



## Measurement of RF Emissions from an Model ADX2FD Frequency Diversity Handheld Transmitter

For	Shure Incorporated 5800 West Touhy Avenue Niles, IL 60714
P.O. Number	4500386770
Date Tested	June 4, 2018 through June 18, 2018
Test Personnel	Mark Longinotti
Test Specification	FCC "Code of Federal Regulations" Title 47 Part 74 Subpart H, Section 74.861

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**REVISION HISTORY**

Revision	Date	Description
—	20 June 2018	Initial release

## Measurement of RF Emissions from a Frequency Diversity Handheld Transmitter, Model No. ADX2FD

### 1. INTRODUCTION

#### 1.1. Scope of Tests

This document represents the results of the series of radio interference measurements performed on a Shure Incorporated Frequency Diversity Handheld Transmitter, Model No. ADX2FD, (hereinafter referred to as the Equipment Under Test (EUT)). The EUT was manufactured and submitted for testing by Shure Incorporated located in Niles, IL.

The EUT contained a transmitter that was designed to transmit in the following UHF frequency bands using an internal, non-removable antenna:

Band	Frequency (MHz)	Serial No.	FCC Rule Part	Mode	Output Power (mW)
X55	941.625 – 951.875	173	74.861	Non-Diversity	2,10, 50
X55	941.625 – 951.875	173	74.861	Diversity	2,10
X55	952.975 – 956.125	173	74.861	Non-Diversity	2,10, 50
X55	952.975 – 956.125	173	74.861	Diversity	2,10
X55	956.575 – 959.725	173	74.861	Non-Diversity	2,10, 50
X55	956.575 - 959.725	173	74.861	Diversity	2,10

The EUT also contained a digital modulation Zigbee transceiver. The transceiver was designed to transmit and receive in the 2400-2483.5 MHz band using an internal, non-removable antenna.

See Elite Electronic Engineering, Inc. Engineering Test Report No. 1703407-02 for compliance testing on the Zigbee transceiver.

#### 1.2. Purpose

The test series was performed to determine if the EUT would meet selected requirements of FCC Part 74, Subpart H, Section 861, for low power auxiliary station. Testing was performed in accordance with ETSI EN 300 422-1 v1.4.2 and IEEE C63.26-2015.

#### 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 Lab Code: 1786-01.

#### 1.5. Laboratory Conditions

The temperature at the time of the test was 25°C and the relative humidity was 32%.

### 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, Subpart H, Section 861, dated 1 October 2016

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 2, dated 1 October 2016
- ETSI EN 300 422-1 V1.4.2 (2011-08) "Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement "
- IEEE C63.26-2015 "American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services Accredited by the American National Standards Institute"
- Federal Communications Commission Office of Engineering and Technology Laboratory Division Basis Certification Requirements for Wireless Microphones dated December 13, 2017

### 3. EUT SETUP AND OPERATION

#### 3.1. General Description

The EUT is a Shure Incorporated, Frequency Diversity Handheld Transmitter, Model No. ADX2FD. A block diagram of the EUT setup is shown as Figure 1.

##### 3.1.1.Power Input

The EUT was powered by 3.6VDC from a removable, rechargeable Li-ion Battery Pack, Shure Model No.: SB920.

##### 3.1.2.Peripheral Equipment

The following peripheral equipment was submitted with the EUT:

Item	Description
Shure SM58 Microphone	Connected to the microphone port of the EUT for all radiated emissions tests.

##### 3.1.3.Signal Input/Output Leads

No interconnect cables were submitted with the EUT.

##### 3.1.4.Grounding

The EUT was not grounded.

##### 3.1.5.Frequency of EUT

Per the Federal Communications Commission Office of Engineering and Technology Laboratory Division, Basis Certification Requirements for Wireless Microphones dated December 13, 2017, section III, Additional Specific Guidance for Licensed Wireless Microphones Under Part 74, paragraph (c), spurious emissions shall be investigated up to the 10<sup>th</sup> harmonic of the fundamental.

#### 3.2. Software

For all tests, the EUT had Firmware Version 1.1.20 loaded onto the device to provide correct load characteristics.

#### 3.3. Operational Mode

All emissions tests were performed separately in the following modes:

	UHF Transmitter					Zigbee Transmitter
	Channel 1		Channel 2		Diversity	
Mode	Frequency MHz	Output Power mW	Frequency MHz	Output Power mW		
1	946.75	2	Off	Off	On	Off
2	946.75	10	Off	Off	On	Off
3	954.55	2	Off	Off	On	Off
4	954.55	10	Off	Off	On	Off
5	958.15	2	Off	Off	On	Off
6	958.15	10	Off	Off	On	Off
7	Off	Off	946.75	2	On	Off
8	Off	Off	946.75	10	On	Off
9	Off	Off	954.55	2	On	Off
10	Off	Off	954.55	10	On	Off
11	Off	Off	958.15	2	On	Off
12	Off	Off	958.15	10	On	Off
13	946.75	2	Off	Off	Off	Off
14	946.75	50	Off	Off	Off	Off
15	954.55	2	Off	Off	Off	Off
16	954.55	50	Off	Off	Off	Off
17	958.15	2	Off	Off	Off	Off
18	958.15	50	Off	Off	Off	Off
For intermodulation tests, the unit was programmed to operate in each of the following modes						
19	941.625	10	942.625	10	On	Off
20	941.625	10	959.725	10	On	Off
21	941.625	10	959.725	10	On	Transmit at 2445MHz
22	958.15	50	Off	Off	Off	Transmit at 2445MHz

### 3.4. 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 C63.4-2014 and CISPR 16 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 with a calibration interval not greater than two years. 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	1.06	-1.06
Expanded Uncertainty (95% confidence)	2.12	-2.12

Radiated Emissions Measurements		
Combined Standard Uncertainty	2.09	-2.09
Expanded Uncertainty (95% confidence)	4.19	-4.19

## 5. TEST PROCEDURES

### 5.1. FCC RF Power Output Measurements

#### 5.1.1. Requirements

Per 74.861(d), For low power auxiliary stations operating in the bands other than those allocated for TV broadcasting (except for the 1435MHz – 1525MHz band), the maximum transmitter power which will be authorized is 1 watt.

#### 5.1.2. Procedures

##### 5.1.2.1 Conducted Output Power

The antenna port of the EUT was connected to an Agilent E9304A E-Series Average Power Sensor. The power sensor was connected to an Agilent E4419B EPM Series Power Meter. The output power of each EUT was then measured.

#### 5.1.3. Results

##### 5.1.3.1 FCC 74.861 Conducted Output Power

The conducted output power data are shown on pages 20 through 22. All conducted output power readings from the EUT were below the limits of 74.861(d) and 74.861(e)(1).

### 5.2. FCC Frequency Tolerance

#### 5.2.1. Requirements

Per 76.861(e)(4), for low power auxiliary stations operating in the 600MHz duplex gap and the bands allocated for TV broadcasting, the frequency tolerance of the transmitter shall be 0.005 percent. In addition, per 2.1055(d)(2), for hand held battery powered equipment, reduce primary voltage to the battery operating end point which shall be declared by the manufacturer.

#### 5.2.2. Procedures

The EUT was connected to a frequency counter through the antenna output of each transmitter. The EUT was then placed in a temperature chamber.

- a) The EUT was programmed to transmit with an unmodulated carrier.



- b) The nominal frequency of the transmitter was measured and recorded.
- c) The temperature chamber was then set to -30°C.
- d) Once the temperature had reached -30°C, the EUT was allowed to soak for 1 hour.
- e) After soaking at -30°C for 1 hour, the EUT was turned on and the transmit frequency was measured and recorded.
- f) Steps (b) through (e) were repeated for each temperature in 10°C steps from -20°C to +50°C.
- g) The temperature chamber was set to +20°C and allowed to soak for 1 hour. The battery was removed from the EUT. The battery leads of the EUT were connected to a DC power supply. The output voltage of the DC power supply was adjusted to the end point voltage and the frequency of the DUT was recorded.

### 5.2.3.Results

The frequency tolerance data are shown on pages 23 through 31. All frequency stability measurements from the EUT met the frequency tolerance requirements of +/- 0.005%. Photographs of the test configuration are shown as Figure 5.

## 5.3. Spurious Radiated Emissions

### 5.3.1.Requirements

#### 5.3.1.1 FCC 74.861

Per 74.861(d)(4)(ii), for the 653-657 MHz, 941.5-944 MHz, 944-952 MHz, 952.850-956.250 MHz, 956.45-959.85 MHz, 1435-1525 MHz, 6875-6900 MHz and 7100-7125 MHz bands and per 74.861(e)(7) the low power auxiliary stations operating in the 600MHz duplex band and the bands allocated for TV broadcasting, digital emissions outside of the band from one megahertz below to one megahertz above the carrier frequency shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08). Per ETSI EN 300 422-1 v1.4.2 section 8.4, the power of the spurious emissions from an ETSI EN 300 422-1 transmitter shall not exceed the following limits:

State	Frequency		
	47MHz to 74MHz 87.5MHz to 137MHz 174 to 230MHz 470MHz to 862MHz	Other Frequencies below 1000MHz	Frequencies above 100MHz
Operation	4nW or -54dBm	250nW or -36dBm	1uW or -30dBm
Standby	2nW or -57dBm	2nW or -57dBm	20nW or -47dBm

In addition, per the Federal Communications Commission Office of Engineering and Technology Laboratory Division, Basis Certification Requirements for Wireless Microphones dated December 13, 2017, section III, Additional Specific Guidance for Licensed Wireless Microphones Under Part 74, paragraph (c), compliance with the emission limits shall be demonstrated using an average detector.

### 5.3.2.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 CISPR 16 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. The EUT was placed on a 1.5 meter high, non-conductive stand and set to transmit. 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 up through the tenth harmonic of the transmit frequency of the EUT. All preliminary tests were performed separately with the EUT operating in the modes listed in paragraph 3.2.
2. All significant broadband and narrowband signals found in the preliminary sweeps were then maximized. For all measurements below 1GHz, a bilog antenna was used as the measurement antenna. An average detector was used for FCC 74.861 tests. For all measurements above 1GHz, a horn antenna was used as the measurement antenna. An average detector was used for all tests 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.

#### 5.3.3.Results

The plots of the peak preliminary spurious radiated emissions and the final tabular average spurious radiated emissions results are presented on pages 32 through 121. All spurious radiated emissions measured from the EUT were within the ETSI EN 300 422-1 specification limits.

Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown as Figure 2 and Figure 3.

### 5.4. Intermodulation – Radiated Emissions

#### 5.4.1.Requirements

Per a response to Inquiry to FCC (tracking number 294618), intermodulation testing must be performed on the EUT with simultaneous transmission of the worst case UHF transmitter and the worst case Part 15 (Zigbee) transmitter. Any intermodulation of the UHF transmitter and the Part 15.247 (Zigbee) transmitter must meet the appropriate requirements of 15.247 and the appropriate requirements 74.861(d)(4)(ii) for spurious radiated emissions. (See Elite Electronic Engineering, Inc. Engineering Test Report No. 1703407-02 for more information on the Zigbee transmitter.)

Per section 15.247(c), the spurious emissions in any 100 kHz BW outside the frequency band must be at least 20dB below the highest 100 kHz BW level measured within the band.

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

Per 74.861(d)(4)(ii), emissions outside of the band from one megahertz below to one megahertz above the carrier frequency shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08). Per ETSI EN 300 422-1 v1.4.2 section 8.4, the power of the spurious emissions from an ETSI EN 300 422-1 transmitter shall not exceed the following limits:

State	Frequency		
	47MHz to 74MHz 87.5MHz to 137MHz 174 to 230MHz 470MHz to 862MHz	Other Frequencies below 1000MHz	Frequencies above 100MHz
Operation	4nW or -54dBm	250nW or -36dBm	1uW or -30dBm
Standby	2nW or -57dBm	2nW or -57dBm	20nW or -47dBm

#### 5.4.2.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.

1. 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 25MHz to 25GHz was investigated using a peak detector function.
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 25MHz 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 test item 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.

#### 5.4.3.Results

Channel 1: Transmit at 941.625MHz, 10mW; Channel 2: Transmit at 942.625MHz, 10mW, Diversity On, Zigbee Off

Preliminary radiated emissions plots with the EUT simultaneously transmitting at the minimum signal separation in the X55 band are shown on pages 122 through 127. Final radiated emissions data with the EUT simultaneously transmitting at the minimum signal separation in the X55 band are shown on page 128. As can be seen from the data, the intermodulation product of simultaneous transmissions from the EUT was below the spurious radiated emissions limits of the 74.861(d)(4)(ii) specification limits.

Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown as Figure 2 and Figure 3.

Channel 1: Transmit at 941.625MHz, 10mW; Channel 2: Transmit at 959.725MHz, 10mW, Diversity On, Zigbee Off

Preliminary radiated emissions plots with the EUT simultaneously transmitting at the maximum signal separation in the X55 band are shown on pages 129 through 134. Final radiated emissions data with the EUT simultaneously transmitting at the maximum signal separation in the X55 band are shown on page 135. As can be seen from the data, the intermodulation product of simultaneous transmissions from the EUT was below the spurious radiated emissions limits of the 74.861(d)(4)(ii) specification limits.

Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown as Figure 2 and Figure 3.

Channel 1: Transmit at 941.625MHz, 10mW; Channel 2: Transmit at 959.725MHz, 10mW, Diversity On, Zigbee Transmit at 2445MHz (Channel 19), mid-power

Preliminary radiated emissions plots with the EUT simultaneously transmitting at the worst case UHF transmitter frequencies and the worst case Part 15 (Zigbee) transmitter frequency are shown on pages 136 through 145. As can be seen from the data, the intermodulation product of simultaneous transmissions from the EUT did not generate additional spurious radiated emissions.

Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown as Figure 2 through Figure 4.

Channel 1: Transmit at 958.15MHz, 50mW; Channel 2: Off, Diversity Off, Zigbee Transmit at 2445MHz (Channel 19), mid-power

Preliminary radiated emissions plots with the EUT simultaneously transmitting at the worst case UHF transmitter frequency (Diversity Off) and the worst case Part 15 (Zigbee) transmitter frequency are shown on pages 146 through 153. As can be seen from the data, the intermodulation product of simultaneous transmissions from the EUT did not generate additional spurious radiated emissions.

Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown as Figure 2 through Figure 4.

## 6. OTHER TEST CONDITIONS

### 6.1. Test Personnel and Witnesses

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

#### 6.2. Disposition of the EUT

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

### **7. CONCLUSIONS**

The Shure Incorporated Frequency Diversity Handheld Transmitter, Model No. ADX2FD did fully meet the output power, frequency tolerance, and spurious emissions requirements of the FCC "Code of Federal Regulations" Title 47, Part 74, Subpart H, Section 74.861 when tested per ETSI EN 300 422-1 V1.4.2 (2011-08), IEEE C63.10-2014, and IEEE C63.26-2015.

### **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. 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 certification, approval, or endorsement by A2LA, NIST or any agency of the Federal Government.

## 9. EQUIPMENT LIST

Table 9-1 Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW0	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-30-20G20R6G	PL2926/0646	20GHZ-26.5GHZ	4/5/2018	4/5/2019
APW11	PREAMPLIFIER	PMI	PE2-35-120-5R0-10 12-SFF	PL11685/1241	1GHZ-20GHZ	4/5/2018	4/5/2019
EMCE01	TEMPERATURE CHAMBER	THERMOTRON	S-4	34537	-70C to 180C	2/27/2018	2/27/2019
GRE2	SIGNAL GENERATOR	AGILENT	E4438C	MY42081749	250KHZ-6GHZ	3/6/2018	3/6/2019
GSE0	SIGNAL GENERATOR (40GHZ)	ROHDE & SCHWARZ	SMB100A	175137	100KHZ-40GHZ	8/17/2017	8/17/2018
MDB8	MULTIMETER (M. LONGINOTTI)	FLUKE CORPORATION	177	81240019	I,VAC,VDC,R	8/17/2017	8/17/2018
MFC0	MICROWAVE FREQ. COUNTER	HEWLETT PACKARD	5343A	2133A00591	10HZ-26GHZ	8/15/2017	8/15/2018
MPE3	DUAL POWER METER	AGILENT	E4419B	GB39511117	0.1MHZ-50GHZ	2/14/2018	2/14/2019
MPI4	POWER SENSOR	KEYSIGHT	E9304A	MY56120003	9KHZ-6GHZ	4/16/2018	4/16/2019
NDQ0	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	311	400-1000MHZ	5/8/2018	5/8/2020
NHG0	STANDARD GAIN HORN ANTENNA	NARDA	638	---	18-26.5GHZ	NOTE 1	
NTA3	BILOG ANTENNA	TESEQ	6112D	32853	25-1000MHz	9/11/2017	9/11/2018
NWQ0	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66657	1GHZ-18GHZ	5/31/2018	5/31/2020
NWQ2	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66659	1GHZ-18GHZ	3/22/2018	3/22/2020
RBG2	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101591	2HZ-44GHZ	2/23/2018	2/23/2019
SHA0	DC POWER SUPPLY	HEWLETT PACKARD	6642A	MY40000116	0-20V/0-10A	NOTE 1	
XOB2	ADAPTER	HEWLETT PACKARD	K281C,012	09407	18-26.5GHZ	NOTE 1	
XPQ4	HIGH PASS FILTER	K&L MICROWAVE	11SH10- 4800/X20000-O/O	1	4.8-20GHZ	9/12/2017	9/12/2019

I/O: Initial Only

N/A: Not Applicable

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

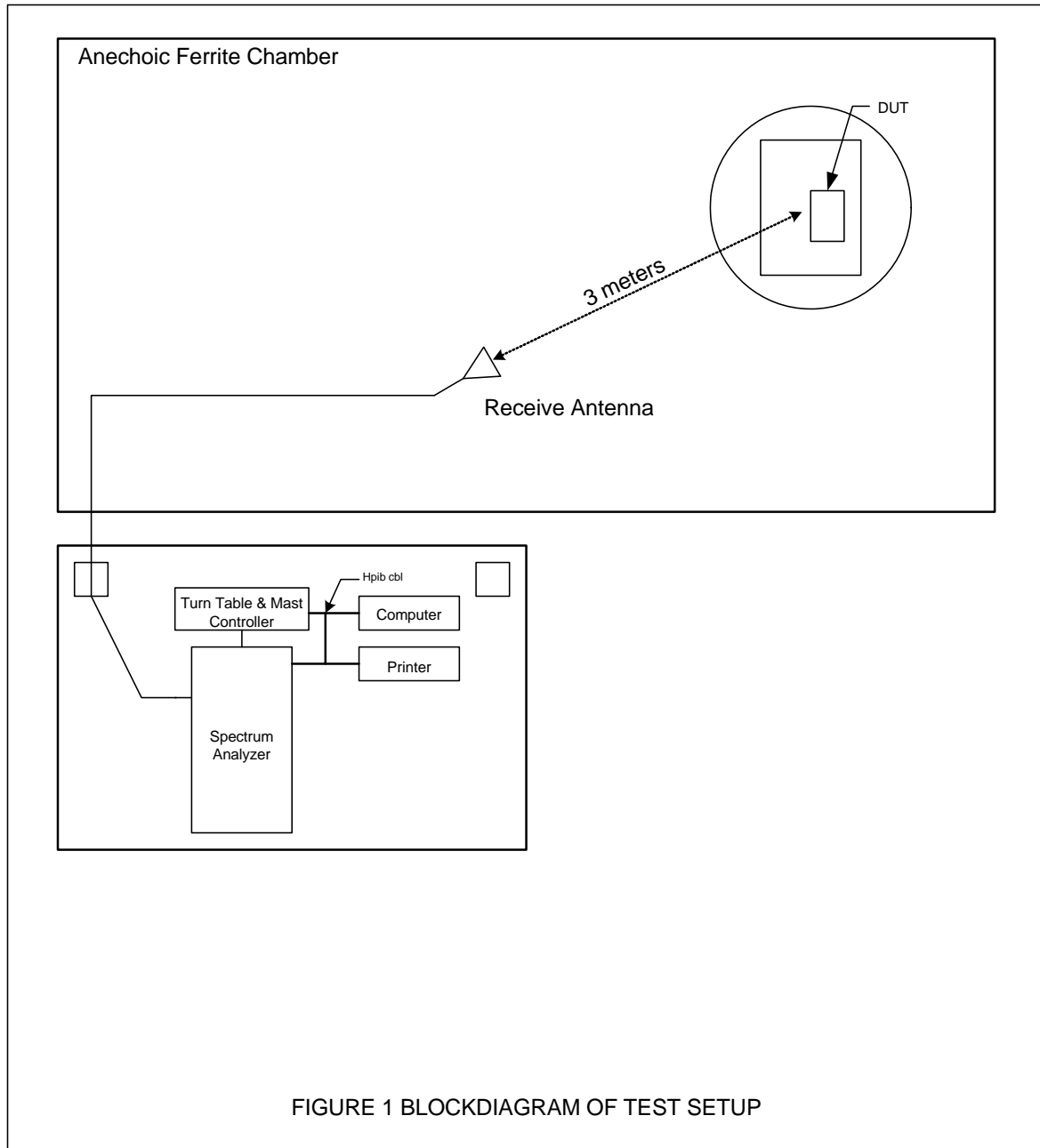




Figure 2



Test Setup for Radiated Emissions, 25MHz to 1GHz – Horizontal Polarization



Test Setup for Radiated Emissions, 25MHz to 1GHz – Vertical Polarization



Figure 3

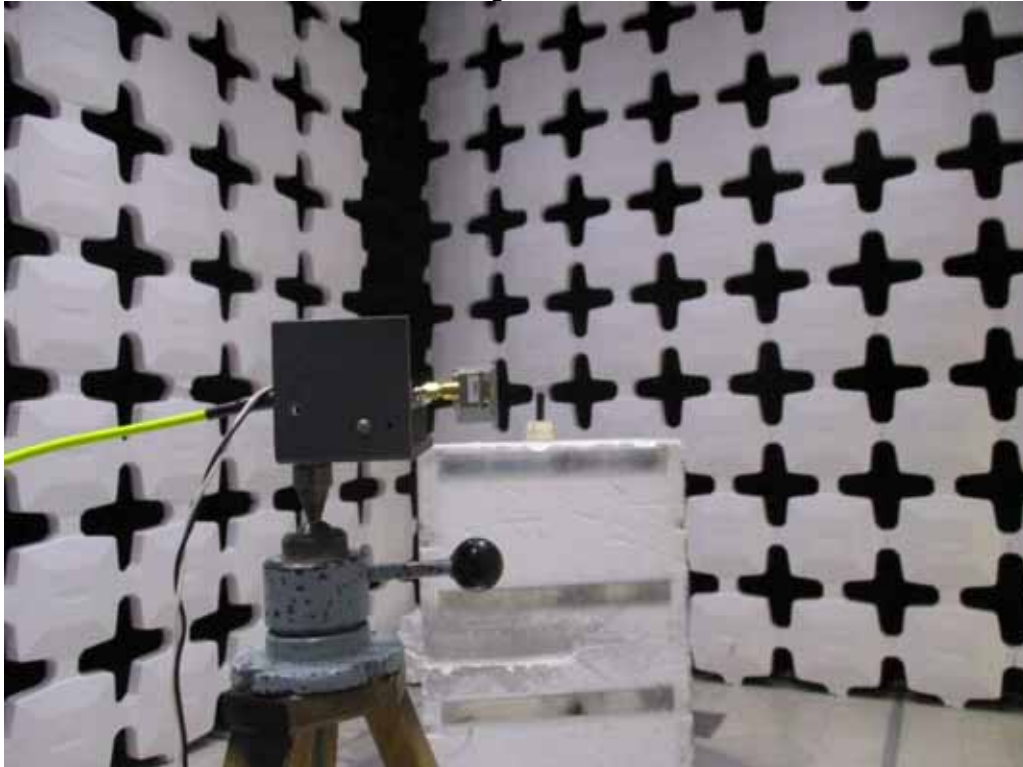


Test Setup for Radiated Emissions 1GHz to 18GHz – Horizontal Polarization



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

Figure 4

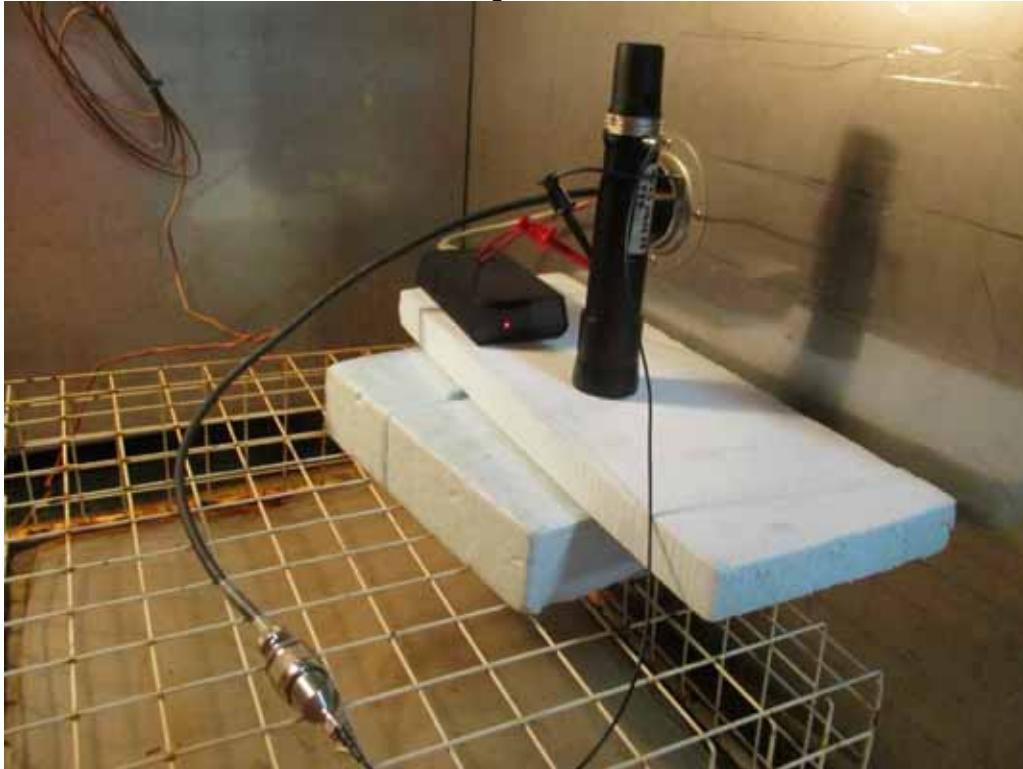


Test Setup for Radiated Emissions 18GHz to 25GHz – Horizontal Polarization



Test Setup for Radiated Emissions 18GHz to 25GHz – Vertical Polarization

Figure 5



Test Setup for Frequency Tolerance Tests



Test Setup for Frequency Tolerance Tests



MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(1) Conducted Output Power  
DATE : June 15, 2018  
MODE : See Below  
UNIT : X55  
EQUIPMENT USED : MPE3, MPI4  
NOTES : Channel 1 On, Channe 2 Off, Diversity On, Zigbee Off

Frequency MHz	Nominal Power mW	Measured Power mW	FCC Part 74H Limit mW
946.75	2.0	1.80	1000
946.75	10.0	8.54	1000
954.55	2.0	1.67	1000
954.55	10.0	8.17	1000
958.15	2.0	1.62	1000
958.15	10.0	8.01	1000

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(1) Conducted Output Power  
DATE : June 15, 2018  
MODE : See Below  
UNIT : X55  
EQUIPMENT USED : MPE3, MPI4  
NOTES : Channel 2 On, Channel 1 Off, Diversity On, Zigbee Off

Frequency MHz	Nominal Power mW	Measured Power mW	FCC Part 74H Limit mW
946.75	2.0	1.85	1000
946.75	10.0	10.20	1000
954.55	2.0	1.75	1000
954.55	10.0	9.95	1000
958.15	2.0	1.70	1000
958.15	10.0	9.82	1000

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(1) Conducted Output Power  
DATE : June 15, 2018  
MODE : See Below  
UNIT : X55  
EQUIPMENT USED : MPE3, MPI4  
NOTES : Channel 1 On, Diversity Off, Zigbee Off

Frequency MHz	Nominal Power mW	Measured Power mW	FCC Part 74H Limit mW
946.75	2.0	1.93	1000
946.75	50.0	44.6	1000
954.55	2.0	1.95	1000
954.55	50.0	42.5	1000
958.15	2.0	1.89	1000
958.15	50.0	40.6	1000

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 and June 15, 2018  
MODE : Transmit at 946.75MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	946,750,000	946,749,125	-0.005000000	-0.000092421	0.005000000	Pass
-20	3.6	946,750,000	946,749,693	-0.005000000	-0.000032427	0.005000000	Pass
-10	3.6	946,750,000	946,749,846	-0.005000000	-0.000016266	0.005000000	Pass
0	3.6	946,750,000	946,750,002	-0.005000000	0.000000211	0.005000000	Pass
+10	3.6	946,750,000	946,750,095	-0.005000000	0.000010034	0.005000000	Pass
+20	3.6	946,750,000	946,749,912	-0.005000000	-0.000009295	0.005000000	Pass
+30	3.6	946,750,000	946,750,124	-0.005000000	0.000013097	0.005000000	Pass
+40	3.6	946,750,000	946,750,089	-0.005000000	0.000009401	0.005000000	Pass
+50	3.6	946,750,000	946,750,029	-0.005000000	0.000003063	0.005000000	Pass
+21	3.2	946,750,000	946,750,009	-0.005000000	0.000000951	0.005000000	Pass

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 and June 15, 2018  
MODE : Transmit at 954.55MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	954,550,000	954,549,120	-0.005000000	-0.000092190	0.005000000	Pass
-20	3.6	954,550,000	954,549,691	-0.005000000	-0.000032371	0.005000000	Pass
-10	3.6	954,550,000	954,549,844	-0.005000000	-0.000016343	0.005000000	Pass
0	3.6	954,550,000	954,550,002	-0.005000000	0.000000210	0.005000000	Pass
+10	3.6	954,550,000	954,550,094	-0.005000000	0.000009848	0.005000000	Pass
+20	3.6	954,550,000	954,549,988	-0.005000000	-0.000001257	0.005000000	Pass
+30	3.6	954,550,000	954,550,079	-0.005000000	0.000008276	0.005000000	Pass
+40	3.6	954,550,000	954,550,120	-0.005000000	0.000012571	0.005000000	Pass
+50	3.6	954,550,000	954,550,022	-0.005000000	0.000002305	0.005000000	Pass
+21	3.2	954550000	954,550,012	-0.005000000	0.000001257	0.005000000	Pass

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 and June 15, 2018  
MODE : Transmit at 958.15MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	958,150,000	958,149,119	-0.005000000	-0.000091948	0.005000000	Pass
-20	3.6	958,150,000	958,149,693	-0.005000000	-0.000032041	0.005000000	Pass
-10	3.6	958,150,000	958,149,846	-0.005000000	-0.000016073	0.005000000	Pass
0	3.6	958,150,000	958,150,003	-0.005000000	0.000000313	0.005000000	Pass
+10	3.6	958,150,000	958,150,096	-0.005000000	0.000010019	0.005000000	Pass
+20	3.6	958,150,000	958,149,919	-0.005000000	-0.000008454	0.005000000	Pass
+30	3.6	958,150,000	958,150,060	-0.005000000	0.000006262	0.005000000	Pass
+40	3.6	958,150,000	958,150,096	-0.005000000	0.000010019	0.005000000	Pass
+50	3.6	958,150,000	958,150,024	-0.005000000	0.000002505	0.005000000	Pass
+21	3.2	958,150,000	958,150,015	-0.005000000	0.000001566	0.005000000	Pass

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 through June 18, 2018  
MODE : Transmit at 946.75MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	946,750,000	946,749,276	-0.005000000	-0.000076472	0.005000000	Pass
-20	3.6	946,750,000	946,749,550	-0.005000000	-0.000047531	0.005000000	Pass
-10	3.6	946,750,000	946,749,807	-0.005000000	-0.000020386	0.005000000	Pass
0	3.6	946,750,000	946,749,803	-0.005000000	-0.000020808	0.005000000	Pass
+10	3.6	946,750,000	946,750,058	-0.005000000	0.000006126	0.005000000	Pass
+20	3.6	946,750,000	946,749,871	-0.005000000	-0.000013626	0.005000000	Pass
+30	3.6	946,750,000	946,750,073	-0.005000000	0.000007711	0.005000000	Pass
+40	3.6	946,750,000	946,750,104	-0.005000000	0.000010985	0.005000000	Pass
+50	3.6	946,750,000	946,750,024	-0.005000000	0.000002535	0.005000000	Pass
+21	3.2	946,750,000	946,749,921	-0.005000000	-0.000008344	0.005000000	Pass

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 through June 18, 2018  
MODE : Transmit at 954.55MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	954,550,000	954,549,193	-0.005000000	-0.000084542	0.005000000	Pass
-20	3.6	954,550,000	954,549,544	-0.005000000	-0.000047771	0.005000000	Pass
-10	3.6	954,550,000	954,549,808	-0.005000000	-0.000020114	0.005000000	Pass
0	3.6	954,550,000	954,549,801	-0.005000000	-0.000020848	0.005000000	Pass
+10	3.6	954,550,000	954,550,044	-0.005000000	0.000004610	0.005000000	Pass
+20	3.6	954,550,000	954,549,842	-0.005000000	-0.000016552	0.005000000	Pass
+30	3.6	954,550,000	954,550,062	-0.005000000	0.000006495	0.005000000	Pass
+40	3.6	954,550,000	954,550,089	-0.005000000	0.000009324	0.005000000	Pass
+50	3.6	954,550,000	954,550,021	-0.005000000	0.000002200	0.005000000	Pass
+21	3.2	954,550,000	954,549,967	-0.005000000	-0.000003457	0.005000000	Pass

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 through June 18, 2018  
MODE : Transmit at 958.15MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	958,150,000	958,149,256	-0.005000000	-0.000077650	0.005000000	Pass
-20	3.6	958,150,000	958,149,545	-0.005000000	-0.000047487	0.005000000	Pass
-10	3.6	958,150,000	958,149,823	-0.005000000	-0.000018473	0.005000000	Pass
0	3.6	958,150,000	958,149,802	-0.005000000	-0.000020665	0.005000000	Pass
+10	3.6	958,150,000	958,150,040	-0.005000000	0.000004175	0.005000000	Pass
+20	3.6	958,150,000	958,149,820	-0.005000000	-0.000018786	0.005000000	Pass
+30	3.6	958,150,000	958,150,083	-0.005000000	0.000008663	0.005000000	Pass
+40	3.6	958,150,000	958,150,096	-0.005000000	0.000010019	0.005000000	Pass
+50	3.6	958,150,000	958,150,022	-0.005000000	0.000002296	0.005000000	Pass
+21	3.2	958,150,000	958,149,959	-0.005000000	-0.000004279	0.005000000	Pass

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 and June 18, 2018  
MODE : Transmit at 946.75MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	946,750,000	946,749,254	-0.005000000	-0.000078796	0.005000000	Pass
-20	3.6	946,750,000	946,749,615	-0.005000000	-0.000040665	0.005000000	Pass
-10	3.6	946,750,000	946,749,866	-0.005000000	-0.000014154	0.005000000	Pass
0	3.6	946,750,000	946,749,798	-0.005000000	-0.000021336	0.005000000	Pass
+10	3.6	946,750,000	946,750,111	-0.005000000	0.000011724	0.005000000	Pass
+20	3.6	946,750,000	946,749,873	-0.005000000	-0.000013414	0.005000000	Pass
+30	3.6	946,750,000	946,750,073	-0.005000000	0.000007711	0.005000000	Pass
+40	3.6	946,750,000	946,750,080	-0.005000000	0.000008450	0.005000000	Pass
+50	3.6	946,750,000	946,750,028	-0.005000000	0.000002957	0.005000000	Pass
+21	3.2	946,750,000	946,749,970	-0.005000000	-0.000003169	0.005000000	Pass

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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 and June 15, 2018  
MODE : Transmit at 954.55MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	954,550,000	954,549,345	-0.005000000	-0.000068619	0.005000000	Pass
-20	3.6	954,550,000	954,549,620	-0.005000000	-0.000039809	0.005000000	Pass
-10	3.6	954,550,000	954,549,864	-0.005000000	-0.000014248	0.005000000	Pass
0	3.6	954,550,000	954,549,791	-0.005000000	-0.000021895	0.005000000	Pass
+10	3.6	954,550,000	954,550,098	-0.005000000	0.000010267	0.005000000	Pass
+20	3.6	954,550,000	954,549,875	-0.005000000	-0.000013095	0.005000000	Pass
+30	3.6	954,550,000	954,550,120	-0.005000000	0.000012571	0.005000000	Pass
+40	3.6	954,550,000	954,550,115	-0.005000000	0.000012048	0.005000000	Pass
+50	3.6	954,550,000	954,550,028	-0.005000000	0.000002933	0.005000000	Pass
+21	3.2	954550000	954,549,997	-0.005000000	-0.000000314	0.005000000	Pass

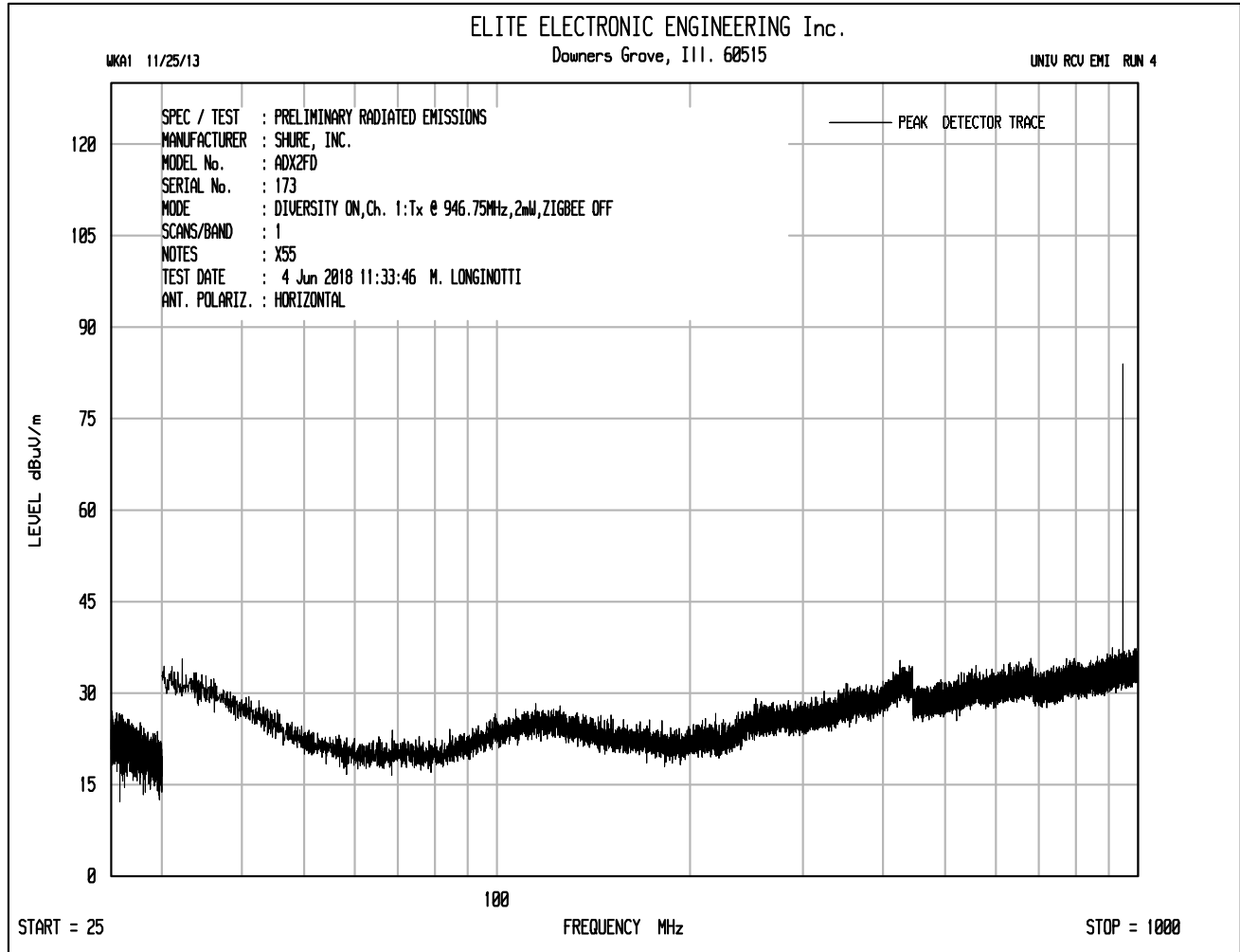
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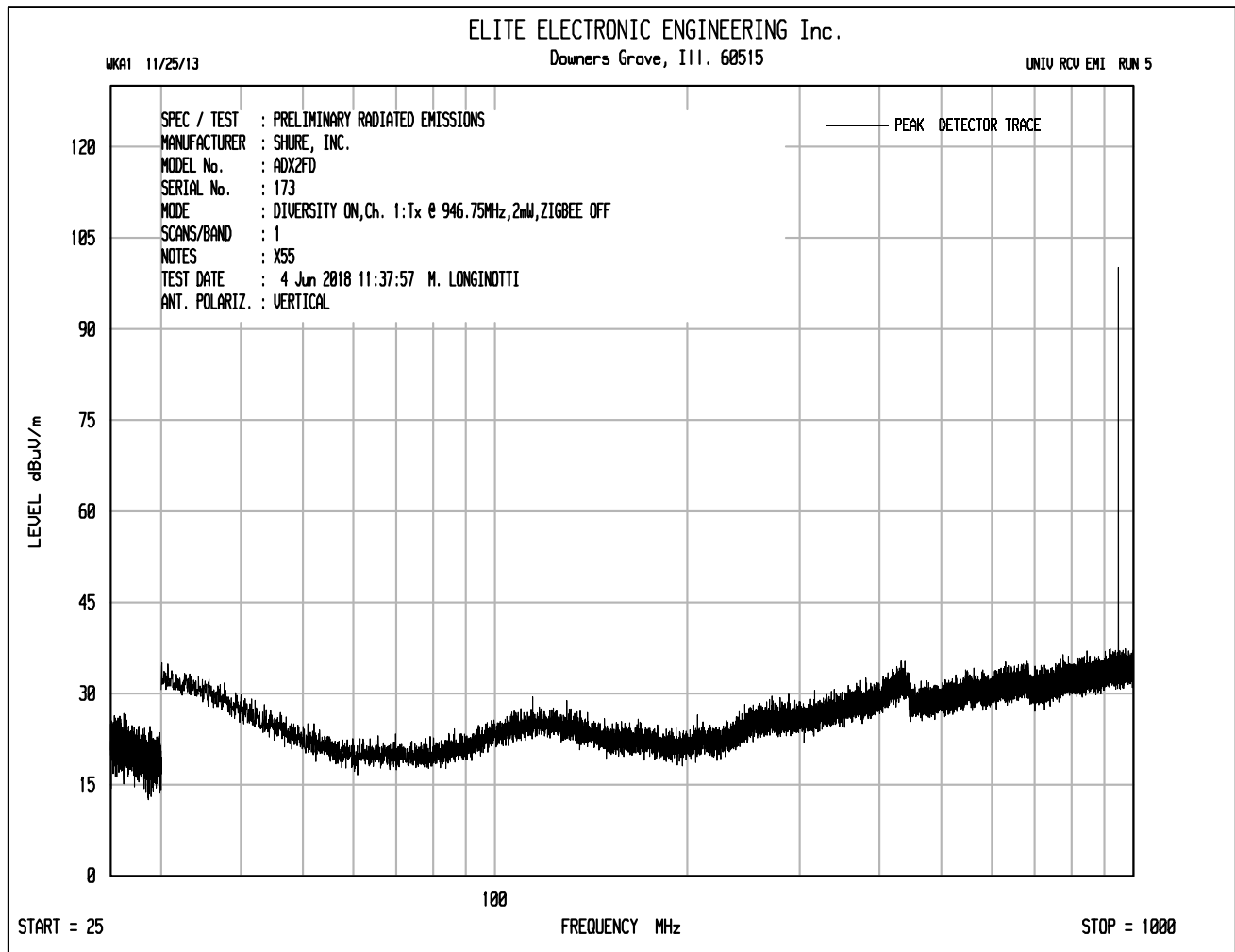
MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(e)(4) Frequency Tolerance  
DATE : June 14, 2018 and June 15, 2018  
MODE : Transmit at 958.15MHz  
UNIT : X55  
EQUIPMENT USED : EMCE01, MFC0, SHA0, MDB8  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

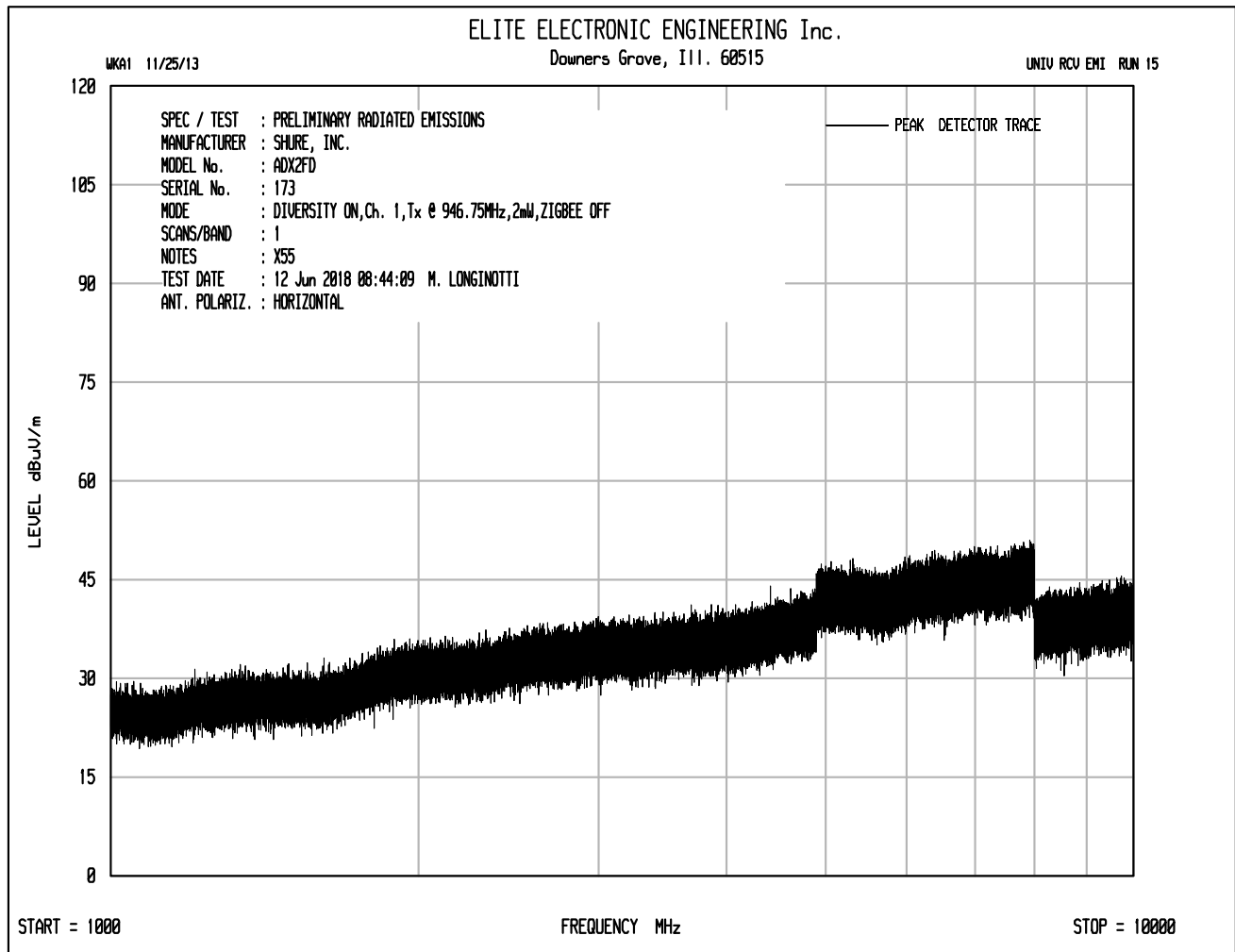
Temperature °C	Input Voltage	Nominal Frequency Hz	Measured Frequency Hz	Frequency Variation in %			Pass/Fail
				Lower Limit %	Measured Variation %	Upper Limit %	
-30	3.6	958,150,000	958,149,281	-0.005000000	-0.000075040	0.005000000	Pass
-20	3.6	958,150,000	958,149,621	-0.005000000	-0.000039555	0.005000000	Pass
-10	3.6	958,150,000	958,149,866	-0.005000000	-0.000013985	0.005000000	Pass
0	3.6	958,150,000	958,149,787	-0.005000000	-0.000022230	0.005000000	Pass
+10	3.6	958,150,000	958,150,091	-0.005000000	0.000009497	0.005000000	Pass
+20	3.6	958,150,000	958,149,883	-0.005000000	-0.000012211	0.005000000	Pass
+30	3.6	958,150,000	958,150,109	-0.005000000	0.000011376	0.005000000	Pass
+40	3.6	958,150,000	958,150,113	-0.005000000	0.000011794	0.005000000	Pass
+50	3.6	958,150,000	958,150,031	-0.005000000	0.000003235	0.005000000	Pass
+21	3.2	958,150,000	958,149,988	-0.005000000	-0.000001252	0.005000000	Pass

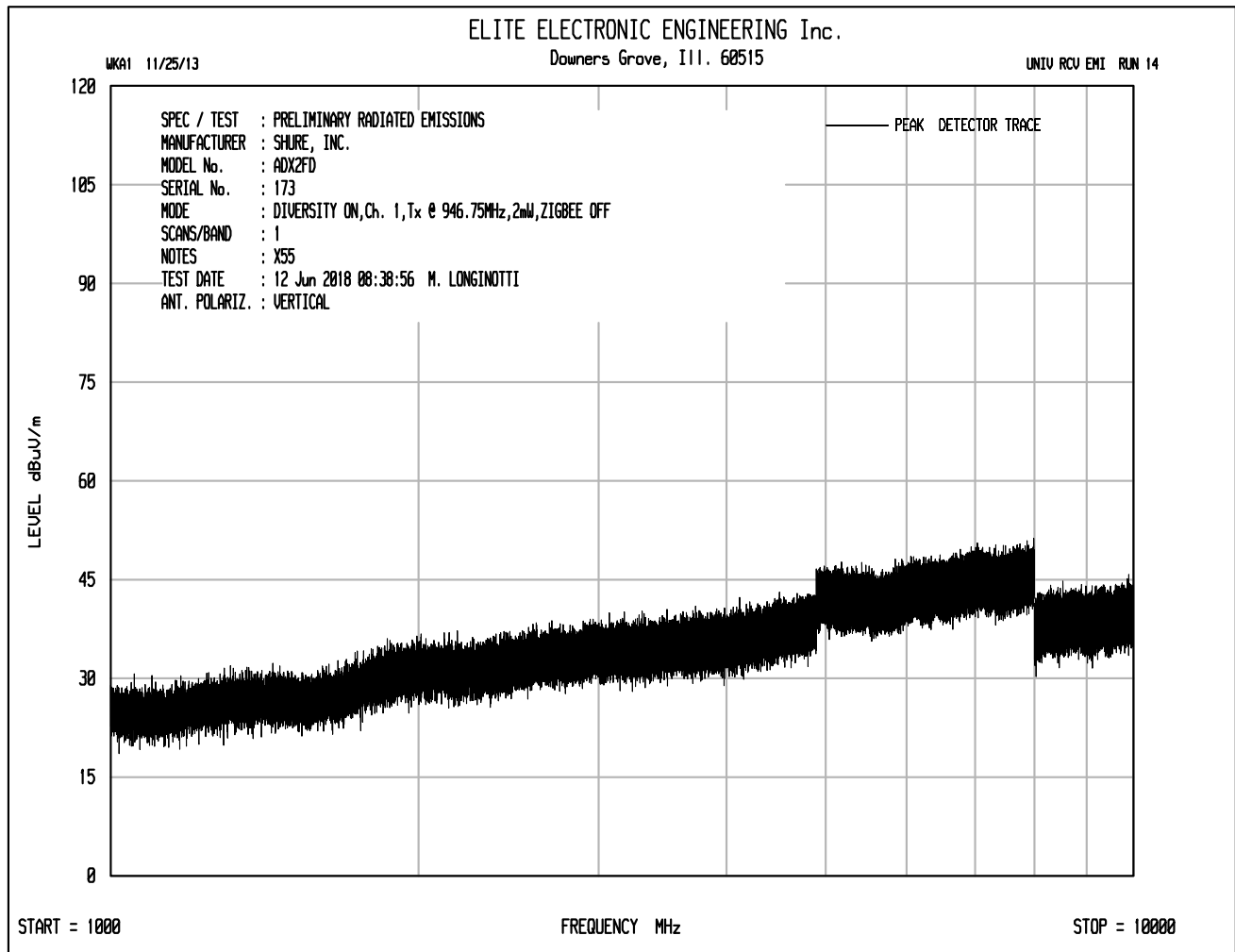
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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 946.75MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

