Electromagnetic Compatibility Tests on a Bodypack Transmitter, Model No. FP1

For	:	Shure Incorporated 5800 West Touhy Avenue Niles, IL 60714
P.O. No.	:	4500215500
Date Received	:	February 24, 2012
Dates Tested	:	February 28, 2012 through March 12, 2012
Test Personnel	:	Mark E. Longinotti, Dayne Putnam
Specification	:	FCC "Code of Federal Regulations" Title 47 Part 74 Industry Canada RSS-123 Industry Canada RSS-Gen

Test Report By : Mark E. Longinotti

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EMC Engineer

Approved By : Raymond J. Klouda

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Registered Professional Engineer of Illinois - 44894

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REPORT REVISION HISTORY

Revision	Date	Description
-	March 23, 2012	Initial release

Electromagnetic Compatibility Tests on Bodypack Transmitter, Model No. FP1

1. INTRODUCTION

1.1 Scope of Tests

This document presents the results of a series of electromagnetic compatibility (EMC) tests performed on a Bodypack Transmitter, Model No. FP1, (hereinafter referred to as the EUT).). The EUT contained a transmitter that was designed to transmit in the following UHF frequency bands using a non-removable “ducky” antenna:

Frequency (MHz)	Band	Output Power (mW)
470 – 494	G4	30
494 – 518	G5	30
518 – 542	H5	30
572 – 596	J3	30
638 – 662	L4	30

For testing purposes only, the ducky antenna was disconnected from the EUT and replaced with a coaxial connector. The EUT with the coaxial connector was used to perform RF power output tests.

The EUT 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 EUT continues to comply with the requirements of the Code of Federal Regulations, Title 47, Part 74 for low power auxiliary station bands and Industry Canada RSS-123 Licensed Low-Power Radio Apparatus.

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

The electromagnetic compatibility tests were performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois.

1.5 Laboratory Conditions

The temperature at the time of the test was 22°C and the relative humidity was 21%.

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 74, dated 1 October 2011
- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 2, dated 1 October 2011

- RSS-123, "Spectrum Management and Telecommunications Radio Standards Specification Licensed Low Power Radio Apparatus" Issue 2, February 2011
- RSS-Gen, "General Requirements and Information for the Certification of Radio Apparatus", Issue 3, December 2010
- TIA-603-C-2004, "Land Mobile FM or PM Communications Equipment Measurement and Performance Standard"

3. EUT SETUP AND OPERATION

3.1 General Description

The EUT is a Bodypack Transmitter, Model No. FP1. A block diagram of the EUT setup is shown as Figure 1.

3.1.1 Power Input

The EUT was powered with 3VDC from 2 each internal "AA" batteries.

3.1.2 Peripheral Equipment

The microphone port of the EUT was terminated with a Shure SM93 lavaliere microphone for all radiated emissions tests.

3.1.3 Signal Input/Output Leads

The EUT was submitted for testing with no signal input/output leads.

3.1.4 Grounding

The EUT was not grounded during testing.

3.1.5 Frequency of EUT

Per CFR Title 47, Section 2, part 1057, for spurious radiated emissions measurements, the frequency spectrum shall be investigated up to at least the tenth harmonic of the highest fundamental frequency.

3.2 Operational Mode

All emissions tests were performed separately in the following modes:

Band G4

Tx @ 481.75MHz, 30mW

Band G5

Tx @ 505.75MHz, 30mW

Band H5

Tx @ 530.5MHz, 30mW

Band J3

Tx @ 584.5MHz, 30mW

Band L4

Tx @ 650.5MHz, 10mW

3.3 EUT 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 10-1**.

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:

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

5. TEST PROCEDURES

5.1 RF POWER OUTPUT MEASUREMENTS

5.1.1 Requirements

In accordance with paragraph 74.861(e)(1)(ii), for low power auxiliary stations operating in the bands allocated for TV broadcasting, the power of the measured unmodulated carrier power at the output of the transmitter power amplifier (antenna input power) may not exceed 250 milliwatts in the 470-608 and 614-698MHz bands.

For certification to section 4.2 of the Industry Canada's RSS-123 requirement for low power auxiliary equipment, the average transmit power may not exceed 250 milliwatts in the 470-608 and 614-698MHz bands as listed in Table 1 when measured as a conducted emissions.

5.1.2 Procedures

The output from the antenna port of the EUT was connected to a spectrum analyzer through 40dB of attenuation. The center frequency of the spectrum analyzer was tuned to the transmit frequency of the

EUT. The output power of the EUT was then measured.

5.1.3 Results

The output power measurements are presented on page 13. As can be seen from the data, the power output of each transmitter is within the requirements of Part 74.861 and RSS-123.

5.2 FIELD STRENGTH OF SPURIOUS EMISSIONS

5.2.1 Requirements

In accordance with paragraph 74.861 of CFR 47, the power of any emission on any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth shall be attenuated by at least 43 + 10 log (P) dB.

In accordance with RSS-123 paragraph 6.3.1, the power of any emission on any frequency removed from the carrier frequency by more than 250% of the authorized bandwidth shall be attenuated by at least 55 + 10 log (P) dB.

5.2.2 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 2003 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

1. Preliminary radiated measurements were performed to determine the frequencies where the significant emissions might be found. With the EUT at one set position and the measurement antenna at a set height (i.e. without maximizing), the radiated emissions were measured using a peak detector and automatically plotted. The broadband measuring antenna was positioned at a 3 meter distance from the EUT. This data was then automatically plotted. All preliminary tests were performed separately with the EUT operating in the modes listed in Para. 3.2.
2. All significant broadband and narrowband signals found in the preliminary sweeps were then measured using a peak detector at a test distance of 3 meters. The measurements were made with a bilog antenna over the frequency range of 30MHz to 1GHz, and a double ridged waveguide antenna was used for frequencies above 1GHz.
3. To ensure that maximum emission levels were measured, the following steps were taken:
    a. The EUT was rotated so that all of its sides were exposed to the receiving antenna.
    b. Since the measuring antennas are linearly polarized, both horizontal and vertical field components were measured.
    c. The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

The equivalent power was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power, another antenna was set in place of the EUT and connected to a calibrated signal generator. (A tuned dipole was used for all measurements below 1GHz and a double ridged waveguide antenna was used for all measurements above 1GHz.) The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The

signal level was recorded. The reading was corrected to compensate for cable loss, as required, and for frequencies above 1GHz, increased by the gain of the waveguide.

5.2.3 Results

The preliminary plots peak levels are presented on pages 14 through 33. Factors for the antennas and cables were added to the data before it was plotted. This data is only presented for a reference, and is not used as official data. All significant radiated emissions were subsequently measured using the substitution method.

The final radiated levels are presented on pages 34 through 43. The radiated emissions were measured through the 10th harmonic. All emissions measured from the EUT were within the specification limits. Photographs of the test setup are shown in Figure 2 and Figure 3.

6. OTHER TEST CONDITIONS

6.1 Test Personnel and Witnesses

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

6.2 Disposition of the EUT

The EUT and all associated equipment were returned to Shure Incorporated upon completion of the tests.

7. CONCLUSION

It was found that the Shure Incorporated, Model FP1 Bodypack Transmitter, continues to comply with the requirements of the Code of Federal Regulations, Title 47, Part 74 for low power auxiliary station bands and Industry Canada RSS-123 Licensed Low-Power Radio Apparatus.

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 specification. The data presented in this test report pertains only to the EUT at the test date. 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.

9. ENDORSEMENT DISCLAIMER

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

10. EQUIPMENT LIST

Table 10-1

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
CMA1	Controllers	EMCO	2090	9701-1213	---	N/A	
GDJ1	SYNTHESIZED GENERATOR	HEWLETT PACKARD	8672A	2132A02171	2-18GHZ	8/22/2011	8/22/2012
GSD3	SIGNAL GENERATOR	ROHDE & SCHWARZ	SMB100A	104454	9KHZ-6GHZ	9/7/2011	9/7/2012
NDQ1	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	313	400-1000MHZ	4/20/2011	4/20/2012
NTA2	BILOG ANTENNA	TESEQ	6112D	28040	25-1000MHz	6/29/2011	6/29/2012
NWF0	RIDGED WAVE GUIDE	EMCO	3105	2035	1-12.4GHZ	1/28/2012	1/28/2013
NWH0	RIDGED WAVE GUIDE	TENSOR	4105	2081	1-12.4GHZ	11/3/2011	11/3/2012
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
T2DD	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BH5449	DC-18GHZ	8/4/2011	8/4/2012
T2DP	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BS0921	DC-18GHZ	8/4/2011	8/4/2012

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

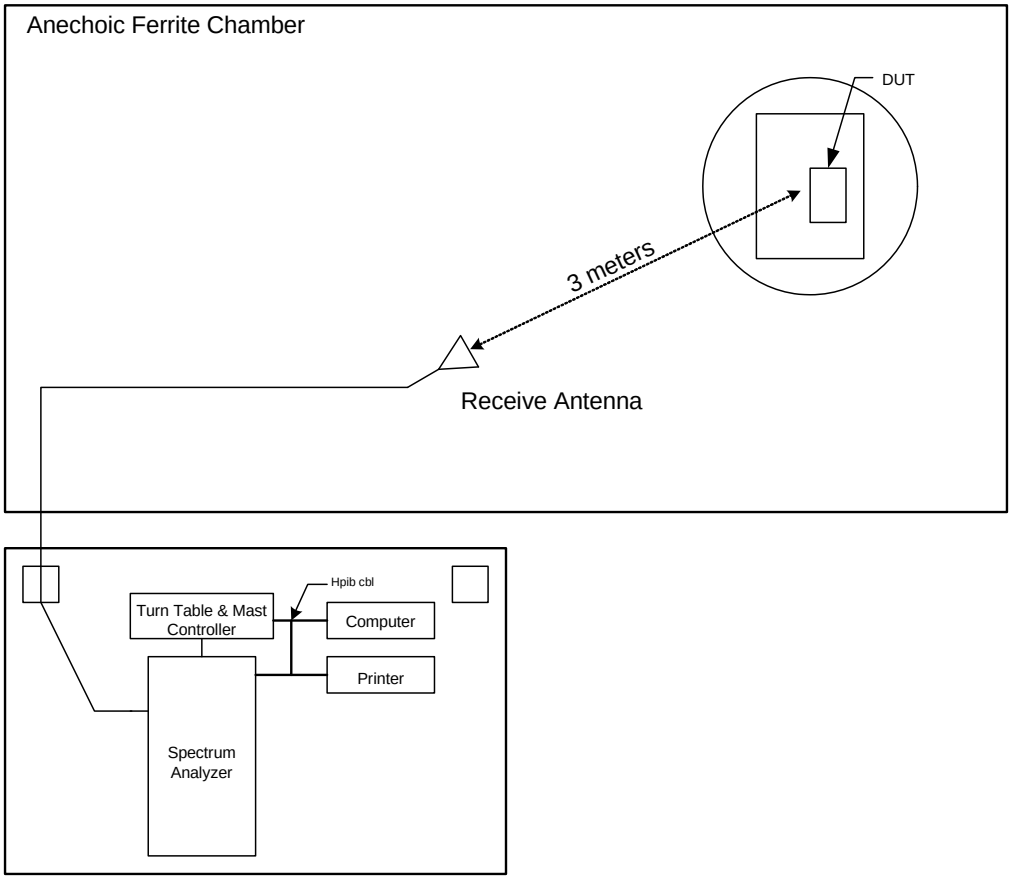
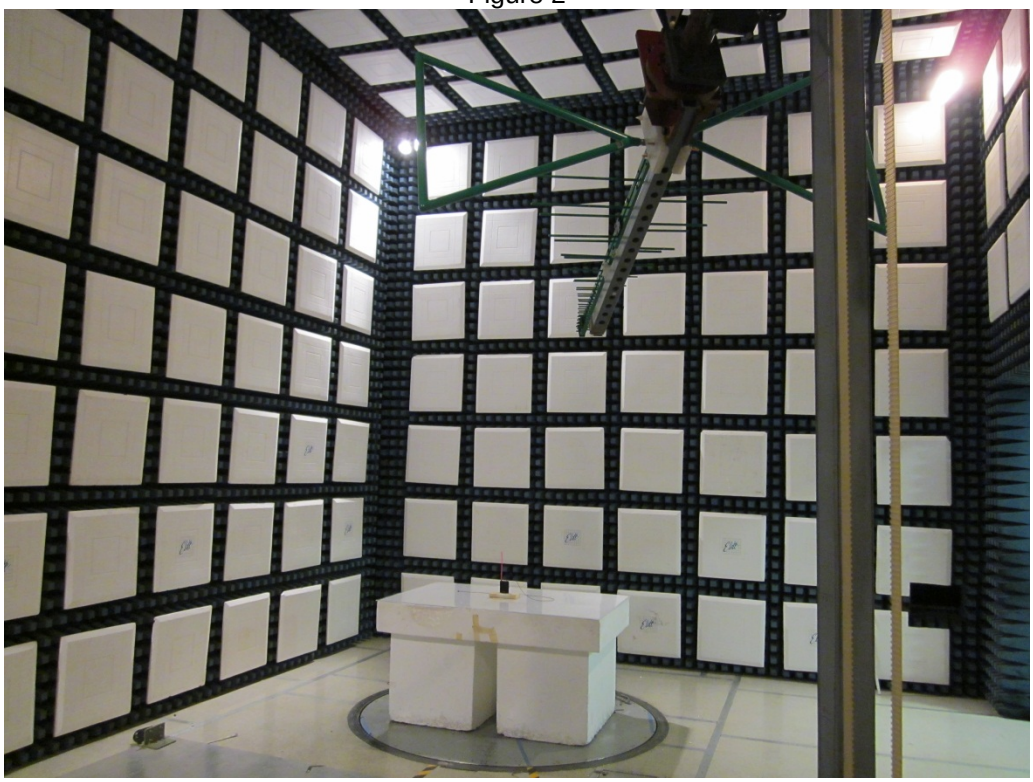
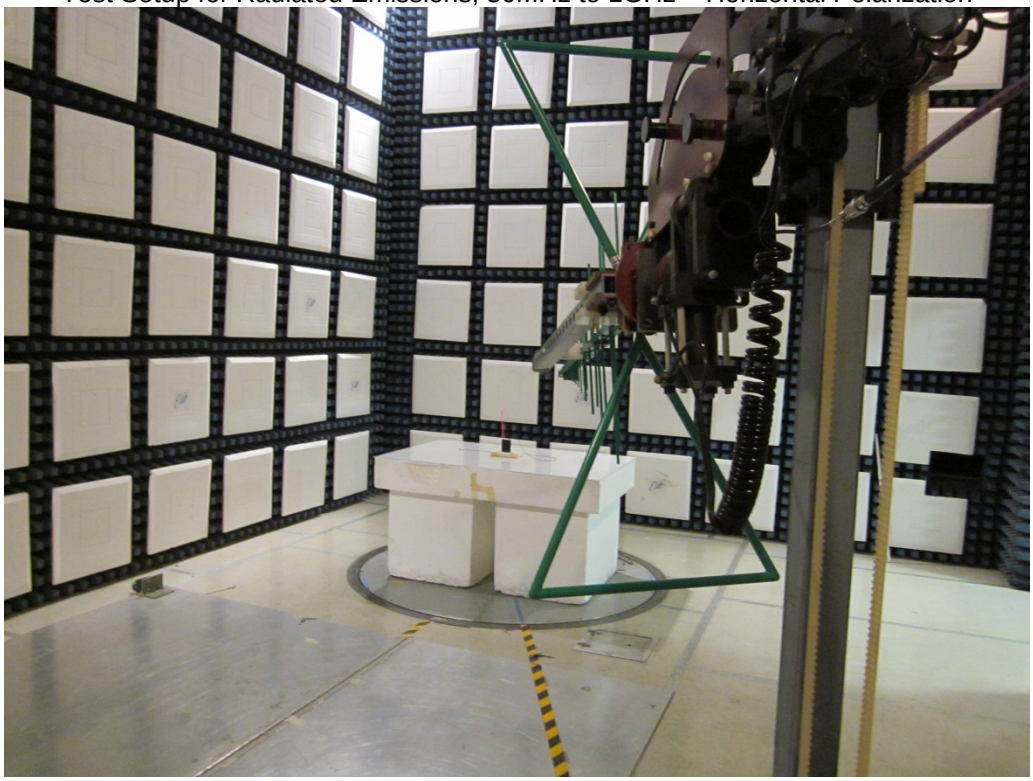


