



Measurement of RF Emissions from a LS01 Radio Module Transmitter

For	LifeShadow LLC. 21805 W. Field Parkway Deer Park, IL 60010
P.O. Number	120890
Date Tested	September 24 through 28, 2012
Test Personnel	Richard King, Dayne Putnam
Test Specification	FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Section 15.247 for Frequency Hopping Spread Spectrum Intentional Radiators or Digital Modulation Intentional Radiators Operating within The 2400-2483.5MHz band

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**TABLE OF CONTENTS**

PARAGRAPH	DESCRIPTION OF CONTENTS	PAGE NO.
1.	Introduction.....	5
1.1.	Scope of Tests.....	5
1.2.	Purpose	5
1.3.	Deviations, Additions and Exclusions.....	5
1.4.	EMC Laboratory Identification	5
1.5.	Laboratory Conditions.....	5
2.	Applicable Documents.....	5
3.	EUT Setup and Operation	5
3.1.	General Description	5
3.1.1.	Power Input.....	5
3.1.2.	Peripheral Equipment	6
3.1.3.	Signal Input/Output Leads	6
3.1.4.	Grounding	6
3.2.	Operational Mode	6
3.3.	EUT Modifications.....	6
4.	Test Facility and Test Instrumentation	7
4.1.	Shielded Enclosure.....	7
4.2.	Test Instrumentation.....	7
4.3.	Calibration Traceability	7
4.4.	Measurement Uncertainty	7
5.	Test Procedures	7
5.1.	Powerline Conducted Emissions	7
5.1.1.	Procedures.....	8
5.1.2.	Results	8
5.2.	6dB Bandwidth.....	8
5.2.1.	Requirement.....	8
5.2.2.	Procedures.....	8
5.2.3.	Results	8
5.3.	Output Power.....	9
5.3.1.	Requirements.....	9
5.3.2.	Procedures.....	9
5.3.3.	Results	9
5.4.	Radiated Spurious Emissions Measurements.....	9
5.4.1.	Requirements.....	9
5.4.2.	Procedures.....	10
5.4.3.	Results	11
5.5.	Band Edge Compliance	11
5.5.1.	Requirement.....	11
5.5.2.	Procedures.....	11
5.5.2.1	Low Band Edge	11
5.5.2.2	High Band Edge.....	12
5.5.3.	Results	12

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TABLE OF CONTENTS

PARAGRAPH	DESCRIPTION OF CONTENTS	PAGE NO.
5.6.	Power Spectral Density	12
5.6.1.1	Requirement	12
5.6.1.2	Procedures	12
5.6.1.3	Results	13
6.	Other Test Conditions	13
6.1.	Test Personnel and Witnesses	13
6.2.	Disposition of the EUT	13
7.	Conclusions	13
8.	Certification	13
9.	Equipment List	14

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REVISION HISTORY

Revision	Date	Description
—	26 October 2012	Initial release

Measurement of RF Emissions from a Radio Module, Model No. LS01 Transmitter

1. INTRODUCTION

1.1. Scope of Tests

This report represents the results of the series of radio interference measurements performed on a LifeShadow LLC. Radio Module, Model No. LS01, Serial No. prototype, transmitter (hereinafter referred to as the EUT). The EUT is a digital transmission system (DTS) transmitter. The transmitter was designed to transmit in the 2400-2483.5 MHz band using an internal antenna. The EUT was manufactured and submitted for testing by LifeShadow LLC. located in Deer Park, IL.

1.2. Purpose

The test series was performed to determine if the EUT meets the conducted and radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.207 and 15.247 for Intentional Radiators. Testing was performed in accordance with ANSI C63.4-2009.

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°C and the relative humidity was 43%.

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 15, Subpart C, dated 1 October 2012
- ANSI C63.4-2009, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
- Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247, KDB 558074, January 18, 2012

3. EUT SETUP AND OPERATION

3.1. General Description

The EUT is a LifeShadow LLC., Radio Module, Model No. LS01. A block diagram of the EUT setup is shown as Figure 1.

3.1.1. Power Input

The EUT was powered with 5 VDC from an internal rechargeable lithium ion battery. The battery may be recharge from a USB port of a laptop.

3.1.2. Peripheral Equipment

The following peripheral equipment was submitted with the EUT:

Item	Description
MacBook Pro	Model a1226 used to program the EUT

3.1.3. Signal Input/Output Leads

The following interconnect cables were submitted with the EUT:

Item	Description
Interconnect Cable	1 meter USB unshielded cable to provide power and programming connection to the EUT

3.1.4. Grounding

The EUT was not grounded during the tests.

3.2. Operational Mode

For all tests, the EUT was placed on an 80cm high non-conductive stand. The EUT was energized. The unit was programmed to operate in one of the following modes:

- Transmit at 2412MHz, CH. 1
- Transmit at 2437MHz, CH. 6
- Transmit at 2462MHz, CH. 11

The EUT was also programmed to operate with one of the following data rates:

- 1MBps, 802.11 b
- 2MBps, 802.11 b
- 5.5MBps, 802.11 b
- 11MBps, 802.11 b
- 6MBps, 802.11 g
- 9MBps, 802.11 g
- 12MBps, 802.11 g
- 18MBps, 802.11 g
- 24MBps, 802.11 g
- 36MBps, 802.11 g
- 48MBps, 802.11 g
- 54MBps, 802.11 g

Since EUT can transmit while charging. Selected tests were performed with the EUT connected to a laptop for charging purposes. The spurious radiated emission test and the power output test were repeated with the EUT connected to a laptop for charging purposes. The power line conducted emission test was performed with the EUT connected to a laptop through a USB cable.

3.3. EUT Modifications

No modifications were required for compliance to the 15.247 requirements.

4. TEST FACILITY AND TEST INSTRUMENTATION

4.1. Shielded Enclosure

All 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. The chamber complies with ANSI C63.4-2009 for site attenuation.

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 by the FCC.

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. Powerline Conducted Emissions

All radio frequency voltages on the power lines of a transmitter shall be below the values shown below when using a quasi-peak or average detector:

Frequency MHz	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 decreasing with logarithm of frequency to 56	56 decreasing with logarithm of frequency to 46
0.5 - 5	56	46
5 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: If the levels measured using the QP detector meet both the QP and the Average limits, the test item is considered to have met both requirements and measurements do not need to be performed using the Average detector.

5.1.1.Procedures

The interference on each power lead of the EUT was measured by connecting the measuring equipment to the appropriate meter terminal of the Line Impedance Stabilization Network (LISN). The meter terminal of the LISN not under test was terminated with 50 ohms.

- a) The EUT was to transmit at CH. 6 2437MHz and connected to the laptop.
- b) Measurements were first made on the L1 line of the laptop.
- c) The frequency range from 150 kHz to 30 MHz was broken up into smaller frequency sub-bands.
- d) Conducted emissions measurements were taken on the first frequency sub-band using a peak detector.
- e) The data thus obtained was then searched by the computer for the highest levels. Any emissions levels that were within 10dB of the average limit were then measured again using both a quasi-peak detector and an average detector. (If no peak readings were within 10dB of the average limit, quasi-peak and average readings were taken on the highest emissions levels measured during the peak detector scan.)
- f) Steps (d) and (e) were repeated for the remainder of the frequency sub-bands until the entire frequency range from 150kHz to 30MHz was investigated. The peak trace was automatically plotted. The plot also shows quasi-peak and average readings that were taken on discrete frequencies. A table showing the quasi-peak and average readings was also generated. This tabular data compares the quasi-peak and average conducted emissions to the applicable conducted emissions limits.
- g) Steps (c) through (f) were repeated on the L2 line of the laptop.

5.1.2.Results

All power line conducted emissions measured from the EUT were within the specification limits. The plots of the peak, quasi-peak, and average conducted voltage levels acquired from each input power line of the laptop while the EUT is transmitting at 2437MHz and connected through the USB cable are shown on pages 21 and 22. The tabular quasi-peak and average results are shown on pages 23 and 24.

Photographs of the test configuration which yielded the highest or worst case, conducted emission levels are shown on Figure 2.

5.2. 6dB Bandwidth

5.2.1.Requirement

Per 15.247(a)(2), the minimum 6dB bandwidth shall be at least 500kHz for all systems using digital modulation techniques.

5.2.2.Procedures

The output of the EUT was connected to the spectrum analyzer through 40dB of attenuation.

The EUT was allowed to transmit continuously. The transmit channel was set separately to low, middle, and high channels. The resolution bandwidth (RBW) was set to 100kHz and the span was set to greater than the RBW.

The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer's display was plotted using a 'screen dump' utility.

5.2.3.Results

The plots on pages 25 through 60 show that the minimum 6 dB bandwidth was 12.26MHz which is greater than minimum allowable 6dB bandwidth requirement of 500kHz for systems using digital modulation

techniques.

5.3. Output Power

5.3.1. Requirements

Per section 15.247(b)(3), for systems using digital modulation, the average output conducted power shall not be greater than 1.0W (30dBm). The limit is based on the use of antennas with directional gains that do not exceed 6dBi. Since the requirements allow for a 6dBi antenna gain, the de facto maximum EIRP is the 30dBm limit increased by 6dB or 4 Watt (36dBm).

5.3.2. Procedures

For the radiated measurements, the EUT was placed on the non-conductive stand and set to transmit. A bilog antenna was placed at a test distance of 3 meters from the EUT. The resolution bandwidth (RBW) of the spectrum analyzer was set to the maximum bandwidth. The EUT was maximized for worst case emissions (or maximum output power) at the measuring antenna. The maximum meter reading was recorded. The power output was measured for the low, middle and high channels.

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 antenna was then 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 then corrected to compensate for cable loss and antenna gain, as required. The peak power output was calculated for low, middle, and high channels.

5.3.3. Results

The results for EIRP measurements are presented on pages 61 through 66. The EIRP measured from the transmitter while operating on battery power was 21.0 dBm or 125 mW which is below the 4 Watt limit. The EIRP measured from the transmitter while being powered through the USB port of the laptop was 19.2 dBm or 83 mW which is below the 4 Watt limit.

5.4. Radiated Spurious Emissions Measurements

5.4.1. Requirements

Per section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated emissions measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).

Paragraph 15.209(a) has the following radiated emission limits:

Frequency MHz	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	3
30.0-88.0	100	3
88.0-216.0	150	3
216.0-960.0	200	3
Above 960	500	3

5.4.2.Procedures

All tests were performed in a 32ft. x 20ft. x 18ft. 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 C63.4-2009 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.

Preliminary radiated emissions tests were performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30MHz to 25GHz was investigated using a peak detector function.

The final open field emission tests were then manually performed over the frequency range of 30MHz to 25GHz.

1) For all harmonics not in the restricted bands, the following procedure was used:

- a) The field strength of the fundamental was measured using a double ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the test item. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
- b) The field strengths of all of the harmonics not in the restricted band were then measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the test item. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
- c) To ensure that maximum or worst case emission levels at the fundamental and harmonics were measured, the following steps were taken when measuring the fundamental emissions and the spurious emissions:
 - i) The test item was rotated so that all of its sides were exposed to the receiving antenna.
 - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
 - iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
 - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer, the measuring antenna was not raised or lowered to ensure maximized readings. Instead the test item was rotated through all axes to ensure the maximum readings were recorded for the test item.
- d) All harmonics not in the restricted bands must be at least 20 dB below levels measured at the fundamental. However, attenuation below the general limits specified in §15.209(a) is not required.

2) For all emissions in the restricted bands, the following procedure was used:

- a) The field strengths of all emissions below 1 GHz were measured using a bi-log antenna. The bi-log antenna was positioned at a 3 meter distance from the EUT. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
- b) The field strengths of all emissions above 1 GHz were measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the EUT. A peak detector with a resolution bandwidth of 1 MHz was used on the spectrum analyzer.
- c) To ensure that maximum or worst case emission levels were measured, the following steps were taken when taking all measurements:
 - i) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
 - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components

were measured.

- iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
 - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer, the measuring antenna was not raised or lowered to ensure maximized readings. Instead the EUT was rotated through all axis to ensure the maximum readings were recorded for the EUT.
- d) For all radiated emissions measurements below 1 GHz, if the peak reading is below the limits listed in 15.209(a), no further measurements are required. If however, the peak readings exceed the limits listed in 15.209(a), then the emissions are remeasured using a quasi-peak detector.
- e) For all radiated emissions measurements above 1 GHz, the peak readings must comply with the 15.35(b) limits. 15.35(b) states that when average radiated emissions measurements are specified, there also is a limit on the peak level of the radiated emissions. The limit on the peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. Therefore, all peak readings above 1 GHz must be no greater than 20 dB above the limits specified in 15.209(a).
- f) Next, for all radiated emissions measurements above 1GHz, the resolution bandwidth was set to 1MHz. The analyzer was set to linear mode with a 10Hz video bandwidth in order to simulate an average detector. An average reading was taken.

5.4.3. Results

Preliminary radiated emissions plots for both antennas with the EUT transmitting at 2412MHz, 2437MHz, and 2462MHz are shown on pages 67 through 114. Final radiated emissions data are presented on data pages 115 through 126. As can be seen from the data, all emissions measured from the EUT were within the specification limits.

Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown on Figure 3 through Figure 6.

5.5. Band Edge Compliance

5.5.1. Requirement

Per section 15.247(d), the emissions at the band-edges must be at least 20dB below the highest level measured within the band but attenuation below the general limits listed in 15.209(a) is not required.

5.5.2. Procedures

5.5.2.1 Low Band Edge

- 1) The EUT was setup inside the test chamber on a non-conductive stand.
- 2) A broadband measuring antenna was placed at a test distance of 3 meters from the EUT.
- 3) The EUT was set to transmit continuously at the channel closest to the low band-edge.
- 4) The EUT was maximized for worst case emissions at the measuring antenna. The maximum meter reading was recorded.
- 5) To determine the band edge compliance, the following spectrum analyzer settings were used:
 - a. Center frequency = low band-edge frequency.
 - b. Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation.
 - c. Resolution bandwidth (RBW) $\geq$ 1% of the span.
 - d. The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined.
 - e. The marker was set on the peak of the in-band emissions. A display line was placed 20dB down from the peak of the in-band emissions. All emissions which fall outside of

the authorized band of operation must be below the 20dB down display line. (All emissions to the left of the center frequency (band-edge) must be below the display line.)

- f. The analyzer's display was plotted using a 'screen dump' utility.

5.5.2.2 High Band Edge

- 1) The EUT was set to transmit continuously at the channel closest to the high band-edge.
- 2) A double ridged waveguide was placed 3 meters away from the EUT. The antenna was connected to the input of a spectrum analyzer.
- 3) The center frequency of the analyzer was set to the high band edge (2483.5MHz)
- 4) The resolution bandwidth was set to 1MHz.
- 5) To ensure that the maximum or worst case emission level was 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 antenna is 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.
- 6) The highest measured peak reading was recorded.
- 7) The highest measured average reading was recorded.

5.5.3.Results

Pages 127 through 134 show the radiated band-edge compliance results. As can be seen from these plots, the radiated emissions at the low end band edge are within the 20 dB down limits. The radiated emissions at the high end band edge are within the general limits.

5.6. Power Spectral Density

5.6.1.1 Requirement

Per section 15.247(d), the peak power spectral density from the intentional radiator shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.6.1.2 Procedures

- 1) The output of the EUT was connected to the spectrum analyzer through 40dB of attenuation and the EUT was set to transmit at the low channel.
- 2) The measurement procedure PKPSD of the DTS Meas Guidance KDB 558074
- 3) The EUT was then placed in the normal operation mode (for DTS devices)
- 4) To determine the power spectral density, the following spectrum analyzer settings were used:
 - a. Center frequency = transmit frequency
 - b. Set the span to 5-30 % greater than the EBW (Span = 50MHz)
 - c. Resolution bandwidth (RBW) = 100kHz
 - d. Sweep time = auto couple
 - e. Detector = peak
 - f. Trace = max hold
 - g. The marker shows the maximum reading in a 100kHz band segment within the fundamental EBW
 - h. Adjust the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{kHz}/100\text{kHz}) = -15.2\text{ dB}$
 - i. The analyzer's display was plotted using a 'screen dump' utility.
 - j. The test was repeated for all frequencies and modulations.



5.6.1.3 Results

Pages 135 through 170 show the power spectral density results. As can be seen from this plot, the peak power density is less than 8dBm in a 3kHz band during any time interval of continuous transmission

6. OTHER TEST CONDITIONS

6.1. Test Personnel and Witnesses

All tests were performed by qualified personnel from Elite Electronic Engineering Incorporated. The test series was witnessed by LifeShadow LLC. personnel.

6.2. Disposition of the EUT

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

7. CONCLUSIONS

It was determined that the LifeShadow LLC. Radio Module, Model No. LS01, Serial No. prototype and Serial No. 7 did fully meet the requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, for Intentional Radiators.

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 date as operated by LifeShadow LLC. personnel. 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

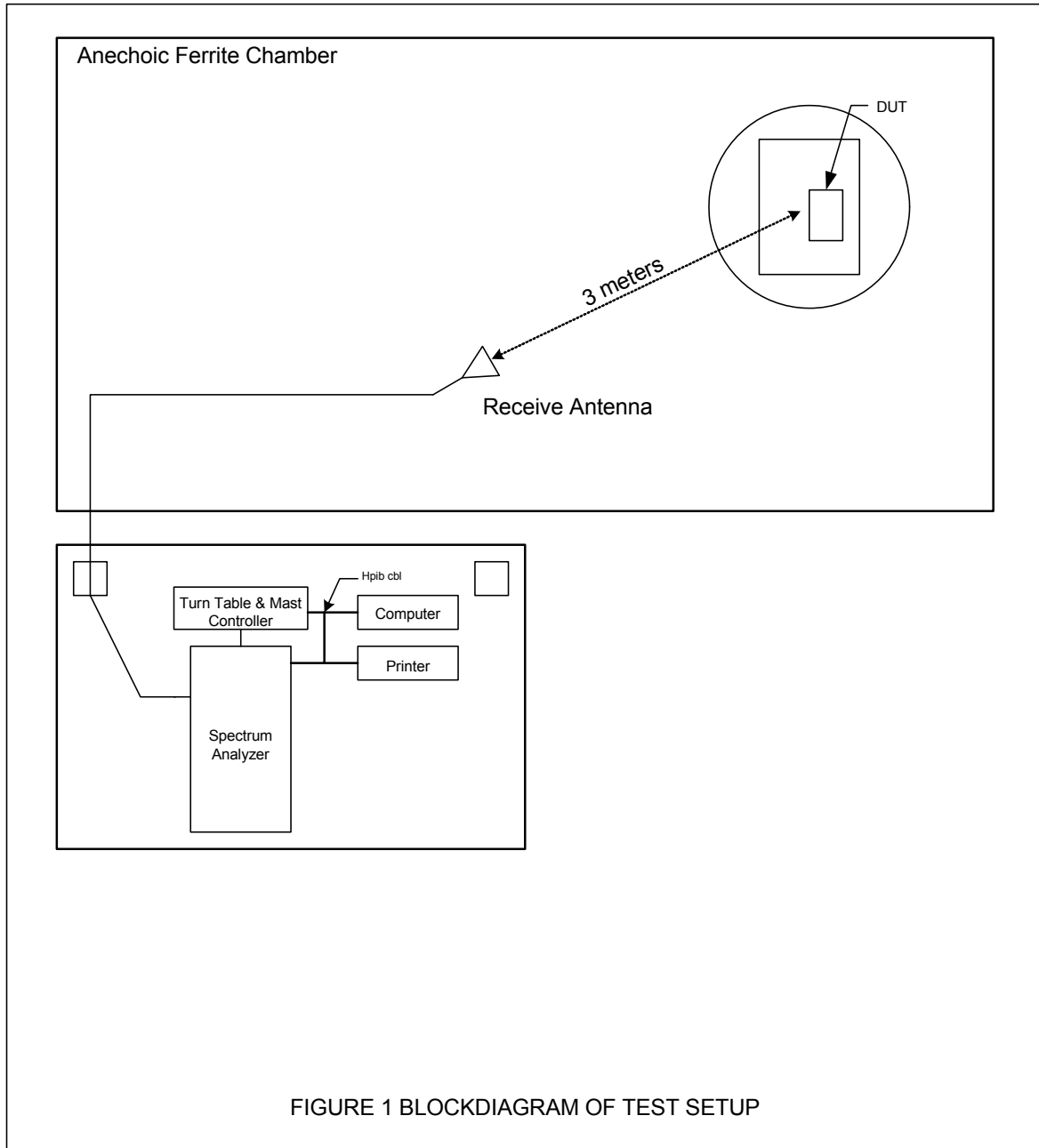
Table 9-1 Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
CDX2	COMPUTER	ELITE	WORKSTATION	---	---	N/A	
CDX8	COMPUTER	ELITE	WORKSTATION			N/A	
CLT3	LAPTOP COMPUTER	SONY	PCG-GRT390ZP	3001143	---	NOTE 1	
GBR6	SIGNAL GENERATOR	HEWLETT PACKARD	8648C	3642U02047	9KHZ-3000MHZ	2/22/2012	2/22/2013
NTA2	BILOG ANTENNA	TESEQ	6112D	28040	25-1000MHZ	7/30/2012	7/30/2013
NTA3	BILOG ANTENNA	TESEQ	6112D	28040	25-1000MHZ	2/16/2012	2/16/2013
NWH0	RIDGED WAVE GUIDE	TENSOR	4105	2081	1-12.4GHZ	11/3/2011	11/3/2012
NWP1	DOUBLE RIDGED WAVEGUIDE ANTENNA	EATON	3115	2100	1GHZ-12.4GHZ	3/6/2012	3/6/2013
PLF1	CISPR16 50UH LISN	ELITE	CISPR16/70A	001	.15-30MHZ	6/20/2012	6/20/2013
PLF3	CISPR16 50UH LISN	ELITE	CISPR16/70A	003	.15-30MHZ	6/20/2012	6/20/2013
RAKG	RF SECTION	HEWLETT PACKARD	85462A	3549A00284	0.009-6500MHZ	3/12/2012	3/12/2013
RAKH	RF FILTER SECTION	HEWLETT PACKARD	85460A	3448A00324	---	3/12/2012	3/12/2013
RAKI	RF SECTION	HEWLETT PACKARD	85462A	3411A00181	0.009-6500MHZ	3/15/2012	3/15/2013
RAKJ	RF FILTER SECTION	HEWLETT PACKARD	85460A	3330A00154	---	3/15/2012	3/15/2013
RBA0	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB26	100145	20HZ-26.5GHZ	3/8/2012	3/8/2013
RBA1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB26	100146	20HZ-26.5GHZ	11/15/2011	11/15/2012
RBB0	EMI TEST RECEIVER 20HZ TO 40 GHZ	ROHDE & SCHWARZ	ESIB40	100250	20 HZ TO 40GHZ	3/5/2012	3/5/2013
T1N1	10DB 20W ATTENUATOR	NARDA	766-10	---	DC-4GHZ	8/6/2012	8/6/2013
T2D7	20DB, 25W ATTENUATOR	WEINSCHL	46-20-43	AY9246	DC-18GHZ	8/6/2012	8/6/2013
T2DL	20DB, 25W ATTENUATOR	WEINSCHL	46-20-34	BS0910	DC-18GHZ	8/6/2012	8/6/2013
T2S3	20DB 25W ATTENUATOR	WEINSCHL	46-20-34	BV3544	DC-18GHZ	1/3/2012	1/3/2013
XLJ1	5W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-052	2	DC-2GHZ	8/6/2012	8/6/2013
XLQS	5W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-052	59	DC-2GHZ	8/6/2012	8/6/2013

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.



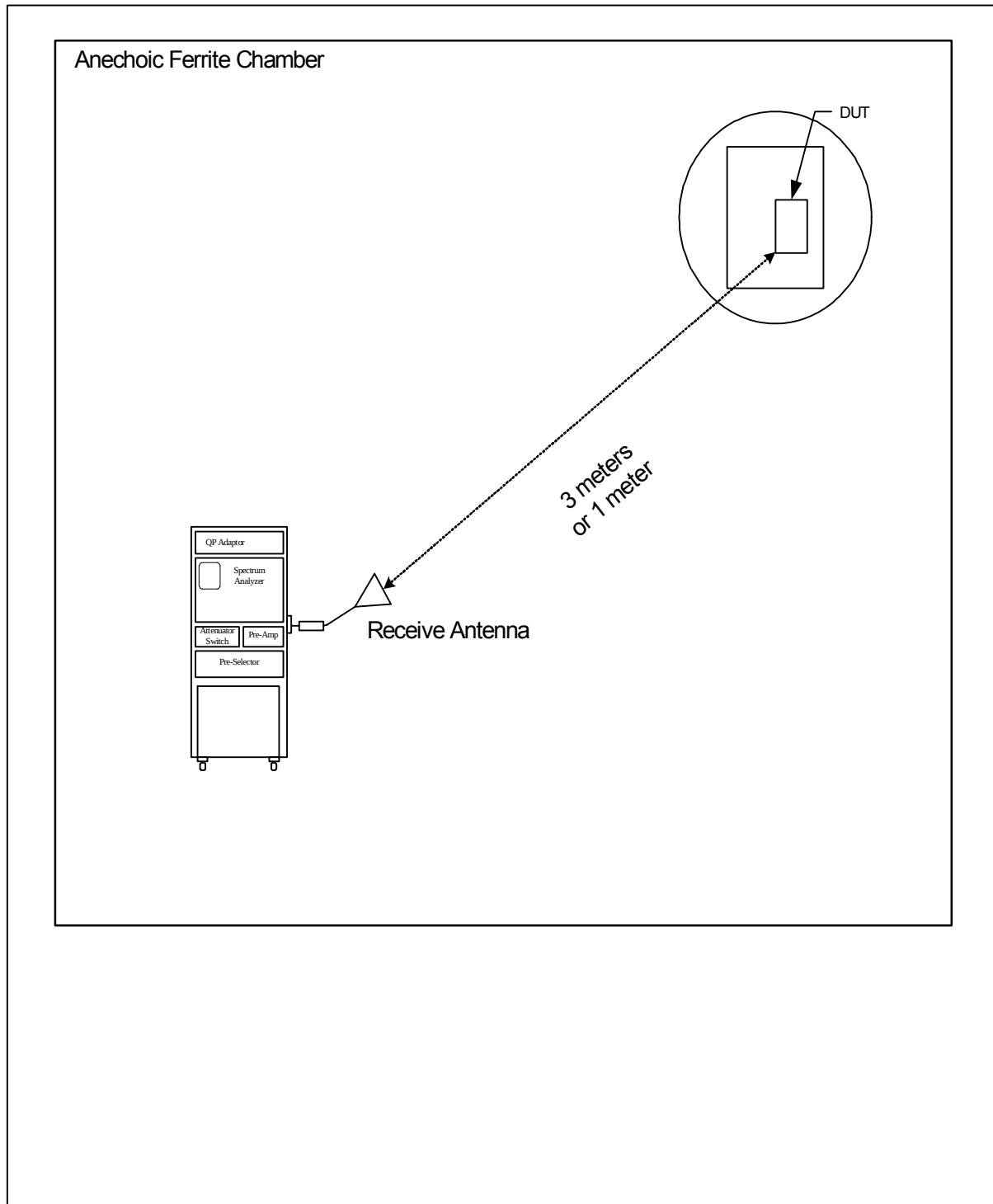
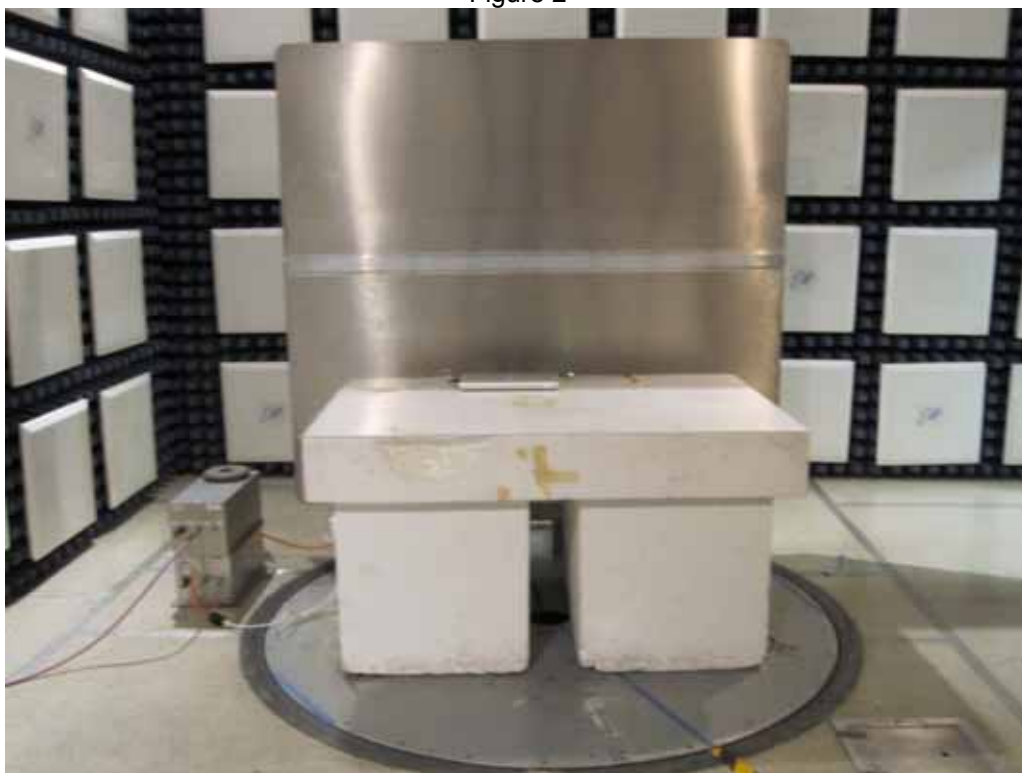
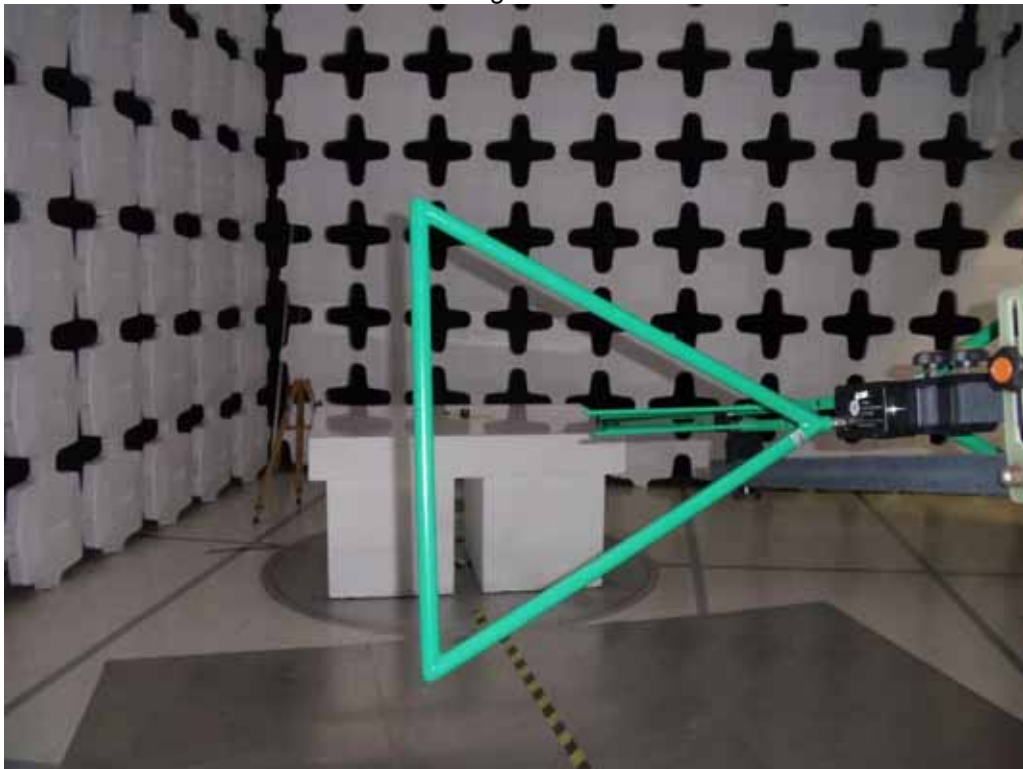


Figure 2

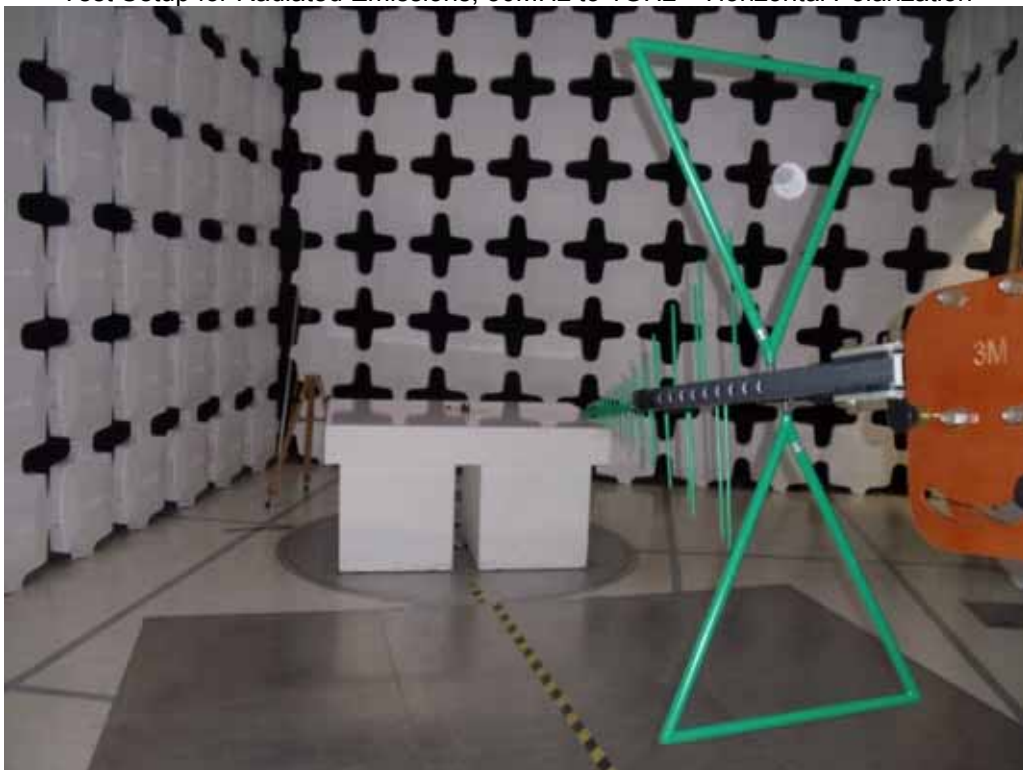


Test Setup for Conducted Emissions, 150kHz to 30MHz

Figure 3

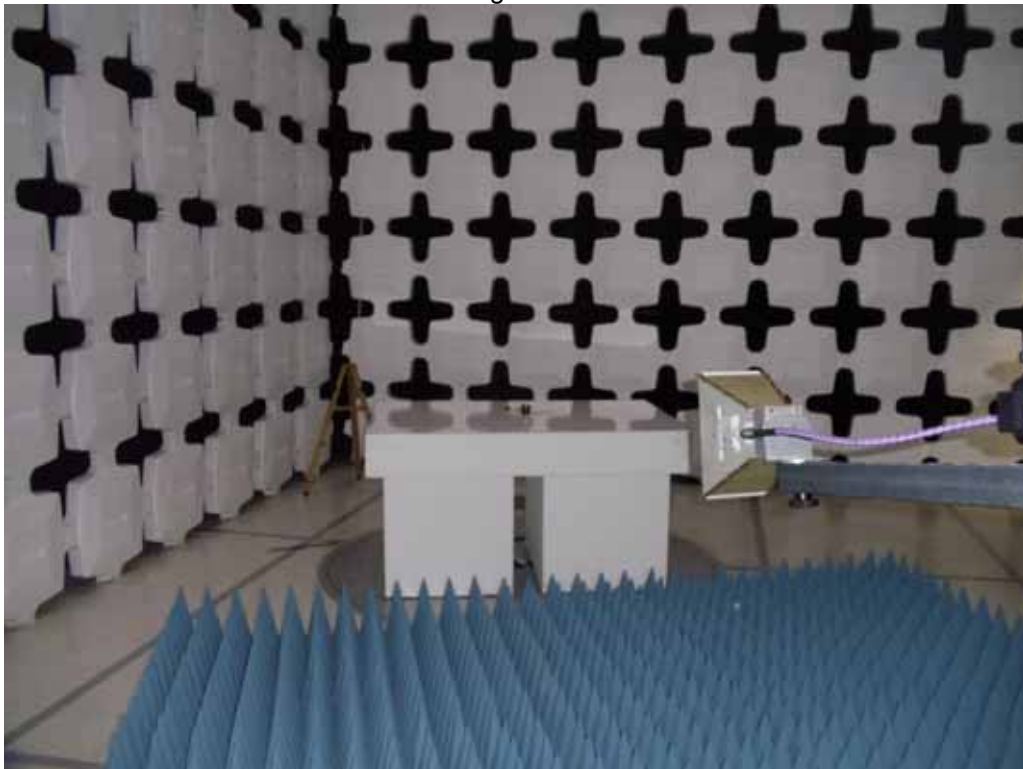


Test Setup for Radiated Emissions, 30MHz to 1GHz – Horizontal Polarization

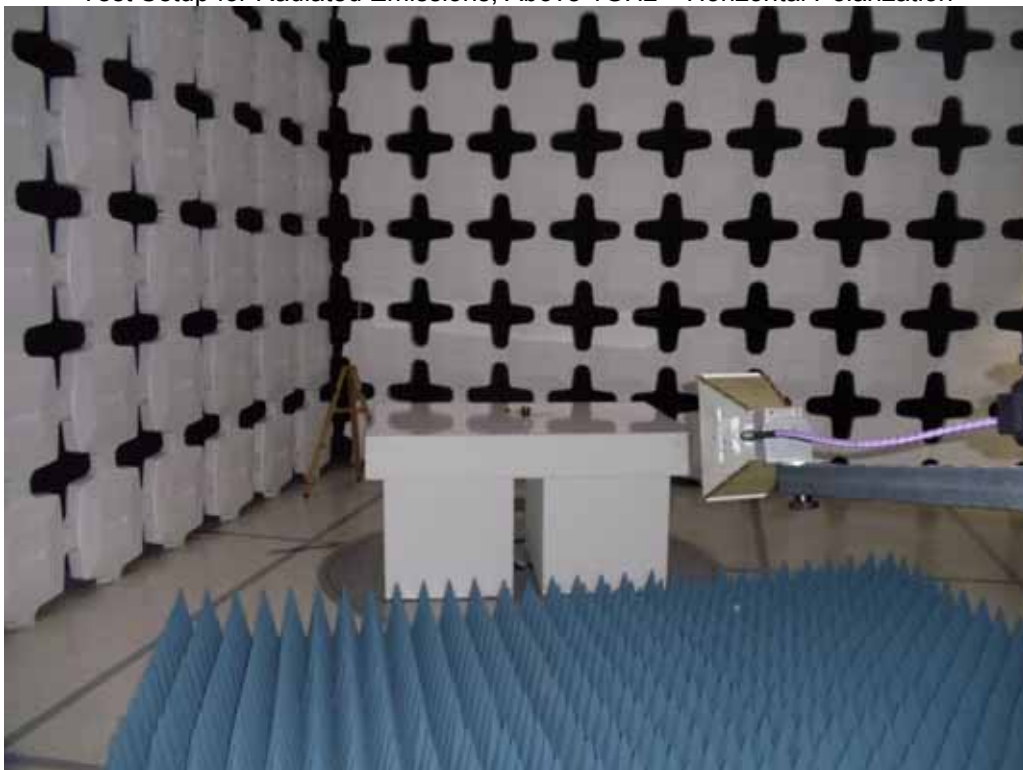


Test Setup for Radiated Emissions, 30MHz to 1GHz – Vertical Polarization

Figure 4



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



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

Figure 5



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



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

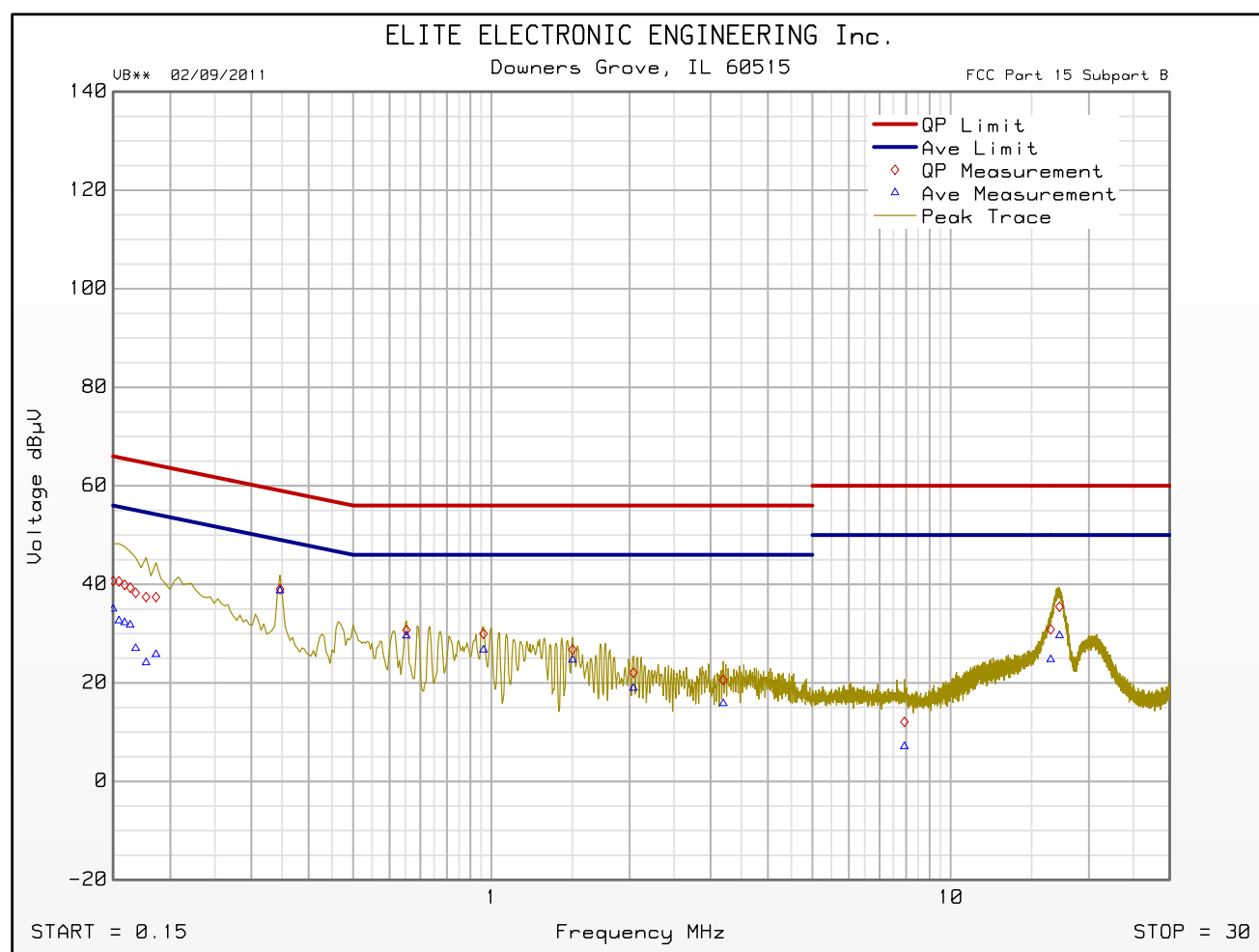


FCC Part 15 Subpart B Conducted Emissions Test

Cumulative Data

VB** 02/09/2011

Manufacturer : LIFE SHADOW
Model : LS01
DUT Mode : TX CH. 6
Line Tested : L1
Scan Step Time [ms] : 30
Meas. Threshold [dB] : -10
Notes : POWERED THROUGH MACBOOK USB
Test Engineer : D. Putnam
Limit : Class B
Test Date : Sep 26, 2012 09:45:38 AM



Emissions Meet QP Limit
Emissions Meet Ave Limit

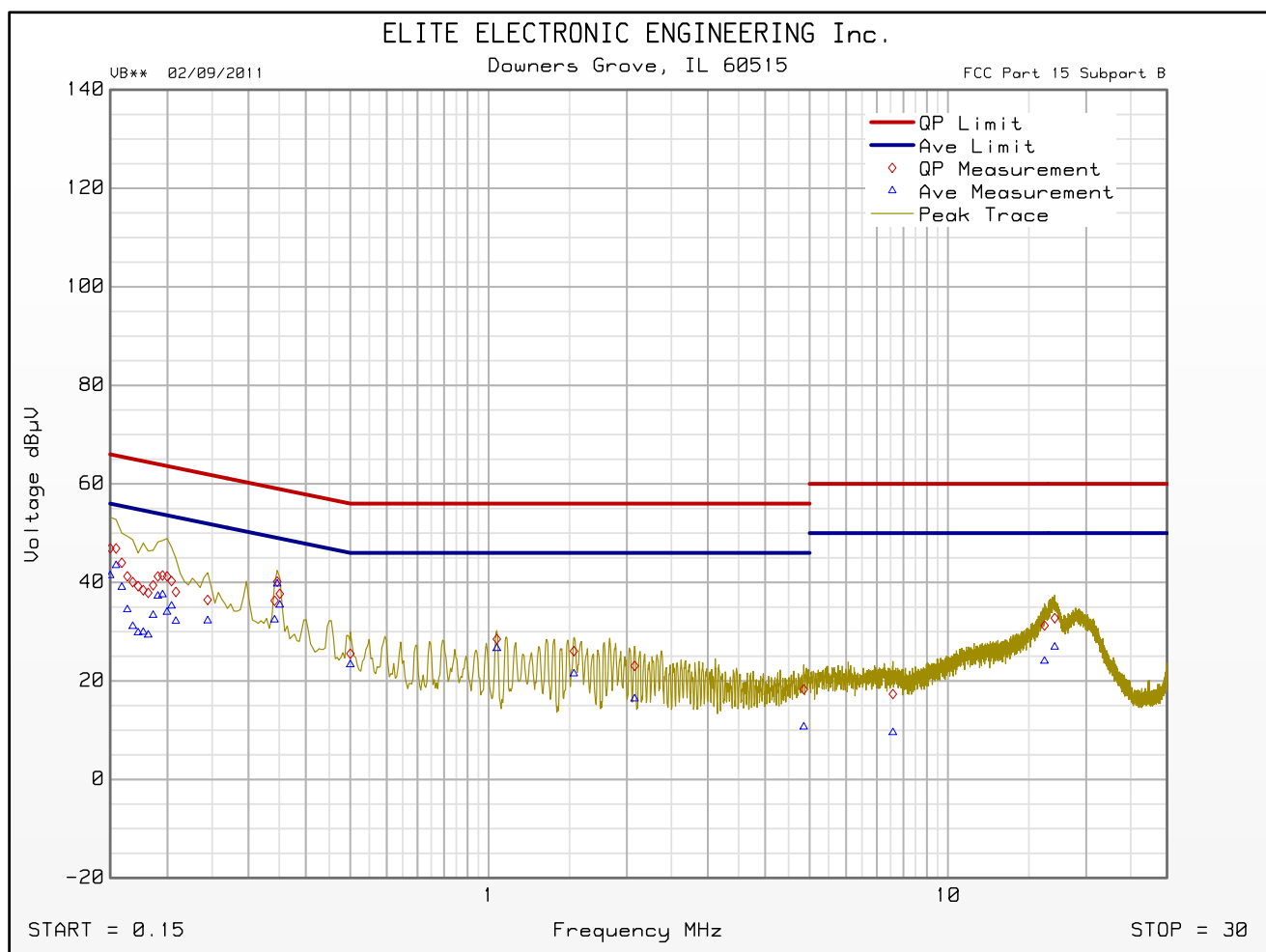


FCC Part 15 Subpart B Conducted Emissions Test

Cumulative Data

VB** 02/09/2011

Manufacturer : LIFE SHADOW
Model : LS01
DUT Mode : TX CH. 6
Line Tested : L2
Scan Step Time [ms] : 30
Meas. Threshold [dB] : -10
Notes : POWERED THROUGH MACBOOK USB
Test Engineer : D. Putnam
Limit : Class B
Test Date : Sep 26, 2012 09:37:02 AM



Emissions Meet QP Limit
Emissions Meet Ave Limit



FCC Part 15 Subpart B Conducted Emissions Test

Significant Emissions Data

VB** 02/09/2011

Manufacturer : LIFE SHADOW
Model : LS01
DUT Mode : TX CH. 6
Line Tested : L1
Scan Step Time [ms] : 30
Meas. Threshold [dB] : -10
Notes : POWERED THROUGH MACBOOK USB
Test Engineer : D. Putnam
Limit : Class B
Test Date : Sep 26, 2012 09:45:38 AM
Data Filter : Up to 80 maximum levels detected with 6 dB level excursion threshold over 10 dB margin below limit

Freq MHz	Quasi-peak Level dBμV	Quasi-peak Limit dBμV	Excessive Quasi-peak Emissions	Average Level dBμV	Average Limit dBμV	Excessive Average Emissions
0.155	40.6	65.8		32.6	55.8	
0.347	39.0	59.0		38.7	49.0	
0.653	30.7	56.0		29.5	46.0	
0.961	30.0	56.0		26.7	46.0	
1.502	26.8	56.0		24.7	46.0	
2.039	22.1	56.0		18.9	46.0	
3.199	20.6	56.0		15.8	46.0	
7.930	12.1	60.0		7.1	50.0	
16.515	30.9	60.0		24.8	50.0	
17.263	35.4	60.0		29.6	50.0	



FCC Part 15 Subpart B Conducted Emissions Test

Significant Emissions Data

VB** 02/09/2011

Manufacturer : LIFE SHADOW
Model : LS01
DUT Mode : TX CH. 6
Line Tested : L2
Scan Step Time [ms] : 30
Meas. Threshold [dB] : -10
Notes : POWERED THROUGH MACBOOK USB
Test Engineer : D. Putnam
Limit : Class B
Test Date : Sep 26, 2012 09:37:02 AM
Data Filter : Up to 80 maximum levels detected with 6 dB level excursion threshold over 10 dB margin below limit

Freq MHz	Quasi-peak Level dBμV	Quasi-peak Limit dBμV	Excessive Quasi-peak Emissions	Average Level dBμV	Average Limit dBμV	Excessive Average Emissions
0.155	46.9	65.8		43.4	55.8	
0.347	40.2	59.0		39.7	49.0	
0.500	25.5	56.0		23.3	46.0	
1.042	28.5	56.0		26.6	46.0	
1.534	26.1	56.0		21.5	46.0	
2.079	23.1	56.0		16.4	46.0	
4.855	18.3	56.0		10.7	46.0	
7.588	17.3	60.0		9.5	50.0	
16.227	31.2	60.0		24.0	50.0	
17.078	32.7	60.0		26.9	50.0	

Ref Lvl
10 dBm

Delta 1 [T3]

0.36 dB

RBW 30 kHz

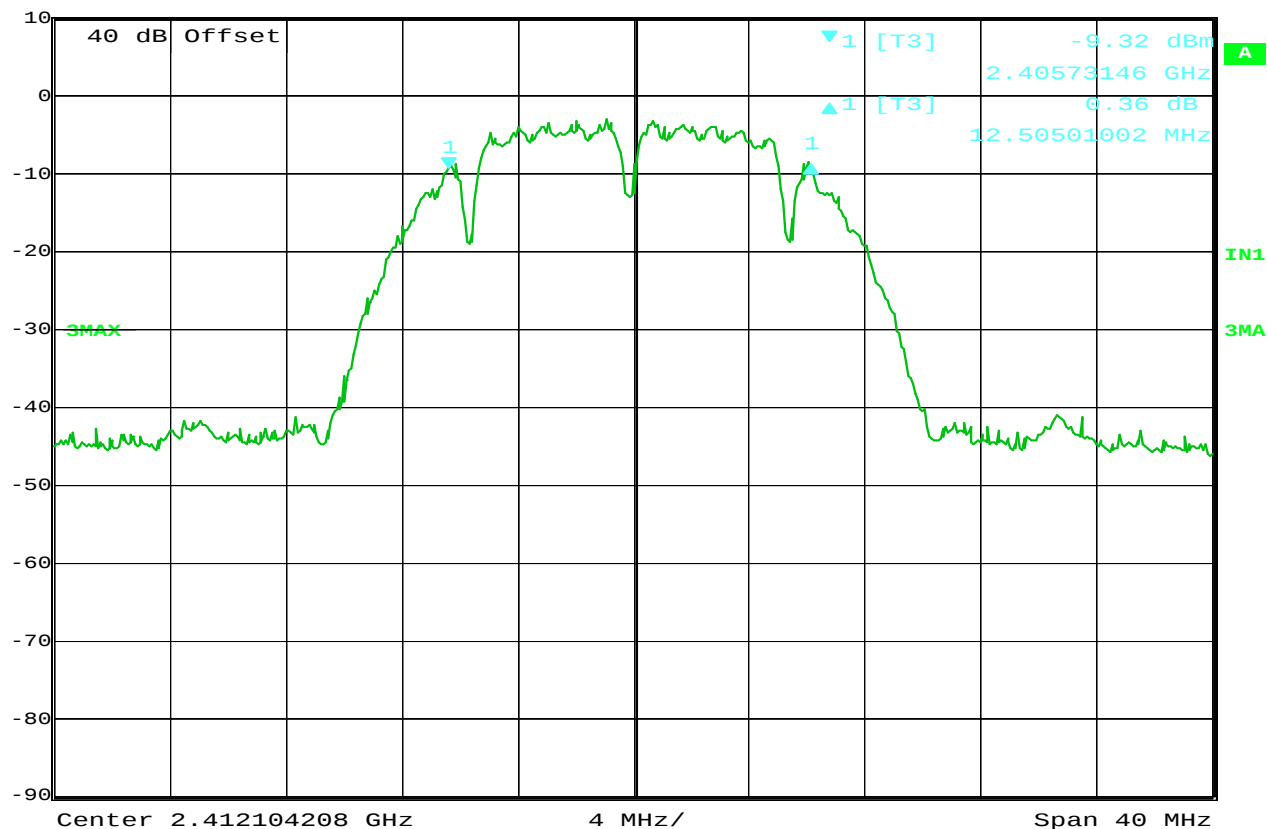
RF Att 10 dB

VBW 300 kHz

12.50501002 MHz

SWT 115 ms

Unit dBm



Date: 21.SEP.2012 10:07:39

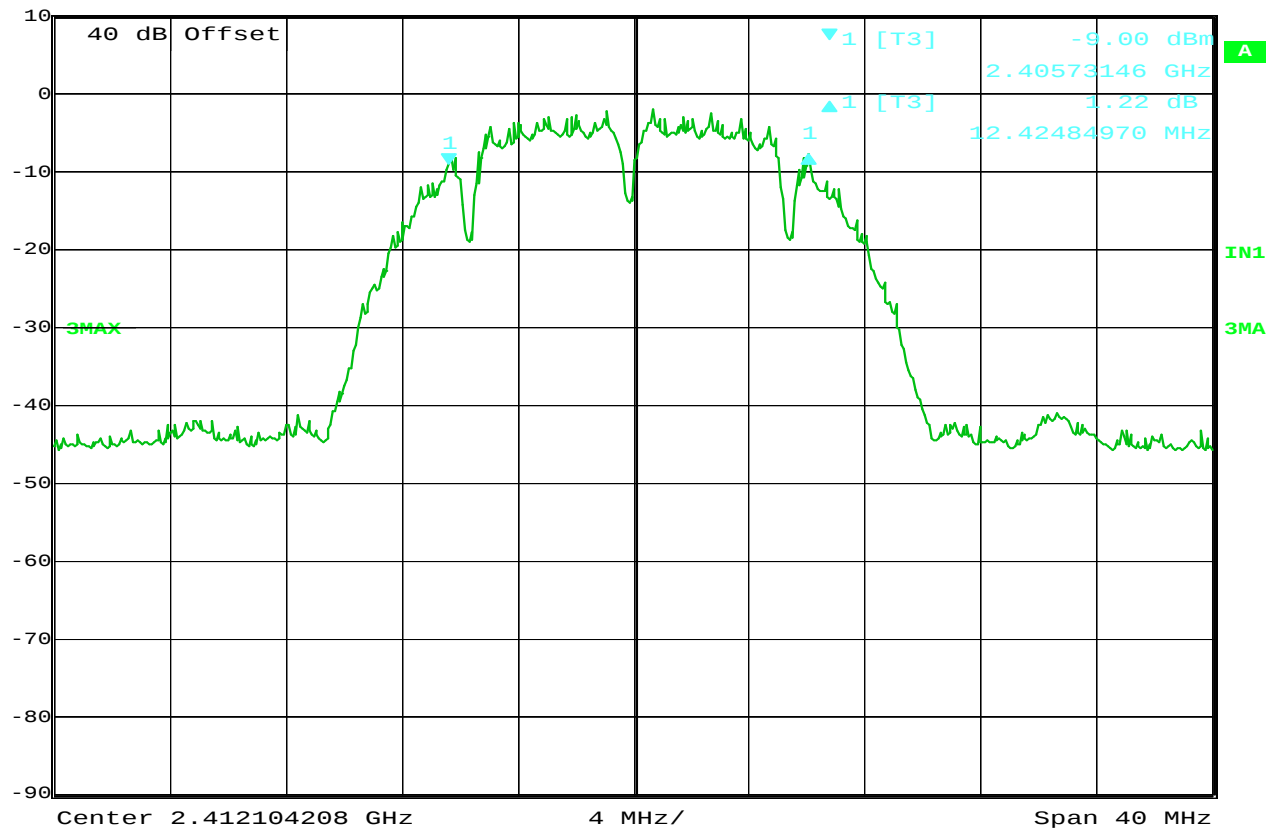
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 1, B 1Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] 1.22 dB
12.42484970 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 10:05:10

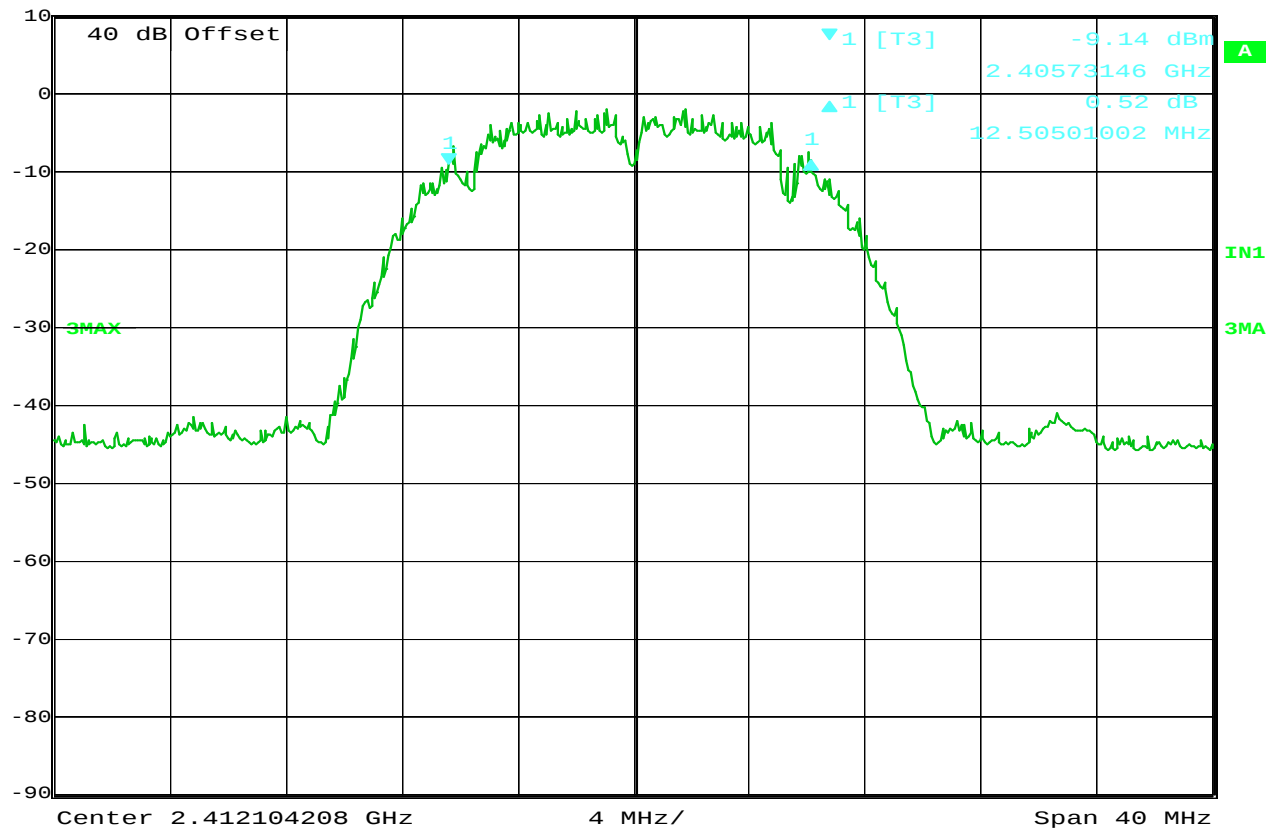
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 1, B 2Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Delta 1 [T3] RBW 30 kHz RF Att 10 dB
Ref Lvl 0.52 dB VBW 300 kHz
10 dBm 12.50501002 MHz SWT 115 ms Unit dBm



Date: 21.SEP.2012 09:57:44

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 1, B 5.5Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES

Ref Lvl
10 dBm

Delta 1 [T3]

