Measurement of RF Interference from an PGXD1 Body Pack Transmitter

For : Shure Incorporated
: 5800 West Touhy Avenue
: Niles, IL

P.O. No. : 4500175587
Date Received : May 17, 2010
Date Tested : May 17, 2010 through May 18, 2010
Test Personnel : Mark E. Longinotti
Specification : FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Section 15.247 for Digital Modulation Intentional Radiators Operating within the band 902-928MHz
: Industry Canada RSS-210
: Industry Canada RSS-GEN

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Mark E. Longinotti

Witnessed By : Juan Castrejon
Shure Incorporated

Approved By : Raymond J Klouda
Raymond J. Klouda
Registered Professional Engineer of Illinois - 44894

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REVISION HISTORY

Revision	Date	Description
—	May 20, 2010	Initial release

Measurement of RF Emissions from a PGXD1 Body Pack Transmitter

1 INTRODUCTION

1.1 Scope of Tests

This document represents the results of the series of radio interference measurements performed on a Shure Incorporated Body Pack Transmitter, Part No. PGXD1, Serial No. 5115, (hereinafter referred to as the test item). The test item is a digital modulation transmitter. The transmitter was designed to transmit in the 902-928 MHz band using a non-detachable, whip antenna. The test item was manufactured and submitted for testing by Shure Incorporated located in Niles, IL.

1.2 Purpose

The test series was performed to determine if the test item 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. The test series was also performed to determine if the test item meets the conducted RF emission requirements of the Industry Canada Radio Standards Specification, RSS-Gen, Section 7.2.2 and the radiated RF emission requirements of the Industry Canada Radio Standards Specification, RSS-210, Annex 8 for transmitters. Testing was performed in accordance with ANSI C63.4-2003.

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 National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP Lab Code: 100278-0.

1.5 Laboratory Conditions

The temperature at the time of the test was 22C and the relative humidity was 31%.

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 2009
- ANSI C63.4-2003, "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"
- Measurement of Digital Transmission Systems Operating under Section 15.247 March 23, 2005
- Industry Canada RSS-210, Issue 7, June 2007, “Spectrum Management and Telecommunications Radio Standards Specification, Low-power License-exempt radio communication devices (All Frequency Bands): Category I Equipment”
- Industry Canada RSS-GEN, Issue 2, June 2007, “Spectrum Management and Telecommunications Radio Standards Specification, General Requirements and Information for the Certification of radio communication equipment”

3 TEST ITEM SET-UP AND OPERATION

3.1 General Description

The test item is a Body Pack Transmitter, Part No. PGXD1. A block diagram of the test item setup is shown as Figure 1.

3.1.1 Power Input

The test item was powdered by 3VDC from 2 “AA” internal batteries.

3.1.2 Peripheral Equipment

The test item was submitted for testing with a Shure 93 microphone.

3.1.3 Interconnect Cables

The test item was connected to the Shure 93 microphone via a 1.1 meter long cable.

3.1.4 Grounding

The test item was ungrounded during the tests.

3.2 Operational Mode

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

- Transmit at 902.75MHz
- Transmit at 915.75MHHz
- Transmit at 927.25MHHz

3.3 Test Item Modifications

No modifications were required for compliance.

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 C63.4-2003 for site attenuation.

4.2 Test Instrumentation

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

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 Emission Measurements		
Combined Standard Uncertainty	1.07	-1.07
Expanded Uncertainty (95% confidence)	2.1	-2.1

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

5 TEST PROCEDURES

5.1 Powerline Conducted Emissions

5.1.1 Requirements

Since the test item is powered only by internal batteries, no conducted emissions tests are required.

5.2 6dB Bandwidth

5.2.1 Requirement

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

5.2.2 Procedures

The test item was setup inside the chamber.

The test item 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 17 through 19 show that the minimum 6 dB bandwidth was 647.29kHz which is greater than minimum allowable 6dB bandwidth requirement of 500kHz for systems using digital modulation techniques. The 99% bandwidth was measured to be 969.74kHz.

5.3 Peak Output Power

5.3.1 Requirements

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

5.3.2 Procedures

The test item was placed on the non-conductive stand and set to transmit. A dipole was placed at a test distance of 3 meters from the test item. The resolution bandwidth (RBW) of the spectrum analyzer was set to greater than the 6dB bandwidth. The test item was maximized for worst case emissions (or maximum output power) at the measuring antenna. The maximum meter reading was recorded. The peak 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 second dipole was then set in place of the test item 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 hopping frequencies.

5.3.3 Results

The results are presented on page 20. The maximum EIRP measured from the transmitter was 11.4dBm or 13.8mW which is below the 4 Watt limit.

5.4 Spurious Emissions

5.4.1 Radiated Spurious Emissions

5.4.1.1 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

5.4.1.2 Procedures

Radiated measurements were performed in a 32ft. x 20ft. x 14ft. high shielded enclosure. 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 test item. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the test item. The entire frequency range from 30MHz to 10.0GHz was investigated using a peak detector function.

The final emission tests were then manually performed over the frequency range of 30MHz to 10.0GHz.

1) For all harmonics not in the restricted bands, the following procedure was used:
   a) The field strength of the fundamental was measured using dipole antenna. The dipole 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 were 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 axis 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 test item. 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 test item. 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 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 were 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 axis to ensure the maximum readings were recorded for the test item.
   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.

If the emission is pulsed, the reading can be adjusted by a “duty cycle correction factor” derived from 20*log(on time/100msec). These readings must be no greater than the limits specified in 15.209(a).

5.4.1.3 Results

Preliminary radiated emissions plots with the test item transmitting at 902.75MHz, 915.75MHz, and 927.25MHz are shown on pages 21 through 32. Final radiated emissions data are presented on data pages 33 through 38. As can be seen from the data, all emissions measured from the test item were within the specification limits. The emissions level closet to the limit (worst case) occurred at 7326MHz. The emissions level at this frequency was 4.9dB within the limit. See data pages 33 through 38 for details. Photographs of the test configuration which yielded the highest, or worst case, radiated emission levels are shown on Figure 2 and Figure 3.

5.5 Band Edge Compliance

5.5.1 Requirements

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 test item 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 test item.
3) The test item was set to transmit continuously at the channel closest to the low band-edge (hopping function disabled).
4) The test item 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) ≥ 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 test item 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 test item.
3) The test item was set to transmit continuously at the channel closest to the high band-edge (hopping function disabled).
4) The test item was maximized for worst case emissions at the measuring antenna.
5) To determine the band edge compliance, the following spectrum analyzer settings were used:

    a. Center frequency = high 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) ≥ 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 right of the center frequency (band-edge) must be below the display line.)
    f. The analyzer's display was plotted using a 'screen dump' utility.

5.5.3 Results

Pages 39 and 40 show the radiated band-edge compliance results. As can be seen from these plots, the emissions at the low end band edge and the high end band edge are within the 20 dB down limits.

5.6 Power Spectral Density

5.6.1 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.

5.6.2 Procedures

1) The test item was placed on the non-conductive stand and set to transmit at a mid channel.
2) A broadband measuring antenna was placed near the test item.
3) To determine the power spectral density, the following spectrum analyzer settings were used for Channel 1:
    a. Center frequency = transmit frequency
    b. Span = 1MHz or wider
    c. Resolution bandwidth (RBW) greater than the 6dB bandwidth.
    d. Sweep time = auto
    e. The peak detector and 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined.
    f. Channel 1 of the spectrum analyzer was placed in ‘View’ mode.
4) This reading corresponds to the peak output power measured for the mid channel.
5) Turn on the display line and place it at the corresponding +8dBm level. (e.g. if the peak output power is +18dBm then the +8dBm level will be 10dB down from the radiated level and if the peak output power is +6dBm then the +8dBm level will be 2dB above the radiated level.)
6) The test item was then placed in the transmit at 915.75MHz mode.
7) To determine the power spectral density, the following spectrum analyzer settings were used for Channel 2:
    a. Center frequency = transmit frequency

b. Span = 1MHz or wider
c. Resolution bandwidth (RBW) = 3kHz
d. Sweep time = span divided by RBW = (for example :1MHz/3kHz = 333 seconds)
e. The peak detector and 'Max-Hold' function was engaged.
f. The display line represents the 8 dBm limit
g. The analyzer's display was plotted using a 'screen dump' utility.

5.6.3 Results

Page 41 shows 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 CONCLUSIONS

It was determined that the Shure Incorporated Body Pack Transmitter, Part No. PGXD1 digital modulation transmitter, Serial No. 5115, did fully meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.207 and 15.247 for Intentional Radiators Operating within the 902-928 MHz, and Industry Canada's RSS-210 for Low-power License-exempt radio communication devices when tested per ANSI C63.4-2003.

7 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 test item at the test date. Any electrical or mechanical modification made to the test item subsequent to the specified test date will serve to invalidate the data and void this certification.

8 ENDORSEMENT DISCLAIMER

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
APW2	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-35-120-5R0-10	PL2925	1GHZ-20GHZ	7/28/2009	7/28/2010
GRE0	SIGNAL GENERATOR	AGILENT TECHNOLOGIES	E4438C	MY42083127	250KHZ-6GHZ	2/16/2010	2/16/2011
NDQ0	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	311	400-1000MHZ	3/26/2010	3/26/2011
NDQ1	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	313	400-1000MHZ	4/12/2010	4/12/2011
NTA1	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL6112	2054	0.03-2GHZ	9/10/2009	9/10/2010
NWH0	RIDGED WAVE GUIDE	TENSOR	4105	2081	1-12.4GHZ	8/11/2009	8/11/2010
RBB0	EMI TEST RECEIVER 20HZ TO 40 GHZ	ROHDE & SCHWARZ	ESIB40	100250	20 HZ TO 40GHZ	3/16/2010	3/16/2011
SES1	24VDC POWER SUPPLY	P TRANS	FS-32024-1M	002	18-27VDC	NOTE 1	
XPQ3	HIGH PASS FILTER	K&L MICROWAVE	4IH30-1804/T10000-0	4	1.8GHZ-10GHZ	11/9/2009	11/9/2010

I/O: Initial Only N/A: Not Applicable
Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

