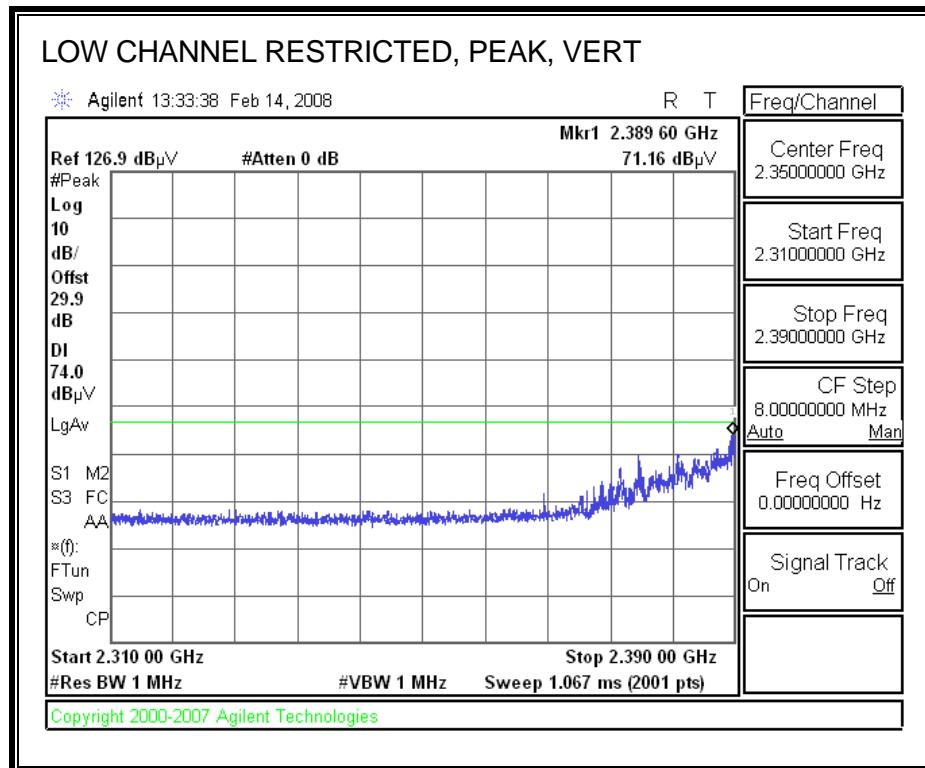
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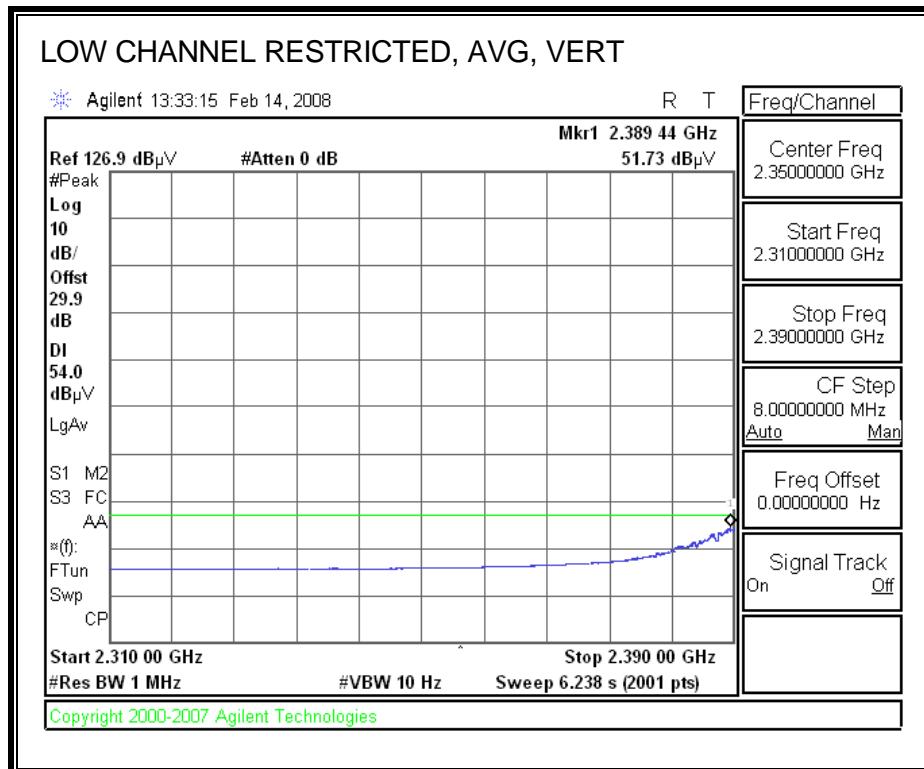
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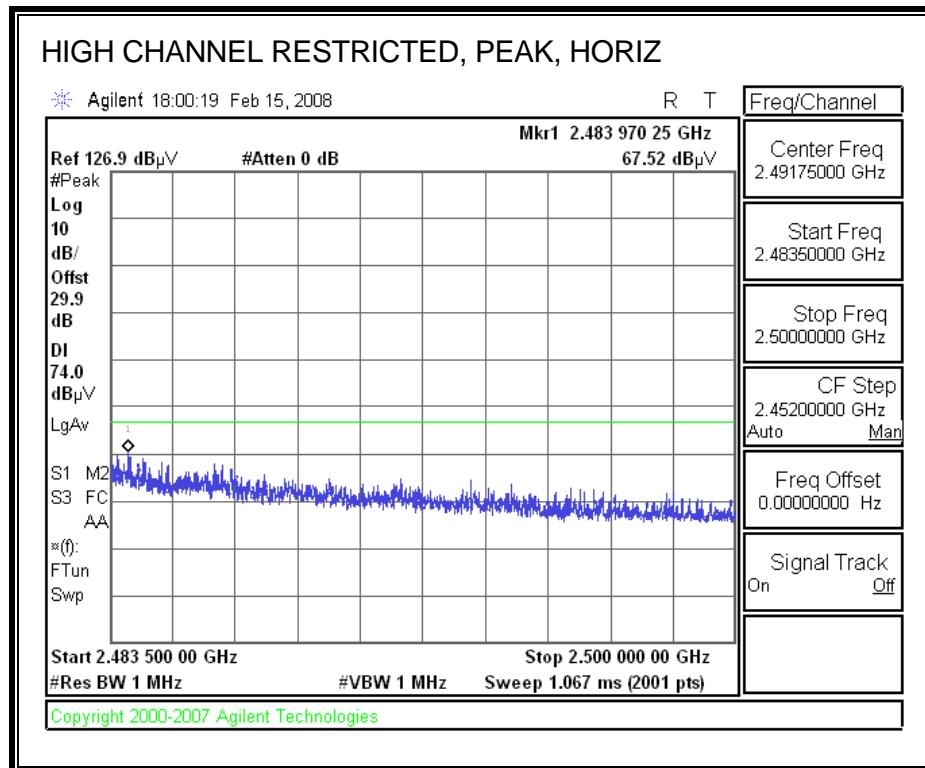


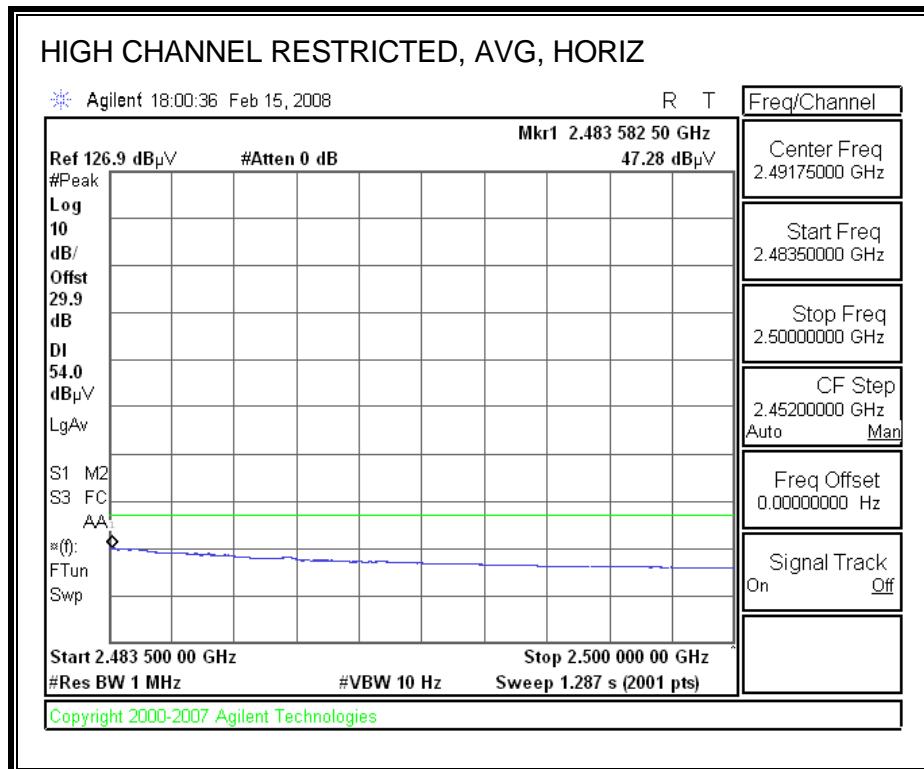
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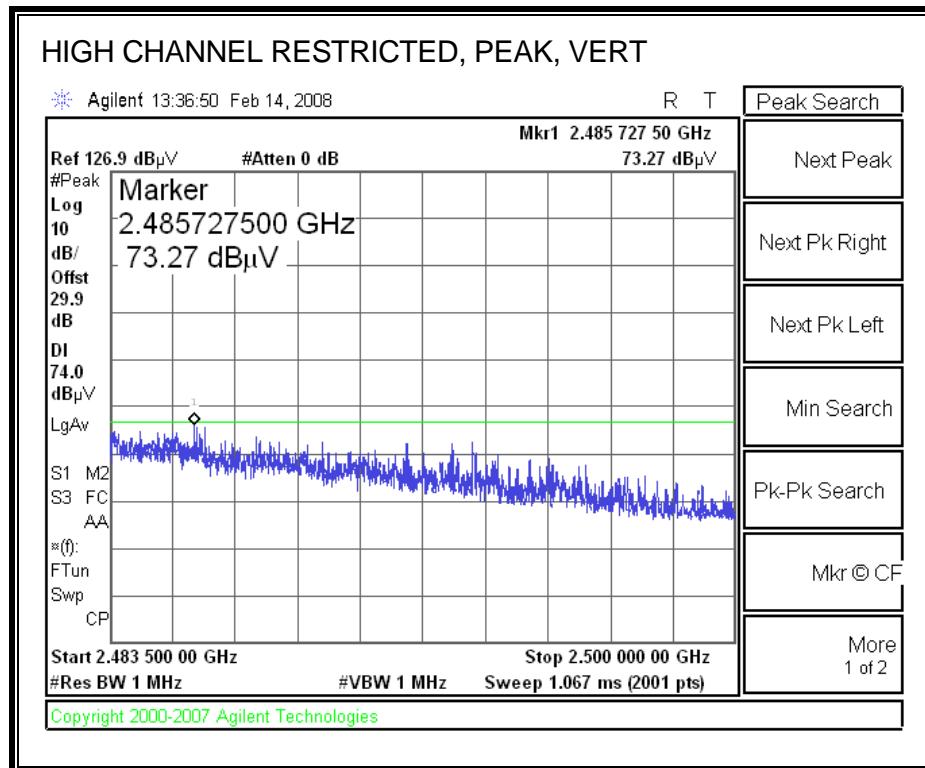


