Measurement of RF Interference from a Model RCRF-03 Transceiver

For : Turning Technologies, LLC
241 Federal Plaza West
Youngstown, OH 44503

P.O. No. : 6013
Date Tested : April 6, 2009 through April 9, 2009
Test Personnel : Mark E. Longinotti
Specification : FCC "Code of Federal Regulations" Title 47 Part 15, Subpart B for Receivers and Subpart C, Sections 15.207 and 15.249 for Intentional Radiators Operating within the 2400-2483.5MHz band
: Industry Canada RSS-210
: Industry Canada RSS-GEN

Test Report By : Mark E. Longinotti

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

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REVISION HISTORY

Revision	Date	Description
—	April 10, 2009	Initial release

Measurement of RF Emissions from an RCRF-03 Transceiver

1 INTRODUCTION

1.1 Scope of Tests

This document represents the results of the series of radio interference measurements performed on an RCRF-03 Transceiver (hereinafter referred to as the test item). Serial No. 2 was assigned to the test item programmed to operate in a normal mode. Serial No. 4 was assigned to the test item programmed to transmit or receive continuously. The test item was designed to transmit and receive in the frequency range of 2401MHz to 2482MHz using an internal antenna. The test item contained a super-heterodyne type receiver which utilizes an intermediate frequency (IF) of 350MHz. The test item was manufactured and submitted for testing by Turning Technologies, LLC located in Youngstown, OH.

1.2 Purpose

The test series was performed to determine if the test item meets the conducted and radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart B, Sections 15.107 and 15.109, for receivers and Subpart C, Sections 15.207 and 15.249 for Intentional Radiators Operating within the 2400MHz to 2483.5MHz band.

The test series was also performed to determine if the test item meets the conducted and radiated RF emission requirements of the Industry Canada Radio Standards Specification, RSS-Gen, Section 7.2.2 and Section 7.2.3 for receivers and the Industry Canada Radio Standards Specification RSS-Gen Section 7.2.2 and RSS-210 Annex 2, section A2.9 for Transmitters.

Testing was performed in accordance with ANSI C63.4-2003.

1.3 Deviations, Additions and Exclusions

There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4 EMC Laboratory Identification

This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP Lab Code: 100278-0.

1.5 Laboratory Conditions

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

2 APPLICABLE DOCUMENTS

The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart C, dated 1 October 2008

- ANSI C63.4-2003, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"

- Industry Canada RSS-210, Issue 7, June 2007, “Spectrum Management and Telecommunications Radio Standards Specification, Low-power License-exempt radio communication devices (All Frequency Bands): Category I Equipment”

- Industry Canada RSS-GEN, Issue 2, June 2007, “Spectrum Management and Telecommunications Radio Standards Specification, General Requirements and Information for the Certification of radio communication equipment”

3 TEST ITEM SETUP AND OPERATION

3.1 General Description

The test item is a Transceiver, Part No. RCRF-03. A block diagram of the test item setup is shown as Figure 1.

3.1.1 Power Input

The test item was powered by 3VDC from 2 each CR2032 internal batteries.

3.1.2 Peripheral Equipment

The test item does not connect to peripheral equipment

3.1.3 Interconnect Cables

The test item does not use interconnect cables.

3.1.4 Grounding

The test item was not grounded during the test.

3.2 Operational Mode

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

- Transmit at 2401MHz
- Transmit at 2441MHHz
- Transmit at 2482MHHz
- Receive at 2441MHHz

3.3 Test Item Modifications

No modifications were required for compliance to the requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart B, Sections 15.107 and 15.109, for receivers and Subpart C, Sections 15.207 and 15.249 for transmitters and the Industry Canada Radio Standards Specification, RSS-Gen, Section 7.2.2 and 7.2.3 for receivers and Industry Canada Radio Standards Specification RSS-Gen Section 7.2.2 and RSS-210 Annex 2, section A2.9 for transmitters.

4 TEST FACILITY AND TEST INSTRUMENTATION

4.1 Shielded Enclosure

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. With the exception of the floor, the reflective surfaces of the shielded chamber are lined with ferrite tiles on the walls and ceiling. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2003 for site attenuation.

4.2 Test Instrumentation

The test instrumentation and auxiliary equipment used during the tests are listed in Table 9-1. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

Conducted emission tests were performed with a spectrum analyzer in conjunction with a quasi-peak adapter.

Radiated emissions were performed with a spectrum analyzer. This receiver allows measurements with the bandwidths specified by the FCC and with the quasi-peak detector function. The receiver bandwidth was 120kHz for the 30MHz to 1000MHz radiated emissions data.

4.3 Calibration Traceability

Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.4 Measurement Uncertainty

All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system.

The measurement uncertainty for these tests is presented below:

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

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

5 TEST PROCEDURES

5.1 Powerline Conducted Emissions

5.1.1 Receiver

5.1.1.1 Requirements

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

5.1.2 Transmitter

5.1.2.1 Requirements

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

5.2 Duty Cycle Factor Measurements (Transmitter Only)

5.2.1 Procedures

The duty cycle factor is used to convert peak detected readings to average readings. This factor is computed from the time domain trace of the pulse modulation signal.

With the transmitter set up to transmit for maximum pulse density, the time domain trace is displayed on the spectrum analyzer. This trace is obtained by tuning center frequency to the transmitter frequency and then setting a zero span width with 100usec/div. The amplitude settings are adjusted so that the on/off transitions clear the 4th division from the bottom of the display. The markers are set at the beginning and end of the “on-time”. The trace is recorded.

Next the spectrum analyzer center frequency is set to the transmitter frequency with a zero span width and 10msec/div. This shows if the word is longer than 100msec or shorter than 100msec. If the word period is less than 100msec, the display is set to show at least one word. The on-time and off-time are then measured. The on-time is total time signal level exceeds the 4th division. Off-time is time under for the word period. The duty cycle is then computed as the (On-time/ word period) where the word period = (On-time + Off-time).).

5.2.2 Results

Plots of the duty cycle at 2445MHz are shown on data pages 17 and 18. The duty cycle factor was computed to be -35.6dB.

5.3 Radiated Measurements

5.3.1 Receiver

5.3.1.1 Requirements

Per the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart B, Section 15.101(b), receivers operating above 960MHz are exempt from complying with the technical provisions of part 15.

Per Industry Canada RSS-Gen, Section 7.2.3, all radio frequency emissions from a receiver shall be below the limits shown on the following table:

Frequency MHz	Distance between Test Item And Antenna in Meters	Field Strength uV/m	Field Strength dBuV/m
30-88	3	100	40
88-216	3	150	43.5
216-960	3	200	46
Above 960	3	500	54

Note: The tighter limit shall apply at the edge between the two frequency bands.

Per Industry Canada RSS-Gen, section 4.10, spurious emissions shall be measured from 30MHz to 3 times the highest tunable or local oscillator frequency.

5.3.1.2 Procedures

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 2003 for site attenuation.

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

Since quasi-peak and average measurements require long integration times, it is not practical to automatically sweep through the quasi-peak or average levels. Therefore, radiated emissions from the test item were first scanned using a peak detector and automatically plotted. The frequencies where significant emission levels were noted were then remeasured using the quasi-peak or average detector.

For preliminary radiated emissions sweeps from 30MHz to 9GHz, the broadband measuring antenna was positioned at a 3 meter distance from the test item. The frequency range from 30MHz to 9GHz was investigated using a peak detector function with the bilog antenna below 1GHz and the double-ridged waveguide antenna above 1GHz. The maximum levels were plotted.

Final radiated emissions were performed on all significant broadband and narrowband emissions found in the preliminary sweeps using the following methods:

1) Measurements below 1GHz were made using a quasi-peak detector and a bilog antenna. Measurements above 1GHz were made using an average detector and a double ridged waveguide antenna.

2) To ensure that maximum or worst case, emission levels were measured, the following steps were taken:

   a. The test item was rotated so that all of its sides were exposed to the receiving antenna.

   b. Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.

   c. The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

5.3.1.3 Results

The preliminary plots are presented on pages 19 and 20. The plots are presented for a reference only, and are not used to determine compliance. The final radiated levels are presented on page 21. As can be seen from the data, all emissions measured from the test item were within the specification limits for receivers. The emissions level closet to the limit (worst case) occurred at 2792MHz. The emissions level at this frequency was 4.2dB within the limit. Photographs of the test configuration are shown on Figure 3.

5.3.2 Transmitter

5.3.2.1 Requirements

The test item must comply with the requirements of FCC "Code of Federal Regulations Title 47", Part 15, Subpart C, Section 15.249(a) and Industry Canada RSS-210 Annex 2, Section A2.9. Both standards have the following radiated emission limits:

Fundamental Frequency MHz	Field Intensity mV/m @ 3 meter	Field Strength of Harmonics and Spurious uV/m @ 3 meter
2400 – 2483.5	50	500

The field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits by more than 20 dB under any condition of modulation.

5.3.2.2 Procedures

All 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. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2003 for site attenuation.

A preliminary radiated emissions test was performed to determine the emission characteristics of the test item. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the test item. The entire frequency range from 30MHz to 25GHz was investigated using a peak detector function. The data was then processed by the computer to calculate equivalent field intensity.

The final emission tests were then manually performed over the frequency range of 30MHz to 25GHz. Between 30MHz and 1000MHz, a bilog antenna was used as the pick-up device. A broadband double ridged waveguide antenna was used as the pick-up device for all frequencies above 1GHz. All significant broadband and narrowband signals were measured and recorded.

To ensure that maximum or worst case, emission levels were measured, the following steps were taken:

1) The test item was rotated so that all of its sides were exposed to the receiving antenna.

2) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.

3) The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

4) For hand-held or body-worn devices, the test item was rotated through three orthogonal axes to determine which orientation produces the highest emission relative to the limit.

5) In some instances, it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer and the antenna could not be raised to 4 meters. The measuring antenna was raised and lowered as much as the cable would allow and the test item is rotated through all axis to ensure the maximum readings are recorded. See attached Figure 2.

5.3.2.3 Results

The preliminary plots, with the test item transmitting at 2401MHz, are presented on data pages 22 through 25. The plots are presented for a reference only, and are not used to determine compliance. The final radiated levels, with the test item transmitting at 2401MHz, are presented on data pages 26 and 27. As can be seen from the data, all emissions measured from the test item were within the specification limits. The emissions level closet to the limit (worst case) occurred at 2401MHz. The emissions level at this frequency was 12.0dB within the limit. Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown on Figure 3 and Figure 4.

The preliminary plots, with the test item transmitting at 2441MHz, are presented on data pages 28 through 31. The plots are presented for a reference only, and are not used to determine compliance. The final radiated levels, with the test item transmitting at 2441MHz, are presented on data pages 32 and 33. As can be seen from the data, all emissions measured from the test item were within the specification limits. The emissions level closet to the limit (worst case) occurred at 2441MHz. The emissions level at this frequency was 10.8dB within the limit. Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown on Figure 3 and Figure 4.

The preliminary plots, with the test item transmitting at 2482MHz, are presented on data pages 34 through 37. The plots are presented for a reference only, and are not used to determine compliance. The final radiated levels, with the test item transmitting at 2482MHz, are presented on data pages 38 and 39. As can be seen from the data, all emissions measured from the test item were within the specification limits. The emissions level closet to the limit (worst case) occurred at 2482MHz. The emissions level at this frequency was 11.3dB within the limit. Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown on Figure 3 and Figure 4.

5.4 Occupied Bandwidth Measurements

5.4.1 Requirement

In accordance with paragraph 15.249(d), emissions outside of the specified frequency bands shall be below the general radiated emissions limits of 15.209. Therefore the radiated emissions at the band edges (2400MHz and 2483.5MHz) must meet the general limits of 15.209.

5.4.2 Procedures

For radiated emissions at the band edges, the “marker-delta” method described in Public Notice DA 00-705 was used.

The test item was placed on an 80cm high non-conductive stand. The unit was set to transmit continuously. A broadband measuring antenna was placed at a test distance of 3 meters from the test item. Initially radiated emissions were performed at the lowest transmit frequency and the highest transmit frequency using a 1MHz bandwidth. Next, the band edge emissions were plotted using a peak detector and a 30kHz bandwidth. The “max-hold” function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer’s display was plotted using a “screen-dump” utility. The “delta” limit was applied to this plot to determine compliance at the band edge.

5.4.3 Results

Pages 40 and 41 show the radiated band-edge compliance results. The testing was performed using the marker-delta method. As can be seen from these plots, the emissions at the band-edges meet the general limits.

The 99% bandwidth was measured to be 1.02MHz.

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 Test Item

The test item and all associated equipment were returned to Turning Technologies, LLC upon completion of

the tests.

7 CONCLUSIONS

It was determined that the Turning Technologies, LLC Transceiver, Part No. RCRF-03, Serial No. S/N 1, did fully meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Section 15.205 et seq. for Intentional Radiators, when tested per ANSI C63.4-2003.

It was determined that the Turning Technologies, LLC Transceiver, Part No. RCRF-03, Serial Nos. 2 and 4, did fully meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart B, Sections 15.107 and 15.109 for receivers, and Subpart C, Sections 15.207 and 15.249 for Intentional Radiators Operating within the 2400 – 2483.5MHz band, when tested per ANSI C63.4-2003.

It was also determined that the Turning Technologies, LLC Transceiver, Part No. RCRF-03, Serial Nos. 2 and 4, did fully meet the conducted and radiated emission requirements of the Industry Canada Radio Standards Specification, RSS-Gen, Section 7.2.2 and Section 7.2.3 for receivers and the Industry Canada Radio Standards Specification RSS-Gen Section 7.2.2 and RSS-210 Annex 2, section A2.9 for Transmitters, when tested per ANSI C63.4-2003.

