CKC LABORATORIES, INC.
Testing the Future
5473A Clouds Rest • Mariposa, CA 95338 • 209-966-5640

Deutscher Akkreditierungs Rat
DAR
Reg. No. DAT-P-051/95-10a

ACCREDITED
EMC/SAFETY

IPWIRELESS, INC. TEST REPORT

FOR THE

3G WIRELESS MODEM P1A, MODEL AN

FCC PART 21 SUBPART K &
FCC PART 15 SUBPART B SECTIONS 15.107 & 15.109

COMPLIANCE

DATE OF ISSUE: MAY 24, 2001

PREPARED FOR:

IPWireless, Inc.
1250 Bayhill Drive Suite 113
San Bruno, Ca 94066

P.O. No.: US2001/0257
W.O. No.: 76266

PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: March 5-28, 2001

Report No.: FC01-032

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST:	March 5-28, 2001
DATE OF RECEIPT:	March 5, 2001
PURPOSE OF TEST:	To demonstrate the compliance of the 3G Wireless Modem P1A, Model AN with the requirements for FCC Part 21 Subpart K and FCC Part 15 Subpart B Sections 15.107 and 15.109 devices.
TEST METHOD:	FCC Part 21 and ANSI C63.4 1992
MANUFACTURER:	IPWireless, Inc. 1250 Bayhill Drive Suite 113 San Bruno, Ca 94066
REPRESENTATIVE:	Roger Quayle
TEST LOCATION:	CKC Laboratories, Inc. 1653 Los Viboras Road Hollister, CA 95023

SUMMARY OF RESULTS

As received, the IPWireless, Inc. 3G Wireless Modem P1A, Model AN was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 15 Subpart B Section 15.107 and 15.109 Class B
- FCC Part 21 Subpart K
- FCC Part 74 Subpart I, using FCC Part 21 Subpart K
- ANSI C63.4 (1992) method

The results in this report apply only to the items tested, as identified herein.

MODIFICATIONS REQUIRED FOR COMPLIANCE

Steward 28A2025-0A0 ferrite added to DC cord of the EUT.

APPROVALS

QUALITY ASSURANCE:

Dennis Ward, Quality Manager

Christine Nicklas, EMC/Lab Manager

TEST PERSONNEL:

Art Rice, Test Engineer

Conan T. Boyle, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit.

The following model has been tested by CKC Laboratories:

3G Modem P1A

The following additional models are identical electrically to the one, which was tested, or any differences between them do not affect their EMC characteristics, and therefore they comply to the level of testing equivalent to the tested models.

3G Modem model AN

EQUIPMENT UNDER TEST

3G Wireless Modem PIA

Manuf:	IP Wireless
Model:	AN
Serial:	000026
FCC ID:	PKTP1AAN (Pending)

AC Adapter

Manuf:	Optronix Corp.
Model:	FW7301/06
Serial:	None
FCC ID:	DoC

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Laptop PC
Manuf: Toshiba
Model: PA173U VCD
Serial: 98060506A-1
FCC ID: DoC

Notebook PC
Manuf: Sony
Model: Vaio PCG-F390
Serial: 28305030 3005960
FCC ID: DoC

Mouse
Manuf: Logitech
Model: M-S35
Serial: LZA72052833
FCC ID: DoC

Keyboard
Manuf: Compaq
Model: RT101
Serial: 1144?877
FCC ID: DoC

Monitor
Manuf: Gateway
Model: PMV1448
Serial: TB9C28503
FCC ID: DoC

Laptop AC adapter
Manuf: Toshiba
Model: PA2450U
Serial: 0295362
FCC ID: DoC

AC Adapter
Manuf: Sony
Model: PCGA-ACX1
Serial: 9908 A 0121831
FCC ID: Doc

TEMPERATURE AND HUMIDITY DURING TESTING

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

2.1033(c)(3) USER'S MANUAL

The necessary information is contained in a separate document.

2.1033(c)(4) TYPE OF EMISSIONS

The emission is QPSK using a 12 MHz radio channel, consequently the emission designator is 12M0G7D.

2.1033(c)(5) FREQUENCY RANGE

The device operates in the frequency range of 2.500 GHz to 2.686 GHz.

2.1033(c)(6) OPERATING POWER

The unit is capable of operating with a single orthogonal spreading code at +22 dBm of PA output power, or with 2 simultaneous codes at +21 dBm of PA output power. The two code case is the more severe case for testing the emission mask and thus is used for the emissions measurements.

The transmit power may be decreased from the above values in 1 dB steps on software control from the controlling base station. The range of output power decrease available by software control is 80 dB.

2.1033(c)(7) MAXIMUM POWER RATING

This unit is being qualified under the low power response station rules contained in both 47CFR21.908 (d) and 47CFR74.936 (f), which define the maximum power limit of –6 dBW EIRP in a 6 MHz channel.

This device operates in a 12 MHz channel and as such, the maximum power EIRP allowed is –6 dBW + 3 dB = -3 dBW EIRP.

The device maximum EIRP in a 6 MHz channels is as follows:
+22 dBm + 2 dB (ant. gain) – 3 dB (adjust for 6 MHz channel BW) = +21 dBm = -9 dBW EIRP

This device operates below the EIRP limit for a low power response station and is thus qualified using the emission mask defined for the lower power response station in both 47CFR74.936 (f) and 47CFR21.908 (d).

2.1033(c)(8) DC VOLTAGES

The necessary information is contained in a separate confidential document.

2.1033(c)(9) TUNE-UP PROCEDURE

This device does not have any tune up procedure, as it is a subscriber modem device that is configured at the factory to operate within the stated frequency and power limits.

2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION

The necessary information is contained in a separate confidential document.

2.1033(c)(11) LABEL AND PLACEMENT

The necessary information is contained in a separate document.

2.1033(c)(12) SUBMITTAL PHOTOS

The necessary information is contained in a separate document.

2.1033(c)(13) MODULATION INFORMATION

The necessary information is contained in a separate confidential document.

2.1033(c)(14)/2.1046/21.904(e) - RF POWER OUTPUT & 2.1033(c)(14)/2.1049(i)//21.908(d) - OCCUPIED BANDWIDTH

Test Conditions:

The HP-8564E Spectrum Analyzer was connected directly to the transmitter antenna terminal with an Andrews Heliax shielded cable. The HP-8564E was placed into Channel Power Measurement mode, the measurement bandwidth function was set to 7.68MHz, which is the chip rate of the device. The power measurement was also performed using the occupied bandwidth of 8.33MHz and there was less than 0.2dB difference between using the chip rate versus the occupied bandwidth; therefore the chip rate was used. An automated measurement was taken and the channel power value for each channel tested was recorded.

Direct Connect Set-up Photo

FCC21.908(d) Bandwidth Emissions Mask & Bandwidth

Model: **AN** **S/N: 026**

Test Equipment:

Asset No.	Description	Model	Cal Date	Cal Due
0	Cable, HF	ghz#5	5/9/00	5/9/01
1401	Spectrum Analyzer	HP-8564E	12/12/01	12/12/01

Channel **2506** MHz

Power measured in 12MHz			**Power normalized to 6MHz band**
Ch Pwr	**21.9** dBm	**-8.1** dBW	**-11.1** dBw
Pwr (100k)	**11.8** dBm		Occupied BW **8.333MHz**

	(-3MHz)	(-250kHz)	Band edge	Center Ch	Band Edge	(+250kHz)	(+3MHz)
	2497	**2499.75**	**2500**	**2506**	**2512**	**2512.25**	**2515**
Measured Value in 100kHz (dBm)	**-28.5**	**-25.5**	**-24.5**		**-26.6**	**-27.3**	**-27.3**
Calculated dBc limit from Channel Power	**-31.9**	**-21.9**	**(-25dB)**		**(-25dB)**	**-21.9**	**-31.9**
LIMIT [Pwr - Calculated dBc] (dBm)	**-20.1**	**-10.1**	**-13.2**		**-13.2**	**-10.1**	**-20.1**
MARGIN	**-8.4**	**-15.4**	**-11.3**		**-13.4**	**-17.2**	**-7.2**
Pass/Fail	**Pass**	**Pass**	**Pass**		**Pass**	**Pass**	**Pass**

Channel **2596** MHz

Power measured in 12MHz			**Power normalized to 6MHz band**
Ch Pwr	**21.2** dBm	**-8.8** dBW	**-11.8** dBw
Pwr (100k)	**10.8** dBm		Occupied BW **8.333MHz**

