

The University of Michigan
Radiation Laboratory
3228 EECS Building
Ann Arbor, MI 48109-2122
Tel: (734) 764-0500

Measured Radio Frequency Emissions
From

**Hyperlink/Intel Long Range Radio
Model IN2401**

Report No. 415031-086
August 16, 2001

Copyright © 2001

For:
Hyperlink Technologies Inc.
1200 Clint Moore Rd., Suite 14
Boca Raton, FL 33487

Contact:
Peter Roth
Tel: (561) 995-2256
Fax: (561) 995-2432
PO: verbal

Measurements made by:

Joseph Brunett
Valdis Liepa

Tests supervised by:
Report approved by:

Valdis V. Liepa
Research Scientist

Summary

Tests for compliance with FCC Regulations, according to Part 15 (15.247), and with Industry Canada Regulations, RSS-210 (Issue 5, Draft 1, Section 6.2.2 (o)) were performed on HyperLink spread spectrum RF Extended Range LAN System. The DUT is subject to the Rules and Regulations as a transmitter, a receiver, and a digital device. This link uses an already FCC certified spread spectrum Intel radio, but adds high gain antennas, amplifiers, filters, and cables. Here we report on measurements as required for combinations of antennas, filters, and amplifiers.

In testing performed May 19-25, 2001, of the twenty-six combinations tested, the radiated emissions in restricted bands were met by 0.1 dB (see pp. 19, 26).

Table of Contents

1.	Introduction	3
2.	Test Procedure and Equipment Used	3
3.	Configuration and Identification of Device Under Test	4
3.1	EMI Relevant Modifications	5
4.	Emission Limits.....	6
4.1	Radiated Emission Limits.....	6
4.2	Conductive Emission Limits	7
5.	Radiated Emission Tests and Results.....	7
5.1	Anechoic Chamber Measurements	7
5.2	Outdoor Measurements.....	7
5.3	Computations and Results.....	7
5.4	Duty Factor for Normal Operation	8
6.	Other Measurements and Computations	8
6.1	Peak-to-Average Ratio (15.35(b)).....	8
6.2	Potential Health Hazard EM Radiation Level.....	8
6.3	Peak and Average Output Power (15.247(b)).....	9
6.4	Power Line Conducted Emissions (15.270)	9
6.5	Bandwidth (15.247(a)(2))	9
6.6	RF Antenna Conducted Spurious Emissions (15.247(c))	10
6.7	Power Spectral Density and Line Spacing (15.247(d)).....	10
6.8	AGC Performance of the RF Amplifier.....	11
	Table 2.1 Test Equipment.....	3
	Figure 3.1 Basic block diagram of the system	5
	Table 4.1 Radiated Emission Limits (FCC:15.205; IC:RSS-210, 6.3) - Transmitter.....	6
	Table 4.2 Radiated Emission Limits (FCC:15.109;IC: RSS-210, 7.3) - Digital device.....	6
	Table 4.3 Conducted Emission Limits (FCC:15.107; IC: RSS-210, 6.6).	7
	Table 6.1 Potential Health Hazard Radiation Level.....	8
	Table 6.1 Peak and Average Output Power (Antenna Conducted).....	9
	Figure 6.1-1. Diagram of AGC Amplifier Test Setup.....	11
	Figure 6.1-2. Plot of Peak Output Power vs. Cable Attenuation.	11
	Table 5.1 Highest Radiated Emissions	12
	Table 5.2 Highest Radiated Emissions	13
	Table 5.3 Highest Radiated Emissions	14
	Table 5.4 Highest Radiated Emissions	15
	Table 5.5 Highest Radiated Emissions	16
	Table 5.6 Highest Radiated Emissions	17
	Table 5.7 Highest Radiated Emissions	18
	Table 5.8 Highest Radiated Emissions	19
	Table 5.9 Highest Radiated Emissions	20

Table 5.10 Highest Radiated Emissions	21
Table 5.11 Highest Radiated Emissions	22
Table 5.12 Highest Radiated Emissions	23
Table 5.13 Highest Radiated Emissions	24
Table 5.14 Highest Radiated Emissions	25
Table 5.15 Highest Radiated Emissions	26
Table 5.16 Highest Radiated Emissions	27
Table 5.17 Highest Radiated Emissions	28
Table 5.18 Highest Radiated Emissions	29
Table 5.19 Highest Radiated Emissions	30
Table 5.20 Highest Radiated Emissions	31
Table 5.21 Highest Radiated Emissions	32
Table 5.22 Highest Radiated Emissions	33
Table 5.23 Highest Radiated Emissions	34
Table 5.24 Highest Radiated Emissions	35
Table 5.25 Highest Radiated Emissions	36
Table 5.26 Highest Radiated Emissions	37
Figure 6.2 Measurement of duty factor for modified CW operation	38
(1000 mW NON-AGC).....	38
Figure 6.3 Measurement of duty factor for modified CW operation	39
(250 mW AGC).....	39
Figure 6.5 6 dB-point bandwidth measurements; low, mid, and high channels.	41
(250 mW AGC).....	41
Figure 6.6 Antenna conducted spurious emissions, low channel.	42
(1000 mW NON-AGC).....	42
Figure 6.7 Antenna conducted spurious emissions, mid channel.	43
(1000 mW NON-AGC).....	43
Figure 6.8 Antenna conducted spurious emissions, high channel.	44
(1000 mW NON-AGC).....	44
Figure 6.9 Antenna conducted spurious emissions, low channel.	45
(250 mW AGC).....	45
Figure 6.10 Antenna conducted spurious emissions, mid channel.	46
(250 mW AGC).....	46
Figure 6.11 Antenna conducted spurious emissions, high channel.....	47
(250 mW AGC).....	47
Figure 6.12 Band-edge behavior at low end and high end of the band	48
(1000 mW NON-AGC).....	48
Figure 6.13 Band-edge behavior at low end and high end of the band	49
(250 mW AGC).....	49
Figure 6.14 Spectral Density (low channel); (top) Spectrum Scan,.....	50
(mid) Spectral Density, (bottom) Line Spacing. (1000 mW NON-AGC)	50
Figure 6.15 Spectral Density (mid channel); (top) Spectrum Scan,.....	51
(mid) Spectral Density, (bottom) Line Spacing. (1000 mW NON-AGC)	51
Figure 6.16 Spectral Density (high channel);(top) Spectrum Scan,.....	52
(mid) Spectral Density, (bottom) Line Spacing. (1000 mW NON-AGC)	52
Figure 6.17 Spectral Density (low channel); (top) Spectrum Scan,.....	53
(mid) Spectral Density, (bottom) Line Spacing. (250 mW AGC).....	53
Figure 6.18 Spectral Density (mid channel); (top) Spectrum Scan,.....	54
(mid) Spectral Density, (bottom) Line Spacing. (250 mW AGC).....	54

1. Introduction

HyperLink/Intel Extended Range Radio, Model IN2401, was tested for compliance with FCC Regulations, Part 15, adopted under Docket 87-389, April 18, 1989, and with Industry Canada RSS-210, Issue 5, Draft 1, Section 6.2.2 (t1), dated December 2000. The tests were performed at the University of Michigan Radiation Laboratory Willow Run Test Range following the procedures described in ANSI C63.4-1992 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The Site description and attenuation characteristics of the Open Site facility are on file with FCC Laboratory, Columbia, Maryland (FCC Reg. No: 91050) and with Industry Canada, Ottawa, ON (File Ref. No: IC 2057).

2. Test Procedure and Equipment Used

The test equipment commonly used in our facility is listed in Table 2.1 below. The second column identifies the specific equipment used in these tests. The HP 8593E spectrum analyzer is used for primary amplitude and frequency reference.

Table 2.1 Test Equipment

Test Instrument	Equipment Used	Manufacturer/Model	Cal. Date/By
Spectrum Analyzer (9kHz-22GHz)	X	Hewlett-Packard 8593A SN: 3107A01358	December 2000/UM
Spectrum Analyzer (9kHz-26GHz)	X	Hewlett-Packard 8593E SN: 3107A01131	December 2000/HP
Spectrum Analyzer (0.1-1500 MHz)		Hewlett-Packard 182T/8558B SN: 1529A01114/543592	December 2000/UM
Preamplifier (5-1000MHz)	X	Watkins-Johnson A11 -1 plus A25-1S	December 2000/UM
Preamplifier (5-4000 MHz)	X	Avantek	Oct. 1999/ U of M Rad Lab
Power Meter w/ Thermistor		Hewlett-Packard 432A Hewlett-Packard 478A	Dec. 2000/U of M Rad Lab
Peak Power Meter w/ Sensor		Pacific Instruments 1018B	Dec. 2000/U of M Rad Lab
Broadband Bicone (20-200 MHz)	X	University of Michigan	June 1999/U of M Rad Lab
Broadband Bicone (200-1000 MHz)	X	University of Michigan	June 1999/U of M Rad Lab
Dipole Antenna Set (25-1000 MHz)	X	University of Michigan	June 2000/UM
Dipole Antenna Set (30-1000 MHz)		EMCO 3121C	June 2000/UM
S-Band Std. Gain Horn	X	S/A, Model SGH-2.6	Manufacturer, NRL design
C-Band Std. Gain Horn	X	University of Michigan	Manufacturer, NRL design
XN-Band Std. Gain Horn	X	University of Michigan	Manufacturer, NRL design
X-Band Std. Gain Horn	X	S/A, Model 12-8.2	Manufacturer, NRL design
Ku-Band Std. Gain Horn	X	University of Michigan	Manufacturer, NRL design
K-Band Std. Gain Horn	X	University of Michigan	Manufacturer, NRL design
Ridge-horn Antenna (0.5-5 GHz)		University of Michigan	February 1991/U of M Rad Lab
LISN Box		University of Michigan	Dec. 2000/U of M Rad Lab
Signal Generator (0.1-2060 MHz)	X	Hewlett-Packard 8657B	January 2000/Uof M Rad Lab
Printer	X	Hewlett-Packard 2225A	August 1989/HP

3. Configuration and Identification of Device Under Test

The DUT is a spread spectrum RF wireless link operating in 2400 - 2483.5 MHz band. The system tested consisted of a laptop computer, Intel radio, (choice of) power feed/ lightning protector, 50-foot coax cable, (choice of) amplifier, (choice of) band-pass filter, and (choice of) an antenna. Figure 3.1 shows the block diagram of the basic system.

The system has been designed to operate up to 13 channels from 2412 to 2462 MHz; however, depending on the choice of components used (amplifier, filter, antenna) to meet the link s/n requirements, channels are restricted to meet the FCC/IC out of band emission limits.

The DUT was designed and manufactured by Hyperlink Technologies Inc., 1200 Clint Moore Rd., Suite 14, Boca Raton, FL 33687. It is identified as:

Hyperlink/Intel Long Range Radio
Model: IN2401
FCC ID: MYF-H9PLA4121

There were 26 combinations, varying in amplifier, filter, and/or antenna used. All 26 were tested.

With components evaluated:

Intel Radio Model LA4121	SN: 00A0F889501F FCC ID: H9PLA4121
Laptop, Compaq Presario Model: Series 2940	SN: V745BQD22994 FCC Reg: CNTTAI-24639-TT-E
Amplifier, HyperLink Model: HA2401-AGC100 Model: HA2401-AGC250 Model: HA2401-1000	SN: 100-051501 SN: 250-051501 SN: 1000-051501
HyperLink Power Supply, for amplifier Model: ACSM-26	FCC: Class A
Power Injector / Lightning Arrestor HyperLink	SN: none
Lightning Arrestor HyperLink, PN: HGLN-03	SN: none
Bandpass Filter, Hyperlink, 4-pole (BLK) Model: FLT-2437-20-4	
Bandpass Filter, Hyperlink, 5-pole (GRAY) Model: FLT-2442-60-5	

Cables

Antenna cable, 50 feet, WBC400, with N-connectors

Pigtail cable, between radio and lightning arrestor approx. 19 in. RG-174 , HyperLink

Antennas

Antenna, Omni, V-pol
Model: HG 2403MU, 3.0 dBi

Antenna, Yaggi, V/H-pol
Model: HG 2415Y, 14.0 dBi

Antenna, Omni, V-pol
Model: HG 2405MU, 5.0 dBi

Antenna, Patch, H/V-pol
Model: HG 24015P, 15.0 dBi

Antenna, Omni, V-pol
Model: HG 2408U, 8.0 dBi

Antenna, Omni, V-pol
Model: HG 2415U, 15.0 dBi

Antenna, Patch, V/H-pol
Model: HG 2408P, 8.0 dBi

Antenna, Reflector, V/H-pol
Model: HG 2415G, 15.0 dBi

Antenna, Patch, V/H-pol
Model: HG 2409P, 9.0 dBi

Antenna, Panel, H/V-pol
Model: HG 2417P, 17.0 dBi

Antenna, Omni, V-pol
Model: HG 2410U, 10.0 dBi

Antenna, Reflector, H/V-pol
Model: HG 2419G, 19.0 dBi

Antenna, Patch, V/H-pol
Model: HG 24012P, 12.0 dBi

Antenna, Panel, H/V-pol
Model: HG 2420P, 20.0 dBi

Antenna, Patch, V/H-pol
Model: HG 2414P, 14.0 dBi

Antenna, Reflector, V/H-pol
Model: HG 2424G, 24.0 dBi

3.1 EMI Relevant Modifications

During the course of testing, amplifier (if need), filter (if need), and antenna were selected, and then the available channels for the particular configuration were reduced (if needed) to meet the band-edge and harmonic emission limits.

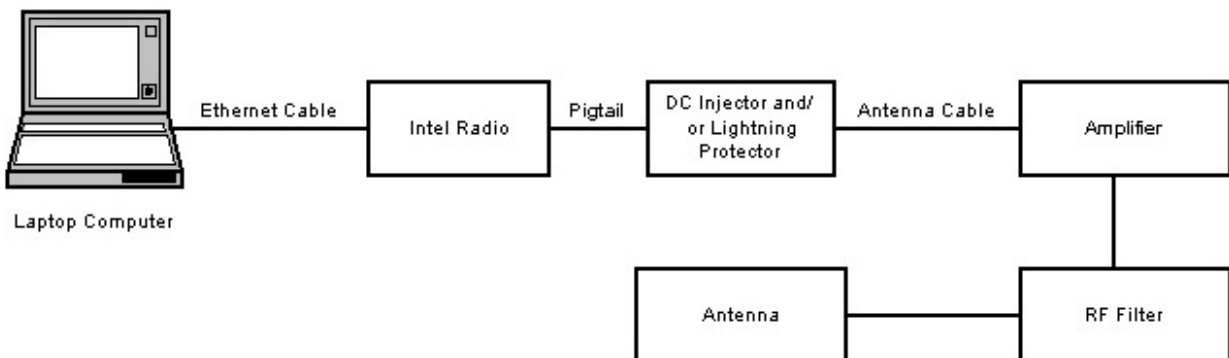


Figure 3.1 Basic block diagram of the system.

4. Emission Limits

4.1 Radiated Emission Limits

Since the DUT is a spread spectrum device (15.247, 2.4 GHz), the radiated emissions are subject to emissions in restricted bands only (15.205). The applicable frequencies, through ten harmonics, are given below in Table 4.1. Emission limits from digital circuitry are specified in Table 4.2.

Table 4.1 Radiated Emission Limits (FCC:15.205; IC:RSS-210, 6.3) - Transmitter

Frequency (MHz)	Fundamental Ave. E _{lim} (3m)		Spurious* Ave. E _{lim} (3m)	
	(μ V/m)	dB (μ V/m)	(μ V/m)	dB (μ V/m)
2400-2483.5	---		---	
2310-2390 2483.5-2500 4500-5250	Restricted Bands Bands		500	54.0
7250-7750 14470-14500 17700-21400 22010-23120 23600-24000	Restricted Bands		500	54.0

* Measure up to tenth harmonic; 1 MHz res. BW, 100 Hz video BW (for average detection)

Table 4.2 Radiated Emission Limits (FCC:15.109;IC: RSS-210, 7.3) - Digital device.

Frequency (MHz)	Class A ds = 10 m		Class B ds = 3 m	
	(μ V/m)	dB (μ V/m)	(μ V/m)	dB (μ V/m)
30-88	90	39.0	100	40.0
88-216	150	43.5	150	43.5
219-960	210	46.4	200	46.0
960-	300	49.5	500	54.0

120 kHz BW up to 1 GHz, 1 MHz BW above 1 GHz

4.2 Conductive Emission Limits

Table 4.3 Conducted Emission Limits (FCC:15.107; IC: RSS-210, 6.6).

Frequency (MHz)	Class A		Class B	
	μV	$\text{dB}\mu\text{V}$	μV	$\text{dB}\mu\text{V}$
0.45-1.705	1000	60.0	250	48.0
1.705-30.0	3000	69.6	250	48.0

Note: Quasi-Peak readings apply here (9 kHz BW)

5. Radiated Emission Tests and Results

5.1 Anechoic Chamber Measurements

In our chamber, there is a set-up similar to that of an outdoor 3-meter site, with a turntable, an antenna mast, and a ground plane. Instrumentation includes spectrum analyzers and other equipment as needed. For these tests the receiver (horn) antennas were placed on a Styrofoam block, at about 1.2 m height, and the DUT on a turntable at 3 meter distance, then moved to 1 m distance, if needed.

Standard gain horn antennas were used for the measurements. Up to 7 GHz the horns were connected to a spectrum analyzer via RG-214 coaxial cable, and above 7 GHz a pre-amp was added. The cables and the pre-amplifier used were specially calibrated for these tests using a network analyzer.

The DUT antenna was rotated in all possible ways and the maximum emission recorded. A photograph in Appendix (last page of the report) shows the measurement set-up.

5.2 Outdoor Measurements

None made

5.3 Computations and Results

To convert the dBm measured on the spectrum analyzer to $\text{dB}(\mu\text{V}/\text{m})$, we use expression

$$E_3(\text{dB}\mu\text{V}/\text{m}) = 107 + P_R + K_A - K_G + K_E$$

where

- P_R = power recorded on spectrum analyzer, dB, measured at 3m
- K_A = antenna factor, dB/m
- K_G = pre-amplifier gain, including cable loss, dB
- K_E = pulse operation correction factor, dB

When presenting the data, the dominant measured emissions at each frequency, under all of the possible orientations, are given. Computations and results are given in Tables 5.1 through 5.26. There we see that in the worst case the DUT meets the limit by 0.1 dB at 2483.5 MHz in Table 5.8, Table 5.15.

Note that besides the emission measurements each table contains (a) the frequency range of operation (in upper section of the table) and (b) the maximum RF exposure power density.

5.4 Duty Factor for Normal Operation

No Duty Factor was used for this device.

6. Other Measurements and Computations

6.1 Peak-to-Average Ratio (15.35(b))

For the measurements presented here for emissions in restricted bands, the DUT was programmed to transmit continuous, and such was verified with spectrum analyzer set to zero-span mode. See Figure 6.1. The average measurements were made using 1 MHz RBW and 100 Hz VBW (sometimes to 300 Hz -- it goes faster). The peak measurements, were made using 1 MHz RBW and 1 MHz VBW.

Typically the difference between peak and average was 12 to 13 dB, and never exceeded the 20 dB limit.

6.2 Potential Health Hazard EM Radiation Level

The following table summarizes the minimum operating distance for each antenna/amplifier system, as calculated from FCC OET Bulletin 65.

