



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 pages 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	WEINSCHL	46-10-43	AU1883	DC-18GHZ	8/6/2012	8/6/2013
T2D2	20DB, 25W ATTENUATOR	WEINSCHL	46-20-43	AV5815	DC-18GHZ	8/6/2012	8/6/2013
T2S3	20DB 25W ATTENUATOR	WEINSCHL	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.

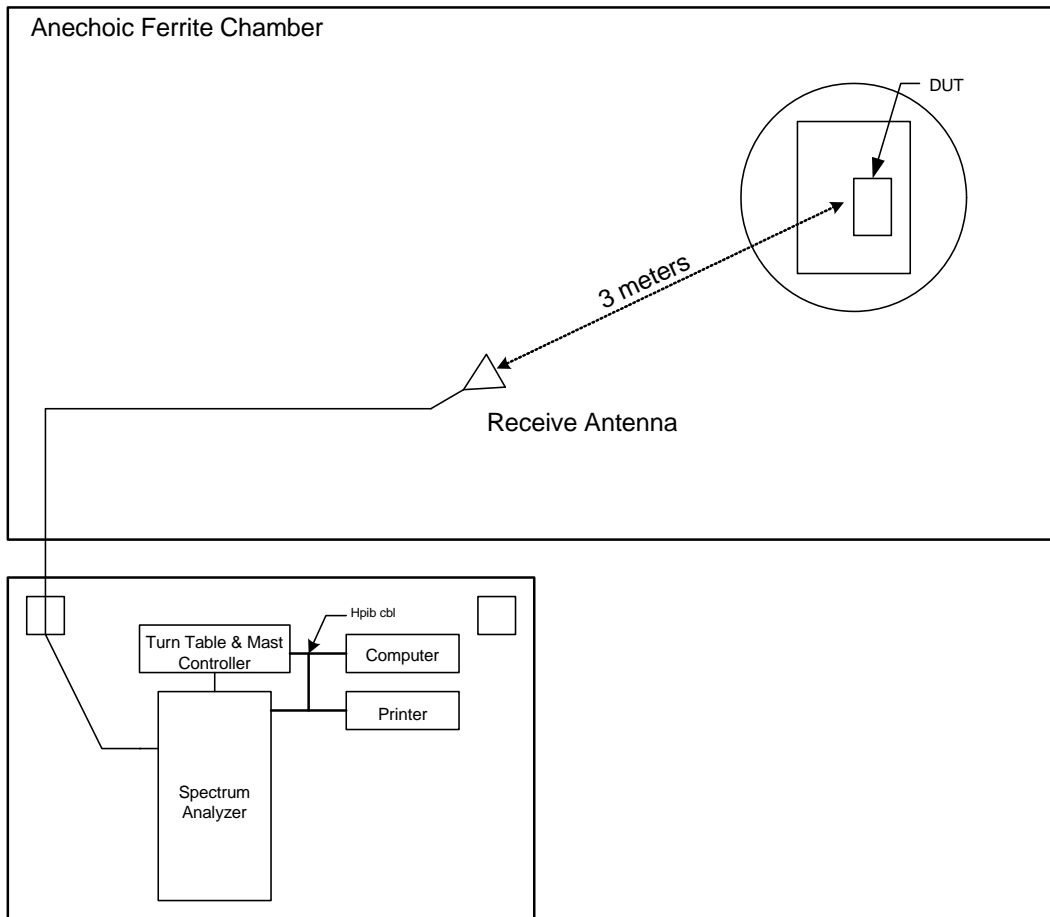
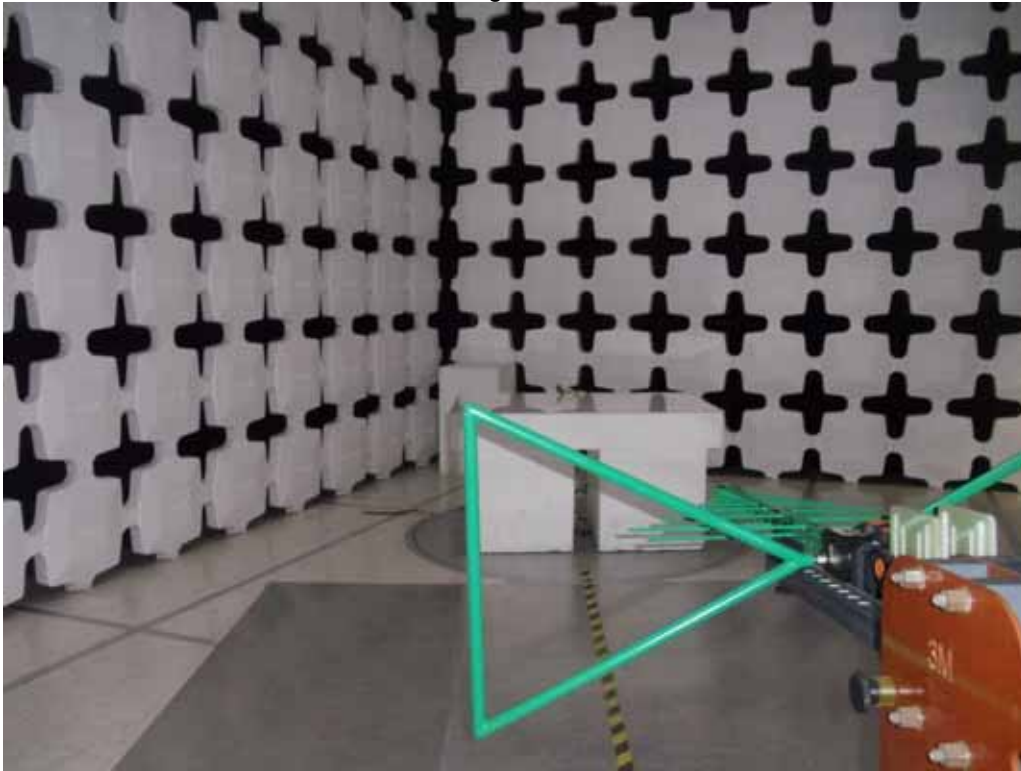
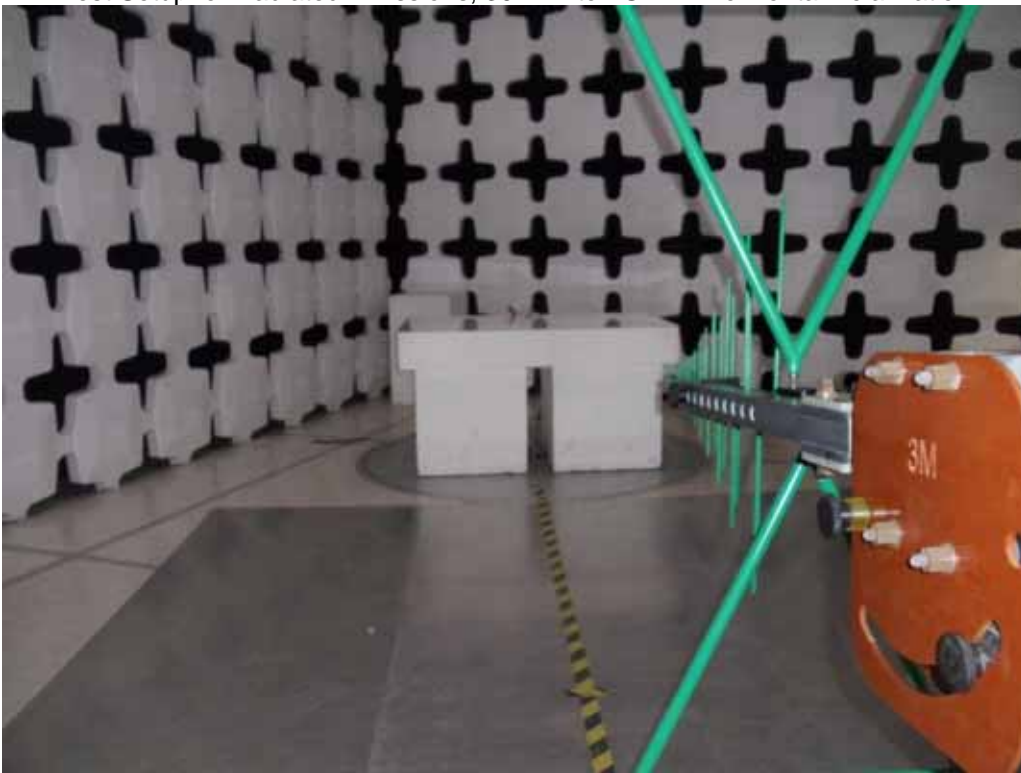


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

Figure 2

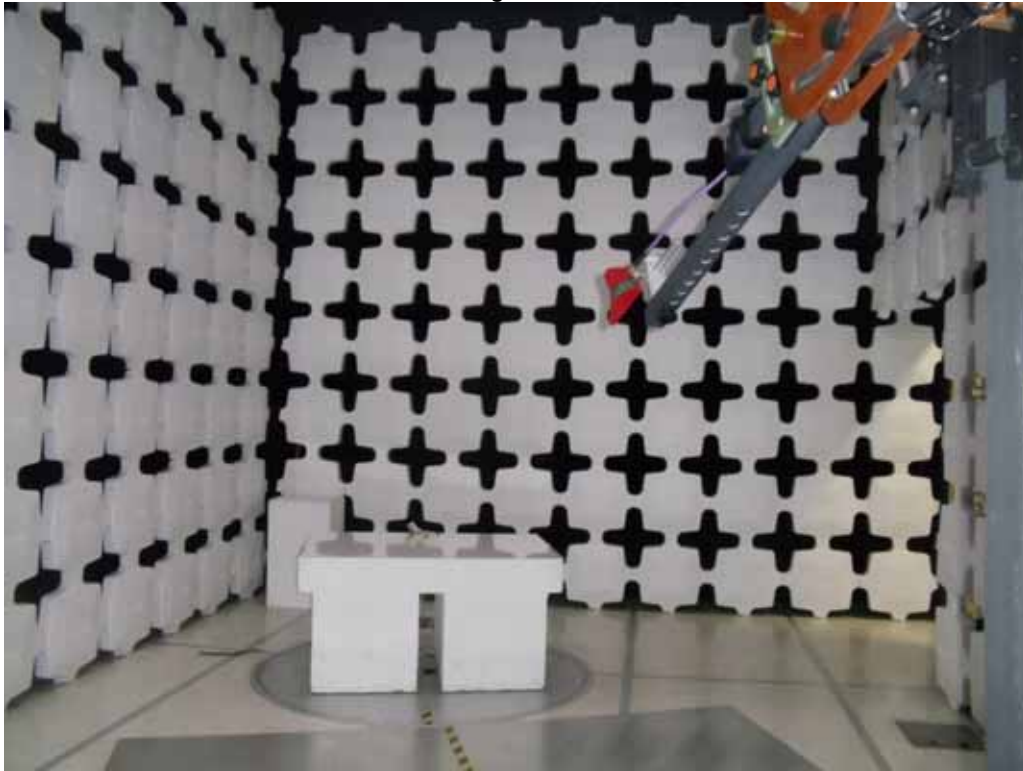


Test Setup for Radiated Emissions, 30MHz to 1GHz – Horizontal Polarization



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

Figure 3



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

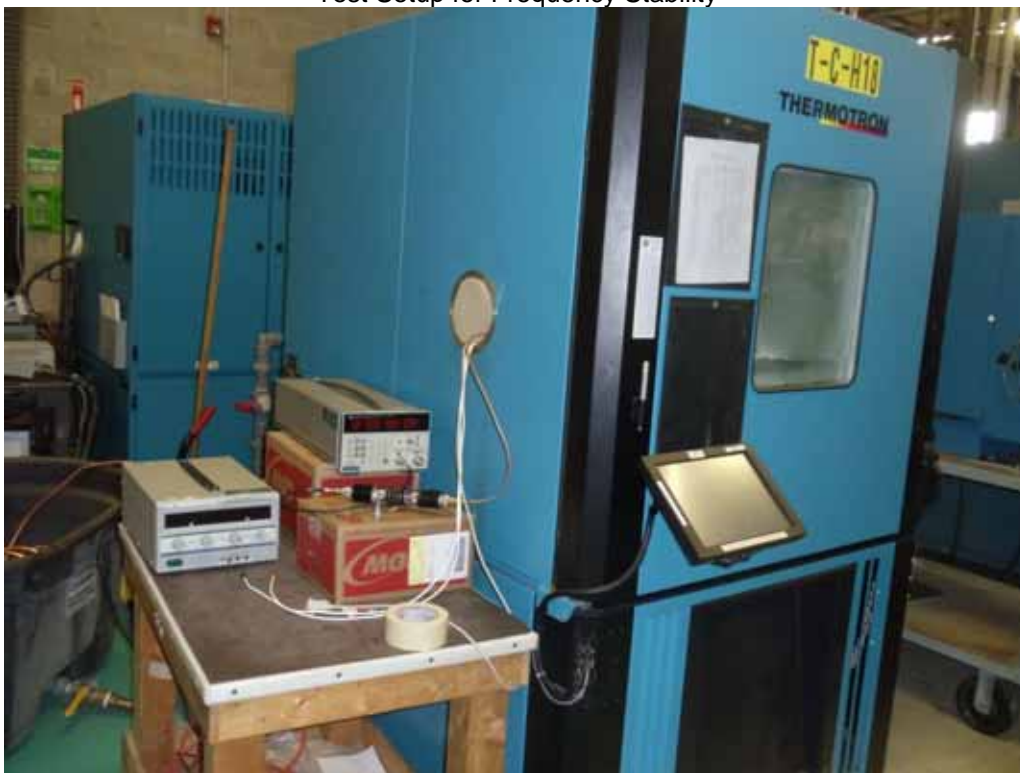


Test Setup for Radiated Emissions, Above 1GHz – Vertical Polarization

Figure 4



Test Setup for Frequency Stability



Test Setup for Frequency Stability

Figure 5



Test Setup for Transient Frequency Behavior

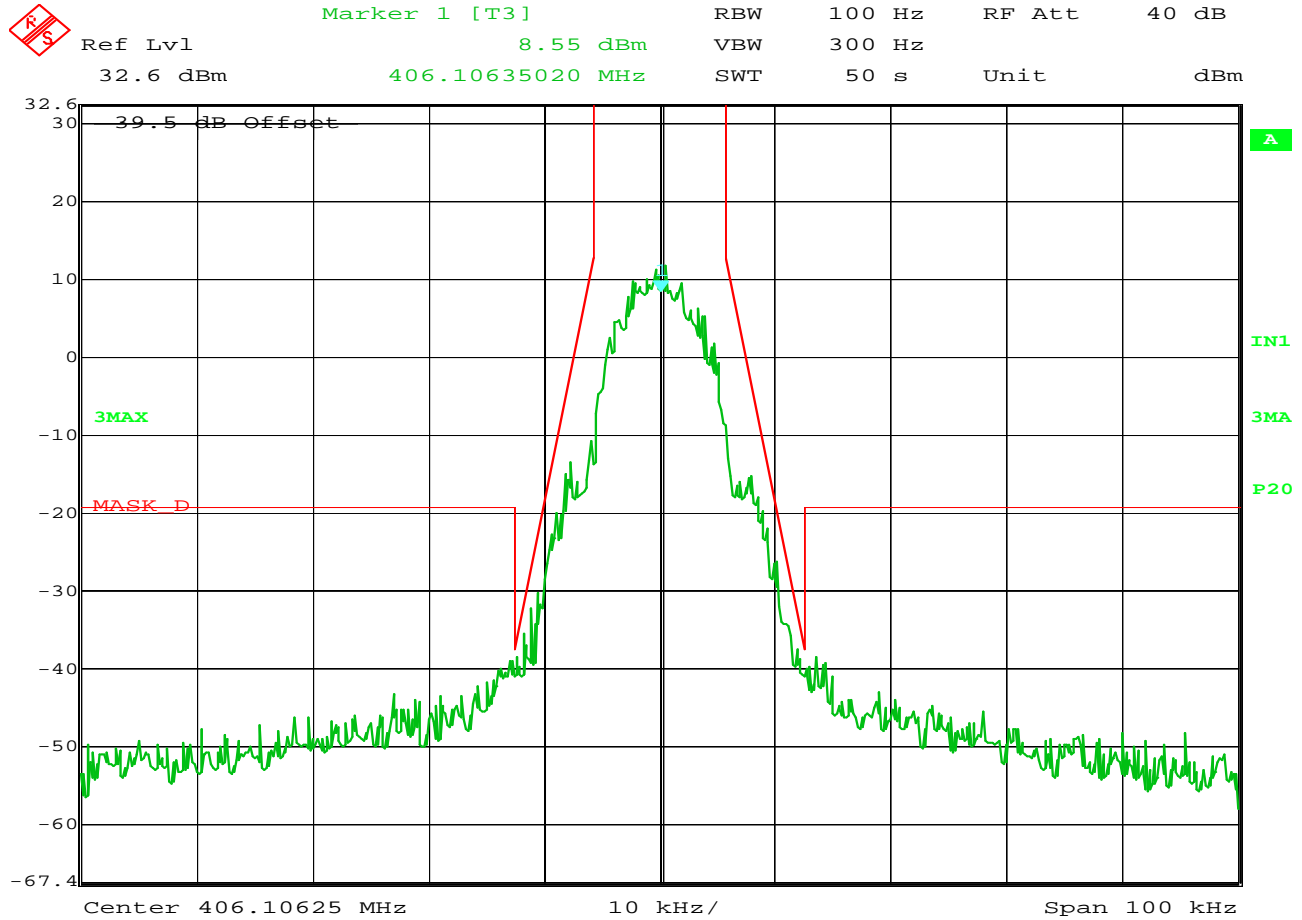


MANUFACTURER : XetaWave LLC.
MODEL : XETA-4
SPECIFICATION : Power Output
DATE : June 14, 2013

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 :

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



Marker 1 [T3]

RBW 100 Hz RF Att 40 dB

Ref Lvl 10.65 dBm

VBW 300 Hz

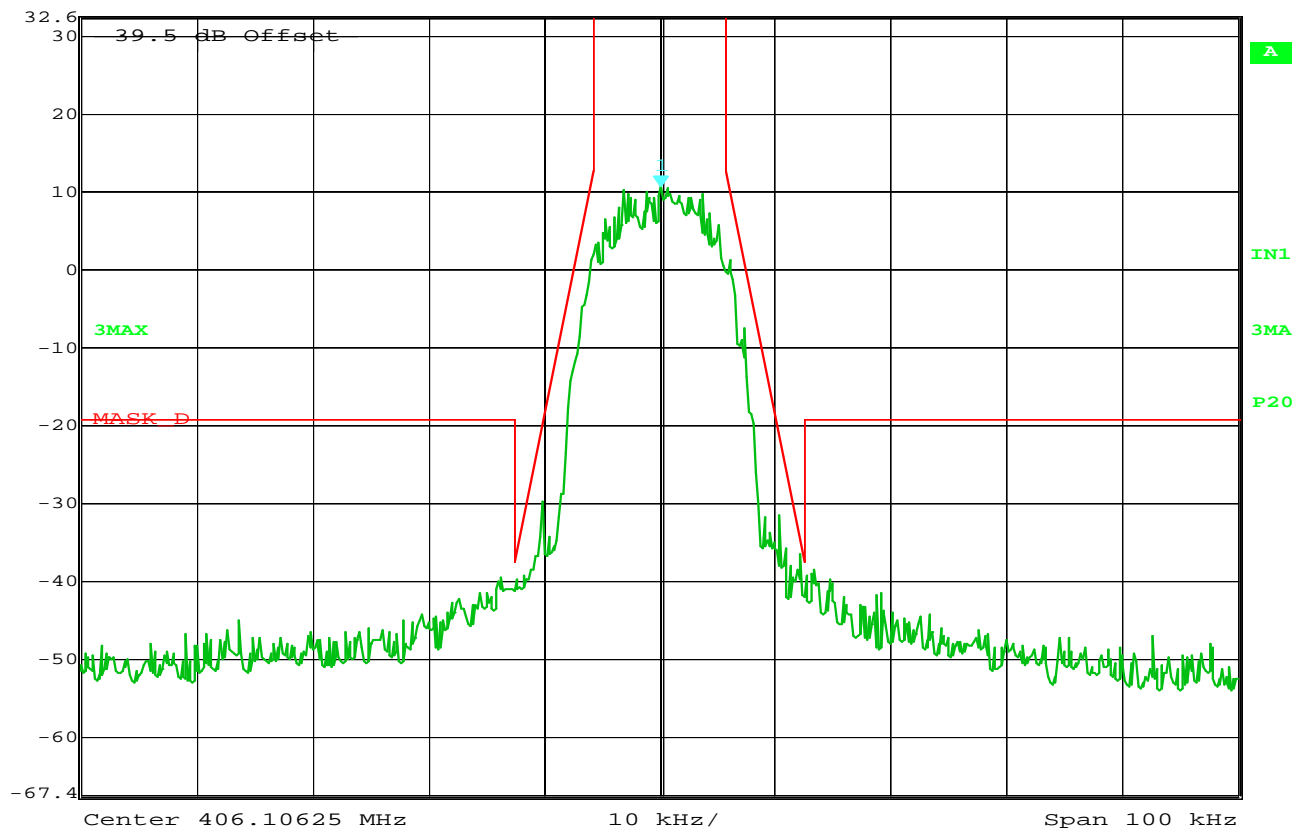
32.6 dBm

406.10635020 MHz

SWT 50 s

Unit

dBm



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



Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

11.64 dBm

VBW

300 Hz

32.6 dBm

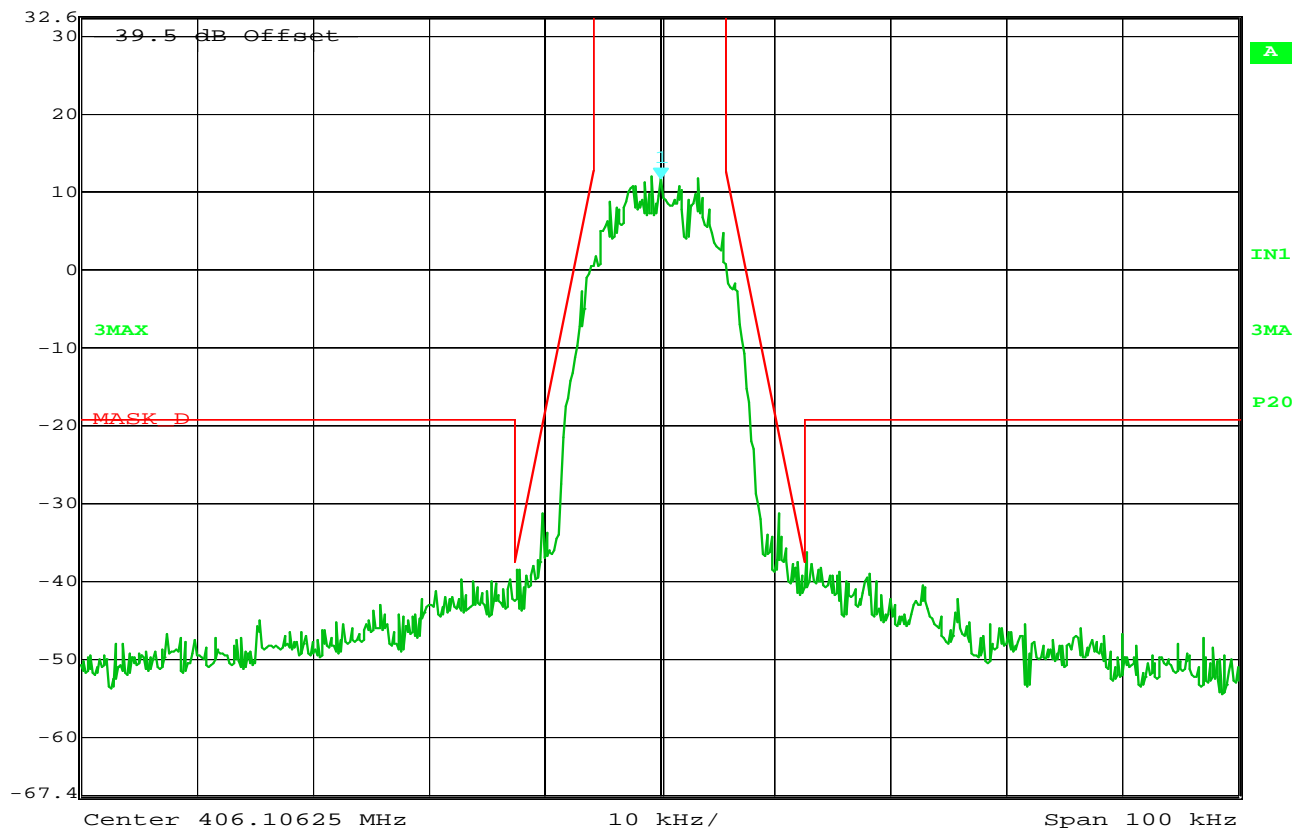
406.10635020 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

-52.31 dBm

VBW

300 Hz

32.6 dBm

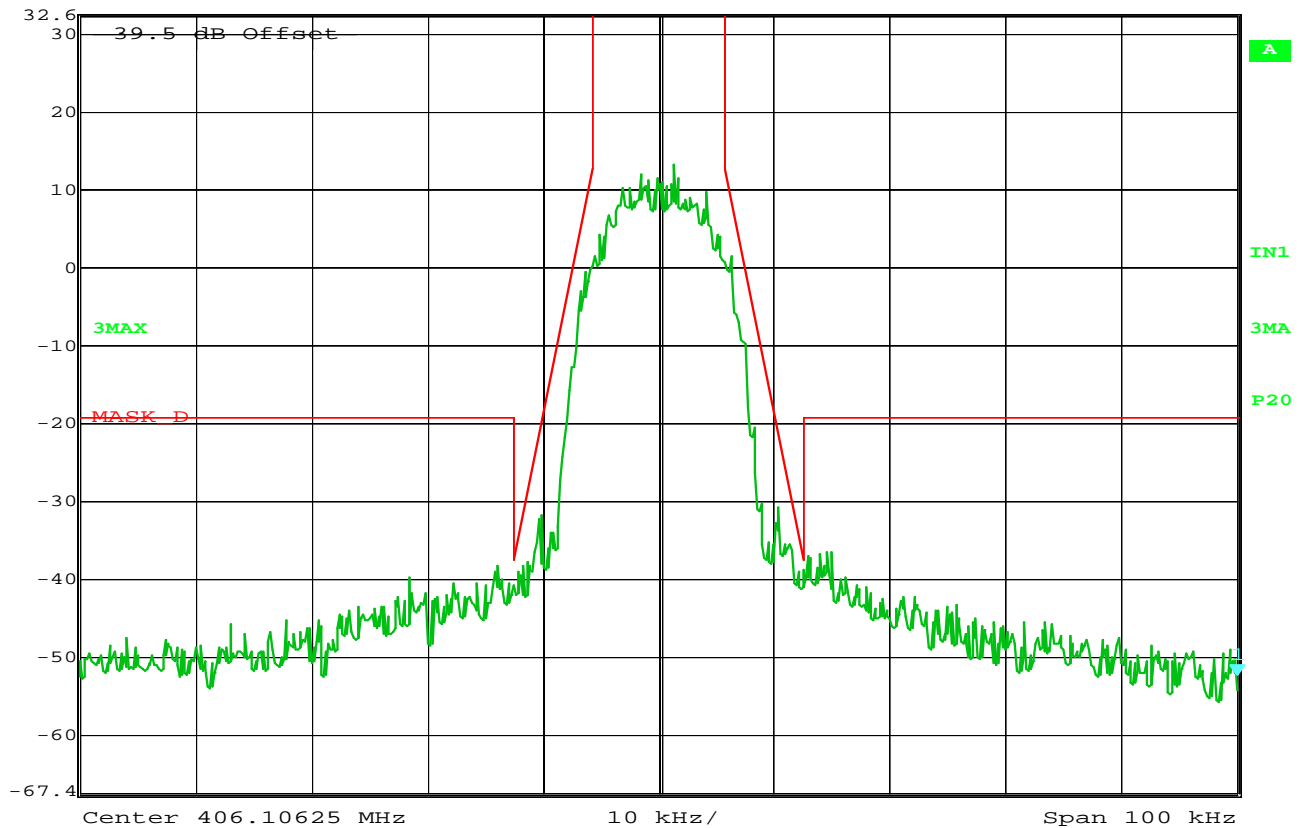
406.15625000 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

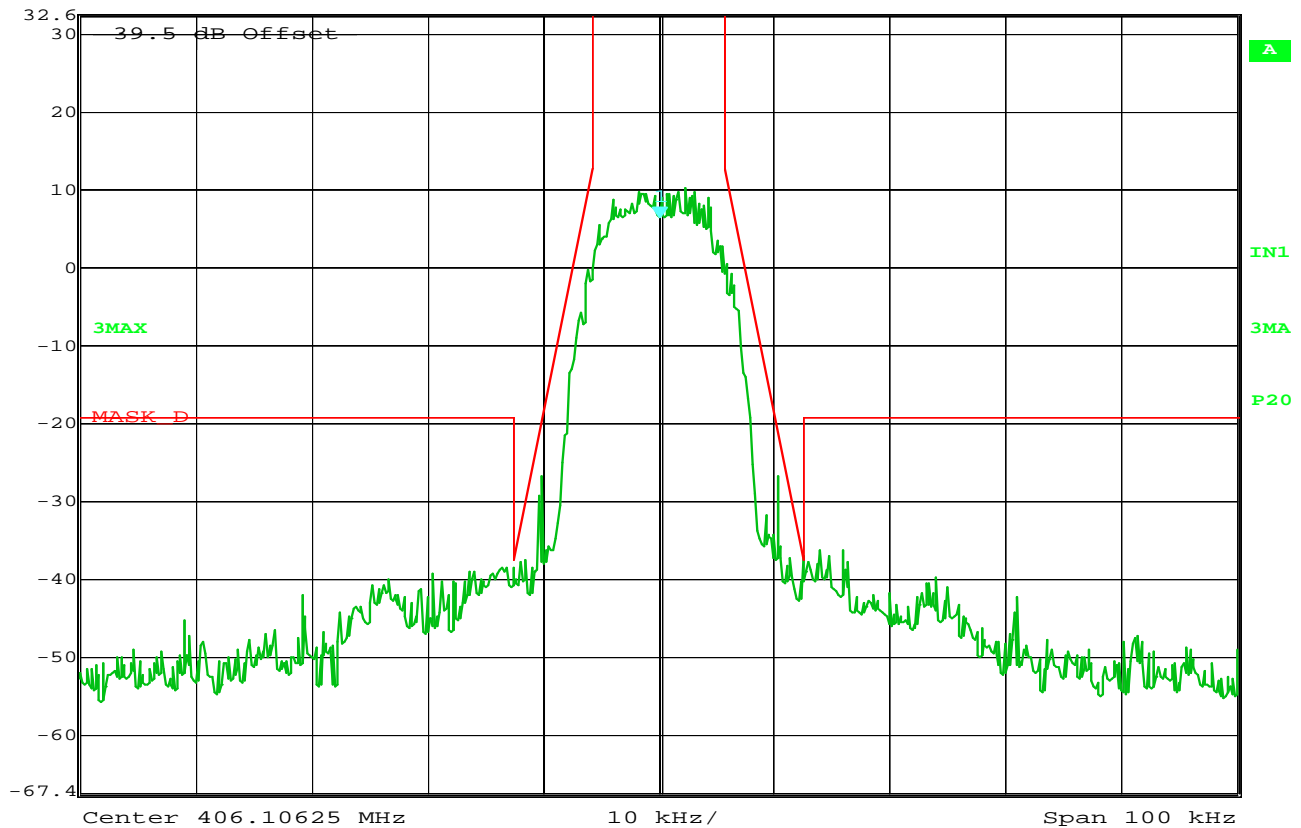
RBW 100 Hz RF Att 40 dB

Ref Lvl 6.56 dBm

VBW 300 Hz

32.6 dBm 406.10635020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

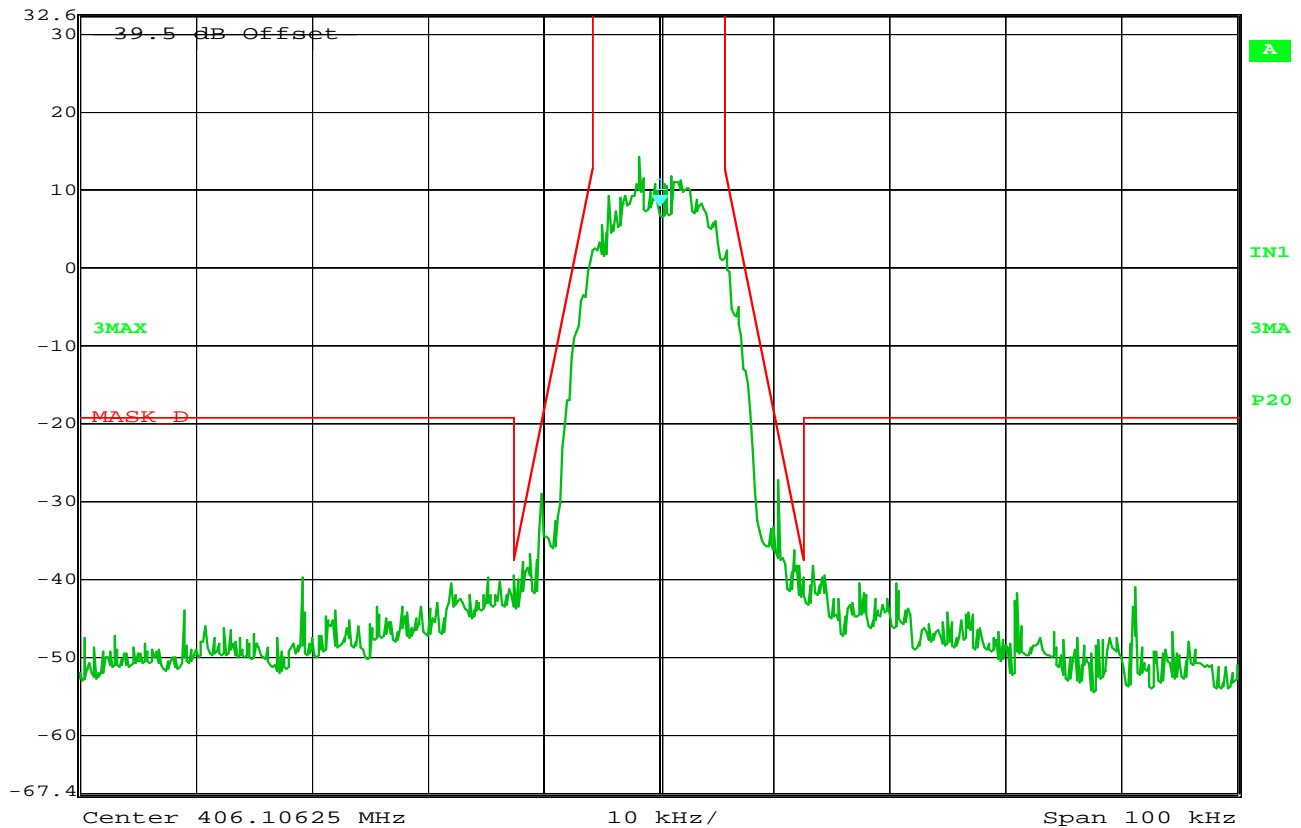
RBW 100 Hz RF Att 40 dB

Ref Lvl 8.06 dBm

VBW 300 Hz

32.6 dBm 406.10635020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

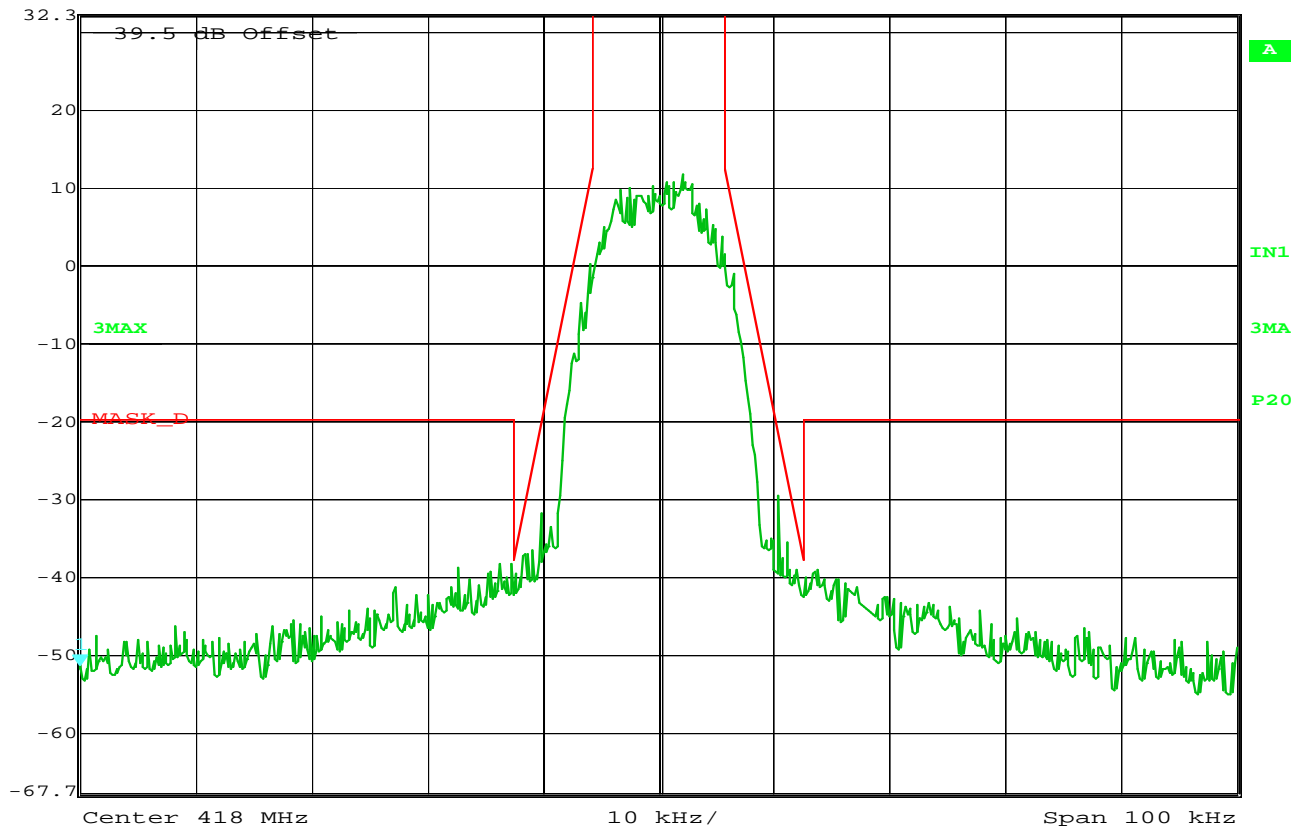
RBW 100 Hz RF Att 40 dB

Ref Lvl -51.40 dBm

VBW 300 Hz

32.3 dBm 417.95000000 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

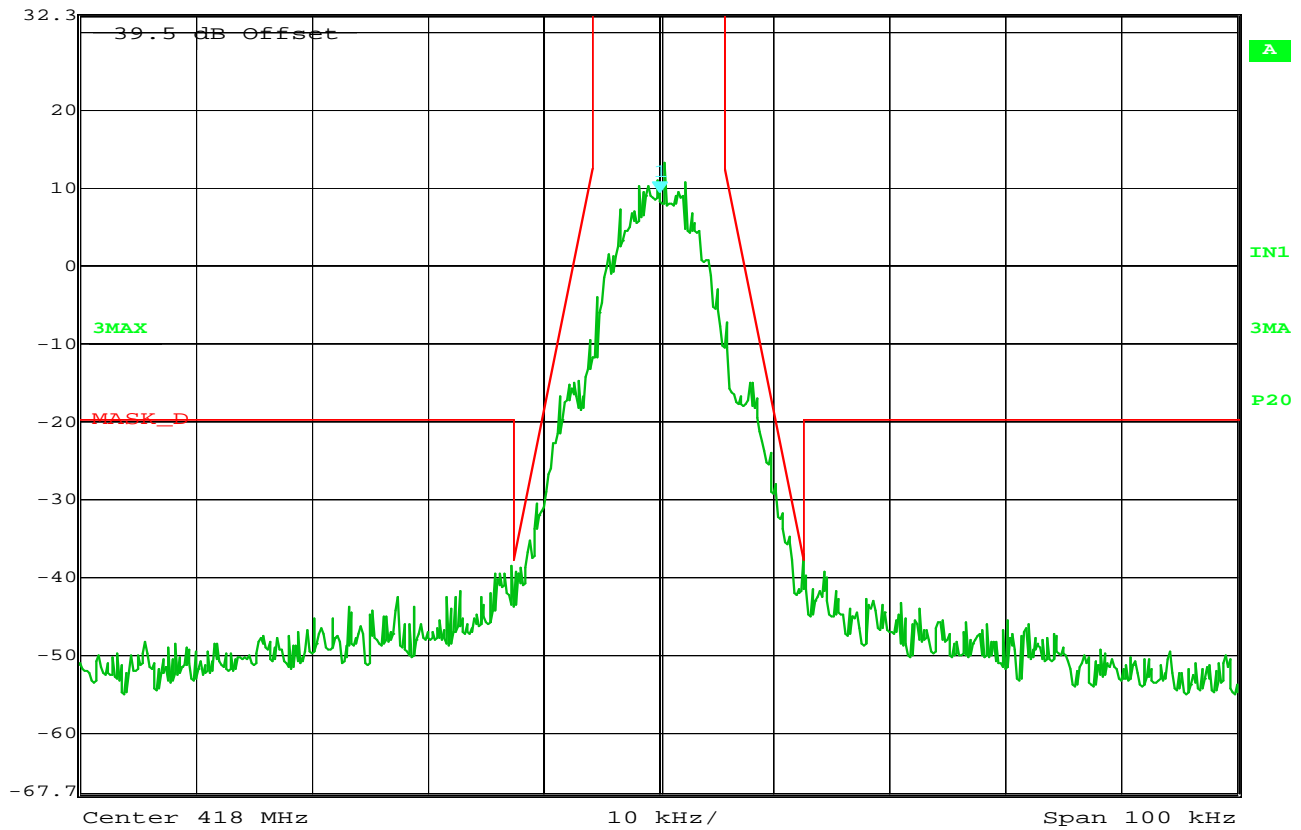
RBW 100 Hz RF Att 40 dB

Ref Lvl 9.36 dBm

VBW 300 Hz

32.3 dBm 418.00010020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

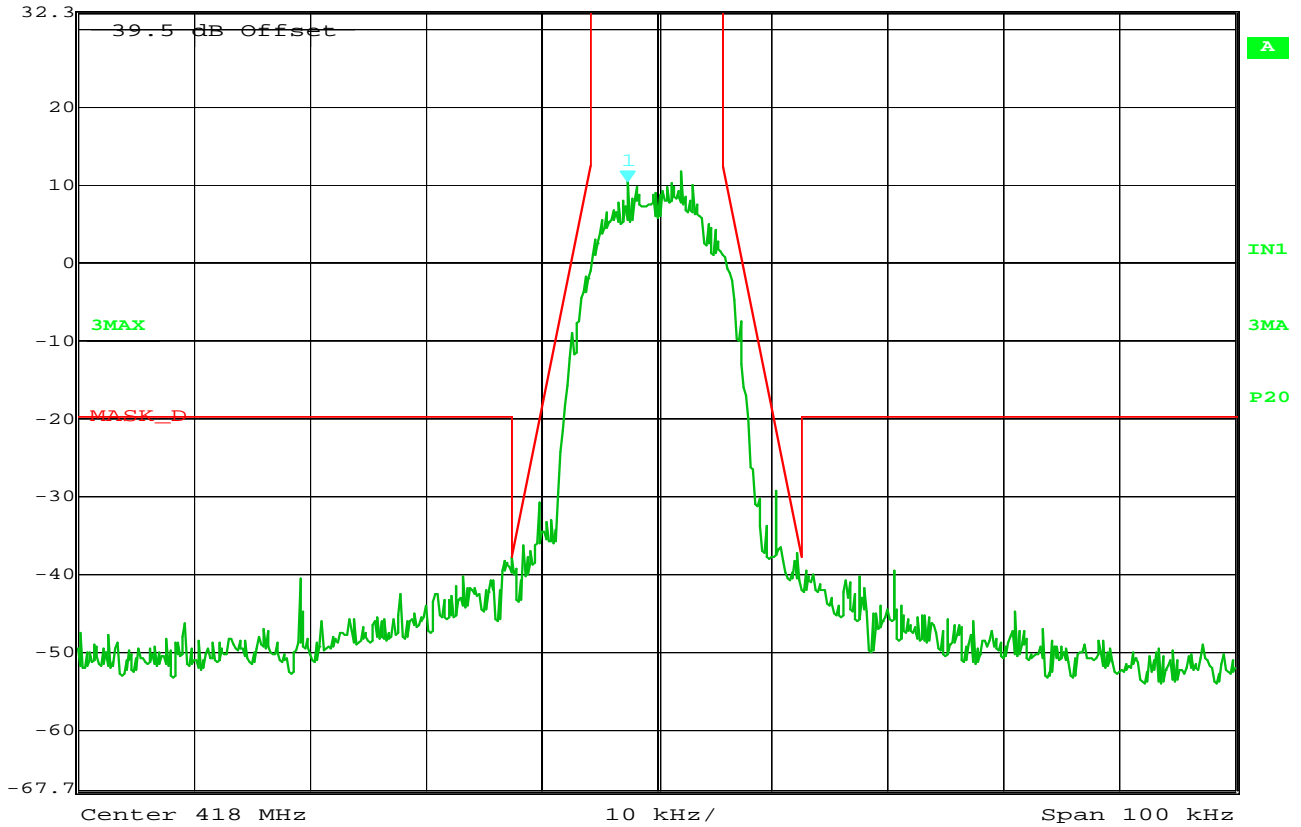
RBW 100 Hz RF Att 40 dB

Ref Lvl 10.51 dBm

VBW 300 Hz

32.3 dBm 417.99749499 MHz

SWT 50 s Unit dBm



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



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

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

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Marker 1 [T3]

