





IPWIRELESS, INC. TEST REPORT

FOR THE

BROADBAND MODEM, MODEL AP

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

COMPLIANCE

DATE OF ISSUE: JANUARY 11, 2002

PREPARED FOR:

IPWireless, Inc. 1001 Bayhill Drive, Second Floor San Bruno, CA 94066

P.O. No.: UK1175/2001 W.O. No.: 78019

PREPARED BY:

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

Date of test: November 19 - December 9, 2001

Report No.: FC01-086

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A2LA (USA); DATech (Germany); BSMI (Taiwan); Nemko (Norway); and GOST (Russia).
CKC Laboratories, Inc has received test site Registration Acceptance from the following agencies:
FCC (USA); VCCI (Japan); and Industry Canada.
CKC Laboratories, Inc. has received Letters of Acceptance through an MRA for the following agencies:
ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); Radio Communications Agency (RA); HOKLAS (Hong Kong); Bakom (Swiss); BIPT (Belgium); Denmark Telestyrelsen; RvA (Netherlands); SEE (Luxembourg) SITTEL (Bolivia); and UKAS (UK).

ADMINISTRATIVE INFORMATION

DATE OF TEST:	November 19 - December 9, 2001
DATE OF RECEIPT:	November 19, 2001
PURPOSE OF TEST:	To demonstrate the compliance of the Broadband Modem, Model AP with the requirements for FCC Part 21 Subpart K and FCC Part 15 Subpart B Sections 15.107 and 15.109 Class B devices.
TEST METHOD:	ANSI C63.4 (1992) and FCC Part 21
MANUFACTURER:	IPWireless, Inc. 1001 Bayhill Drive, Second Floor San Bruno, CA 94066
REPRESENTATIVE:	Peter Warburg
TEST LOCATION:	CKC Laboratories, Inc. 480 Los Viboras Road Hollister, CA 95023 5473A Clouds Rest Mariposa, CA 95338



SUMMARY OF RESULTS

As received, the IPWireless, Inc. Broadband Modem, Model AP was found to be fully compliant with the following standards and specifications:

<u>United States (2500 – 2686 MHz)</u>

- 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) and FCC Part 21 methods

Canada (2500 - 2596 MHz)

RSS-193 using:

- FCC Part 15 Subpart B Section 15.107 and 15.109 Class B
- ► FCC Part 21 Subpart K
- ANSI C63.4 (1992) and FCC Part 21 methods

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

MODIFICATIONS REQUIRED FOR COMPLIANCE



Added with one turn TDK Ferrite P/N ZCAT1518-0730 on 15.109 testing. The ferrite is on the AC adapter cable next to the connector that plugs into the chassis of the EUT (see photo at the right).

APPROVALS

QUALITY ASSURANCE:

ennis Ward

Dennis Ward, Quality Manager

undall

Chuck Kendall, EMC/Lab Manager

Christine Nicklas, EMC/Lab Manager

TEST PERSONNEL:

Randy Clark, EMC Engineer

Conan T. Boyle, EMC Engineer

Matthew Pettersen, Test Engineer

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EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The Broadband Modem tested by CKC Laboratories was a production unit. The following was the name of the product and model during testing: Wireless Modem, Model UEP1b.

The above name was the engineering tracking name used by IP Wireless, Inc. The device will be marketed as: Broadband Modem, Model AP.

EQUIPMENT UNDER TEST

Broadband Modem

Broadband N	<u>Iodem</u>	AC Adapter	
Manuf:	IP Wireless, Inc.	Manuf:	Friwo
Model:	AP	Model:	SPA15U-05
Serial:	AE4K1A-0000066	Serial:	None
FCC ID:	PKTP1BAP1 (pending)	FCC ID:	DoC

PERIPHERAL DEVICES

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

AC Adapter (2)

Manuf:	Dell
Model:	AA20031
Serial:	CN-09364U-16291-14O-070J
	and CN-09364U-12671-0BH-4902
FCC ID:	DoC

Keyboard

Manuf:	Compaq
Model:	RT101
Serial:	1114X877X
FCC ID:	AQ6-MTN4X215

Printer

Manuf: HP Model: C2184A Serial: MY63J1T1KZ FCC ID: 894C2184X

Notebook PC (2)

Manuf: Dell Model: PPX (Inspiron 3800) 329-634-58 and 329-634-27 Serial: FCC ID: DoC

Monitor

Manuf: Micron RMD5L11CM Model: Serial: 8205C1127500 FCC ID: DoC

Mouse

Manuf: Microsoft Model: X04-72167 Serial: None FCC ID: DoC

<u>AC Adapte</u>r

Manuf: HP Model: C2175A Serial: 220995 (Date) FCC ID: DoC



TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within $+15^{\circ}$ C and $+35^{\circ}$ 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 either a single orthogonal spreading code at +24 dBm of PA output power or with 2 simultaneous codes at +21 dBm of PA output powers each, for a composite output power of +24 dBm. The single 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 2 dB steps under 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 EIRP allowed is -6 dBW + 3 dB = -3 dBW EIRP. The design EIRP using the integral antenna is as follows:

EIRP = +24 dBm + 3 dBi (ant. gain)= +27 dBm = -3 dBW

Therefore the EIRP is below the –3 dBW limit allowed for a 12 MHz bandwidth emission.

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 and 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 and confidential document.



<u>2.1033(c)(14)/2.1046/21.904(e) - RF POWER OUTPUT & 2.1033(c)(14)/2.1049(i)//21.908(d)</u> 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.



RF Output and Occupied Bandwidth Test Setup



FCC CHANNEL REQUIREMENTS – FCC 21.908(d) & Occupied Bandwidth 2500 – 2686 MHZ

Model: UEP1b S/N: AE4K1A-000066

Test Equip	oment:								
Asset No.	Description		Model	Cal Date	Cal Due				
1401	Spectrum An	alyzer	HP-8564E	12/12/00	12/12/01				
Channel	2506		TX IF DAC =	= 148		•			
Power mea	sured in 12M	Ηz			Power norma	lized to 6MHz	band		
Ch Pwr	23.60	dBm	-6.4	dBW	-9.4 dBw				
Pwr (100k)	-12.00	dBm			Occupied BW	8.58	MHz		
		(-3MHz)	(-250kHz)	Band edge	Center Ch	Band Edge	(+250kHz)	(+3MHz)	
		2497.00	2499.75	2500.00	2506.00	2512.00	2512.25	2515.00	
Measured V 100kHz (dBı		-55.83	-49.33	-51.17		-51.50	-48.33	-54.50	
Calculated c	Bc limit from	-33.60	-23.60	(-25dB)		(-25dB)	-23.60	-33.60	
LIMIT [Pwr - dBc] (dBm)		-45.6	-35.6	-37		-37	-35.6	-45.6	
	MARGIN	-10.23	-13.73	-14.17		-14.50	-12.73	-8.90	
		Pass	Pass	Pass		Pass	Pass	Pass	
							Spec Limit	61.4	
Channel	2596	MHz	TX IF DAC =	= 140					
Power mea	sured in 12MI	Ηz			Power norma	lized to 6MHz	: band		
Ch Pwr	23.60	dBm	-6.4	dBW	-9.4 dBw				
Pwr (100k)	-11.17	dBm			Occupied BW	8.13	MHz		
		(-3MHz)	(-250kHz)	Band edge	Center Ch	Band Edge	(+250kHz)	(+3MHz)	
		(-3MHz) 2587.00	(-250kHz) 2589.75	Band edge 2590.00	Center Ch 2596.00	Band Edge 2602.00	(+250kHz) 2602.25		
		· /		0		<u> </u>	· /		
100kHz (dBı		2587.00	2589.75	2590.00		2602.00	2602.25	2605.00	
100kHz (dBi Calculated c	m) Bc point from	2587.00	2589.75	2590.00		2602.00	2602.25	2605.00	
100kHz (dBi Calculated c Channel Pov LIMIT [Pwr -	m) Bc point from wer	2587.00 -51.33 -33.60	2589.75 -46.33 -23.60	2590.00 -49.33 (-25dB)		2602.00 -49.00 (-25dB)	2602.25 -46.83 -23.60	2605.00 -51.17 -33.60	
100kHz (dBi Calculated c Channel Pov LIMIT [Pwr -	m) IBc point from wer · Calculated	2587.00 -51.33 -33.60 -44.77	2589.75 -46.33 -23.60 -34.77	2590.00 -49.33 (-25dB) -36.17		2602.00 -49.00 (-25dB) -36.17	2602.25 -46.83 -23.60 -34.77	2605.00 -51.17 -33.60 -44.77	
Channel Pov	m) Bc point from wer	2587.00 -51.33 -33.60	2589.75 -46.33 -23.60	2590.00 -49.33 (-25dB)		2602.00 -49.00 (-25dB)	2602.25 -46.83 -23.60	-33.60	

							Spec Limit	62.23
Channel	2680	MHz	TX IF DAC =	- 147		-		
Power measu	ired in 12M	Hz			Power norma	lized to 6MHz	band	
Ch Pwr	23.80	dBm	-6.2 dBW		-9.2			
Pwr (100k)	-12.17	dBm	Occupied BW 8.6		8.60	MHz		
		(-3MHz)	(-250kHz)	Band edge	Center Ch	Band Edge	(+250kHz)	(+3MHz)
		2671	2673.75	2674	2680	2686	2686.25	2689
Measured Val 100kHz (dBm)		-57.83	-52.67	-55.33		-55.33 -52.83 -5		-57.83
Calculated dB Channel Powe		-33.80	-23.80	(-25dB)		(-25dB)	-23.80	-33.80
LIMIT [Pwr - C dBc] (dBm)	Calculated	-45.97	-35.97	-37.17		-37.17	-35.97	-45.97
I	IARGIN	-11.86	-16.70	-18.16		-18.16	-16.86	-11.86
F	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).

61.03

Spec Limit



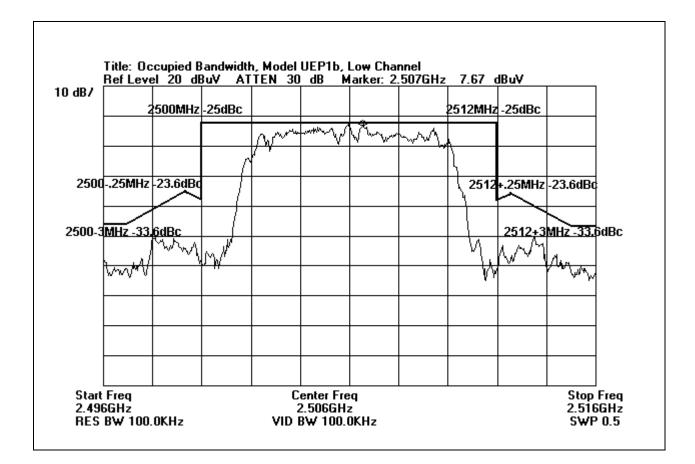
CANADA CHANNEL REQUIREMENTS USING FCC 21.908(D) & OCCUPIED BANDWIDTH 2500 – 2596 MHZ

Channel	2590	MHz	TX IF DAC =	= 141				
Power measured in 12MHz					Power norma	lized to 6MHz	z band	
Ch Pwr	23.50	dBm	-6.5	dBW	-9.5	dBw		
Pwr (100k)	-12.33	dBm			Occupied BW	8.53	MHz	
		(-3MHz)	(-250kHz)	Band edge	Center Ch	Band Edge	(+250kHz)	(+3MHz)
		2581.00	2583.75	2584.00	2590.00	2596.00	2596.25	2599.00
Measured V	leasured Value in -53.83		-49.00	-52.00		-52.33	-48.83	-54.83
Calculated c	Bc point from	-33.50	-23.50	(-25dB)		(-25dB)	-23.50	-33.50
LIMIT [Pwr -	- Calculated	-45.83	-35.83	-37.33		-37.33	-35.83	-45.83
	MARGIN	-8.00	-13.17	-14.67		-15.00	-13.00	-9.00
	Pass/Fail	Pass	Pass	Pass		Pass	Pass	Pass
-							Spec Limit	61.17

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).

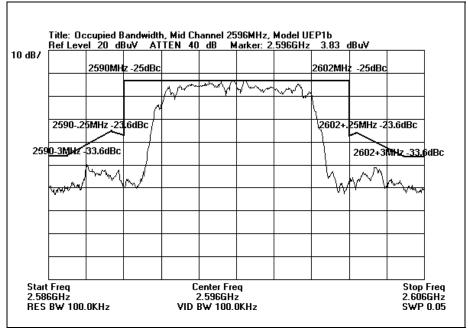


OCCUPIED BANDWIDTH - LOW

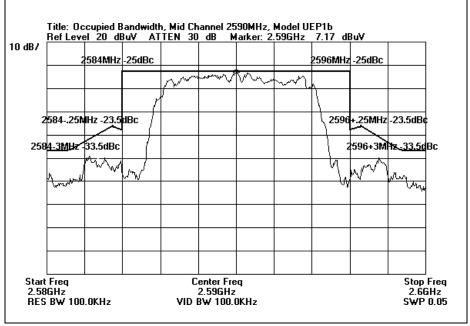




OCCUPIED BANDWIDTH - MIDDLE



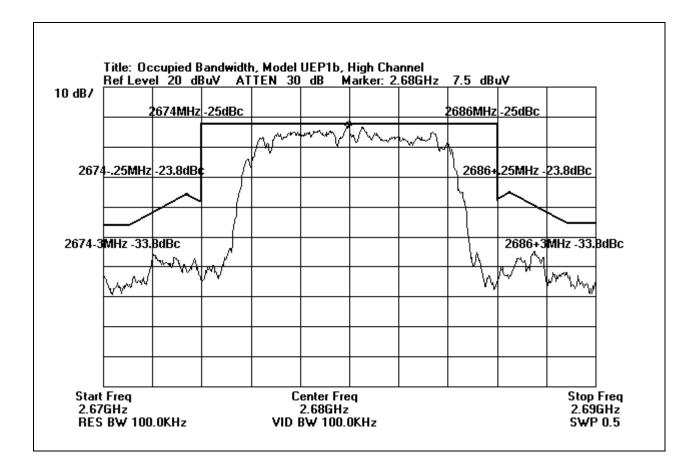
E	C	\mathbf{C}
1	C	C







OCCUPIED BANDWIDTH - HIGH





OUT OF BAND SPURIOUS - LOW

dB7								2500M	1Hz -25d	BC	
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							250	025MHz	-23.6dB	с,	H H
							2500-3	MHz -33.	6dBc		
										kΝ –	И
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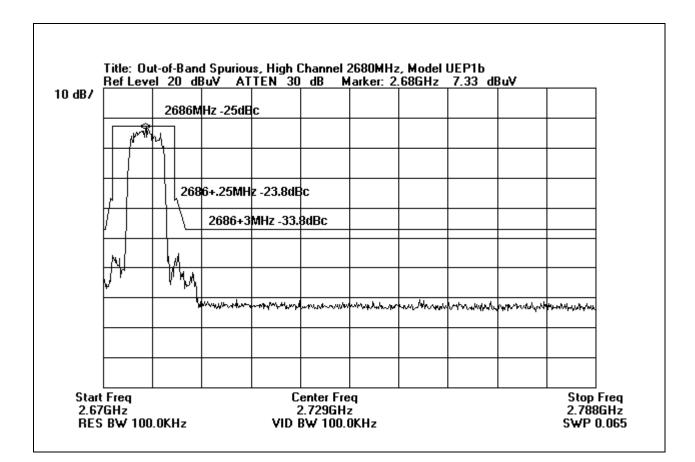
OUT OF BAND SPURIOUS - MIDDLE

) dB7				2	584MHz ·	25dBc	Ì	2596M	Hz -25dB	С	
				25842	5MHz -23	.5dBc		2596+.	25MHz -2	3.5dBc	
				2584-3	MHz -33.	5dBc		2596	+3MHz -3	3.5dBc	
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							┢				

RSS-193 (Canada) Specific Frequency Compliance



OUT OF BAND SPURIOUS - HIGH





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.