Table 6.1 Potential Health Hazard Radiation Level

Ant.	Ant. Gain (dB)	Po (mW)	EIRP (mW)	R (cm)	Corr. Data Table
03MU	3	1000	1995	12.6	5.1
03MU	3	250	499	6.3	5.2
05MU	5	1000	3162	15.9	5.3
05MU	5	250	791	7.9	5.4
08P	8	40	252	4.5	5.5
08P	8	100	631	7.1	5.6
08U	8	40	252	4.5	5.7
08U	8	100	631	7.1	5.8
09P	9	40	318	5.0	5.9
09P	9	100	794	8.0	5.10
10U	10	40	400	5.6	5.11
10U	10	100	1000	8.9	5.12
12P	12	40	634	7.1	5.13
14P	14	40	1005	8.9	5.14
14P	14	100	2512	14.1	5.15
15G	15	40	1265	10.0	5.16
15P	15	40	1265	10.0	5.17
15U	15	40	1265	10.0	5.18
15U	15	100	3162	15.9	5.19
15Y	14	40	1005	8.9	5.20
15Y	14	100	2512	14.1	5.21
17P	17	40	2005	12.6	5.22
19G	19	250	19858	39.8	5.23
20P	20	40	4000	17.8	5.24
24G	24	40	10048	28.3	5.25
24G	24	250	62797	70.7	5.26

The following equations were used in calculating the safe operating distance (R).

$$EIRP(mW) = Po(mW) \cdot 10^{\frac{Gain(dB)}{10}}$$

and

$$R = \sqrt{\frac{EIRP(mW)}{4 \cdot \pi \cdot S(mW/cm^2)}}, \quad S = 1mW/cm^2$$

6.3 Peak and Average Output Power (15.247(b))

For this measurement, the DUT was set in a test mode for continuous data transmission. A peak (diode detector) power meter and a bolometer type (average) microwave power meter was connected where the antenna attaches to the system. The power was measured for cases of (a) without amplifier, (b) with 100 mW AGC amplifier, (c) with 250 mW AGC amplifier, and (d) with 1000mW NON-AGC amplifier. A 50-foot coax cable and a power injector (or arrestor) was used in each case. Since the DUT transmits in continuous mode, there is no adjustment needed to the readings. See Figure 6.1. Table 6.2, below, presents the results. The Limit is 30dBm.

Table 6.1 Peak and Average Output Power (Antenna Conducted)

Freq (MHz)	Avg. P(dBm)	Peak P(dBm)	Comment
2412	10.0	10.3	(No AMP)
2437	10.2	10.2	
2462	10.3	10.3	
2412	18.1	18.2	(100 mW AGC AMP)
2437	18.2	18.6	
2462	18.0	18.3	
2412	23.0	23.8	(250 mW AGC AMP)
2437	23.0	23.7	
2462	23.0	23.7	
2412	27.2	28.1	(1000 mW AMP)
2437	27.4	27.9	
2462	27.1	27.8	

6.4 Power Line Conducted Emissions (15.270)

The radio, amplifier, and the laptop conducted emissions were not measured; the laptop and the amplifier are already compliant and for the radio conducted data see the Intel radio test report.

6.5 Bandwidth (15.247(a)(2))

For this test, the DUT was put in a test mode for continuous data transmission. The spectrum analyzer was connected where the antenna attaches to the system. The analyzer was set for RBW=VBW=100 kHz, SPAN= 100 MHz. Configured were the "worst case" systems, i.e., with 50-foot cable, high power amp (1000mW Non-AGC, 250 mW AGC), no filter, and measured for lowest, mid, and highest channels that would be used in each system. Plots are shown in Figure 6.4 and Figure 6.5.

1000 mW NON-AGC Amplifier

<u>Frequency</u>	<u>6 dB Bandwidth</u>
2.412 GHz	9.9 MHz
2.436 GHz	10.6 MHz
2.462 GHz	10.7 MHz

250 mW AGC Amplifier

<u>Frequency</u>	<u>6 dB Bandwidth</u>
2.412 GHz	9.9 MHz
2.436 GHz	9.9 MHz
2.462 GHz	10.1 MHz

6.6 RF Antenna Conducted Spurious Emissions (15.247(c))

For this test, the DUT was put in a test mode for continuous data transmission. The spectrum analyzer was connected where the antenna attaches to the system. The analyzer was set for RBW=VBW=100 kHz, the frequency was swept from 0 to 25 GHz. Configured was the "worst case" system, i.e., with 50 foot cable, high power amp (1000mW Non-AGC, 250 mW AGC), no filter, and measured for lowest, mid, and highest channels that would be used in the system. See Figures 6.6 through 6.8 for the 1000 mW NON-AGC amplifier and Figures 6.9 through 6.11 for the 250 mW AGC amplifier. In the plots, only the fundamental is seen, the rest is noise. In all cases, the noise is at least 35 dB below the carrier. (Limit - 20.0 dB below carrier).

The Figures 6.12 and 6.13 show the band-edge scans at lower and upper edges.

6.7 Power Spectral Density and Line Spacing (15.247(d))

For this measurement, the DUT was put in a test mode for continuous data transmission. The spectrum analyzer was connected where the antenna attaches to the system. Configured was the "worst case" system, i.e., with 50-foot cable, high power amp (1000mW Non-AGC, 250 mW AGC), no filter, and measured for lowest, mid, and highest channels that would be used in the system. The spectrum was first scanned for the maximum spectrum peaks and then at these peaks the sweep was repeated with RBW=3 kHz, VBW=100 kHz, SPAN=300 kHz, and SWEEP TIME=100s. See Figures 6.14 through 6.16 for NON-AGC and Figures 6.17 through 6.19 for AGC. The maximum readings obtained are:

1000 mW NON-AGC Amplifier

<u>Frequency</u>	<u>Analyzer Reading</u>	<u>Line Spacing</u>
2.41254 GHz	-0.09 dBm (Limit 8.0 dBm)	5.5 kHz
2.43701 GHz	-0.07 dBm (Limit 8.0 dBm)	5.5 kHz
2.46154 GHz	-0.28 dBm (Limit 8.0 dBm)	5.5 kHz

250 mW AGC Amplifier

<u>Frequency</u>	<u>Analyzer Reading</u>	<u>Line Spacing</u>
2.41244 GHz	-2.58 dBm (Limit 8.0 dBm)	5.5 kHz
2.43744 GHz	-1.90 dBm (Limit 8.0 dBm)	5.5 kHz
2.46269 GHz	-2.57 dBm (Limit 8.0 dBm)	5.5 kHz

6.8 AGC Performance of the RF Amplifier

Below we show from measurements that the output power of the amplifier is independent of the input signal for up to 9 dB of attenuation at the input. This demonstrates that when using the AGC amplifiers, the system performance is cable length independent up to 120 ft.

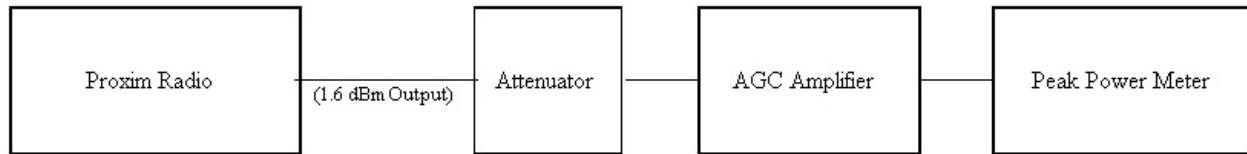


Figure 6.1-1. Diagram of AGC Amplifier Test Setup

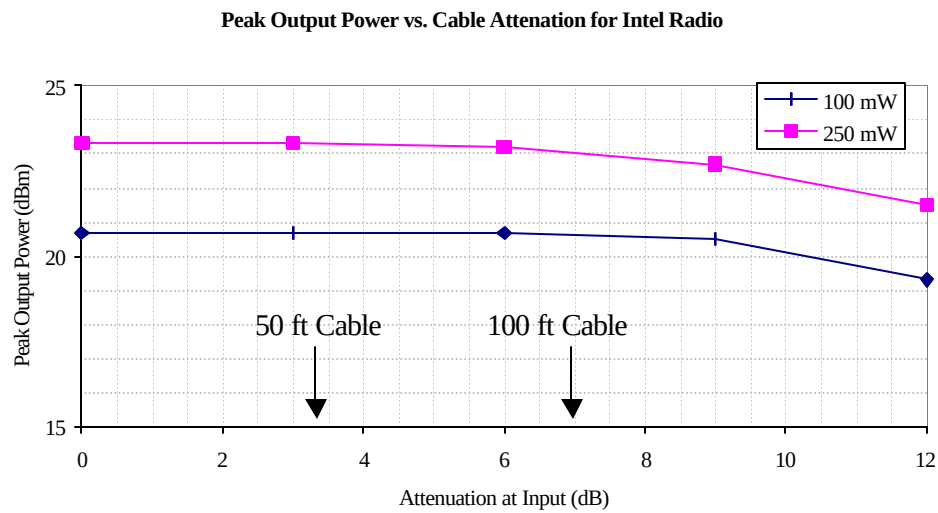


Figure 6.1-2. Plot of Peak Output Power vs. Cable Attenuation.

The University of Michigan
Radiation Laboratory
3228 EECS Building
Ann Arbor, Michigan 48109-2122
(734) 764-0500

Table 5.1 Highest Emissions Measured

Radiated Emissions											HL/Intel; 03MU1
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2425.0										Low channel
3	2437.0										Mid channel
4	2449.0										High channel
5											
6	2390.0	HornS	H/V	-79.6		21.5	- 0.6	49.5	54.0	4.5	Low
7	2390.0	HornS	H/V	-79.6		21.5	- 0.6	49.5	54.0	4.5	Mid
8	2390.0	HornS	H/V	-79.6		21.5	- 0.6	49.5	54.0	4.5	High
9	2483.5	HornS	H/V	-79.5		21.5	- 0.6	49.6	54.0	4.4	Low
10	2483.5	HornS	H/V	-79.6		21.5	- 0.6	49.5	54.0	4.5	Mid
11	2483.5	HornS	H/V	-79.4		21.5	- 0.6	49.7	54.0	4.3	High
12	4850.0	HornC	H/V	-59.6		25.5	37.0	35.9	54.0	18.1	Low
13	4874.0	HornC	H/V	-56.7		25.5	37.0	38.8	54.0	15.2	Mid
14	4898.0	HornC	H/V	-54.8		25.5	37.0	40.7	54.0	13.3	High
15	7275.0	HornXN	H/V	-67.2		25.5	36.0	29.3	54.0	24.7	Low
16	7311.0	HornXN	H/V	-69.0		25.5	36.0	27.5	54.0	26.5	Mid
17	7347.0	HornXN	H/V	-70.4		25.5	36.0	26.1	54.0	27.9	High
18	12125.0	HornX	H/V	-71.7		25.5	34.0	26.8	54.0	27.2	Low, noise
19	12185.0	HornX	H/V	-73.0		25.5	34.0	25.5	54.0	28.5	Mid, noise
20	12245.0	HornX	H/V	-74.3		25.5	34.0	24.2	54.0	29.8	High, noise
21	19400.0	HornK	H/V	-74.0		32.3	32.0	33.3	54.0	20.7	Low, noise
22	19496.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	Mid, noise
23	19592.0	HornK	H/V	-72.6		32.3	32.0	34.7	54.0	19.3	High, noise
24	22041.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
25											
26											
27	Health Hazard:		Pr	Pr			Pr	Limit		dB	
28			dBm	mW			mW/cm2	mW/cm2		Below	
29	2437 MHz	3cm	17.5	56.2			1.46	1.0		-1.6	
30		6cm	14.2	26.3			0.68	1.0		1.7	
31	Configuration:										
32	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
33	ACSM-26	No	10 ft	1W	BLK	03MU		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
34											
35											
36											
37											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.2 Highest Emissions Measured

Radiated Emissions											HL/Intel; 03MU
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2422.0										Low channel
3	2437.0										Mid channel
4	2452.0										High channel
5											
6	2390.0	HornS	H/V	-78.4		21.5	- 0.6	50.7	54.0	3.3	Low
7	2390.0	HornS	H/V	-79.2		21.5	- 0.6	49.9	54.0	4.1	Mid
8	2390.0	HornS	H/V	-79.8		21.5	- 0.6	49.3	54.0	4.7	High
9	2483.5	HornS	H/V	-79.7		21.5	- 0.6	49.4	54.0	4.6	Low
10	2483.5	HornS	H/V	-76.9		21.5	- 0.6	52.2	54.0	1.8	Mid
11	2483.5	HornS	H/V	-75.5		21.5	- 0.6	53.6	54.0	0.4	High
12	4844.0	HornC	H/V	-56.1		25.5	37.0	39.4	54.0	14.6	Low
13	4874.0	HornC	H/V	-54.5		25.5	37.0	41.0	54.0	13.0	Mid
14	4904.0	HornC	H/V	-56.6		25.5	37.0	38.9	54.0	15.1	High
15	7266.0	HornXN	H/V	-68.9		25.5	36.0	27.6	54.0	26.4	Low
16	7311.0	HornXN	H/V	-66.4		25.5	36.0	30.1	54.0	23.9	Mid
17	7356.0	HornXN	H/V	-65.8		25.5	36.0	30.7	54.0	23.3	High
18	12110.0	HornX	H/V	-74.3		25.5	34.0	24.2	54.0	29.8	Low
19	12185.0	HornX	H/V	-74.6		25.5	34.0	23.9	54.0	30.1	Mid
20	12260.0	HornX	H/V	-75.0		25.5	34.0	23.5	54.0	30.5	High
21	14532.0	HornKu	H/V	-78.8		25.5	17.3	36.4	54.0	17.6	Low, noise
22	19376.0	HornK	H/V	-74.0		32.3	32.0	33.3	54.0	20.7	Low, noise
23	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
24	19616.0	HornK	H/V	-72.6		32.3	32.0	34.7	54.0	19.3	High, noise
25	22068.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		9.4	8.7			0.23	1.0		6.5	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	No	10 ft	250 mW	N/A	03MU		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.3 Highest Emissions Measured

Radiated Emissions											HL/Intel; 05MU1
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2425.0										Low channel
3	2437.0										Mid channel
4	2449.0										High channel
5											
6	2390.0	HornS	H/V	-79.5		21.5	- 0.6	49.6	54.0	4.4	Low
7	2390.0	HornS	H/V	-79.6		21.5	- 0.6	49.5	54.0	4.5	Mid
8	2390.0	HornS	H/V	-79.8		21.5	- 0.6	49.3	54.0	4.7	High
9	2483.5	HornS	H/V	-79.5		21.5	- 0.6	49.6	54.0	4.4	Low
10	2483.5	HornS	H/V	-79.5		21.5	- 0.6	49.6	54.0	4.4	Mid
11	2483.5	HornS	H/V	-79.5		21.5	- 0.6	49.6	54.0	4.4	High
12	4850.0	HornC	H/V	-60.1		25.5	37.0	35.4	54.0	18.6	Low
13	4874.0	HornC	H/V	-62.8		25.5	37.0	32.7	54.0	21.3	Mid
14	4898.0	HornC	H/V	-59.6		25.5	37.0	35.9	54.0	18.1	High
15	7275.0	HornXN	H/V	-70.8		25.5	36.0	25.7	54.0	28.3	Low
16	7311.0	HornXN	H/V	-70.2		25.5	36.0	26.3	54.0	27.7	Mid
17	7347.0	HornXN	H/V	-71.4		25.5	36.0	25.1	54.0	28.9	High
18	12125.0	HornX	H/V	-71.2		25.5	34.0	27.3	54.0	26.7	Low, noise
19	12185.0	HornX	H/V	-72.3		25.5	34.0	26.2	54.0	27.8	Mid, noise
20	12245.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	High, noise
21	19400.0	HornK	H/V	-74.0		32.3	32.0	33.3	54.0	20.7	Low, noise
22	19496.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	Mid, noise
23	19592.0	HornK	H/V	-72.6		32.3	32.0	34.7	54.0	19.3	High, noise
24	22041.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
25											
26											
27	Health Hazard:		Pr	Pr			Pr	Limit		dB	
28			dBm	mW			mW/cm2	mW/cm2		Below	
29	2437 MHz		15.0	31.6			0.82	1.0		.9	
30											
31	Configuration:										
32	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
33	ACSM-26	No	10 ft	1W	BLK	05MU		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
34											
35											
36											
37											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.4 Highest Emissions Measured

Radiated Emissions											HL/Intel; 05MU
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2422.0										Low channel
3	2437.0										Mid channel
4	2452.0										High channel
5											
6	2390.0	HornS	H/V	-78.7		21.5	- 0.6	50.4	54.0	3.6	Low
7	2390.0	HornS	H/V	-79.7		21.5	- 0.6	49.4	54.0	4.6	Mid
8	2390.0	HornS	H/V	-79.5		21.5	- 0.6	49.6	54.0	4.4	High
9	2483.5	HornS	H/V	-79.1		21.5	- 0.6	50.0	54.0	4.0	Low
10	2483.5	HornS	H/V	-78.9		21.5	- 0.6	50.2	54.0	3.8	Mid
11	2483.5	HornS	H/V	-77.2		21.5	- 0.6	51.9	54.0	2.1	High
12	4844.0	HornC	H/V	-55.9		25.5	37.0	39.6	54.0	14.4	Low
13	4874.0	HornC	H/V	-54.5		25.5	37.0	41.0	54.0	13.0	Mid
14	4904.0	HornC	H/V	-56.7		25.5	37.0	38.8	54.0	15.2	High
15	7266.0	HornXN	H/V	-67.2		25.5	36.0	29.3	54.0	24.7	Low
16	7311.0	HornXN	H/V	-69.0		25.5	36.0	27.5	54.0	26.5	Mid
17	7356.0	HornXN	H/V	-70.4		25.5	36.0	26.1	54.0	27.9	High
18	12110.0	HornX	H/V	-73.4		25.5	34.0	25.1	54.0	28.9	Low
19	12185.0	HornX	H/V	-73.4		25.5	34.0	25.1	54.0	28.9	Mid
20	12260.0	HornX	H/V	-75.1		25.5	34.0	23.4	54.0	30.6	High
21	14532.0	HornKu	H/V	-79.0		25.5	17.3	36.2	54.0	17.8	Low, noise
22	19376.0	HornK	H/V	-74.1		32.3	32.0	33.2	54.0	20.8	Low, noise
23	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
24	19616.0	HornK	H/V	-72.5		32.3	32.0	34.8	54.0	19.2	High, noise
25	22068.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		7.5	5.6			0.15	1.0		8.4	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	No	10 ft	250 mW	N/A	05MU		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.5 Highest Emissions Measured

Radiated Emissions											HL/Intel; 08P
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-80.6		21.5	- 0.6	48.5	54.0	5.5	Low
7	2390.0	HornS	H/V	-86.4		21.5	- 0.6	42.7	54.0	11.3	Mid
8	2390.0	HornS	H/V	-86.8		21.5	- 0.6	42.3	54.0	11.7	High
9	2485.3	HornS	H/V	-86.7		21.5	- 0.6	42.4	54.0	11.6	Low
10	2485.3	HornS	H/V	-85.2		21.5	- 0.6	43.9	54.0	10.1	Mid
11	2485.3	HornS	H/V	-77.2		21.5	- 0.6	51.9	54.0	2.1	High
12	4824.0	HornC	H/V	-73.2		25.5	37.0	22.3	54.0	31.7	Low
13	4874.0	HornC	H/V	-72.9		25.5	37.0	22.6	54.0	31.4	Mid
14	4924.0	HornC	H/V	-72.4		25.5	37.0	23.1	54.0	30.9	High
15	7236.0	HornXN	H/V	-72.6		25.5	36.0	23.9	54.0	30.1	Low
16	7311.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	Mid
17	7386.0	HornXN	H/V	-72.8		25.5	36.0	23.7	54.0	30.3	High
18	12060.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	Low, noise
19	12185.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Mid, noise
20	12310.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	High, noise
21	14472.0	HornKu	H/V	-78.7		25.5	17.3	36.5	54.0	17.5	Low, noise
22	19296.0	HornK	H/V	-74.0		32.3	32.0	33.3	54.0	20.7	Low, noise
23	19496.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	Mid, noise
24	19696.0	HornK	H/V	-72.8		32.3	32.0	34.5	54.0	19.5	High, noise
25	21708.0	HornK	H/V	-68.9		32.3	32.0	38.4	54.0	15.6	Low, noise
26	22158.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		4.8	3.0			0.08	1.0		11.1	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	08P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.6 Highest Emissions Measured