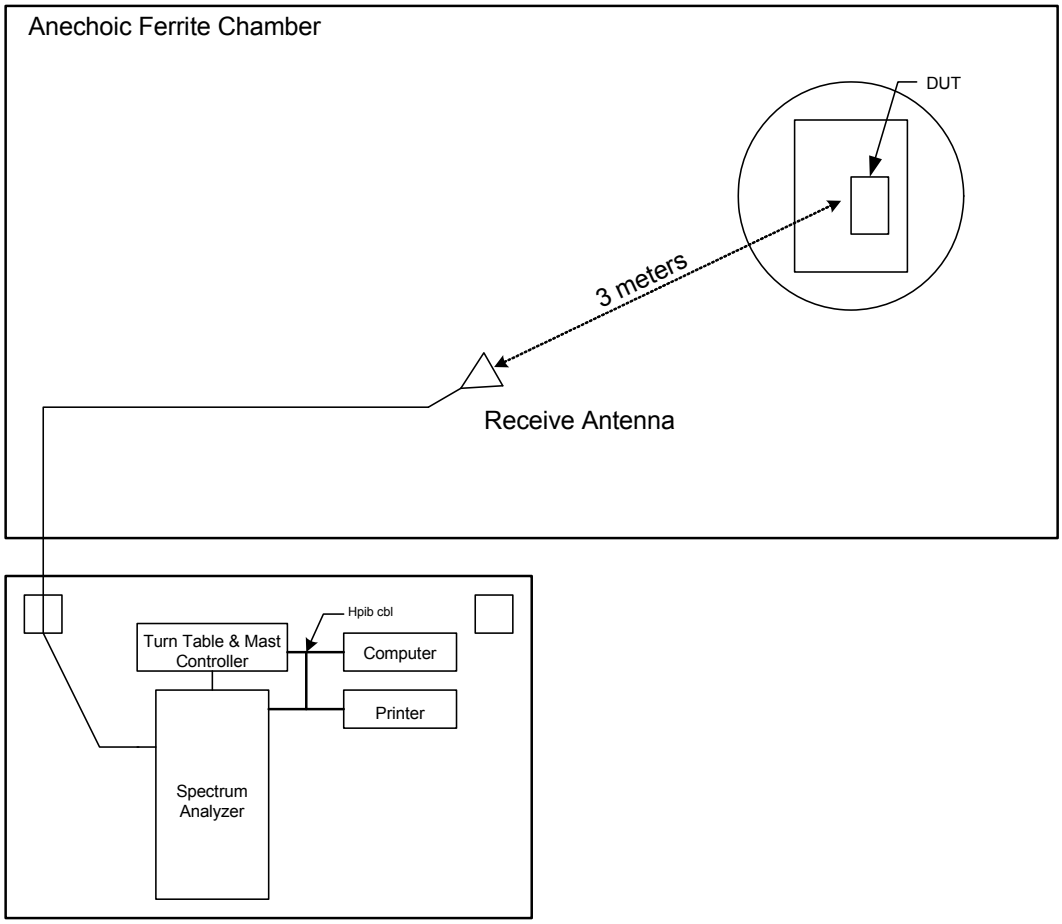


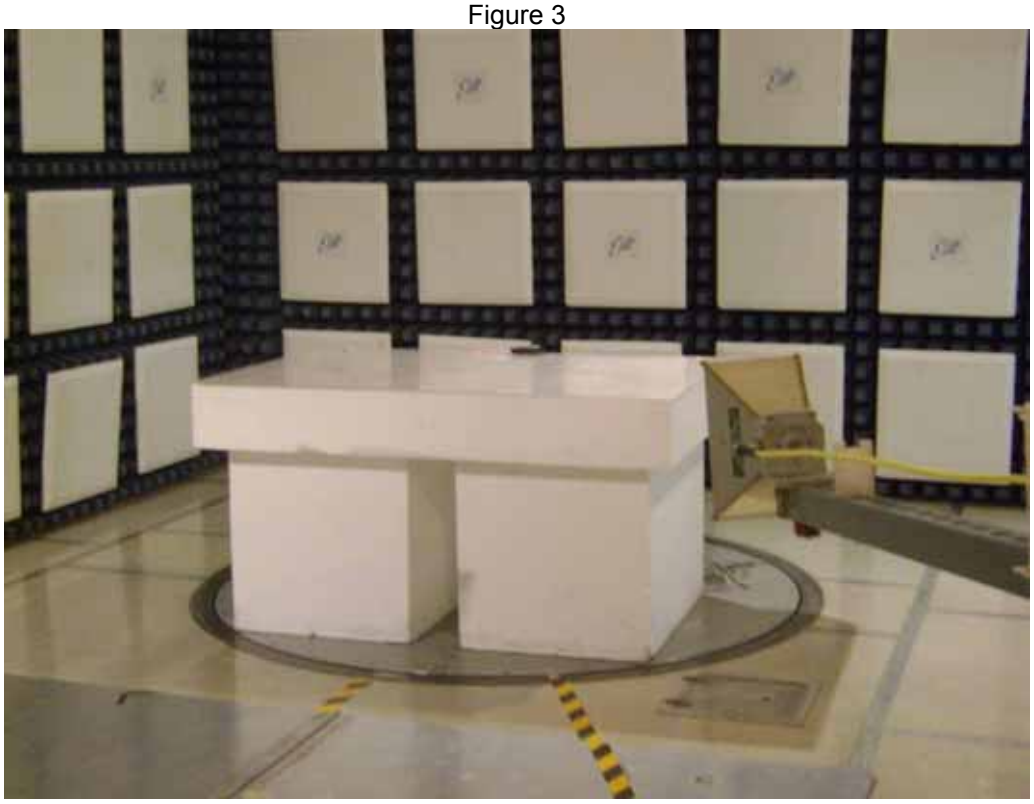
FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

Figure 2

Test Setup for Radiated Emissions – 902MHz to 928MHz, Horizontal Polarization

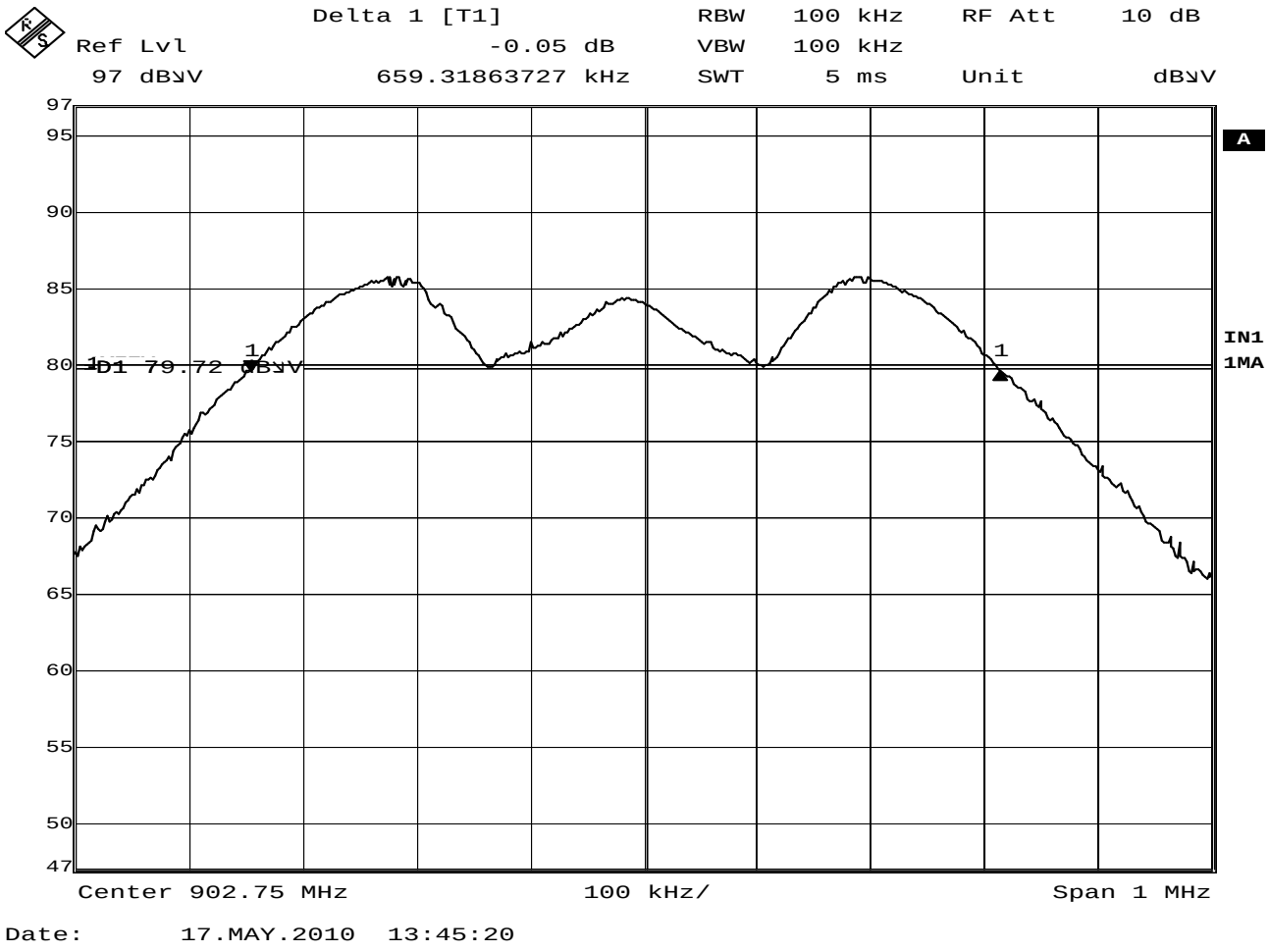
Test Setup for Radiated Emissions – 902MHz to 928MHz, Vertical Polarization

Figure 3



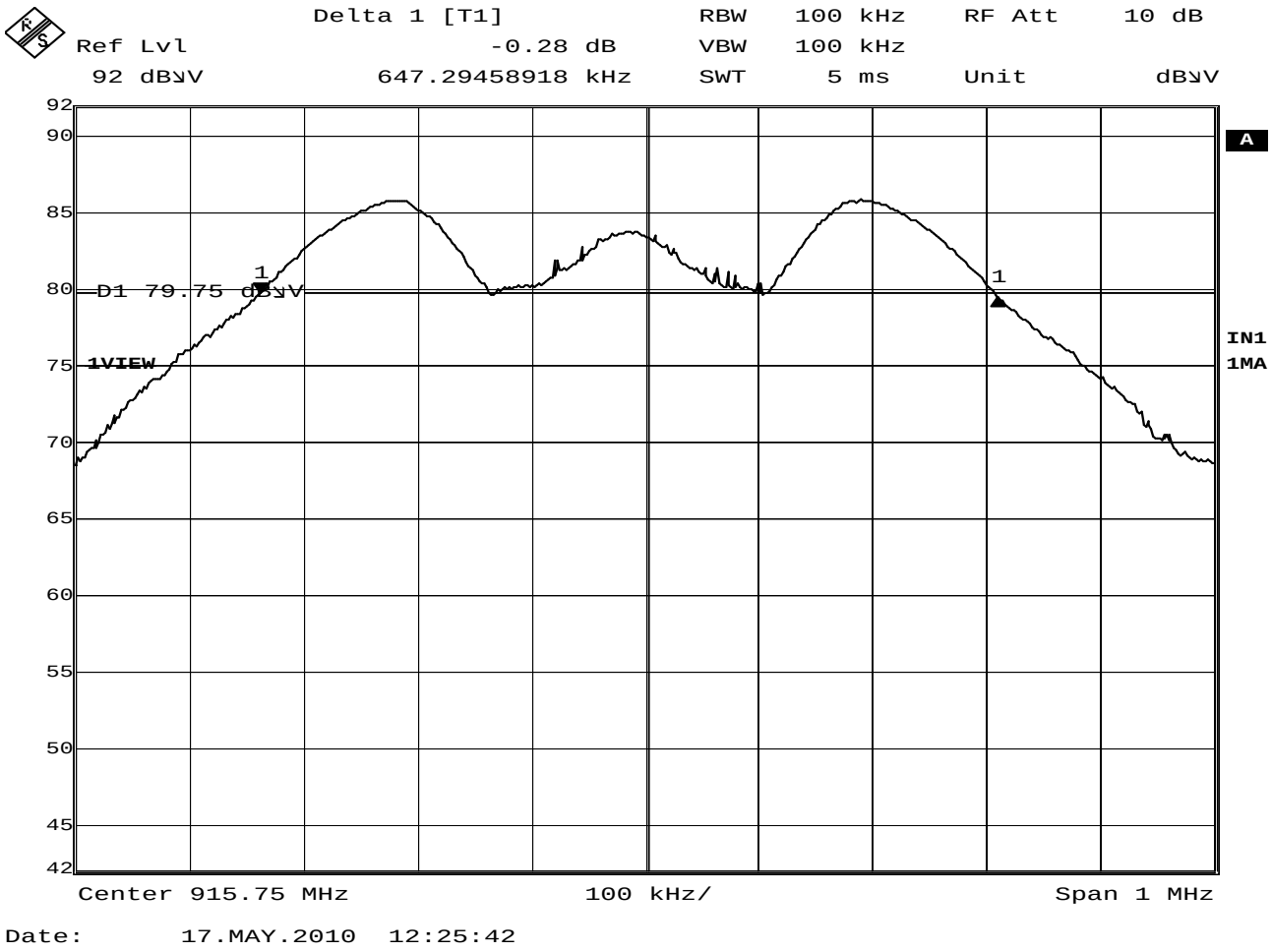
Test Setup for Radiated Emissions – 1GHz to 10GHz, Horizontal Polarization

Test Setup for Radiated Emissions – 1GHz to 18GHz, Vertical Polarization



FCC 15.247(a)(2) 6 dB Bandwidth

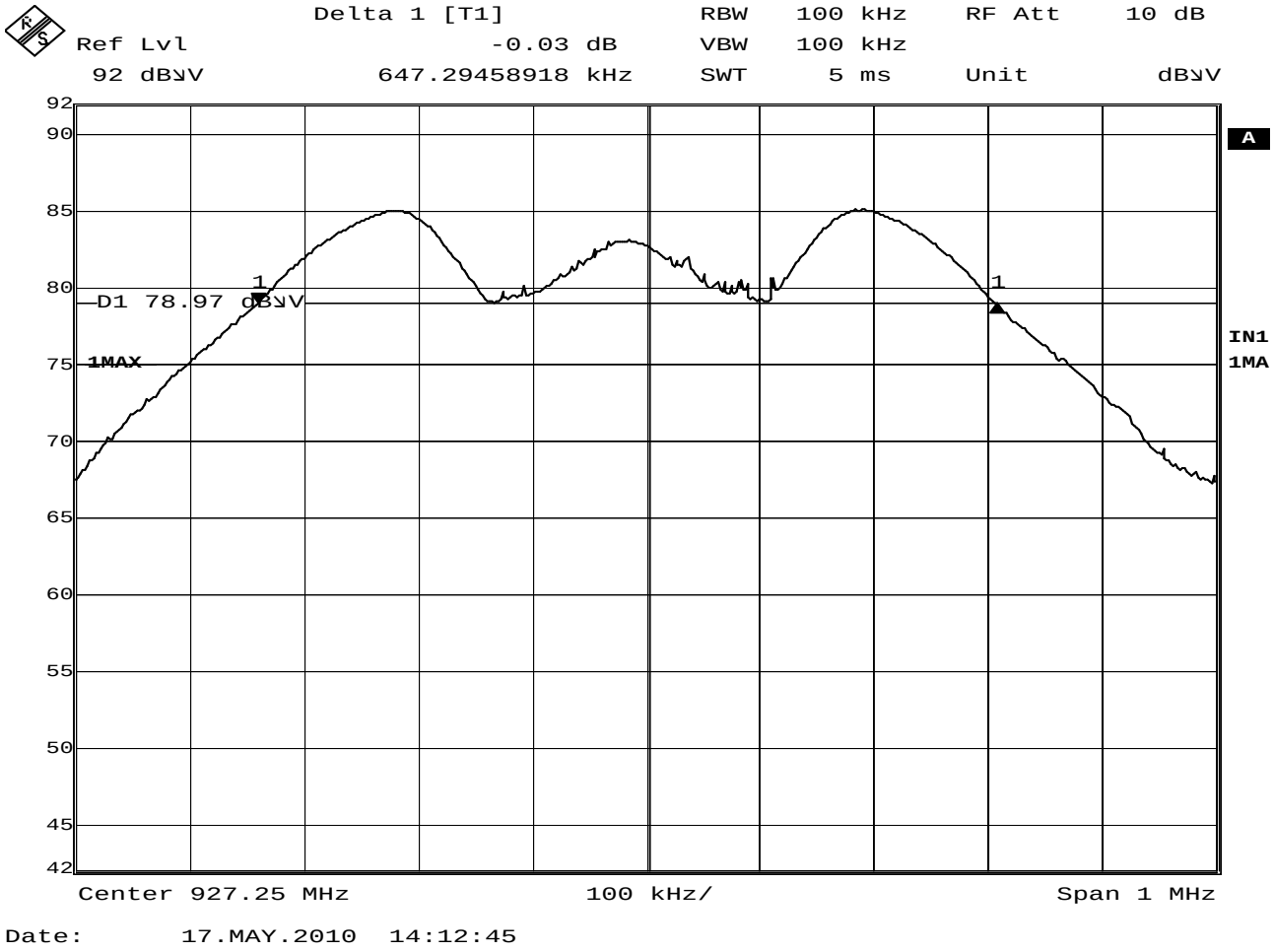
MANUFACTURER	:	Shure Incorporated
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Tx @ 902.75MHz
TEST DATE	:	May 17, 2010
TEST PARAMETERS	:	6dB bandwidth
NOTES	:	6dB bandwidth = 659.32kHz
EQUIPMENT USED	:	RBB0, NTA1