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

Figure 2

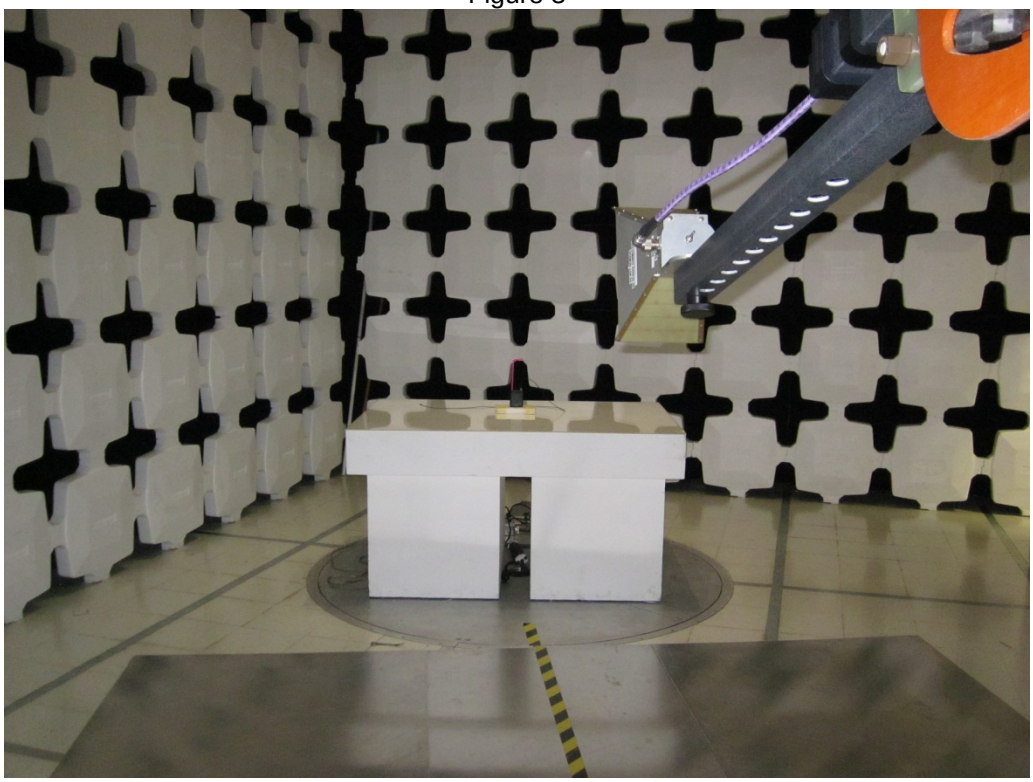


Test Setup for Radiated Emissions, 30MHz to 1GHz – Horizontal Polarization

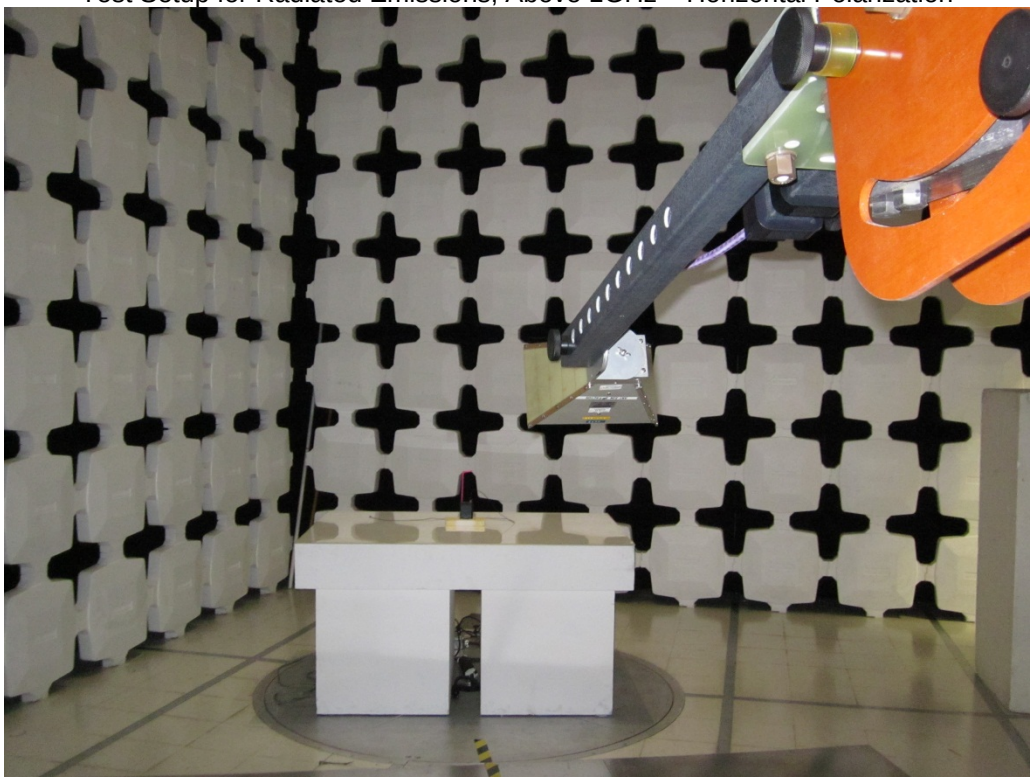


Test Setup for Radiated Emissions, 30MHz to 1GHz – Vertical Polarization

Figure 3



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

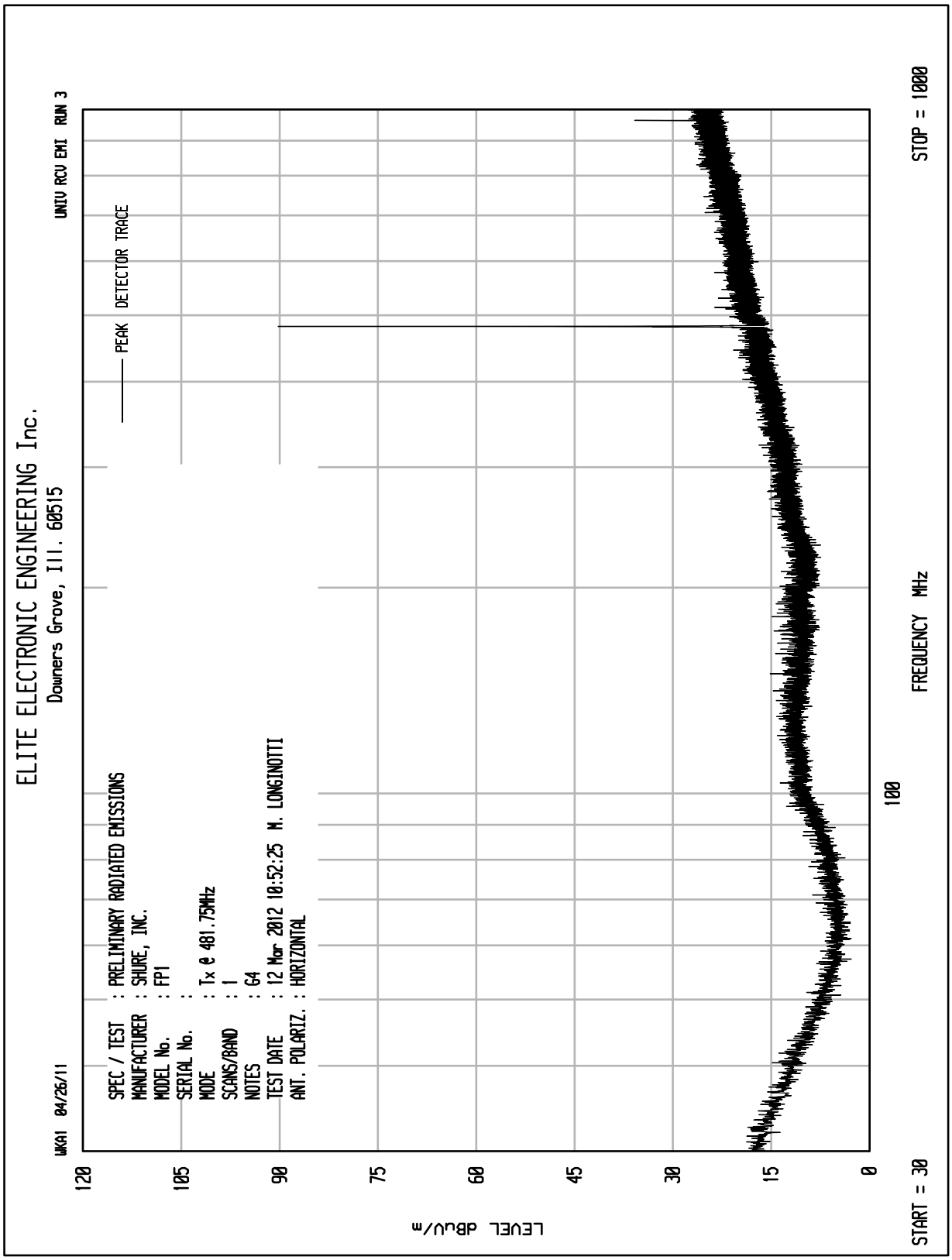


Test Setup for Radiated Emissions, Above 1GHz – Vertical Polarization

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : FCC-74 and RSS-123 RF Power Output – Antenna Conducted
DATE : Feb 29, 2012
MODE : See Below
BAND : See Below
EQUIPMENT USED : T2DD, T2DP, RBA1

Frequency MHz	Band	Nominal Power W	Spectrum Analyzer Reading dBm	External Attenuation dBm	Measured Output Power dBm	Measured Output Power W	FCC-74 and RSS-123 Limit W
481.75	G4	0.03	-25.37	39.55	14.18	0.02618	0.250
505.75	G5	0.03	-26.50	39.85	13.35	0.02163	0.250
530.5	H5	0.03	-24.50	39.70	15.20	.033113	0.250
584.5	J3	0.03	-24.97	39.80	14.83	0.030409	0.250
650.5	L4	0.03	-25.99	39.60	13.61	0.022961	0.250

