

05/10/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1295
Company: AtherosCommunications, Inc.
EUT Descrip.: 802.11a Wireless LAN Cardbus Card
EUT M/N: Tecra 8200 Laptop Computer
Test Target: FCC 15.407 UNII
Mode Oper: Normal, Mid Channel, 5260MHz
(Frequency Range 5.15 - 5.35GHz)

Equipment for 1-26 GHz:

HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Equipment for 26 - 40 GHz:

HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970A External mixer/antenna
Dico 1149 Horn Antenna
Cable: IF Only (321 MHz)

Peak Measurements:

1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Harmonic:															
10.520	5.0	56.0	42.2	38.9	8.9	-35.6	-5.9	1.0	63.3	49.5	68.2		-4.9		** V
15.780	5.0	51.7	39.0	38.1	11.6	-38.6	-5.9	1.0	57.9	45.2	74.0	54.0	-16.1	-8.8	* V
21.040	2.5	53.2	42.0	32.4	14.4	-38.6	-11.9	0.0	49.4	38.3	74.0	54.0	-24.6	-15.7	* V (Noise Floor)
26.300	1.0	37.3	26.3	44.1	0.0	0.0	-19.9	0.0	61.5	50.5	68.2		-6.7		** V (Noise Floor)
31.560	1.0	37.5	26.4	44.1	0.0	0.0	-19.9	0.0	61.7	50.6	74.0	54.0	-12.3	-3.4	* V (Noise Floor)
36.820	1.0	37.6	26.5	44.1	0.0	0.0	-19.9	0.0	61.8	50.7	68.2		-6.4		** V (Noise Floor)
10.520	5.0	50.0	37.0	38.9	8.9	-35.6	-5.9	1.0	57.3	44.3	68.2		-10.9		** H
15.780	5.0	51.3	39.2	38.1	11.6	-38.6	-5.9	1.0	57.5	45.4	74.0	54.0	-16.5	-8.6	* H
21.040	2.5	53.2	42.0	32.4	14.4	-38.6	-11.9	0.0	49.5	38.3	74.0	54.0	-24.5	-15.7	* H (Noise Floor)
26.300	1.0	37.2	26.1	44.1	0.0	0.0	-19.9	0.0	61.4	50.3	68.2		-6.8		** H (Noise Floor)
31.560	1.0	37.4	26.2	44.1	0.0	0.0	-19.9	0.0	61.6	50.4	74.0	54.0	-12.4	-3.6	* H (Noise Floor)
36.820	1.0	37.5	26.3	44.1	0.0	0.0	-19.9	0.0	61.7	50.5	68.2		-6.5		** H (Noise Floor)
Spurious:															
6.125	2.5	67.8	53.0	35.4	6.7	-36.3	-11.9	0.0	61.7	46.9	68.2		-6.5		** V (w/ 16dB Pad)
6.992	2.5	65.0	52.5	36.5	7.1	-36.4	-11.9	0.0	60.3	47.8	68.2		-8.0		** V (w/ 16dB Pad)
6.992	2.5	64.4	52.5	36.5	7.1	-36.4	-11.9	0.0	59.7	47.8	68.2		-8.6		** H (w/ 16dB Pad)
4.390	5.0	69.8	53.0	33.0	5.4	-36.1	-5.9	0.0	66.2	49.4	74.0	54.0	-7.8	-4.6	* V (w/ 10dB Pad)
3.535	5.0	71.2	51.5	32.3	4.7	-36.2	-5.9	0.0	66.1	46.4	68.2		-2.1		** V (w/ 10dB Pad)
2.457	5.0	65.0	46.2	29.0	3.9	-36.3	-5.9	0.0	55.7	36.9	68.2		-12.5		** V (w/ 10dB Pad)
4.390	5.0	60.1	47.2	33.0	5.4	-36.1	-5.9	0.0	56.5	43.6	74.0	54.0	-17.5	-10.4	* H (w/ 10dB Pad)
3.535	5.0	60.0	47.0	32.3	4.7	-36.2	-5.9	0.0	54.9	41.9	68.2		-13.3		** H (w/ 10dB Pad)
6.125	5.0	61.3	48.8	35.4	6.7	-36.3	-5.9	0.0	61.2	48.7	68.2		-7.0		** H (w/ 10dB Pad)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -27dBm = 68.2dBuV

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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EUT M/N: Tecra 8200 Laptop Computer
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Equipment for 26 - 40 GHz:

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Cable: IF Only (321 MHz)

Peak Measurements:

1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:

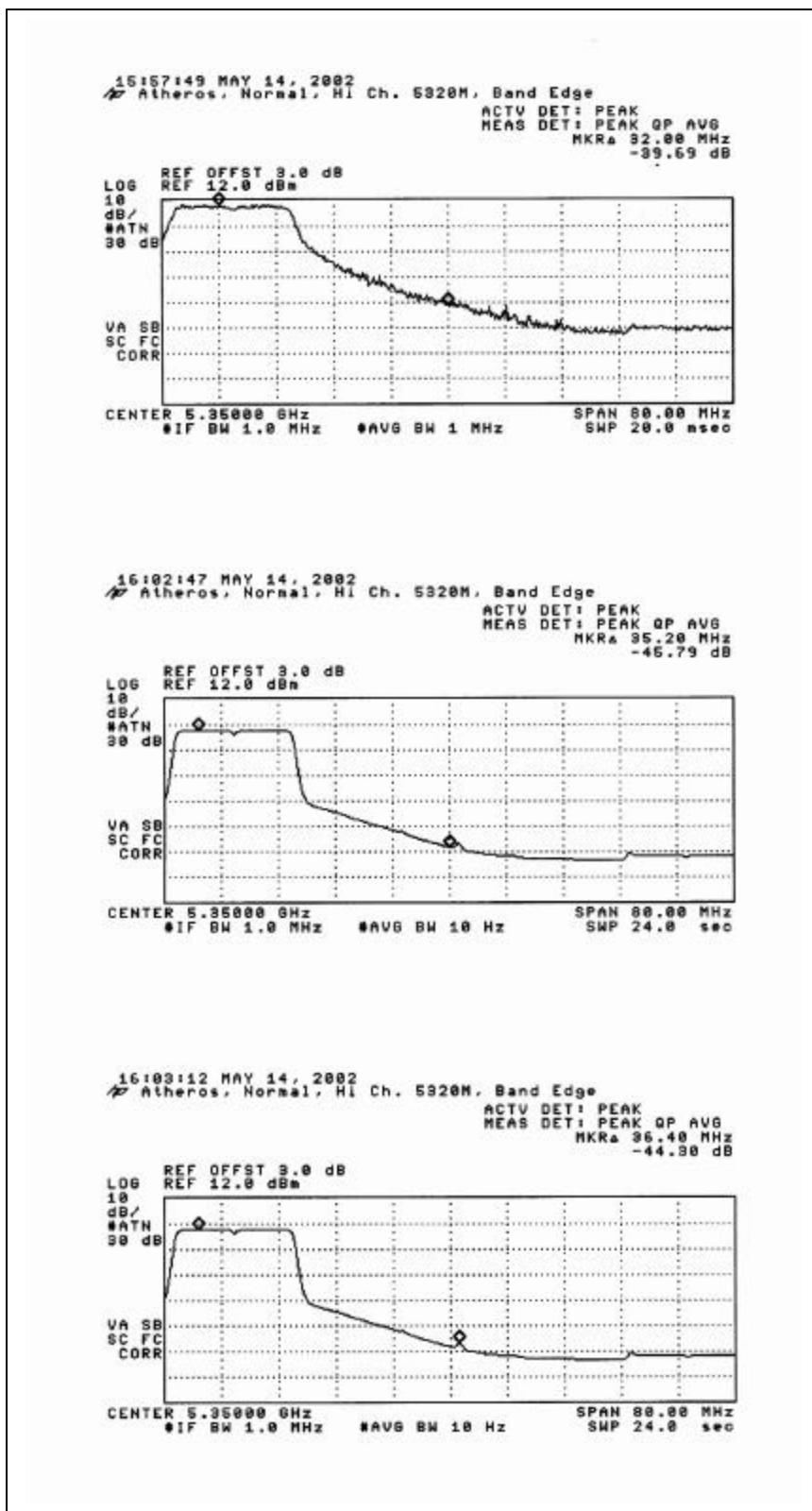
1MHz Resolution Bandwidth
10Hz Video Bandwidth