FCC 15.247(a)(2) 6 dB Bandwidth

MANUFACTURER	:	Shure Incorporated
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Tx @ 915.75MHz
TEST DATE	:	May 17, 2010
TEST PARAMETERS	:	6dB bandwidth
NOTES	:	6dB bandwidth = 647.29kHz

EQUIPMENT USED : RBB0, NTA1



FCC 15.247(a)(2) 6 dB Bandwidth

MANUFACTURER	:	Shure Incorporated
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Tx @ 927.25MHz
TEST DATE	:	May 17, 2010
TEST PARAMETERS	:	6dB bandwidth
NOTES	:	6dB bandwidth = 647.29kHz
EQUIPMENT USED	:	RBB0, NTA1

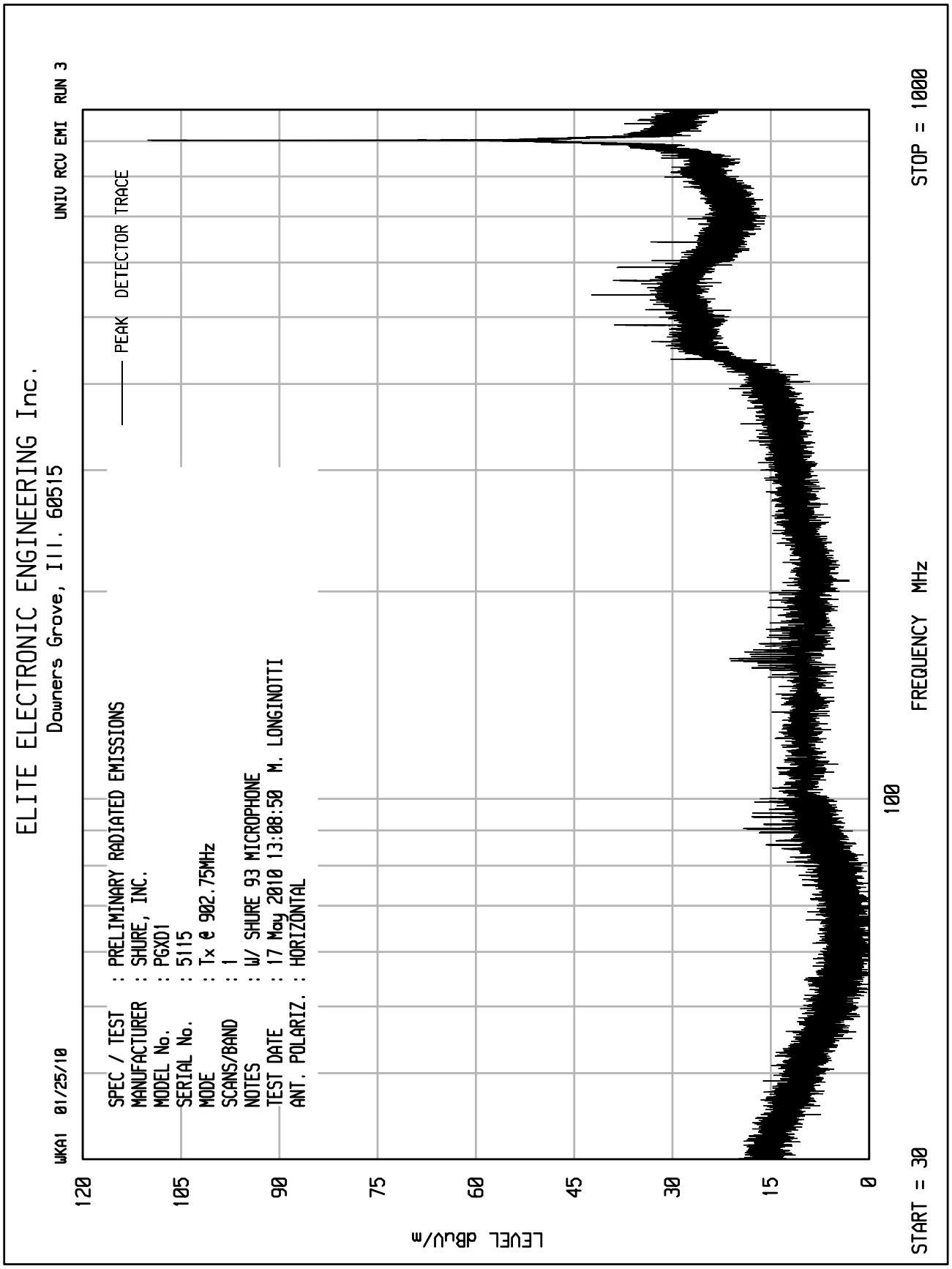
MANUFACTURER	:	Shure Incorporated
TEST ITEM	:	Body Pack Transmitter
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	See Below
TEST DATE	:	May 17, 2010
TEST PARAMETERS	:	FCC Part 15, Subpart C, 15.247, Peak Output Power
NOTES	:	EIRP Measurements
EQUIPMENT USED	:	RBB0, NDQ1, NDQ0, GRE0

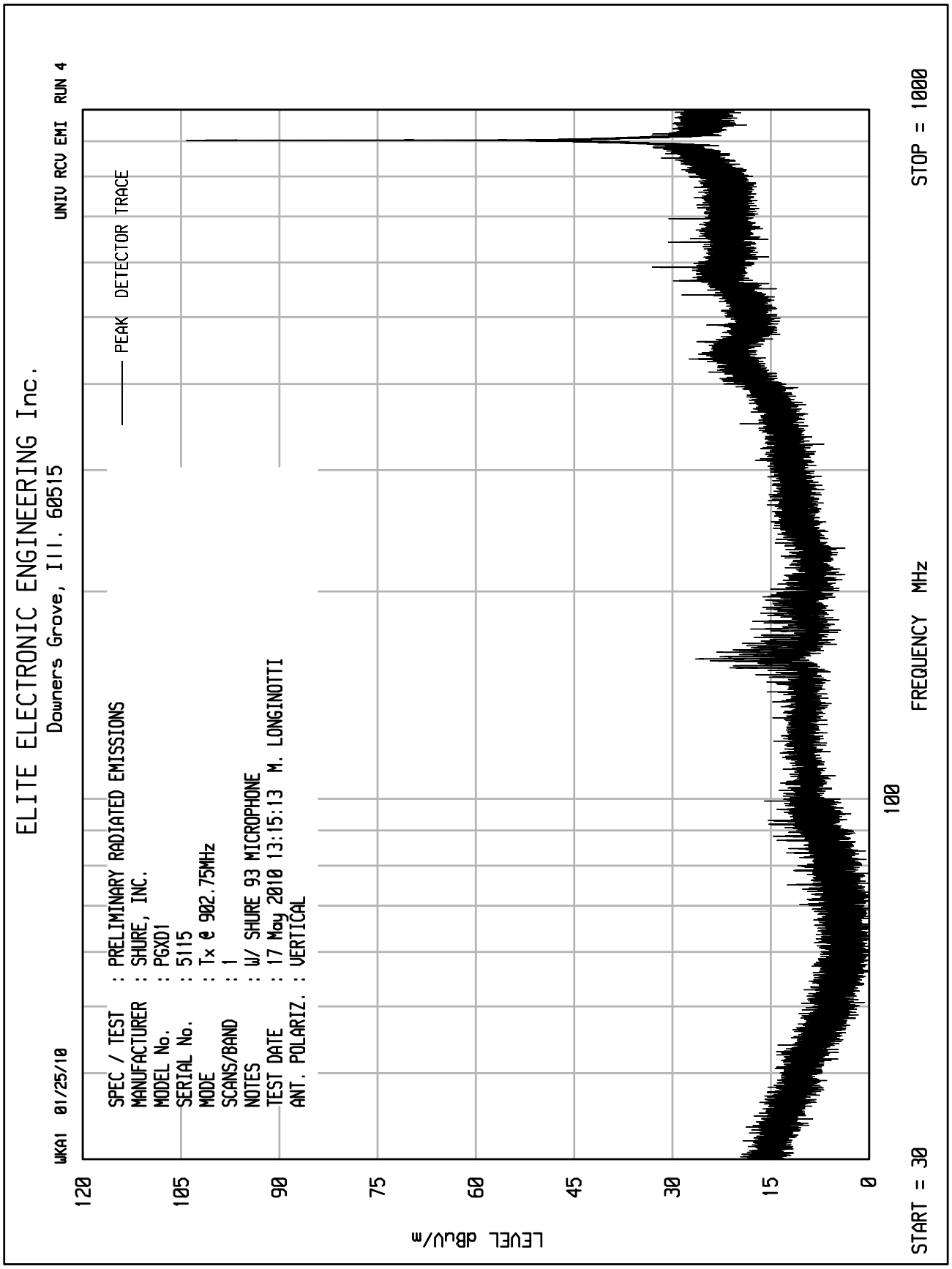
Frequency MHz	Antenna Polarization	Meter Reading dBuV	Matched Signal Generator Reading dBm	Antenna Gain dB	Cable Loss dB	EIRP dBm	Limit dBm
Transmit at 902.75 MHz							
902.75	Horizontal	82.0	11.7	1.6	1.9	11.4	36.0
902.75	Vertical	76.0	7.4	1.6	1.9	7.1	36.0
Transmit at 915.75 MHz							
915.75	Horizontal	80.9	11.4	1.7	1.9	11.2	36.0
915.75	Vertical	68.1	-1.0	1.7	1.9	-1.2	36.0
Transmit at 927.25 MHz							
927.25	Horizontal	80.1	11.0	1.5	1.9	10.6	36.0
927.25	Vertical	68.1	1.0	1.5	1.9	0.6	36.0

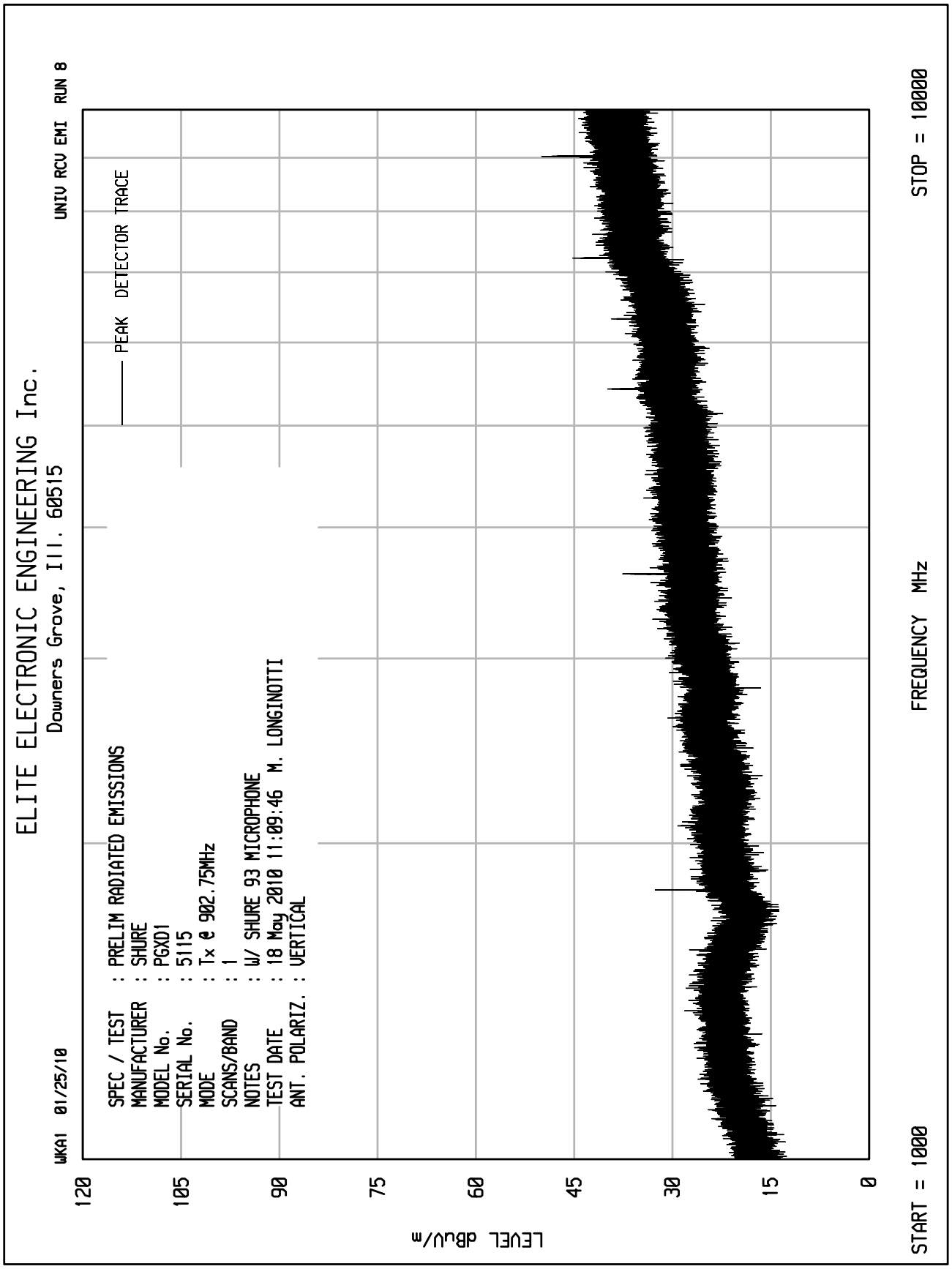
EIRP (dBm) = Sig. Gen. (dBm) + Antenna Gain (dBm) – Cable Loss (dB)

