

EMISSIONS TEST REPORT**Report Number: 3092198BOX.001a****Project Number: 3092198****Testing performed on the****Lantag Transmitter****Model: Lantag V2****To****FCC Part 15 Subpart C 15.247****For****PanGo Networks, Inc.**

Test Performed by:
Intertek – ETL SEMKO
70 Codman Hill Road
Boxborough, MA 01719

Test Authorized by:
PanGo Networks, Inc.
959 Concord Street Suite 100
Framingham, MA 01701

Prepared by: _____

Nicholas Abbondante

Date: _____

5/9/06

Reviewed by: _____

Roland W. Gubisch

Date: _____

5-10-06

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1.0 Job Description

1.1 Client Information

This EUT has been tested at the request of:

| | |
|-------------------|--|
| Company: | PanGo Networks, Inc. 959 Concord Street Suite 100 Framingham, MA 01701 |
| Contact: | Bart Hanlon |
| Telephone: | 508-626-8900 |
| Fax: | 508-626-8901 |
| Email: | bart.hanlon@pangonetworks.com |

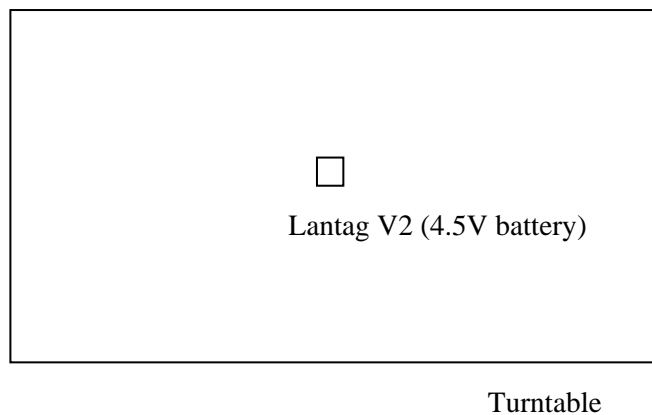
1.2 Equipment Under Test

| | |
|--------------------------------|------------------------------|
| Equipment Type: | Lantag Transmitter |
| Model Number(s): | Lantag V2 |
| Serial number(s): | 00147E-000E37; 00147E-000099 |
| Manufacturer: | PanGo Networks, Inc. |
| EUT receive date: | 02/21/2006 |
| EUT received condition: | Prototype in good condition |
| Test start date: | 02/21/2006 |
| Test end date: | 05/09/2006 |

1.3 Test Plan Reference: Tested according to the standards listed, FCC Public Notice DA-00-705A1 and ANSI C63.4:2003

1.4 Test Configuration/Operating Voltage

1.4.1 Block Diagram



1.4.2. Cables:

| Cable | Shielding | Connector | Length (m) | Qty. |
|-------|-----------|-----------|------------|------|
| None | | | | |

1.4.3. Support Equipment:

Name: None

Model No.:

Serial No.:

1.5 Mode(s) of Operation:

The EUT was transmitting at nominal power using a fresh 4.5V battery. It has an integral antenna.

2.0 Test Summary

| TEST STANDARD | RESULTS | |
|---|--|---------|
| FCC Part 15 Subpart C 15.247 | | |
| SUB-TEST | TEST PARAMETER | COMMENT |
| RF Output Power and Human RF Exposure FCC 15.247(b)(3-5) | The RF output power must not exceed 36 dBm EIRP. The human RF Exposure limit is 1 mW/cm ² . | Pass |
| 6 dB Bandwidth FCC 15.247(a)(2) | The 6dB bandwidth must exceed 500 kHz. | Pass |
| Peak Power Spectral Density FCC 15.247(e) | The peak power spectral density must not exceed 8 dBm in any 3 kHz bandwidth. | Pass |
| Band Edge Compliance FCC 15.215, 15.247(d) | Spurious emissions at the band edges must be at least 20 dB lower than the fundamental field strength when measured with a 100 kHz bandwidth. | Pass |
| Radiated Emissions FCC 15.205, 15.209, 15.247(d) | Spurious emissions must be at least 20 dB lower than the fundamental field strength when measured with a 100 kHz bandwidth. Emissions which fall in the restricted bands of 15.205 must meet the general limits of 15.209. | Pass |

Notes: Channels tested include:

Channel 1 2412 MHz
Channel 6 2437 MHz
Channel 11 2462 MHz

REVISION SUMMARY – The following changes have been made to this Report:

| <u>Date</u> | <u>Project No.</u> | <u>Project Handler</u> | <u>Page(s)</u> | <u>Item</u> | <u>Description of Change</u> |
|-------------|--------------------|------------------------|----------------|---------------|--|
| 5/9/06 | 3092198 | Nicholas Abbondante | All | Report Number | Changed report number to 3092198BOX.001a |
| 5/9/06 | 3092198 | Nicholas Abbondante | 2 | Test End Date | Incorporated latest test date |
| 5/9/06 | 3092198 | Nicholas Abbondante | 8-10 | Test Details | Included duty cycle test data |
| 5/9/06 | 3092198 | Nicholas Abbondante | 23, 25 | Detector | Fixed typo which called out a quasi-peak detector instead of a peak detector |

3.0 Sample Calculations

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
 AF = 7.4 dB/m
 CF = 1.6 dB
 AG = 29.0 dB
 FS = 32 dB μ V/m

$$\text{Level in } \mu\text{V/m} = [10(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where

- NF = Net Reading in dB μ V
- RF = Reading from receiver in dB μ V
- LF = LISN Correction Factor in dB
- CF = Cable Correction Factor in dB
- AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where UF = Net Reading in } \mu\text{V}$$

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 254 \mu\text{V/m}$$

3.1 Measurement Uncertainty

Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes.

The expanded uncertainty ($k = 2$) for radiated emissions from 30 to 1000 MHz has been determined to be:
 ± 3.5 dB at 10m, ± 3.8 dB at 3m

The expanded uncertainty ($k = 2$) for mains conducted emissions from 150 kHz to 30 MHz has been determined to be:

± 2.6 dB

The expanded uncertainty ($k = 2$) for telecom port conducted emissions from 150 kHz to 30 MHz has been determined to be:

± 3.2 for ISN and voltage probe measurements

± 3.1 for current probe measurements

3.2 Site Description

Test Site(s): 2

Our OATS are 3m and 10m sheltered emissions measurement ranges located in a light commercial environment in Boxborough, Massachusetts. They meet the technical requirements of ANSI C63.4-2003 and CISPR 22:1993/EN 55022:1994 for radiated and conducted emission measurements. The shelter structure is entirely fiberglass and plastic, with outside dimensions of 33 ft x 57 ft. The structure resembles a quonset hut with a center ceiling height of 16.5 ft.

The testing floor is covered by a galvanized sheet metal groundplane that is earth-grounded via copper rods around the perimeter of the site. The joints between individual metal sheets are bridged with a 2 inch wide metal strips to provide low RF impedance contact throughout. The sheets are screwed in place with stainless steel, round-head screws every three inches. Site illumination and HVAC are provided from beneath the ground reference plane through flush entry ports, the port covers are electrically bonded to the ground plane.

A flush metal turntable with 12 ft. diameter and 5000 lb. load capacity (12,000 lb. in Site 3) is provided for floor-standing equipment. A wooden table 80 cm high is used for table-top equipment. The turntable is electrically connected to the ground plane with three copper straps. The straps are connected to the turntable at the center of it with ground braid. The copper strap is directly connected to the groundplane at the edges of the turntable. The turntable is located on the south end of the structure and the antennas are mounted 3 and 10 meters away to the north. The antenna mast is a non-conductive with remote control of antenna height and polarization. The antenna height is adjustable from 1 to 4 meters.

All final radiated emission measurements are performed with the testing personnel and measurement equipment located below the ground reference plane. The site has a full basement underneath the turntable where support equipment may be remotely located. Operation of the antenna, turntable and equipment under test is controlled by remote controls that manipulate the antenna height and polarization and with a turntable control. Test personnel are located below the ellipse when measurements are performed, however the site maintains the ability of having personnel manipulate cables while monitoring test equipment. Ambient radiated emissions are 6 dB or more below the relevant FCC emission limits.

AC mains power is brought to the equipment under test through a power line filter, to remove ambient conducted noise. 50 Hz (240 VAC single phase), 60 Hz power (120 VAC single phase, 208 VAC three phase), and 60 Hz (480 VAC three phase) are available. Conducted emission measurements are performed with a Line Impedance Stabilization Network (LISN) or Artificial Mains Network (AMN) bonded to the ground reference plane. A removable vertical groundplane (2 meter X 2 meter area) is used for line-conducted measurements for table top equipment. The vertical groundplane is electrically connected to the reference groundplane.

