



CERTIFICATION TEST REPORT

FOR THE

WIRELESS CABLE MODEM TRANSCEIVER, 520005-1

**FCC PART 2 AND PART 21
COMPLIANCE**

DATE OF ISSUE: JANUARY 17, 2000

PREPARED FOR:

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Date of test: December 15-17, 1999

Report No: FC00-002

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A handwritten signature in cursive script that reads 'Dennis Ward'.

Dennis Ward
Director of Laboratories
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ADMINISTRATIVE INFORMATION

DATE OF TEST: December 15, 1999

PURPOSE OF TEST: To demonstrate the compliance of the Wireless Cable Modem Transceiver, 520005-1, with the requirements for FCC Part 21 devices.

MANUFACTURER: California Amplifier, Inc.
460 Calle San Pablo
Camarillo, CA 93012

REPRESENTATIVE: Carlos Briceno

TEST LOCATION: CKC Laboratories, Inc.
5473A Clouds Rest, Mariposa, CA 95338

TEST PERSONNEL: Skip Doyle

TEST METHOD: FCC Part 2 and 21

FREQUENCY RANGE TESTED: 500 kHz - 22 GHz

EQUIPMENT UNDER TEST: **Wireless Cable Modem Transceiver**
Manuf: California Amplifier
Model: 520005-1
Serial: 9510002383
FCC ID: J26520005-1 (Pending)

SUMMARY OF RESULTS

The California Amplifier, Inc. Wireless Cable Modem Transceiver, 520005-1, was tested in accordance with FCC Part 21 devices. As received, the above equipment was found to be fully compliant with the limits of FCC Part 21 devices. The results in this report apply only to the items tested, as identified herein.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

Up/Down converter working in conjunction with a cable modem.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB measurement uncertainty.

EUT OPERATING FREQUENCY

The EUT was operating at 2150-2162 MHz.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

PERIPHERAL DEVICES

The EUT was tested with the following peripheral devices:

Mouse

Manuf: Compaq
Model: P/N:141189-401
Serial: N/A
FCC ID: DZL211029

Keyboard

Manuf: Compaq
Model: M/N
Serial: B23N0A39E874G
FCC ID: AQ6MTN4XZ15

PC

Manuf: Compaq
Model: Deskpro
Serial: 6647HVS3Q701
FCC ID: DoC

Modem

Manuf: Hybrid Networks
Model: N231
Serial: 82AAP001759
FCC ID: DoC

Monitor

Manuf: ViewSonic
Model: V641-1M
Serial: 2A71303961
FCC ID: GSS14002

Power Supply 22 VDC/750mA

Manuf: Unknown
Model: 71441
Serial:
FCC ID: DoC

2.1033(c)(5) – Frequency Range

2150-2162 MHz.

2.1033(c)(7) – Maximum Power Rating

Maximum power rating as defined in the operating part(s) of the rules.

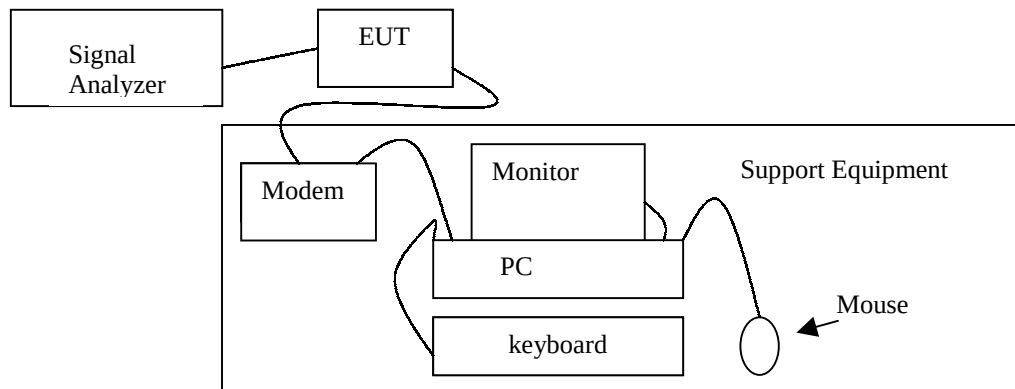
219 mW

2.1033(c)(14)/2.1046/21.107/21.904(b) - RF POWER OUTPUT

Test Conditions: EUT is a Wireless Cable Modem operating at 2150-2162MHz. EUT receives power from the modem via RG58 cable. Power through the cable is provided through the Power Inserter. EUT is continuously sending packets via command from the PC. EUT is operating on Low Channel (2153MHz) and High Channel (2159MHz) for each reading.

The emission designator is 5M00M1D.

