



Measurement of RF Interference from a Remote Transceiver Part No. 00N30983XXX

For : Emerson Appliance Controls
1901 South Street
Elgin, IL 60123

P.O. No. : Y90003
Date Tested : March 2, 2009 through March 5, 2009
Test Personnel : Mark E. Longinotti
Specification : FCC "Code of Federal Regulations" Title 47 Part 15, Subpart B,
for receivers and Subpart C, for Intentional Radiators Operating
within the 2400MHz to 2483.5MHz band
: Industry Canada RSS-210
: Industry Canada RSS-GEN

Test Report By

MARK E. LONGINOTTI
Mark E. Longinotti

Witnessed by

Steven Vornsand
Michale DeBoer
Emerson Appliance Controls

Approved By

Raymond J. Klouda
Raymond J. Klouda
Registered Professional Engineer of
Illinois - 44894

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THIS REPORT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE
WRITTEN APPROVAL OF ELITE ELECTRONIC ENGINEERING INCORPORATED.

REVISION HISTORY

Revision	Date	Description
—	March 16, 2009	Initial release

Measurement of RF Emissions from a Remote transceiver, Part No. 00N30983XXX

1 INTRODUCTION

1.1 Scope of Tests

This document represents the results of the series of radio interference measurements performed on a Remote, Part No. 00N30983XXX, Serial No. None Assigned transceiver, (hereinafter referred to as the test item). The test item was designed to transmit and receive in the frequency range of 2405MHz to 2480MHz using an internal "F" antenna. The test item contained a super-heterodyne type receiver which utilizes an intermediate frequency (IF) of 64MHz. The test item was manufactured and submitted for testing by Emerson Appliance Controls located in Elgin, IL.

1.2 Purpose

The test series was performed to determine if the test item meets the conducted and radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart 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 16%.

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 B for Receivers, 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 Remote transceiver, Part No. 00N30983XXX. A block diagram of the test item setup is shown as Figure 1 and Figure 2.

3.1.1 Power Input

The test item was powered by 4.5VDC from 3 "AAA" internal batteries.

3.1.2 Peripheral Equipment

The test item does not connect with no peripheral equipment.

3.1.3 Interconnect Cables

The test item does not use interconnect cables.

3.1.4 Grounding

The test item was ungrounded 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 2405MHz
- Transmit at 2445MHz
- Transmit at 2480MHz
- Receive at 2445MHz

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 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

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 Correction Factor (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 1msec/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-tmie". 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 -29.0dB.

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 tuneable 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 8GHz, the broadband measuring antenna was positioned at a 3 meter distance from the test item. The frequency range from 30MHz to 8GHz 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 closest to the limit (worst case) occurred at 7335MHz. The emissions level at this frequency was 11.5dB 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 2405MHz, 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 2405MHz, 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 closest to the limit (worst case) occurred at 2405MHz. The emissions level at this frequency was 11.9dB 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 2445MHz, 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 2445MHz, 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 closest to the limit (worst case) occurred at 2445MHz. The emissions level at this frequency was 12.4dB 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 2480MHz, 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 2480MHz, 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 closest to the limit (worst case) occurred at 2480MHz. The emissions level at this frequency was 13.3dB 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 Requirements

In accordance with paragraph 15.249(d), all emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuate by at least 50dB below the level of the fundamental or to the general radiated emissions limits in 15.209, which ever is the lesser attenuation.

5.4.2 Procedure

- 1) The test item was placed on an 80cm high non-conductive stand.
- 2) The unit was set to transmit continuously (CW) on the lowest channel (2405MHz).
- 3) A double ridged waveguide was placed 3 meters away from the test item. The antenna was connected to the input of a spectrum analyzer.
- 4) The center frequency of the analyzer was set to the low band edge (2400MHz).
- 5) The resolution bandwidth was set to 1MHz.
- 6) To ensure that the maximum or worst case emission level was 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.
- 7) The highest measured peak reading was recorded.
- 8) Steps 1 through 7 were repeated with the modulation turned on.
- 9) Steps 1 through 8 were repeated with the following changes:
 - The test item was set to transmit on the highest channel (2480MHz)
 - The center frequency of the analyzer was set to the high band edge (2483.5MHz)

5.4.3 Results

The results of the occupied bandwidth tests are shown on pages 40 through 42. As can be seen from the data, the transmitter met the occupied bandwidth requirements. The 99% bandwidth was measured to be 2.4MHz.

6 OTHER TEST CONDITIONS

6.1 Test Personnel and Witnesses

All tests were performed by qualified personnel from Elite Electronic Engineering Incorporated. The test series was witnessed by Emerson Appliance Controls personnel.

6.2 Disposition of the Test Item

The test item and all associated equipment were returned to Emerson Appliance Controls upon completion of the



tests.

7 CONCLUSIONS

It was determined that the Emerson Appliance Controls Remote, Part No. 00N30983XXX, Serial No. None Assigned, 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 Emerson Appliance Controls Remote, Part No. 00N30983XXX, Serial No. None Assigned, 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 as operated by Emerson Appliance Controls personnel. 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.



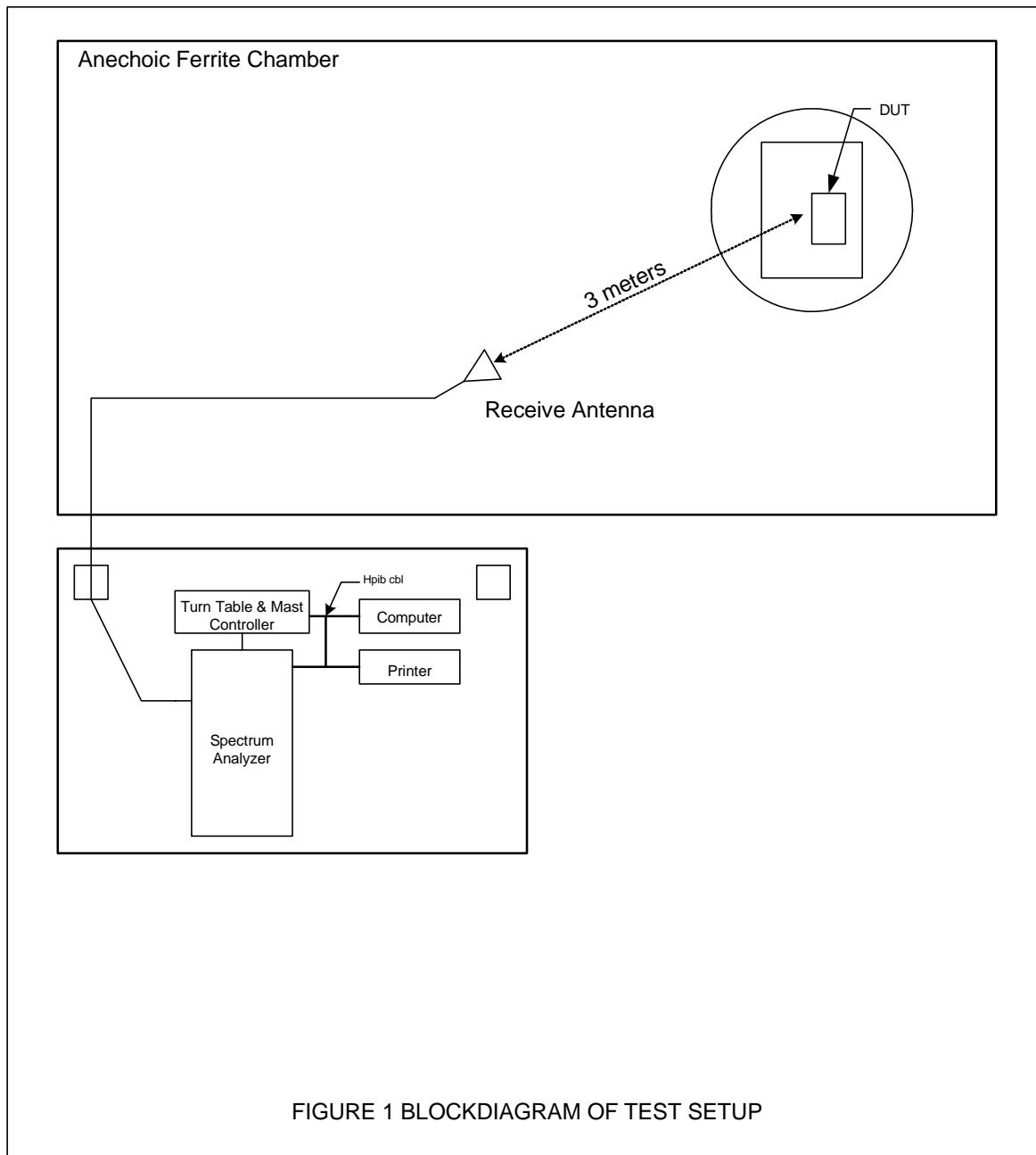
9 EQUIPMENT LIST

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
CDS2	COMPUTER	GATEWAY	MFATXPNT NMZ 500L	0028483108	1.8GHZ	N/A	
CMA1	Controllers	EMCO	2090	9701-1213	---	N/A	
NHG0	STANDARD GAIN HORN ANTENNA	NARDA	638	---	18-26.5GHZ	NOTE 1	
NTA1	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL6112	2054	0.03-2GHZ	9/2/2008	9/2/2009
NWI0	RIDGED WAVE GUIDE	AEL	H1498	153	2-18GHZ	10/25/2008	10/25/2009
RBA1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB26	100146	20HZ-26.5GHZ	9/10/2008	9/10/2009
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

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.