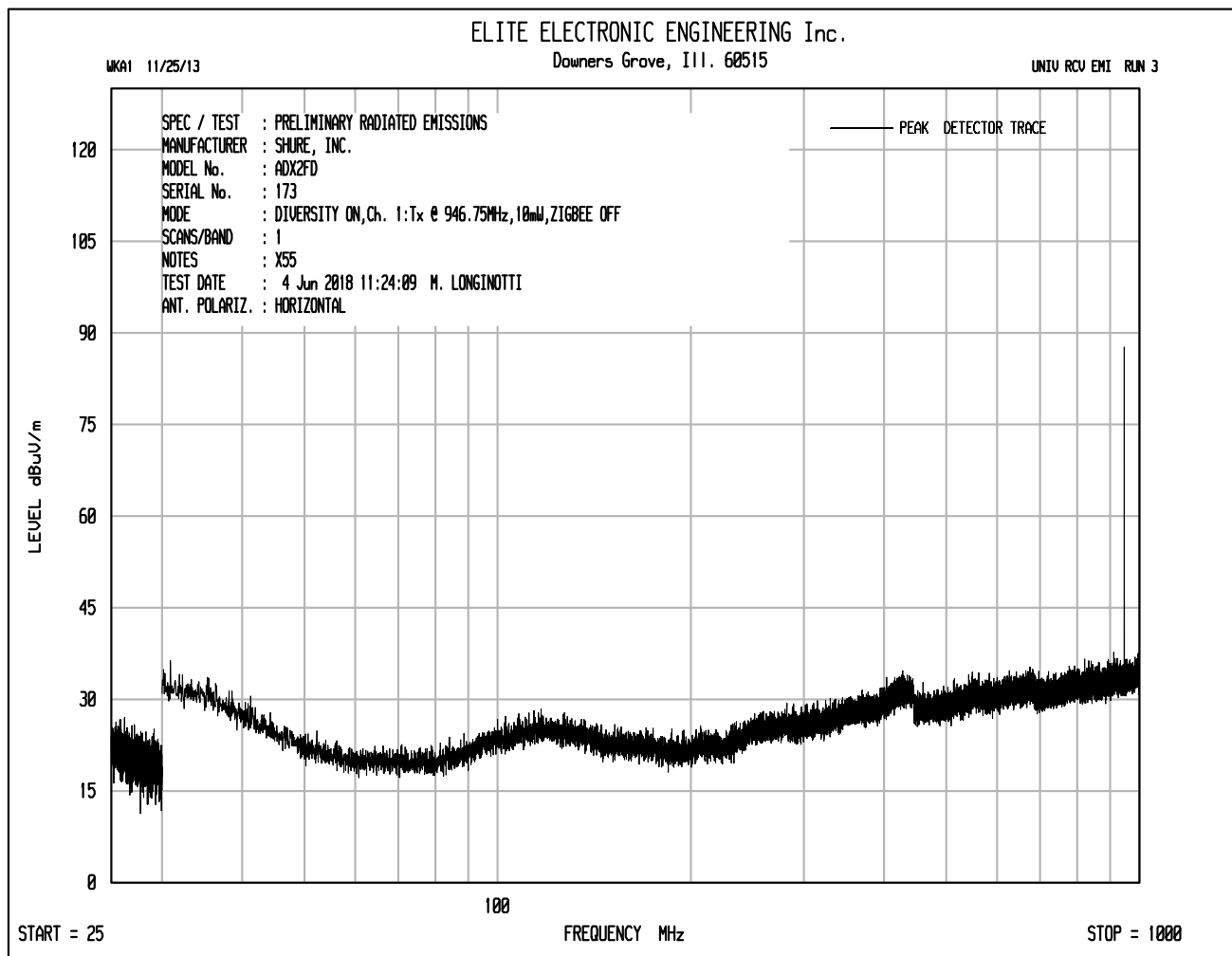
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1893.50	H	0.3	Ambient	-65.6	3.7	3.0	-65.0	-30.0	-35.0
1893.50	V	0.2	Ambient	-63.1	3.7	3.0	-62.4	-30.0	-32.4
2840.25	H	1.4	Ambient	-64.3	4.9	3.8	-63.1	-30.0	-33.1
2840.25	V	1.3	Ambient	-62.6	4.9	3.8	-61.5	-30.0	-31.5
3787.00	H	2.0	Ambient	-60.9	7.3	4.4	-58.0	-30.0	-28.0
3787.00	V	2.0	Ambient	-59.7	7.3	4.4	-56.8	-30.0	-26.8
4733.75	H	3.2	Ambient	-57.0	6.8	4.8	-55.0	-30.0	-25.0
4733.75	V	3.2	Ambient	-56.8	6.8	4.8	-54.7	-30.0	-24.7
5680.50	H	6.2	Ambient	-52.6	7.9	5.3	-50.0	-30.0	-20.0
5680.50	V	6.2	Ambient	-52.7	7.9	5.3	-50.1	-30.0	-20.1
6627.25	H	6.9	Ambient	-48.6	8.5	5.8	-45.9	-30.0	-15.9
6627.25	V	6.9	Ambient	-49.6	8.5	5.8	-46.9	-30.0	-16.9
7574.00	H	7.7	Ambient	-49.0	9.7	6.3	-45.6	-30.0	-15.6
7574.00	V	7.6	Ambient	-49.7	9.7	6.3	-46.3	-30.0	-16.3
8520.75	H	0.5	Ambient	-55.9	10.1	6.5	-52.3	-30.0	-22.3
8520.75	V	0.6	Ambient	-56.4	10.1	6.5	-52.8	-30.0	-22.8
9467.50	H	0.6	Ambient	-54.7	10.5	6.7	-50.9	-30.0	-20.9
9467.50	V	0.5	Ambient	-55.1	10.5	6.7	-51.4	-30.0	-21.4

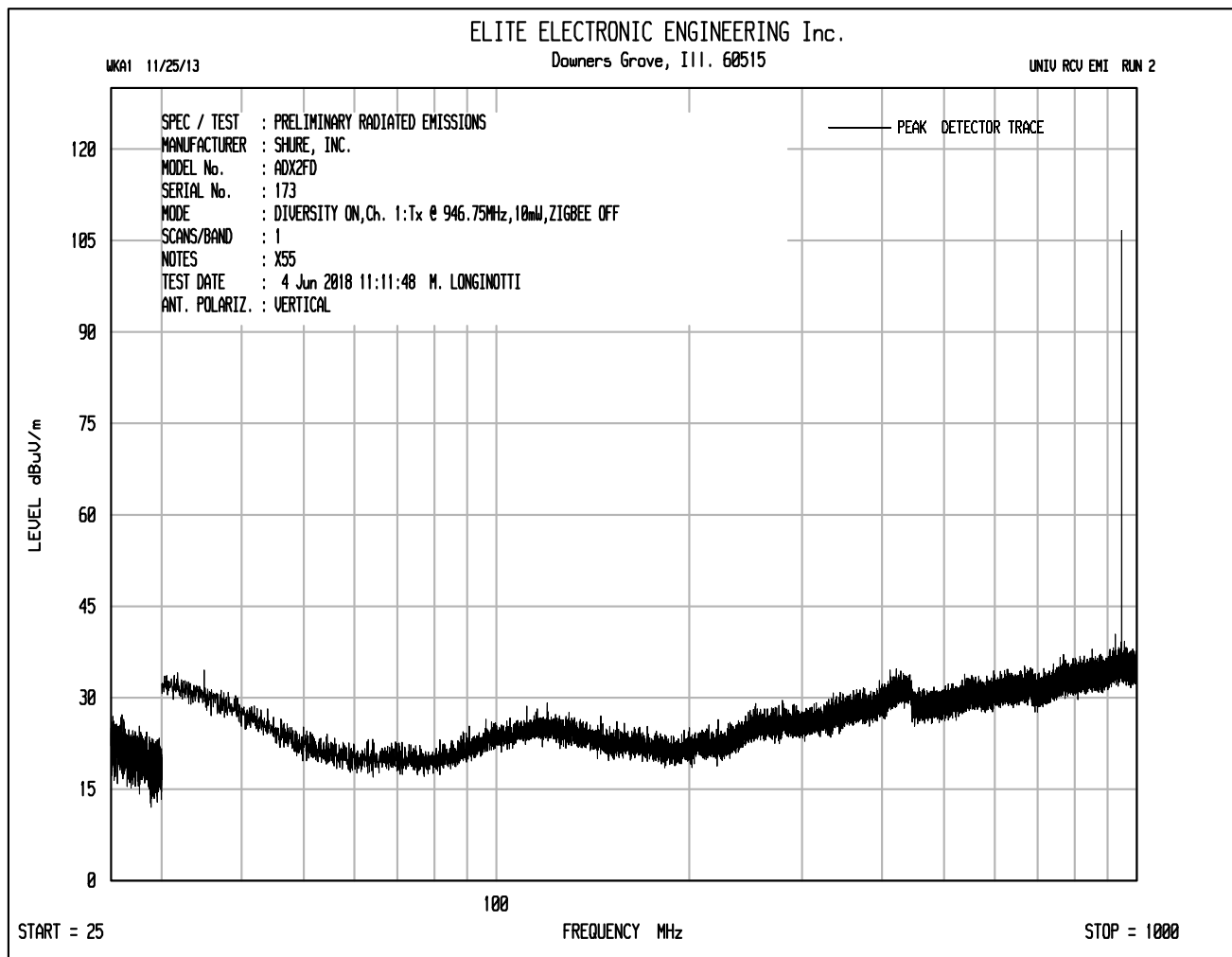
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

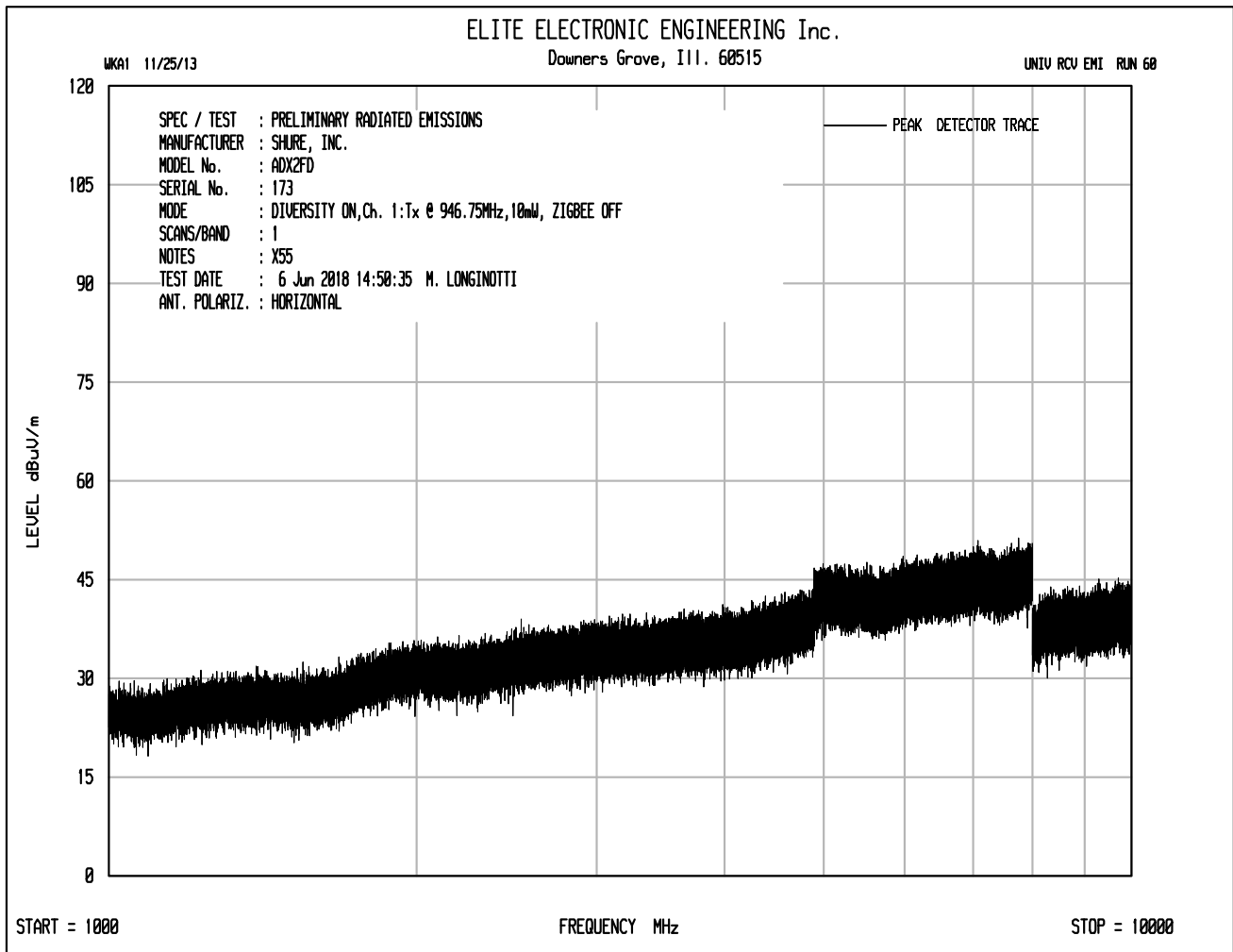
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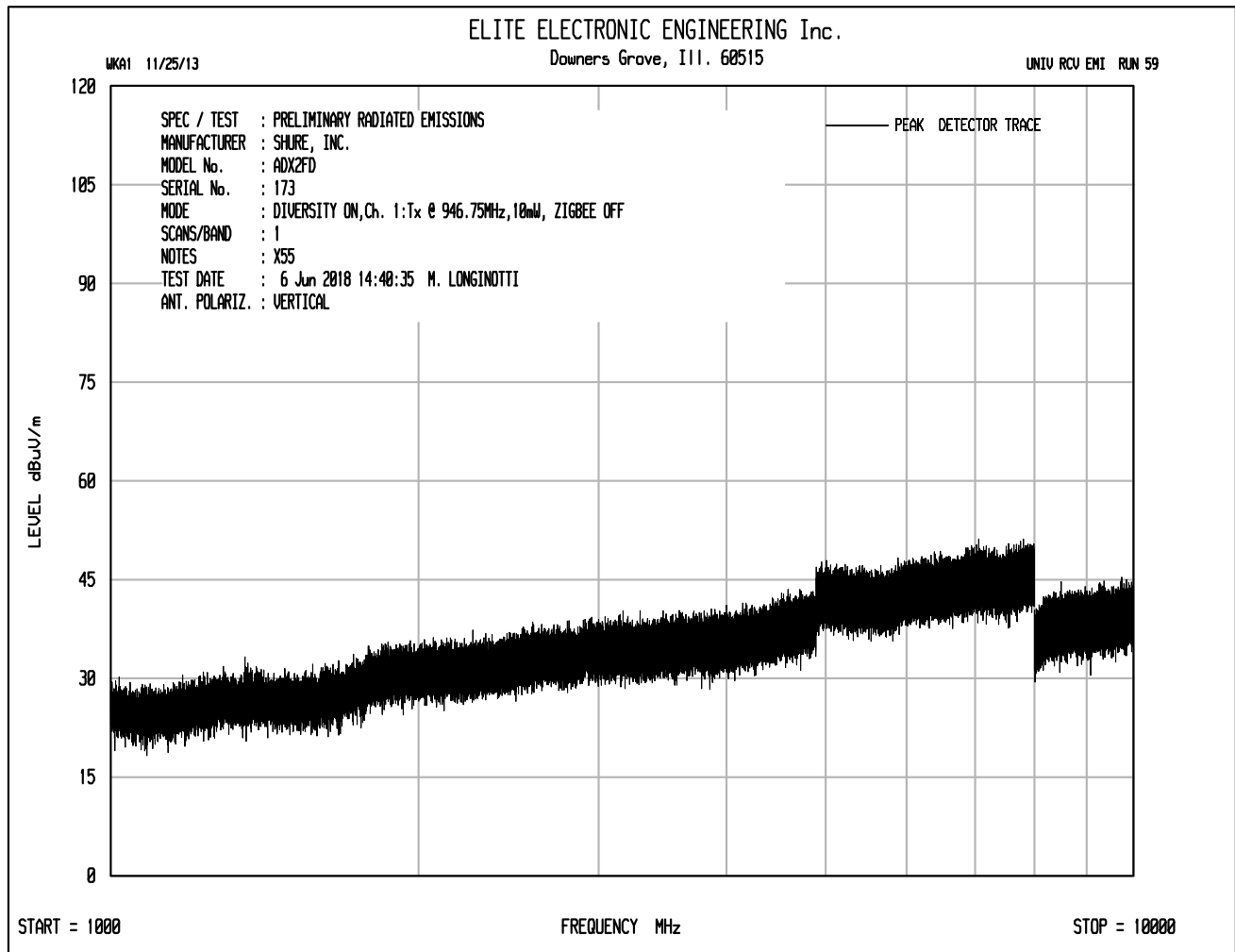
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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 946.75MHz, 10mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

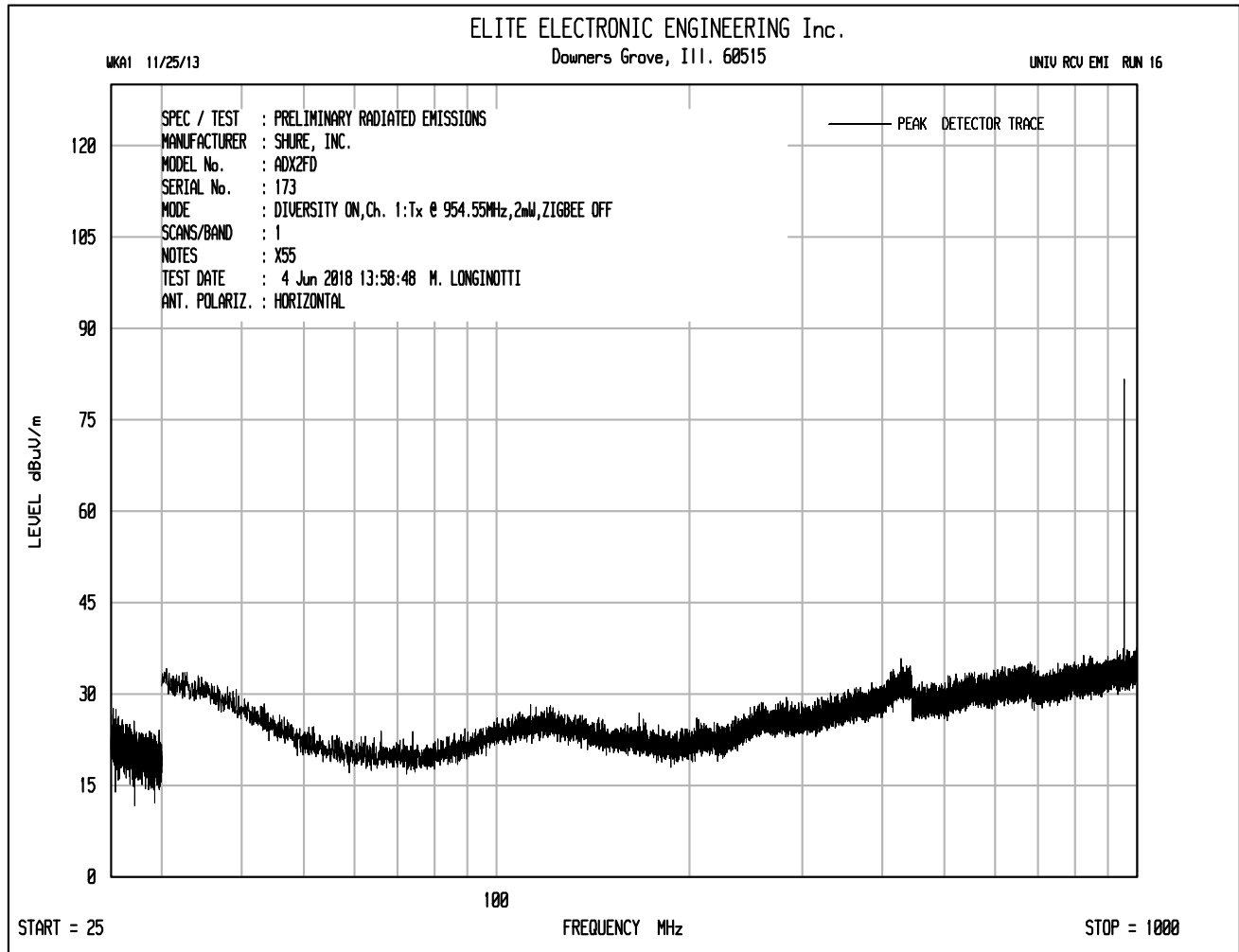
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1893.50	H	0.3	Ambient	-65.6	3.7	3.0	-65.0	-30.0	-35.0
1893.50	V	0.3	Ambient	-63.0	3.7	3.0	-62.3	-30.0	-32.3
2840.25	H	1.3	Ambient	-64.4	4.9	3.8	-63.2	-30.0	-33.2
2840.25	V	1.3	Ambient	-62.6	4.9	3.8	-61.5	-30.0	-31.5
3787.00	H	1.9	Ambient	-61.0	7.3	4.4	-58.1	-30.0	-28.1
3787.00	V	1.9	Ambient	-59.8	7.3	4.4	-56.9	-30.0	-26.9
4733.75	H	3.2	Ambient	-57.0	6.8	4.8	-55.0	-30.0	-25.0
4733.75	V	3.2	Ambient	-56.8	6.8	4.8	-54.7	-30.0	-24.7
5680.50	H	6.2	Ambient	-52.6	7.9	5.3	-50.0	-30.0	-20.0
5680.50	V	6.2	Ambient	-52.7	7.9	5.3	-50.1	-30.0	-20.1
6627.25	H	6.9	Ambient	-48.6	8.5	5.8	-45.9	-30.0	-15.9
6627.25	V	6.9	Ambient	-49.6	8.5	5.8	-46.9	-30.0	-16.9
7574.00	H	7.5	Ambient	-49.2	9.7	6.3	-45.8	-30.0	-15.8
7574.00	V	7.5	Ambient	-49.8	9.7	6.3	-46.4	-30.0	-16.4
8520.75	H	0.0	Ambient	-56.4	10.1	6.5	-52.8	-30.0	-22.8
8520.75	V	0.2	Ambient	-56.8	10.1	6.5	-53.2	-30.0	-23.2
9467.50	H	0.5	Ambient	-54.8	10.5	6.7	-51.0	-30.0	-21.0
9467.50	V	0.4	Ambient	-55.2	10.5	6.7	-51.5	-30.0	-21.5

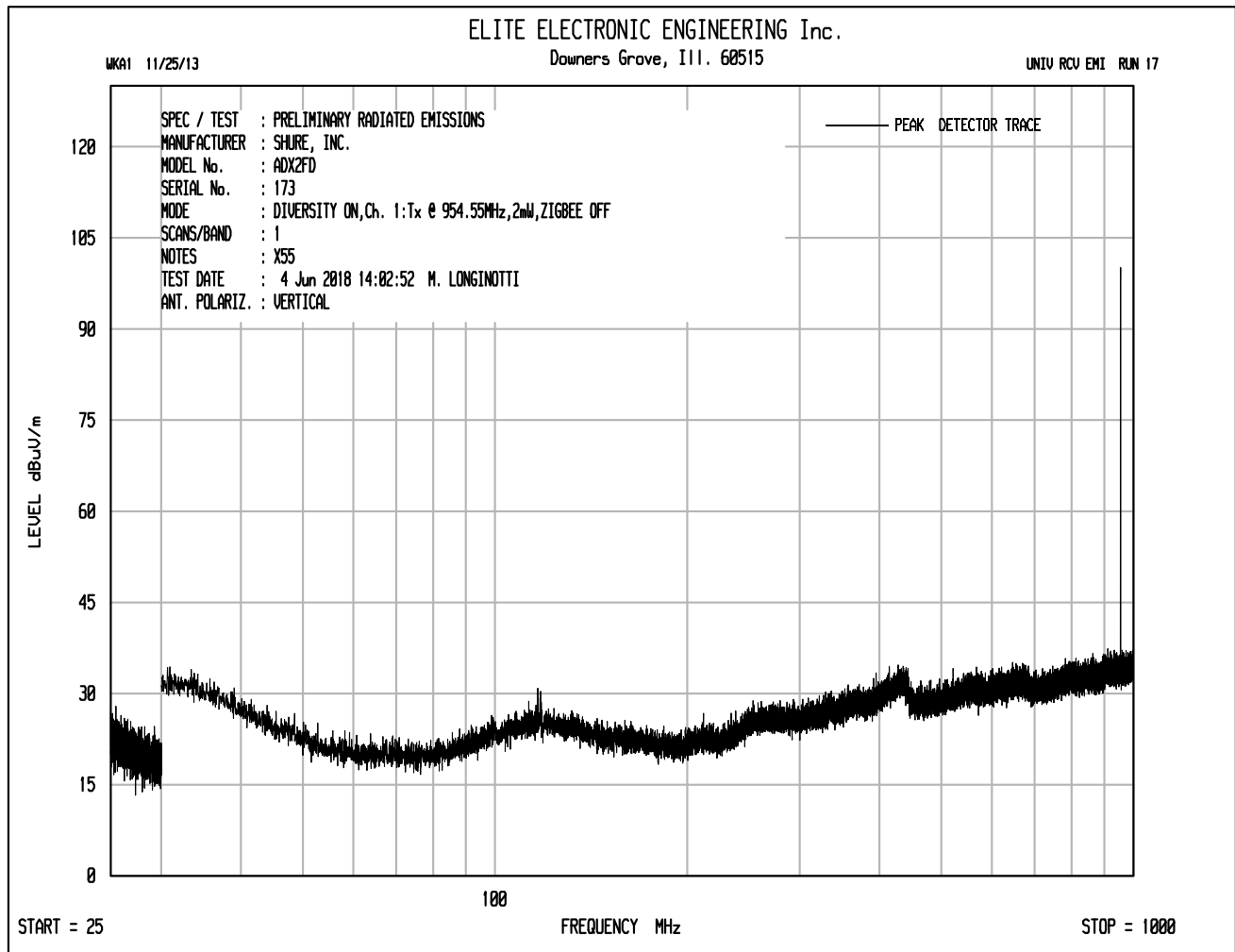
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

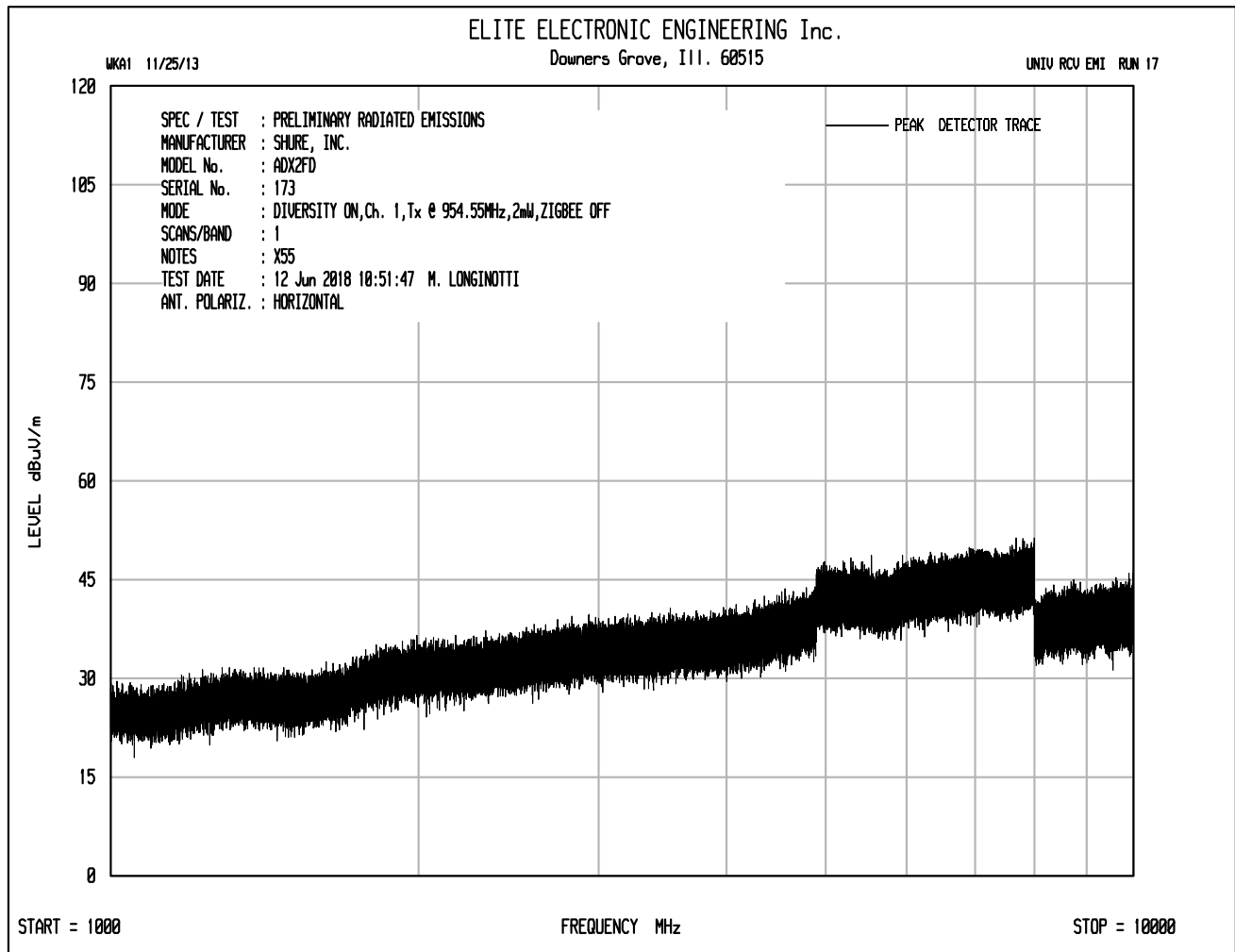
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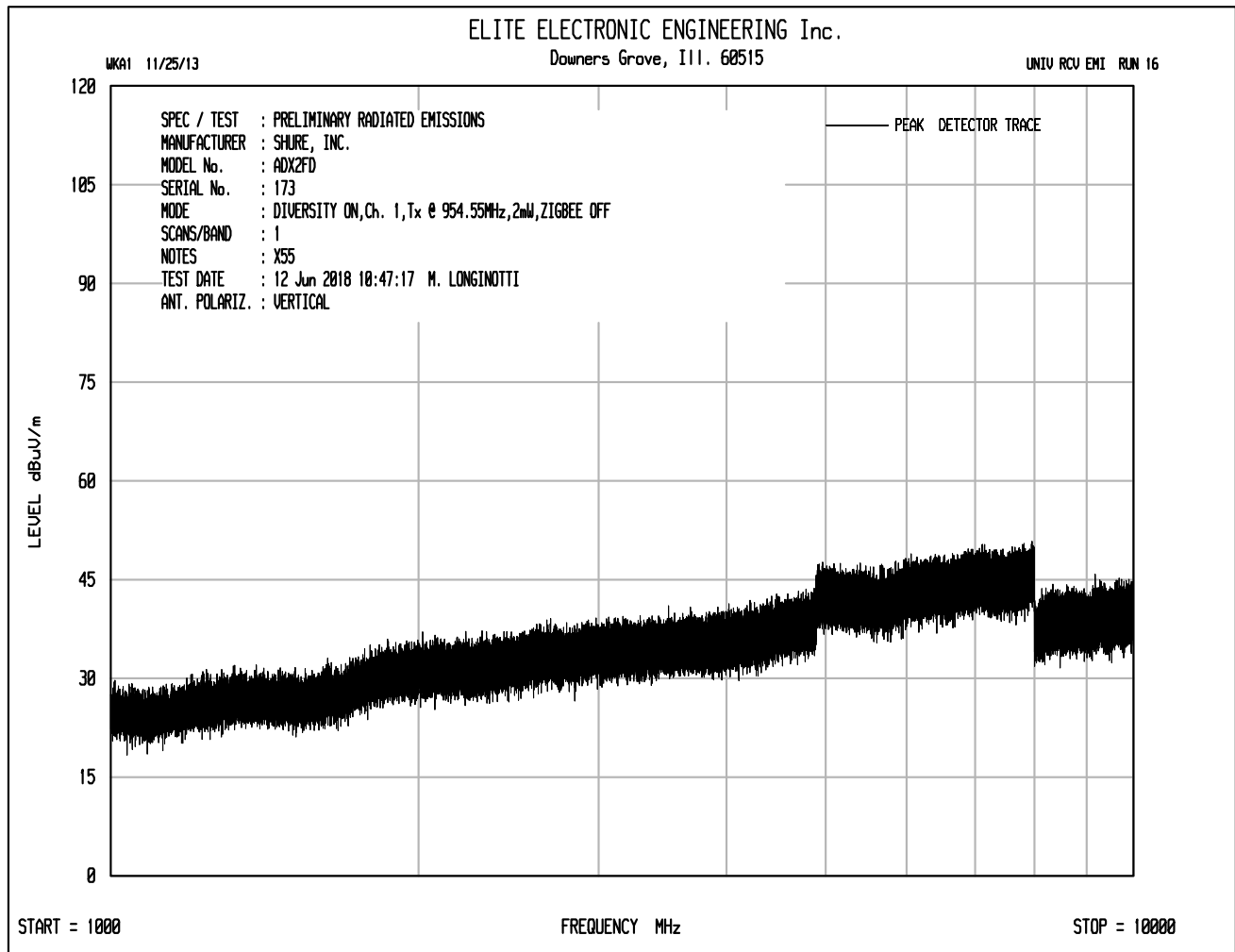
MARK E. LONGINOTTI

Mark E. Longinotti











MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 954.55MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

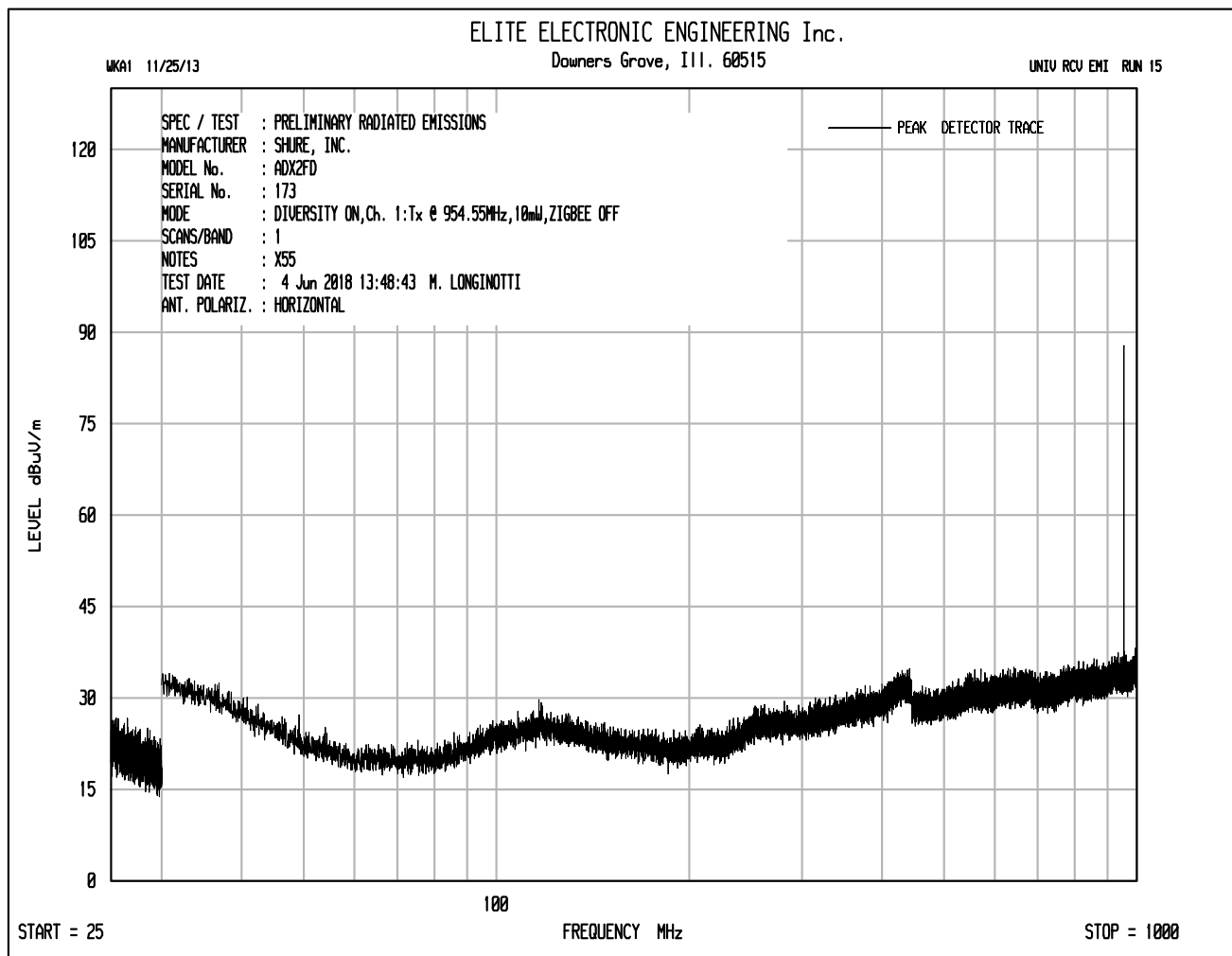
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1909.10	H	0.3	Ambient	-65.4	3.6	3.0	-64.8	-30.0	-34.8
1909.10	V	0.3	Ambient	-62.8	3.6	3.0	-62.2	-30.0	-32.2
2863.65	H	1.4	Ambient	-64.1	4.9	3.8	-63.0	-30.0	-33.0
2863.65	V	1.5	Ambient	-62.3	4.9	3.8	-61.2	-30.0	-31.2
3818.20	H	2.0	Ambient	-60.9	7.3	4.4	-58.0	-30.0	-28.0
3818.20	V	2.0	Ambient	-59.7	7.3	4.4	-56.8	-30.0	-26.8
4772.75	H	3.0	Ambient	-57.1	6.9	4.8	-55.0	-30.0	-25.0
4772.75	V	3.0	Ambient	-56.8	6.9	4.8	-54.7	-30.0	-24.7
5727.30	H	6.0	Ambient	-52.5	7.8	5.3	-50.0	-30.0	-20.0
5727.30	V	6.0	Ambient	-52.6	7.8	5.3	-50.1	-30.0	-20.1
6681.85	H	7.0	Ambient	-48.5	8.4	5.8	-45.9	-30.0	-15.9
6681.85	V	7.0	Ambient	-49.5	8.4	5.8	-46.9	-30.0	-16.9
7636.40	H	7.8	Ambient	-48.8	9.7	6.3	-45.5	-30.0	-15.5
7636.40	V	7.8	Ambient	-49.6	9.7	6.3	-46.2	-30.0	-16.2
8590.95	H	0.7	Ambient	-55.7	10.2	6.5	-51.9	-30.0	-21.9
8590.95	V	0.6	Ambient	-56.2	10.2	6.5	-52.5	-30.0	-22.5
9545.50	H	0.7	Ambient	-54.5	10.5	6.8	-50.7	-30.0	-20.7
9545.50	V	0.8	Ambient	-54.8	10.5	6.8	-51.0	-30.0	-21.0

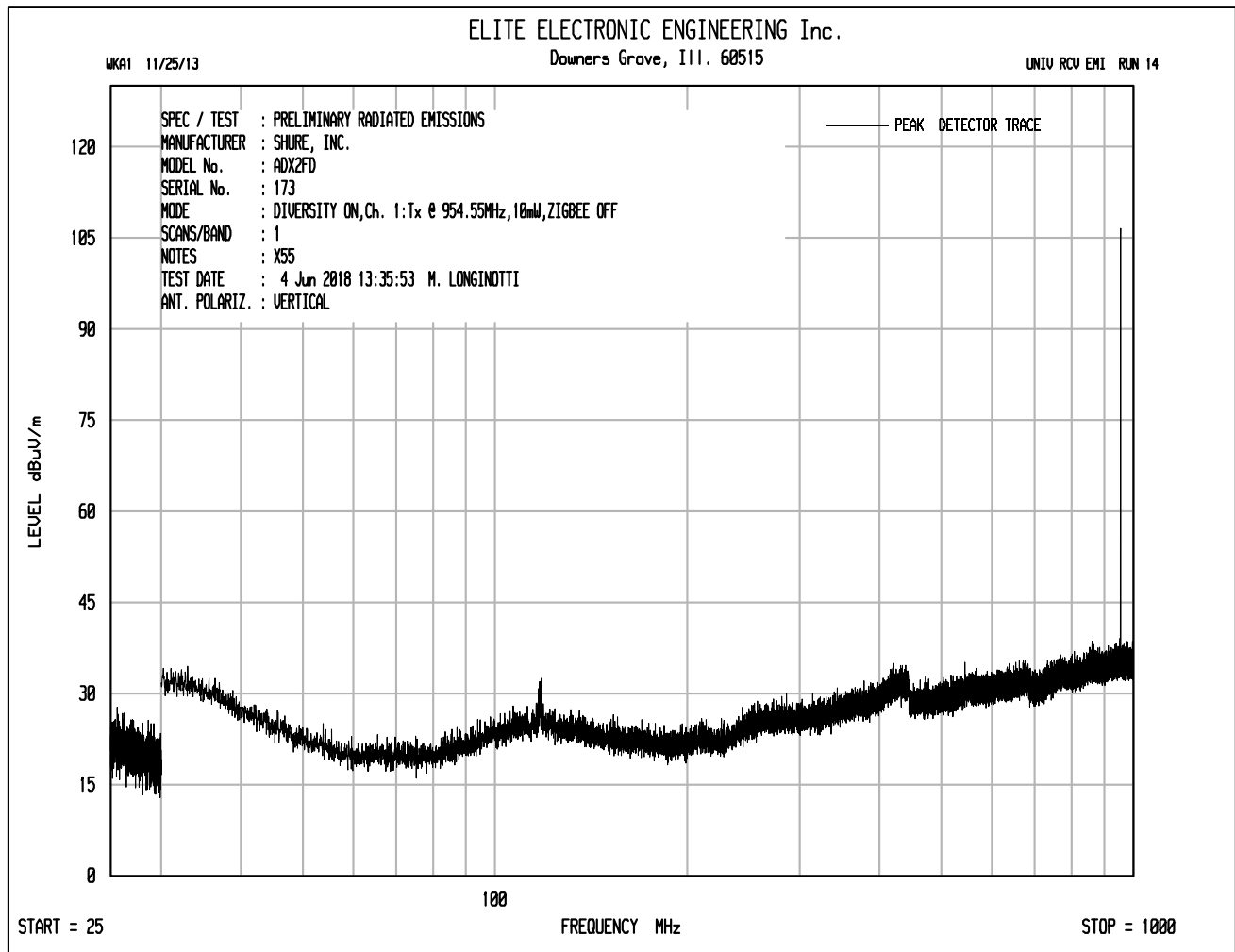
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

Checked By:

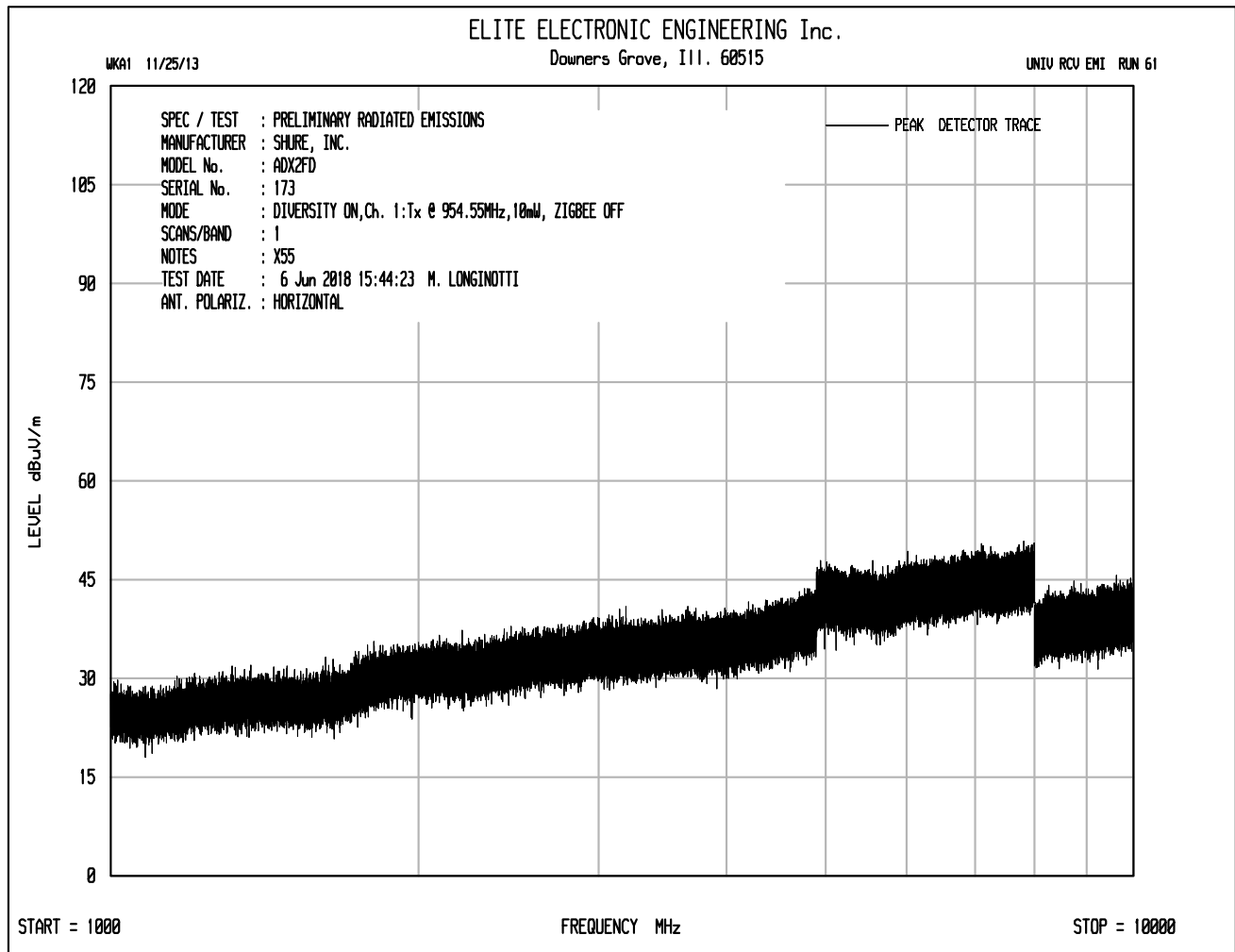
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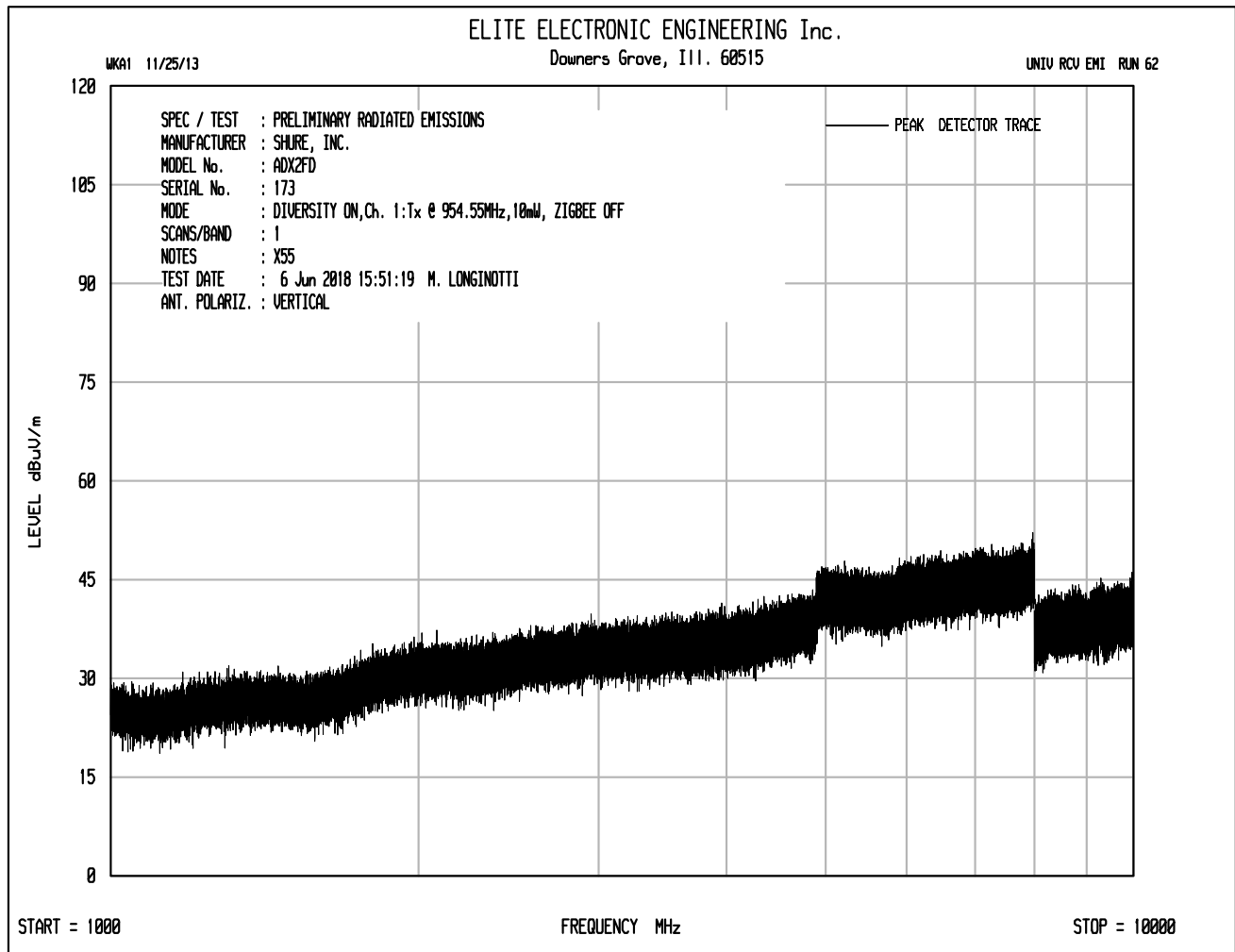
Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
 MODEL NO. : ADX2FD  
 SERIAL NO. : 173  
 SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
 DATE : June 4, 2018 through June 12, 2018  
 MODE : Transmit at 954.55MHz, 10mW nominal power  
 UNIT : X55  
 EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
 NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

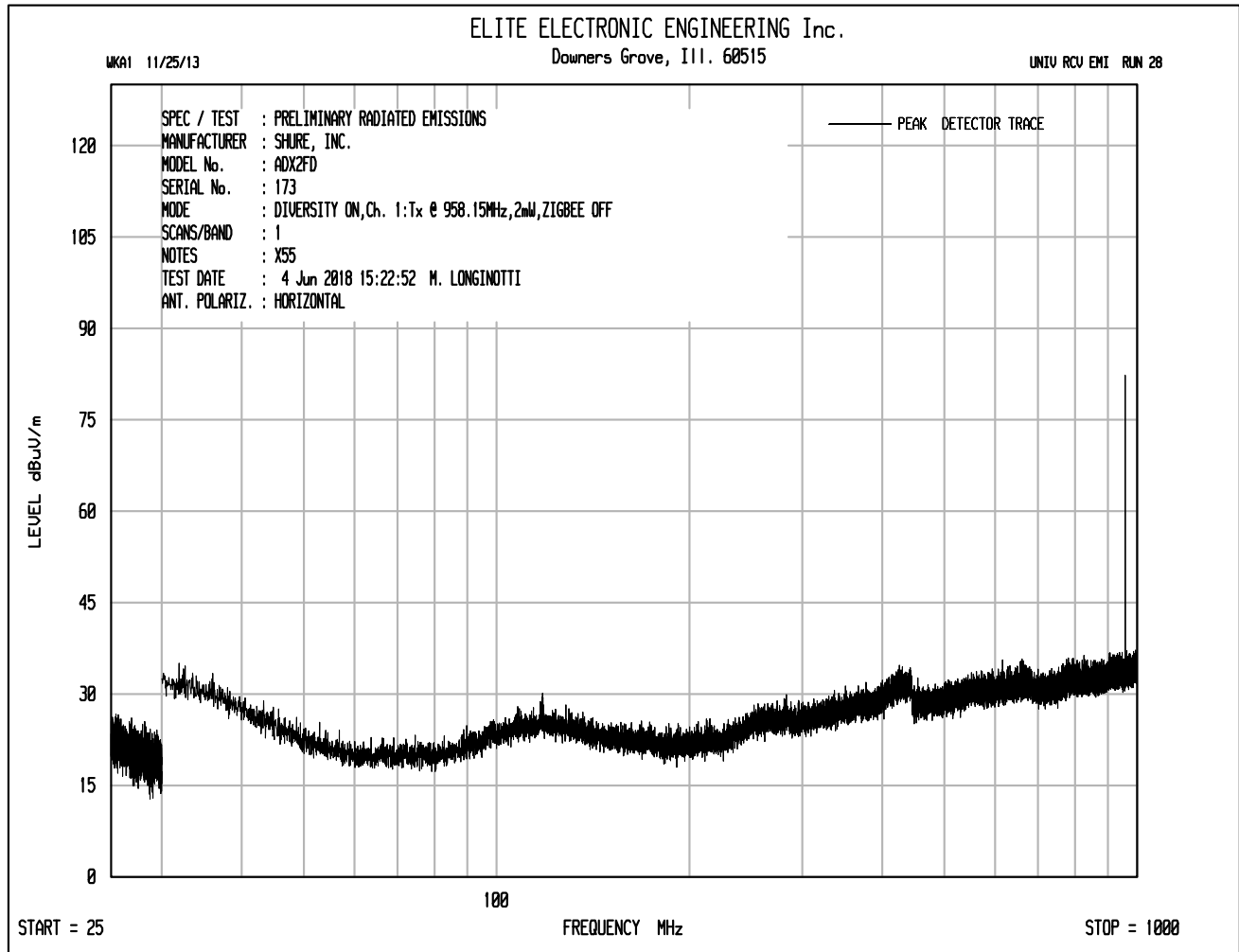
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1909.10	H	0.2	Ambient	-65.5	3.6	3.0	-64.9	-30.0	-34.9
1909.10	V	0.2	Ambient	-62.9	3.6	3.0	-62.3	-30.0	-32.3
2863.65	H	1.4	Ambient	-64.1	4.9	3.8	-63.0	-30.0	-33.0
2863.65	V	1.4	Ambient	-62.4	4.9	3.8	-61.3	-30.0	-31.3
3818.20	H	1.9	Ambient	-61.0	7.3	4.4	-58.1	-30.0	-28.1
3818.20	V	1.9	Ambient	-59.8	7.3	4.4	-56.9	-30.0	-26.9
4772.75	H	2.9	Ambient	-57.2	6.9	4.8	-55.1	-30.0	-25.1
4772.75	V	2.8	Ambient	-57.0	6.9	4.8	-54.9	-30.0	-24.9
5727.30	H	5.8	Ambient	-52.7	7.8	5.3	-50.2	-30.0	-20.2
5727.30	V	5.8	Ambient	-52.8	7.8	5.3	-50.3	-30.0	-20.3
6681.85	H	6.8	Ambient	-48.7	8.4	5.8	-46.1	-30.0	-16.1
6681.85	V	6.8	Ambient	-49.7	8.4	5.8	-47.1	-30.0	-17.1
7636.40	H	7.7	Ambient	-48.9	9.7	6.3	-45.6	-30.0	-15.6
7636.40	V	7.6	Ambient	-49.8	9.7	6.3	-46.4	-30.0	-16.4
8590.95	H	0.9	Ambient	-55.5	10.2	6.5	-51.7	-30.0	-21.7
8590.95	V	1.0	Ambient	-55.8	10.2	6.5	-52.1	-30.0	-22.1
9545.50	H	0.8	Ambient	-54.4	10.5	6.8	-50.6	-30.0	-20.6
9545.50	V	0.8	Ambient	-54.8	10.5	6.8	-51.0	-30.0	-21.0

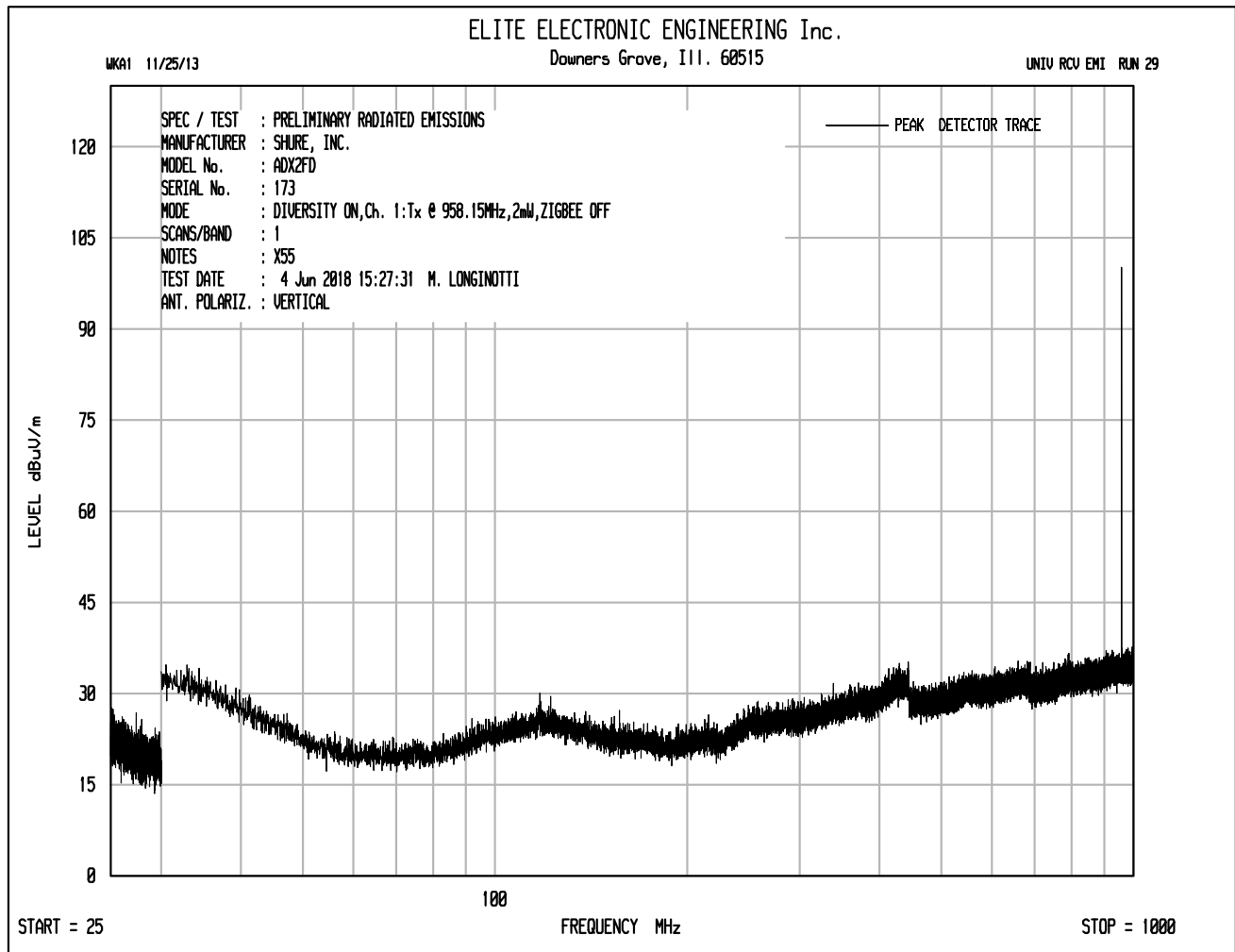
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