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

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

9 EQUIPMENT LIST

Table 9-1 Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW0	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-30-20G20R6G	PL2926/0646	20GHZ-26.5GHZ	12/16/2008	12/16/2009
APW2	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-35-120-5R0-10	PL2925	1GHZ-20GHZ	12/16/2008	12/16/2009
NHG1	STANDARD GAIN HORN ANTENNA	NARDA	638	---	18-26.5GHZ	NOTE 1	
NWI1	RIDGED WAVE GUIDE	AEL	H1498	154	2-18GHZ	10/25/2008	10/25/2009
RBB0	EMI TEST RECEIVER 20HZ TO 40 GHZ.	ROHDE & SCHWARZ	ESIB40	100250	20 HZ TO 40GHZ	3/11/2009	3/11/2010
SBA1	DC POWER SUPPLY	APLAB	ZS3205	99071032	0-32VDC;0-5A	NOTE 1	
XPR0	HIGH PASS FILTER	K&L MICROWAVE	11SH10-4800/X20000	001	4.8-20GHZ	7/30/2008	7/30/2009

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

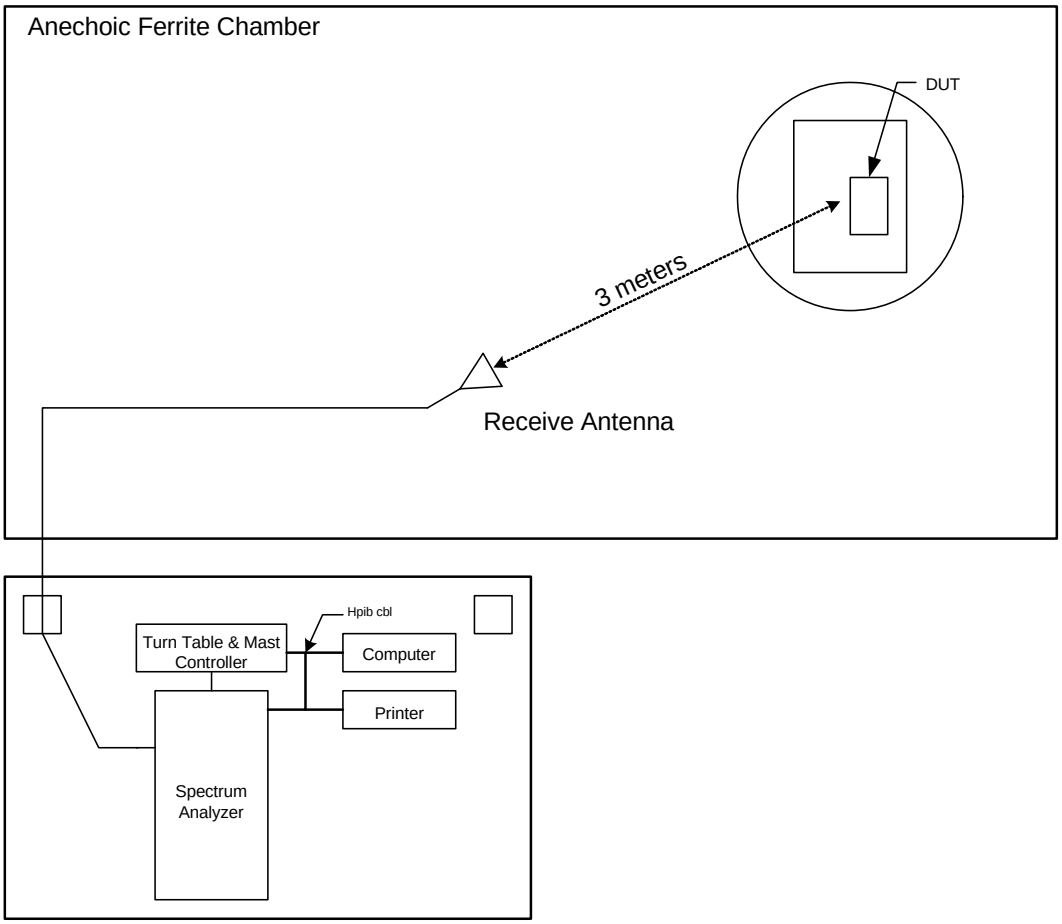


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

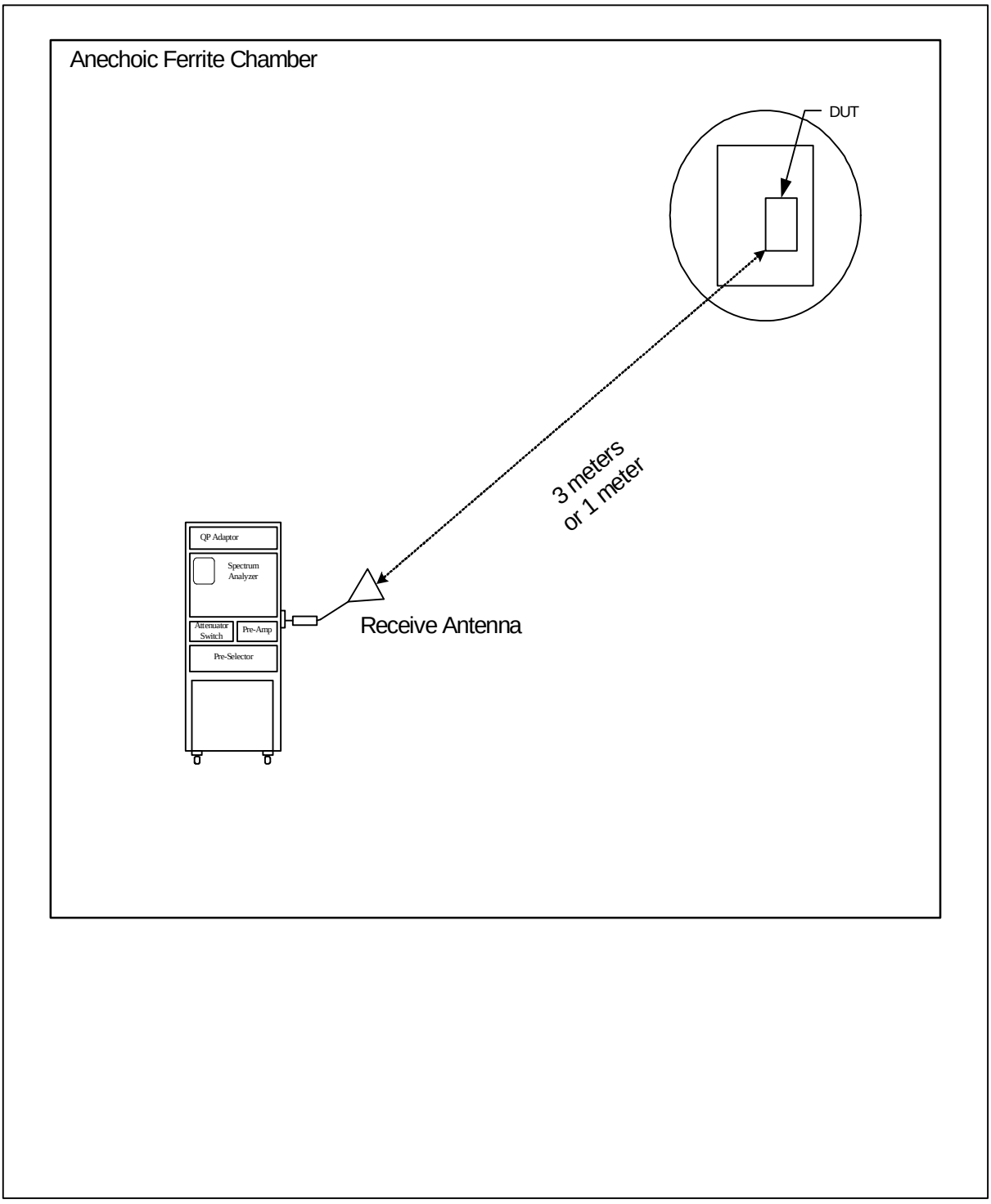
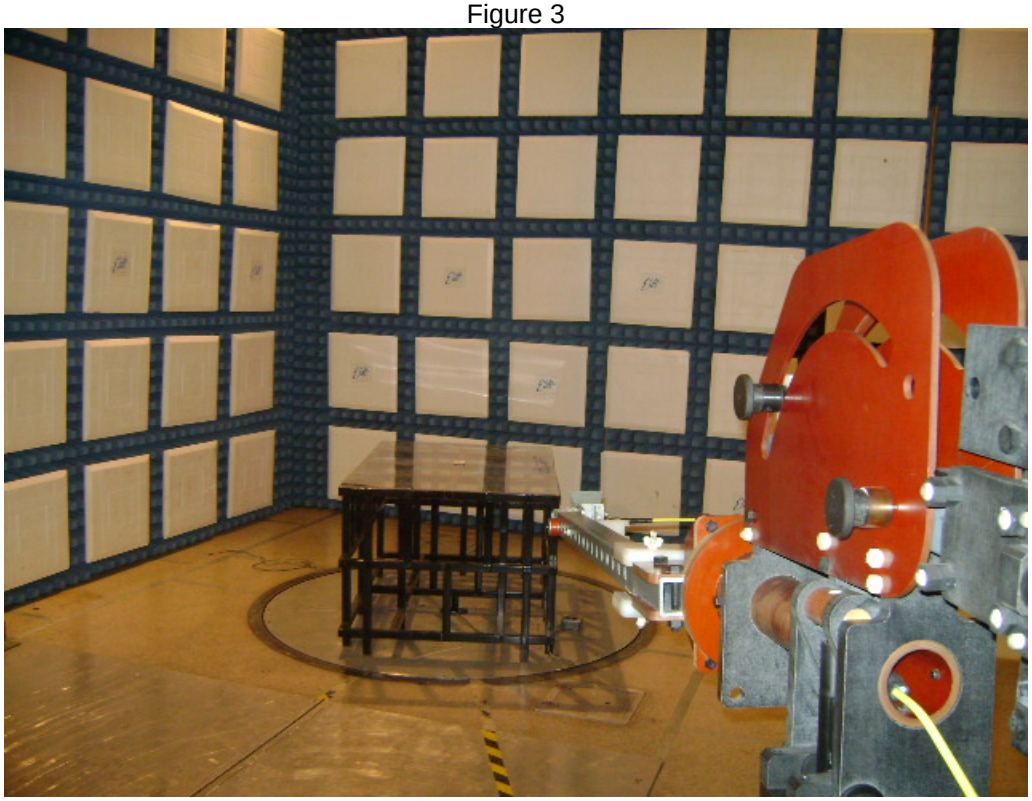

Anechoic Ferrite Chamber
DUT
3 meters
or 1 meter
QP Adaptor
Spectrum
Analyzer
Attenuator
Switch
Pre-Amp
Pre-Selector
Receive Antenna

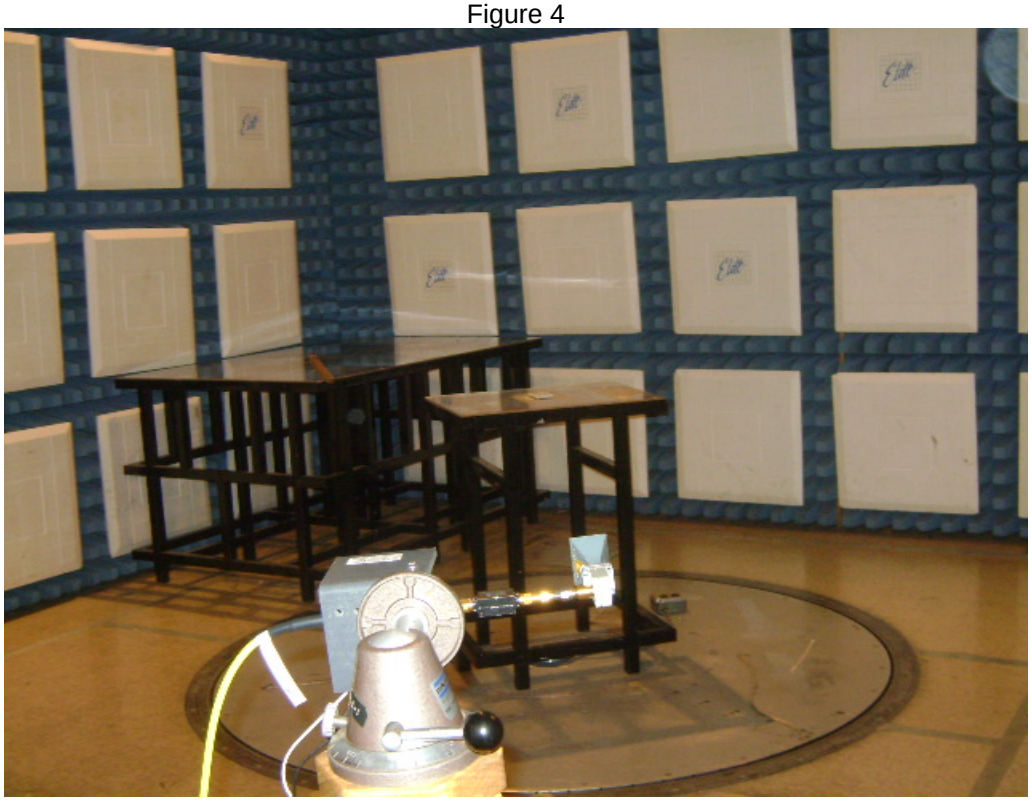
Figure 3



Test Setup for Radiated Emissions, 2GHz to 18GHz – Horizontal Polarization

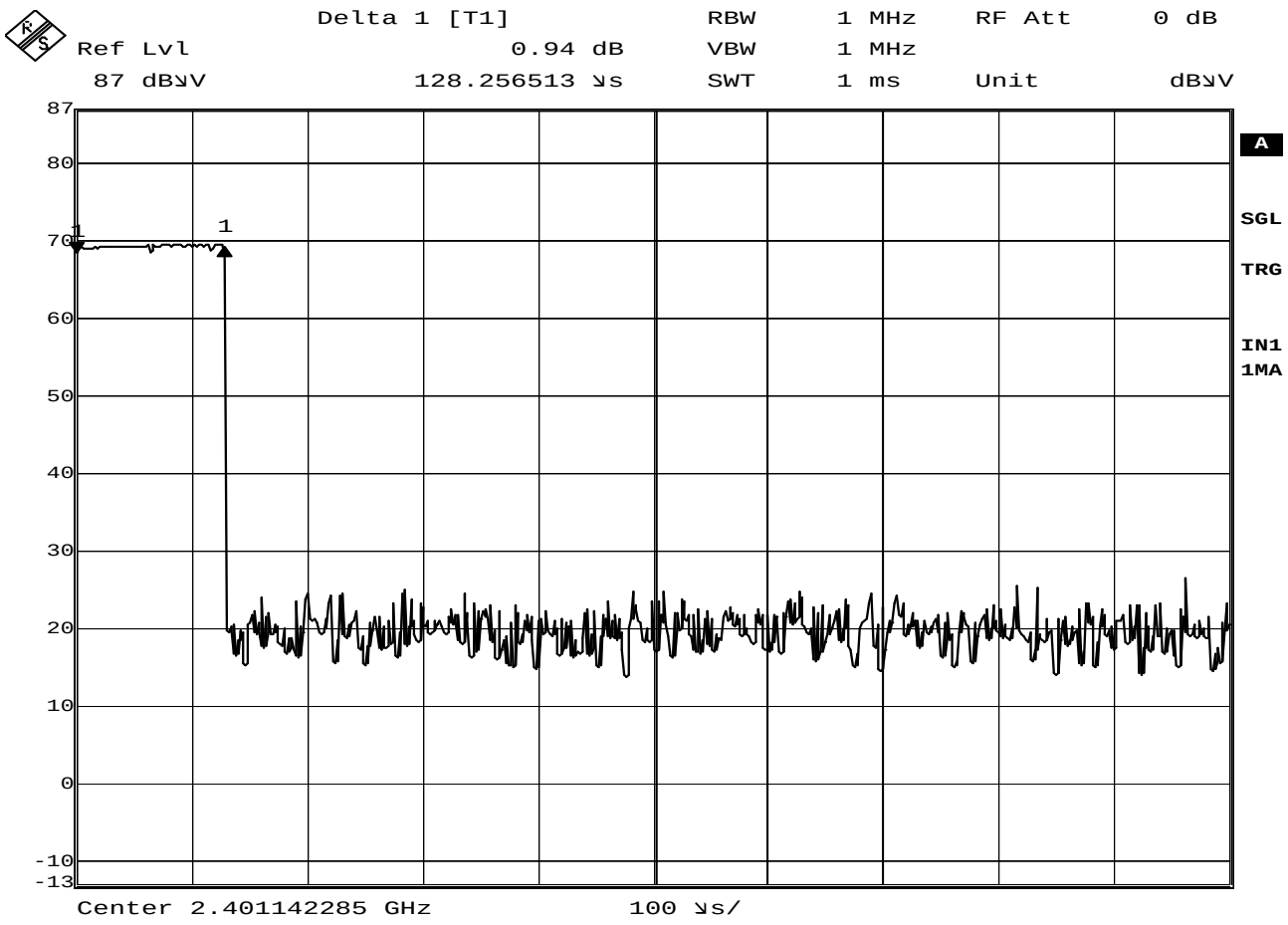
Test Setup for Radiated Emissions, 2GHz to 18GHz – Vertical Polarization