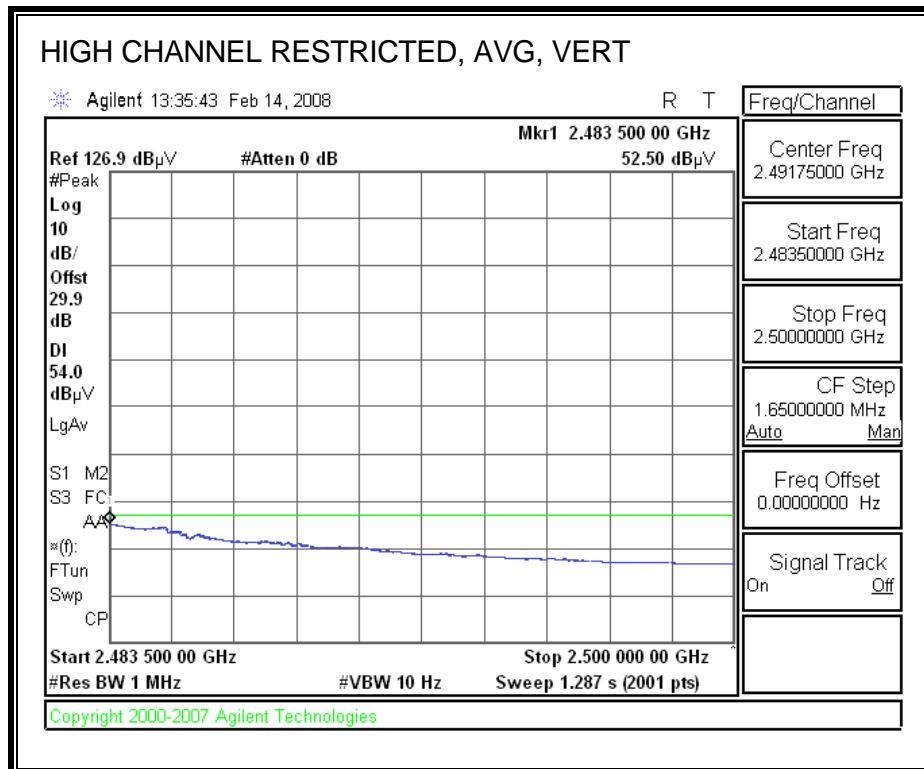
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																																																																																																																																																																																																																																																								
<p>Company: Atheros Project #: 08U11571 Date: 2/14/2008 Test Engineer: Devin Chang Configuration: B mode Tx Mode: XB92-040-S0660 (g mode)</p> <p><u>Test Equipment:</u></p> <table border="1"> <tr> <th>Horn 1-18GHz</th> <th>Pre-amplifier 1-26GHz</th> <th>Pre-amplifier 26-40GHz</th> <th colspan="4">Horn > 18GHz</th> <th>Limit</th> </tr> <tr> <td>T73; S/N: 6717 @3m</td> <td>T34 HP 8449B</td> <td></td> <td colspan="4"></td> <td>FCC 15.209</td> </tr> <tr> <td colspan="14">Hi Frequency Cables</td> </tr> <tr> <td colspan="2">2 foot cable</td> <td colspan="2">3 foot cable</td> <td colspan="2">12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="5"> <u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz </td> </tr> <tr> <td>f GHz</td> <td>Dist (m)</td> <td>Read Pk dBuV</td> <td>Read Avg. dBuV</td> <td>AF dB/m</td> <td>CL dB</td> <td>Amp dB</td> <td>D Corr dB</td> <td>Fltr dB</td> <td>Peak dBuV/m</td> <td>Avg dBuV/m</td> <td>Pk Lim dBuV/m</td> <td>Avg Lim dBuV/m</td> <td>Pk Mar dB</td> <td>Avg Mar dB</td> <td>Notes (V/H)</td> </tr> </table> <p>Low band (2412MHz)</p> <table border="1"> <tr><td>4.824</td><td>3.0</td><td>42.9</td><td>30.1</td><td>33.3</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>48.2</td><td>35.4</td><td>74</td><td>54</td><td>-25.8</td><td>-18.6</td><td>V</td></tr> <tr><td>7.236</td><td>3.0</td><td>41.9</td><td>27.5</td><td>34.9</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>51.1</td><td>36.7</td><td>74</td><td>54</td><td>-22.9</td><td>-17.3</td><td>V</td></tr> <tr><td>4.824</td><td>3.0</td><td>40.6</td><td>27.1</td><td>33.3</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>45.9</td><td>32.5</td><td>74</td><td>54</td><td>-28.1</td><td>-21.5</td><td>H</td></tr> <tr><td>7.236</td><td>3.0</td><td>37.4</td><td>23.7</td><td>34.9</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>46.6</td><td>32.9</td><td>74</td><td>54</td><td>-27.4</td><td>-21.1</td><td>Noise</td></tr> </table> <p>Mid band (2437MHz)</p> <table border="1"> <tr><td>4.874</td><td>3.0</td><td>48.6</td><td>35.1</td><td>33.4</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>54.0</td><td>40.5</td><td>74</td><td>54</td><td>-20.0</td><td>-13.5</td><td>V</td></tr> <tr><td>7.311</td><td>3.0</td><td>44.4</td><td>29.5</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>53.7</td><td>38.8</td><td>74</td><td>54</td><td>-20.3</td><td>-15.2</td><td>V</td></tr> <tr><td>4.874</td><td>3.0</td><td>43.5</td><td>30.4</td><td>33.4</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>49.0</td><td>35.8</td><td>74</td><td>54</td><td>-25.0</td><td>-18.2</td><td>H</td></tr> <tr><td>7.311</td><td>3.0</td><td>43.2</td><td>29.3</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>52.5</td><td>38.6</td><td>74</td><td>54</td><td>-21.5</td><td>-15.4</td><td>H</td></tr> </table> <p>High band (2462MHz)</p> <table border="1"> <tr><td>4.924</td><td>3.0</td><td>49.0</td><td>35.3</td><td>33.4</td><td>7.0</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>54.5</td><td>40.8</td><td>74</td><td>54</td><td>-19.5</td><td>-13.2</td><td>V</td></tr> <tr><td>7.386</td><td>3.0</td><td>43.6</td><td>28.8</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>53.0</td><td>38.1</td><td>74</td><td>54</td><td>-21.0</td><td>-15.9</td><td>V</td></tr> <tr><td>4.924</td><td>3.0</td><td>43.5</td><td>29.9</td><td>33.4</td><td>7.0</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>49.0</td><td>35.5</td><td>74</td><td>54</td><td>-25.0</td><td>-18.5</td><td>H</td></tr> <tr><td>7.386</td><td>3.0</td><td>37.9</td><td>25.0</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>47.2</td><td>34.3</td><td>74</td><td>54</td><td>-26.8</td><td>-19.7</td><td>Noise</td></tr> </table>														Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz				Limit	T73; S/N: 6717 @3m	T34 HP 8449B						FCC 15.209	Hi Frequency Cables														2 foot cable		3 foot cable		12 foot cable		HPF	Reject Filter	<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> 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)	4.824	3.0	42.9	30.1	33.3	6.9	-34.8	0.0	0.0	48.2	35.4	74	54	-25.8	-18.6	V	7.236	3.0	41.9	27.5	34.9	8.4	-34.1	0.0	0.0	51.1	36.7	74	54	-22.9	-17.3	V	4.824	3.0	40.6	27.1	33.3	6.9	-34.8	0.0	0.0	45.9	32.5	74	54	-28.1	-21.5	H	7.236	3.0	37.4	23.7	34.9	8.4	-34.1	0.0	0.0	46.6	32.9	74	54	-27.4	-21.1	Noise	4.874	3.0	48.6	35.1	33.4	6.9	-34.8	0.0	0.0	54.0	40.5	74	54	-20.0	-13.5	V	7.311	3.0	44.4	29.5	35.0	8.4	-34.1	0.0	0.0	53.7	38.8	74	54	-20.3	-15.2	V	4.874	3.0	43.5	30.4	33.4	6.9	-34.8	0.0	0.0	49.0	35.8	74	54	-25.0	-18.2	H	7.311	3.0	43.2	29.3	35.0	8.4	-34.1	0.0	0.0	52.5	38.6	74	54	-21.5	-15.4	H	4.924	3.0	49.0	35.3	33.4	7.0	-34.8	0.0	0.0	54.5	40.8	74	54	-19.5	-13.2	V	7.386	3.0	43.6	28.8	35.0	8.4	-34.1	0.0	0.0	53.0	38.1	74	54	-21.0	-15.9	V	4.924	3.0	43.5	29.9	33.4	7.0	-34.8	0.0	0.0	49.0	35.5	74	54	-25.0	-18.5	H	7.386	3.0	37.9	25.0	35.0	8.4	-34.1	0.0	0.0	47.2	34.3	74	54	-26.8	-19.7	Noise
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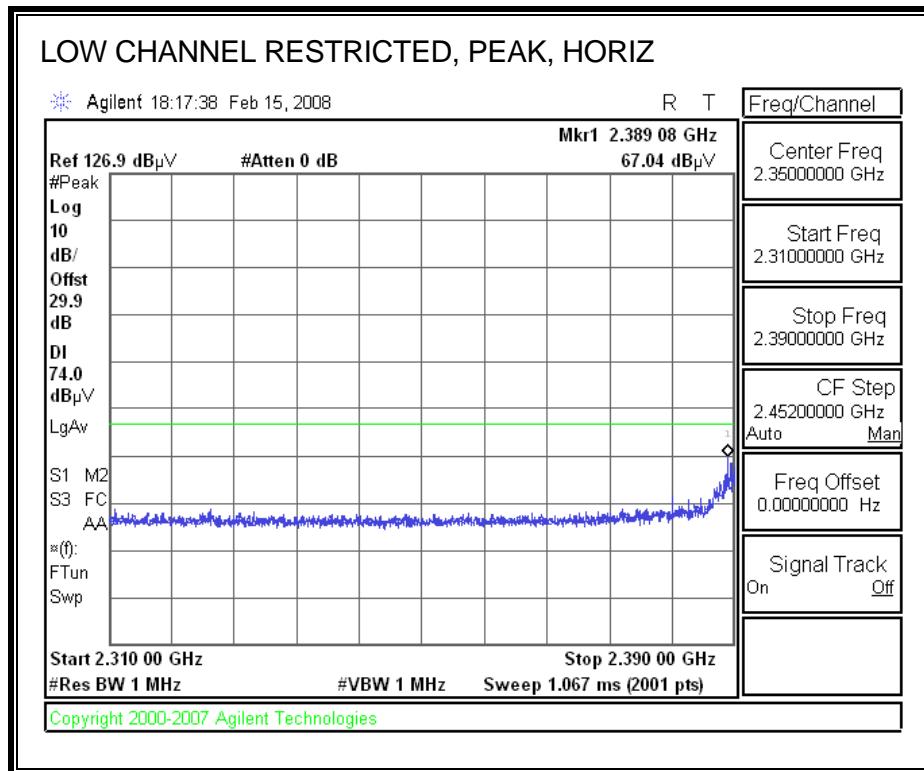
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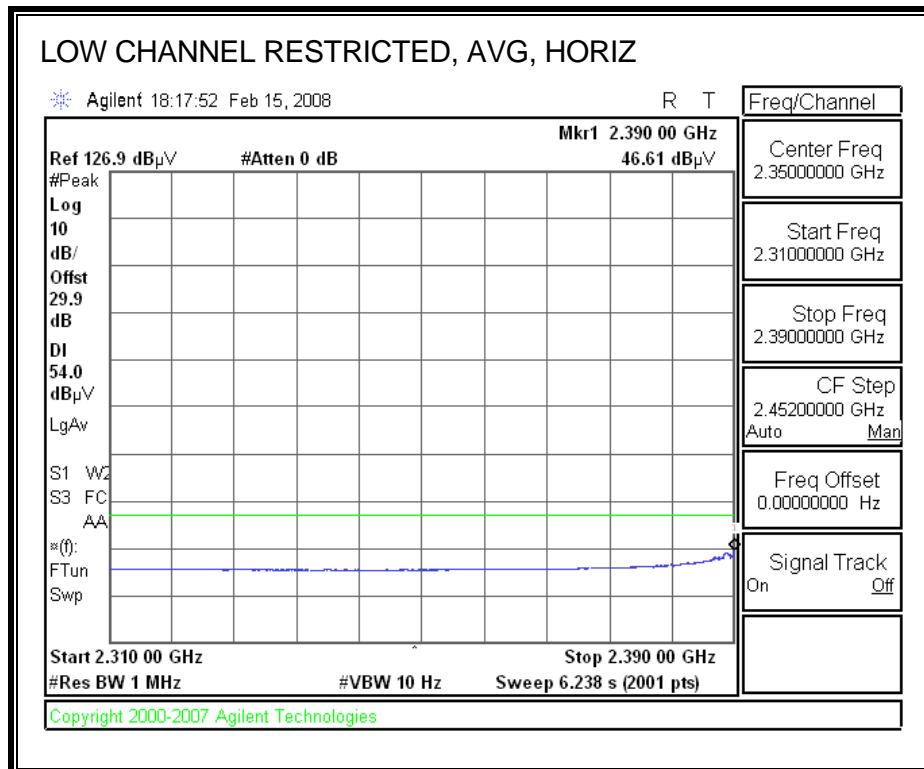
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S/N: 6717 @3m	T34 HP 8449B						FCC 15.205	Hi Frequency Cables												2 foot cable		3 foot cable		12 foot cable		HPF	Reject Filter	<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz				f GHz	Dist (m)	Read Ph dBuV	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)	4.824	3.0	42.4	29.4	33.3	6.9	-34.8	0.0	0.0	47.8	34.8	74	54	-26.2	-19.2	V	7.326	3.0	39.1	26.4	35.0	8.4	-34.1	0.0	0.0	48.4	35.7	74	54	-25.6	-18.3	V	4.824	3.0	44.1	29.7	33.3	6.9	-34.8	0.0	0.0	49.4	35.1	74	54	-24.6	-18.9	H	7.326	3.0	38.5	25.6	35.0	8.4	-34.1	0.0	0.0	47.8	34.9	74	54	-26.2	-19.1	H	4.874	3.0	46.9	34.8	33.4	6.9	-34.8	0.0	0.0	52.4	40.2	74	54	-21.6	-13.8	V	7.311	3.0	50.2	35.1	35.0	8.4	-34.1	0.0	0.0	59.5	44.4	74	54	-14.5	-9.6	V	4.874	3.0	44.7	32.5	33.4	6.9	-34.8	0.0	0.0	50.1	38.0	74	54	-23.9	-16.0	H	7.311	3.0	43.9	29.2	35.0	8.4	-34.1	0.0	0.0	53.1	38.5	74	54	-20.9	-15.5	H	4.924	3.0	38.6	25.4	33.4	7.0	-34.8	0.0	0.0	44.1	31.0	74	54	-29.9	-23.0	V	7.386	3.0	42.2	28.7	35.0	8.4	-34.1	0.0	0.0	51.6	38.1	74	54	-22.4	-15.9	V	4.924	3.0	38.5	25.2	33.4	7.0	-34.8	0.0	0.0	44.0	30.8	74	54	-30.0	-23.2	H	7.386	3.0	37.7	25.2	35.0	8.4	-34.1	0.0	0.0	47.1	34.6	74	54	-26.9	-19.4	H
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7.311	3.0	43.9	29.2	35.0	8.4	-34.1	0.0	0.0	53.1	38.5	74	54	-20.9	-15.5	H																																																																																																																																																																																																																																																				
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7.386	3.0	42.2	28.7	35.0	8.4	-34.1	0.0	0.0	51.6	38.1	74	54	-22.4	-15.9	V																																																																																																																																																																																																																																																				
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Rev. 4.127																																																																																																																																																																																																																																																																			
f Measurement Frequency Dist Distance to Antenna Read Analyzer Reading AF Antenna Factor CL Cable Loss				Amp Preamp Gain D Corr Distance Correct to 3 meters Avg Average Field Strength @ 3 m Peak Calculated Peak Field Strength HPF High Pass Filter				Avg Lim Average Field Strength Limit Pk Lim Peak Field Strength Limit Avg Mar Margin vs. Average Limit Pk Mar Margin vs. Peak Limit																																																																																																																																																																																																																																																											

8.2.3. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT20 MODE IN THE 2.4 GHz BAND

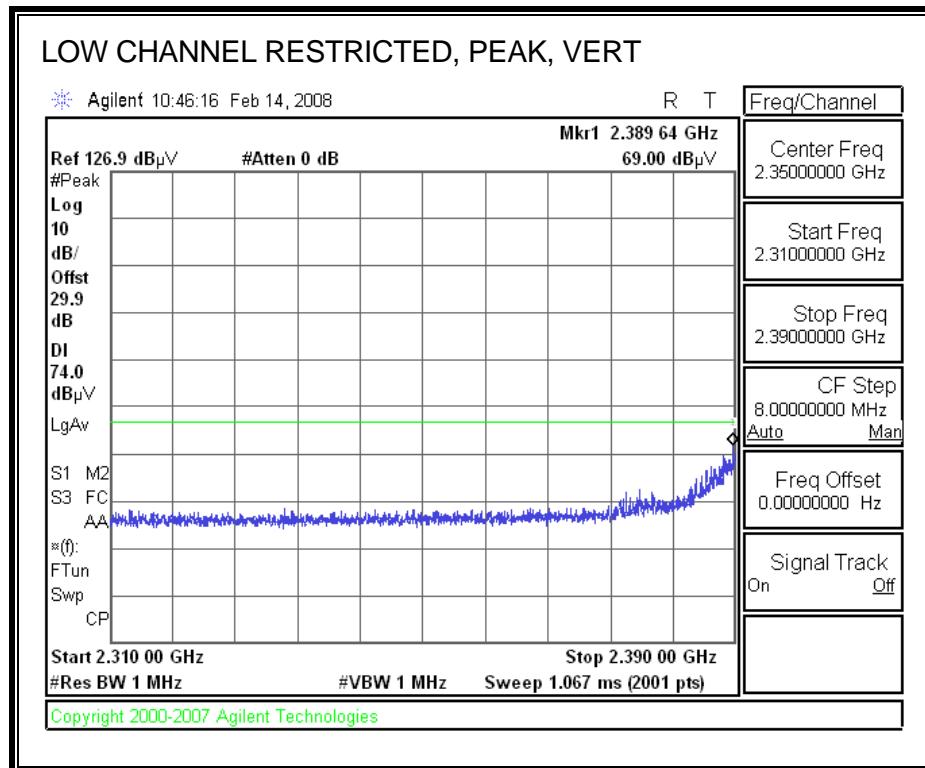
FEM #1

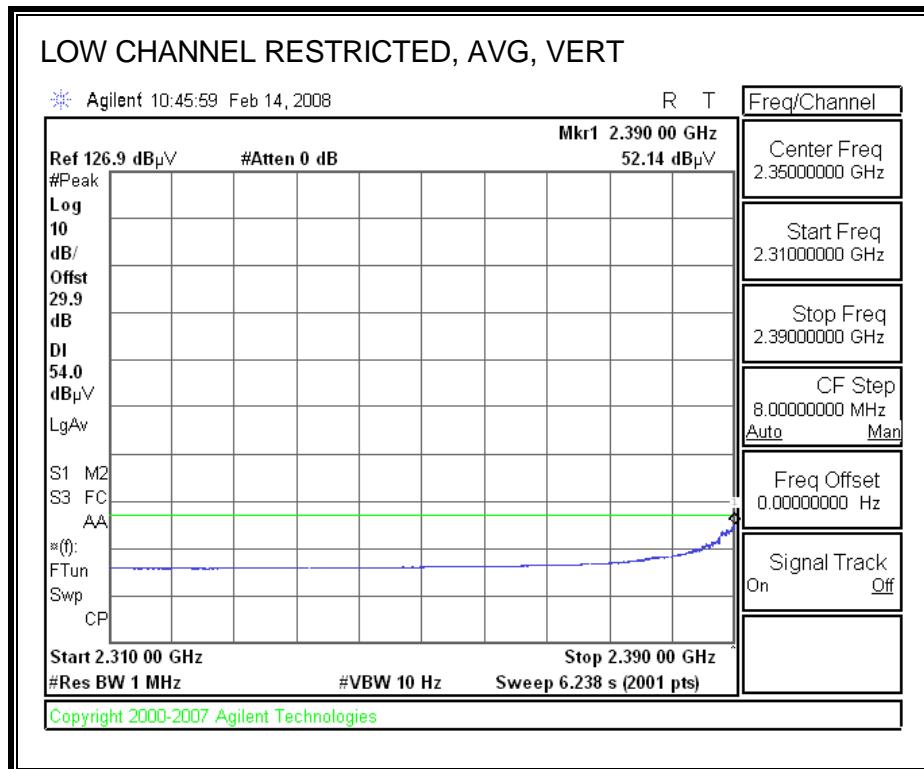
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