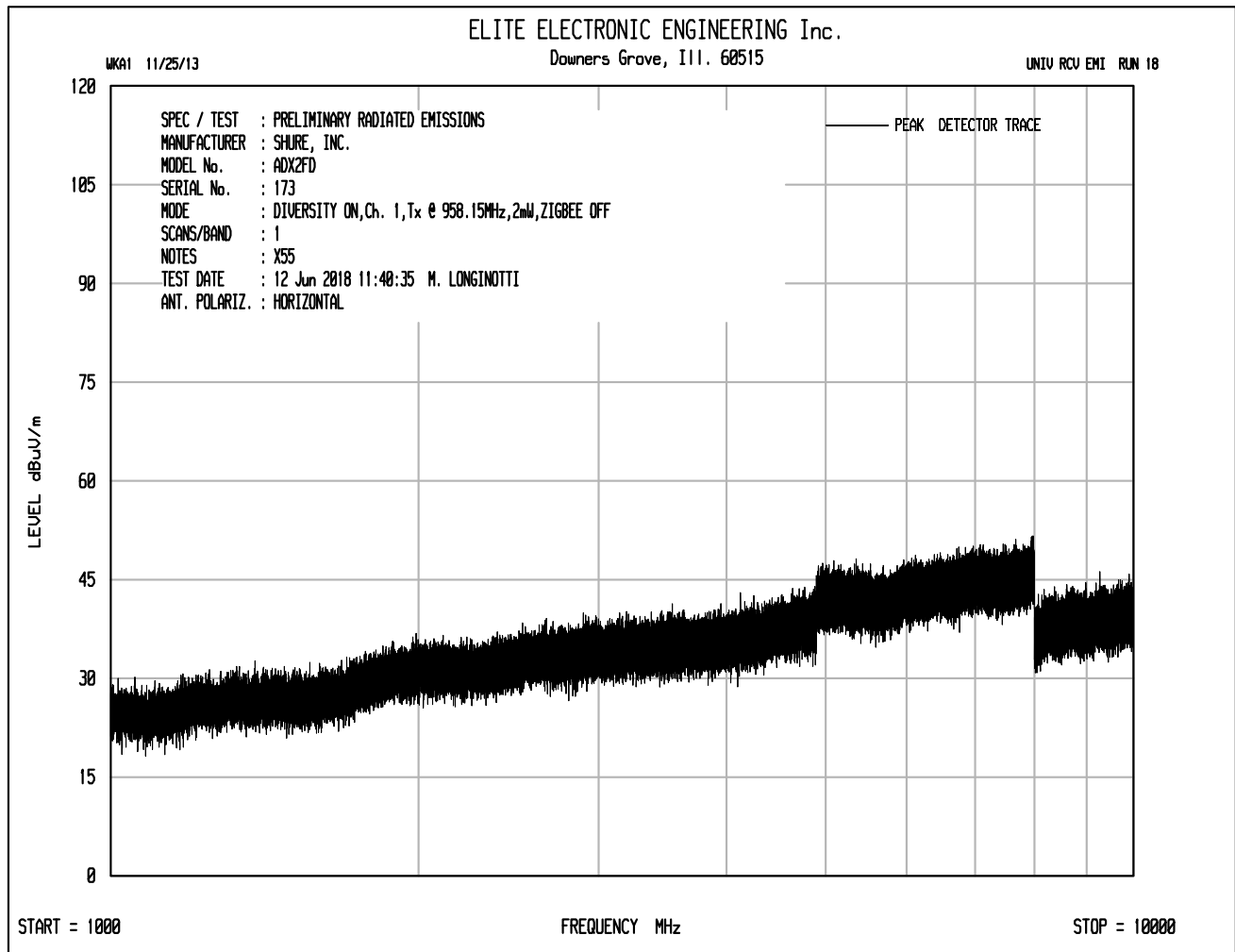
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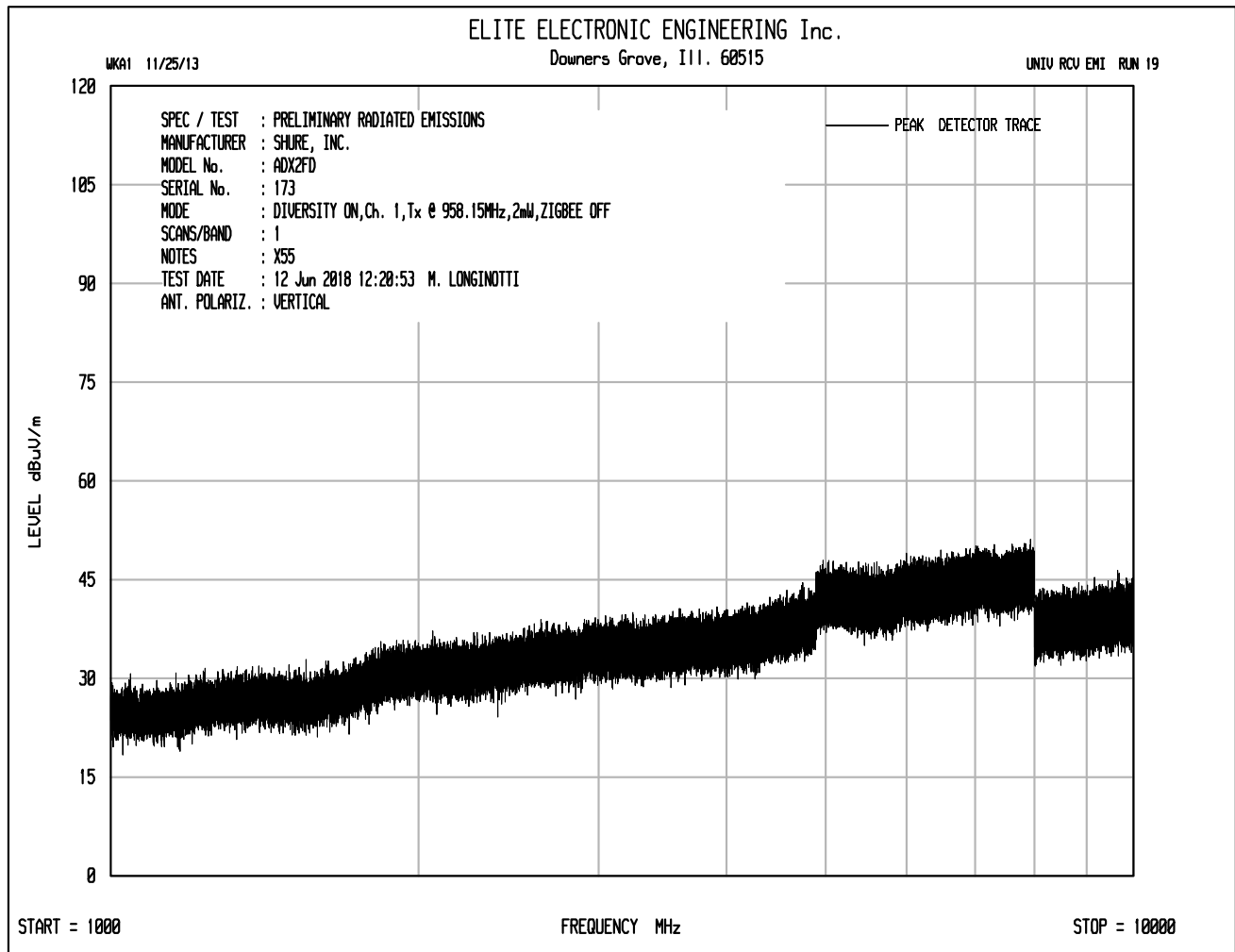
MARK E. LONGINOTTI

Mark E. Longinotti











MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 958.15MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1916.30	H	0.4	Ambient	-65.2	3.6	3.0	-64.6	-30.0	-34.6
1916.30	V	0.4	Ambient	-62.7	3.6	3.0	-62.0	-30.0	-32.0
2874.45	H	1.5	Ambient	-63.9	4.9	3.8	-62.8	-30.0	-32.8
2874.45	V	1.5	Ambient	-62.2	4.9	3.8	-61.1	-30.0	-31.1
3832.60	H	2.0	Ambient	-60.9	7.3	4.4	-58.0	-30.0	-28.0
3832.60	V	2.0	Ambient	-59.8	7.3	4.4	-56.8	-30.0	-26.8
4790.75	H	3.1	Ambient	-57.0	7.0	4.8	-54.9	-30.0	-24.9
4790.75	V	3.1	Ambient	-56.6	7.0	4.8	-54.4	-30.0	-24.4
5748.90	H	6.2	Ambient	-52.2	7.7	5.3	-49.8	-30.0	-19.8
5748.90	V	6.2	Ambient	-52.3	7.7	5.3	-49.9	-30.0	-19.9
6707.05	H	7.1	Ambient	-48.3	8.4	5.8	-45.8	-30.0	-15.8
6707.05	V	7.0	Ambient	-49.5	8.4	5.8	-47.0	-30.0	-17.0
7665.20	H	7.9	Ambient	-48.6	9.6	6.3	-45.3	-30.0	-15.3
7665.20	V	7.9	Ambient	-49.5	9.6	6.3	-46.2	-30.0	-16.2
8623.35	H	1.0	Ambient	-55.4	10.3	6.5	-51.6	-30.0	-21.6
8623.35	V	1.0	Ambient	-55.8	10.3	6.5	-52.0	-30.0	-22.0
9581.50	H	0.9	Ambient	-54.1	10.5	6.8	-50.4	-30.0	-20.4
9581.50	V	0.9	Ambient	-54.5	10.5	6.8	-50.8	-30.0	-20.8

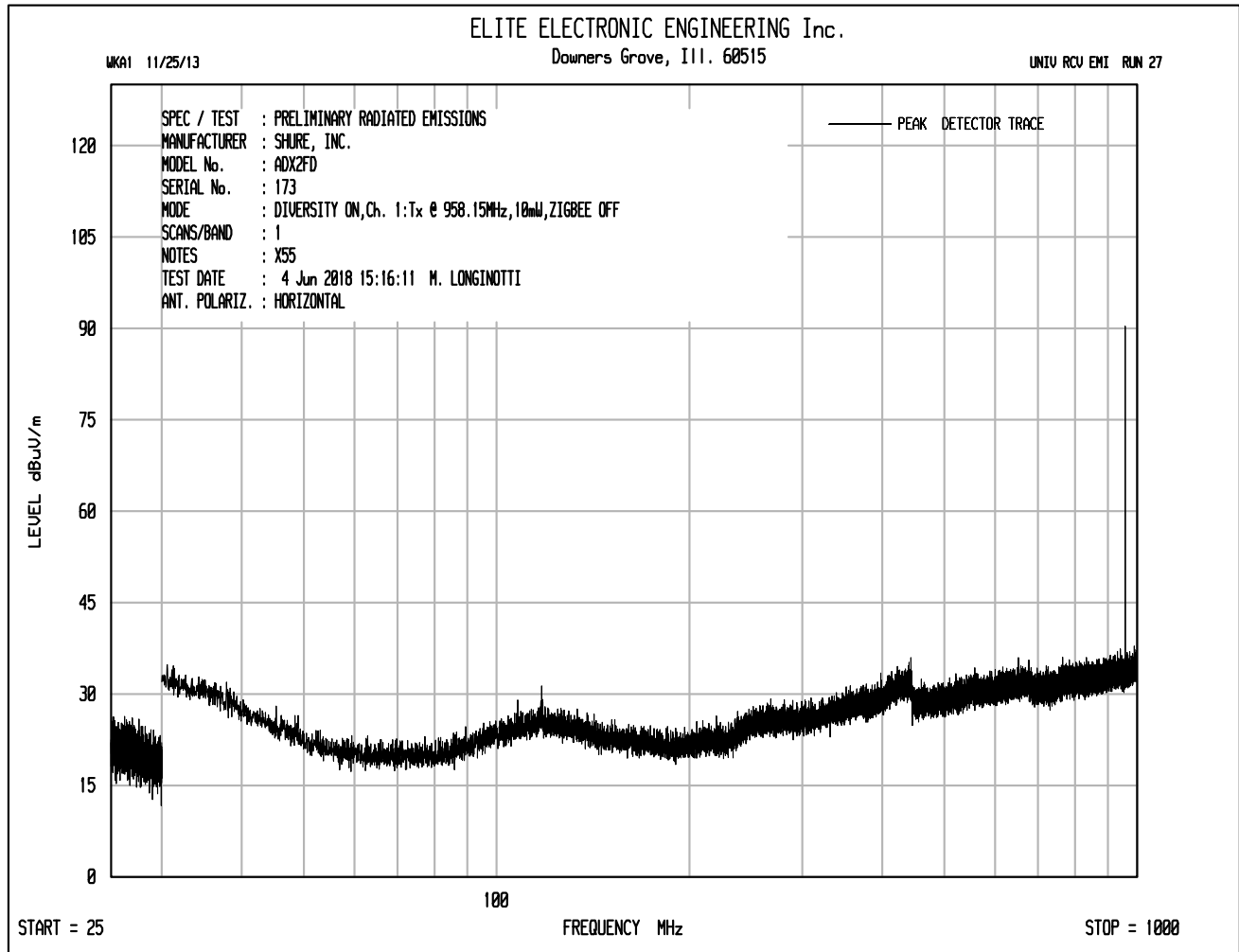
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

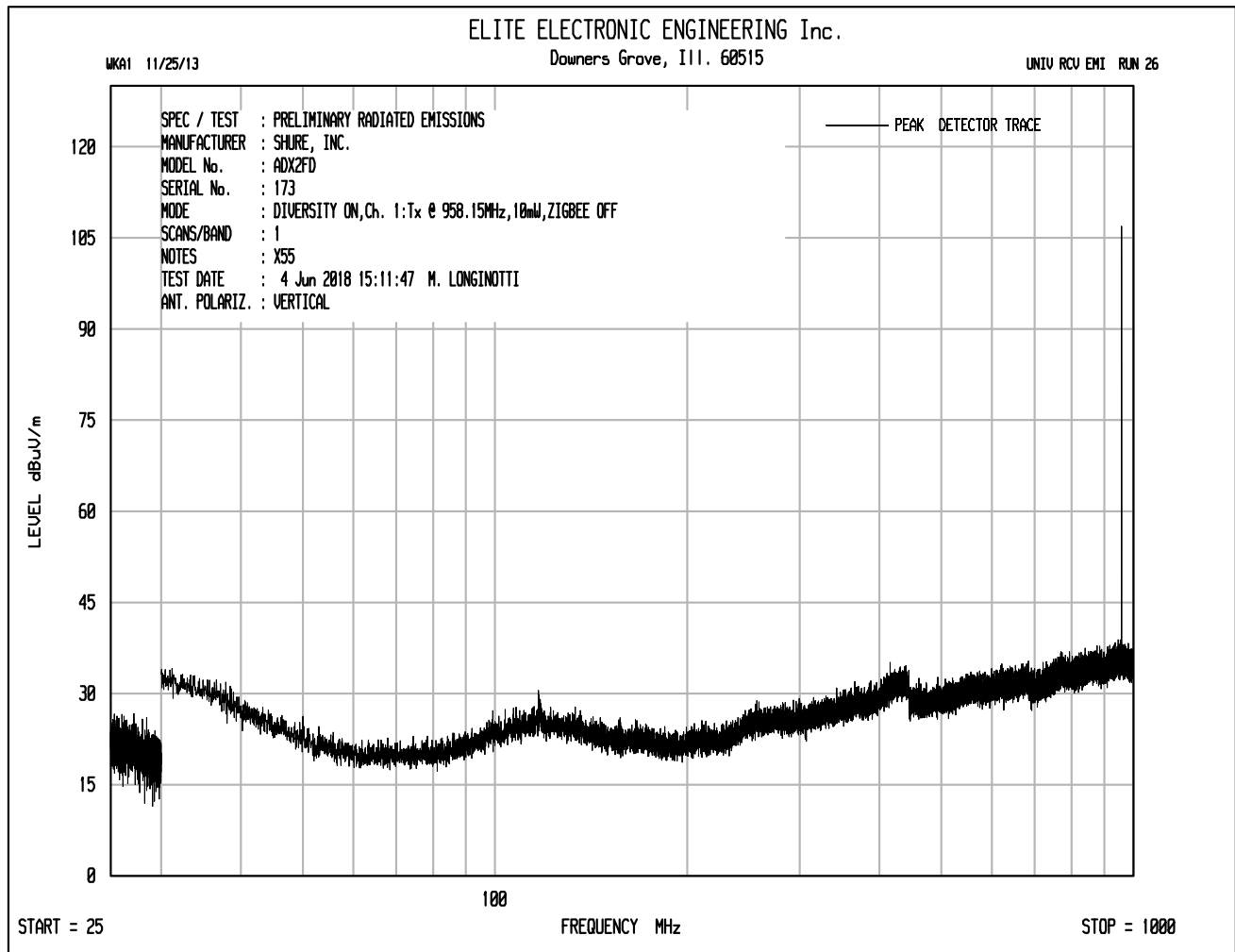
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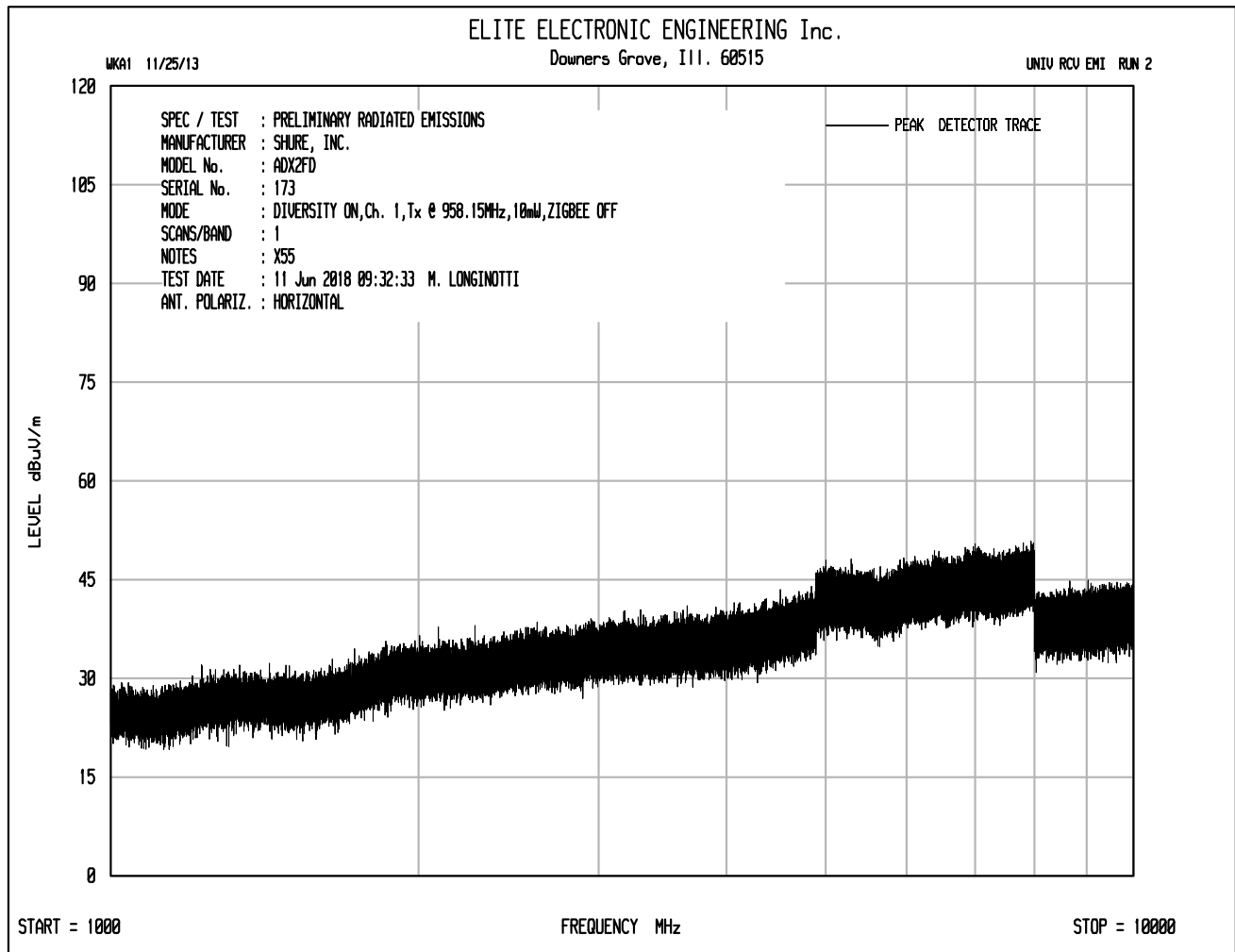
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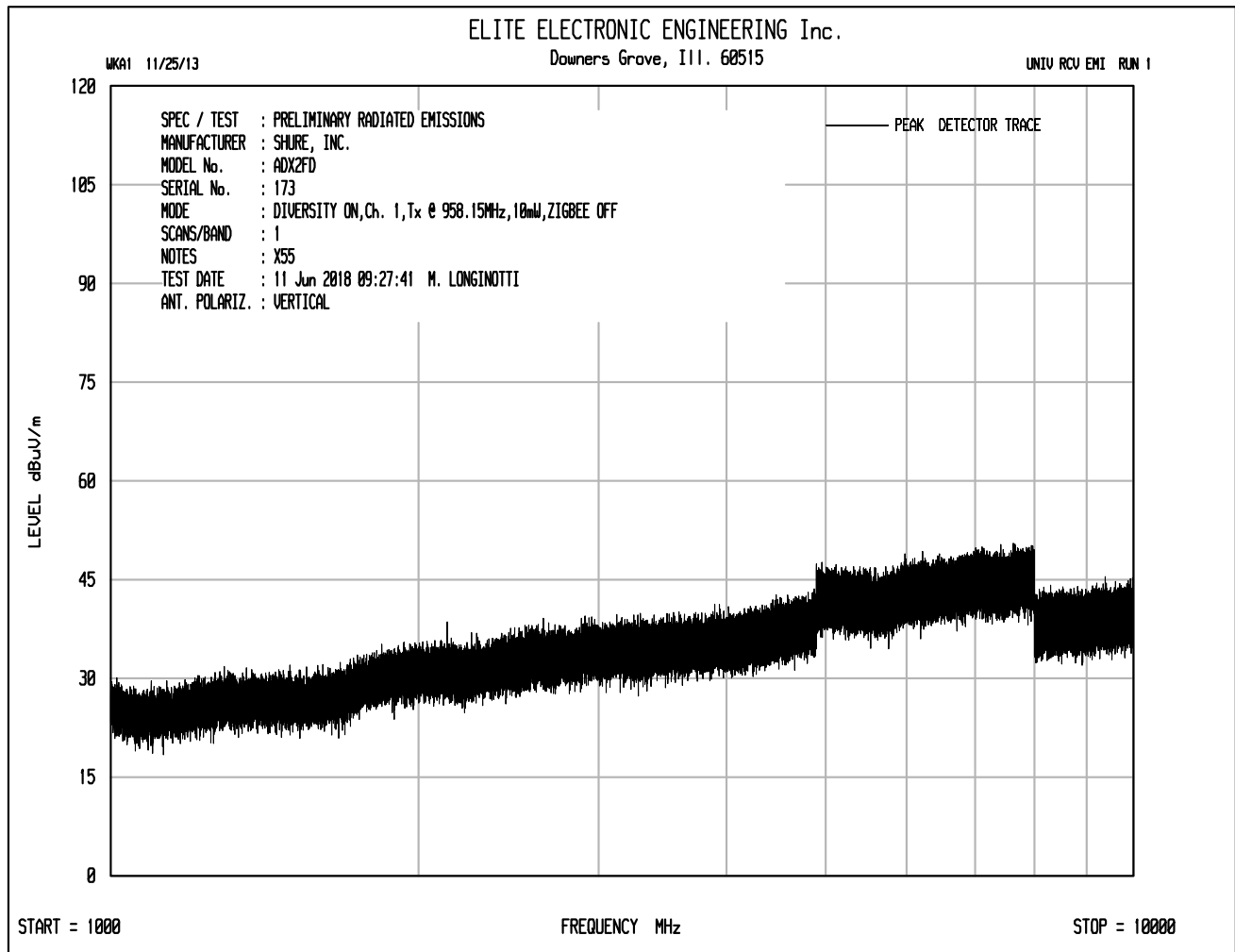
Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 958.15MHz, 10mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity On, Zigbee Off

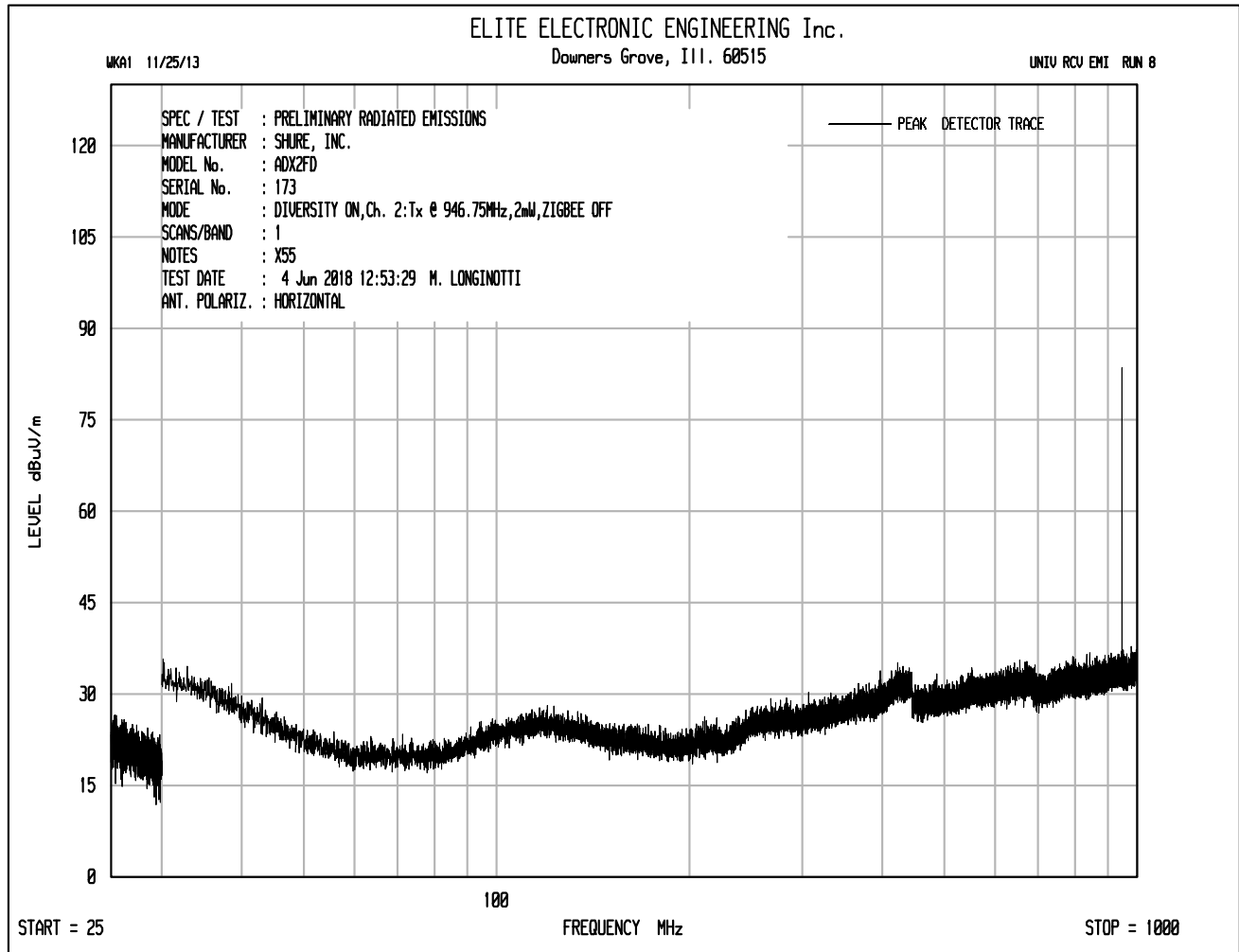
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1916.30	H	0.2	Ambient	-65.4	3.6	3.0	-64.8	-30.0	-34.8
1916.30	V	0.3	Ambient	-62.8	3.6	3.0	-62.1	-30.0	-32.1
2874.45	H	1.3	Ambient	-64.1	4.9	3.8	-63.0	-30.0	-33.0
2874.45	V	1.5	Ambient	-62.2	4.9	3.8	-61.1	-30.0	-31.1
3832.60	H	1.8	Ambient	-61.1	7.3	4.4	-58.2	-30.0	-28.2
3832.60	V	1.8	Ambient	-60.0	7.3	4.4	-57.0	-30.0	-27.0
4790.75	H	2.8	Ambient	-57.3	7.0	4.8	-55.2	-30.0	-25.2
4790.75	V	2.8	Ambient	-56.9	7.0	4.8	-54.7	-30.0	-24.7
5748.90	H	5.9	Ambient	-52.5	7.7	5.3	-50.1	-30.0	-20.1
5748.90	V	5.9	Ambient	-52.6	7.7	5.3	-50.2	-30.0	-20.2
6707.05	H	6.8	Ambient	-48.6	8.4	5.8	-46.1	-30.0	-16.1
6707.05	V	6.8	Ambient	-49.7	8.4	5.8	-47.2	-30.0	-17.2
7665.20	H	7.7	Ambient	-48.8	9.6	6.3	-45.5	-30.0	-15.5
7665.20	V	7.6	Ambient	-49.8	9.6	6.3	-46.5	-30.0	-16.5
8623.35	H	1.0	Ambient	-55.4	10.3	6.5	-51.6	-30.0	-21.6
8623.35	V	1.1	Ambient	-55.7	10.3	6.5	-51.9	-30.0	-21.9
9581.50	H	0.8	Ambient	-54.2	10.5	6.8	-50.5	-30.0	-20.5
9581.50	V	0.8	Ambient	-54.6	10.5	6.8	-50.9	-30.0	-20.9

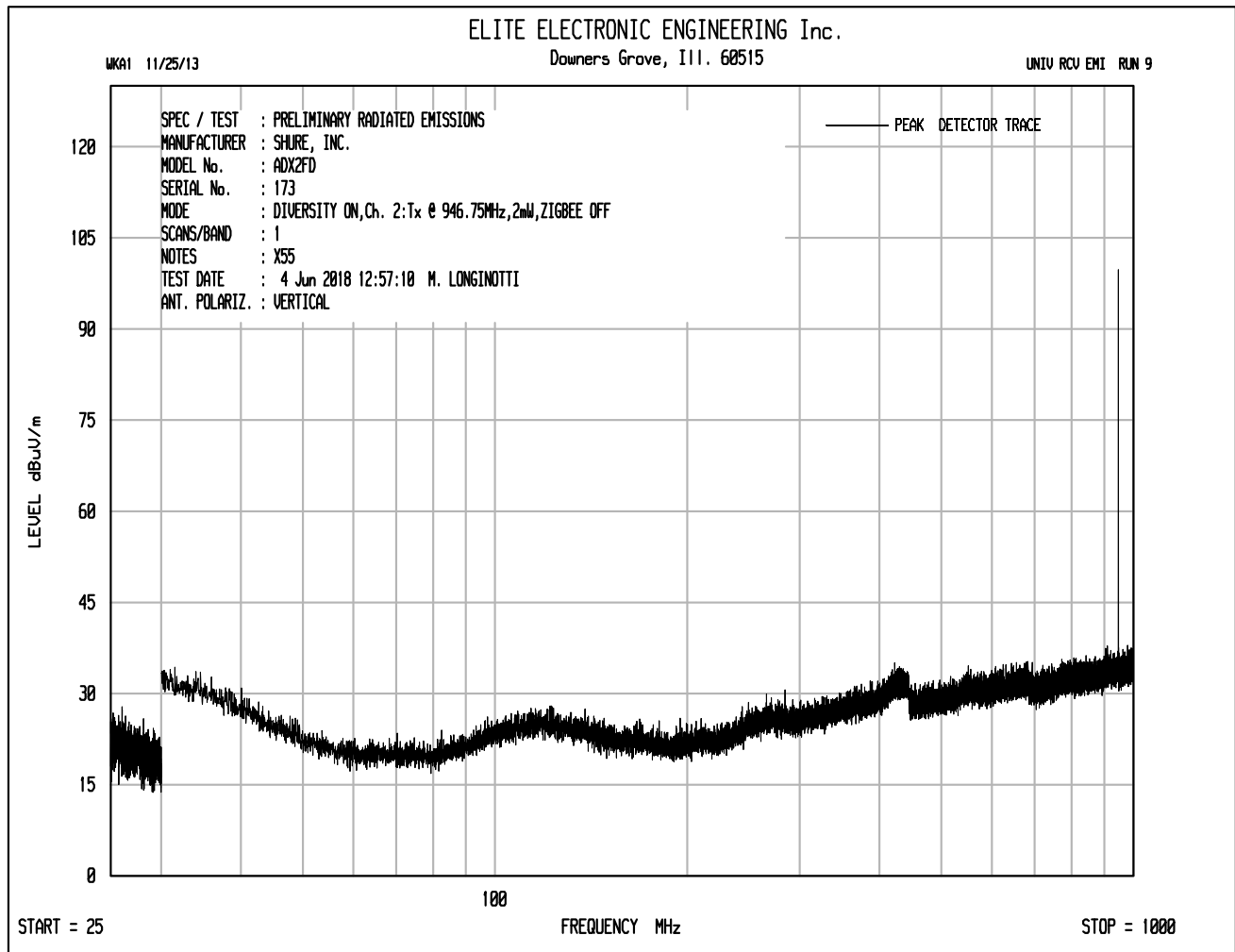
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

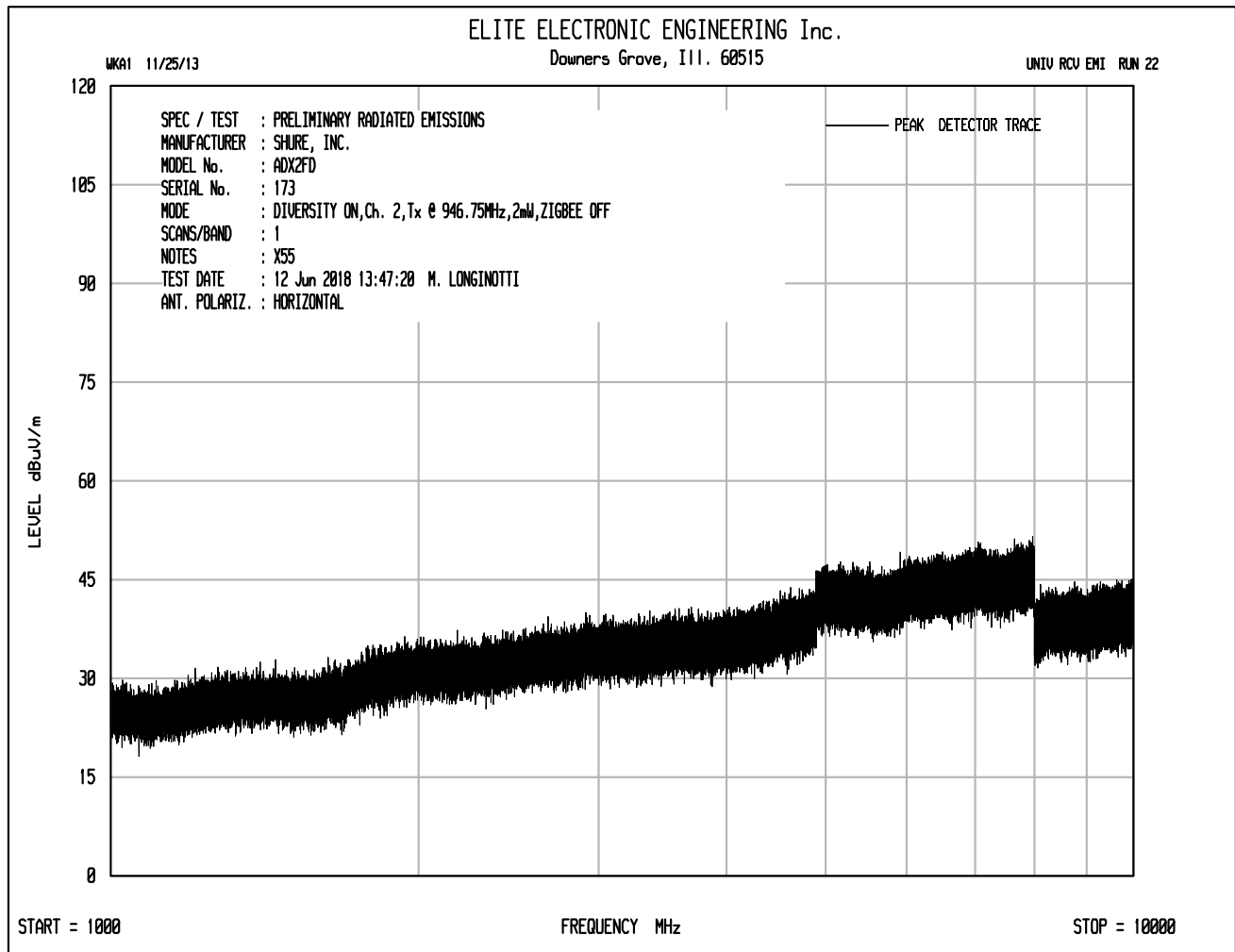
Checked By:

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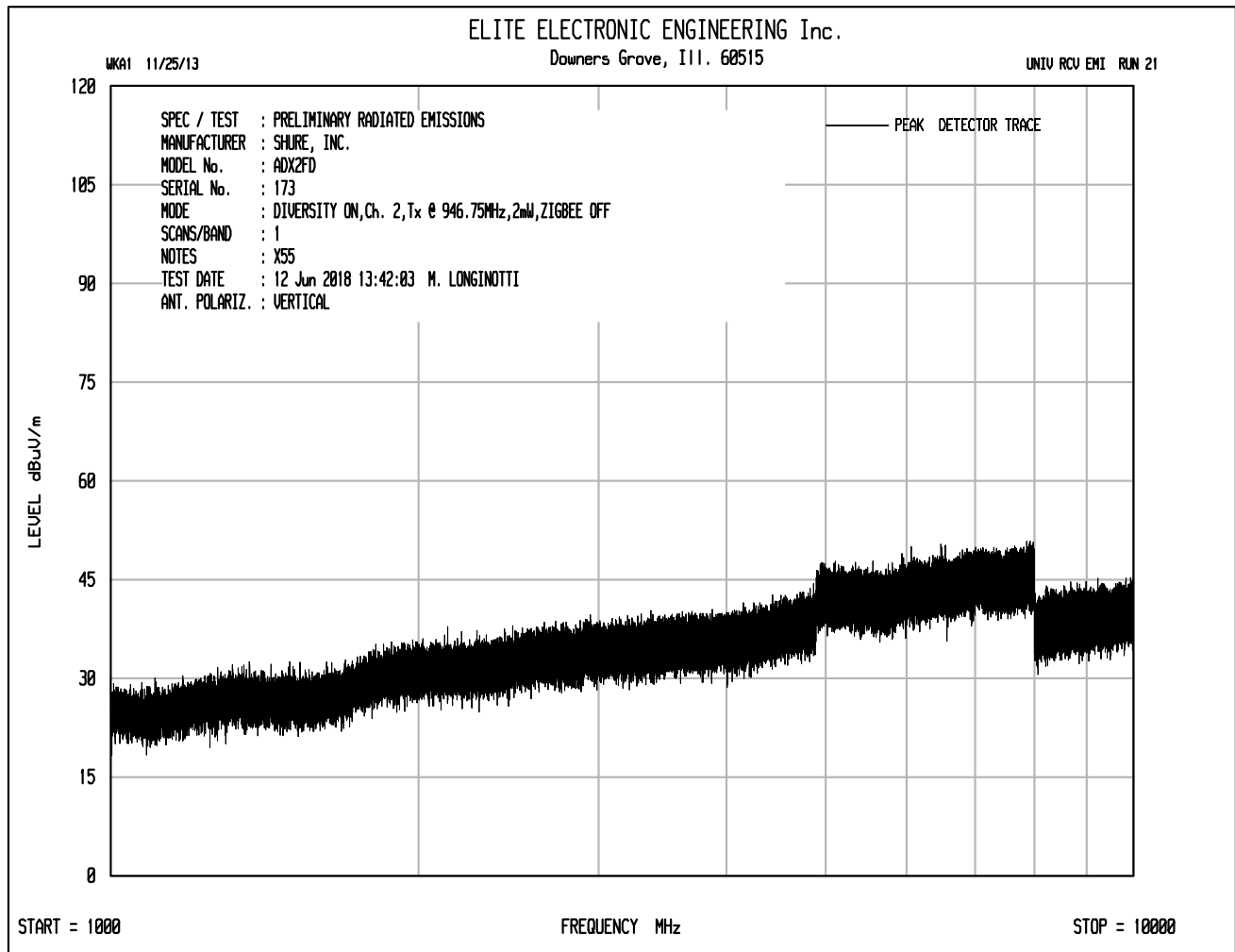
Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
 MODEL NO. : ADX2FD  
 SERIAL NO. : 173  
 SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
 DATE : June 4, 2018 through June 12, 2018  
 MODE : Transmit at 946.75MHz, 2mW nominal power  
 UNIT : X55  
 EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
 NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

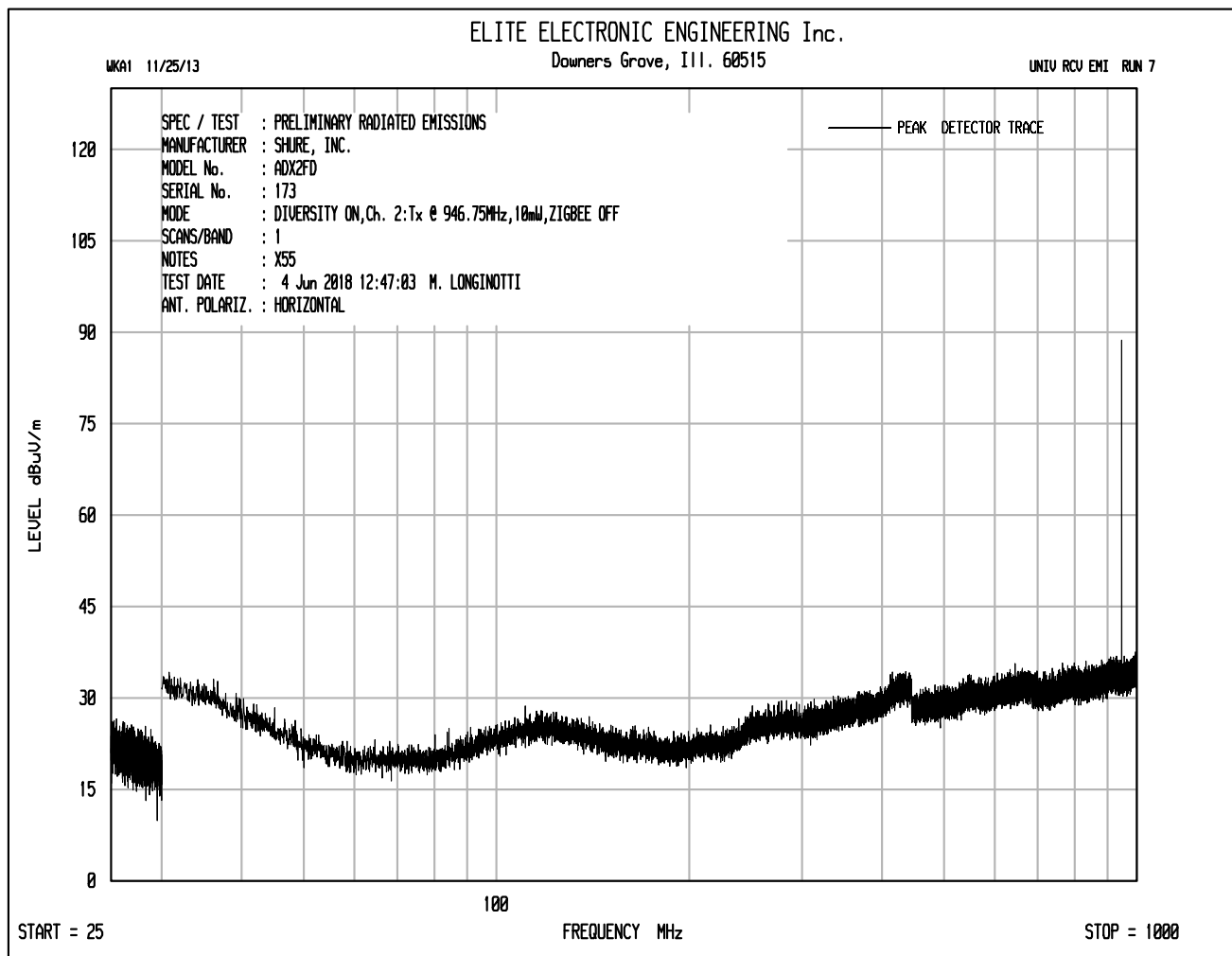
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1893.50	H	0.3	Ambient	-65.6	3.7	3.0	-65.0	-30.0	-35.0
1893.50	V	0.3	Ambient	-63.0	3.7	3.0	-62.3	-30.0	-32.3
2840.25	H	1.4	Ambient	-64.3	4.9	3.8	-63.1	-30.0	-33.1
2840.25	V	1.4	Ambient	-62.5	4.9	3.8	-61.4	-30.0	-31.4
3787.00	H	2.0	Ambient	-60.9	7.3	4.4	-58.0	-30.0	-28.0
3787.00	V	2.1	Ambient	-59.6	7.3	4.4	-56.7	-30.0	-26.7
4733.75	H	3.3	Ambient	-56.9	6.8	4.8	-54.9	-30.0	-24.9
4733.75	V	3.3	Ambient	-56.7	6.8	4.8	-54.6	-30.0	-24.6
5680.50	H	6.3	Ambient	-52.5	7.9	5.3	-49.9	-30.0	-19.9
5680.50	V	6.3	Ambient	-52.6	7.9	5.3	-50.0	-30.0	-20.0
6627.25	H	7.0	Ambient	-48.5	8.5	5.8	-45.8	-30.0	-15.8
6627.25	V	7.0	Ambient	-49.5	8.5	5.8	-46.8	-30.0	-16.8
7574.00	H	7.7	Ambient	-49.0	9.7	6.3	-45.6	-30.0	-15.6
7574.00	V	7.7	Ambient	-49.6	9.7	6.3	-46.2	-30.0	-16.2
8520.75	H	0.4	Ambient	-56.0	10.1	6.5	-52.4	-30.0	-22.4
8520.75	V	0.4	Ambient	-56.6	10.1	6.5	-53.0	-30.0	-23.0
9467.50	H	0.5	Ambient	-54.8	10.5	6.7	-51.0	-30.0	-21.0
9467.50	V	0.6	Ambient	-55.0	10.5	6.7	-51.3	-30.0	-21.3

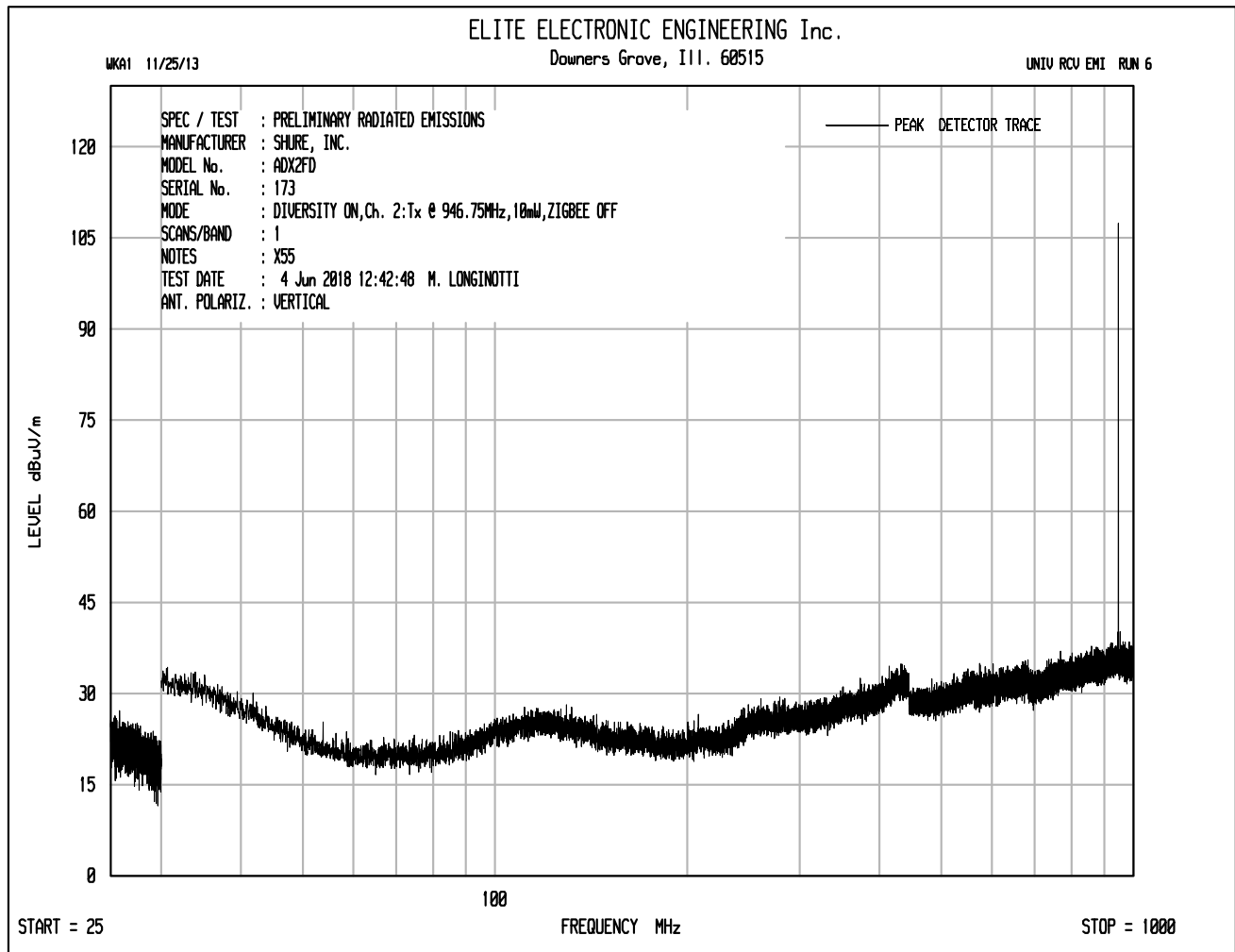
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

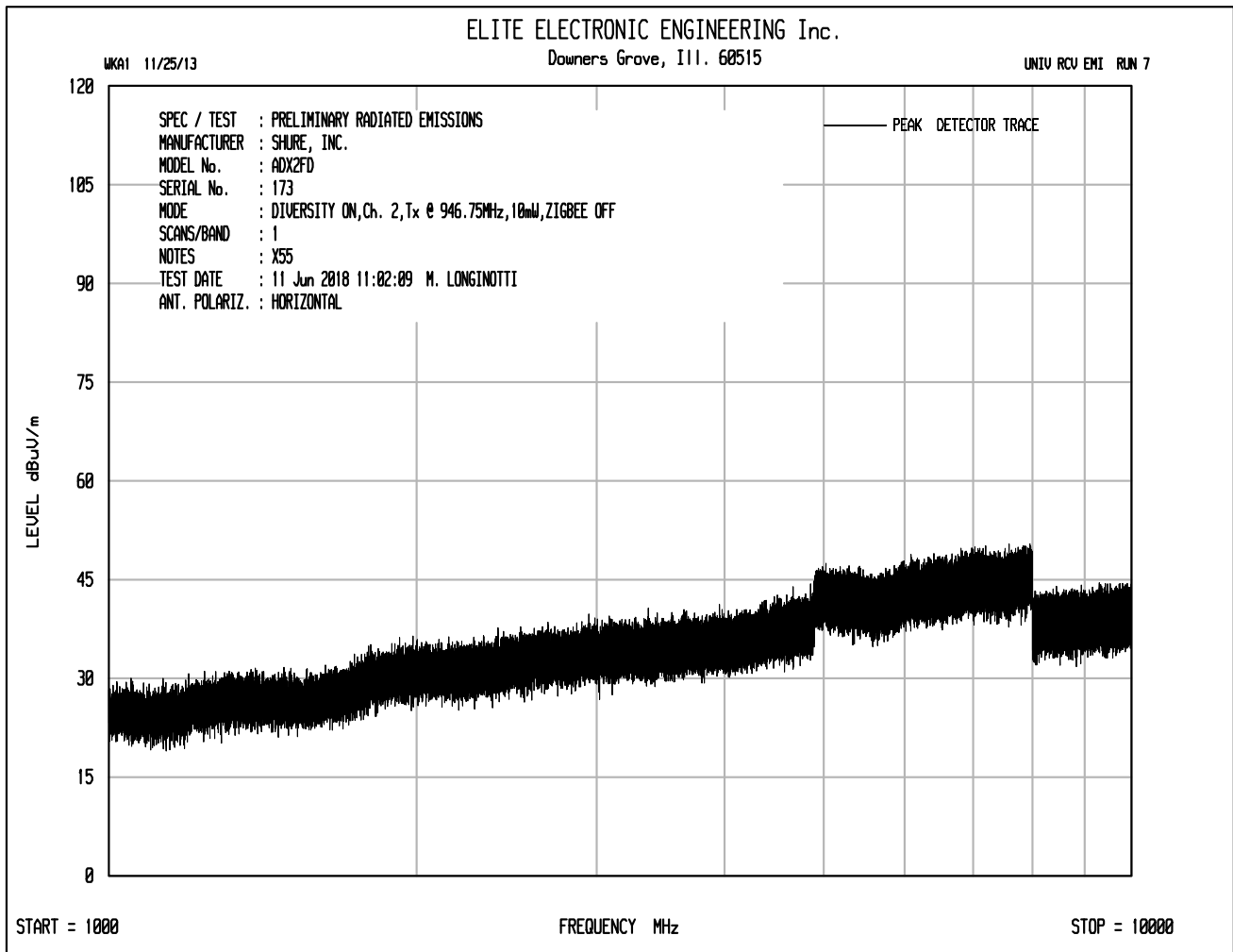
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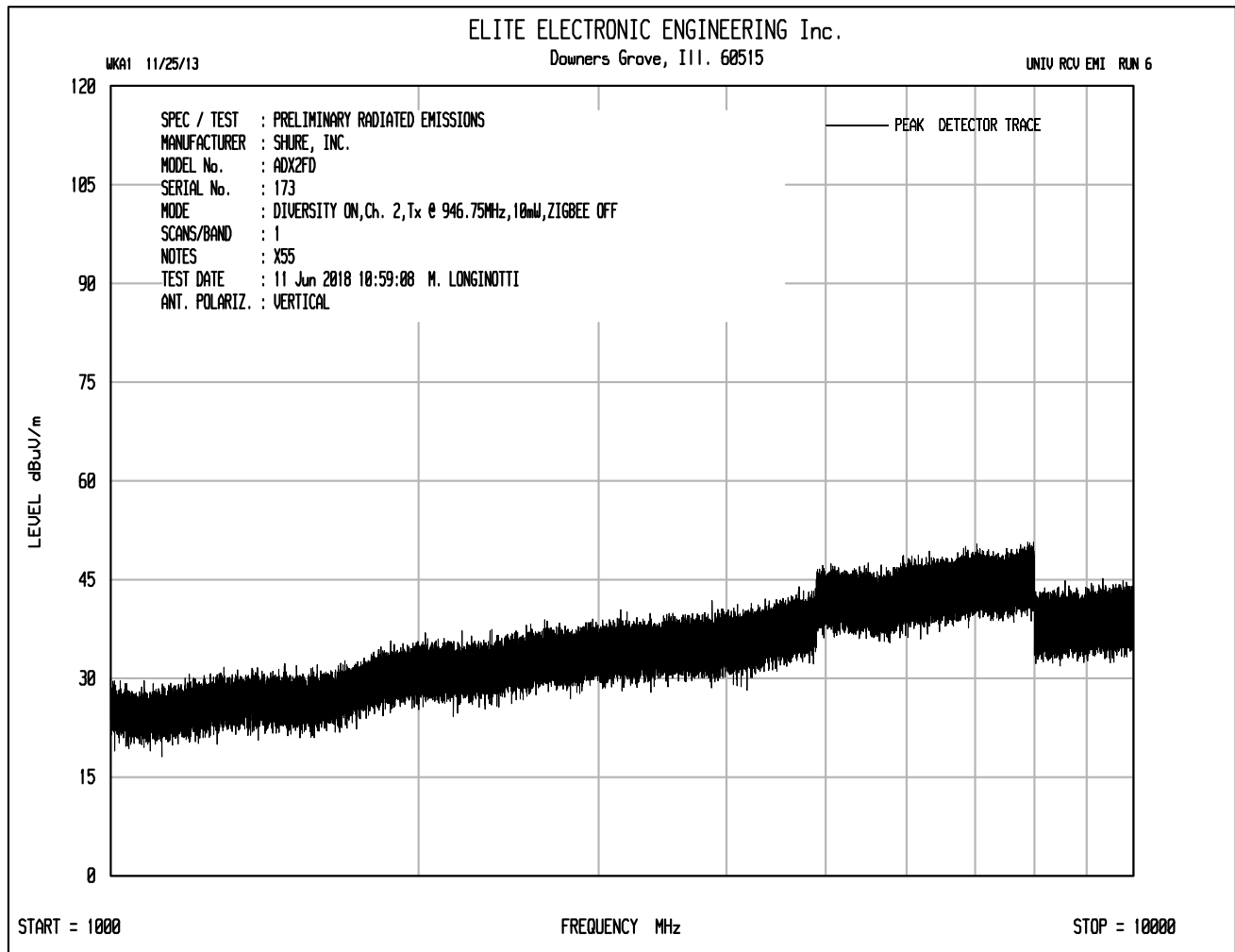
MARK E. LONGINOTTI