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2.1033(c)(14)/2.1051/21.908(d) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

FCC 21.908(d) Sample Calculations for Specification Limits Using the Relative Method in 21.908(e).

Definitions:

P = channel power in dBW normalized to 6MHz (for value, refer to Emissions Mask Data Sheet, Page NN, "Power normalized to 6MHz band" for each channel).

Pa = average power @ 100kHz (for value, refer to Emissions Mask Data Sheet, Page NN, "Pwr (100k)" for each channel). This average power value is used with the average value readings at the band/channel edges for calculating the specification limits.

Puce = upper channel edge power limit

Plce = lower channel edge power limit

 $\frac{\text{Formulas:}}{\text{Puce} = \text{Pa} - 25 \text{ dB}}$ $\frac{\text{Plce}}{\text{Plce}} = \frac{\text{Pa} - 25 \text{ dB}}{\text{Plce}}$

Puce + 250 kHz = Pa - 33+10log(P) dBPlce - 250 kHz = Pa - 33+10log(P) dB

Puce + 3 MHz = Pa - 43 + 10log(P) dBPlce - 3 MHz = Pa - 43 + 10log(P) dB

Since the all measurements were performed using RBW = 100 kHz, no bandwidth correction was necessary.

<u>Sample calculations:</u> (shown for the upper channel side only— the lower side limits will be identical)

Channel = 2506 MHz

P = -9.40 dBW Pa = -12.00 dBm Puce = -12.00 - 25 dBc = -37.00 dBm Puce + 250 kHz = -12.00 - 23.60 dBc = -35.60 dBm Puce + 3 MHz = -12.00 - 33.60 dBc = -45.60 dBm

Channel = 2596 MHz

P = -9.40 dBW Pa = -11.17 dBm Puce = -11.17 - 25 dBc = -36.17 dBm Puce + 250 kHz = -11.17 - 23.60 dBc = -34.77 dBm Puce + 3 MHz = -11.17 - 33.60 dBc = -44.77 dBm

Channel = 2680 MHz

P = -9.20 dBW Pa = -12.17 dBm Puce = -12.17 - 25 dBc = -37.17 dBm Puce + 250 kHz = -12.17 - 23.80 dBc = -35.97 dBm Puce + 3 MHz = -12.17 - 33.80 dBc = -45.97 dBm



Test Location: CKC Laboratories, Inc. • 480 Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-8176

IPWireless, Inc. FCC 2.1051 Model UEP1b Ant SE 78019 Spurious Emissions Ant Term Wireless Modem IP Wireless, Inc. UEP1b	Time: Sequence#:	12/08/2001 13:16:32 1 Conan T. Boyle
AE4K1A-0000066		
	FCC 2.1051 Model UEP1b Ant SE 78019 Spurious Emissions Ant Term Wireless Modem IP Wireless, Inc. UEP1b	FCC 2.1051 Model UEP1b Ant SE78019Date:Spurious Emissions Ant TermTime:Wireless ModemSequence#:IP Wireless, Inc.Tested By:UEP1bTested By:

Test Equipment:

1 1				
Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
S.A.	2049A01408	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
High Pass Filter,	3643A00026	02/19/2001	02/19/2002	1417
3.5GHz				

Equipment Under Test (* = EUT):									
Function	Manufacturer	Model #	S/N						
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066						
AC Adapter	Friwo	SPA15U-05	None						
Support Devices:									
Function	Manufacturer	Model #	S/N						
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-58						
AC Adapter	Dell	AA20031	CN-09364U-16291-14O-						
-			070J						

Test Conditions / Notes:

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via a serial cable and a customer-supplied debug PCB and is powered by an AC adapter. The EUT RF output is directly connected to the spectrum analyzer RF input port. The EUT is fully operating in transmit-receive mode at 2506MHz (low channel) with five transmit and ten receive channels active. Specification limit derived according to the Relative Method in 21.908(e). See "Calculations Worksheet" (file name "calculations-uep1b.xls"). Test is spurious emissions at antenna terminals from 10kHz - 25060MHz (FCC 2.1051).

Mea	surement Data:	Re	eading lis	ted by	margin.		Те	est Distance	e: None		
			3.5 G								
#	Freq	Rdng					Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
	1 12845.940	53.8	+0.0				+0.0	53.8	61.0	-7.2	None
	Μ										
	2 2464.073M	50.0	+0.0				+0.0	50.0	61.0	-11.0	None
	3 2517.176M	49.3	+0.0				+0.0	49.3	61.0	-11.7	None
	Ave										
	^ 2517.176M	70.5	+0.0				+0.0	70.5	61.0	+9.5	None
	5 2617.513M	46.7	+0.0				+0.0	46.7	61.0	-14.3	None



6 6.268M	46.3	+0.0	-	+0.0	46.3	61.0	-14.7	None
7 12541.070 M	45.8	+0.0	-	+0.0	45.8	61.0	-15.2	None
8 198.667M	45.0	+0.0	-	+0.0	45.0	61.0	-16.0	None
9 6378.025M	33.0	+0.0	-	+0.0	33.0	61.0	-28.0	None



Test Location: CKC Laboratories, Inc. • 480 Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-8176

Test Equipment:

1 1				
Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
S.A.	2049A01408	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
High Pass Filter,	3643A00026	02/19/2001	02/19/2002	1417
3.5GHz				

Equipment Under Test (* = EUT):									
Function	Manufacturer	Model #	S/N						
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066						
AC Adapter	Friwo	SPA15U-05	None						
Support Devices:									
Function	Manufacturer	Model #	S/N						
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-58						
AC Adapter	Dell	AA20031	CN-09364U-16291-14O-						
-			070J						

Test Conditions / Notes:

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via a serial cable and a customer-supplied debug PCB and is powered by an AC adapter. The EUT RF output is directly connected to the spectrum analyzer RF input port. The EUT is fully operating in transmit-receive mode at 2596MHz (mid channel) with five transmit and ten receive channels active. Specification limit derived according to the Relative Method in 21.908(e). See "Calculations Worksheet" (file name "calculations-uep1b.xls"). Test is spurious emissions at antenna terminals from 10kHz - 25960MHz (FCC 2.1051).

Measu	rement Data:	Re	eading list	ted by	margin.		Те	est Distance	e: None		
#	Freq	Rdng	3.5 G				Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2553.919M	55.8	+0.0				+0.0	55.8	61.0	-5.2	None
2	852.000M	54.8	+0.0				+0.0	54.8	61.0	-6.2	None
3	12844.960 M	53.8	+0.0				+0.0	53.8	61.0	-7.2	None
4	642.572M	52.5	+0.0				+0.0	52.5	61.0	-8.5	None
5	2523.187M	51.0	+0.0				+0.0	51.0	61.0	-10.0	None



6 311.167M	49.7	+0.0	+0	.0	49.7	61.0	-11.3	None
7 2676.787M	48.5	+0.0	+0	.0	48.5	61.0	-12.5	None
8 6.241M	46.3	+0.0	+0	.0	46.3	61.0	-14.7	None
9 2607.124M Ave	39.0	+0.0	+0	.0	39.0	61.0	-22.0	None
^ 2607.124M	70.8	+0.0	+0	.0	70.8	61.0	+9.8	None
11 8863.998M	37.7	+0.0	+0	.0	37.7	61.0	-23.3	None
12 11080.020 M	33.0	+0.0	+0	.0	33.0	61.0	-28.0	None



Test Location: CKC Laboratories, Inc. • 480 Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-8176

Customer:	IPWireless, Inc.
Specification:	FCC 2.1051 Model UEP1b Ant SE
Work Order #:	78019
Test Type:	Spurious Emissions Ant Term
Equipment:	Wireless Modem
Manufacturer:	IP Wireless, Inc.
Model:	UEP1b
S/N:	AE4K1A-0000066

	E4K1A-0000066				
Test Ewuipment:					
Function	S/N	Calibration Date	Cal Due Date	Asset #	
HP 8564E Spec. An	. 01984	12/12/2000	12/12/2001	1406	
S.A.	2049A01408	06/14/2001	06/14/2002	313	
S.A. Display	2112A02174	06/14/2001	06/14/2002	313	
QP Adapter	2430A00541	06/14/2001	06/14/2002	313	
High Pass Filter,	3643A00026	02/19/2001	02/19/2002	1417	
ingi i assi inci,	50-51100020	02/17/2001	02/17/2002	171/	

Date: 12/08/2001 Time: 11:40:07

Tested By: Matthew Pettersen

Sequence#: 3

Equipment Under Test (* = EUT):									
Function	Manufacturer	Model #	S/N						
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066						
AC Adapter	Friwo	SPA15U-05	None						
Support Devices:									
Function	Manufacturer	Model #	S/N						
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-58						
AC Adapter	Dell	AA20031	CN-09364U-16291-14O-						
			070J						

Test Conditions / Notes:

3.5GHz

The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via a serial cable and a customer-supplied debug PCB and is powered by an AC adapter. The EUT RF output is directly connected to the spectrum analyzer RF input port. The EUT is fully operating in transmit-receive mode at 2680MHz (high channel) with five transmit and ten receive channels active. Specification limit derived according to the Relative Method in 21.908(e). See "Calculations Worksheet" (file name "calculations-uep1b.xls"). Test is spurious emissions at antenna terminals from 10kHz - 26800MHz (FCC 2.1051).

Measu	rement Data:	Re	eading list	ted by	margin.		Те	est Distance	e: None		
			3.5 G								
#	Freq	Rdng					Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7.765M	53.3	+0.0				+0.0	53.3	61.0	-7.7	None
2	2637.920M	53.0	+0.0				+0.0	53.0	61.0	-8.0	None
3	6.244M	52.1	+0.0				+0.0	52.1	61.0	-8.9	None
4	2481.127M	51.0	+0.0				+0.0	51.0	61.0	-10.0	None
5	12847.180 M	50.8	+0.0				+0.0	50.8	61.0	-10.2	None



6 2607.202M	49.7	+0.0	+0	0.0	49.7	61.0	-11.3	None
7 2653.261M	46.3	+0.0	+0	0.0	46.3	61.0	-14.7	None
8 2299.998M	44.3	+0.0	+0	0.0	44.3	61.0	-16.7	None
9 2691.159M Ave	43.5	+0.0	+0	0.0	43.5	61.0	-17.5	None
^ 2691.159M	62.5	+0.0	+0	0.0	62.5	61.0	+1.5	None
11 2668.624M Ave	40.4	+0.0	+0	0.0	40.4	61.0	-20.7	None
^ 2668.624M	59.2	+0.0	+0	0.0	59.2	61.0	-1.8	None
13 38.400M	35.8	+0.0	+0	0.0	35.8	61.0	-25.2	None
14 1.444M	35.0	+0.0	+0	0.0	35.0	61.0	-26.0	None
15 11500.020 M	30.8	+0.0	+0	0.0	30.8	61.0	-30.2	None



VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS

BEGINNING	ENDING	BANDWIDTH
FREQUENCY	FREQUENCY	SETTING
10 kHz	150 kHz	200 Hz
150 kHz	30 MHz	9 kHz
30 MHz	1000 MHz	120 kHz
1000 MHz	26800 MHz	1 MHz



Spurious Emissions Test Setup



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

Test Location: Customer: Specification:	CKC Laboratories, Inc. • 480 IPWireless, Inc. FCC 2.1053 Model UEP1b Fi	Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-0485 eld Strength SE
Work Order #:	78019	Date: 12/9/2001
Test Type:	Radiated Scan	Time: 19:44:33
Equipment:	Wireless Modem	Sequence#: 15
Manufacturer:	IP Wireless, Inc.	Tested By: Conan Boyle
Model:	UEP1b	
S/N:	AE4K1A-0000066	

Test Equipment:

тся Бушртст.				
Function	S/N	Calibration	Cal Due	Asset
		Date	Date	#
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Preamp, HP83017A	3123A0464	05/14/2001	05/14/2002	1271
Horn Ant., Emco 3115	9307-5655	07/09/2001	07/09/2002	2157
Ant, Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413
Filter, 3.5GHz High Pass	3643A00026	02/19/2001	02/19/2002	1417
Log Periodic, AH Systems SAS 200/510	288	05/16/2001	05/16/2002	566
Bilog Antenna CBL6111C	2630	10/10/2001	10/10/2002	0
Preamp, HP 8447F opt H64	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
S.A.	2049A01408	06/14/2001	06/14/2002	313
H-B 3meter Rad. cable .01-1MHz	Hol-B 3-m rad cable-0101-1MHz	10/03/2001	10/03/2002	0
H-B 3meter Rad. cable 1-13.5GHz	Hol-B 3-m rad cable-01-1GHz-	10/03/2001	10/03/2002	0
	13.5GHz			
Ant, Mag Loop	2078	08/17/2001	08/17/2002	432

Equipment Under Test (* = EUT):

Function Manufacturer Model # S/N	Function			
	runction	Manufacturer Mod	el # S/N	
Wireless Modem* IP Wireless, Inc. UEP1b AE4K1A-0000066	Wireless Modem*	IP Wireless, Inc. UEP	1b AE4K1A-0000066	
AC Adapter Friwo SPA15U-05 None	AC Adapter	Friwo SPA	15U-05 None	

Support Devices:			
Function	Manufacturer	Model #	S/N
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-58
AC Adapter	Dell	AA20031	CN-09364U-16291-14O-070J
Printer	HP	C2184A	MY63J1T1KZ
AC Adapter	HP	C2175A	220995 (Date)
Monitor	Micron	RMD5L11CM	8205C1127500
Keyboard	Compaq	RT101	1114X877X
Mouse	Microsoft	X04-72167	None

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 transmit-receive mode at 2506MHz with five transmit channels and ten receive channels active. Specification limit derived according to the Relative Method in 21.908(e). See "Calculations Worksheet" (file name "calculations-uep1b.xls"). Test is field strength of spurious emissions at antenna terminals from 10kHz - 25060MHz (FCC 2.1053).