Figure 4



Test Setup for Radiated Emissions above 18GHz – Horizontal Polarization

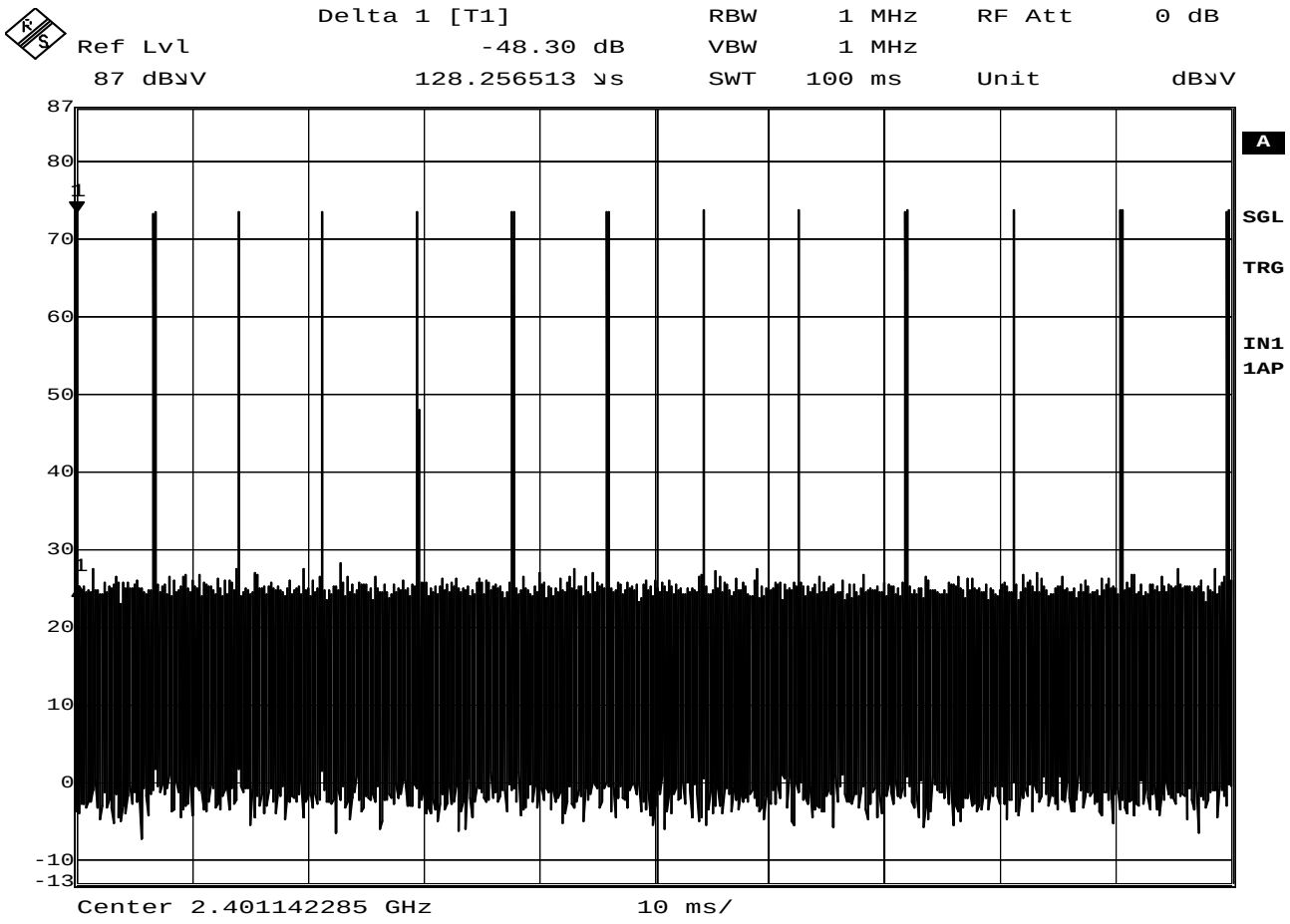
Test Setup for Radiated Emissions above 18GHz – Vertical Polarization



Date: 6.APR.2009 15:38:37

FCC 15.249 Duty Cycle Factor

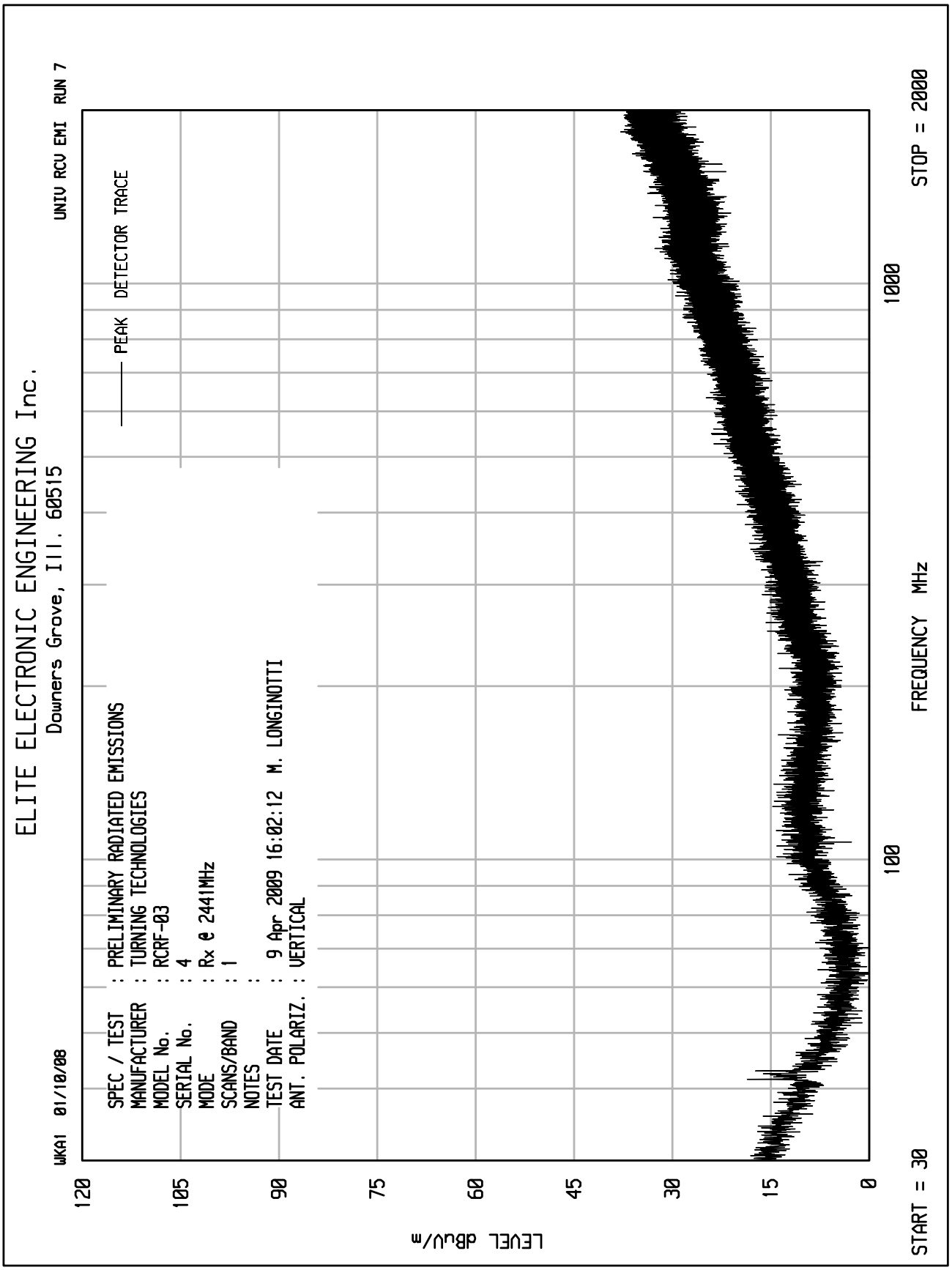
MANUFACTURER : Turning Technologies
PART NUMBER : RCRF-03
SERIAL NUMBER : #2
TEST MODE : Tx @ 2401MHz (Ch. 1)
TEST PARAMETER : Pulse width = 128.26usec.
EQUIPMENT USED : RBB0,T2DA,T2DN

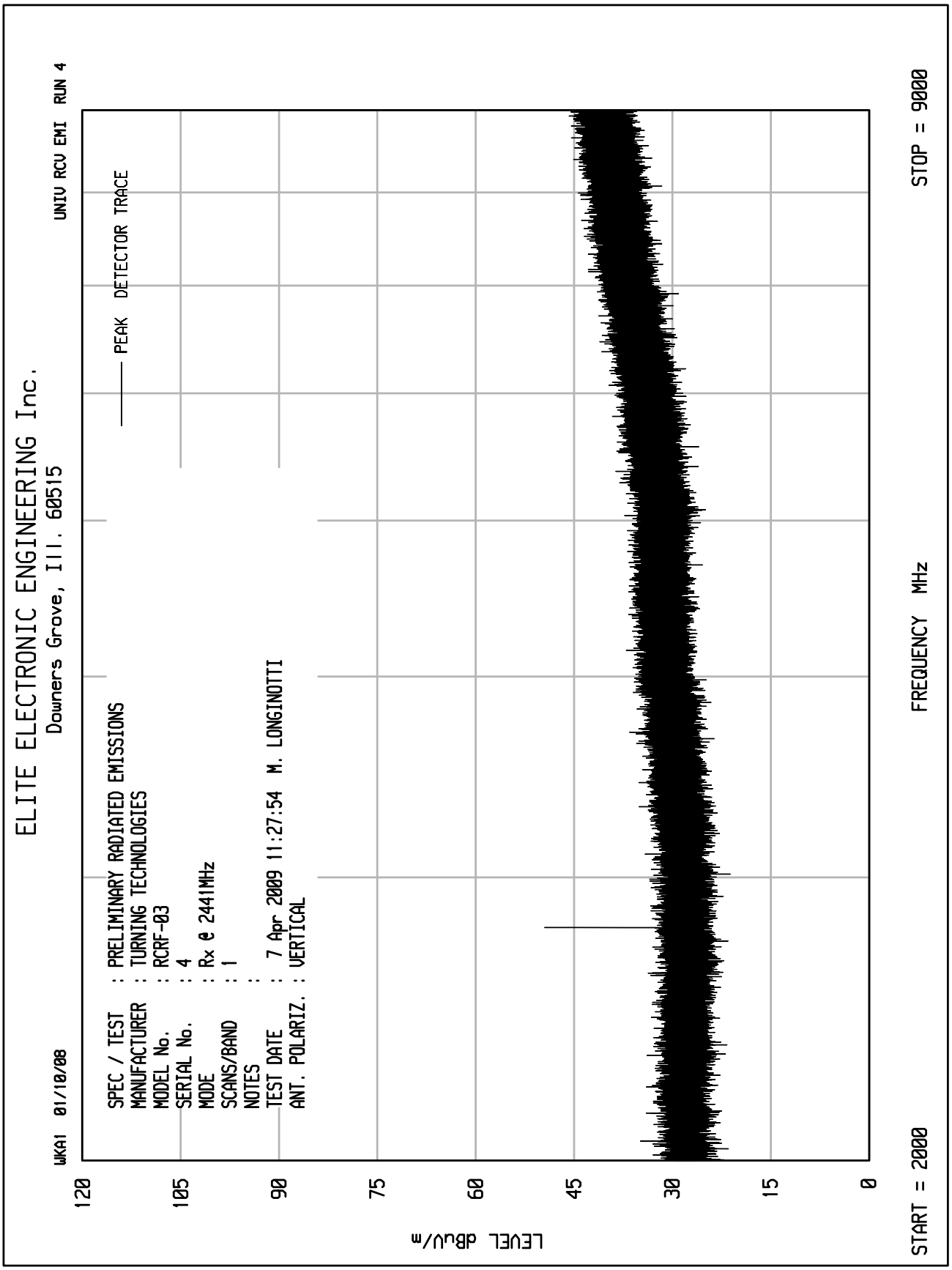


Date: 6.APR.2009 15:42:31

FCC 15.249 Duty Cycle Factor

MANUFACTURER : Turning Technologies
PART NUMBER : RCRF-03
SERIAL NUMBER : #2
TEST MODE : Tx @ 2401MHz (Ch. 1)
TEST PARAMETER : Number of Pulses in a 100msec period = 13.
On Time = 13 x 128.26msec = 1667.38usec = 1.67ms
Duty Cycle = 20*log(1.67msec/100msec) = -35.6dB
EQUIPMENT USED : RBB0,T2DA,T2DN


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 7
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Rx @ 2441MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 9 Apr 2009 16:02:12 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
1000
STOP = 2000
FREQUENCY MHz