Mark E. Longinotti











MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 946.75MHz, 10mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

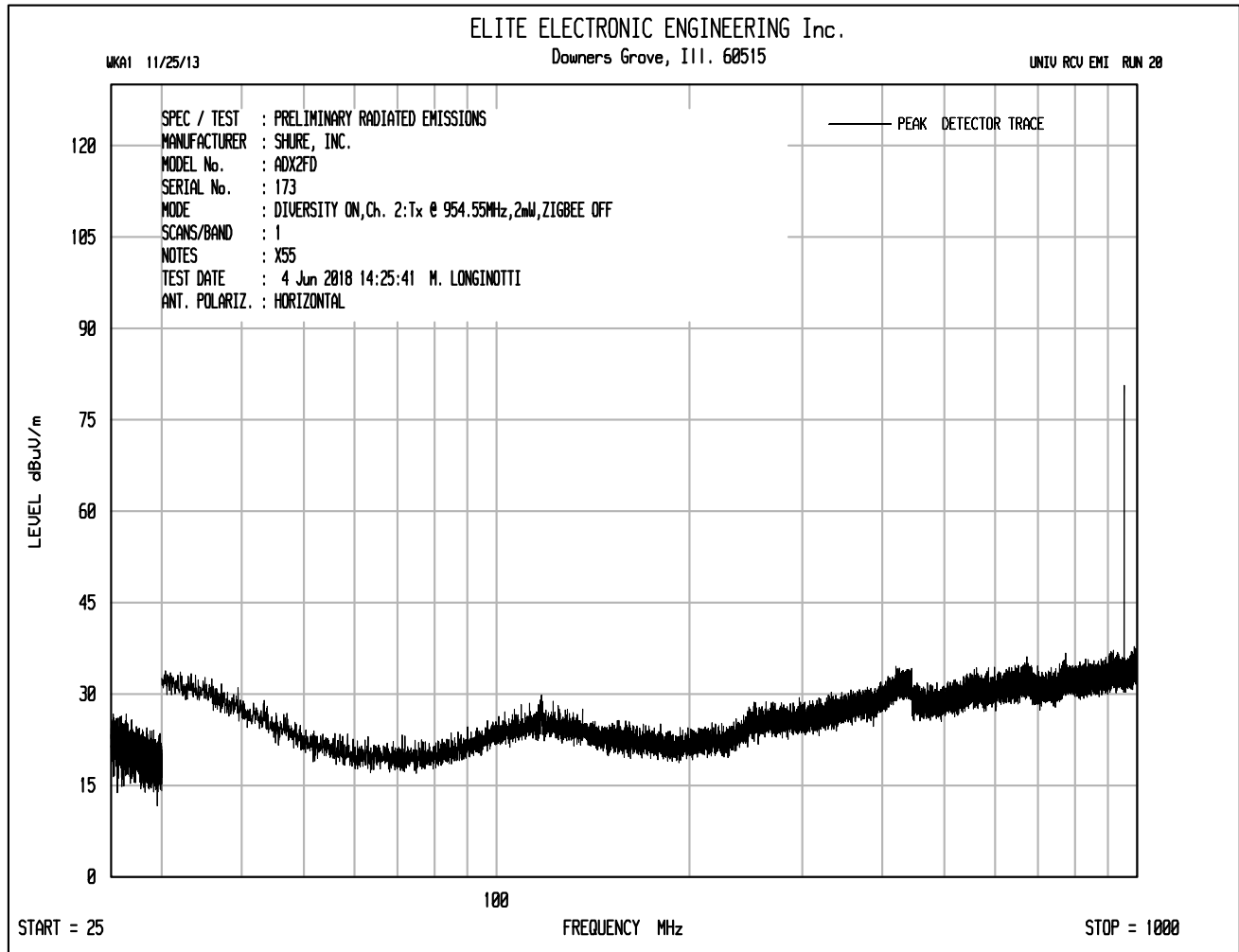
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1893.50	H	0.1	Ambient	-65.8	3.7	3.0	-65.2	-30.0	-35.2
1893.50	V	0.1	Ambient	-63.2	3.7	3.0	-62.5	-30.0	-32.5
2840.25	H	1.2	Ambient	-64.5	4.9	3.8	-63.3	-30.0	-33.3
2840.25	V	1.3	Ambient	-62.6	4.9	3.8	-61.5	-30.0	-31.5
3787.00	H	1.8	Ambient	-61.1	7.3	4.4	-58.2	-30.0	-28.2
3787.00	V	1.8	Ambient	-59.9	7.3	4.4	-57.0	-30.0	-27.0
4733.75	H	3.1	Ambient	-57.1	6.8	4.8	-55.1	-30.0	-25.1
4733.75	V	3.1	Ambient	-56.9	6.8	4.8	-54.8	-30.0	-24.8
5680.50	H	6.1	Ambient	-52.7	7.9	5.3	-50.1	-30.0	-20.1
5680.50	V	6.1	Ambient	-52.8	7.9	5.3	-50.2	-30.0	-20.2
6627.25	H	6.8	Ambient	-48.7	8.5	5.8	-46.0	-30.0	-16.0
6627.25	V	6.8	Ambient	-49.7	8.5	5.8	-47.0	-30.0	-17.0
7574.00	H	7.5	Ambient	-49.2	9.7	6.3	-45.8	-30.0	-15.8
7574.00	V	7.5	Ambient	-49.8	9.7	6.3	-46.4	-30.0	-16.4
8520.75	H	1.0	Ambient	-55.4	10.1	6.5	-51.8	-30.0	-21.8
8520.75	V	1.1	Ambient	-55.9	10.1	6.5	-52.3	-30.0	-22.3
9467.50	H	0.7	Ambient	-54.6	10.5	6.7	-50.8	-30.0	-20.8
9467.50	V	0.7	Ambient	-54.9	10.5	6.7	-51.2	-30.0	-21.2

ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

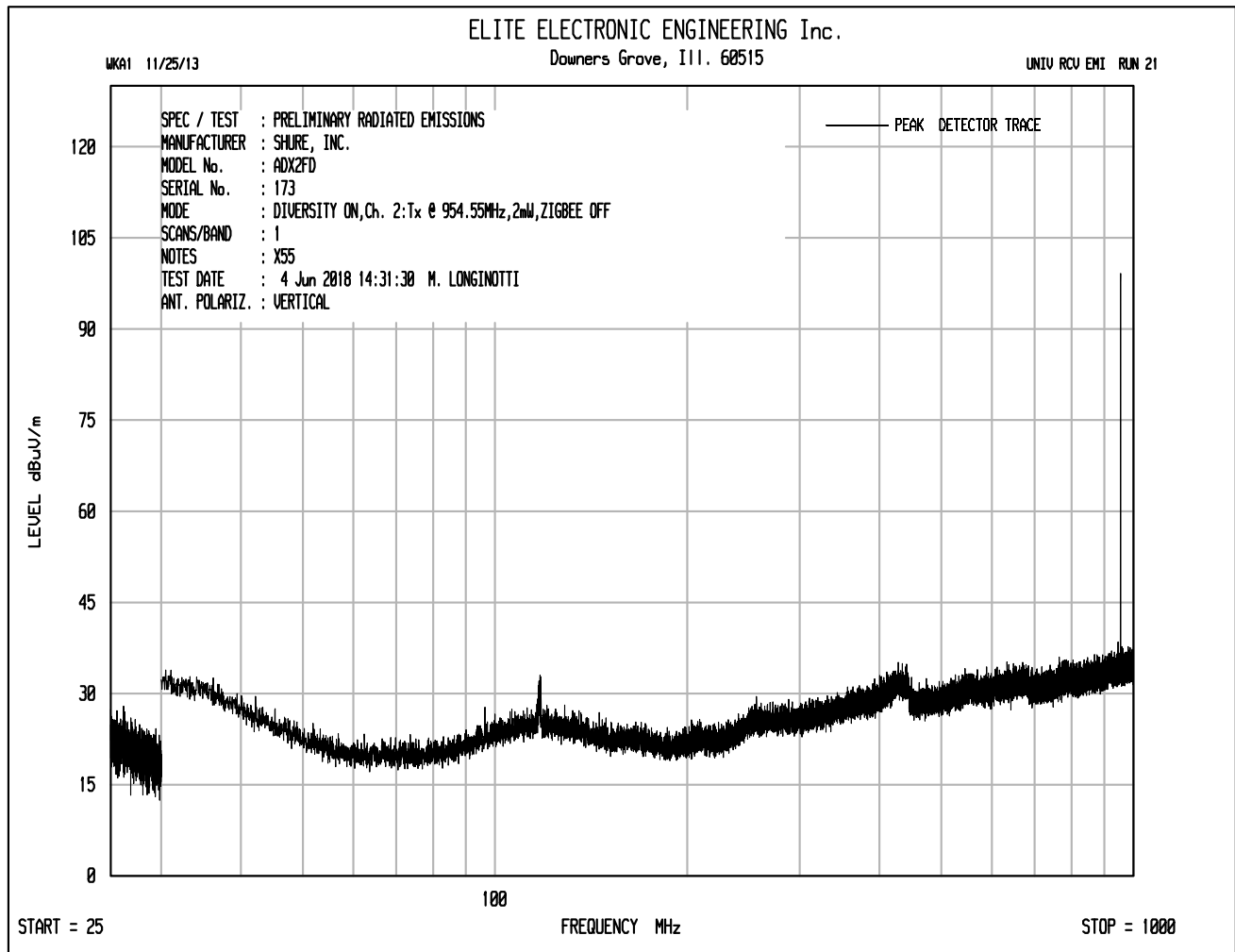
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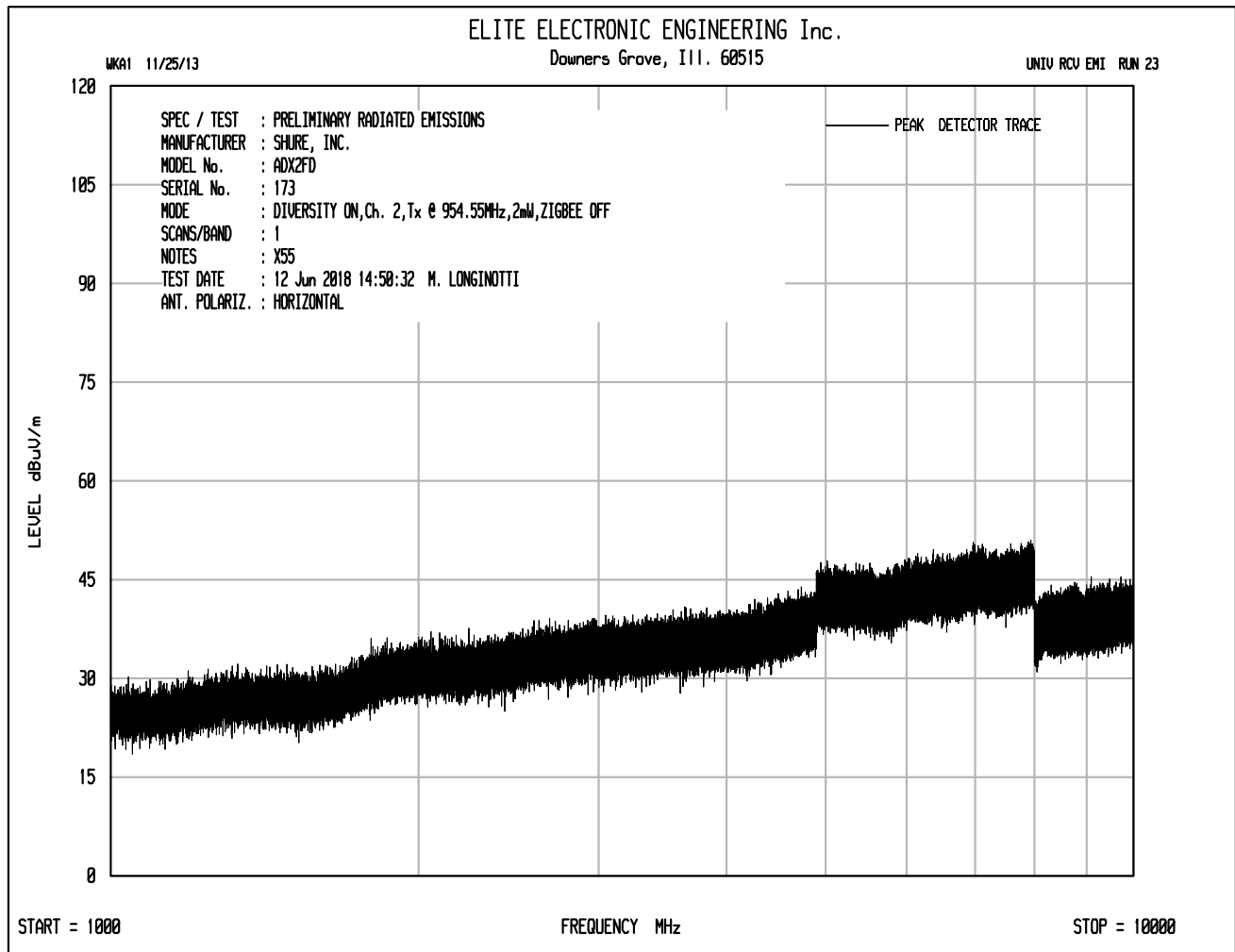
MARK E. LONGINOTTI

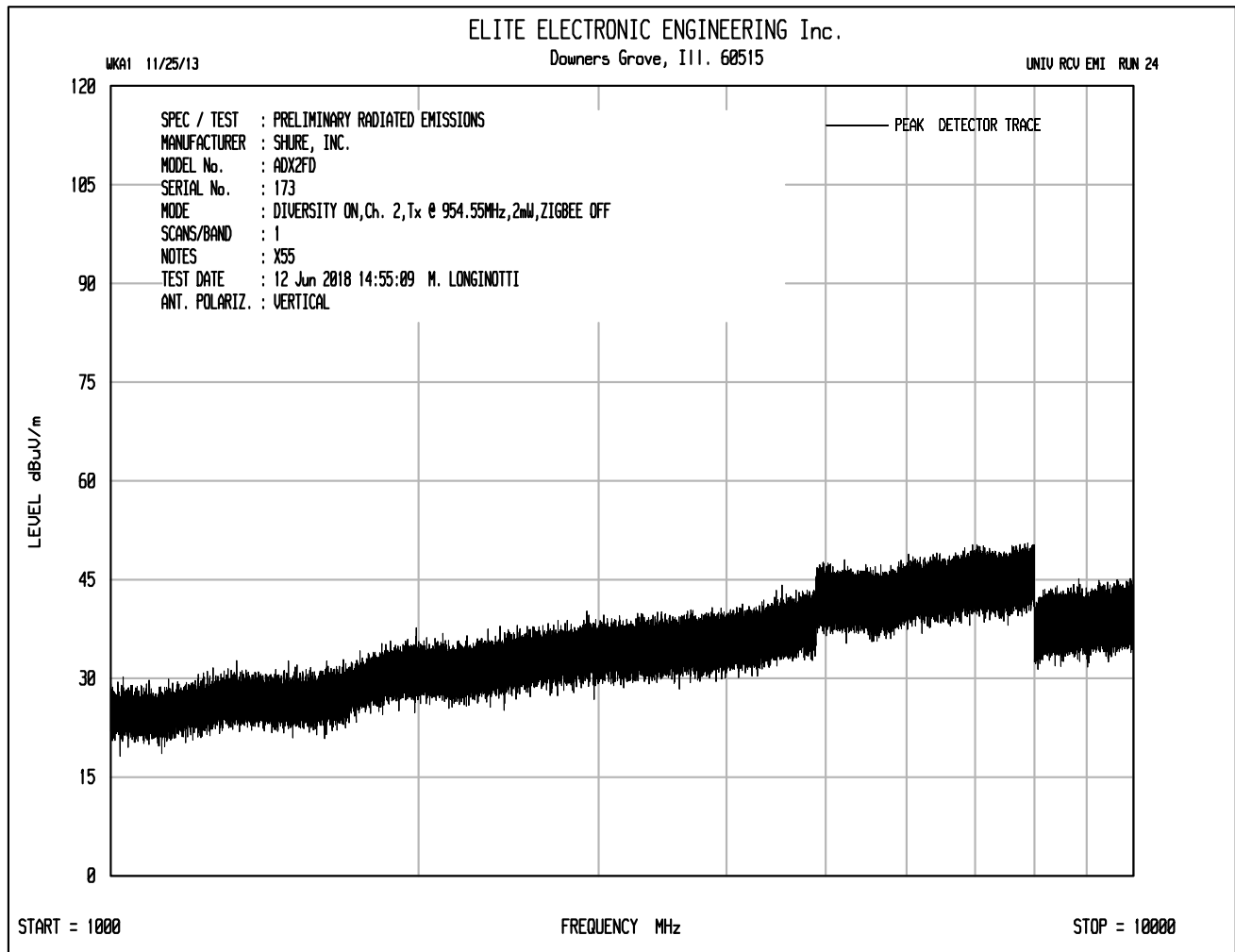
Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 954.55MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

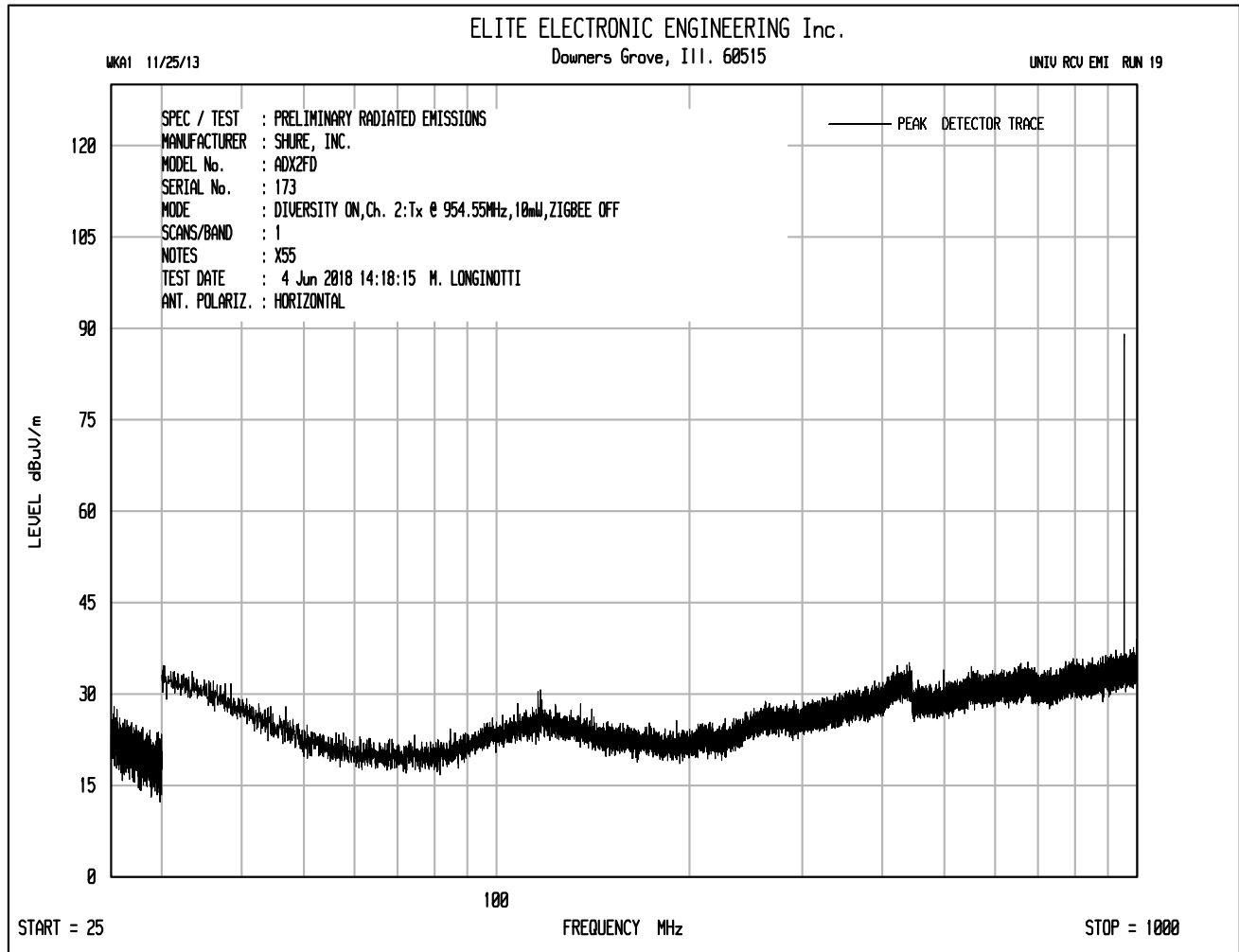
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1909.10	H	0.4	Ambient	-65.3	3.6	3.0	-64.7	-30.0	-34.7
1909.10	V	0.4	Ambient	-62.7	3.6	3.0	-62.1	-30.0	-32.1
2863.65	H	1.5	Ambient	-64.0	4.9	3.8	-62.9	-30.0	-32.9
2863.65	V	1.5	Ambient	-62.3	4.9	3.8	-61.2	-30.0	-31.2
3818.20	H	2.0	Ambient	-60.9	7.3	4.4	-58.0	-30.0	-28.0
3818.20	V	2.0	Ambient	-59.7	7.3	4.4	-56.8	-30.0	-26.8
4772.75	H	3.0	Ambient	-57.1	6.9	4.8	-55.0	-30.0	-25.0
4772.75	V	3.0	Ambient	-56.8	6.9	4.8	-54.7	-30.0	-24.7
5727.30	H	6.1	Ambient	-52.4	7.8	5.3	-49.9	-30.0	-19.9
5727.30	V	6.1	Ambient	-52.5	7.8	5.3	-50.0	-30.0	-20.0
6681.85	H	7.1	Ambient	-48.4	8.4	5.8	-45.8	-30.0	-15.8
6681.85	V	7.1	Ambient	-49.4	8.4	5.8	-46.8	-30.0	-16.8
7636.40	H	7.9	Ambient	-48.7	9.7	6.3	-45.4	-30.0	-15.4
7636.40	V	7.9	Ambient	-49.5	9.7	6.3	-46.1	-30.0	-16.1
8590.95	H	0.8	Ambient	-55.6	10.2	6.5	-51.8	-30.0	-21.8
8590.95	V	0.5	Ambient	-56.3	10.2	6.5	-52.6	-30.0	-22.6
9545.50	H	0.7	Ambient	-54.5	10.5	6.8	-50.7	-30.0	-20.7
9545.50	V	0.8	Ambient	-54.8	10.5	6.8	-51.0	-30.0	-21.0

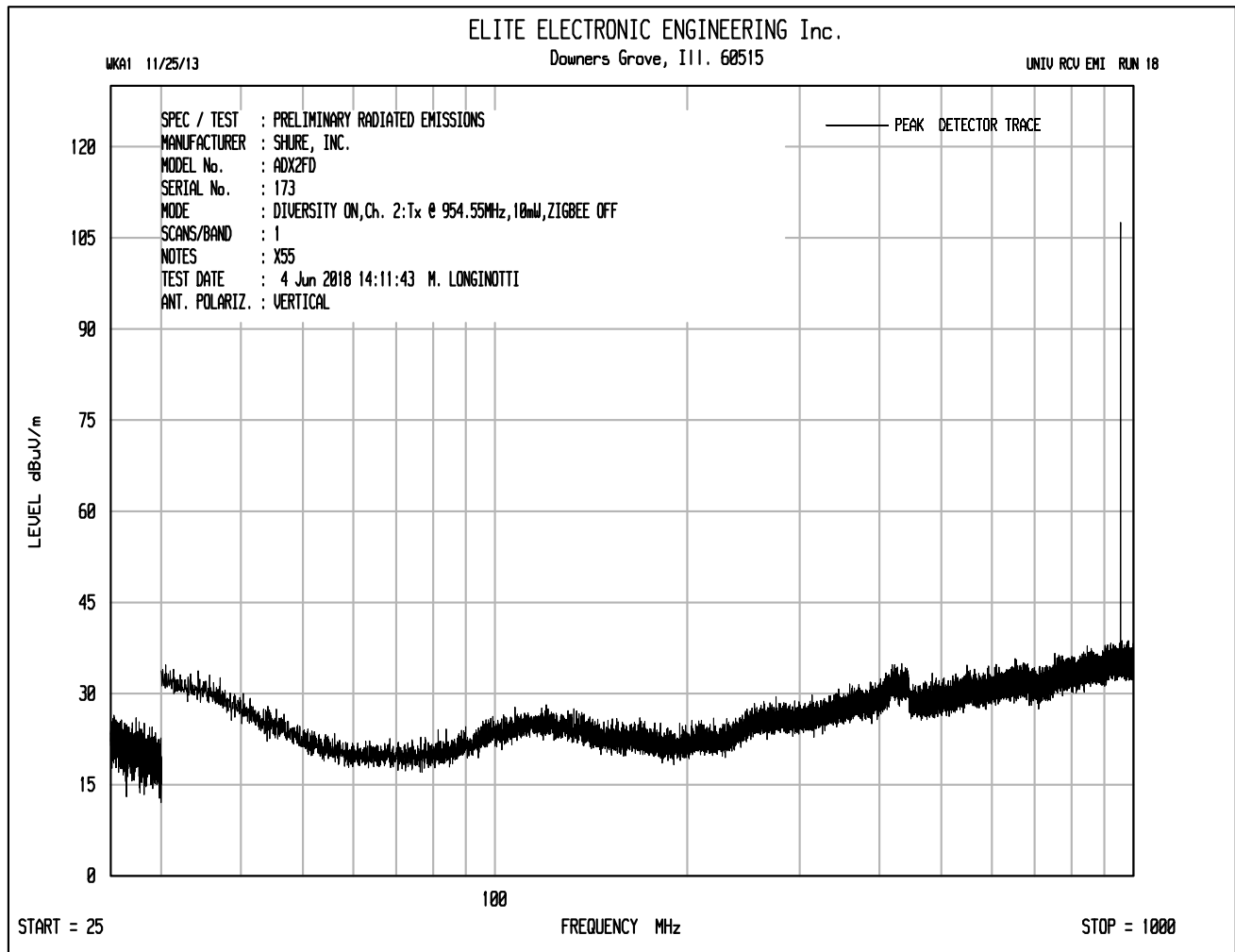
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

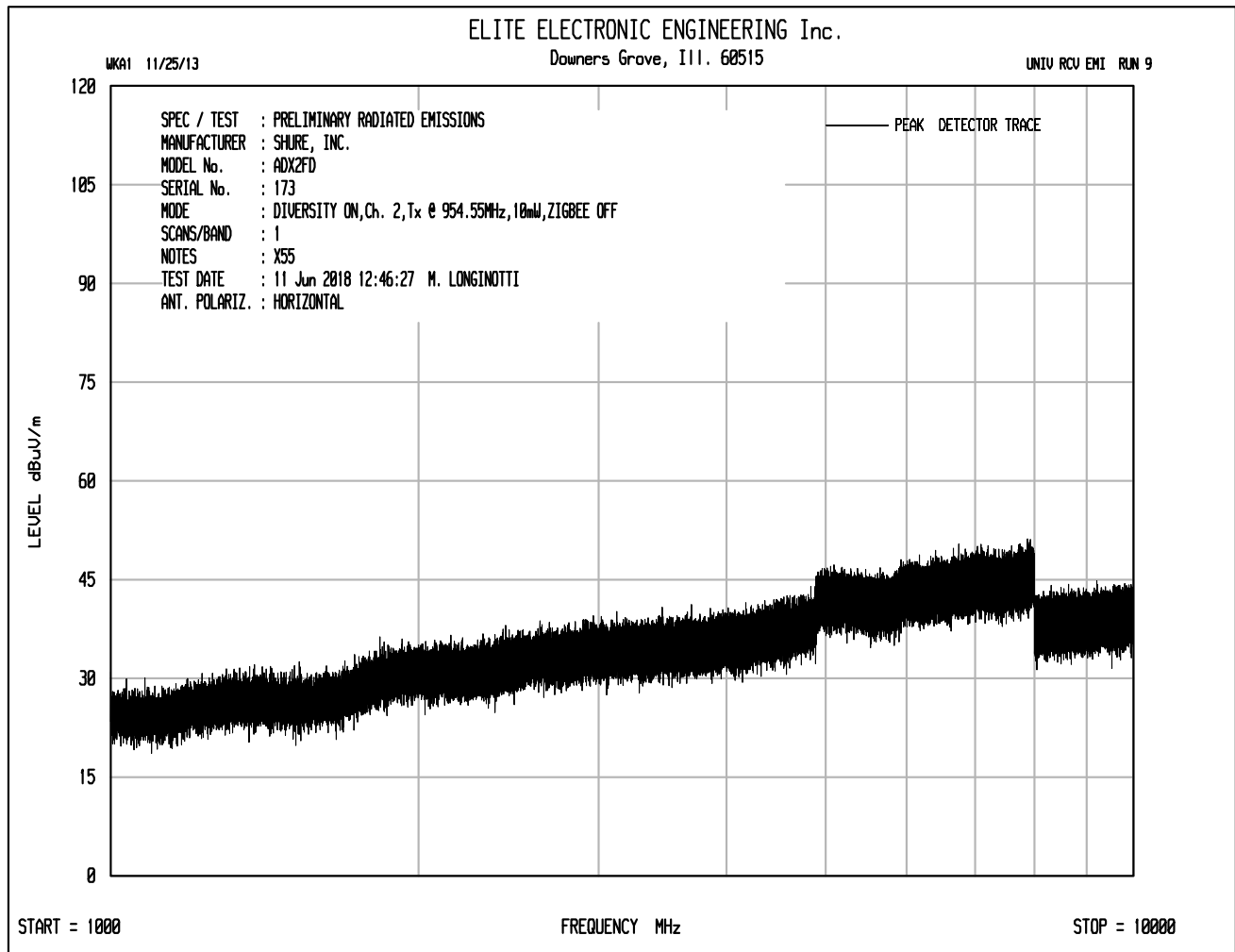
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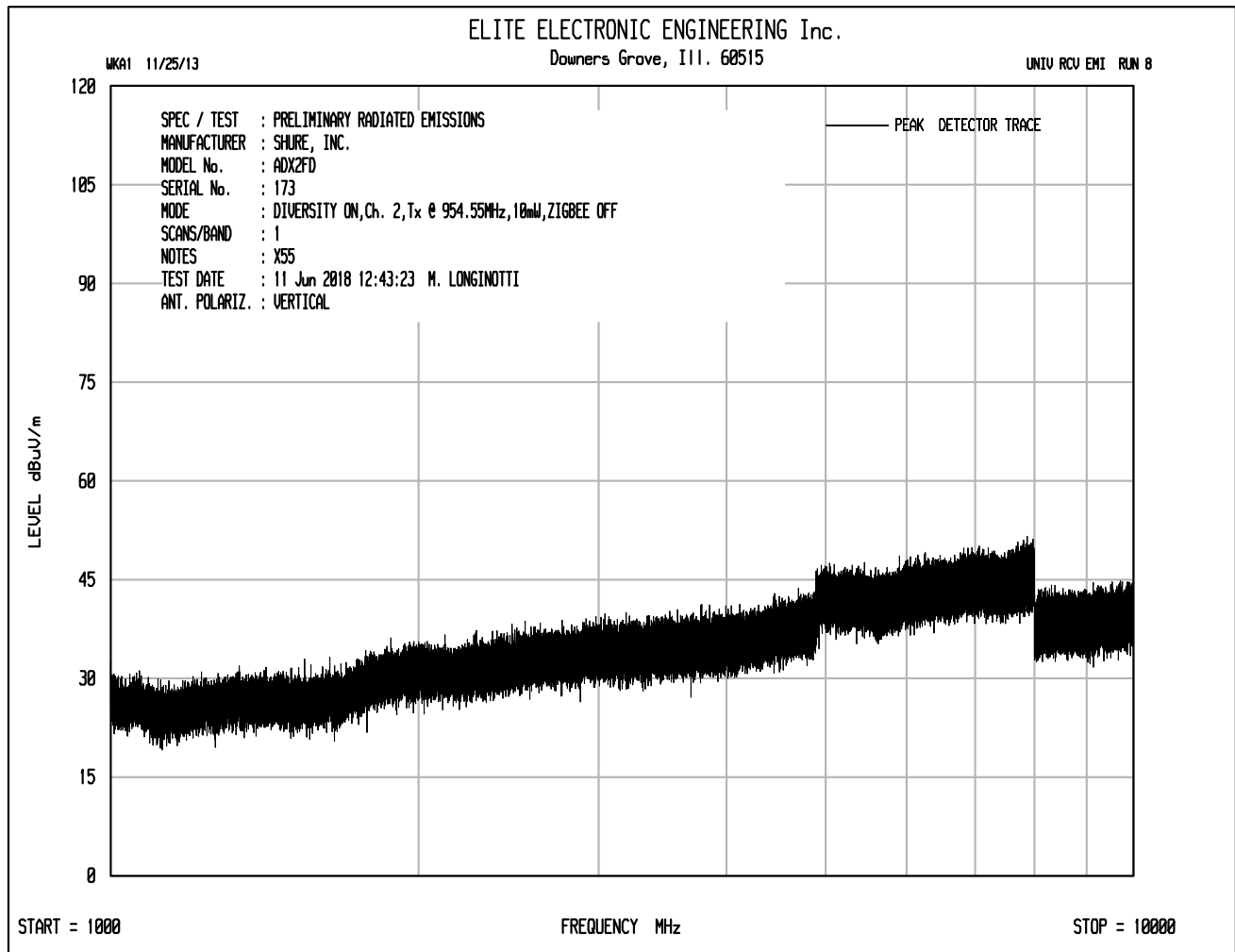
MARK E. LONGINOTTI

Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 954.55MHz, 10mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

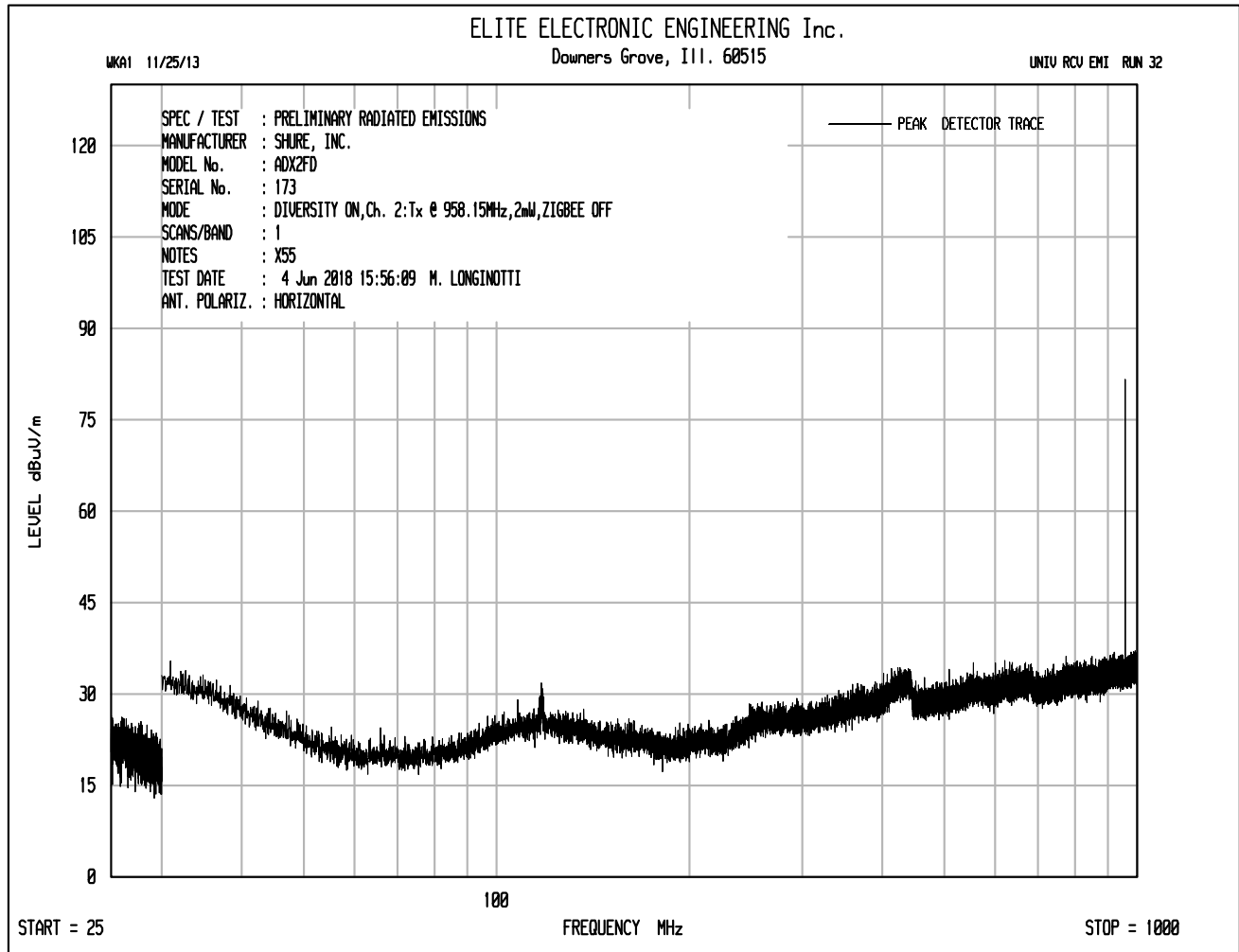
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1909.10	H	0.2	Ambient	-65.5	3.6	3.0	-64.9	-30.0	-34.9
1909.10	V	0.3	Ambient	-62.8	3.6	3.0	-62.2	-30.0	-32.2
2863.65	H	1.3	Ambient	-64.2	4.9	3.8	-63.1	-30.0	-33.1
2863.65	V	1.3	Ambient	-62.5	4.9	3.8	-61.4	-30.0	-31.4
3818.20	H	1.8	Ambient	-61.1	7.3	4.4	-58.2	-30.0	-28.2
3818.20	V	1.8	Ambient	-59.9	7.3	4.4	-57.0	-30.0	-27.0
4772.75	H	2.8	Ambient	-57.3	6.9	4.8	-55.2	-30.0	-25.2
4772.75	V	2.8	Ambient	-57.0	6.9	4.8	-54.9	-30.0	-24.9
5727.30	H	5.8	Ambient	-52.7	7.8	5.3	-50.2	-30.0	-20.2
5727.30	V	5.8	Ambient	-52.8	7.8	5.3	-50.3	-30.0	-20.3
6681.85	H	6.8	Ambient	-48.7	8.4	5.8	-46.1	-30.0	-16.1
6681.85	V	6.8	Ambient	-49.7	8.4	5.8	-47.1	-30.0	-17.1
7636.40	H	7.6	Ambient	-49.0	9.7	6.3	-45.7	-30.0	-15.7
7636.40	V	7.6	Ambient	-49.8	9.7	6.3	-46.4	-30.0	-16.4
8590.95	H	0.9	Ambient	-55.5	10.2	6.5	-51.7	-30.0	-21.7
8590.95	V	0.9	Ambient	-55.9	10.2	6.5	-52.2	-30.0	-22.2
9545.50	H	0.8	Ambient	-54.4	10.5	6.8	-50.6	-30.0	-20.6
9545.50	V	0.8	Ambient	-54.8	10.5	6.8	-51.0	-30.0	-21.0

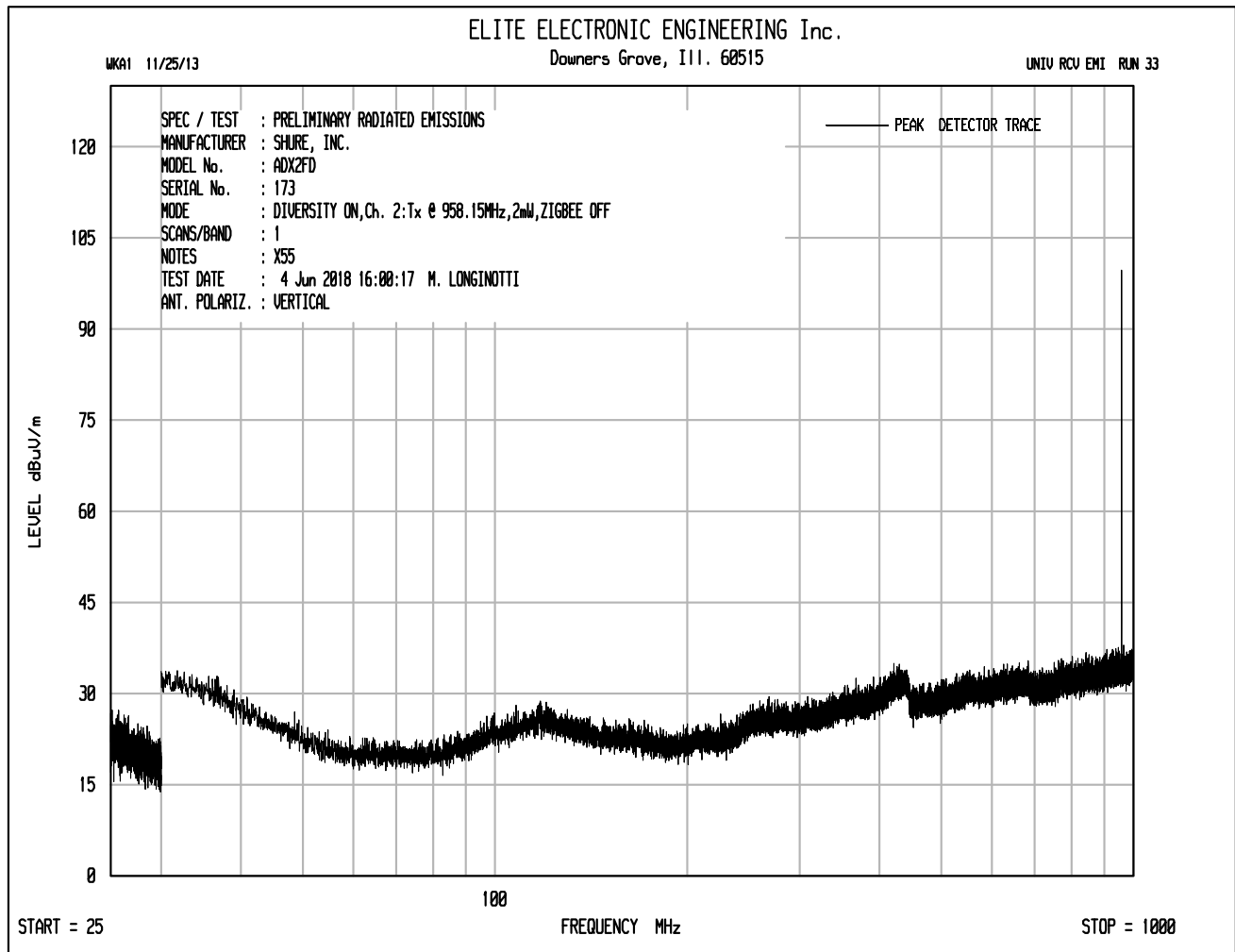
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

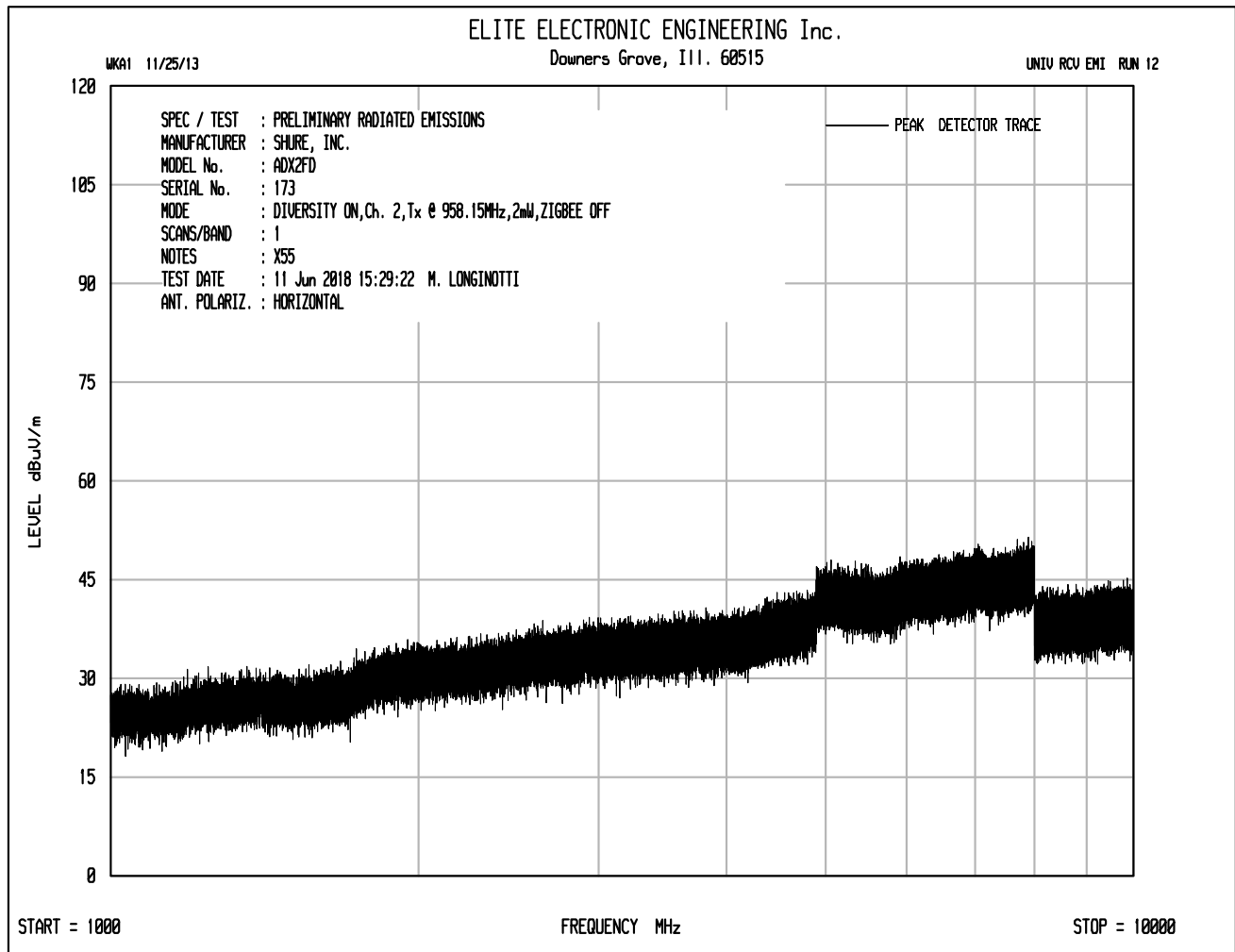
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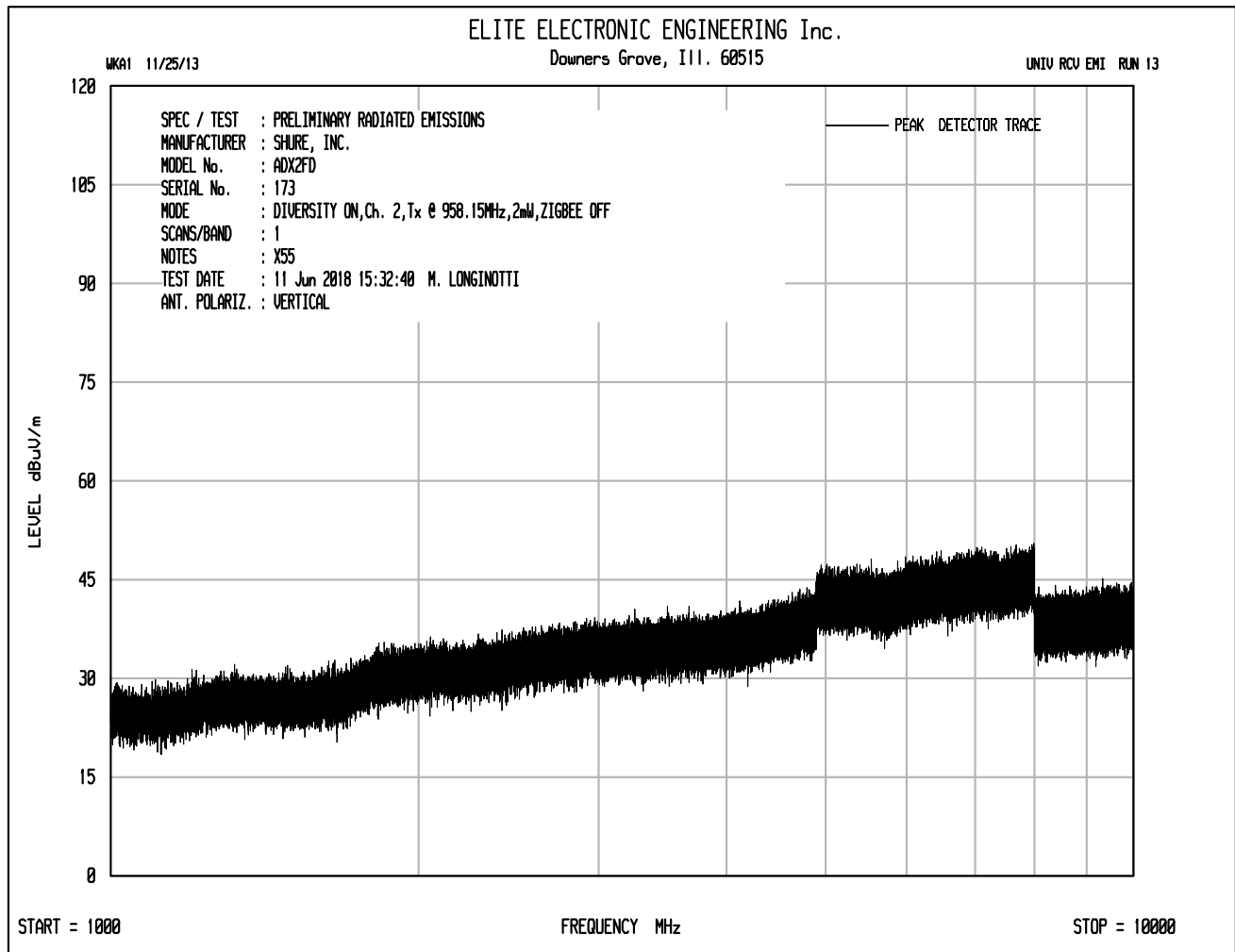
MARK E. LONGINOTTI

Mark E. Longinotti











MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 958.15MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