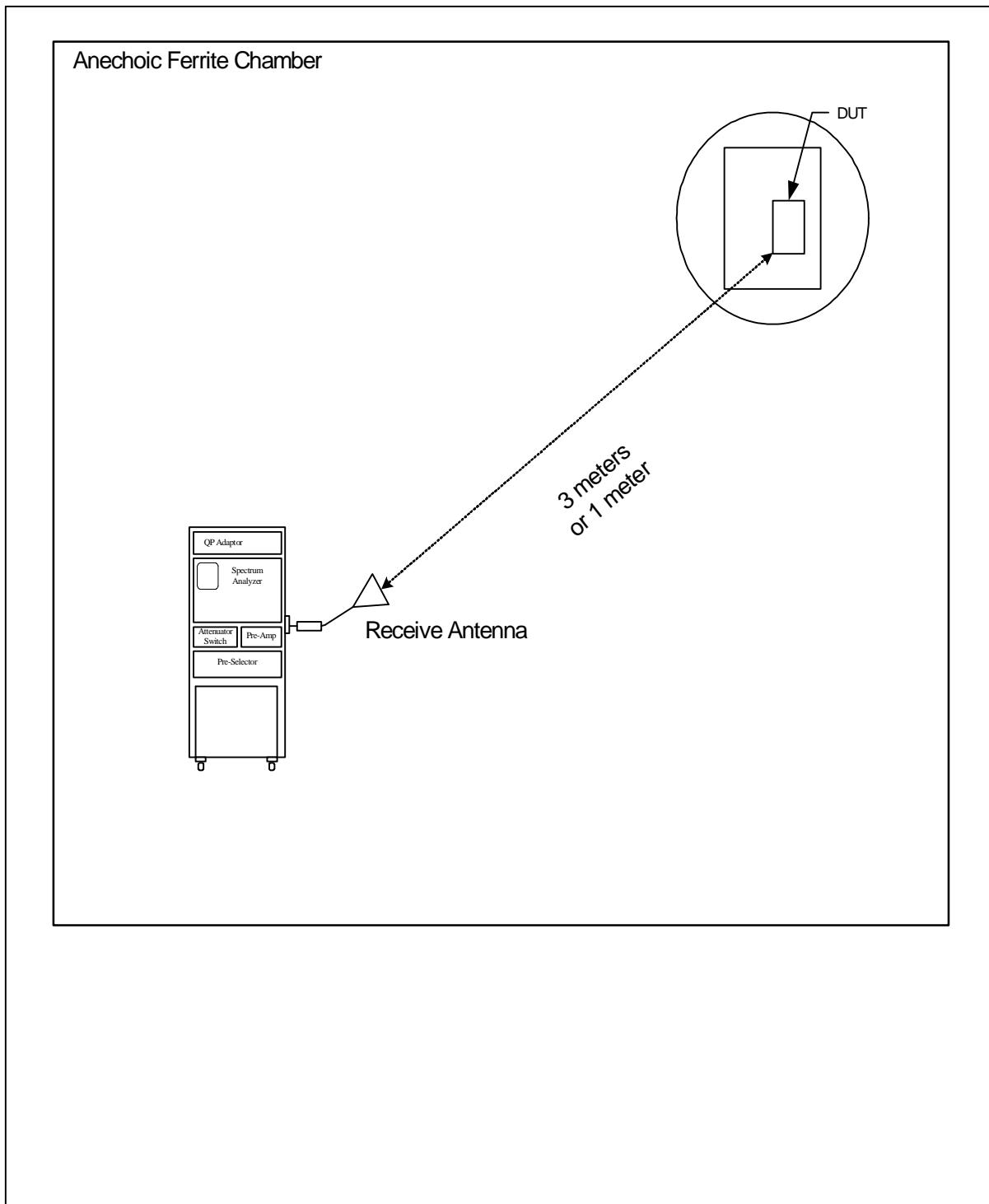
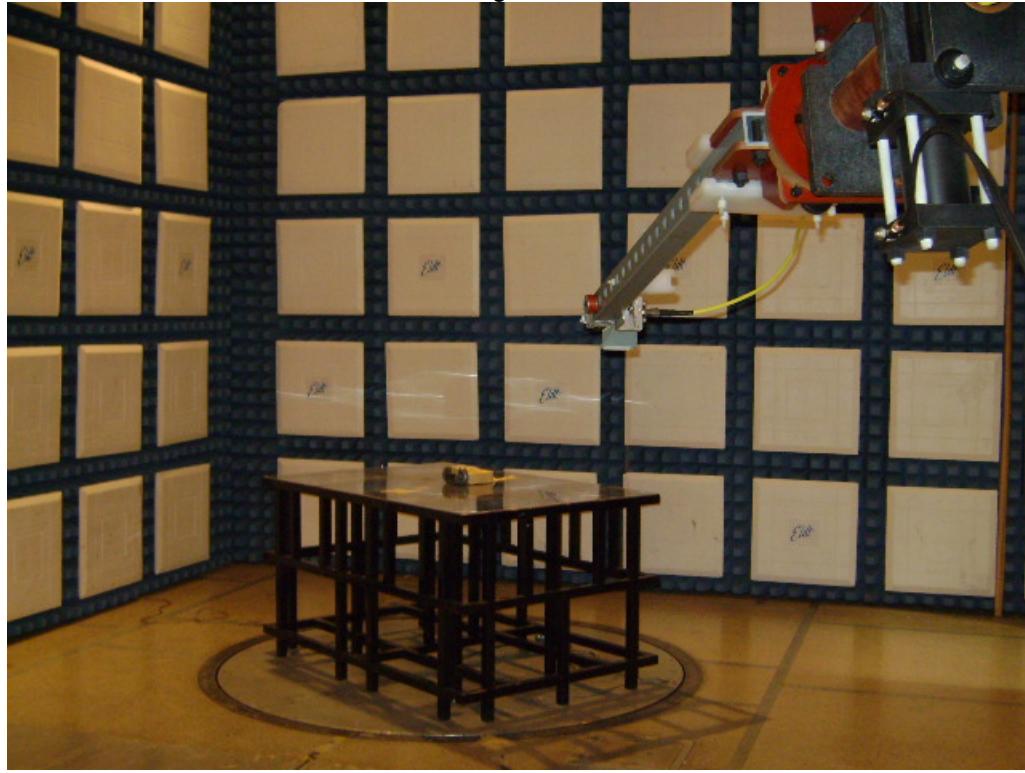
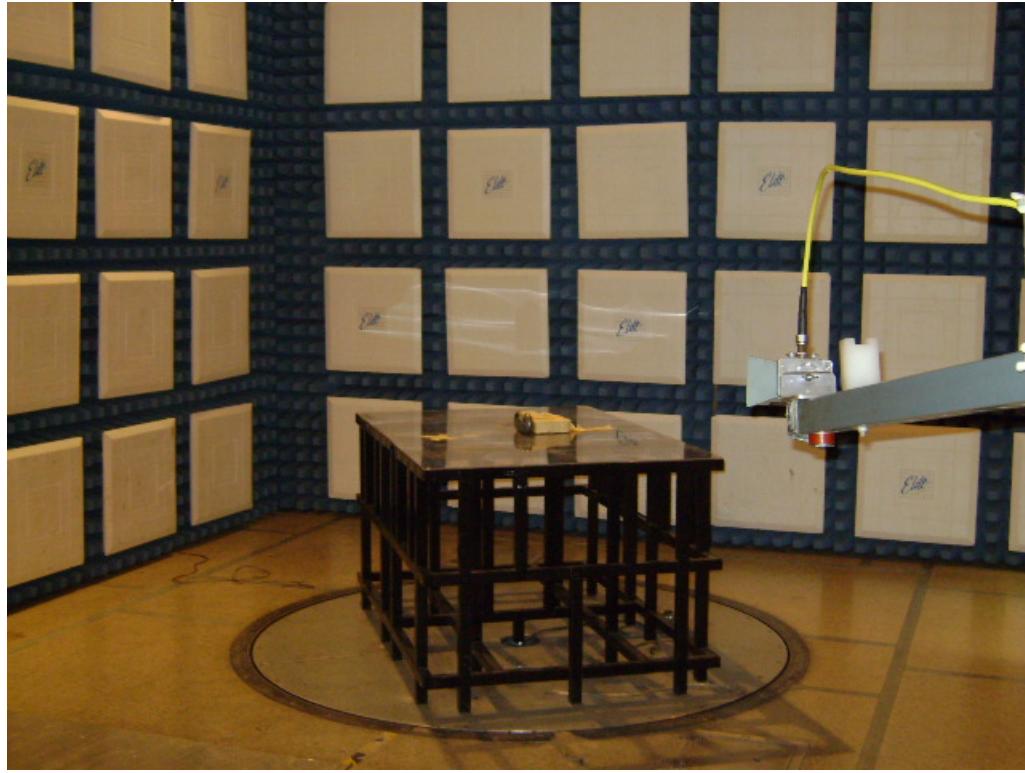


FIGURE 2: TEST SETUP FOR RADIATED EMISSIONS ABOVE 18GHz

Figure 3



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



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

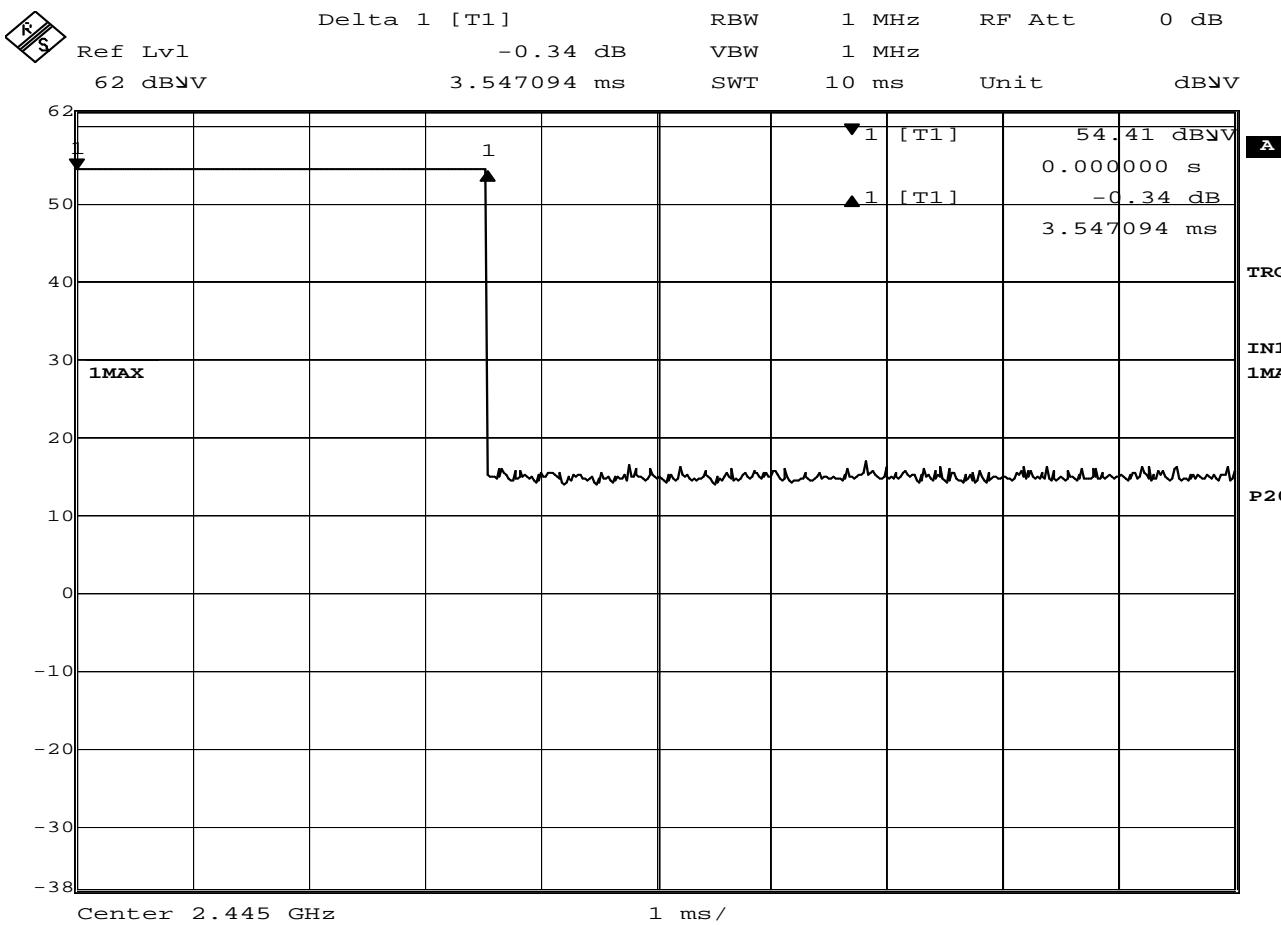
Figure 4



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



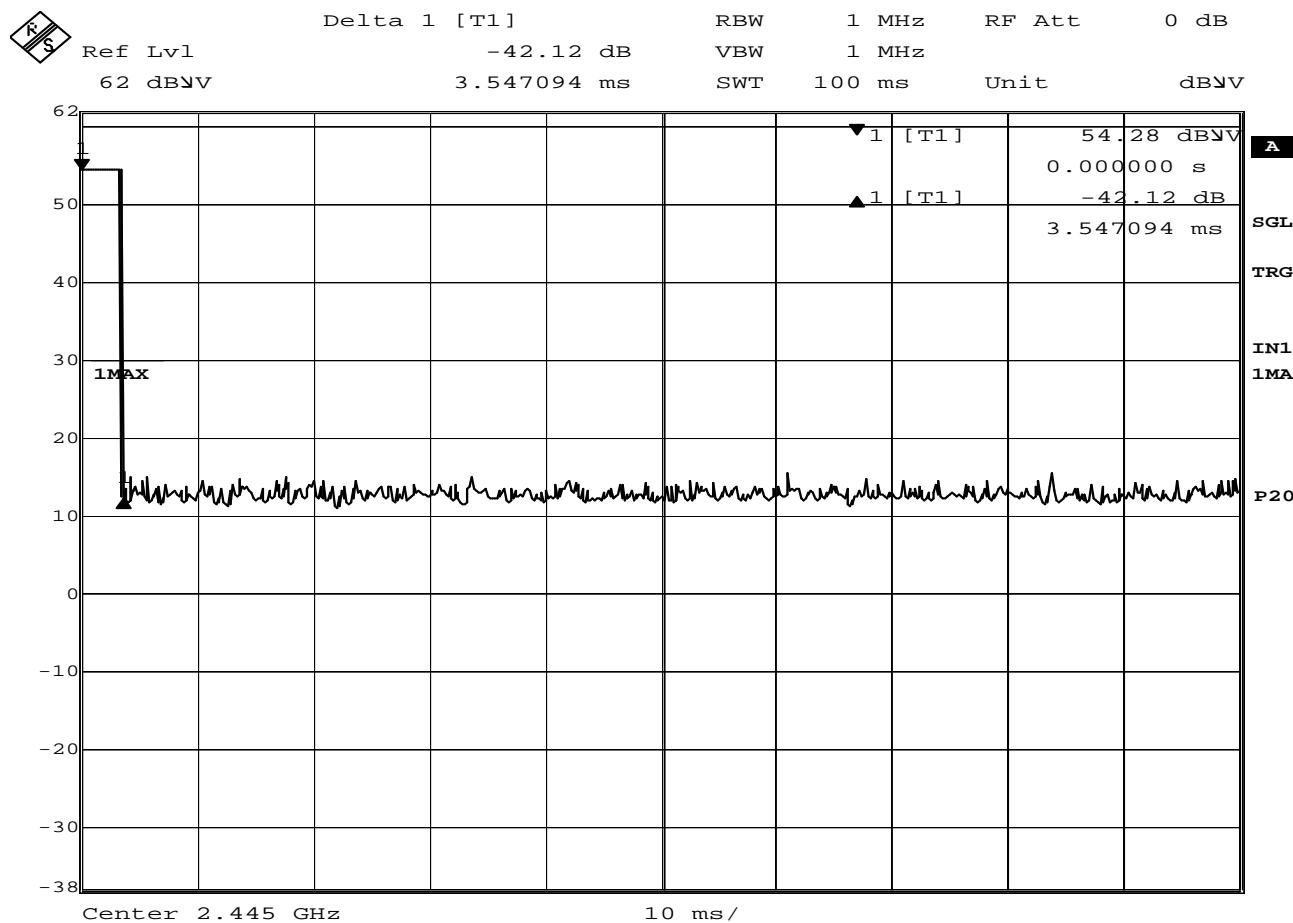
Test Setup for Radiated Emissions – 18GHz to 25GHz – Vertical Polarization



