



Measurement of RF Emissions from an Xeta-4 Licensed Radio Transmitter

| | |
|--------------------|--|
| For | XetaWave LLC. 1668 Valtec Lane Boulder, CO 80301 |
| P.O. Number | FCCXETA9MAS&XETA4 |
| Date Tested | May 20 th through 24 th and June 11 th through 14 th , 2013 |
| Test Personnel | Richard King |
| Test Specification | FCC "Code of Federal Regulations" Title 47 Part 90, Subpart I Industry Canada RSS-119, June 2011 |

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REVISION HISTORY

| Revision | Date | Description |
|----------|---------------|-----------------|
| — | June 28, 2013 | Initial release |
| | | |

Measurement of RF Emissions from a Model No. Xeta-4 Licensed Radio Transmitter

1. INTRODUCTION

1.1. Scope of Tests

This report presents the results of the RF emissions measurements performed on a Licensed Radio Transmitter, Model No. Xeta-4. Serial Number 006 was assigned to the Equipment Under Test (EUT). The EUT is designed to transmit in the frequency range 406.1MHz to 512MHz. The EUT uses an external antenna.

1.2. Purpose

The test series was performed to determine if the EUT meets FCC technical requirements for transmitters. The EUT shall comply with the technical requirements of FCC Part 90. The testing includes RF power output, emissions mask, spurious emissions at antenna terminal, field strength of spurious emissions, transient frequency behavior and frequency stability requirements for the transmitters.

The test series was performed to determine if the EUT also meets Industry Canada's technical requirements for transmitters. The EUT shall comply with the technical requirements of RSS-119. The testing includes RF power output, emissions mask, spurious emissions at antenna terminal, field strength of spurious emissions, transient frequency behavior and frequency stability requirements for the transmitters.

Testing was performed in accordance with ANSI C63.4-2003 and TIA-603-C-2004.

1.3. Deviations, Additions and Exclusions

There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4. EMC Laboratory Identification

This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by The American Association for Laboratory Accreditation (A2LA). A2LA Certificate Number: 1786.01.

1.5. Laboratory Conditions

The temperature at the time of the test was 23.1°C and the relative humidity was 56%.

2. APPLICABLE DOCUMENTS

The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 90, Subpart I dated 1 October 2012
- TIA-603-C-2004, "Land Mobile FM or PM – Communications Equipment – Measurement and Performance Standards"
- Industry Canada Radio Standards Specification, RSS-119, "Radio Transmitters and Receivers Operating in the Land Mobile and Fixed Services in the Frequency Range 27.41-960 MHz", Issue 11, June 2011

3. EUT SETUP AND OPERATION

3.1. General Description

The EUT is a XetaWave LLC., Licensed Radio Transmitter, Model No. Xeta-4. A block diagram of the EUT setup is shown as Figure 1.

3.1.1. Power Input

For test purposes, a DC power supply provided 7.4VDC to the EUT.

3.1.2. Peripheral Equipment

The EUT was submitted for testing with the following peripheral equipment:

- Sony Viao Laptop Computer M/N: PCG-8N2L, P/N: 28398098, S/N: 3000596

3.1.3. Signal Input/Output Leads

The EUT was submitted for testing with a 10 wire, 50 cm long cable. Eight (8) of those wires went to the serial port of the Sony laptop computer. The other two (2) wires went to the output of the DC power supply that was used to provide 7.4VDC power to the EUT.

3.1.4. Grounding

The EUT was ungrounded during testing.

3.2. Software

XetaWave LLC Firmware Version 11779 was installed onto the EUT to provide correct load characteristics. The EUT uses Teraterm Software Version 4.7.3 to control the device during testing

3.3. Operational Mode

For all transmitter tests, the EUT was set to transmit at the following frequencies:

- 406.10625 MHz with 2FSK, 8QAM, 16QAM, 32QAM, BPSK, QPSK modulations
- 418 MHz with 2FSK, 8QAM, 16QAM, 32QAM, BPSK, QPSK modulations
- 429.99375 MHz with 2FSK, 8QAM, 16QAM, 32QAM, BPSK, QPSK modulations
- 450.00625 MHz with 2FSK, 8QAM, 16QAM, 32QAM, BPSK, QPSK modulations
- 460.65 MHz with 2FSK, 8QAM, 16QAM, 32QAM, BPSK, QPSK modulations
- 460.65MHz with 2FSK, 8QAM, 16QAM, 32QAM, BPSK, QPSK modulations

3.4. EUT Modifications

No modifications were required for compliance.

4. TEST FACILITY AND TEST INSTRUMENTATION

4.1. Shielded Enclosure

All radiated tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. With the exception of the floor, the reflective surfaces of the shielded chamber are lined with ferrite tiles on the walls and ceiling. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane.

4.2. Test Instrumentation

The test instrumentation and auxiliary equipment used during the tests are listed in Table 9-1.

Conducted and radiated emission measurements were performed with a spectrum analyzer. This receiver allows measurements with the bandwidths and detector functions specified in the requirements.

4.3. Calibration Traceability

Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.4. Measurement Uncertainty

All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system.

The measurement uncertainty for these tests is presented below:

| Conducted Emissions Measurements | | | |
|---------------------------------------|--|------|-------|
| Combined Standard Uncertainty | | 1.07 | -1.07 |
| Expanded Uncertainty (95% confidence) | | 2.1 | -2.1 |

| Radiated Emissions Measurements | | | |
|---------------------------------------|--|------|-------|
| Combined Standard Uncertainty | | 2.26 | -2.18 |
| Expanded Uncertainty (95% confidence) | | 4.5 | -4.4 |

5. TEST PROCEDURES

5.1. Transmitter

5.1.1. RF Power Output

5.1.1.1. Requirements

The output power shall not exceed by more than 20 percent the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

5.1.1.2. Procedures

With the EUT transmitting, the antenna port of the EUT was connected to a spectrum analyzer through 39.5 dB of attenuation. The resolution bandwidth of the spectrum analyzer was set wider than the bandwidth of the EUT. The output power of the item was then measured. This procedure was repeated separately with the EUT transmitting at the frequencies listed in paragraph 3.2.

5.1.1.3. Results

The output power measurements are shown on page 19. As can be seen from the data, the power output at each frequency is below the maximum allowable power of 20% above the manufacturer's rated output power.

5.1.2. Emission Mask

5.1.2.1. Requirements

For equipment with a 12.5 kHz channel bandwidth, any emissions must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

- (1) On any frequency from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 : Zero dB.
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least $7.27(f_d - 2.88\text{kHz})$ dB.
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz; At least $50 + 10\log(P)$ dB or 70 dB whichever is the lesser attenuation.

5.1.2.2. Procedures

The EUT was set to transmit.

- (a) The antenna port of the EUT was connected to a spectrum analyzer through 39.5 dB of attenuation.
- (b) The following spectrum analyzer settings were employed:
 - trace 1 = on
 - center frequency = transmit frequency of the EUT
 - resolution bandwidth = 1 MHz
 - video bandwidth > resolution bandwidth
 - frequency span = 125 kHz
 - sweep = Auto
 - detector function = peak
 - trace = max hold
- (c) Several sweeps were made with the settings listed above.
- (d) Trace 1 was changed from max hold to view
- (e) The following spectrum analyzer settings were employed:
 - trace 2 = on
 - resolution bandwidth = 100 Hz
 - video bandwidth = 300 Hz
 - sweep = Auto
 - detector function = peak
 - trace = max hold
- (f) Several sweeps were made with the settings listed above.
- (g) Steps (a) through (f) were repeated with the EUT set to transmit all the frequencies in paragraph 3.2.

5.1.2.3. Results

The spectrum analyzer plots of the emissions of the EUT are shown on pages 20 through 56. As can be seen from the data, the EUT did not produce spurious emissions in excess of the limit. The 99% bandwidth was measured to be 12.8kHz.

5.1.3. Spurious Emissions at the Antenna Terminals

5.1.3.1. Requirements

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz the emissions must be attenuated by at least $50 + 10\log(P)$ dB or 70dB whichever is the lesser attenuation.

5.1.3.2. Procedures

The EUT was set to transmit.

- (a) The antenna port of the EUT was connected to a spectrum analyzer through 39.5 dB of attenuation.
- (b) The resolution bandwidth of the spectrum analyzer was set to 100 kHz.
- (c) A sweep was made from 30 MHz to 1 GHz.
- (d) The resolution bandwidth of the spectrum analyzer was set to 1 MHz.
- (e) A sweep was made from 1 GHz to 5 GHz.
- (f) Steps (a) through (e) were repeated with the EUT set to transmit all the frequencies in paragraph 3.2.

5.1.3.3. Results

The plots of the antenna conducted output measurements are presented on pages 57 through 92. The limits, shown on the plots, are referenced to the RF power output measurements made on the EUT. As can be seen from the data, the EUT did not produce spurious emissions in excess of the limit. Field Strength of Spurious Emissions.

5.1.1.1. Requirements

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz the emissions must be attenuated by at least $50 + 10\log(P)$ dB or 70dB whichever is the lesser attenuation.

5.1.1.2. Procedures

All tests were performed in a 32 ft. x 20 ft. x 18 ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 2003 for site attenuation. The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

1. Preliminary radiated emissions measurements were first performed using a peak detector and automatically plotted. The broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30 MHz to 5 GHz was investigated using a peak detector function. All preliminary tests were performed separately with the EUT transmitting at the frequencies listed in paragraph 3.2.
2. All significant broadband and narrowband signals found in the preliminary sweeps were then measured using a peak detector at a test distance of 3 meters. The measurements were made with a tuned dipole or double ridged waveguide antenna over the frequency range of 30 MHz to 5 GHz.
3. To ensure that maximum emission levels were measured, the following steps were taken:
 - a. The EUT was rotated so that all of its sides were exposed to the receiving antenna.
 - b. Since the measuring antennas are linearly polarized, both horizontal and vertical field components were measured.
 - c. The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.
4. The equivalent power was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power a tuned dipole or double ridged waveguide antenna was set in place of the EUT and connected to a calibrated signal generator. The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The signal level was recorded. The reading was corrected to compensate for cable loss, as required, and when the double ridged waveguide antenna was used, increased by the difference in gain between the dipole and the waveguide antenna.

5.1.1.3. Results

The preliminary radiated emissions plots are presented on pages 93 through 116. This data is only presented for a reference, and is not used as official data. The final radiated levels are presented on page 117. The

radiated emissions were measured through the 10th harmonic. As can be seen from the data, all emissions measured from the EUT were within the specification limits. Photographs of the test configuration are shown on Figures 2 and 3.

5.1.2. Frequency Stability

5.1.2.1. Requirements

Fixed stations operating at 2 watts or less with a 12.5 kHz channel bandwidth must have a frequency stability of 1.5 ppm.

5.1.2.2. Procedures

The antenna port of the EUT was connected to a frequency counter through 39.5 dB of attenuation. The EUT was then placed in a humidity temperature chamber.

- (a) The EUT was set to transmit at 460.65MHz. The transmit frequency was measured and recorded at ambient temperature.
- (b) The temperature chamber was then set to -30°C.
- (c) Once the temperature chamber had reached -30°C, the EUT was allowed to soak for 30 minutes.
- (d) After soaking at -30°C for thirty minutes, the EUT was turned on and set to transmit and the transmit frequency was measured and recorded.
- (e) Steps (b) through (d) were repeated at -20°C.
- (f) Steps (b) through (d) were repeated at -10°C.
- (g) Steps (b) through (d) were repeated at 0°C.
- (h) Steps (b) through (d) were repeated at +10°C.
- (i) Steps (b) through (d) were repeated at +20°C.
- (j) Steps (b) through (d) were repeated at +30°C.
- (k) Steps (b) through (d) were repeated at +40°C.
- (l) Steps (b) through (d) were repeated at +50°C.
- (m) The EUT was then removed from the temperature chamber and allowed to adjust to nominal room temperature.
- (n) The supply voltage was checked and adjusted to the nominal level. The EUT was turned on and set to transmit. The transmit frequency was measured and recorded at ambient temperature.
- (o) The supply voltage was then varied to 85% of its nominal level. The EUT was turned on and set to transmit. The transmit frequency was measured and recorded at ambient temperature.
- (p) The supply voltage was then varied to 115% of its nominal level. The EUT was turned on and set to transmit. The transmit frequency was measured and recorded at ambient temperature.

5.1.2.3. Results

The frequency stability measurements are presented on pages 123 through 124. As can be seen from the data, all frequency deviations were within the 2.5 ppm limit. A photograph of the test setup is shown on Figure 4.

5.1.3. Transient Frequency Behavior

5.1.3.1. Requirements

Transmitters with 12.5 kHz channel spacing must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

| Time intervals | Maximum Frequency Difference | Time (ms) |
|----------------|------------------------------|-----------|
| t_1 | +/-12.5 kHz | 10.0 |
| t_2 | +/-6.25 kHz | 25.0 |
| t_3 | +/-12.5 kHz | 10.0 |

Where:

- t_1 is the time period immediately following t_{on}
- t_2 is the time period immediately following t_1
- t_3 is the time period from the instant when the transmitter is turned off until t_{off}

5.1.3.2. Procedures

Two test signals were connected to the test discriminator via a combining network. The transmitter was connected to a 50 ohm power attenuator. The output of the power attenuator was connected to the test discriminator via one input of the combining network. A test signal was connected to the second input of the combining network.

- (a) The test signal was adjusted to the nominal frequency of the transmitter.
- (b) The test signal was modulated by a 1 kHz signal with a deviation equal to the value of the relevant channel separation (12.5 kHz).
- (c) The test signal was adjusted to correspond to 0.5% of the power of the transmitter under test measured at the input of the test discriminator. This level was maintained throughout the measurement.
- (d) The amplitude difference (ad) and the frequency difference (f_d) output of the test discriminator were connected to a storage oscilloscope.
- (e) The storage oscilloscope was set to display the channel corresponding to the (f_d) input up to ± 1 channel frequency difference, corresponding to the relevant channel separation, from the nominal frequency.
- (f) The storage oscilloscope was set to a rate of 5 ms/div and set so that the triggering occurs at 1 div from the left edge of the display.
- (g) The 1 kHz test signal was shown continuously. The storage oscilloscope was set to trigger on the channel corresponding to the amplitude difference (ad) input at a low input level, rising.
- (h) The transmitter was then switched on, without modulation, to produce the trigger pulse and a picture on the display. The result of the change in the ratio of power between the test signal and the transmitter output produced two separate sides, one showing the 1 kHz test signal, the other the frequency difference of the transmitter versus time.
- (i) The transmit signal suppresses the 1 kHz test signal and produces the start of the test or t_{on} . During this test time the frequency difference was measured and recorded versus time.
- (j) The transmitter was then switched off to produce the trigger pulse and a picture of the display. The result of the change in the ratio of power between the test signal and the transmitter output produced two separate sides, one showing the frequency difference of the transmitter versus time and the other showing the 1 kHz test signal.
- (k) The transmitter signal no longer suppresses the 1 kHz test signal and produces t_3

5.1.3.3. Results

The plots of the transient frequency behavior are shown on pages 125 and 126. As can be seen from the data, all transient frequencies were within the maximum frequency difference limits. A photograph of the test setup is shown on Figure 5.

6. OTHER TEST CONDITIONS

6.1. Test Personnel and Witnesses

All tests were performed by qualified personnel from Elite Electronic Engineering Incorporated.

6.2. Disposition of the EUT

The EUT and all associated equipment were returned to XetaWave LLC. upon completion of the tests.

7. CONCLUSIONS

It was determined that the XetaWave LLC., Model No. Xeta-4, Licensed Radio Transmitter did fully meet the RF power output, emissions mask, spurious emissions at antenna terminal, field strength of spurious emissions, frequency stability, and transient frequency behavior, requirements of the FCC "Code of Federal Regulations" Title 47, Part 90, Subpart I, when tested per TIA-603-C-2004.

It was also determined that the XetaWave LLC., Model No. Xeta-4, Licensed Radio Transmitter did fully meet the RF power output, emissions mask, spurious emissions at antenna terminal, field strength of spurious emissions, frequency stability, and transient frequency behavior, requirements of Industry Canada Radio Standards Specification, RSS-119, Issue 11, June 2011.

8. CERTIFICATION

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specifications.

The data presented in this test report pertains to the EUT at the test. Any electrical or mechanical modification made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

This report must not be used to claim product endorsement by NVLAP or any agency of the US Government.

9. EQUIPMENT LIST

Table 9-1 Equipment List

| Eq ID | Equipment Description | Manufacturer | Model No. | Serial No. | Frequency Range | Cal Date | Due Date |
|-------|---------------------------------|----------------------|--------------------------|-------------------|-----------------|-----------|-----------|
| APW11 | PREAMPLIFIER | PMI | PE2-35-120-5R0-10-12-SFF | PL11685/1241 | 1GHZ-20GHZ | 1/26/2013 | 1/26/2014 |
| APW3 | PREAMPLIFIER | PLANAR ELECTRONICS | PE2-35-120-5R0-10-12 | PL2924 | 1GHZ-20GHZ | 8/22/2012 | 8/22/2013 |
| CDX7 | COMPUTER | ELITE | WORKSTATION | | | N/A | |
| CDX8 | COMPUTER | ELITE | WORKSTATION | | | N/A | |
| ETH4 | THERMOTRON CONTROLLER SYSTEM | THERMOTRON | 8800 | 37876 | --- | 4/10/2013 | 4/10/2014 |
| ETHE | 2 CHANNEL CHART RECORDER | HONEYWELL | DR45AT-1100 | 0711Y773680400004 | -70 to 180 C | 4/10/2013 | 4/10/2014 |
| GRE0 | SIGNAL GENERATOR | AGILENT TECHNOLOGIES | E4438C | MY42083127 | 250KHZ-6GHZ | 2/21/2013 | 2/21/2014 |
| GSD0 | SIGNAL GENERATOR | ROHDE & SCHWARZ | SMB 100A | 100395 | 9KHZ-6GHZ | 8/13/2012 | 8/13/2013 |
| MDA0 | MULTIMETER (R. KING) | FLUKE CORPORATION | 26 | 72120781 | I;VDC;VAC;R | 3/18/2013 | 3/18/2014 |
| MFC0 | MICROWAVE FREQ. COUNTER | HEWLETT PACKARD | 5343A | 2133A00591 | 10HZ-26GHZ | 8/9/2012 | 8/9/2013 |
| MSP2 | 8 CH DIGITAL OSCILLOSCOPE | YOKOGAWA | DL708E | 12VB19634 | --- | 3/4/2013 | 3/4/2014 |
| NDP0 | TUNED DIPOLE ANTENNA | EMCO | 3121C-DB3 | 311 | 140-400MHZ | 4/4/2013 | 4/4/2014 |
| NDQ0 | TUNED DIPOLE ANTENNA | EMCO | 3121C-DB4 | 311 | 400-1000MHZ | 4/4/2013 | 4/4/2014 |
| NTA2 | BILOG ANTENNA | TESEQ | 6112D | 28040 | 25-1000MHz | 7/30/2012 | 7/30/2013 |
| NTA3 | BILOG ANTENNA | TESEQ | 6112D | 28040 | 25-1000MHz | 2/15/2013 | 2/15/2014 |
| NWP2 | DOUBLE RIDGED WAVEGUIDE ANTENNA | EMCO | 3115 | 2185 | 1GHZ-12.4GHZ | 1/26/2013 | 1/26/2014 |
| NWQ0 | DOUBLE RIDGED WAVEGUIDE ANTENNA | ETS LINDGREN | 3117 | 66657 | 1GHZ-18GHZ | 1/26/2013 | 1/26/2014 |
| NWQ1 | DOUBLE RIDGED WAVEGUIDE ANTENNA | ETS-LINDGREN | 3117 | 66655 | 1GHZ-18GHZ | 3/18/2013 | 3/18/2014 |
| RBA0 | EMI TEST RECEIVER | ROHDE & SCHWARZ | ESIB26 | 100145 | 20HZ-26.5GHZ | 3/12/2013 | 3/12/2014 |
| RBE0 | EMI TEST RECEIVER | ROHDE & SCHWARZ | ESU26 | 100095 | 20Hz-26GHz | 3/13/2013 | 3/13/2014 |
| RYE0 | MODULATION ANALYZER | HEWLETT PACKARD | 8901B | 3104A03410 | 0.15-1300MHZ | 9/4/2012 | 9/4/2013 |
| SHB0 | DC POWER SUPPLY | HEWLETT PACKARD | 6644A | MY40000115 | 0-60V/0-3.5A | NOTE 1 | |
| SMAH | POWER SUPPLY | MASTECH | HY3020EX | 1014 | 30 Volt, 20 Amp | NOTE 1 | |
| T1E1 | 10DB 25W ATTENUATOR | WEINSCHEL | 46-10-43 | AU1883 | DC-18GHZ | 8/6/2012 | 8/6/2013 |
| T2D2 | 20DB, 25W ATTENUATOR | WEINSCHEL | 46-20-43 | AV5815 | DC-18GHZ | 8/6/2012 | 8/6/2013 |
| T2S3 | 20DB 25W ATTENUATOR | WEINSCHEL | 46-20-34 | BV3544 | DC-18GHZ | 1/2/2013 | 1/2/2014 |
| WKA1 | SOFTWARE, UNIVERSAL RCV EMI | ELITE | UNIV_RCV_EMI | 1 | --- | I/O | |

I/O: Initial Only

N/A: Not Applicable

Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

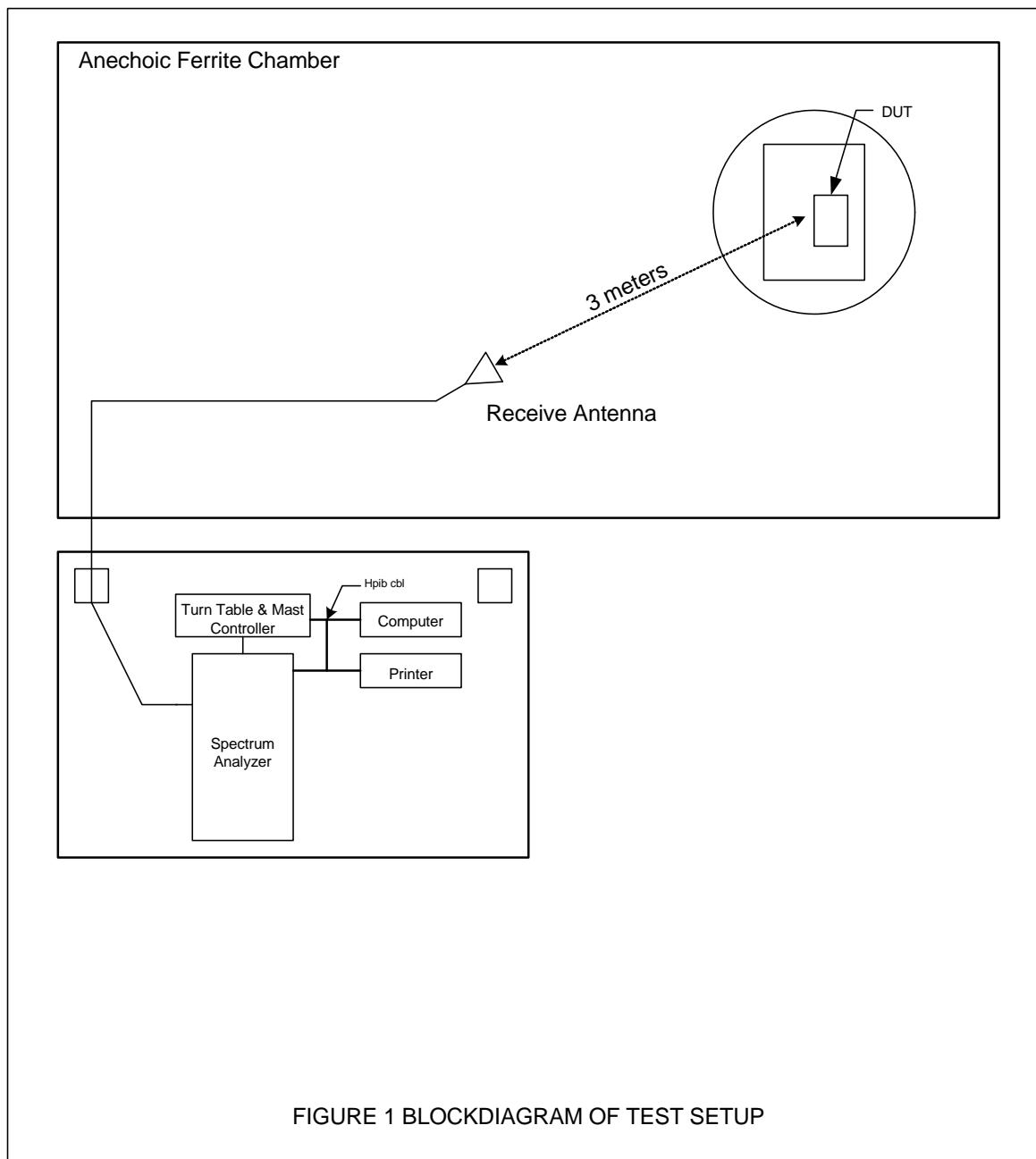
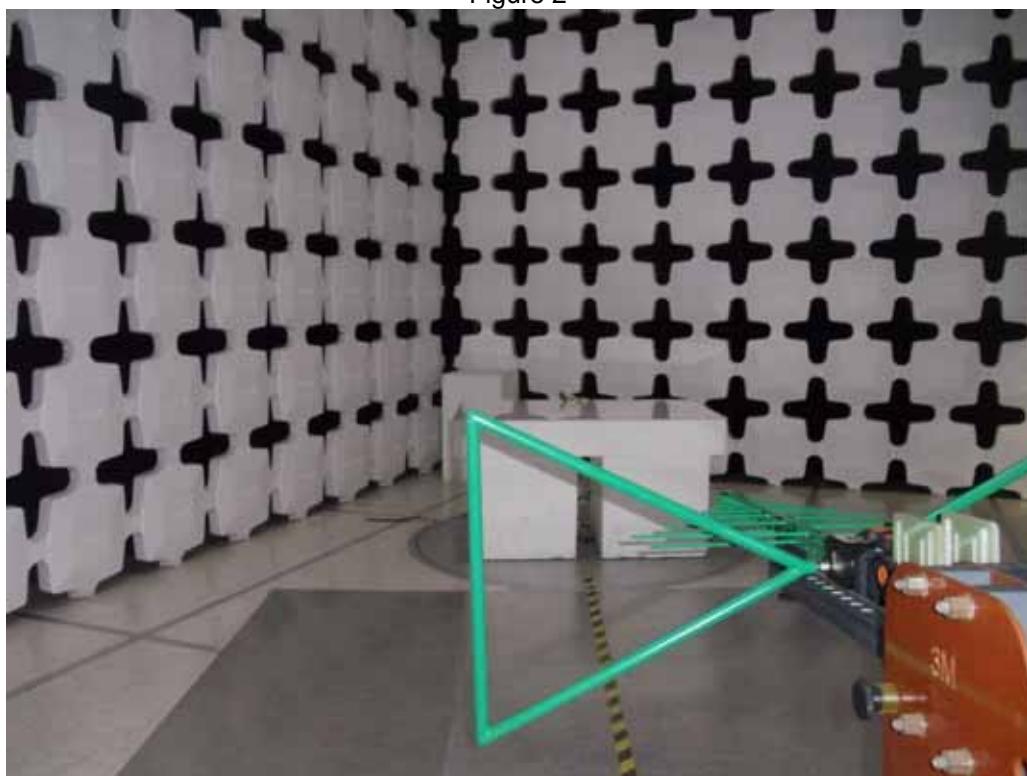


Figure 2



Test Setup for Radiated Emissions, 30MHz to 1GHz – Horizontal Polarization



Test Setup for Radiated Emissions, 30MHz to 1GHz – Vertical Polarization

Figure 3



Test Setup for Radiated Emissions, Above 1GHz – Horizontal Polarization



Test Setup for Radiated Emissions, Above 1GHz – Vertical Polarization

Figure 4

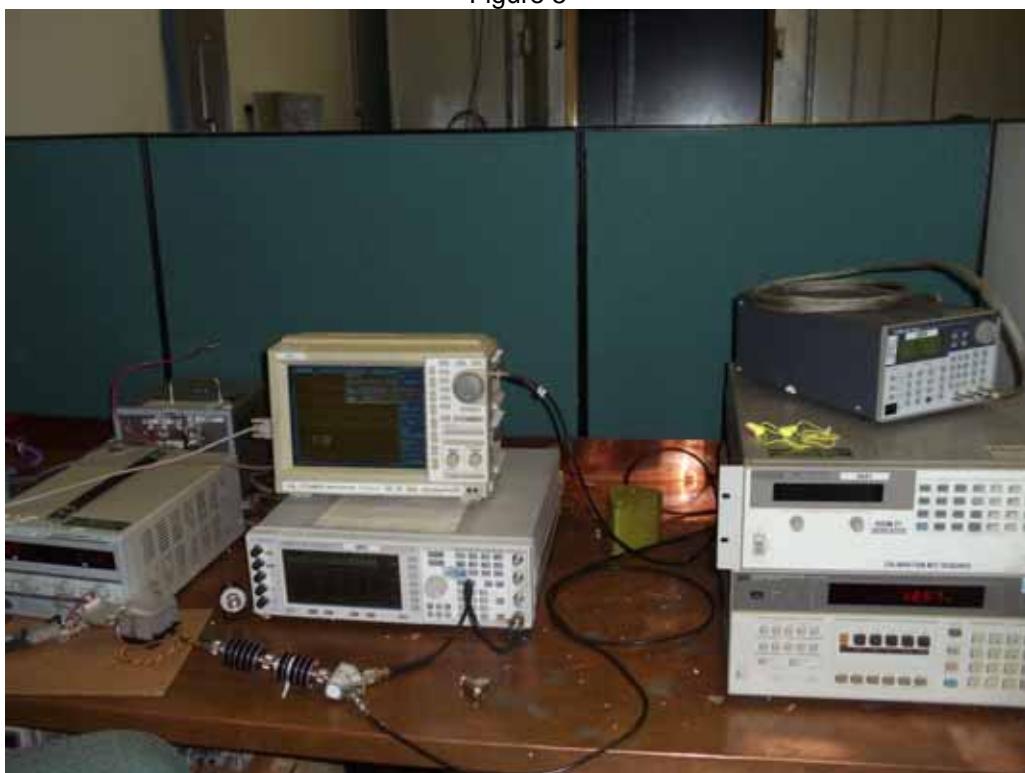


Test Setup for Frequency Stability



Test Setup for Frequency Stability

Figure 5



Test Setup for Transient Frequency Behavior

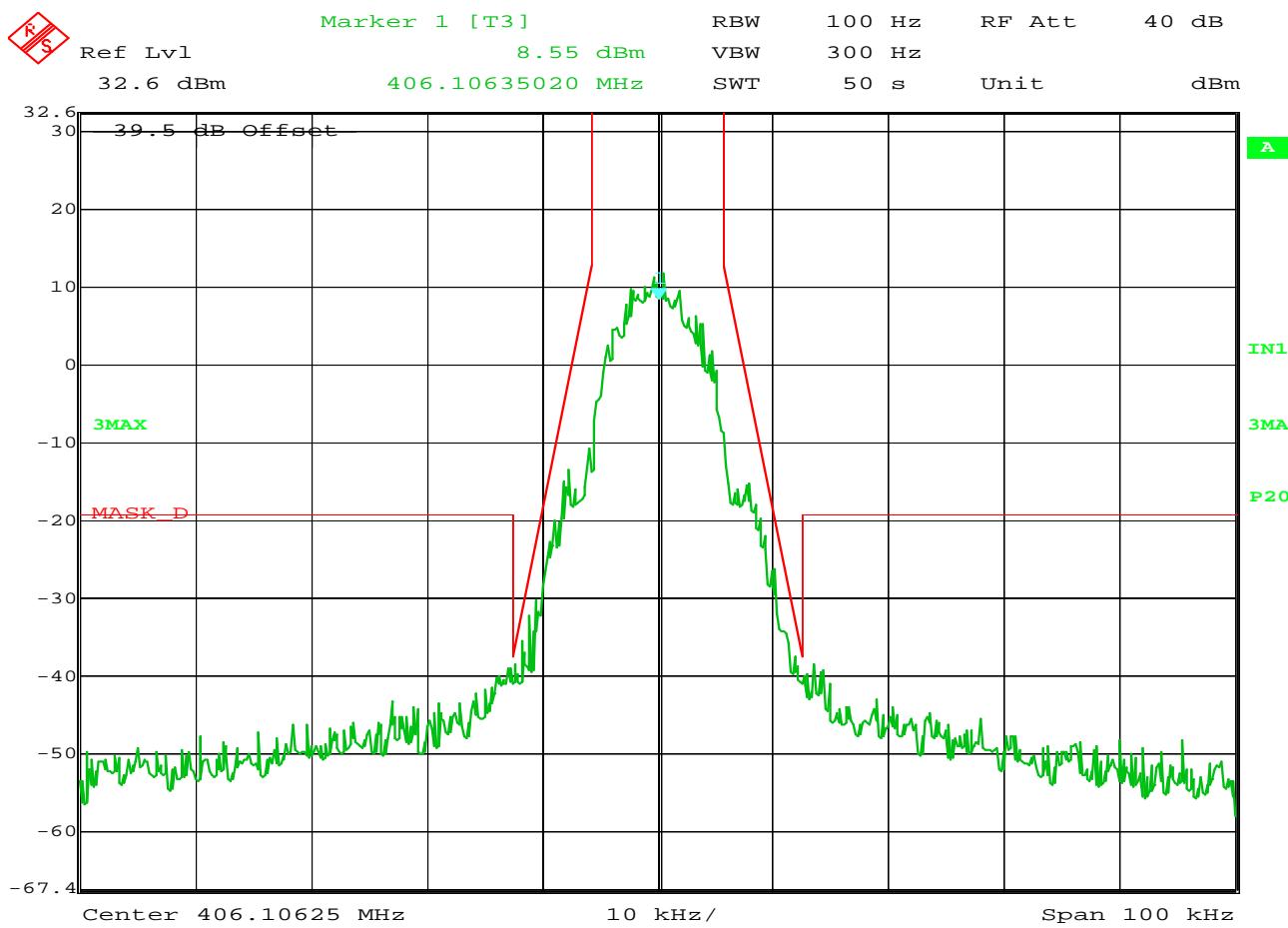


MANUFACTURER : XetaWave LLC.
MODEL : XETA-4
SPECIFICATION : Power Output
DATE : June 14, 2013

| Frequency MHz | Measured Output Power dBm | Measured Output Power Watts | Manufacturer's Rated Power Watts | Manufacturer's Rated Power + 20% Watts |
|---------------|---------------------------|-----------------------------|----------------------------------|--|
| 406.10625 | 32.67 | 1.84 | 2.0 | 2.4 |
| 418 | 32.48 | 1.77 | 2.0 | 2.4 |
| 429.99375 | 32.08 | 1.61 | 2.0 | 2.4 |
| 450.00625 | 32.20 | 1.65 | 2.0 | 2.4 |
| 460.65 | 32.63 | 1.83 | 2.0 | 2.4 |
| 469.99375 | 32.57 | 1.80 | 2.0 | 2.4 |

Checked BY

Richard E. King

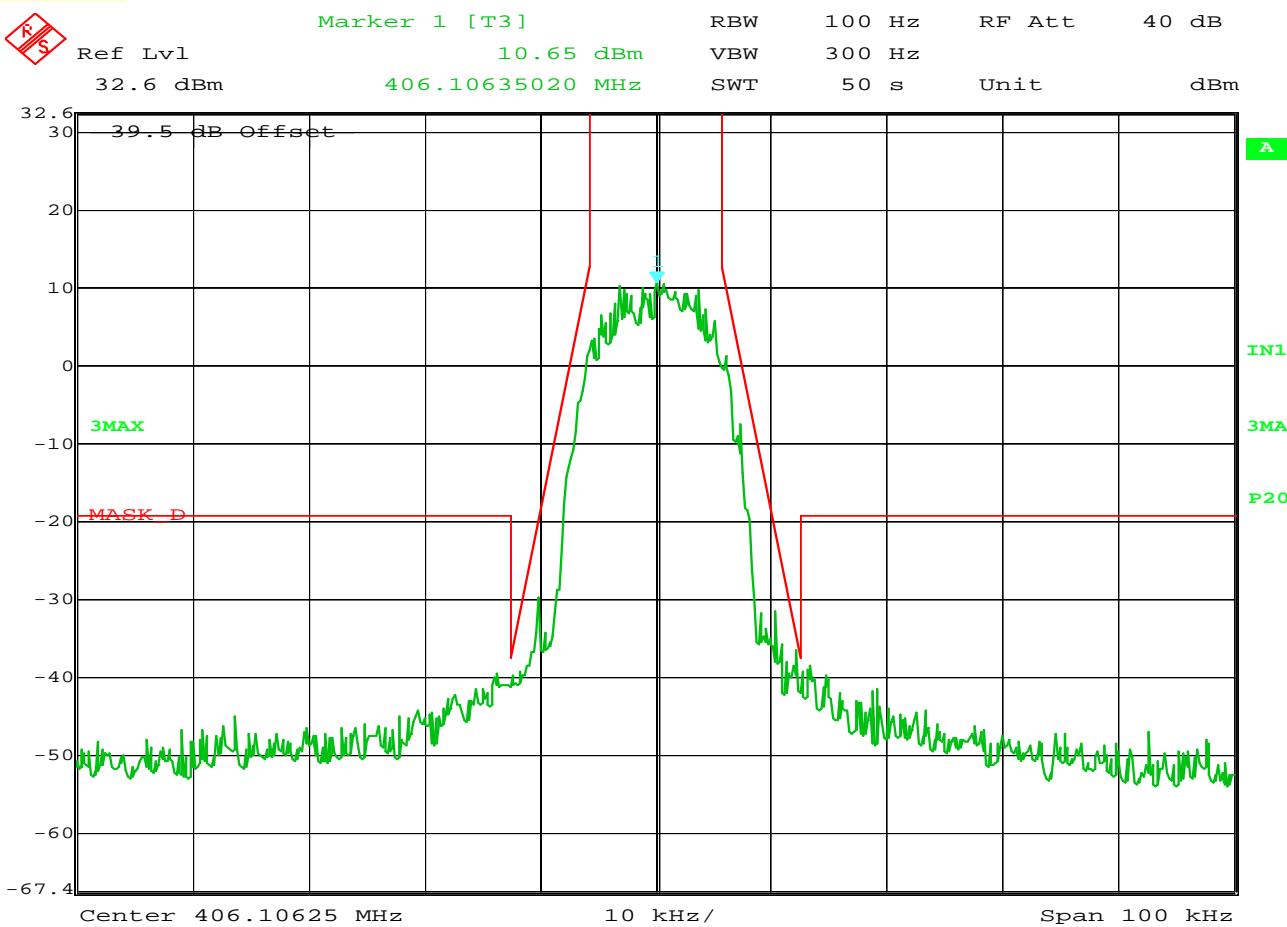


Date: 11.JUN.2013 15:18:00

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 406.10625MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 2FSK modulation
 : txpwr=4500

NOTES

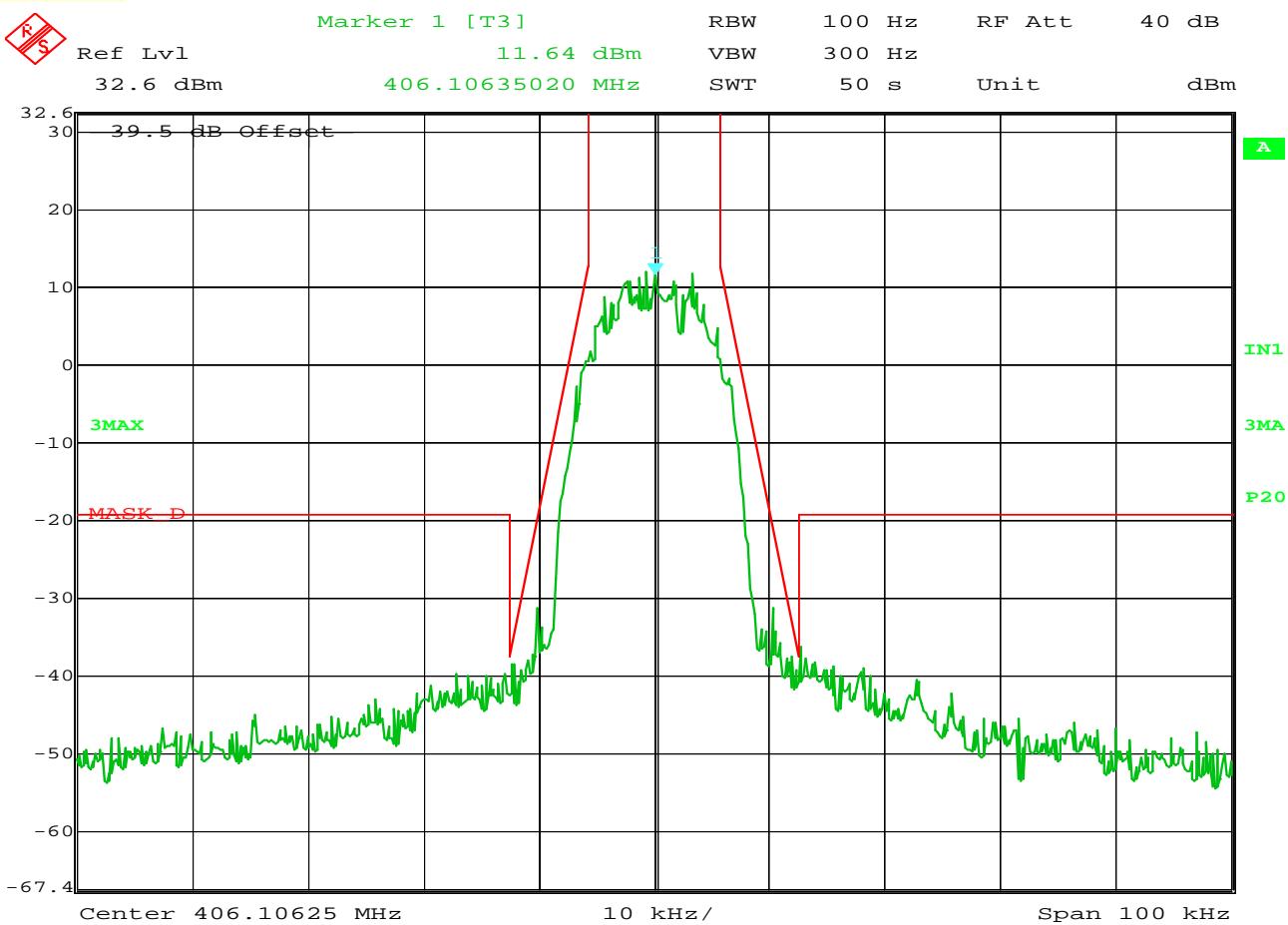


Date: 11.JUN.2013 15:29:02

FCC/Industry Canada Occupied Bandwidth

| | |
|---------------|---|
| MANUFACTURER | : XetaWave LLC |
| MODEL NUMBER | : Xeta-4 |
| TEST MODE | : Tx @ 406.10625MHz |
| SERIAL NUMBER | : 006 |
| NOTES | : Tx 2Watts 8QAM modulation : txpwr= 14000 |

NOTES

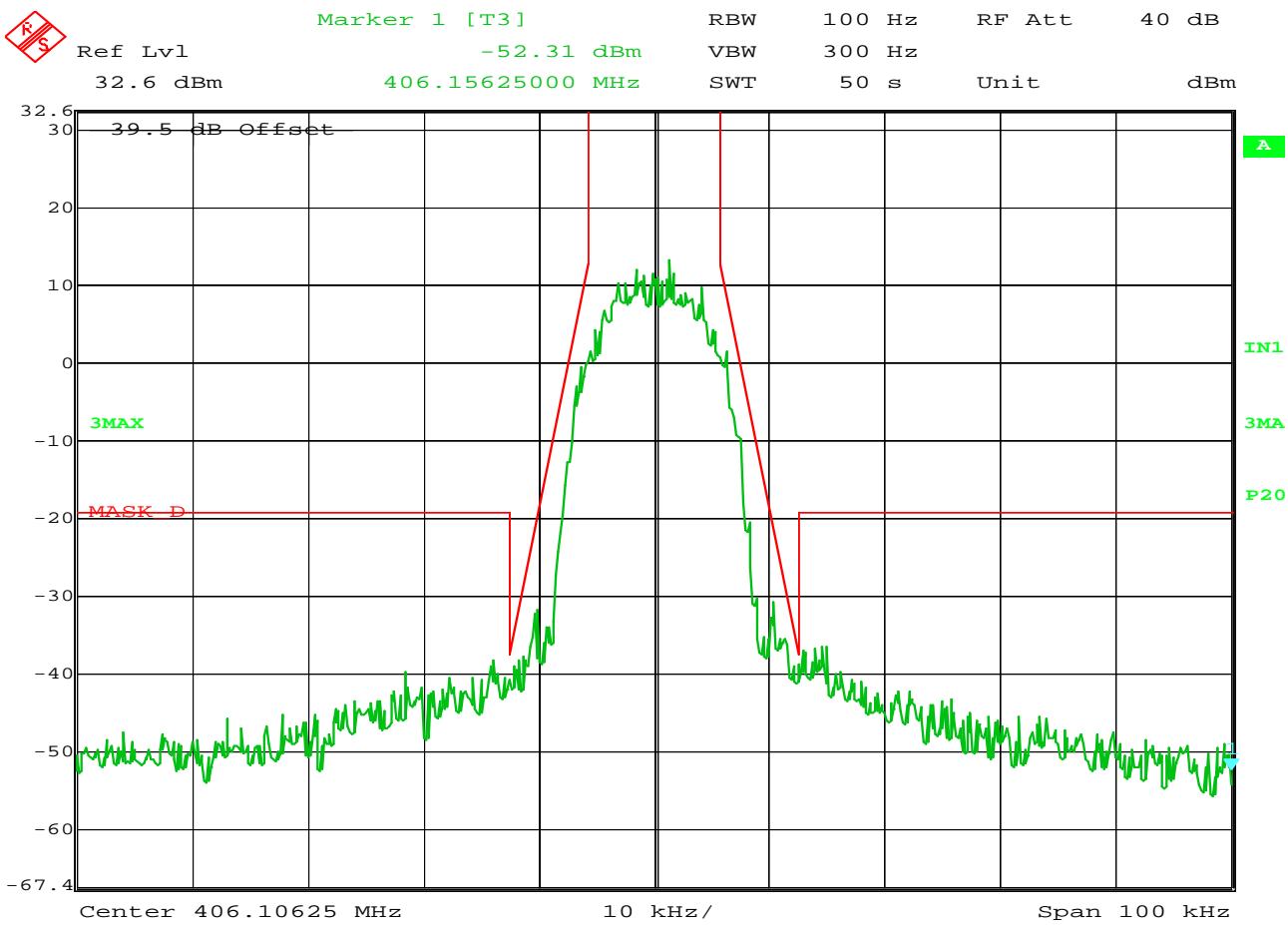


Date: 11.JUN.2013 15:31:20

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 406.10625MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 16QAM modulation
 : txpwr=13000

NOTES

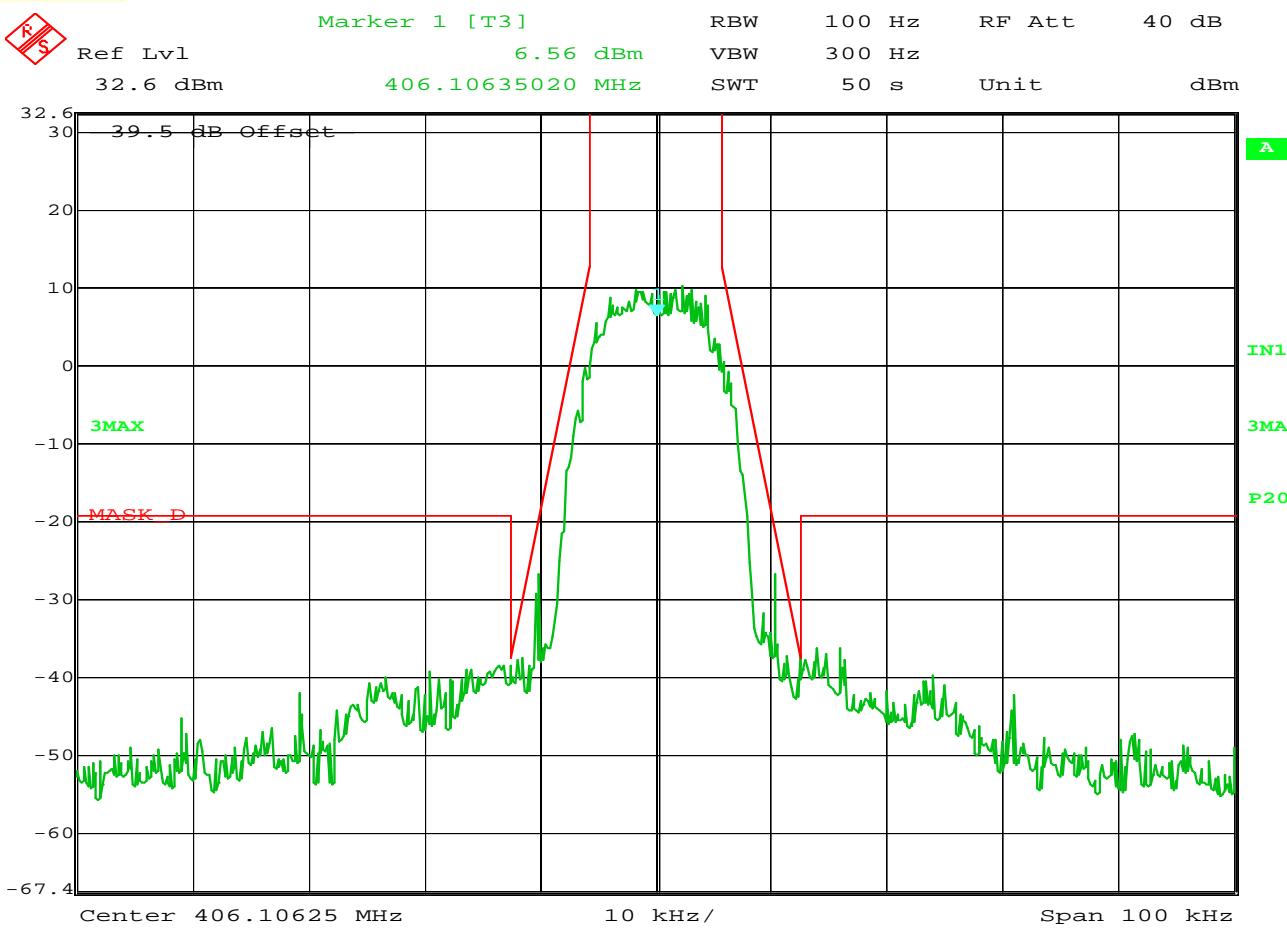


Date: 11.JUN.2013 16:11:06

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 406.10625MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 32 QAM modulation
 : txpwr=12000

NOTES

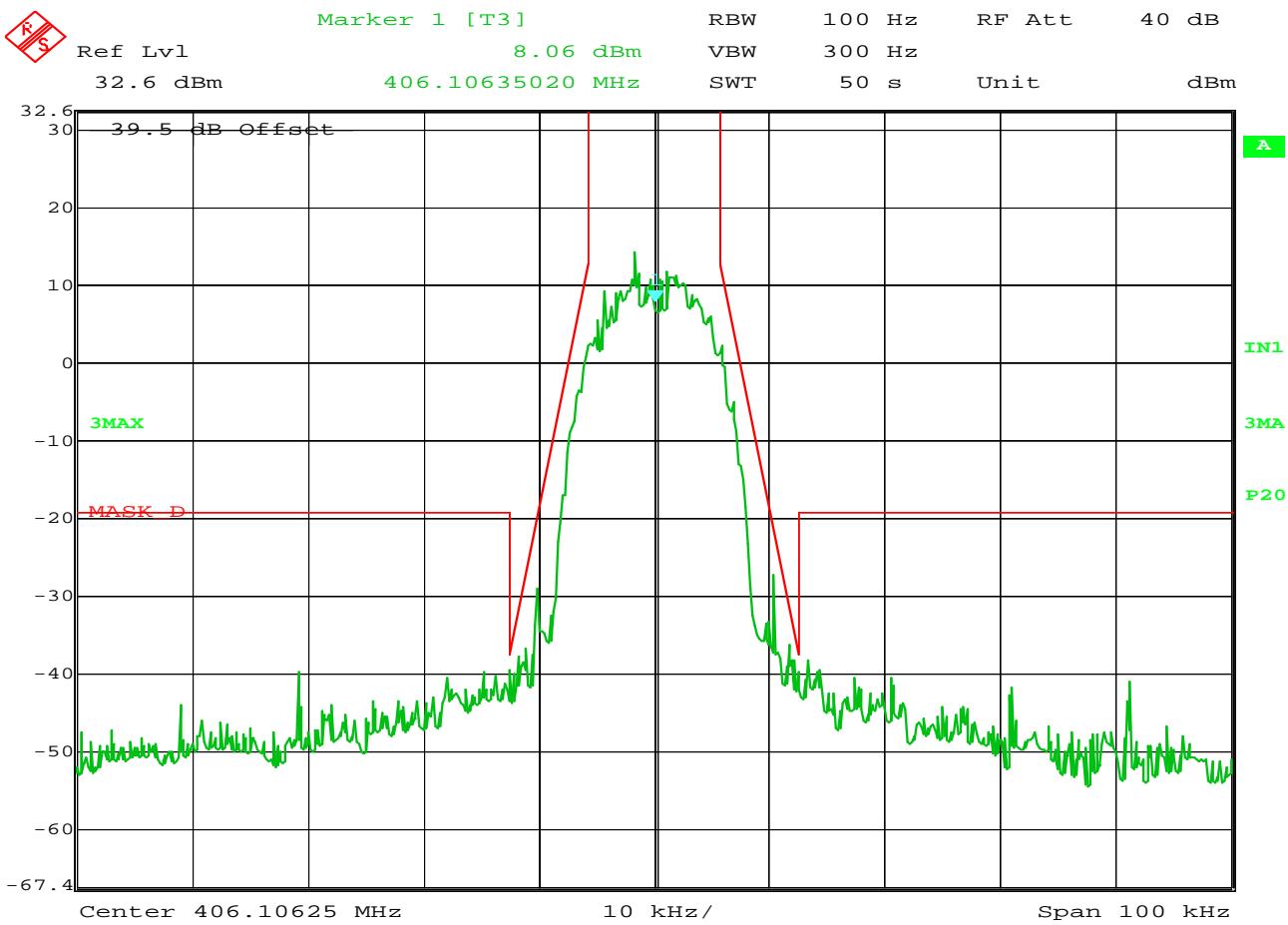


Date: 11.JUN.2013 15:20:40

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|--|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 406.10625MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts BPSK modulation txpwr=10000 |