RBW 100 Hz RF Att 40 dB

Ref Lvl -42.65 dBm

VBW 300 Hz

32.3 dBm

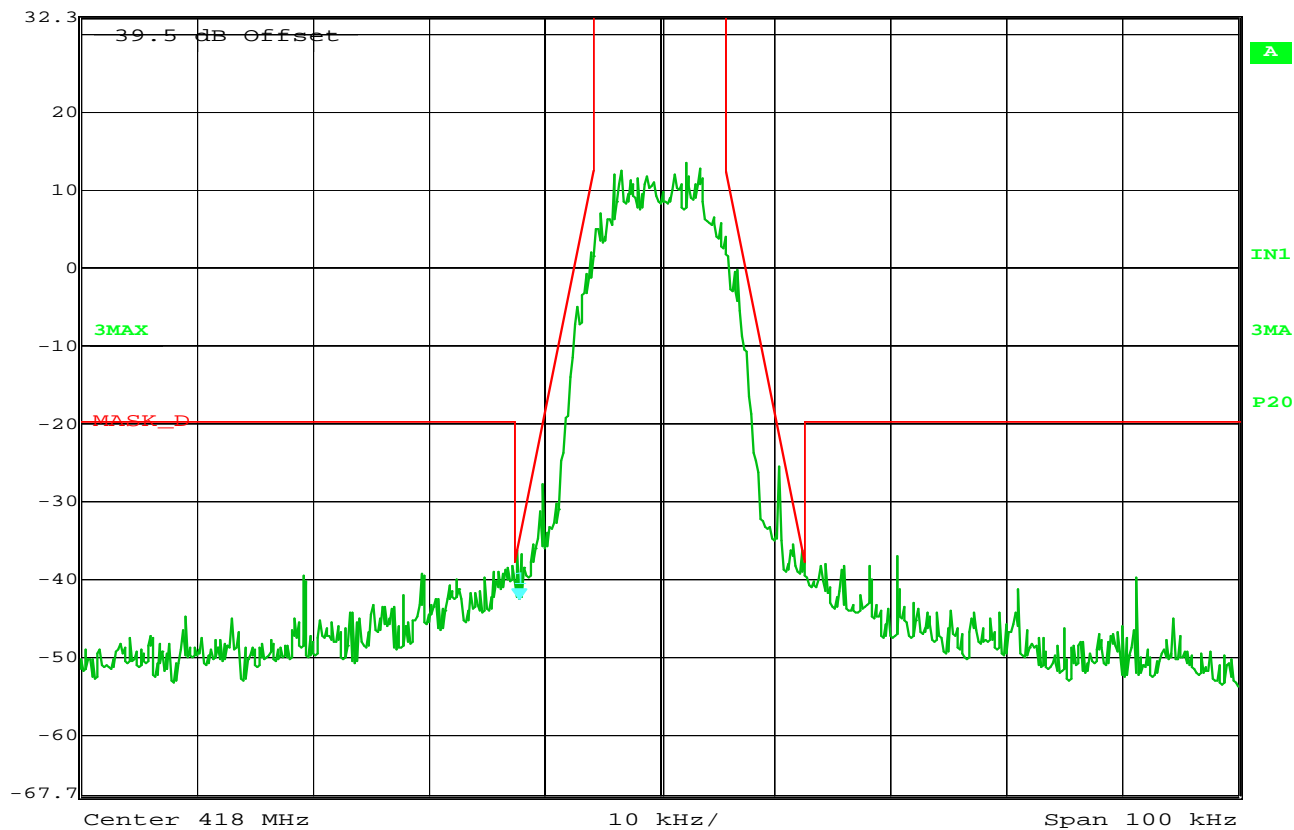
417.98787575 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

RBW 100 Hz RF Att 40 dB

Ref Lvl -50.97 dBm

VBW 300 Hz

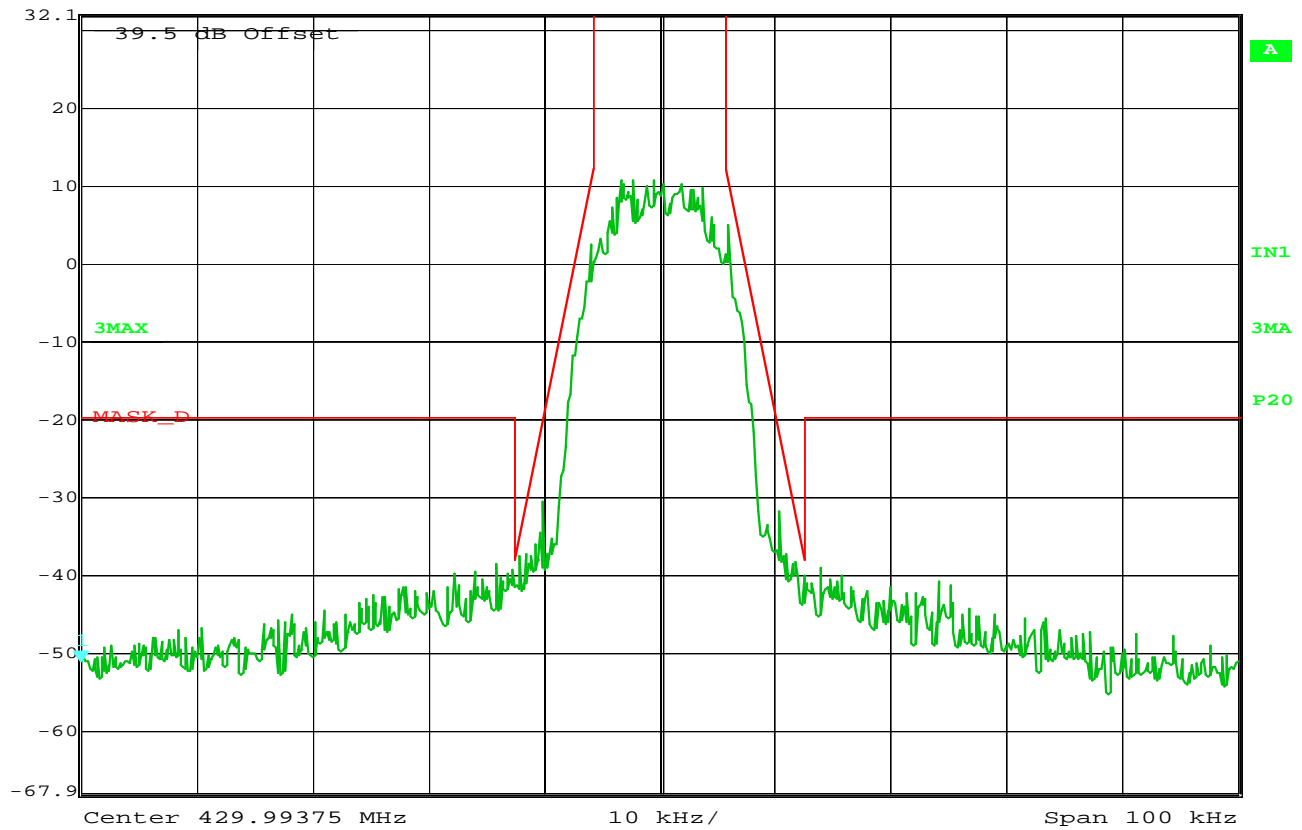
32.1 dBm

429.94375000 MHz

SWT 50 s

Unit

dBm



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



Marker 1 [T3]

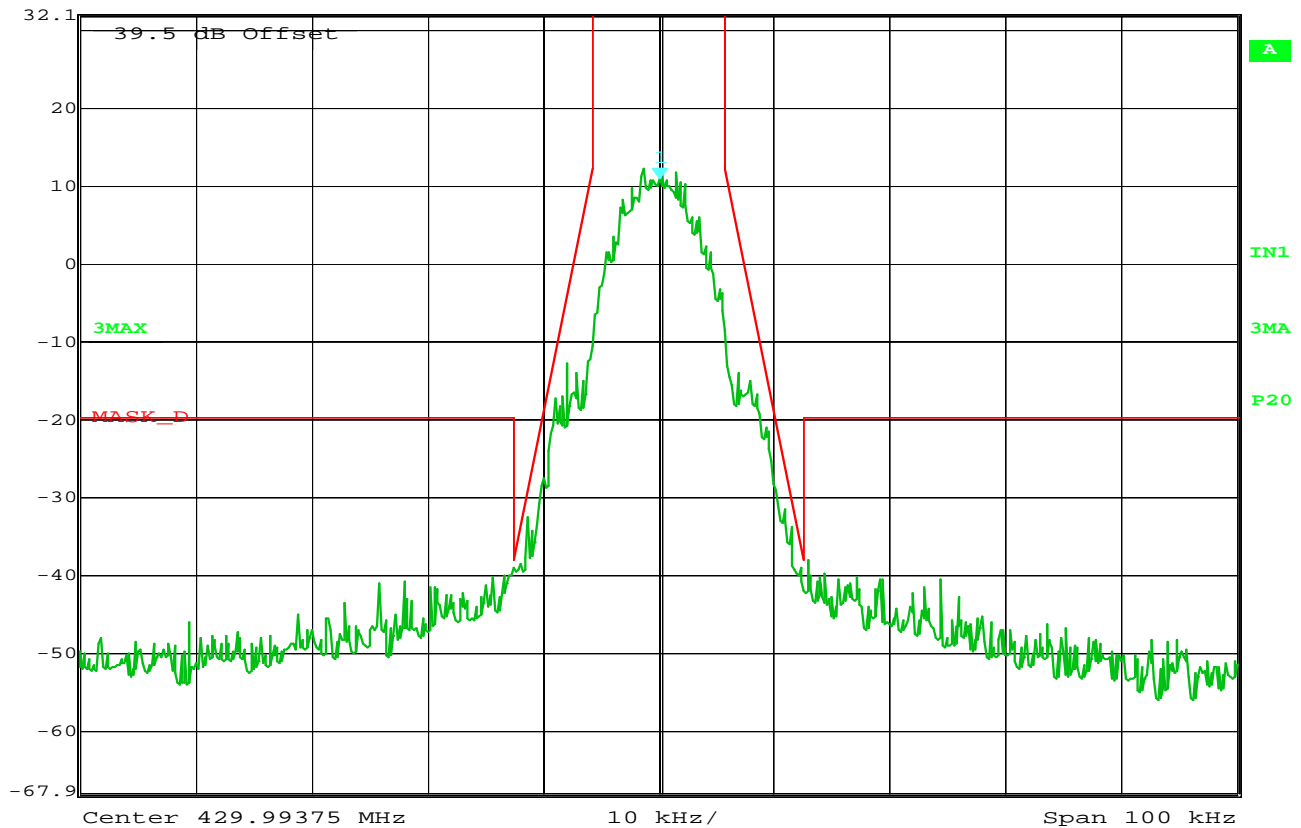
RBW 100 Hz RF Att 40 dB

Ref Lvl 11.02 dBm

VBW 300 Hz

32.1 dBm 429.99385020 MHz

SWT 50 s Unit dBm



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



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

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Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

-32.70 dBm

VBW

300 Hz

32.1 dBm

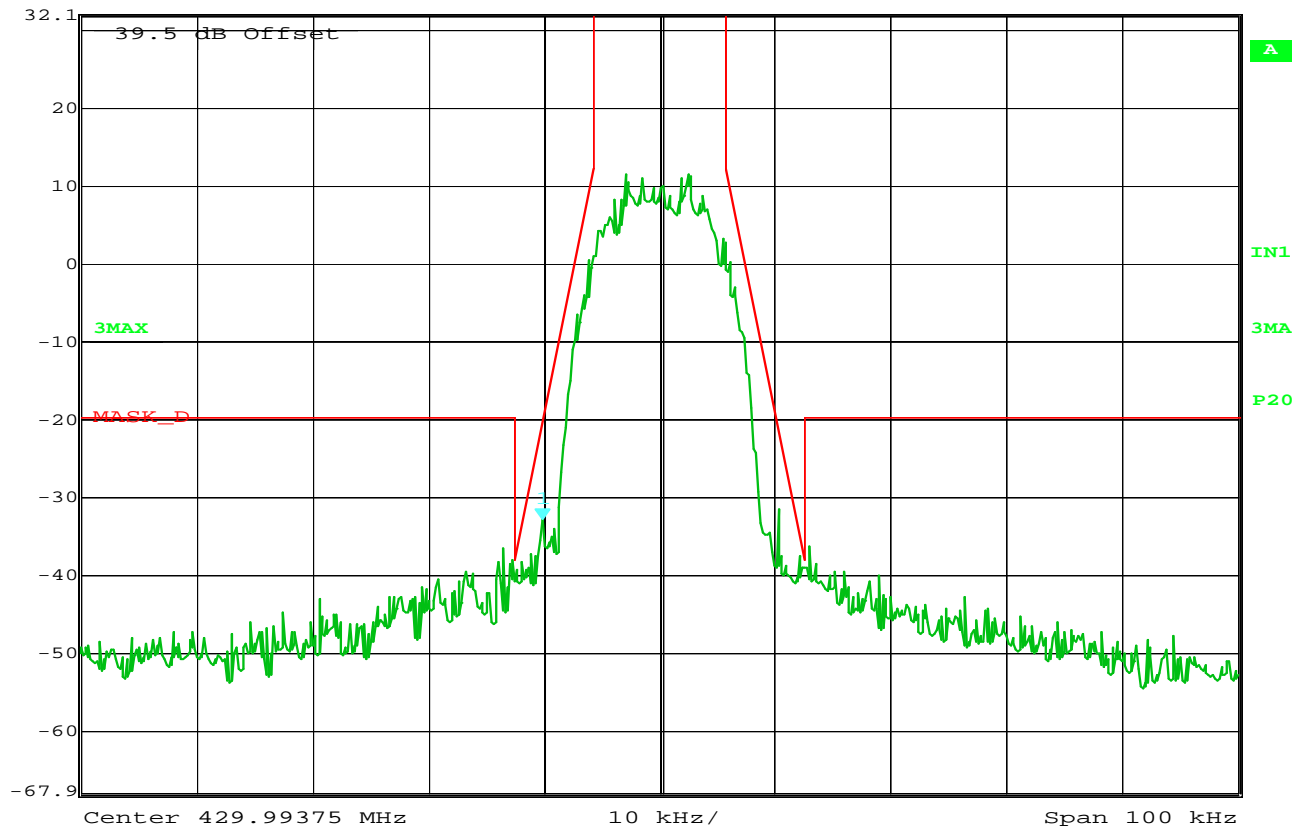
429.98362976 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

-26.73 dBm

VBW

300 Hz

32.1 dBm

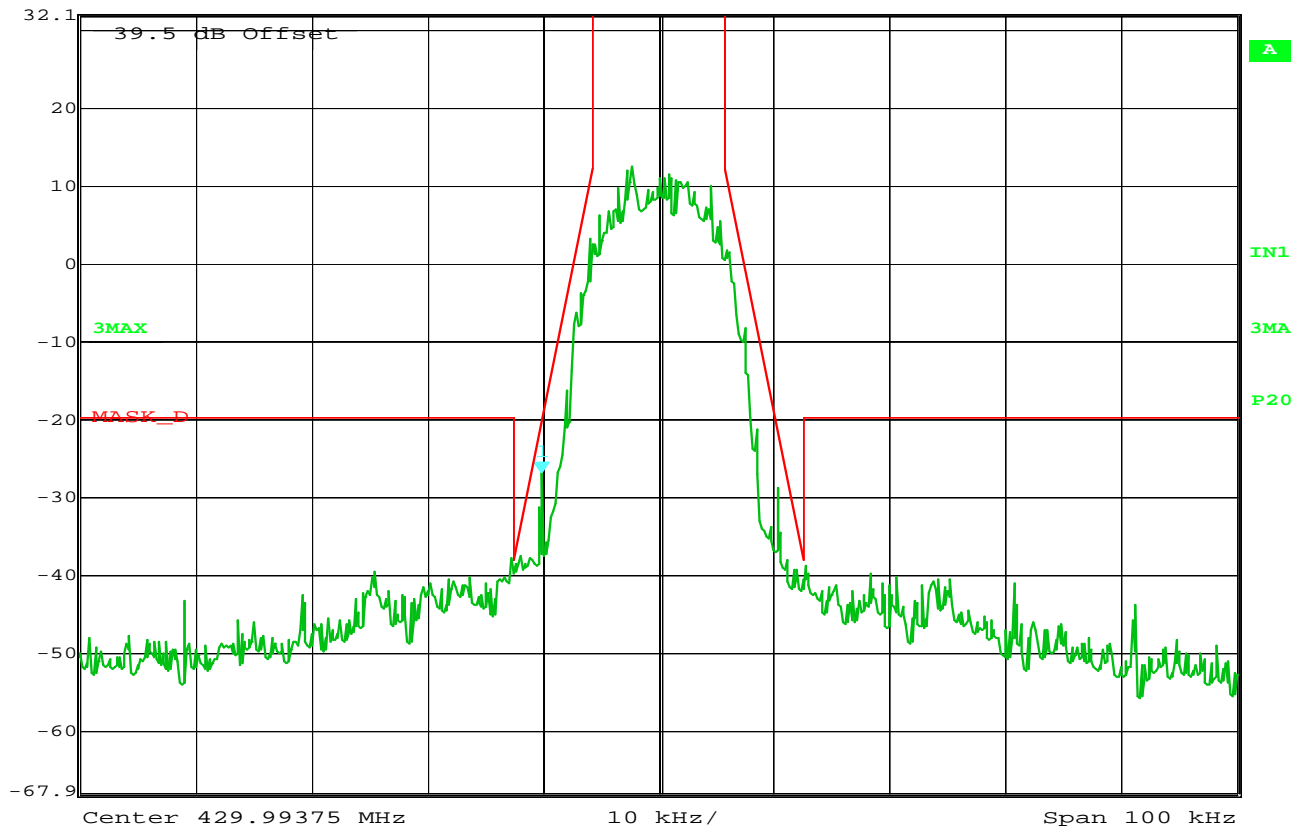
429.98362976 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

RBW 100 Hz RF Att 40 dB

Ref Lvl -28.53 dBm

VBW 300 Hz

32.1 dBm

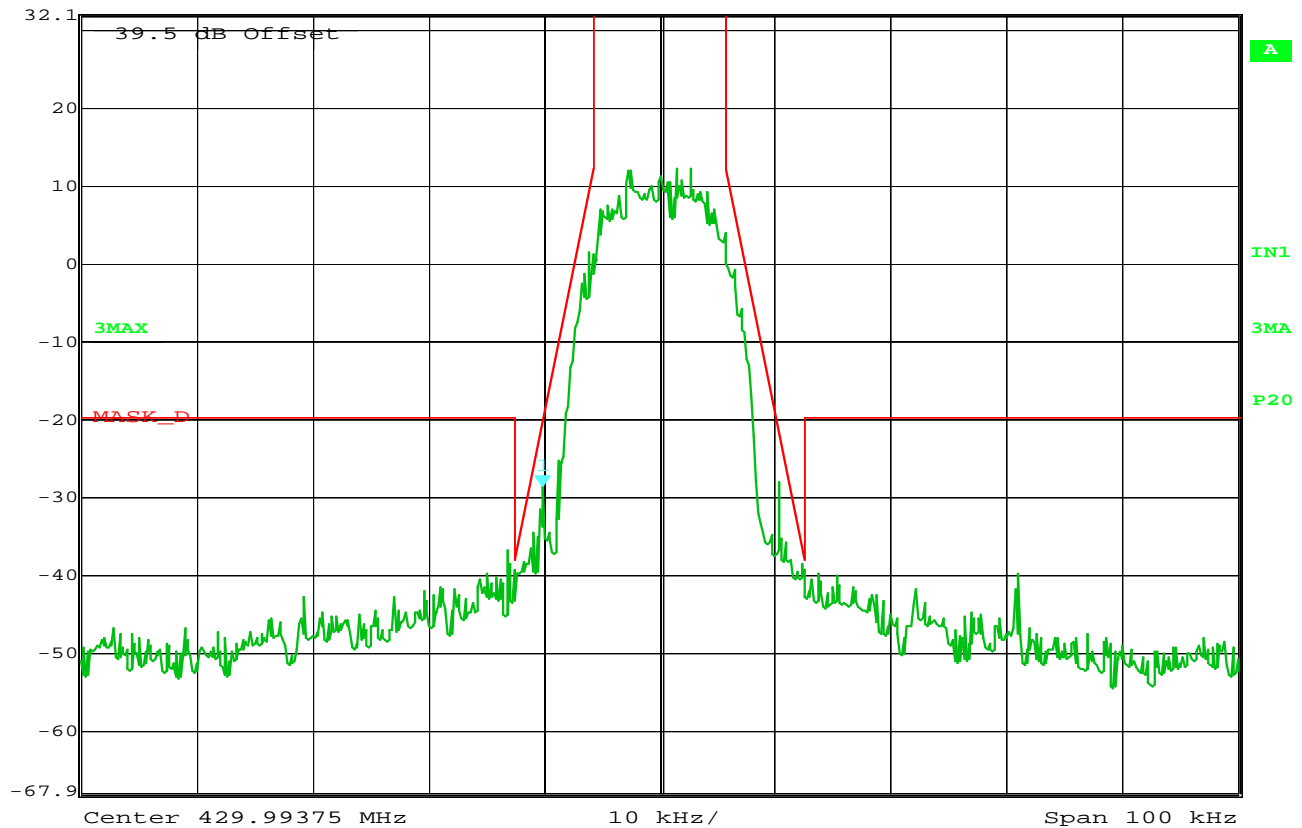
429.98362976 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

-48.43 dBm

VBW

300 Hz

32.1 dBm

449.95625000 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

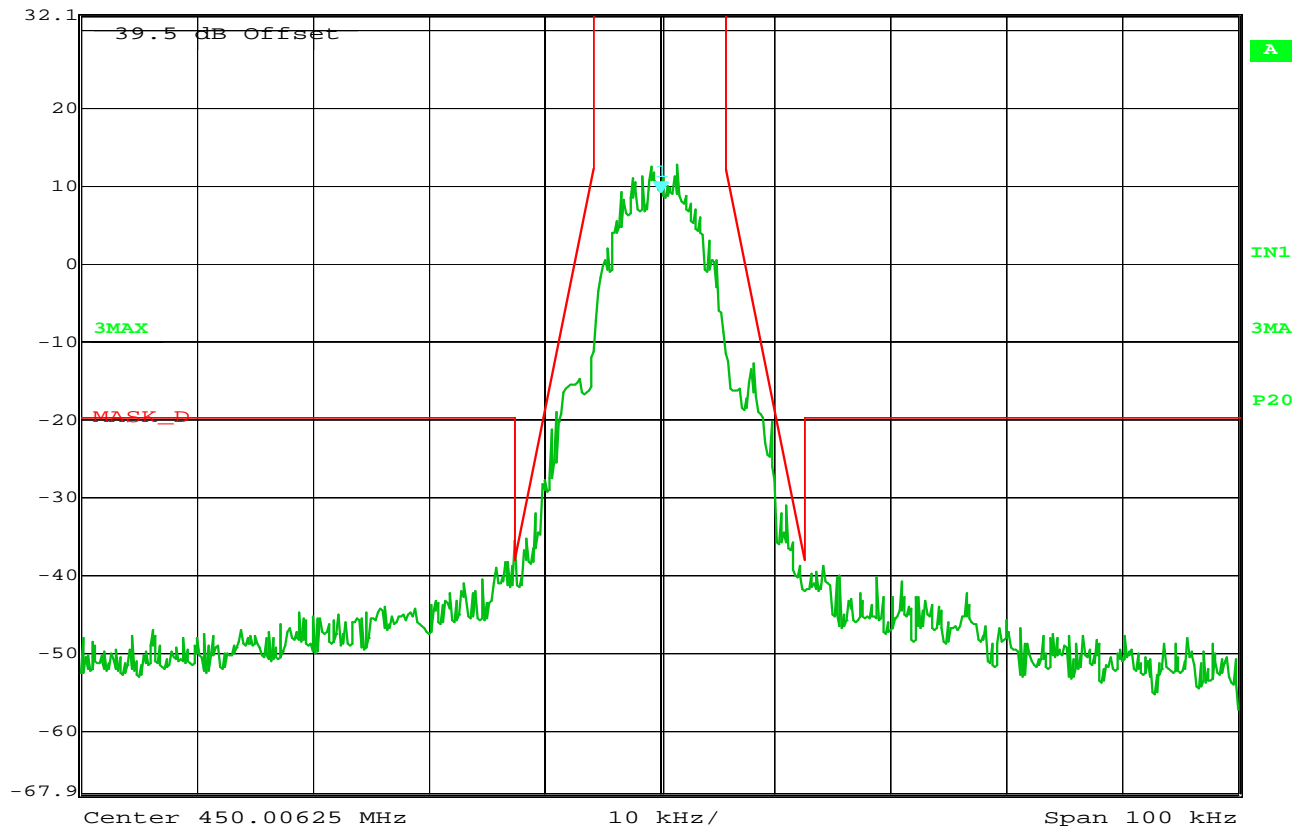
RBW 100 Hz RF Att 40 dB

Ref Lvl 9.22 dBm

VBW 300 Hz

32.1 dBm 450.00635020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

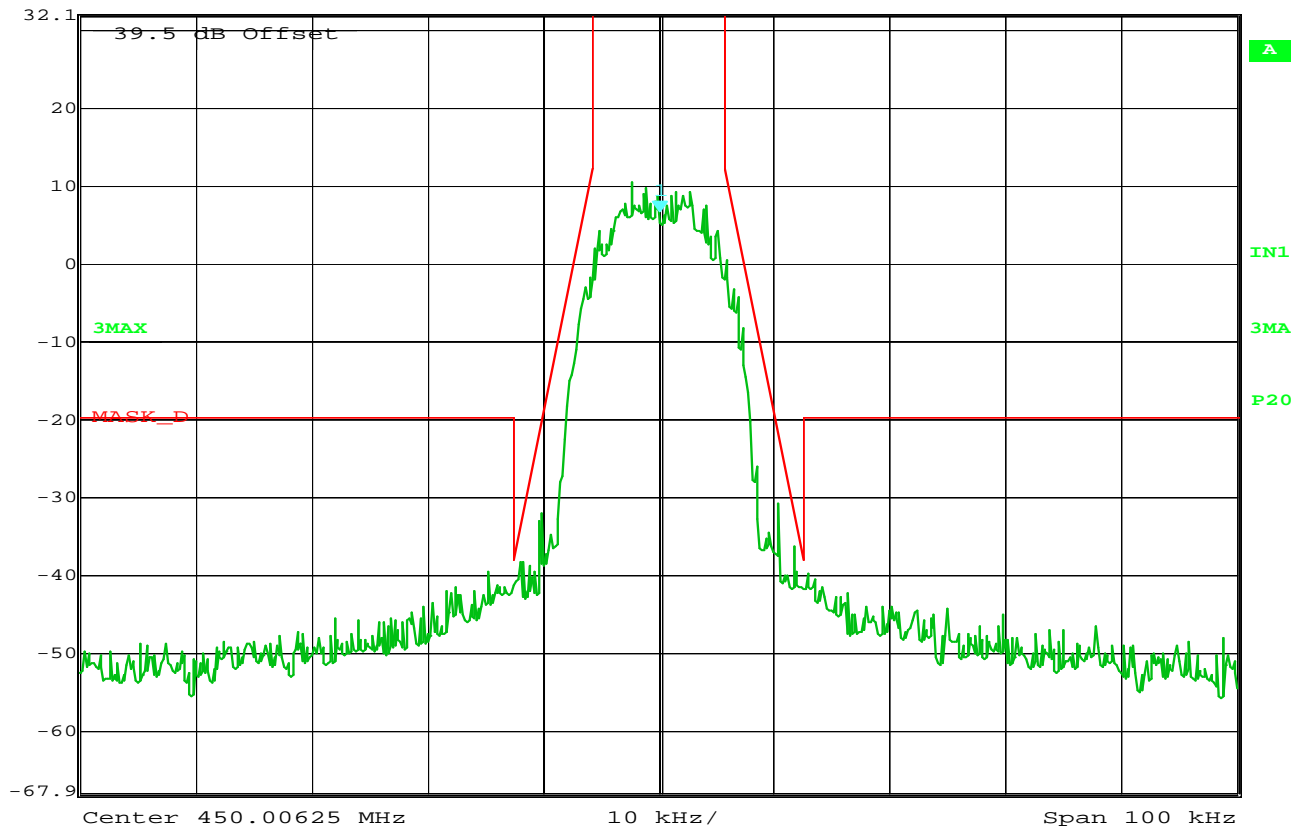
RBW 100 Hz RF Att 40 dB

Ref Lvl 6.77 dBm

VBW 300 Hz

32.1 dBm 450.00635020 MHz

SWT 50 s Unit dBm



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



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

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Marker 1 [T3]

RBW 100 Hz RF Att 40 dB

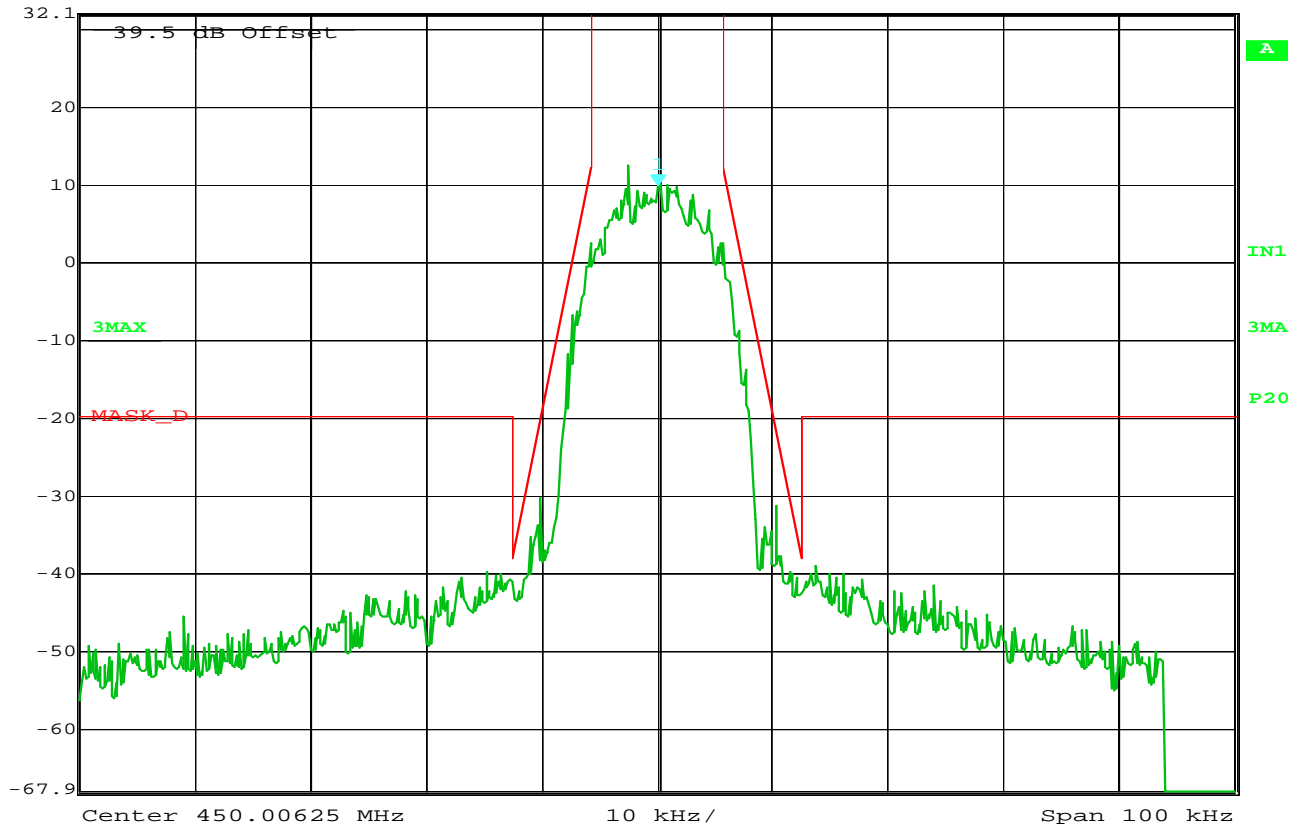
Ref Lvl 32.1 dBm 9.97 dBm

VBW 300 Hz

32.1 dBm 450.00635020 MHz

SWT 50 s

Unit dBm



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



Marker 1 [T3]

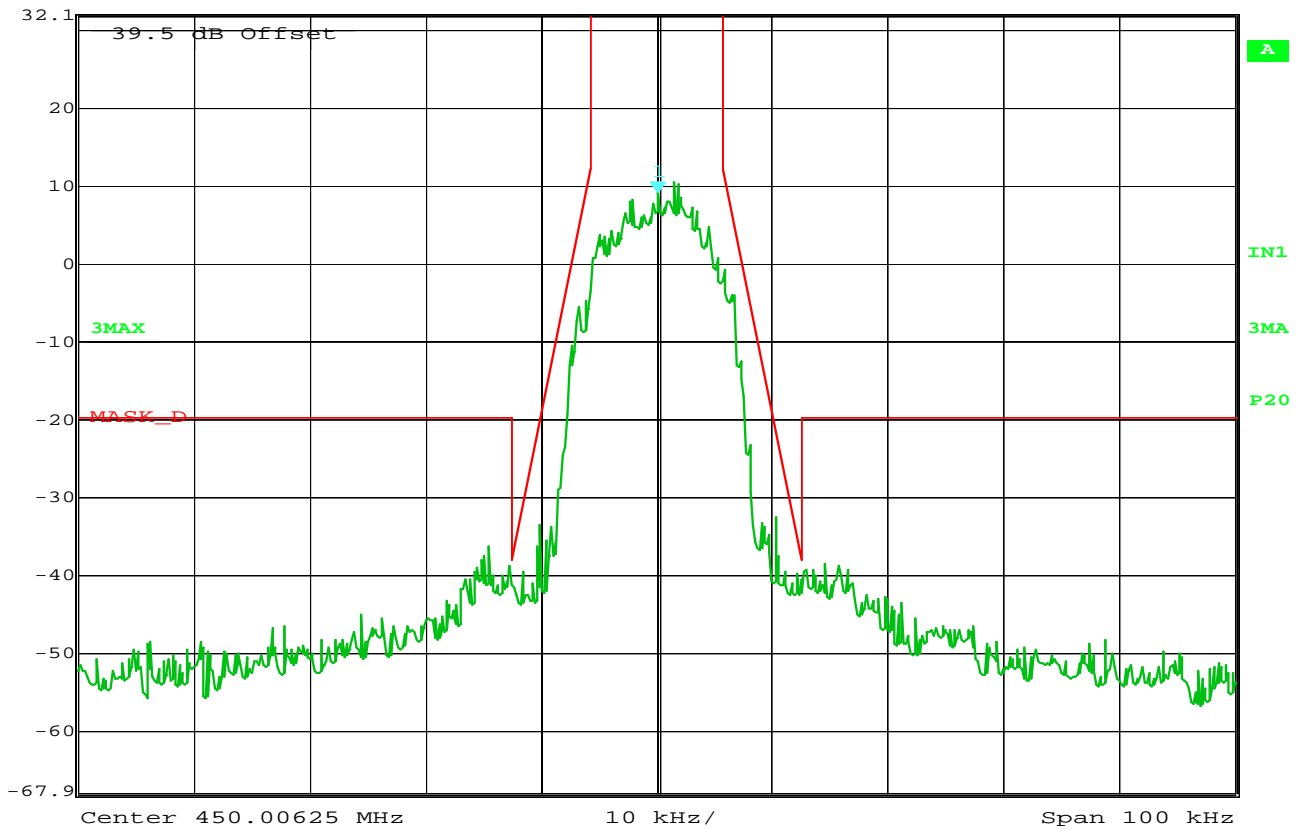
RBW 100 Hz RF Att 40 dB

Ref Lvl 9.30 dBm

VBW 300 Hz

32.1 dBm 450.00635020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

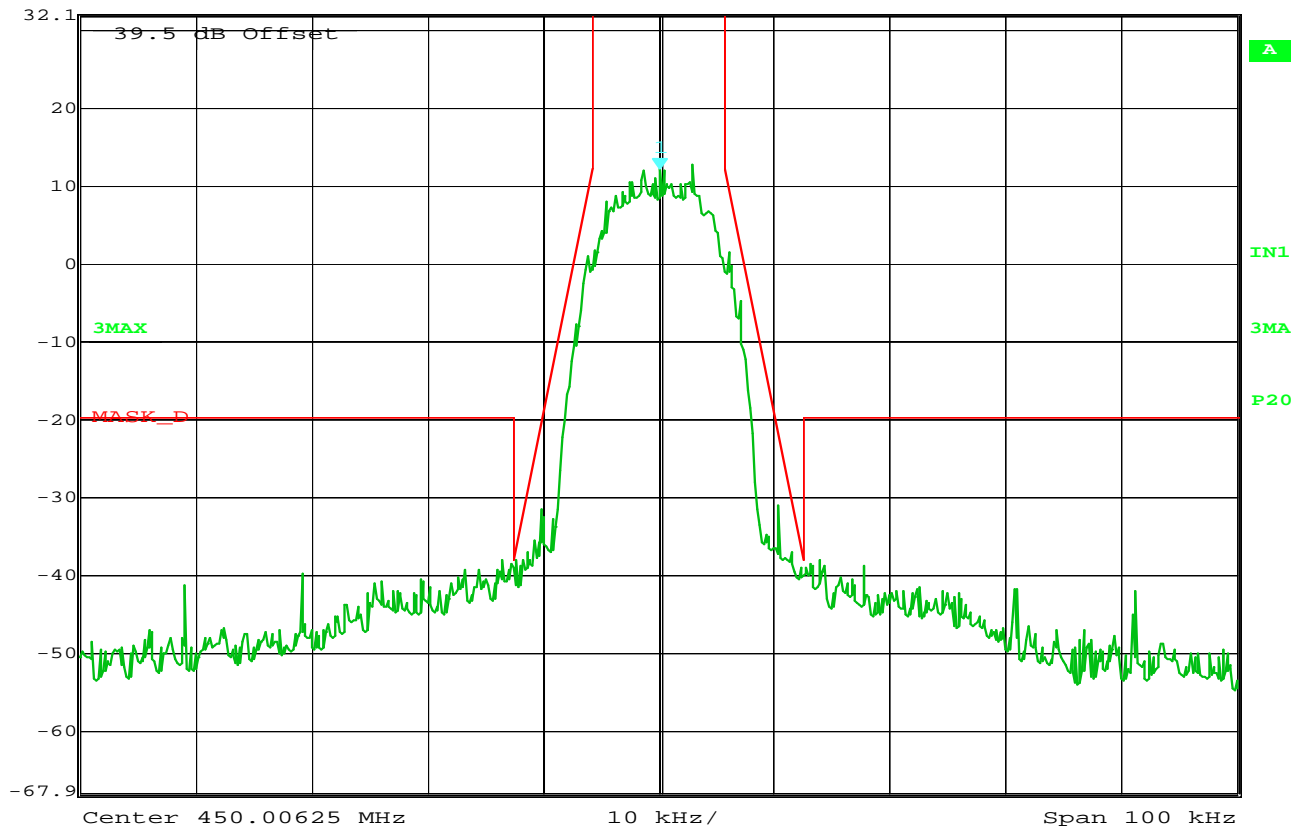
RBW 100 Hz RF Att 40 dB

Ref Lvl 12.30 dBm

VBW 300 Hz

32.1 dBm 450.00635020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

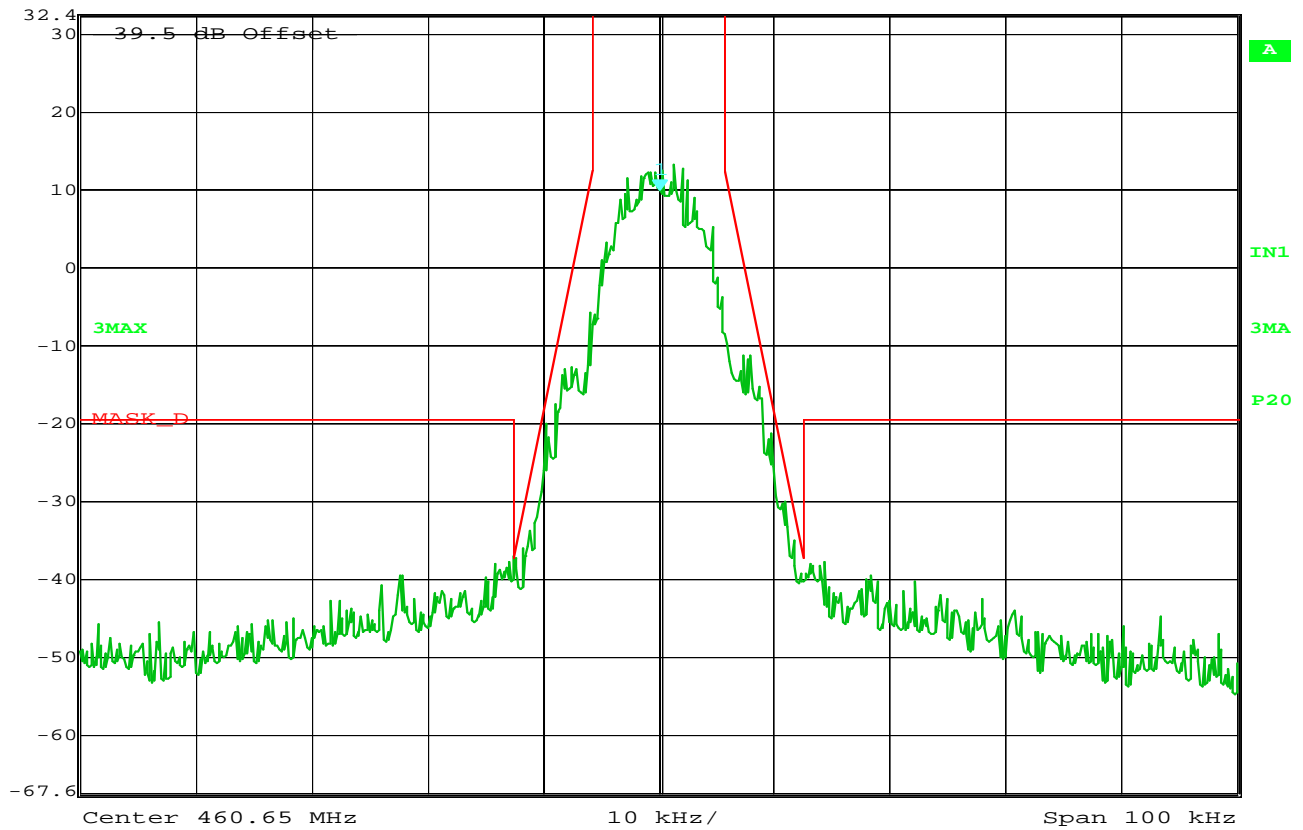
RBW 100 Hz RF Att 40 dB

Ref Lvl 9.83 dBm

VBW 300 Hz

32.4 dBm 460.65010020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

9.77 dBm

VBW

300 Hz

32.4 dBm

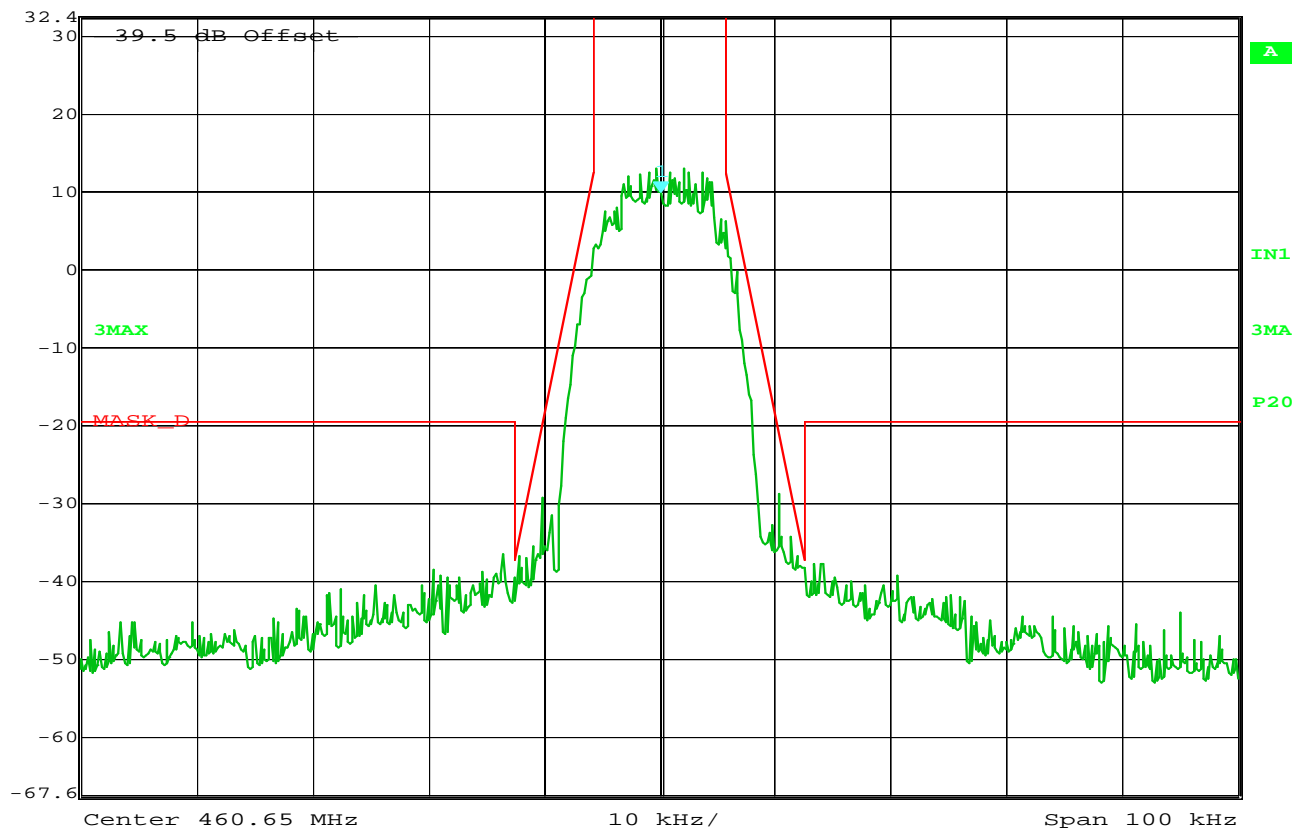
460.65010020 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