Date: 4 . MAR . 2009 09:07:20

FCC 15.35 Duty Cycle Correction Factor

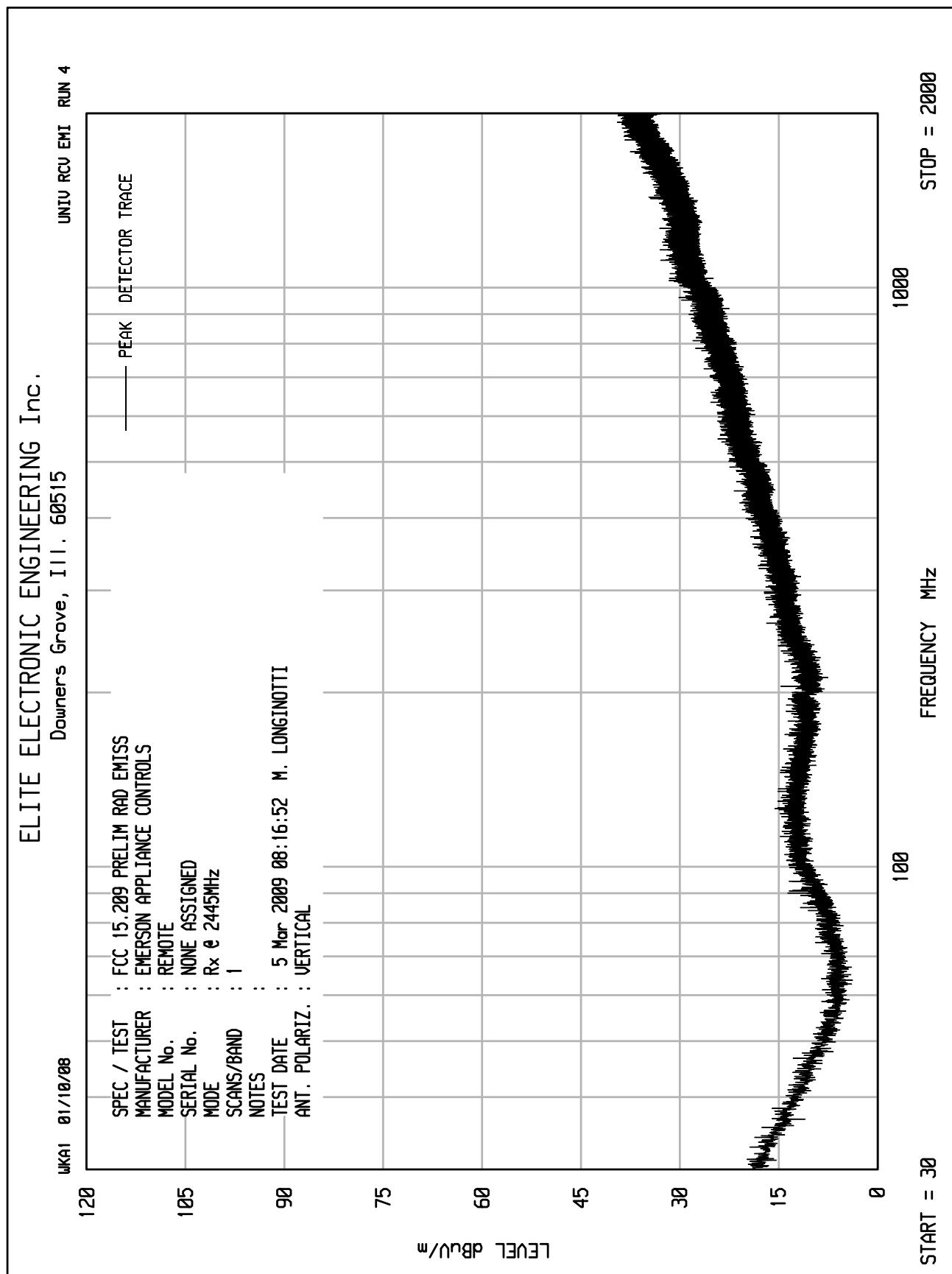
MANUFACTURER	: Emerson Appliance Control
MODEL NUMBER	: Remote (Part No. 00N30983XXX)
SERIAL NUMBER	: None Assigned
TEST MODE	: Tx @ 2445MHz (Packets)
TEST PARAMETER	: On Time is 3.54msec long
EQUIPMENT USED	: RBA1, NWI0

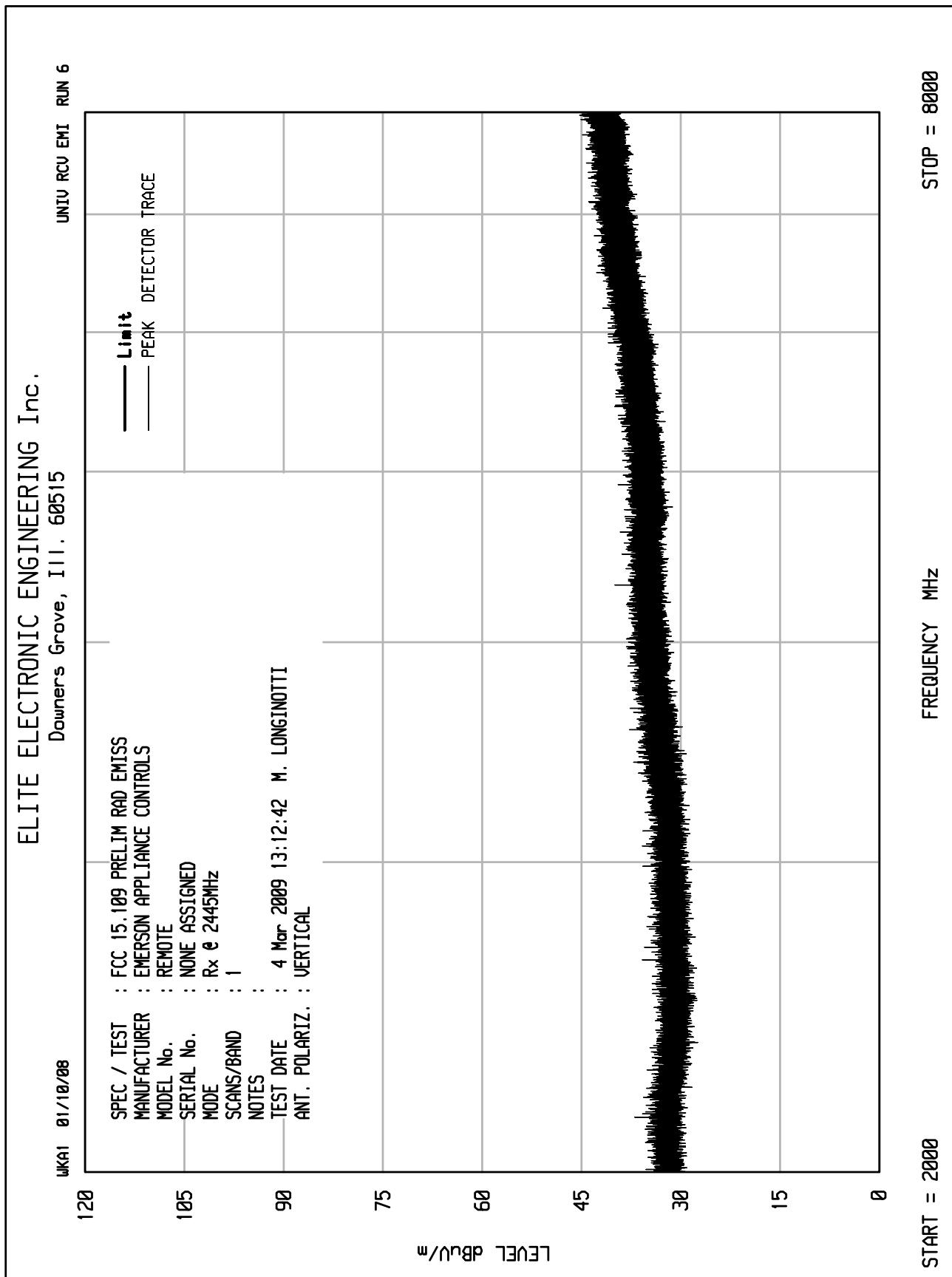


Date: 4.MAR.2009 09:12:07

FCC 15.35 Duty Cycle Correction Factor

MANUFACTURER	: Emerson Appliance Control
MODEL NUMBER	: Remote (Part No. 00N30983XXX)
SERIAL NUMBER	: None Assigned
TEST MODE	: Tx @ 2445MHz (Packets)
TEST PARAMETER	: Word is 100msec long. On Time is 3.54msec long : Duty Cycle correction factor = : $20 \log(\text{on time}/\text{word length}) =$: $20 \log(3.54\text{msec}/100\text{msec}) = -29.0\text{dB}$
EQUIPMENT USED	: RBA1, NWIO







Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Receive at 2445MHz
Test Specification : FCC 15.109 and RSS-Gen
Date : March 4 and 5, 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)
2445.0	H	34.2	Ambient	3.8	31.3	-37.3	32.1	40.3	500.0	-21.9
2445.0	V	35.0	Ambient	3.8	31.3	-37.3	32.9	44.2	500.0	-21.1
4890.0	H	31.8	Ambient	5.8	34.9	-35.9	36.5	67.0	500.0	-17.5
4890.0	V	31.6	Ambient	5.8	34.9	-35.9	36.3	65.4	500.0	-17.7
7335.0	H	32.1	Ambient	7.7	38.2	-35.5	42.5	132.8	500.0	-11.5
7335.0	V	32.0	Ambient	7.7	38.2	-35.5	42.4	131.3	500.0	-11.6

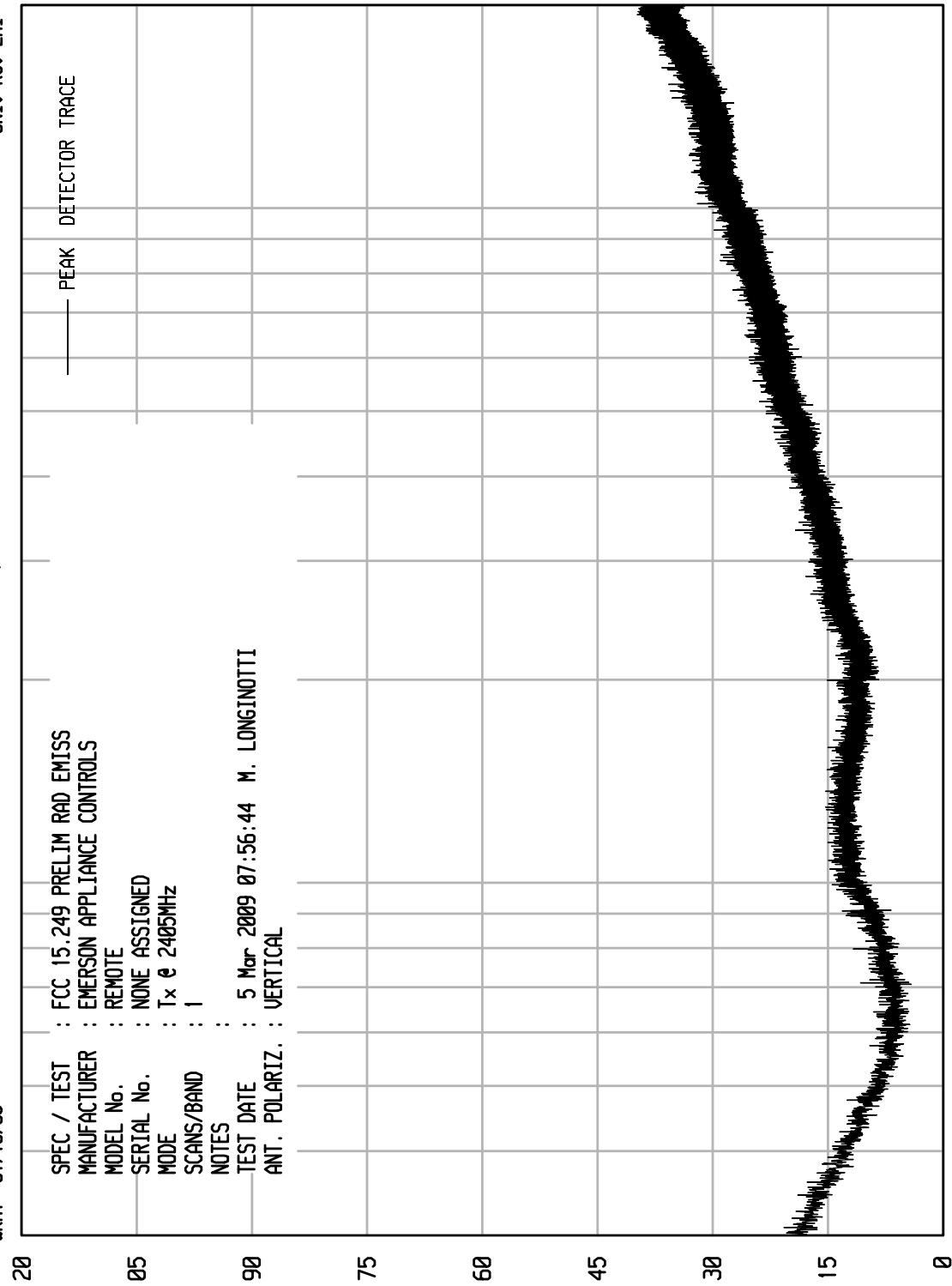
Total (dBuv/m) = Meter reading + Cbl Factor + Ant Fac + Pre Amp