	(-3MHz)	(-250kHz)	Band edge	Center Ch	Band Edge	(+250kHz)	(+3MHz)
	2587	**2589.75**	**2590**	**2596**	**2602**	**2602.25**	**2605**
Measured Value in 100kHz (dBm)	**-25.5**	**-23.3**	**-22**		**-22.1**	**-22.1**	**-25.6**
Calculated dBc point from Channel Power	**-31.2**	**-21.2**	**(-25dB)**		**(-25dB)**	**-21.2**	**-31.2**
LIMIT [Pwr - Calculated dBc] (dBm)	**-20.4**	**-10.4**	**-14.2**		**-14.2**	**-10.4**	**-20.4**
MARGIN	**-5.1**	**-12.9**	**-7.8**		**-7.9**	**-11.7**	**-5.2**
Pass/Fail	**Pass**	**Pass**	**Pass**		**Pass**	**Pass**	**Pass**

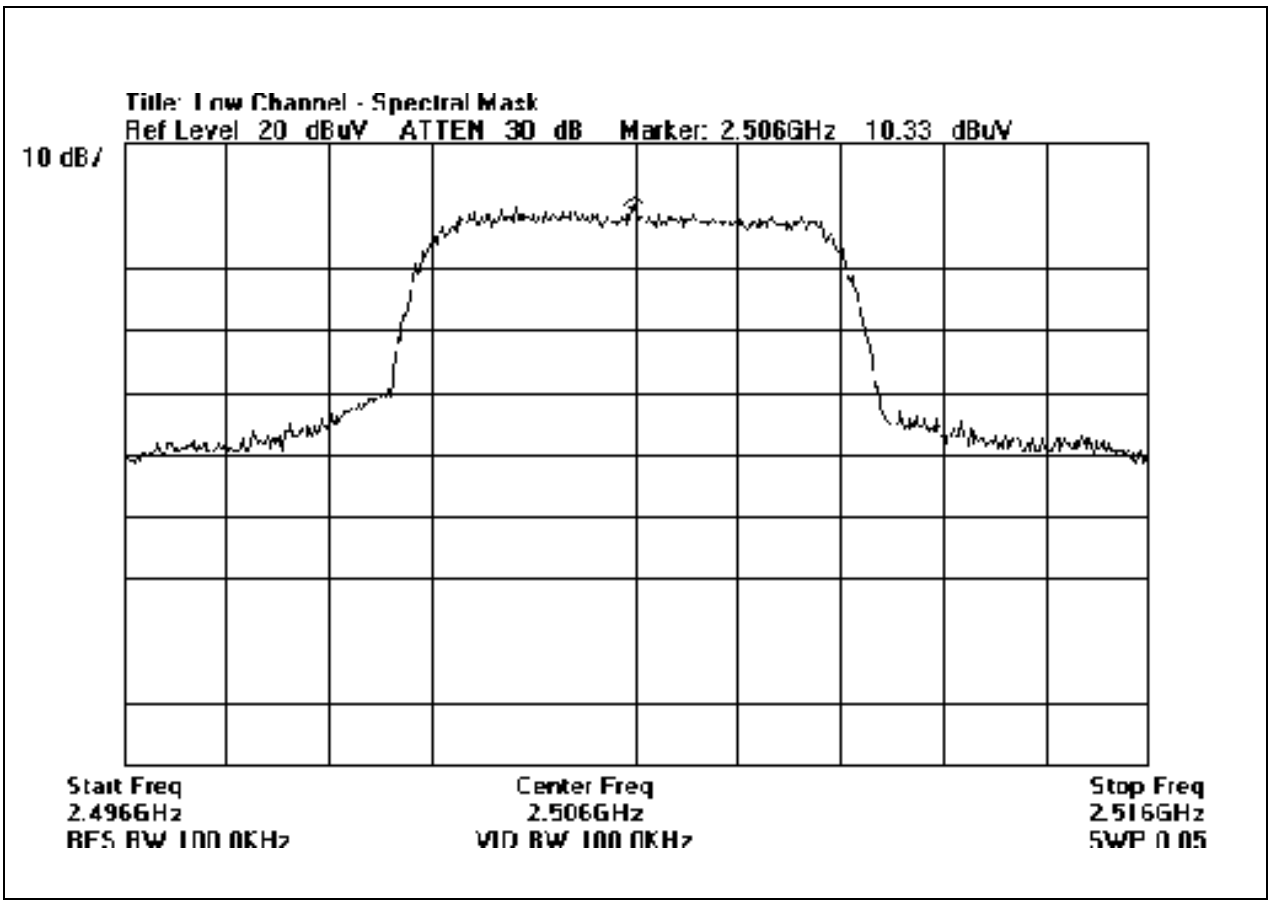
Channel **2680** MHz

Power measured in 12MHz			**Power normalized to 6MHz band**
Ch Pwr	**20.9** dBm	**-9.1** dBW	**-12.1** dBw
Pwr (100k)	**10.5** dBm		Occupied BW **8.267MHz**

	(-3MHz)	(-250kHz)	Band edge	Center Ch	Band Edge	(+250kHz)	(+3MHz)
	2671	**2673.75**	**2674**	**2680**	**2686**	**2686.25**	**2689**
Measured Value in 100kHz (dBm)	**-27**	**-23.1**	**-23.1**		**-24**	**-23.1**	**-27**
Calculated dBc point from Channel Power	**-30.9**	**-20.9**	**(-25dB)**		**(-25dB)**	**-20.9**	**-30.9**
LIMIT [Pwr - Calculated dBc] (dBm)	**-20.4**	**-10.4**	**-14.5**		**-14.5**	**-10.4**	**-20.4**
MARGIN	**-6.6**	**-12.7**	**-8.6**		**-9.5**	**-12.7**	**-6.6**
Pass/Fail	**Pass**	**Pass**	**Pass**		**Pass**	**Pass**	**Pass**

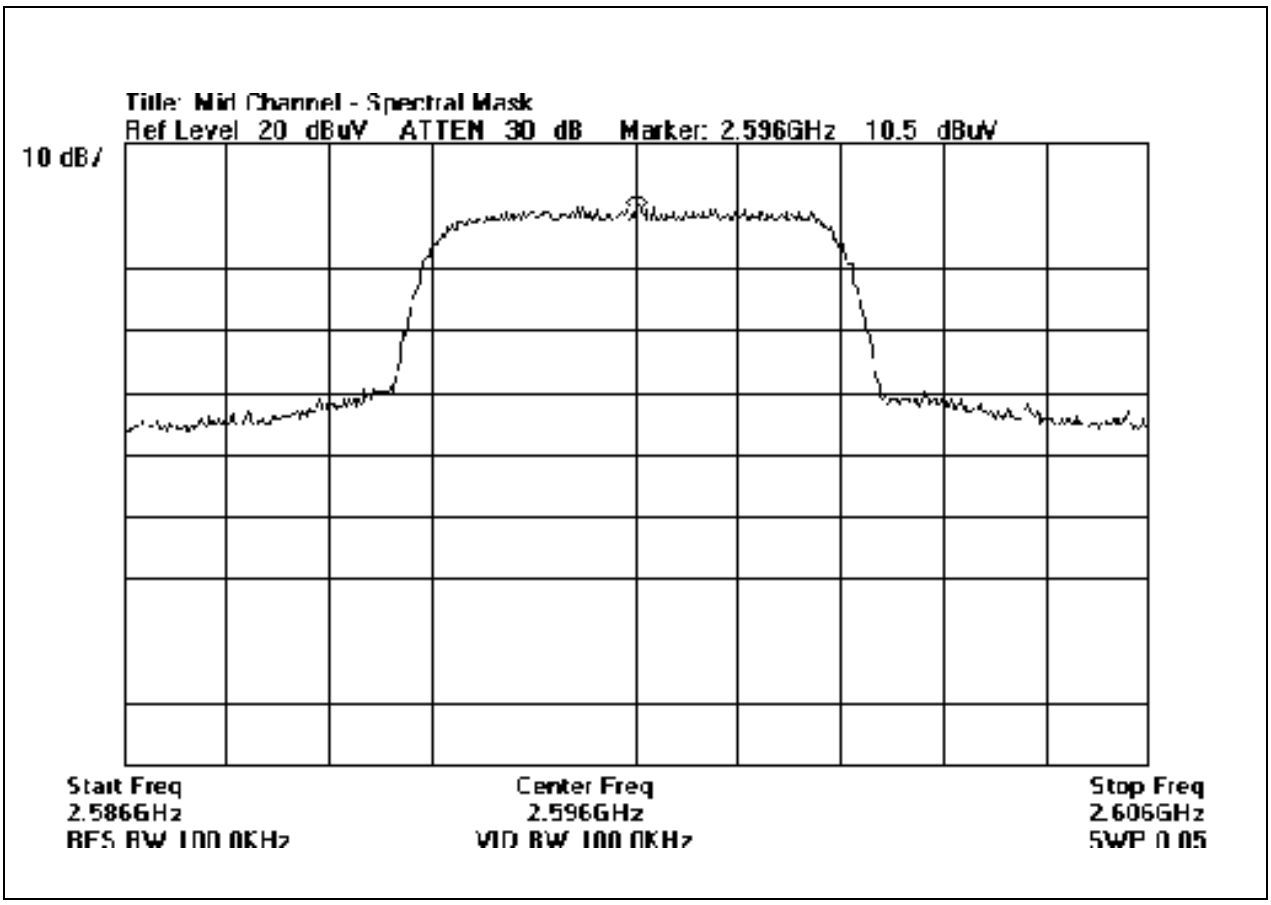
The emissions mask for low power response stations was used to show compliance to 21.908(d) and 74.936(f). The output power of this device is less than the -6dBW requirement and therefore can be used. All measurements were made with a RBW=100kHz and using the relative method as specified in section 21.908(e).