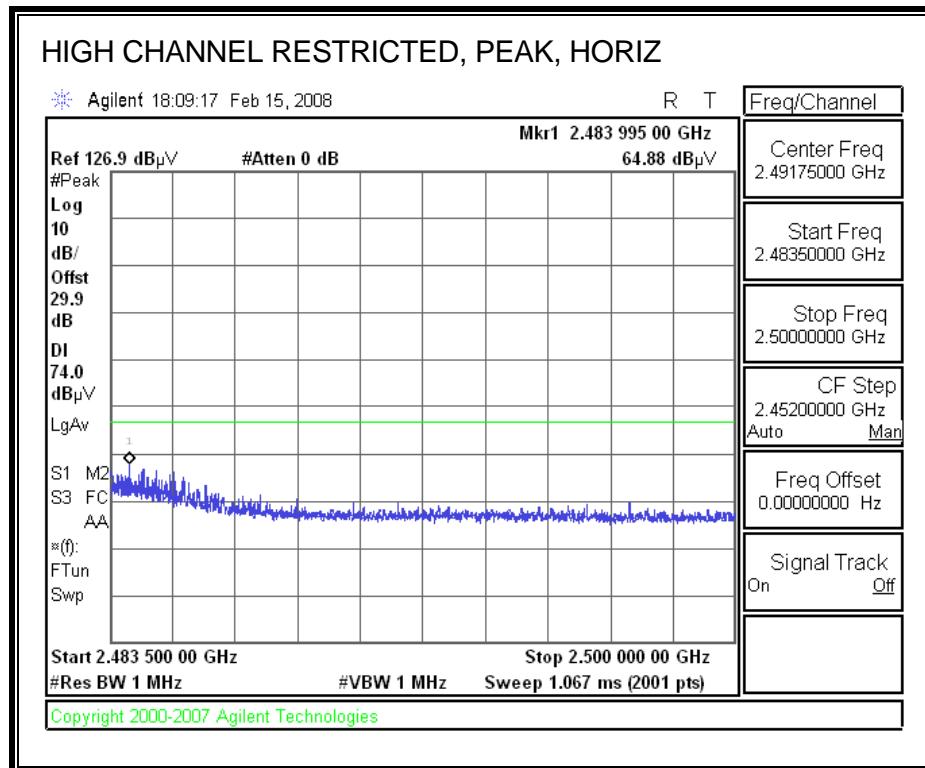


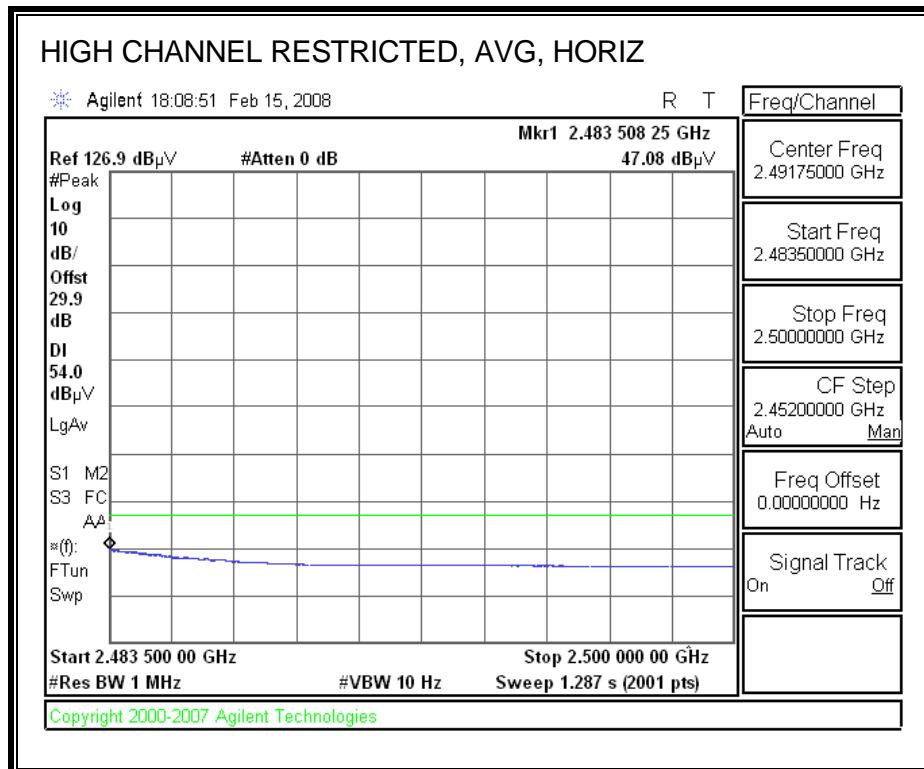
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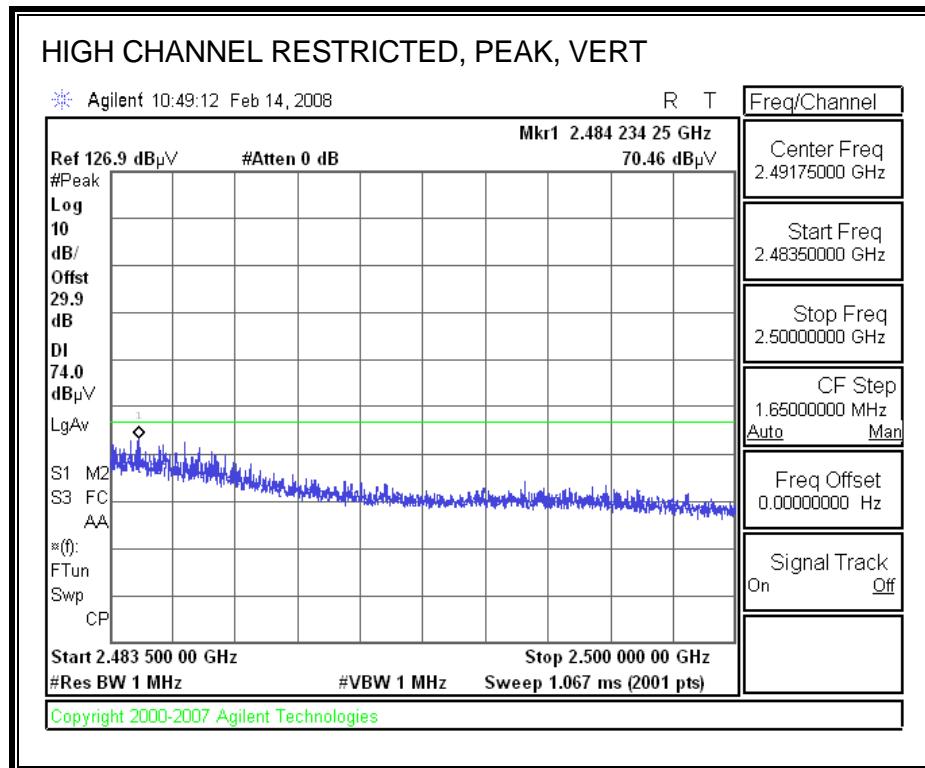


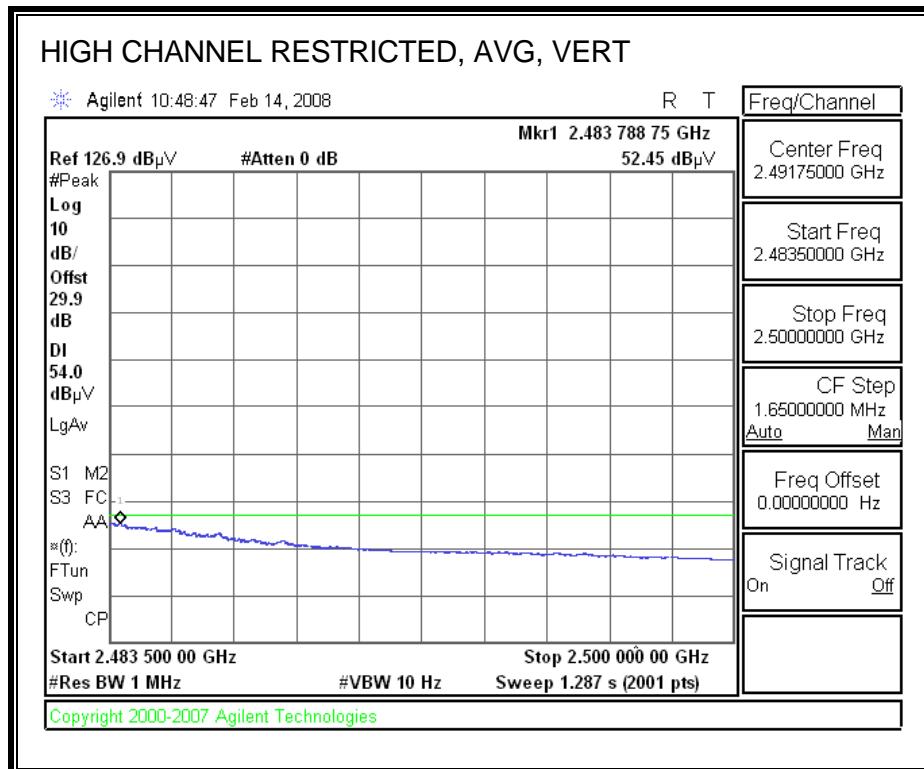
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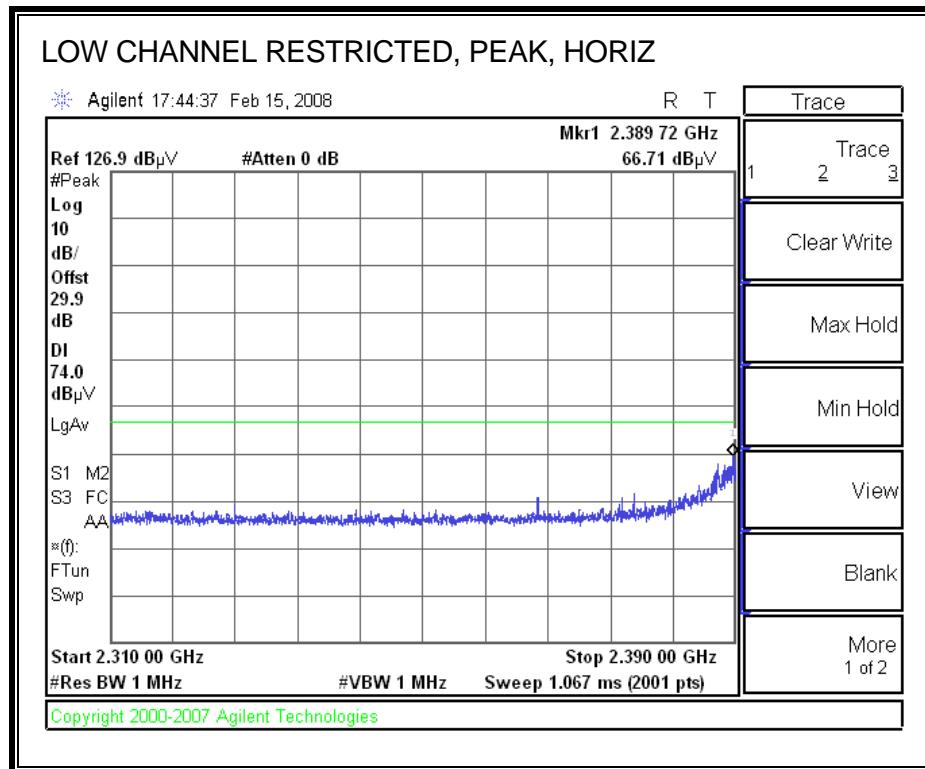
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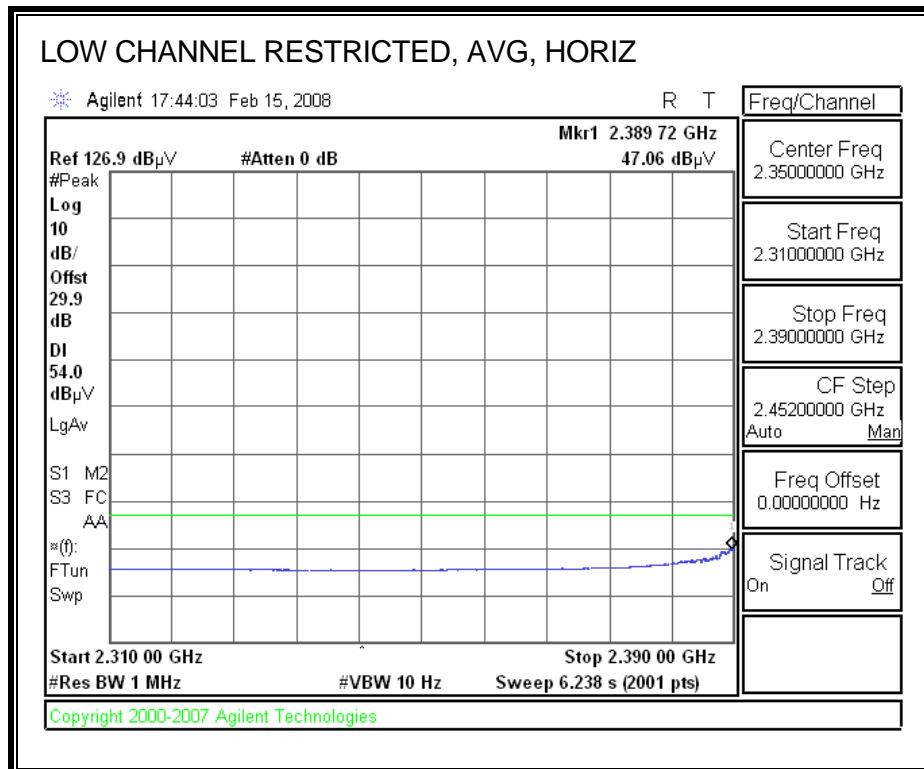




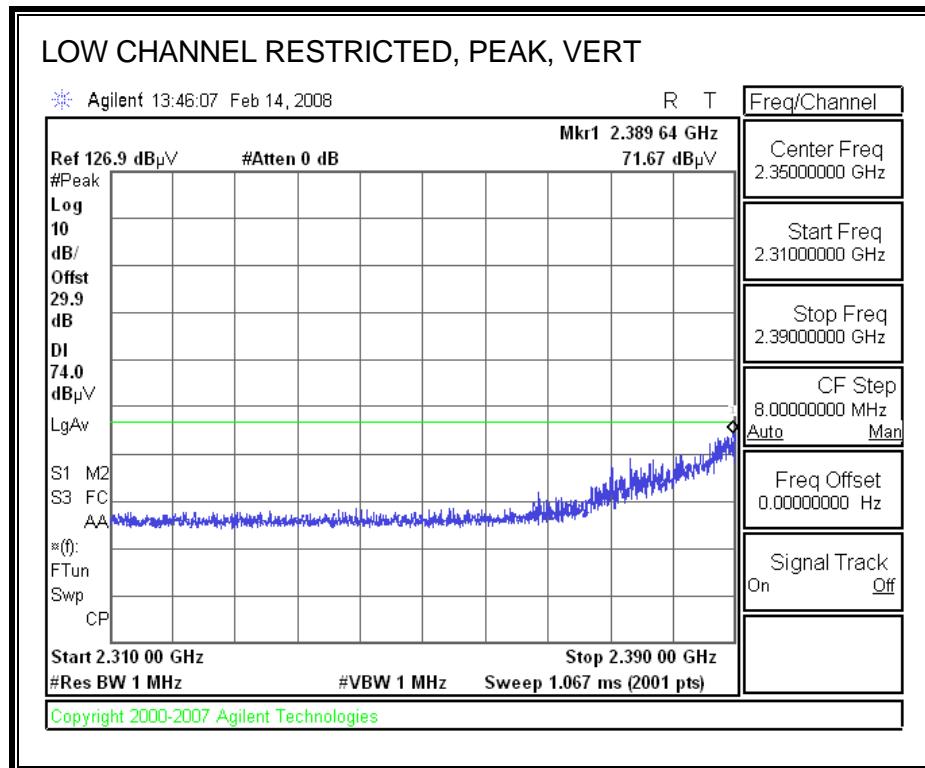
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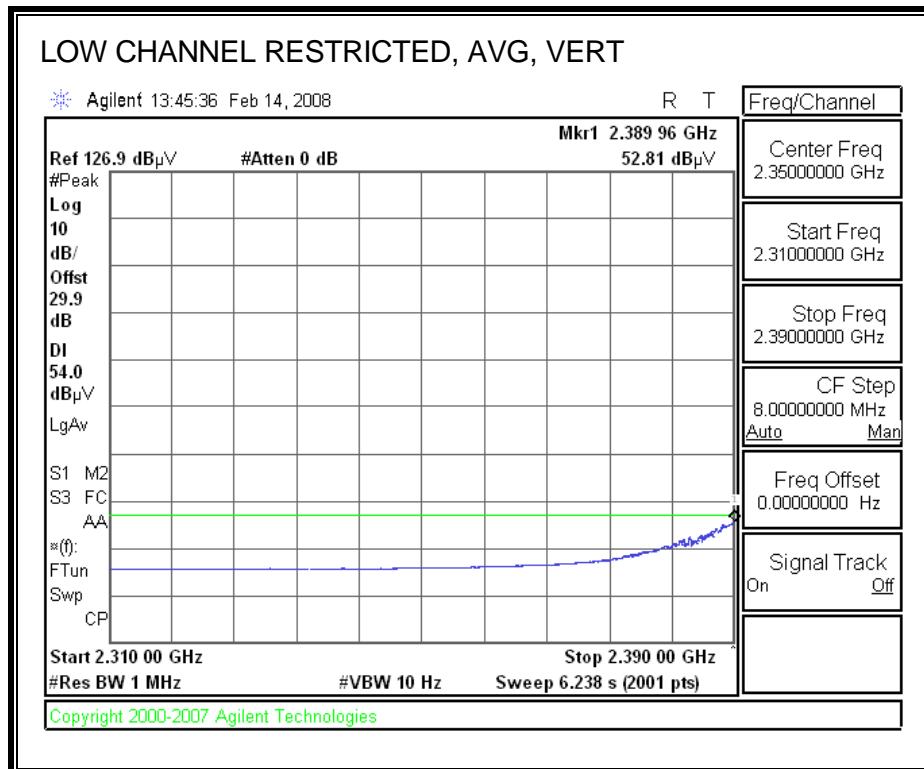
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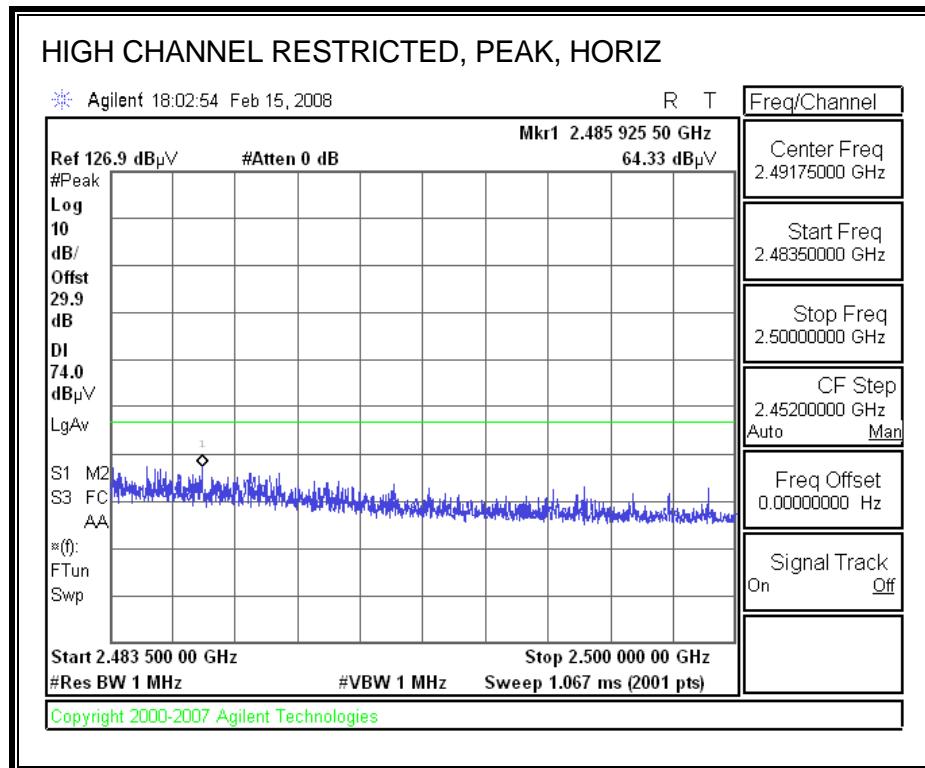