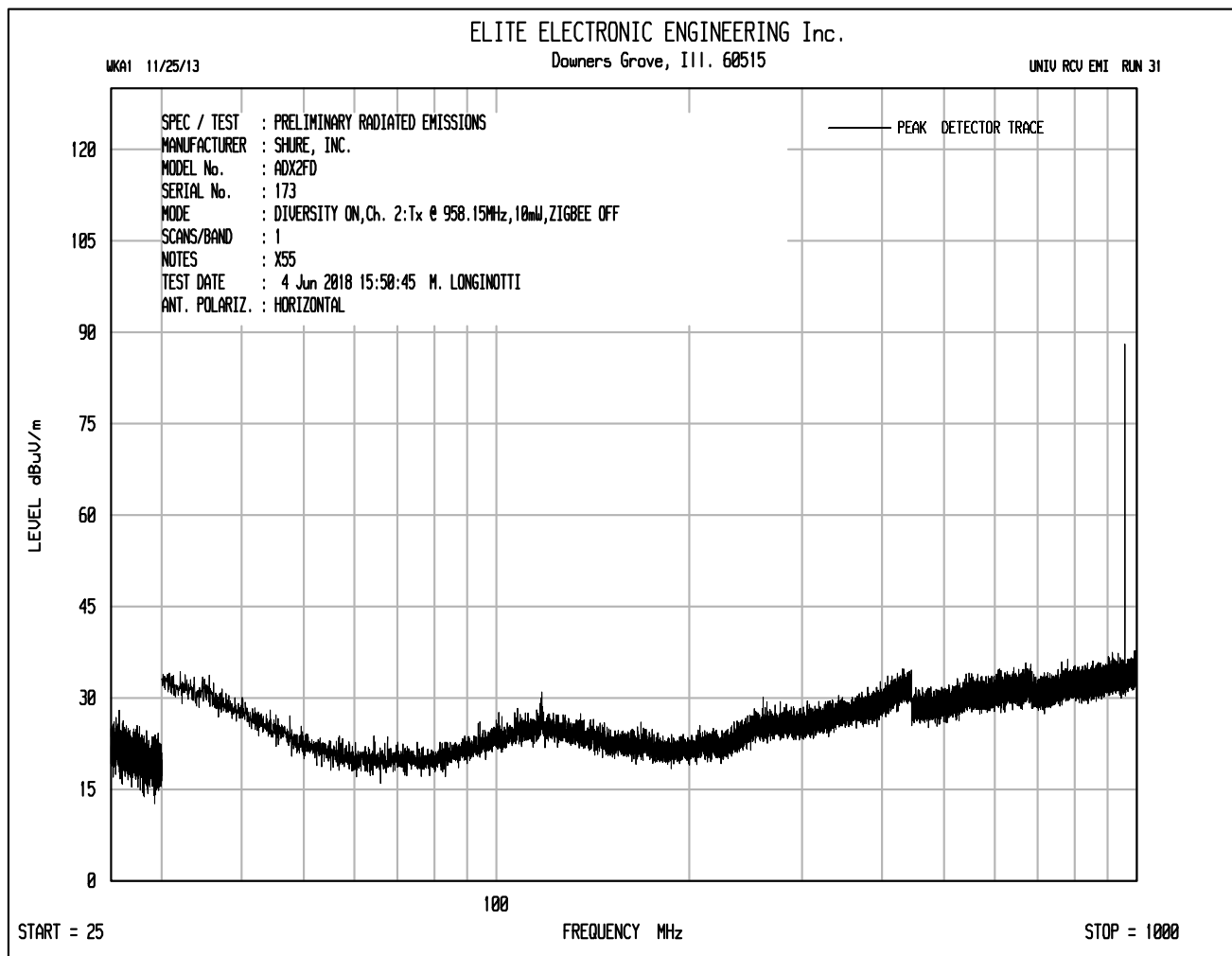
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1916.30	H	0.2	Ambient	-65.4	3.6	3.0	-64.8	-30.0	-34.8
1916.30	V	0.3	Ambient	-62.8	3.6	3.0	-62.1	-30.0	-32.1
2874.45	H	1.4	Ambient	-64.0	4.9	3.8	-62.9	-30.0	-32.9
2874.45	V	1.4	Ambient	-62.3	4.9	3.8	-61.2	-30.0	-31.2
3832.60	H	1.9	Ambient	-61.0	7.3	4.4	-58.1	-30.0	-28.1
3832.60	V	1.9	Ambient	-59.9	7.3	4.4	-56.9	-30.0	-26.9
4790.75	H	3.0	Ambient	-57.1	7.0	4.8	-55.0	-30.0	-25.0
4790.75	V	3.0	Ambient	-56.7	7.0	4.8	-54.5	-30.0	-24.5
5748.90	H	6.1	Ambient	-52.3	7.7	5.3	-49.9	-30.0	-19.9
5748.90	V	6.1	Ambient	-52.4	7.7	5.3	-50.0	-30.0	-20.0
6707.05	H	7.0	Ambient	-48.4	8.4	5.8	-45.9	-30.0	-15.9
6707.05	V	7.0	Ambient	-49.5	8.4	5.8	-47.0	-30.0	-17.0
7665.20	H	7.8	Ambient	-48.7	9.6	6.3	-45.4	-30.0	-15.4
7665.20	V	7.8	Ambient	-49.6	9.6	6.3	-46.3	-30.0	-16.3
8623.35	H	1.0	Ambient	-55.4	10.3	6.5	-51.6	-30.0	-21.6
8623.35	V	1.0	Ambient	-55.8	10.3	6.5	-52.0	-30.0	-22.0
9581.50	H	0.8	Ambient	-54.2	10.5	6.8	-50.5	-30.0	-20.5
9581.50	V	0.8	Ambient	-54.6	10.5	6.8	-50.9	-30.0	-20.9

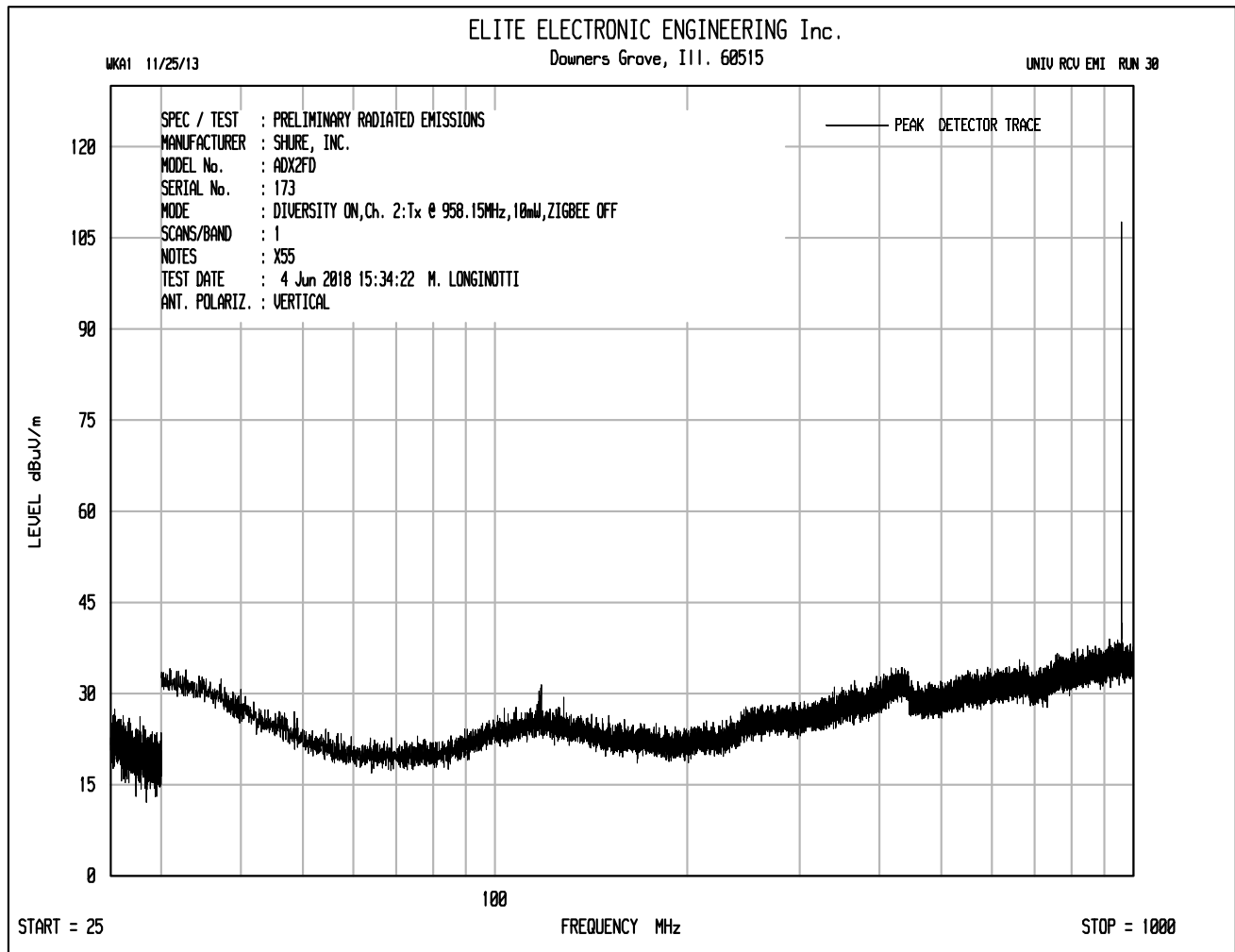
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

Checked By:

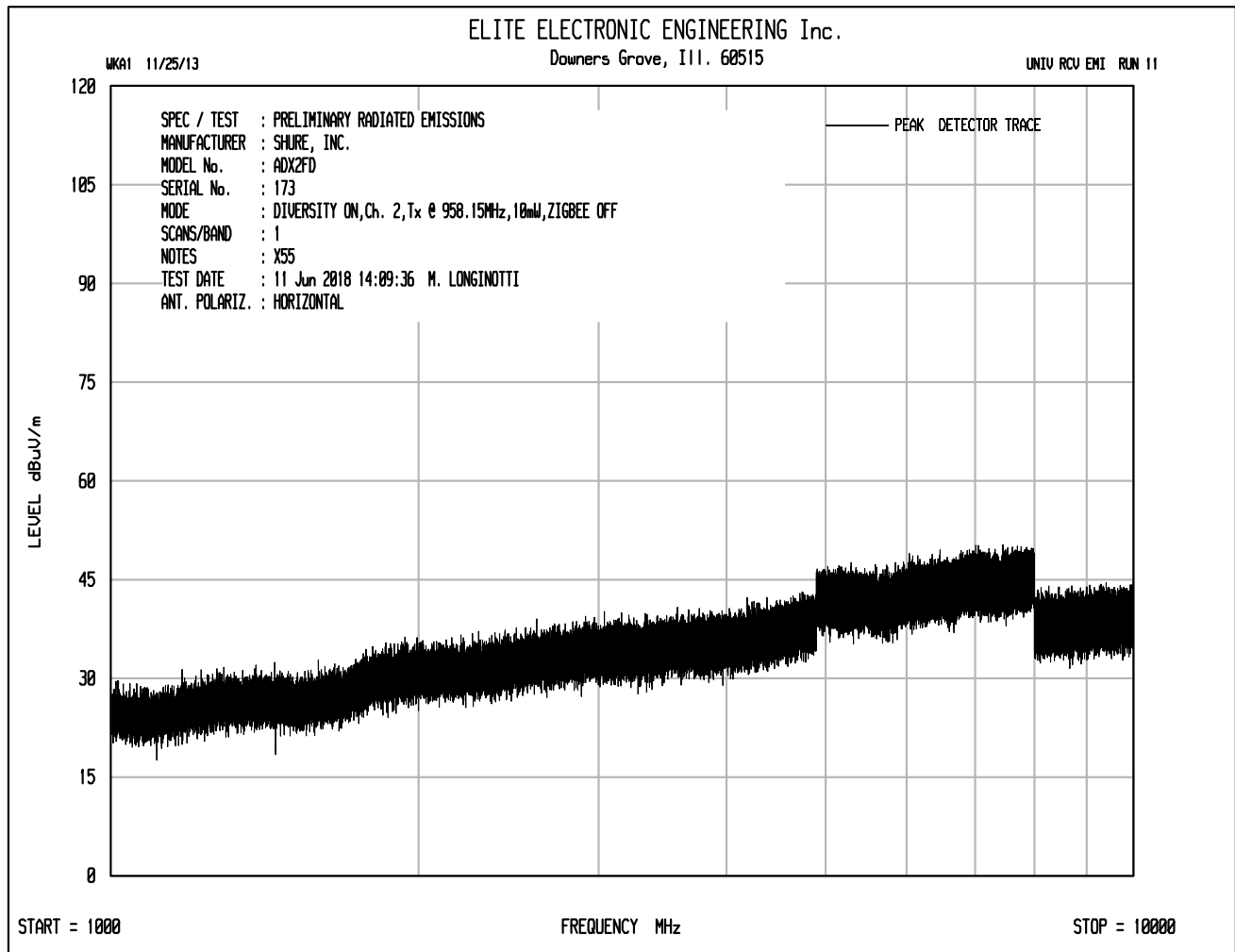
MARK E. LONGINOTTI

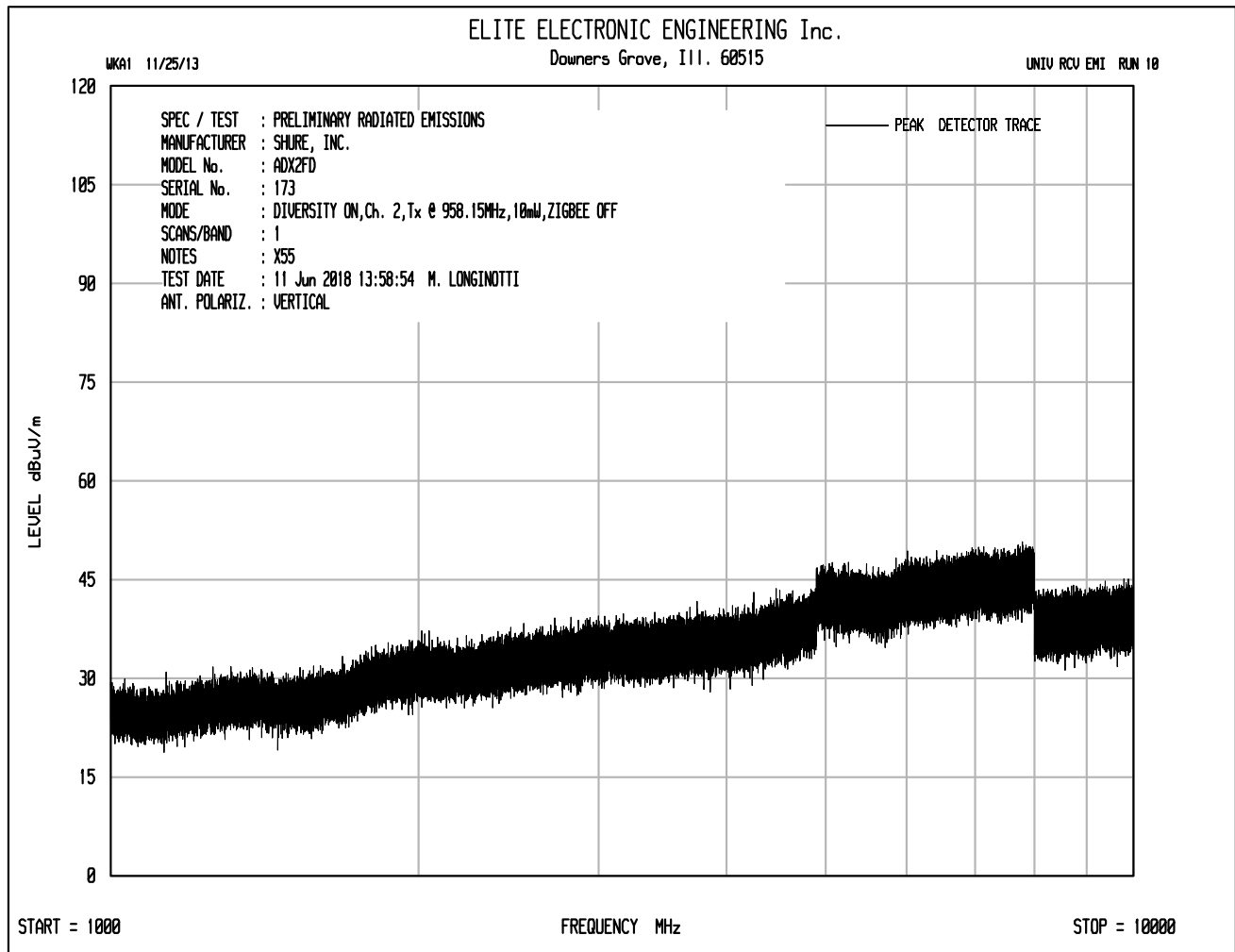
Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 958.15MHz, 10mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 Off, Channel 2 On, Diversity On, Zigbee Off

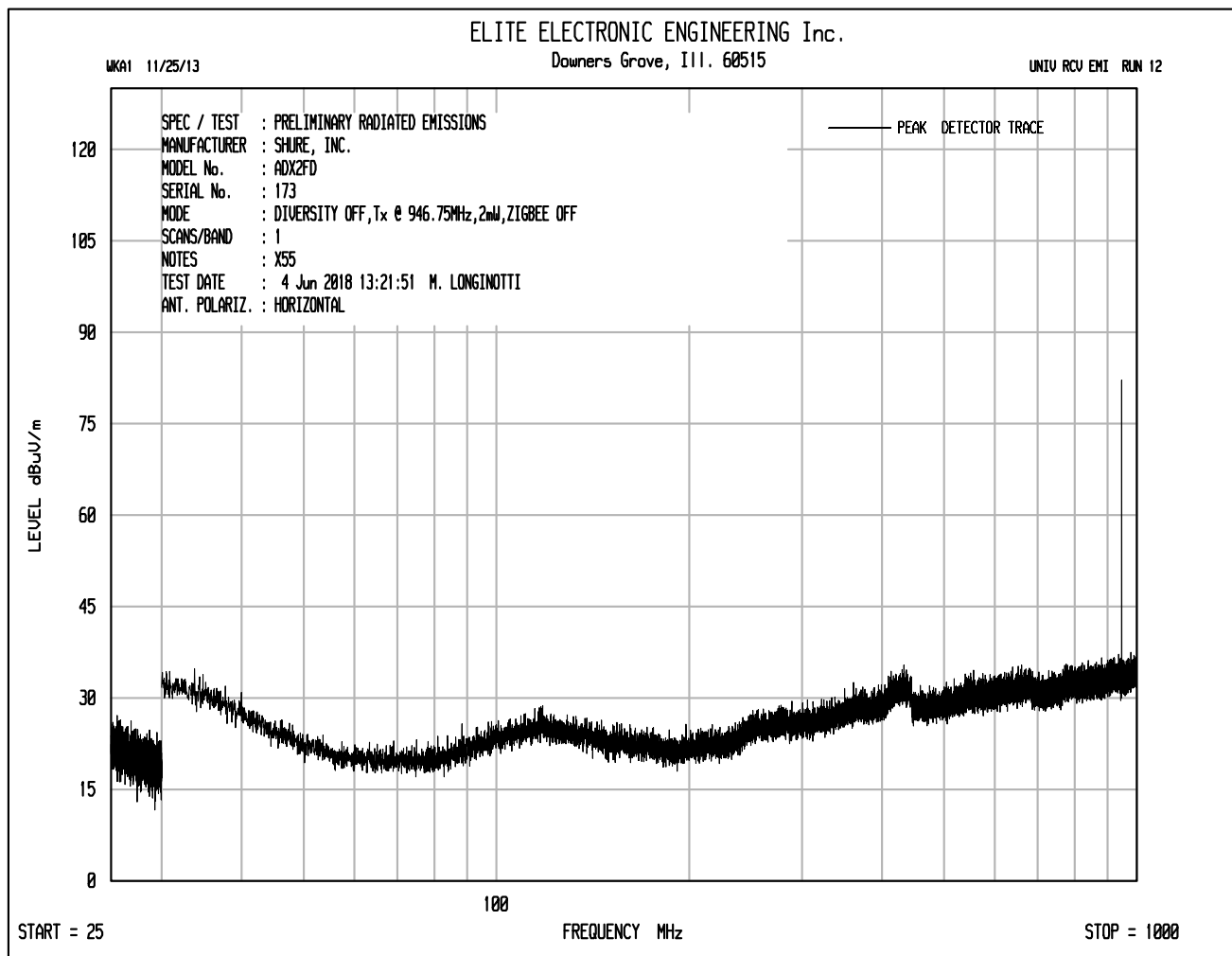
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1916.30	H	0.3	Ambient	-65.3	3.6	3.0	-64.7	-30.0	-34.7
1916.30	V	0.2	Ambient	-62.9	3.6	3.0	-62.2	-30.0	-32.2
2874.45	H	1.3	Ambient	-64.1	4.9	3.8	-63.0	-30.0	-33.0
2874.45	V	1.6	Ambient	-62.1	4.9	3.8	-61.0	-30.0	-31.0
3832.60	H	1.8	Ambient	-61.1	7.3	4.4	-58.2	-30.0	-28.2
3832.60	V	1.8	Ambient	-60.0	7.3	4.4	-57.0	-30.0	-27.0
4790.75	H	2.9	Ambient	-57.2	7.0	4.8	-55.1	-30.0	-25.1
4790.75	V	2.9	Ambient	-56.8	7.0	4.8	-54.6	-30.0	-24.6
5748.90	H	6.0	Ambient	-52.4	7.7	5.3	-50.0	-30.0	-20.0
5748.90	V	6.0	Ambient	-52.5	7.7	5.3	-50.1	-30.0	-20.1
6707.05	H	6.8	Ambient	-48.6	8.4	5.8	-46.1	-30.0	-16.1
6707.05	V	6.9	Ambient	-49.6	8.4	5.8	-47.1	-30.0	-17.1
7665.20	H	7.7	Ambient	-48.8	9.6	6.3	-45.5	-30.0	-15.5
7665.20	V	7.7	Ambient	-49.7	9.6	6.3	-46.4	-30.0	-16.4
8623.35	H	1.0	Ambient	-55.4	10.3	6.5	-51.6	-30.0	-21.6
8623.35	V	1.1	Ambient	-55.7	10.3	6.5	-51.9	-30.0	-21.9
9581.50	H	0.8	Ambient	-54.2	10.5	6.8	-50.5	-30.0	-20.5
9581.50	V	0.8	Ambient	-54.6	10.5	6.8	-50.9	-30.0	-20.9

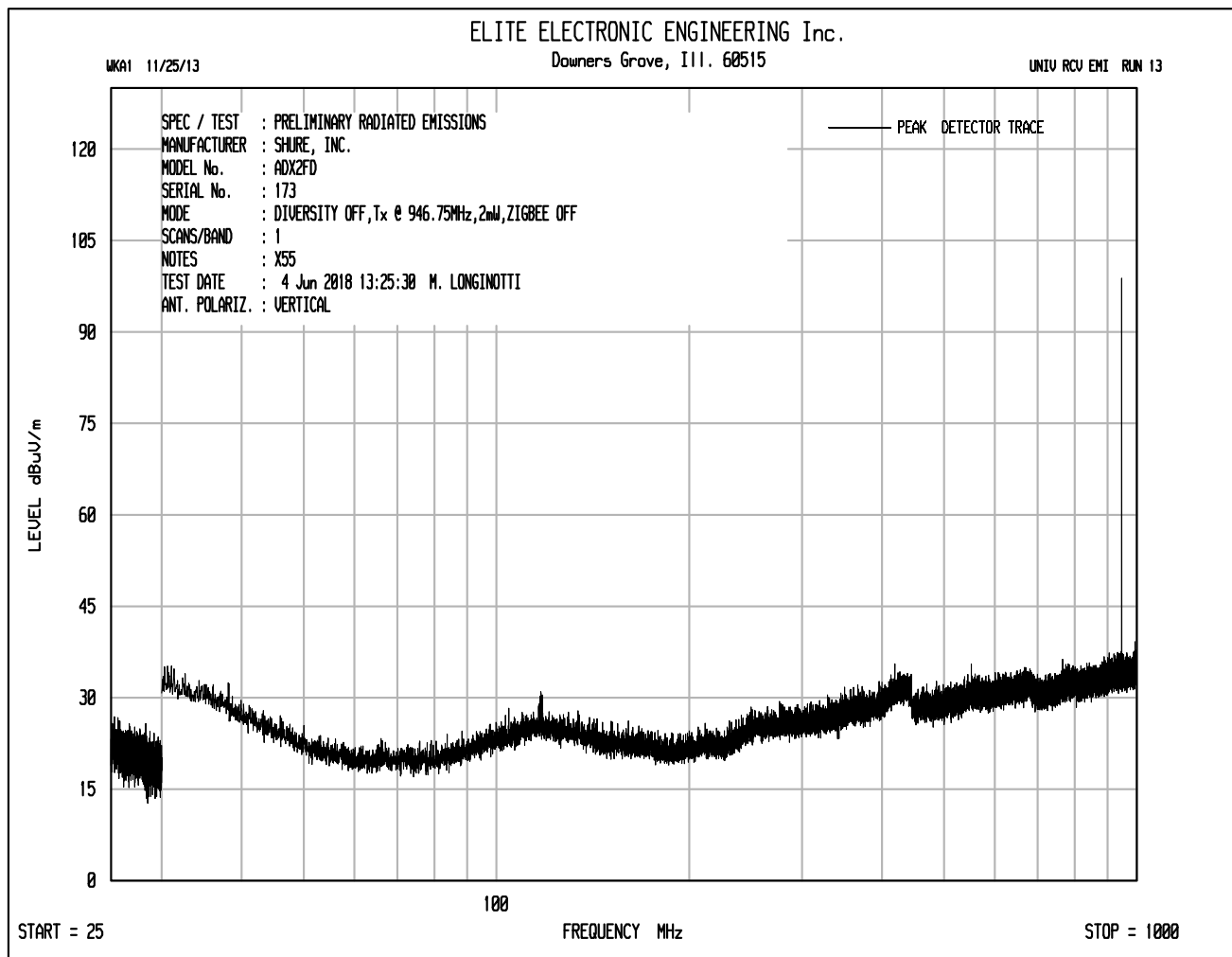
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

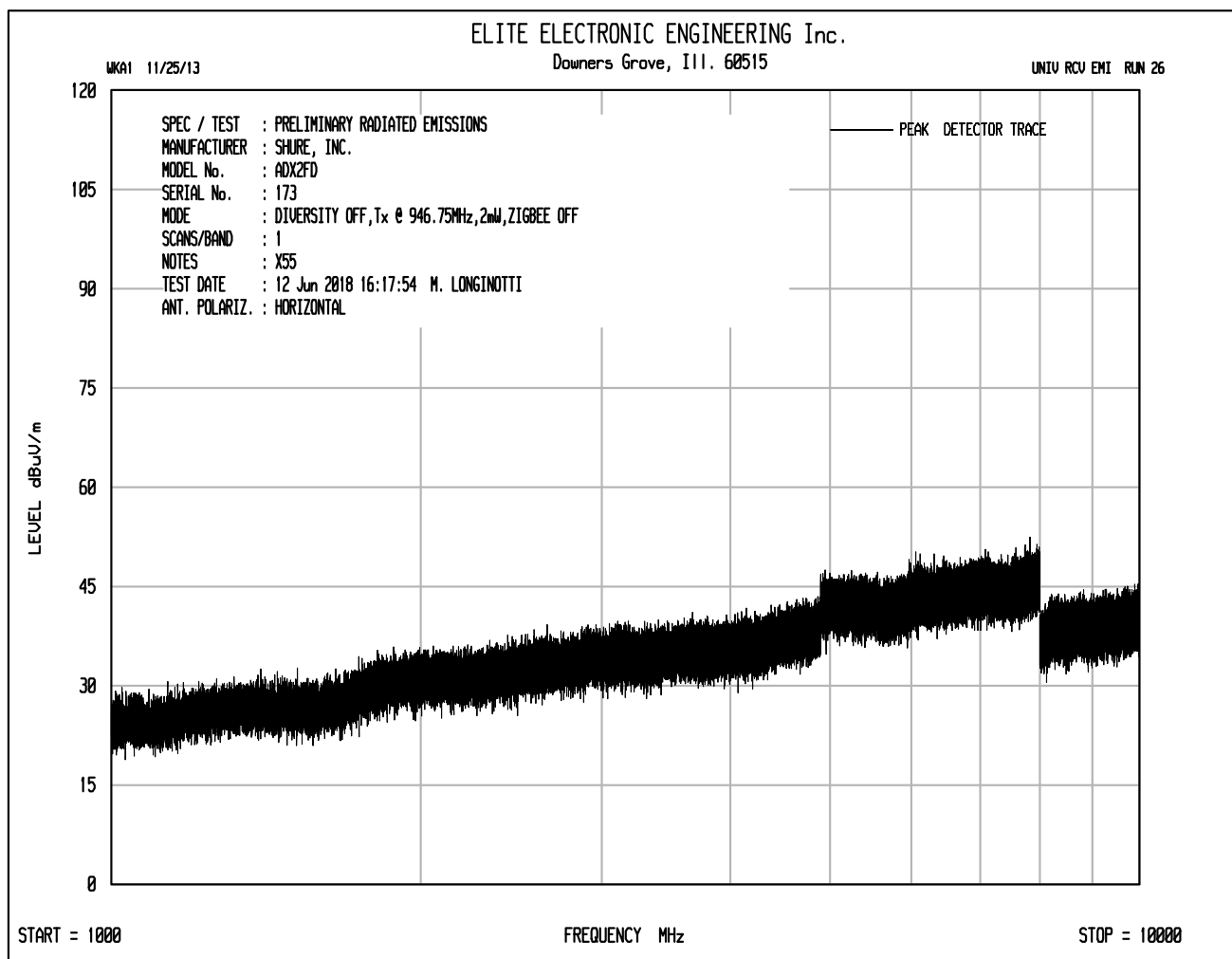
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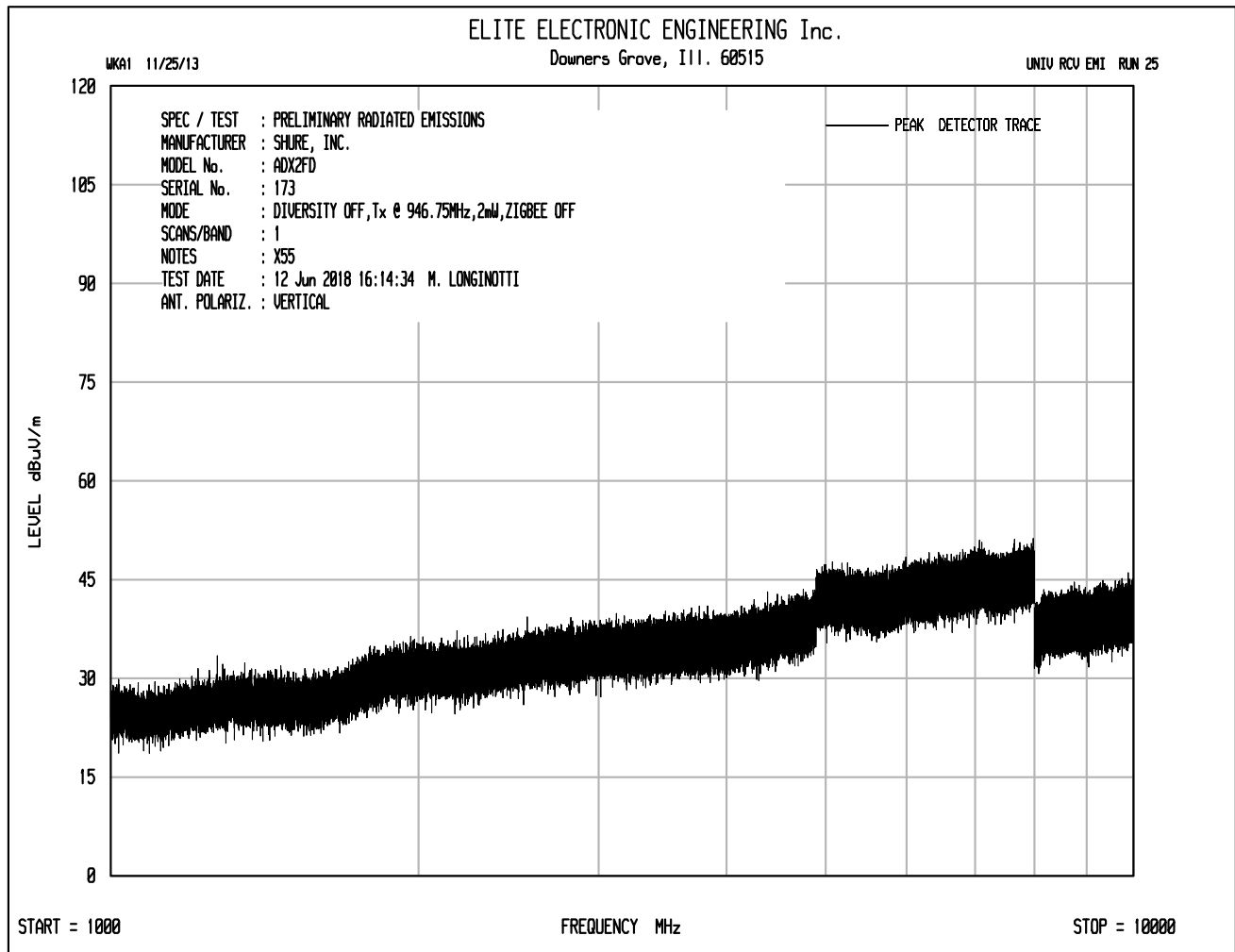
MARK E. LONGINOTTI

Mark E. Longinotti











MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 946.75MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1893.50	H	0.3	Ambient	-65.6	3.7	3.0	-65.0	-30.0	-35.0
1893.50	V	0.3	Ambient	-63.0	3.7	3.0	-62.3	-30.0	-32.3
2840.25	H	1.4	Ambient	-64.3	4.9	3.8	-63.1	-30.0	-33.1
2840.25	V	1.4	Ambient	-62.5	4.9	3.8	-61.4	-30.0	-31.4
3787.00	H	2.0	Ambient	-60.9	7.3	4.4	-58.0	-30.0	-28.0
3787.00	V	2.0	Ambient	-59.7	7.3	4.4	-56.8	-30.0	-26.8
4733.75	H	3.2	Ambient	-57.0	6.8	4.8	-55.0	-30.0	-25.0
4733.75	V	3.1	Ambient	-56.9	6.8	4.8	-54.8	-30.0	-24.8
5680.50	H	6.1	Ambient	-52.7	7.9	5.3	-50.1	-30.0	-20.1
5680.50	V	6.1	Ambient	-52.8	7.9	5.3	-50.2	-30.0	-20.2
6627.25	H	6.8	Ambient	-48.7	8.5	5.8	-46.0	-30.0	-16.0
6627.25	V	6.7	Ambient	-49.8	8.5	5.8	-47.1	-30.0	-17.1
7574.00	H	7.5	Ambient	-49.2	9.7	6.3	-45.8	-30.0	-15.8
7574.00	V	7.5	Ambient	-49.8	9.7	6.3	-46.4	-30.0	-16.4
8520.75	H	1.0	Ambient	-55.4	10.1	6.5	-51.8	-30.0	-21.8
8520.75	V	1.0	Ambient	-56.0	10.1	6.5	-52.4	-30.0	-22.4
9467.50	H	0.7	Ambient	-54.6	10.5	6.7	-50.8	-30.0	-20.8
9467.50	V	0.7	Ambient	-54.9	10.5	6.7	-51.2	-30.0	-21.2

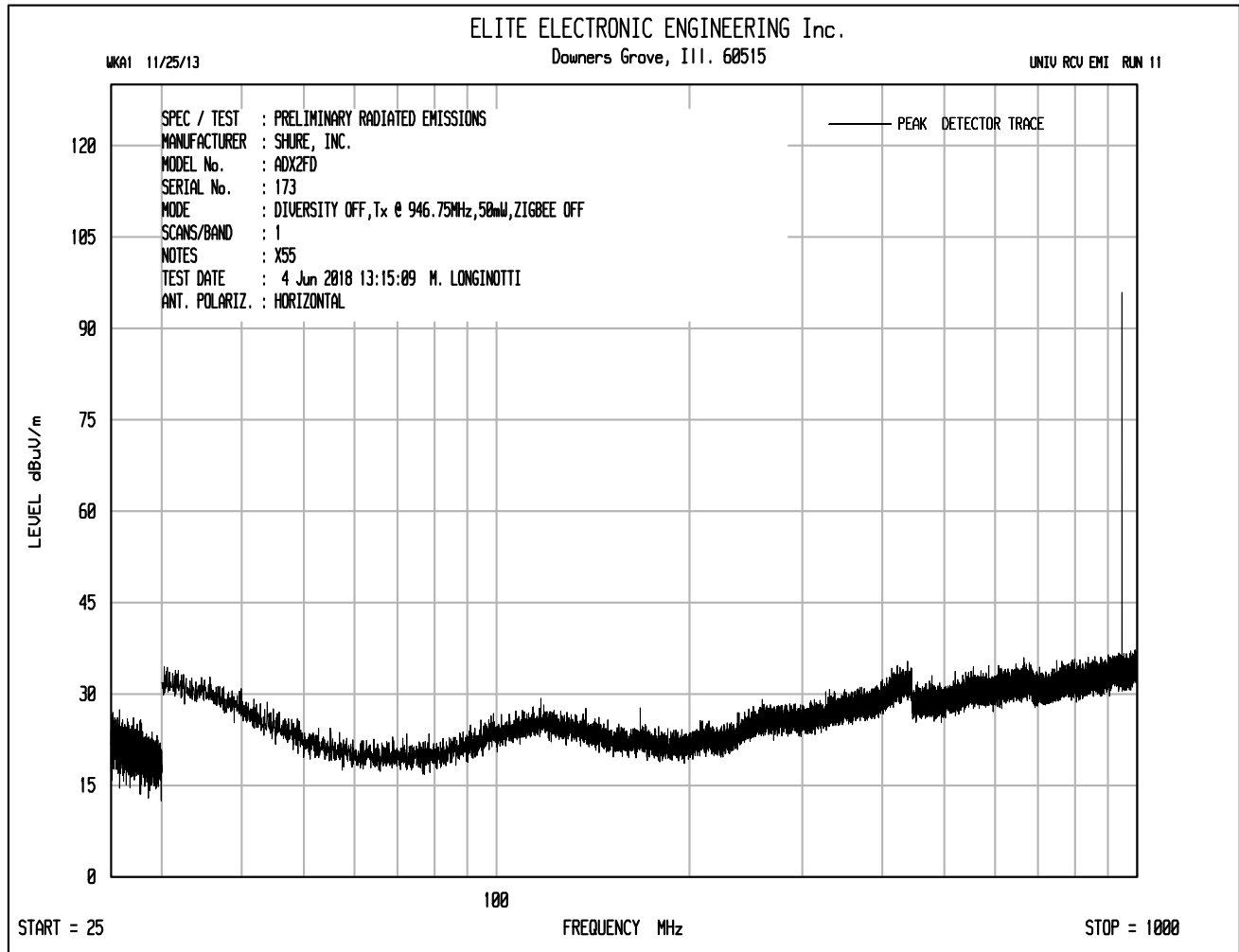
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

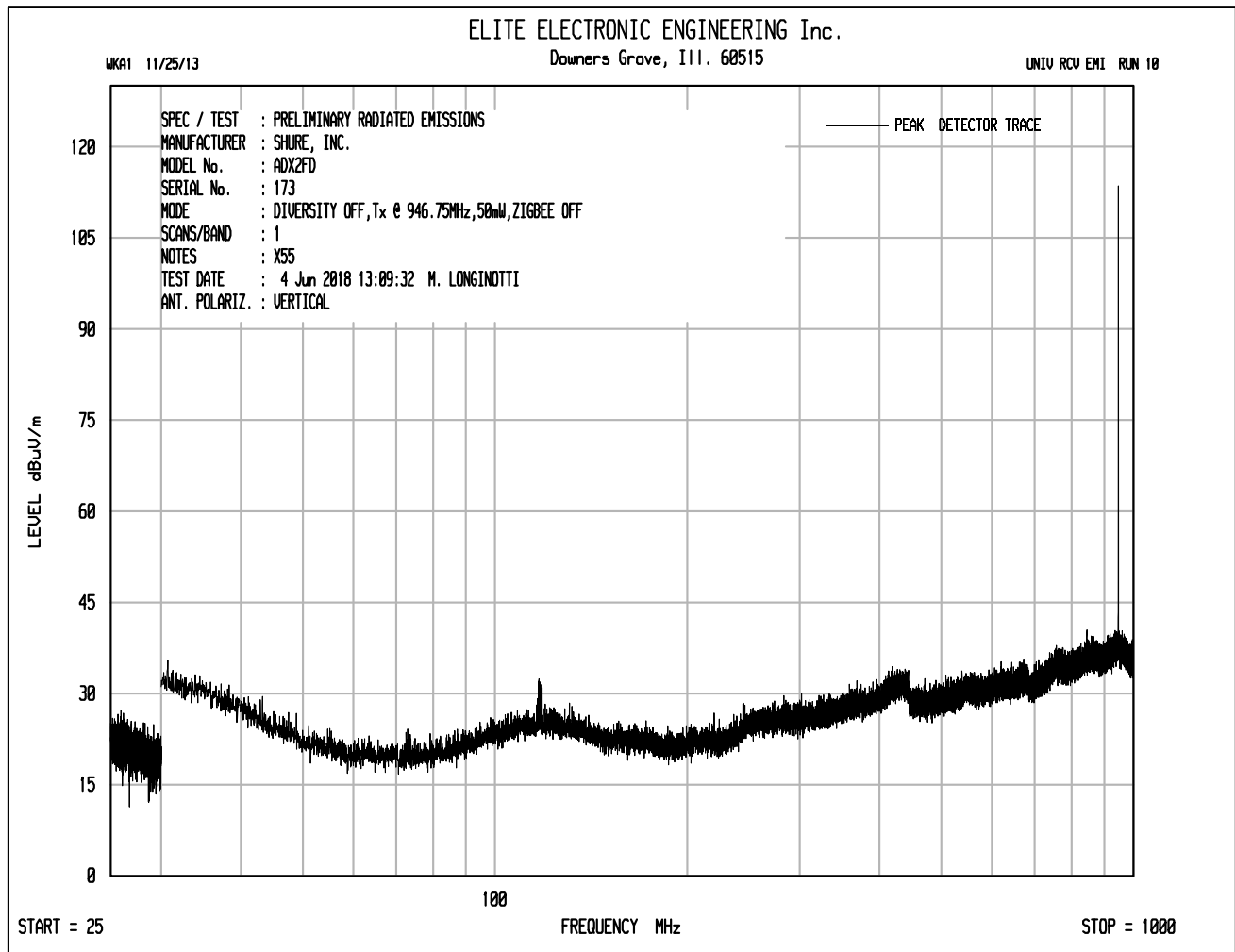
Checked By:

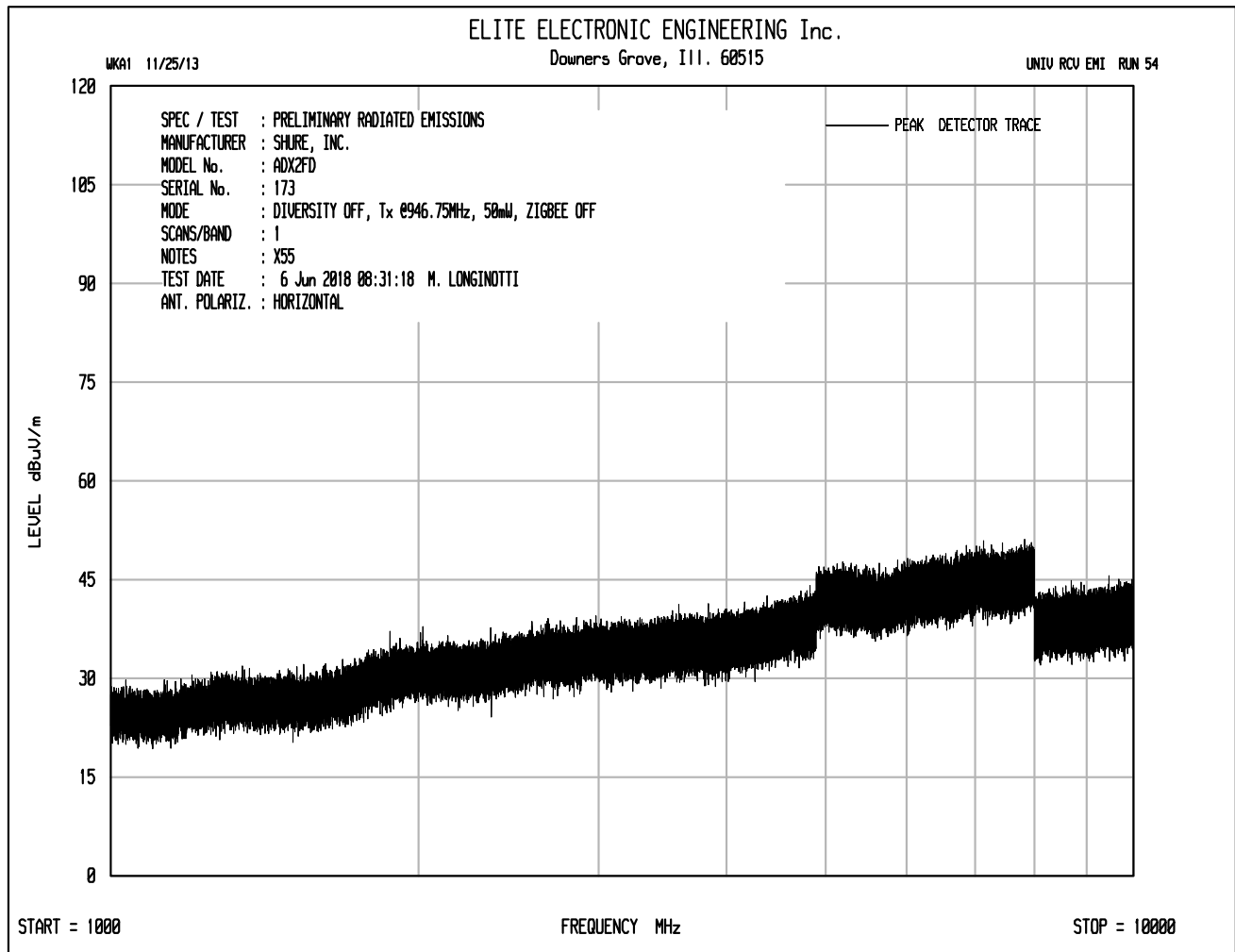
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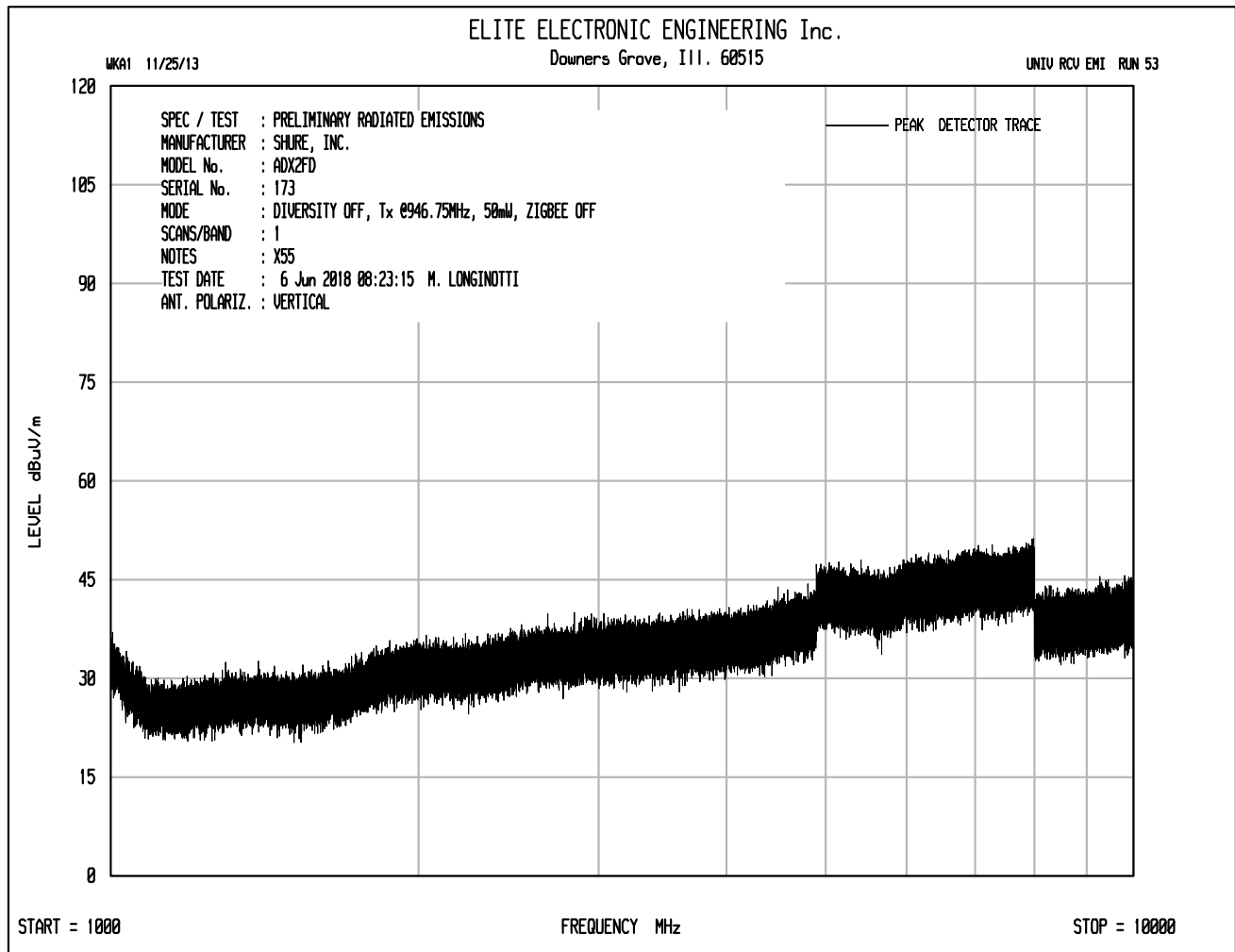
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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 946.75MHz, 50mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

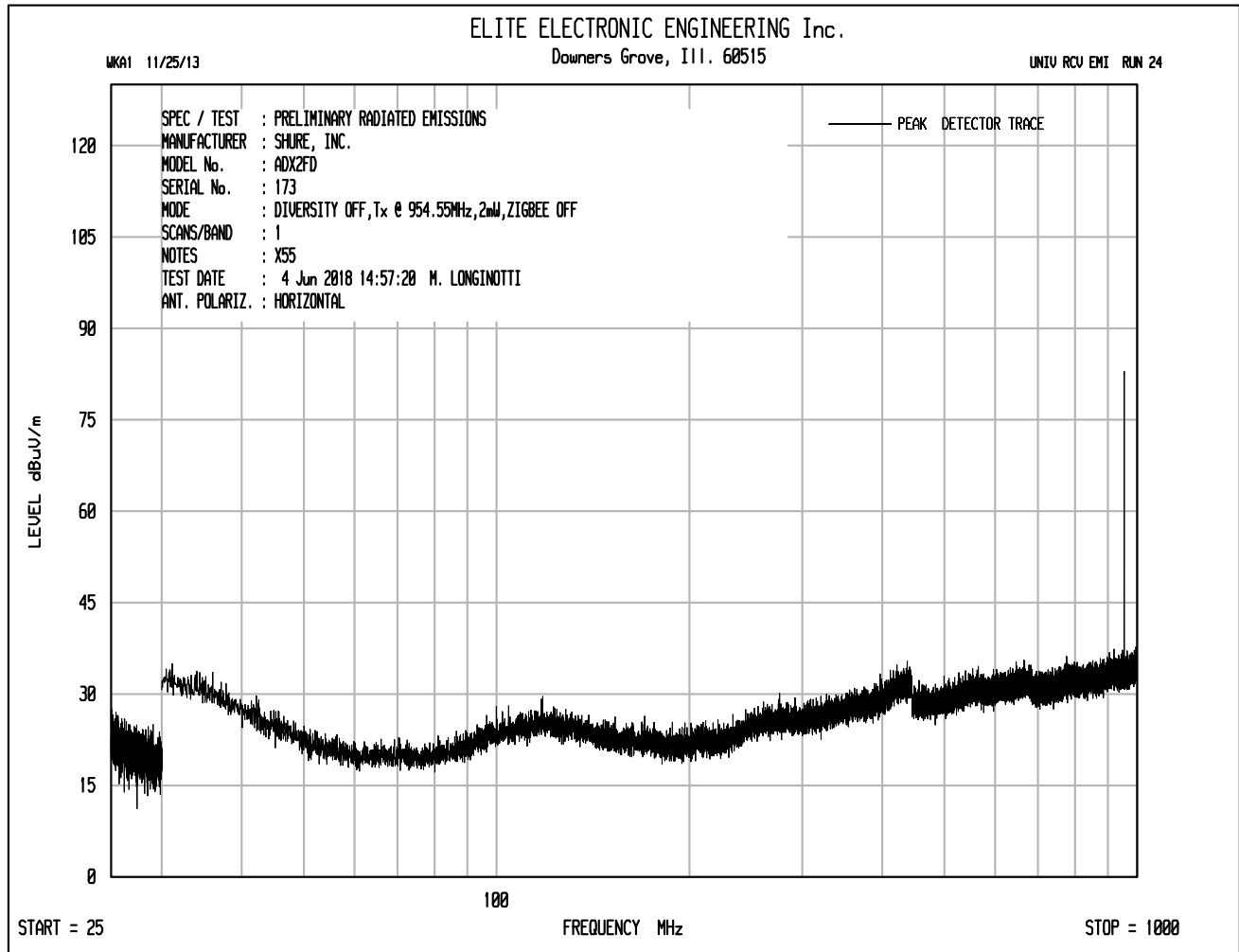
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1893.50	H	0.3	Ambient	-65.7	3.7	3.0	-65.0	-30.0	-35.0
1893.50	V	0.2	Ambient	-63.1	3.7	3.0	-62.4	-30.0	-32.4
2840.25	H	1.7		-64.0	4.9	3.8	-62.8	-30.0	-32.8
2840.25	V	3.0		-60.9	4.9	3.8	-59.8	-30.0	-29.8
3787.00	H	1.8	Ambient	-61.1	7.3	4.4	-58.2	-30.0	-28.2
3787.00	V	1.9	Ambient	-59.8	7.3	4.4	-56.9	-30.0	-26.9
4733.75	H	3.1	Ambient	-57.1	6.8	4.8	-55.1	-30.0	-25.1
4733.75	V	3.1	Ambient	-56.9	6.8	4.8	-54.8	-30.0	-24.8
5680.50	H	6.1	Ambient	-52.7	7.9	5.3	-50.1	-30.0	-20.1
5680.50	V	6.1	Ambient	-52.8	7.9	5.3	-50.2	-30.0	-20.2
6627.25	H	6.8	Ambient	-48.7	8.5	5.8	-46.0	-30.0	-16.0
6627.25	V	6.8	Ambient	-49.7	8.5	5.8	-47.0	-30.0	-17.0
7574.00	H	7.5	Ambient	-49.2	9.7	6.3	-45.8	-30.0	-15.8
7574.00	V	7.5	Ambient	-49.8	9.7	6.3	-46.4	-30.0	-16.4
8520.75	H	0.9	Ambient	-55.5	10.1	6.5	-51.9	-30.0	-21.9
8520.75	V	0.9	Ambient	-56.1	10.1	6.5	-52.5	-30.0	-22.5
9467.50	H	0.8	Ambient	-54.5	10.5	6.7	-50.7	-30.0	-20.7
9467.50	V	0.8	Ambient	-54.8	10.5	6.7	-51.1	-30.0	-21.1

