

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

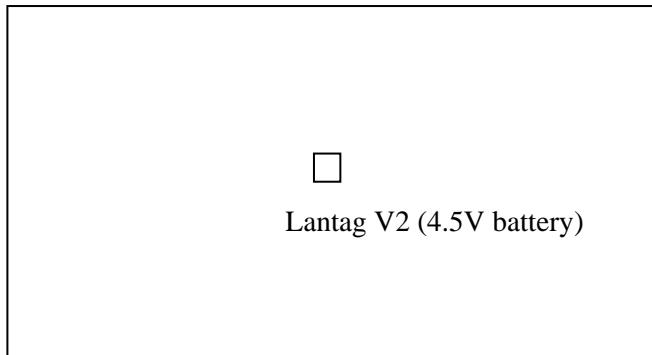
1.2 Equipment Under Test

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



Turntable

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 $\text{dB}\mu\text{V}/\text{m}$

RA = Receiver Amplitude (including preamplifier) in $\text{dB}\mu\text{V}$

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 $\text{dB}\mu\text{V}$ 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 $\text{dB}\mu\text{V}/\text{m}$. This value in $\text{dB}\mu\text{V}/\text{m}$ was converted to its corresponding level in $\mu\text{V}/\text{m}$.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}/\text{m}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}\mu\text{V}/\text{m}$$

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

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

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

Where NF = Net Reading in $\text{dB}\mu\text{V}$

RF = Reading from receiver in $\text{dB}\mu\text{V}$

LF = LISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from $\text{dB}\mu\text{V}$ to μV or mV the following was used:

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

Example:

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

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

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

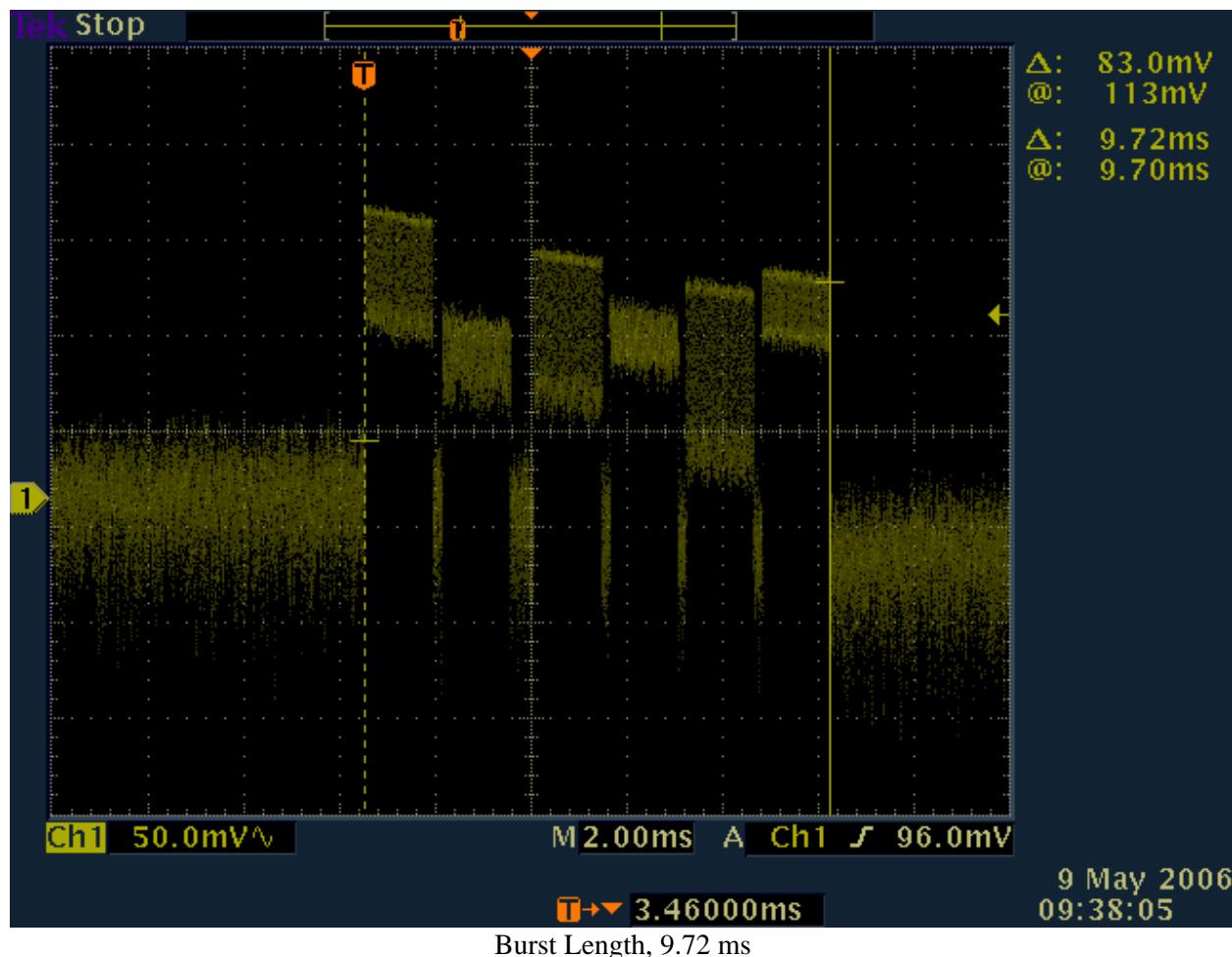
Test Details:

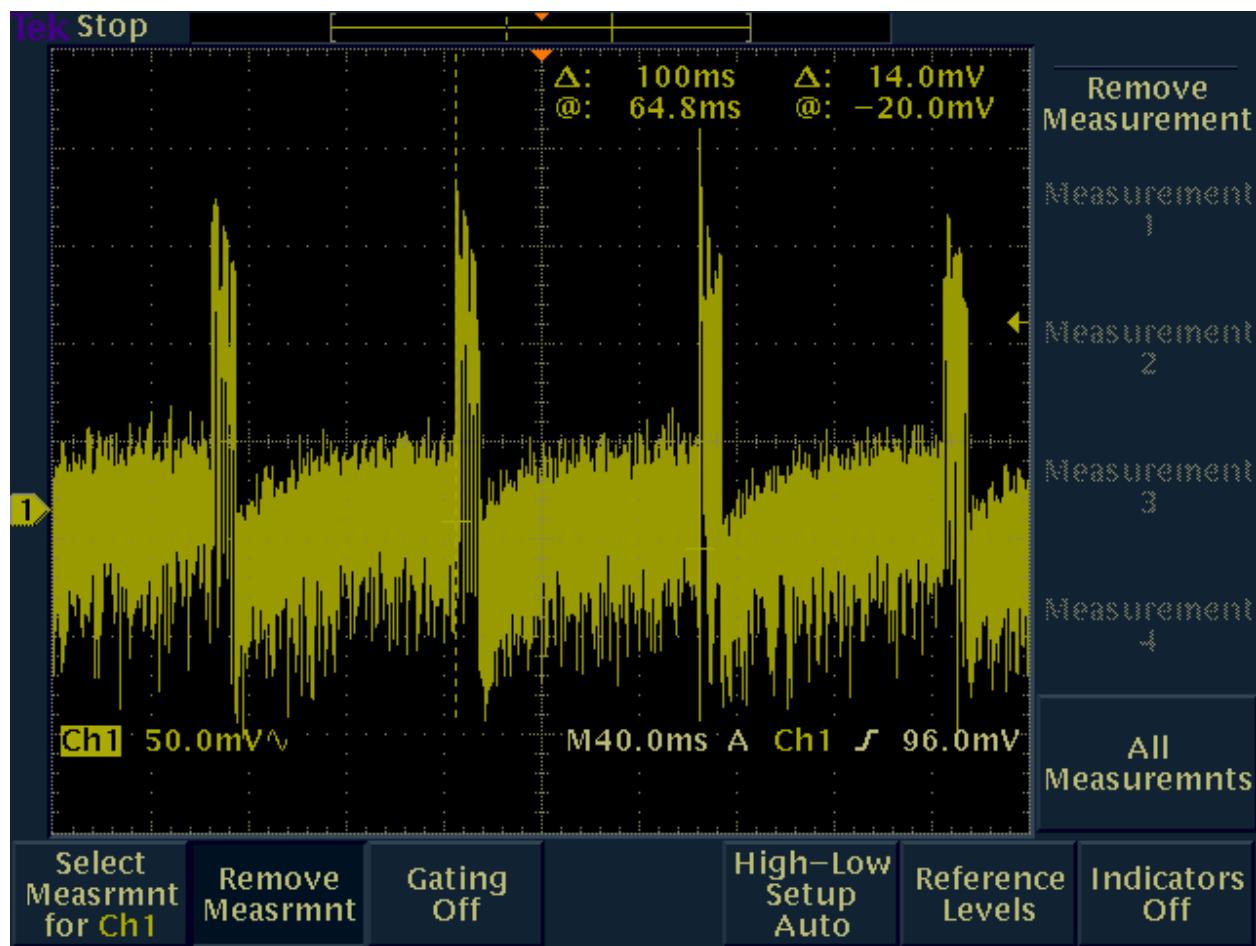
Notes: The EUT was measured radiatively. The RF output power was measured via integration using a 50 MHz span with a 100 kHz resolution bandwidth and 500 points of resolution. The data obtained was adjusted for equipment losses and converted from a field strength reading to a power reading using the 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:

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

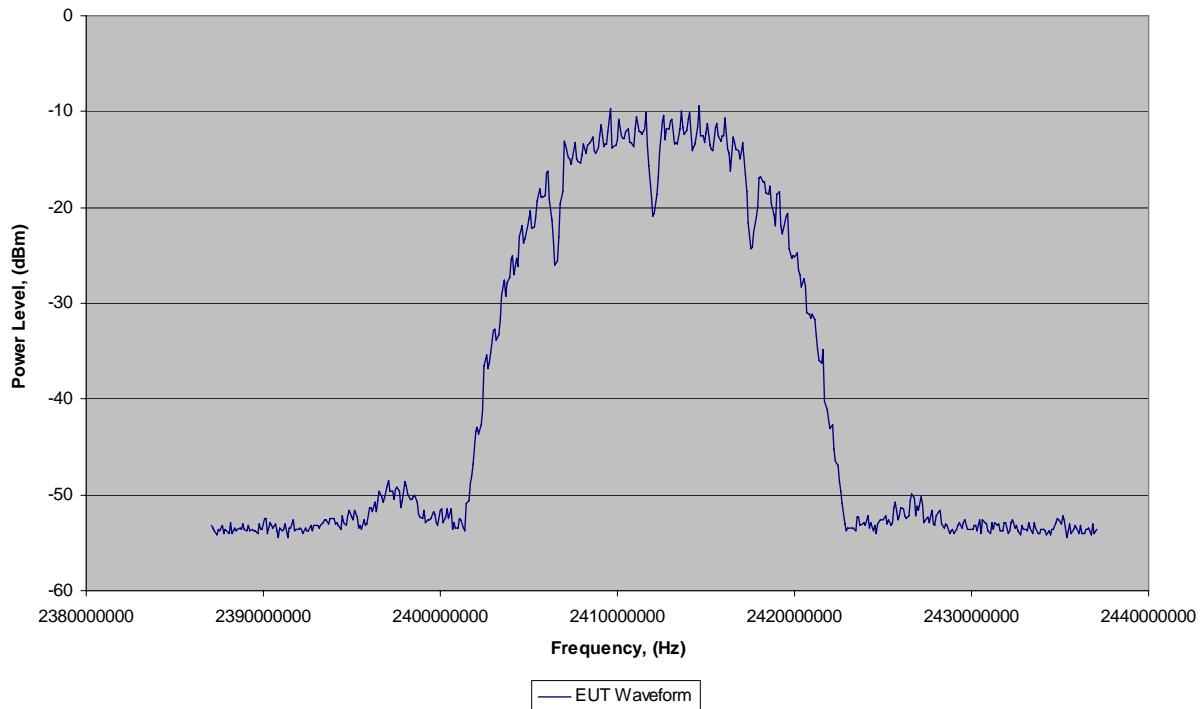
The distance, given a maximum EIRP of 20.41 dBm (109.93 mW), at which the radiated power density of the EUT is equal to the human RF exposure limit is 2.96 cm from the antenna.

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.