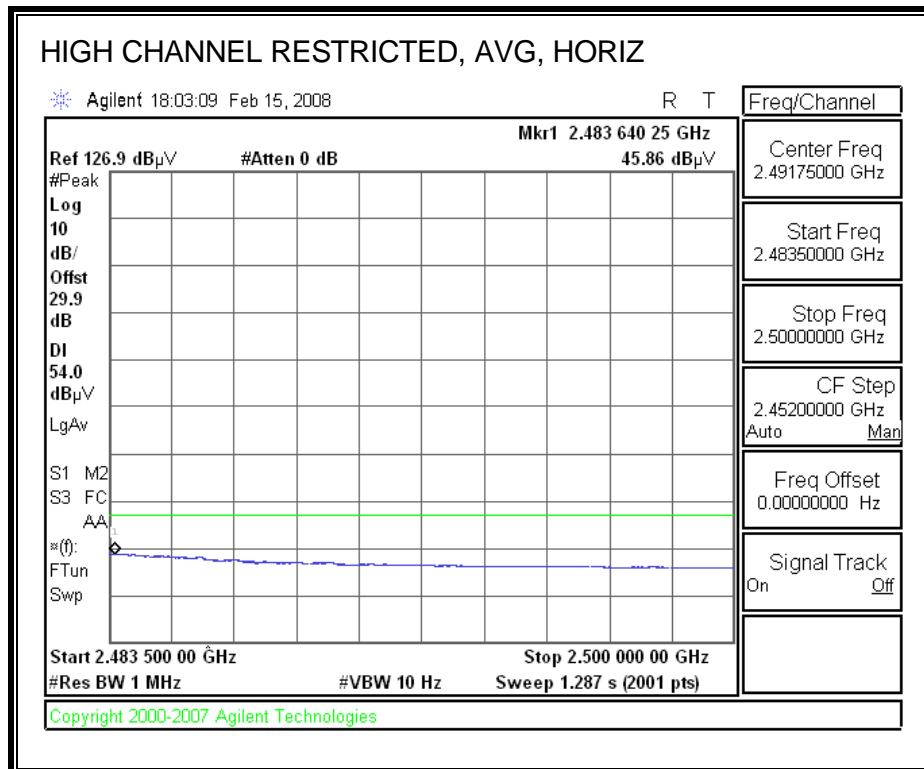
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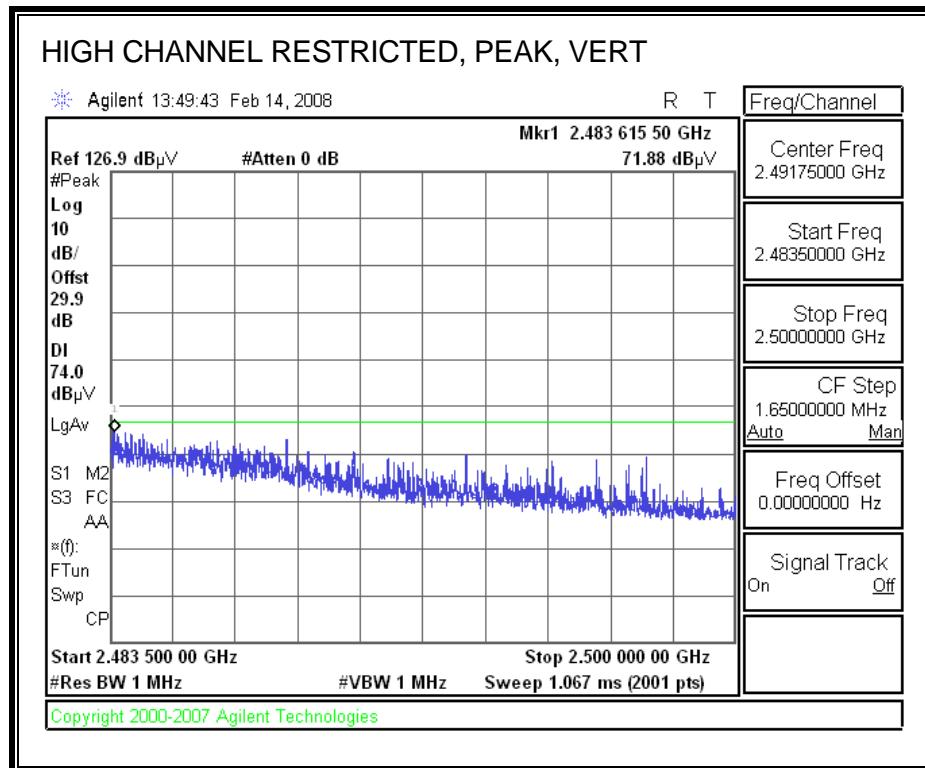


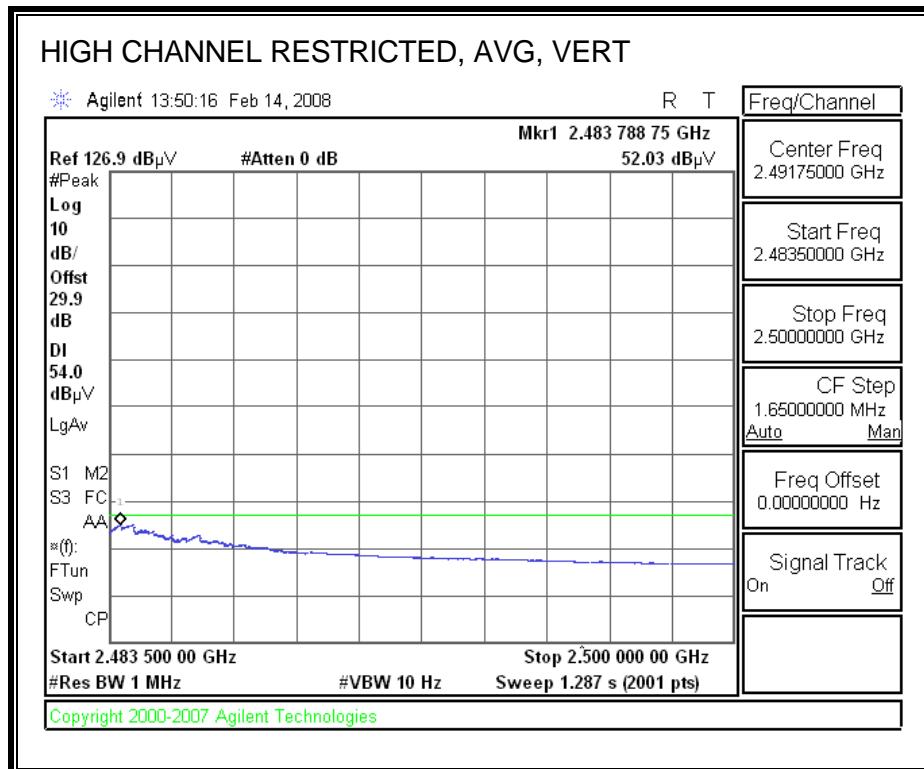
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																					
<p>Company: Atheros Project #: 08U11572 Date: 2/25/2008 Test Engineer: Chin Pang Configuration: HT20 mode Tx Mode: XB92-040-S0660</p> <p><u>Test Equipment:</u></p> <table border="1"> <thead> <tr> <th>Horn 1-18GHz</th> <th>Pre-amplifier 1-26GHz</th> <th>Pre-amplifier 26-40GHz</th> <th colspan="3">Horn > 18GHz</th> <th>Limit</th> </tr> </thead> <tbody> <tr> <td>T73; S/N: 6717 @3m</td> <td>T34 HP 8449B</td> <td></td> <td colspan="3"></td> <td>FCC 15.209</td> </tr> </tbody> </table> <p>Hi Frequency Cables</p> <table border="1"> <thead> <tr> <th>2 foot cable</th> <th>3 foot cable</th> <th>12 foot cable</th> <th>HPF</th> <th>Reject Filter</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>A-5m Chamber</td> <td></td> <td>R_001</td> </tr> </tbody> </table> <p><u>Peak Measurements</u> RBW=VBW=1MHz</p> <p><u>Average Measurements</u> RBW=1MHz ; VBW=10Hz</p>														Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz			Limit	T73; S/N: 6717 @3m	T34 HP 8449B					FCC 15.209	2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter			A-5m Chamber		R_001
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f GHz	Dist (m)	Read Ph dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)																						
Low Ch (2412MHz)																																					
3.216	3.0	46.5	39.8	30.5	5.5	-35.7	0.0	0.0	46.8	40.1	74	54	-27.2	-13.9	V																						
4.824	3.0	45.1	32.8	33.3	6.9	-34.8	0.0	0.0	50.5	38.2	74	54	-23.5	-15.8	V																						
7.326	3.0	44.6	31.0	35.0	8.4	-34.1	0.0	0.0	53.9	40.3	74	54	-20.1	-13.7	V																						
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Mid Ch (2437MHz)																																					
3.249	3.0	38.2	35.4	30.6	5.5	-35.7	0.0	0.0	38.7	35.9	74	54	-35.3	-16.1	V																						
4.874	3.0	46.3	34.0	33.4	6.9	-34.8	0.0	0.0	51.8	39.5	74	54	-22.2	-14.5	V																						
7.311	3.0	48.2	34.9	35.0	8.4	-34.1	0.0	0.0	57.5	44.2	74	54	-16.5	-9.8	V																						
3.249	3.0	46.8	41.2	30.6	5.5	-35.7	0.0	0.0	47.3	41.7	74	54	-26.7	-12.3	H																						
4.874	3.0	45.5	33.3	33.4	6.9	-34.8	0.0	0.0	51.0	38.8	74	54	-23.0	-15.2	H																						
7.311	3.0	44.9	32.2	35.0	8.4	-34.1	0.0	0.0	54.2	41.4	74	54	-19.8	-12.6	H																						
High Ch (2462MHz)																																					
3.283	3.0	47.8	43.8	30.7	5.6	-35.6	0.0	0.0	48.4	44.4	74	54	-25.6	-9.6	V																						
4.924	3.0	50.2	37.0	33.4	7.0	-34.8	0.0	0.0	55.8	42.6	74	54	-18.2	-11.4	V																						
7.386	3.0	49.2	33.9	35.0	8.4	-34.1	0.0	0.0	58.6	43.3	74	54	-15.4	-10.7	V																						
3.283	3.0	45.5	40.5	30.7	5.6	-35.6	0.0	0.0	46.1	41.1	74	54	-27.9	-12.9	H																						
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7.386	3.0	48.4	35.0	35.0	8.4	-34.1	0.0	0.0	57.8	44.4	74	54	-16.2	-9.6	H																						

Rev. 4.12.7
Note: No other emissions were detected above the system noise floor.

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

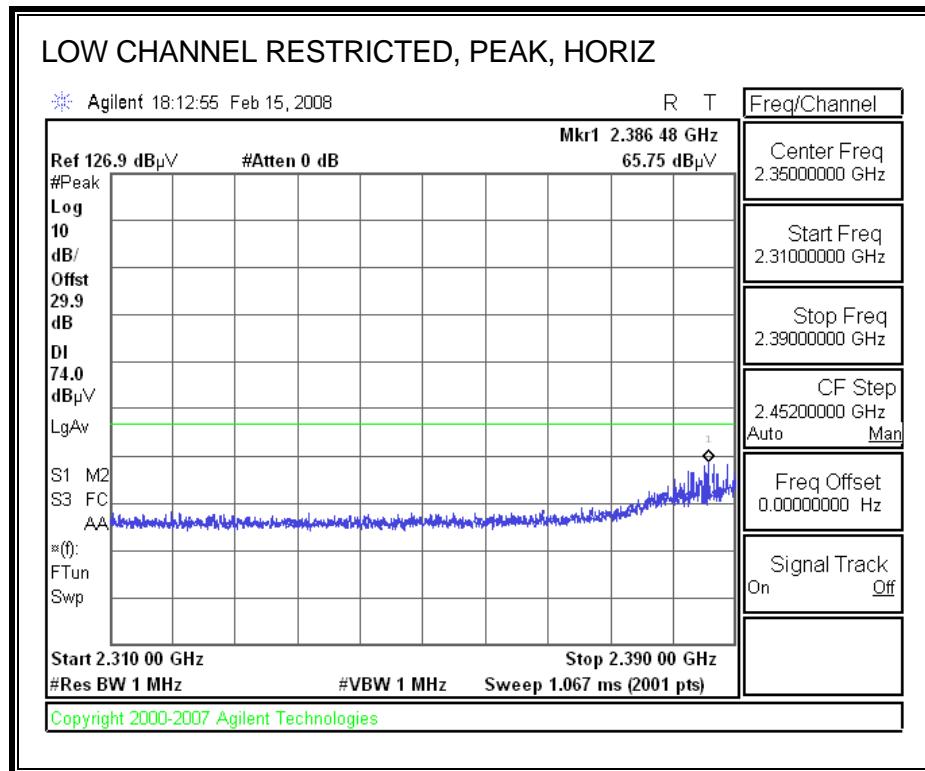
HARMONICS AND SPURIOUS EMISSIONS

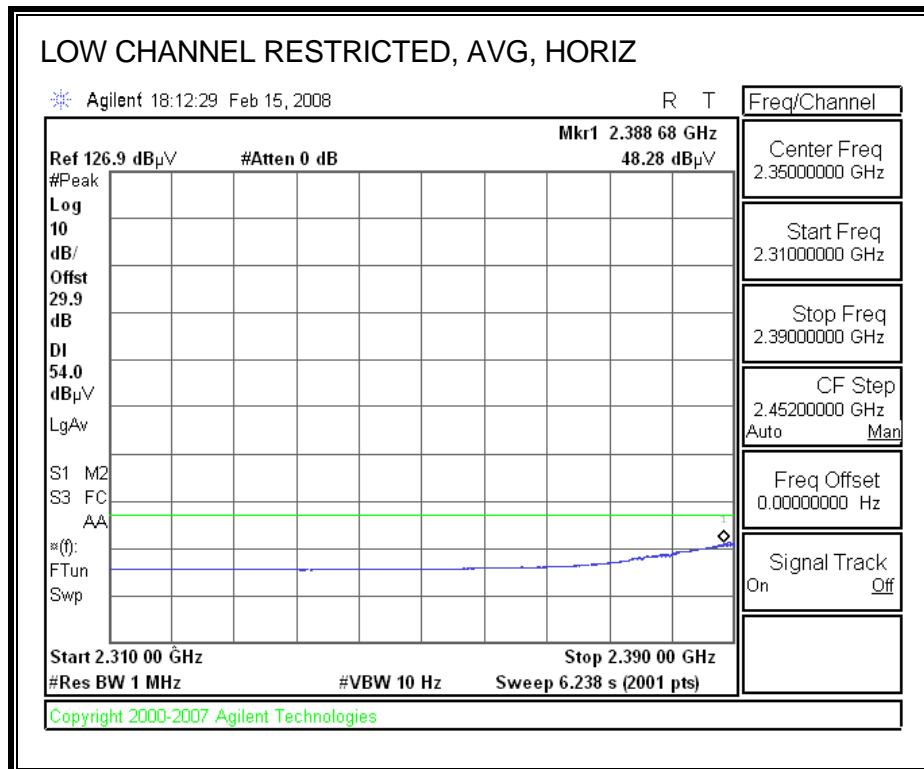
High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																																																																																																																																																																																																																																																																																																																												
<p>Company: Atheros Project #: 08U11571 Date: 2/14/2008 Test Engineer: Devin Chang Configuration: HT 20 Tx Mode: XB92-040-S0580</p> <p><u>Test Equipment:</u></p> <table border="1"> <tr> <td>Horn 1-18GHz</td> <td>Pre-amplifier 1-26GHz</td> <td>Pre-amplifier 26-40GHz</td> <td colspan="3">Horn > 18GHz</td> <td>Limit</td> </tr> <tr> <td>T73; S/N: 6717 @3m</td> <td>T34 HP 8449B</td> <td></td> <td colspan="3"></td> <td>FCC 15.205</td> </tr> <tr> <td colspan="7">Hi Frequency Cables</td> </tr> <tr> <td>2 foot cable</td> <td>3 foot cable</td> <td>12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="2">Peak Measurements RBW=VBW=1MHz</td> </tr> <tr> <td></td> <td></td> <td>A-5m Chamber</td> <td></td> <td>R_001</td> <td colspan="2">Average Measurements RBW=1MHz ; VBW=10Hz</td> </tr> </table> <p><u>Measurement Data:</u></p> <table border="1"> <thead> <tr> <th>f GHz</th> <th>Dist (m)</th> <th>Read Pk dBuV</th> <th>Read Avg. dBuV</th> <th>AF dB/m</th> <th>CL dB</th> <th>Amp dB</th> <th>D Corr dB</th> <th>Fltr dB</th> <th>Peak dBuV/m</th> <th>Avg dBuV/m</th> <th>Pk Lim dBuV/m</th> <th>Avg Lim dBuV/m</th> <th>Pk Mar dB</th> <th>Avg Mar dB</th> <th>Notes (V/H)</th> </tr> </thead> <tbody> <tr> <td colspan="15">Low band (2412MHz)</td> </tr> <tr> <td>4.824</td> <td>3.0</td> <td>43.5</td> <td>29.8</td> <td>33.3</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>48.9</td> <td>35.1</td> <td>74</td> <td>54</td> <td>-25.1</td> <td>-18.9</td> <td>V</td> </tr> <tr> <td>7.326</td> <td>3.0</td> <td>41.4</td> <td>26.3</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>50.7</td> <td>35.7</td> <td>74</td> <td>54</td> <td>-23.3</td> <td>-18.3</td> <td>V</td> </tr> <tr> <td>4.824</td> <td>3.0</td> <td>42.2</td> <td>29.8</td> <td>33.3</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>47.6</td> <td>35.2</td> <td>74</td> <td>54</td> <td>-26.4</td> <td>-18.8</td> <td>H</td> </tr> <tr> <td>7.326</td> <td>3.0</td> <td>38.4</td> <td>25.5</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>47.7</td> <td>34.8</td> <td>74</td> <td>54</td> <td>-26.3</td> <td>-19.2</td> <td>H</td> </tr> <tr> <td colspan="15">Mid band (2437MHz)</td> </tr> <tr> <td>4.874</td> <td>3.0</td> <td>48.3</td> <td>35.0</td> <td>33.4</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>53.8</td> <td>40.5</td> <td>74</td> <td>54</td> <td>-20.2</td> <td>-13.5</td> <td>V</td> </tr> <tr> <td>7.311</td> <td>3.0</td> <td>47.0</td> <td>31.4</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>56.3</td> <td>40.7</td> <td>74</td> <td>54</td> <td>-17.7</td> <td>-13.3</td> <td>V</td> </tr> <tr> <td>4.874</td> <td>3.0</td> <td>44.8</td> <td>31.6</td> <td>33.4</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>50.3</td> <td>37.0</td> <td>74</td> <td>54</td> <td>-23.7</td> <td>-17.0</td> <td>H</td> </tr> <tr> <td>7.311</td> <td>3.0</td> <td>42.8</td> <td>29.5</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>52.1</td> <td>38.8</td> <td>74</td> <td>54</td> <td>-21.9</td> <td>-15.2</td> <td>H</td> </tr> <tr> <td colspan="15">High band (2462MHz)</td> </tr> <tr> <td>4.924</td> <td>3.0</td> <td>44.1</td> <td>30.1</td> <td>33.4</td> <td>7.0</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>49.7</td> <td>35.7</td> <td>74</td> <td>54</td> <td>-24.3</td> <td>-18.3</td> <td>V</td> </tr> <tr> <td>7.386</td> <td>3.0</td> <td>42.1</td> <td>26.5</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>51.5</td> <td>35.9</td> <td>74</td> <td>54</td> <td>-22.5</td> <td>-18.1</td> <td>V</td> </tr> <tr> <td>4.924</td> <td>3.0</td> <td>42.7</td> <td>30.2</td> <td>33.4</td> <td>7.0</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>48.3</td> <td>35.8</td> <td>74</td> <td>54</td> <td>-25.7</td> <td>-18.2</td> <td>H</td> </tr> <tr> <td>7.386</td> <td>3.0</td> <td>38.8</td> <td>26.0</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> <td>48.2</td> <td>35.4</td> <td>74</td> <td>54</td> <td>-25.8</td> <td>-18.6</td> <td>H</td> </tr> </tbody> </table> <p>Rev. 4.12.7</p> <table border="1"> <tr> <td>f</td> <td>Measurement Frequency</td> <td>Amp</td> <td>Preamp Gain</td> <td>Avg Lim</td> <td>Average Field Strength Limit</td> </tr> <tr> <td>Dist</td> <td>Distance to Antenna</td> <td>D Corr</td> <td>Distance Correct to 3 meters</td> <td>Pk Lim</td> <td>Peak Field Strength Limit</td> </tr> <tr> <td>Read</td> <td>Analyzer Reading</td> <td>Avg</td> <td>Average Field Strength @ 3 m</td> <td>Avg Mar</td> <td>Margin vs. Average Limit</td> </tr> <tr> <td>AF</td> <td>Antenna Factor</td> <td>Peak</td> <td>Calculated Peak Field Strength</td> <td>Pk Mar</td> <td>Margin vs. Peak Limit</td> </tr> <tr> <td>CL</td> <td>Cable Loss</td> <td>HPF</td> <td>High Pass Filter</td> <td></td> <td></td> </tr> </table>															Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz			Limit	T73; S/N: 6717 @3m	T34 HP 8449B					FCC 15.205	Hi Frequency Cables							2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz				A-5m Chamber		R_001	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 band (2412MHz)															4.824	3.0	43.5	29.8	33.3	6.9	-34.8	0.0	0.0	48.9	35.1	74	54	-25.1	-18.9	V	7.326	3.0	41.4	26.3	35.0	8.4	-34.1	0.0	0.0	50.7	35.7	74	54	-23.3	-18.3	V	4.824	3.0	42.2	29.8	33.3	6.9	-34.8	0.0	0.0	47.6	35.2	74	54	-26.4	-18.8	H	7.326	3.0	38.4	25.5	35.0	8.4	-34.1	0.0	0.0	47.7	34.8	74	54	-26.3	-19.2	H	Mid band (2437MHz)															4.874	3.0	48.3	35.0	33.4	6.9	-34.8	0.0	0.0	53.8	40.5	74	54	-20.2	-13.5	V	7.311	3.0	47.0	31.4	35.0	8.4	-34.1	0.0	0.0	56.3	40.7	74	54	-17.7	-13.3	V	4.874	3.0	44.8	31.6	33.4	6.9	-34.8	0.0	0.0	50.3	37.0	74	54	-23.7	-17.0	H	7.311	3.0	42.8	29.5	35.0	8.4	-34.1	0.0	0.0	52.1	38.8	74	54	-21.9	-15.2	H	High band (2462MHz)															4.924	3.0	44.1	30.1	33.4	7.0	-34.8	0.0	0.0	49.7	35.7	74	54	-24.3	-18.3	V	7.386	3.0	42.1	26.5	35.0	8.4	-34.1	0.0	0.0	51.5	35.9	74	54	-22.5	-18.1	V	4.924	3.0	42.7	30.2	33.4	7.0	-34.8	0.0	0.0	48.3	35.8	74	54	-25.7	-18.2	H	7.386	3.0	38.8	26.0	35.0	8.4	-34.1	0.0	0.0	48.2	35.4	74	54	-25.8	-18.6	H	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		
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7.386	3.0	42.1	26.5	35.0	8.4	-34.1	0.0	0.0	51.5	35.9	74	54	-22.5	-18.1	V																																																																																																																																																																																																																																																																																																																													
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8.2.4. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT40 MODE IN THE 2.4 GHz BAND