NOTES

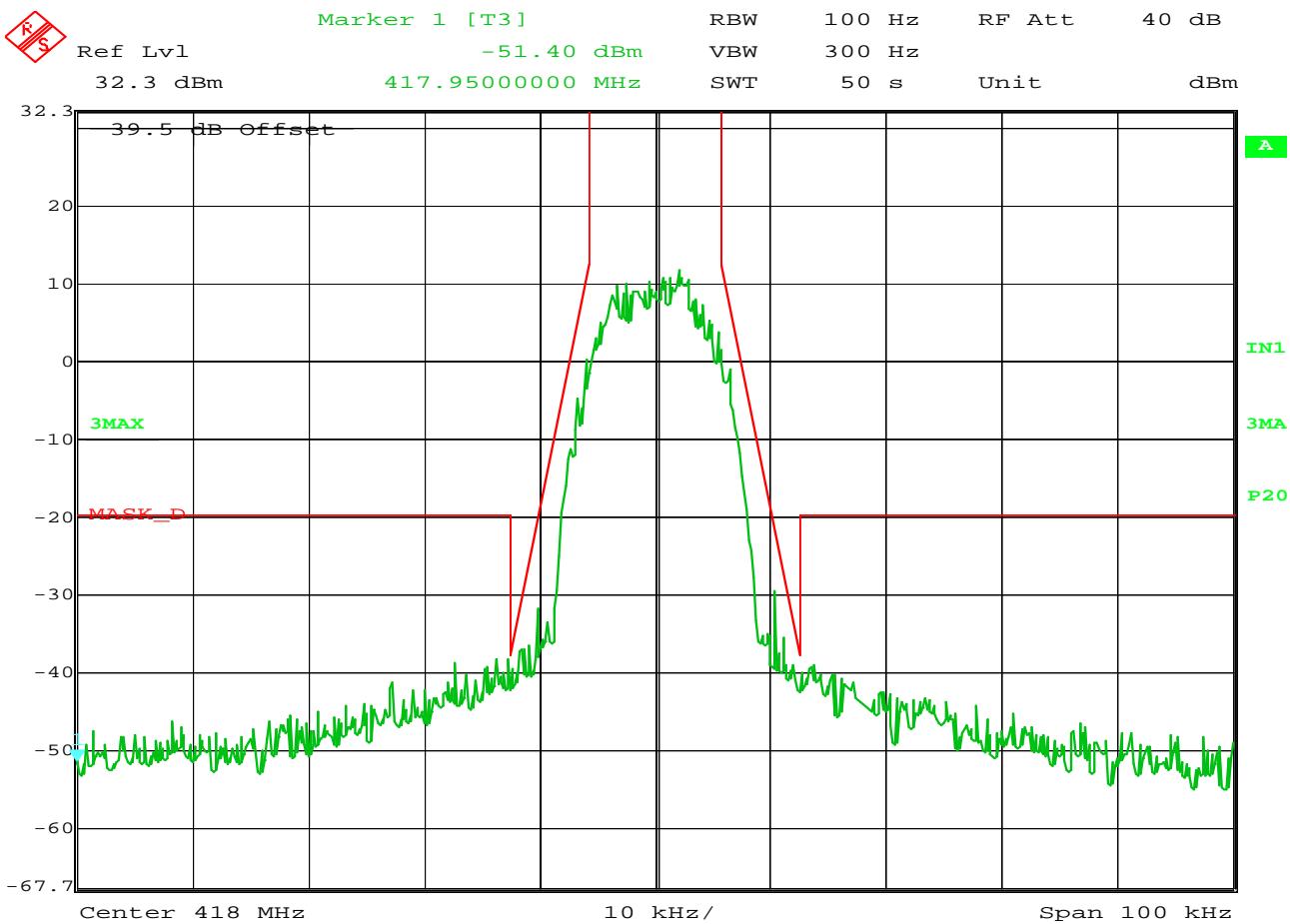


Date: 11.JUN.2013 15:25:03

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 406.10625MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts QPSK modulation
 : txpwr=11000

NOTES

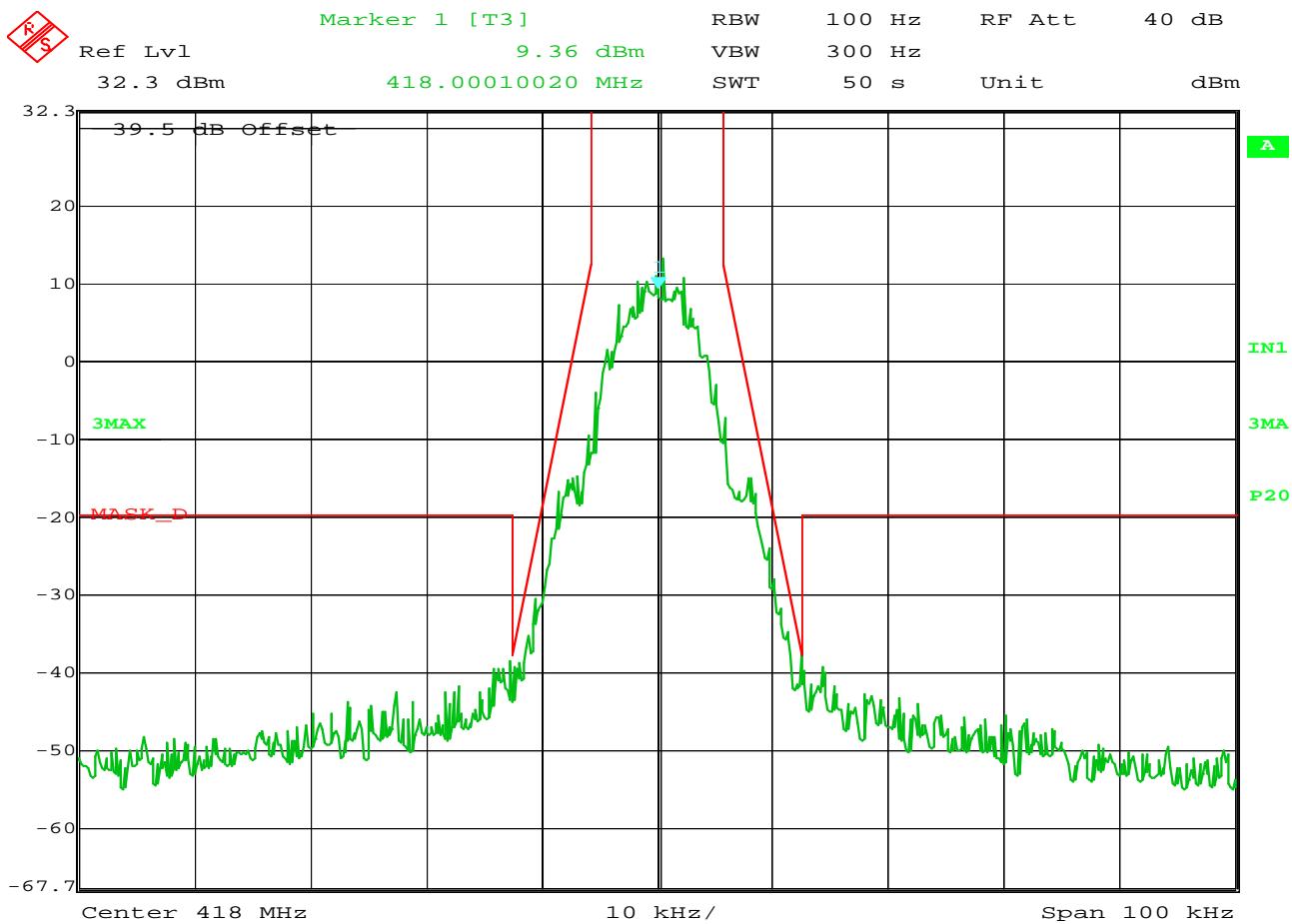


Date: 11.JUN.2013 16:13:32

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|---|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 418MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 32QAM Modulation txpwr=11000 |

NOTES

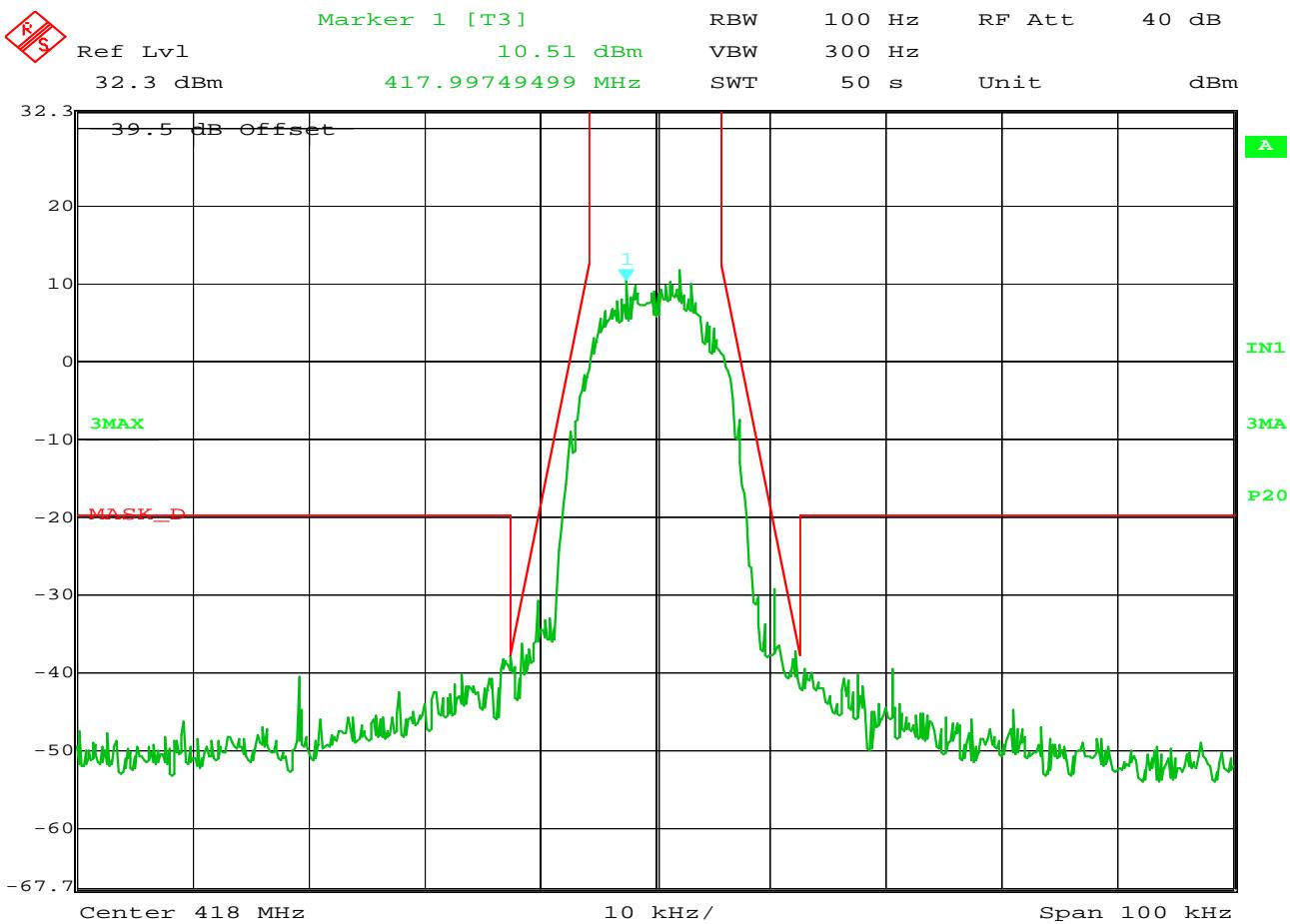


Date: 11.JUN.2013 14:51:16

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|--|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 418MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts2FSK modulation txpwr=4500 |

NOTES

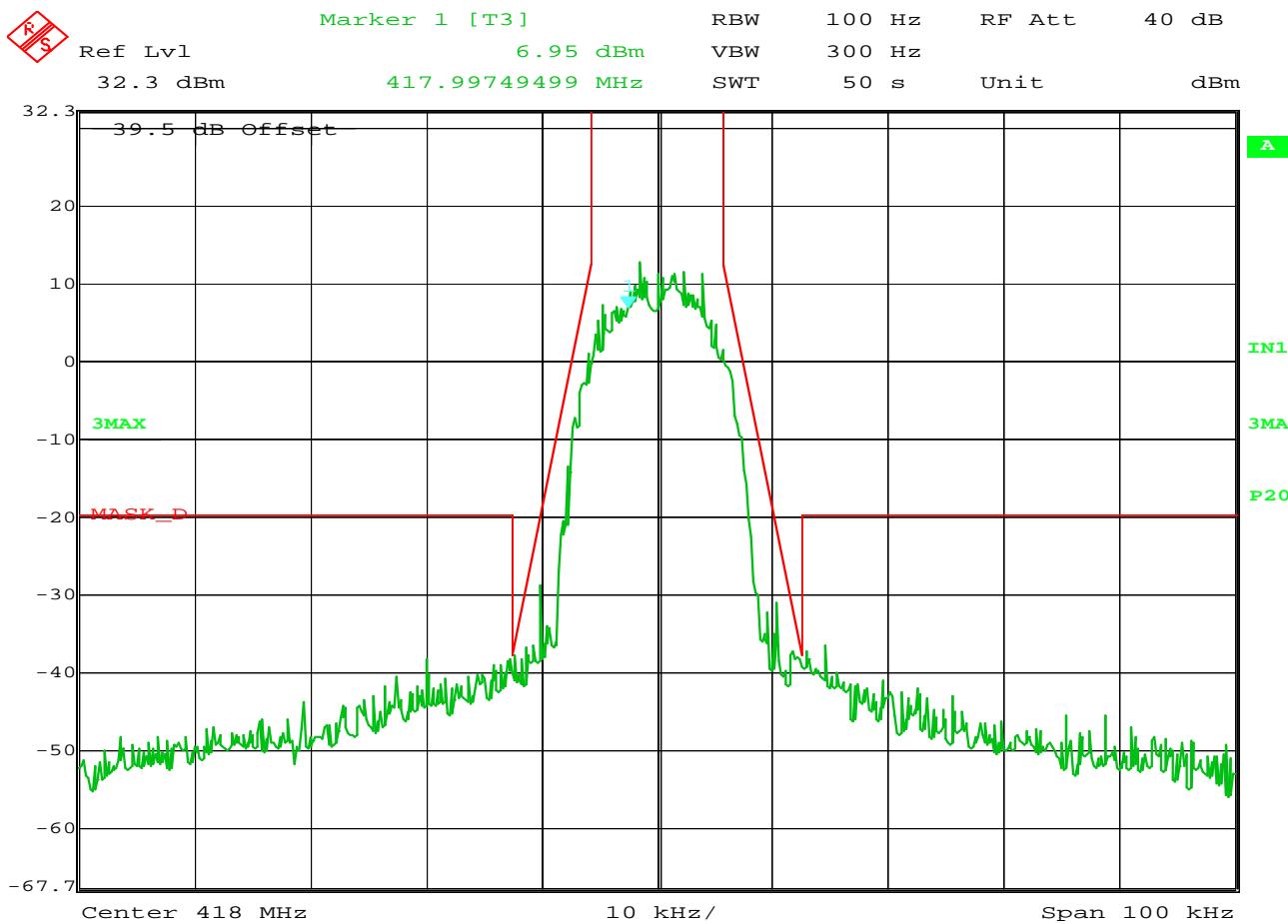


Date: 11.JUN.2013 15:09:07

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|--|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 418MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 8QAM modulation txpwr=13000 |

NOTES

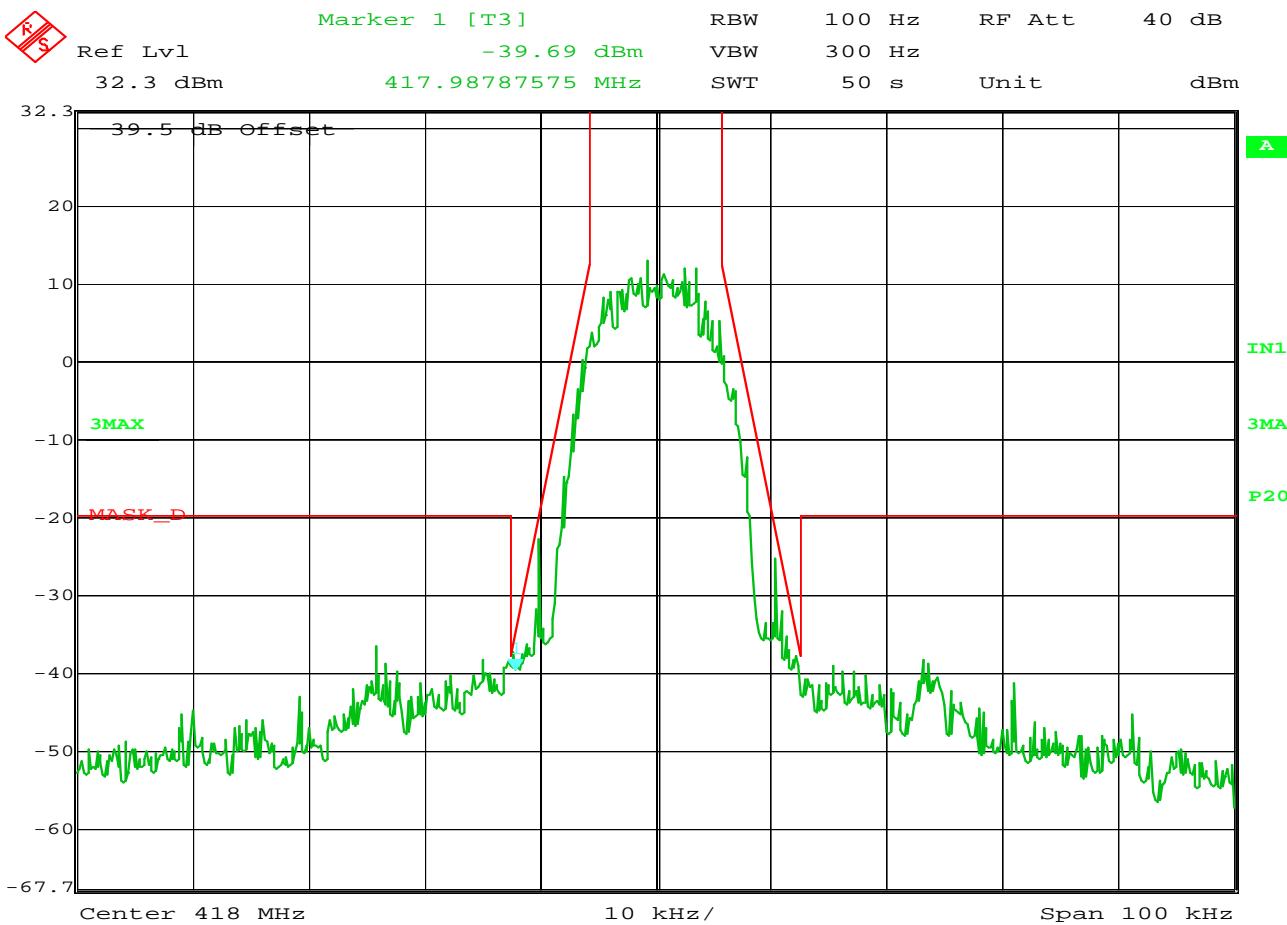


Date: 11.JUN.2013 15:11:53

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|---|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 418MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 16QAM modulation txpwr=12000 |

NOTES

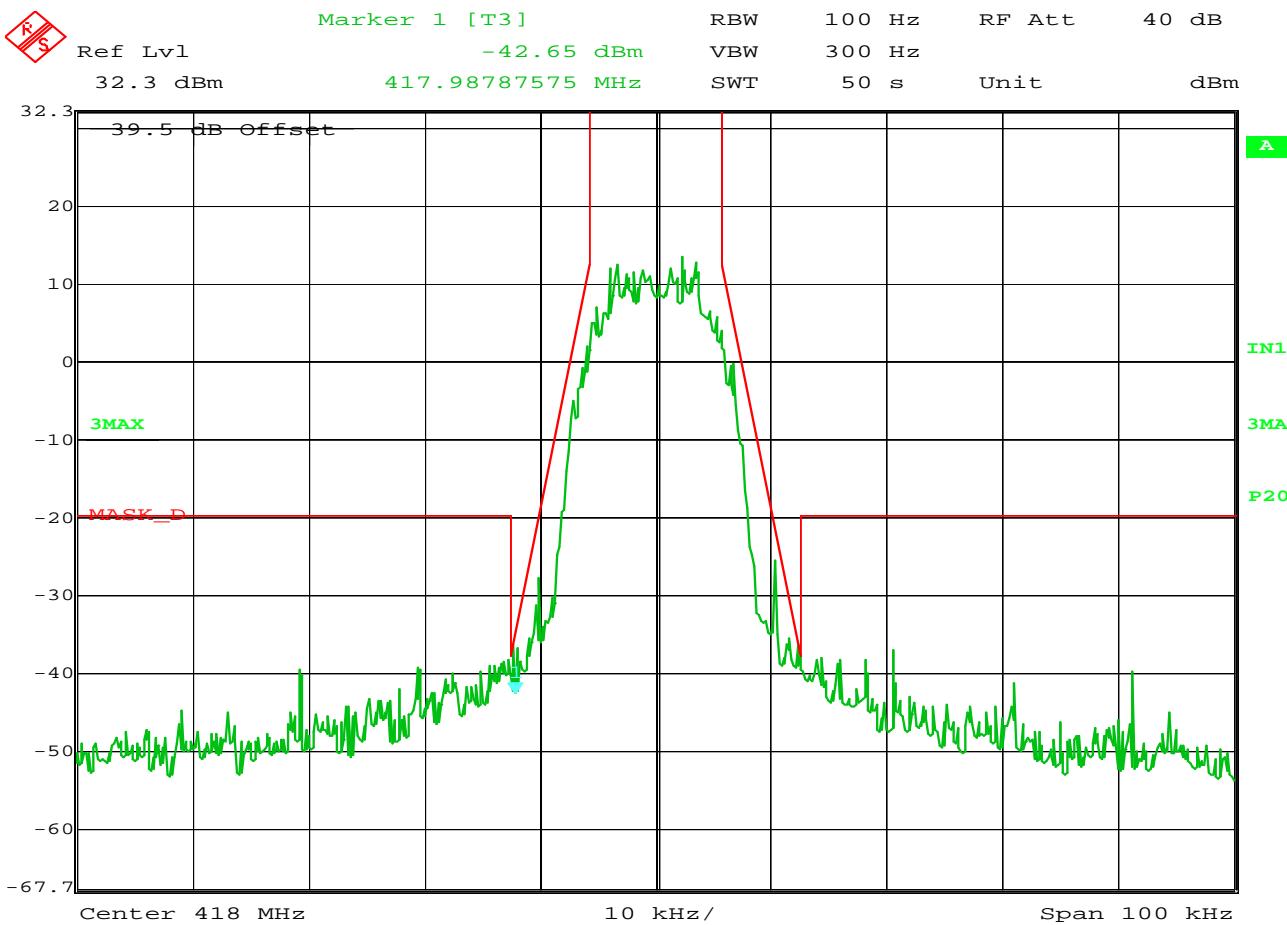


Date: 11.JUN.2013 15:02:30

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 418MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts BPSK modulation
 : txpwr=10000

NOTES

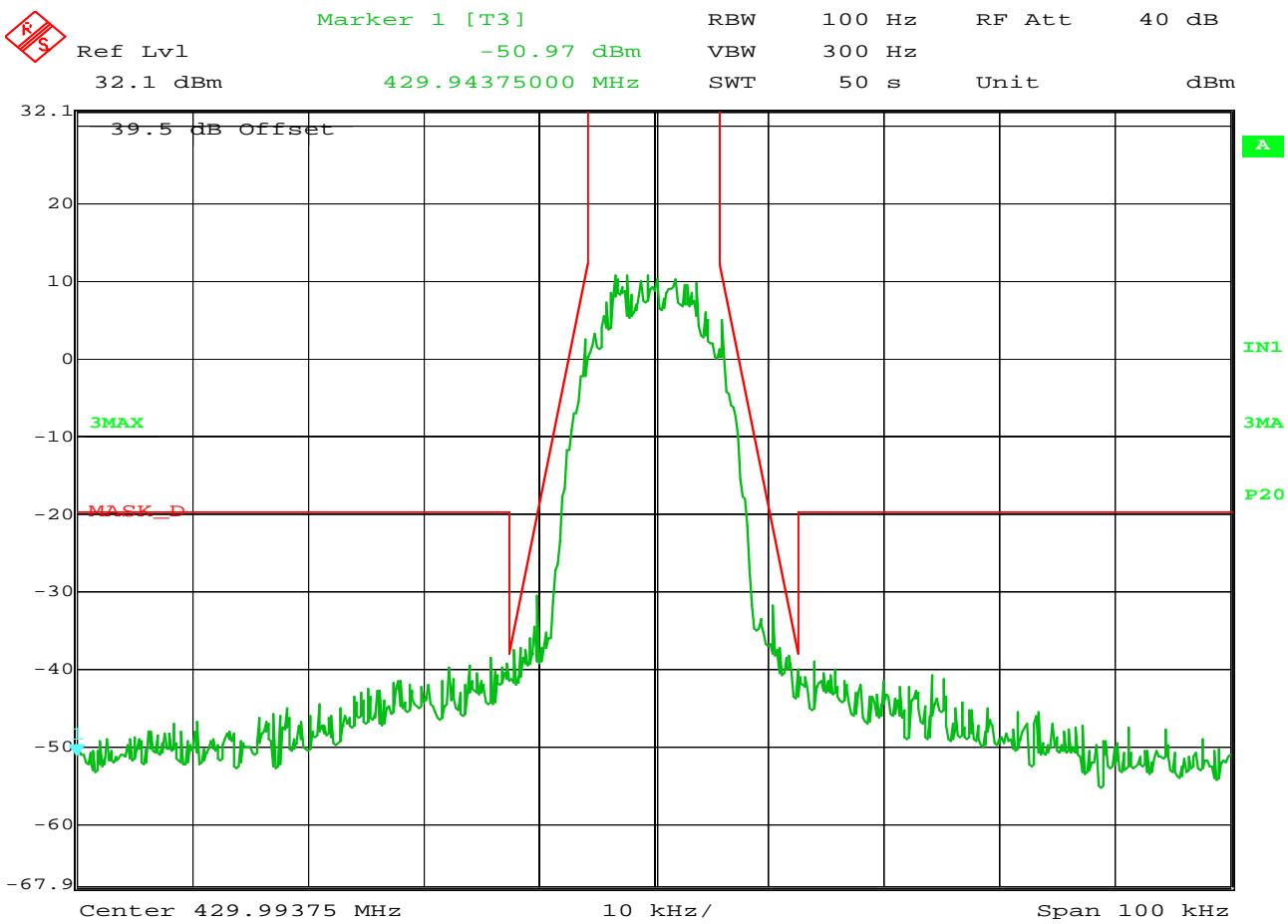


Date: 11.JUN.2013 15:05:40

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 418MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts QPSK modulation
 : txpwr=11000

NOTES

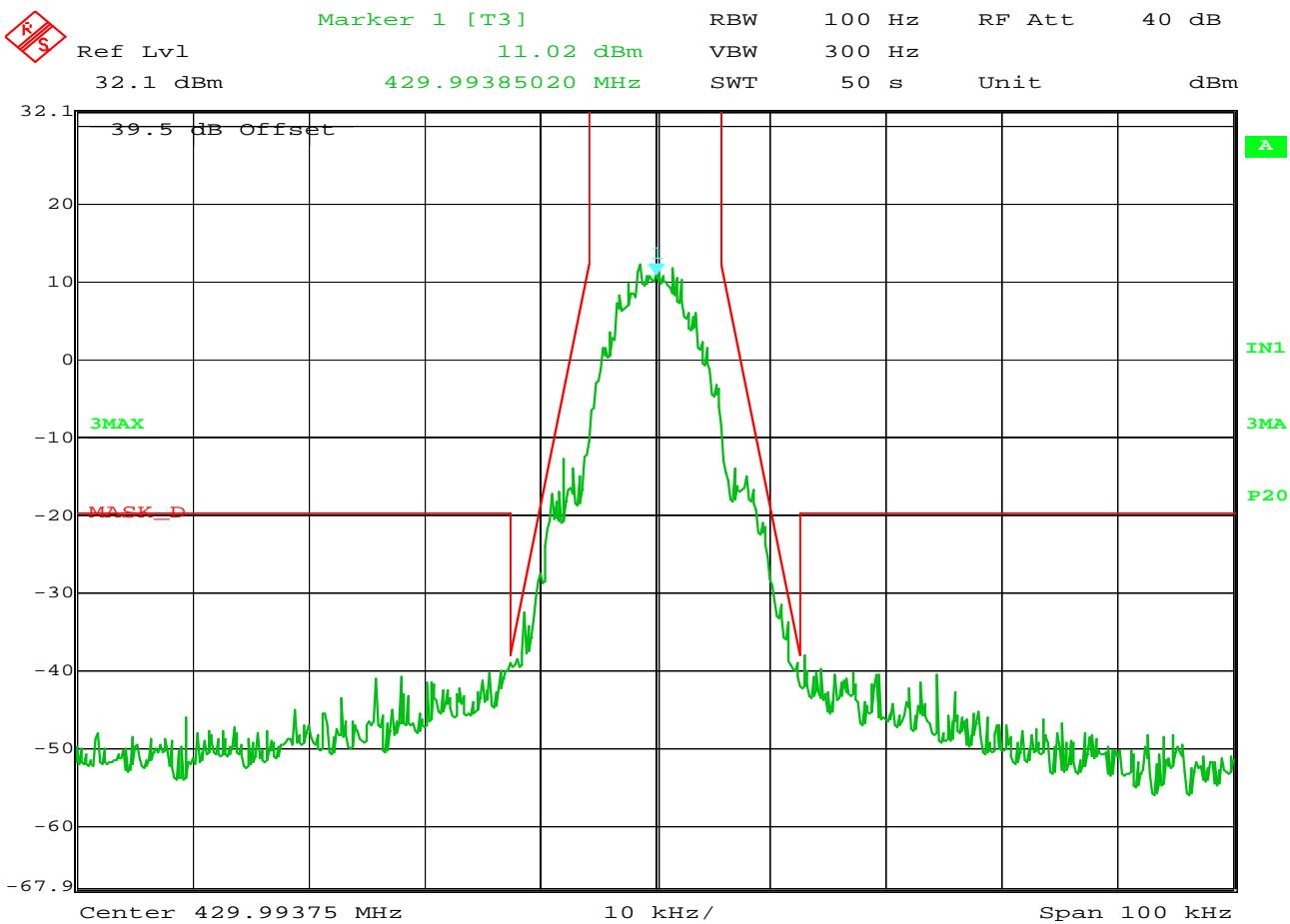


Date: 11.JUN.2013 16:16:02

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|---|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 429.99375MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 32QAM Modulation txpwr=12500 |

NOTES

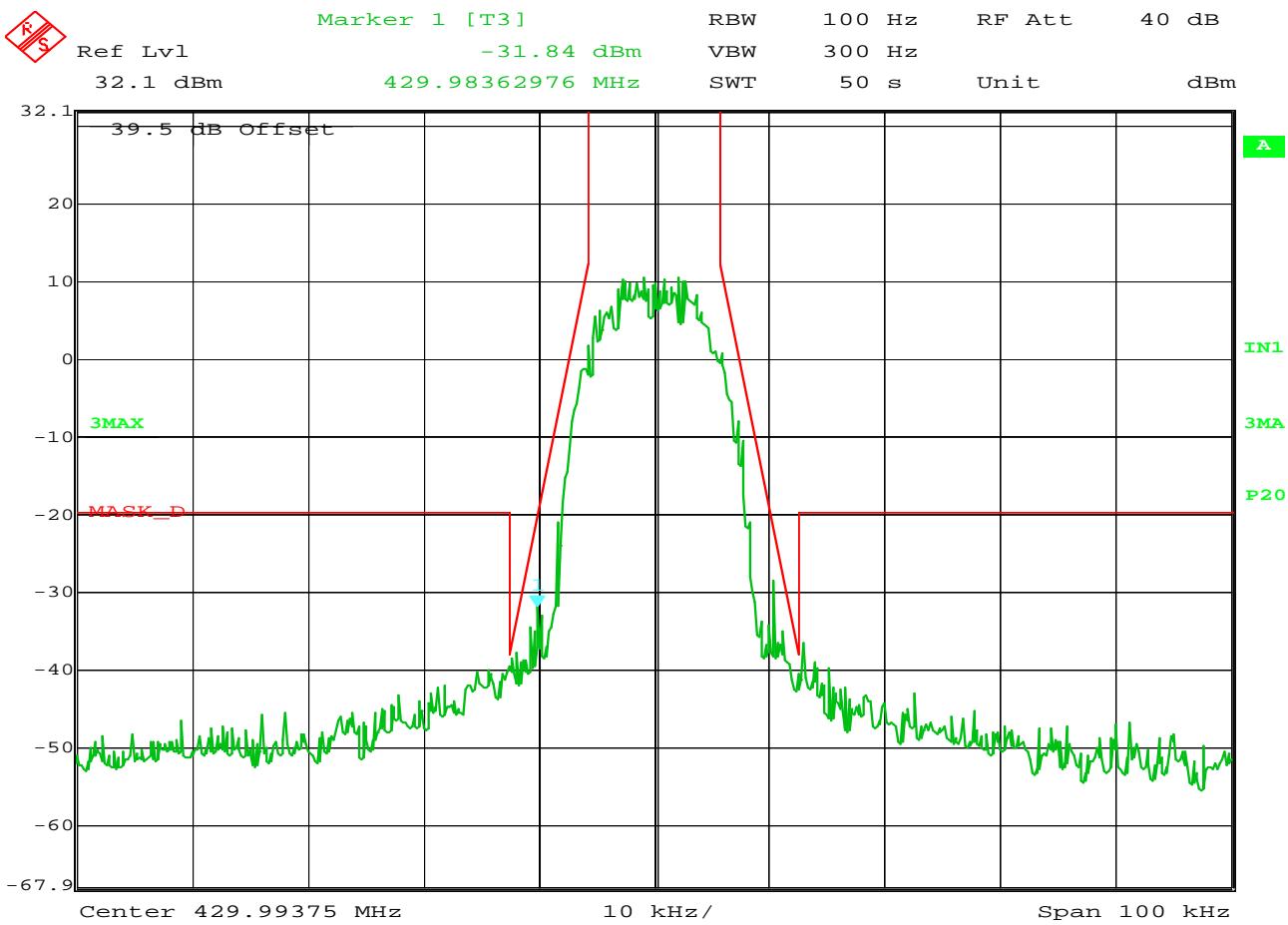


Date: 11.JUN.2013 14:24:14

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 429.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 2FSK modulation
 : txpwr=5000

NOTES

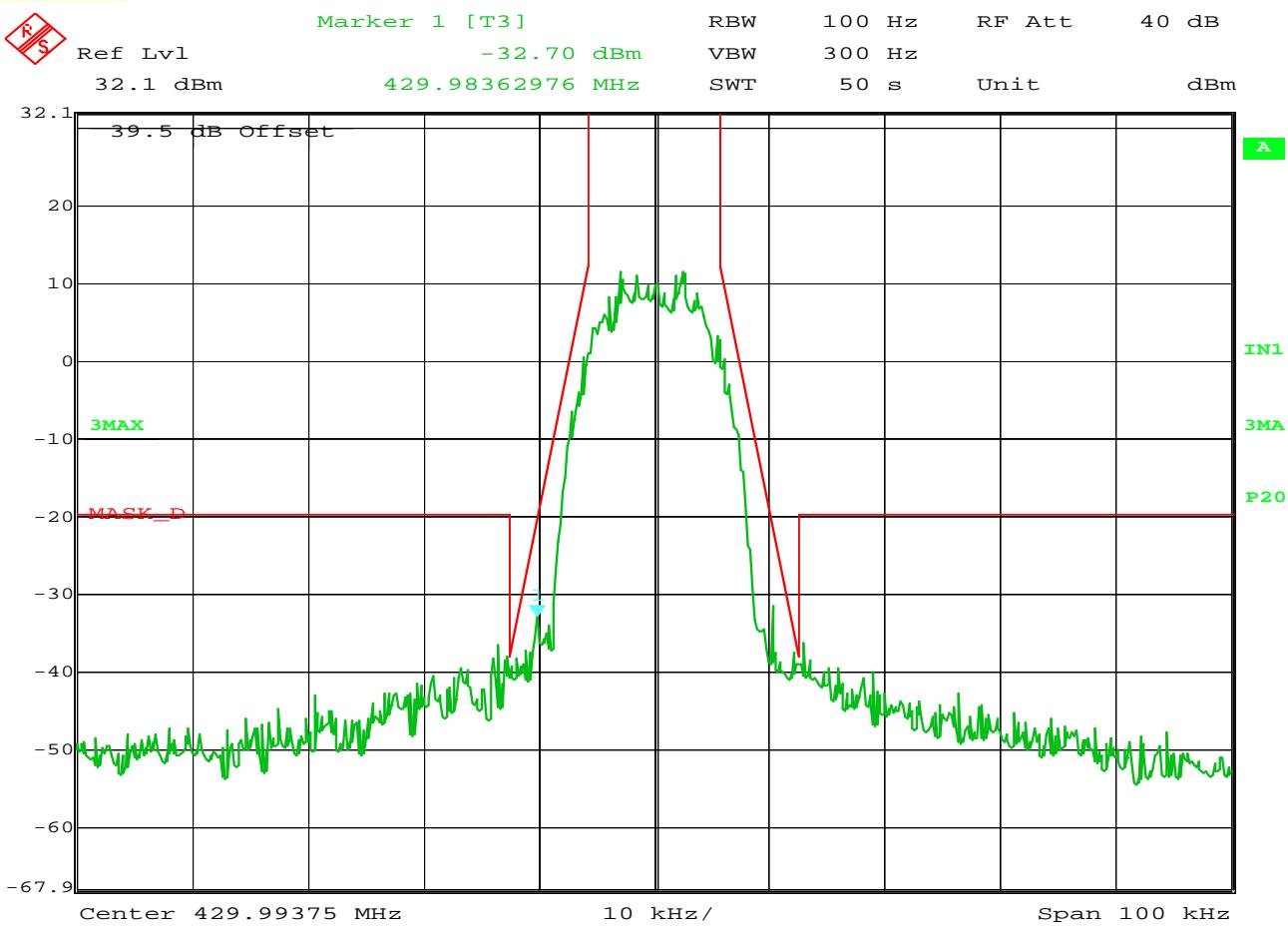


Date: 11.JUN.2013 14:37:34

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 429.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 8QAM modulation
 : txpwr=14500

NOTES

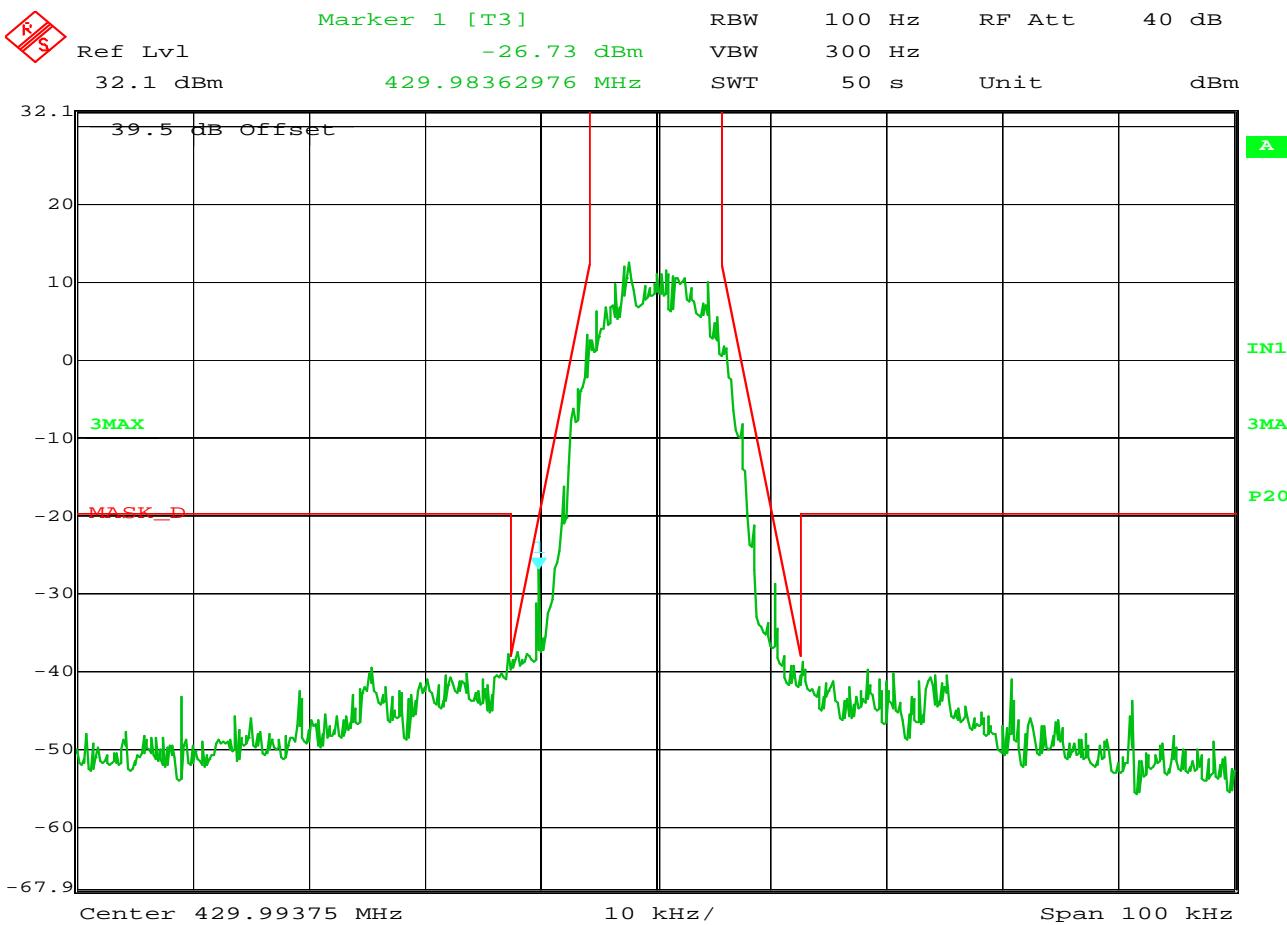


Date: 11.JUN.2013 14:42:19

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
MODEL NUMBER : Xeta-4
TEST MODE : Tx @ 429.99375MHz
SERIAL NUMBER : 006
NOTES : Tx 2Watts 16QAM modulation
 : txpwr=13500

NOTES

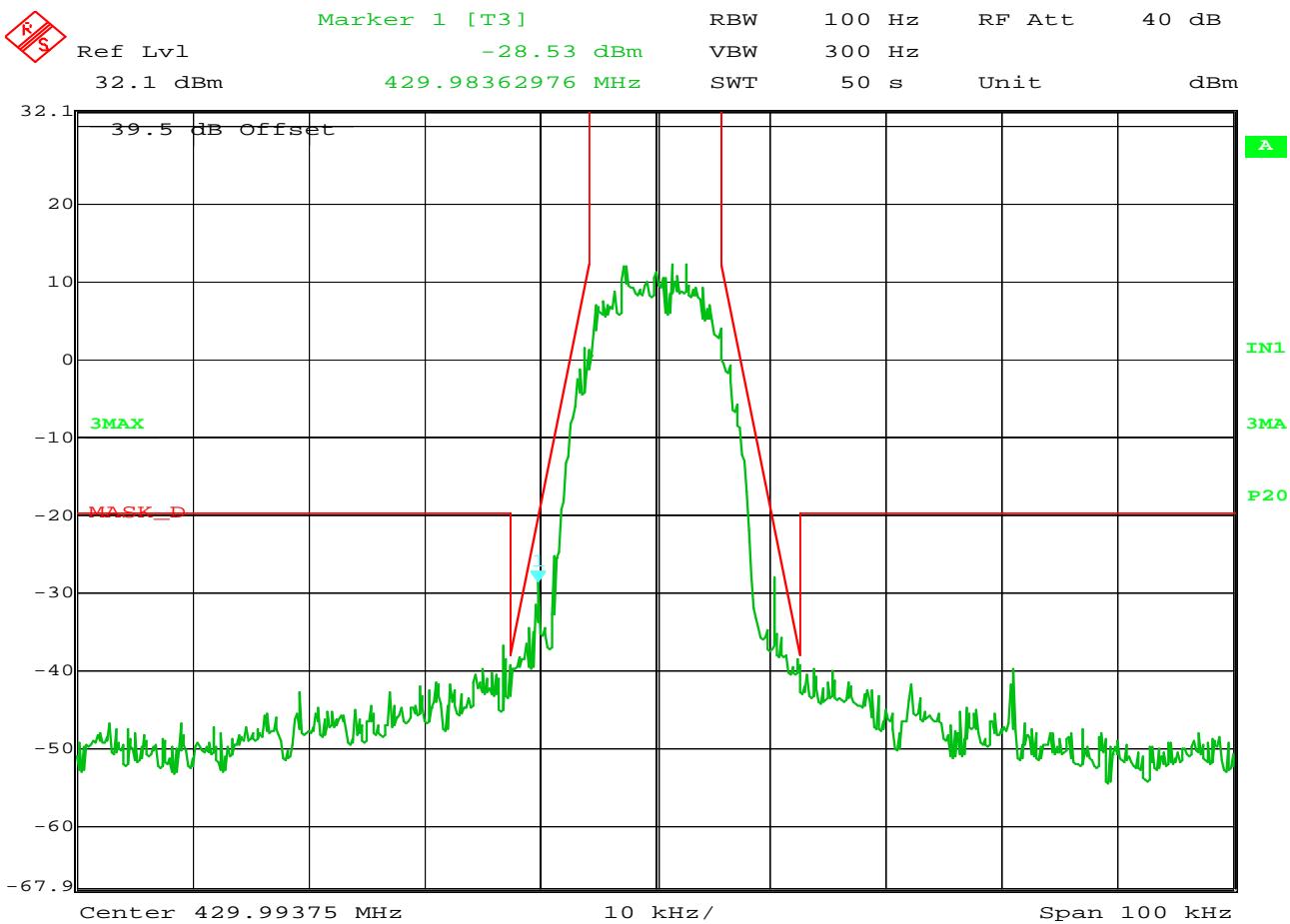


Date: 11.JUN.2013 14:31:01

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 429.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts BPSK modulation
 : txpwr=11500

NOTES

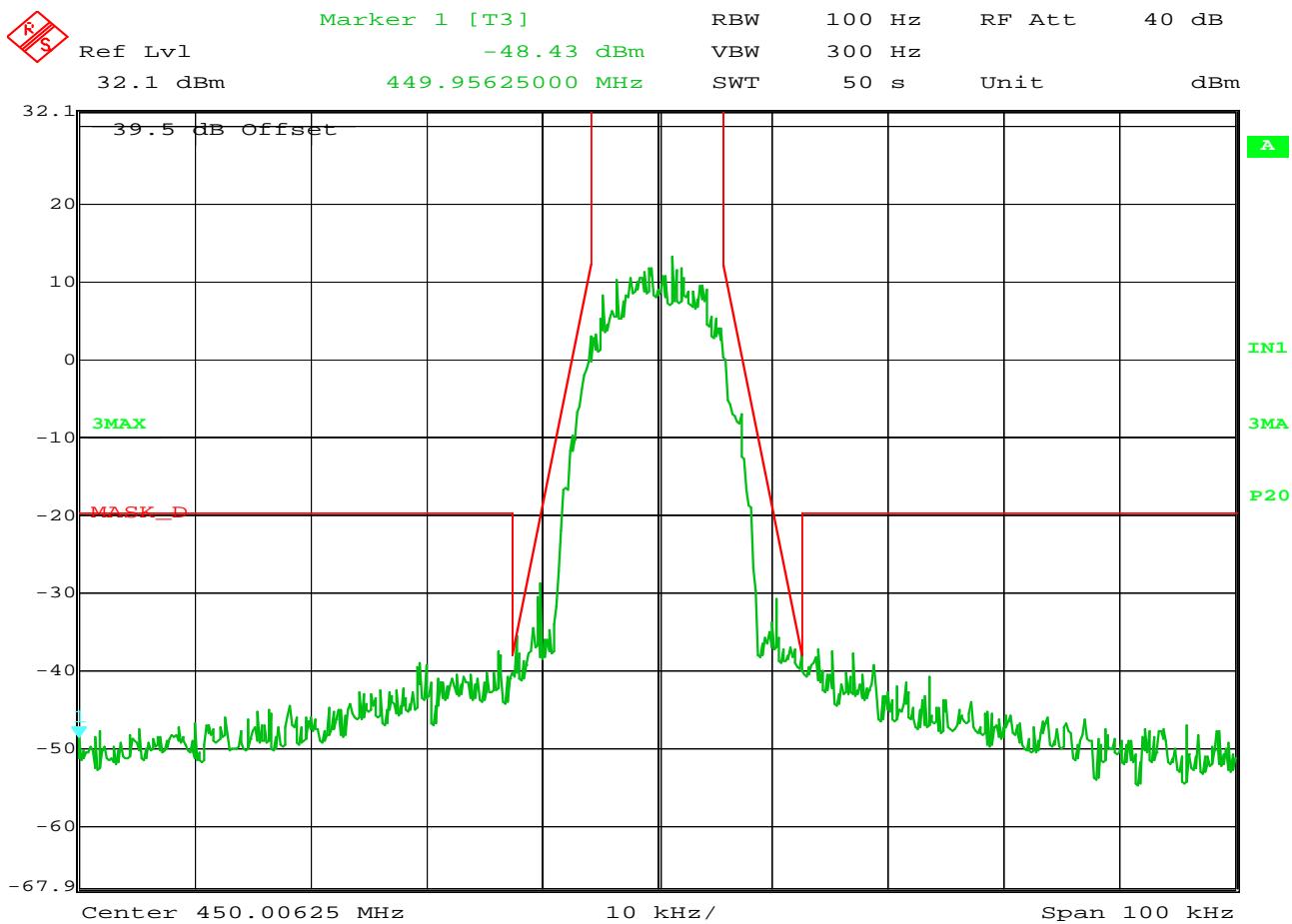


Date: 11.JUN.2013 14:35:06

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 429.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts QPSK modulation
 : txpwr=12000

NOTES

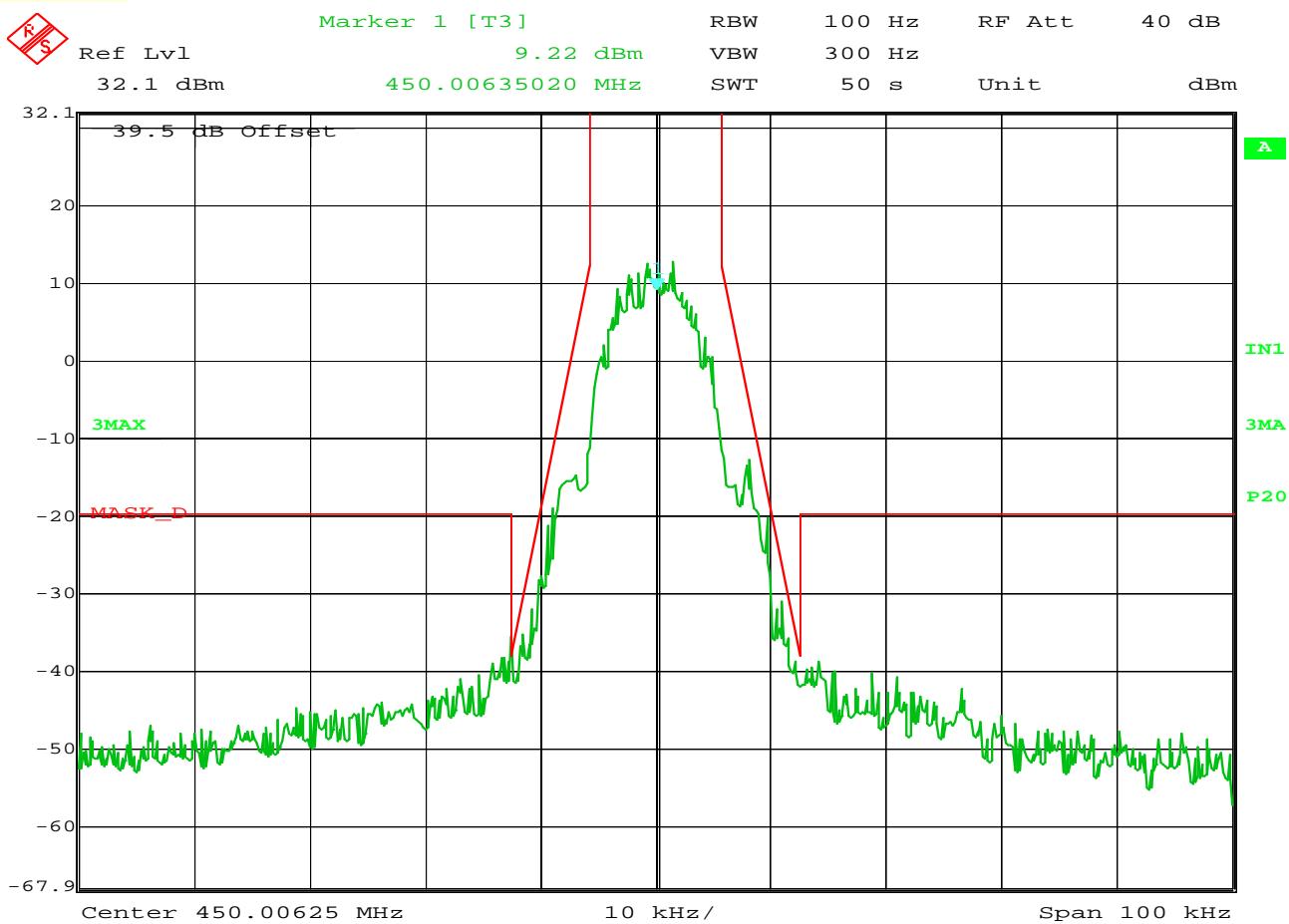


Date: 11.JUN.2013 16:18:27

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|---|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 450.00625MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 32QAM Modulation txpwr=13000 |