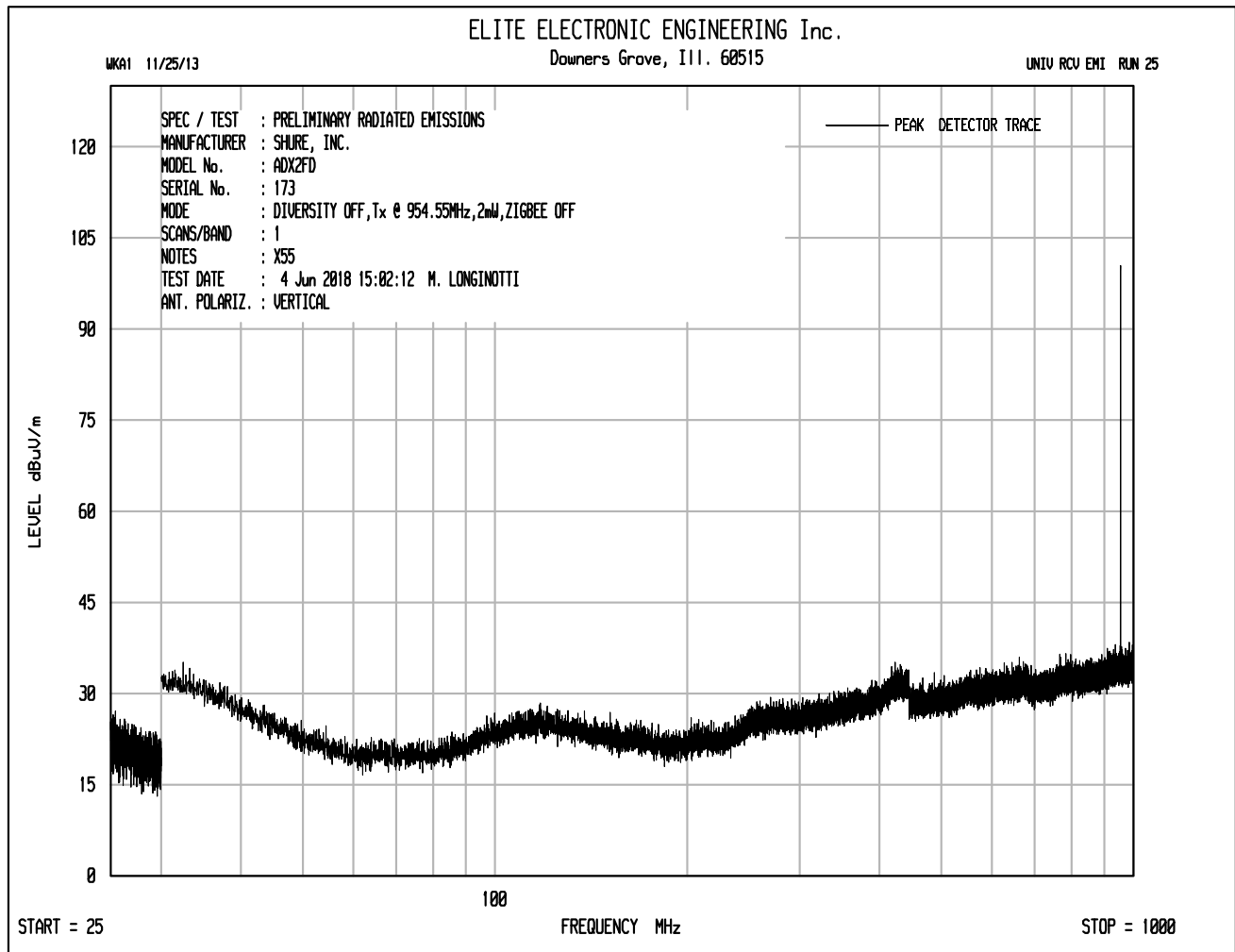
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

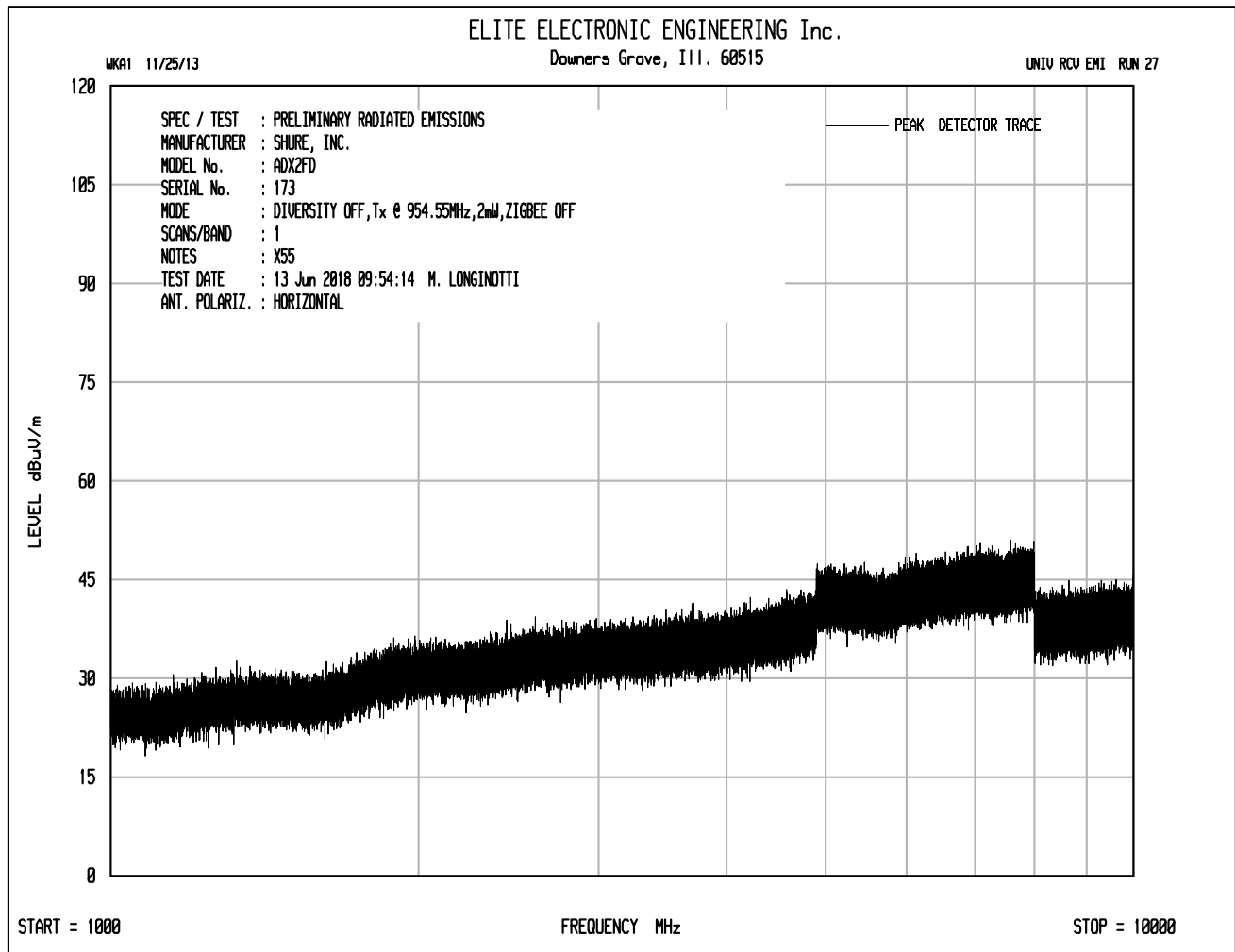
Checked By:

MARK E. LONGINOTTI

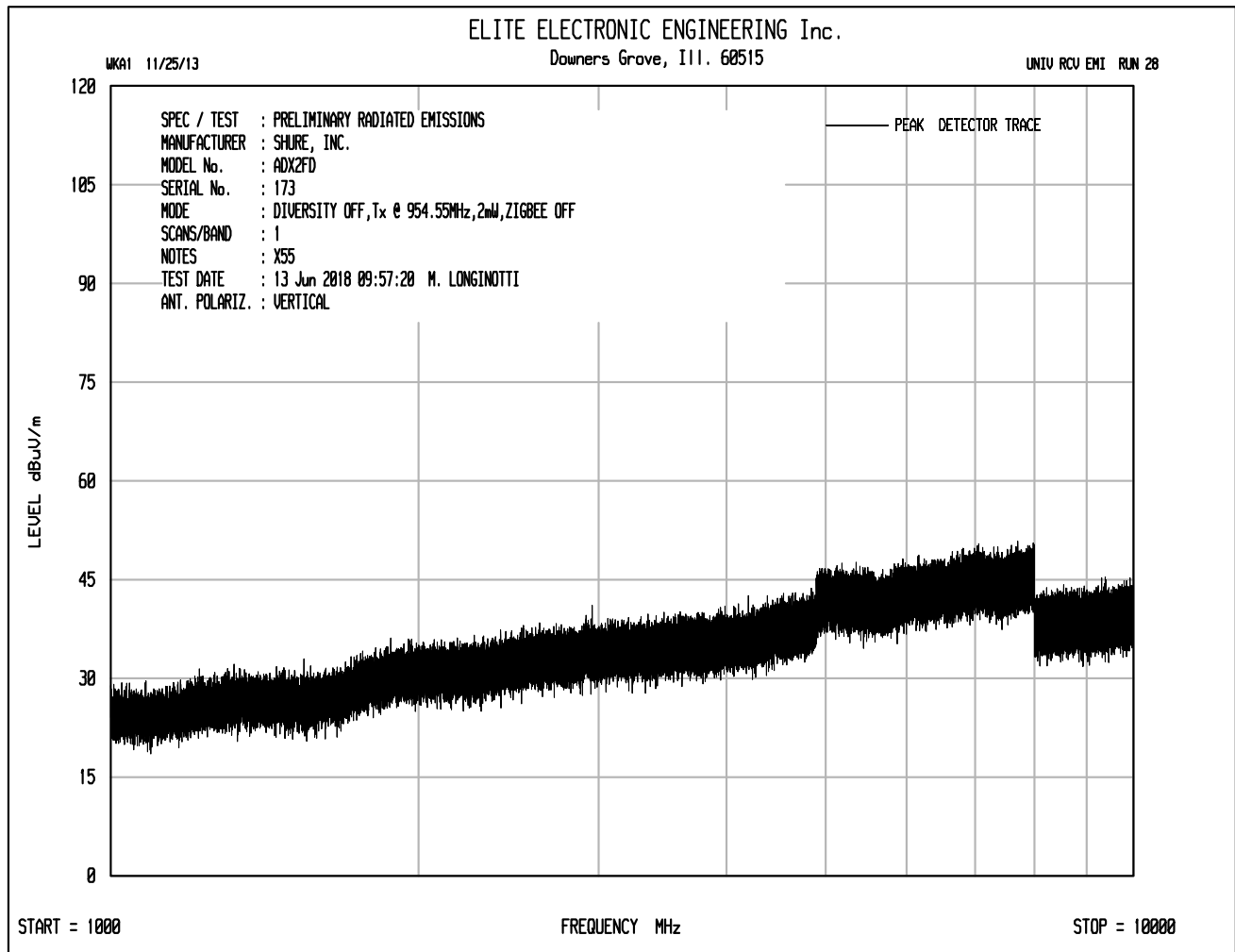
Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 954.55MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

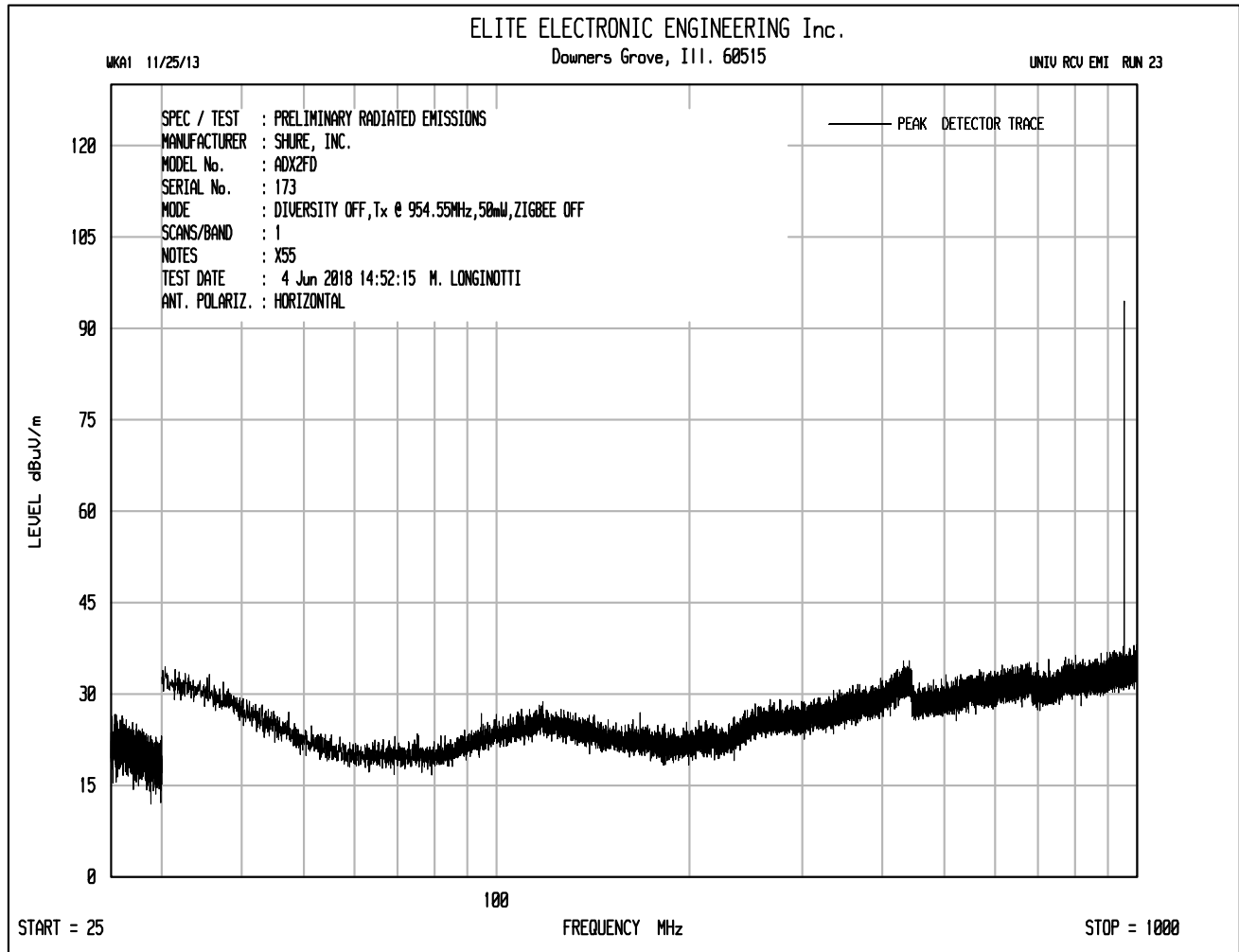
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1909.10	H	0.2	Ambient	-65.5	3.6	3.0	-64.9	-30.0	-34.9
1909.10	V	0.2	Ambient	-62.9	3.6	3.0	-62.3	-30.0	-32.3
2863.65	H	1.3	Ambient	-64.2	4.9	3.8	-63.1	-30.0	-33.1
2863.65	V	1.3	Ambient	-62.5	4.9	3.8	-61.4	-30.0	-31.4
3818.20	H	1.8	Ambient	-61.1	7.3	4.4	-58.2	-30.0	-28.2
3818.20	V	1.8	Ambient	-59.9	7.3	4.4	-57.0	-30.0	-27.0
4772.75	H	2.8	Ambient	-57.3	6.9	4.8	-55.2	-30.0	-25.2
4772.75	V	2.8	Ambient	-57.0	6.9	4.8	-54.9	-30.0	-24.9
5727.30	H	5.8	Ambient	-52.7	7.8	5.3	-50.2	-30.0	-20.2
5727.30	V	5.8	Ambient	-52.8	7.8	5.3	-50.3	-30.0	-20.3
6681.85	H	6.8	Ambient	-48.7	8.4	5.8	-46.1	-30.0	-16.1
6681.85	V	6.8	Ambient	-49.7	8.4	5.8	-47.1	-30.0	-17.1
7636.40	H	7.6	Ambient	-49.0	9.7	6.3	-45.7	-30.0	-15.7
7636.40	V	7.6	Ambient	-49.8	9.7	6.3	-46.4	-30.0	-16.4
8590.95	H	0.9	Ambient	-55.5	10.2	6.5	-51.7	-30.0	-21.7
8590.95	V	1.0	Ambient	-55.8	10.2	6.5	-52.1	-30.0	-22.1
9545.50	H	0.8	Ambient	-54.4	10.5	6.8	-50.6	-30.0	-20.6
9545.50	V	0.8	Ambient	-54.8	10.5	6.8	-51.0	-30.0	-21.0

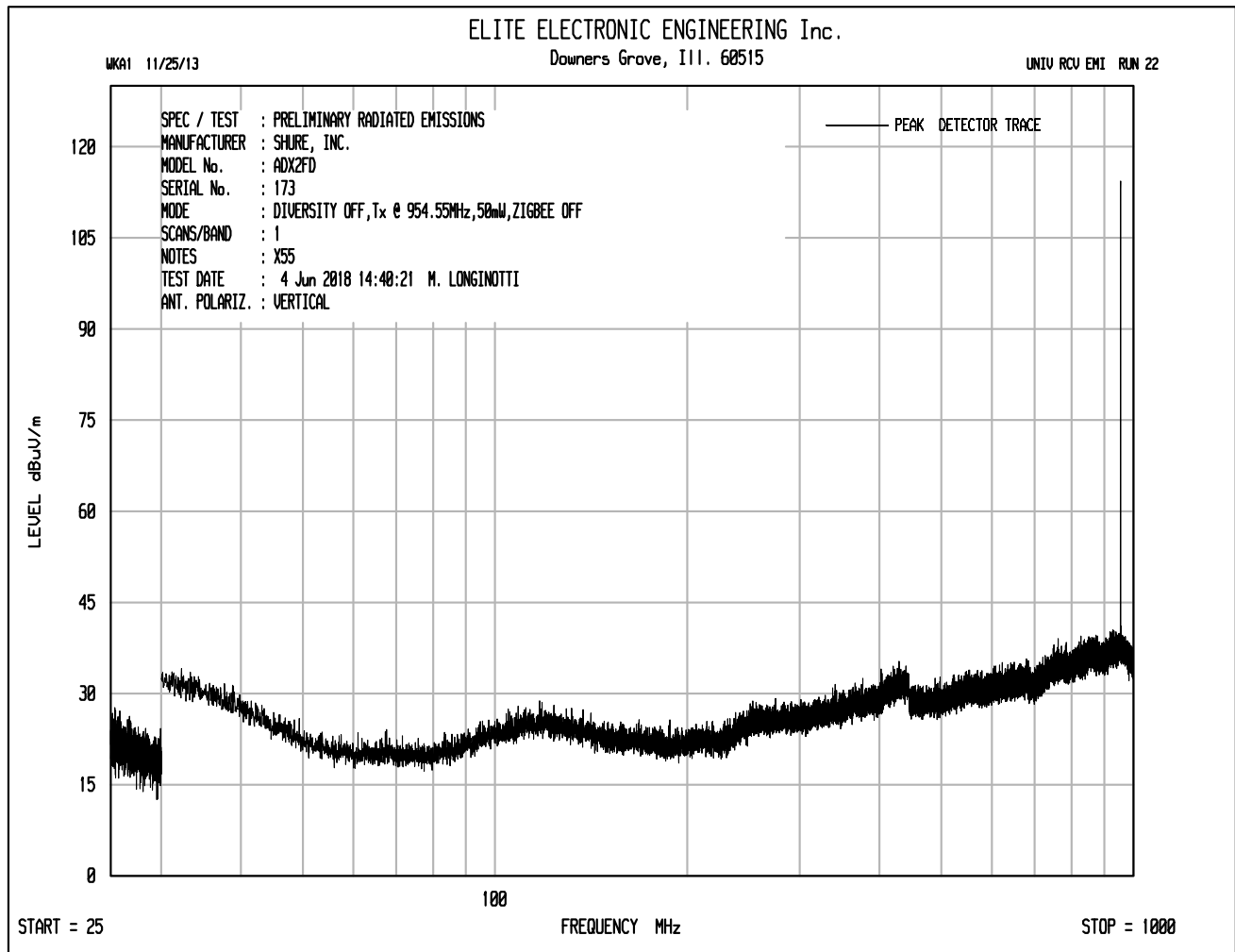
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

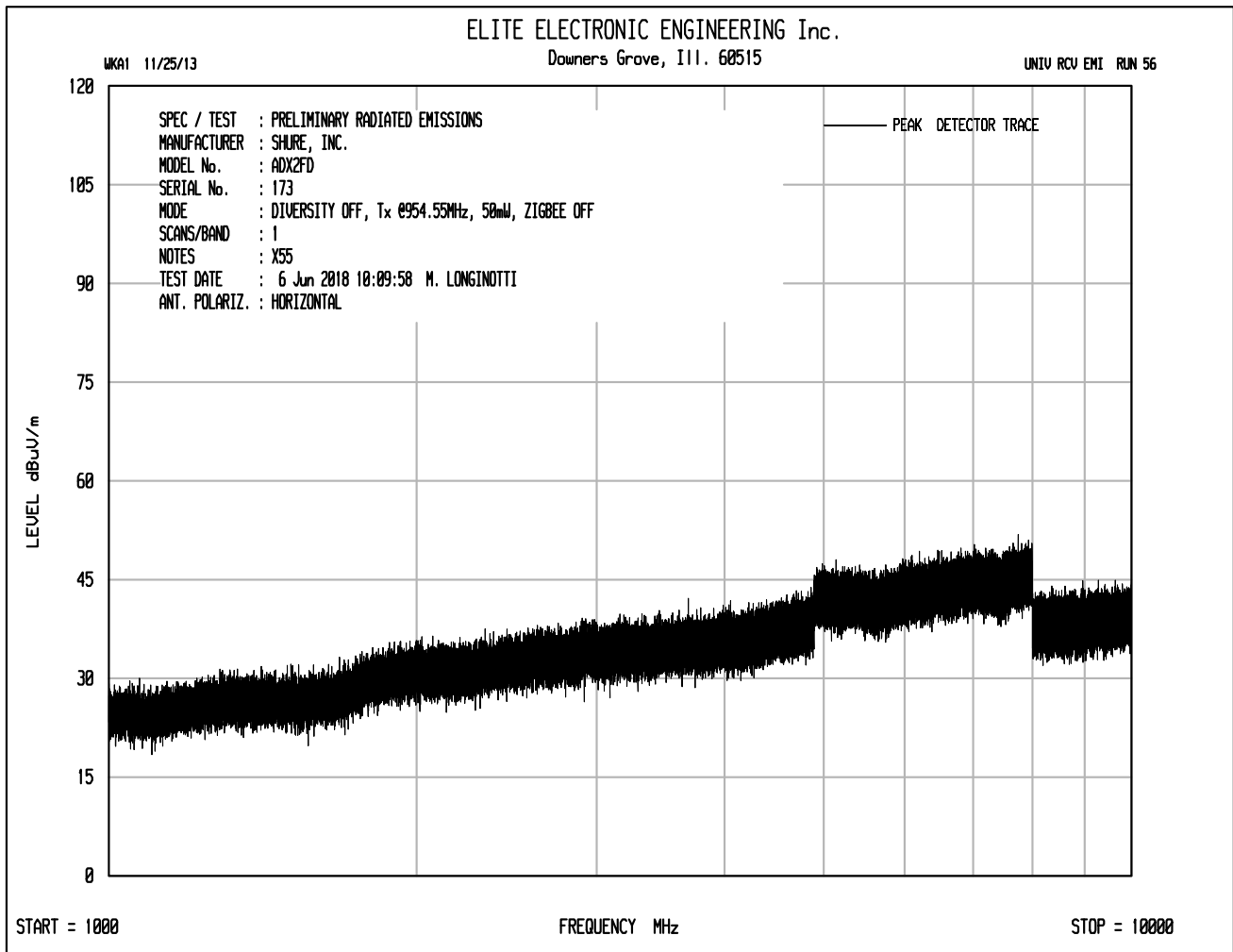
Checked By:

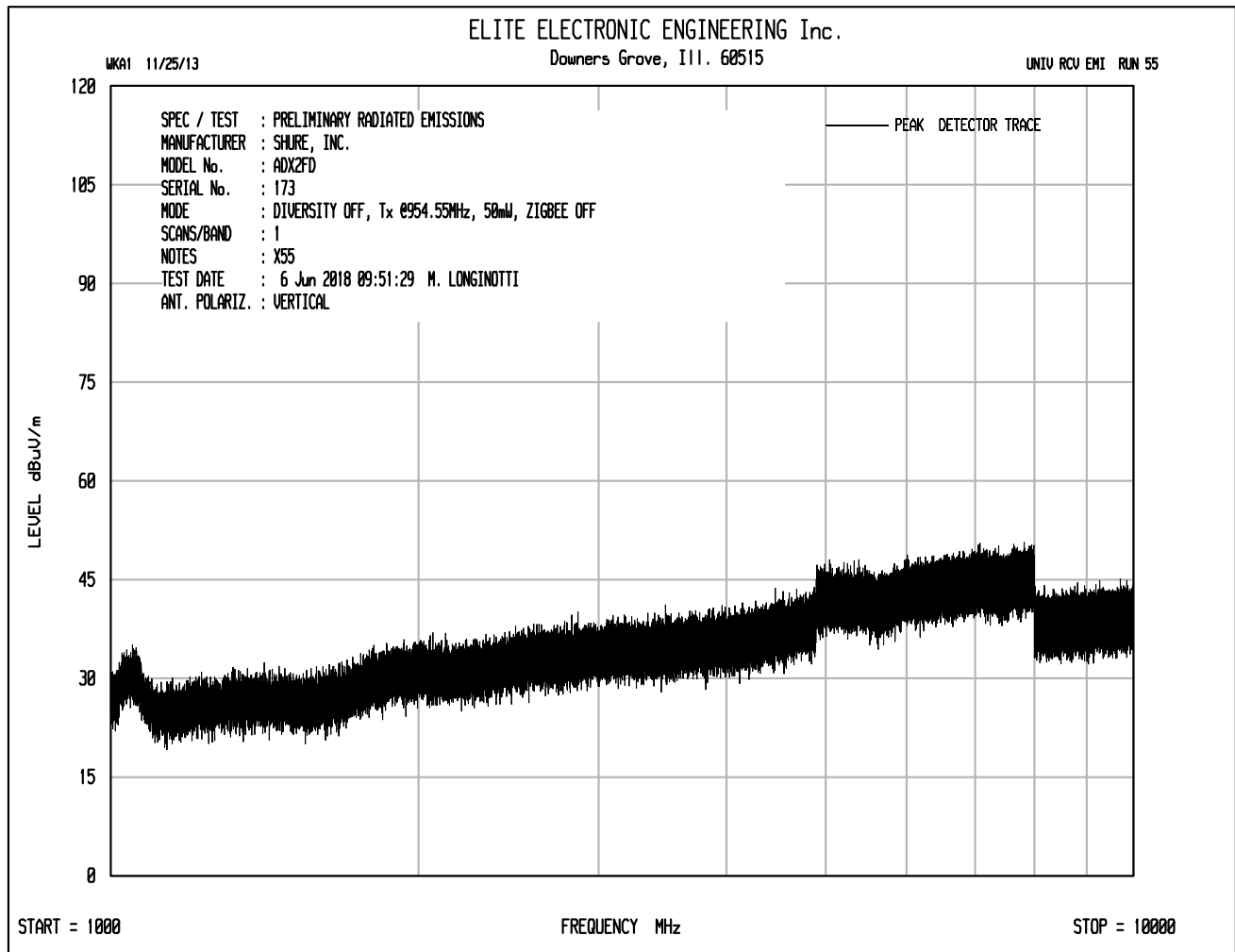
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MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 954.55MHz, 50mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

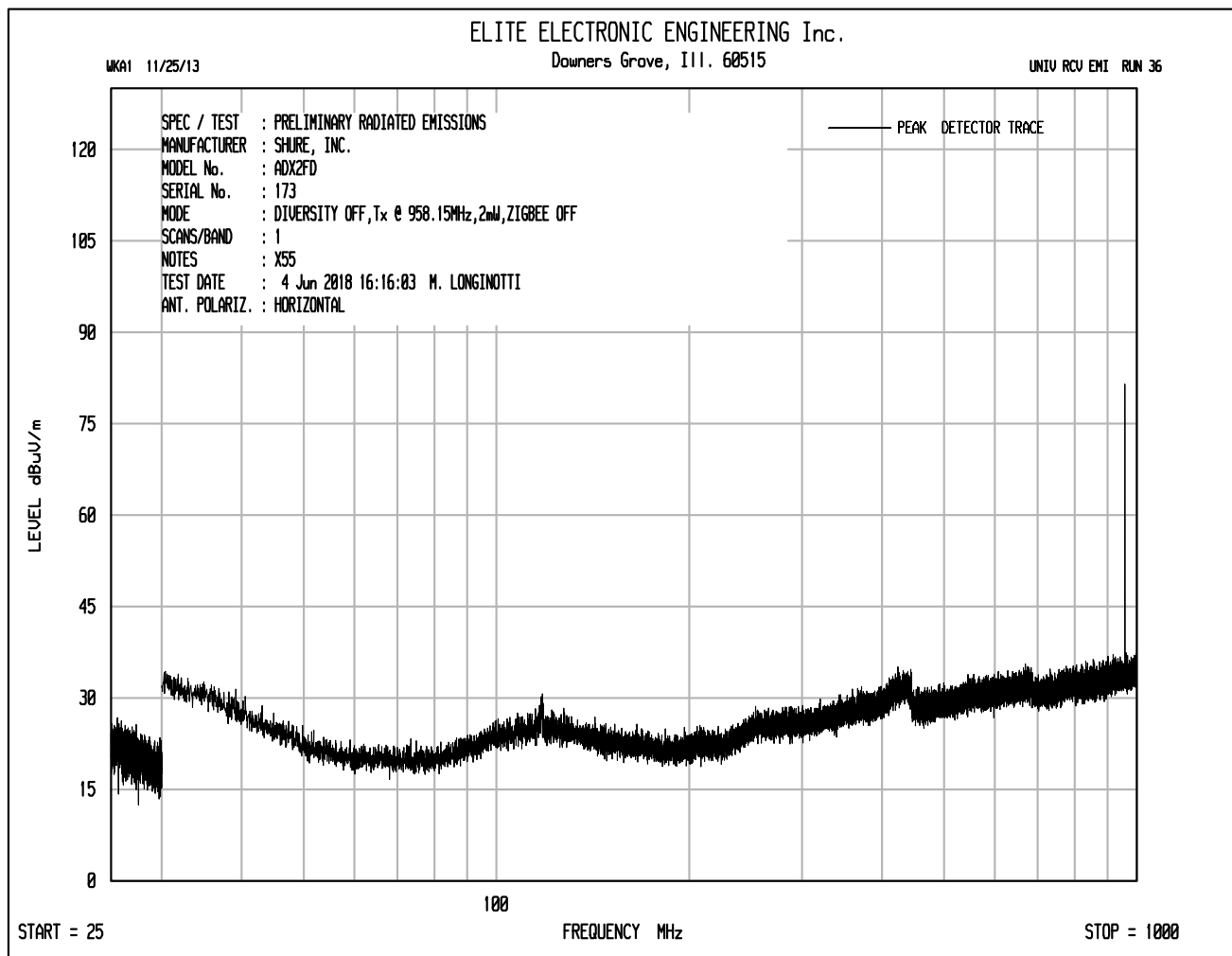
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1909.10	H	0.2	Ambient	-65.5	3.6	3.0	-64.9	-30.0	-34.9
1909.10	V	0.2	Ambient	-62.9	3.6	3.0	-62.3	-30.0	-32.3
2863.65	H	2.3		-63.2	4.9	3.8	-62.1	-30.0	-32.1
2863.65	V	3.9		-59.9	4.9	3.8	-58.8	-30.0	-28.8
3818.20	H	1.9	Ambient	-61.0	7.3	4.4	-58.1	-30.0	-28.1
3818.20	V	1.9	Ambient	-59.8	7.3	4.4	-56.9	-30.0	-26.9
4772.75	H	3.0	Ambient	-57.1	6.9	4.8	-55.0	-30.0	-25.0
4772.75	V	3.0	Ambient	-56.8	6.9	4.8	-54.7	-30.0	-24.7
5727.30	H	6.0	Ambient	-52.5	7.8	5.3	-50.0	-30.0	-20.0
5727.30	V	6.0	Ambient	-52.6	7.8	5.3	-50.1	-30.0	-20.1
6681.85	H	7.0	Ambient	-48.5	8.4	5.8	-45.9	-30.0	-15.9
6681.85	V	7.0	Ambient	-49.5	8.4	5.8	-46.9	-30.0	-16.9
7636.40	H	7.8	Ambient	-48.8	9.7	6.3	-45.5	-30.0	-15.5
7636.40	V	7.8	Ambient	-49.6	9.7	6.3	-46.2	-30.0	-16.2
8590.95	H	1.0	Ambient	-55.4	10.2	6.5	-51.6	-30.0	-21.6
8590.95	V	1.0	Ambient	-55.8	10.2	6.5	-52.1	-30.0	-22.1
9545.50	H	0.7	Ambient	-54.5	10.5	6.8	-50.7	-30.0	-20.7
9545.50	V	0.7	Ambient	-54.9	10.5	6.8	-51.1	-30.0	-21.1

ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

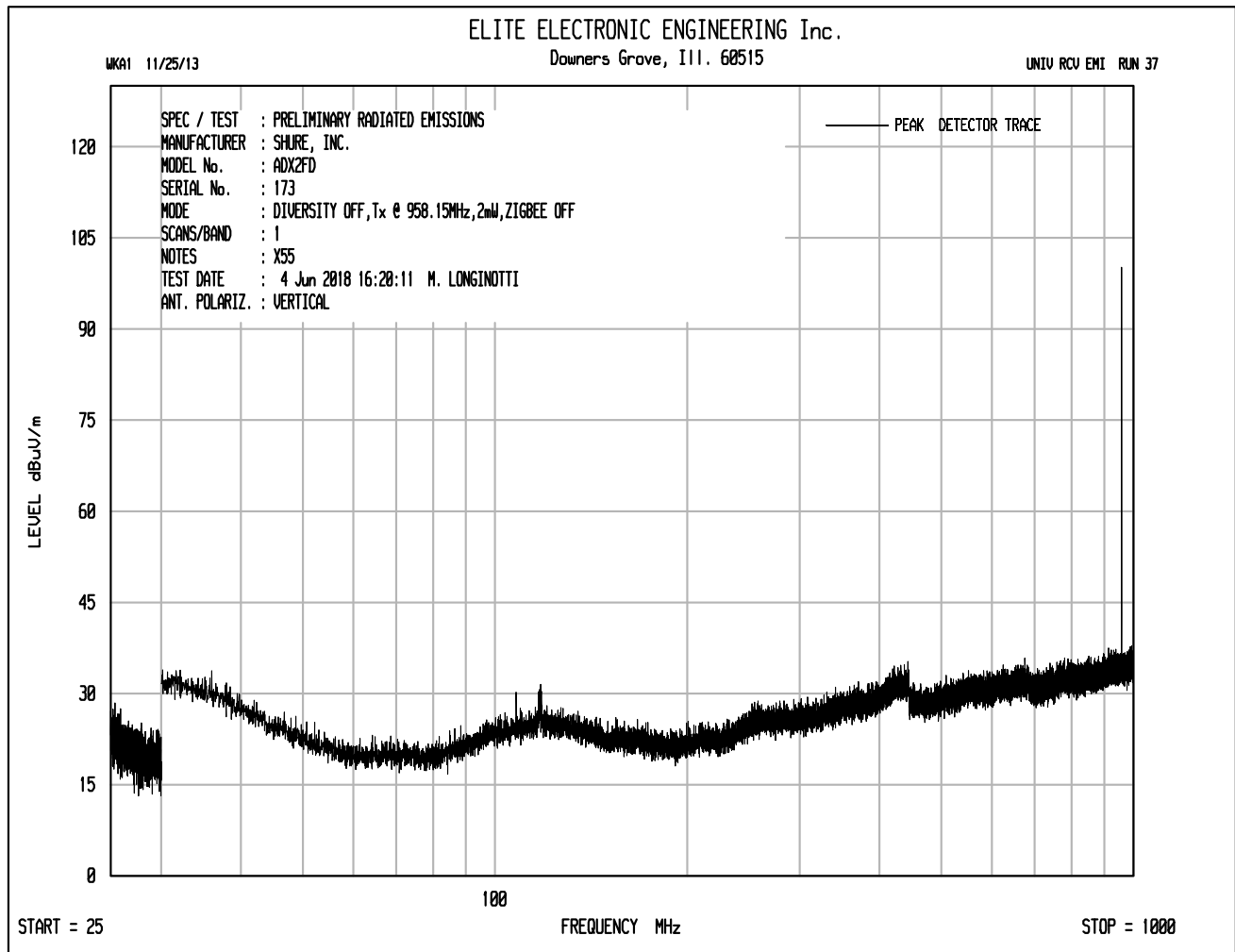
Checked By:

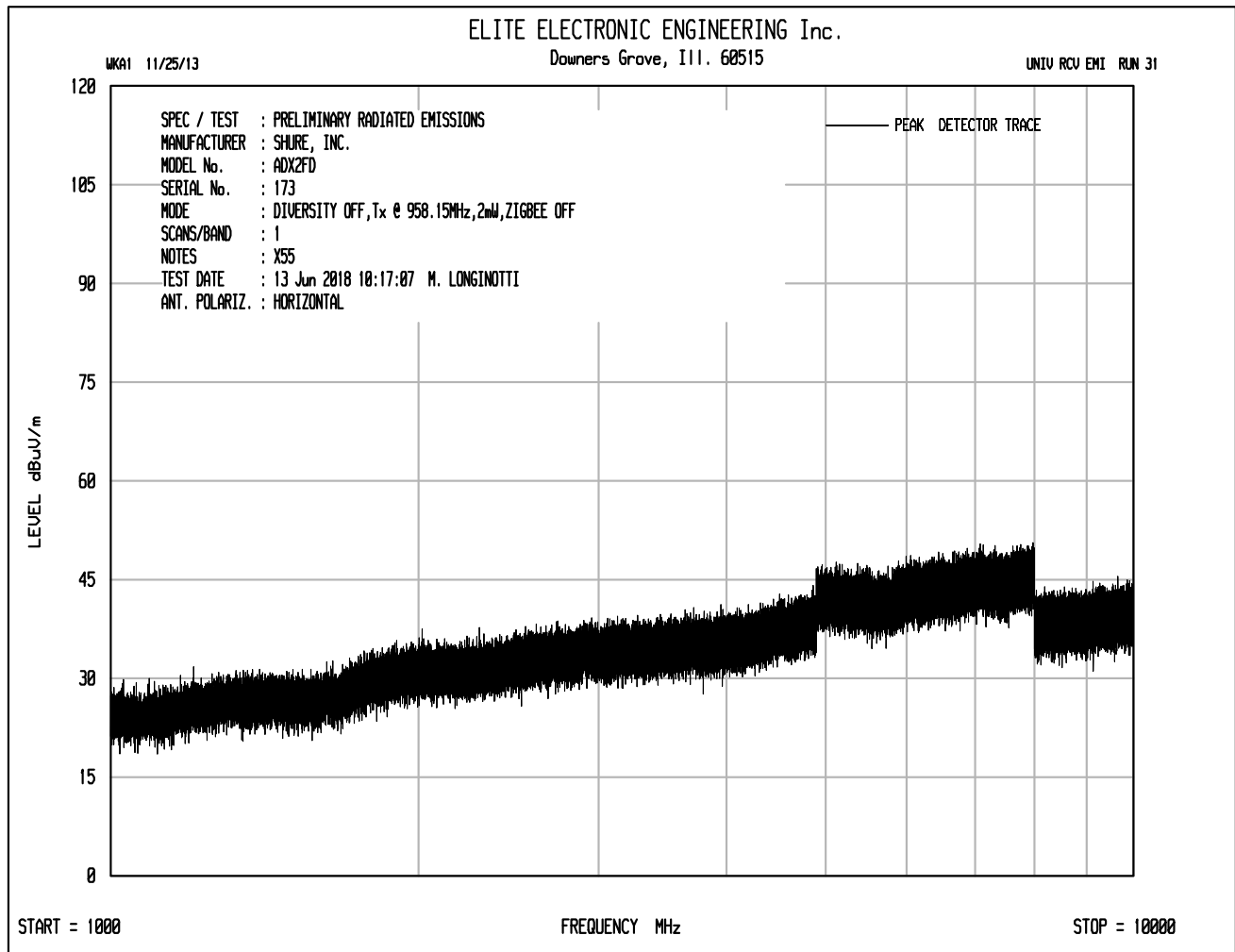
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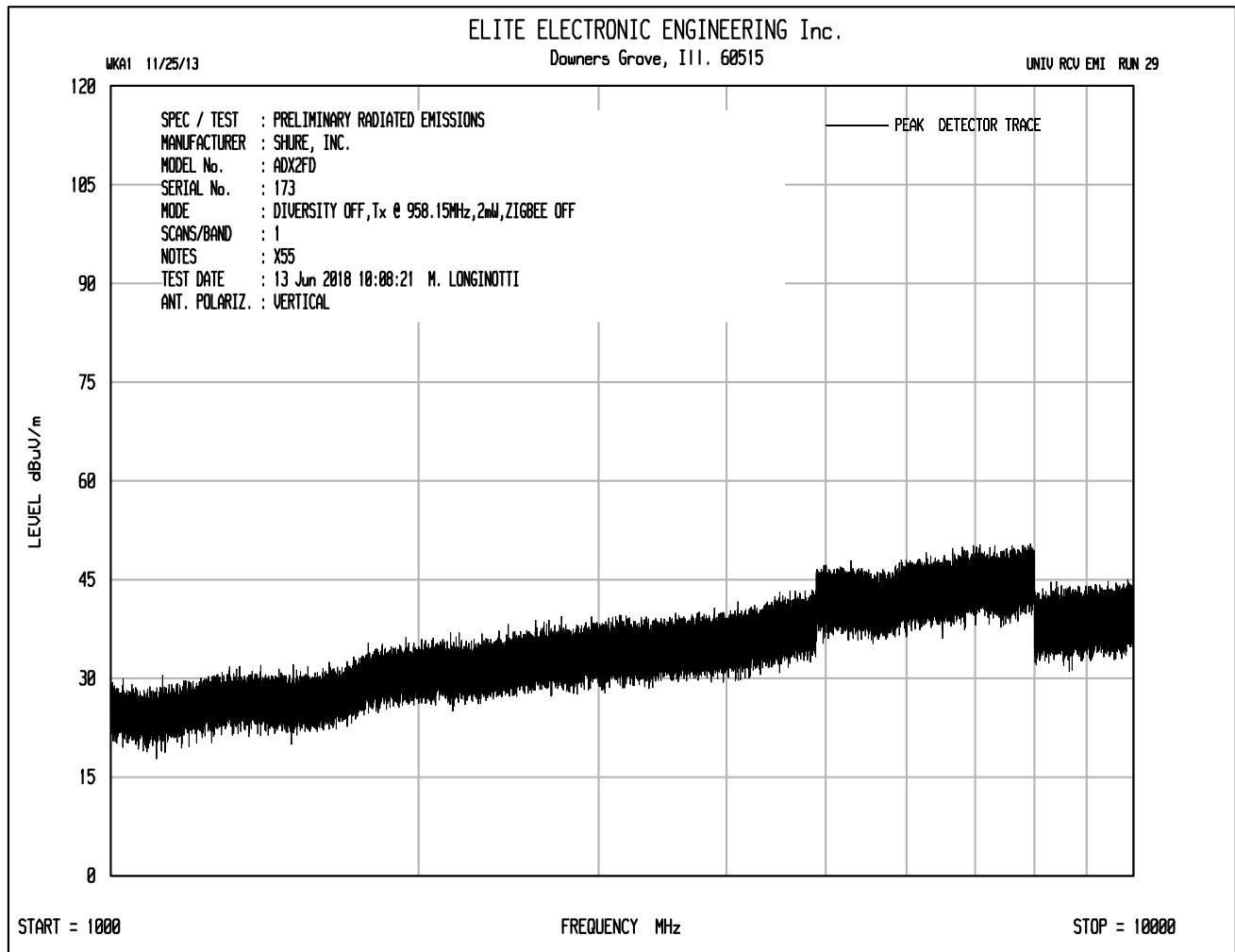
Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 958.15MHz, 2mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

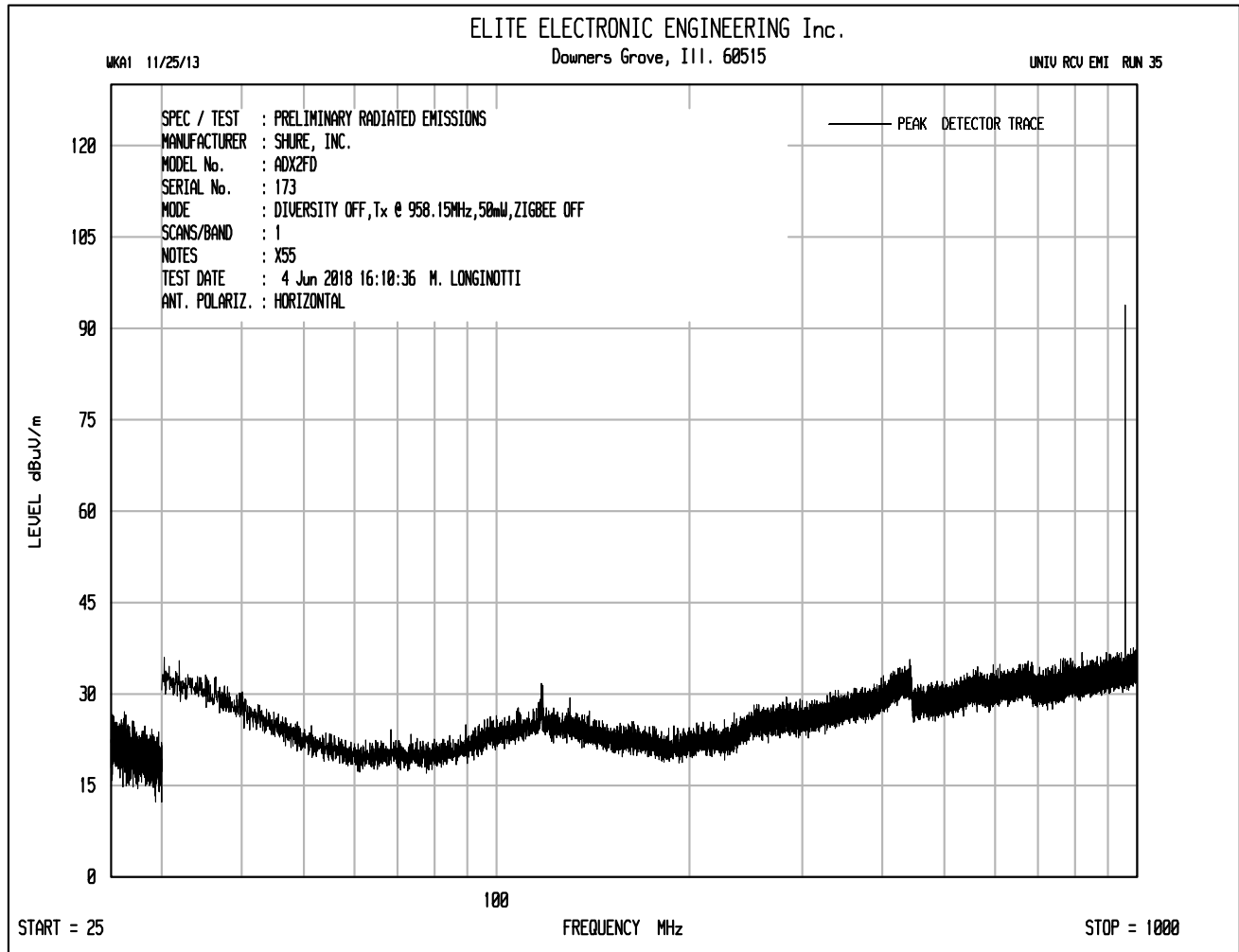
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1916.30	H	0.3	Ambient	-65.3	3.6	3.0	-64.7	-30.0	-34.7
1916.30	V	0.3	Ambient	-62.8	3.6	3.0	-62.1	-30.0	-32.1
2874.45	H	1.4	Ambient	-64.0	4.9	3.8	-62.9	-30.0	-32.9
2874.45	V	1.4	Ambient	-62.3	4.9	3.8	-61.2	-30.0	-31.2
3832.60	H	1.8	Ambient	-61.1	7.3	4.4	-58.2	-30.0	-28.2
3832.60	V	1.8	Ambient	-60.0	7.3	4.4	-57.0	-30.0	-27.0
4790.75	H	2.9	Ambient	-57.2	7.0	4.8	-55.1	-30.0	-25.1
4790.75	V	2.9	Ambient	-56.8	7.0	4.8	-54.6	-30.0	-24.6
5748.90	H	6.0	Ambient	-52.4	7.7	5.3	-50.0	-30.0	-20.0
5748.90	V	6.0	Ambient	-52.5	7.7	5.3	-50.1	-30.0	-20.1
6707.05	H	7.0	Ambient	-48.4	8.4	5.8	-45.9	-30.0	-15.9
6707.05	V	7.0	Ambient	-49.5	8.4	5.8	-47.0	-30.0	-17.0
7665.20	H	7.8	Ambient	-48.7	9.6	6.3	-45.4	-30.0	-15.4
7665.20	V	7.8	Ambient	-49.6	9.6	6.3	-46.3	-30.0	-16.3
8623.35	H	1.0	Ambient	-55.4	10.3	6.5	-51.6	-30.0	-21.6
8623.35	V	1.0	Ambient	-55.8	10.3	6.5	-52.0	-30.0	-22.0
9581.50	H	0.9	Ambient	-54.1	10.5	6.8	-50.4	-30.0	-20.4
9581.50	V	0.9	Ambient	-54.5	10.5	6.8	-50.8	-30.0	-20.8

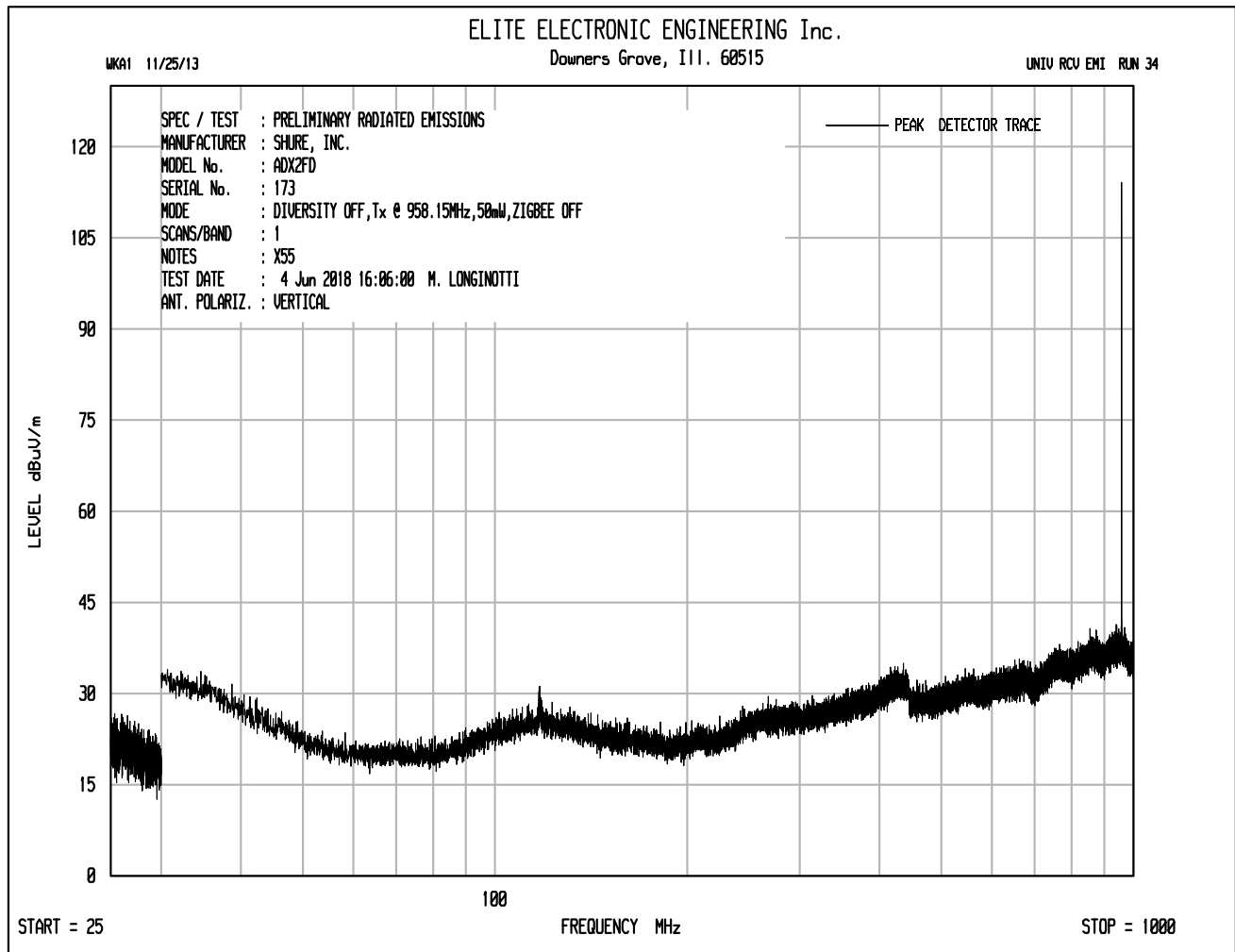
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

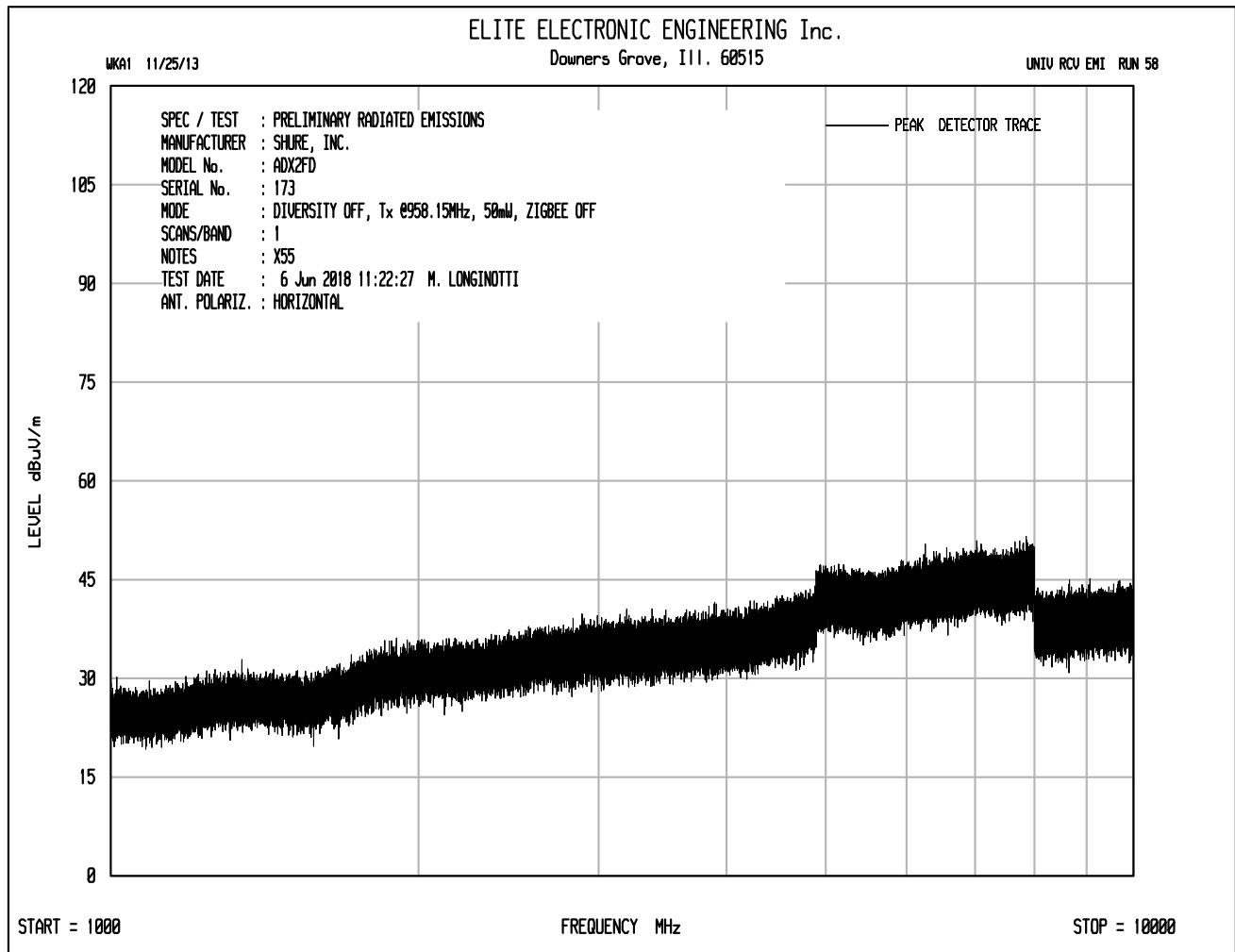
Checked By:

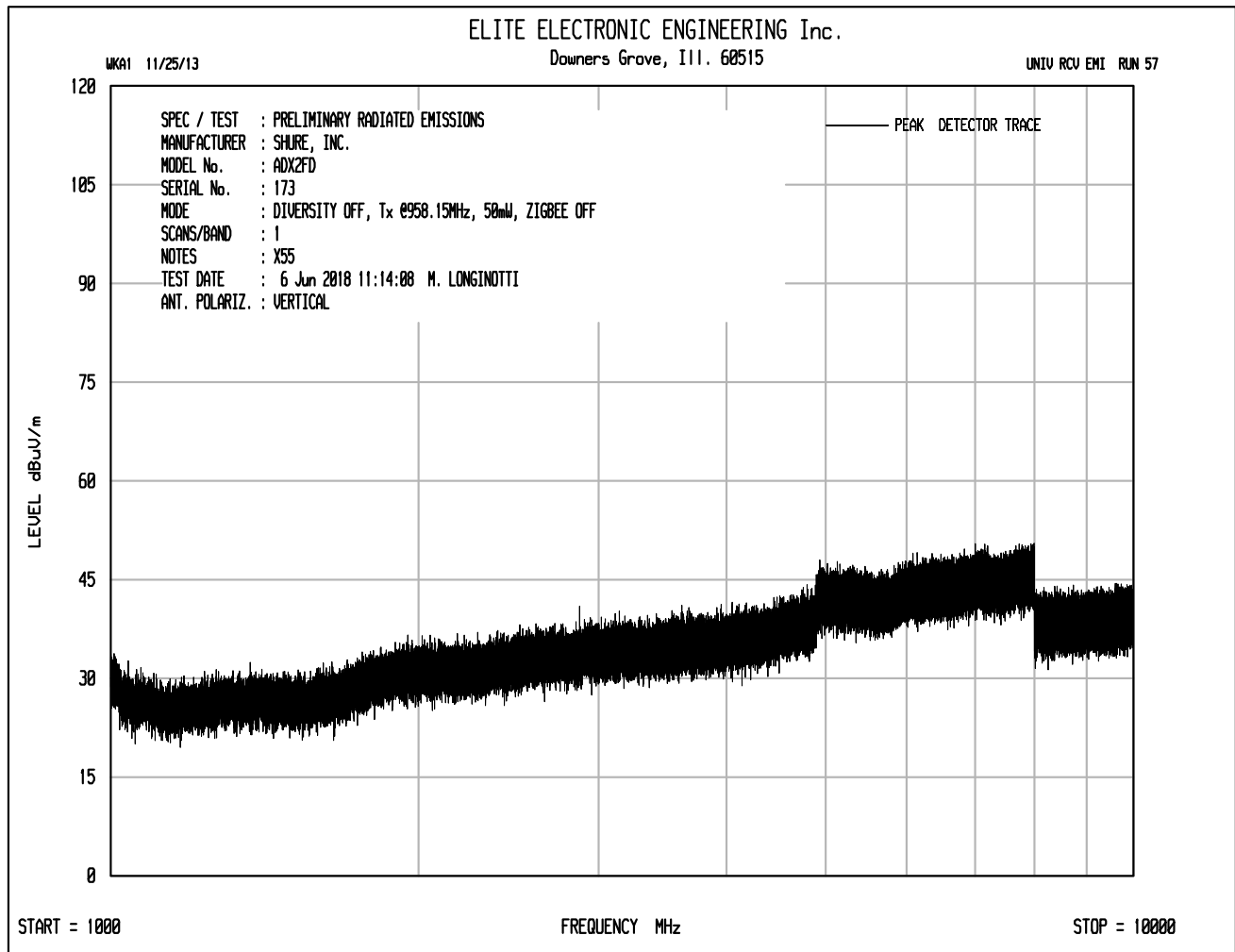
MARK E. LONGINOTTI

Mark E. Longinotti













MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Transmit at 958.15MHz, 50mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 Off, Diversity Off, Zigbee Off

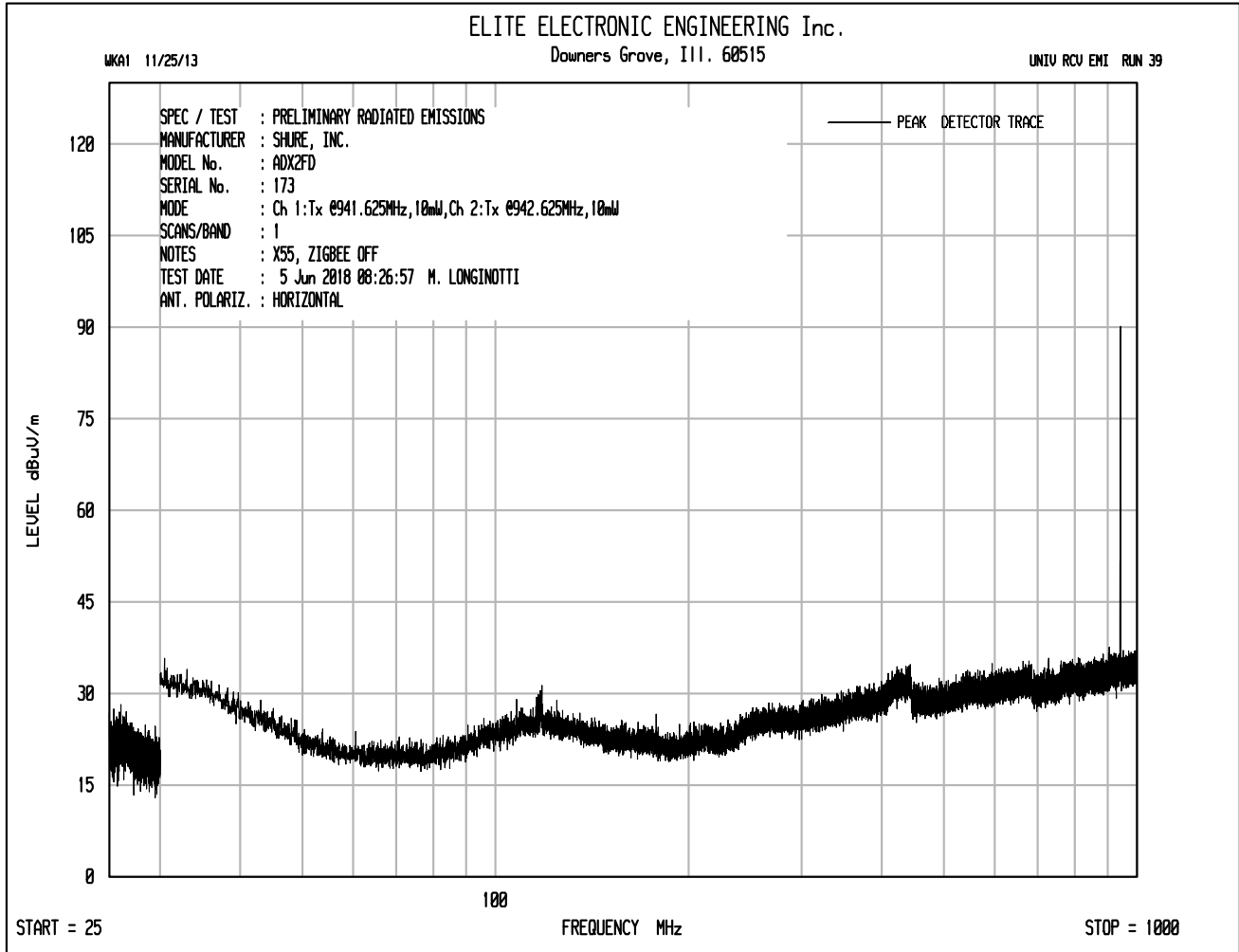
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
1916.30	H	0.3	Ambient	-65.3	3.6	3.0	-64.7	-30.0	-34.7
1916.30	V	0.3	Ambient	-62.8	3.6	3.0	-62.1	-30.0	-32.1
2874.45	H	2.2		-63.2	4.9	3.8	-62.1	-30.0	-32.1
2874.45	V	4.0		-59.7	4.9	3.8	-58.6	-30.0	-28.6
3832.60	H	2.0	Ambient	-60.9	7.3	4.4	-58.0	-30.0	-28.0
3832.60	V	2.0	Ambient	-59.8	7.3	4.4	-56.8	-30.0	-26.8
4790.75	H	3.1	Ambient	-57.0	7.0	4.8	-54.9	-30.0	-24.9
4790.75	V	2.9	Ambient	-56.8	7.0	4.8	-54.6	-30.0	-24.6
5748.90	H	6.1	Ambient	-52.3	7.7	5.3	-49.9	-30.0	-19.9
5748.90	V	6.1	Ambient	-52.4	7.7	5.3	-50.0	-30.0	-20.0
6707.05	H	6.9	Ambient	-48.5	8.4	5.8	-46.0	-30.0	-16.0
6707.05	V	7.0	Ambient	-49.5	8.4	5.8	-47.0	-30.0	-17.0
7665.20	H	7.9	Ambient	-48.6	9.6	6.3	-45.3	-30.0	-15.3
7665.20	V	7.8	Ambient	-49.6	9.6	6.3	-46.3	-30.0	-16.3
8623.35	H	1.1	Ambient	-55.3	10.3	6.5	-51.5	-30.0	-21.5
8623.35	V	1.1	Ambient	-55.7	10.3	6.5	-51.9	-30.0	-21.9
9581.50	H	1.0	Ambient	-54.0	10.5	6.8	-50.3	-30.0	-20.3
9581.50	V	1.0	Ambient	-54.4	10.5	6.8	-50.7	-30.0	-20.7

ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

Checked By:

MARK E. LONGINOTTI

Mark E. Longinotti



Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 942.625MHz from UHF transmitter.

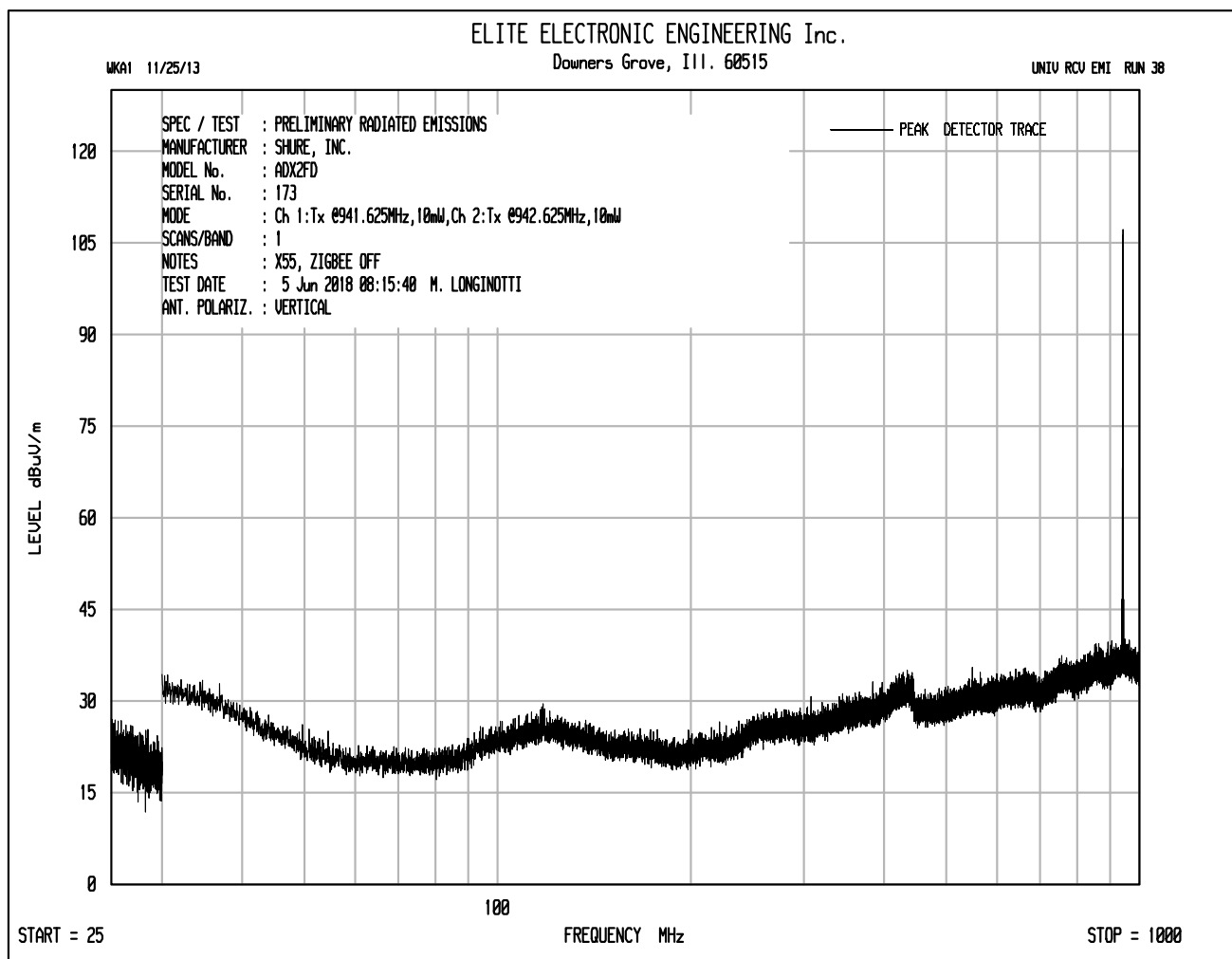
Plot shows emissions at 939.625MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 942.625MHz)

Plot shows emissions at 940.625MHz (Intermodulation product of: 2 x 941.625MHz – 942.625MHz)

Plot shows emissions at 943.625MHz (Intermodulation product of: 2 x 942.625MHz – 941.625MHz)

Plot shows emissions at 944.625MHz (Intermodulation product of: 3 x 942.625MHz – 2 x 941.625MHz)

See pages 126 and 127 for a zoomed in plot of the fundamental and intermodulation products



Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 942.625MHz from UHF transmitter.

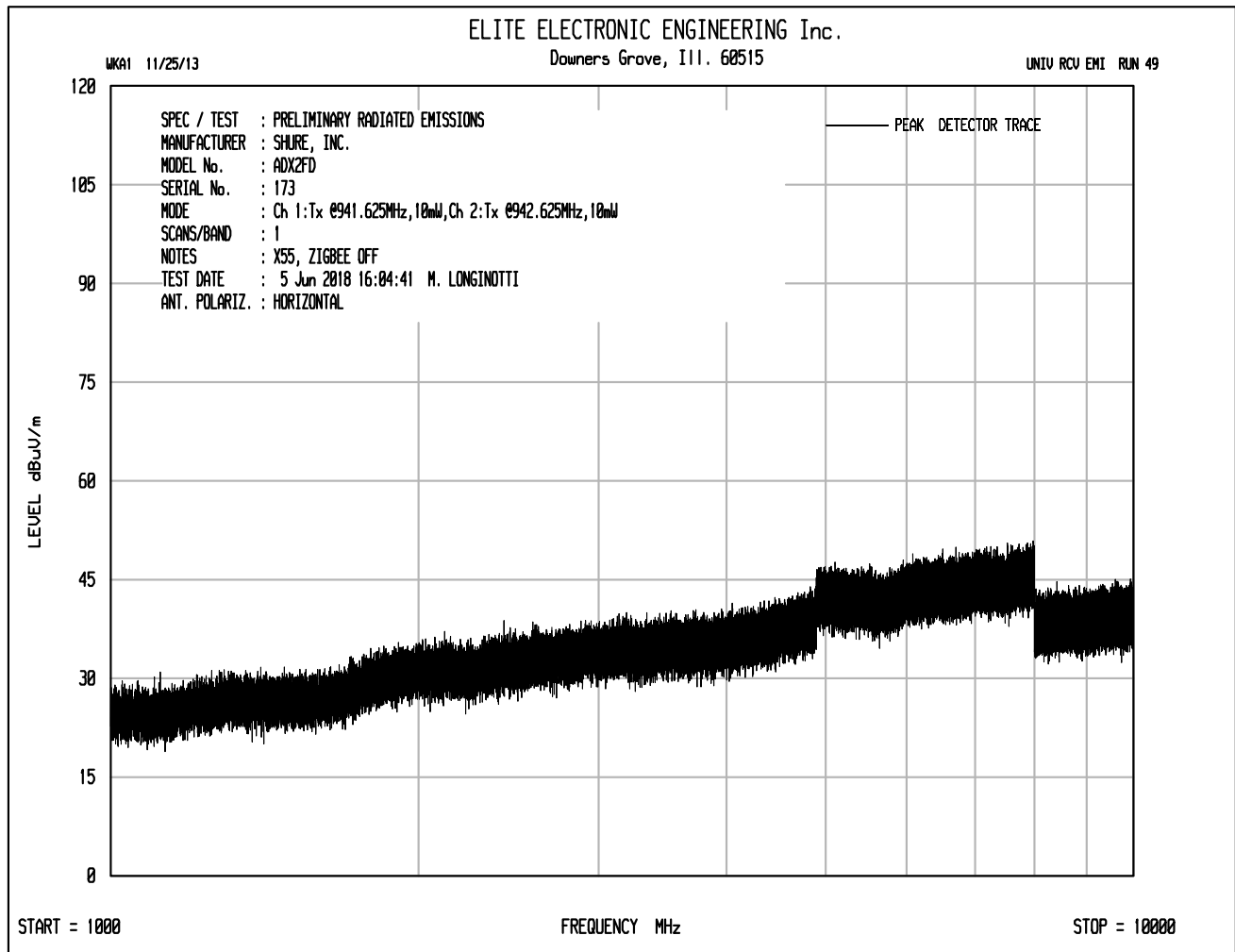
Plot shows emissions at 939.625MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 942.625MHz)

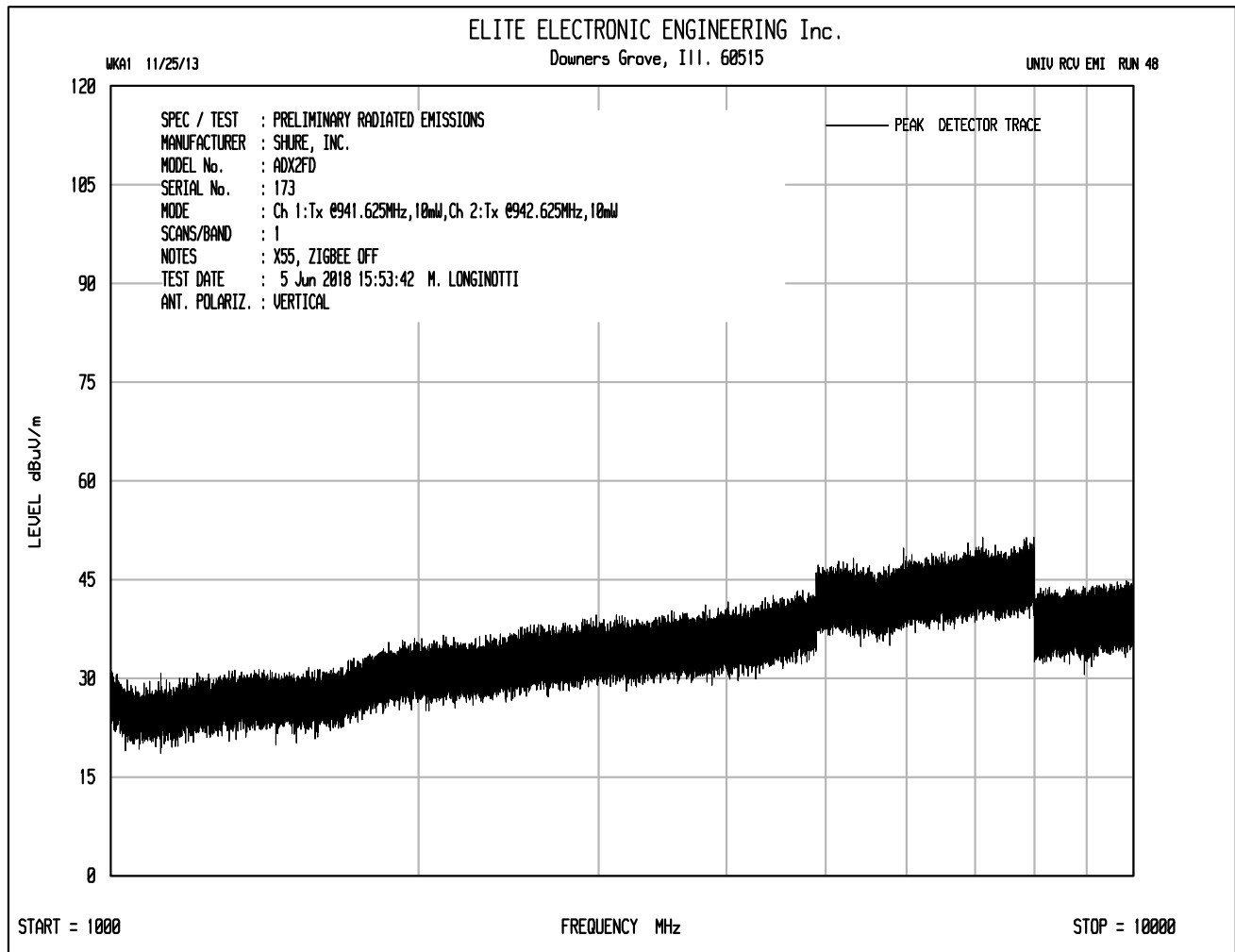
Plot shows emissions at 940.625MHz (Intermodulation product of: 2 x 941.625MHz – 942.625MHz)

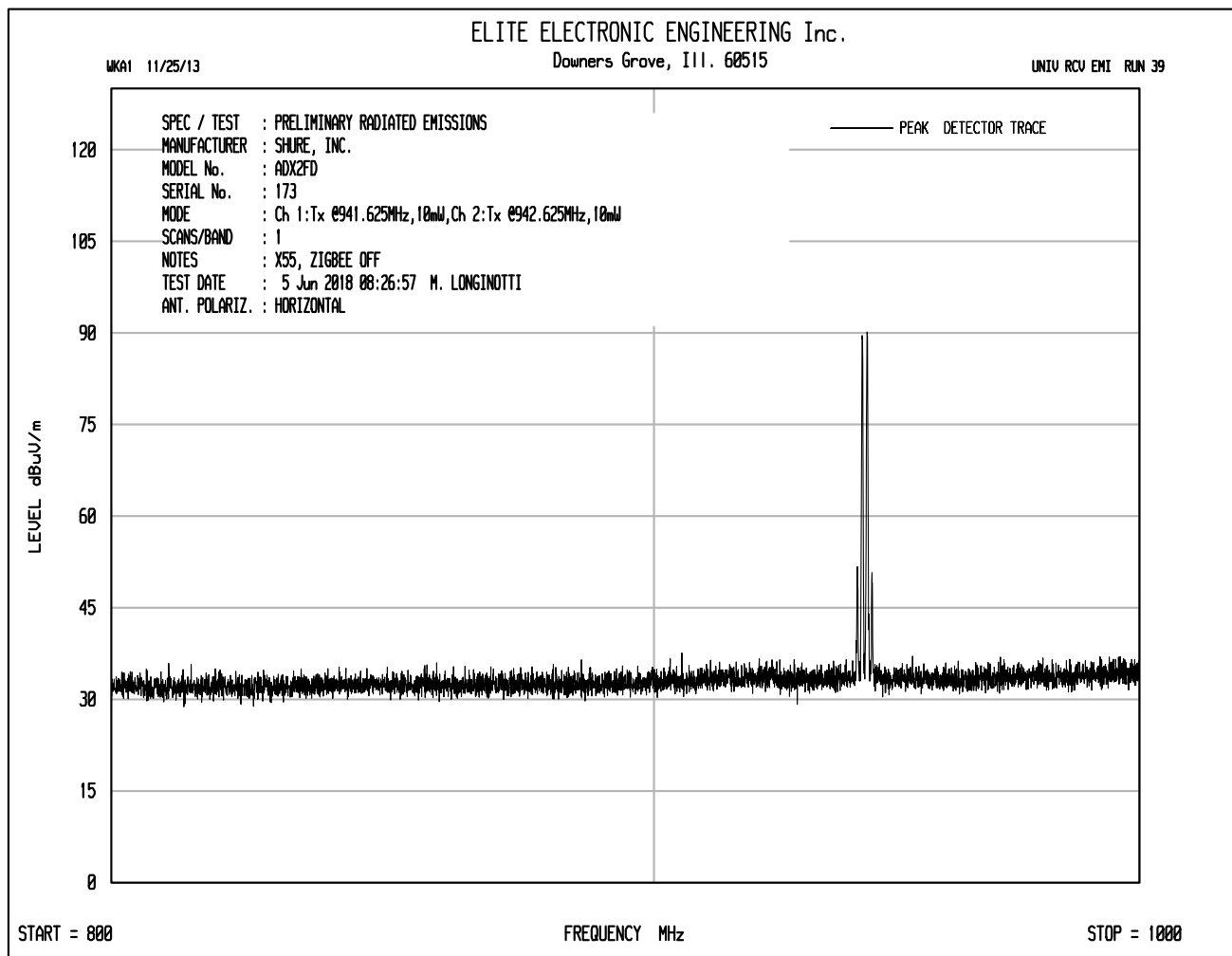
Plot shows emissions at 943.625MHz (Intermodulation product of: 2 x 942.625MHz – 941.625MHz)

Plot shows emissions at 944.625MHz (Intermodulation product of: 3 x 942.625MHz – 2 x 941.625MHz)

See pages 126 and 127 for a zoomed in plot of the fundamental and intermodulation products







Plot shows emissions at 941.625MHz from UHF transmitter.

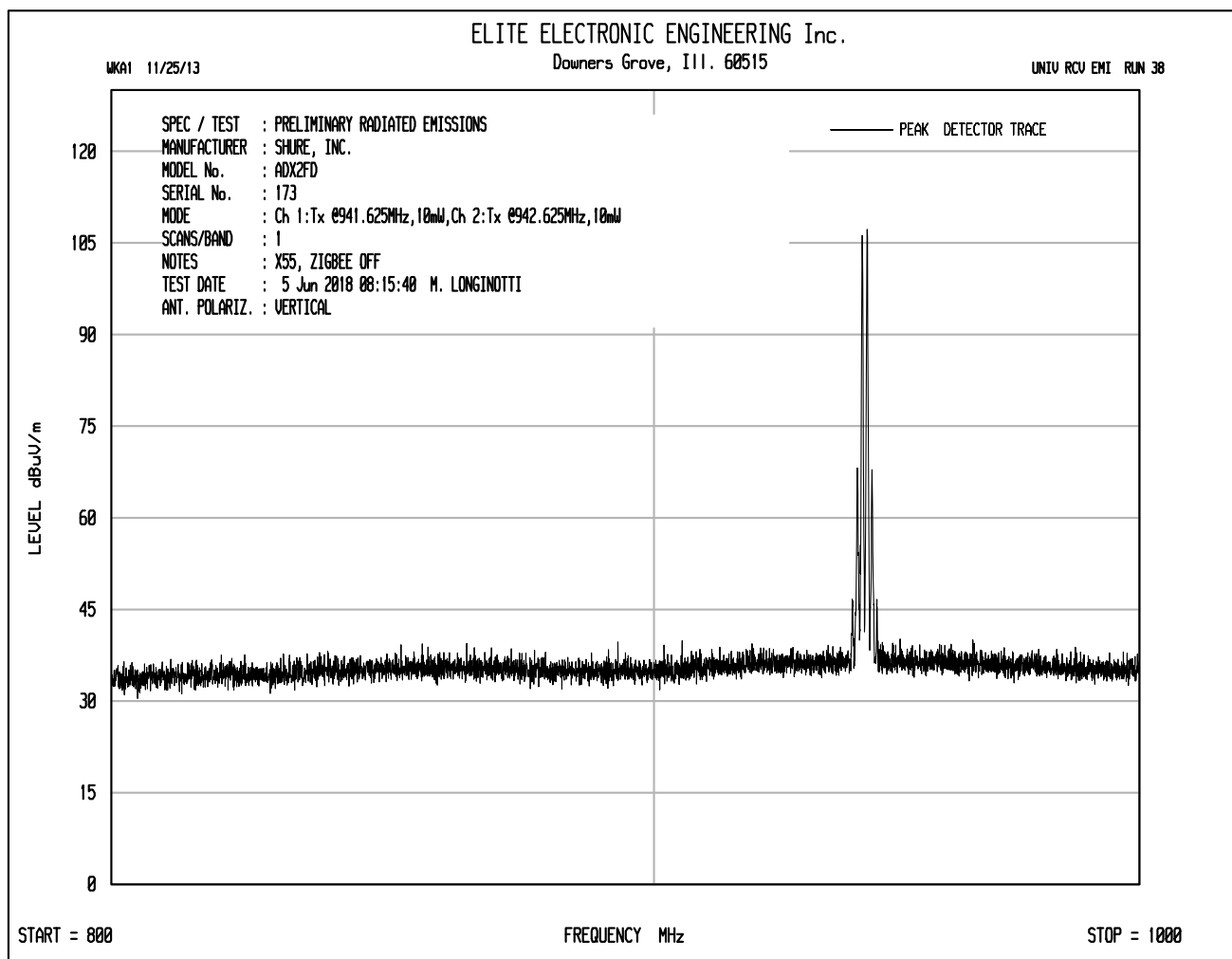
Plot shows emissions at 942.625MHz from UHF transmitter.

Plot shows emissions at 939.625MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 942.625MHz)

Plot shows emissions at 940.625MHz (Intermodulation product of: 2 x 941.625MHz – 942.625MHz)

Plot shows emissions at 943.625MHz (Intermodulation product of: 2 x 942.625MHz – 941.625MHz)

Plot shows emissions at 944.625MHz (Intermodulation product of: 3 x 942.625MHz – 2 x 941.625MHz)



Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 942.625MHz from UHF transmitter.

Plot shows emissions at 939.625MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 942.625MHz)

Plot shows emissions at 940.625MHz (Intermodulation product of: 2 x 941.625MHz – 942.625MHz)

Plot shows emissions at 943.625MHz (Intermodulation product of: 2 x 942.625MHz – 941.625MHz)

Plot shows emissions at 944.625MHz (Intermodulation product of: 3 x 942.625MHz – 2 x 941.625MHz)



MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Channel 1: Transmit at 941.625MHz, 10mW nominal power  
Channel 2: Transmit at 942.625MHz 10mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 On, Diversity On, Zigbee Off

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
939.625	H	-3.1		-72.8	0.0	2.1	-74.9	-36.0	-38.9
939.625	V	9.4		-56.9	0.0	2.1	-59.0	-36.0	-23.0
940.62	H	15.1		-53.8	0.0	2.1	-55.9	-36.0	-19.9
940.62	V	34.0		-34.1	0.0	2.1	-36.2	-36.0	-0.2
943.66	H	13.7		-55.2	0.0	2.1	-57.3	-36.0	-21.3
943.66	V	33.8		-34.2	0.0	2.1	-36.3	-36.0	-0.3
944.625	H	-3.2		-72.9	0.0	2.1	-75.0	-36.0	-39.0
944.625	V	8.5		-58.0	0.0	2.1	-60.1	-36.0	-24.1

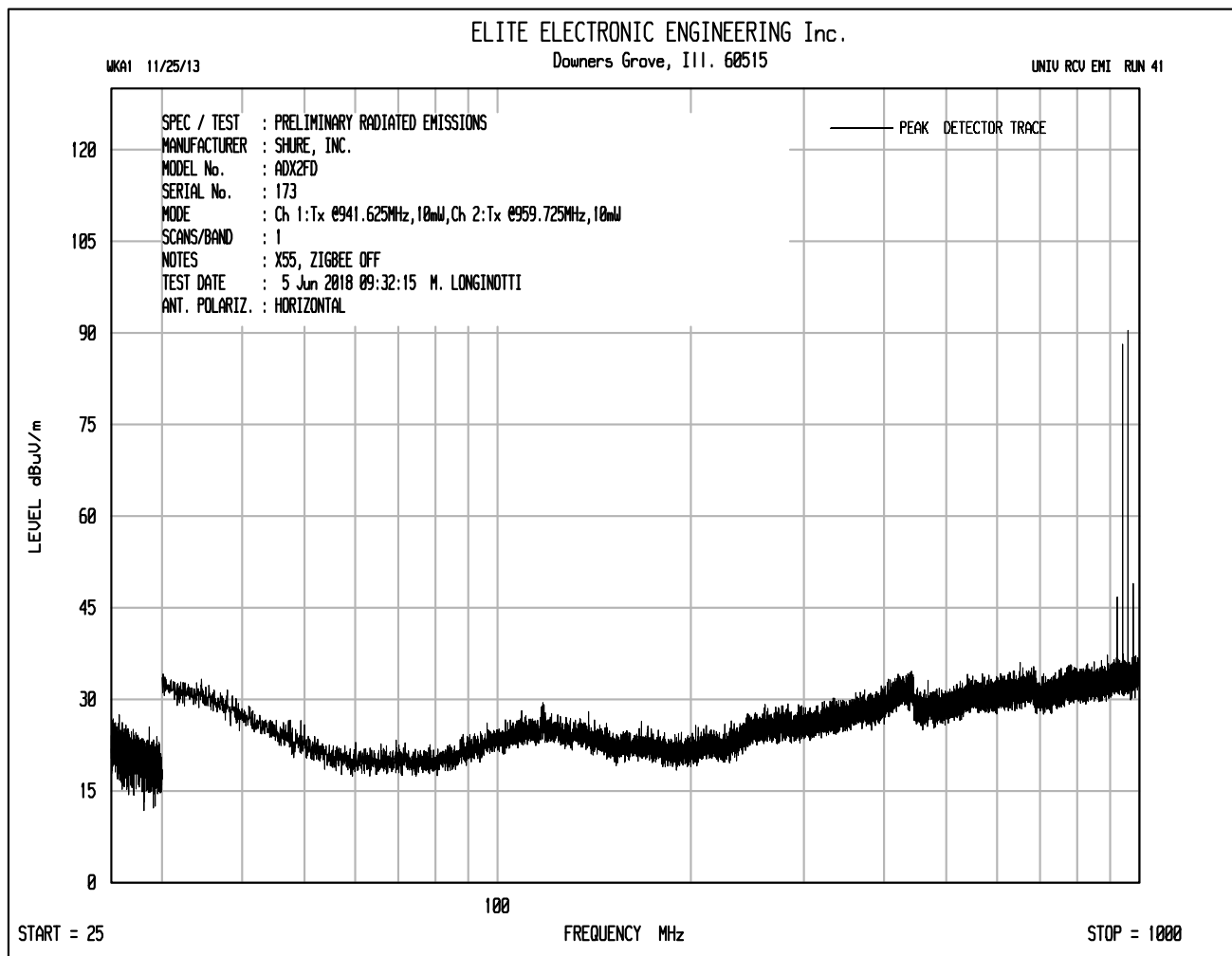
ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

Checked By:

MARK E. LONGINOTTI

Mark E. Longinotti





Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 959.725MHz from UHF transmitter.

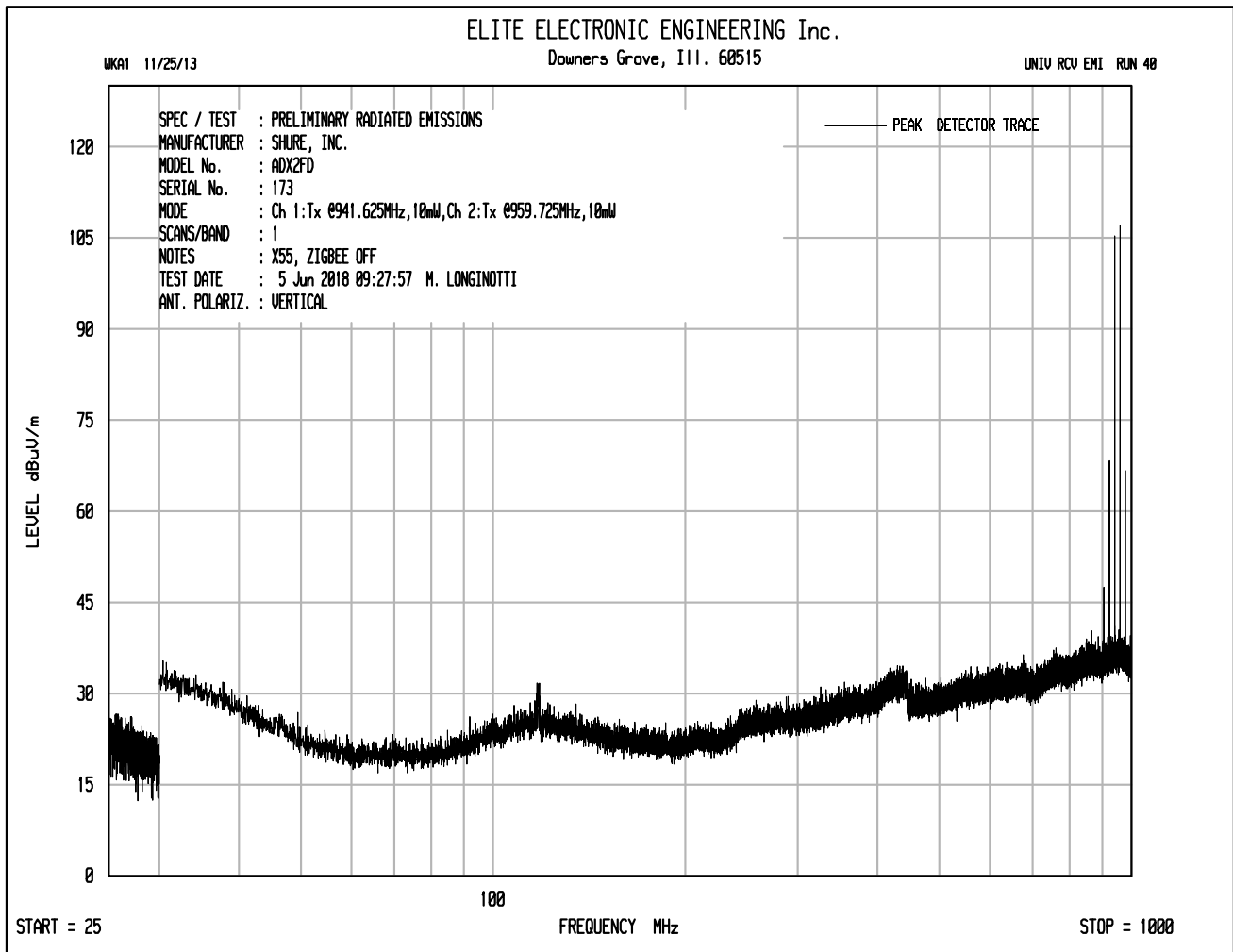
Plot shows emissions at 905.425MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 959.725MHz)

Plot shows emissions at 923.525MHz (Intermodulation product of: 2 x 941.625MHz – 959.725MHz)

Plot shows emissions at 977.825MHz (Intermodulation product of: 2 x 959.725MHz – 941.625MHz)

Plot shows emissions at 995.925MHz (Intermodulation product of: 3 x 959.725MHz – 2 x 941.625MHz)

See pages133 and 134 for a zoomed in plot of the fundamental and intermodulation products



Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 959.725MHz from UHF transmitter.

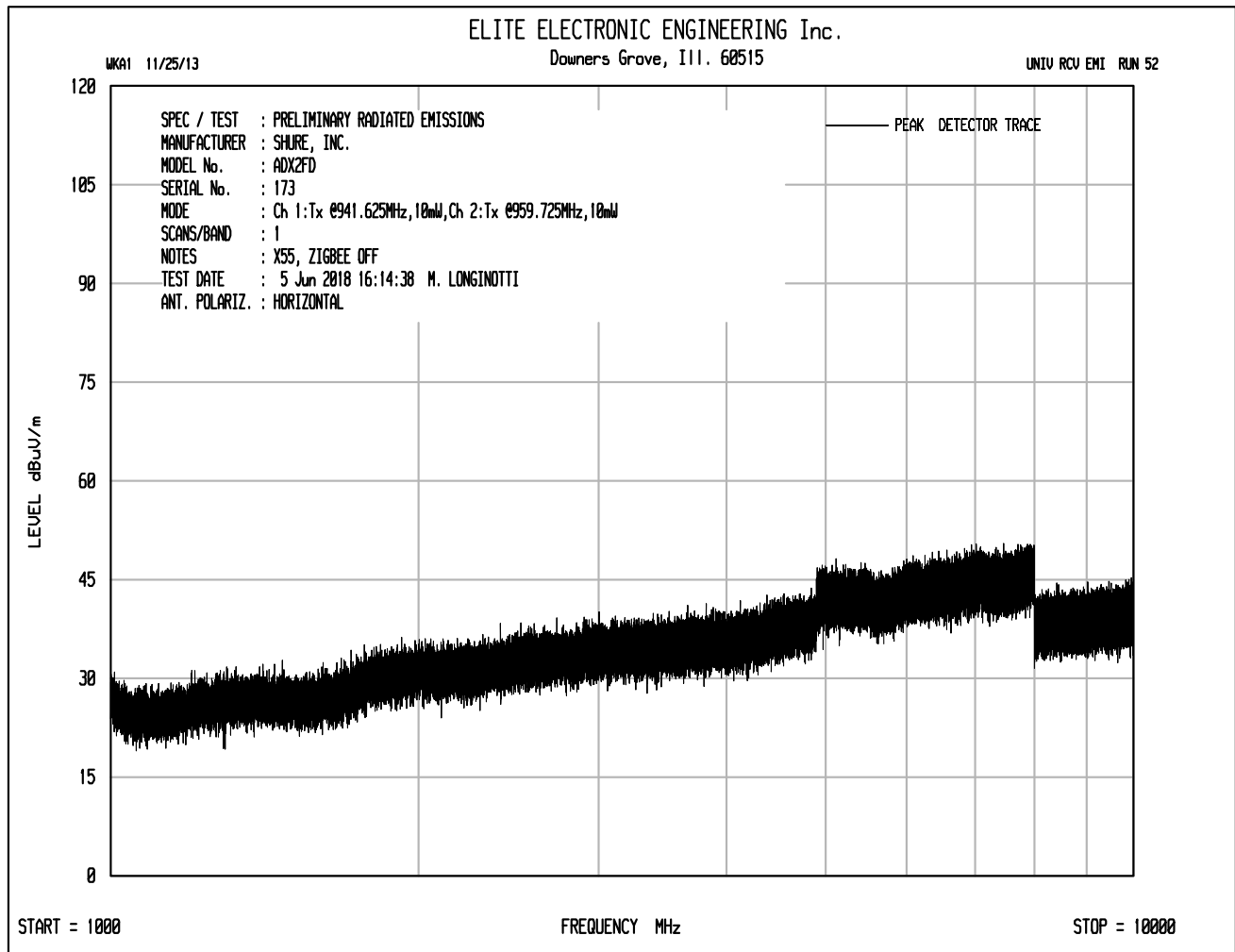
Plot shows emissions at 905.425MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 959.725MHz)

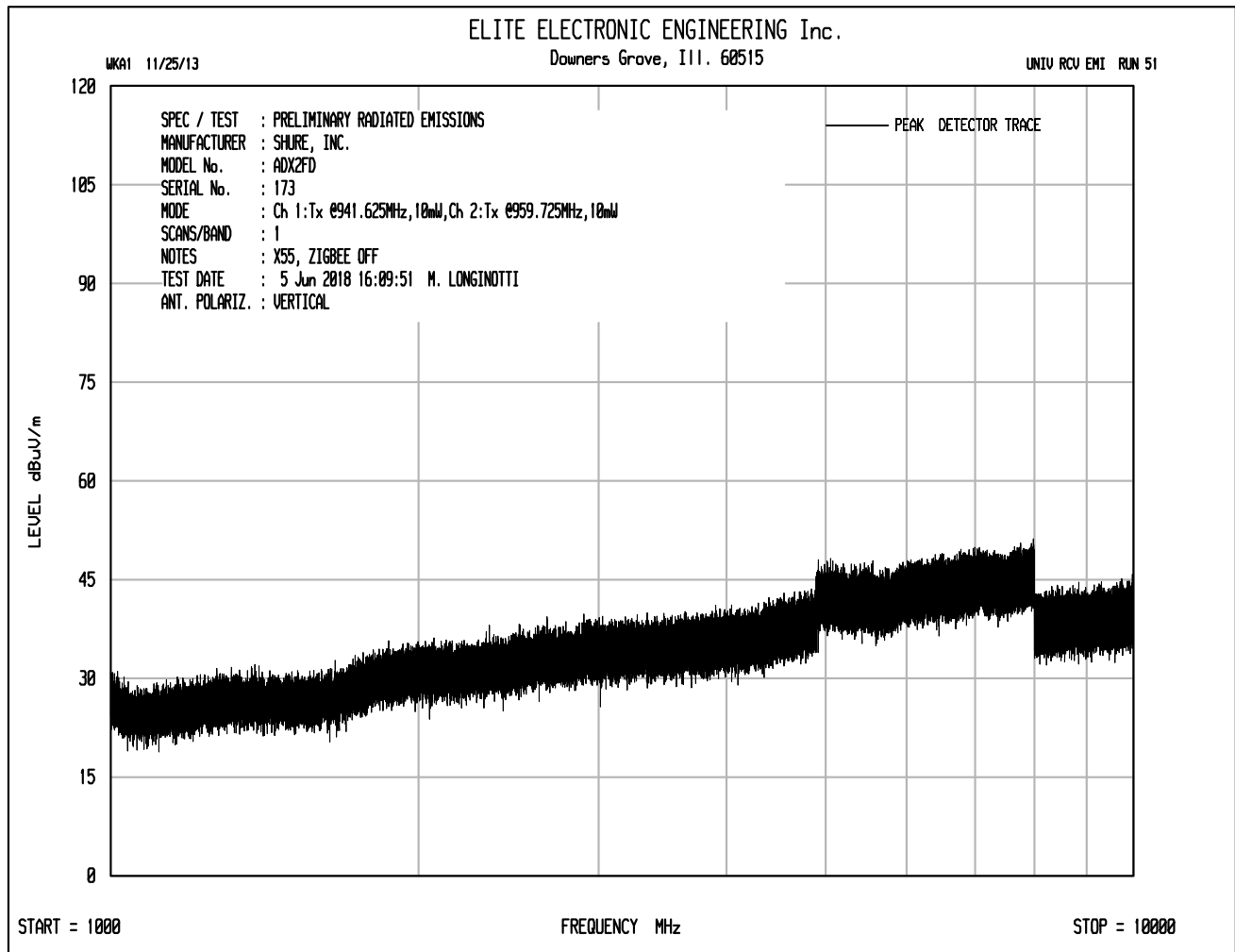
Plot shows emissions at 923.525MHz (Intermodulation product of: 2 x 941.625MHz – 959.725MHz)

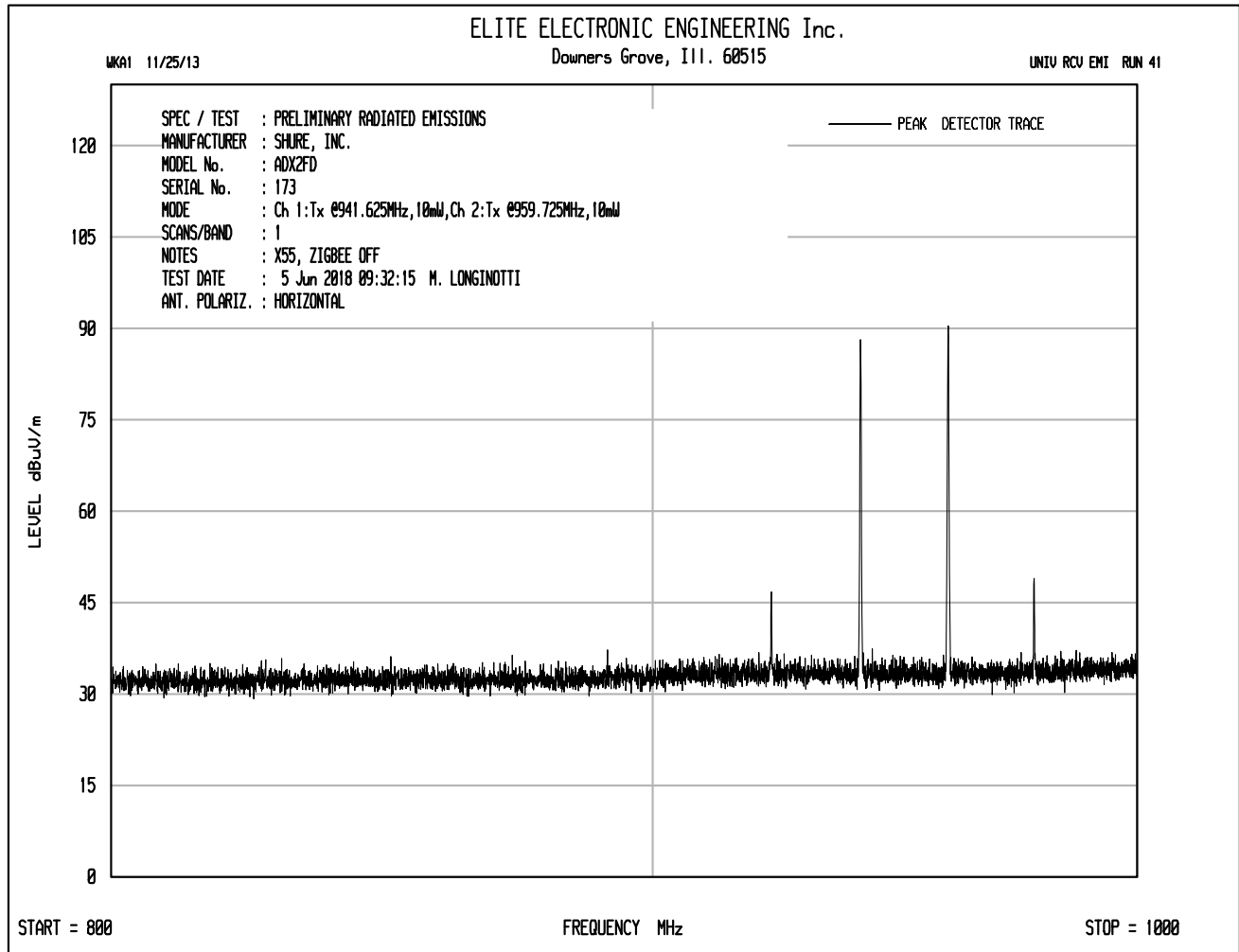
Plot shows emissions at 977.825MHz (Intermodulation product of: 2 x 959.725MHz – 941.625MHz)

Plot shows emissions at 995.925MHz (Intermodulation product of: 3 x 959.725MHz – 2 x 941.625MHz)

See pages133 and 134 for a zoomed in plot of the fundamental and intermodulation products







Plot shows emissions at 941.625MHz from UHF transmitter.

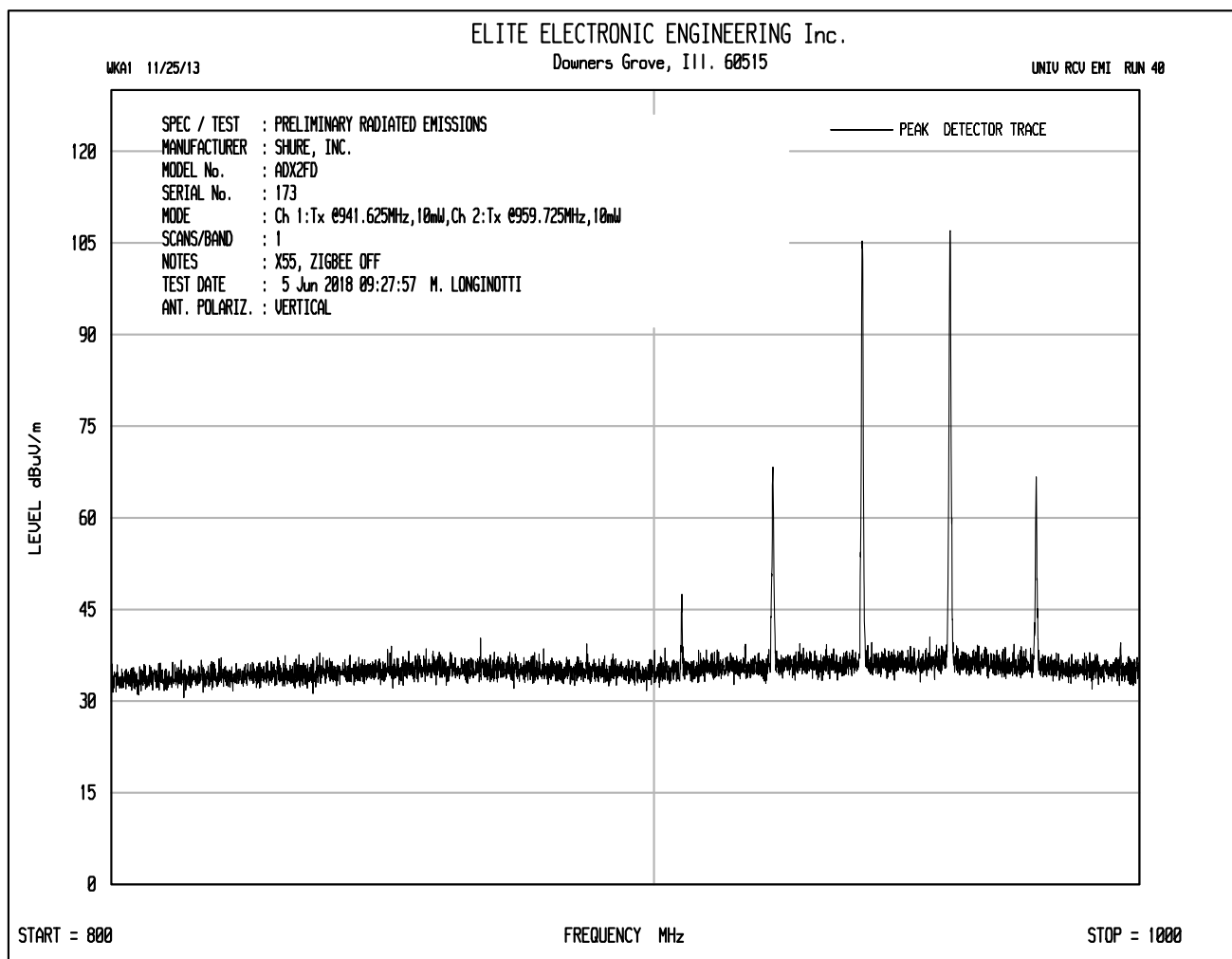
Plot shows emissions at 959.725MHz from UHF transmitter.

Plot shows emissions at 905.425MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 959.725MHz)

Plot shows emissions at 923.525MHz (Intermodulation product of: 2 x 941.625MHz – 959.725MHz)

Plot shows emissions at 977.825MHz (Intermodulation product of: 2 x 959.725MHz – 941.625MHz)

Plot shows emissions at 995.925MHz (Intermodulation product of: 3 x 959.725MHz – 2 x 941.625MHz)



Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 959.725MHz from UHF transmitter.