DIAGRAM OF TEST SETUP USED FOR TEST:



TEST EQUIPMENT USED:

1. Spectrum Analyzer, Hewlett Packard, Model No. 8566B, S/N 2209A01404. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
2. Display, Hewlett Packard, Model No. 8566B, S/N 2403A08241. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
3. QP Adapter, Hewlett Packard, Model No. 85650A, S/N 1532A03198. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
4. 10-Meter GHz Hardline Cable, includes GHz cables #1, 2 & 3.

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
2152MHz – 2159MHz	1MHz

TEST DATA: (ERP or EIRP)Channel 2153

$$\begin{aligned} \text{Power Output} &= \text{InvLog}(\text{dBuV}-107)/10 \\ &\quad \text{InvLog}(130.4\text{dBuV}-107)/10 \\ &\quad \text{InvLog}(2.34) \end{aligned}$$

$$\text{Power Output} = \mathbf{218.776162\text{mWatts or }130.4\text{dBuV}}$$

Channel 2159

$$\begin{aligned} \text{Power Output} &= \text{InvLog}(\text{dBuV}-107)/10 \\ &\quad \text{InvLog}(130.1\text{dBuV}-107)/10 \\ &\quad \text{InvLog}(2.31) \end{aligned}$$

$$\text{Power Output} = \mathbf{204.173794\text{mWatts or }130.1\text{dBuV}}$$

Spec Limit Per 21.107/21.904(b)

$$\begin{aligned} \text{EIRP Spec Limit} &= 33\text{dBW}+10\text{Log}(360/\text{Beamwidth}) \\ &= 33\text{dBW}+10\text{Log}(360/12.5) \\ &= 33\text{dBW}+14.59 \end{aligned}$$

In accordance with 21.904(b) where $10\text{Log}(360/\text{beamwidth}) \leq 6$, since 14.59 is greater than 6 the following spec was used:

$$\begin{aligned} \text{EIRP Spec Limit} &= 33\text{dBW}+6 \\ &= \mathbf{39\text{dBW or }176\text{dBuV}} \end{aligned}$$

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dB μ V	GHz Cable				Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	2153.121M	127.6	+2.8				+0.0	130.4	176.0	-48.6	None
2	2159.036M	127.3	+2.8				+0.0	130.1	176.0	-48.6	None

**2.1033(c)(14)/2.1047(a)MODULATION CHARACTERISTICS – Audio Frequency
Response**

Not applicable to this unit.

**2.1033(c)(14)/2.1047(b)MODULATION CHARACTERISTICS – Modulation Limiting
Response**

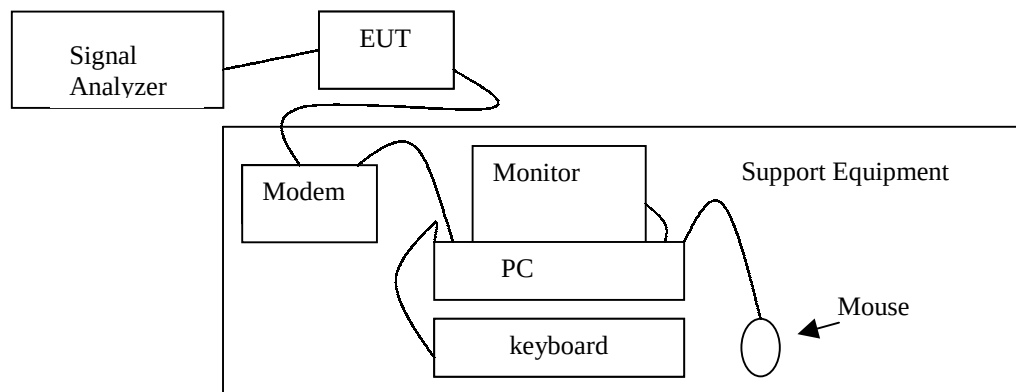
Not applicable to this unit.

2.1033(c)(14)/2.1049(i)/26.106(a)(2)/21.908(b) - OCCUPIED BANDWIDTH

DESCRIBE: The EUT was connected directly to the signal analyzer. Since the EUT only produced a modulated signal, plots showing the modulated signal were taken. EUT is a Wireless Cable Modem operating at 2150-2162MHz. EUT receives power from the modem via RG58 cable. Power through the cable is provided through the Power Inserter. EUT is continuously sending packets via command from the PC. EUT is operating on Low Channel (2153MHz) and High Channel (2159MHz) for each reading.

The emission designator is 5M00M1D.