Checked By: MARK E. LONGINOTTI
For Dayne Putnam


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
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UKA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 481.75MHz
SCANS/BAND : 1
NOTES : G4
TEST DATE : 12 Mar 2012 10:52:25 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
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90
75
60
45
30
15
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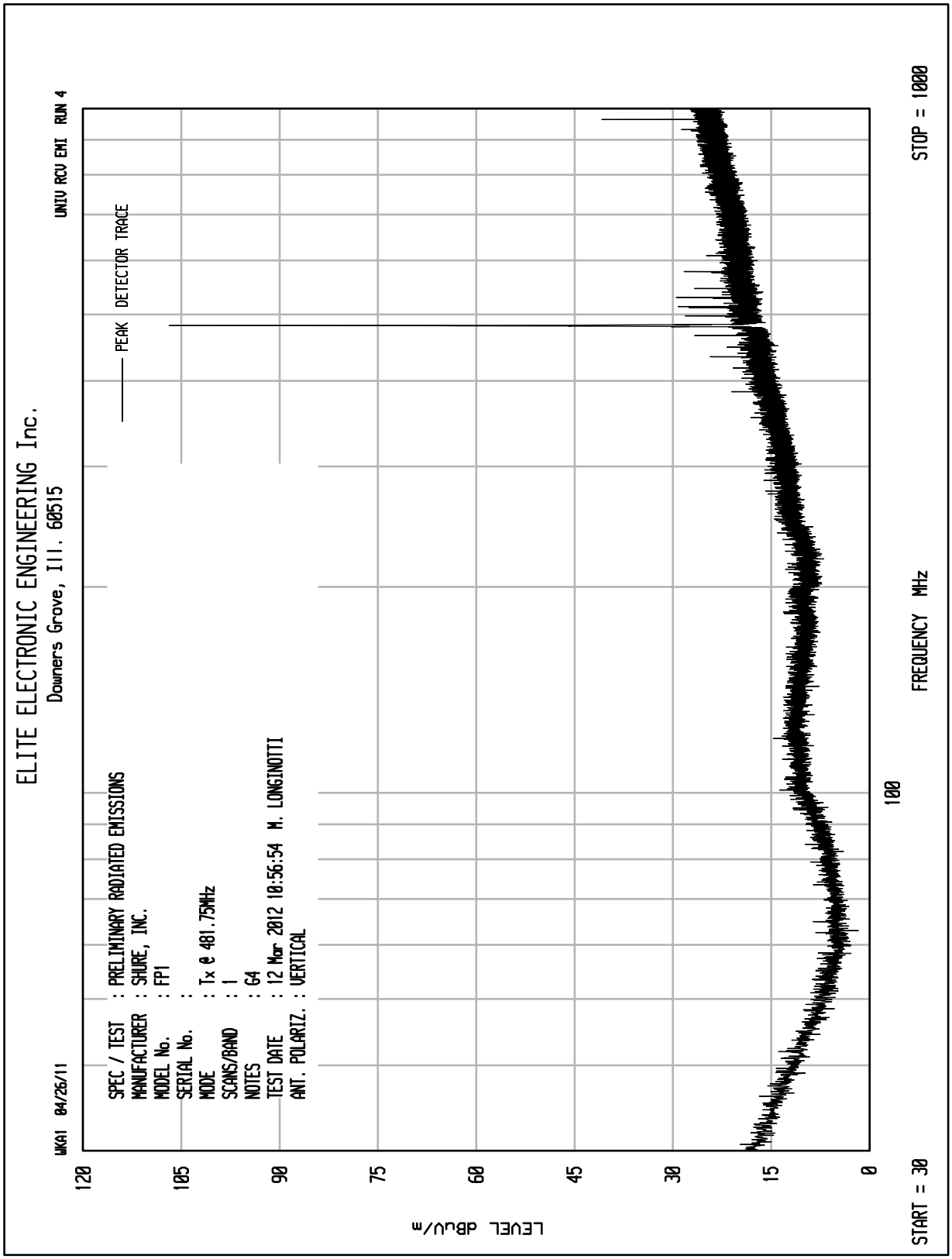
START = 30
100
FREQUENCY MHz
STOP = 1000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Downers Grove, Ill. 60515
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UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 481.75MHz
SCANS/BAND : 1
NOTES : G4
TEST DATE : 12 Mar 2012 10:56:54 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
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START = 30
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FREQUENCY MHz
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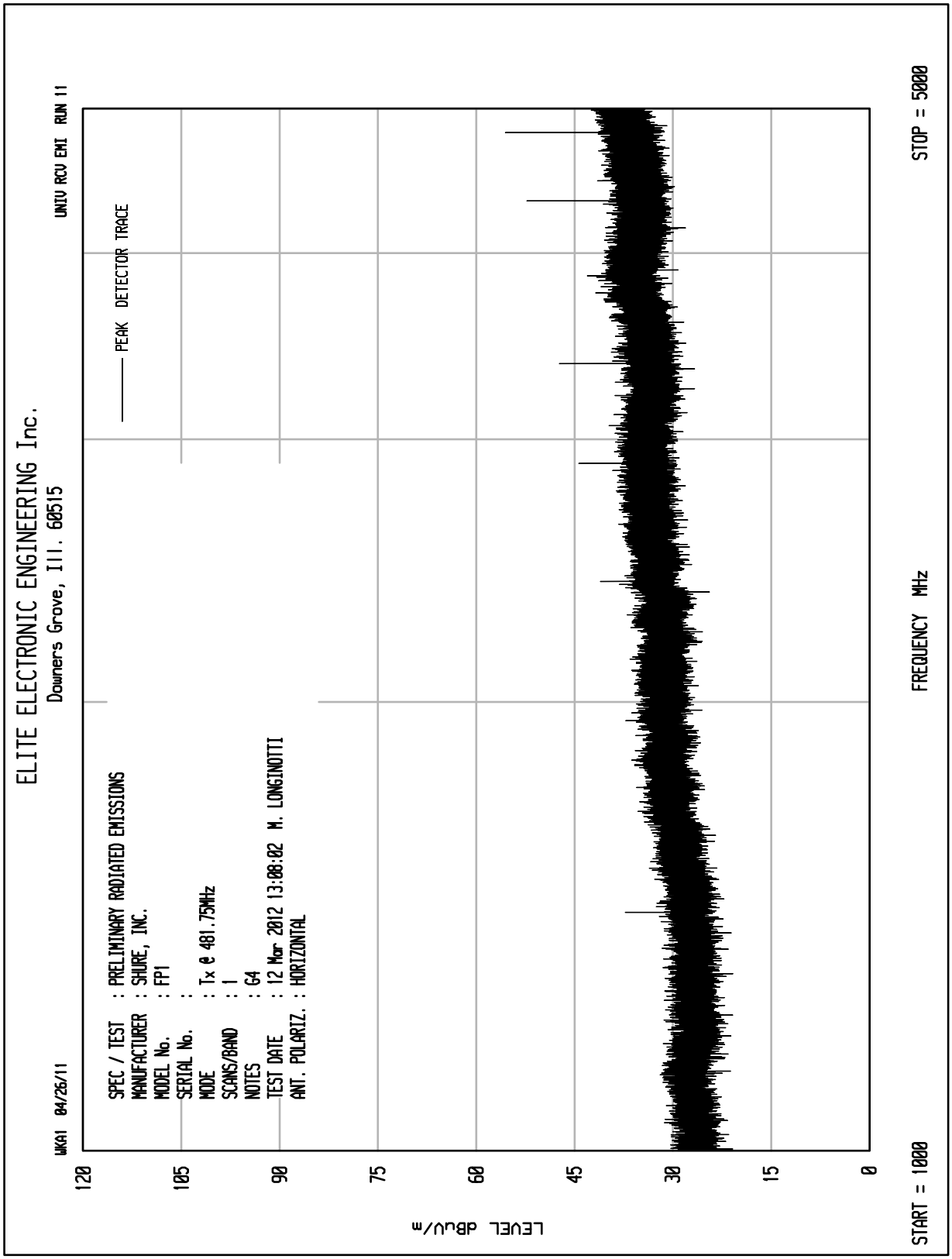
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Downers Grove, Ill. 60515
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WKA1 04/26/11
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SERIAL No. :
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FREQUENCY MHz