Measu	rement Data:	R	eading li		<u> </u>	0.4.455	Τe	est Distance	e: 3 Meters		
ц	F actor	D 1	Horn	HP-83	H-B 3	8447F	D '	C	C	M	D 1
#	Freq MHz	Rdng dBµV	Chase dB	Hol-B dB	LOG28 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar
1	2126.001M		+27.8	-34.2	49.4		+0.0	<u>α</u> 52.0	<u>авµ v/ш</u> 61.0	-9.0	Ant
1	2120.001M	49.0	+27.8 +0.0	-54.2 +0.0	+9.4 +0.0	+0.0	+0.0	32.0	01.0	-9.0	Vert
2	2126.004M	46.2				+0.0	+0.0	49.2	61.0	-11.8	Horiz
2	2120.004M	40.2	+27.8	-34.2	+9.4	+0.0	+0.0	49.2	01.0	-11.8	HOLIZ
3	245.805M	55.7	+0.0	+0.0	+0.0 +0.0	-26.0	+0.0	44.2	61.0	-16.8	Homin
3	245.805M	55.7	+0.0	+0.0	+0.0 +0.0	-20.0	+0.0	44.2	61.0	-10.8	Horiz
4	368.684M	50 (+12.3 +0.0	+2.2	+0.0 +0.0	26.6	+0.0	43.1	(1.0	-17.9	Haria
4	508.084W	50.6	+0.0 +0.0	$^{+0.0}_{+2.5}$	+0.0 +16.6	-26.6	+0.0	45.1	61.0	-17.9	Horiz
5	207 276M	51.5	+0.0 +0.0	+2.3 +0.0		26.2	+0.0	42.6	61.0	-18.4	Vert
5	307.276M	51.5		+0.0 +2.3	+0.0	-26.2	+0.0	42.0	01.0	-10.4	ven
	27654714	52.2	+0.0		+15.0	26.0	.0.0	41.4	(1.0	10.0	Haria
6	276.547M	52.2	+0.0	+0.0	+0.0	-26.0	+0.0	41.4	61.0	-19.6	Horiz
7	245 921M	52.0	+13.0	+2.2	+0.0	26.0	+0.0	41.4	61.0	-19.6	Vert
/	245.831M	52.9	+0.0 +12.3	$^{+0.0}_{+2.2}$	+0.0	-26.0	+0.0	41.4	61.0	-19.0	vert
0	220 4COM	52.0			+0.0	26.1	.0.0	40.4	(1.0	20.0	Haria
8	230.469M	53.2	+0.0	+0.0	+0.0	-26.1	+0.0	40.4	61.0	-20.6	Horiz
0	261 14114	50.0	+11.3	+2.0	+0.0	26.0	.0.0	20.0	(1.0	01.1	II!
9	261.141M	50.9	+0.0	+0.0	+0.0	-26.0	+0.0	39.9	61.0	-21.1	Horiz
10	100.04014	52.6	+12.8	+2.2	+0.0	26.6	.0.0	20.0	(1.0	21.2	TT '
10	122.949M	53.6	+0.0	+0.0	+0.0	-26.6	+0.0	39.8	61.0	-21.2	Horiz
11	201.00514	10.0	+11.4	+1.4	+0.0	26.1	.0.0	20.0	(1.0	22.1	II!
11	291.905M	49.6	+0.0	+0.0	+0.0	-26.1	+0.0	38.9	61.0	-22.1	Horiz
10	260 71014	45.0	+13.2	+2.2	+0.0	26.6	.0.0	20.2	(1.0	22.7	X 7 4
12	368.719M	45.8	+0.0	+0.0	+0.0	-26.6	+0.0	38.3	61.0	-22.7	Vert
12	(75.9(9)M	40.0	+0.0	+2.5	+16.6	27.7	.0.0	38.2	(1.0	-22.8	V.
13	675.868M	40.8	+0.0	+0.0	+0.0	-27.7	+0.0	38.2	61.0	-22.8	Vert
1.4	(75.972)	40.0	+0.0	+3.5	+21.6	27.7	.0.0	20.0	(1.0	22.0	II!
14	675.872M	40.8	+0.0	+0.0	+0.0	-27.7	+0.0	38.2	61.0	-22.8	Horiz
15	252 2091	16.4	+0.0	+3.5	+21.6	26.4	.0.0	38.0	(1.0	-23.0	Hania
15	353.308M	46.4	+0.0	+0.0	+0.0	-26.4	+0.0	38.0	61.0	-23.0	Horiz
16	384.075M	44.4	+0.0	+2.4	+15.6	26.9	.0.0	37.8	(1.0	22.2	Hania
16	384.075M	44.4	+0.0	+0.0	+0.0	-26.8	+0.0	57.8	61.0	-23.2	Horiz
17	207 260M	46.2	+0.0	+2.6	+17.6	26.2	+0.0	37.3	61.0	-23.7	Horiz
17	307.269M	40.2	+0.0	+0.0 +2.3	+0.0	-26.2	+0.0	51.5	61.0	-23.1	HOUL
10	284 07014	42.0	+0.0		+15.0	260		266	61.0	24.4	Vort
18	384.070M	43.2			+0.0	-26.8	+0.0	36.6	61.0	-24.4	Vert
10	122.949M	50 /	+0.0	+2.6		266		36.6	61.0	24.4	Vort
19	122.949M	50.4	+0.0	+0.0	+0.0	-26.6	+0.0	30.0	61.0	-24.4	Vert
20	614.479M	40.3	+11.4	+1.4	+0.0	-27.9	+0.0	36.5	61.0	-24.5	Horiz
20	014.4/911	40.3	+0.0	+0.0 +3.3	+0.0	-21.9	+0.0	30.3	01.0	-24.3	HOLIZ
21	353.352M	44.7	+0.0		+20.8	76 1	+0.0	36.3	61.0	-24.7	Vort
21	333.332IVI	44./	+0.0	+0.0	+0.0	-26.4	+0.0	30.3	61.0	-24.1	Vert
22	276 55214	46.0	+0.0	+2.4	+15.6	26.0		26.1	61.0	24.0	Vert
22	276.552M	46.9	+0.0	+0.0	+0.0	-26.0	+0.0	36.1	61.0	-24.9	Vert
	261 10014	100	+13.0	+2.2		26.0	.0.0	25 6	(1.0	25 4	V.
23	261.189M	46.6	+0.0	+0.0	+0.0	-26.0	+0.0	35.6	61.0	-25.4	Vert
24	614 47014	20.0	+12.8	+2.2	+0.0	27.0		25.0	61.0	75.0	Vert
24	614.470M	39.0	+0.0	+0.0	+0.0	-27.9	+0.0	35.2	61.0	-25.8	Vert
			+0.0	+3.3	+20.8						



25	230.464M	47.8	+0.0 +11.3	+0.0 +2.0	$^{+0.0}_{+0.0}$	-26.1	+0.0	35.0	61.0	-26.0	Vert
26	337.997M	43.6	+0.0 +0.0	+0.0 +2.4	+0.0 +15.3	-26.4	+0.0	34.9	61.0	-26.1	Horiz
27	291.908M	45.4	+0.0 +13.2	+0.0 +2.2	+10.0 +0.0	-26.1	+0.0	34.7	61.0	-26.3	Vert
28	737.322M	36.5	+0.0 +0.0	+0.0 +3.5	+0.0 +21.5	-27.7	+0.0	33.8	61.0	-27.2	Horiz
29	337.994M	42.1	+0.0 +0.0	+0.0 +2.4	+0.0 +15.3	-26.4	+0.0	33.4	61.0	-27.6	Vert
30	217.630M	45.7	+0.0 +10.3	+0.0 +2.0	$^{+0.0}_{+0.0}$	-26.2	+0.0	31.8	61.0	-29.2	Vert
31	138.309M	44.4	+0.0 +11.3	+0.0 +1.6	$^{+0.0}_{+0.0}$	-26.5	+0.0	30.8	61.0	-30.2	Horiz
32	215.106M	44.6	+0.0 +10.1	+0.0 +2.0	$^{+0.0}_{+0.0}$	-26.2	+0.0	30.5	61.0	-30.5	Horiz
33	491.599M	37.3	$^{+0.0}_{+0.0}$	+0.0 +2.8	+0.0 +17.8	-27.6	+0.0	30.3	61.0	-30.7	Vert
34	215.108M	42.7	+0.0 +10.1	+0.0 +2.0	$^{+0.0}_{+0.0}$	-26.2	+0.0	28.6	61.0	-32.4	Vert
35	217.617M	41.8	+0.0 +10.3	+0.0 +2.0	$^{+0.0}_{+0.0}$	-26.2	+0.0	27.9	61.0	-33.1	Horiz



Test Location: Customer:	IPWireless, Inc.	os Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-0485
Specification:	FCC 2.1053 Model UEP1b Fie	iu Strength SE
Work Order #:	78019	Date: 12/9/2001
Test Type:	Radiated Scan	Time: 19:34:12
Equipment:	Wireless Modem	Sequence#: 16
Manufacturer:	IP Wireless, Inc.	Tested By: Conan Boyle
Model:	UEP1b	
S/N:	AE4K1A-0000066	

Test Equipment:

Function	S/N	Calibration	Cal Due	Asset
		Date	Date	#
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Preamp, HP83017A	3123A0464	05/14/2001	05/14/2002	1271
Horn Ant., Emco 3115	9307-5655	07/09/2001	07/09/2002	2157
Ant, Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413
Filter, 3.5GHz High Pass	3643A00026	02/19/2001	02/19/2002	1417
Log Periodic, AH Systems SAS 200/510	288	05/16/2001	05/16/2002	566
Bilog Antenna CBL6111C	2630	10/10/2001	10/10/2002	0
Preamp, HP 8447F opt H64	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
S.A.	2049A01408	06/14/2001	06/14/2002	313
S.A.	2049A01408	06/14/2001	06/14/2002	313
S.A.	2049A01408	06/14/2001	06/14/2002	313
H-B 3meter Rad. cable .01-1MHz	Hol-B 3-m rad cable-0101-1MHz	10/03/2001	10/03/2002	0
H-B 3meter Rad. cable 1-13.5GHz	Hol-B 3-m rad cable-01-1GHz-	10/03/2001	10/03/2002	0
	13.5GHz			
Ant, Mag Loop	2078	08/17/2001	08/17/2002	432

Equipment Chaer 10st	$(-\mathbf{L}\mathbf{C}\mathbf{I})$			
Function	Manufacturer	Model #	S/N	
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066	
AC Adapter	Friwo	SPA15U-05	None	

Support Devices:			
Function	Manufacturer	Model #	S/N
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-58
AC Adapter	Dell	AA20031	CN-09364U-16291-14O-070J
Printer	HP	C2184A	MY63J1T1KZ
AC Adapter	HP	C2175A	220995 (Date)
Monitor	Micron	RMD5L11CM	8205C1127500
Keyboard	Compaq	RT101	1114X877X
Mouse	Microsoft	X04-72167	None

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 transmit-receive mode at 2596MHz with five transmit channels and ten receive channels active. Specification limit derived according to the Relative Method in 21.908(e). See "Calculations Worksheet" (file name "calculations-uep1b.xls"). Test is field strength of spurious emissions at antenna terminals from 10kHz - 25960MHz (FCC 2.1053).



Measu	rement Data:	R	eading li		0		Te	est Distanc	e: 3 Meters	6	
		D 1	Horn	HP-83	H-B 3	Hol-B	D	G	a		D 1
#	Freq	Rdng	8447F		LOG28	ID	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m		dB	Ant
1	2216.002M	48.5	+27.8	-34.2	+9.0	+0.0	+0.0	51.1	61.0	-9.9	Vert
	2 60 51 63 6		+0.0	+0.0	+0.0			40.5	<i>c</i> 1 0	10.5	
2	368.716M	57.5	+0.0	+0.0	+0.0	+2.5	+0.0	48.5	61.0	-12.5	Vert
	221 < 0.053 4		-26.6	+15.1	+0.0			14.0	<i>c</i> 1 0		
3	2216.007M	44.3	+27.8	-34.2	+9.0	+0.0	+0.0	46.9	61.0	-14.1	Horiz
			+0.0	+0.0	+0.0						
4	245.829M	56.8	+0.0	+0.0	+0.0	+2.2	+0.0	45.3	61.0	-15.7	Horiz
-	260 72114	10.5	-26.0	+12.3	+0.0	2.5	0.0	12.0	(1.0	10.0	
5	368.721M	49.5	+0.0	+0.0	+0.0	+2.5	+0.0	42.0	61.0	-19.0	Horiz
			-26.6	+0.0	+16.6			10 -		• • •	
6	307.278M	50.9	+0.0	+0.0	+0.0	+2.3	+0.0	40.5	61.0	-20.5	Vert
			-26.2	+13.5	+0.0			10.0			
7	276.554M	51.1	+0.0	+0.0	+0.0	+2.2	+0.0	40.3	61.0	-20.7	Horiz
			-26.0	+13.0	+0.0					• • • •	
8	353.358M	49.4	+0.0	+0.0	+0.0	+2.4	+0.0	40.1	61.0	-20.9	Vert
			-26.4	+14.7	+0.0						
9	122.957M	53.8	+0.0	+0.0	+0.0	+1.4	+0.0	40.0	61.0	-21.0	Horiz
			-26.6	+11.4	+0.0						
10	230.449M	52.8	+0.0	+0.0	+0.0	+2.0	+0.0	39.9	61.0	-21.1	Horiz
			-26.1	+11.2	+0.0						
11	245.832M	51.1	+0.0	+0.0	+0.0	+2.2	+0.0	39.6	61.0	-21.4	Vert
			-26.0	+12.3	+0.0						
12	675.926M	42.7	+0.0	+0.0	+0.0	+3.5	+0.0	39.4	61.0	-21.6	Vert
			-27.7	+20.9	+0.0						
13	261.185M	49.9	+0.0	+0.0	+0.0	+2.2	+0.0	38.9	61.0	-22.1	Horiz
			-26.0	+12.8	+0.0						
14	337.997M	48.5	+0.0	+0.0	+0.0	+2.4	+0.0	38.8	61.0	-22.2	Vert
			-26.4	+14.3	+0.0						
15	307.278M	49.0	+0.0	+0.0	+0.0	+2.3	+0.0	38.6	61.0	-22.4	Horiz
			-26.2	+13.5	+0.0						
16	291.904M	48.8	+0.0	+0.0	+0.0	+2.2	+0.0	38.1	61.0	-22.9	Horiz
			-26.1	+13.2	+0.0						
17	122.945M	51.0	+0.0	+0.0	+0.0	+1.4	+0.0	37.2	61.0	-23.8	Vert
			-26.6	+11.4	+0.0			a			
18	675.909M	40.3	+0.0	+0.0		+3.5	+0.0	37.0	61.0	-24.0	Horiz
			-27.7	+20.9		_					
19	384.070M	44.9	+0.0	+0.0		+2.6	+0.0	36.3	61.0	-24.7	Vert
			-26.8	+15.6		_		a · -			
20	353.352M	45.5	+0.0	+0.0	+0.0	+2.4	+0.0	36.2	61.0	-24.8	Horiz
			-26.4	+14.7	+0.0			a			
21	614.453M	40.1	+0.0	+0.0	+0.0	+3.3	+0.0	35.7	61.0	-25.3	Vert
			-27.9	+20.2	+0.0						
22	384.083M	44.1	+0.0	+0.0		+2.6	+0.0	35.5	61.0	-25.5	Horiz
			-26.8	+15.6							
23	276.547M	46.3	+0.0	+0.0		+2.2	+0.0	35.5	61.0	-25.5	Vert
			-26.0	+13.0							
24	737.352M	37.4	+0.0	+0.0		+3.5	+0.0	35.3	61.0	-25.7	Vert
			-27.7	+22.1	+0.0						