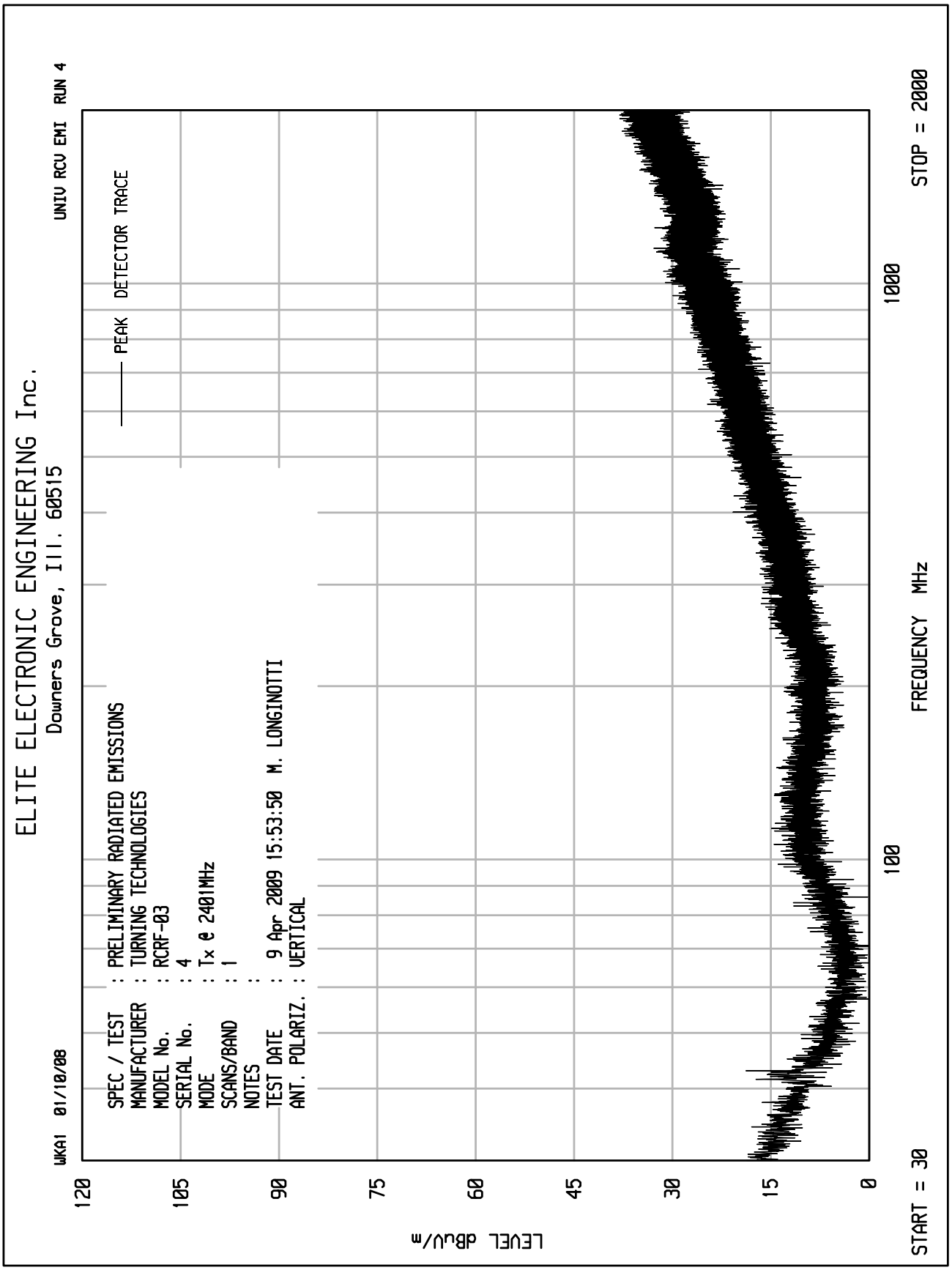

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 4
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Rx @ 2441MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 7 Apr 2009 11:27:54 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 2000
FREQUENCY MHz
STOP = 9000

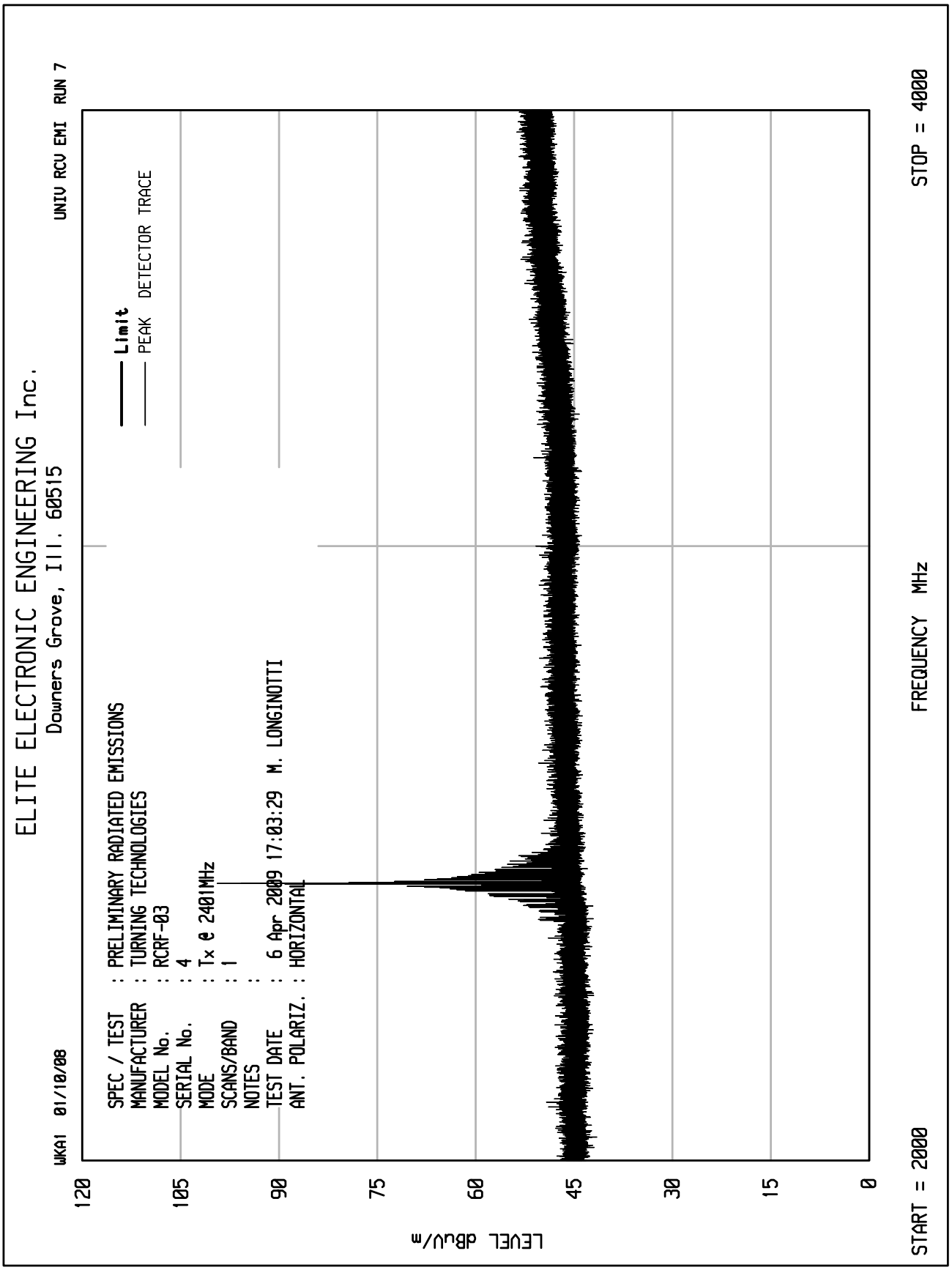
Manufacturer : Turning Technologies
Model No. : RCRF-03
Serial No. : 4
Mode : Receive at 2441MHz
Test Specification : FCC 15.109 and RSS-Gen
Date : April 8, 2009
Test Distance : 3 meters

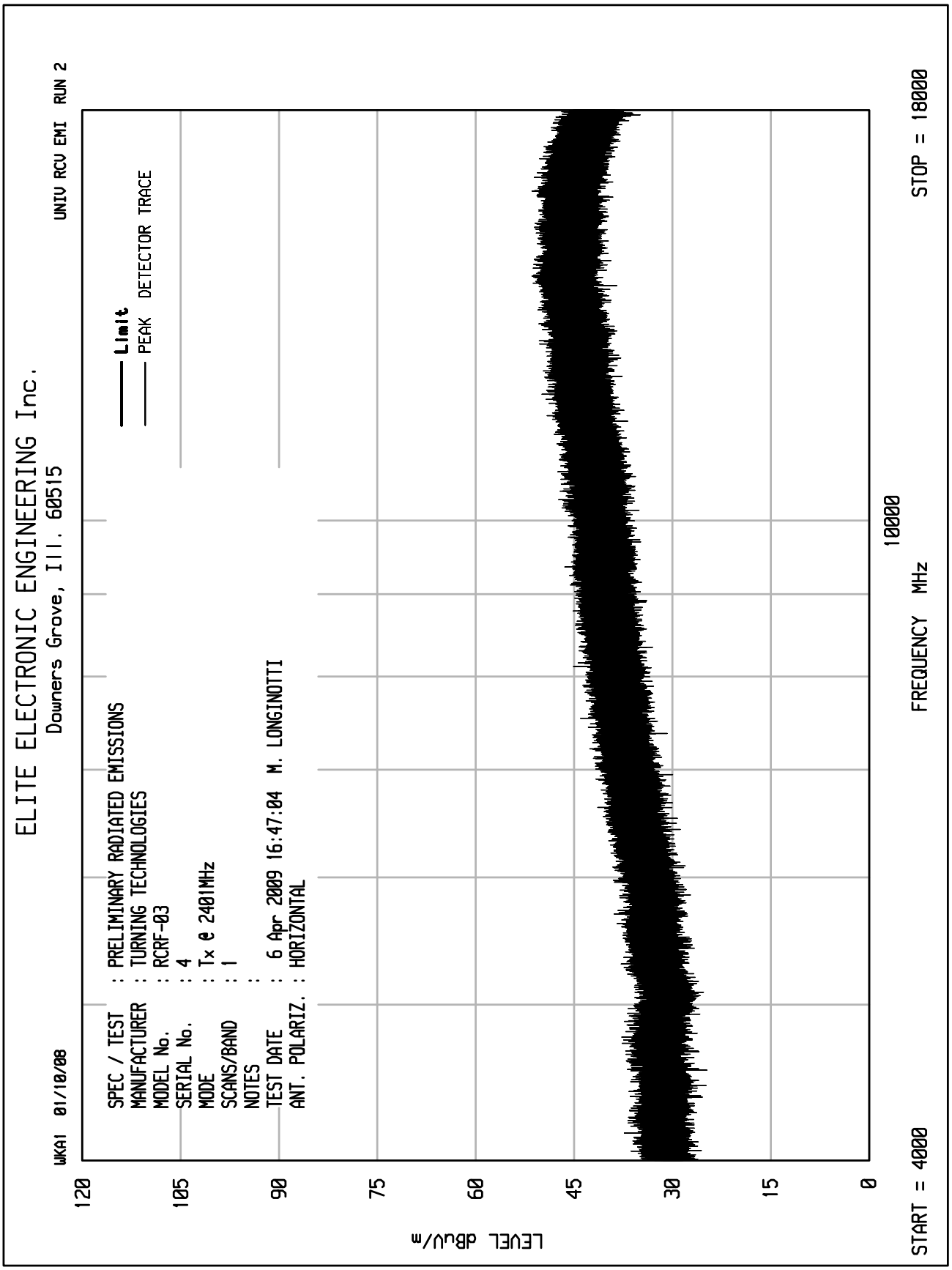
Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Total dBuV/m at 3 m	Total uV/m at 3m	Limit at 3m	(dB)
2792.0	H	51.1		4.0	31.6	-36.9	49.7	307.0	500.0	-4.2
2792.0	V	47.3		4.0	31.6	-36.9	45.9	198.2	500.0	-8.0
5584.0	H	31.5	Ambient	6.3	36.1	-35.8	38.2	81.1	500.0	-15.8
5584.0	V	31.6	Ambient	6.3	36.1	-35.8	38.3	82.0	500.0	-15.7
8376.0	H	32.1	Ambient	8.2	38.6	-35.3	43.6	151.9	500.0	-10.3
8376.0	V	32.1	Ambient	8.2	38.6	-35.3	43.6	151.9	500.0	-10.3

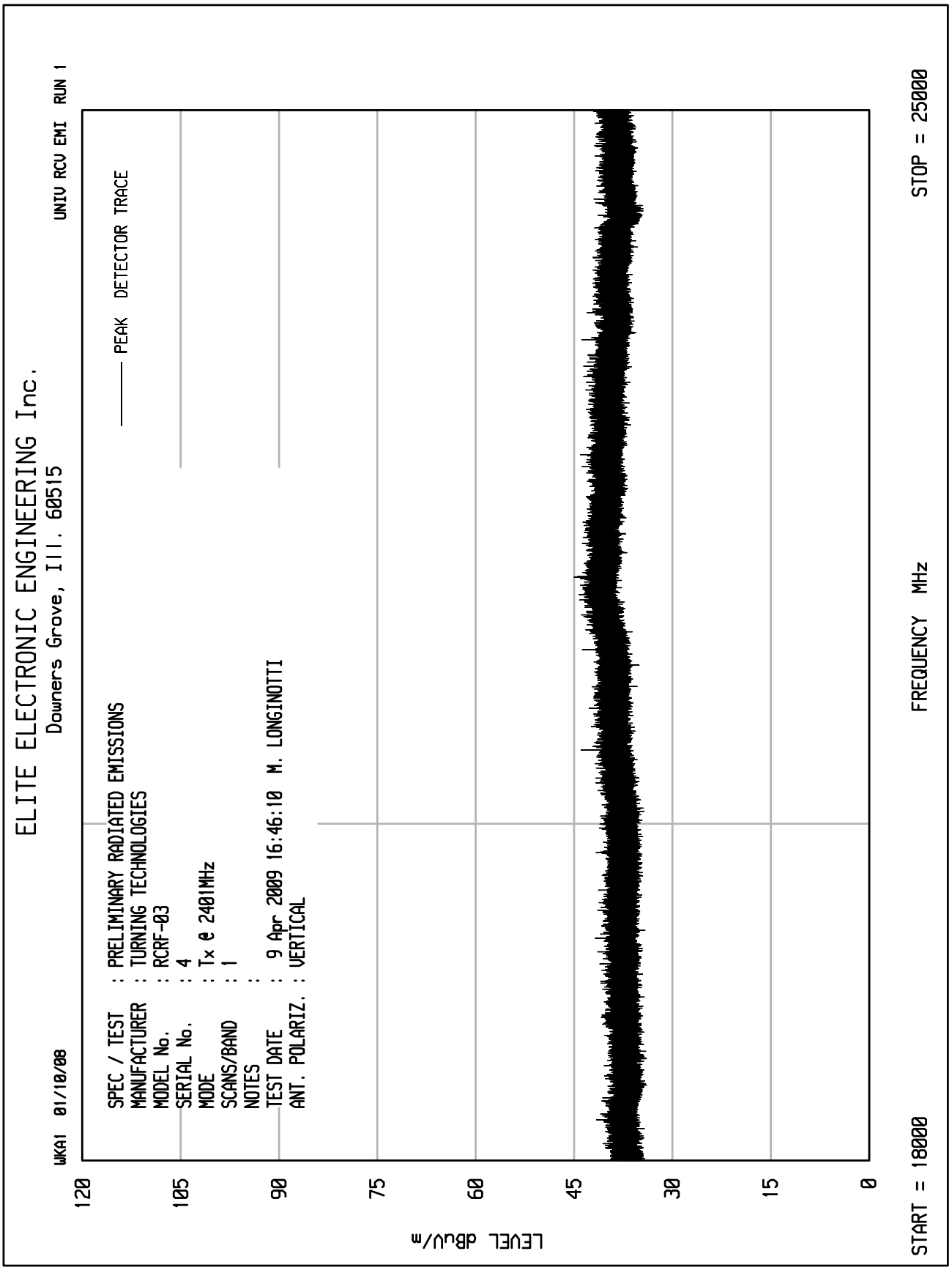
Total (dBuv/m) = Meter reading + Cbl Factor + Ant Fac + Pre Amp