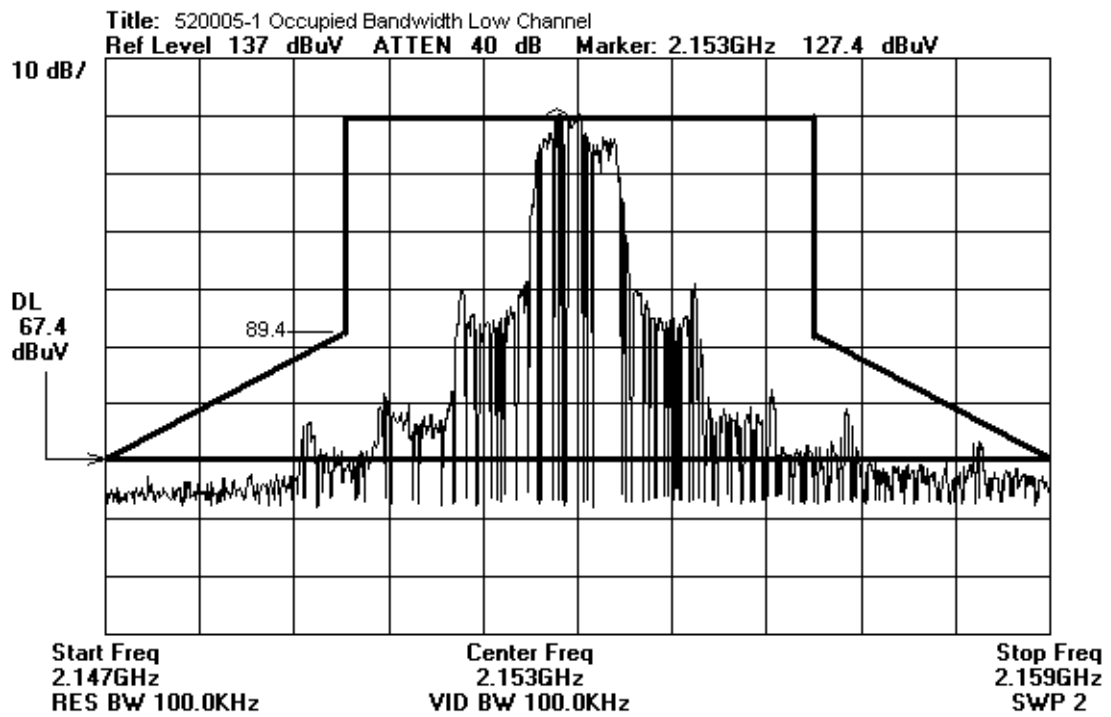
DIAGRAM OF TEST SETUP USED FOR TEST:



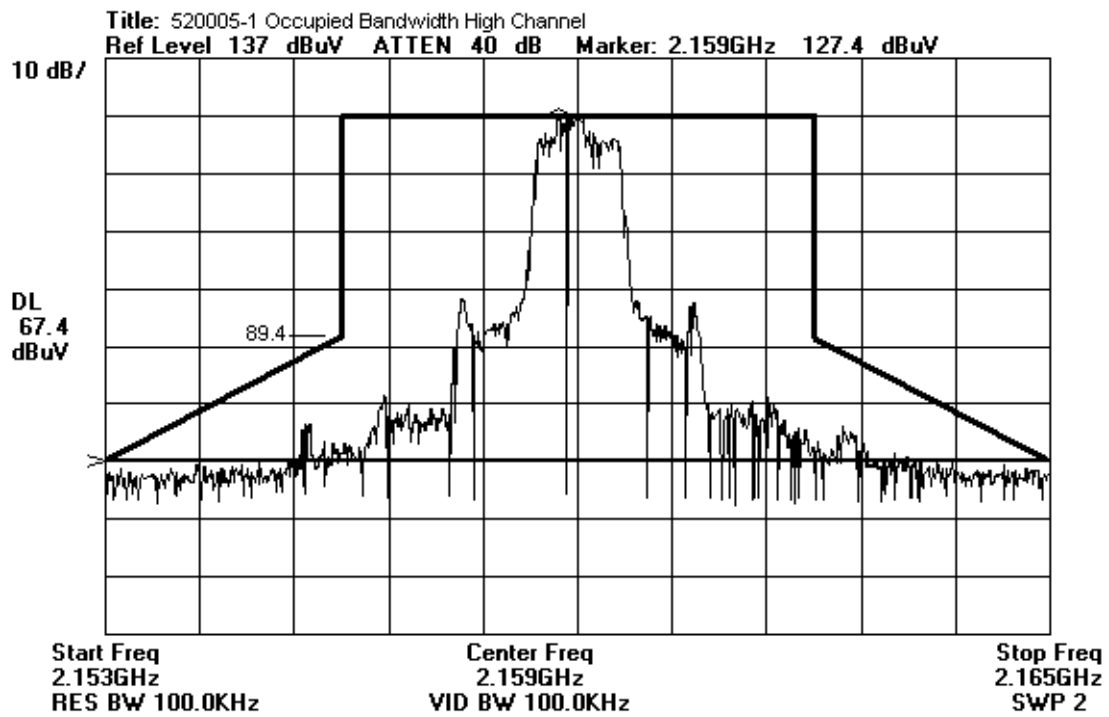
TEST EQUIPMENT USED:

1. Spectrum Analyzer, Hewlett Packard, Model No. 8566B, S/N 2209A01404. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
2. Display, Hewlett Packard, Model No. 8566B, S/N 2403A08241. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
3. QP Adapter, Hewlett Packard, Model No. 85650A, S/N 1532A03198. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.