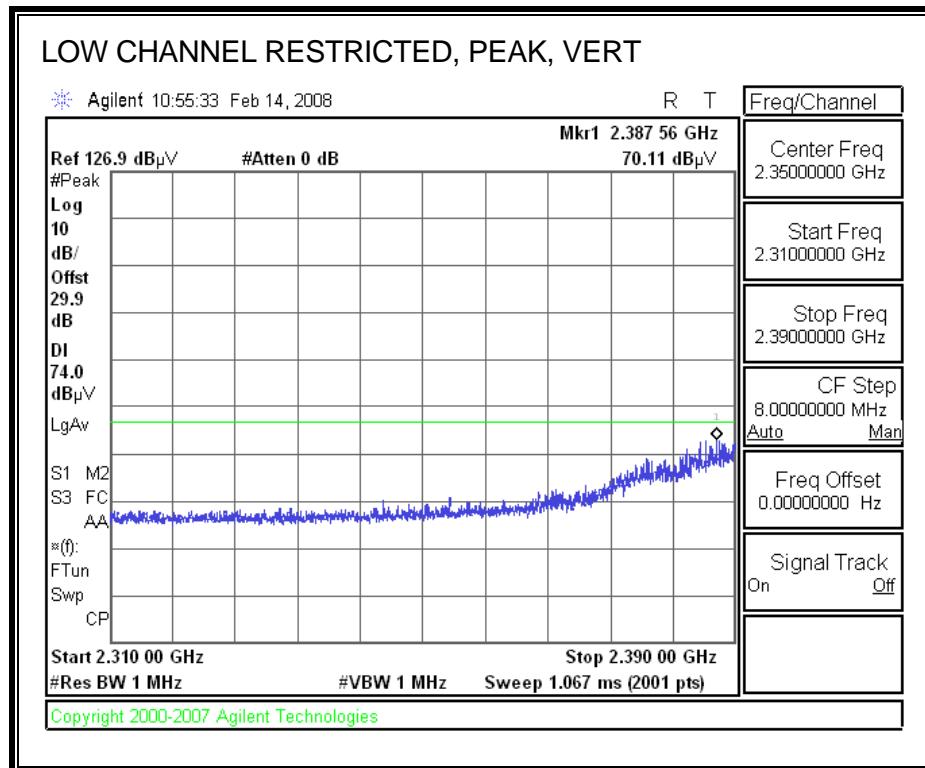
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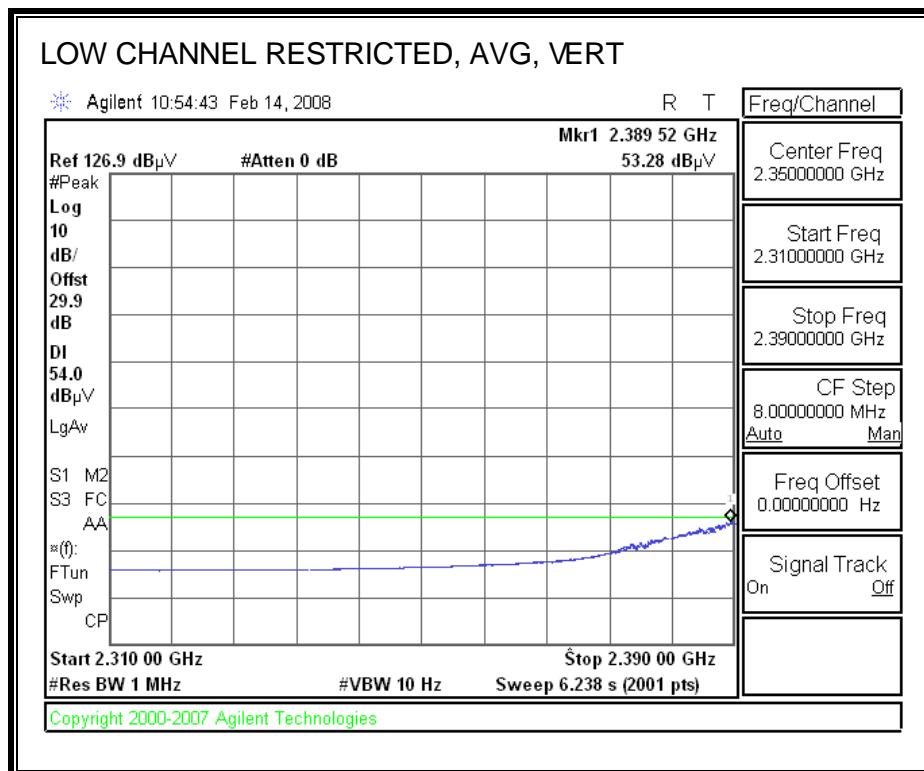
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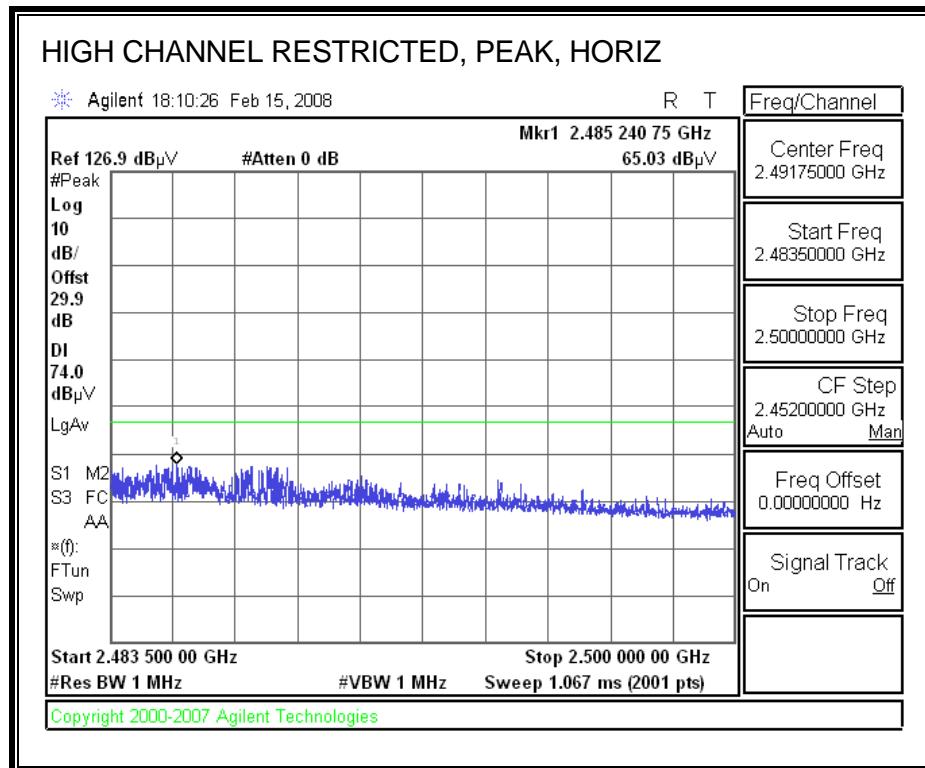


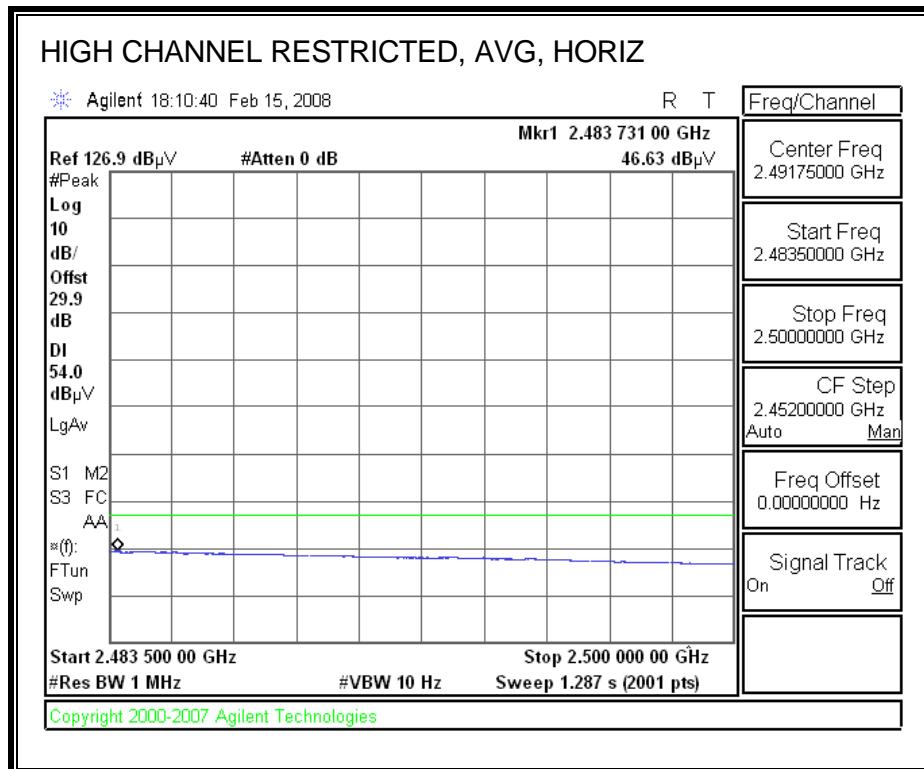
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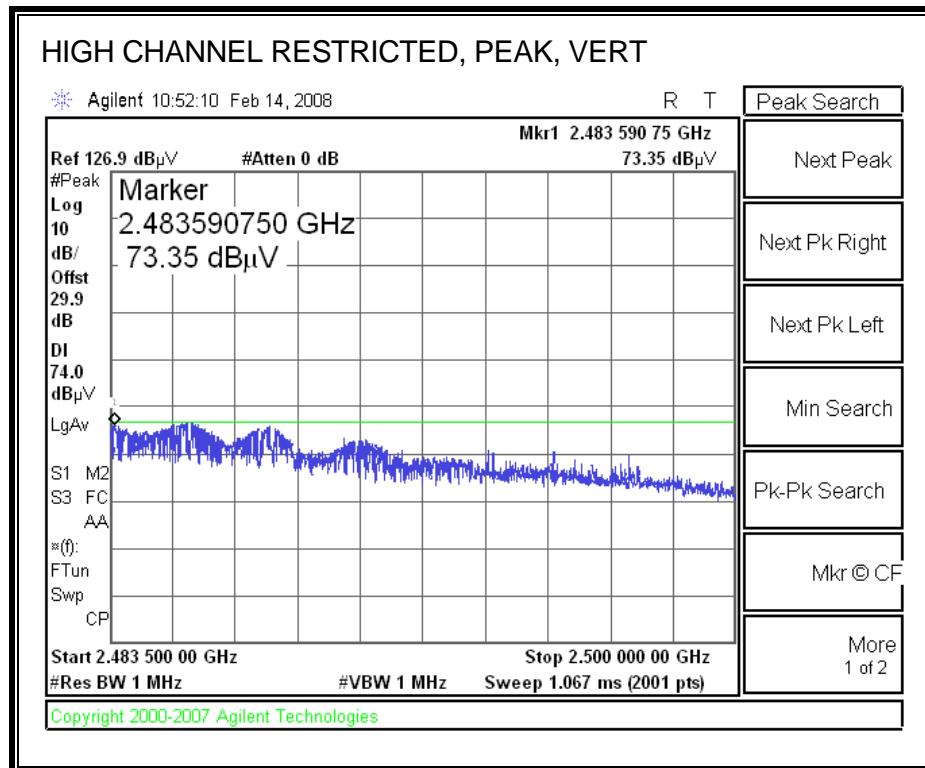