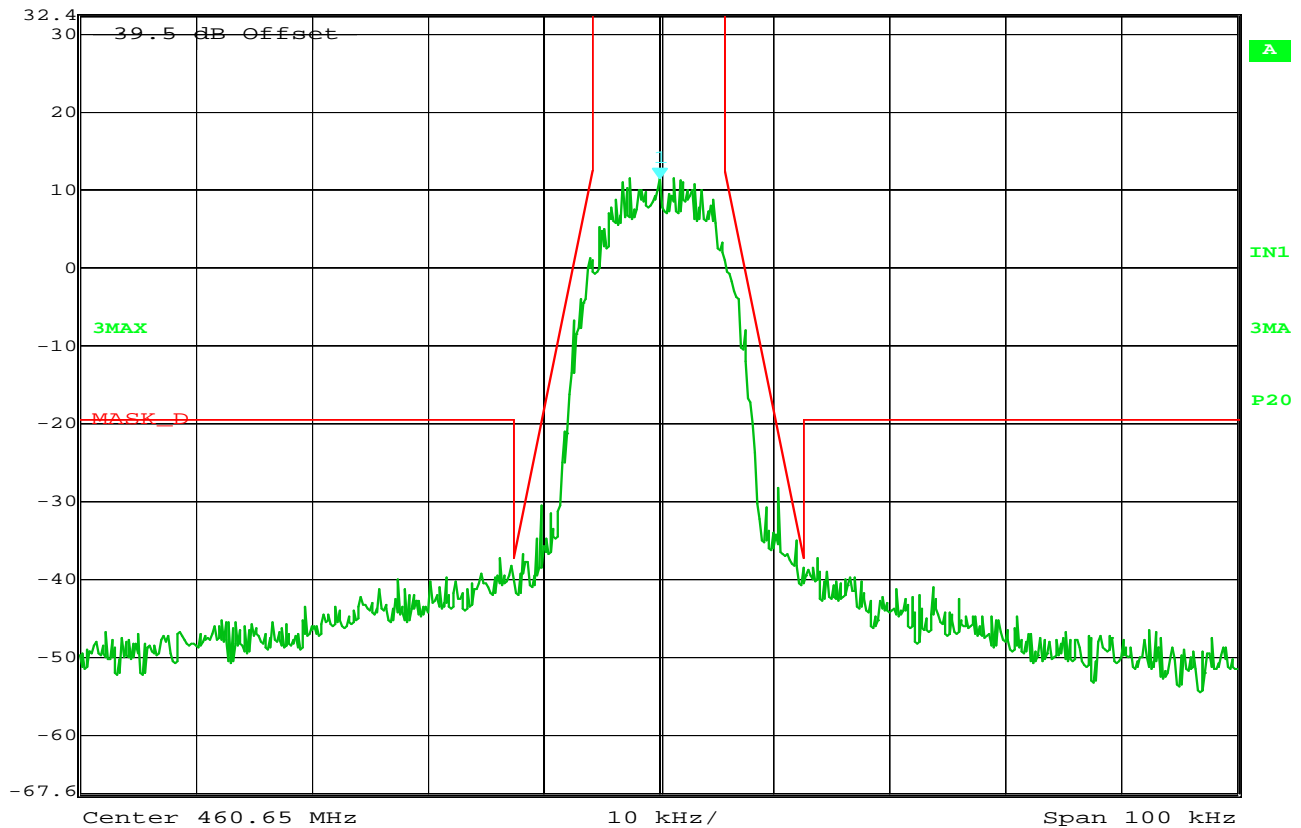
RBW 100 Hz RF Att 40 dB

Ref Lvl 11.29 dBm

VBW 300 Hz

32.4 dBm 460.65010020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

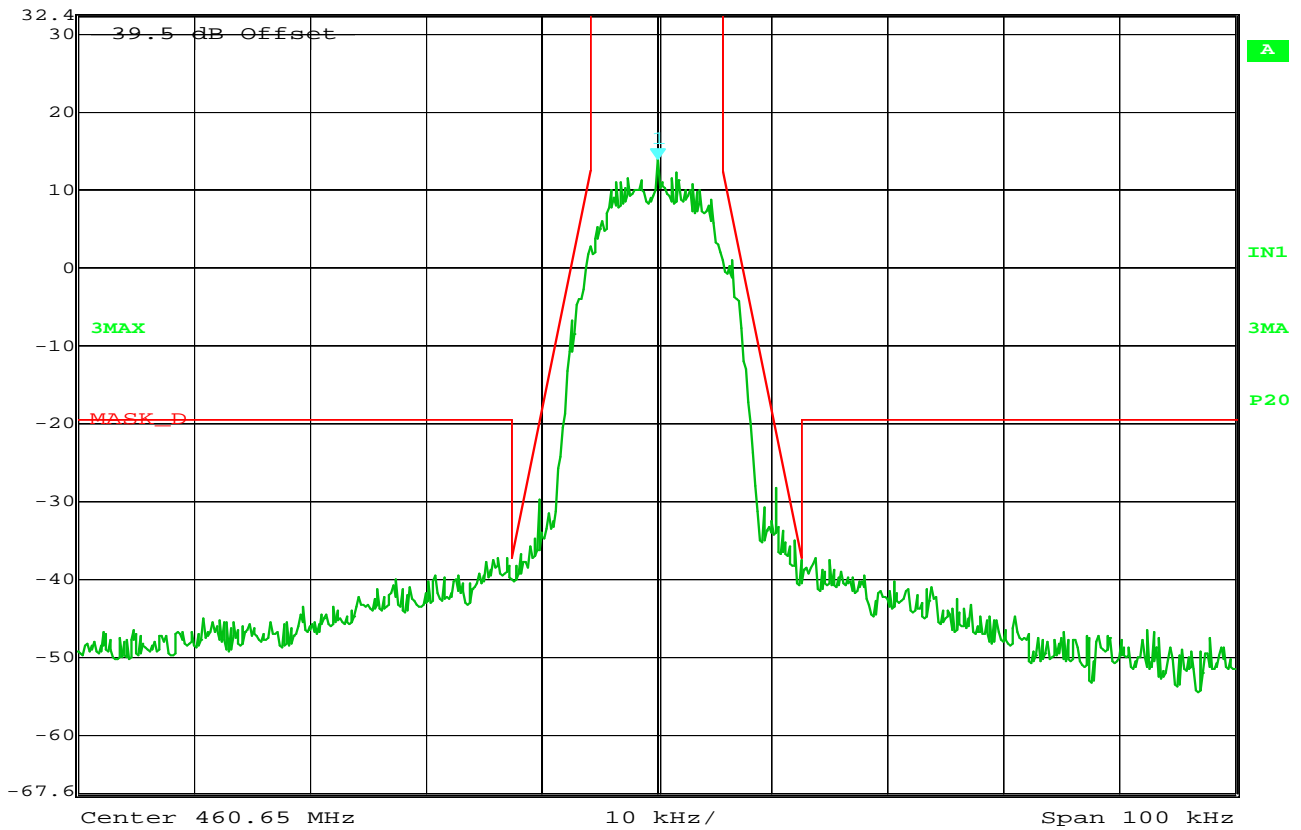
RBW 100 Hz RF Att 40 dB

Ref Lvl 13.88 dBm

VBW 300 Hz

32.4 dBm 460.65010020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

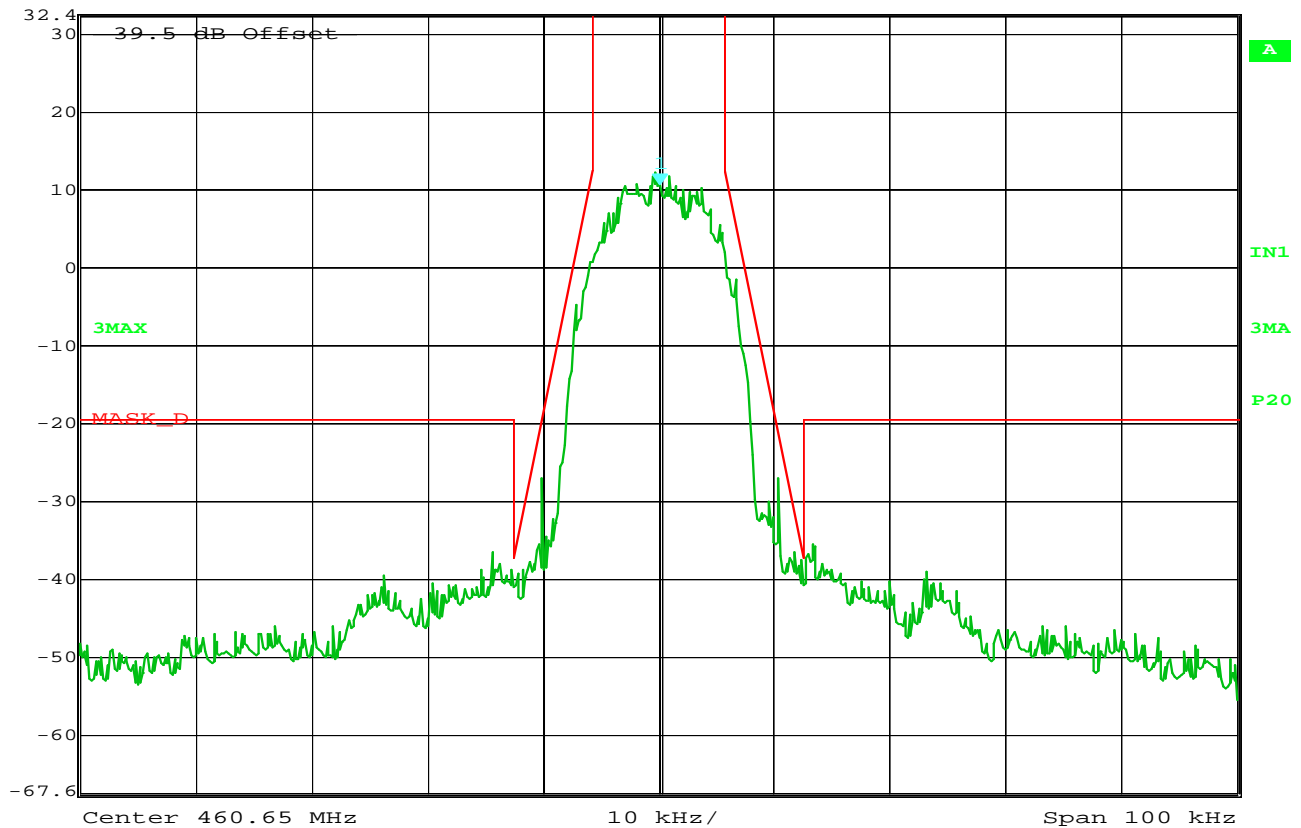
RBW 100 Hz RF Att 40 dB

Ref Lvl 10.54 dBm

VBW 300 Hz

32.4 dBm 460.65010020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

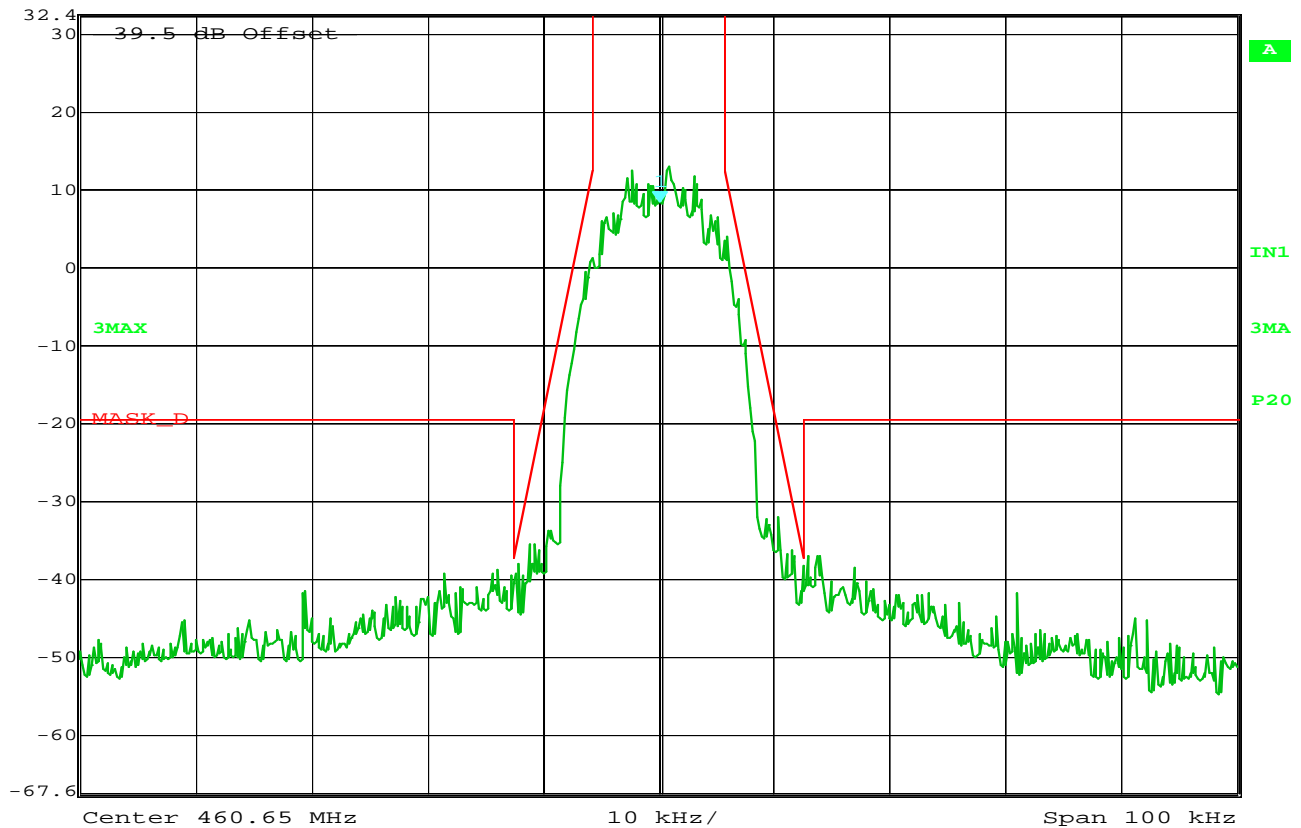
RBW 100 Hz RF Att 40 dB

Ref Lvl 8.31 dBm

VBW 300 Hz

32.4 dBm 460.65010020 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

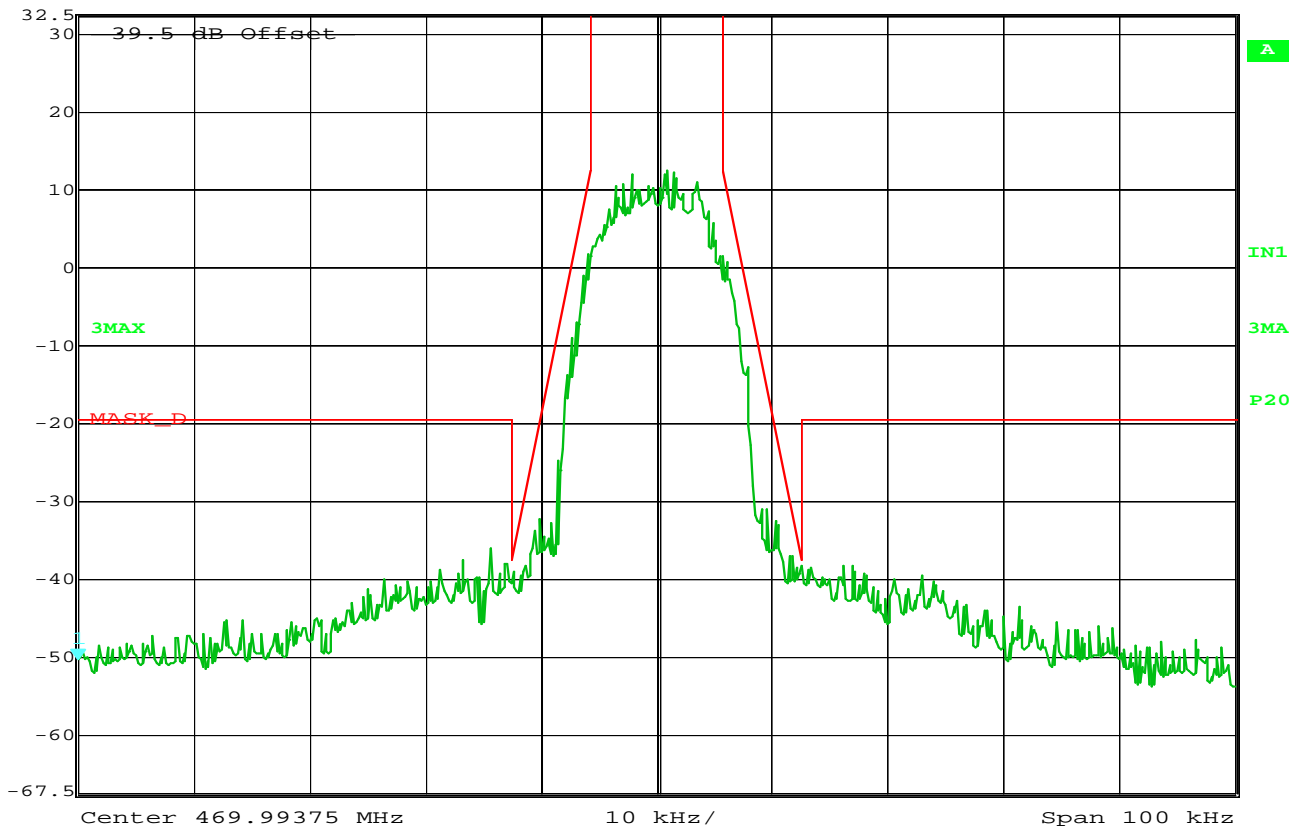
RBW 100 Hz RF Att 40 dB

Ref Lvl -50.42 dBm

VBW 300 Hz

32.5 dBm 469.94375000 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

13.58 dBm

VBW

300 Hz

32.5 dBm

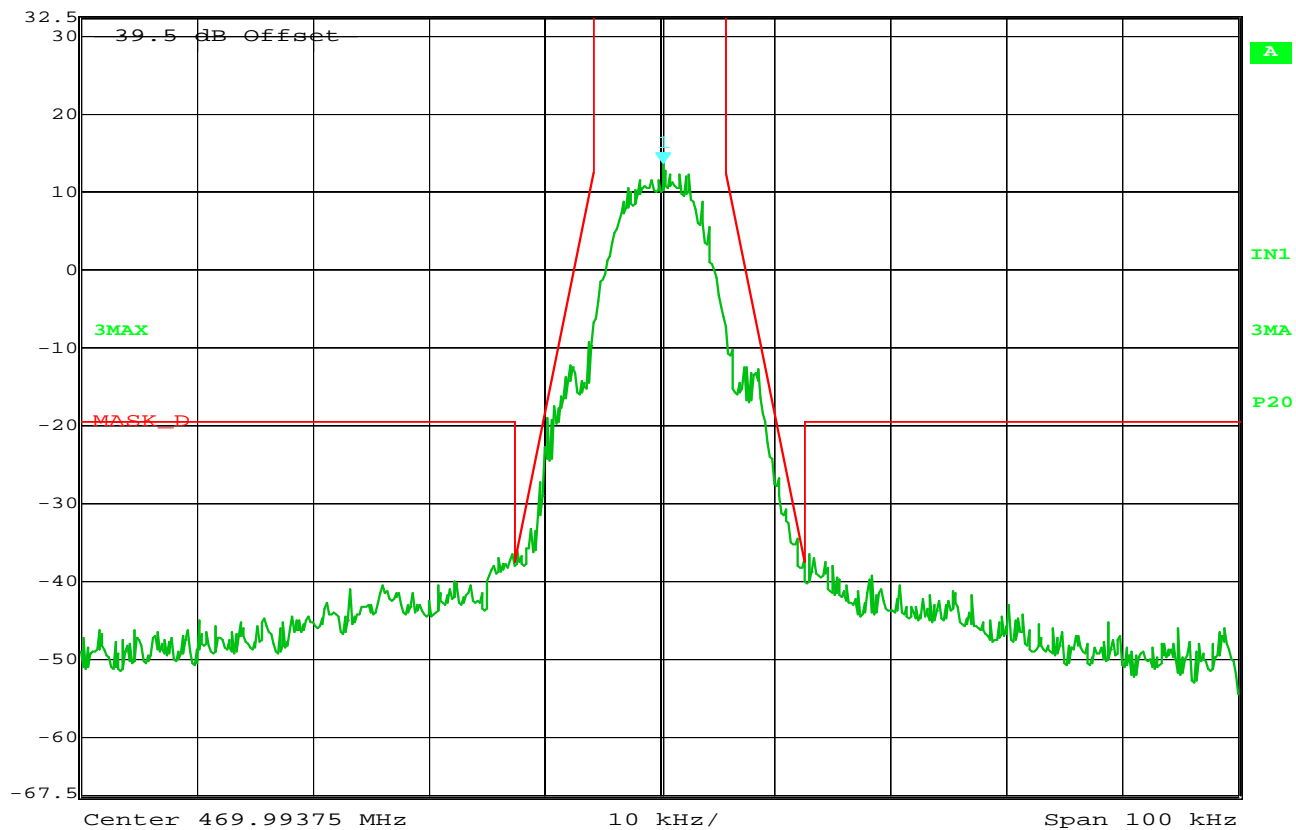
469.99405060 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

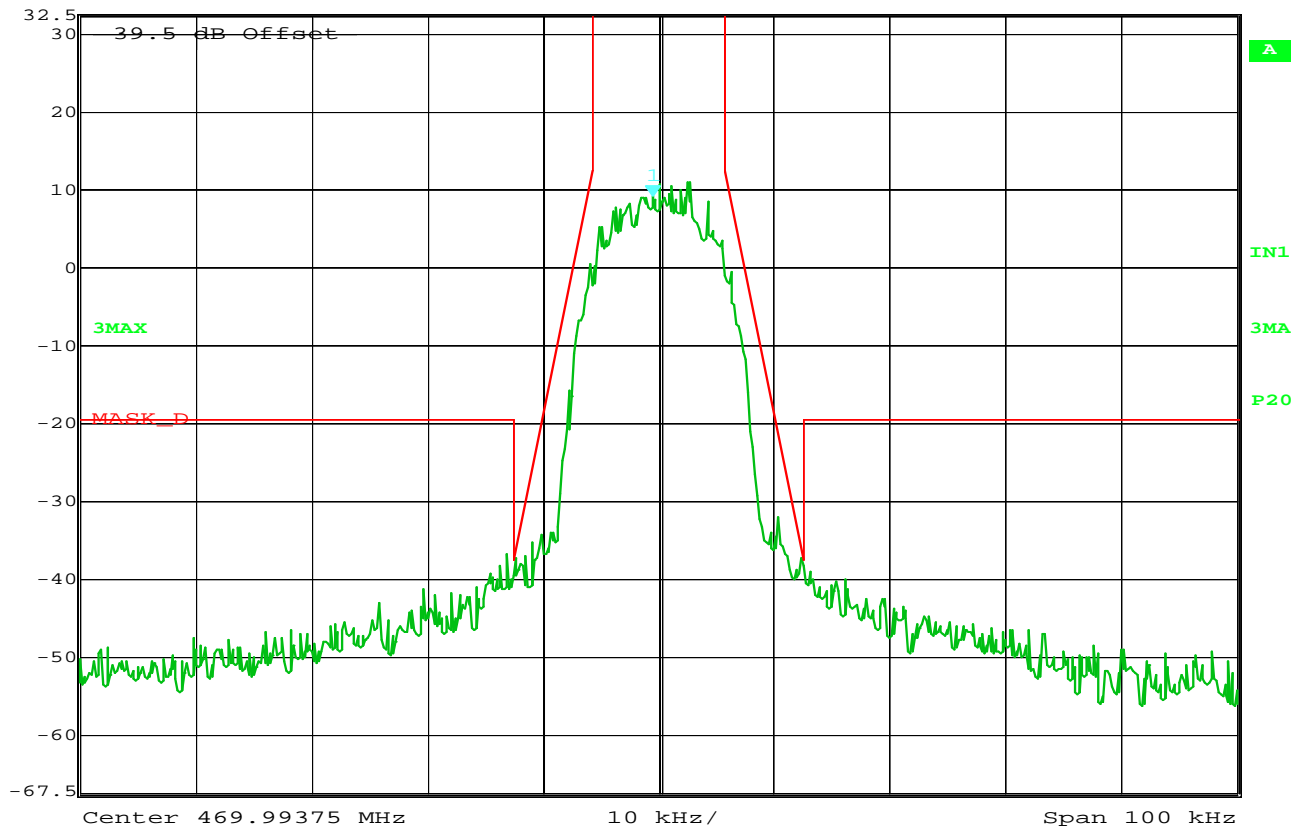
RBW 100 Hz RF Att 40 dB

Ref Lvl 9.09 dBm

VBW 300 Hz

32.5 dBm 469.99324900 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

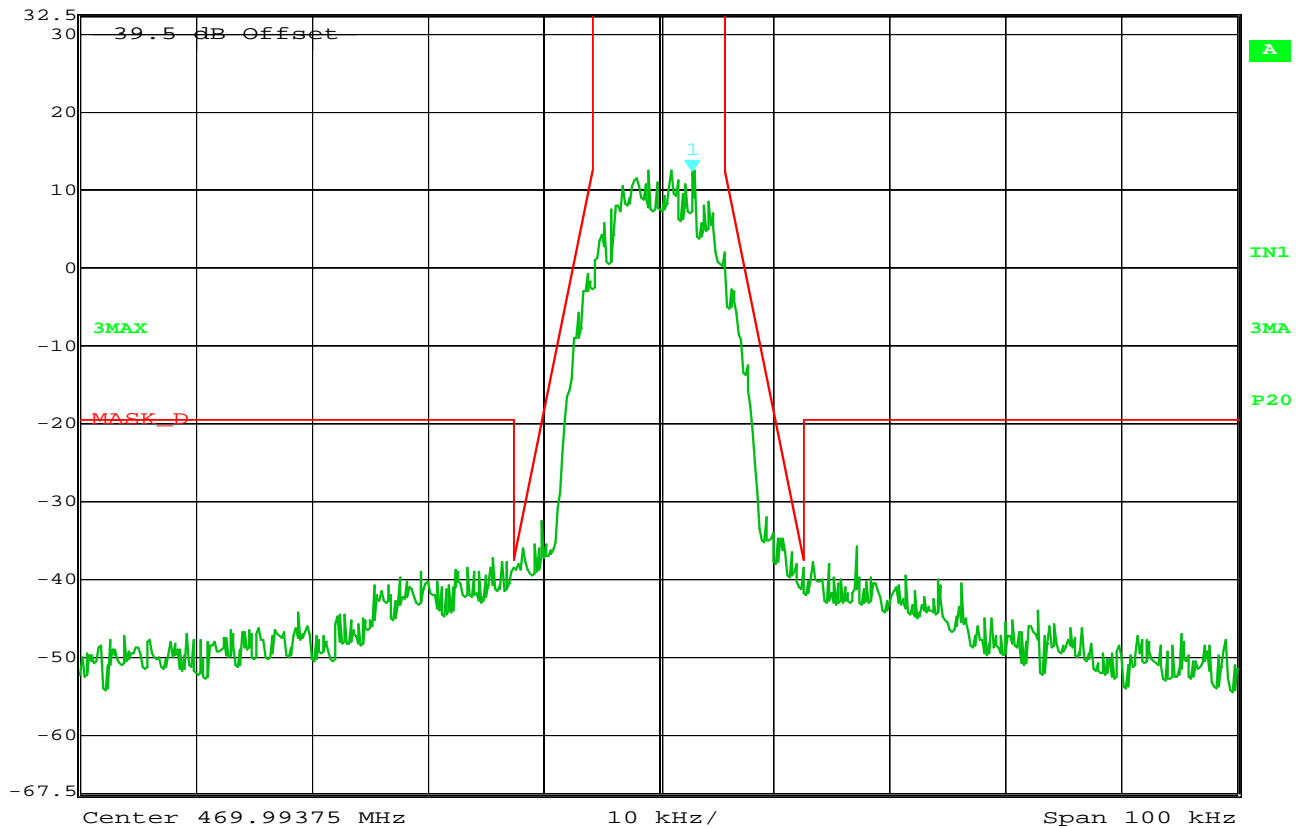
RBW 100 Hz RF Att 40 dB

Ref Lvl 12.49 dBm

VBW 300 Hz

32.5 dBm 469.99665581 MHz

SWT 50 s Unit dBm



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



Marker 1 [T3]

RBW

100 Hz

RF Att

40 dB

Ref Lvl

10.13 dBm

VBW

300 Hz

32.5 dBm

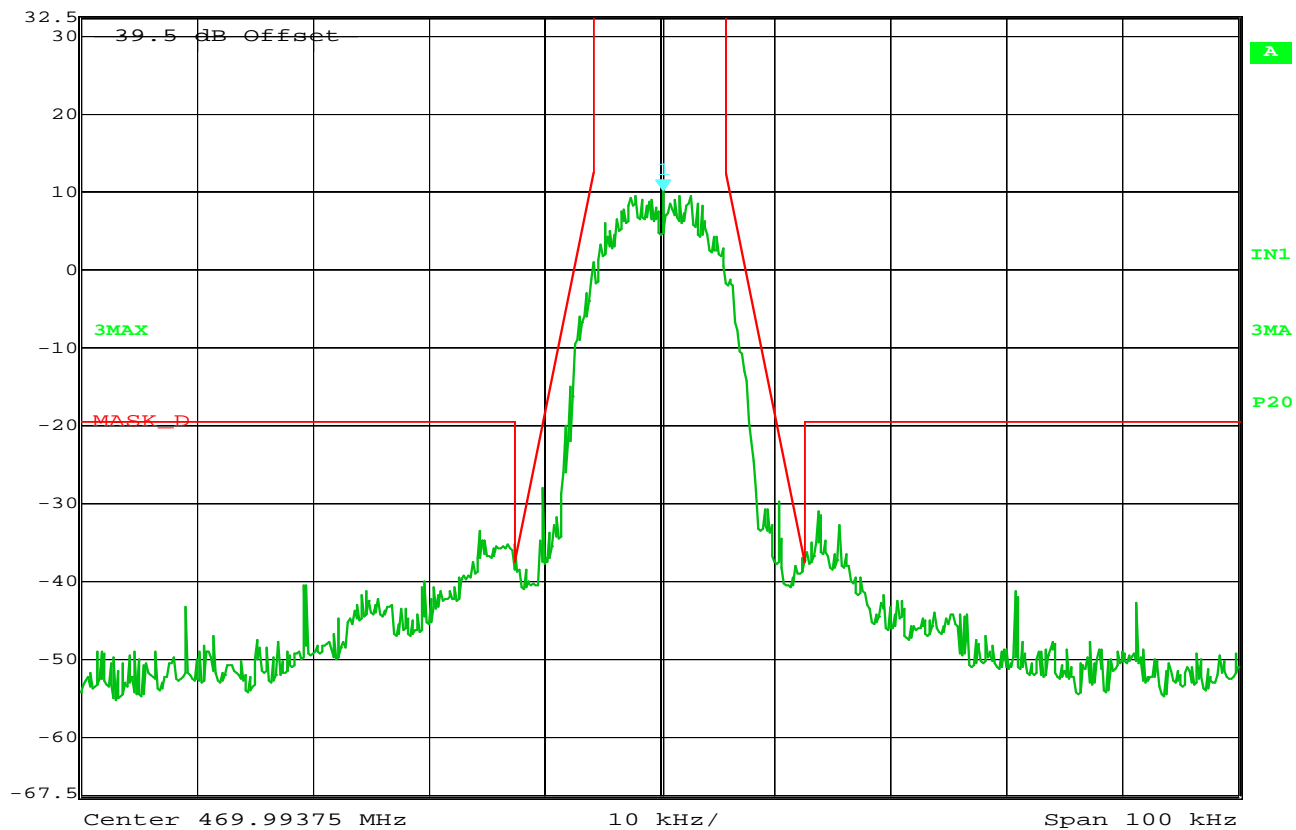
469.99405060 MHz

SWT

50 s

Unit

dBm



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



Marker 1 [T3]

RBW 100 Hz RF Att 40 dB

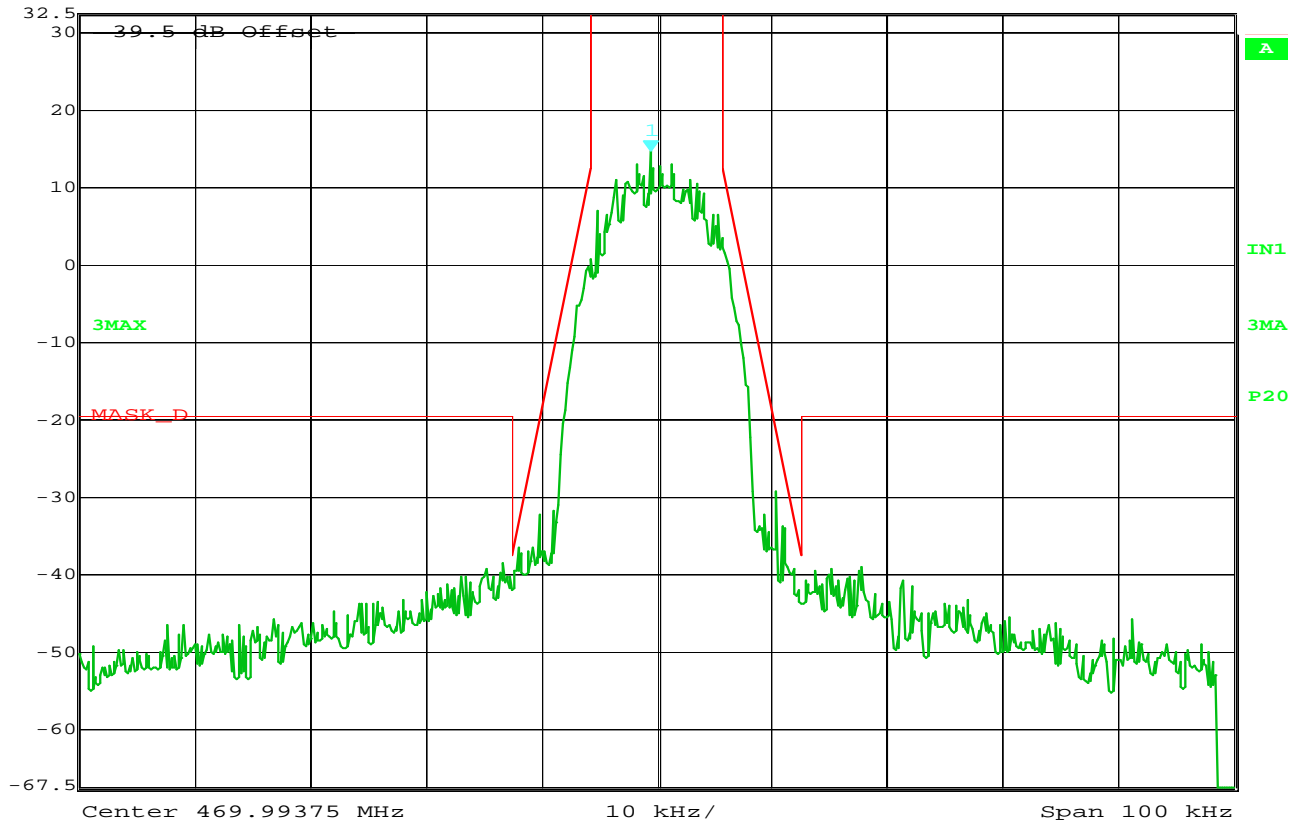
Ref Lvl 32.5 dBm 14.64 dBm

VBW 300 Hz

32.5 dBm 469.99324900 MHz

SWT 50 s

Unit dBm



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

FCC/Industry Canada Occupied Bandwidth

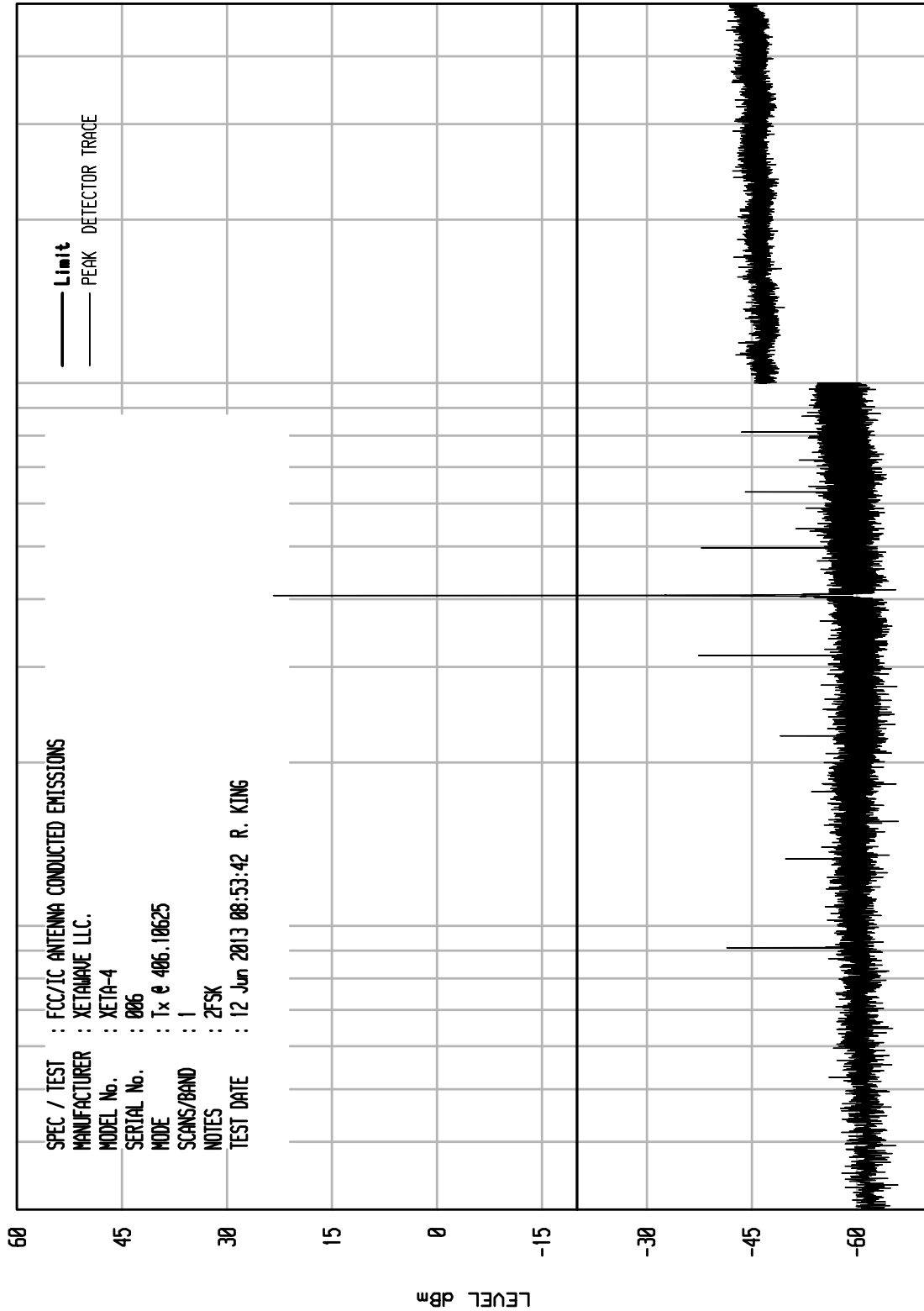
MANUFACTURER : XetaWave LLC
MODEL NUMBER : Xeta-4
TEST MODE : Tx @ 469.99375MHz
SERIAL NUMBER : 006
NOTES : Tx 2Watts QPSK modulation
: txpwr=9000