SPECTRAL PLOT



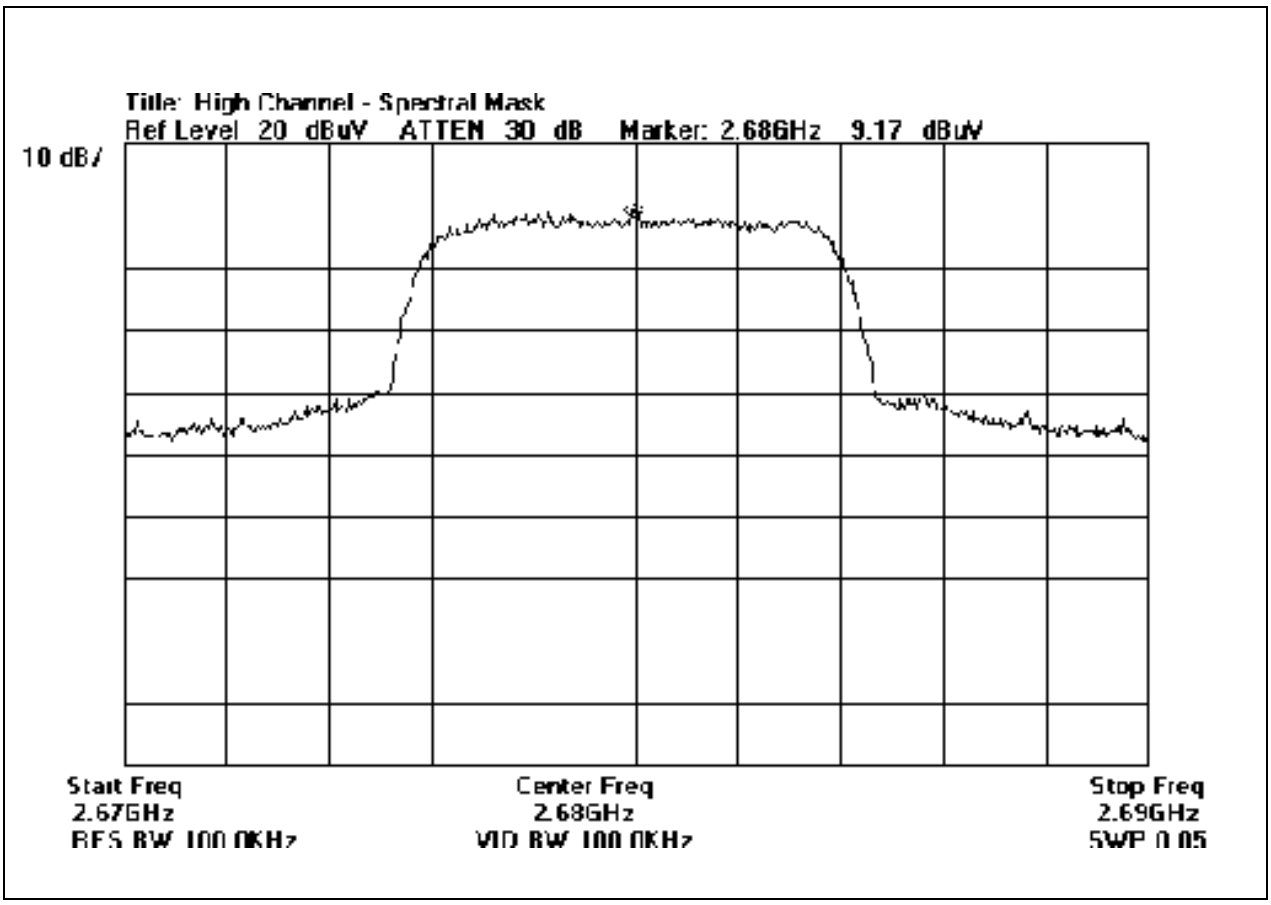
Low Channel

SPECTRAL PLOT



Middle Channel

SPECTRAL PLOT



High Channel

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)/2.1051/21.908(d) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC Part 21.908(d) Low Chan**
Work Order #: **76266** Date: 03/05/2001
Test Type: **Spurious Emissions** Time: 17:16:15
Equipment: **Wireless Modem** Sequence#: 2
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Notebook PC	Sony	Vaio PCG-F390	28305030 3005960
AC Adapter	Sony	PCGA-ACX1	9908 A 0121831

Test Conditions / Notes:

The first EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is operating at 2.506GHz (low channel) and the RF output is directly connected to the spectrum analyzer RF input port. Test is spurious emissions at antenna terminals. Frequency range tested: 1 MHz - 27 GHz.

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2525.218M	66.2	+0.0				+0.0	66.2	86.4	-20.2	Vert
2	2486.847M	65.2	+0.0				+0.0	65.2	86.4	-21.2	Vert
3	10016.540M	62.3	+0.0				+0.0	62.3	86.4	-24.1	Vert
									4th Harmonic		
4	7514.272M	62.3	+0.0				+0.0	62.3	86.4	-24.1	Vert
									3rd Harmonic		
5	2479.295M	60.7	+0.0				+0.0	60.7	86.4	-25.7	Vert
6	2540.747M	60.2	+0.0				+0.0	60.2	86.4	-26.2	Vert
7	2556.105M	60.0	+0.0				+0.0	60.0	86.4	-26.4	Vert
8	2660.024M	59.0	+0.0				+0.0	59.0	86.4	-27.4	Vert
9	2586.824M	59.0	+0.0				+0.0	59.0	86.4	-27.4	Vert

10	2617.541M	58.3	+0.0		+0.0	58.3	86.4	-28.1	Vert
11	2602.187M	58.2	+0.0		+0.0	58.2	86.4	-28.2	Vert
12	12530.000M	53.7	+0.0		+0.0	53.7	86.4	-32.7	Vert 5th Harmonic
13	17542.000M	53.5	+0.0		+0.0	53.5	86.4	-32.9	Vert 7th Harmonic
14	15036.000M	53.5	+0.0		+0.0	53.5	86.4	-32.9	Vert 6th Harmonic
15	25060.000M	53.2	+0.0		+0.0	53.2	86.4	-33.2	Vert 10th Harmonic
16	20048.000M	53.2	+0.0		+0.0	53.2	86.4	-33.2	Vert 8th Harmonic
17	22554.000M	52.0	+0.0		+0.0	52.0	86.4	-34.4	Vert 9th Harmonic
18	5012.000M	50.3	+0.0		+0.0	50.3	86.4	-36.1	Vert 2nd Harmonic

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC Part 21.908(d) Mid Hi Chan**
Work Order #: **76266** Date: 03/05/2001
Test Type: **Spurious Emissions** Time: 18:16:43
Equipment: **Wireless Modem** Sequence#: 3
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Notebook PC	Sony	Vaio PCG-F390	28305030 3005960
AC Adapter	Sony	PCGA-ACX1	9908 A 0121831

Test Conditions / Notes:

The first EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is operating at 2.596GHz (mid channel) and the RF output is directly connected to the spectrum analyzer RF input port. Test is spurious emissions at antenna terminals. Frequency range tested: 1 MHz - 27 GHz.