Radiated Emissions											HL/Intel; 08PA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-82.4		21.5	- 0.6	46.7	54.0	7.3	Low
7	2390.0	HornS	H/V	-78.6		21.5	- 0.6	50.5	54.0	3.5	Mid
8	2390.0	HornS	H/V	-83.1		21.5	- 0.6	46.0	54.0	8.0	High
9	2483.5	HornS	H/V	-82.9		21.5	- 0.6	46.2	54.0	7.8	Low
10	2483.5	HornS	H/V	-76.6		21.5	- 0.6	52.5	54.0	1.5	Mid
11	2483.5	HornS	H/V	-77.2		21.5	- 0.6	51.9	54.0	2.1	High
12	4834.0	HornC	H/V	-55.9		25.5	37.0	39.6	54.0	14.4	Low
13	4874.0	HornC	H/V	-59.7		25.5	37.0	35.8	54.0	18.2	Mid
14	4914.0	HornC	H/V	-55.7		25.5	37.0	39.8	54.0	14.2	High
15	7251.0	HornXN	H/V	-65.4		25.5	36.0	31.1	54.0	22.9	Low
16	7311.0	HornXN	H/V	-64.3		25.5	36.0	32.2	54.0	21.8	Mid
17	7371.0	HornXN	H/V	-63.7		25.5	36.0	32.8	54.0	21.2	High
18	12085.0	HornX	H/V	-74.0		25.5	34.0	24.5	54.0	29.5	Low, noise
19	12185.0	HornX	H/V	-74.1		25.5	34.0	24.4	54.0	29.6	Mid, noise
20	12285.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	High, noise
21	14502.0	HornKu	H/V	-78.9		25.5	17.3	36.3	54.0	17.7	Low, noise
22	19336.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
24	19656.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	High, noise
25	22113.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		14.2	26.3			0.68	1.0		1.7	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	100 mW	N/A	08P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.7 Highest Emissions Measured

Radiated Emissions											HL/Intel; 08U
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-79.1		21.5	- 0.6	50.0	54.0	4.0	Low
7	2390.0	HornS	H/V	-86.8		21.5	- 0.6	42.3	54.0	11.7	Mid
8	2390.0	HornS	H/V	-86.9		21.5	- 0.6	42.2	54.0	11.8	High
9	2485.3	HornS	H/V	-86.7		21.5	- 0.6	42.4	54.0	11.6	Low
10	2485.3	HornS	H/V	-86.4		21.5	- 0.6	42.7	54.0	11.3	Mid
11	2485.3	HornS	H/V	-79.5		21.5	- 0.6	49.6	54.0	4.4	High
12	4824.0	HornC	H/V	-73.1		25.5	37.0	22.4	54.0	31.6	Low
13	4874.0	HornC	H/V	-72.7		25.5	37.0	22.8	54.0	31.2	Mid
14	4924.0	HornC	H/V	-72.3		25.5	37.0	23.2	54.0	30.8	High
15	7236.0	HornXN	H/V	-72.6		25.5	36.0	23.9	54.0	30.1	Low
16	7311.0	HornXN	H/V	-72.7		25.5	36.0	23.8	54.0	30.2	Mid
17	7386.0	HornXN	H/V	-72.7		25.5	36.0	23.8	54.0	30.2	High
18	12060.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Low, noise
19	12185.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	Mid, noise
20	12310.0	HornX	H/V	-72.9		25.5	34.0	25.6	54.0	28.4	High, noise
21	14472.0	HornKu	H/V	-78.8		25.5	17.3	36.4	54.0	17.6	Low, noise
22	19296.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	Mid, noise
24	19696.0	HornK	H/V	-72.8		32.3	32.0	34.5	54.0	19.5	High, noise
25	21708.0	HornK	H/V	-68.9		32.3	32.0	38.4	54.0	15.6	Low, noise
26	22158.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		# ##	0.8			0.02	1.0		16.7	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	08U		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.8 Highest Emissions Measured

Radiated Emissions											HL/Intel; 08UA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-78.1		21.5	- 0.6	51.0	54.0	3.0	Low
7	2390.0	HornS	H/V	-78.4		21.5	- 0.6	50.7	54.0	3.3	Mid
8	2390.0	HornS	H/V	-79.1		21.5	- 0.6	50.0	54.0	4.0	High
9	2483.5	HornS	H/V	-78.8		21.5	- 0.6	50.3	54.0	3.7	Low
10	2483.5	HornS	H/V	-77.2		21.5	- 0.6	51.9	54.0	2.1	Mid
11	2483.5	HornS	H/V	-75.2		21.5	- 0.6	53.9	54.0	0.1	High
12	4834.0	HornC	H/V	-57.7		25.5	37.0	37.8	54.0	16.2	Low
13	4874.0	HornC	H/V	-56.7		25.5	37.0	38.8	54.0	15.2	Mid
14	4914.0	HornC	H/V	-54.8		25.5	37.0	40.7	54.0	13.3	High
15	7251.0	HornXN	H/V	-67.9		25.5	36.0	28.6	54.0	25.4	Low
16	7311.0	HornXN	H/V	-66.6		25.5	36.0	29.9	54.0	24.1	Mid
17	7371.0	HornXN	H/V	-65.4		25.5	36.0	31.1	54.0	22.9	High
18	12085.0	HornX	H/V	-74.3		25.5	34.0	24.2	54.0	29.8	Low, noise
19	12185.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	Mid, noise
20	12285.0	HornX	H/V	-74.1		25.5	34.0	24.4	54.0	29.6	High, noise
21	14502.0	HornKu	H/V	-79.1		25.5	17.3	36.1	54.0	17.9	Low, noise
22	19336.0	HornK	H/V	-74.1		32.3	32.0	33.2	54.0	20.8	Low, noise
23	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
24	19656.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	High, noise
25	22113.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		6.0	4.0			0.10	1.0		9.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	00 mV	N/A	08U		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.9 Highest Emissions Measured

Radiated Emissions											HL/Intel; 09P
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-77.1		21.5	- 0.6	52.0	54.0	2.0	Low
7	2390.0	HornS	H/V	-86.8		21.5	- 0.6	42.3	54.0	11.7	Mid
8	2390.0	HornS	H/V	-86.9		21.5	- 0.6	42.2	54.0	11.8	High
9	2485.3	HornS	H/V	-86.3		21.5	- 0.6	42.8	54.0	11.2	Low
10	2485.3	HornS	H/V	-86.7		21.5	- 0.6	42.4	54.0	11.6	Mid
11	2485.3	HornS	H/V	-77.8		21.5	- 0.6	51.3	54.0	2.7	High
12	4824.0	HornC	H/V	-73.2		25.5	37.0	22.3	54.0	31.7	Low
13	4874.0	HornC	H/V	-72.9		25.5	37.0	22.6	54.0	31.4	Mid
14	4924.0	HornC	H/V	-72.5		25.5	37.0	23.0	54.0	31.0	High
15	7236.0	HornXN	H/V	-72.7		25.5	36.0	23.8	54.0	30.2	Low
16	7311.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	Mid
17	7386.0	HornXN	H/V	-72.7		25.5	36.0	23.8	54.0	30.2	High
18	12060.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Low, noise
19	12185.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Mid, noise
20	12310.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	High, noise
21	14472.0	HornKu	H/V	-78.7		25.5	17.3	36.5	54.0	17.5	Low, noise
22	19296.0	HornK	H/V	-73.8		32.3	32.0	33.5	54.0	20.5	Low, noise
23	19496.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	Mid, noise
24	19696.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	High, noise
25	21708.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	Low, noise
26	22158.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		7.0	5.0			0.13	1.0		8.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	09P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.10 Highest Emissions Measured

Radiated Emissions											HL/Intel; 09PA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-81.8		21.5	- 0.6	47.3	54.0	6.7	Low
7	2390.0	HornS	H/V	-77.6		21.5	- 0.6	51.5	54.0	2.5	Mid
8	2390.0	HornS	H/V	-83.1		21.5	- 0.6	46.0	54.0	8.0	High
9	2483.5	HornS	H/V	-83.0		21.5	- 0.6	46.1	54.0	7.9	Low
10	2483.5	HornS	H/V	-76.4		21.5	- 0.6	52.7	54.0	1.3	Mid
11	2483.5	HornS	H/V	-77.0		21.5	- 0.6	52.1	54.0	1.9	High
12	4834.0	HornC	H/V	-56.1		25.5	37.0	39.4	54.0	14.6	Low
13	4874.0	HornC	H/V	-53.9		25.5	37.0	41.6	54.0	12.4	Mid
14	4914.0	HornC	H/V	-58.8		25.5	37.0	36.7	54.0	17.3	High
15	7251.0	HornXN	H/V	-68.5		25.5	36.0	28.0	54.0	26.0	Low
16	7311.0	HornXN	H/V	-65.8		25.5	36.0	30.7	54.0	23.3	Mid
17	7371.0	HornXN	H/V	-64.3		25.5	36.0	32.2	54.0	21.8	High
18	12085.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	Low, noise
19	12185.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	Mid, noise
20	12285.0	HornX	H/V	-79.0		25.5	34.0	19.5	54.0	34.5	High, noise
21	14502.0	HornKu	H/V	-79.0		25.5	17.3	36.2	54.0	17.8	Low, noise
22	19336.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
24	19656.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	High, noise
25	22113.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		14.8	30.2			0.79	1.0		1.1	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	100 mW	N/A	09P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.11 Highest Emissions Measured

Radiated Emissions											HL/Intel; 10U
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-78.7		21.5	- 0.6	50.4	54.0	3.6	Low
7	2390.0	HornS	H/V	-87.3		21.5	- 0.6	41.8	54.0	12.2	Mid
8	2390.0	HornS	H/V	-87.9		21.5	- 0.6	41.2	54.0	12.8	High
9	2485.3	HornS	H/V	-88.6		21.5	- 0.6	40.5	54.0	13.5	Low
10	2485.3	HornS	H/V	-85.9		21.5	- 0.6	43.2	54.0	10.8	Mid
11	2485.3	HornS	H/V	-78.5		21.5	- 0.6	50.6	54.0	3.4	High
12	4824.0	HornC	H/V	-73.1		25.5	37.0	22.4	54.0	31.6	Low
13	4874.0	HornC	H/V	-72.6		25.5	37.0	22.9	54.0	31.1	Mid
14	4924.0	HornC	H/V	-72.3		25.5	37.0	23.2	54.0	30.8	High
15	7236.0	HornXN	H/V	-72.6		25.5	36.0	23.9	54.0	30.1	Low
16	7311.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	Mid
17	7386.0	HornXN	H/V	-72.8		25.5	36.0	23.7	54.0	30.3	High
18	12060.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Low, noise
19	12185.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Mid, noise
20	12310.0	HornX	H/V	-72.9		25.5	34.0	25.6	54.0	28.4	High, noise
21	14472.0	HornKu	H/V	-78.8		25.5	17.3	36.4	54.0	17.6	Low, noise
22	19296.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.1		32.3	32.0	35.2	54.0	18.8	Mid, noise
24	19696.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	High, noise
25	21708.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	Low, noise
26	22158.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		0.0	1.0			0.03	1.0		15.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	10U		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.12 Highest Emissions Measured

Radiated Emissions											HL/Intel; 10UA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-78.3		21.5	- 0.6	50.8	54.0	3.2	Low
7	2390.0	HornS	H/V	-76.9		21.5	- 0.6	52.2	54.0	1.8	Mid
8	2390.0	HornS	H/V	-79.2		21.5	- 0.6	49.9	54.0	4.1	High
9	2483.5	HornS	H/V	-78.9		21.5	- 0.6	50.2	54.0	3.8	Low
10	2483.5	HornS	H/V	-76.1		21.5	- 0.6	53.0	54.0	1.0	Mid
11	2483.5	HornS	H/V	-75.5		21.5	- 0.6	53.6	54.0	0.4	High
12	4834.0	HornC	H/V	-53.0		25.5	37.0	42.5	54.0	11.5	Low
13	4874.0	HornC	H/V	-53.4		25.5	37.0	42.1	54.0	11.9	Mid
14	4914.0	HornC	H/V	-53.2		25.5	37.0	42.3	54.0	11.7	High
15	7251.0	HornXN	H/V	-65.2		25.5	36.0	31.3	54.0	22.7	Low
16	7311.0	HornXN	H/V	-67.8		25.5	36.0	28.7	54.0	25.3	Mid
17	7371.0	HornXN	H/V	-65.4		25.5	36.0	31.1	54.0	22.9	High
18	12085.0	HornX	H/V	-74.3		25.5	34.0	24.2	54.0	29.8	Low, noise
19	12185.0	HornX	H/V	-74.1		25.5	34.0	24.4	54.0	29.6	Mid, noise
20	12285.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	High, noise
21	14502.0	HornKu	H/V	-78.8		25.5	17.3	36.4	54.0	17.6	Low, noise
22	19336.0	HornK	H/V	-74.0		32.3	32.0	33.3	54.0	20.7	Low, noise
23	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
24	19656.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	High, noise
25	22113.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		5.0	3.2			0.08	1.0		10.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	100 mW	N/A	10U		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.13 Highest Emissions Measured

Radiated Emissions											HL/Intel; 12P
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-75.8		21.5	- 0.6	53.3	54.0	0.7	Low
7	2390.0	HornS	H/V	-84.7		21.5	- 0.6	44.4	54.0	9.6	Mid
8	2390.0	HornS	H/V	-76.7		21.5	- 0.6	52.4	54.0	1.6	High
9	2485.3	HornS	H/V	-86.1		21.5	- 0.6	43.0	54.0	11.0	Low
10	2485.3	HornS	H/V	-85.3		21.5	- 0.6	43.8	54.0	10.2	Mid
11	2485.3	HornS	H/V	-87.9		21.5	- 0.6	41.2	54.0	12.8	High
12	4824.0	HornC	H/V	-72.9		25.5	37.0	22.6	54.0	31.4	Low
13	4874.0	HornC	H/V	-72.8		25.5	37.0	22.7	54.0	31.3	Mid
14	4924.0	HornC	H/V	-72.4		25.5	37.0	23.1	54.0	30.9	High
15	7236.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	Low
16	7311.0	HornXN	H/V	-73.1		25.5	36.0	23.4	54.0	30.6	Mid
17	7386.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	High
18	12060.0	HornX	H/V	-72.9		25.5	34.0	25.6	54.0	28.4	Low, noise
19	12185.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Mid, noise
20	12310.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	High, noise
21	14472.0	HornKu	H/V	-78.6		25.5	17.3	36.6	54.0	17.4	Low, noise
22	19296.0	HornK	H/V	-73.8		32.3	32.0	33.5	54.0	20.5	Low, noise
23	19496.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	Mid, noise
24	19696.0	HornK	H/V	-71.8		32.3	32.0	35.5	54.0	18.5	High, noise
25	21708.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	Low, noise
26	22158.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		# ##	0.8			0.02	1.0		16.7	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	12P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.14 Highest Emissions Measured

Radiated Emissions											HL/Intel; 14P
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-79.7		21.5	- 0.6	49.4	54.0	4.6	Low
7	2390.0	HornS	H/V	-87.9		21.5	- 0.6	41.2	54.0	12.8	Mid
8	2390.0	HornS	H/V	-89.2		21.5	- 0.6	39.9	54.0	14.1	High
9	2485.3	HornS	H/V	-88.3		21.5	- 0.6	40.8	54.0	13.2	Low
10	2485.3	HornS	H/V	-88.6		21.5	- 0.6	40.5	54.0	13.5	Mid
11	2485.3	HornS	H/V	-82.8		21.5	- 0.6	46.3	54.0	7.7	High
12	4824.0	HornC	H/V	-73.1		25.5	37.0	22.4	54.0	31.6	Low
13	4874.0	HornC	H/V	-72.8		25.5	37.0	22.7	54.0	31.3	Mid
14	4924.0	HornC	H/V	-72.4		25.5	37.0	23.1	54.0	30.9	High
15	7236.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	Low
16	7311.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	Mid
17	7386.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	High
18	12060.0	HornX	H/V	-73.0		25.5	34.0	25.5	54.0	28.5	Low, noise
19	12185.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Mid, noise
20	12310.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	High, noise
21	14472.0	HornKu	H/V	-78.8		25.5	17.3	36.4	54.0	17.6	Low, noise
22	19296.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	Mid, noise
24	19696.0	HornK	H/V	-71.8		32.3	32.0	35.5	54.0	18.5	High, noise
25	21708.0	HornK	H/V	-68.9		32.3	32.0	38.4	54.0	15.6	Low, noise
26	22158.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		2.6	1.8			0.05	1.0		13.3	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	14P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.15 Highest Emissions Measured

Radiated Emissions											HL/Intel; 14PA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-75.5		21.5	- 0.6	53.6	54.0	0.4	Low
7	2390.0	HornS	H/V	-76.8		21.5	- 0.6	52.3	54.0	1.7	Mid
8	2390.0	HornS	H/V	-81.4		21.5	- 0.6	47.7	54.0	6.3	High
9	2483.5	HornS	H/V	-76.4		21.5	- 0.6	52.7	54.0	1.3	Low
10	2483.5	HornS	H/V	-75.2		21.5	- 0.6	53.9	54.0	0.1	Mid
11	2483.5	HornS	H/V	-75.5		21.5	- 0.6	53.6	54.0	0.4	High
12	4834.0	HornC	H/V	-52.2		25.5	37.0	43.3	54.0	10.7	Low
13	4874.0	HornC	H/V	-50.9		25.5	37.0	44.6	54.0	9.4	Mid
14	4914.0	HornC	H/V	-51.6		25.5	37.0	43.9	54.0	10.1	High
15	7251.0	HornXN	H/V	-67.2		25.5	36.0	29.3	54.0	24.7	Low
16	7311.0	HornXN	H/V	-69.9		25.5	36.0	26.6	54.0	27.4	Mid
17	7371.0	HornXN	H/V	-63.0		25.5	36.0	33.5	54.0	20.5	High
18	12085.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	Low, noise
19	12185.0	HornX	H/V	-74.3		25.5	34.0	24.2	54.0	29.8	Mid, noise
20	12285.0	HornX	H/V	-74.0		25.5	34.0	24.5	54.0	29.5	High, noise
21	14502.0	HornKu	H/V	-79.0		25.5	17.3	36.2	54.0	17.8	Low, noise
22	19336.0	HornK	H/V	-74.0		32.3	32.0	33.3	54.0	20.7	Low, noise
23	19496.0	HornK	H/V	-72.1		32.3	32.0	35.2	54.0	18.8	Mid, noise
24	19656.0	HornK	H/V	-72.7		32.3	32.0	34.6	54.0	19.4	High, noise
25	22113.0	HornK	H/V	-68.9		32.3	32.0	38.4	54.0	15.6	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		8.5	7.1			0.18	1.0		7.4	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	100 mW	N/A	14P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.16 Highest Emissions Measured

Radiated Emissions											HL/Intel; 15G
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-78.1		21.5	- 0.6	51.0	54.0	3.0	Low
7	2390.0	HornS	H/V	-86.1		21.5	- 0.6	43.0	54.0	11.0	Mid
8	2390.0	HornS	H/V	-85.8		21.5	- 0.6	43.3	54.0	10.7	High
9	2485.3	HornS	H/V	-85.4		21.5	- 0.6	43.7	54.0	10.3	Low
10	2485.3	HornS	H/V	-82.2		21.5	- 0.6	46.9	54.0	7.1	Mid
11	2485.3	HornS	H/V	-84.6		21.5	- 0.6	44.5	54.0	9.5	High
12	4824.0	HornC	H/V	-73.3		25.5	37.0	22.2	54.0	31.8	Low
13	4874.0	HornC	H/V	-72.3		25.5	37.0	23.2	54.0	30.8	Mid
14	4924.0	HornC	H/V	-72.8		25.5	37.0	22.7	54.0	31.3	High
15	7236.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	Low
16	7311.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	Mid
17	7386.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	High
18	12060.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Low, noise
19	12185.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	Mid, noise
20	12310.0	HornX	H/V	-72.9		25.5	34.0	25.6	54.0	28.4	High, noise
21	14472.0	HornKu	H/V	-78.7		25.5	17.3	36.5	54.0	17.5	Low, noise
22	19296.0	HornK	H/V	-73.8		32.3	32.0	33.5	54.0	20.5	Low, noise
23	19496.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	Mid, noise
24	19696.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	High, noise
25	22158.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		# ##	1.0			0.02	1.0		16.1	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	15G		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.17 Highest Emissions Measured