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

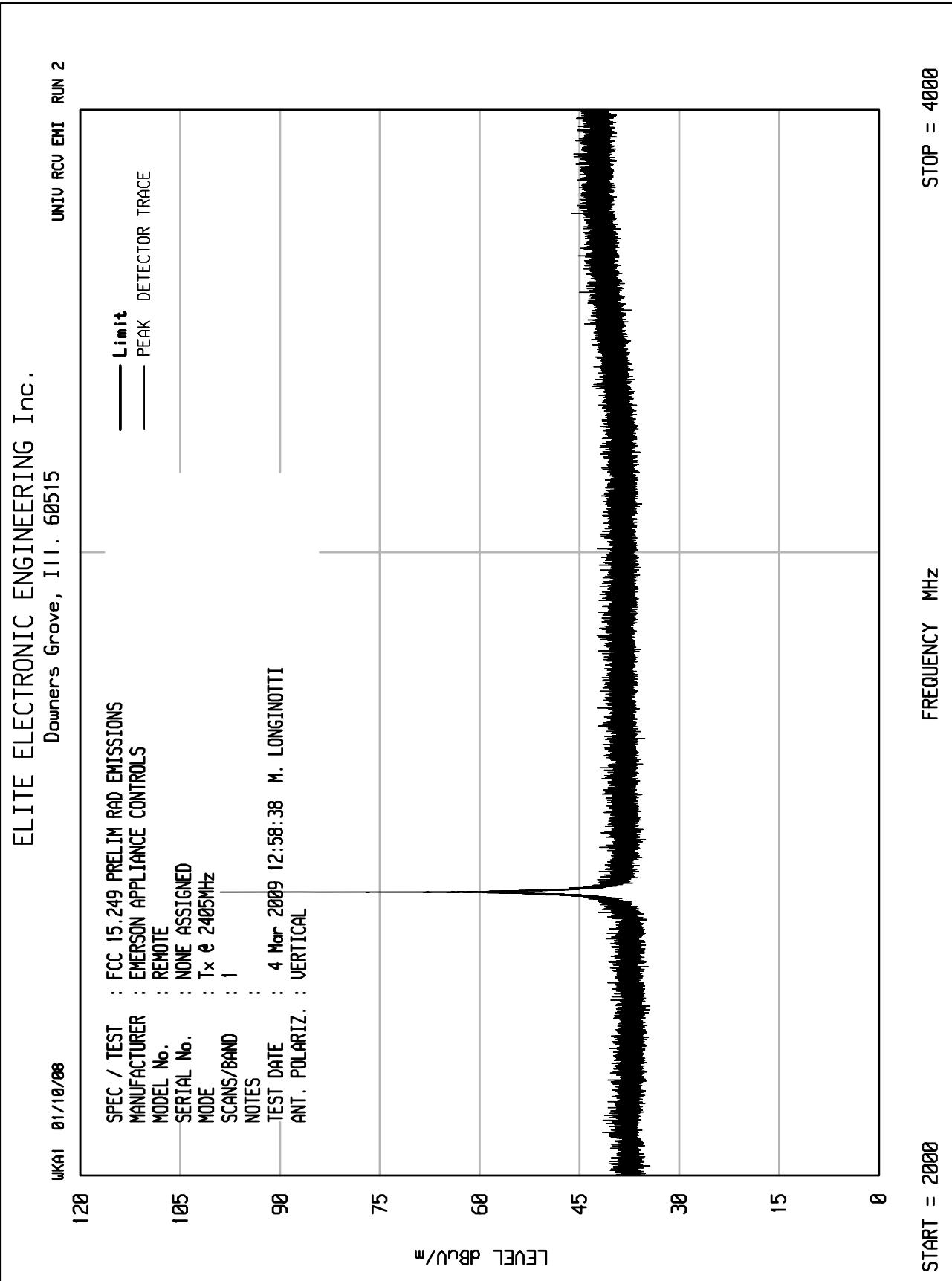
UNI U RCU EMI RUN 1

WKAI 01/10/08	SPEC / TEST	FCC 15.249 PRELIM RAD EMISS
105	MANUFACTURER	EMERSON APPLIANCE CONTROLS
	MODEL No.	REMOTE
	SERIAL No.	NONE ASSIGNED
	MODE	Tx & 2405MHz
	SCANS/BAND	1
	NOTES	
	TEST DATE	5 Mar 2009 07:56:44 M. LONGINOTTI
	ANT. POLARIZ.	VERTICAL

LEVEL dB_U/_W

START = 30

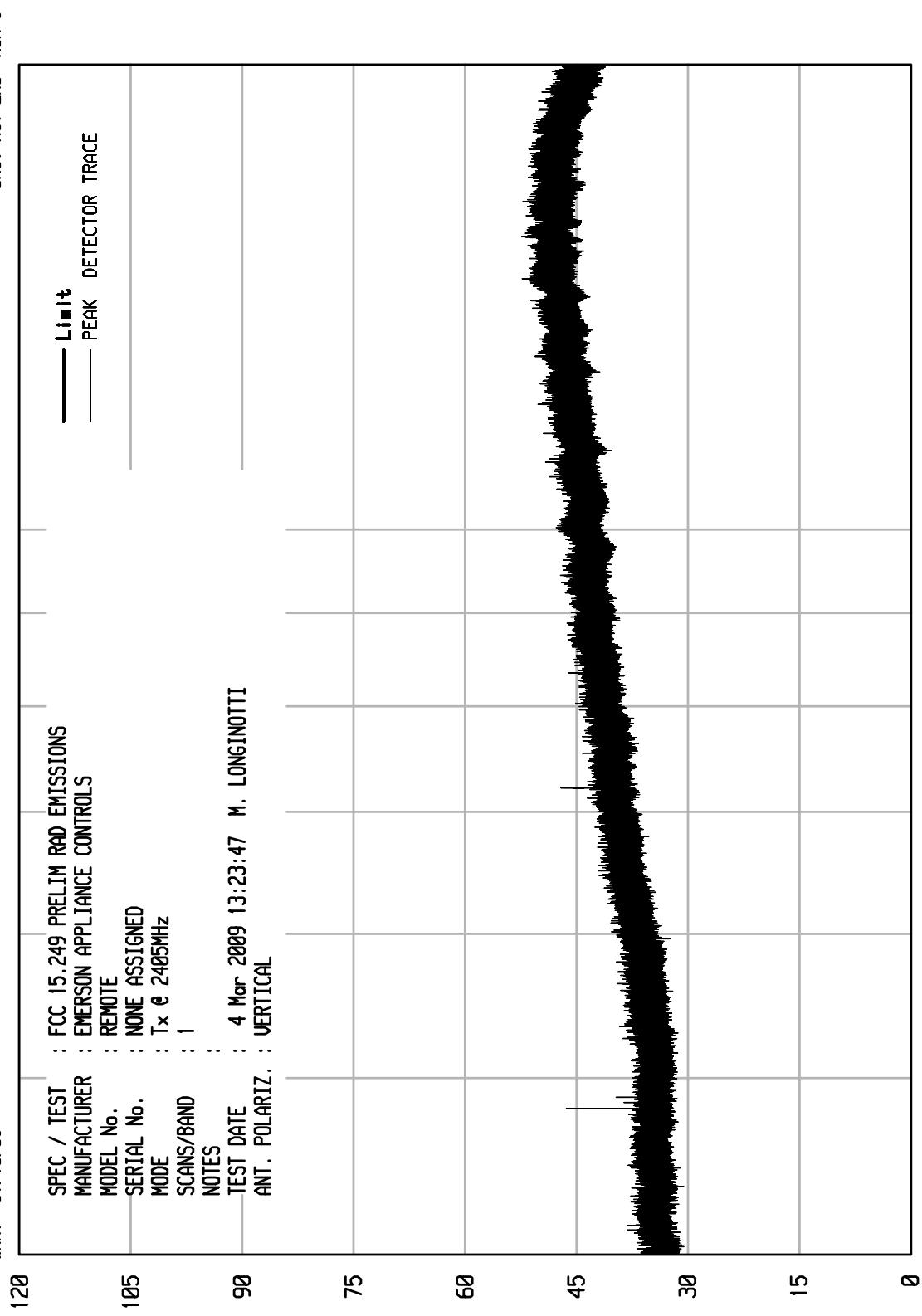
STOP = 2000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

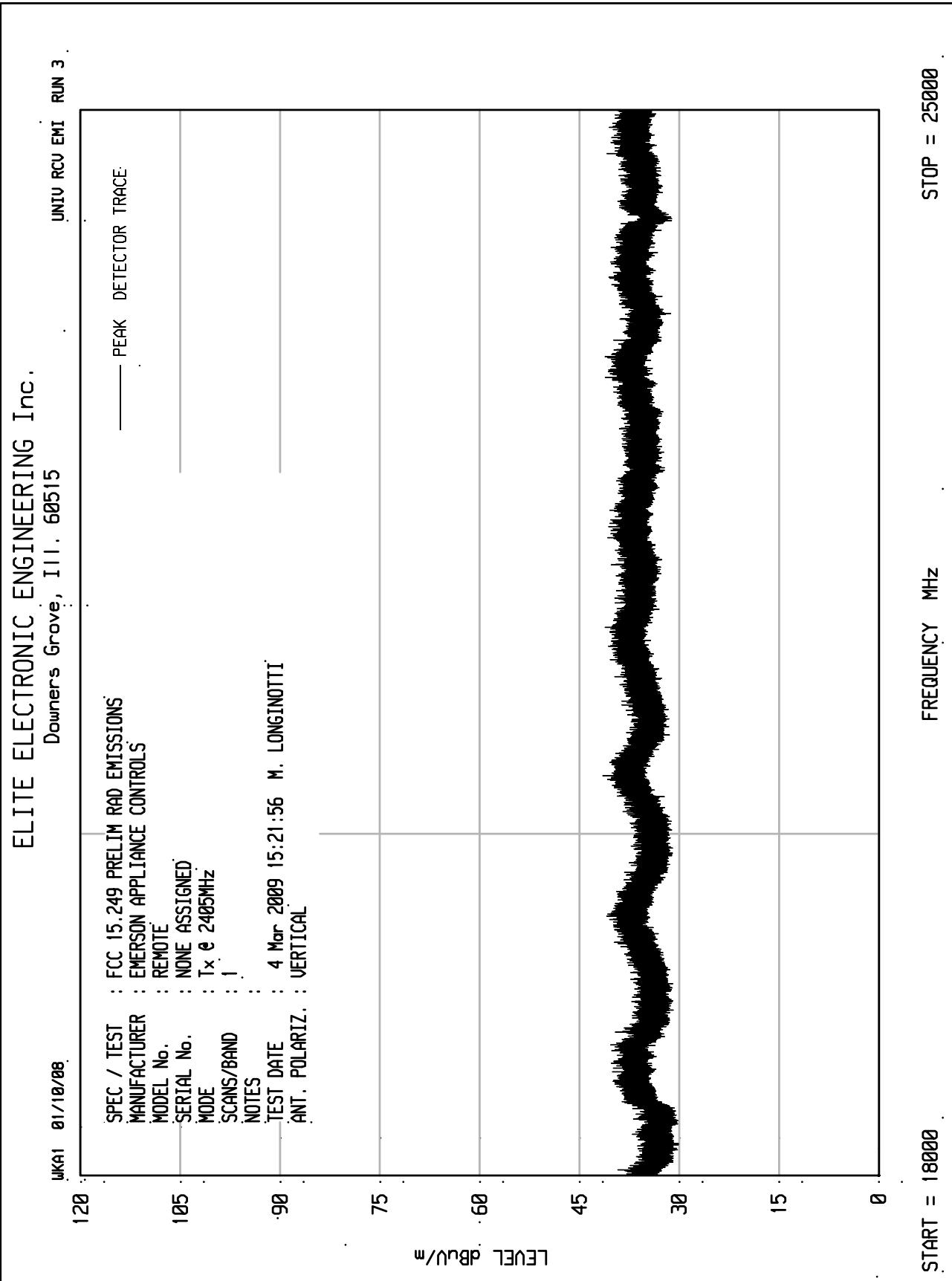
UNI/RCU/EMI RUN 8

WKAI 01/10/08	SPEC / TEST	FCC 15.249 PRELIM RAD EMISSIONS
105	MANUFACTURER	EMERSON APPLIANCE CONTROLS
	MODEL No.	REMOTE
	SERIAL No.	NONE ASSIGNED
	MODE	Tx & 2405MHz
	SCANS/BAND	1
	NOTES	
	TEST DATE	4 Mar 2009 13:23:47
	ANT. POLARIZ.	VERTICAL