NOTES

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

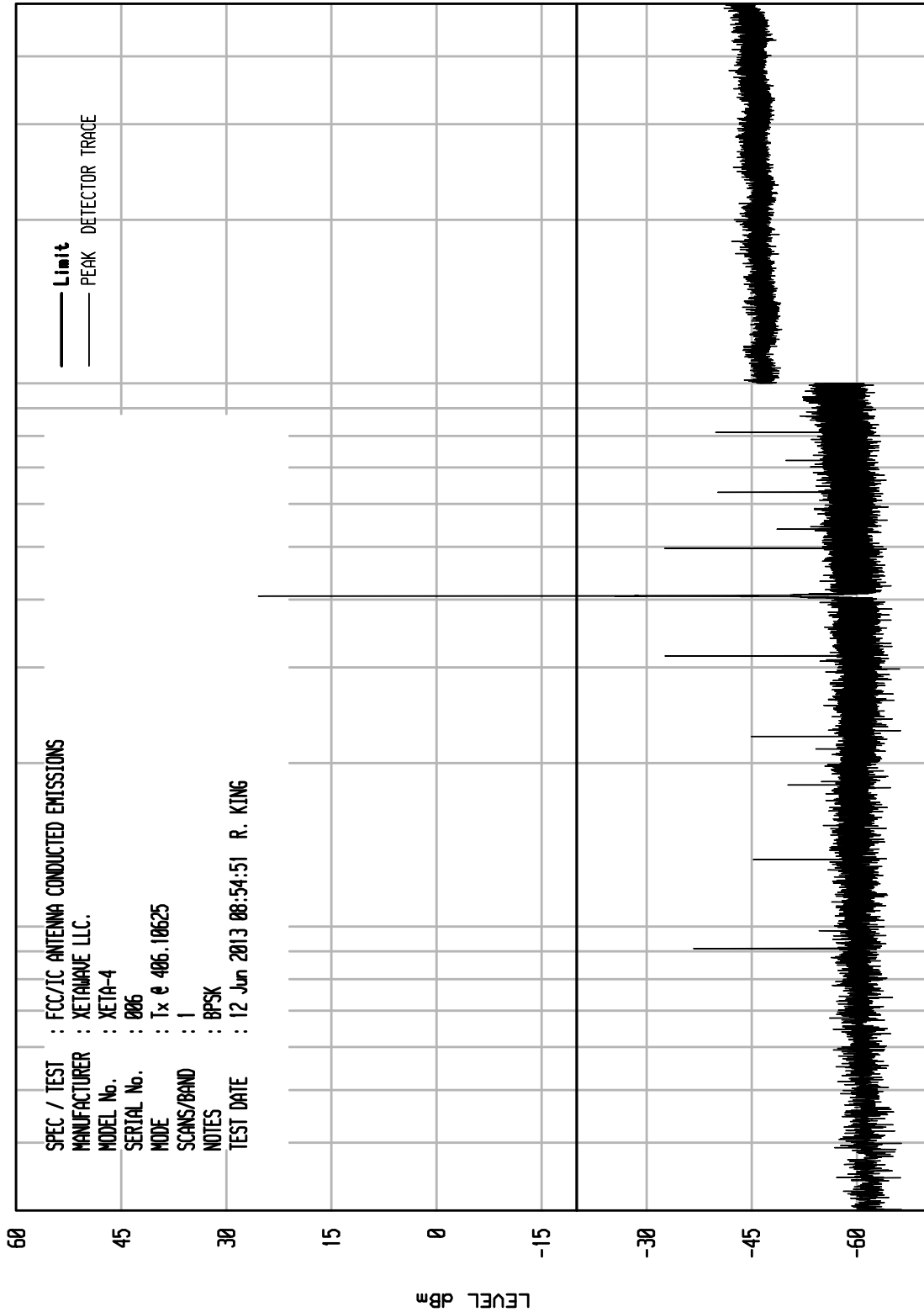
UNITU RCU ENI RUN 33



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

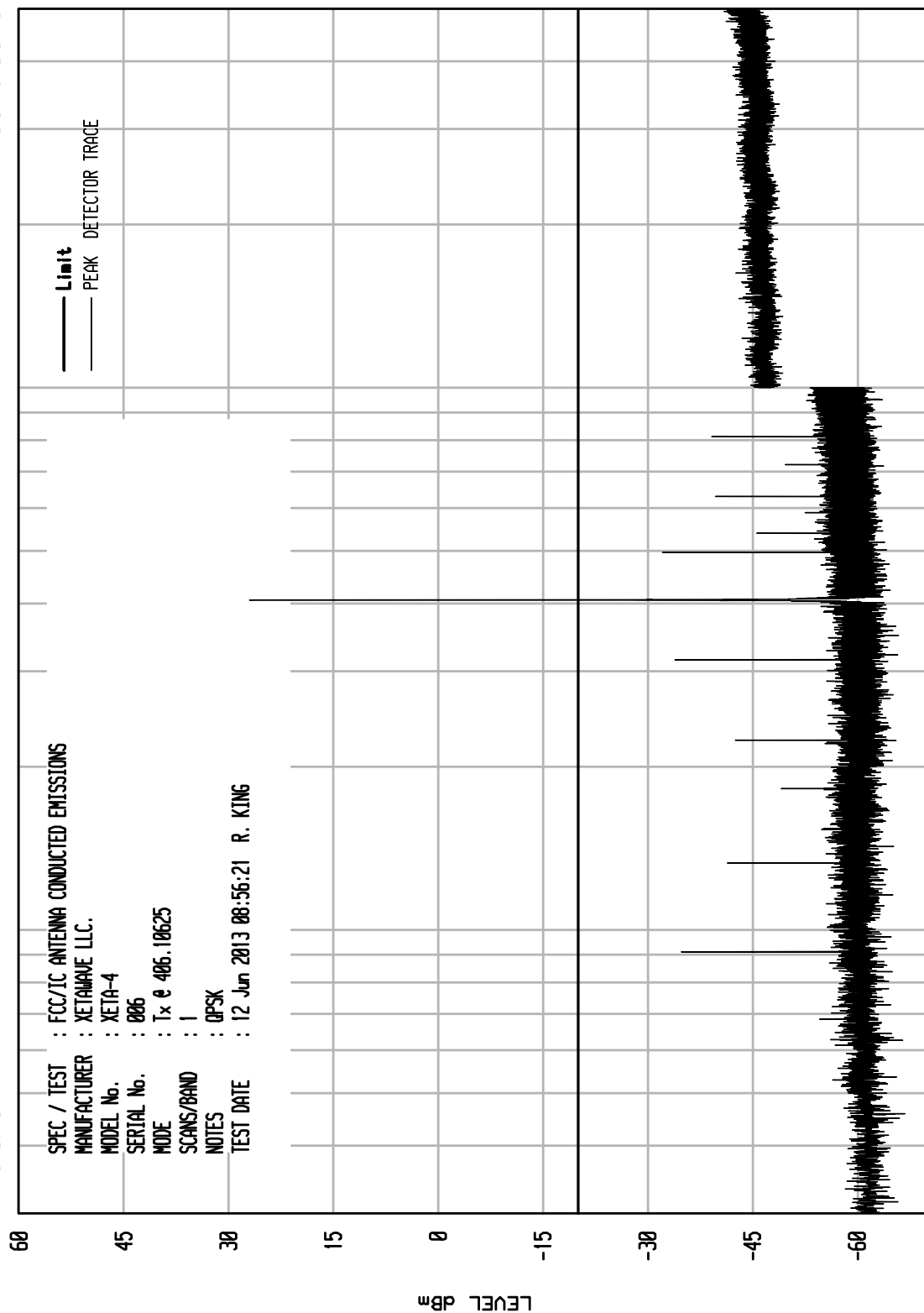
UNITU RCU ENI RUN 34



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

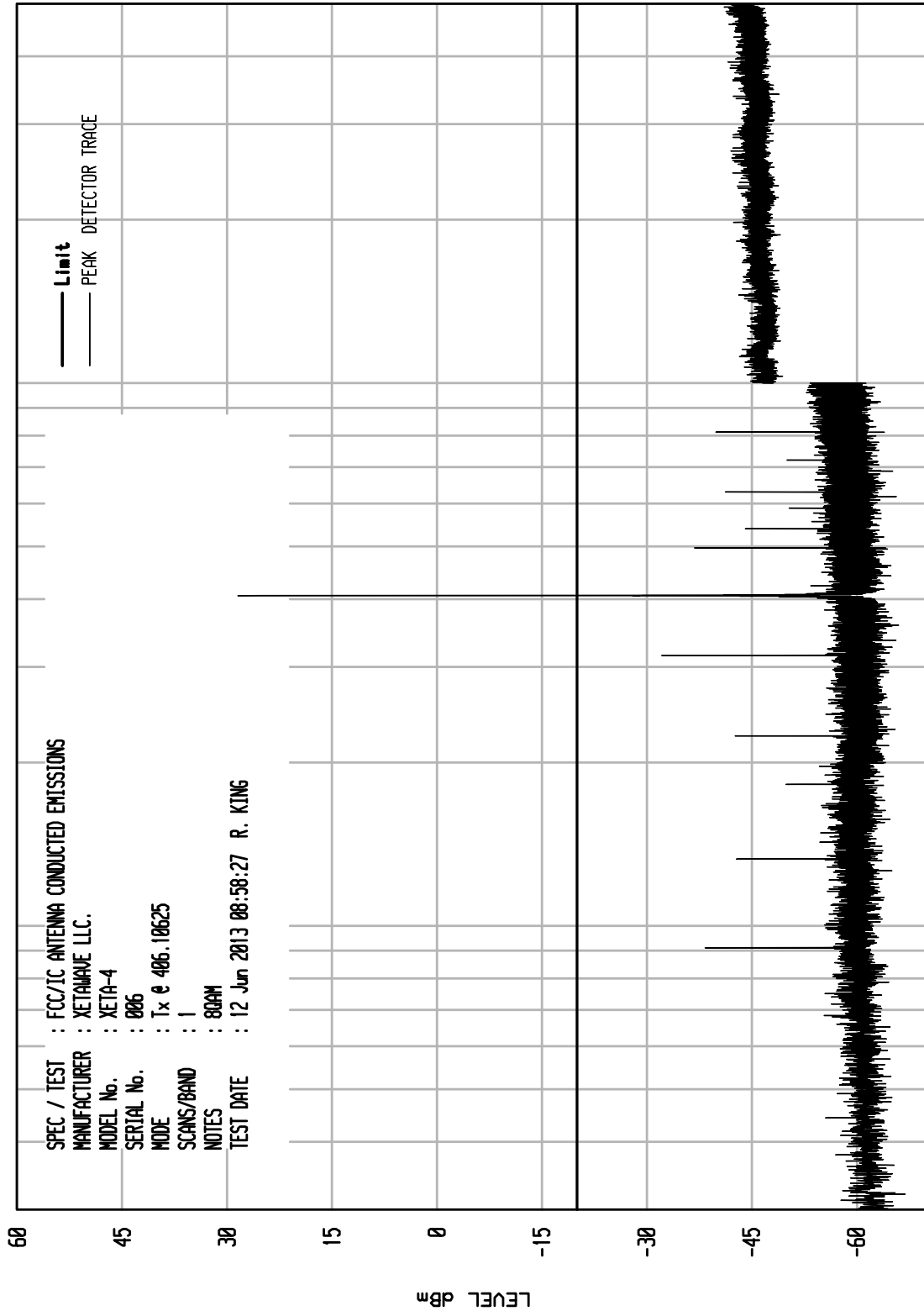
UNITU RCU ENI RUN 35



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

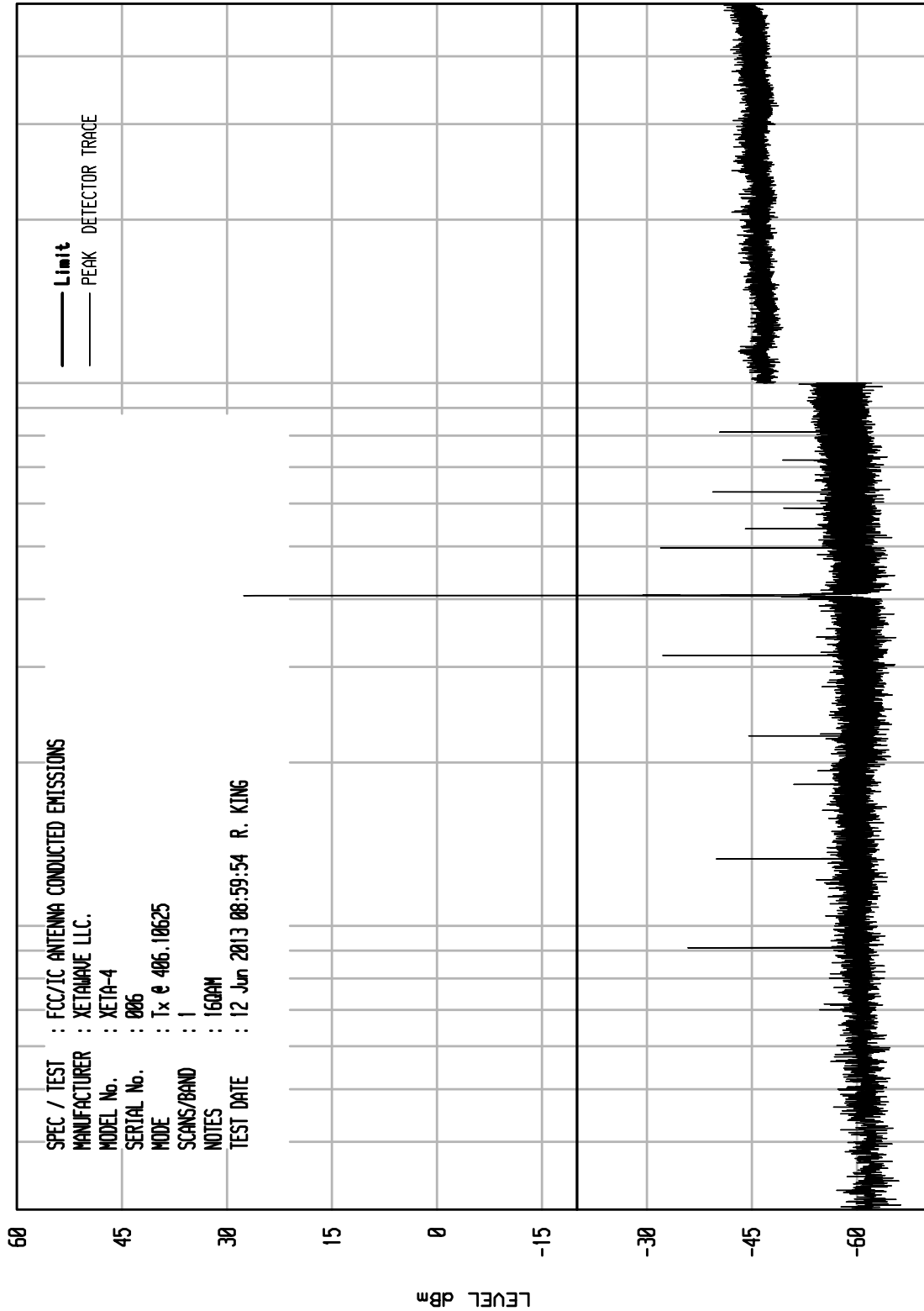
UNITU RCU ENI RUN 36



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

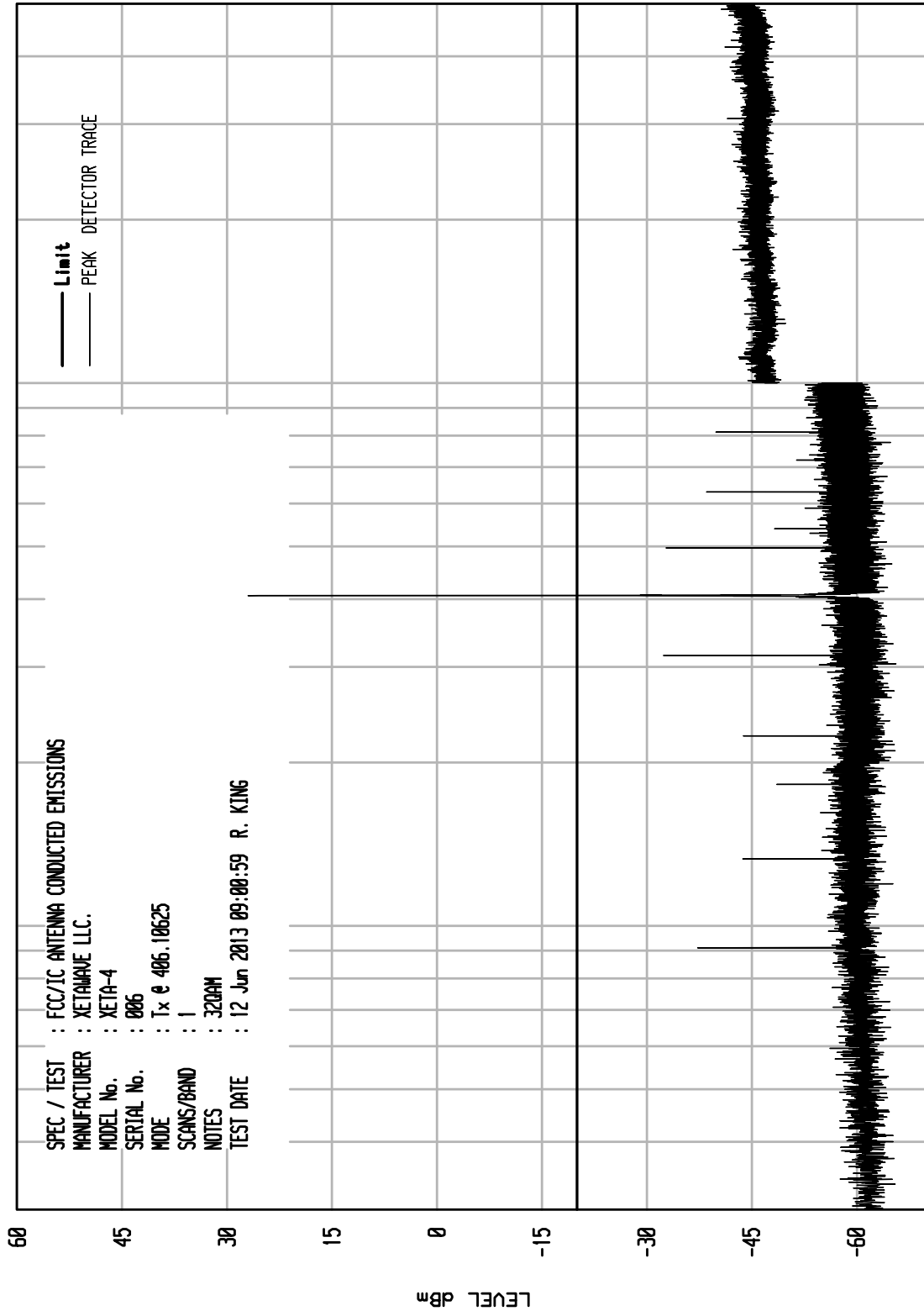
UNITU RCU ENI RUN 37



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

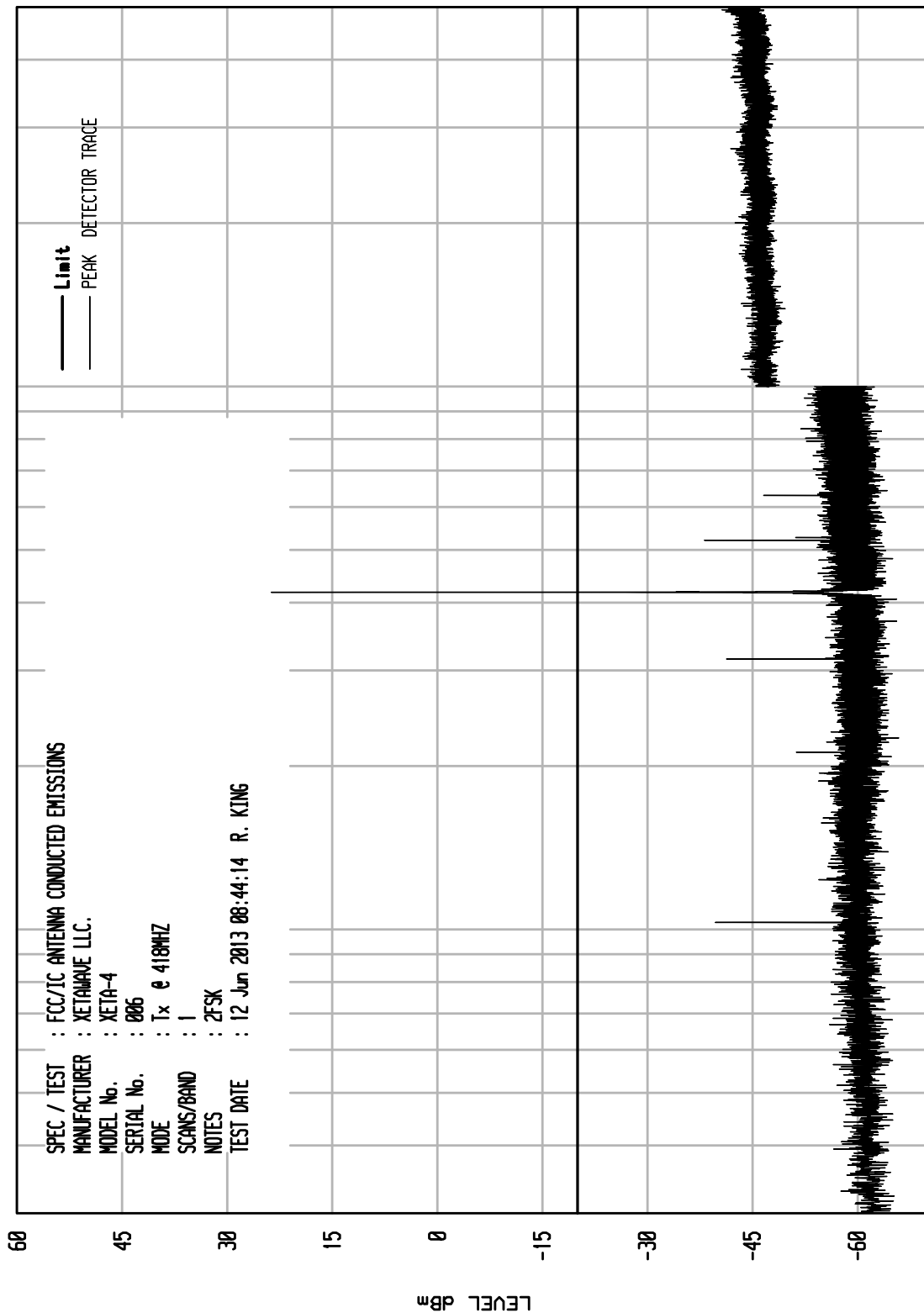
UNITU RCU ENI RUN 38



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

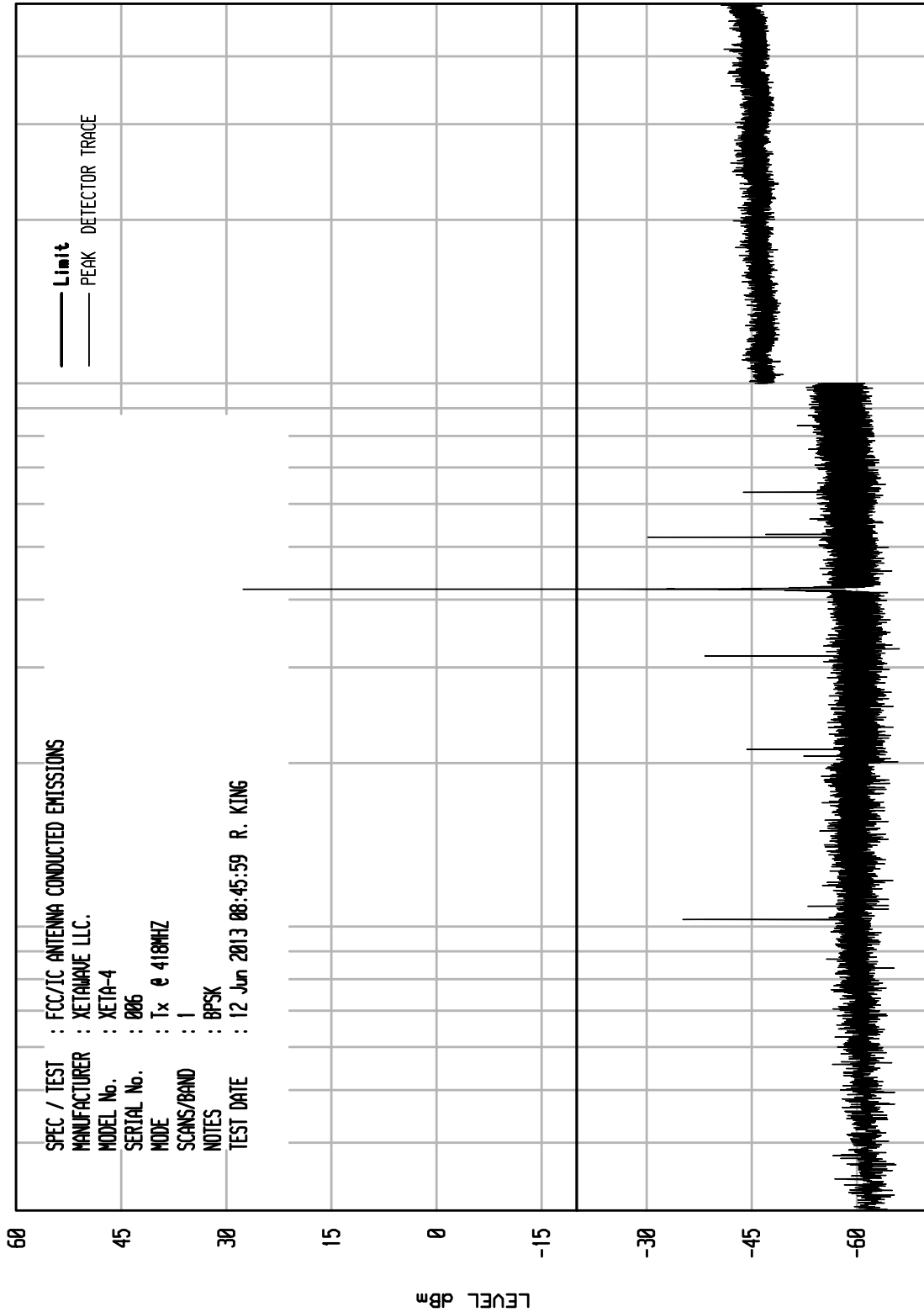
UNITU RCU ENI RUN 25



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

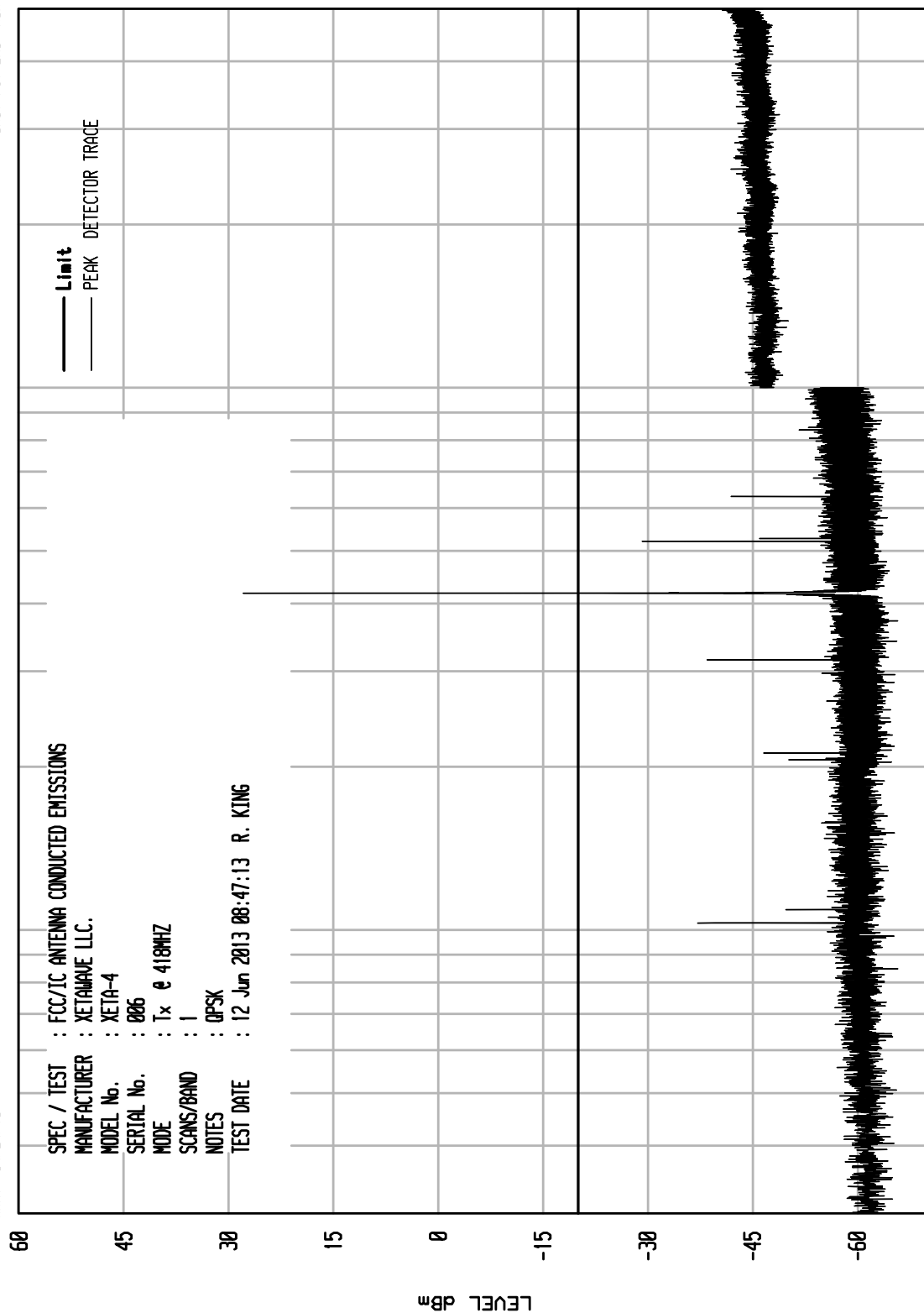
UNITU RCU ENI RUN 26



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

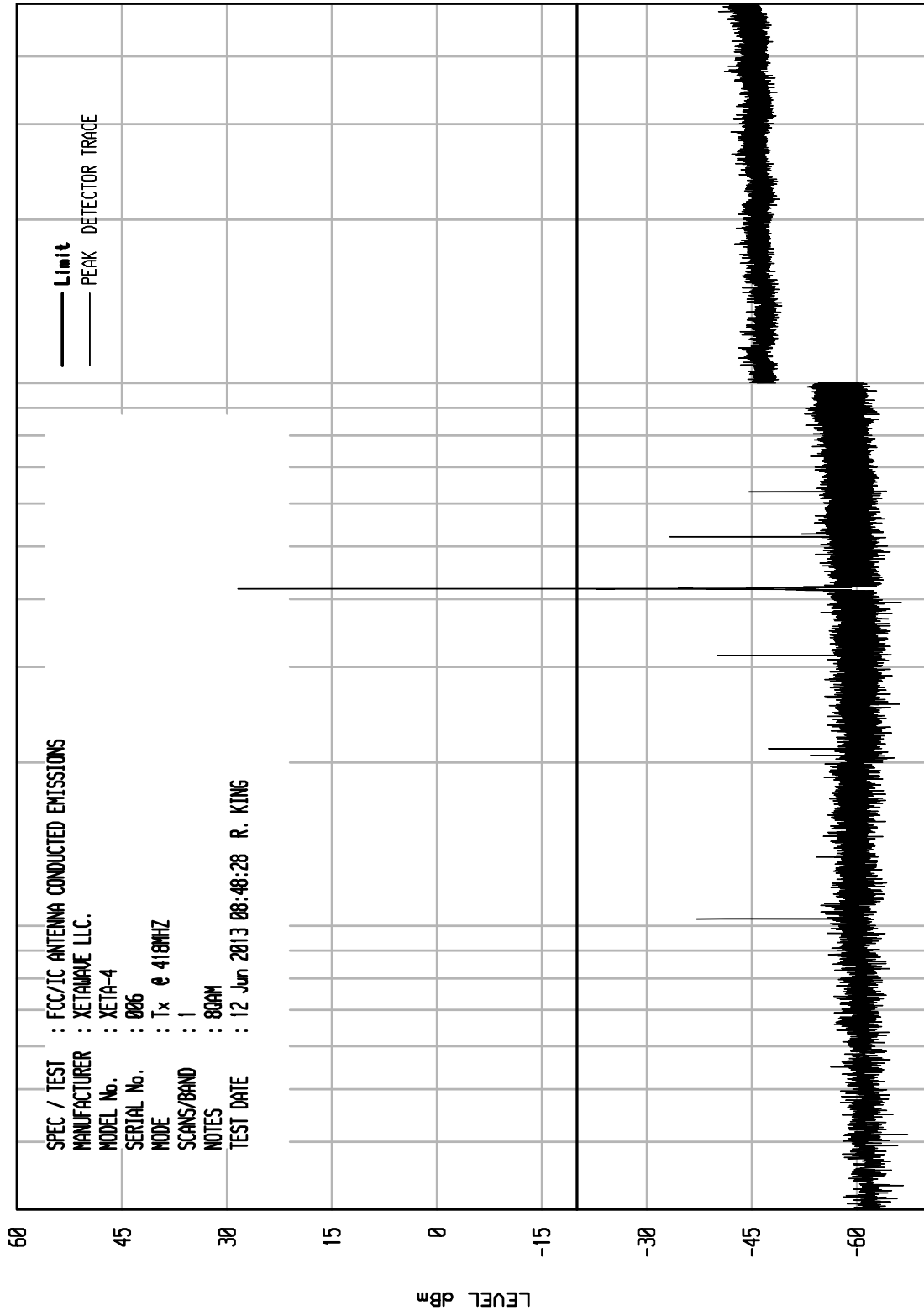
UNITU RCU ENI RUN 27



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 28

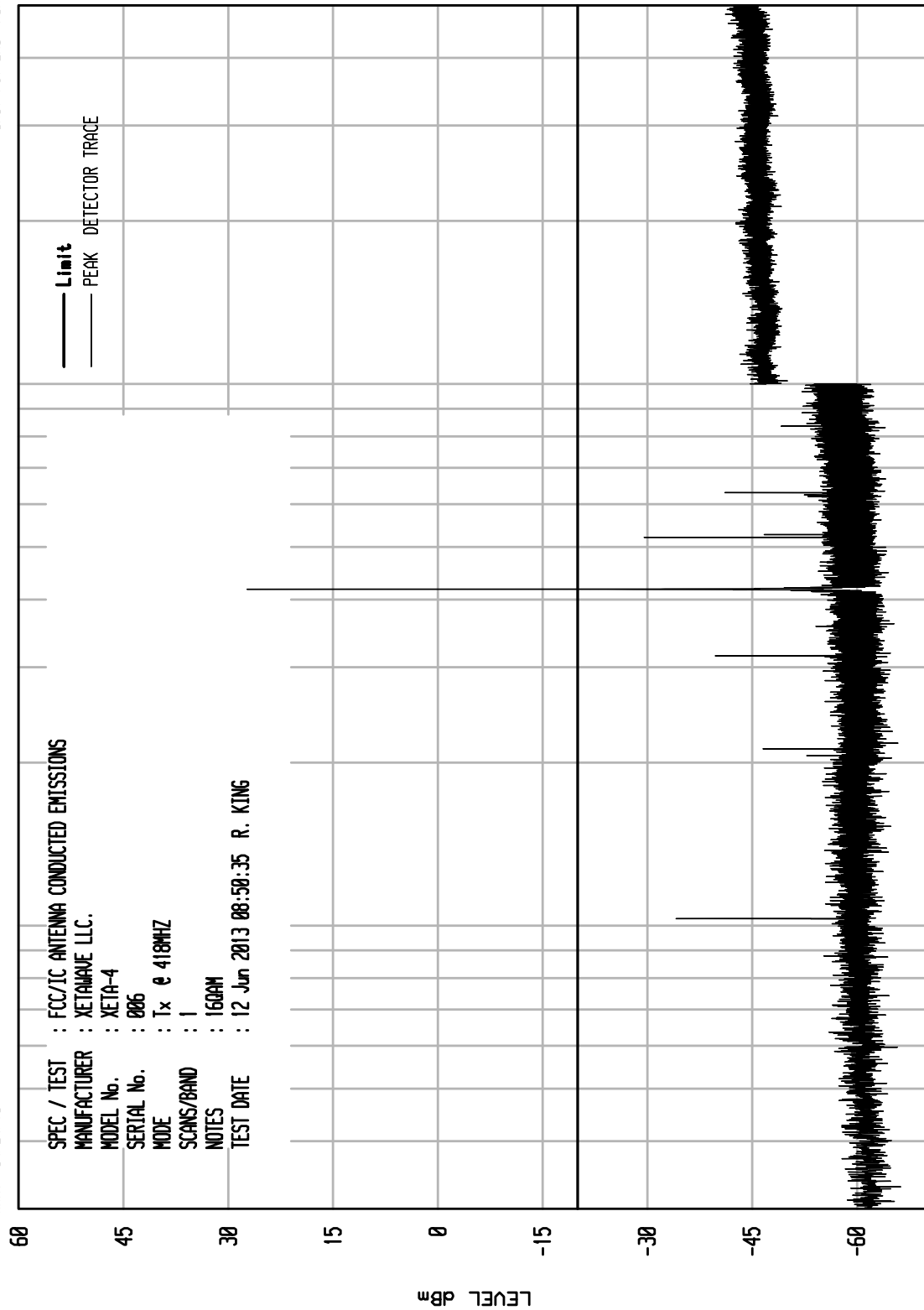




ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/24/13

UNITU RCU ENI RUN 30



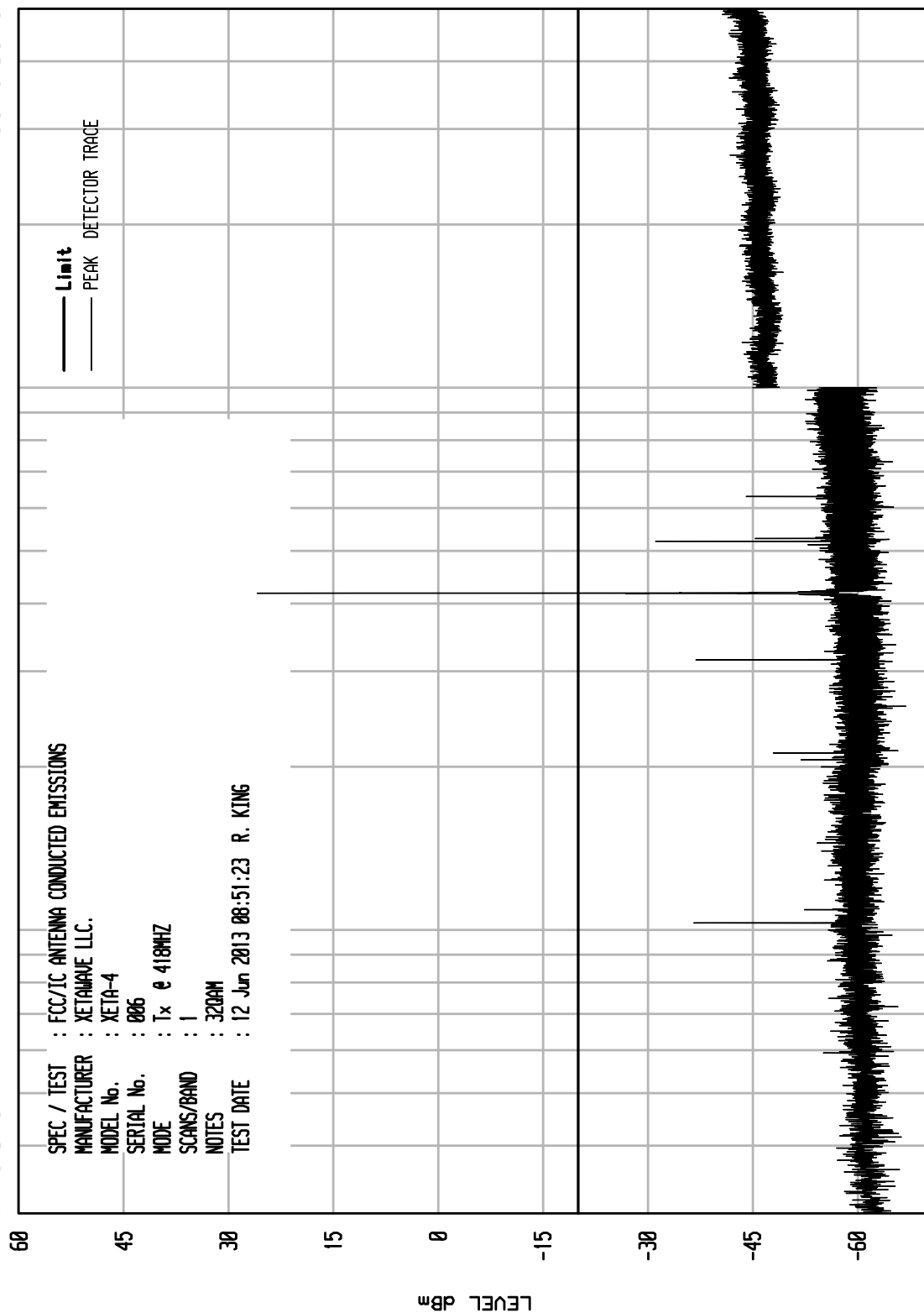
STOP = 5000

START = 30

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

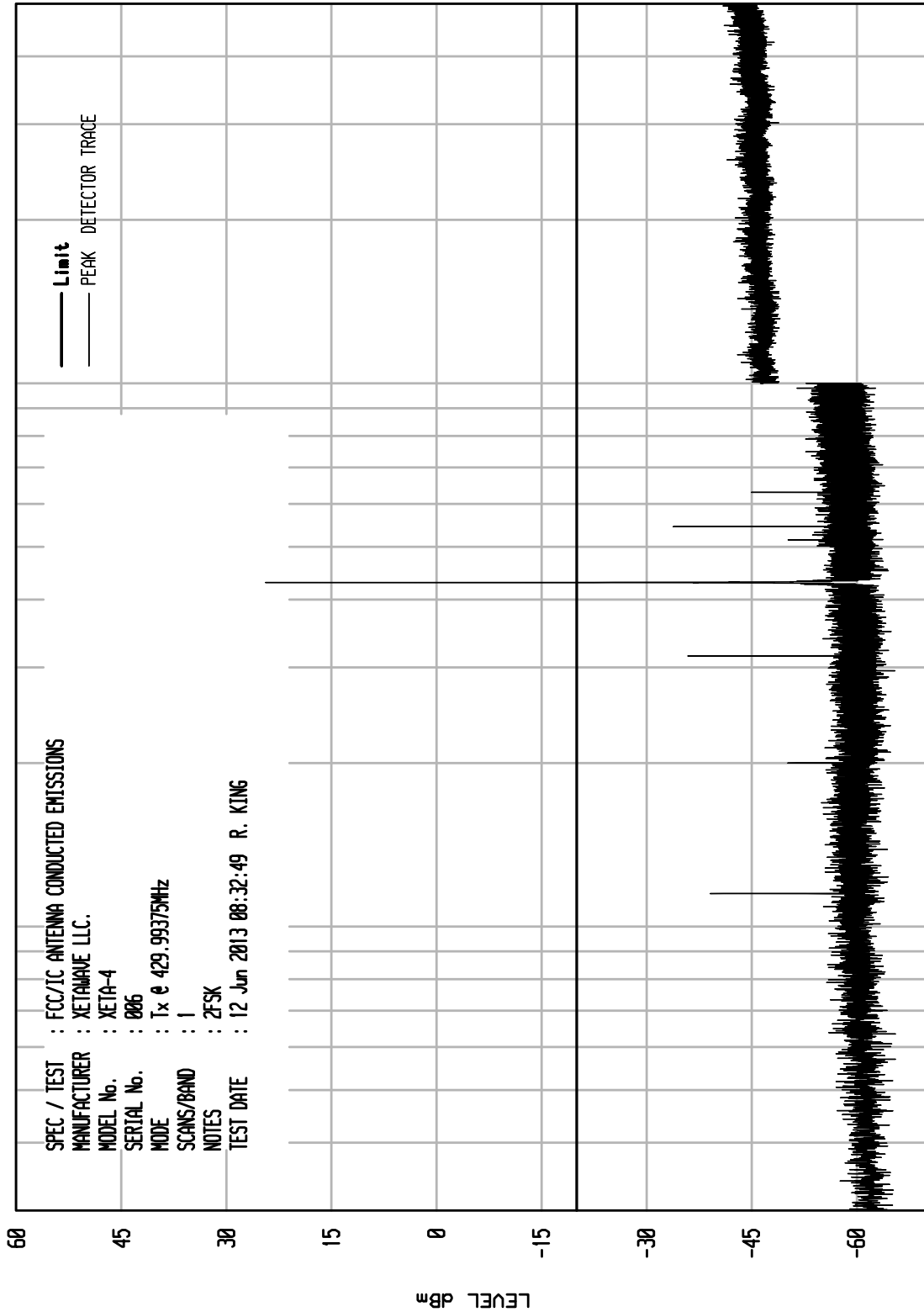
UNITU RCU ENI RUN 31



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 18

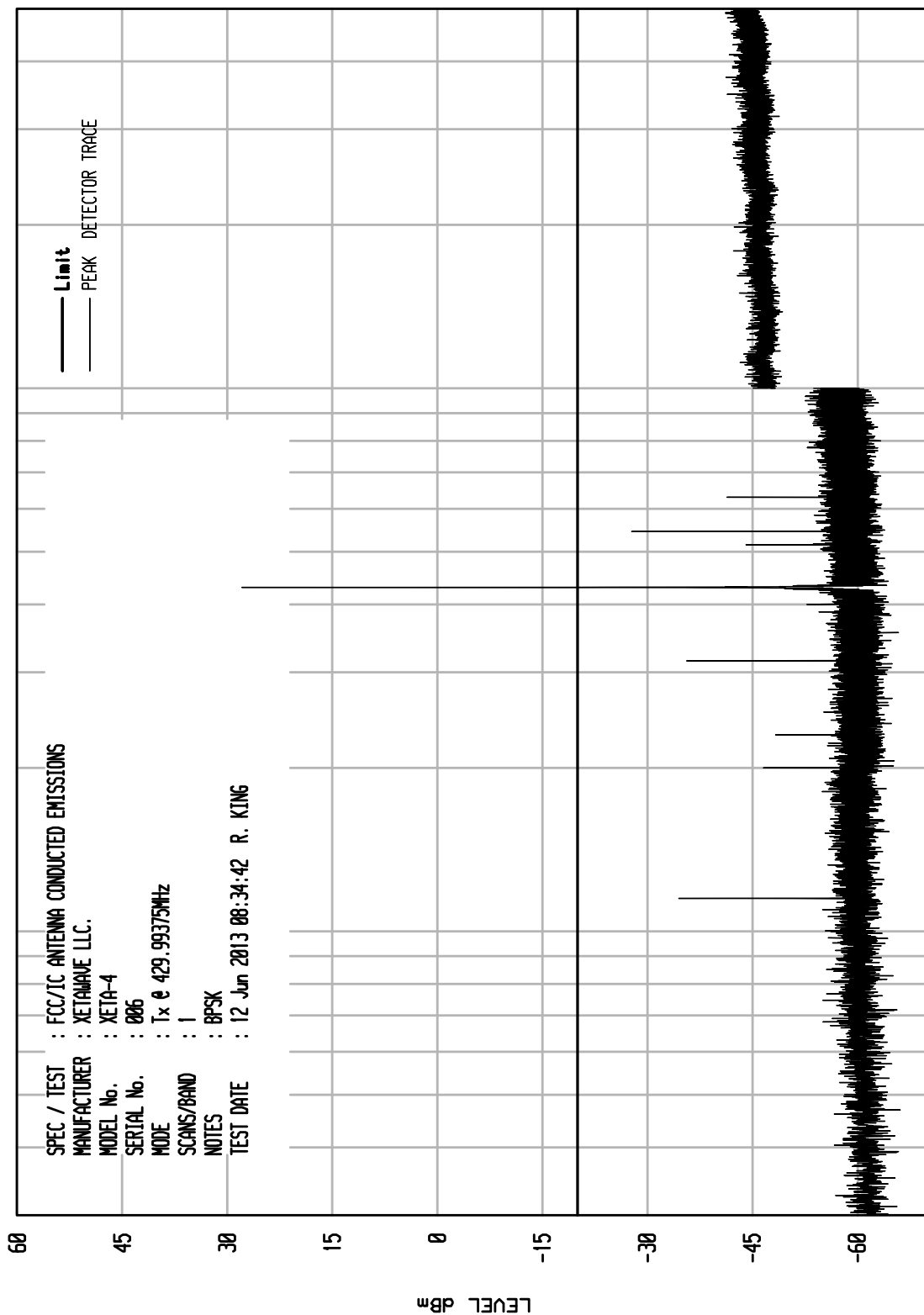


ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 19