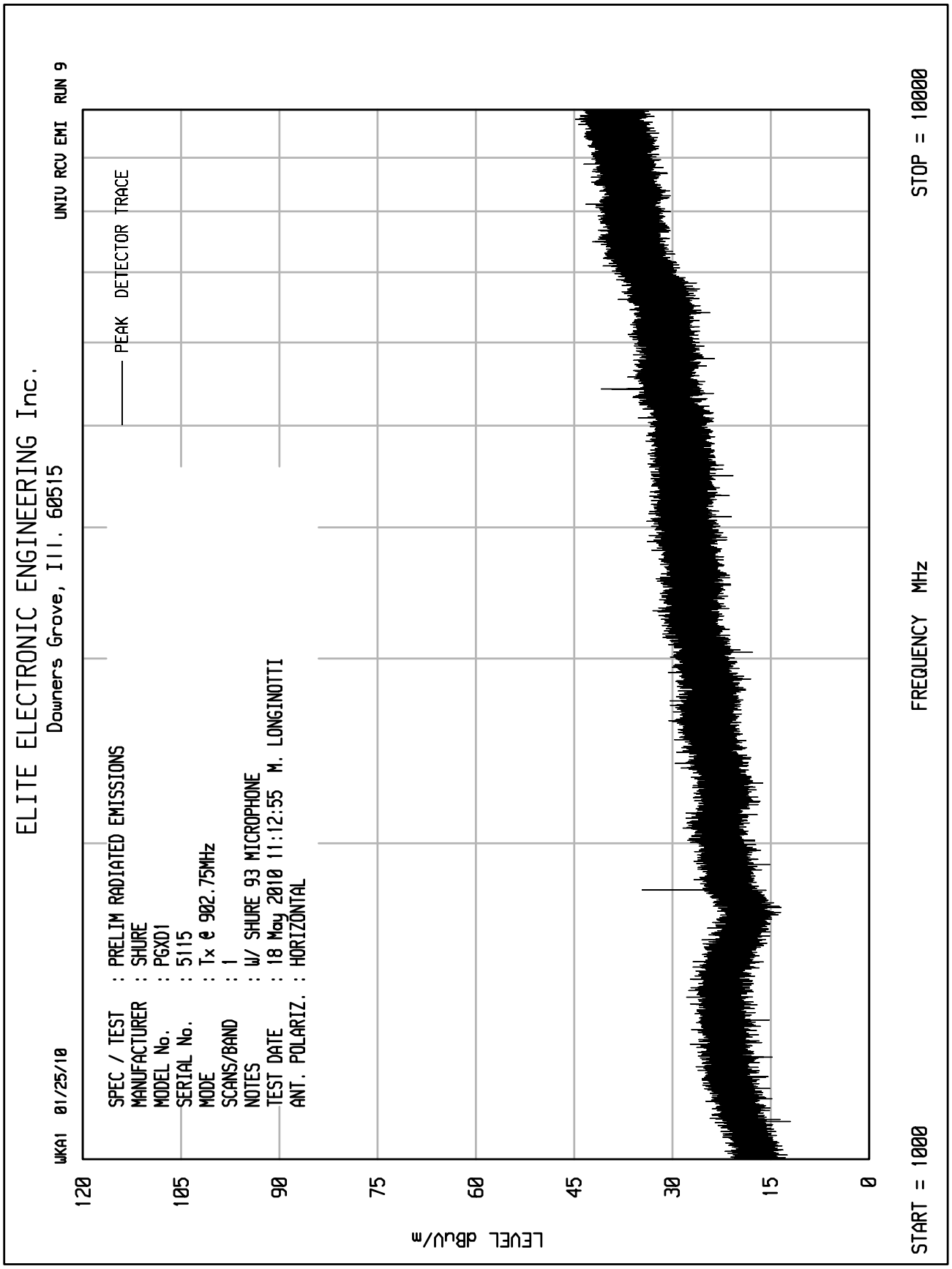
Checked By: MARK E. LONGINOTTI

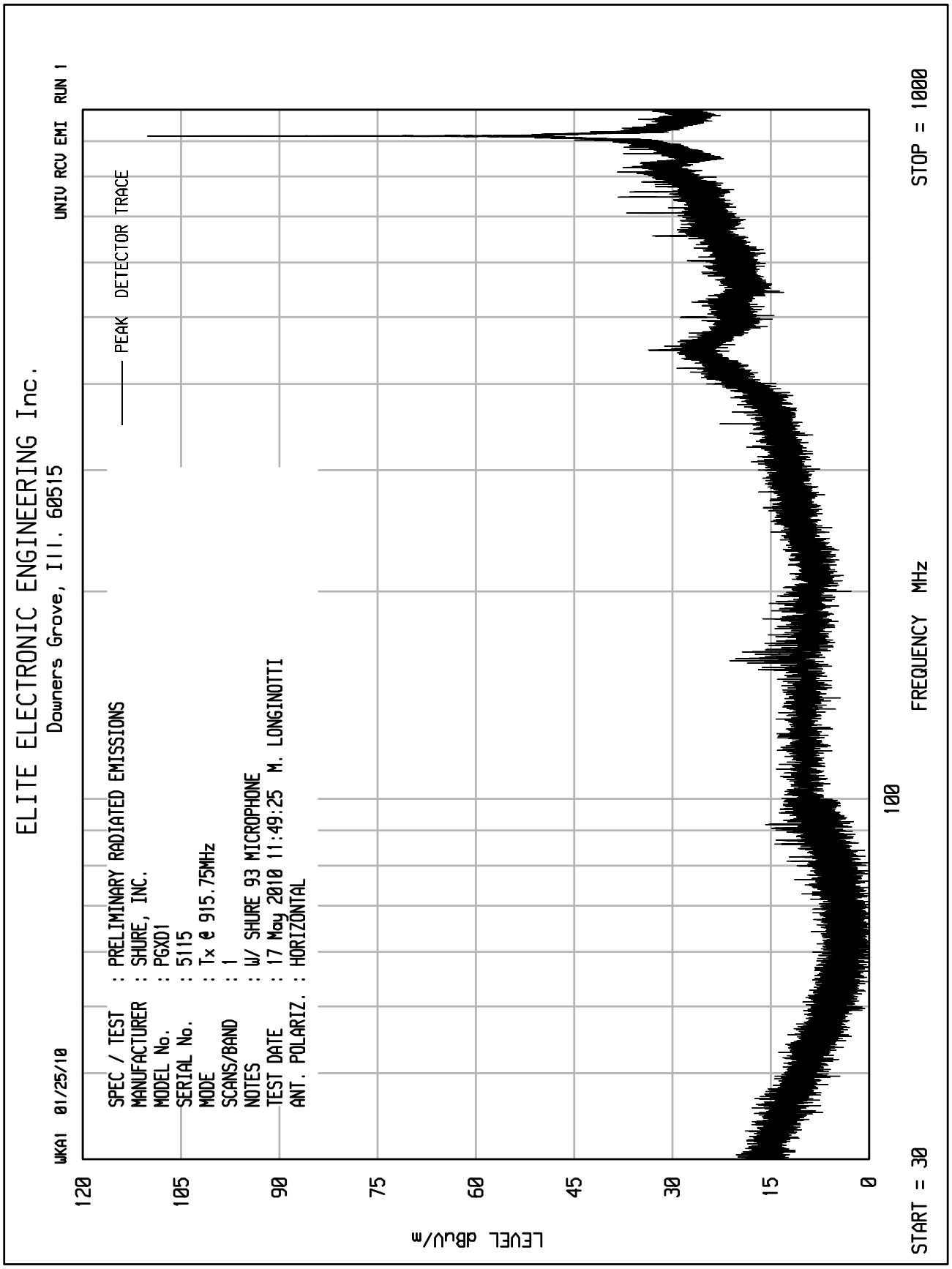
Mark E. Longinotti

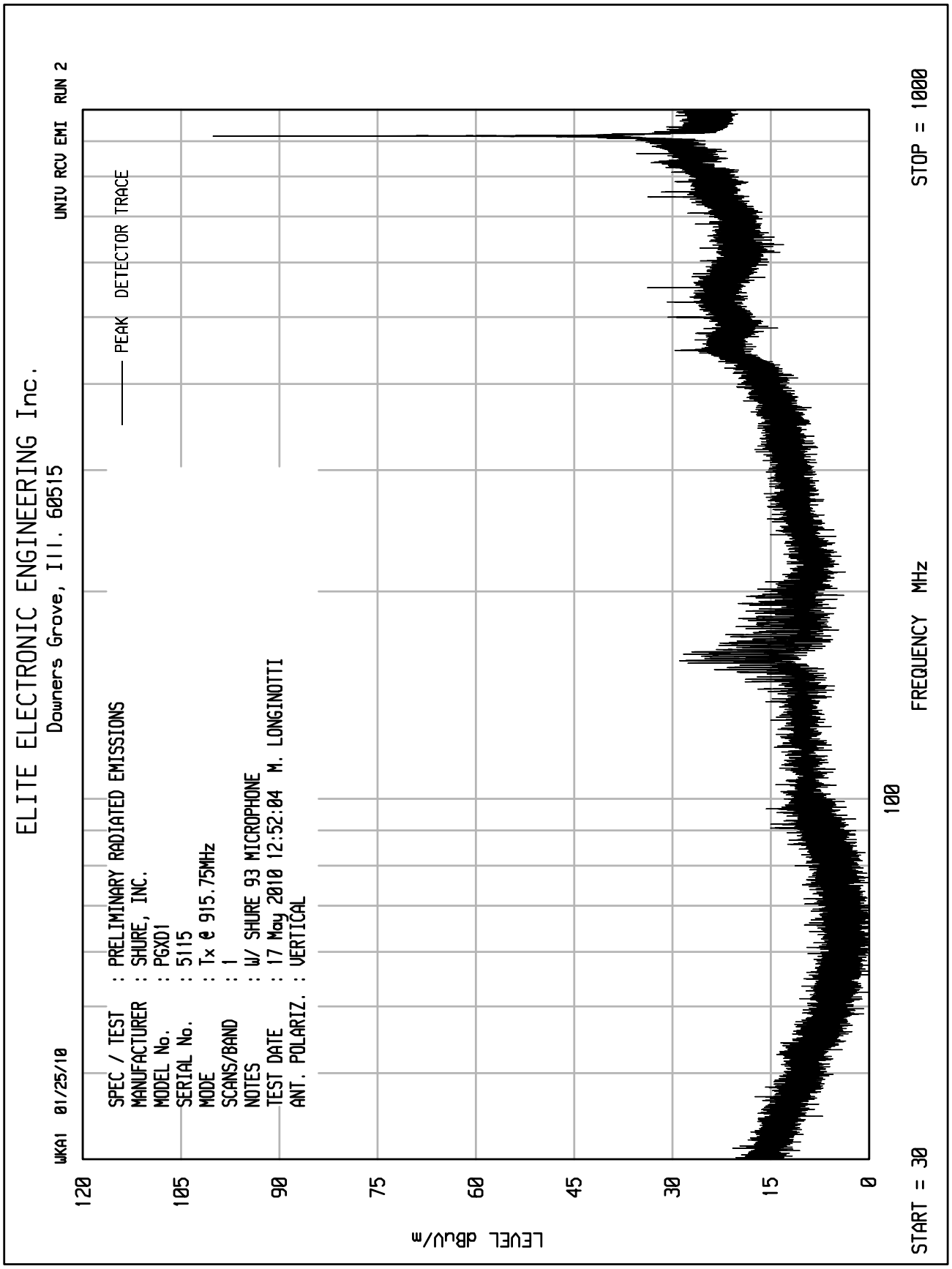

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 3
WKA1 01/25/10
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 902.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 17 May 2010 13:08:50 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