NOTES

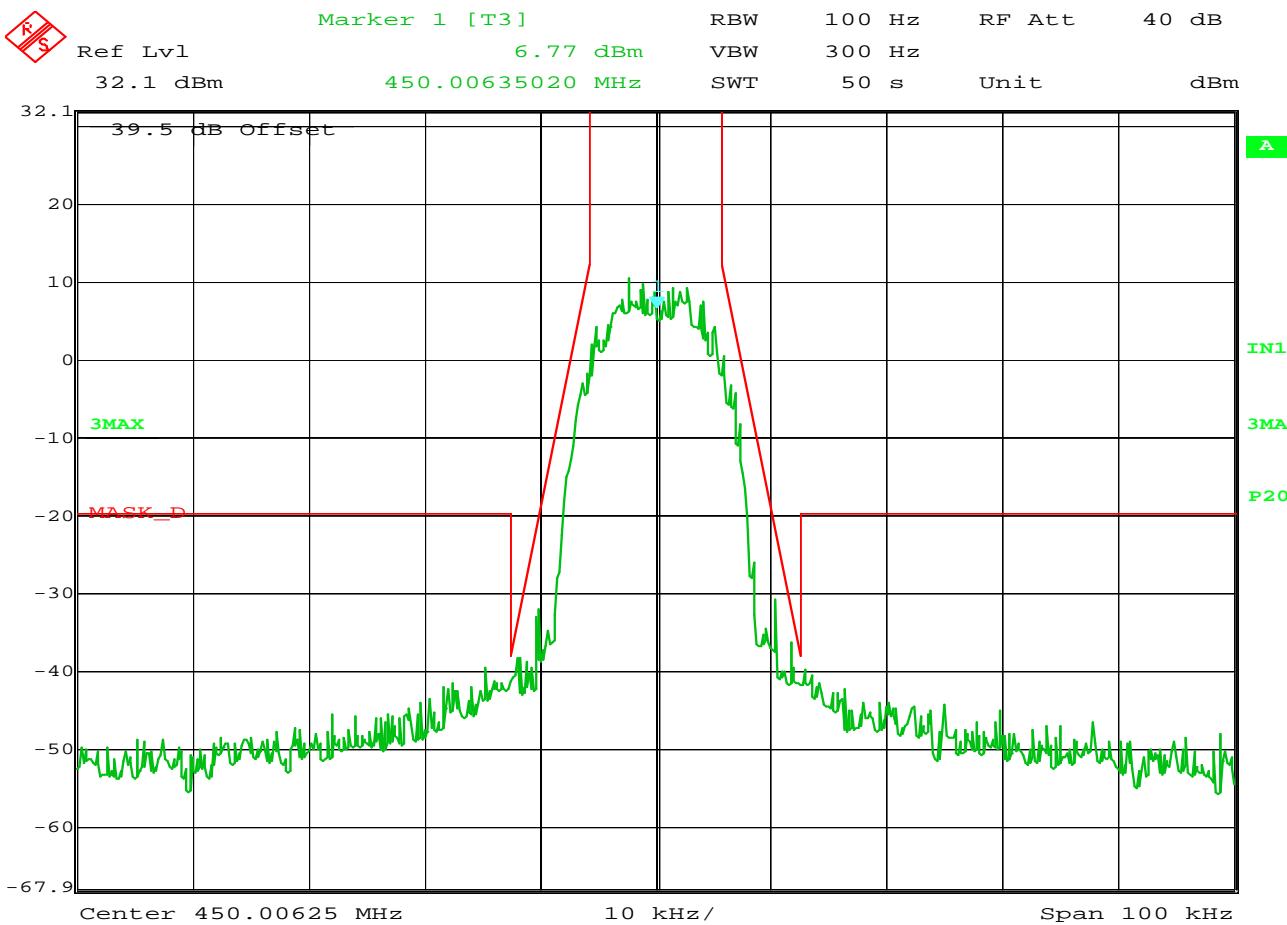


Date: 11.JUN.2013 13:54:15

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|---|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 450.00625MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 2FSK modulation txpwr=5000 |

NOTES

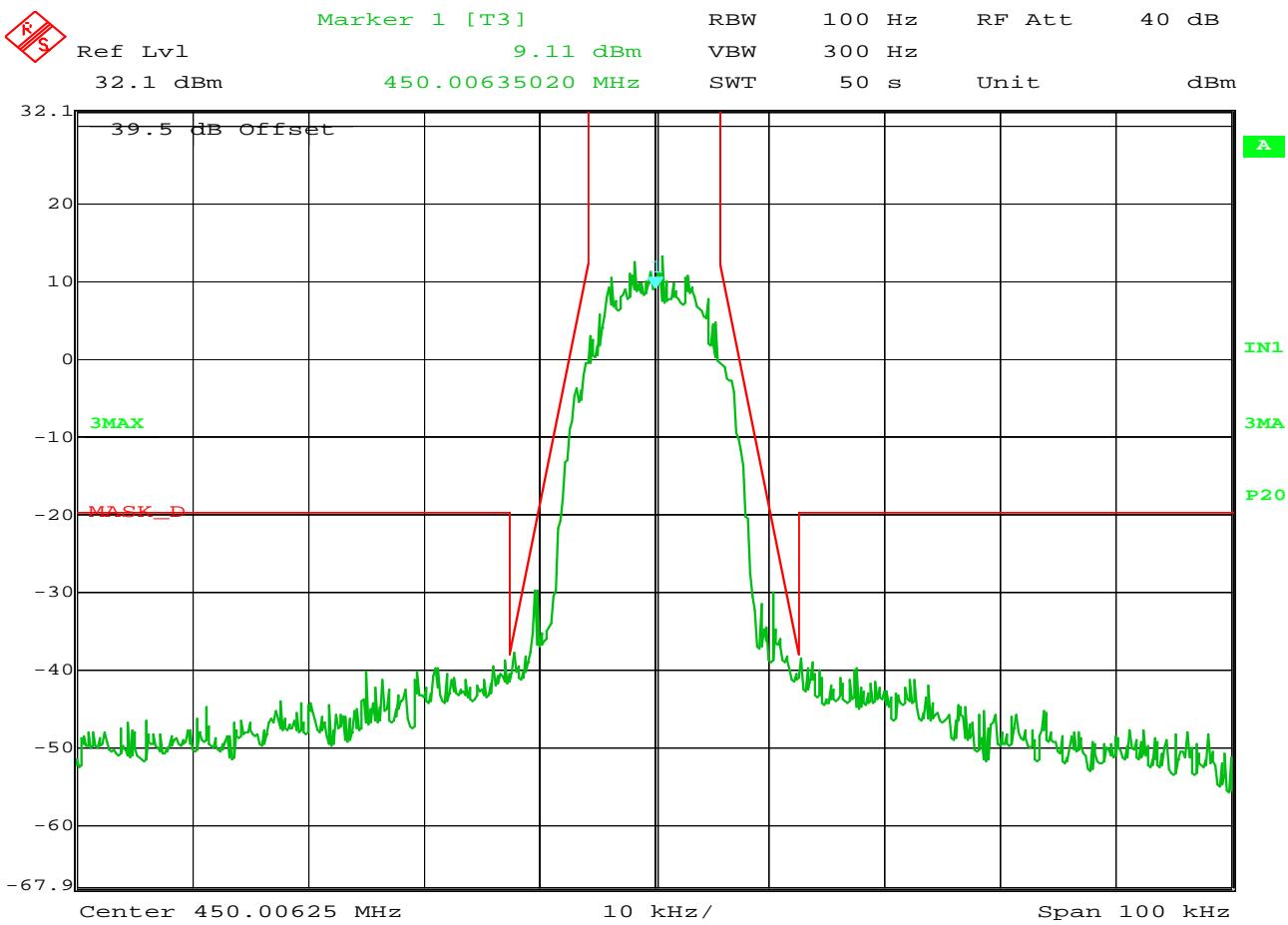


Date: 11.JUN.2013 14:15:14

FCC/Industry Canada Occupied Bandwidth

| | |
|---------------|--|
| MANUFACTURER | : XetaWave LLC |
| MODEL NUMBER | : Xeta-4 |
| TEST MODE | : Tx @ 450.00625MHz |
| SERIAL NUMBER | : 006 |
| NOTES | : Tx 2Watts 8QAM modulation : txpwr=13500 |

NOTES

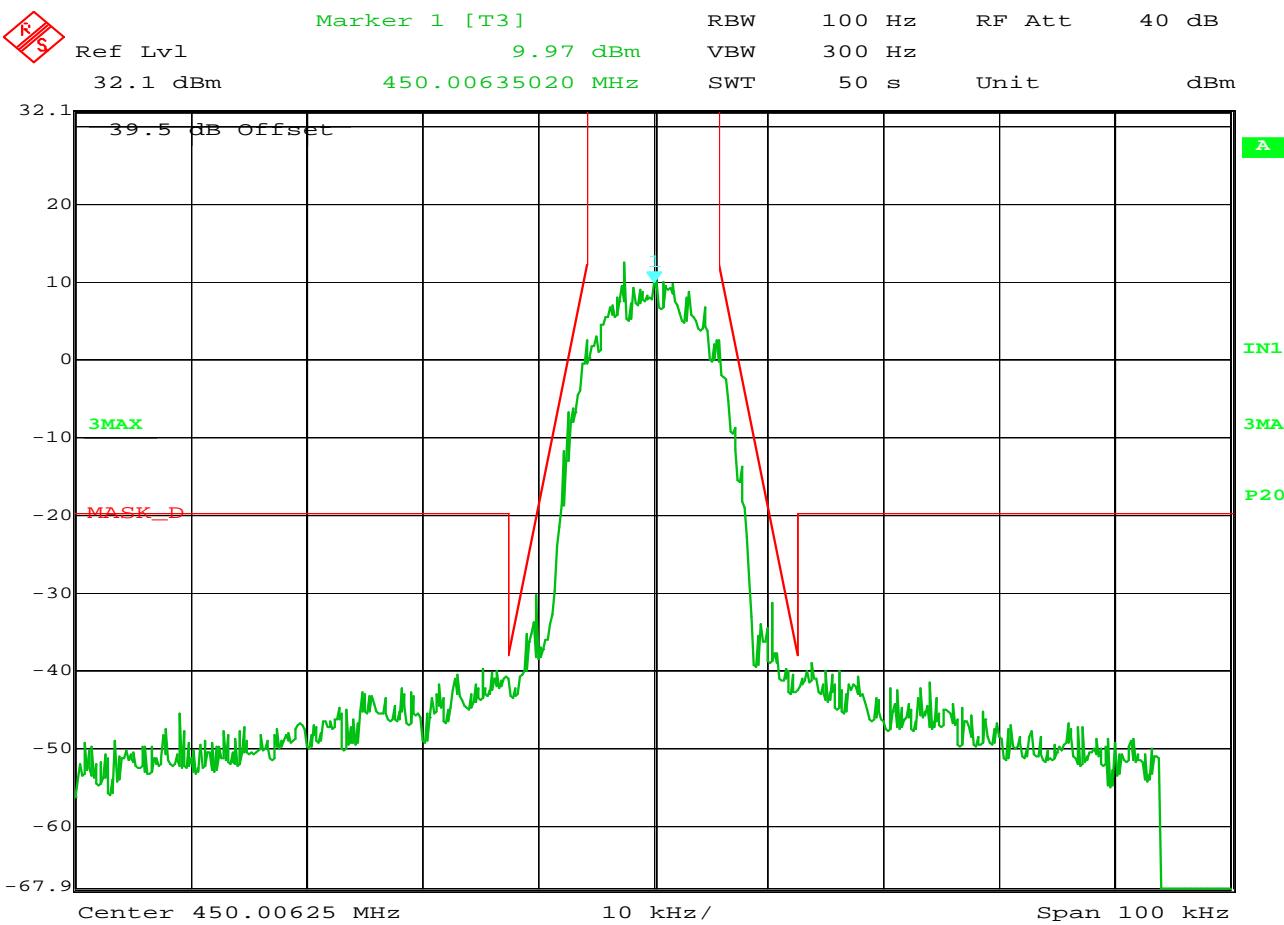


Date: 11.JUN.2013 14:17:42

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 450.00625MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 16QAM modulation
 : txpwr=14000

NOTES

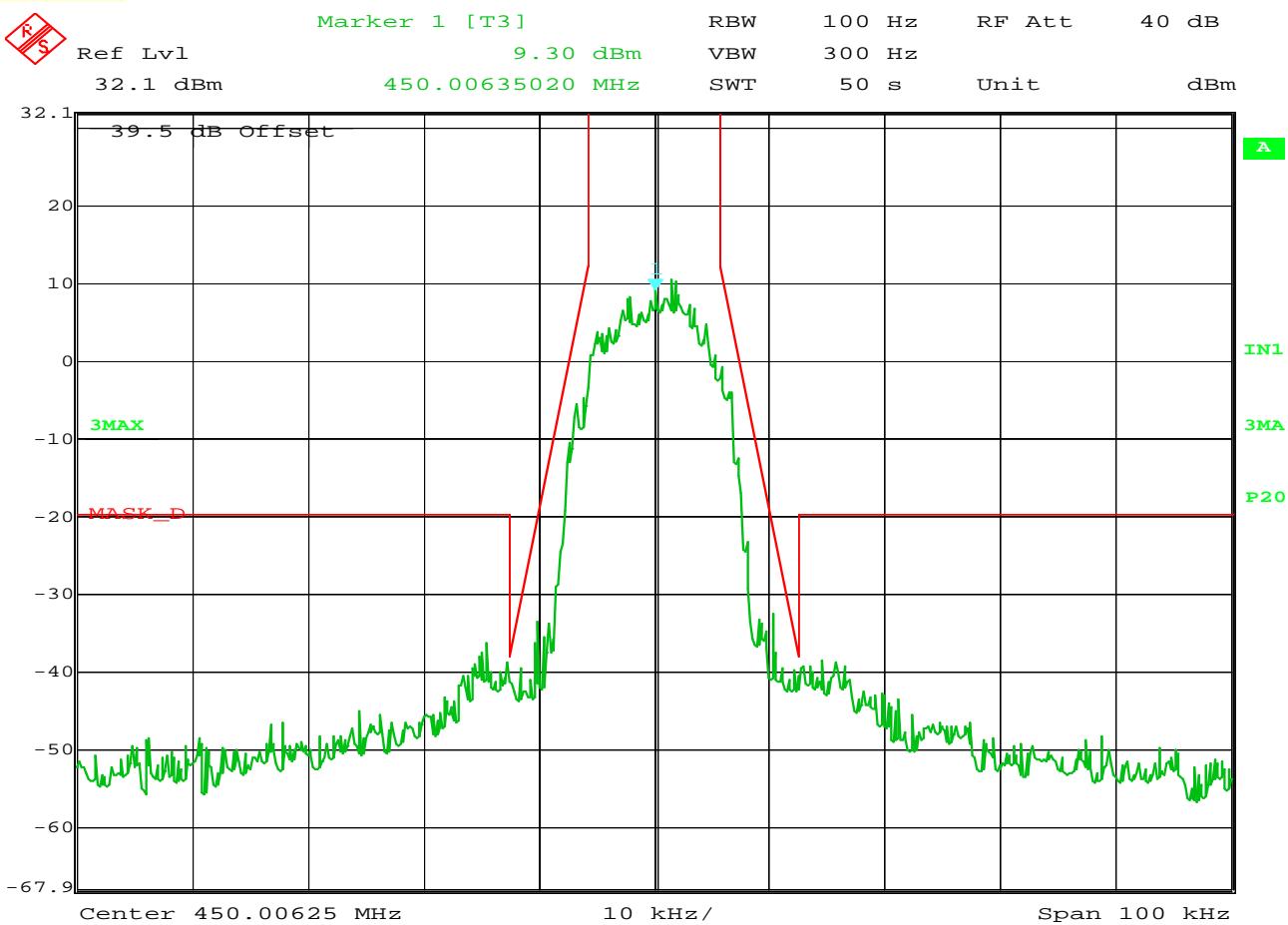


Date: 11.JUN.2013 14:09:20

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
MODEL NUMBER : Xeta-4
TEST MODE : Tx @ 450.00625MHz
SERIAL NUMBER : 006
NOTES : Tx 2Watts BPSK modulation
 : txpwr=8500

NOTES

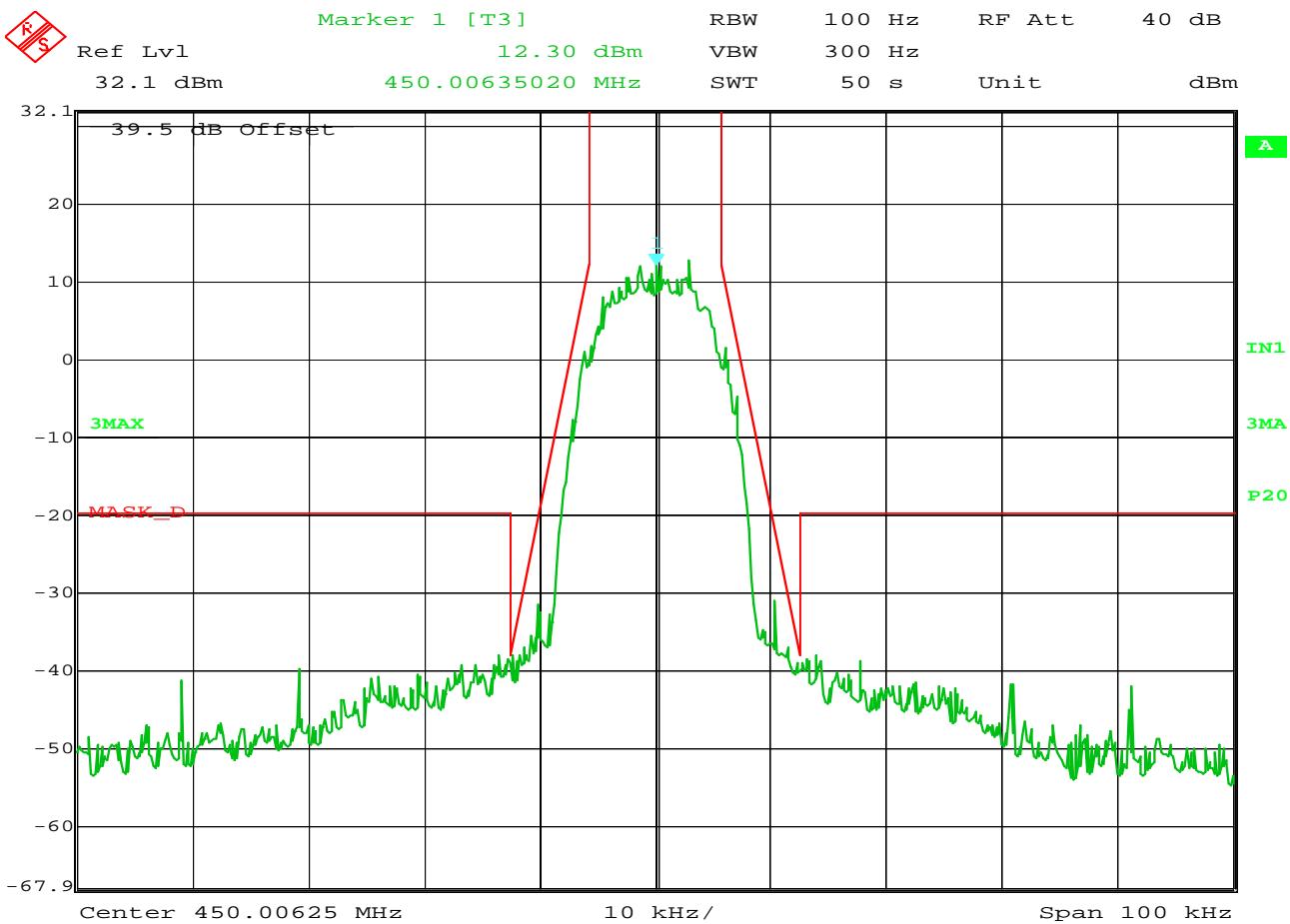


Date: 11.JUN.2013 14:05:43

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 450.00625MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts BPSK modulation

NOTES

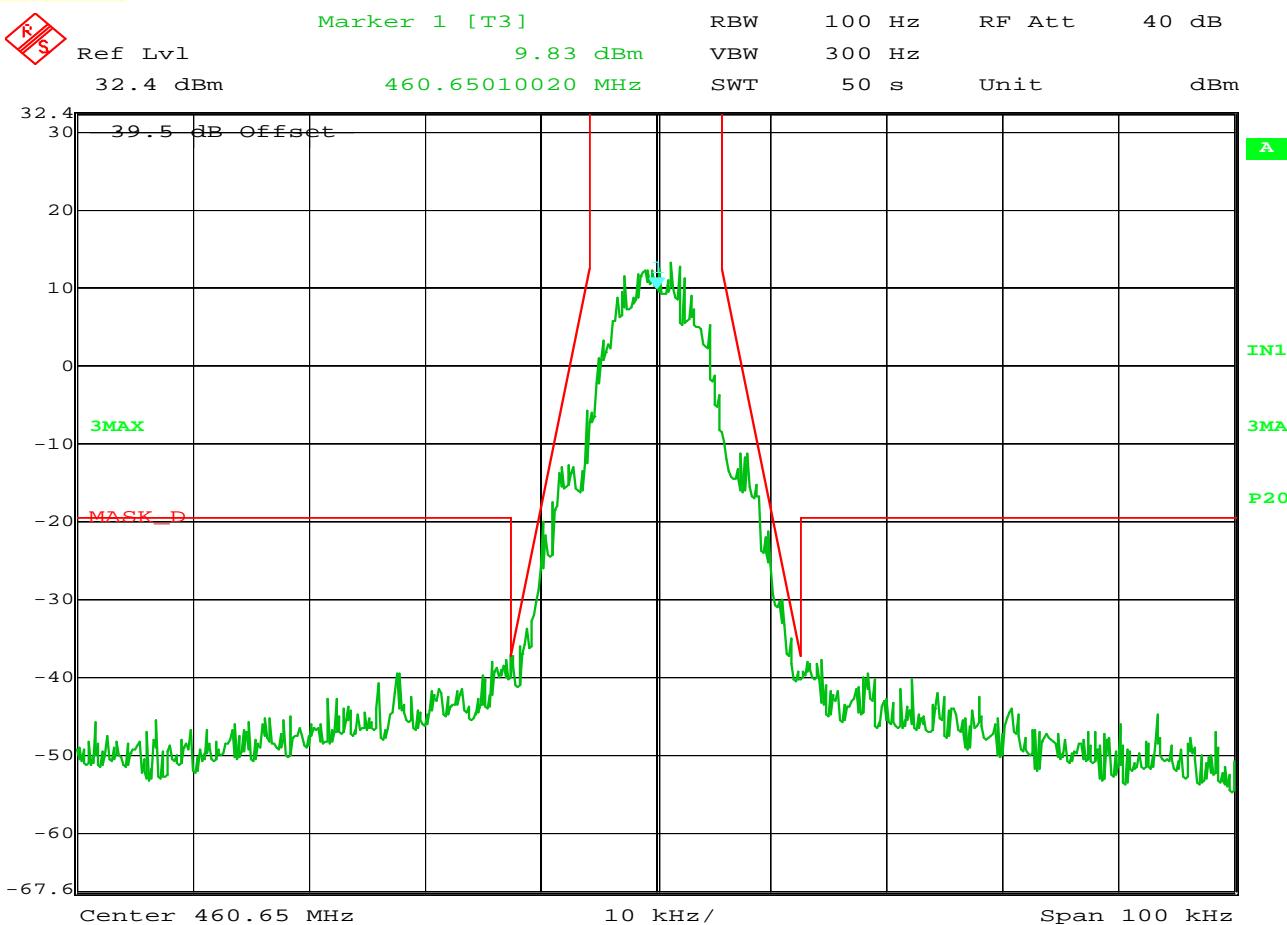


Date: 11.JUN.2013 14:11:08

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 450.00625MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts QPSK modulation
 : txpwr=11000

NOTES

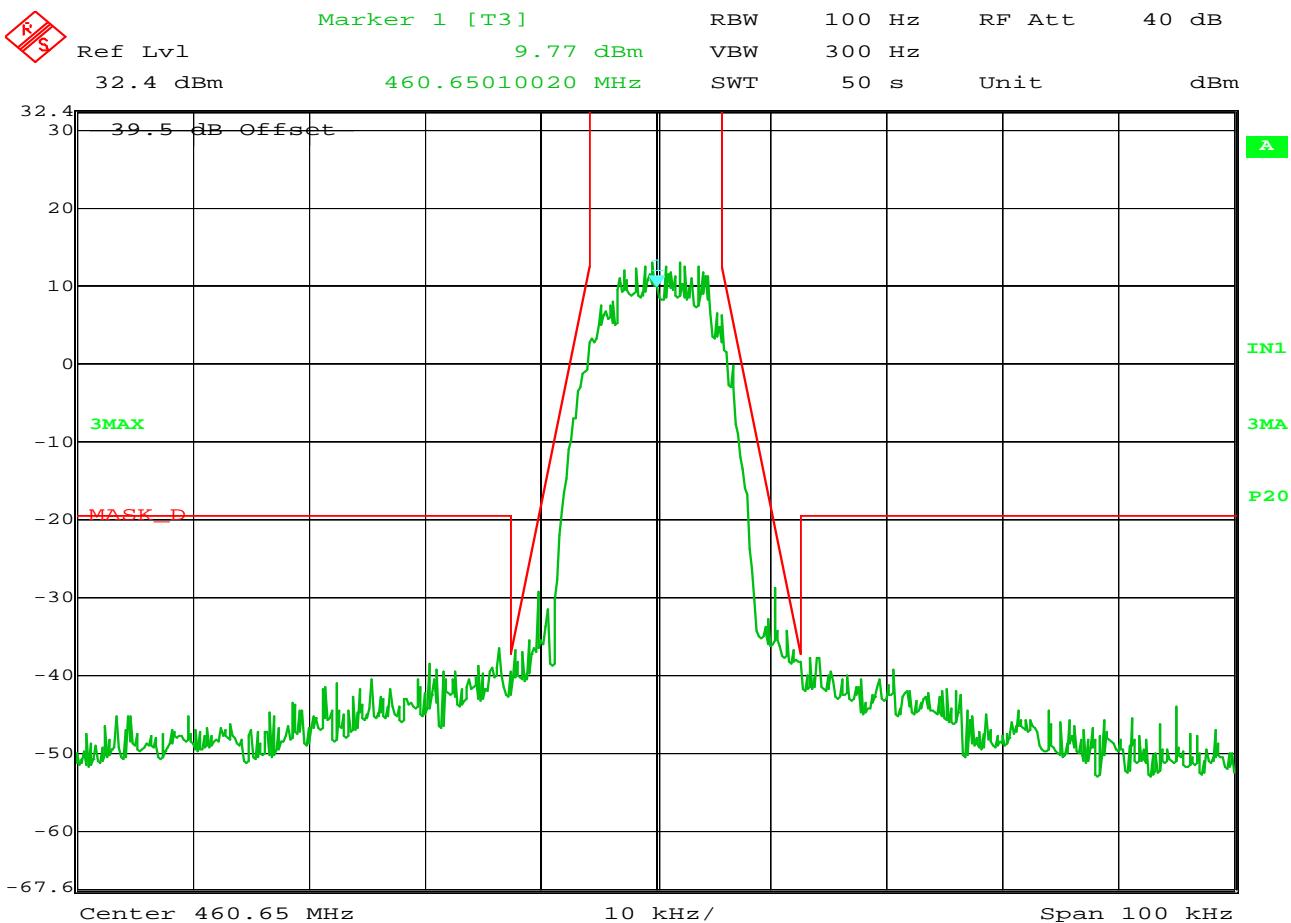


Date: 11.JUN.2013 15:37:45

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|---|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 460.65MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 2FSK modulation txpwr=5000 |

NOTES

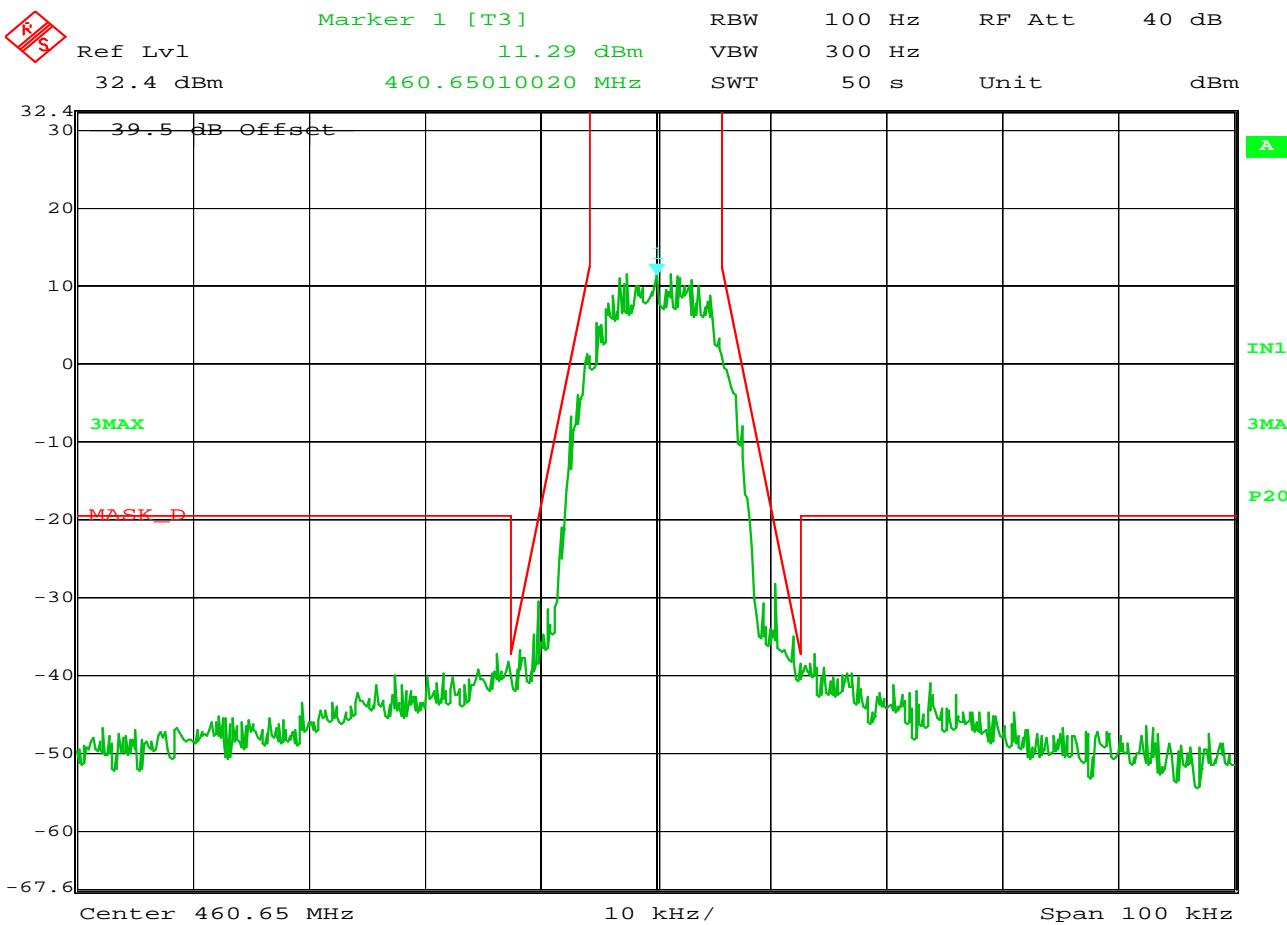


Date: 11.JUN.2013 15:54:08

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 460.65MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 2FSK modulation
 : txpwr=13500

NOTES

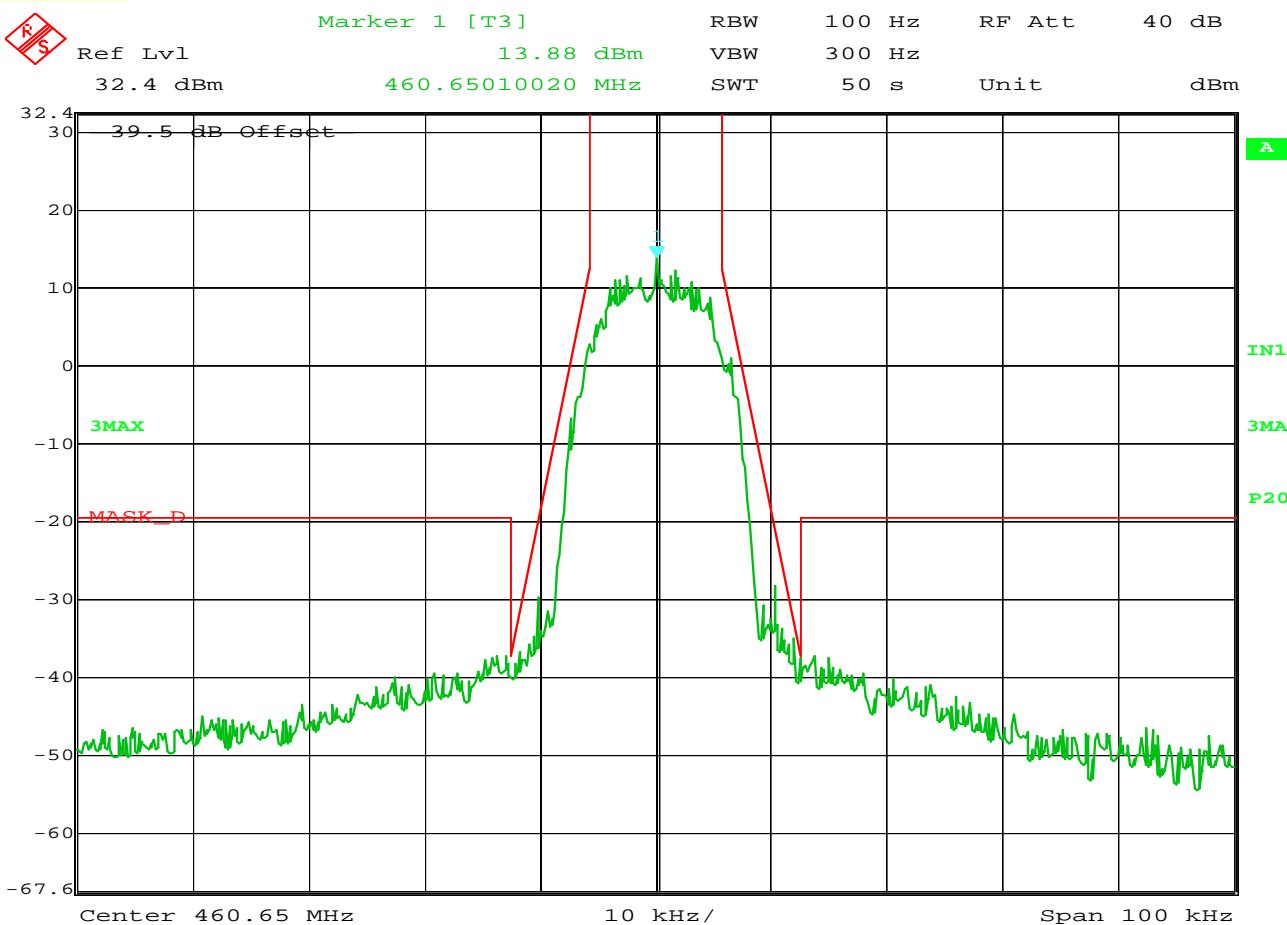


Date: 11.JUN.2013 16:05:17

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 460.65MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 2FSK modulation
 : txpwr=13000

NOTES

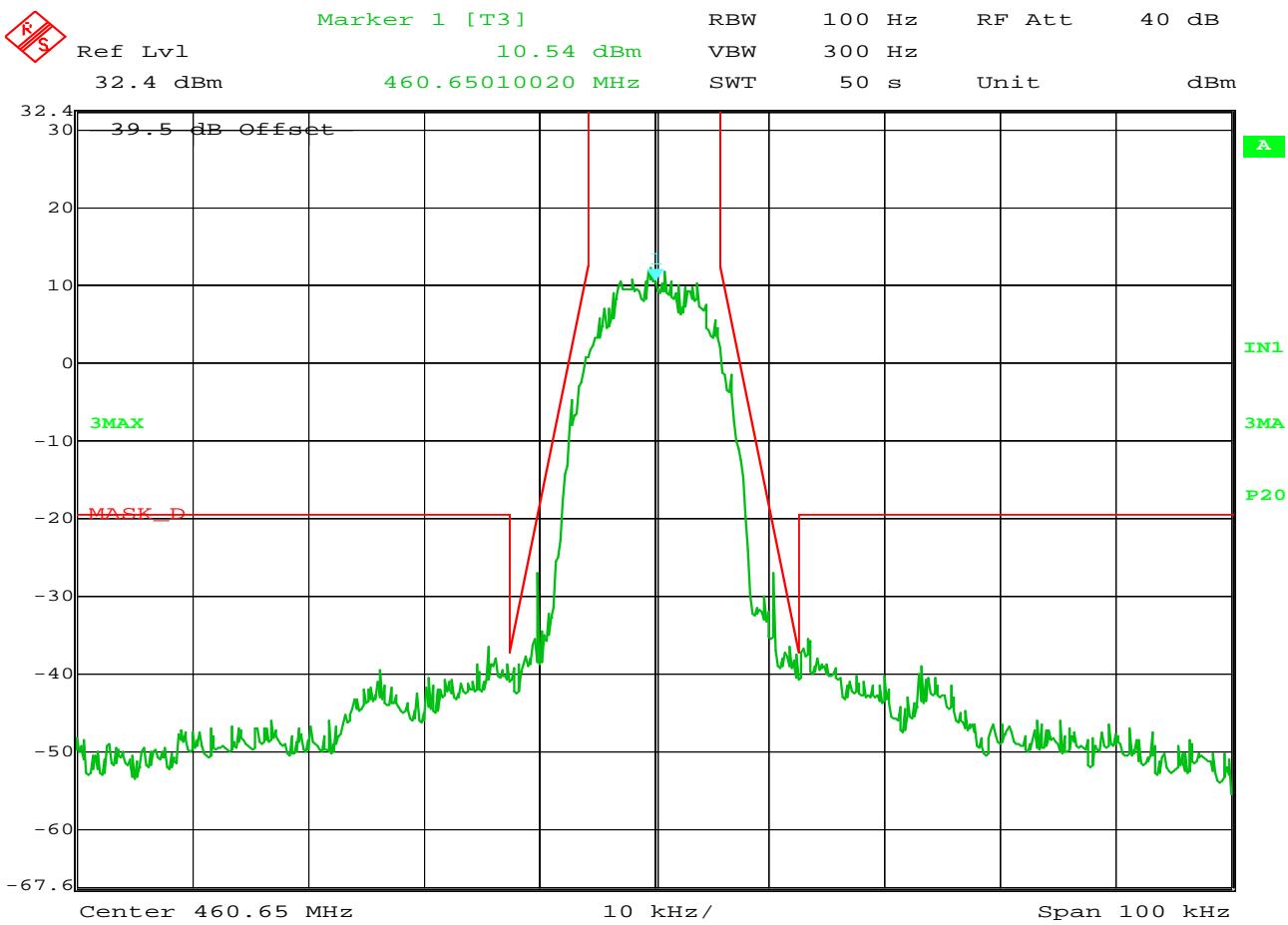


Date: 11.JUN.2013 16:05:58

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 460.65MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 32QAM modulation
 : txpwr=12000

NOTES

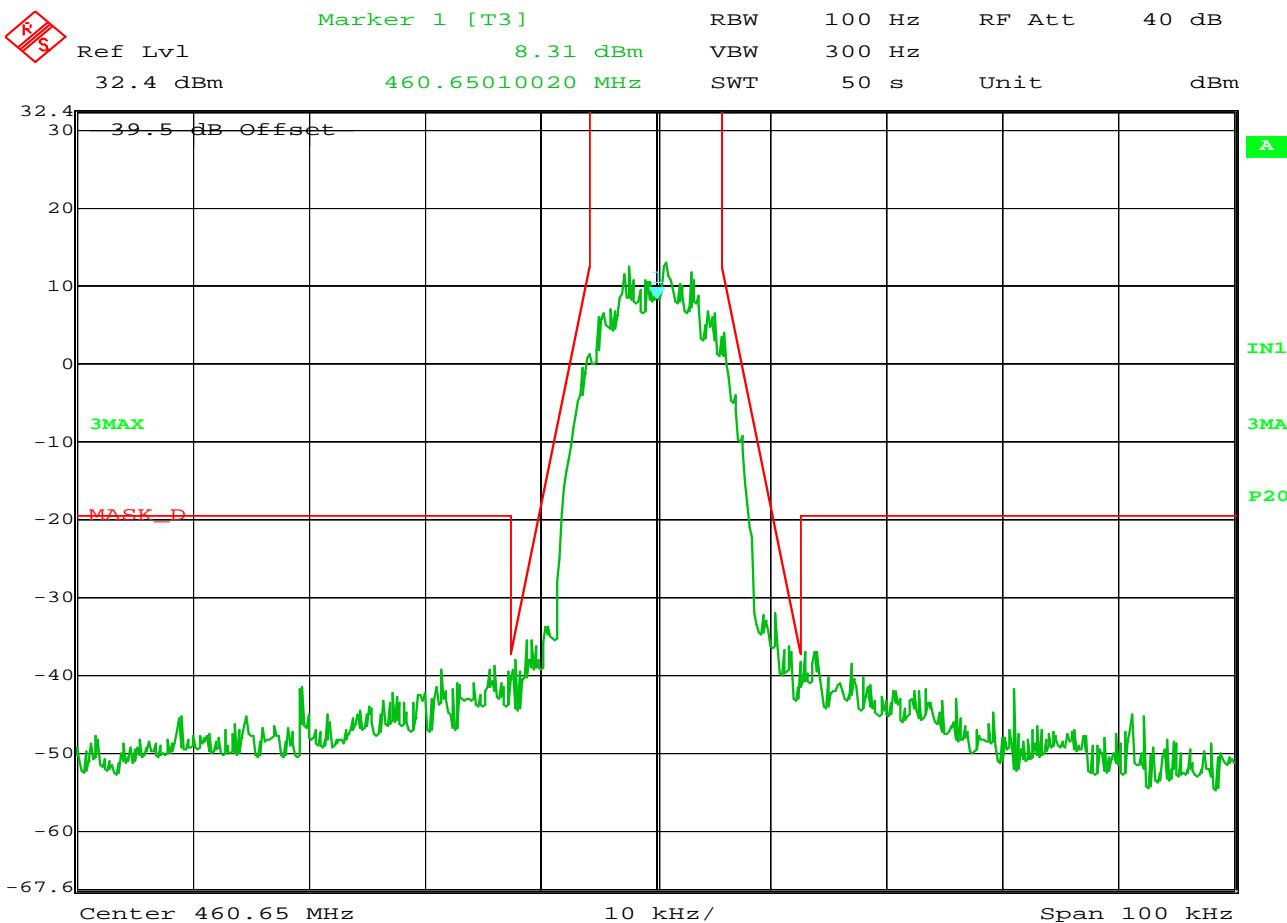


Date: 11.JUN.2013 15:43:23

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|---|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 460.65MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts BPSK modulation txpwr=9000 |

NOTES

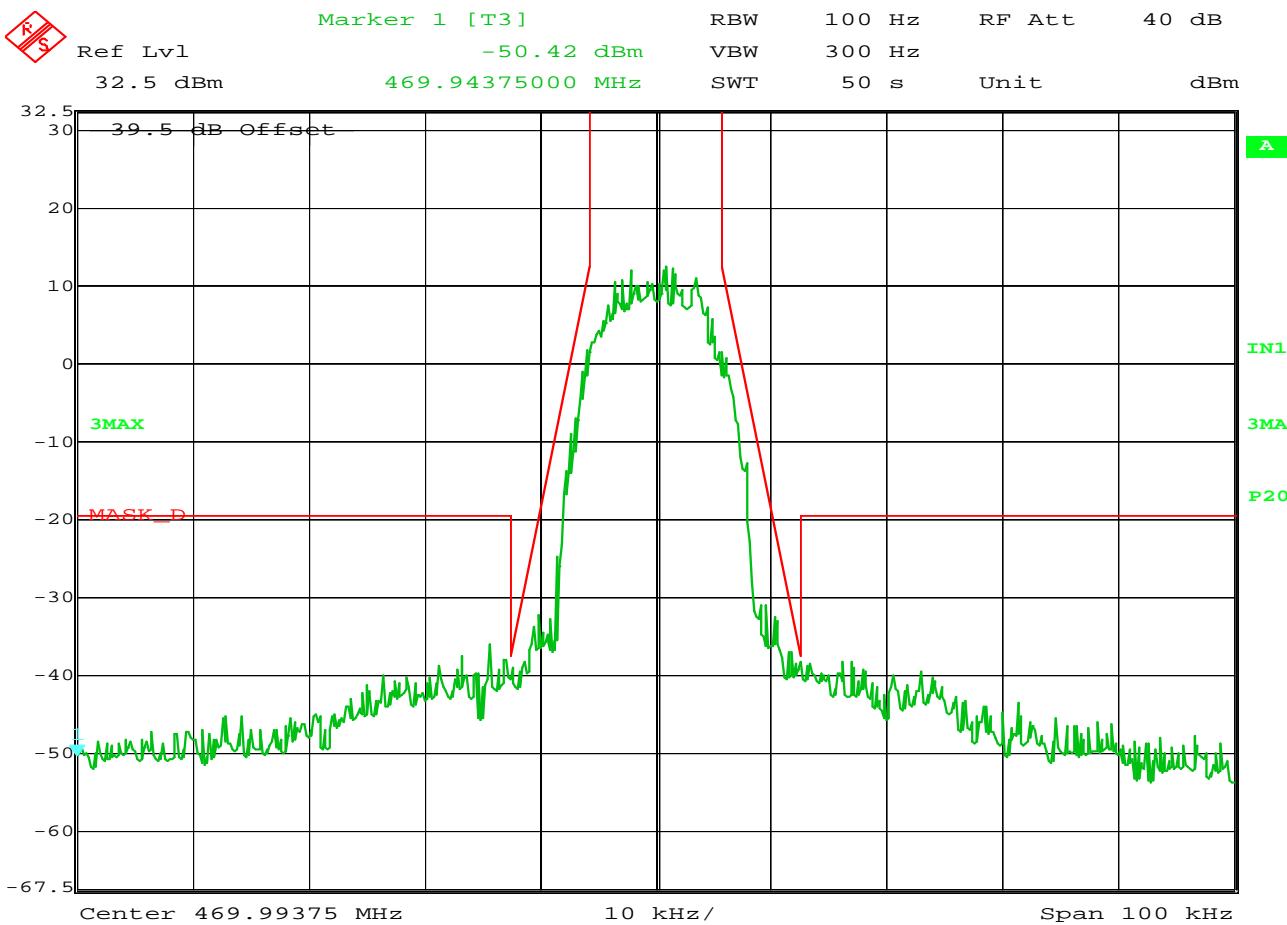


Date: 11.JUN.2013 15:46:38

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 460.65MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts QPSK modulation
 : txpwr=10000

NOTES

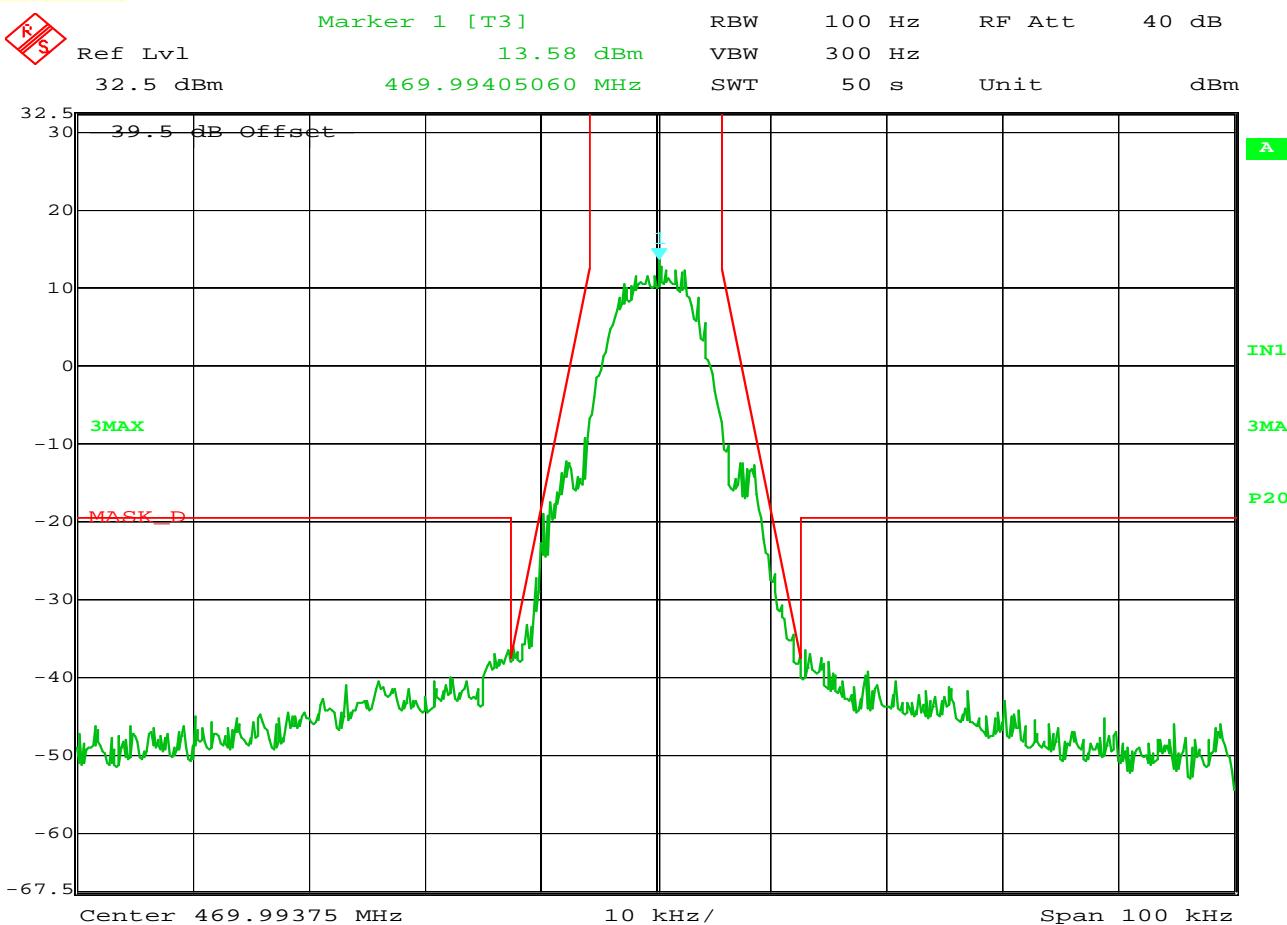


Date: 11.JUN.2013 16:21:47

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 469.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 32QAM Modulation
 : txpwr=10000

NOTES

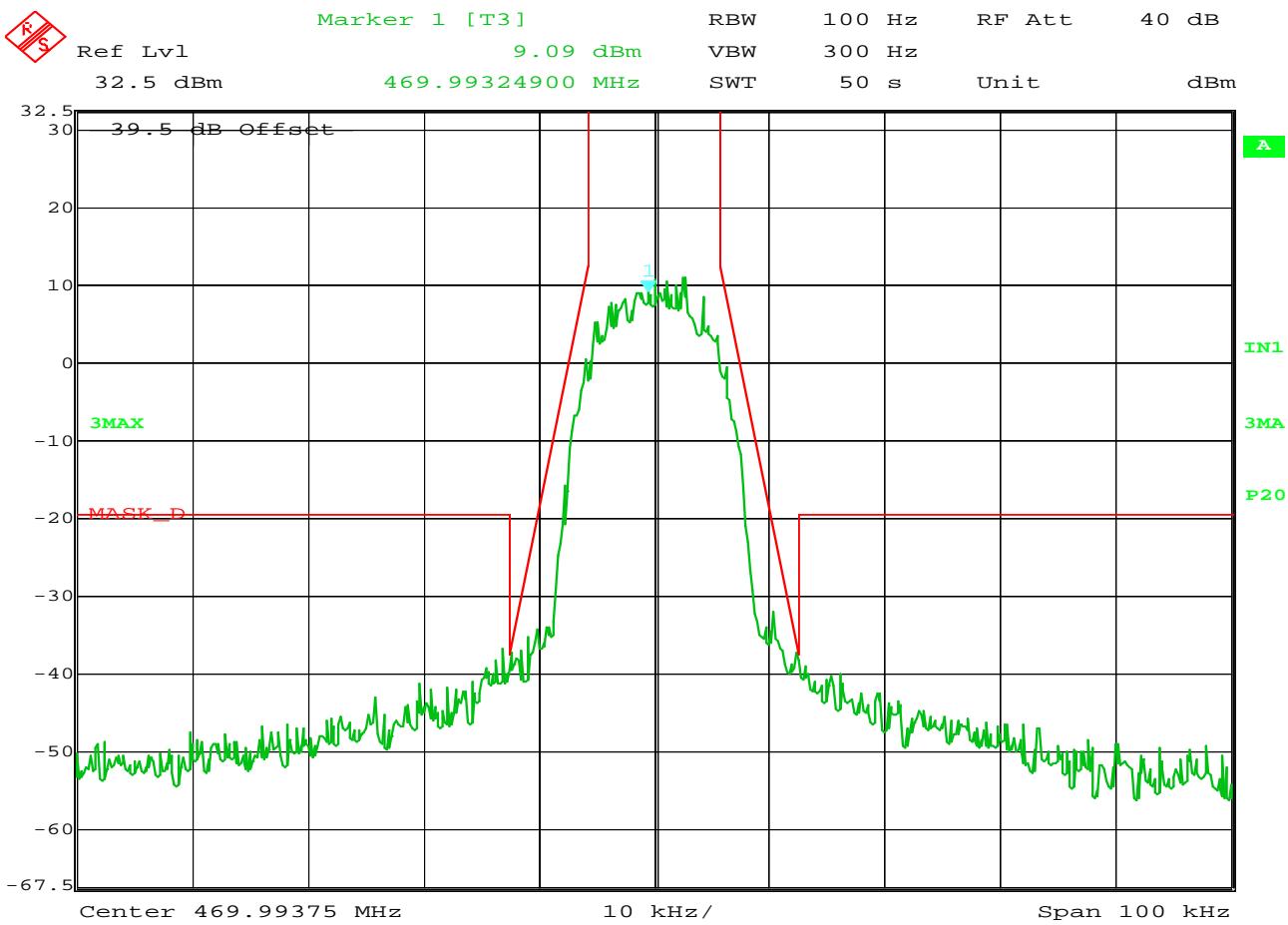


Date: 11.JUN.2013 11:40:49

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 469.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 2FSK modulation
 : txpwr=5000

NOTES

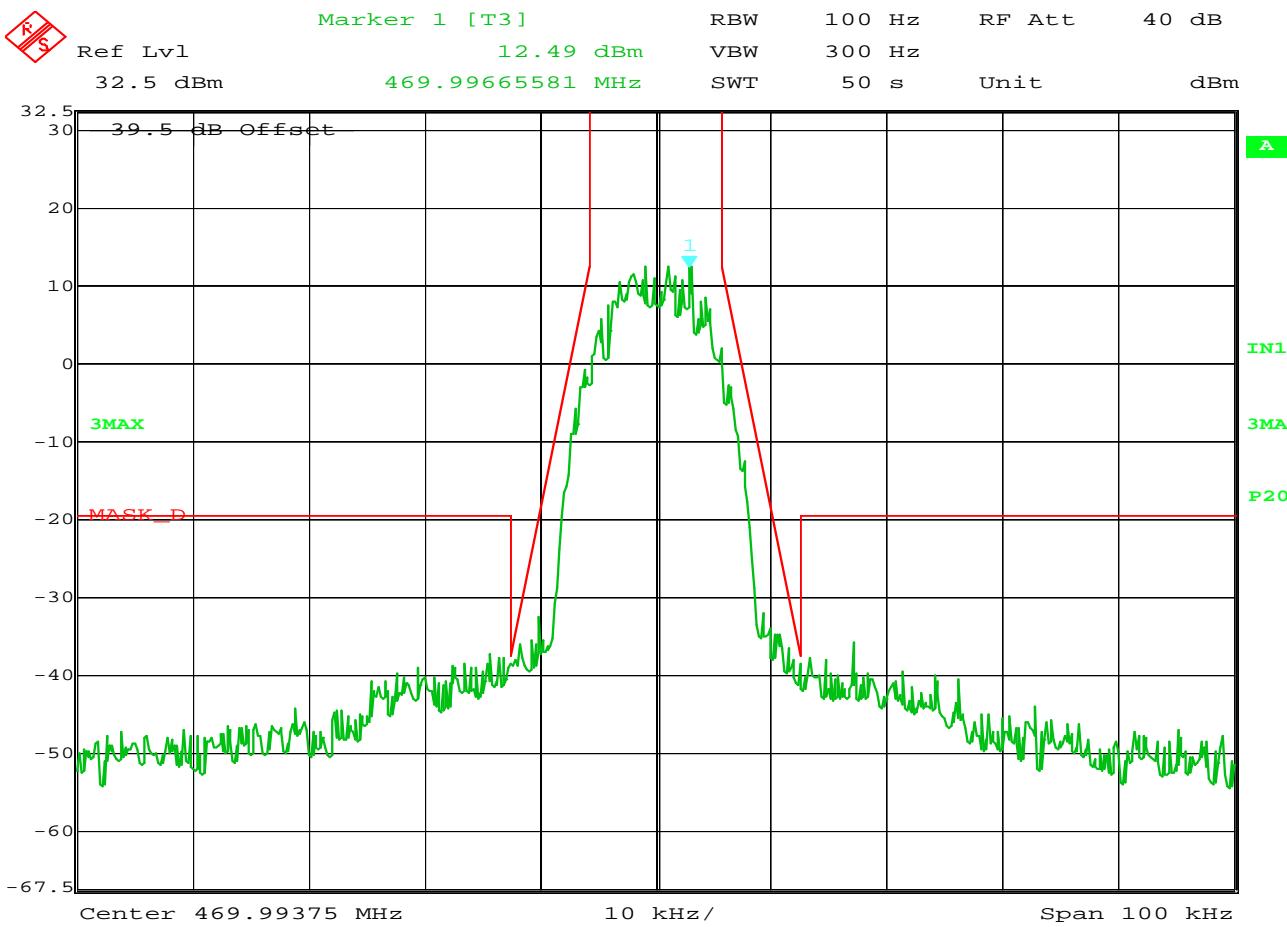


Date: 11.JUN.2013 12:10:19

FCC/Industry Canada Occupied Bandwidth

| | | |
|---------------|---|--|
| MANUFACTURER | : | XetaWave LLC |
| MODEL NUMBER | : | Xeta-4 |
| TEST MODE | : | Tx @ 469.99375MHz |
| SERIAL NUMBER | : | 006 |
| NOTES | : | Tx 2Watts 8QAM modulation txpwr=10000 |