The EMC Lab has two Semi-anechoic Chambers and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference groundplanes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

Test Results: Pass

Test Standard: FCC Part 15 Subpart C 15.247

Test: RF Output Power and Human RF Exposure FCC 15.247(b)(3-5)

Performance Criterion: Emissions must be below specified limits.

Test Environment:

| | | | | | | |
|--|---------------|----|-----------------------|-----------|---------------|----|
| Environmental Conditions During Testing: | Humidity (%): | 24 | Pressure (hPa): | 999 | Ambient (°C): | 19 |
| Pretest Verification Performed | N/A | | Equipment under Test: | Lantag V2 | | |

Maximum Test Disturbance Parameters: The RF output power must not exceed 36 dBm EIRP. The human RF Exposure limit is 1 mW/cm².

Test Equipment Used:

| TEST EQUIPMENT LIST | | | | | |
|---------------------|---------------------------------|------------------|---------------|------------|------------------|
| Item | Equipment Type | Make | Model No. | Serial No. | Next Cal. Due |
| 1 | Spectrum Analyzer 20hz - 40 Ghz | Rohde & Schwartz | FSEK-30 | 100225 | 07/26/2006 |
| 2 | HORN ANTENNA | EMCO | 3115 | 9610-4980 | 09/13/2006 |
| 3 | High Frequency Cable 40Ghz | Megaphase | TM40 K1K1 197 | CBL027 | 12/20/2006 |
| 4 | Oscilloscope, Digital Storage | Tektronix | TDS3052 | B014809 | 03/03/2007 |
| 5 | Diode Detector | Agilent | 8473B | 0046 | Cal Not Required |
| 6 | Digital 4 Line Barometer | Mannix | 0ABA116 | BAR2 | 08/02/2007 |

Software Utilized:

| Name | Manufacturer | Version |
|------------|-----------------------|---------------|
| EXCEL 2000 | Microsoft Corporation | 9.0.6926 SP-3 |

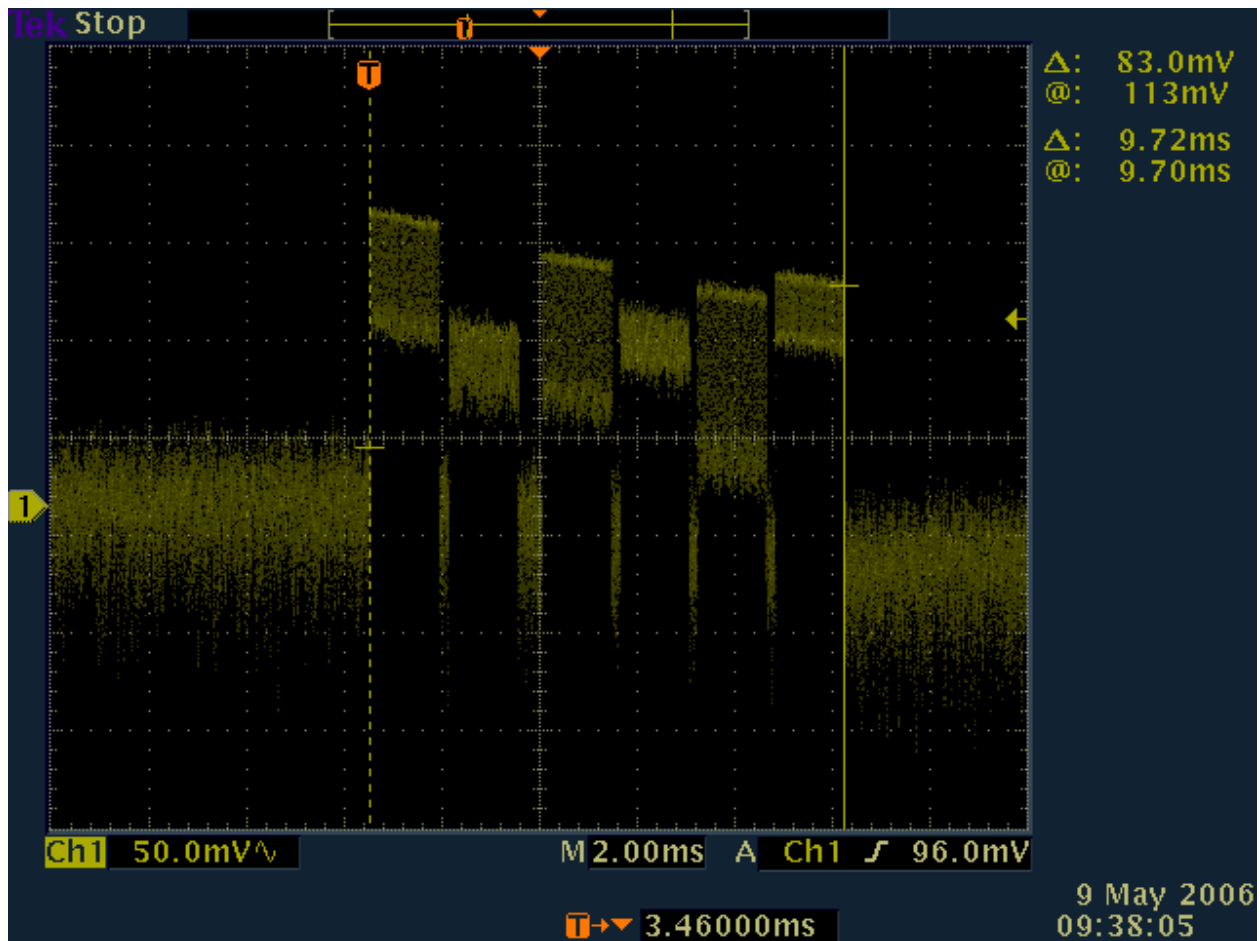
Test Details:

Notes: The EUT was measured radiatively. The RF output power was measured via integration using a 50 MHz span with a 100 kHz resolution bandwidth and 500 points of resolution. The data obtained was adjusted for equipment losses and converted from a field strength reading to a power reading using the provisions of FCC Public Notice DA-00-705A1. The human RF exposure limit is 1 mW/cm². The power density S generated by some value of EIRP at a given distance d is related by the equation:

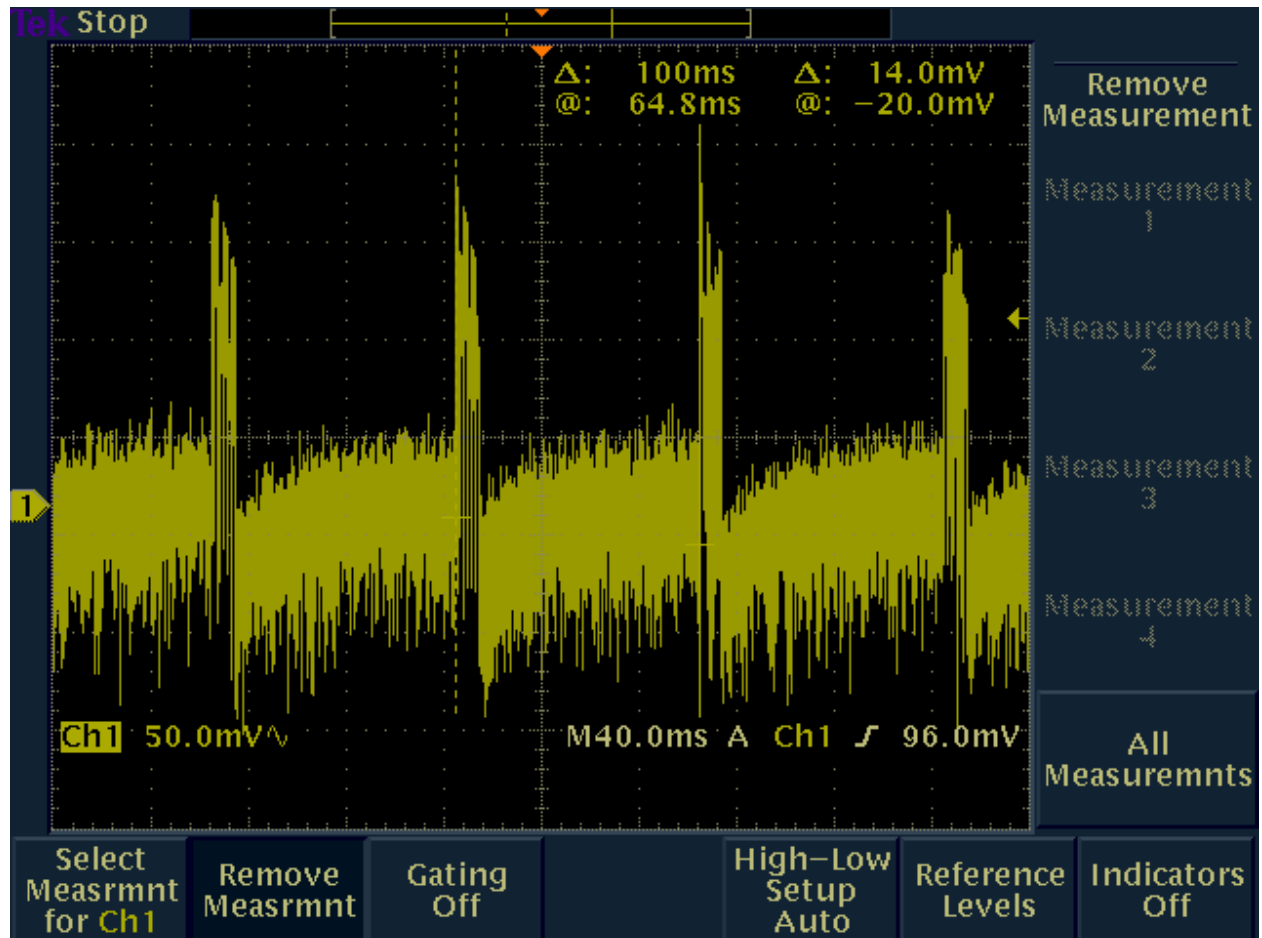
$$S = \text{EIRP} / (4\pi d^2)$$

The distance, given a maximum EIRP of 20.41 dBm (109.93 mW), at which the radiated power density of the EUT is equal to the human RF exposure limit is 2.96 cm from the antenna.

A duty cycle averaging factor has been calculated which takes into account the typical EUT duty cycle. Normally the device would transmit a burst every 60 seconds. The worst-case burst length is 9.72 ms. For the duty cycle test, the EUT was configured to transmit every 100 ms for ease of testing. Given the 9.72 ms burst length and the maximum allowed averaging period of 100 ms, using the equation, dB reduction = $20 * \text{LOG}(\text{dwell time} / 100 \text{ ms})$, the duty cycle average factor obtained is 20.25 dB. Given a max output power of 20.41 dBm, after adjustment for duty cycle the output power is 0.16 dBm (1.04 mW). The EUT is therefore exempt from SAR evaluation due to the output power being below 25 mW after duty cycle adjustment.

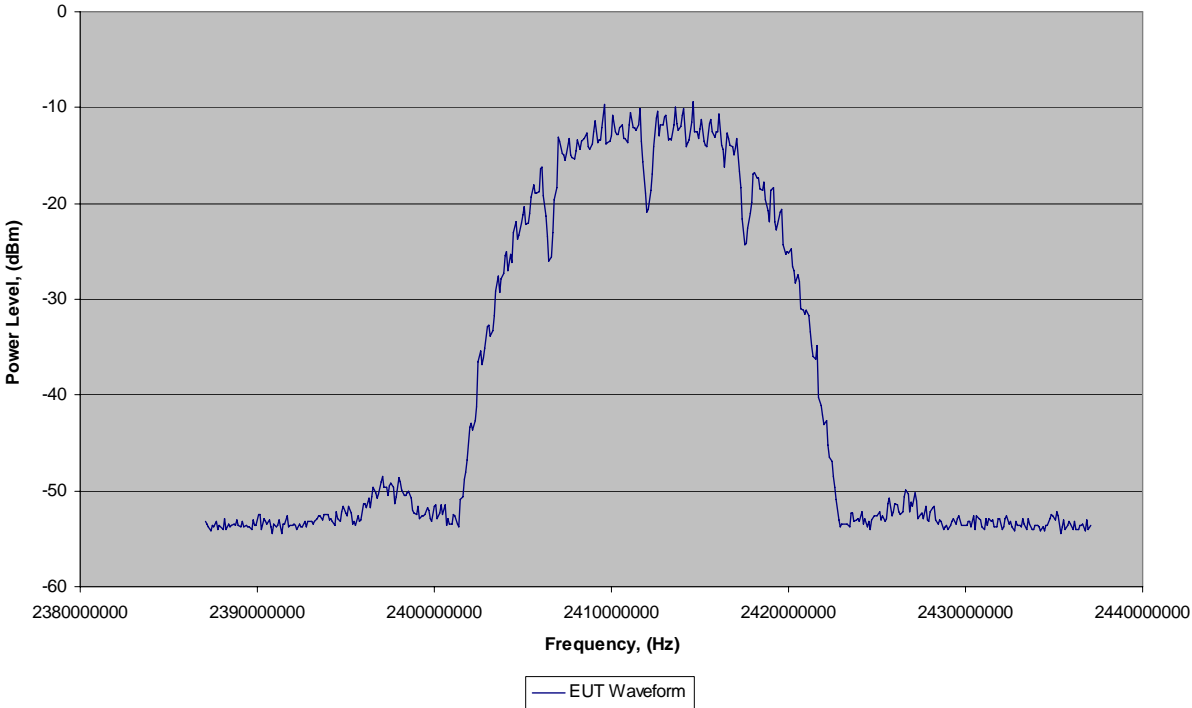


Burst Length, 9.72 ms

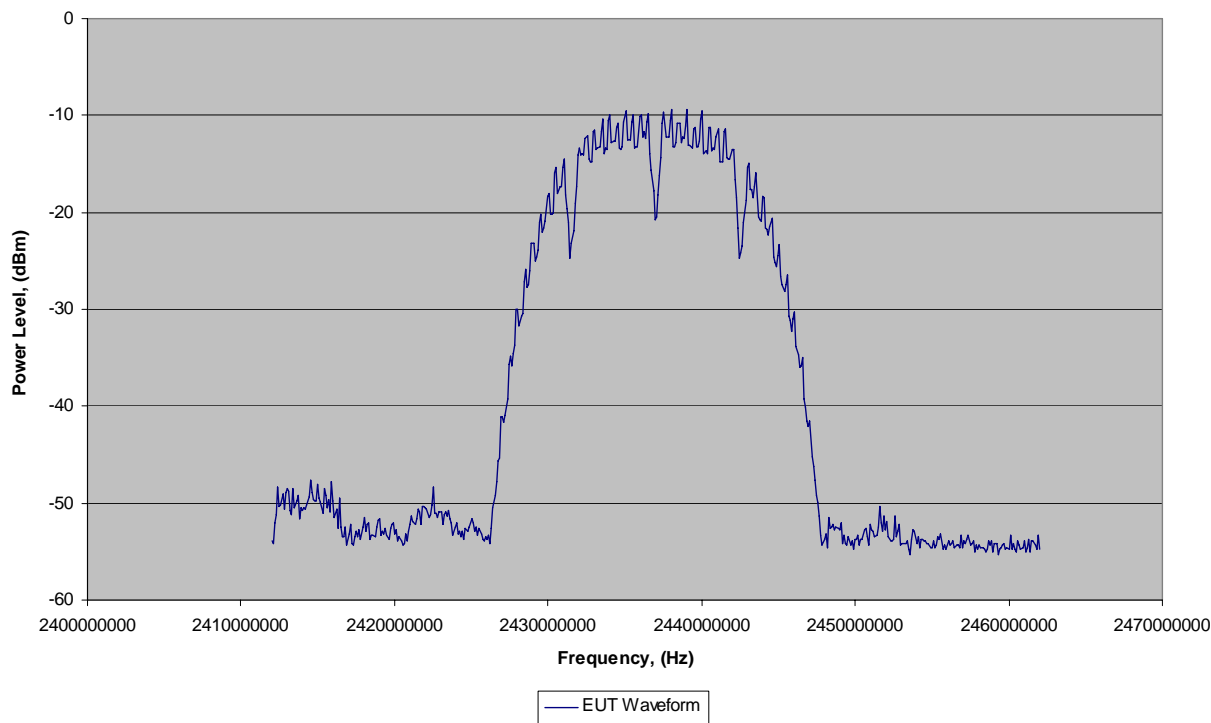


Burst Interval, 100 ms (60 seconds in normal operation)