Peak Delta Ave Delta
39.69 44.30

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
5.320	5.0	74.0	63.6	35.0	4.9	0.0	-5.9	0.0	108.0	97.6					V (Fundamental)
5.320	5.0	65.5	55.0	35.0	4.9	0.0	-5.9	0.0	99.5	89.0					H (Fundamental)
Band Edge:															
5.350	Using Peak Delta = 39.69 and Average Delta = 44.30								68.3	53.3	74.0	54.0	-5.7	-0.7	* V (Band Edge)
5.350	Using Peak Delta = 39.69 and Average Delta = 44.30								59.8	44.7	74.0	54.0	-14.2	-9.3	* H (Band Edge)
Harmonic:															
10.640	5.0	46.3	33.6	38.9	8.9	-35.7	-5.9	1.0	53.6	40.9	74.0	54.0	-20.4	-13.1	* V
15.960	5.0	51.5	37.7	38.0	11.7	-38.7	-5.9	1.0	57.7	43.9	74.0	54.0	-16.3	-10.1	* V
21.280	2.5	53.2	41.2	32.3	14.5	-38.6	-11.9	0.0	49.4	37.5	74.0	54.0	-24.6	-16.5	* V (Noise Floor)
26.600	1.0	37.5	26.5	44.1	0.0	0.0	-19.9	0.0	61.7	50.7	68.2		-6.5		** V (Noise Floor)
31.920	1.0	37.6	26.6	44.1	0.0	0.0	-19.9	0.0	61.8	50.8	68.2		-6.4		** V (Noise Floor)
37.240	1.0	37.8	26.7	44.1	0.0	0.0	-19.9	0.0	62.0	50.9	68.2		-6.2		** V (Noise Floor)
10.640	5.0	44.5	33.0	38.9	8.9	-35.7	-5.9	1.0	51.8	40.3	74.0	54.0	-22.2	-13.7	* H
15.960	5.0	51.3	37.4	38.0	11.7	-38.7	-5.9	1.0	57.5	43.6	74.0	54.0	-16.5	-10.4	* H
21.280	2.5	53.2	41.3	32.3	14.5	-38.6	-11.9	0.0	49.5	37.6	74.0	54.0	-24.5	-16.4	* H (Noise Floor)
26.600	1.0	37.3	26.3	44.1	0.0	0.0	-19.9	0.0	61.5	50.5	68.2		-6.7		** H (Noise Floor)
31.920	1.0	37.5	26.5	44.1	0.0	0.0	-19.9	0.0	61.7	50.7	68.2		-6.5		** H (Noise Floor)
37.240	1.0	37.7	26.7	44.1	0.0	0.0	-19.9	0.0	61.9	50.9	68.2		-6.3		** H (Noise Floor)
Spurious:															
6.192	5.0	61.6	47.0	35.4	6.7	-36.3	-5.9	0.0	61.6	47.0	68.2		-6.7		** V (w/ 10dB Pad)
6.383	5.0	59.1	53.0	35.5	6.8	-36.3	-5.9	0.0	59.1	53.1	68.2		-9.1		** V (w/ 10dB Pad)
4.256	5.0	51.8	40.0	33.1	5.3	-36.1	-5.9	0.0	48.2	36.4	74.0	54.0	-25.8	-17.6	* V (w/ 10dB Pad)
5.386	5.0	58.0	46.1	35.1	6.1	-36.1	-5.9	0.0	57.2	45.3	74.0	54.0	-16.8	-8.7	* V (w/ 10dB Pad)
5.408	5.0	57.3	47.6	35.1	6.2	-36.1	-5.9	0.0	56.5	46.9	74.0	54.0	-17.5	-7.1	* V (w/ 10dB Pad)
5.216	5.0	57.0	49.5	34.8	6.0	-36.1	-5.9	0.0	55.8	48.3	68.2		-12.4		** V (w/ 10dB Pad)
4.959	5.0	54.2	45.4	34.3	5.8	-36.1	-5.9	0.0	52.4	43.6	74.0	54.0	-21.6	-10.4	* V (w/ 10dB Pad)
5.023	5.0	54.3	45.4	34.4	5.9	-36.1	-5.9	0.0	52.6	43.8	74.0	54.0	-21.4	-10.2	* V (w/ 10dB Pad)
5.024	5.0	53.3	42.0	34.4	5.9	-36.1	-5.9	0.0	51.6	40.4	74.0	54.0	-22.4	-13.6	* H (w/ 10dB Pad)
5.024	5.0	53.3	42.0	34.4	5.9	-36.1	-5.9	0.0	51.6	40.4	74.0	54.0	-22.4	-13.6	* H (w/ 10dB Pad)
5.216	5.0	54.7	43.5	34.8	6.0	-36.1	-5.9	0.0	53.5	42.3	68.2		-14.7		** H (w/ 10dB Pad)
5.024	5.0	53.3	42.0	34.4	5.9	-36.1	-5.9	0.0	51.6	40.4	74.0	54.0	-22.4	-13.6	* H (w/ 10dB Pad)
5.400	5.0	54.5	44.0	35.1	6.2	-36.1	-5.9	0.0	53.7	43.2	74.0	54.0	-20.3	-10.8	* H (w/ 10dB Pad)
6.183	5.0	55.7	42.7	35.4	6.7	-36.3	-5.9	0.0	55.7	42.7	68.2		-12.6		** H (w/ 10dB Pad)
6.384	5.0	53.6	45.1	35.5	6.8	-36.3	-5.9	0.0	53.7	45.2	68.2		-14.6		** H (w/ 10dB Pad)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -27dBm = 68.2dBuV

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
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1 MHz Resolution Bandwidth
1 MHz Video Bandwidth

Average Measurements:

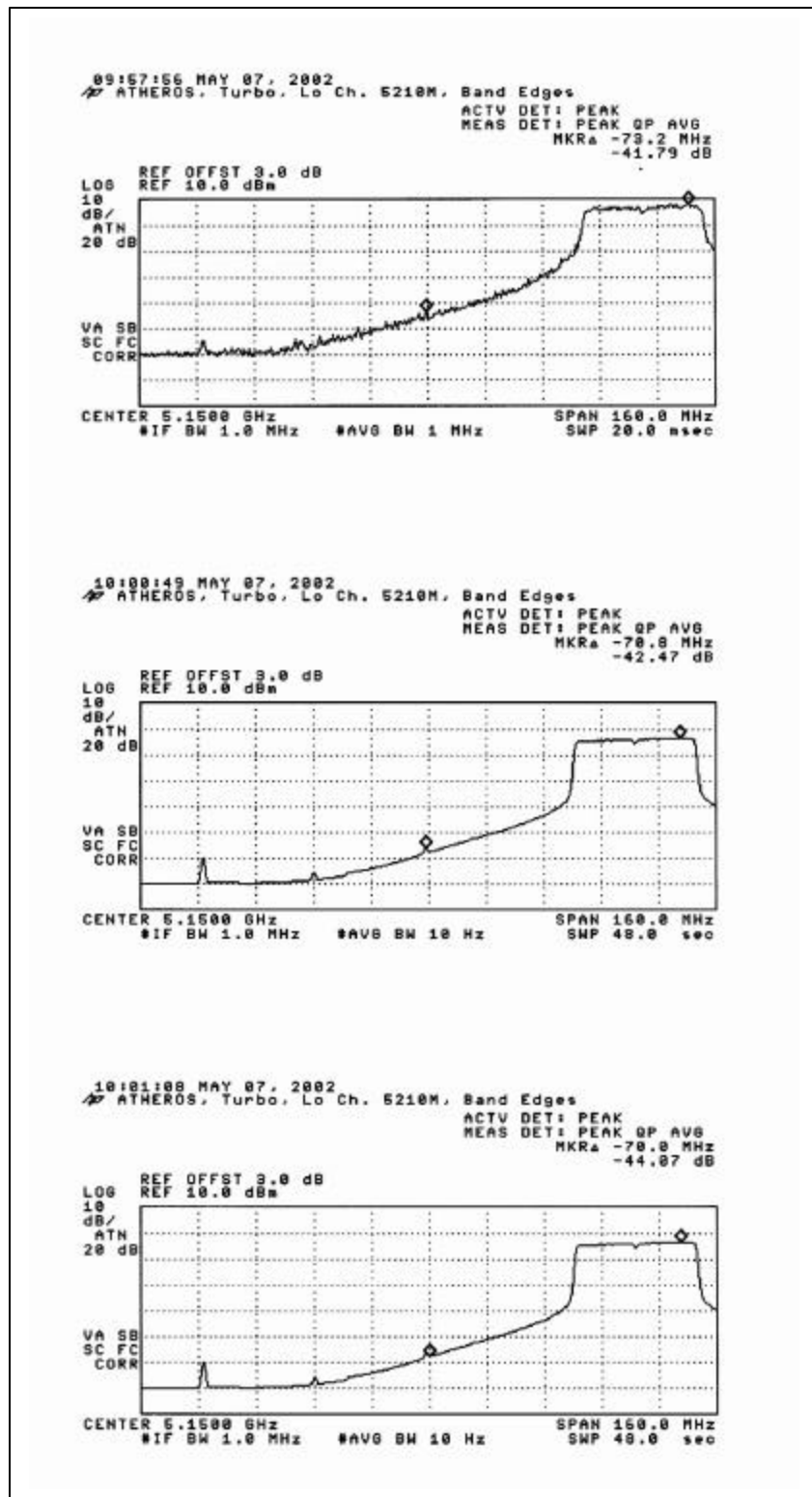
1 MHz Resolution Bandwidth
10 Hz Video Bandwidth