NOTES

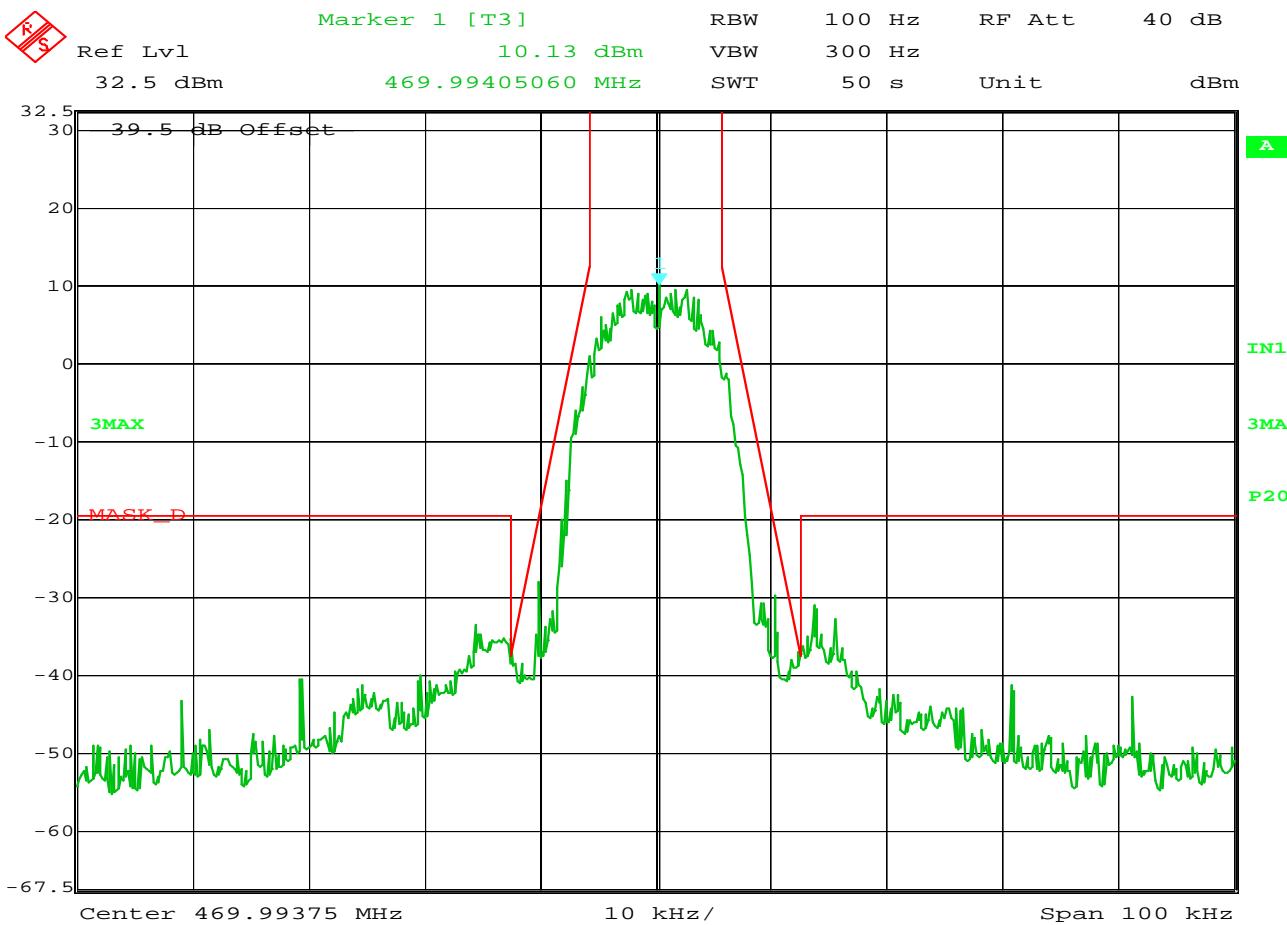


Date: 11.JUN.2013 12:14:10

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 469.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts 16QAM modulation
 : txpwr=10500

NOTES

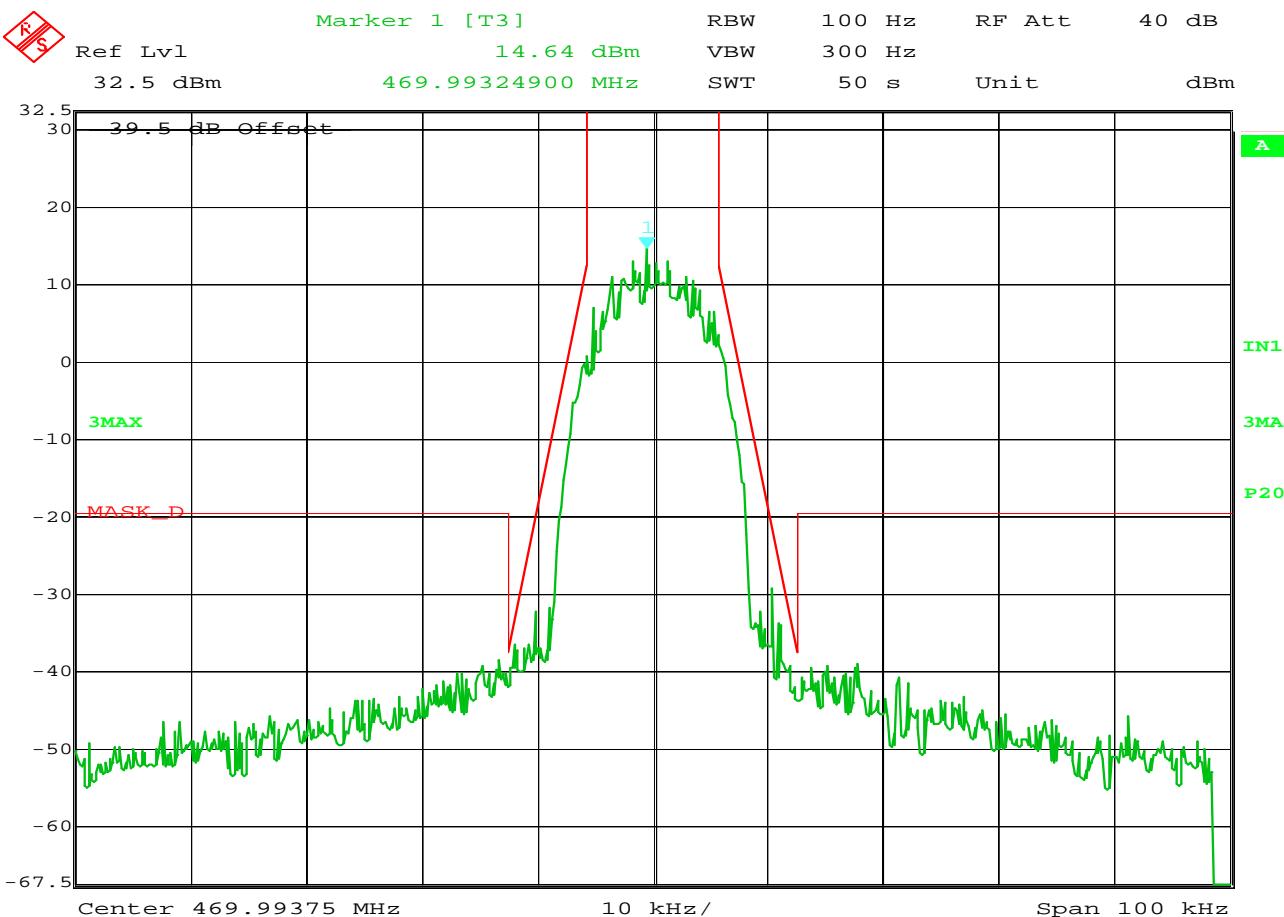


Date: 11.JUN.2013 11:53:07

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 469.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts BPSK modulation
 : txpwr=7500

NOTES



Date: 11.JUN.2013 12:02:31

FCC/Industry Canada Occupied Bandwidth

MANUFACTURER : XetaWave LLC
 MODEL NUMBER : Xeta-4
 TEST MODE : Tx @ 469.99375MHz
 SERIAL NUMBER : 006
 NOTES : Tx 2Watts QPSK modulation
 : txpwr=9000

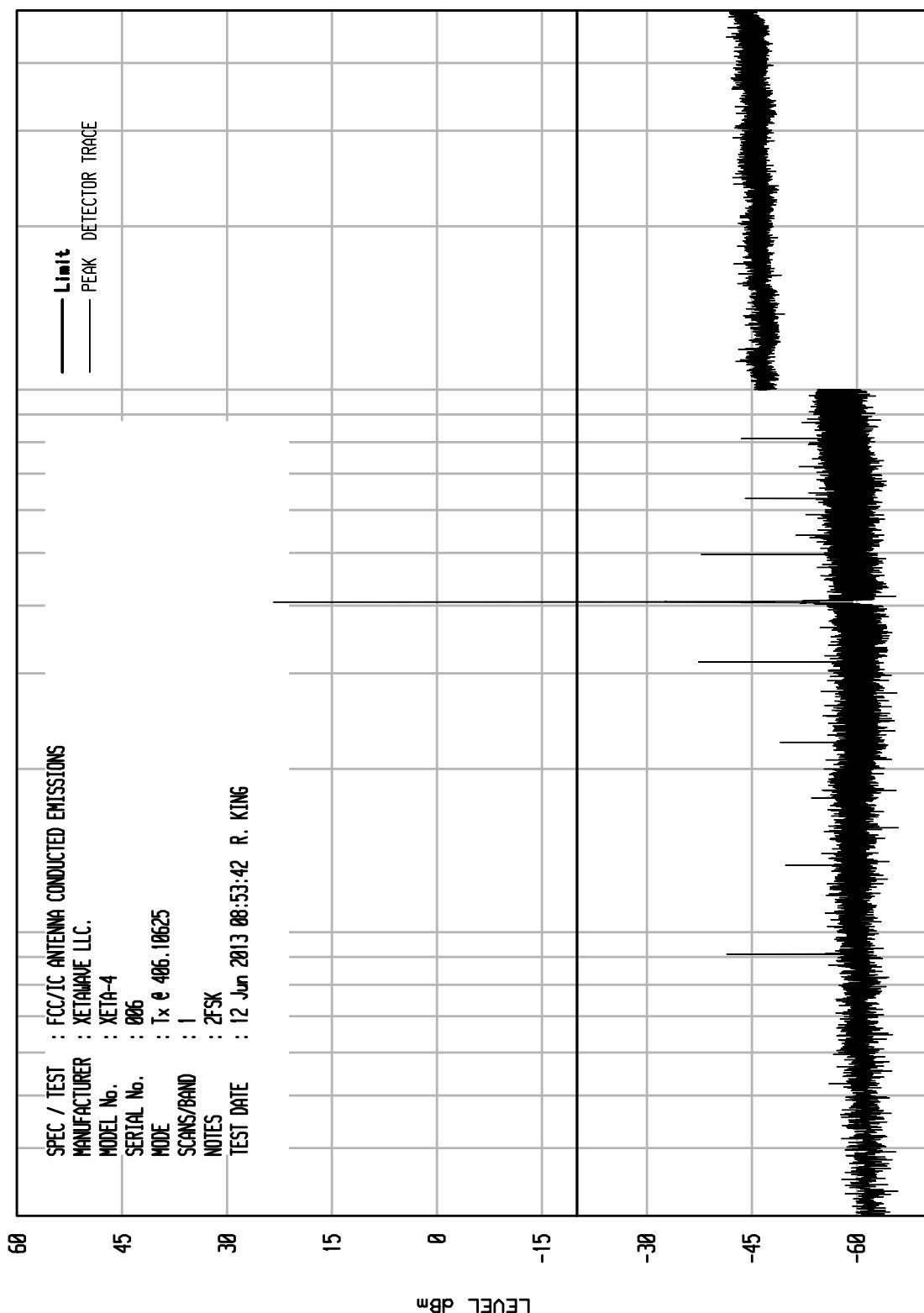
NOTES

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 33

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 10625
SCANS/BAND : 1
NOTES : 2FSK
TEST DATE : 12 Jun 2013 08:53:42 R. KING

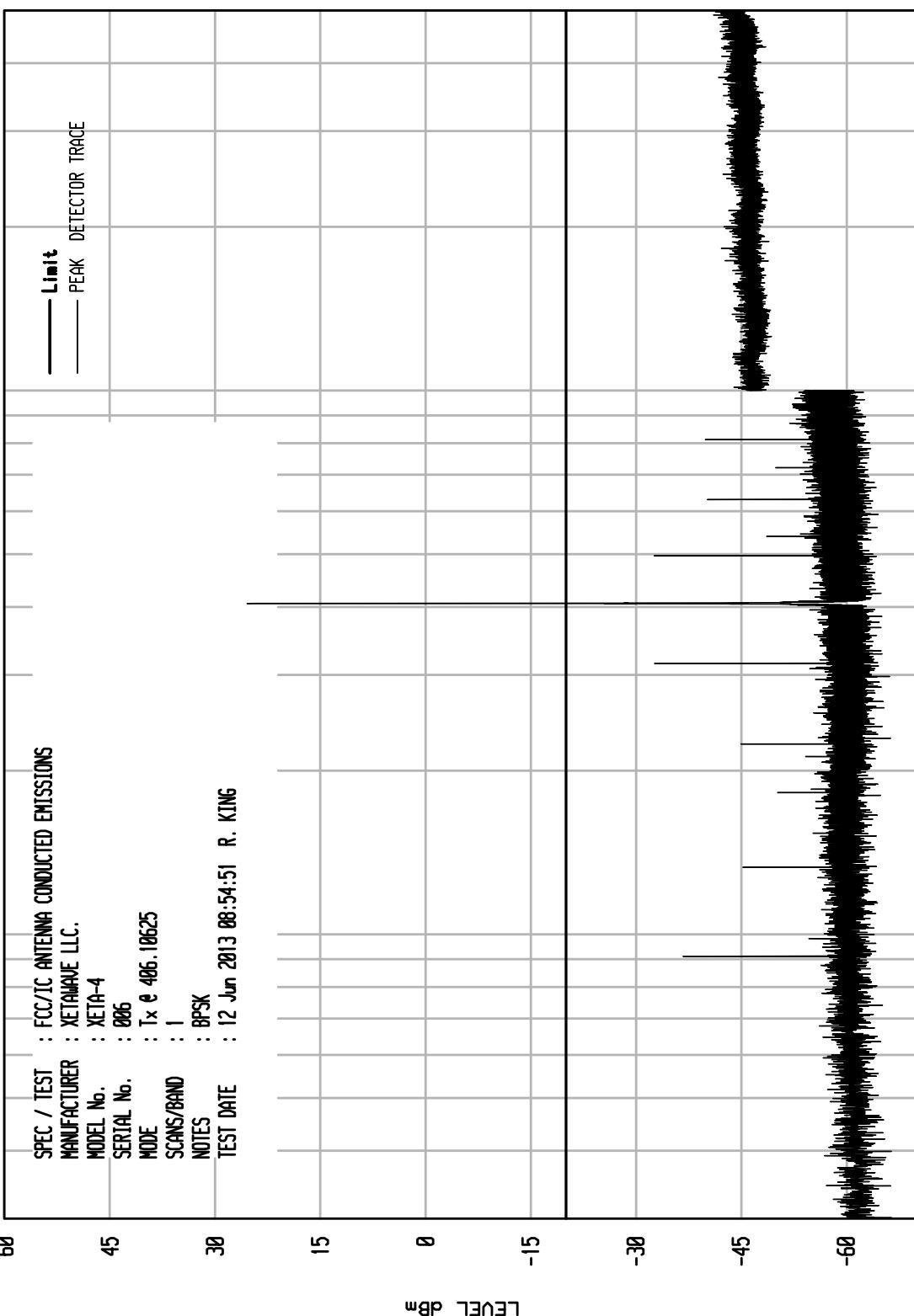


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITO RCU EMI RUN 34

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 10625
SCANS/BAND : 1
NOTES : BPSK
TEST DATE : 12 Jun 2013 08:54:51 R. KING

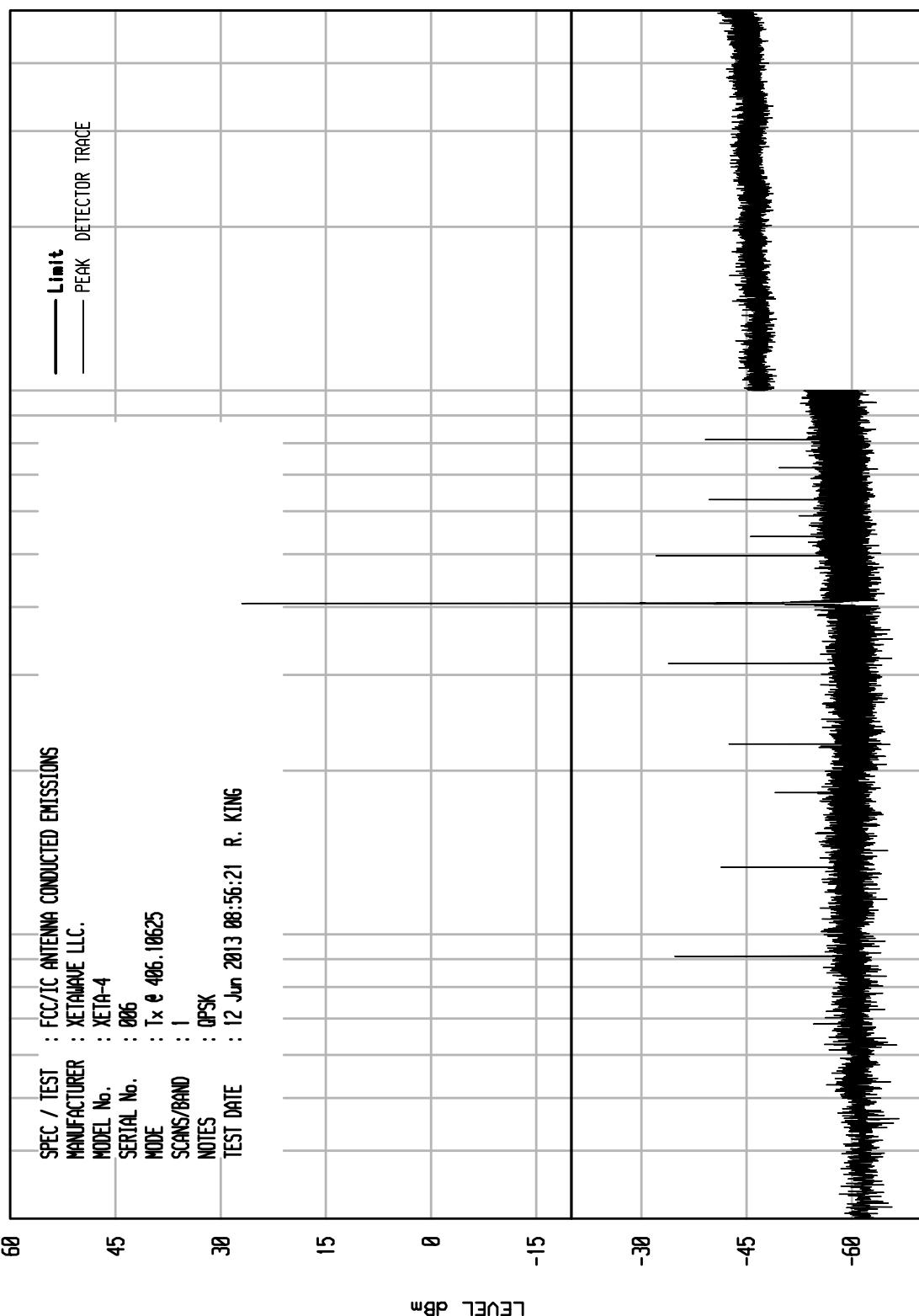


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT 100 EMI RUN 35

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 10625
SCANS/BAND : 1
NOTES : QPSK
TEST DATE : 12 Jun 2013 08:56:21 R. KING

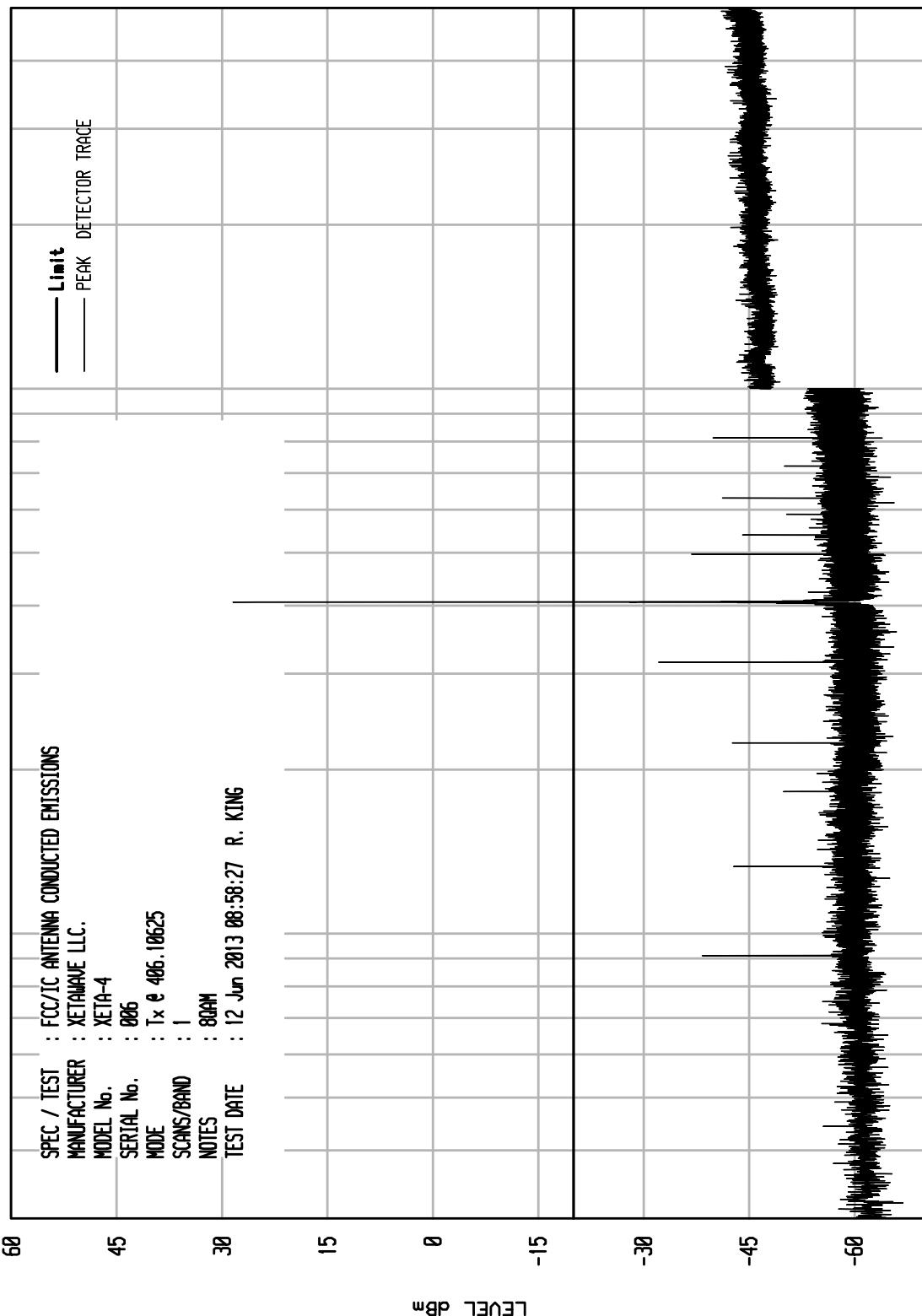


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

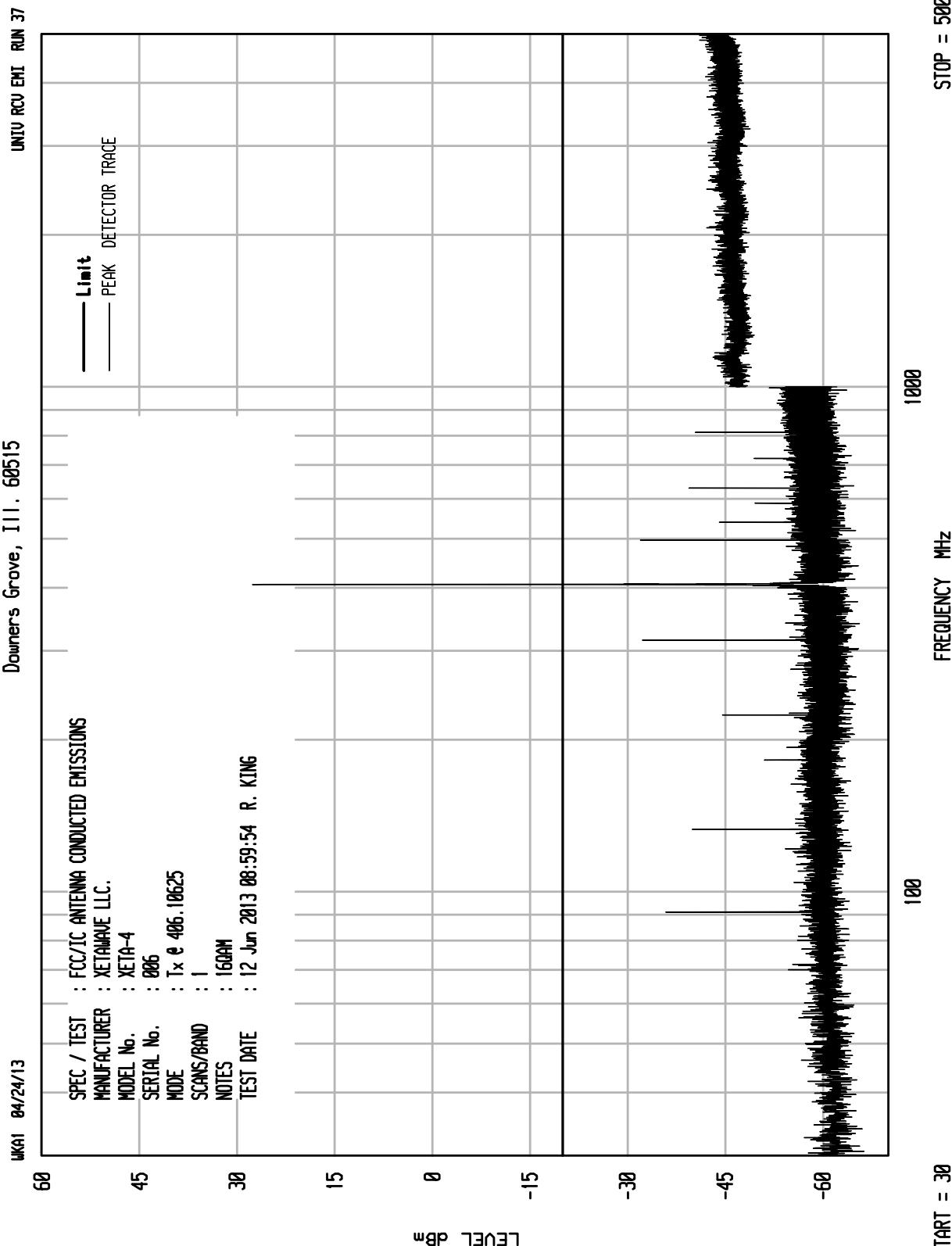
UNIT 1 RCU EMI RUN 36

WKA1 04/24/13

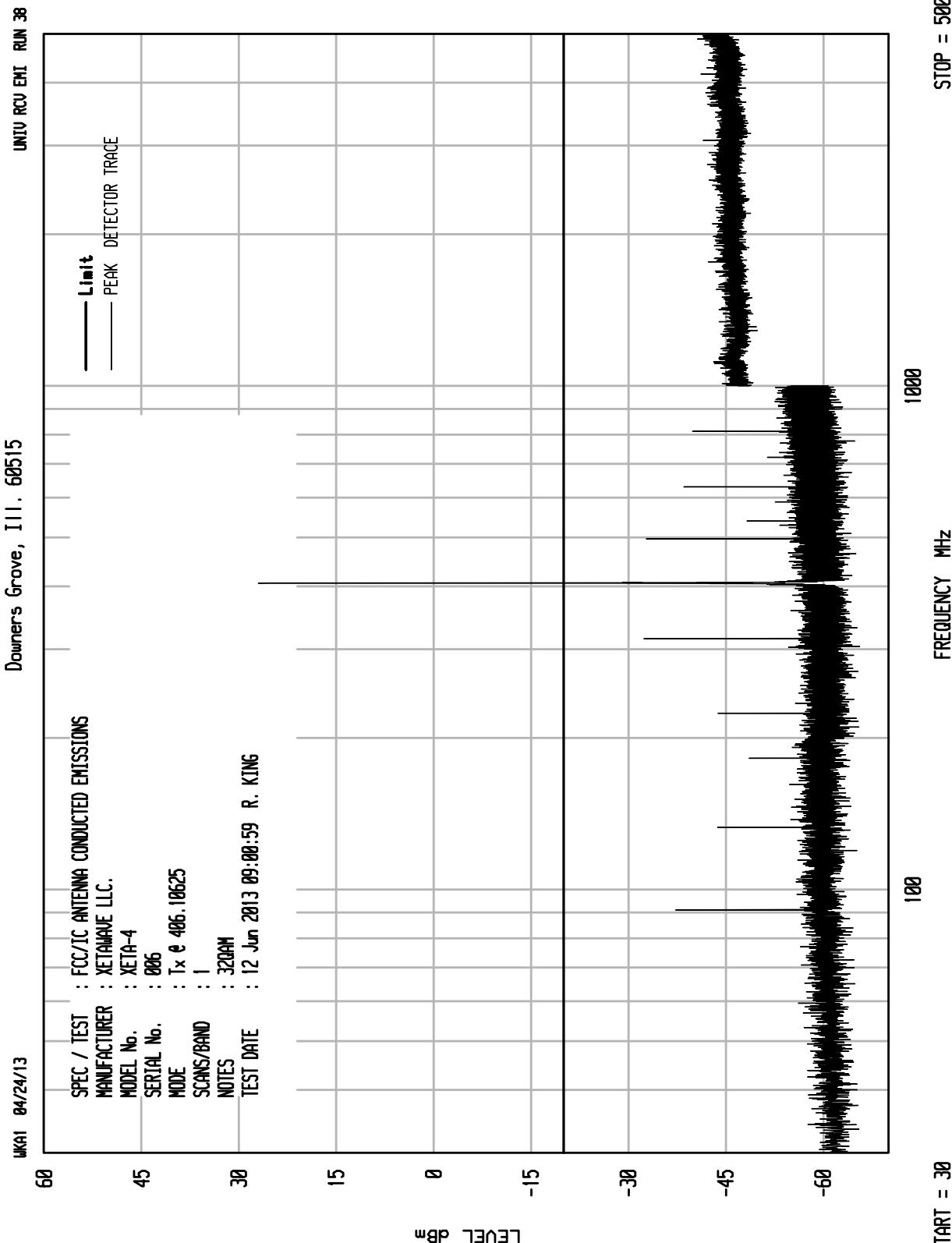
| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & Rx 10625 |
| SCANS/BAND | : 1 |
| NOTES | : 80AM |
| TEST DATE | : 12 Jun 2013 08:58:27 R. KING |



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Downers Grove, Ill. 60515



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Downers Grove, Ill. 60515

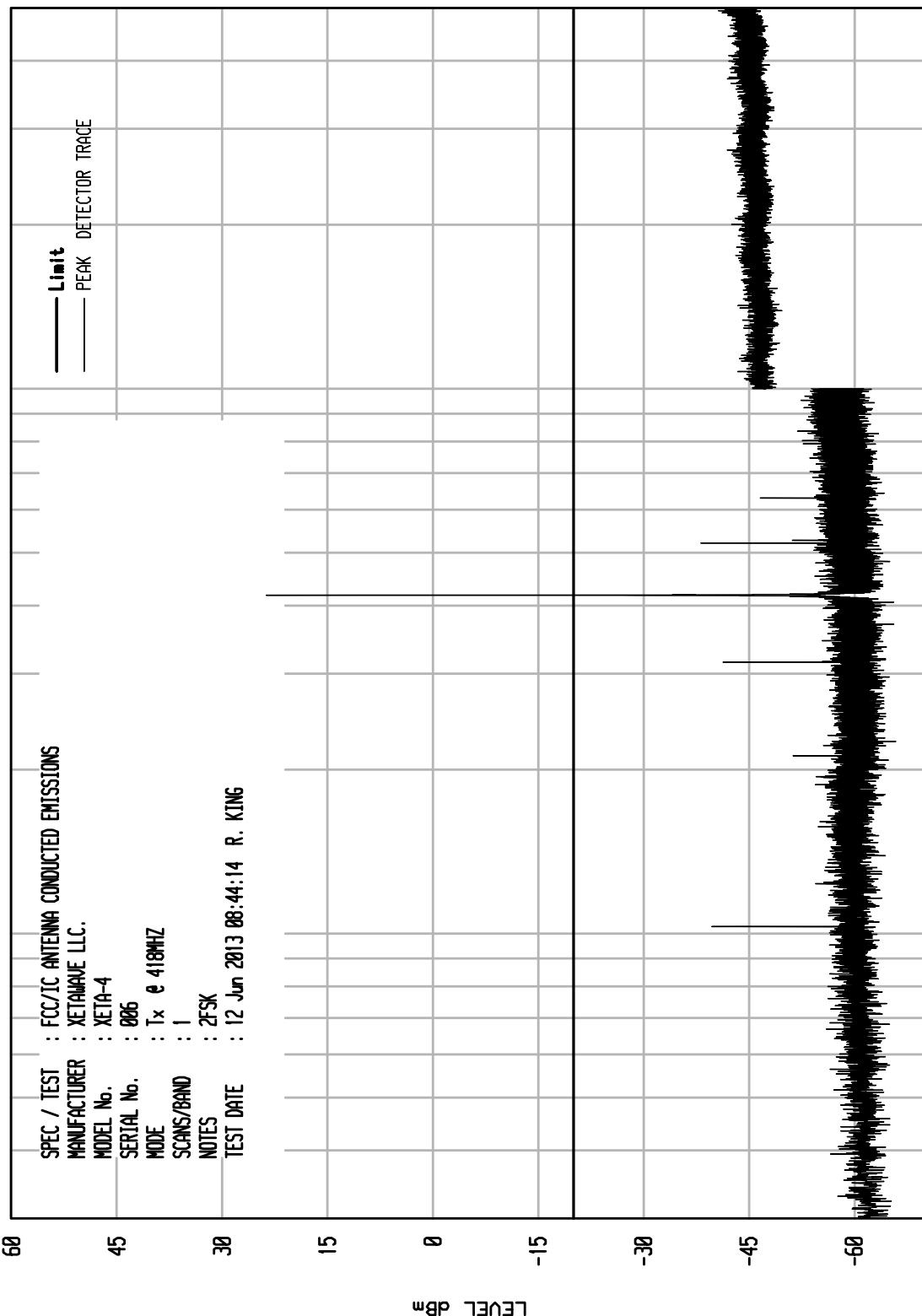


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 25

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 418MHz
SCANS/BAND : 1
NOTES : 2FSK
TEST DATE : 12 Jun 2013 08:44:14 R. KING



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 26

UKAI 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS

MANUFACTURER : XETAWAVE LLC.

MODEL No. : XETA-4

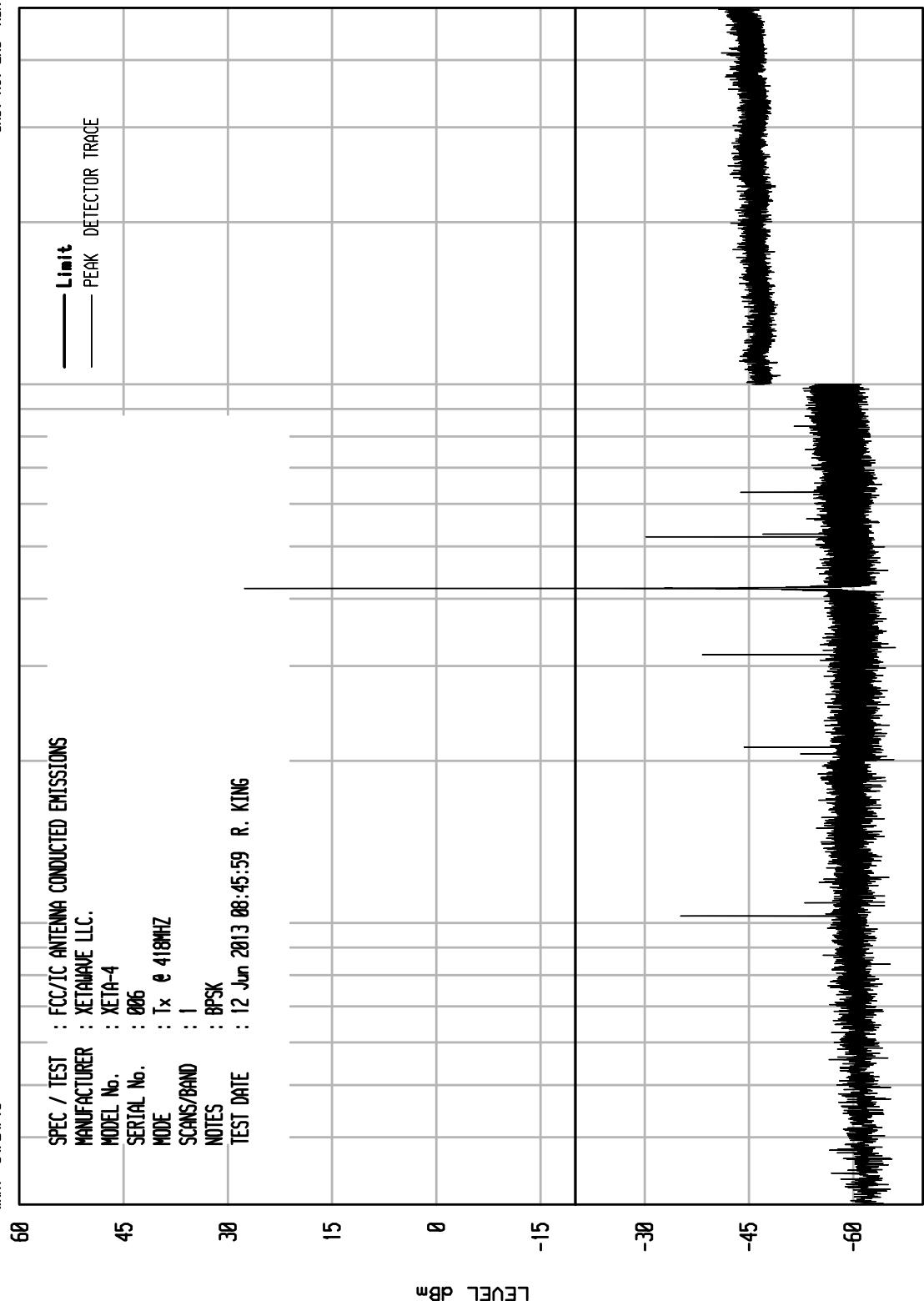
SERIAL No. : 006

MODE : Tx & 418MHz

SCANS/BAND : 1

NOTES : BPSK

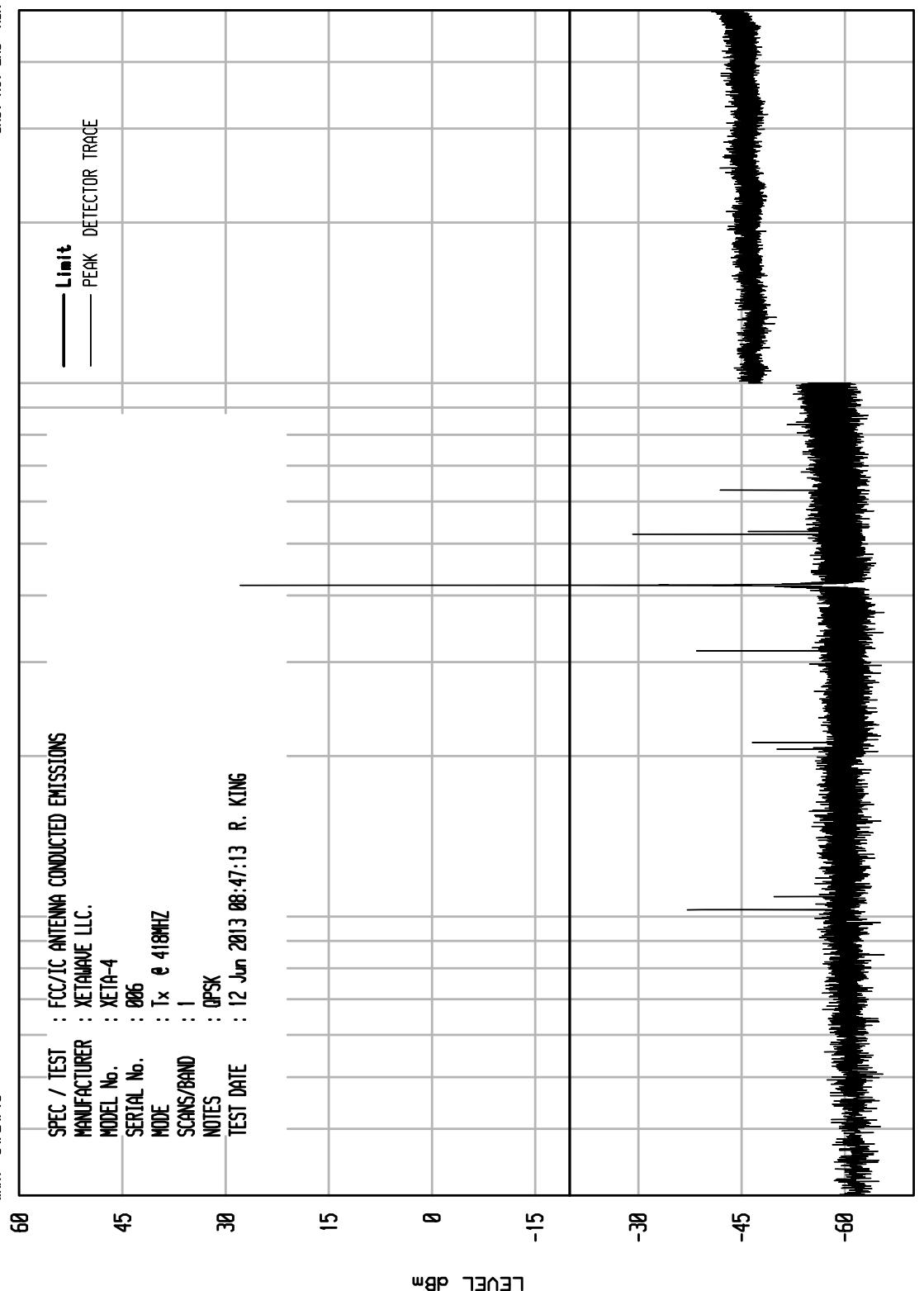
TEST DATE : 12 Jun 2013 08:45:59 R. KING



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UNIT0 RCU EMI RUN 27

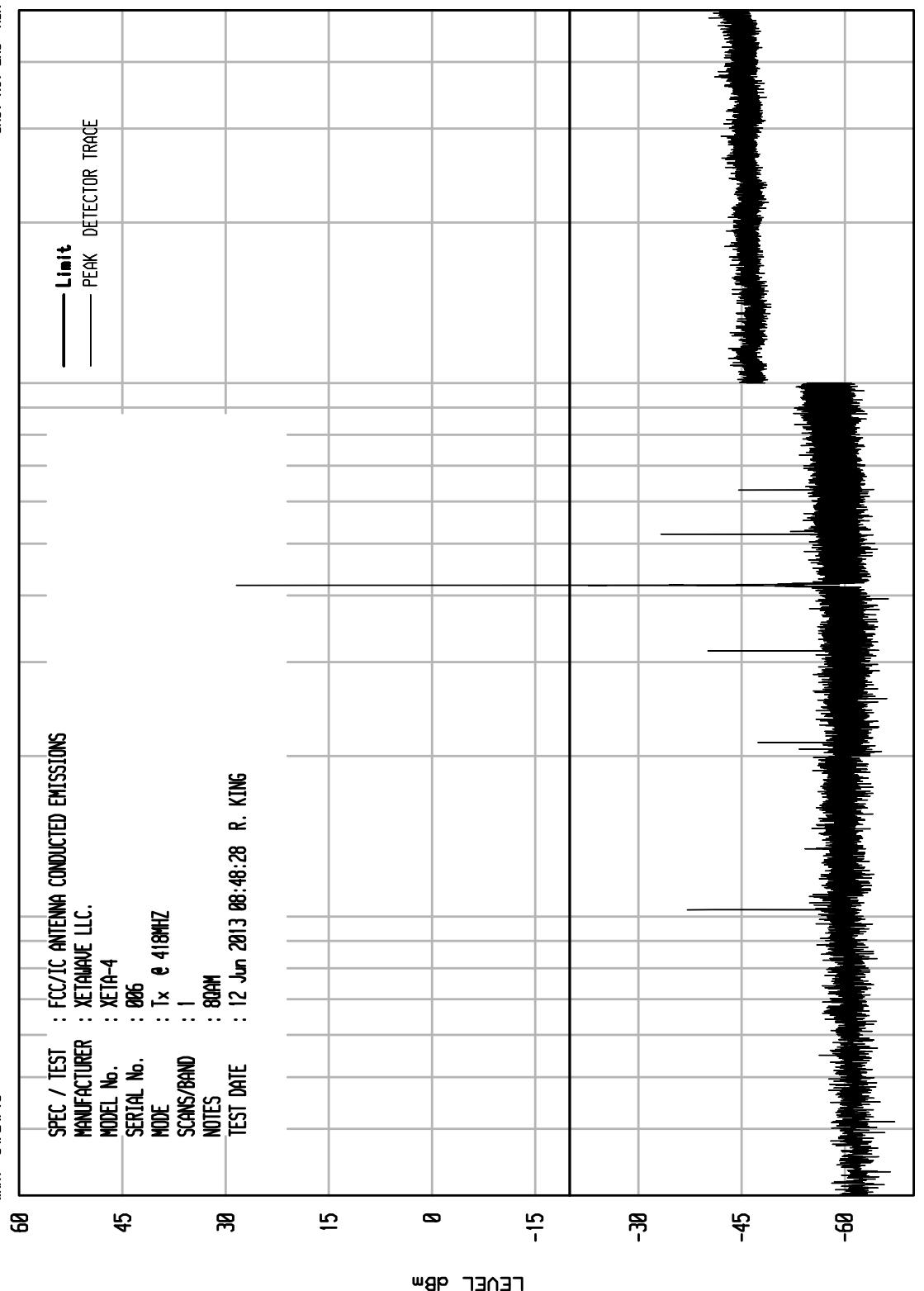
UKAI 04/24/13
SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 418MHz
SCANS/BAND : 1
NOTES : QPSK
TEST DATE : 12 Jun 2013 08:47:13 R. KING



ELITE ELECTRONIC ENGINEERING Inc.
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UNIT0 RCU EMI RUN 28

| | | | |
|--------------|----------------------|-------------|-------------------------------------|
| UKAI | 04/24/13 | SPEC / TEST | FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | XETAWAVE LLC. | MODEL No. | XETA-4 |
| SERIAL No. | 006 | MODE | Tx & 418MHz |
| SCANS/BAND | 1 | NOTES | 80AM |
| TEST DATE | 12 Jun 2013 08:48:28 | R. KING | |

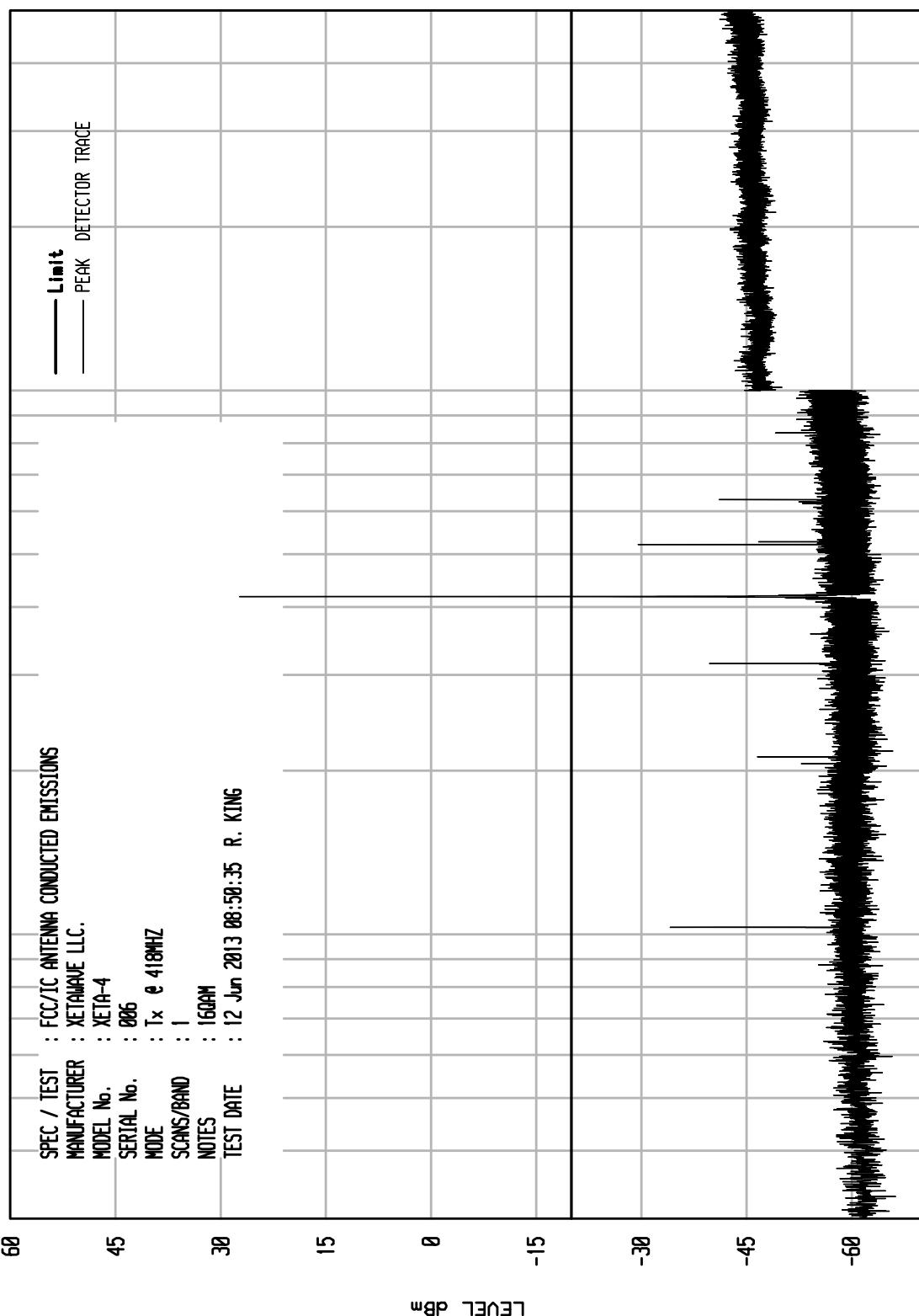


ELITE ELECTRONIC ENGINEERING Inc.
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UNIT 1 RCU EMI RUN 30

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 418MHz
SCANS/BAND : 1
NOTES : 16GBAM
TEST DATE : 12 Jun 2013 08:50:35 R. KING

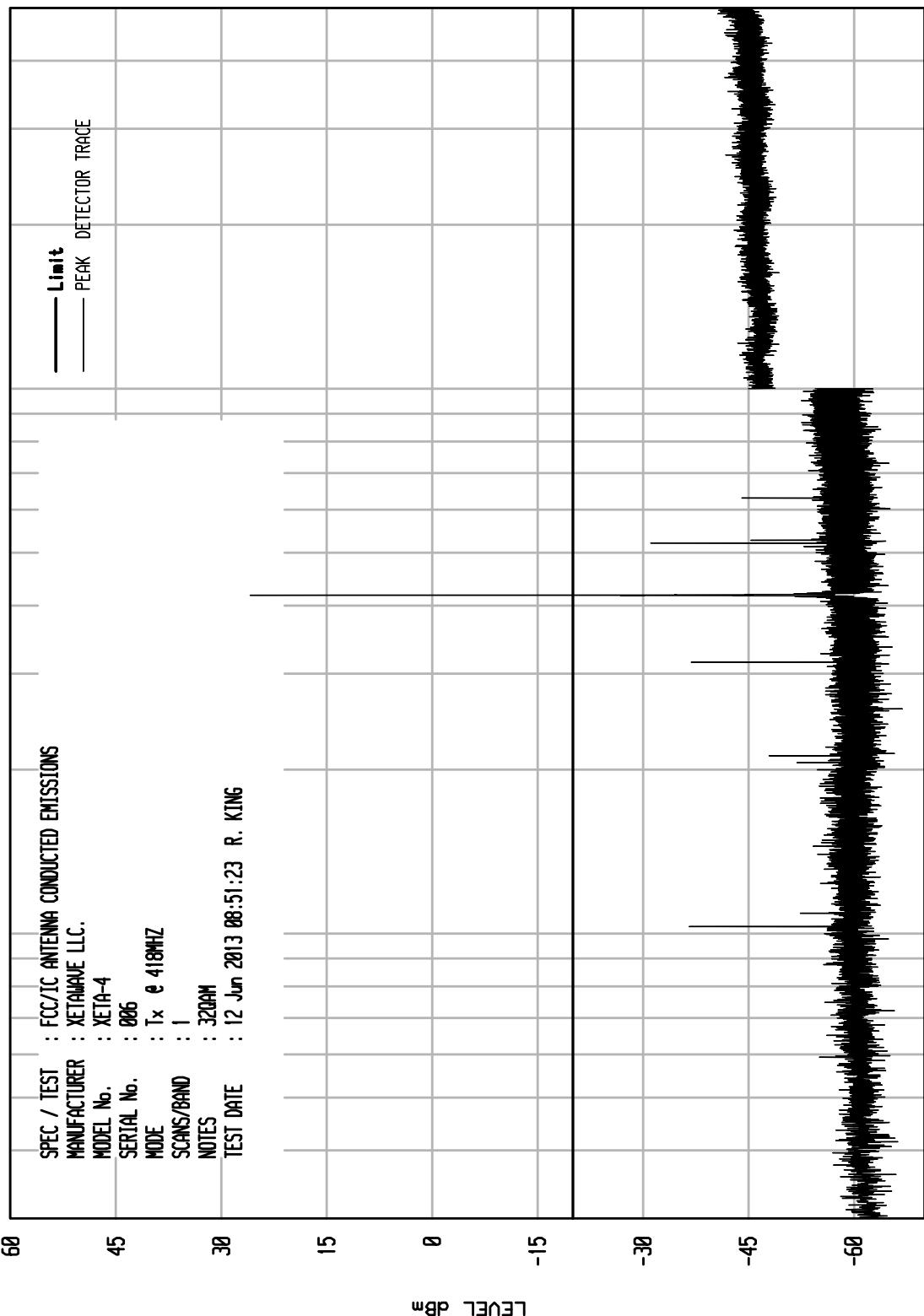


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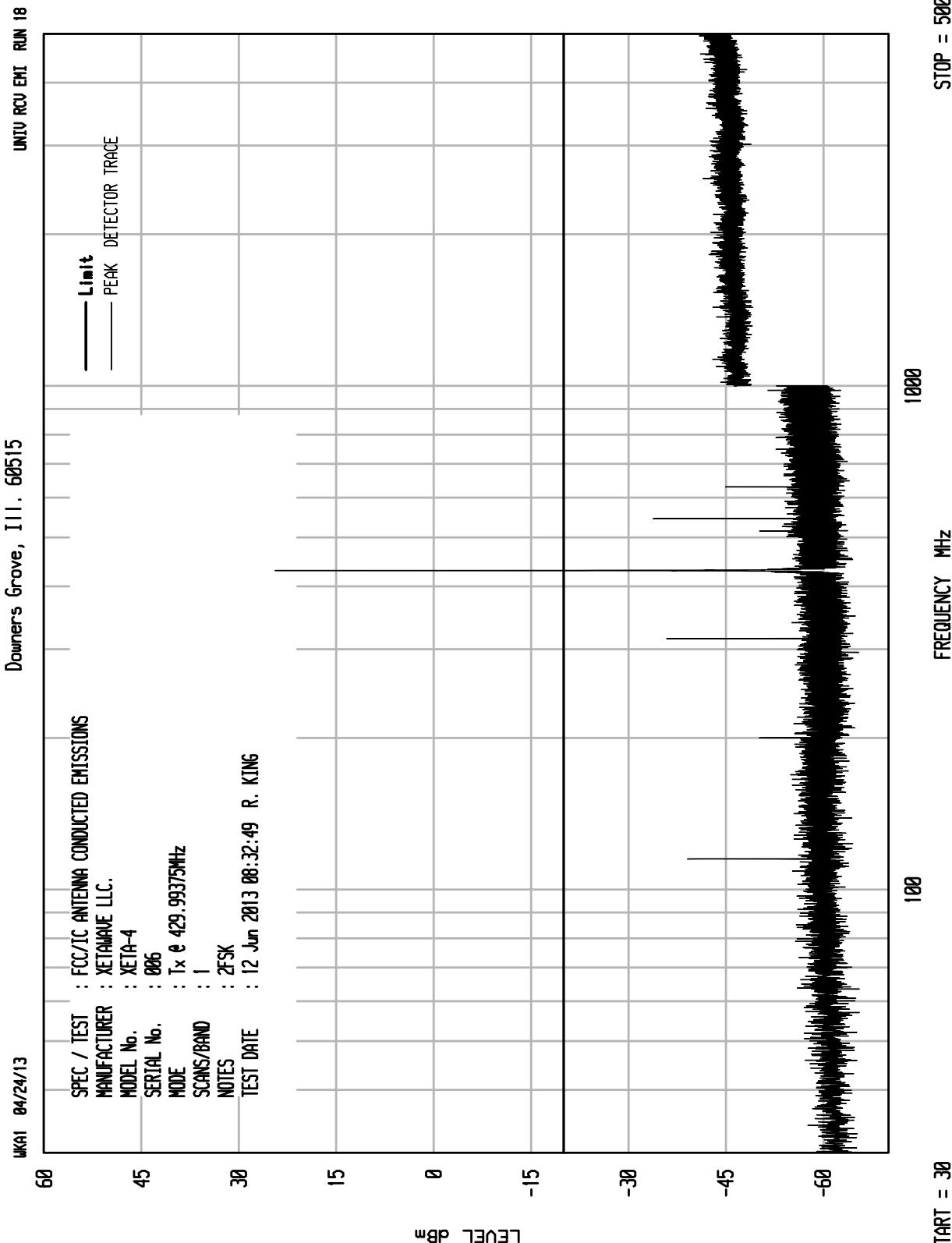
UNIT0 RCU EMI RUN 31

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 418MHz
SCANS/BAND : 1
NOTES : 320AM
TEST DATE : 12 Jun 2013 08:51:23 R. KING



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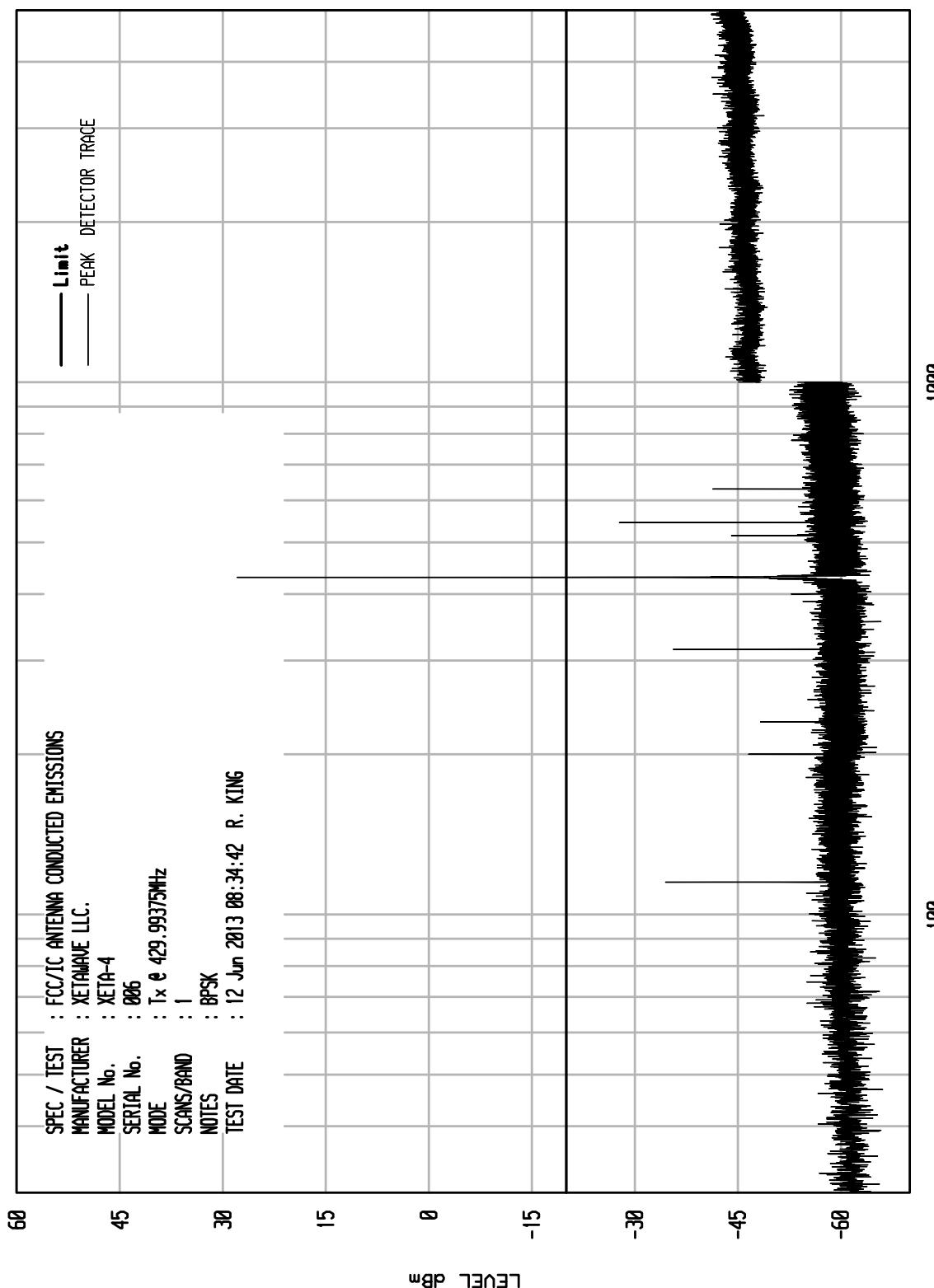


ELITE ELECTRONIC ENGINEERING Inc.
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UNIT0 RCU EMI RUN 19

WKA1 04/24/13

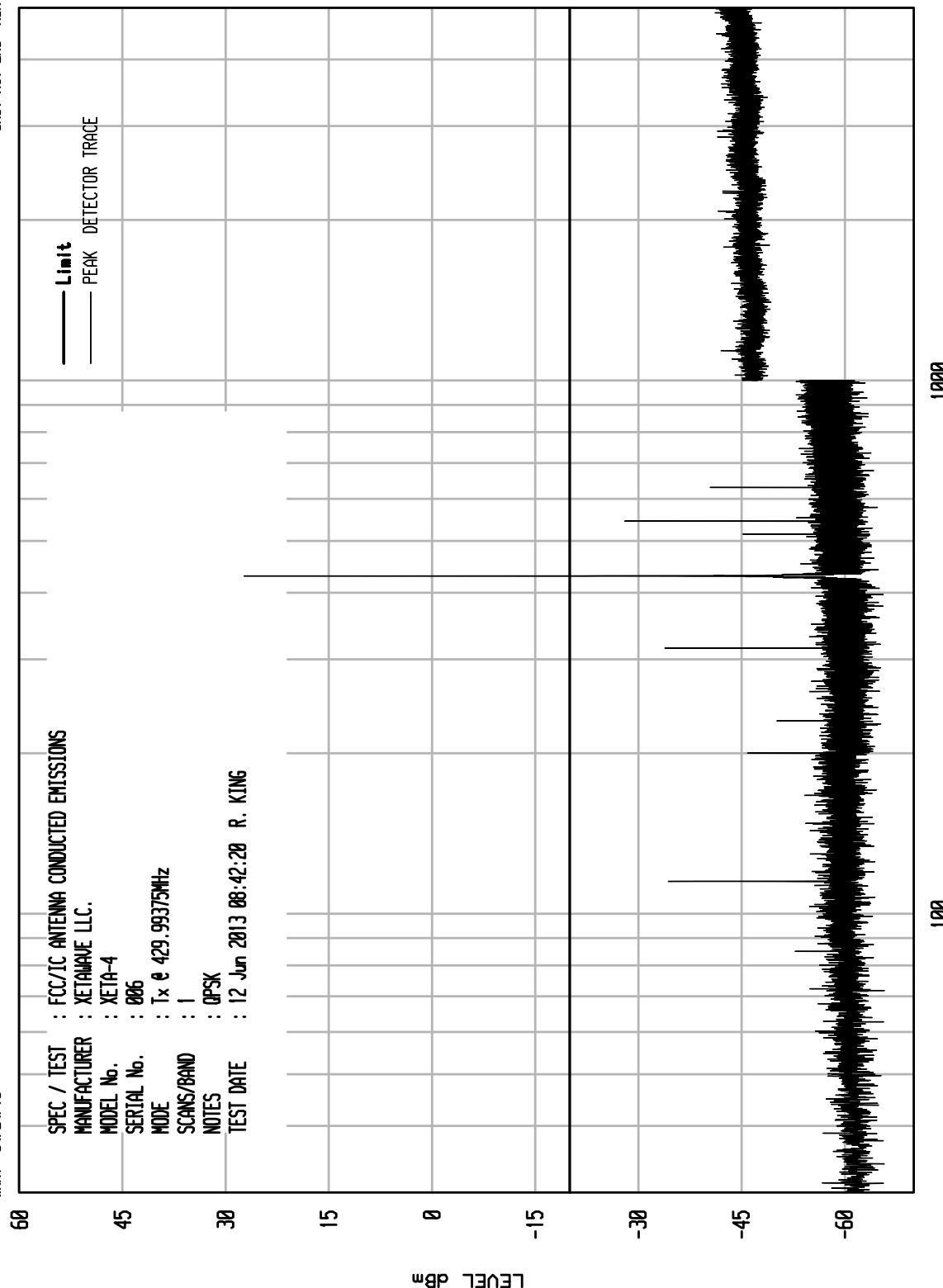
| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & Rx 993.75MHz |
| SCANS/BAND | : 1 |
| NOTES | : BPSK |
| TEST DATE | : 12 Jun 2013 08:34:42 R. KING |



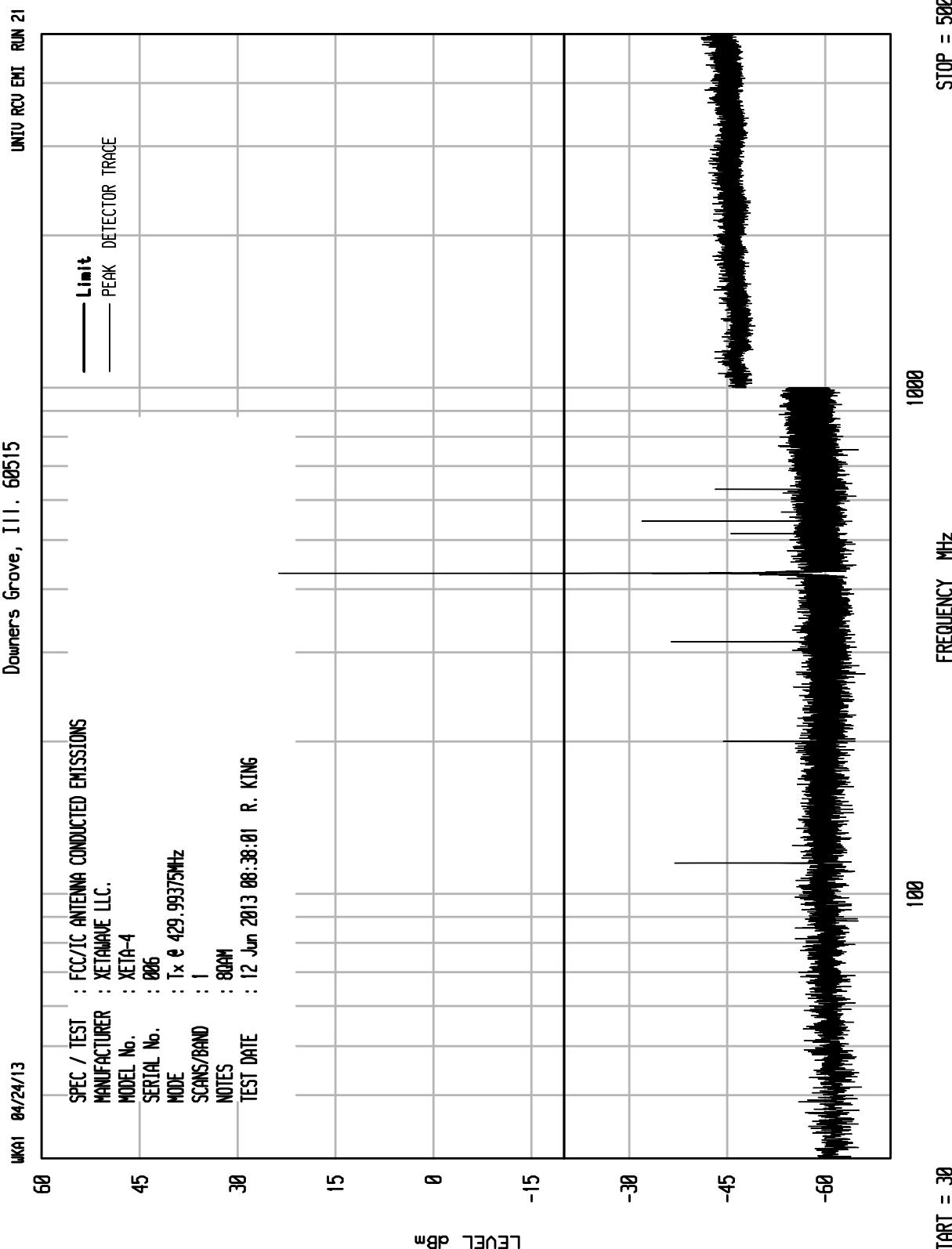
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 24

UKAI 04/24/13
SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 429.99375MHz
SCANS/BAND : 1
NOTES : QPSK
TEST DATE : 12 Jun 2013 08:42:20 R. KING



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UNIT0 RCU EMI RUN 22

| | | | |
|--------------|----------------------|--------------|-------------------------------------|
| UKAI | 04/24/13 | SPEC / TEST | FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | XETAWAVE LLC. | MANUFACTURER | XETAWAVE LLC. |
| MODEL No. | XETA-4 | MODEL No. | XETA-4 |
| SERIAL No. | 006 | SERIAL No. | 006 |
| MODE | Tx & 429.99375MHz | MODE | Tx & 429.99375MHz |
| SCANS/BAND | 1 | SCANS/BAND | 1 |
| NOTES | 16GBN | NOTES | 16GBN |
| TEST DATE | 12 Jun 2013 08:39:31 | TEST DATE | 12 Jun 2013 08:39:31 |
| | R. KING | | R. KING |

60

45

30

15

0

-15

-30

-45

-60

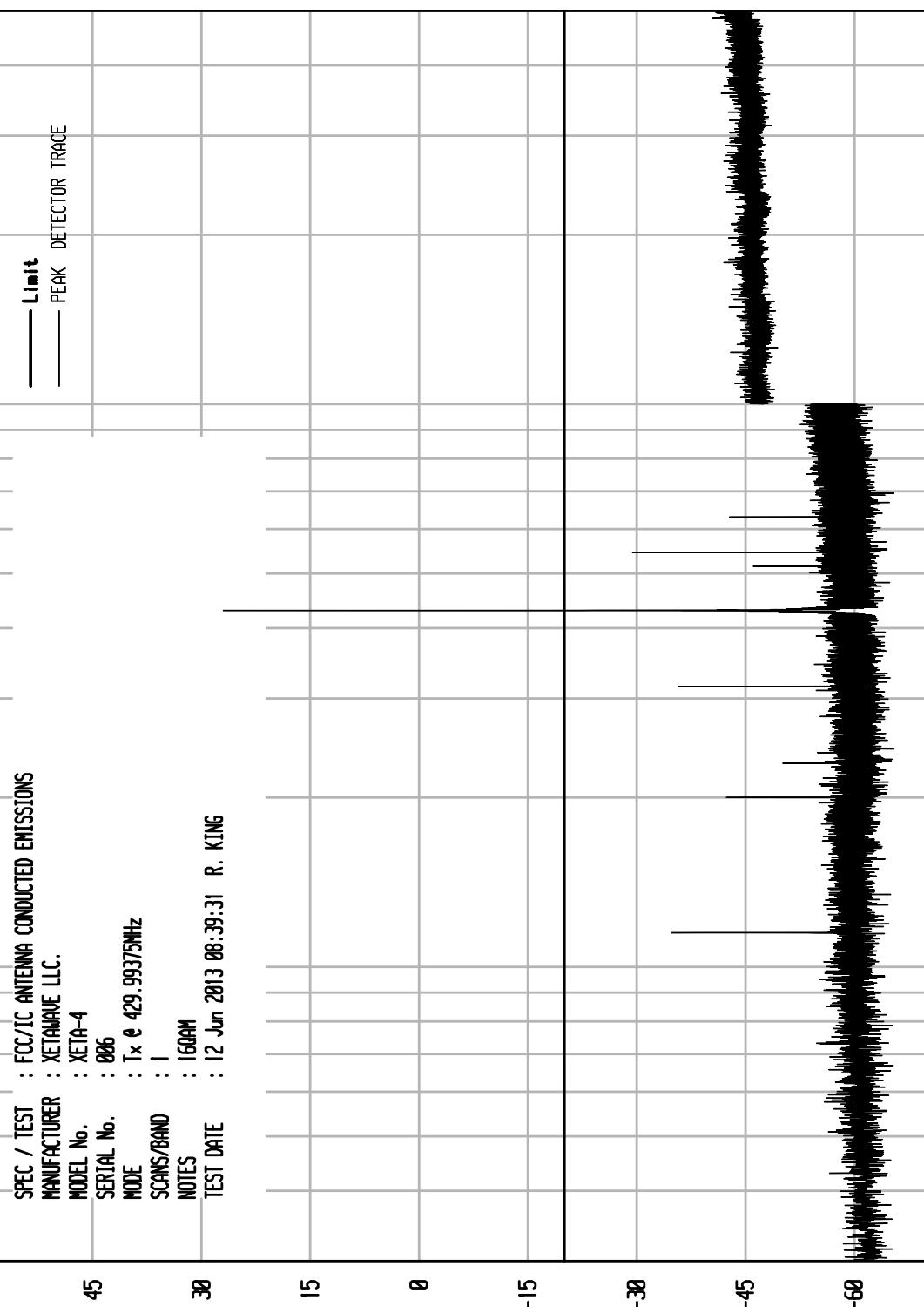
LEVEL dB^m

100

FREQUENCY MHz

1000

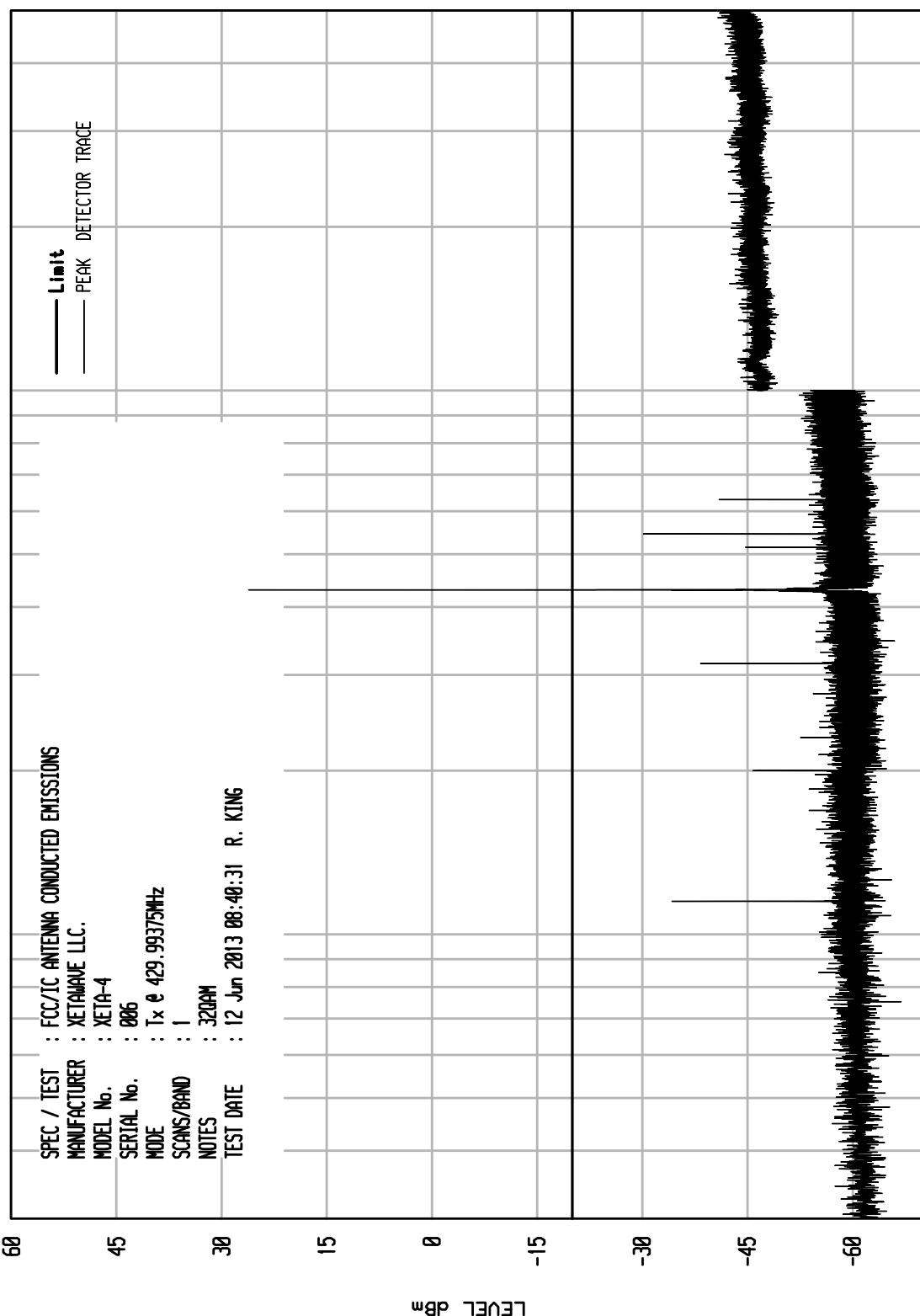
STOP = 5000



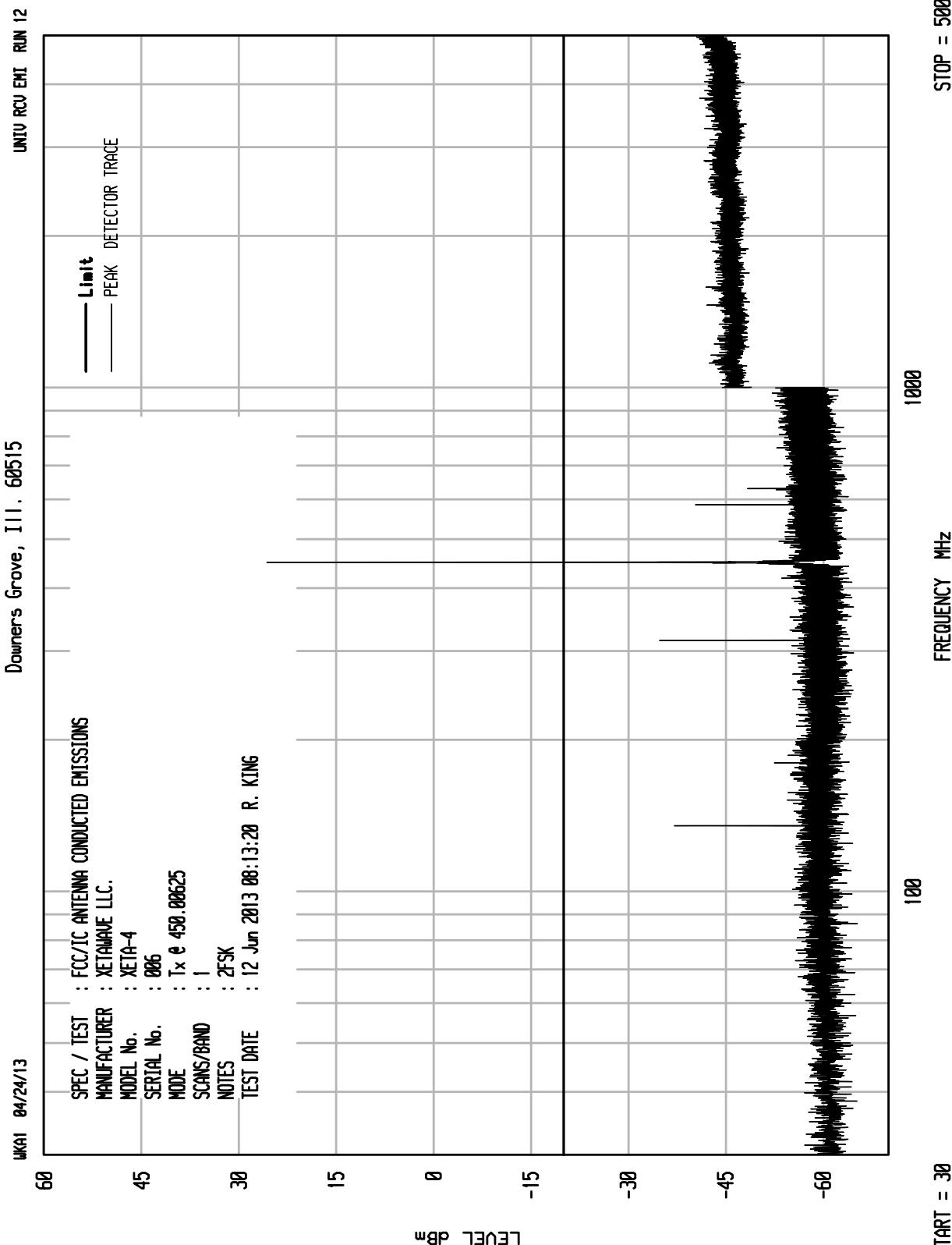
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 23

| | | | |
|--------------|----------------------|-------------|-------------------------------------|
| UKAI | 04/24/13 | SPEC / TEST | FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | XETAWAVE LLC. | MODE | XETA-4 |
| MODEL No. | 006 | SCANS/BAND | Tx @ 429.99375MHz |
| SERIAL No. | 1 | NOTES | 320AM |
| TEST DATE | 12 Jun 2013 08:40:31 | R. KING | |



ELITE ELECTRONIC ENGINEERING Inc.
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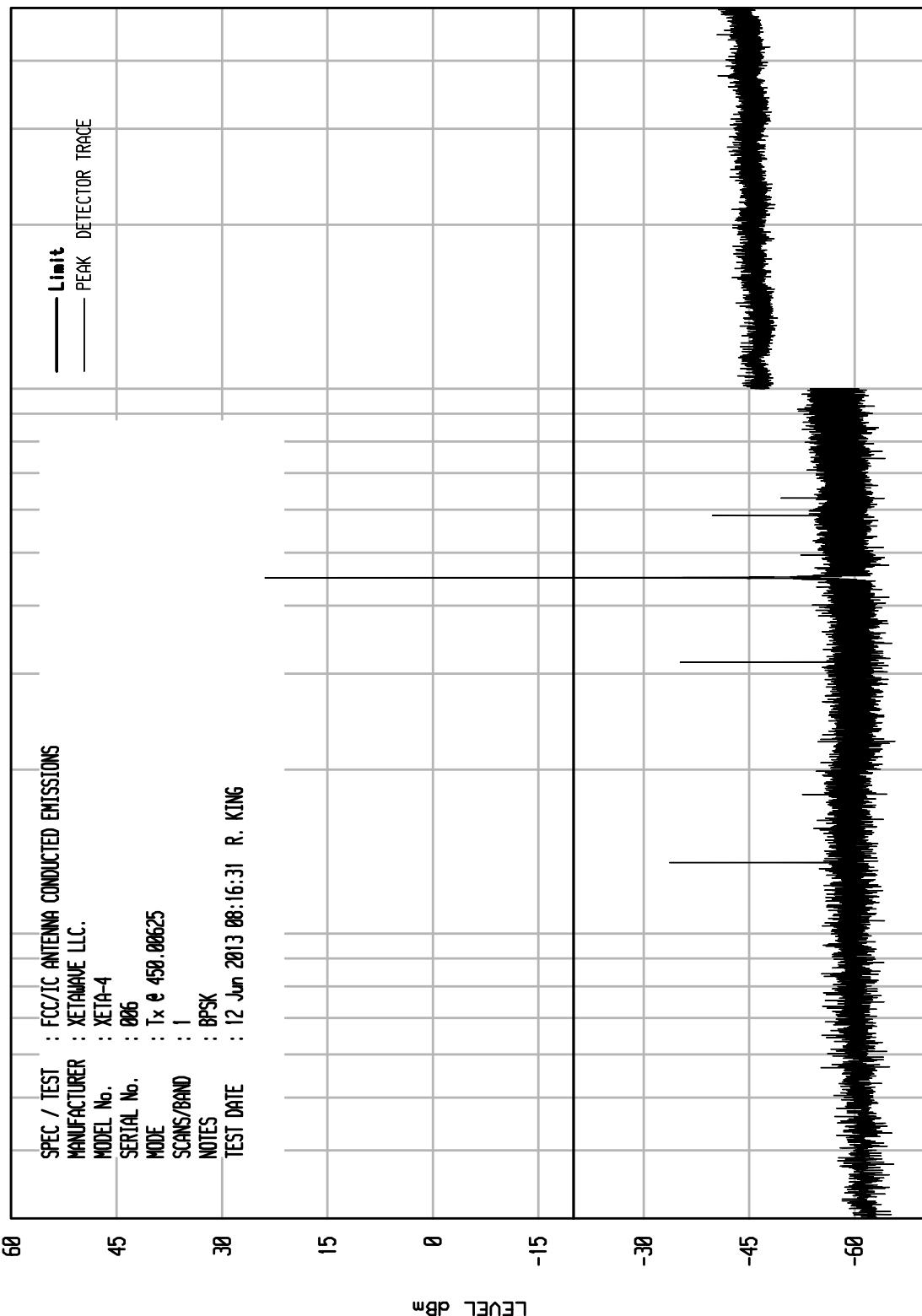


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 13

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 88625
SCANS/BAND : 1
NOTES : BPSK
TEST DATE : 12 Jun 2013 08:16:31 R. KING



START = 30

STOP = 1000

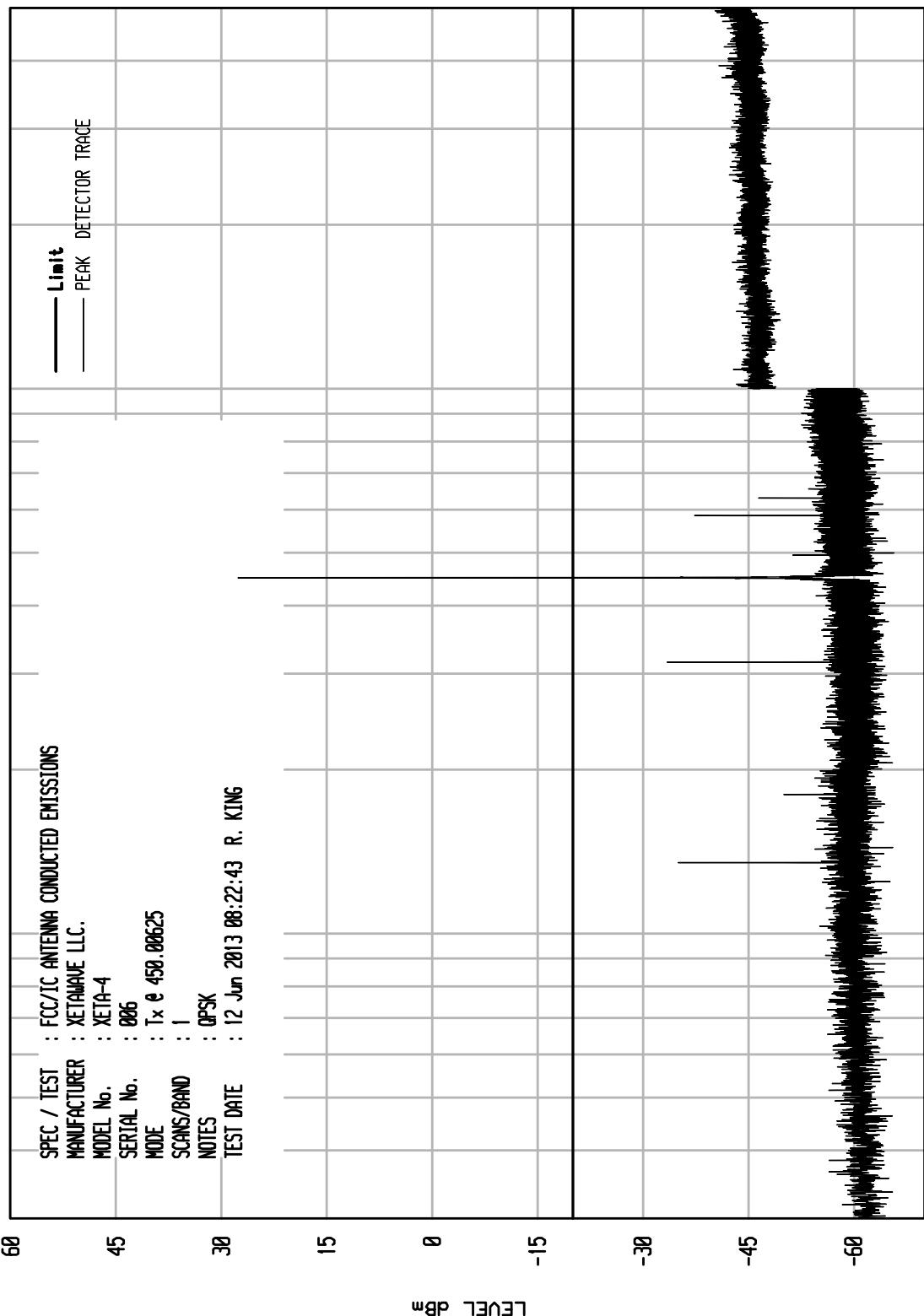
FREQUENCY MHz

ELITE ELECTRONIC ENGINEERING Inc.
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UNITO RCU EMI RUN 14

WKA1 04/24/13

| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & Rx 88625 |
| SCANS/BAND | : 1 |
| NOTES | : QPSK |
| TEST DATE | : 12 Jun 2013 08:22:43 R. KING |



ELITE ELECTRONIC ENGINEERING Inc.

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UNITO RCU EMI RUN 15

WKA1 04/24/13

| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & Rx 88625 |
| SCANS/BAND | : 1 |
| NOTES | : 80AM |
| TEST DATE | : 12 Jun 2013 08:27:24 R. KING |

60

45

30

15

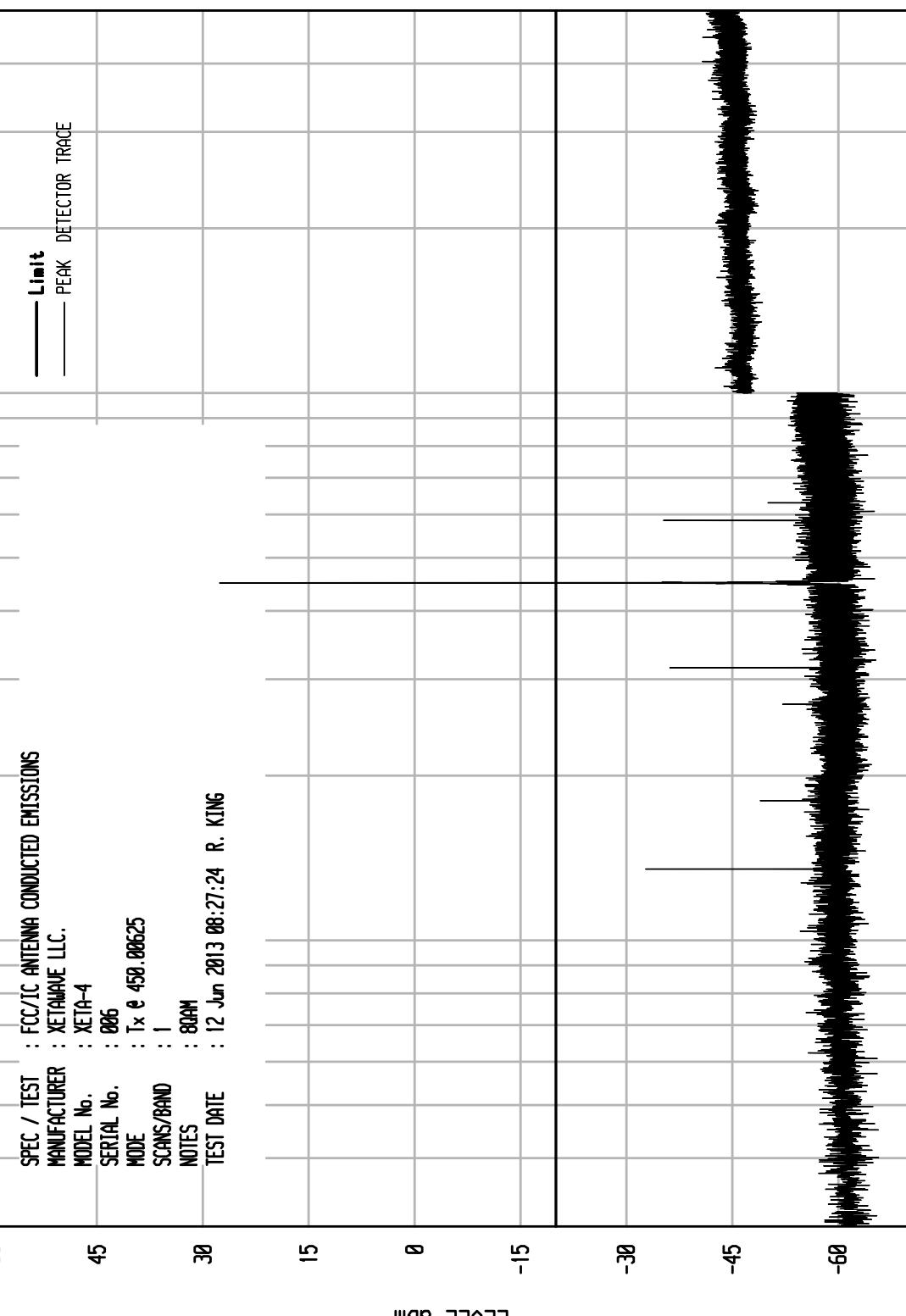
0

-15

-30

-45

-60

LEVEL dB^m

START = 30

100

FREQUENCY MHz

1000

STOP = 5000

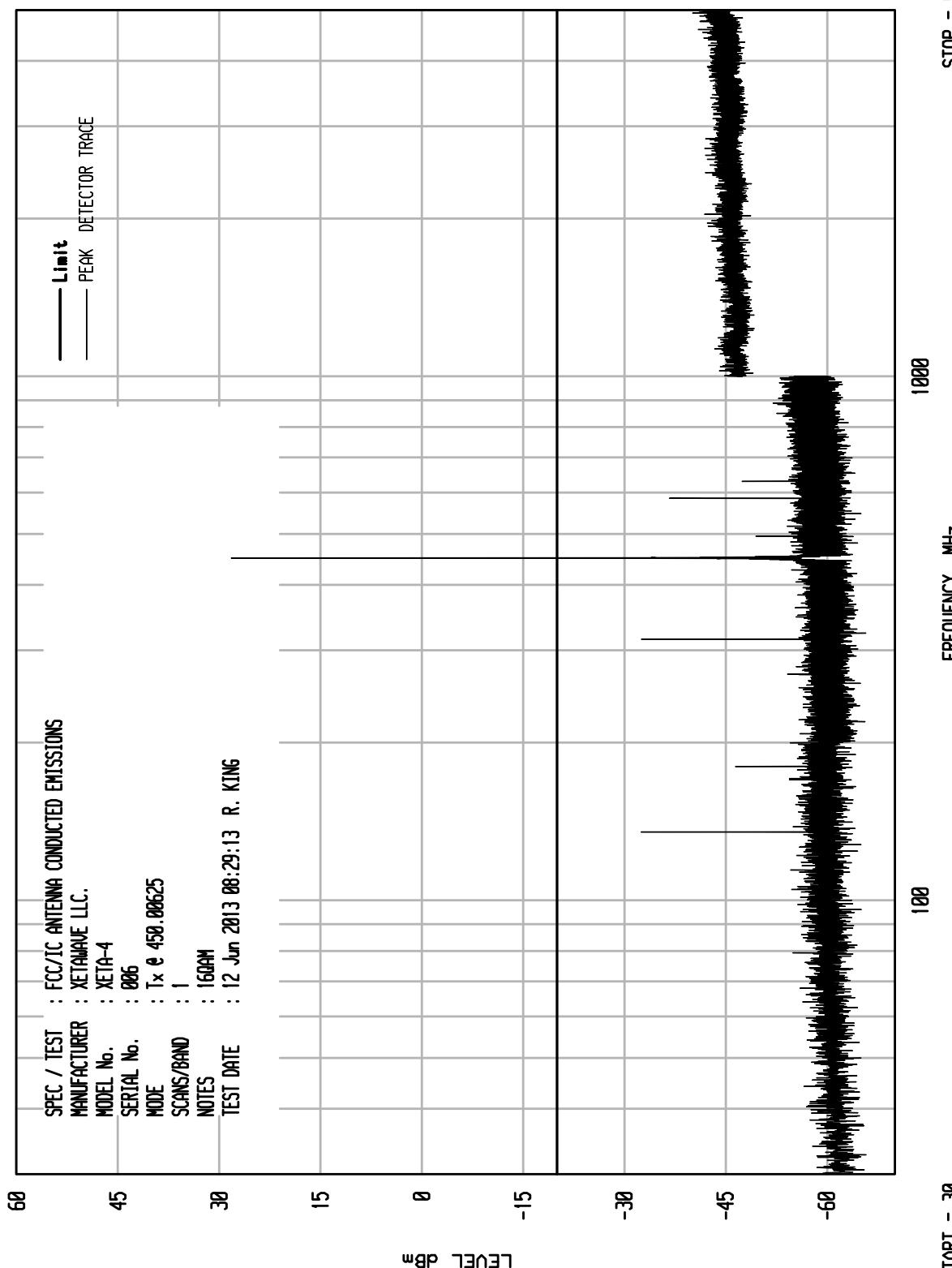
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITO RCU EMI RUN 16

WKA1 04/24/13

| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & Rx 88625 |
| SCANS/BAND | : 1 |
| NOTES | : 160NM |
| TEST DATE | : 12 Jun 2013 08:29:13 R. KING |



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Dummers Grove 111 60515

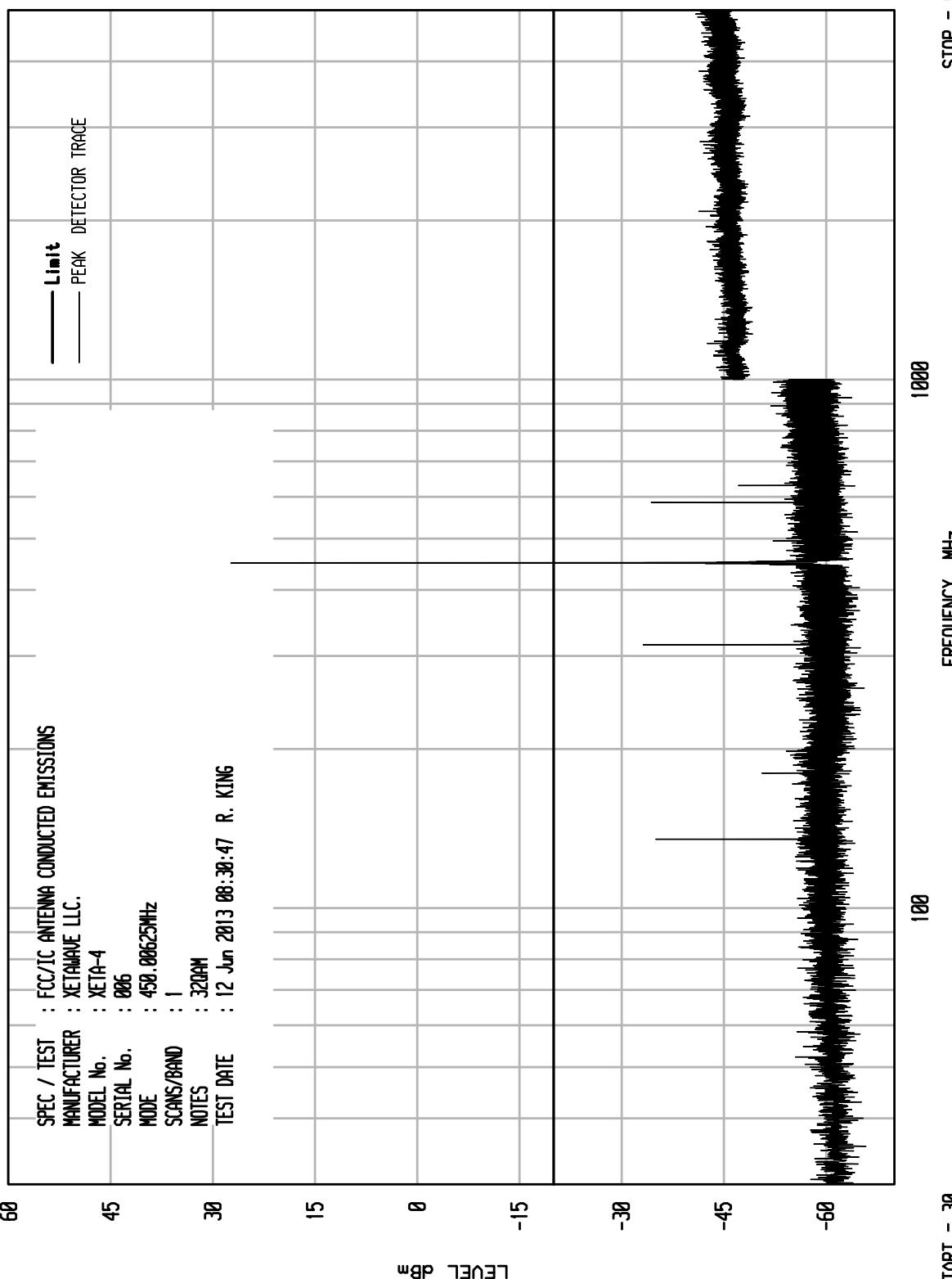
UNIV RCU EMI RUN 17

Downers Grove, Ill. 60515

WKA1 04/24/13

60

| | | | |
|--------------|---------------|------------------------------------|--------------|
| SPEC / TEST | | FCC/IC ANTENNA CONDUCTED EMISSIONS | |
| MANUFACTURER | NETAMATE LLC. | MODEL No. | NETA-4 |
| SERIAL No. | 886 | MODE | 450.88625MHz |
| SCANS/BAND | 1 | NOTES | 320AW |
| TEST DATE | 12 Jun 2013 | 88:38:47 | R. KING |

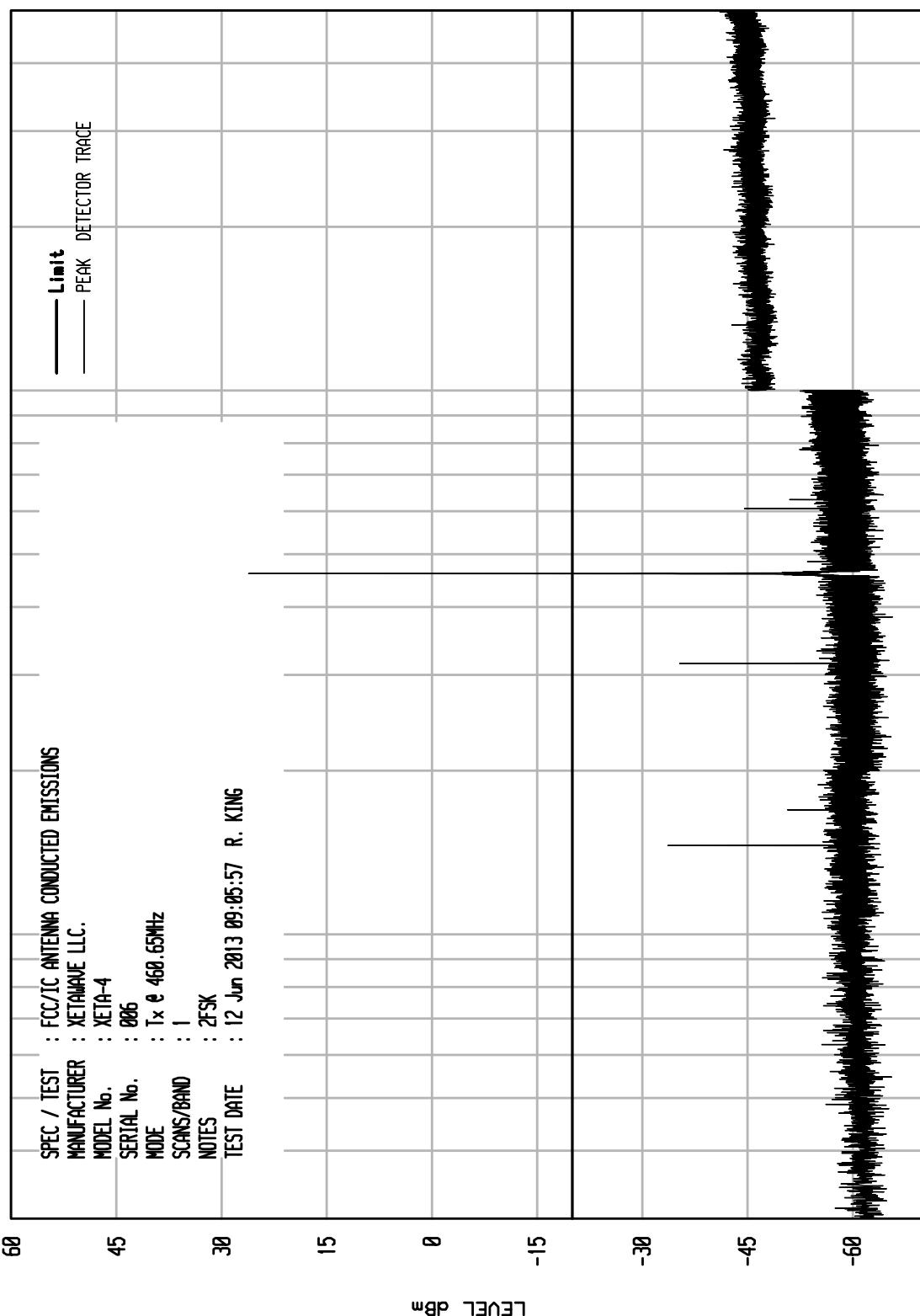


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

UNIT0 RCU EMI RUN 39

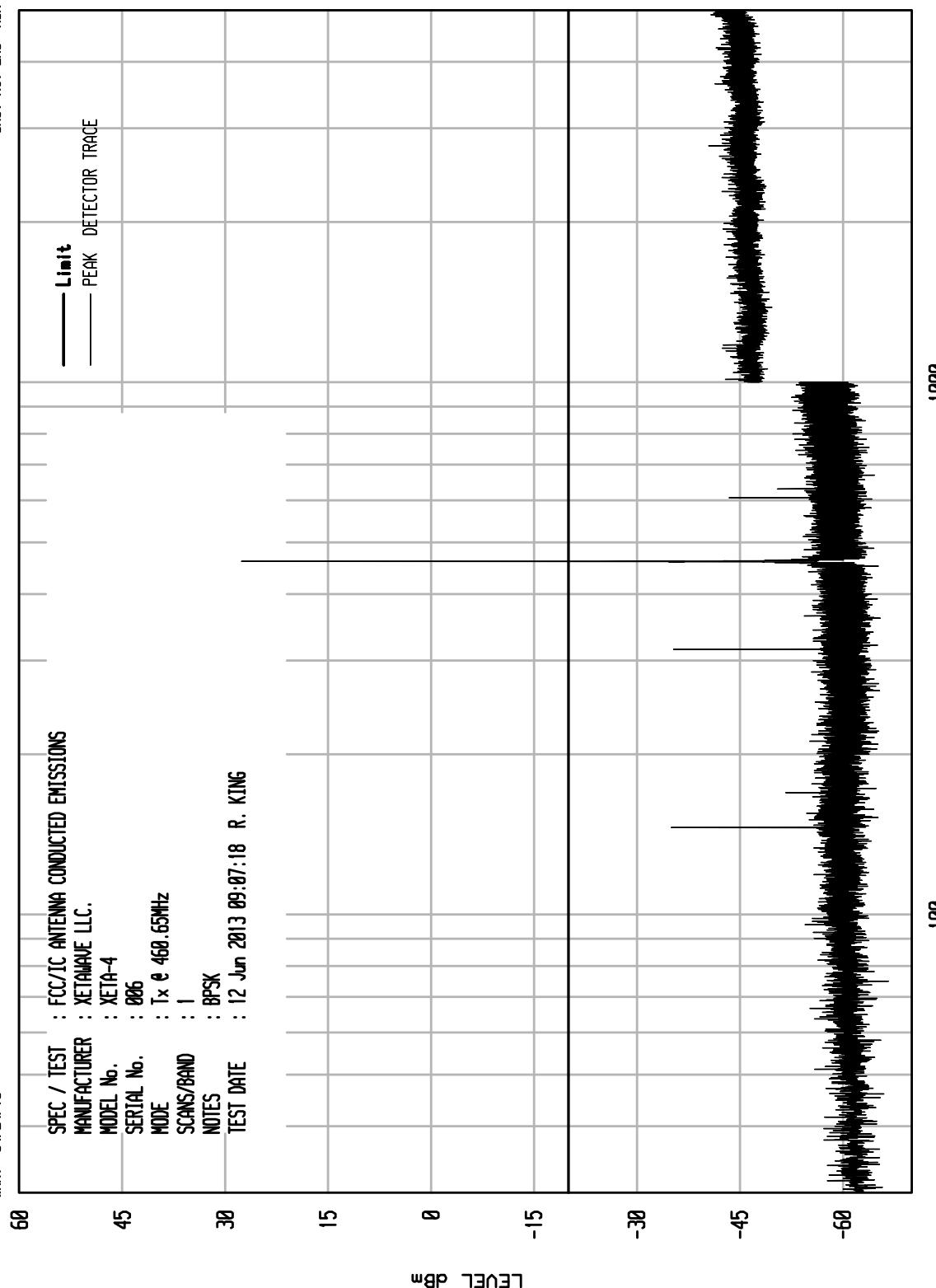
| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & Rx 65MHz |
| SCANS/BAND | : 1 |
| NOTES | : 2FSK |
| TEST DATE | : 12 Jun 2013 09:05:57 R. KING |



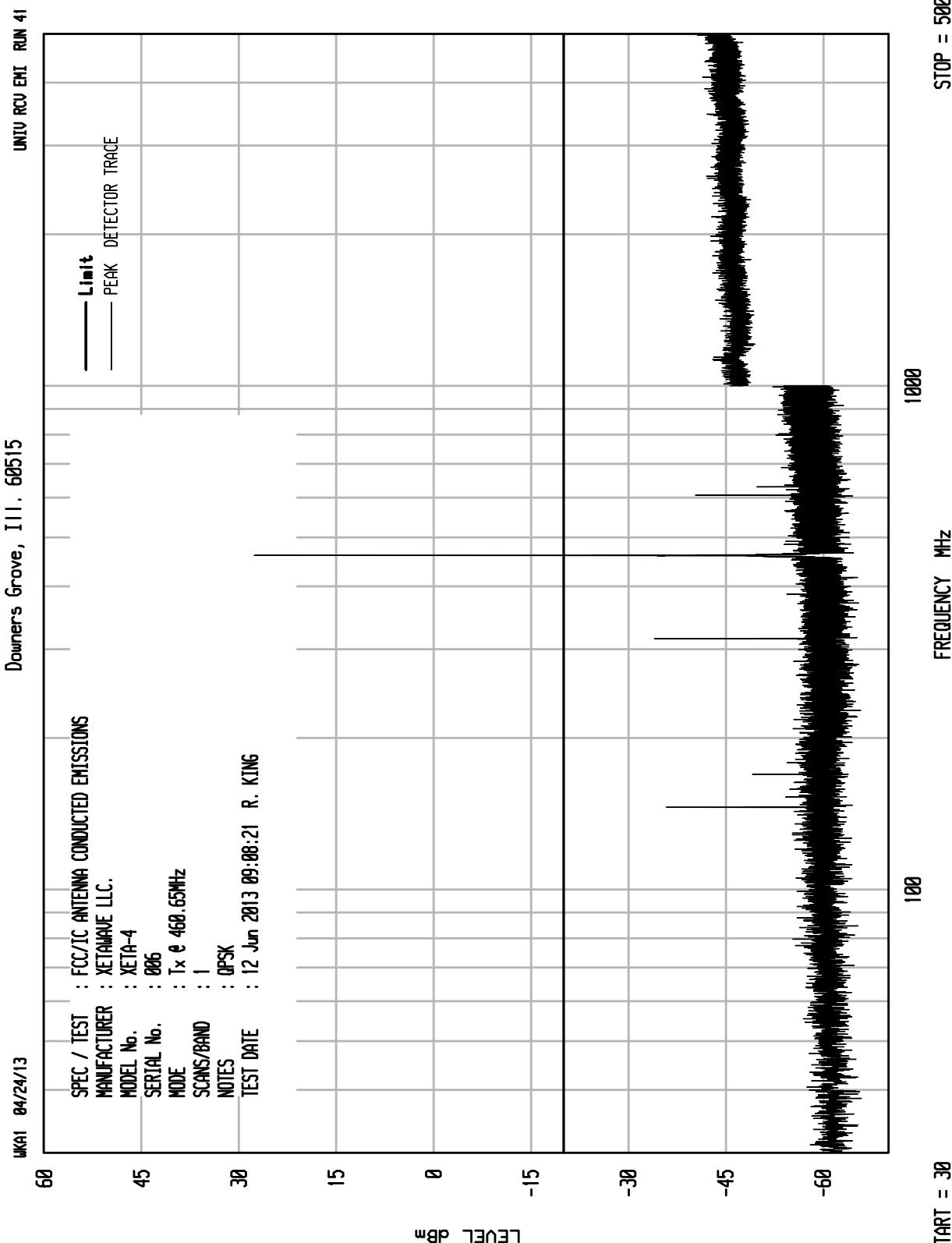
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 40

UKAI 04/24/13
SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 65MHz
SCANS/BAND : 1
NOTES : BPSK
TEST DATE : 12 Jun 2013 09:07:18 R. KING



ELITE ELECTRONIC ENGINEERING Inc.
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ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT0 RCU EMI RUN 42

| | | | |
|--------------|----------------------|-------------|-------------------------------------|
| UKAI | 04/24/13 | SPEC / TEST | FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | XETAWAVE LLC. | TEST | XETAWAVE LLC. |
| MODEL No. | XETA-4 | | |
| SERIAL No. | 006 | | |
| MODE | Tx & 480.65MHz | | |
| SCANS/BAND | 1 | | |
| NOTES | 80AM | | |
| TEST DATE | 12 Jun 2013 09:09:48 | R. KING | |

60

45

30

15

LEVEL dB^m

0

-15

-30

-45

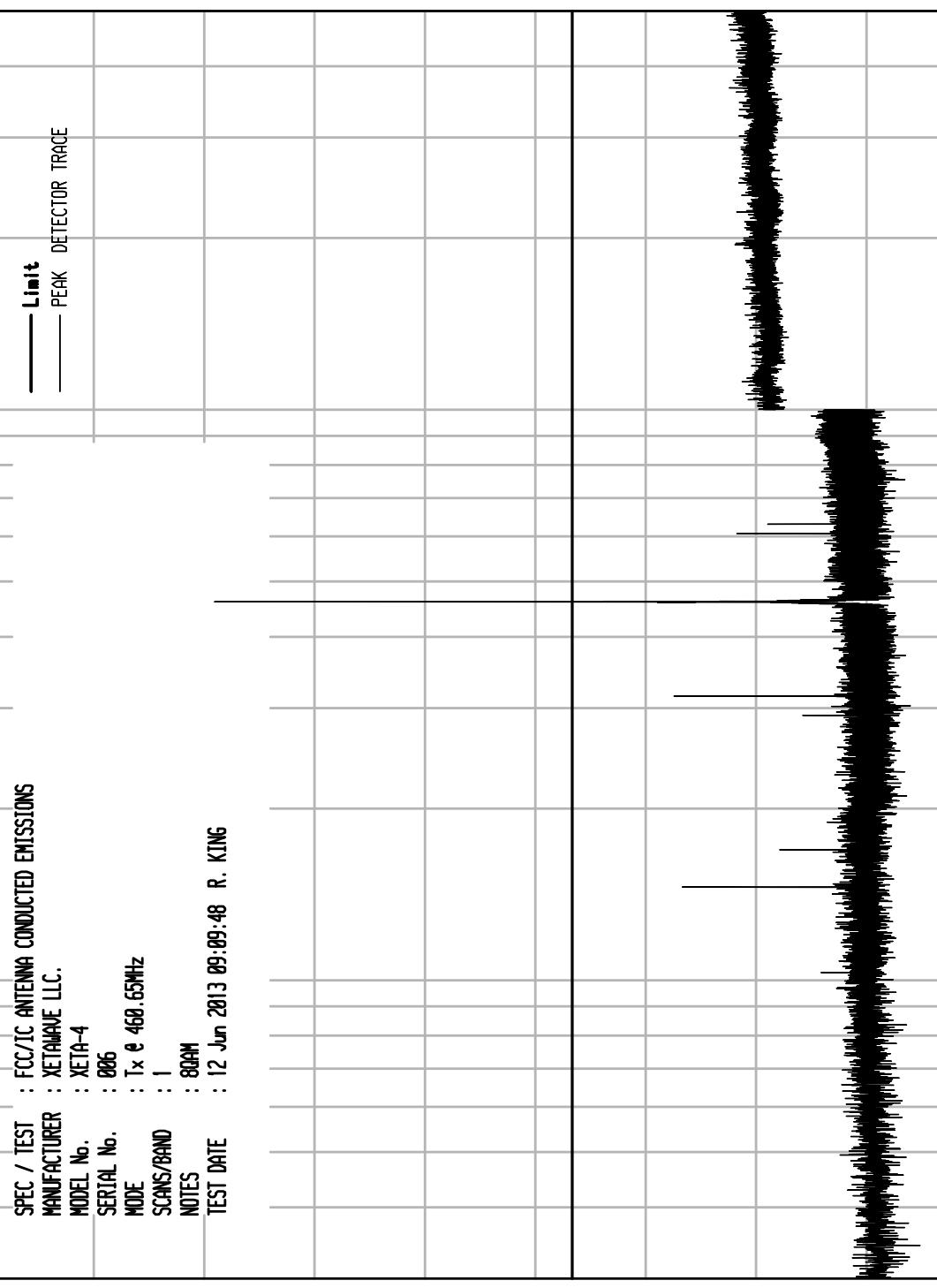
-60

100

FREQUENCY MHz

1000

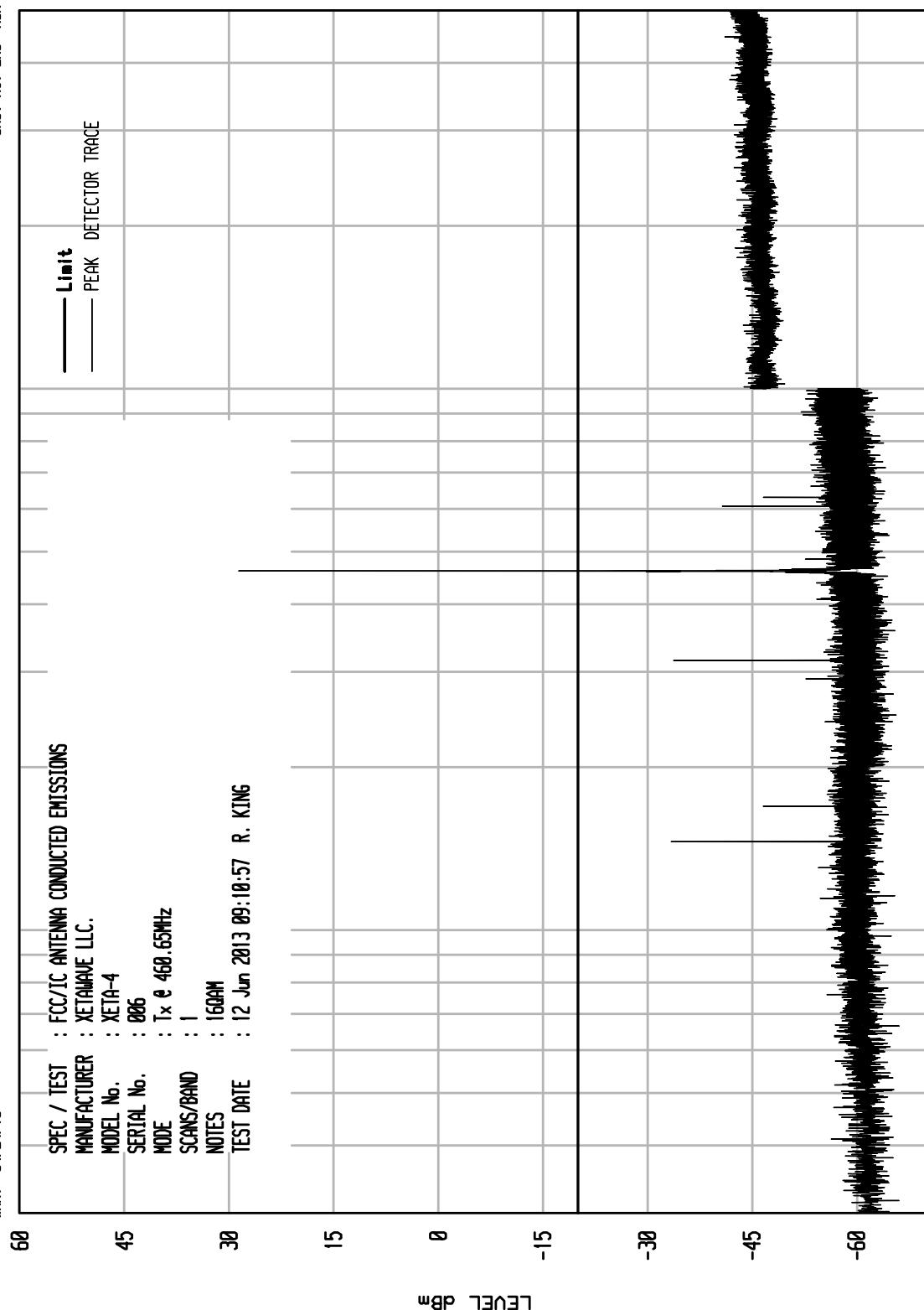
STOP = 5000



ELITE ELECTRONIC ENGINEERING Inc.
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UNIT0 RCU EMI RUN 43

| | | | |
|--------------|----------------------|-------------|-------------------------------------|
| UKAI | 04/24/13 | SPEC / TEST | FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | XETAWAVE LLC. | MODEL No. | XETA-4 |
| SERIAL No. | 006 | MODE | Tx & 480.65MHz |
| SCANS/BAND | 1 | NOTES | 16GBAM |
| TEST DATE | 12 Jun 2013 09:10:57 | R. KING | |



ELITE ELECTRONIC ENGINEERING Inc.
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UNIT0 RCU EMI RUN 44

WKA1 04/24/13

| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & Rx 65MHz |
| SCANS/BAND | : 1 |
| NOTES | : 320AM |
| TEST DATE | : 12 Jun 2013 09:12:14 R. KING |

60

45

30

15

0

-15

-30

-45

-60

LEVEL dB^m

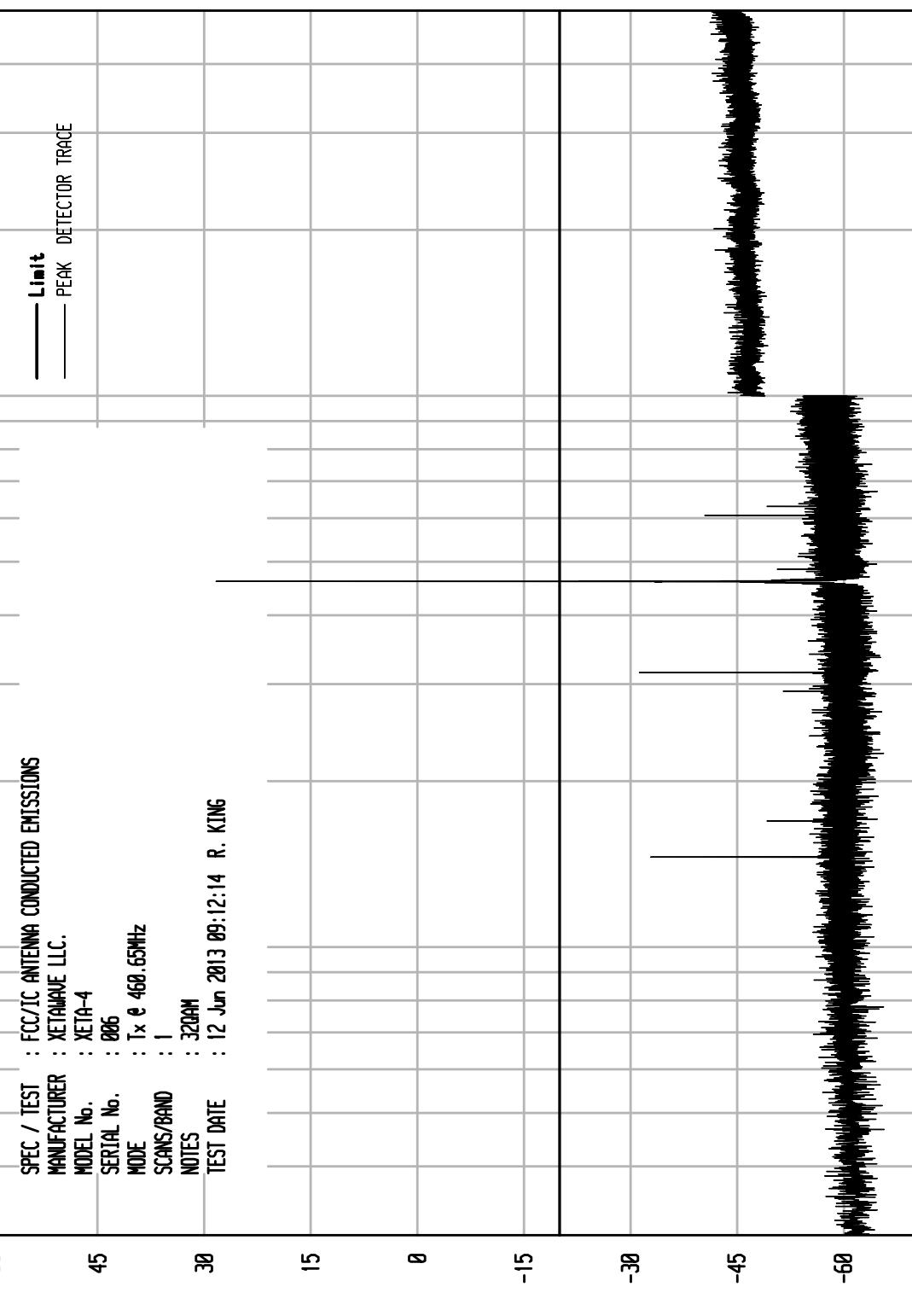
START = 30

100

FREQUENCY MHz

1000

STOP = 5000

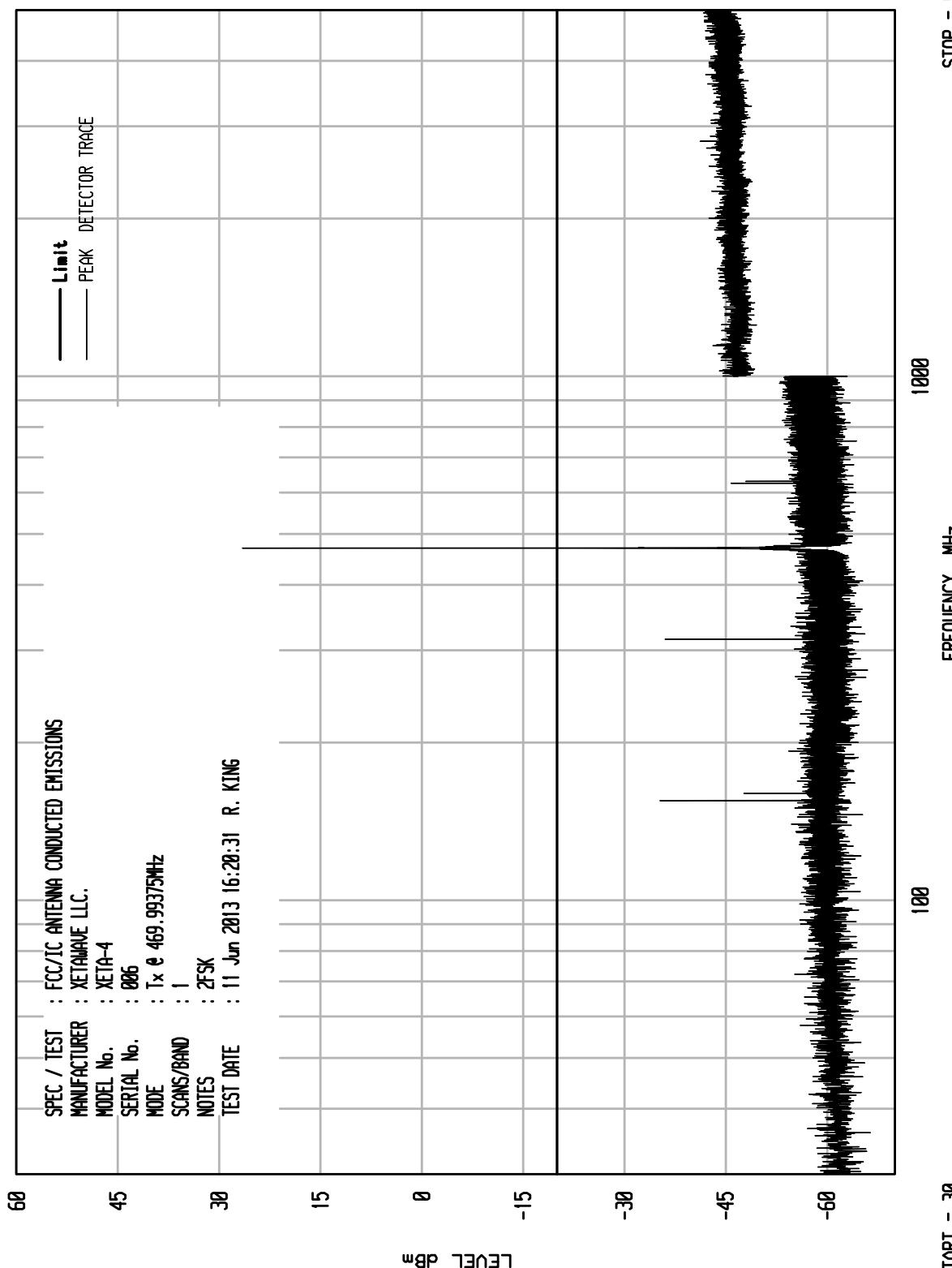


ELITE ELECTRONIC ENGINEERING Inc.
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UNIT0 RCU EMI RUN 11

WKA1 04/24/13

| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & 469.99375MHz |
| SCANS/BAND | : 1 |
| NOTES | : 2FSK |
| TEST DATE | : 11 Jun 2013 16:20:31 R. KING |

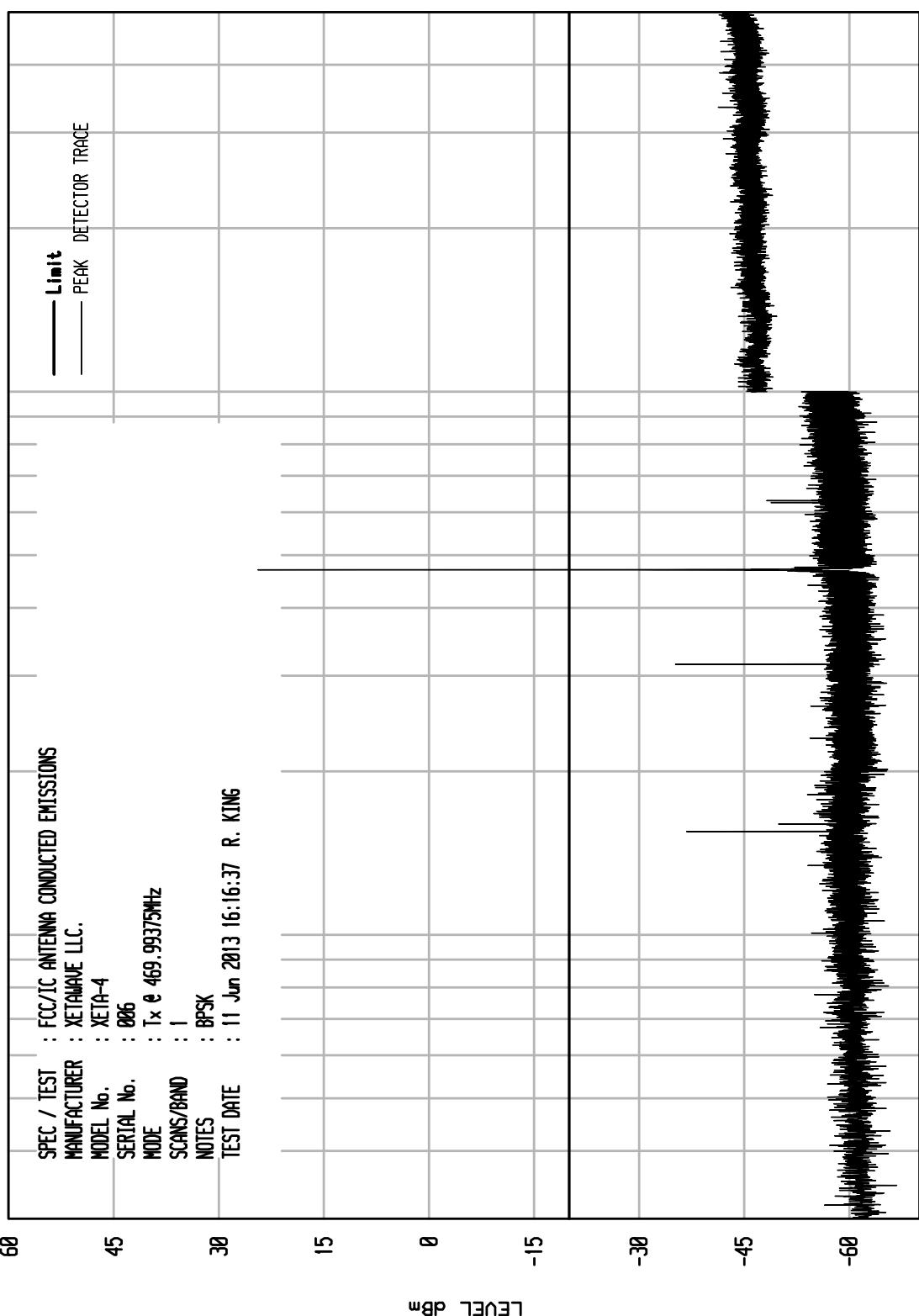


ELITE ELECTRONIC ENGINEERING Inc.
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UNIT 1 RCU EMI RUN 9

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 469.99375MHz
SCANS/BAND : 1
NOTES : BPSK
TEST DATE : 11 Jun 2013 16:16:37 R. KING



START = 30

100

FREQUENCY MHz

1000

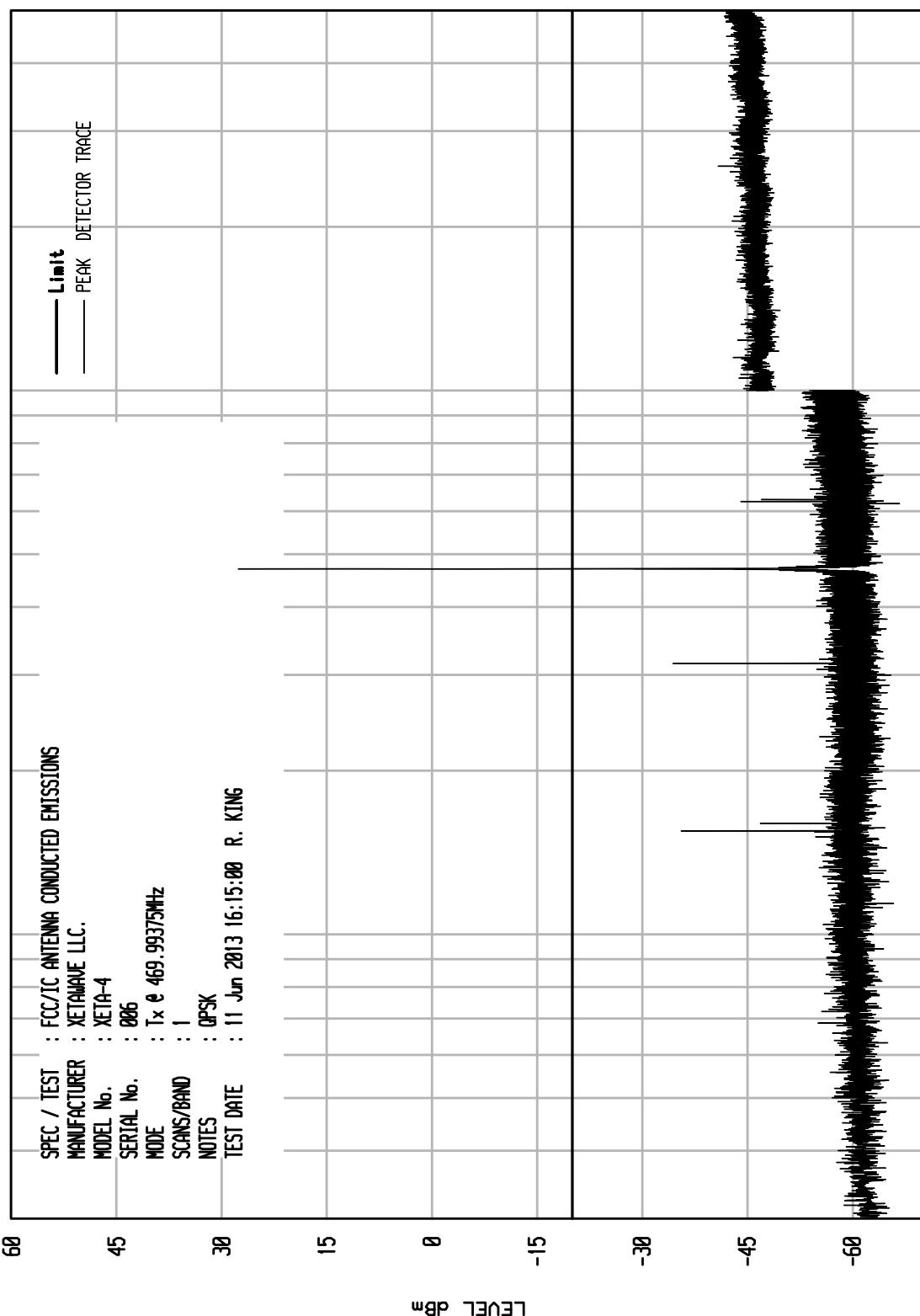
STOP = 5000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

UNIT0 RCU EMI RUN 8

| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & 469.99375MHz |
| SCANS/BAND | : 1 |
| NOTES | : QPSK |
| TEST DATE | : 11 Jun 2013 16:15:00 R. KING |



START = 30

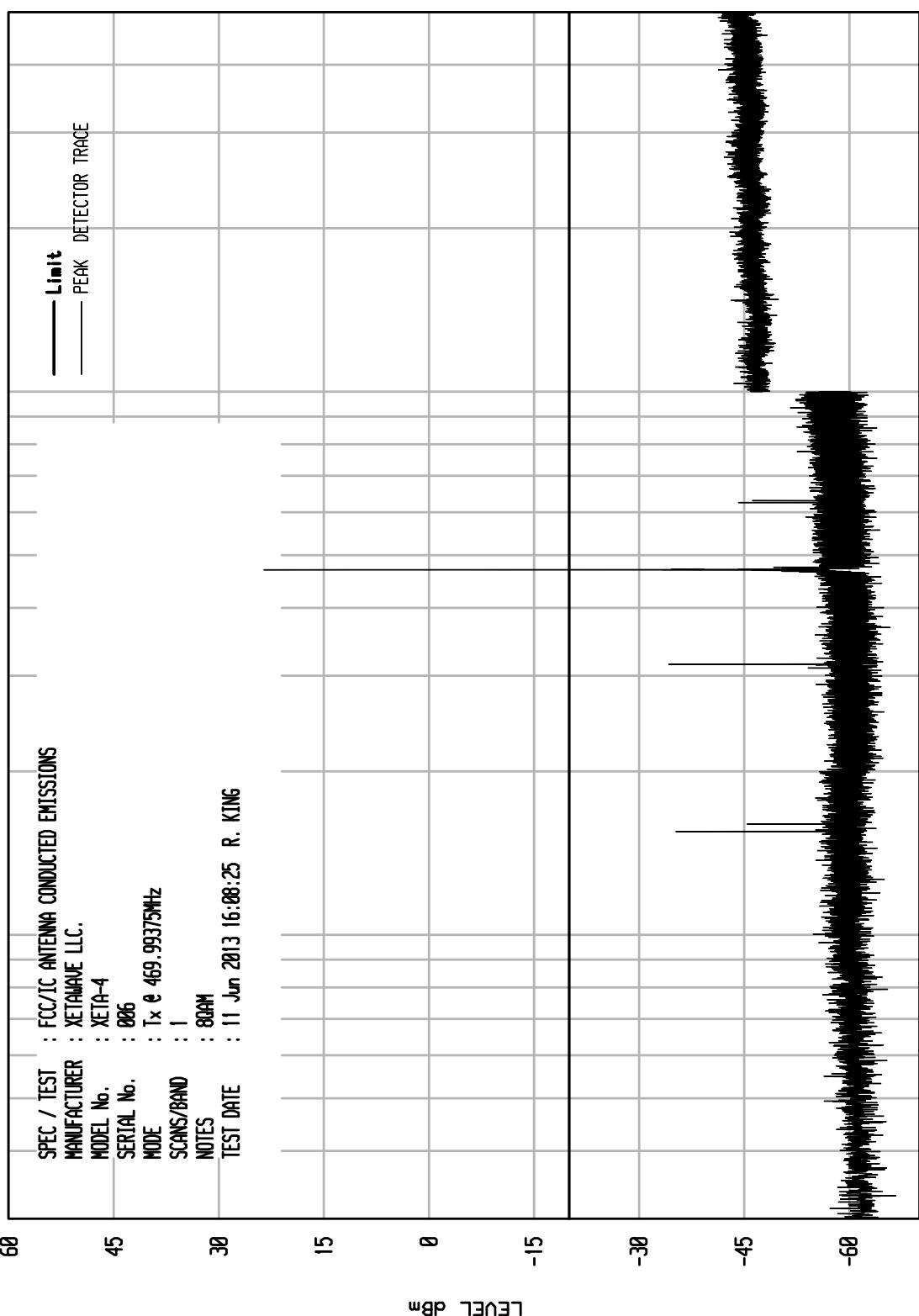
STOP = 5000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITO RCU EMI RUN 6

WKA1 04/24/13

SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 469.99375MHz
SCANS/BAND : 1
NOTES : 80AM
TEST DATE : 11 Jun 2013 16:08:25 R. KING



START = 30

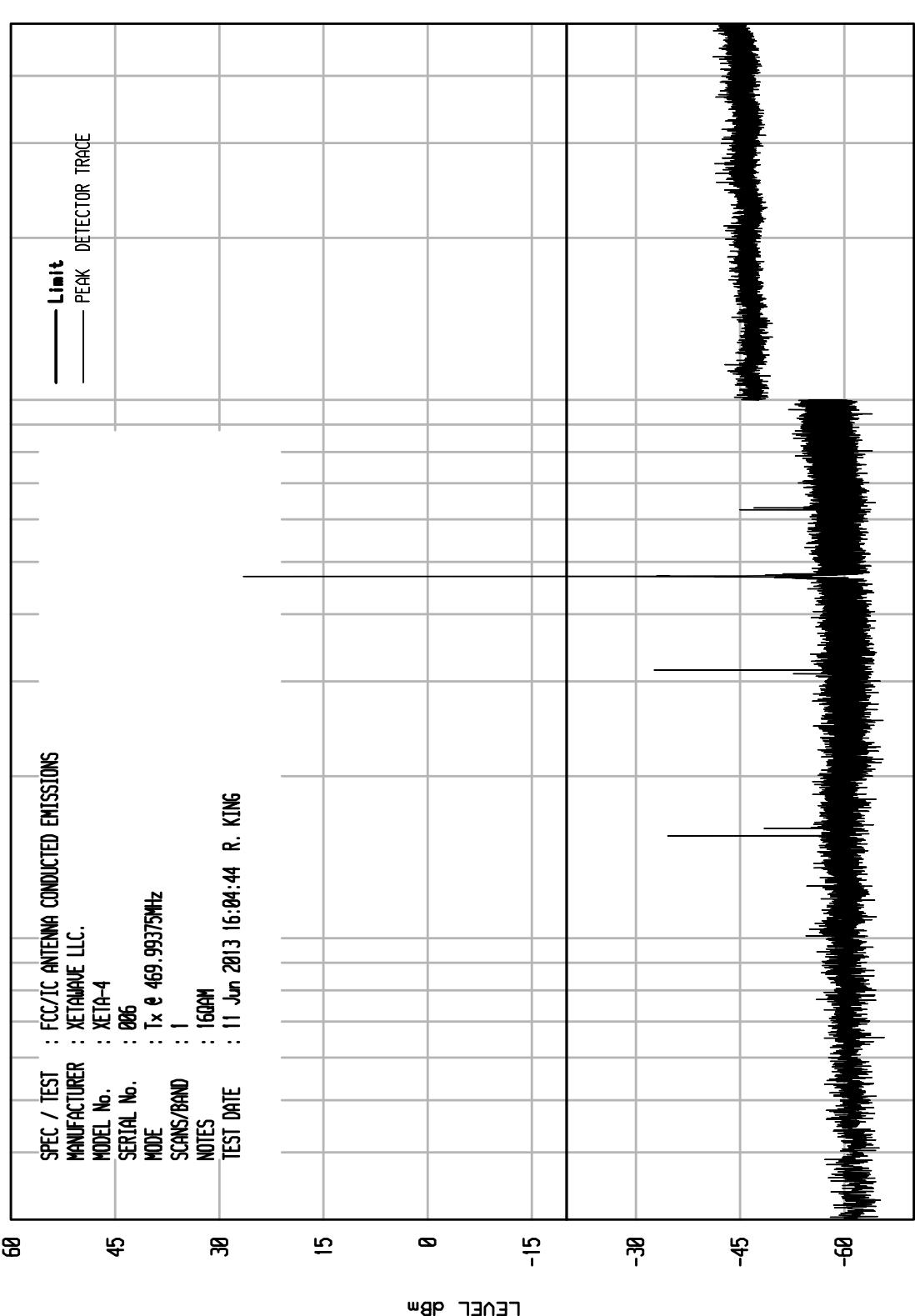
1000

FREQUENCY MHz

STOP = 5000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13
SPEC / TEST : FCC/TIC ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 469.99375MHz
SCANS/BAND : 1
NOTES : 16dBm
TEST DATE : 11 Jun 2013 16:04:44 R. KING

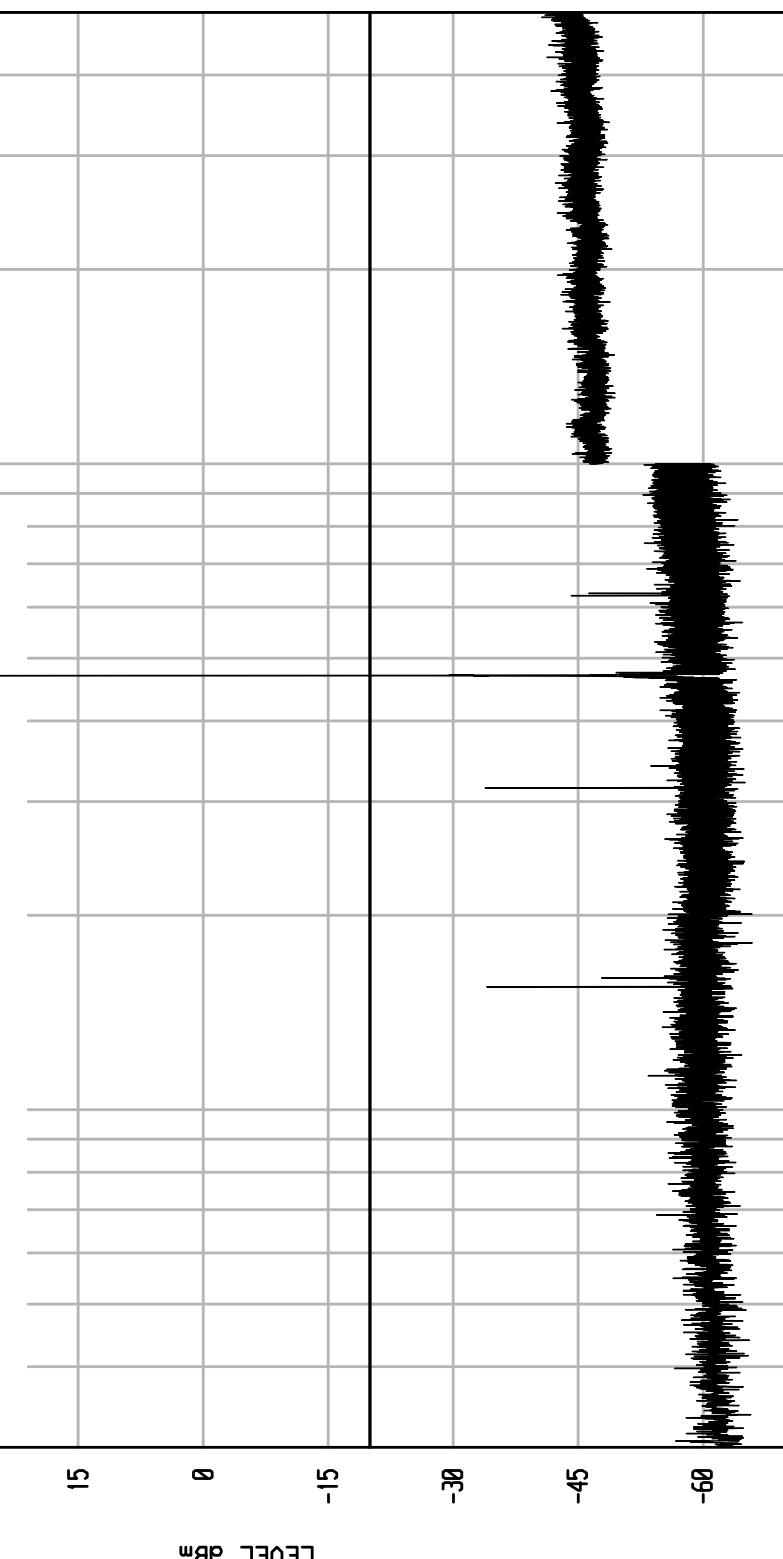


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

LEVEL dBm

| | |
|--------------|---------------------------------------|
| SPEC / TEST | : FCC/TIC ANTENNA CONDUCTED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx & 469.99375MHz |
| SCANS/BAND | : 1 |
| NOTES | : 320AM |
| TEST DATE | : 11 Jun 2013 16:07:12 R. KING |



START = 30

STOP = 1000

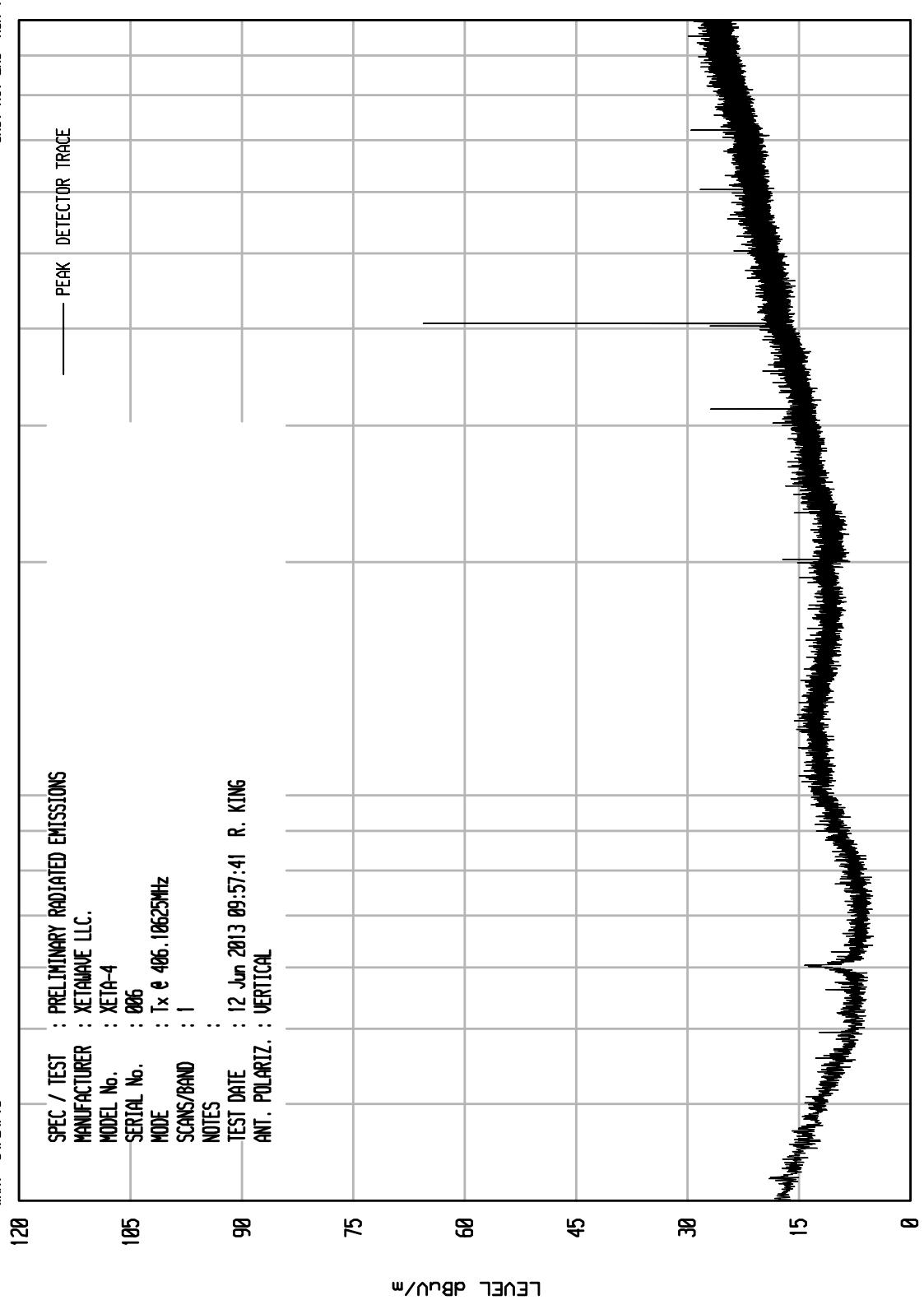
FREQUENCY MHz

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

UNIT0 RCU EMI RUN 1

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 10625MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 09:57:41 R. KING
ANT. POLARIZ. : VERTICAL

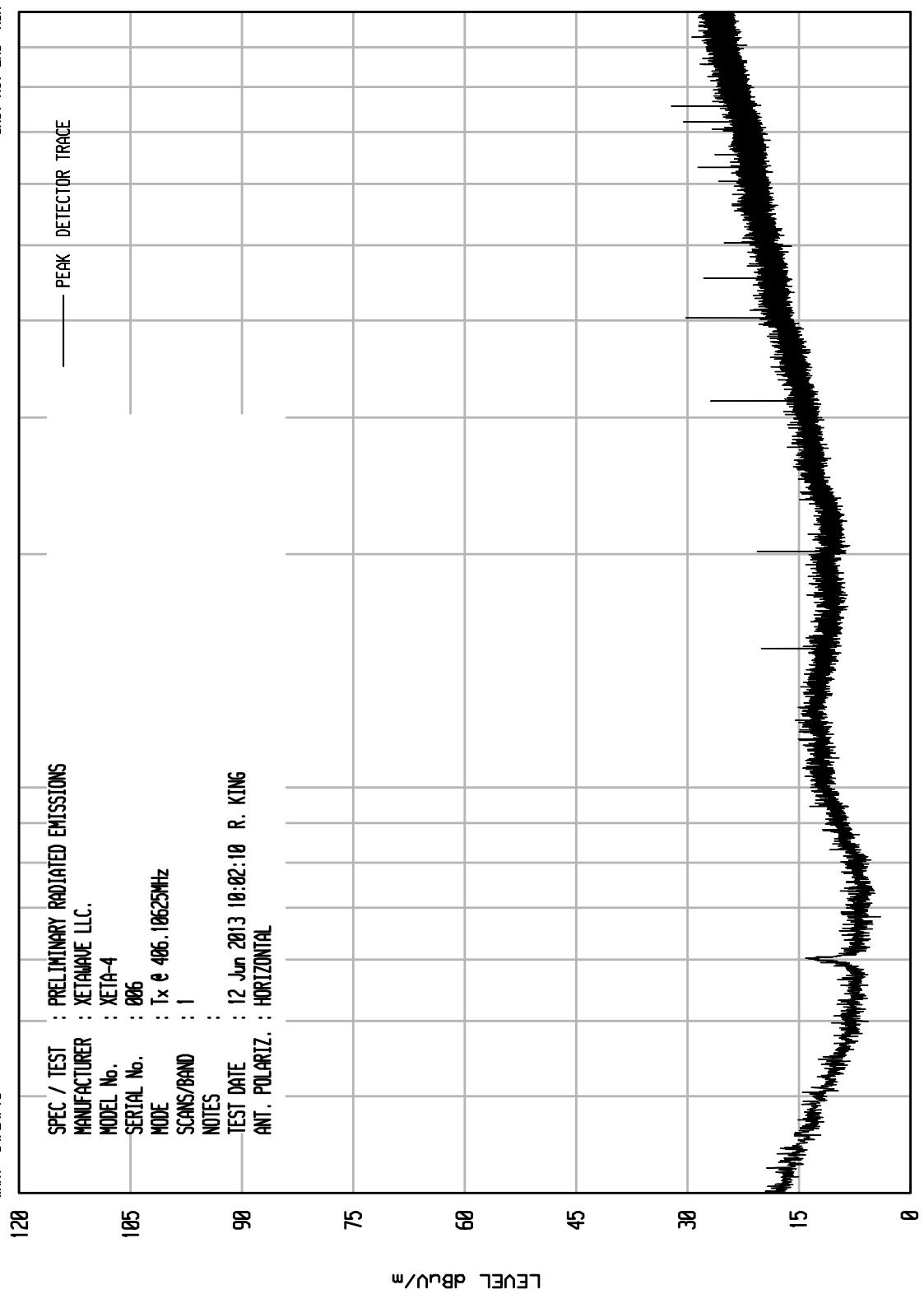


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 10625MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:02:10 R. KING
ANT. POLARIZ. : HORIZONTAL

UNIT0 RCU EMI RUN 2



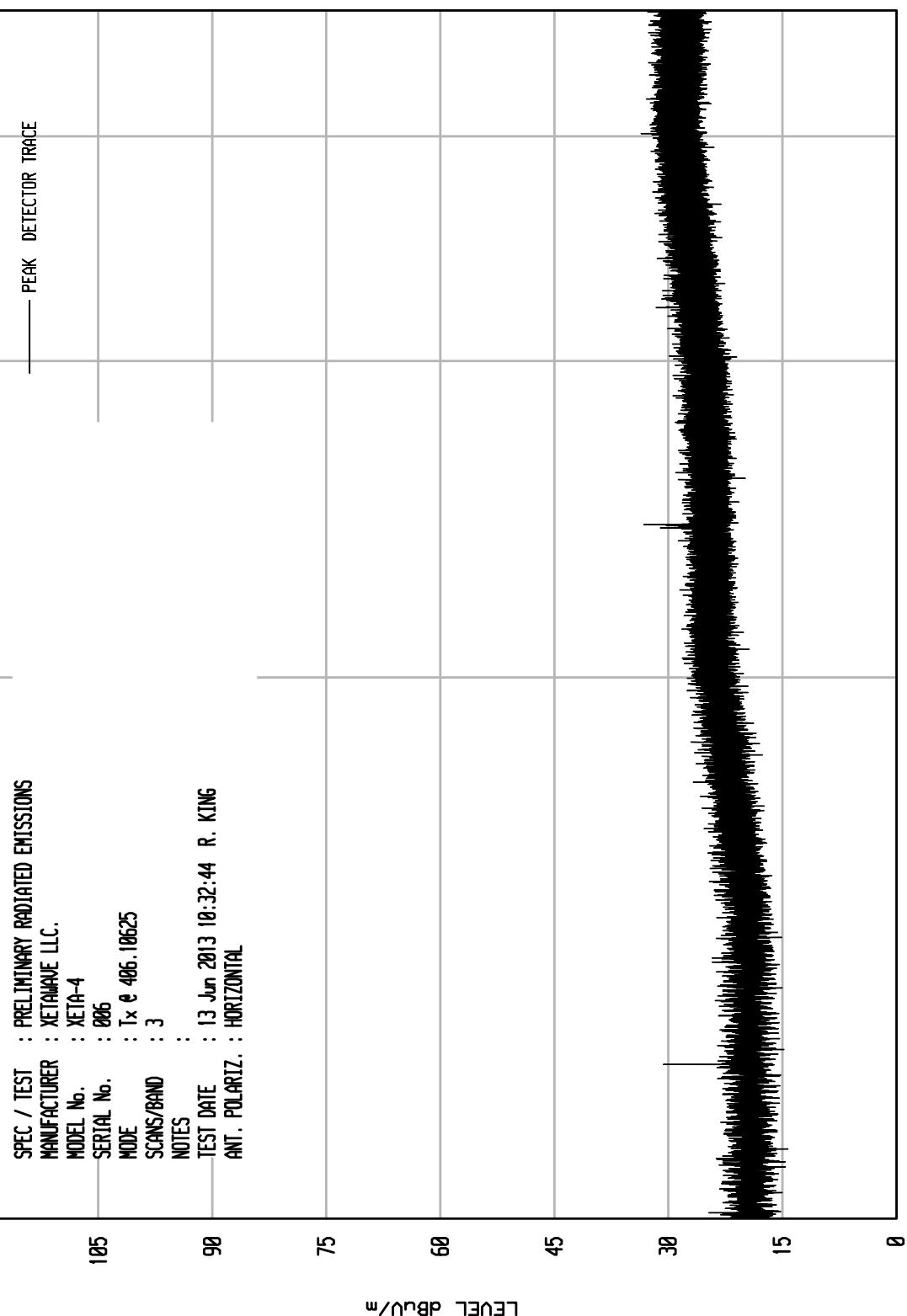
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

120

UNIT0 RCU EMI RUN 20

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 10625
SCANS/BAND : 3
NOTES :
TEST DATE : 13 Jun 2013 10:32:44 R. KING
ANT. POLARIZ. : HORIZONTAL



START = 10000

FREQUENCY MHz

STOP = 4700

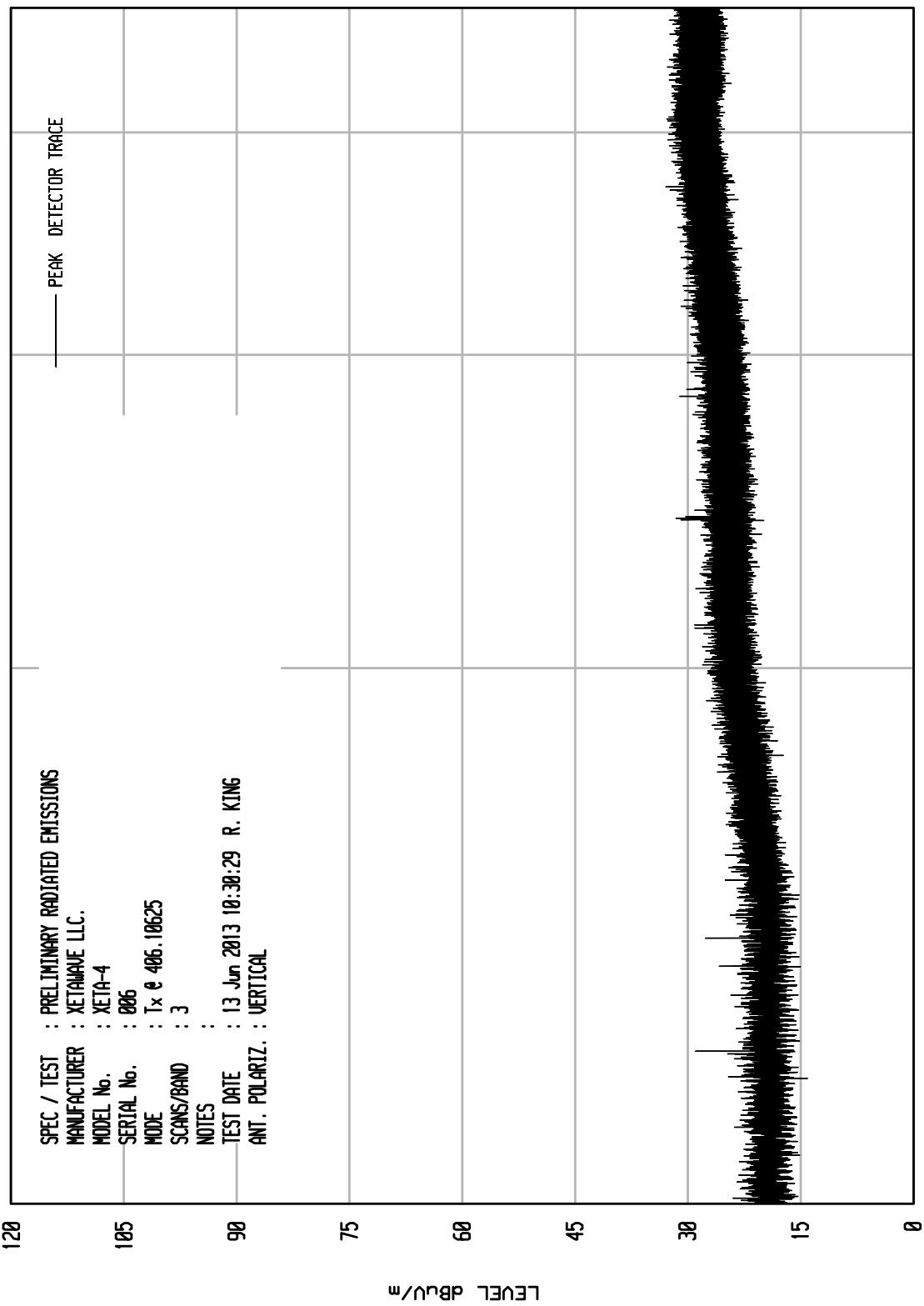
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 10625
SCANS/BAND : 3
NOTES :
TEST DATE : 13 Jun 2013 10:30:29 R. KING
ANT. POLARIZ. : VERTICAL

UNIT: RCU EMI RUN 19



START = 10000

FREQUENCY MHz

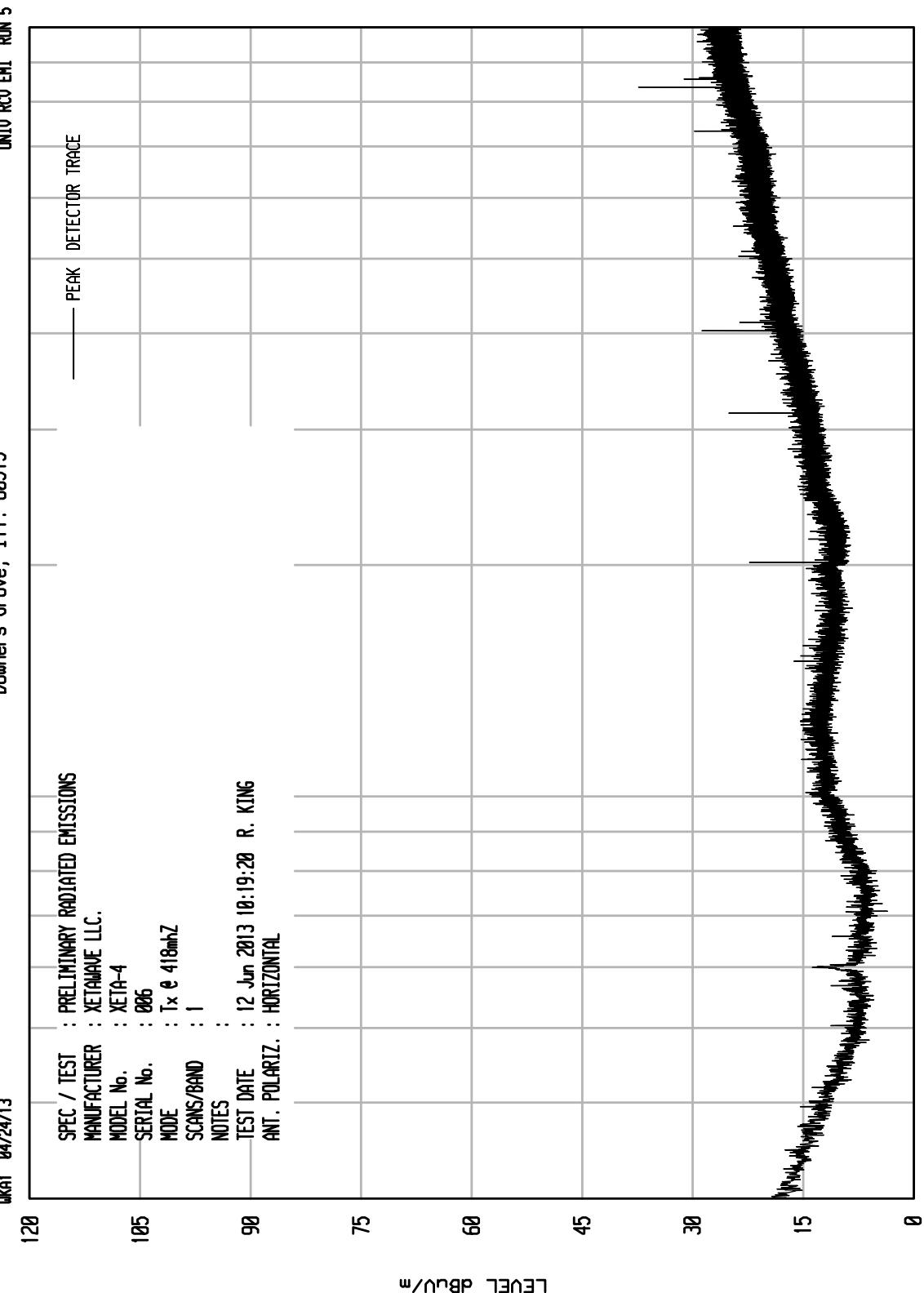
STOP = 4700

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT 100 EMI RUN 5

MKA1 04/24/13

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 418MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:19:20 R. KING
ANT. POLARIZ. : HORIZONTAL



ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

WKA1 04/24/13

UNIT0 RCU EMI RUN 6

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 418MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:20:59 R. KING
ANT. POLARIZ. : VERTICAL

120

105

90

75

60

45

30

15

0

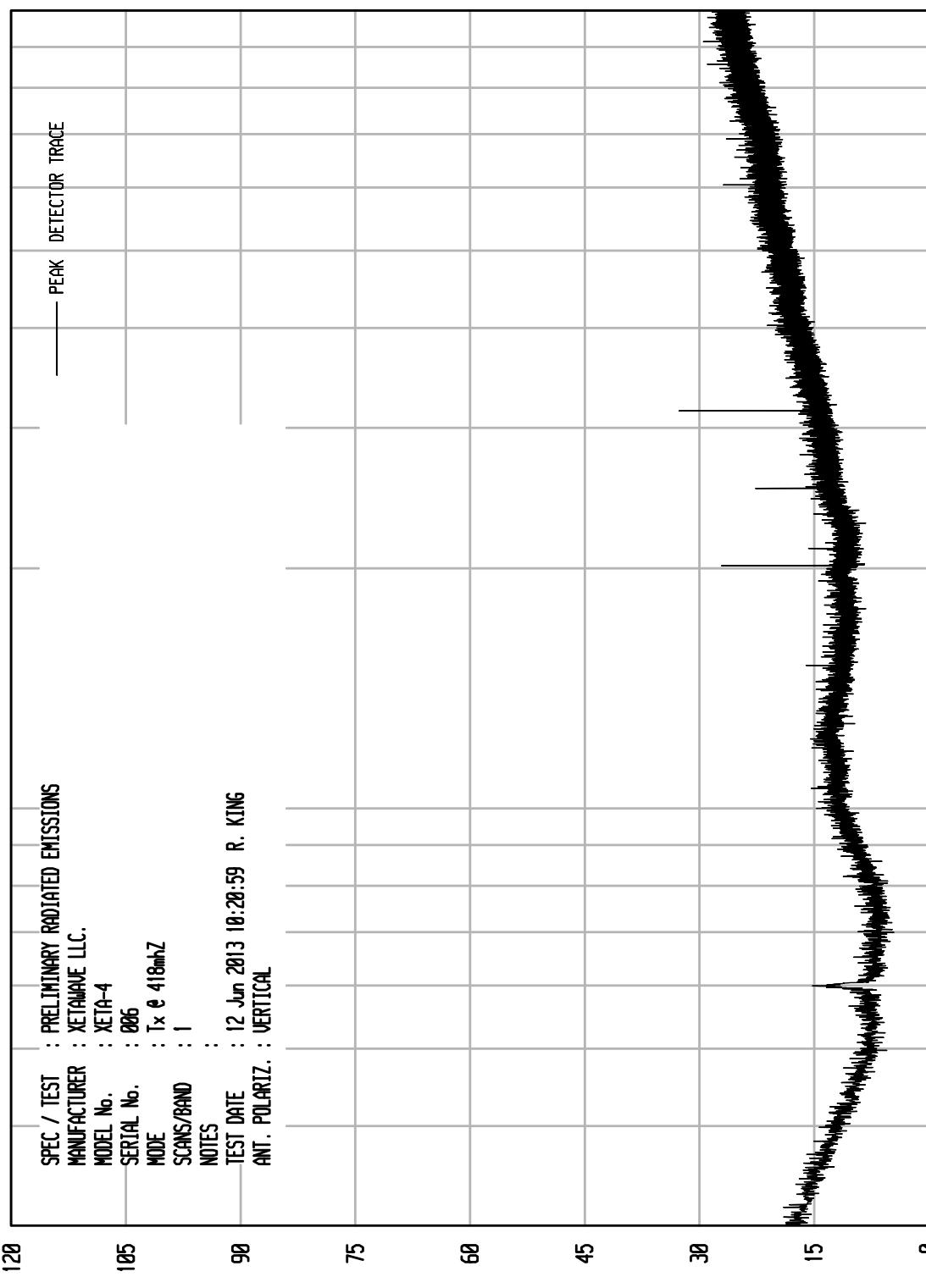
LEVEL dBm/u/m

START = 30

100

FREQUENCY MHz

STOP = 1000



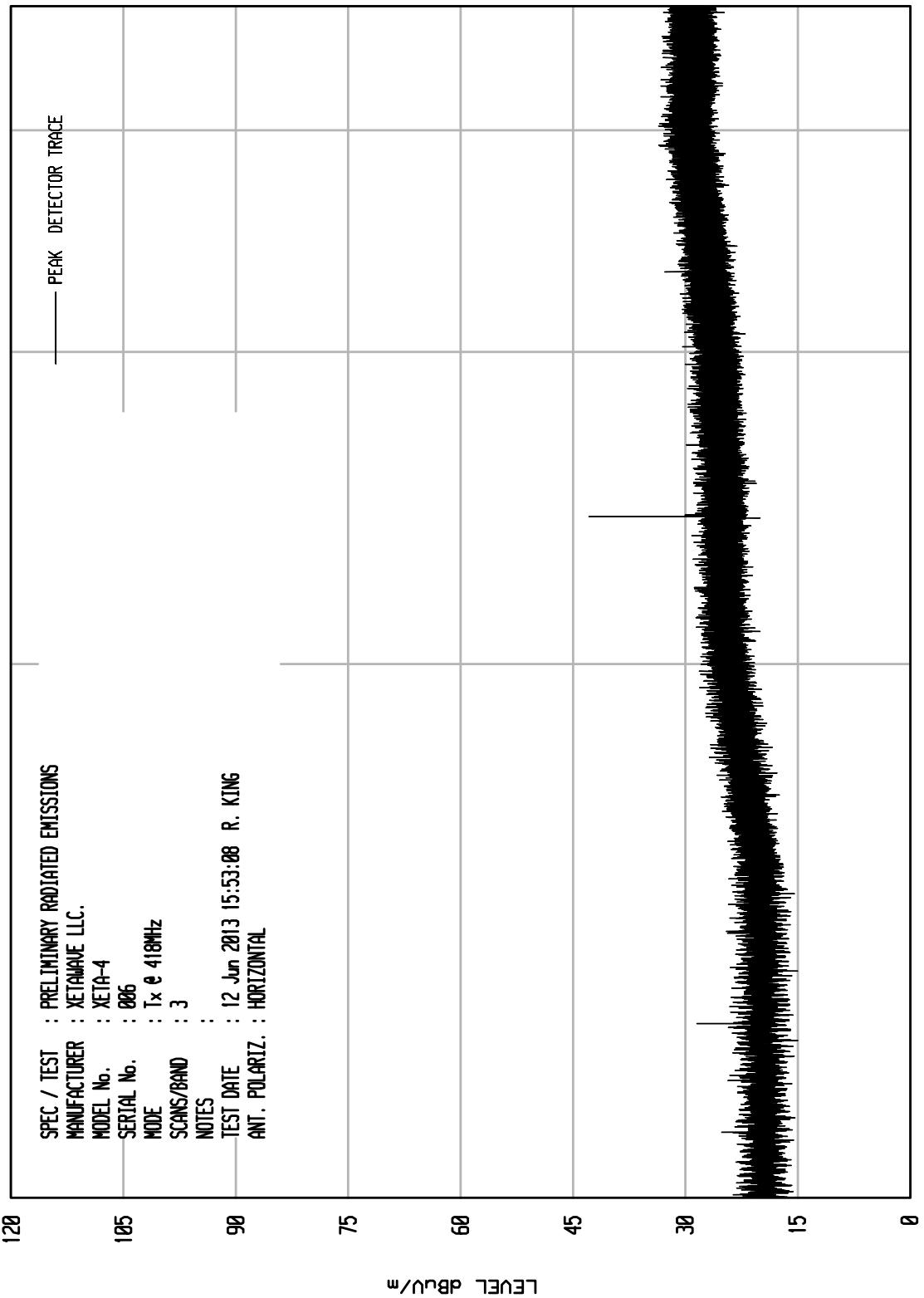
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 418MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 15:53:08 R. KING
ANT. POLARIZ. : HORIZONTAL

UNIV RCU EMI RUN 12



START = 1000

FREQUENCY MHz

STOP = 4700

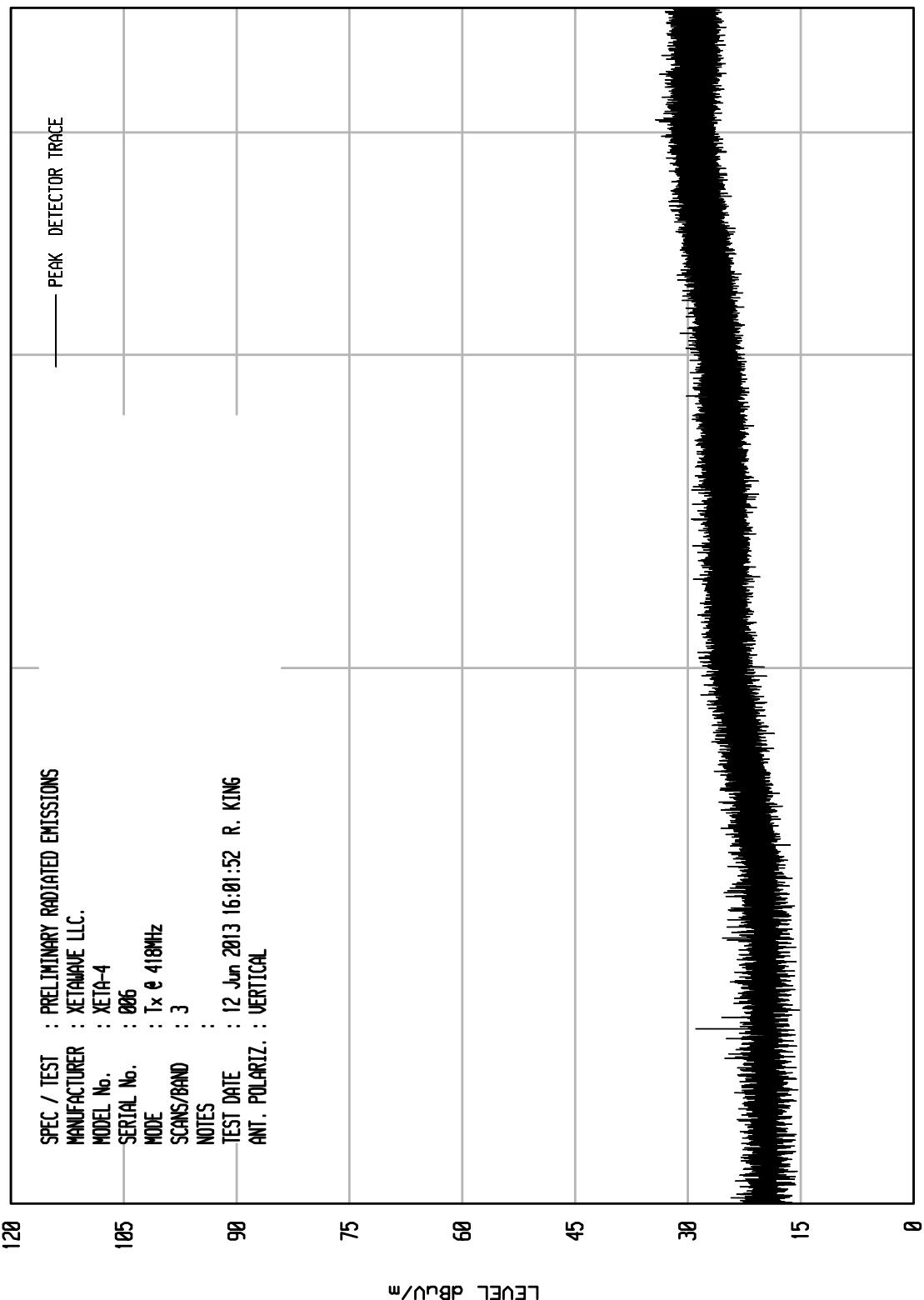
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 418MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 16:01:52 R. KING
ANT. POLARIZ. : VERTICAL

UNIV RCU EMI RUN 16

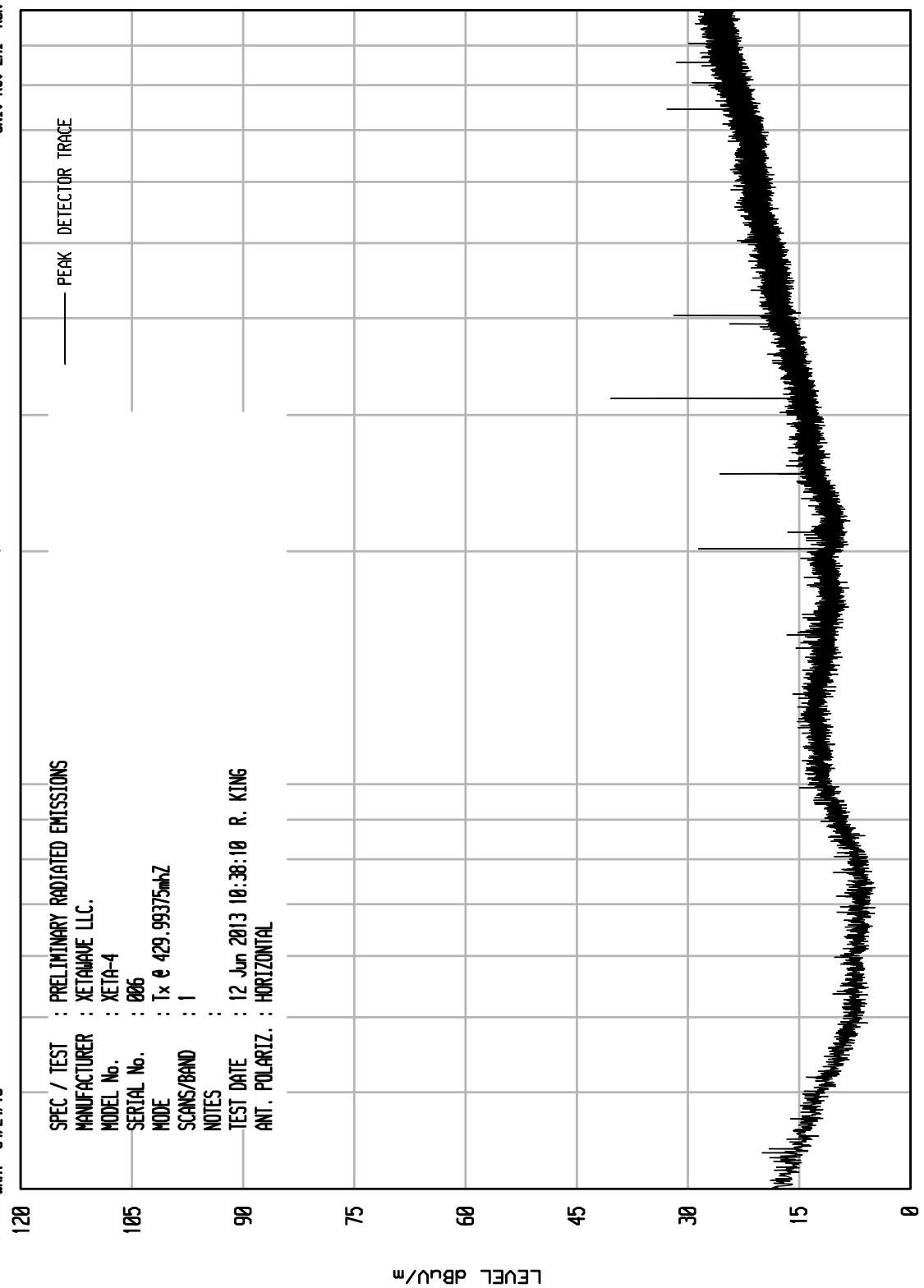


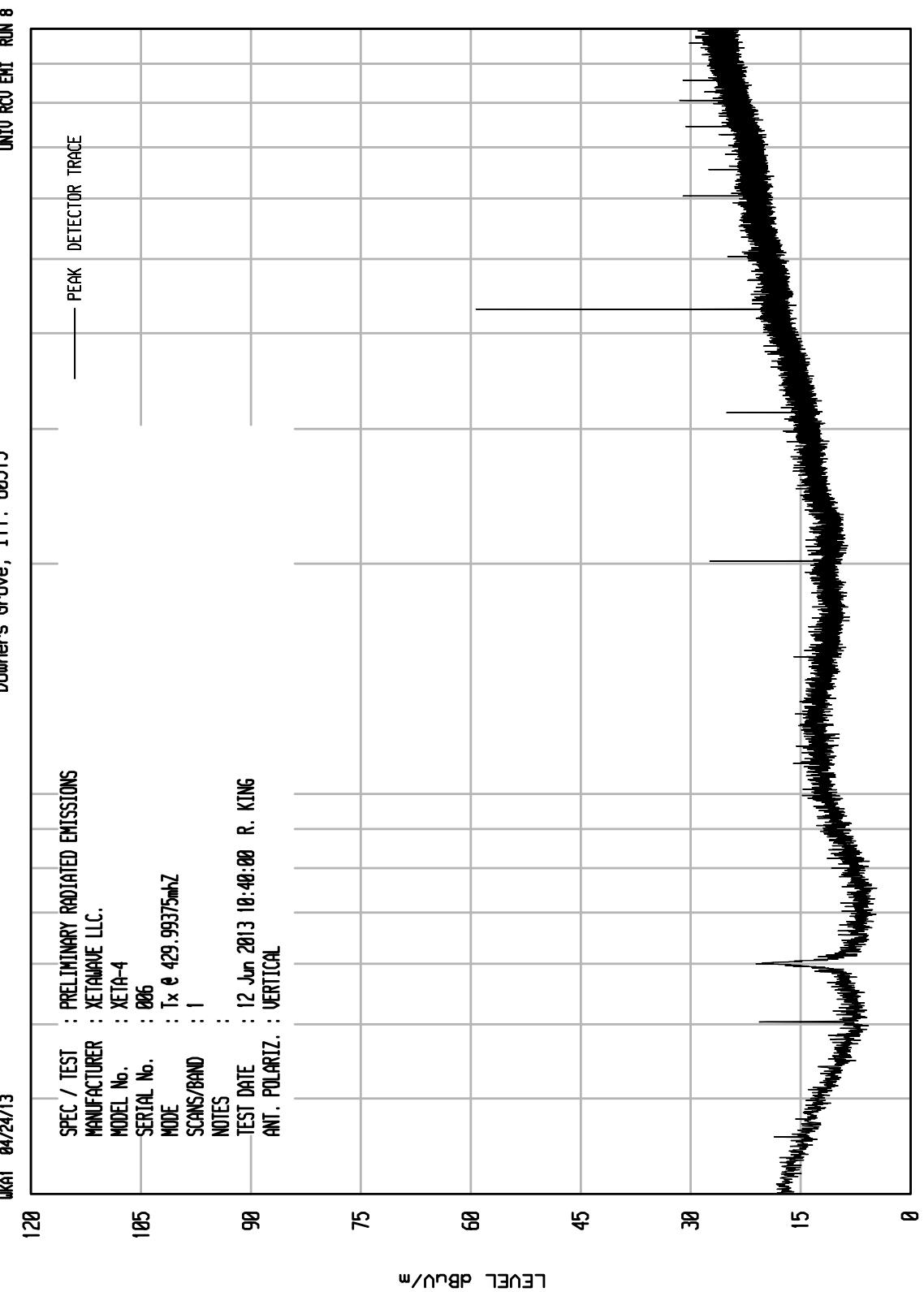
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 429.99375MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:38:10 R. KING
ANT. POLARIZ. : HORIZONTAL

UNIT0 RCU EMI RUN 7



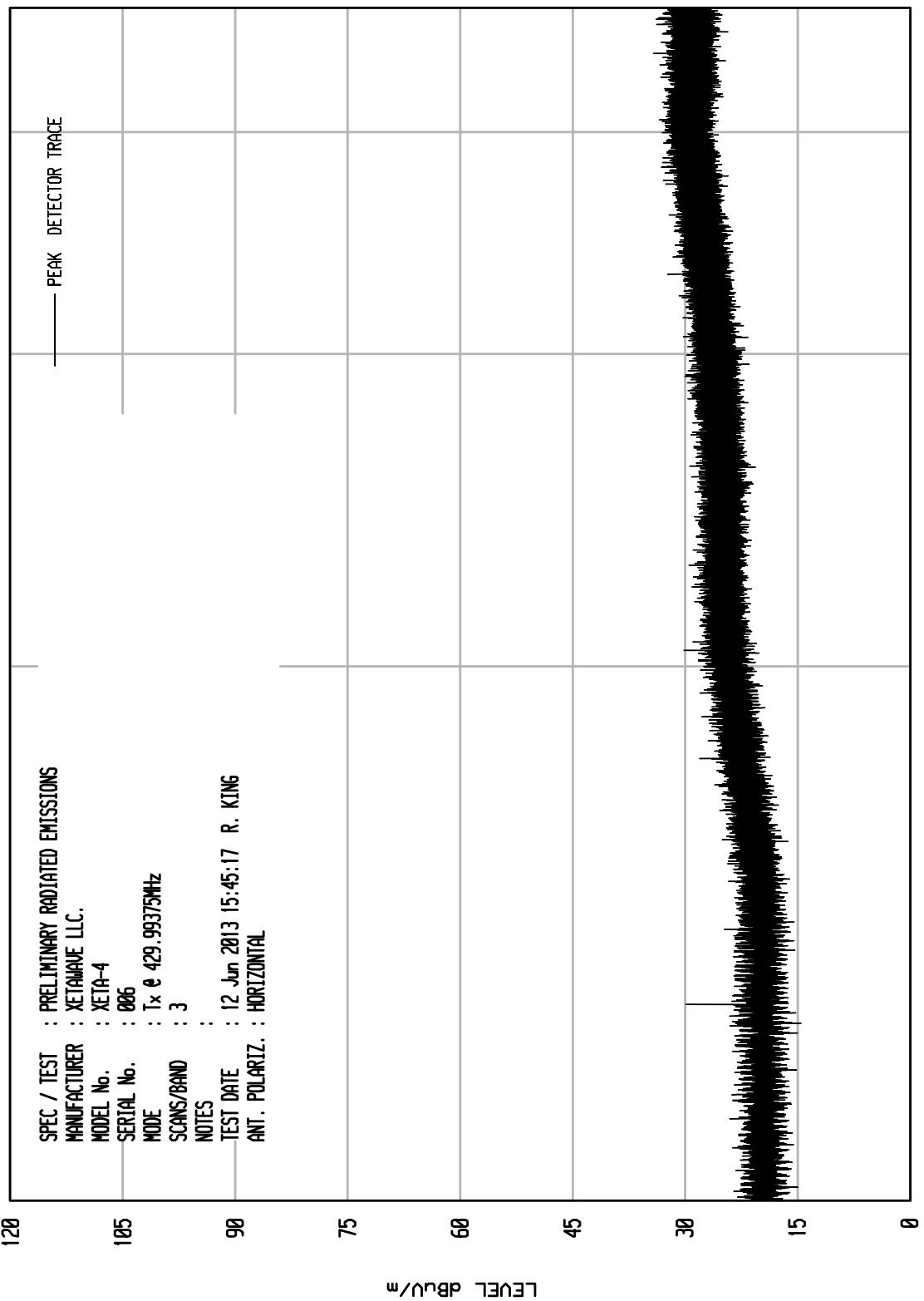
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515WKA1 04/24/13
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 429.99375MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:40:00 R. KING
ANT. POLARIZ. : VERTICAL

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13
120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 429.99375MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 15:45:17 R. KING
ANT. POLARIZ. : HORIZONTAL

UNIT: RCU EMI RUN 11



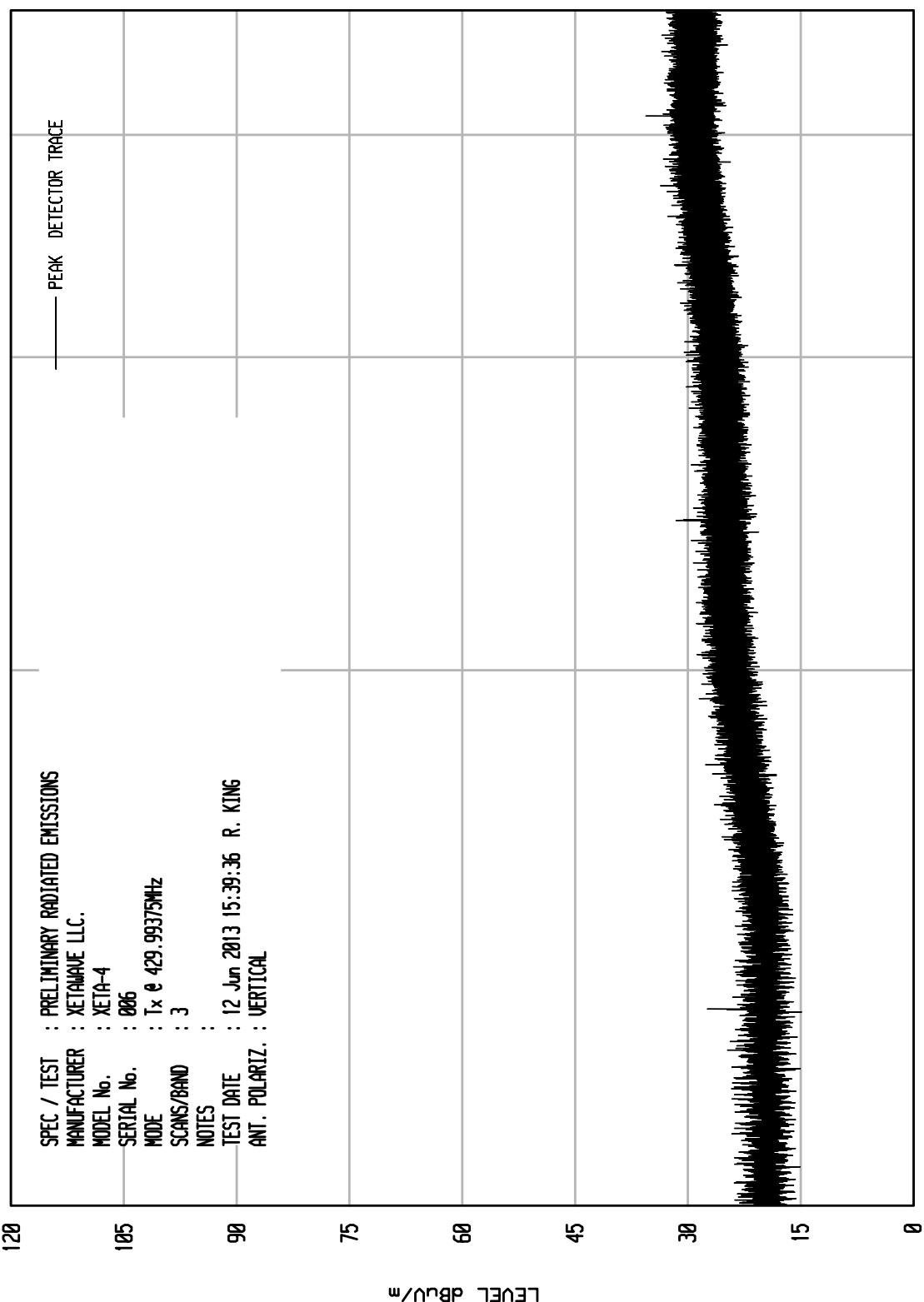
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 429.99375MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 15:39:36 R. KING
ANT. POLARIZ. : VERTICAL

UNIV RCU EMI RUN 9



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT 01 EMI RUN 10

WKA1 04/24/13

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 438.88625MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:45:55 R. KING
ANT. POLARIZ. : HORIZONTAL

120

105

90

75

60

45

30

15

0

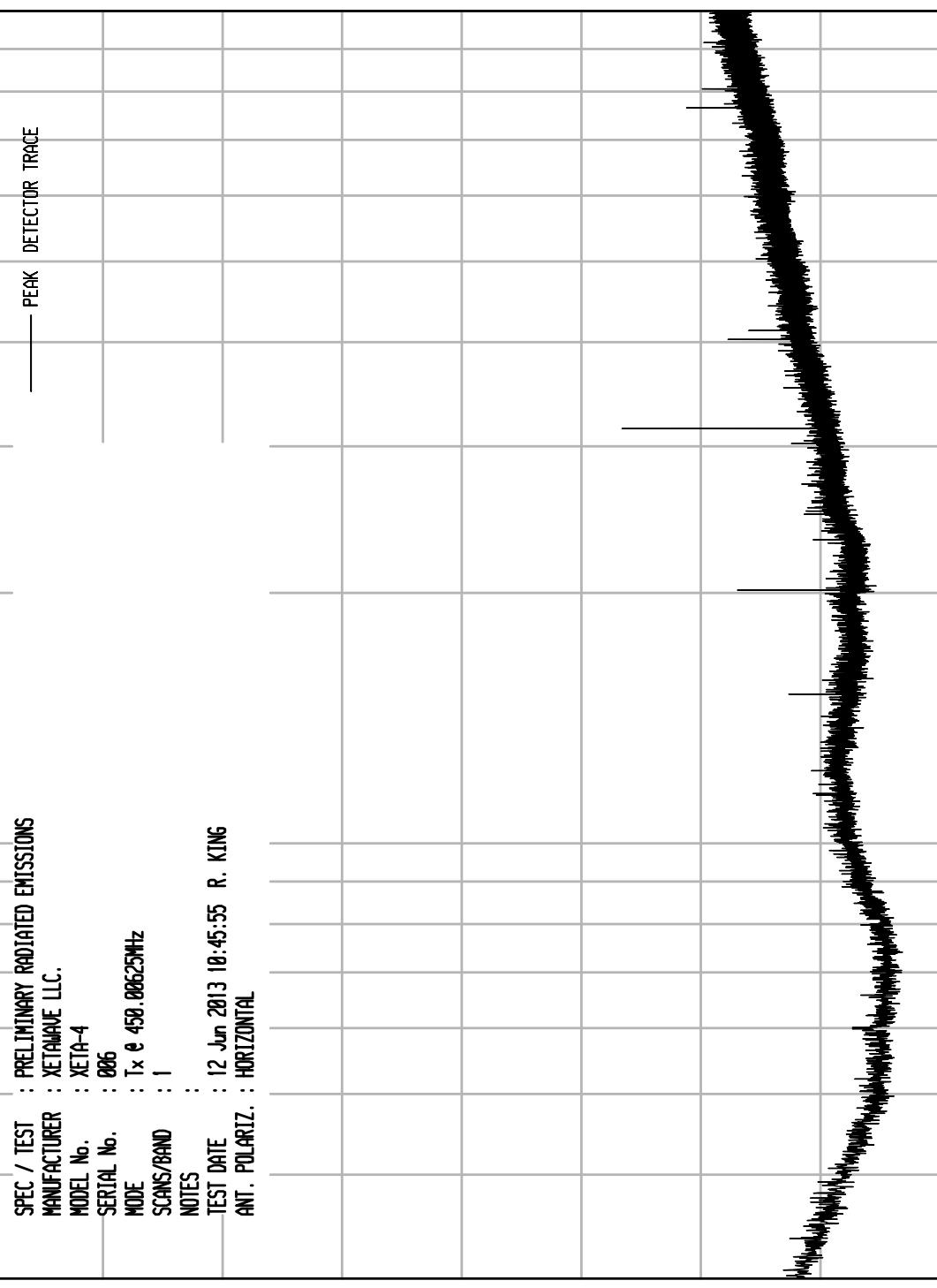
LEVEL dB_U/_m

START = 30

100

FREQUENCY MHz

STOP = 1000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT 001 EMI RUN 9

WKA1 04/24/13

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & Rx 88625MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:41:38 R. KING
ANT. POLARIZ. : VERTICAL

120

105

90

75

60

45

30

15

0

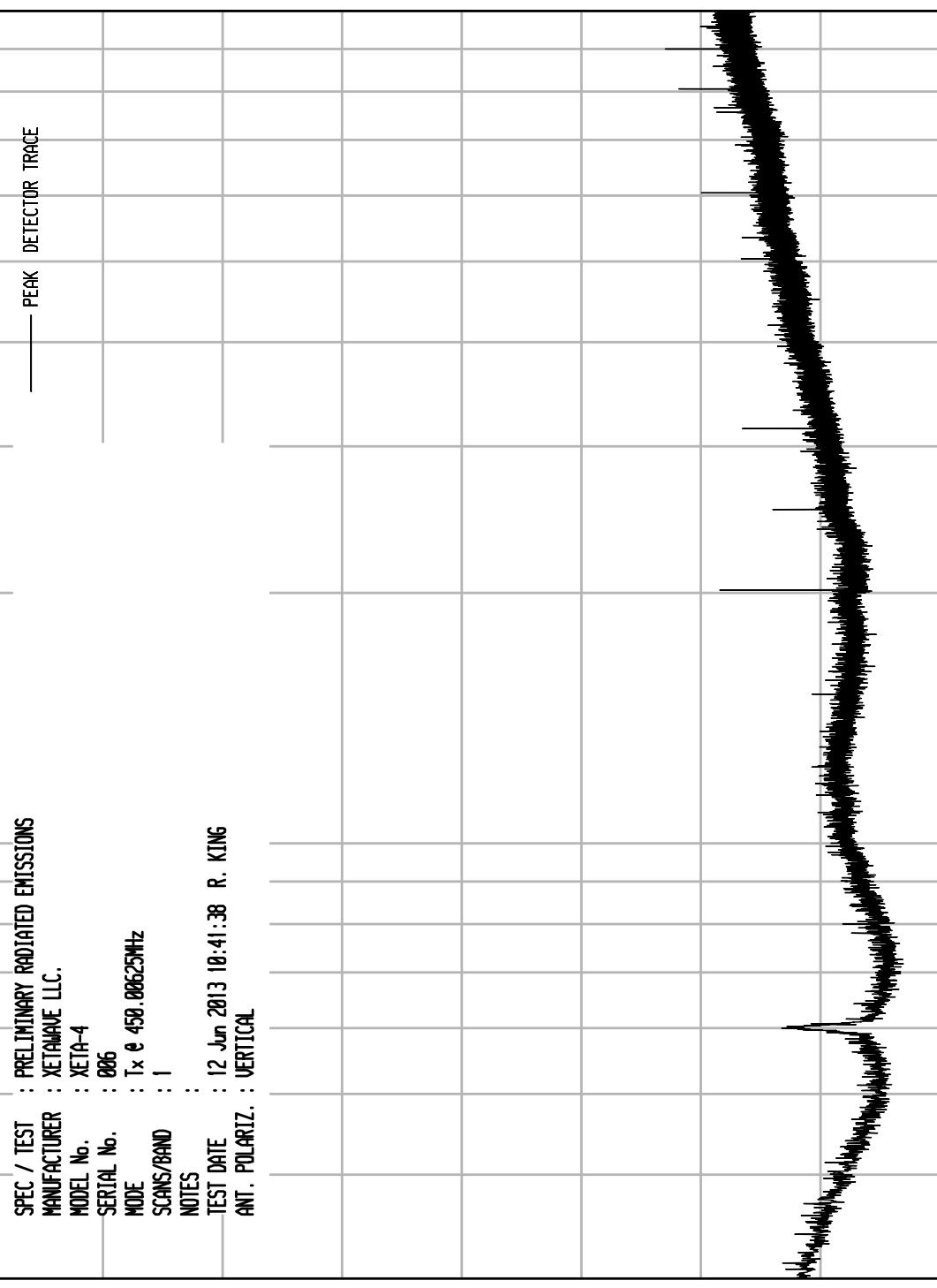
LEVEL dB_U/_m

START = 30

100

FREQUENCY MHz

STOP = 1000

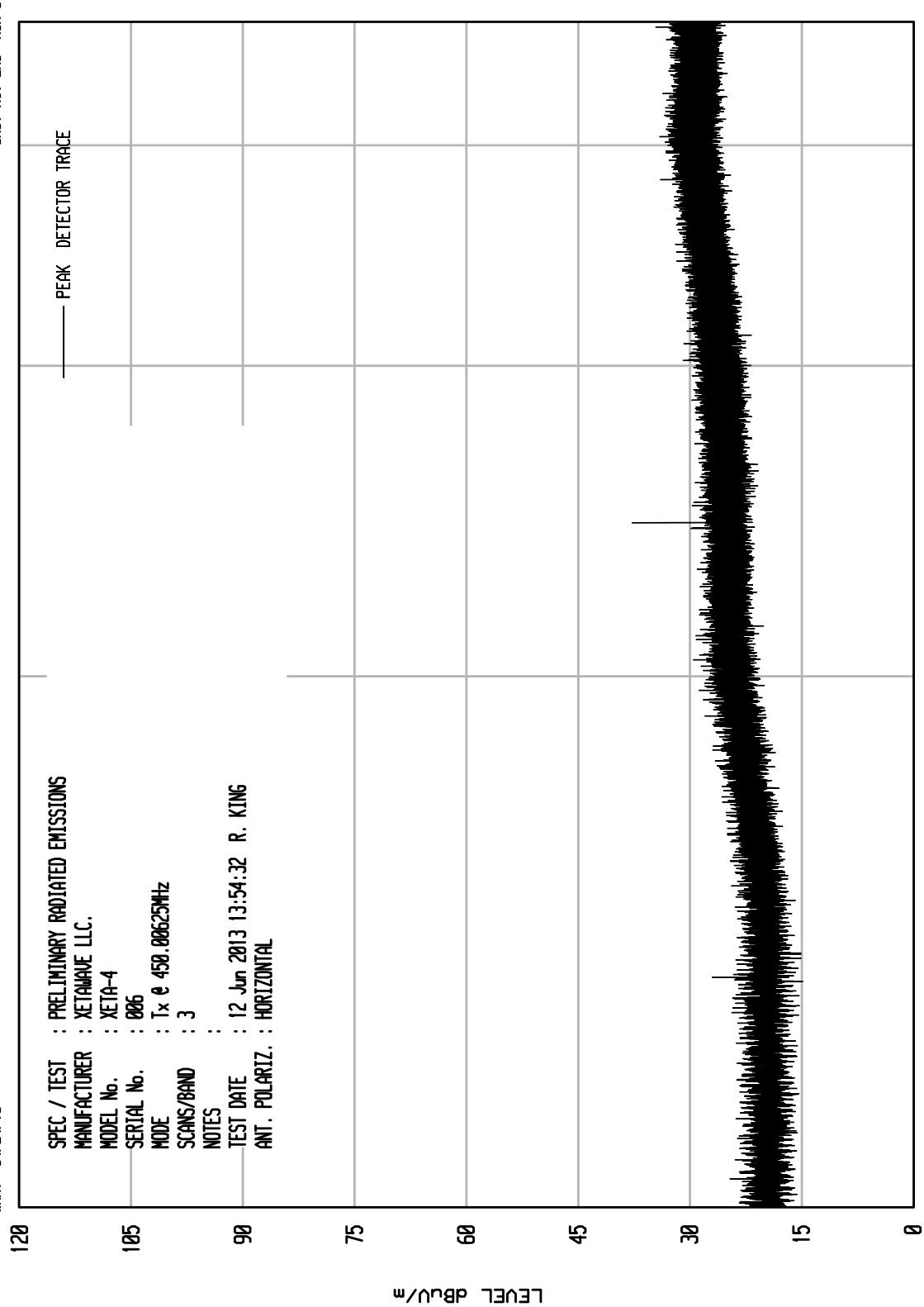


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

UNIT0 RCU EMI RUN 6

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 450.88625MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 13:54:32 R. KING
ANT. POLARIZ. : HORIZONTAL



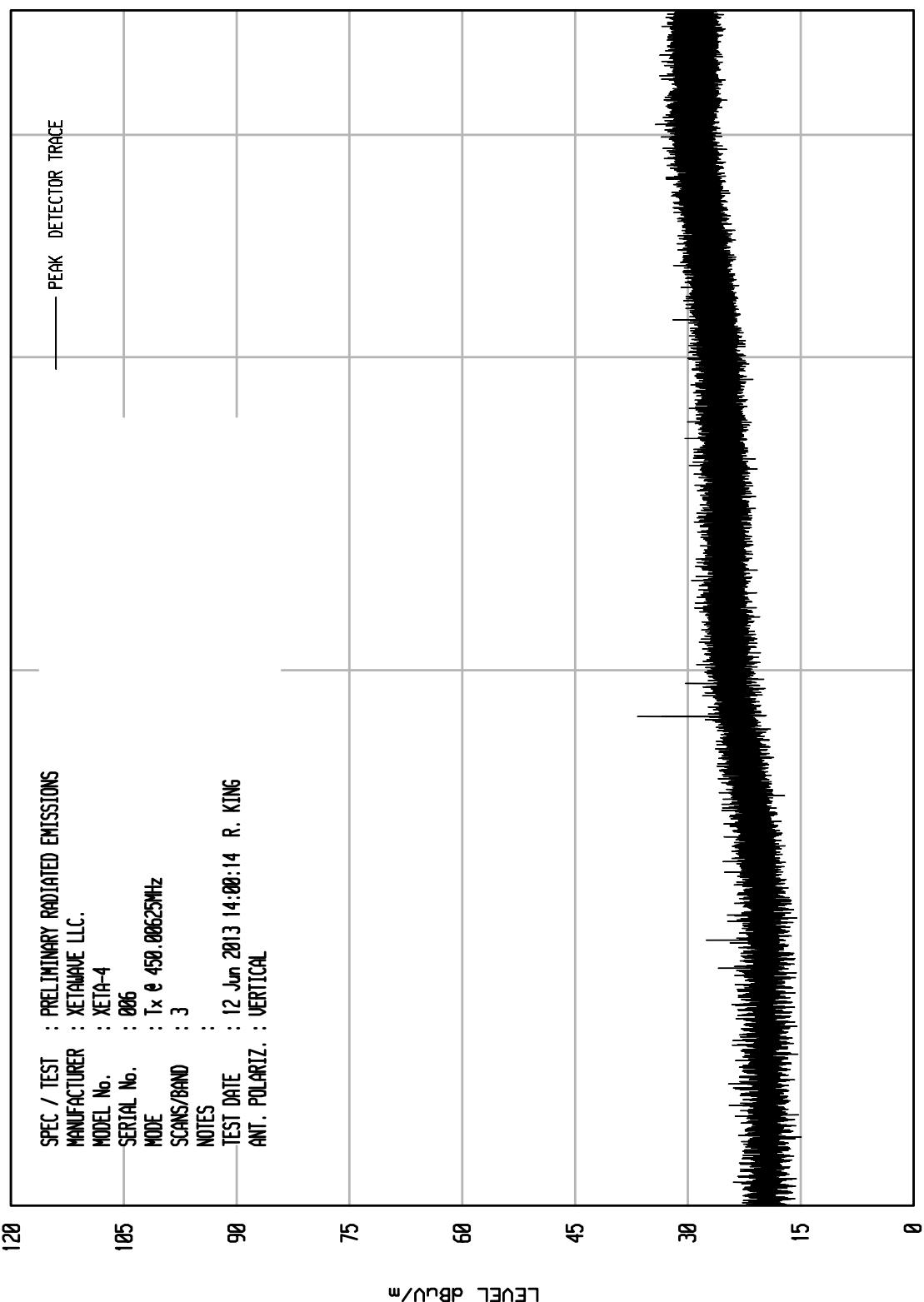
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 450.88625MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 14:00:14 R. KING
ANT. POLARIZ. : VERTICAL

UNIT: RCU EMI RUN 8



START = 10000

FREQUENCY MHz

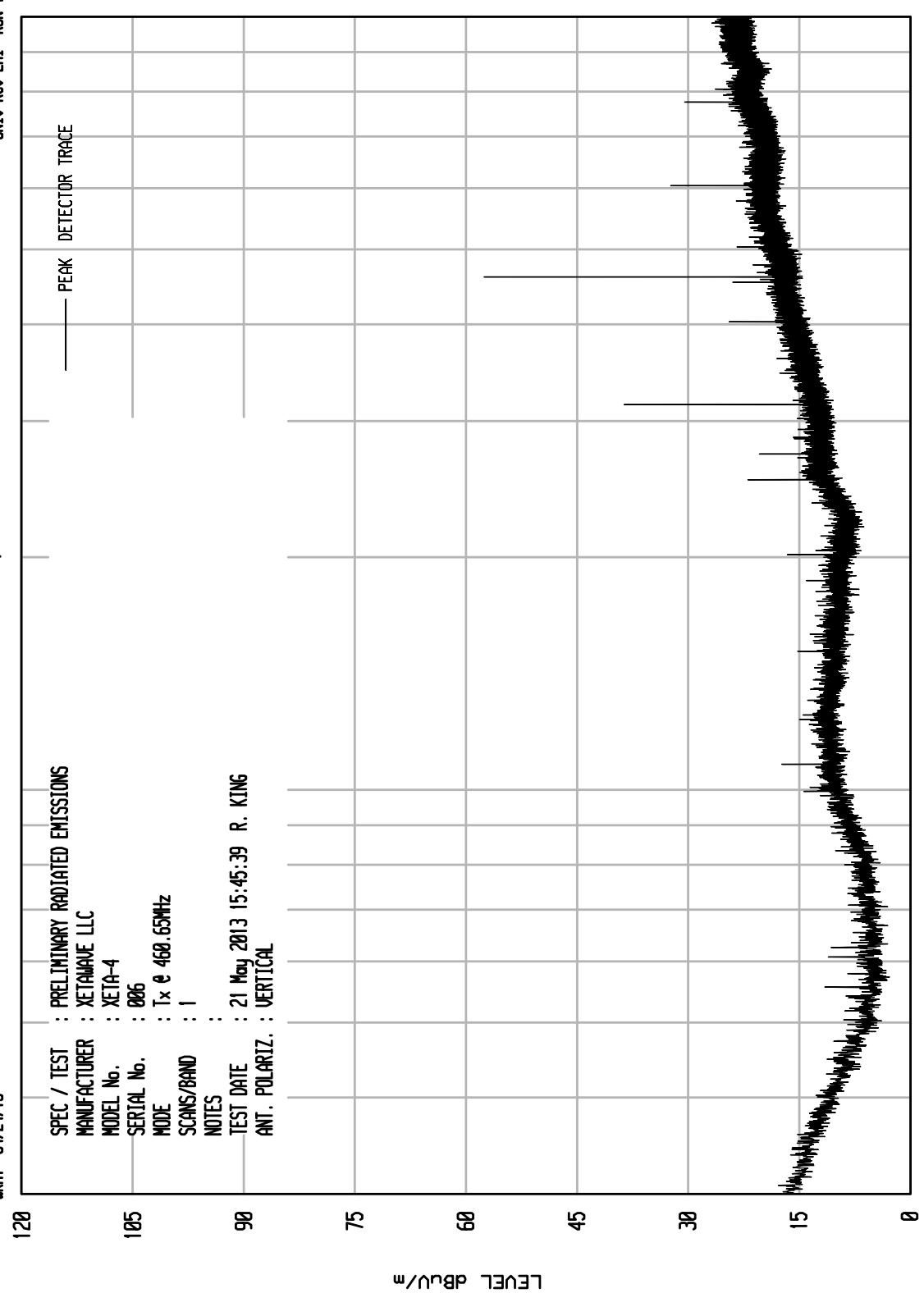
STOP = 4700

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

UNIT0 RCU EMI RUN 1

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 480.65MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 21 May 2013 15:45:39 R. KING
ANT. POLARIZ. : VERTICAL



ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

WKA1 04/24/13

UNIT0 RCU EMI RUN 8

| | |
|---------------|----------------------------------|
| SPEC / TEST | : PRELIMINARY RADIATED EMISSIONS |
| MANUFACTURER | : XETAWAVE LLC. |
| MODEL No. | : XETA-4 |
| SERIAL No. | : 006 |
| MODE | : Tx 2 480.25MHz |
| SCANS/BAND | : 1 |
| NOTES | |
| TEST DATE | : 21 May 2013 15:20:04 |
| ANT. POLARIZ. | : HORIZONTAL |