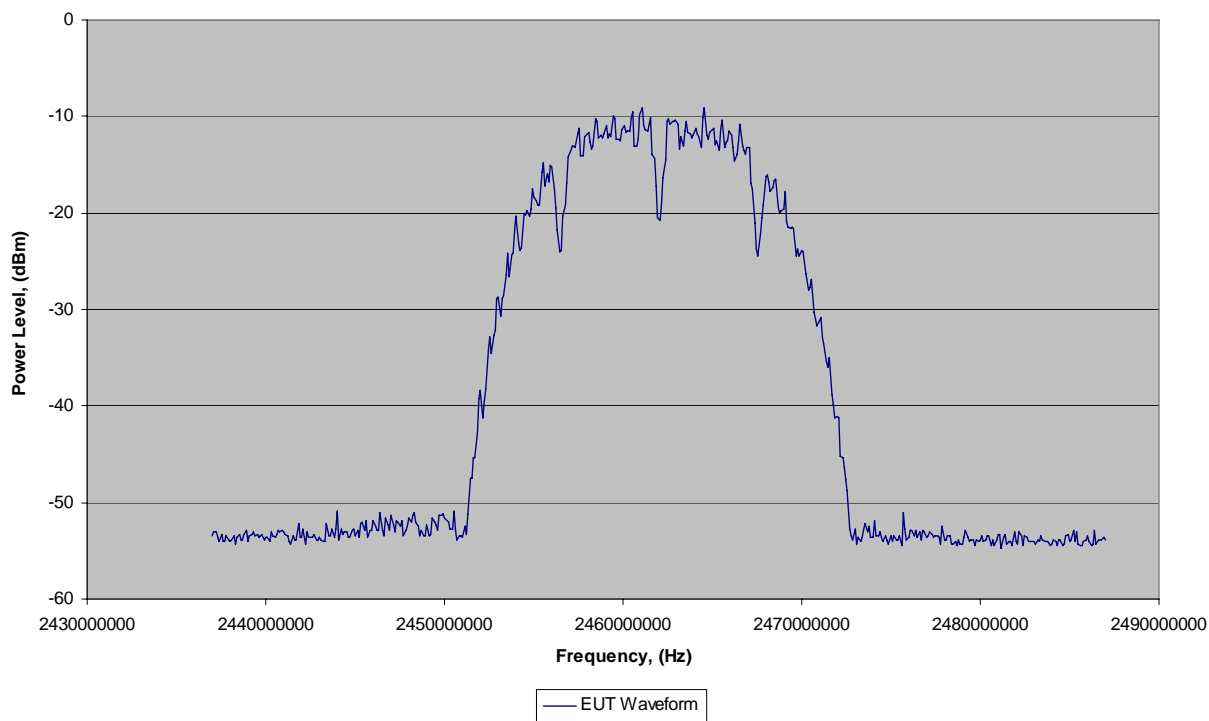
Channel 1 2412 MHz
89.45 mW (19.51 dBm)



Channel 6 2437 MHz
100.99 mW (20.04 dBm)



Channel 11 2462 MHz
109.93 mW (20.41 dBm)



Test Results: Pass

Test Standard: FCC Part 15 Subpart C 15.247

Test: 6 dB Bandwidth FCC 15.247(a)(2)

Performance Criterion: Emissions must be above specified limits.

Test Environment:

| | | | | | | |
|--|---------------|----|-----------------------|-----------|---------------|----|
| Environmental Conditions During Testing: | Humidity (%): | 24 | Pressure (hPa): | 999 | Ambient (°C): | 19 |
| Pretest Verification Performed | N/A | | Equipment under Test: | Lantag V2 | | |

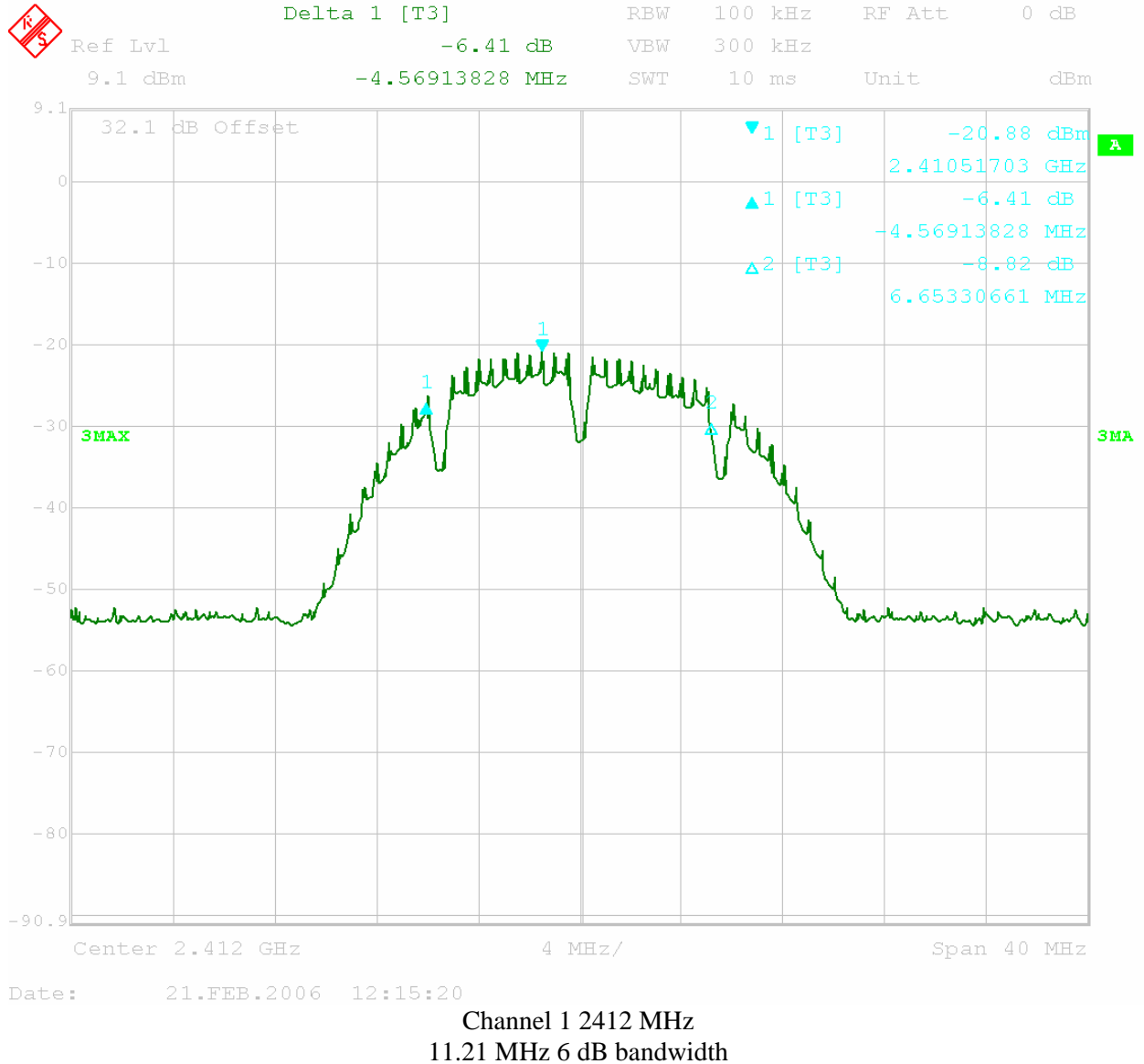
Maximum Test Disturbance Parameters: The 6dB bandwidth must exceed 500 kHz.

Test Equipment Used:

| TEST EQUIPMENT LIST | | | | | |
|---------------------|------------------------------------|------------------|------------------|------------|---------------|
| Item | Equipment Type | Make | Model No. | Serial No. | Next Cal. Due |
| 1 | Spectrum Analyzer 20hz - 40 Ghz | Rohde & Schwartz | FSEK-30 | 100225 | 07/26/2006 |
| 2 | HORN ANTENNA | EMCO | 3115 | 9610-4980 | 09/13/2006 |
| 3 | High Frequency Cable 40Ghz | Megaphase | TM40 K1K1 197 | CBL027 | 12/20/2006 |
| 4 | Digital 4 Line Barometer | Mannix | 0ABA116 | BAR2 | 08/02/2007 |