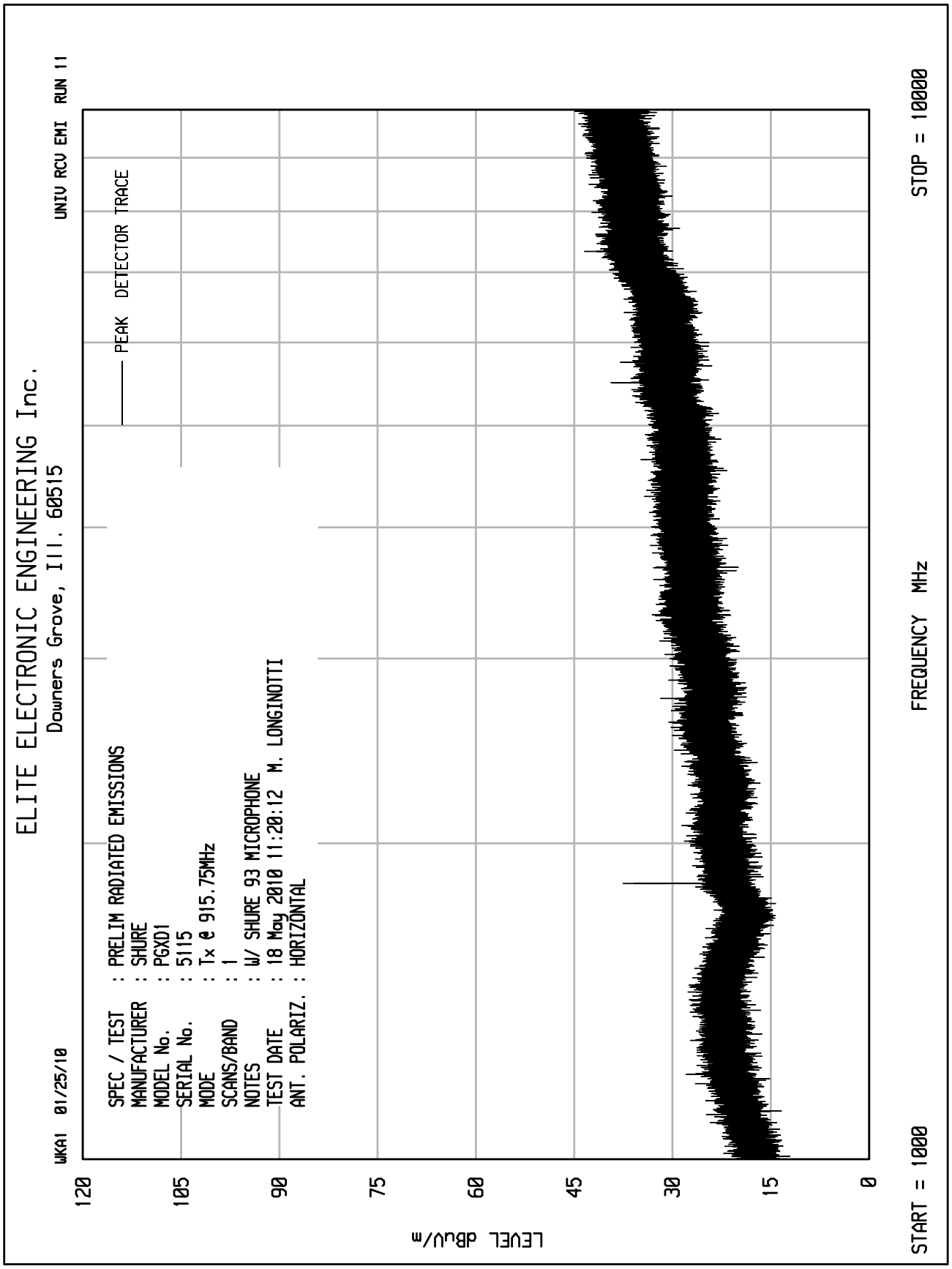

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 4
WKA1 01/25/10
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 902.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 17 May 2010 13:15:13 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

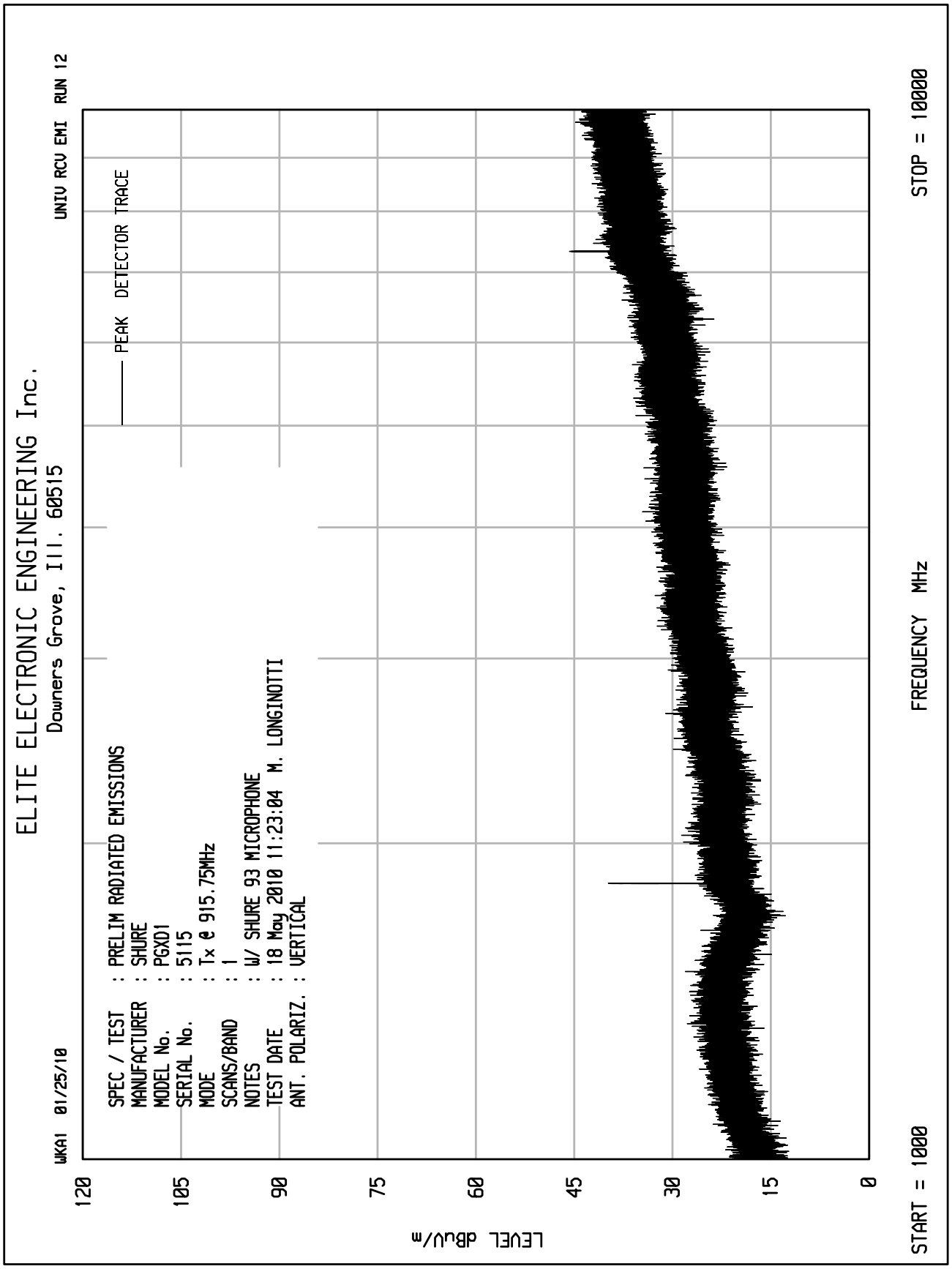

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 8
WKA1 01/25/10
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : SHURE
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 902.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 18 May 2010 11:09:46 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 10000

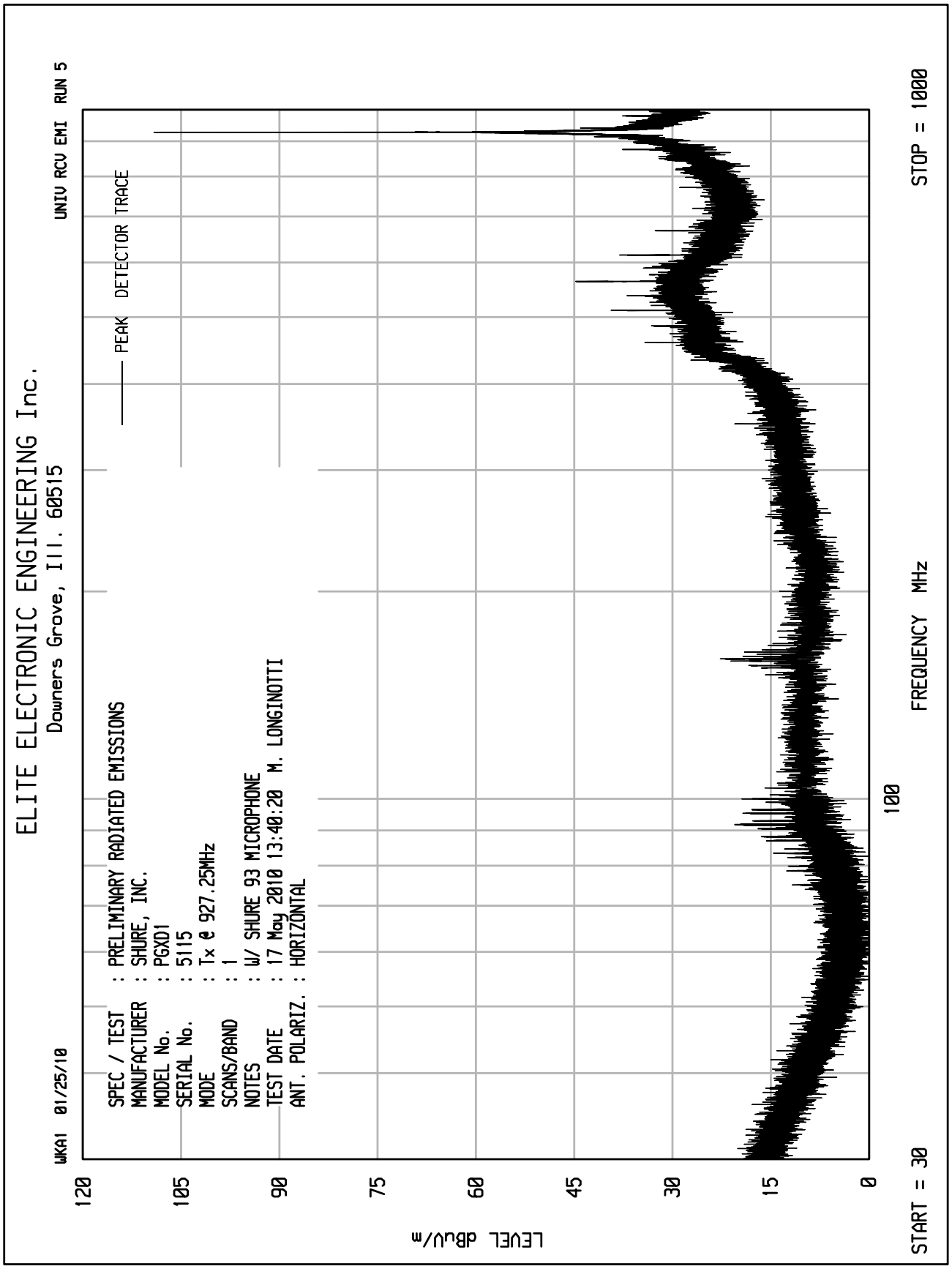

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 9
WKA1 01/25/10
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : SHURE
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 902.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 18 May 2010 11:12:55 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 10000

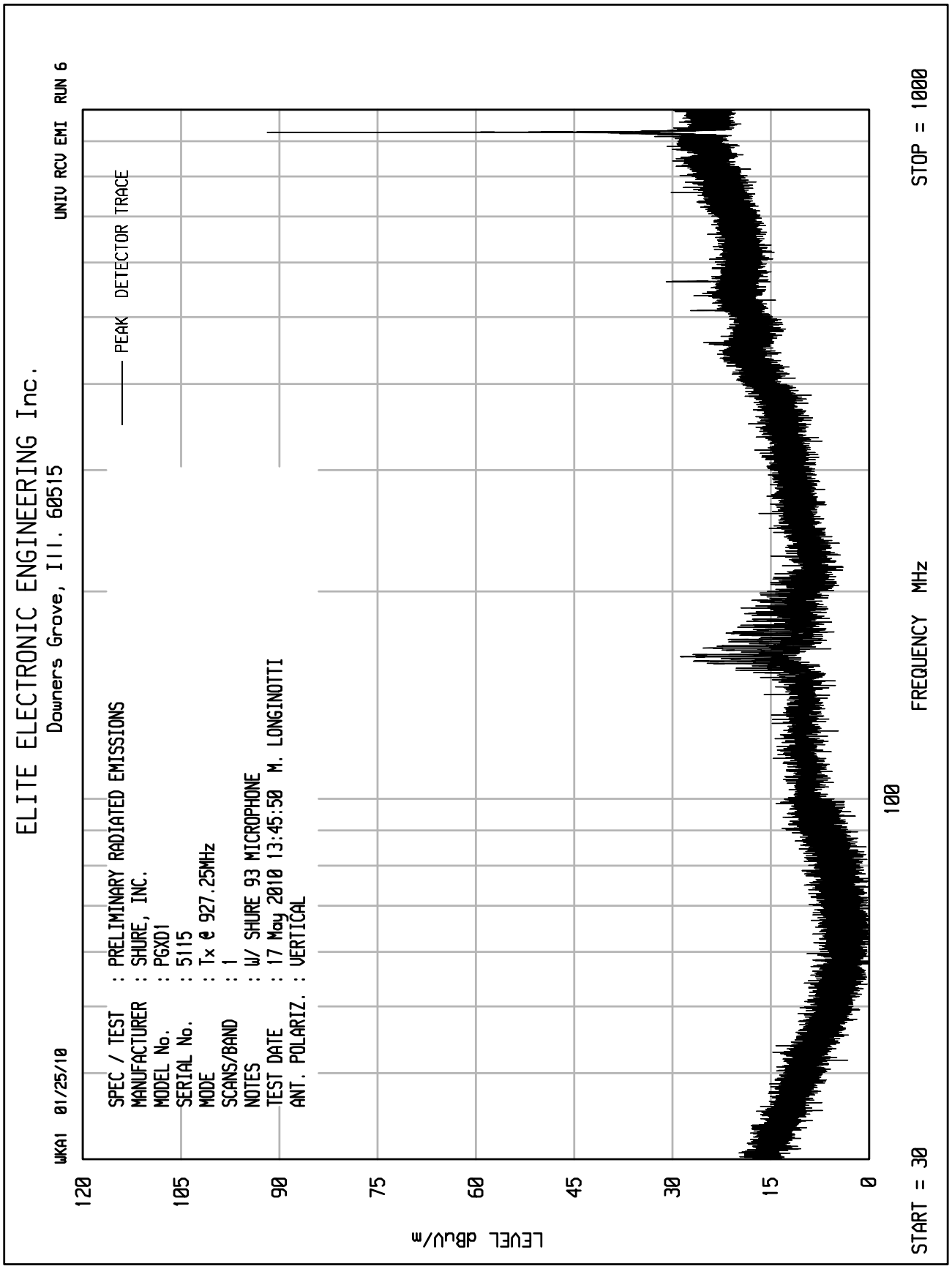

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 1
WKA1 01/25/10
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 915.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 17 May 2010 11:49:25 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

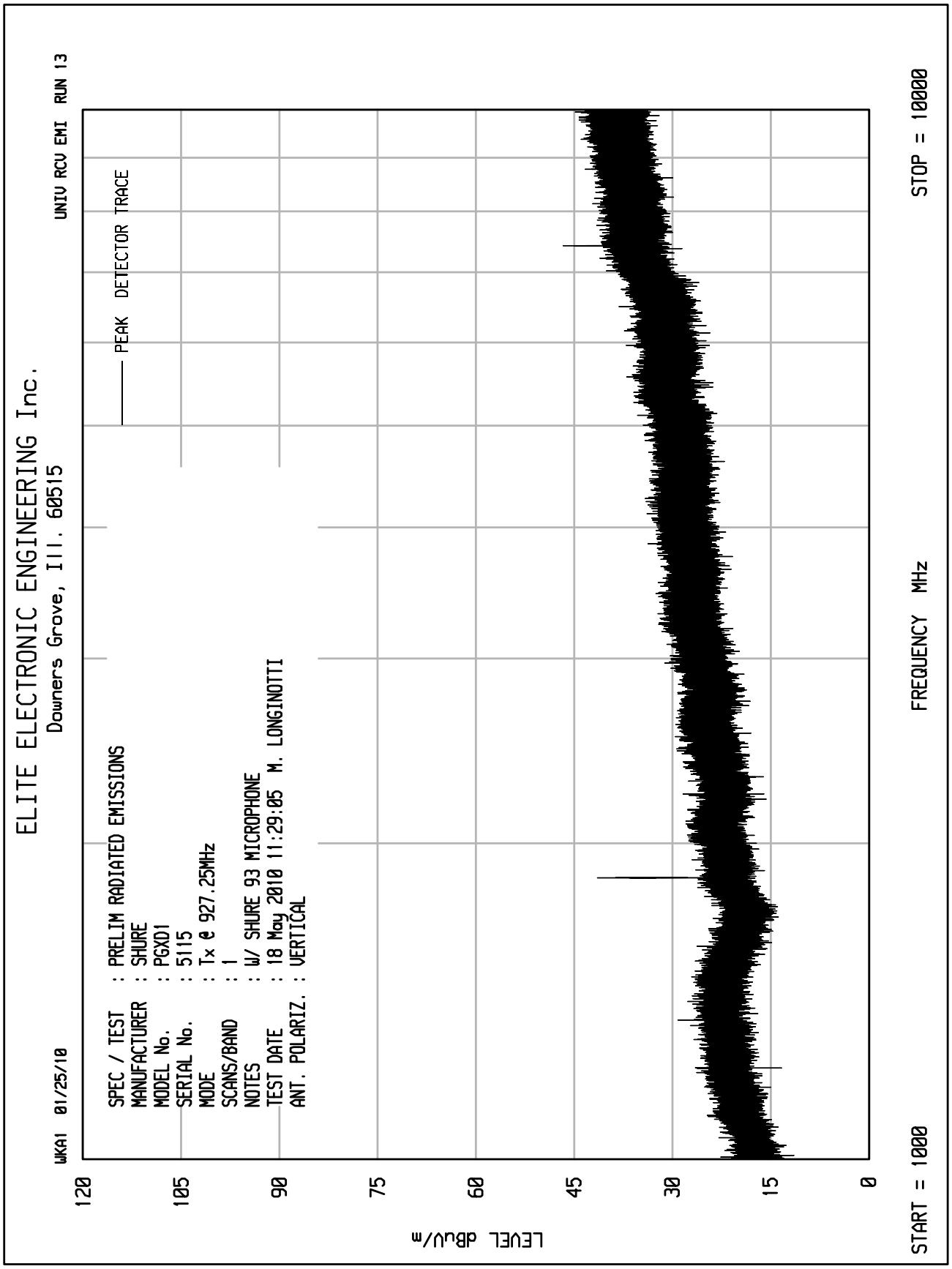

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 2
WKA1 01/25/10
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 915.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 17 May 2010 12:52:04 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

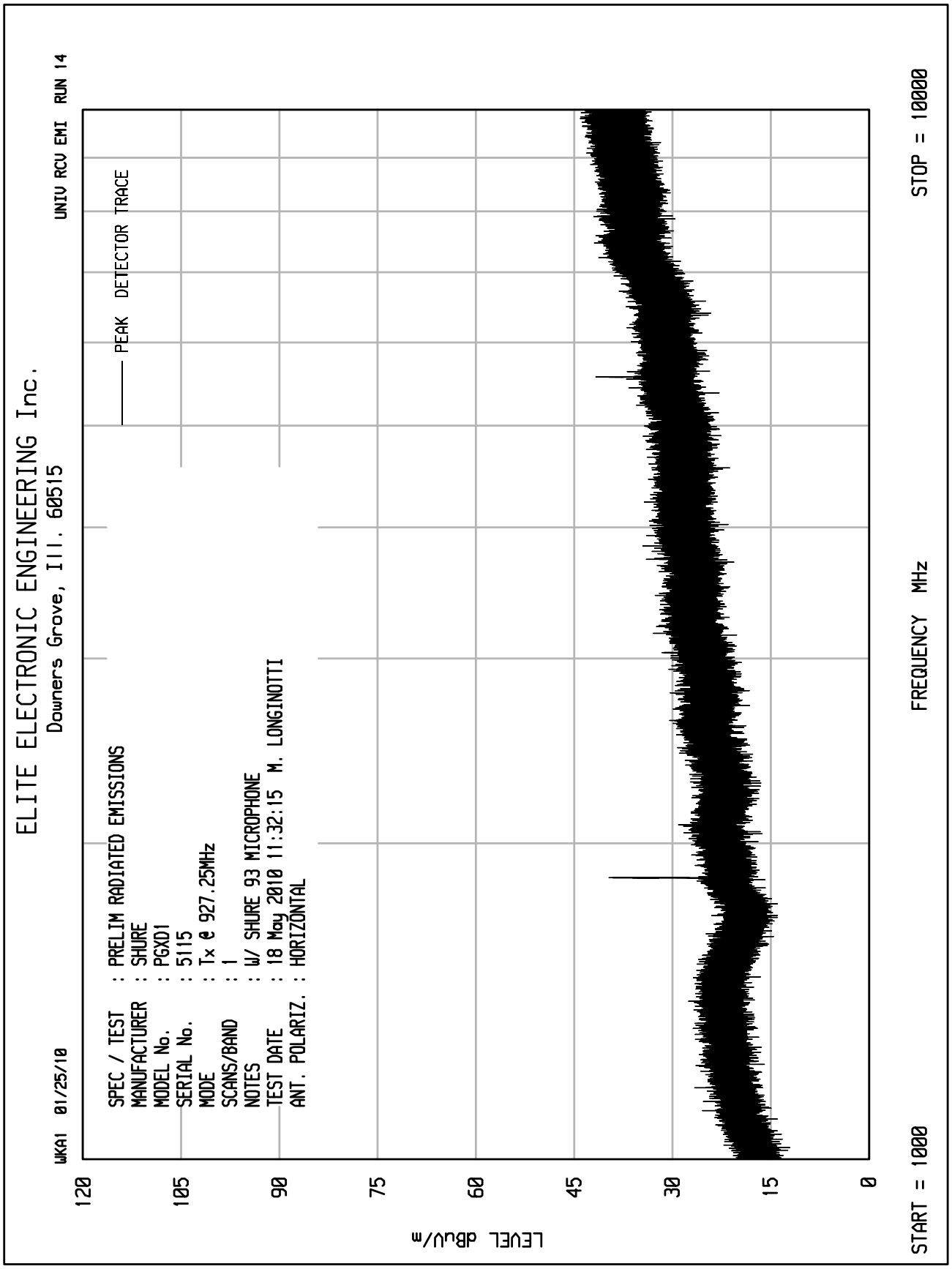

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 11
WKA1 01/25/10
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : SHURE
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 915.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 18 May 2010 11:20:12 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 10000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 12
WKA1 01/25/10
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : SHURE
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 915.75MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 18 May 2010 11:23:04 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 10000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 5
WKA1 01/25/10
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 927.25MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 17 May 2010 13:40:20 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 6
WKA1 01/25/10
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 927.25MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 17 May 2010 13:45:50 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 13
WKA1 01/25/10
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : SHURE
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 927.25MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 18 May 2010 11:29:05 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 10000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 14
WKA1 01/25/10
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : SHURE
MODEL No. : PGXD1
SERIAL No. : 5115
MODE : Tx @ 927.25MHz
SCANS/BAND : 1
NOTES : W/ SHURE 93 MICROPHONE
TEST DATE : 18 May 2010 11:32:15 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 10000

MANUFACTURER	:	Shure Incorporated
TEST ITEM	:	Body Pack Transmitter
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Transmit @ 902.75MHz
TEST DATE	:	May 17 and 18, 2010
TEST PARAMETERS	:	FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
TEST DISTANCE	:	3 meters
NOTES	:	Gray rows indicate restricted bands which must meet the general limits
	:	Peak measurements
EQUIPMENT USED	:	RBB0, NDQ1, NWH0, XPQ3, APW2, SES1

Frequency MHz	Antenna Polar.	Meter Reading dBuV	Ambient	Cable Loss dB	Antenna Factor dB	Pre Amp Gain dB	Total dBuV/m	Total uV/m	Limit uV/m	Margin dB
902.75	H	86.2		2.4	22.9	0.0	111.4	372683.8		
902.75	V	79.7		2.4	22.9	0.0	104.9	176335.8		
1805.50	H	62.1		3.4	26.5	-37.4	54.7	543.3	37268.4	-36.7
1805.50	V	57.3		3.4	26.5	-37.4	49.9	312.6	37268.4	-41.5
2708.25	H	47.2		3.9	29.6	-37.0	43.7	153.4	5000.0	-30.3
2708.25	V	47.4		3.9	29.6	-37.0	43.9	157.0	5000.0	-30.1
3611.00	H	45.1		4.7	32.0	-36.5	45.3	184.0	5000.0	-28.7
3611.00	V	46.1		4.7	32.0	-36.5	46.3	206.5	5000.0	-27.7
4513.75	H	44.8		5.5	32.9	-35.9	47.3	231.5	5000.0	-26.7
4513.75	V	43.8		5.5	32.9	-35.9	46.3	206.3	5000.0	-27.7
5416.50	H	48.8		6.2	35.2	-35.8	54.3	521.2	5000.0	-19.6
5416.50	V	47.9		6.2	35.2	-35.8	53.4	469.9	5000.0	-20.5
6319.25	H	46.3		7.0	35.4	-35.7	53.0	447.1	37268.4	-38.4
6319.25	V	48.4		7.0	35.4	-35.7	55.1	569.4	37268.4	-36.3
7222.00	H	47.5		7.7	37.4	-35.5	57.1	713.5	37268.4	-34.4
7222.00	V	48.0		7.7	37.4	-35.5	57.6	755.8	37268.4	-33.9
8124.75	H	32.4		8.0	37.8	-35.4	42.8	138.1	5000.0	-31.2
8124.75	V	34.2		8.0	37.8	-35.4	44.6	170.0	5000.0	-29.4
9027.50	H	34.0		8.8	37.8	-35.2	45.3	185.0	5000.0	-28.6
9027.50	V	35.7		8.8	37.8	-35.2	47.0	225.0	5000.0	-26.9

Total (dBuV/m) = Meter Reading (dBuV) + Cable Loss (dB) + Antenna Factor (dB) + Pre Amp Gain (dB)

FS (uV/m) = AntiLog [(FS (dBuV/m))/20]

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER	:	Shure Incorporated
TEST ITEM	:	Body Pack Transmitter
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Transmit @ 902.75MHz
TEST DATE	:	May 17 and 18, 2010
TEST PARAMETERS	:	FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
TEST DISTANCE	:	3 meters
NOTES	:	Average measurements in restricted bands
EQUIPMENT USED	:	RBB0, NDQ1, NWH0, XPQ3, APW2, SES1

Frequency MHz	Antenna Polar.	Meter Reading dBuV	Ambient	Cable Factor dB	Antenna Factor dB	Pre Amp Gain dB	Duty Cycle dB	Total dBuV/m at 3 meters	Total uV/m at 3 meters	Limit uV/m	Margin dB
2708.3	H	36.1		3.9	29.6	-37.0	0.0	32.6	42.7	500.0	-21.4
2708.3	V	37.9		3.9	29.6	-37.0	0.0	34.4	52.6	500.0	-19.6
3611.0	H	34.3		4.7	32.0	-36.5	0.0	34.5	53.1	500.0	-19.5
3611.0	V	33.4		4.7	32.0	-36.5	0.0	33.6	47.9	500.0	-20.4
4513.8	H	32.9		5.5	32.9	-35.9	0.0	35.4	58.8	500.0	-18.6
4513.8	V	31.9		5.5	32.9	-35.9	0.0	34.4	52.4	500.0	-19.6
5416.5	H	38.1		6.2	35.2	-35.8	0.0	43.6	152.1	500.0	-10.3
5416.5	V	38.0		6.2	35.2	-35.8	0.0	43.5	150.3	500.0	-10.4
8124.8	H	33.1		8.0	37.8	-35.4	0.0	43.5	149.7	500.0	-10.5
8124.8	V	34.1		8.0	37.8	-35.4	0.0	44.5	168.0	500.0	-9.5
9027.5	H	32.2		8.8	37.8	-35.2	0.0	43.5	150.4	500.0	-10.4
9027.5	V	33.7		8.8	37.8	-35.2	0.0	45.0	178.7	500.0	-8.9

Total (dBuV/m) = Meter Reading (dBuV) + Cable Loss (dB) + Antenna Factor (dB) + Pre Amp Gain (dB) + Duty Cycle (dB)

FS (uV/m) = AntiLog [(FS (dBuV/m))/20]

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER	:	Shure Incorporated
TEST ITEM	:	Body Pack Transmitter
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Transmit @ 915.75MHz
TEST DATE	:	May 17 and 18, 2010
TEST PARAMETERS	:	FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
TEST DISTANCE	:	3 meters
NOTES	:	Gray rows indicate restricted bands which must meet the general limits
	:	Peak measurements
EQUIPMENT USED	:	RBB0, NDQ1, NWH0, XPQ3, APW2, SES1

Frequency MHz	Antenna Polar.	Meter Reading dBuV	Ambient	Cable Loss dB	Antenna Factor dB	Pre Amp Gain dB	Total dBuV/m	Total uV/m	Limit uV/m	Margin dB
915.75	H	85.7		2.4	23.1	0.0	111.2	363099.3		
915.75	V	76.9		2.4	23.1	0.0	102.4	131833.4		
1831.50	H	58.2		3.5	26.8	-37.3	51.2	361.2	36309.9	-40.0
1831.50	V	54.8		3.5	26.8	-37.3	47.8	244.2	36309.9	-43.4
2747.25	H	47.7		3.9	29.6	-36.9	44.3	163.8	5000.0	-29.7
2747.25	V	47.0		3.9	29.6	-36.9	43.6	151.1	5000.0	-30.4
3663.00	H	46.4		4.7	32.3	-36.5	46.9	221.3	5000.0	-27.1
3663.00	V	47.2		4.7	32.3	-36.5	47.7	242.6	5000.0	-26.3
4578.75	H	45.3		5.5	33.1	-35.9	48.1	252.7	5000.0	-25.9
4578.75	V	44.4		5.5	33.1	-35.9	47.2	227.9	5000.0	-26.8
5494.50	H	46.0		6.2	35.3	-35.8	51.7	384.7	36309.9	-39.5
5494.50	V	47.8		6.2	35.3	-35.8	53.5	473.3	36309.9	-37.7
6410.25	H	45.1		7.0	34.9	-35.6	51.4	370.8	36309.9	-39.8
6410.25	V	45.5		7.0	34.9	-35.6	51.8	388.3	36309.9	-39.4
7326.00	H	46.8		7.7	37.8	-35.5	56.8	690.6	5000.0	-17.2
7326.00	V	49.5		7.7	37.8	-35.5	59.5	942.3	5000.0	-14.5
8241.75	H	45.8		8.1	37.4	-35.3	56.0	629.3	5000.0	-18.0
8241.75	V	47.1		8.1	37.4	-35.3	57.3	730.9	5000.0	-16.7
9157.50	H	43.3		8.7	37.8	-35.2	54.7	543.2	5000.0	-19.3
9157.50	V	46.9		8.7	37.8	-35.2	58.3	822.2	5000.0	-15.7

Total (dBuV/m) = Meter Reading (dBuV) + Cable Loss (dB) + Antenna Factor (dB) + Pre Amp Gain (dB)

FS (uV/m) = AntiLog [(FS (dBuV/m))/20]

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER	:	Shure Incorporated
TEST ITEM	:	Body Pack Transmitter
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Transmit @ 915.75MHz
TEST DATE	:	May 17 and 18, 2010
TEST PARAMETERS	:	FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
TEST DISTANCE	:	3 meters
NOTES	:	Average measurements in restricted bands
EQUIPMENT USED	:	RBB0, NDQ1, NWH0, XPQ3, APW2, SES1

Frequency MHz	Antenna Polar.	Meter Reading dBuV	Ambient	Cable Factor dB	Antenna Factor dB	Pre Amp Gain dB	Duty Cycle dB	Total dBuV/m at 3 meters	Total uV/m at 3 meters	Limit uV/m	Margin dB
2747.3	H	36.8		3.9	29.6	-36.9	0.0	33.4	46.7	500.0	-20.6
2747.3	V	36.3		3.9	29.6	-36.9	0.0	32.9	44.1	500.0	-21.1
3663.0	H	35.0		4.7	32.3	-36.5	0.0	35.5	59.6	500.0	-18.5
3663.0	V	36.3		4.7	32.3	-36.5	0.0	36.8	69.2	500.0	-17.2
4578.8	H	33.4		5.5	33.1	-35.9	0.0	36.2	64.2	500.0	-17.8
4578.8	V	30.8		5.5	33.1	-35.9	0.0	33.6	47.6	500.0	-20.4
7326.0	H	33.6		7.7	37.8	-35.5	0.0	43.6	151.1	500.0	-10.4
7326.0	V	39.1		7.7	37.8	-35.5	0.0	49.1	284.6	500.0	-4.9
8241.8	H	31.1		8.1	37.4	-35.3	0.0	41.3	115.8	500.0	-12.7
8241.8	V	35.8		8.1	37.4	-35.3	0.0	46.0	199.0	500.0	-8.0
9157.5	H	31.3		8.7	37.8	-35.2	0.0	42.7	136.4	500.0	-11.3
9157.5	V	35.8		8.7	37.8	-35.2	0.0	47.2	229.1	500.0	-6.8

Total (dBuV/m) = Meter Reading (dBuV) + Cable Loss (dB) + Antenna Factor (dB) + Pre Amp Gain (dB) + Duty Cycle (dB)

FS (uV/m) = AntiLog [(FS (dBuV/m))/20]

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER	:	Shure Incorporated
TEST ITEM	:	Body Pack Transmitter
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Transmit @ 927.25MHz
TEST DATE	:	May 17 and 18, 2010
TEST PARAMETERS	:	FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
TEST DISTANCE	:	3 meters
NOTES	:	Gray rows indicate restricted bands which must meet the general limits
	:	Peak measurements
EQUIPMENT USED	:	RBB0, NDQ1, NWH0, XPQ3, APW2, SES1

Frequency MHz	Antenna Polar.	Meter Reading dBuV	Ambient	Cable Loss dB	Antenna Factor dB	Pre Amp Gain dB	Total dBuV/m	Total uV/m	Limit uV/m	Margin dB
927.25	H	85.4		2.4	23.5	0.0	111.3	366758.0		
927.25	V	76.6		2.4	28.1	0.0	107.1	225219.5		
1854.50	H	60.0		3.5	27.0	-37.3	53.3	460.4	36675.8	-38.0
1854.50	V	56.1		3.5	27.0	-37.3	49.4	293.8	36675.8	-41.9
2781.75	H	46.6		4.0	29.6	-36.9	43.2	145.2	5000.0	-30.7
2781.75	V	46.3		4.0	29.6	-36.9	42.9	140.3	5000.0	-31.0
3709.00	H	43.8		4.8	32.4	-36.5	44.6	168.9	5000.0	-29.4
3709.00	V	44.6		4.8	32.4	-36.5	45.4	185.2	5000.0	-28.6
4636.25	H	42.8		5.6	33.3	-35.9	45.8	194.6	5000.0	-28.2
4636.25	V	43.7		5.6	33.3	-35.9	46.7	215.9	5000.0	-27.3
5563.50	H	47.9		6.3	35.1	-35.8	53.6	476.1	36675.8	-37.7
5563.50	V	47.4		6.3	35.1	-35.8	53.1	449.5	36675.8	-38.2
6490.75	H	44.1		7.1	34.8	-35.6	50.4	332.7	36675.8	-40.8
6490.75	V	47.5		7.1	34.8	-35.6	53.8	492.1	36675.8	-37.4
7418.00	H	46.1		7.7	37.8	-35.5	56.1	639.3	5000.0	-17.9
7418.00	V	47.6		7.7	37.8	-35.5	57.6	759.8	5000.0	-16.4
8345.25	H	45.3		8.2	37.3	-35.3	55.4	591.3	5000.0	-18.5
8345.25	V	46.1		8.2	37.3	-35.3	56.2	648.3	5000.0	-17.7
9272.50	H	44.9	Ambient	8.7	38.1	-35.1	56.5	670.8	36675.8	-34.8
9272.50	V	46.1	Ambient	8.7	38.1	-35.1	57.7	770.2	36675.8	-33.6

Total (dBuV/m) = Meter Reading (dBuV) + Cable Loss (dB) + Antenna Factor (dB) + Pre Amp Gain (dB)

FS (uV/m) = AntiLog [(FS (dBuV/m))/20]

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER	:	Shure Incorporated
TEST ITEM	:	Body Pack Transmitter
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Transmit @ 927.25MHz
TEST DATE	:	May 17 and 18, 2010
TEST PARAMETERS	:	FCC Part 15, Subpart C, Section 15.247, Radiated Emissions
TEST DISTANCE	:	3 meters
NOTES	:	Average measurements in restricted bands
EQUIPMENT USED	:	RBB0, NDQ1, NWH0, XPQ3, APW2, SES1