120

105

90

75

60

45

30

15

0

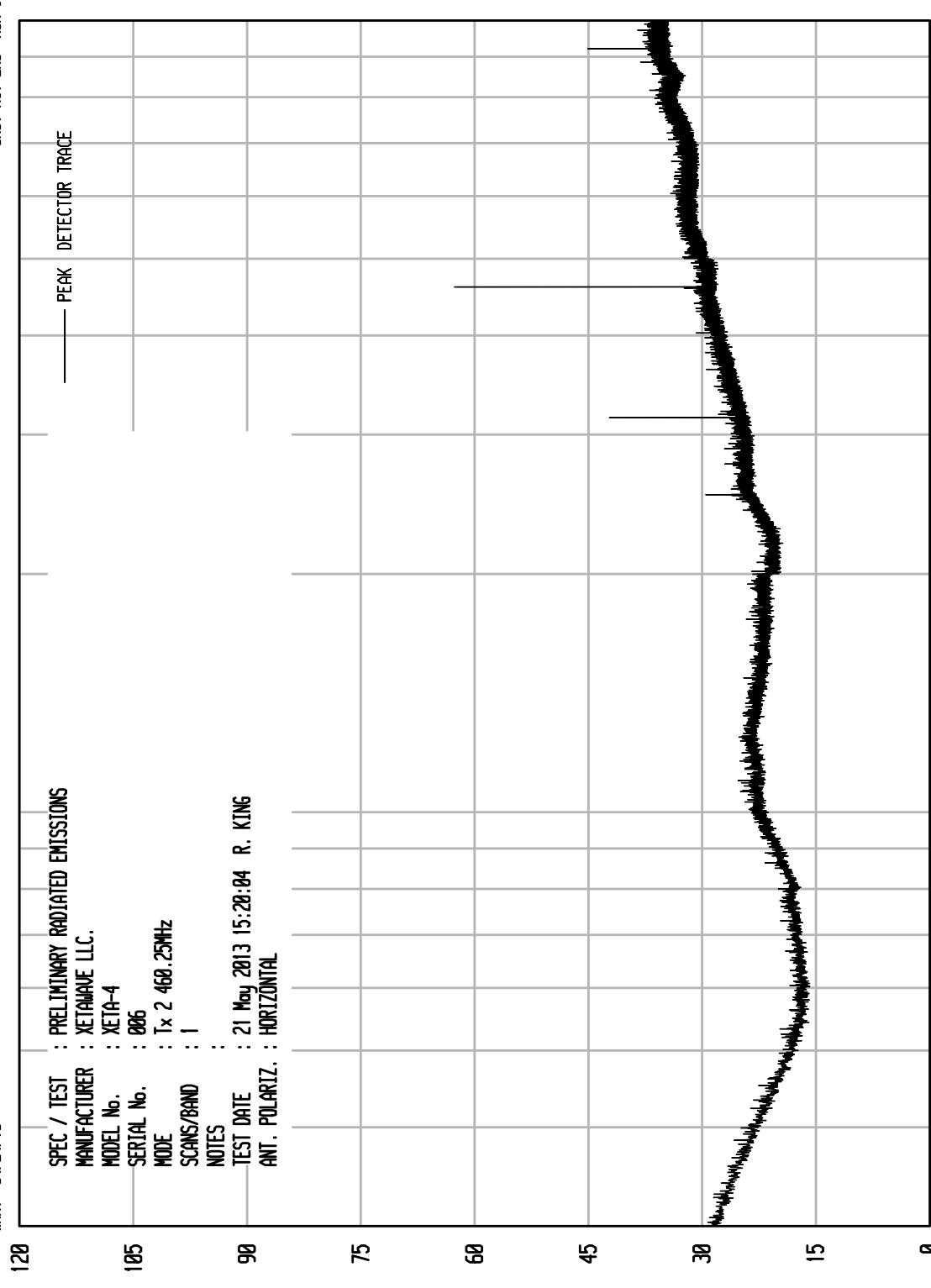
LEVEL dB_U/_m

START = 30

FREQUENCY MHz

100

STOP = 1000

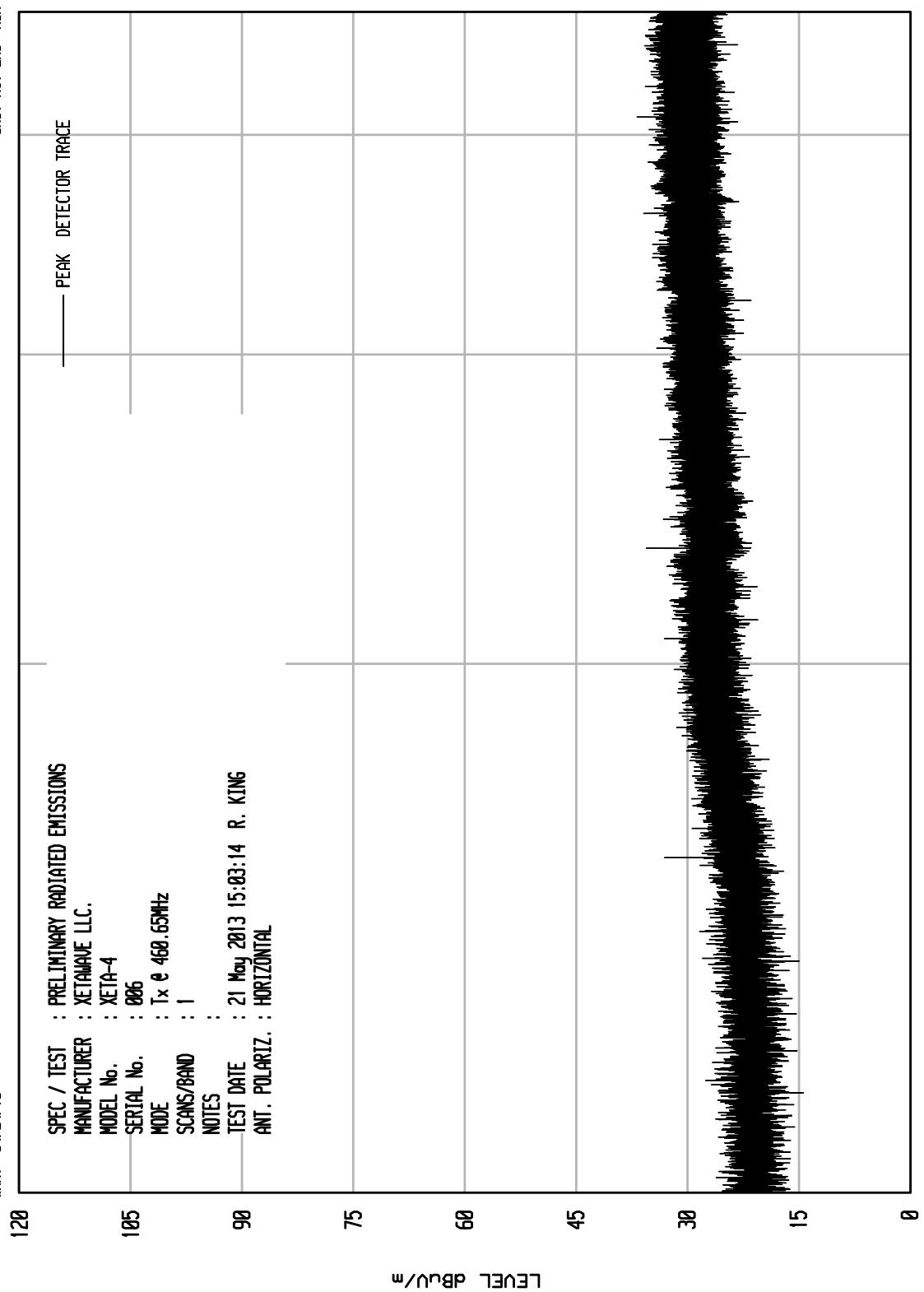


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13
120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 480.65MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 21 May 2013 15:03:14 R. KING
ANT. POLARIZ. : HORIZONTAL

UNIT: RCU EMI RUN 4

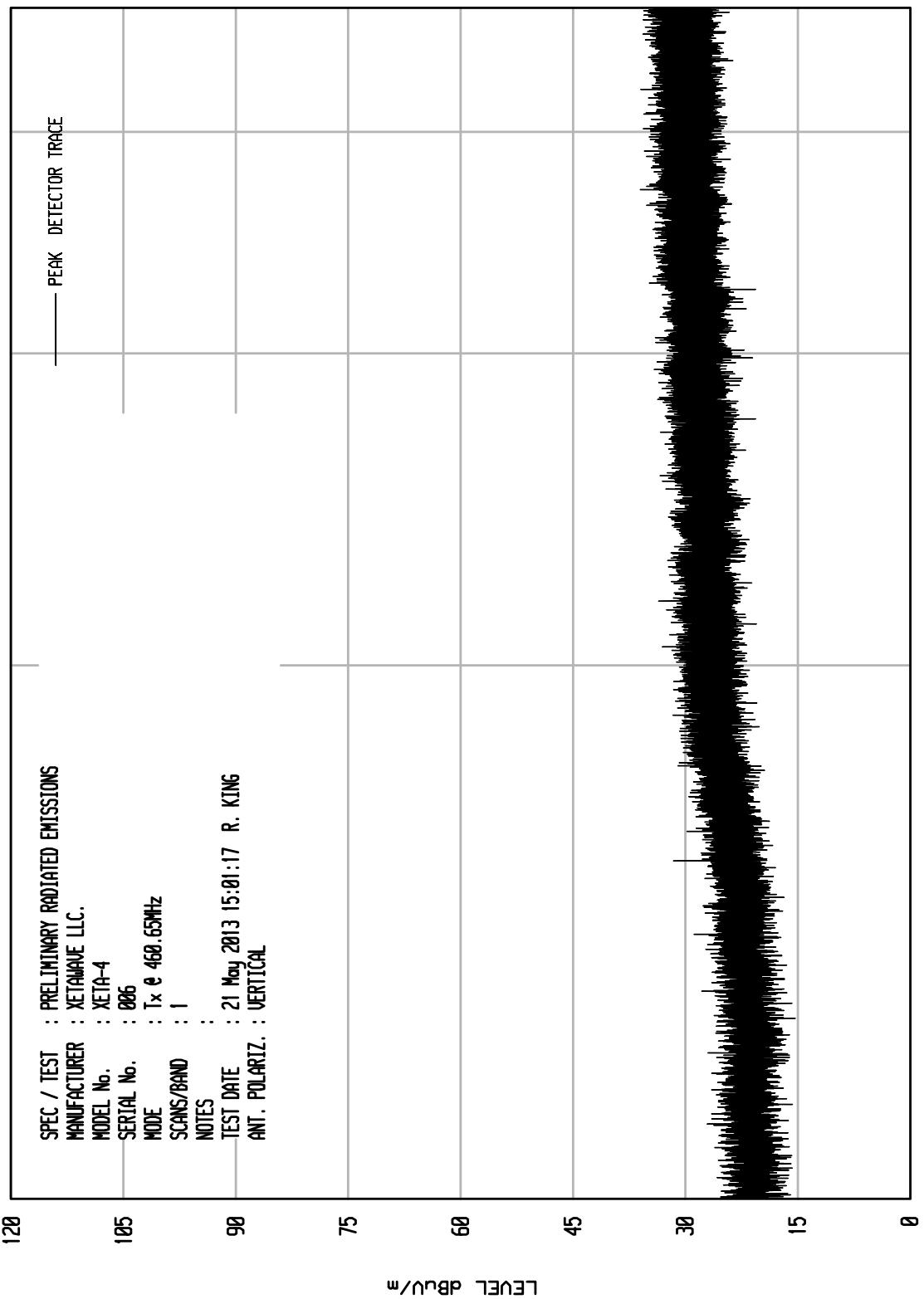


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13
120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 400.65MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 21 May 2013 15:01:17 R. KING
ANT. POLARIZ. : VERTICAL

UNIT0 RCU EMI RUN 3

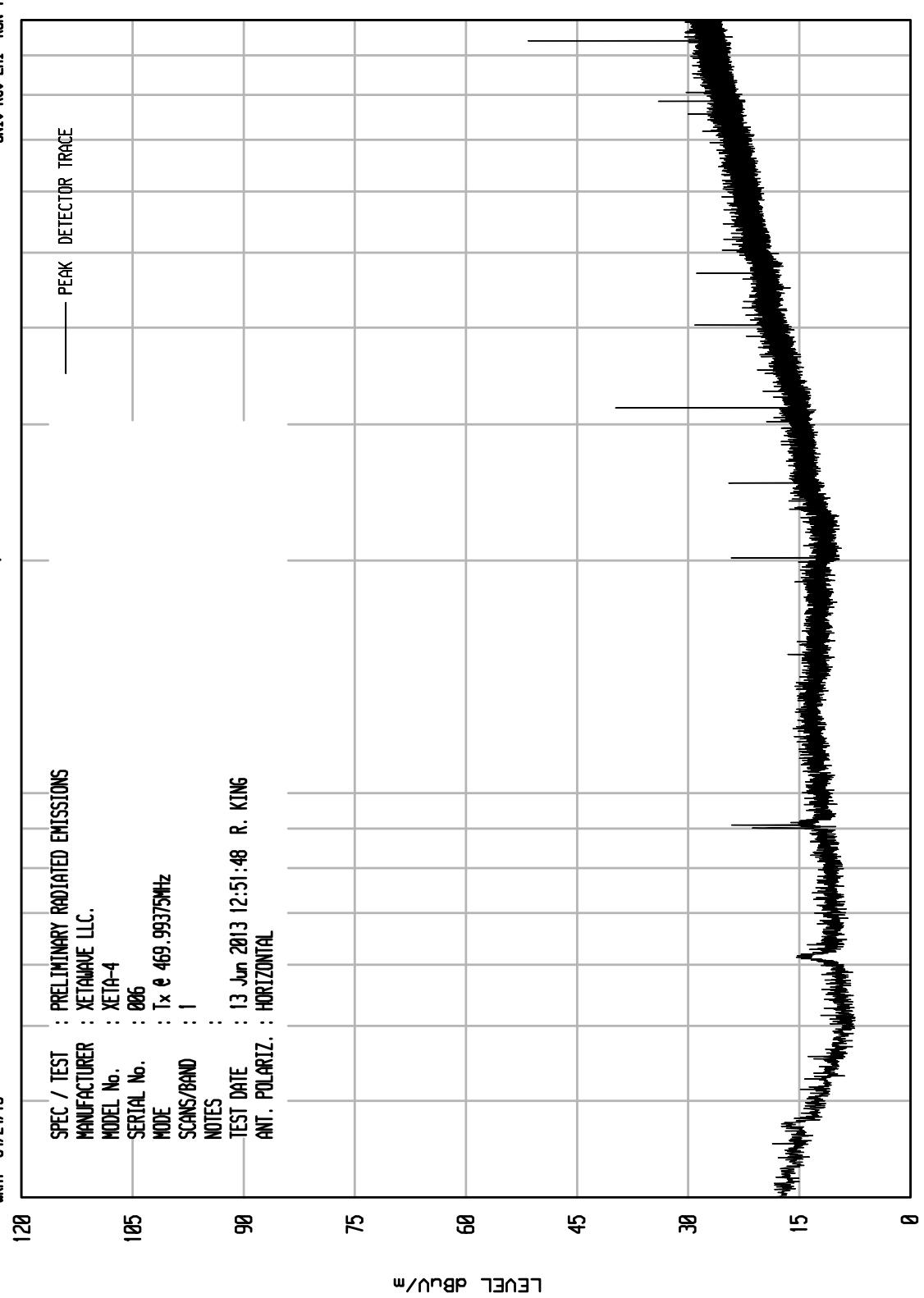


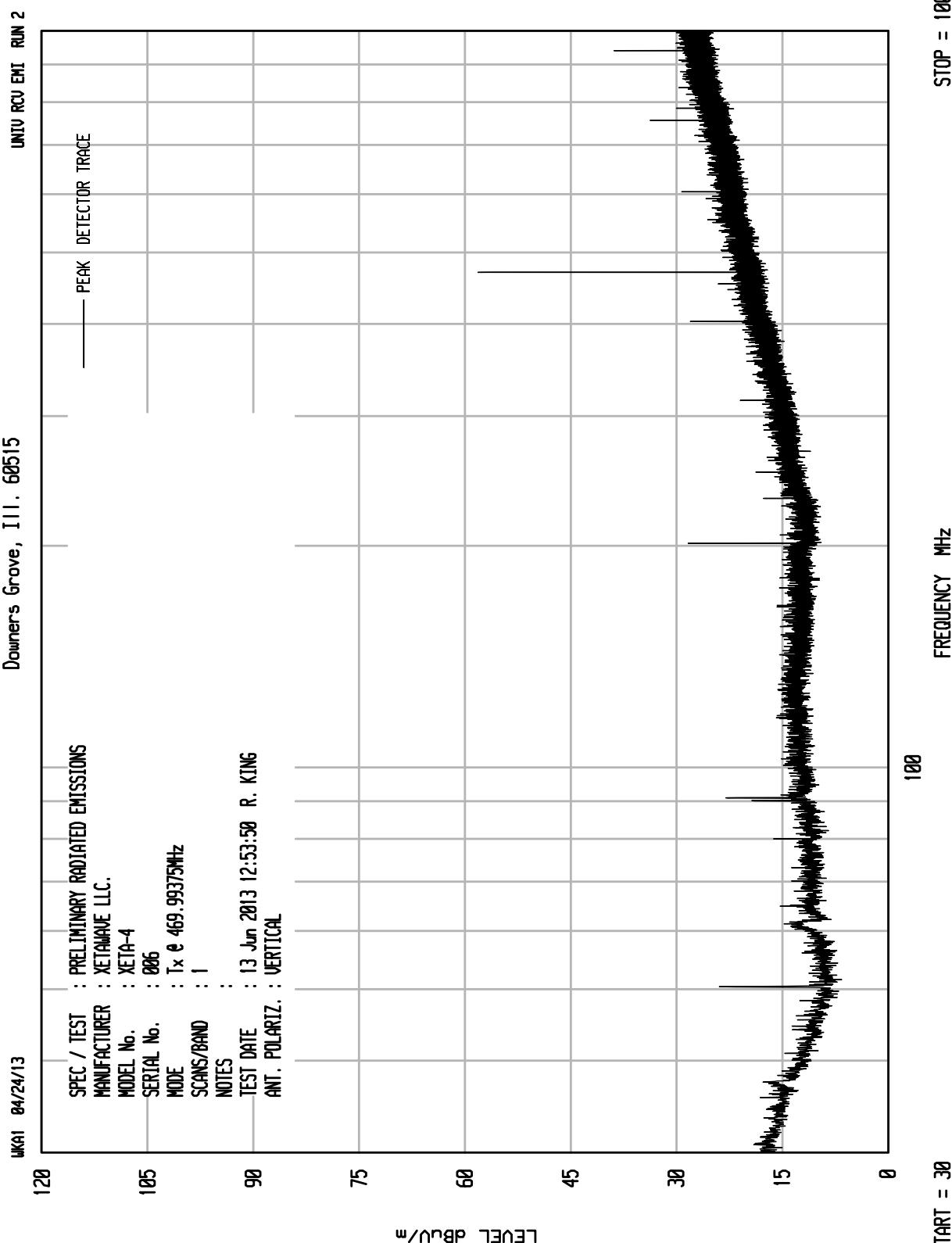
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

UNIV RCU EMI RUN 1

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 469.99375MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 13 Jun 2013 12:51:48 R. KING
ANT. POLARIZ. : HORIZONTAL





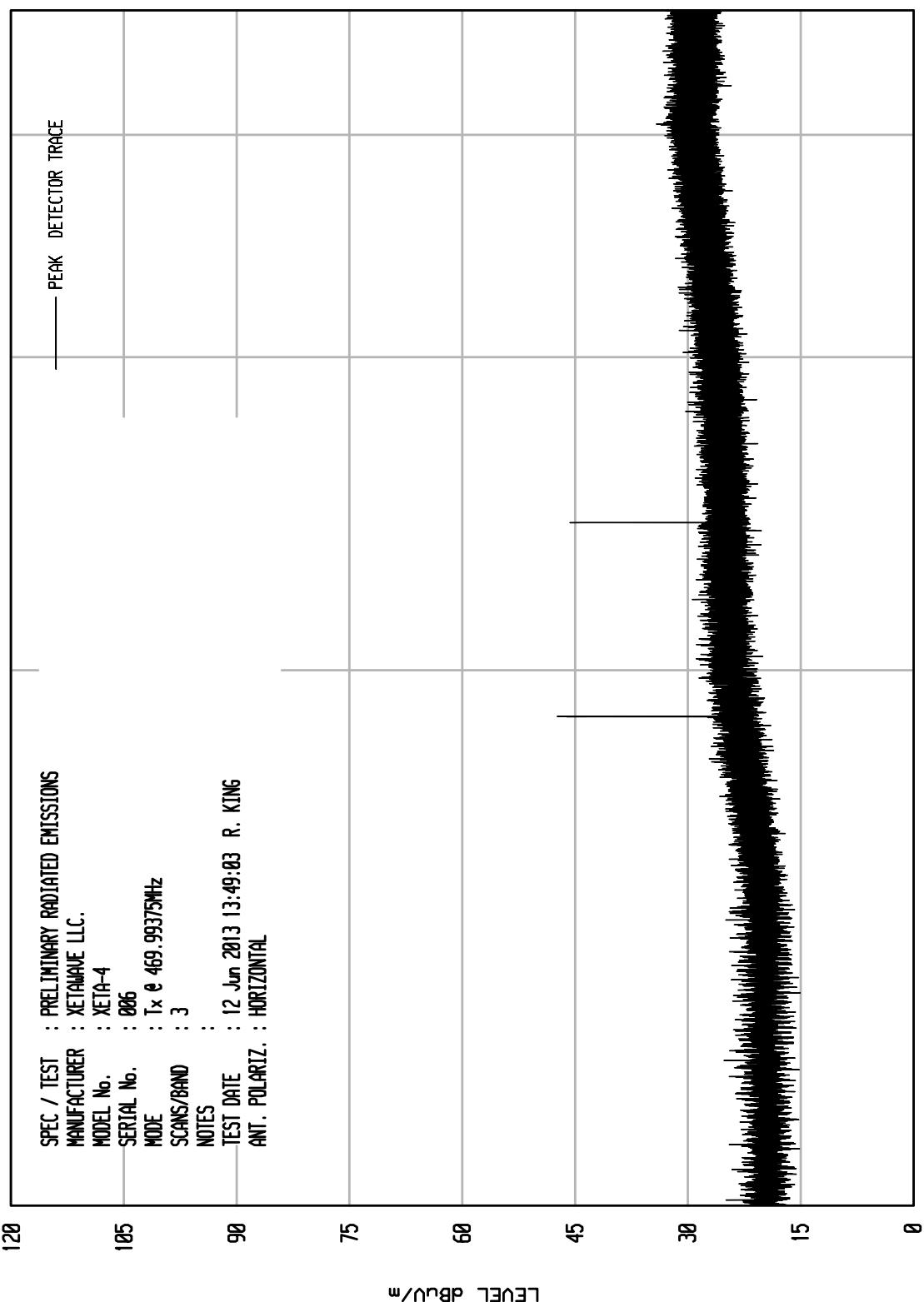
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 04/24/13

120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 469.99375MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 13:49:03 R. KING
ANT. POLARIZ. : HORIZONTAL

UNIT: RCU EMI RUN 5



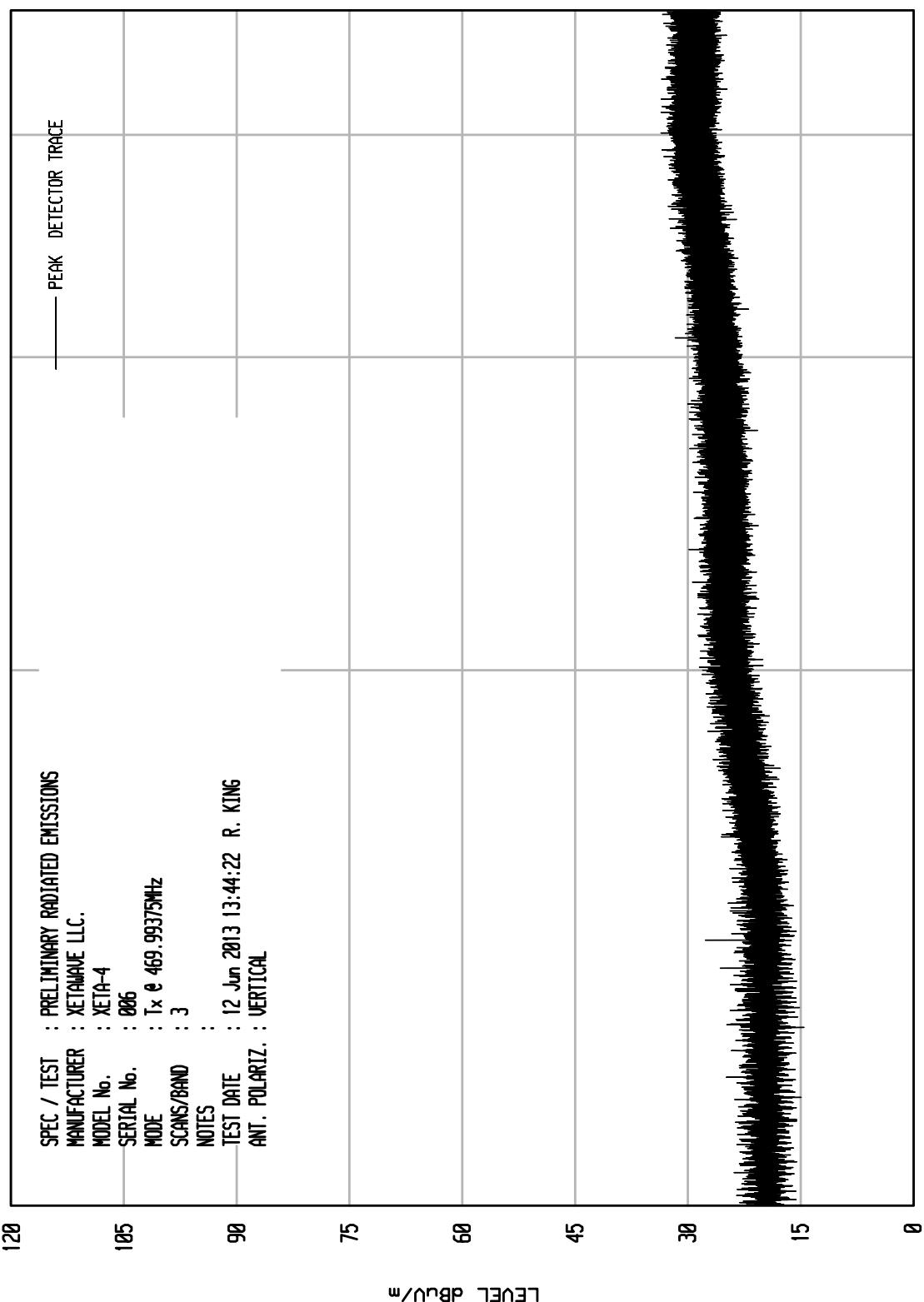
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

120

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx & 469.99375MHz
SCANS/BAND : 3
NOTES :
TEST DATE : 12 Jun 2013 13:44:22 R. KING
ANT. POLARIZ. : VERTICAL

UNIT: RCU EMI RUN 3



START = 10000

FREQUENCY MHz

STOP = 47000



MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90 Spurious Radiated Emissions
DATE : June 14, 2013
NOTES : Transmit at 406.10625 MHz
: Test Distance is 3 meters

| Freq (MHz) | Ant Pol | Meter Reading (dBuV) | Matched | | | Total (dBm) | ATTEN | Minimum Attenuation |
|---------------|------------|----------------------------|----------------------|---------------------|-------------|----------------|-------|------------------------|
| | | | SIG. GEN. (dB) | Ant Gain (dB) | CBL (dB) | | | |
| 812.21 | H | 23.0 | -51.4 | 0.0 | 2.3 | -53.8 | 86.8 | 53.0 |
| 812.21 | V | 19.4 | -52.4 | 0.0 | 2.3 | -54.8 | 87.8 | 53.0 |
| 1218.32 | H | 54.3 | -56.7 | 1.4 | 2.9 | -58.2 | 91.2 | 53.0 |
| 1218.32 | V | 53.7 | -55.2 | 1.4 | 2.9 | -56.7 | 89.7 | 53.0 |
| 1624.43 | H | 47.1 | -63.4 | 2.7 | 3.3 | -64.1 | 97.1 | 53.0 |
| 1624.43 | V | 48.3 | -66.5 | 2.7 | 3.3 | -67.2 | 100.2 | 53.0 |
| 2030.53 | H | 48.2 | -60.3 | 1.8 | 3.7 | -62.2 | 95.2 | 53.0 |
| 2030.53 | V | 47.8 | -61.2 | 1.8 | 3.7 | -63.1 | 96.1 | 53.0 |
| 2436.64 | H | 46.6 | -55.4 | 3.2 | 4.2 | -56.3 | 89.3 | 53.0 |
| 2436.64 | V | 47.3 | -53.1 | 3.2 | 4.2 | -54.0 | 87.0 | 53.0 |
| 2842.74 | H | 50.3 | -48.3 | 4.0 | 4.5 | -48.8 | 81.8 | 53.0 |
| 2842.74 | V | 47.6 | -51.2 | 4.0 | 4.5 | -51.7 | 84.7 | 53.0 |
| 3248.85 | H | 44.7 | -55.4 | 4.9 | 4.9 | -55.3 | 88.3 | 53.0 |
| 3248.85 | V | 46.1 | -53.1 | 4.9 | 4.9 | -53.0 | 86.0 | 53.0 |
| 3654.96 | H | 46.3 | -52.7 | 5.7 | 5.1 | -52.2 | 85.2 | 53.0 |
| 3654.96 | V | 46.2 | -52.0 | 5.7 | 5.1 | -51.5 | 84.5 | 53.0 |
| 4061.06 | H | 46.1 | -56.6 | 5.9 | 5.4 | -56.1 | 89.1 | 53.0 |
| 4061.06 | V | 46.0 | -57.1 | 5.9 | 5.4 | -56.6 | 89.6 | 53.0 |

MIN ATTEN = (matched signal + antenna gain - cable loss) – power in dBm

FCC minimum attenuation = $50 + 10 \log(\text{Power in watts}) = 50 + 10 \log(2W) = 53$

Checked BY *Richard E. King* :

Richard E. King



MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90 Spurious Radiated Emissions
DATE : June 14, 2013
NOTES : Transmit at 418 MHz
: Test Distance is 3 meters

| Freq (MHz) | Ant Pol | Meter Reading (dBuV) | Matched | | | Total (dBm) | ATTEN | Minimum Attenuation |
|---------------|------------|----------------------------|----------------------|---------------------|-------------|----------------|-------|------------------------|
| | | | SIG. GEN. (dB) | Ant Gain (dB) | CBL (dB) | | | |
| 836.00 | H | 25.6 | -48.5 | 0.0 | 2.4 | -50.9 | 83.9 | 53.0 |
| 836.00 | V | 22.1 | -50.4 | 0.0 | 2.4 | -52.8 | 85.8 | 53.0 |
| 1254.00 | H | 56.8 | -52.2 | 1.7 | 2.9 | -53.5 | 86.5 | 53.0 |
| 1254.00 | V | 54.9 | -51.1 | 1.7 | 2.9 | -52.4 | 85.4 | 53.0 |
| 1672.00 | H | 47.0 | -61.0 | 2.6 | 3.4 | -61.8 | 94.8 | 53.0 |
| 1672.00 | V | 46.9 | -62.0 | 2.6 | 3.4 | -62.8 | 95.8 | 53.0 |
| 2090.00 | H | 47.7 | -58.8 | 2.0 | 3.8 | -60.6 | 93.6 | 53.0 |
| 2090.00 | V | 47.9 | -59.3 | 2.0 | 3.8 | -61.1 | 94.1 | 53.0 |
| 2508.00 | H | 48.3 | -51.1 | 3.4 | 4.2 | -51.9 | 84.9 | 53.0 |
| 2508.00 | V | 47.8 | -52.2 | 3.4 | 4.2 | -53.0 | 86.0 | 53.0 |
| 2926.00 | H | 46.3 | -54.3 | 4.2 | 4.6 | -54.7 | 87.7 | 53.0 |
| 2926.00 | V | 46.4 | -53.3 | 4.2 | 4.6 | -53.7 | 86.7 | 53.0 |
| 3344.00 | H | 46.7 | -52.7 | 5.2 | 4.9 | -52.5 | 85.5 | 53.0 |
| 3344.00 | V | 46.7 | -55.6 | 5.2 | 4.9 | -55.4 | 88.4 | 53.0 |
| 3762.00 | H | 46.1 | -51.6 | 5.7 | 5.2 | -51.1 | 84.1 | 53.0 |
| 3762.00 | V | 46.1 | -55.5 | 5.7 | 5.2 | -55.0 | 88.0 | 53.0 |
| 4180.00 | H | 46.0 | -55.9 | 6.0 | 5.5 | -55.4 | 88.4 | 53.0 |
| 4180.00 | V | 44.6 | -55.4 | 6.0 | 5.5 | -54.9 | 87.9 | 53.0 |

MIN ATTEN = (matched signal + antenna gain - cable loss) – power in dBm

FCC minimum attenuation = $50 + 10 \log(\text{Power in watts}) = 50 + 10 \log(2W) = 53$

Checked BY *Richard E. King* :

Richard E. King



MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90 Spurious Radiated Emissions
DATE : June 14, 2013
NOTES : Transmit at 429.99375 MHz
: Test Distance is 3 meters

| Freq (MHz) | Ant Pol | Meter Reading (dBuV) | Matched | | | Total (dBm) | ATTEN | Minimum Attenuation |
|---------------|------------|----------------------------|----------------------|---------------------|-------------|----------------|-------|------------------------|
| | | | SIG. GEN. (dB) | Ant Gain (dB) | CBL (dB) | | | |
| 859.99 | H | 26.7 | -46.4 | 0.0 | 2.4 | -48.8 | 81.8 | 53.0 |
| 859.99 | V | 21.5 | -52.4 | 0.0 | 2.4 | -54.8 | 87.8 | 53.0 |
| 1289.98 | H | 56.6 | -55.3 | 1.9 | 3.0 | -56.4 | 89.4 | 53.0 |
| 1289.98 | V | 53.9 | -57.6 | 1.9 | 3.0 | -58.7 | 91.7 | 53.0 |
| 1719.98 | H | 47.1 | -59.2 | 2.4 | 3.4 | -60.2 | 93.2 | 53.0 |
| 1719.98 | V | 49.5 | -57.6 | 2.4 | 3.4 | -58.6 | 91.6 | 53.0 |
| 2149.97 | H | 47.8 | -49.6 | 2.2 | 3.9 | -51.2 | 84.2 | 53.0 |
| 2149.97 | V | 48.9 | -47.5 | 2.2 | 3.9 | -49.1 | 82.1 | 53.0 |
| 2579.96 | H | 47.9 | -52.8 | 3.6 | 4.3 | -53.5 | 86.5 | 53.0 |
| 2579.96 | V | 47.5 | -53.2 | 3.6 | 4.3 | -53.9 | 86.9 | 53.0 |
| 3009.96 | H | 46.4 | -55.3 | 4.3 | 4.7 | -55.6 | 88.7 | 53.0 |
| 3009.96 | V | 46.8 | -54.2 | 4.3 | 4.7 | -54.5 | 87.6 | 53.0 |
| 3439.95 | H | 46.5 | -55.1 | 5.4 | 5.0 | -54.7 | 87.7 | 53.0 |
| 3439.95 | V | 45.3 | -54.6 | 5.4 | 5.0 | -54.2 | 87.2 | 53.0 |
| 3869.94 | H | 45.4 | -52.3 | 5.8 | 5.3 | -51.8 | 84.8 | 53.0 |
| 3869.94 | V | 45.3 | -54.6 | 5.8 | 5.3 | -54.1 | 87.1 | 53.0 |
| 4299.94 | H | 44.8 | -55.3 | 6.0 | 5.5 | -54.8 | 87.8 | 53.0 |
| 4299.94 | V | 46.1 | -54.2 | 6.0 | 5.5 | -53.7 | 86.7 | 53.0 |

MIN ATTEN = (matched signal + antenna gain - cable loss) – power in dBm

FCC minimum attenuation = $50 + 10 \log(\text{Power in watts}) = 50 + 10 \log(2W) = 53$

Checked BY *Richard E. King* :

Richard E. King



MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90 Spurious Radiated Emissions
DATE : June 14, 2013
NOTES : Transmit at 450.00625 MHz
: Test Distance is 3 meters

| Freq (MHz) | Ant Pol | Meter Reading (dBuV) | Matched | | | Total (dBm) | ATTEN | Minimum Attenuation |
|---------------|------------|----------------------------|----------------------|---------------------|-------------|----------------|-------|------------------------|
| | | | SIG. GEN. (dB) | Ant Gain (dB) | CBL (dB) | | | |
| 900.01 | H | 30.1 | -39.4 | 0.0 | 2.4 | -41.9 | 74.9 | 53.0 |
| 900.01 | V | 23.6 | -50.4 | 0.0 | 2.4 | -52.9 | 85.9 | 53.0 |
| 1350.02 | H | 53.6 | -56.8 | 2.2 | 3.1 | -57.6 | 90.6 | 53.0 |
| 1350.02 | V | 54.6 | -55.2 | 2.2 | 3.1 | -56.0 | 89.0 | 53.0 |
| 1800.03 | H | 47.6 | -63.2 | 2.2 | 3.5 | -64.5 | 97.5 | 53.0 |
| 1800.03 | V | 47.5 | -64.5 | 2.2 | 3.5 | -65.8 | 98.8 | 53.0 |
| 2250.03 | H | 47.6 | -58.6 | 2.6 | 4.0 | -60.0 | 93.0 | 53.0 |
| 2250.03 | V | 48.2 | -57.4 | 2.6 | 4.0 | -58.8 | 91.8 | 53.0 |
| 2700.04 | H | 47.9 | -52.6 | 3.8 | 4.4 | -53.2 | 86.2 | 53.0 |
| 2700.04 | V | 48.0 | -55.3 | 3.8 | 4.4 | -55.9 | 88.9 | 53.0 |
| 3150.04 | H | 47.3 | -55.6 | 4.7 | 4.8 | -55.7 | 88.7 | 53.0 |
| 3150.04 | V | 46.2 | -58.2 | 4.7 | 4.8 | -58.3 | 91.3 | 53.0 |
| 3600.05 | H | 45.4 | -55.6 | 5.6 | 5.1 | -55.1 | 88.1 | 53.0 |
| 3600.05 | V | 45.7 | -54.2 | 5.6 | 5.1 | -53.7 | 86.7 | 53.0 |
| 4050.06 | H | 46.7 | -55.6 | 5.9 | 5.4 | -55.1 | 88.1 | 53.0 |
| 4050.06 | V | 46.3 | -55.7 | 5.9 | 5.4 | -55.2 | 88.2 | 53.0 |
| 4500.06 | H | 45.6 | -58.3 | 6.1 | 5.6 | -57.8 | 90.8 | 53.0 |
| 4500.06 | V | 46.7 | -58.0 | 6.1 | 5.6 | -57.5 | 90.5 | 53.0 |

MIN ATTEN = (matched signal + antenna gain - cable loss) – power in dBm

FCC minimum attenuation = $50 + 10 \log(\text{Power in watts}) = 50 + 10 \log(2W) = 53$

Checked BY *Richard E. King* :

Richard E. King



MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90 Spurious Radiated Emissions
DATE : May 23, 2013
NOTES : Transmit at 460.65MHz
: Test Distance is 3 meters

| Freq (MHz) | Ant Pol | Meter Reading (dBuV) | Matched | | | Total (dBm) | ATTEN | Minimum Attenuation |
|---------------|------------|----------------------------|----------------------|---------------------|-------------|----------------|-------|------------------------|
| | | | SIG. GEN. (dB) | Ant Gain (dB) | CBL (dB) | | | |
| 921.30 | H | 39.1 | -34.6 | 0.0 | 2.5 | -37.1 | 70.1 | 53.0 |
| 921.30 | V | 39.1 | -32.7 | 0.0 | 2.5 | -35.2 | 68.2 | 53.0 |
| 1381.95 | H | 57.0 | -53.0 | 2.4 | 3.1 | -53.7 | 86.7 | 53.0 |
| 1381.95 | V | 55.6 | -51.8 | 2.4 | 3.1 | -52.5 | 85.5 | 53.0 |
| 1842.60 | H | 51.6 | -58.3 | 2.1 | 3.5 | -59.8 | 92.8 | 53.0 |
| 1842.60 | V | 48.0 | -63.2 | 2.1 | 3.5 | -64.7 | 97.7 | 53.0 |
| 2303.25 | H | 57.5 | -46.8 | 2.8 | 4.0 | -48.0 | 81.1 | 53.0 |
| 2303.25 | V | 58.1 | -45.7 | 2.8 | 4.0 | -47.0 | 80.0 | 53.0 |
| 2763.90 | H | 49.5 | -50.8 | 3.9 | 4.5 | -51.3 | 84.3 | 53.0 |
| 2763.90 | V | 48.0 | -51.2 | 3.9 | 4.5 | -51.8 | 84.8 | 53.0 |
| 3224.55 | H | 47.1 | -53.5 | 4.9 | 4.8 | -53.5 | 86.5 | 53.0 |
| 3224.55 | V | 48.2 | -52.4 | 4.9 | 4.8 | -52.4 | 85.4 | 53.0 |
| 3685.20 | H | 47.6 | -53.1 | 5.7 | 5.2 | -52.6 | 85.6 | 53.0 |
| 3685.20 | V | 47.3 | -54.6 | 5.7 | 5.2 | -54.1 | 87.1 | 53.0 |
| 4145.85 | H | 48.7 | -50.0 | 6.0 | 5.4 | -49.5 | 82.5 | 53.0 |
| 4145.85 | V | 50.0 | -48.0 | 6.0 | 5.4 | -47.5 | 80.5 | 53.0 |
| 4606.50 | H | 46.8 | -55.9 | 6.4 | 5.7 | -55.2 | 88.2 | 53.0 |
| 4606.50 | V | 46.4 | -53.3 | 6.4 | 5.7 | -52.6 | 85.6 | 53.0 |

MIN ATTEN = (matched signal + antenna gain - cable loss) – power in dBm

FCC minimum attenuation = $50 + 10 \log(\text{Power in watts}) = 50 + 10 \log(2W) = 53$

Checked BY *Richard E. King* :

Richard E. King



MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90 Spurious Radiated Emissions
DATE : May 23, 2013
NOTES : Transmit at 469.99375 MHz
: Test Distance is 3 meters

| Freq (MHz) | Ant Pol | Meter Reading (dBuV) | Matched | | | Total (dBm) | ATTEN | Minimum Attenuation |
|---------------|------------|----------------------------|----------------------|---------------------|-------------|----------------|-------|------------------------|
| | | | SIG. GEN. (dB) | Ant Gain (dB) | CBL (dB) | | | |
| 939.99 | H | 34.3 | -37.4 | 0.0 | 2.5 | -39.9 | 72.9 | 53.0 |
| 939.99 | V | 29.0 | -44.4 | 0.0 | 2.5 | -46.9 | 79.9 | 53.0 |
| 1409.98 | H | 54.1 | -54.3 | 2.6 | 3.1 | -54.8 | 87.8 | 53.0 |
| 1409.98 | V | 54.1 | -52.3 | 2.6 | 3.1 | -52.8 | 85.8 | 53.0 |
| 1879.98 | H | 48.3 | -57.3 | 2.0 | 3.6 | -58.9 | 91.9 | 53.0 |
| 1879.98 | V | 47.4 | -57.2 | 2.0 | 3.6 | -58.8 | 91.8 | 53.0 |
| 2349.97 | H | 48.6 | -46.2 | 2.9 | 4.1 | -47.3 | 80.3 | 53.0 |
| 2349.97 | V | 46.7 | -47.2 | 2.9 | 4.1 | -48.3 | 81.3 | 53.0 |
| 2819.96 | H | 55.0 | -47.6 | 4.0 | 4.5 | -48.1 | 81.1 | 53.0 |
| 2819.96 | V | 53.6 | -48.3 | 4.0 | 4.5 | -48.8 | 81.8 | 53.0 |
| 3289.96 | H | 45.8 | -55.2 | 5.0 | 4.9 | -55.0 | 88.1 | 53.0 |
| 3289.96 | V | 48.7 | -53.9 | 5.0 | 4.9 | -53.7 | 86.8 | 53.0 |
| 3759.95 | H | 46.5 | -58.3 | 5.7 | 5.2 | -57.8 | 90.8 | 53.0 |
| 3759.95 | V | 46.3 | -58.6 | 5.7 | 5.2 | -58.1 | 91.1 | 53.0 |
| 4229.94 | H | 47.9 | -52.3 | 6.0 | 5.5 | -51.8 | 84.8 | 53.0 |
| 4229.94 | V | 47.8 | -55.3 | 6.0 | 5.5 | -54.8 | 87.8 | 53.0 |
| 4699.94 | H | 45.8 | -56.1 | 6.7 | 5.8 | -55.2 | 88.2 | 53.0 |
| 4699.94 | V | 45.8 | -57.3 | 6.7 | 5.8 | -56.4 | 89.4 | 53.0 |

MIN ATTEN = (matched signal + antenna gain - cable loss) – power in dBm

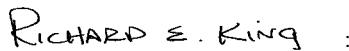
FCC minimum attenuation = $50 + 10 \log(\text{Power in watts}) = 50 + 10 \log(2W) = 53$

Checked BY *Richard E. King* :

Richard E. King

MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90
DATE : May 23, 2013
NOTES : Transmit at 460.65MHz

| Temperature °C | Input Voltage | Nominal Frequency Hz | Measured Frequency Hz | Frequency Variation in ppm | | | Pass/Fail |
|-------------------|------------------|----------------------------|-----------------------------|----------------------------|------------------------------|-----------------------|-----------|
| | | | | Lower Limit ppm | Measured Variation ppm | Upper Limit ppm | |
| -30 | 7.5 | 460,650,000 | 460,650,408 | -1.5000000 | 0.885705 | 1.5000000 | Pass |
| -20 | 7.5 | 460,650,000 | 460,650,240 | -1.5000000 | 0.527515 | 1.5000000 | Pass |
| -10 | 7.5 | 460,650,000 | 460,650,224 | -1.5000000 | 0.243135 | 1.5000000 | Pass |
| 0 | 7.5 | 460,650,000 | 460,649,967 | -1.5000000 | 0.521003 | 1.5000000 | Pass |
| +10 | 7.5 | 460,650,000 | 460,650,016 | -1.5000000 | 0.303918 | 1.5000000 | Pass |
| +20 | 7.5 | 460,650,000 | 460,649,966 | -1.5000000 | 0.195376 | 1.5000000 | Pass |
| +30 | 7.5 | 460,650,000 | 460,649,968 | -1.5000000 | 0.486269 | 1.5000000 | Pass |
| +40 | 7.5 | 460,650,000 | 460,649,999 | -1.5000000 | 0.099859 | 1.5000000 | Pass |
| +50 | 7.5 | 460,650,000 | 460,649,995 | -1.5000000 | 0.004342 | 1.5000000 | Pass |

Checked BY  :

Richard E. King

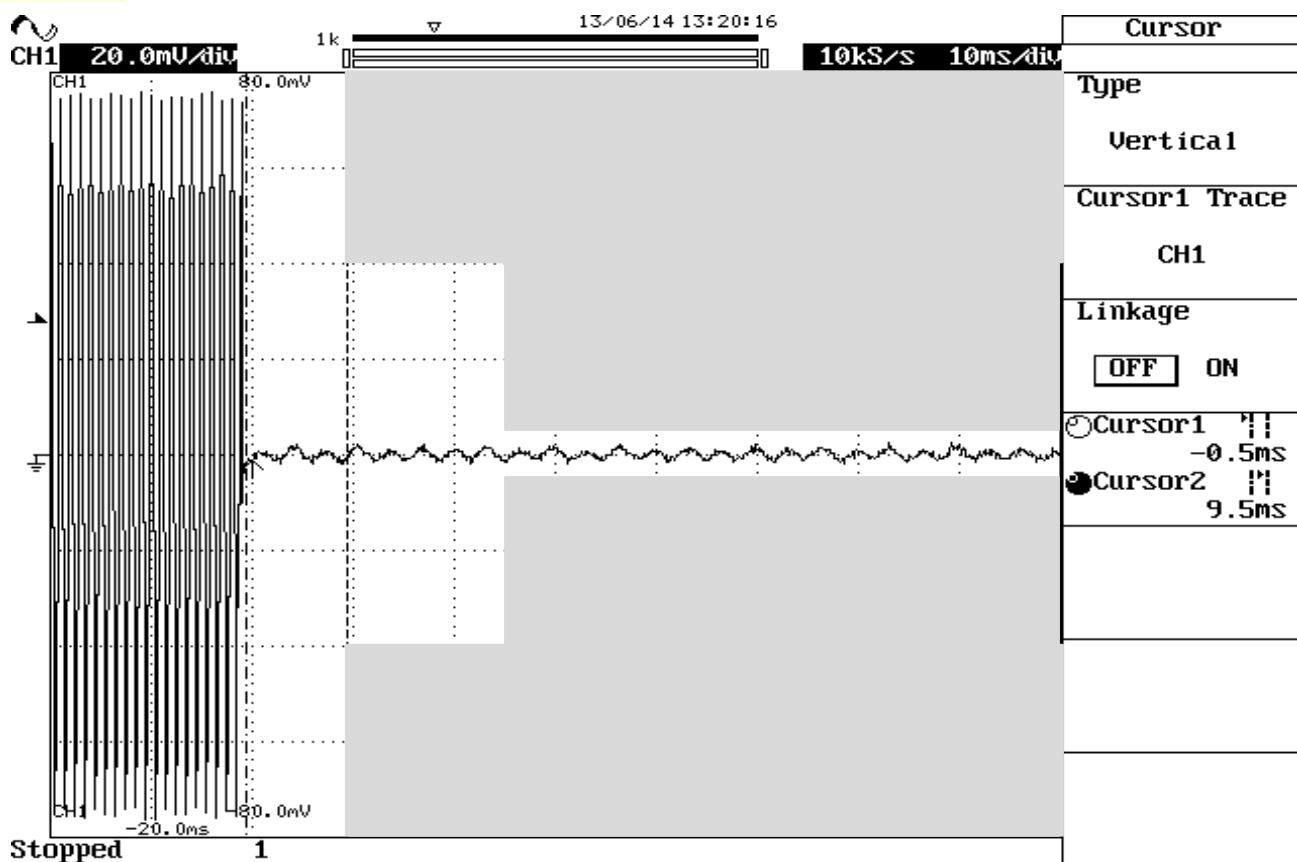


MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90
DATE : May 23, 2013
NOTES : Transmit at 460.65MHz

| Temperature °C | Input Voltage VDC | Nominal Frequency Hz | Measured Frequency Hz | Frequency Variation in ppm | | | Pass/Fail |
|-------------------|--------------------------|----------------------------|-----------------------------|----------------------------|------------------------------|-----------------------|-----------|
| | | | | Lower Limit ppm | Measured Variation ppm | Upper Limit ppm | |
| +23 | 7.5 (Nominal) | 460,650,000 | 460,649,966 | -1.5000000 | -0.073809 | 1.5000000 | Pass |
| +23 | 6.4 (85% of Nominal) | 460,650,000 | 460,649,980 | -1.5000000 | -0.043417 | 1.5000000 | Pass |
| +23 | 8.6 (115% of Nominal) | 460,650,000 | 460,649,978 | -1.5000000 | -0.047759 | 1.5000000 | Pass |

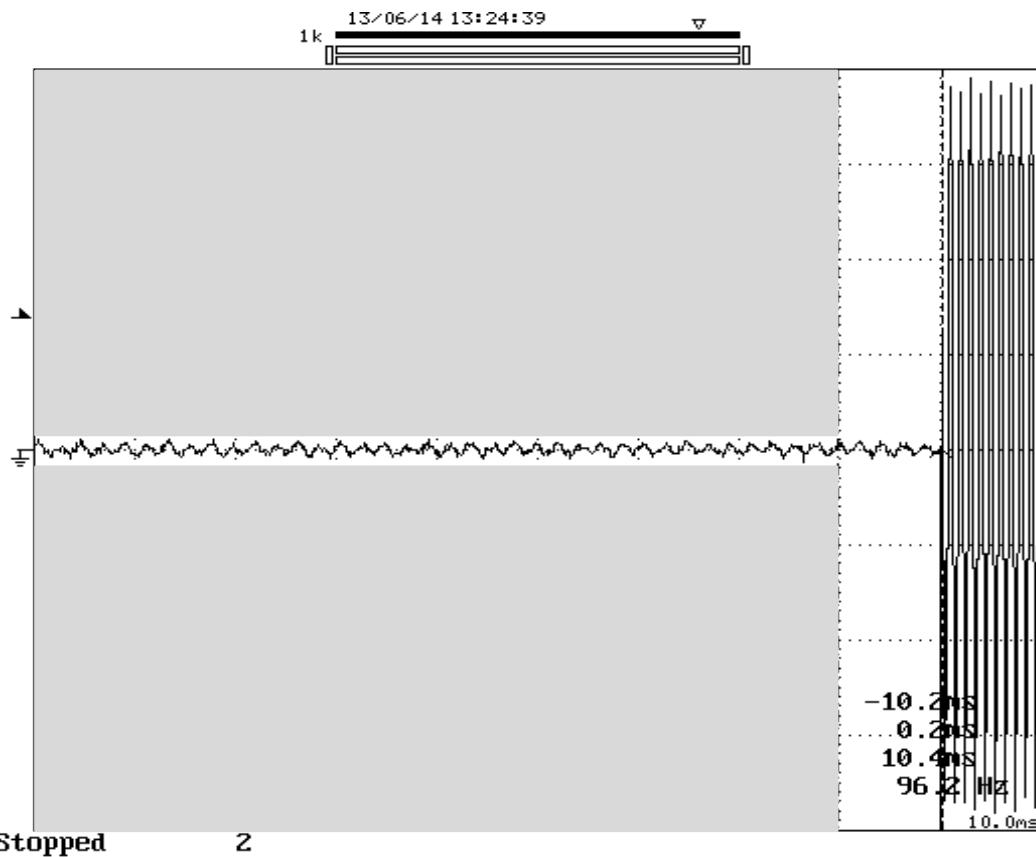
Checked BY *Richard E. King* :

Richard E. King



FCC 90/RSS-119 - TRANSIENT FREQUENCY BEHAVIOR, ON TIME

MANUFACTURER : XetaWave LLC.
MODEL NUMBER : Xeta-4
TEST : Transient Frequency Behavior, OFF-time
TEST MODE : Tx @ 460.65MHz, 12.5kHz channel spacing
TEST : Transmit on Time, t1= 10ms, t2=25ms
TEST : 1.5ppm transmitter on
EQUIPMENT USED : MSP2, GRE0, RYE0, T1N7

**FCC 90/RSS-119 - TRANSIENT FREQUENCY BEHAVIOR, ON TIME**

MANUFACTURER : XetaWave LLC.
MODEL NUMBER : Xeta-4
TEST : Transient Frequency Behavior, OFF-time
TEST MODE : Tx @ 460.65MHz, 12.5kHz channel spacing
TEST : Transmit off Time, t3=10msec
TEST : 1.5ppm transmitter on
EQUIPMENT USED : MSP2, GRE0, RYE0, T1N7