



Reg. No. DAT-P-051/95-10a



**P-COM ADDENDUM REPORT TO FC01-061**  
**FOR THE**  
**WIRELESS LAN, AIRPRO GOLD 20F.NET**  
**FCC PART 15 SUBPART C SECTIONS 15.247 AND 15.207**  
**COMPLIANCE**

**DATE OF ISSUE: NOVEMBER 14, 2001**

**PREPARED FOR:**

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P.O. No.: P1694  
W.O. No.: 77060

Date of test: August 31 - September 26, 2001

**Report No.: FC01-061A**

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**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:** August 31 - September 26, 2001

**DATE OF RECEIPT:** August 31, 2001

**PURPOSE OF TEST:** To demonstrate the compliance of the Wireless LAN, Airpro Gold 20F.Net, with the requirements for FCC Part 15 Subpart C Sections 15.247 and 15.207 devices. Addendum A changes all references to the low end of the frequency range tested to 9 kHz. All references of the operating frequency were changed to 2410 – 2471 MHz. References to power output were recalculated.

**TEST METHOD:** ANSI C63.4 (1992)

**MANUFACTURER:** P-Com  
1355 Dell Avenue  
Campbell, CA 95008

**REPRESENTATIVE:** Allen Fisher

**TEST LOCATION:** CKC Laboratories, Inc.  
1653 Los Viboras Road  
Hollister, CA 95023

## SUMMARY OF RESULTS

As received, the Wireless LAN, Airpro Gold 20F.Net was found to be fully compliant with the following standards and specifications:

### United States

- FCC Part 15 Subpart C Sections 15.247 and 15.207
  - ANSI C63.4 (1992) method

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

## MODIFICATIONS REQUIRED FOR COMPLIANCE

No modifications were necessary for compliance.

## APPROVALS

### QUALITY ASSURANCE:



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Dennis Ward, Quality Manager



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Christine Nicklas, EMC/Lab Manager

### TEST PERSONNEL:



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Amrinder Brar, EMC Engineer



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Conan T. Boyle, EMC Engineer



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Steve Behm, EMC/Lab Manager

## **EQUIPMENT UNDER TEST (EUT) DESCRIPTION**

The Wireless Lan tested by CKC Laboratories was a production unit.

## **EQUIPMENT UNDER TEST**

### **Wireless LAN**

Manuf: P-Com  
Model: Airpro Gold 20F.Net  
Serial: 1601653  
FCC ID: Pending

## **PERIPHERAL DEVICES**

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

### **EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub**

Manuf: Linksys  
Model: EFAH08W  
Serial: None  
FCC ID: DoC

### **AC-DC Adapter**

Manuf: Thomson  
Model: 5-2366A  
Serial: None  
FCC ID: DoC

## **15.33 FREQUENCY RANGE TESTED**

15.209/15.247 Radiated:	9kHz – 27.5 GHz
15.207 Conducted:	450 kHz – 30 MHz

## **EUT OPERATING FREQUENCY**

The EUT was operating at 2410 – 2471 MHz in the 2400 – 2483.5 MHz frequency band.

## **TEMPERATURE AND HUMIDITY DURING TESTING**

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

## REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the Wireless LAN, Airpro Gold 20F.Net. All readings taken are peak readings unless otherwise noted. The data sheets from which these tables were compiled are contained in Appendix B.

**Table 1: Fundamental Radiated Emission Levels**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Cable dB	Amp dB	BW CF dB	Dist dB				
2410.470	125.6	0.2		6.0		131.8	137.0	-5.2	N - 1
2440.360	125.4	0.2		6.0		131.6	137.0	-5.4	N - 7
2461.331	116.1	0.2		6.0		122.3	137.0	-14.7	N - 12
2466.740	117.9	0.2		6.0		124.1	137.0	-12.9	N - 11
2470.200	106.8	0.2		6.0		113.0	137.0	-24.0	N - 13

Test Method: ANSI C63.4 (1992)

NOTES: N = No Polarization

Spec Limit: FCC Part 15 Subpart C Section 15.247(b) & 15.209

1 = Channel 1

Test Distance: No Distance

7 = Channel 7

11 = Channel 11

12 = Channel 12

13 = Channel 13

COMMENTS: EUT is connected directly to the spectrum analyzer. The EUT is transmitting in CW mode, channels being tested include 1 (2411MHz), 7 (2440MHz), 11 (2461MHz), 12 (2466MHz) and 13 (2471MHz). EUT powered by 120v/60Hz. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Spectrum analyzer settings- RBW=3MHz, VBW=10Hz, SWEEP=20S. Correction factor calculated to compensate for spectrum analyzer 3MHz maximum bandwidth:  $C_f = 20\log(BW_1/BW_2)$ , where  $BW_1 = 6\text{MHz}$  and  $BW_2 = 3\text{MHz}$ ,  $C_f = +6.0\text{dB}$ .

Channel 1 = 131.8dB $\mu$ V/m

Channel 7 = 131.6dB $\mu$ V/m

Channel 11 = 122.3dB $\mu$ V/m

Channel 12 = 124.1dB $\mu$ V/m

Channel 13 = 113.0dB $\mu$ V/m

Note: All channels transmitting less than maximum allowable for DSSS transmitters (137dB $\mu$ V = 1W). Plots taken for each channel.

**Table 2: Six Highest Radiated Emission Levels: 9 kHz - 27.5 GHz**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
160.692	69.5			0.0		69.5	89.9	-20.4	N - 1
310.667	64.2			0.0		64.2	90.5	-26.3	N - 13
455.667	69.8			0.0		69.8	89.9	-20.1	N - 1
515.642	67.5			0.0		67.5	90.5	-23.0	N - 13
1410.725	65.3			0.2		65.5	89.9	-24.4	N - 1
4878.447	68.2			0.2		68.4	91.2	-22.8	N - 7

Test Method: ANSI C63.4 (1992)

NOTES: N = No Polarization

Spec Limit: FCC Part 15 Subpart C Section 15.247(c)

1 = Channel 1

Test Distance: No Distance

7 = Channel 7

13 = Channel 13

**COMMENTS:** EUT is connected directly to the spectrum analyzer. The EUT is transmitting in 11Mbps CCK mode. Channel 1 (2411 MHz), channel 7 (2440 MHz) and channel 13 (2471 MHz) tested. EUT powered by 120v/60Hz. -20dBc spec limit derived from 100kHz bandwidth power measurement of Channel 1, 7 or 13 fundamental. Measurement included in this data sheet. Frequency range tested from 9 kHz - 27.5GHz.

**Table 3: Six Highest Radiated Emission Levels: 1 - 1000 MHz**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
200.015	43.7	17.5	-26.4	2.1		36.9	43.5	-6.6	H - 13
200.029	44.3	17.5	-26.4	2.1		37.5	43.5	-6.0	VQ - 13
200.030	46.0	17.5	-26.4	2.1		39.2	43.5	-4.3	VQ - 1
200.030	44.8	17.5	-26.4	2.1		38.0	43.5	-5.5	VQ - 7
200.043	43.8	17.5	-26.4	2.1		37.0	43.5	-6.5	H - 7
500.031	46.4	17.5	-27.6	3.4		39.7	46.0	-6.3	H - 1

Test Method: ANSI C63.4 (1992)

Spec Limit: FCC Part 15 Subpart C Section 15.247(c) &amp; 15.209

Test Distance: 3 &amp; 30 Meters

NOTES:

H = Horizontal Polarization

V = Vertical Polarization

Q = Quasi Peak Reading

1 = Channel 1

7 = Channel 7

13 = Channel 13

**COMMENTS:** EUT is 3 meters from the biconical and log antennas and 30 meters from the mag loop antenna (no readings found below 30 MHz). The EUT is transmitting in 11Mbps CCK mode. Channel 1 (2411 MHz), channel 7 (2440 MHz) and channel 13 (2471 MHz) tested. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 9kHz-1GHz.

**Table 4: Six Highest Radiated Emission Levels: 1- 26.5 GHz**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
1660.833	42.5	26.6	-38.5	12.4		43.0	54.0	-11.0	VA - 1
1700.133	42.5	26.6	-38.5	12.4		43.0	54.0	-11.0	VA - 7
2202.993	47.3	27.8	-38.4	12.7		49.4	54.0	-4.6	VA - 1
2243.003	44.3	27.8	-38.4	12.7		46.4	54.0	-7.6	VA - 7
2243.142	47.0	27.8	-38.4	12.7		49.1	54.0	-4.9	V - 7
2283.103	41.3	27.8	-38.4	12.7		43.4	54.0	-10.6	VA - 13

Test Method:

ANSI C63.4 (1992)

NOTES:

V = Vertical Polarization

Spec Limit:

FCC Part 15 Subpart C Section 15.247(c) &  
15.209

A = Average Reading

Test Distance:

3 Meters

1 = Channel 1

7 = Channel 7

13 = Channel 13

**COMMENTS:** EUT is 3 meters from the horn antenna. The EUT is transmitting in 11Mbps CCK mode. Channel 1 (2411 MHz), channel 7 (2440 MHz) and channel 13 (2471 MHz) tested. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 1-26.5GHz.

**Table 5: Six Highest Conducted Emission Levels**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS			CORRECTED READING dB $\mu$ V	SPEC LIMIT dB $\mu$ V	MARGIN dB	NOTES
		Lisnz dB	Lisnl dB	Cable dB				
0.562833	38.8	-0.7	0.5	0.2	38.8	48.0	-9.2	W
3.234608	38.2	-0.2	0.3	0.3	38.6	48.0	-9.4	W
3.540272	38.4	-0.2	0.3	0.3	38.8	48.0	-9.2	W
3.578480	38.4	-0.2	0.3	0.3	38.8	48.0	-9.2	W
3.650120	37.8	-0.2	0.3	0.3	38.2	48.0	-9.8	W
17.832000	36.9	0.6	0.4	0.6	38.5	48.0	-9.5	B

Test Method:

ANSI C63.4 (1992)

NOTES:

B = Black Lead

Spec Limit:

FCC Part 15 Subpart C Section 15.207

W = White Lead

**COMMENTS:** EUT is at the center back edge of the table. The EUT is in receive mode (channel 7 selected) and the RF port is terminated with a dummy load. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested is 450KHz - 30MHz.

## MEASUREMENT UNCERTAINTY

Associated with data in this report is a  $\pm 4$ dB measurement uncertainty.

## EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements.

The radiated and conducted emissions data of the Wireless LAN, Airpro Gold 20F.Net, was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

## CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in  $\text{dB}\mu\text{V}/\text{m}$ , the spectrum analyzer reading in  $\text{dB}\mu\text{V}$  was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

**TABLE A: SAMPLE CALCULATIONS**

Meter reading	( $\text{dB}\mu\text{V}$ )
+ Antenna Factor	(dB)
+ Cable Loss	(dB)
- Distance Correction	(dB)
- Preamplifier Gain	(dB)
= Corrected Reading	( $\text{dB}\mu\text{V}/\text{m}$ )

A typical data sheet will display the following in column format:

#	Freq	Rdng	8447F	Bicon	Log31	Horn	Corr	Spec	Margin	Polar
		BWCF	HP-83	LISNZ	LISNL	hol-h	cabl	Ant	18-26	Site

# means reading number.

**Freq** is the frequency in MHz of the obtained reading.

**Rdng** is the reading obtained on the spectrum analyzer in dB $\mu$ V.

**8447F & HP-83** are the preamplifier factors or gain in dB.

**Bicon** is the biconical antenna factor in dB.

**Log31** is the log periodic antenna factor in dB.

**Horn** is the horn antenna factor in dB.

**Hol-h, cabl, Ant, 18-26 & site** are the cable losses in dB.

**LISNZ** is the line impedance stabilization network factor in dB for conducted emissions.

**LISNL** is the insertion loss in dB.

**Dist** is the distance factor in dB used when testing at a different test distance than the one stated in the spec.

**Corr** is the corrected reading in dB $\mu$ V/m (field strength).

**Spec** is the specification limit (dB) stated in the FCC regulations.

**Margin** is the closeness to the specified limit in dB; + is over and - is under the limit.

**Polar** is the polarity of the antenna with respect to earth.

**BW CF** is the bandwidth correction factor in dB.

## TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the Wireless LAN, Airpro Gold 20F.Net. Frequencies below 30 MHz were tested using the magnetic loop antenna. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. The horn antenna was used for frequencies above 1000 MHz. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB $\mu$ V, and a vertical scale of 10 dB per division.

### FCC SECTION 15.35:

**TABLE B: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE**

TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	450 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	27.5 GHz	1 MHz
ANTENNA CONDUCTED	1 MHz	27.5 GHz	100 kHz

## SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the Wireless LAN, Airpro Gold 20F.Net.

### **Peak**

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

### **Quasi-Peak**

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

### **Average**

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

## **EUT TESTING**

### **Radiated Emissions**

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. Frequencies below 30 MHz were tested with a magnetic loop antenna. The frequency range of 30 MHz to 88 MHz was scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. The frequency range of 100 to 300 MHz was then scanned in the same manner using the biconical antenna and the peaks recorded. Lastly, a scan of the FM band from 88 to 110 MHz was made, using a reduced resolution bandwidth and frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 to 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 to 1000 MHz was again scanned. For frequencies exceeding 1000 MHz, the horn antenna was used. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

### **Antenna Conducted Emissions**

For measuring the signal strength on the RF output port of the EUT, the spectrum analyzer was connected directly to the EUT. The sweep time of the analyzer was adjusted so that the spectrum analyzer readings were always in a calibrated range. All readings within 20 dB of the limit were recorded.

## **AC Conducted Emissions**

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

For conducted emissions testing, a 30 to 50 second sweep time was used for automated measurements in the frequency bands of 450 kHz to 1.705 MHz, 1.705 MHz to 3 MHz, and 3 MHz to 30 MHz. All readings within 20 dB of the limit were recorded. At frequencies where the recorded emissions were close to the limit, further investigation was performed manually at a slower sweep rate.

## **TRANSMITTER CHARACTERISTICS**

### **15.205 Restricted Bands**

The Fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules.

Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

### **15.247(a)(2) Bandwidth Measurements (Direct Sequence)**

The fundamental frequency was kept within the permitted band 2400-2483.5 MHz. The minimum 6dB bandwidth shall be at least 500 kHz. Refer to the occupied bandwidth plots.

### **15.247(b) Peak Output Power**

Frequency of Transmitter: 2400-2483.5

The RF conducted test was measured using a direct connection between the antenna port of the transmitter and the spectrum analyzer, through suitable attenuation. The resolution bandwidth was adjusted to greater than the 6 dB bandwidth of the emissions.

### **15.247(d) Peak Power Spectral Density**

The peak power spectral density conducted from the EUT to the antenna was not greater than 8 dm in any 3 kHz band during any time interval of continuous transmission.



**APPENDIX A**  
**TEST SETUP PHOTOS**

**PHOTOGRAPH SHOWING DIRECT CONNECT TESTING**



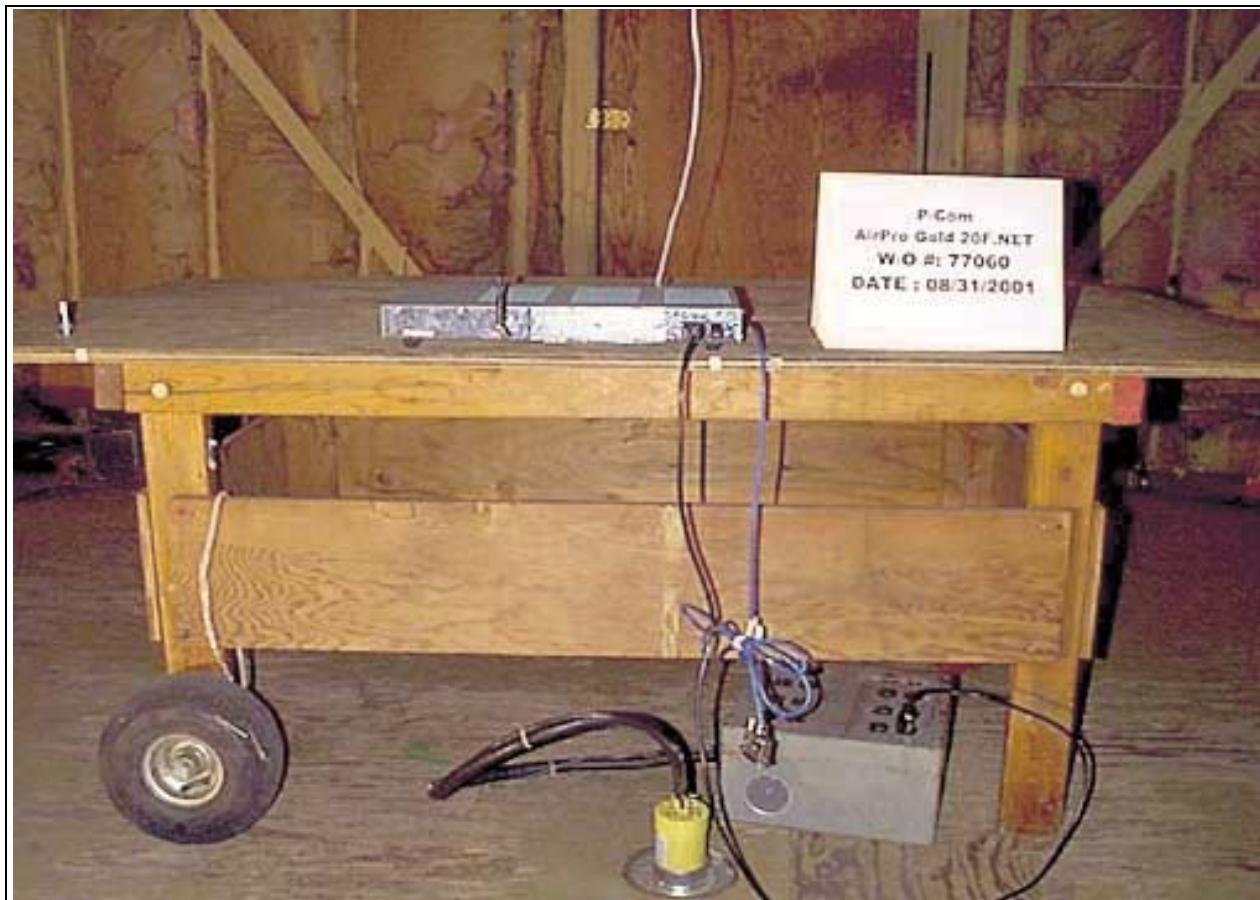
Direct Connect Testing - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



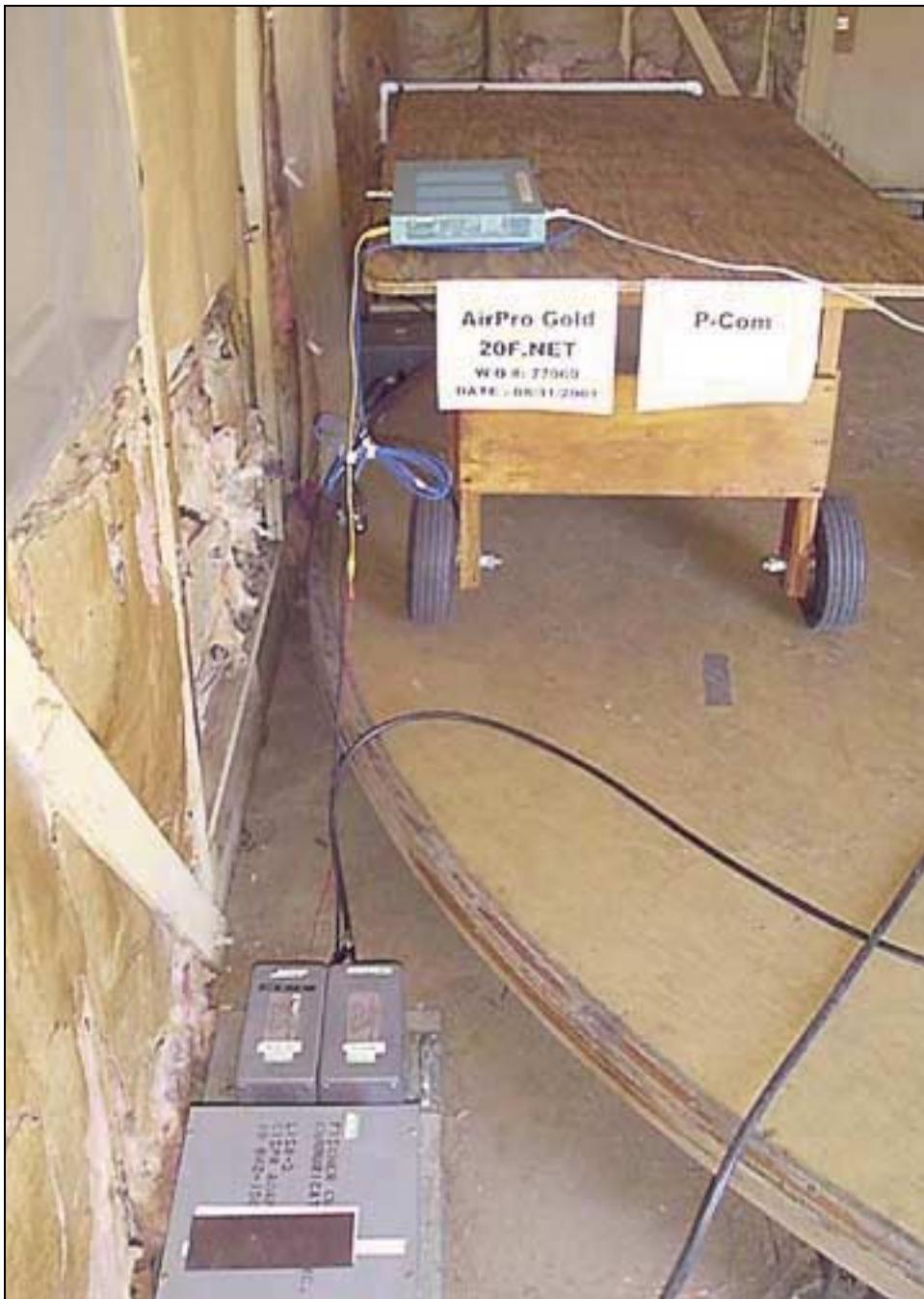
Radiated Emissions - Back View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



AC Conducted Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



AC Conducted Emissions - Side View



## APPENDIX B

### **15.247(a)(2), (b), (c), (d) and 15.207 MEASUREMENT DATA SHEETS**

## FCC Part 15.247(a)(2) Bandwidth- Direct Sequence

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

Customer: **P-Com**  
 Specification: **FCC15.247(2.4 GHz) & 15.209**  
 Work Order #: **77060** Date: **09/04/2001**  
 Test Type: **Bandwidth Measurements** Time: **18:45:42**  
 Equipment: **Wireless LAN** Sequence#: **10**  
 Manufacturer: **P-Com** Tested By: **Conan T. Boyle**  
 Model: **AIRPRO GOLD 20F.NET**  
 S/N: **1601653**

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0
Cable, 100 ft Andrews FSJ1P-50A-4A	hol-hf-100-09	10/17/2000	10/17/2001	0
Cable, 25 ft Andrews FSJ1P-50A-4A	hol-hf-025-06	09/29/2000	09/29/2001	0
Horn Ant., Emco 3115	9901-5655	10/20/2000	10/20/2001	2157
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Preamplifier, HP83017A	3123A00283	05/14/2001	05/14/2002	785

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-	Linksys	EFAH08W	None
Port Workgroup Hub			
AC-DC Adapter	Thomson	5-2366A	None

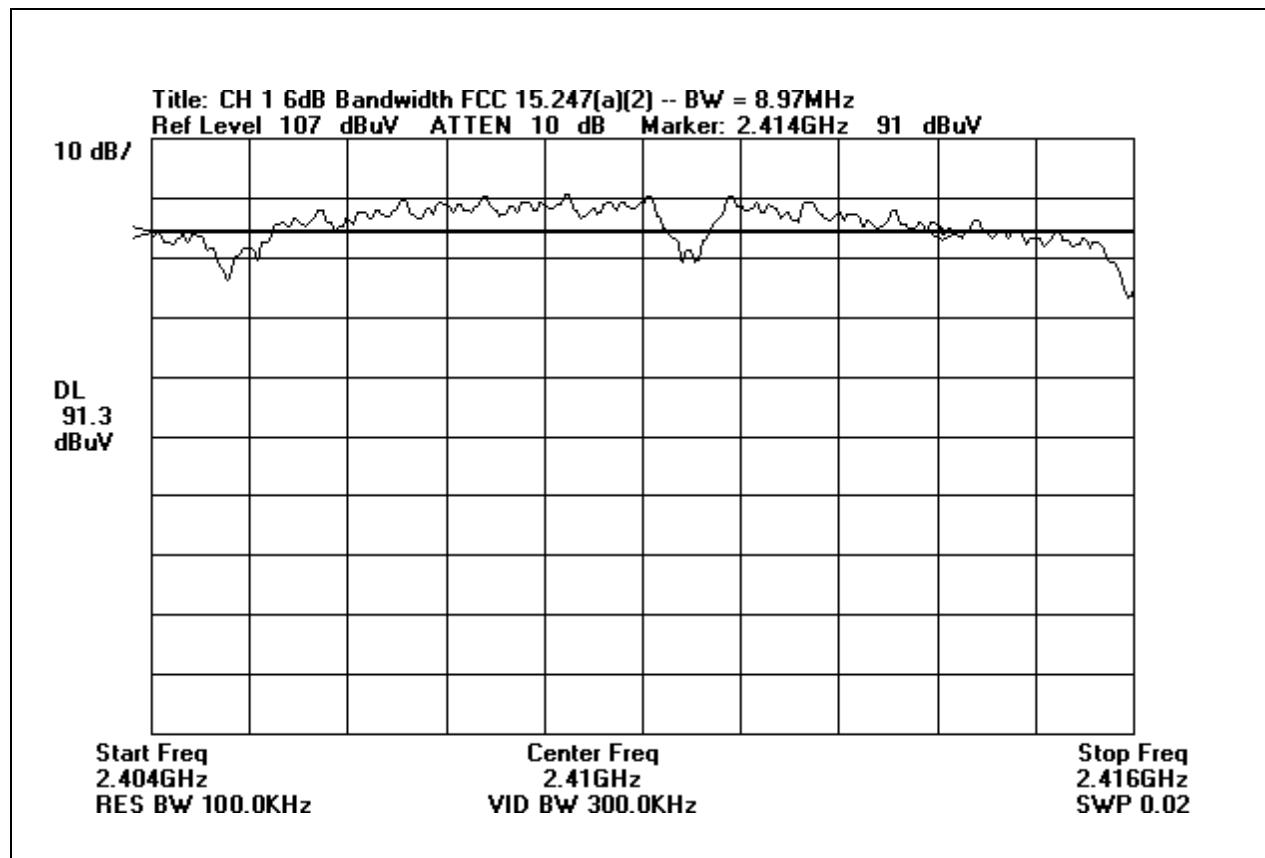
**Test Conditions / Notes:**

EUT is 3 meters from the horn antenna. The EUT is transmitting in CW mode, channels being tested include 1 (2411MHz), 7 (2440MHz) and 13 (2471MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Spectrum analyzer settings- RBW=100kHz, VBW=300Hz, SWEEP=20S. Refer to plots for final data-- ch 01 6dB bw fcc15.247(a)(2).bmp ch 07 6dB bw fcc15.247(a)(2).bmp ch 13 6dB bw fcc15.247(a)(2).bmp

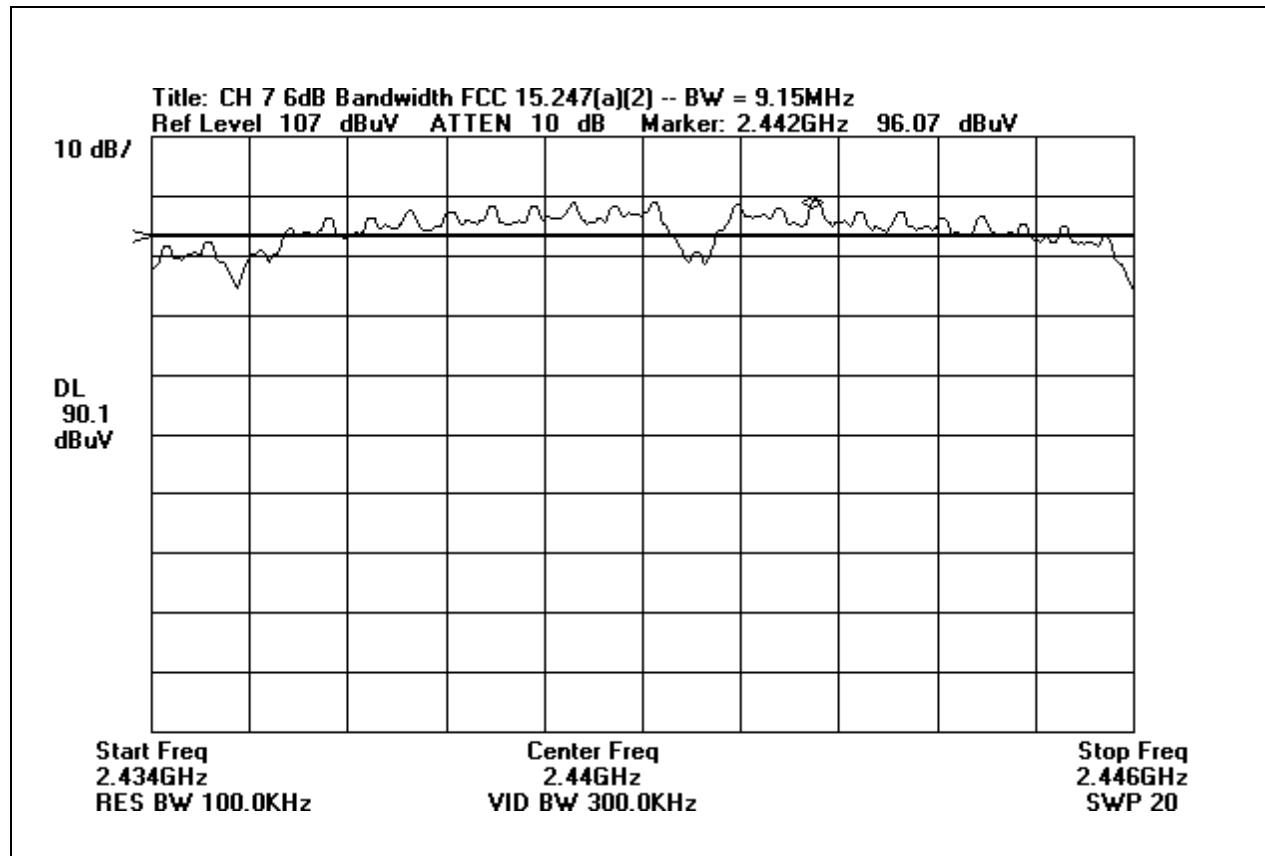
**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	hol-h dB	HP-83 Horn dB	hol-h dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	2471.500M	104.5		-38.4	+0.2	+2.7	+0.0	107.3	137.0	-29.7
			+10.5	+27.8						Vert
2	2410.670M	101.0		-38.4	+0.2	+2.6	+0.0	103.6	137.0	-33.4
			+10.4	+27.8						Vert
3	2440.648M	100.5		-38.4	+0.2	+2.7	+0.0	103.2	137.0	-33.8
			+10.4	+27.8						Vert
										Channel 7
										Channel 13

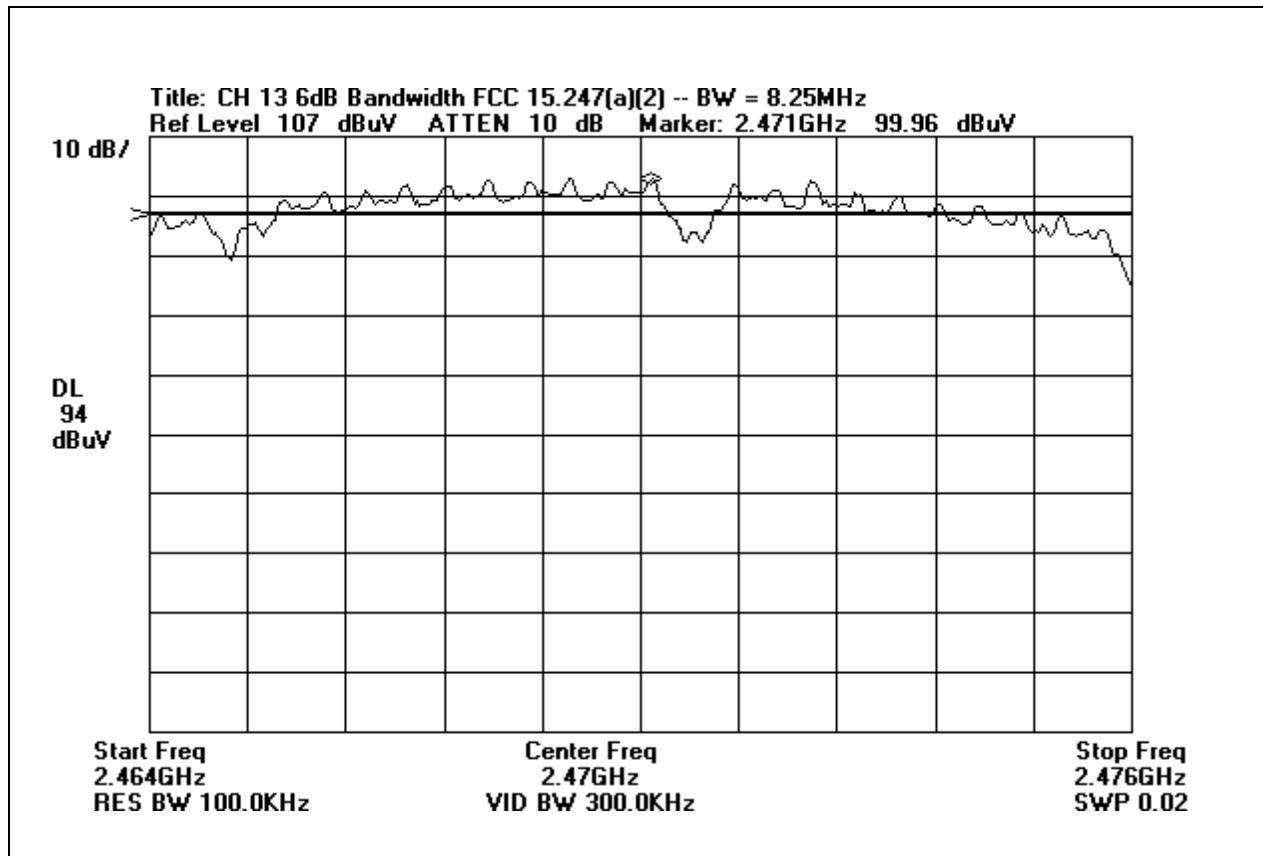
**CHANNEL 01 6dB BANDWIDTH**



**CHANNEL 07 6dB BANDWIDTH**



**CHANNEL 13 6dB BANDWIDTH**



## FCC Part 15.247(b) Peak Power Output

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

Customer: **P-Com**  
 Specification: **FCC15.247(2.4 GHz) & 15.209**  
 Work Order #: **77060** Date: **09/07/2001**  
 Test Type: **Peak Power Out** Time: **16:48:25**  
 Equipment: **Wireless LAN** Sequence#: **8**  
 Manufacturer: **P-Com** Tested By: **C. Boyle**  
 Model: **AIRPRO GOLD 20F.NET**  
 S/N: **1601653**

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

***Support Devices:***

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

***Test Conditions / Notes:***

EUT is connected directly to the spectrum analyzer. The EUT is transmitting in CW mode, channels being tested include 1 (2411MHz), 7 (2440MHz), 11 (2461MHz), 12 (2466MHz) and 13 (2471MHz). EUT powered by 120v/60Hz. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Spectrum analyzer settings- RBW=3MHz, VBW=10Hz, SWEEP=20S. Correction factor calculated to compensate for spectrum analyzer 3MHz maximum bandwidth: Cf = 20log(BW1/BW2) where BW1 = 6MHz and BW2 = 3MHz Cf = +6.0dB

Channel 1 = 131.8dB $\mu$ V/m

Channel 7 = 131.6dB $\mu$ V/m

Channel 11 = 122.3dB $\mu$ V/m

Channel 12 = 124.1dB $\mu$ V/m

Channel 13 = 113.0dB $\mu$ V/m

Note: All channels transmitting less than maximum allowable for fixed DSSS transmitters (137dB $\mu$ V = 1W) Plot taken for each channel.

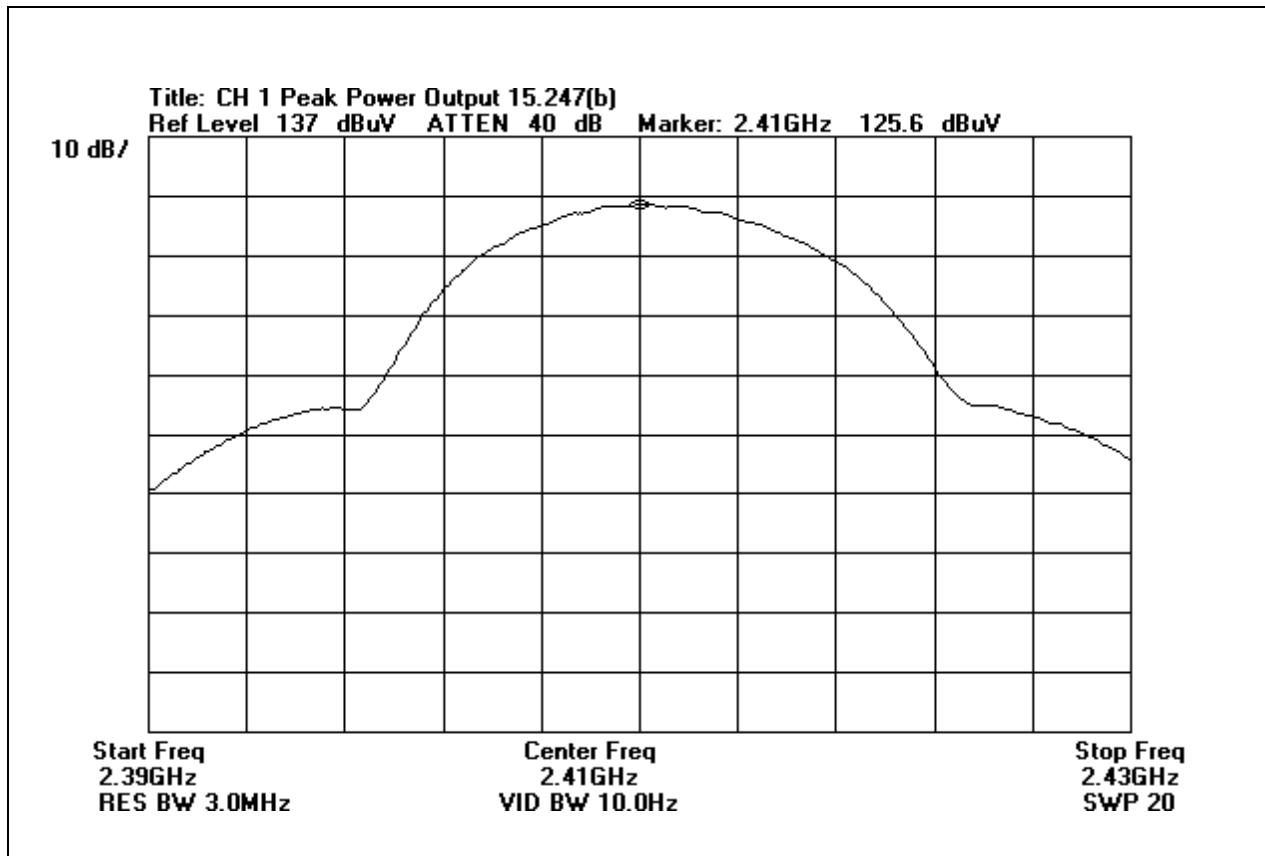
***Measurement Data:***

Reading listed by margin.

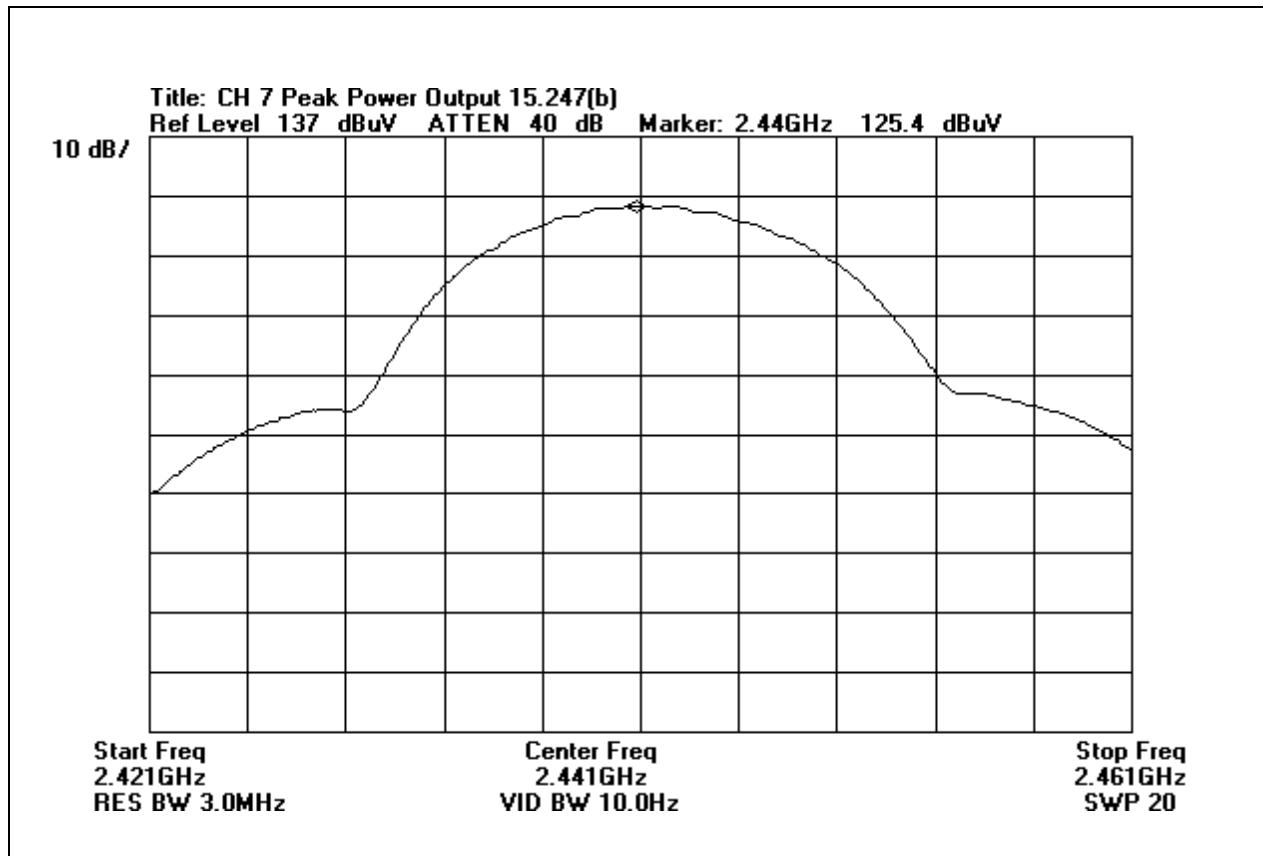
Test Distance: None

#	Freq MHz	Rdng dB $\mu$ V	hol-h BW CF			Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
			dB	dB	dB					
1	2410.470M	125.6	+0.2	+6.0		+0.0	131.8	137.0	-5.2	None
Channel 1 Peak Power Out = 24.8dBm										
2	2440.360M	125.4	+0.2	+6.0		+0.0	131.6	137.0	-5.4	None
Channel 7 Peak Power Out = 24.6dBm										
3	2466.740M	117.9	+0.2	+6.0		+0.0	124.1	137.0	-12.9	None
Channel 12 Peak Power Out = 17.3dBm, Power Level Setting = "10" to meet Band Edge Compliance.										
4	2461.331M	116.1	+0.2	+6.0		+0.0	122.3	137.0	-14.7	None
Channel 11 Peak Power Out = 15.3dBm										
5	2470.200M	106.8	+0.2	+6.0		+0.0	113.0	137.0	-24.0	None
Channel 13 Peak Power Out = 6dBm, Power Level Setting = "10" to meet Band Edge Compliance.										

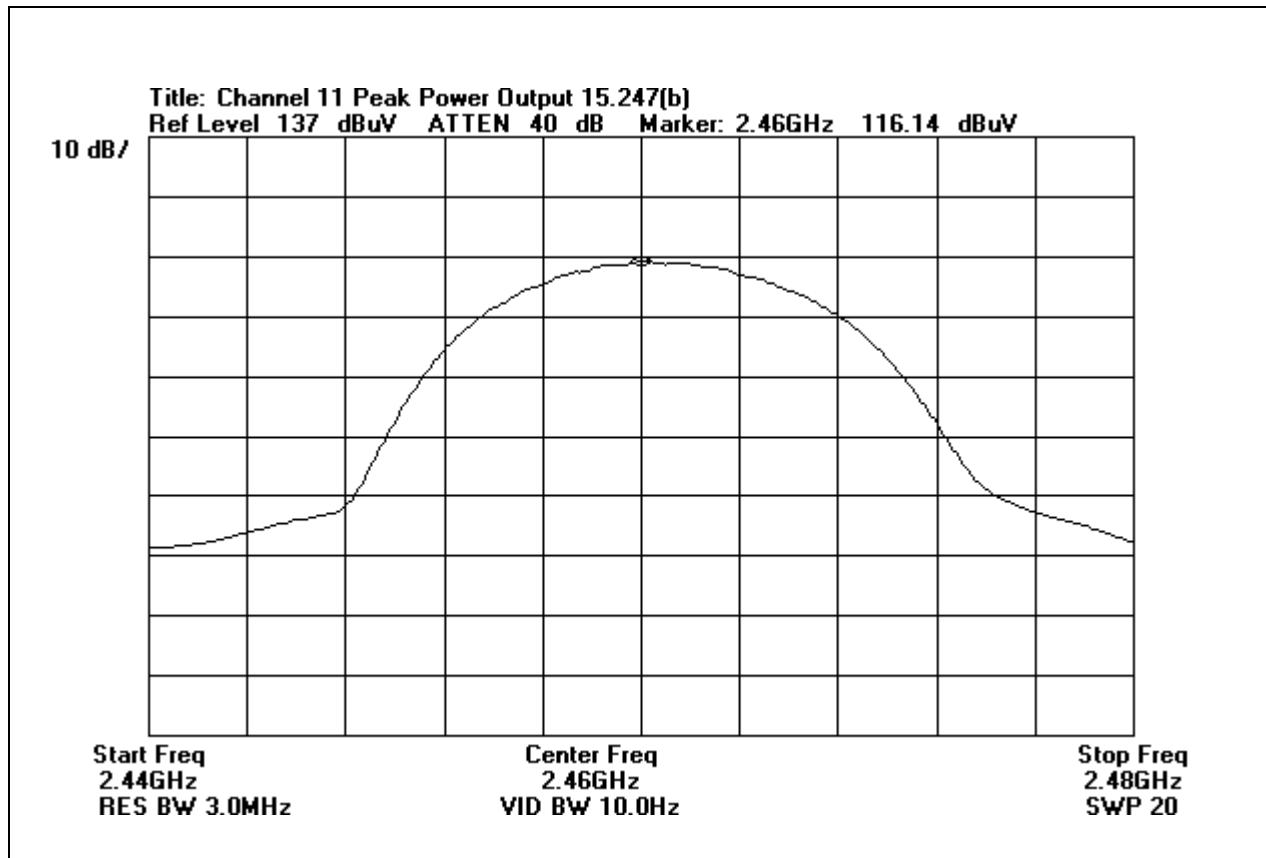
**CHANNEL 01 PEAK POWER OUTPUT**



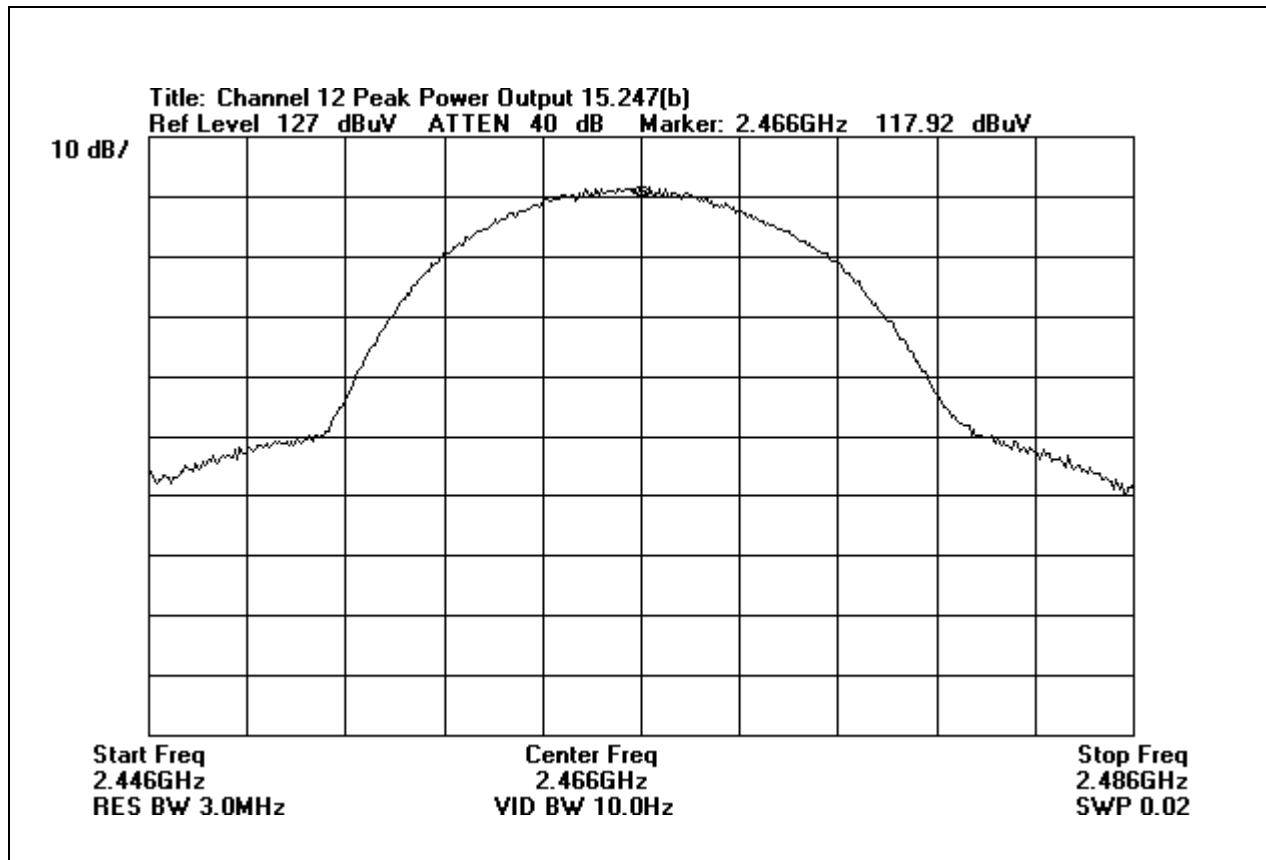
**CHANNEL 07 PEAK POWER OUTPUT**



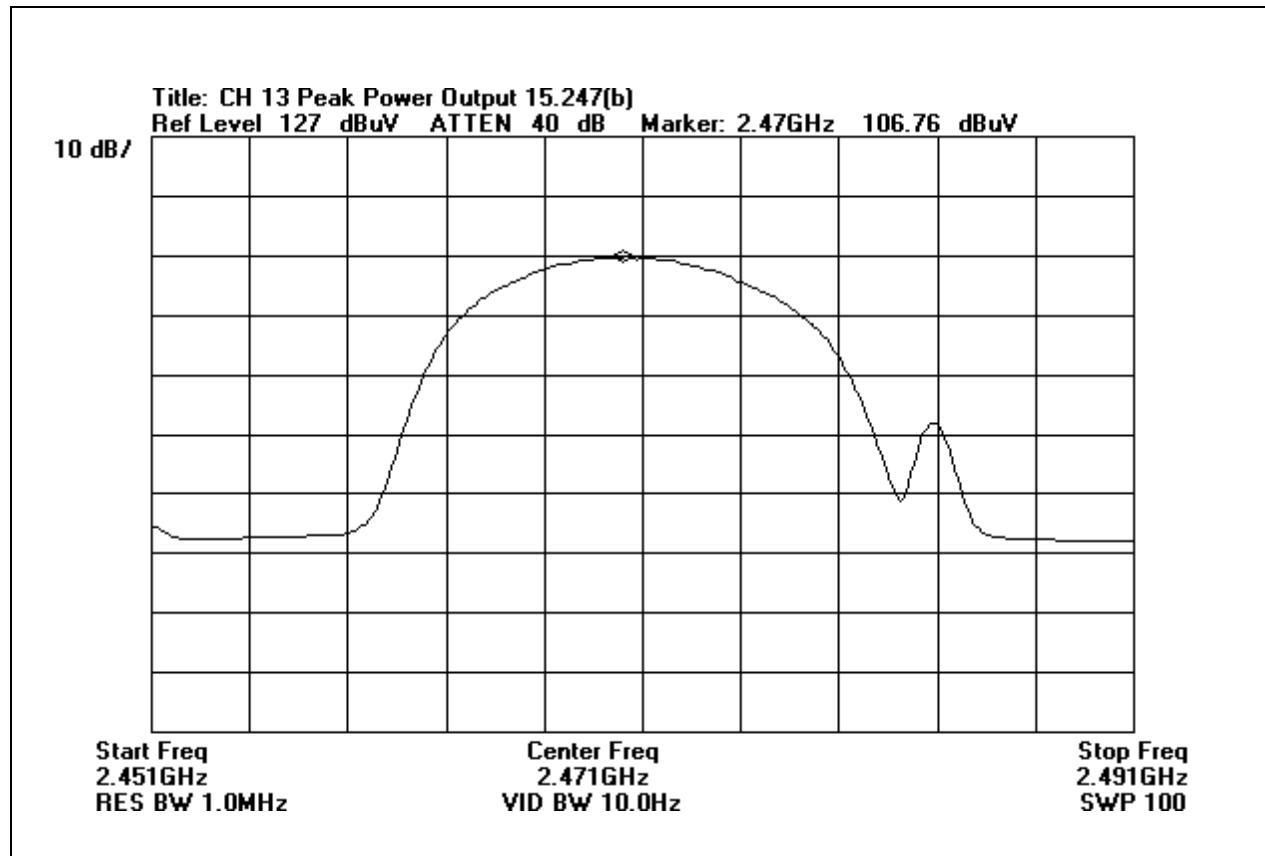
## CHANNEL 11 PEAK POWER OUTPUT



## CHANNEL 12 PEAK POWER OUTPUT



## CHANNEL 13 PEAK POWER OUTPUT



## FCC Part 15.247(c) Band Edge Measurements

### FCC Band Edge Signal Calculations

P-Com Model No. Airpro Gold 20F Net (Ser. No. 1601653)

Test performed 5-6 September, 2001 at CKC Laboratories, Hollister, CA  
 See data sheet "fcep11a-oats band edge-airpro.dat" for test data.

**CHANNEL 1** Power level = 26

Part 1:

<u>Fundamental</u>	<u>Peak Level</u>	<u>Average Level</u>
2410.9 MHz	116.3 dBuV/m	108.0 dBuV/m

Fundamental peak level was measured with Res. BW = 1MHz, Video BW = 1MHz  
 Fundamental average level was measured with Res. BW = 1MHz, Video BW = 10Hz

<u>Band Edge</u>	2400.0 MHz	76.5 dBuV/m
------------------	------------	-------------

116.3 dBuV/m	-	76.5 dBuV/m
<b>39.8 dB below the fundamental level, therefore, the band edge passes the -20dBc requirement.</b>		

**CHANNEL 11** Power level = 26

Part 1:

Fundamental peak level was measured with Res. BW = 1MHz, Video BW = 1MHz  
 Fundamental average level was measured with Res. BW = 1MHz, Video BW = 10Hz

<u>Fundamental</u>	<u>Peak Level</u>	<u>Average Level</u>
2462.4 MHz	116.0 dBuV/m	108.2 dBuV/m

Part 2:

Fundamental peak level was measured with Res. BW = 300kHz, Video BW = 300kHz

<u>Fundamental</u>	<u>Peak Level</u>
2462.4 MHz	111.8 dBuV/m

<u>Band Edge</u>	-	<u>53.9 dBuV/m</u>
------------------	---	--------------------

Delta =	57.9 dB	Delta =	57.9 dB
---------	---------	---------	---------

Fund. Peak Delta =	58.1 dB	Fund. Avg. Delta =	50.3 dB
FCC 15.209 Limit =		FCC 15.209 Limit =	54.0 dBuV/m
<b>Below Limit (PASS)</b>		<b>-3.7 dB</b>	

**CHANNEL 12** Power Level = 16

**Part 1:**

Fundamental peak level was measured with Res. BW = 1MHz, Video BW = 1MHz

Fundamental average level was measured with Res. BW = 1MHz, Video BW = 10Hz

Fundamental	<u>Peak Level</u>	<u>Average Level</u>
2467.2 MHz	101.0 dBuV/m	92.3 dBuV/m

**Part 2:**

Fundamental peak level was measured with Res. BW = 300kHz, Video BW = 300kHz

Fundamental	<u>Peak Level</u>		
2467.2 MHz	96.2 dBuV/m		
Band Edge			
2483.5 MHz	- <u>52.8</u> dBuV/m		
	Delta = 43.4 dB	Delta = 43.4 dB	
Fund. Peak Delta =	57.6 dB	Fund. Avg. Delta =	48.9 dB
FCC 15.209 Limit =		54.0 dBuV/m	
<b>Below Limit (PASS)</b>		<b>-5.1 dB</b>	

**CHANNEL 13** Power Level = 16

**Part 1:**

Fundamental peak level was measured with Res. BW = 1MHz, Video BW = 1MHz

Fundamental average level was measured with Res. BW = 1MHz, Video BW = 10Hz

Fundamental	<u>Peak Level</u>	<u>Average Level</u>
2470.0 MHz	100.6 dBuV/m	92.4 dBuV/m

**Part 2:**

Fundamental peak level was measured with Res. BW = 300kHz, Video BW = 300kHz

Fundamental	<u>Peak Level</u>		
2470.0 MHz	95.4 dBuV/m		
Band Edge			
2483.5 MHz	- <u>54.9</u> dBuV/m		
	Delta = 40.5 dB	Delta = 40.5 dB	
Fund. Peak Delta =	60.1 dB	Fund. Avg. Delta =	51.9
FCC 15.209 Limit =		54.0 dBuV/m	
<b>Below Limit (PASS)</b>		<b>-2.1 dB</b>	

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

Customer: **P-Com**  
 Specification: **FCC15.247(2.4 GHz) & 15.209**  
 Work Order #: **77060** Date: **09/06/2001**  
 Test Type: **Band Edge** Time: **15:03:48**  
 Equipment: **Wireless LAN** Sequence#: **11**  
 Manufacturer: P-Com Tested By: **Conan T. Boyle**  
 Model: **AIRPRO GOLD 20F.NET**  
 S/N: **1601653**

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0
Cable, 100 ft Andrews FSJ1P-50A-4A	hol-hf-100-09	10/17/2000	10/17/2001	0
Cable, 25 ft Andrews FSJ1P-50A-4A	hol-hf-025-06	09/29/2000	09/29/2001	0
Horn Ant., Emco 3115	9602-4660	07/09/2001	07/09/2002	2113
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Preamplifier, HP83017A	3123A00283	05/14/2001	05/14/2002	785

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is three meters from the horn antenna. The EUT is transmitting in CW mode, channels being tested include 1 (2411MHz), 11 (2462MHz), 12 (2467MHz) and 13 (2471MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Spectrum analyzer settings - see "Notes" for settings. This is raw data, see Note 2. Test is Band Edge compliance IAW CKC LP 042008 (derived from FCC OET Staff Position, FCC Interpretations Database). Note 1: Power output reduced for channels 12 and 13 to meet band edge compliance. Note 2: Measurements are raw data used in Calculation Spreadsheet entitled "FCC Band Edge Signal Calculation for P-Com Model No. Airpro Gold 20F Net" (see previous pages in test report). Note 3: Plots taken to show band edge compliance.

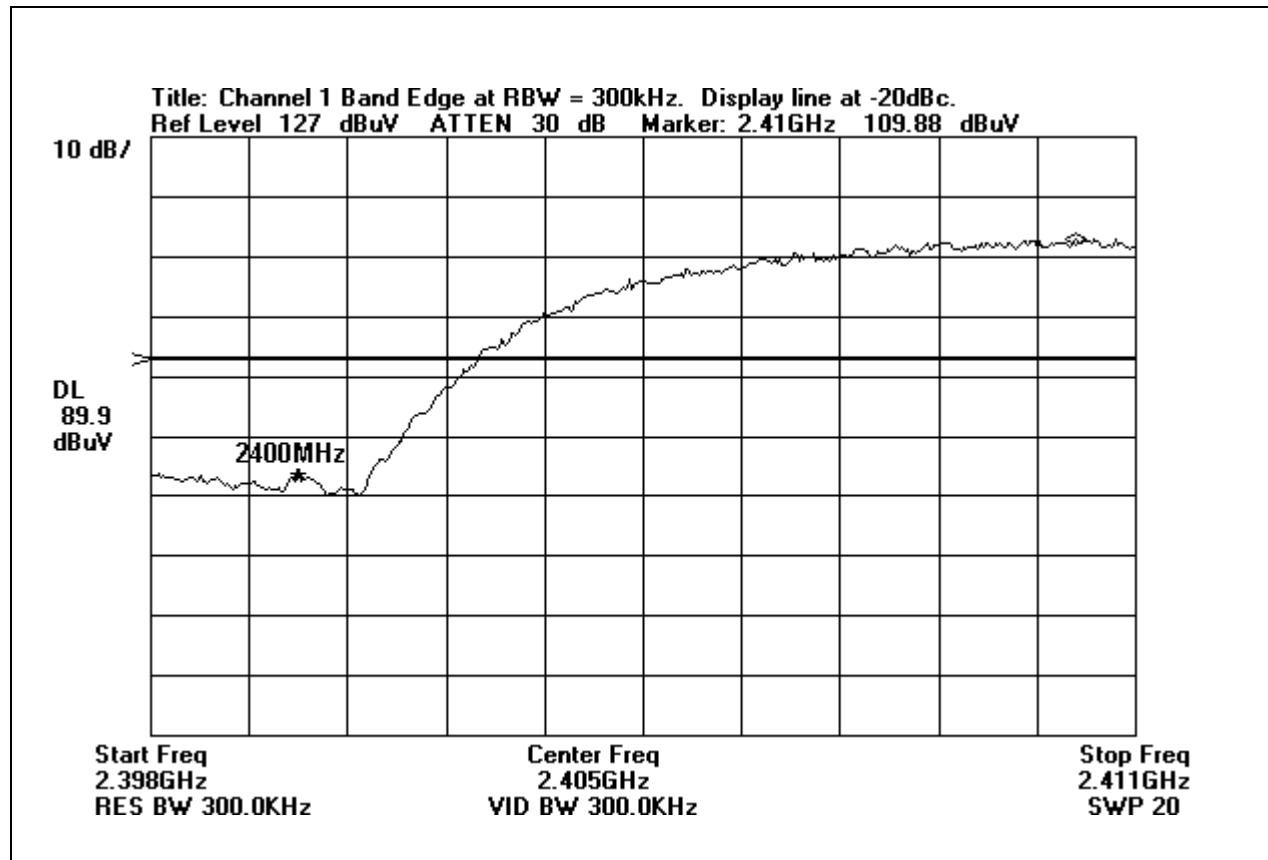
**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	hol-h	HP-83	hol-h	hol-h	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
			Horn dB	dB	dB	dB					
1	2400.000M	73.7	+0.2 +28.1	-38.4	+2.6	+10.3	+0.0	76.5	54.0	+22.5	Vert Channel 1 Band Edge, RBW=300kHz
2	2483.500M	51.8	+0.2 +28.1	-38.4	+2.7	+10.5	+0.0	54.9	54.0	+0.9	Vert Channel 13 Band Edge Peak, RBW=300kHz
3	2483.500M	50.8	+0.2 +28.1	-38.4	+2.7	+10.5	+0.0	53.9	54.0	-0.1	Vert Channel 11 Band

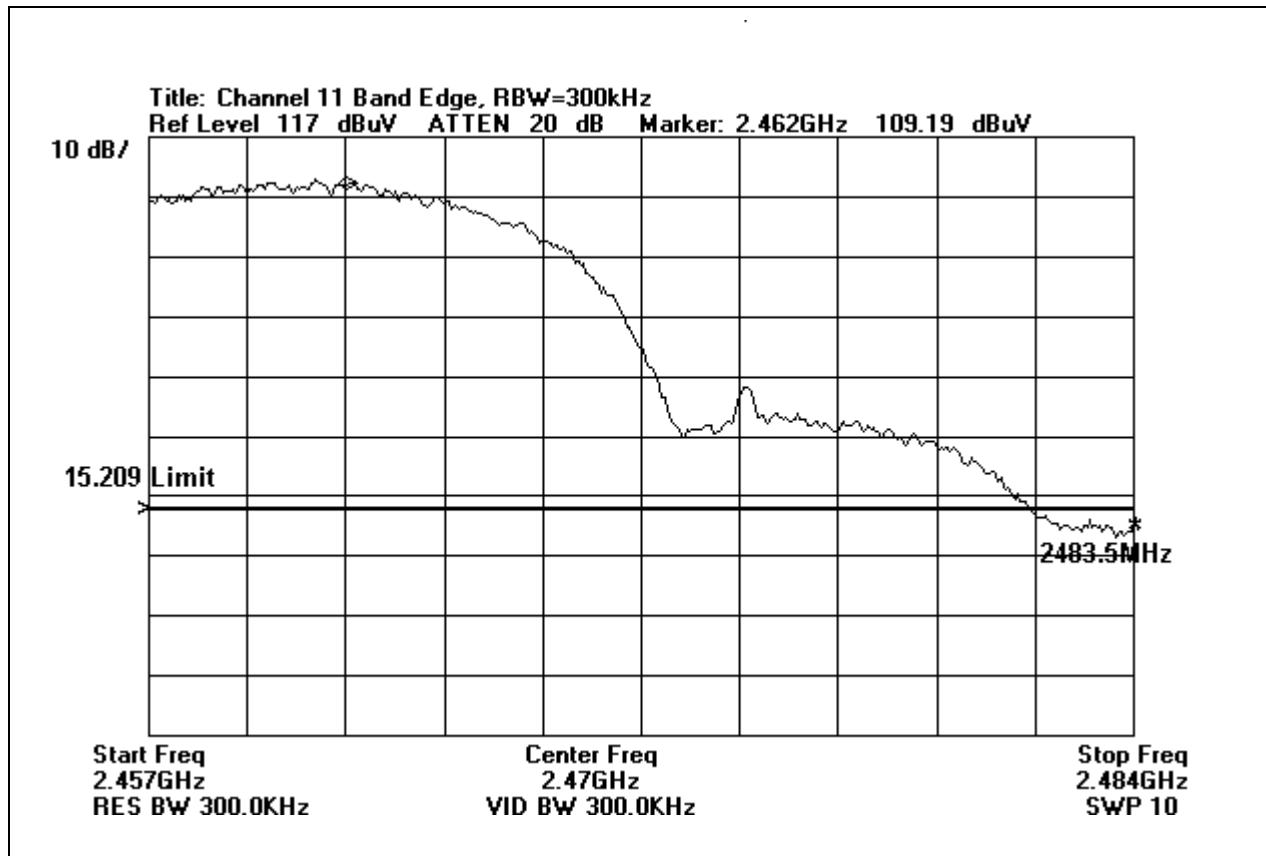
											Edge Peak, RBW=300kHz
4	2483.500M	49.7	+0.2	-38.4	+2.7	+10.5	+0.0	52.8	54.0	-1.2	Vert
				+28.1							Channel 12 Band
											Edge Peak, RBW=300kHz
5	2462.360M	105.2	+0.2	-38.4	+2.7	+10.4	+0.0	108.2	137.0	-28.8	Vert
	Ave			+28.1							Channel 11
											Fundamental
											Average, RBW=1MHz, VBW=10Hz
^	2462.360M	113.0	+0.2	-38.4	+2.7	+10.4	+0.0	116.0	137.0	-21.0	Vert
			+28.1								Channel 11
											Fundamental Peak, RBW=1MHz
^	2462.360M	108.8	+0.2	-38.4	+2.7	+10.4	+0.0	111.8	137.0	-25.2	Vert
			+28.1								Channel 11
											Fundamental Peak, RBW=300kHz
8	2410.850M	105.1	+0.2	-38.4	+2.6	+10.4	+0.0	108.0	137.0	-29.0	Vert
	Ave			+28.1							Channel 1
											Fundamental
											Average, RBW=1MHz, VBW=10Hz
^	2410.850M	113.4	+0.2	-38.4	+2.6	+10.4	+0.0	116.3	137.0	-20.7	Vert
			+28.1								Channel 1
											Fundamental Peak, RBW=1MHz
10	2470.010M	89.3	+0.2	-38.4	+2.7	+10.5	+0.0	92.4	137.0	-44.6	Vert
	Ave			+28.1							Channel 13
											Fundamental
											Average, RBW=1MHz, VBW=10Hz
^	2470.010M	97.5	+0.2	-38.4	+2.7	+10.5	+0.0	100.6	137.0	-36.4	Vert
			+28.1								Channel 13
											Fundamental Peak, RBW=1MHz
^	2470.010M	92.3	+0.2	-38.4	+2.7	+10.5	+0.0	95.4	137.0	-41.6	Vert
			+28.1								Channel 13
											Fundamental Peak, RBW=300kHz

13	2467.200M	89.3	+0.2	-38.4	+2.7	+10.4	+0.0	92.3	137.0	-44.7	Vert
Ave				+28.1					Channel 12		
									Fundamental		
									Average,		
									RBW=1MHz,		
									VBW=10Hz		
^	2467.200M	98.0	+0.2	-38.4	+2.7	+10.4	+0.0	101.0	137.0	-36.0	Vert
				+28.1					Channel 12		
									Fundamental Peak,		
									RBW=1MHz		
^	2467.200M	93.2	+0.2	-38.4	+2.7	+10.4	+0.0	96.2	137.0	-40.8	Vert
				+28.1					Channel 12		
									Fundamental Peak,		
									RBW=300kHz		

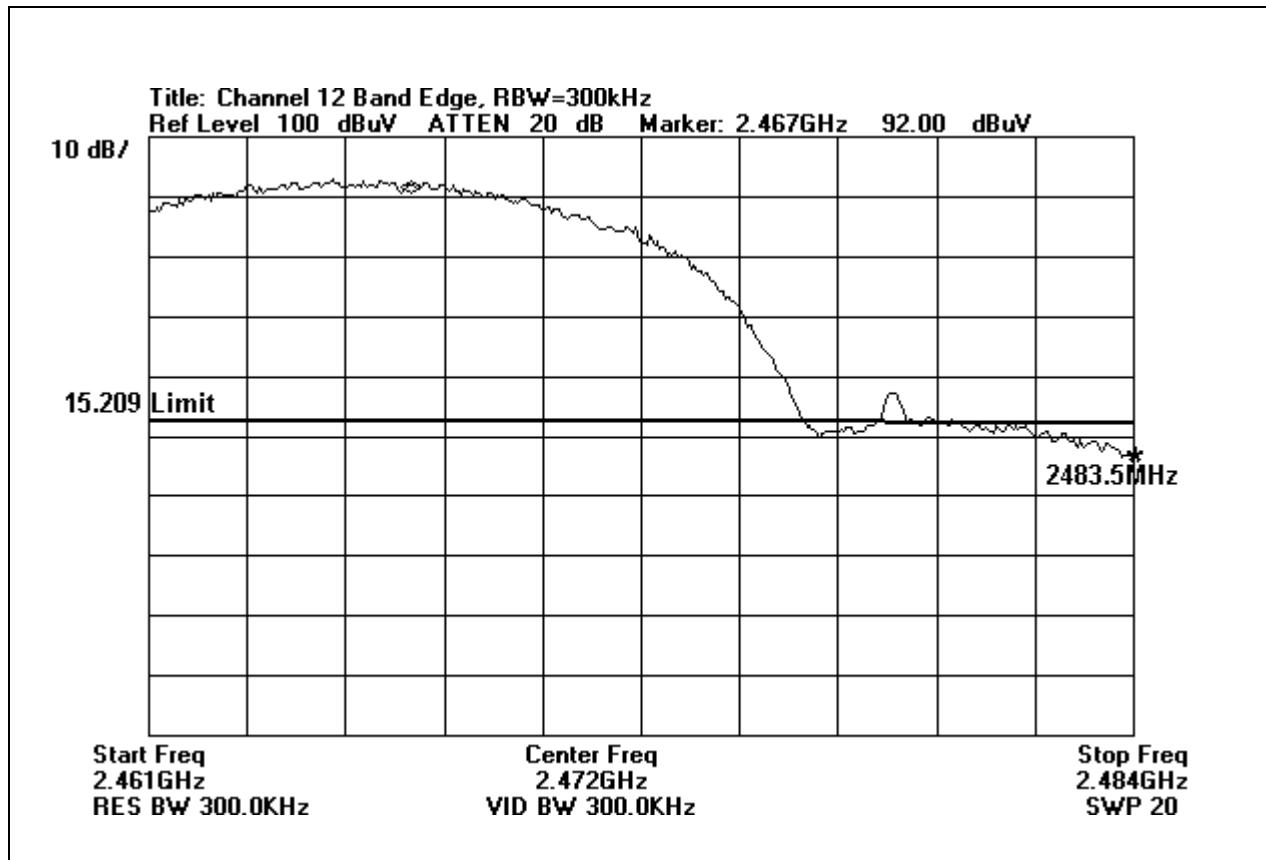
**CHANNEL 01 BAND EDGE**



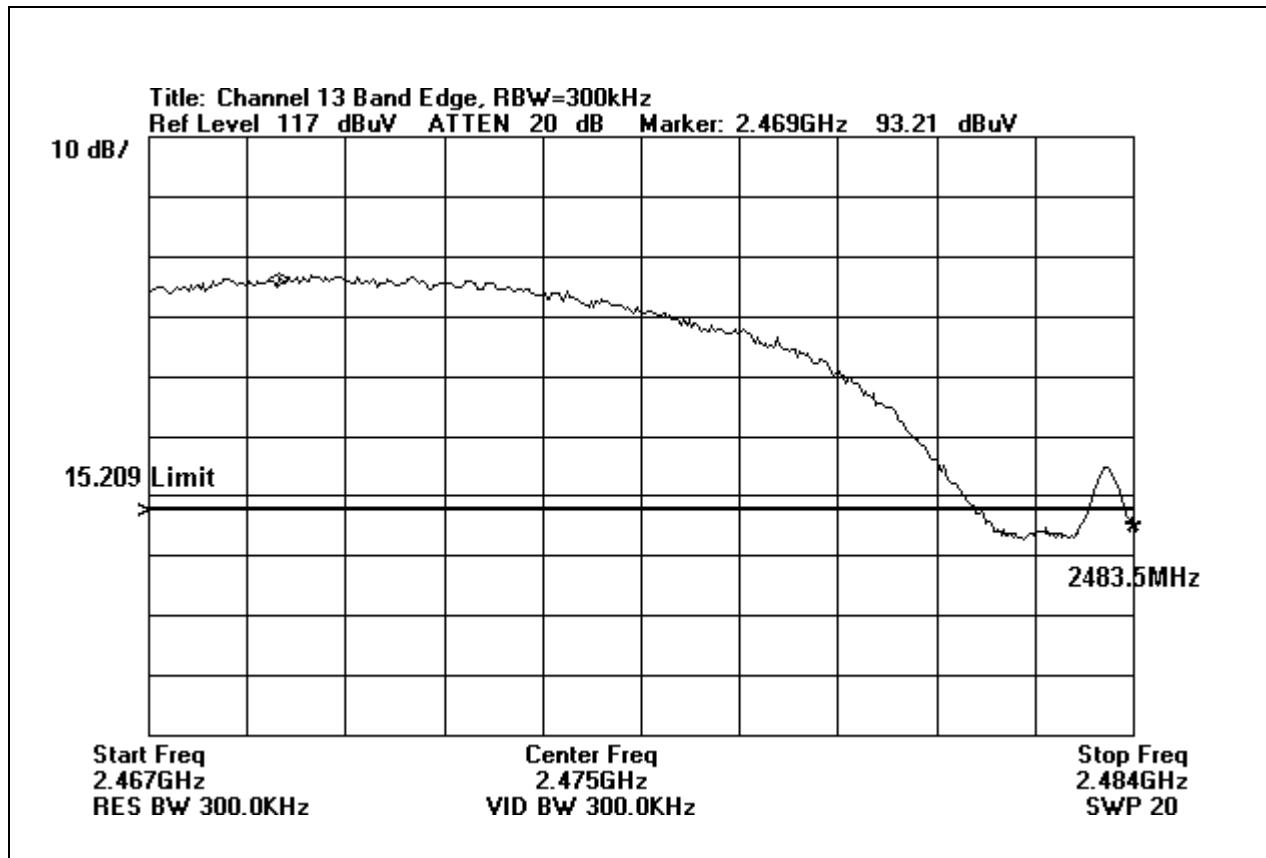
**CHANNEL 11 BAND EDGE**



**CHANNEL 12 BAND EDGE**



**CHANNEL 13 BAND EDGE**



## FCC Part 15.247(c) Spurious Emissions @ Antenna Terminal

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

Customer: **P-Com**  
 Specification: **FCC 15.247c Chan 1 Ant Spurs**  
 Work Order #: **77060** Date: **9/7/2001**  
 Test Type: **Ant. Spurious Emissions** Time: **10:26:43**  
 Equipment: **Wireless LAN** Sequence#: **12**  
 Manufacturer: **P-Com** Tested By: **A. Brar**  
 Model: **AIRPRO GOLD 20F.NET**  
 S/N: **1601653**

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is connected directly to the spectrum analyzer. The EUT is transmitting in 11Mbps CCK mode, channel 1 (2411MHz). EUT powered by 120v/60Hz. -20dBc spec limit derived from 100kHz bandwidth power measurement of Channel 1 fundamental. Measurement included in this data sheet. Frequency range tested from 9kHz - 27.5GHz.

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

hol-h							Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
#	Freq MHz	Rdng dB $\mu$ V	dB	dB	dB	dB					
1	2411.607M	109.7	+0.2				+0.0	109.9	89.9	+20.0	None
											Fundamental power, RBW=100KHZ VBW=100KHZ.
2	455.667M	69.8	+0.0				+0.0	69.8	89.9	-20.1	None
3	160.692M	69.5	+0.0				+0.0	69.5	89.9	-20.4	None
4	1410.725M	65.3	+0.2				+0.0	65.5	89.9	-24.4	None
5	1285.808M	61.3	+0.2				+0.0	61.5	89.9	-28.4	None
6	607.525M	60.0	+0.0				+0.0	60.0	89.9	-29.9	None
7	1366.808M	59.7	+0.2				+0.0	59.9	89.9	-30.0	None

8	410.883M	53.2	+0.0	+0.0	53.2	89.9	-36.7	None
9	1210.892M	51.2	+0.2	+0.0	51.4	89.9	-38.5	None
10	1575.425M	50.3	+0.2	+0.0	50.5	89.9	-39.4	None
11	683.475M	49.7	+0.0	+0.0	49.7	89.9	-40.2	None

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

Customer: **P-Com**  
 Specification: **FCC 15.247c Chan 7 Ant Spurs**  
 Work Order #: **77060** Date: 09/07/2001  
 Test Type: **Ant. Spurious Emissions** Time: 11:23:59  
 Equipment: **Wireless LAN** Sequence#: 13  
 Manufacturer: P-Com Tested By: A. Brar  
 Model: AIRPRO GOLD 20F.NET  
 S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is connected directly to the spectrum analyzer. The EUT is transmitting in 11Mbps CCK mode, channel 7 (2440MHz). EUT powered by 120v/60Hz. -20dBc spec limit derived from 100kHz bandwidth power measurement of Channel 7 fundamental. Measurement included in this data sheet. Frequency range tested from 9kHz - 27.5GHz.

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

hol-h							Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
#	Freq MHz	Rdng dB $\mu$ V	dB	dB	dB						
1	2440.480M	111.0	+0.2				+0.0	111.2	91.2	+20.0	None
Fundamental power reading. RBW=100KHZ VBW=300KHZ.											
2	4878.447M	68.2	+0.2				+0.0	68.4	91.2	-22.8	None
3	485.650M	62.2	+0.0				+0.0	62.2	91.2	-29.0	None
4	4882.017M	61.3	+0.2				+0.0	61.5	91.2	-29.7	None
5	1705.517M	59.8	+0.2				+0.0	60.0	91.2	-31.2	None
6	4879.275M	56.3	+0.2				+0.0	56.5	91.2	-34.7	None
7	4892.817M	53.0	+0.2				+0.0	53.2	91.2	-38.0	None
8	11.017M	49.7	+0.0				+0.0	49.7	91.2	-41.5	None
9	480.150M	49.3	+0.0				+0.0	49.3	91.2	-41.9	None

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

Customer: **P-Com**  
 Specification: **FCC 15.247c Chan 13 Ant Spurs**  
 Work Order #: **77060** Date: **9/7/2001**  
 Test Type: **Ant. Spurious Emissions** Time: **11:50:22**  
 Equipment: **Wireless LAN** Sequence#: **14**  
 Manufacturer: **P-Com** Tested By: **A. Brar**  
 Model: **AIRPRO GOLD 20F.NET**  
 S/N: **1601653**

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is connected directly to the spectrum analyzer. The EUT is transmitting in 11Mbps CCK mode, channel 13 (2471MHz). EUT powered by 120v/60Hz. -20dBc spec limit derived from 100kHz bandwidth power measurement of Channel 13 fundamental. Measurement included in this data sheet. Frequency range tested from 9kHz - 27.5GHz.

Measurement Data:				Reading listed by margin.		Test Distance: None				
hol-h				Spec					Margin	
#	Freq MHz	Rdng dB $\mu$ V	Margin	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Polar	Ant	Margin dB	
1	2469.172M	110.3	+0.2		+0.0	110.5	90.5	+20.0		None
Fundamental power. RBW=100KHZ VBW=300KHz.										
2	515.642M	67.5	+0.0		+0.0	67.5	90.5	-23.0		None
3	310.667M	64.2	+0.0		+0.0	64.2	90.5	-26.3		None
4	4942.108M	61.5	+0.3		+0.0	61.8	90.5	-28.7		None
5	1750.858M	60.2	+0.2		+0.0	60.4	90.5	-30.1		None
6	687.508M	60.3	+0.0		+0.0	60.3	90.5	-30.2		None
7	155.833M	55.8	+0.0		+0.0	55.8	90.5	-34.7		None
8	550.883M	53.5	+0.0		+0.0	53.5	90.5	-37.0		None

9	1390.858M	51.5	+0.2	+0.0	51.7	90.5	-38.8	None
10	10.992M	50.7	+0.0	+0.0	50.7	90.5	-39.8	None
11	508.658M	49.0	+0.0	+0.0	49.0	90.5	-41.5	None
12	773.492M	46.2	+0.0	+0.0	46.2	90.5	-44.3	None

## FCC Part 15.247(c) Spurious Emissions - OATS

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

Customer: **P-Com**  
 Specification: **FCC15.247 & 15.209**  
 Work Order #: **77060** Date: **09/07/2001**  
 Test Type: **Maximized Emissions** Time: **15:47:16**  
 Equipment: **Wireless LAN** Sequence#: **15**  
 Manufacturer: **P-Com** Tested By: **A. Brar**  
 Model: **AIRPRO GOLD 20F.NET**  
 S/N: **1601653**

### **Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bicon, Emco 311000/540	9205-1522	10/30/2000	10/30/2001	503
Log Periodic, A.H.	318	05/16/2001	05/16/2002	0
Cable, Rad., Site A	cabl 10m Hol A 01	01/03/2001	01/03/2002	0
Pre Amp	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
Spectrum Analyzer	2049A01408	06/14/2001	06/14/2002	313
Spectrum Analyzer Display	2112A02174	06/14/2001	06/14/2002	313
Mag loop, Emco 6502	2078	08/17/2001	08/17/2002	432

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

### **Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

### **Test Conditions / Notes:**

EUT is 3 meters from the biconical and log antennas and 30 meters from the mag loop antenna (no readings found below 30 MHz). The EUT is transmitting in 11Mbps CCK mode, channel 1 (2411MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 9kHz-1GHz.

<b>Measurement Data:</b>		Reading listed by margin.					Test Distance: 3 Meters				
#		Bicon	cabl	Log31	8447F	Dist	Corr	Spec	Margin	Polar	Ant
	Freq	Rdng				Table	dB $\mu$ V/m	dB $\mu$ V/m			
	MHz	dB $\mu$ V	dB	dB	dB						
1	200.030M	46.0	+17.5	+2.1	+0.0	-26.4	+0.0	39.2	43.5	-4.3	Vert
	QP										
^	200.030M	46.9	+17.5	+2.1	+0.0	-26.4	+0.0	40.1	43.5	-3.4	Vert
3	500.031M	46.4	+0.0	+3.4	+17.5	-27.6	+0.0	39.7	46.0	-6.3	Horiz
4	200.005M	43.3	+17.5	+2.1	+0.0	-26.4	+0.0	36.5	43.5	-7.0	Horiz
5	698.286M	32.4	+0.0	+4.2	+23.5	-27.8	+0.0	32.3	46.0	-13.7	Horiz

6	333.348M	36.0	+0.0	+2.7	+17.9	-26.3	+0.0	30.3	46.0	-15.7	Horiz
7	375.019M	38.4	+0.0	+2.9	+15.6	-26.7	+0.0	30.2	46.0	-15.8	Horiz
8	475.020M	34.7	+0.0	+3.3	+17.1	-27.6	+0.0	27.5	46.0	-18.5	Horiz
9	233.376M	31.4	+18.1	+2.2	+0.0	-26.1	+0.0	25.6	46.0	-20.4	Horiz

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

Customer: **P-Com**  
 Specification: **FCC15.247 & 15.209**  
 Work Order #: **77060** Date: 09/07/2001  
 Test Type: **Maximized Emissions** Time: 15:26:02  
 Equipment: **Wireless LAN** Sequence#: 16  
 Manufacturer: P-Com Tested By: A. Brar  
 Model: AIRPRO GOLD 20F.NET  
 S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bicon, Emco 311000/540	9205-1522	10/30/2000	10/30/2001	503
Log Periodic, A.H.	318	05/16/2001	05/16/2002	0
Cable, Rad., Site A	cabl 10m Hol A 01	01/03/2001	01/03/2002	0
Pre Amp	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
Spectrum Analyzer	2049A01408	06/14/2001	06/14/2002	313
Spectrum Analyzer Display	2112A02174	06/14/2001	06/14/2002	313
Mag loop, Emco 6502	2078	08/17/2001	08/17/2002	432

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is 3 meters from the biconical and log antennas and 30 meters from the mag loop antenna (no readings found below 30 MHz). The EUT is transmitting in 11Mbps CCK mode, channel 7 (2440MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 9kHz-1GHz.

Measurement Data:		Reading listed by margin.				Test Distance: 3 Meters					
#	Freq	Bicon	cabl	Log31	8447F	Dist	Corr	Spec	Margin	Polar	Ant
	MHz	dB $\mu$ V	dB	dB	dB	Table	dB $\mu$ V/m	dB $\mu$ V/m	dB		
1	200.030M	44.8	+17.5	+2.1	+0.0	-26.4	+0.0	38.0	43.5	-5.5	Vert
	QP										
^	200.030M	46.7	+17.5	+2.1	+0.0	-26.4	+0.0	39.9	43.5	-3.6	Vert
3	200.043M	43.8	+17.5	+2.1	+0.0	-26.4	+0.0	37.0	43.5	-6.5	Horiz
4	666.687M	39.1	+0.0	+4.1	+21.8	-27.8	+0.0	37.2	46.0	-8.8	Horiz

5	300.010M	35.5	+0.0	+2.5	+23.6	-26.2	+0.0	35.4	46.0	-10.6	Horiz
6	349.994M	41.5	+0.0	+2.8	+15.2	-26.4	+0.0	33.1	46.0	-12.9	Horiz
7	650.026M	34.4	+0.0	+4.0	+20.8	-27.9	+0.0	31.3	46.0	-14.7	Horiz
8	333.347M	36.3	+0.0	+2.7	+17.9	-26.3	+0.0	30.6	46.0	-15.4	Horiz

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

Customer: **P-Com**  
 Specification: **FCC15.247 & 15.209**  
 Work Order #: **77060** Date: 09/07/2001  
 Test Type: **Maximized Emissions** Time: 17:15:48  
 Equipment: **Wireless LAN** Sequence#: 17  
 Manufacturer: P-Com Tested By: A. Brar  
 Model: AIRPRO GOLD 20F.NET  
 S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bicon, Emco 311000/540	9205-1522	10/30/2000	10/30/2001	503
Log Periodic, A.H.	318	05/16/2001	05/16/2002	0
Cable, Rad., Site A	cabl 10m Hol A 01	01/03/2001	01/03/2002	0
Pre Amp	2944A03850	04/09/2001	04/09/2002	501
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
Spectrum Analyzer	2049A01408	06/14/2001	06/14/2002	313
Spectrum Analyzer Display	2112A02174	06/14/2001	06/14/2002	313
Mag loop, Emco 6502	2078	08/17/2001	08/17/2002	432

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is 3 meters from the biconical and log antennas and 30 meters from the mag loop antenna (no readings found below 30 MHz). The EUT is transmitting in 11Mbps CCK mode, channel 13 (2471MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 9kHz-1GHz.

Measurement Data:		Reading listed by margin.				Test Distance: 3 Meters					
#	Freq	Bicon	cabl	Log31	8447F	Dist	Corr	Spec	Margin	Polar	Ant
	MHz	dB $\mu$ V	dB	dB	dB	Table	dB $\mu$ V/m	dB $\mu$ V/m	dB		
1	200.029M	44.3	+17.5	+2.1	+0.0	-26.4	+0.0	37.5	43.5	-6.0	Vert
	QP										
^	200.029M	46.2	+17.5	+2.1	+0.0	-26.4	+0.0	39.4	43.5	-4.1	Vert
3	200.015M	43.7	+17.5	+2.1	+0.0	-26.4	+0.0	36.9	43.5	-6.6	Horiz
4	500.013M	45.9	+0.0	+3.4	+17.5	-27.6	+0.0	39.2	46.0	-6.8	Horiz

5	698.360M	34.5	+0.0	+4.2	+23.5	-27.8	+0.0	34.4	46.0	-11.6	Horiz
6	324.985M	33.7	+0.0	+2.7	+19.2	-26.3	+0.0	29.3	46.0	-16.7	Horiz
7	375.024M	36.8	+0.0	+2.9	+15.6	-26.7	+0.0	28.6	46.0	-17.4	Horiz
8	474.983M	34.2	+0.0	+3.3	+17.1	-27.6	+0.0	27.0	46.0	-19.0	Horiz

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

Customer: **P-Com**  
 Specification: **FCC15.247 & 15.209**  
 Work Order #: **77060** Date: 09/11/2001  
 Test Type: **Spurious Emissions** Time: 09:45:53  
 Equipment: **Wireless LAN** Sequence#: 18  
 Manufacturer: P-Com Tested By: C. Boyle  
 Model: AIRPRO GOLD 20F.NET  
 S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0
Cable, 25 ft Andrews FSJ1P-50A-4A	hol-hf-025-06	09/29/2000	09/29/2001	0
Cable, 100 ft Andrews FSJ1P-50A-4A	hol-hf-100-09	10/17/2000	10/17/2001	0
Preamplifier, HP83017A	3123A00283	05/14/2001	05/14/2002	785
Horn Ant., Emco 3115	9901-5655	07/09/2001	07/09/2002	2157
Ant., Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is 3 meters from the horn antenna. The EUT is transmitting in 11Mbps CCK mode, channel 1 (2411MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 1-26.5GHz.

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

#	Freq MHz	Rdng dB $\mu$ V	hol-h dB	HP-83 Horn dB	hol-h 18-26 dB	hol-h Ant, dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	2202.993M Ave	47.3 +10.0		-38.4 +27.8	+0.2 +0.0	+2.5 +0.0	+0.0	49.4	54.0	-4.6	Vert
^	2203.042M	50.0		-38.4 +27.8	+0.2 +0.0	+2.5 +0.0	+0.0	52.1	54.0	-1.9	Vert
3	1660.833M Ave	42.5 +9.1		-38.5 +26.6	+0.2 +0.0	+3.1 +0.0	+0.0	43.0	54.0	-11.0	Vert
^	1660.833M	62.5 +9.1		-38.5 +26.6	+0.2 +0.0	+3.1 +0.0	+0.0	63.0	54.0	+9.0	Vert
5	2202.982M Ave	40.7 +10.0		-38.4 +27.8	+0.2 +0.0	+2.5 +0.0	+0.0	42.8	54.0	-11.2	Horiz
^	2202.982M	44.3 +10.0		-38.4 +27.8	+0.2 +0.0	+2.5 +0.0	+0.0	46.4	54.0	-7.6	Horiz
7	4405.973M	27.7 +13.4		-37.8 +31.1	+0.1 +0.0	+3.1 +0.0	+0.0	37.6	54.0	-16.4	Horiz

8	4820.593M	25.3	-37.4	+0.2	+3.3	+0.0	37.3	54.0	-16.7	Vert
		+14.2	+31.7	+0.0	+0.0				2nd Harmonic	
9	1823.334M	36.0	-38.4	+0.2	+2.7	+0.0	37.1	54.0	-16.9	Horiz
		+9.4	+27.2	+0.0	+0.0					
10	1411.117M	37.5	-38.8	+0.2	+3.2	+0.0	36.8	54.0	-17.2	Vert
		+8.4	+26.3	+0.0	+0.0					
11	1367.280M	36.2	-38.9	+0.2	+3.0	+0.0	35.1	54.0	-18.9	Vert
		+8.2	+26.4	+0.0	+0.0					

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485  
 Customer: **P-Com**  
 Specification: **FCC15.247 & 15.209**  
 Work Order #: **77060** Date: 09/11/2001  
 Test Type: **Spurious Emissions** Time: 09:45:53  
 Equipment: **Wireless LAN** Sequence#: 19  
 Manufacturer: P-Com Tested By: S. Behm  
 Model: AIRPRO GOLD 20F.NET S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0
Cable, 25 ft Andrews FSJ1P-50A-4A	hol-hf-025-06	09/29/2000	09/29/2001	0
Cable, 100 ft Andrews FSJ1P-50A-4A	hol-hf-100-09	10/17/2000	10/17/2001	0
Preamp, HP83017A	3123A00283	05/14/2001	05/14/2002	785
Horn Ant., Emco 3115	9901-5655	07/09/2001	07/09/2002	2157
Ant., Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is 3 meters from the horn antenna. The EUT is transmitting in 11Mbps CCK mode, channel 7 (2440MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 1-26.5GHz.

Measurement Data:		Reading listed by margin.					Test Distance: 3 Meters					
#	Freq MHz	Rdng dB $\mu$ V	hol-h dB	HP-83 dB	Horn dB	18-26 dB	hol-h dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	2243.142M	47.0		-38.4	+0.2	+2.5	+0.0	49.1	54.0	-4.9	Vert	
			+10.0	+27.8	+0.0							
2	2243.003M	44.3		-38.4	+0.2	+2.5	+0.0	46.4	54.0	-7.6	Vert	
	Ave		+10.0	+27.8	+0.0							
3	1700.133M	42.5		-38.5	+0.2	+3.1	+0.0	43.0	54.0	-11.0	Vert	
	Ave		+9.1	+26.6	+0.0							
^	1700.133M	50.5		-38.5	+0.2	+3.1	+0.0	51.0	54.0	-3.0	Vert	
			+9.1	+26.6	+0.0							
5	2242.982M	40.7		-38.4	+0.2	+2.5	+0.0	42.8	54.0	-11.2	Horiz	
	Ave		+10.0	+27.8	+0.0							
^	2242.982M	43.3		-38.4	+0.2	+2.5	+0.0	45.4	54.0	-8.6	Horiz	
			+10.0	+27.8	+0.0							
7	4445.973M	27.2		-37.8	+0.1	+3.1	+0.0	37.1	54.0	-16.9	Horiz	
			+13.4	+31.1	+0.0							
8	4840.593M	24.3		-37.4	+0.2	+3.3	+0.0	36.3	54.0	-17.7	Vert	
			+14.2	+31.7	+0.0							2nd Harmonic

Test Location: CKC Laboratories, Inc. • 1653 Los Viboras Rd., Site A • Hollister, Ca 95023 • (831) 637-0485  
 Customer: **P-Com**  
 Specification: **FCC15.247 & 15.209**  
 Work Order #: **77060** Date: 09/11/2001  
 Test Type: **Spurious Emissions** Time: 09:45:53  
 Equipment: **Wireless LAN** Sequence#: 20  
 Manufacturer: P-Com Tested By: S. Behm  
 Model: AIRPRO GOLD 20F.NET S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0
Cable, 25 ft Andrews FSJ1P-50A-4A	hol-hf-025-06	09/29/2000	09/29/2001	0
Cable, 100 ft Andrews FSJ1P-50A-4A	hol-hf-100-09	10/17/2000	10/17/2001	0
Preamplifier, HP83017A	3123A00283	05/14/2001	05/14/2002	785
Horn Ant., Emco 3115	9901-5655	07/09/2001	07/09/2002	2157
Ant., Horn 18-26.5GHz	942126-003	07/09/2001	07/09/2002	1413

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is 3 meters from the horn antenna. The EUT is transmitting in 11Mbps CCK mode, channel 13 (2471MHz). Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested from 1-26.5GHz.

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

#	Freq MHz	Rdng dB $\mu$ V	hol-h dB	HP-83	hol-h	hol-h	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
				Horn dB	18-26 dB	dB					
1	2283.103M	41.3		-38.4	+0.2	+2.5	+0.0	43.4	54.0	-10.6	Vert
	Ave		+10.0	+27.8	+0.0						
^	2283.142M	38.0		-38.4	+0.2	+2.5	+0.0	40.1	54.0	-13.9	Vert
			+10.0	+27.8	+0.0						
3	2282.982M	38.7		-38.4	+0.2	+2.5	+0.0	40.8	54.0	-13.2	Horiz
	Ave		+10.0	+27.8	+0.0						
^	2282.982M	41.4		-38.4	+0.2	+2.5	+0.0	43.5	54.0	-10.5	Horiz
			+10.0	+27.8	+0.0						
5	4880.593M	26.3		-37.4	+0.2	+3.3	+0.0	38.3	54.0	-15.7	Vert
			+14.2	+31.7	+0.0						
6	4485.973M	27.8		-37.8	+0.1	+3.1	+0.0	37.7	54.0	-16.3	Horiz
			+13.4	+31.1	+0.0						
7	1740.133M	32.5		-38.5	+0.2	+3.1	+0.0	33.0	54.0	-21.0	Vert
	Ave		+9.1	+26.6	+0.0						
^	1740.133M	38.5		-38.5	+0.2	+3.1	+0.0	39.0	54.0	-15.0	Vert
			+9.1	+26.6	+0.0						

## FCC Part 15.247(d) Power Spectral Density

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

Customer: **P-Com**  
 Specification: **FCC 15.247(d)**  
 Work Order #: **77060** Date: 09/04/2001  
 Test Type: **Pk Pwr Spectral Density** Time: 14:20:23  
 Equipment: **Wireless LAN** Sequence#: 9  
 Manufacturer: P-Com Tested By: Conan T. Boyle  
 Model: AIRPRO GOLD 20F.NET  
 S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, HP 8564E	3623A00539	12/12/2001	12/12/2002	1406
Cable, 2 ft Andrews FSJ1P-50A-4A	hol-hf-002-01	10/17/2000	10/17/2001	0

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

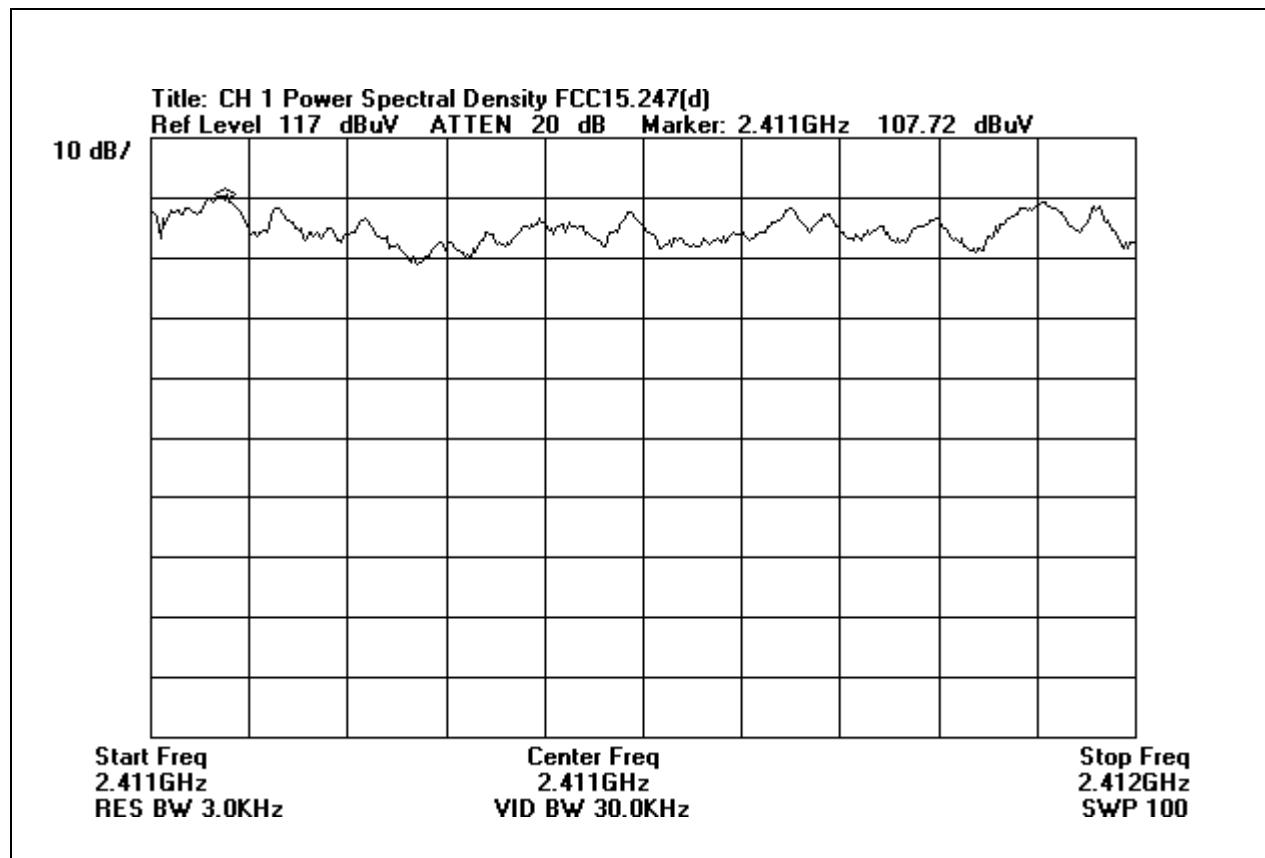
Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

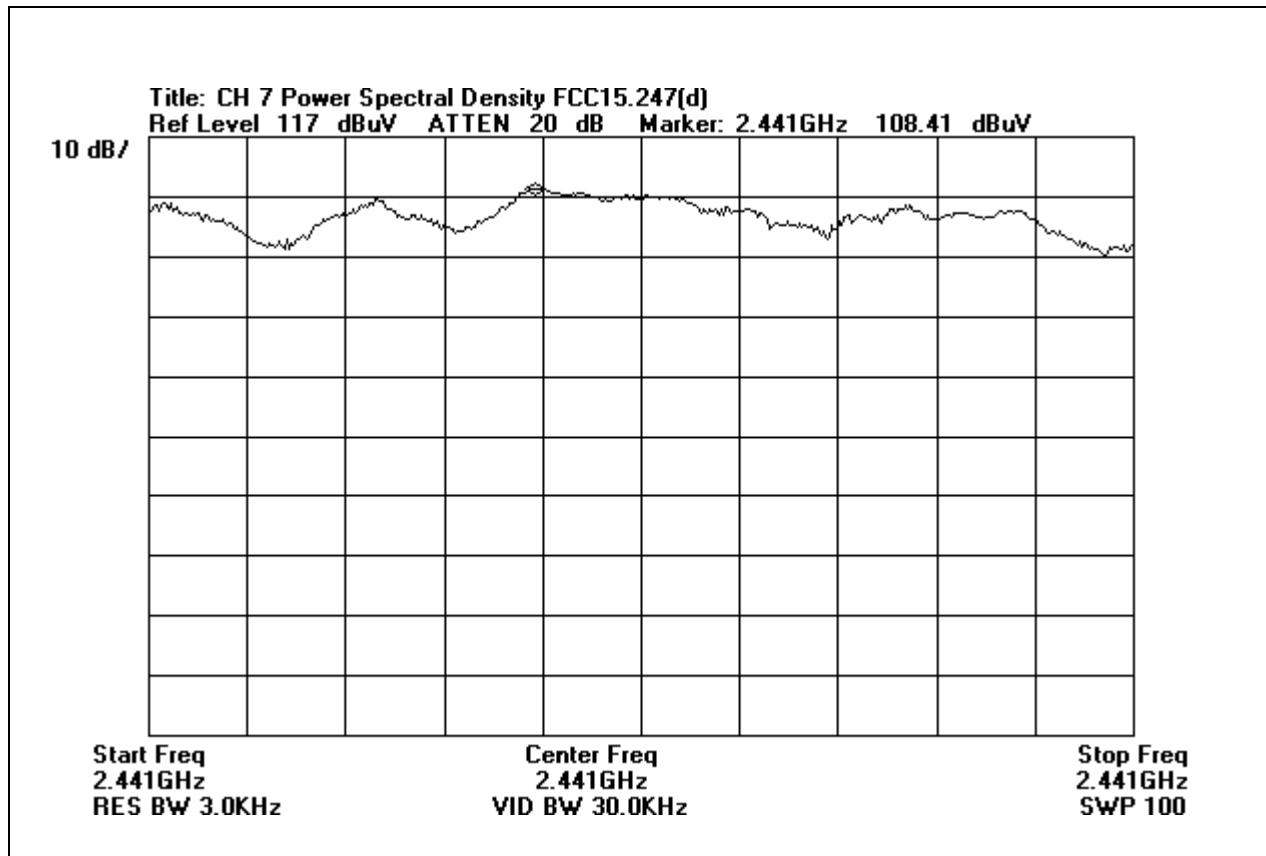
EUT is connected directly to the spectrum analyzer. The EUT is in transmit mode, channels being tested include 1 (2410MHz), 7 (2440MHz) and 13 (2471MHz). Transmitted signal modulation mode is CCK 11 Mbps. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Spectrum analyzer settings- RBW=3kHz, VBW=300kHz, SWEEP=100S. Note: All channels transmitting less than maximum allowable peak level spectral density for DSSS transmitters (115dBuV = 8dBm) Plot created for each channel.

Measurement Data:				Reading listed by margin.				Test Distance: None			
				hol-h							
#	Freq MHz	Rdng dB $\mu$ V	Margin dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar	Ant		
1	2470.366M	105.8	+0.2		+0.0	106.0	115.0	-9.0	None		
										Channel 13 Power	
										Spectral Density = -	
										1.0dBm	
2	2410.365M	105.4	+0.2		+0.0	105.6	115.0	-9.4	None		
										Channel 1 Power	
										Spectral Density = -	
										1.4dBm	
3	2440.364M	105.3	+0.2		+0.0	105.5	115.0	-9.5	None		
										Channel 7 Power	
										Spectral Density = -	
										1.5dBm	

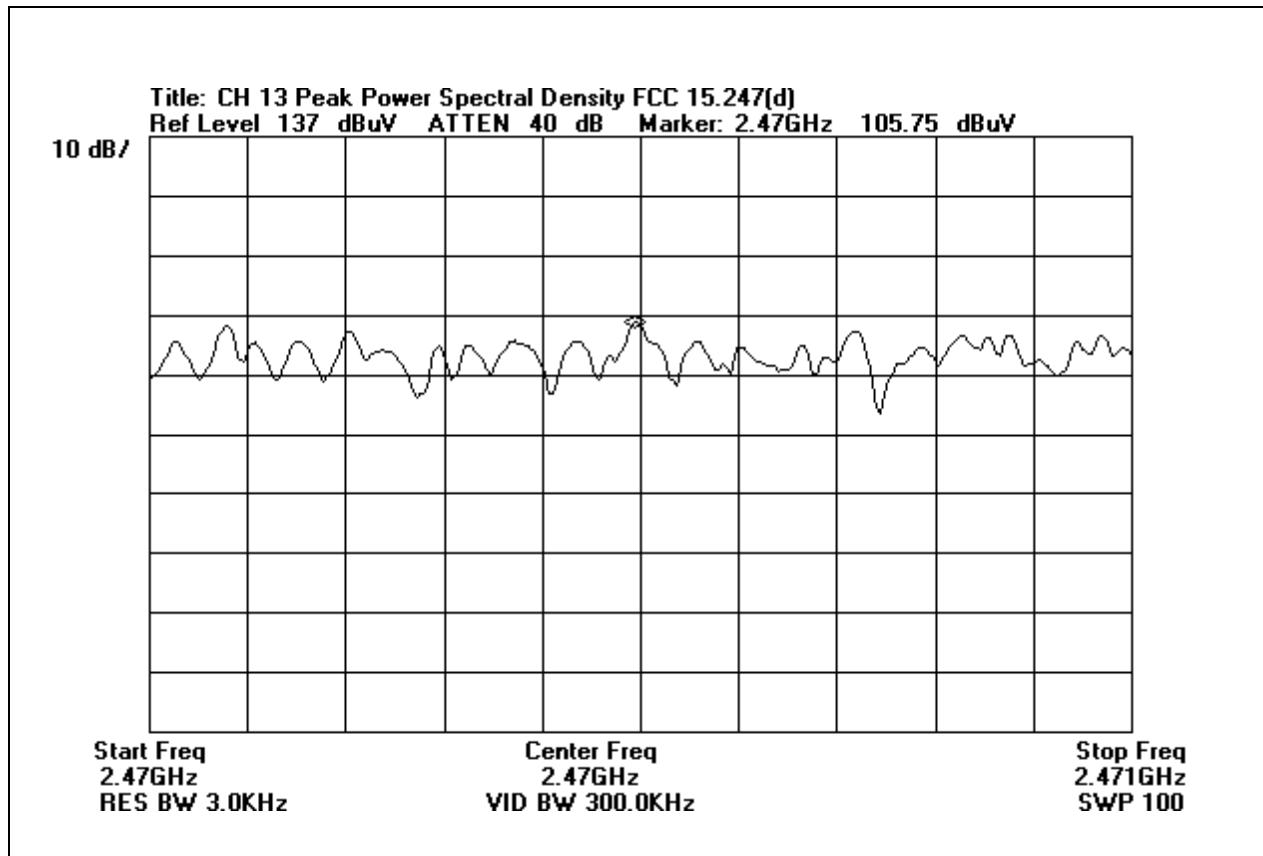
**CHANNEL 01 POWER SPECTRAL DENSITY**



**CHANNEL 07 POWER SPECTRAL DENSITY**



**CHANNEL 13 POWER SPECTRAL DENSITY**



## FCC Part 15.207 AC Conducted

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

Customer: **P-Com**  
 Specification: **FCC 15.207**  
 Work Order #: **77060** Date: 08/31/2001  
 Test Type: **Conducted Emissions** Time: 1:58:51 PM  
 Equipment: **Wireless LAN** Sequence#: 7  
 Manufacturer: P-Com Tested By: A. Brar  
 Model: AIRPRO GOLD 20F.NET  
 S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer Display	2112A02174	06/14/2001	06/14/2002	313
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
Spectrum Analyzer	2049A01408	06/14/2001	06/14/2002	313
LISN Wht, 8028-50-TS-24-BNC	910489	09/13/2000	09/13/2001	736
LISN Blk, 8028-50-TS-24-BNC	910490	09/13/2000	09/13/2001	737
Cable, Cond., Site A	CABL-COND SITE A.TRN	03/01/2001	03/01/2002	0

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

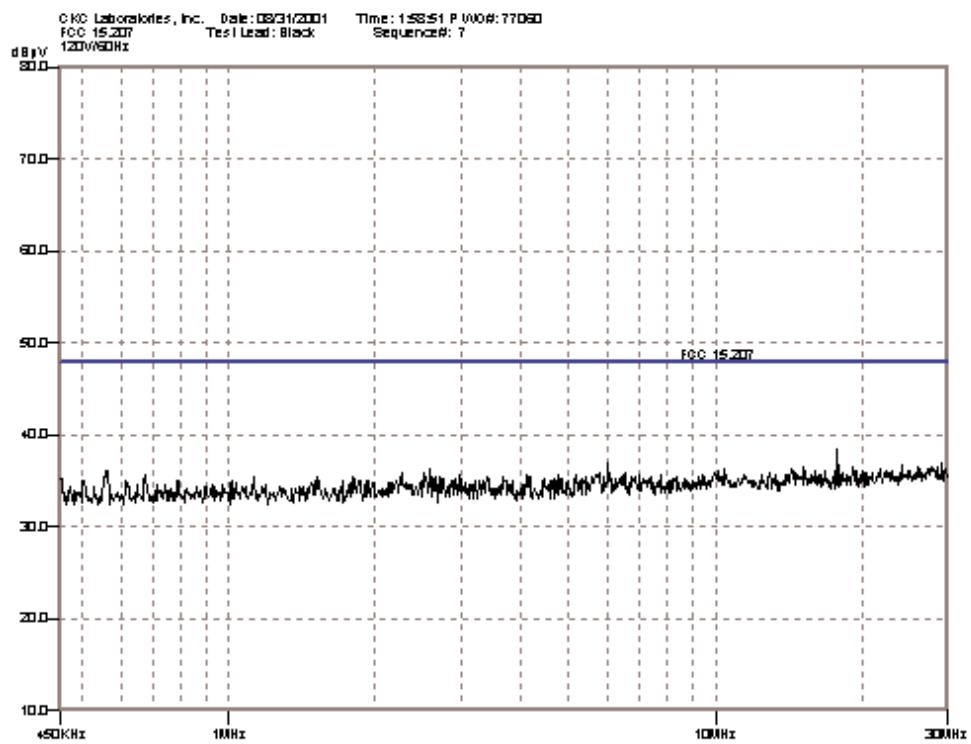
**Test Conditions / Notes:**

EUT is at the center back edge of the table. The EUT is in receive mode (channel 7 selected) and the RF port is terminated with a dummy load. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested is 450KHz - 30MHz.

Measurement Data:			Reading listed by margin.				Test Lead: Black			
#	Freq MHz	Rdng dB $\mu$ V	Site LISNZ dB	LISNI dB	Dist Table dB	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant	
1	17.832M	36.9	+0.6 +0.6	+0.4	+0.0	38.5	48.0	-9.5	Black	
2	29.298M	34.3	+0.8 +1.4	+0.5	+0.0	37.0	48.0	-11.0	Black	
3	6.035M	36.3	+0.4 +0.1	+0.2	+0.0	37.0	48.0	-11.0	Black	
4	24.189M	34.5	+0.7 +1.1	+0.5	+0.0	36.8	48.0	-11.2	Black	
5	28.713M	33.9	+0.8 +1.3	+0.5	+0.0	36.5	48.0	-11.5	Black	
6	26.217M	34.1	+0.7 +1.2	+0.5	+0.0	36.5	48.0	-11.5	Black	

7	19.197M	34.7	+0.7 +0.7	+0.4	+0.0	36.5	48.0	-11.5	Black
8	15.219M	35.1	+0.7 +0.4	+0.3	+0.0	36.5	48.0	-11.5	Black
9	27.855M	33.8	+0.8 +1.3	+0.5	+0.0	36.4	48.0	-11.6	Black
10	29.805M	33.6	+0.8 +1.4	+0.5	+0.0	36.3	48.0	-11.7	Black
11	21.771M	34.3	+0.7 +0.9	+0.4	+0.0	36.3	48.0	-11.7	Black
12	14.342M	35.0	+0.6 +0.4	+0.3	+0.0	36.3	48.0	-11.7	Black
13	26.451M	33.8	+0.7 +1.2	+0.5	+0.0	36.2	48.0	-11.8	Black
14	10.417M	35.2	+0.5 +0.2	+0.3	+0.0	36.2	48.0	-11.8	Black
15	2.609M	35.6	+0.3 +0.0	+0.3	+0.0	36.2	48.0	-11.8	Black
16	23.097M	33.9	+0.7 +1.0	+0.5	+0.0	36.1	48.0	-11.9	Black
17	22.434M	33.9	+0.7 +1.0	+0.5	+0.0	36.1	48.0	-11.9	Black
18	20.172M	34.2	+0.7 +0.8	+0.4	+0.0	36.1	48.0	-11.9	Black
19	19.490M	34.2	+0.7 +0.8	+0.4	+0.0	36.1	48.0	-11.9	Black
20	17.598M	34.5	+0.6 +0.6	+0.4	+0.0	36.1	48.0	-11.9	Black
21	14.517M	34.8	+0.6 +0.4	+0.3	+0.0	36.1	48.0	-11.9	Black
22	563.669k	35.7	+0.2 -0.2	+0.4	+0.0	36.1	48.0	-11.9	Black
23	25.281M	33.7	+0.7 +1.1	+0.5	+0.0	36.0	48.0	-12.0	Black
24	24.969M	33.7	+0.7 +1.1	+0.5	+0.0	36.0	48.0	-12.0	Black
25	16.818M	34.5	+0.6 +0.6	+0.3	+0.0	36.0	48.0	-12.0	Black
26	16.077M	34.5	+0.7 +0.5	+0.3	+0.0	36.0	48.0	-12.0	Black
27	15.414M	34.6	+0.7 +0.4	+0.3	+0.0	36.0	48.0	-12.0	Black
28	10.144M	35.0	+0.5 +0.2	+0.3	+0.0	36.0	48.0	-12.0	Black
29	22.785M	33.7	+0.7 +1.0	+0.5	+0.0	35.9	48.0	-12.1	Black
30	21.069M	33.9	+0.7 +0.9	+0.4	+0.0	35.9	48.0	-12.1	Black
31	18.339M	34.2	+0.6 +0.7	+0.4	+0.0	35.9	48.0	-12.1	Black
32	14.712M	34.6	+0.6 +0.4	+0.3	+0.0	35.9	48.0	-12.1	Black

33	6.541M	35.1	+0.5 +0.1	+0.2	+0.0	35.9	48.0	-12.1	Black
34	2.528M	35.3	+0.3 +0.0	+0.3	+0.0	35.9	48.0	-12.1	Black
35	20.328M	33.9	+0.7 +0.8	+0.4	+0.0	35.8	48.0	-12.2	Black
36	12.977M	34.6	+0.6 +0.3	+0.3	+0.0	35.8	48.0	-12.2	Black
37	9.960M	34.8	+0.5 +0.2	+0.3	+0.0	35.8	48.0	-12.2	Black
38	6.076M	35.1	+0.4 +0.1	+0.2	+0.0	35.8	48.0	-12.2	Black
39	5.803M	35.1	+0.4 +0.1	+0.2	+0.0	35.8	48.0	-12.2	Black
40	2.265M	35.2	+0.3 +0.0	+0.3	+0.0	35.8	48.0	-12.2	Black



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

Customer: **P-Com**  
 Specification: **FCC B QP**  
 Work Order #: **77060** Date: 08/31/2001  
 Test Type: **Conducted Emissions** Time: 1:44:48 PM  
 Equipment: **Wireless LAN** Sequence#: 6  
 Manufacturer: P-Com Tested By: A. Brar  
 Model: AIRPRO GOLD 20F.NET  
 S/N: 1601653

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer Display	2112A02174	06/14/2001	06/14/2002	313
QP Adapter	2430A00541	06/14/2001	06/14/2002	313
Spectrum Analyzer	2049A01408	06/14/2001	06/14/2002	313
LISN Wht, 8028-50-TS-24-BNC	910489	09/13/2000	09/13/2001	736
LISN Blk, 8028-50-TS-24-BNC	910490	09/13/2000	09/13/2001	737
Cable, Cond., Site A	CABL-COND SITE A.TRN	03/01/2001	03/01/2002	0

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

Function	Manufacturer	Model #	S/N
Wireless LAN*	P-Com	AIRPRO GOLD 20F.NET	1601653

**Support Devices:**

Function	Manufacturer	Model #	S/N
EthernetFast 10/100 Auto Sensing 8-Port Workgroup Hub	Linksys	EFAH08W	None
AC-DC Adapter	Thomson	5-2366A	None

**Test Conditions / Notes:**

EUT is at the center back edge of the table. The EUT is in receive mode (channel 7 selected) and the RF port is terminated with a dummy load. Two cables are attached to the front of the EUT. One is a 25-ft Cat 5E connected between an Ethernet port and an active Ethernet hub and the second is an unterminated serial cable connected to a serial I/O port. EUT powered by 120v/60Hz. Frequency range tested is 450KHz - 30MHz.

Measurement Data:			Reading listed by margin.			Test Lead: White					
#	Freq MHz	Rdng dB $\mu$ V	Site dB	LISNI dB	LISNZ dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant	
1	3.578M	38.4	+0.3	+0.3		-0.2	+0.0	38.8	48.0	-9.2	White
2	3.540M	38.4	+0.3	+0.3		-0.2	+0.0	38.8	48.0	-9.2	White
3	562.833k	38.8	+0.2	+0.5		-0.7	+0.0	38.8	48.0	-9.2	White
4	3.235M	38.2	+0.3	+0.3		-0.2	+0.0	38.6	48.0	-9.4	White
5	3.650M	37.8	+0.3	+0.3		-0.2	+0.0	38.2	48.0	-9.8	White
6	8.656M	37.1	+0.6	+0.3		+0.1	+0.0	38.1	48.0	-9.9	White
7	3.742M	37.7	+0.3	+0.3		-0.2	+0.0	38.1	48.0	-9.9	White
8	2.915M	37.7	+0.3	+0.3		-0.2	+0.0	38.1	48.0	-9.9	White

9	3.354M	37.6	+0.3	+0.3	-0.2	+0.0	38.0	48.0	-10.0	White
10	3.306M	37.5	+0.3	+0.3	-0.2	+0.0	37.9	48.0	-10.1	White
11	7.919M	37.0	+0.5	+0.3	+0.0	+0.0	37.8	48.0	-10.2	White
12	4.670M	37.3	+0.4	+0.2	-0.1	+0.0	37.8	48.0	-10.2	White
13	4.452M	37.4	+0.3	+0.2	-0.1	+0.0	37.8	48.0	-10.2	White
14	3.149M	37.4	+0.3	+0.3	-0.2	+0.0	37.8	48.0	-10.2	White
15	2.752M	37.4	+0.3	+0.3	-0.2	+0.0	37.8	48.0	-10.2	White
16	9.230M	36.7	+0.6	+0.3	+0.1	+0.0	37.7	48.0	-10.3	White
17	5.612M	37.2	+0.4	+0.2	-0.1	+0.0	37.7	48.0	-10.3	White
18	4.848M	37.2	+0.4	+0.2	-0.1	+0.0	37.7	48.0	-10.3	White
19	4.732M	37.2	+0.4	+0.2	-0.1	+0.0	37.7	48.0	-10.3	White
20	4.316M	37.3	+0.3	+0.2	-0.1	+0.0	37.7	48.0	-10.3	White
21	2.853M	37.3	+0.3	+0.3	-0.2	+0.0	37.7	48.0	-10.3	White
22	7.523M	36.8	+0.5	+0.3	+0.0	+0.0	37.6	48.0	-10.4	White
23	7.387M	36.8	+0.5	+0.3	+0.0	+0.0	37.6	48.0	-10.4	White
24	7.127M	36.8	+0.5	+0.3	+0.0	+0.0	37.6	48.0	-10.4	White
25	6.076M	37.0	+0.4	+0.2	+0.0	+0.0	37.6	48.0	-10.4	White
26	5.954M	37.0	+0.4	+0.2	+0.0	+0.0	37.6	48.0	-10.4	White
27	5.885M	37.1	+0.4	+0.2	-0.1	+0.0	37.6	48.0	-10.4	White
28	5.066M	37.1	+0.4	+0.2	-0.1	+0.0	37.6	48.0	-10.4	White
29	4.425M	37.2	+0.3	+0.2	-0.1	+0.0	37.6	48.0	-10.4	White
30	4.097M	37.2	+0.3	+0.2	-0.1	+0.0	37.6	48.0	-10.4	White
31	4.002M	37.3	+0.3	+0.2	-0.2	+0.0	37.6	48.0	-10.4	White
32	901.332k	37.4	+0.2	+0.4	-0.4	+0.0	37.6	48.0	-10.4	White
33	8.383M	36.7	+0.5	+0.3	+0.0	+0.0	37.5	48.0	-10.5	White
34	6.035M	36.9	+0.4	+0.2	+0.0	+0.0	37.5	48.0	-10.5	White

35	1.668M	37.2	+0.3	+0.4	-0.4	+0.0	37.5	48.0	-10.5	White
36	3.892M	37.1	+0.3	+0.2	-0.2	+0.0	37.4	48.0	-10.6	White
37	3.471M	37.0	+0.3	+0.3	-0.2	+0.0	37.4	48.0	-10.6	White
38	2.967M	37.0	+0.3	+0.3	-0.2	+0.0	37.4	48.0	-10.6	White
39	2.795M	37.0	+0.3	+0.3	-0.2	+0.0	37.4	48.0	-10.6	White
40	1.298M	37.1	+0.2	+0.5	-0.4	+0.0	37.4	48.0	-10.6	White