Radiated Emissions											HL/Intel; 15P
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-80.9		21.5	- 0.6	48.2	54.0	5.8	Low
7	2390.0	HornS	H/V	-87.6		21.5	- 0.6	41.5	54.0	12.5	Mid
8	2390.0	HornS	H/V	-87.6		21.5	- 0.6	41.5	54.0	12.5	High
9	2485.3	HornS	H/V	-86.1		21.5	- 0.6	43.0	54.0	11.0	Low
10	2485.3	HornS	H/V	-83.5		21.5	- 0.6	45.6	54.0	8.4	Mid
11	2485.3	HornS	H/V	-83.2		21.5	- 0.6	45.9	54.0	8.1	High
12	4824.0	HornC	H/V	-73.3		25.5	37.0	22.2	54.0	31.8	Low
13	4874.0	HornC	H/V	-72.7		25.5	37.0	22.8	54.0	31.2	Mid
14	4924.0	HornC	H/V	-72.7		25.5	37.0	22.8	54.0	31.2	High
15	7236.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	Low
16	7311.0	HornXN	H/V	-73.1		25.5	36.0	23.4	54.0	30.6	Mid
17	7386.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	High
18	12060.0	HornX	H/V	-72.9		25.5	34.0	25.6	54.0	28.4	Low, noise
19	12185.0	HornX	H/V	-73.0		25.5	34.0	25.5	54.0	28.5	Mid, noise
20	12310.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	High, noise
21	14472.0	HornKu	H/V	-78.6		25.5	17.3	36.6	54.0	17.4	Low, noise
22	19296.0	HornK	H/V	-73.8		32.3	32.0	33.5	54.0	20.5	Low, noise
23	19496.0	HornK	H/V	-72.1		32.3	32.0	35.2	54.0	18.8	Mid, noise
24	19696.0	HornK	H/V	-72.1		32.3	32.0	35.2	54.0	18.8	High, noise
25	22158.0	HornK	H/V	-69.1		32.3	32.0	38.2	54.0	15.8	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		# ##	0.6			0.01	1.0		18.3	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	15P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.18 Highest Emissions Measured

Radiated Emissions											HL/Intel; 15U
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-82.3		21.5	- 0.6	46.8	54.0	7.2	Low
7	2390.0	HornS	H/V	-87.9		21.5	- 0.6	41.2	54.0	12.8	Mid
8	2390.0	HornS	H/V	-88.6		21.5	- 0.6	40.5	54.0	13.5	High
9	2485.3	HornS	H/V	-88.3		21.5	- 0.6	40.8	54.0	13.2	Low
10	2485.3	HornS	H/V	-86.5		21.5	- 0.6	42.6	54.0	11.4	Mid
11	2485.3	HornS	H/V	-77.5		21.5	- 0.6	51.6	54.0	2.4	High
12	4824.0	HornC	H/V	-73.2		25.5	37.0	22.3	54.0	31.7	Low
13	4874.0	HornC	H/V	-72.7		25.5	37.0	22.8	54.0	31.2	Mid
14	4924.0	HornC	H/V	-72.9		25.5	37.0	22.6	54.0	31.4	High
15	7236.0	HornXN	H/V	-72.8		25.5	36.0	23.7	54.0	30.3	Low
16	7311.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	Mid
17	7386.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	High
18	12060.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Low, noise
19	12185.0	HornX	H/V	-72.9		25.5	34.0	25.6	54.0	28.4	Mid, noise
20	12310.0	HornX	H/V	-73.0		25.5	34.0	25.5	54.0	28.5	High, noise
21	14472.0	HornKu	H/V	-78.7		25.5	17.3	36.5	54.0	17.5	Low, noise
22	19296.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.1		32.3	32.0	35.2	54.0	18.8	Mid, noise
24	19696.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	High, noise
25	21708.0	HornK	H/V	-68.9		32.3	32.0	38.4	54.0	15.6	Low, noise
26	22158.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		0.7	1.2			0.03	1.0		15.2	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	15U		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.19 Highest Emissions Measured

Radiated Emissions											HL/Intel; 15UA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-81.7		21.5	- 0.6	47.4	54.0	6.6	Low
7	2390.0	HornS	H/V	-78.5		21.5	- 0.6	50.6	54.0	3.4	Mid
8	2390.0	HornS	H/V	-83.1		21.5	- 0.6	46.0	54.0	8.0	High
9	2483.5	HornS	H/V	-82.4		21.5	- 0.6	46.7	54.0	7.3	Low
10	2483.5	HornS	H/V	-76.9		21.5	- 0.6	52.2	54.0	1.8	Mid
11	2483.5	HornS	H/V	-76.9		21.5	- 0.6	52.2	54.0	1.8	High
12	4834.0	HornC	H/V	-51.5		25.5	37.0	44.0	54.0	10.0	Low
13	4874.0	HornC	H/V	-52.9		25.5	37.0	42.6	54.0	11.4	Mid
14	4914.0	HornC	H/V	-52.6		25.5	37.0	42.9	54.0	11.1	High
15	7251.0	HornXN	H/V	-65.2		25.5	36.0	31.3	54.0	22.7	Low
16	7311.0	HornXN	H/V	-67.1		25.5	36.0	29.4	54.0	24.6	Mid
17	7371.0	HornXN	H/V	-64.5		25.5	36.0	32.0	54.0	22.0	High
18	12085.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	Low, noise
19	12185.0	HornX	H/V	-74.0		25.5	34.0	24.5	54.0	29.5	Mid, noise
20	12285.0	HornX	H/V	-74.1		25.5	34.0	24.4	54.0	29.6	High, noise
21	14502.0	HornKu	H/V	-79.1		25.5	17.3	36.1	54.0	17.9	Low, noise
22	19336.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.1		32.3	32.0	35.2	54.0	18.8	Mid, noise
24	19656.0	HornK	H/V	-72.3		32.3	32.0	35.0	54.0	19.0	High, noise
25	22113.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		6.5	4.5			0.12	1.0		9.4	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	100 mW	N/A	15U		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.20 Highest Emissions Measured

Radiated Emissions											HL/Intel; 15Y
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-84.9		21.5	- 0.6	44.2	54.0	9.8	Low
7	2390.0	HornS	H/V	-89.5		21.5	- 0.6	39.6	54.0	14.4	Mid
8	2390.0	HornS	H/V	-89.5		21.5	- 0.6	39.6	54.0	14.4	High
9	2485.3	HornS	H/V	-89.3		21.5	- 0.6	39.8	54.0	14.2	Low
10	2485.3	HornS	H/V	-88.6		21.5	- 0.6	40.5	54.0	13.5	Mid
11	2485.3	HornS	H/V	-84.6		21.5	- 0.6	44.5	54.0	9.5	High
12	4824.0	HornC	H/V	-73.1		25.5	37.0	22.4	54.0	31.6	Low
13	4874.0	HornC	H/V	-72.9		25.5	37.0	22.6	54.0	31.4	Mid
14	4924.0	HornC	H/V	-72.4		25.5	37.0	23.1	54.0	30.9	High
15	7236.0	HornXN	H/V	-72.8		25.5	36.0	23.7	54.0	30.3	Low
16	7311.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	Mid
17	7386.0	HornXN	H/V	-73.1		25.5	36.0	23.4	54.0	30.6	High
18	12060.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	Low, noise
19	12185.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	Mid, noise
20	12310.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	High, noise
21	14472.0	HornKu	H/V	-78.8		25.5	17.3	36.4	54.0	17.6	Low, noise
22	19296.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	Mid, noise
24	19696.0	HornK	H/V	-71.9		32.3	32.0	35.4	54.0	18.6	High, noise
25	21708.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	Low, noise
26	22158.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		- 5.0	0.3			0.01	1.0		20.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	15Y		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.21 Highest Emissions Measured

Radiated Emissions											HL/Intel; 15YA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-79.7		21.5	- 0.6	49.4	54.0	4.6	Low
7	2390.0	HornS	H/V	-79.6		21.5	- 0.6	49.5	54.0	4.5	Mid
8	2390.0	HornS	H/V	-79.6		21.5	- 0.6	49.5	54.0	4.5	High
9	2483.5	HornS	H/V	-79.4		21.5	- 0.6	49.7	54.0	4.3	Low
10	2483.5	HornS	H/V	-79.1		21.5	- 0.6	50.0	54.0	4.0	Mid
11	2483.5	HornS	H/V	-78.9		21.5	- 0.6	50.2	54.0	3.8	High
12	4834.0	HornC	H/V	-55.3		25.5	37.0	40.2	54.0	13.8	Low
13	4874.0	HornC	H/V	-55.6		25.5	37.0	39.9	54.0	14.1	Mid
14	4914.0	HornC	H/V	-56.8		25.5	37.0	38.7	54.0	15.3	High
15	7251.0	HornXN	H/V	-67.3		25.5	36.0	29.2	54.0	24.8	Low
16	7311.0	HornXN	H/V	-62.6		25.5	36.0	33.9	54.0	20.1	Mid
17	7371.0	HornXN	H/V	-60.7		25.5	36.0	35.8	54.0	18.2	High
18	12085.0	HornX	H/V	-74.3		25.5	34.0	24.2	54.0	29.8	Low, noise
19	12185.0	HornX	H/V	-74.3		25.5	34.0	24.2	54.0	29.8	Mid, noise
20	12285.0	HornX	H/V	-74.2		25.5	34.0	24.3	54.0	29.7	High, noise
21	14502.0	HornKu	H/V	-79.0		25.5	17.3	36.2	54.0	17.8	Low, noise
22	19336.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
24	19656.0	HornK	H/V	-72.9		32.3	32.0	34.4	54.0	19.6	High, noise
25	22113.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		# ##	1.0			0.03	1.0		16.0	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	100 mW	N/A	15Y		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.22 Highest Emissions Measured

Radiated Emissions											HL/Intel; 17P
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2	2412.0										Low channel
3	2437.0										Mid channel
4	2462.0										High channel
5											
6	2390.0	HornS	H/V	-75.4		21.5	- 0.6	53.7	54.0	0.3	Low
7	2390.0	HornS	H/V	-86.1		21.5	- 0.6	43.0	54.0	11.0	Mid
8	2390.0	HornS	H/V	-86.8		21.5	- 0.6	42.3	54.0	11.7	High
9	2485.3	HornS	H/V	-86.5		21.5	- 0.6	42.6	54.0	11.4	Low
10	2485.3	HornS	H/V	-83.4		21.5	- 0.6	45.7	54.0	8.3	Mid
11	2485.3	HornS	H/V	-75.4		21.5	- 0.6	53.7	54.0	0.3	High
12	4824.0	HornC	H/V	-73.1		25.5	37.0	22.4	54.0	31.6	Low
13	4874.0	HornC	H/V	-72.8		25.5	37.0	22.7	54.0	31.3	Mid
14	4924.0	HornC	H/V	-72.6		25.5	37.0	22.9	54.0	31.1	High
15	7236.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	Low
16	7311.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	Mid
17	7386.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	High
18	12060.0	HornX	H/V	-73.0		25.5	34.0	25.5	54.0	28.5	Low, noise
19	12185.0	HornX	H/V	-73.0		25.5	34.0	25.5	54.0	28.5	Mid, noise
20	12310.0	HornX	H/V	-72.7		25.5	34.0	25.8	54.0	28.2	High, noise
21	14472.0	HornKu	H/V	-78.7		25.5	17.3	36.5	54.0	17.5	Low, noise
22	19296.0	HornK	H/V	-73.7		32.3	32.0	33.6	54.0	20.4	Low, noise
23	19496.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	Mid, noise
24	19696.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	High, noise
25	21708.0	HornK	H/V	-68.9		32.3	32.0	38.4	54.0	15.6	Low, noise
26	22158.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		0.3	1.1			0.03	1.0		15.6	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	17P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.23 Highest Emissions Measured

Radiated Emissions											HL/Intel; 19GA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2427.0										Low channel
3	2437.0										Mid channel
4	2447.0										High channel
5											
6	2390.0	HornS	H/V	-86.4		21.5	- 0.6	42.7	54.0	11.3	Low
7	2390.0	HornS	H/V	-87.2		21.5	- 0.6	41.9	54.0	12.1	Mid
8	2390.0	HornS	H/V	-87.2		21.5	- 0.6	41.9	54.0	12.1	High
9	2483.5	HornS	H/V	-86.9		21.5	- 0.6	42.2	54.0	11.8	Low
10	2483.5	HornS	H/V	-87.1		21.5	- 0.6	42.0	54.0	12.0	Mid
11	2483.5	HornS	H/V	-86.9		21.5	- 0.6	42.2	54.0	11.8	High
12	4854.0	HornC	H/V	-56.1		25.5	37.0	39.4	54.0	14.6	Low
13	4874.0	HornC	H/V	-55.6		25.5	37.0	39.9	54.0	14.1	Mid
14	4914.0	HornC	H/V	-56.7		25.5	37.0	38.8	54.0	15.2	High
15	7281.0	HornXN	H/V	-66.3		25.5	36.0	30.2	54.0	23.8	Low
16	7311.0	HornXN	H/V	-63.8		25.5	36.0	32.7	54.0	21.3	Mid
17	7341.0	HornXN	H/V	-64.9		25.5	36.0	31.6	54.0	22.4	High
18	12135.0	HornX	H/V	-73.4		25.5	34.0	25.1	54.0	28.9	Low, noise
19	12185.0	HornX	H/V	-73.2		25.5	34.0	25.3	54.0	28.7	Mid, noise
20	12235.0	HornX	H/V	-74.6		25.5	34.0	23.9	54.0	30.1	High, noise
21	19416.0	HornK	H/V	-74.4		32.3	32.0	32.9	54.0	21.1	Low, noise
22	19496.0	HornK	H/V	-72.2		32.3	32.0	35.1	54.0	18.9	Mid, noise
23	19576.0	HornK	H/V	-72.5		32.3	32.0	34.8	54.0	19.2	High, noise
24											
25											
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		6.0	4.0			0.10	1.0		9.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	250 mW	BLK	19G		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.24 Highest Emissions Measured

Radiated Emissions											HL/Intel; 20P
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2417.0										Low channel
3	2437.0										Mid channel
4	2457.0										High channel
5											
6	2390.0	HornS	H/V	-77.9		21.5	- 0.6	51.2	54.0	2.8	Low
7	2390.0	HornS	H/V	-86.3		21.5	- 0.6	42.8	54.0	11.2	Mid
8	2390.0	HornS	H/V	-86.9		21.5	- 0.6	42.2	54.0	11.8	High
9	2485.3	HornS	H/V	-86.7		21.5	- 0.6	42.4	54.0	11.6	Low
10	2485.3	HornS	H/V	-85.5		21.5	- 0.6	43.6	54.0	10.4	Mid
11	2485.3	HornS	H/V	-83.4		21.5	- 0.6	45.7	54.0	8.3	High
12	4824.0	HornC	H/V	-73.2		25.5	37.0	22.3	54.0	31.7	Low
13	4874.0	HornC	H/V	-72.7		25.5	37.0	22.8	54.0	31.2	Mid
14	4924.0	HornC	H/V	-72.8		25.5	37.0	22.7	54.0	31.3	High
15	7236.0	HornXN	H/V	-72.8		25.5	36.0	23.7	54.0	30.3	Low
16	7311.0	HornXN	H/V	-73.0		25.5	36.0	23.5	54.0	30.5	Mid
17	7386.0	HornXN	H/V	-72.9		25.5	36.0	23.6	54.0	30.4	High
18	12060.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Low, noise
19	12185.0	HornX	H/V	-72.8		25.5	34.0	25.7	54.0	28.3	Mid, noise
20	12310.0	HornX	H/V	-72.9		25.5	34.0	25.6	54.0	28.4	High, noise
21	14472.0	HornKu	H/V	-78.8		25.5	17.3	36.4	54.0	17.6	Low, noise
22	19296.0	HornK	H/V	-73.9		32.3	32.0	33.4	54.0	20.6	Low, noise
23	19496.0	HornK	H/V	-72.1		32.3	32.0	35.2	54.0	18.8	Mid, noise
24	19696.0	HornK	H/V	-72.0		32.3	32.0	35.3	54.0	18.7	High, noise
25	22158.0	HornK	H/V	-69.0		32.3	32.0	38.3	54.0	15.7	High, noise
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		- 2.0	0.6			0.02	1.0		17.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	N/A	N/A	20P		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.25 Highest Emissions Measured

Radiated Emissions											HL/Intel; 24G
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμ V/m	E3lim dBμ V/m	Pass dB	Comments
1											
2											
3	2437.0										Only channel (Mid)
4											
5											
6	2390.0	HornS	H/V	-80.7		21.5	- 0.6	48.4	54.0	5.6	Mid
7	2483.5	HornS	H/V	-78.9		21.5	- 0.6	50.2	54.0	3.8	Mid
8	4874.0	HornC	H/V	-72.1		25.5	37.0	23.4	54.0	30.6	Mid
9	7311.0	HornC	H/V	-72.9		25.5	37.0	22.6	54.0	31.4	Mid
10	12185.0	HornC	H/V	-74.0		25.5	37.0	21.5	54.0	32.5	Mid
11	19496.0	HornXN	H/V	-72.2		32.3	36.0	31.1	54.0	22.9	Mid
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		-10.0	0.1			0.00	1.0		25.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	100 ft	N/A	N/A	24G		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

Table 5.26 Highest Emissions Measured

Radiated Emissions											HL/Intel; 24GA
#	Freq. MHz	Ant. Used	Ant. Pol.	Ave dBm	Peak dBm	Ka dB/m	Kg dB	E3 dBμV/m	E3lim dBμV/m	Pass dB	Comments
1											
2	2427.0										Low channel
3	2437.0										Mid channel
4	2447.0										High channel
5											
6	2390.0	HornS	H/V	-86.6		21.5	- 0.6	42.5	54.0	11.5	Low
7	2390.0	HornS	H/V	-87.1		21.5	- 0.6	42.0	54.0	12.0	Mid
8	2390.0	HornS	H/V	-87.2		21.5	- 0.6	41.9	54.0	12.1	High
9	2483.5	HornS	H/V	-87.1		21.5	- 0.6	42.0	54.0	12.0	Low
10	2483.5	HornS	H/V	-86.9		21.5	- 0.6	42.2	54.0	11.8	Mid
11	2483.5	HornS	H/V	-86.9		21.5	- 0.6	42.2	54.0	11.8	High
12	4854.0	HornC	H/V	-54.4		25.5	37.0	41.1	54.0	12.9	Low
13	4874.0	HornC	H/V	-53.1		25.5	37.0	42.4	54.0	11.6	Mid
14	4914.0	HornC	H/V	-51.2		25.5	37.0	44.3	54.0	9.7	High
15	7281.0	HornXN	H/V	-68.0		25.5	36.0	28.5	54.0	25.5	Low
16	7311.0	HornXN	H/V	-64.7		25.5	36.0	31.8	54.0	22.2	Mid
17	7341.0	HornXN	H/V	-69.7		25.5	36.0	26.8	54.0	27.2	High
18	12135.0	HornX	H/V	-73.3		25.5	34.0	25.2	54.0	28.8	Low, noise
19	12185.0	HornX	H/V	-73.4		25.5	34.0	25.1	54.0	28.9	Mid, noise
20	12235.0	HornX	H/V	-73.8		25.5	34.0	24.7	54.0	29.3	High, noise
21	19416.0	HornK	H/V	-74.4		32.3	32.0	32.9	54.0	21.1	Low, noise
22	19496.0	HornK	H/V	-72.3		32.3	32.0	35.0	54.0	19.0	Mid, noise
23	19576.0	HornK	H/V	-72.4		32.3	32.0	34.9	54.0	19.1	High, noise
24											
25											
26											
27											
28	Health Hazard:		Pr	Pr			Pr	Limit		dB	
29			dBm	mW			mW/cm2	mW/cm2		Below	
30	2437 MHz		14.0	25.1			0.65	1.0		1.9	
31											
32	Configuration:										
33	Pwr supp	Pwr feed	Coax	Amp	Filt	Ant		* Ave: measured with 1 MHz RBW and 100 Hz VBW			
34	ACSM-26	Yes	50 ft	250 mW	BLK	24G		* Peak: measured with 1 MHz RBW and 3 MHz VBW			
35											
36											
37											
38											

Meas. 05/19/01 - 05/23/01; U of Mich

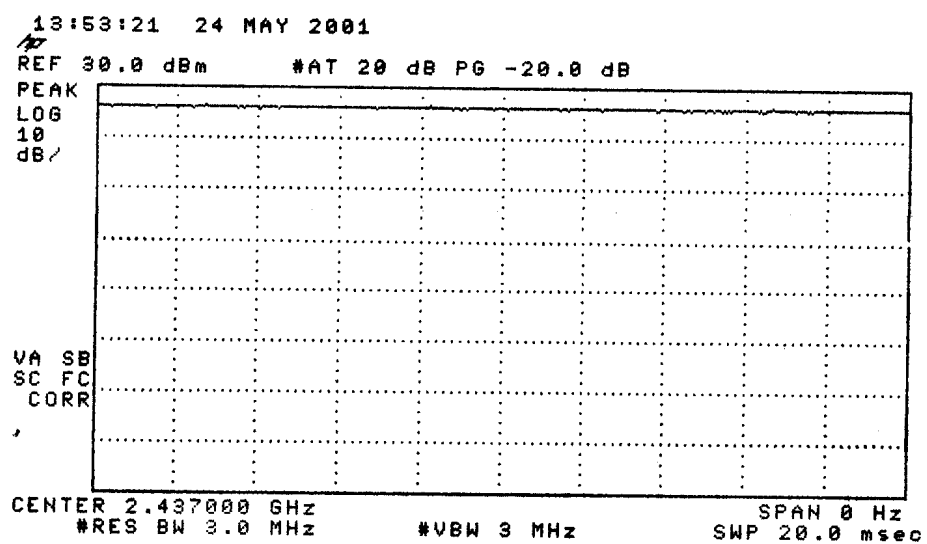


Figure 6.2 Measurement of duty factor for modified CW operation
(1000 mW NON-AGC).