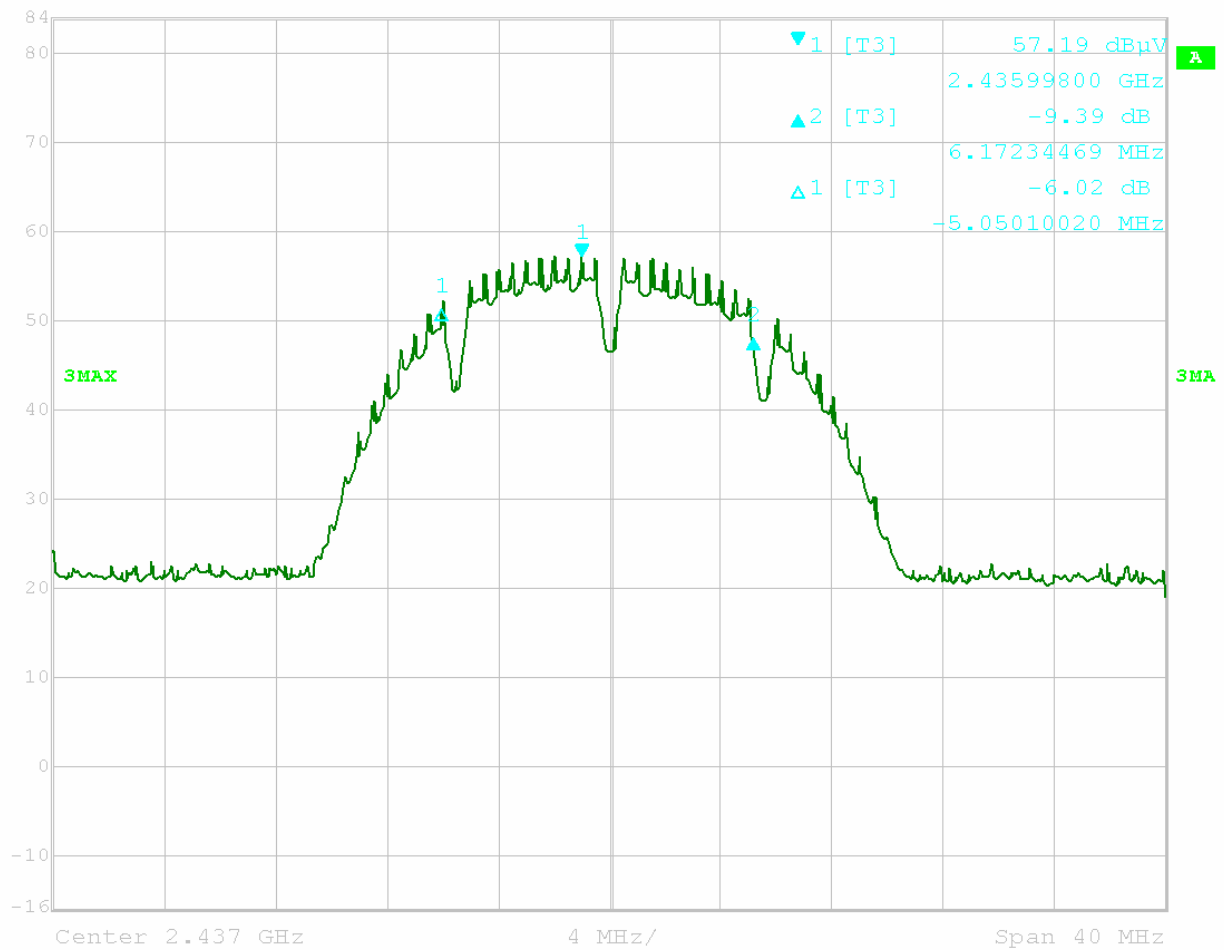
Test Details:

Notes: RF level in plots not necessarily indicative of maximum RF output power.





Delta 2 [T3] RBW 100 kHz RF Att 0 dB
 Ref Lvl -9.39 dB VBW 300 kHz
 84 dBμV 6.17234469 MHz SWT 10 ms Unit dBμV

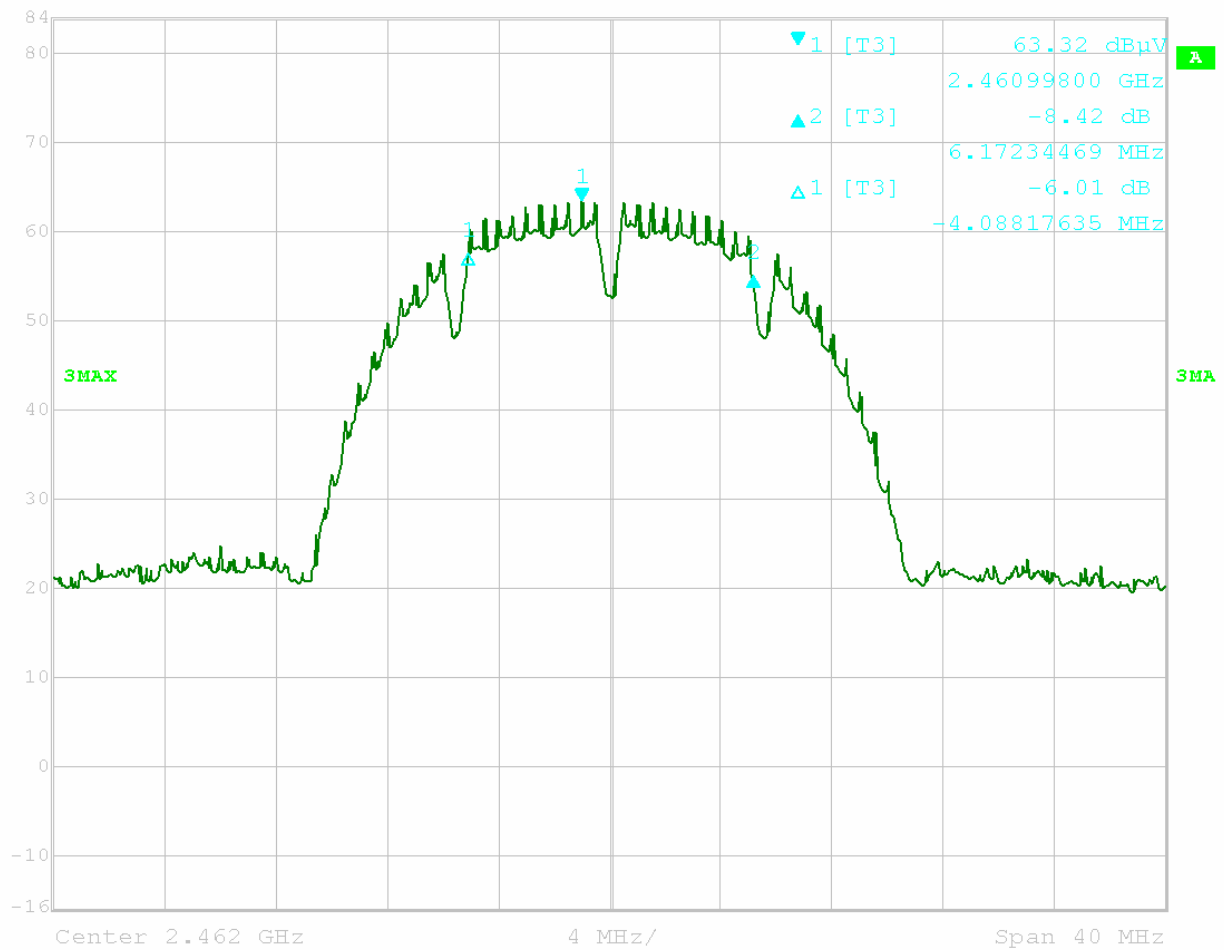


Date: 21.FEB.2006 13:40:02

Channel 6 2437 MHz
 11.22 MHz 6 dB bandwidth



Delta 2 [T3] RBW 100 kHz RF Att 0 dB
 Ref Lvl -8.42 dB VBW 300 kHz
 84 dBμV 6.17234469 MHz SWT 10 ms Unit dBμV



Date: 21.FEB.2006 15:12:27

Channel 11 2462 MHz
 10.25 MHz 6 dB bandwidth

Test Results: Pass

Test Standard: FCC Part 15 Subpart C 15.247

Test: Peak Power Spectral Density FCC 15.247(e)

Performance Criterion: Emissions must be below specified limits.

Test Environment:

| | | | | | | |
|--|---------------|----|-----------------------|-----|---------------|----|
| Environmental Conditions During Testing: | Humidity (%): | 24 | Pressure (hPa): | 999 | Ambient (°C): | 19 |
| Pretest Verification Performed | N/A | | Equipment under Test: | | Lantag V2 | |

Maximum Test Disturbance Parameters: The peak power spectral density must not exceed 8 dBm in any 3 kHz bandwidth.

Test Equipment Used:

| TEST EQUIPMENT LIST | | | | | |
|---------------------|------------------------------------|------------------|------------------|------------|---------------|
| Item | Equipment Type | Make | Model No. | Serial No. | Next Cal. Due |
| 1 | Spectrum Analyzer 20hz - 40 Ghz | Rohde & Schwartz | FSEK-30 | 100225 | 07/26/2006 |
| 2 | HORN ANTENNA | EMCO | 3115 | 9610-4980 | 09/13/2006 |
| 3 | High Frequency Cable 40Ghz | Megaphase | TM40 K1K1 197 | CBL027 | 12/20/2006 |
| 4 | Digital 4 Line Barometer | Mannix | 0ABA116 | BAR2 | 08/02/2007 |

Software Utilized:

| Name | Manufacturer | Version |
|------------|-----------------------|---------------|
| EXCEL 2000 | Microsoft Corporation | 9.0.6926 SP-3 |

Test Details:

Notes: The highest signal level measured using a 100 kHz bandwidth during the RF output power test does not exceed 8 dBm, therefore the EUT does not exceed the limit.