0.31 dB

12.58517034 MHz

RBW

30 kHz

RF Att

10 dB

VBW

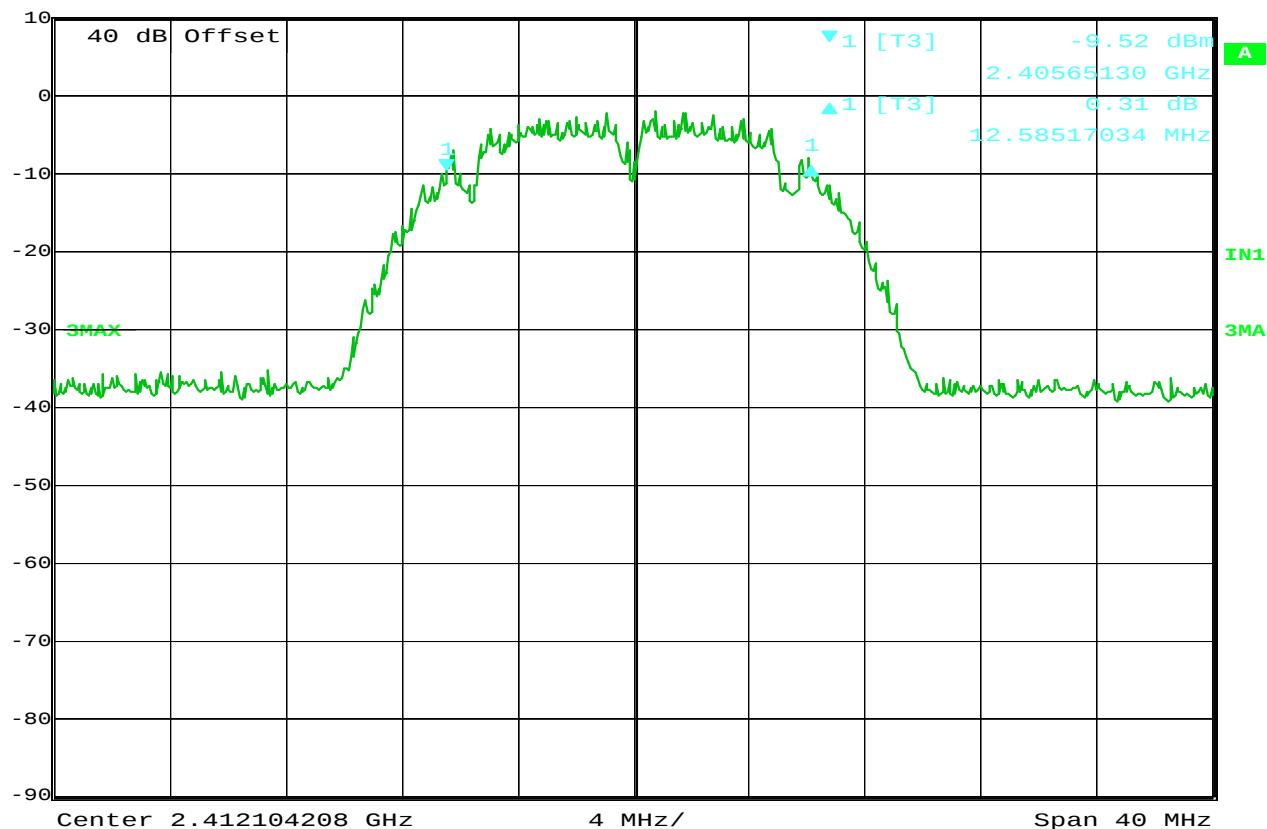
300 kHz

SWT

115 ms

Unit

dBm

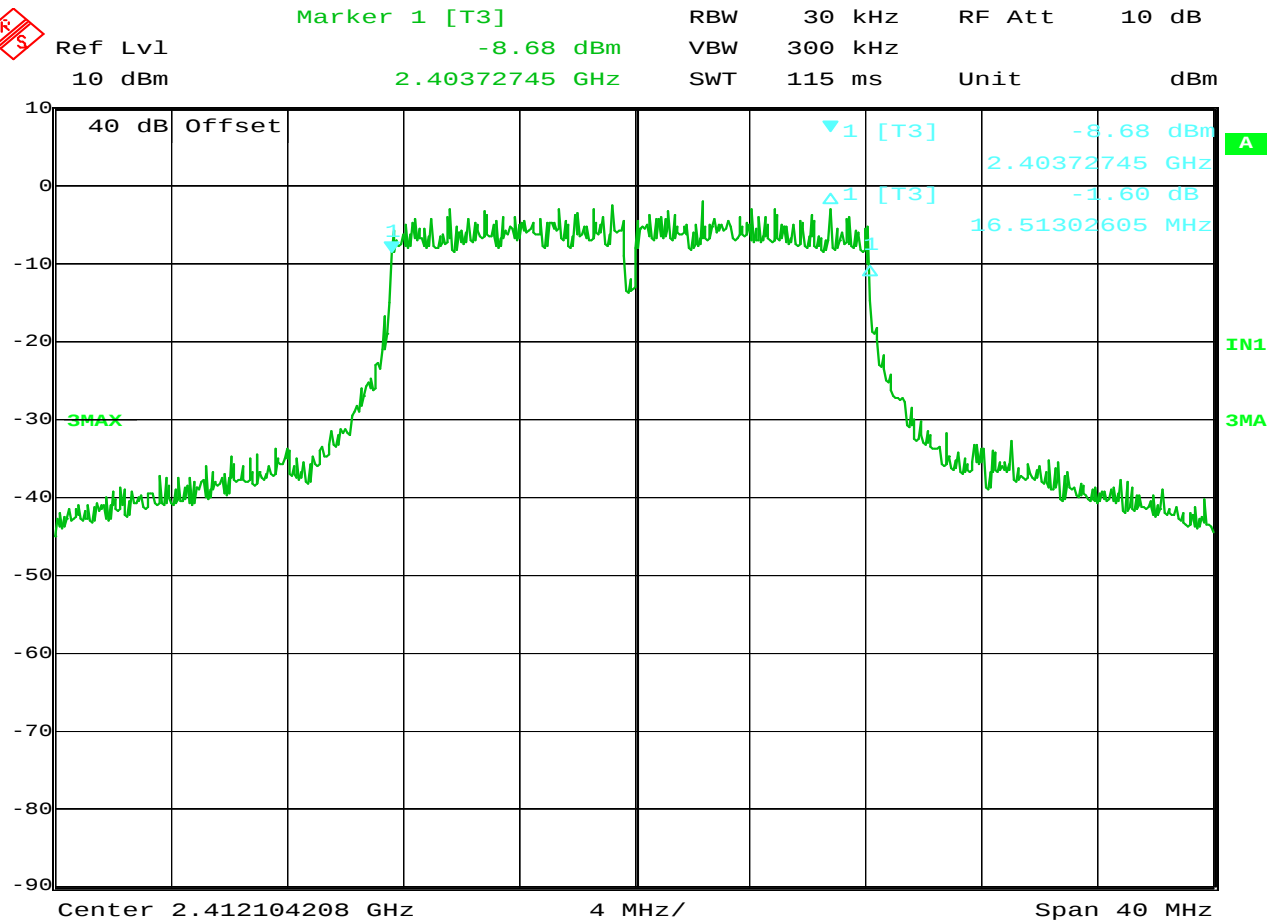


Date: 21.SEP.2012 09:51:46

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 1, B 11Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Date: 21.SEP.2012 10:10:37

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 1, G 6Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES

Ref Lvl
10 dBm

Delta 1 [T3]

-0.82 dB

16.59318637 MHz

RBW

30 kHz

RF Att

10 dB

VBW

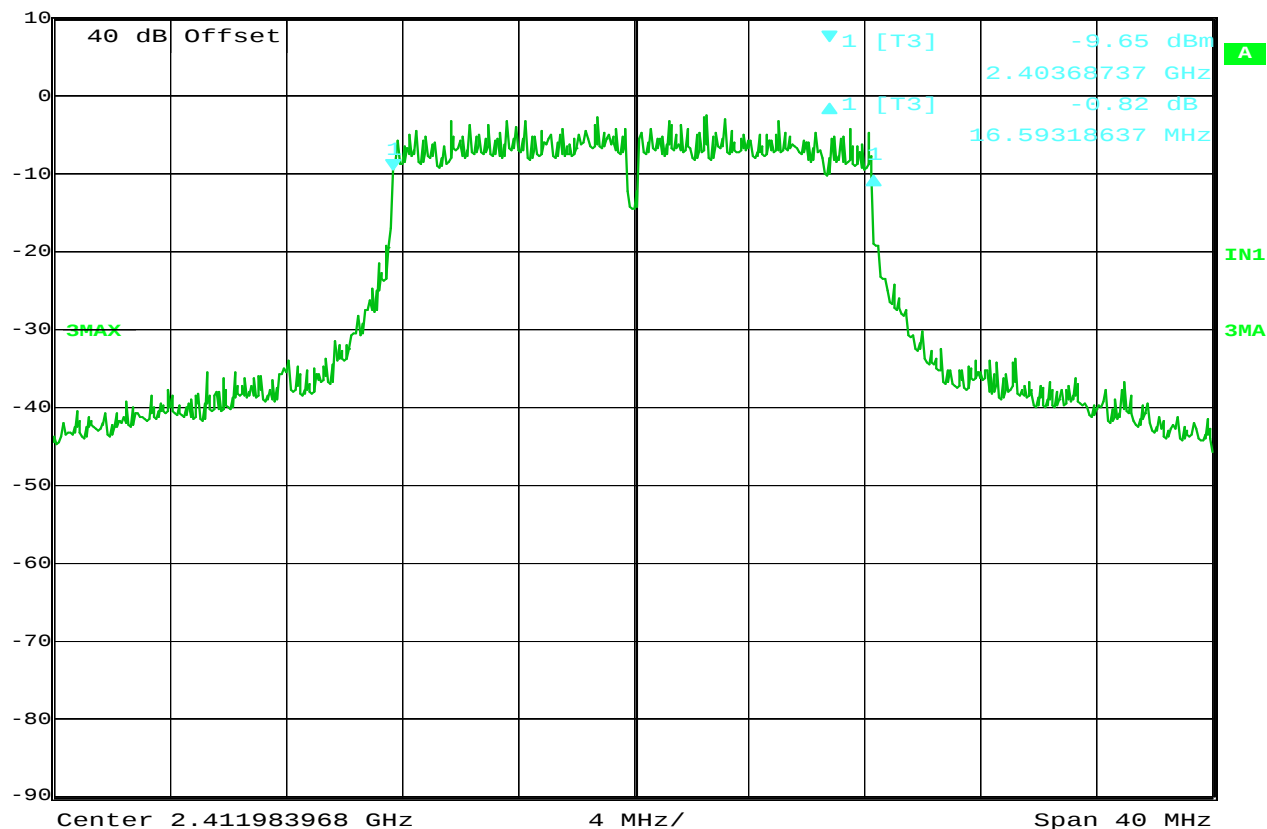
300 kHz

SWT

115 ms

Unit

dBm



Date: 21.SEP.2012 10:13:46

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow

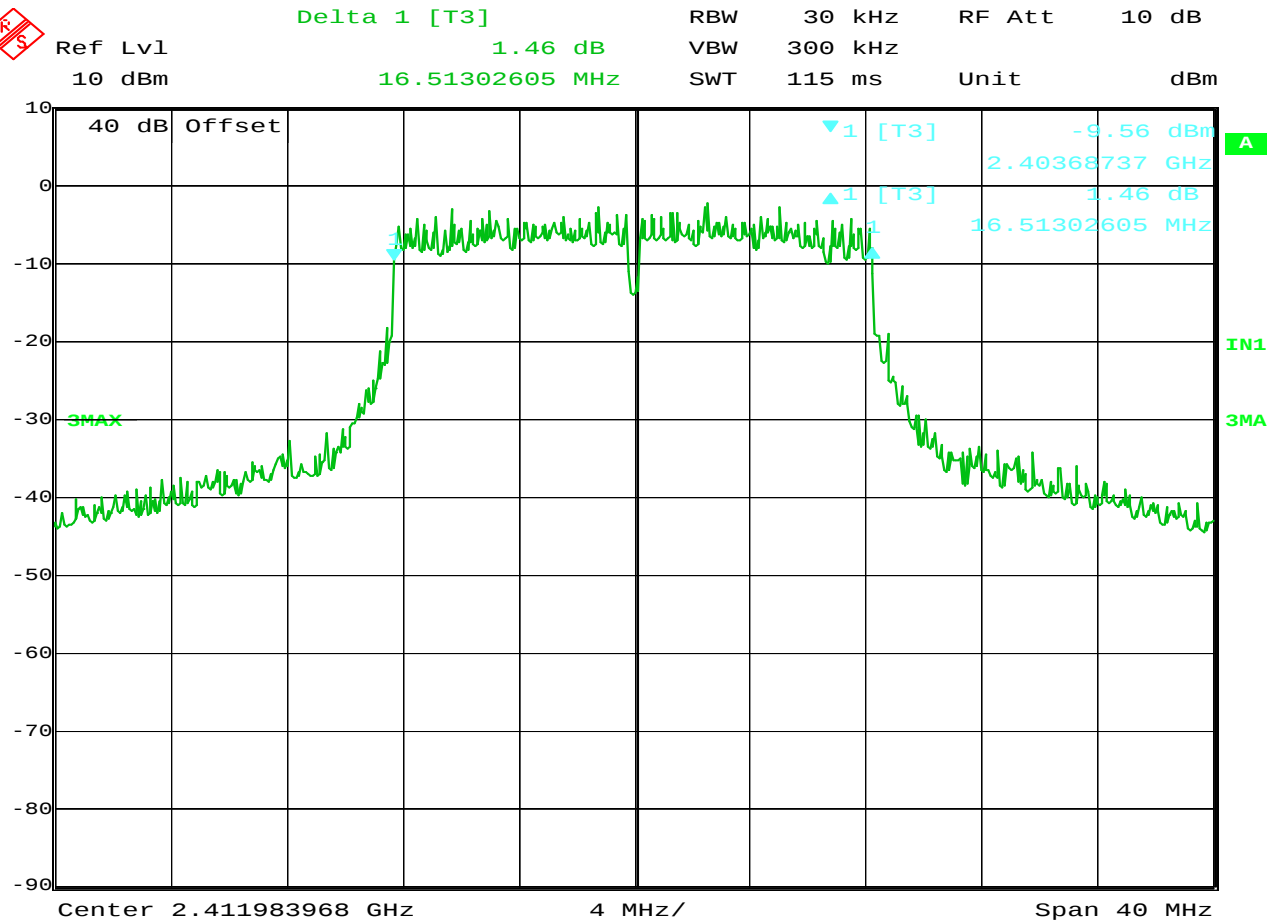
MODEL NUMBER : LS01

TEST MODE : Channel 1, G 9Mbps

TEST PARAMETERS :

EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Date: 21.SEP.2012 10:15:36

15.247 6dB Bandwidth

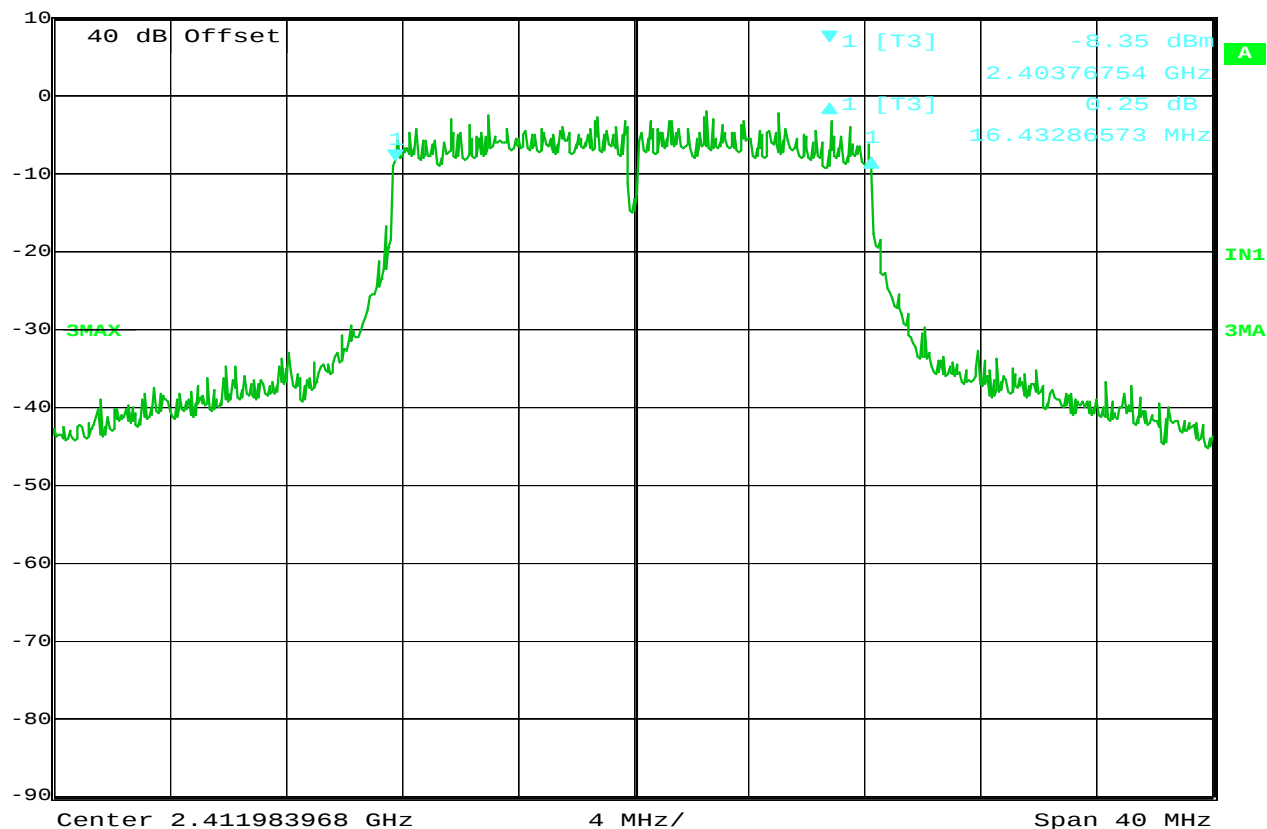
MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 1, G 12Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm Delta 1 [T3] 0.25 dB RBW 30 kHz RF Att 10 dB
16.43286573 MHz VBW 300 kHz Unit dBm
SWT 115 ms



Date: 21.SEP.2012 10:17:48

15.247 6dB Bandwidth

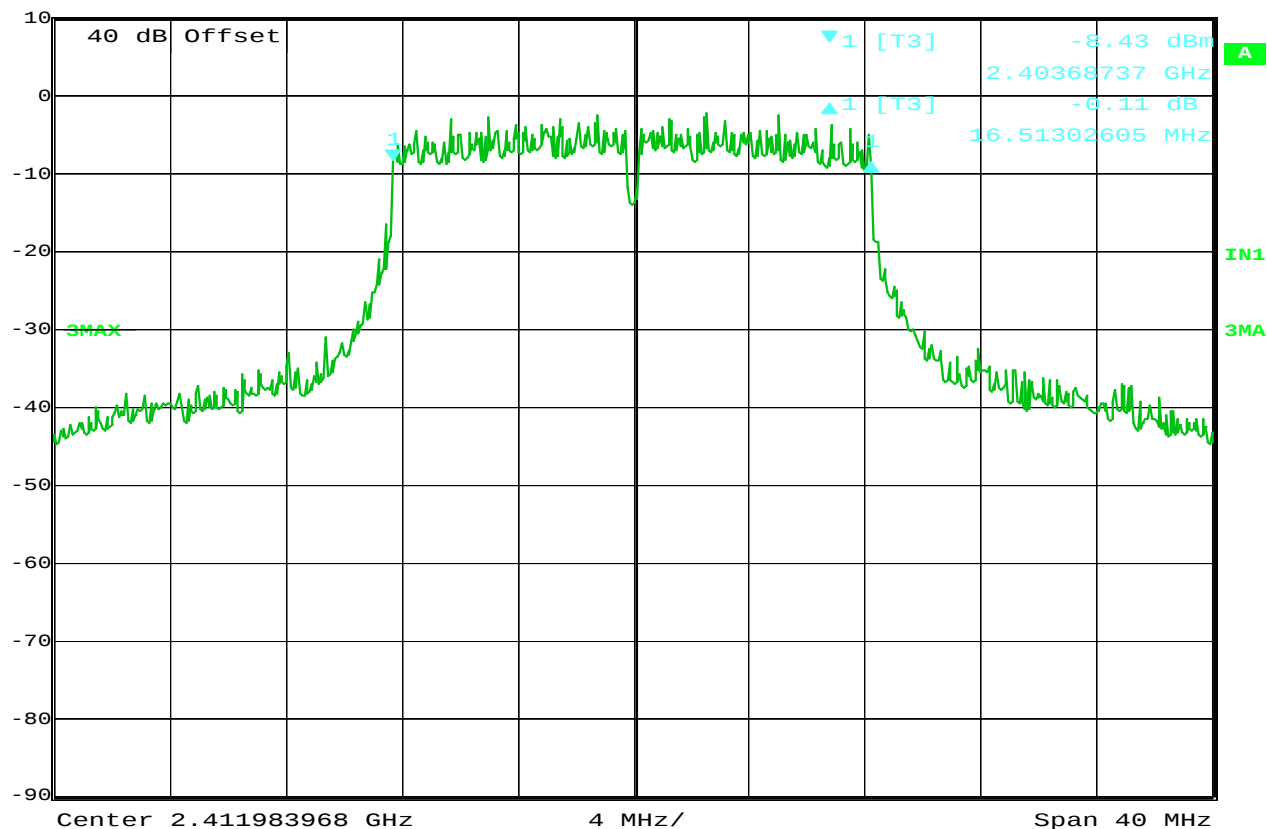
MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 1, G 18Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm Delta 1 [T3] -0.11 dB RBW 30 kHz RF Att 10 dB
16.51302605 MHz VBW 300 kHz Unit dBm
SWT 115 ms



Date: 21.SEP.2012 10:20:25

15.247 6dB Bandwidth

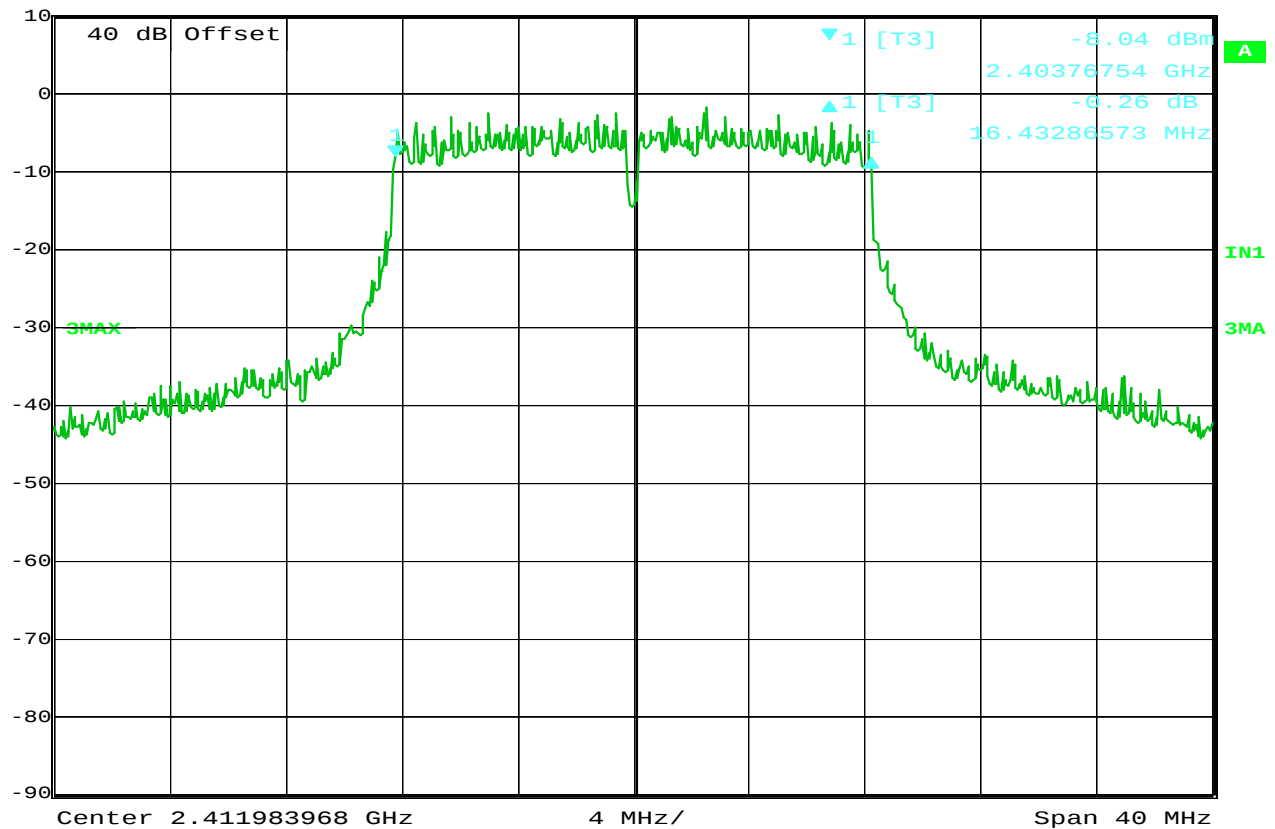
MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 1, G 24Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] -0.26 dB
16.43286573 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 10:22:54

15.247 6dB Bandwidth

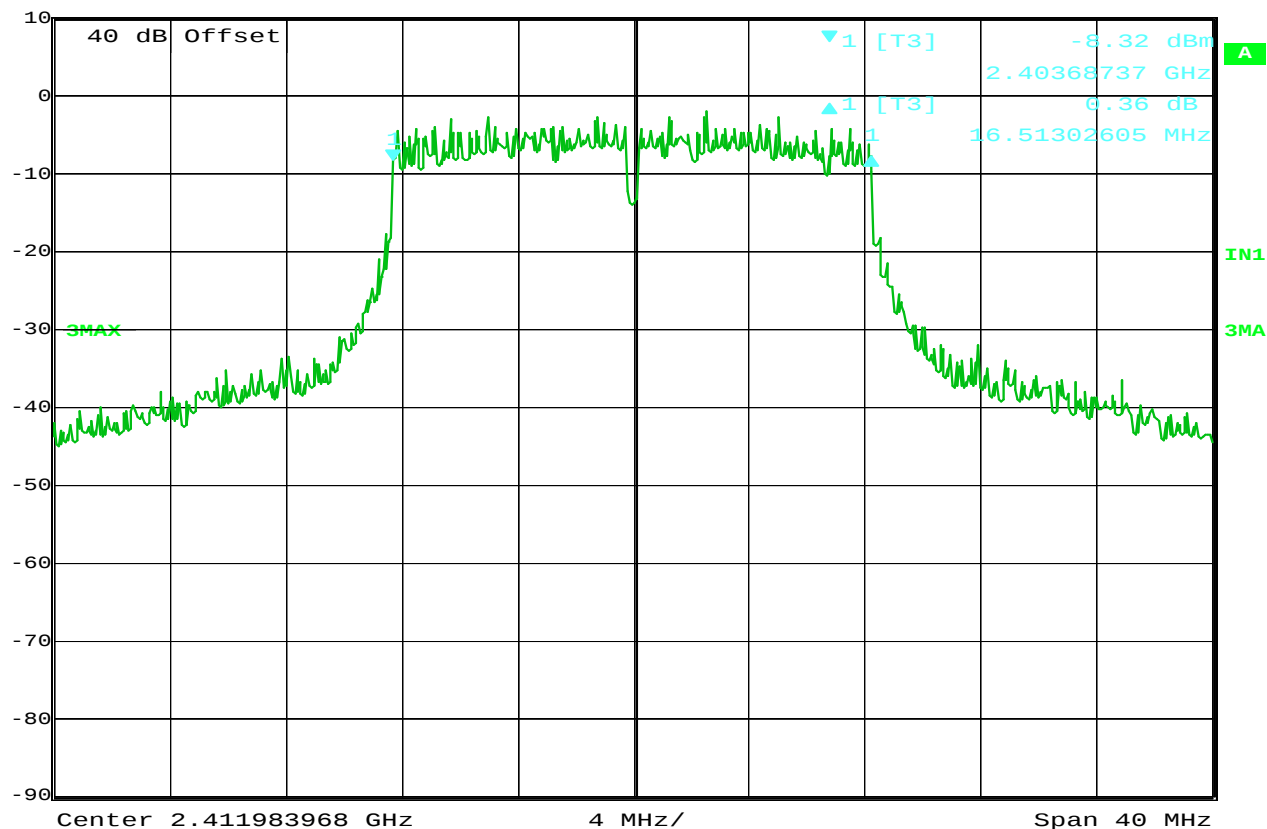
MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 1, G 36Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] 0.36 dB
16.51302605 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm

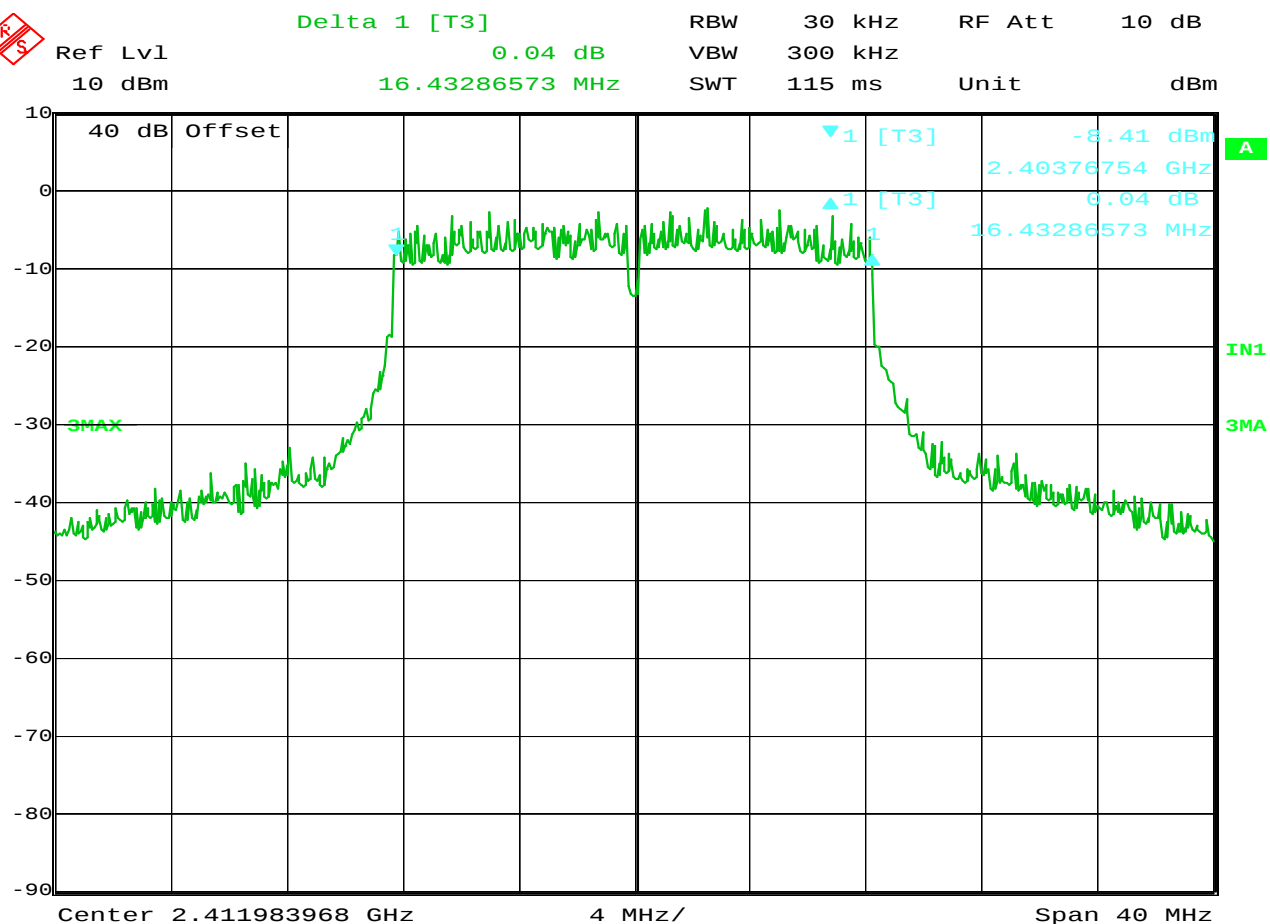


Date: 21.SEP.2012 10:25:11

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 1, G 48Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Date: 21.SEP.2012 10:27:59

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 1, G 54Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES

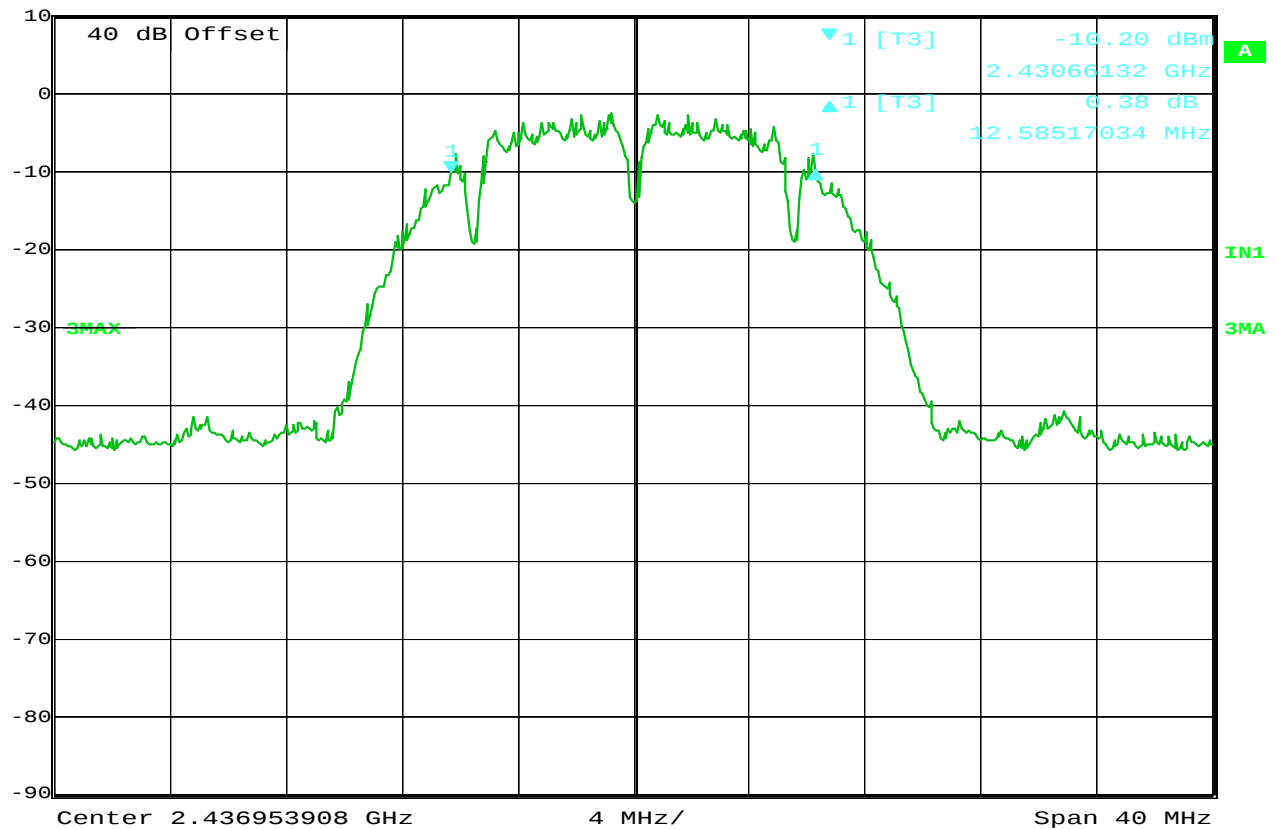


MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] 0.38 dB
12.58517034 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 10:34:09

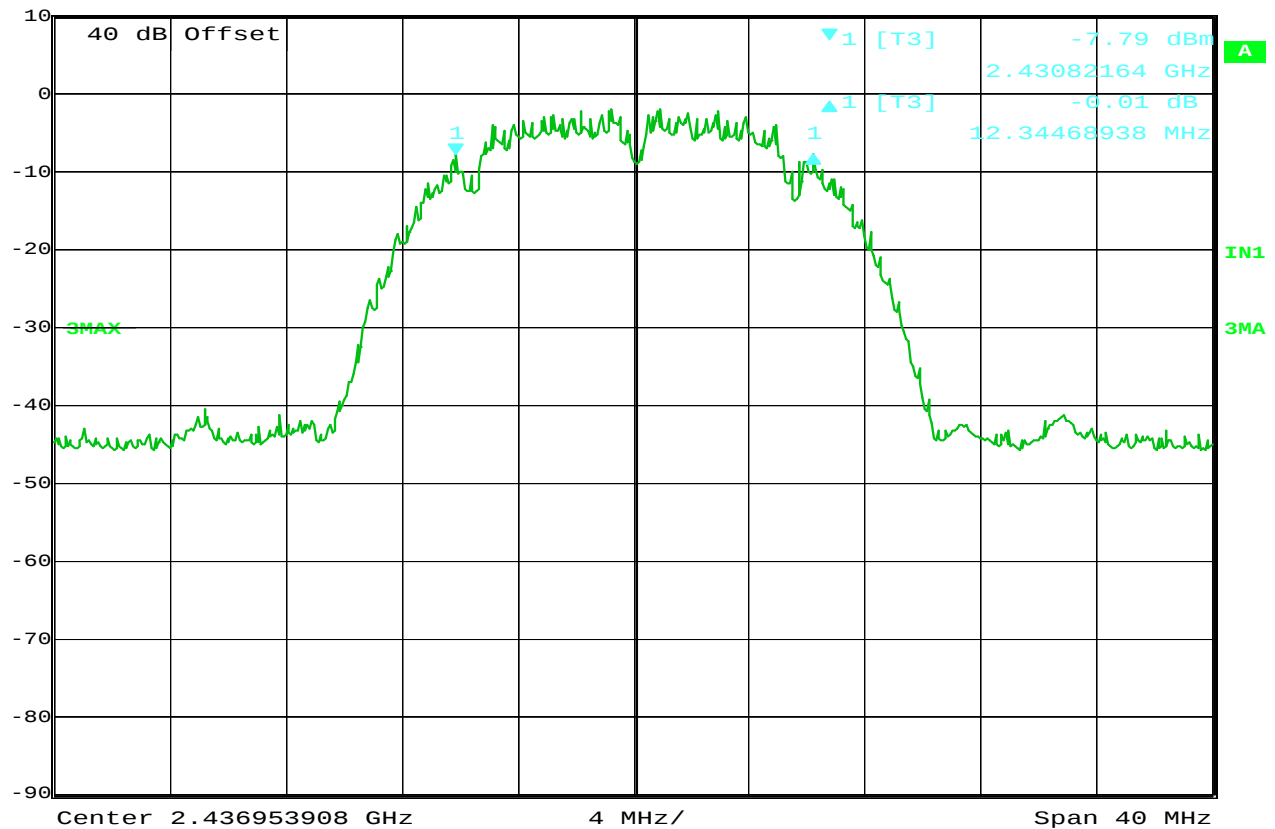
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 6, B 2Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] -0.01 dB
12.34468938 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 10:37:50

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 6, B 5.5Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES

Ref Lvl
10 dBm

Delta 1 [T3]

0.09 dB

RBW

30 kHz

RF Att

10 dB

VBW

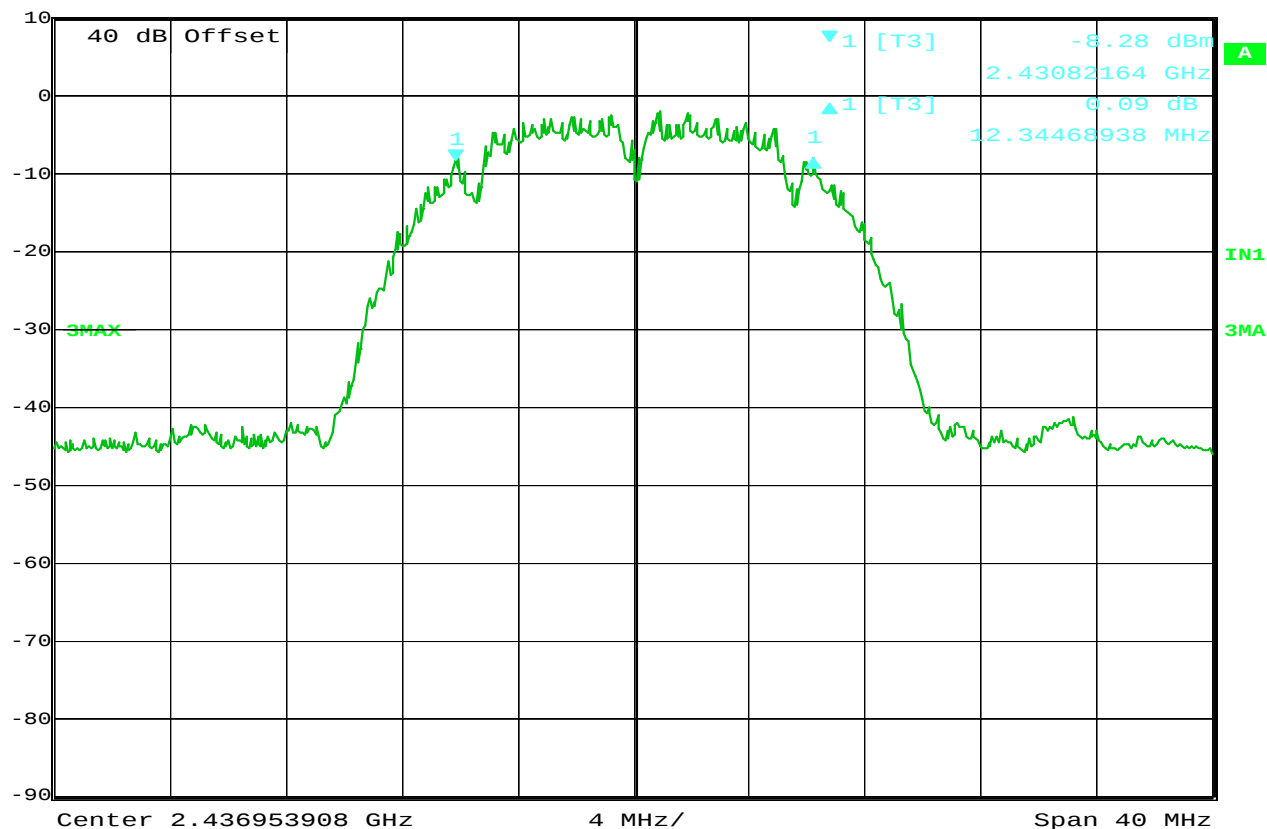
300 kHz

SWT

115 ms

Unit

dBm



Date: 21.SEP.2012 10:41:10

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow

MODEL NUMBER : LS01

TEST MODE : Channel 6, B 11Mbps

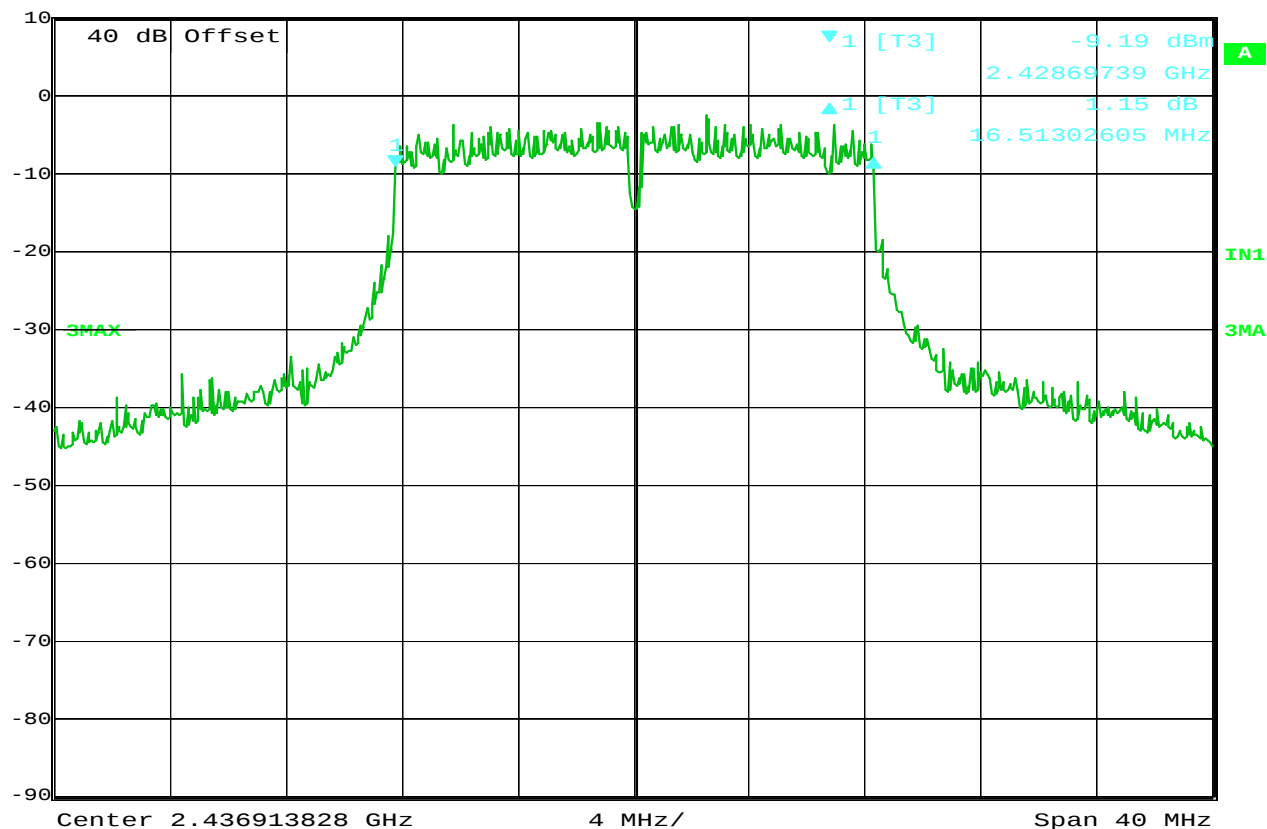
TEST PARAMETERS :

EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm Delta 1 [T3] 1.15 dB RBW 30 kHz RF Att 10 dB
16.51302605 MHz VBW 300 kHz Unit dBm
SWT 115 ms



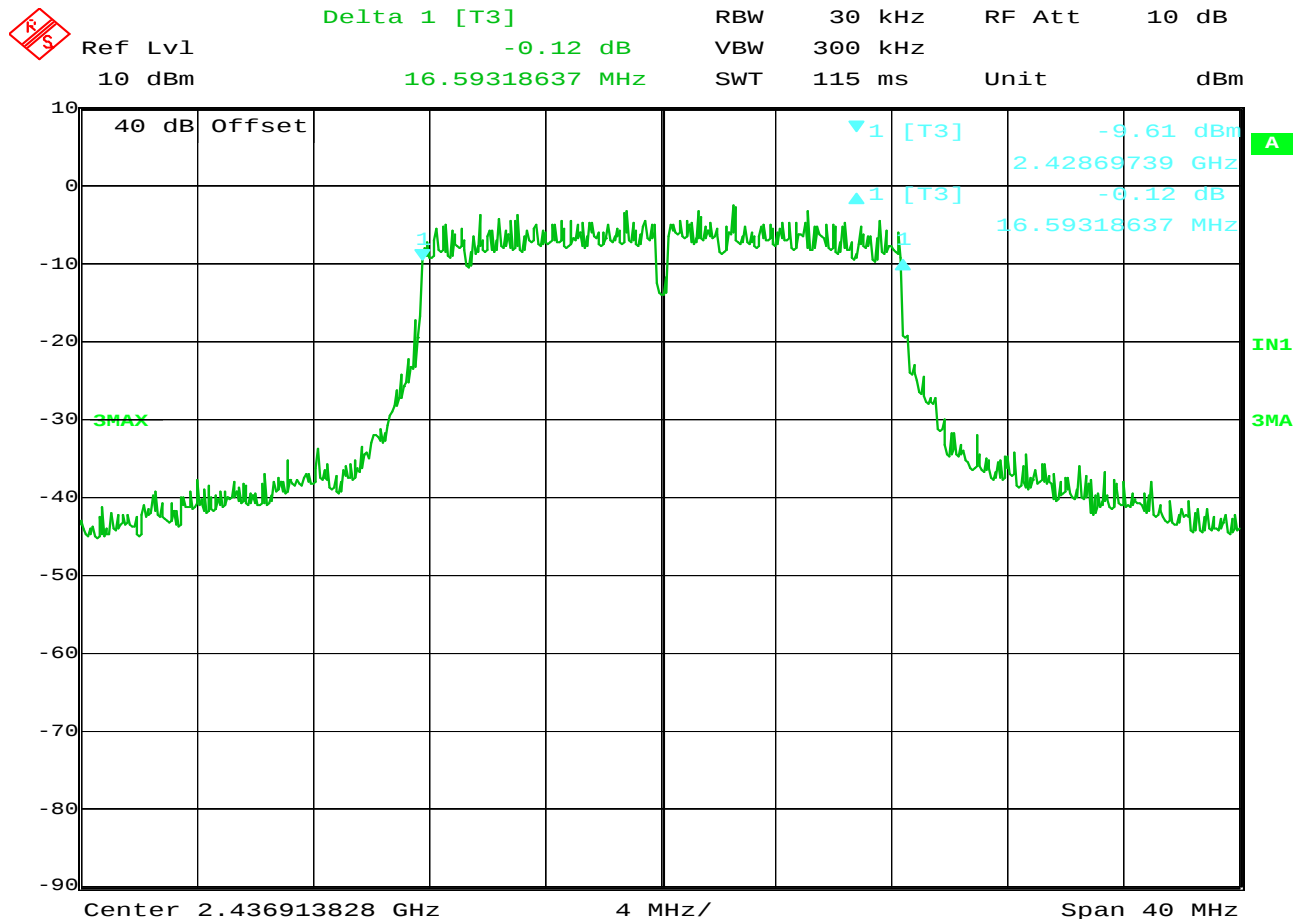
Date: 21.SEP.2012 10:44:20

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 6, G 6Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Date: 21.SEP.2012 10:53:53

15.247 6dB BandwidthMANUFACTURER : LifeShadow
MODEL NUMBER : LS01TEST MODE : Channel 6, G 9Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL**NOTES**

Ref Lvl
10 dBm

Delta 1 [T3]

2.16 dB

RBW

30 kHz

RF Att

10 dB

VBW

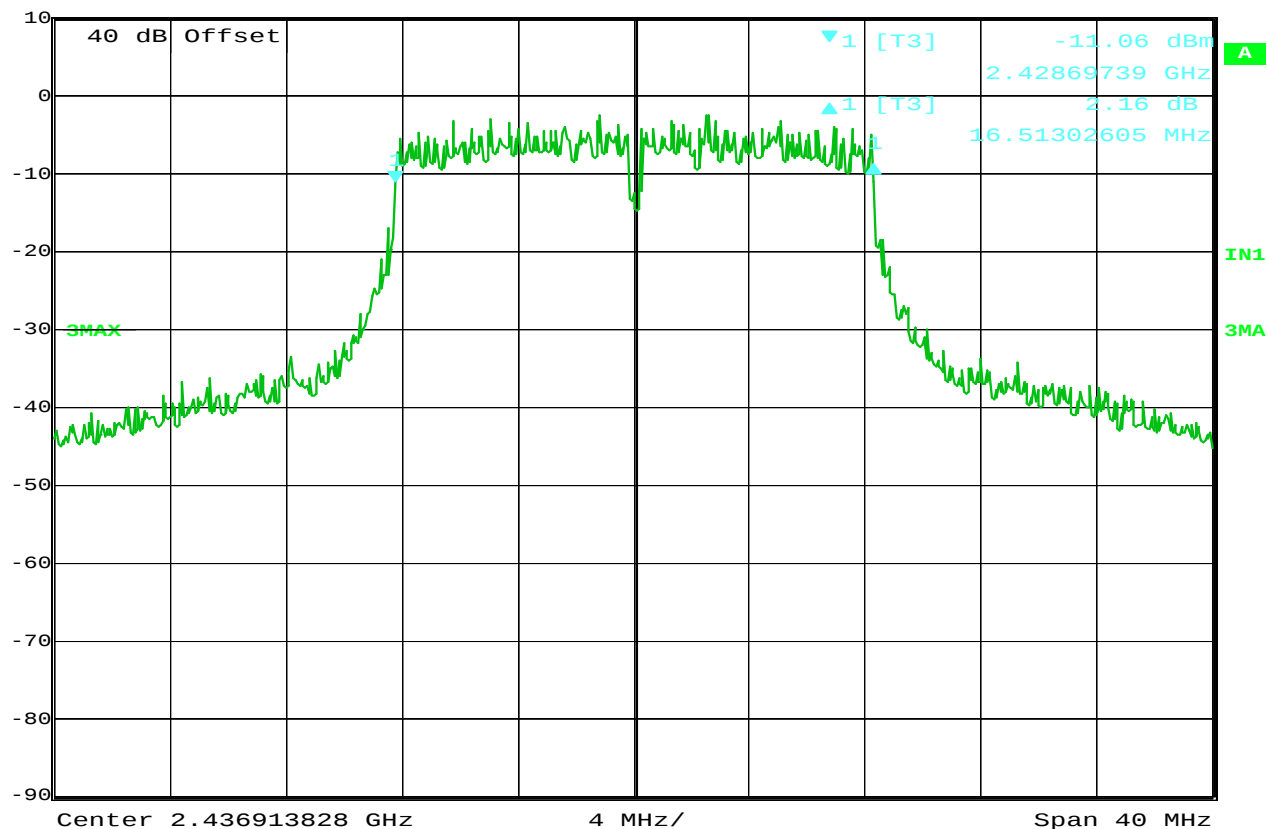
300 kHz

SWT

115 ms

Unit

dBm



Date: 21.SEP.2012 10:56:57

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow

MODEL NUMBER : LS01

TEST MODE : Channel 6, G 12Mbps

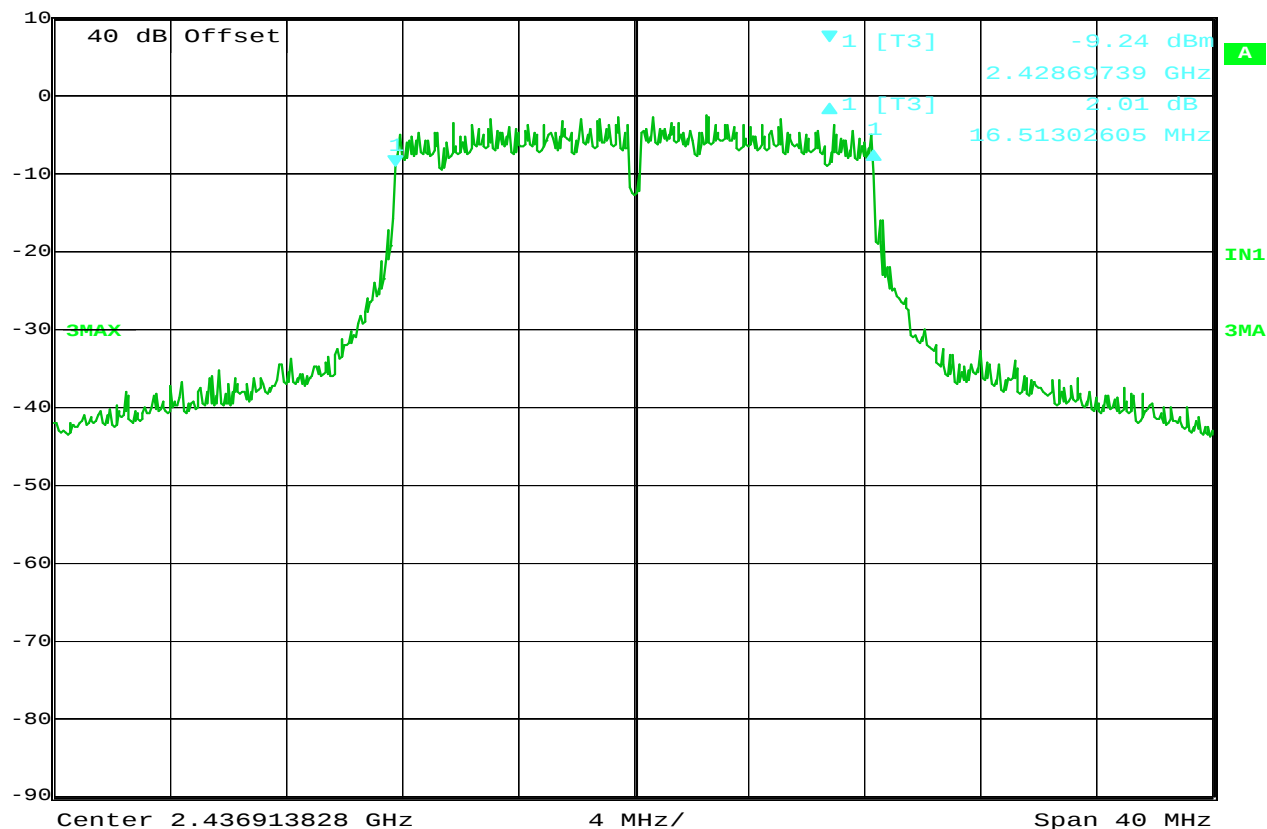
TEST PARAMETERS :

EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] 2.01 dB
16.51302605 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



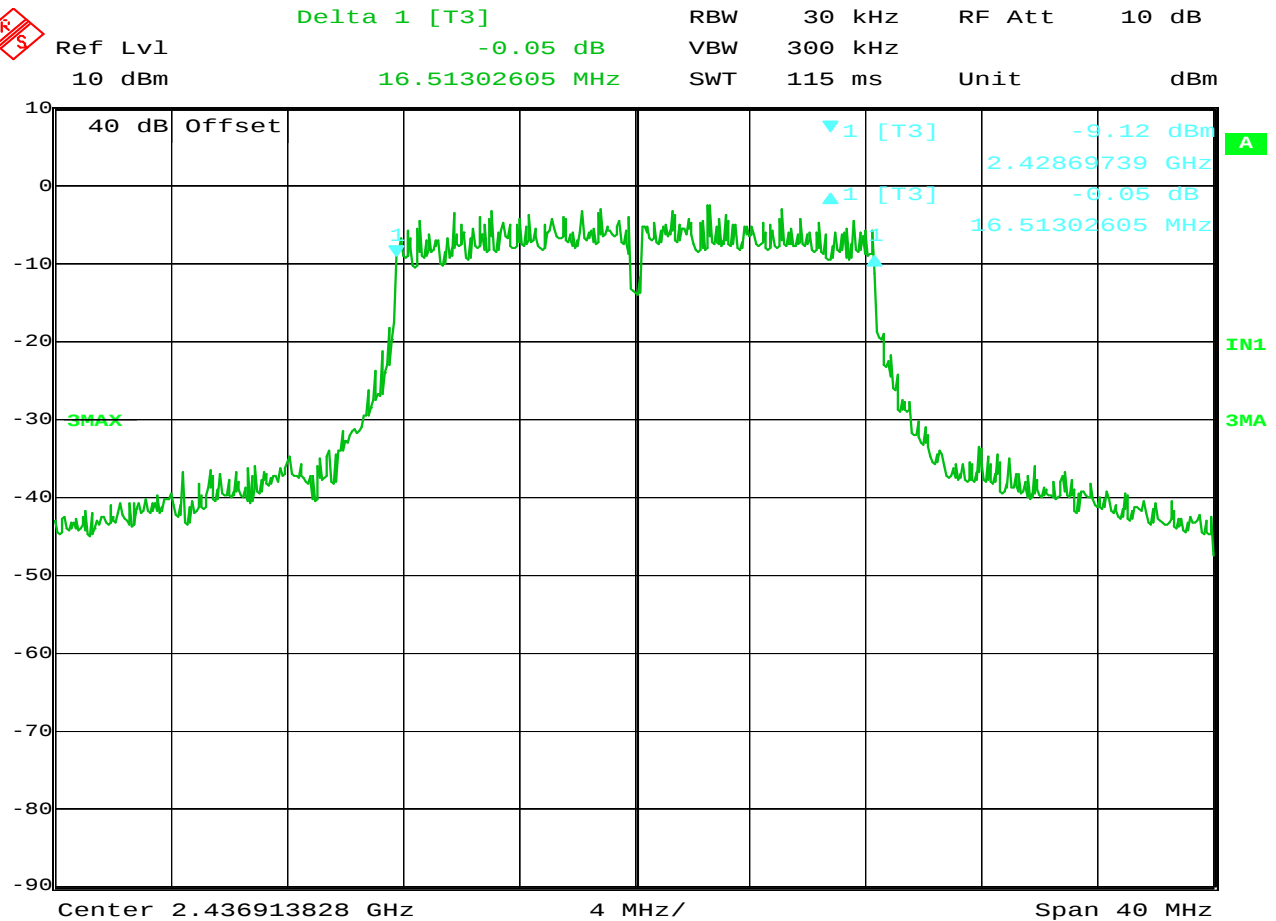
Date: 21.SEP.2012 11:08:48

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 6, G 18Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Date: 21.SEP.2012 11:12:41

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 6, G 24Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



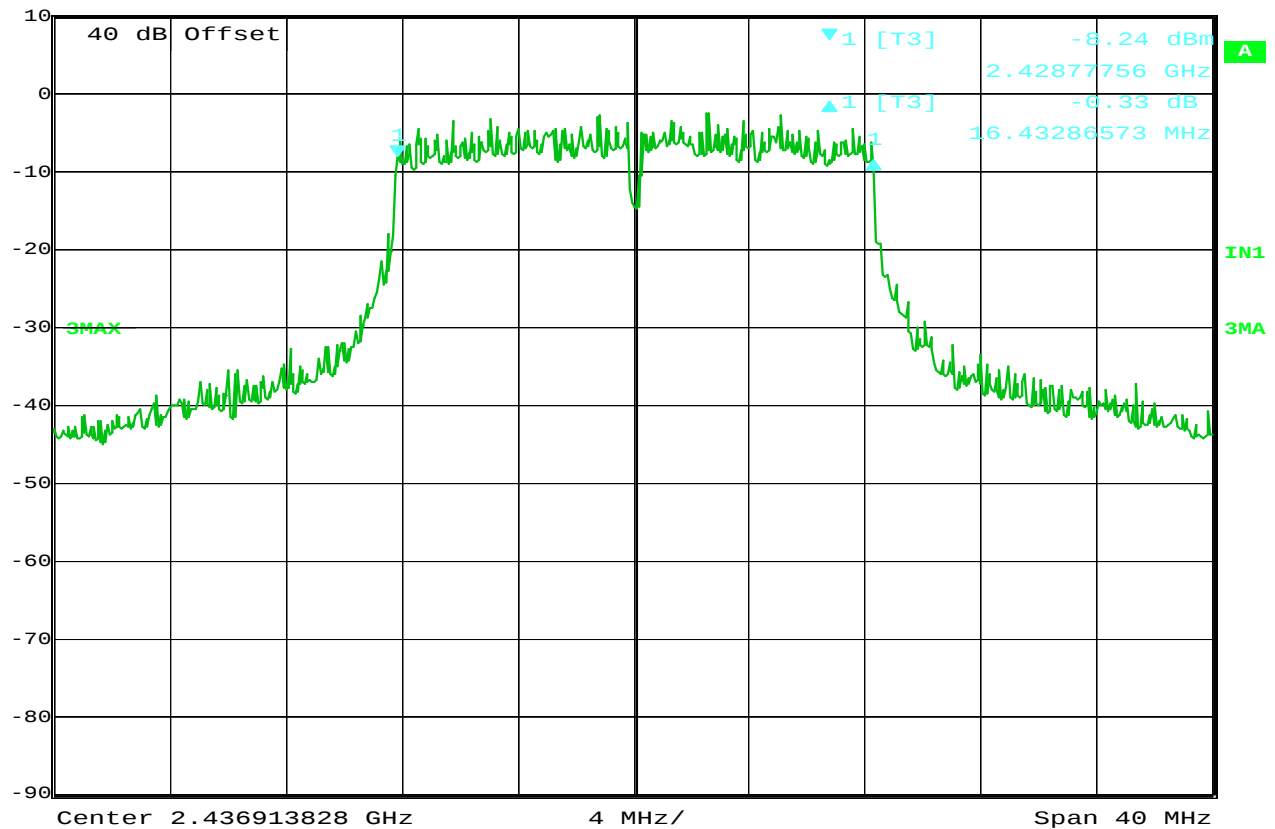
MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 6, G 36Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

Page 46 of 170



Ref Lvl 10 dBm
Delta 1 [T3] -0.33 dB
16.43286573 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 11:17:15

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01

TEST MODE : Channel 6, G 48Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES

Ref Lvl
10 dBm

Delta 1 [T3]

-0.47 dB

16.43286573 MHz

RBW

30 kHz

RF Att

10 dB

VBW

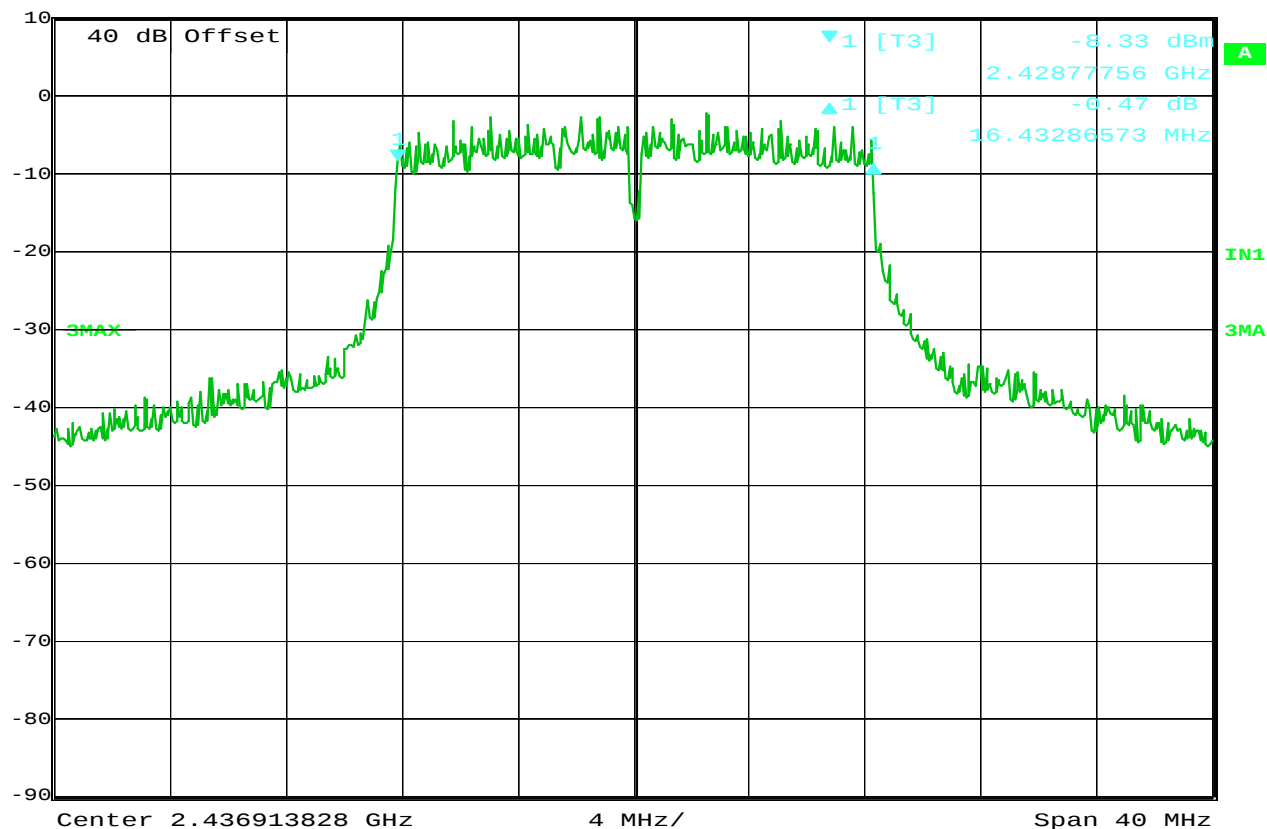
300 kHz

SWT

115 ms

Unit

dBm



Date: 21.SEP.2012 11:19:32

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 6, G 54Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES

Ref Lvl
10 dBm

Delta 1 [T3]