25	614.423M	39.3	+0.0 -27.9	+0.0 +20.2	$^{+0.0}_{+0.0}$	+3.3	+0.0	34.9	61.0	-26.1	Horiz
26	230.462M	47.7	+0.0	+0.0	+0.0	+2.0	+0.0	34.9	61.0	-26.1	Vert
27	337.972M	44.2	-26.1 +0.0	+11.3 +0.0	+0.0 +0.0	+2.4	+0.0	34.5	61.0	-26.5	Horiz
28	737.343M	36.0	-26.4 +0.0	+14.3 +0.0	+0.0 +0.0	+3.5	+0.0	33.9	61.0	-27.1	Horiz
20	757.545M	30.0	+0.0 -27.7	+0.0 +22.1	+0.0 +0.0		+0.0				HOUL
29	291.915M	44.4	+0.0 -26.1	+0.0 +13.2	$^{+0.0}_{+0.0}$	+2.2	+0.0	33.7	61.0	-27.3	Vert
30	261.189M	44.5	+0.0 -26.0	+0.0 +12.8	+0.0 +0.0	+2.2	+0.0	33.5	61.0	-27.5	Vert
31	215.111M	45.7	+0.0	+0.0	+0.0	+2.0	+0.0	31.6	61.0	-29.4	Vert
32	217.630M	45.0	-26.2 +0.0	+10.1 +0.0	+0.0 +0.0	+2.0	+0.0	31.1	61.0	-29.9	Vert
33	491.611M	36.6	-26.2 +0.0	+10.3 +0.0	+0.0 +0.0	+2.8	+0.0	29.8	61.0	-31.2	Vert
34	399.450M	37.2	-27.6 +0.0	+18.0 +0.0	+0.0 +0.0	+2.7	+0.0	28.9	61.0	-32.1	Horiz
35	138.305M	42.4	-27.0 +0.0	+16.0 +0.0	+0.0 +0.0	+1.6	+0.0	28.8	61.0	-32.2	Horiz
			-26.5	+11.3	+0.0						
36	215.111M	42.7	+0.0 -26.2	$^{+0.0}_{+10.1}$	$^{+0.0}_{+0.0}$	+2.0	+0.0	28.6	61.0	-32.4	Horiz
37	217.635M	42.0	+0.0	+0.0 +10.3	$^{+0.0}_{+0.0}$	+2.0	+0.0	28.1	61.0	-32.9	Horiz
38	399.419M	35.5	+0.0 -27.0	+10.3 +0.0 +16.0	+0.0 +0.0 +0.0	+2.7	+0.0	27.2	61.0	-33.8	Vert



Test Location:	CKC Laboratories, Inc. • 480 Los	Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-0485
Customer:	IPWireless, Inc.	
Specification:	FCC 2.1053 Model UEP1b Field	Strength SE
Work Order #:	78019	Date: 12/9/2001
Test Type:	Radiated Scan	Time: 19:57:18
Equipment:	Wireless Modem	Sequence#: 17
Manufacturer:	IP Wireless, Inc.	Tested By: Conan Boyle
Model:	UEP1b	
S/N:	AE4K1A-0000066	

Test Equipment:

Function	S/N	Calibration	Cal Due Date	Asset
		Date		#
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Preamp, HP83017A	3123A0464	05/14/2001	05/14/2002	1271
Horn Ant., Emco 3115	9307-5655	07/09/2001	07/09/2002	2157
Ant, Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413
Ant, Horn 26.5-40GHz	951559-008	05/22/2001	05/22/2002	1414
Filter, 3.5GHz High Pass	3643A00026	02/19/2001	02/19/2002	1417
Log Periodic, AH Systems SAS 200/510	288	05/16/2001	05/16/2002	566
Bilog Antenna CBL6111C	2630	10/10/2001	10/10/2002	0
Preamp, HP 8447F opt H64	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
S.A.	2049A01408	06/14/2001	06/14/2002	313
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	09/29/2000	09/29/2001	0
H-B 3meter Rad. cable .01-1MHz	Hol-B 3-m rad cable-0101-	10/03/2001	10/03/2002	0
	1MHz			
H-B 3meter Rad. cable 1-13.5GHz	Hol-B 3-m rad cable-01-1GHz-	10/03/2001	10/03/2002	0
	13.5GHz			
Cable,100 ft Andrews FSJ1P-50A-4A	hol-hf-100-09	09/29/2001	09/29/2002	0
Ant, Mag Loop	2078	08/17/2001	08/17/2002	432

Equipment Under Test (* = EUT):

111	· /		
Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066
AC Adapter	Friwo	SPA15U-05	None

Support Devices: Function Manufacturer Model # S/N Notebook PC Dell PPX (Inspiron 3800) 329-634-58 AC Adapter Dell AA20031 CN-09364U-16291-14O-070J Printer HP C2184A MY63J1T1KZ AC Adapter HP 220995 (Date) C2175A Monitor RMD5L11CM Micron 8205C1127500 Keyboard Compaq **RT101** 1114X877X Mouse Microsoft X04-72167 None

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 transmit-receive mode at 2680MHz with five transmit channels and ten receive channels active. Specification limit derived according to the Relative Method in 21.908(e). See "Calculations Worksheet" (file name "calculations-uep1b.xls"). Test is field strength of spurious emissions at antenna terminals from 10kHz - 26800MHz (FCC 2.1053).



Measu	rement Data:	R	eading li		U	0.4.455	Τe	est Distanc	e: 3 Meters	6	
	-	D 1	Horn	HP-83	H-B 3	8447F		a	~		D 1
#	Freq	Rdng	Hol-B		LOG28	ID	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table		dBµV/m	dB	Ant
1	2300.004M	50.2	+27.8	-34.2	+8.6	+0.0	+0.0	52.4	61.0	-8.6	Vert
2	2200.00414	10 5	+0.0	+0.0	+0.0	10.0	.0.0	50.7	(1.0	10.2	Hanin
2	2300.004M	48.5	+27.8	-34.2	+8.6	+0.0	+0.0	50.7	61.0	-10.3	Horiz
2	269 71014	50.1	+0.0	+0.0	+0.0	26.6	.0.0	11.0	(1.0	164	N. Land
3	368.719M	52.1	+0.0	+0.0	+0.0	-26.6	+0.0	44.6	61.0	-16.4	Vert
4	245 92414	500	+2.5	+0.0	+16.6	26.0		115	(1.0	165	Harin
4	245.834M	56.0	+0.0	+0.0	+0.0	-26.0	+0.0	44.5	61.0	-16.5	Horiz
5	269 710M	517	+2.2	+12.3	+0.0	26.6		44.2	61.0	16.0	Homin
5	368.719M	51.7	+0.0	+0.0	+0.0	-26.6	+0.0	44.2	61.0	-16.8	Horiz
(207 29014	51.3	+2.5	+0.0	+16.6	26.2		42.4	(1.0	10 (Vert
6	307.280M	51.5	+0.0	+0.0	+0.0	-26.2	+0.0	42.4	61.0	-18.6	Vert
7	252 25914	10 5	+2.3	+0.0	+15.0	26.4		40.1	(1.0	-20.9	Harin
/	353.358M	48.5	+0.0	+0.0	+0.0	-26.4	+0.0	40.1	61.0	-20.9	Horiz
0	245.838M	51.5	+2.4	+0.0	+15.6	26.0		40.0	(1.0	-21.0	Vert
8	245.858M	51.5	+0.0	+0.0	+0.0	-26.0	+0.0	40.0	61.0	-21.0	Vert
0	100.05014	527	+2.2	+12.3	+0.0	26.6	.0.0	20.0	(1.0	21.1	II
9	122.958M	53.7	+0.0	+0.0	+0.0	-26.6	+0.0	39.9	61.0	-21.1	Horiz
10	276 55114	50.5	+1.4	+11.4	+0.0	26.0	.0.0	20.7	(1.0	21.2	II
10	276.551M	50.5	+0.0	+0.0	+0.0	-26.0	+0.0	39.7	61.0	-21.3	Horiz
11	252 25 () (47.0	+2.2	+13.0	+0.0	26.4	.0.0	20.5	(1.0	21.5	V
11	353.356M	47.9	+0.0	+0.0	+0.0	-26.4	+0.0	39.5	61.0	-21.5	Vert
12	384.077M	45.9	+2.4 +0.0	+0.0 +0.0	+15.6 +0.0	-26.8	+0.0	39.3	61.0	-21.7	Vert
12	384.077M	43.9	+0.0 +2.6	+0.0 +0.0	+0.0 +17.6	-20.8	+0.0	39.3	01.0	-21.7	ven
13	(75.00CM	41.7	+2.0 +0.0	+0.0 +0.0		-27.7	+0.0	39.1	61.0	-21.9	Vert
15	675.906M	41./		+0.0 +0.0	+0.0 +21.6	-27.7	+0.0	39.1	01.0	-21.9	ven
14	261.193M	49.9	+3.5 +0.0	+0.0 +0.0	+21.0 +0.0	-26.0	+0.0	38.9	61.0	-22.1	Horiz
14	201.1951	49.9	+0.0 +2.2	+0.0 +12.8	+0.0 +0.0	-20.0	+0.0	30.9	01.0	-22.1	HOLIZ
15	291.914M	49.4	+2.2 +0.0	+12.0 +0.0	+0.0 +0.0	-26.1	+0.0	38.7	61.0	-22.3	Horiz
15	291.914W	49.4	+0.0 +2.2	+0.0 +13.2	+0.0 +0.0	-20.1	+0.0	30.7	01.0	-22.3	HOLIZ
16	337.988M	47.1	+2.2 +0.0	+13.2 +0.0	+0.0 +0.0	-26.4	+0.0	38.4	61.0	-22.6	Vert
10	337.900IVI	4/.1	+0.0 +2.4	+0.0 +0.0	+0.0 +15.3	-20.4	+0.0	30.4	01.0	-22.0	ven
17	201 0701	44.9				-26.8		20.2	61.0	-22.7	Homin
17	384.078M	44.9	+0.0 +2.6	+0.0 +0.0	+0.0 +17.6	-20.8	+0.0	38.3	61.0	-22.1	Horiz
18	614.462M	41.2	+2.6 +0.0	+0.0 +0.0	+17.0 +0.0	-27.9	+0.0	37.4	61.0	-23.6	Horiz
10	014.402M	41.2	+0.0 +3.3	+0.0 +0.0	+0.0 +20.8	-21.9	± 0.0	37.4	01.0	-23.0	TIONZ
19	122.950M	50.7	+3.3 +0.0	+0.0 +0.0	+20.8 +0.0	-26.6	+0.0	36.9	61.0	-24.1	Vert
19	122.930101	50.7	+0.0 +1.4	+0.0 +11.4	+0.0 +0.0	-20.0	± 0.0	50.9	01.0	-24.1	ven
20	614.478M	39.8	+1.4 +0.0	+11.4 +0.0	+0.0 +0.0	-27.9	+0.0	36.0	61.0	-25.0	Vert
20	014.470101	57.0	+0.0 +3.3	+0.0 +0.0	+0.0 +20.8	-21.7	FU.U	50.0	01.0	-25.0	ven
21	307.271M	44.6	+3.3 +0.0	+0.0 +0.0	+20.8 +0.0	-26.2	+0.0	35.7	61.0	-25.3	Horiz
21	507.27 HVI	44.0	+0.0 +2.3	+0.0 +0.0	+0.0 +15.0	-20.2	± 0.0	55.1	01.0	-23.3	TIOUZ
22	675 82211	38.2		+0.0 +0.0		777	+0.0	35.6	61.0	-25.4	Horiz
22	675.823M	38.2	$^{+0.0}_{+3.5}$	+0.0 +0.0	+0.0 +21.6	-27.7	+0.0	33.0	01.0	-23.4	HOUL
23	727 2001	37.7				777		35.0	61.0	26.0	Ucriz
23	737.322M	51.1	+0.0	+0.0	+0.0 +21.5	-27.7	+0.0	33.0	61.0	-26.0	Horiz
24	337.996M	43.3	+3.5 +0.0	+0.0 +0.0	+21.5 +0.0	-26.4	+0.0	34.6	61.0	-26.4	Horiz
24	337.990M	43.3	+0.0	+0.0 +0.0	+0.0 +15.3	-20.4	± 0.0	34.0	01.0	-20.4	TIONZ
l			+∠.4	+0.0	+13.3						



25	291.916M	45.0	+0.0	+0.0	+0.0	-26.1	+0.0	34.3	61.0	-26.7	Vert
	_,,		+2.2	+13.2	+0.0	2011		0.110	0110	-017	
26	276.559M	45.0	+0.0	+0.0	+0.0	-26.0	+0.0	34.2	61.0	-26.8	Vert
			+2.2	+13.0	+0.0						
27	491.578M	40.7	+0.0	+0.0	+0.0	-27.6	+0.0	33.7	61.0	-27.3	Vert
			+2.8	+0.0	+17.8						
28	261.189M	44.7	+0.0	+0.0	+0.0	-26.0	+0.0	33.7	61.0	-27.3	Vert
			+2.2	+12.8	+0.0						
29	230.474M	46.5	+0.0	+0.0	+0.0	-26.1	+0.0	33.7	61.0	-27.3	Vert
			+2.0	+11.3	+0.0						
30	215.116M	46.2	+0.0	+0.0	+0.0	-26.2	+0.0	32.1	61.0	-28.9	Vert
			+2.0	+10.1	+0.0						
31	430.154M	37.0	+0.0	+0.0	+0.0	-27.1	+0.0	30.9	61.0	-30.1	Vert
			+2.7	+0.0	+18.3						
32	217.635M	44.8	+0.0	+0.0	+0.0	-26.2	+0.0	30.9	61.0	-30.1	Vert
			+2.0	+10.3	+0.0						
33	430.138M	36.4	+0.0	+0.0	+0.0	-27.1	+0.0	30.3	61.0	-30.7	Horiz
			+2.7	+0.0	+18.3						
34	215.064M	44.3	+0.0	+0.0	+0.0	-26.2	+0.0	30.2	61.0	-30.8	Horiz
			+2.0	+10.1	+0.0						
35	217.621M	43.5	+0.0	+0.0	+0.0	-26.2	+0.0	29.6	61.0	-31.4	Horiz
			+2.0	+10.3	+0.0						
36	491.548M	36.1	+0.0	+0.0	+0.0	-27.6	+0.0	29.1	61.0	-31.9	Horiz
			+2.8	+0.0	+17.8						
37	138.317M	42.2	+0.0	+0.0	+0.0	-26.5	+0.0	28.6	61.0	-32.4	Horiz
			+1.6	+11.3	+0.0						
38	138.307M	42.0	+0.0	+0.0	+0.0	-26.5	+0.0	28.4	61.0	-32.6	Vert
			+1.6	+11.3	+0.0						

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
10 kHz	150 kHz	200 Hz
150 kHz	30 MHz	9 kHz
30 MHz	1000 MHz	120 kHz
1000 MHz	26800 MHz	1 MHz





 $Field\ Strength\ Test\ Setup-Front\ View$



Field Strength Test Setup – Back View



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

Equipment Asset # Manufacturer Model # Serial # Cal Date Cal Due Digital Multimeter Radio Shack 22-183 NA 01241 8/30/01 8/30/02 **QP** Adapter HP 85650A 2811A01267 00478 11/9/01 11/9/02 11/9/01 11/9/02 S/A Display HP 8566B 2403A08241 00489 Spectrum Analyzer HP 8566B 2209A01404 00490 11/9/01 11/9/02 Temp Chamber S-1.2 MiniMax 11899 3/29/01 3/29/02 Thermotron 01879 Sorensen 7/17/01 7/17/02 Power Supply, DC DCR-60-30B 176 00765 Thermometer Omega HH-26K T-202884 02242 7/26/01 7/26/02

Test Equipment Used:

Test Conditions:

The device was placed in continuos transmit mode and an Andrews Heliax shielded RF cable was connected directly to the transmit port connector of the device and the other end to the HP8566B spectrum analyzer RF input port. The device power supply was plugged into 120V AC. The temperature was varied in 10-degree steps from -30° C to $+50^{\circ}$ C. The fundamental frequency was monitored on the spectrum analyzer.

Frequency Stability

Customor	IP Wireless	
	78019	
	AP UEP1b	
	2.1055 / 21.101	
Test Engineer:	Randal Clark	
-		
Ambient Temperature:	68	20.0 ⁰C
Relative Humidity:	40	%
Authorized Band:	2506 - 2680	MHz
CH1 Operating Frequency in MHz:	2506.00	
CH2 Operating Frequency in MHz:	2596.00	
CH3 Operating Frequency in MHz:	2680.00	
CH1 Frequency Limit in Hz:	12530000	0.005%
CH2 Frequency Limit in Hz:	12980000	0.005%
CH3 Frequency Limit in Hz:	13400000	
Nominal Operating Voltage:	5.00	VAC/VDC
85% of Nominal (V-)	4.25	VAC/VDC
115% of Nominal (V+)	5.75	VAC/VDC
Maximum Positive Deviation:	4000.00	Hz
Maximum Negative Deviation:	-400.00	Hz



Temperature Stability

	Chanr	nel 1	
	Frequency MHz	Frequency Error Hz	Pass/Fail
200	2500 001400	1400	DACC
-30°	2506.001400		PASS
-20ºC	2506.000800	800	PASS
-10ºC	2505.999600	-400	PASS
0ºC	2506.001800	1800	PASS
+10ºC	2506.001800	1800	PASS
+20°C	2506.001800	1800	PASS
+30°C	2505.999800	-200	PASS
+40°C	2506.002000	2000	PASS
+50°C	2506.002600	2600	PASS

	Channel 2								
	Frequency MHz	Frequency Error Hz	Pass/Fail						
200	2506 000400	400	DACC						
-30°	2596.000400		PASS						
-20ºC	2596.000800	800	PASS						
-10ºC	2596.000200	200	PASS						
0ºC	2596.002600	2600	PASS						
+10ºC	2596.002000	2000	PASS						
+20ºC	2596.001600	1600	PASS						
+30°C	2596.001300	1300	PASS						
+40°C	2596.001200	1200	PASS						
+50ºC	2596.002200	2200	PASS						

	Chanr	nel 3	
	Frequency MHz	Frequency Error Hz	Pass/Fail
-30º	2680.000000		PASS
-20°C	2680.002400		
-10ºC	2680.001000	1000	PASS
0°C	2680.001600	1600	PASS
+10ºC	2680.001800	1800	PASS
+20°C	2680.001600	1600	PASS
+30°C	2679.999800	-200	PASS
+40°C	2680.001800	1800	PASS
+50°C	2680.004000	4000	PASS



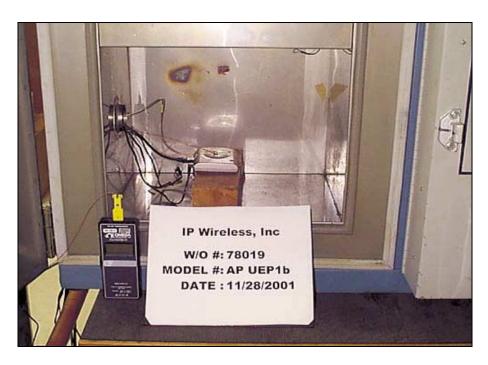
Voltage Variations

Ambient Temperature is 20.0 °C

Channel 1								
Voltage	Frequency MHz	Frequency Error Hz	Pass/Fail					
4.3	2506.000400	400	PASS					
5.0	2506.001200	1200	PASS					
5.8	2506.000800	800	PASS					

Channel 2								
Voltage	Frequency MHz	Frequency Error Hz	Pass/Fail					
4.3	2596.001000	1000	PASS					
5.0	2596.001200	1200	PASS					
5.8	2596.001600	1600	PASS					

Channel 3								
Voltage	Frequency MHz	Frequency Error Hz	Pass/Fail					
4.3	2680.000800	800	PASS					
5.0	2680.002800	2800	PASS					
5.8	2680.003200	3200	PASS					



Frequency Stability Test Setup



15.107 - AC CONDUCTED EMISSIONS - RECEIVER

S.A. $2049A01408$ $06/14/2001$ $06/14/2002$ 313 S.A. Display $2112A02174$ $06/14/2001$ $06/14/2002$ 313 QP Adapter $2430A00541$ $06/14/2001$ $06/14/2002$ 313 Cond cable, HB cond_cab_01_hol_b $09/13/2001$ $09/13/2002$ 0 LISN, Solar 9252-50-R-24-BNC 927108 $03/07/2001$ $03/07/2002$ 611 Equipment Under Test (* = EUT): Function Manufacturer Model # S/N Wireless Modem* IP Wireless, Inc. UEP1b AE4K1A-0000066 AC Adapter Friwo SPA15U-05 None S/N Support Devices: Function Manufacturer Model # S/N Notebook PC Dell PPX (Inspiron 3800) 329-634-27 AC Adapter Dell AA20031 CN-09364U-12671-0BH-4902 Monitor Micron RMD5L11CM 8205C1127500 Keyboard Compaq RT101 1114X877X Mouse Microsoft X04-72167 None <	Test Location: Customer: Specification: Work Order #: Test Type: Equipment: Manufacturer: Model: S/N:	CKC Laboratories IPWireless, Inc. FCC B COND 78019 Conducted Emis Wireless Modem IP Wireless, Inc. UEP1b AE4K1A-000006	sions	30 Los Viboras Rd., i	Site B • H Date Time Sequence Tested By	e: 12/9/2 e: 9:20:1 f: 10	001 5 PM	37-8176
S.A. 2049A01408 06/14/2001 06/14/2002 313 S.A. Display 2112A02174 06/14/2001 06/14/2002 313 QP Adapter 2430A00541 06/14/2001 06/14/2002 313 Cond cable, HB cond_cab_01_hol_b 09/13/2001 09/13/2002 0 LISN, Solar 9252-50-R-24-BNC 927108 03/07/2001 03/07/2002 611 Equipment Under Test (* = EUT): Function Manufacturer Model # S/N Wireless Modem* IP Wireless, Inc. UEP1b AE4K1A-0000066 AC Adapter Friwo SPA15U-05 None Support Devices: Function Manufacturer Model # S/N Notebook PC Dell PPX (Inspiron 3800) 329-634-27 AC Adapter Dell AA20031 CN-09364U-12671-0BH-4902 Monitor Micron RMD5L11CM 8205C1127500 Keyboard Compaq RT101 1114X877X Mouse Microsoft X04-72167 None Printer HP C2184A MY6	Test Equipment:							
S.A. Display $2112A02174$ $06/14/2001$ $06/14/2002$ 313 QP Adapter $2430A00541$ $06/14/2001$ $06/14/2002$ 313 Cond cable, HB $cond_cab_01_hol_b$ $09/13/2001$ $09/13/2002$ 0 LISN, Solar 9252-50-R-24-BNC 927108 $03/07/2001$ $03/07/2002$ 611 Equipment Under Test (* = EUT): Function Manufacturer Model # S/N Wireless Modem* IP Wireless, Inc. UEP1b AE4K1A-0000066 AC Adapter Friwo SPA15U-05 None S/N Support Devices: Function Manufacturer Model # S/N Notebook PC Dell PPX (Inspiron 3800) $329-634-27$ AC Adapter Dell AA20031 CN-09364U-12671-0BH-4902 Monitor Micron RMD5L11CM $8205C1127500$ Keyboard Compaq RT101 1114X877X Mouse Microsoft X04-72167 None Printer HP C2184A MY63J1T1KZ	Function	C L	S/N		Calibrat	ion Date	Cal Due Date	Asset #
QP Adapter 2430A00541 06/14/2001 06/14/2002 313 Cond cable, HB cond_cab_01_hol_b 09/13/2001 09/13/2002 0 LISN, Solar 9252-50-R-24-BNC 927108 03/07/2001 03/07/2002 611 Equipment Under Test (* = EUT): Function Manufacturer Model # S/N Wireless Modem* IP Wireless, Inc. UEP1b AE4K1A-0000066 AC Adapter Friwo SPA15U-05 None Support Devices: Function Manufacturer Model # S/N Notebook PC Dell PPX (Inspiron 3800) 329-634-27 AC Adapter Dell AA20031 CN-09364U-12671-0BH-4902 Monitor Micron RMD5L11CM 8205C1127500 Keyboard Compaq RT101 1114X877X Mouse Microsoft X04-72167 None Printer HP C2184A MY63J1T1KZ	S.A.		2049A0140)8	06/14/2	001	06/14/2002	313
Cond cable, HB $cond_cab_01_hol_b$ $09/13/2001$ $09/13/2002$ 0 LISN, Solar 9252-50-R-24-BNC 927108 $03/07/2001$ $03/07/2002$ 611 Equipment Under Test (* = EUT): FunctionManufacturerModel # S/N Wireless Modem*IP Wireless, Inc.UEP1bAE4K1A-0000066AC AdapterFriwoSPA15U-05NoneSupport Devices:FunctionManufacturerModel # S/N Notebook PCDellPPX (Inspiron 3800) $329-634-27$ AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM $8205C1127500$ KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	S.A. Display		2112A0217	74	06/14/2	001	06/14/2002	313
LISN, Solar 9252-50-R-24-BNC927108 $03/07/2001$ $03/07/2002$ 611 Equipment Under Test (* = EUT):FunctionManufacturerModel # S/N Wireless Modem*IP Wireless, Inc.UEP1bAE4K1A-0000066AC AdapterFriwoSPA15U-05NoneSupport Devices:Support Devices:S/NFunctionManufacturerModel # S/N Notebook PCDellPPX (Inspiron 3800) $329-634-27$ AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM $8205C1127500$ KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	QP Adapter		2430A0054	41	06/14/2	001	06/14/2002	313
Equipment Under Test (* = EUT):FunctionManufacturerModel #S/NWireless Modem*IP Wireless, Inc.UEP1bAE4K1A-0000066AC AdapterFriwoSPA15U-05NoneSupport Devices:FunctionManufacturerModel #S/NNotebook PCDellPPX (Inspiron 3800)329-634-27AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	Cond cable, HB	C	cond_cab_	01_hol_b	09/13/2	001	09/13/2002	0
FunctionManufacturerModel #S/NWireless Modem*IP Wireless, Inc.UEP1bAE4K1A-0000066AC AdapterFriwoSPA15U-05NoneSupport Devices:FunctionManufacturerModel #S/NNotebook PCDellPPX (Inspiron 3800)329-634-27AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	LISN, Solar 9252-	-50-R-24-BNC 9	927108		03/07/2	001	03/07/2002	611
FunctionManufacturerModel #S/NWireless Modem*IP Wireless, Inc.UEP1bAE4K1A-0000066AC AdapterFriwoSPA15U-05NoneSupport Devices:FunctionManufacturerModel #S/NNotebook PCDellPPX (Inspiron 3800)329-634-27AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	Equipment Unde	er Test (* = EUT):						
AC AdapterFriwoSPA15U-05NoneSupport Devices:FunctionManufacturerModel #S/NNotebook PCDellPPX (Inspiron 3800)329-634-27AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	Function	Manufa	cturer	Model #		S/N		
Support Devices:FunctionManufacturerModel #S/NNotebook PCDellPPX (Inspiron 3800)329-634-27AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	Wireless Modem*	IP Wire	eless, Inc.	UEP1b		AE4K1A	-0000066	
FunctionManufacturerModel #S/NNotebook PCDellPPX (Inspiron 3800)329-634-27AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	AC Adapter	Friwo		SPA15U-05		None		
Notebook PC Dell PPX (Inspiron 3800) 329-634-27 AC Adapter Dell AA20031 CN-09364U-12671-0BH-4902 Monitor Micron RMD5L11CM 8205C1127500 Keyboard Compaq RT101 1114X877X Mouse Microsoft X04-72167 None Printer HP C2184A MY63J1T1KZ	Support Devices:							
AC AdapterDellAA20031CN-09364U-12671-0BH-4902MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	Function	Manufa	cturer	Model #		S/N		
MonitorMicronRMD5L11CM8205C1127500KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	Notebook PC	Dell		PPX (Inspiron 38	(00)	329-634-2	27	
KeyboardCompaqRT1011114X877XMouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	AC Adapter	Dell		AA20031		CN-09364	4U-12671-0BH-	4902
MouseMicrosoftX04-72167NonePrinterHPC2184AMY63J1T1KZ	Monitor	Micron		RMD5L11CM		8205C112	27500	
Printer HP C2184A MY63J1T1KZ						1114X87′	7X	
	Mouse		oft	X04-72167				
AC Adapter HP C2175A 220995 (Date)	Printer	HP		C2184A		MY63J17	TIKZ	
	AC Adapter	HP		C2175A		220995 (I	Date)	

Test Conditions / Notes:

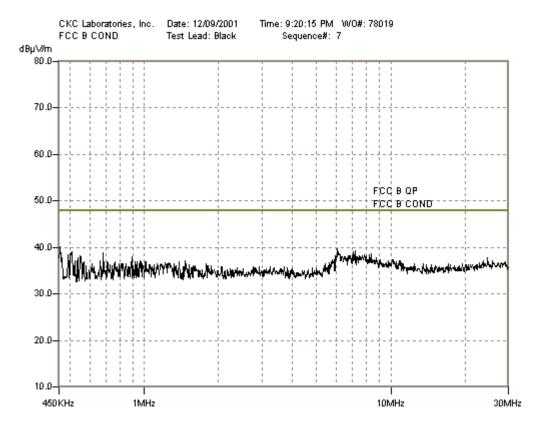
The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is set to receive mode on a frequency of 2596MHz. The notebook PC is connected to a 15-in video monitor, keyboard, mouse, and inkjet printer. Power is 120v, 60Hz. Frequency range tested is .45- 30MHz.