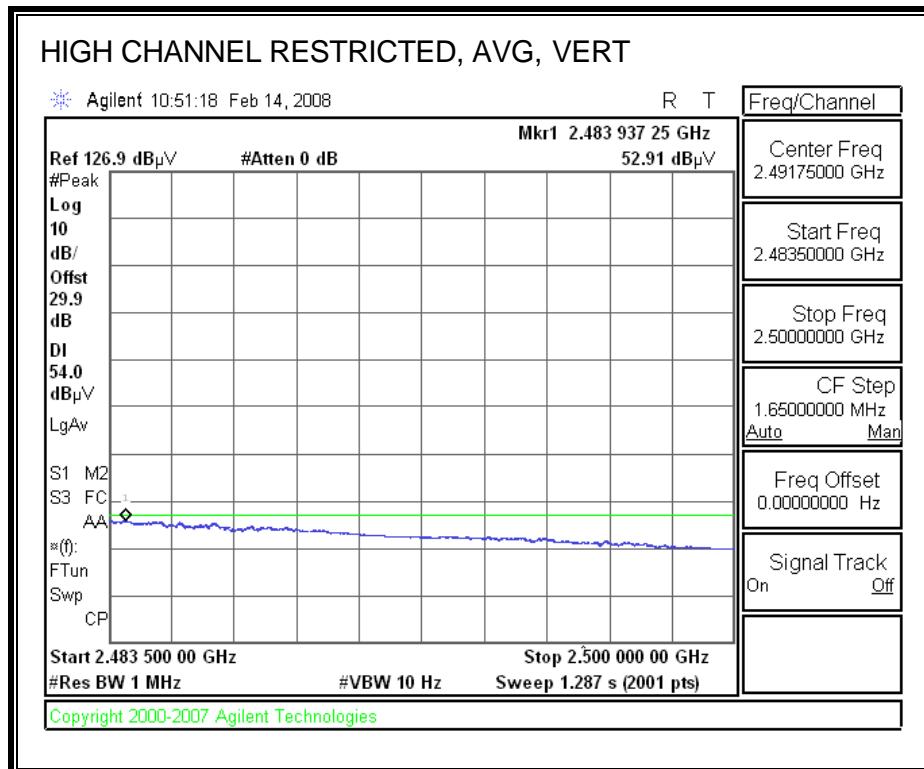
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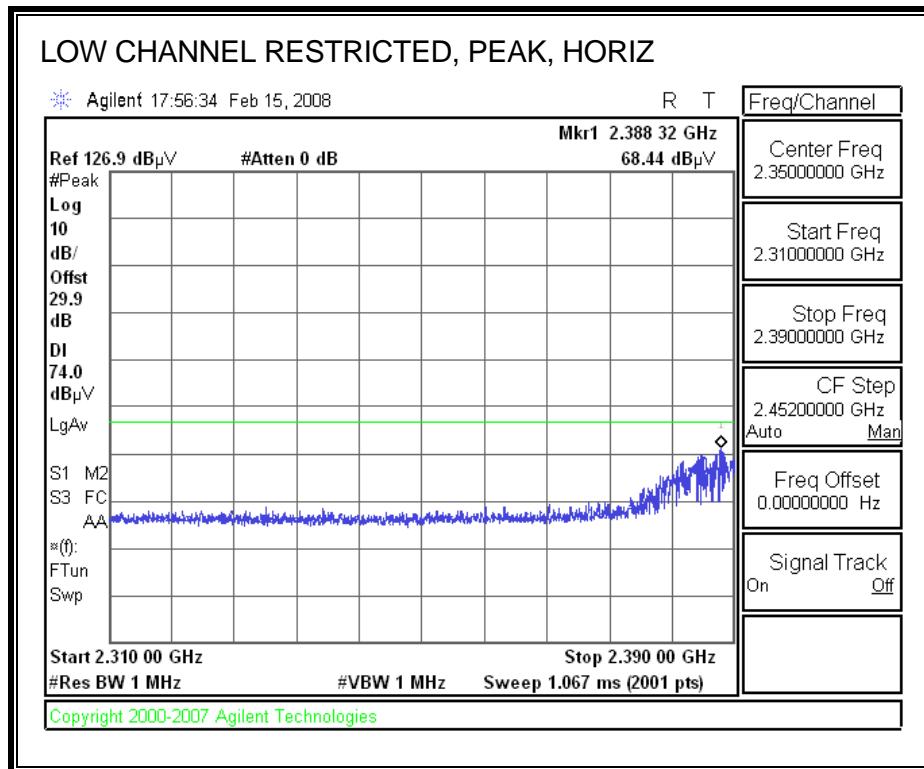
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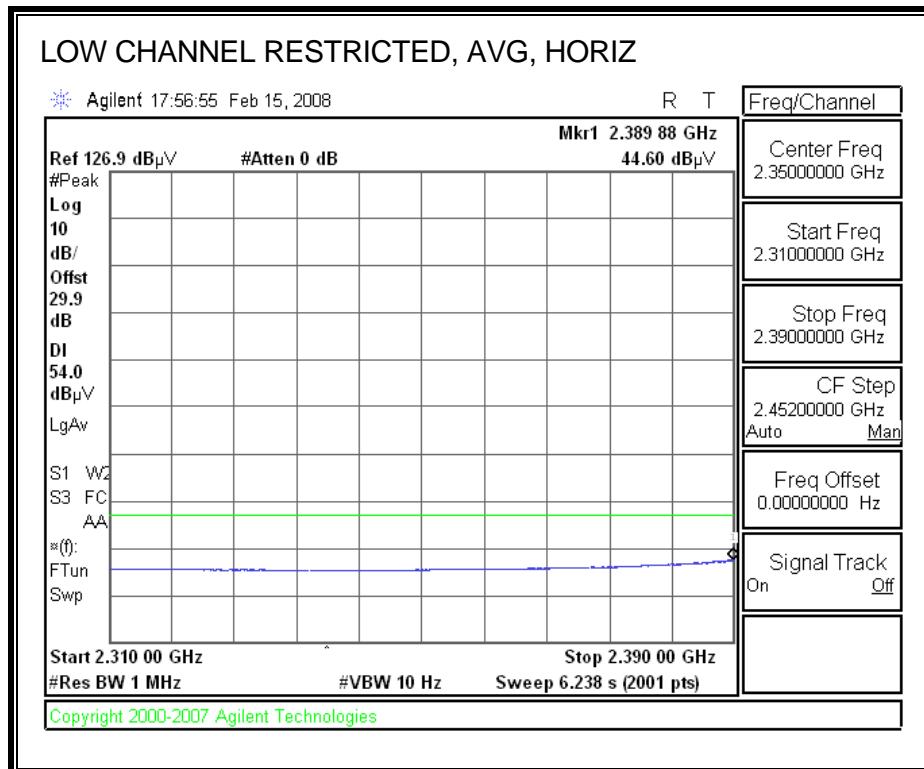




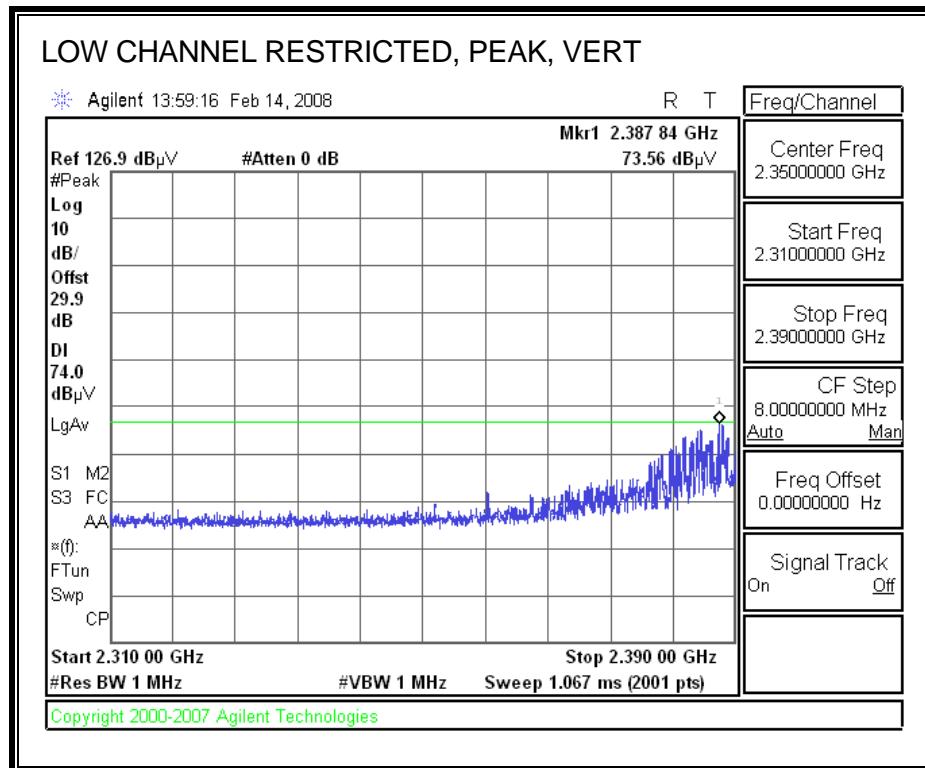
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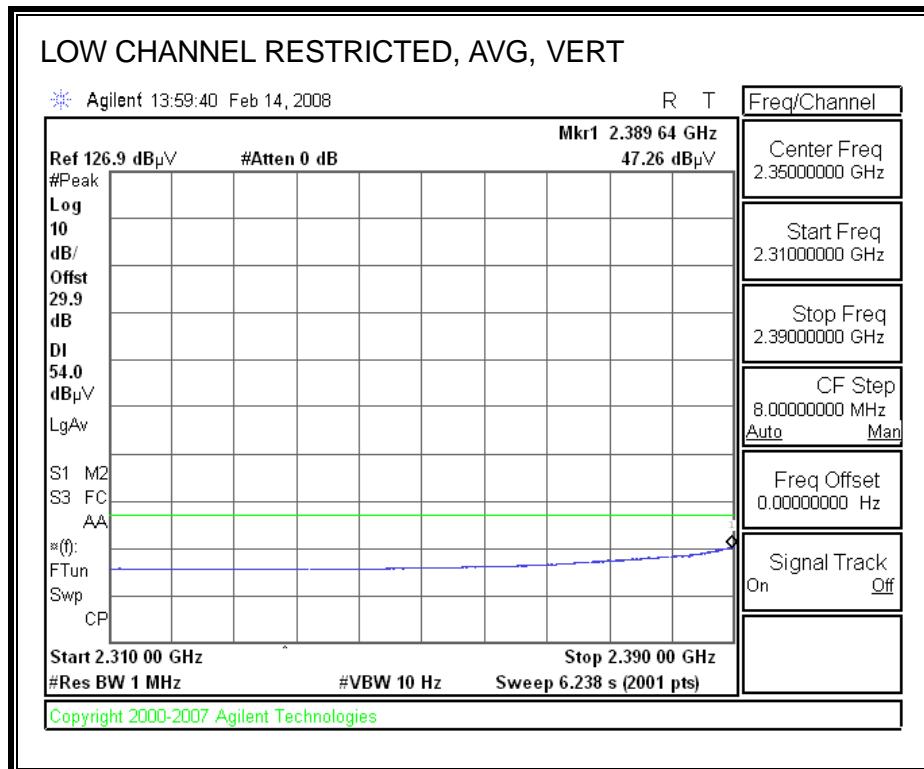
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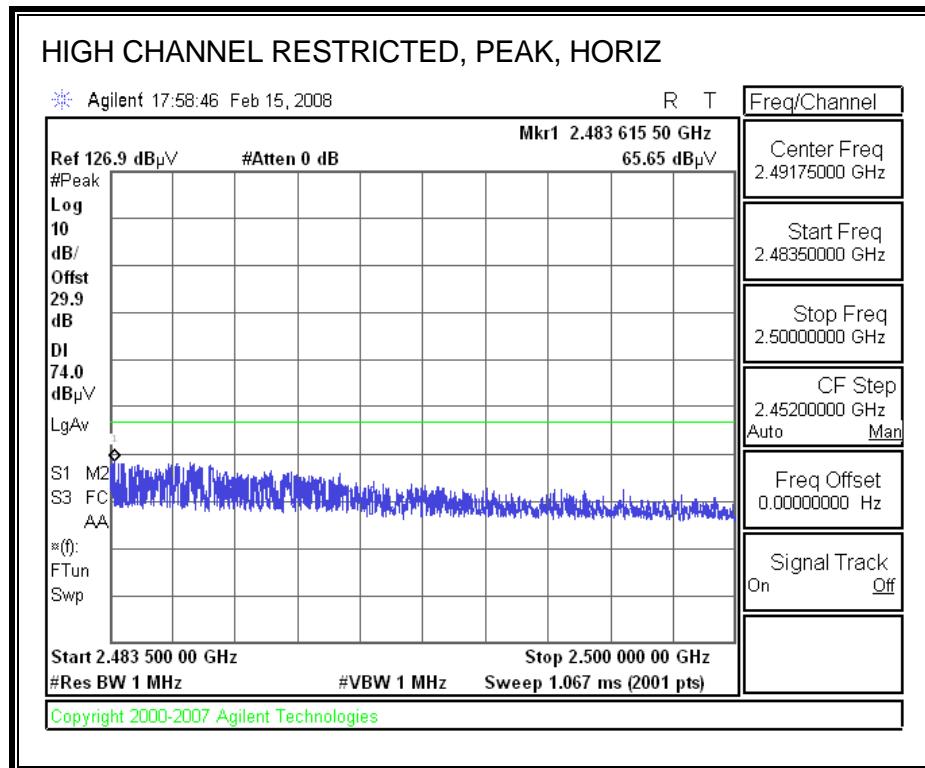


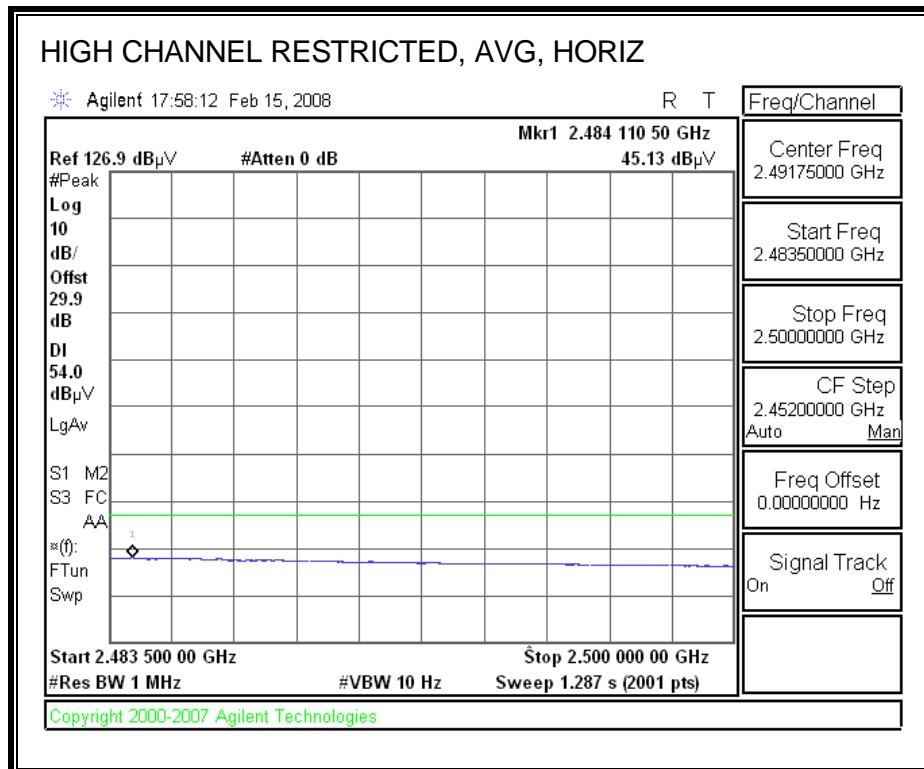
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