0.57 dB

RBW

30 kHz

RF Att

10 dB

VBW

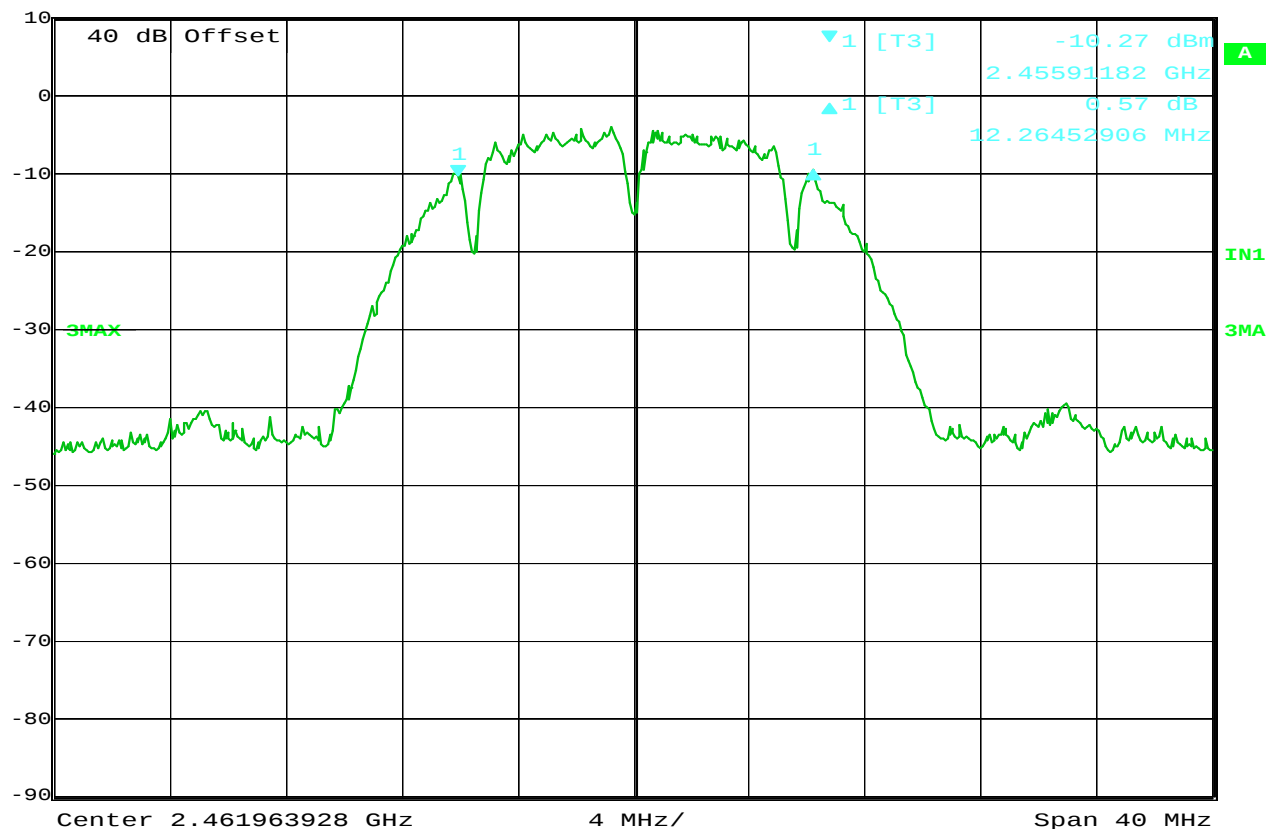
300 kHz

SWT

115 ms

Unit

dBm



Date: 21.SEP.2012 11:23:04

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, B 1Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES

Ref Lvl
10 dBm

Marker 1 [T3]

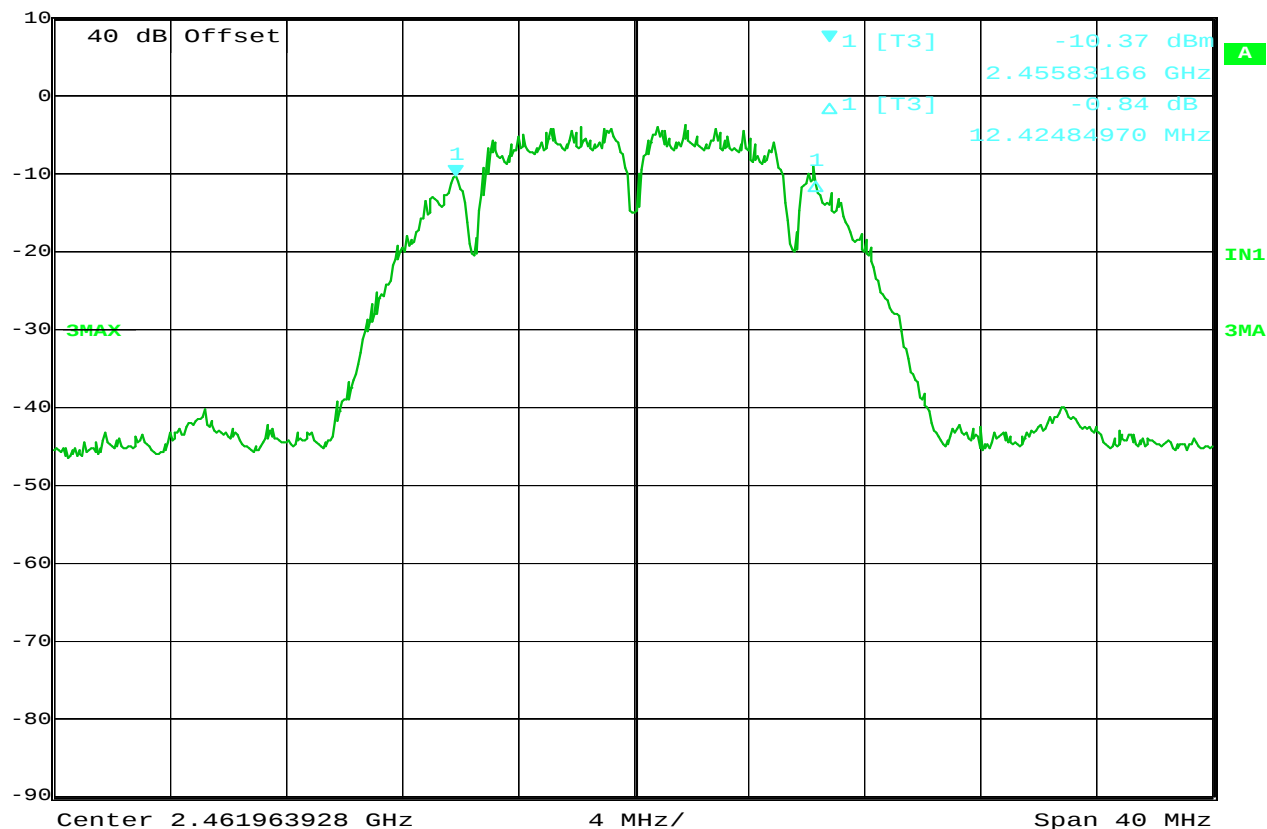
-10.37 dBm

2.45583166 GHz

RBW 30 kHz RF Att 10 dB

VBW 300 kHz

SWT 115 ms Unit dBm



Date: 21.SEP.2012 11:25:23

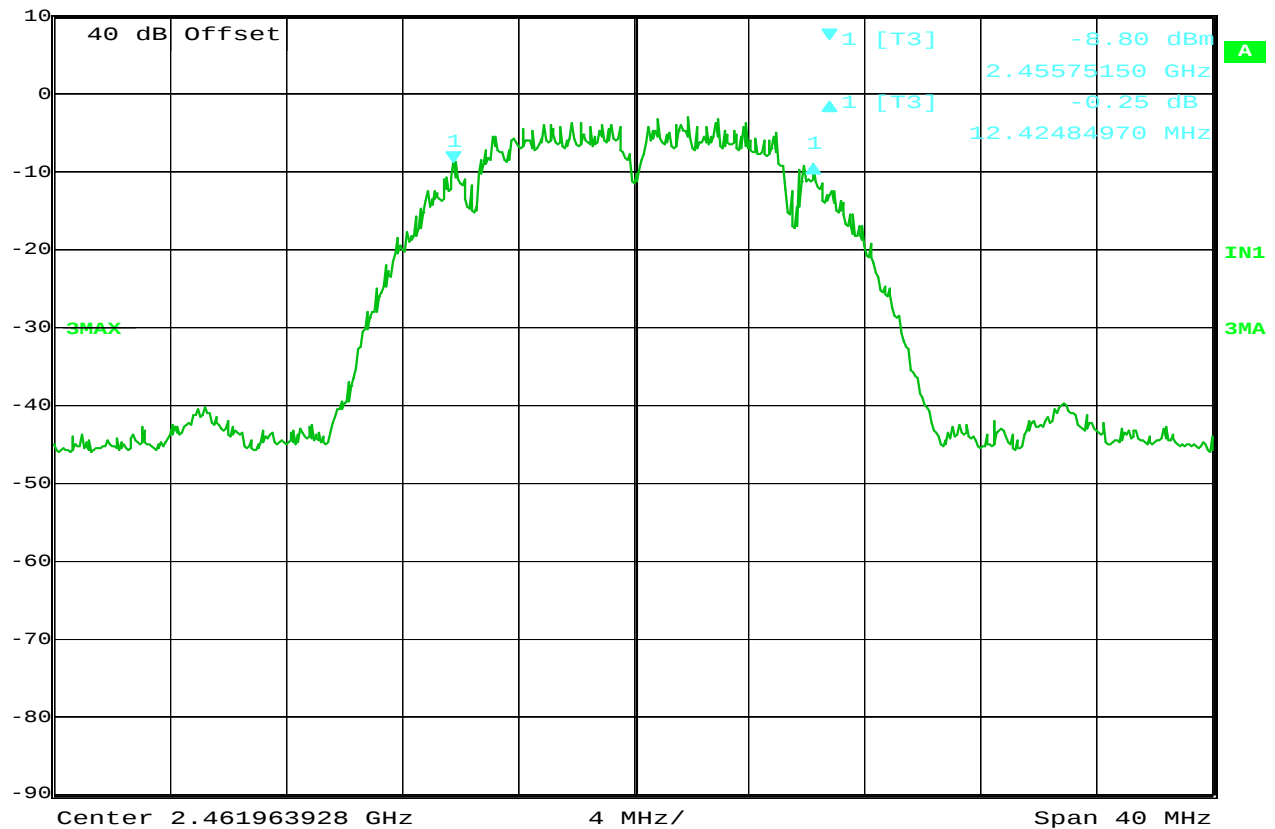
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, B 2Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] -0.25 dB
12.42484970 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 11:26:59

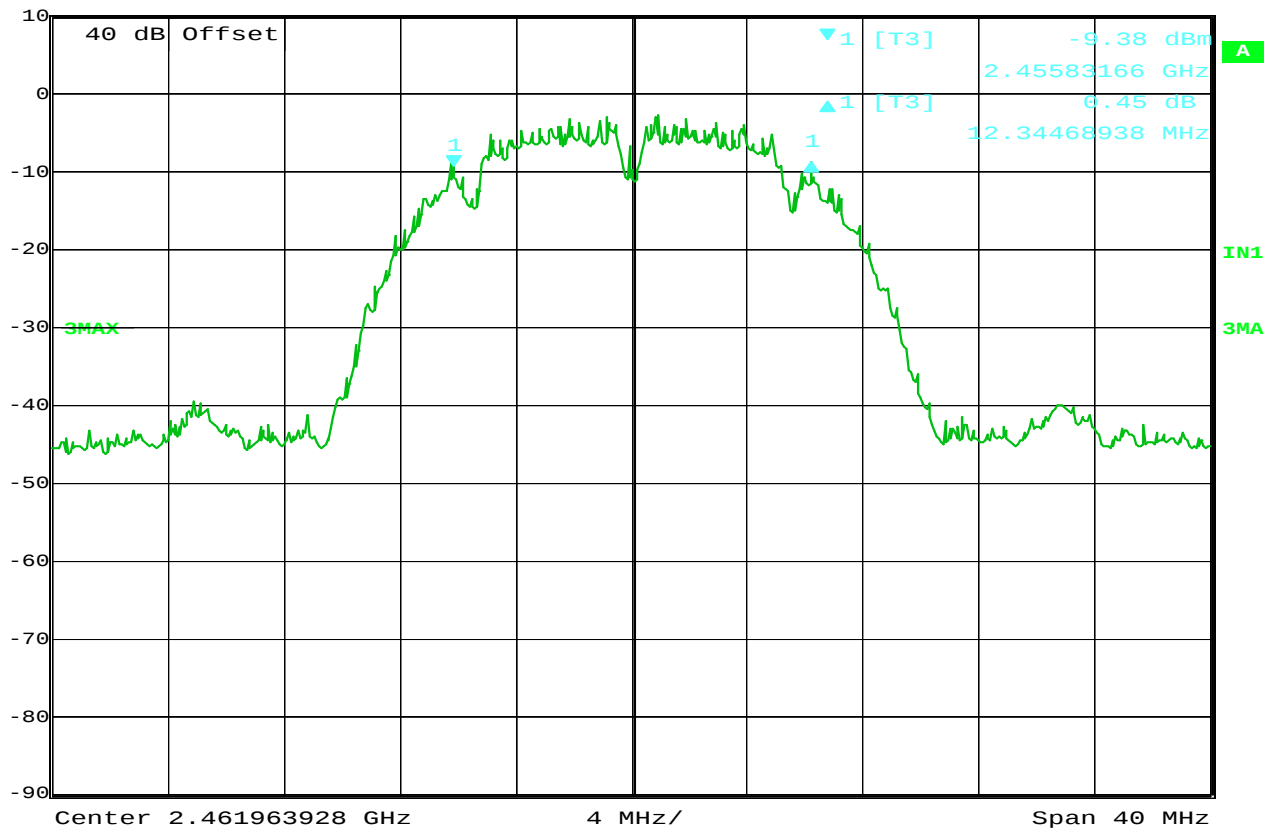
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, B 5.5Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Delta 1 [T3] RBW 30 kHz RF Att 10 dB
0.45 dB VBW 300 kHz
10 dBm 12.34468938 MHz SWT 115 ms Unit dBm



Date: 21.SEP.2012 11:28:46

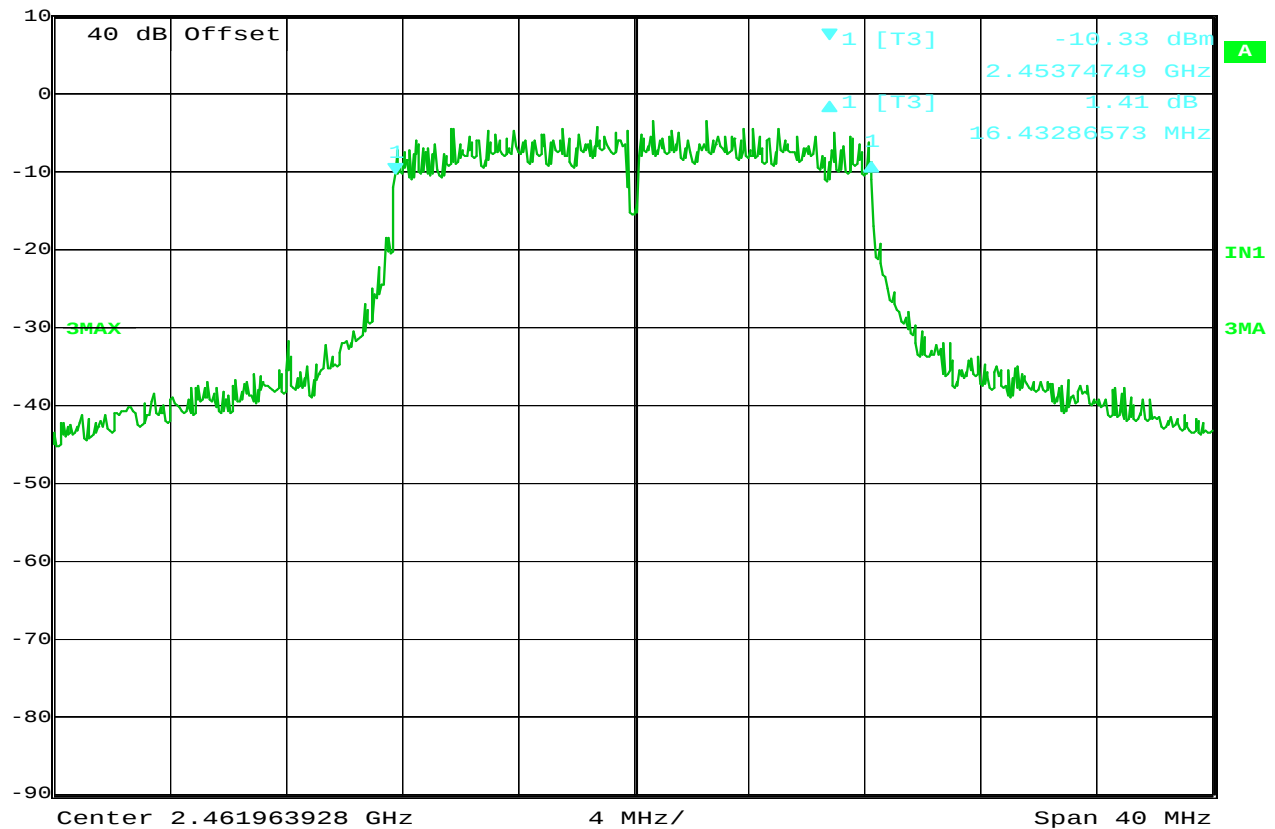
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, B 11Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] 1.41 dB
16.43286573 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 11:31:21

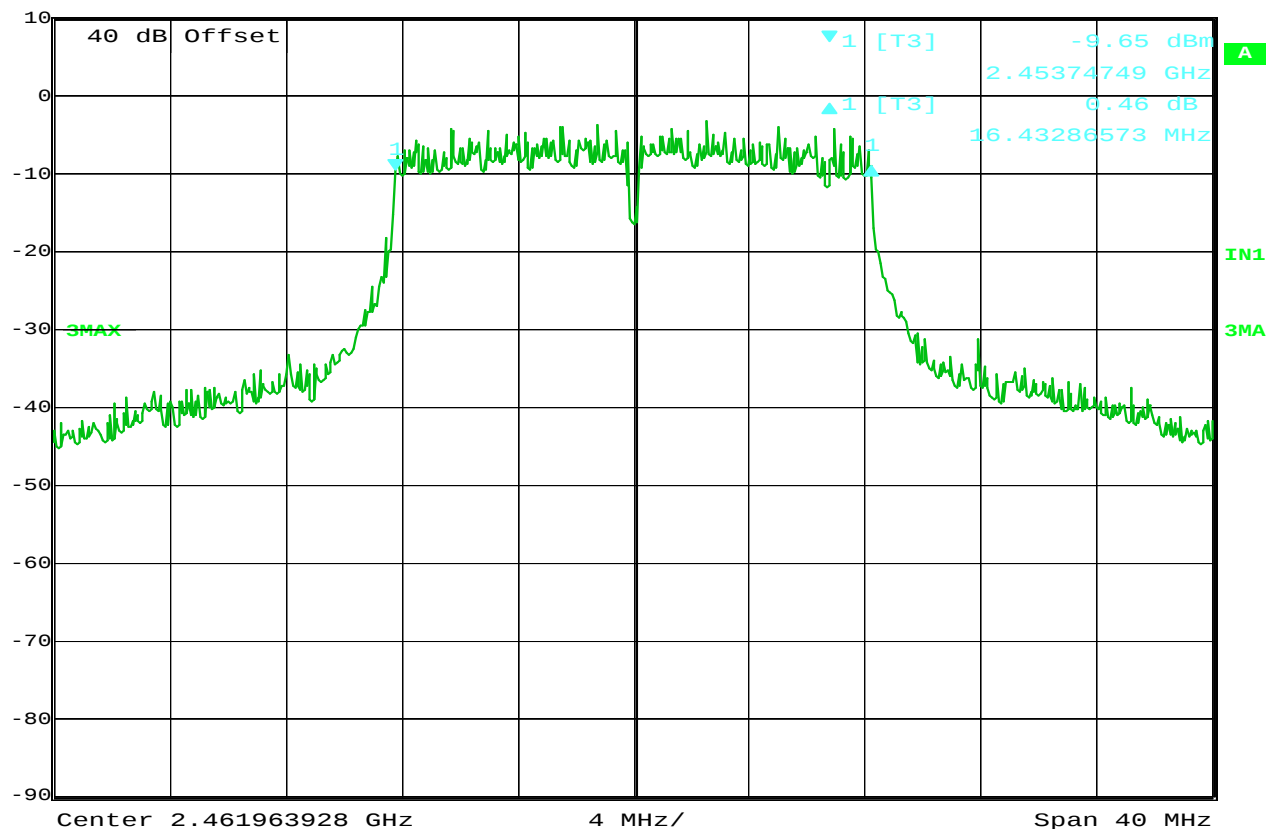
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, G 6Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] 0.46 dB
16.43286573 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm

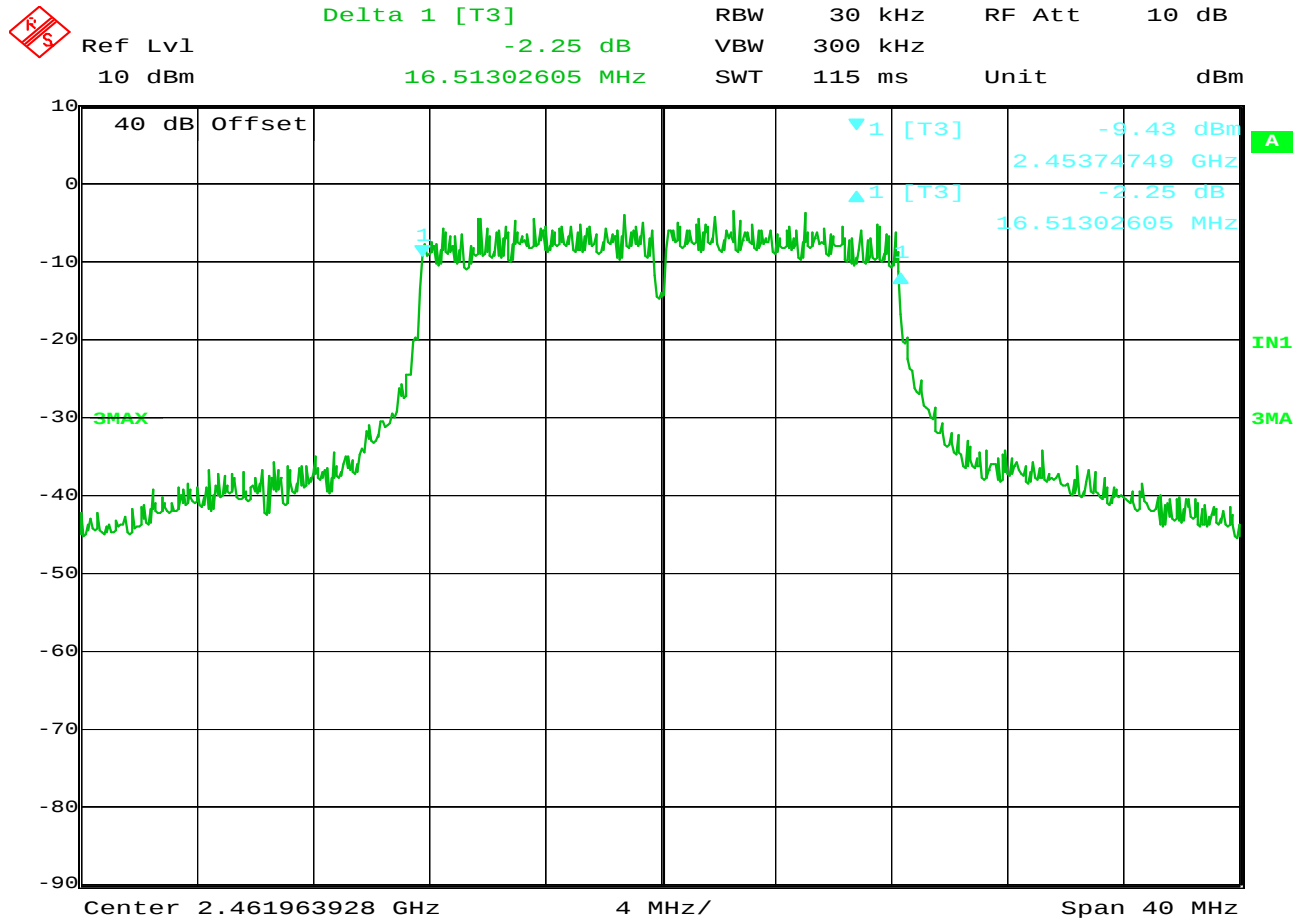


Date: 21.SEP.2012 11:33:13

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, G 9Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Date: 21.SEP.2012 11:35:16

15.247 6dB Bandwidth

```
MANUFACTURER   : LifeShadow
MODEL NUMBER    : LS01
TEST MODE       : Channel 11, G 12Mbps
TEST PARAMETERS :
EQUIPMENT USED  : RBB0, T2D7, T2DL
```

NOTES

Ref Lvl
10 dBm

Delta 1 [T3]

-0.67 dB

16.35270541 MHz

RBW

30 kHz

RF Att

10 dB

VBW

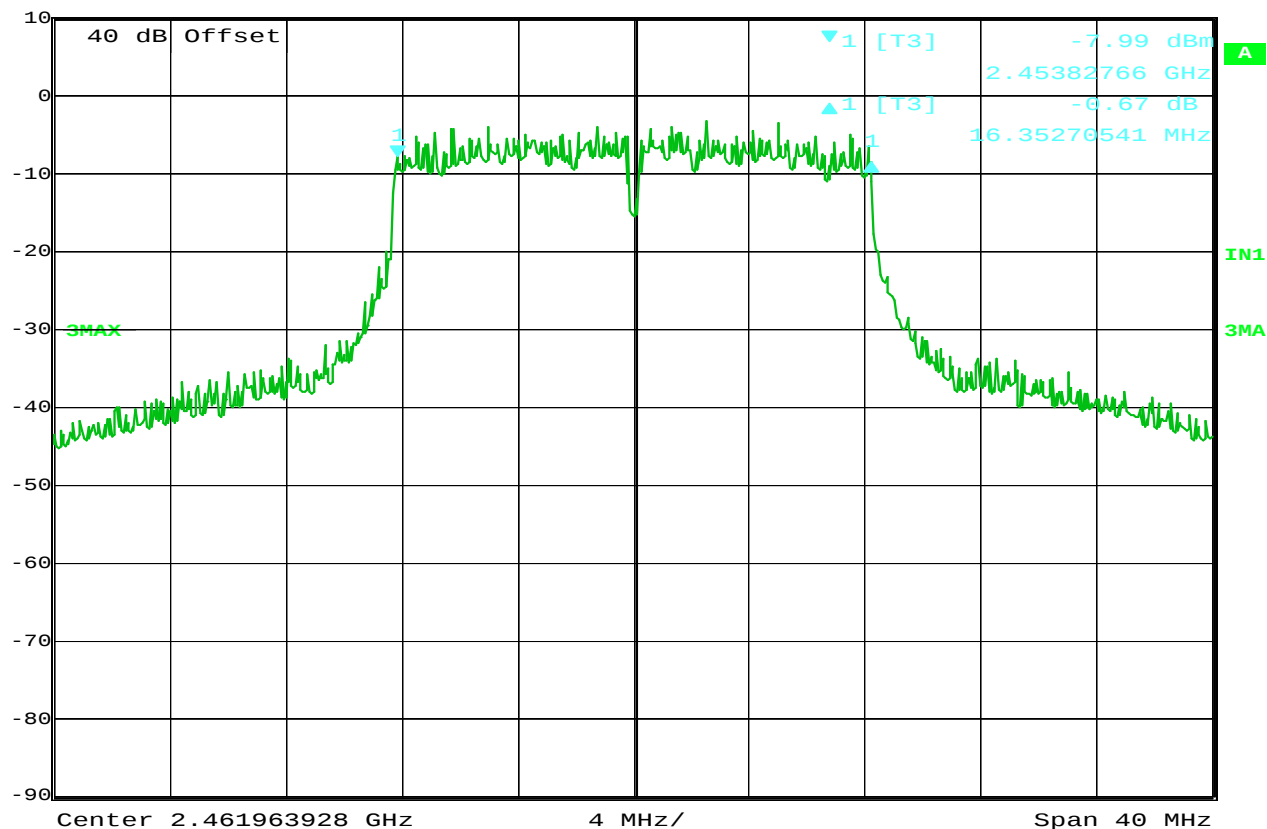
300 kHz

SWT

115 ms

Unit

dBm



Date: 21.SEP.2012 11:37:18

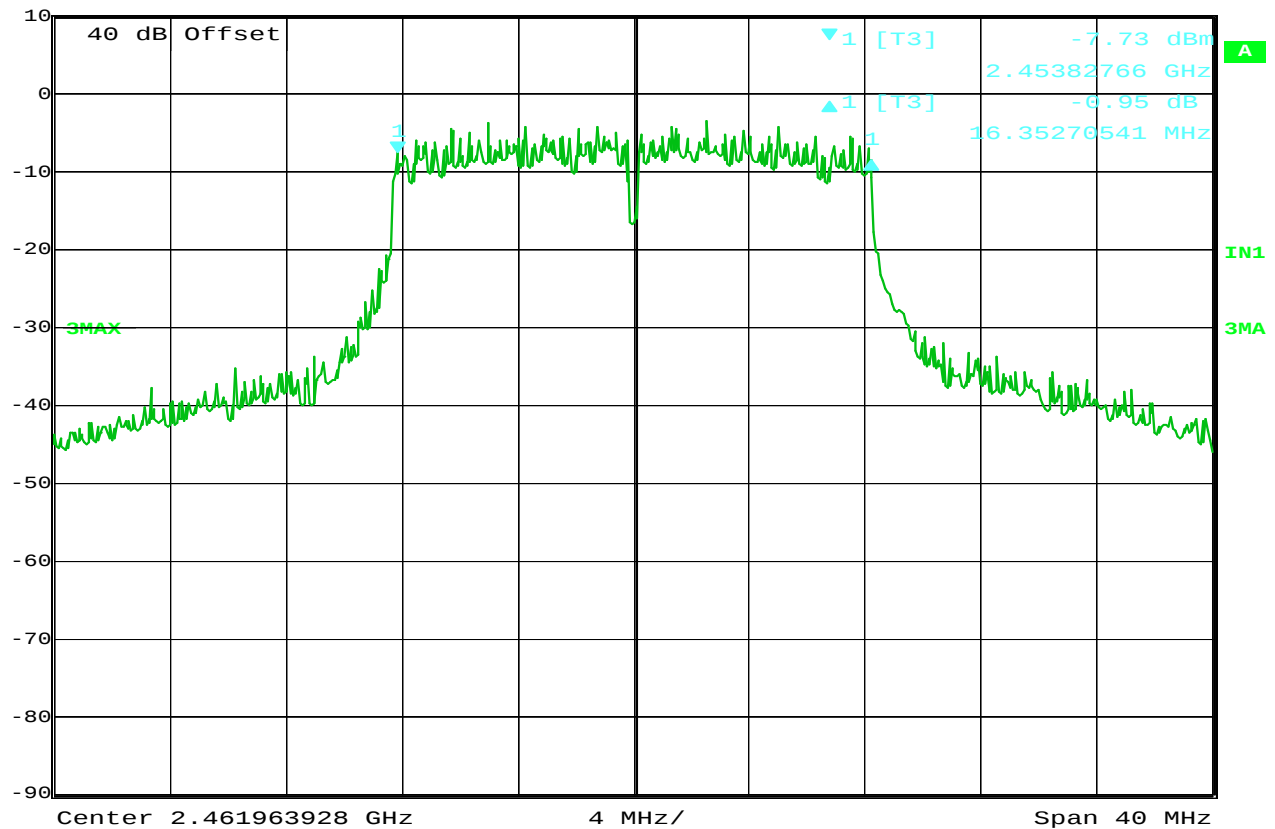
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, G 18Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Ref Lvl 10 dBm
Delta 1 [T3] -0.95 dB
16.35270541 MHz
RBW 30 kHz
VBW 300 kHz
SWT 115 ms
RF Att 10 dB
Unit dBm



Date: 21.SEP.2012 11:40:04

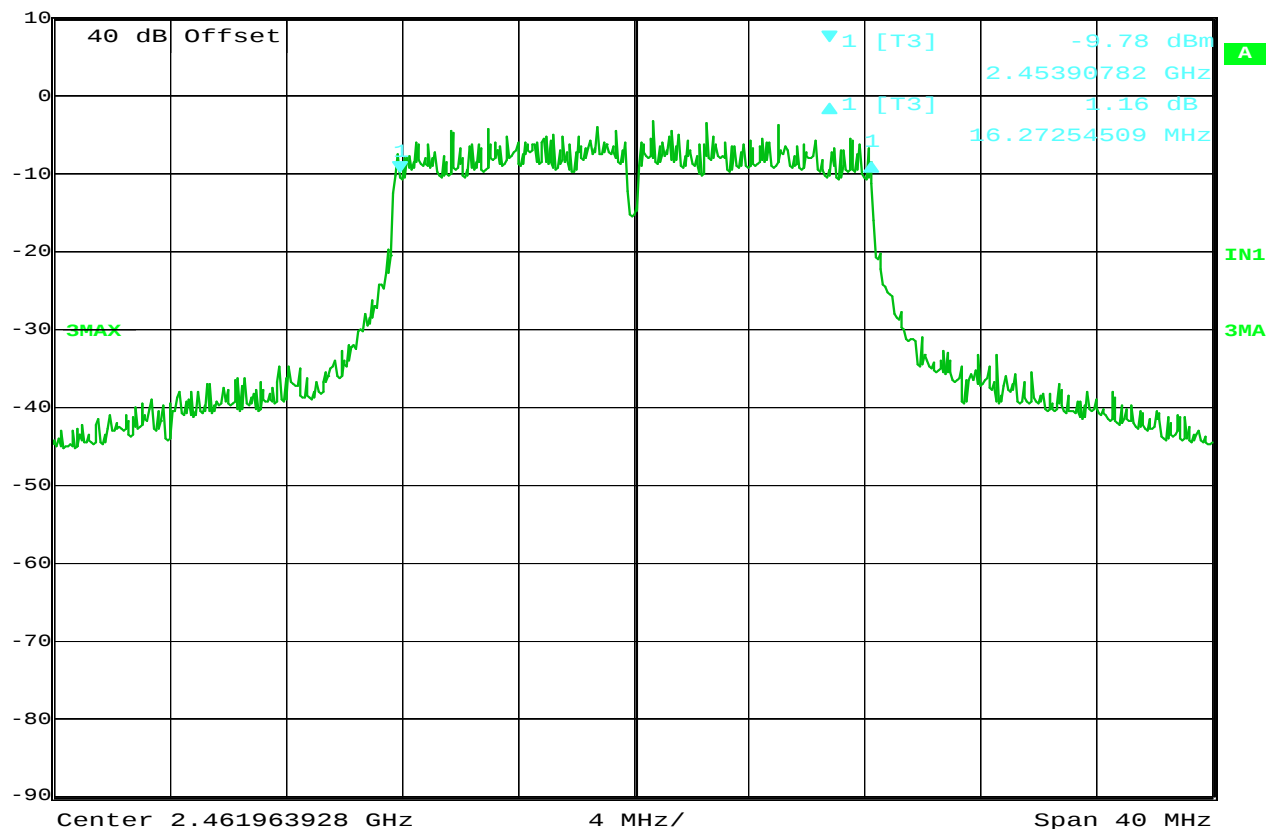
15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, G 24Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Delta 1 [T3] RBW 30 kHz RF Att 10 dB
Ref Lvl 1.16 dB VBW 300 kHz
10 dBm 16.27254509 MHz SWT 115 ms Unit dBm

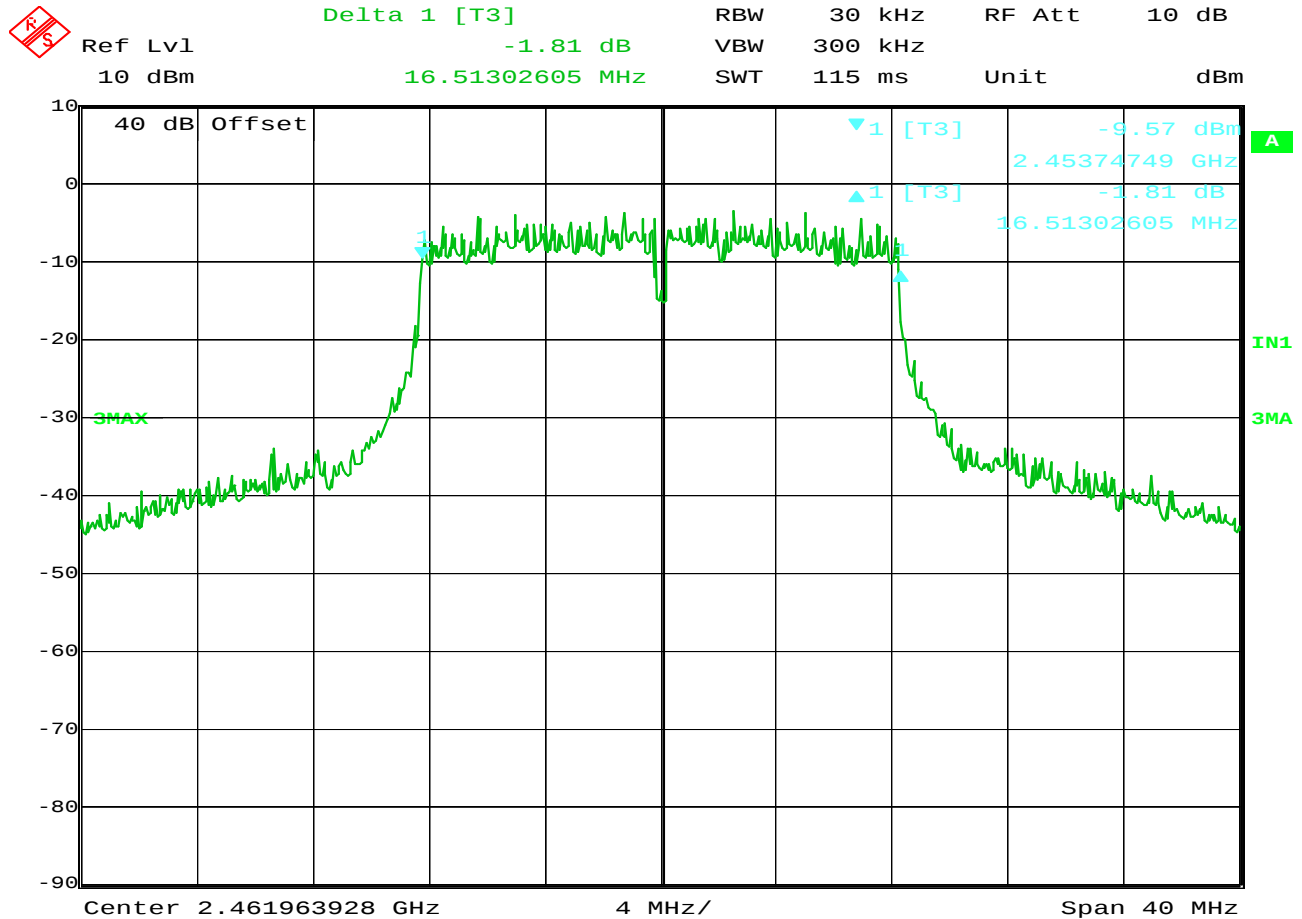


Date: 21.SEP.2012 11:42:35

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, G 36Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Date: 21.SEP.2012 11:45:00

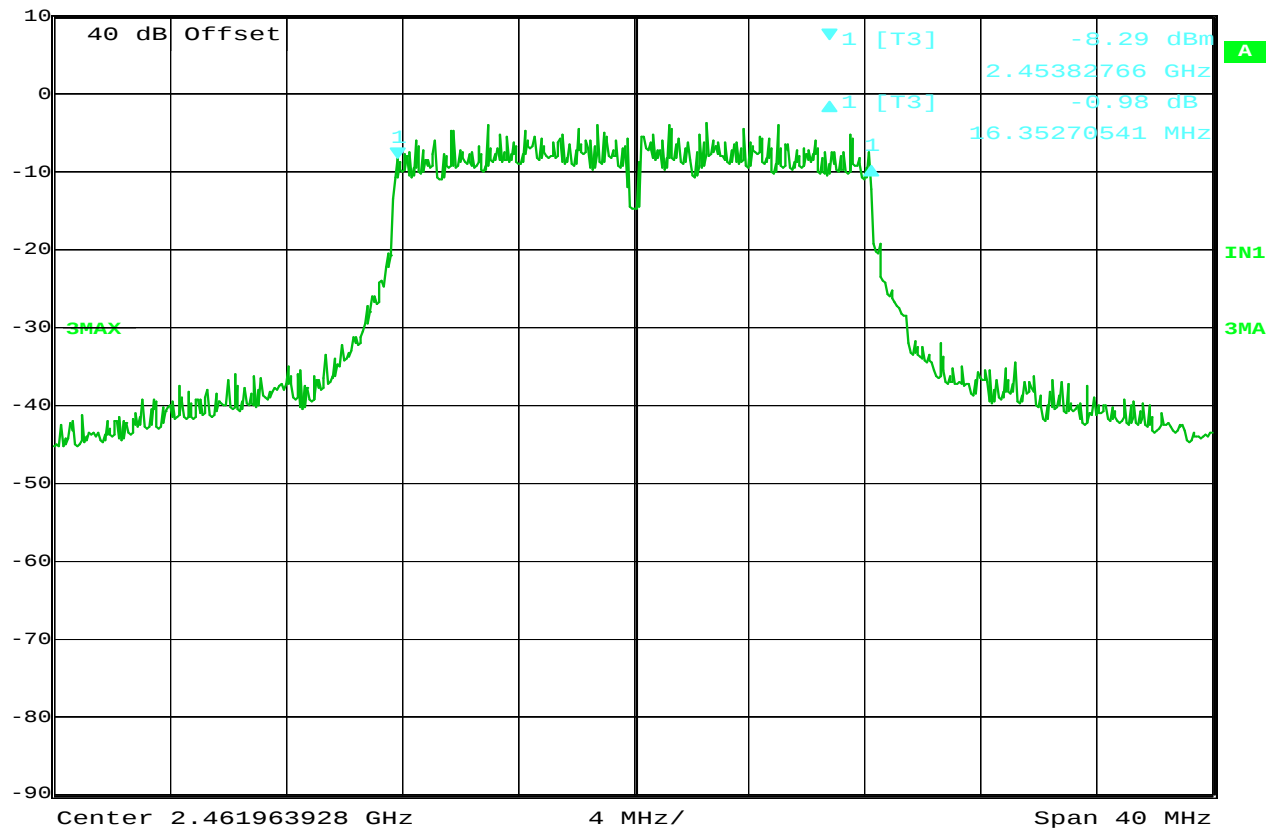
15.247 6dB Bandwidth

```
MANUFACTURER   : LifeShadow
MODEL NUMBER    : LS01
TEST MODE       : Channel 11, G 48Mbps
TEST PARAMETERS :
EQUIPMENT USED  : RBB0, T2D7, T2DL
```

NOTES



Ref Lvl 10 dBm Delta 1 [T3] -0.98 dB RBW 30 kHz RF Att 10 dB
16.35270541 MHz VBW 300 kHz Unit dBm
SWT 115 ms



Date: 21.SEP.2012 11:47:57

15.247 6dB Bandwidth

MANUFACTURER : LifeShadow
MODEL NUMBER : LS01
TEST MODE : Channel 11, G 54Mbps
TEST PARAMETERS :
EQUIPMENT USED : RBB0, T2D7, T2DL

NOTES



Manufacturer : Life Shadow, LLC.
Test Item : Radio Module
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, EIRP
Date : September 28, 2012
Notes : Battery Operated

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Freq. (MHz)	Data Rate	Ant Pol	Wide BW Meter Reading (dBuV)	Matched Sig. Gen. Reading (dB)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2412	11MBps b	H	80.6	7.6	8.0	2.8	12.9	36.0	-23.1
2412	11MBps b	V	78.0	7.4	8.0	2.8	12.6	36.0	-23.4
2412	54MBps g	H	86.6	13.6	8.0	2.8	18.9	36.0	-17.1
2412	54MBps g	V	72.5	1.9	8.0	2.8	7.1	36.0	-28.9

Checked BY RICHARD E. KING :

Richard E. King



Manufacturer : Life Shadow, LLC.
Test Item : Radio Module
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, EIRP
Date : September 28, 2012
Notes : Battery Operated

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Freq. (MHz)	Data Rate	Ant Pol	Wide BW Meter Reading (dBuV)	Matched Sig. Gen. Reading (dB)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2437	11Mbps b	H	81.3	8.5	8.1	2.8	13.8	36.0	-22.2
2437	11Mbps b	V	75.9	5.6	8.1	2.8	10.9	36.0	-25.1
2437	54Mbps g	H	86.9	14.1	8.1	2.8	19.4	36.0	-16.6
2437	54Mbps g	V	77.1	6.8	8.1	2.8	12.1	36.0	-23.9

Checked BY RICHARD E. KING :

Richard E. King



Manufacturer : Life Shadow, LLC.
Test Item : Radio Module
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, EIRP
Date : September 28, 2012
Notes : Battery Operated

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Freq. (MHz)	Data Rate	Ant Pol	Wide BW Meter Reading (dBuV)	Matched Sig. Gen. Reading (dB)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2462	11MBps b	H	80.0	7.4	8.1	2.8	12.7	36.0	-23.3
2462	11MBps b	V	77.6	7.6	8.1	2.8	12.9	36.0	-23.1
2462	54MBps g	H	88.3	15.7	8.1	2.8	21.0	36.0	-15.0
2462	54MBps g	V	79.3	9.3	8.1	2.8	14.6	36.0	-21.4

Checked BY RICHARD E. KING :

Richard E. King



Manufacturer : Life Shadow, LLC.
Test Item : Radio Module
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, EIRP
Date : September 28, 2012
Notes : Connected to laptop

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Freq. (MHz)	Data Rate	Ant Pol	Wide BW Meter Reading (dBuV)	Matched Sig. Gen. Reading (dB)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2412	11Mbps b	H	80.8	7.8	8.0	2.8	13.1	36.0	-22.9
2412	11Mbps b	V	77.0	6.4	8.0	2.8	11.6	36.0	-24.4
2412	54Mbps g	H	85.3	12.3	8.0	2.8	17.6	36.0	-18.4
2412	54Mbps g	V	78.1	7.5	8.0	2.8	12.7	36.0	-23.3

Checked BY RICHARD E. KING :

Richard E. King



Manufacturer : Life Shadow, LLC.
Test Item : Radio Module
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, EIRP
Date : September 28, 2012
Notes : Connected to laptop

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Freq. (MHz)	Data Rate	Ant Pol	Wide BW Meter Reading (dBuV)	Matched Sig. Gen. Reading (dB)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2437	11Mbps b	H	80.4	7.6	8.1	2.8	12.9	36.0	-23.1
2437	11Mbps b	V	76.6	6.3	8.1	2.8	11.6	36.0	-24.4
2437	54Mbps g	H	86.1	13.3	8.1	2.8	18.6	36.0	-23.6
2437	54Mbps g	V	77.7	7.4	8.1	2.8	12.7	36.0	-23.9

Checked BY RICHARD E. KING :

Richard E. King



Manufacturer : Life Shadow, LLC.
Test Item : Radio Module
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, EIRP
Date : September 28, 2012
Notes : Connected to laptop

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Freq. (MHz)	Data Rate	Ant Pol	Wide BW Meter Reading (dBuV)	Matched Sig. Gen. Reading (dB)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2462	11MBps b	H	79.9	7.3	8.1	2.8	12.6	36.0	-23.4
2462	11MBps b	V	75.0	5.0	8.1	2.8	10.3	36.0	-25.7
2462	54MBps g	H	86.5	13.9	8.1	2.8	19.2	36.0	-16.8
2462	54MBps g	V	78.2	8.2	8.1	2.8	13.5	36.0	-22.5

Checked BY RICHARD E. KING :

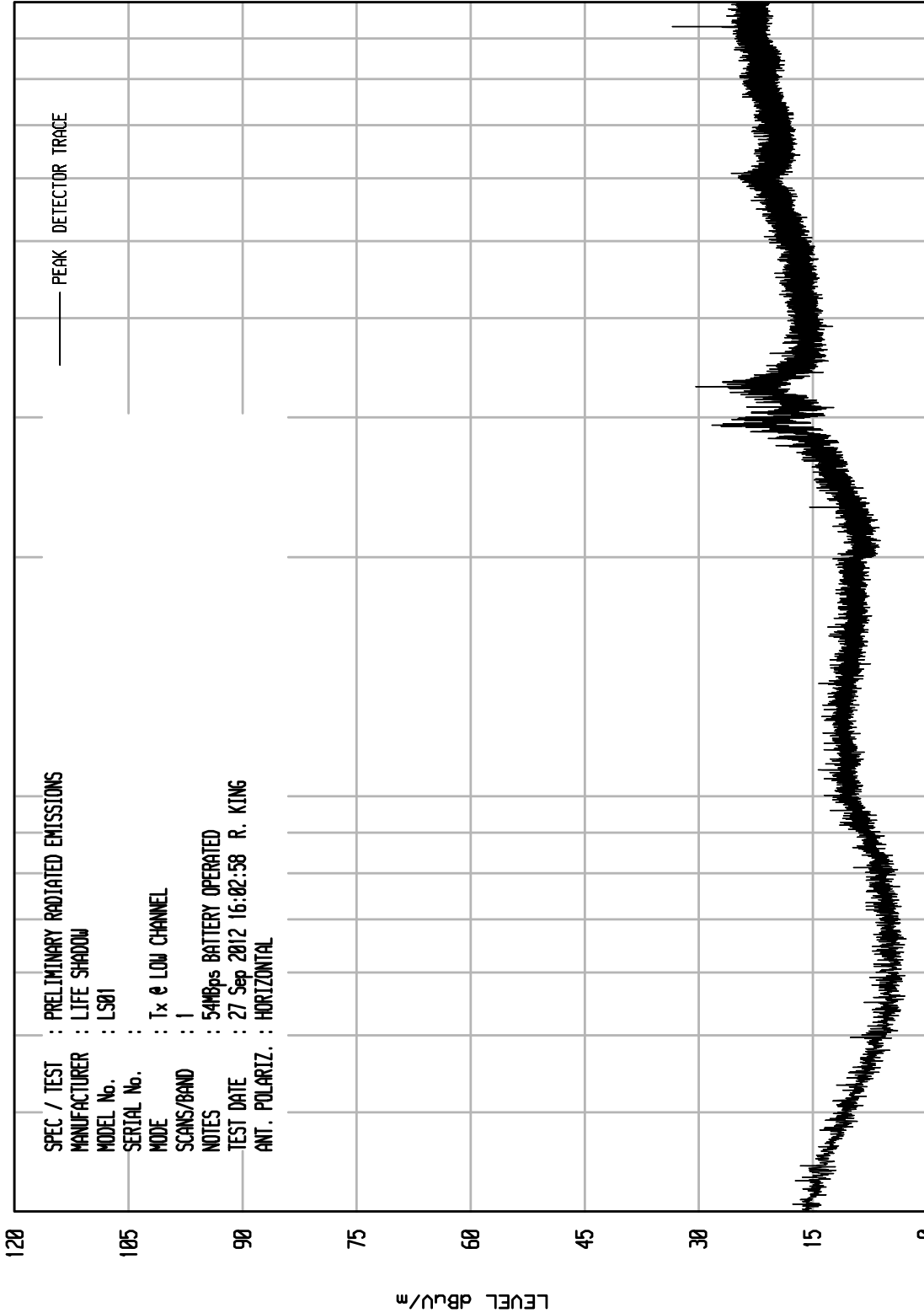
Richard E. King

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITV RCV EMI RUN 32

UKA1 04/26/11

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps BATTERY OPERATED
TEST DATE : 27 Sep 2012 16:02:58 R. KING
ANT. POLARIZ. : HORIZONTAL



STOP = 1000

FREQUENCY MHz

100

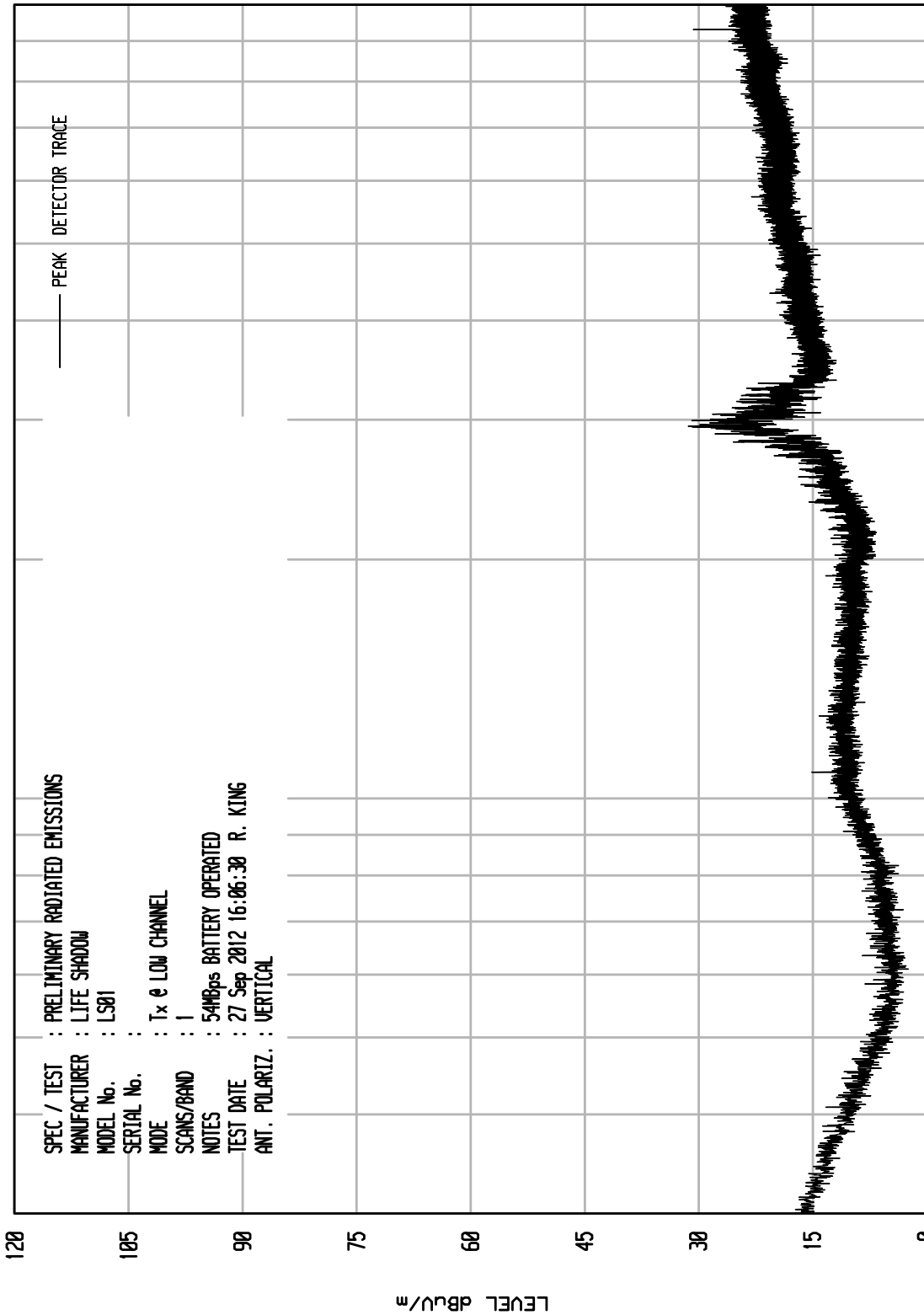
START = 30

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITV RCV EMI RUN 33

UKA1 04/26/11

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps BATTERY OPERATED
TEST DATE : 27 Sep 2012 16:06:30 R. KING
ANT. POLARIZ. : VERTICAL



STOP = 1000

FREQUENCY MHz

100

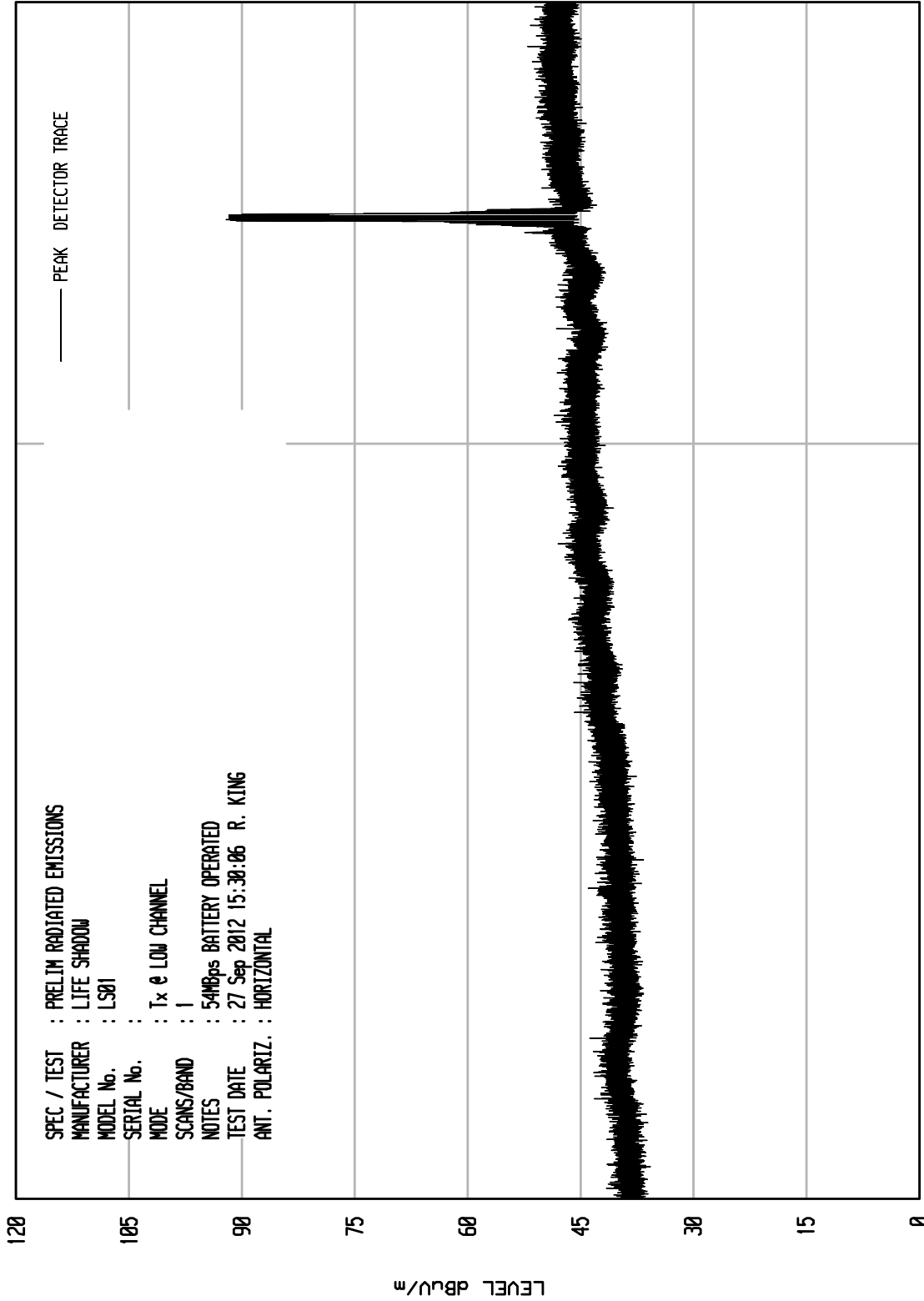
START = 30



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 27



STOP = 3000

FREQUENCY MHz

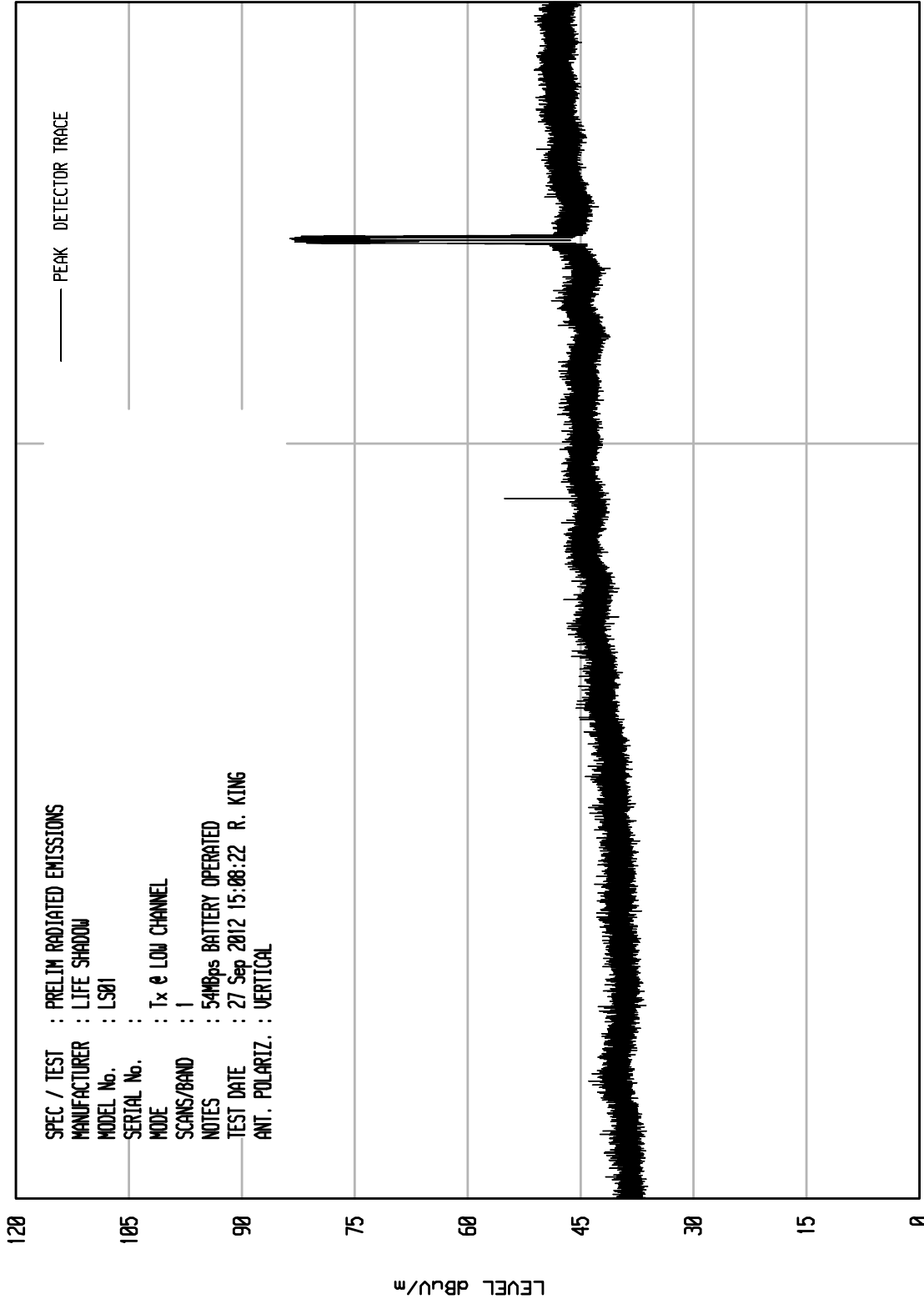
START = 1000



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 20



STOP = 3000

FREQUENCY MHz

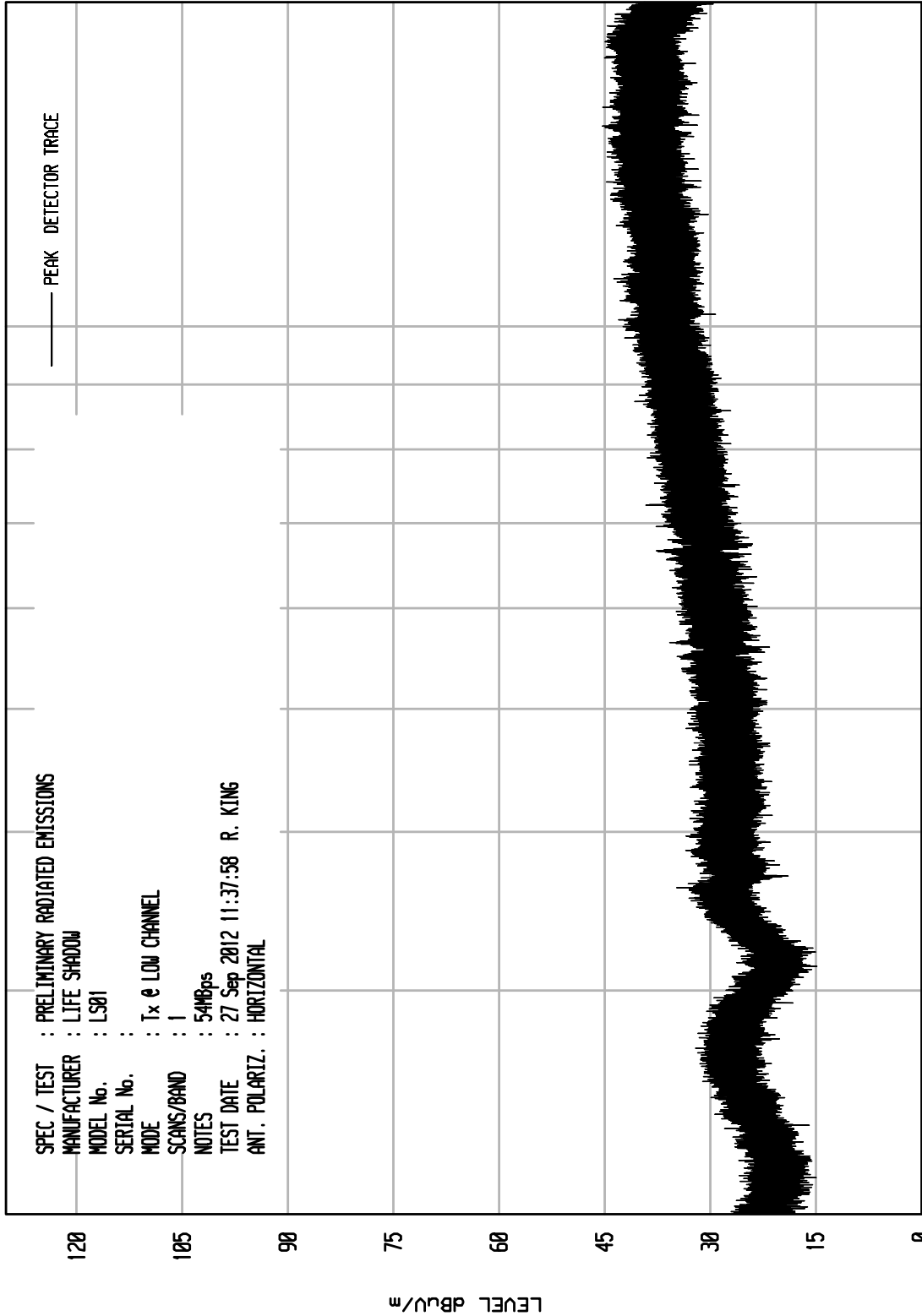
START = 1000



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UKA1 04/26/11

UNITV RCV EMI RUN 5



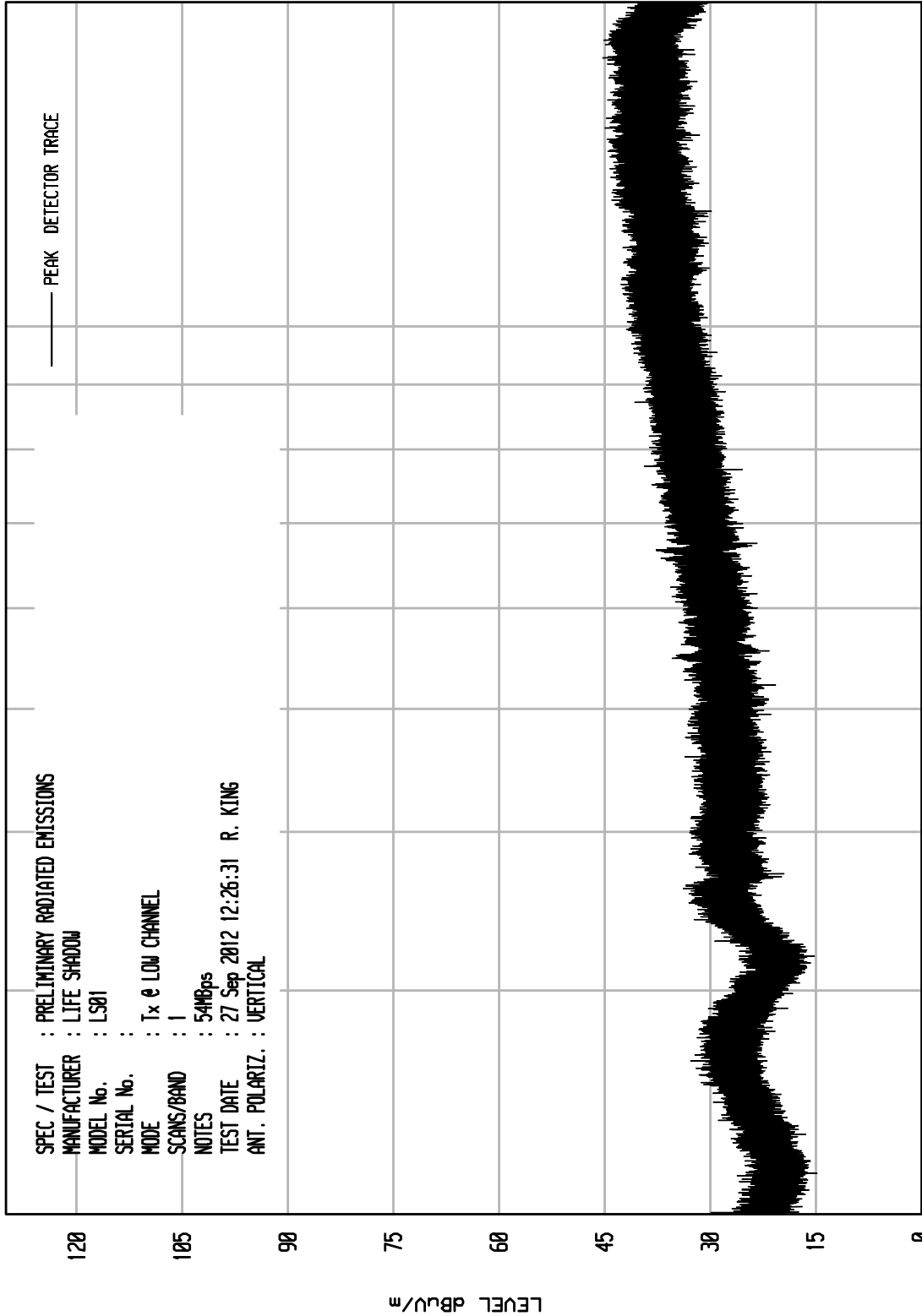


ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 6

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps
TEST DATE : 27 Sep 2012 12:26:31 R. KING
ANT. POLARIZ. : VERTICAL