LEVEL dB_{RU}/m

START = 4000

STOP = 18000





Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit at 2405MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : March 2, 2009 through March 5, 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)
2405.0	H	56.7		3.8	31.3	0.0	91.8	38982.0	500000.0	-22.2
2405.0	V	67.0		3.8	31.3	0.0	102.1	127603.9	500000.0	-11.9
4810.0	H	46.6	Amb	5.7	34.8	-37.2	49.9	311.9	5000.0	-24.1
4810.0	V	51.7	Amb	5.7	34.8	-37.2	55.0	561.1	5000.0	-19.0
7215.0	H	51.3		7.6	38.1	-35.9	61.2	1143.1	5000.0	-12.8
7215.0	V	49.9		7.6	38.1	-35.9	59.8	972.9	5000.0	-14.2
9620.0	H	45.6	Amb	8.6	39.6	-35.5	58.3	824.8	5000.0	-15.7
9620.0	V	45.1	Amb	8.6	39.6	-35.5	57.8	778.7	5000.0	-16.2
12025.0	H	44.4	Amb	9.8	41.4	-35.1	60.6	1066.5	5000.0	-13.4
12025.0	V	44.4	Amb	9.8	41.4	-35.1	60.6	1066.5	5000.0	-13.4
14430.0	H	44.4	Amb	10.9	43.7	-34.4	64.6	1696.2	5000.0	-9.4
14430.0	V	43.4	Amb	10.9	43.7	-34.4	63.6	1511.7	5000.0	-10.4
16835.0	H	43.0	Amb	11.6	44.7	-33.9	65.5	1885.1	5000.0	-8.5
16835.0	V	46.1	Amb	11.6	44.7	-33.9	68.6	2693.6	5000.0	-5.4
19240.0	H	33.6	Amb	2.2	40.4	-27.5	48.7	273.5	5000.0	-25.2
19240.0	V	35.0	Amb	2.2	40.4	-27.5	50.1	321.3	5000.0	-23.8
21645.0	H	31.9	Amb	2.2	40.6	-26.2	48.5	266.1	5000.0	-25.5
21645.0	V	31.6	Amb	2.2	40.6	-26.2	48.2	257.0	5000.0	-25.8
24050.0	H	34.2	Amb	2.2	40.6	-27.4	49.6	303.7	5000.0	-24.3
24050.0	V	33.5	Amb	2.2	40.6	-27.4	48.9	280.2	5000.0	-25.0

Amb = Ambient

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

Checked By:

MARK E. LONGINOTTI

Mark E. Longinotti



Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit at 2405MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : March 2, 2009 through March 5, 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)
2480.0	H	56.7		3.8	31.3	0.0	-29.0	62.8	1383.1	50000.0	-31.2
2480.0	V	67.0		3.8	31.3	0.0	-29.0	73.1	4527.6	50000.0	-20.9
4960.0	H	46.6	Amb	5.7	34.8	-37.2	-29.0	20.9	11.1	500.0	-33.1
4960.0	V	51.7	Amb	5.7	34.8	-37.2	-29.0	26.0	19.9	500.0	-28.0
7440.0	H	51.3		7.6	38.1	-35.9	-29.0	32.2	40.6	500.0	-21.8
7440.0	V	49.9		7.6	38.1	-35.9	-29.0	30.8	34.5	500.0	-23.2
9920.0	H	45.6	Amb	8.6	39.6	-35.5	-29.0	29.3	29.3	500.0	-24.7
9920.0	V	45.1	Amb	8.6	39.6	-35.5	-29.0	28.8	27.6	500.0	-25.2
12400.0	H	44.4	Amb	9.8	41.4	-35.1	-29.0	31.6	37.8	500.0	-22.4
12400.0	V	44.4	Amb	9.8	41.4	-35.1	-29.0	31.6	37.8	500.0	-22.4
14880.0	H	44.4	Amb	10.9	43.7	-34.4	-29.0	35.6	60.2	500.0	-18.4
14880.0	V	43.4	Amb	10.9	43.7	-34.4	-29.0	34.6	53.6	500.0	-19.4
17360.0	H	43.0	Amb	11.6	44.7	-33.9	-29.0	36.5	66.9	500.0	-17.5
17360.0	V	46.1	Amb	11.6	44.7	-33.9	-29.0	39.6	95.6	500.0	-14.4
19840.0	H	33.6	Amb	2.2	40.4	-27.5	-29.0	19.7	9.7	500.0	-34.2
19840.0	V	35.0	Amb	2.2	40.4	-27.5	-29.0	21.1	11.4	500.0	-32.8
22320.0	H	31.9	Amb	2.2	40.6	-26.2	-29.0	19.5	9.4	500.0	-34.5
22320.0	V	31.6	Amb	2.2	40.6	-26.2	-29.0	19.2	9.1	500.0	-34.8
24800.0	H	34.2	Amb	2.2	40.6	-27.4	-29.0	20.6	10.8	500.0	-33.3
24800.0	V	33.5	Amb	2.2	40.6	-27.4	-29.0	19.9	9.9	500.0	-34.0

Amb = Ambient

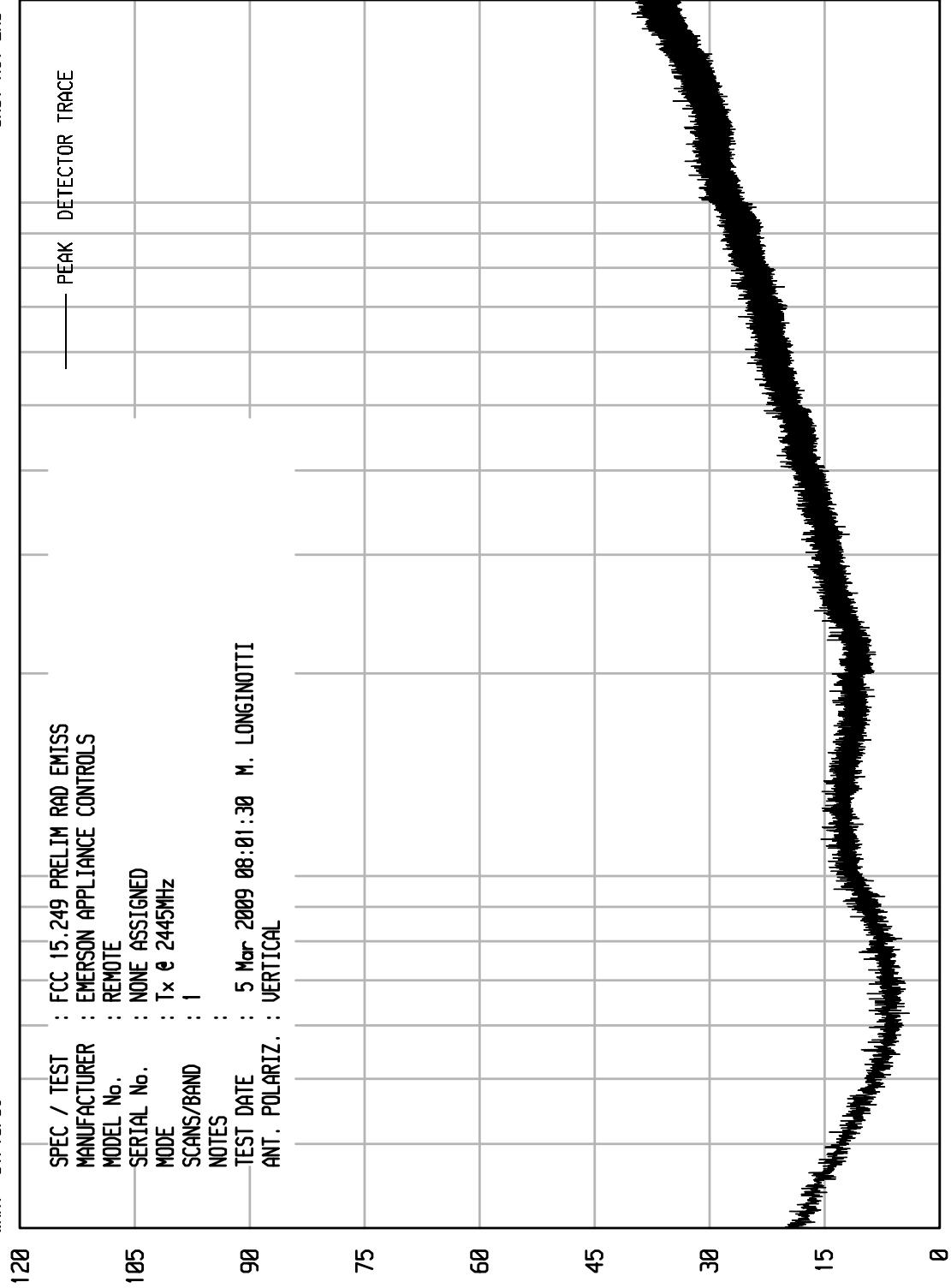
Total (dBuV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp + Duty Cycle

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIV RCU EMI RUN 2

WKAI 01/10/08	SPEC / TEST	FCC 15.249 PRELIM RAD EMISS
105	MANUFACTURER	EMERSON APPLIANCE CONTROLS
	MODEL No.	REMOTE
	SERIAL No.	NONE ASSIGNED
	MODE	Tx & 245MHz
	SCANS/BAND	1
	NOTES	
	TEST DATE	5 Mar 2009 08:01:30
	ANT. POLARIZ.	VERTICAL