Test Results: Pass

Test Standard: FCC Part 15 Subpart C 15.247

Test: Band Edge Compliance FCC 15.215, 15.247(d)

Performance Criterion: The emission must stay within band.

Test Environment:

| | | | | | | |
|--|---------------|----|-----------------------|-----|---------------|----|
| Environmental Conditions During Testing: | Humidity (%): | 24 | Pressure (hPa): | 999 | Ambient (°C): | 19 |
| Pretest Verification Performed | N/A | | Equipment under Test: | | Lantag V2 | |

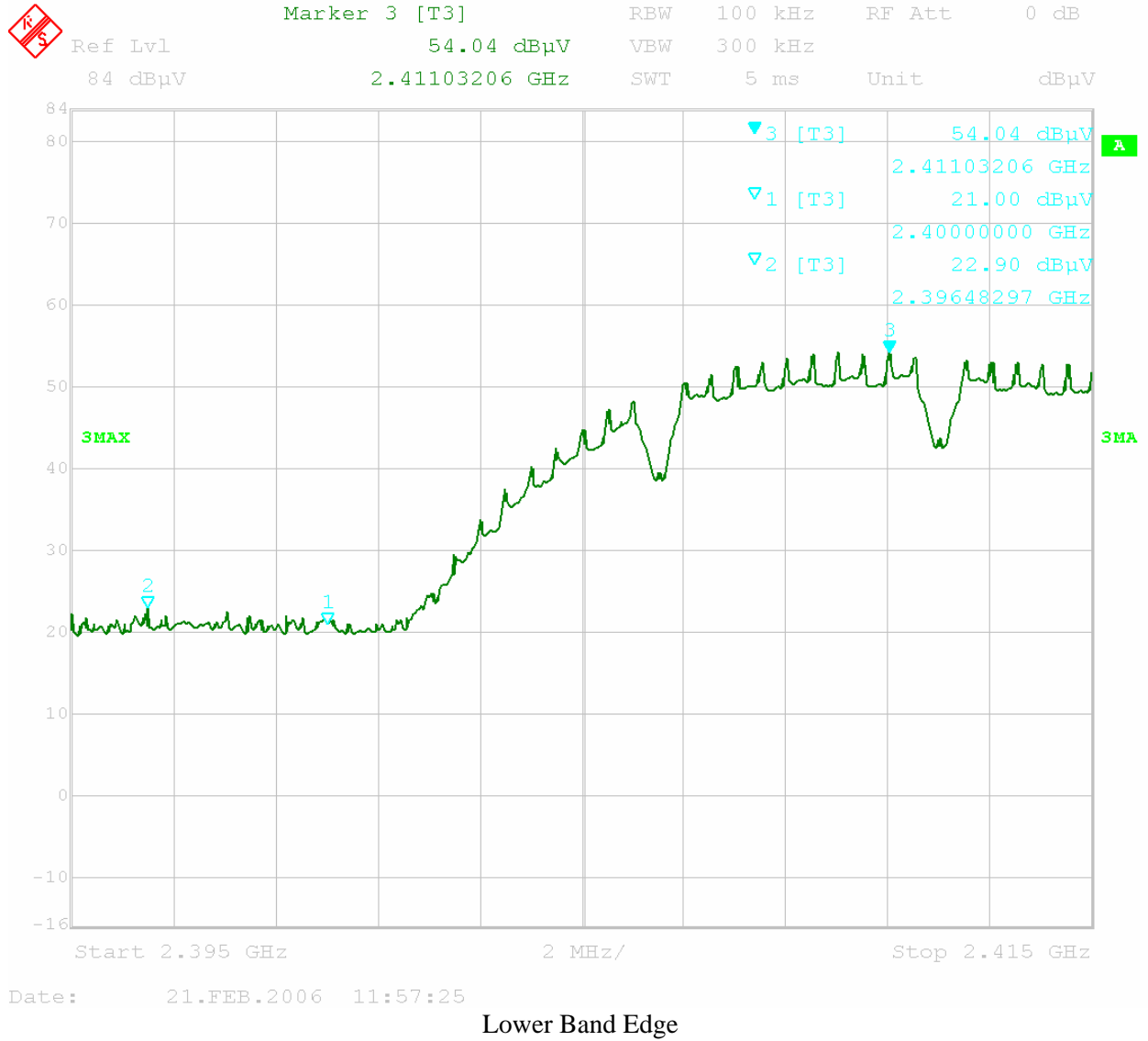
Maximum Test Disturbance Parameters: Spurious emissions at the band edges must be at least 20 dB lower than the fundamental field strength when measured with a 100 kHz bandwidth.

Test Equipment Used:

| TEST EQUIPMENT LIST | | | | | |
|---------------------|------------------------------------|------------------|------------------|------------|---------------|
| Item | Equipment Type | Make | Model No. | Serial No. | Next Cal. Due |
| 1 | Spectrum Analyzer 20hz - 40 Ghz | Rohde & Schwartz | FSEK-30 | 100225 | 07/26/2006 |
| 2 | HORN ANTENNA | EMCO | 3115 | 9610-4980 | 09/13/2006 |
| 3 | High Frequency Cable 40Ghz | Megaphase | TM40 K1K1 197 | CBL027 | 12/20/2006 |
| 4 | Digital 4 Line Barometer | Mannix | 0ABA116 | BAR2 | 08/02/2007 |

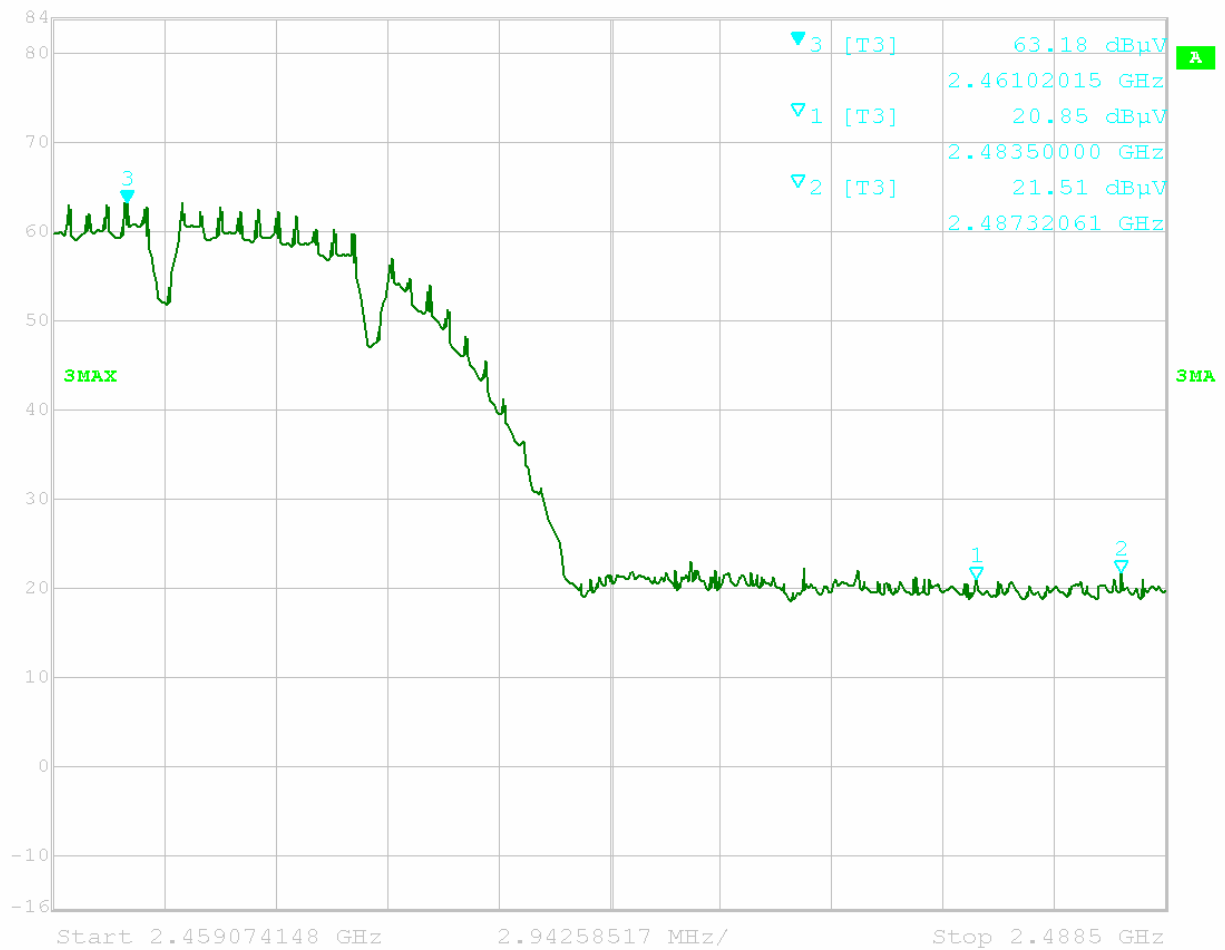
Test Details:

Notes: The lower band edge plot shows at least a 31.14 dB margin from the highest in band level to the highest level below the band edge. The upper band edge plot shows at least a 41.67 dB margin between the highest in band signal and the highest signal above the band edge.