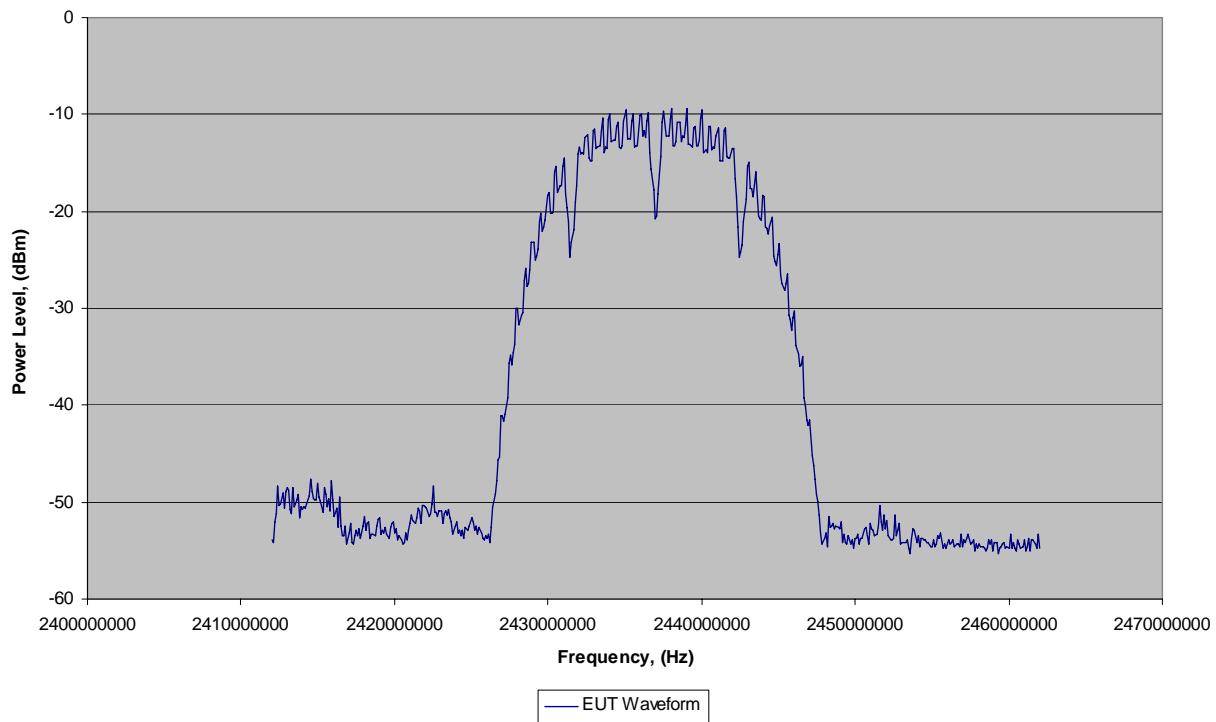




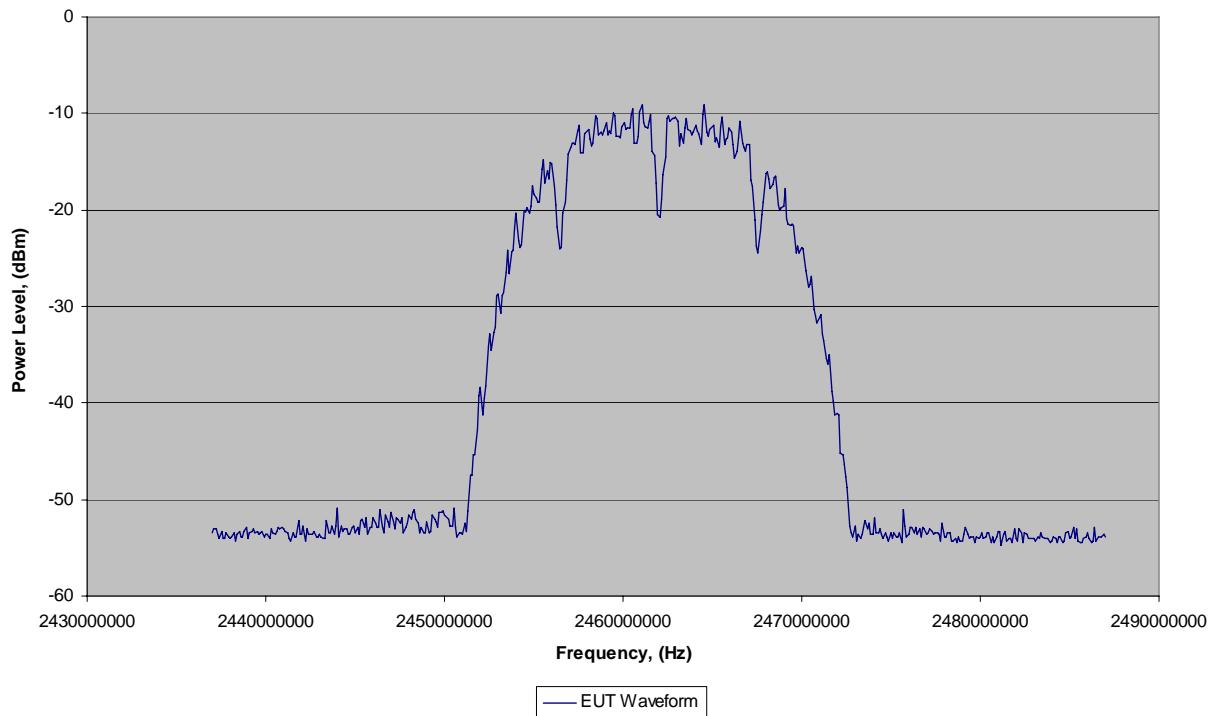
Channel 1 2412 MHz
89.45 mW (19.51 dBm)