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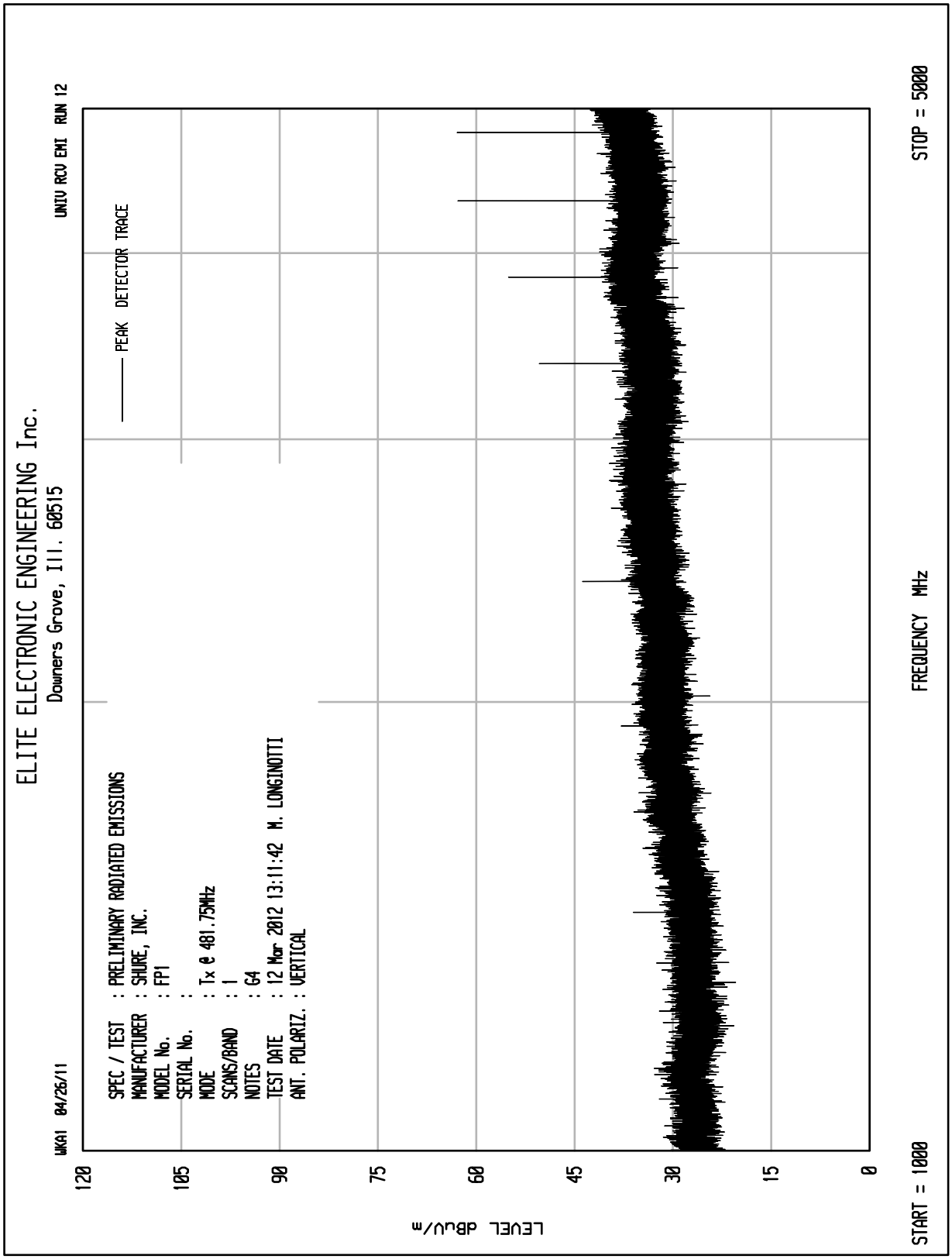
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Downers Grove, Ill. 60515
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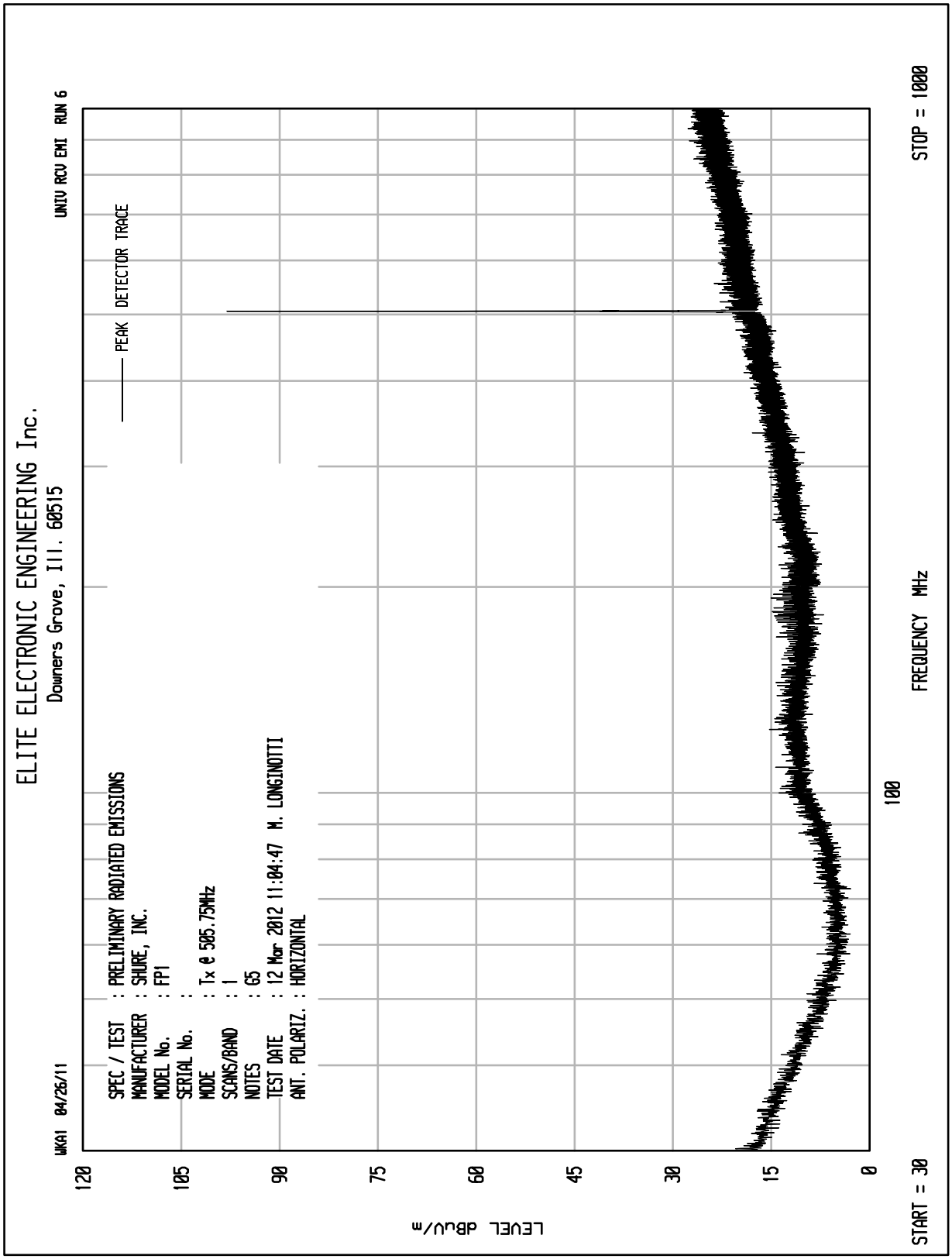
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Downers Grove, Ill. 60515
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UKA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 505.75MHz
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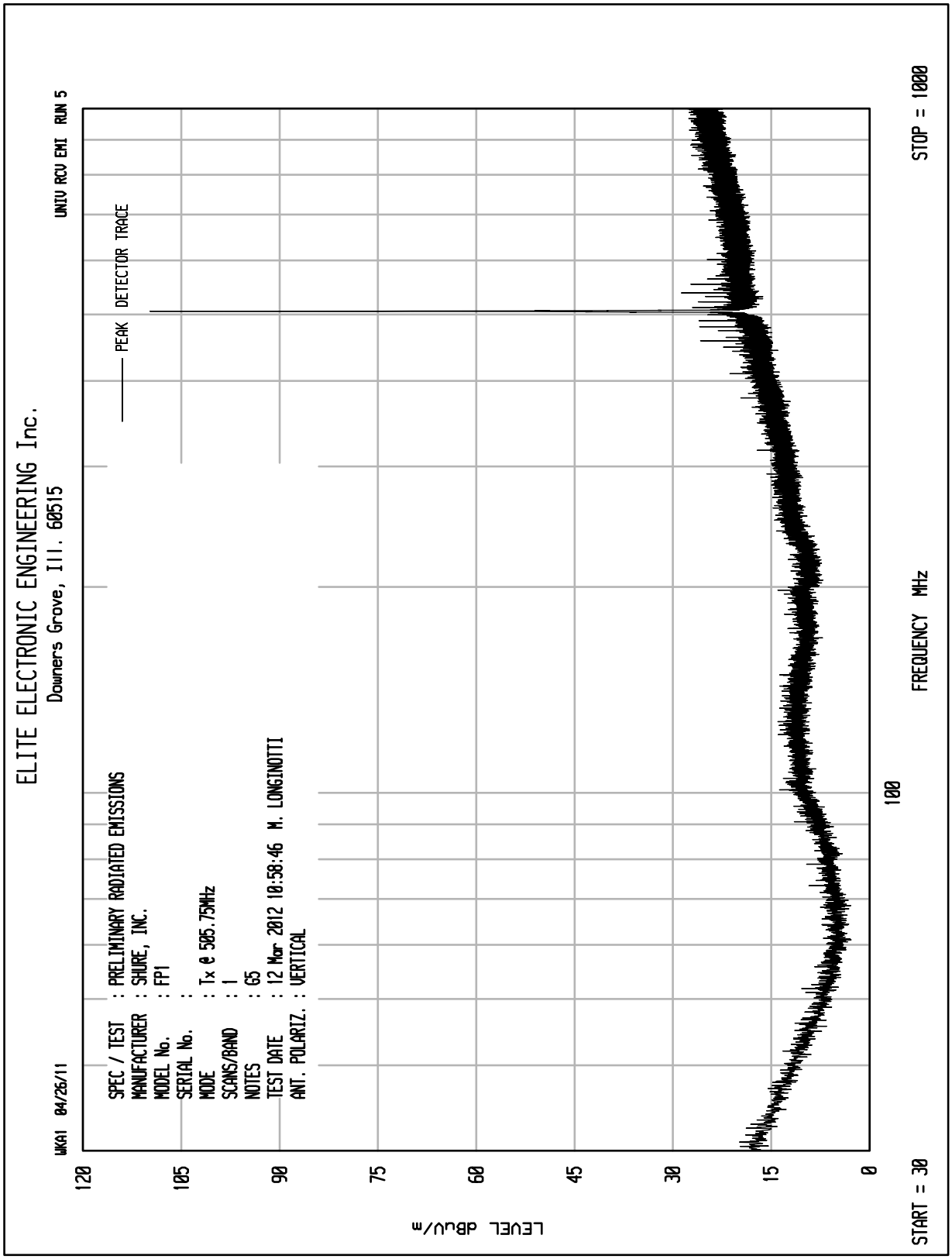
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Downers Grove, Ill. 60515
UNIV RCV EMI RUN 5
WKA1 04/26/11
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MODEL No. : FP1
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NOTES : G5
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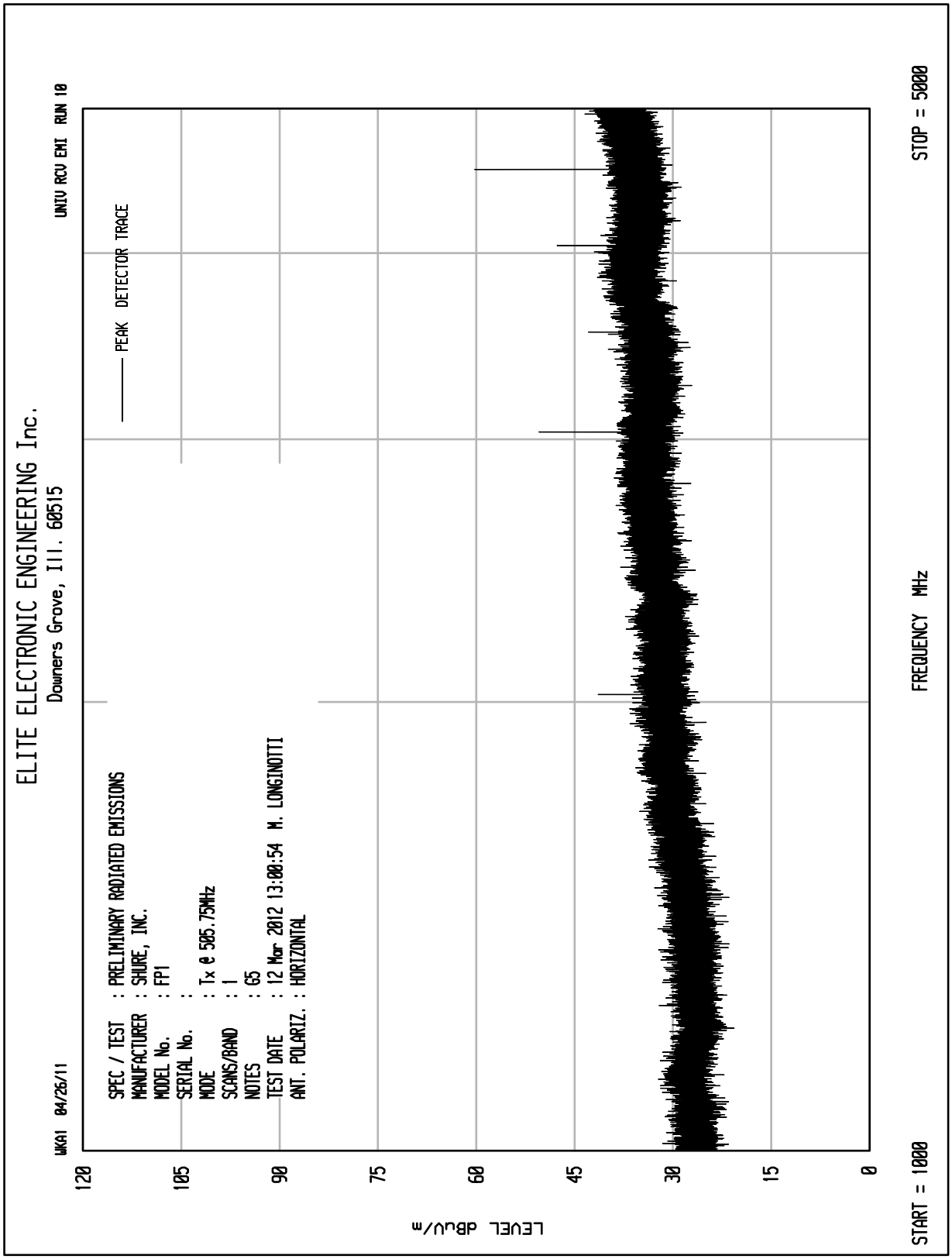
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
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MANUFACTURER : SHURE, INC.
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SERIAL No. :
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SCANS/BAND : 1
NOTES : 65
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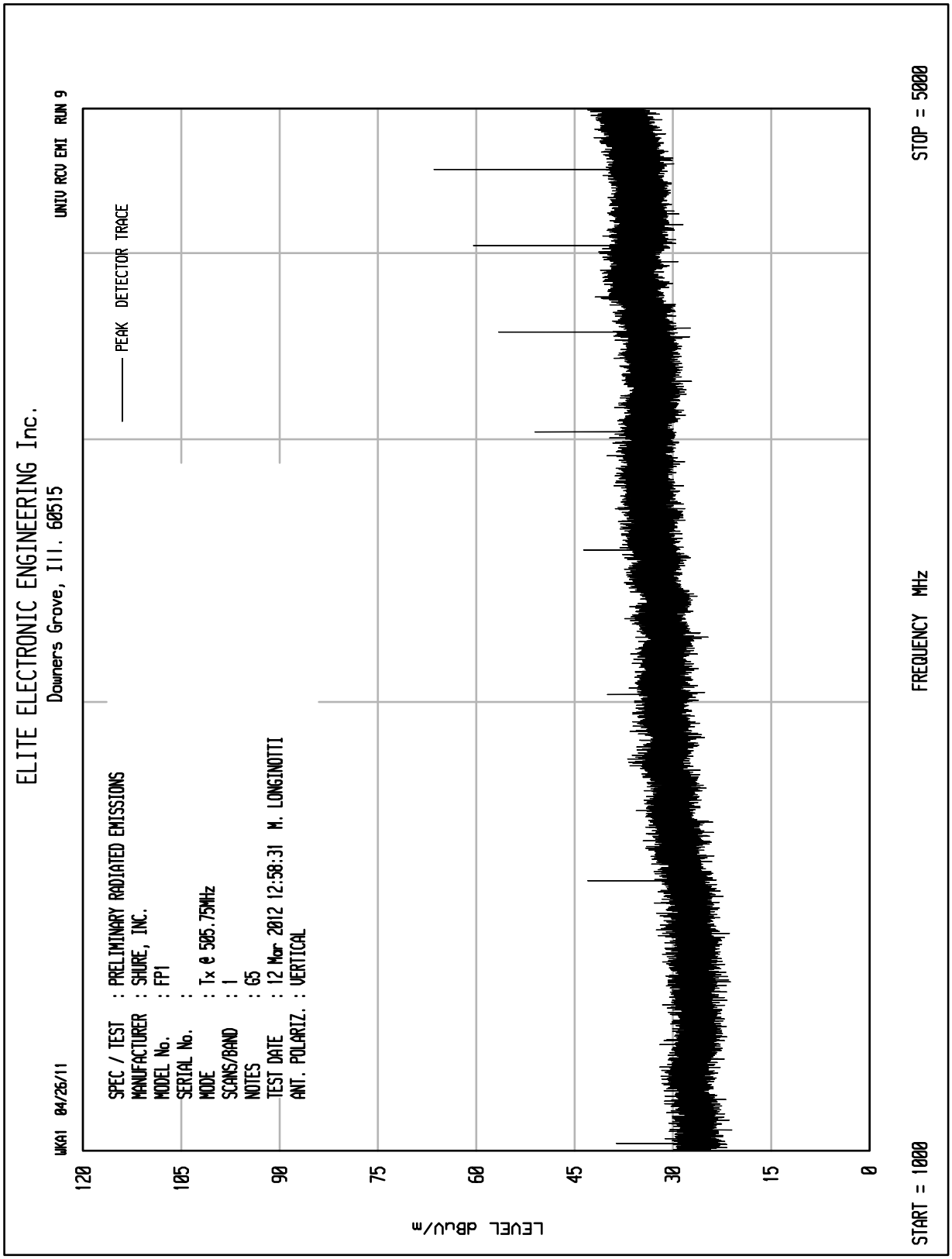
FREQUENCY MHz