Measur	rement Data:	Reading listed by margin.				Test Lead: Black					
			Condu								
#	Freq	Rdng		LISN		LISN	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	455.015k	40.0	+0.2				+0.0	40.1	48.0	-7.9	Black
				+0.1		-0.2					
2	6.090M	39.1	+0.3				+0.0	39.7	48.0	-8.3	Black
				+0.2		+0.1					
3	7.155M	38.6	+0.4				+0.0	39.2	48.0	-8.8	Black
				+0.1		+0.1					
4	510.178k	38.8	+0.2				+0.0	39.0	48.0	-9.0	Black
				+0.2		-0.2					
5	7.073M	38.4	+0.4				+0.0	39.0	48.0	-9.0	Black
				+0.1		+0.1					



6	682.352k	38.8	+0.1	+0.2	-0.2	+0.0	38.9	48.0	-9.1	Black
7	8.342M	37.8	+0.5			+0.0	38.6	48.0	-9.4	Black
8	8.179M	37.7	+0.5	+0.2	+0.1	+0.0	38.5	48.0	-9.5	Black
9	491.790k	38.2	+0.2	+0.2	+0.1	+0.0	38.4	48.0	-9.6	Black
10	7.796M	37.6	+0.5	+0.2	-0.2	+0.0	38.4	48.0	-9.6	Black
11	5.981M	37.7	+0.3	+0.2	+0.1	+0.0	38.3	48.0	-9.7	Black
12	7.441M	37.7	+0.4	+0.2	+0.1	+0.0	38.3	48.0	-9.7	Black
13	7.987M	37.4	+0.5	+0.1	+0.1	+0.0	38.2	48.0	-9.8	Black
14	7.687M	37.4	+0.5	+0.2	+0.1	+0.0	38.2	48.0	-9.8	Black
15	550.296k	38.4	+0.1	+0.2	+0.1	+0.0	38.2	48.0	-9.8	Black
16	7.018M	37.6	+0.4	+0.1	+0.1	+0.0	38.2	48.0	-9.8	Black
17	6.882M	37.6	+0.4	+0.1	+0.1	+0.0	38.2	48.0	-9.8	Black
18	6.766M	37.6	+0.4	+0.1	+0.1	+0.0	38.2	48.0	-9.8	Black
19	6.295M	37.5	+0.3	+0.2	+0.1	+0.0	38.1	48.0	-9.9	Black
20	7.564M	37.3	+0.5	+0.2	+0.1	+0.0	38.1	48.0	-9.9	Black
21	887.959k	38.1	+0.1	+0.1	-0.2	+0.0	38.1	48.0	-9.9	Black
22	7.298M	37.5	+0.4	+0.1	+0.1	+0.0	38.1	48.0	-9.9	Black
23	6.500M	37.5	+0.4	+0.1	+0.1	+0.0	38.1	48.0	-9.9	Black
24	6.349M	37.4	+0.3	+0.2	+0.1	+0.0	38.0	48.0	-10.0	Black
25	6.554M	37.4	+0.4	+0.1	+0.1	+0.0	38.0	48.0	-10.0	Black
26	6.663M	37.3	+0.4	+0.1	+0.1	+0.0	37.9	48.0	-10.1	Black
27	24.774M	35.3	+0.8	+0.5	+1.2	+0.0	37.8	48.0	-10.2	Black
28	465.044k	37.7	+0.2	+0.1	-0.2	+0.0	37.8	48.0	-10.2	Black
29	8.738M	36.8	+0.4	+0.3	+0.2	+0.0	37.7	48.0	-10.3	Black
30	536.923k	37.6	+0.2	+0.1	-0.2	+0.0	37.7	48.0	-10.3	Black







Test Location: Customer: Specification:	CKC Laboratories, Inc. IPWireless, Inc. FCC B COND	• 480 Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-8176
Work Order #:	77097	Date: 12/9/2001
Test Type:	Conducted Emissions	Time: 9:25:31 PM
Equipment:	Wireless Modem	Sequence#: 11
Manufacturer: Model:	IP Wireless, Inc. UEP1b	Tested By: Conan T. Boyle
S/N:	AE4K1A-0000066	

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A.	2049A01408	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
Cond cable, HB	cond_cab_01_hol_b	09/13/2001	09/13/2002	0
LISN, Solar 9252-50-R-24-BNC	927108	03/07/2001	03/07/2002	611

Equipment Under Test (* = EUT):

Equipinent entite rest (201).		
Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066
AC Adapter	Friwo	SPA15U-05	None

Support Devices:			
Function	Manufacturer	Model #	S/N
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-27
AC Adapter	Dell	AA20031	CN-09364U-12671-0BH-4902
Monitor	Micron	RMD5L11CM	8205C1127500
Keyboard	Compaq	RT101	1114X877X
Mouse	Microsoft	X04-72167	None
Printer	HP	C2184A	MY63J1T1KZ
AC Adapter	HP	C2175A	220995 (Date)

Test Conditions / Notes:

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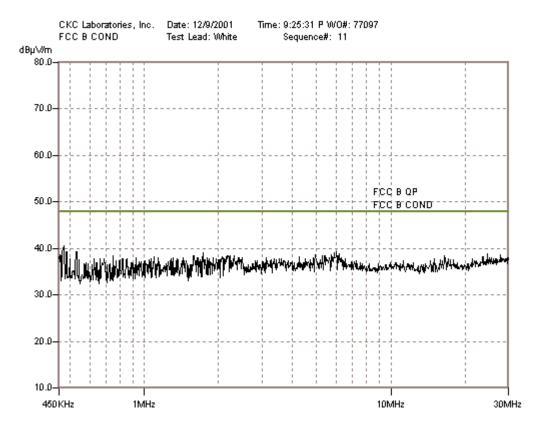
The EUT is a Wireless Modem referred to as a subscriber terminal. The EUT is connected to a notebook PC via an RS-232 serial cable and is powered by an AC adapter. The EUT is set to receive mode on a frequency of 2596MHz. The notebook PC is connected to a 15-in video monitor, keyboard, mouse, and inkjet printer. Power is 120v, 60Hz. Frequency range tested is .45 - 30MHz.

Measur	rement Data:	R	Reading listed by margin.					Test Lead	d: White		
			Condu		LISN						
#	Freq	Rdng	LISN	LISN	LISN		Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	$dB\mu V/m$	dBµV/m	dB	Ant
1	471.731k	40.5	+0.2		+0.1		+0.0	40.5	48.0	-7.5	White
			-0.3	+0.0	+0.0						
2	531.073k	39.3	+0.2		+0.1		+0.0	39.3	48.0	-8.7	White
			-0.3	+0.0	+0.0						
3	6.035M	38.5	+0.3		+0.1		+0.0	39.2	48.0	-8.8	White
			+0.3	+0.0	+0.0						
4	484.268k	39.2	+0.2		+0.1		+0.0	39.2	48.0	-8.8	White
			-0.3	+0.0	+0.0						
5	5.899M	38.4	+0.3		+0.1		+0.0	39.0	48.0	-9.0	White
			+0.2	+0.0	+0.0						
6	1.735M	38.8	+0.1		+0.1		+0.0	39.0	48.0	-9.0	White
			+0.0	+0.0	+0.0						



$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$											
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	7	24.618M	36.0				+0.0	38.9	48.0	-9.1	White
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					+0.0						
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	8	6.172M	38.1				+0.0	38.8	48.0	-9.2	White
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$					+0.0						
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	9	5.762M	38.1				+0.0	38.7	48.0	-9.3	White
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$					+0.0						
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	10	4.930M	37.9			+0.2	+0.0	38.7	48.0	-9.3	White
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				+0.2	+0.0	+0.0					
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	11	453.343k	38.7	+0.2		+0.1	+0.0	38.7	48.0	-9.3	White
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				-0.3	+0.0	+0.0					
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	12	27.933M	35.2	+0.8		+1.0	+0.0	38.6	48.0	-9.4	White
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$				+1.6	+0.0	+0.0					
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	13	5.298M	37.7	+0.4		+0.2	+0.0	38.5	48.0	-9.5	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$				+0.2	+0.0	+0.0					
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	14	2.236M	38.1			+0.1	+0.0	38.5	48.0	-9.5	White
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				+0.1	+0.0	+0.0					
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	15	749.216k	38.5			+0.1	+0.0	38.5	48.0	-9.5	White
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					+0.0						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	16	16.545M	36.6				+0.0	38.4	48.0	-9.6	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$					+0.0						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	17	5.414M	37.6				+0.0	38.4	48.0	-9.6	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$					+0.0						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	18	5.367M	37.6				+0.0	38.4	48.0	-9.6	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	10	01007112	0,10		+0.0			2011		2.0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	19	2.318M	38.0				+0.0	38.4	48.0	-9.6	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		21010111	2010		+0.0			2011		2.0	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	20	2.177M	38.2		1010		+0.0	38.4	48.0	-96	White
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			00.2		+0.0			2011		2.0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	21	1 601M	38.2				+0.0	38.4	48.0	-96	White
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	21	1.001101	50.2		+0.0		10.0	20.1	10.0	2.0	() Inte
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	22	1 587M	38.2		1010		+0.0	38.4	48.0	-96	White
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	22	1.507101	50.2		+0.0		10.0	50.1	10.0	2.0	··· inte
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	23	458 358k	38.4				+0.0	38.4	48.0	-9.6	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	23	150.550K	50.7		+0.0		10.0	50.7	10.0	2.0	,, inte
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	24	30.000M	34.7		10.0		+0.0	38 3	48.0	-97	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	2,	20100000	21.7		+0.0		10.0	20.2	10.0	2.1	,, inte
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	25	4 275M	37.6		10.0		+0.0	38.3	48.0	_9.7	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	23	T.2/J1VI	57.0		+0.0		10.0	50.5	-0.0	2.1	,, inte
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	26	23 663M	35 /		10.0		±0.0	38.2	48.0	-0.8	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	20	25.005141	55.4		+0.0		+0.0	50.2	-0.0	-9.0	winte
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	27	2 1/6M	38.0		10.0		±0.0	38.2	/8.0	-0.8	White
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	21	2.140101	50.0		±0 0		± 0.0	50.2	+0.0	-7.0	willie
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	28	2 060M	38.0		± 0.0			38.2	18.0	0.8	White
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	20	2.009101	50.0		+0 0		+0.0	30.2	40.0	-7.0	winte
-0.1 +0.0 +0.0 30 929.749k 37.9 +0.1 +0.2 +0.0 38.1 48.0 -9.9 White	20	1.0001	20.1		± 0.0			20.0	10 0	0.0	White
30 929.749k 37.9 +0.1 +0.2 +0.0 38.1 48.0 -9.9 White	29	1.09014	36.1				+0.0	30.2	40.0	-9.8	white
	20	020 7401-	27.0		± 0.0			20.1	10.0	0.0	White
-0.1 +0.0 +0.0	30	929./49K	31.9				+0.0	38.1	48.0	-9.9	white
				-0.1	+0.0	+0.0					







VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS

BEGINNING	ENDING	BANDWIDTH
FREQUENCY	FREQUENCY	SETTING
450 kHz	30 MHz	9 kHz



Mains Conducted Emissions Test Setup - Front View



Mains Conducted Emissions Test Setup - Side View



15.109 - RADIATED EMISSIONS - RECEIVER

Test Location: CKC Laboratories, Inc. • 480 Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-0485

Customer: Specification: Work Order #:	IPWireless, Inc. FCC B RADIATED 78019
Test Type:	Radiated Scan
Equipment:	Wireless Modem
Manufacturer:	IP Wireless, Inc.
Model:	UEP1b
S/N:	AE4K1A-0000066

Date:	12/9/2001
Time:	17:08:25
Sequence#:	7
Tested By:	Conan Boyle

Test Equipment: Function S/N Calibration Date Cal Due Date Asset # HP 8564E Spec. An. 01984 12/12/2001 1406 12/12/2000 Preamp, HP83017A 3123A0464 05/14/2001 05/14/2002 1271 Horn Ant., Emco 3115 9307-5655 07/09/2001 07/09/2002 2157 Ant, Horn 18-26.5GHz 942126-003 07/09/2001 07/09/2002 1413 Ant, Horn 26.5-40GHz 1414 951559-008 05/22/2001 05/22/2002 Filter, 3.5GHz High Pass 3643A00026 02/19/2001 02/19/2002 1417 Log Periodic, AH Systems SAS 200/510 288 05/16/2001 05/16/2002 566 Bilog Antenna CBL6111C 10/10/2002 0 2630 10/10/2001 Preamp, HP 8447F opt H64 2944A03850 04/09/2001 04/09/2002 501 QP Adapter 2430A00541 06/14/2001 06/14/2002 313 S.A. Display 2112A02174 06/14/2001 06/14/2002 313 313 S.A. 2049A01408 06/14/2001 06/14/2002 H-B 3meter Rad. cable .01-1MHz Hol-B 3-m rad cable-01-.01-10/03/2001 10/03/2002 0 1MHz H-B 3meter Rad. cable 1-13.5GHz Hol-B 3-m rad cable-01-10/03/2001 10/03/2002 0 1GHz-13.5GHz 2078 08/17/2001 08/17/2002 432 Ant, Mag Loop

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066
AC Adapter	Friwo	SPA15U-05	None

Support Devices:

Support Derices.			
Function	Manufacturer	Model #	S/N
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-58
AC Adapter	Dell	AA20031	CN-09364U-16291-14O-070J
Printer	HP	C2184A	MY63J1T1KZ
AC Adapter	HP	C2175A	220995 (Date)
Monitor	Micron	RMD5L11CM	8205C1127500
Keyboard	Compaq	RT101	1114X877X
Mouse	Microsoft	X04-72167	None

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 2506 MHz. Frequency range is 30 - 12530MHz.



Measu	rement Data:	R	eading li				Te	est Distanc	e: 3 Meters		
	-	D 1	Horn	HP-83	H-B 3	8447F	D	a	a		D 1
#	Freq	Rdng	Chase		LOG28	ID	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table		dBµV/m	dB	Ant
1	245.829M OP	55.6	+0.0 +12.3	+0.0 +2.2	$^{+0.0}_{+0.0}$	-26.0	+0.0	44.1	46.0 No ferrite	-1.9	Horiz
^	245.829M	55.7	+0.0	+0.0	+0.0	-26.0	+0.0	44.2	46.0	-1.8	Horiz
			+12.3	+2.2	+0.0				No ferrite		
	2126.001M	48.1	+27.8	-34.2	+9.4	+0.0	+0.0	51.1	54.0	-2.9	Vert
	Ave 2126.001M	40.0	+0.0	+0.0	+0.0	.0.0	.0.0	52.0	54.0	2.0	V <i>I</i> and
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2120.001M	49.0	+27.8 +0.0	-34.2 +0.0	+9.4 +0.0	+0.0	+0.0	52.0	54.0	-2.0	Vert
5	122.953M	53.2	+0.0 +0.0	+0.0 +0.0	+0.0 +0.0	-26.6	+0.0	39.4	43.5	-4.1	Horiz
	QP	00.2	+11.4	+1.4	+0.0	2010		0,,,,,			
^	122.949M	53.6	+0.0	+0.0	+0.0	-26.6	+0.0	39.8	43.5	-3.7	Horiz
		0010	+11.4	+1.4	+0.0	2010		0,10		017	110112
7	307.278M	50.7	+0.0	+0.0	+0.0	-26.2	+0.0	41.8	46.0	-4.2	Vert
	QP	0017	+0.0	+2.3	+15.0			1110			
^	307.278M	50.9	+0.0	+0.0	+0.0	-26.2	+0.0	42.0	46.0	-4.0	Vert
			+0.0	+2.3	+15.0						
9	276.553M	52.2	+0.0	+0.0	+0.0	-26.0	+0.0	41.4	46.0	-4.6	Horiz
	QP		+13.0	+2.2	+0.0						
^	276.553M	52.2	+0.0	+0.0	+0.0	-26.0	+0.0	41.4	46.0	-4.6	Horiz
			+13.0	+2.2	+0.0						
11	245.832M	52.5	+0.0	+0.0	+0.0	-26.0	+0.0	41.0	46.0	-5.0	Vert
	QP		+12.3	+2.2	+0.0						
^	245.832M	52.9	+0.0	+0.0	+0.0	-26.0	+0.0	41.4	46.0	-4.6	Vert
10	2126.00434	45.0	+12.3	+2.2	+0.0	.0.0	.0.0	40.0	54.0	6.0	TT '
	2126.004M	45.0	+27.8	-34.2	+9.4	+0.0	+0.0	48.0	54.0	-6.0	Horiz
	Ave 2126.004M	46.2	+0.0 +27.8	+0.0 -34.2	+0.0 +9.4	+0.0	+0.0	49.2	54.0	-4.8	Horiz
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2120.004M	40.2	+27.8 +0.0	-54.2 +0.0	+9.4	+0.0	+0.0	49.2	54.0	-4.8	HOLIZ
15	261.141M	50.9	+0.0 +0.0	+0.0 +0.0	+0.0 +0.0	-26.0	+0.0	39.9	46.0	-6.1	Horiz
15	201.141M	50.9	+0.0 +12.8	+0.0 +2.2	+0.0 +0.0	-20.0	+0.0	39.9	40.0	-0.1	HOLIZ
16	230.469M	52.7	+12.0 +0.0	+2.2 +0.0	+0.0+0.0	-26.1	+0.0	39.9	46.0	-6.1	Horiz
	OP	52.1	+11.3	+2.0	+0.0	-20.1	10.0	57.7	+0.0	-0.1	HOHZ
^	230.469M	53.2	+0.0	+0.0	+0.0	-26.1	+0.0	40.4	46.0	-5.6	Horiz
	200.109101	55.2	+11.3	+2.0	+0.0	20.1	10.0	10.1	10.0	5.0	110112
18	122.949M	50.4		+0.0	+0.0	-26.6	+0.0	36.6	43.5	-6.9	Vert
10		20.1	+11.4	+1.4	+0.0	-0.0		20.0		0.7	
19	291.905M	49.6	+0.0	+0.0	+0.0	-26.1	+0.0	38.9	46.0	-7.1	Horiz
		-	+13.2	+2.2	+0.0						
20	368.714M	45.9	+0.0	+0.0	+0.0	-26.6	+0.0	38.4	46.0	-7.6	Horiz
			+0.0	+2.5	+16.6						
21	675.868M	40.8	+0.0	+0.0	+0.0	-27.7	+0.0	38.2	46.0	-7.8	Vert
			+0.0	+3.5	+21.6						
22	675.872M	40.8	+0.0	+0.0	+0.0	-27.7	+0.0	38.2	46.0	-7.8	Horiz
			+0.0	+3.5	+21.6			00.0	4 - 0		
23	353.308M	46.4	+0.0	+0.0	+0.0	-26.4	+0.0	38.0	46.0	-8.0	Horiz
24	204 07514	A A A	+0.0	+2.4	+15.6	060	.0.0	27.0	16.0	0.0	II.
24	384.075M	44.4	+0.0	+0.0	+0.0	-26.8	+0.0	37.8	46.0	-8.2	Horiz
			+0.0	+2.6	+17.6						