Peak Delta 41.79
Ave Delta 42.47

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
5.210	5.0	70.9	60.2	34.8	4.8	0.0	-5.9	0.0	104.6	93.9					V (Fundamental)
5.210	5.0	64.1	53.6	34.8	4.8	0.0	-5.9	0.0	97.8	87.3					H (Fundamental)
Band Edge:															
5.150	Using Peak Delta = 41.79 and Average Delta = 42.47														
5.150	Using Peak Delta = 41.79 and Average Delta = 42.47														
Harmonic:															
10.420	5.0	43.5	33.6	38.9	8.9	-35.6	-5.9	1.0	50.8	40.9	68.2		-17.5		** V
15.630	5.0	49.0	38.1	38.2	11.5	-38.6	-5.9	1.0	55.2	44.3	74.0	54.0	-18.8	-9.7	* V
20.840	2.5	53.1	41.0	32.4	14.3	-38.6	-11.9	0.0	49.2	37.1	74.0	54.0	-24.8	-16.9	* V (Noise Floor)
26.050	1.0	37.0	26.0	44.1	0.0	0.0	-19.9	0.0	61.2	50.2	68.2		-7.0		** V (Noise Floor)
31.260	1.0	37.1	26.1	44.1	0.0	0.0	-19.9	0.0	61.3	50.3	74.0	54.0	-12.7	-3.7	* V (Noise Floor)
36.470	1.0	37.2	26.2	44.1	0.0	0.0	-19.9	0.0	61.4	50.4	74.0	54.0	-12.6	-3.6	* V (Noise Floor)
10.420	5.0	44.5	33.5	38.9	8.9	-35.6	-5.9	1.0	51.8	40.8	68.2		-16.5		** H
15.630	5.0	50.5	37.5	38.2	11.5	-38.6	-5.9	1.0	56.7	43.7	74.0	54.0	-17.3	-10.3	* H
20.840	2.5	53.1	41.0	32.4	14.3	-38.6	-11.9	0.0	49.2	37.1	74.0	54.0	-24.8	-16.9	* H (Noise Floor)
26.050	1.0	37.0	26.0	44.1	0.0	0.0	-19.9	0.0	61.2	50.2	68.2		-7.0		** H (Noise Floor)
31.260	1.0	37.1	26.1	44.1	0.0	0.0	-19.9	0.0	61.3	50.3	74.0	54.0	-12.7	-3.7	* H (Noise Floor)
36.470	1.0	37.2	26.2	44.1	0.0	0.0	-19.9	0.0	61.4	50.4	74.0	54.0	-12.6	-3.6	* H (Noise Floor)
Spurious:															
4.157	5.0	55.0	42.0	33.2	5.2	-36.1	-5.9	0.0	51.4	38.4	74.0	54.0	-22.6	-15.6	* V (w/ 10dB attn)
4.332	5.0	63.5	51.0	33.0	5.3	-36.1	-5.9	0.0	59.9	47.4	74.0	54.0	-14.1	-6.6	* V (w/ 10dB attn)
2.507	5.0	56.5	44.5	29.1	3.9	-36.3	-5.9	0.0	47.4	35.4	68.2		-20.9		** V (w/ 10dB attn)
4.616	5.0	60.8	42.0	33.2	5.6	-36.1	-5.9	0.0	57.6	38.8	74.0	54.0	-16.4	-15.2	* V (w/ 10dB attn)
6.252	5.0	63.7	59.5	35.5	6.7	-36.3	-5.9	0.0	63.6	59.5	68.2		-4.6		** V (w/ 10dB attn)
6.252	5.0	58.2	52.7	35.5	6.7	-36.3	-5.9	0.0	58.2	52.7	68.2		-10.1		** H (w/ 10dB Pad)
4.616	5.0	52.0	42.0	33.2	5.6	-36.1	-5.9	0.0	48.8	38.8	74.0	54.0	-25.2	-15.2	* H (w/ 10dB Pad)
4.337	5.0	56.1	43.3	33.0	5.4	-36.1	-5.9	0.0	52.5	39.7	74.0	54.0	-21.5	-14.3	* H (w/ 10dB Pad)

Note: * Restricted Band Limit
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10Hz Video Bandwidth

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26.250	1.0	37.2	26.1	44.1	0.0	0.0	-19.9	0.0	61.4	50.3	68.2		-6.8		** V (Noise Floor)
31.500	1.0	37.4	26.3	44.1	0.0	0.0	-19.9	0.0	61.6	50.5	74.0	54.0	-12.4	-3.5	* V (Noise Floor)
36.750	1.0	37.5	26.4	44.1	0.0	0.0	-19.9	0.0	61.7	50.6	68.2		-6.5		** V (Noise Floor)
10.500	5.0	47.2	36.0	38.9	8.9	-35.6	-5.9	1.0	54.5	43.3	68.2		-13.7		** V (Noise Floor)
15.750	5.0	51.0	39.0	38.2	11.6	-38.6	-5.9	1.0	57.2	45.2	74.0	54.0	-16.8	-8.8	* H
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36.750	1.0	37.4	26.4	44.1	0.0	0.0	-19.9	0.0	61.6	50.6	68.2		-6.6		** H (Noise Floor)
Spurious:															
6.130	5.0	63.3	51.3	35.4	6.7	-36.3	-5.9	0.0	63.2	51.2	68.2		-5.0		** V (w/ 10dB Pad)
4.413	5.0	63.0	50.5	33.0	5.4	-36.1	-5.9	0.0	59.4	46.9	68.2		-8.8		** V (w/ 10dB Pad)
4.327	5.0	60.3	45.0	33.0	5.3	-36.1	-5.9	0.0	56.7	41.4	74.0	54.0	-17.3	-12.6	* V (w/ 10dB Pad)
3.496	5.0	68.0	52.0	32.2	4.6	-36.2	-5.9	0.0	62.8	46.8	68.2		-5.5		** V (w/ 10dB Pad)
1.988	5.0	71.0	62.0	27.8	3.6	-36.4	-5.9	0.0	60.2	51.2	68.2		-8.0		** V (w/ 10dB Pad)
1.988	5.0	63.5	53.0	27.8	3.6	-36.4	-5.9	0.0	52.7	42.2	68.2		-15.5		** H (w/ 10dB Pad)
6.130	5.0	58.5	46.5	35.4	6.7	-36.3	-5.9	0.0	58.4	46.4	68.2		-9.8		** H (w/ 10dB Pad)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -27dBm = 68.2dBuV

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		

05/10/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1295
Company: AtherosCommunications, Inc.
EUT Descrip.: 802.11a Wireless LAN Cardbus Card
EUT M/N: Tecra 8200 Laptop Computer
Test Target: FCC 15.407 UNII
Mode Oper: Turbo, Hi Channel, 5290MHz
(Frequency Range 5.15 - 5.35GHz)

Equipment for 1-26 GHz:
HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Equipment for 26 - 40 GHz:
HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970A External mixer/antenna
Dico 1149 Horn Antenna
Cable: IF Only (321 MHz)

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

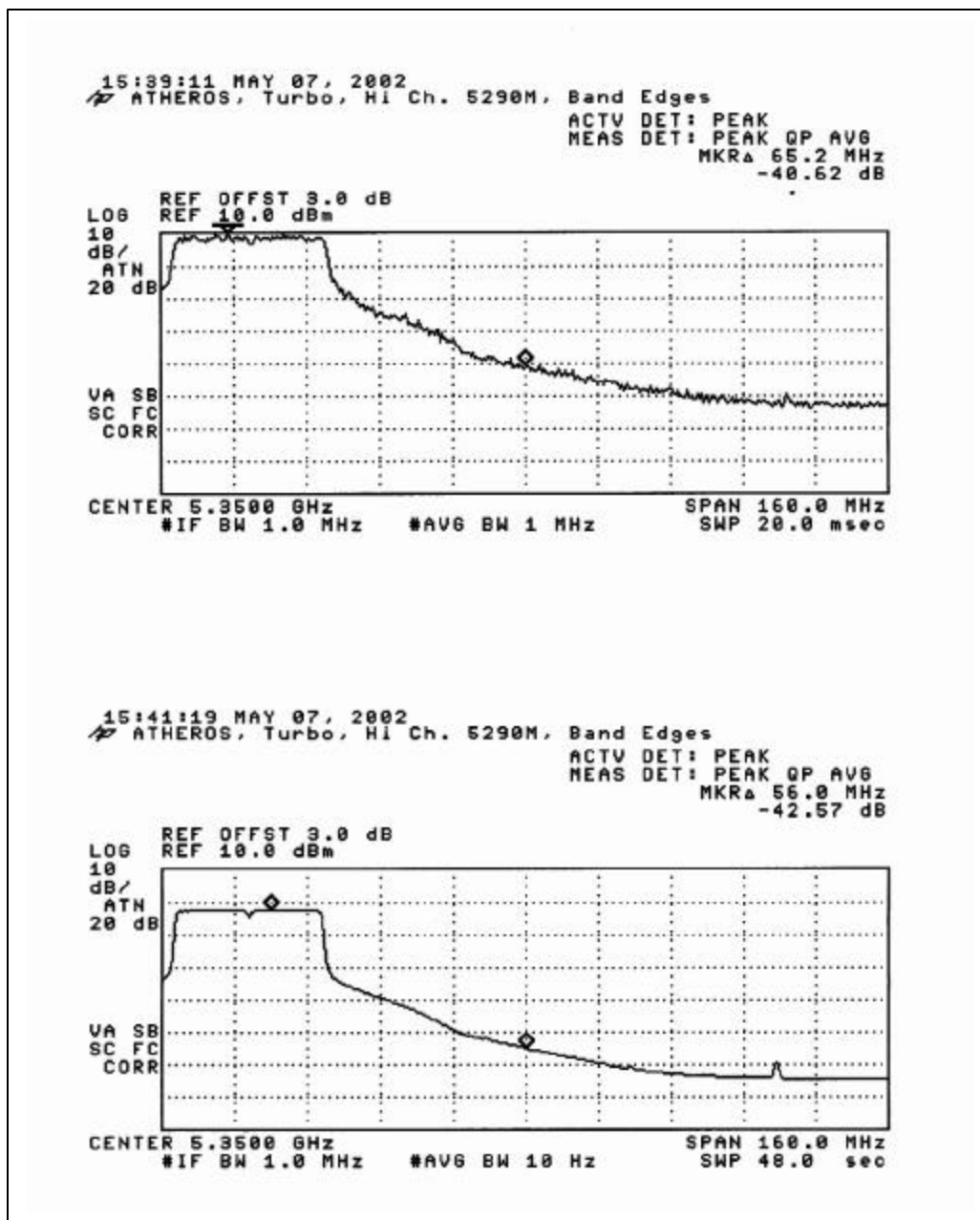
Average Measurements:
1MHz Resolution Bandwidth
10Hz Video Bandwidth