STOP = 5000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 9
WKA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 505.75MHz
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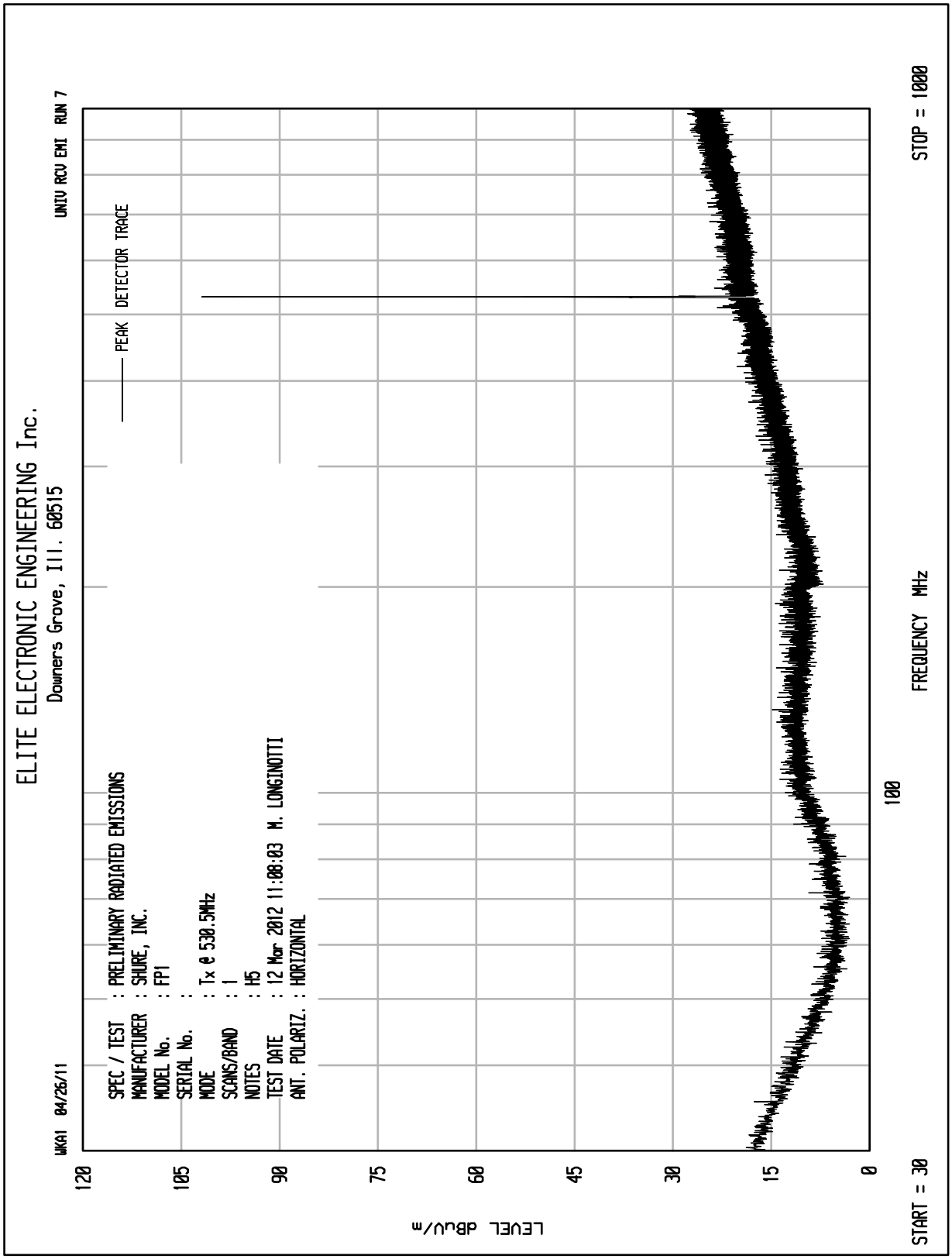
FREQUENCY MHz
STOP = 5000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Downers Grove, Ill. 60515
UNIV RCV EMI RUN 7
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 530.5MHz
SCANS/BAND : 1
NOTES : H5
TEST DATE : 12 Mar 2012 11:08:03 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
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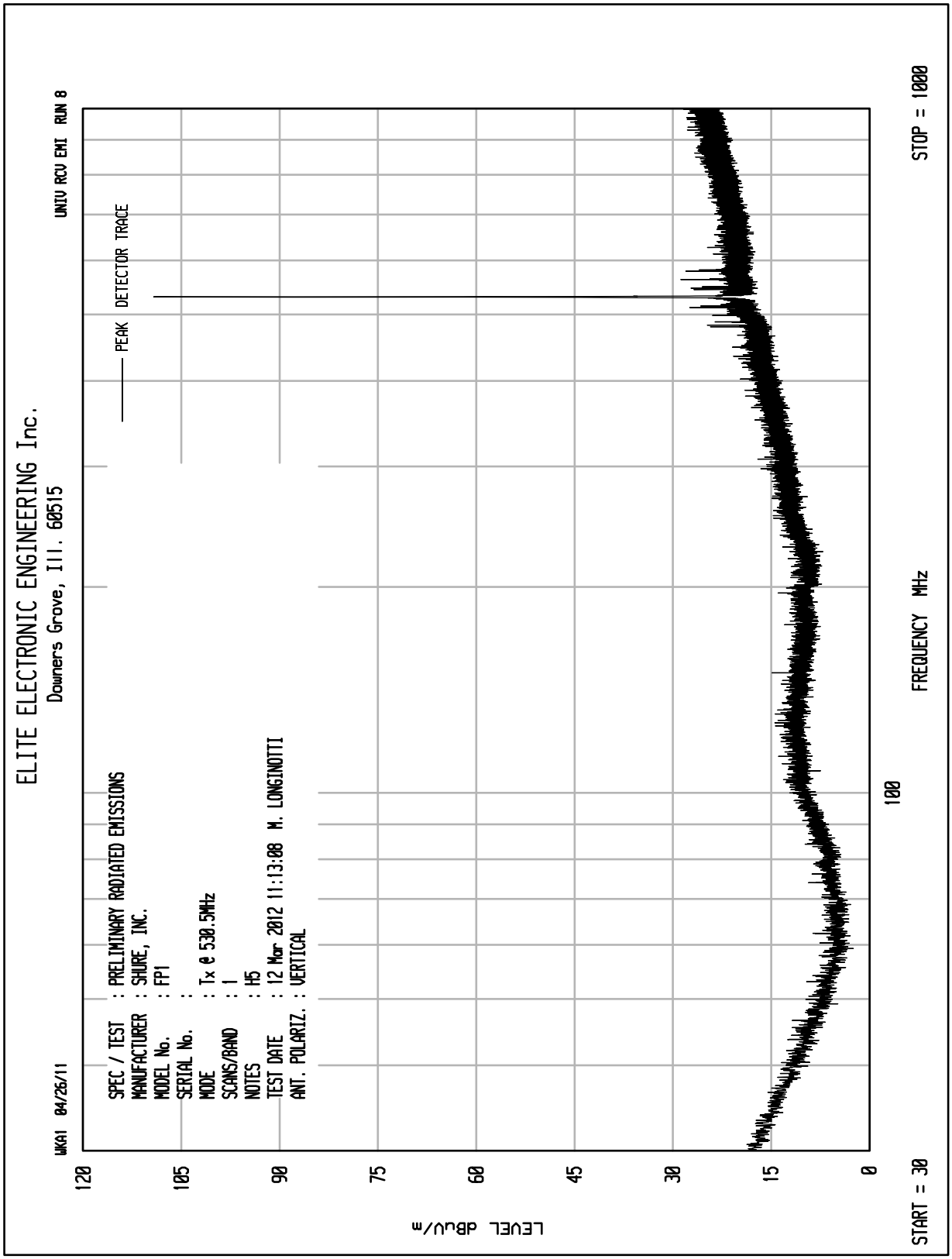
FREQUENCY MHz
STOP = 1000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
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UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
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MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 530.5MHz
SCANS/BAND : 1
NOTES : H5
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PEAK DETECTOR TRACE
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START = 30
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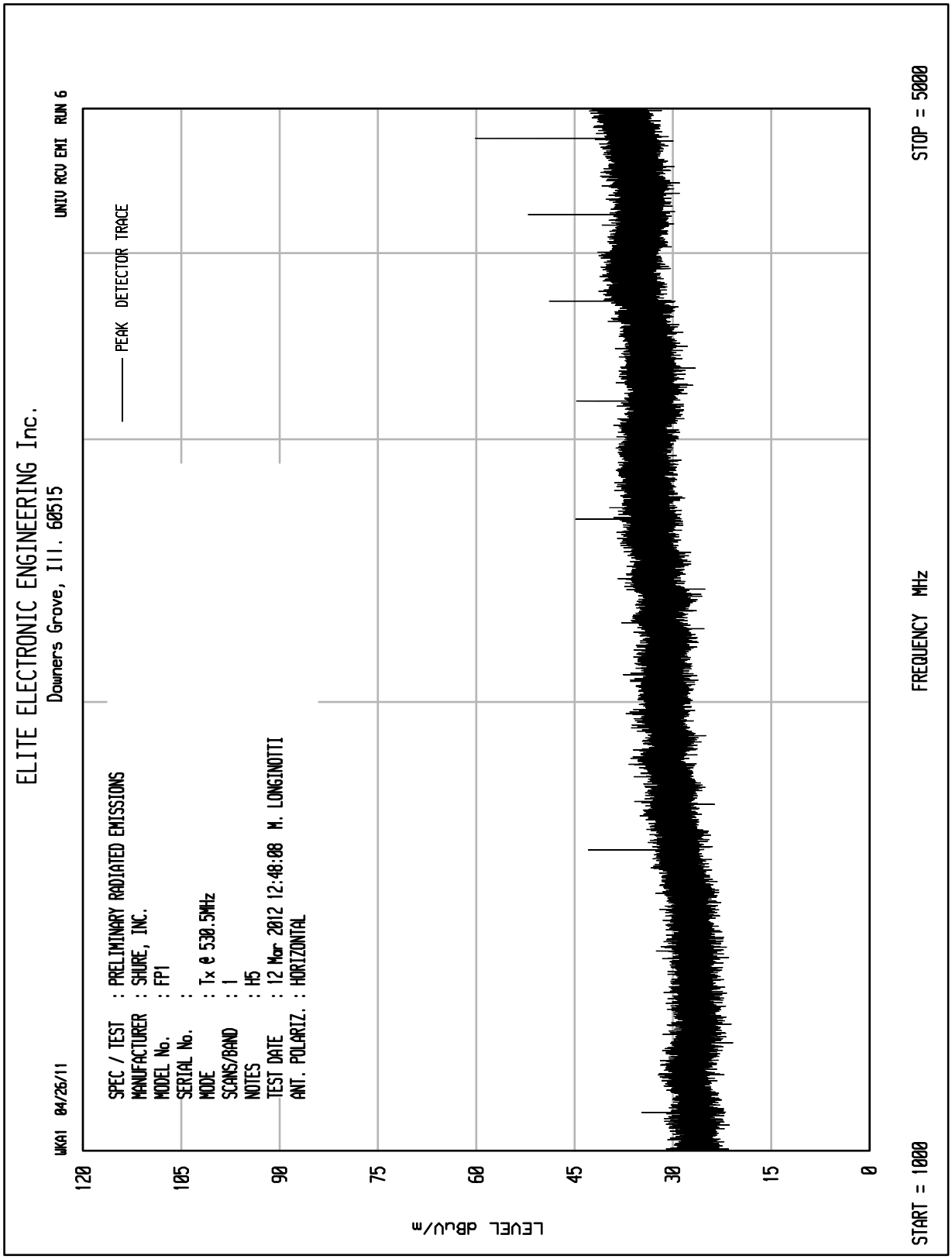
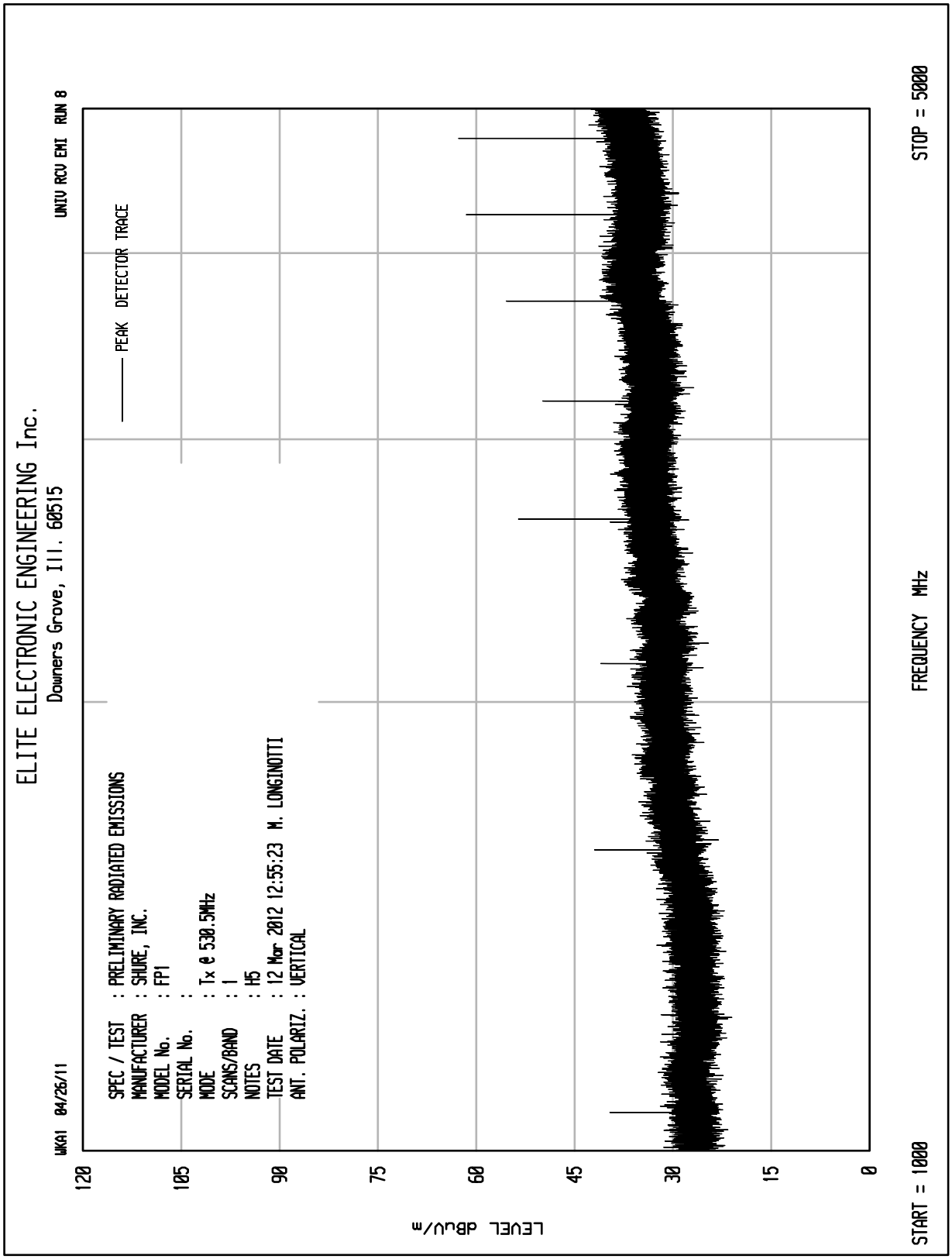
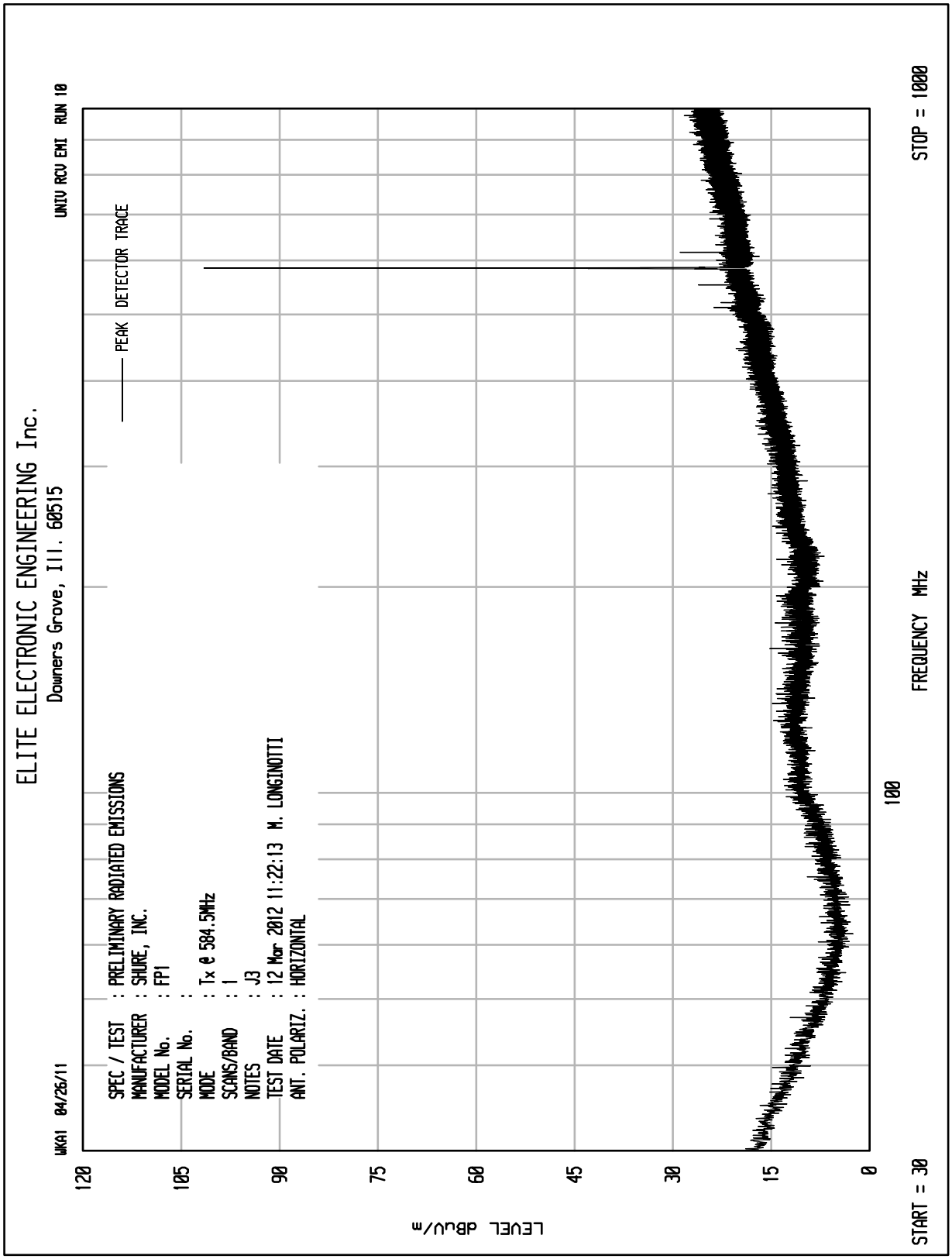
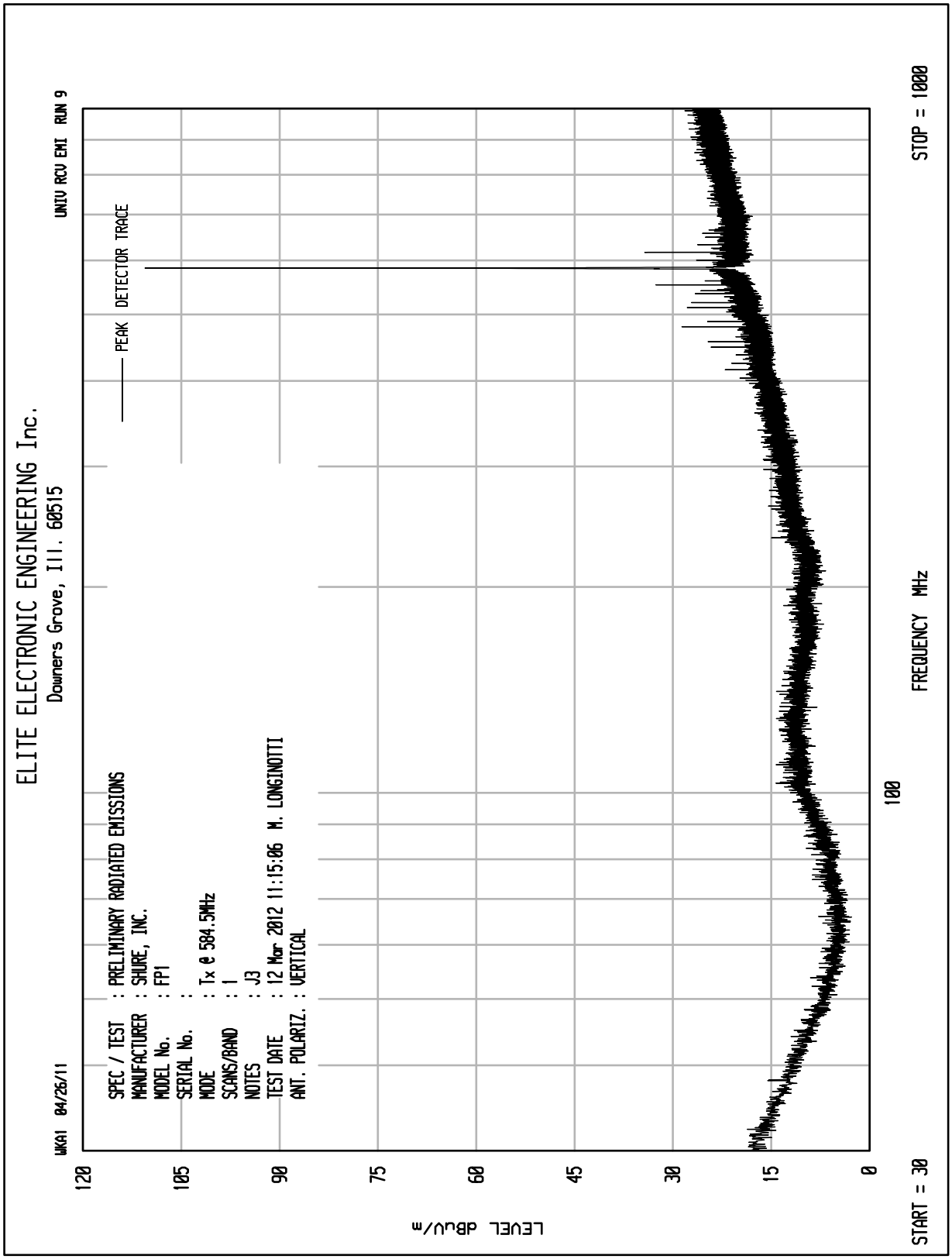
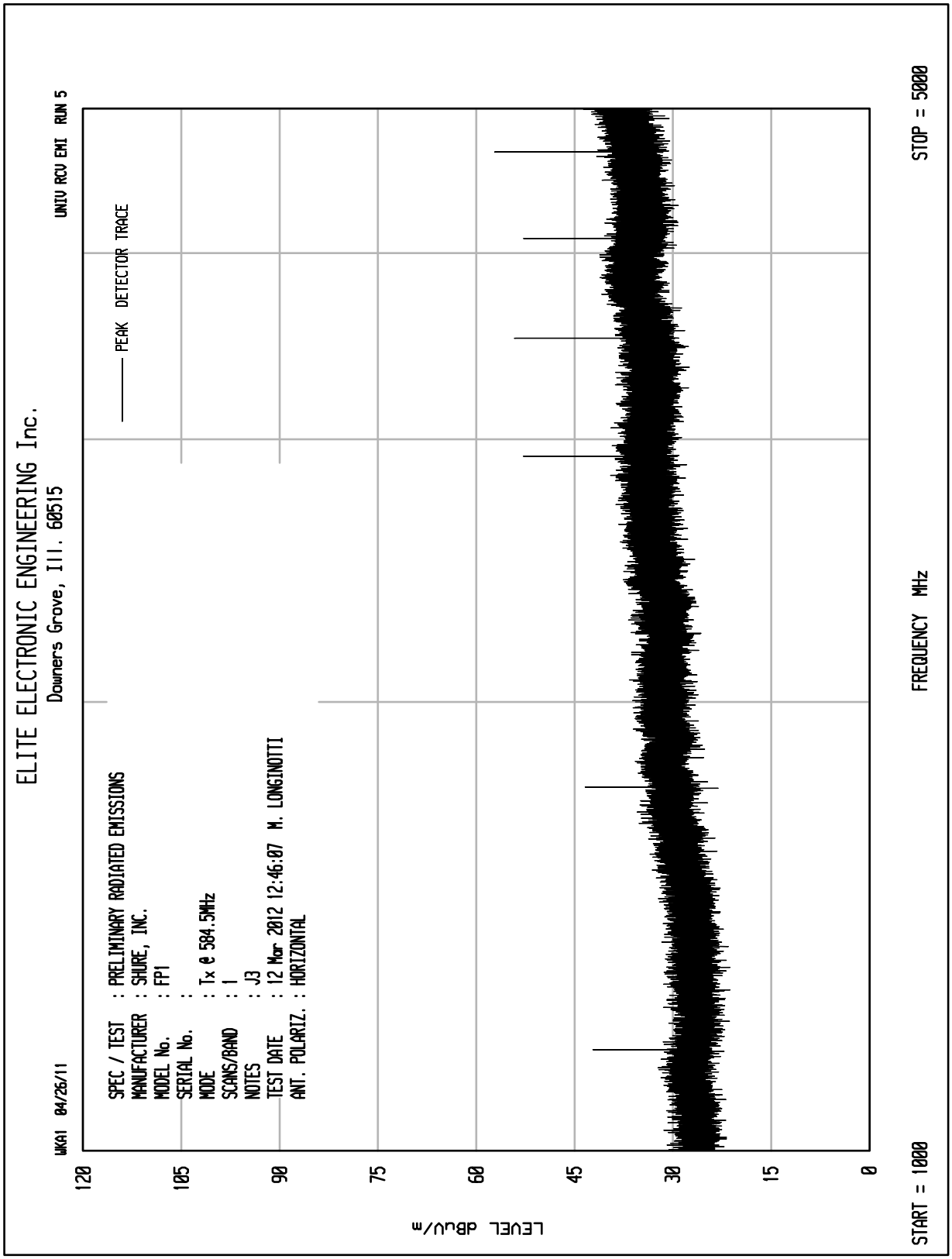
STOP = 1000