LEVEL dB_{RU}/

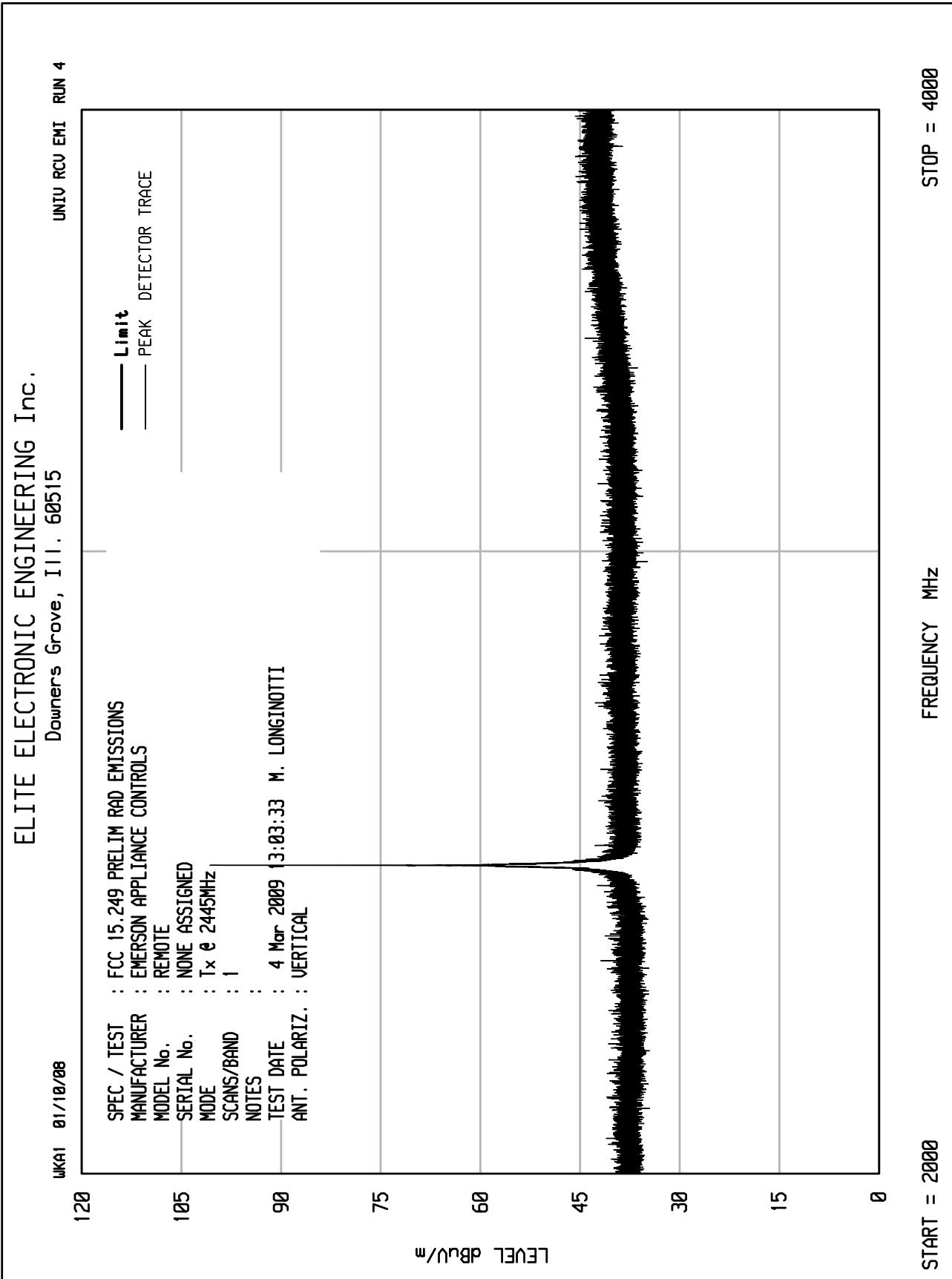
START = 30

100

FREQUENCY MHz

1000

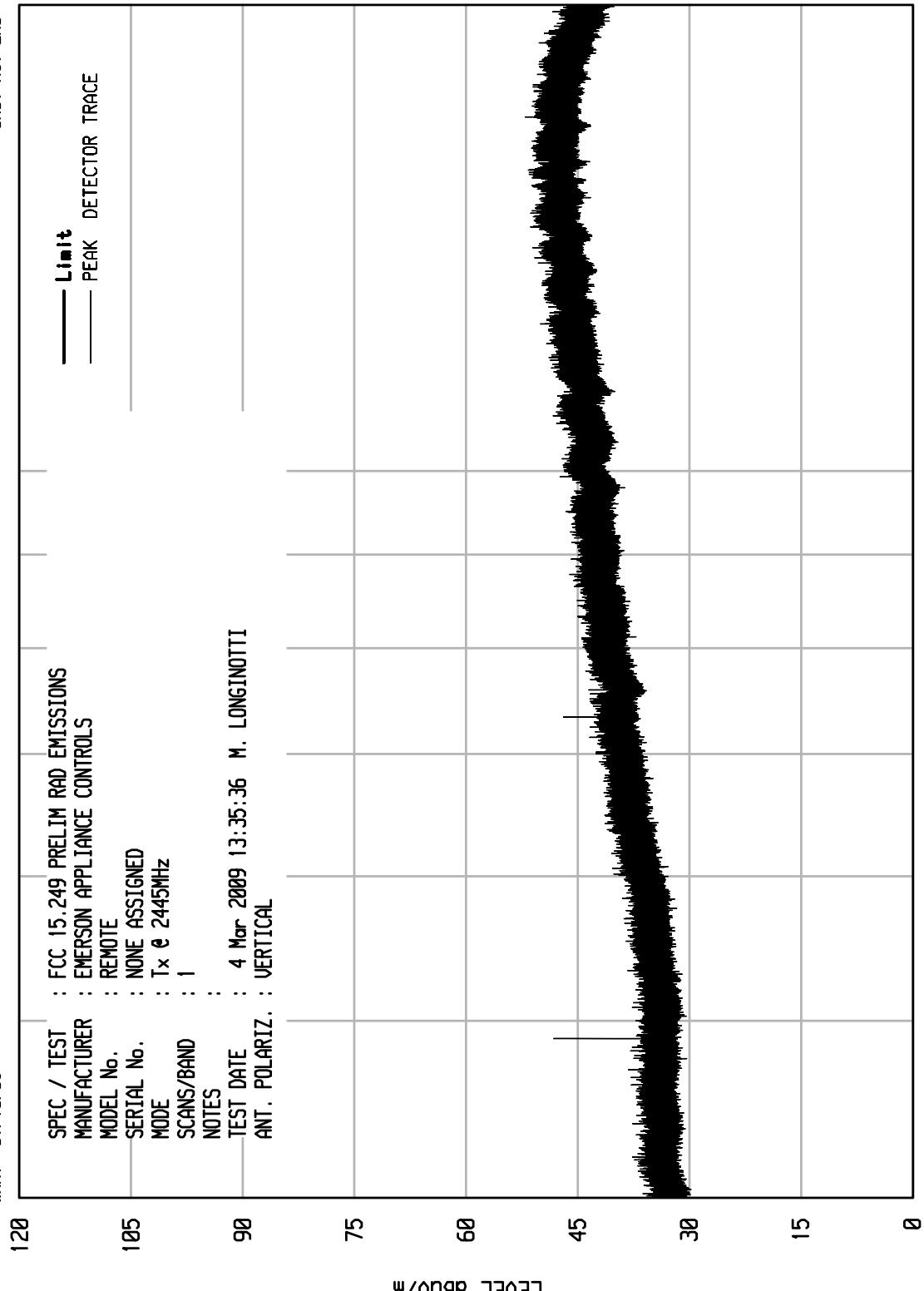
STOP = 2000

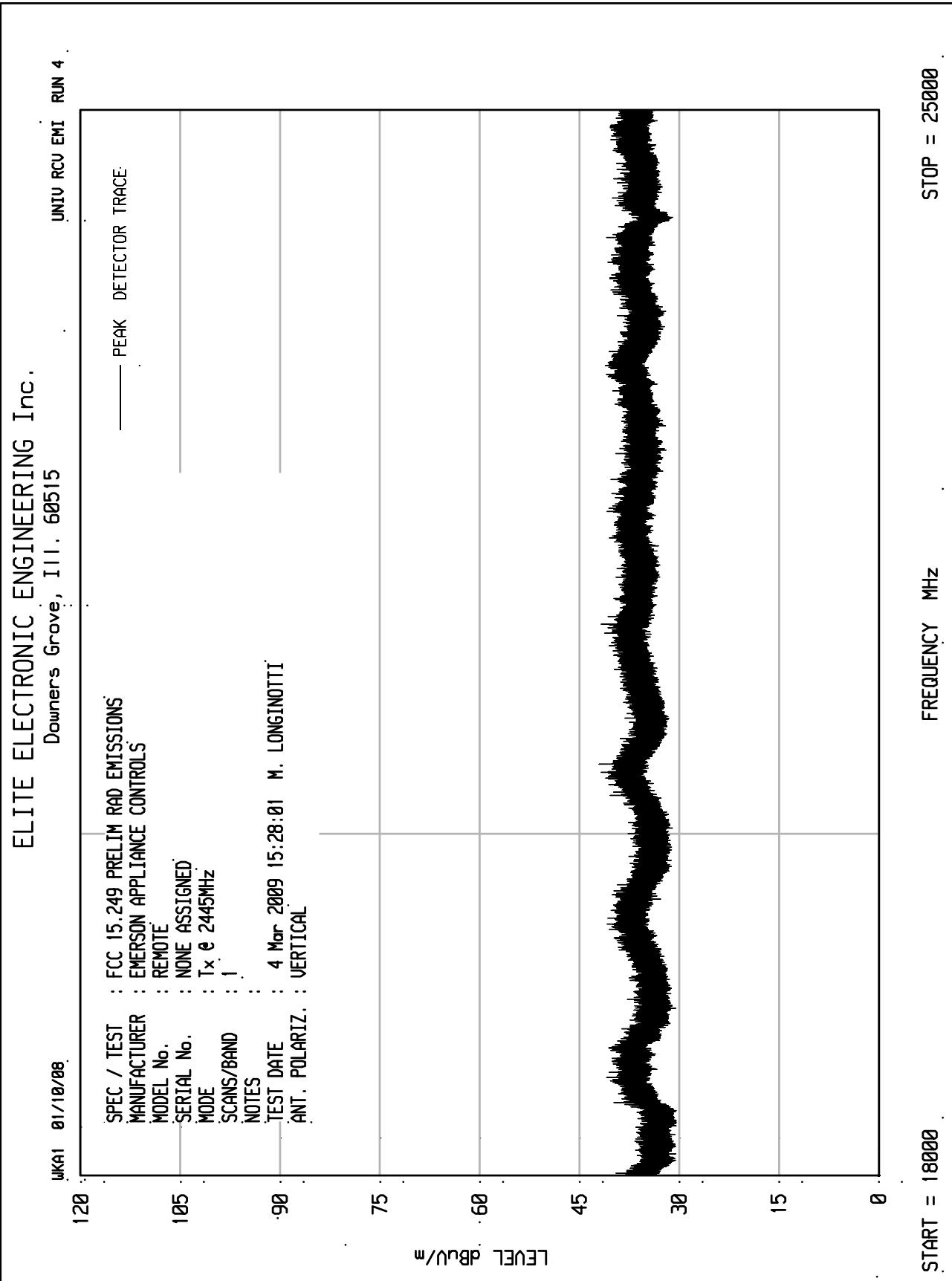


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNI U RCU EMI RUN 9

WKAI 01/10/08	SPEC / TEST	FCC 15.249 PRELIM RAD EMISSIONS
105	MANUFACTURER	EMERSON APPLIANCE CONTROLS
	MODEL No.	REMOTE
	SERIAL No.	NONE ASSIGNED
	MODE	Tx & 245MHz
	SCANS/BAND	1
	NOTES	
	TEST DATE	4 Mar 2009 13:35:36
	ANT. POLARIZ.	VERTICAL







Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit at 2445MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : March 2, 2009 through March 5, 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)
2445.0	H	57.1		3.8	31.3	0.0	92.3	41073.1	500000.0	-21.7
2445.0	V	66.4		3.8	31.3	0.0	101.6	119827.8	500000.0	-12.4
4890.0	H	50.3		5.8	34.9	-37.3	53.6	481.2	5000.0	-20.3
4890.0	V	54.6		5.8	34.9	-37.3	57.9	789.5	5000.0	-16.0
7335.0	H	49.6	Amb	7.7	38.2	-35.9	59.6	950.4	5000.0	-14.4
7335.0	V	48.9	Amb	7.7	38.2	-35.9	58.9	876.8	5000.0	-15.1
9780.0	H	43.9	Amb	8.6	39.8	-35.5	56.8	688.4	5000.0	-17.2
9780.0	V	43.8	Amb	8.6	39.8	-35.5	56.7	680.5	5000.0	-17.3
12225.0	H	43.5	Amb	9.9	41.5	-35.0	59.8	976.9	5000.0	-14.2
12225.0	V	44.1	Amb	9.9	41.5	-35.0	60.4	1046.8	5000.0	-13.6
14670.0	H	43.6	Amb	11.0	44.2	-34.4	64.4	1664.3	5000.0	-9.6
14670.0	V	44.3	Amb	11.0	44.2	-34.4	65.1	1804.0	5000.0	-8.9
17115.0	H	43.5	Amb	12.0	44.7	-33.9	66.2	2051.4	5000.0	-7.7
17115.0	V	43.3	Amb	12.0	44.7	-33.9	66.0	2004.7	5000.0	-7.9
19560.0	H	34.2	Amb	2.2	40.4	-27.1	49.7	304.0	5000.0	-24.3
19560.0	V	34.5	Amb	2.2	40.4	-27.1	50.0	314.7	5000.0	-24.0
22005.0	H	35.1	Amb	2.2	40.6	-27.0	50.9	351.6	5000.0	-23.1
22005.0	V	34.2	Amb	2.2	40.6	-27.0	50.0	317.0	5000.0	-24.0
24450.0	H	33.2	Amb	2.2	40.6	-27.5	48.6	268.2	5000.0	-25.4
24450.0	V	34.0	Amb	2.2	40.6	-27.5	49.4	294.1	5000.0	-24.6