START = 2000

10000

FREQUENCY MHz

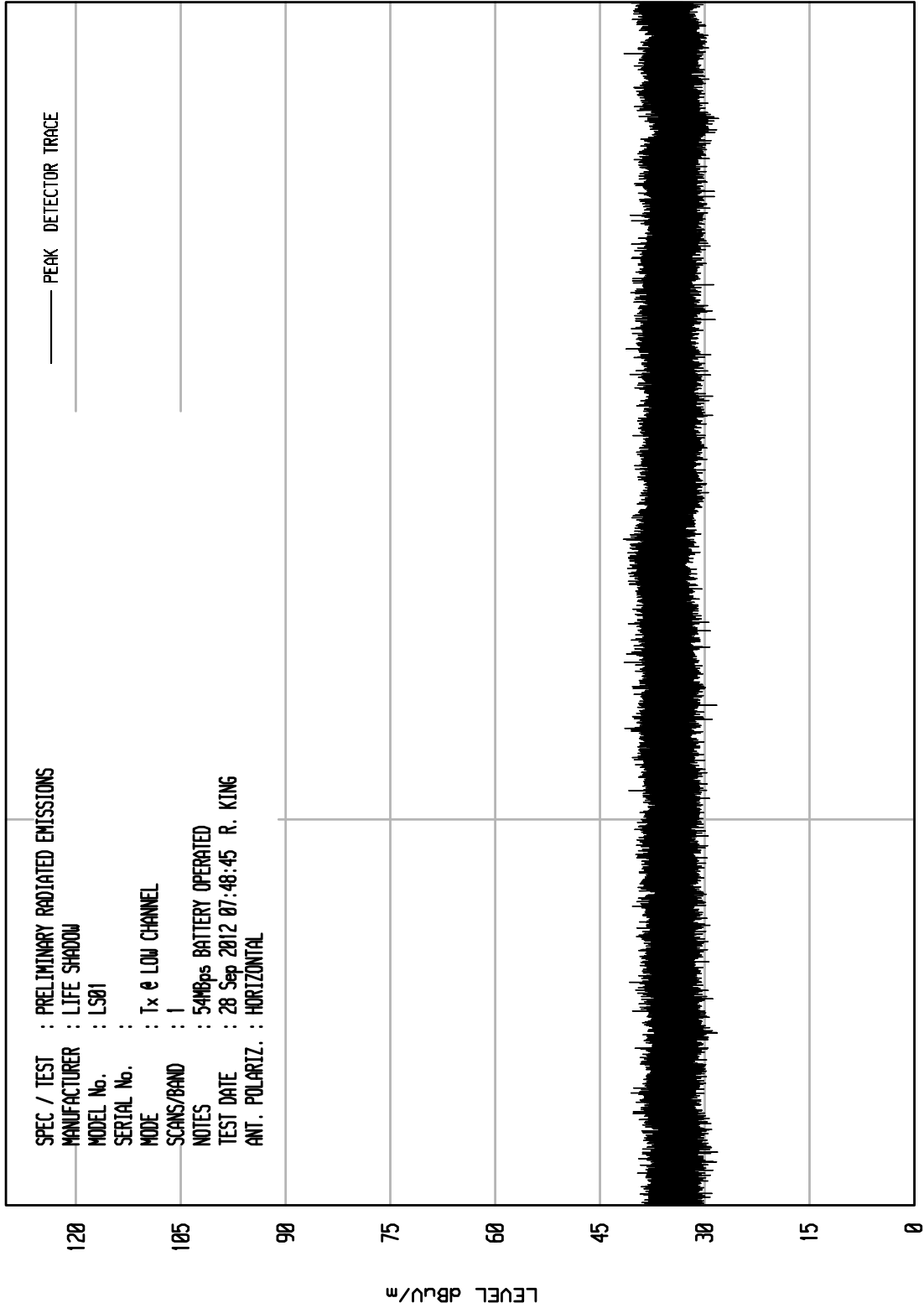
STOP = 18000



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UKA1 04/26/11

UNITV RCV EMI RUN 52



START = 18000

FREQUENCY MHz

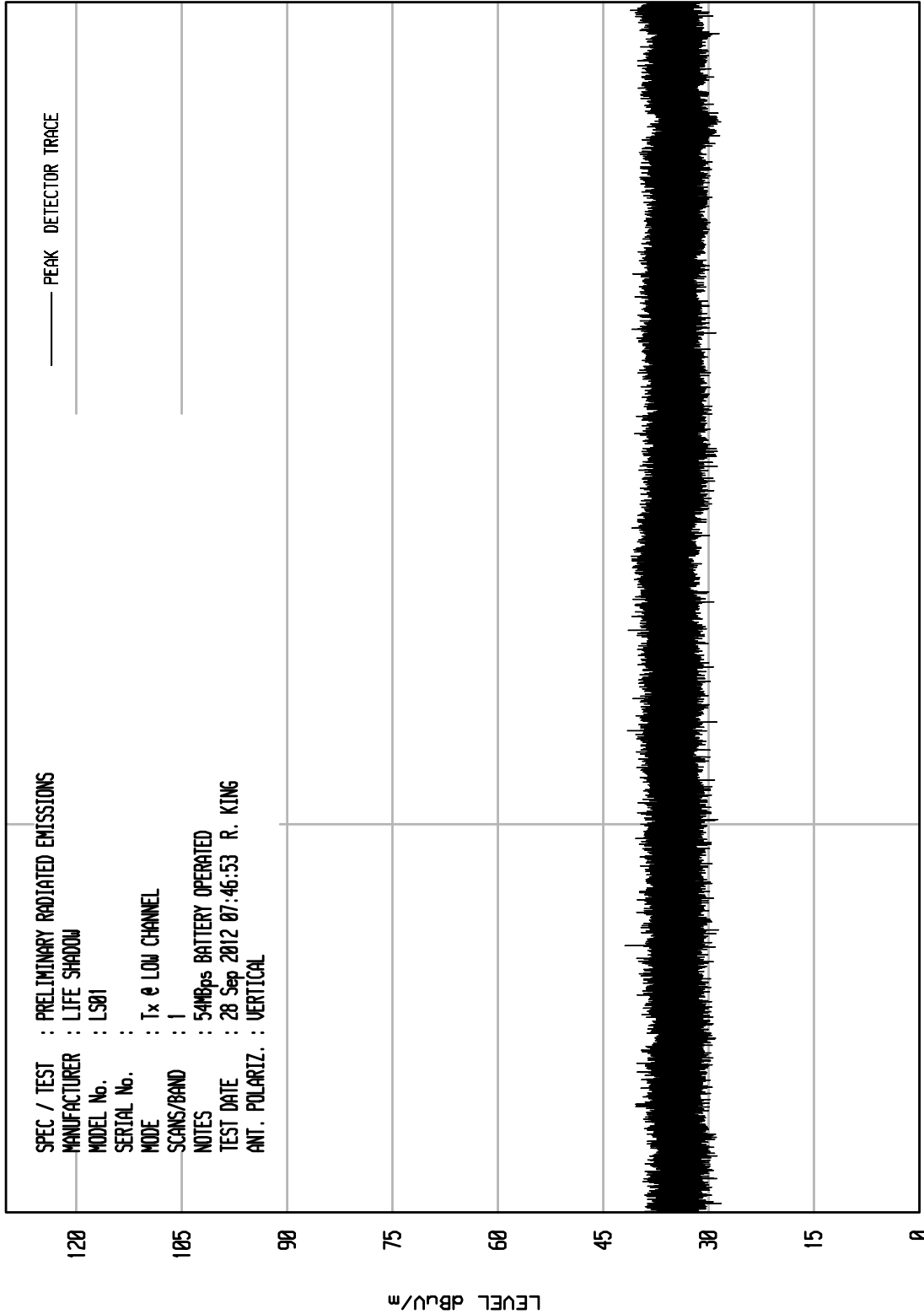
STOP = 25000



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 51



START = 18000

FREQUENCY MHz

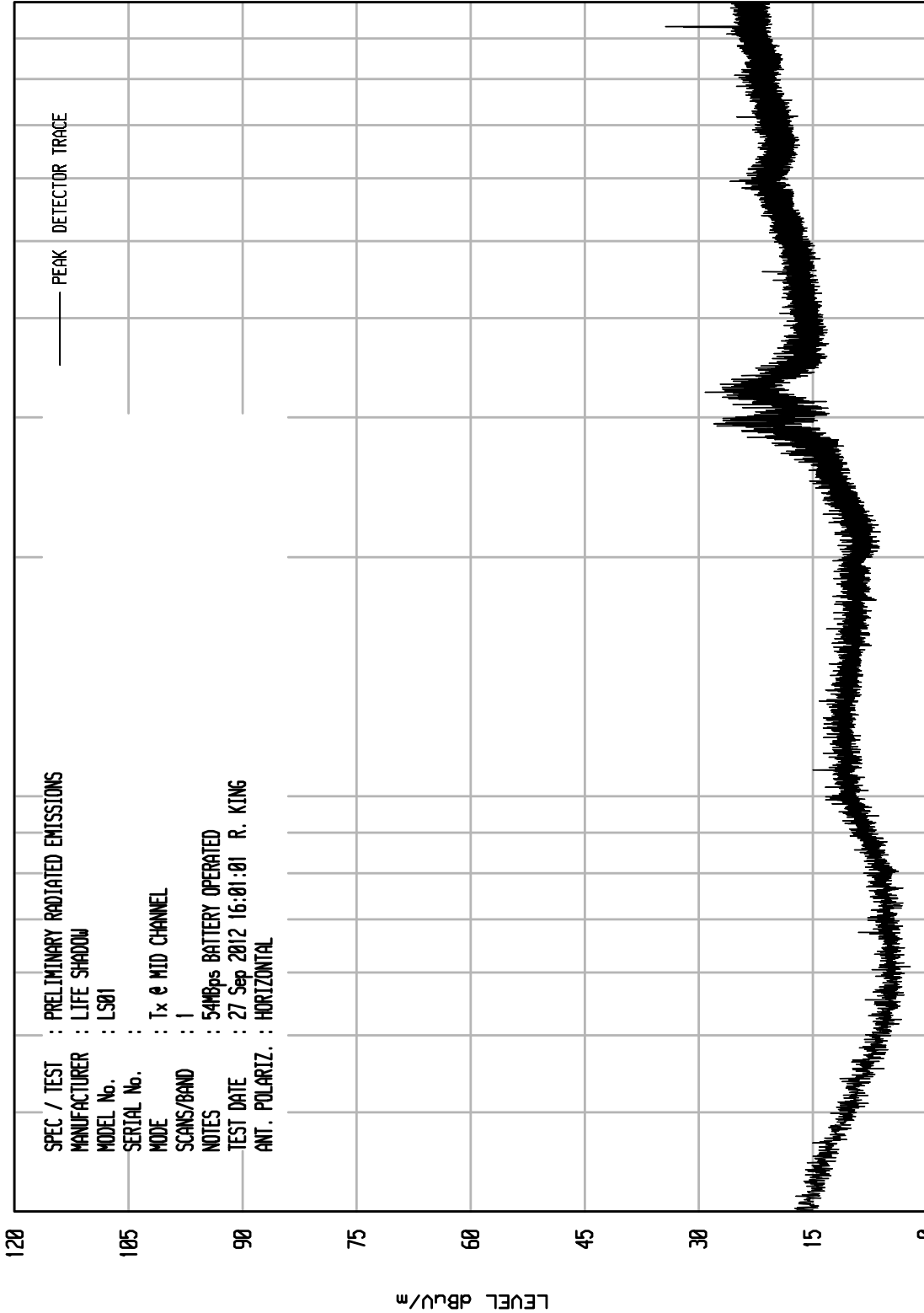
STOP = 25000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIV RCV EMI RUN 31

UKA1 04/26/11

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps BATTERY OPERATED
TEST DATE : 27 Sep 2012 16:01:01 R. KING
ANT. POLARIZ. : HORIZONTAL



STOP = 1000

FREQUENCY MHz

100

START = 30

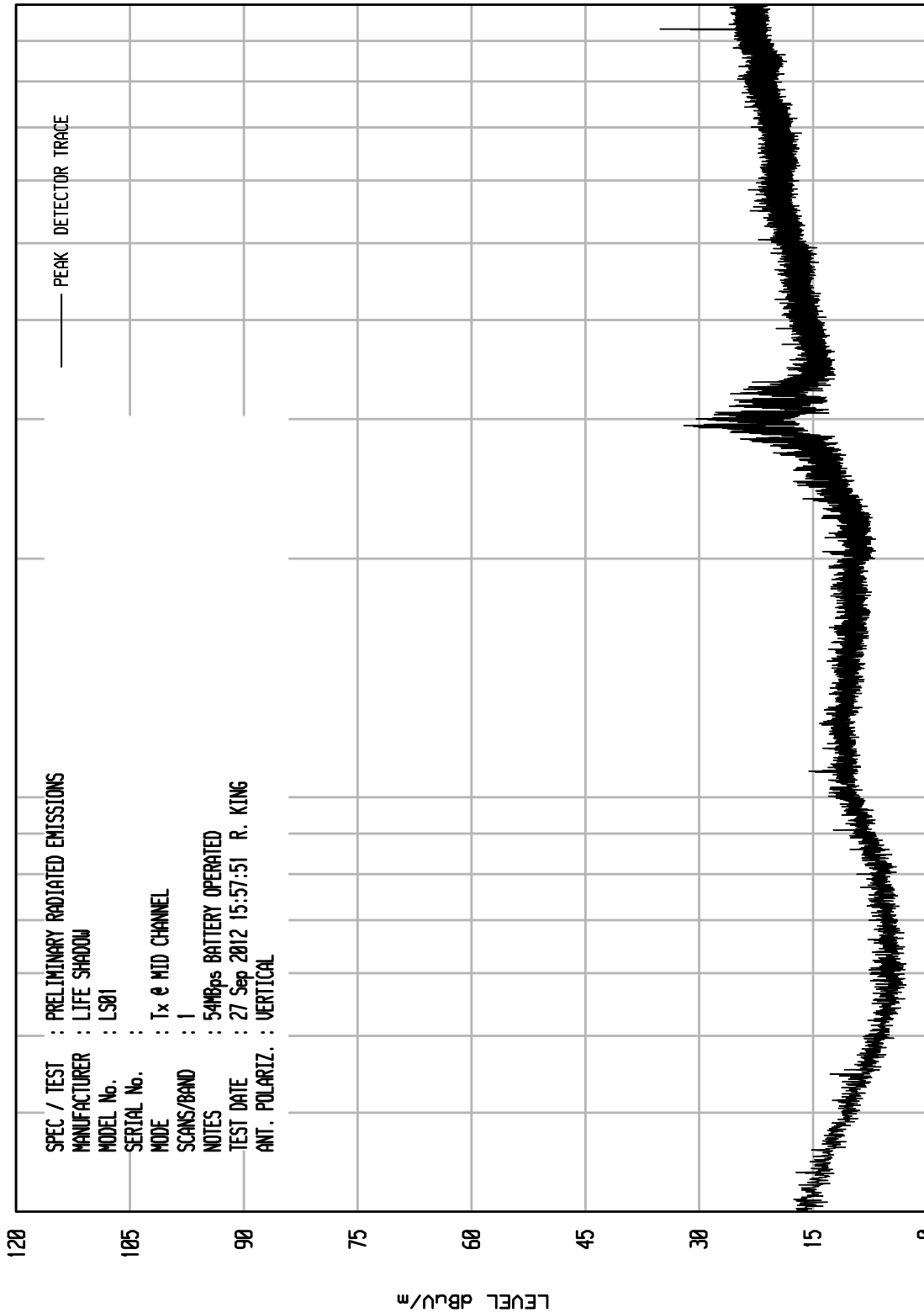


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 30

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps BATTERY OPERATED
TEST DATE : 27 Sep 2012 15:57:51 R. KING
ANT. POLARIZ. : VERTICAL



START = 30

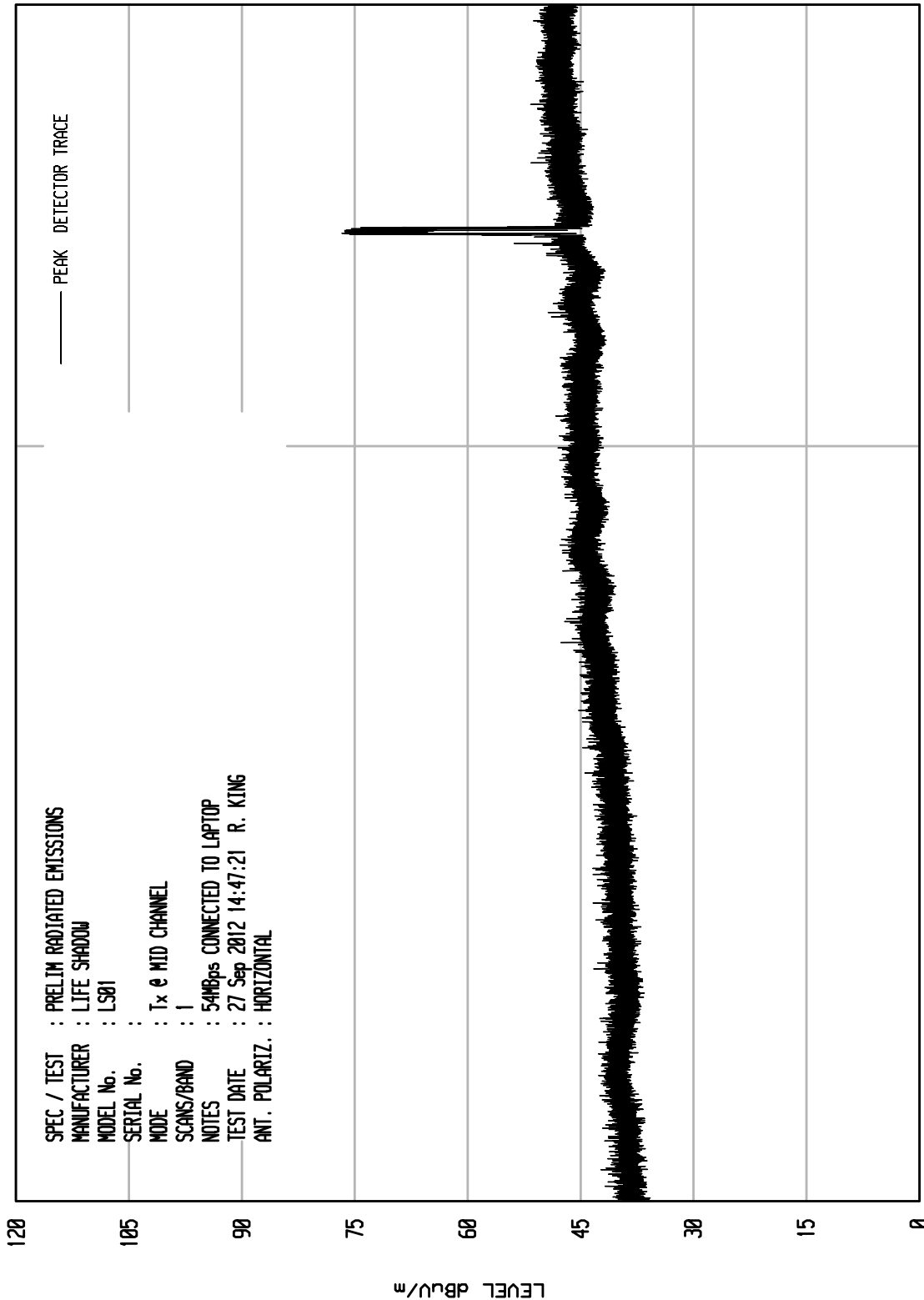
STOP = 1000



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 16



START = 1000

FREQUENCY MHz

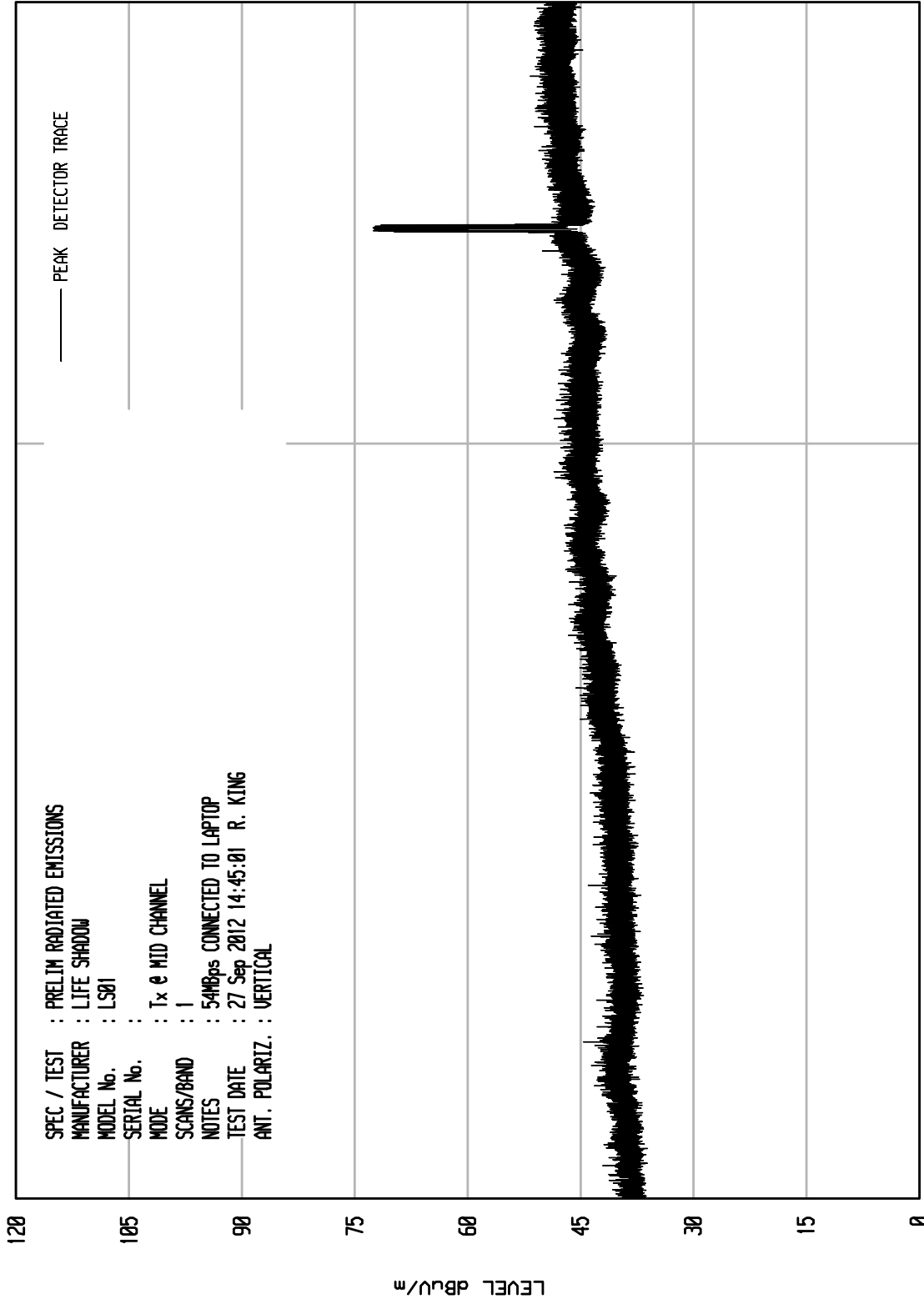
STOP = 3000



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 15



STOP = 3000

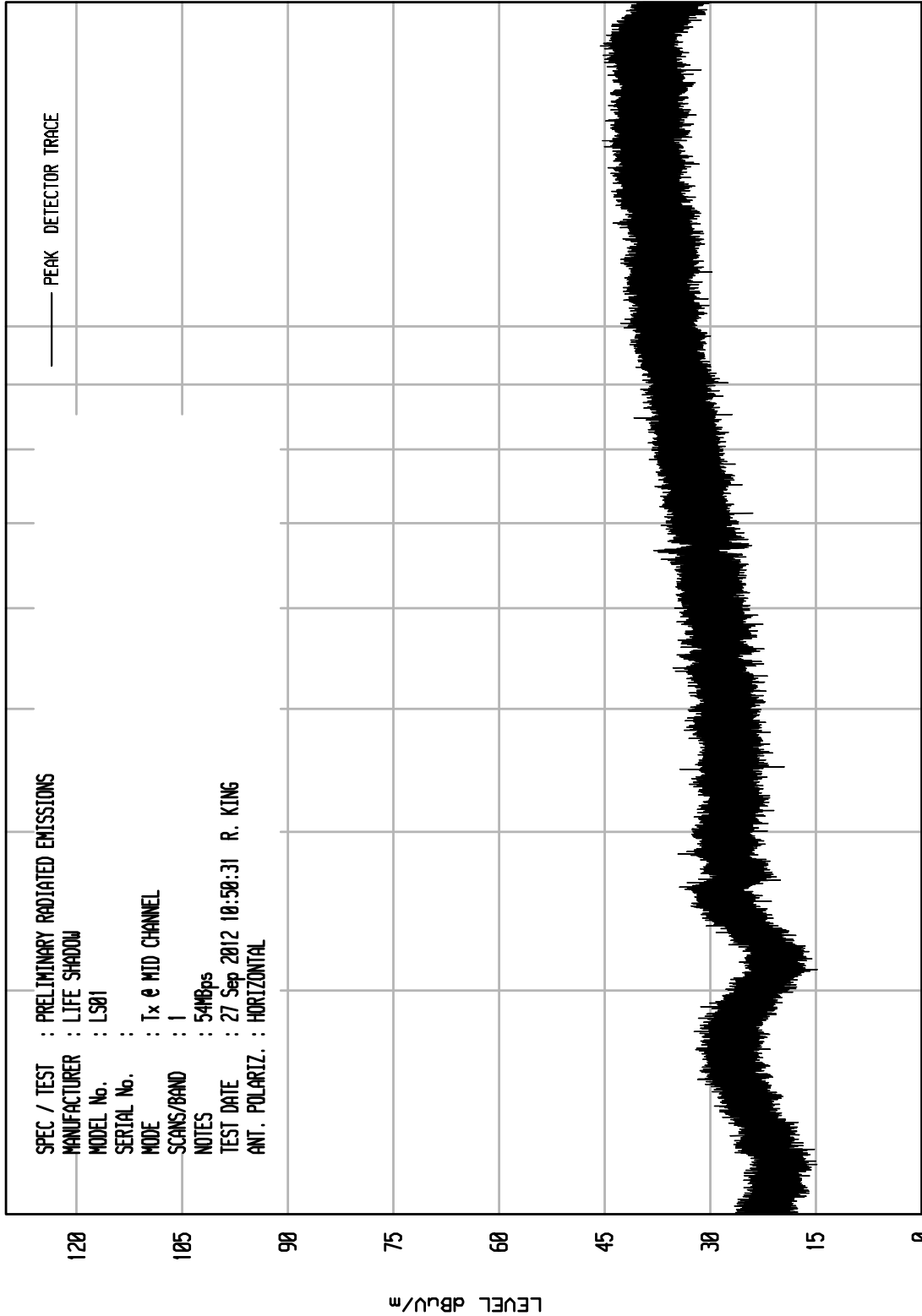
FREQUENCY MHz

START = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 4



START = 2000

10000

FREQUENCY MHz

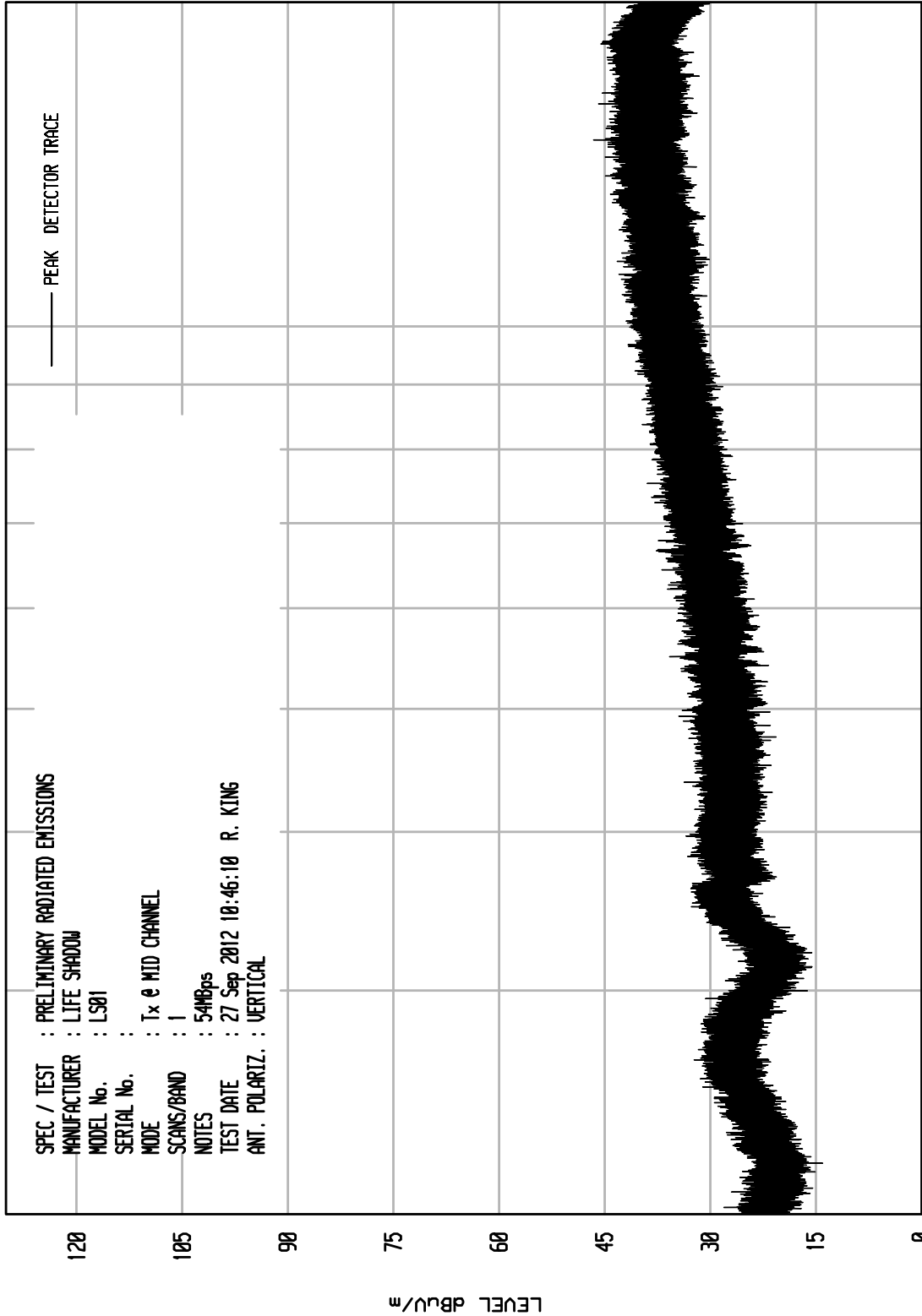
STOP = 18000



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UKA1 04/26/11

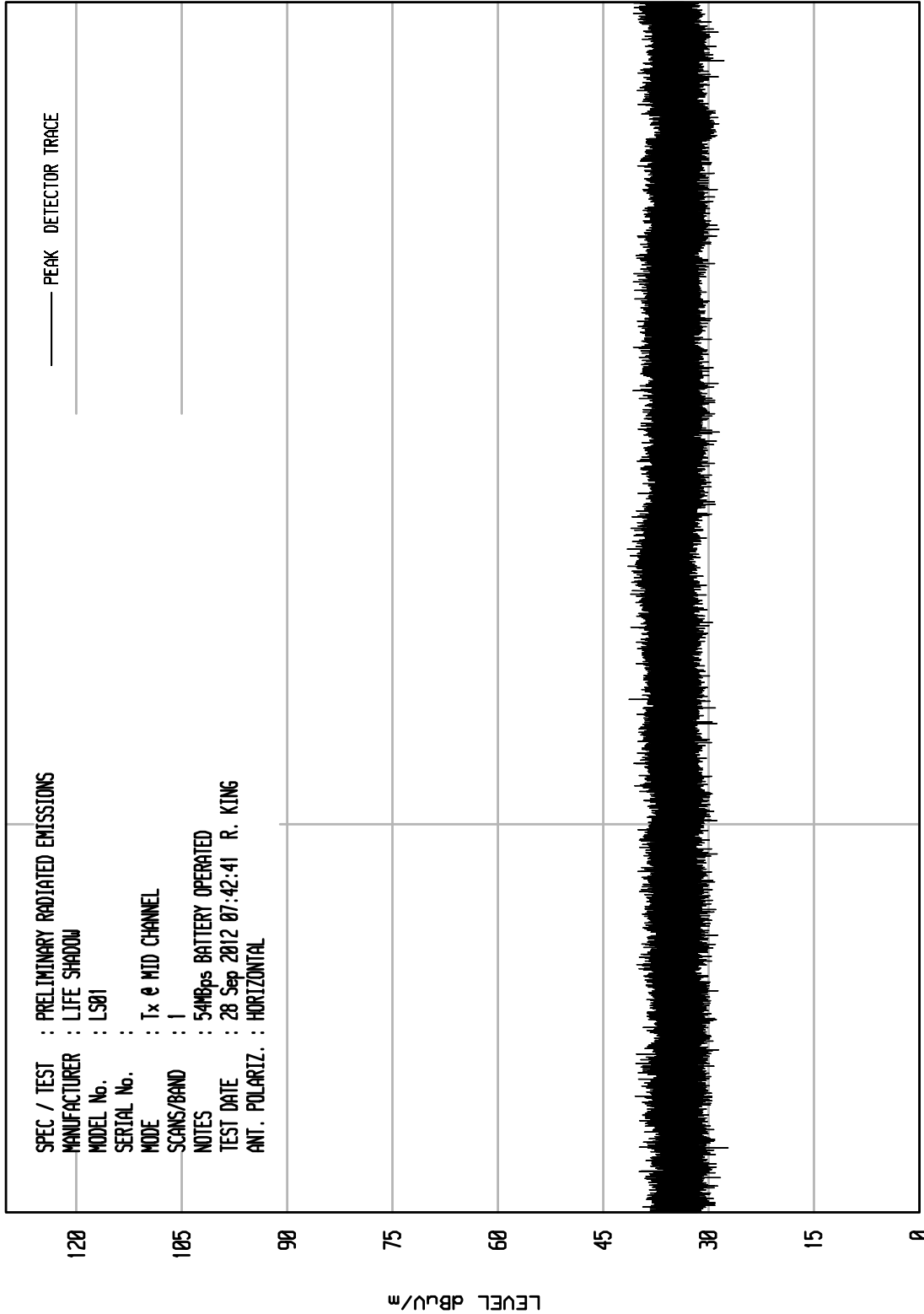
UNITV RCV EMI RUN 3



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 49

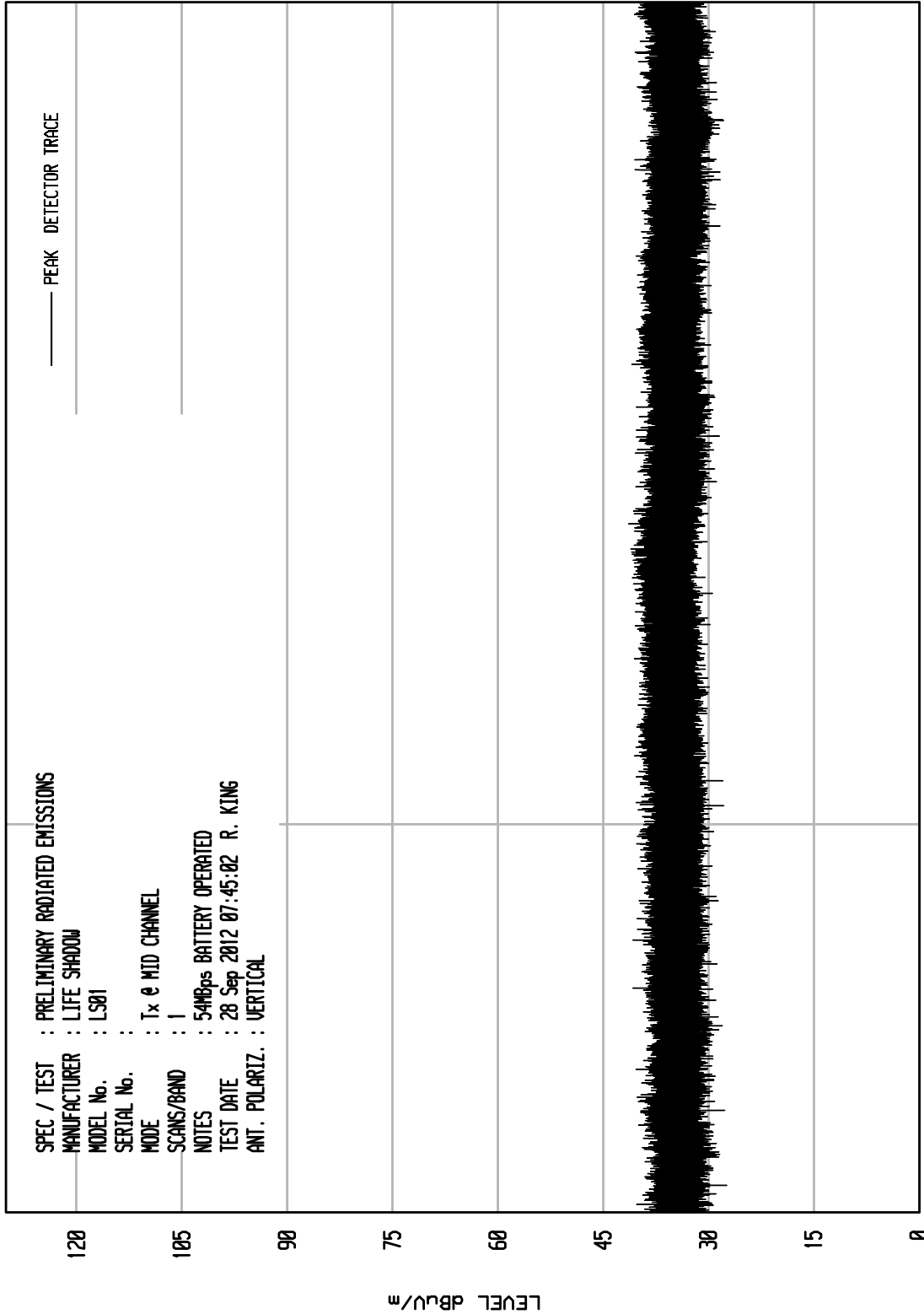




ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 50



START = 18000

FREQUENCY MHz

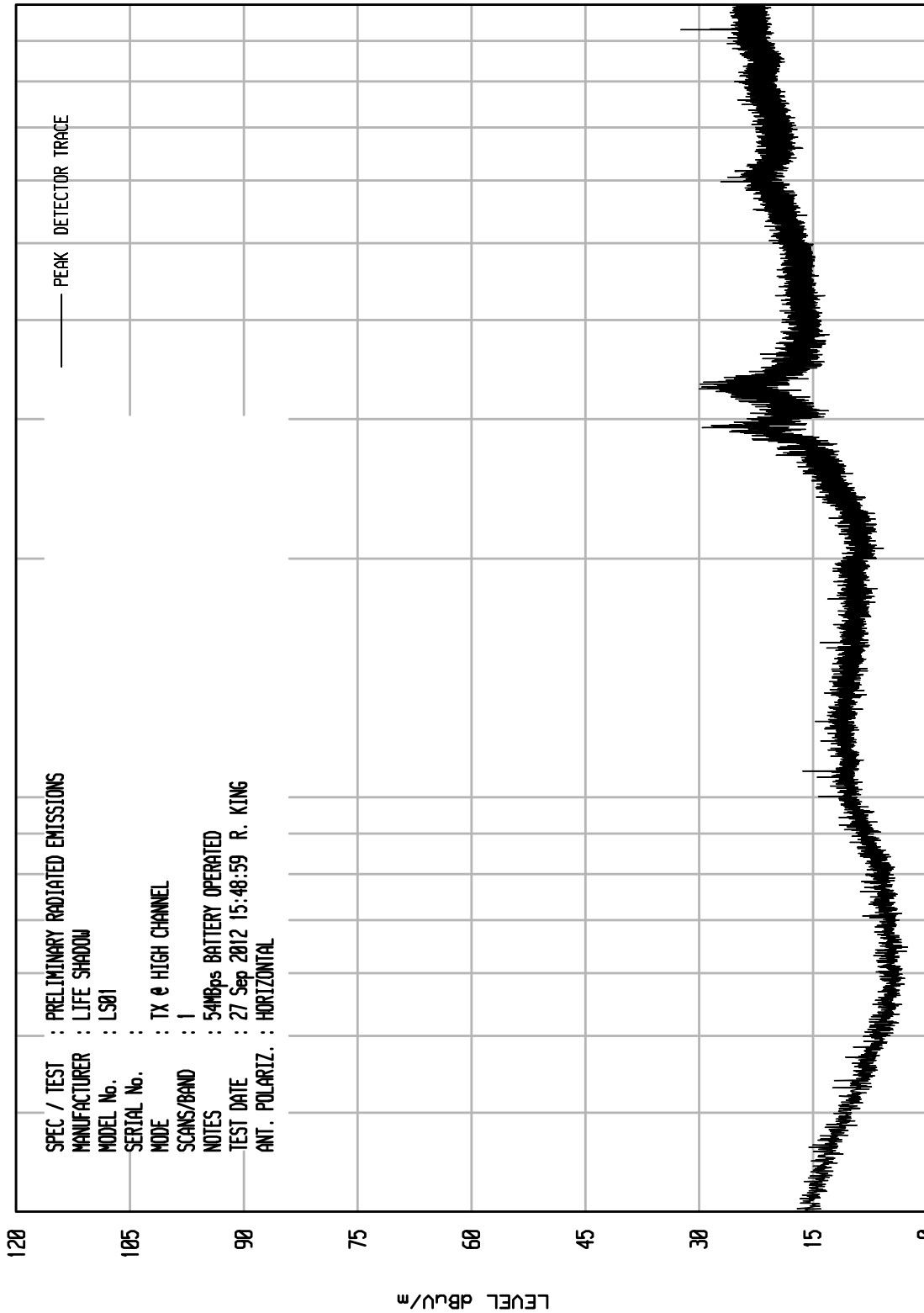
STOP = 25000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIV RCV EMI RUN 28

UKA1 04/26/11

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : TX @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps BATTERY OPERATED
TEST DATE : 27 Sep 2012 15:48:59 R. KING
ANT. POLARIZ. : HORIZONTAL



STOP = 1000

FREQUENCY MHz

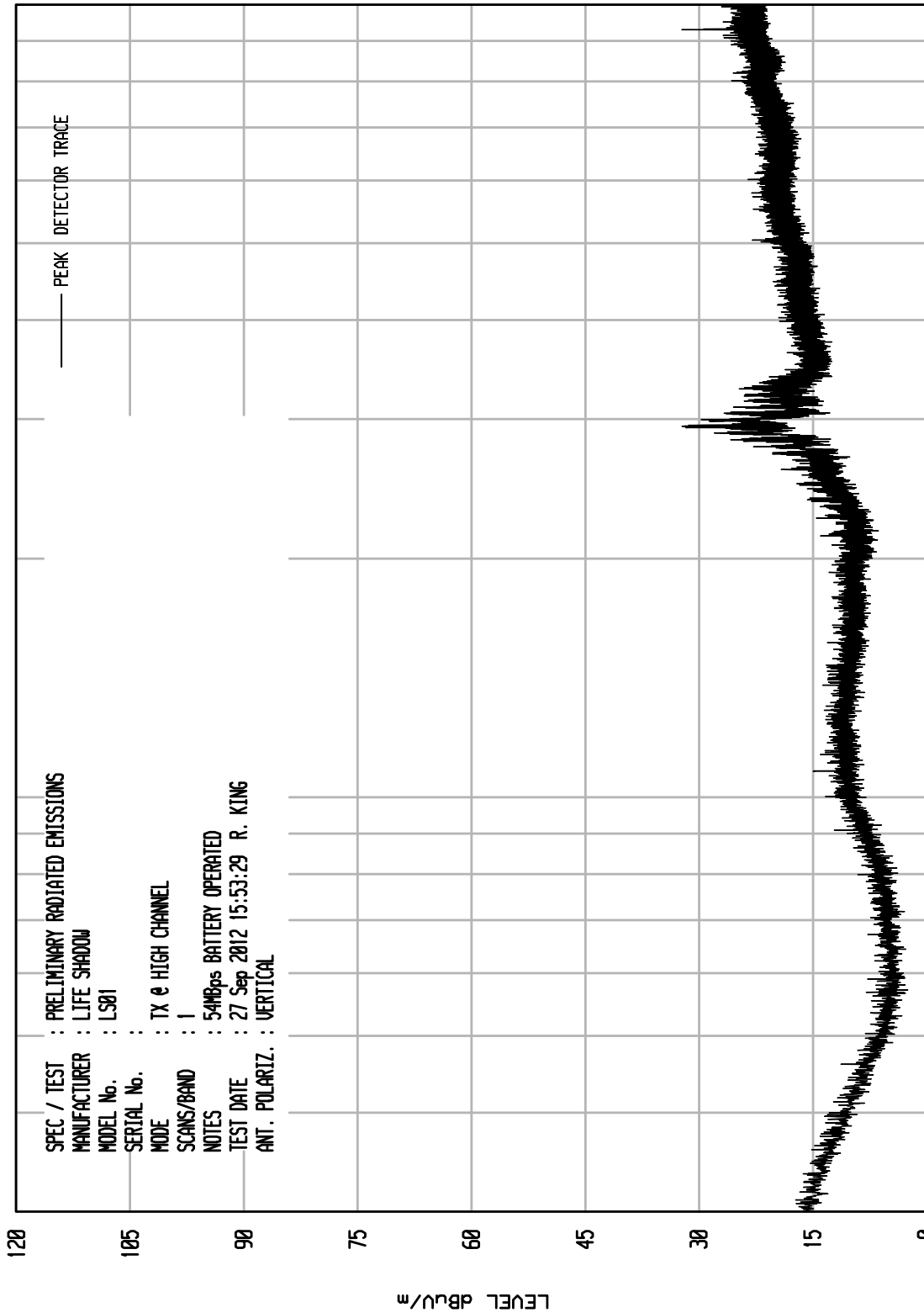
START = 30

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITV RCV EMI RUN 29

UKA1 04/26/11

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : TX @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps BATTERY OPERATED
TEST DATE : 27 Sep 2012 15:53:29 R. KING
ANT. POLARIZ. : VERTICAL



STOP = 1000

FREQUENCY MHz

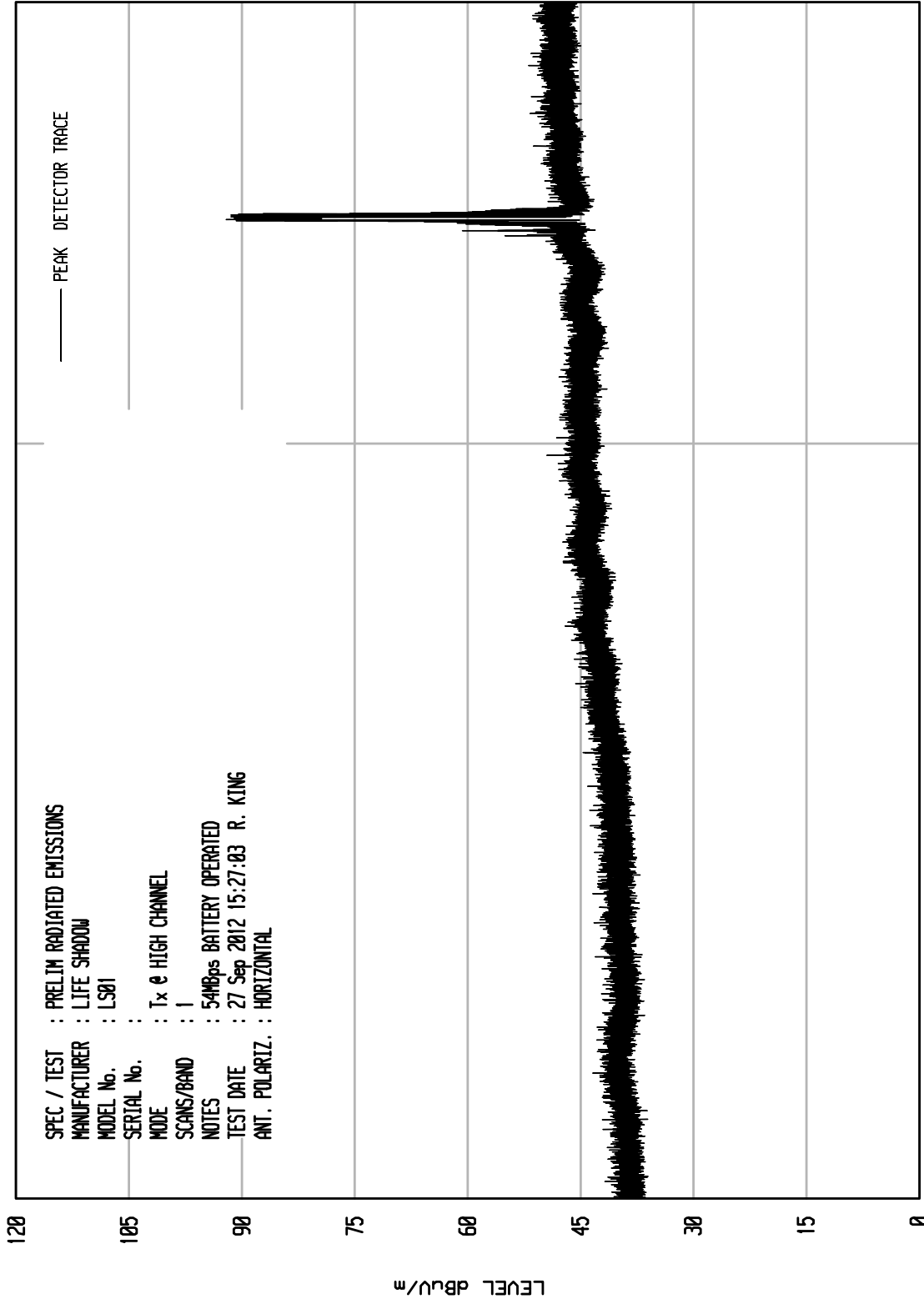
START = 30



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 26



START = 1000

FREQUENCY MHz

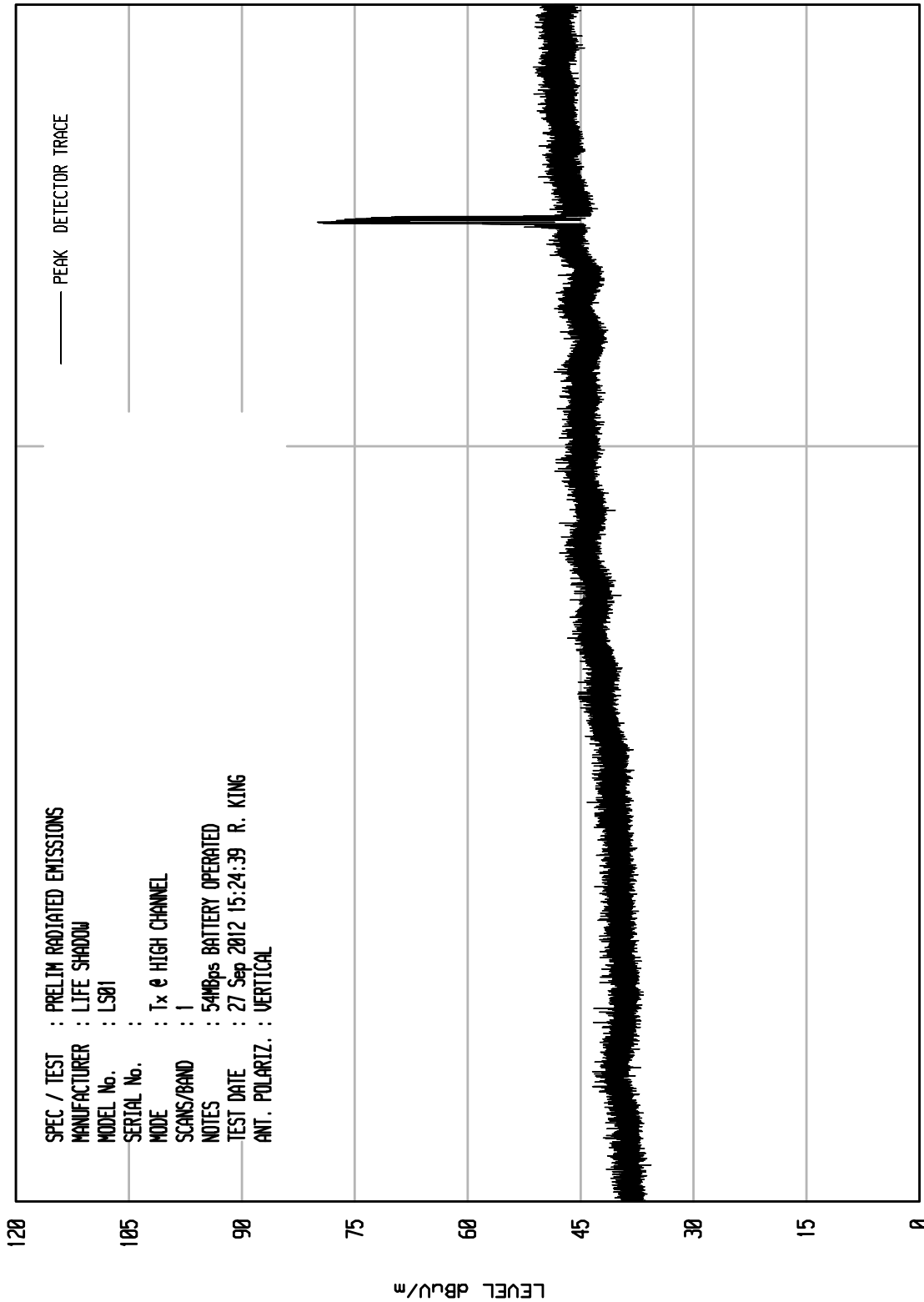
STOP = 3000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 25



START = 1000

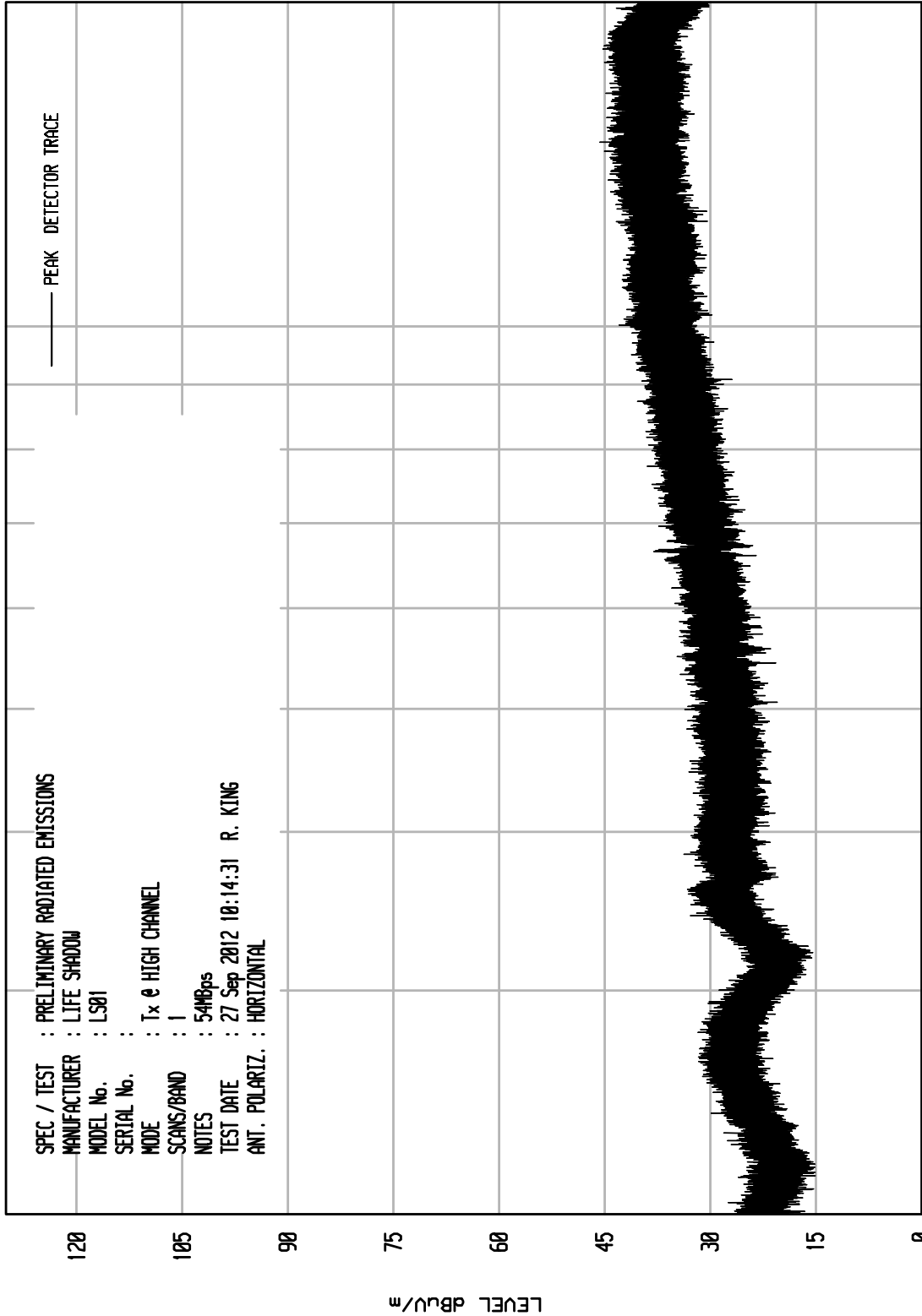
FREQUENCY MHz

STOP = 3000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 1



START = 2000

10000

FREQUENCY MHz

STOP = 18000

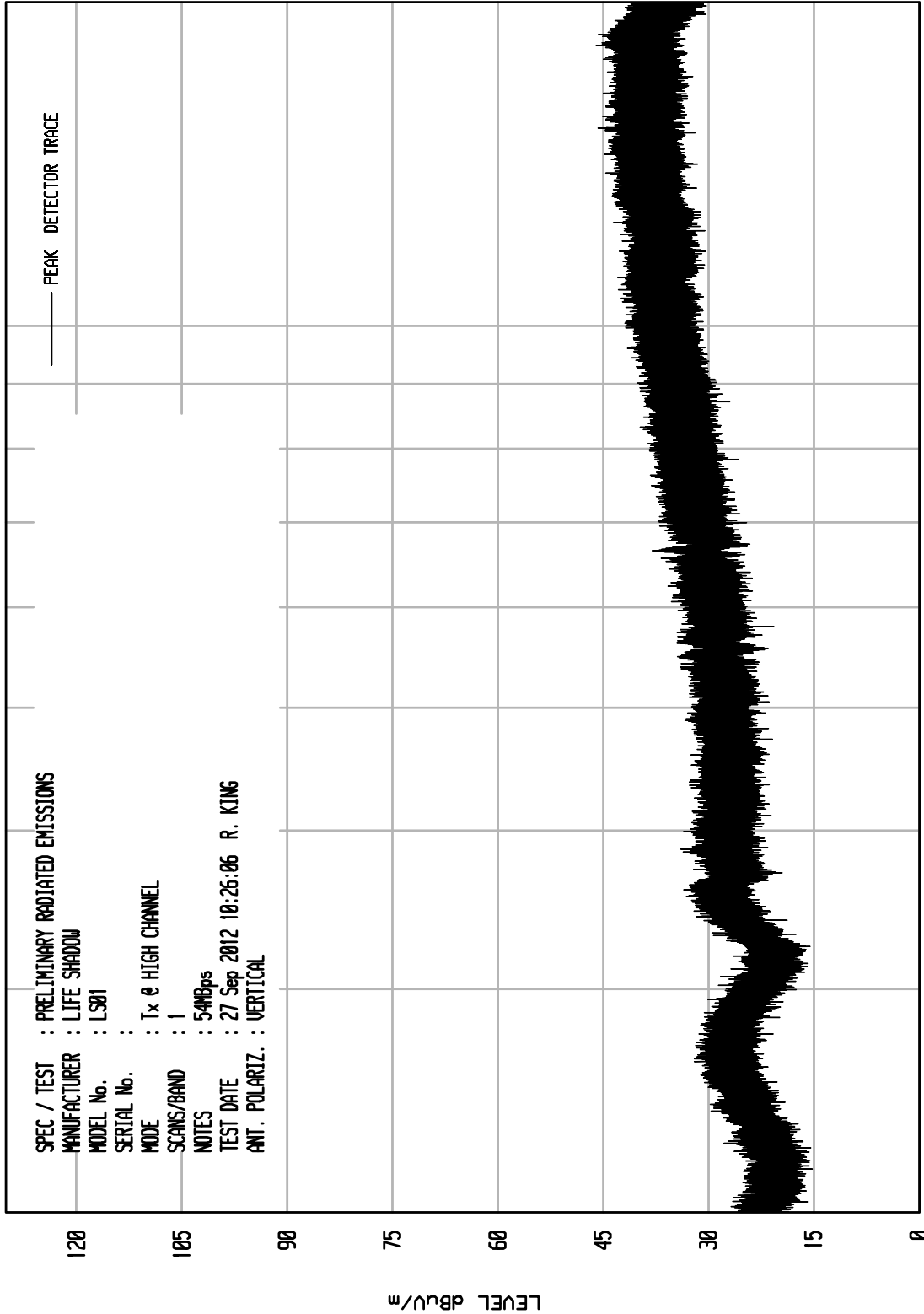


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 2

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps
TEST DATE : 27 Sep 2012 10:26:06 R. KING
ANT. POLARIZ. : VERTICAL