Peak Delta Ave Delta
40.62 42.57

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
5.290	5.0	73.8	62.0	34.9	4.9	0.0	-5.9	0.0	107.7	95.9					V (Fundamental)
5.290	5.0	68.0	57.0	34.9	4.9	0.0	-5.9	0.0	101.9	90.9					H (Fundamental)
Band Edge:															
5.350	Using Peak Delta = 40.62 and Average Delta = 42.57								67.1	53.3	74.0	54.0	-6.9	-0.7	* V (Band Edge)
5.350	Using Peak Delta = 40.62 and Average Delta = 42.57								61.3	48.3	74.0	54.0	-12.7	-5.7	* H (Band Edge)
Harmonic:															
10.580	5.0	48.0	35.4	38.9	8.9	-35.6	-5.9	1.0	55.3	42.7	68.2		-12.9		** V
10.616	5.0	50.0	37.0	38.9	8.9	-35.6	-5.9	1.0	57.3	44.3	74.0	54.0	-16.7	-9.7	* V
15.870	5.0	51.5	37.7	38.1	11.6	-38.6	-5.9	1.0	57.7	43.9	74.0	54.0	-16.3	-10.1	* V
21.160	2.5	53.2	41.2	32.4	14.4	-38.6	-11.9	0.0	49.4	37.5	74.0	54.0	-24.6	-16.5	* V (Noise Floor)
26.450	1.0	37.4	26.3	44.1	0.0	0.0	-19.9	0.0	61.6	50.5	68.2		-6.6		** V (Noise Floor)
31.740	1.0	37.5	26.4	44.1	0.0	0.0	-19.9	0.0	61.7	50.6	74.0	54.0	-12.3	-3.4	* V (Noise Floor)
37.030	1.0	37.6	26.6	44.1	0.0	0.0	-19.9	0.0	61.8	50.8	68.2		-6.4		** V (Noise Floor)
10.580	5.0	47.5	35.6	38.9	8.9	-35.6	-5.9	1.0	54.8	42.9	68.2		-13.4		** H
10.617	5.0	52.0	41.3	38.9	8.9	-35.6	-5.9	1.0	59.3	48.6	74.0	54.0	-14.7	-5.4	* H
15.870	5.0	50.7	38.5	38.1	11.6	-38.6	-5.9	1.0	56.9	44.7	74.0	54.0	-17.1	-9.3	* H
21.160	2.5	53.4	41.5	32.4	14.4	-38.6	-11.9	0.0	49.7	37.8	74.0	54.0	-24.3	-16.2	* H (Noise Floor)
26.450	1.0	37.3	26.3	44.1	0.0	0.0	-19.9	0.0	61.5	50.5	68.2		-6.7		** H (Noise Floor)
31.740	1.0	37.4	26.4	44.1	0.0	0.0	-19.9	0.0	61.6	50.6	74.0	54.0	-12.4	-3.4	* H (Noise Floor)
37.030	1.0	37.6	26.6	44.1	0.0	0.0	-19.9	0.0	61.8	50.8	68.2		-6.4		** H (Noise Floor)
Spurious:															
1.989	5.0	70.8	60.5	27.9	3.6	-36.4	-5.9	0.0	60.0	49.7	68.2		-8.2		** V (w/ 10dB Pad)
2.339	5.0	59.0	49.2	28.7	3.8	-36.3	-5.9	0.0	49.3	39.5	74.0	54.0	-24.7	-14.5	* V (w/ 10dB Pad)
3.540	5.0	65.0	49.5	32.3	4.7	-36.2	-5.9	0.0	59.9	44.4	68.2		-8.3		** V (w/ 10dB Pad)
4.420	5.0	64.0	50.5	33.0	5.4	-36.1	-5.9	0.0	60.4	46.9	68.2		-7.8		** V (w/ 10dB Pad)
6.167	5.0	63.0	50.0	35.4	6.7	-36.3	-5.9	0.0	63.0	50.0	68.2		-5.3		** V (w/ 10dB Pad)
6.167	5.0	60.4	49.0	35.4	6.7	-36.3	-5.9	0.0	60.4	49.0	68.2		-7.9		** H (w/ 10dB Pad)
4.420	5.0	59.3	48.0	33.0	5.4	-36.1	-5.9	0.0	55.7	44.4	68.2		-12.5		** H (w/ 10dB Pad)
3.540	5.0	61.0	47.3	32.3	4.7	-36.2	-5.9	0.0	55.9	42.2	68.2		-12.3		** H (w/ 10dB Pad)
1.989	5.0	66.0	57.0	27.9	3.6	-36.4	-5.9	0.0	55.2	46.2	68.2		-13.0		** H (w/ 10dB Pad)

Note: * Restricted Band Limit
** Non Restricted Band Liimit = -27dBm = 68.2dBuV

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		



05/08/02 **FCC Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1295
Company: AtherosCommunications, Inc.
EUT Descrip.: 802.11a Wireless LAN Cardbus Card
EUT M/N: Tecra 8200 Laptop Computer
Test Target: FCC 15.407 UNII
Mode Oper: Normal, Low Channel, 5745MHz
(Frequency Range 5.725 - 5.850GHz)

Equipment for 1-26 GHz:

HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Equipment for 26-40 GHz:

HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970A External mixer/antenna
Dico 1149 Horn Antenna
Cable: IF Only (321 MHz)

Peak Measurements:

1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental Frequency:															
5.745	5.0	77.3	66.9	35.3	5.1	0.0	-5.9	0.0	111.9	101.5					V
5.745	5.0	69.9	59.6	35.3	5.1	0.0	-5.9	0.0	104.5	94.2					H
Band Edge (-20dBc from the fundamental output power):															
5.725	5.0	52.6	39.3	35.3	5.1	0.0	-5.9	0.0	87.2	73.8	91.9	81.5	-4.7	-7.7	** V
5.725	5.0	46.3	36.8	35.3	5.1	0.0	-5.9	0.0	80.9	71.4	91.9	81.5	-11.0	-10.1	** H
Harmonic:															
11.489	5.0	58.2	44.4	39.5	9.3	-36.0	-5.9	1.0	66.1	52.2	74.0	54.0	-7.9	-1.8	* V
17.236	5.0	51.4	40.1	43.6	12.4	-38.9	-5.9	1.0	63.7	52.4	91.9	81.5	-28.2	-29.1	** V
22.980	2.5	52.0	40.5	32.7	15.6	-39.1	-11.9	0.0	49.3	37.8	74.0	54.0	-24.7	-16.2	* V (Noise Floor)
27.120	1.0	37.0	26.0	44.1	0.0	0.0	-19.9	0.0	61.2	50.2	91.9	81.5	-30.7	-31.3	** V (Noise Floor)
28.725	1.0	37.1	26.1	44.1	0.0	0.0	-19.9	0.0	61.3	50.3	91.9	81.5	-30.6	-31.2	** V (Noise Floor)
34.470	1.0	37.2	26.2	44.1	0.0	0.0	-19.9	0.0	61.4	50.4	91.9	81.5	-30.5	-31.1	** V (Noise Floor)
11.489	5.0	55.5	42.5	39.5	9.3	-36.0	-5.9	1.0	63.3	50.4	74.0	54.0	-10.7	-3.6	* H
17.236	5.0	51.0	39.7	43.6	12.4	-38.9	-5.9	1.0	63.3	52.0	91.9	81.5	-28.6	-29.5	** H
22.980	2.5	52.0	40.5	32.7	15.6	-39.1	-11.9	0.0	49.3	37.8	74.0	54.0	-24.7	-16.2	* H (Noise Floor)
28.725	1.0	37.0	26.0	44.1	0.0	0.0	-19.9	0.0	61.2	50.2	91.9	81.5	-30.7	-31.3	** H (Noise Floor)
34.470	1.0	37.1	26.1	44.1	0.0	0.0	-19.9	0.0	61.3	50.3	91.9	81.5	-30.6	-31.2	** H (Noise Floor)
Spurious:															
4.009	5.0	64.5	48.7	33.3	5.1	-36.1	-5.9	0.0	60.9	45.1	74.0	54.0	-13.1	-8.9	* V (w/ 10dB attn)
3.811	5.0	56.9	42.8	32.9	4.9	-36.2	-5.9	0.0	52.6	38.6	74.0	54.0	-21.4	-15.4	* V (w/ 10dB attn)
4.682	5.0	62.5	44.6	33.4	5.6	-36.1	-5.9	0.0	59.6	41.7	74.0	54.0	-14.4	-12.3	* V (w/ 10dB attn)
6.608	5.0	66.2	52.4	35.7	6.9	-36.4	-5.9	0.0	66.5	52.8	91.9	81.5	-25.4	-28.7	** V (w/ 10dB attn)
6.812	5.0	62.8	47.5	36.1	7.0	-36.4	-5.9	0.0	63.7	48.4	91.9	81.5	-28.2	-33.1	** V (w/ 10dB attn)
7.475	5.0	73.8	51.0	37.4	7.4	-36.2	-5.9	0.0	76.6	53.8	74.0	54.0	2.6	-0.2	* V (w/ 10dB attn)
7.475	2.5	64.9	52.0	37.5	7.4	-36.2	-11.9	0.0	61.7	48.7	74.0	54.0	-12.3	-5.3	* V (w/ 20dB attn)
6.608	5.0	57.0	45.0	35.7	6.9	-36.4	-5.9	0.0	57.4	45.4	91.9	81.5	-34.5	-36.1	** H (w/ 10dB attn)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -20dBc from the fundamental output power

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		

05/10/02 **FCC Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1295
Company: AtherosCommunications, Inc.
EUT Descrip.: 802.11a Wireless LAN Cardbus Card
EUT M/N: Tecra 8200 Laptop Computer
Test Target: FCC 15.407 UNII
Mode Oper: Normal, Mid Channel, 5785MHz
(Frequency Range 5.725 - 5.850GHz)