Amb = Ambient

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

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti



Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit at 2445MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : March 2, 2009 through March 5, 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)
2445.0	H	57.1	Amb	3.8	31.3	0.0	-29.0	63.3	1457.3	50000.0	-30.7
2445.0	V	66.4		3.8	31.3	0.0	-29.0	72.6	4251.7	50000.0	-21.4
4890.0	H	50.3	Amb	5.8	34.9	-37.3	-29.0	24.6	17.1	500.0	-29.3
4890.0	V	54.6		5.8	34.9	-37.3	-29.0	28.9	28.0	500.0	-25.0
7335.0	H	49.6	Amb	7.7	38.2	-35.9	-29.0	30.6	33.7	500.0	-23.4
7335.0	V	48.9	Amb	7.7	38.2	-35.9	-29.0	29.9	31.1	500.0	-24.1
9780.0	H	43.9	Amb	8.6	39.8	-35.5	-29.0	27.8	24.4	500.0	-26.2
9780.0	V	43.8	Amb	8.6	39.8	-35.5	-29.0	27.7	24.1	500.0	-26.3
12225.0	H	43.5	Amb	9.9	41.5	-35.0	-29.0	30.8	34.7	500.0	-23.2
12225.0	V	44.1	Amb	9.9	41.5	-35.0	-29.0	31.4	37.1	500.0	-22.6
14670.0	H	43.6	Amb	11.0	44.2	-34.4	-29.0	35.4	59.1	500.0	-18.6
14670.0	V	44.3	Amb	11.0	44.2	-34.4	-29.0	36.1	64.0	500.0	-17.9
17115.0	H	43.5	Amb	12.0	44.7	-33.9	-29.0	37.2	72.8	500.0	-16.7
17115.0	V	43.3	Amb	12.0	44.7	-33.9	-29.0	37.0	71.1	500.0	-16.9
19560.0	H	34.2	Amb	2.2	40.4	-27.1	-29.0	20.7	10.8	500.0	-33.3
19560.0	V	34.5	Amb	2.2	40.4	-27.1	-29.0	21.0	11.2	500.0	-33.0
22005.0	H	35.1	Amb	2.2	40.6	-27.0	-29.0	21.9	12.5	500.0	-32.1
22005.0	V	34.2	Amb	2.2	40.6	-27.0	-29.0	21.0	11.2	500.0	-33.0
24450.0	H	33.2	Amb	2.2	40.6	-27.5	-29.0	19.6	9.5	500.0	-34.4
24450.0	V	34.0	Amb	2.2	40.6	-27.5	-29.0	20.4	10.4	500.0	-33.6

Amb = Ambient

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

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti

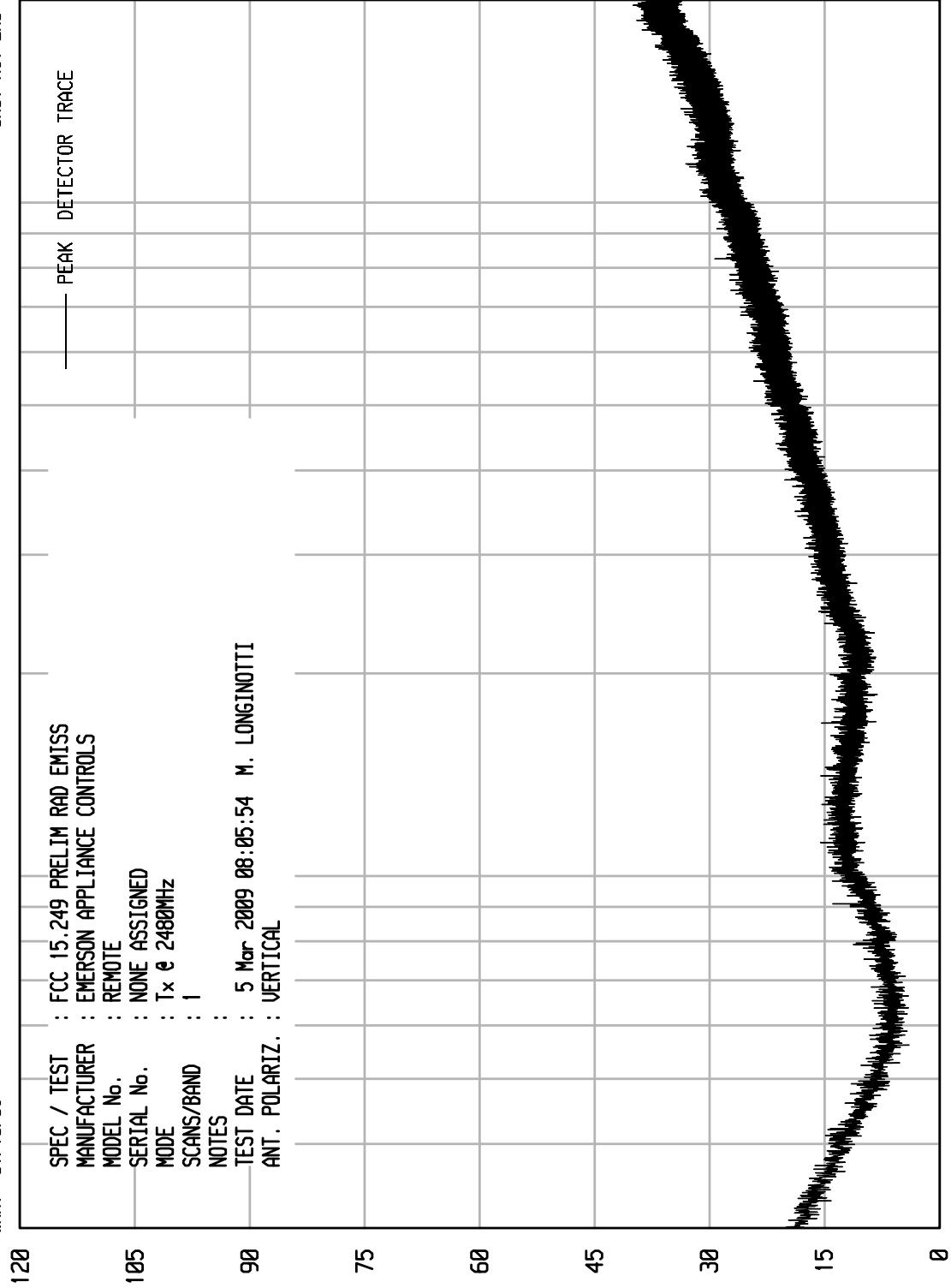
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

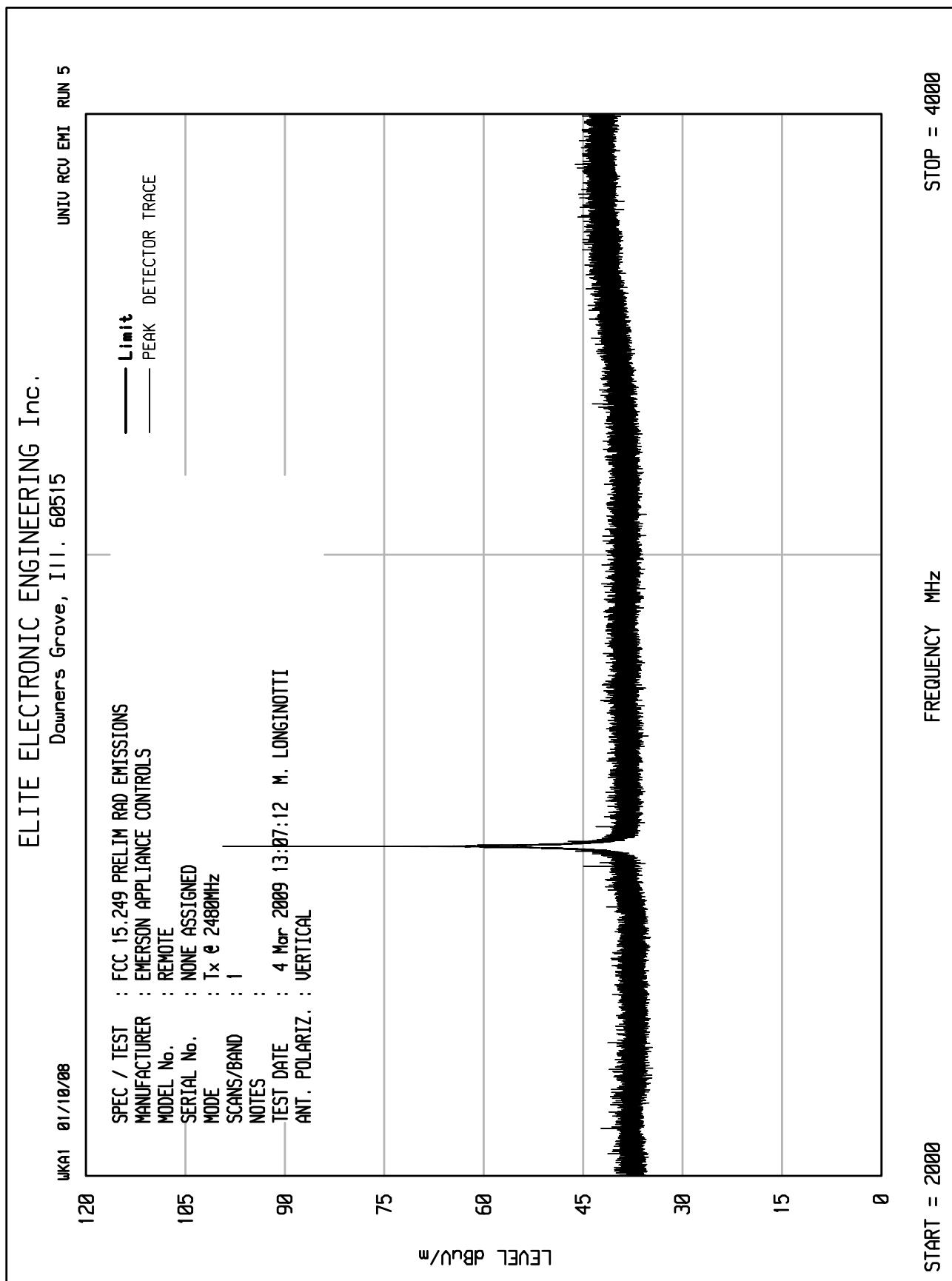
UNIV RCU EMI RUN 3

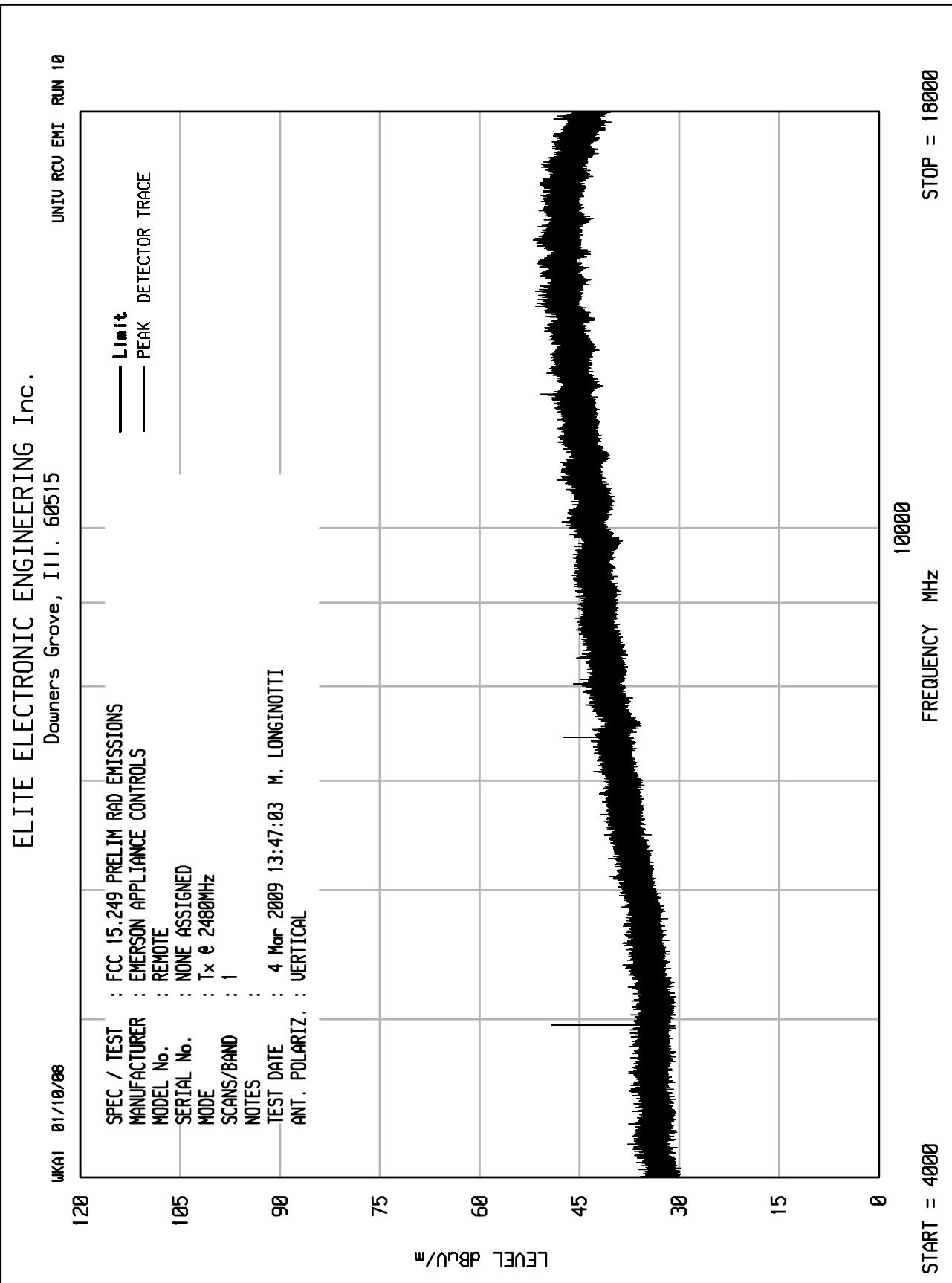
WKAI 01/10/08	SPEC / TEST	FCC 15.249 PRELIM RAD EMISS
105	MANUFACTURER	EMERSON APPLIANCE CONTROLS
	MODEL No.	REMOTE
	SERIAL No.	NONE ASSIGNED
	MODE	Tx & 248MHz
	SCANS/BAND	1
	NOTES	
	TEST DATE	5 Mar 2009 08:05:54 M. LONGINOTTI
	ANT. POLARIZ.	VERTICAL