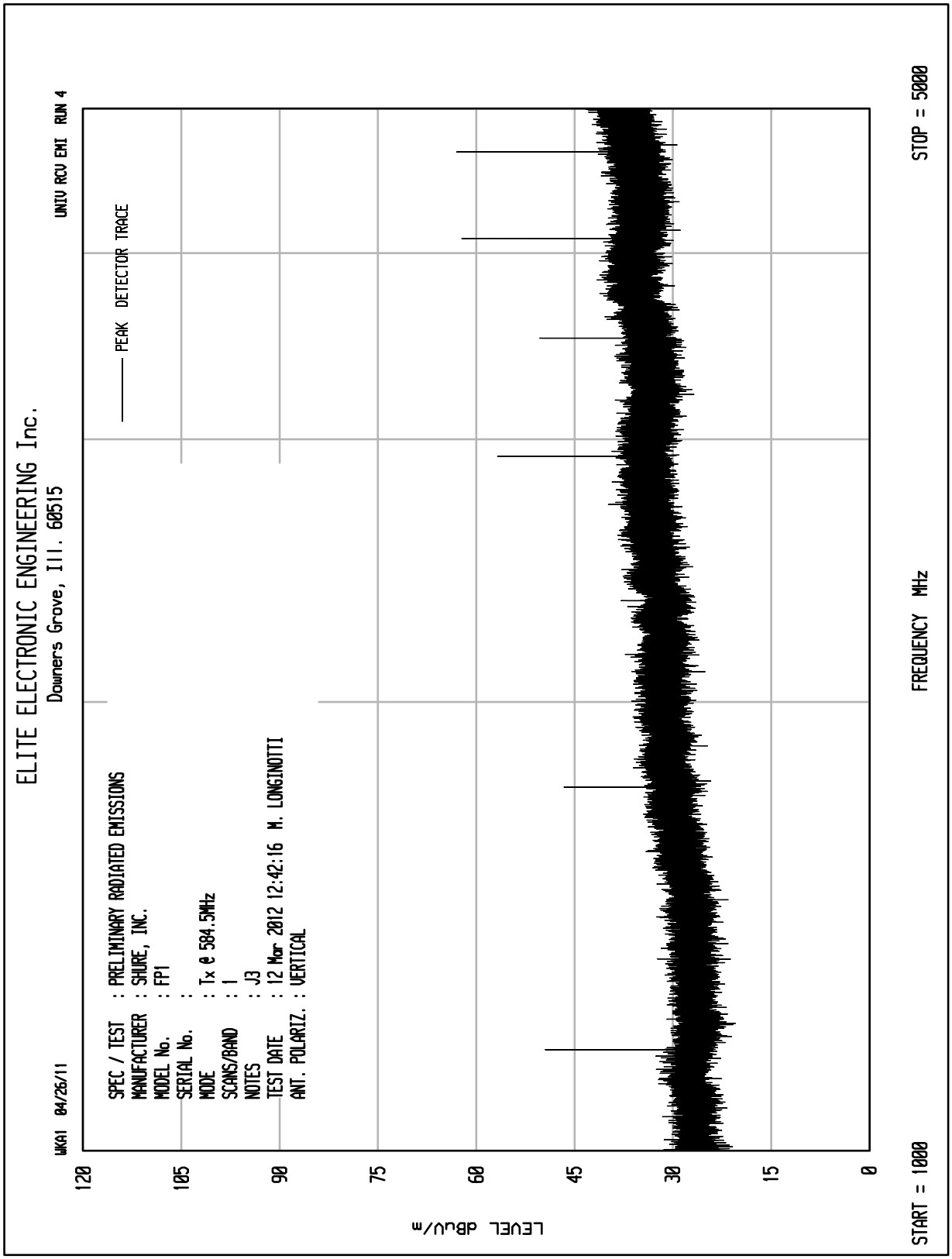

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 6
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 530.5MHz
SCANS/BAND : 1
NOTES : H5
TEST DATE : 12 Mar 2012 12:48:08 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000

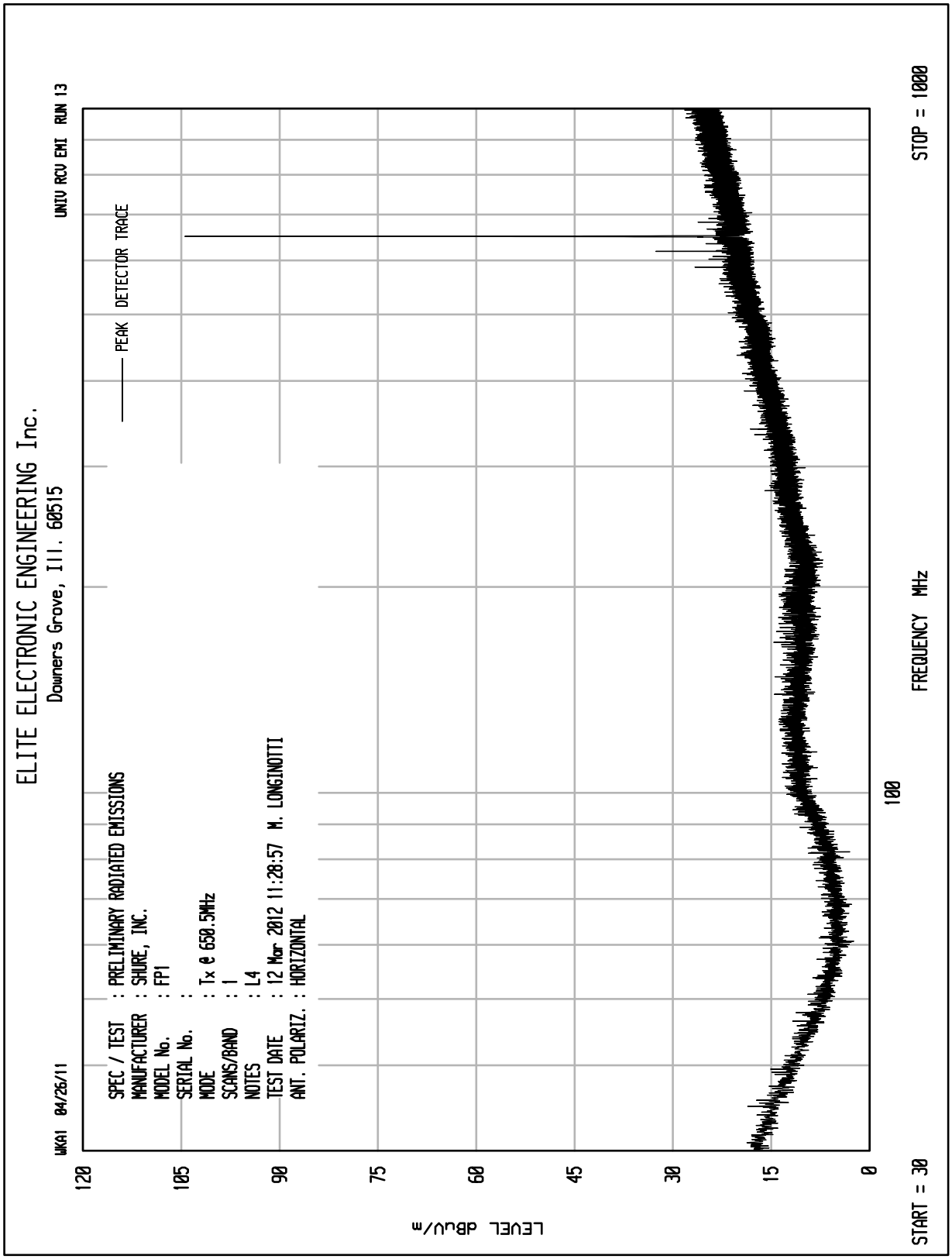

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 8
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 530.5MHz
SCANS/BAND : 1
NOTES : H5
TEST DATE : 12 Mar 2012 12:55:23 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000