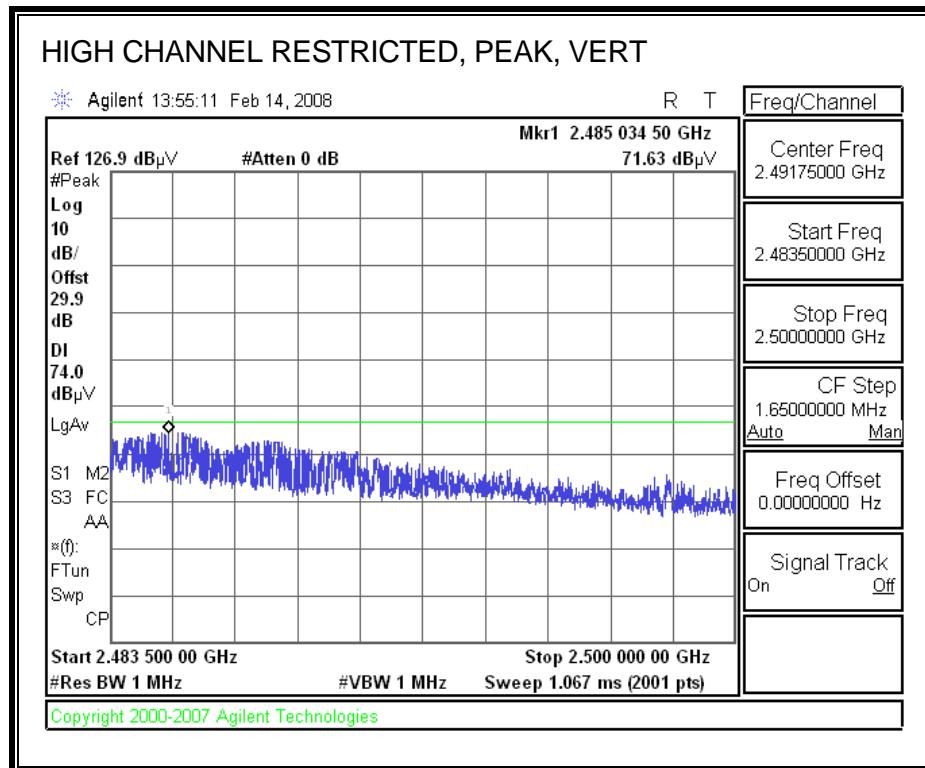


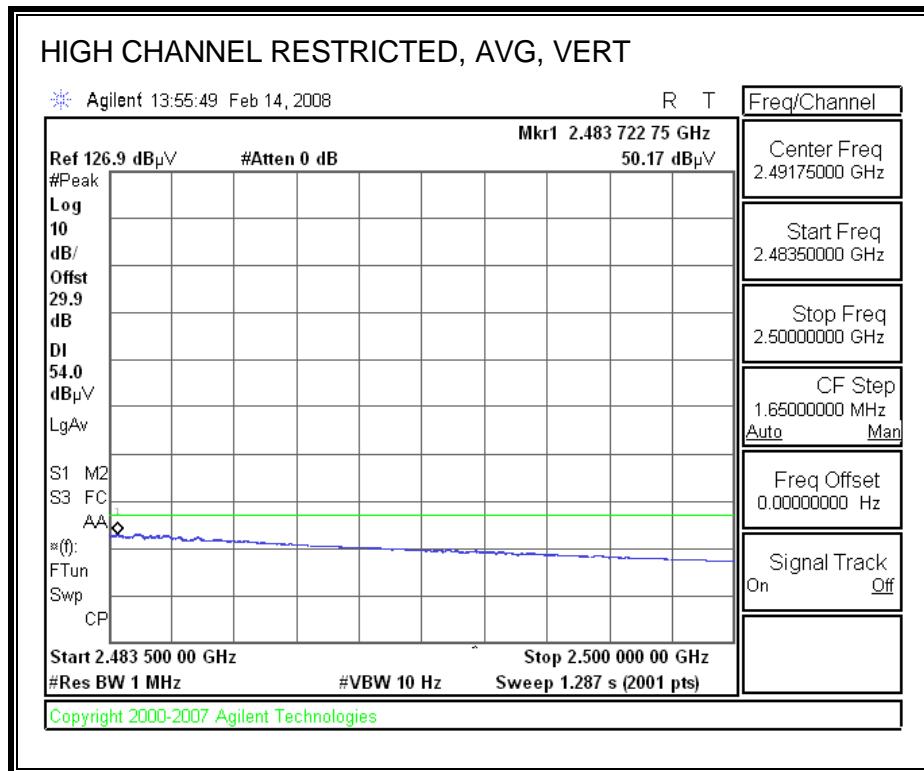
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
<p>Company: Atheros Project #: 08U11571 Date: 2/25/2008 Test Engineer: Chin Pang Configuration: HT40 mode Tx Mode: XB92-040-S0660</p> <p><u>Test Equipment:</u></p> <table border="1"> <tr> <th>Horn 1-18GHz</th> <th>Pre-amplifier 1-26GHz</th> <th>Pre-amplifier 26-40GHz</th> <th colspan="4">Horn > 18GHz</th> <th>Limit</th> </tr> <tr> <td>T73; S/N: 6717 @3m</td> <td>T34 HP 8449B</td> <td></td> <td colspan="4"></td> <td>FCC 15.209</td> </tr> <tr> <td colspan="15">Hi Frequency Cables</td> </tr> <tr> <td colspan="2">2 foot cable</td> <td colspan="2">3 foot cable</td> <td colspan="2">12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="6"> <u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz </td> </tr> <tr> <td colspan="2"> 2 foot cable ▾ </td> <td colspan="2"> 3 foot cable ▾ </td> <td colspan="2"> 12 foot cable ▾ </td> <td>HPF</td> <td>Reject Filter</td> <td colspan="6"> R_001 ▾ </td> </tr> </table> <p><u>Measurement Data:</u></p> <table border="1"> <thead> <tr> <th>f GHz</th> <th>Dist (m)</th> <th>Read Ph dBuV</th> <th>Read Avg dBuV</th> <th>AF dB/m</th> <th>CL dB</th> <th>Amp dB</th> <th>D Corr dB</th> <th>Fltr dB</th> <th>Peak dBuV/m</th> <th>Avg dBuV/m</th> <th>Pk Lim dBuV/m</th> <th>Avg Lim dBuV/m</th> <th>Pk Mar dB</th> <th>Avg Mar dB</th> <th>Notes (V/H)</th> </tr> </thead> <tbody> <tr> <td colspan="15">Low Ch (2422MHz)</td> </tr> <tr> <td>3.229</td> <td>3.0</td> <td>52.0</td> <td>49.1</td> <td>30.6</td> <td>5.5</td> <td>-35.7</td> <td>0.0</td> <td>0.0</td> <td>52.4</td> <td>49.5</td> <td>74</td> <td>54</td> <td>-21.6</td> <td>-4.5</td> <td>V</td> </tr> <tr> <td>4.844</td> <td>3.0</td> <td>44.1</td> <td>31.4</td> <td>33.3</td> <td>6.9</td> <td>-34.8</td> <td>0.0</td> <td>0.0</td> <td>49.5</td> <td>36.8</td> <td>74</td> <td>54</td> <td>-24.5</td> <td>-17.2</td> <td>V</td> </tr> <tr> <td>7.266</td> <td>3.0</td> <td>43.5</td> <td>30.5</td> <td>35.0</td> <td>8.4</td> <td>-34.1</td> <td>0.0</td> <td>0.0</td> 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(2422MHz)															3.229	3.0	52.0	49.1	30.6	5.5	-35.7	0.0	0.0	52.4	49.5	74	54	-21.6	-4.5	V	4.844	3.0	44.1	31.4	33.3	6.9	-34.8	0.0	0.0	49.5	36.8	74	54	-24.5	-17.2	V	7.266	3.0	43.5	30.5	35.0	8.4	-34.1	0.0	0.0	52.7	39.7	74	54	-21.3	-14.3	V	3.229	3.0	49.8	47.0	30.6	5.5	-35.7	0.0	0.0	50.2	47.4	74	54	-23.8	-6.6	H	4.844	3.0	44.0	30.6	33.3	6.9	-34.8	0.0	0.0	49.4	36.0	74	54	-24.6	-18.0	H	7.266	3.0	43.0	30.3	35.0	8.4	-34.1	0.0	0.0	52.2	39.5	74	54	-21.8	-14.5	H	Mid Ch (2437MHz)															3.249	3.0	51.0	48.0	30.6	5.5	-35.7	0.0	0.0	51.5	48.5	74	54	-22.5	-5.5	V	4.874	3.0	44.1	33.0	33.4	6.9	-34.8	0.0	0.0	49.6	38.5	74	54	-24.4	-15.5	V	7.311	3.0	44.0	31.0	35.0	8.4	-34.1	0.0	0.0	53.3	40.3	74	54	-20.7	-13.7	V	3.249	3.0	50.1	47.6	30.6	5.5	-35.7	0.0	0.0	50.6	48.1	74	54	-23.4	-5.9	H	4.874	3.0	42.0	30.1	33.4	6.9	-34.8	0.0	0.0	47.5	35.6	74	54	-26.5	-18.4	H	7.311	3.0	43.6	30.7	35.0	8.4	-34.1	0.0	0.0	52.9	40.0	74	54	-21.1	-14.0	H	High Ch 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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																																																																																																																																																																																																																																																			
<p>Company: Atheros Project #: 08U11571 Date: 2/14/2008 Test Engineer: Devin Chang Configuration: HT 40 Tx Mode: XB92-040-S0580</p> <p><u>Test Equipment:</u></p> <table border="1"> <tr> <th>Horn 1-18GHz</th> <th>Pre-amplifier 1-26GHz</th> <th>Pre-amplifier 26-40GHz</th> <th colspan="4">Horn > 18GHz</th> <th>Limit</th> </tr> <tr> <td>T73; S/N: 6717 @3m</td> <td>T34 HP 8449B</td> <td></td> <td colspan="4"></td> <td>FCC 15.205</td> </tr> <tr> <td colspan="12">Hi Frequency Cables</td> </tr> <tr> <td colspan="2">2 foot cable</td> <td colspan="2">3 foot cable</td> <td colspan="2">12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="4"> <u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz </td> </tr> <tr> <td>f GHz</td> <td>Dist (m)</td> <td>Read Ph dBuV</td> <td>Read Avg dBuV</td> <td>AF dB/m</td> <td>CL dB</td> <td>Amp dB</td> <td>D Corr dB</td> <td>Fltr dB</td> <td>Peak dBuV/m</td> <td>Avg dBuV/m</td> <td>Pk Lim dBuV/m</td> <td>Avg Lim dBuV/m</td> <td>Pk Mar dB</td> <td>Avg Mar dB</td> <td>Notes (V/H)</td> </tr> </table> <p>Low band (2422MHz)</p> <table border="1"> <tr><td>4.844</td><td>3.0</td><td>41.2</td><td>30.2</td><td>33.3</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>46.6</td><td>35.6</td><td>74</td><td>54</td><td>-27.4</td><td>-18.4</td><td>V</td></tr> <tr><td>7.266</td><td>3.0</td><td>40.9</td><td>27.9</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>50.1</td><td>37.1</td><td>74</td><td>54</td><td>-23.9</td><td>-16.9</td><td>V</td></tr> <tr><td>4.844</td><td>3.0</td><td>39.9</td><td>26.5</td><td>33.3</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>45.3</td><td>31.9</td><td>74</td><td>54</td><td>-28.7</td><td>-22.1</td><td>H</td></tr> <tr><td>7.266</td><td>3.0</td><td>40.2</td><td>26.7</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>49.4</td><td>35.9</td><td>74</td><td>54</td><td>-24.6</td><td>-18.1</td><td>H</td></tr> </table> <p>Mid band (2437MHz)</p> <table border="1"> <tr><td>4.874</td><td>3.0</td><td>43.4</td><td>31.4</td><td>33.4</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>48.9</td><td>36.9</td><td>74</td><td>54</td><td>-25.1</td><td>-17.1</td><td>V</td></tr> <tr><td>7.311</td><td>3.0</td><td>44.7</td><td>29.3</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>54.0</td><td>38.6</td><td>74</td><td>54</td><td>-20.0</td><td>-15.4</td><td>V</td></tr> <tr><td>4.874</td><td>3.0</td><td>41.5</td><td>27.7</td><td>33.4</td><td>6.9</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>47.0</td><td>33.1</td><td>74</td><td>54</td><td>-27.0</td><td>-20.9</td><td>H</td></tr> <tr><td>7.311</td><td>3.0</td><td>42.0</td><td>27.8</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>51.3</td><td>37.1</td><td>74</td><td>54</td><td>-22.7</td><td>-16.9</td><td>H</td></tr> </table> <p>High band (2452MHz)</p> <table border="1"> <tr><td>4.904</td><td>3.0</td><td>41.6</td><td>30.8</td><td>33.4</td><td>7.0</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>47.1</td><td>36.3</td><td>74</td><td>54</td><td>-26.9</td><td>-17.7</td><td>V</td></tr> <tr><td>7.356</td><td>3.0</td><td>41.6</td><td>28.7</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>51.0</td><td>38.1</td><td>74</td><td>54</td><td>-23.0</td><td>-15.9</td><td>V</td></tr> <tr><td>4.904</td><td>3.0</td><td>40.5</td><td>26.8</td><td>33.4</td><td>7.0</td><td>-34.8</td><td>0.0</td><td>0.0</td><td>46.0</td><td>32.3</td><td>74</td><td>54</td><td>-28.0</td><td>-21.7</td><td>H</td></tr> <tr><td>7.356</td><td>3.0</td><td>40.9</td><td>27.0</td><td>35.0</td><td>8.4</td><td>-34.1</td><td>0.0</td><td>0.0</td><td>50.2</td><td>36.4</td><td>74</td><td>54</td><td>-23.8</td><td>-17.6</td><td>H</td></tr> </table>												Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz				Limit	T73; S/N: 6717 @3m	T34 HP 8449B						FCC 15.205	Hi Frequency Cables												2 foot cable		3 foot cable		12 foot cable		HPF	Reject Filter	<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz				f GHz	Dist (m)	Read Ph 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)	4.844	3.0	41.2	30.2	33.3	6.9	-34.8	0.0	0.0	46.6	35.6	74	54	-27.4	-18.4	V	7.266	3.0	40.9	27.9	35.0	8.4	-34.1	0.0	0.0	50.1	37.1	74	54	-23.9	-16.9	V	4.844	3.0	39.9	26.5	33.3	6.9	-34.8	0.0	0.0	45.3	31.9	74	54	-28.7	-22.1	H	7.266	3.0	40.2	26.7	35.0	8.4	-34.1	0.0	0.0	49.4	35.9	74	54	-24.6	-18.1	H	4.874	3.0	43.4	31.4	33.4	6.9	-34.8	0.0	0.0	48.9	36.9	74	54	-25.1	-17.1	V	7.311	3.0	44.7	29.3	35.0	8.4	-34.1	0.0	0.0	54.0	38.6	74	54	-20.0	-15.4	V	4.874	3.0	41.5	27.7	33.4	6.9	-34.8	0.0	0.0	47.0	33.1	74	54	-27.0	-20.9	H	7.311	3.0	42.0	27.8	35.0	8.4	-34.1	0.0	0.0	51.3	37.1	74	54	-22.7	-16.9	H	4.904	3.0	41.6	30.8	33.4	7.0	-34.8	0.0	0.0	47.1	36.3	74	54	-26.9	-17.7	V	7.356	3.0	41.6	28.7	35.0	8.4	-34.1	0.0	0.0	51.0	38.1	74	54	-23.0	-15.9	V	4.904	3.0	40.5	26.8	33.4	7.0	-34.8	0.0	0.0	46.0	32.3	74	54	-28.0	-21.7	H	7.356	3.0	40.9	27.0	35.0	8.4	-34.1	0.0	0.0	50.2	36.4	74	54	-23.8	-17.6	H
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8.2.5. TRANSMITTER ABOVE 1 GHz FOR 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																																																																																																																																																																							
Company: Atheros Project #: 08U11572 Date: 2/19/2008 Test Engineer: Thanh Nguyen Configuration: EUT w/Extender card, Support Laptop Mode: Tx a mode, Upper band.																																																																																																																																																																																							
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11.570	1.0	44.0	30.9	37.5	11.7	-32.5	-9.5	0.0	51.2	38.0	74	54	-22.8	-16.0	H																																																																																																																																																																								
5825MHz																																																																																																																																																																																							
11.650	1.0	52.2	36.3	37.5	11.8	-32.5	-9.5	0.0	59.4	43.5	74	54	-14.6	-10.5	V																																																																																																																																																																								
11.650	1.0	46.5	33.7	37.5	11.8	-32.5	-9.5	0.0	53.8	41.0	74	54	-20.2	-13.0	H																																																																																																																																																																								
Rev. 4.12.7																																																																																																																																																																																							
<table><tr><td>f</td><td>Measurement Frequency</td><td>Amp</td><td>Preamp Gain</td><td>Avg Lim</td><td>Average Field Strength Limit</td></tr><tr><td>Dist</td><td>Distance to Antenna</td><td>D Corr</td><td>Distance Correct to 3 meters</td><td>Pk Lim</td><td>Peak Field Strength Limit</td></tr><tr><td>Read</td><td>Analyzer Reading</td><td>Avg</td><td>Average Field Strength @ 3 m</td><td>Avg Mar</td><td>Margin vs. Average Limit</td></tr><tr><td>AF</td><td>Antenna Factor</td><td>Peak</td><td>Calculated Peak Field Strength</td><td>Pk Mar</td><td>Margin vs. Peak Limit</td></tr><tr><td>CL</td><td>Cable Loss</td><td>HPF</td><td>High Pass Filter</td><td></td><td></td></tr></table>									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																																																																																																																																																			
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AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit																																																																																																																																																																																		
CL	Cable Loss	HPF	High Pass Filter																																																																																																																																																																																				

8.2.6. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT20 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																
Company: Atheros Project #: 08U11572 Date: 2/22/2008 Test Engineer: Devin Chang Configuration: EUT, Extender, Support Laptop. Mode:Tx HT20 mode(SiGe FEM)																
<u>Test Equipment:</u>																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T73; S/N: 6717 @3m			T34 HP 8449B			T88 Miteq 26-40GHz			T39-T88 ARA 18-40GHz & Mixer > 40GHz			FCC 15.209				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements RBW=VBW=1MHz	
A-5m Chamber												R_001			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)	
5745MHz																
11.490	1.0	49.5	33.4	37.5	11.6	-32.5	-9.5	0.0	56.5	40.4	74	54	-17.5	-13.6	V	
11.490	1.0	48.3	32.7	37.5	11.6	-32.5	-9.5	0.0	55.3	39.7	74	54	-18.7	-14.3	H	
5785MHz																
11.570	1.0	46.7	30.8	37.5	11.7	-32.5	-9.5	0.0	53.8	37.9	74	54	-20.2	-16.1	V	
11.570	1.0	44.0	30.1	37.5	11.7	-32.5	-9.5	0.0	51.2	37.3	74	54	-22.8	-16.7	H	
5825MHz																
11.650	1.0	48.4	33.8	37.5	11.8	-32.5	-9.5	0.0	55.7	41.1	74	54	-18.3	-12.9	V	
11.650	1.0	46.7	33.4	37.5	11.8	-32.5	-9.5	0.0	53.9	40.6	74	54	-20.1	-13.4	H	
Rev. 4.12.7																
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											

8.2.7. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT40 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber															
Company: Atheros Project #: 08U11572 Date: 2/22/2008 Test Engineer: Devin Chang Configuration: EUT, Extender, Support Laptop. Mode:Tx HT40 mode(SiGe FEM)															
<u>Test Equipment:</u>															
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit			
T73; S/N: 6717 @3m			T34 HP 8449B			T88 Miteq 26-40GHz			T39-T88 ARA 18-40GHz & Mixer > 40GHz			FCC 15.209			
Hi Frequency Cables															
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			
A-5m Chamber												R_001			
<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> 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 (5755MHz)															
11.510	1.0	43.9	29.6	37.5	11.6	-32.5	-9.5	0.0	50.9	36.6	74	54	-23.1	-17.4	V
11.510	1.0	41.9	28.0	37.5	11.6	-32.5	-9.5	0.0	48.9	35.0	74	54	-25.1	-19.0	H
High Channel (5795MHz)															
11.590	1.0	42.4	29.5	37.5	11.7	-32.5	-9.5	0.0	49.5	36.7	74	54	-24.5	-17.3	V
11.590	1.0	42.6	29.1	37.5	11.7	-32.5	-9.5	0.0	49.7	36.2	74	54	-24.3	-17.8	H
Rev. 4.12.7															
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												