START = 2000

10000

FREQUENCY MHz

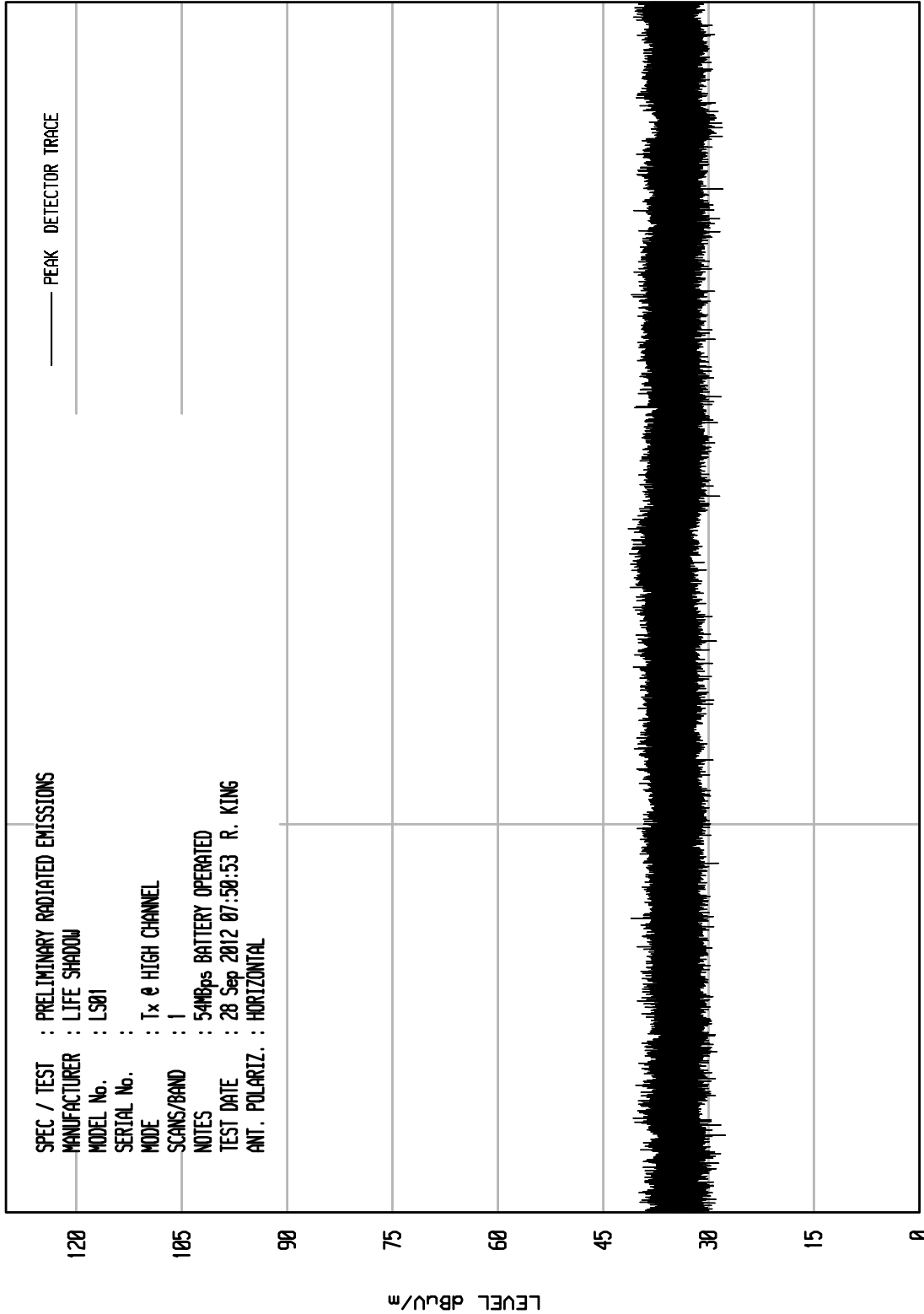
STOP = 18000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 53



START = 18000

FREQUENCY MHz

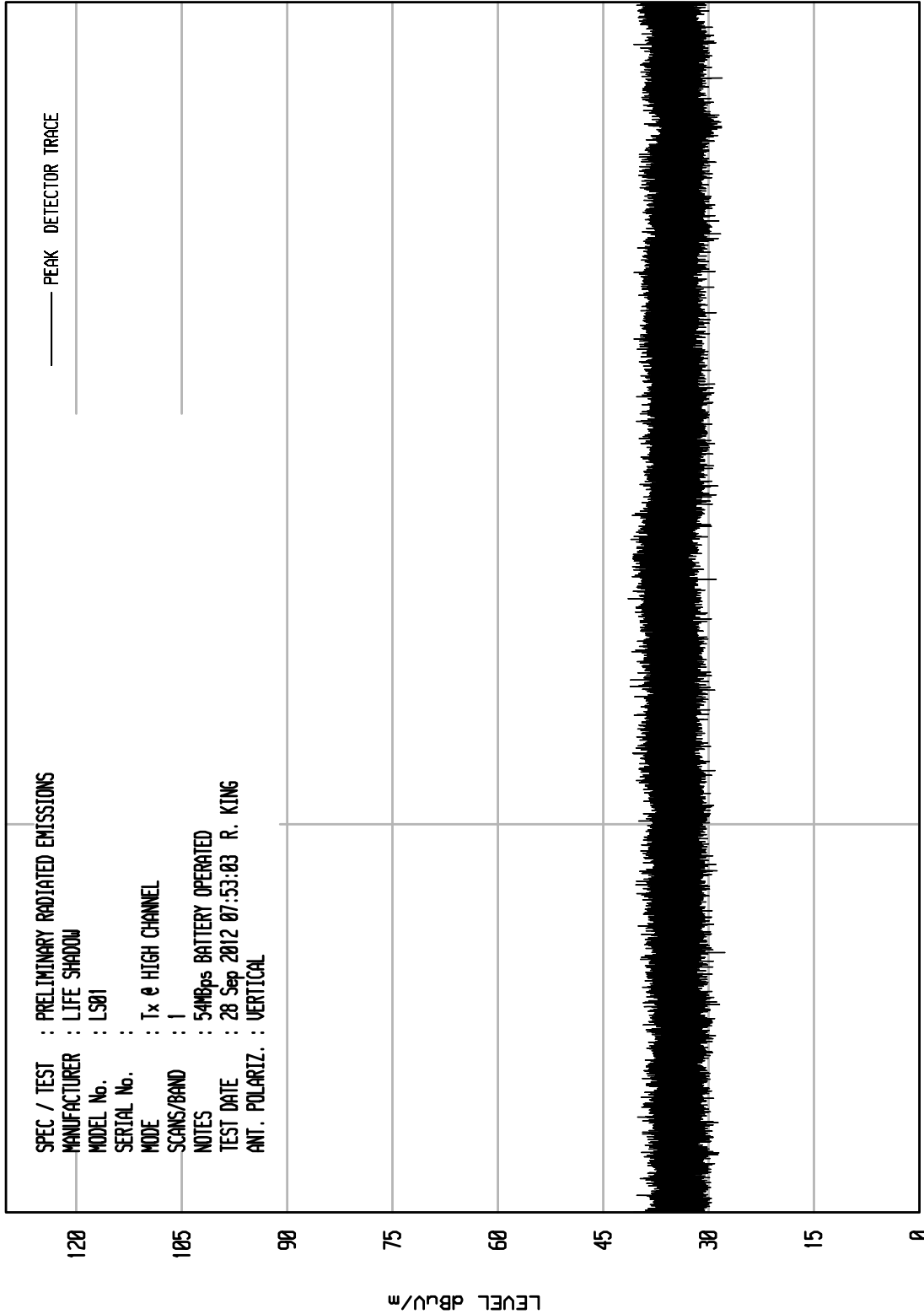
STOP = 25000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 54



START = 18000

FREQUENCY MHz

STOP = 25000

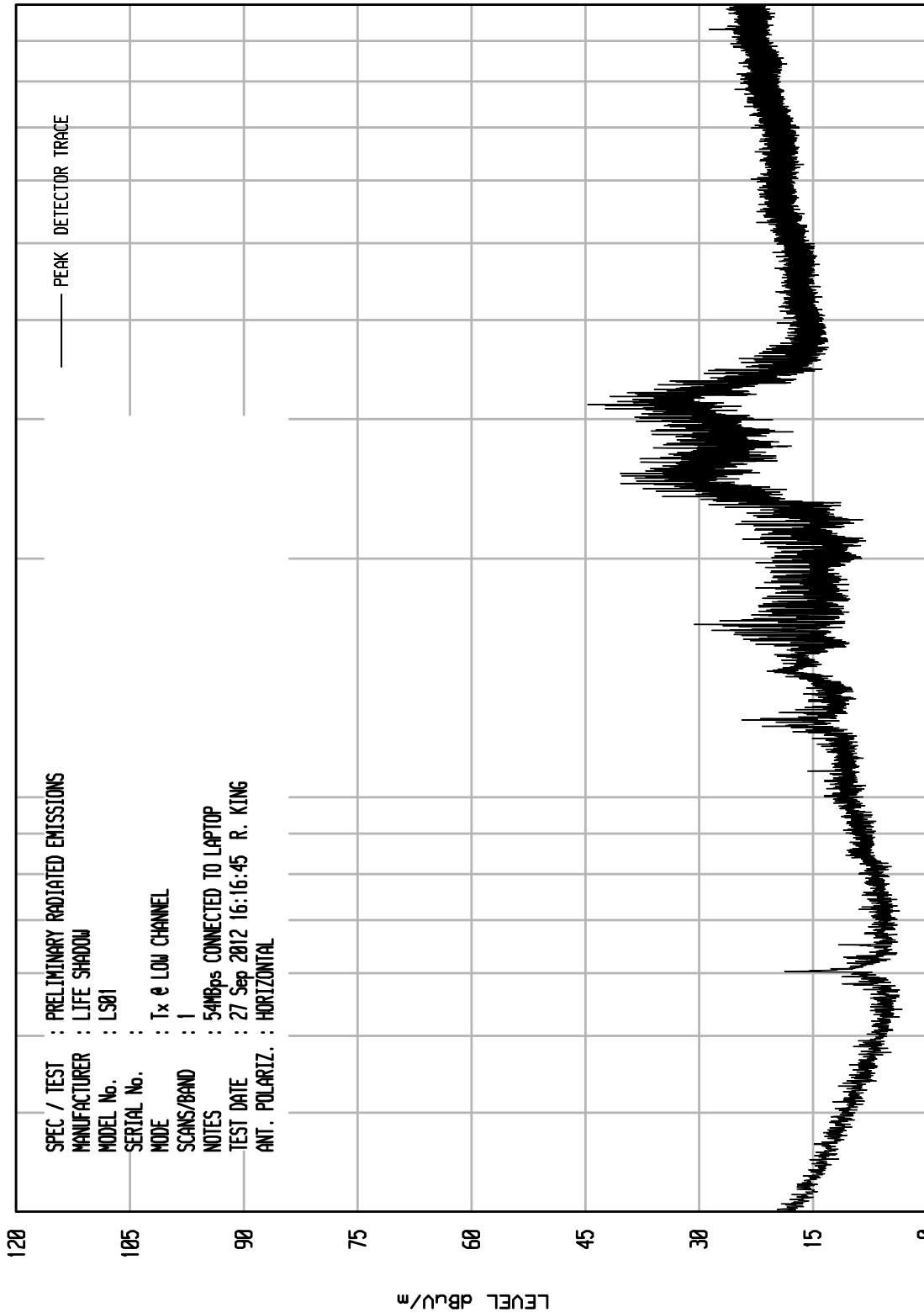


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 35

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps CONNECTED TO LAPTOP
TEST DATE : 27 Sep 2012 16:16:45 R. KING
ANT. POLARIZ. : HORIZONTAL



START = 30

STOP = 1000

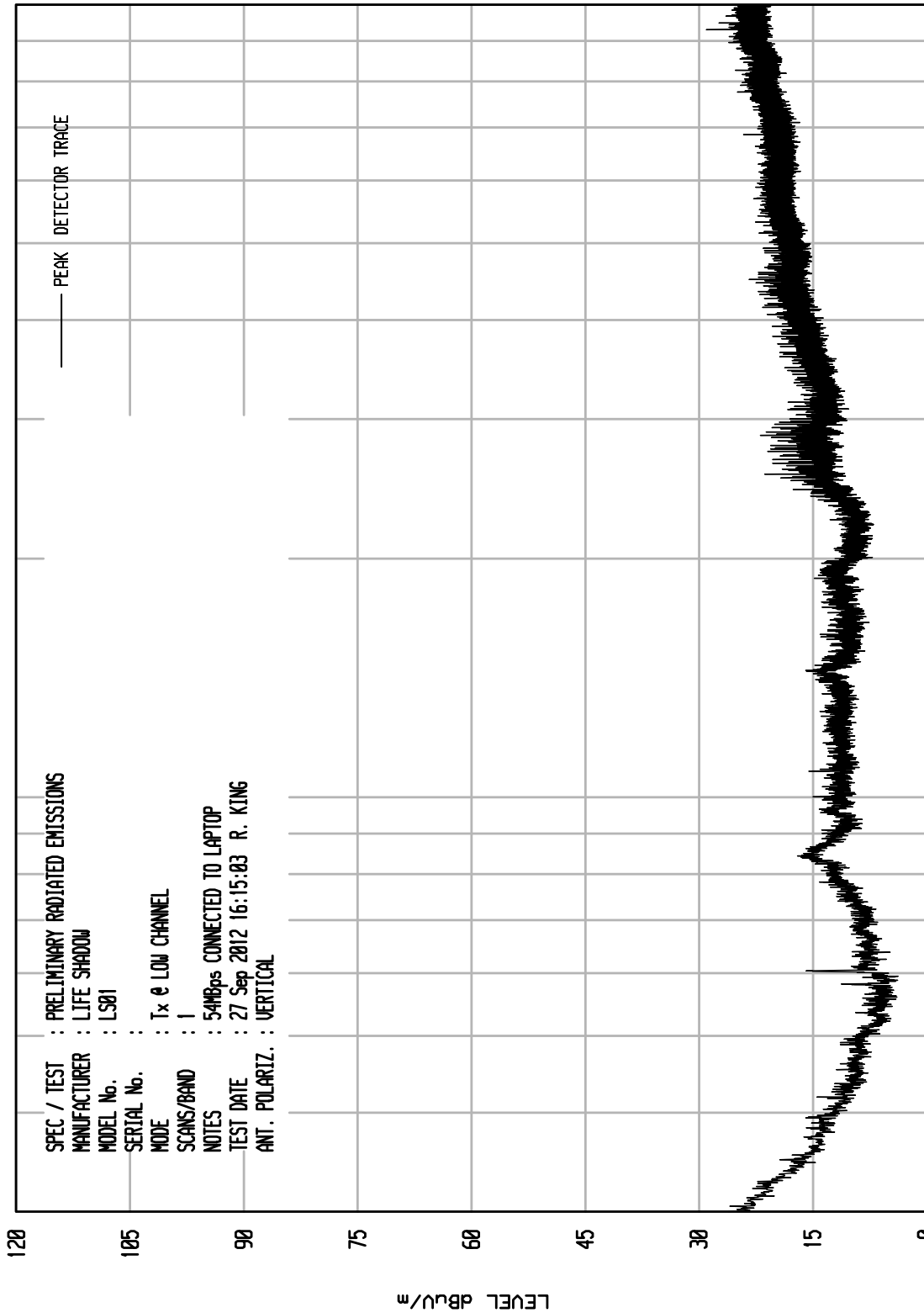


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 34

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps CONNECTED TO LAPTOP
TEST DATE : 27 Sep 2012 16:15:03 R. KING
ANT. POLARIZ. : VERTICAL



START = 30

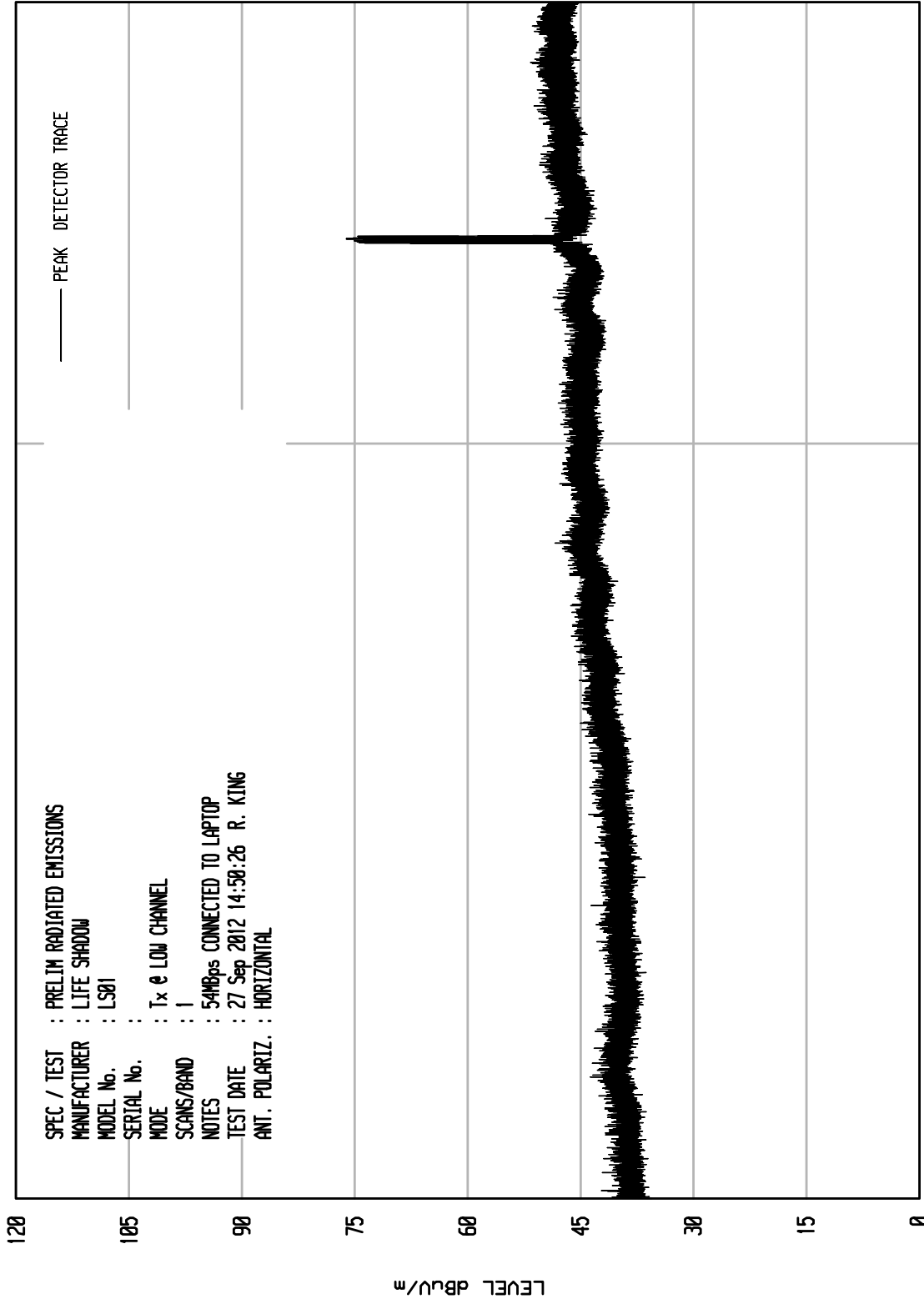
STOP = 1000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 17



START = 1000

FREQUENCY MHz

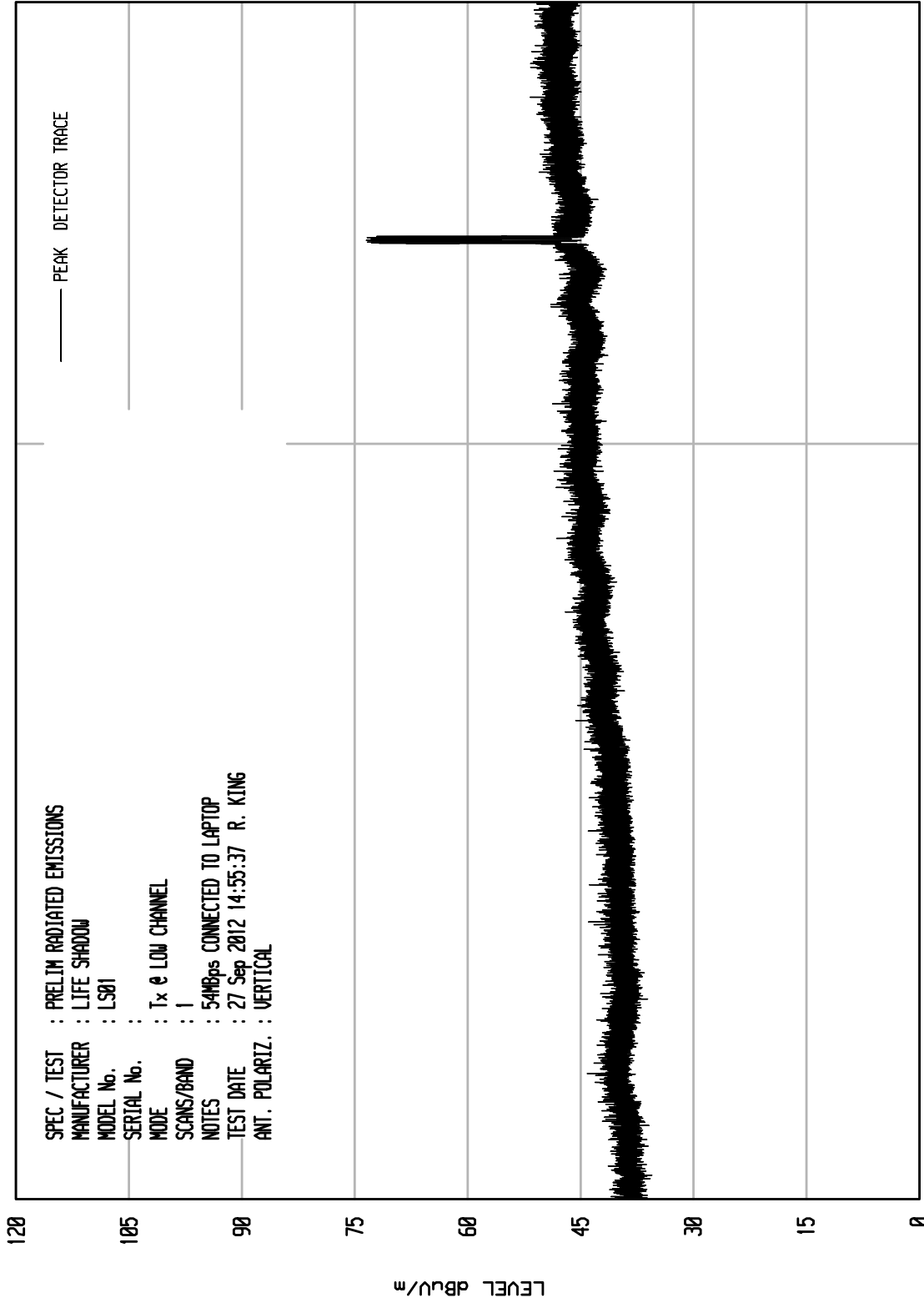
STOP = 3000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 19



START = 1000

FREQUENCY MHz

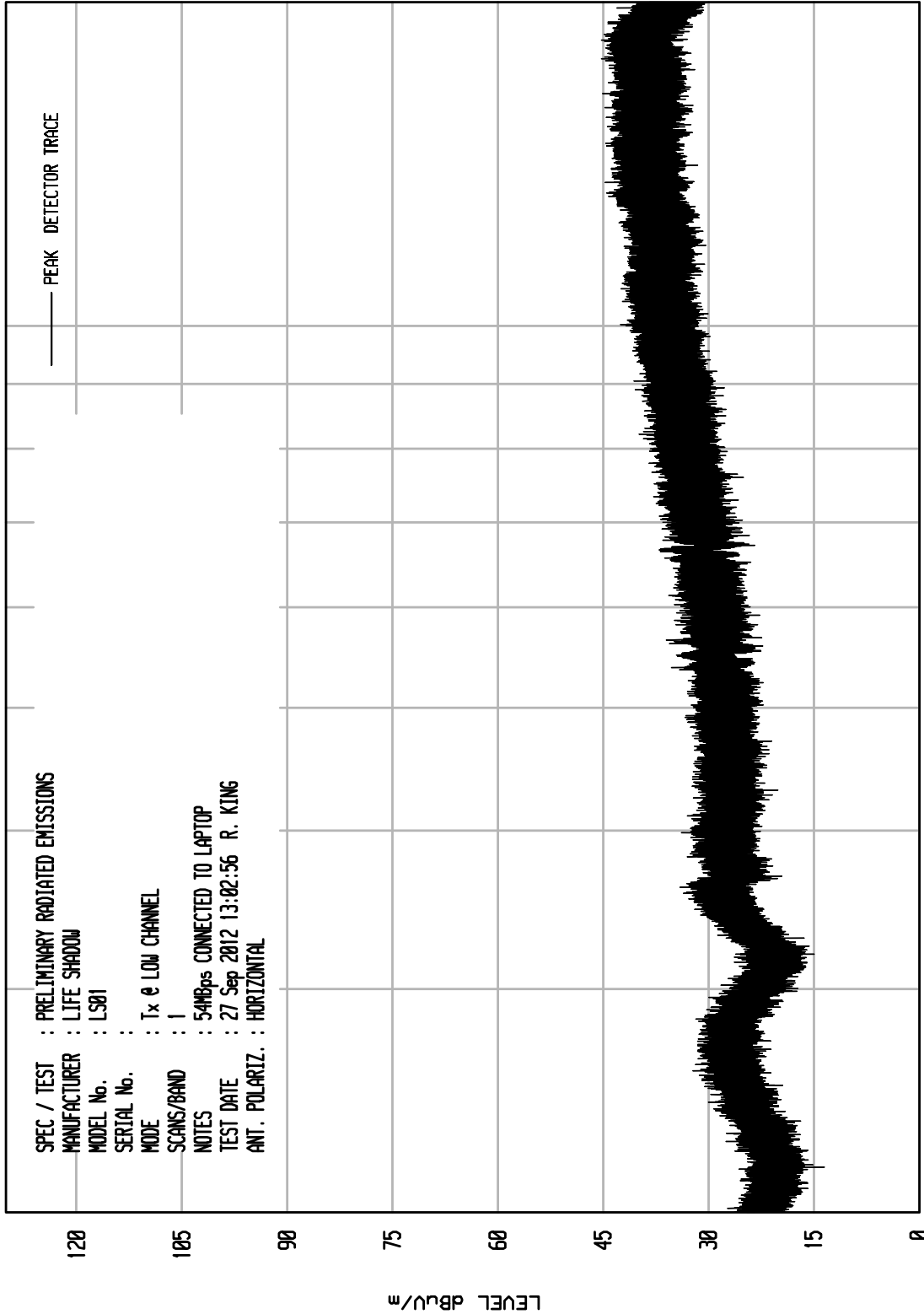
STOP = 3000



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Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 8



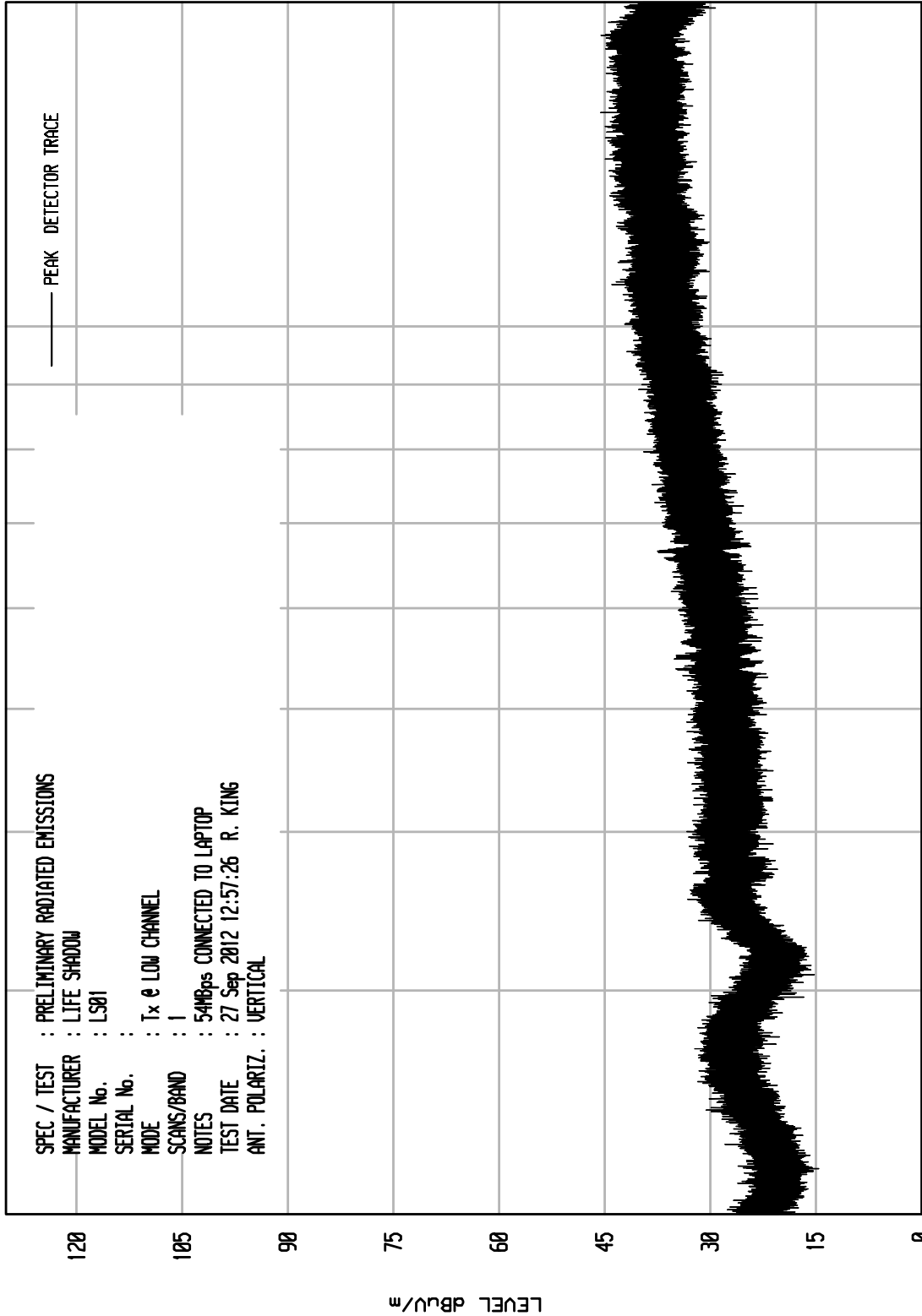
START = 2000

STOP = 18000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 7



START = 2000

10000

FREQUENCY MHz

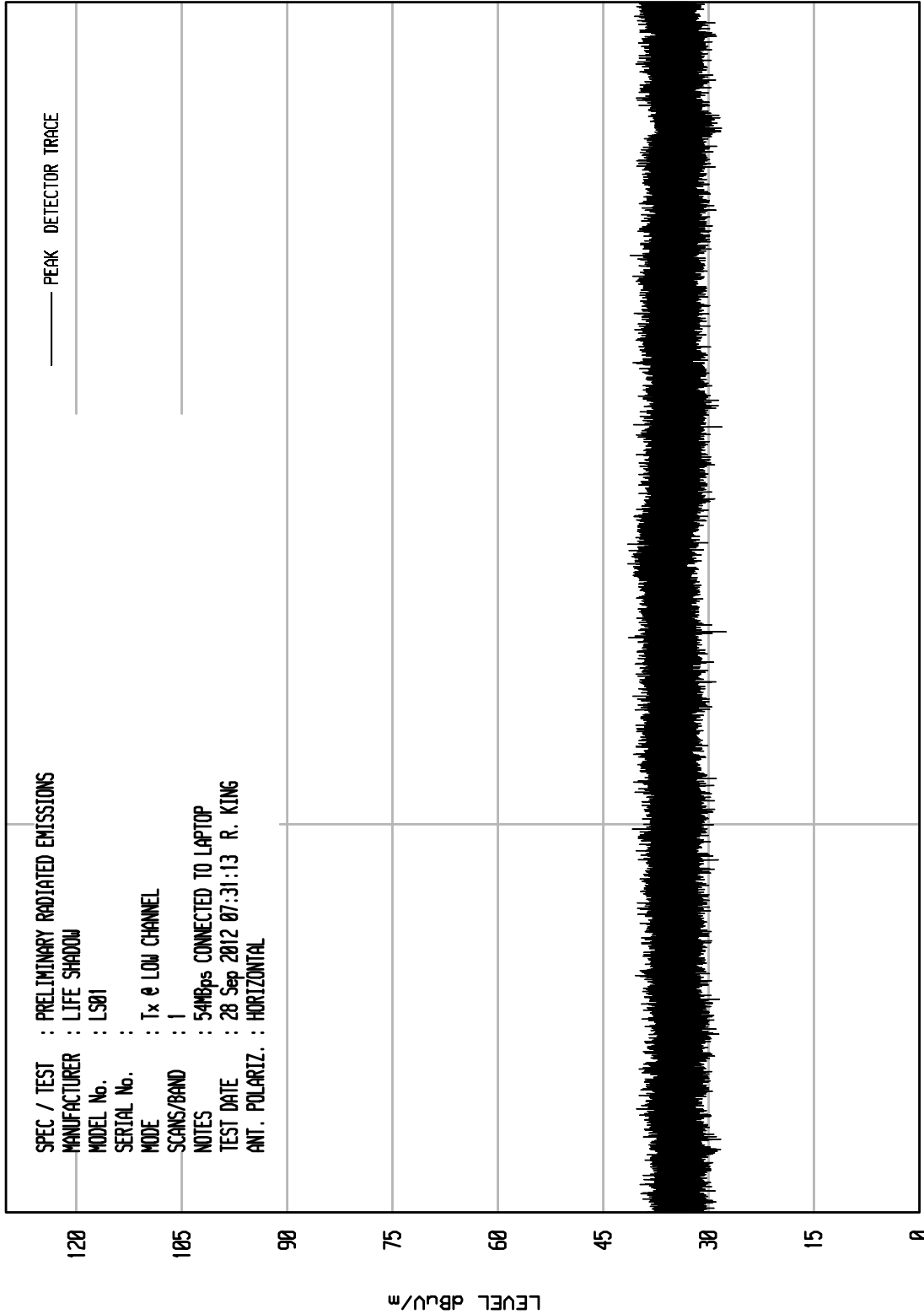
STOP = 18000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 45



START = 18000

FREQUENCY MHz

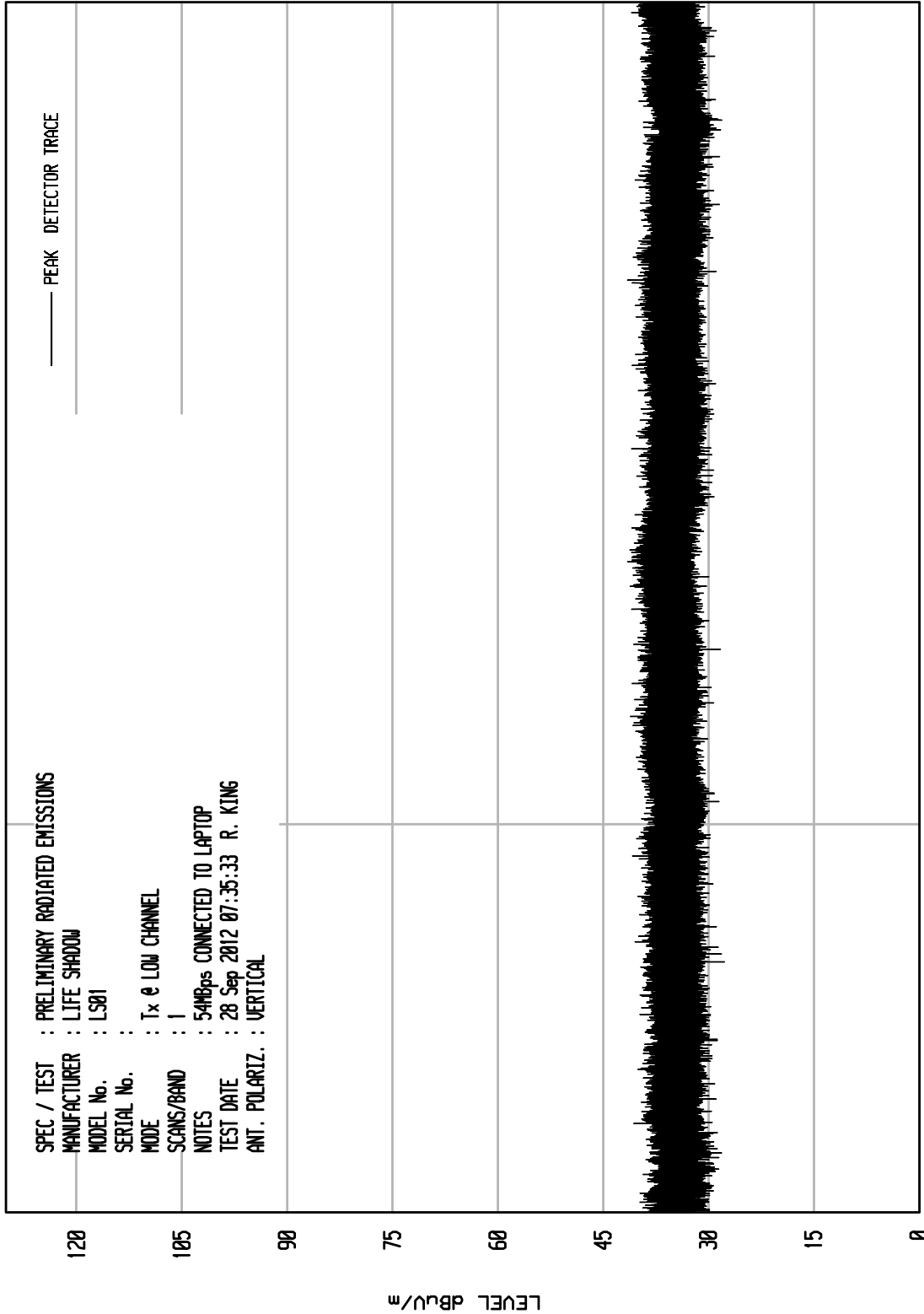
STOP = 25000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNIT RCV EMI RUN 46



START = 18000

FREQUENCY MHz

STOP = 25000



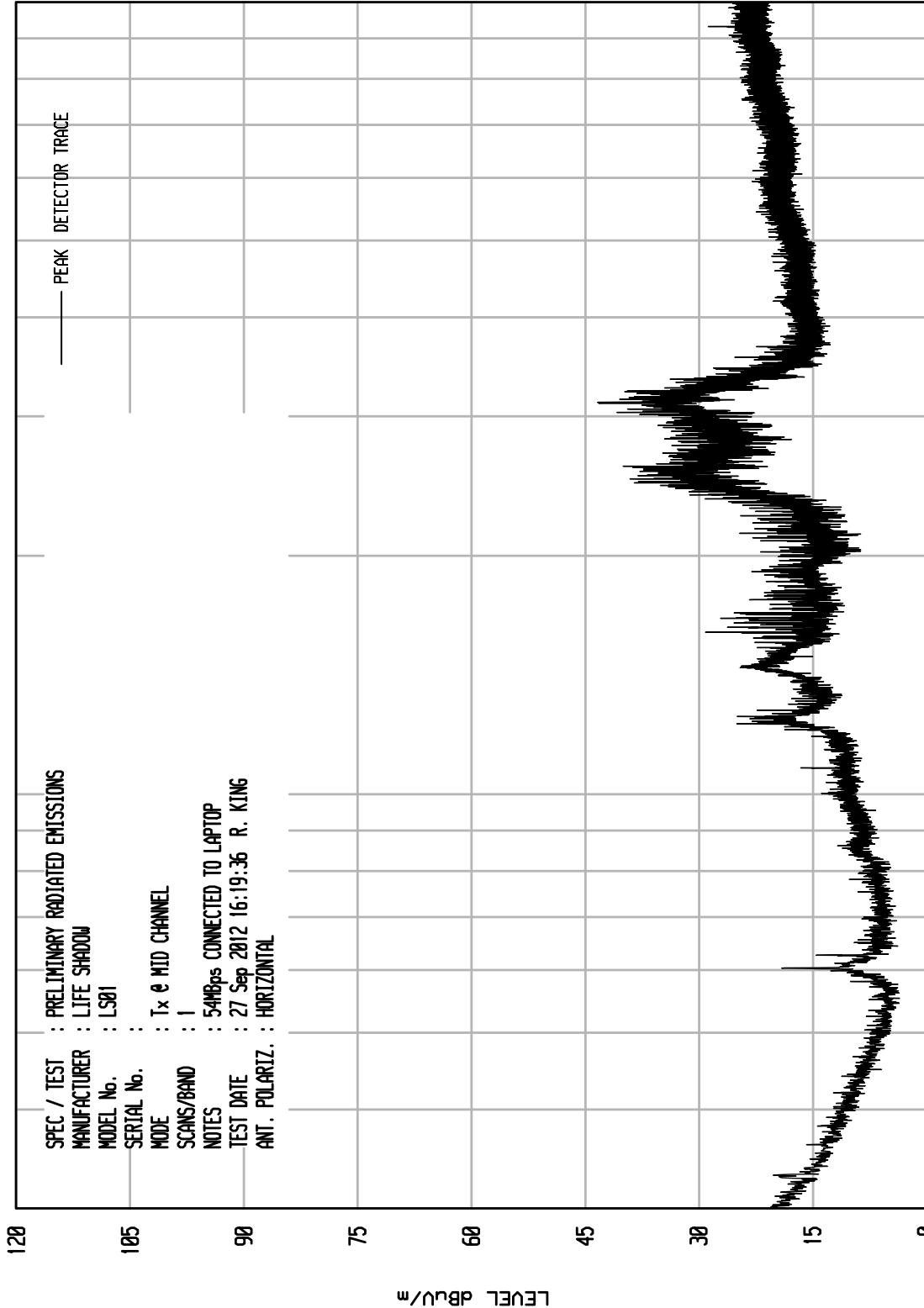
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 36

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps CONNECTED TO LAPTOP
TEST DATE : 27 Sep 2012 16:19:36 R. KING
ANT. POLARIZ. : HORIZONTAL

— PEAK
— DETECTOR TRACE



START = 30

FREQUENCY MHz

STOP = 1000

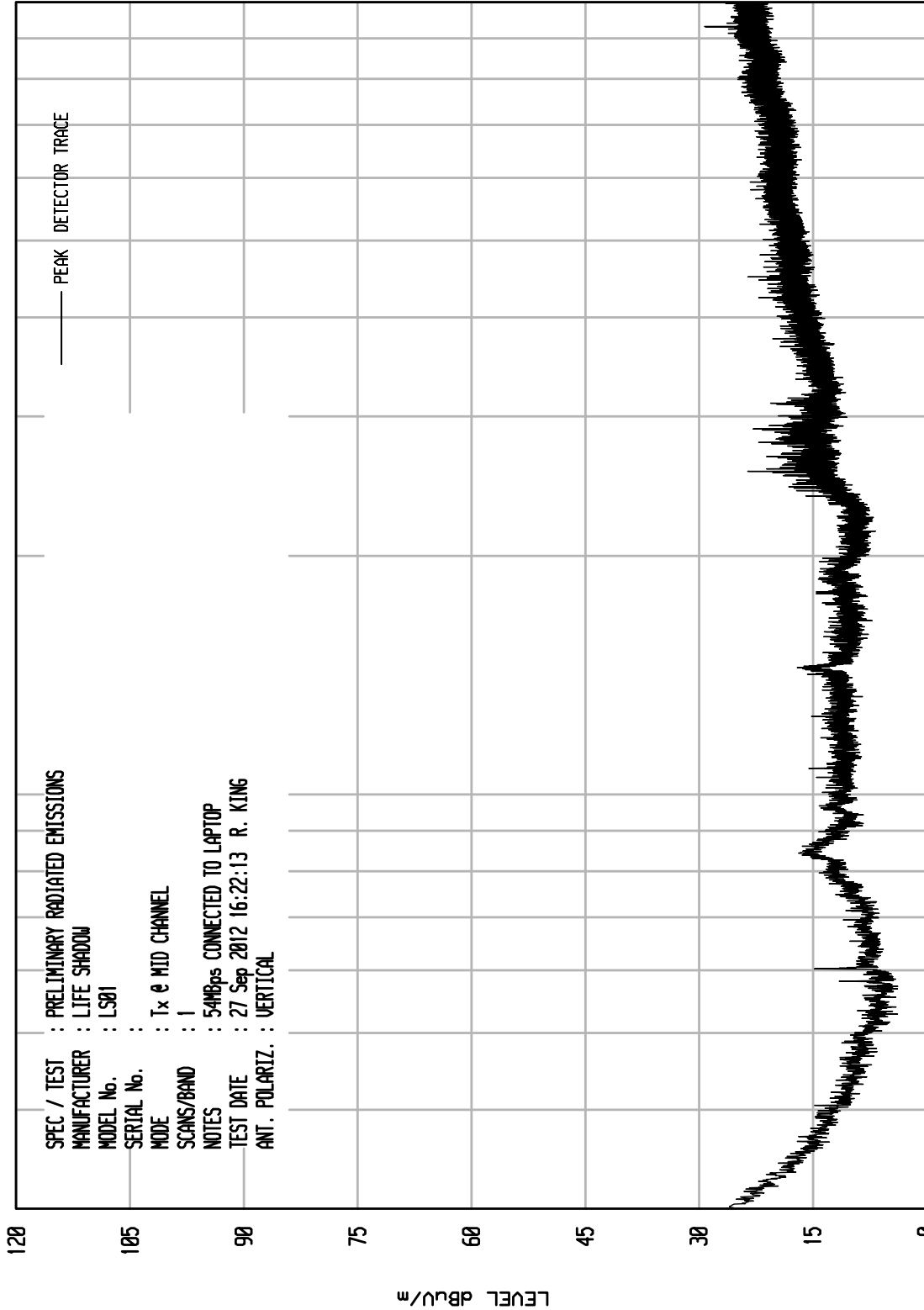


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 38

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps CONNECTED TO LAPTOP
TEST DATE : 27 Sep 2012 16:22:13 R. KING
ANT. POLARIZ. : VERTICAL



START = 30

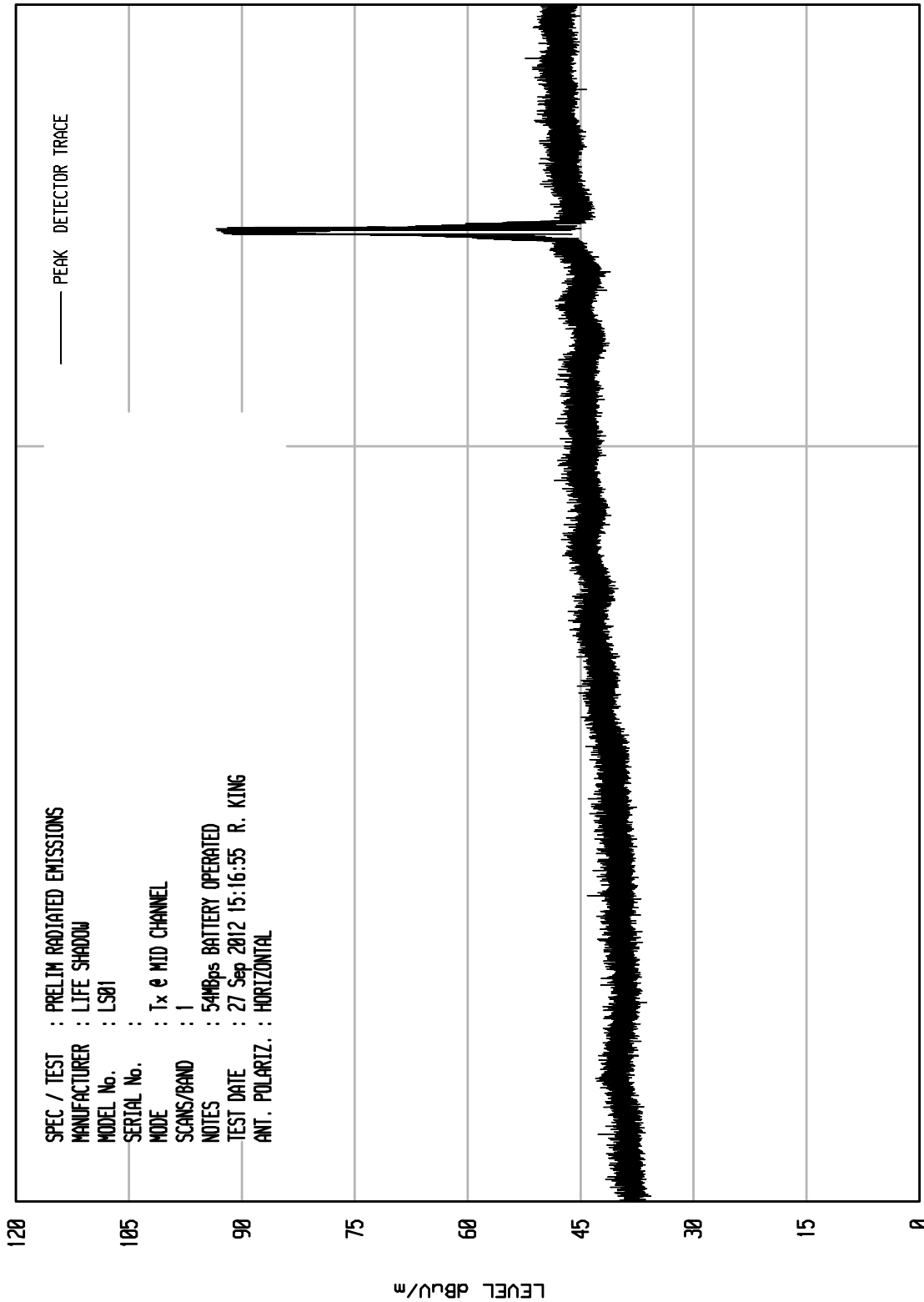
STOP = 1000



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UKA1 04/26/11

UNITV RCV EMI RUN 22



START = 1000

FREQUENCY MHz

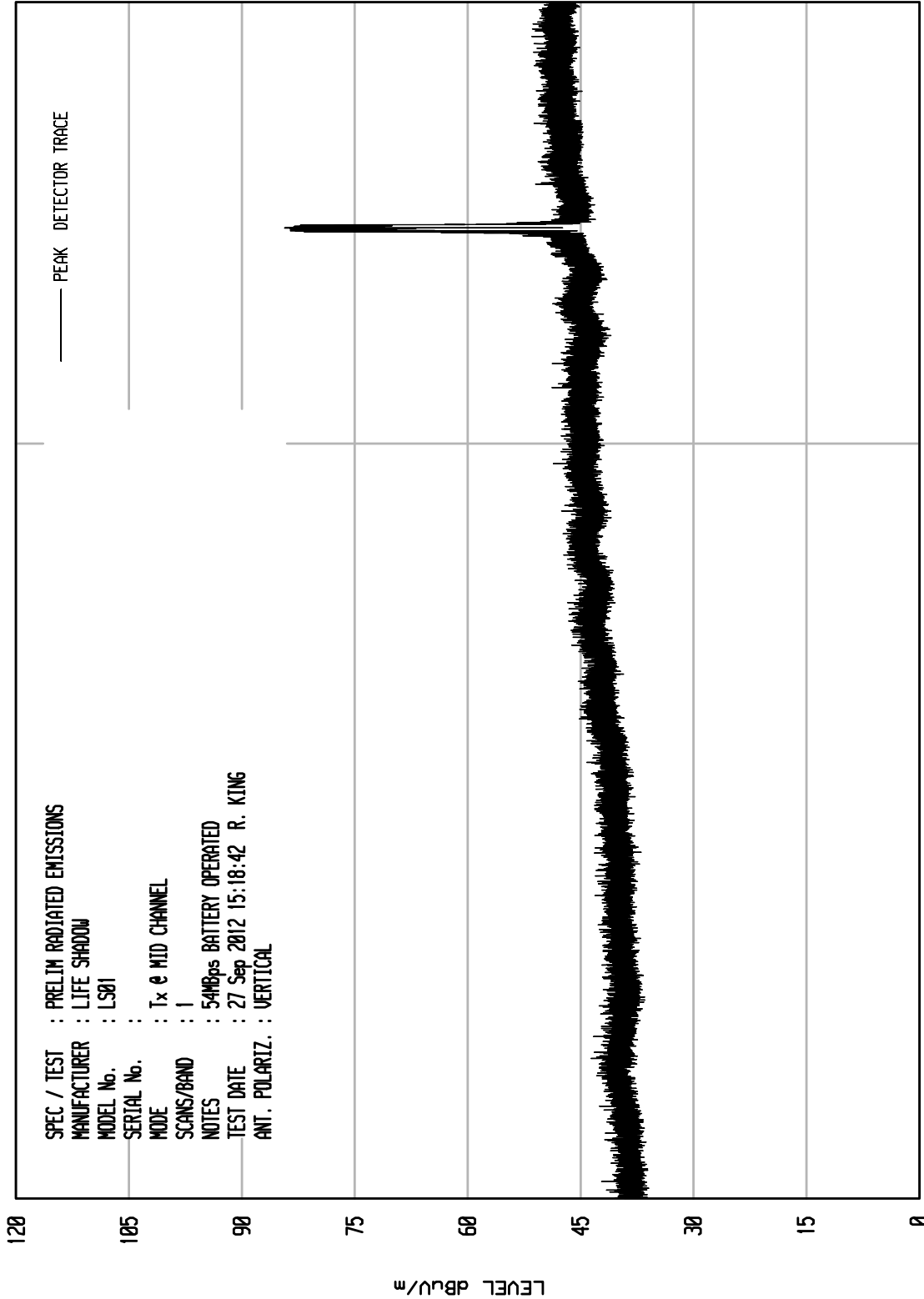
STOP = 3000



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 23



START = 1000

FREQUENCY MHz

STOP = 3000

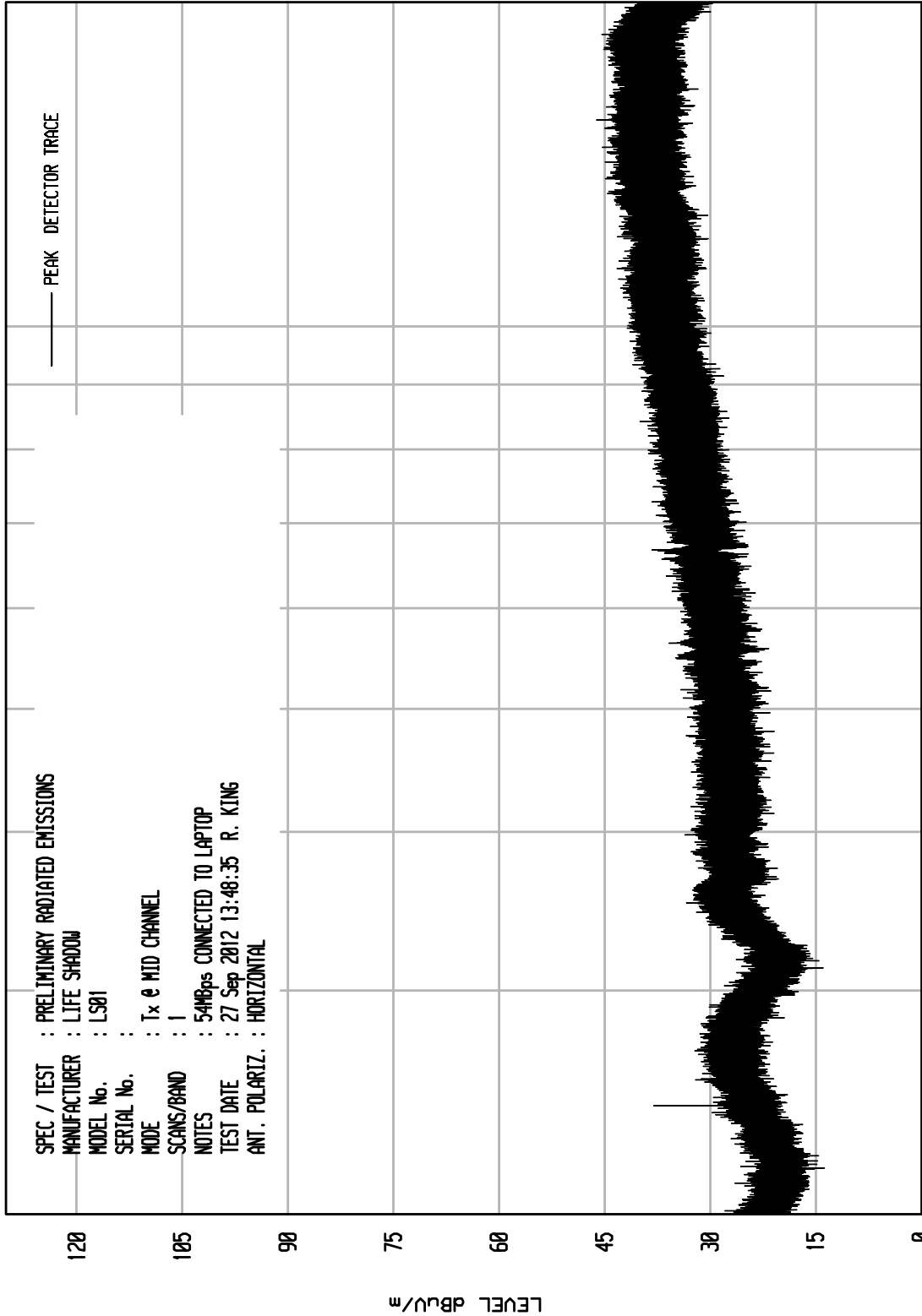


ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 9

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps CONNECTED TO LAPTOP
TEST DATE : 27 Sep 2012 13:48:35 R. KING
ANT. POLARIZ. : HORIZONTAL