START = 30

FREQUENCY MHz

1000

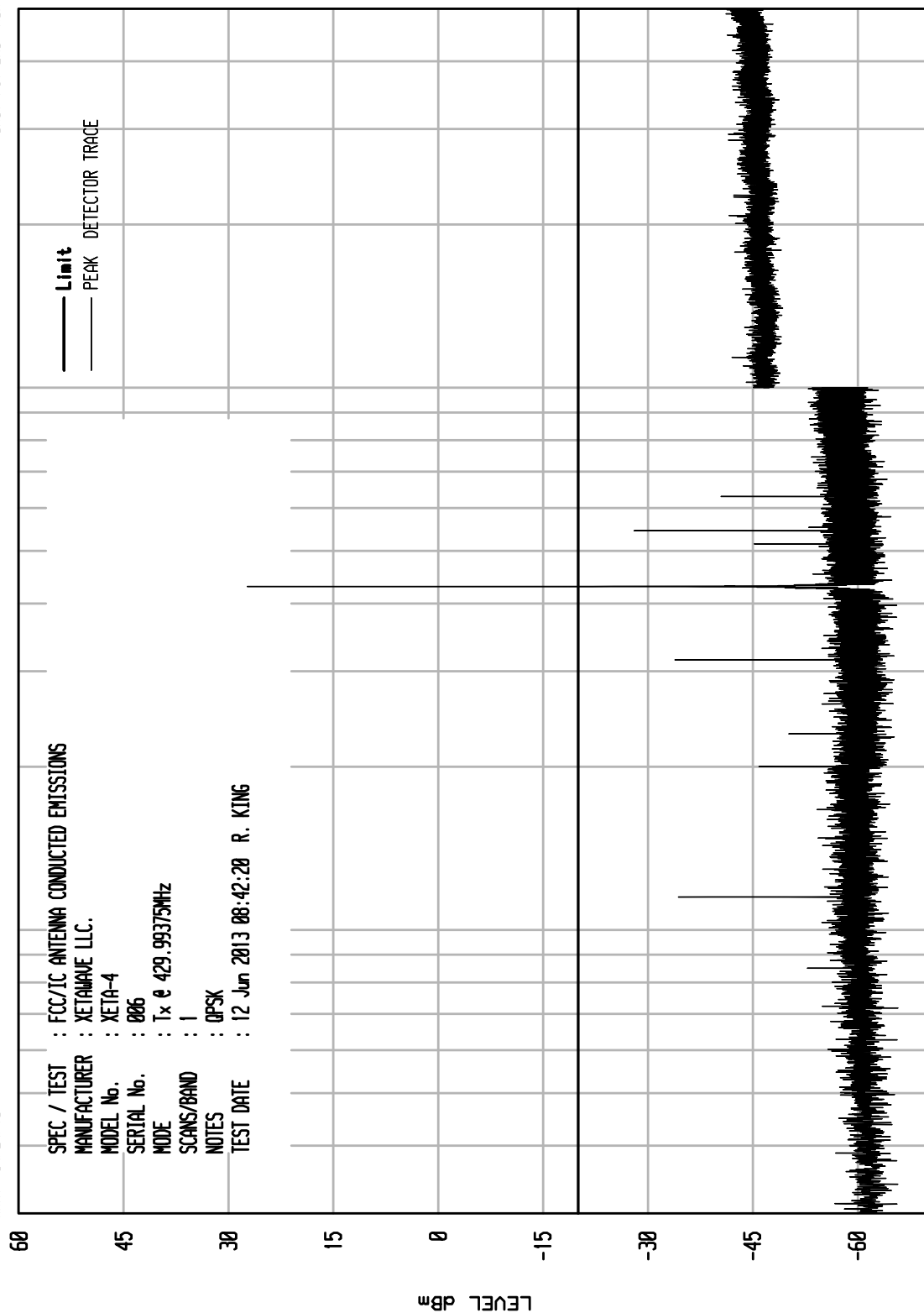
100

STOP = 5000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 24



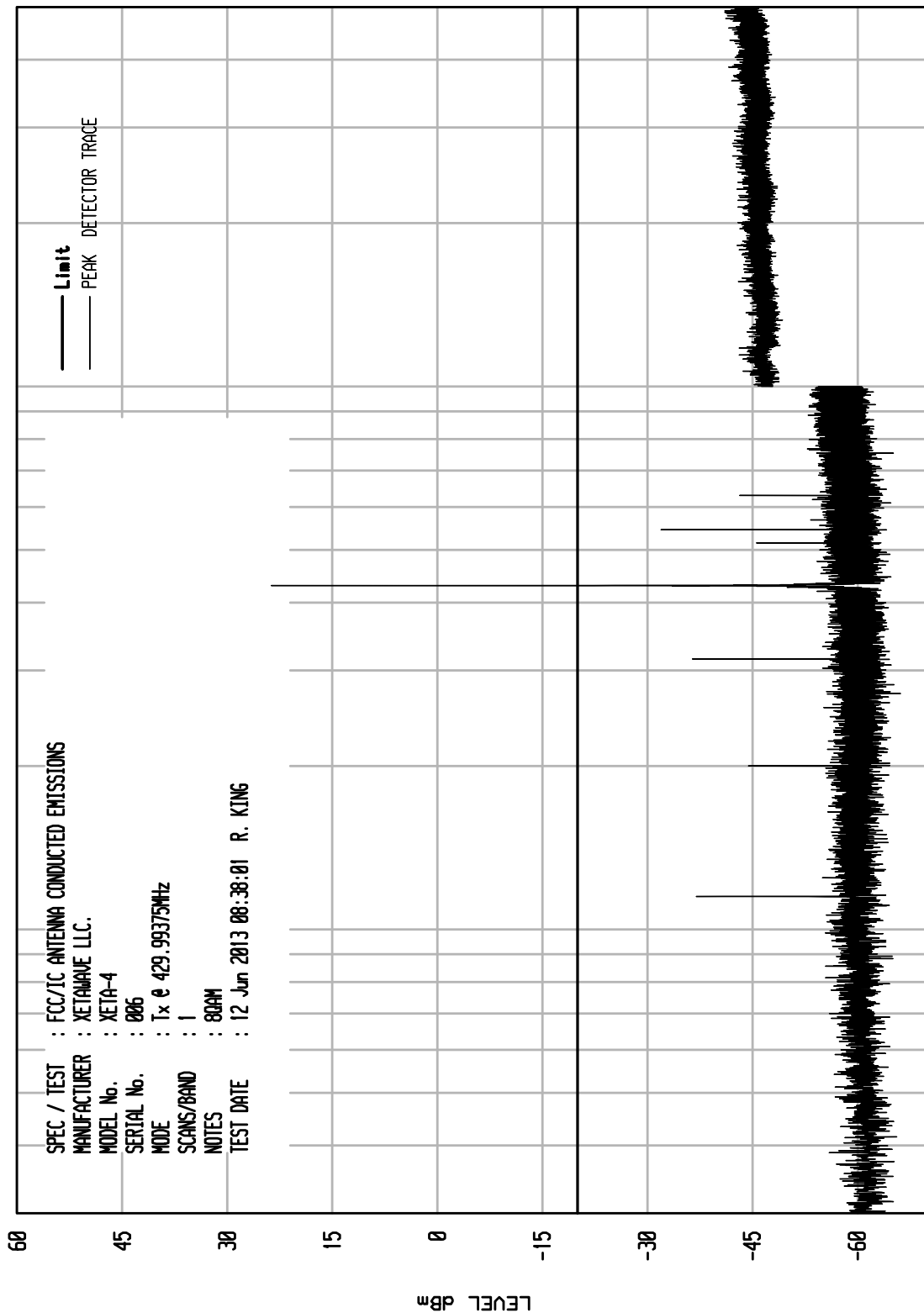
STOP = 5000

START = 30

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 21



START = 30

FREQUENCY MHz

1000

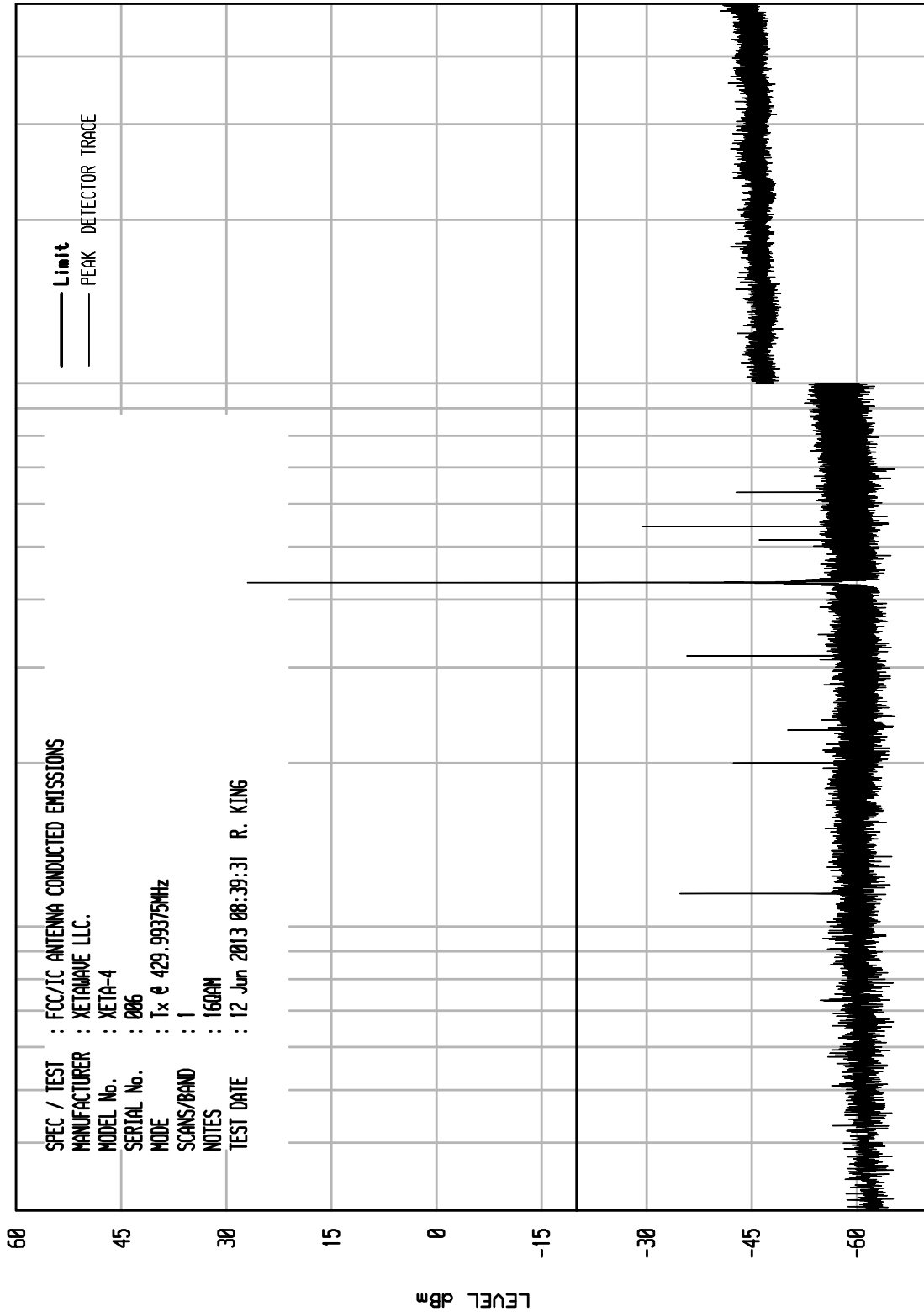
100

STOP = 5000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

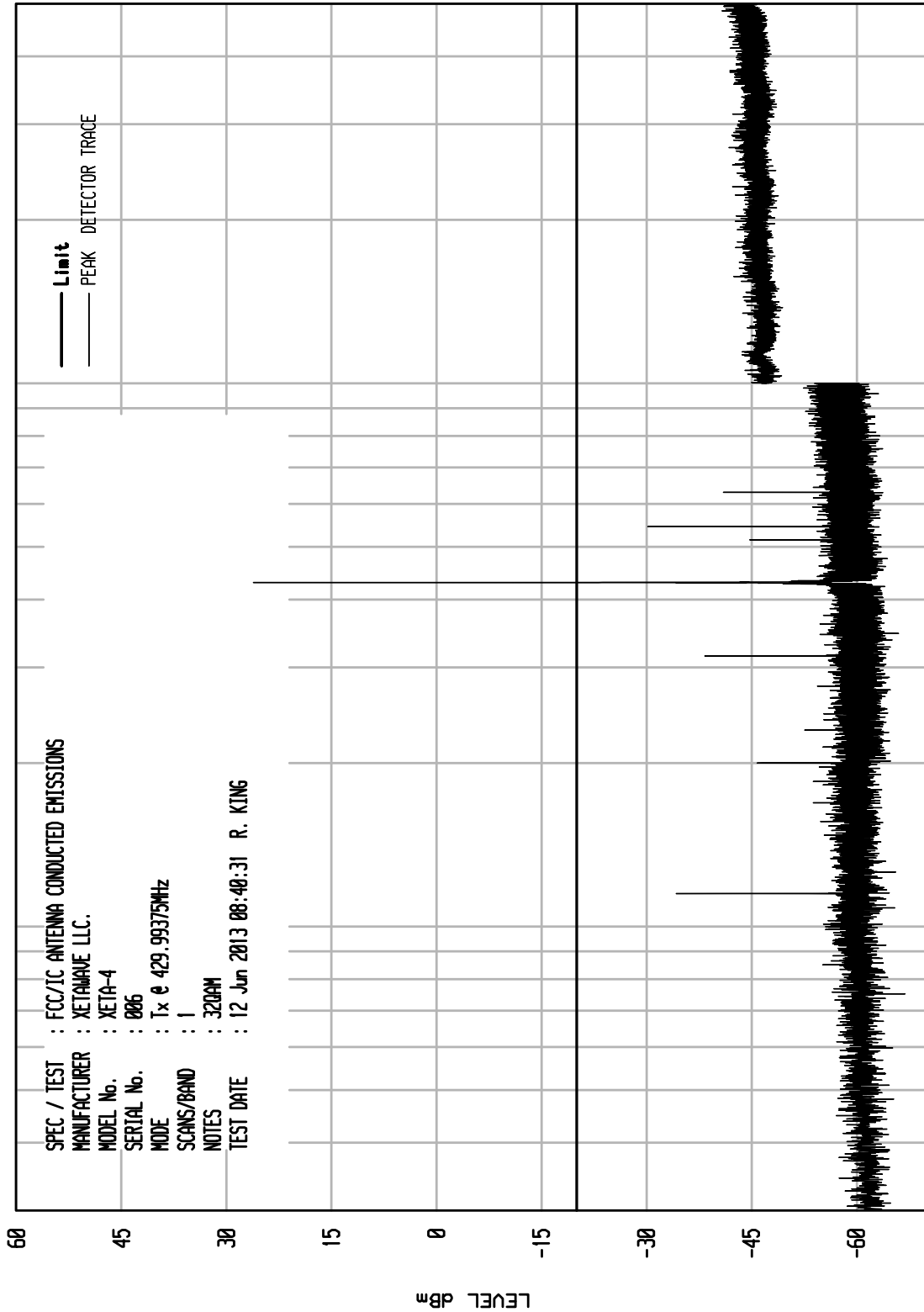
UNITU RCU ENI RUN 22



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 23



START = 30

FREQUENCY MHz

1000

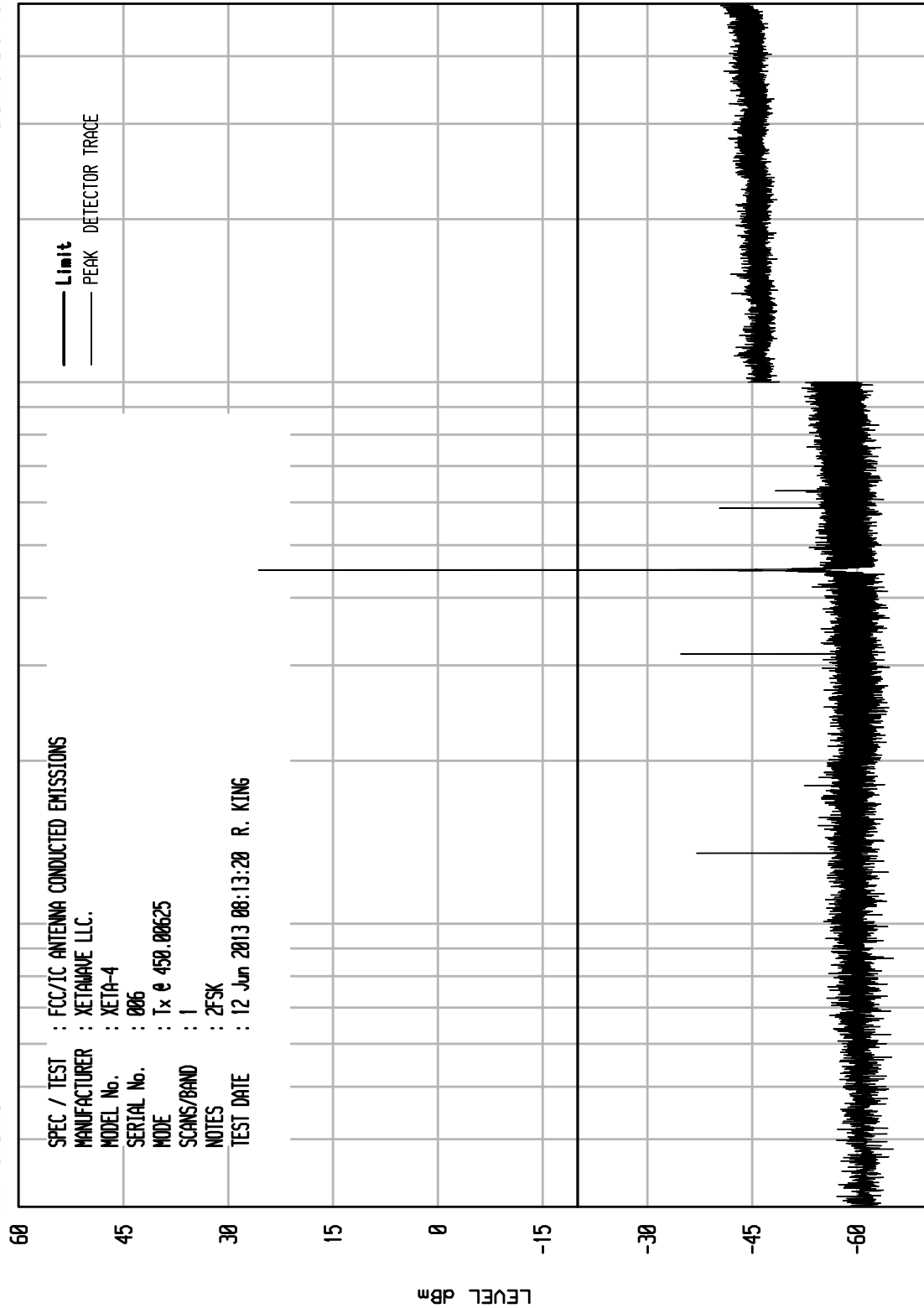
100

STOP = 5000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 12

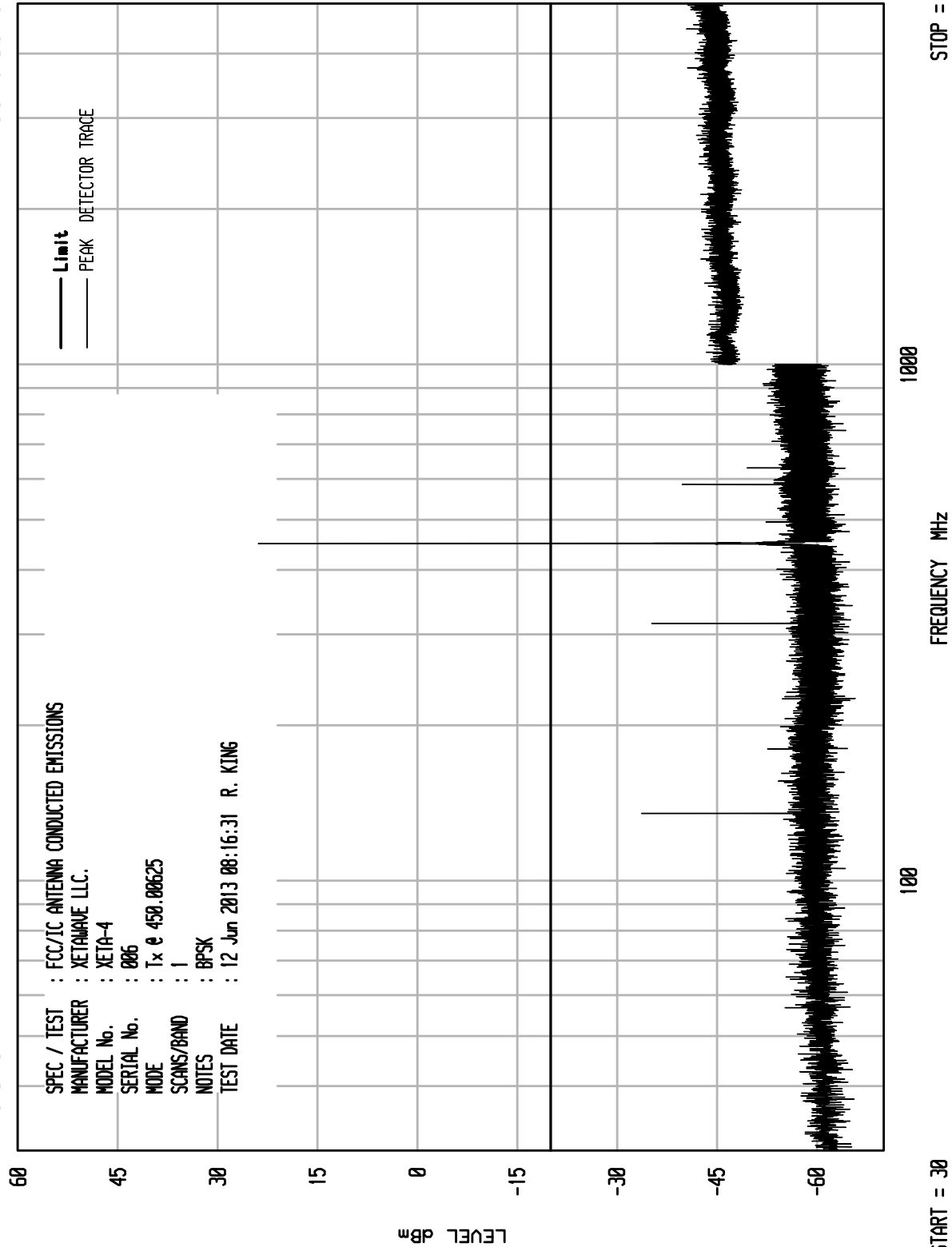


ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA1 04/24/13

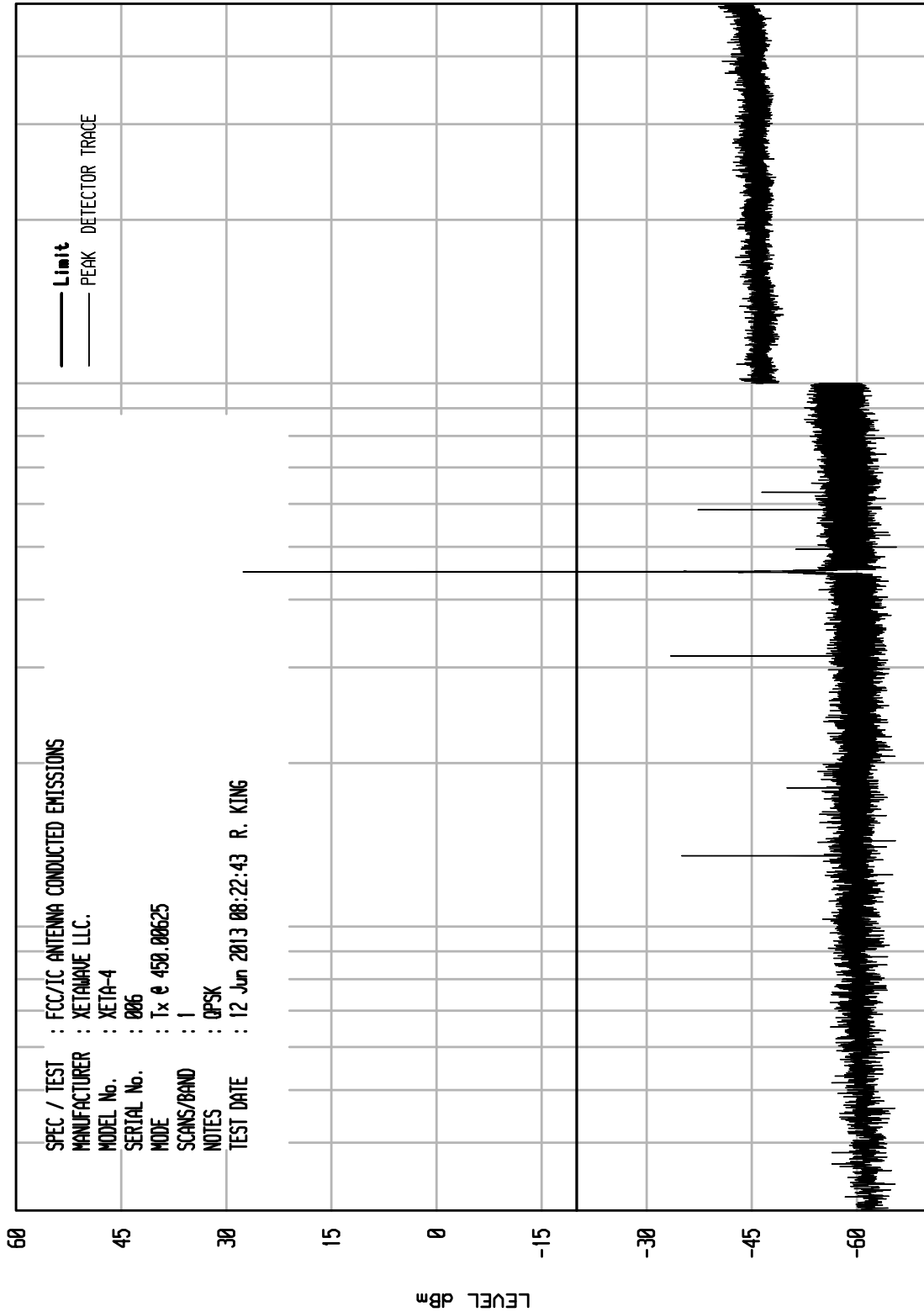
UNITU RCU ENI RUN 13



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

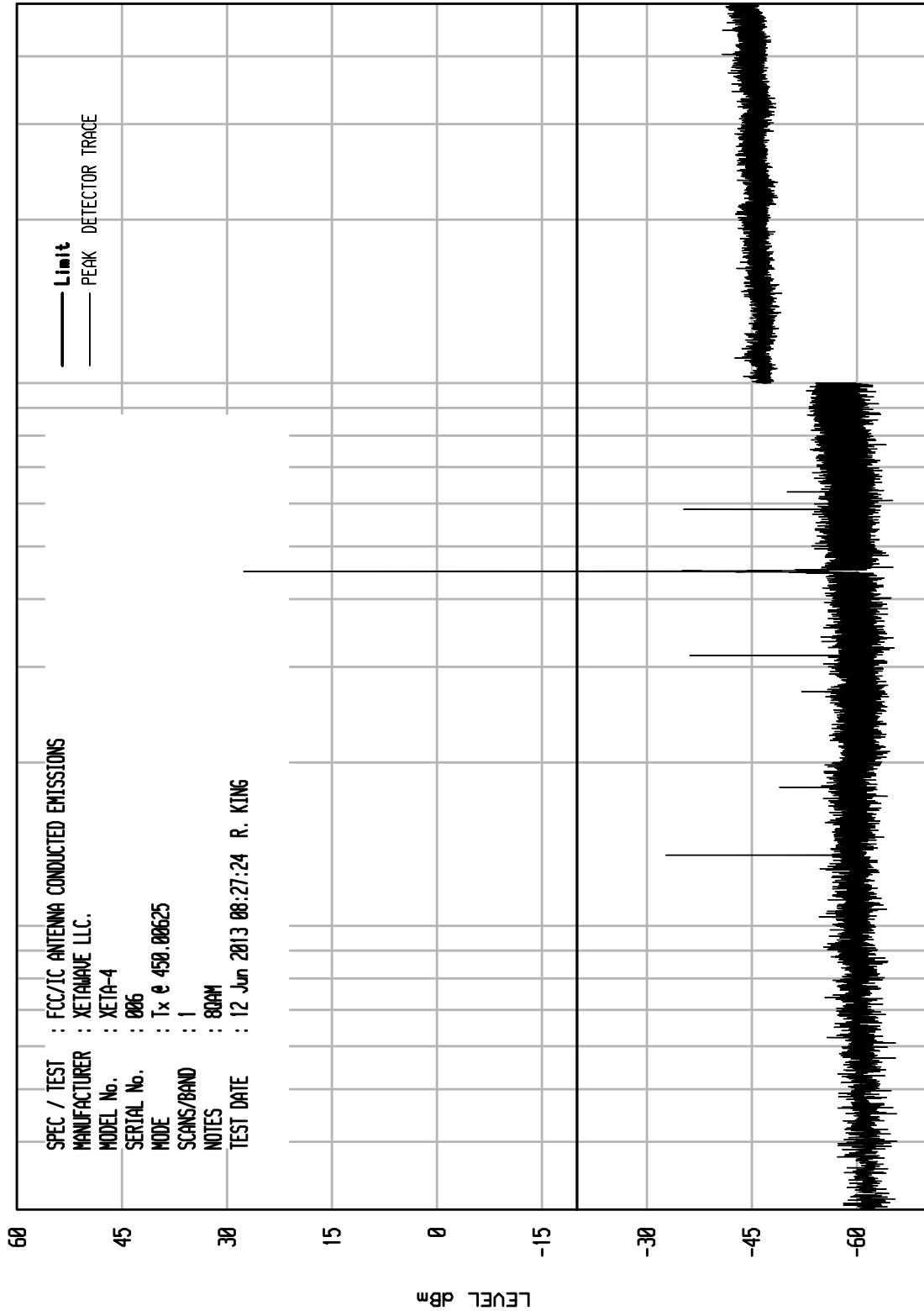
UNITU RCU ENI RUN 14



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

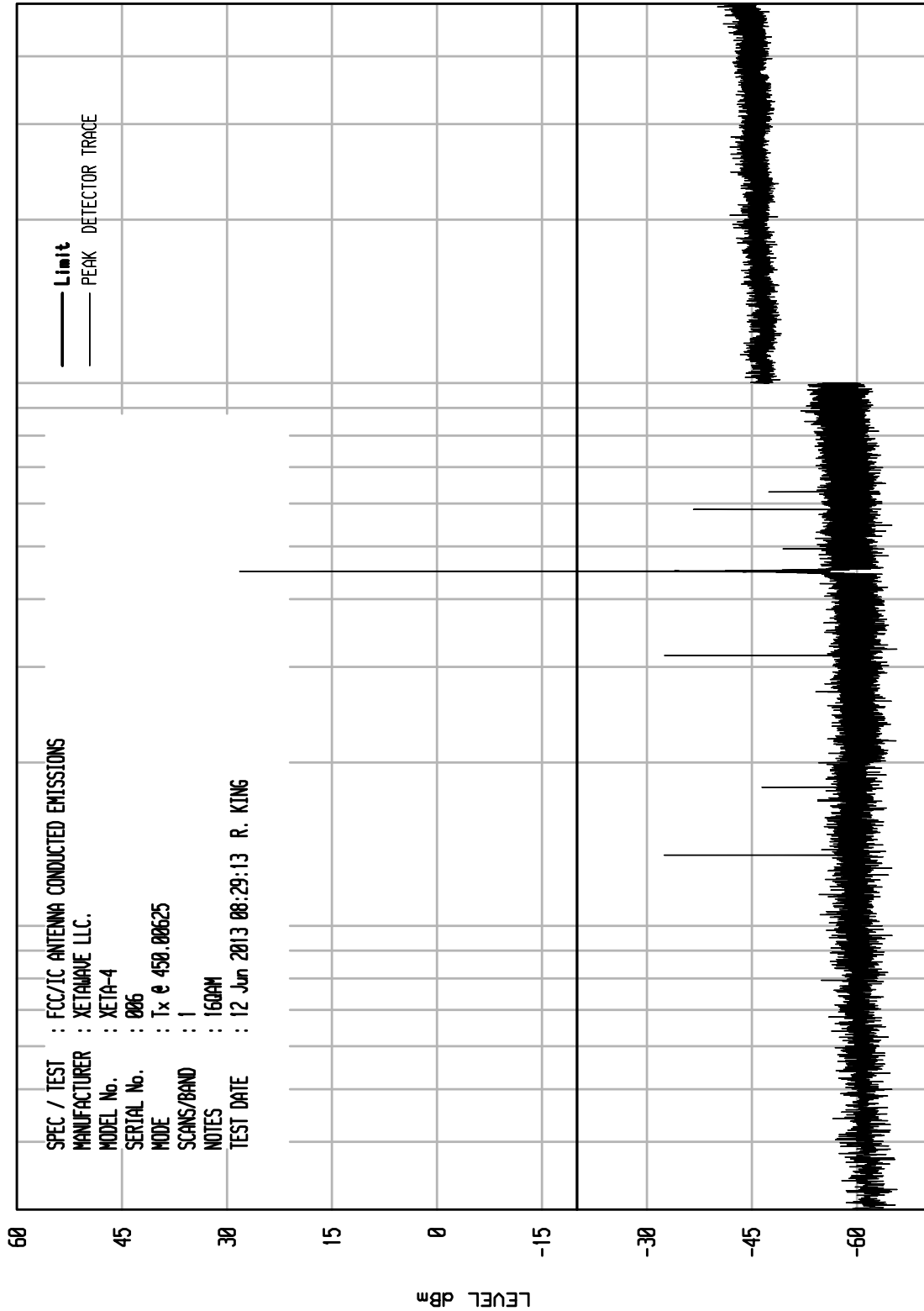
UNITU RCU ENI RUN 15



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

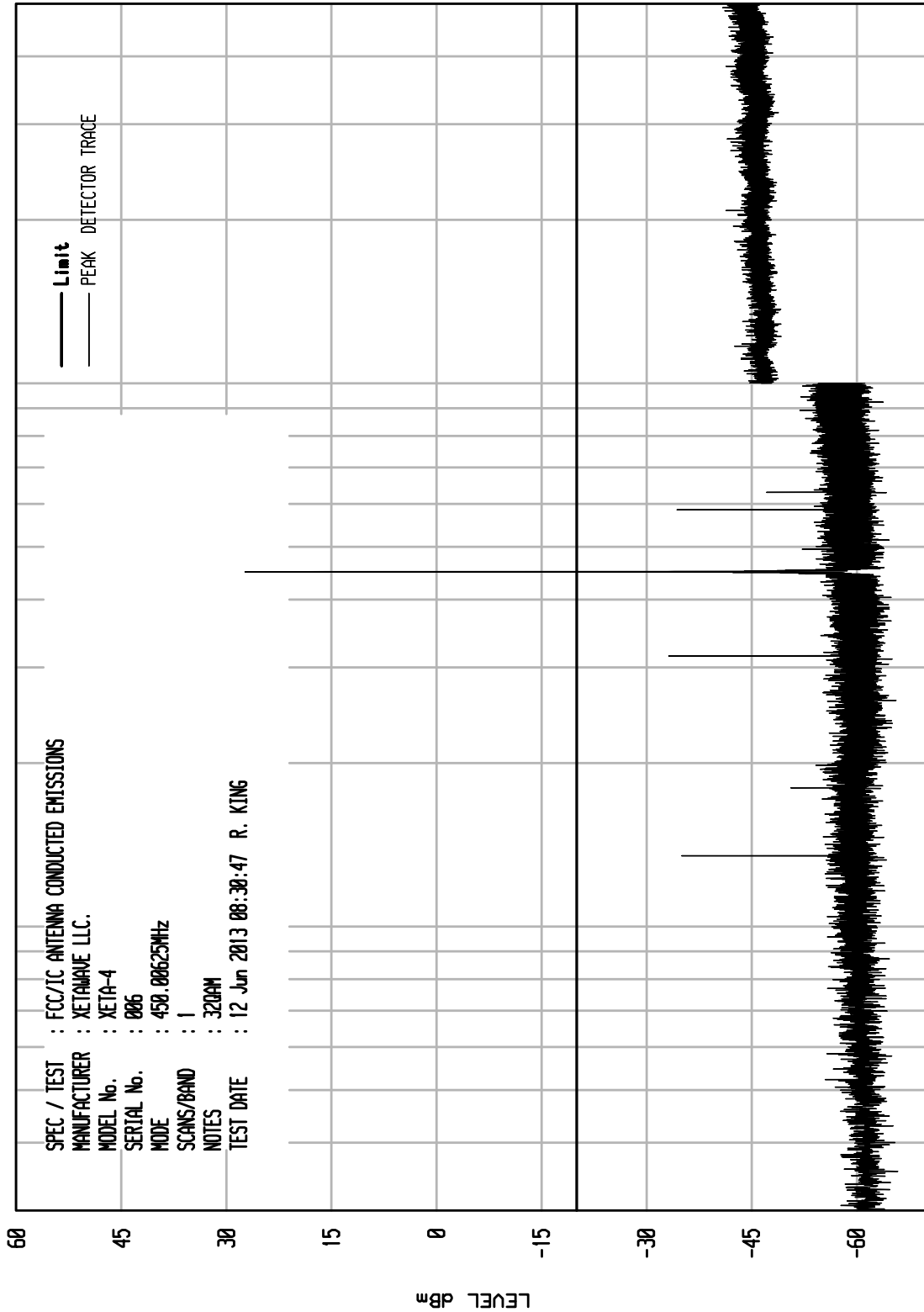
UNITU RCU ENI RUN 16



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

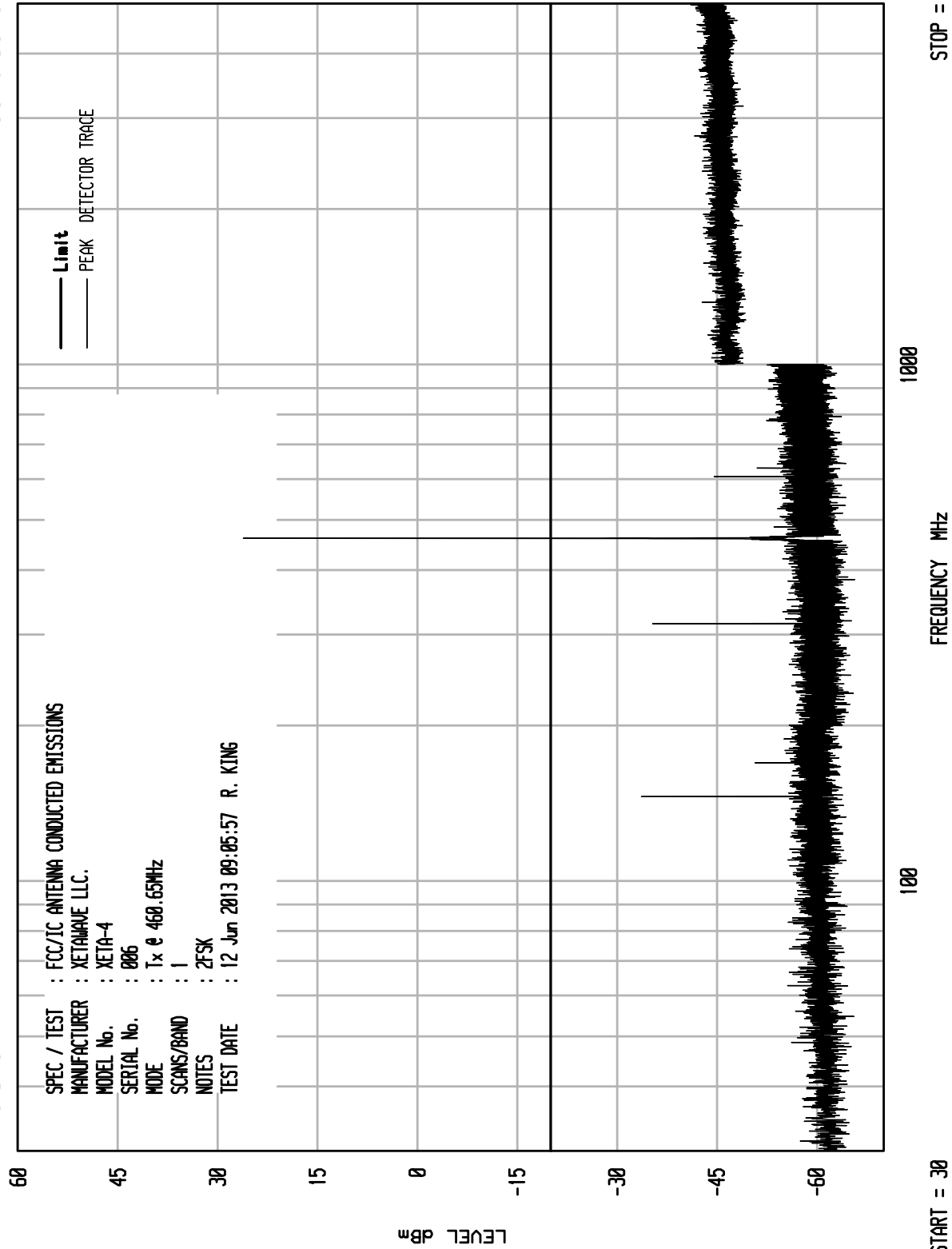
UNITU RCU ENI RUN 17



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

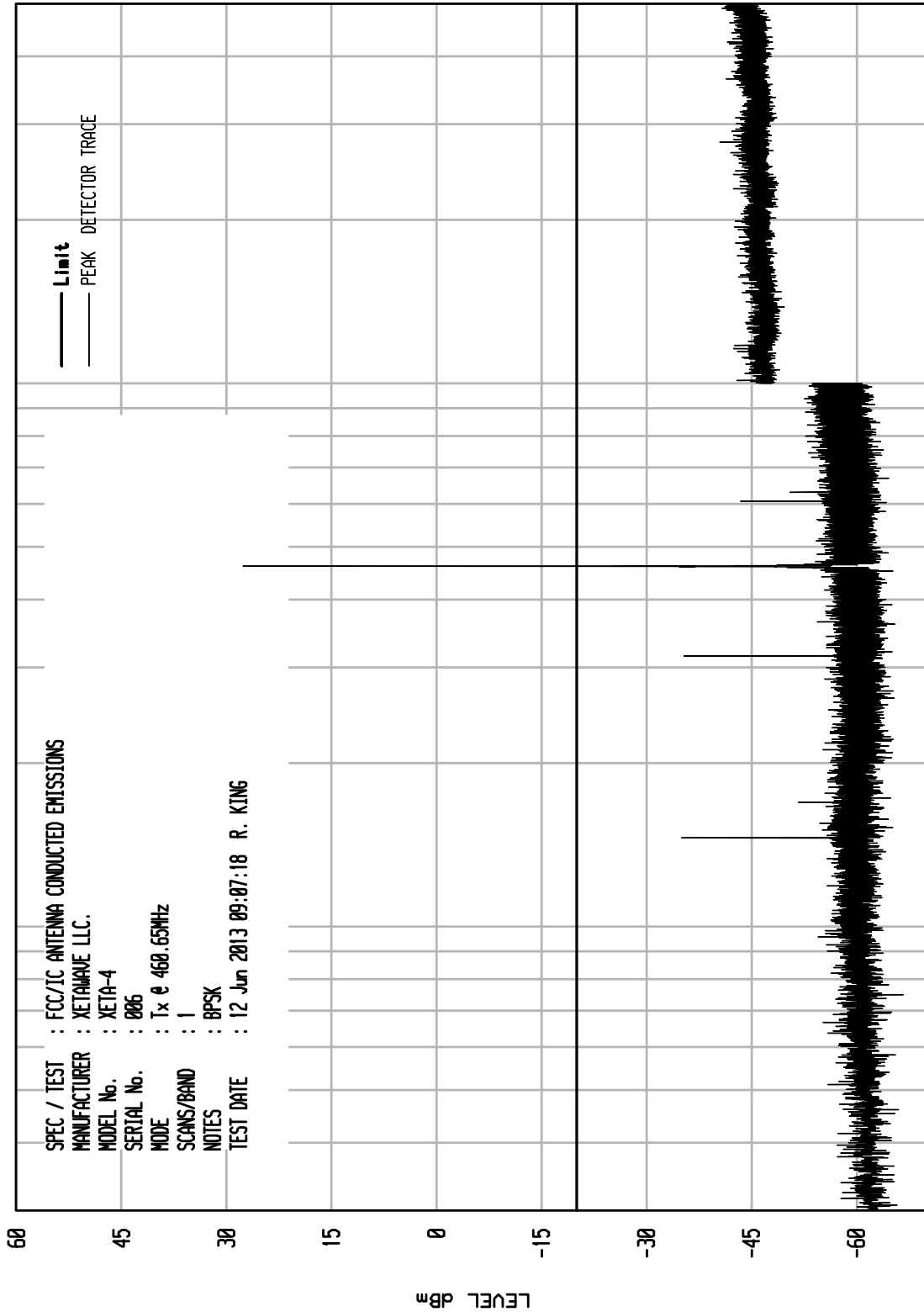
UNITU RCU ENI RUN 39



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 40



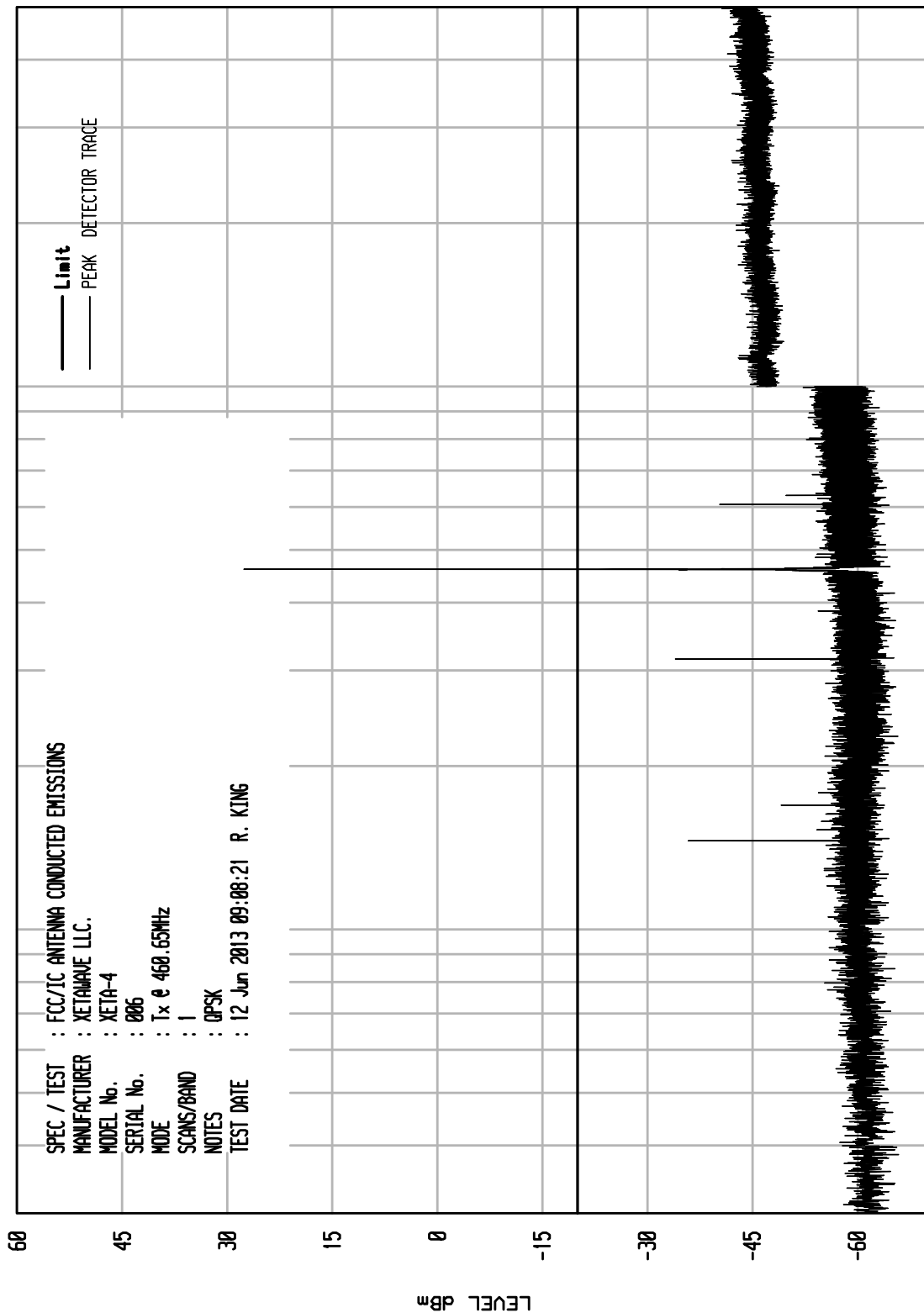
START = 30