8.3. RECEIVER ABOVE 1 GHz

8.3.1. RECEIVER ABOVE 1 GHz FOR 20 MHz BANDWIDTH IN THE 2.4 GHz BAND

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber															
Company: Atheros Project #: 08U11572 Date: 2/14/2008 Test Engineer: Devin Chang Configuration: HT 20 Tx Mode: XB92-040-S0580															
Test Equipment:															
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit			
T73; S/N: 6717 @3m			T34 HP 8449B									FCC 15.209			
Hi Frequency Cables 2 foot cable 3 foot cable 12 foot cable A-5m Chamber															
HPF Reject Filter Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz															
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low band															
1.500	3.0	51.0	40.8	25.6	3.7	-37.6	0.0	0.0	42.7	32.5	74	54	-31.3	-21.5	V
1.596	3.0	60.7	44.4	26.0	3.8	-37.4	0.0	0.0	53.0	36.7	74	54	-21.0	-17.3	V
1.500	3.0	47.8	39.4	25.6	3.7	-37.6	0.0	0.0	39.5	31.1	74	54	-34.5	-22.9	H
1.596	3.0	56.0	40.2	26.0	3.8	-37.4	0.0	0.0	48.3	32.5	74	54	-25.7	-21.5	H
Mid band															
1.500	3.0	49.5	41.6	25.6	3.7	-37.6	0.0	0.0	41.2	33.3	74	54	-32.8	-20.7	V
1.596	3.0	60.9	44.3	26.0	3.8	-37.4	0.0	0.0	53.2	36.6	74	54	-20.8	-17.4	V
1.500	3.0	49.6	39.4	25.6	3.7	-37.6	0.0	0.0	41.3	31.1	74	54	-32.7	-22.9	H
1.596	3.0	55.9	40.5	26.0	3.8	-37.4	0.0	0.0	48.2	32.8	74	54	-25.8	-21.2	H
High band															
1.500	3.0	49.6	41.3	25.6	3.7	-37.6	0.0	0.0	41.3	33.0	74	54	-32.7	-21.0	V
1.596	3.0	60.7	44.3	26.0	3.8	-37.4	0.0	0.0	53.0	36.6	74	54	-21.0	-17.4	V
1.500	3.0	49.2	39.1	25.6	3.7	-37.6	0.0	0.0	40.9	30.8	74	54	-33.1	-23.2	H
1.596	3.0	55.7	40.2	26.0	3.8	-37.4	0.0	0.0	48.0	32.5	74	54	-26.0	-21.5	H
Rev. 4.12.7															
f Measurement Frequency Dist Distance to Antenna Read Analyzer Reading AF Antenna Factor CL Cable Loss					Amp Preamp Gain D Corr Distance Correct to 3 meters Avg Average Field Strength @ 3 m Peak Calculated Peak Field Strength HPF High Pass Filter					Avg Lim Average Field Strength Limit Pk Lim Peak Field Strength Limit Avg Mar Margin vs. Average Limit Pk Mar Margin vs. Peak Limit					

8.3.2. RECEIVER ABOVE 1 GHz FOR 40 MHz BANDWIDTH IN THE 2.4 GHz BAND

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																	
Company: Atheros Project #: 08U11572 Date: 2/14/2008 Test Engineer: Devin Chang Configuration: Rx 40MHz BW Mode: XB92-040-S0580																	
Test Equipment:																	
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit					
T73; S/N: 6717 @3m			T34 HP 8449B												FCC 15.109		
Hi Frequency Cables																	
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements RBW=VBW=1MHz		
						A-5m Chamber									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 band																	
1.500	3.0	50.3	41.4	25.6	3.7	-37.6	0.0	0.0	42.0	33.1	74	54	-32.0	-20.9	V		
1.596	3.0	60.9	44.6	26.0	3.8	-37.4	0.0	0.0	53.2	36.9	74	54	-20.8	-17.1	V		
1.500	3.0	48.4	39.3	25.6	3.7	-37.6	0.0	0.0	40.1	31.0	74	54	-33.9	-23.0	H		
1.596	3.0	55.2	39.7	26.0	3.8	-37.4	0.0	0.0	47.5	32.0	74	54	-26.5	-22.0	H		
Mid band																	
1.500	3.0	51.3	41.7	25.6	3.7	-37.6	0.0	0.0	43.0	33.4	74	54	-31.0	-20.6	V		
1.596	3.0	61.1	44.6	26.0	3.8	-37.4	0.0	0.0	53.4	36.9	74	54	-20.6	-17.1	V		
1.500	3.0	49.0	39.6	25.6	3.7	-37.6	0.0	0.0	40.7	31.3	74	54	-33.3	-22.7	H		
1.596	3.0	55.8	40.7	26.0	3.8	-37.4	0.0	0.0	48.1	32.9	74	54	-25.9	-21.1	H		
High band																	
1.500	3.0	48.1	40.8	25.6	3.7	-37.6	0.0	0.0	39.8	32.5	74	54	-34.2	-21.5	V		
1.596	3.0	60.6	44.3	26.0	3.8	-37.4	0.0	0.0	52.9	36.6	74	54	-21.1	-17.4	V		
1.500	3.0	48.9	38.9	25.6	3.7	-37.6	0.0	0.0	40.6	30.6	74	54	-33.4	-23.4	H		
1.596	3.0	55.1	40.0	26.0	3.8	-37.4	0.0	0.0	47.4	32.3	74	54	-26.6	-21.7	H		

Rev. 4.12.7

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		

8.3.3. RECEIVER ABOVE 1 GHz FOR 5.8 GHz BAND

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																											
Company: Atheros Project #: 08U11572 Date: 2/19/2008 Test Engineer: Thanh Nguyen Configuration: EUT, Extender, Support Laptop. Mode: Rx mode.																																											
Test Equipment:																																											
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit																															
T73; S/N: 6717 @3m			T34 HP 8449B									RX RSS 210																															
Hi Frequency Cables <table border="1"> <tr> <td>2 foot cable</td> <td>3 foot cable</td> <td>12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="9"> Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz </td> </tr> <tr> <td></td> <td></td> <td>A-5m Chamber</td> <td></td> <td></td> <td>R_001</td> <td colspan="9"></td> </tr> </table>															2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz											A-5m Chamber			R_001									
2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz																																						
		A-5m Chamber			R_001																																						
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)																												
1.063	1.0	58.5	32.1	24.0	3.1	-38.2	-9.5	0.0	37.9	11.5	74	54	-36.1	-42.5	V																												
1.331	1.0	59.0	42.8	25.0	3.4	-37.8	-9.5	0.0	40.1	23.9	74	54	-33.9	-30.1	V																												
1.596	1.0	64.5	52.6	26.0	3.8	-37.4	-9.5	0.0	47.2	35.3	74	54	-26.8	-18.7	V																												
2.397	1.0	50.8	36.5	28.3	4.8	-36.3	-9.5	0.0	38.1	23.7	74	54	-35.9	-30.3	V																												
1.595	1.0	62.2	46.7	26.0	3.8	-37.4	-9.5	0.0	45.0	29.4	74	54	-29.0	-24.6	H																												
Rev. 4.12.7																																											
f Measurement Frequency	Dist Distance to Antenna	Read Analyzer Reading	Amp Preamp Gain	D Corr Distance Correct to 3 meters	Avg Average Field Strength @ 3 m	Peak Calculated Peak Field Strength	HPF High Pass Filter	Avg Lim Average Field Strength Limit	Pk Lim Peak Field Strength Limit	Avg Mar Margin vs. Average Limit	Pk Mar Margin vs. Peak Limit																																

8.4. WORST-CASE BELOW 1 GHz

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

HORIZONTAL DATA

Condition: FCC CLASS-B HORIZONTAL
Test Operator: Chin Pang
Project #: 08U11571
Company: Atheros
Config: EUT/laptop/antenna
Mode: 2.4GHz Band, Tx (Worst Case)
Target: FCC Class B

Freq	Read		Limit Line	Over Limit	Remark	
	MHz	dBuV	dB	dBuV/m	dBuV/m	
1	258.920	54.67	-17.48	37.19	46.00	-8.81 Peak
2	365.620	52.50	-14.20	38.30	46.00	-7.70 Peak
3	450.010	49.17	-12.38	36.79	46.00	-9.21 Peak
4	566.410	44.00	-10.44	33.56	46.00	-12.44 Peak
5	765.260	43.50	-7.58	35.93	46.00	-10.08 Peak
6	899.120	44.58	-5.22	39.35	46.00	-6.65 Peak

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

VERTICAL DATA

Condition: FCC CLASS-B VERTICAL
Test Operator: Chin Pang
Project #: 08U11571
Company: Atheros
Config: EUT/laptop/antenna
Mode: 2.4GHz Band, Tx (Worst Case)
Target: FCC Class B

Freq	Read		Limit Line	Over Limit	Remark
	Level	Factor			
	MHz	dBuV	dB	dBuV/m	dB
1	88.200	59.83	-22.98	36.85	43.50 -6.65 Peak
2	129.910	53.33	-16.57	36.77	43.50 -6.73 Peak
3	388.900	51.00	-13.67	37.33	46.00 -8.67 Peak
4	532.460	43.00	-10.85	32.15	46.00 -13.85 Peak
5	797.270	40.50	-7.09	33.41	46.00 -12.59 Peak
6	899.120	41.58	-5.22	36.35	46.00 -9.65 Peak

9. 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

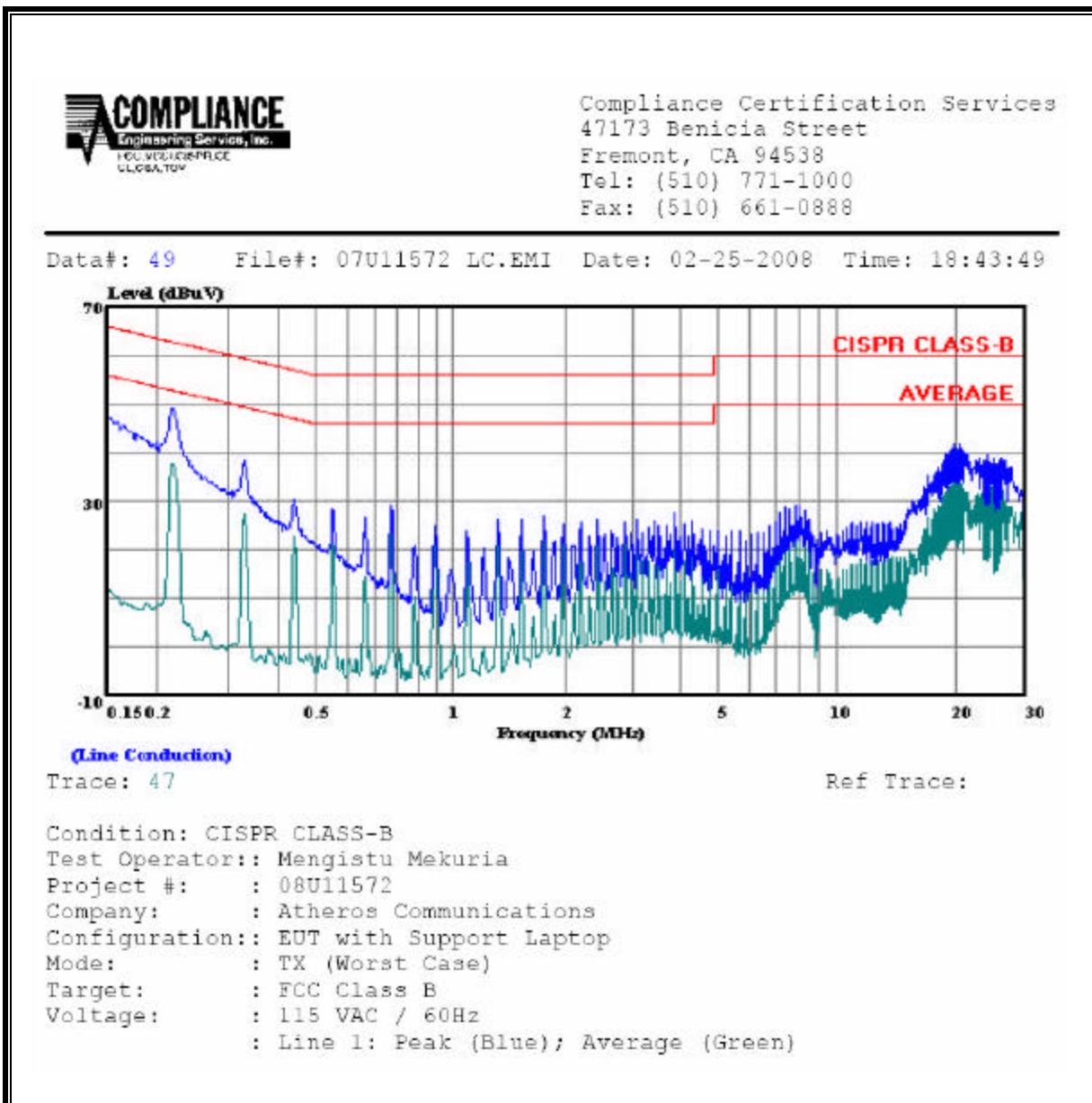
ANSI C63.4

RESULTS

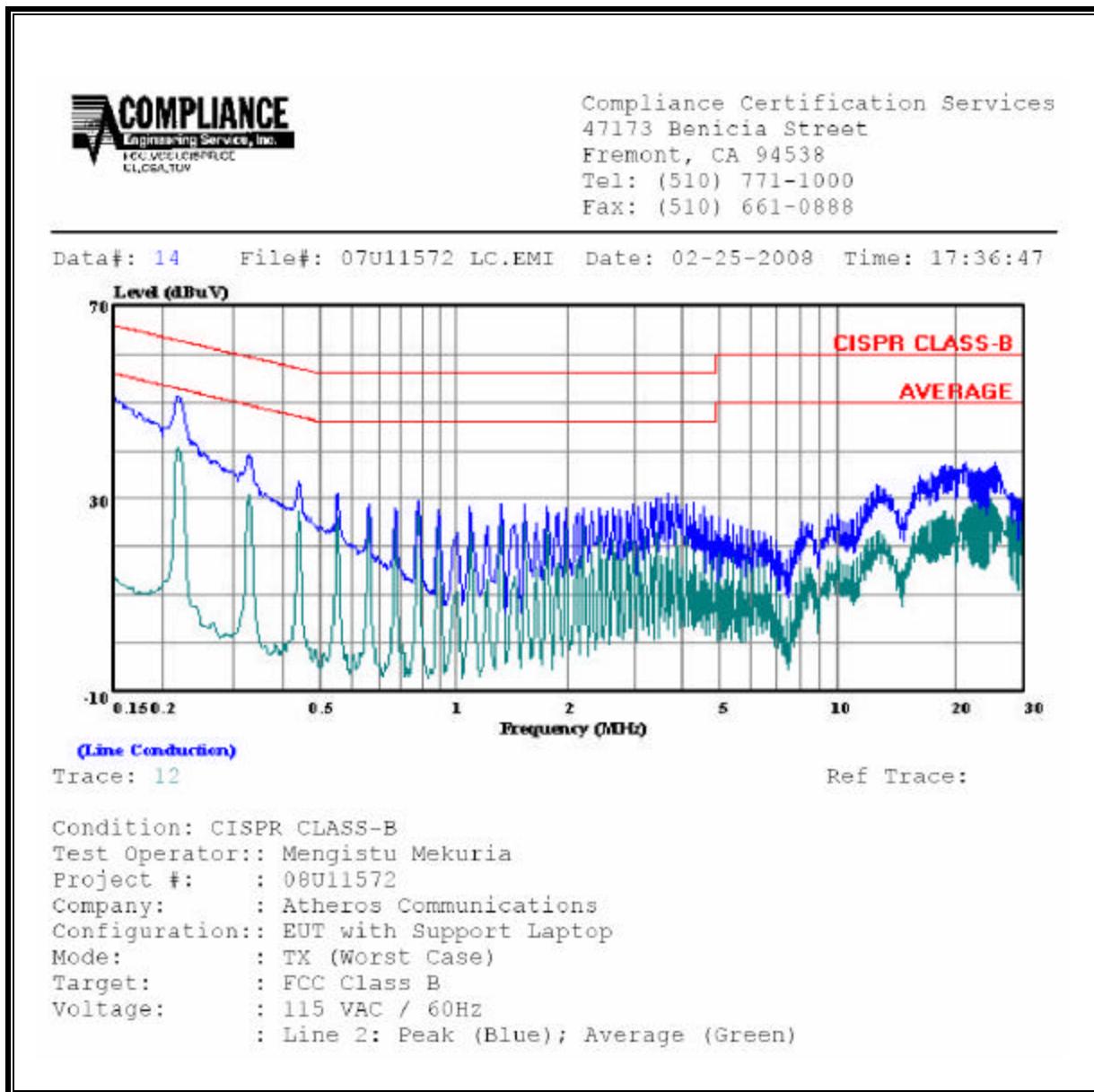
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Closs (dB)	Limit	EN_B	Margin		Remark
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP	AV	
0.22	49.32	—	37.91	0.00	62.82	52.82	-13.50	-14.91	L1
0.33	38.54	—	27.55	0.00	59.45	49.45	-20.91	-21.90	L1
19.84	41.82	—	34.44	0.00	60.00	50.00	-18.18	-15.56	L1
0.22	51.44	—	40.65	0.00	62.82	52.82	-11.38	-12.17	L2
0.33	39.33	—	30.97	0.00	59.45	49.45	-20.12	-18.48	L2
23.02	37.51	—	29.63	0.00	60.00	50.00	-22.49	-20.37	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS



10. 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	1842f	4.89f	*(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	824f	2.19f	*(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/m² is equivalent to 1 mW/cm².
3. A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μ T) 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/cm²

From IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m²

RESULTS

Mode	Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	FCC Power Density (mW/cm ²)	IC Power Density (W/m ²)
WLAN	2.4 GHz	20.0	27.98	6.33	0.54	5.36
WLAN	5 GHz	20.0	28.69	6.76	0.70	6.97