LEVEL dB_{U/I}

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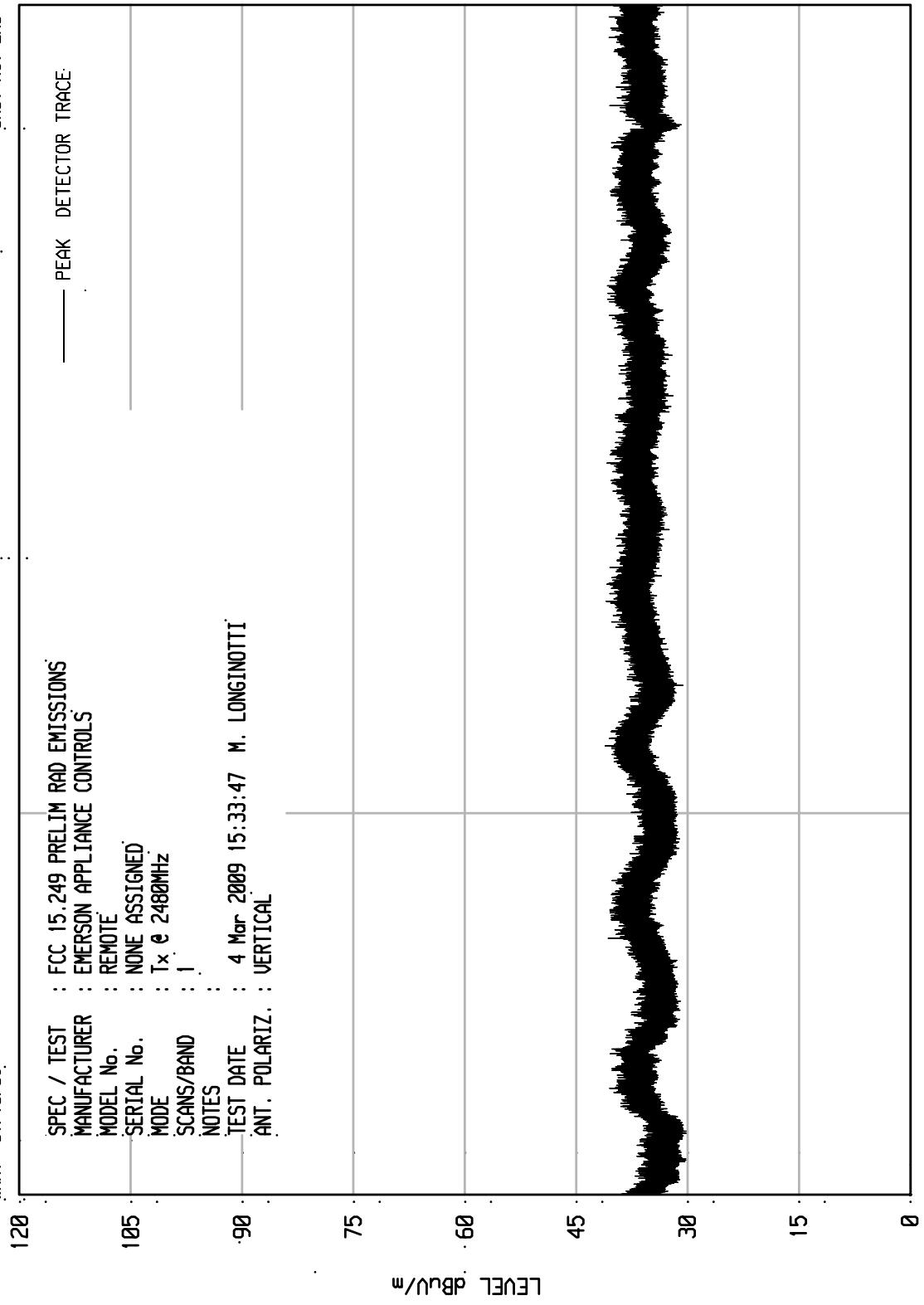


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

WKA1 01/10/08

UNIT RCU EMI RUN 5

SPEC / TEST : FCC 15.249 PRELIM RAD EMISSIONS
MANUFACTURER : EMERSON APPLIANCE CONTROLS
MODEL No. : REMOTE
SERIAL No. : NONE ASSIGNED
MODE : Tx @ 2480MHz
SCANS/BAND :
NOTES :
TEST DATE : 4 Mar 2009 15:33:47 M. LONGINOTTI
ANT. POLARIZ. : VERTICAL





Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit at 2480MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : March 2, 2009 through March 5, 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)
2480.0	H	54.5		3.8	31.4	0.0	89.7	30611.1	500000.0	-24.3
2480.0	V	64.6		3.8	31.4	0.0	99.8	97921.6	500000.0	-14.2
4960.0	H	51.7		5.8	34.9	-37.3	55.1	569.1	5000.0	-18.9
4960.0	V	54.6		5.8	34.9	-37.3	58.0	794.6	5000.0	-16.0
7440.0	H	50.6		7.7	38.2	-35.9	60.6	1076.6	5000.0	-13.3
7440.0	V	49.3		7.7	38.2	-35.9	59.3	926.9	5000.0	-14.6
9920.0	H	45.3	Amb	8.5	39.9	-35.5	58.3	819.2	5000.0	-15.7
9920.0	V	45.2	Amb	8.5	39.9	-35.5	58.2	809.9	5000.0	-15.8
12400.0	H	44.2	Amb	9.9	41.5	-35.0	60.6	1073.5	5000.0	-13.4
12400.0	V	44.2	Amb	9.9	41.5	-35.0	60.6	1073.5	5000.0	-13.4
14880.0	H	44.1	Amb	11.2	44.6	-34.4	65.5	1877.5	5000.0	-8.5
14880.0	V	44.2	Amb	11.2	44.6	-34.4	65.6	1899.3	5000.0	-8.4
17360.0	H	43.7	Amb	12.0	44.6	-34.0	66.3	2077.3	5000.0	-7.6
17360.0	V	43.4	Amb	12.0	44.6	-34.0	66.0	2006.8	5000.0	-7.9
19840.0	H	30.8	Amb	2.2	40.4	-26.9	46.5	212.3	5000.0	-27.4
19840.0	V	30.5	Amb	2.2	40.4	-26.9	46.2	205.1	5000.0	-27.7
22320.0	H	33.1	Amb	2.2	40.6	-27.1	48.9	277.3	5000.0	-25.1
22320.0	V	33.8	Amb	2.2	40.6	-27.1	49.6	300.5	5000.0	-24.4
24800.0	H	33.1	Amb	2.2	40.6	-27.2	48.8	274.2	5000.0	-25.2
24800.0	V	33.9	Amb	2.2	40.6	-27.2	49.6	300.6	5000.0	-24.4

Amb = Ambient

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

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti



Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit at 2480MHz
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9
Date : March 2, 2009 through March 5, 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 3m	Total uV/m at 3m	Limit uV/m at 3m	Margin (dB)
2480.0	H	54.5		3.8	31.4	0.0	-29.0	60.7	1086.1	50000.0	-33.3
2480.0	V	64.6		3.8	31.4	0.0	-29.0	70.8	3474.4	50000.0	-23.2
4960.0	H	51.7		5.8	34.9	-37.3	-29.0	26.1	20.2	500.0	-27.9
4960.0	V	54.6		5.8	34.9	-37.3	-29.0	29.0	28.2	500.0	-25.0
7440.0	H	50.6		7.7	38.2	-35.9	-29.0	31.6	38.2	500.0	-22.3
7440.0	V	49.3		7.7	38.2	-35.9	-29.0	30.3	32.9	500.0	-23.6
9920.0	H	45.3	Amb	8.5	39.9	-35.5	-29.0	29.3	29.1	500.0	-24.7
9920.0	V	45.2	Amb	8.5	39.9	-35.5	-29.0	29.2	28.7	500.0	-24.8
12400.0	H	44.2	Amb	9.9	41.5	-35.0	-29.0	31.6	38.1	500.0	-22.4
12400.0	V	44.2	Amb	9.9	41.5	-35.0	-29.0	31.6	38.1	500.0	-22.4
14880.0	H	44.1	Amb	11.2	44.6	-34.4	-29.0	36.5	66.6	500.0	-17.5
14880.0	V	44.2	Amb	11.2	44.6	-34.4	-29.0	36.6	67.4	500.0	-17.4
17360.0	H	43.7	Amb	12.0	44.6	-34.0	-29.0	37.3	73.7	500.0	-16.6
17360.0	V	43.4	Amb	12.0	44.6	-34.0	-29.0	37.0	71.2	500.0	-16.9
19840.0	H	30.8	Amb	2.2	40.4	-26.9	-29.0	17.5	7.5	500.0	-36.4
19840.0	V	30.5	Amb	2.2	40.4	-26.9	-29.0	17.2	7.3	500.0	-36.7
22320.0	H	33.1	Amb	2.2	40.6	-27.1	-29.0	19.9	9.8	500.0	-34.1
22320.0	V	33.8	Amb	2.2	40.6	-27.1	-29.0	20.6	10.7	500.0	-33.4
24800.0	H	33.1	Amb	2.2	40.6	-27.2	-29.0	19.8	9.7	500.0	-34.2
24800.0	V	33.9	Amb	2.2	40.6	-27.2	-29.0	20.6	10.7	500.0	-33.4

Amb = Ambient

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

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti



Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit CW
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9 Occupied Bandwidth
Date : March 2, 2009 through March 5, 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)
Tx @ 2405MHz										
2400.0	H	17.2		3.8	31.3	0.0	52.3	412.1	5000.0	-21.7
2400.0	V	27.6		3.8	31.3	0.0	62.7	1364.6	5000.0	-11.3
Tx @ 2480MHz										
2483.5	H	18.6		3.8	31.4	0.0	53.8	489.8	5000.0	-20.2
2483.5	V	26.9		3.8	31.4	0.0	62.2	1288.2	5000.0	-11.8

Amb = Ambient

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

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti



Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit with modulation
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9 Occupied Bandwidth
Date : March 2, 2009 through March 5, 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)
Tx @ 2405MHz										
2400.0	H	27.7		3.8	31.3	0.0	62.8	1380.4	5000.0	-11.2
2400.0	V	28.6		3.8	31.3	0.0	63.7	1531.1	5000.0	-10.3
Tx @ 2480MHz										
2483.5	H	24.7		3.8	31.4	0.0	59.9	988.6	5000.0	-14.1
2483.5	V	33.8		3.8	31.4	0.0	69.0	2818.4	5000.0	-5.0

Amb = Ambient

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

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti



Manufacturer : Emerson Appliance Controls
Model No. : Remote (Part No. 00N30983XXX)
Serial No. : None Assigned
Mode : Transmit with modulation
Test Specification : FCC 15.249 and Industry Canada Annex 2, section A2.9 Occupied Bandwidth
Date : March 2, 2009 through March 5, 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)
Tx @ 2405MHz											
2400.0	H	27.7		3.8	31.3	0.0	-29.0	33.8	48.9	500.0	-20.2
2400.0	V	28.6		3.8	31.3	0.0	-29.0	34.7	54.3	500.0	-19.3
Tx @ 2480MHz											
2483.5	H	24.7		3.8	31.4	0.0	-29.0	30.9	35.1	500.0	-23.1
2483.5	V	33.8		3.8	31.4	0.0	-29.0	40.0	100.0	500.0	-14.0

Amb = Ambient

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

Checked By: MARK E. LONGINOTTI
Mark E. Longinotti