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 4
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2401MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 9 Apr 2009 15:53:50 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
1000
STOP = 2000
FREQUENCY MHz


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 7
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2401MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 6 Apr 2009 17:03:29 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 2000
FREQUENCY MHz
STOP = 4000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 2
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2401MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 6 Apr 2009 16:47:04 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 4000
10000
FREQUENCY MHz
STOP = 18000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 1
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2401MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 9 Apr 2009 16:46:10 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 25000

Manufacturer : Turning Technologies
Model No. : RCRF-03
Serial No. : 4
Mode : Transmit at 2401MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : April 6 and 7, 2009
Test Distance : 3 meters
Note : Peak readings

Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Amb	CBL FAC (dB)	Ant Fac (dB)	Pre Amp (dB)	Total dBuV/m at 3 m	Total uV/m at 3m	Limit uV/m at 3m	Margin (dB)
2401.0	H	66.8		3.8	31.4	0.0	102.0	125291.7	500000.0	-12.0
2401.0	V	61.4		3.8	31.4	0.0	96.6	67285.6	500000.0	-17.4
4802.0	H	48.4	Amb	5.7	34.5	-35.9	52.7	431.5	5000.0	-21.3
4802.0	V	46.8	Amb	5.7	34.5	-35.9	51.1	358.9	5000.0	-22.9
7203.0	H	44.0	Amb	7.6	38.0	-35.5	54.1	509.7	5000.0	-19.8
7203.0	V	45.2	Amb	7.6	38.0	-35.5	55.3	585.2	5000.0	-18.6
9604.0	H	44.3	Amb	8.6	39.7	-35.1	57.6	756.3	5000.0	-16.4
9604.0	V	44.4	Amb	8.6	39.7	-35.1	57.7	765.1	5000.0	-16.3
12005.0	H	45.2	Amb	9.8	41.4	-34.4	62.0	1256.1	5000.0	-12.0
12005.0	V	44.6	Amb	9.8	41.4	-34.4	61.4	1172.3	5000.0	-12.6
14406.0	H	43.7	Amb	10.9	43.7	-33.9	64.4	1657.5	5000.0	-9.6
14406.0	V	45.1	Amb	10.9	43.7	-33.9	65.8	1947.4	5000.0	-8.2
16807.0	H	43.4	Amb	11.6	44.6	-33.9	65.8	1950.0	5000.0	-8.2
16807.0	V	43.6	Amb	11.6	44.6	-33.9	66.0	1995.4	5000.0	-8.0
19208.0	H	34.5	Amb	2.2	40.4	-27.5	49.6	302.2	5000.0	-24.4
19208.0	V	36.1	Amb	2.2	40.4	-27.5	51.2	363.3	5000.0	-22.8
21609.0	H	37.0	Amb	2.2	40.6	-26.1	53.7	483.3	5000.0	-20.3
21609.0	V	37.5	Amb	2.2	40.6	-26.1	54.2	511.9	5000.0	-19.8
24010.0	H	36.2	Amb	2.2	40.6	-27.4	51.7	382.8	5000.0	-22.3
24010.0	V	37.0	Amb	2.2	40.6	-27.4	52.5	419.7	5000.0	-21.5

Amb = Ambient

Total (dBuV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

Manufacturer : Turning Technologies
Model No. : RCRF-03
Serial No. : 4
Mode : Transmit at 2401MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : April 6 and 7, 2009
Test Distance : 3 meters
Note : Average readings

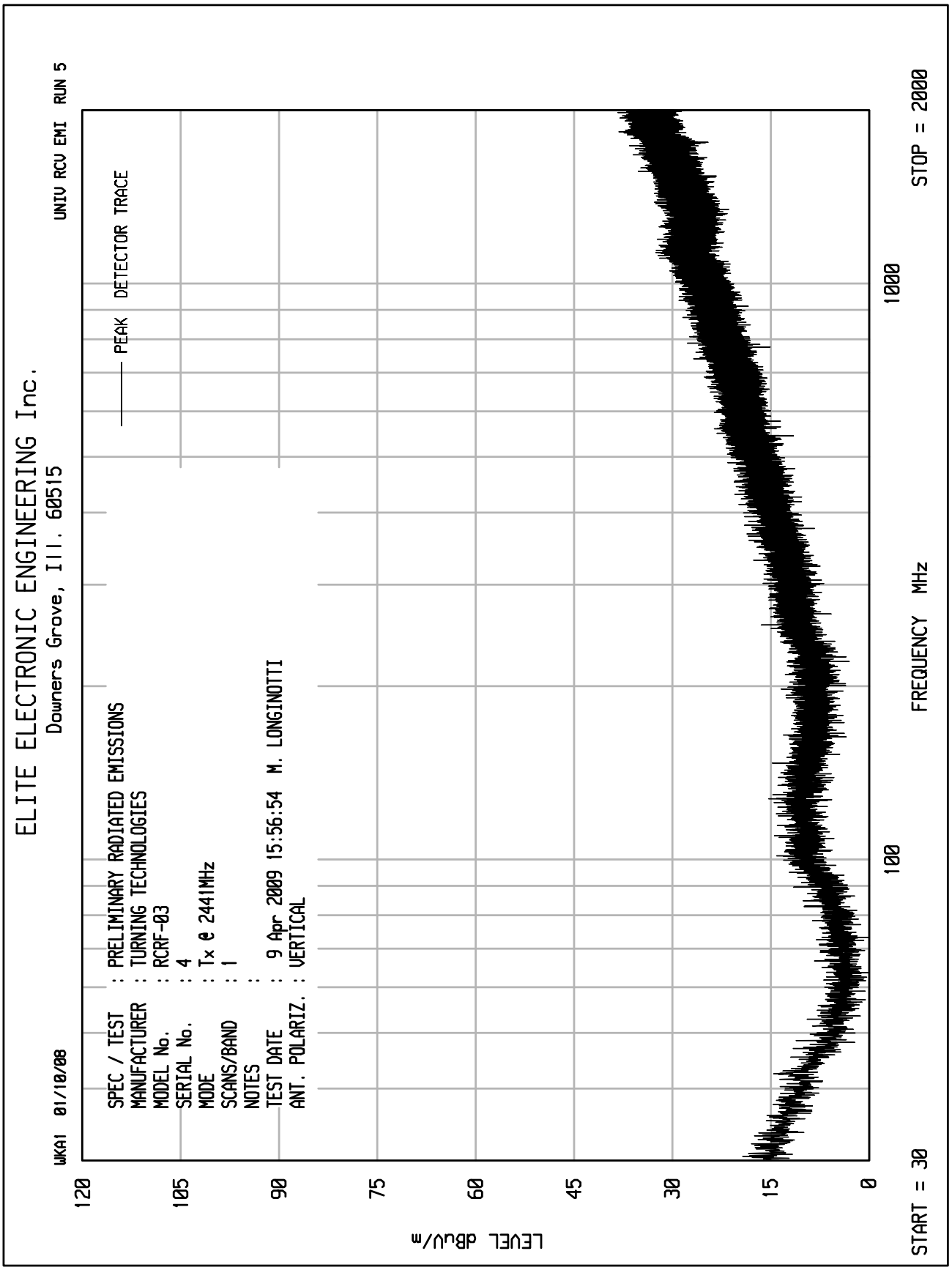
Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Amb	CBL FAC (dB)	Ant Fac (dB)	Pre Amp (dB)	Duty Cycle (dB)	Total dBuV/m at 3 m	Total uV/m at 3m	Limit uV/m at 3m	Margin (dB)
2401.0	H	66.8		3.8	31.4	0.0	-35.6	66.4	2079.3	50000.0	-27.6
2401.0	V	61.4		3.8	31.4	0.0	-35.6	61.0	1116.7	50000.0	-33.0
4802.0	H	48.4	Amb	5.7	34.5	-35.9	-35.6	17.1	7.2	500.0	-36.9
4802.0	V	46.8	Amb	5.7	34.5	-35.9	-35.6	15.5	6.0	500.0	-38.5
7203.0	H	44.0	Amb	7.6	38.0	-35.5	-35.6	18.5	8.5	500.0	-35.4
7203.0	V	45.2	Amb	7.6	38.0	-35.5	-35.6	19.7	9.7	500.0	-34.2
9604.0	H	44.3	Amb	8.6	39.7	-35.1	-35.6	22.0	12.6	500.0	-32.0
9604.0	V	44.4	Amb	8.6	39.7	-35.1	-35.6	22.1	12.7	500.0	-31.9
12005.0	H	45.2	Amb	9.8	41.4	-34.4	-35.6	26.4	20.8	500.0	-27.6
12005.0	V	44.6	Amb	9.8	41.4	-34.4	-35.6	25.8	19.5	500.0	-28.2
14406.0	H	43.7	Amb	10.9	43.7	-33.9	-35.6	28.8	27.5	500.0	-25.2
14406.0	V	45.1	Amb	10.9	43.7	-33.9	-35.6	30.2	32.3	500.0	-23.8
16807.0	H	43.4	Amb	11.6	44.6	-33.9	-35.6	30.2	32.4	500.0	-23.8
16807.0	V	43.6	Amb	11.6	44.6	-33.9	-35.6	30.4	33.1	500.0	-23.6
19208.0	H	34.5	Amb	2.2	40.4	-27.5	-35.6	14.0	5.0	500.0	-40.0
19208.0	V	36.1	Amb	2.2	40.4	-27.5	-35.6	15.6	6.0	500.0	-38.4
21609.0	H	37.0	Amb	2.2	40.6	-26.1	-35.6	18.1	8.0	500.0	-35.9
21609.0	V	37.5	Amb	2.2	40.6	-26.1	-35.6	18.6	8.5	500.0	-35.4
24010.0	H	36.2	Amb	2.2	40.6	-27.4	-35.6	16.1	6.4	500.0	-37.9
24010.0	V	37.0	Amb	2.2	40.6	-27.4	-35.6	16.9	7.0	500.0	-37.1