STOP = 5000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

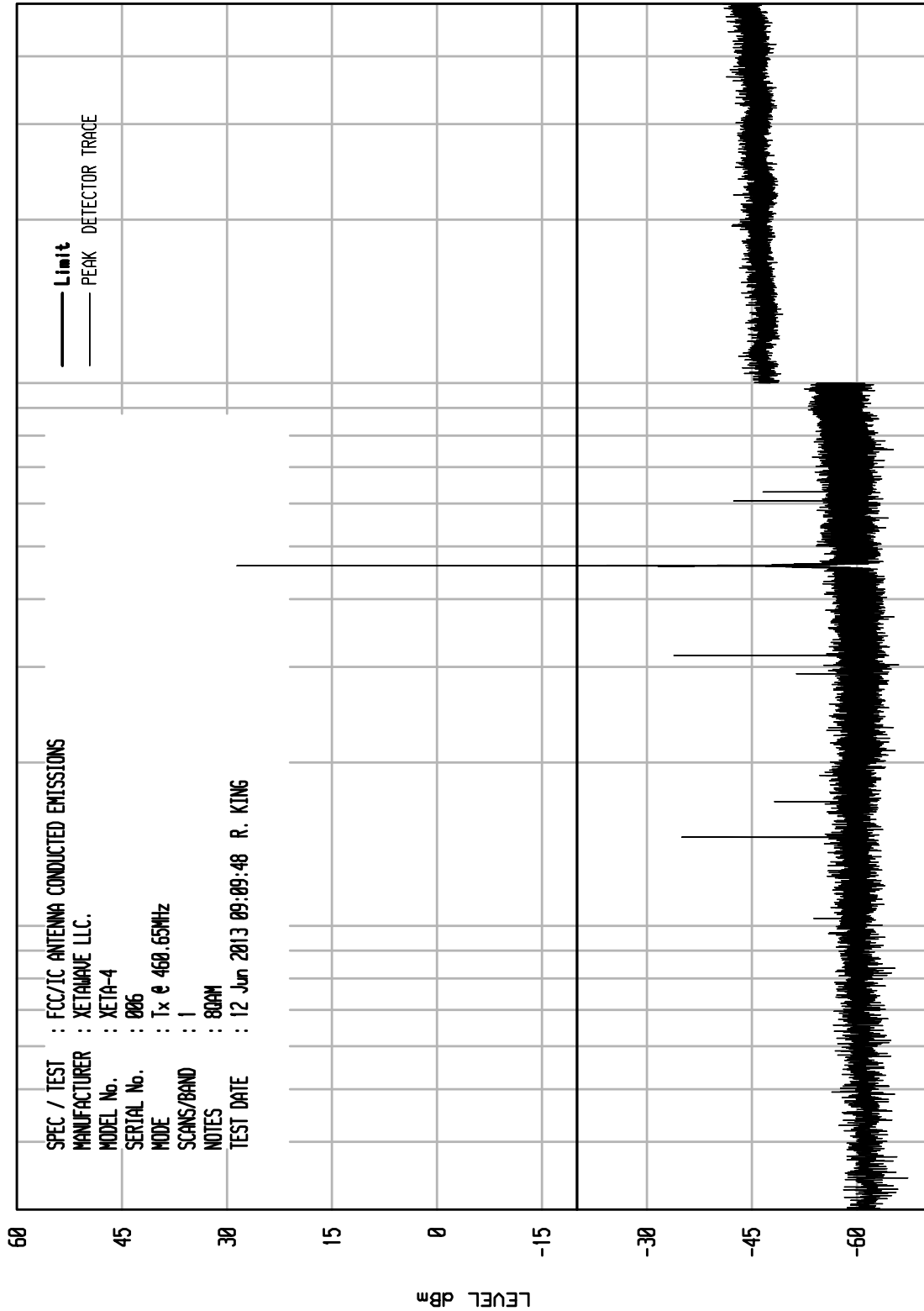
UNITU RCU ENI RUN 41



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

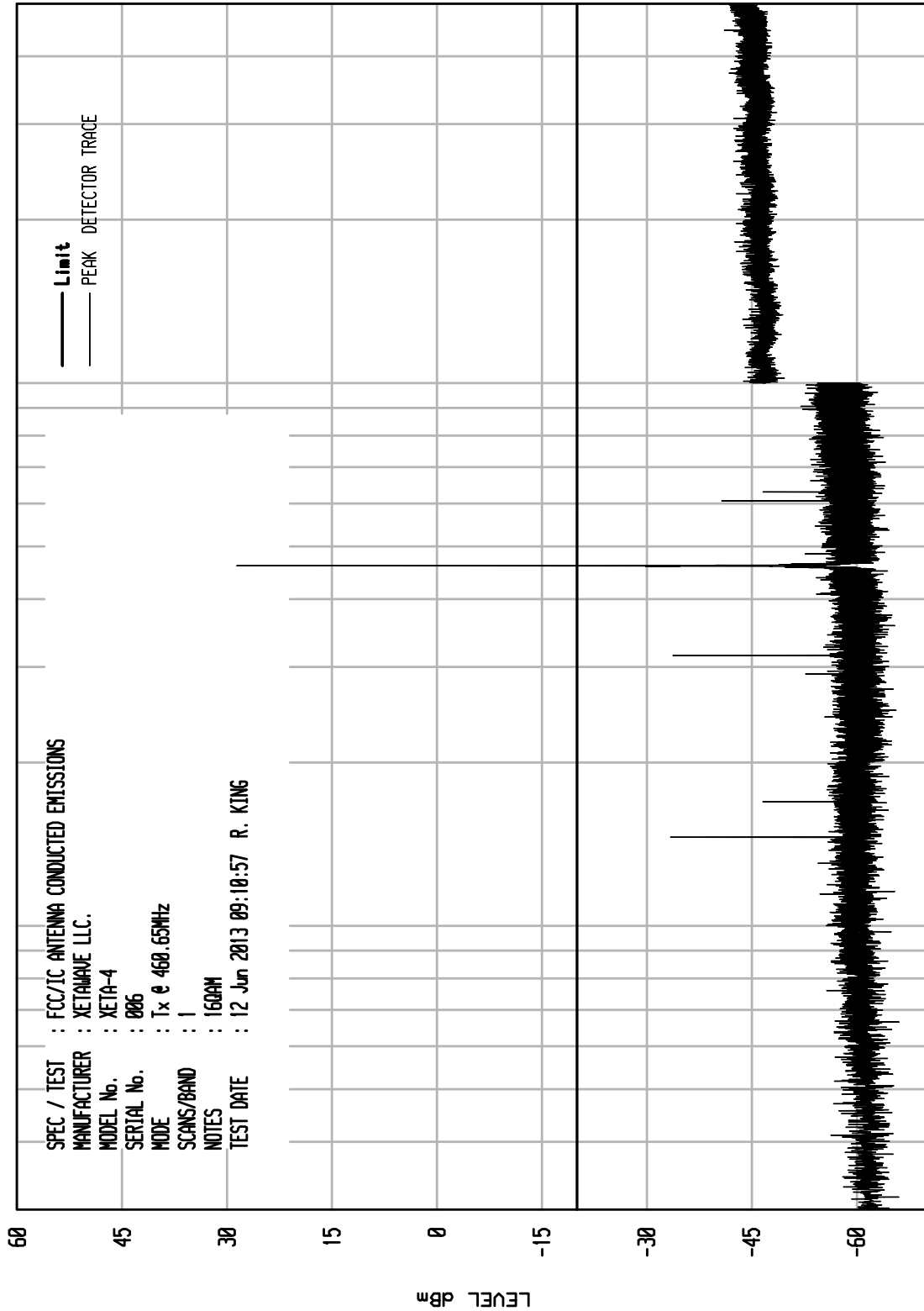
UNITU RCU ENI RUN 42



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

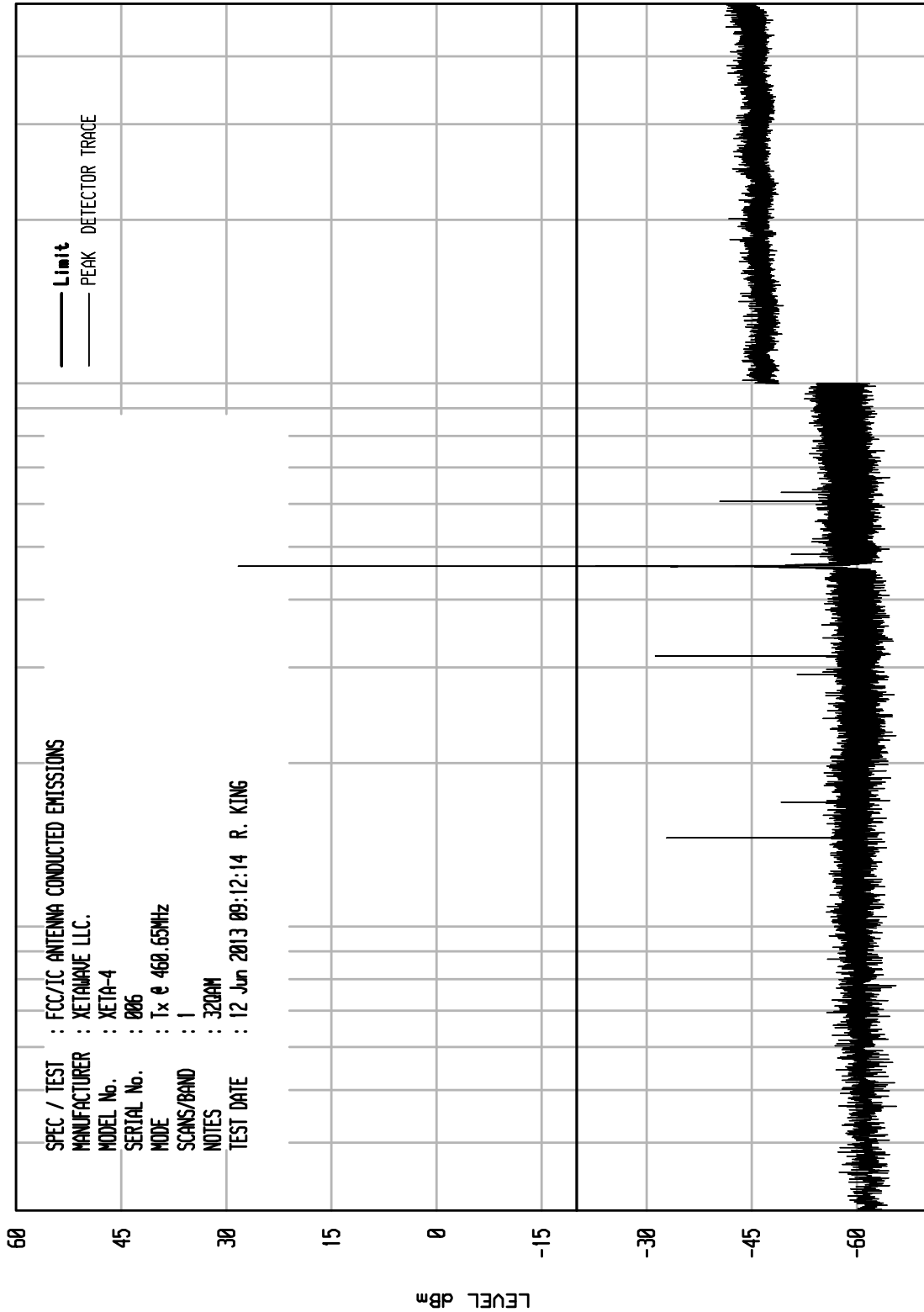
UNITU RCU ENI RUN 43



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

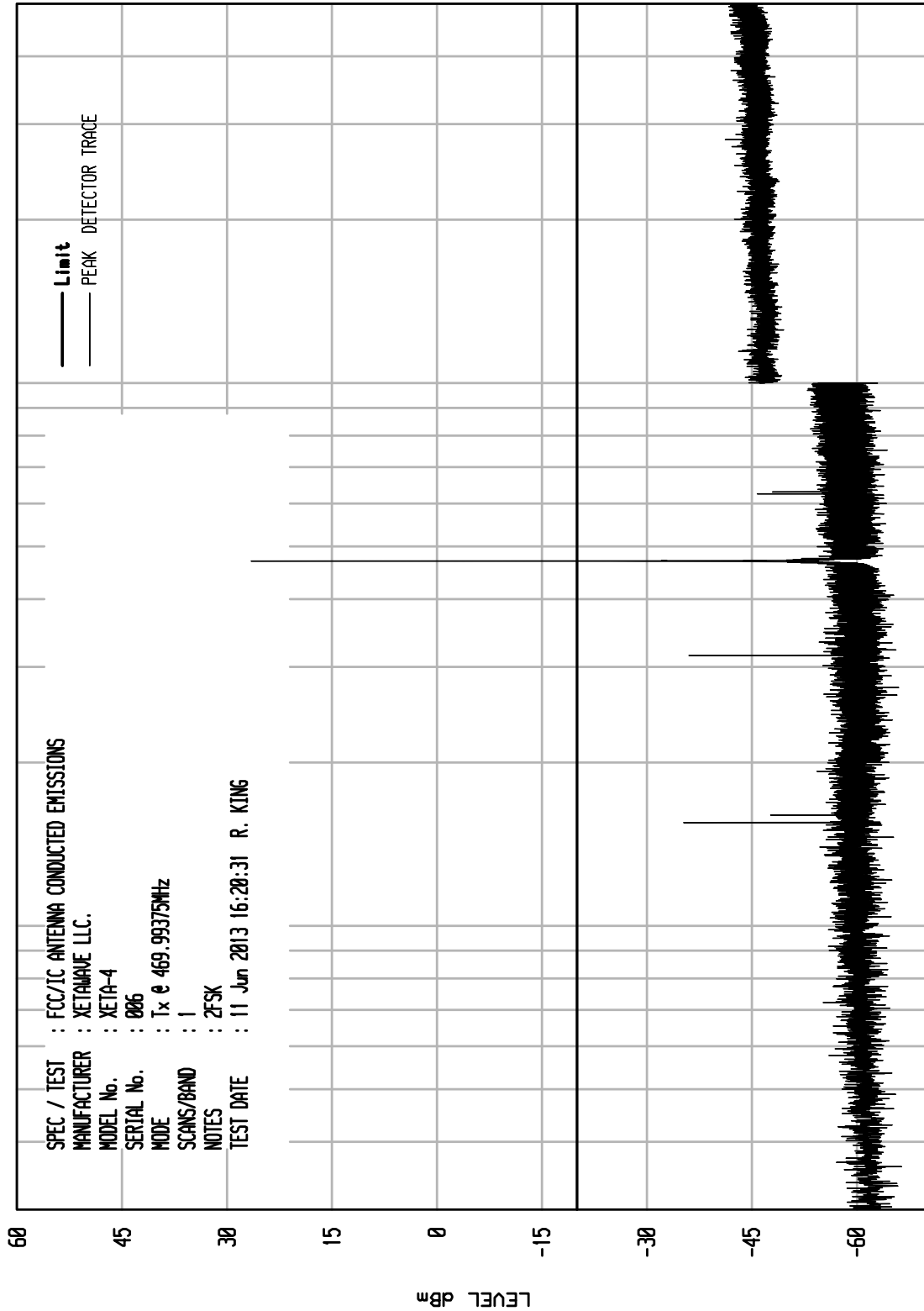
UNITU RCU ENI RUN 44



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

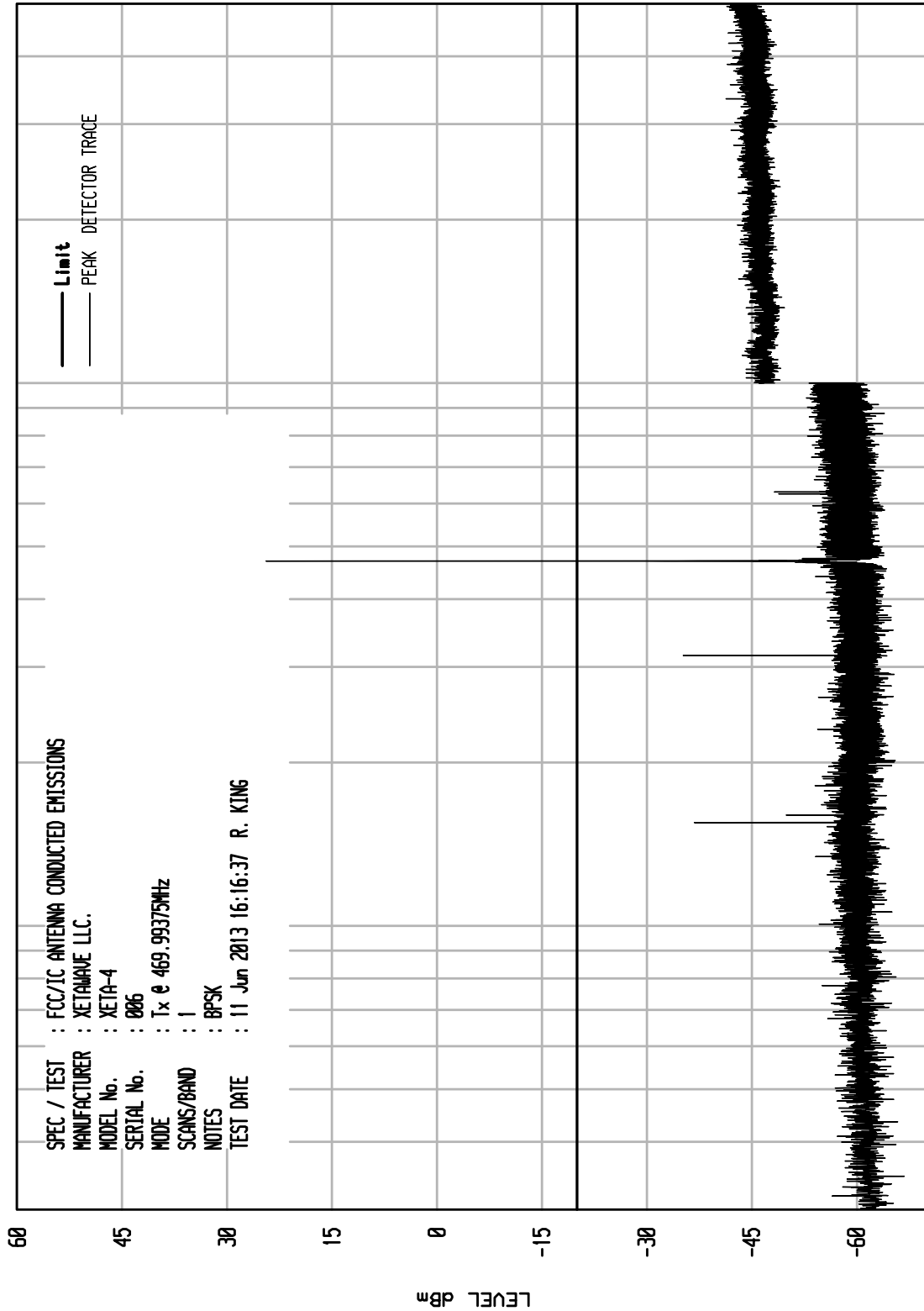
UNITU RCU ENI RUN 11



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 9

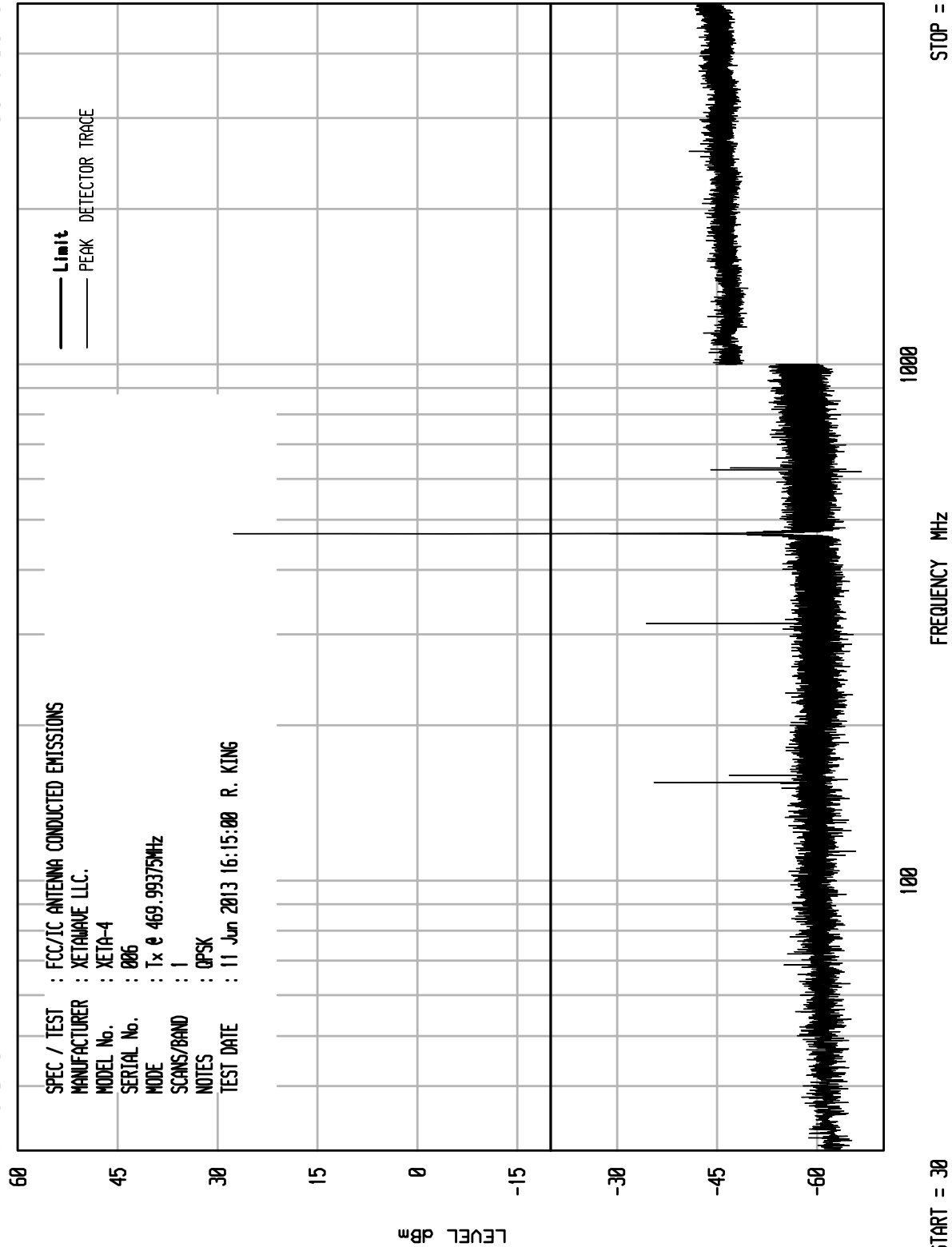


ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA1 04/24/13

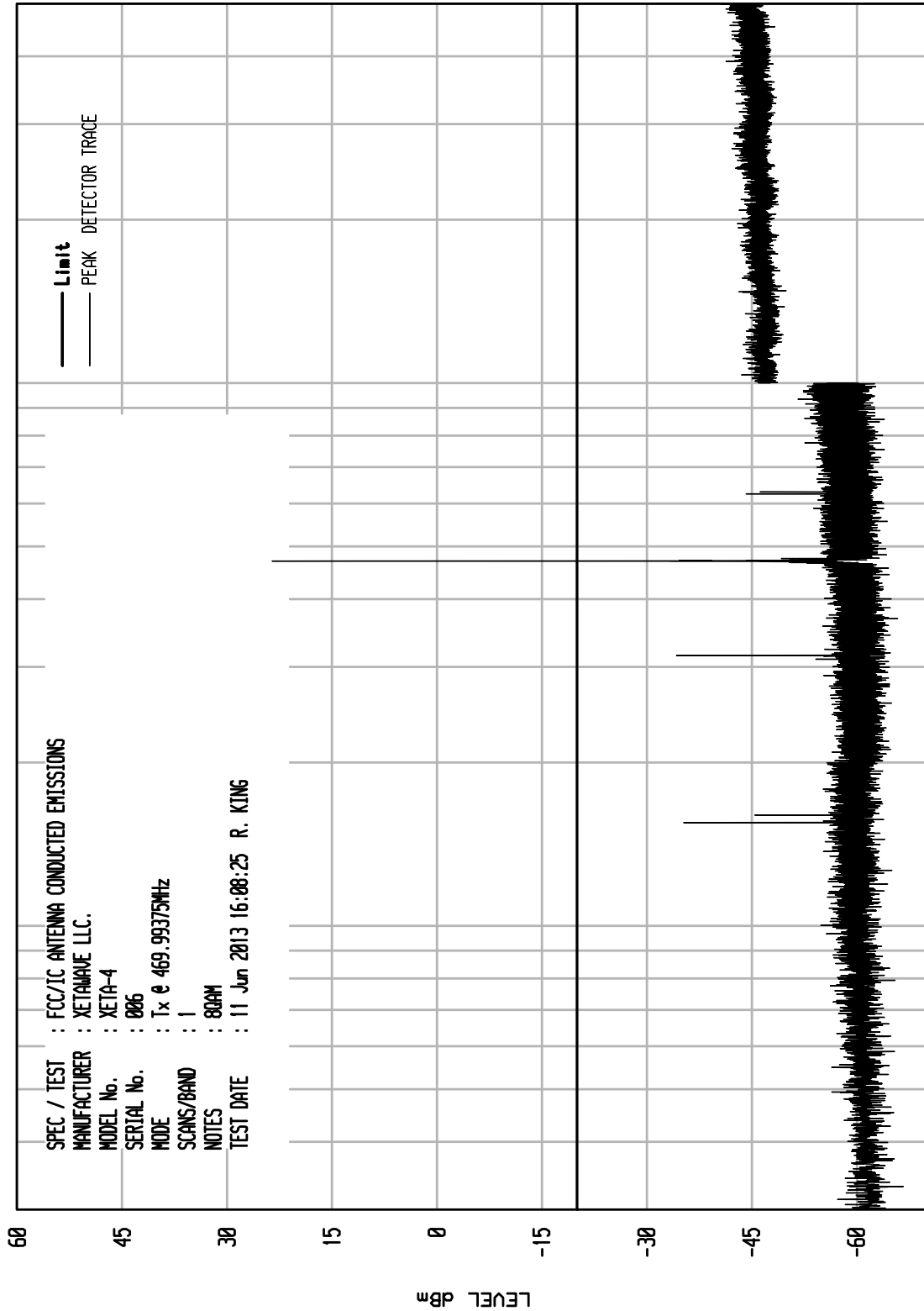
UNITU RCU ENI RUN 8



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

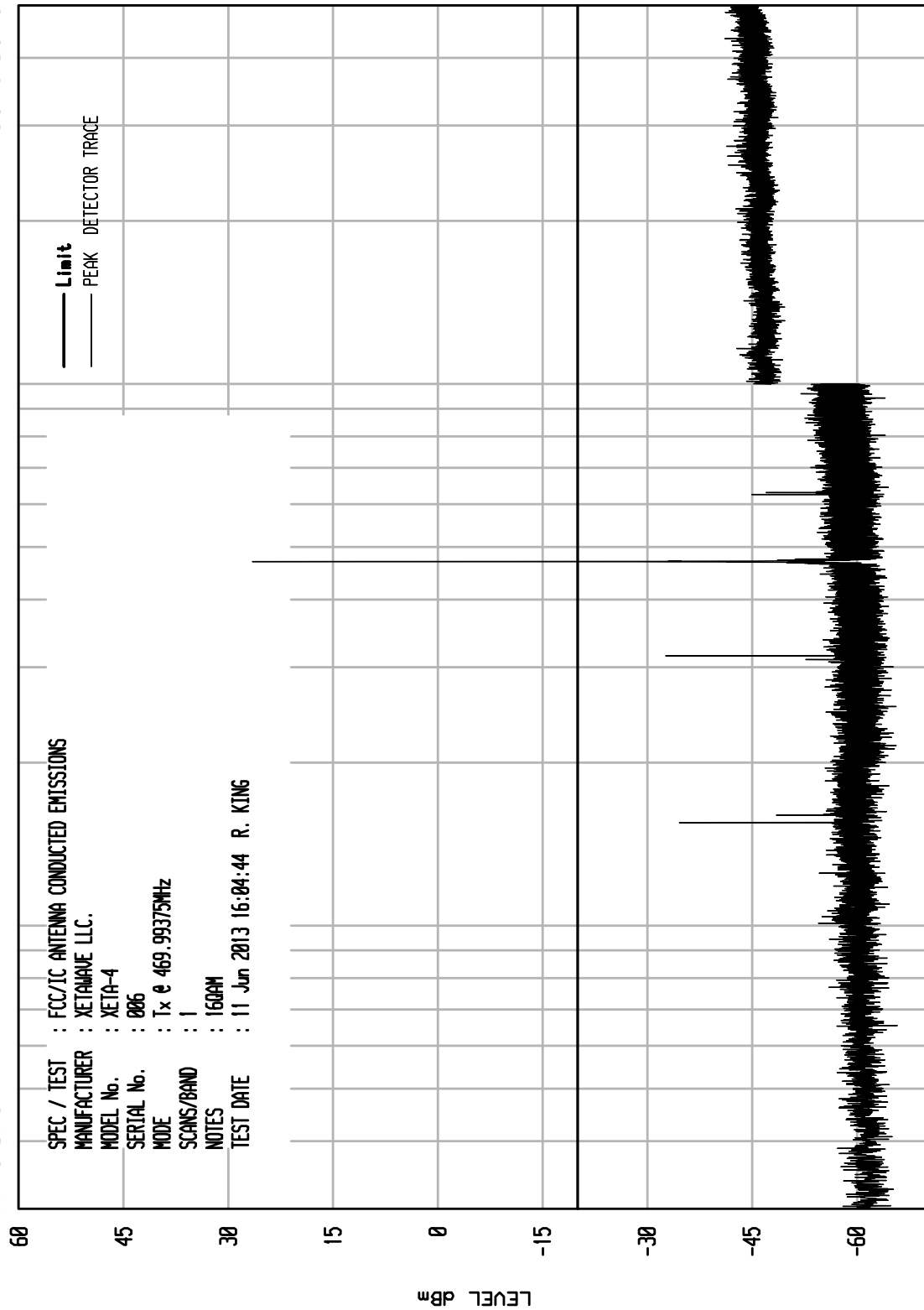
UNITU RCU ENI RUN 6



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 4

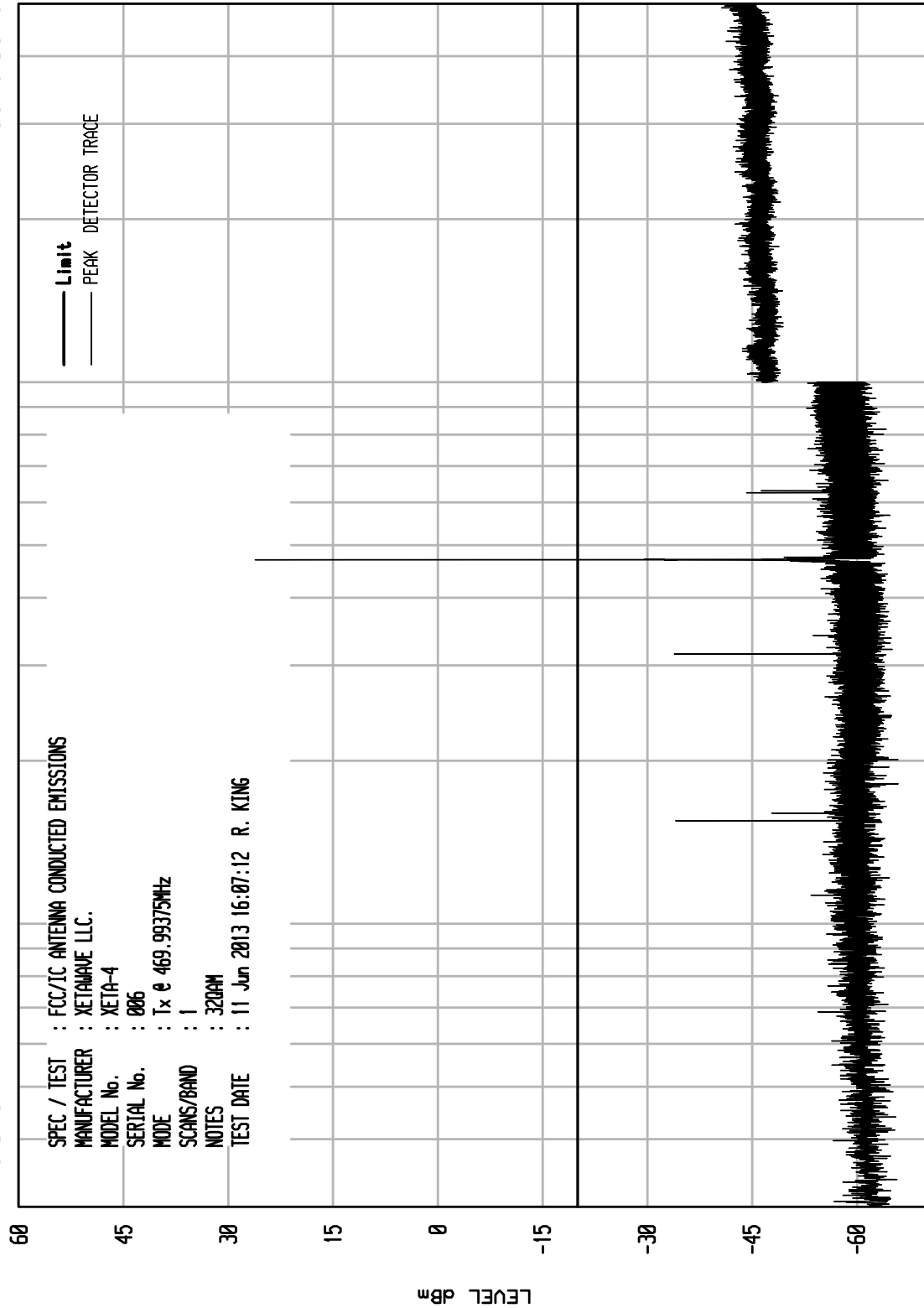


ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA1 04/24/13

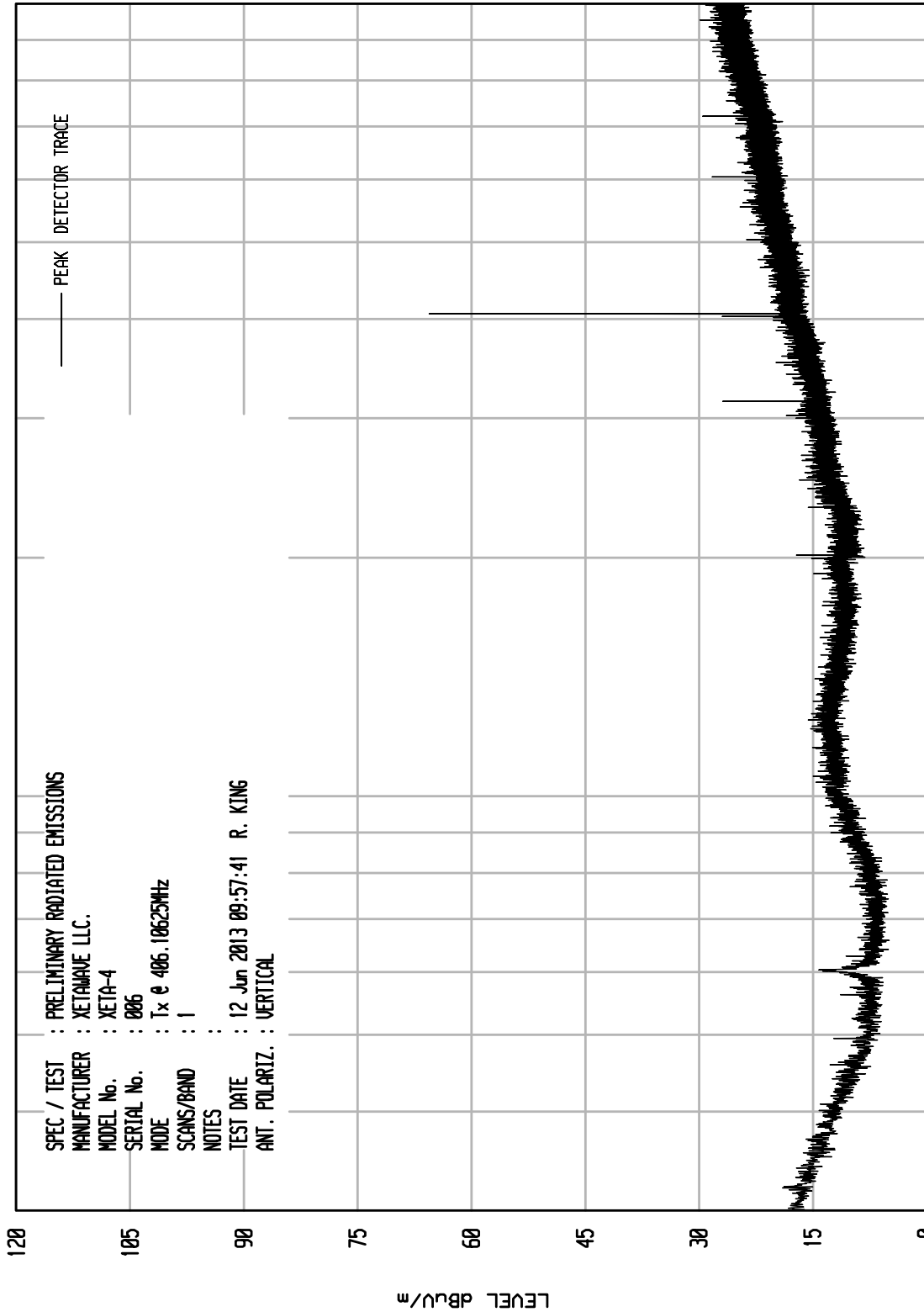
UNITU RCU ENI RUN 5



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNIT0 RCU EN1 RUN 1



START = 30

100

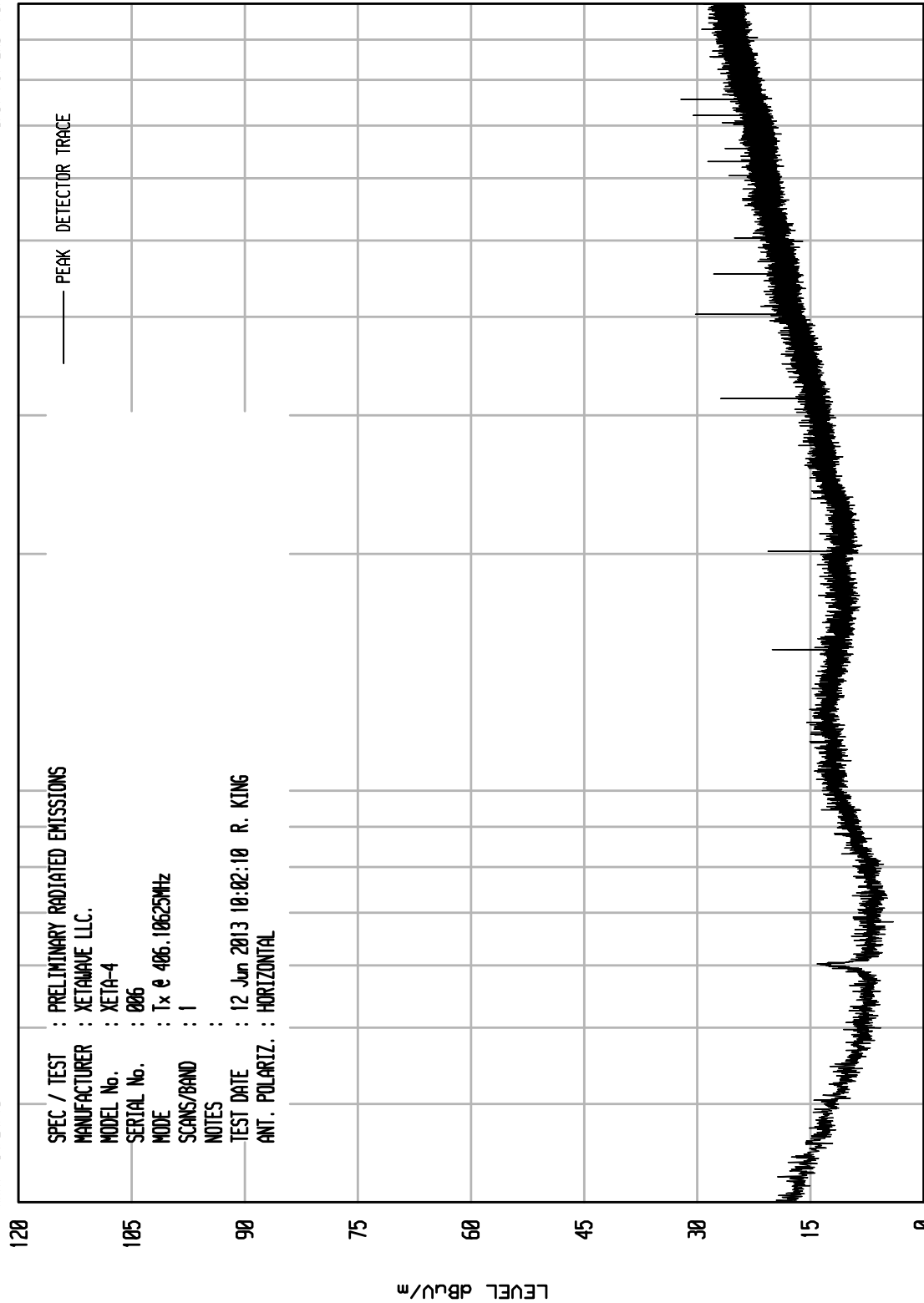
FREQUENCY MHz

STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 2

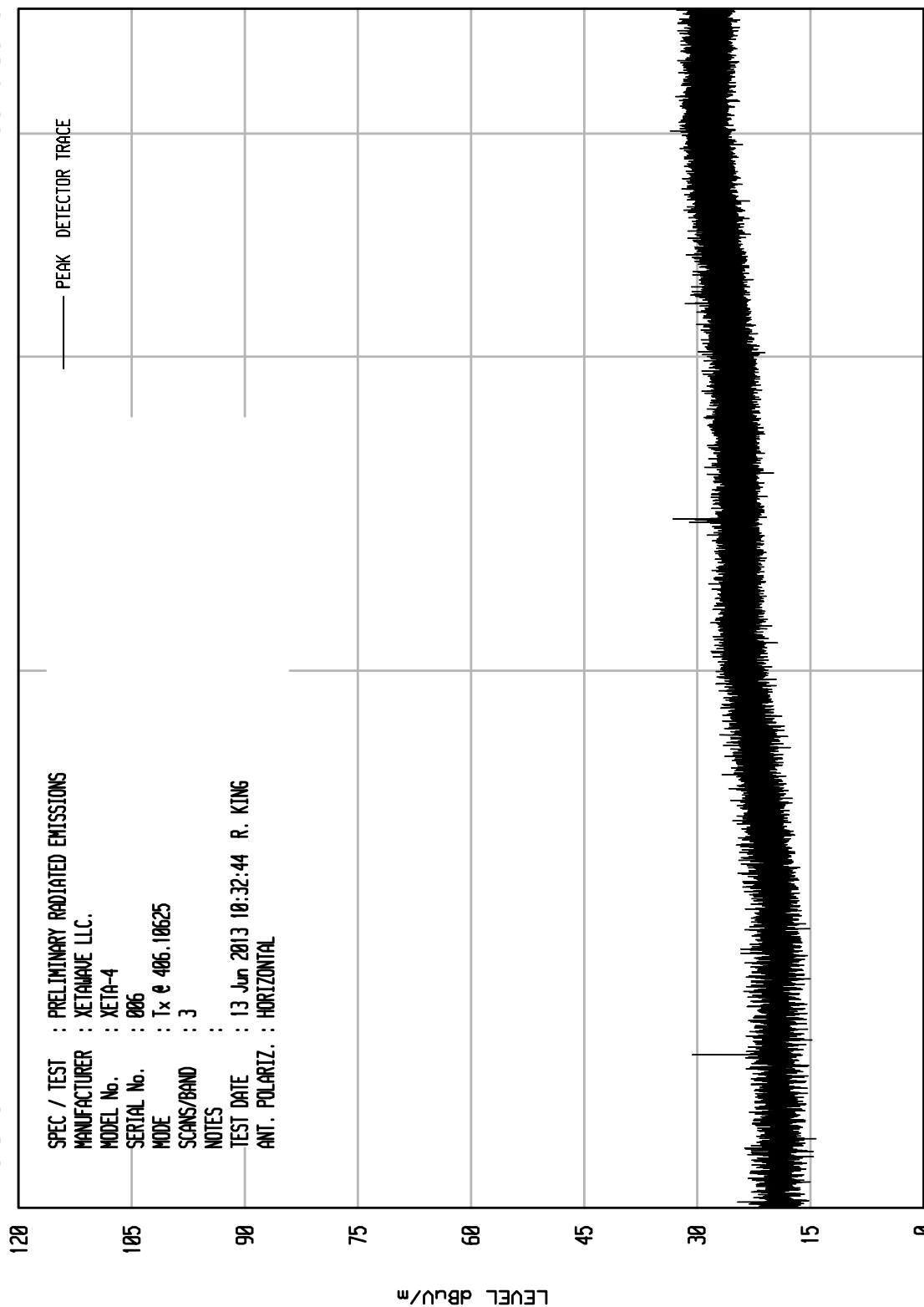


SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 406.10625MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:02:10 R. KING
ANT. POLARIZ. : HORIZONTAL

