

**FCC CFR47 PART 15 SUBPART C
15.247 CERTIFICATION**



TEST REPORT

FOR

D-LINK SYSTEMS, INC.

802.11 a/b BAND PCI ADAPTER

MODEL NUMBER: PC22, DWL-AB520, WPC-D11

BRAND NAME: D-LINK

FCC ID: KA22002080002-1

REPORT NUMBER: 02U1466-1

ISSUE DATE: AUGUST 19, 2002

Prepared for

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1. TEST RESULT CERTIFICATION

COMPANY NAME: D-LINK CORPORATION
NO.8, LI-SHING ROAD VII
SCIENCE-BASED INDUSTRIAL PARK
HSINCHU, TAIWAN R.O.C.

EUT DESCRIPTION: 802.11 a/b BAND PCI ADAPTER

MODEL NUMBER: PC22, DWL-AB520, WPC-D11

BRAND NAME: D-LINK

DATE TESTED: AUGUST 12 – 16, 2002

TYPE OF EQUIPMENT	INTENTIONAL RADIATOR
EQUIPMENT TYPE	2.4 - 2.4835 GHz TRANSCEIVER *
MEASUREMENT PROCEDURE	ANSI 63.4 / 1992, TIA/EIA 603
PROCEDURE	CERTIFICATION
FCC RULE	CFR 47 PART 15.C

Compliance Certification Services, Inc. tested the above equipment for compliance with the requirements set forth in CFR 47, PART 15, Subpart C 15.247. The equipment in the configuration described in this report, shows the measured emission levels emanating from the equipment do not exceed the specified limit.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:

Tested By:



STEVE CHENG
EMC ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

THU CHAN
SENIOR EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The D-Link WLAN 802.11a/b PCI adaptor is based on the AR5001 three-chip set which implements IEEE 802.11a and IEEE 802.11b and intended for desktop applications. It operates in the 5.15-5.35 GHz, 5.725 - 5.825GHz, and 2.40-2.4835GHz bands with a maximum Tx output power of 20.9 dBm in b/g bands. The product uses two antennas (one for external and the other for internal) for diversity operation with the maximum of 3dBi gain.

3. TEST METHODOLOGY

Conducted and radiated testing were performed according to the procedures documented on chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, and 15.407.

4. FACILITIES AND ACCREDITATION

4.1. FACILITIES AND EQUIPMENT

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

Receiving equipment (i.e., receiver, analyzer, quasi-peak adapter, pre-selector) and LISNs conform to CISPR specifications for "Radio Interference Measuring Apparatus and Measurement Methods," Publication 16.

4.2. LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2)).

4.3. TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP*	FCC Part 15, CISPR 22, AS/NZS 3548, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, CNS 13438	 200065-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 1300
Japan	VCCI	CISPR 22 Two OATS and one conducted Site	VCCI R-1014, R-619, C-640
Norway	NEMKO	EN50081-1, EN50081-2, EN50082-1, EN50082-2, IEC61000-6-1, IEC61000-6-2, EN50083-2, EN50091-2, EN50130-4, EN55011, EN55013, EN55014-1, EN55104, EN55015, EN61547, EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60945, EN61326-1	 ELA 117
Norway	NEMKO	EN60601-1-2 and IEC 60601-1-2, the Collateral Standards for Electro-Medical Products. MDD, 93/42/EEC, AIMD 90/385/EEC	 ELA-171
Taiwan	BSMI	CNS 13438	 SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	 IC2324 A,B,C, and F

* No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission	
30MHz – 200 MHz	+/- 3.3dB
200MHz – 1000MHz	+4.5/-2.9dB
1000MHz – 2000MHz	+4.6/-2.2dB
Power Line Conducted Emission	
150kHz – 30MHz	+/-2.9

Any results falling within the above values are deemed to be marginal.

5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST AND MEASUREMENT EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due Date
Spectrum Analyzer	HP	8566B	3014A06685	6/1/03
Spectrum Display	HP	85662A	2152A03066	6/1/03
Quasi-Peak Detector	HP	85650A	3145A01654	6/1/03
Preamplifier	HP	8447D	2944A06833	8/10/03
Log Periodic Antenna	EMCO	3146	9107-3163	3/30/03
Biconical Antenna	Eaton	94455-1	1197	3/30/03
LISN	F.C.C.	LISN-50/250-25-2	114	4/23/03
EMI Test Receiver	Rohde & Schwarz	ESHS 20	827129/006	4/17/03
Spectrum Analyzer	HP	8593EM	3710A00205	6/11/03
Preamplifier (1 - 26.5GHz)	MITEQ	NSP2600-44	646456	4/26/03
Horn Antenna (1 - 18GHz)	EMCO	3115	6717	1/31/03
Horn Antenna (18 - 26.5GHz)	ARA	3115	6717	1/31/03
Signal Generator	HP	83732B	US34490599	3/29/03
High Pass Filter (4.57GHz)	FSY Microwave	FM-4570-9SS	003	N.C.R.
Spectrum Analyzer	HP	8563E	3720A07066	3/18/04
Spectrum Analyzer	Agilent	E4404B	US40240772	3/25/03

6. SETUP OF EQUIPMENT UNDER TEST

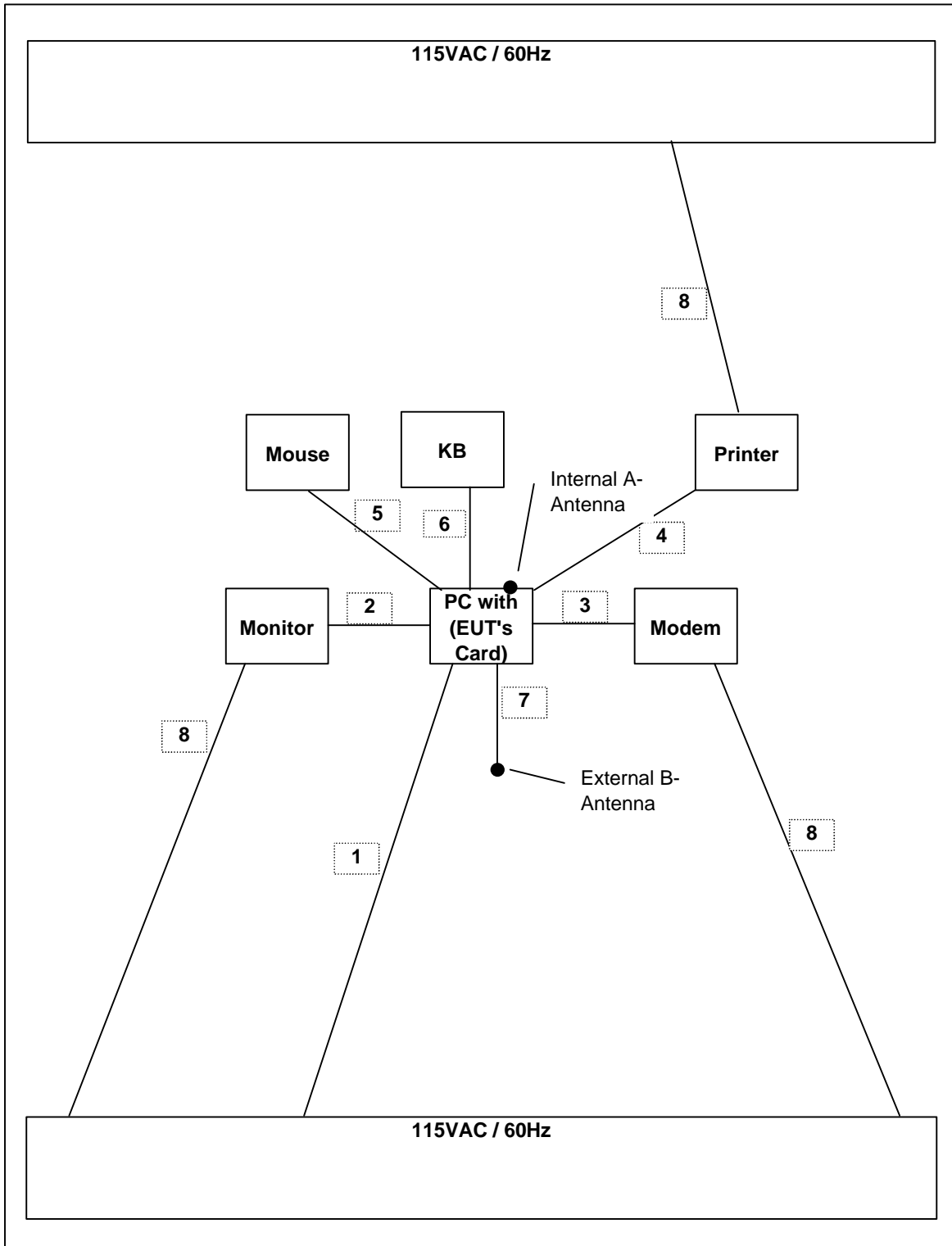
TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
PRINTER	HP	2225C	2541S41679	BS46XU2225C
MODEM	ACEEX	1414	9013540	IFAXDM1414
MOUSE	Logitech	M-UA34	LZB7050269	DZL211087
Keyboard	NMB	7931M	N82500843	E5XKBP10410U
Monitor	MAG	DX1595	HD3345052058	IAWDX15FG
PC	Atheros	N/A	SM162387	DoC

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	AC	1	US 115V	Un-shielded	2m	No	Yes, LC	N/A
2	Video	1	DB15	Shielded	2m	Yes	Yes	One Torroid on PC's End
3	Serial	1	DB9	Shielded	1m	Yes	No	N/A
4	Parallel	1	DB25	Shielded	2m	Yes	Yes	N/A
5	Mouse	1	PS/2	Un-shielded	2m	Yes	No	N/A
6	KB	1	PS/2	Shielded	2m	Yes	No	N/A
7	B-Antenna	1	Wire	Un-shielded	2m	Yes	No	External B-Antenna
8	AC	3	US 115V	Un-shielded	2m	No	No	N/A

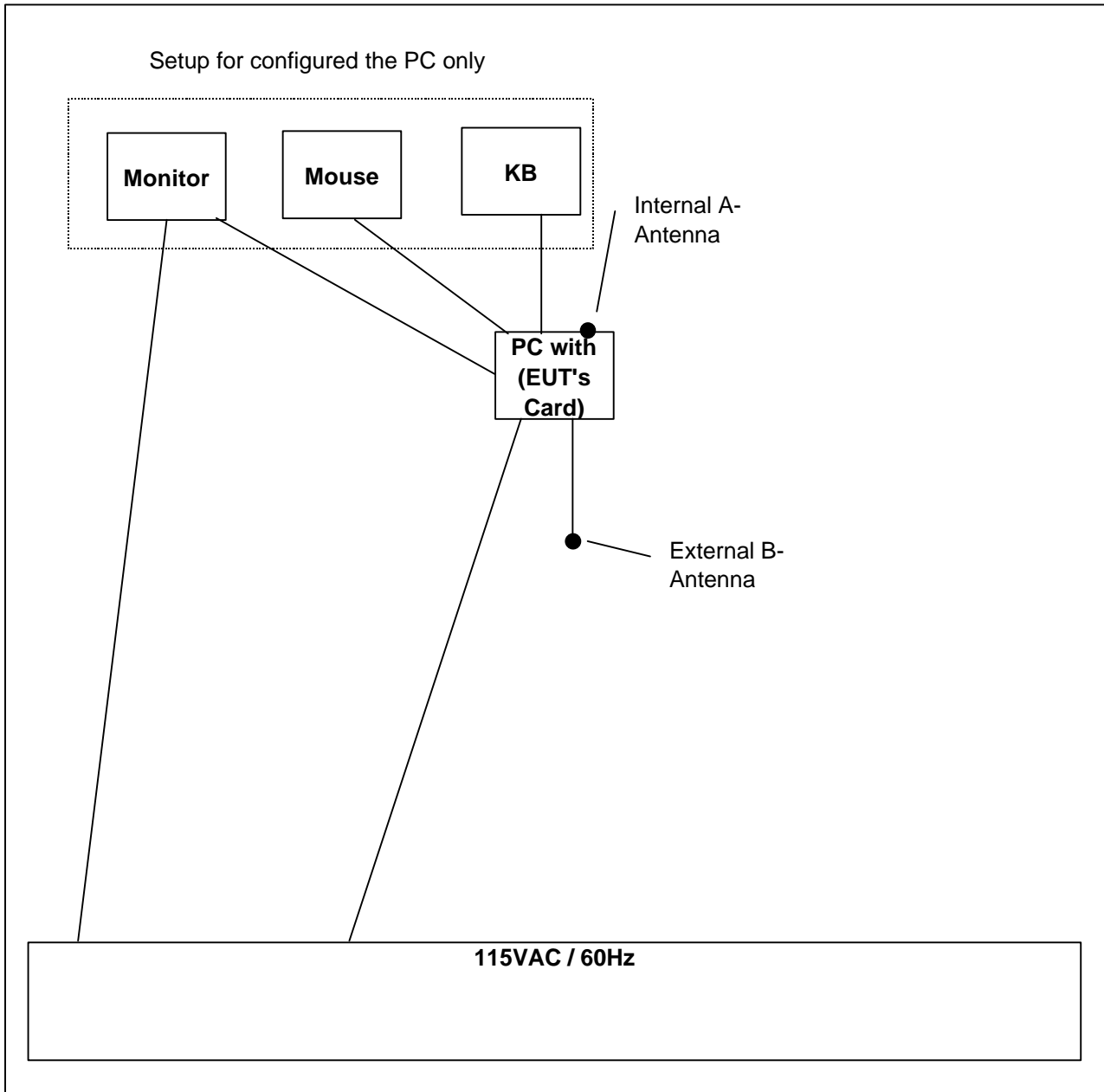
TEST SETUP

The EUT is installed into a PC computer during the test.

SETUP DIAGRAM FOR DIGITAL DEVICE TESTS



SETUP DIAGRAM FOR TRANSMITTER TESTS



7. APPLICABLE RULES

§15.247 (a)- BANDWIDTH

(2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

§15.247 (b)- POWER OUTPUT

The maximum peak output power of the intentional radiator shall not exceed the following:

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

(4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.247 (b)- RADIO FREQUENCY EXPOSURE

(5) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §1.1307(b)(1) of this chapter.

§15.247 (c)- SPURIOUS EMISSIONS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

§15.247 (d)- PEAK POWER SPECTRAL DENSITY

(d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

§15.205- RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.207- CONDUCTED LIMITS

(a) For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 450 kHz to 30 MHz shall not exceed 250 microvolts. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

FCC PART 15.207

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)/QP
450kHz-30MHz	250	48

§15.209- RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges.

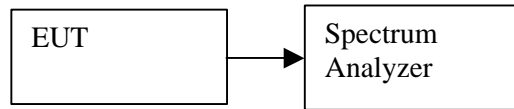
FCC PART 15.209

MEASURING DISTANCE OF 3 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

8. TEST SETUP, PROCEDURE AND RESULT

8.1. 6 dB BANDWIDTH

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection is used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.

RESULTS

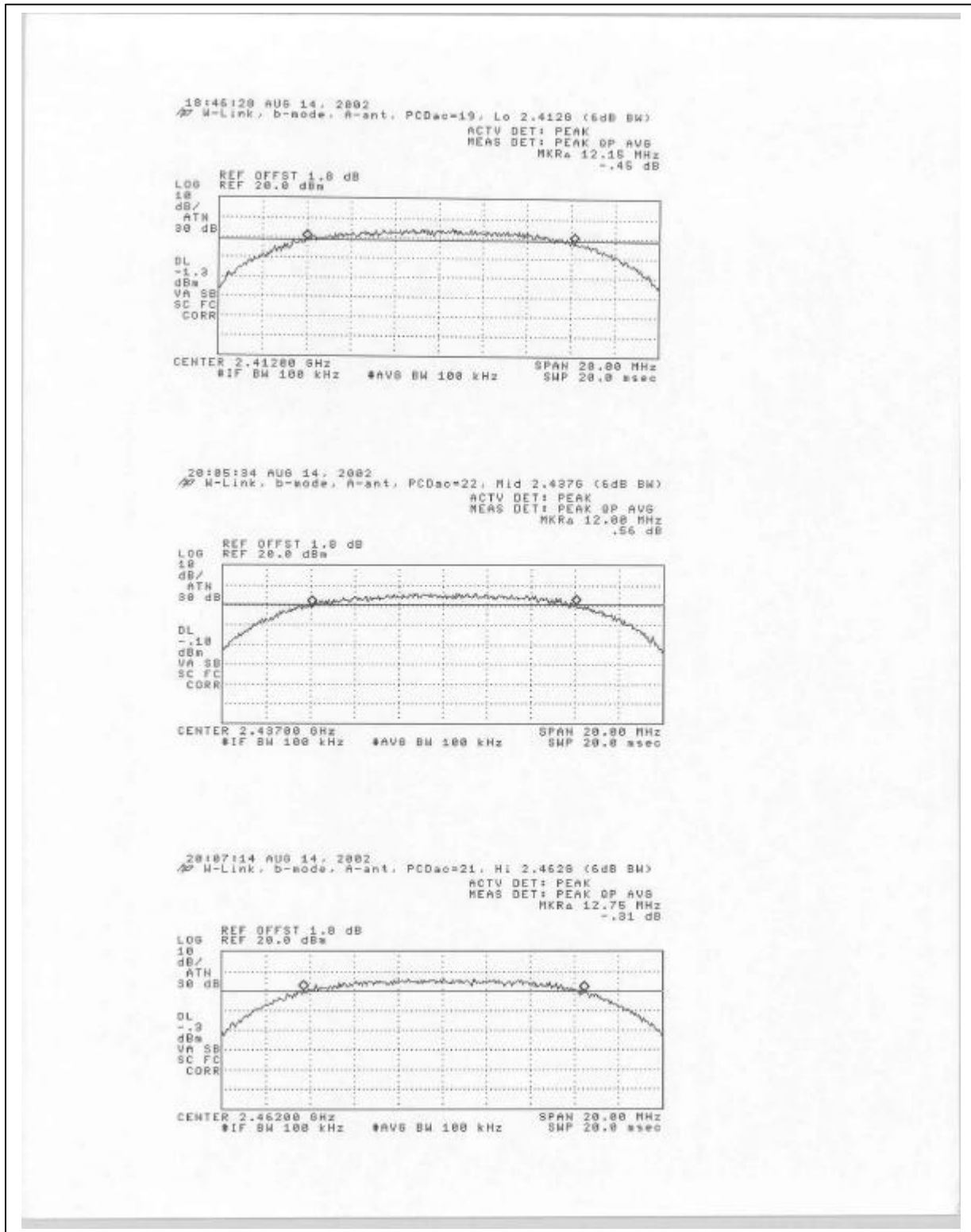
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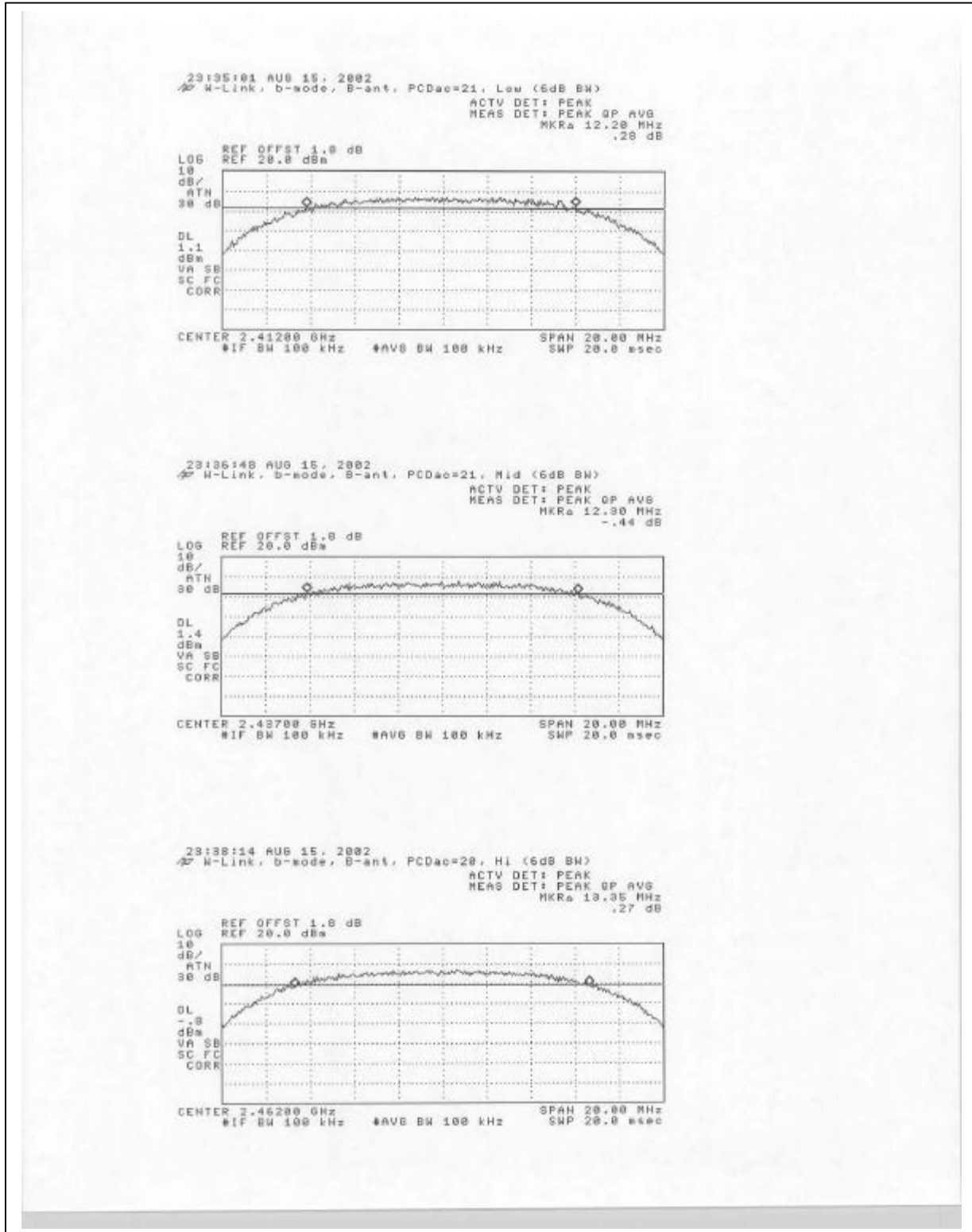
2.4 GHz Band, b-mode, A-antenna port

Channel	Frequency (MHz)	6dB BW (kHz)	Limit (kHz)	Margin (kHz)
Low	2412	12150	500	11650
Middle	2437	12000	500	11500
High	2462	12750	500	12250

2.4 GHz Band, b-mode, B-antenna port

Channel	Frequency (MHz)	6dB BW (kHz)	Limit (kHz)	Margin (kHz)
Low	2412	12200	500	11700
Middle	2437	12300	500	11800
High	2462	13350	500	12850

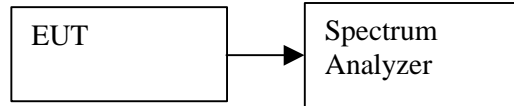




8.2. EMISSION BANDWIDTH

This measurement is used to determine the channel bandwidth for the peak power measurement.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection is used. The emission bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 26 dB.

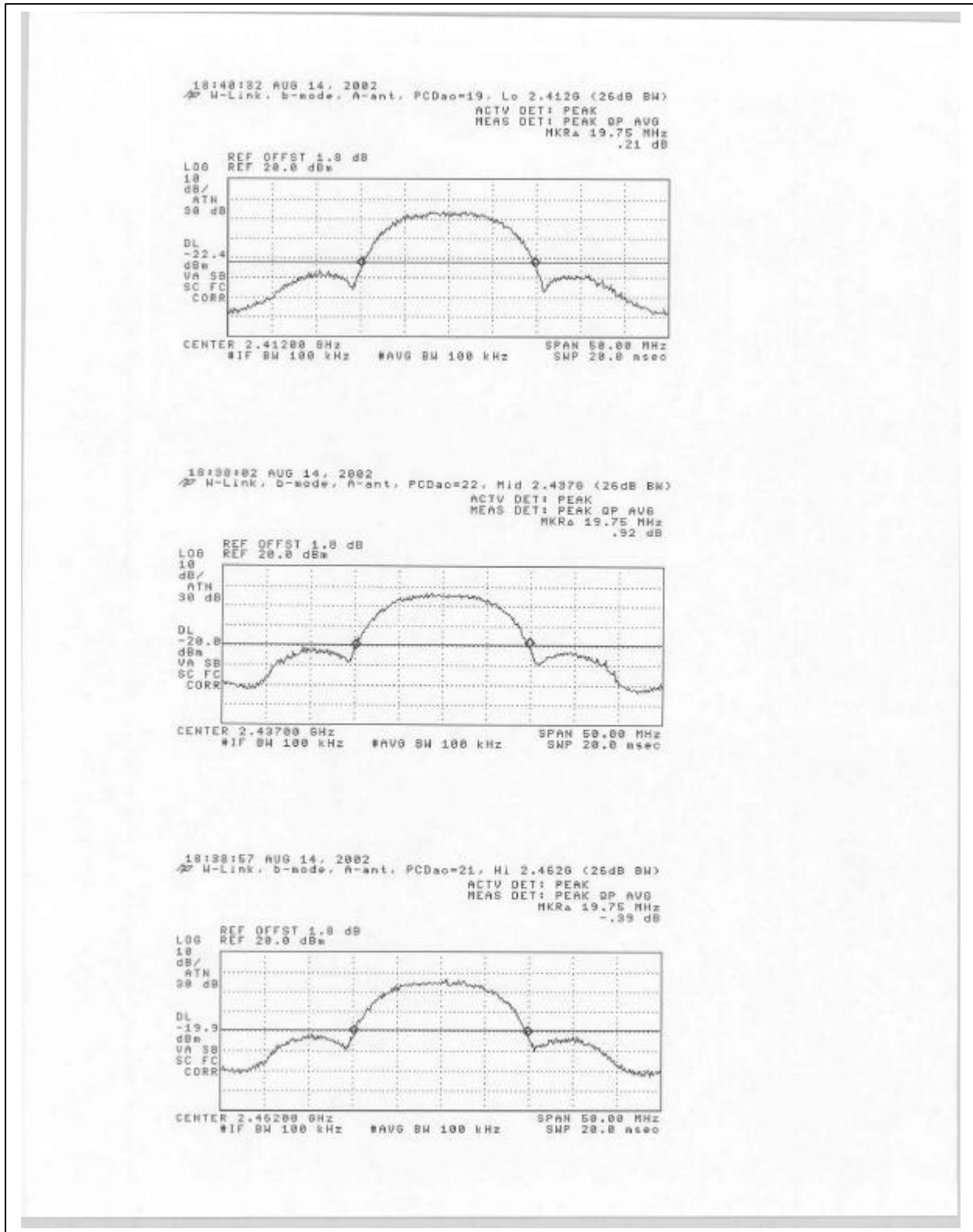
RESULTS

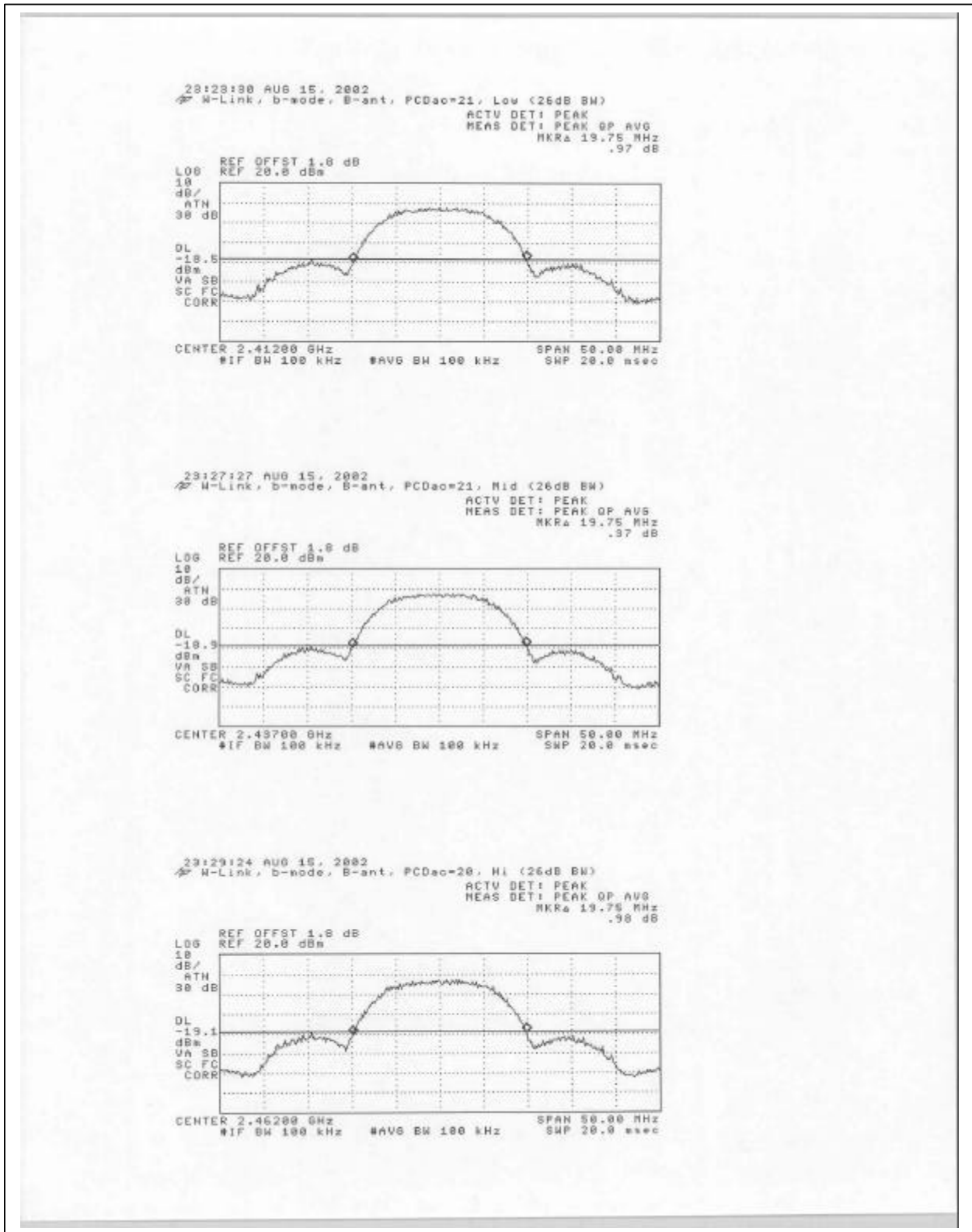
2.4 GHz Band, b-mode, A-antenna port

Channel	Frequency (MHz)	26dB BW (MHz)
Low	2412	19.75
Middle	2437	19.75
High	2462	19.75

2.4 GHz Band, b-mode, B-antenna port

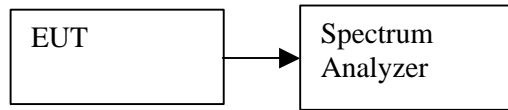
Channel	Frequency (MHz)	26dB BW (MHz)
Low	2412	19.75
Middle	2437	19.75
High	2462	19.75





8.3. PEAK POWER

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW=VBW=1MHz,

Peak detection is used, and the peak power is determined by channel integration over the previously measured emission bandwidth.

RESULTS

No non-compliance noted:

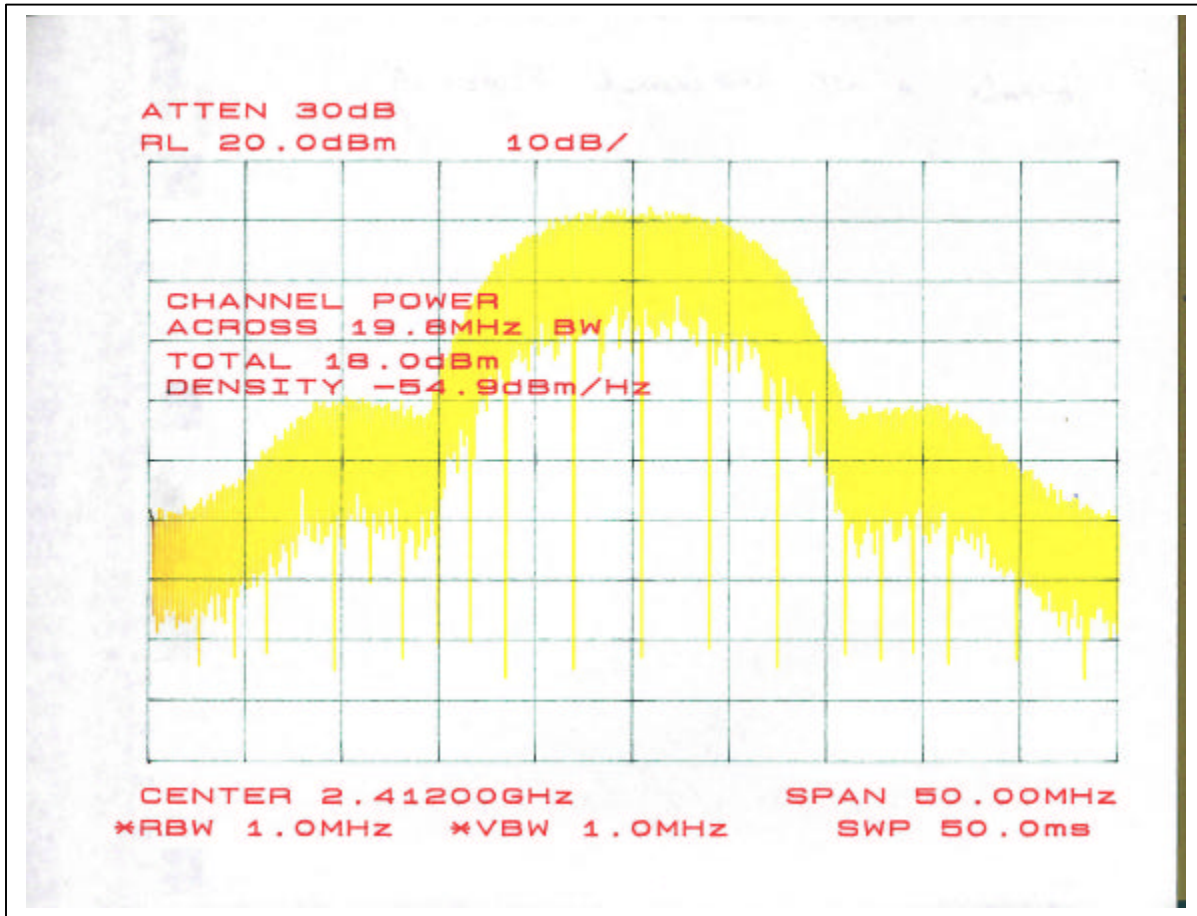
2.4 GHz Band, b-mode, A-antenna port

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin dB
Low	2412	18.0	30	-12.0
Middle	2437	20.9	30	-9.1
High	2462	19.8	30	-10.2

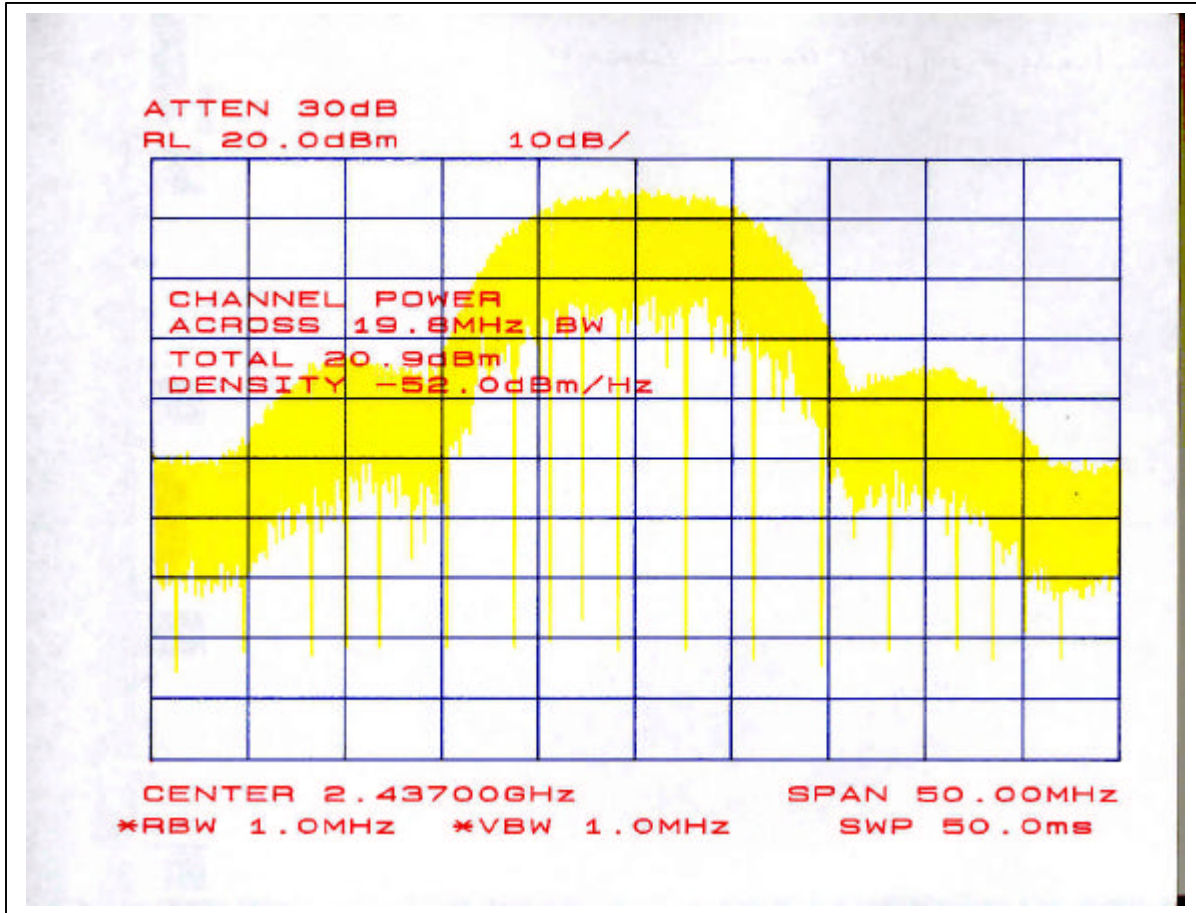
2.4 GHz Band, b-mode, B-antenna port

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin dB
Low	2412	20.8	30	-9.2
Middle	2437	20.9	30	-9.1
High	2462	20.1	30	-9.9

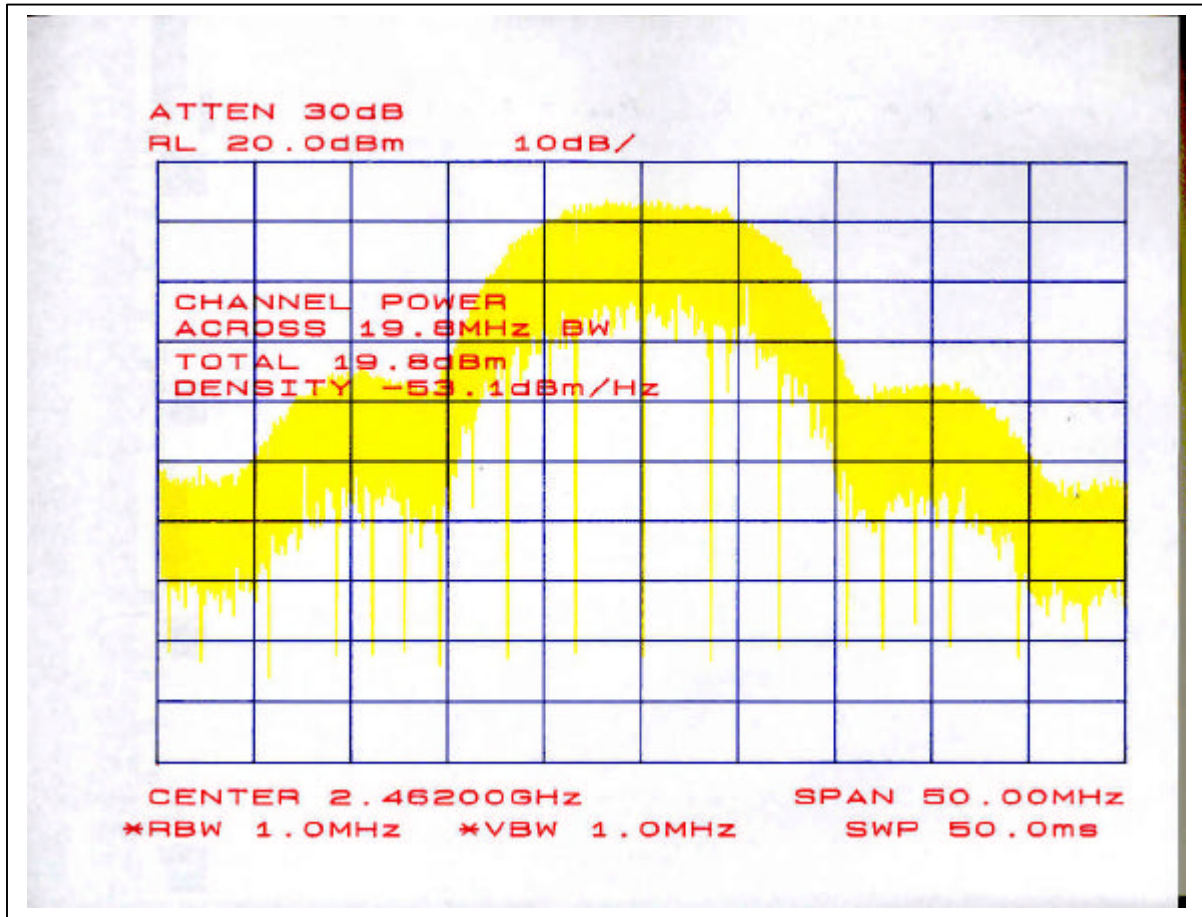
2.4 GHz Band, b-mode, A-antenna port, PCDac=19, Low Channel:



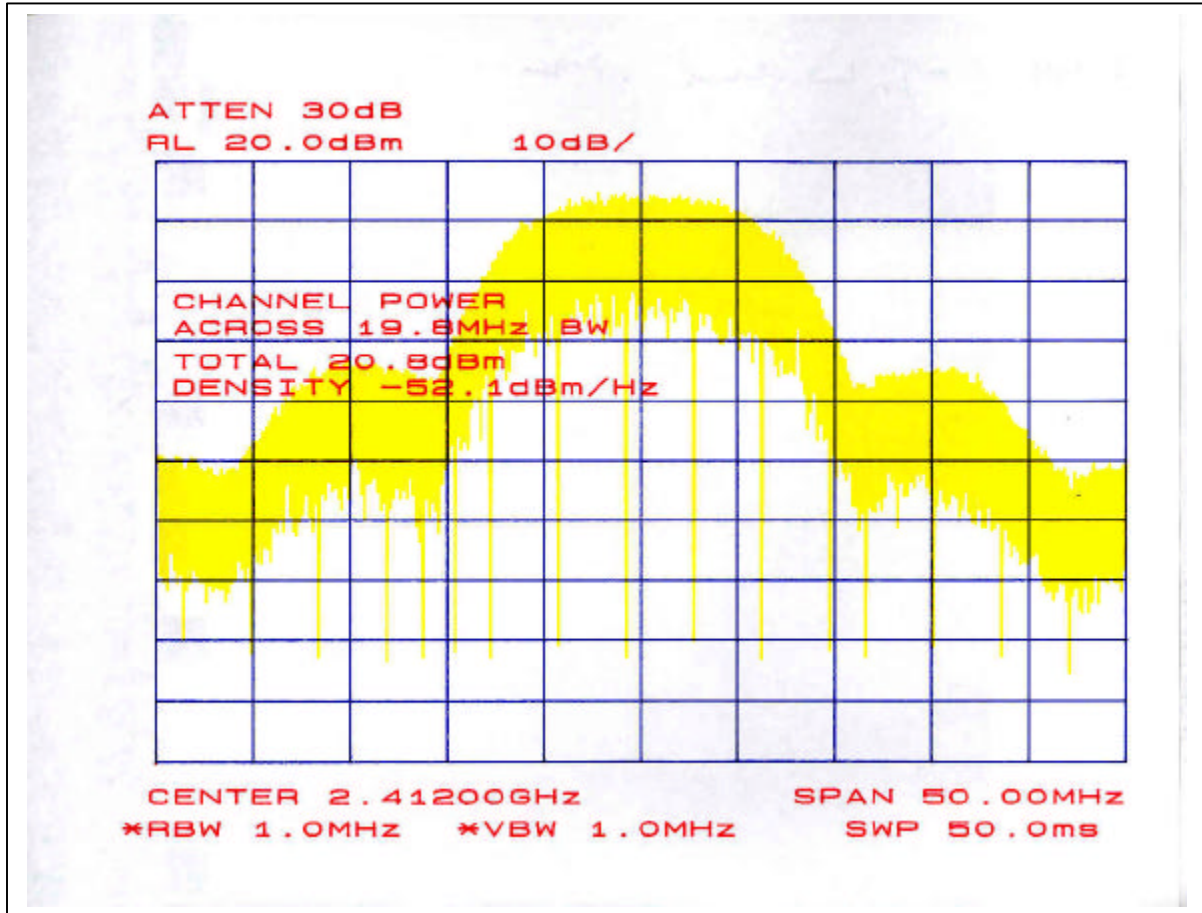
2.4 GHz Band, b-mode, A-antenna port, PCDAc=22, Mid Channel:



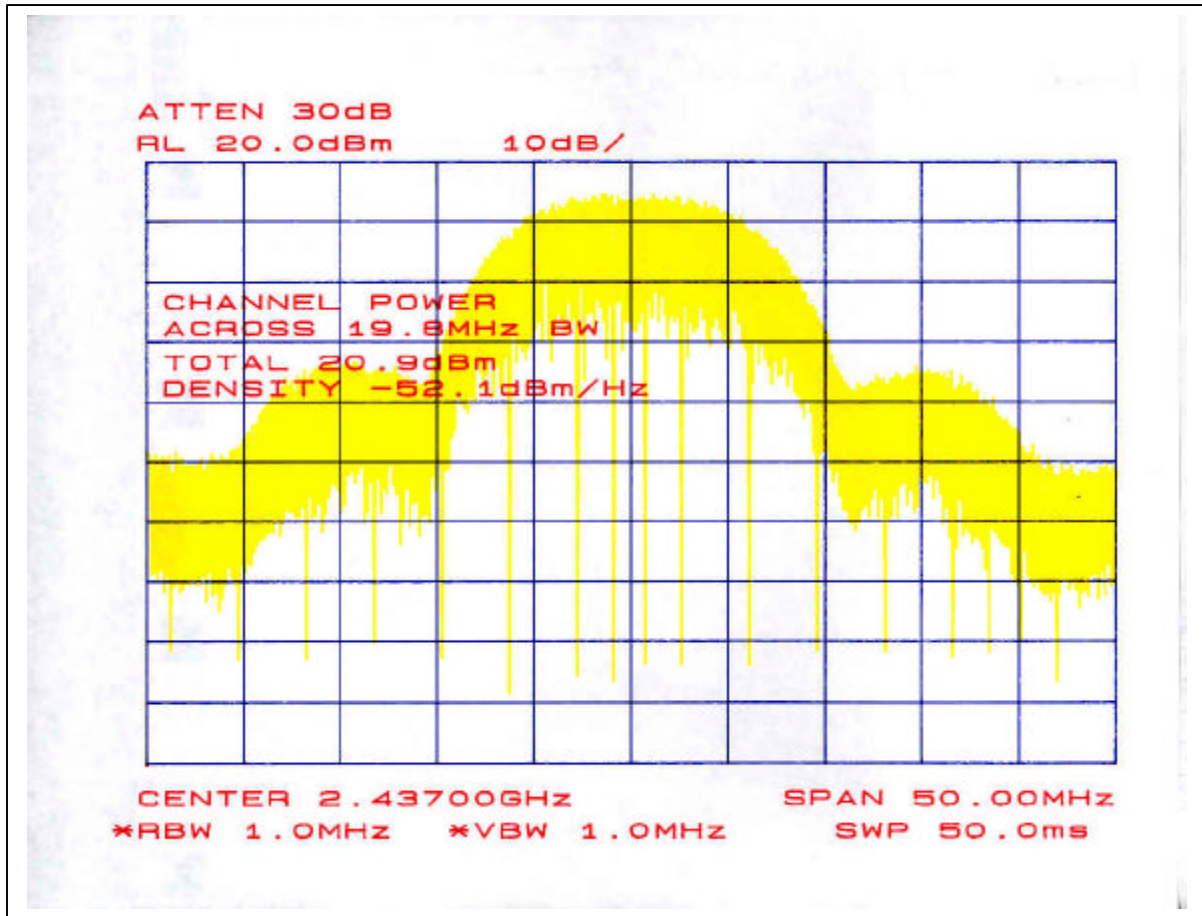
2.4 GHz Band, b-mode, A-antenna port, PCDAc=21, High Channel:



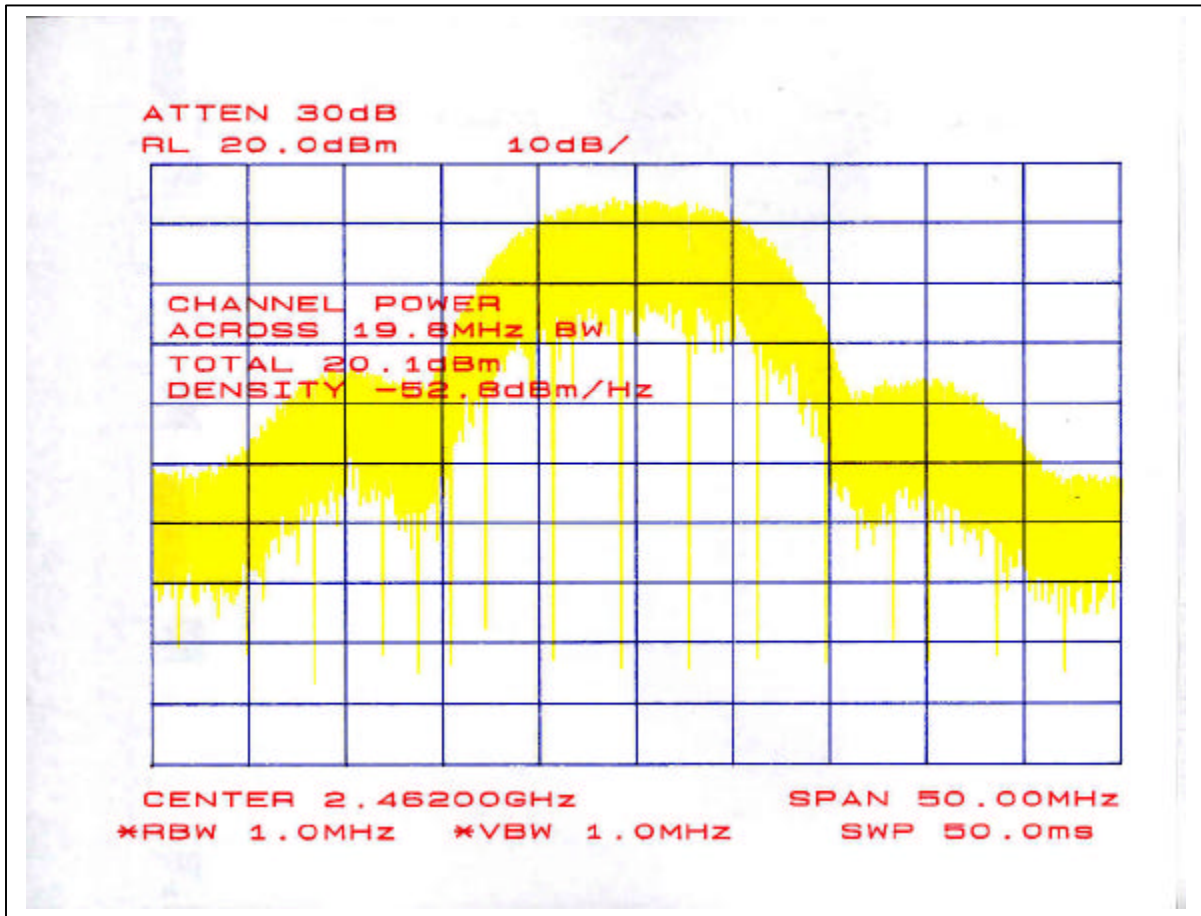
2.4 GHz Band, b-mode, B-antenna port, PCdac=21, Low Channel



2.4 GHz Band, b-mode, B-antenna port, PCdac=21, Mid Channel

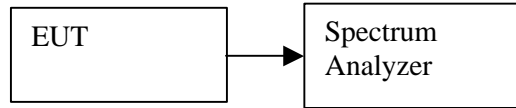


2.4 GHz Band, b-mode, B-antenna port, PC DAC=20, High Channel



8.4. PEAK POWER SPECTRAL DENSITY

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3KHz, VBW < RBW, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

RESULTS

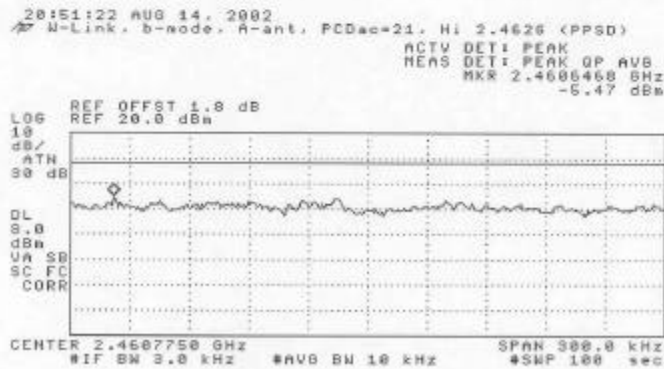
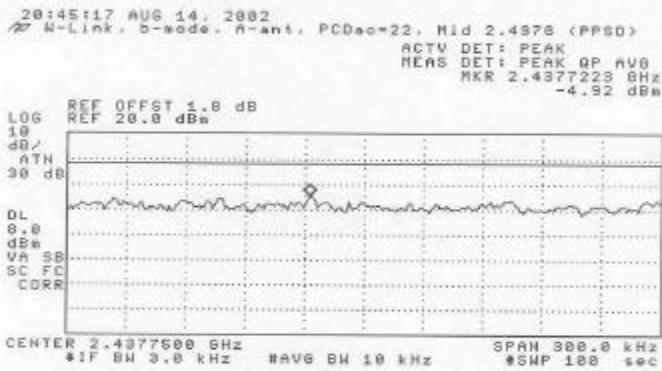
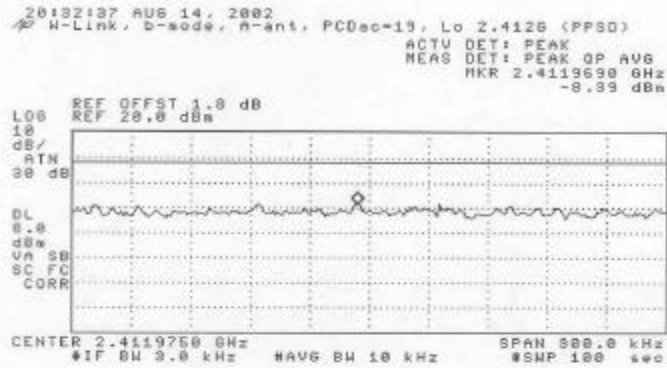
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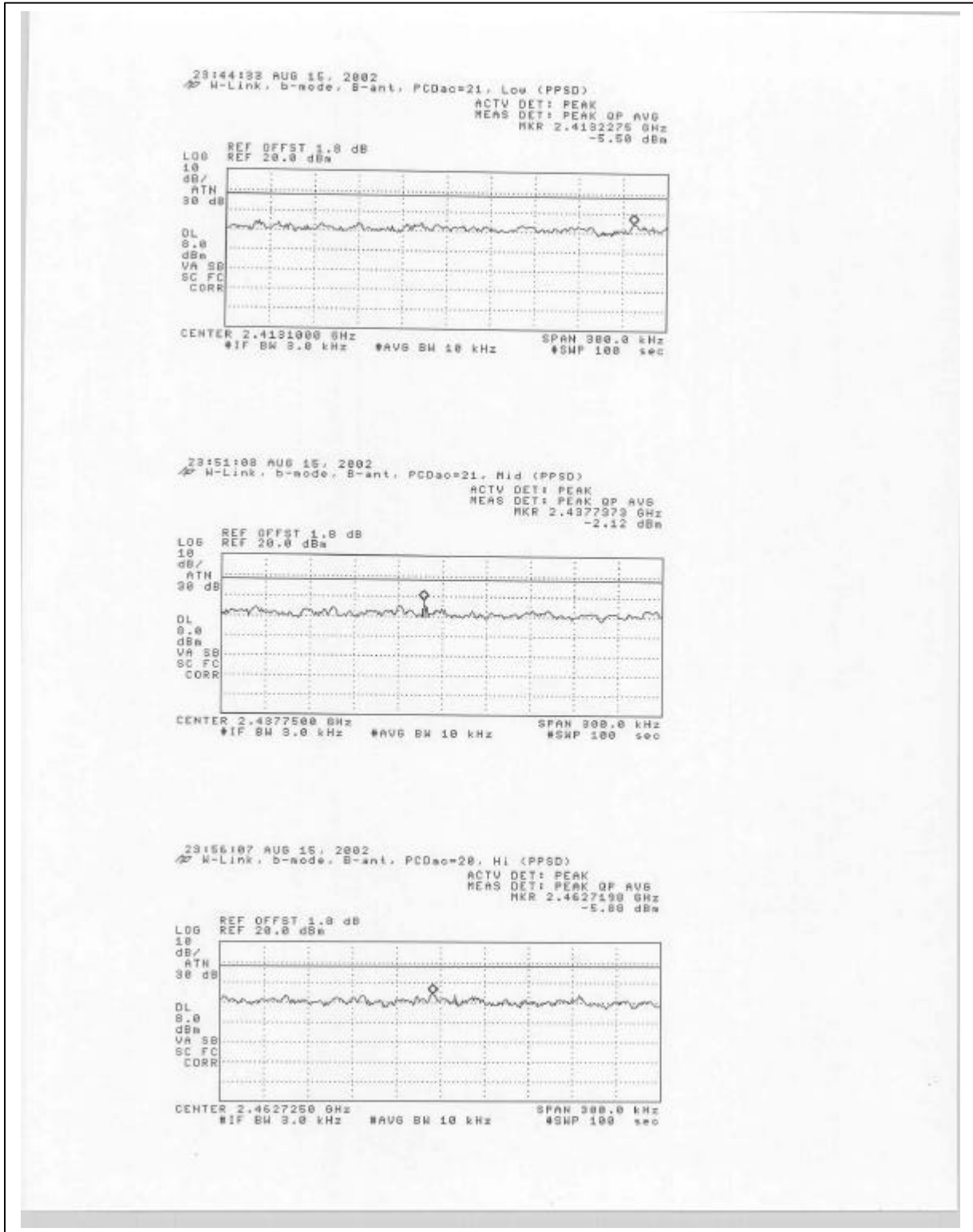
2.4 GHz Band, b-mode, A-antenna port

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin dB
Low	2412	-8.39	8	-16.39
Middle	2437	-4.92	8	-12.92
High	2462	-5.47	8	-13.47

2.4 GHz Band, b-mode, B-antenna port

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin DB
Low	2412	-5.50	8	-13.50
Middle	2437	-2.12	8	-10.12
High	2462	-5.88	8	-13.88





8.5. MAXIMUM PERMISSIBLE EXPOSURE

MPE CALCULATION FOR 3 dBi ANTENNA

Formula used in the MPE Calculations:

$$E^2/3770 = S, \text{ mW/cm}^2$$
$$P_{\text{watts}} * G_{\text{gain}} = 10^{(P_{\text{dBm}} - 30 + G_{\text{dBi}}) / 10}$$
$$E, \text{ V/m} = (P_{\text{watts}} * G_{\text{gain}} * 30)^{.5} / d, \text{ meters}$$
$$d = ((P_{\text{watts}} * G * 30) / 3770 * S)^{.5} \text{ ----- (A)}$$

Since

$$S \text{ (mW/cm}^2\text{)} = 1.00 \quad \text{from 1.1310 Table 1}$$
$$P \text{ (dBm)} = 20.90 \quad \text{EUT output power}$$
$$G \text{ (dBi)} = 3.00 \quad \text{EUT antenna gain}$$

Substitute these parameters into the A above, we have

$$\text{MPE safe distance } d \text{ (cm)} = 4.42$$

NOTE: For mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less

MPE CALCULATION FOR 2.5 dBi ANTENNA

Formula used in the MPE Calculations:

$$E^2/3770 = S, \text{ mW/cm}^2$$
$$P_{\text{watts}} * G_{\text{gain}} = 10^{(P_{\text{dBm}} - 30 + G_{\text{dBi}}) / 10}$$
$$E, \text{ V/m} = (P_{\text{watts}} * G_{\text{gain}} * 30)^{.5} / d, \text{ meters}$$
$$d = ((P_{\text{watts}} * G * 30) / 3770 * S)^{.5} \text{ ----- (A)}$$

Since

$$S \text{ (mW/cm}^2\text{)} = 1.00 \quad \text{from 1.1310 Table 1}$$
$$P \text{ (dBm)} = 20.90 \quad \text{EUT output power}$$
$$G \text{ (dBi)} = 2.50 \quad \text{EUT antenna gain}$$

Substitute these parameters into the A above, we have

$$\text{MPE safe distance } d \text{ (cm)} = 4.17$$

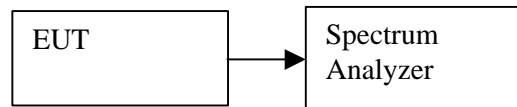
NOTE: For mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less

8.6. SPURIOUS EMISSIONS – CONDUCTED MEASUREMENTS

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit.

Also, conducted RF measurements of the transmitter output over the 30 MHz to 26.5 GHz band were made in order to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

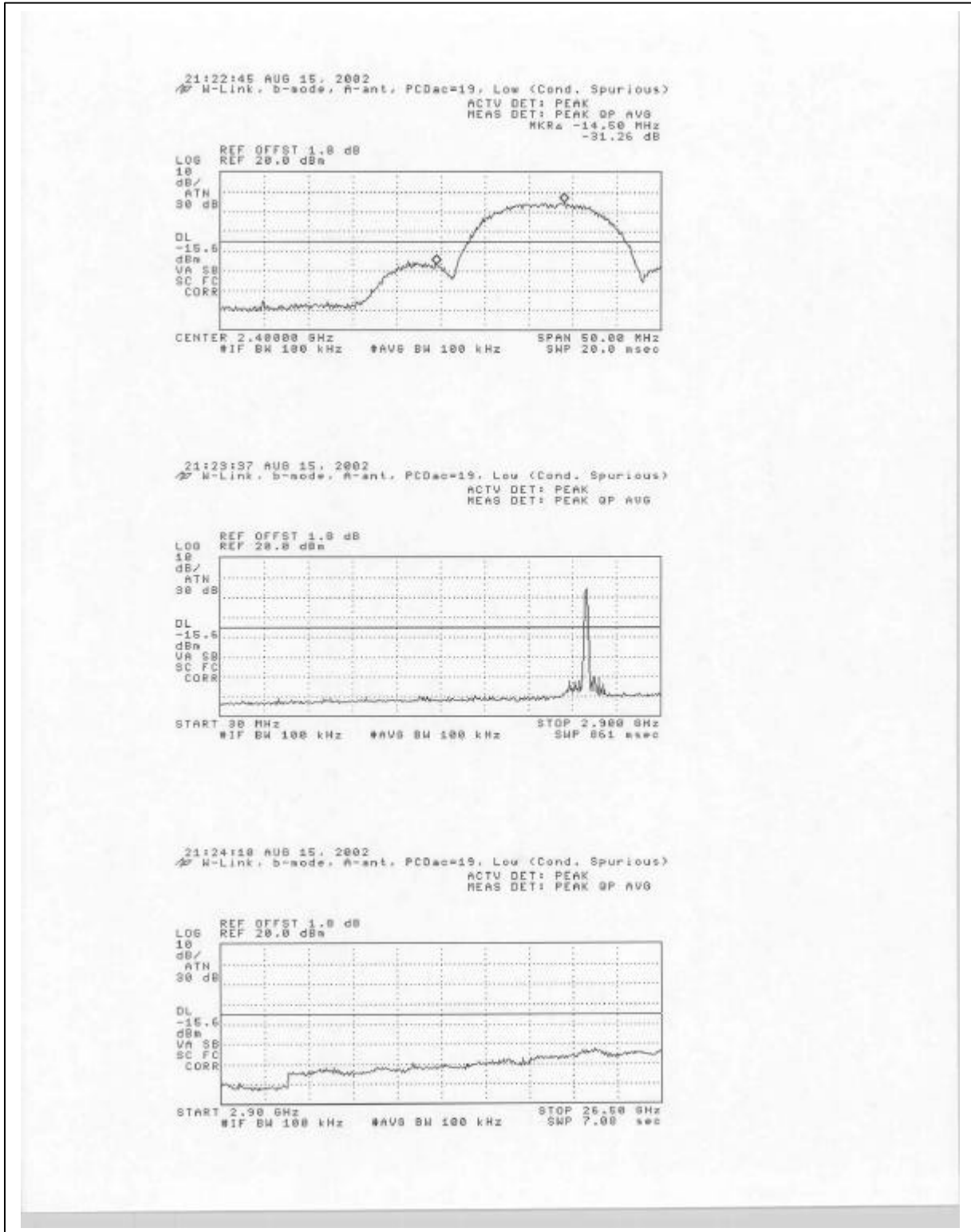
Measurements are made at the lower band edge and the restricted band adjacent to the lower edge of the authorized band, with the transmitter set to the lowest channel.

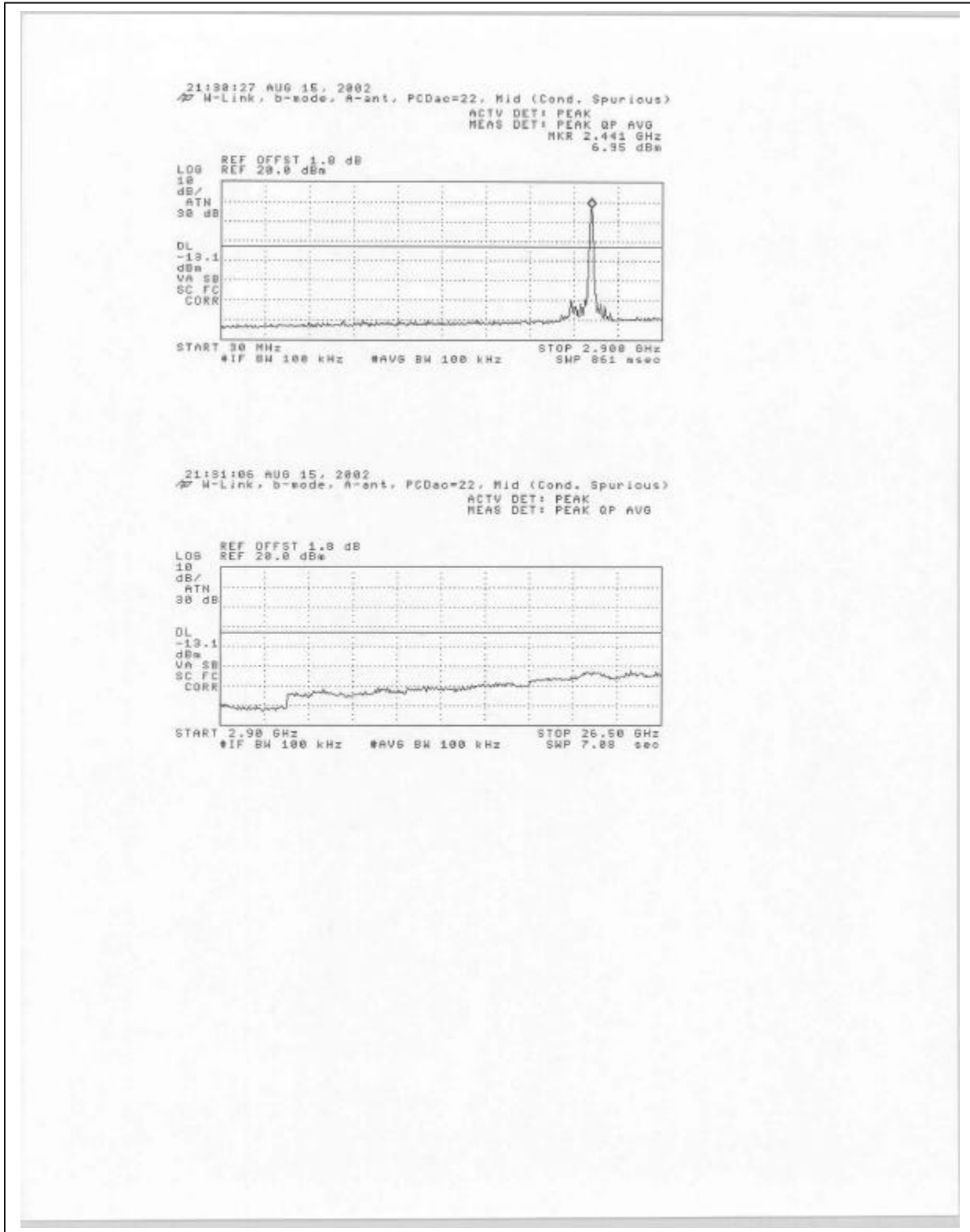
Measurements are made at the upper band edge and the restricted band adjacent to the upper edge of the authorized band, with the transmitter set to the highest channel.

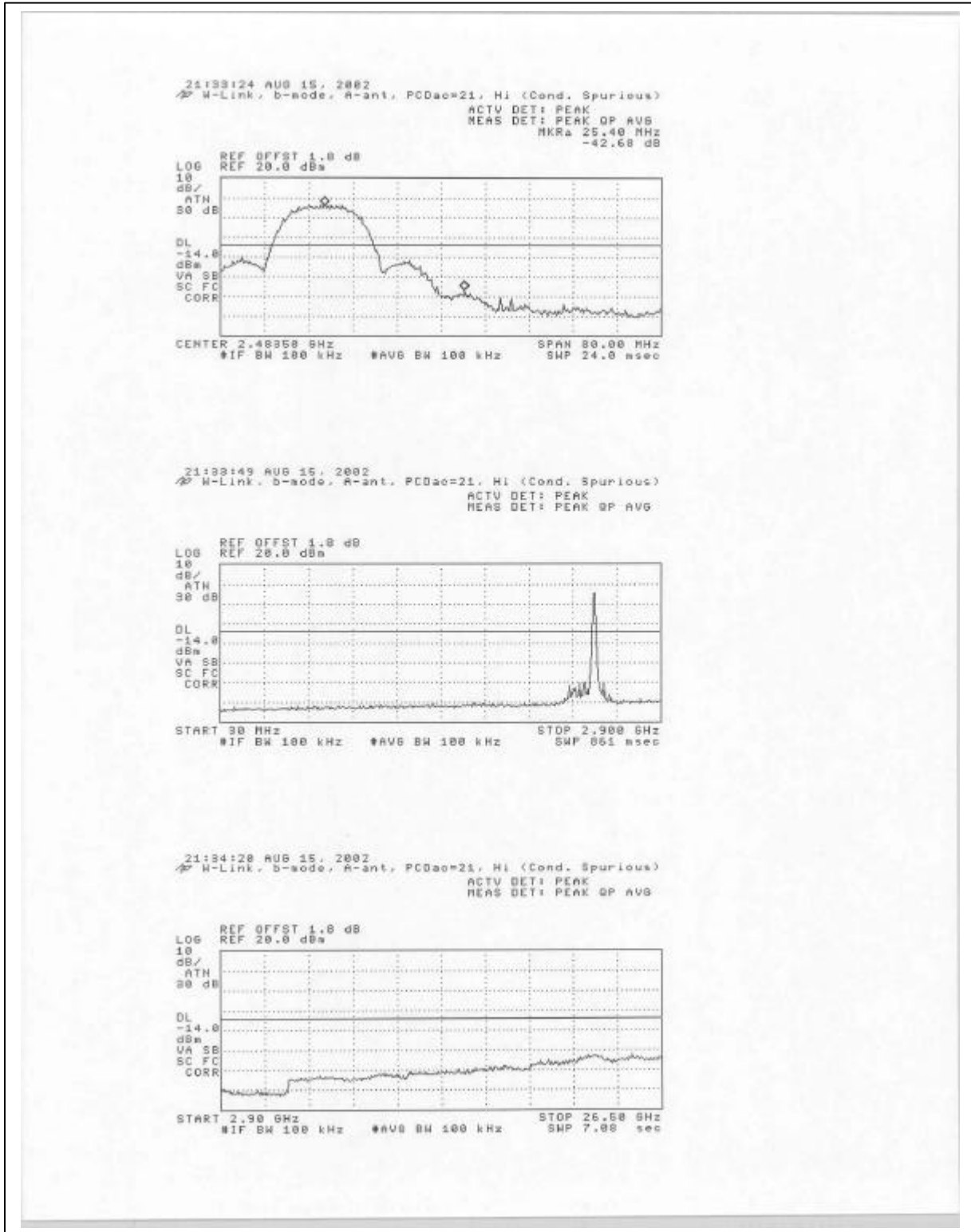
Measurements are made over the 30 MHz to 26.5 GHz range with the transmitter set to the lowest, middle, and highest channels.

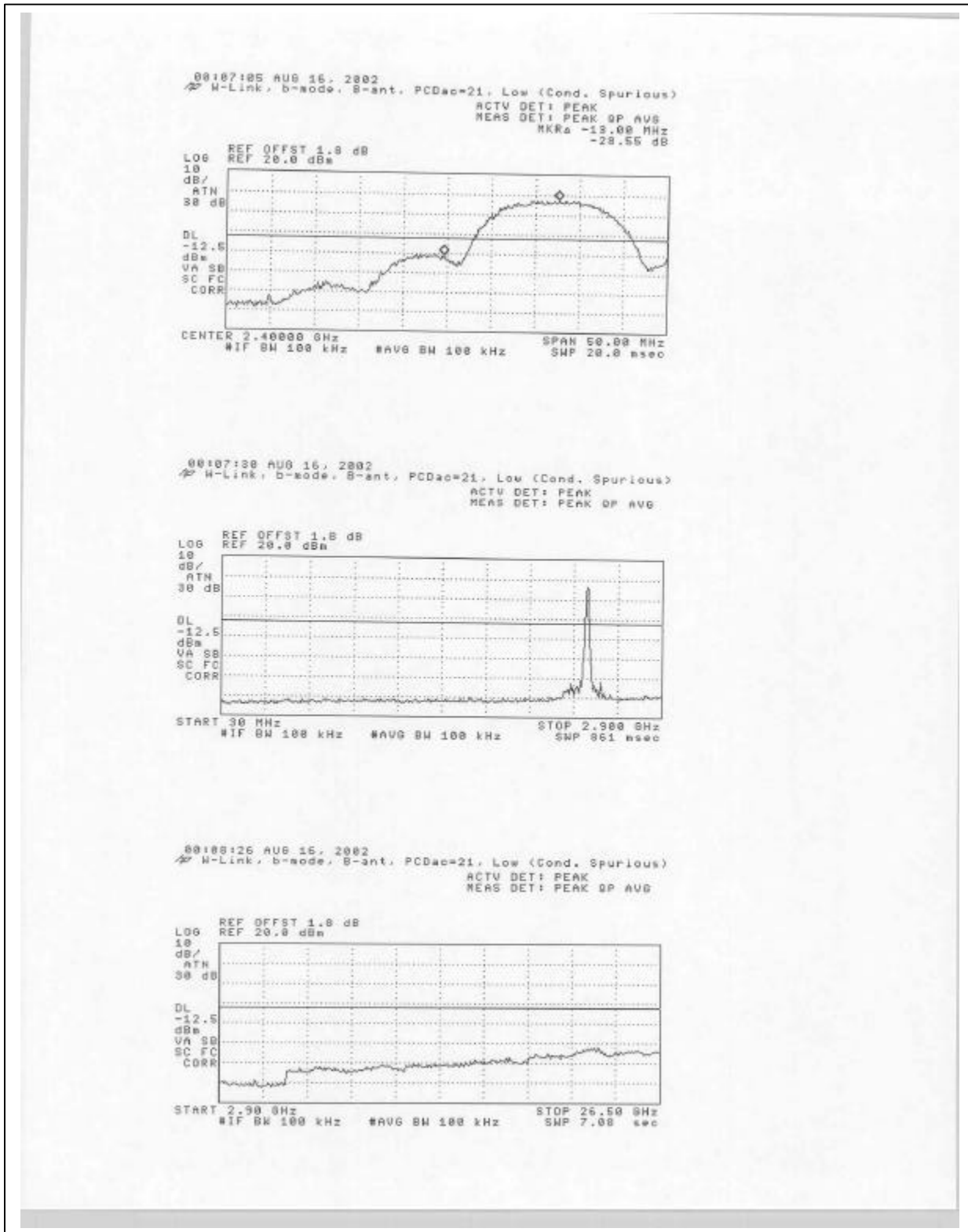
RESULTS

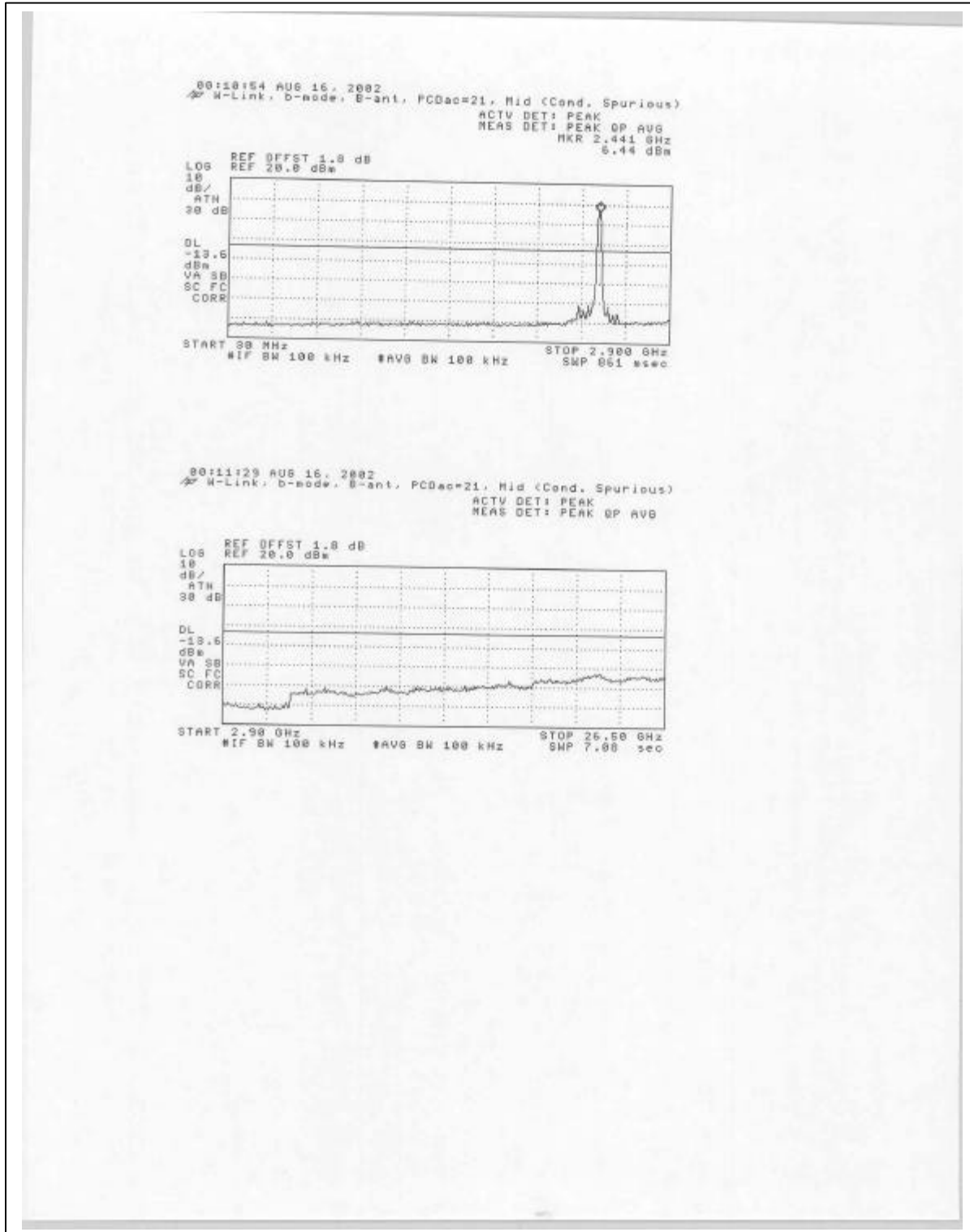
No non-compliance noted:

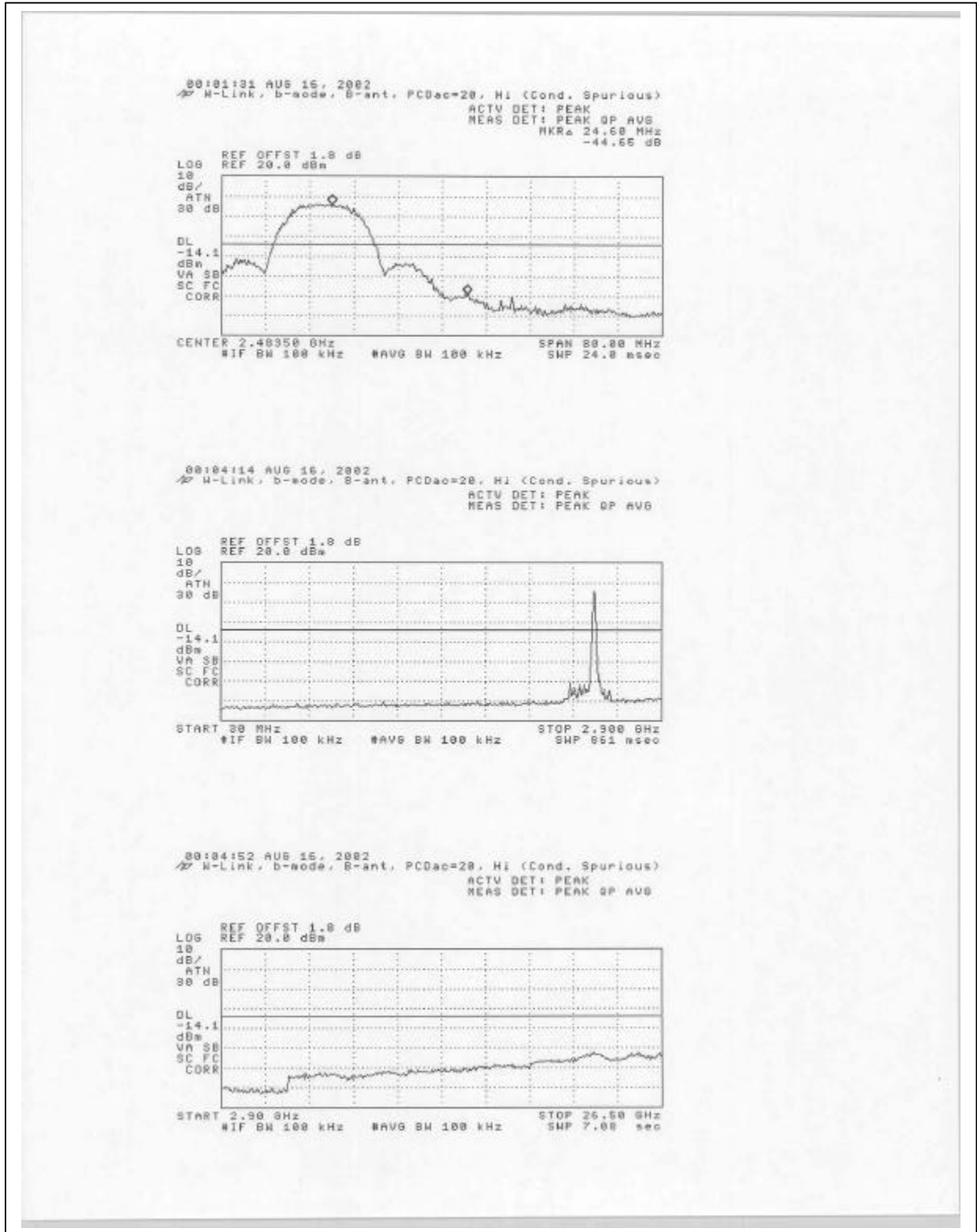












8.7. UNDESIRABLE EMISSIONS – RADIATED MEASUREMENTS

TEST SETUP

For measurements of the EUT as a digital device, the EUT and all other support equipment were placed on a wooden table 80 cm above the ground plane. For measurements of the EUT as a transmitter, the EUT and the laptop were placed on the wooden table. The antenna to EUT distance is 3 meters for measurements below 1 GHz and 1 meter for measurements above 1 GHz. The EUT is configured in accordance with Section 8 of ANSI C63.4/1992.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz outside restricted bands, the resolution bandwidth is set to 100 kHz. Peak detection is used.

For measurements above 1 GHz within restricted bands, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

For operation in the 2.4 GHz band, the spectrum from 30 MHz to 26 GHz is investigated. For operation in the 5.8 GHz band, the spectrum from 30 MHz to 40 GHz is investigated.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The frequency span is set small enough to easily differentiate between broadcast stations, intermittent ambient signals and EUT emissions. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the suspected signal. Measurements were made with the antenna polarized in both the vertical and the horizontal positions.

SYSTEM NOISE FLOOR FOR HARMONIC AND SPURIOUS MEASUREMENTS

Compliance Certification Services

Worst Case Radiated Emissions System Noise Floor

Each band below corresponds to each horn antenna band
 Uses the lowest gain preamplifier; actual preamp used may have higher gain
 Uses the longest typical cable configuration; actual cables used may have less loss
 Noise floor field strength results are compared to the FCC 15.205 Restricted Band limit

Specification Distance: 3 meters

Freq GHz	SA dBuV	AF dB/m	Distance m	Distance dB	Preamp dB	Cable dB	Field dBuV/m	Limit dBuV/m	Margin dB
1 to 18 GHz band									
RBW = 1 MHz, peak detection									
18	41.9	47.8	1	-9.5	32.6	13.5	61.06	74	-12.94
RBW = 1 MHz, average detection									
18	28.7	47.8	1	-9.5	32.6	13.5	47.86	54	-6.14
18 to 26 GHz band									
RBW = 1 MHz, peak detection									
26	44.6	33.4	1	-9.5	35.0	19.5	52.96	74	-21.04
RBW = 1 MHz, average detection									
26	32.4	33.4	1	-9.5	35.0	19.5	40.76	54	-13.24
26 to 40 GHz band									
External mixer is used for this band									
Preamplifier is internal to Spectrum Analyzer, with gain factor built into firmware									
Antenna is mounted directly on external mixer, therefore cable = 0 dB									
RBW = 1 MHz, peak detection									
40	39.2	44.5	0.3	-20.0	0.0	0	63.70	74	-10.30
RBW = 1 MHz, average detection									
40	27.2	44.5	0.3	-20.0	0.0	0	51.70	54	-2.30

TEST RESULTS

No non-compliance noted:

b-mode, PH (Skycross) A-antenna, Low Channel:

08/13/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: PH (Skycross) A-Ant, Low Channel, 2.412GHz, PCdac=19, Xgain=0, 11Mb Rate, b mode

Equipment for 1-22 GHz:

HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:

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

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.412	3.3	77.9		28.9	3.1	0.0	-9.5	0.0	100.4						H (RBW=VBW=100KHz)
2.412	3.3	77.3		28.9	3.1	0.0	-9.5	0.0	99.8						V (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.390	3.3	38.1	28.9	28.9	3.1	0.0	-9.5	0.0	60.5	51.3	74.0	54.0	-13.5	-2.7	V
2.368	3.3	36.4	27.8	28.8	3.1	0.0	-9.5	0.0	58.8	50.2	74.0	54.0	-15.2	-3.8	V
2.390	3.3	39.0	30.6	28.9	3.1	0.0	-9.5	0.0	61.5	53.0	74.0	54.0	-12.5	-1.0	H
2.368	3.3	37.1	29.5	28.8	3.1	0.0	-9.5	0.0	59.5	51.9	74.0	54.0	-14.5	-2.1	H
4.824	3.3	50.0	36.0	33.8	5.7	-36.1	-9.5	1.0	45.0	31.0	74.0	54.0	-29.0	-23.0	H
12.062	3.3	52.0	42.0	39.4	9.5	-36.3	-9.5	1.0	56.1	46.1	74.0	54.0	-17.9	-7.9	H
4.824	3.3	55.2	40.0	33.8	5.7	-36.1	-9.5	1.0	50.2	35.0	74.0	54.0	-23.8	-19.0	V
12.062	3.3	46.0	34.0	39.4	9.5	-36.3	-9.5	1.0	50.1	38.1	74.0	54.0	-23.9	-15.9	V
Spurious & Harmonics outside restricted bands:															
2.304	3.3	35.6		28.7	3.1	0.0	-9.5	0.0	57.8		80.4		-22.6		V
7.237	3.3	54.8		37.0	7.2	-36.3	-9.5	1.0	54.3		80.4		-26.1		V
9.647	3.3	45.0		39.7	8.5	-35.4	-9.5	1.0	49.3		80.4		-31.1		V
6.336	3.3	55.0		35.4	6.8	-36.3	-9.5	1.0	52.4		80.4		-28.0		V
2.304	3.3	35.0		28.7	3.1	0.0	-9.5	0.0	57.2		80.4		-23.2		H
7.237	3.3	51.0		37.0	7.2	-36.3	-9.5	1.0	50.5		80.4		-29.9		H
9.647	3.3	46.0		39.7	8.5	-35.4	-9.5	1.0	50.3		80.4		-30.1		H
9.636	3.3	45.0		39.7	8.5	-35.4	-9.5	1.0	49.3		80.4		-31.1		H
9.658	3.3	45.0		39.7	8.5	-35.4	-9.5	1.0	49.3		80.4		-31.1		H
6.336	3.3	49.0		35.4	6.8	-36.3	-9.5	1.0	46.4		80.4		-34.0		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

b-mode, PH (Skycross) A-antenna, Mid Channel:

08/13/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: PH (Skycross) A-antenna, Mid Channel, 2.437GHz, PCDAc = 22, Xgain=0, 11Mb Rate, b mode

Equipment for 1-22 GHz:

HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:

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

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.437	3.3	80.9		29.0	3.1	0.0	-9.5	0.0	103.5						H (RBW=VBW=100KHz)
2.437	3.3	79.8		29.0	3.1	0.0	-9.5	0.0	102.4						V (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.336	3.3	37.2	26.7	28.7	4.0	0.0	-9.5	0.0	60.4	49.9	74.0	54.0	-13.6	-4.1	V
2.341	3.3	35.8	27.3	28.8	4.1	0.0	-9.5	0.0	59.2	50.7	74.0	54.0	-14.8	-3.3	V
2.368	3.3	38.8	30.0	28.8	4.1	0.0	-9.5	0.0	62.2	53.4	74.0	54.0	-11.8	-0.6	V
4.874	3.3	64.0	49.0	33.9	5.8	-36.1	-9.5	1.0	59.1	44.1	74.0	54.0	-14.9	-9.9	V
7.311	3.3	61.7	52.0	37.2	7.3	-36.3	-9.5	1.0	61.4	51.7	74.0	54.0	-12.6	-2.3	V
12.185	3.3	50.0	38.0	39.3	9.5	-36.4	-9.5	1.0	54.0	42.0	74.0	54.0	-20.0	-12.0	V
2.336	3.3	36.5	26.7	28.7	4.0	0.0	-9.5	0.0	59.7	49.9	74.0	54.0	-14.3	-4.1	H
2.341	3.3	35.5	26.0	28.8	4.1	0.0	-9.5	0.0	58.9	49.4	74.0	54.0	-15.1	-4.6	H
2.368	3.3	37.5	29.0	28.8	4.1	0.0	-9.5	0.0	60.9	52.4	74.0	54.0	-13.1	-1.6	H
4.874	3.3	60.8	47.0	33.9	5.8	-36.1	-9.5	1.0	55.9	42.1	74.0	54.0	-18.1	-11.9	H
7.311	3.3	60.0	49.0	37.2	7.3	-36.3	-9.5	1.0	59.7	48.7	74.0	54.0	-14.3	-5.3	H
12.185	3.3	49.0	36.0	39.3	9.5	-36.4	-9.5	1.0	53.0	40.0	74.0	54.0	-21.0	-14.0	H
Spurious & Harmonics outside restricted bands:															
2.022	3.3	39.0		28.0	3.9	0.0	-9.5	0.0	61.5		83.5		-22.0		V
2.538	3.3	32.0		29.2	3.9	0.0	-9.5	0.0	55.7		83.5		-27.8		V
9.748	3.3	51.0		39.8	8.6	-35.5	-9.5	1.0	55.5		83.5		-28.0		V
14.622	3.3	51.0		41.3	10.9	-38.2	-9.5	1.0	56.5		83.5		-26.9		V
6.336	3.3	53.0		35.4	6.8	-36.3	-9.5	1.0	50.4		83.5		-33.1		V
9.737	3.3	48.0		39.8	8.6	-35.5	-9.5	1.0	52.4		83.5		-31.0		V
9.759	3.3	49.0		39.9	8.6	-35.5	-9.5	1.0	53.5		83.5		-30.0		V
2.304	3.3	37.3		28.7	3.9	0.0	-9.5	0.0	60.4		83.5		-23.1		H
2.528	3.3	34.3		29.2	3.9	0.0	-9.5	0.0	57.9		83.5		-25.5		H
2.556	3.3	32.5		29.3	3.9	0.0	-9.5	0.0	56.2		83.5		-27.2		H
9.748	3.3	53.5		39.8	8.6	-35.5	-9.5	1.0	58.0		83.5		-25.5		H
14.622	3.3	50.5		41.3	10.9	-38.2	-9.5	1.0	56.0		83.5		-27.4		H
6.336	3.3	52.0		35.4	6.8	-36.3	-9.5	1.0	49.4		83.5		-34.1		H
9.737	3.3	49.0		39.8	8.6	-35.5	-9.5	1.0	53.4		83.5		-30.0		H
9.759	3.3	50.0		39.9	8.6	-35.5	-9.5	1.0	54.5		83.5		-29.0		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

b-mode, PH (Skycross) A-antenna, High Channel:

08/13/02 FCC Measurement																
Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr: Thu Chan																
Project #: 02U1466-1																
Company: W-Link Systems, Inc.																
EUT Descrip.: 802.11 b/g Band PCI Adapter																
EUT M/N: PC22																
Test Target: FCC 15.247																
Mode Oper: PH (Skycross) A-Antenna, High Channel, 2.462GHz, PCDAc=21, Xgain=0, 11Mb Rate, b mode																
Equipment for 1-22 GHz:								Equipment for 22 - 58 GHz:								
HP8566B Analyzer								HP8566B Analyzer								
Miteq NSP2600-44 Preamp								HP 11975A Amplifier (LO)								
EMCO 3115 Antenna								HP 11970K External mixer/antenna								
Cable: 15.0 feet								Cable: IF Only (321 MHz)								
Peak Measurements:								Average Measurements:								
1 MHz Resolution Bandwidth								1MHz Resolution Bandwidth								
1MHz Video Bandwidth								10Hz Video Bandwidth								
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes	
Fundamental:																
2.462	3.3	80.2		29.0	3.1	0.0	-9.5	0.0	102.8						H (RBW=VBW=100KHz)	
2.462	3.3	78.2		29.0	3.1	0.0	-9.5	0.0	100.8						V (RBW=VBW=100KHz)	
Spurious & Harmonics within restricted bands:																
2.484	3.3	38.7	27.2	29.1	3.1	0.0	-9.5	0.0	61.4	49.9	74.0	54.0	-12.6	-4.1	V	
2.496	3.3	34.9	27.2	29.1	3.1	0.0	-9.5	0.0	57.6	49.9	74.0	54.0	-16.4	-4.1	V	
2.484	3.3	40.5	29.1	29.1	3.1	0.0	-9.5	0.0	63.2	51.8	74.0	54.0	-10.8	-2.2	H	
2.496	3.3	37.2	29.9	29.1	3.1	0.0	-9.5	0.0	59.9	52.6	74.0	54.0	-14.1	-1.4	H	
2.368	3.3	37.4	30.0	28.8	3.1	0.0	-9.5	0.0	59.8	52.4	74.0	54.0	-14.2	-1.6	V	
4.924	3.3	57.0	40.5	34.1	5.8	-36.1	-9.5	1.0	52.3	35.8	74.0	54.0	-21.7	-18.2	V	
7.386	3.3	60.8	50.4	37.3	7.3	-36.2	-9.5	1.0	60.7	50.4	74.0	54.0	-13.3	-3.6	V	
12.310	3.3	47.9	34.2	39.2	9.6	-36.4	-9.5	1.0	51.8	38.1	74.0	54.0	-22.2	-15.9	V	
2.334	3.3	37.0	27.0	28.7	3.1	0.0	-9.5	0.0	59.4	49.4	74.0	54.0	-14.6	-4.6	H	
2.368	3.3	38.0	30.8	28.8	3.1	0.0	-9.5	0.0	60.5	53.2	74.0	54.0	-13.5	-0.8	H	
4.924	3.3	55.0	39.0	34.1	5.8	-36.1	-9.5	1.0	50.3	34.3	74.0	54.0	-23.7	-19.7	H	
7.386	3.3	61.0	51.0	37.3	7.3	-36.2	-9.5	1.0	61.0	51.0	74.0	54.0	-13.0	-3.0	H	
12.310	3.3	49.0	37.0	39.2	9.6	-36.4	-9.5	1.0	52.9	40.9	74.0	54.0	-21.1	-13.1	H	
Spurious & Harmonics outside restricted bands:																
2.303	3.3	33.0		28.7	3.1	0.0	-9.5	0.0	55.3		82.8		-27.5		V	
9.848	3.3	54.4		40.0	8.6	-35.5	-9.5	1.0	59.0		82.8		-23.8		V	
14.772	3.3	49.0		40.9	11.0	-38.3	-9.5	1.0	54.0		82.8		-28.8		V	
6.336	3.3	49.0		35.4	6.8	-36.3	-9.5	1.0	46.4		82.8		-36.5		V	
2.303	3.3	38.0		28.7	3.1	0.0	-9.5	0.0	60.3		82.8		-22.5		H	
2.560	3.3	33.2		29.3	3.1	0.0	-9.5	0.0	56.1		82.8		-26.7		H	
9.848	3.3	55.0		40.0	8.6	-35.5	-9.5	1.0	59.6		82.8		-23.2		H	
6.336	3.3	53.0		35.4	6.8	-36.3	-9.5	1.0	50.4		82.8		-32.5		H	
* No other emissions were found within 20dB under the limits up to 25GHz.																
f	Measurement Frequency					Amp	Preamp Gain			Avg Lim	Average Field Strength Limit					
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit					
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit					
AF	Antenna Factor					Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit					
CL	Cable Loss					HPF	High Pass Filter									

b-mode, Joymax B-antenna, Low Channel:

08/13/02 **FCC Measurement**
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: Joymax B-Ant, Low Channel, 2.412GHz, PCDec=21, Xgain=0, 11Mb Rate, b mode

Equipment for 1-22 GHz:
 HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:
 HP8566B Analyzer
 HP 11975A Amplifier (LO)
 HP 11970K External mixer/antenna
 Cable: IF Only (321 MHz)

Peak Measurements:
 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:
 1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.412	3.3	76.3		28.9	3.1	0.0	-9.5	0.0	98.8						V (RBW=VBW=100KHz)
2.412	3.3	72.5		28.9	3.1	0.0	-9.5	0.0	95.0						H (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.390	3.3	39.5	27.7	28.9	3.1	0.0	-9.5	0.0	61.9	50.1	74.0	54.0	-12.1	-3.9	V
2.387	3.3	39.0	28.6	28.9	3.1	0.0	-9.5	0.0	61.4	51.0	74.0	54.0	-12.6	-3.0	V
2.368	3.3	35.0	23.2	28.8	3.1	0.0	-9.5	0.0	57.4	45.6	74.0	54.0	-16.6	-8.4	V
2.390	3.3	37.0	25.2	28.9	3.1	0.0	-9.5	0.0	59.4	47.6	74.0	54.0	-14.6	-6.4	H
2.387	3.3	37.0	26.2	28.9	3.1	0.0	-9.5	0.0	59.4	48.7	74.0	54.0	-14.6	-5.3	H
2.368	3.3	33.7	22.0	28.8	3.1	0.0	-9.5	0.0	56.1	44.4	74.0	54.0	-17.9	-9.6	H
Spurious & Harmonics outside restricted bands:															
2.336	3.3	34.0	26.0	28.7	3.1	0.0	-9.5	0.0	56.3	48.3	74.0	54.0	-17.7	-5.7	H
2.284	3.3	32.0	23.5	28.6	3.1	0.0	-9.5	0.0	54.2	45.7	74.0	54.0	-19.8	-8.3	H
4.824	3.3	56.1	42.0	33.8	5.7	-36.1	-9.5	1.0	51.1	37.0	74.0	54.0	-22.9	-17.0	H
12.062	3.3	47.0	35.0	39.4	9.5	-36.3	-9.5	1.0	51.1	39.1	74.0	54.0	-22.9	-14.9	H
2.336	3.3	36.0	29.3	28.7	3.1	0.0	-9.5	0.0	58.3	51.6	74.0	54.0	-15.7	-2.4	V
2.288	3.3	34.7	22.0	28.6	3.1	0.0	-9.5	0.0	56.9	44.2	74.0	54.0	-17.1	-9.8	V
4.824	3.3	58.8	43.5	33.8	5.7	-36.1	-9.5	1.0	53.8	38.5	74.0	54.0	-20.2	-15.5	V
12.062	3.3	49.9	39.0	39.4	9.5	-36.3	-9.5	1.0	54.1	43.1	74.0	54.0	-19.9	-10.9	V
Spurious & Harmonics outside restricted bands:															
2.304	3.3	34.7		28.7	3.1	0.0	-9.5	0.0	56.9		78.8		-21.9		V
7.237	3.3	59.2		37.0	7.2	-36.3	-9.5	1.0	58.7		78.8		-20.1		V
9.647	3.3	48.1		39.7	8.5	-35.4	-9.5	1.0	52.4		78.8		-26.4		V
6.336	3.3	54.0		35.4	6.8	-36.3	-9.5	1.0	51.4		78.8		-27.4		V
2.304	3.3	33.3		28.7	3.1	0.0	-9.5	0.0	55.5		78.8		-23.3		H
7.237	3.3	56.5		37.0	7.2	-36.3	-9.5	1.0	56.0		78.8		-22.8		H
9.647	3.3	51.0		39.7	8.5	-35.4	-9.5	1.0	55.3		78.8		-23.5		H
9.636	3.3	46.2		39.7	8.5	-35.4	-9.5	1.0	50.5		78.8		-28.3		H
9.658	3.3	47.0		39.7	8.5	-35.4	-9.5	1.0	51.3		78.8		-27.5		H
6.336	3.3	53.0		35.4	6.8	-36.3	-9.5	1.0	50.4		78.8		-28.4		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

b-mode, Joymax B-antenna, Mid Channel:

08/13/02 **FCC Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: Joy Max B-antenna, Mid Channel, 2.437GHz, PCDAc = 21, Xgain=0, 11Mb Rate, b mode

Equipment for 1-22 GHz:

HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:

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

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.437	3.3	77.9		29.0	3.1	0.0	-9.5	0.0	100.4						V (RBW=VBW=100KHz)
2.437	3.3	73.6		29.0	3.1	0.0	-9.5	0.0	96.2						H (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.368	3.3	37.0	26.0	28.8	3.1	0.0	-9.5	0.0	59.4	48.4	74.0	54.0	-14.6	-5.6	V
4.874	3.3	58.5	44.0	33.9	5.8	-36.1	-9.5	1.0	53.7	39.1	74.0	54.0	-20.3	-14.9	V
7.311	3.3	58.5	49.5	37.2	7.3	-36.3	-9.5	1.0	58.2	49.2	74.0	54.0	-15.8	-4.8	V
12.185	3.3	49.0	37.0	39.3	9.5	-36.4	-9.5	1.0	53.0	41.0	74.0	54.0	-21.0	-13.0	V
2.368	3.3	30.0	20.0	28.8	3.1	0.0	-9.5	0.0	52.4	42.4	74.0	54.0	-21.6	-11.6	H
4.874	3.3	59.0	46.0	33.9	5.8	-36.1	-9.5	1.0	54.1	41.1	74.0	54.0	-19.9	-12.9	H
7.311	3.3	58.1	49.0	37.2	7.3	-36.3	-9.5	1.0	57.8	48.7	74.0	54.0	-16.2	-5.3	H
12.185	3.3	49.0	36.0	39.3	9.5	-36.4	-9.5	1.0	53.0	40.0	74.0	54.0	-21.0	-14.0	H
Spurious & Harmonics outside restricted bands:															
2.303	3.3	36.0		28.7	3.1	0.0	-9.5	0.0	58.3		80.4		-22.2		V
9.737	3.3	47.0		39.8	8.6	-35.5	-9.5	1.0	51.4		80.4		-29.0		V
9.748	3.3	51.0		39.8	8.6	-35.5	-9.5	1.0	55.5		80.4		-25.0		V
9.759	3.3	48.2		39.9	8.6	-35.5	-9.5	1.0	52.7		80.4		-27.8		V
14.622	3.3	52.0		41.3	10.9	-38.2	-9.5	1.0	57.5		80.4		-22.9		V
5.605	3.3	46.0		35.2	6.3	-36.2	-9.5	1.0	42.8		80.4		-37.6		V
6.336	3.3	54.5		35.4	6.8	-36.3	-9.5	1.0	51.9		80.4		-28.6		V
9.737	3.3	48.0		39.8	8.6	-35.5	-9.5	1.0	52.4		80.4		-28.0		H
9.748	3.3	52.0		39.8	8.6	-35.5	-9.5	1.0	56.5		80.4		-24.0		H
9.759	3.3	48.0		39.9	8.6	-35.5	-9.5	1.0	52.5		80.4		-28.0		H
14.622	3.3	51.0		41.3	10.9	-38.2	-9.5	1.0	56.5		80.4		-23.9		H
5.605	3.3	46.0		35.2	6.3	-36.2	-9.5	1.0	42.8		80.4		-37.6		H
6.336	3.3	51.0		35.4	6.8	-36.3	-9.5	1.0	48.4		80.4		-32.1		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

b-mode, Joymax B-antenna, High Channel:

08/13/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: Joymax B-Antenna, High Channel, 2.462GHz, PC DAC=20, Xgain=0, 11Mb Rate, b mode

Equipment for 1-22 GHz:

HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:

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

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.462	3.3	77.3		29.0	3.1	0.0	-9.5	0.0	100.0						V (RBW=VBW=100KHz)
2.462	3.3	72.1		29.0	3.1	0.0	-9.5	0.0	94.8						H (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.484	3.3	40.9	29.4	29.1	3.1	0.0	-9.5	0.0	63.5	52.1	74.0	54.0	-10.5	-1.9	V
2.487	3.3	39.3	30.1	29.1	3.1	0.0	-9.5	0.0	62.0	52.8	74.0	54.0	-12.0	-1.2	V
2.494	3.3	36.1	26.8	29.1	3.1	0.0	-9.5	0.0	58.8	49.5	74.0	54.0	-15.2	-4.5	V
2.484	3.3	35.5	24.5	29.1	3.1	0.0	-9.5	0.0	58.2	47.1	74.0	54.0	-15.8	-6.9	H
2.496	3.3	36.0	25.0	29.1	3.1	0.0	-9.5	0.0	58.7	47.7	74.0	54.0	-15.3	-6.3	H
2.496	3.3	31.7	22.0	29.1	3.1	0.0	-9.5	0.0	54.5	44.7	74.0	54.0	-19.5	-9.3	H
2.335	3.3	34.7	24.0	28.7	3.1	0.0	-9.5	0.0	57.1	46.4	74.0	54.0	-16.9	-7.6	V
2.368	3.3	33.7	24.0	28.8	3.1	0.0	-9.5	0.0	56.1	46.4	74.0	54.0	-17.9	-7.6	V
4.924	3.3	57.9	42.3	34.1	5.8	-36.1	-9.5	1.0	53.2	37.6	74.0	54.0	-20.8	-16.4	V
7.386	3.3	64.0	53.3	37.3	7.3	-36.2	-9.5	1.0	64.0	53.3	74.0	54.0	-10.0	-0.7	V
12.310	3.3	50.0	39.5	39.2	9.6	-36.4	-9.5	1.0	53.9	43.4	74.0	54.0	-20.1	-10.6	V
2.368	3.3	31.0	20.0	28.8	3.1	0.0	-9.5	0.0	53.4	42.4	74.0	54.0	-20.6	-11.6	H
4.924	3.3	57.9	42.3	34.1	5.8	-36.1	-9.5	1.0	53.2	37.6	74.0	54.0	-20.8	-16.4	H
7.386	3.3	62.0	52.0	37.3	7.3	-36.2	-9.5	1.0	62.0	52.0	74.0	54.0	-12.0	-2.0	H
12.310	3.3	50.0	39.5	39.2	9.6	-36.4	-9.5	1.0	53.9	43.4	74.0	54.0	-20.1	-10.6	H
Spurious & Harmonics outside restricted bands:															
2.304	3.3	33.0		28.7	3.1	0.0	-9.5	0.0	55.3		80.0		-24.7		V
2.400	3.3	37.6		28.9	3.1	0.0	-9.5	0.0	60.1		80.0		-19.9		V
2.527	3.3	38.8		29.2	3.1	0.0	-9.5	0.0	61.6		80.0		-18.3		V
2.558	3.3	32.0		29.3	3.1	0.0	-9.5	0.0	54.9		80.0		-25.0		V
2.560	3.3	33.0		29.3	3.1	0.0	-9.5	0.0	55.9		80.0		-24.0		V
9.848	3.3	51.9		40.0	8.6	-35.5	-9.5	1.0	56.5		80.0		-23.5		V
14.772	3.3	49.0		40.9	11.0	-38.3	-9.5	1.0	54.0		80.0		-25.9		V
5.630	3.3	44.9		35.2	6.3	-36.2	-9.5	1.0	41.7		80.0		-38.2		V
6.336	3.3	53.5		35.4	6.8	-36.3	-9.5	1.0	50.9		80.0		-29.1		V
2.303	3.3	38.0		28.7	3.1	0.0	-9.5	0.0	60.3		80.0		-19.7		H
2.560	3.3	33.2		29.3	3.1	0.0	-9.5	0.0	56.1		80.0		-23.8		H
9.848	3.3	54.7		40.0	8.6	-35.5	-9.5	1.0	59.4		80.0		-20.6		H
5.630	3.3	47.6		35.2	6.3	-36.2	-9.5	1.0	44.4		80.0		-35.6		H
6.336	3.3	52.0		35.4	6.8	-36.3	-9.5	1.0	49.3		80.0		-30.6		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

b-mode, SMT (Skycross) A-antenna, Low Channel:

08/14/02 **FCC Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: SMT A-Ant, Low Channel, 2.412GHz, PCdac=19, Xgain=0,11Mb Rate, b mode

Equipment for 1-22 GHz:
 HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:
 HP8566B Analyzer
 HP 11975A Amplifier (LO)
 HP 11970K External mixer/antenna
 Cable: IF Only (321 MHz)

Peak Measurements:
 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:
 1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.412	3.3	78.0		28.9	3.1	0.0	-9.5	0.0	100.5						H (RBW=VBW=100KHz)
2.412	3.3	74.2		28.9	3.1	0.0	-9.5	0.0	96.7						V (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.390	3.3	36.2	26.2	28.9	3.1	0.0	-9.5	0.0	58.6	48.6	74.0	54.0	-15.4	-5.4	V
2.390	3.3	39.5	29.3	28.9	3.1	0.0	-9.5	0.0	61.9	51.8	74.0	54.0	-12.1	-2.2	H
2.386	3.3	38.0	28.3	28.8	3.1	0.0	-9.5	0.0	60.4	50.7	74.0	54.0	-13.6	-3.3	H
4.824	3.3	56.3	42.0	33.8	5.7	-36.1	-9.5	1.0	51.3	37.0	74.0	54.0	-22.7	-17.0	H
12.062	3.3	50.0	39.0	39.4	9.5	-36.3	-9.5	1.0	54.1	43.1	74.0	54.0	-19.9	-10.9	H
4.824	3.3	55.4	41.0	33.8	5.7	-36.1	-9.5	1.0	50.4	36.0	74.0	54.0	-23.6	-18.0	V
12.062	3.3	49.0	37.5	39.4	9.5	-36.3	-9.5	1.0	53.1	41.6	74.0	54.0	-20.9	-12.4	V
Spurious & Harmonics outside restricted bands:															
2.304	3.3	35.6	26.7	28.7	3.1	0.0	-9.5	0.0	57.8	48.9	80.5		-22.7		V
7.237	3.3	63.5	53.8	37.0	7.2	-36.3	-9.5	1.0	63.0	53.3	80.5		-17.5		V
9.647	3.3	53.0	51.0	39.7	8.5	-35.4	-9.5	1.0	57.3	55.3	80.5		-23.2		V
6.336	3.3	54.5	52.5	35.4	6.8	-36.3	-9.5	1.0	51.9	49.9	80.5		-28.6		V
2.304	3.3	35.0	27.7	28.7	3.1	0.0	-9.5	0.0	57.2	49.9	80.5		-23.3		H
7.237	3.3	62.8	53.0	37.0	7.2	-36.3	-9.5	1.0	62.3	52.5	80.5		-18.2		H
9.647	3.3	50.0	47.0	39.7	8.5	-35.4	-9.5	1.0	54.3	51.3	80.5		-26.2		H
9.636	3.3	46.0	37.0	39.7	8.5	-35.4	-9.5	1.0	50.3	41.3	80.5		-30.2		H
9.658	3.3	46.0	37.0	39.7	8.5	-35.4	-9.5	1.0	50.3	41.3	80.5		-30.2		H
6.336	3.3	52.5	50.5	35.4	6.8	-36.3	-9.5	1.0	49.9	47.9	80.5		-30.6		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

b-mode, SMT (Skycross) A-antenna, Mid Channel:

08/14/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: SMT A-antenna, Mid Channel, 2.437GHz, PCDAc = 22, Xgain=0, 11Mb Rate, b mode

Equipment for 1-22 GHz:

HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:

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

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.437	3.3	78.6		29.0	3.1	0.0	-9.5	0.0	101.2						H (RBW=VBW=100KHz)
2.437	3.3	76.5		29.0	3.1	0.0	-9.5	0.0	99.1						V (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.368	3.3	31.0	20.0	28.8	4.1	0.0	-9.5	0.0	54.4	43.4	74.0	54.0	-19.6	-10.6	V
2.496	3.3	30.0	22.0	29.1	4.1	0.0	-9.5	0.0	53.7	45.7	74.0	54.0	-20.3	-8.3	V
4.874	3.3	54.0	39.0	33.9	5.8	-36.1	-9.5	1.0	49.1	34.1	74.0	54.0	-24.9	-19.9	V
7.311	3.3	60.5	51.5	37.2	7.3	-36.3	-9.5	1.0	60.2	51.2	74.0	54.0	-13.8	-2.8	V
12.185	3.3	449.0	35.0	39.3	9.5	-36.4	-9.5	1.0	453.0	39.0	74.0	54.0	379.0	-15.0	V
2.496	3.3	36.5	28.0	29.1	4.0	0.0	-9.5	0.0	60.1	51.6	74.0	54.0	-13.9	-2.4	H
2.368	3.3	37.0	26.0	28.8	4.1	0.0	-9.5	0.0	60.4	49.4	74.0	54.0	-13.6	-4.6	H
4.874	3.3	54.0	39.0	33.9	5.8	-36.1	-9.5	1.0	49.1	34.1	74.0	54.0	-24.9	-19.9	H
7.311	3.3	58.0	47.5	37.2	7.3	-36.3	-9.5	1.0	57.7	47.2	74.0	54.0	-16.3	-6.8	H
12.185	3.3	48.0	35.0	39.3	9.5	-36.4	-9.5	1.0	52.0	39.0	74.0	54.0	-22.0	-15.0	H
Spurious & Harmonics outside restricted bands:															
2.528	3.3	35.0		29.2	3.9	0.0	-9.5	0.0	58.6		81.2		-22.5		V
9.748	3.3	52.0		39.8	8.6	-35.5	-9.5	1.0	56.5		81.2		-24.7		V
14.622	3.3	51.0		41.3	10.9	-38.2	-9.5	1.0	56.5		81.2		-24.6		V
6.336	3.3	54.0		35.4	6.8	-36.3	-9.5	1.0	51.4		81.2		-29.8		V
9.737	3.3	50.0		39.8	8.6	-35.5	-9.5	1.0	54.4		81.2		-26.7		V
9.759	3.3	49.0		39.9	8.6	-35.5	-9.5	1.0	53.5		81.2		-27.7		V
2.304	3.3	35.0		28.7	3.9	0.0	-9.5	0.0	58.1		81.2		-23.1		H
2.528	3.3	37.0		29.2	3.9	0.0	-9.5	0.0	60.6		81.2		-20.5		H
9.748	3.3	51.0		39.8	8.6	-35.5	-9.5	1.0	55.5		81.2		-25.7		H
14.622	3.3	50.5		41.3	10.9	-38.2	-9.5	1.0	56.0		81.2		-25.1		H
6.336	3.3	51.0		35.4	6.8	-36.3	-9.5	1.0	48.4		81.2		-32.8		H
9.737	3.3	48.5		39.8	8.6	-35.5	-9.5	1.0	52.9		81.2		-28.2		H
9.759	3.3	47.0		39.9	8.6	-35.5	-9.5	1.0	51.5		81.2		-29.7		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

b-mode, SMT (Skycross) A-antenna, High Channel:

08/14/02 **FCC Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1466-1
Company: W-Link Systems, Inc.
EUT Descrip.: 802.11 b/g Band PCI Adapter
EUT M/N: PC22
Test Target: FCC 15.247
Mode Oper: SMT A-Antenna, High Channel, 2.462GHz, PCDAc=21, Xgain=0, 11Mb Rate, b mode

Equipment for 1-22 GHz:

HP8566B Analyzer
 Miteq NSP2600-44 Preamp
 EMCO 3115 Antenna
 Cable: 15.0 feet

Equipment for 22 - 58 GHz:

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

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Fundamental:															
2.462	3.3	80.3		29.0	3.1	0.0	-9.5	0.0	102.9						H (RBW=VBW=100KHz)
2.462	3.3	72.0		29.0	3.1	0.0	-9.5	0.0	94.6						V (RBW=VBW=100KHz)
Spurious & Harmonics within restricted bands:															
2.484	3.3	39.2	27.8	29.1	3.1	0.0	-9.5	0.0	61.9	50.4	74.0	54.0	-12.1	-3.6	V
2.496	3.3	39.5	28.2	29.1	3.1	0.0	-9.5	0.0	62.2	50.9	74.0	54.0	-11.8	-3.1	V
2.484	3.3	40.9	29.9	29.1	3.1	0.0	-9.5	0.0	63.5	52.6	74.0	54.0	-10.5	-1.4	H
2.487	3.3	42.0	31.1	29.1	3.1	0.0	-9.5	0.0	64.7	53.8	74.0	54.0	-9.3	-0.2	H
2.496	3.3	41.5	30.8	29.1	3.1	0.0	-9.5	0.0	64.2	53.5	74.0	54.0	-9.8	-0.5	H
2.368	3.3	31.0	23.0	28.8	3.1	0.0	-9.5	0.0	53.4	45.4	74.0	54.0	-20.6	-8.6	V
4.924	3.3	54.0	39.0	34.1	5.8	-36.1	-9.5	1.0	49.3	34.3	74.0	54.0	-24.7	-19.7	V
7.386	3.3	61.8	52.9	37.3	7.3	-36.2	-9.5	1.0	61.8	52.9	74.0	54.0	-12.2	-1.1	V
12.310	3.3	48.0	34.0	39.2	9.6	-36.4	-9.5	1.0	51.9	37.9	74.0	54.0	-22.1	-16.1	V
2.368	3.3	33.0	24.0	28.8	3.1	0.0	-9.5	0.0	55.4	46.4	74.0	54.0	-18.6	-7.6	H
4.924	3.3	53.0	38.0	34.1	5.8	-36.1	-9.5	1.0	48.3	33.3	74.0	54.0	-25.7	-20.7	H
7.386	3.3	61.0	52.0	37.3	7.3	-36.2	-9.5	1.0	61.0	52.0	74.0	54.0	-13.0	-2.0	H
12.310	3.3	48.0	36.0	39.2	9.6	-36.4	-9.5	1.0	51.9	39.9	74.0	54.0	-22.1	-14.1	H
Spurious & Harmonics outside restricted bands:															
2.528	3.3	30.0		29.2	3.1	0.0	-9.5	0.0	52.8		82.9		-30.1		V
9.848	3.3	54.0		40.0	8.6	-35.5	-9.5	1.0	58.6		82.9		-24.3		V
14.772	3.3	50.0		40.9	11.0	-38.3	-9.5	1.0	55.0		82.9		-27.9		V
6.336	3.3	51.0		35.4	6.8	-36.3	-9.5	1.0	48.4		82.9		-34.6		V
2.303	3.3	33.0		28.7	3.1	0.0	-9.5	0.0	55.3		82.9		-27.6		H
2.528	3.3	37.7		29.2	3.1	0.0	-9.5	0.0	60.5		82.9		-22.4		H
9.848	3.3	53.0		40.0	8.6	-35.5	-9.5	1.0	57.6		82.9		-25.3		H
9.859	3.3	49.0		40.0	8.6	-35.5	-9.5	1.0	53.7		82.9		-29.3		H
6.336	3.3	52.0		35.4	6.8	-36.3	-9.5	1.0	49.4		82.9		-33.6		H

* No other emissions were found within 20dB under the limits up to 25GHz.

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

DIGITAL DEVICE RADIATED EMISSIONS



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

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

Project #: 02U1466-1
Report #: 020814C1
Date & Time: 08/14/02 3:04 PM
Test Engr: Thu Chan

Company: W-Link Systems, Inc.
EUT Description: 802.11 a/b/g Band Pci Adapter
Test Configuration: EUT/Monitor/PC/KB/Mouse/Printer/Modem
Type of Test: FCC Class B
Mode of Operation: Transmitting/EMCTest

[<< Main Sheet](#)

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
72.66	59.00	6.24	1.03	27.42	38.84	40.00	-1.16	3mV	0.00	1.00	P
70.66	59.00	5.90	1.01	27.43	38.49	40.00	-1.51	3mV	0.00	1.00	P
76.00	57.00	6.80	1.05	27.42	37.44	40.00	-2.56	3mV	0.00	1.00	P
233.33	56.00	11.27	2.09	26.73	42.63	46.00	-3.37	3mH	0.00	1.00	P
288.00	52.00	14.05	2.49	26.64	41.89	46.00	-4.11	3mH	0.00	1.00	P
300.00	51.00	14.66	2.58	26.64	41.60	46.00	-4.40	3mV	0.00	1.00	P
6 Worst Data											

Note: Changing the transmitter band, mode or channel does not affect these emissions.

8.8. POWER LINE CONDUCTED EMISSIONS

TEST SETUP

The EUT is placed on a wooden table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane on the floor.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

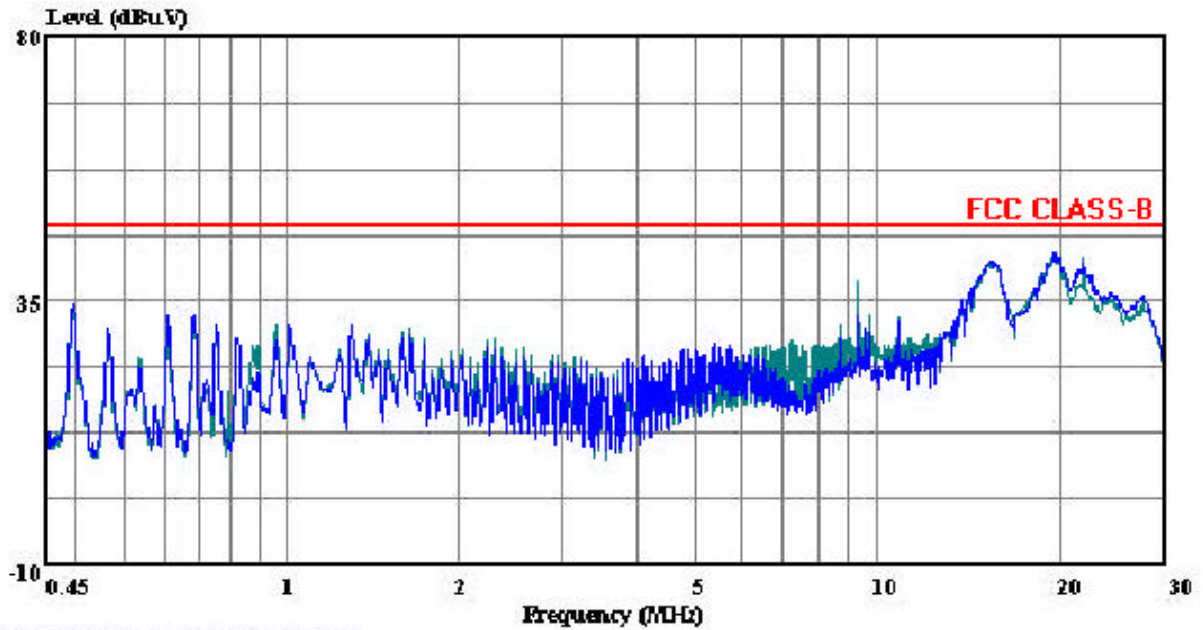
CONDUCTED EMISSIONS DATA (115VAC 60Hz)										
Freq. (MHz)	Reading			Class (dB)	Limit QP	FCC_B		Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)			AV	QP (dB)	AV (dB)		
0.50	34.48	--	--	0.00	48.00	--	--	-13.52	--	L1
15.52	41.94	--	--	0.00	48.00	--	--	-6.06	--	L1
19.63	43.22	--	--	0.00	48.00	--	--	-4.78	--	L1
0.50	33.34	--	--	0.00	48.00	--	--	-14.66	--	L2
19.80	43.32	--	--	0.00	48.00	--	--	-4.68	--	L2
21.89	42.16	--	--	0.00	48.00	--	--	-5.84	--	L2
6 Worst Data										



561F Monterey Road
Morgan Hill, CA 95037, U.S.A.
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 7 File#: W-Link 2.4G

Date: 08-14-2002 Time: 18:58:23



(Compliance Certification Service)

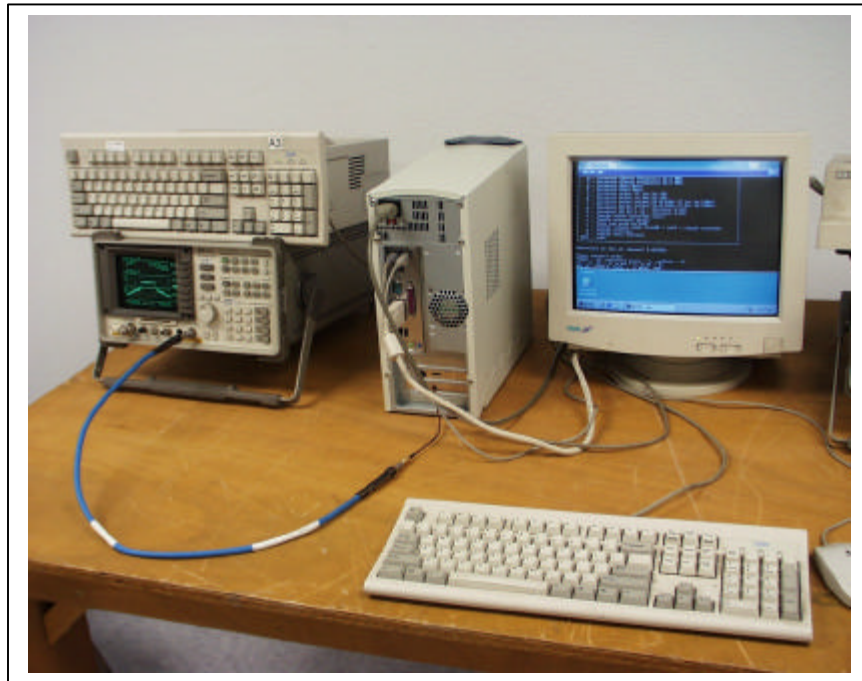
Trace: 3

Ref Trace:

Project # : 02U1466-1
Test Engineer: Thu Chan
Company : W-Link Systems, Inc.
EUT : Harmony / Skyline 802.11 a/b
Test Config : EUT/PC/Monitor/KB/Mouse/Printer/Modem
Mode of Op. : Transmitting
: Peak: L1 (Blue), L2 (Green)
: 115Vac, 60 HZ

8.9. SETUP PHOTOS

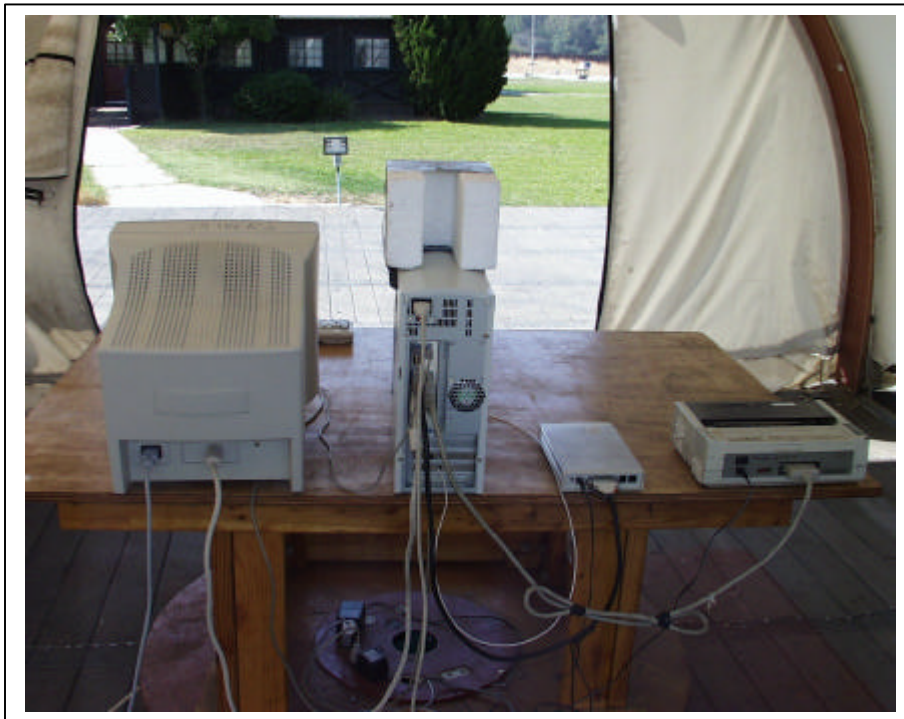
ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



TRANSMITTER RADIATED RF MEASUREMENT SETUP



DIGITAL DEVICE RADIATED EMISSIONS MEASUREMENT SETUP



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



END OF REPORT