Marker 3 [T3] RBW 100 kHz RF Att 0 dB
 Ref Lvl 63.18 dBμV VBW 300 kHz
 84 dBμV 2.46102015 GHz SWT 7.5 ms Unit dBμV



Date: 21.FEB.2006 15:13:58

Upper Band Edge

Test Results: Pass

Test Standard: FCC Part 15 Subpart C 15.247

Test: Radiated Emissions FCC 15.205, 15.209, 15.247(d)

Performance Criterion: Emissions must be below specified limits.

Test Environment:

| | | | | | | |
|--|---------------|------------|-----------------------|------------|---------------|------------|
| Environmental Conditions During Testing: | Humidity (%): | See Tables | Pressure (hPa): | See Tables | Ambient (°C): | See Tables |
| Pretest Verification Performed | Yes | | Equipment under Test: | | Lantag V2 | |

Maximum Test Disturbance Parameters: Spurious emissions must be at least 20 dB lower than the fundamental field strength when measured with a 100 kHz bandwidth. Emissions which fall in the restricted bands of 15.205 must meet the general limits of 15.209.

Test Equipment Used:

| TEST EQUIPMENT LIST | | | | | |
|---------------------|------------------------------------|------------------|---------------|------------|---------------|
| Item | Equipment Type | Make | Model No. | Serial No. | Next Cal. Due |
| 1 | Spectrum Analyzer 20hz - 40 Ghz | Rohde & Schwartz | FSEK-30 | 100225 | 07/26/2006 |
| 2 | HORN ANTENNA | EMCO | 3115 | 9610-4980 | 09/13/2006 |
| 3 | High Frequency Cable 40Ghz | Megaphase | TM40 K1K1 197 | CBL027 | 12/20/2006 |
| 4 | High Frequency Cable 40Ghz | Megaphase | TM40 K1K1 80 | CBL029 | 12/20/2006 |
| 5 | Spectrum Analyzer | Agilent | E7405A | US40240205 | 08/09/2006 |
| 6 | ANTENNA | EMCO | 3142 | 9701-1116 | 11/10/2006 |
| 7 | 10 Meter in floor cable for site 2 | ITS | RG214B/U | S2 10M FLR | 09/02/2006 |
| 8 | PREAMPLIFIER 1-40 GHz | MITEQ | NSP4000-NF | 507145 | 11/21/2006 |
| 9 | ANTENNA, RIDGED GUIDE, 18-40 GHZ | EMCO | 3116 | 2090 | 12/13/2007 |
| 10 | Digital 4 Line Barometer | Mannix | 0ABA116 | BAR2 | 08/02/2007 |

Software Utilized:

| Name | Manufacturer | Version |
|----------------|-----------------------|------------------|
| EXCEL 2000 | Microsoft Corporation | 9.0.6926 SP-3 |
| EMI BOXBOROUGH | Intertek | 1/12/06 Revision |

Test Details:
Radiated Emissions

Company: PanGo Networks, Inc. Antenna & Cables: N Bands: N, LF, HF, SHF
 Model #: Lantag V2 LF Antenna: NONE. NONE.
 Serial #: 00147E-000099 N Antenna: LOG1 11-10-06 V10.ant LOG1 11-10-06 H10.ant
 Engineers: Nicholas Abbondante Location: Site 2 HF Antenna: HORN3 9-13-06 V1m.txt HORN3 9-13-06 H1m.txt
 Project #: 3092198 Date(s): 02/21/06 02/23/06 SHF Antenna: EMC04 V 1m 12-13-2006.txt EMC04 H 1m 12-13-2006.txt
 Standard: FCC Part 15 Subpart C 15.247 LF Cable(s): NONE. NONE.
 Receiver: Agilent E7405A (AGL001) Limit Distance (m): 3 N Cable(s): S2 10M FLR 9-2-2006.cbl NONE.
 PreAmp: PRE8 11-21-06.amp Test Distance (m): 10 HF Cable(s): CBL029 12-20-2006.txt CBL027 12-20-2006.txt
 Barometer: BAR2 Temp/Humidity/Pressure: 19c 24% 999 mB SHF Cable(s): CBL029 12-20-2006.txt CBL027 12-20-2006.txt
 PreAmp Used? (Y or N): N Voltage/Frequency: 4.5V Fresh Battery Frequency Range: 30 - 1000 MHz
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

| Detector Type | Ant. Pol. (V/H) | Frequency MHz | Reading dB(uV) | Antenna Factor dB(1/m) | Cable Loss dB | Pre-amp Factor dB | Distance Factor dB | Net dB(uV/m) | Limit dB(uV/m) | Margin dB | Bandwidth |
|---------------|-----------------|---------------|----------------|------------------------|---------------|-------------------|--------------------|--------------|----------------|-----------|-------------|
| QP | V | 276.000 | 18.4 | 13.0 | 3.0 | 0.0 | -10.5 | 44.8 | 46.0 | -1.2 | 100/300 kHz |

Radiated Emissions

Company: PanGo Networks, Inc. Antenna & Cables: HF Bands: N, LF, HF, SHF
 Model #: Lantag V2 LF Antenna: NONE. NONE.
 Serial #: 00147E-000099 N Antenna: LOG1 11-10-06 V10.ant LOG1 11-10-06 H10.ant
 Engineers: Nicholas Abbondante Location: Site 2 HF Antenna: HORN3 9-13-06 V1m.txt HORN3 9-13-06 H1m.txt
 Project #: 3092198 Date(s): 02/23/06 SHF Antenna: EMC04 V 1m 12-13-2006.txt EMC04 H 1m 12-13-2006.txt
 Standard: FCC Part 15 Subpart C 15.247 LF Cable(s): NONE. NONE.
 Receiver: R&S FSEK-30 (ROS001) Limit Distance (m): 3 N Cable(s): S2 10M FLR 9-2-2006.cbl NONE.
 PreAmp: PRE8 11-21-06.amp Test Distance (m): 3 HF Cable(s): CBL029 12-20-2006.txt CBL027 12-20-2006.txt
 Barometer: BAR2 Temp/Humidity/Pressure: 19c 26% 1001 mB SHF Cable(s): CBL029 12-20-2006.txt CBL027 12-20-2006.txt
 PreAmp Used? (Y or N): N Voltage/Frequency: 4.5V Fresh Battery Frequency Range: 1 - 4 GHz
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

| Detector Type | Ant. Pol. (V/H) | Frequency MHz | Reading dB(uV) | Antenna Factor dB(1/m) | Cable Loss dB | Pre-amp Factor dB | Distance Factor dB | Net dB(uV/m) | Limit dB(uV/m) | Margin dB | Bandwidth |
|---|-----------------|---------------|----------------|------------------------|---------------|-------------------|--------------------|--------------|----------------|-----------|-------------|
| Note: Using CBL027 only, noise floor readings | | | | | | | | | | | |
| PK | V | 1517.000 | 20.9 | 25.9 | 2.3 | 0.0 | 0.0 | 49.1 | 54.0 | -4.9 | 1/3 MHz |
| PK | V | 3400.000 | 18.5 | 31.8 | 3.7 | 0.0 | 0.0 | 54.0 | 77.9 | -23.8 | 100/300 kHz |

Radiated Emissions

Company: PanGo Networks, Inc.