Test data: Low Channel 2.153GHz



Test data: High Channel 2.159GHz



2.1033(c)(14)/2.1051/21.106(a)(i)&(ii) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

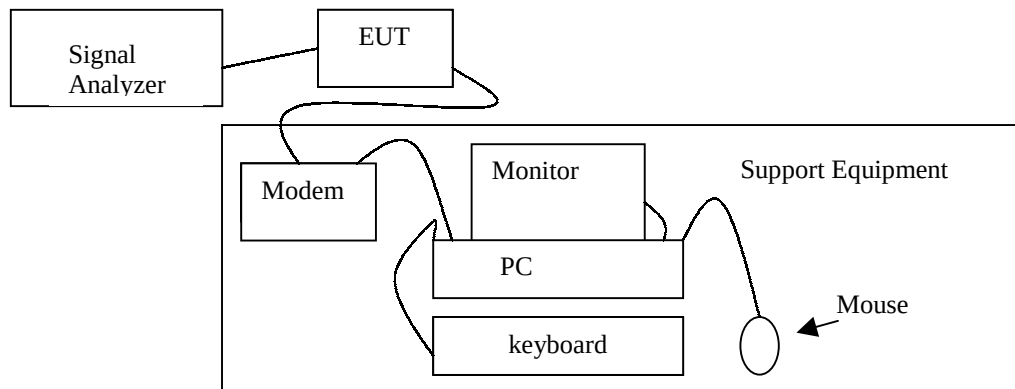
DESCRIBE: The EUT was connected directly to the signal analyzer. The EUT is a Wireless Cable Modem operating at 2150-2162MHz. The EUT receives power from the modem via a RG58 cable. The power to the cable is provided through the Power Inserter. The EUT is continually sending packets via command from the PC. The EUT was operating on the Low Channel (2153MHz) and then again on the High Channel (2159MHz).

The emission designator is 5M00M1D.

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
9kHz – 150kHz	3kHz
150kHz - 30MHz	100Khz
30MHz – 1MHz	1MHz
1GHz – 22GHz	1MHz

DIAGRAM OF TEST SETUP USED FOR TEST:



TEST EQUIPMENT USED:

1. Spectrum Analyzer, Hewlett Packard, Model No. 8566B, S/N 2209A01404. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
2. Display, Hewlett Packard, Model No. 8566B, S/N 2403A08241. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
3. QP Adapter, Hewlett Packard, Model No. 85650A, S/N 1532A03198. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
4. 10-Meter GHz Hardline Cable, includes GHz cables #1, 2 & 3.

TEST DATA: Low Channel 2153MHz

Customer: **California Amplifier**
Specification: **FCC 21.106(a)(2)(i)(ii) – Channel 2153**
Work Order #: **72297** Date: 12/15/1999
Test Type: **Antenna Terminal Emissions** Time: 16:48:35
Equipment: **Wireless Cable Modem Transceiver** Sequence#: 5
Model 520005-1
Manufacturer: California Amplifier Tested By: Skip Doyle
Model: 520005-1
S/N: 9510002383

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Wireless Cable Modem	California Amplifier	520005-1	9510002383

Support Devices:

Function	Manufacturer	Model #	S/N
Modem	Hybrid Networks	N231	82AAP001759
Mouse	Compaq	P/N:141189-401	N/A
Keyboard	Compaq	M/N	B23N0A39E874G
PC	Compaq	Deskpro	6647HVS3Q701
Monitor	ViewSonic	V641-1M	2A71303961
Power Supply 22VDC 750mA	Unknown	71441	

Test Conditions / Notes:

EUT is a Wireless Cable Modem operating at 2150-2162MHz. EUT receives power from the modem via RG58 cable. Power to the cable is provided through the Power Inserter. EUT is continuously sending packets via command from the PC. EUT is operating on Low Channel (2153MHz) at 23 dBm. Direct connection from EUT antenna output to analyzer.