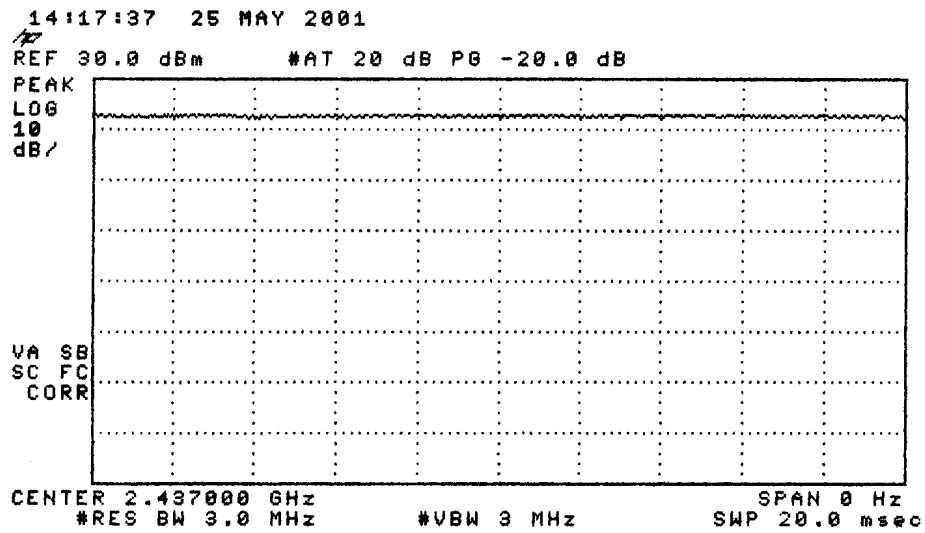


Figure 6.3 Measurement of duty factor for modified CW operation
(250 mW AGC).

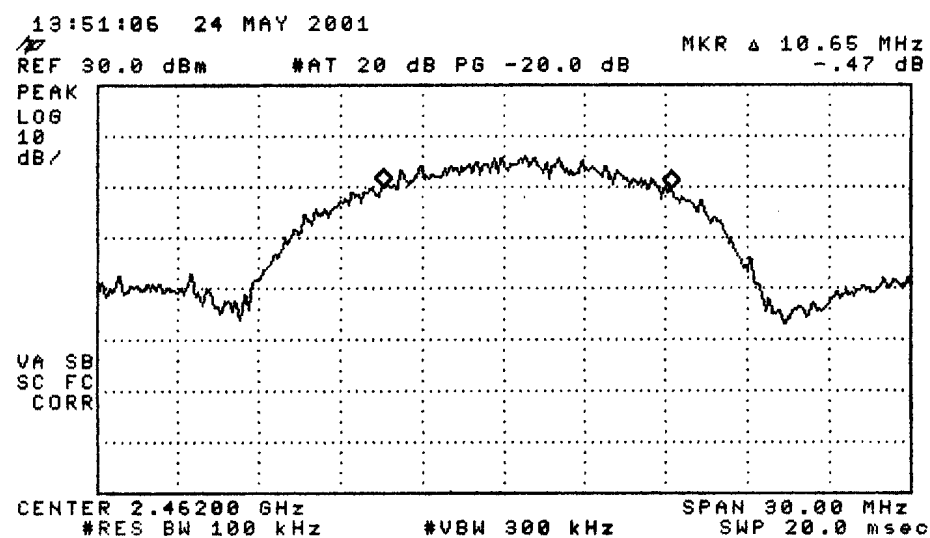
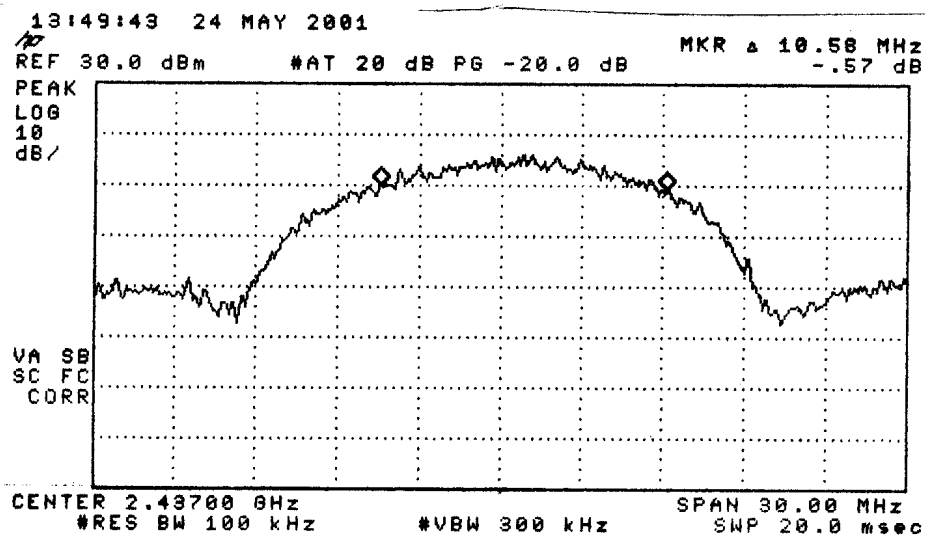
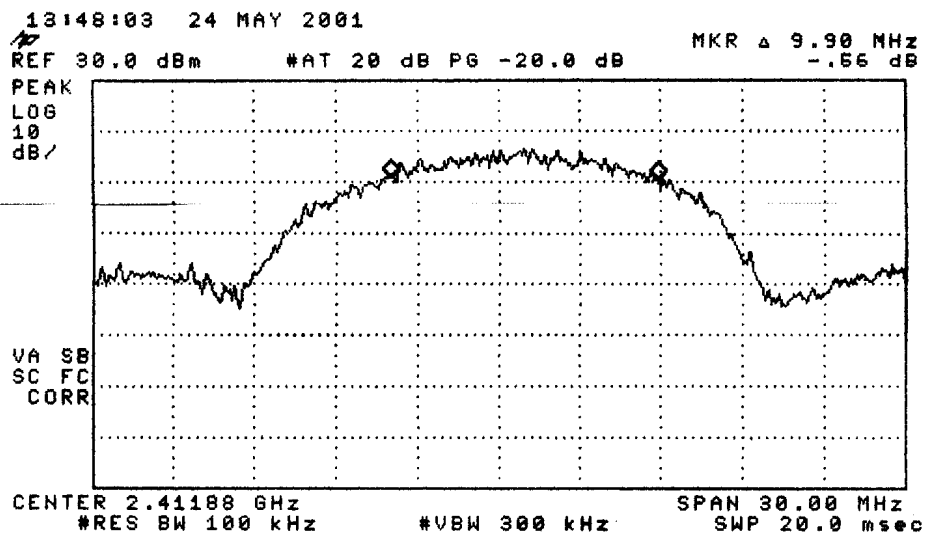


Figure 6.4 6 dB-point bandwidth measurements; low, mid, and high channels (1000 mW NON-AGC).

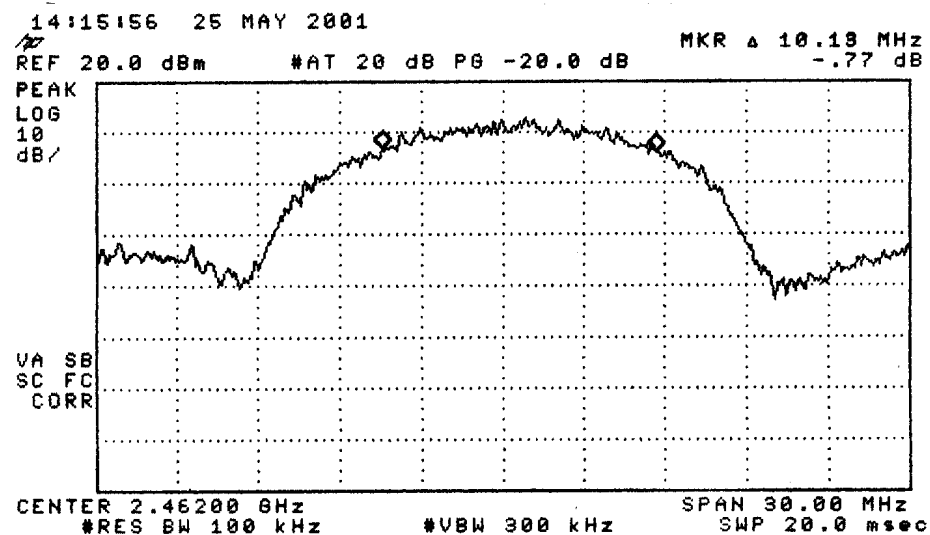
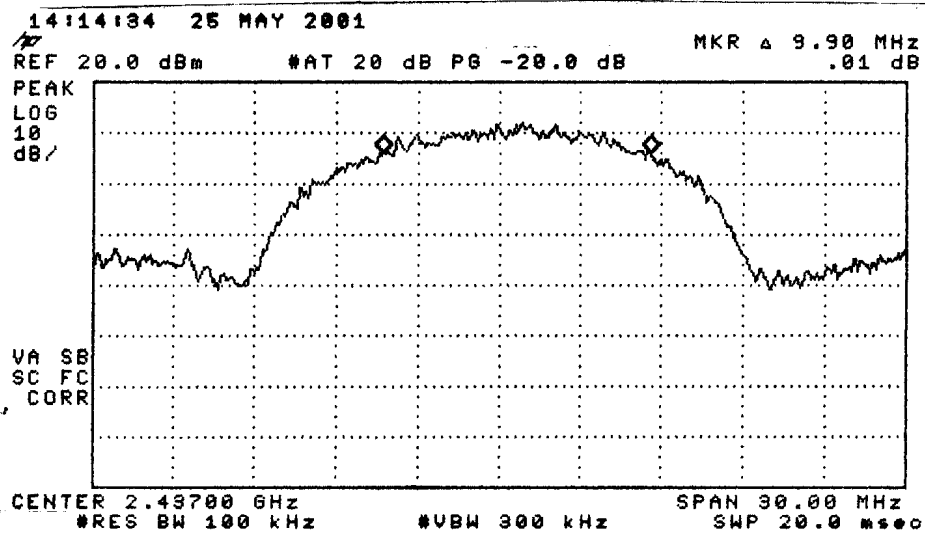
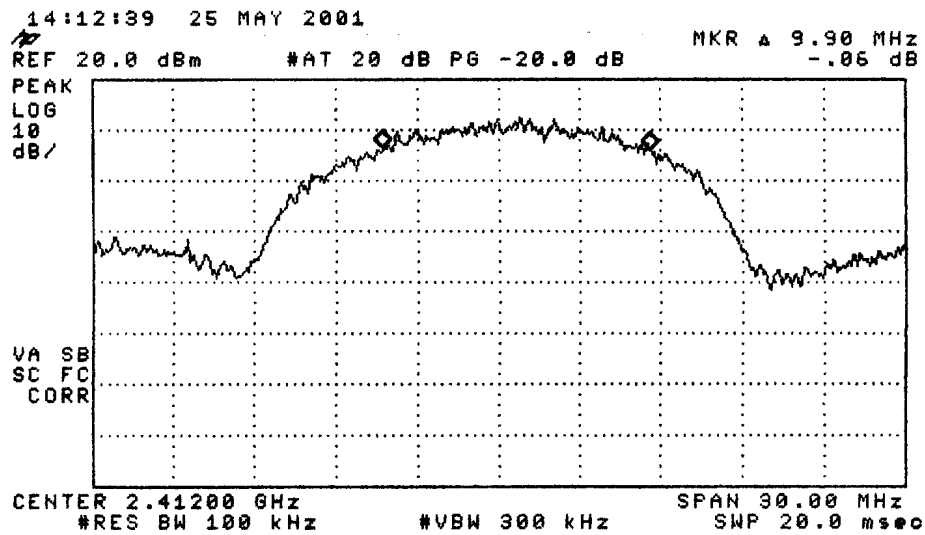


Figure 6.5 6 dB-point bandwidth measurements; low, mid, and high channels.
(250 mW AGC)

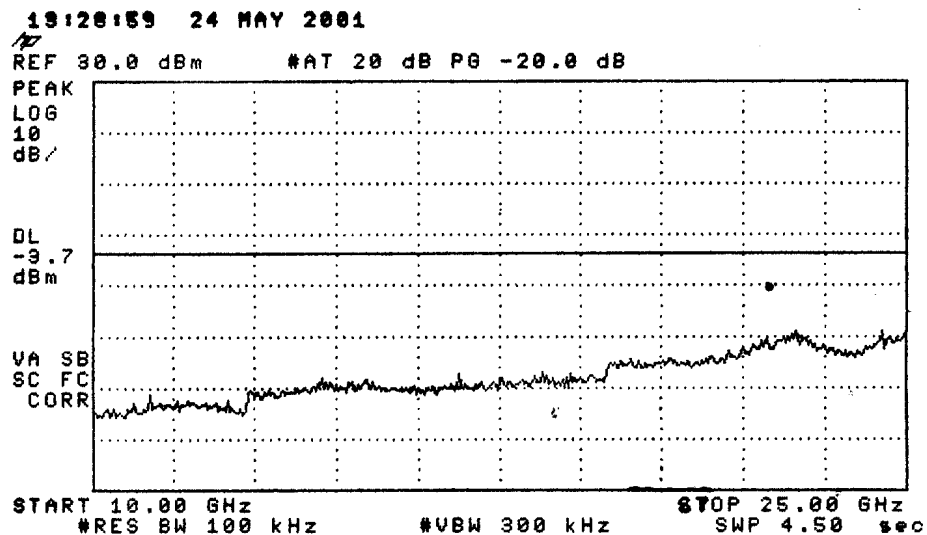
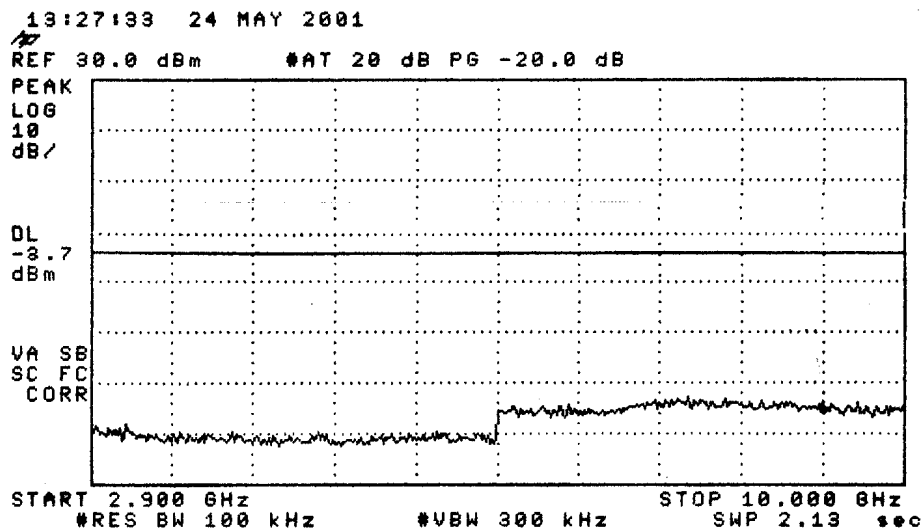
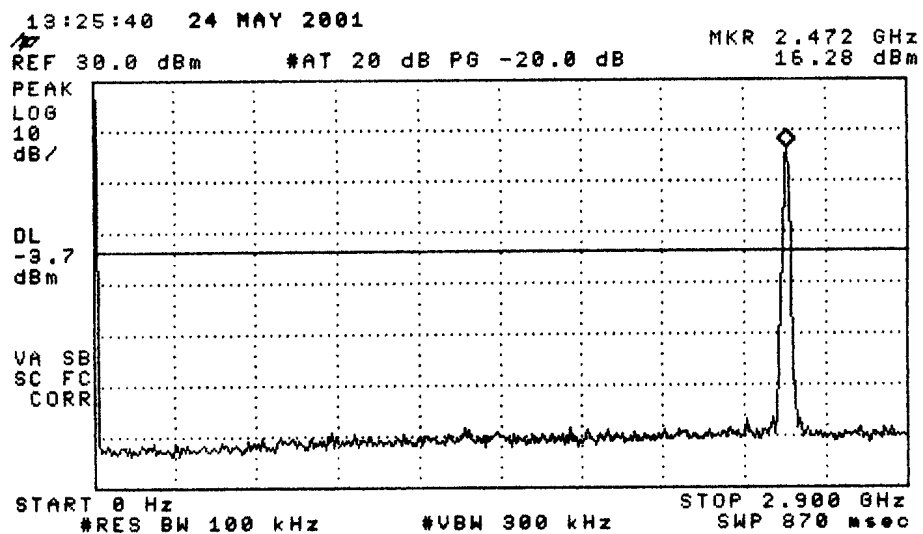


Figure 6.6 Antenna conducted spurious emissions, low channel.
(1000 mW NON-AGC).