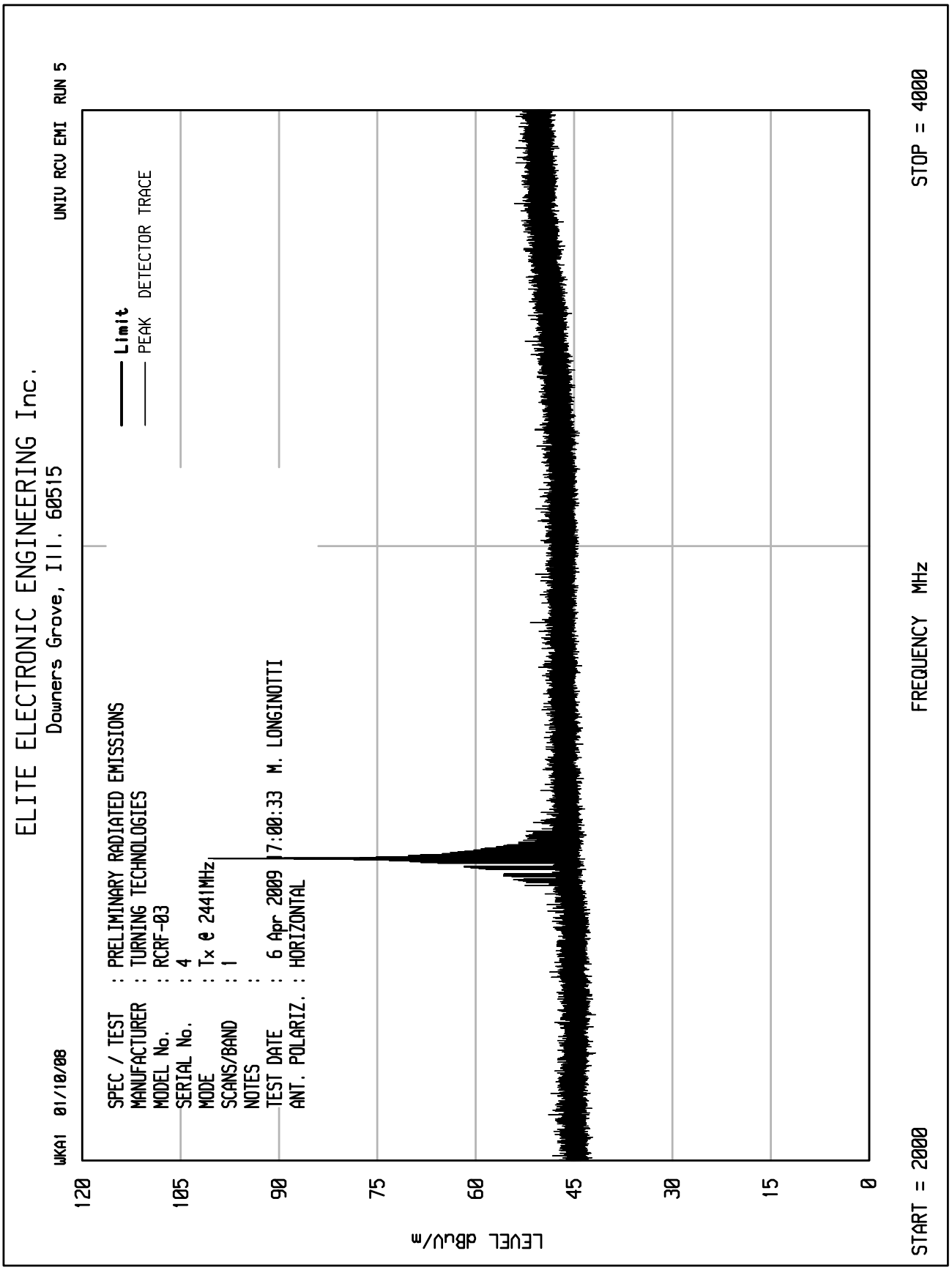
Amb = Ambient

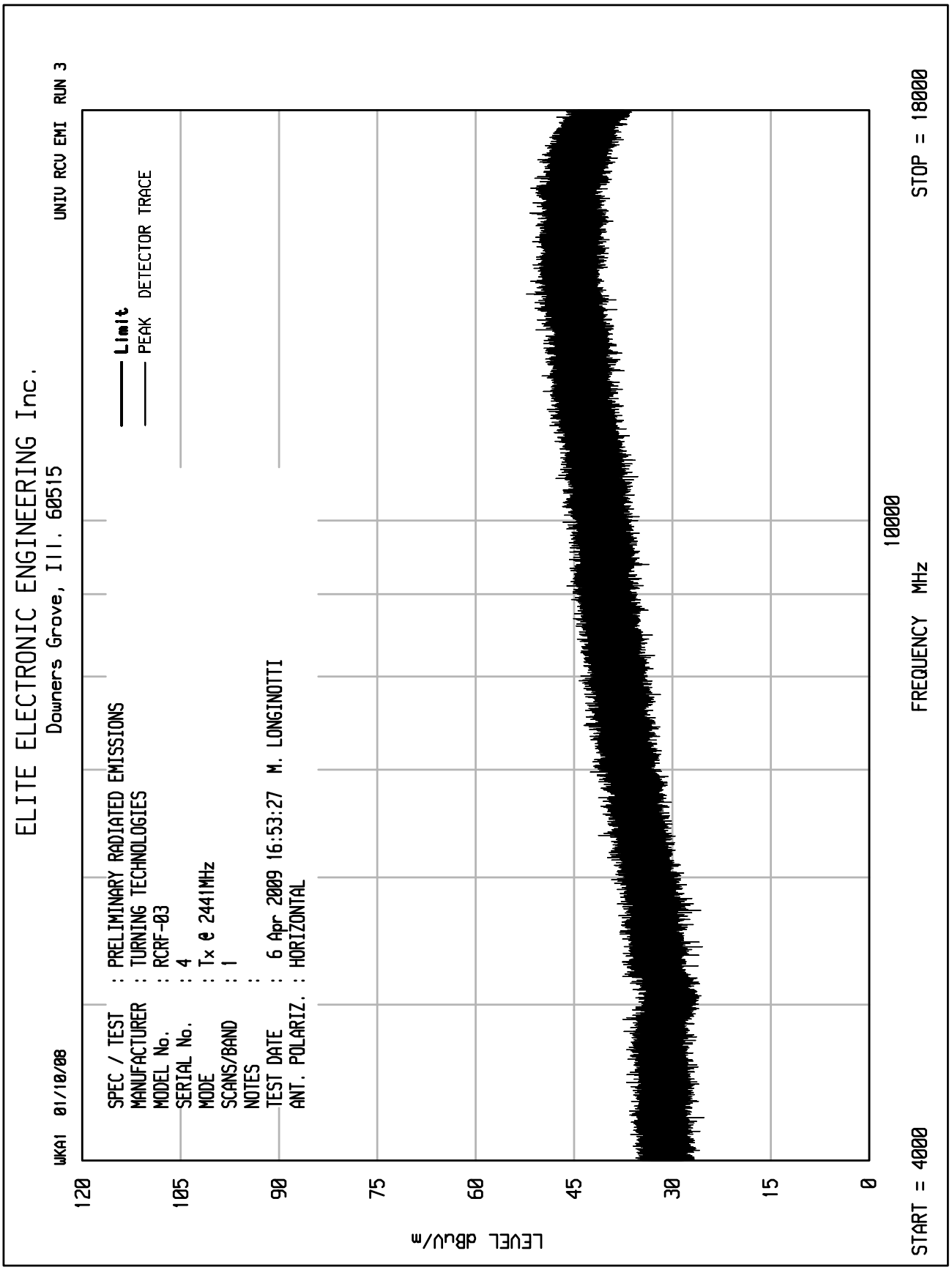
Total (dBuV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp + Duty Cycle

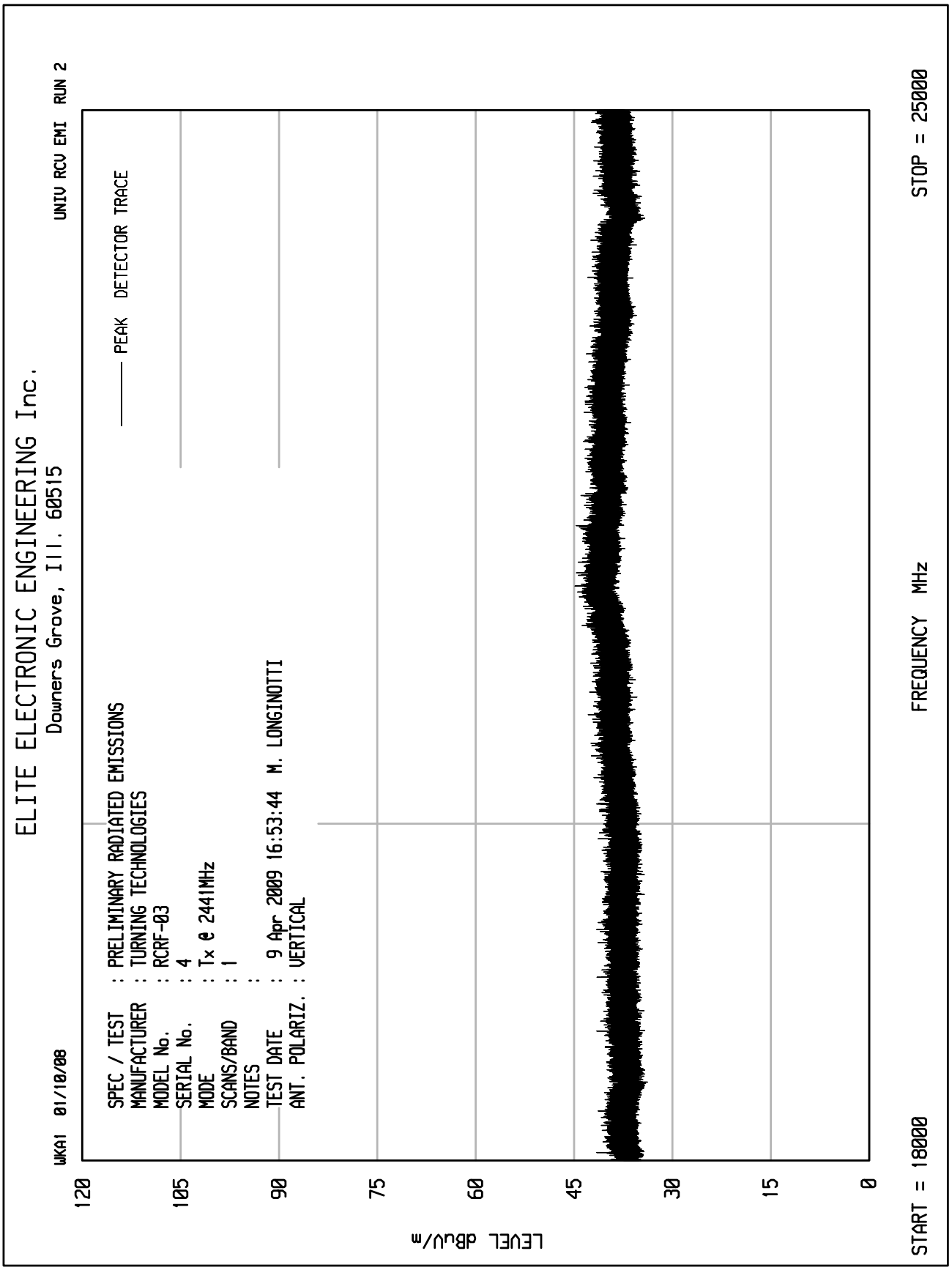
Checked By: MARK E. LONGINOTTI

Mark E. Longinotti


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 5
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2441MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 9 Apr 2009 15:56:54 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
1000
STOP = 2000
FREQUENCY MHz


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 5
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2441MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 6 Apr 2009 17:00:33 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 2000
FREQUENCY MHz
STOP = 4000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 3
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2441MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 6 Apr 2009 16:53:27 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 4000
10000
STOP = 18000
FREQUENCY MHz


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 2
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2441MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 9 Apr 2009 16:53:44 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 25000

Manufacturer : Turning Technologies
Model No. : RCRF-03
Serial No. : 4
Mode : Transmit at 2441MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : April 6 and 7, 2009
Test Distance : 3 meters
Note : Peak readings

Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Amb	CBL FAC (dB)	Ant Fac (dB)	Pre Amp (dB)	Total dBuV/m at 3 m	Total uV/m at 3m	Limit uV/m at 3m	Margin (dB)
2441.0	H	68.0		3.8	31.4	0.0	103.2	144511.1	500000.0	-10.8
2441.0	V	63.8		3.8	31.4	0.0	99.0	89104.8	500000.0	-15.0
4882.0	H	46.9	Amb	5.8	34.5	-35.9	51.3	365.8	5000.0	-22.7
4882.0	V	49.2	Amb	5.8	34.5	-35.9	53.6	476.6	5000.0	-20.4
7323.0	H	44.9	Amb	7.7	38.1	-35.5	55.1	571.7	5000.0	-18.8
7323.0	V	45.4	Amb	7.7	38.1	-35.5	55.6	605.6	5000.0	-18.3
9764.0	H	44.9	Amb	8.6	39.9	-35.0	58.3	823.6	5000.0	-15.7
9764.0	V	45.6	Amb	8.6	39.9	-35.0	59.0	892.7	5000.0	-15.0
12205.0	H	44.6	Amb	9.9	41.4	-34.4	61.4	1180.3	5000.0	-12.5
12205.0	V	44.2	Amb	9.9	41.4	-34.4	61.0	1127.1	5000.0	-12.9
14646.0	H	43.6	Amb	11.0	44.1	-33.9	64.8	1738.2	5000.0	-9.2
14646.0	V	42.7	Amb	11.0	44.1	-33.9	63.9	1567.1	5000.0	-10.1
17087.0	H	43.4	Amb	11.7	44.5	-34.0	65.6	1903.7	5000.0	-8.4
17087.0	V	43.5	Amb	11.7	44.5	-34.0	65.7	1925.7	5000.0	-8.3
19528.0	H	35.7	Amb	2.2	40.4	-27.2	51.1	360.5	5000.0	-22.8
19528.0	V	35.6	Amb	2.2	40.4	-27.2	51.0	356.3	5000.0	-22.9
21969.0	H	37.3	Amb	2.2	40.6	-26.9	53.2	454.5	5000.0	-20.8
21969.0	V	36.9	Amb	2.2	40.6	-26.9	52.8	434.1	5000.0	-21.2
24410.0	H	35.7	Amb	2.2	40.6	-27.5	51.1	357.4	5000.0	-22.9
24410.0	V	35.8	Amb	2.2	40.6	-27.5	51.2	361.5	5000.0	-22.8

Amb = Ambient

Total (dBuV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

Manufacturer : Turning Technologies
Model No. : RCRF-03
Serial No. : 4
Mode : Transmit at 2441MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : April 6 and 7, 2009
Test Distance : 3 meters
Note : Average readings

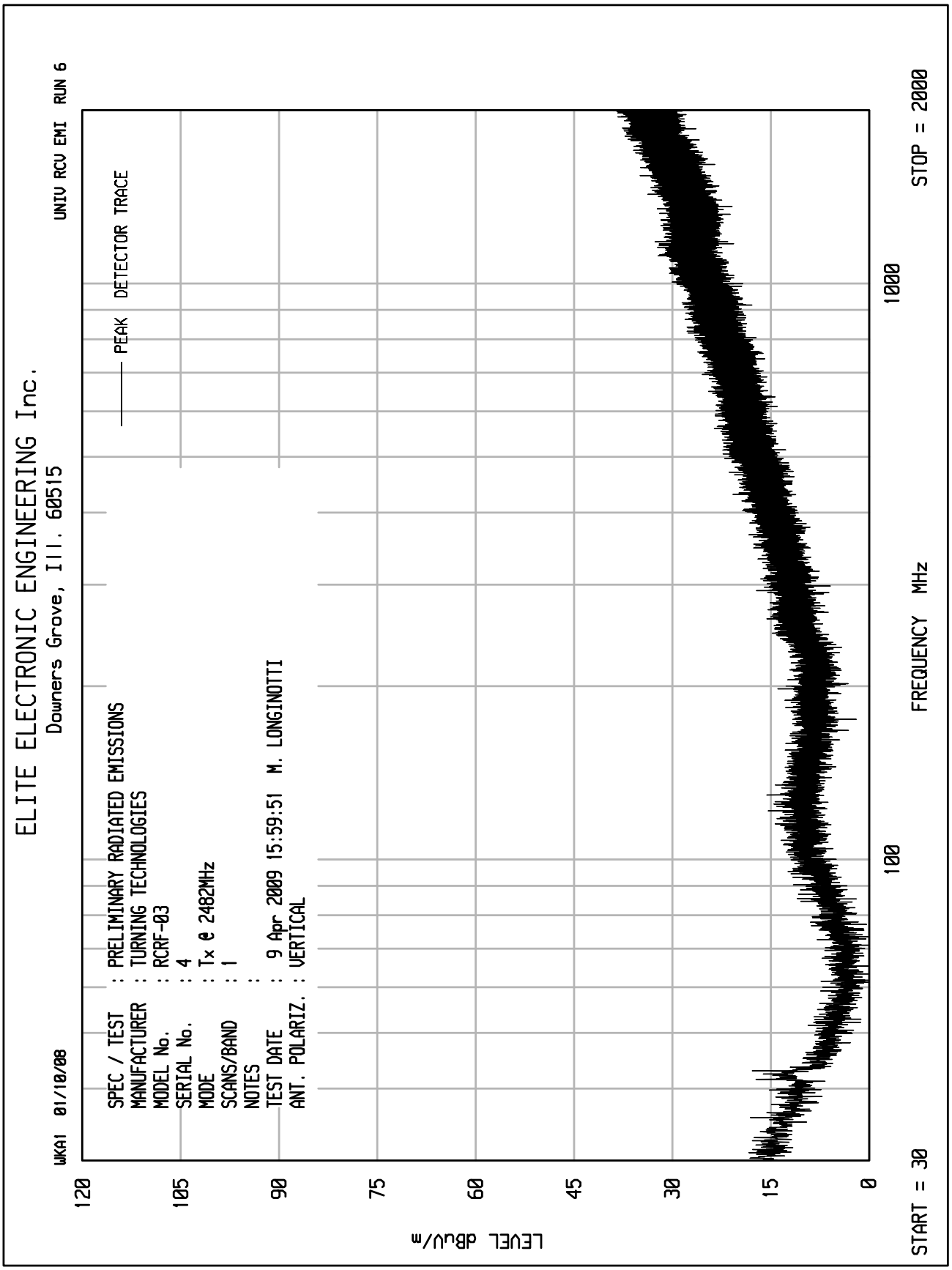
Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Amb	CBL FAC (dB)	Ant Fac (dB)	Pre Amp (dB)	Duty Cycle (dB)	Total dBuV/m at 3 m	Total uV/m at 3m	Limit uV/m at 3m	Margin (dB)
2441.0	H	68.0		3.8	31.4	0.0	-35.6	67.6	2398.3	50000.0	-26.4
2441.0	V	63.8		3.8	31.4	0.0	-35.6	63.4	1478.8	50000.0	-30.6
4882.0	H	46.9	Amb	5.8	34.5	-35.9	-35.6	15.7	6.1	500.0	-38.3
4882.0	V	49.2	Amb	5.8	34.5	-35.9	-35.6	18.0	7.9	500.0	-36.0
7323.0	H	44.9	Amb	7.7	38.1	-35.5	-35.6	19.5	9.5	500.0	-34.4
7323.0	V	45.4	Amb	7.7	38.1	-35.5	-35.6	20.0	10.1	500.0	-33.9
9764.0	H	44.9	Amb	8.6	39.9	-35.0	-35.6	22.7	13.7	500.0	-31.3
9764.0	V	45.6	Amb	8.6	39.9	-35.0	-35.6	23.4	14.8	500.0	-30.6
12205.0	H	44.6	Amb	9.9	41.4	-34.4	-35.6	25.8	19.6	500.0	-28.1
12205.0	V	44.2	Amb	9.9	41.4	-34.4	-35.6	25.4	18.7	500.0	-28.5
14646.0	H	43.6	Amb	11.0	44.1	-33.9	-35.6	29.2	28.8	500.0	-24.8
14646.0	V	42.7	Amb	11.0	44.1	-33.9	-35.6	28.3	26.0	500.0	-25.7
17087.0	H	43.4	Amb	11.7	44.5	-34.0	-35.6	30.0	31.6	500.0	-24.0
17087.0	V	43.5	Amb	11.7	44.5	-34.0	-35.6	30.1	32.0	500.0	-23.9
19528.0	H	35.7	Amb	2.2	40.4	-27.2	-35.6	15.5	6.0	500.0	-38.4
19528.0	V	35.6	Amb	2.2	40.4	-27.2	-35.6	15.4	5.9	500.0	-38.5
21969.0	H	37.3	Amb	2.2	40.6	-26.9	-35.6	17.6	7.5	500.0	-36.4
21969.0	V	36.9	Amb	2.2	40.6	-26.9	-35.6	17.2	7.2	500.0	-36.8
24410.0	H	35.7	Amb	2.2	40.6	-27.5	-35.6	15.5	5.9	500.0	-38.5
24410.0	V	35.8	Amb	2.2	40.6	-27.5	-35.6	15.6	6.0	500.0	-38.4

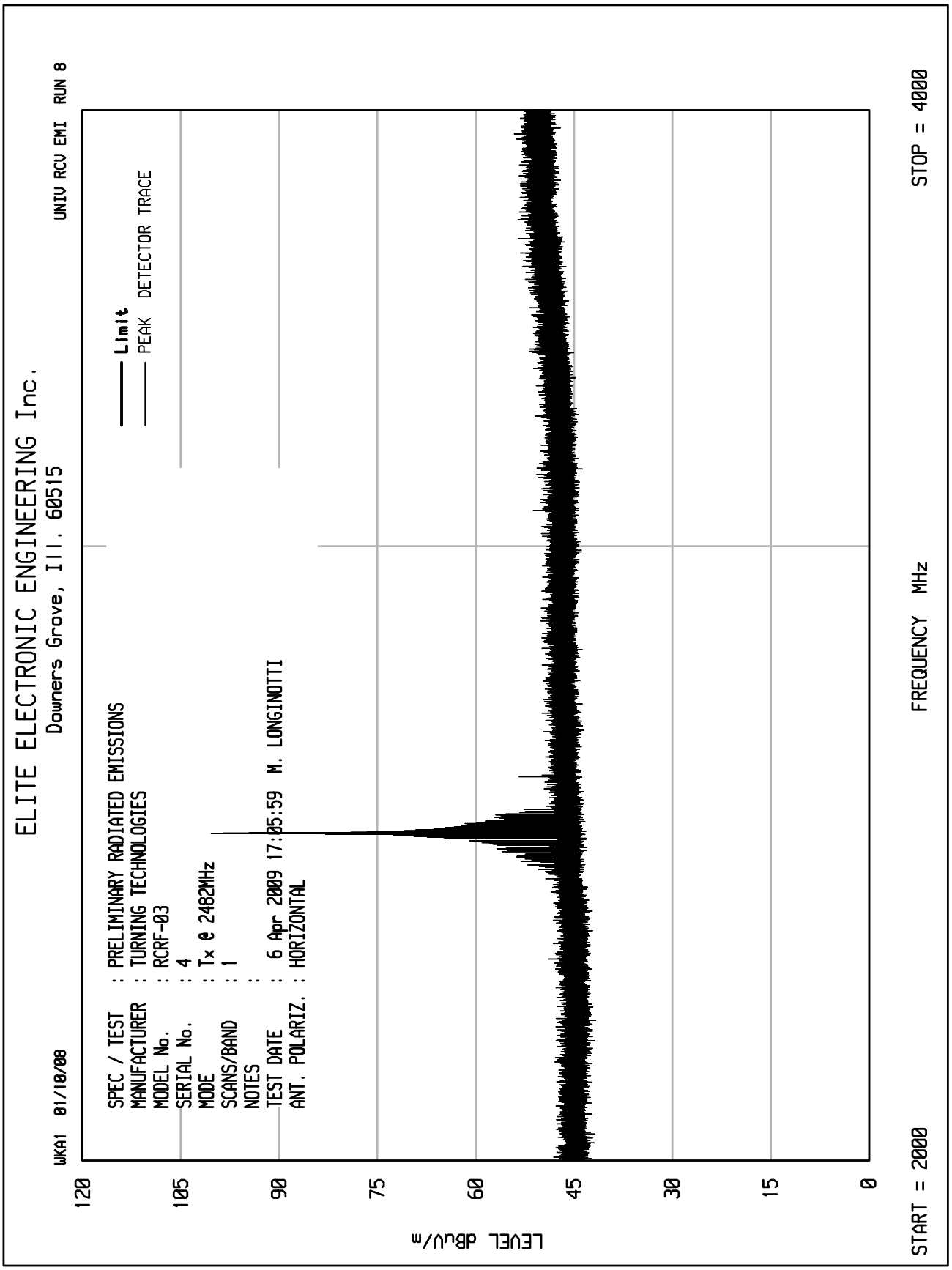
Amb = Ambient

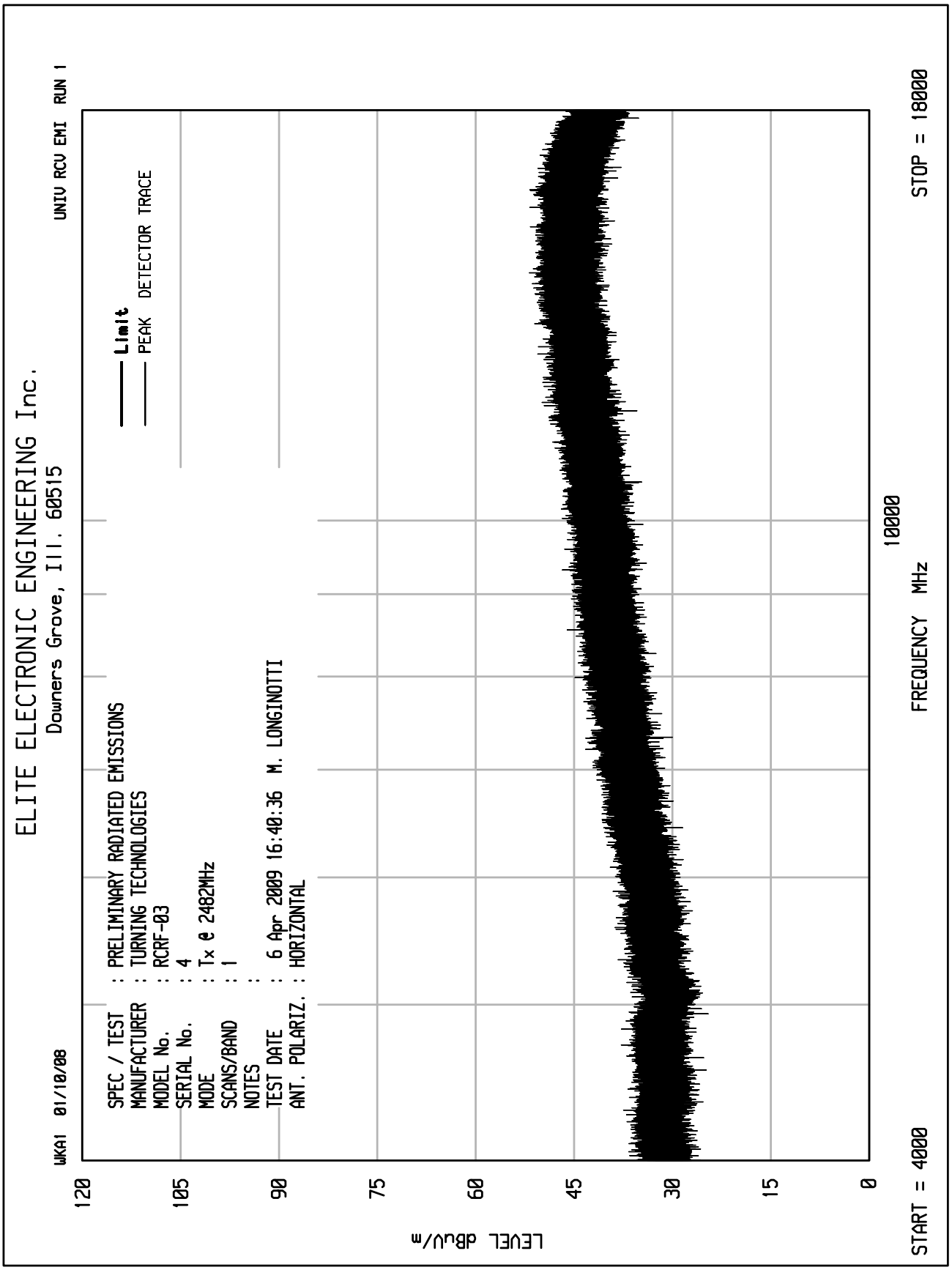
Total (dBuV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp + Duty Cycle

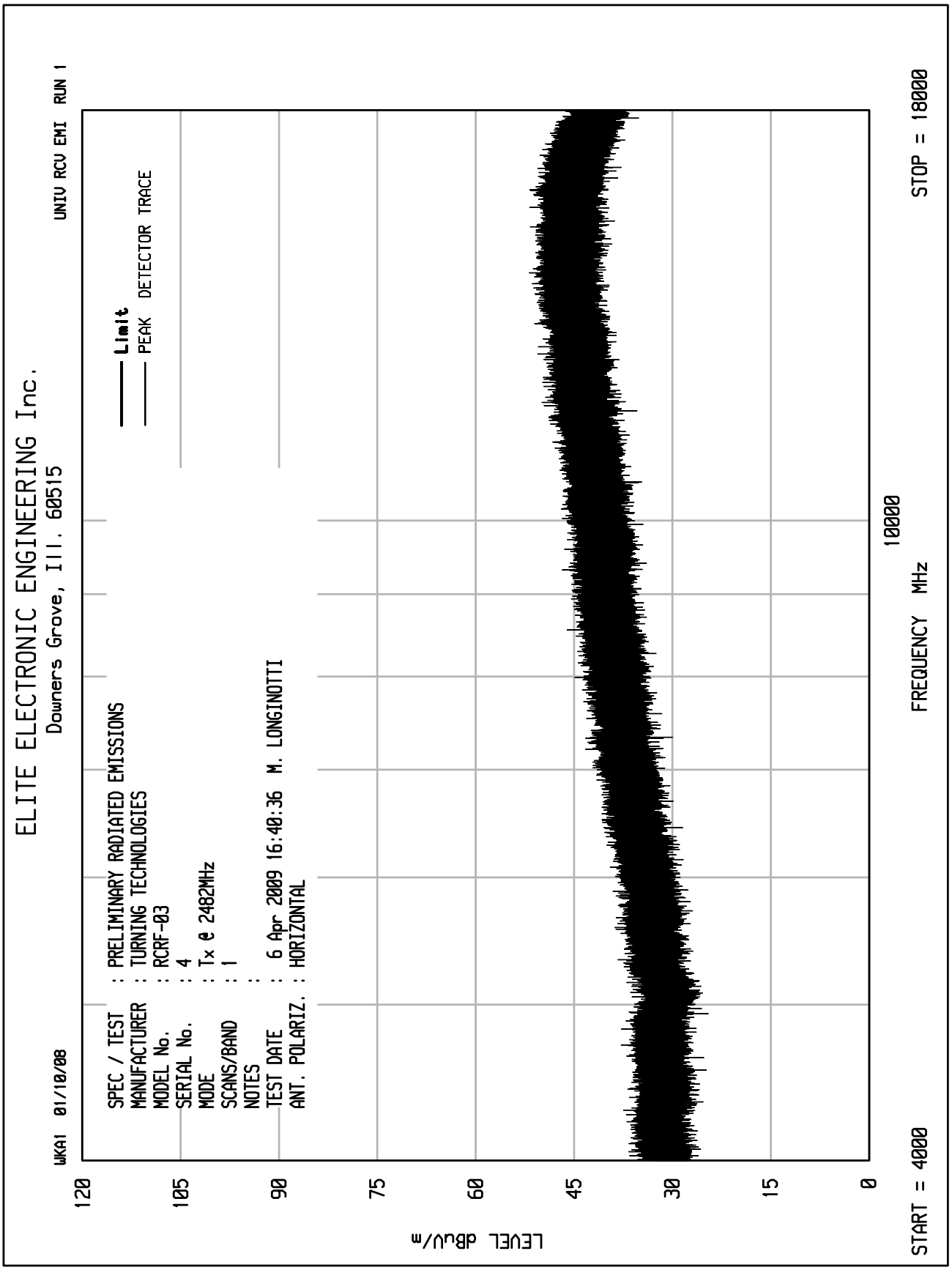
Checked By: MARK E. LONGINOTTI

Mark E. Longinotti


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 6
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2402MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 9 Apr 2009 15:59:51 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 30
100
1000
STOP = 2000
FREQUENCY MHz


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 8
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2402MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 6 Apr 2009 17:05:59 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 2000
FREQUENCY MHz
STOP = 4000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 1
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2402MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 6 Apr 2009 16:40:36 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 4000
10000
STOP = 18000
FREQUENCY MHz


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 1
WKA1 01/10/08
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TURNING TECHNOLOGIES
MODEL No. : RCRF-03
SERIAL No. : 4
MODE : Tx @ 2402MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 6 Apr 2009 16:40:36 M. LONGINOTTI
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 4000
10000
FREQUENCY MHz
STOP = 18000

Manufacturer : Turning Technologies
Model No. : RCRF-03
Serial No. : 4
Mode : Transmit at 2482MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : April 6 and 7, 2009
Test Distance : 3 meters
Note : Peak readings

Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Amb	CBL FAC (dB)	Ant Fac (dB)	Pre Amp (dB)	Total dBuV/m at 3 m	Total uV/m at 3m	Limit uV/m at 3m	Margin (dB)
2482.0	H	67.4		3.8	31.4	0.0	102.6	135486.5	500000.0	-11.3
2482.0	V	62.9		3.8	31.4	0.0	98.1	80704.2	500000.0	-15.8
4964.0	H	47.3		5.8	34.5	-35.9	51.7	385.9	5000.0	-22.3
4964.0	V	47.3		5.8	34.5	-35.9	51.7	385.9	5000.0	-22.3
7446.0	H	45.1	Amb	7.7	38.1	-35.5	55.4	591.7	5000.0	-18.5
7446.0	V	44.6	Amb	7.7	38.1	-35.5	54.9	558.6	5000.0	-19.0
9928.0	H	44.9	Amb	8.5	40.0	-35.0	58.5	837.1	5000.0	-15.5
9928.0	V	45.3	Amb	8.5	40.0	-35.0	58.9	876.6	5000.0	-15.1
12410.0	H	44.7	Amb	9.9	41.3	-34.4	61.6	1202.1	5000.0	-12.4
12410.0	V	44.6	Amb	9.9	41.3	-34.4	61.5	1188.4	5000.0	-12.5
14892.0	H	43.5	Amb	11.2	44.5	-34.0	65.2	1823.7	5000.0	-8.8
14892.0	V	43.5	Amb	11.2	44.5	-34.0	65.2	1823.7	5000.0	-8.8
17374.0	H	44.0	Amb	12.0	44.3	-33.9	66.5	2104.3	5000.0	-7.5
17374.0	V	43.7	Amb	12.0	44.3	-33.9	66.2	2032.8	5000.0	-7.8
19856.0	H	34.7	Amb	2.2	40.4	-26.8	50.5	334.2	5000.0	-23.5
19856.0	V	34.8	Amb	2.2	40.4	-26.8	50.6	338.0	5000.0	-23.4
22338.0	H	37.4	Amb	2.2	40.6	-27.1	53.1	453.9	5000.0	-20.8
22338.0	V	37.5	Amb	2.2	40.6	-27.1	53.2	459.2	5000.0	-20.7
24820.0	H	36.0	Amb	2.2	40.6	-27.2	51.6	382.4	5000.0	-22.3
24820.0	V	36.8	Amb	2.2	40.6	-27.2	52.4	419.2	5000.0	-21.5

Amb = Ambient

Total (dBuV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp

Checked By: MARK E. LONGINOTTI

Mark E. Longinotti

Manufacturer : Turning Technologies
Model No. : RCRF-03
Serial No. : 4
Mode : Transmit at 2482MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : April 6 and 7, 2009
Test Distance : 3 meters
Note : Average readings

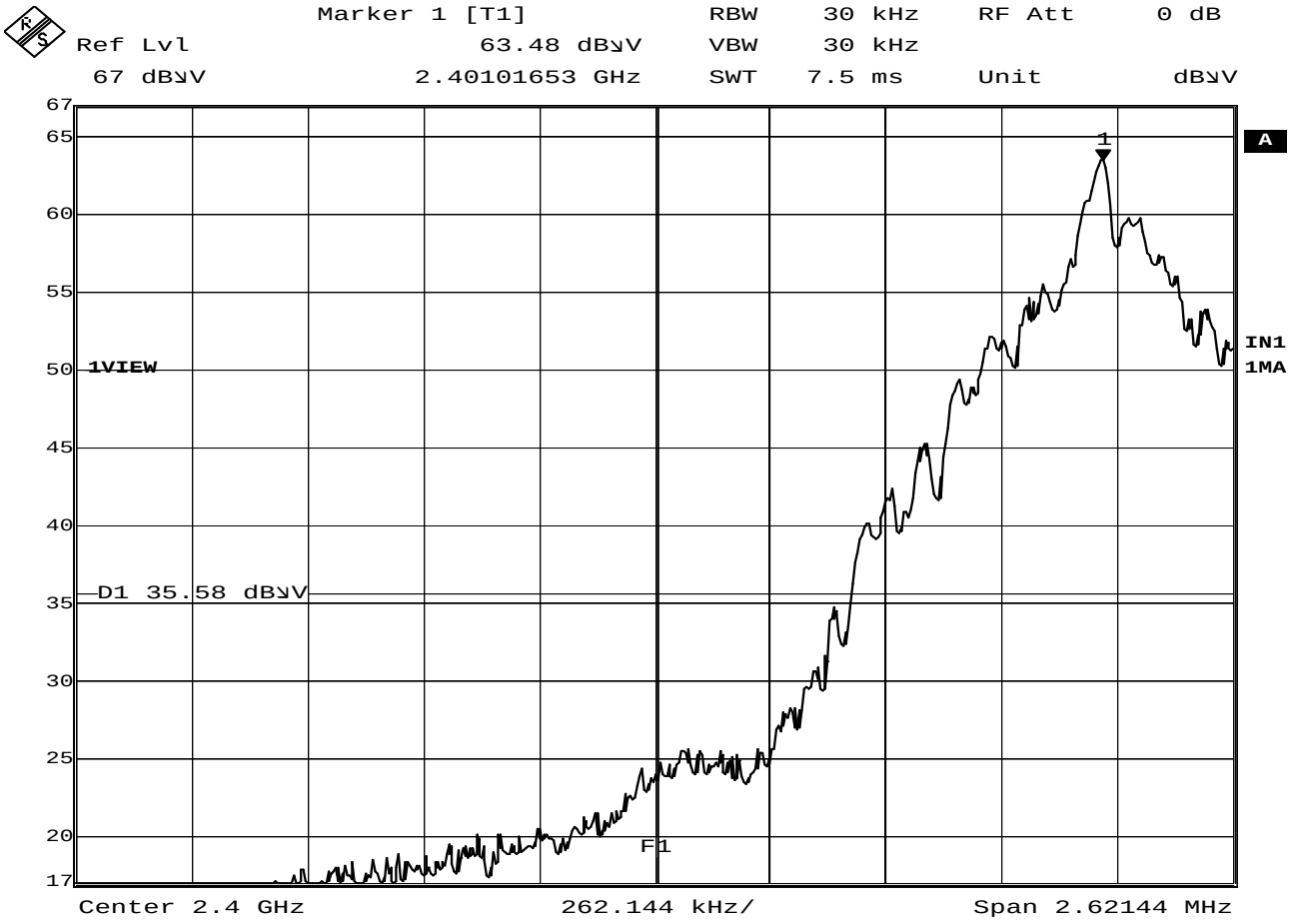
Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Amb	CBL FAC (dB)	Ant Fac (dB)	Pre Amp (dB)	Duty Cycle (dB)	Total dBuV/m at 3 m	Total uV/m at 3m	Limit uV/m at 3m	Margin (dB)
2482.0	H	67.4		3.8	31.4	0.0	-35.6	67.0	2248.5	50000.0	-26.9
2482.0	V	62.9		3.8	31.4	0.0	-35.6	62.5	1339.4	50000.0	-31.4
4964.0	H	47.3		5.8	34.5	-35.9	-35.6	16.1	6.4	500.0	-37.9
4964.0	V	47.3		5.8	34.5	-35.9	-35.6	16.1	6.4	500.0	-37.9
7446.0	H	45.1	Amb	7.7	38.1	-35.5	-35.6	19.8	9.8	500.0	-34.1
7446.0	V	44.6	Amb	7.7	38.1	-35.5	-35.6	19.3	9.3	500.0	-34.6
9928.0	H	44.9	Amb	8.5	40.0	-35.0	-35.6	22.9	13.9	500.0	-31.1
9928.0	V	45.3	Amb	8.5	40.0	-35.0	-35.6	23.3	14.5	500.0	-30.7
12410.0	H	44.7	Amb	9.9	41.3	-34.4	-35.6	26.0	20.0	500.0	-28.0
12410.0	V	44.6	Amb	9.9	41.3	-34.4	-35.6	25.9	19.7	500.0	-28.1
14892.0	H	43.5	Amb	11.2	44.5	-34.0	-35.6	29.6	30.3	500.0	-24.4
14892.0	V	43.5	Amb	11.2	44.5	-34.0	-35.6	29.6	30.3	500.0	-24.4
17374.0	H	44.0	Amb	12.0	44.3	-33.9	-35.6	30.9	34.9	500.0	-23.1
17374.0	V	43.7	Amb	12.0	44.3	-33.9	-35.6	30.6	33.7	500.0	-23.4
19856.0	H	34.7	Amb	2.2	40.4	-26.8	-35.6	14.9	5.5	500.0	-39.1
19856.0	V	34.8	Amb	2.2	40.4	-26.8	-35.6	15.0	5.6	500.0	-39.0
22338.0	H	37.4	Amb	2.2	40.6	-27.1	-35.6	17.5	7.5	500.0	-36.4
22338.0	V	37.5	Amb	2.2	40.6	-27.1	-35.6	17.6	7.6	500.0	-36.3
24820.0	H	36.0	Amb	2.2	40.6	-27.2	-35.6	16.0	6.3	500.0	-37.9
24820.0	V	36.8	Amb	2.2	40.6	-27.2	-35.6	16.8	7.0	500.0	-37.1

Amb = Ambient

Total (dBuV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp + Duty Cycle

Checked By: MARK E. LONGINOTTI

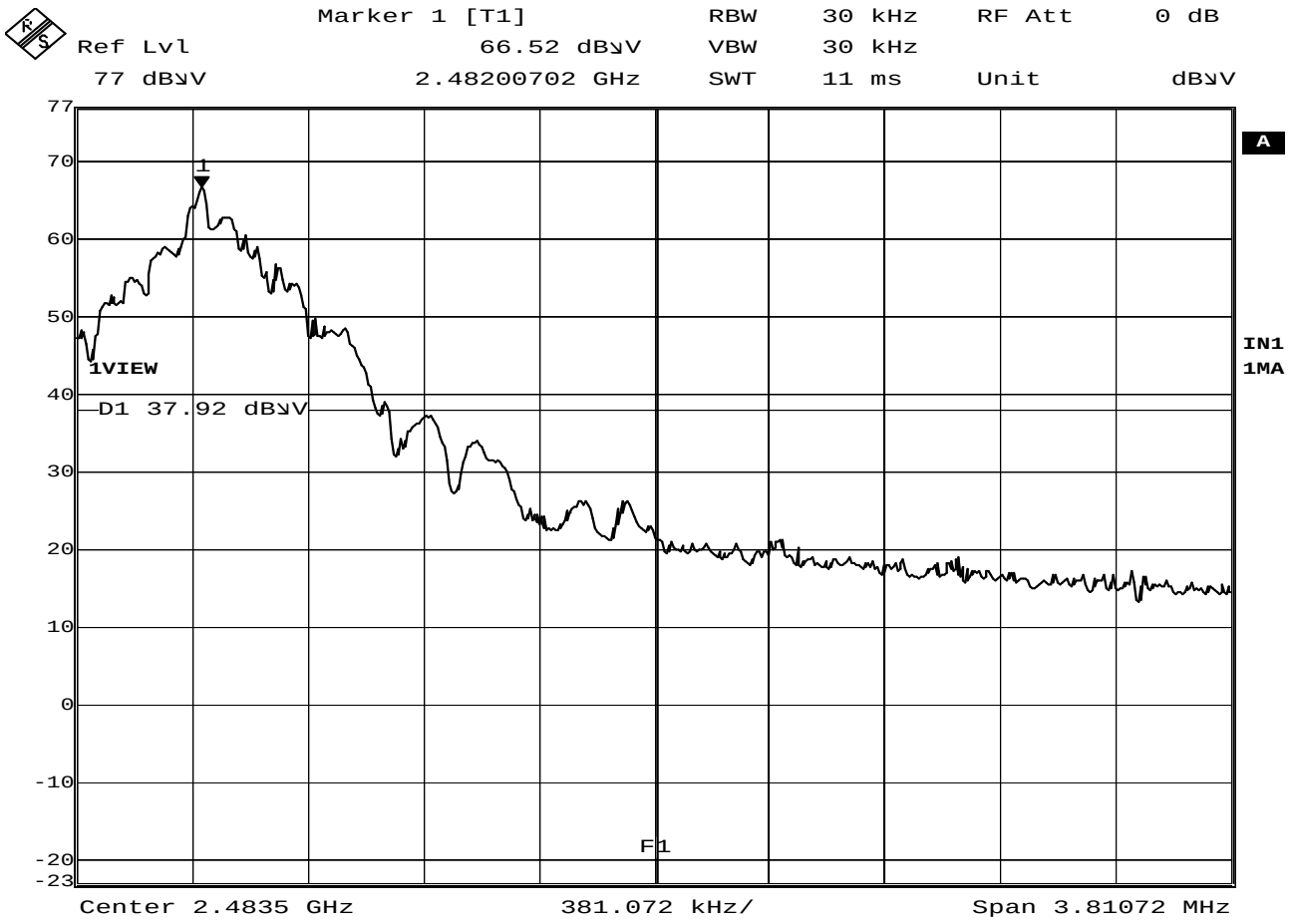
Mark E. Longinotti



Date: 6.APR.2009 17:18:23

FCC 15.249(d) Band edge

MANUFACTURER	:	Turning Technologies
PART NUMBER	:	RCRF-03
SERIAL NUMBER	:	#4
TEST MODE	:	Tx @ 2401MHz (Ch. 1)
TEST PARAMETER	:	The peak reading at 2401MHz is 101.9dBuV/m (with a 1MHz bandwidth). In order for the band edge (2400MHz) to be below the general limit of 74dBuV/m (peak), it must be down (101.9dBuV/m – 74dBuV/m) 27.9dB from the fundamental at 2401MHz. Display line D1 represents the general limt and Display line F1 represents the band edge (2400MHz).
EQUIPMENT USED	:	RBB0,NWI1



Date: 6.APR.2009 18:02:58

FCC 15.249(d) Band edge

MANUFACTURER	:	Turning Technologies
PART NUMBER	:	RCRF-03
SERIAL NUMBER	:	#4
TEST MODE	:	Tx @ 2482MHz (Ch. 82)
TEST PARAMETER	:	The peak reading at 2482MHz is 102.6dBuV/m (with a 1MHz bandwidth). In order for the band edge (2483.5MHz) to be below the general limit of 74dBuV/m (peak), it must be down (102.6dBuV/m – 74dBuV/m) 28.6dB from the fundamental at 2483.5MHz. Display line D1 represents the general limit and Display line F1 represents the band edge (2483.5MHz).
EQUIPMENT USED	:	RBB0,NWI1