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 20



START = 1000

FREQUENCY MHz

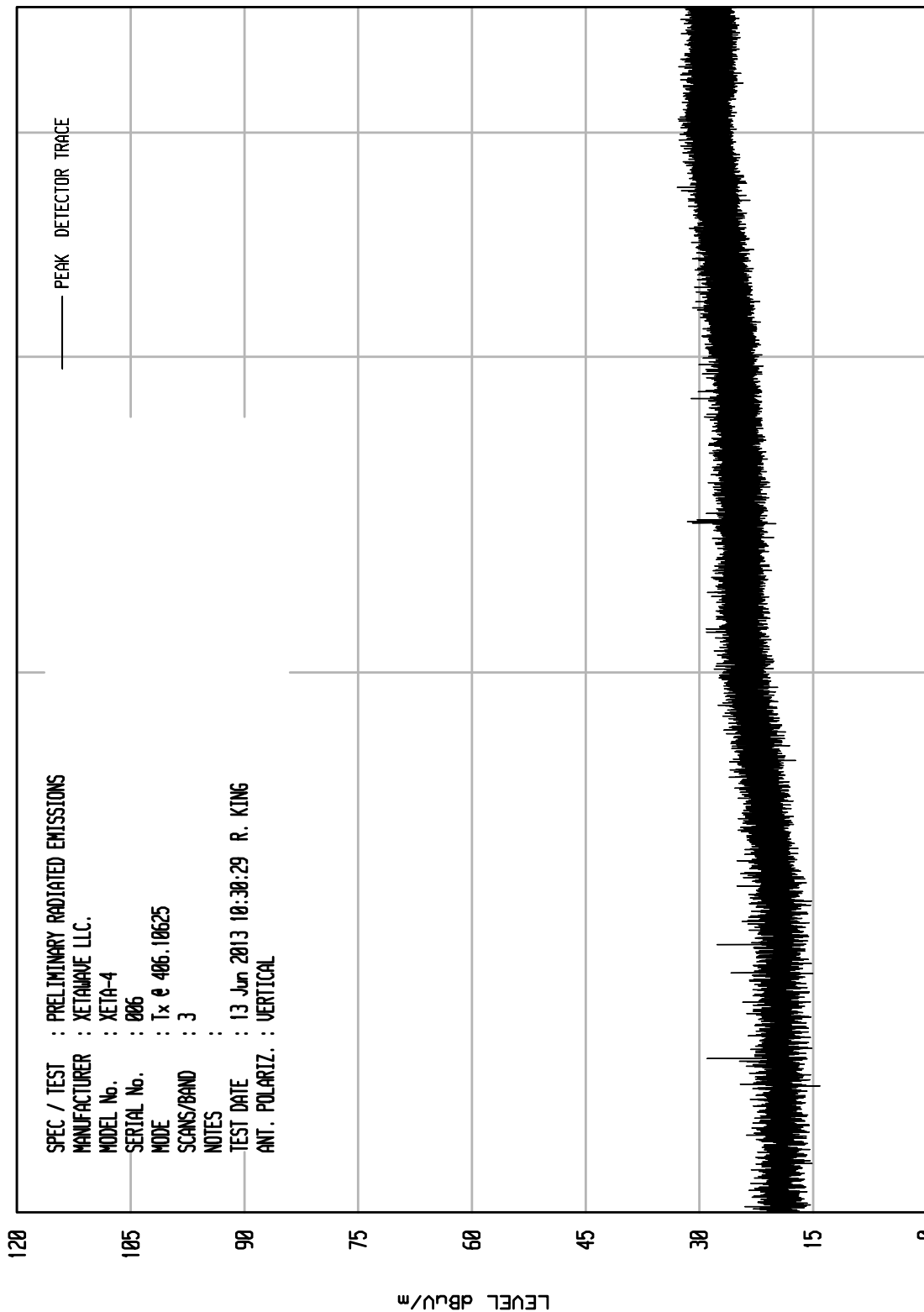
STOP = 4700



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 19



START = 1000

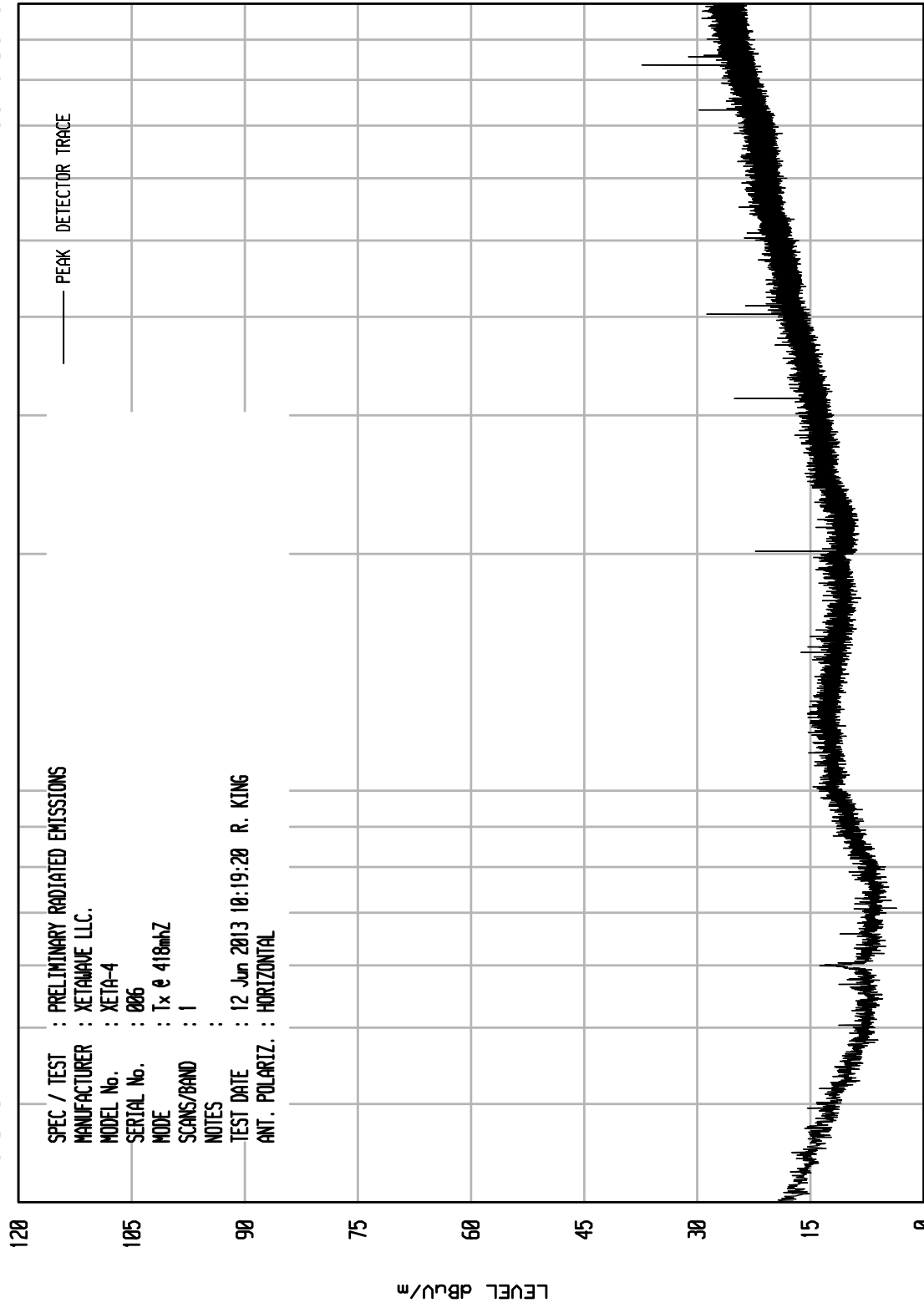
FREQUENCY MHz

STOP = 4700

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 5

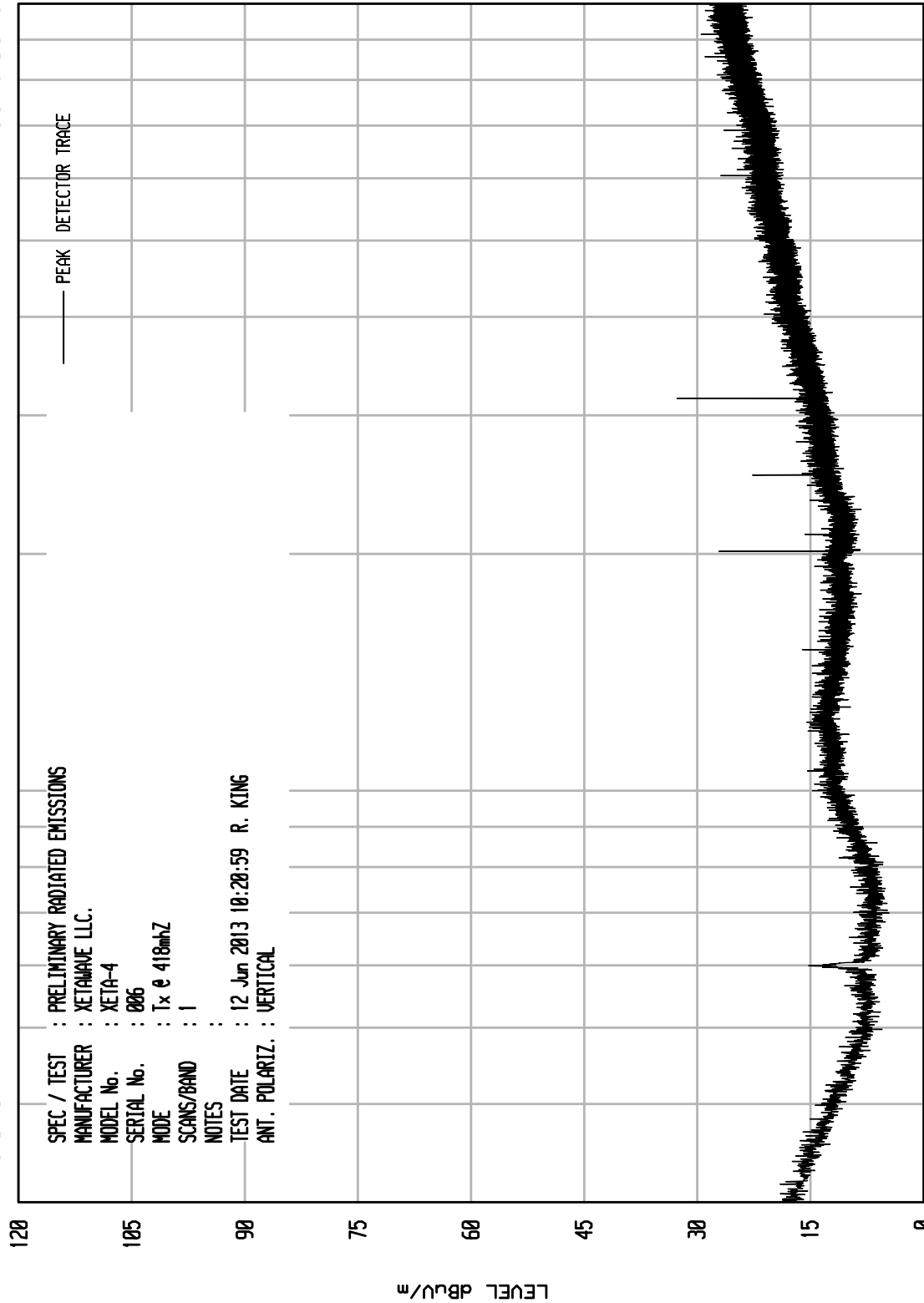


SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 418MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:19:20 R. KING
ANT. POLARIZ. : HORIZONTAL

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 6



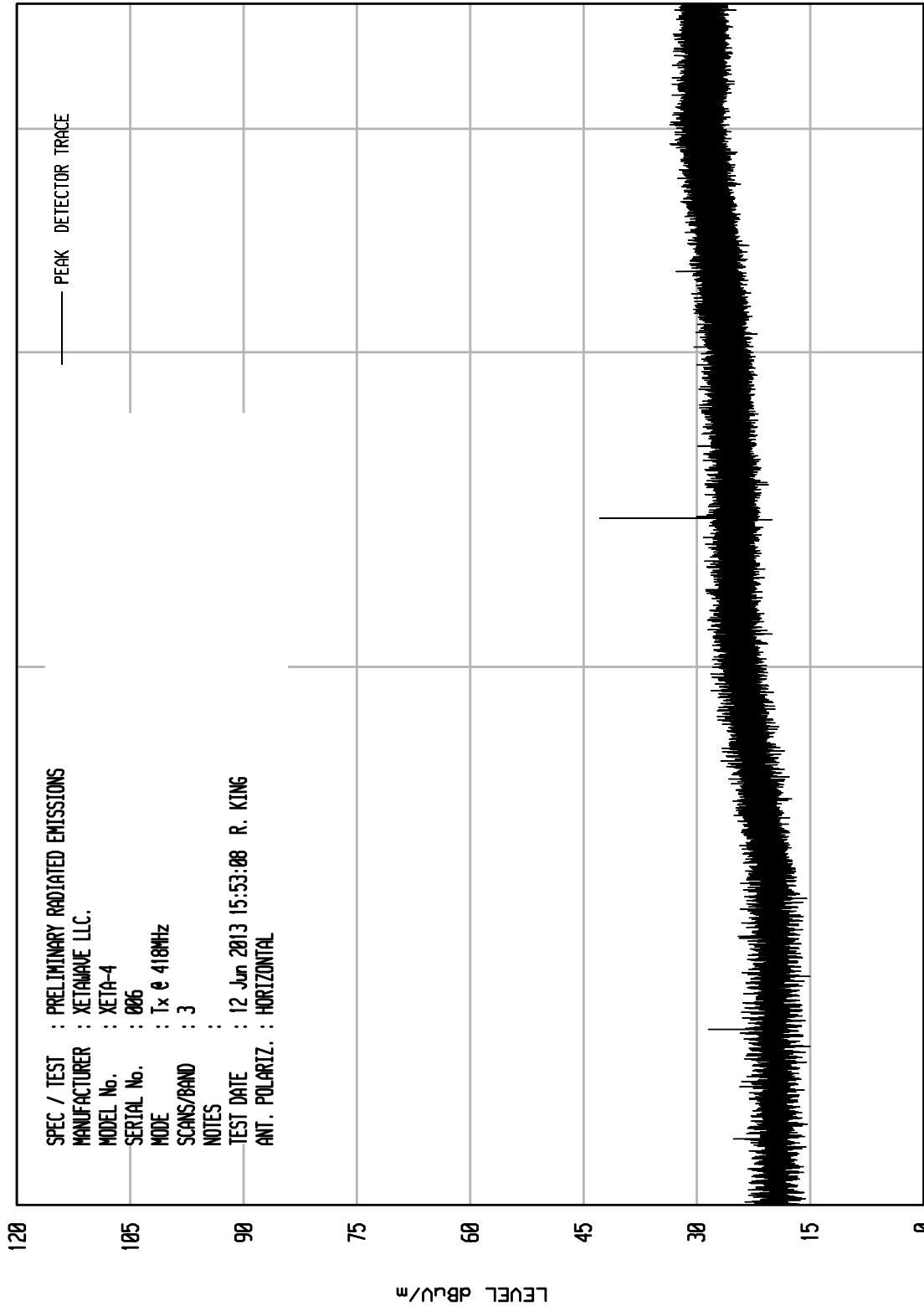
START = 30

STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNTU RCU ENI RUN 12



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

START = 1000

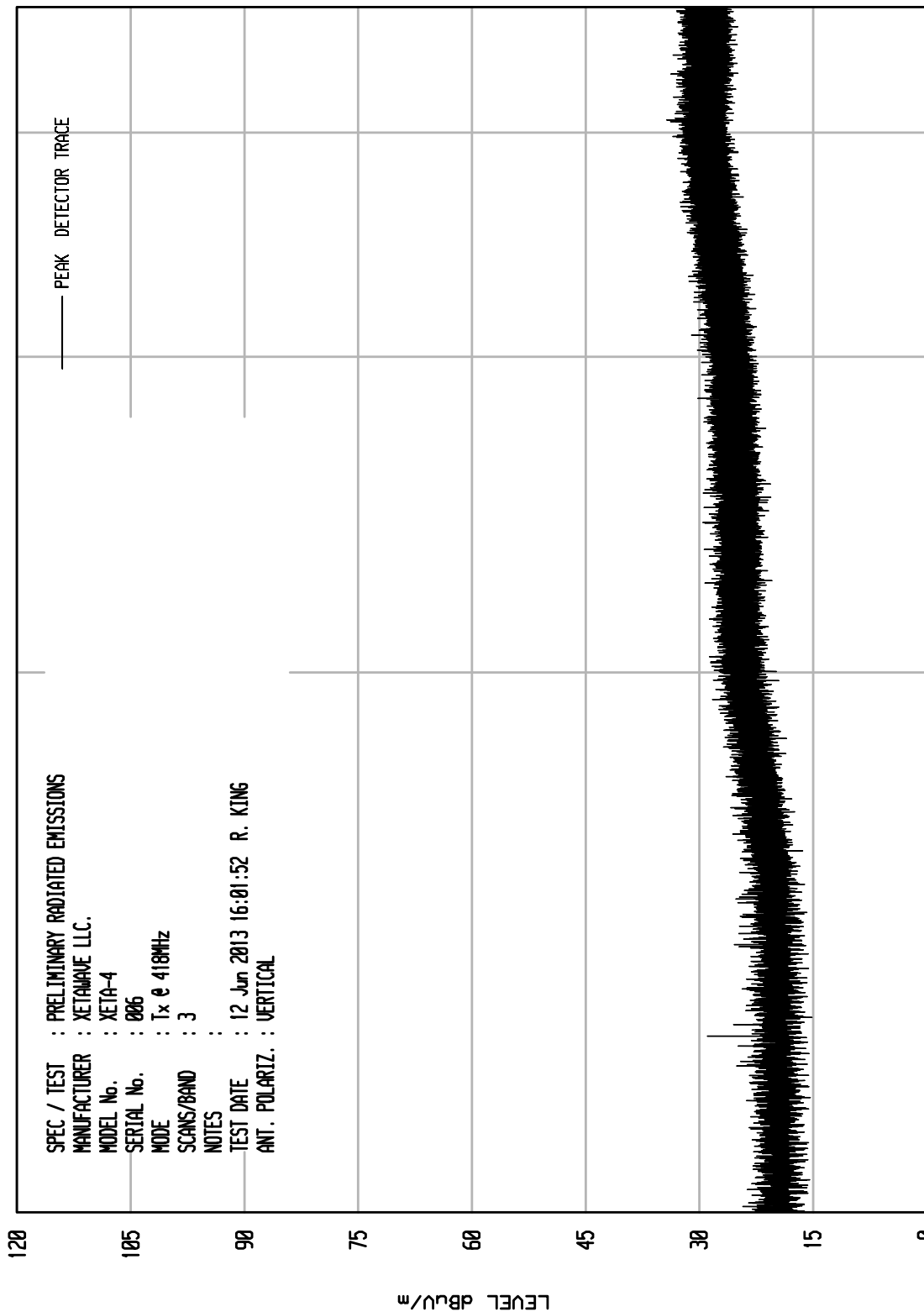
FREQUENCY MHz

STOP = 4700

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 16



START = 1000

FREQUENCY MHz

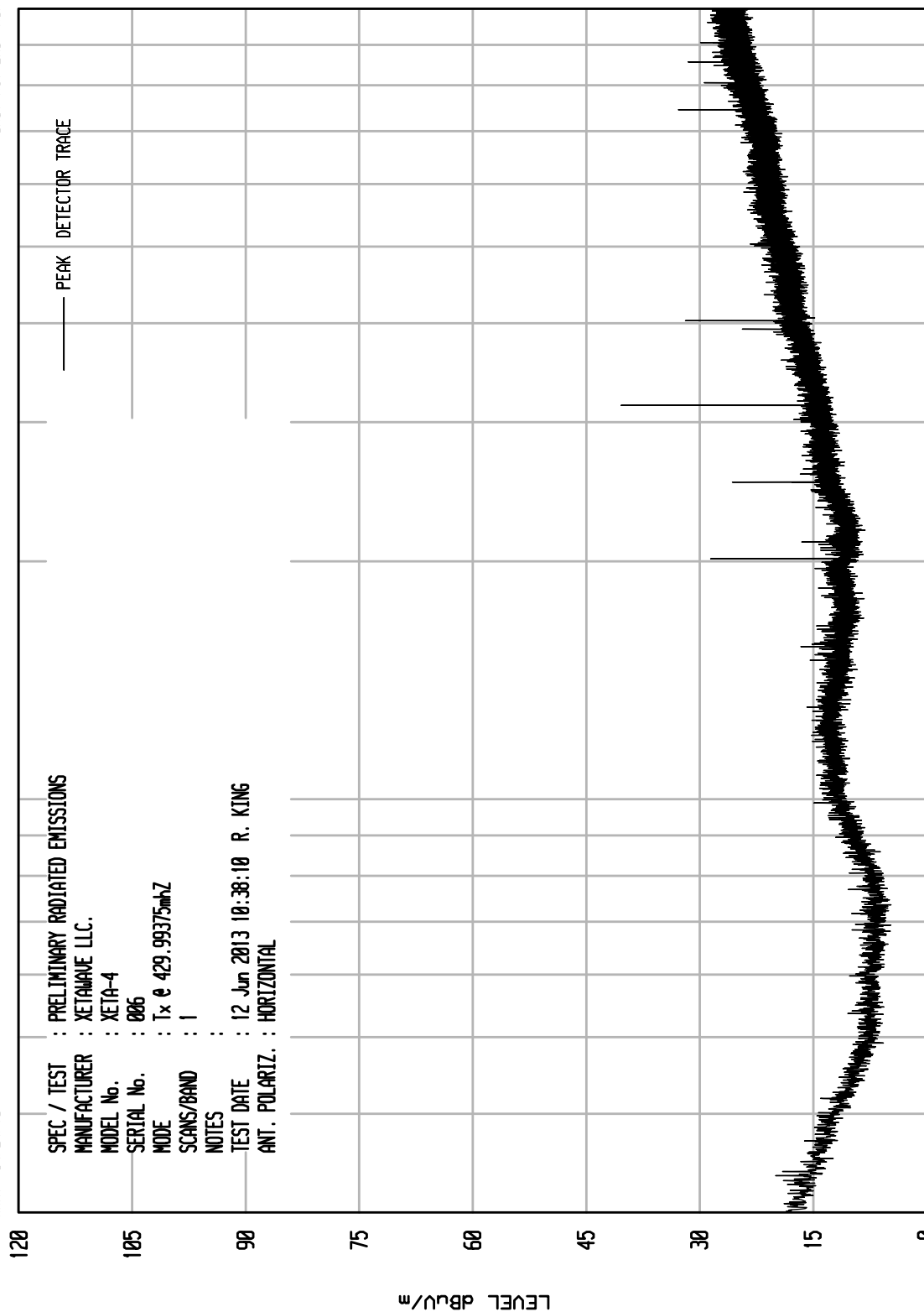
STOP = 4700



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNTU RCU ENI RUN 7



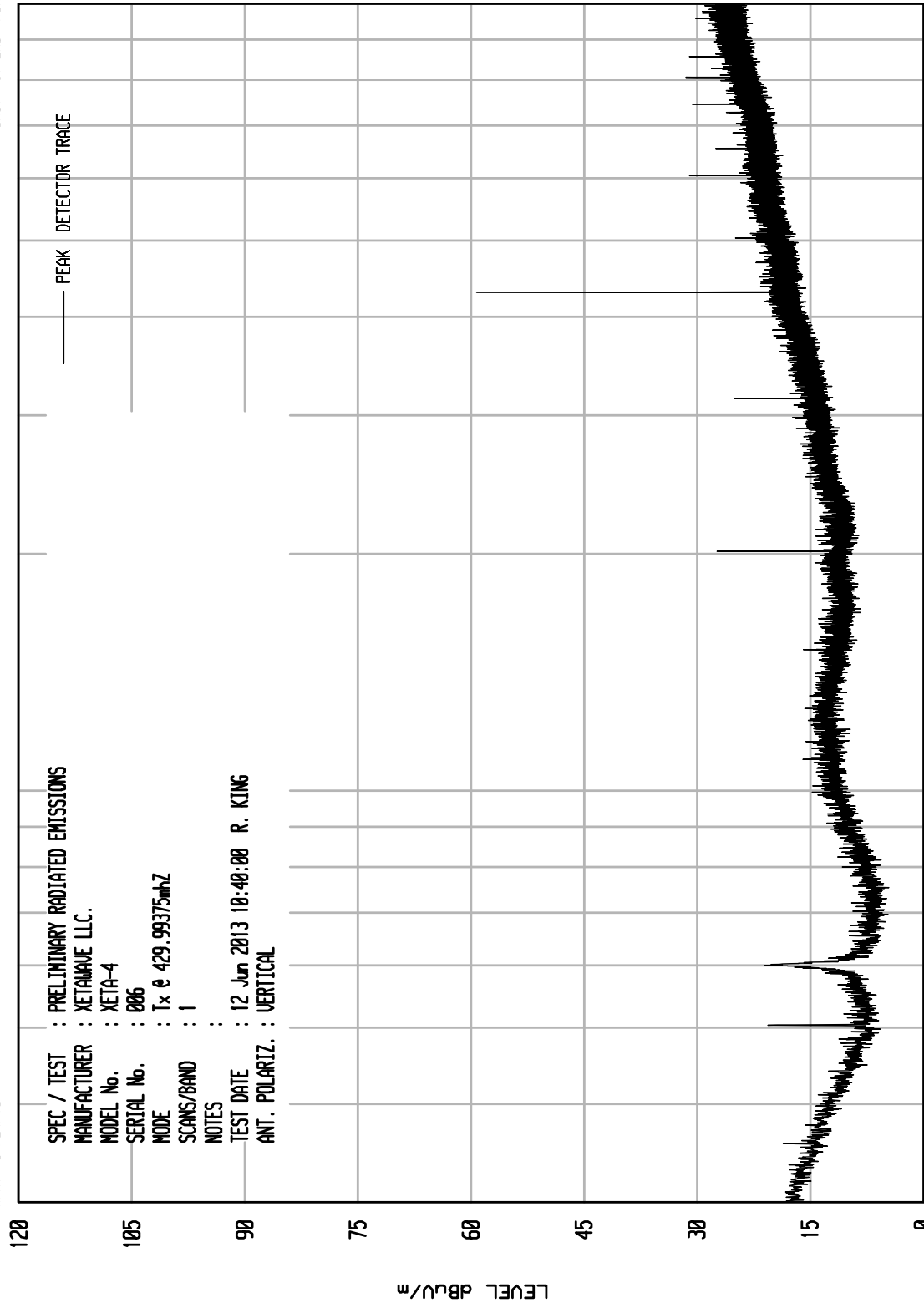
START = 30

STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNIT0 RCU ENI RUN 8



START = 30

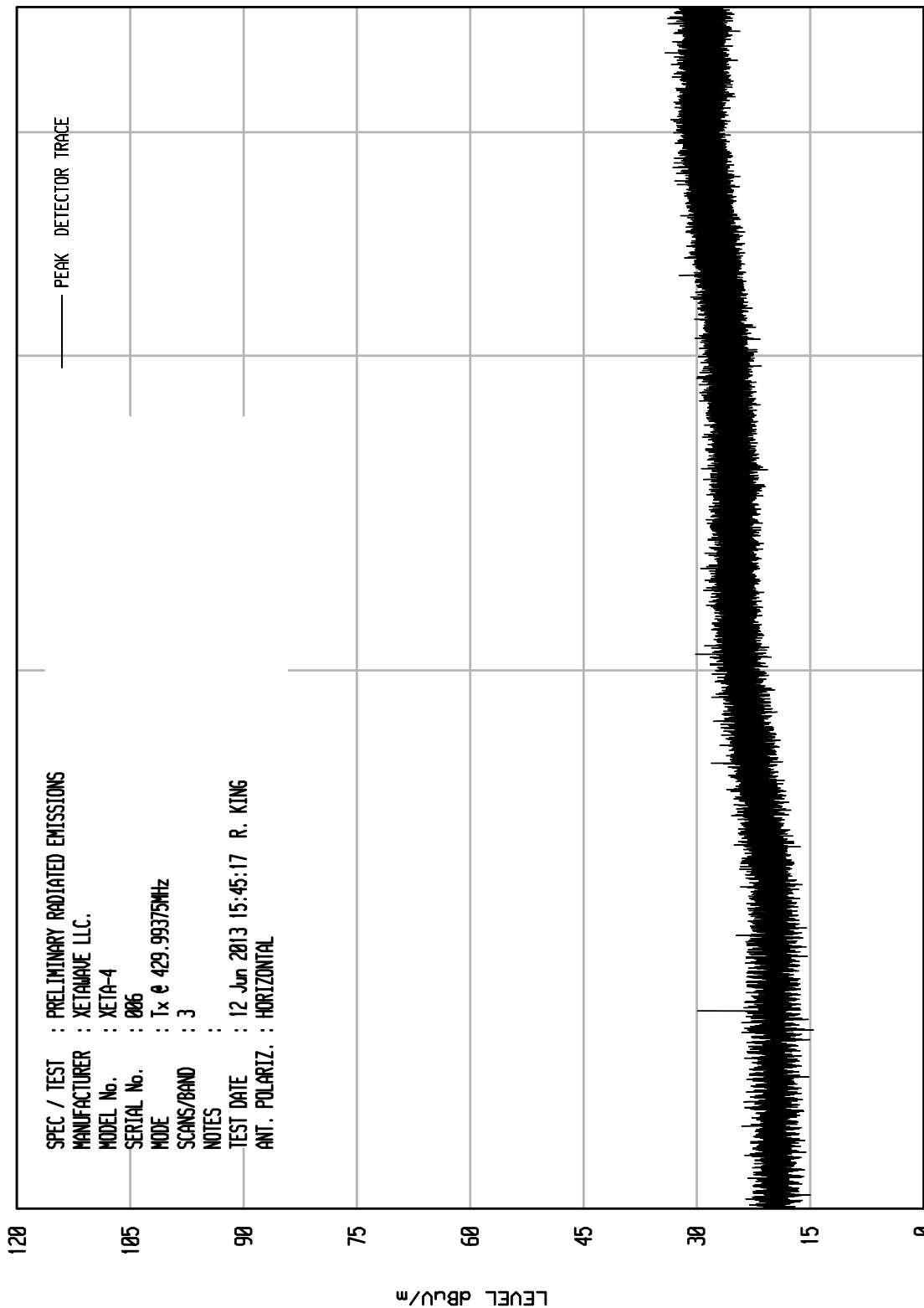
STOP = 1000

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

UKA1 04/24/13

UNITU RCU ENI RUN 11



START = 1000

FREQUENCY MHz

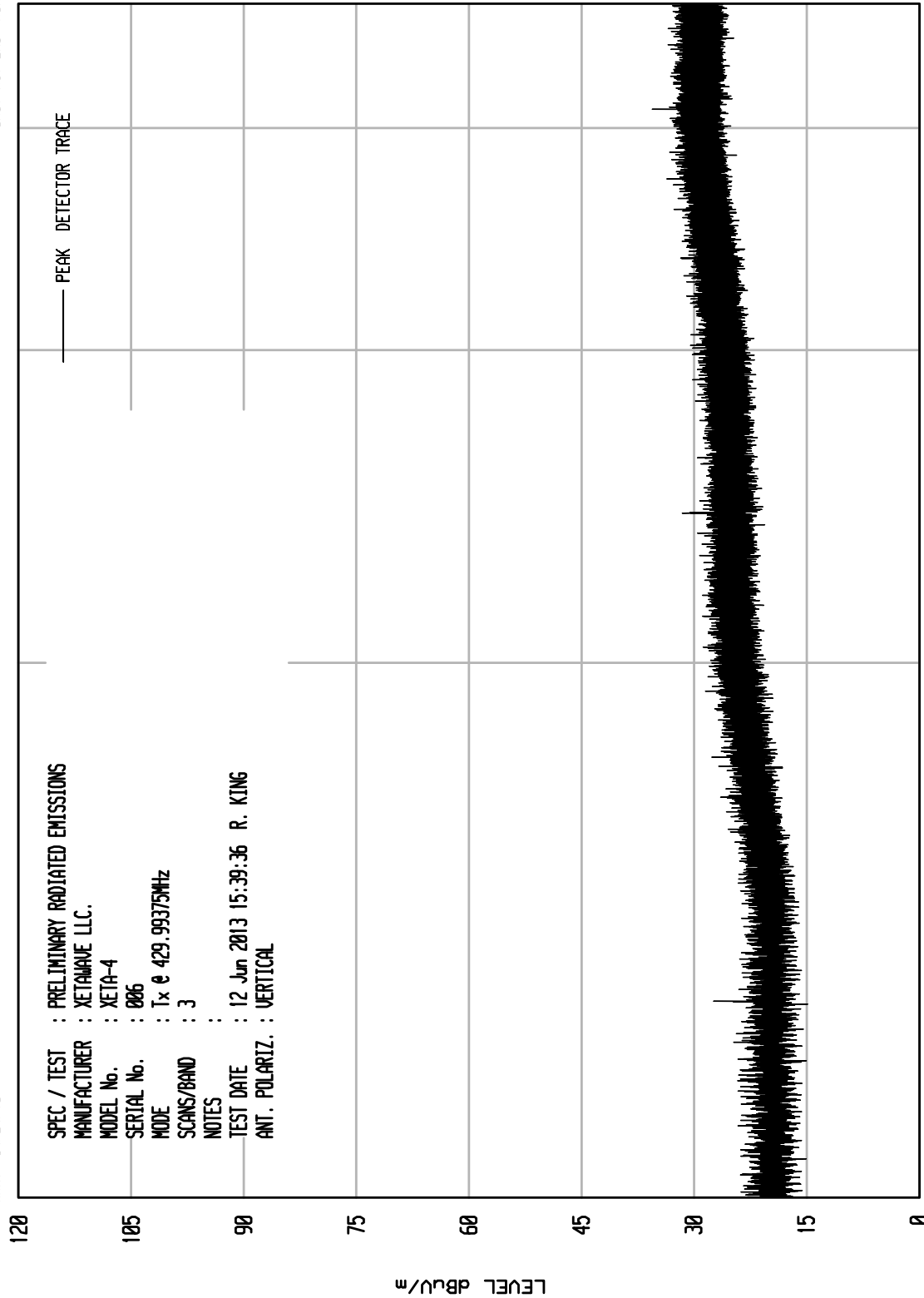
STOP = 4700



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 9



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

STOP = 4700

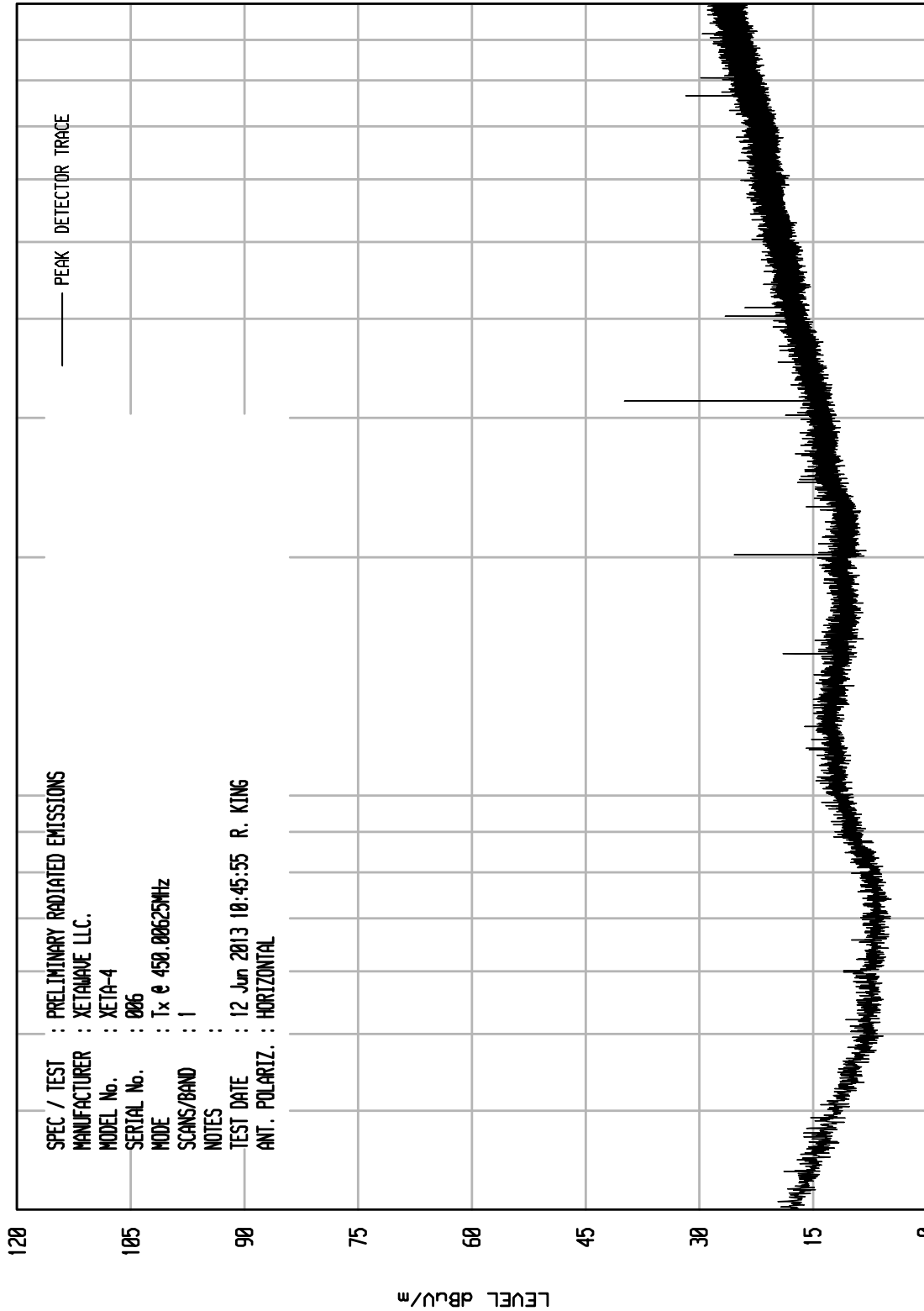
FREQUENCY MHz

START = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 10

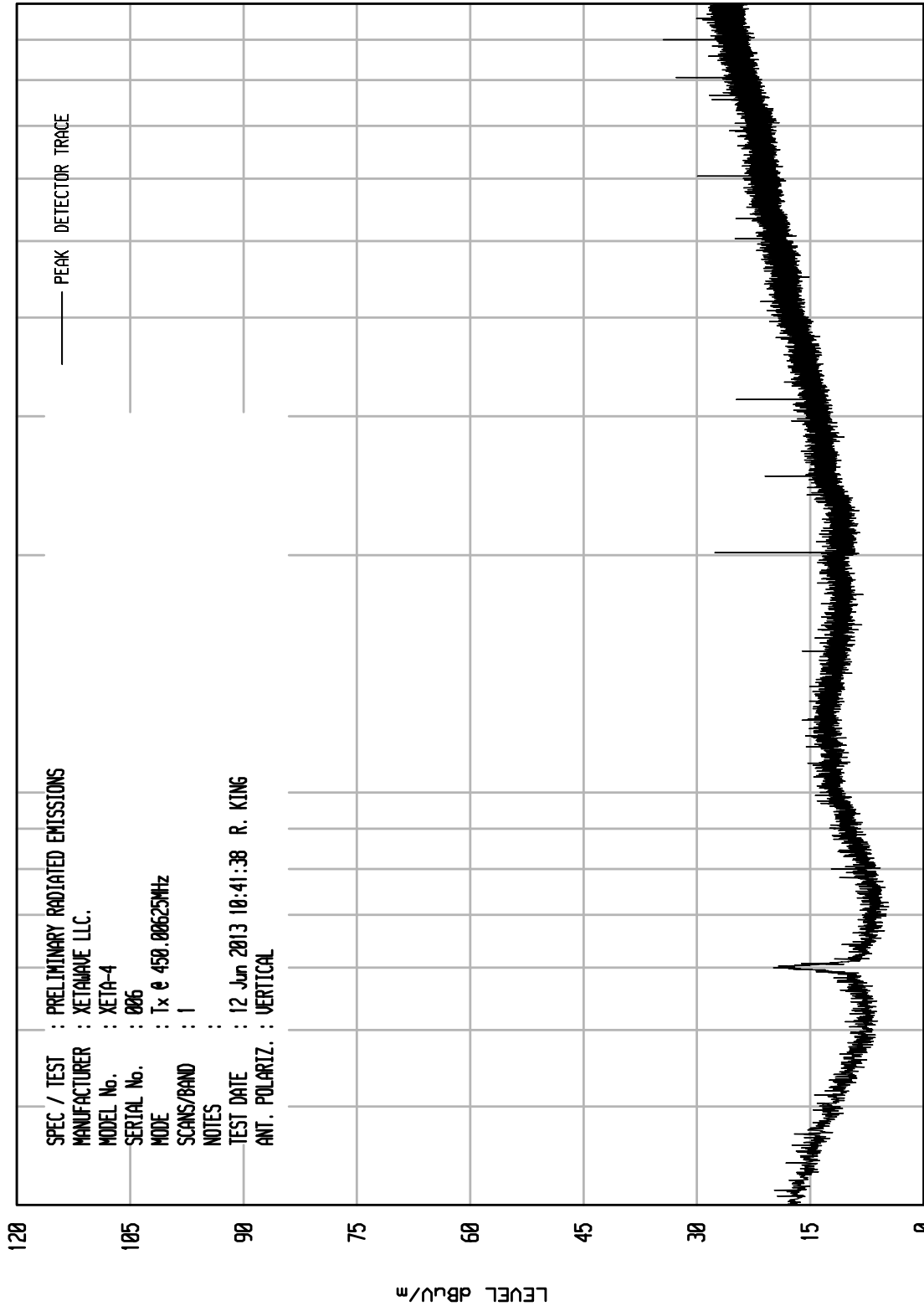


SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 450.00625MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:45:55 R. KING
ANT. POLARIZ. : HORIZONTAL