Equipment for 1-26 GHz:

HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Equipment for 26 - 40 GHz:

HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970A External mixer/antenna
Dico 1149 Horn Antenna
Cable: IF Only (321 MHz)

Peak Measurements:

1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental Frequency:															
5.785	5.0	78.3	67.4	35.4	5.2	0.0	-5.9	0.0	113.0	102.1					V
5.785	5.0	71.7	60.7	35.4	5.2	0.0	-5.9	0.0	106.4	95.4					H
Harmonics:															
11.570	5.0	60.0	45.0	39.5	9.3	-36.0	-5.9	1.0	67.8	52.8	74.0	54.0	-6.2	-1.2	* V
17.355	5.0	50.8	39.4	44.5	12.5	-38.9	-5.9	1.0	64.1	52.7	93.0	82.1	-28.9	-29.4	** V
23.140	2.5	52.5	41.0	32.8	15.7	-39.1	-11.9	0.0	49.9	38.4	93.0	82.1	-43.1	-43.7	** V (Noise Floor)
28.925	1.0	37.7	26.8	44.1	0.0	0.0	-19.9	0.0	61.9	51.0	93.0	82.1	-31.1	-31.1	** V (Noise Floor)
34.710	1.0	37.8	27.0	44.1	0.0	0.0	-19.9	0.0	62.0	51.2	93.0	82.1	-31.0	-30.9	** V (Noise Floor)
11.570	5.0	52.7	40.0	39.5	9.3	-36.0	-5.9	1.0	60.5	47.8	74.0	54.0	-13.5	-6.2	* H
17.355	5.0	40.0	39.0	44.5	12.5	-38.9	-5.9	1.0	53.3	52.3	93.0	82.1	-39.7	-29.8	** H
23.400	2.5	52.5	41.0	32.9	15.9	-39.2	-11.9	0.0	50.2	38.7	93.0	82.1	-42.8	-43.4	** H (Noise Floor)
28.925	1.0	37.6	26.7	44.1	0.0	0.0	-19.9	0.0	61.8	50.9	93.0	82.1	-31.2	-31.2	** H (Noise Floor)
34.710	1.0	37.8	26.9	44.1	0.0	0.0	-19.9	0.0	62.0	51.1	93.0	82.1	-31.0	-31.0	** H (Noise Floor)
Spurious:															
4.026	5.0	76.1	56.0	33.3	5.1	-36.1	-5.9	0.0	72.5	52.4	74.0	54.0	-1.5	-1.6	* V (w/ 10dB attn)
4.908	5.0	69.0	52.5	34.1	5.8	-36.1	-5.9	0.0	67.0	50.5	74.0	54.0	-7.0	-3.5	* V (w/ 10dB attn)
2.988	5.0	68.5	48.5	31.0	4.2	-36.2	-5.9	0.0	61.5	41.5	93.0	82.1	-31.5	-40.6	** V (w/ 10dB attn)
6.660	5.0	70.0	55.0	35.8	6.9	-36.4	-5.9	0.0	70.5	55.5	93.0	82.1	-22.5	-26.6	** V (w/ 10dB attn)
6.660	5.0	65.5	54.0	35.8	6.9	-36.4	-5.9	0.0	66.0	54.5	93.0	82.1	-27.0	-27.6	** H (w/ 10dB attn)
4.026	5.0	62.0	46.5	33.3	5.1	-36.1	-5.9	0.0	58.4	42.9	74.0	54.0	-15.6	-11.1	* H (w/ 10dB attn)
4.908	5.0	59.3	46.0	34.1	5.8	-36.1	-5.9	0.0	57.3	44.0	74.0	54.0	-16.7	-10.0	* H (w/ 10dB attn)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -20dBc from the fundamental output power

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		

05/08/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1295
Company: AtherosCommunications, Inc.
EUT Descrip.: 802.11a Wireless LAN Cardbus Card
EUT M/N: Tecra 8200 Laptop Computer
Test Target: FCC 15.407 UNII
Mode Oper: Normal, Hi Channel, 5825MHz
(Frequency Range 5.725 - 5.850GHz)

Equipment for 1-26 GHz:

HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Equipment for 26 - 40 GHz:

HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970A External mixer/antenna
Dico 1149 Horn Antenna
Cable: IF Only (321 MHz)

Peak Measurements:

1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental Frequency:															
5.825	5.0	76.8	66.3	35.4	5.2	0.0	-5.9	0.0	111.5	101.0					V
5.825	5.0	68.1	58.2	35.4	5.2	0.0	-5.9	0.0	102.8	92.9					H
Band Edge (-20dBc from the fundamental output power):															
5.850	5.0	41.0	28.0	35.4	5.2	0.0	-5.9	0.0	75.7	62.7	91.5	81.0	-15.8	-18.3	** V (RBW=VBW=100KHz)
5.850	5.0	36.7	25.5	35.4	5.2	0.0	-5.9	0.0	71.4	60.2	91.5	81.0	-20.1	-20.8	** H (RBW=VBW=100KHz)
Harmonic:															
11.652	5.0	58.5	45.0	39.4	9.3	-36.1	-5.9	1.0	66.3	52.8	74.0	54.0	-7.7	-1.2	* V
17.468	5.0	51.6	38.5	45.4	12.6	-38.9	-5.9	1.0	65.7	52.6	91.5	81.0	-25.8	-28.4	** V
23.300	2.5	52.0	41.7	32.8	15.8	-39.2	-11.9	0.0	49.6	39.3	91.5	81.0	-41.9	-41.7	** V (Noise Floor)
29.125	1.0	37.9	26.9	44.1	0.0	0.0	-19.9	0.0	62.1	51.1	91.5	81.0	-29.4	-29.9	** V (Noise Floor)
34.950	1.0	38.0	27.0	44.1	0.0	0.0	-19.9	0.0	62.2	51.2	91.5	81.0	-29.3	-29.8	** V (Noise Floor)
11.560	5.0	52.1	39.5	39.5	9.3	-36.0	-5.9	1.0	59.9	47.3	74.0	54.0	-14.1	-6.7	* H
17.475	5.0	50.5	38.5	45.4	12.6	-38.9	-5.9	1.0	64.7	52.7	91.5	81.0	-26.8	-28.3	** H
23.300	2.5	52.0	41.7	32.8	15.8	-39.2	-11.9	0.0	49.6	39.3	91.5	81.0	-41.9	-41.7	** H (Noise Floor)
29.125	5.0	37.8	26.8	44.1	0.0	0.0	-5.9	0.0	76.0	65.0	91.5	81.0	-15.5	-16.0	** H (Noise Floor)
34.950	5.0	37.9	26.9	44.1	0.0	0.0	-5.9	0.0	76.1	65.1	91.5	81.0	-15.4	-15.9	** H (Noise Floor)
Spurious:															
4.945	5.0	72.4	55.5	34.2	5.8	-36.1	-5.9	0.0	70.5	53.6	74.0	54.0	-3.5	-0.4	* V
4.889	5.0	60.0	47.4	34.1	5.8	-36.1	-5.9	0.0	57.9	45.3	74.0	54.0	-16.1	-8.7	* V (w/ 10dB attn)
6.686	5.0	72.5	56.5	35.9	7.0	-36.4	-5.9	0.0	73.1	57.1	91.5	81.0	-18.4	-23.9	** V (w/ 10dB attn)
7.554	2.5	71.0	56.4	37.5	7.4	-36.1	-11.9	0.0	67.9	53.3	74.0	54.0	-6.1	-0.7	* V (w/ 20dB attn)
6.686	2.5	72.5	57.0	35.9	7.0	-36.4	-11.9	0.0	67.0	51.5	91.5	81.0	-24.5	-29.5	** V (w/ 20dB attn)
6.686	5.0	61.7	50.0	35.9	7.0	-36.4	-5.9	0.0	62.3	50.6	91.5	81.0	-29.2	-30.4	** H (w/ 10dB attn)
7.554	5.0	67.8	50.0	37.5	7.4	-36.1	-5.9	0.0	70.7	52.9	74.0	54.0	-3.3	-1.1	* H (w/ 10dB attn)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -20dBc from the fundamental output power

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		

05/08/02 **FCC Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1295
Company: AtherosCommunications, Inc.
EUT Descrip.: 802.11a Wireless LAN Cardbus Card
EUT M/N: Tecra 8200 Laptop Computer
Test Target: FCC 15.407 UNII
Mode Oper: Turbo, Low Channel, 5760MHz
(Frequency Range 5.725 - 5.850GHz)

Equipment for 1-26 GHz:

HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Equipment for 26 - 40 GHz:

HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970A External mixer/antenna
Dico 1149 Horn Antenna
Cable: IF Only (321 MHz)

Peak Measurements:

1 MHz Resolution Bandwidth
1 MHz Video Bandwidth

Average Measurements:

1 MHz Resolution Bandwidth
10 Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental Frequency:															
5.760	5.0	76.6	65.5	35.4	5.1	0.0	-5.9	0.0	111.2	100.1					V
5.760	5.0	68.9	58.0	35.4	5.1	0.0	-5.9	0.0	103.5	92.6					H
Band Edge (-20dBc from the fundamental output power):															
5.725	5.0	46.7	36.0	35.3	5.1	0.0	-5.9	0.0	81.3	70.6	91.2	80.1	-9.9	-9.5	** V
5.725	5.0	39.0	29.0	35.3	5.1	0.0	-5.9	0.0	73.6	63.6	91.2	80.1	-17.6	-16.5	** H
Harmonic:															
11.520	5.0	55.2	43.1	39.5	9.3	-36.0	-5.9	1.0	63.1	51.0	74.0	54.0	-10.9	-3.0	* V
17.280	5.0	51.3	39.5	44.0	12.5	-38.9	-5.9	1.0	64.0	52.2	91.2	80.1	-27.2	-27.9	** V
23.040	2.5	54.0	41.0	32.7	15.6	-39.1	-11.9	0.0	51.3	38.3	74.0	54.0	-22.7	-15.7	* V (Noise Floor)
28.800	1.0	37.2	26.1	44.1	0.0	0.0	-19.9	0.0	61.4	50.3	91.2	80.1	-29.8	-29.8	** V (Noise Floor)
34.560	1.0	37.2	26.2	44.1	0.0	0.0	-19.9	0.0	61.4	50.4	91.2	80.1	-29.8	-29.7	** V (Noise Floor)
11.489	5.0	50.0	38.0	39.5	9.3	-36.0	-5.9	1.0	57.9	45.9	74.0	54.0	-16.1	-8.1	* H
17.236	5.0	50.0	39.5	43.6	12.4	-38.9	-5.9	1.0	62.3	51.8	91.2	80.1	-28.9	-28.3	** H
23.040	2.5	52.0	40.5	32.7	15.6	-39.1	-11.9	0.0	49.3	37.8	74.0	54.0	-24.7	-16.2	* H (Noise Floor)
28.800	1.0	37.1	26.0	44.1	0.0	0.0	-19.9	0.0	61.3	50.2	91.2	80.1	-29.9	-29.9	** H (Noise Floor)
34.560	1.0	37.0	26.1	44.1	0.0	0.0	-19.9	0.0	61.2	50.3	91.2	80.1	-30.0	-29.8	** H (Noise Floor)
Spurious:															
4.009	5.0	65.6	53.0	33.3	5.1	-36.1	-5.9	0.0	62.0	49.4	74.0	54.0	-12.0	-4.6	* V (w/ 20dB attn)
4.884	5.0	65.0	53.7	34.1	5.8	-36.1	-5.9	0.0	62.9	51.6	74.0	54.0	-11.1	-2.4	* V (w/ 20dB attn)
6.640	2.5	70.0	59.0	35.8	6.9	-36.4	-11.9	0.0	64.4	53.4	91.2	80.1	-26.8	-26.7	** V (w/ 20dB attn)
6.640	2.5	69.5	58.0	35.8	6.9	-36.4	-11.9	0.0	63.9	52.4	91.2	80.1	-27.3	-27.7	** H (w/ 20dB attn)
7.475	2.5	64.9	52.0	37.5	7.4	-36.2	-11.9	0.0	61.7	48.7	74.0	54.0	-12.3	-5.3	* V (w/ 20dB attn)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -20dBc from the fundamental output power

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		

05/08/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1295
Company: AtherosCommunications, Inc.
EUT Descrip.: 802.11a Wireless LAN Cardbus Card
EUT M/N: Tecra 8200 Laptop Computer
Test Target: FCC 15.407 UNII
Mode Oper: Turbo, Hi Channel, 5800MHz
(Frequency Range 5.725 - 5.850GHz)

Equipment for 1-26 GHz:

HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Equipment for 26 - 40 GHz:

HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970A External mixer/antenna
Dico 1149 Horn Antenna
Cable: IF Only (321 MHz)

Peak Measurements:

1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental Frequency:															
5.800	5.0	73.9	63.1	35.4	5.2	0.0	-5.9	0.0	108.6	97.8					V
5.800	5.0	68.0	57.1	35.4	5.2	0.0	-5.9	0.0	102.7	91.8					H
Band Edge (-20dBc from the fundamental output power):															
5.850	5.0	37.8	27.0	35.4	5.2	0.0	-5.9	0.0	72.5	61.7	88.6	77.8	-16.1	-16.1	** V
5.850	5.0	36.6	25.5	35.4	5.2	0.0	-5.9	0.0	71.3	60.2	88.6	77.8	-17.3	-17.6	** H
Harmonic:															
11.600	5.0	55.4	44.0	39.5	9.3	-36.1	-5.9	1.0	63.2	51.8	74.0	54.0	-10.8	-2.2	* V
17.400	5.0	51.6	39.0	44.9	12.5	-38.9	-5.9	1.0	65.2	52.6	88.6	77.8	-23.4	-25.2	** V
23.200	2.5	52.0	41.7	32.8	15.8	-39.1	-11.9	0.0	49.5	39.2	88.6	77.8	-39.1	-38.6	** V (Noise Floor)
29.000	1.0	38.0	27.0	44.1	0.0	0.0	-19.9	0.0	62.2	51.2	88.6	77.8	-26.4	-26.6	** V (Noise Floor)
34.800	1.0	38.2	27.1	44.1	0.0	0.0	-19.9	0.0	62.4	51.3	88.6	77.8	-26.2	-26.5	** V (Noise Floor)
11.600	5.0	49.5	38.0	39.5	9.3	-36.1	-5.9	1.0	57.3	45.8	74.0	54.0	-16.7	-8.2	* H
17.400	5.0	51.0	38.5	44.9	12.5	-38.9	-5.9	1.0	64.6	52.1	88.6	77.8	-24.0	-25.7	** H
23.200	2.5	52.0	41.7	32.8	15.8	-39.1	-11.9	0.0	49.5	39.2	88.6	77.8	-39.1	-38.6	** H (Noise Floor)
29.000	1.0	37.9	26.9	44.1	0.0	0.0	-19.9	0.0	62.1	51.1	88.6	77.8	-26.5	-26.7	** H (Noise Floor)
34.800	1.0	38.0	27.0	44.1	0.0	0.0	-19.9	0.0	62.2	51.2	88.6	77.8	-26.4	-26.6	** H (Noise Floor)
Spurious:															
6.656	5.0	71.3	58.0	35.8	6.9	-36.4	-5.9	0.0	71.8	58.5	88.6	77.8	-16.8	-19.3	** V (w/ 10dB attn)
6.656	5.0	62.0	49.7	35.8	6.9	-36.4	-5.9	0.0	62.5	50.2	88.6	77.8	-26.1	-27.6	** H (w/ 10dB attn)
4.942	5.0	66.6	53.6	34.2	5.8	-36.1	-5.9	0.0	64.7	51.7	74.0	54.0	-9.3	-2.3	* V (w/ 20dB attn)
4.076	5.0	65.0	53.0	33.2	5.2	-36.1	-5.9	0.0	61.4	49.4	74.0	54.0	-12.6	-4.6	* V (w/ 20dB attn)
4.942	5.0	65.0	53.5	34.2	5.8	-36.1	-5.9	0.0	63.1	51.6	74.0	54.0	-10.9	-2.4	* H (w/ 20dB attn)
4.076	5.0	64.0	53.1	33.2	5.2	-36.1	-5.9	0.0	60.4	49.5	74.0	54.0	-13.6	-4.5	* H (w/ 20dB attn)

Note: * Restricted Band Limit
** Non Restricted Band Limit = -20dBc from the fundamental output power

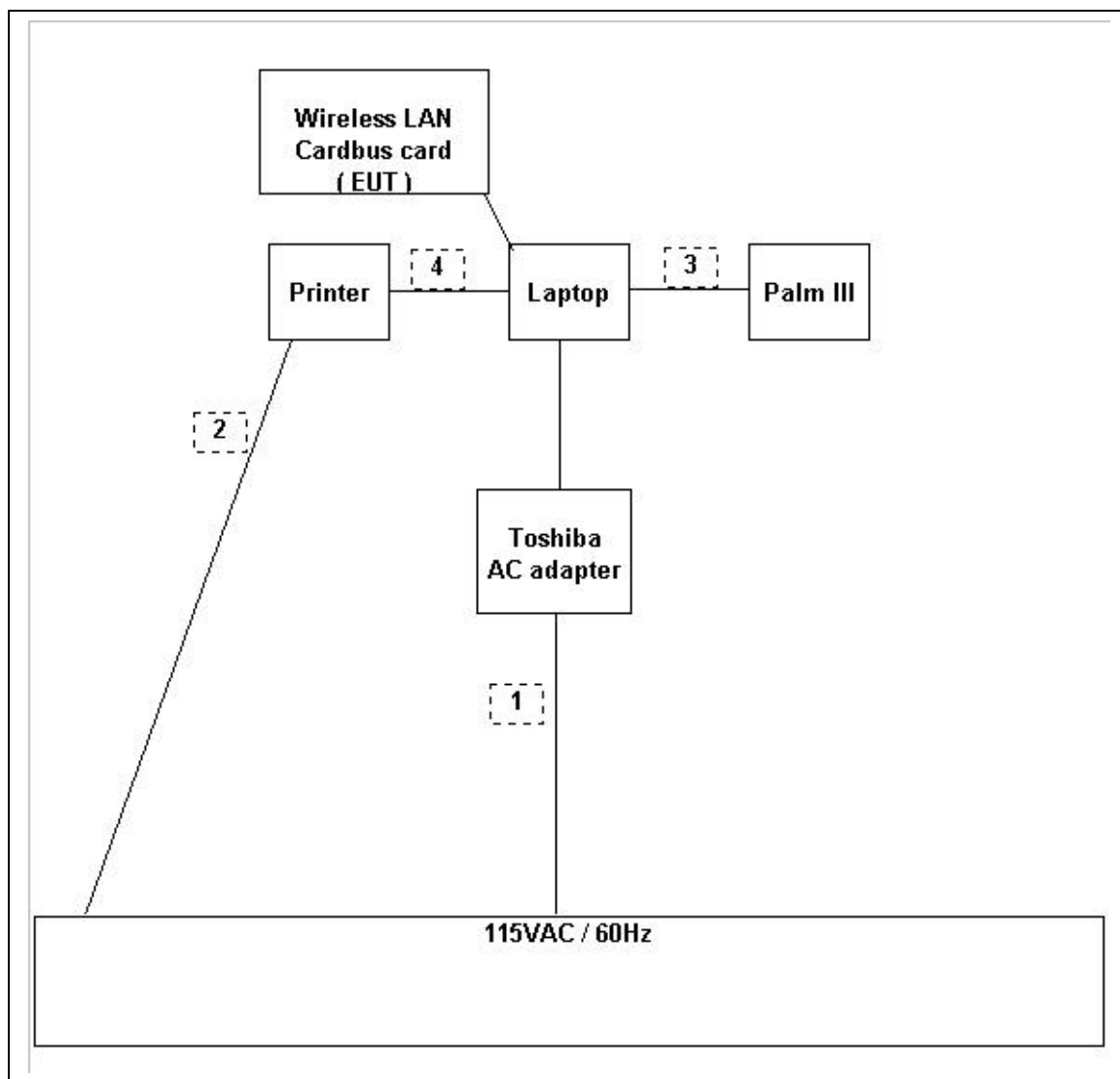
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