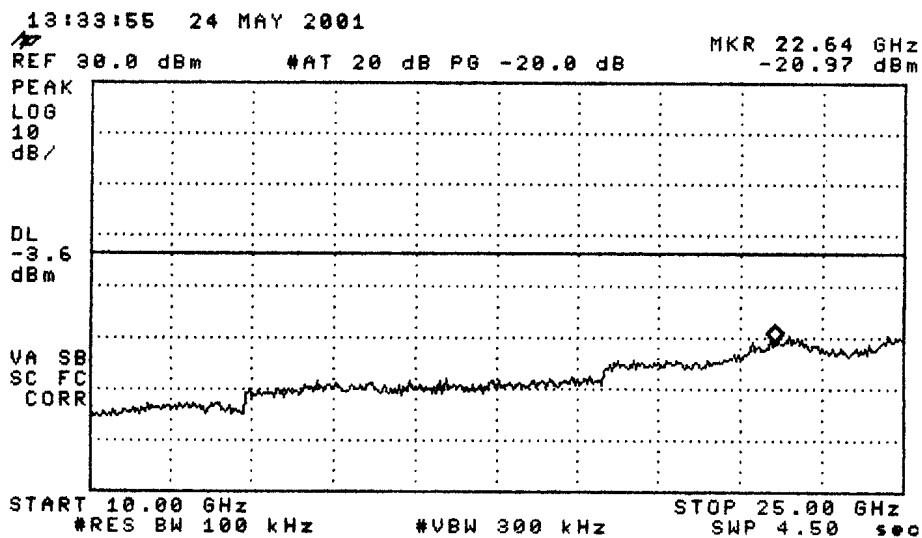
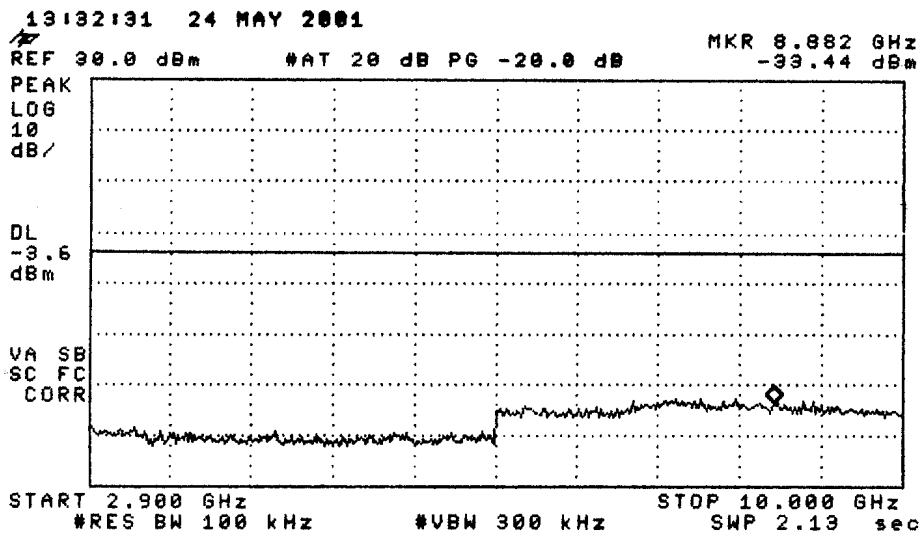
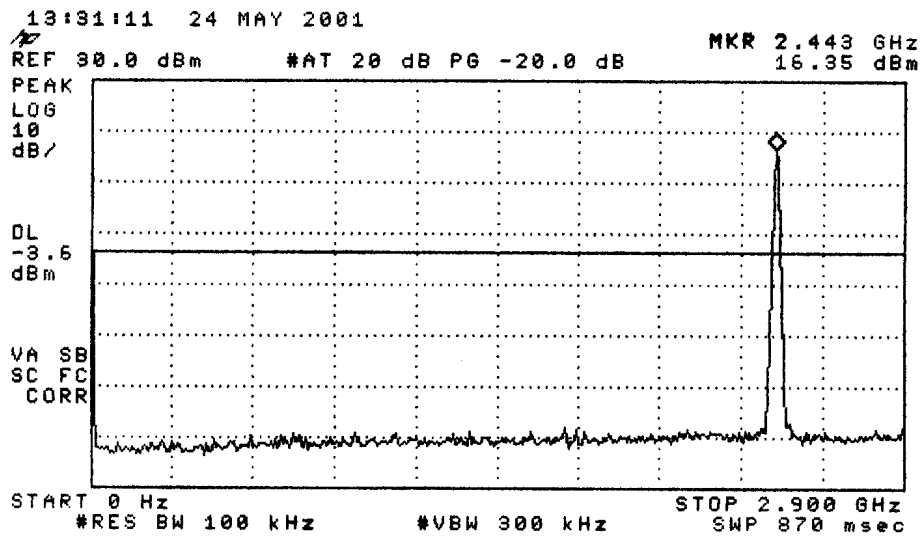


Figure 6.7 Antenna conducted spurious emissions, mid channel.
(1000 mW NON-AGC).

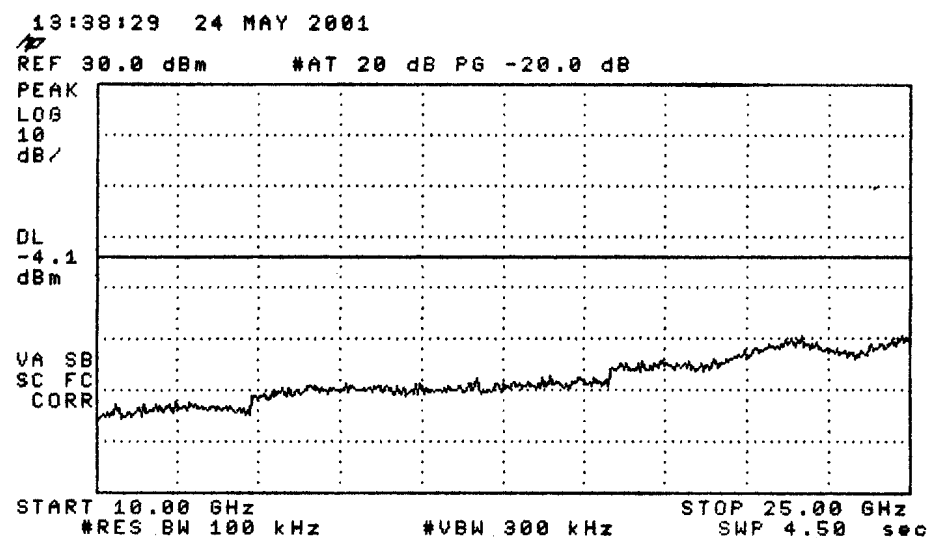
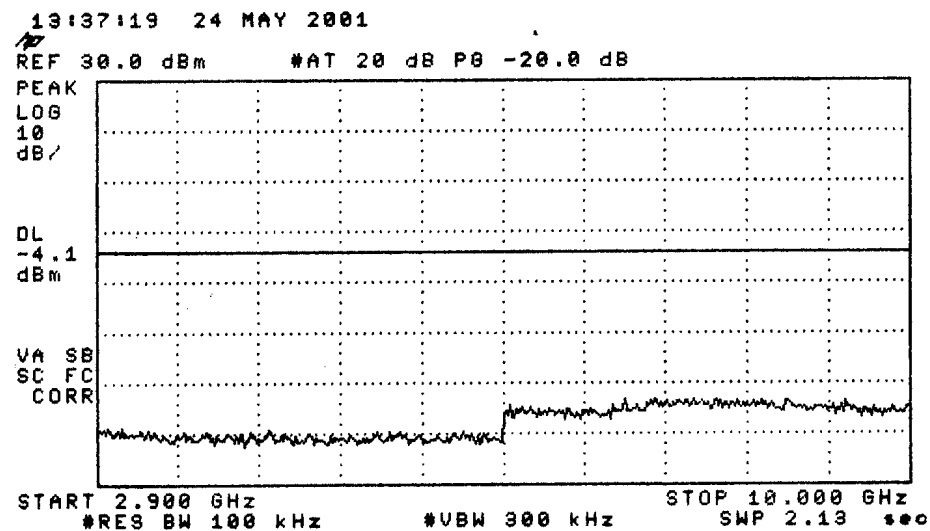
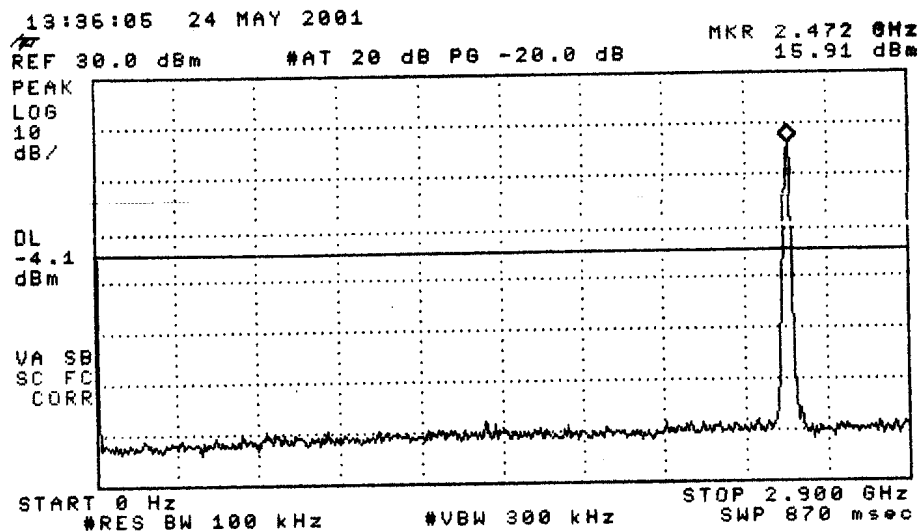


Figure 6.8 Antenna conducted spurious emissions, high channel.
(1000 mW NON-AGC).

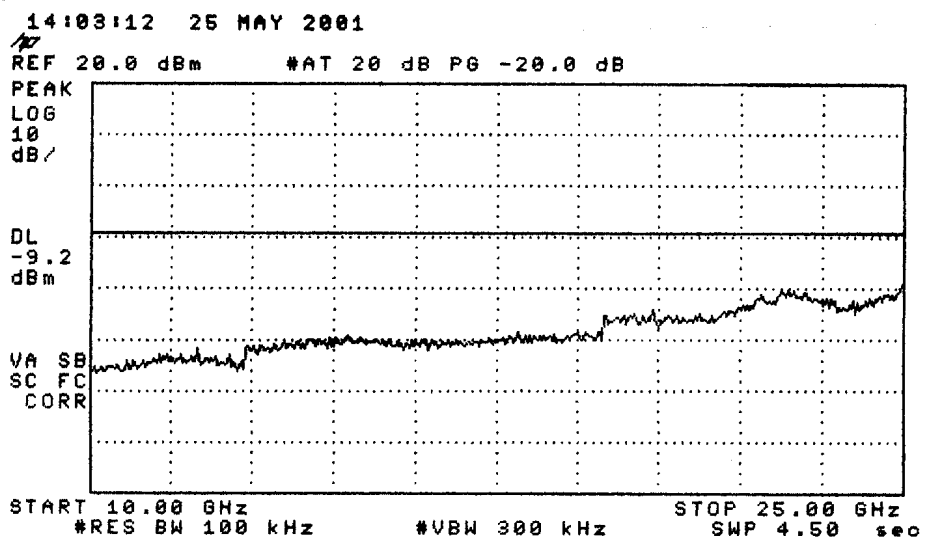
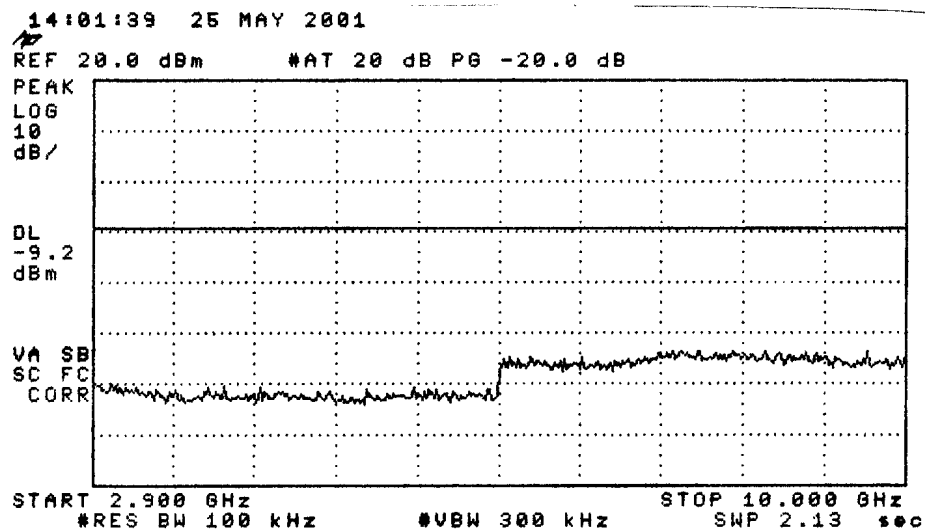
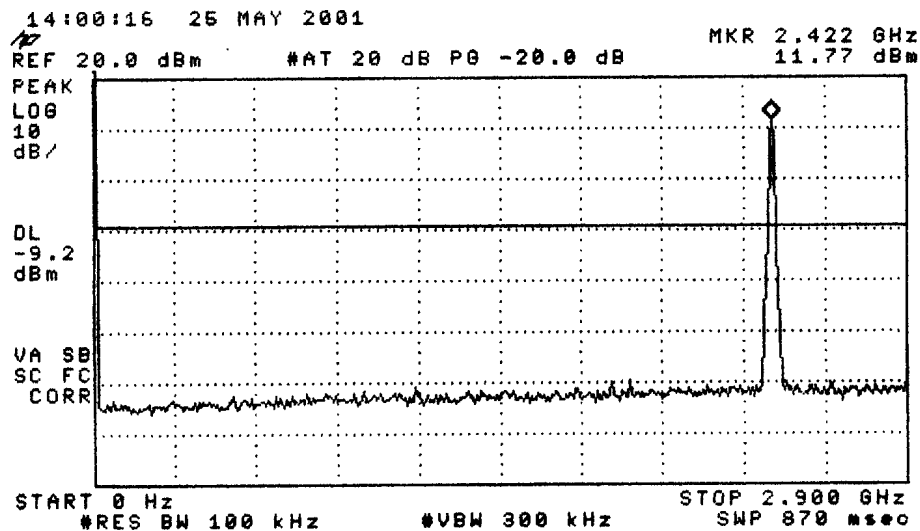


Figure 6.9 Antenna conducted spurious emissions, low channel.
(250 mW AGC).

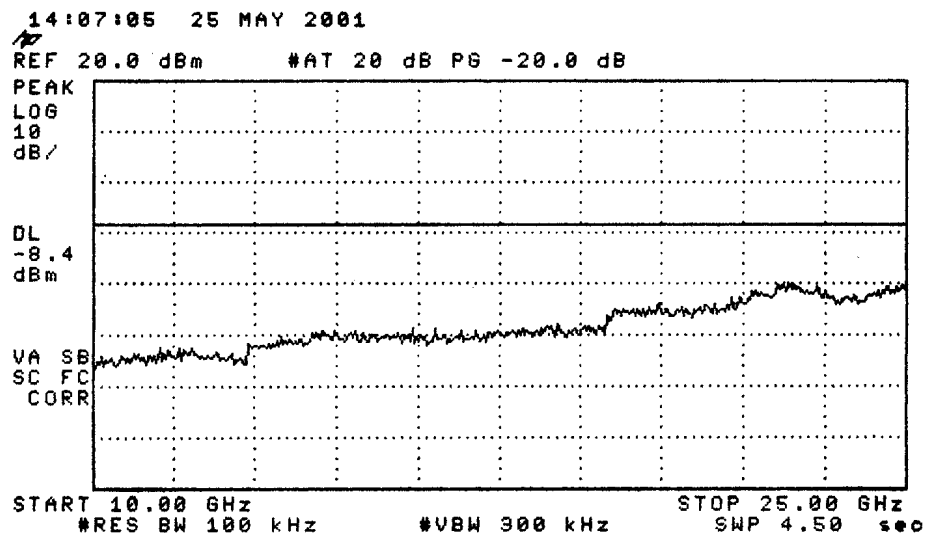
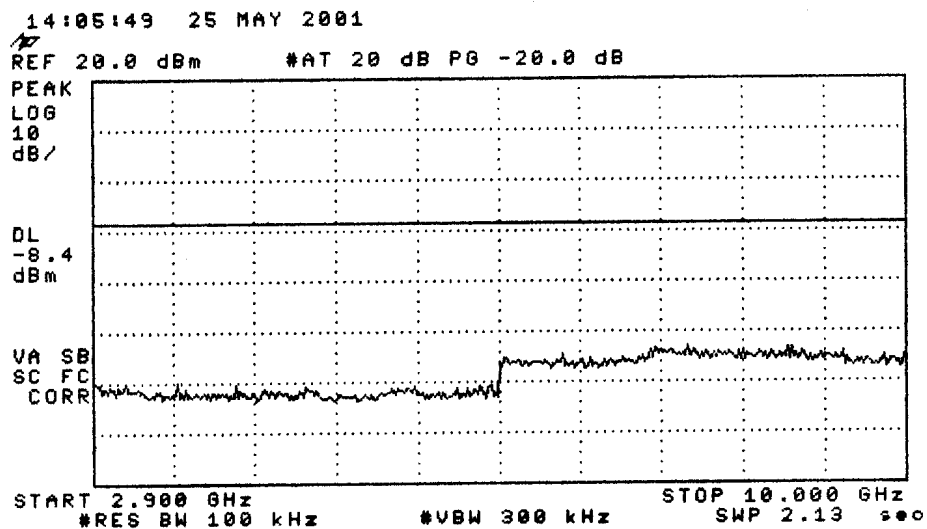
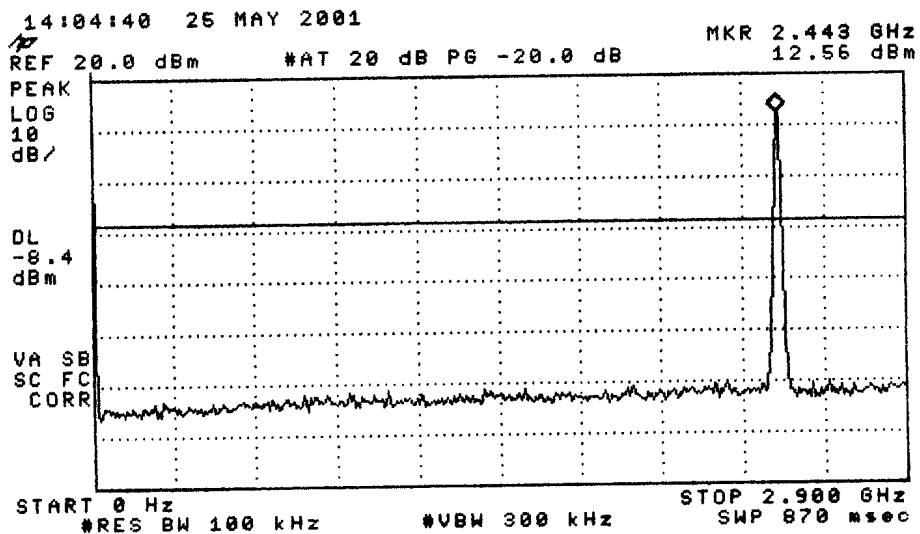


Figure 6.10 Antenna conducted spurious emissions, mid channel.
(250 mW AGC).