START = 2000

10000

FREQUENCY MHz

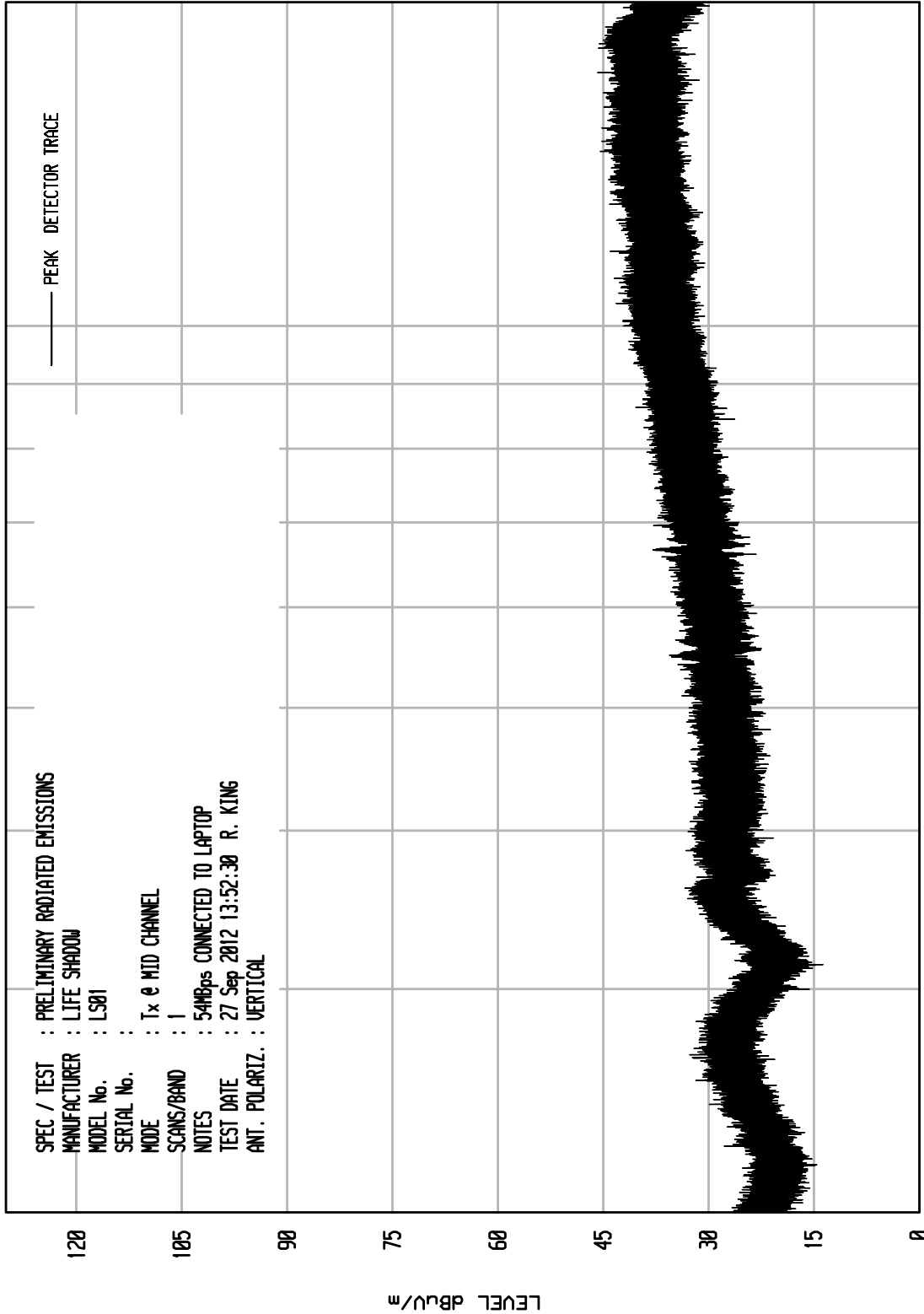
STOP = 18000



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 10

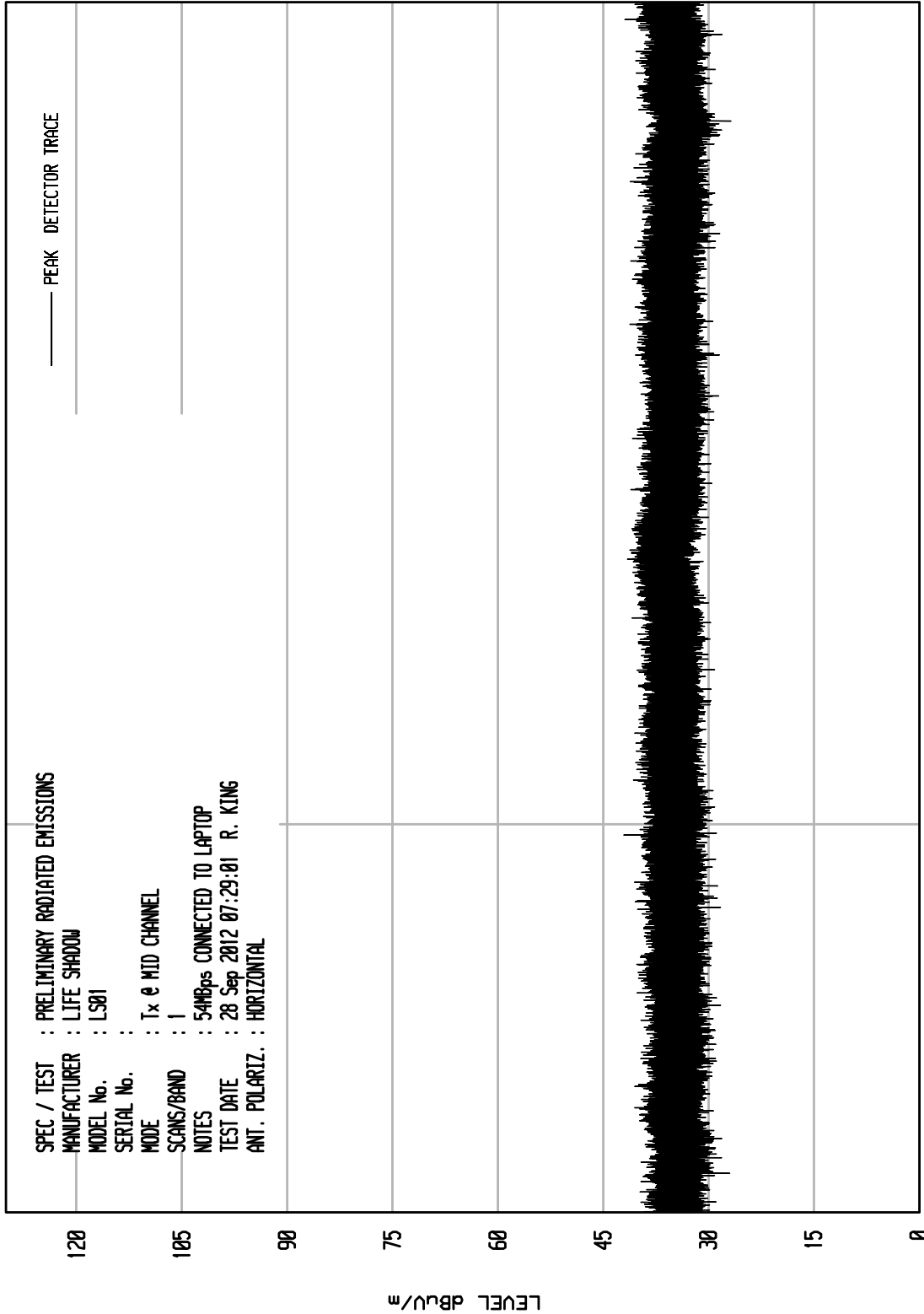




ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 44



START = 18000

FREQUENCY MHz

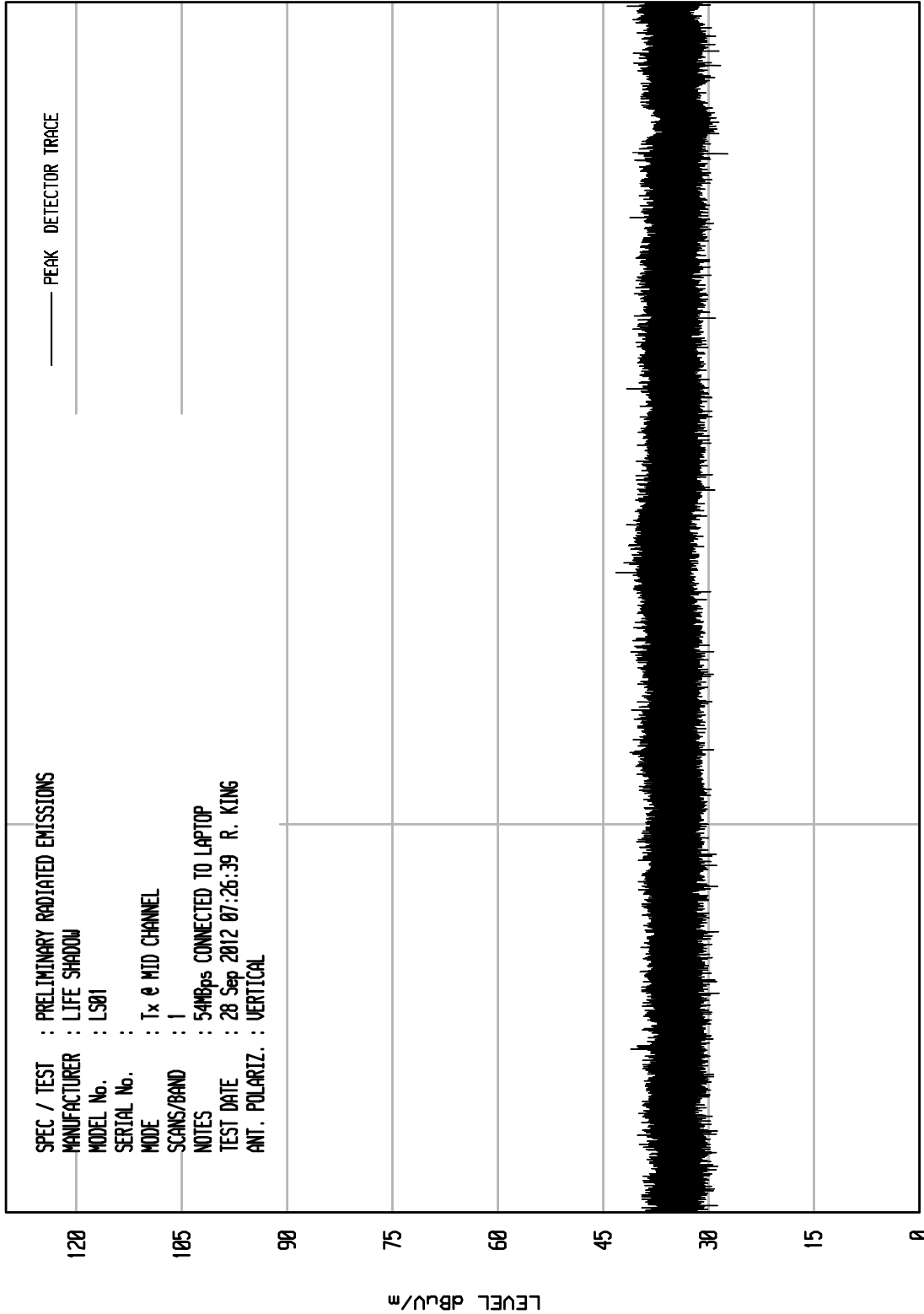
STOP = 25000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNIT RCV EMI RUN 43



START = 18000

FREQUENCY MHz

STOP = 25000

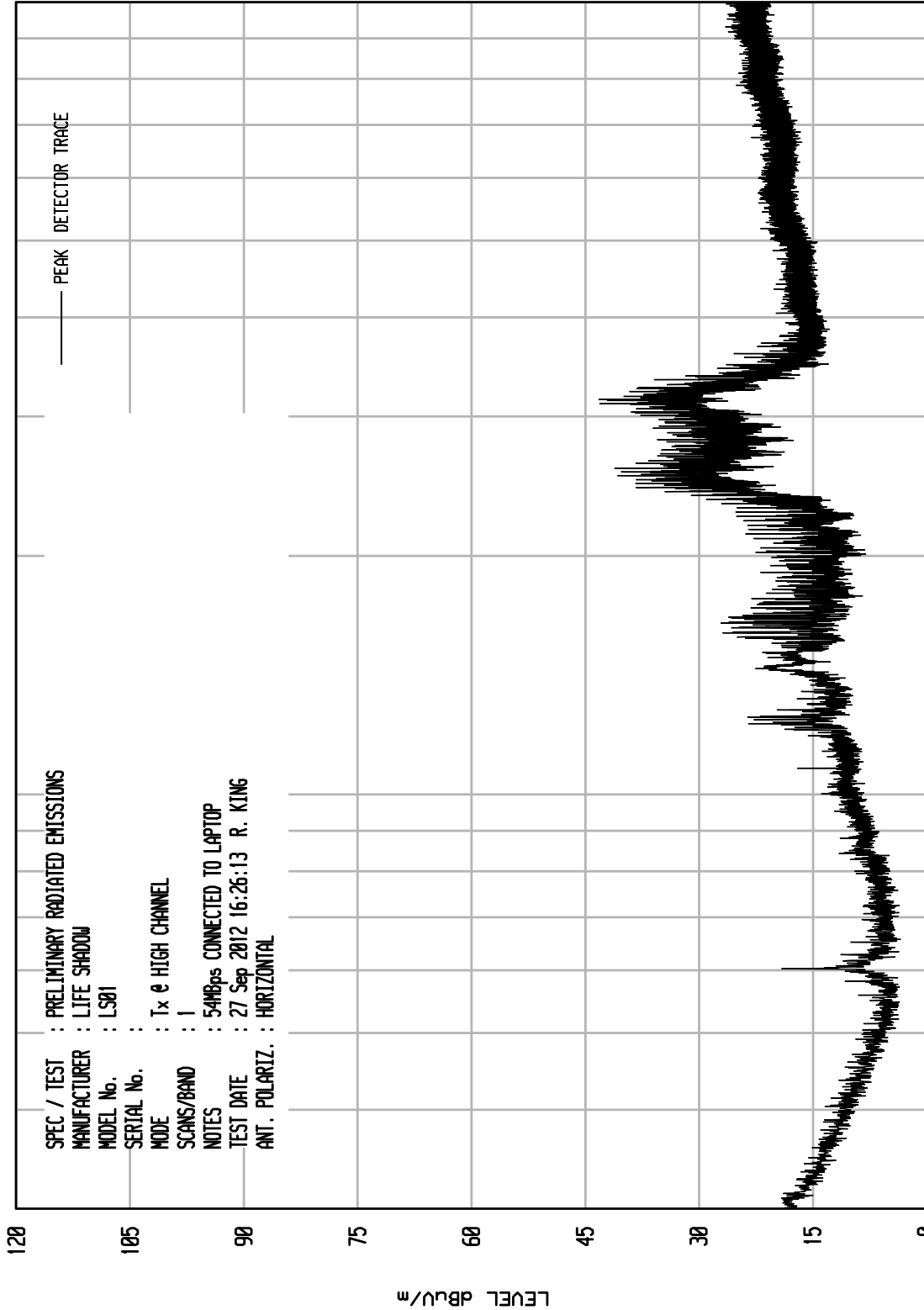


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 40

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps CONNECTED TO LAPTOP
TEST DATE : 27 Sep 2012 16:26:13 R. KING
ANT. POLARIZ. : HORIZONTAL



START = 30

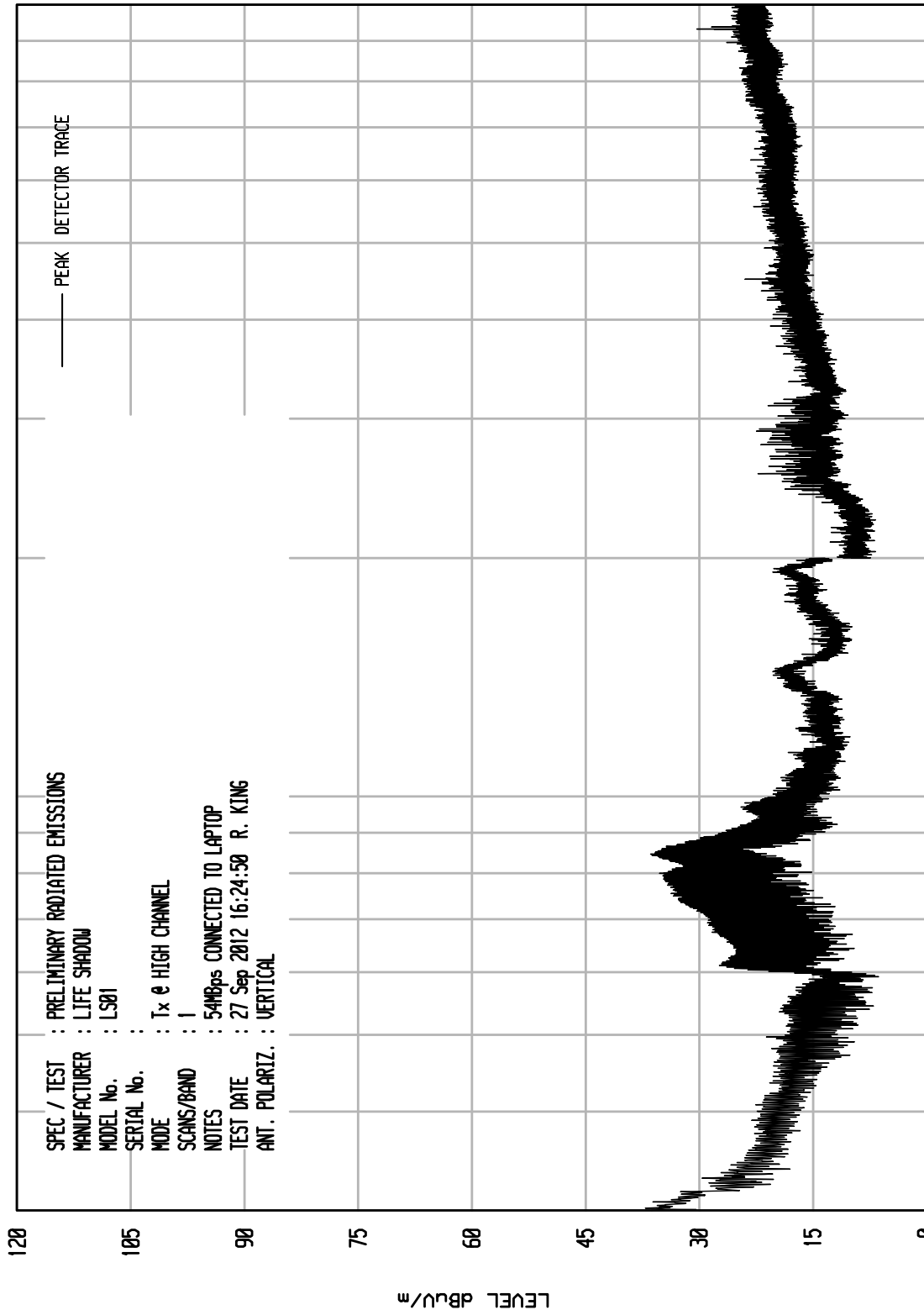
STOP = 1000



ELITE ELECTRONIC ENGINEERING Inc.
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UNIV RCV EMI RUN 39

UKA1 04/26/11



STOP = 1000

FREQUENCY MHz

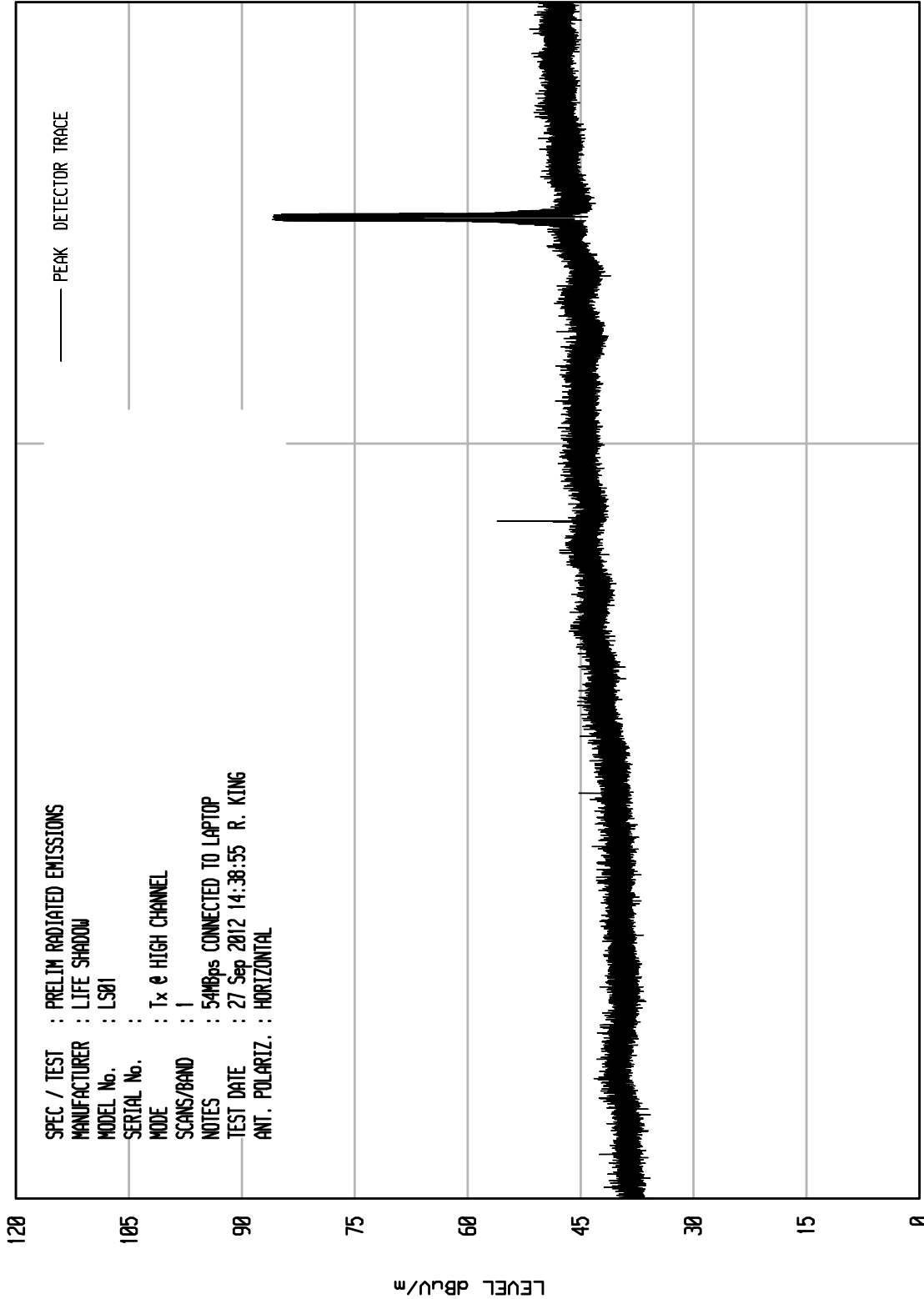
START = 30



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 13



START = 1000

FREQUENCY MHz

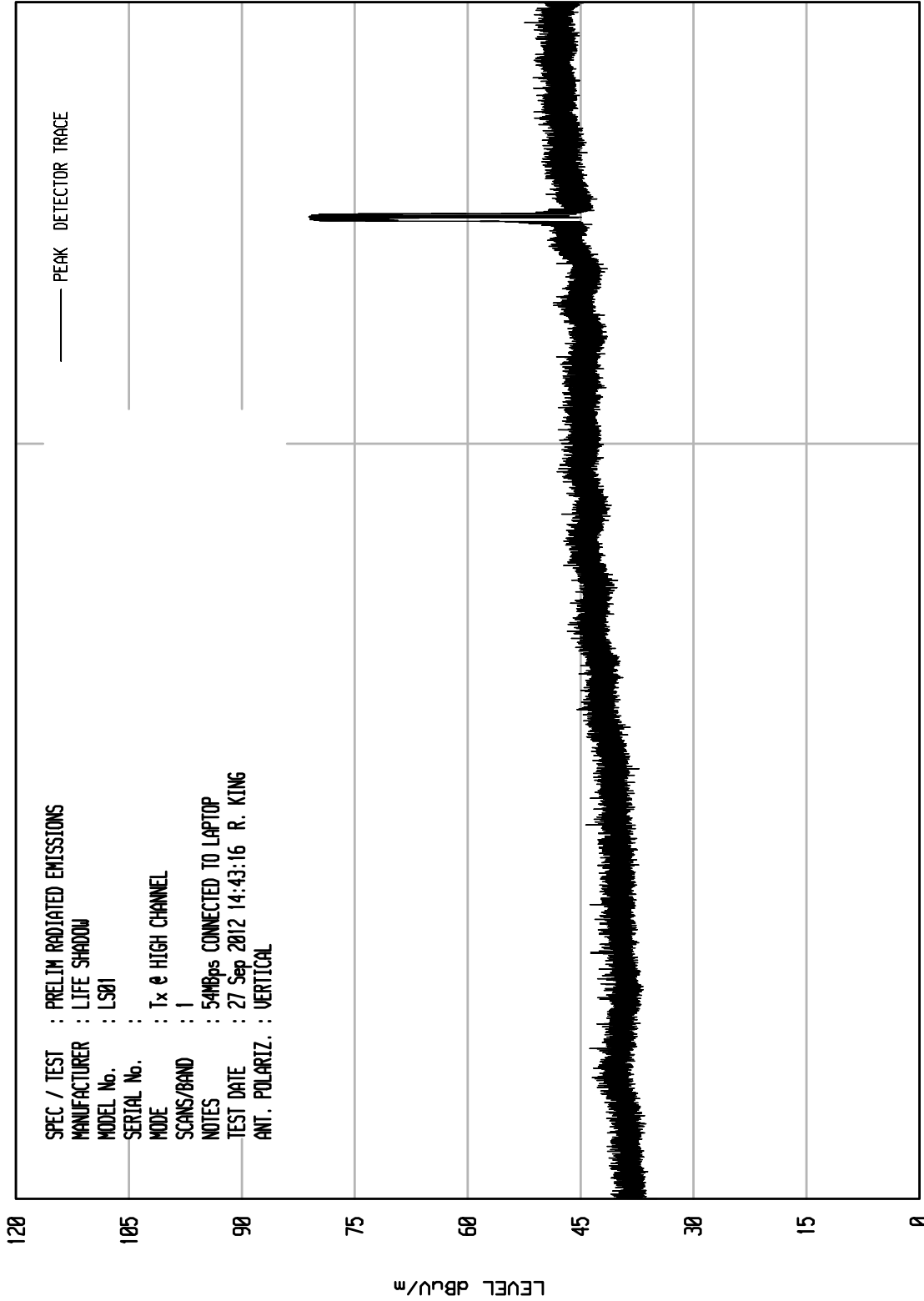
STOP = 3000



ELITE ELECTRONIC ENGINEERING Inc.
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UKA1 04/26/11

UNITV RCV EMI RUN 14



START = 1000

FREQUENCY MHz

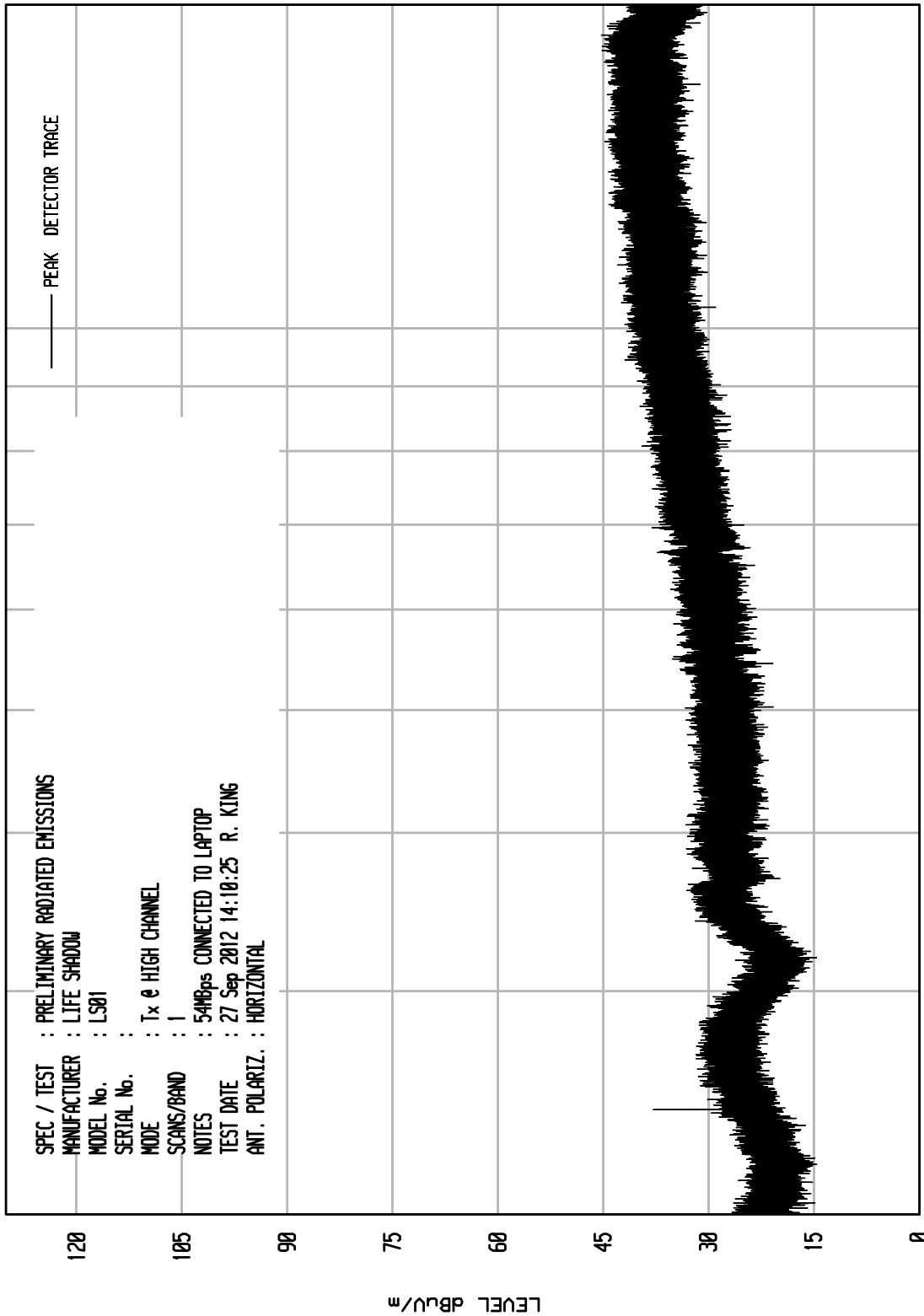
STOP = 3000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 12



START = 2000

10000

FREQUENCY MHz

STOP = 18000



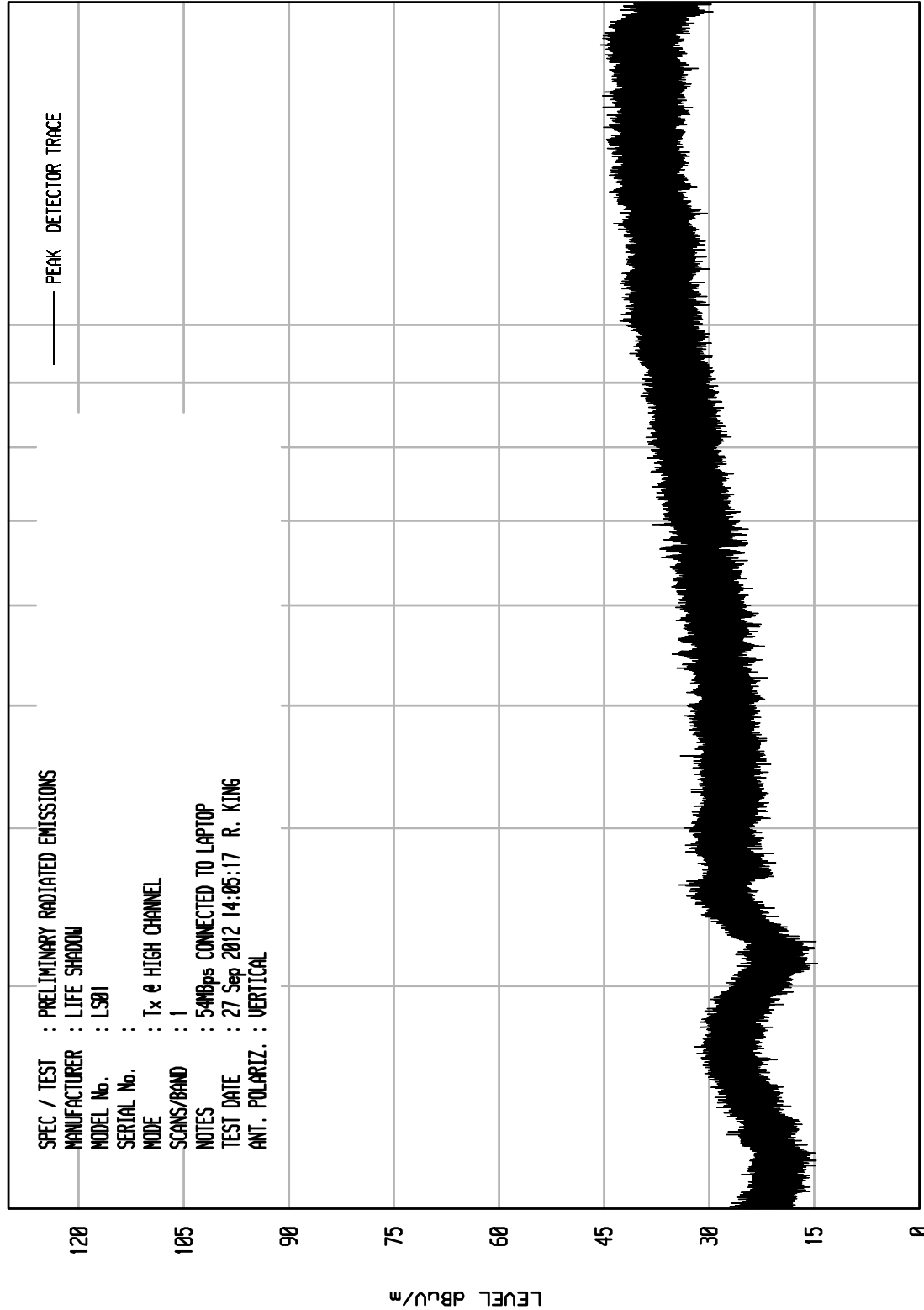
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 11

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : LIFE SHADOW
MODEL No. : LS01
SERIAL No. :
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : 54Mbps CONNECTED TO LAPTOP
TEST DATE : 27 Sep 2012 14:05:17 R. KING
ANT. POLARIZ. : VERTICAL

— PEAK DETECTOR TRACE



START = 2000

10000

FREQUENCY MHz

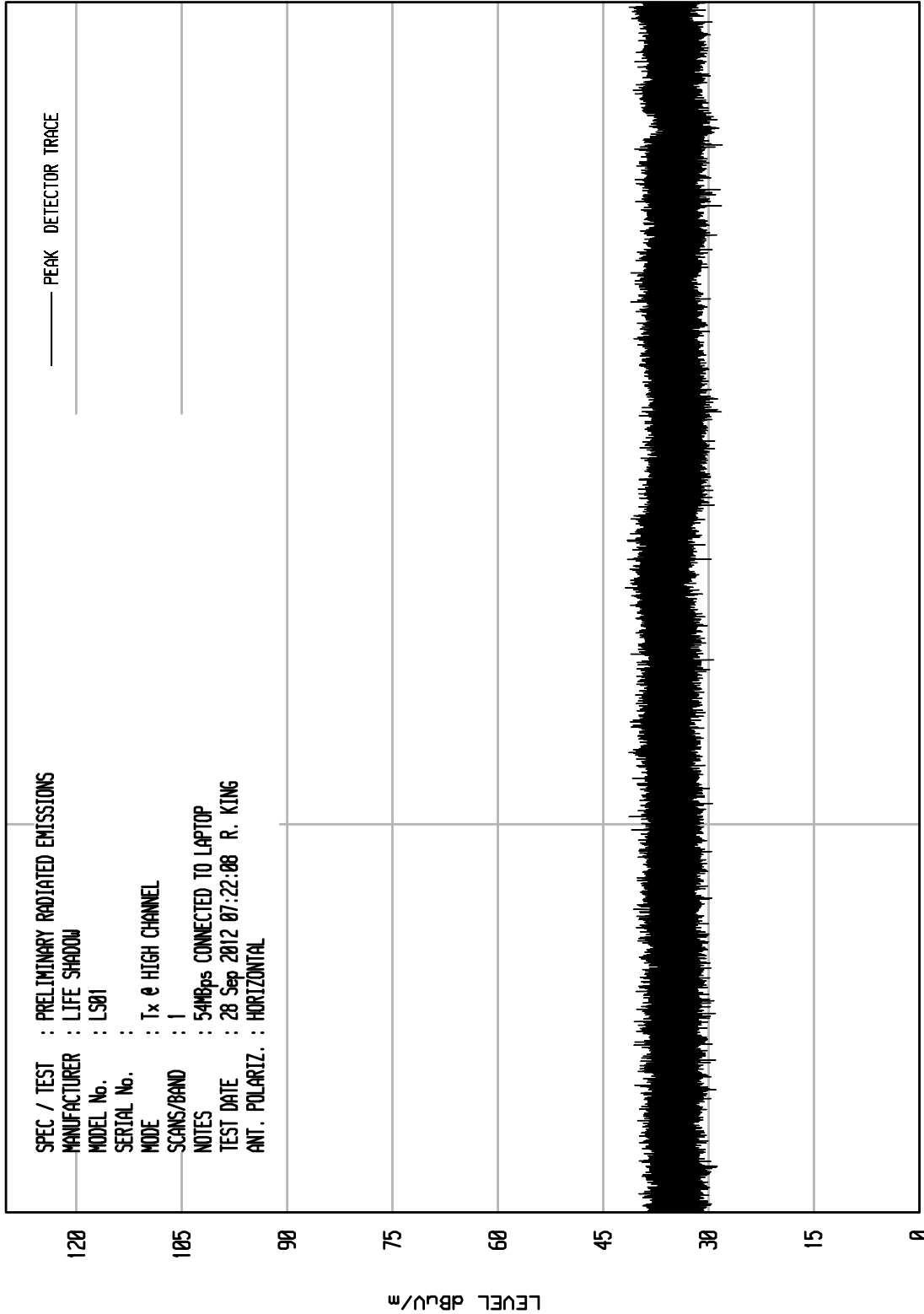
STOP = 18000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 41



START = 18000

FREQUENCY MHz

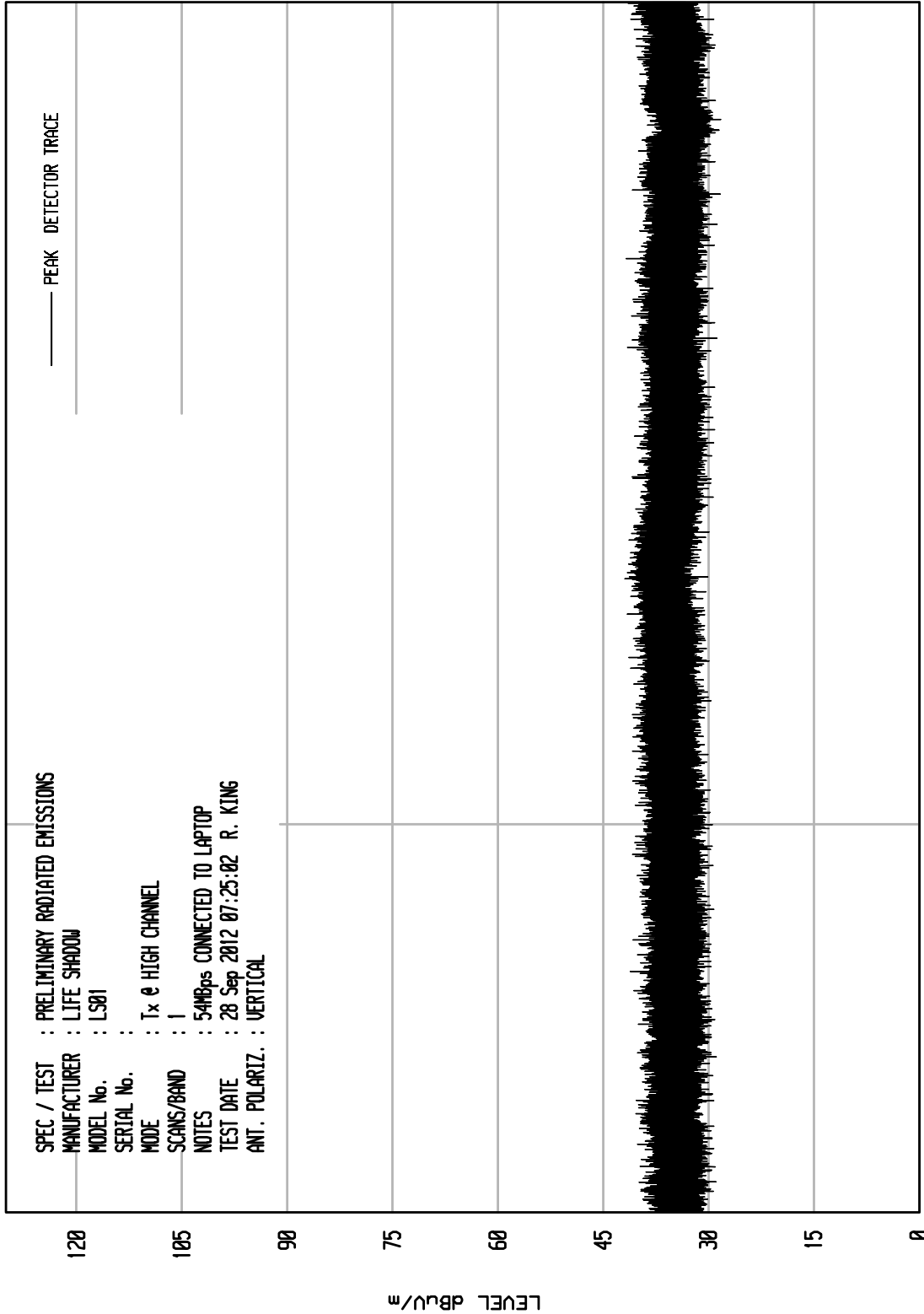
STOP = 25000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UKA1 04/26/11

UNITV RCV EMI RUN 42



START = 18000

FREQUENCY MHz

STOP = 25000



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2412MHz
Test Distance : 3 meters
Notes : Battery Operated
Notes : Peak Detector
: Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2412.00	H	79.6		2.6	31.5	0.0	113.7	482625.5		
2412.00	V	72.5		2.6	31.5	0.0	106.6	213604.4		
4824.00	H	46.1	*	3.7	34.7	-40.1	44.4	165.1	5000.0	-29.6
4824.00	V	47.5	*	3.7	34.7	-40.1	45.8	194.5	5000.0	-28.2
7236.00	H	37.5	*	4.7	37.8	-39.8	40.2	102.4	48262.5	-53.5
7236.00	V	35.8	*	4.7	37.8	-39.8	38.5	84.2	48262.5	-55.2
9648.00	H	36.3	*	5.2	39.7	-38.8	42.4	132.4	48262.5	-51.2
9648.00	V	35.4	*	5.2	39.7	-38.8	41.5	119.4	48262.5	-52.1
12060.00	H	45.9	*	6.1	41.3	-39.6	53.7	483.7	5000.0	-20.3
12060.00	V	46.1	*	6.1	41.3	-39.6	53.8	490.4	5000.0	-20.2
14472.00	H	44.4	*	6.6	42.3	-39.9	53.4	465.8	5000.0	-20.6
14472.00	V	45.9	*	6.6	42.3	-39.9	54.9	557.4	5000.0	-19.1
16884.00	H	35.4	*	7.2	41.2	-38.7	45.1	179.3	48262.5	-48.6
16884.00	V	34.8	*	7.2	41.2	-38.7	44.5	167.4	48262.5	-49.2
19296.00	H	35.8	*	2.2	40.4	-27.6	50.8	348.5	5000.0	-23.1
19296.00	V	35.8	*	2.2	40.4	-27.6	50.8	348.5	5000.0	-23.1
21708.00	H	27.6	*	2.2	40.6	-27.3	43.1	143.0	48262.5	-50.6
21708.00	V	28.9	*	2.2	40.6	-27.3	44.4	166.1	48262.5	-49.3
24120.00	H	29.3	*	2.2	40.6	-28.3	43.8	155.7	48262.5	-49.8
24120.00	V	29.3	*	2.2	40.6	-28.3	43.8	155.7	48262.5	-49.8



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2412MHz
Test Distance : 3 meters
Notes : Battery Operated
Notes : Average Readings in Restricted Bands
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4824.00	H	32.5	3.7	34.7	-40.1	30.8	165.1	500.0	-23.2
4824.00	V	32.5	3.7	34.7	-40.1	30.8	194.5	500.0	-23.2
12060.00	H	32.5	6.1	41.3	-39.6	40.3	103.1	500.0	-13.7
12060.00	V	32.5	6.1	41.3	-39.6	40.3	103.1	500.0	-13.7
14472.00	H	32.5	6.6	42.3	-39.9	41.5	118.8	500.0	-12.5
14472.00	V	32.5	6.6	42.3	-39.9	41.5	118.8	500.0	-12.5
19296.00	H	21.8	2.2	40.4	-27.6	36.8	69.5	500.0	-17.1
19296.00	V	21.8	2.2	40.4	-27.6	36.8	69.5	500.0	-17.1



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2412MHz
Test Distance : 3 meters
Notes : While connected to a laptop
Notes : Peak Detector
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2412.00	H	78.2		2.6	31.5	0.0	112.3	411254.1		
2412.00	V	72.3		2.6	31.5	0.0	106.4	208502.0		
4824.00	H	45.9	*	3.7	34.7	-40.1	44.2	162.9	5000.0	-29.7
4824.00	V	45.9	*	3.7	34.7	-40.1	44.2	162.3	5000.0	-29.8
7236.00	H	35.2	*	4.7	37.8	-39.8	37.9	78.6	41125.4	-54.4
7236.00	V	36.1	*	4.7	37.8	-39.8	38.8	87.2	41125.4	-53.5
9648.00	H	35.2	*	5.2	39.7	-38.8	41.3	116.7	41125.4	-50.9
9648.00	V	35.0	*	5.2	39.7	-38.8	41.1	114.0	41125.4	-51.1
12060.00	H	46.1	*	6.1	41.3	-39.6	53.8	490.4	5000.0	-20.2
12060.00	V	46.1	*	6.1	41.3	-39.6	53.8	490.4	5000.0	-20.2
14472.00	H	46.3	*	6.6	42.3	-39.9	55.3	582.3	5000.0	-18.7
14472.00	V	45.0	*	6.6	42.3	-39.9	54.0	500.8	5000.0	-20.0
16884.00	H	36.6	*	7.2	41.2	-38.7	46.3	205.9	41125.4	-46.0
16884.00	V	36.6	*	7.2	41.2	-38.7	46.3	205.9	41125.4	-46.0
19296.00	H	35.8	*	2.2	40.4	-27.6	50.8	348.5	5000.0	-23.1
19296.00	V	35.8	*	2.2	40.4	-27.6	50.8	348.5	5000.0	-23.1
21708.00	H	28.4	*	2.2	40.6	-27.3	43.9	156.8	41125.4	-48.4
21708.00	V	24.3	*	2.2	40.6	-27.3	39.8	97.8	41125.4	-52.5
24120.00	H	24.3	*	2.2	40.6	-28.3	38.8	87.5	41125.4	-53.4
24120.00	V	24.3	*	2.2	40.6	-28.3	38.8	87.5	41125.4	-53.4



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2412MHz
Test Distance : 3 meters
Notes : While connected to a laptop
Notes : Average Readings in Restricted Bands
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4824.00	H	32.5	3.7	34.7	-40.1	30.8	162.9	500.0	-23.2
4824.00	V	32.5	3.7	34.7	-40.1	30.8	162.3	500.0	-23.2
12060.00	H	32.5	6.1	41.3	-39.6	40.3	103.1	500.0	-13.7
12060.00	V	32.5	6.1	41.3	-39.6	40.3	103.1	500.0	-13.7
14472.00	H	32.5	6.6	42.3	-39.9	41.5	118.8	500.0	-12.5
14472.00	V	32.5	6.6	42.3	-39.9	41.5	118.8	500.0	-12.5
19296.00	H	21.8	2.2	40.4	-27.6	36.8	69.5	500.0	-17.1
19296.00	V	21.8	2.2	40.4	-27.6	36.8	69.5	500.0	-17.1



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2437MHz
Test Distance : 3 meters
Notes : Battery Operated
Notes : Peak Detector
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2437.00	H	77.6		2.6	31.5	0.0	111.7	384890.0		
2437.00	V	74.5		2.6	31.5	0.0	108.6	269362.2		
4874.00	H	46.4	*	3.7	34.7	-40.1	44.8	173.0	5000.0	-29.2
4874.00	V	46.4	*	3.7	34.7	-40.1	44.8	173.0	5000.0	-29.2
7311.00	H	45.2	*	4.7	37.9	-39.8	48.0	251.6	5000.0	-26.0
7311.00	V	45.4	*	4.7	37.9	-39.8	48.2	257.5	5000.0	-25.8
9748.00	H	35.8	*	5.2	39.8	-38.7	42.1	127.6	38489.0	-49.6
9748.00	V	35.6	*	5.2	39.8	-38.7	41.9	124.7	38489.0	-49.8
12185.00	H	44.8	*	6.1	41.3	-39.5	52.7	433.9	5000.0	-21.2
12185.00	V	45.1	*	6.1	41.3	-39.5	53.0	447.6	5000.0	-21.0
14622.00	H	34.1	*	6.7	42.3	-40.1	43.0	141.7	38489.0	-48.7
14622.00	V	34.1	*	6.7	42.3	-40.1	43.0	141.7	38489.0	-48.7
17059.00	H	34.9	*	7.2	40.9	-38.7	44.4	166.0	38489.0	-47.3
17059.00	V	35.8	*	7.2	40.9	-38.7	45.3	184.2	38489.0	-46.4
19496.00	H	35.8	*	2.2	40.4	-27.1	51.3	365.9	5000.0	-22.7
19496.00	V	35.8	*	2.2	40.4	-27.1	51.3	365.9	5000.0	-22.7
21933.00	H	28.5	*	2.2	40.6	-27.5	43.8	154.7	38489.0	-47.9
21933.00	V	28.5	*	2.2	40.6	-27.5	43.8	154.7	38489.0	-47.9
24370.00	H	28.3	*	2.2	40.6	-28.2	42.9	139.8	38489.0	-48.8
24370.00	V	28.3	*	2.2	40.6	-28.2	42.9	139.8	38489.0	-48.8



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2437MHz
Test Distance : 3 meters
Notes : Battery Operated
Notes : Average Readings in Restricted Bands
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4874.00	H	32.5	3.7	34.7	-40.1	30.8	173.0	500.0	-23.2
4874.00	V	32.4	3.7	34.7	-40.1	30.8	173.0	500.0	-23.2
7311.00	H	32.2	4.7	37.9	-39.8	35.0	56.1	500.0	-19.0
7311.00	V	32.2	4.7	37.9	-39.8	35.0	56.1	500.0	-19.0
12185.00	H	31.7	6.1	41.3	-39.5	39.6	96.0	500.0	-14.3
12185.00	V	31.7	6.1	41.3	-39.5	39.6	96.0	500.0	-14.3
19496.00	H	21.8	2.2	40.4	-27.1	37.3	73.0	500.0	-16.7
19496.00	V	21.8	2.2	40.4	-27.1	37.3	73.0	500.0	-16.7



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2437MHz
Test Distance : 3 meters
Notes : While connected to a laptop
Notes : Peak Detector
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2437.00	H	77.6		2.6	31.5	0.0	111.7	384890.0		
2437.00	V	72.1		2.6	31.5	0.0	106.2	204332.1		
4874.00	H	45.6	*	3.7	34.7	-40.1	43.9	156.1	5000.0	-30.1
4874.00	V	45.9	*	3.7	34.7	-40.1	44.3	163.1	5000.0	-29.7
7311.00	H	44.0	*	4.7	37.9	-39.8	46.8	218.1	5000.0	-27.2
7311.00	V	45.7	*	4.7	37.9	-39.8	48.5	265.6	5000.0	-25.5
9748.00	H	35.3	*	5.2	39.8	-38.7	41.6	120.4	38489.0	-50.1
9748.00	V	35.7	*	5.2	39.8	-38.7	42.0	126.1	38489.0	-49.7
12185.00	H	45.0	*	6.1	41.3	-39.5	53.0	446.6	5000.0	-21.0
12185.00	V	45.3	*	6.1	41.3	-39.5	53.2	459.6	5000.0	-20.7
14622.00	H	36.1	*	6.7	42.3	-40.1	45.0	178.4	38489.0	-46.7
14622.00	V	36.1	*	6.7	42.3	-40.1	45.0	178.4	38489.0	-46.7
17059.00	H	35.2	*	7.2	40.9	-38.7	44.7	171.9	38489.0	-47.0
17059.00	V	35.3	*	7.2	40.9	-38.7	44.8	173.9	38489.0	-46.9
19496.00	H	35.8	*	2.2	40.4	-27.1	51.3	365.9	5000.0	-22.7
19496.00	V	35.8	*	2.2	40.4	-27.1	51.3	365.9	5000.0	-22.7
21933.00	H	28.3	*	2.2	40.6	-27.5	43.6	151.2	38489.0	-48.1
21933.00	V	28.3	*	2.2	40.6	-27.5	43.6	151.2	38489.0	-48.1
24370.00	H	28.1	*	2.2	40.6	-28.2	42.7	136.7	38489.0	-49.0
24370.00	V	28.1	*	2.2	40.6	-28.2	42.7	136.7	38489.0	-49.0



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2437MHz
Test Distance : 3 meters
Notes : While connected to a laptop
Notes : Average Readings in Restricted Bands
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4874.00	H	32.5	3.7	34.7	-40.1	30.8	156.1	500.0	-23.2
4874.00	V	32.4	3.7	34.7	-40.1	30.8	163.1	500.0	-23.2
7311.00	H	32.2	4.7	37.9	-39.8	35.0	56.1	500.0	-19.0
7311.00	V	32.2	4.7	37.9	-39.8	35.0	56.1	500.0	-19.0
12185.00	H	31.7	6.1	41.3	-39.5	39.6	96.0	500.0	-14.3
12185.00	V	31.7	6.1	41.3	-39.5	39.6	96.0	500.0	-14.3
19496.00	H	21.8	2.2	40.4	-27.1	37.3	73.0	500.0	-16.7
19496.00	V	21.8	2.2	40.4	-27.1	37.3	73.0	500.0	-16.7



DATA PAGE

Manufacturer : Life Shadow, LLC.
 Model No. : LS01
 Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
 Date : September 28, 2012
 Mode : Transmit @ 2462MHz
 Test Distance : 3 meters
 Notes : Battery Operated
 Notes : Peak Detector
 Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2462.00	H	78.6		2.6	31.5	0.0	112.7	433062.5		
2462.00	V	76.3		2.6	31.5	0.0	110.4	332315.5		
4924.00	H	46.4	*	3.7	34.8	-40.1	44.8	173.3	5000.0	-29.2
4924.00	V	44.9	*	3.7	34.8	-40.1	43.2	145.1	5000.0	-30.7
7386.00	H	45.6	*	4.7	37.9	-39.7	48.5	267.3	5000.0	-25.4
7386.00	V	45.8	*	4.7	37.9	-39.7	48.7	272.9	5000.0	-25.3
9848.00	H	35.1	*	5.3	39.9	-38.7	41.6	120.1	43306.2	-51.1
9848.00	V	34.8	*	5.3	39.9	-38.7	41.3	116.0	43306.2	-51.4
12310.00	H	45.6	*	6.1	41.4	-39.3	53.8	488.3	5000.0	-20.2
12310.00	V	45.1	*	6.1	41.4	-39.3	53.2	457.8	5000.0	-20.8
14772.00	H	34.8	*	6.8	42.3	-40.2	43.7	152.5	43306.2	-49.1
14772.00	V	34.9	*	6.8	42.3	-40.2	43.8	154.2	43306.2	-49.0
17234.00	H	36.2	*	7.3	40.2	-38.9	44.9	175.3	43306.2	-47.9
17234.00	V	36.2	*	7.3	40.2	-38.9	44.9	175.3	43306.2	-47.9
19696.00	H	35.9	*	2.2	40.4	-26.9	51.7	382.6	5000.0	-22.3
19696.00	V	35.9	*	2.2	40.4	-26.9	51.7	382.6	5000.0	-22.3
22158.00	H	34.5	*	2.2	40.6	-27.6	49.6	303.7	5000.0	-24.3
22158.00	V	34.5	*	2.2	40.6	-27.6	49.6	303.7	5000.0	-24.3
24620.00	H	28.2	*	2.2	40.6	-28.2	42.8	138.6	43306.2	-49.9
24620.00	V	28.2	*	2.2	40.6	-28.2	42.8	138.6	43306.2	-49.9



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2462MHz
Test Distance : 3 meters
Notes : Battery Operated
Notes : Average Readings in Restricted Bands
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4924.00	H	32.5	3.7	34.8	-40.1	30.8	173.3	500.0	-23.2
4924.00	V	32.5	3.7	34.8	-40.1	30.8	145.1	500.0	-23.2
7386.00	H	32.1	4.7	37.9	-39.7	35.0	56.1	500.0	-19.0
7386.00	V	32.1	4.7	37.9	-39.7	35.0	56.2	500.0	-19.0
12310.00	H	31.8	6.1	41.4	-39.3	40.0	99.7	500.0	-14.0
12310.00	V	31.8	6.1	41.4	-39.3	39.9	98.9	500.0	-14.1
19696.00	H	21.9	2.2	40.4	-26.9	37.7	76.3	500.0	-16.3
19696.00	V	21.9	2.2	40.4	-26.9	37.7	76.3	500.0	-16.3
22158.00	H	21.5	2.2	40.6	-27.6	36.6	68.0	500.0	-17.3
22158.00	V	21.5	2.2	40.6	-27.6	36.6	68.0	500.0	-17.3



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2462MHz
Test Distance : 3 meters
Notes : While connected to a laptop
Notes : Peak Detector
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2462.00	H	76.3		2.6	31.5	0.0	110.4	332315.5		
2462.00	V	73.0		2.6	31.5	0.0	107.1	227274.4		
4924.00	H	44.6	*	3.7	34.8	-40.1	43.0	140.8	5000.0	-31.0
4924.00	V	46.2	*	3.7	34.8	-40.1	44.5	168.1	5000.0	-29.5
7386.00	H	45.2	*	4.7	37.9	-39.7	48.1	253.5	5000.0	-25.9
7386.00	V	45.3	*	4.7	37.9	-39.7	48.2	257.4	5000.0	-25.8
9848.00	H	34.9	*	5.3	39.9	-38.7	41.4	117.4	33231.5	-49.0
9848.00	V	35.0	*	5.3	39.9	-38.7	41.5	118.7	33231.5	-48.9
12310.00	H	45.0	*	6.1	41.4	-39.3	53.2	456.8	5000.0	-20.8
12310.00	V	44.9	*	6.1	41.4	-39.3	53.1	449.5	5000.0	-20.9
14772.00	H	33.8	*	6.8	42.3	-40.2	42.7	135.9	33231.5	-47.8
14772.00	V	34.2	*	6.8	42.3	-40.2	43.1	142.3	33231.5	-47.4
17234.00	H	34.0	*	7.3	40.2	-38.9	42.7	136.1	33231.5	-47.8
17234.00	V	33.6	*	7.3	40.2	-38.9	42.3	130.0	33231.5	-48.2
19696.00	H	35.9	*	2.2	40.4	-26.9	51.7	382.6	5000.0	-22.3
19696.00	V	35.9	*	2.2	40.4	-26.9	51.7	382.6	5000.0	-22.3
22158.00	H	34.5	*	2.2	40.6	-27.6	49.6	303.7	5000.0	-24.3
22158.00	V	34.5	*	2.2	40.6	-27.6	49.6	303.7	5000.0	-24.3
24620.00	H	28.2	*	2.2	40.6	-28.2	42.8	138.6	33231.5	-47.6
24620.00	V	28.2	*	2.2	40.6	-28.2	42.8	138.6	33231.5	-47.6



DATA PAGE

Manufacturer : Life Shadow, LLC.
Model No. : LS01
Test Specification : FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
Date : September 28, 2012
Mode : Transmit @ 2462MHz
Test Distance : 3 meters
Notes : While connected to a laptop
Notes : Average Readings in Restricted Bands
Notes : Total = Meter Reading + Cable Loss + Antenna Factor + Preamp Gain

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4924.00	H	32.5	3.7	34.8	-40.1	30.8	173.3	500.0	-23.2
4924.00	V	32.5	3.7	34.8	-40.1	30.8	145.1	500.0	-23.2
7386.00	H	32.1	4.7	37.9	-39.7	35.0	56.1	500.0	-19.0
7386.00	V	32.1	4.7	37.9	-39.7	35.0	56.2	500.0	-19.0
12310.00	H	31.8	6.1	41.4	-39.3	40.0	99.7	500.0	-14.0
12310.00	V	31.8	6.1	41.4	-39.3	39.9	98.9	500.0	-14.1
19696.00	H	21.9	2.2	40.4	-26.9	37.7	76.3	500.0	-16.3
19696.00	V	21.9	2.2	40.4	-26.9	37.7	76.3	500.0	-16.3
22158.00	H	21.5	2.2	40.6	-27.6	36.6	68.0	500.0	-17.3
22158.00	V	21.5	2.2	40.6	-27.6	36.6	68.0	500.0	-17.3



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2412MHz
Mode : b, 11 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Peak readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2400	H	16.4	2.6	31.5	0.0	50.5	335.0	5000.0	-23.5
2400	V	20.6	2.6	31.5	0.0	54.6	539.5	5000.0	-19.3

Checked BY RICHARD E. King :

Richard E. King



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2412MHz
Mode : b, 11 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Average readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
2400	H	3.4	2.6	31.5	37.5	84.2	500.0	-16.5
2400	V	6.0	2.6	31.5	40.1	84.2	500.0	-13.9

Checked BY RICHARD E. King :

Richard E. King



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2412MHz
Mode : g, 54 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Peak readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2400	H	20.2	2.6	31.5	0.0	54.3	515.8	5000.0	-19.7
2400	V	23.8	2.6	31.5	0.0	57.8	779.9	5000.0	-16.1

Checked BY RICHARD E. King :

Richard E. King



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2412MHz
Mode : g, 54 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Average readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
2400	H	3.1	2.6	31.5	37.2	84.2	500.0	-16.8
2400	V	3.6	2.6	31.5	37.7	84.2	500.0	-16.3

Checked BY RICHARD E. KING :

Richard E. King



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2462MHz
Mode : b, 11 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Peak readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2483.50	H	14.2	2.7	31.5	0.0	48.3	260.1	5000.0	-25.7
2483.50	V	16.1	2.7	31.5	0.0	50.2	323.7	5000.0	-23.8

Checked BY RICHARD E. King :

Richard E. King



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2462MHz
Mode : b, 11 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Average readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
2483.50	H	2.0	2.7	31.5	36.2	84.2	500.0	-17.7
2483.50	V	2.2	2.7	31.5	36.4	84.2	500.0	-17.6

Checked BY RICHARD E. King :

Richard E. King



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2462MHz
Mode : g, 54 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Peak readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2483.50	H	14.9	2.7	31.5	0.0	49.1	283.5	5000.0	-24.9
2483.50	V	15.5	2.7	31.5	0.0	49.7	303.8	5000.0	-24.3

Checked BY RICHARD E. King :

Richard E. King



Manufacturer : LifeShadow LLC.
Test Item : Radio Module
Model No. : LS01
Serial No. : prototype
Mode : Transmit at 2462MHz
Mode : g, 54 MBps
Test Specification : FCC 15.247 and Industry Canada RSS-210 Annex 2, section A2.9
Date : September 28, 2012
Test Distance : 3 meters
Note : Average readings

Freq. MHz	Ant Pol	Meter Reading (dBuV)	CBL Fac (dB)	Ant Fac (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
2483.50	H	2.0	2.7	31.5	36.2	84.2	500.0	-17.7
2483.50	V	3.1	2.7	31.5	37.3	84.2	500.0	-16.7

Checked BY RICHARD E. KING :

Richard E. King

Ref Lvl
15 dBm

Marker 1 [T3]

2.26 dBm

RBW 100 kHz

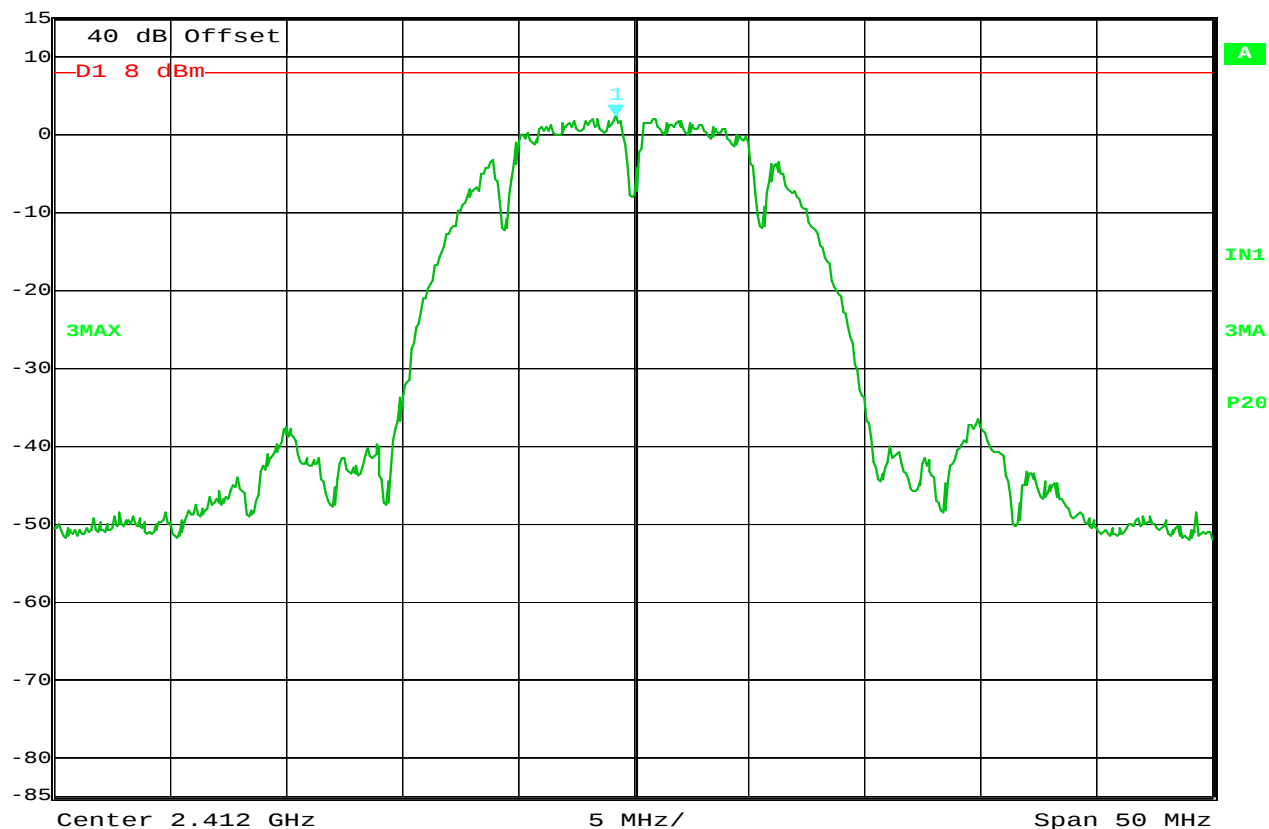
RF Att 10 dB

VBW 1 MHz

2.41124850 GHz

SWT 12.5 ms

Unit dBm



Date: 28.SEP.2012 08:50:14

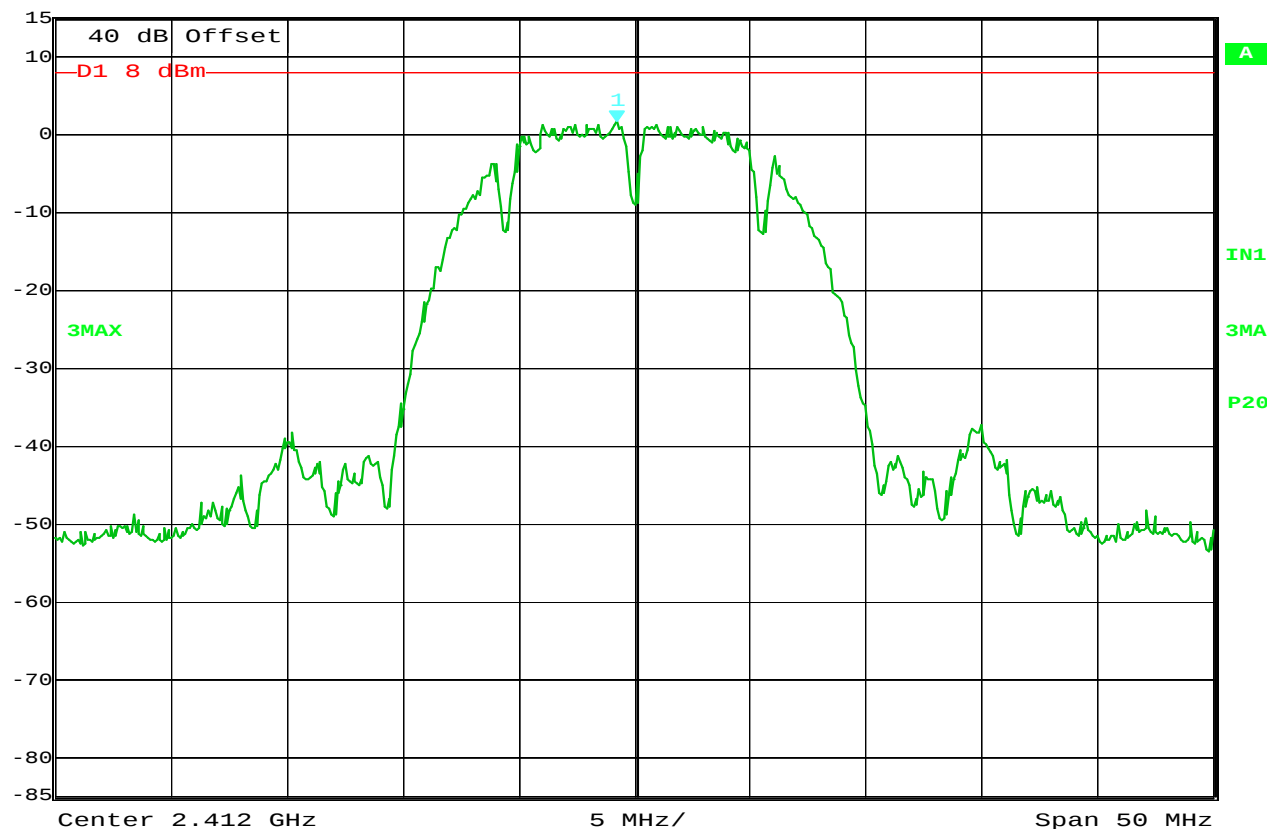
FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol B
TEST MODE : 1Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 2.26 dBm – 15.2 dB = -12.94 dBm