25	307.273M	45.6	+0.0	+0.0	+0.0	-26.2	+0.0	36.7	46.0	-9.3	Horiz
26	384.070M	43.2	+0.0 +0.0	+2.3 +0.0	+15.0 +0.0	-26.8	+0.0	36.6	46.0	-9.4	Vert
			+0.0	+2.6	+17.6						
27	614.479M	40.3	+0.0	+0.0	+0.0	-27.9	+0.0	36.5	46.0	-9.5	Horiz
			+0.0	+3.3	+20.8						
28	353.352M	44.7	+0.0	+0.0	+0.0	-26.4	+0.0	36.3	46.0	-9.7	Vert
			+0.0	+2.4	+15.6						
29	368.707M	43.7	+0.0	+0.0	+0.0	-26.6	+0.0	36.2	46.0	-9.8	Vert
			+0.0	+2.5	+16.6						
30	276.552M	46.9	+0.0	+0.0	+0.0	-26.0	+0.0	36.1	46.0	-9.9	Vert
			+13.0	+2.2	+0.0						
31	261.189M	46.6	+0.0	+0.0	+0.0	-26.0	+0.0	35.6	46.0	-10.4	Vert
			+12.8	+2.2	+0.0					40.0	
32	614.470M	39.0	+0.0	+0.0	+0.0	-27.9	+0.0	35.2	46.0	-10.8	Vert
			+0.0	+3.3	+20.8						
33	230.464M	47.8	+0.0	+0.0	+0.0	-26.1	+0.0	35.0	46.0	-11.0	Vert
	225 0051 (10.6	+11.3	+2.0	+0.0	2.5.4	0.0	210	16.0		
34	337.997M	43.6	+0.0	+0.0	+0.0	-26.4	+0.0	34.9	46.0	-11.1	Horiz
	201.0003.6		+0.0	+2.4	+15.3	2.1.1	0.0	215	16.0	11.0	* *
35	291.908M	45.4	+0.0	+0.0	+0.0	-26.1	+0.0	34.7	46.0	-11.3	Vert
- 26	707 0001 (265	+13.2	+2.2	+0.0	07.7	0.0	22.0	16.0	10.0	
36	737.322M	36.5	+0.0	+0.0	+0.0	-27.7	+0.0	33.8	46.0	-12.2	Horiz
27	120 2001	4.4.4	+0.0	+3.5	+21.5	26.5	.0.0	20.0	12 5	10.7	II!
37	138.309M	44.4	+0.0	+0.0	+0.0	-26.5	+0.0	30.8	43.5	-12.7	Horiz
20	215 10CM	11 (+11.3	+1.6	+0.0	26.2	.0.0	30.5	12 5	12.0	Hania
38	215.106M	44.6	+0.0	+0.0 +2.0	+0.0	-26.2	+0.0	50.5	43.5	-13.0	Horiz
39	217.630M	45.7	+10.1		+0.0	-26.2	+0.0	31.8	160	14.2	Vort
39	217.030M	45.7	$^{+0.0}_{+10.3}$	$^{+0.0}_{+2.0}$	$^{+0.0}_{+0.0}$	-20.2	+0.0	31.8	46.0	-14.2	Vert
40	215.108M	42.7				26.2	+0.0	28.6	43.5	-14.9	Vort
40	213.106M	42.7	$^{+0.0}_{+10.1}$	$^{+0.0}_{+2.0}$	$^{+0.0}_{+0.0}$	-26.2	+0.0	20.0	43.3	-14.9	Vert
41	217.617M	41.8	+10.1 +0.0	+2.0 +0.0	+0.0 +0.0	-26.2		27.9	46.0	-18.1	Horiz
41	217.017W	41.0	+0.0 +10.3	+0.0 +2.0	$^{+0.0}_{+0.0}$	-20.2	+0.0	21.9	40.0	-10.1	HOLIZ
			+10.3	+2.0	+0.0						



Test Location: CK

CKC Laboratories, Inc. • 480 Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-0485

Customer:	IPWireless, Inc.
Specification:	FCC B RADIATED
Work Order #:	78019
Test Type:	Radiated Scan
Equipment:	Wireless Modem
Manufacturer:	IP Wireless, Inc.
Model:	UEP1b
Nodel:	0EP16
S/N:	AE4K1A-0000066

Date:	12/9/2001
Time:	18:47:54
Sequence#:	8
Tested By:	Conan Boyle

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Preamp, HP83017A	3123A0464	05/14/2001	05/14/2002	1271
Horn Ant., Emco 3115	9307-5655	07/09/2001	07/09/2002	2157
Ant, Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413
Ant, Horn 26.5-40GHz	951559-008	05/22/2001	05/22/2002	1414
Filter, 3.5GHz High Pass	3643A00026	02/19/2001	02/19/2002	1417
Log Periodic, AH Systems SAS 200/510	288	05/16/2001	05/16/2002	566
Bilog Antenna CBL6111C	2630	10/10/2001	10/10/2002	0
Preamp, HP 8447F opt H64	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
S.A.	2049A01408	06/14/2001	06/14/2002	313
H-B 3meter Rad. cable .01-1MHz	Hol-B 3-m rad	10/03/2001	10/03/2002	0
	cable-0101-			
	1MHz			
H-B 3meter Rad. cable 1-13.5GHz	Hol-B 3-m rad	10/03/2001	10/03/2002	0
	cable-01-1GHz-			
	13.5GHz			
Ant, Mag Loop	2078	08/17/2001	08/17/2002	432

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066
AC Adapter	Friwo	SPA15U-05	None

Support Devices:

Function	Manufacturer	Model #	S/N
Notebook PC	Dell	PPX (Inspiron 3800)	329-634-58
AC Adapter	Dell	AA20031	CN-09364U-16291-14O-070J
Printer	HP	C2184A	MY63J1T1KZ
AC Adapter	HP	C2175A	220995 (Date)
Monitor	Micron	RMD5L11CM	8205C1127500
Keyboard	Compaq	RT101	1114X877X
Mouse	Microsoft	X04-72167	None

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 2596MHz. Frequency range tested 30 - 12980MHz.



Measu	irement Data:	R	leading li		U		Те	est Distanc	e: 3 Meters		
	-	-	Horn	HP-83	H-B 3	Hol-B		~	~		
#	Freq	Rdng	8447F		LOG28		Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table		dBµV/m	dB	Ant
1	245.830M QP	55.1	+0.0 -26.0	+0.0 +12.3	$^{+0.0}_{+0.0}$	+2.2	+0.0	43.6	46.0 No ferrite	-2.4	Horiz
^	245.830M	55.6	+0.0 -26.0	+0.0 +12.3	+0.0 +0.0	+2.2	+0.0	44.1	46.0 No ferrite	-1.9	Horiz
3	2216.002M	47.5	+27.8	-34.2 +0.0	+9.0 +0.0	+0.0	+0.0	50.1	54.0	-3.9	Vert
^	Ave 2216.002M	48.5	+0.0 +27.8	-34.2	+9.0	+0.0	+0.0	51.1	54.0	-2.9	Vert
5	368.718M	50.6	$+0.0 \\ +0.0$	$+0.0 \\ +0.0$	$+0.0 \\ +0.0$	+2.5	+0.0	41.6	46.0	-4.4	Vert
	QP		-26.6	+15.1	+0.0	Added v	with one	turn TDK	Ferrite P/N	ZCAT151	18-0730
^	368.718M	51.0	+0.0	+0.0	+0.0	+2.5	+0.0	42.0	46.0	-4.0	Vert
			-26.6	+15.1	+0.0	Added w	ith one t	urn TDK	Ferrite P/N	ZCAT151	8-0730
7	122.957M QP	52.9	+0.0 -26.6	+0.0 +11.4	$^{+0.0}_{+0.0}$	+1.4	+0.0	39.1	43.5	-4.4	Horiz
^	122.957M	53.8	+0.0	+0.0	+0.0	+1.4	+0.0	40.0	43.5	-3.5	Horiz
	122.957111	00.0	-26.6	+11.4	+0.0		10.0	10.0	10.0	0.0	HOHE
9	368.716M	48.2	+0.0	+0.0	+0.0	+2.5	+0.0	40.7	46.0	-5.3	Horiz
	2001/10101	10.2	-26.6	+0.0	+16.6	12.0	10.0	10.7	1010	0.0	HOHE
10	276.554M	51.1	+0.0	+0.0	+0.0	+2.2	+0.0	40.3	46.0	-5.7	Horiz
10	270.00 101	01.1	-26.0	+13.0	+0.0	12.2	10.0	10.5	10.0	5.7	HOLL
11	353.358M	49.4	+0.0 -26.4	+0.0 +14.7	+0.0 +0.0	+2.4	+0.0	40.1	46.0	-5.9	Vert
12	307.278M	50.4	+0.0	+0.0	+0.0	+2.3	+0.0	40.0	46.0	-6.0	Vert
	QP		-26.2	+13.5	+0.0						
^	307.278M	50.9	+0.0	+0.0	+0.0	+2.3	+0.0	40.5	46.0	-5.5	Vert
			-26.2	+13.5	+0.0						
14	230.449M	52.8	+0.0	+0.0	+0.0	+2.0	+0.0	39.9	46.0	-6.1	Horiz
			-26.1	+11.2	+0.0						
15	122.945M	51.0	+0.0	+0.0	+0.0	+1.4	+0.0	37.2	43.5	-6.3	Vert
			-26.6	+11.4	+0.0						
16	245.832M	51.1	+0.0	+0.0	+0.0	+2.2	+0.0	39.6	46.0	-6.4	Vert
			-26.0	+12.3	+0.0						
17	675.926M	42.7	+0.0 -27.7	+0.0 +20.9	$^{+0.0}_{+0.0}$	+3.5	+0.0	39.4	46.0	-6.6	Vert
18	261.185M	49.9	+0.0	+20.9 $+0.0$	+0.0 +0.0	+2.2	+0.0	38.9	46.0	-7.1	Horiz
18	201.1851	49.9	+0.0 -26.0	+0.0 +12.8	+0.0 +0.0	+2.2	+0.0	38.9	40.0	-/.1	HOLIZ
10	2216.007M	44.3	+27.8	-34.2	+0.0 +9.0	+0.0	+0.0	46.9	54.0	-7.1	Horiz
19	2210.0071VI	44.3	+27.8 +0.0	-34.2 +0.0	+9.0 +0.0	± 0.0	± 0.0	+0.7	54.0	-/.1	TIOUZ
20	337.997M	48.5	+0.0	+0.0	+0.0	+2.4	+0.0	38.8	46.0	-7.2	Vert
			-26.4	+14.3	+0.0						
21	307.278M	49.0	+0.0 -26.2	+0.0 +13.5	$^{+0.0}_{+0.0}$	+2.3	+0.0	38.6	46.0	-7.4	Horiz
22	291.904M	48.8	+0.0	+0.0	+0.0	+2.2	+0.0	38.1	46.0	-7.9	Horiz
	(75 000) 4	40.2	-26.1	+13.2	+0.0	. 2 5	.0.0	27.0	46.0	0.0	II.
23	675.909M	40.3	+0.0 -27.7	+0.0 +20.9	$^{+0.0}_{+0.0}$	+3.5	+0.0	37.0	46.0	-9.0	Horiz
24	384.070M	44.9	+0.0	+0.0	+0.0	+2.6	+0.0	36.3	46.0	-9.7	Vert
		,	-26.8	+15.6	+0.0	. 2.0		00.0		2.11	
L			20.0	. 12.0	10.0						



-26.4 +14.7 +0.0	.8 Horiz
26 614.453M 40.1 +0.0 +0.0 +0.0 +3.3 +0.0 35.7 46.0 -10	0.3 Vert
-27.9 +20.2 +0.0	
27 384.083M 44.1 +0.0 +0.0 +0.0 +2.6 +0.0 35.5 46.0 -10	0.5 Horiz
-26.8 +15.6 +0.0	
28 276.547M 46.3 +0.0 +0.0 +0.0 +2.2 +0.0 35.5 46.0 -10	0.5 Vert
-26.0 +13.0 +0.0	
29 737.352M 37.4 +0.0 +0.0 +0.0 +3.5 +0.0 35.3 46.0 -10	0.7 Vert
-27.7 +22.1 +0.0	
30 614.423M 39.3 +0.0 +0.0 +0.0 +3.3 +0.0 34.9 46.0 -1	.1 Horiz
-27.9 +20.2 +0.0	
31 230.462M 47.7 +0.0 +0.0 +0.0 +2.0 +0.0 34.9 46.0 -1	.1 Vert
-26.1 +11.3 +0.0	
32 337.972M 44.2 +0.0 +0.0 +0.0 +2.4 +0.0 34.5 46.0 -1	.5 Horiz
	0 1
33 215.111M 45.7 +0.0 +0.0 +0.0 +2.0 +0.0 31.6 43.5 -1	.9 Vert
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1 11'
34 737.343M 36.0 +0.0 +0.0 +0.0 +3.5 +0.0 33.9 46.0 -12	2.1 Horiz
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2.3 Vert
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$.7 Horiz
-26.5 + 11.3 + 0.0	
38 217.630M 45.0 +0.0 +0.0 +0.0 +2.0 +0.0 31.1 46.0 -14	.9 Vert
-26.2 + 10.3 + 0.0	
39 215.111M 42.7 +0.0 +0.0 +0.0 +2.0 +0.0 28.6 43.5 -14	9 Horiz
-26.2 +10.1 +0.0	
40 491.611M 36.6 +0.0 +0.0 +0.0 +2.8 +0.0 29.8 46.0 -10	5.2 Vert
-27.6 +18.0 +0.0	
41 399.450M 37.2 +0.0 +0.0 +0.0 +2.7 +0.0 28.9 46.0 -1'	7.1 Horiz
-27.0 +16.0 +0.0	
42 217.635M 42.0 +0.0 +0.0 +0.0 +2.0 +0.0 28.1 46.0 -1'	7.9 Horiz
-26.2 +10.3 +0.0	
43 399.419M 35.5 +0.0 +0.0 +0.0 +2.7 +0.0 27.2 46.0 -18	8.8 Vert
-27.0 +16.0 +0.0	



Test Location: CKC Laboratories, Inc. • 480 Los Viboras Rd., Site B • Hollister, Ca 95023 • (831) 637-0485

Customer:	IPWireless, Inc.
Specification:	FCC B RADIATED
Work Order #:	78019
Test Type:	Radiated Scan
Equipment:	Wireless Modem
Manufacturer:	IP Wireless, Inc.
Model:	UEP1b
S/N:	AE4K1A-0000066

Date:	12/11/2001
Time:	12:50:55
Sequence#:	9
Tested By:	Conan Boyle

Test Equipment:

1 csi Dyaipment.				
Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8564E Spec. An.	01984	12/12/2000	12/12/2001	1406
Preamp, HP83017A	3123A0464	05/14/2001	05/14/2002	1271
Horn Ant., Emco 3115	9307-5655	07/09/2001	07/09/2002	2157
Ant, Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413
Ant, Horn 26.5-40GHz	951559-008	05/22/2001	05/22/2002	1414
Filter, 3.5GHz High Pass	3643A00026	02/19/2001	02/19/2002	1417
Log Periodic, AH Systems SAS 200/510	288	05/16/2001	05/16/2002	566
Bilog Antenna CBL6111C	2630	10/10/2001	10/10/2002	0
Preamp, HP 8447F opt H64	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
S.A. Display	2112A02174	06/14/2001	06/14/2002	313
S.A.	2049A01408	06/14/2001	06/14/2002	313
H-B 3meter Rad. cable .01-1MHz	Hol-B 3-m rad	10/03/2001	10/03/2002	0
	cable-0101-			
	1MHz			
H-B 3meter Rad. cable 1-13.5GHz	Hol-B 3-m rad	10/03/2001	10/03/2002	0
	cable-01-1GHz-			
	13.5GHz			
Ant, Mag Loop	2078	08/17/2001	08/17/2002	432

Equipment Under Test (= EUT):*

Function	Manufacturer	Model #	S/N	
Wireless Modem*	IP Wireless, Inc.	UEP1b	AE4K1A-0000066	
AC Adapter	Friwo	SPA15U-05	None	

Support Devices: Function Manufacturer Model # S/N Notebook PC Dell PPX (Inspiron 3800) 329-634-58 AC Adapter Dell CN-09364U-16291-14O-070J AA20031 Printer HP C2184A MY63J1T1KZ AC Adapter HP C2175A 220995 (Date) Monitor Micron RMD5L11CM 8205C1127500 Keyboard Compaq RT101 1114X877X Mouse Microsoft X04-72167 None

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 2680MHz. Frequency range tested 30 - 13400MHz.



Measu	rement Data:	R	eading li				Те	est Distanc	e: 3 Meters	5	
		D 1	Horn	HP-83	H-B 3	8447F	D	G	a		D 1
#	Freq	Rdng	Hol-B		LOG28	ID	Dist	Corr	Spec	Margin	Polar
1	MHz	dBµV	dB	dB	dB	dB	Table		dBµV/m	dB	Ant
1	368.719M QP	51.9	+0.0	+0.0	+0.0	-26.6	+0.0	44.4	46.0	-1.6	Vert
^	<u>QP</u> 368.719M	52.1	+2.5 +0.0	+0.0 +0.0	+16.6 +0.0	26.6	+0.0	44.6	46.0	-1.4	Vert
	508.719M	32.1	+0.0 +2.5	+0.0 +0.0	+0.0 +16.6	-26.6	+0.0	44.0	40.0	-1.4	ven
2	245.834M	55 0				26.0		44.3	16.0	-1.7	Homin
3	245.854M OP	55.8	$^{+0.0}_{+2.2}$	+0.0 +12.3	$^{+0.0}_{+0.0}$	-26.0	+0.0	44.5	46.0	-1./	Horiz
٨	245.834M	56.0	+2.2 +0.0	+12.3 +0.0	+0.0 +0.0	-26.0	+0.0	44.5	46.0	-1.5	Horiz
	243.034101	50.0	+0.0 +2.2	+0.0 +12.3	+0.0 +0.0	-20.0	+0.0	44.3	40.0	-1.5	HOUT
5	2300.004M	49.7	+2.2 +27.8	-34.2	+0.0 +8.6	+0.0	+0.0	51.9	54.0	-2.1	Vert
5	Ave	49.7	+27.8 +0.0	+0.0	+0.0	± 0.0	± 0.0	51.9	54.0	-2.1	ven
^		50.2	+0.0 +27.8	-34.2	+8.6	+0.0	+0.0	52.4	54.0	-1.6	Vert
	2300.004101	50.2	+27.8 +0.0	+0.0	+0.0	± 0.0	± 0.0	52.4	54.0	-1.0	ven
7	122.958M	53.7	+0.0	+0.0	+0.0	-26.6	+0.0	39.9	43.5	-3.6	Horiz
	QP	55.1	+0.0 $+1.4$	+0.0 +11.4	+0.0 +0.0	-20.0	10.0	57.7	-5.5	-5.0	TIOUT
^	122.958M	53.7	+1.4 +0.0	+0.0	+0.0	-26.6	+0.0	39.9	43.5	-3.6	Horiz
	122.750001	55.1	+0.0 $+1.4$	+11.4	+0.0 $+0.0$	20.0	10.0	57.7	-5.5	5.0	TIOUT
9	307.280M	51.0	+0.0	+0.0	+0.0	-26.2	+0.0	42.1	46.0	-3.9	Vert
	QP	51.0	+2.3	+0.0	+15.0	20.2	10.0	12.1	10.0	5.7	ven
^	307.280M	51.3	+0.0	+0.0	+0.0	-26.2	+0.0	42.4	46.0	-3.6	Vert
	507.200101	0110	+2.3	+0.0	+15.0	20.2	10.0	.2	10.0	5.0	vert
11	2300.004M	47.9	+27.8	-34.2	+8.6	+0.0	+0.0	50.1	54.0	-3.9	Horiz
	Ave		+0.0	+0.0	+0.0			0011	0.110	015	
^		48.5	+27.8	-34.2	+8.6	+0.0	+0.0	50.7	54.0	-3.3	Horiz
			+0.0	+0.0	+0.0						
13	368.719M	47.8	+0.0	+0.0	+0.0	-26.6	+0.0	40.3	46.0	-5.7	Horiz
	QP		+2.5	+0.0	+16.6						
^	368.719M	48.5	+0.0	+0.0	+0.0	-26.6	+0.0	41.0	46.0	-5.0	Horiz
			+2.5	+0.0	+16.6						
15	353.358M	48.4	+0.0	+0.0	+0.0	-26.4	+0.0	40.0	46.0	-6.0	Horiz
	QP		+2.4	+0.0	+15.6						
^	353.358M	48.5	+0.0	+0.0	+0.0	-26.4	+0.0	40.1	46.0	-5.9	Horiz
			+2.4	+0.0	+15.6						
17	276.551M	50.5	+0.0	+0.0	+0.0	-26.0	+0.0	39.7	46.0	-6.3	Horiz
			+2.2	+13.0	+0.0						
18		51.1	+0.0	+0.0	+0.0	-26.0	+0.0	39.6	46.0	-6.4	Vert
	QP		+2.2	+12.3	+0.0						
^	245.838M	51.5	+0.0	+0.0	+0.0	-26.0	+0.0	40.0	46.0	-6.0	Vert
			+2.2	+12.3	+0.0						
20	353.356M	47.9	+0.0	+0.0	+0.0	-26.4	+0.0	39.5	46.0	-6.5	Vert
			+2.4	+0.0	+15.6						
21	122.950M	50.7	+0.0	+0.0	+0.0	-26.6	+0.0	36.9	43.5	-6.6	Vert
			+1.4	+11.4	+0.0	_	_			-	¥-
22	384.077M	45.9	+0.0	+0.0	+0.0	-26.8	+0.0	39.3	46.0	-6.7	Vert
-			+2.6	+0.0	+17.6			<u> </u>	4.5.0		**
23	675.906M	41.7	+0.0	+0.0	+0.0	-27.7	+0.0	39.1	46.0	-6.9	Vert
	0.01 1003 5	40.0	+3.5	+0.0	+21.6	0.00	0.0	20.0	14.0		
24	261.193M	49.9	+0.0	+0.0	+0.0	-26.0	+0.0	38.9	46.0	-7.1	Horiz
			+2.2	+12.8	+0.0						



25	291.914M	49.4	$^{+0.0}_{+2.2}$	+0.0 +13.2	$^{+0.0}_{+0.0}$	-26.1	+0.0	38.7	46.0	-7.3	Horiz
26	227.00014	47 1				26.4	. 0. 0	20.4	16.0	7.6	X 7 (
26	337.988M	47.1	$^{+0.0}_{+2.4}$	$^{+0.0}_{+0.0}$	+0.0 +15.3	-26.4	+0.0	38.4	46.0	-7.6	Vert
27	384.078M	44.9	+0.0	+0.0	+0.0	-26.8	+0.0	38.3	46.0	-7.7	Horiz
	2011070112	,	+2.6	+0.0	+17.6	2010		0010			TIOTIL
28	614.462M	41.2	+0.0	+0.0	+0.0	-27.9	+0.0	37.4	46.0	-8.6	Horiz
20	011.10210	11.2	+3.3	+0.0	+20.8	21.7	10.0	57.1	10.0	0.0	HOLL
29	614.478M	39.8	+0.0	+0.0	+0.0	-27.9	+0.0	36.0	46.0	-10.0	Vert
2)	014.470101	57.0	+3.3	+0.0	+20.8	-21.9	10.0	50.0	+0.0	-10.0	ven
30	675.823M	38.2	+0.0	+0.0	+0.0	-27.7	+0.0	35.6	46.0	-10.4	Horiz
50	075.025141	50.2	+3.5	+0.0	+21.6	21.1	10.0	55.0	+0.0	10.4	HOLL
31	737.322M	37.7	+0.0	+0.0	+21.0 +0.0	-27.7	+0.0	35.0	46.0	-11.0	Horiz
51	131.322111	51.1	+3.5	+0.0	+21.5	-21.1	10.0	55.0	+0.0	-11.0	HOHZ
32	337.996M	43.3	+0.0	+0.0	+21.3 +0.0	-26.4	+0.0	34.6	46.0	-11.4	Horiz
52	557.770101	чэ.э	+2.4	+0.0	+15.3	-20.4	10.0	54.0	+0.0	-11.7	HOHZ
33	215.116M	46.2	+0.0	+0.0	+10.0	-26.2	+0.0	32.1	43.5	-11.4	Vert
55	213.1101	40.2	+0.0 $+2.0$	+10.0	+0.0 $+0.0$	-20.2	± 0.0	52.1	45.5	-11.4	VCIT
34	291.916M	45.0	+0.0	+10.1	+0.0	-26.1	+0.0	34.3	46.0	-11.7	Vert
54	291.910IVI	45.0	+0.0 $+2.2$	+13.2	+0.0 $+0.0$	-20.1	± 0.0	54.5	40.0	-11./	ven
35	276.559M	45.0	+0.0	+13.2 +0.0	+0.0	-26.0	+0.0	34.2	46.0	-11.8	Vert
55	270.339101	45.0	+0.0 $+2.2$	+13.0	+0.0 $+0.0$	-20.0	± 0.0	54.2	40.0	-11.0	VCIT
36	491.578M	40.7	+0.0	+13.0 +0.0	+0.0	-27.6	+0.0	33.7	46.0	-12.3	Vert
50	471.370WI	40.7	+2.8	+0.0	+17.8	-27.0	10.0	55.7	+0.0	-12.5	ven
37	261.189M	44.7	+0.0	+0.0	+0.0	-26.0	+0.0	33.7	46.0	-12.3	Vert
51	201.1071		+2.2	+12.8	+0.0	-20.0	10.0	55.7	+0.0	-12.5	ven
38	230.474M	46.5	+0.0	+0.0	+0.0	-26.1	+0.0	33.7	46.0	-12.3	Vert
50	230.474141	40.5	+2.0	+11.3	+0.0	20.1	10.0	55.7	+0.0	12.5	ven
39	215.064M	44.3	+0.0	+0.0	+0.0	-26.2	+0.0	30.2	43.5	-13.3	Horiz
57	215.00411		+2.0	+10.0	+0.0	-20.2	10.0	50.2	ч <i>э</i> .5	-15.5	HOHZ
40	138.317M	42.2	+0.0	+10.1 +0.0	+0.0	-26.5	+0.0	28.6	43.5	-14.9	Horiz
40	130.31/101	72.2	+0.0 $+1.6$	+0.0 $+11.3$	+0.0 +0.0	-20.5	10.0	20.0	-5.5	-14.7	TIOUT
41	430.154M	37.0	+0.0	+0.0	+0.0	-27.1	+0.0	30.9	46.0	-15.1	Vert
71	130.137101	57.0	+0.0 +2.7	+0.0 $+0.0$	+18.3	21.1	10.0	50.7	-0.0	13.1	vert
42	217.635M	44.8	+0.0	+0.0 +0.0	+10.3 +0.0	-26.2	+0.0	30.9	46.0	-15.1	Vert
	217.033101	- - 0	+0.0 +2.0	+10.3	+0.0 $+0.0$	20.2	10.0	50.7	-0.0	13.1	ven
43	138.307M	42.0	+2.0 +0.0	+10.3 +0.0	+0.0 +0.0	-26.5	+0.0	28.4	43.5	-15.1	Vert
	130.307101	72.0	+1.6	+11.3	+0.0 $+0.0$	-20.3	10.0	20.7	-5.5	-13.1	ven
44	430.138M	36.4	+0.0	+0.0	+0.0	-27.1	+0.0	30.3	46.0	-15.7	Horiz
	-130.130101	50.4	+0.0 +2.7	+0.0 $+0.0$	+18.3	-21.1	10.0	50.5	-0.0	-13.7	TIOUT
45	217.621M	43.5	+0.0	+0.0 +0.0	+10.3 +0.0	-26.2	+0.0	29.6	46.0	-16.4	Horiz
	217.02111	-5.5	+0.0 +2.0	+0.0 $+10.3$	+0.0 $+0.0$	-20.2	10.0	27.0	-0.0	-10.4	TIOUT
46	491.548M	36.1	+2.0 +0.0	+10.3 +0.0	+0.0 +0.0	-27.6	+0.0	29.1	46.0	-16.9	Horiz
-0	771.J 7 01 VI	50.1	+0.0 +2.8	+0.0 $+0.0$	+17.8	-27.0	10.0	27.1	-0.0	-10.9	TIOUT
			12.0	10.0	11/.0						



VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS

BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
30 MHz	1000 MHz	120 kHz
1000 MHz	13400 MHz	1 MHz



Field Strength Test Setup – Front view



Field Strength Test Setup – Back View