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBμV	GHz Cable				Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
			dB	dB	DB	dB					
1	995.000k	72.3	+0.0				+0.0	72.3	94.0	-21.7	None
2	342.400M	69.7	+0.0				+0.0	69.7	94.0	-24.3	None
3	1.967M	62.7	+0.0				+0.0	62.7	94.0	-31.3	None
4	2.046M	59.8	+0.0				+0.0	59.8	94.0	-34.2	None
5	195.400M	58.5	+0.0				+0.0	58.5	94.0	-35.5	None
6	2.948M	52.1	+0.0				+0.0	52.1	94.0	-41.9	None
7	211.800M	51.9	+0.0				+0.0	51.9	94.0	-42.1	None
8	116.900M	51.9	+0.0				+0.0	51.9	94.0	-42.1	None
9	4556.100M	46.2	+3.7				+0.0	49.9	94.0	-44.1	None

10	6830.000M	40.6	+5.8	+0.0	46.4	94.0	-47.6	None
11	1631.100M	43.3	+2.4	+0.0	45.7	94.0	-48.3	None
12	279.500M	43.1	+0.0	+0.0	43.1	94.0	-50.9	None
13	1893.200M	39.7	+2.6	+0.0	42.3	94.0	-51.7	None
14	5.980M	41.7	+0.0	+0.0	41.7	94.0	-52.3	None
15	6.992M	39.0	+0.0	+0.0	39.0	94.0	-55.0	None
16	4680.700M	34.5	+3.9	+0.0	38.4	94.0	-55.6	None
17	868.000M	37.9	+0.0	+0.0	37.9	94.0	-56.1	None
18	2402.800M	32.3	+2.9	+0.0	35.2	94.0	-58.8	None

TEST DATA: High Channel 2159MHz

Customer: **California Amplifier**
Specification: **FCC 21.106(a)(2)(i)(ii) – Channel 2159**
Work Order #: **72297** Date: 12/15/1999
Test Type: **Antenna Terminal Emissions** Time: 16:10:53
Equipment: **Wireless Cable Modem Transceiver** Sequence#: 4
Model 520005-1
Manufacturer: California Amplifier Tested By: Skip Doyle
Model: 520005-1
S/N: 9510002383

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Wireless Cable Modem	California Amplifier	520005-1	9510002383

Support Devices:

Function	Manufacturer	Model #	S/N
Modem	Hybrid Networks	N231	82AAP001759
Mouse	Compaq	P/N:141189-401	N/A
Keyboard	Compaq	M/N	B23N0A39E874G
PC	Compaq	Deskpro	6647HVS3Q701
Monitor	ViewSonic	V641-1M	2A71303961
Power Supply 22VDC 750mA	Unknown	71441	

Test Conditions / Notes:

EUT is a Wireless Cable Modem operating at 2150-2162MHz. EUT receives power from the modem via RG58 cable. Power to the cable is provided through the Power Inserter. EUT is continuously sending packets via command from the PC. EUT is operating on High Channel (2159MHz) at 23 dBm. Direct connection from EUT antenna output to analyzer.

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBμV	GHz Cable				Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
			dB	dB	DB	dB					
1	1183.000M	75.9	+2.0				+0.0	77.9	94.0	-16.1	None
2	1426.860M	70.5	+2.2				+0.0	72.7	94.0	-21.3	None
3	581.000k	66.2	+0.0				+0.0	66.2	94.0	-27.8	None
4	348.513M	63.7	+0.0				+0.0	63.7	94.0	-30.3	None
	QP										
^	348.600M	69.6	+0.0				+0.0	69.6	94.0	-24.4	None
6	2278.088M	60.3	+2.9				+0.0	63.2	94.0	-30.8	None
7	1061.000M	59.0	+1.9				+0.0	60.9	94.0	-33.1	None
8	1.091M	60.5	+0.0				+0.0	60.5	94.0	-33.5	None
9	3.032M	59.9	+0.0				+0.0	59.9	94.0	-34.1	None

10	2.570M	57.6	+0.0	+0.0	57.6	94.0	-36.4	None
11	989.600M	57.5	+0.0	+0.0	57.5	94.0	-36.5	None
12	464.600M	57.5	+0.0	+0.0	57.5	94.0	-36.5	None
13	1.811M	57.3	+0.0	+0.0	57.3	94.0	-36.7	None
14	125.548M	56.5	+0.0	+0.0	56.5	94.0	-37.5	None
15	4.049M	56.5	+0.0	+0.0	56.5	94.0	-37.5	None
16	2.066M	56.2	+0.0	+0.0	56.2	94.0	-37.8	None
17	209.800M	56.1	+0.0	+0.0	56.1	94.0	-37.9	None
18	4556.000M	50.0	+3.7	+0.0	53.7	94.0	-40.3	None
19	1648.000M	49.2	+2.4	+0.0	51.6	94.0	-42.4	None
20	5.050M	51.1	+0.0	+0.0	51.1	94.0	-42.9	None
21	4.997M	50.7	+0.0	+0.0	50.7	94.0	-43.3	None
22	6832.000M	42.1	+5.7	+0.0	47.8	94.0	-46.2	None
23	331.400M	47.0	+0.0	+0.0	47.0	94.0	-47.0	None
24	1905.000M	43.1	+2.6	+0.0	45.7	94.0	-48.3	None
25	289.000M	44.8	+0.0	+0.0	44.8	94.0	-49.2	None
26	221.000M	40.2	+0.0	+0.0	40.2	94.0	-53.8	None
27	6.035M	39.0	+0.0	+0.0	39.0	94.0	-55.0	None
28	8.980M	32.6	+0.0	+0.0	32.6	94.0	-61.4	None
29	7.030M	31.7	+0.0	+0.0	31.7	94.0	-62.3	None
30	8.000M	30.7	+0.0	+0.0	30.7	94.0	-63.3	None
31	590.800k Ave	21.7	+0.0	+0.0	21.7	94.0	-72.3	None