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	7791.934M	71.5	+0.0				+0.0	71.5	86.6	-15.1	Vert
									3rd Harmonic		
2	12972.600M	63.8	+0.0				+0.0	63.8	86.6	-22.8	Vert
									5th Harmonic		
3	2569.295M	62.5	+0.0				+0.0	62.5	86.6	-24.1	Vert
4	2646.099M	60.5	+0.0				+0.0	60.5	86.6	-26.1	Vert
5	2569.300M	60.2	+0.0				+0.0	60.2	86.6	-26.4	Vert
6	2630.757M	59.8	+0.0				+0.0	59.8	86.6	-26.8	Vert
7	10376.600M	59.0	+0.0				+0.0	59.0	86.6	-27.6	Vert
									4th Harmonic		
8	2660.018M	59.0	+0.0				+0.0	59.0	86.6	-27.6	Vert
9	2492.525M	58.8	+0.0				+0.0	58.8	86.6	-27.8	Vert
10	2676.824M	58.0	+0.0				+0.0	58.0	86.6	-28.6	Vert

11	2507.866M	57.8	+0.0		+0.0	57.8	86.6	-28.8	Vert
12	25960.000M	53.7	+0.0		+0.0	53.7	86.6	-32.9	Vert 10th Harmonic
13	15576.000M	53.0	+0.0		+0.0	53.0	86.6	-33.6	Vert 6th Harmonic
14	23364.000M	52.7	+0.0		+0.0	52.7	86.6	-33.9	Vert 9th Harmonic
15	5192.000M	51.7	+0.0		+0.0	51.7	86.6	-34.9	Vert 2nd Harmonic
16	18172.000M	51.2	+0.0		+0.0	51.2	86.6	-35.4	Vert 7th Harmonic
17	20768.000M	51.0	+0.0		+0.0	51.0	86.6	-35.6	Vert 8th Harmonic

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC Part 21.908(d) Mid Hi Chan**
Work Order #: **76266** Date: 03/05/2001
Test Type: **Spurious Emissions** Time: 19:06:53
Equipment: **Wireless Modem** Sequence#: 4
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Notebook PC	Sony	Vaio PCG-F390	28305030 3005960
AC Adapter	Sony	PCGA-ACX1	9908 A 0121831

Test Conditions / Notes:

The first EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is operating at 2.680GHz (high channel) and the RF output is directly connected to the spectrum analyzer RF input port. Test is spurious emissions at antenna terminals. Frequency range tested: 1 MHz - 27 GHz.

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	10727.800M	64.8	+0.0				+0.0	64.8	86.6	-21.8	Vert
									4th Harmonic		
2	2484.351M	64.7	+0.0				+0.0	64.7	86.6	-21.9	Vert
3	2656.984M	64.0	+0.0				+0.0	64.0	86.6	-22.6	Vert
4	8044.400M	63.8	+0.0				+0.0	63.8	86.6	-22.8	Vert
									3rd Harmonic		
5	2515.057M	63.3	+0.0				+0.0	63.3	86.6	-23.3	Vert
6	2653.300M	62.7	+0.0				+0.0	62.7	86.6	-23.9	Vert
7	2545.786M	60.8	+0.0				+0.0	60.8	86.6	-25.8	Vert
8	13392.600M	60.2	+0.0				+0.0	60.2	86.6	-26.4	Vert
									5th Harmonic		
9	2530.426M	59.8	+0.0				+0.0	59.8	86.6	-26.8	Vert
10	2622.587M	58.3	+0.0				+0.0	58.3	86.6	-28.3	Vert

11	2591.871M	58.3	+0.0		+0.0	58.3	86.6	-28.3	Vert
12	2576.494M	58.3	+0.0		+0.0	58.3	86.6	-28.3	Vert
13	2561.144M	58.0	+0.0		+0.0	58.0	86.6	-28.6	Vert
14	16078.730M	56.0	+0.0		+0.0	56.0	86.6	-30.6	Vert
							6th Harmonic		
15	24120.000M	55.3	+0.0		+0.0	55.3	86.6	-31.3	Vert
							9th Harmonic		
16	26800.000M	54.0	+0.0		+0.0	54.0	86.6	-32.6	Vert
							10th Harmonic		
17	21440.000M	53.3	+0.0		+0.0	53.3	86.6	-33.3	Vert
							8th Harmonic		
18	18760.000M	51.2	+0.0		+0.0	51.2	86.6	-35.4	Vert
							7th Harmonic		
19	5360.000M	50.3	+0.0		+0.0	50.3	86.6	-36.3	Vert
							2nd Harmonic		

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
1 MHz – 30 MHz	9 kHz
30 MHz – 1000 MHz	120 kHz
1 GHz – 27 GHz	1MHz

Direct Connect Set-up Photo

2.1033(c)(14)/2.1053/21.908(d) - FIELD STRENGTH OF SPURIOUS RADIATION

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC 21.908(d) Low Chan**
Work Order #: **76266** Date: 3/8/2001
Test Type: **Maximized Emissions** Time: 15:26:58
Equipment: **Wireless Modem** Sequence#: 8
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Horn Ant, 1-18GHz	9901-5655	10/20/2000	10/20/2001	2157
Horn Ant, 18-26.5GHz	84125-80008	05/21/2001	05/21/2002	1413
Horn Ant, 26.5-40GHz	951559-008	05/21/2001	05/21/2002	1414
Cable, HF	ghz#5	05/09/2000	05/09/2001	0
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	09/29/2000	09/29/2001	0
Preamp, HP 83017A	3123A00464	05/11/2000	05/11/2001	1271

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Toshiba	PA173U VCD	98060506A-1
Laptop AC Adapter	Toshiba	PA2450U	0295362
Monitor	Gateway	PMV1448	TB9C28503
Keyboard	Compaq	RT101	1144?877
Mouse	Logitech	M-S35	LZA72052833

Test Conditions / Notes:

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is continuously transmitting in low channel at 2.506GHz. Frequency range tested 1 MHz - 27 GHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Horn dB	GHz C dB	hol-h dB	HP 83 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	7523.201M	75.8	+35.7	+4.7	+1.0	-34.2	+0.0	83.0	86.4	-3.4	Horiz
2	5008.183M	81.2	+27.5	+4.8	+0.3	-32.9	+0.0	80.9	86.4	-5.5	Horiz
3	7513.134M	72.7	+35.7	+4.7	+1.0	-34.2	+0.0	79.9	86.4	-6.5	Vert
4	5008.200M	78.3	+27.5	+4.8	+0.3	-32.9	+0.0	78.0	86.4	-8.4	Vert
5	1800.300M	82.7	+26.0	+1.7	+0.2	-34.4	+0.0	76.2	86.4	-10.2	Vert

6	1801.400M	82.0	+26.0	+1.7	+0.2	-34.4	+0.0	75.5	86.4	-10.9	Horiz
7	1405.750M	78.2	+25.2	+1.5	+0.2	-35.3	+0.0	69.8	86.4	-16.6	Horiz
8	2658.194M	74.2	+26.9	+1.5	+0.2	-33.5	+0.0	69.3	86.4	-17.1	Horiz
9	1417.750M	76.7	+25.2	+1.5	+0.2	-35.2	+0.0	68.4	86.4	-18.0	Horiz
10	10016.320M	55.5	+38.1	+7.1	+0.7	-33.7	+0.0	67.7	86.4	-18.7	Horiz
11	10016.400M	54.0	+38.1	+7.1	+0.7	-33.7	+0.0	66.2	86.4	-20.2	Vert
12	1405.784M	73.8	+25.2	+1.5	+0.2	-35.3	+0.0	65.4	86.4	-21.0	Vert
13	2125.998M	67.8	+26.2	+1.7	+0.2	-33.9	+0.0	62.0	86.4	-24.4	Vert
14	1566.033M	69.5	+25.7	+1.5	+0.2	-34.9	+0.0	62.0	86.4	-24.4	Vert
15	2125.999M	67.0	+26.2	+1.7	+0.2	-33.9	+0.0	61.2	86.4	-25.2	Horiz
16	1119.066M	70.0	+23.6	+1.3	+0.2	-36.2	+0.0	58.9	86.4	-27.5	Horiz
17	2658.258M	62.3	+26.9	+1.5	+0.2	-33.5	+0.0	57.4	86.4	-29.0	Vert
18	2195.000M	62.5	+26.1	+1.6	+0.2	-33.8	+0.0	56.6	86.4	-29.8	Vert
19	1257.616M	64.5	+24.4	+1.4	+0.2	-35.7	+0.0	54.8	86.4	-31.6	Horiz
20	2754.217M	57.7	+27.5	+1.6	+0.3	-33.4	+0.0	53.7	86.4	-32.7	Vert
21	2543.265M	58.0	+26.1	+1.4	+0.2	-33.6	+0.0	52.1	86.4	-34.3	Horiz
22	2701.156M	56.2	+27.2	+1.5	+0.2	-33.5	+0.0	51.6	86.4	-34.8	Vert
23	1233.416M	59.8	+24.2	+1.4	+0.2	-35.8	+0.0	49.8	86.4	-36.6	Horiz
24	6377.991M	47.3	+29.2	+4.8	+1.3	-33.5	+0.0	49.1	86.4	-37.3	Horiz
25	2556.078M	54.8	+26.2	+1.4	+0.2	-33.6	+0.0	49.0	86.4	-37.4	Horiz
26	1014.616M	61.0	+22.9	+1.2	+0.2	-36.6	+0.0	48.7	86.4	-37.7	Vert
27	1339.900M	56.0	+24.8	+1.4	+0.2	-35.5	+0.0	46.9	86.4	-39.5	Vert
28	6378.008M	44.5	+29.2	+4.8	+1.3	-33.5	+0.0	46.3	86.4	-40.1	Vert