9.8. POWER LINE CONDUCTED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
450 KHz to 30 MHz	☒ Peak ☐ CISPR Quasi Peak	☒ 9 KHz	☒ 9 KHz

TEST SETUP



TEST PROCEDURE

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in a continuous mode.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

RESULT

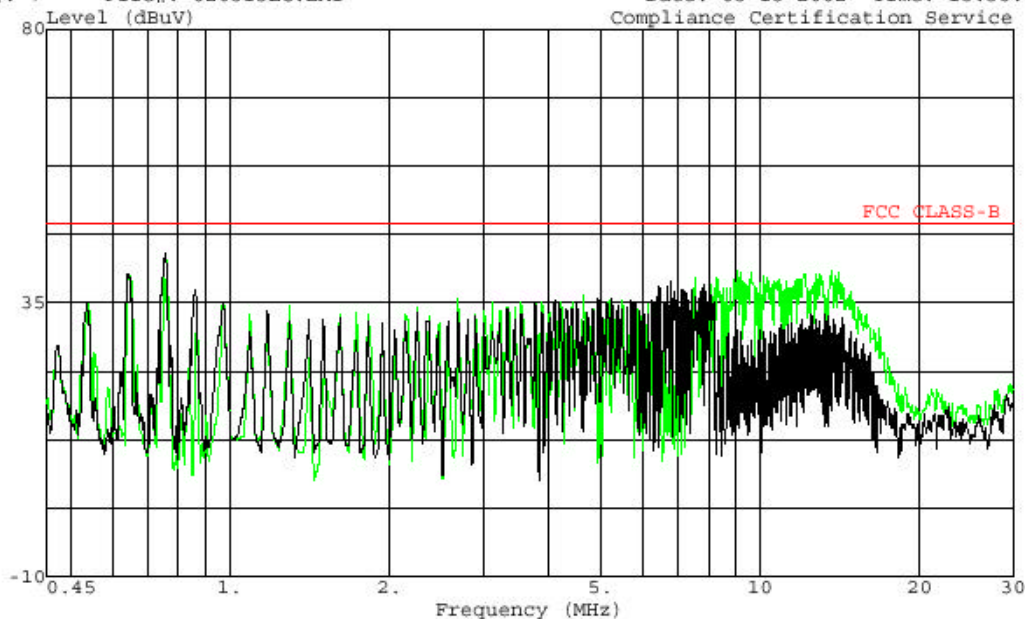
No non-compliance noted. See plot Line Conduction.

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCCB	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.65	40.17	—	—	0	48.00	—	-7.83	—	L1
0.76	42.22	—	—	0	48.00	—	-5.78	—	L1
13.97	40.18	—	—	0	48.00	—	-7.82	—	L1
0.64	39.40	—	—	0	48.00	—	-8.60	—	L2
0.75	43.34	—	—	0	48.00	—	-4.66	—	L2
7.86	38.14	—	—	0	48.00	—	-9.86	—	L2
6 Worst Data									



561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 7 File#: 020513LC.EMI Date: 05-13-2002 Time: 15:38:42
Level (dBuV) Compliance Certification Service



Trace: 3
Project # : 02U1295-2
Test Engineer: Chin Pang
Company : Atheros Communications, Inc.
EUT : 802.11 Wireless LAN Cardbus Card
Test Config : EUT/Support Peripherals
Type of Test : FCC Class B
Mode of Op. : Turbo, 50Mb/s, 5.80Ghz, PCdAc=23
: L1: Peak (Green), L2: Peak (Black)
: 115VAC, 60Hz

Ref Trace:

9.9. RADIATED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak	☒ 100 KHz	☒ 100 KHz
	☐ Quasi Peak	☐ 120 KHz	☐ 120 KHz
Above 1000	☒ Peak	☒ 1 MHz	☒ 1 MHz
	☐ Average	☐ 1 MHz	☐ 10 Hz

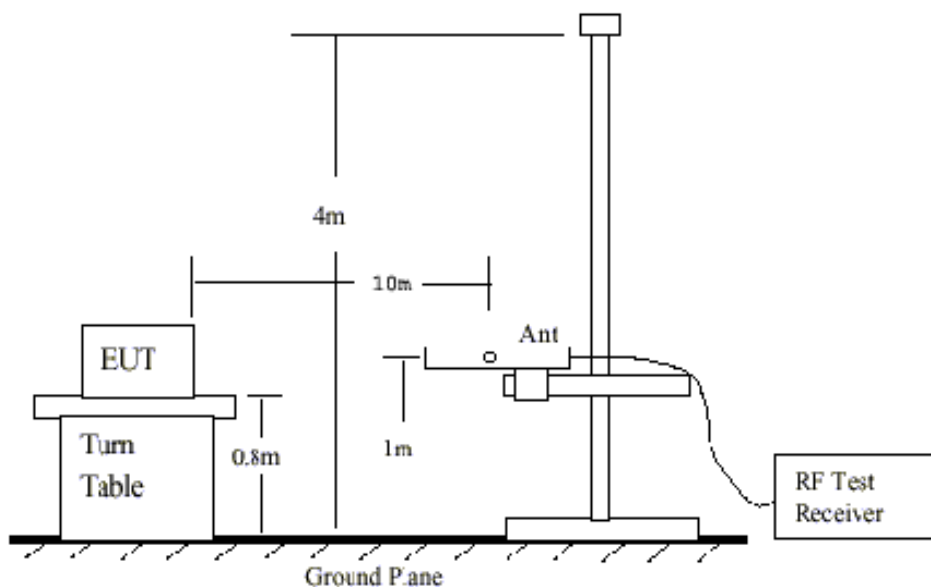
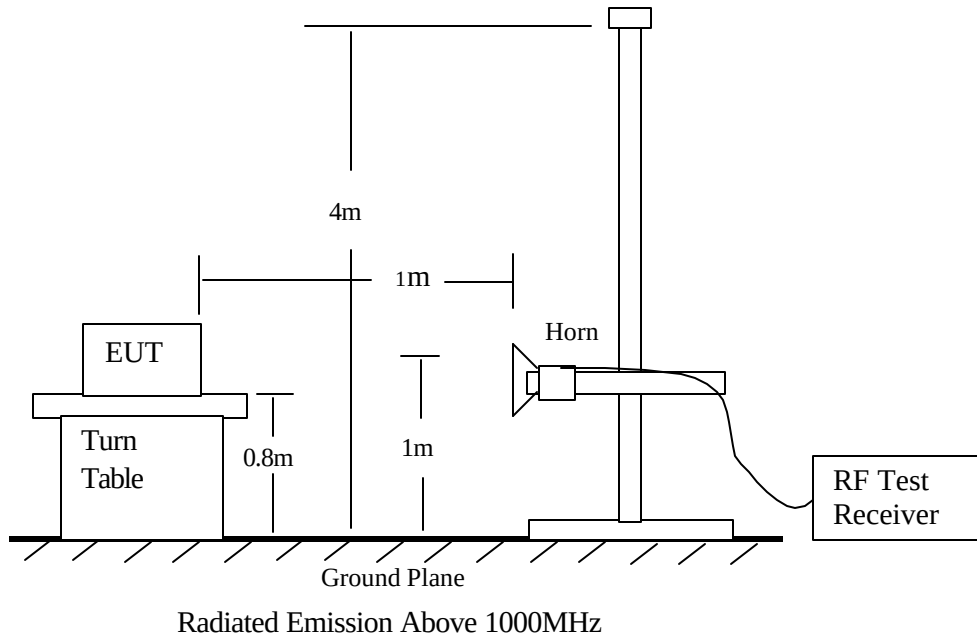


Fig 1: Radiated Emission Measurement 30 to 1000 MHz



TEST SETUP & PROCEDURE

1. The EUT was placed on the turn table 0.8 meter above ground in 3 meter open area test site.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures C ~ F. If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.
8. Set the resolution and video bandwidth of the spectrum analyzer to 1MHz and repeat procedures C ~ F for frequency band from 1 GHz to 10 times carrier frequency.

9. If the reading for the local peak is lower than the Average limit, no further testing is needed in this local peak and this reading should be recorded. If it is higher than Average limit but lower than Peak limit, then set the resolution bandwidth to 1MHz and video bandwidth to 300Hz. Repeat procedures C ~ F. If the maximum reading is lower than Average limit, then this reading should be recorded. If it is higher, then the test is fail.

RESULT

No non-compliance noted, as shown below.



FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 02U1295-2
Report #: 020513B1
Date & Time: 05/13/02 9:15 AM
Test Engr: Chin Pang

Company: Atheros communications, Inc.
EUT Description: 802.11a Wireless LAN Cardbus Card
Test Configuration : EUT/Support Peripherals
Type of Test: FCC Class B
Mode of Operation: Turbo, 108Mb/s, 5.25GHz

☐ A-Site ☒ B-Site ☐ C-Site ☐ F-Site

Freq.	Reading	AF	Class	Pre-amp	Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
20Mhz & 32Mhz step size											
160.00	46.30	10.03	2.67	29.34	29.66	43.50	-13.84	3mV	180.00	1.00	P
416.00	46.00	16.09	4.67	29.41	37.35	46.00	-8.65	3mV	180.00	1.00	P
544.00	46.00	17.93	5.53	29.75	39.72	46.00	-6.28	3mV	180.00	1.00	P
672.00	46.60	18.80	6.34	29.57	42.17	46.00	-3.83	3mV	180.00	1.00	P
800.00	43.80	19.73	7.07	29.29	41.31	46.00	-4.69	3mV	180.00	1.00	P
840.00	39.60	19.95	7.29	29.14	37.71	46.00	-8.29	3mV	180.00	1.00	P
331.00	43.80	13.86	4.02	28.98	32.70	46.00	-13.30	3mV	180.00	1.00	P
514.00	44.90	17.51	5.33	29.76	37.99	46.00	-8.01	3mV	180.00	1.00	P
640.00	44.40	18.76	6.15	29.64	39.67	46.00	-6.33	3mV	180.00	1.00	P
416.00	41.20	16.09	4.67	29.41	32.55	46.00	-13.45	3mH	180.00	1.50	P
288.00	45.10	12.77	3.68	28.84	32.71	46.00	-13.29	3mH	180.00	1.20	P
544.00	45.00	17.93	5.53	29.75	38.72	46.00	-7.28	3mH	180.00	1.20	P
800.00	44.60	19.73	7.07	29.29	42.11	46.00	-3.89	3mH	180.00	1.20	P
960.00	43.60	20.66	7.88	28.66	43.48	46.00	-2.52	3mH	180.00	1.20	P
Total data #: 14											
V.2b											



FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 02U1295-2
Report #: 020513B2
Date & Time: 05/13/02 12:07 PM
Test Engr: Chin Pang

Company: Atheros communications, Inc.
EUT Description: 802.11a Wireless LAN Cardbus Card
Test Configuration : EUT/Support Peripherals
Type of Test: FCC Class B
Mode of Operation: Turbo, 108Mb/s, 5.80GHz

☐ A-Site ☒ B-Site ☐ C-Site ☐ F-Site

Freq.	Reading	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
20Mhz & 32Mhz step size											
160.00	46.20	10.03	2.67	29.34	29.56	43.50	-13.94	3mV	180.00	1.00	P
480.00	43.60	17.03	5.10	29.68	36.05	46.00	-9.95	3mV	180.00	1.00	P
800.00	43.60	19.73	7.07	29.29	41.11	46.00	-4.89	3mV	180.00	1.00	P
224.00	44.60	10.38	3.17	29.03	29.12	46.00	-16.88	3mV	180.00	1.00	P
544.00	44.30	17.93	5.53	29.75	38.02	46.00	-7.98	3mV	180.00	1.00	P
343.00	44.20	14.20	4.12	29.04	33.47	46.00	-12.53	3mV	180.00	1.00	P
416.00	43.70	16.09	4.67	29.41	35.05	46.00	-10.95	3mV	180.00	1.00	P
416.00	44.20	16.09	4.67	29.41	35.55	46.00	-10.45	3mH	180.00	1.20	P
320.00	45.00	13.54	3.94	28.92	33.55	46.00	-12.45	3mH	180.00	1.20	P
480.00	43.40	17.03	5.10	29.68	35.85	46.00	-10.15	3mH	180.00	1.20	P
800.00	45.00	19.73	7.07	29.29	42.51	46.00	-3.49	3mH	180.00	1.20	P
720.00	44.20	19.01	6.62	29.47	40.37	46.00	-5.63	3mH	180.00	1.00	P
520.00	43.20	17.60	5.37	29.75	36.42	46.00	-9.58	3mH	180.00	1.00	P
220.00	42.80	10.11	3.13	29.05	27.00	46.00	-19.00	3mH	180.00	1.00	P
Total data # 14											
V.2b											



FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 02U1295-2
Report #: 020513B3
Date & Time: 05/13/02 2:34 PM
Test Engr: Chin Pang

Company: Atheros communications, Inc.
EUT Description: 802.11a Wireless LAN Cardbus Card
Test Configuration : EUT/Support Peripherals
Type of Test: FCC Class B
Mode of Operation: Normal , 54Mb/s, 5.785GHz

☐ A-Site

☒ B-Site

☐ C-Site

☐ F-Site

6 Worst Data

Descending

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
589.83	44.70	18.57	5.84	29.73	39.38	46.00	-6.62	3mV	180.00	1.00	P
544.00	44.00	17.93	5.53	29.75	37.72	46.00	-8.28	3mV	180.00	1.00	P
160.00	46.50	10.03	2.67	29.34	29.86	43.50	-13.64	3mV	180.00	1.00	P
800.00	43.00	19.73	7.07	29.29	40.51	46.00	-5.49	3mV	180.00	1.00	P
288.00	45.00	12.77	3.68	28.84	32.61	46.00	-13.39	3mH	0.00	1.00	P
544.00	44.00	17.93	5.53	29.75	37.72	46.00	-8.28	3mH	0.00	1.00	P
800.00	42.00	19.73	7.07	29.29	39.51	46.00	-6.49	3mH	0.00	1.00	P
Total data # 7 V.2b											

9.10. SETUP PHOTOS

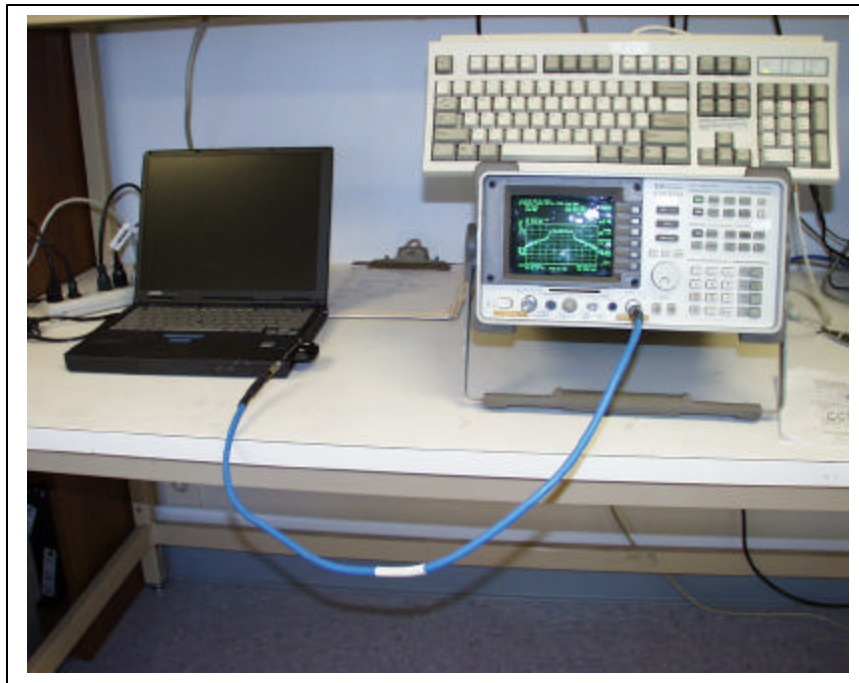
Radiated Emission 30 – 1000 MHz



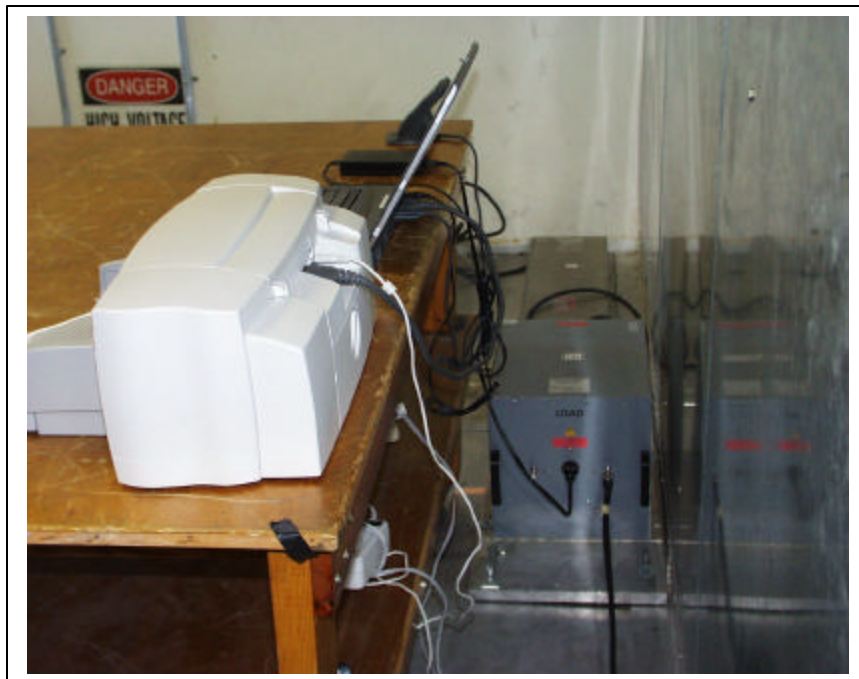
Radiated Emission above 1 GHz



Antenna Terminal Port Measurement



Line Conduction Emission



END OF REPORT