Model #: Lantag V2

Serial #: 00147E-000099

Engineers: Nicholas Abbondante

Project #: 3092198

Date(s): 02/23/06

Location: Site 2

02/24/06

Standard: FCC Part 15 Subpart C 15.247

Receiver: R&S FSEK-30 (ROS001)

Limit Distance (m): 3

PreAmp: PRE8 11-21-06.amp

Test Distance (m): 3

Barometer: BAR2

Temp/Humidity/Pressure: 19c

26% 1001 mB

PreAmp Used? (Y or N): Y

Voltage/Frequency: 4.5V Fresh Battery

Frequency Range: 4 - 18 GHz

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Antenna & Cables: HF

Bands: N, LF, HF, SHF

LF Antenna: NONE.

NONE.

N Antenna: LOG1 11-10-06 V10.ant

LOG1 11-10-06 H10.ant

HF Antenna: HORN3 9-13-06 V1m.txt

HORN3 9-13-06 H1m.txt

SHF Antenna: EMC04 V 1m 12-13-2006.txt

EMC04 H 1m 12-13-2006.txt

LF Cable(s): NONE.

NONE.

N Cable(s): S2 10M FLR 9-2-2006.cbl

NONE.

HF Cable(s): CBL029 12-20-2006.txt

CBL027 12-20-2006.txt

SHF Cable(s): CBL029 12-20-2006.txt

CBL027 12-20-2006.txt

| Detector Type | Ant. Pol. (V/H) | Frequency MHz | Reading dB(uV) | Antenna Factor dB(1/m) | Cable Loss dB | Pre-amp Factor dB | Distance Factor dB | Net dB(uV/m) | Limit dB(uV/m) | Margin dB | Bandwidth |
|---------------|-----------------|---------------|----------------|------------------------|---------------|-------------------|--------------------|--------------|----------------|-----------|-------------|
| PK | V | 4824.000 | 34.4 | 34.0 | 6.4 | 22.5 | 0.0 | 52.3 | 74.0 | -21.7 | 1/3 MHz |
| AVG | V | 4824.000 | 28.9 | 34.0 | 6.4 | 22.5 | 0.0 | 46.7 | 54.0 | -7.3 | 1/3 MHz |
| PK | V | 7236.000 | 21.9 | 37.2 | 8.1 | 21.5 | 0.0 | 45.7 | 77.9 | -32.2 | 100/300 kHz |
| PK | V | 9648.000 | 23.4 | 39.1 | 9.7 | 19.1 | 0.0 | 53.1 | 77.9 | -24.8 | 100/300 kHz |
| PK | V | 12060.000 | 25.5 | 39.2 | 11.2 | 19.3 | 0.0 | 56.5 | 74.0 | -17.5 | 1/3 MHz |
| AVG | V | 12060.000 | 20.9 | 39.2 | 11.2 | 19.3 | 0.0 | 51.9 | 54.0 | -2.1 | 1/3 MHz |
| PK | V | 14472.000 | 26.9 | 42.3 | 12.4 | 20.9 | 0.0 | 60.7 | 74.0 | -13.3 | 1/3 MHz |
| AVG | V | 14472.000 | 18.0 | 42.3 | 12.4 | 20.9 | 0.0 | 51.8 | 54.0 | -2.2 | 1/3 MHz |
| PK | V | 16884.000 | 24.7 | 41.2 | 13.7 | 24.1 | 0.0 | 55.6 | 77.9 | -22.3 | 100/300 kHz |
| PK | V | 4874.000 | 33.5 | 34.1 | 6.4 | 22.5 | 0.0 | 51.5 | 74.0 | -22.5 | 1/3 MHz |
| AVG | V | 4874.000 | 28.9 | 34.1 | 6.4 | 22.5 | 0.0 | 47.0 | 54.0 | -7.0 | 1/3 MHz |
| PK | V | 7311.000 | 33.3 | 37.3 | 8.2 | 21.4 | 0.0 | 57.4 | 74.0 | -16.6 | 1/3 MHz |
| AVG | V | 7311.000 | 24.8 | 37.3 | 8.2 | 21.4 | 0.0 | 48.9 | 54.0 | -5.1 | 1/3 MHz |
| PK | V | 9748.000 | 24.0 | 39.3 | 9.7 | 19.0 | 0.0 | 54.0 | 77.9 | -23.9 | 100/300 kHz |
| PK | V | 12185.000 | 33.3 | 39.2 | 11.2 | 19.4 | 0.0 | 64.3 | 74.0 | -9.7 | 1/3 MHz |
| AVG | V | 12185.000 | 20.5 | 39.2 | 11.2 | 19.4 | 0.0 | 51.5 | 54.0 | -2.5 | 1/3 MHz |
| PK | V | 14622.000 | 23.4 | 42.0 | 12.5 | 21.0 | 0.0 | 56.9 | 77.9 | -21.0 | 100/300 kHz |
| PK | V | 17059.000 | 26.1 | 42.4 | 13.8 | 24.3 | 0.0 | 57.9 | 77.9 | -19.9 | 100/300 kHz |
| PK | V | 4924.000 | 32.8 | 34.3 | 6.5 | 22.6 | 0.0 | 51.0 | 74.0 | -23.0 | 1/3 MHz |
| AVG | V | 4924.000 | 25.8 | 34.3 | 6.5 | 22.6 | 0.0 | 44.0 | 54.0 | -10.0 | 1/3 MHz |
| PK | V | 7386.000 | 35.2 | 37.5 | 8.2 | 21.3 | 0.0 | 59.6 | 74.0 | -14.4 | 1/3 MHz |
| AVG | V | 7386.000 | 25.1 | 37.5 | 8.2 | 21.3 | 0.0 | 49.5 | 54.0 | -4.5 | 1/3 MHz |
| PK | V | 9848.000 | 26.4 | 39.5 | 9.8 | 19.0 | 0.0 | 56.7 | 77.9 | -21.2 | 100/300 kHz |
| PK | V | 12310.000 | 26.9 | 39.3 | 11.3 | 19.4 | 0.0 | 58.0 | 74.0 | -16.0 | 1/3 MHz |
| AVG | V | 12310.000 | 19.8 | 39.3 | 11.3 | 19.4 | 0.0 | 50.9 | 54.0 | -3.1 | 1/3 MHz |
| PK | V | 14772.000 | 24.1 | 41.7 | 12.5 | 21.2 | 0.0 | 57.2 | 77.9 | -20.7 | 100/300 kHz |
| PK | V | 17234.000 | 25.5 | 44.1 | 13.8 | 24.3 | 0.0 | 59.1 | 77.9 | -18.8 | 100/300 kHz |

Radiated Emissions

Company: PanGo Networks, Inc.

Model #: Lantag V2

Serial #: 00147E-000099

Engineers: Nicholas Abbondante

Project #: 3092198

Date(s): 02/24/06

Location: Site 2

Standard: FCC Part 15 Subpart C 15.247

Receiver: R&S FSEK-30 (ROS001)

Limit Distance (m): 3

PreAmp: PRE8 11-21-06.amp

Test Distance (m): 3

Barometer: BAR2

Temp/Humidity/Pressure: 19c 26% 999 mB

PreAmp Used? (Y or N): Y

Voltage/Frequency: 4.5V Fresh Battery

Frequency Range: 18 - 25 GHz

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Antenna & Cables: SHF

Bands: N, LF, HF, SHF

LF Antenna: NONE.

NONE.

N Antenna: LOG1 11-10-06 V10.ant

LOG1 11-10-06 H10.ant

HF Antenna: HORN3 9-13-06 V1m.txt

HORN3 9-13-06 H1m.txt

SHF Antenna: EMC04 V 1m 12-13-2006.txt

EMC04 H 1m 12-13-2006.txt

LF Cable(s): NONE.

NONE.

N Cable(s): S2 10M FLR 9-2-2006.cbl

NONE.

HF Cable(s): CBL029 12-20-2006.txt

CBL027 12-20-2006.txt

SHF Cable(s): CBL029 12-20-2006.txt

CBL027 12-20-2006.txt

| Detector Type | Ant. Pol. (V/H) | Frequency MHz | Reading dB(uV) | Antenna Factor dB(1/m) | Cable Loss dB | Pre-amp Factor dB | Distance Factor dB | Net dB(uV/m) | Limit dB(uV/m) | Margin dB | Bandwidth |
|---------------|-----------------|---------------|----------------|------------------------|---------------|-------------------|--------------------|--------------|----------------|-----------|-------------|
| PK | V | 21500.000 | 23.8 | 45.3 | 16.1 | 23.3 | 0.0 | 61.9 | 77.9 | -16.0 | 100/300 kHz |
| PK | V | 24500.000 | 23.4 | 45.8 | 17.5 | 21.0 | 0.0 | 65.7 | 77.9 | -12.2 | 100/300 kHz |

Setup Photos