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 10 dB
1.64 dBm VBW 1 MHz
2.41124850 GHz SWT 12.5 ms Unit dBm



Date: 28.SEP.2012 08:54:25

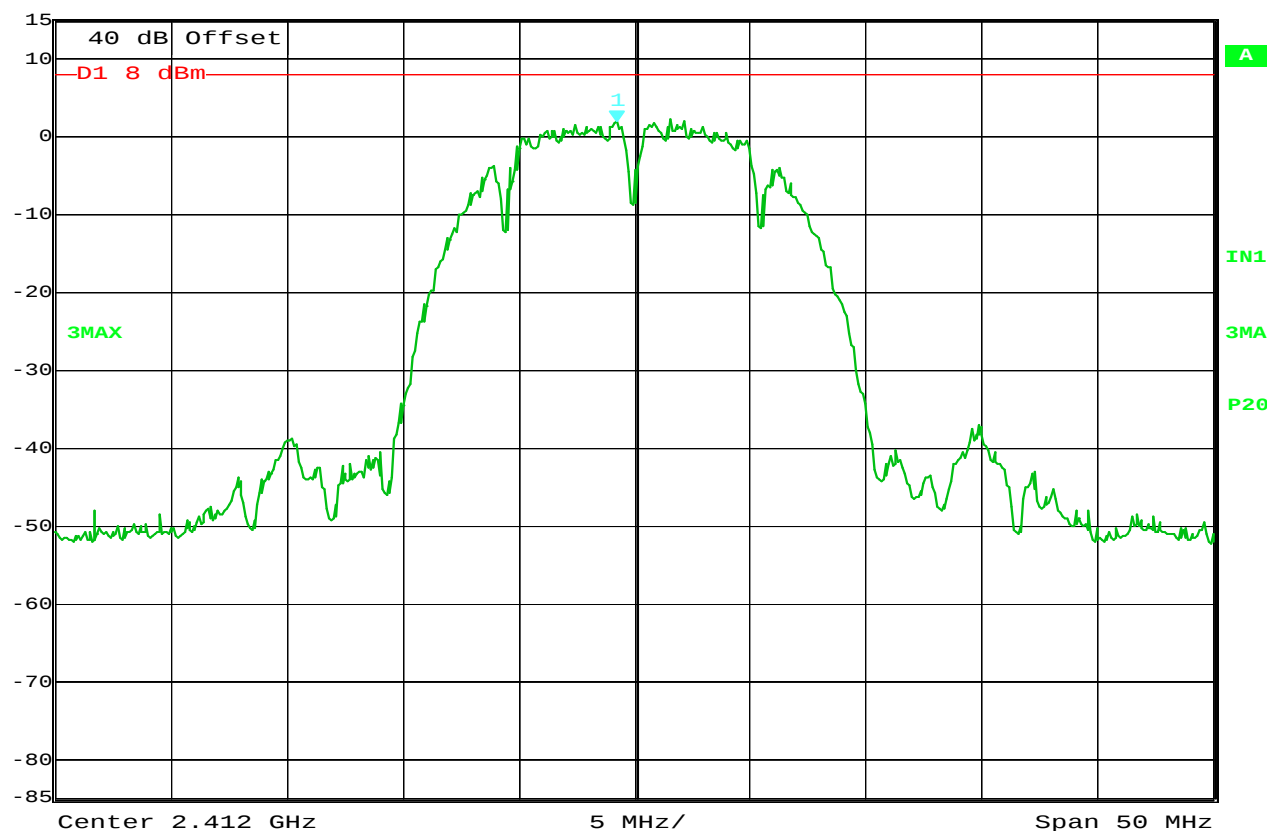
FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol B
TEST MODE : 2Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.64 dBm – 15.2 dB = -13.56 dBm

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 10 dB
1.91 dBm VBW 1 MHz
2.41124850 GHz SWT 12.5 ms Unit dBm



Date: 28.SEP.2012 08:56:04

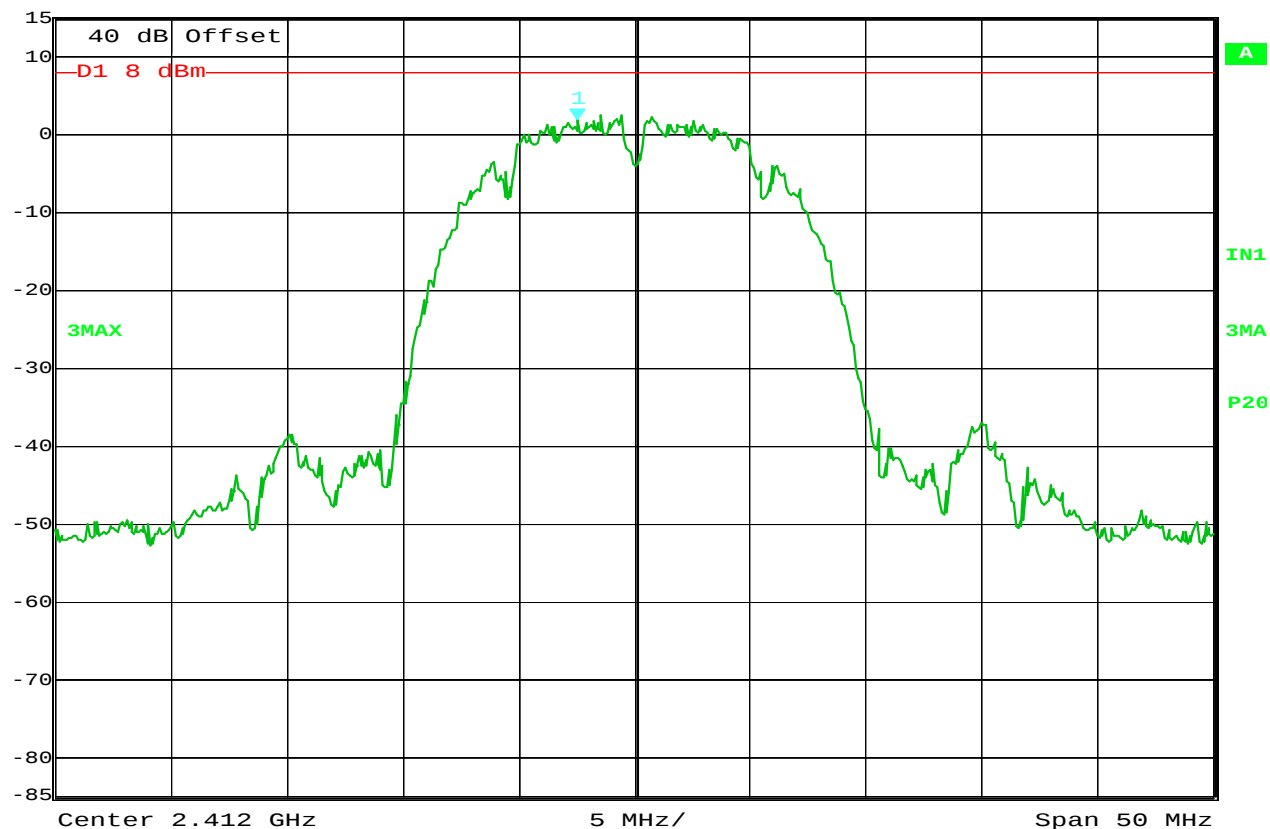
FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol B
TEST MODE : 5.5Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.91 dBm – 15.2 dB = -13.29 dBm

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 10 dB
1.99 dBm VBW 1 MHz
2.40954509 GHz SWT 12.5 ms Unit dBm

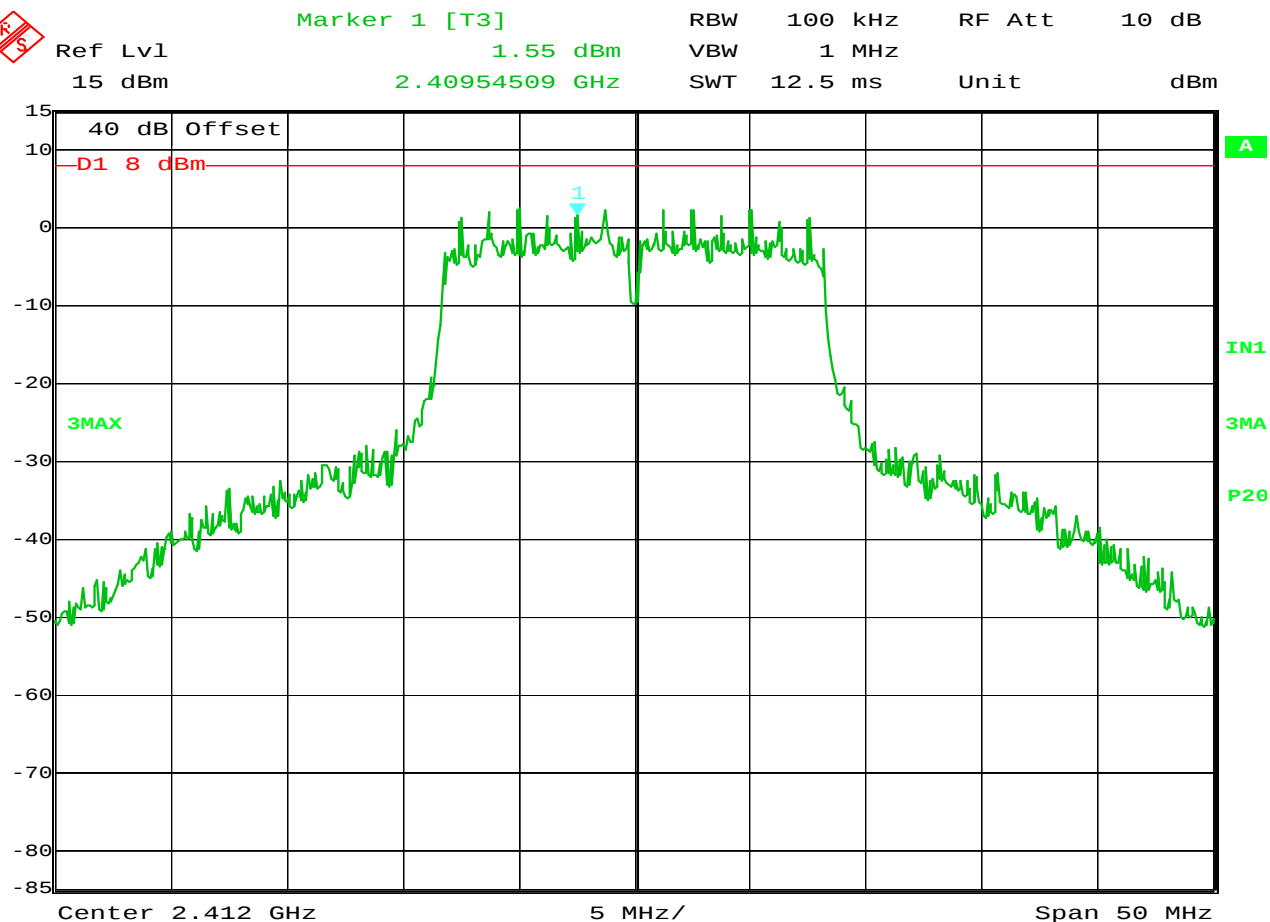


Date: 28.SEP.2012 08:57:39

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol B
TEST MODE : 11Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.99 dBm - 15.2 dB = -13.21 dBm

NOTES



Date: 28.SEP.2012 08:59:46

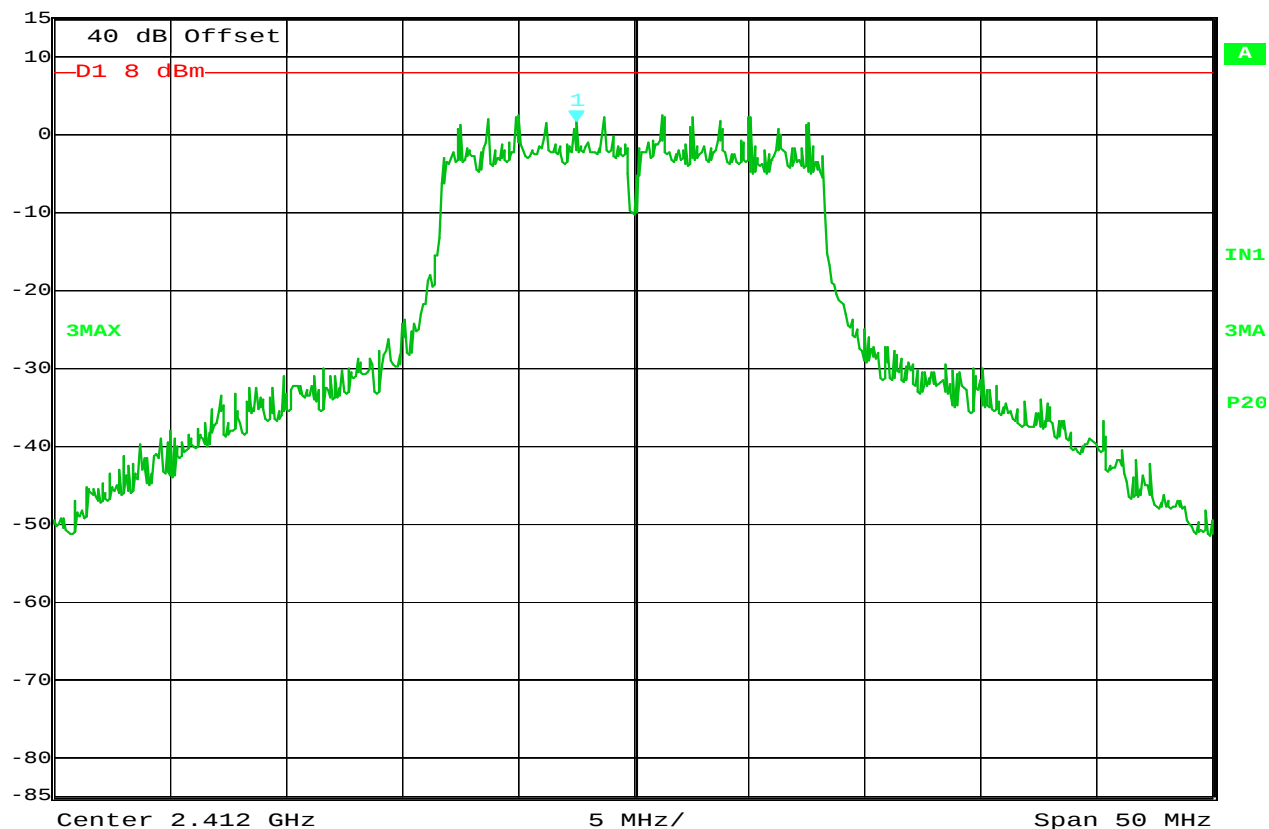
FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 6Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.55 dBm – 15.2 dB = -13.65 dBm

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 10 dB
1.64 dBm VBW 1 MHz
2.40954509 GHz SWT 12.5 ms Unit dBm

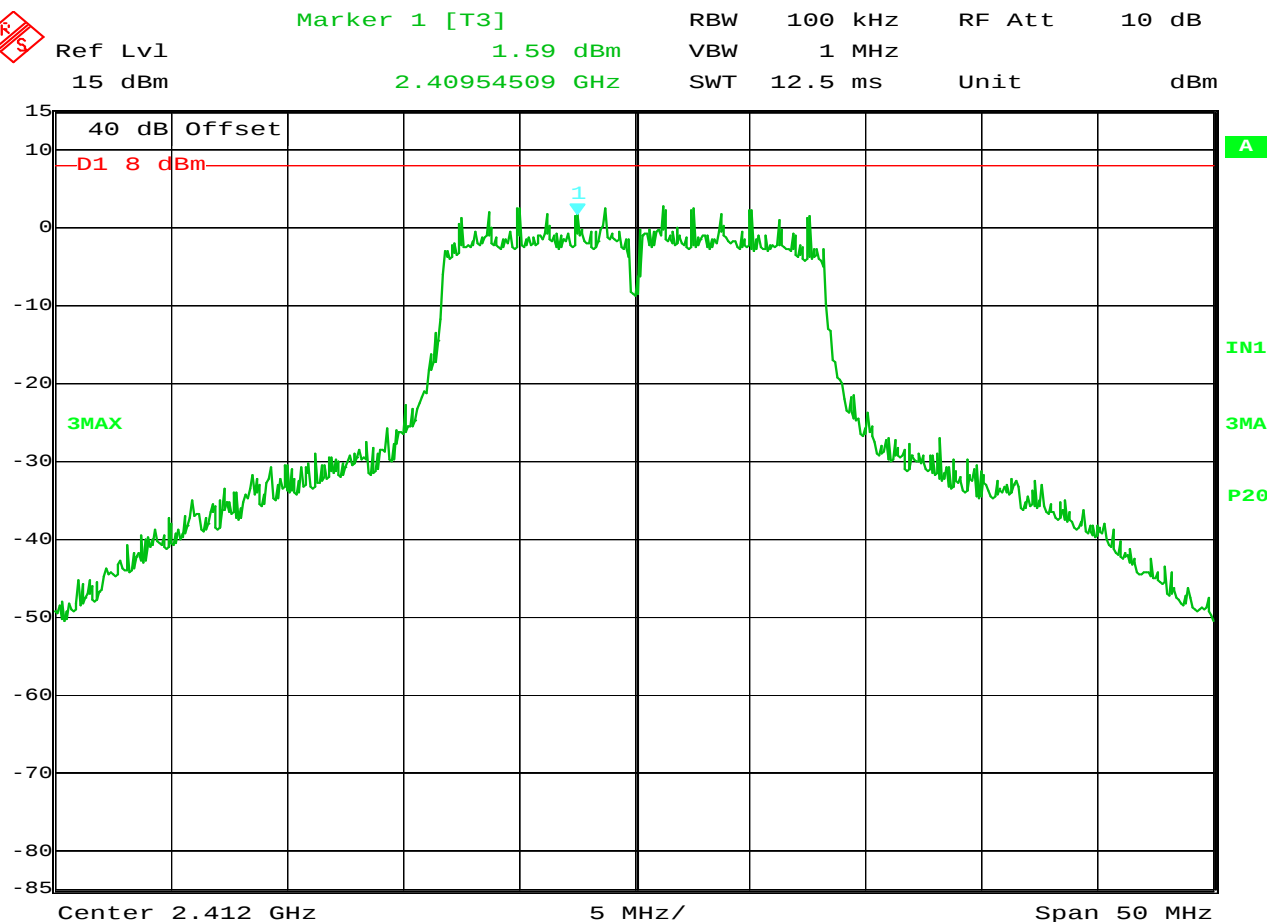


Date: 28.SEP.2012 09:01:16

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 9Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.64 dBm – 15.2 dB = -13.56 dBm

NOTES

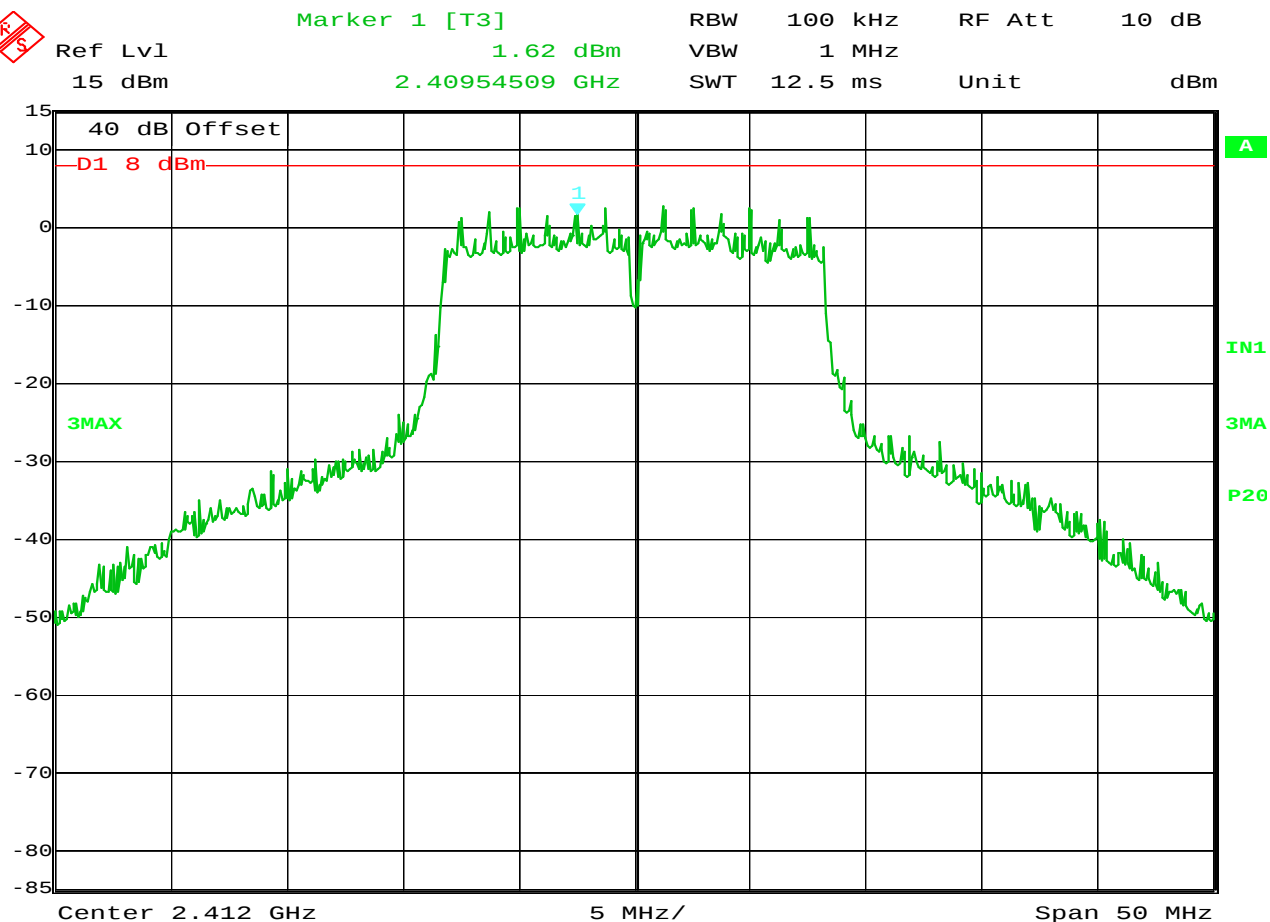


Date: 28.SEP.2012 09:03:39

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 12Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.59 dBm – 15.2 dB = -13.61 dBm

NOTES

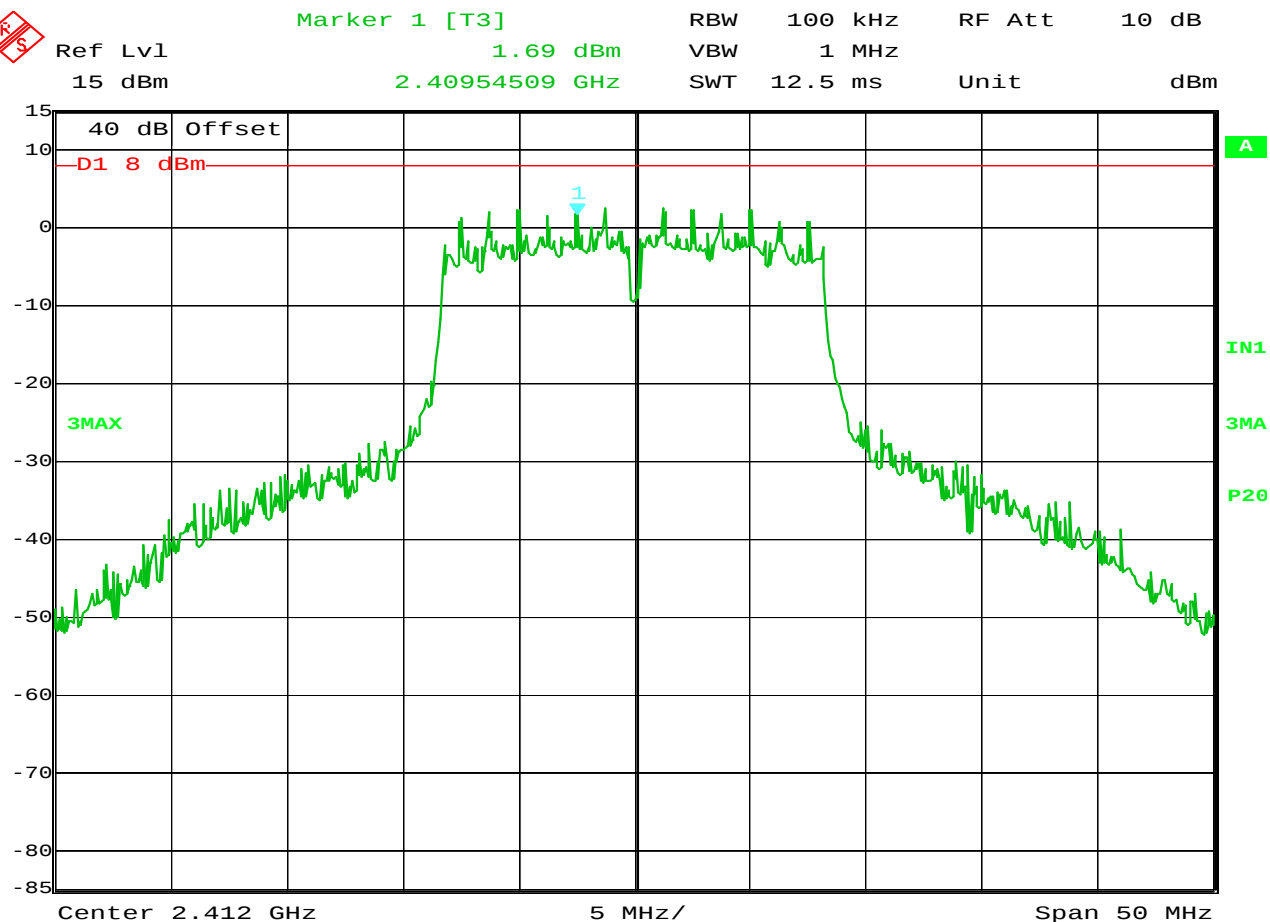


Date: 28.SEP.2012 09:07:31

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 18Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.62 dBm – 15.2 dB = -13.58 dBm

NOTES

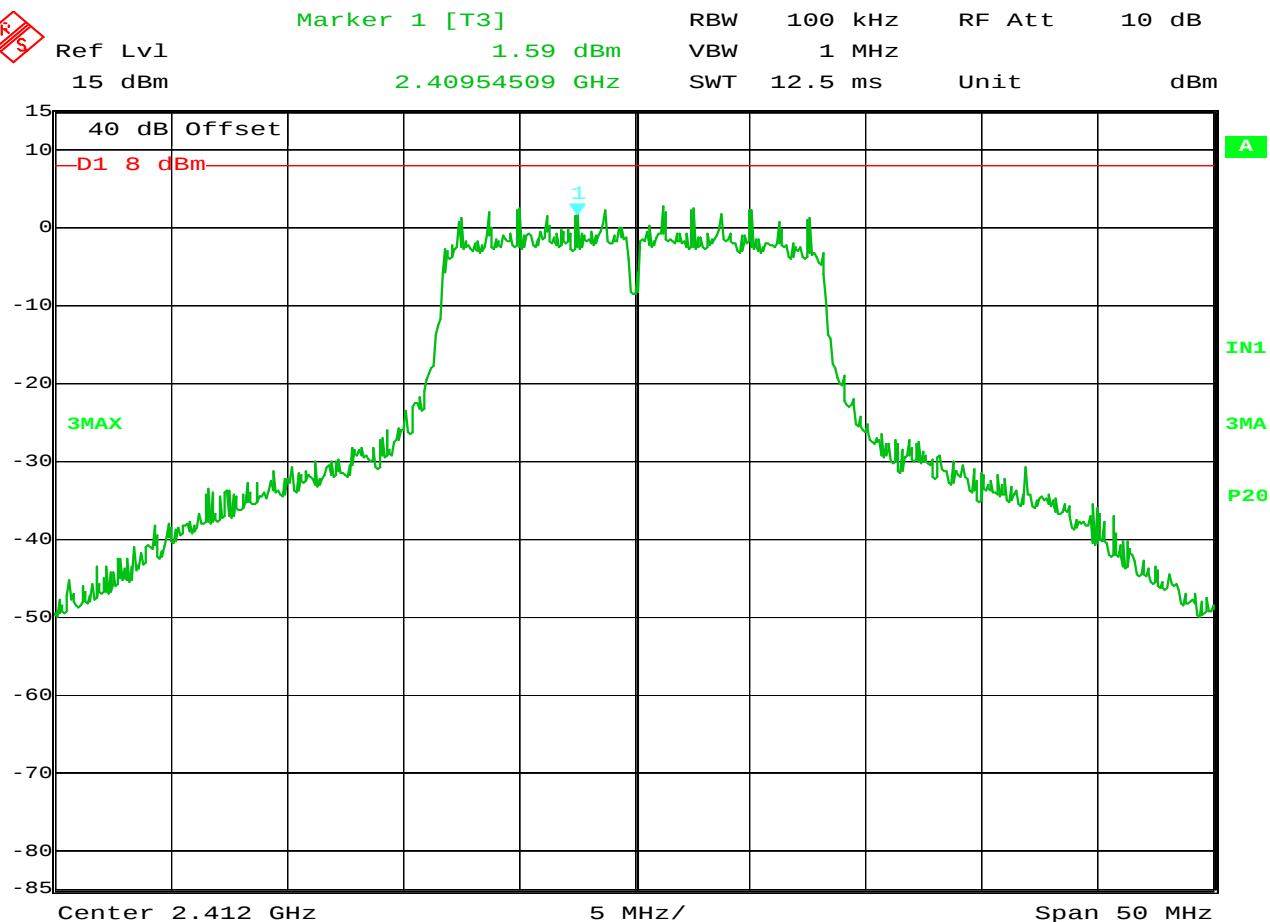


Date: 28.SEP.2012 09:09:38

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 24Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.69 dBm – 15.2 dB = -13.51 dBm

NOTES

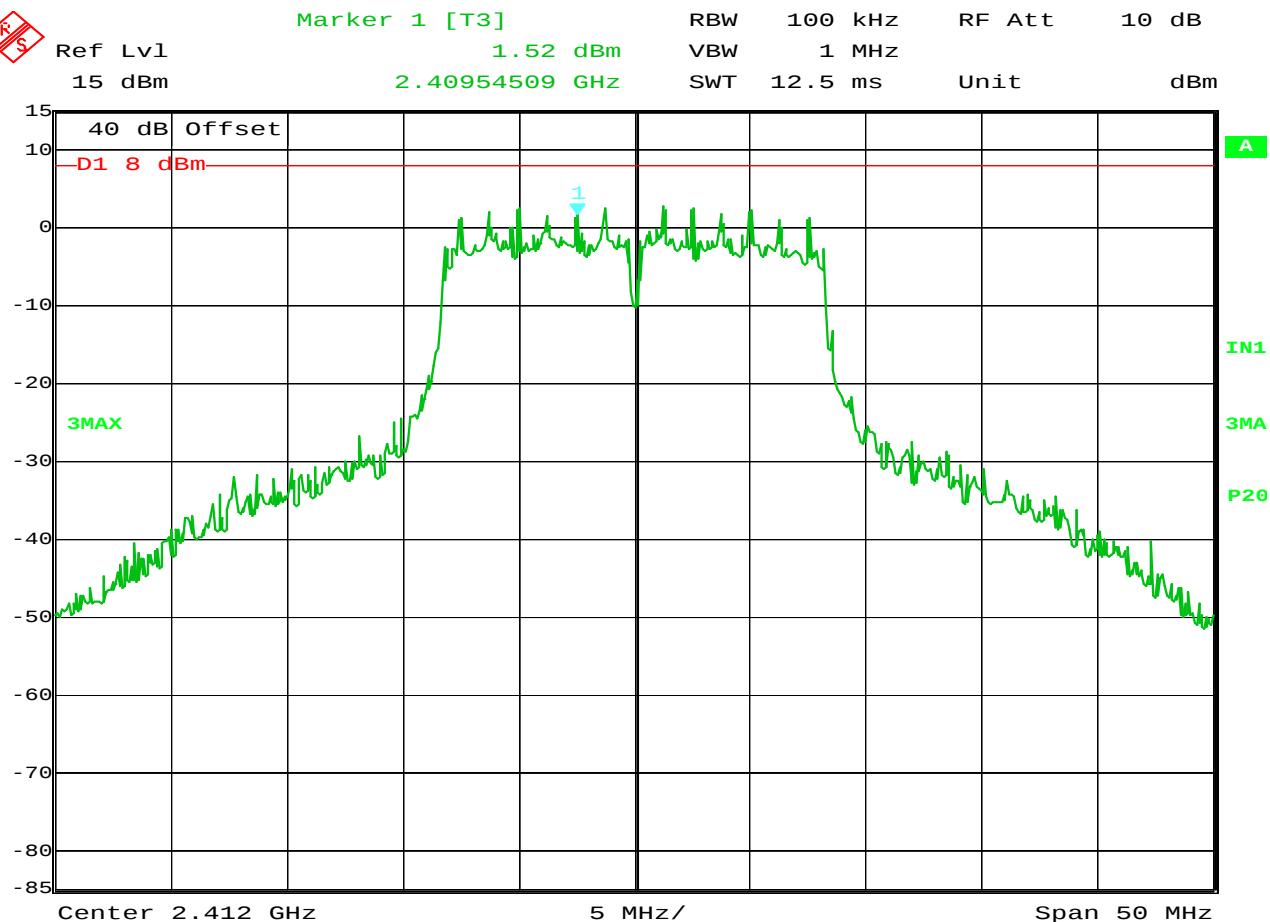


Date: 28.SEP.2012 09:13:20

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 36Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.59 dBm – 15.2 dB = -13.61 dBm

NOTES



Date: 28.SEP.2012 09:15:18

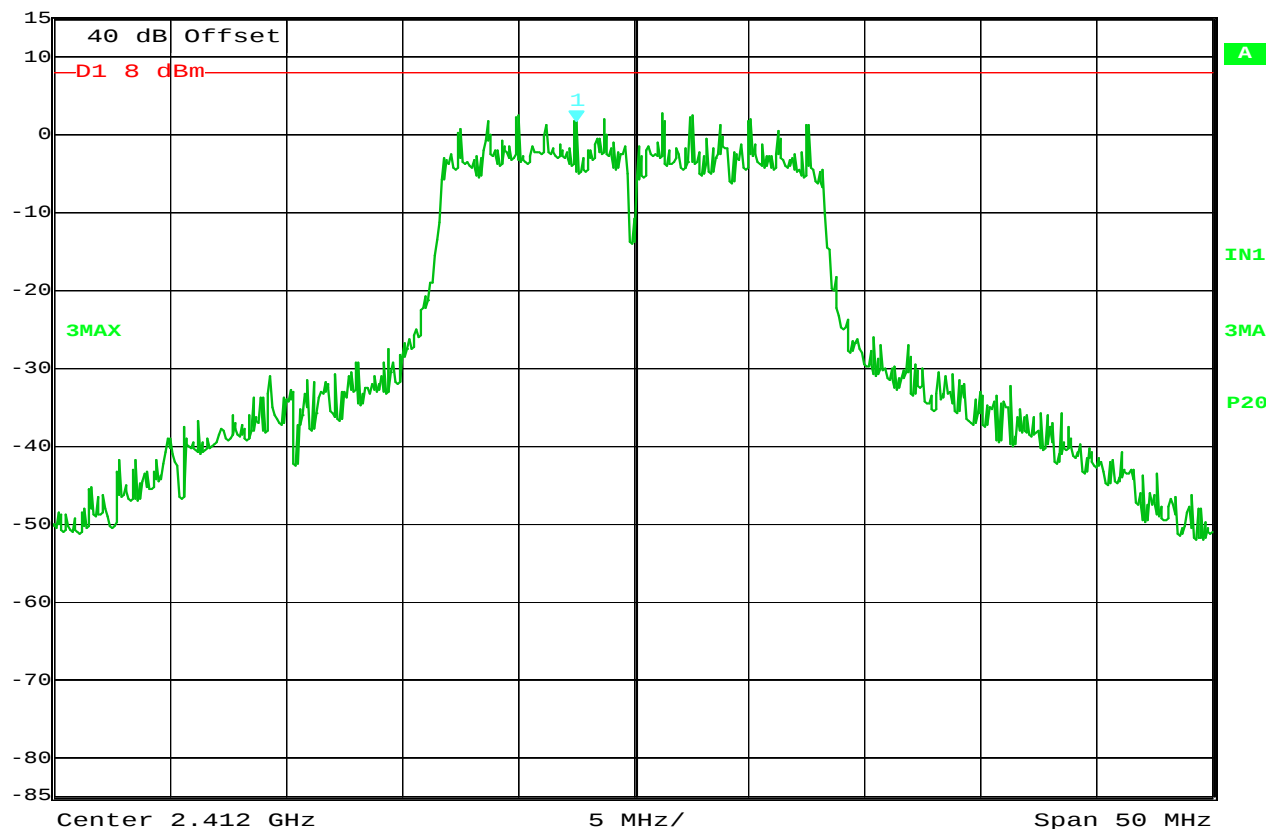
FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 48Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.52 dBm – 15.2 dB = -13.68 dBm

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 10 dB
1.65 dBm VBW 1 MHz
2.40954509 GHz SWT 12.5 ms Unit dBm

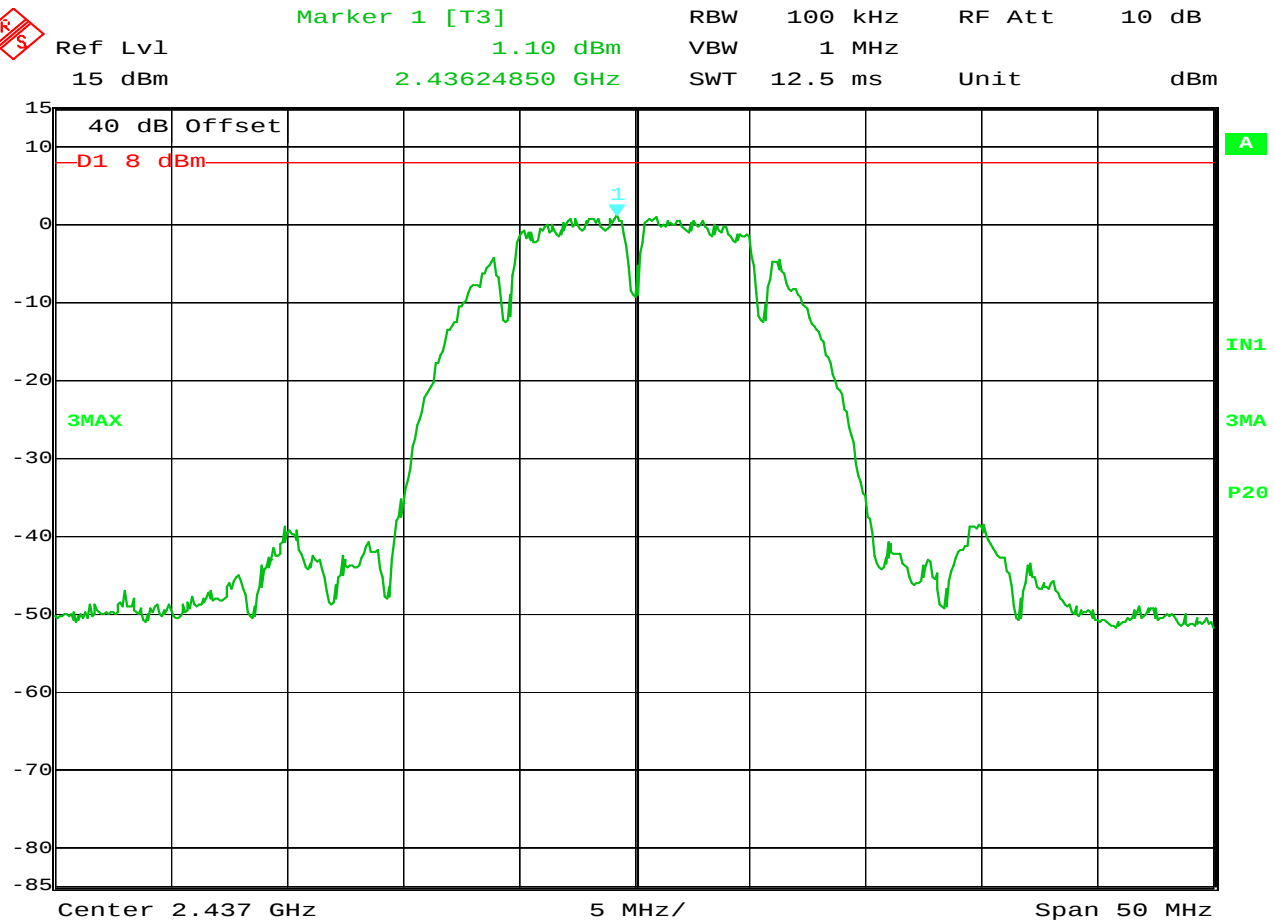


Date: 28.SEP.2012 09:16:58

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 1 2412MHz
TEST MODE : protocol G
TEST MODE : 54Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.65 dBm – 15.2 dB = -13.55 dBm

NOTES



Date: 28.SEP.2012 09:20:58

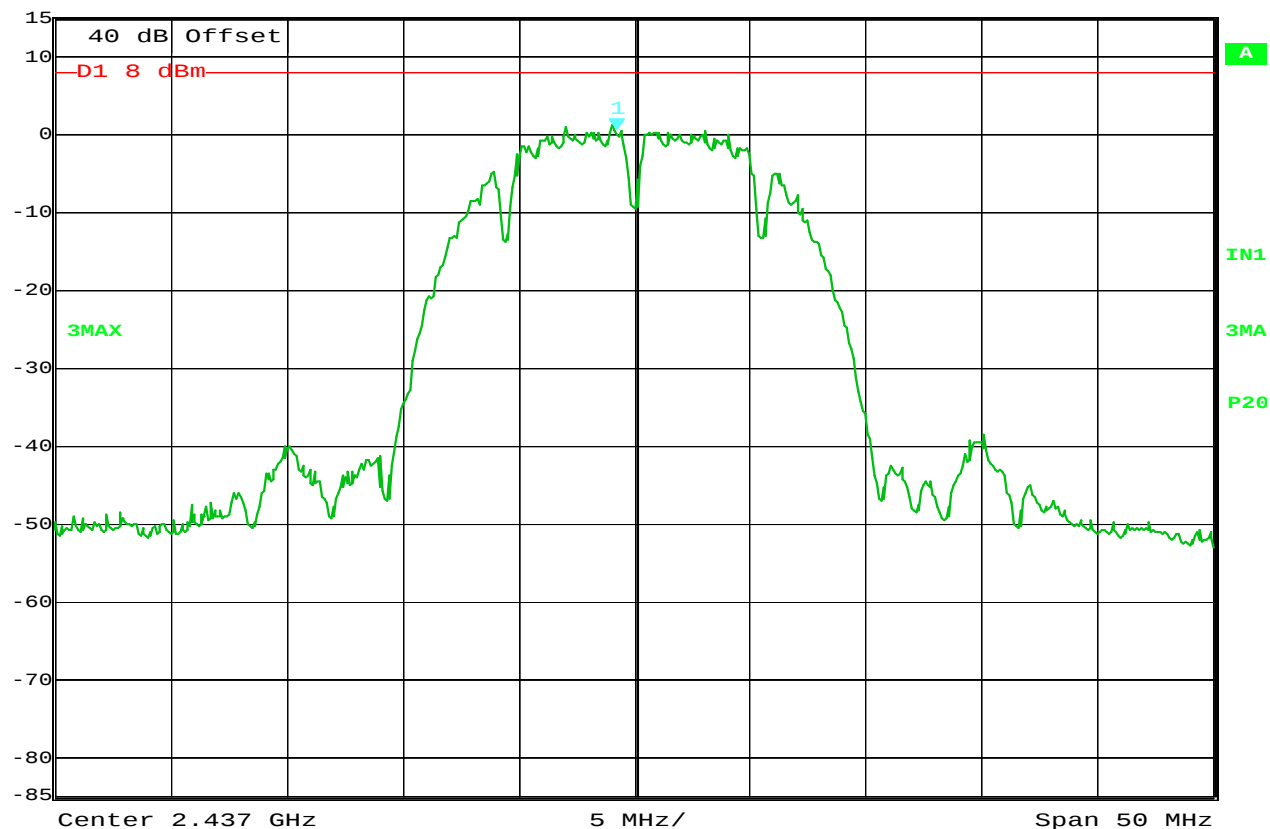
FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol B
TEST MODE : 1Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.10 dBm – 15.2 dB = -14.1 dBm

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 10 dB
0.61 dBm VBW 1 MHz
2.43624850 GHz SWT 12.5 ms Unit dBm



Date: 28.SEP.2012 09:24:05

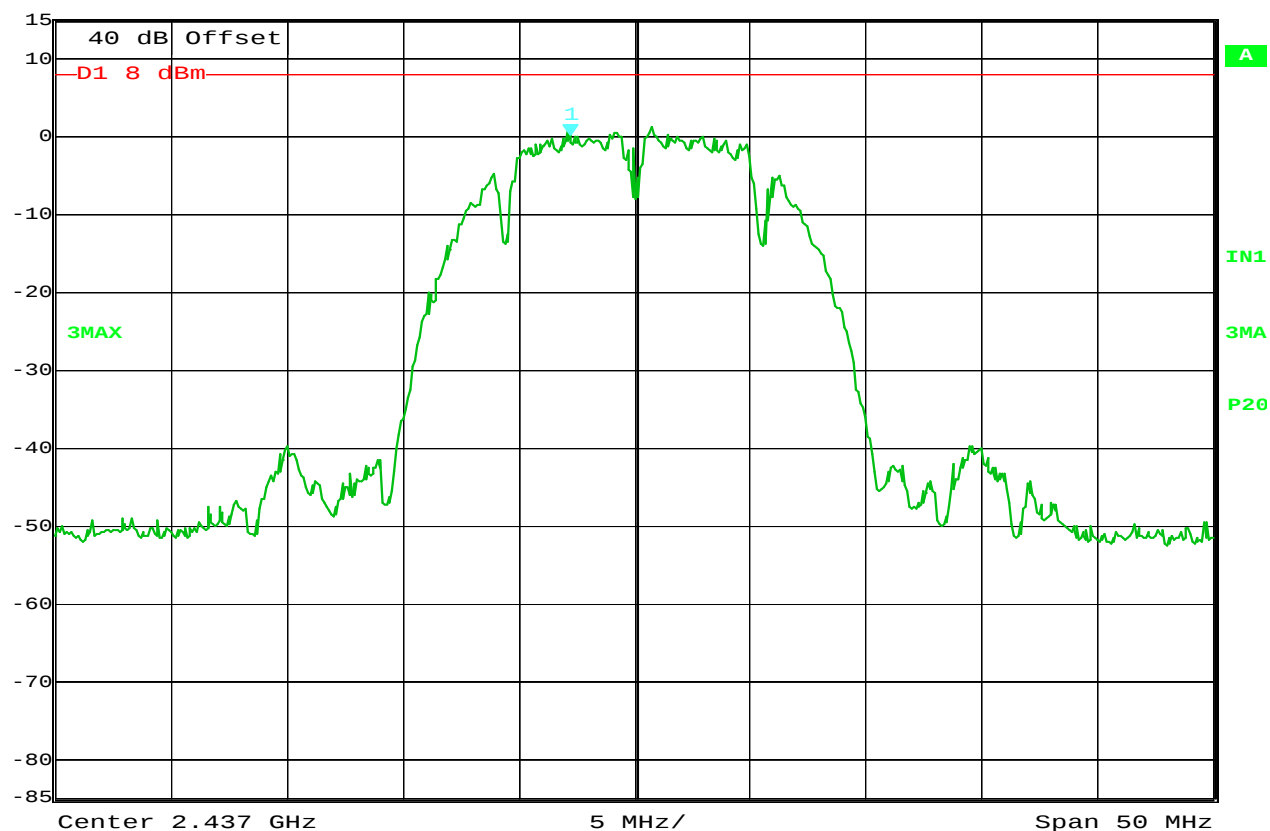
FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol B
TEST MODE : 2Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.61 dBm – 15.2 dB = -14.59 dBm

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 10 dB
0.13 dBm VBW 1 MHz
2.43424449 GHz SWT 12.5 ms Unit dBm

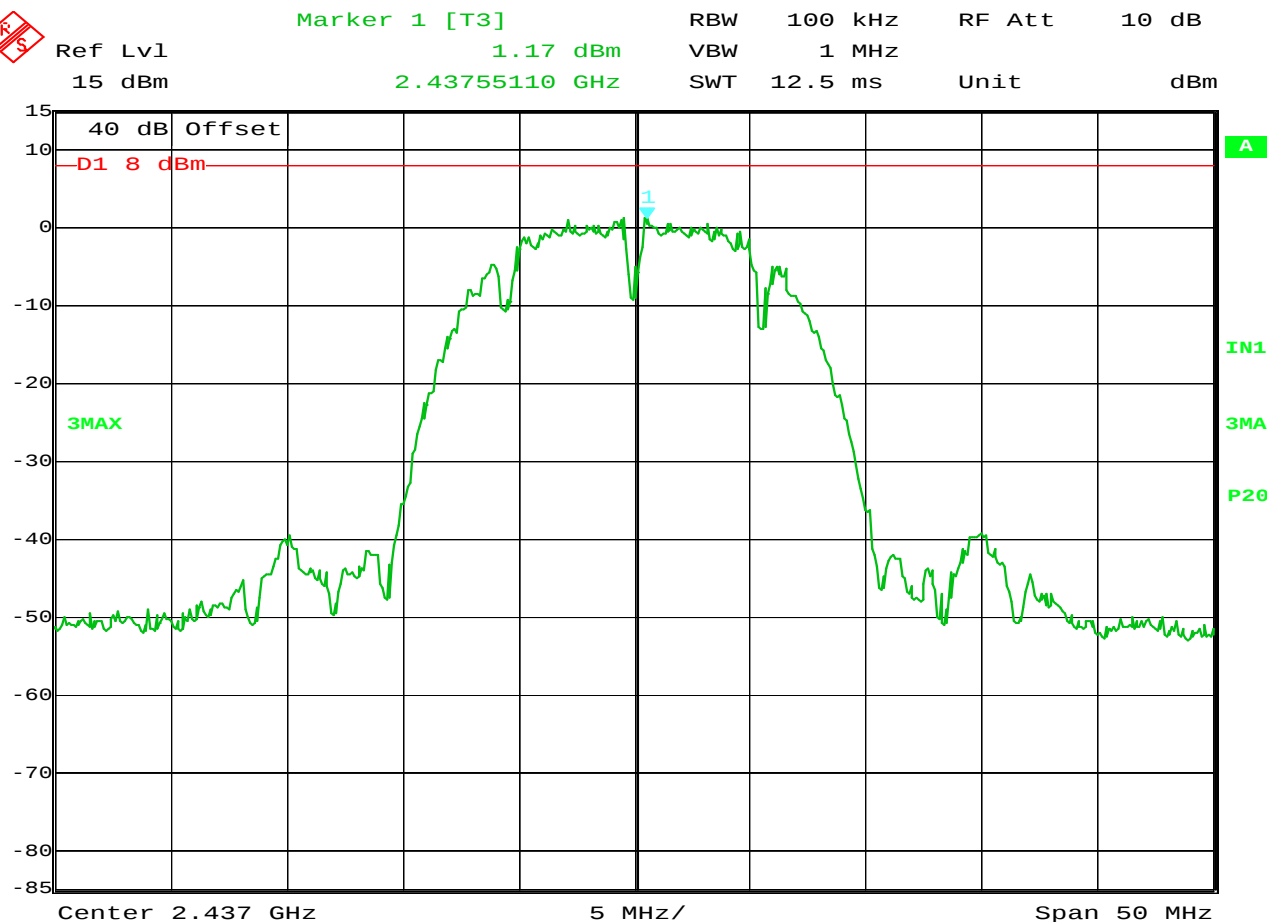


Date: 28.SEP.2012 09:25:58

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol B
TEST MODE : 5.5Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.13 dBm – 15.2 dB = -15.07 dBm

NOTES

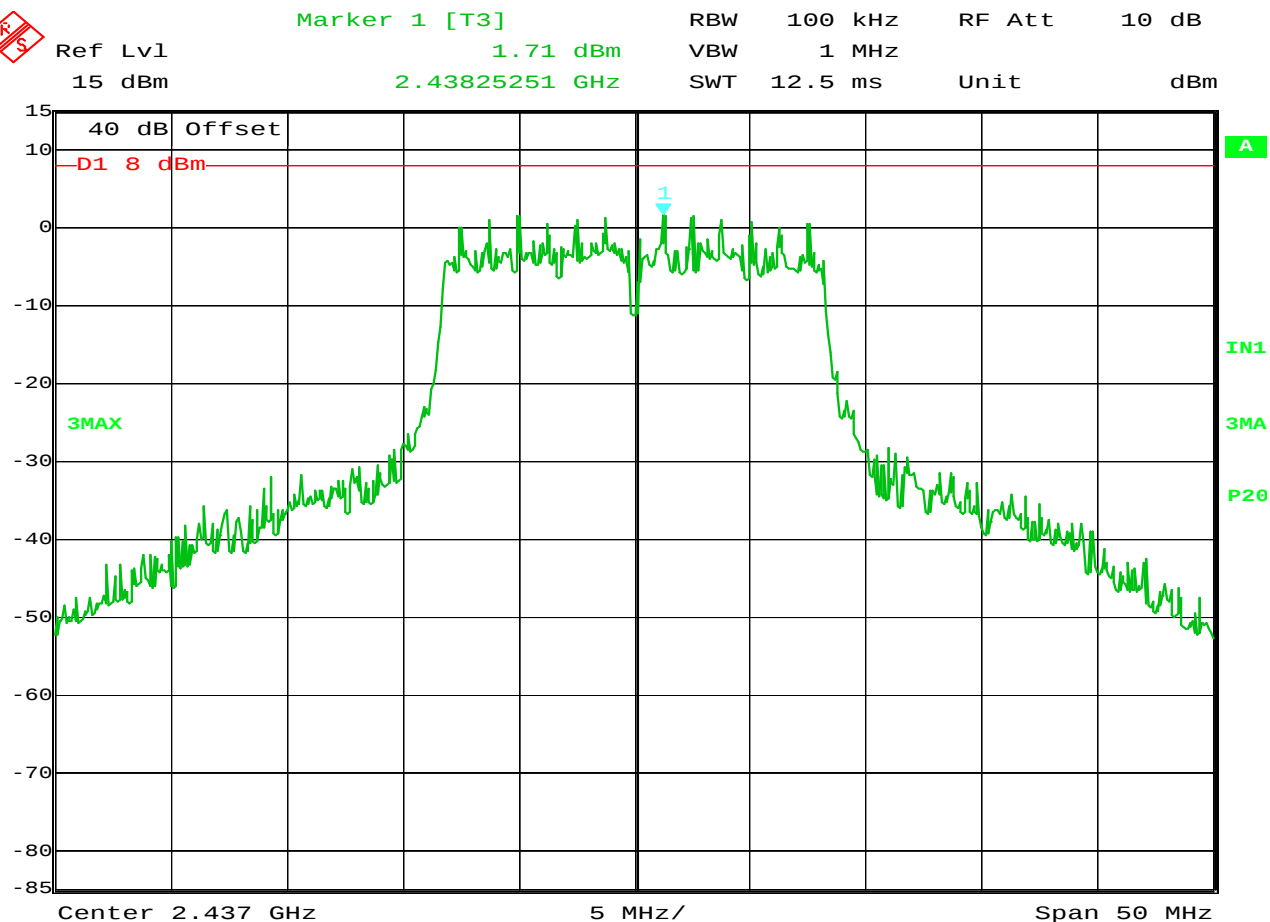


Date: 28.SEP.2012 09:28:02

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol B
TEST MODE : 11Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.17 dBm – 15.2 dB = -14.03 dBm

NOTES

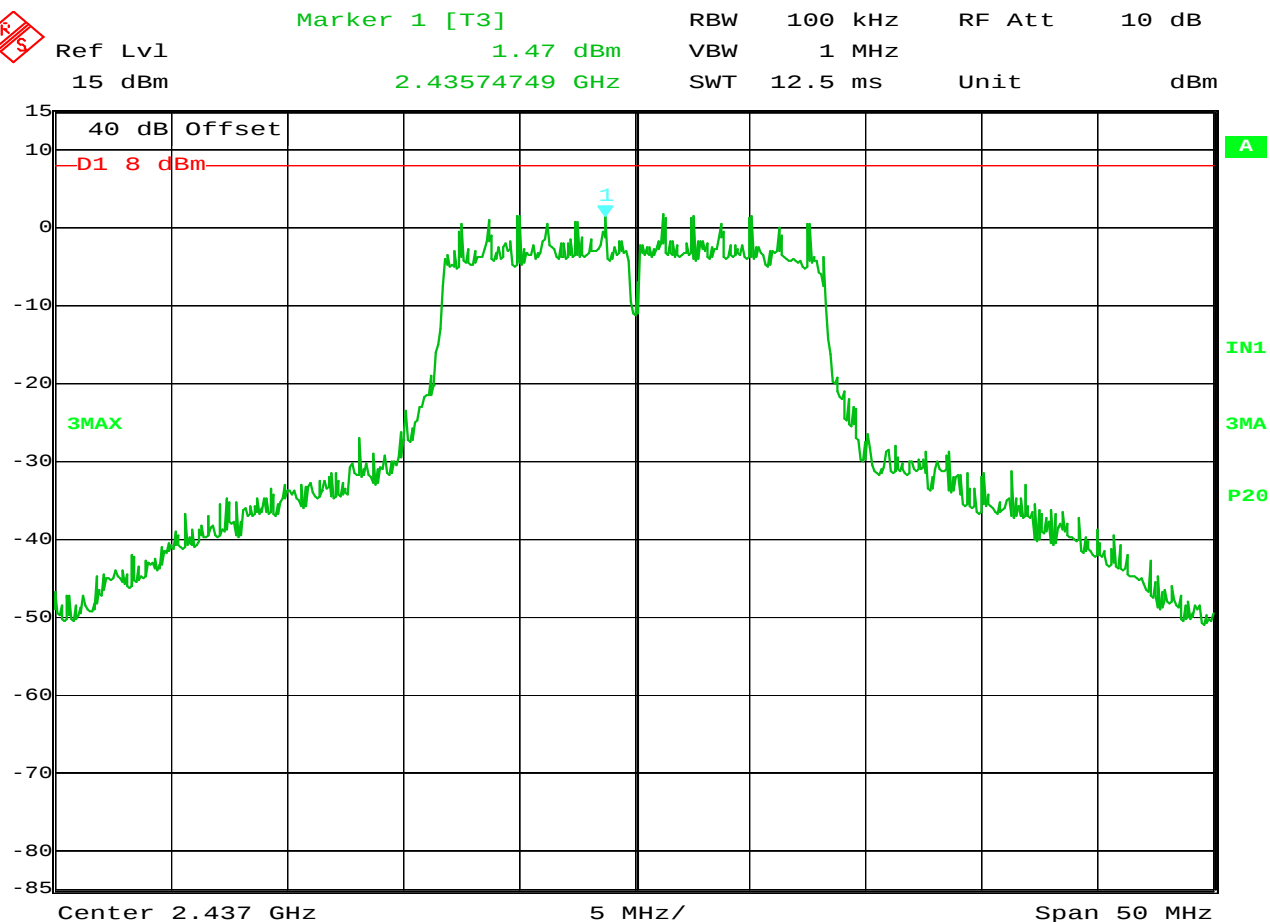


Date: 28.SEP.2012 09:29:21

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 6Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.71 dBm – 15.2 dB = -13.49 dBm

NOTES

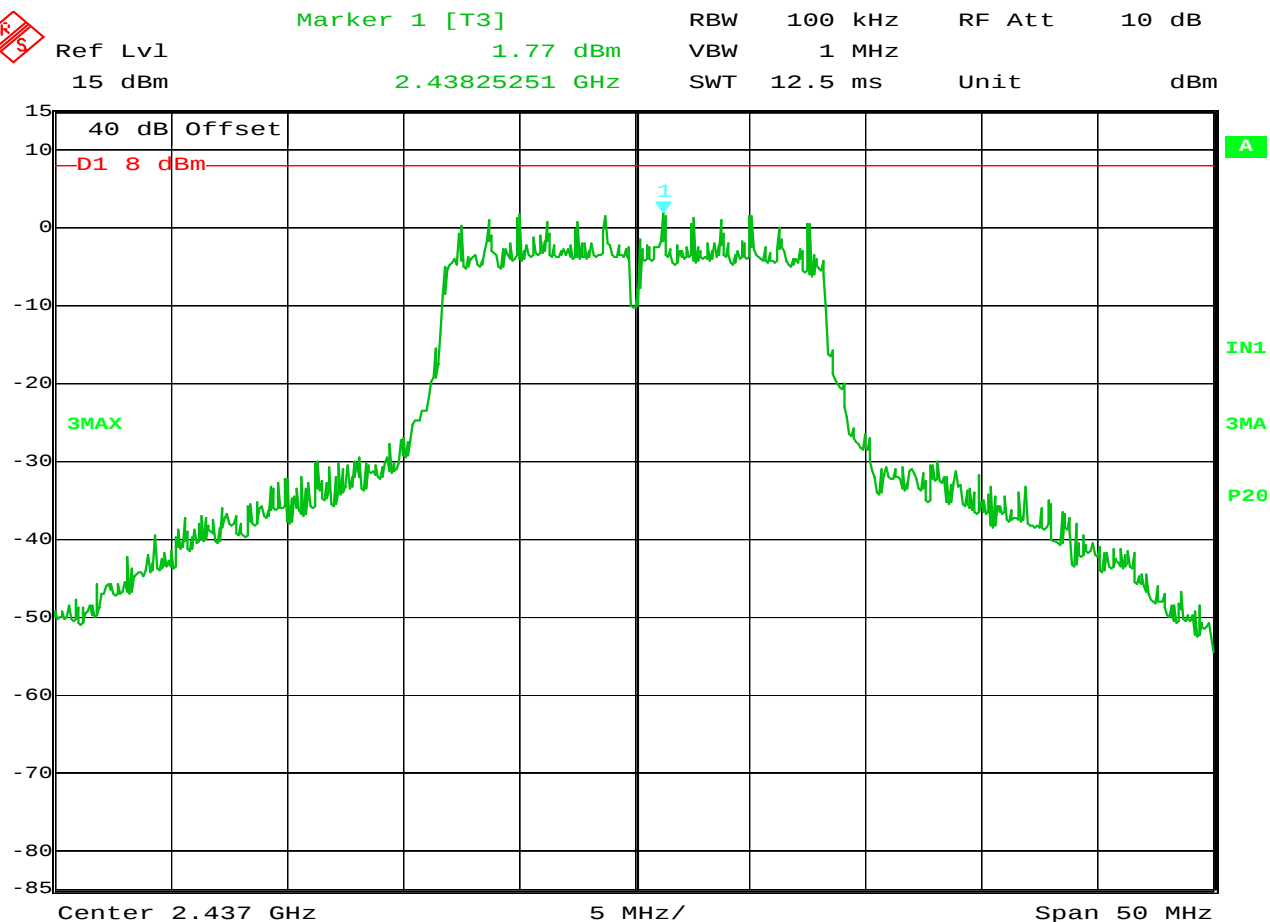


Date: 28.SEP.2012 09:31:10

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 9Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.47 dBm – 15.2 dB = -13.73 dBm

NOTES

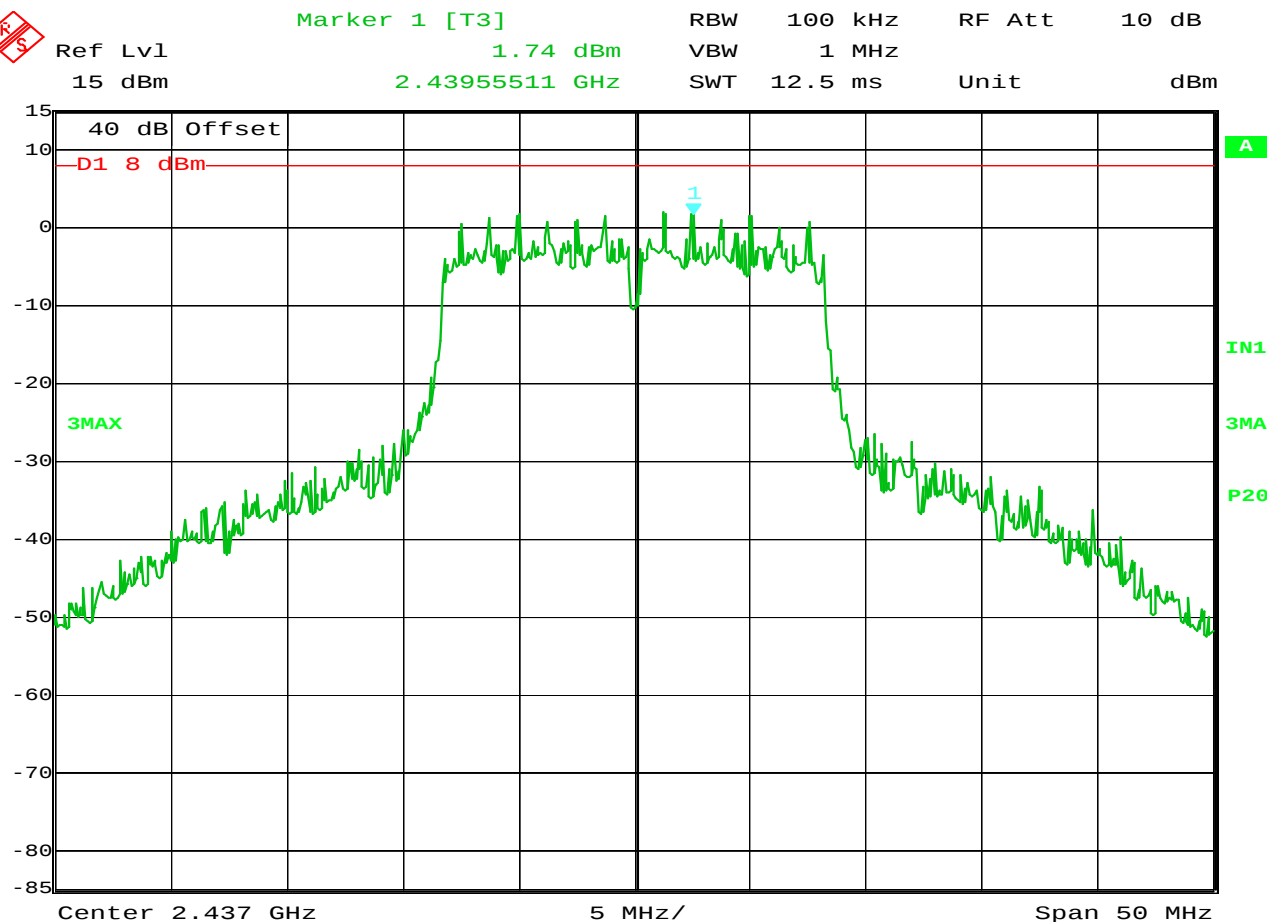


Date: 28.SEP.2012 09:32:45

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 12Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.77 dBm – 15.2 dB = -13.43 dBm

NOTES

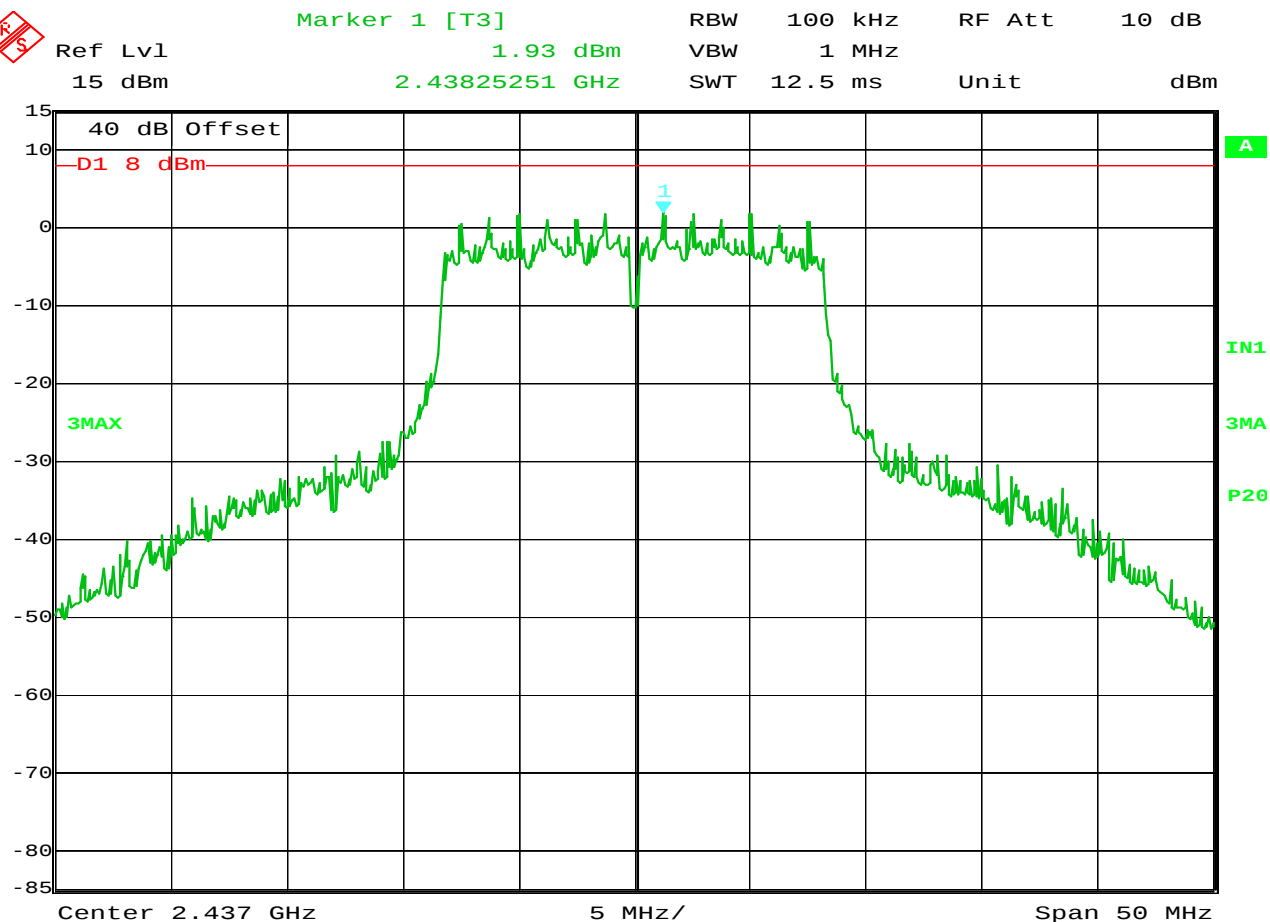


Date: 28.SEP.2012 09:33:59

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 18Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.74 dBm – 15.2 dB = -13.46 dBm

NOTES

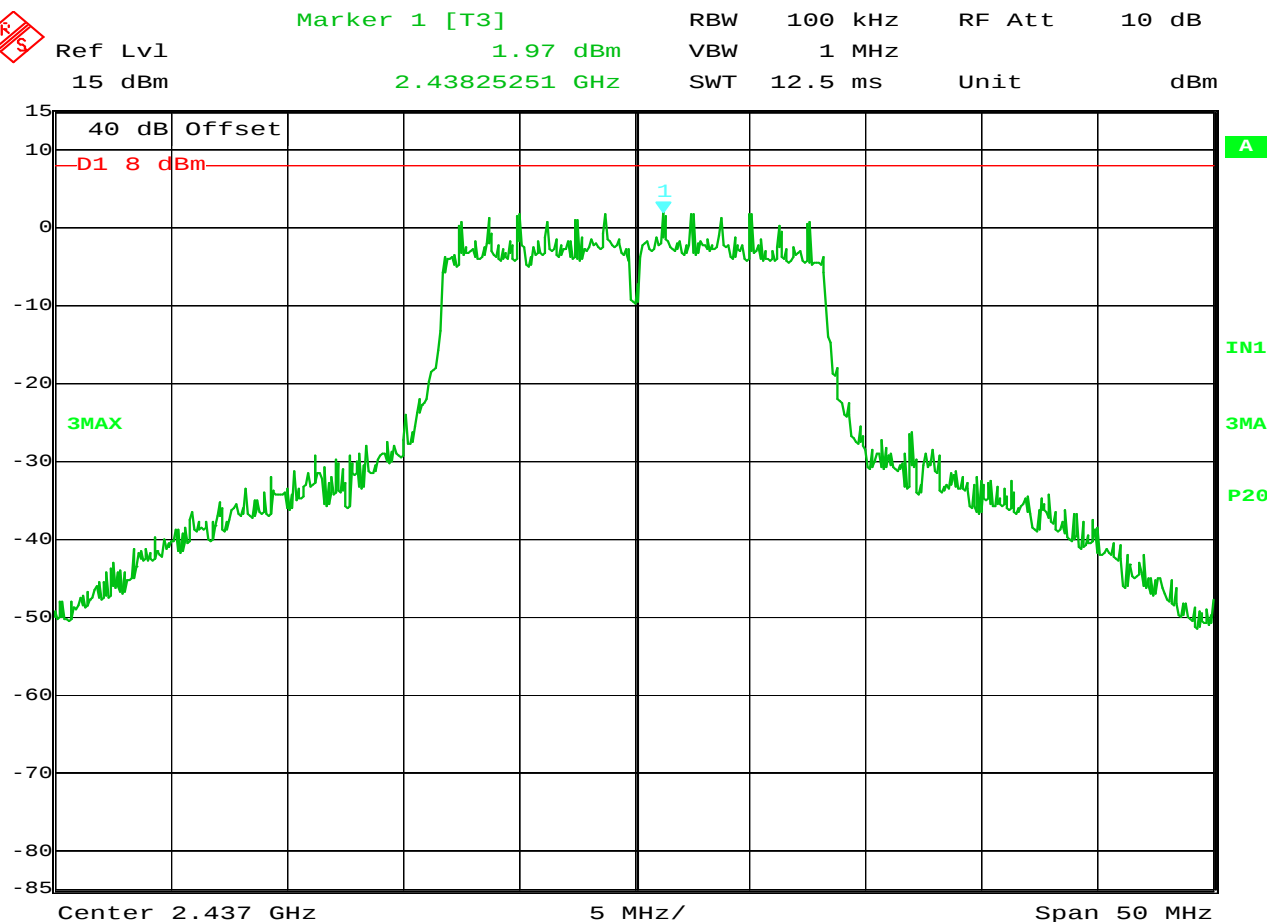


Date: 28.SEP.2012 09:35:35

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 24Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.93 dBm – 15.2 dB = -13.27 dBm

NOTES

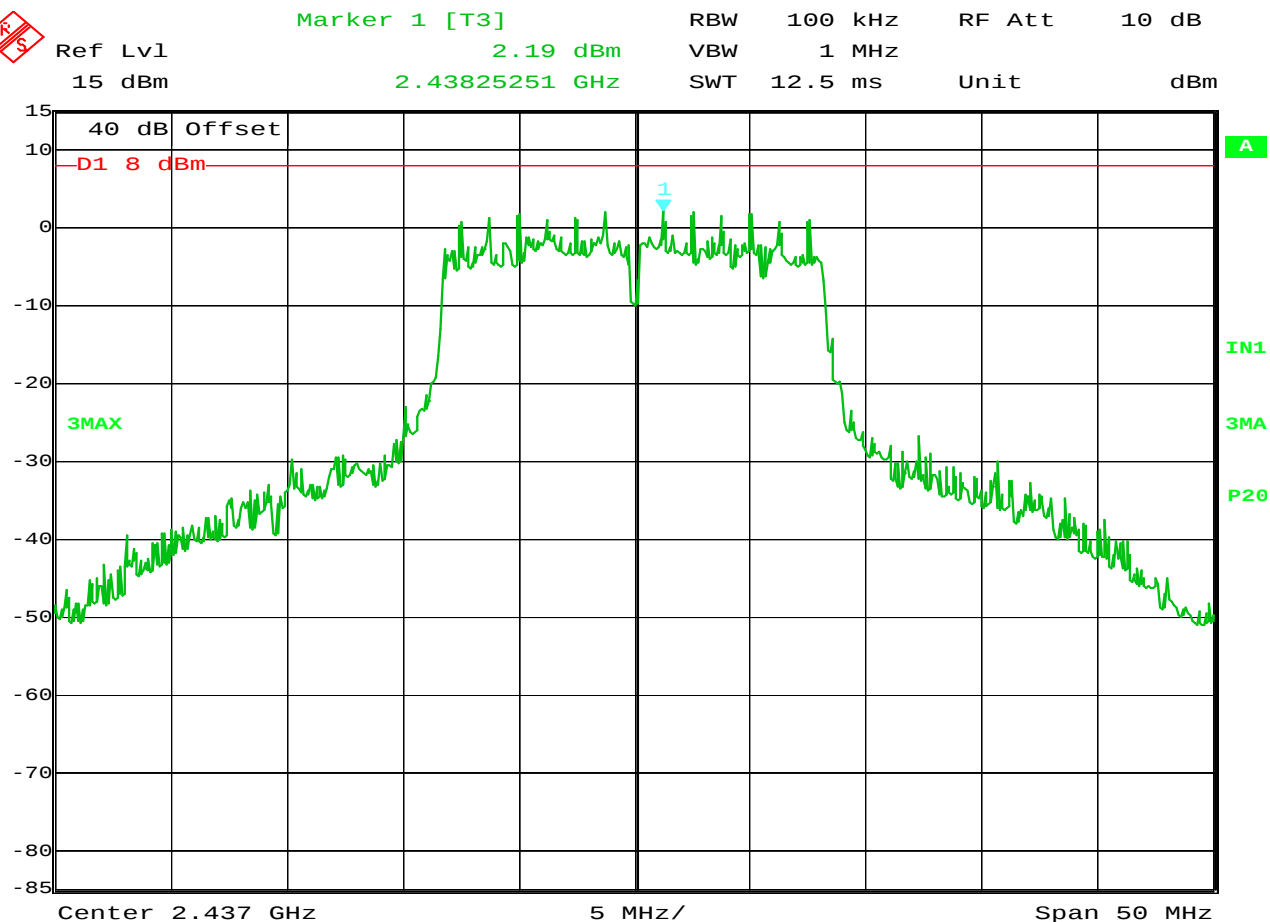


Date: 28.SEP.2012 09:37:24

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 36Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.97 dBm – 15.2 dB = -13.23 dBm

NOTES

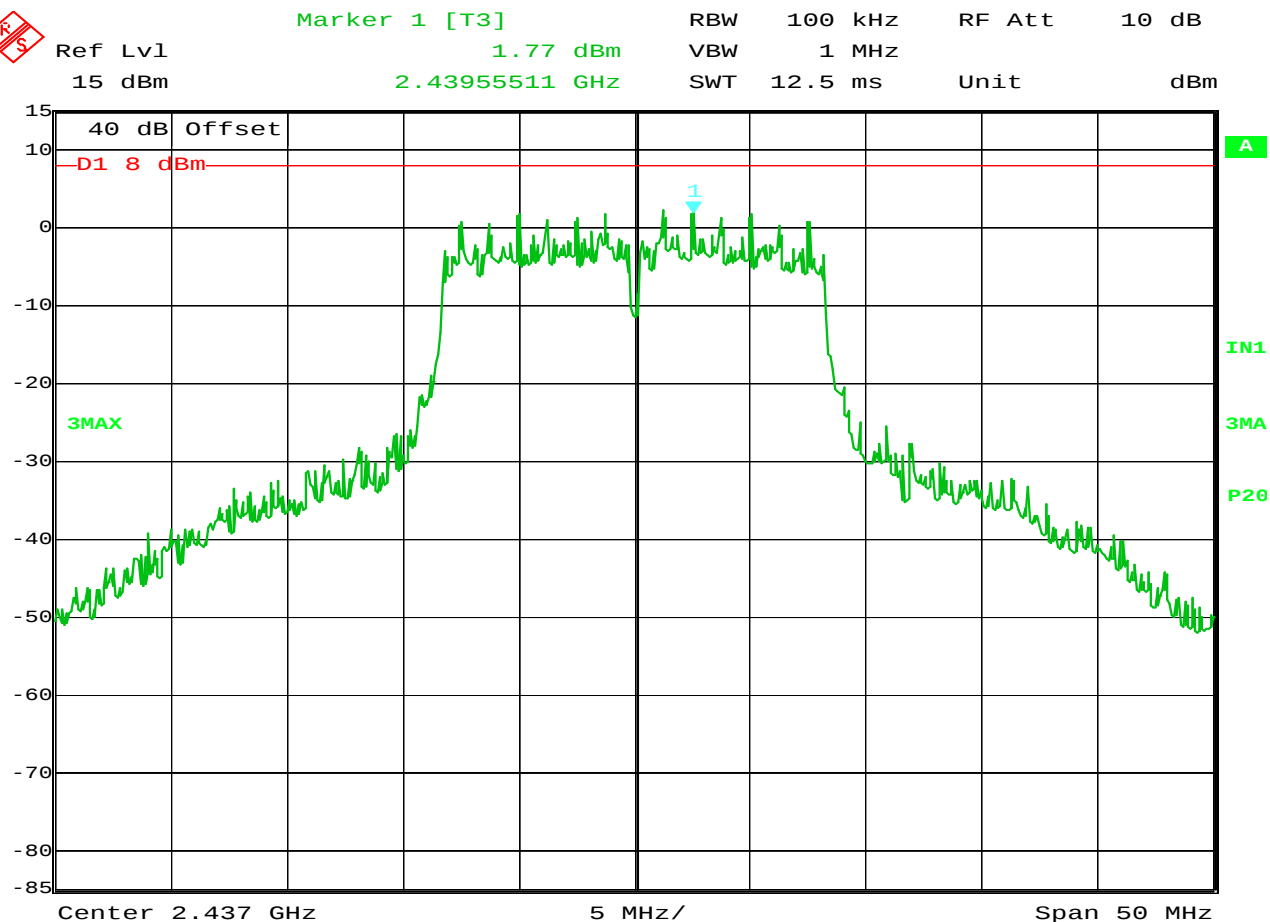


Date: 28.SEP.2012 09:38:43

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 48Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 2.19 dBm – 15.2 dB = -13.01 dBm

NOTES

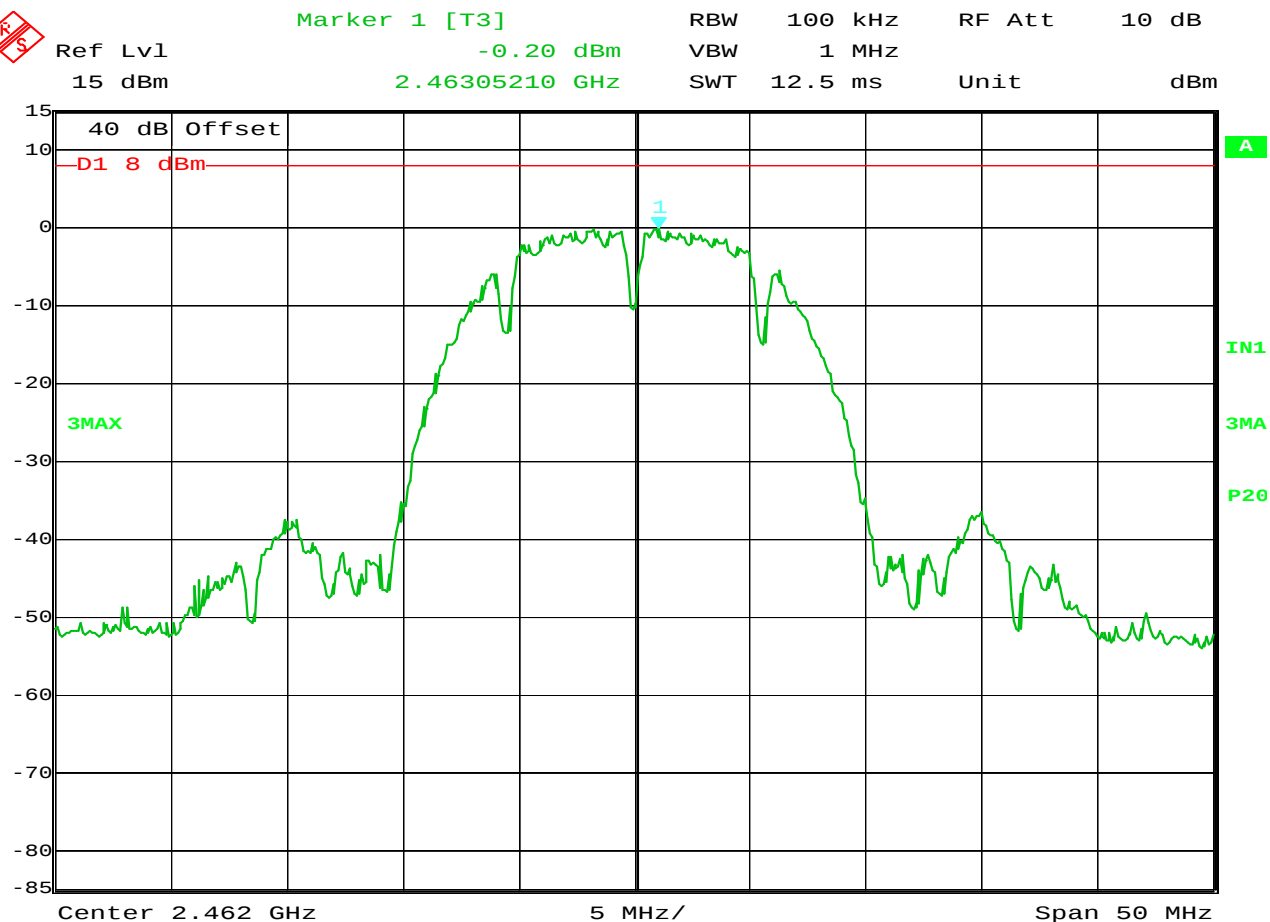


Date: 28.SEP.2012 09:40:13

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 6 2437MHz
TEST MODE : protocol G
TEST MODE : 54Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 1.77 dBm – 15.2 dB = -13.43 dBm

NOTES

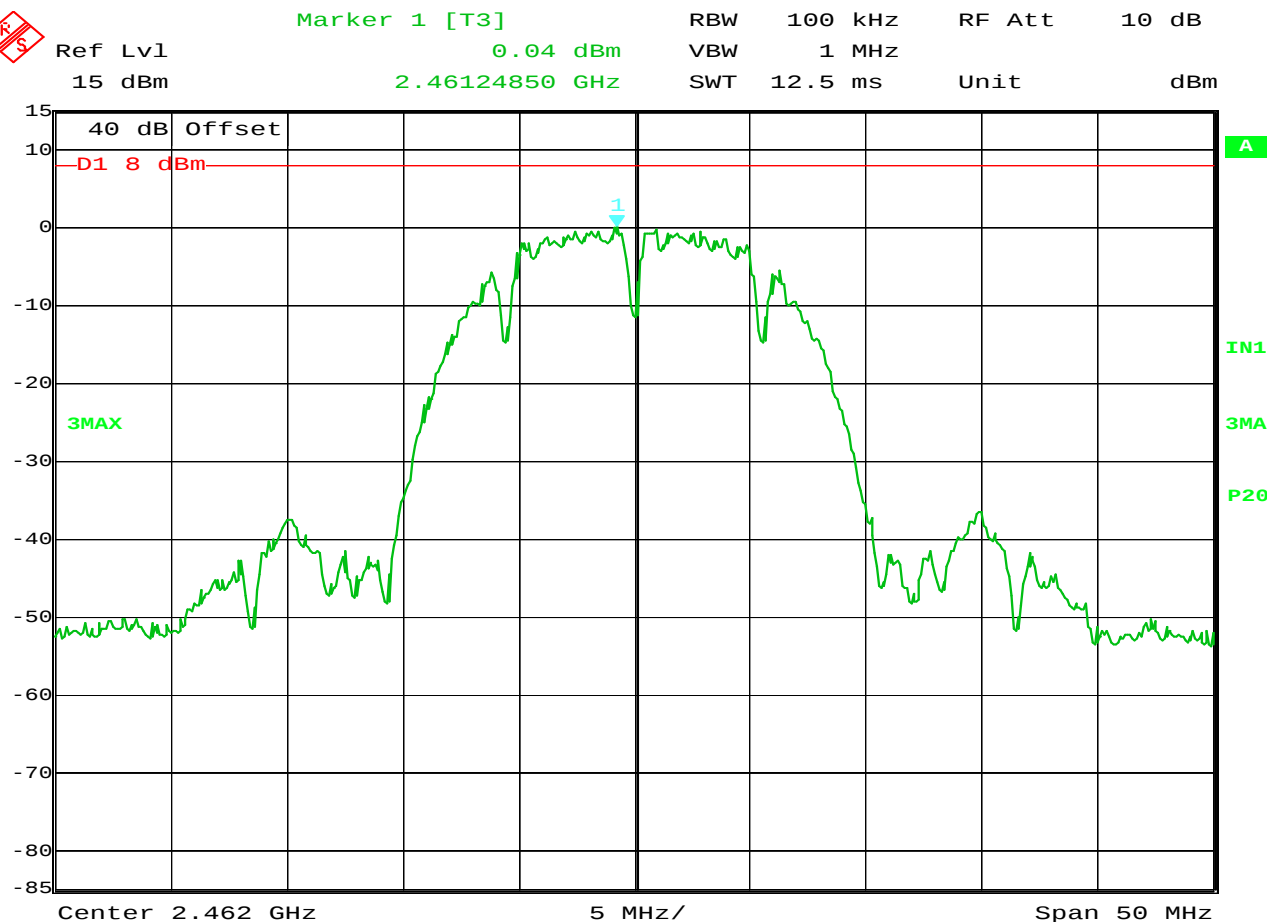


Date: 28.SEP.2012 09:42:46

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol B
TEST MODE : 1Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = -0.2 dBm - 15.2 dB = -15.4 dBm

NOTES

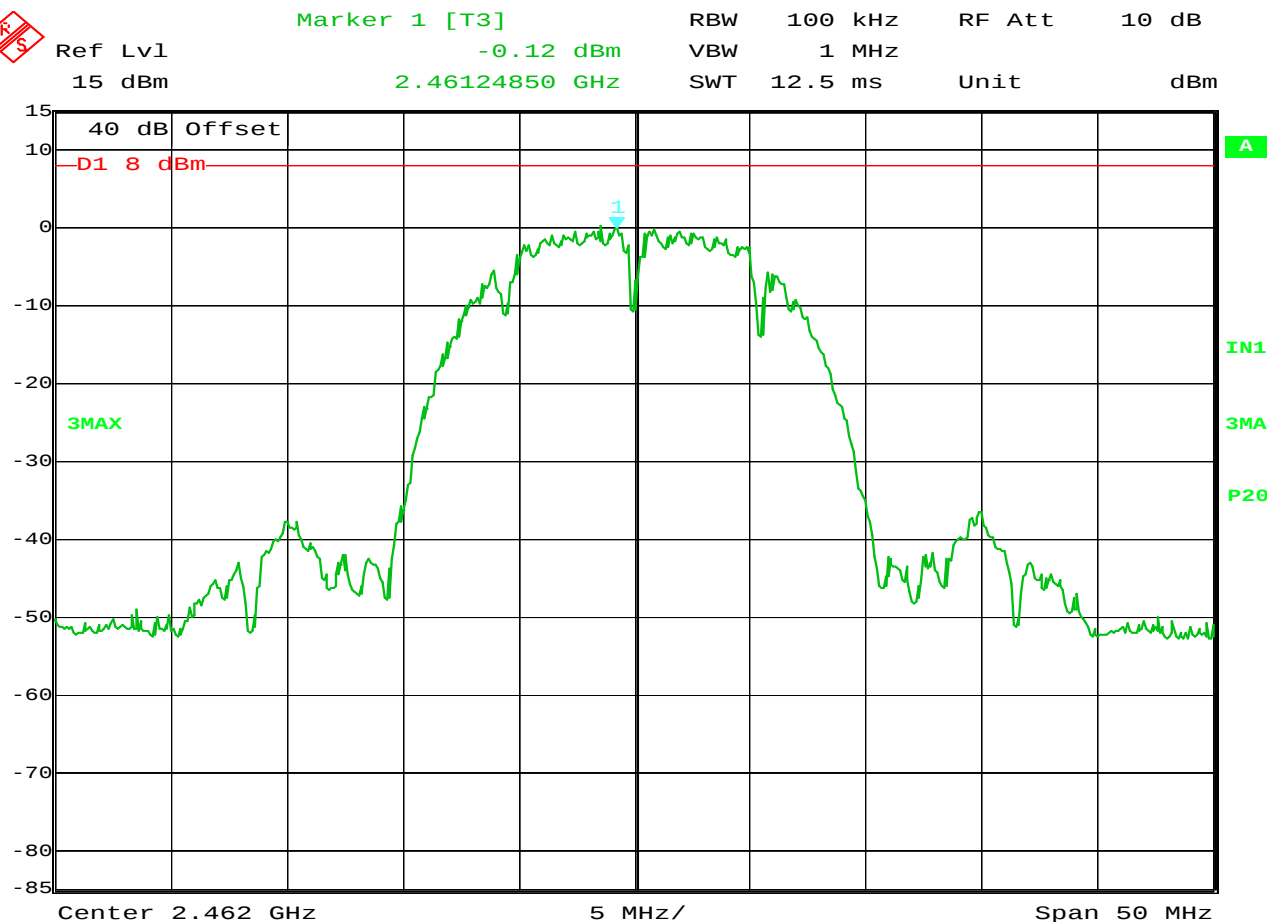


Date: 28.SEP.2012 09:44:15

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol B
TEST MODE : 2Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.04 dBm – 15.2 dB = -15.16 dBm

NOTES

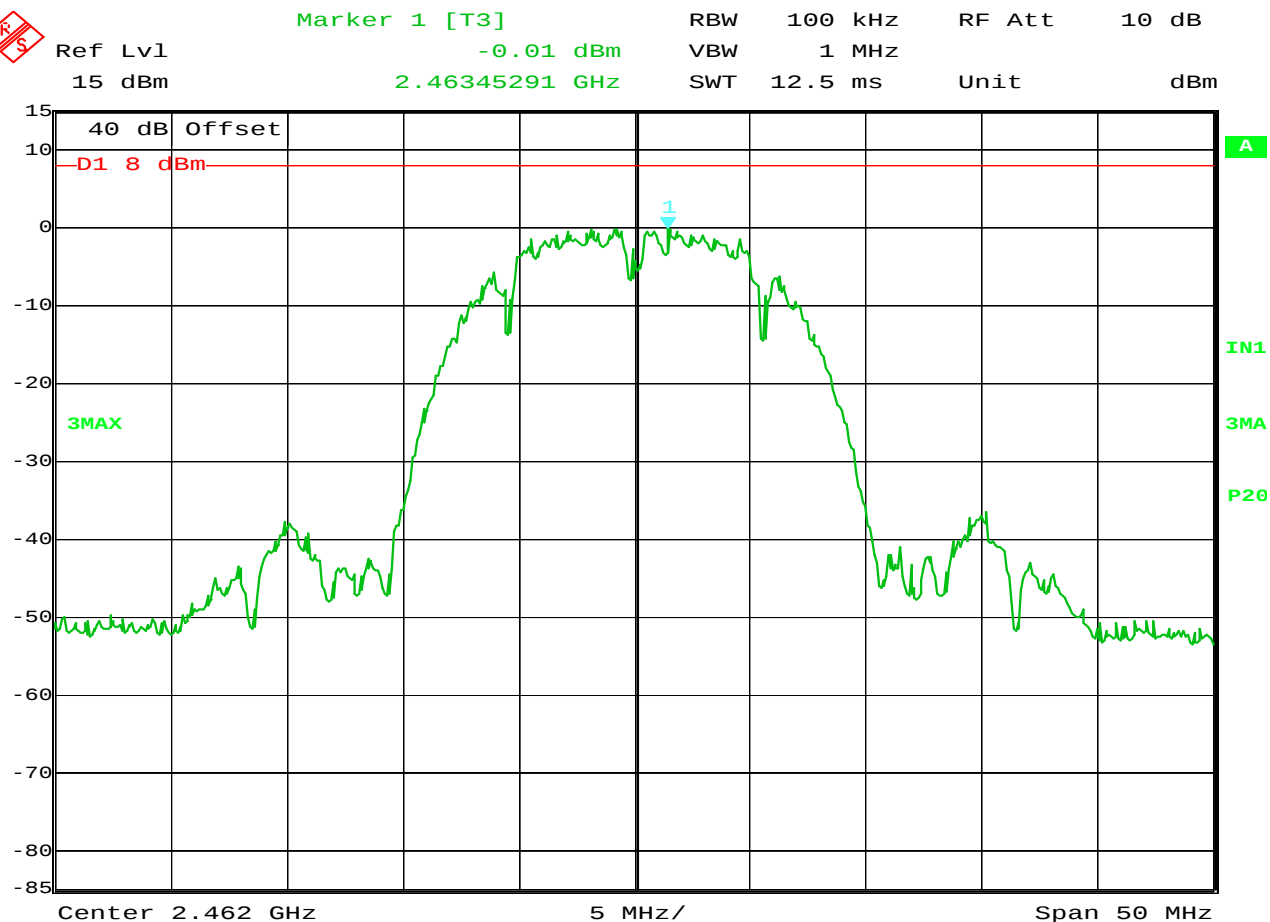


Date: 28.SEP.2012 09:45:45

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol B
TEST MODE : 5.5Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = -0.12 dBm - 15.2 dB = -15.32 dBm

NOTES

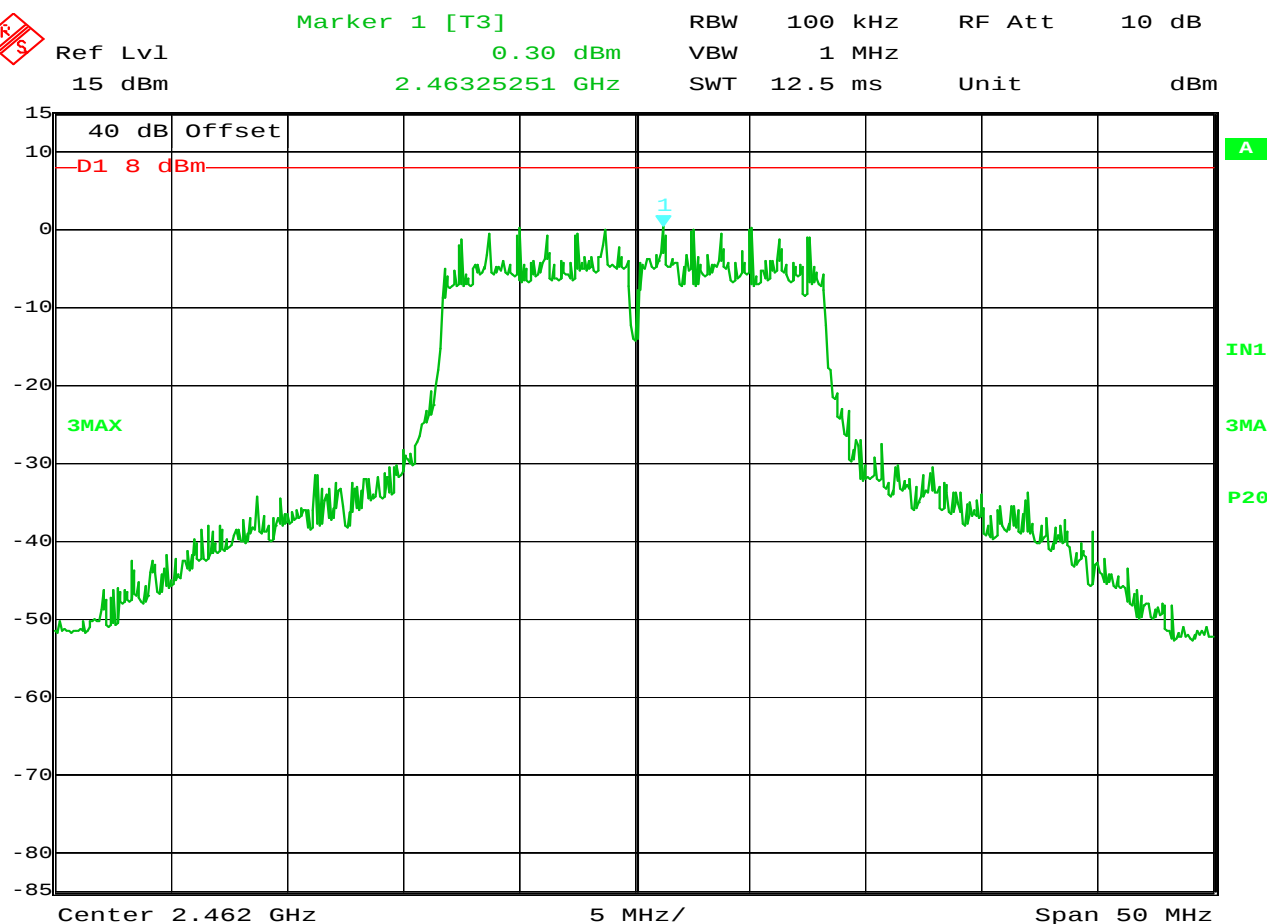


Date: 28.SEP.2012 09:47:16

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol B
TEST MODE : 11Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = -0.01 dBm - 15.2 dB = -15.21 dBm

NOTES

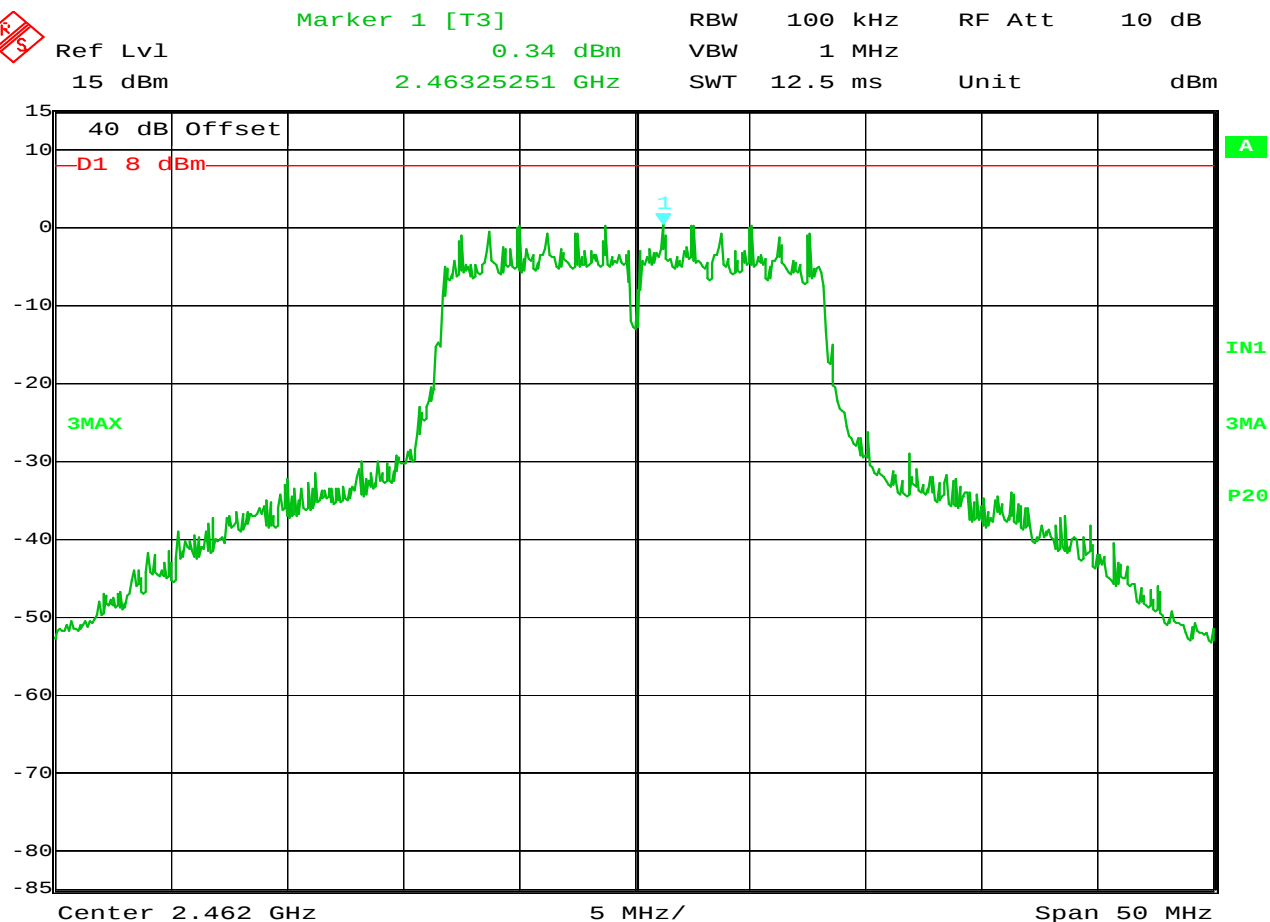


Date: 28.SEP.2012 09:49:06

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 6Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.30 dBm – 15.2 dB = -14.9 dBm

NOTES

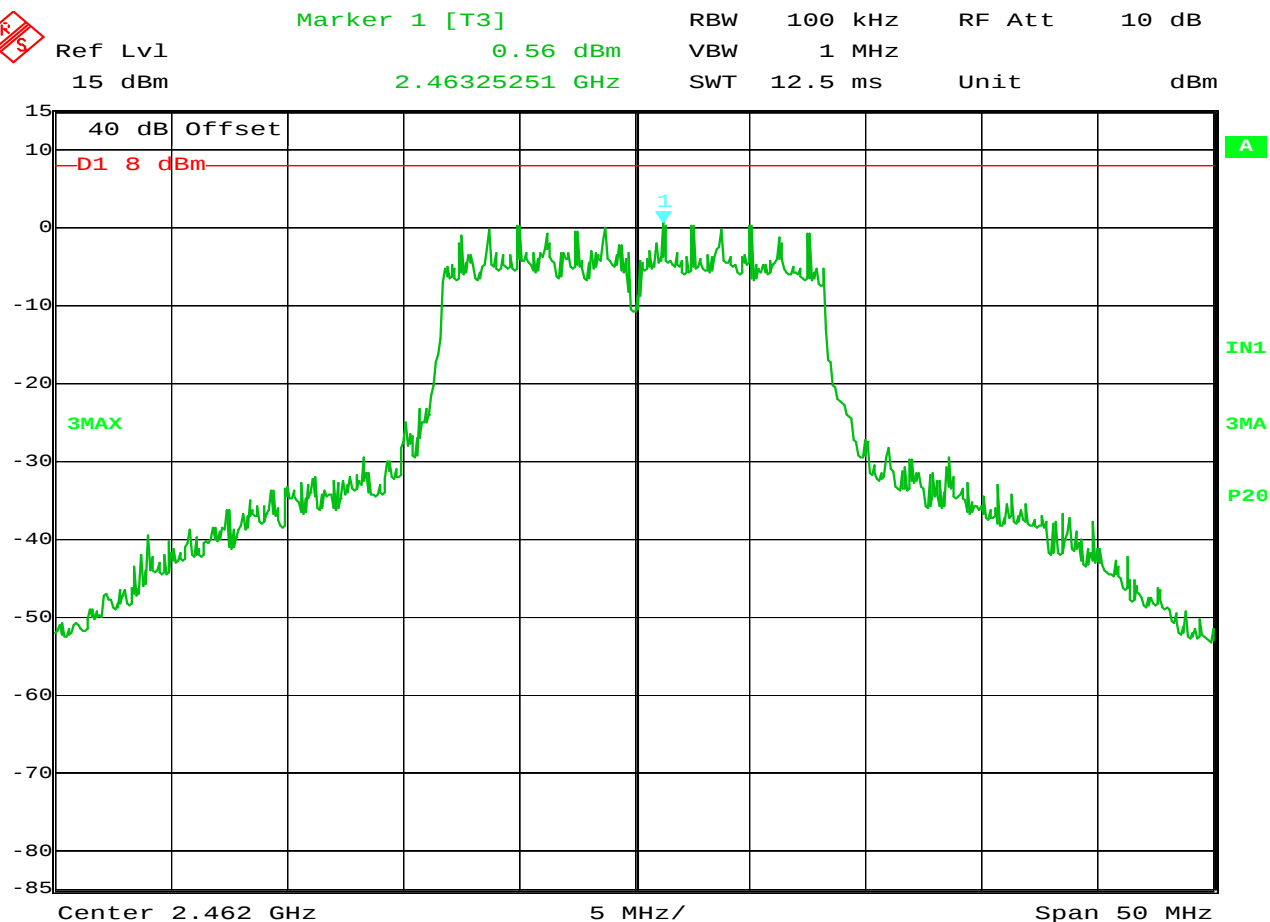


Date: 28.SEP.2012 09:51:13

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 9Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.34 dBm – 15.2 dB = -14.86 dBm

NOTES

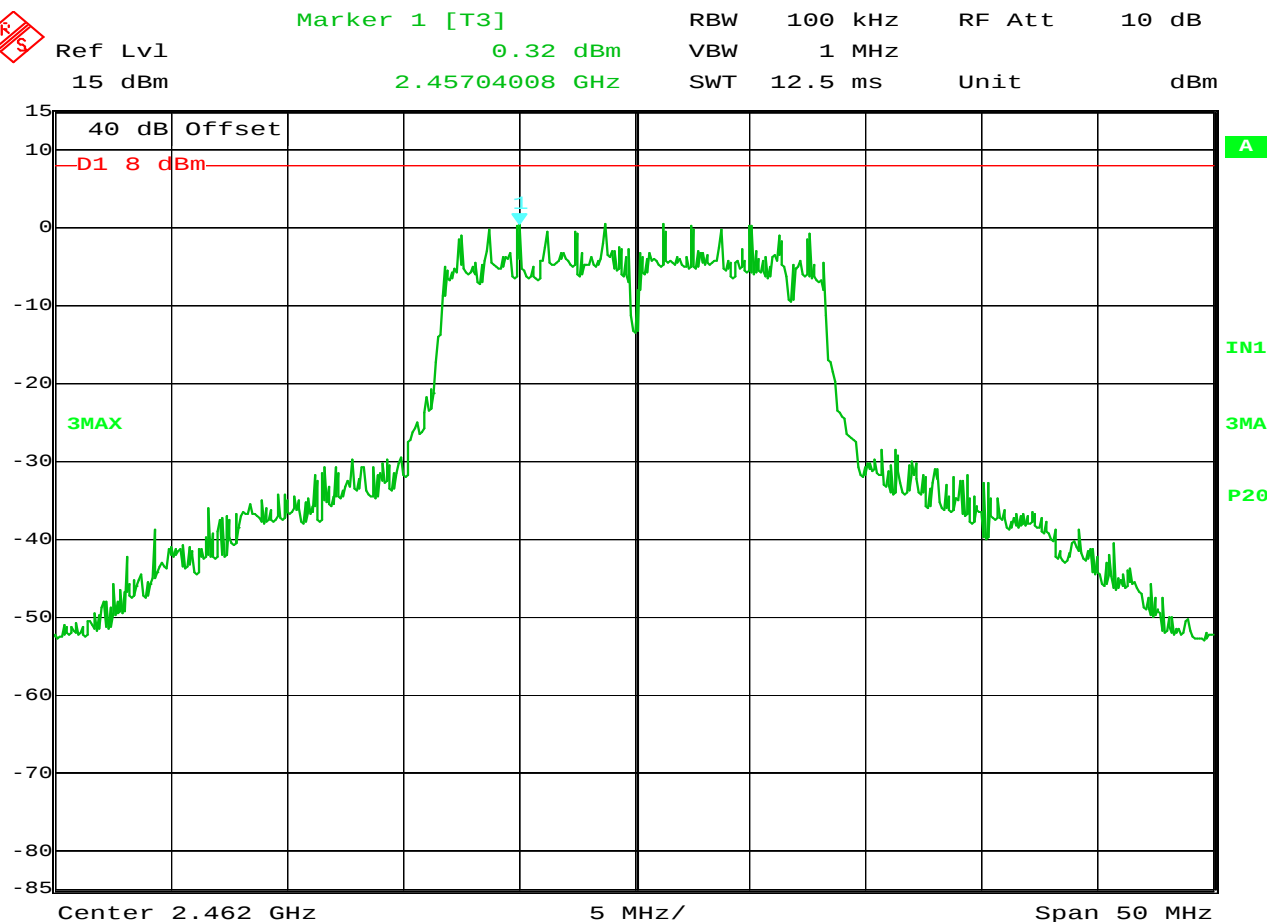


Date: 28.SEP.2012 09:52:40

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 12Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.56 dBm – 15.2 dB = -14.64 dBm

NOTES



Date: 28.SEP.2012 09:54:06

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 18Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.32 dBm – 15.2 dB = -14.88 dBm

NOTES

Ref Lvl
15 dBm

Marker 1 [T3]

0.27 dBm

RBW 100 kHz

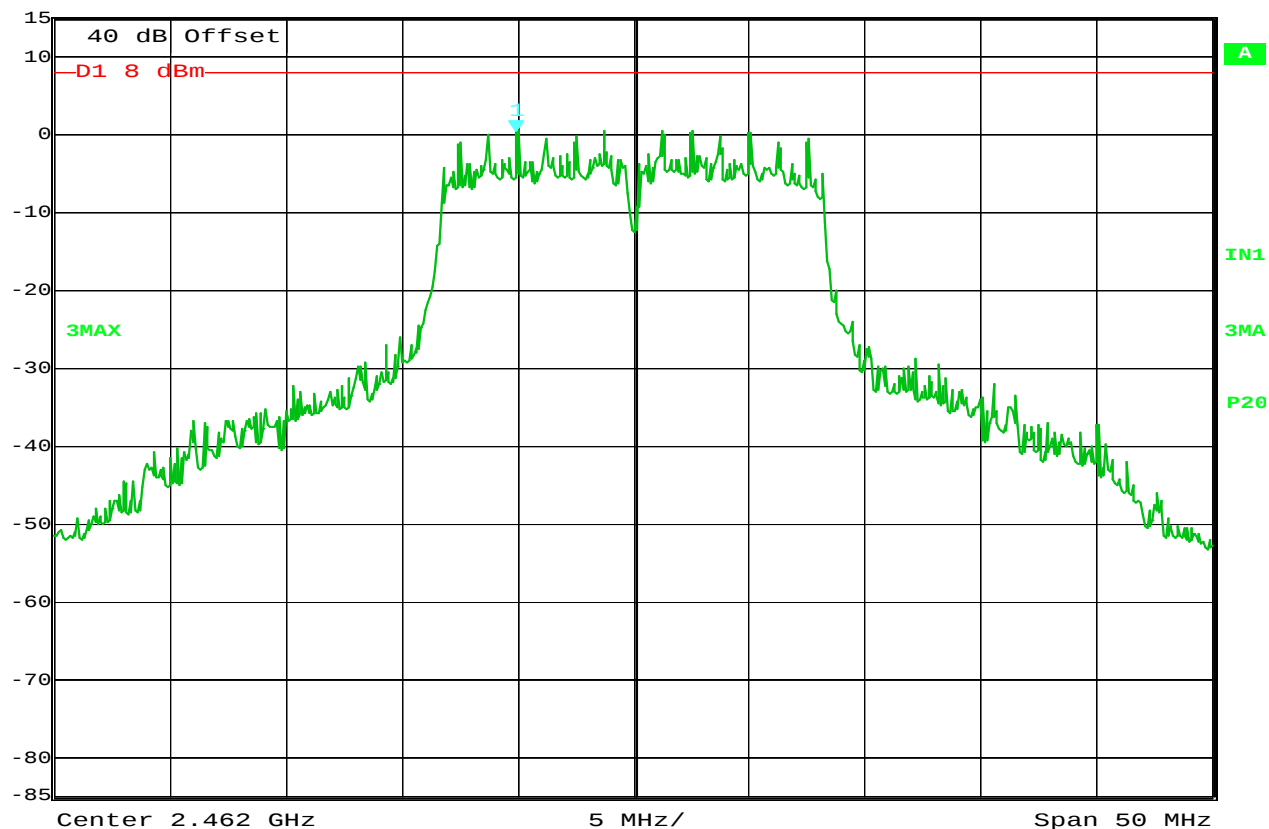
RF Att 10 dB

VBW 1 MHz

2.45693988 GHz

SWT 12.5 ms

Unit dBm

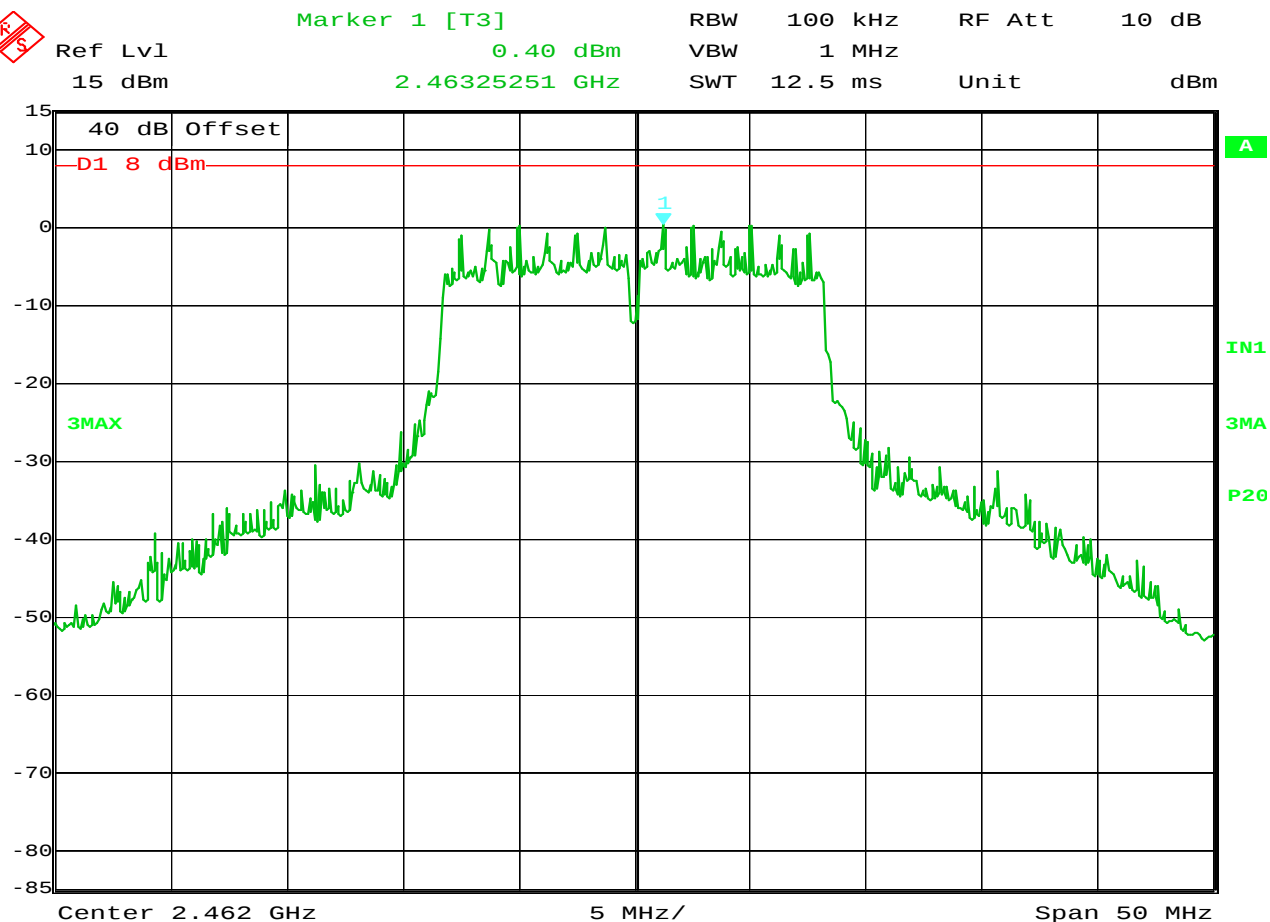


Date: 28.SEP.2012 09:55:29

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 24Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.27 dBm – 15.2 dB = -14.93 dBm

NOTES



Date: 28.SEP.2012 09:58:30

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 36Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.40 dBm – 15.2 dB = -14.80 dBm

NOTES

Ref Lvl
15 dBm

Marker 1 [T3]

-0.02 dBm

2.46074749 GHz

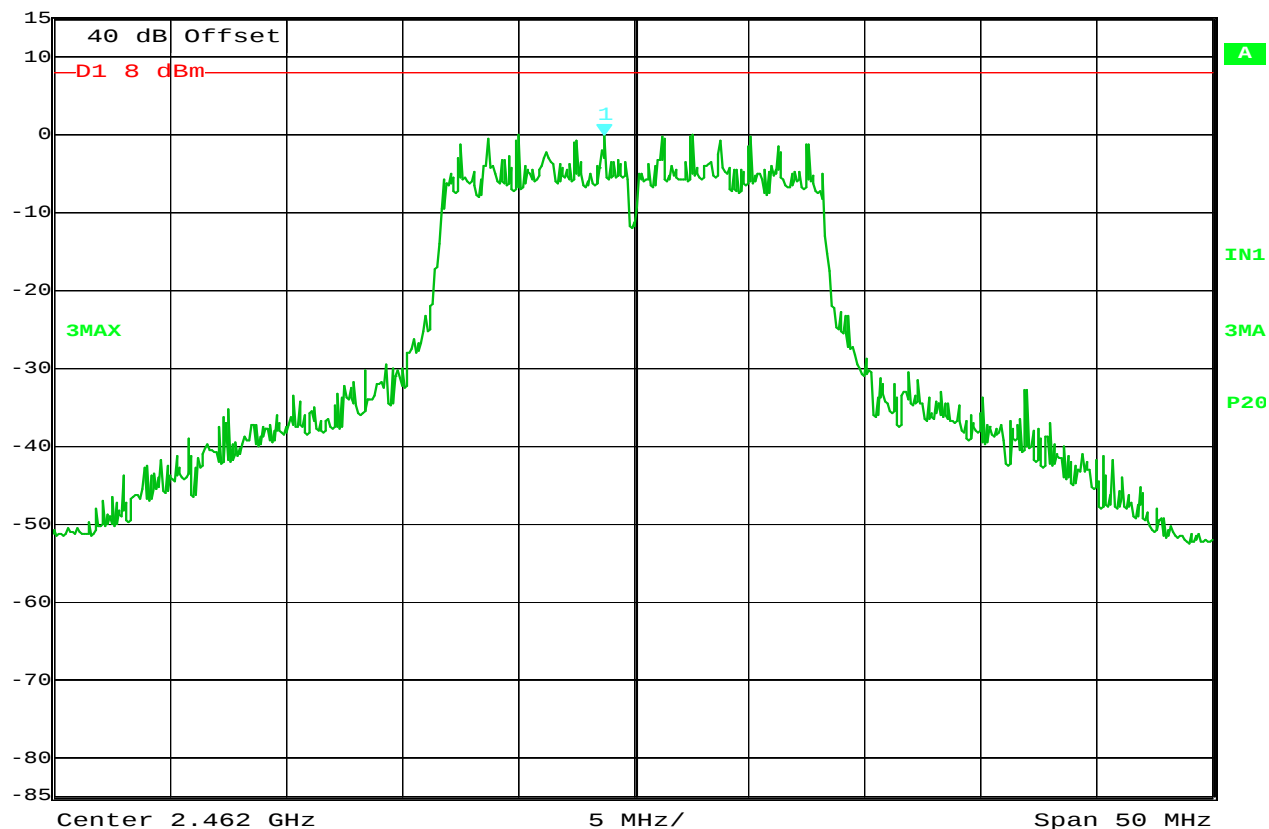
RBW 100 kHz

RF Att 10 dB

VBW 1 MHz

SWT 12.5 ms

Unit dBm

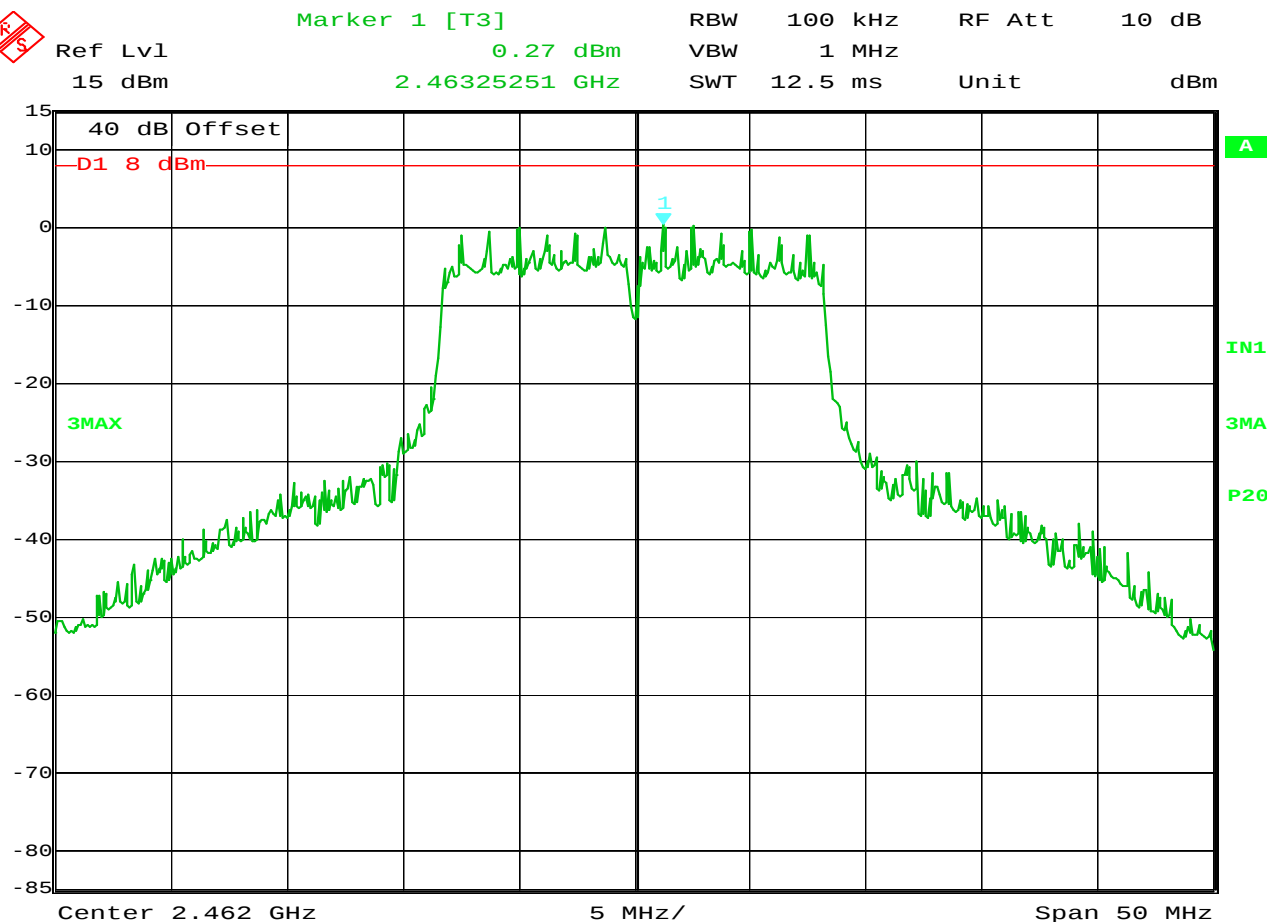


Date: 28.SEP.2012 10:00:42

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 48Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = -0.02 dBm - 15.2 dB = -15.22 dBm

NOTES



Date: 28.SEP.2012 10:02:50

FCC 15C Spectral Density

MANUFACTURER : Life Shadow
MODEL NUMBER : LS01
TEST MODE : Tx @ CH 11 2462MHz
TEST MODE : protocol G
TEST MODE : 54Mbps
TEST DATE : September 28, 2012
TEST PARAMETER : Spectral Density = 0.27 dBm – 15.2 dB = -14.93 dBm

NOTES