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNIT0 RCU ENI RUN 9



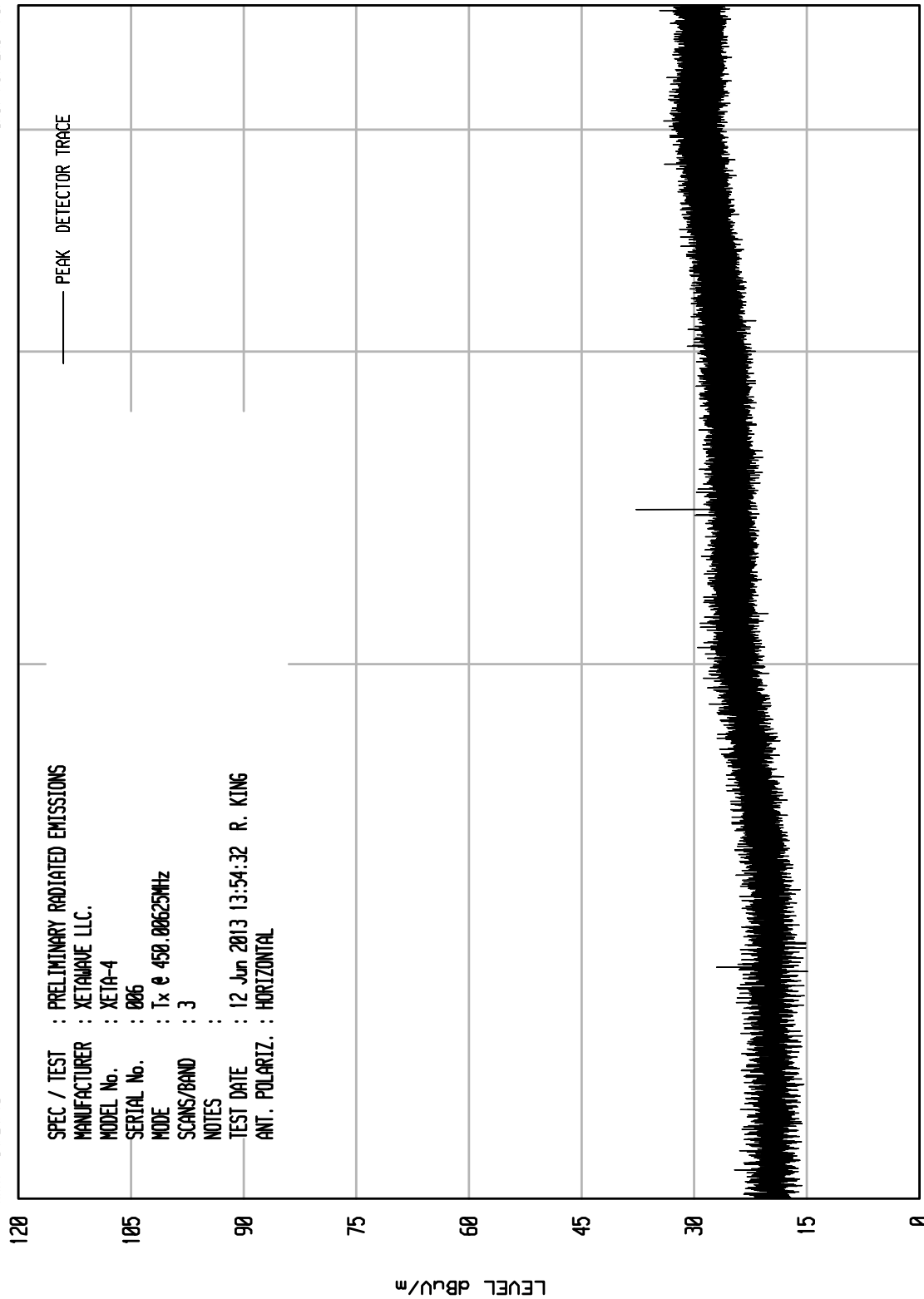
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx @ 450.00625MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 12 Jun 2013 10:41:38 R. KING
ANT. POLARIZ. : VERTICAL



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNTU RCU ENI RUN 6



START = 1000

FREQUENCY MHz

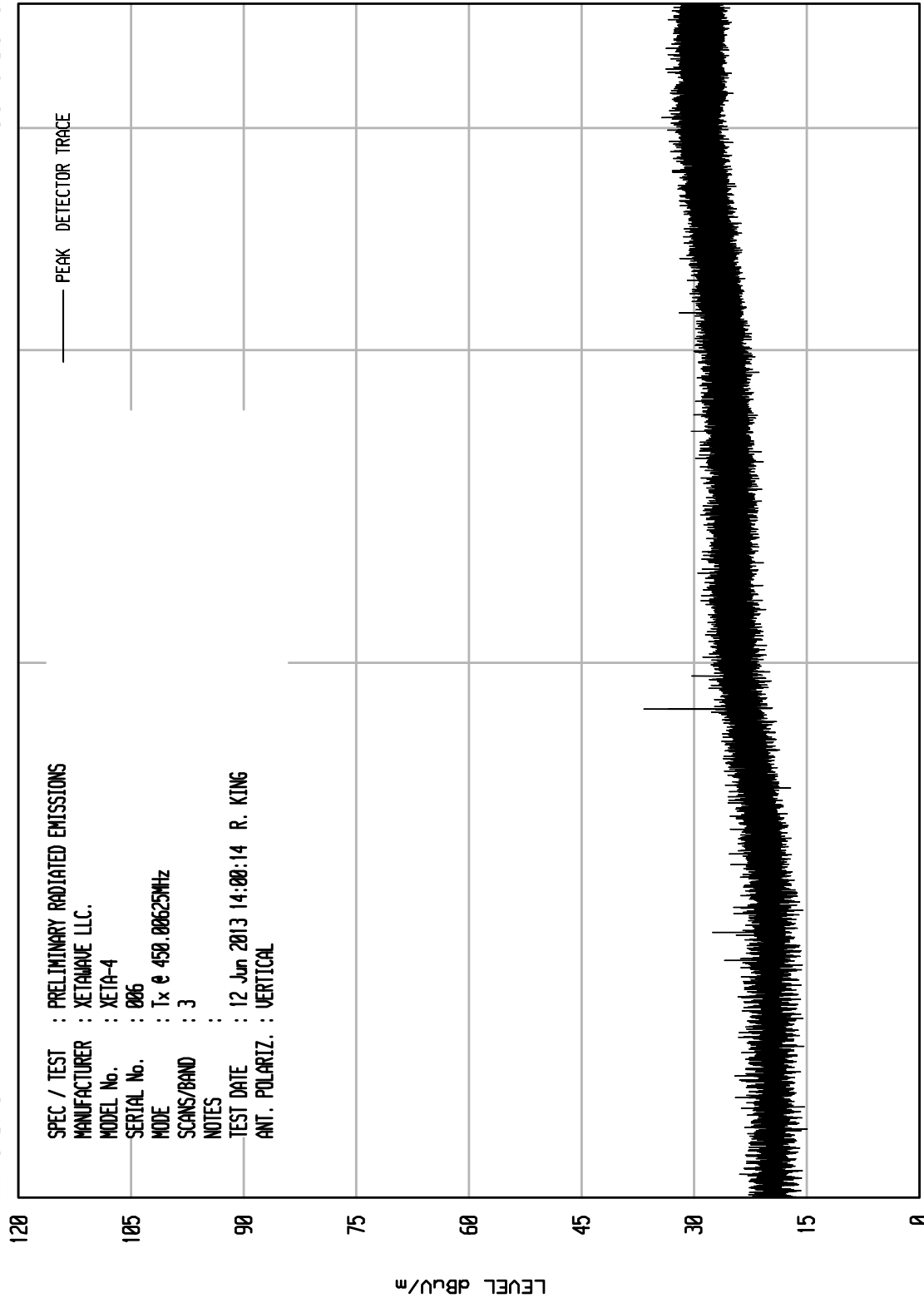
STOP = 4700



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 8



START = 1000

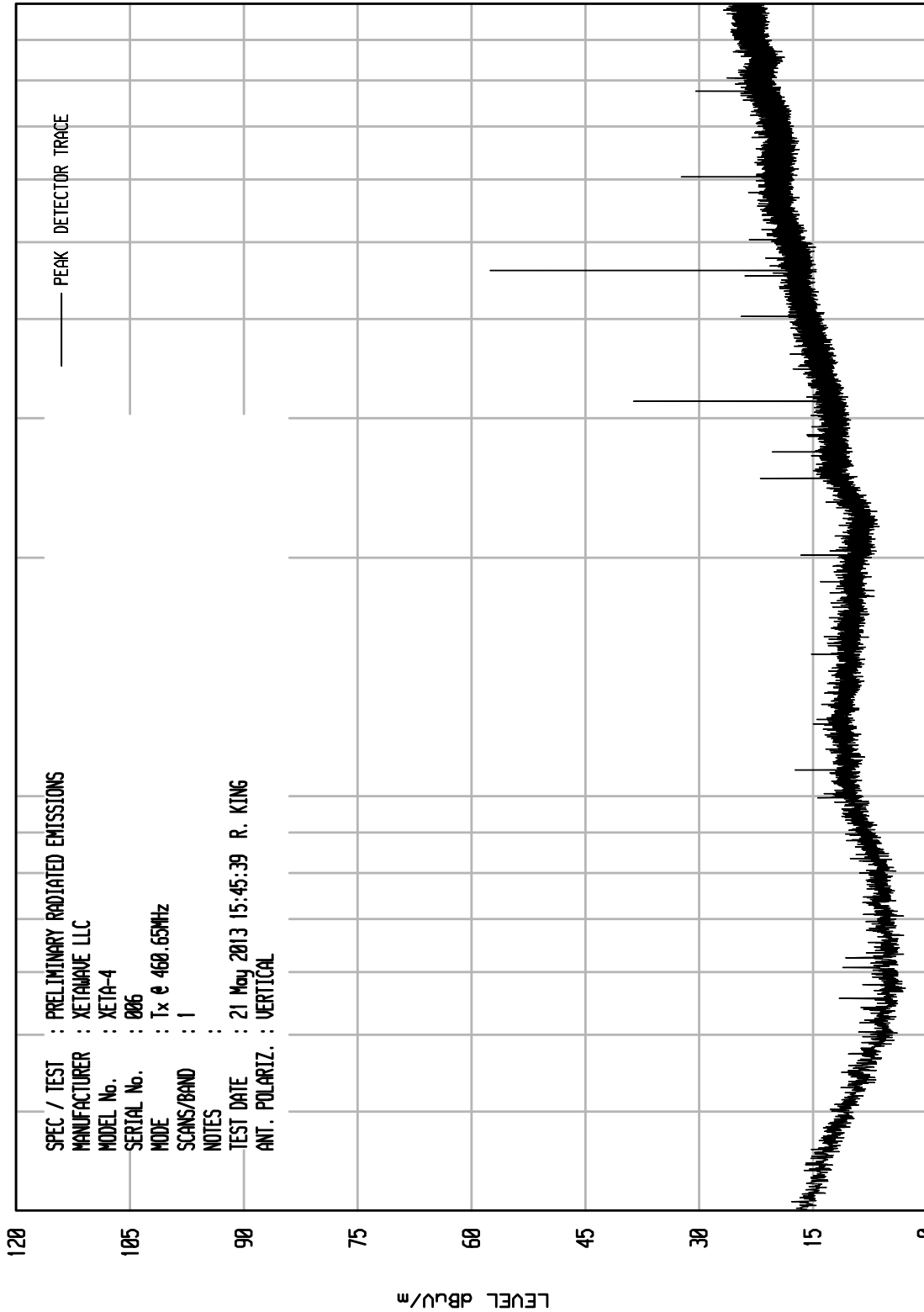
FREQUENCY MHz

STOP = 4700

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNIT0 RCU EN1 RUN 1



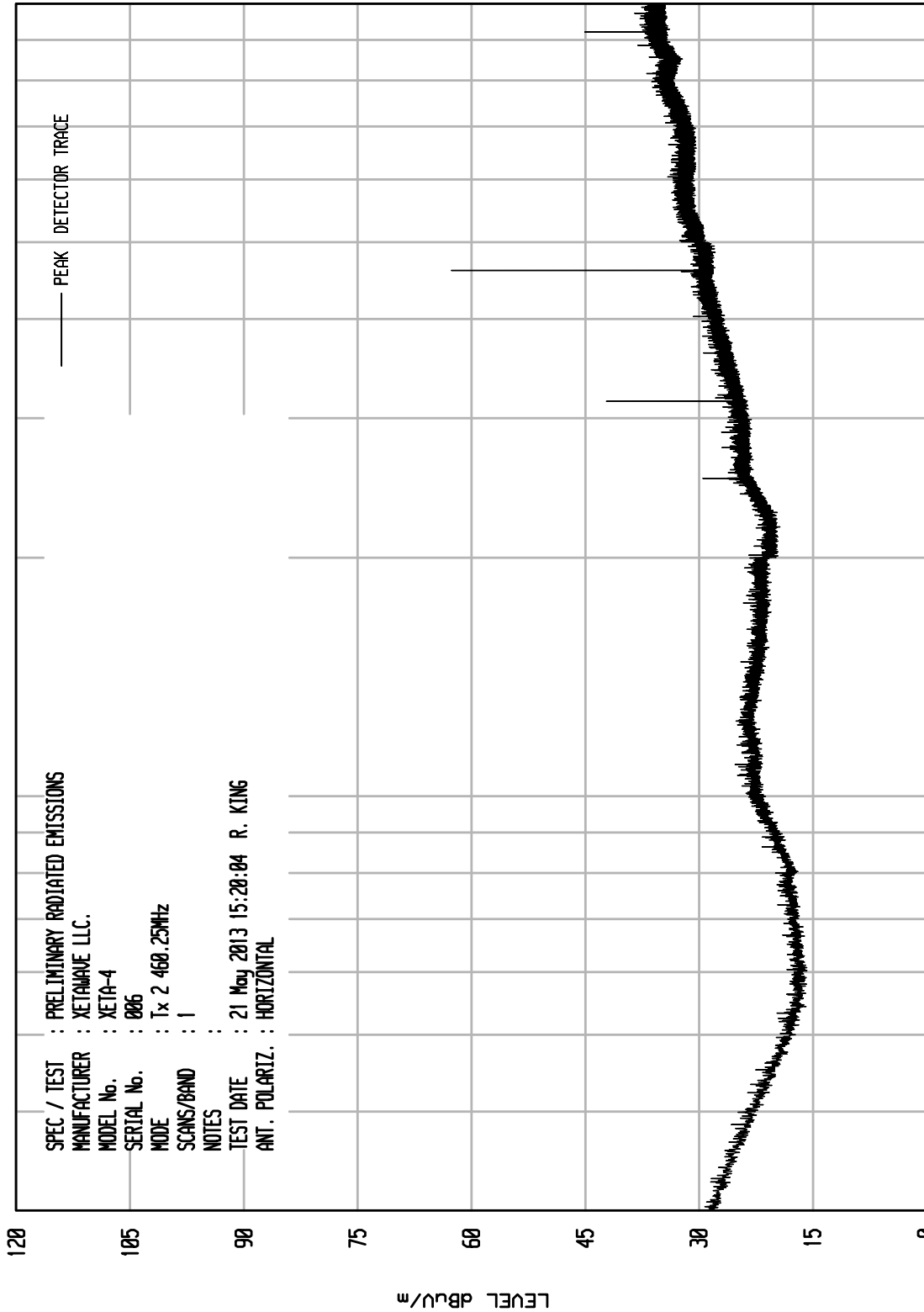
START = 30

STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNIT0 RCU ENI RUN 8

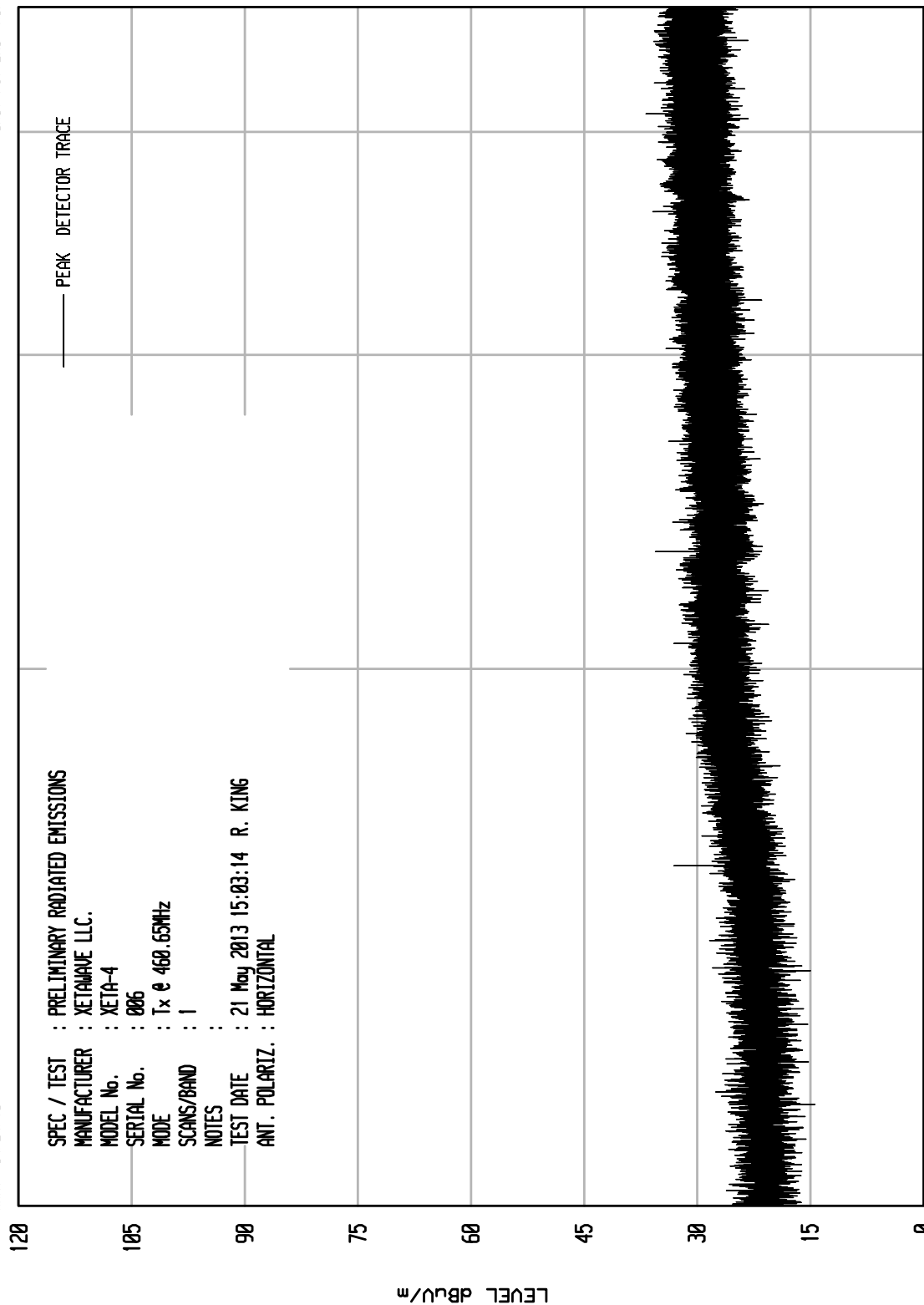


SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : XETAWAVE LLC.
MODEL No. : XETA-4
SERIAL No. : 006
MODE : Tx 2 460.25MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 21 May 2013 15:20:04 R. KING
ANT. POLARIZ. : HORIZONTAL

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 4



START = 1000

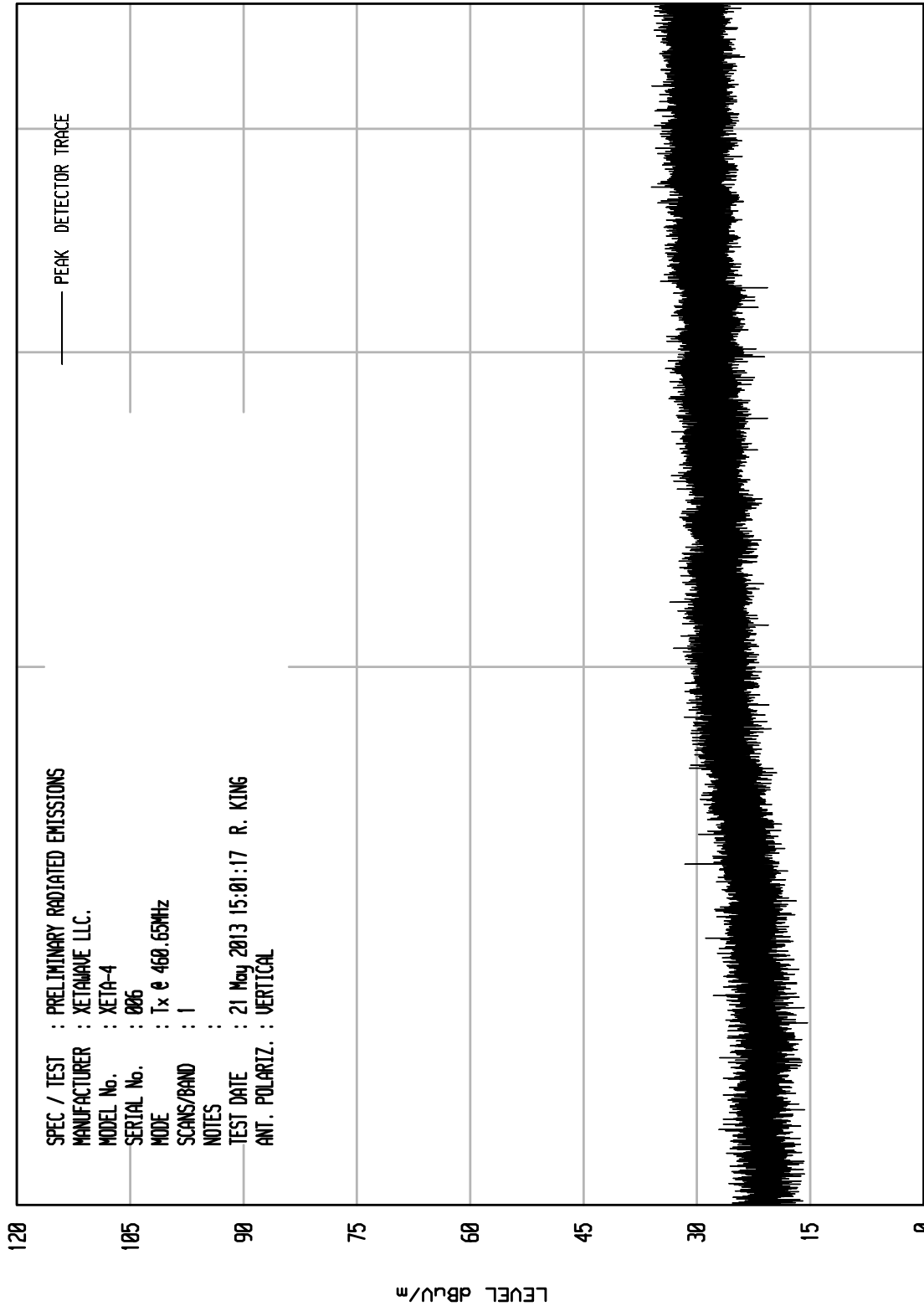
FREQUENCY MHz

STOP = 4700

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT: RCU ENI RUN 3

UKA1 04/24/13



STOP = 4700

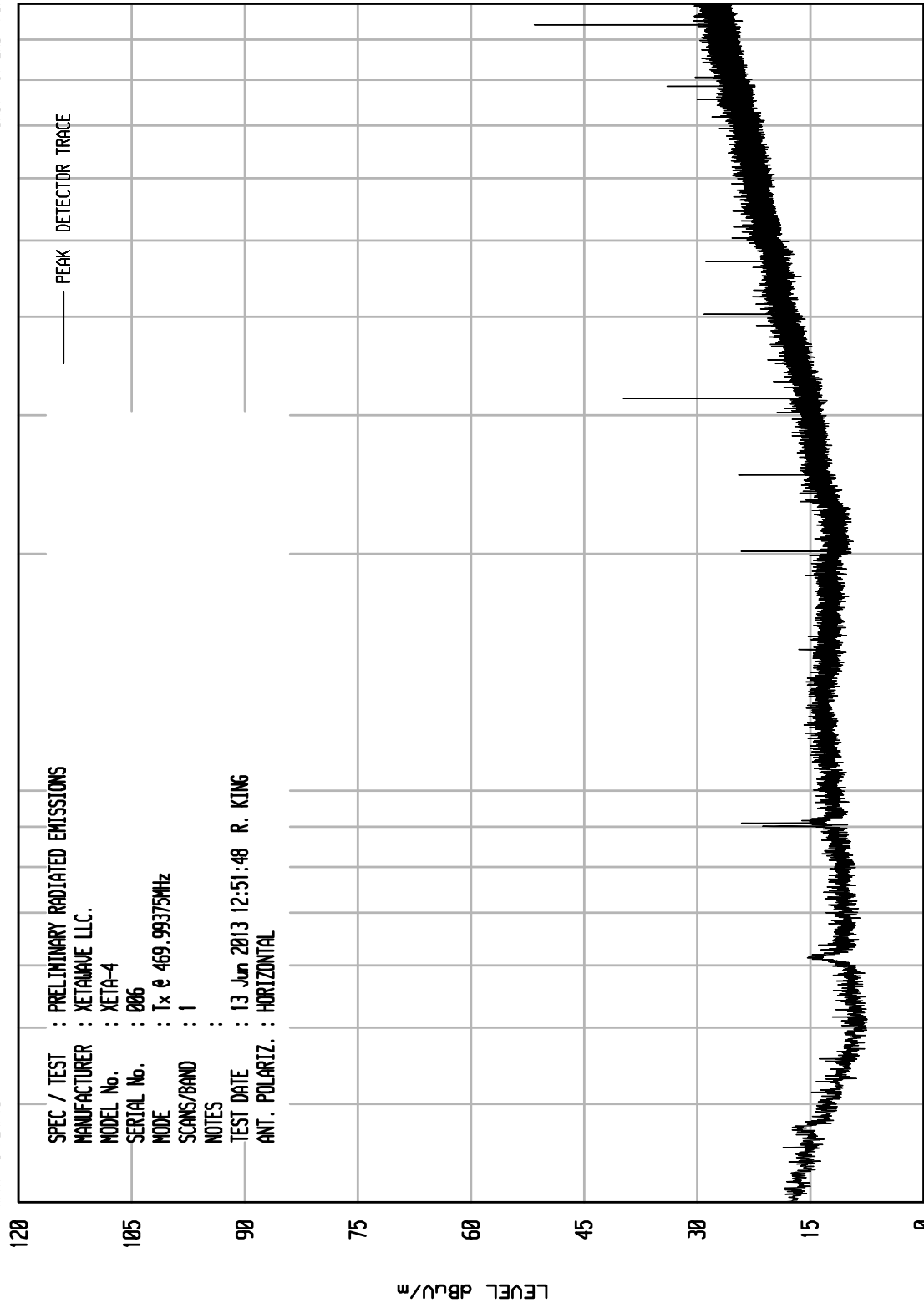
FREQUENCY MHz

START = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNIT0 RCU ENI RUN 1



START = 30

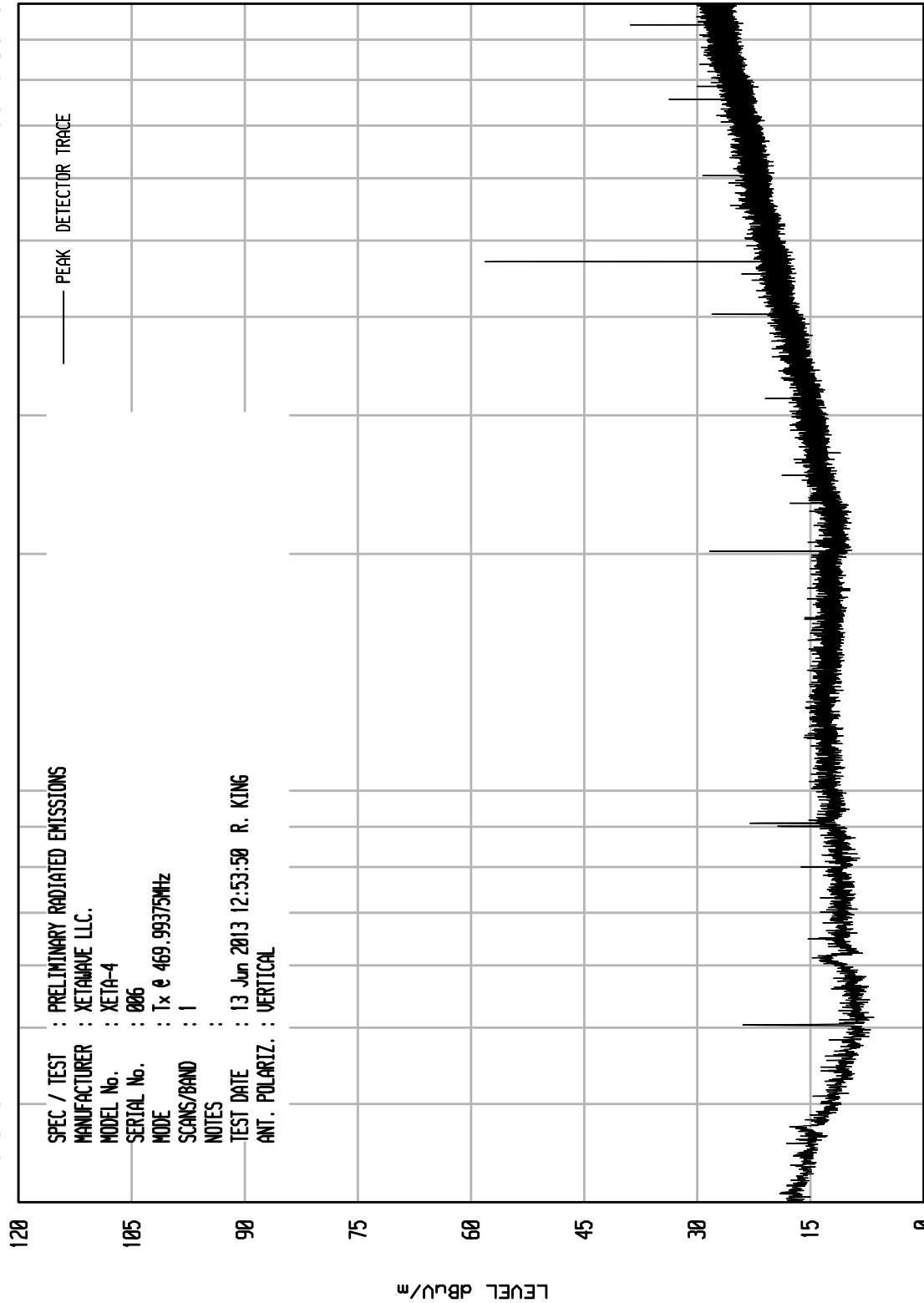
FREQUENCY MHz

STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 2



START = 30

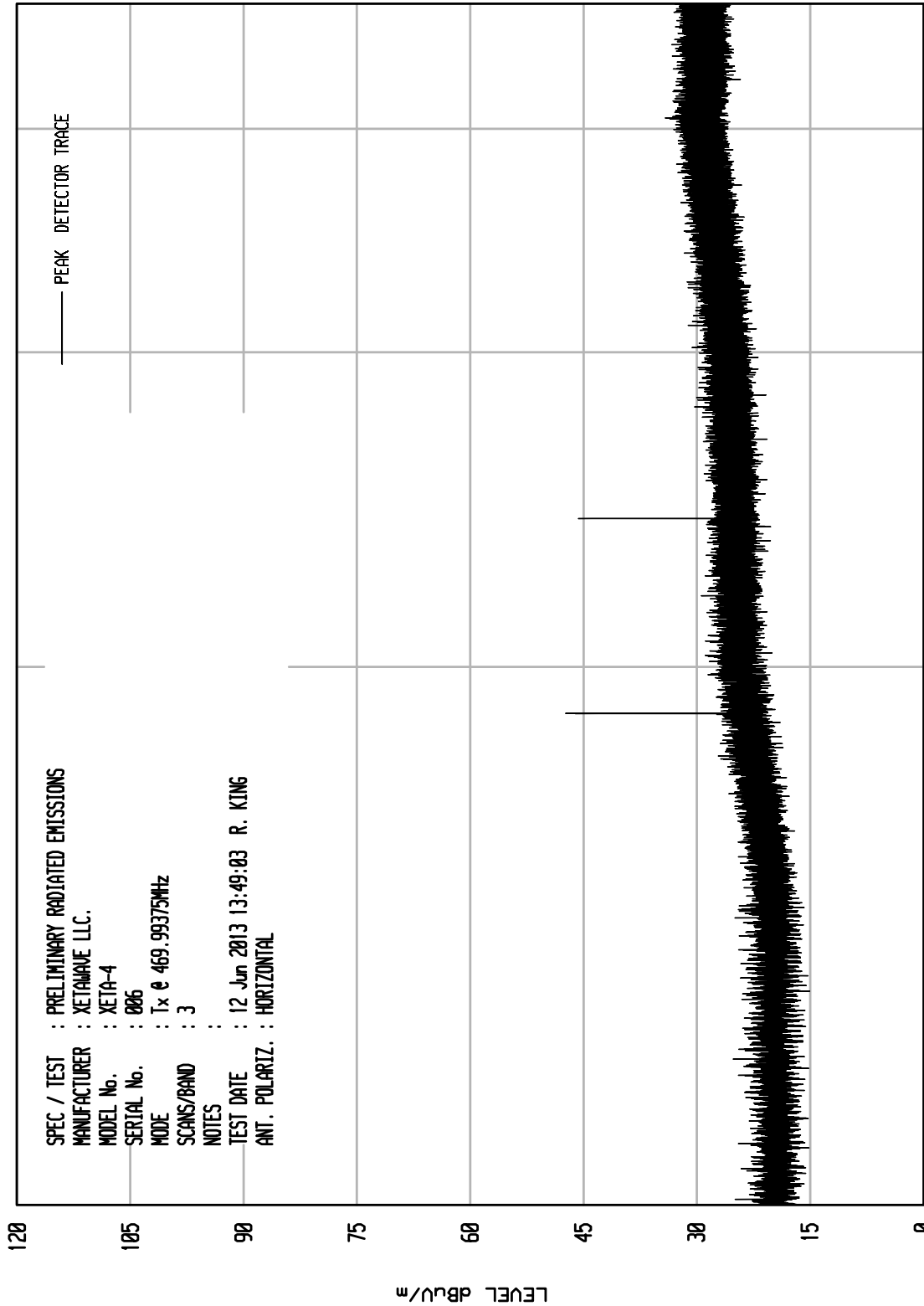
STOP = 1000

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 12:53:50 R. KING
ANT. POLARIZ. : VERTICAL

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNITU RCU ENI RUN 5



START = 1000

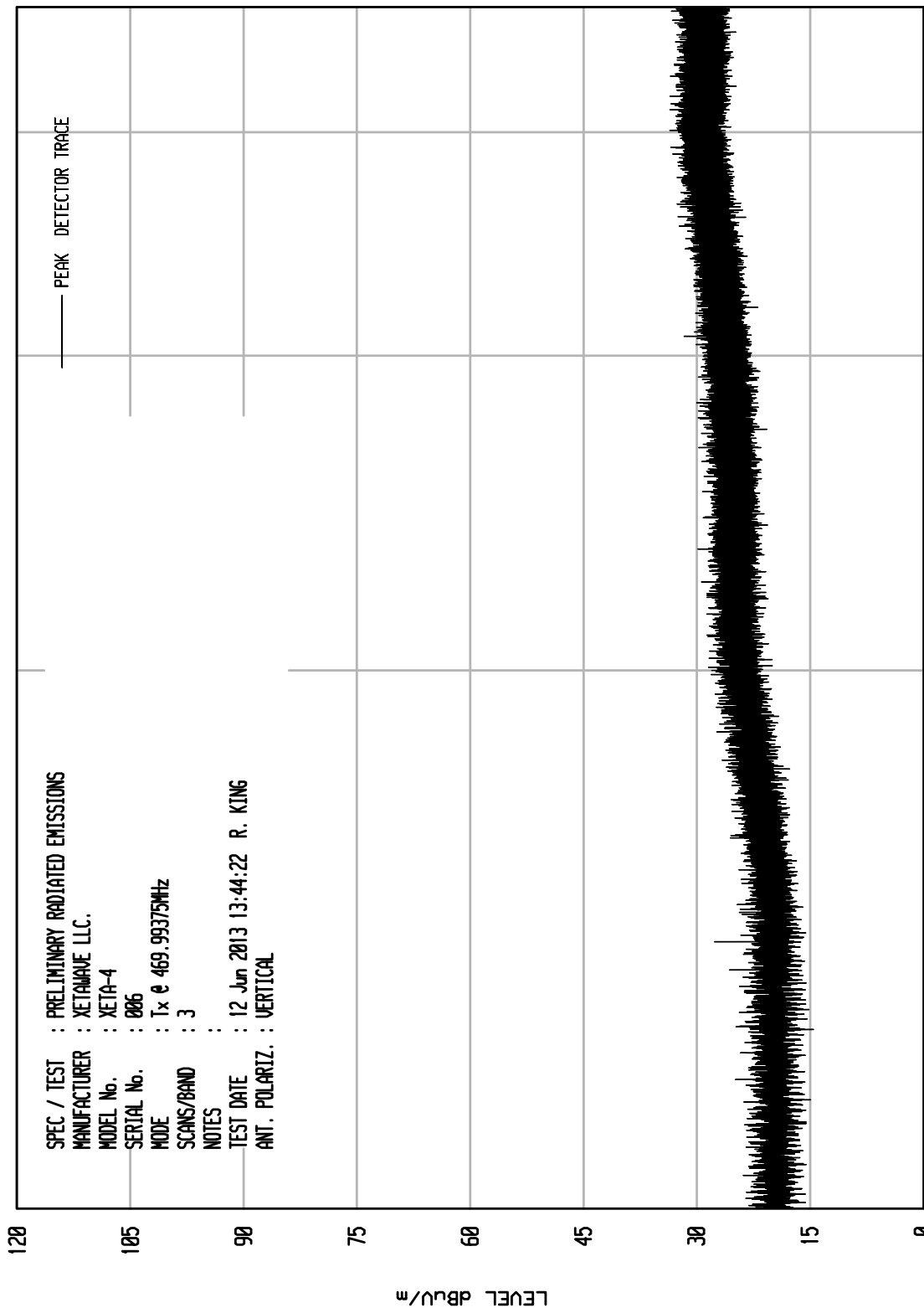
FREQUENCY MHz

STOP = 4700

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/24/13

UNTU RCU ENI RUN 3



START = 1000

FREQUENCY MHz

STOP = 4700



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 SIG. GEN. (dB)	Ant Gain (dB)	CBL (dB)	Total (dBm)	ATTEN	Minimum Attenuation
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 = $50 + 10 \cdot \log(\text{Power in watts}) = 50 + 10 \cdot \log(2W) = 53$

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	Ant Gain (dB)	CBL (dB)	Total (dBm)	ATTEN	Minimum Attenuation
			SIG. GEN. (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 = $50 + 10 \cdot \log(\text{Power in watts}) = 50 + 10 \cdot \log(2W) = 53$

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	Ant Gain (dB)	CBL (dB)	Total (dBm)	ATTEN	Minimum Attenuation
			SIG. GEN. (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 = $50 + 10 \cdot \log(\text{Power in watts}) = 50 + 10 \cdot \log(2W) = 53$

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	Ant Gain (dB)	CBL (dB)	Total (dBm)	ATTEN	Minimum Attenuation
			SIG. GEN. (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 = $50 + 10 \cdot \log(\text{Power in watts}) = 50 + 10 \cdot \log(2W) = 53$

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	Ant Gain (dB)	CBL (dB)	Total (dBm)	ATTEN	Minimum Attenuation
			SIG. GEN. (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 = $50 + 10 \cdot \log(\text{Power in watts}) = 50 + 10 \cdot \log(2W) = 53$

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	Ant Gain (dB)	CBL (dB)	Total (dBm)	ATTEN	Minimum Attenuation
			SIG. GEN. (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 = $50 + 10 \cdot \log(\text{Power in watts}) = 50 + 10 \cdot \log(2W) = 53$

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 :

Richard E. King

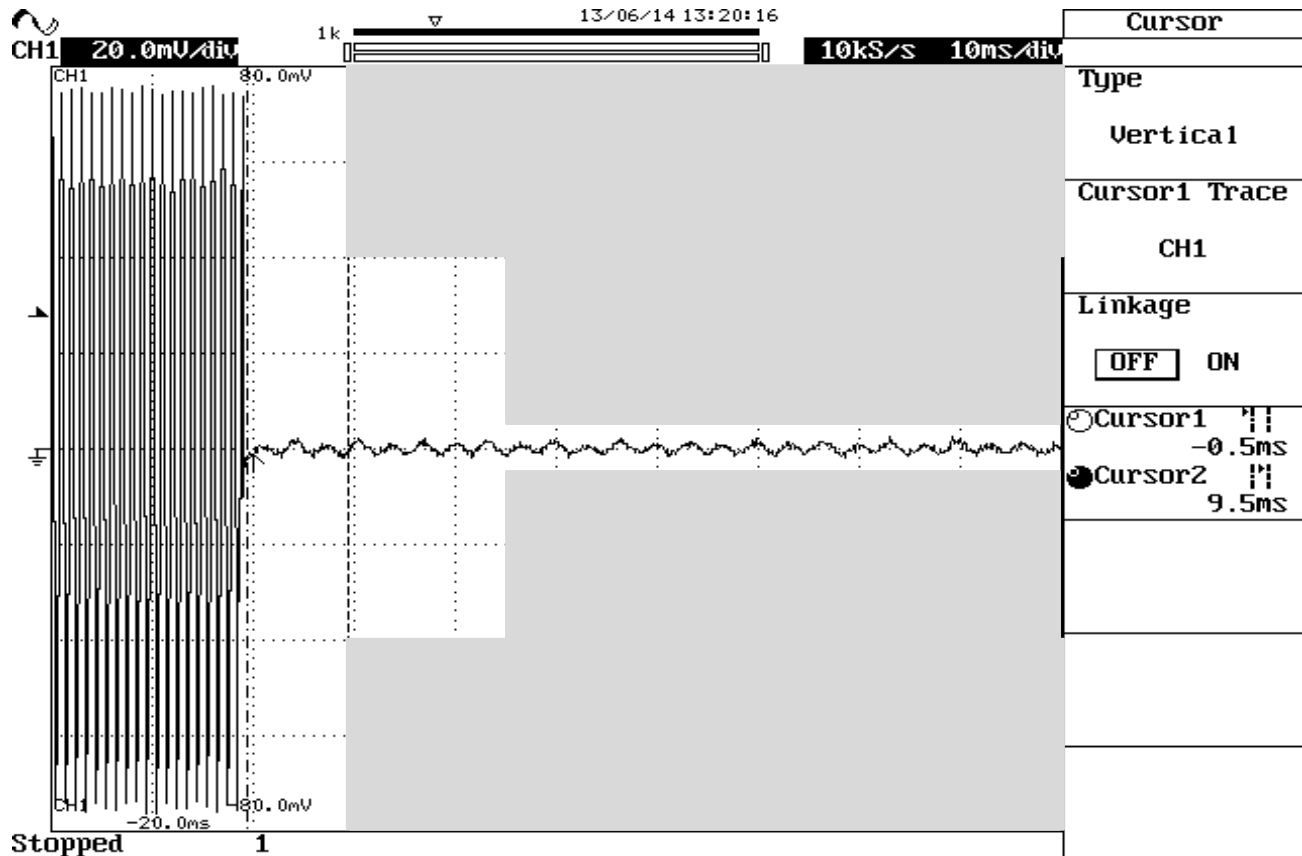


MANUFACTURER : XetaWave LLC.
MODEL : Xeta-4
SPECIFICATION : FCC Part 90
DATE : May 23, 2013
NOTES : Transmit at 460.65MHz

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

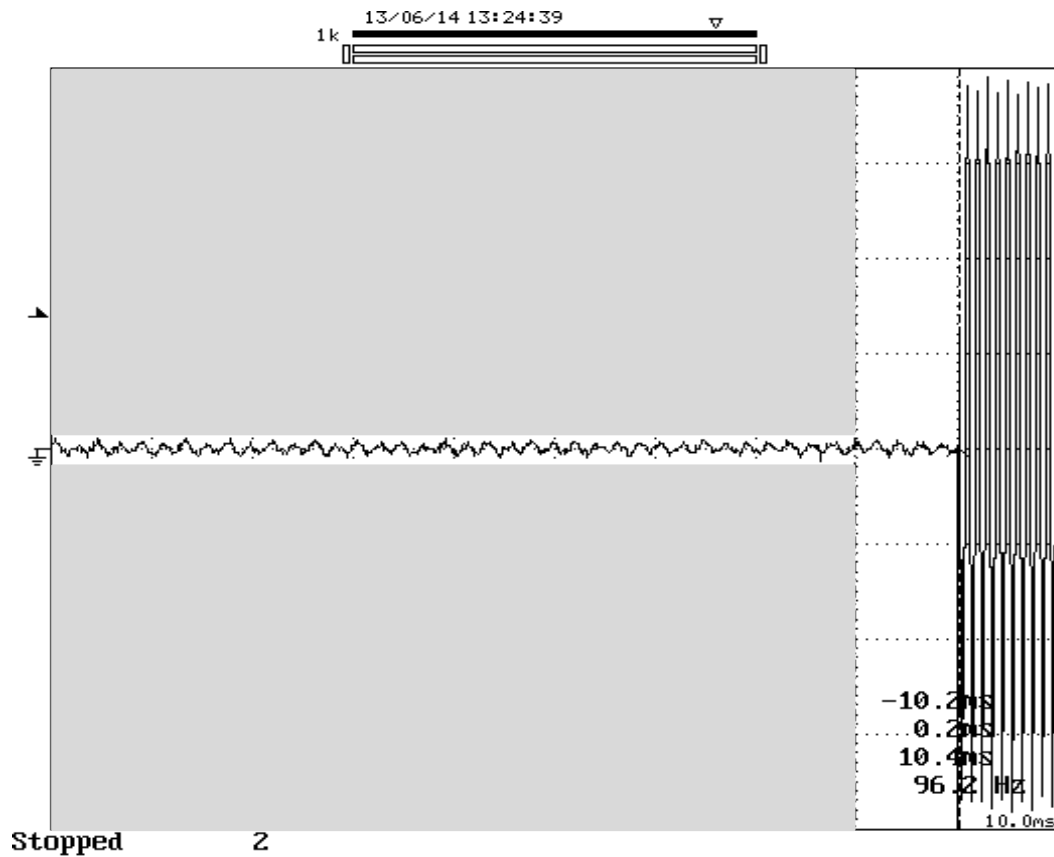
Checked BY RICHARD E. KING :

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