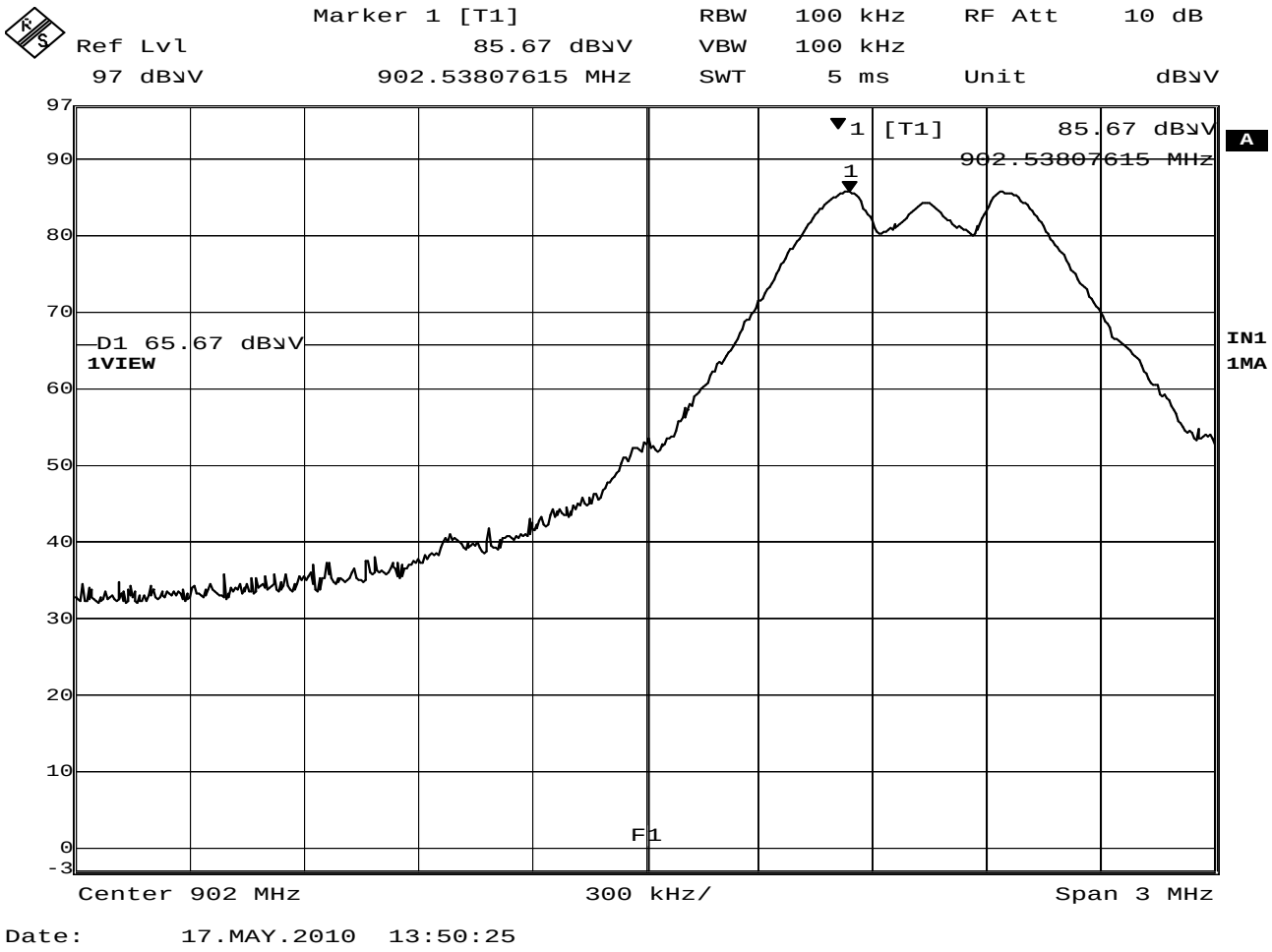
Frequency MHz	Antenna Polar.	Meter Reading dBuV	Ambient	Cable Factor dB	Antenna Factor dB	Pre Amp Gain dB	Duty Cycle dB	Total dBuV/m at 3 meters	Total uV/m at 3 meters	Limit uV/m	Margin dB
2781.8	H	34.8		4.0	29.6	-36.9	0.0	31.4	37.3	500.0	-22.5
2781.8	V	36.1		4.0	29.6	-36.9	0.0	32.7	43.4	500.0	-21.2
3709.0	H	32.7		4.8	32.4	-36.5	0.0	33.5	47.1	500.0	-20.5
3709.0	V	31.7		4.8	32.4	-36.5	0.0	32.5	41.9	500.0	-21.5
4636.3	H	30.7		5.6	33.3	-35.9	0.0	33.7	48.3	500.0	-20.3
4636.3	V	32.3		5.6	33.3	-35.9	0.0	35.3	58.1	500.0	-18.7
7418.0	H	35.5		7.7	37.8	-35.5	0.0	45.5	188.7	500.0	-8.5
7418.0	V	37.1		7.7	37.8	-35.5	0.0	47.1	226.8	500.0	-6.9
8345.3	H	32.4		8.2	37.3	-35.3	0.0	42.5	133.9	500.0	-11.4
8345.3	V	34.4		8.2	37.3	-35.3	0.0	44.5	168.6	500.0	-9.4

Total (dBuV/m) = Meter Reading (dBuV) + Cable Loss (dB) + Antenna Factor (dB) + Pre Amp Gain (dB) + Duty Cycle (dB)

FS (uV/m) = AntiLog [(FS (dBuV/m))/20]

Checked By: MARK E. LONGINOTTI

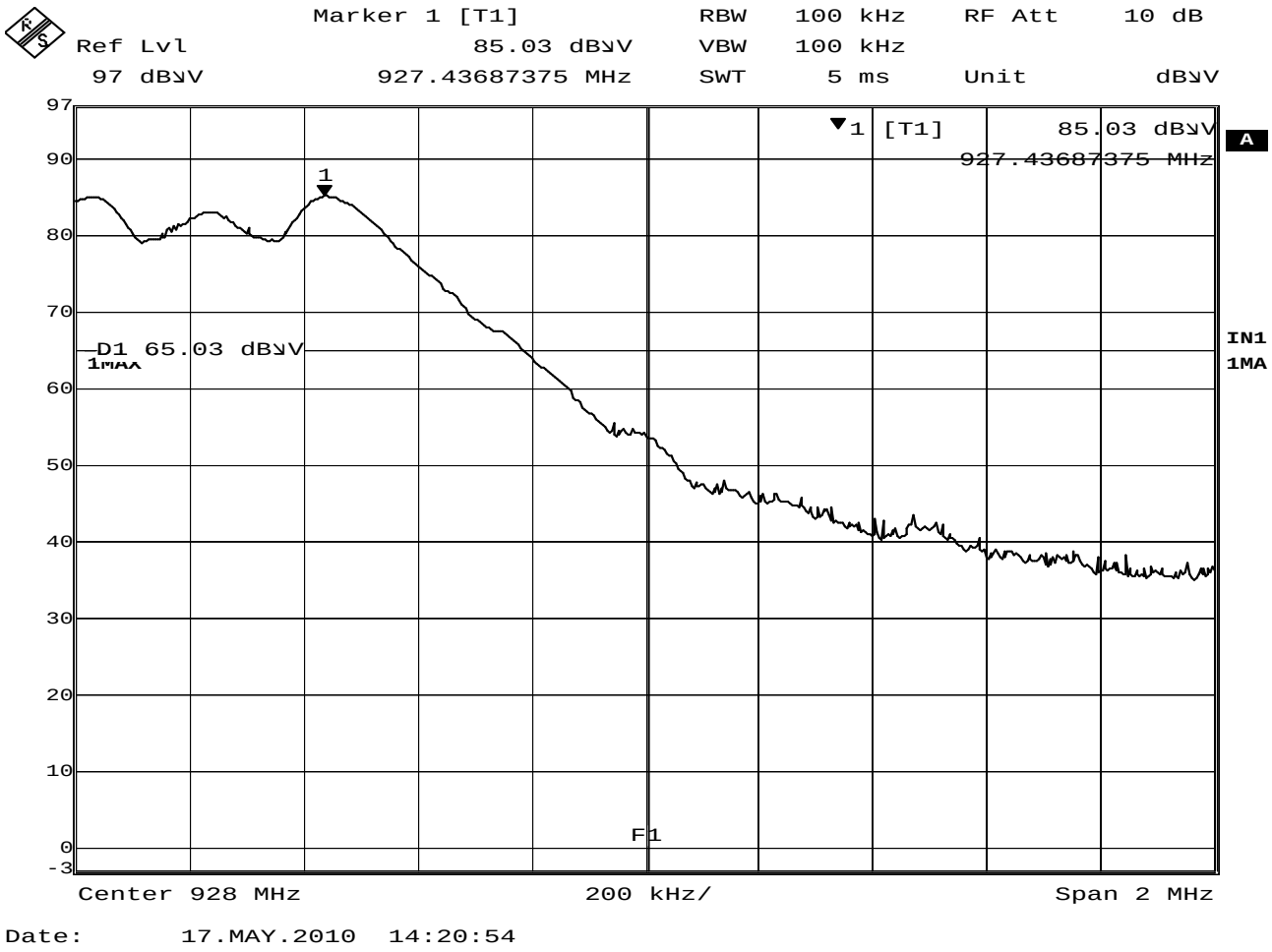
Mark E. Longinotti



FCC 15.247(d) Band Edge

MANUFACTURER	:	Shure Incorporated
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Tx @ 902.75MHz
TEST DATE	:	May 17, 2010
TEST PARAMETERS	:	Band Edge
NOTES	:	Display line D1 represents the 20dB down level. Display line F1 represents the band edge (902MHz).

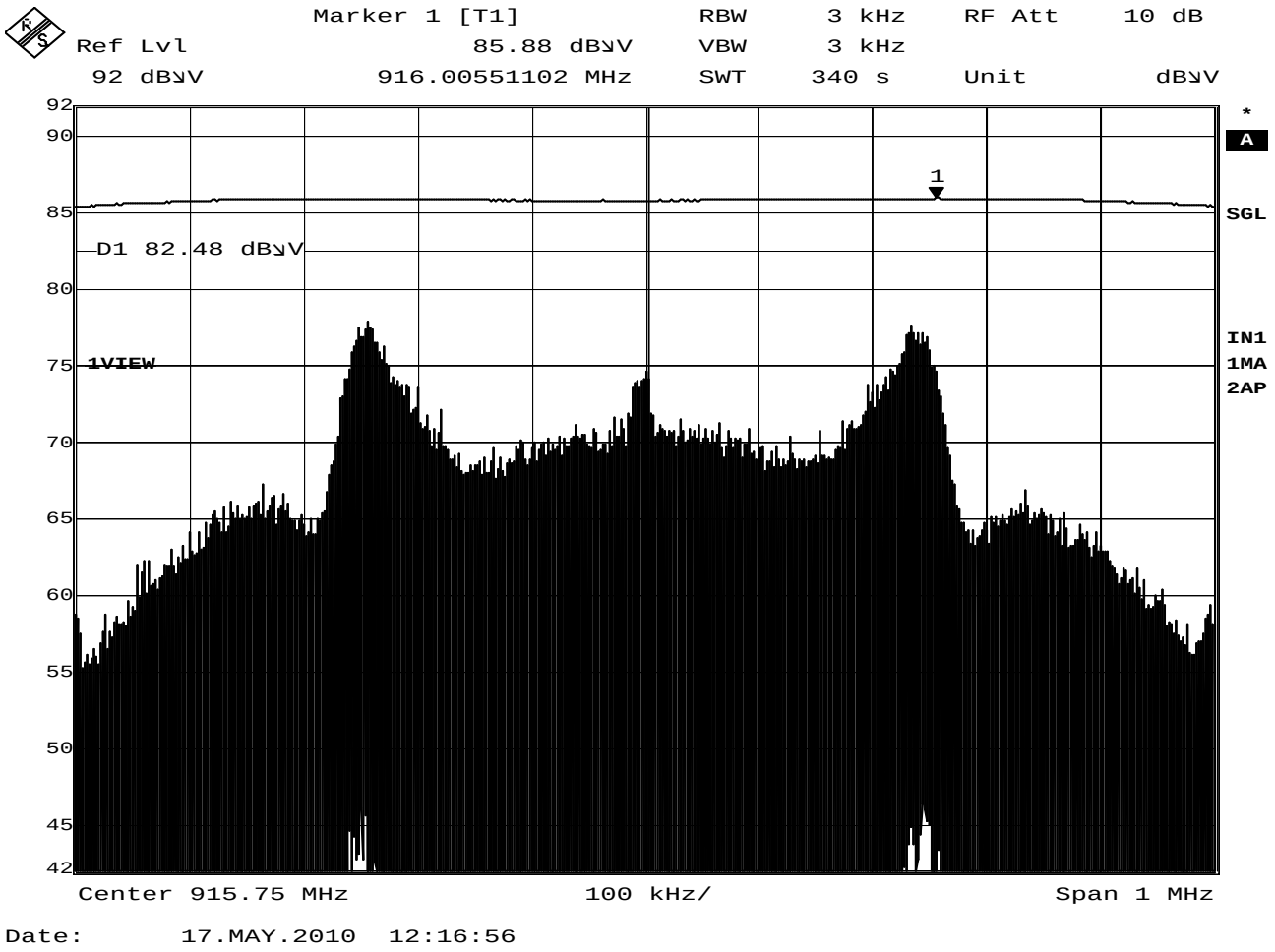
EQUIPMENT USED : RBB0, NTA1



FCC 15.247(d) Band Edge

MANUFACTURER	:	Shure Incorporated
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Tx @ 927.25MHz
TEST DATE	:	May 17, 2010
TEST PARAMETERS	:	Band Edge
NOTES	:	Display Line D1 represents the 20dB down level. Display Line F1 represents the band edge (928MHz).

EQUIPMENT USED : RBB0, NTA1



FCC 15.247(d) Power Spectral Density

MANUFACTURER	:	Shure Incorporated
MODEL NUMBER	:	PGXD1
SERIAL NUMBER	:	5115
TEST MODE	:	Tx @ 915.75MHz
TEST DATE	:	May 17, 2010
TEST PARAMETERS	:	Power Spectral Density
NOTES	:	85.88dBuV/m = 11.4 dBm matched in 1MHz RBW.
	:	Top Trace = 85.88 dBuV is the peak equivalent to
	:	11.4dBm. Display line (D1) is equal to + 8dBm;
	:	(11.4 – (8.0) = -3.4 dB difference;
	:	85.88 dBuV – 3.4 dB = 82.48dBuV.
	:	Bottom trace = power spectral density in 3kHz
	:	RBW with 340 second sweep time.
EQUIPMENT USED	:	RBB0, NTA1