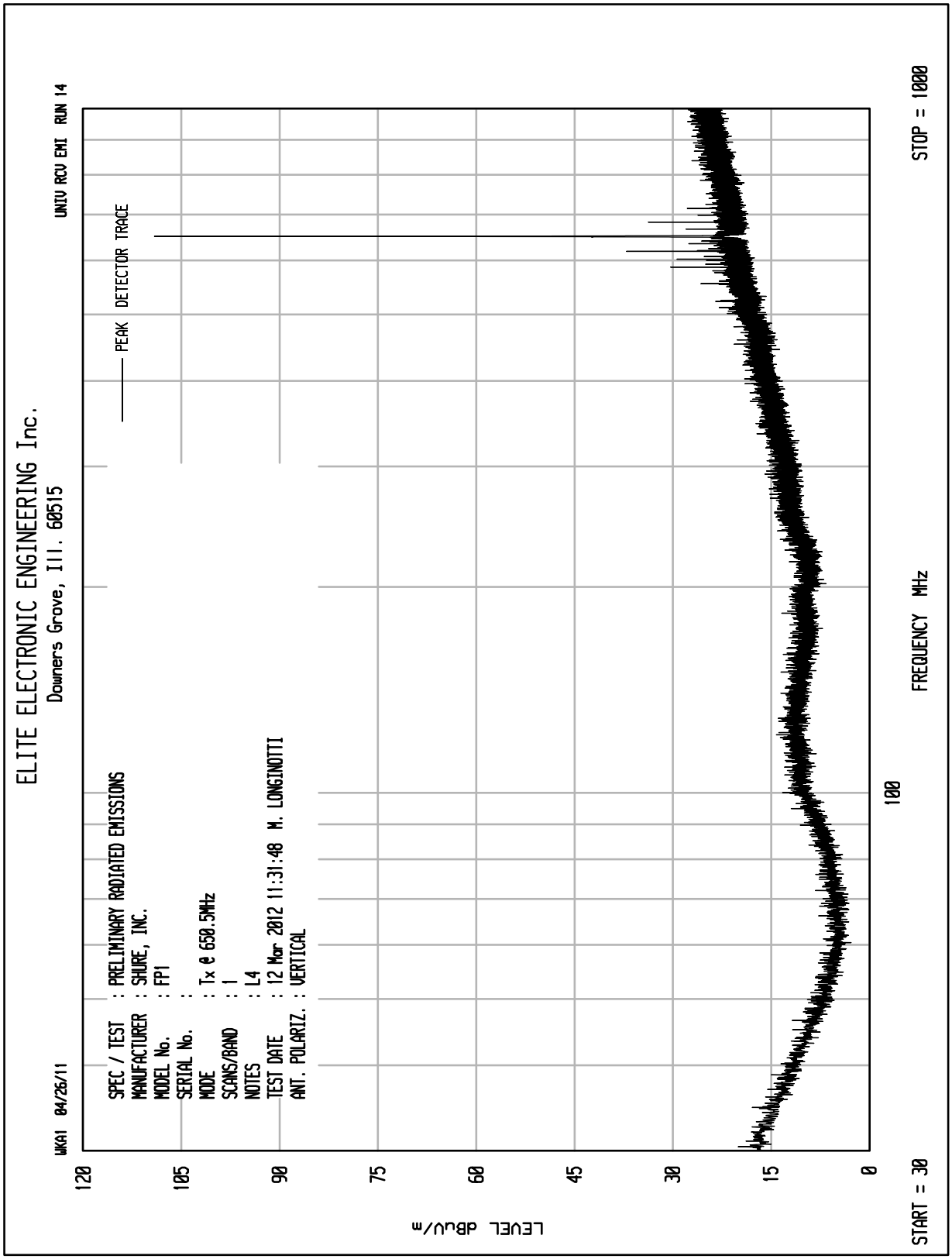

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 10
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 584.5MHz
SCANS/BAND : 1
NOTES : J3
TEST DATE : 12 Mar 2012 11:22:13 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

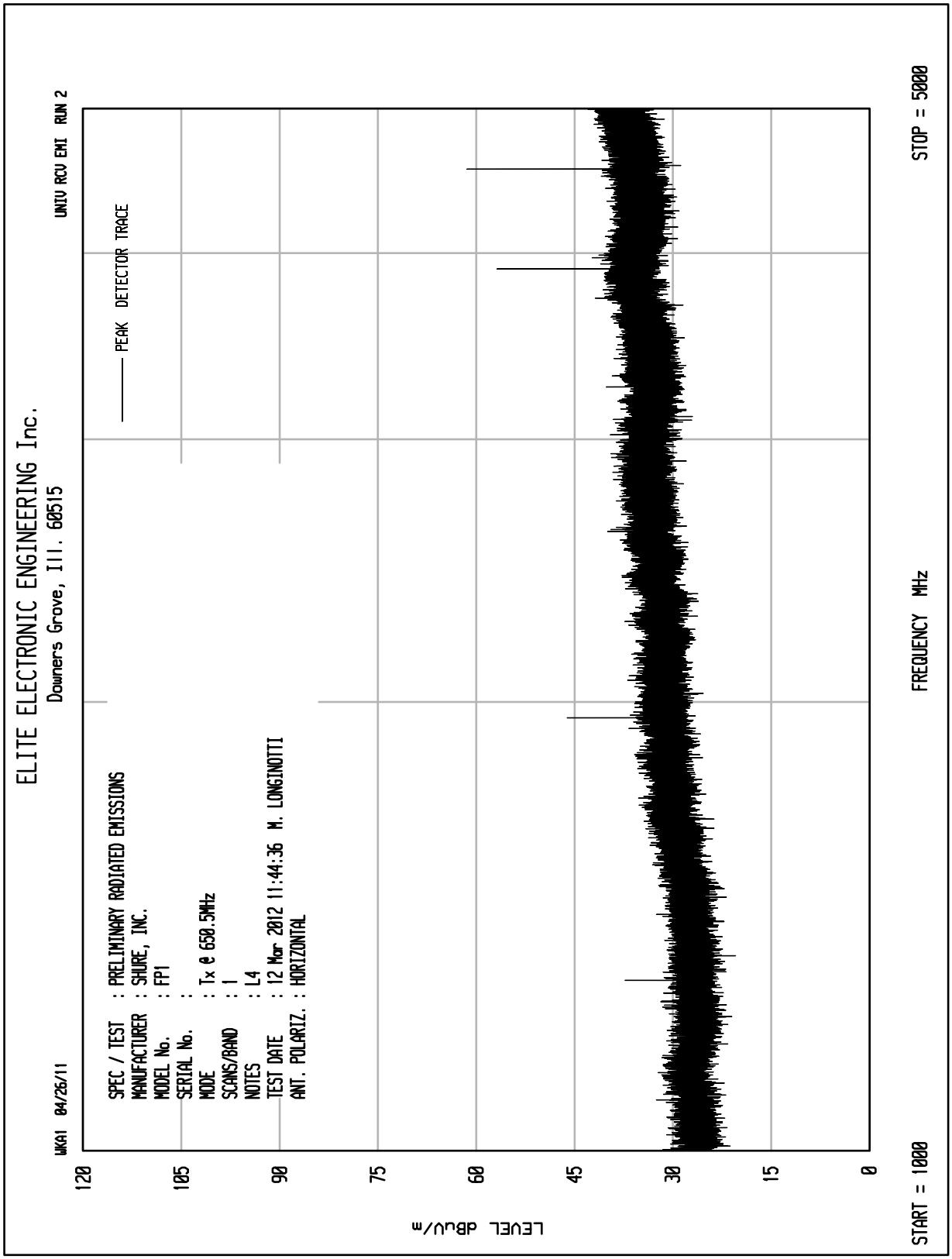

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 9
UKA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 584.5MHz
SCANS/BAND : 1
NOTES : J3
TEST DATE : 12 Mar 2012 11:15:06 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

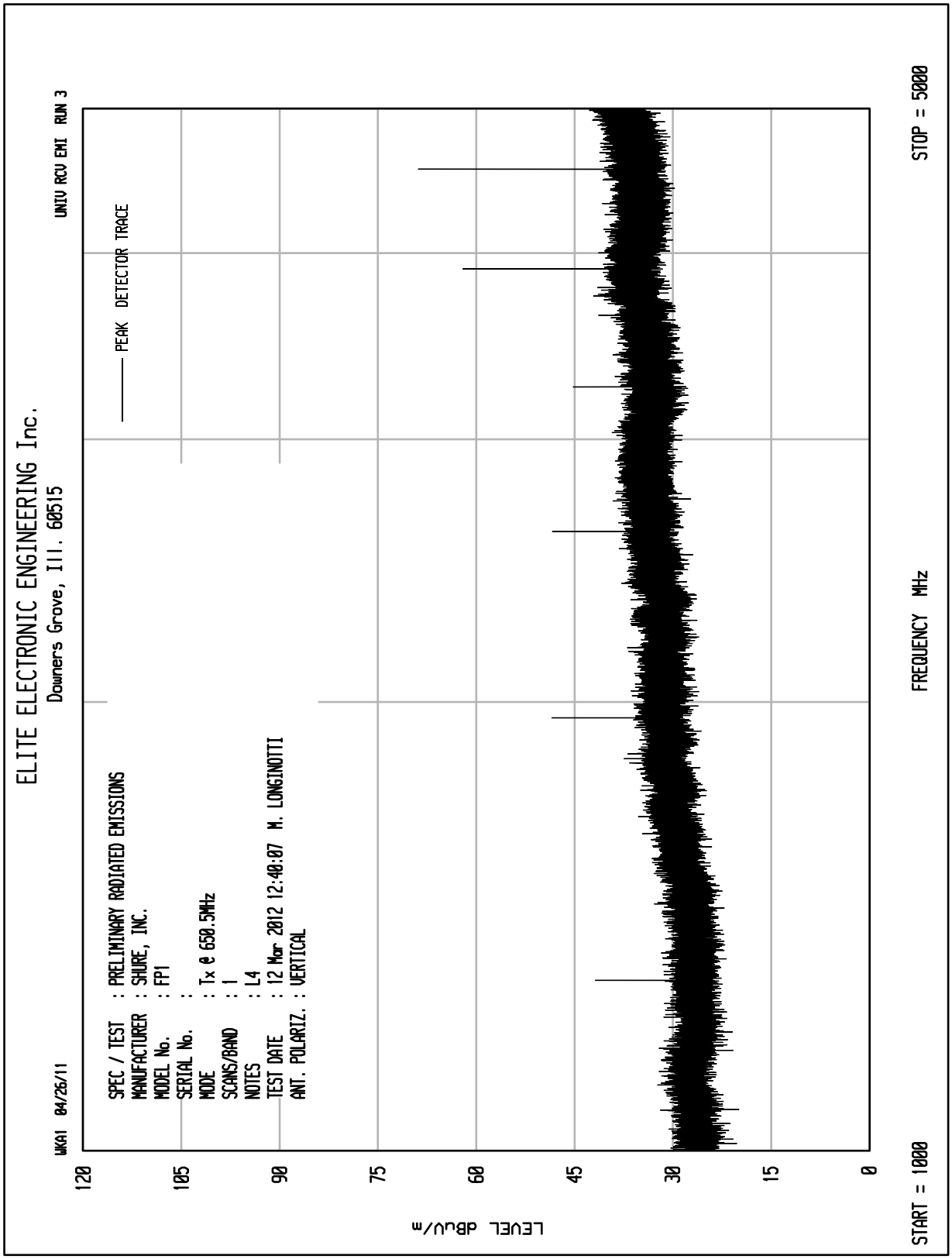

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 5
WKA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 584.5MHz
SCANS/BAND : 1
NOTES : J3
TEST DATE : 12 Mar 2012 12:46:07 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 4
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 584.5MHz
SCANS/BAND : 1
NOTES : J3
TEST DATE : 12 Mar 2012 12:42:16 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 = 5000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 13
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 650.5MHz
SCANS/BAND : 1
NOTES : L4
TEST DATE : 12 Mar 2012 11:28:57 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 14
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 650.5MHz
SCANS/BAND : 1
NOTES : L4
TEST DATE : 12 Mar 2012 11:31:48 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 2
WKA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 650.5MHz
SCANS/BAND : 1
NOTES : L4
TEST DATE : 12 Mar 2012 11:44:36 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 = 5000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 3
UNA1 04/26/11
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : SHURE, INC.
MODEL No. : FP1
SERIAL No. :
MODE : Tx @ 650.5MHz
SCANS/BAND : 1
NOTES : L4
TEST DATE : 12 Mar 2012 12:40:07 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 = 5000