29	1646.233M	53.0	+25.8	+1.6	+0.2	-34.7	+0.0	45.9	86.4	-40.5	Vert
30	2436.450M	50.8	+25.9	+1.4	+0.2	-33.6	+0.0	44.7	86.4	-41.7	Vert
31	1453.850M	51.2	+25.4	+1.5	+0.2	-35.1	+0.0	43.2	86.4	-43.2	Vert
32	1167.367M	42.5	+23.9	+1.3	+0.2	-36.1	+0.0	31.8	86.4	-54.6	Vert
33	1075.209M	42.8	+23.3	+1.3	+0.2	-36.4	+0.0	31.2	86.4	-55.2	Vert

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC 21.908(d) Mid Hi Chan**
Work Order #: **76266** Date: 03/08/2001
Test Type: **Maximized Emissions** Time: 15:51:16
Equipment: **Wireless Modem** Sequence#: 9
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Preamp, HP 83017A	3123A00464	05/11/2000	05/11/2001	1271
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	09/29/2000	09/29/2001	0
Cable, HF	ghz#5	05/09/2000	05/09/2001	0
Horn Ant, 1-18GHz	9901-5655	10/20/2000	10/20/2001	2157
Horn Ant, 18-26.5GHz	84125-80008	05/21/2001	05/21/2002	1413
Horn Ant, 26.5-40GHz	951559-008	05/21/2001	05/21/2002	1414

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Toshiba	PA173U VCD	98060506A-1
Laptop AC Adapter	Toshiba	PA2450U	0295362
Monitor	Gateway	PMV1448	TB9C28503
Keyboard	Compaq	RT101	1144?877
Mouse	Logitech	M-S35	LZA72052833

Test Conditions / Notes:

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is continuously transmitting in mid channel at 2.596GHz. Frequency range tested 1 MHz - 27 GHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Horn dB	GHz C dB	hol-h dB	HP 83 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5188.200M	82.3	+28.4	+4.6	+0.5	-33.1	+0.0	82.7	86.6	-3.9	Horiz
2	5188.200M	81.5	+28.4	+4.6	+0.5	-33.1	+0.0	81.9	86.6	-4.7	Vert
3	7793.200M	69.7	+35.9	+4.4	+0.7	-34.1	+0.0	76.6	86.6	-10.0	Horiz
4	7795.067M	68.7	+35.9	+4.4	+0.7	-34.1	+0.0	75.6	86.6	-11.0	Vert
5	2215.997M	71.3	+26.1	+1.6	+0.2	-33.8	+0.0	65.4	86.6	-21.2	Vert

6	2215.995M	69.3	+26.1	+1.6	+0.2	-33.8	+0.0	63.4	86.6	-23.2	Horiz
7	1091.085M	74.3	+23.4	+1.3	+0.2	-36.3	+0.0	62.9	86.6	-23.7	Horiz
8	1042.964M	67.0	+23.1	+1.2	+0.2	-36.5	+0.0	55.0	86.6	-31.6	Horiz
9	6648.007M	49.5	+30.7	+6.1	+1.3	-33.7	+0.0	53.9	86.6	-32.7	Vert
10	6647.994M	47.8	+30.7	+6.1	+1.3	-33.7	+0.0	52.2	86.6	-34.4	Horiz
11	1113.844M	60.3	+23.5	+1.3	+0.2	-36.2	+0.0	49.1	86.6	-37.5	Horiz
12	2676.797M	52.7	+27.0	+1.5	+0.2	-33.5	+0.0	47.9	86.6	-38.7	Horiz
13	1521.747M	54.2	+25.6	+1.5	+0.2	-34.9	+0.0	46.6	86.6	-40.0	Horiz
14	4431.998M	46.8	+28.9	+3.1	+0.0	-33.0	+0.0	45.8	86.6	-40.8	Horiz
15	2477.112M	51.7	+25.8	+1.4	+0.2	-33.6	+0.0	45.5	86.6	-41.1	Horiz
16	2692.158M	50.0	+27.1	+1.5	+0.2	-33.5	+0.0	45.3	86.6	-41.3	Horiz
17	2707.524M	48.3	+27.2	+1.5	+0.2	-33.5	+0.0	43.7	86.6	-42.9	Horiz
18	2659.998M	48.0	+26.9	+1.5	+0.2	-33.5	+0.0	43.1	86.6	-43.5	Horiz
19	1536.010M	46.5	+25.7	+1.5	+0.2	-34.9	+0.0	39.0	86.6	-47.6	Vert
20	1413.109M	46.8	+25.2	+1.5	+0.2	-35.3	+0.0	38.4	86.6	-48.2	Vert
21	1413.128M	46.8	+25.2	+1.5	+0.2	-35.3	+0.0	38.4	86.6	-48.2	Horiz
22	4432.017M	39.3	+28.9	+3.1	+0.0	-33.0	+0.0	38.3	86.6	-48.3	Vert
23	1474.556M	46.0	+25.5	+1.5	+0.2	-35.1	+0.0	38.1	86.6	-48.5	Vert
24	1520.046M	45.3	+25.6	+1.5	+0.2	-35.0	+0.0	37.6	86.6	-49.0	Horiz
25	1238.450M	46.5	+24.3	+1.4	+0.2	-35.8	+0.0	36.6	86.6	-50.0	Vert
26	1520.011M	43.5	+25.6	+1.5	+0.2	-35.0	+0.0	35.8	86.6	-50.8	Vert
27	1720.323M	42.0	+25.9	+1.6	+0.2	-34.5	+0.0	35.2	86.6	-51.4	Vert
28	1883.770M	39.8	+26.2	+1.7	+0.2	-34.2	+0.0	33.7	86.6	-52.9	Horiz
29	1167.359M	43.3	+23.9	+1.3	+0.2	-36.1	+0.0	32.6	86.6	-54.0	Vert

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC 21.908(d) Mid Hi Chan**
Work Order #: **76266** Date: 03/08/2001
Test Type: **Maximized Emissions** Time: 14:15:04
Equipment: **Wireless Modem** Sequence#: 10
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Preamp, HP 83017A	3123A00464	05/11/2000	05/11/2001	1271
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	09/29/2000	09/29/2001	0
Cable, HF	ghz#5	05/09/2000	05/09/2001	0
Horn Ant, 1-18GHz	9901-5655	10/20/2000	10/20/2001	2157
Horn Ant, 18-26.5GHz	84125-80008	05/21/2001	05/21/2002	1413
Horn Ant, 26.5-40GHz	951559-008	05/21/2001	05/21/2002	1414

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Toshiba	PA173U VCD	98060506A-1
Laptop AC Adapter	Toshiba	PA2450U	0295362
Monitor	Gateway	PMV1448	TB9C28503
Keyboard	Compaq	RT101	1144?877
Mouse	Logitech	M-S35	LZA72052833

Test Conditions / Notes:

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is continuously transmitting in high channel at 2.680GHz. Frequency range tested 1 MHz - 27 GHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Horn dB	GHz C dB	HP 83 dB	hol-h dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5363.966M	76.7	+29.1	+4.4	-33.3	+0.7	+0.0	77.6	86.6	-9.0	Vert
2	5356.167M	75.5	+29.1	+4.4	-33.3	+0.7	+0.0	76.4	86.6	-10.2	Horiz
3	2067.147M	80.0	+26.2	+1.7	-33.9	+0.2	+0.0	74.2	86.6	-12.4	Vert
4	10729.040M	60.2	+38.3	+7.7	-34.2	+0.9	+0.0	72.9	86.6	-13.7	Vert
5	2068.196M	74.2	+26.2	+1.7	-33.9	+0.2	+0.0	68.4	86.6	-18.2	Horiz
6	2485.940M	74.0	+25.8	+1.4	-33.6	+0.2	+0.0	67.8	86.6	-18.8	Horiz

7	8045.500M	60.2	+36.1	+4.4	-34.0	+0.5	+0.0	67.2	86.6	-19.4	Vert
8	2890.950M	69.0	+28.4	+1.6	-33.4	+0.3	+0.0	65.9	86.6	-20.7	Vert
9	2485.256M	72.0	+25.8	+1.4	-33.6	+0.2	+0.0	65.8	86.6	-20.8	Horiz
10	1117.355M	76.5	+23.6	+1.3	-36.2	+0.2	+0.0	65.4	86.6	-21.2	Vert
11	2300.001M	69.5	+26.0	+1.5	-33.7	+0.2	+0.0	63.5	86.6	-23.1	Vert
12	2501.107M	68.8	+25.8	+1.4	-33.6	+0.2	+0.0	62.6	86.6	-24.0	Horiz
13	1856.234M	68.2	+26.1	+1.7	-34.3	+0.2	+0.0	61.9	86.6	-24.7	Vert
14	2299.999M	66.7	+26.0	+1.5	-33.7	+0.2	+0.0	60.7	86.6	-25.9	Horiz
15	6900.001M	51.0	+33.4	+8.5	-34.1	+1.2	+0.0	60.0	86.6	-26.6	Horiz
16	6900.004M	49.5	+33.4	+8.5	-34.1	+1.2	+0.0	58.5	86.6	-28.1	Vert
17	2749.067M	62.5	+27.5	+1.6	-33.4	+0.3	+0.0	58.5	86.6	-28.1	Vert
18	2755.500M	60.8	+27.5	+1.6	-33.4	+0.3	+0.0	56.8	86.6	-29.8	Horiz
19	2530.402M	60.0	+26.0	+1.4	-33.6	+0.2	+0.0	54.0	86.6	-32.6	Horiz
20	2562.861M	59.3	+26.2	+1.4	-33.6	+0.2	+0.0	53.5	86.6	-33.1	Vert
21	2484.319M	59.0	+25.8	+1.4	-33.6	+0.2	+0.0	52.8	86.6	-33.8	Vert
22	2819.933M	55.5	+27.9	+1.6	-33.4	+0.3	+0.0	51.9	86.6	-34.7	Vert
23	2450.220M	57.7	+25.8	+1.4	-33.6	+0.2	+0.0	51.5	86.6	-35.1	Horiz
24	1229.281M	60.5	+24.2	+1.4	-35.8	+0.2	+0.0	50.5	86.6	-36.1	Horiz
25	1034.535M	62.5	+23.0	+1.2	-36.6	+0.2	+0.0	50.3	86.6	-36.3	Vert
26	1231.881M	60.2	+24.2	+1.4	-35.8	+0.2	+0.0	50.2	86.6	-36.4	Vert
27	2562.844M	55.8	+26.2	+1.4	-33.6	+0.2	+0.0	50.0	86.6	-36.6	Horiz
28	2530.401M	56.0	+26.0	+1.4	-33.6	+0.2	+0.0	50.0	86.6	-36.6	Vert
29	2501.244M	56.0	+25.8	+1.4	-33.6	+0.2	+0.0	49.8	86.6	-36.8	Vert
30	2515.036M	55.0	+25.9	+1.4	-33.6	+0.2	+0.0	48.9	86.6	-37.7	Horiz
31	2537.250M	54.3	+26.1	+1.4	-33.6	+0.2	+0.0	48.4	86.6	-38.2	Vert
32	2547.724M	54.3	+26.1	+1.4	-33.6	+0.2	+0.0	48.4	86.6	-38.2	Horiz

33	4600.007M	48.8	+28.5	+3.5	-33.0	+0.1	+0.0	47.9	86.6	-38.7	Horiz
34	1099.455M	59.0	+23.5	+1.3	-36.3	+0.2	+0.0	47.7	86.6	-38.9	Vert
35	2456.254M	53.5	+25.8	+1.4	-33.6	+0.2	+0.0	47.3	86.6	-39.3	Vert
36	1414.800M	55.2	+25.2	+1.5	-35.2	+0.2	+0.0	46.9	86.6	-39.7	Horiz
37	1519.864M	54.5	+25.6	+1.5	-35.0	+0.2	+0.0	46.8	86.6	-39.8	Horiz
38	4600.002M	46.3	+28.5	+3.5	-33.0	+0.1	+0.0	45.4	86.6	-41.2	Vert
39	2591.835M	49.0	+26.4	+1.5	-33.5	+0.2	+0.0	43.6	86.6	-43.0	Vert
40	1239.163M	51.7	+24.3	+1.4	-35.8	+0.2	+0.0	41.8	86.6	-44.8	Horiz
41	1279.014M	50.8	+24.5	+1.4	-35.7	+0.2	+0.0	41.2	86.6	-45.4	Vert
42	1445.410M	48.5	+25.3	+1.5	-35.2	+0.2	+0.0	40.3	86.6	-46.3	Vert
43	2622.557M	45.2	+26.6	+1.5	-33.5	+0.2	+0.0	40.0	86.6	-46.6	Vert
44	3039.994M	41.7	+28.8	+1.7	-33.3	+0.3	+0.0	39.2	86.6	-47.4	Horiz
45	1413.122M	46.8	+25.2	+1.5	-35.3	+0.2	+0.0	38.4	86.6	-48.2	Vert
46	1520.000M	46.0	+25.6	+1.5	-35.0	+0.2	+0.0	38.3	86.6	-48.3	Vert
47	2517.744M	42.7	+25.9	+1.4	-33.6	+0.2	+0.0	36.6	86.6	-50.0	Vert
48	1167.283M	47.2	+23.9	+1.3	-36.1	+0.2	+0.0	36.5	86.6	-50.1	Vert
49	1535.981M	42.7	+25.7	+1.5	-34.9	+0.2	+0.0	35.2	86.6	-51.4	Vert

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
1MHz – 30 MHz	9 kHz
30 MHz – 1000 MHz	120 kHz
1 GHz – 27 GHz	1MHz

Front View

Back View

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

Not applicable to this unit.

15.107 – AC CONDUCTED EMISSIONS

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC Part 15.107 Class B**
Work Order #: **76266** Date: 03/08/2001
Test Type: **Conducted Emissions** Time: 18:00:13
Equipment: **Wireless Modem** Sequence#: 11
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 85650A QP Adaptor	2430A00541	04/09/2000	04/09/2001	0
HP 85662A Display	2112A02174	04/09/2000	04/09/2001	0
HP 85680A S. A.	2049A01408	04/09/2000	04/09/2001	0
LISN, Solar 8028-50-TS-24-BNC	910490	09/13/2000	09/13/2001	737
LISN, Solar 8028-50-TS-24-BNC	910489	09/13/2000	09/13/2001	736

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Toshiba	PA173U VCD	98060506A-1
Laptop AC Adapter	Toshiba	PA2450U	0295362
Monitor	Gateway	PMV1448	TB9C28503
Keyboard	Compaq	RT101	1144?877
Mouse	Logitech	M-S35	LZA72052833

Test Conditions / Notes:

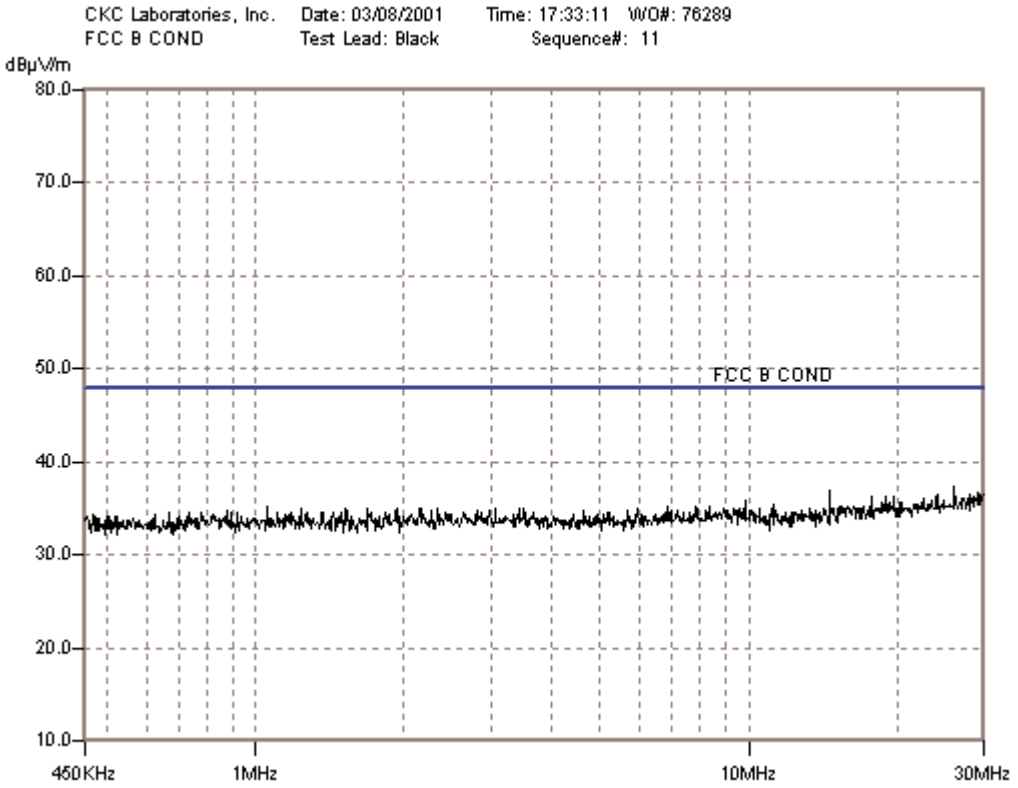
The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is transmitting in low channel (2.506GHz). Frequency range tested: 450 kHz – 30 MHz.

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	Site dB	LISNl dB	dB	LISNZ dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	26.233M	34.9	+0.7	+0.5		+1.2	+0.0	37.3	48.0	-10.7	Black
2	14.599M	35.6	+0.6	+0.3		+0.4	+0.0	36.9	48.0	-11.1	Black

3	29.434M	34.1	+0.5	+1.4	+0.0	36.8	48.0	-11.2	Black
		+0.8							
4	29.980M	34.0	+0.5	+1.4	+0.0	36.7	48.0	-11.3	Black
		+0.8							
5	24.203M	34.3	+0.5	+1.1	+0.0	36.6	48.0	-11.4	Black
		+0.7							
6	29.629M	33.8	+0.5	+1.4	+0.0	36.5	48.0	-11.5	Black
		+0.8							
7	28.263M	33.9	+0.5	+1.3	+0.0	36.5	48.0	-11.5	Black
		+0.8							
8	28.614M	33.7	+0.5	+1.3	+0.0	36.3	48.0	-11.7	Black
		+0.8							
9	19.830M	34.4	+0.4	+0.8	+0.0	36.3	48.0	-11.7	Black
		+0.7							
10	17.761M	34.7	+0.4	+0.6	+0.0	36.3	48.0	-11.7	Black
		+0.6							
11	19.011M	34.4	+0.4	+0.7	+0.0	36.2	48.0	-11.8	Black
		+0.7							
12	28.946M	33.5	+0.5	+1.3	+0.0	36.1	48.0	-11.9	Black
		+0.8							
13	27.287M	33.7	+0.5	+1.2	+0.0	36.1	48.0	-11.9	Black
		+0.7							
14	22.641M	33.9	+0.5	+1.0	+0.0	36.1	48.0	-11.9	Black
		+0.7							
15	27.794M	33.4	+0.5	+1.3	+0.0	36.0	48.0	-12.0	Black
		+0.8							
16	24.983M	33.5	+0.5	+1.1	+0.0	35.8	48.0	-12.2	Black
		+0.7							
17	23.539M	33.6	+0.5	+1.0	+0.0	35.8	48.0	-12.2	Black
		+0.7							
18	9.877M	34.8	+0.3	+0.2	+0.0	35.8	48.0	-12.2	Black
		+0.5							
19	26.935M	33.3	+0.5	+1.2	+0.0	35.7	48.0	-12.3	Black
		+0.7							
20	22.485M	33.5	+0.5	+1.0	+0.0	35.7	48.0	-12.3	Black
		+0.7							
21	19.284M	33.9	+0.4	+0.7	+0.0	35.7	48.0	-12.3	Black
		+0.7							
22	20.533M	33.7	+0.4	+0.8	+0.0	35.6	48.0	-12.4	Black
		+0.7							
23	20.338M	33.7	+0.4	+0.8	+0.0	35.6	48.0	-12.4	Black
		+0.7							
24	18.698M	33.8	+0.4	+0.7	+0.0	35.6	48.0	-12.4	Black
		+0.7							
25	22.173M	33.5	+0.4	+0.9	+0.0	35.5	48.0	-12.5	Black
		+0.7							
26	21.821M	33.5	+0.4	+0.9	+0.0	35.5	48.0	-12.5	Black
		+0.7							

27	23.266M	33.2	+0.7	+0.5	+1.0	+0.0	35.4	48.0	-12.6	Black
28	11.281M	34.4	+0.4	+0.3	+0.3	+0.0	35.4	48.0	-12.6	Black
29	7.787M	34.3	+0.5	+0.3	+0.2	+0.0	35.3	48.0	-12.7	Black
30	1.059M	34.8	+0.2	+0.5	-0.2	+0.0	35.3	48.0	-12.7	Black


CKC Laboratories, Inc.
Date: 03/08/2001
Time: 17:33:11
WO#: 76289
FCC B COND
Test Lead: Black
Sequence#: 11
dBµV/m
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
FCC B COND
450KHz
1MHz
10MHz
30MHz

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC Part 15.107 Class B**
Work Order #: **76266** Date: 03/08/2001
Test Type: **Conducted Emissions** Time: 17:46:26
Equipment: **Wireless Modem** Sequence#: 12
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 85650A QP Adaptor	2430A00541	04/09/2000	04/09/2001	0
HP 85662A Display	2112A02174	04/09/2000	04/09/2001	0
HP 85680A S. A.	2049A01408	04/09/2000	04/09/2001	0
LISN, Solar 8028-50-TS-24-BNC	910490	09/13/2000	09/13/2001	737
LISN, Solar 8028-50-TS-24-BNC	910489	09/13/2000	09/13/2001	736

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Toshiba	PA173U VCD	98060506A-1
Laptop AC Adapter	Toshiba	PA2450U	0295362
Monitor	Gateway	PMV1448	TB9C28503
Keyboard	Compaq	RT101	1144?877
Mouse	Logitech	M-S35	LZA72052833

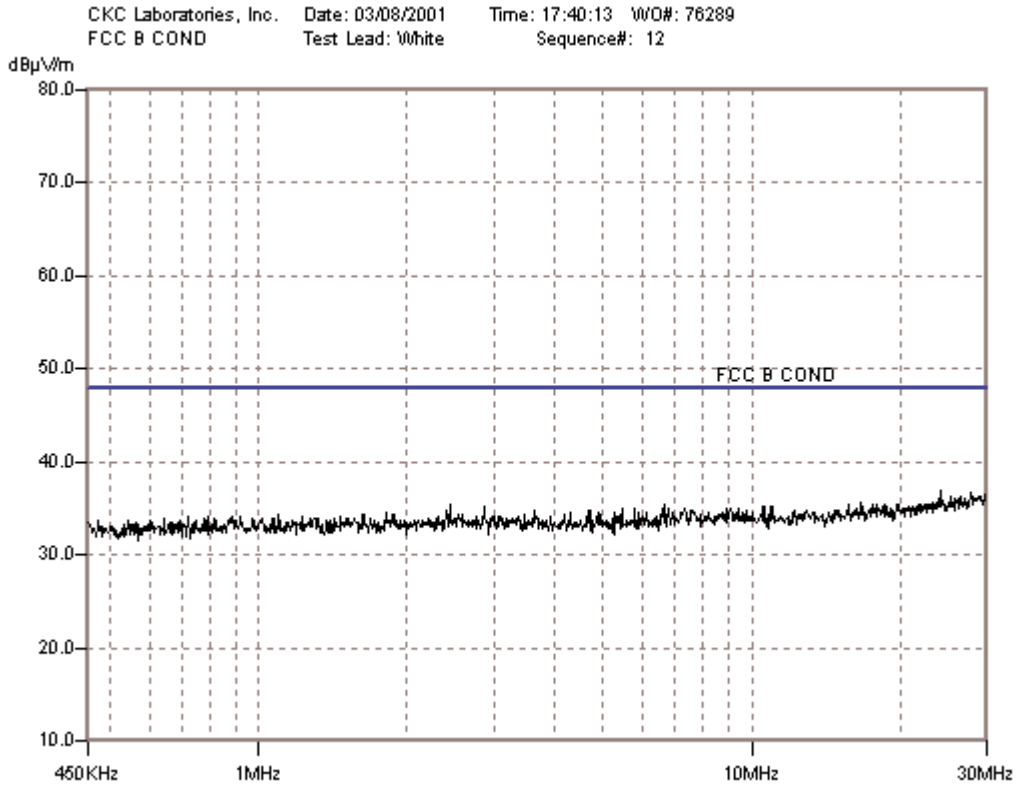
Test Conditions / Notes:

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is transmitting in low channel (2.506GHz). Frequency range tested: 450 kHz – 30 MHz.

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	LISNl Site dB	dB	LISNZ dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	24.203M	34.7	+0.4 +0.7		+1.1		+0.0	36.9	48.0	-11.1	White
2	27.950M	34.1	+0.4 +0.8		+1.5		+0.0	36.8	48.0	-11.2	White
3	29.707M	33.5	+0.4 +0.8		+1.7		+0.0	36.4	48.0	-11.6	White
4	29.980M	33.4	+0.4 +0.8		+1.7		+0.0	36.3	48.0	-11.7	White
5	29.356M	33.5	+0.4 +0.8		+1.6		+0.0	36.3	48.0	-11.7	White
6	26.623M	33.8	+0.4 +0.7		+1.4		+0.0	36.3	48.0	-11.7	White
7	25.413M	33.9	+0.4 +0.7		+1.2		+0.0	36.2	48.0	-11.8	White

8	27.170M	33.6	+0.4 +0.7	+1.4	+0.0	36.1	48.0	-11.9	White
9	26.389M	33.6	+0.4 +0.7	+1.3	+0.0	36.0	48.0	-12.0	White
10	25.764M	33.6	+0.4 +0.7	+1.3	+0.0	36.0	48.0	-12.0	White
11	24.476M	33.5	+0.4 +0.7	+1.2	+0.0	35.8	48.0	-12.2	White
12	27.443M	33.1	+0.4 +0.7	+1.5	+0.0	35.7	48.0	-12.3	White
13	23.695M	33.5	+0.4 +0.7	+1.1	+0.0	35.7	48.0	-12.3	White
14	23.461M	33.5	+0.4 +0.7	+1.1	+0.0	35.7	48.0	-12.3	White
15	16.746M	34.2	+0.2 +0.6	+0.6	+0.0	35.6	48.0	-12.4	White
16	24.749M	33.2	+0.4 +0.7	+1.2	+0.0	35.5	48.0	-12.5	White
17	22.524M	33.4	+0.4 +0.7	+1.0	+0.0	35.5	48.0	-12.5	White
18	19.947M	33.8	+0.3 +0.7	+0.7	+0.0	35.5	48.0	-12.5	White
19	19.752M	33.8	+0.3 +0.7	+0.7	+0.0	35.5	48.0	-12.5	White
20	18.620M	33.8	+0.3 +0.7	+0.7	+0.0	35.5	48.0	-12.5	White
21	23.266M	33.3	+0.4 +0.7	+1.0	+0.0	35.4	48.0	-12.6	White
22	22.758M	33.3	+0.4 +0.7	+1.0	+0.0	35.4	48.0	-12.6	White
23	22.095M	33.5	+0.3 +0.7	+0.9	+0.0	35.4	48.0	-12.6	White
24	21.782M	33.5	+0.3 +0.7	+0.9	+0.0	35.4	48.0	-12.6	White
25	18.035M	33.9	+0.3 +0.6	+0.6	+0.0	35.4	48.0	-12.6	White
26	17.683M	33.9	+0.3 +0.6	+0.6	+0.0	35.4	48.0	-12.6	White
27	15.848M	34.0	+0.2 +0.7	+0.5	+0.0	35.4	48.0	-12.6	White
28	6.707M	34.7	+0.2 +0.5	+0.0	+0.0	35.4	48.0	-12.6	White
29	2.443M	35.1	+0.3 +0.3	-0.3	+0.0	35.4	48.0	-12.6	White
30	10.929M	34.4	+0.3 +0.4	+0.2	+0.0	35.3	48.0	-12.7	White


CKC Laboratories, Inc. Date: 03/08/2001 Time: 17:40:13 WO#: 76289
FCC B COND Test Lead: White Sequence#: 12
dBµV/m
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
FCC B COND
450KHz
1MHz
10MHz
30MHz

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
450 kHz – 30 MHz	9 kHz

Conducted Emissions - Front View

Conducted Emissions - Side View

15.109 – RADIATED EMISSIONS

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485

Customer: **IPWireless, Inc.**
Specification: **FCC 15.109 Radiated Class B**
Work Order #: **76266** Date: 03/27/2001
Test Type: **Radiated Scan/maximized** Time: 14:22:37
Equipment: **Wireless Modem** Sequence#: 15
Manufacturer: IP Wireless Tested By: Conan T. Boyle
Model: AN
S/N: 000026

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bicon, AH Sys. SAS200/542	157	10/30/2000	10/30/2001	206
Log Periodic, A.H. SAS200/510	464	10/11/2000	10/11/2001	2
Cable, 3m	cabl 3m Hol A 01	01/04/2001	01/04/2002	0
HP 85650A QP Adaptor	2430A00541	04/09/2000	04/09/2001	0
HP 85662A Display	2112A02174	04/09/2000	04/09/2001	0
HP 85680A S. A.	2049A01408	04/09/2000	04/09/2001	0
Loop Ant, Emco 6502	2078	08/17/2000	08/17/2001	432
HP 8447F Preamp	2944A03850	03/21/2001	03/21/2002	501

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless	AN	000026
AC Adapter	Optronix Corp.	FW7301/06	None

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Toshiba	PA173U VCD	98060506A-1
Mouse	Logitech	M-S35	LZA72052833
Keyboard	Compaq	RT101	1144?877
Monitor	Gateway	PMV1448	TB9C28503
Laptop AC adapter	Toshiba	PA2450U	0295362

Test Conditions / Notes:

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The PC has external keyboard, mouse and monitor. The EUT is operating in receive mode at 2596 MHz. Frequency range tested: 1-1000 MHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	.Amp. dB	Bicon dB	cabl dB	Log31 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1 QP	86.387M	49.9	-26.9	+7.8	+1.3	+0.0	+0.0	32.1	40.0	-7.9	Vert
^	86.387M	52.3	-26.9	+7.8	+1.3	+0.0	+0.0	34.5	40.0	-5.5	Vert
3	737.275M	37.6	-27.9	+0.0	+4.4	+22.5	+0.0	36.6	46.0	-9.4	Vert
4	798.705M	36.4	-27.6	+0.0	+4.6	+21.8	+0.0	35.2	46.0	-10.8	Vert
5	309.697M	36.2	-26.5	+0.0	+2.6	+22.8	+0.0	35.1	46.0	-10.9	Vert

6	67.410M	46.5	-27.0	+7.6	+1.1	+0.0	+0.0	28.2	40.0	-11.8	Horiz
7	675.839M	35.8	-28.0	+0.0	+4.1	+22.3	+0.0	34.2	46.0	-11.8	Vert
8	71.581M	46.7	-27.0	+7.2	+1.1	+0.0	+0.0	28.0	40.0	-12.0	Vert
9	245.749M	38.9	-26.2	+18.3	+2.2	+0.0	+0.0	33.2	46.0	-12.8	Vert
10	245.775M	38.7	-26.2	+18.3	+2.2	+0.0	+0.0	33.0	46.0	-13.0	Horiz
11	62.480M	43.9	-27.0	+8.4	+1.0	+0.0	+0.0	26.3	40.0	-13.7	Horiz
12	59.870M	42.8	-27.0	+8.8	+1.0	+0.0	+0.0	25.6	40.0	-14.4	Horiz
13	39.954M	36.5	-27.0	+15.3	+0.8	+0.0	+0.0	25.6	40.0	-14.4	Vert
14	77.420M	44.3	-27.0	+7.0	+1.2	+0.0	+0.0	25.5	40.0	-14.5	Horiz
15	553.044M	36.4	-27.9	+0.0	+3.7	+18.8	+0.0	31.0	46.0	-15.0	Horiz
16	522.247M	35.8	-27.8	+0.0	+3.5	+18.1	+0.0	29.6	46.0	-16.4	Vert
17	491.511M	36.4	-27.8	+0.0	+3.4	+17.5	+0.0	29.5	46.0	-16.5	Vert
18	430.096M	36.5	-27.4	+0.0	+3.1	+16.5	+0.0	28.7	46.0	-17.3	Vert
19	400.094M	36.5	-27.2	+0.0	+3.0	+16.0	+0.0	28.3	46.0	-17.7	Horiz

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

Frequency Range	Signal Analyzer VBW & RBW Setting
1 MHz – 30 MHz	9 kHz
30 MHz – 1000 MHz	120 kHz

Front View

Back View