2.1033(c)(14)/2.1053/21.106(i) - FIELD STRENGTH OF SPURIOUS RADIATION

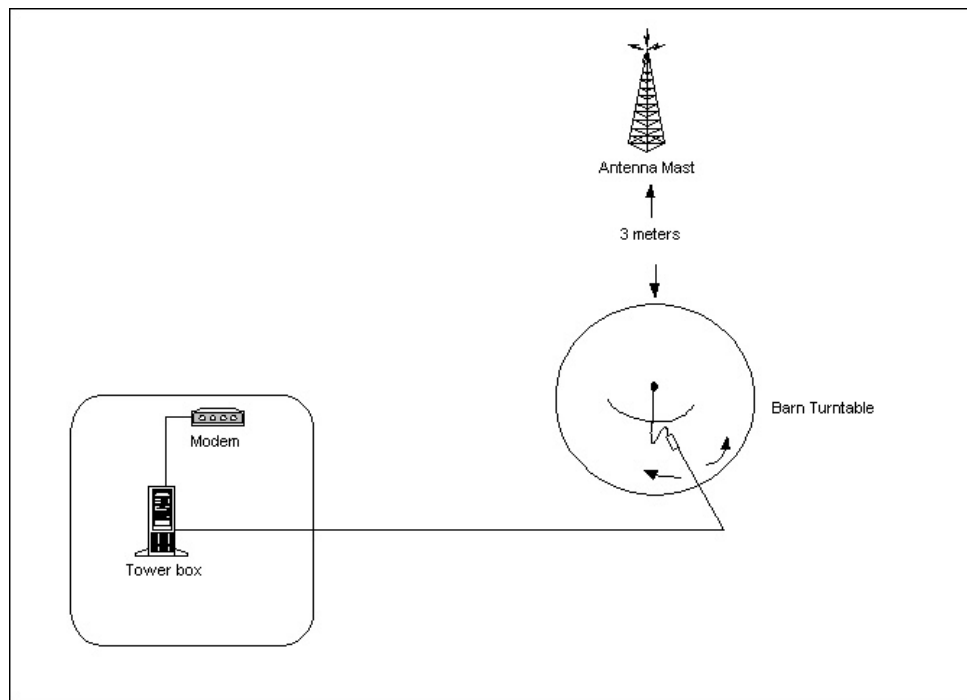
TEST METHOD AND PROCEDURE:

All harmonics and sub-harmonics of the carrier frequency were investigated. Measurements were also made to detect any spurious emissions that were directly radiated from the EUT under normal conditions of installation and operation. All spurious emissions which were attenuated more than 20 dB below the permissible value were not reported. The information submitted includes the relative radiated power of each spurious and harmonic emissions with reference to the rated power output of the transmitter (assuming all emissions are radiated from half-wave dipole antennas).

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
9kHz – 150kHz	3kHz
150kHz - 30MHz	100kHz
30MHz – 1MHz	1MHz
1GHz – 22GHz	1MHz

DIAGRAM OF TEST SETUP USED FOR TEST:



TEST EQUIPMENT USED:

1. Spectrum Analyzer, Hewlett Packard, Model No. 8566B, S/N 2209A01404. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
2. Display, Hewlett Packard, Model No. 8566B, S/N 2403A08241. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
3. QP Adapter, Hewlett Packard, Model No. 85650A, S/N 1532A03198. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
4. Preamplifier, Hewlett Packard, Model No. 8447D, S/N 1937A02604. Calibration date: April 28, 1999. Calibration due date: April 28, 2000.
5. Preamplifier, Hewlett Packard, Model No. 8449B, S/N 300A00301. Calibration date: April 27, 1999. Calibration due date: April 27, 2000.
6. Biconical Antenna, A & H Systems, Model No. SAS-200/542, S/N 156. Calibration date: May 20, 1999. Calibration due date: May 20, 2000.
7. Log Periodic Antenna, A & H Systems, Model No. SAS-200/512, S/N 154. Calibration date: May 20, 1999. Calibration due date: May 20, 2000.
8. Horn Antenna, EMCO, Model No. 3115, S/N 4085. Calibration date: February 15, 1999. Calibration due date: February 15, 2000.
9. High Pass Filter, K & L, Model 91H31-300, S/N 00001. Calibration date: August 9, 1999. Calibration due date: August 9, 2000.
10. 10-Meter GHz Hardline Cable, includes GHz cables #1, 2 & 3.
11. 10-Meter Hardline Cable.

TEST CONDITIONS:

EUT is a Wireless Cable Modem operating at 2150-2162MHz. EUT receives power from modem via RG58 cable. Power to the cable is provided through the Power Inserter. EUT is continually sending packets via command from the PC. EUT is operating on Low Channel (2153MHz). Test was then redone in the same manner as stated above, except the EUT was operating at the High Channel (2159MHz).

PHOTOGRAPH OF TEST SETUP USED FOR TEST:



Front View



Back View

TEST DATA:

FCC Part 21.908(b) Measurements required: Field strength of spurious radiation

Low Channel - 2153MHz

Polarity	Freq(MHz)	Reading in dBuV/m	PreAmp Factor	Cable Factor	Horn Antenna	High Pass Filter	Corrected E (dBuV/M)	V/M	ERP (Watts)	Spec Limit Watts	Pass or Fail
Horizontal	1420.00	85.90	-35.70	5.30	25.30	0.0	80.80	0.010964782	0.000021993	0.000218770	Pass
Vertical	1422.01	83.90	-35.70	5.30	25.30	0.0	78.80	0.008709636	0.000013876	0.000218770	Pass
Horizontal	16260.01	33.40	-34.00	29.10	38.60	11.7	78.80	0.008709636	0.000013876	0.000218770	Pass
Vertical	2864.00	55.00	-32.20	10.30	31.50	0.0	64.60	0.001698244	0.000000528	0.000218770	Pass
Horizontal	6664.00	29.70	-31.50	23.60	35.80	1.6	59.20	0.000912011	0.000000152	0.000218770	Pass
Horizontal	8612.00	30.20	-34.40	18.50	37.80	4.1	56.20	0.000645654	0.000000076	0.000218770	Pass

Notes: Frequency range investigated was from 500kHz to 22GHz. All spurious and harmonic emissions were investigated. All emissions detected that were less than 20dB below the permissible value were reported. **Rated Power output of transmitter at 2153.121MHz = 0.21877 Watts.** EUT is a Wireless Cable Modem operating at 2150-2162MHz. EUT receives power from the modem via RG58 cable. Power through the cable is provided through the Power Inserter. EUT is continuously sending packets via command from the PC. EUT is operating on Low Channel (2153MHz). Antenna gain is 24dBi. OATS testing.

High Channel - 2159MHz

Polarity	Freq(MHz)	Reading in dBuV/m	PreAmp Factor	Cable Factor	Horn Antenna	High Pass Filter	Corrected E (dBuV/M)	V/M	ERP (Watts)	Spec Limit Watts	Pass or Fail
Horizontal	5084.00	62.1	-31.2	17.5	33.8	0.9	83.1	0.014288940	0.000037349	0.000204170	Pass
Horizontal	4440.00	62.2	-33.0	13.8	32.8	0.5	76.3	0.006531306	0.000007803	0.000204170	Pass
Horizontal	2304.00	62.4	-33.9	8.8	29.3	0.0	66.6	0.002137962	0.000000836	0.000204170	Pass
Vertical	3202.00	55.0	-32.3	10.8	32.0	0.4	65.9	0.001972423	0.000000712	0.000204170	Pass
Vertical	2858.00	55.5	-32.2	10.3	31.5	0.0	65.1	0.001798871	0.000000592	0.000204170	Pass
Horizontal	1938	61.4	-35.3	6.5	27.8	0	60.4	0.001047129	0.000000201	0.000204170	Pass

Notes: Frequency range investigated was from 500kHz to 22GHz. All spurious and harmonic emissions were investigated. All emissions detected that were less than 20dB below the permissible value were reported. **Rated Power output of transmitter at 2159MHz = 0.20417 Watts.** EUT is a Wireless Cable Modem operating at 2150-2162MHz. EUT receives power from the modem via RG58 cable. Power through the cable is provided through the Power Inserter. EUT is continuously sending packets via command from the PC. EUT is operating on High Channel (2159MHz). Antenna gain is 24dBi. OATS testing.

CALCULATIONS

Note: The data taken is relative to the radiated power of each spurious emission with reference to the rated power output of

$$10 \log (218.77\text{mW}/1\text{mW}) = 23.4\text{dBm}$$

$$23.4\text{dBm} - 60\text{dBc} = -36.6\text{dBm}$$

$$\text{Inv Log } (-36.6\text{dBm}/10) = 0.00021877\text{W}$$

Spec Limit = 0.00021877 Watts for Low Channel (2153MHz)

$$10 \log (204.17\text{mW}/1\text{mW}) = 23.1\text{dBm}$$

$$23.1\text{dBm} - 60\text{dBc} = -36.9\text{dBm}$$

$$\text{Inv Log } (-36.9\text{dBm}/10) = 0.00020417\text{W}$$

Spec Limit = 0.00020417 Watts for High Channel (2159MHz)

$$\text{ERP} = (\text{Ed})^2/30(\text{G})$$

$$\text{E} = \text{V/m}$$

d= distance

G = Gain of Antenna (numerical gain of half wave dipole antenna 1.64)

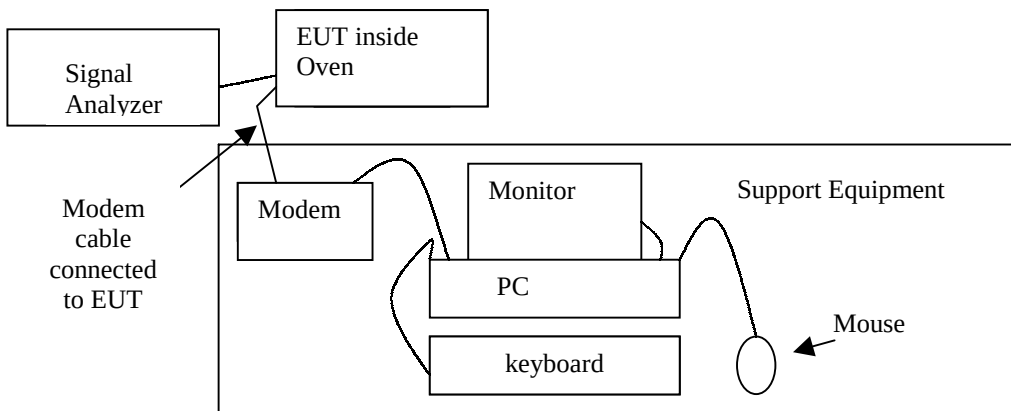
Conversion of dBuV/m to V/m

$$[\text{invlog}(\text{Reading in dBuV/m}/20)]*.000001 = \text{V/m}$$

2.1033(c)(14)/2.1055/21.101 - FREQUENCY STABILITY

TEST CONDITIONS: The EUT was connected directly to the signal analyzer. The EUT is a Wireless Cable Modem operating at 2150-2162MHz. The EUT receives power from the modem via a RG58 cable. The power to the cable is provided through the Power Inserter. The EUT is continually sending packets via command from the PC.

DIAGRAM AND PHOTOGRAPH OF TEST SETUP USED FOR TEST:



TEST EQUIPMENT USED:

1. Spectrum Analyzer, Hewlett Packard, Model No. 8566B, S/N 2209A01404. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
2. Display, Hewlett Packard, Model No. 8566B, S/N 2403A08241. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
3. QP Adapter, Hewlett Packard, Model No. 85650A, S/N 1532A03198. Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
4. Temperature Chamber Thermotron Corp S-1.2 Mini Max 11899. Calibration date: March 29, 1999. Calibration Due: March 29, 2000.

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
2152MHz – 2159MHz	1MHz

TEST DATA:

LO 2278.000MHz, Counter is reading the LO. Unable to check Low and High channels, EUT unable to produce unmodulated signal at those frequencies and the counter will not read the modulated signal of the fundamental.

FCC Part 21.101 – Frequency Specification is +/-1kHz. We would like to request a frequency tolerance of +/- 10kHz. The +/- 10kHz is stated in the manufacturers specification. As reference, a previous grant was issued to FCC ID: J26520001-2.

Measured Reading	Frequency Error(Hz)	LIMIT (Hz)
-20°C LIMIT		
f +V = 2.278006200 GHz	6200	1000
V = 2.278005800 GHz	5800	1000
-V = 2.278006100 GHz	6100	1000
-10°C		
f +V = 2.278006500 GHz	6500	1000
V = 2.278006500 GHz	6500	1000
-V = 2.278006600 GHz	6600	1000
0°C		
f +V = 2.278005600 GHz	5600	1000
V = 2.278005500 GHz	5500	1000
-V = 2.278005400 GHz	5400	1000
+10°C		
f +V = 2.278003500 GHz	3500	1000
V = 2.278003700 GHz	3700	1000
-V = 2.278003900 GHz	3900	1000
+20°C		
f +V = 2.278001500 GHz	1500	1000
V = 2.278001700 GHz	1700	1000
-V = 2.278001800 GHz	1800	1000
+30°C		
f +V = 2.278000400 GHz	400	1000
V = 2.278000500 GHz	500	1000
-V = 2.278000600 GHz	600	1000
+40°C		
f +V = 2.278000400 GHz	400	1000
V = 2.278000400 GHz	400	1000
-V = 2.278000200 GHz	200	1000
+50°C		
f +V = 2.278002100 GHz	2100	1000
V = 2.278002000 GHz	2000	1000
-V = 2.278001400 GHz	1400	1000