Plot shows emissions at 905.425MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 959.725MHz)

Plot shows emissions at 923.525MHz (Intermodulation product of: 2 x 941.625MHz – 959.725MHz)

Plot shows emissions at 977.825MHz (Intermodulation product of: 2 x 959.725MHz – 941.625MHz)

Plot shows emissions at 995.925MHz (Intermodulation product of: 3 x 959.725MHz – 2 x 941.625MHz)



MANUFACTURER : Shure Incorporated  
MODEL NO. : ADX2FD  
SERIAL NO. : 173  
SPECIFICATION : FCC 74.861(d)(4)(ii) Spurious Radiated Emissions  
DATE : June 4, 2018 through June 12, 2018  
MODE : Channel 1: Transmit at 941.625MHz, 10mW nominal power  
Channel 2: Transmit at 959.725MHz 10mW nominal power  
UNIT : X55  
EQUIPMENT USED : NTA3,RBG2,NDQ0,GRE2,NWQ0,GSE0,NWQ2  
NOTES : Channel 1 On, Channel 2 On, Diversity On, Zigbee Off

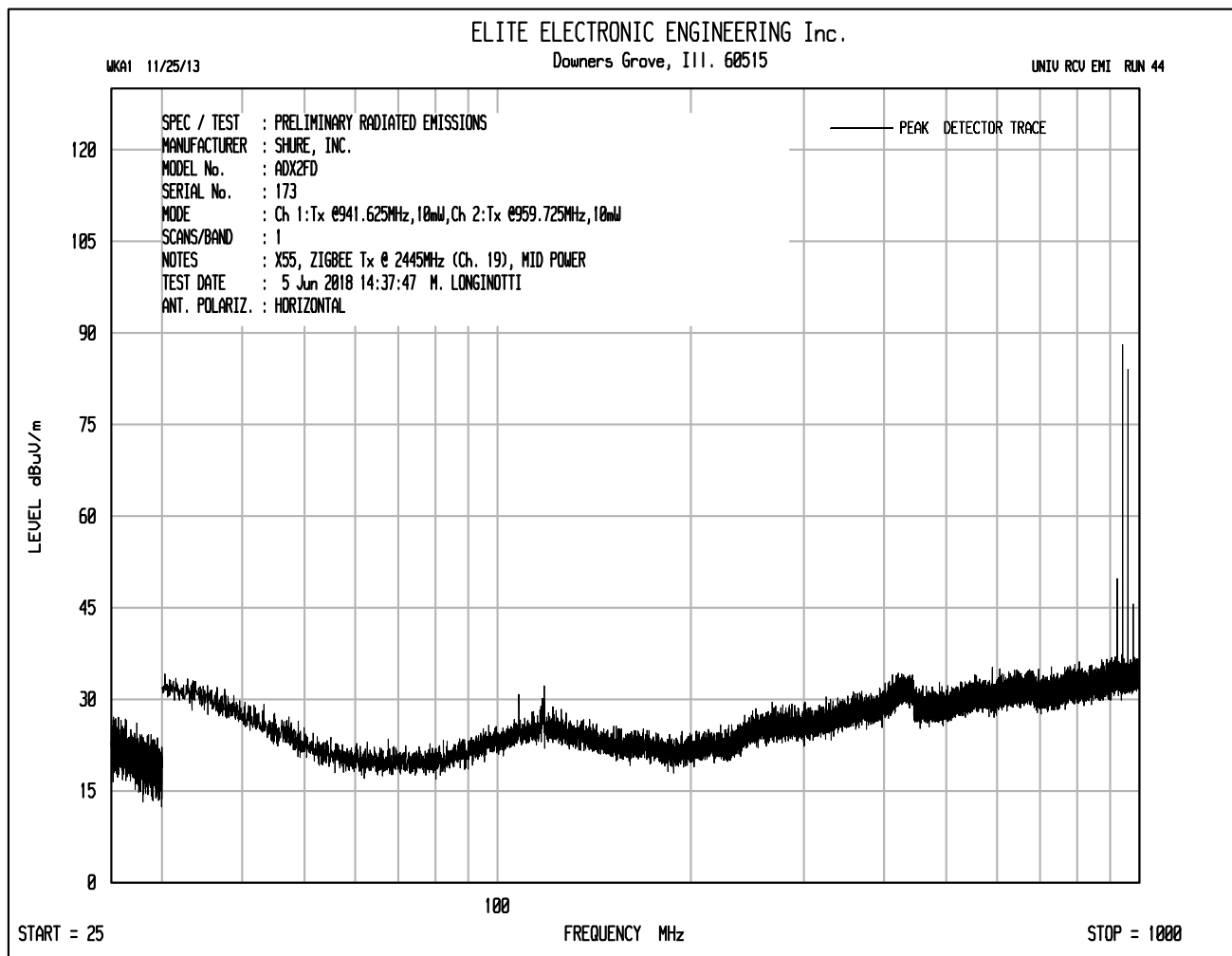
Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Limit dBm	Margin dB
905.425	H	-3.7		-74.1	0.0	2.0	-76.1	-36.0	-40.1
905.425	V	12.2		-54.2	0.0	2.0	-56.2	-36.0	-20.2
923.525	H	18.5		-50.6	0.0	2.1	-52.7	-36.0	-16.7
923.525	V	34.6		-34.0	0.0	2.1	-36.1	-36.0	-0.1
977.825	H	16.7		-51.1	0.0	2.1	-53.2	-36.0	-17.2
977.825	V	33.2		-34.5	0.0	2.1	-36.6	-36.0	-0.6
995.925	H	-3.0	Ambient	-70.3	0.0	2.1	-72.4	-36.0	-36.4
995.925	V	5.5		-59.1	0.0	2.1	-61.2	-36.0	-25.2

ERP(dBm) = Matched Sig. Gen. Reading (dBm) + Equivalent Antenna Gain (dB) – Cable Loss (dB)

Checked By:

MARK E. LONGINOTTI

Mark E. Longinotti



Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 959.725MHz from UHF transmitter.

Plot shows emissions at 905.425MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 959.725MHz)

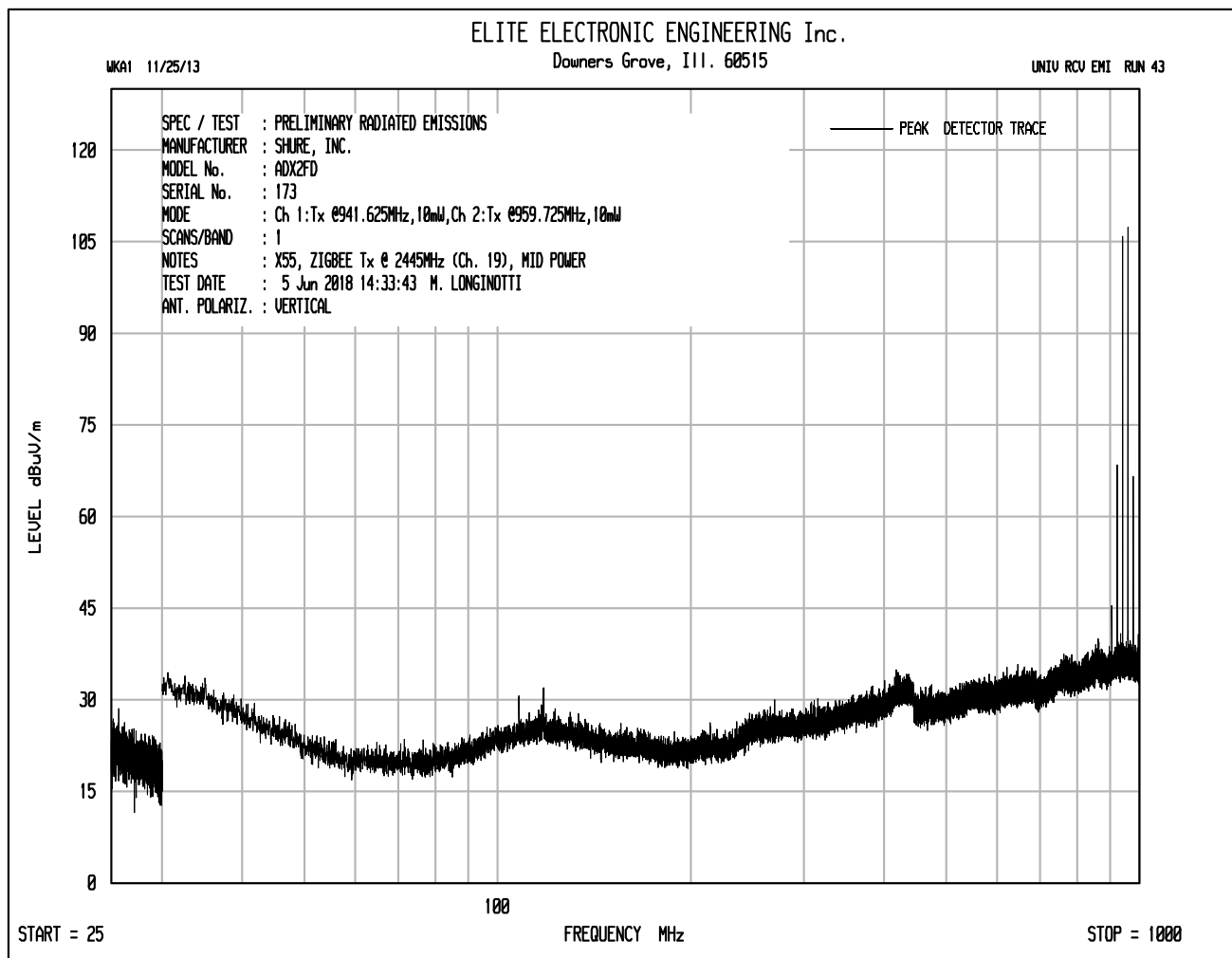
Plot shows emissions at 923.525MHz (Intermodulation product of: 2 x 941.625MHz – 959.725MHz)

Plot shows emissions at 977.825MHz (Intermodulation product of: 2 x 959.725MHz – 941.625MHz)

Plot shows emissions at 995.925MHz (Intermodulation product of: 3 x 959.725MHz – 2 x 941.625MHz)

See pages 144 and 145 for a zoomed in plot of the fundamental and intermodulation products





Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 959.725MHz from UHF transmitter.

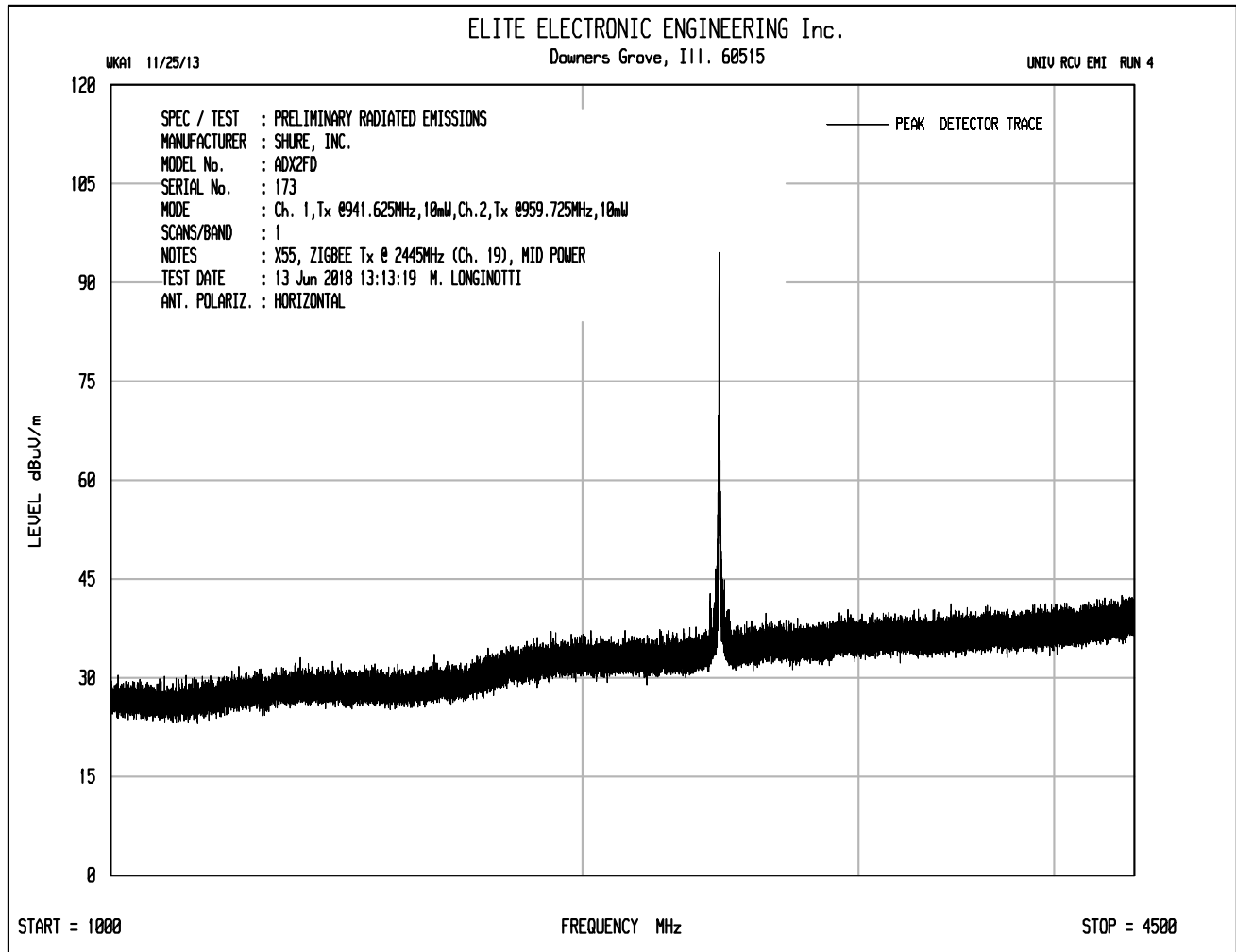
Plot shows emissions at 905.425MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 959.725MHz)

Plot shows emissions at 923.525MHz (Intermodulation product of: 2 x 941.625MHz – 959.725MHz)

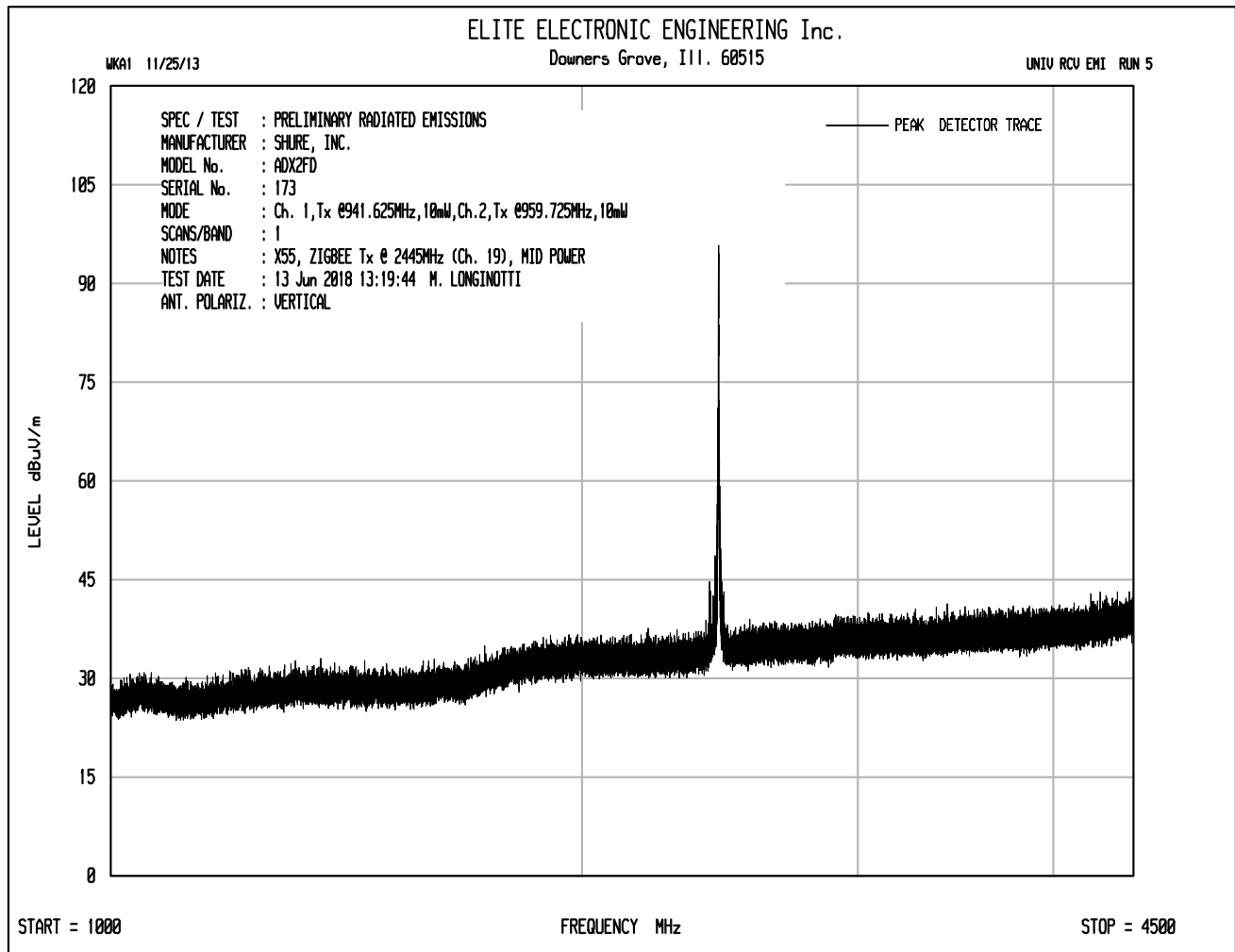
Plot shows emissions at 977.825MHz (Intermodulation product of: 2 x 959.725MHz – 941.625MHz)

Plot shows emissions at 995.925MHz (Intermodulation product of: 3 x 959.725MHz – 2 x 941.625MHz)

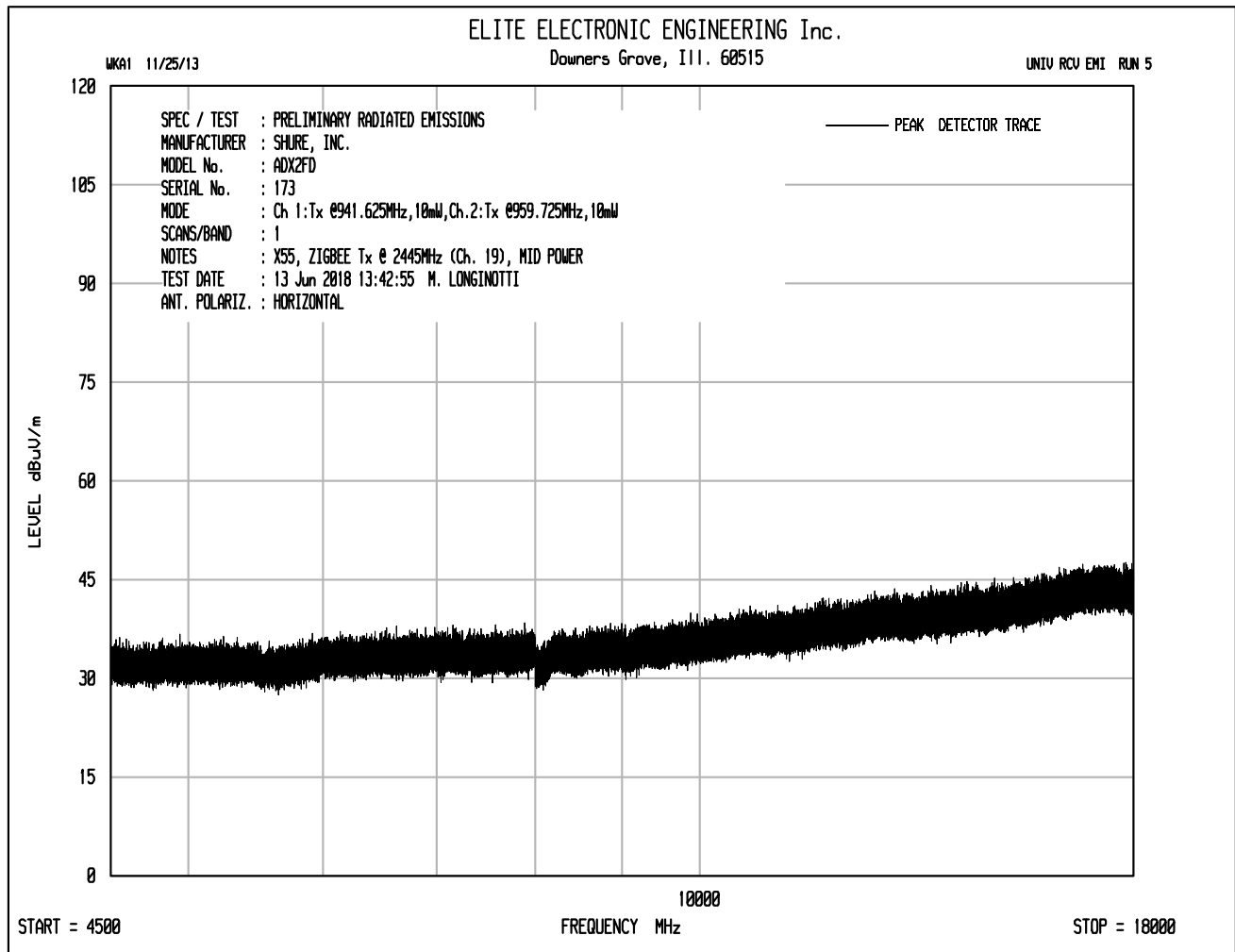
See pages 144 and 145 for a zoomed in plot of the fundamental and intermodulation products

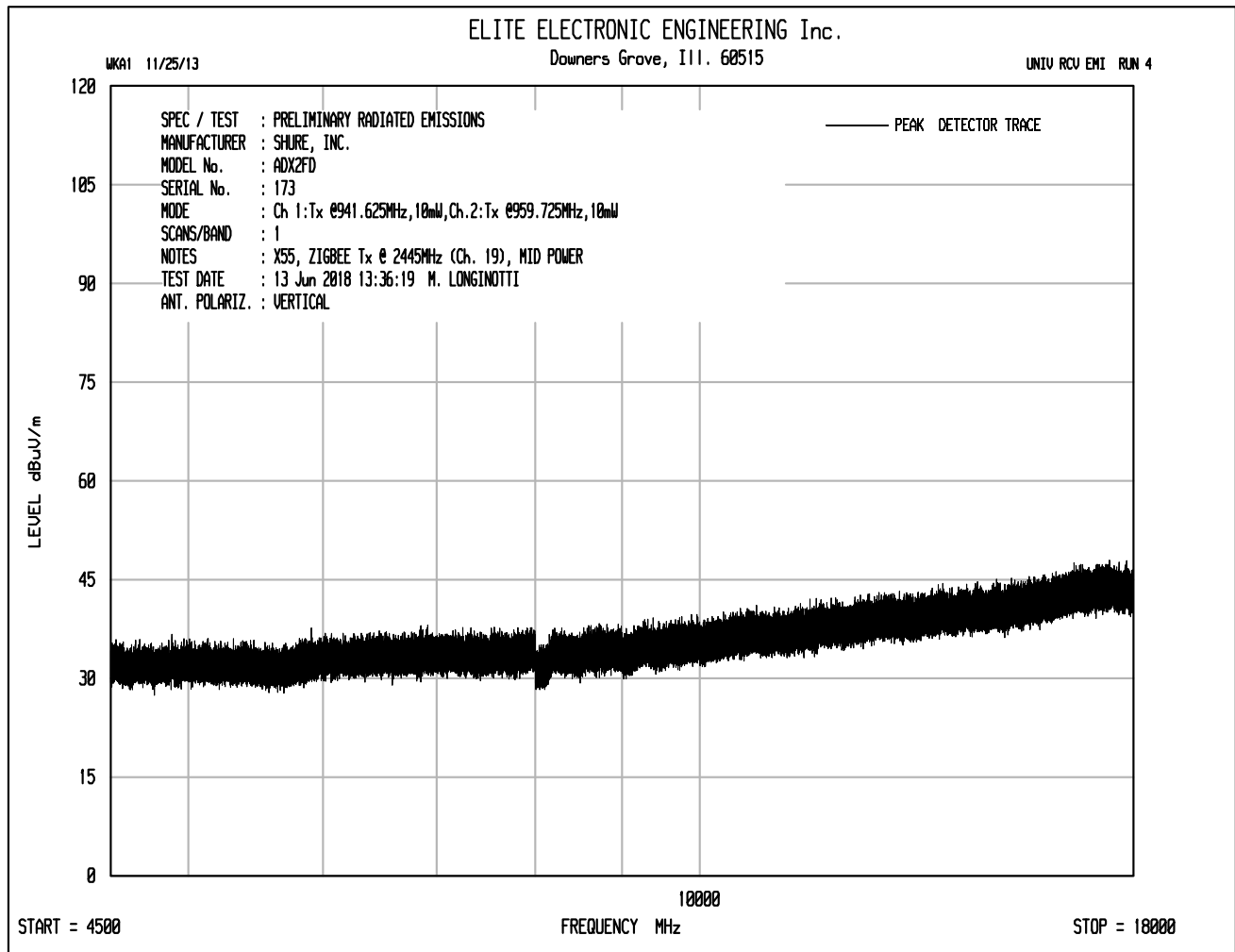


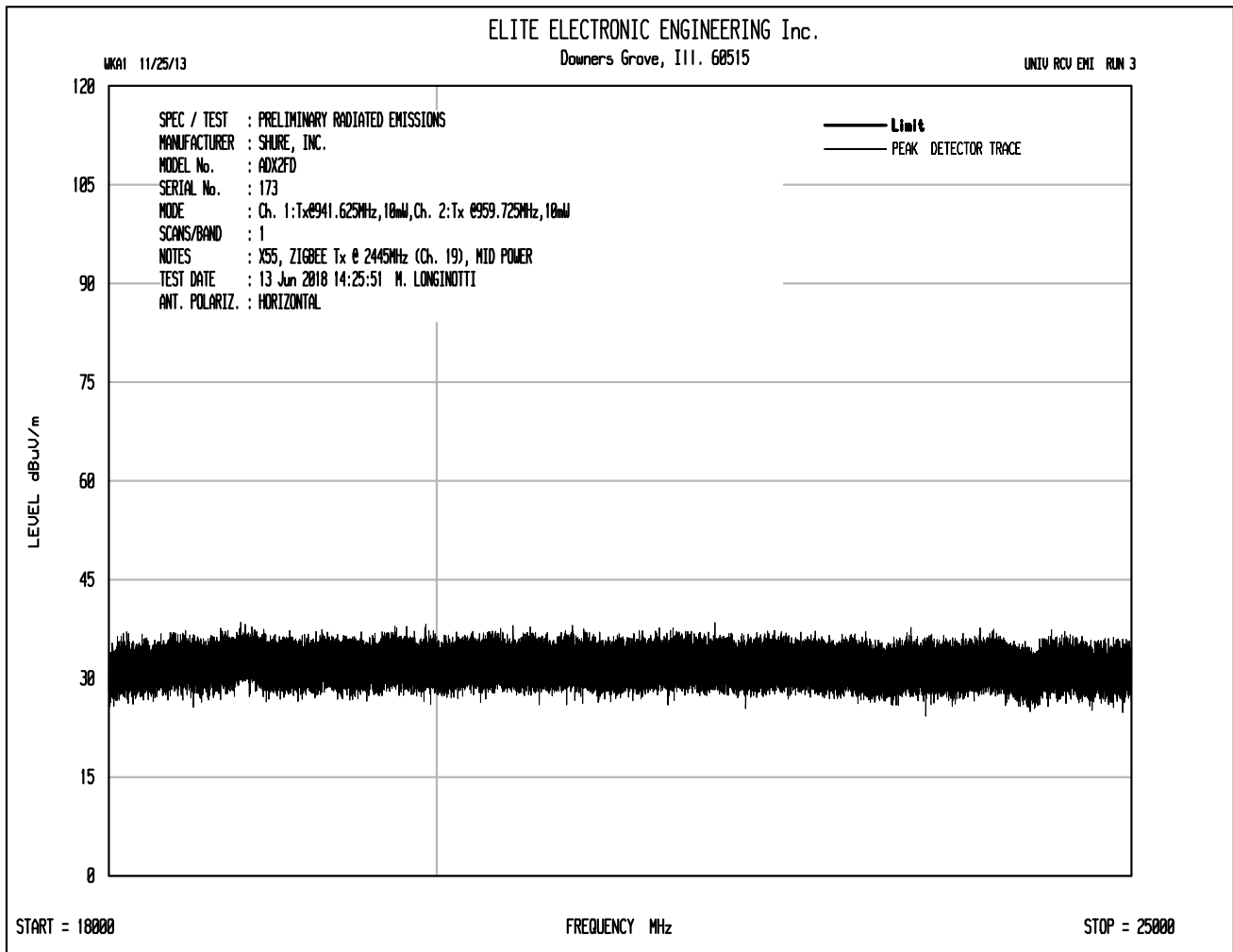
Plot shows emissions at 2445MHz from Zigbee transmitter.

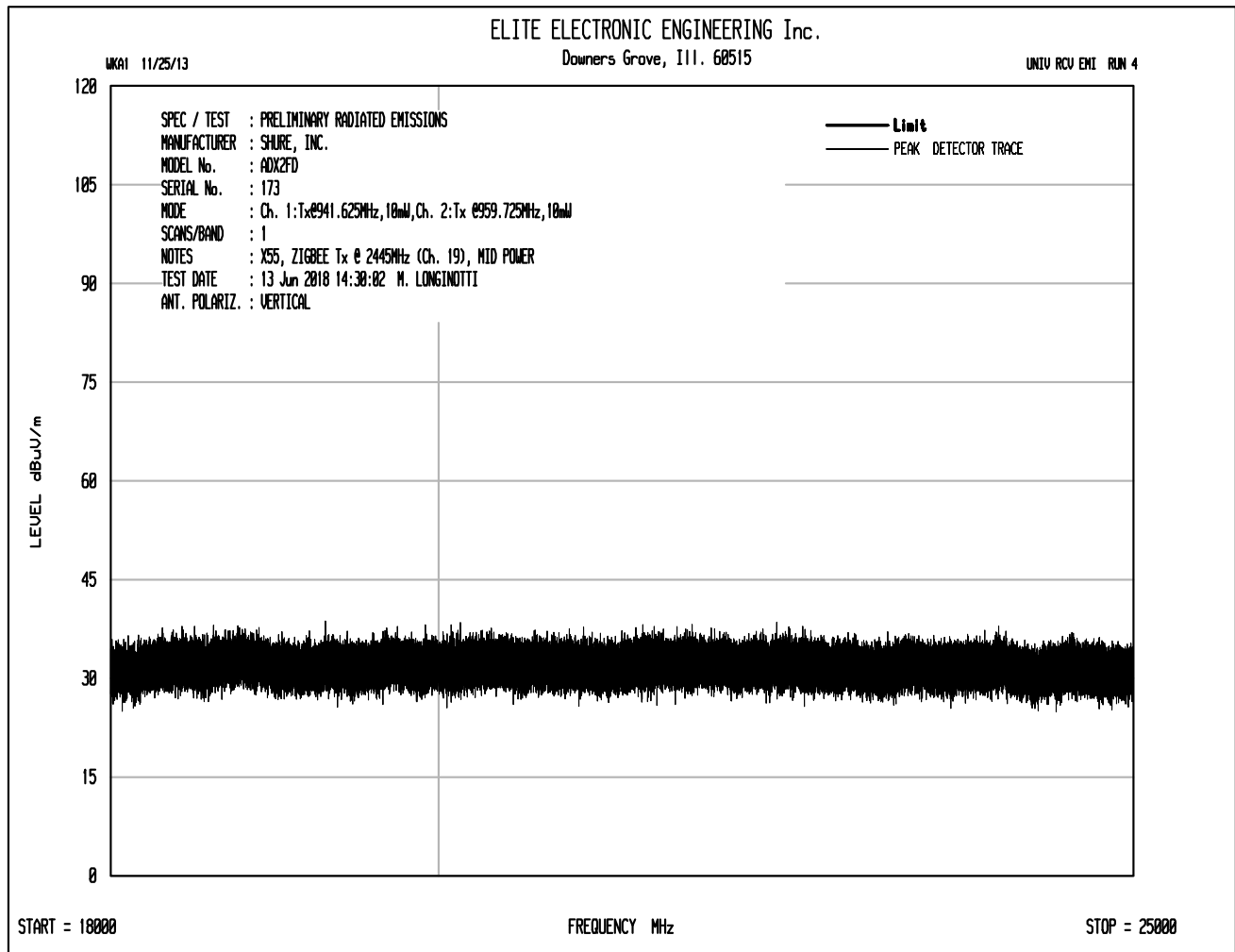


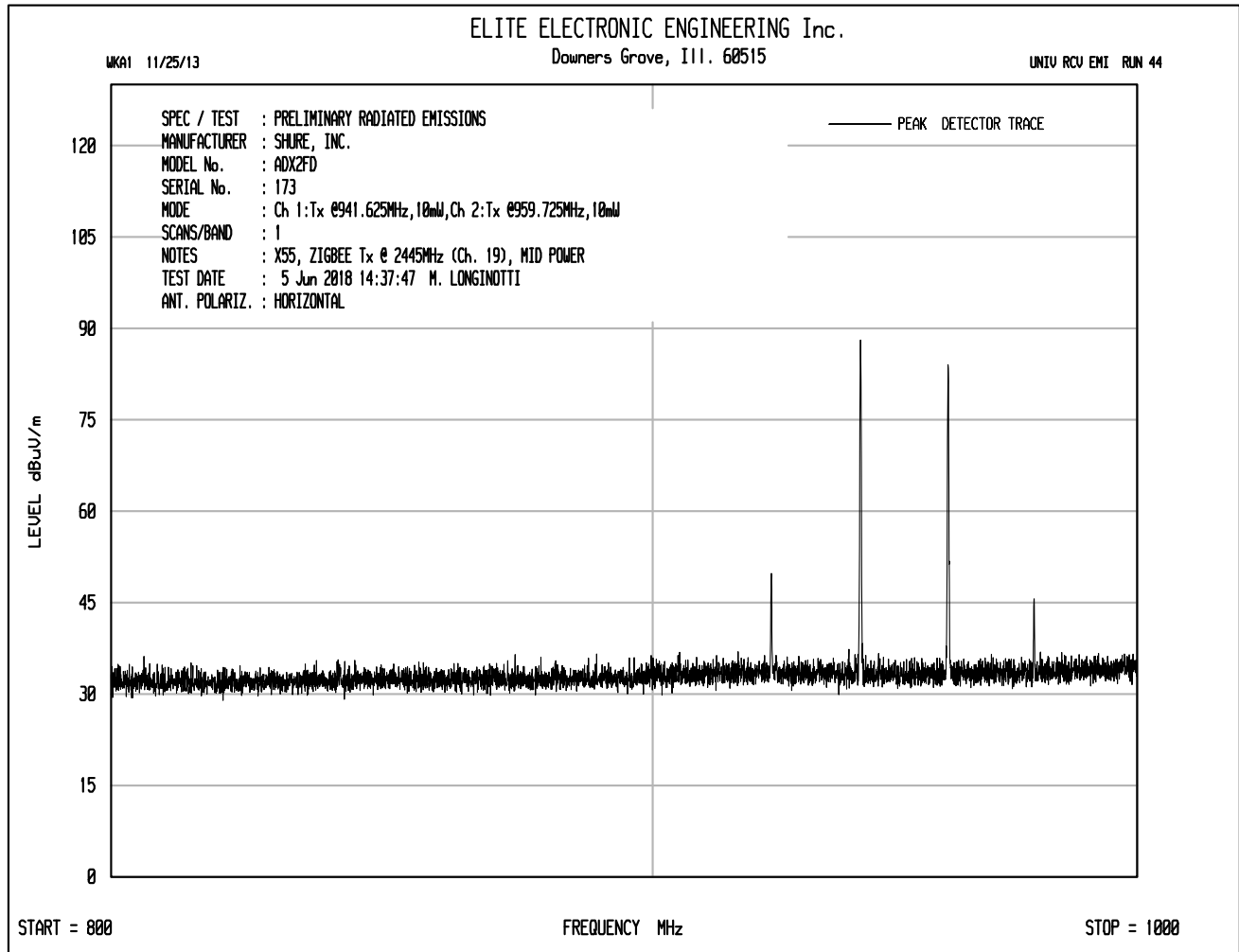
Plot shows emissions at 2445MHz from Zigbee transmitter.











Plot shows emissions at 941.625MHz from UHF transmitter.

Plot shows emissions at 959.725MHz from UHF transmitter.

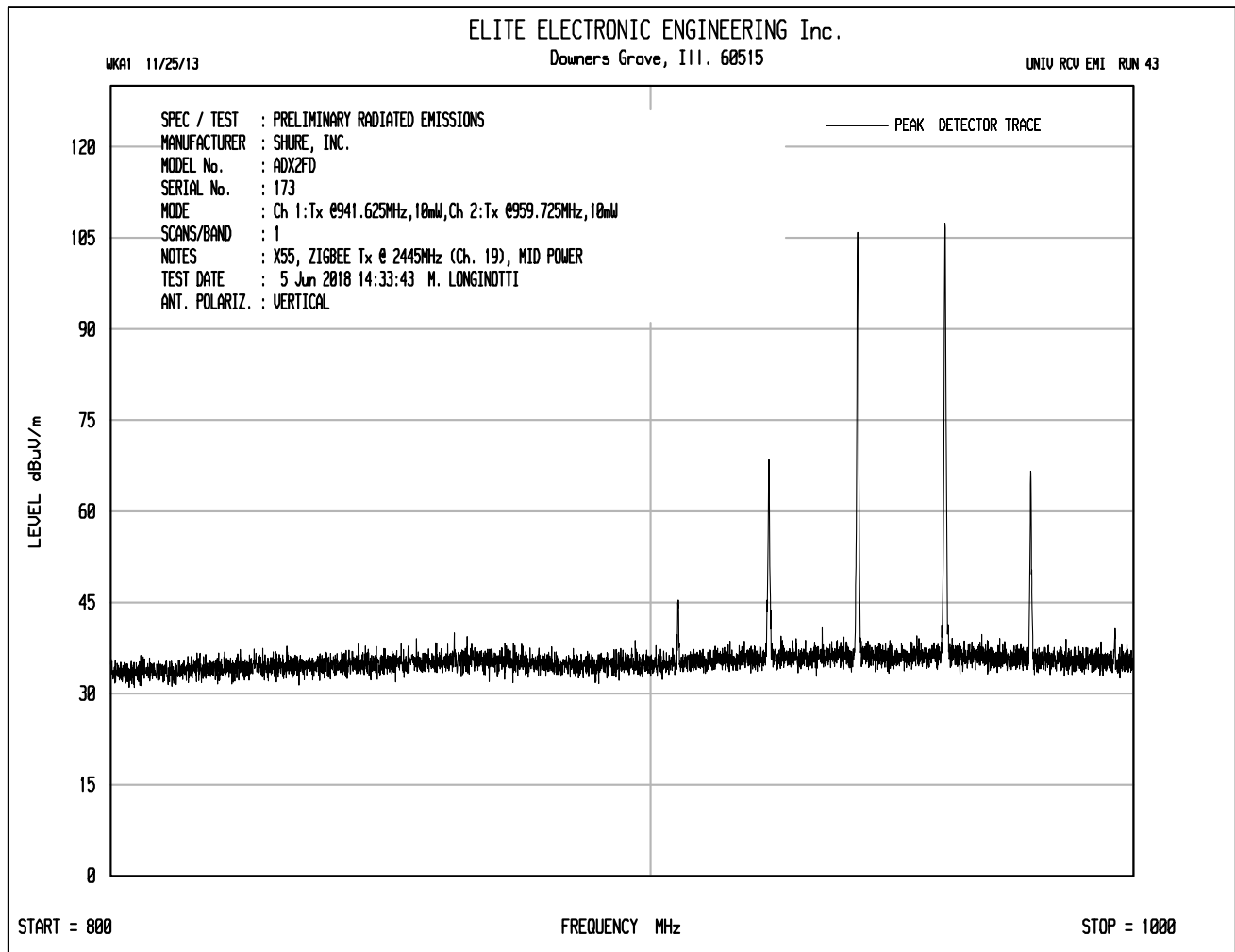
Plot shows emissions at 905.425MHz (Intermodulation product of:  $3 \times 941.625\text{MHz} - 2 \times 959.725\text{MHz}$ )

Plot shows emissions at 923.525MHz (Intermodulation product of:  $2 \times 941.625\text{MHz} - 959.725\text{MHz}$ )

Plot shows emissions at 977.825MHz (Intermodulation product of:  $2 \times 959.725\text{MHz} - 941.625\text{MHz}$ )

Plot shows emissions at 995.925MHz (Intermodulation product of:  $3 \times 959.725\text{MHz} - 2 \times 941.625\text{MHz}$ )





Plot shows emissions at 941.625MHz from UHF transmitter.

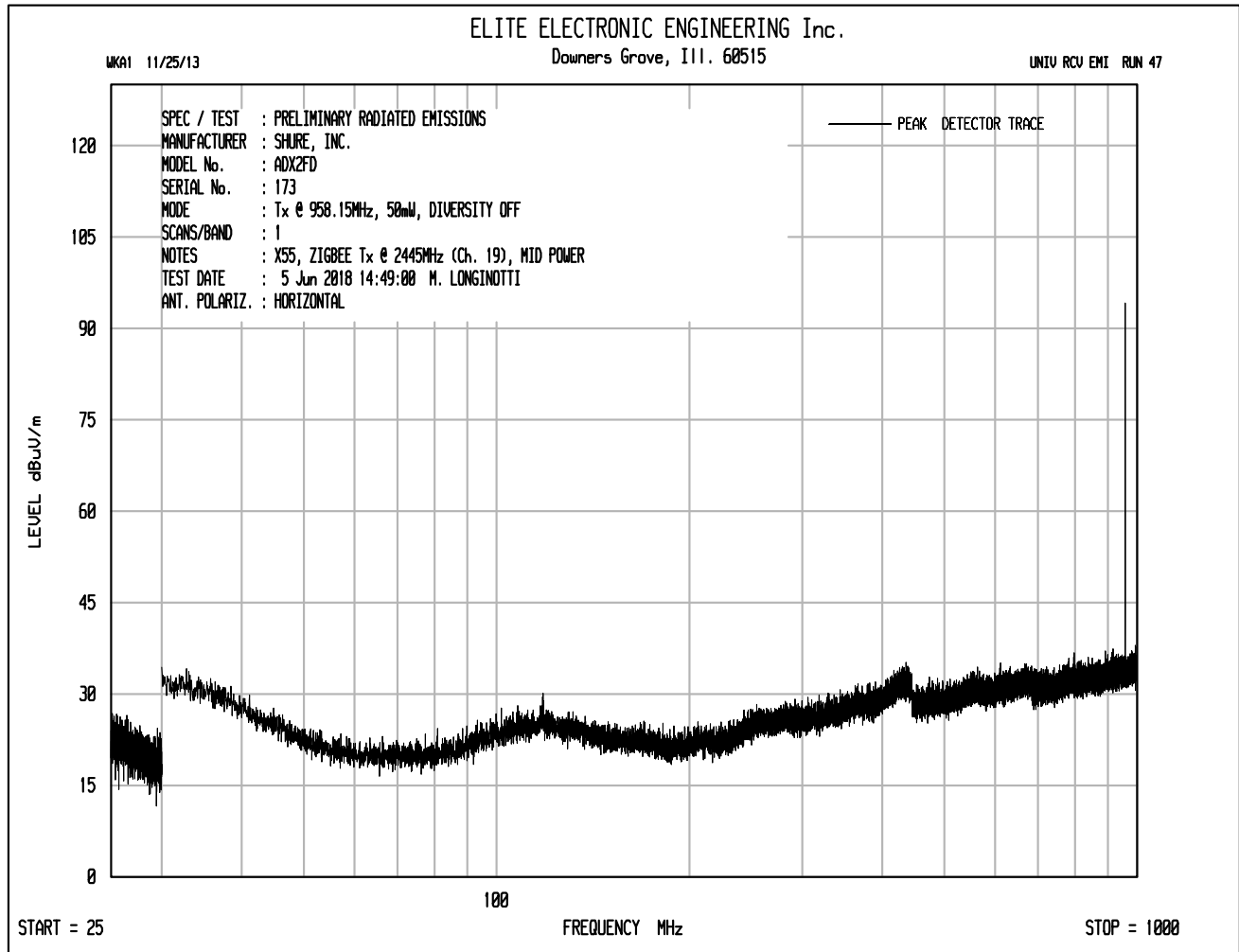
Plot shows emissions at 959.725MHz from UHF transmitter.

Plot shows emissions at 905.425MHz (Intermodulation product of: 3 x 941.625MHz – 2 x 959.725MHz)

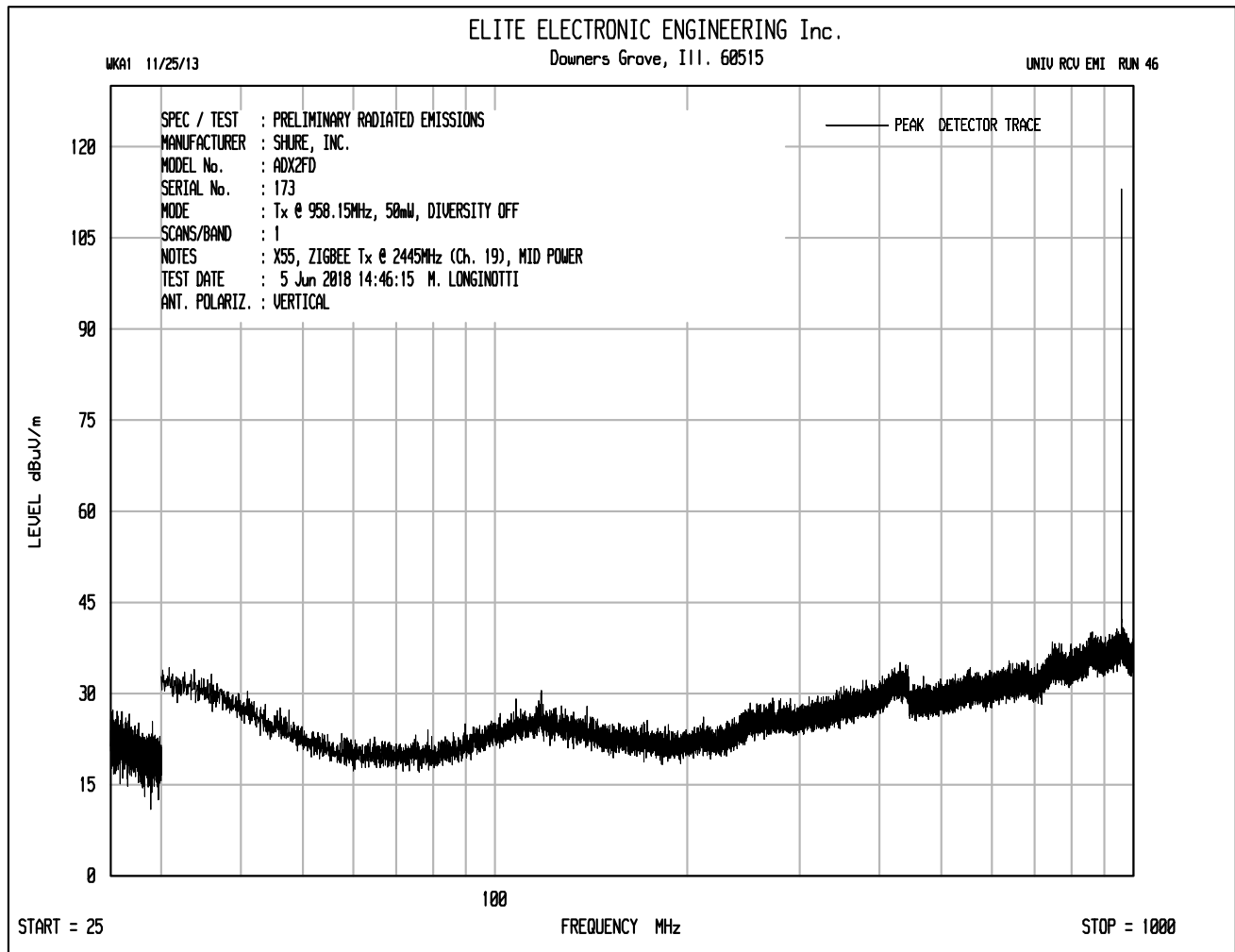
Plot shows emissions at 923.525MHz (Intermodulation product of: 2 x 941.625MHz – 959.725MHz)

Plot shows emissions at 977.825MHz (Intermodulation product of: 2 x 959.725MHz – 941.625MHz)

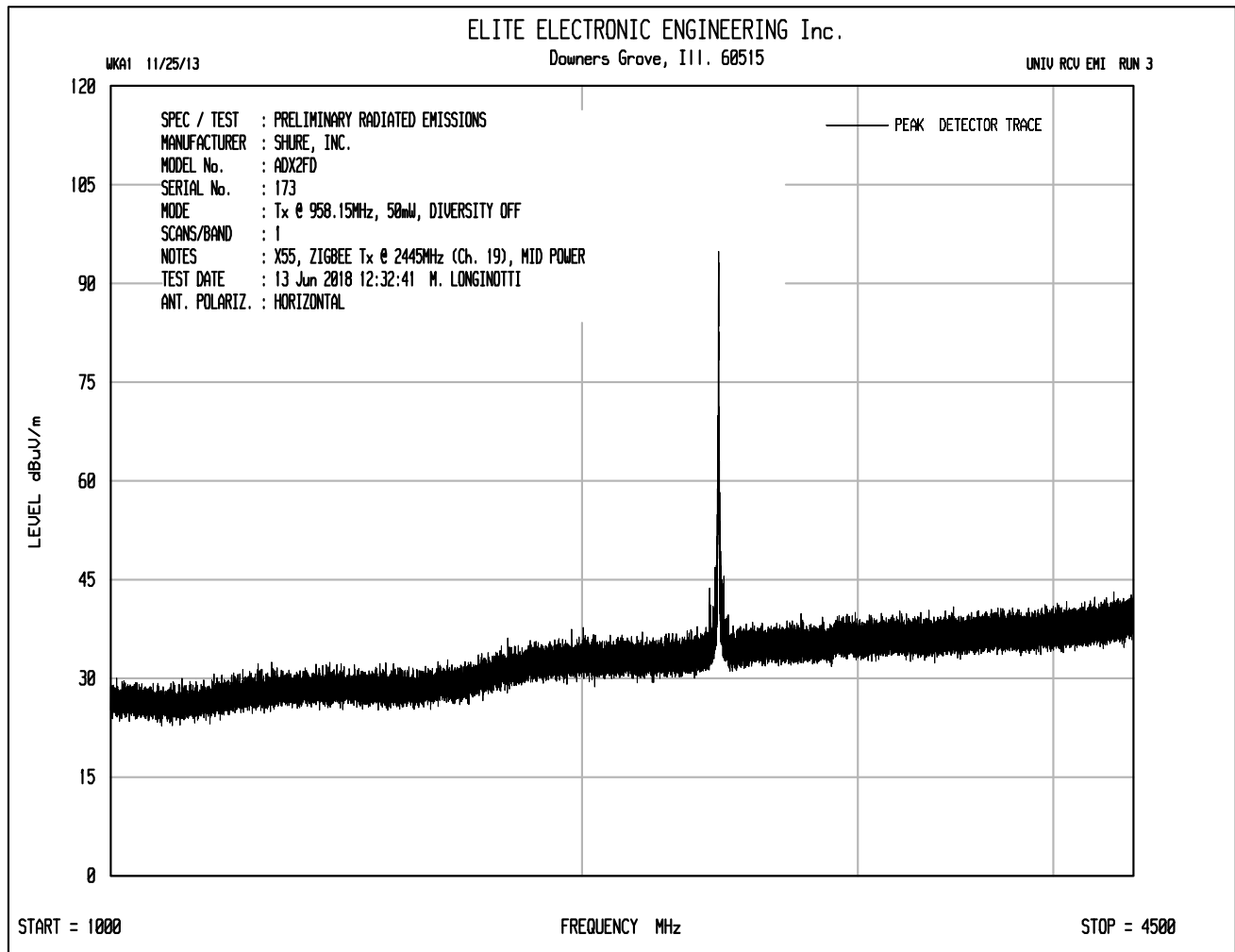
Plot shows emissions at 995.925MHz (Intermodulation product of: 3 x 959.725MHz – 2 x 941.625MHz)



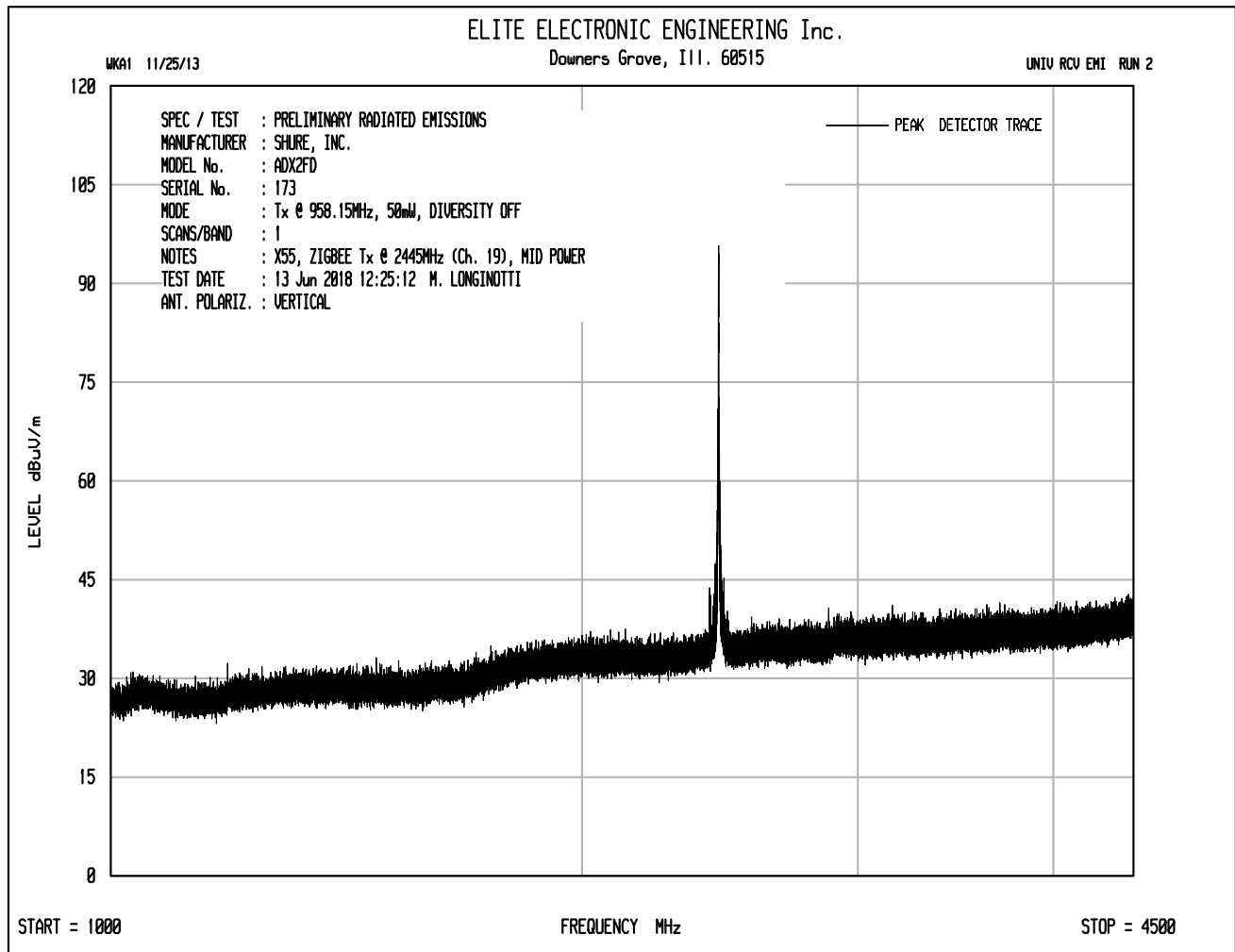
Plot shows emissions at 958.15MHz from UHF transmitter.



Plot shows emissions at 958.15MHz from UHF transmitter.



Plot shows emissions at 2445MHz from Zigbee transmitter.



Plot shows emissions at 2445MHz from Zigbee transmitter.