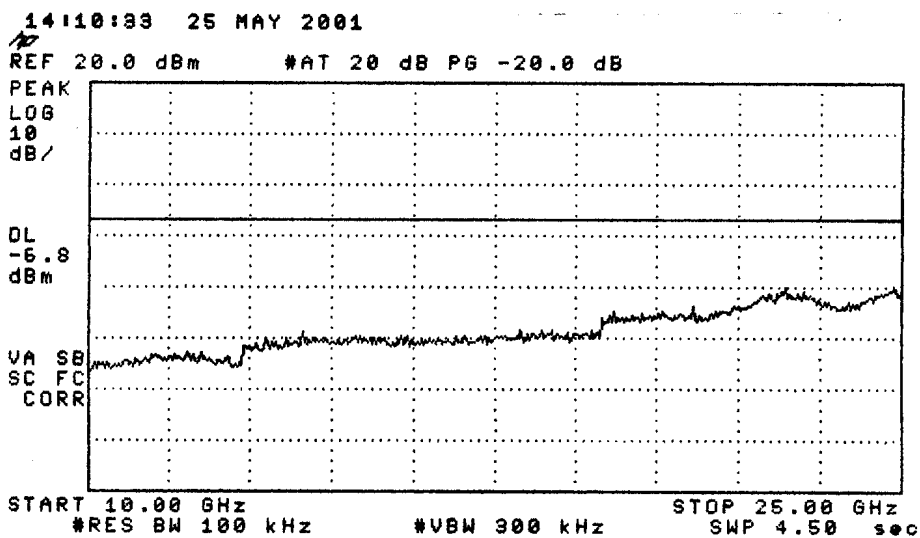
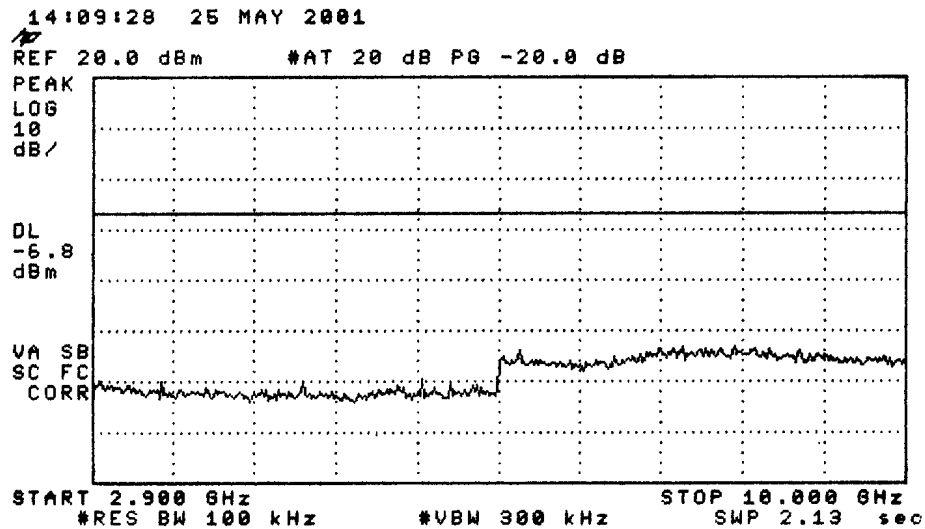
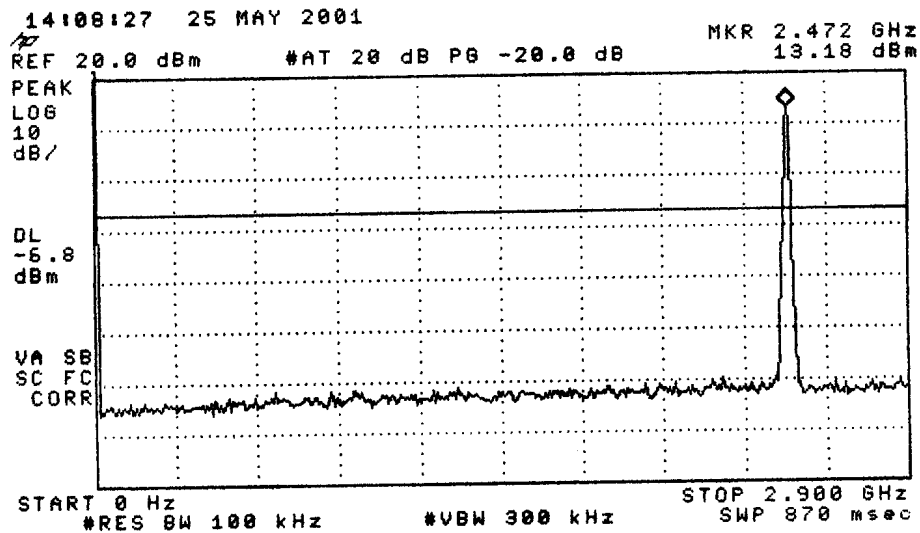


Figure 6.11 Antenna conducted spurious emissions, high channel.
(250 mW AGC).

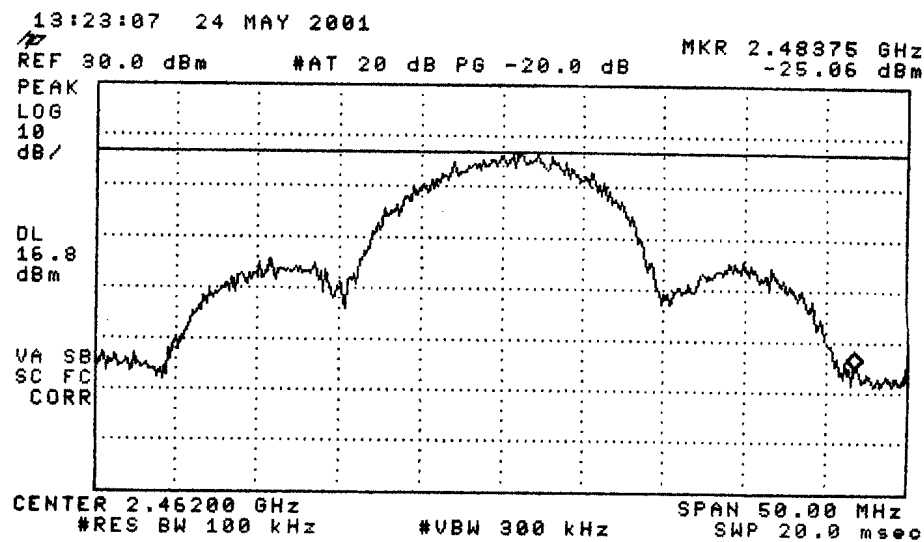
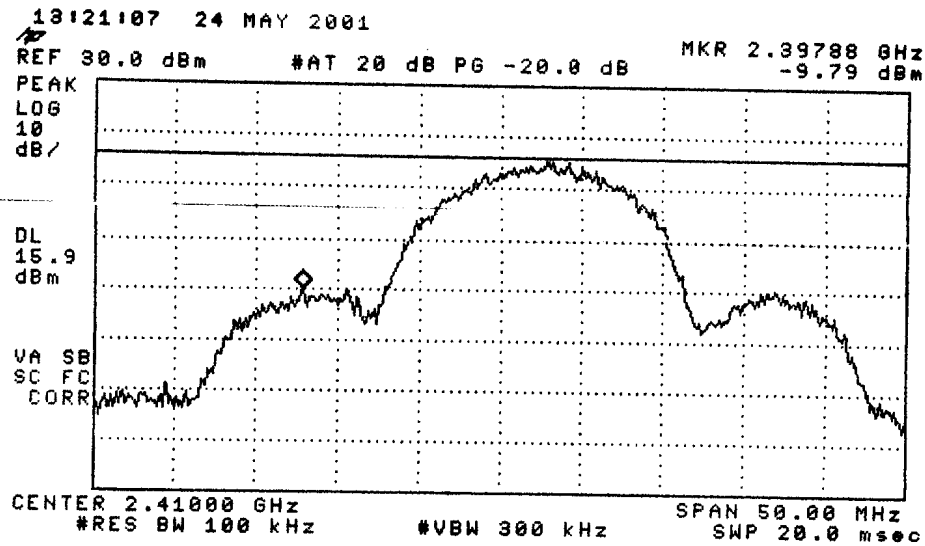


Figure 6.12 Band-edge behavior at low end and high end of the band
(1000 mW NON-AGC).

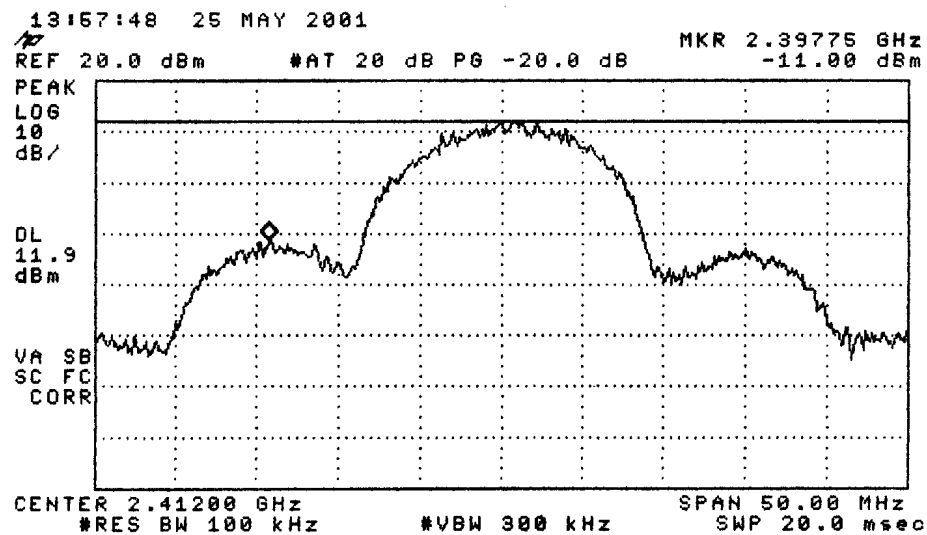
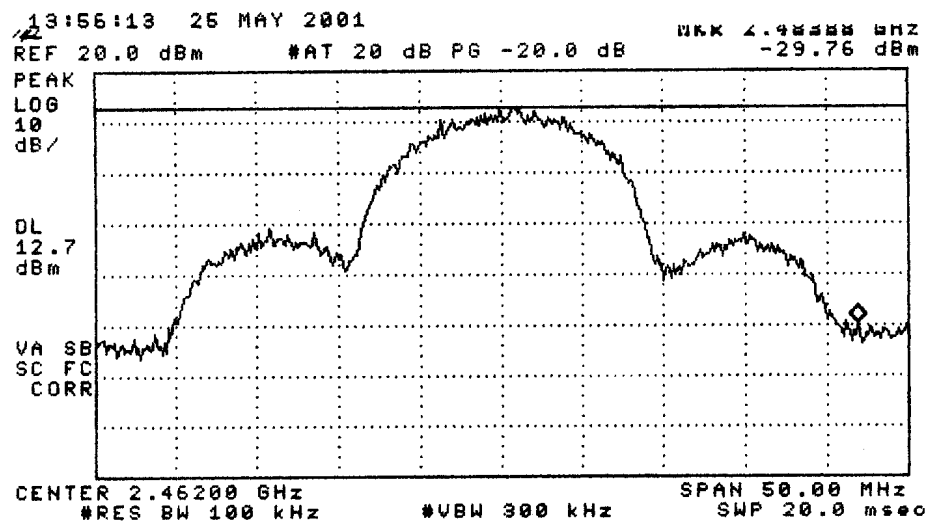


Figure 6.13 Band-edge behavior at low end and high end of the band
 (250 mW AGC).

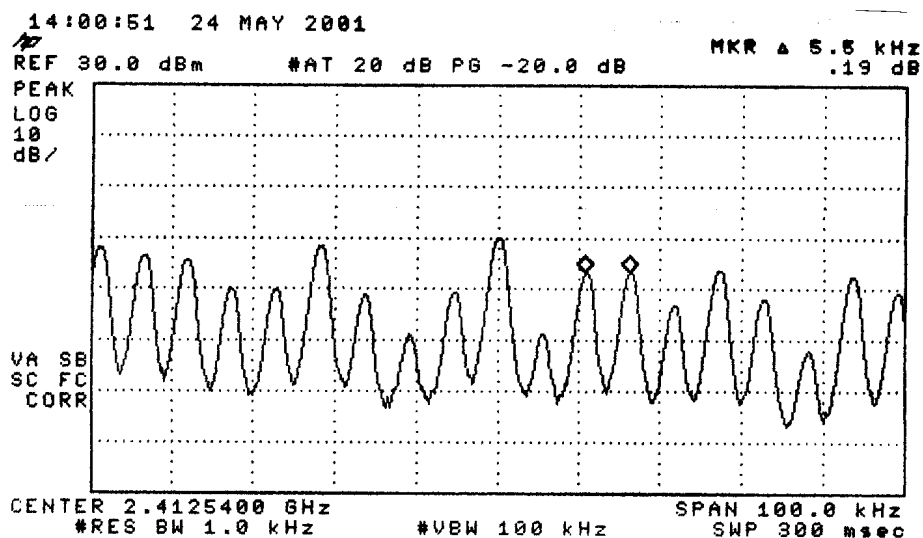
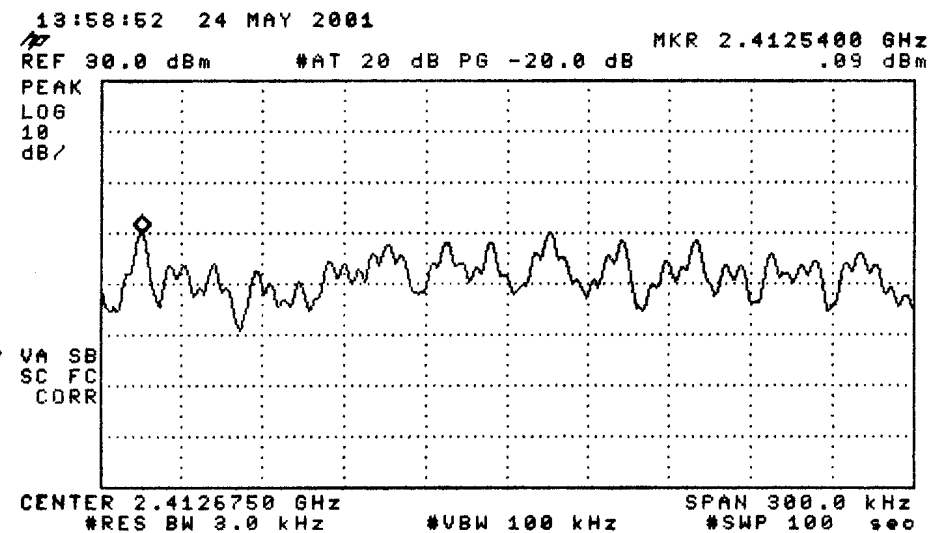
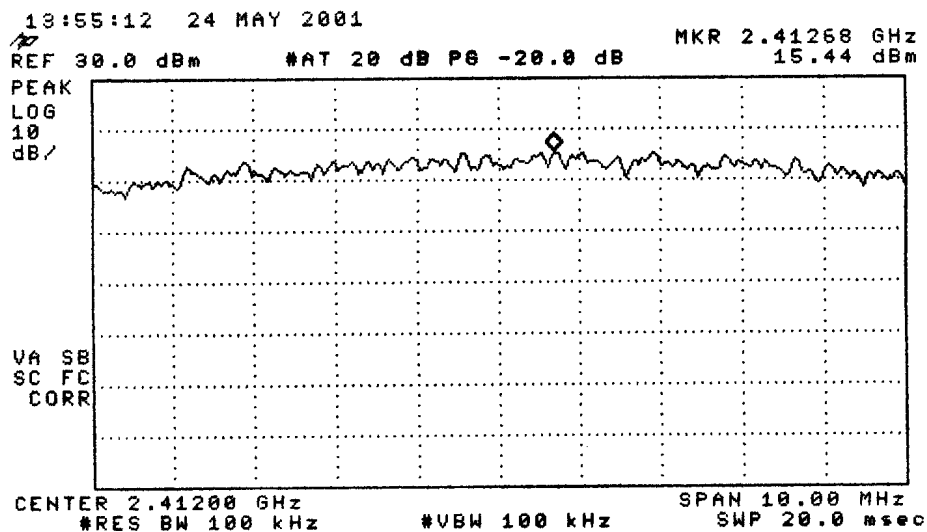


Figure 6.14 Spectral Density (low channel); (top) Spectrum Scan, (mid) Spectral Density, (bottom) Line Spacing. (1000 mW NON-AGC)

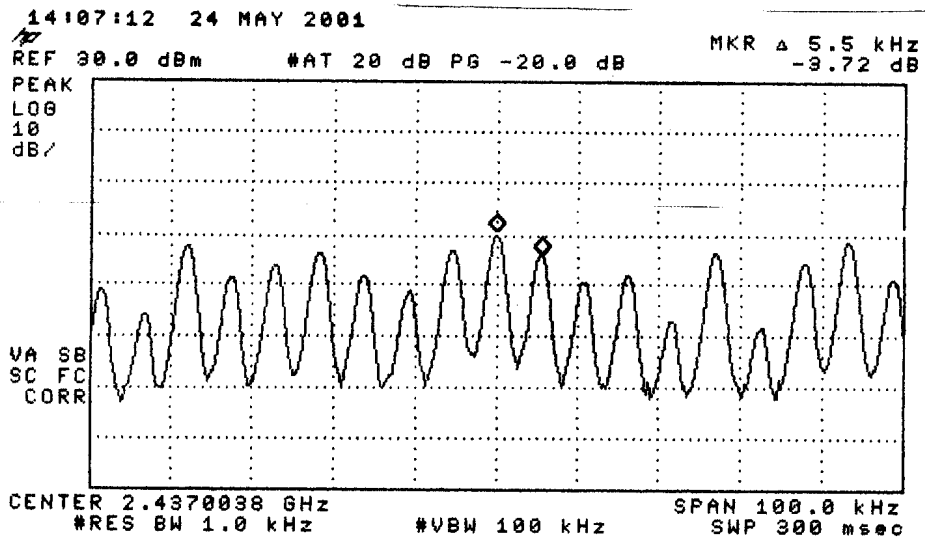
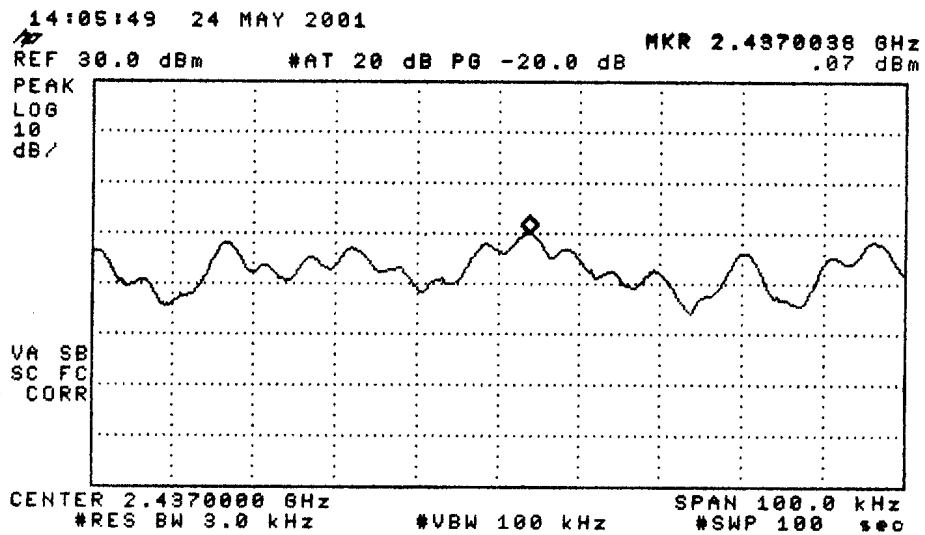
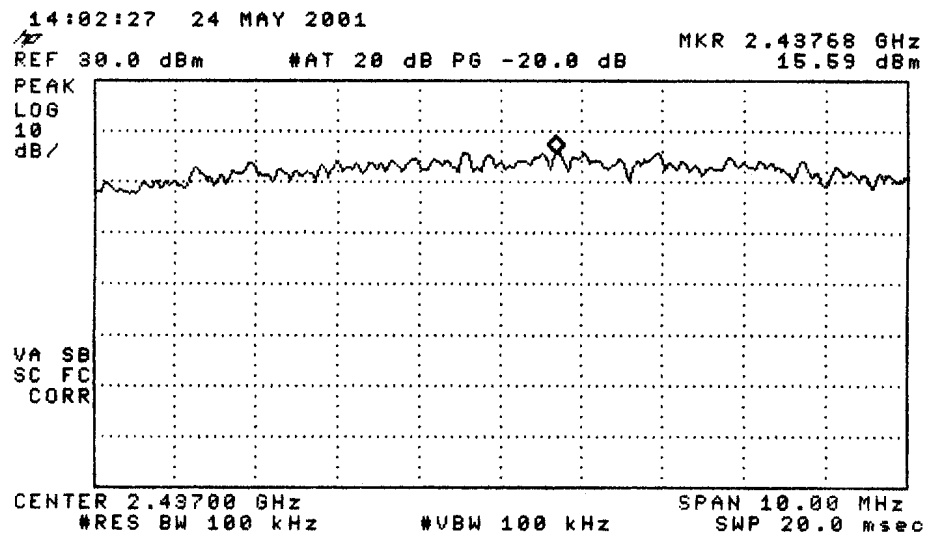


Figure 6.15 Spectral Density (mid channel); (top) Spectrum Scan, (mid) Spectral Density, (bottom) Line Spacing. (1000 mW NON-AGC)

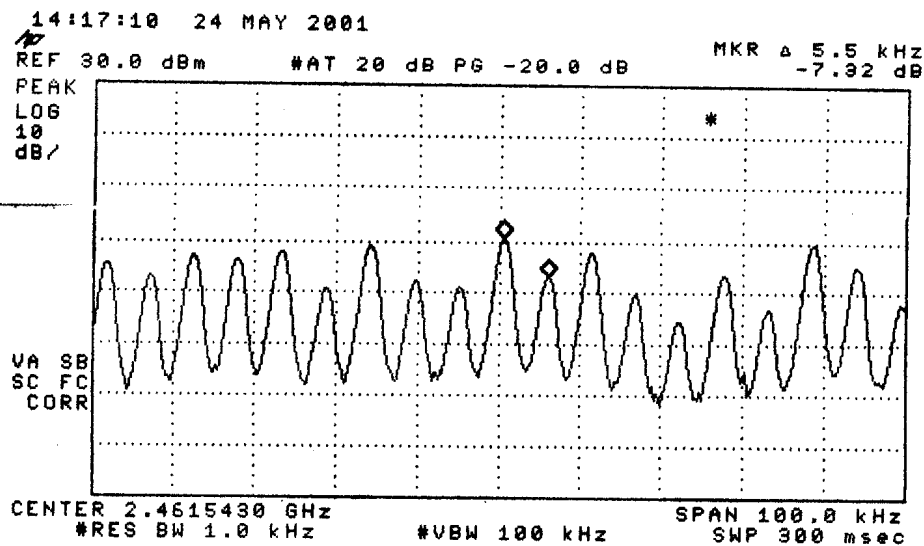
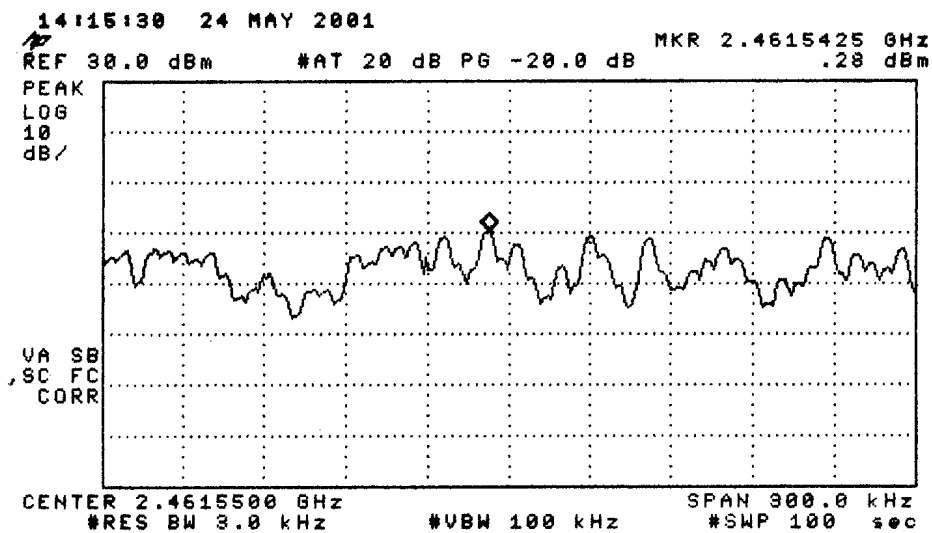
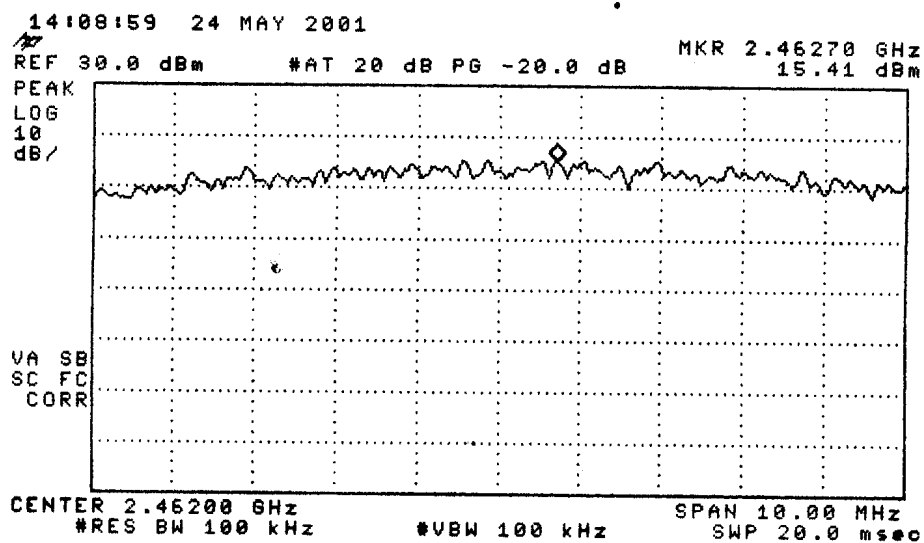


Figure 6.16 Spectral Density (high channel):(top) Spectrum Scan, (mid) Spectral Density, (bottom) Line Spacing. (1000 mW NON-AGC)

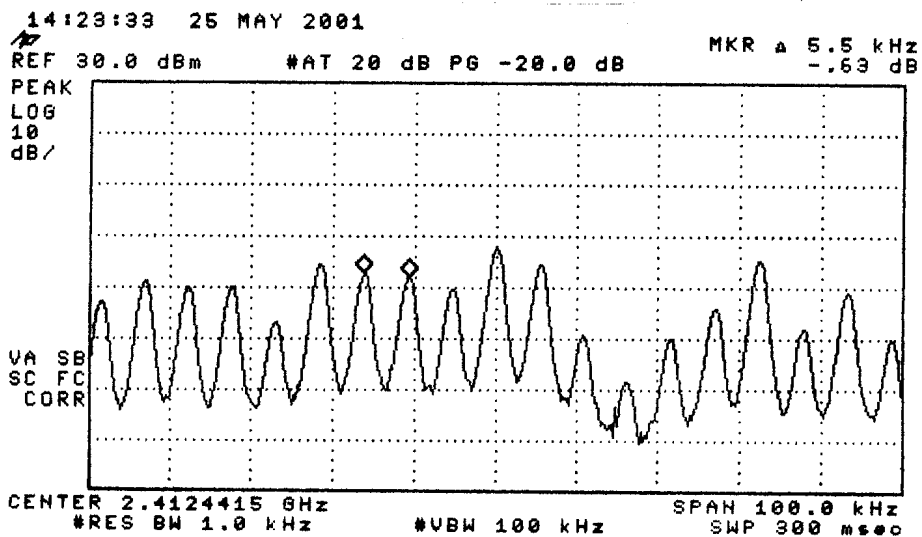
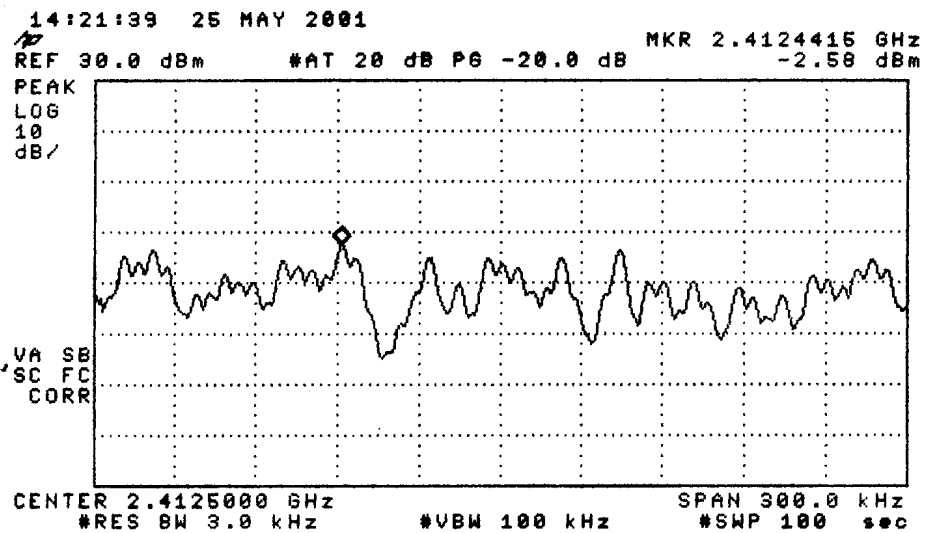
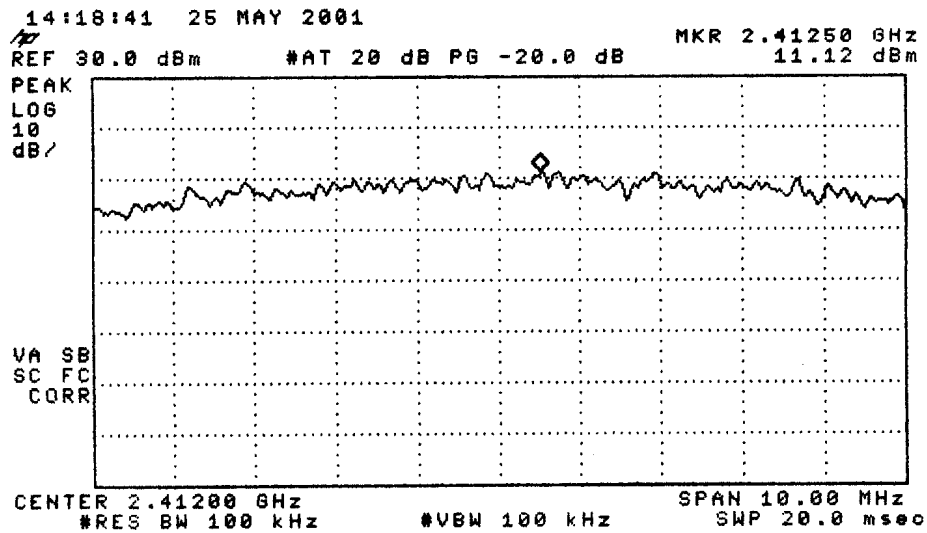


Figure 6.17 Spectral Density (low channel); (top) Spectrum Scan, (mid) Spectral Density, (bottom) Line Spacing. (250 mW AGC)

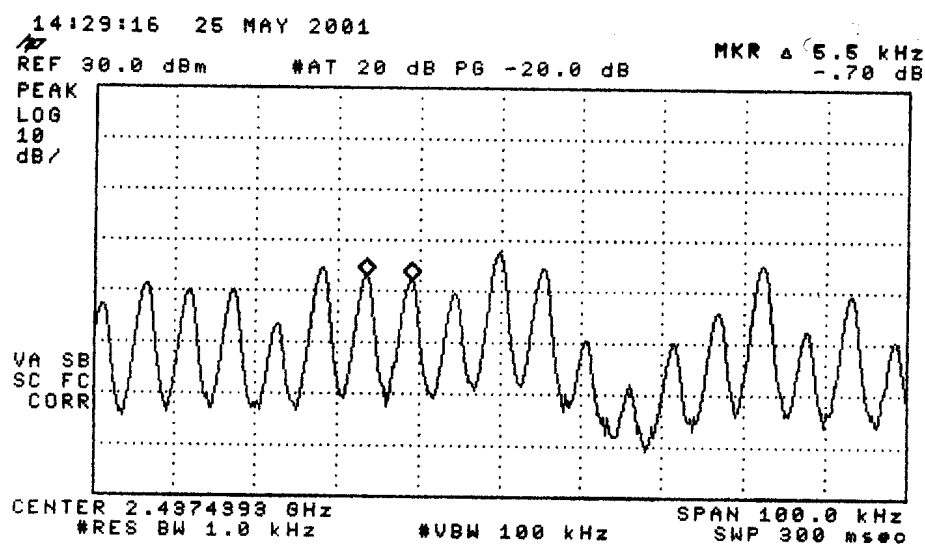
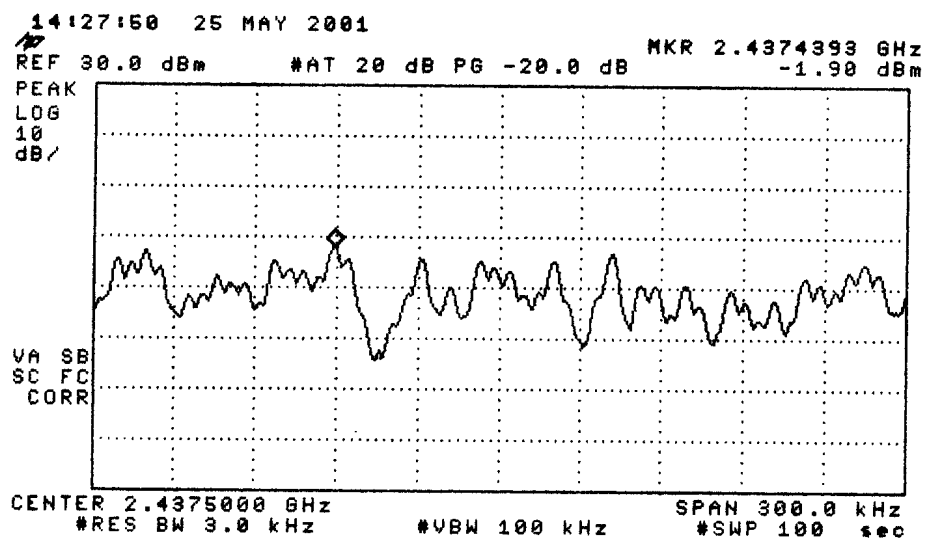
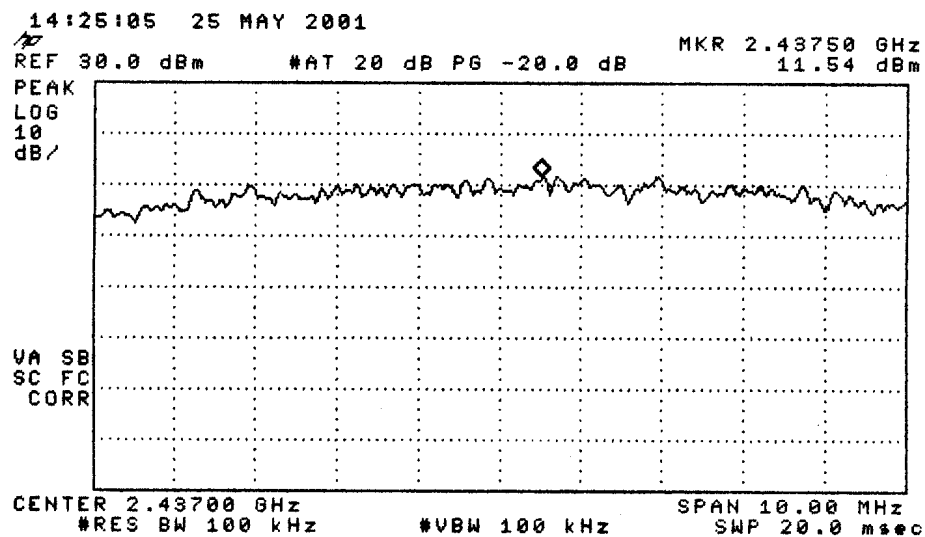


Figure 6.18 Spectral Density (mid channel); (top) Spectrum Scan, (mid) Spectral Density, (bottom) Line Spacing. (250 mW AGC)

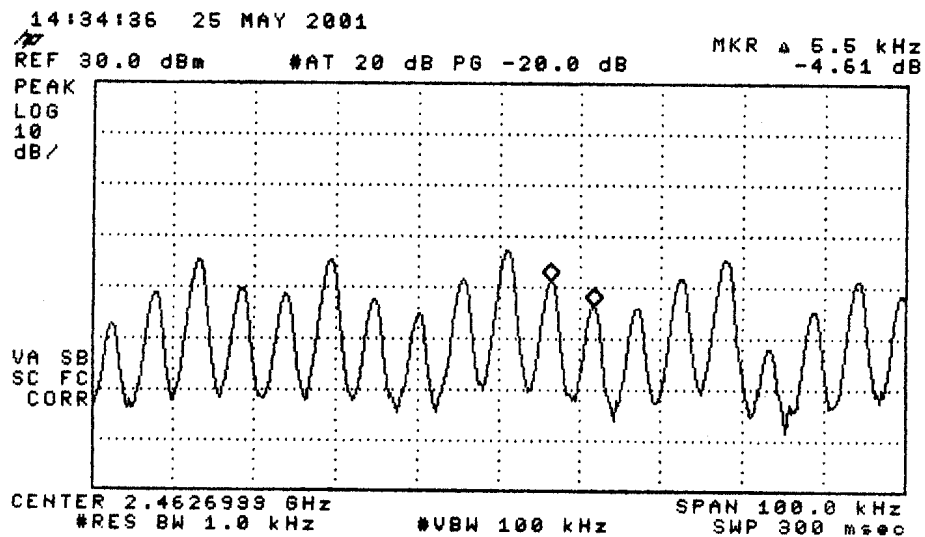
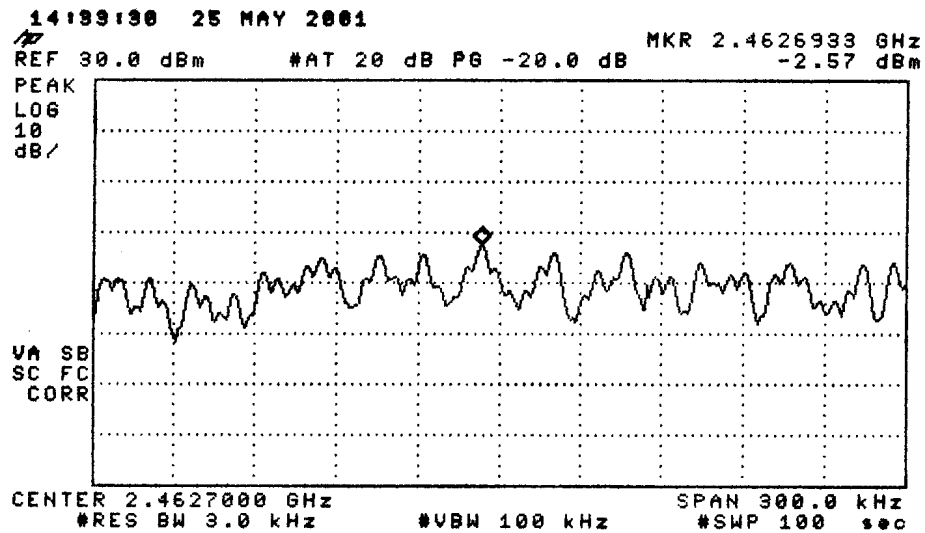
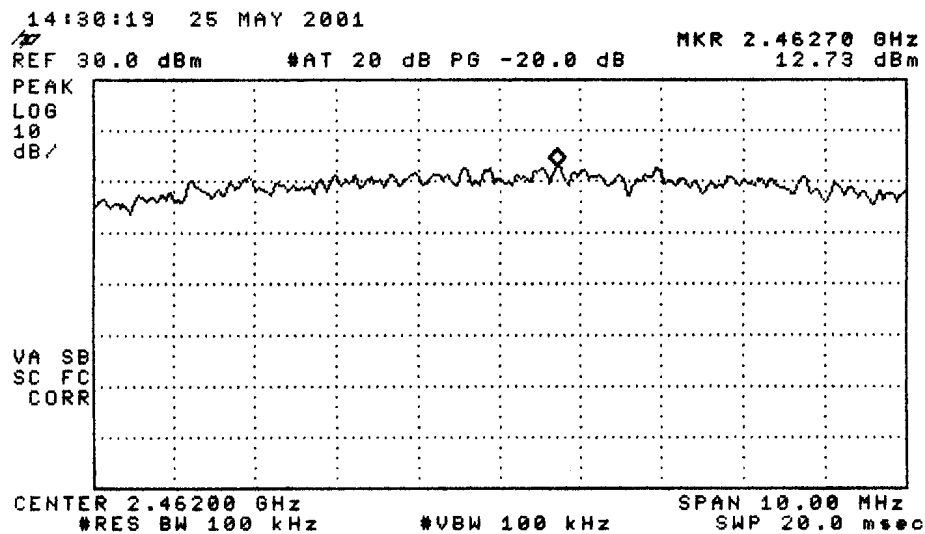


Figure 6.19 Spectral Density (high channel);(top) Spectrum Scan,
(mid) Spectral Density, (bottom) Line Spacing. (250 mW AGC)