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		

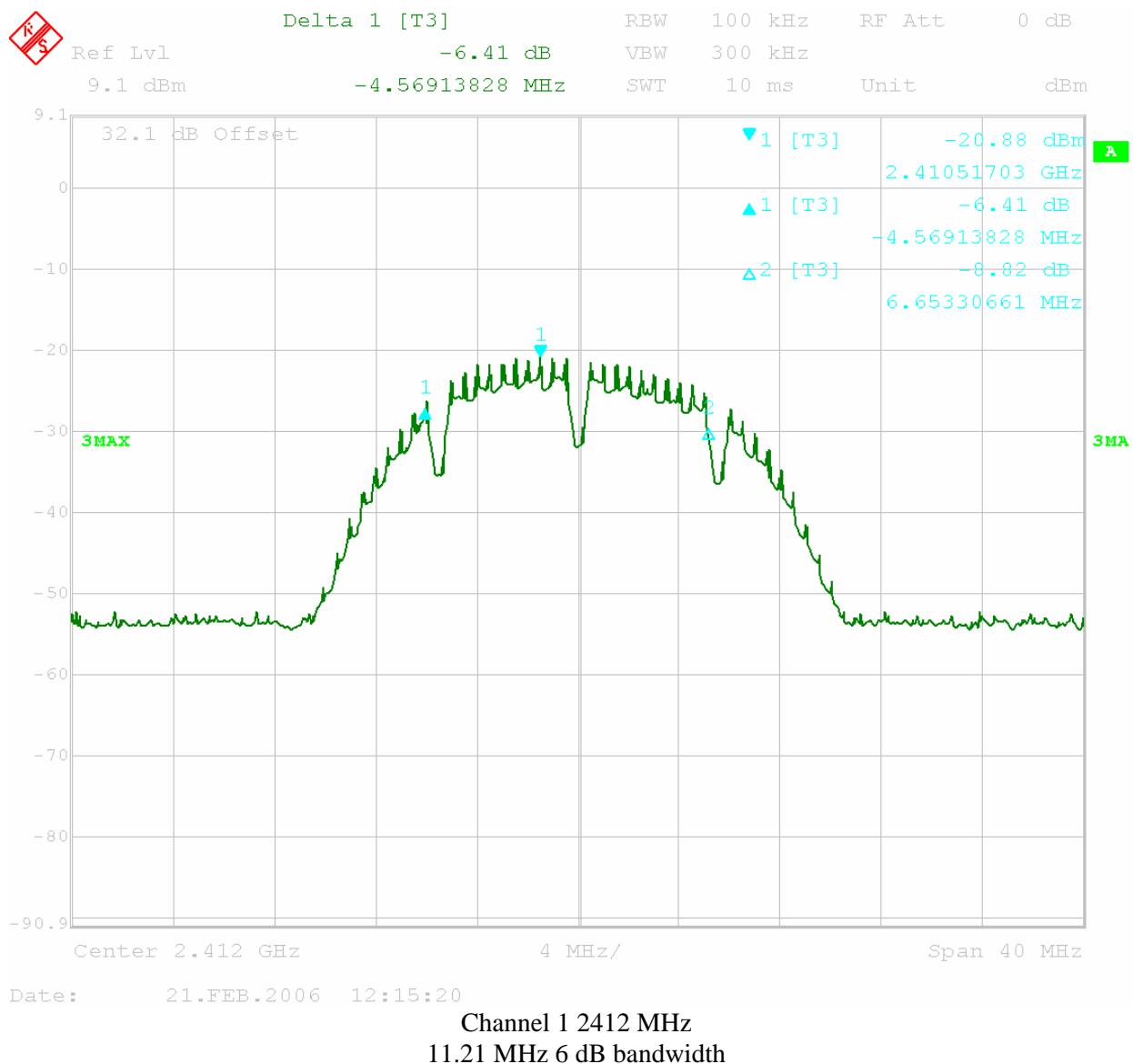
Maximum Test Disturbance Parameters: The 6dB bandwidth must exceed 500 kHz.

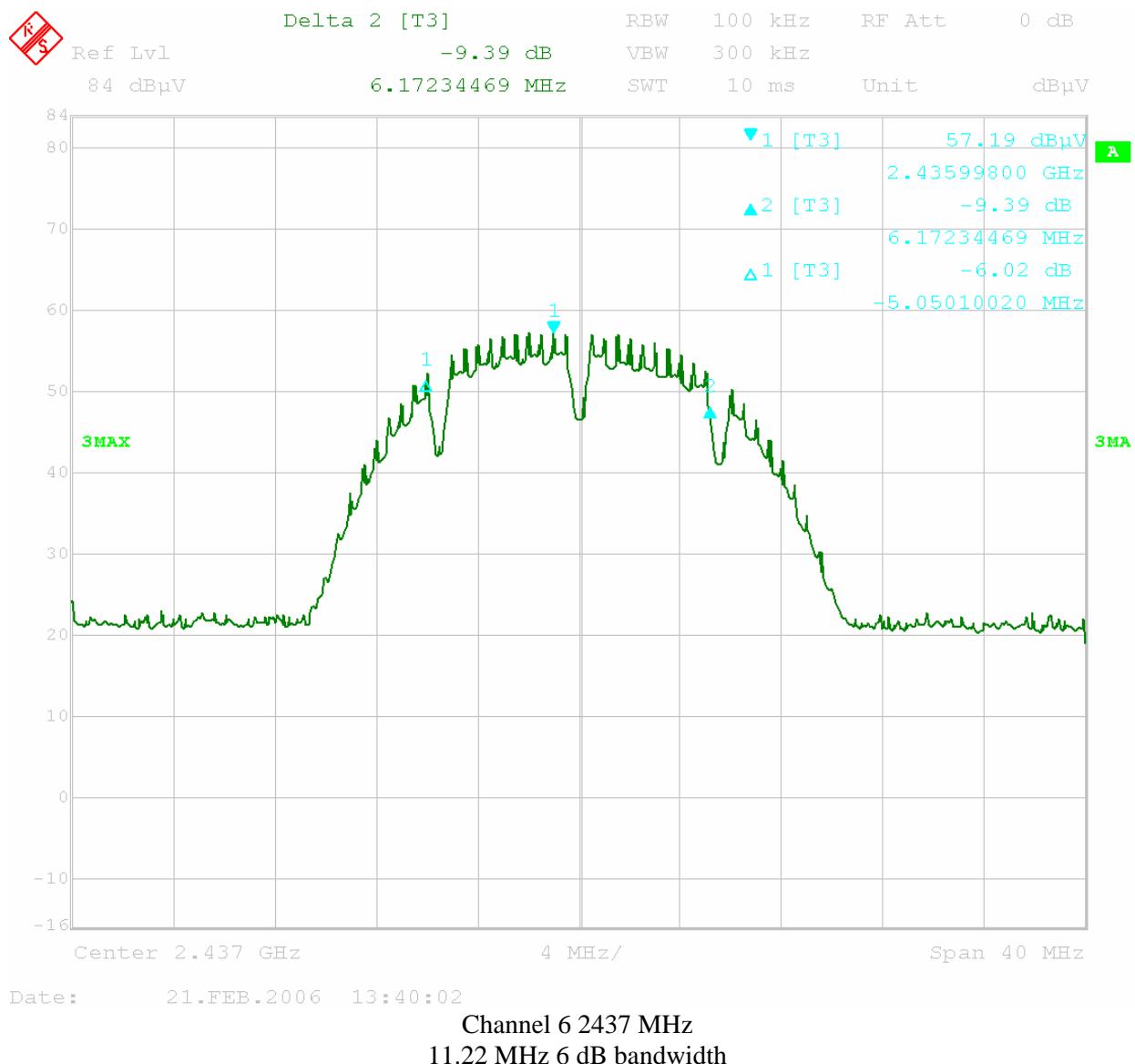
Test Equipment Used:

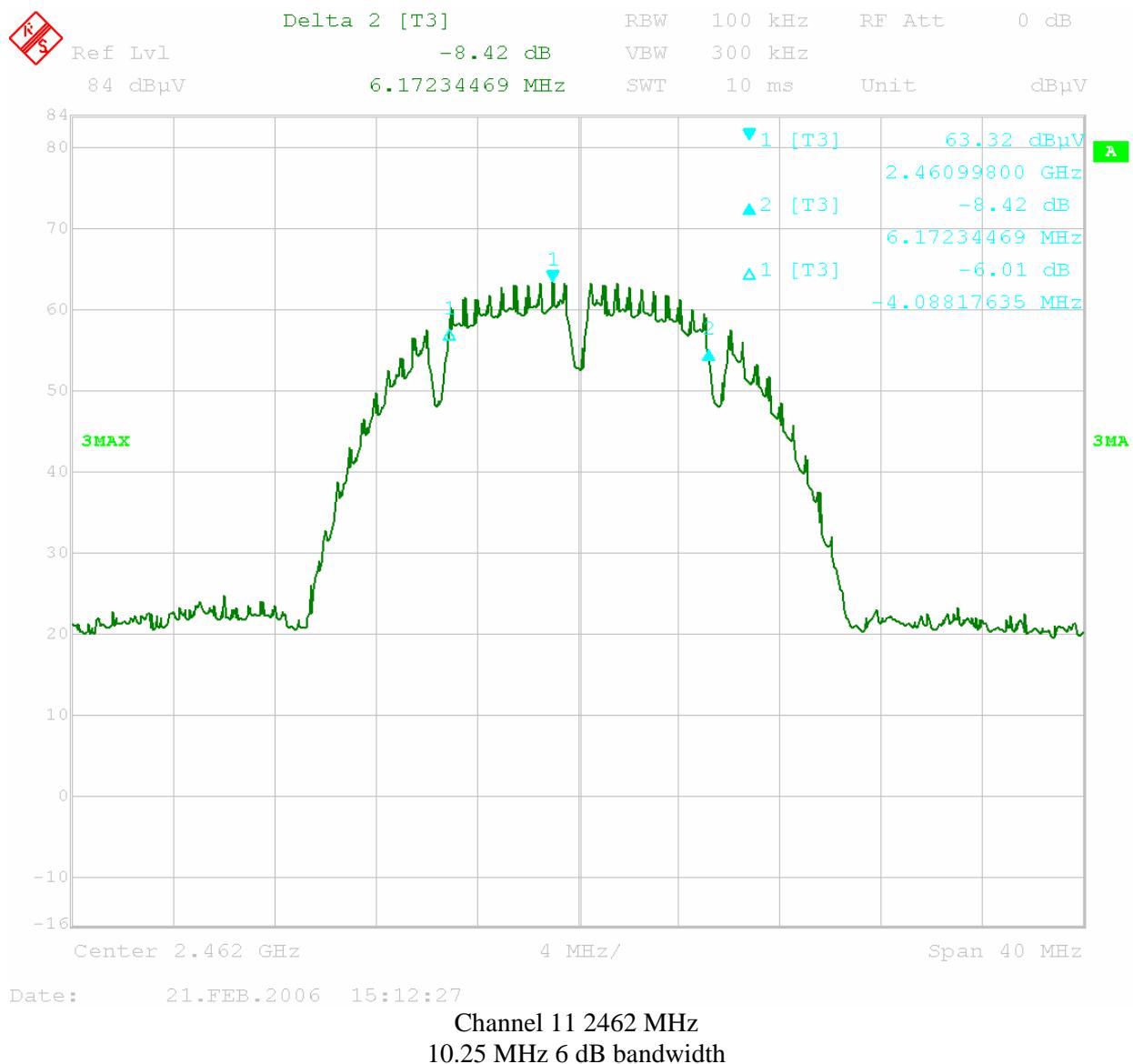
TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	Spectrum Analyzer 20hz - 40 Ghz	Rohde & Schwartz	FSEK-30	100225	07/26/2006
2	HORN ANTENNA	EMCO	3115	9610-4980	09/13/2006
3	High Frequency Cable 40Ghz	Megaphase	TM40 K1K1 197	CBL027	12/20/2006
4	Digital 4 Line Barometer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

Test Details:

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







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		

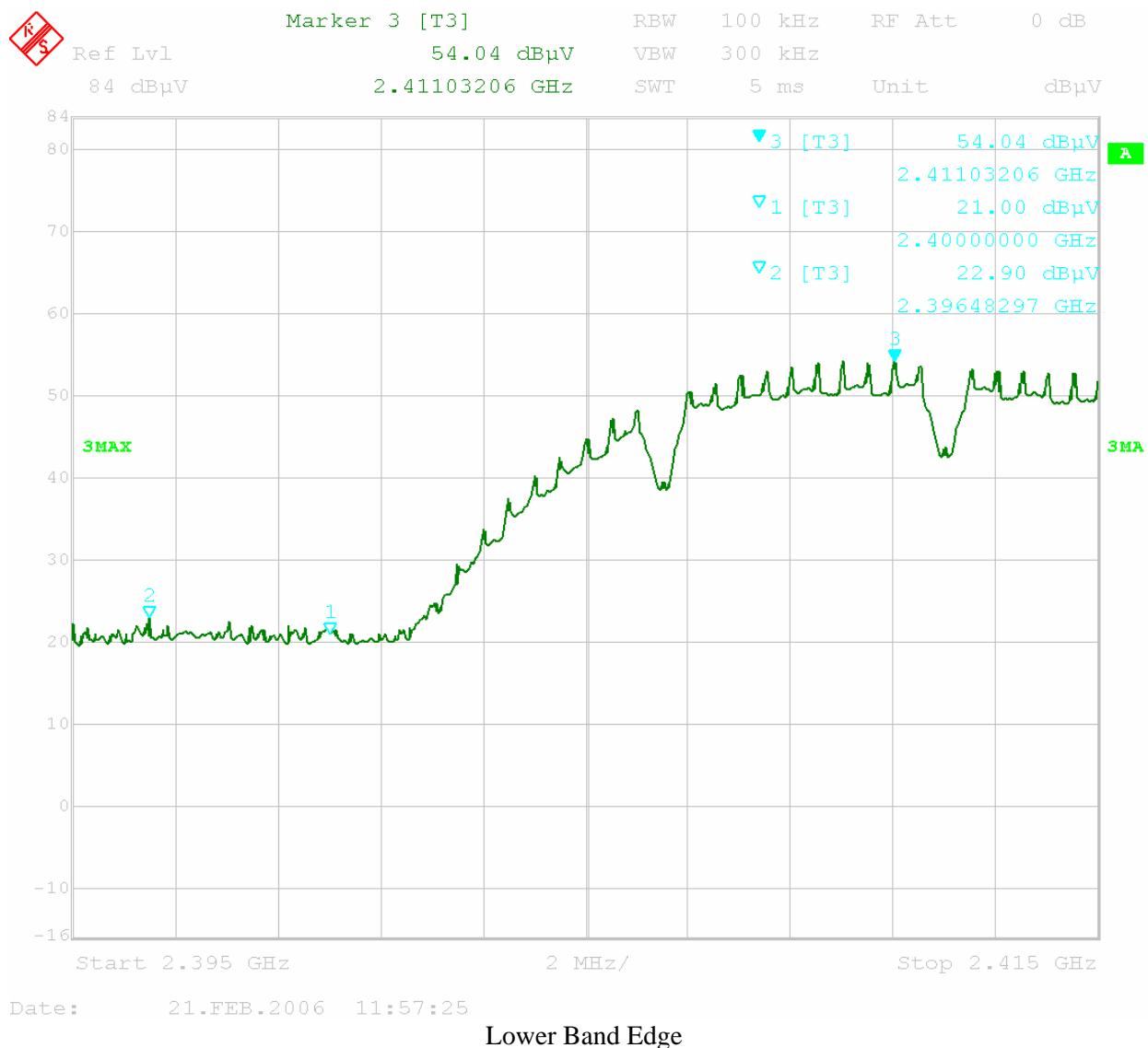
Maximum Test Disturbance Parameters: Spurious emissions at the band edges must be at least 20 dB lower than the fundamental field strength when measured with a 100 kHz bandwidth.

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.





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, RIDGE 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.
 Model #: Lantag V2
 Serial #: 00147E-000099
 Engineers: Nicholas Abbondante
 Project #: 3092198 Date(s): 02/21/06 02/23/06
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: Agilent E7405A (AGL001) Limit Distance (m): 3
 PreAmp: PRE8 11-21-06.amp Test Distance (m): 10
 Barometer: BAR2 Temp/Humidity/Pressure: 19c 24% 999 mB
 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.
 Model #: Lantag V2
 Serial #: 00147E-000099
 Engineers: Nicholas Abbondante
 Project #: 3092198 Date(s): 02/23/06
 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): 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

 Location: Site 2
 Date(s): 02/23/06 02/24/06

Standard: FCC Part 15 Subpart C 15.247

Receiver: R&S FSEK-30 (ROS001)

PreAmp: PRE8 11-21-06.amp

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. Bands: 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

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

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