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : RSS-123 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 481.75MHz, 30mW (14.8dBm)
BAND : G4
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	RSS-123 Min. Attn. dB
963.50	H	23.2		-51.9	0.0	1.6	-53.5	68.3	39.8
963.50	V	25.9		-47.3	0.0	1.6	-48.9	63.7	39.8
1445.25	H	15.5		-59.6	4.7	2.0	-57.0	71.7	39.8
1445.25	V	17.0		-58.7	4.7	2.0	-56.1	70.8	39.8
1927.00	H	7.7		-64.4	5.1	2.4	-61.7	76.5	39.8
1927.00	V	11.3		-60.4	5.1	2.4	-57.7	72.5	39.8
2408.75	H	13.0		-59.3	5.8	2.7	-56.2	71.0	39.8
2408.75	V	16.1		-53.7	5.8	2.7	-50.6	65.4	39.8
2890.50	H	11.5		-58.3	6.0	3.0	-55.4	70.1	39.8
2890.50	V	10.1		-56.8	6.0	3.0	-53.9	68.6	39.8
3372.25	H	10.8		-56.3	6.6	3.3	-53.0	67.7	39.8
3372.25	V	11.7		-53.5	6.6	3.3	-50.2	64.9	39.8
3854.00	H	10.6		-55.2	6.9	3.5	-51.9	66.6	39.8
3854.00	V	14.8		-49.4	6.9	3.5	-46.1	60.8	39.8
4335.75	H	15.0		-50.6	7.9	3.8	-46.5	61.2	39.8
4335.75	V	25.1		-40.4	7.9	3.8	-36.3	51.0	39.8
4817.50	H	20.7		-42.5	8.1	3.9	-38.4	53.1	39.8
4817.50	V	26.9		-37.0	8.1	3.9	-32.9	47.6	39.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Factor (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : FCC-74 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 481.75MHz, 30mW (14.8dBm)
BAND : G4
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	Part 74 Min. Attn. dB
963.50	H	23.9		-51.2	0.0	1.6	-52.8	67.6	27.8
963.50	V	26.4		-46.8	0.0	1.6	-48.4	63.2	27.8
1445.25	H	20.6		-55.0	4.7	2.0	-52.4	67.1	27.8
1445.25	V	21.0		-54.5	4.7	2.0	-51.9	66.6	27.8
1927.00	H	16.8		-55.3	5.1	2.4	-52.6	67.4	27.8
1927.00	V	17.9		-53.7	5.1	2.4	-51.0	65.8	27.8
2408.75	H	20.2		-52.0	5.8	2.7	-48.9	63.7	27.8
2408.75	V	22.5		-47.3	5.8	2.7	-44.2	59.0	27.8
2890.50	H	19.9		-50.0	6.0	3.0	-47.1	61.8	27.8
2890.50	V	19.8		-47.0	6.0	3.0	-44.1	58.8	27.8
3372.25	H	19.2		-47.4	6.6	3.3	-44.1	58.8	27.8
3372.25	V	20.7		-45.9	6.6	3.3	-42.6	57.3	27.8
3854.00	H	19.9		-46.2	6.9	3.5	-42.9	57.6	27.8
3854.00	V	22.7		-44.5	6.9	3.5	-41.2	55.9	27.8
4335.75	H	21.6		-44.0	7.9	3.8	-39.9	54.6	27.8
4335.75	V	29.0		-36.7	7.9	3.8	-32.6	47.3	27.8
4817.50	H	25.9		-37.4	8.1	3.9	-33.3	48.0	27.8
4817.50	V	30.4		-33.5	8.1	3.9	-29.4	44.1	27.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : RSS-123 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 505.75MHz, 30mW (14.8dBm)
BAND : G5
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	RSS-123 Min. Attn. dB
1011.5	H	12.3		-64.2	0.0	1.6	-65.8	80.6	39.8
1011.5	V	17.2		-60.1	0.0	1.6	-61.7	76.5	39.8
1517.3	H	22.3		-53.7	6.5	2.1	-49.2	64.0	39.8
1517.3	V	25.1		-51.2	6.5	2.1	-46.7	61.5	39.8
2023.0	H	15.7		-58.1	6.5	2.4	-54.0	68.7	39.8
2023.0	V	16.1		-57.5	6.5	2.4	-53.4	68.1	39.8
2528.8	H	11.8		-59.9	6.8	2.8	-55.9	70.7	39.8
2528.8	V	17.5		-53.0	6.8	2.8	-49.0	63.8	39.8
3034.5	H	14.8		-54.9	6.9	3.1	-51.1	65.9	39.8
3034.5	V	19.5		-49.1	6.9	3.1	-45.3	60.1	39.8
3540.3	H	13.7		-54.8	7.1	3.4	-51.1	65.9	39.8
3540.3	V	20.4		-47.1	7.1	3.4	-43.4	58.2	39.8
4046.0	H	15.7		-49.8	7.2	3.6	-46.3	61.0	39.8
4046.0	V	20.9		-44.5	7.2	3.6	-41.0	55.7	39.8
4551.8	H	23.5		-43.1	8.2	3.8	-38.8	53.5	39.8
4551.8	V	29.7		-36.5	8.2	3.8	-32.2	46.9	39.8
5057.5	H	23.6		-36.6	7.7	4.0	-33.0	47.7	39.8
5057.5	V	26.5		-37.1	7.7	4.0	-33.5	48.2	39.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : FCC-74 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 505.75MHz, 30mW (14.8dBm)
BAND : G5
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	Part 74 Min. Attn. dB
1011.50	H	18.5		-56.0	0.0	1.6	-57.6	72.4	27.8
1011.50	V	22.9		-53.2	0.0	1.6	-54.8	69.6	27.8
1517.25	H	26.1		-49.5	4.9	2.1	-46.7	61.5	27.8
1517.25	V	25.6		-50.5	4.9	2.1	-47.7	62.5	27.8
2023.00	H	29.3		-43.0	5.1	2.4	-40.3	55.1	27.8
2023.00	V	21.3		-50.5	5.1	2.4	-47.8	62.6	27.8
2528.75	H	18.5		-50.5	5.9	2.8	-47.4	62.2	27.8
2528.75	V	21.9		-46.9	5.9	2.8	-43.8	58.6	27.8
3034.50	H	20.4		-48.4	6.1	3.1	-45.5	60.2	27.8
3034.50	V	23.3		-43.7	6.1	3.1	-40.8	55.5	27.8
3540.25	H	20.5		-46.8	6.8	3.4	-43.4	58.1	27.8
3540.25	V	24.4		-41.2	6.8	3.4	-37.8	52.5	27.8
4046.00	H	20.4		-45.0	7.0	3.6	-41.6	56.4	27.8
4046.00	V	25.4		-39.6	7.0	3.6	-36.2	51.0	27.8
4551.75	H	27.2		-37.0	8.3	3.8	-32.6	47.3	27.8
4551.75	V	33.0		-31.9	8.3	3.8	-27.5	42.2	27.8
5057.50	H	28.3		-33.7	7.8	4.0	-29.9	44.7	27.8
5057.50	V	31.4		-31.9	7.8	4.0	-28.1	42.9	27.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : RSS-123 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 530.5MHz, 30mW (14.8dBm)
BAND : H5
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	RSS-123 Min. Attn. dB
1061.00	H	13.1		-62.1	0.0	1.7	-63.8	78.5	39.8
1061.00	V	21.0		-55.1	0.0	1.7	-56.8	71.5	39.8
1591.50	H	22.2		-48.2	4.9	2.1	-45.4	60.2	39.8
1591.50	V	23.1		-52.7	4.9	2.1	-49.9	64.7	39.8
2122.00	H	12.7		-60.0	5.3	2.5	-57.2	72.0	39.8
2122.00	V	14.9		-57.3	5.3	2.5	-54.5	69.3	39.8
2652.50	H	13.5		-56.0	5.9	2.9	-52.9	67.7	39.8
2652.50	V	20.3		-48.0	5.9	2.9	-44.9	59.7	39.8
3183.00	H	20.6		-47.5	6.3	3.2	-44.4	59.2	39.8
3183.00	V	15.7		-50.5	6.3	3.2	-47.4	62.2	39.8
3713.50	H	12.6		-54.7	6.9	3.5	-51.3	66.1	39.8
3713.50	V	16.5		-48.9	6.9	3.5	-45.5	60.3	39.8
4244.00	H	22.8		-42.5	7.6	3.7	-38.6	53.4	39.8
4244.00	V	23.4		-40.6	7.6	3.7	-36.7	51.5	39.8
4774.50	H	22.9		-40.1	8.1	3.9	-35.9	50.7	39.8
4774.50	V	22.3		-41.0	8.1	3.9	-36.8	51.6	39.8
5305.00	H	20.1		-41.7	7.4	4.1	-38.4	53.2	39.8
5305.00	V	23.6		-38.4	7.4	4.1	-35.1	49.9	39.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : FCC-74 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 530.5MHz, 30mW (14.8dBm)
BAND : H5
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	Part 74 Min. Attn. dB
1061.00	H	18.1		-57.1	0.0	1.7	-58.8	73.5	27.8
1061.00	V	22.8		-53.2	0.0	1.7	-54.9	69.6	27.8
1591.50	H	24.8		-45.6	4.9	2.1	-42.8	57.6	27.8
1591.50	V	25.5		-50.3	4.9	2.1	-47.5	62.3	27.8
2122.00	H	19.1		-53.8	5.3	2.5	-51.0	65.7	27.8
2122.00	V	20.3		-52.1	5.3	2.5	-49.3	64.1	27.8
2652.50	H	19.4		-50.1	5.9	2.9	-47.0	61.8	27.8
2652.50	V	21.0		-47.1	5.9	2.9	-44.0	58.8	27.8
3183.00	H	20.5		-47.6	6.3	3.2	-44.5	59.3	27.8
3183.00	V	20.7		-45.6	6.3	3.2	-42.5	57.3	27.8
3713.50	H	20.0		-47.1	6.9	3.5	-43.7	58.5	27.8
3713.50	V	21.9		-43.2	6.9	3.5	-39.8	54.6	27.8
4244.00	H	20.4		-42.8	7.6	3.7	-38.9	53.7	27.8
4244.00	V	27.3		-36.8	7.6	3.7	-32.9	47.7	27.8
4774.50	H	26.5		-37.3	8.1	3.9	-33.1	47.9	27.8
4774.50	V	27.1		-36.1	8.1	3.9	-31.9	46.7	27.8
5305.00	H	26.8		-34.9	7.4	4.1	-31.6	46.4	27.8
5305.00	V	28.4		-33.9	7.4	4.1	-30.6	45.4	27.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : RSS-123 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 584.5MHz, 30mW (14.8dBm)
BAND : J3
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	RSS-123 Min. Attn. dB
1169.00	H	22.6		-52.3	0.0	1.8	-54.1	68.9	39.8
1169.00	V	30.7		-45.2	0.0	1.8	-47.0	61.8	39.8
1753.50	H	15.5		-57.5	5.0	2.2	-54.8	69.5	39.8
1753.50	V	25.4		-48.6	5.0	2.2	-45.9	60.6	39.8
2338.00	H	15.5		-56.7	5.7	2.7	-53.7	68.5	39.8
2338.00	V	16.2		-55.2	5.7	2.7	-52.2	67.0	39.8
2922.50	H	26.6		-44.3	6.0	3.1	-41.4	56.1	39.8
2922.50	V	26.1		-43.7	6.0	3.1	-40.8	55.5	39.8
3507.00	H	21.2		-46.9	6.8	3.4	-43.4	58.2	39.8
3507.00	V	19.5		-47.7	6.8	3.4	-44.2	59.0	39.8
4091.50	H	15.9		-50.1	7.2	3.6	-46.6	61.3	39.8
4091.50	V	25.9		-39.2	7.2	3.6	-35.7	50.4	39.8
4676.00	H	23.2		-41.5	8.2	3.9	-37.2	52.0	39.8
4676.00	V	28.1		-38.0	8.2	3.9	-33.7	48.5	39.8
5260.50	H	23.7		-38.5	7.5	4.1	-35.1	49.9	39.8
5260.50	V	20.2		-44.0	7.5	4.1	-40.6	55.4	39.8
5845.00	H	11.8		-52.3	7.8	4.3	-48.8	63.6	39.8
5845.00	V	11.9		-53.6	7.8	4.3	-50.1	64.9	39.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : FCC-74 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 584.5MHz, 30mW (14.8dBm)
BAND : J3
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	Part 74 Min. Attn. dB
1169.00	H	24.4		-50.4	0.0	1.8	-52.2	67.0	27.8
1169.00	V	31.5		-44.3	0.0	1.8	-46.1	60.9	27.8
1753.50	H	21.1		-52.0	6.5	2.2	-47.7	62.5	27.8
1753.50	V	20.4		-53.6	6.5	2.2	-49.3	64.1	27.8
2338.00	H	20.5		-51.8	7.3	2.7	-47.2	61.9	27.8
2338.00	V	20.5		-50.8	7.3	2.7	-46.2	60.9	27.8
2922.50	H	28.3		-42.6	7.2	3.1	-38.4	53.2	27.8
2922.50	V	28.8		-40.8	7.2	3.1	-36.6	51.4	27.8
3507.00	H	23.2		-44.6	7.1	3.4	-40.9	55.7	27.8
3507.00	V	25.1		-41.9	7.1	3.4	-38.2	53.0	27.8
4091.50	H	22.0		-44.0	7.3	3.6	-40.4	55.1	27.8
4091.50	V	29.0		-36.2	7.3	3.6	-32.6	47.3	27.8
4676.00	H	26.3		-38.3	8.0	3.9	-34.2	48.9	27.8
4676.00	V	31.6		-34.4	8.0	3.9	-30.3	45.0	27.8
5260.50	H	26.5		-35.7	7.6	4.1	-32.2	47.0	27.8
5260.50	V	28.3		-35.8	7.6	4.1	-32.3	47.1	27.8
5845.00	H	14.6		-50.0	8.6	4.3	-45.7	60.5	27.8
5845.00	V	13.9		-51.4	8.6	4.3	-47.1	61.9	27.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : RSS-123 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 650.5MHz, 30mW (14.8dBm)
BAND : L4
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	RSS-123 Min. Attn. dB
1301.00	H	16.0		-59.7	0.0	1.9	-61.6	76.4	39.8
1301.00	V	29.2		-47.0	0.0	1.9	-48.9	63.7	39.8
1951.50	H	21.7		-51.6	6.3	2.4	-47.7	62.4	39.8
1951.50	V	28.2		-44.3	6.3	2.4	-40.4	55.1	39.8
2602.00	H	16.4		-55.4	6.7	2.9	-51.6	66.3	39.8
2602.00	V	16.7		-53.3	6.7	2.9	-49.5	64.2	39.8
3252.50	H	16.2		-52.8	6.5	3.2	-49.6	64.3	39.8
3252.50	V	14.8		-52.5	6.5	3.2	-49.3	64.0	39.8
3903.00	H	18.0		-48.6	6.8	3.6	-45.4	60.2	39.8
3903.00	V	25.2		-40.4	6.8	3.6	-37.2	52.0	39.8
4553.50	H	27.3		-38.9	8.2	3.8	-34.6	49.3	39.8
4553.50	V	32.7		-34.8	8.2	3.8	-30.5	45.2	39.8
5204.00	H	28.8		-34.3	7.7	4.1	-30.7	45.5	39.8
5204.00	V	30.7		-34.0	7.7	4.1	-30.4	45.2	39.8
5854.50	H	21.7		-42.2	8.6	4.3	-37.9	52.7	39.8
5854.50	V	20.9		-44.2	8.6	4.3	-39.9	54.7	39.8
6505.00	H	15.9		-44.7	8.4	4.6	-40.9	55.7	39.8
6505.00	V	17.2		-45.6	8.4	4.6	-41.8	56.6	39.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

MANUFACTURER : Shure Incorporated
MODEL : FP1 Bodypack Transmitter
SERIAL NO. : None Assigned
SPECIFICATION : FCC-74 Spurious Radiated Emissions
DATE : February 28, 2012 through March 12, 2012
MODE : Transmit at 650.5MHz, 30mW (14.8dBm)
BAND : L4
EQUIPMENT USED : RBB0, CMA1, NTA2, NWH0, NWF0, NDQ1, GSD3, GDJ1

Freq. MHz	Ant Pol	Meter Reading dBuV	Amb	Matched Sig Gen dBm	Antenna Gain dB	Cable Factor dB	ERP Total dBm	Atten dB	Part 74 Min. Attn. dB
1301.00	H	30.3		-45.2	0.0	1.9	-47.1	61.9	27.8
1301.00	V	20.3		-55.9	0.0	1.9	-57.8	72.6	27.8
1951.50	H	24.6		-48.6	6.3	2.4	-44.7	59.4	27.8
1951.50	V	27.1		-45.4	6.3	2.4	-41.5	56.2	27.8
2602.00	H	22.0		-49.7	6.7	2.9	-45.9	60.6	27.8
2602.00	V	22.6		-47.3	6.7	2.9	-43.5	58.2	27.8
3252.50	H	21.5		-47.3	6.5	3.2	-44.1	58.8	27.8
3252.50	V	23.6		-43.5	6.5	3.2	-40.3	55.0	27.8
3903.00	H	21.9		-44.6	6.8	3.6	-41.4	56.2	27.8
3903.00	V	28.7		-36.7	6.8	3.6	-33.5	48.3	27.8
4553.50	H	30.9		-35.3	8.2	3.8	-31.0	45.7	27.8
4553.50	V	37.0		-30.0	8.2	3.8	-25.7	40.4	27.8
5204.00	H	32.9		-30.9	7.7	4.1	-27.3	42.1	27.8
5204.00	V	34.3		-30.4	7.7	4.1	-26.8	41.6	27.8
5854.50	H	27.6		-38.7	8.6	4.3	-34.4	49.2	27.8
5854.50	V	26.8		-38.0	8.6	4.3	-33.7	48.5	27.8
6505.00	H	23.5		-36.9	8.4	4.6	-33.1	47.9	27.8
6505.00	V	24.2		-38.5	8.4	4.6	-34.7	49.5	27.8

* - Ambient

ERP Total (dBm) = Matched Sig Gen (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Atten. (dB) = Output Power (dBm) – ERP (dBm)

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti