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Downers Grove, Illinois
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Engineering Test Report Number 31804-01

MEASUREMENT OF RF INTERFERENCE FROM A MODEL **MOTOROLA CANOPY TRANSCEIVER**

FOR: **Cascade Networks, Inc.**
1324 Vandercock Way
Longview, WA 98632

Dates Tested: February 4-7, 2003 and March 19th. 2003

Test Specifications: FCC "Code of Federal Regulations" Title 47
Part 15, Subpart C, Section 15.407



ENGINEERING TEST REPORT NO. 31804-01
ADMINISTRATIVE DATA AND SUMMARY OF TESTS

DESCRIPTION OF TEST ITEM: UNII Transceiver

MODEL NO: Motorola Canopy

SERIAL NO: None Assigned

MANUFACTURER: Cascade Networks Inc.

APPLICABLE SPECIFICATIONS: FCC "Code of Federal Regulations"
Title 47, Part 15, Subpart C

QUANTITY OF ITEMS TESTED: One (1)

TEST PERFORMED BY: ELITE ELECTRONIC ENGINEERING
INCORPORATED
Radio Interference Consultants
Downers Grove, Illinois 60515

DATE RECEIVED: January 17 , 2003

DATE TESTED: February 4 through 7, 2003 and March 19, 2003

PERSONNEL (OPERATORS, OBSERVERS, AND CO-ORDINATORS):

CUSTOMER: No representative of Cascade Networks Inc., was present.

ELITE ELECTRONIC: Richard E. King

ELITE JOB NO.: 31804

ABSTRACT: The model Motorola Canopy Transceiver, does meet the 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 C63.4-2001.

Report By:


Richard E. King
EMC Engineer

Approved By:

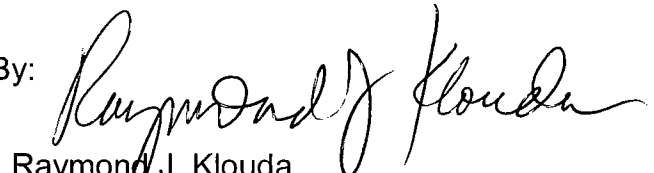

Raymond J. Klouda
Registered Professional
Engineer of Illinois - 44894

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**TOTAL NUMBER OF PAGES IN THIS DOCUMENT,
(INCLUDING DATA SHEETS): 68**

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

ENGINEERING TEST REPORT NO. 31804-01
MEASUREMENT OF RF INTERFERENCE FROM
A MODEL MOTOROLA CANOPY TRANSCEIVER

1.0 INTRODUCTION:

1.1 DESCRIPTION OF TEST ITEM: This document presents the results of a series of radio interference measurements performed on a model Motorola Canopy Transceiver (hereinafter referred to as the test item). The test item was designed to transmit in the 5725MHz to 5825MHz band using external antennas. The test series was performed to determine if the Motorola Canopy Transceiver, FCC ID: ABZ89FC4816, would continue to meet the FCC requirements when using a Radiowaves model SEC-5V-120-14 Antenna (Cylindrical), a Andrew model P2F-52-N7A Antenna (2' Dish), a Radiowaves model SEC-5.5V-90-16 Antenna (Panel), a Radiall /Larson model R380.700.205 omnidirectional antenna (Rod) or when placed in a metal box. The tests were performed for Cascade Networks Inc, of Longview, Washington.

1.2 PURPOSE: The test series was performed to determine if the test item meets the requirements of the radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections for Intentional Radiators. The test series was performed on the original Motorola Canopy, FCC ID: ABZ89FC4816, with the four external antennas listed above were connected to the device or the test item was enclosed in a metal box. All testing was performed in accordance with ANSI C63.4-1992.

1.3 DEVIATIONS, ADDITIONS AND EXCLUSIONS: There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4 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 2001
- ANSI C63.4-2001, "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"

1.5 SUBCONTRACTOR 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.

1.6 LABORATORY CONDITIONS: The temperature at the time of the test was 23°C and the relative humidity was 11%.

2.0 TEST ITEM SETUP AND OPERATION:

A block diagram of the test item setup is included as Figure 1.

2.1 POWER INPUT: The test item was powered with 24VDC from a Motorola model AEC-T4824 Class 2 transformer.

2.2 GROUNDING: Since the test item was powered with two wires, it was ungrounded during the tests.

2.3 PERIPHERAL EQUIPMENT: There was no peripheral equipment submitted with the test item.

2.4 INTERCONNECT CABLES: There were no interconnect cables submitted with the test item.

2.5 OPERATIONAL MODE: For all tests the test item and all peripheral equipment were placed on a 80cm high non-conductive stand. The test item and all peripheral equipment was energized.

For all tests, the test item was set to transmit continuously. The tests were performed with the test item operating at 5745MHz and 5805MHz.

3.0 TEST EQUIPMENT:

3.1 TEST EQUIPMENT LIST: A list of the test equipment used can be found on Table I. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

The fundamental, harmonics and spurious emissions were measured with a spectrum analyzer. All measurements were taken with the resolution and video bandwidth of the measuring instrument adjusted to 100kHz below 1GHz and 1MHz above 1GHz.

3.2 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).

3.3 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 budgets were based on guidelines in "ISO Guide to the Expression of Uncertainty in Measurements" and NAMAS NIS81 "The Treatment of Uncertainty in EMC Measurements".

The measurement uncertainty for these tests is presented below:

<u>Conducted Emission Measurements:</u>		
Combined Standard Uncertainty	1.07	-1.07
Expanded Uncertainty (95% confidence)	2.1	-2.1
<u>Radiated Emission Measurements:</u>		
Combined Standard Uncertainty	2.26	-2.18
Expanded Uncertainty (95% confidence)	4.5	-4.4

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 POWERLINE CONDUCTED EMISSIONS:

4.1.1 REQUIREMENTS: Since the purpose of the testing was to determine a class II permissive change to the test item and the changes made to the test item would not effect the conducted emissions no conducted emission measurements were taken.

4.2 BANDEGE EMISSION MEASUREMENTS:

4.2.1 REQUIREMENTS: Per section 15.407(b)(3), For transmitters operating in the 5.725 - 5.825GHz range band: all emissions within the frequency range from the band edge to 10MHz above or 10MHz below the bandedge shall not exceed an EIRP of -17dBm/MHz; for frequencies 10MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27dBm/MHz. Per section 15.407(b)(5), Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in 15.209.

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

1992 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.

The spectrum analyzer was set to measure the 5.705MHz to 5.845MHz band. The test item was set to transmit at the low side of the authorized band. A spectrum analyzer "screen dump" program was used to plot out the frequency spectrum. The test was repeated with the test item transmitting at high side of the authorised band.

The bandedge test was performed with all three of the antennas mentioned in Para. 1.1.

4.2.3 RESULTS: The bandedge compliance measurements, with the test item transmitting at both 5745MHz and 5805MHz, with the cylindrical antenna, is presented on pages 13 and 14. The bandedge compliance measurements, with the test item transmitting at both 5745MHz and 5805MHz, with the dish antenna, are presented on pages 15 and 16. The bandedge compliance measurements, with the test item transmitting at both 5745MHz and 5805MHz, with the panel antenna, are presented on pages 17 and 18. The bandedge compliance measurements, with the test item transmitting at both 5745MHz and 5805MHz, with the Rod antenna and in the metal box, are presented on pages 19 and 20. As can be seen from the data, all emissions measured from the test item were within the specification limits.

4.3 OUT OF BAND RADIATED EMISSION MEASUREMENTS:

4.3.1 REQUIREMENTS: Per section 15.407(b)(3), For transmitters operating in the 5.725 - 5.835GHz range band: all emissions within the frequency range from the band edge to 10MHz above or 10MHz below the bandedge shall not exceed an EIRP of -17dBm/MHz; for frequencies 10MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27dBm/MHz. Per section 15.407(b)(5), Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in 15.209.

4.3.2 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 ANSI C63.4 1992 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.

Preliminary radiated emissions measurements were first performed using a peak detector and automatically plotted. The frequencies where significant emission levels were noted were then remeasured.

With the broadband measuring antennas positioned at a 3 meter distance from the test item, the frequency range from 30MHz to 18GHz was investigated using a peak detector function with the antennas set for vertical polarization. The frequency range from 18GHz to 40GHz was measured but not plotted.

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

- 1) Measurements were made using a peak detector and either a BiLog or 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.

The test item was set to transmit at either 5.745GHz or 5.805GHz continuously. The out of band tests were performed with all three antennas described in Para. 1.1.

4.3.3 RESULTS: The preliminary plots, with the test item transmitting at 5745 MHz and 5805MHz for cylindrical antenna, is presented on pages 21 through 30. The preliminary plots, with the test item transmitting at 5745 MHz and 5805MHz for dish antenna, is presented on pages 31 through 40. The preliminary plots, with the test item transmitting at 5745 MHz and 5805MHz for panel antenna, are presented on pages 41 through 50. The preliminary plots, with the test item transmitting at 5745 MHz and 5805MHz for rod antenna and in a metal box,

are presented on pages 51 through 60. 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 both 5745 and 5805MHz, with the cylindrical antenna, are presented on pages 61 and 62. The final radiated levels, with the test item transmitting at both 5745 and 5805MHz, with the dish antenna, are presented on pages 63 and 64. The final radiated levels, with the test item transmitting at both 5745 and 5805MHz, with the panel antenna, are presented on pages 65 and 66. The final radiated levels, with the test item transmitting at both 5745 and 5805MHz, with the rod antenna and in a metal box, are presented on pages 67 and 68. As can be seen from the data, all emissions measured from the test item were within the specification limits. Photographs of the test configuration which yielded the highest, or worst case, radiated emission levels are shown on Figure 2.

5.0 CONCLUSION:

It was found that the Cascade Networks model Motorola Canopy, does 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 C63.4-2001.

6.0 CERTIFICATION:

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specification.

The data presented in this test report pertains only to the 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.

7.0 ENDORSEMENT DISCLAIMER:

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



ELITE ELECTRONIC ENGINEERING INC.
ETR 31804-01
Radiated Emissions Test Setup Anechoic Ferrite Chamber

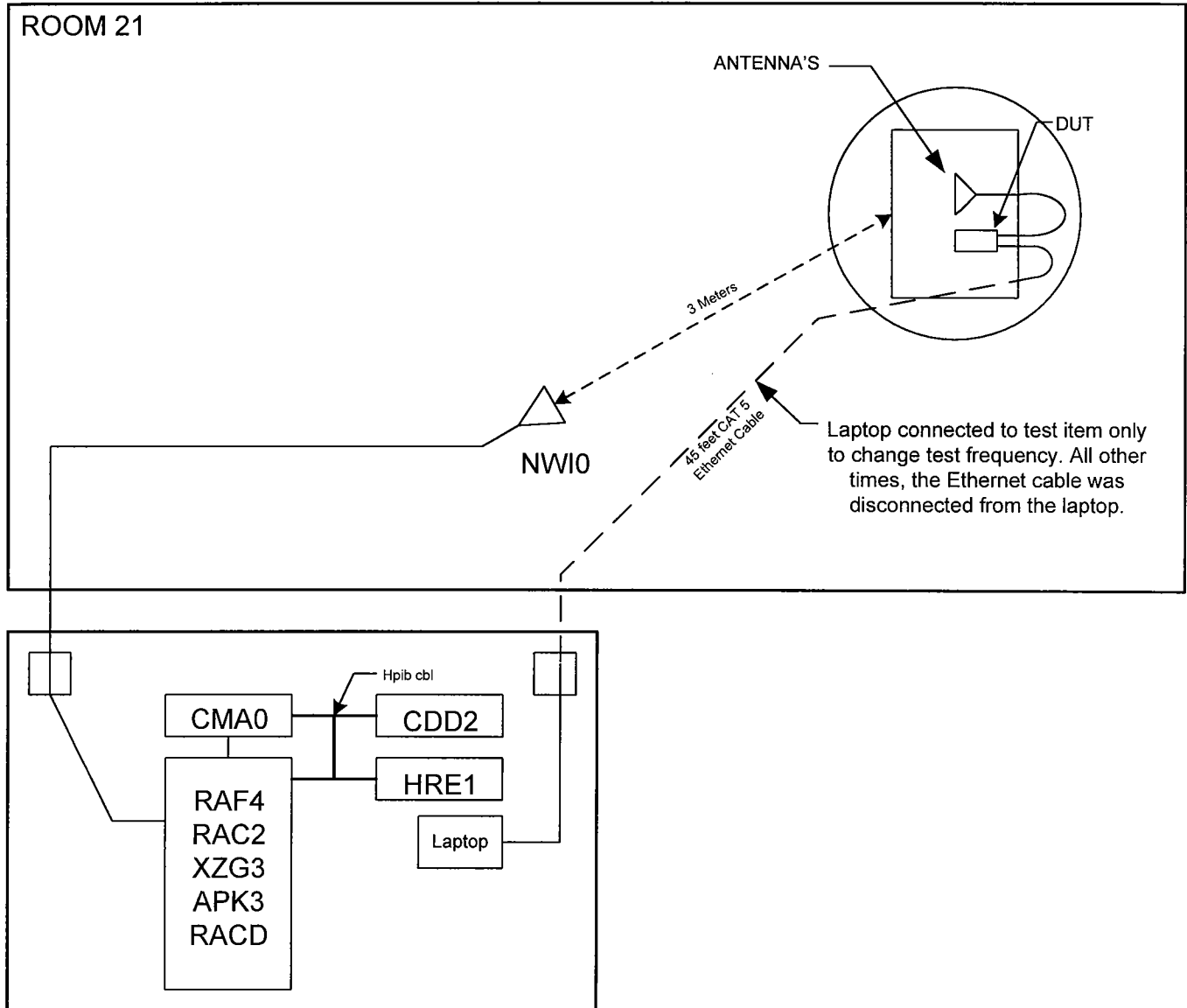
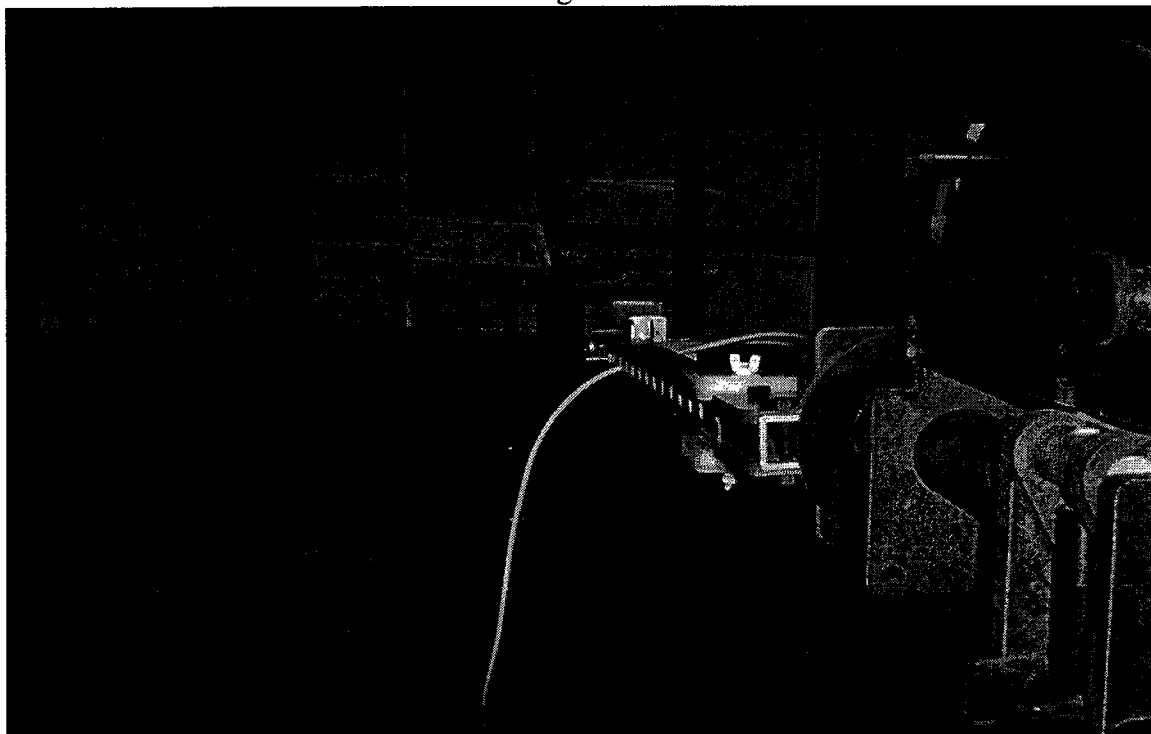


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

ETR 31804-01
Figure 2



Radiated Emissions Worst Case Horizontal Polarization



Radiated Emissions Worst Case Vertical Polarization

ELITE ELECTRONIC ENGINEERING Inc.

MKR 5.740 0 GHz
120.10 dBuV

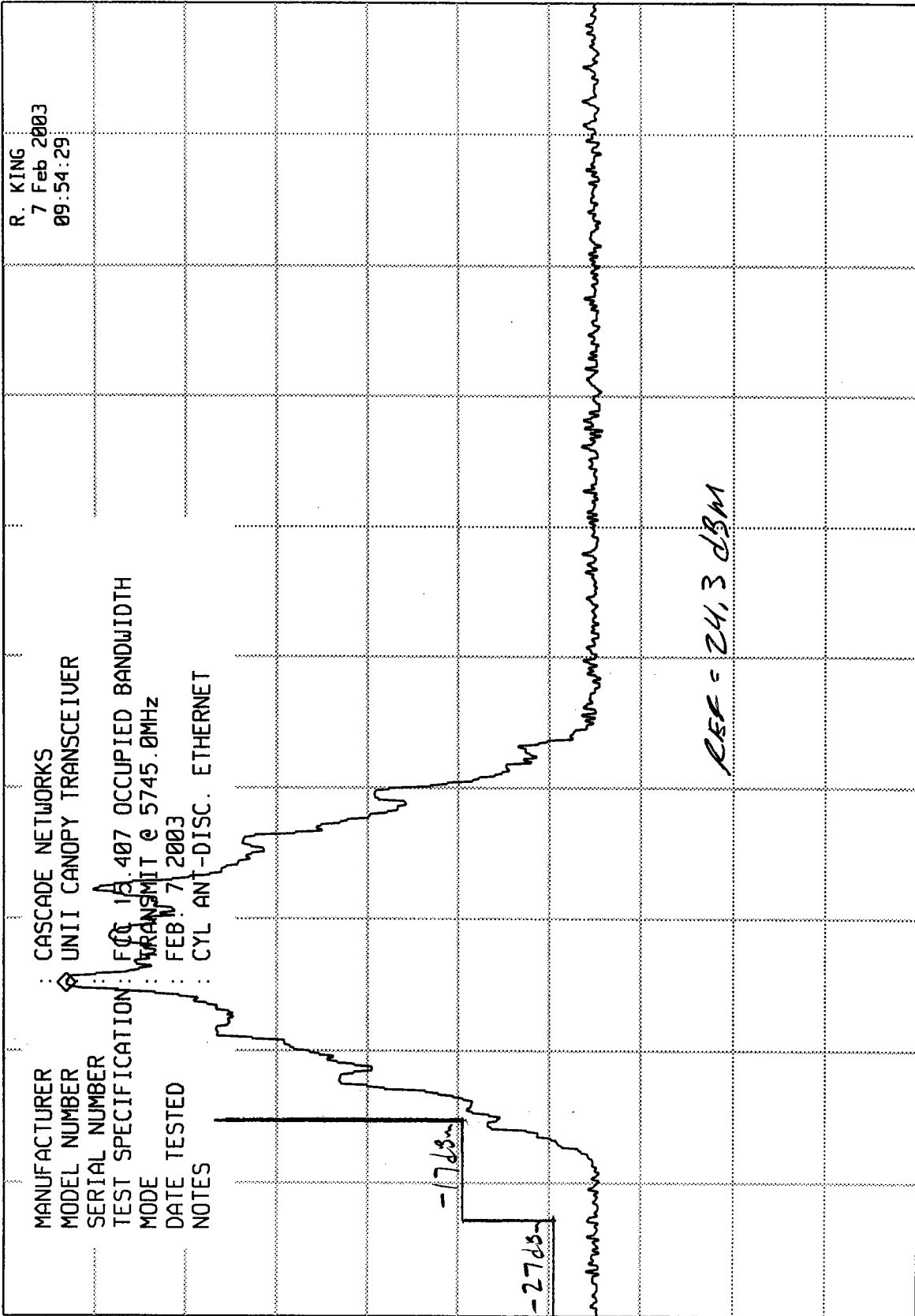
hp

10 dB/

OFFSET
-20.0
dB

REF 127.0 dBuV

ATTEN 30 dB



R. KING
7 Feb 2003
09:54:29

START 5.705 GHz

RES BW 1 MHz (i)

VBW 3 MHz

STOP 5.845 GHz

SWP 20.0 msec

ELITE ELECTRONIC ENGINEERING Inc.

MKR ^-10.1 MHz
16.30 dB

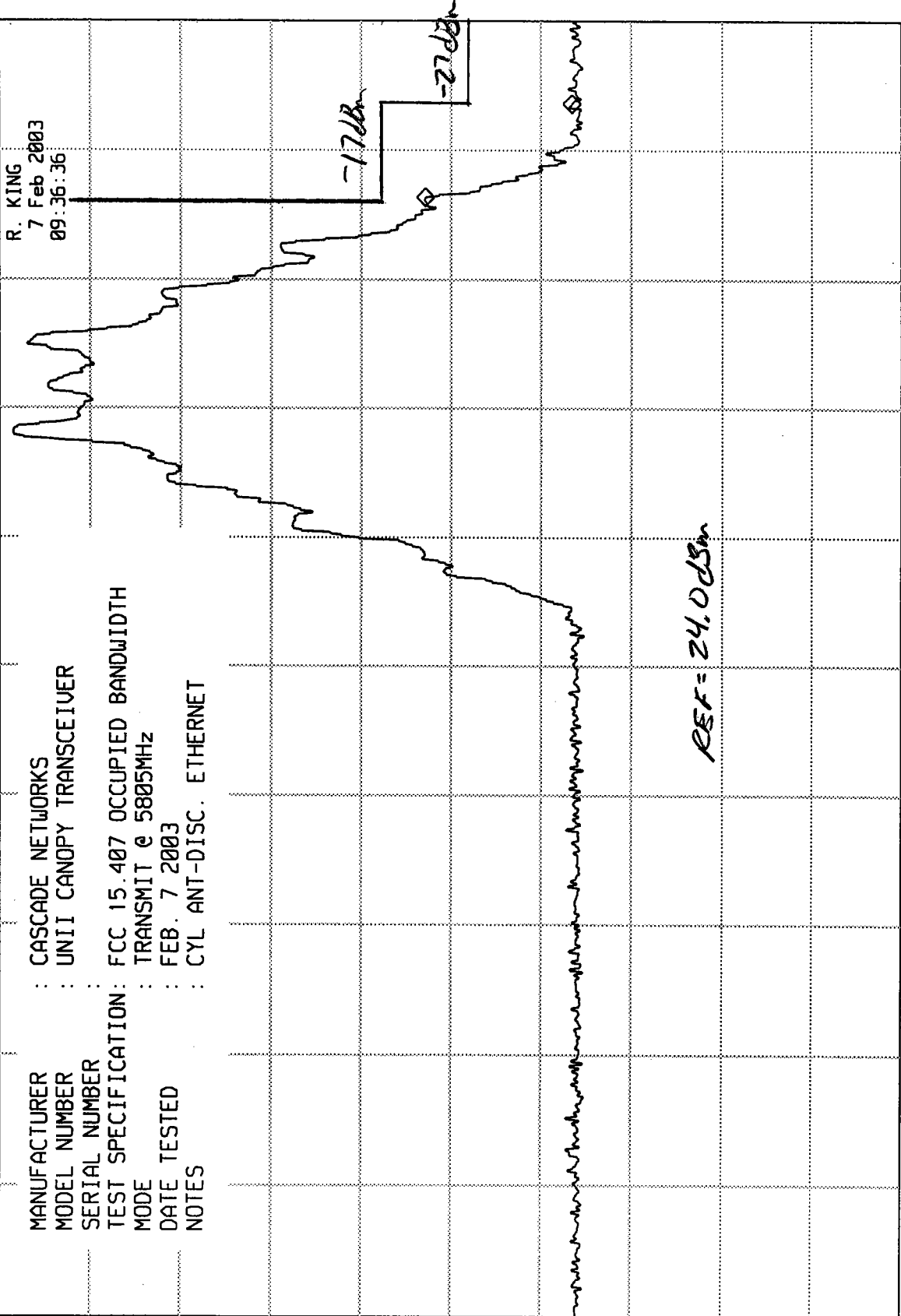
hp

10 dB/

ATTEN 20 dB

REF 10.0 dBm

MANUFACTURER : CASCADE NETWORKS
MODEL NUMBER : UNII CANOPY TRANSCEIVER
SERIAL NUMBER :
TEST SPECIFICATION: FCC 15.407 OCCUPIED BANDWIDTH
MODE : TRANSMIT @ 5805MHz
DATE TESTED : FEB. 7 2003
NOTES : CYL ANT-DISC. ETHERNET



START 5.705 GHz
RES BW 1 MHz (i)
STOP 5.845 GHz
SWP 20.0 msec
UBW 3 MHz

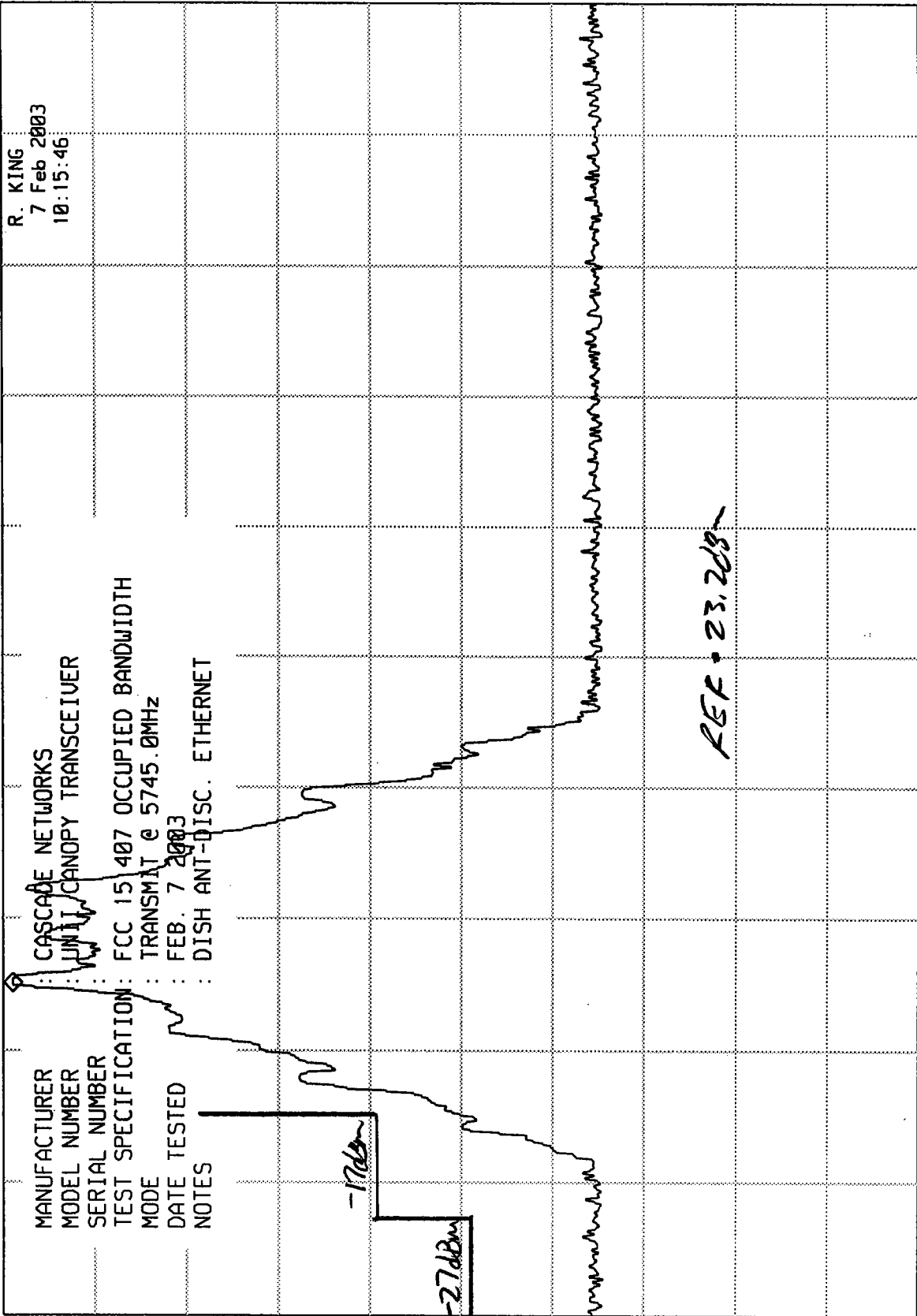
ELITE ELECTRONIC ENGINEERING Inc.

MKR 5.740 0 GHz
115.90 dBuV

hp

REF 117.0 dBuV

ATTEN 20 dB



10 dB/

START 5.705 GHz
RES BW 1 MHz(i)
STOP 5.845 GHz
SWP 20.0 msec
VBW 3 MHz

ELITE ELECTRONIC ENGINEERING Inc.

MKR 5.800 2 GHz
115.80 dBuV

hp

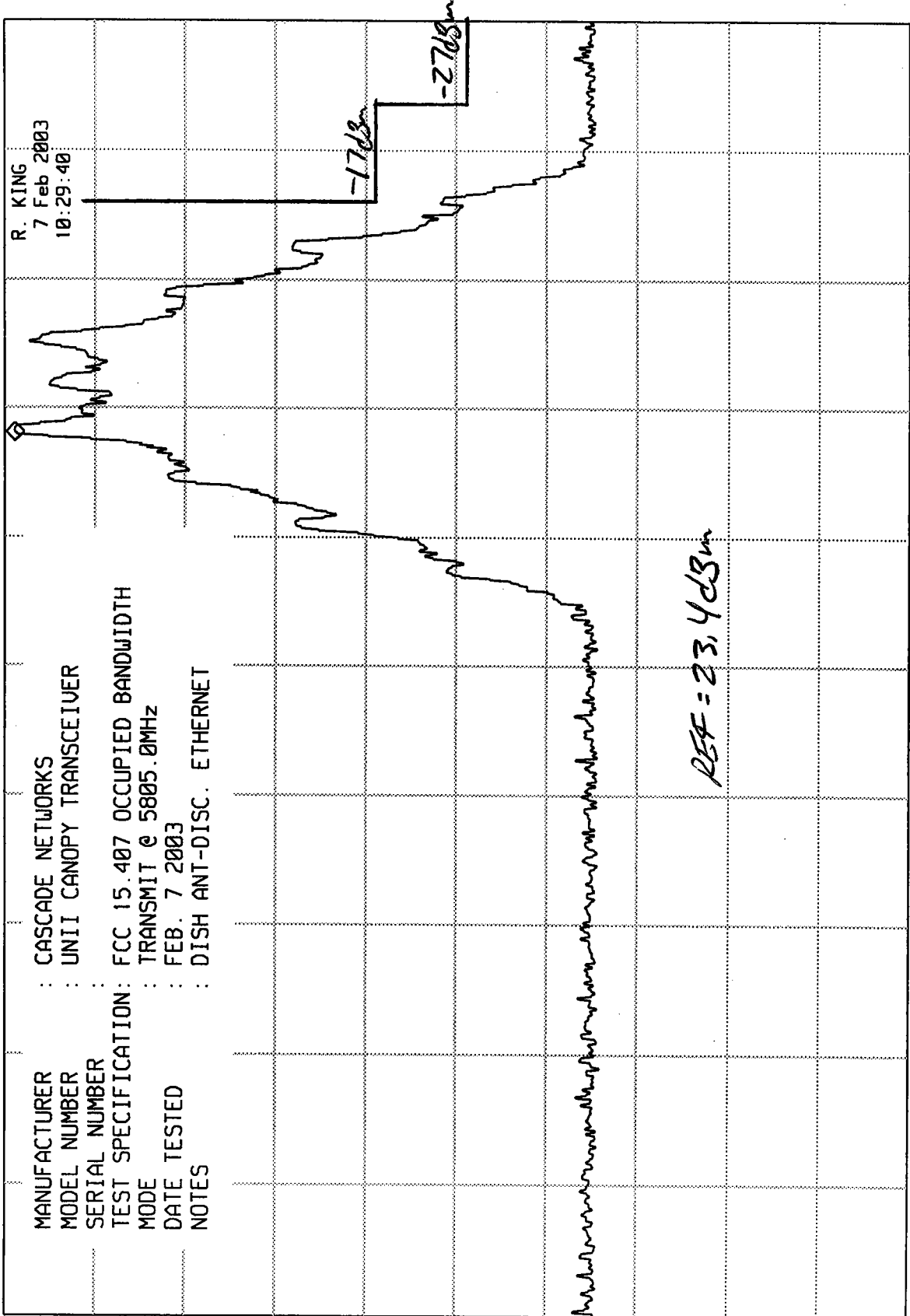
REF 117.0 dBuV

ATTEN 20 dB

10 dB/

MANUFACTURER : CASCADE NETWORKS
MODEL NUMBER : UNII CANOPY TRANSCIEVER
SERIAL NUMBER :
TEST SPECIFICATION: FCC 15.407 OCCUPIED BANDWIDTH
MODE : TRANSMIT @ 5805.0MHz
DATE TESTED : FEB. 7 2003
NOTES : DISH ANT-DISC. ETHERNET

R. KING
7 Feb 2003
10:29:40



START 5.705 GHz

RES BW 1 MHz(i)

VBW 3 MHz

STOP 5.845 GHz

SWP 20.0 msec

ELITE ELECTRONIC ENGINEERING Inc.

MKR ^-10.1 MHz
-14.80 dB

hp

10 dB/

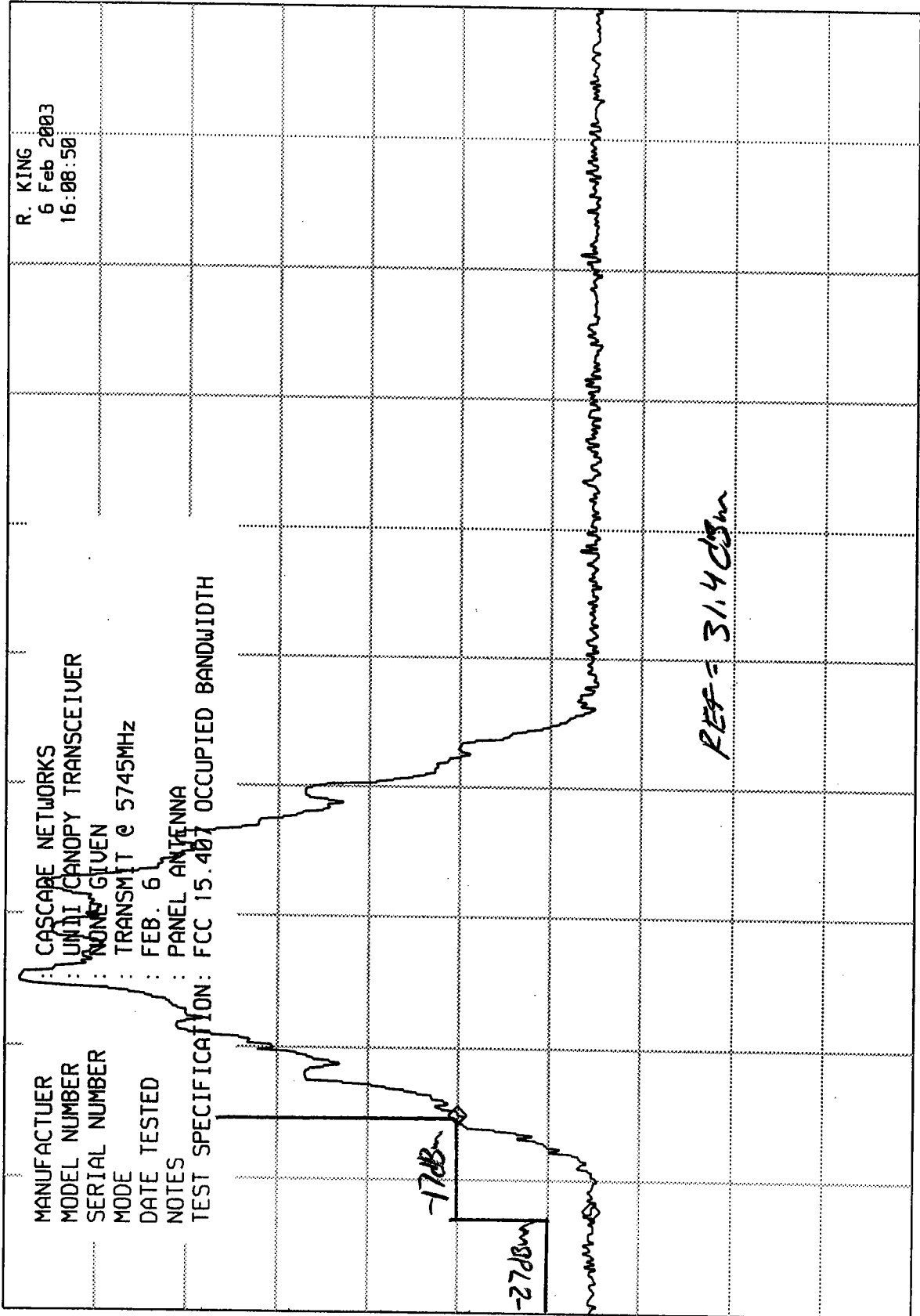
OFFSET

-20.0

dB

REF 127.0 dBuV

ATTEN 30 dB



START 5.705 GHz

RES BW 1 MHz (i)

VBW 3 MHz

STOP 5.845 GHz

SWP 20.0 msec

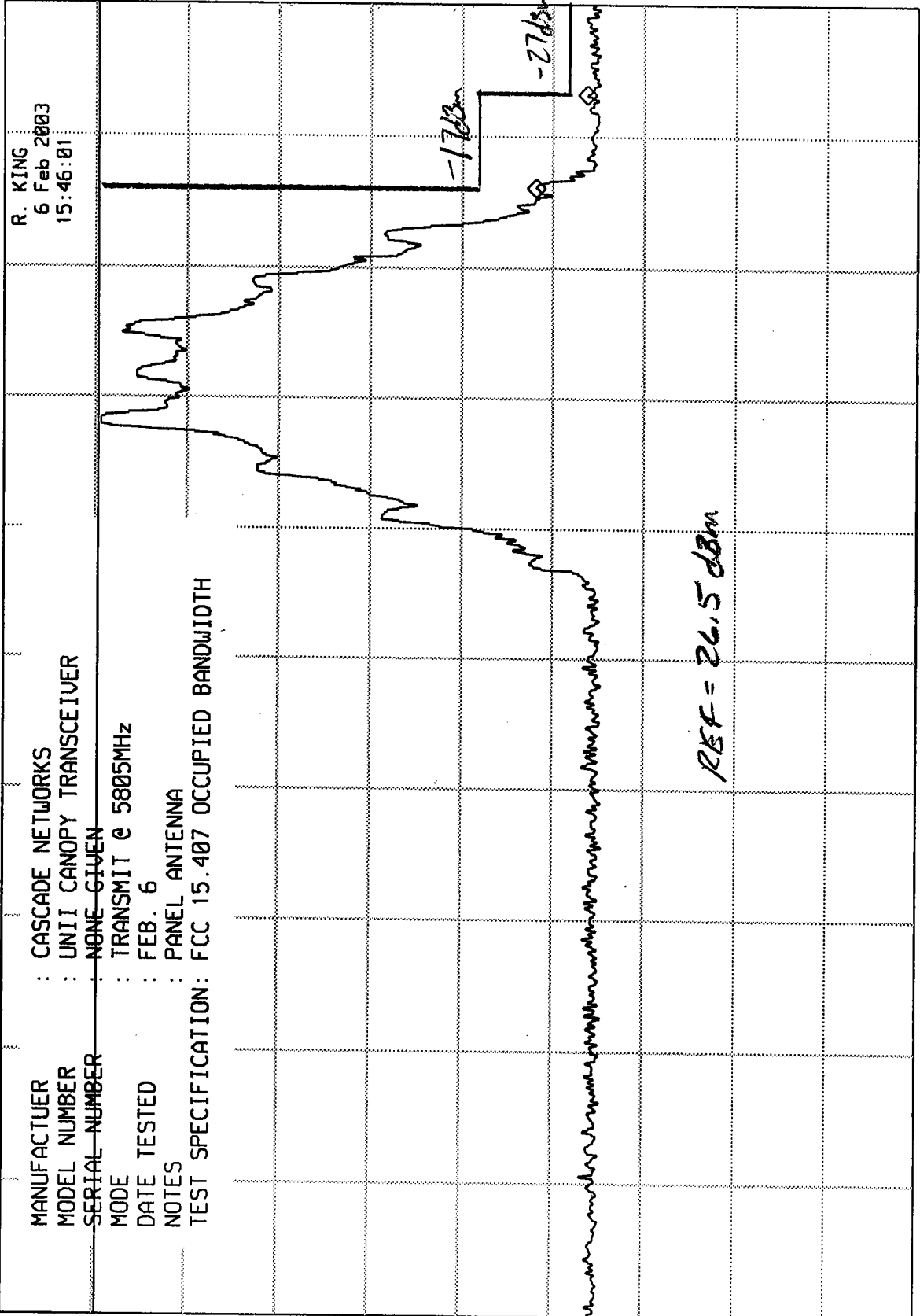
ELITE ELECTRONIC ENGINEERING Inc.

MKR ^-9.9 MHz
5.60 dB

hp

REF 10.0 dBm ATTN 20 dB

10 dB/



DL
-0.3
dBm

START 5.705 GHz
RES BW 1 MHz(i)
STOP 5.845 GHz
SWP 20.0 msec
VBW 3 MHz

ELITE ELECTRONIC ENGINEERING Inc.

MKR 5.739 9 GHz
106.70 dBuV

hp

10 dB/

OFFSET

-20.0

dB

REF 117.0 dBuV

ATTEN 20 dB

MANUFACTURER

MODEL NUMBER

SERIAL NUMBER

TEST SPECIFICATION

MODE

DATE TESTED

NOTES

: CASCADE NETWORKS

: UNII CANOPY TRANSCIEIVER

: FCC 15.407 OCCUPIED BANDWIDTH

: TRANSMIT @ 5745.0MHz

: 19 Mar 2003

: METAL BOX ETHERNET DISC.

R. KING

19 Mar 2003

11:45:15

-17dBm

-27dBm

REF = 21.0 dBm

START 5.705 GHz

RES BW 1 MHz (i)

VBW 3 MHz

STOP 5.845 GHz

SWP 20.0 msec

ETR 31804-01

ELITE ELECTRONIC ENGINEERING Inc.

MR 5.800 5 GHz
104.90 dBuV

hp

10 dB/

OFFSET

-20.0

dB

DL

105.0

dBuV

REF 107.0 dBuV

ATTEN 10 dB

MANUFACTURER

MODEL NUMBER

SERIAL NUMBER

TEST SPECIFICATION: FCC 15.407 OCCUPIED BANDWIDTH

MODE TRANSMIT @ 5805.0MHz

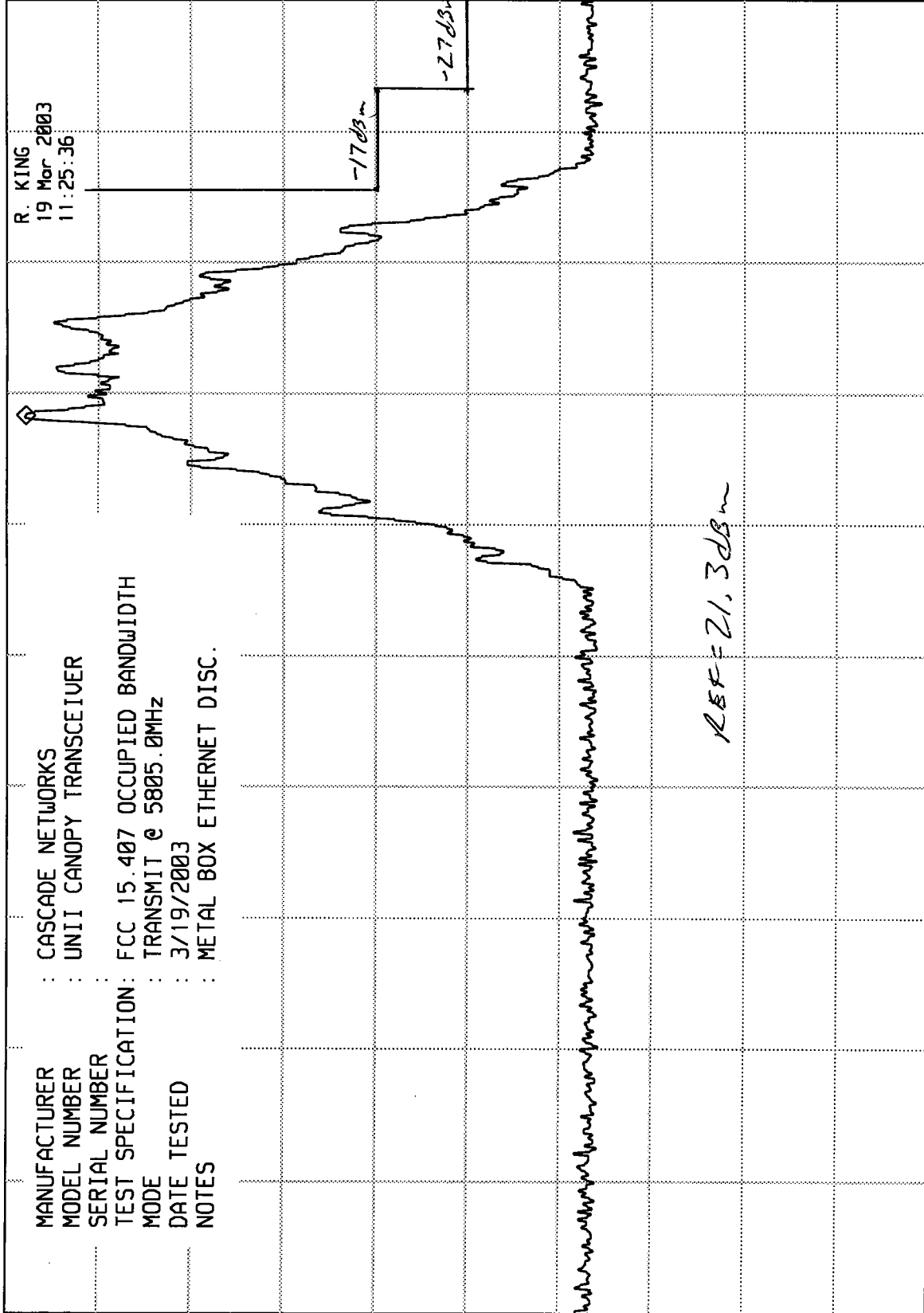
DATE TESTED 3/19/2003

NOTES : METAL BOX ETHERNET DISC.

: CASCADE NETWORKS

: UNII CANOPY TRANSCIEIVER

R. KING
19 Mar 2003
11:25:36



START 5.705 GHz

RES BW 1 MHz (i)

VBW 3 MHz

STOP 5.845 GHz

SUP 20.0 msec

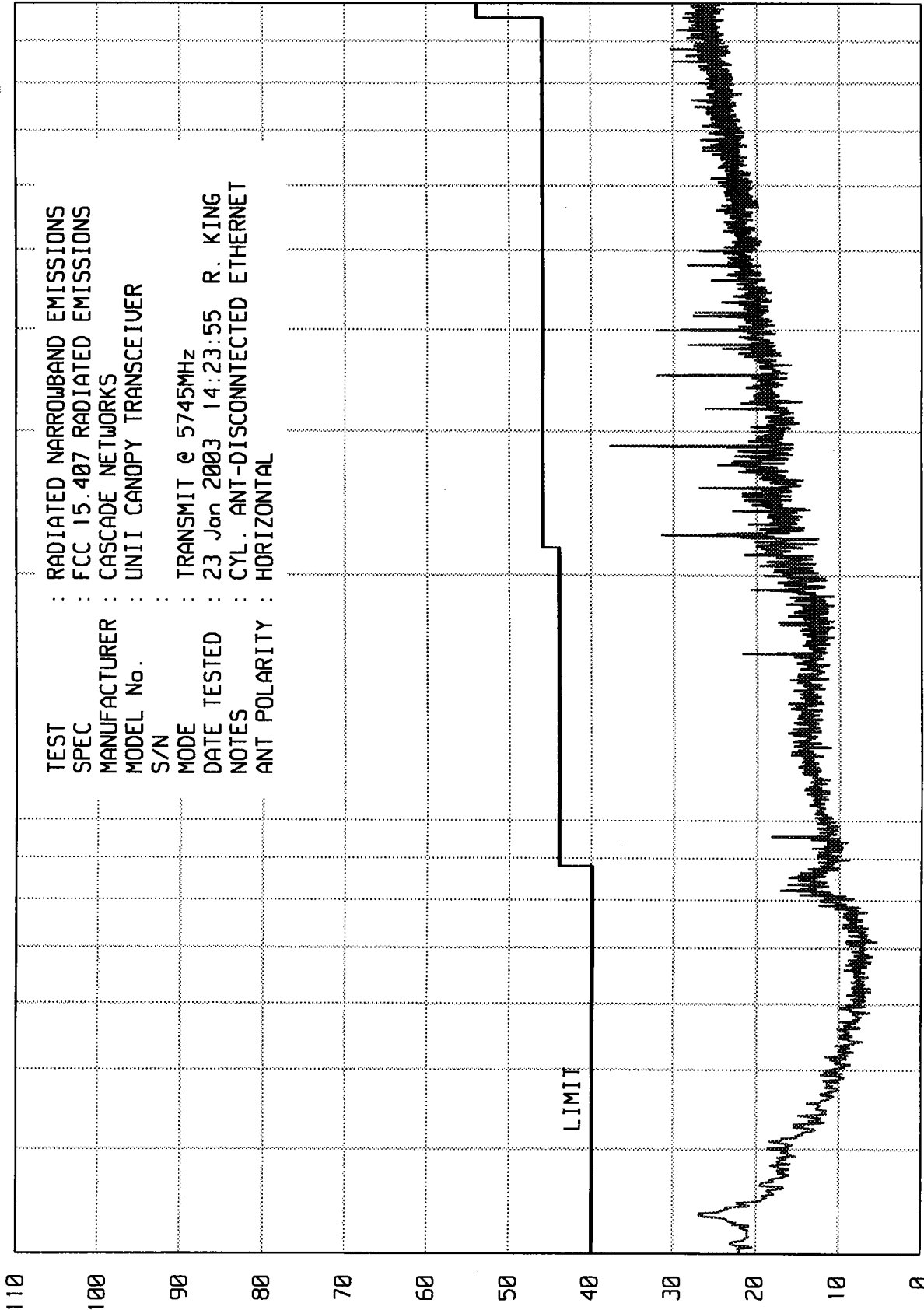
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIU_EM RUN RUN 1

WK00 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.407 RADIATED EMISSIONS
MANUFACTURER : CASCADE NETWORKS
MODEL No. : UNII CANOPY TRANSCIEVER
S/N :
MODE : TRANSMIT @ 5745MHz
DATE TESTED : 23 Jan 2003 14:23:55 R. KING
NOTES : CYL. ANT-DISCONNECTED ETHERNET
ANT POLARITY : HORIZONTAL



RADIATED NARROWBAND EMISSIONS - dBu/m

Page 21 of 68

START = 30

FREQUENCY - MHz

STOP = 1000

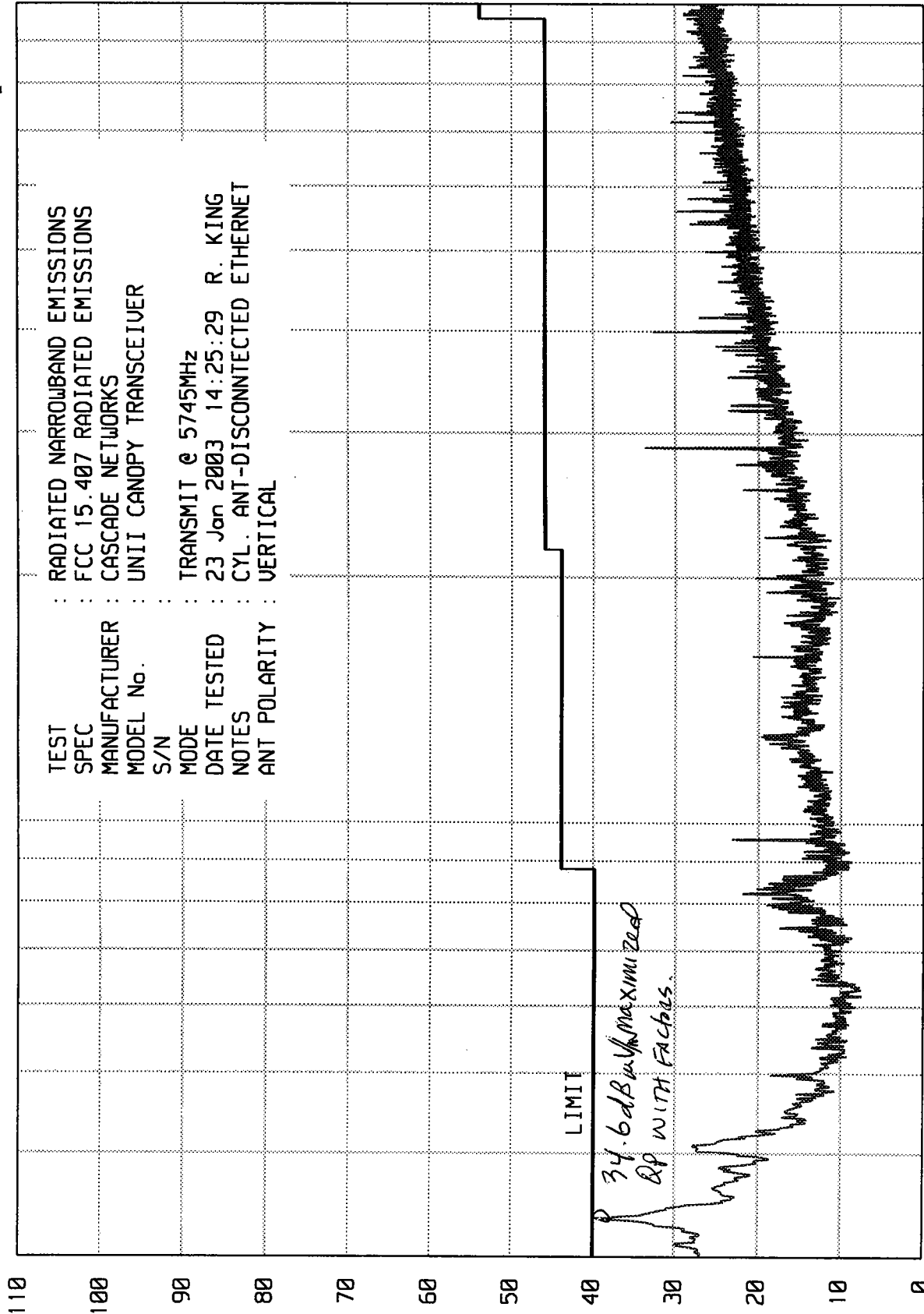
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIV_EM RUN RUN 1

UKA00 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.407 RADIATED EMISSIONS
MANUFACTURER : CASCADE NETWORKS
MODEL No. : UNII CANOPY TRANSCEIVER
S/N :
MODE : TRANSMIT @ 5745MHz
DATE TESTED : 23 Jan 2003 14:25:29 R. KING
NOTES : CYL. ANT-DISCONNECTED ETHERNET
ANT POLARITY : VERTICAL



RADIATED NARROWBAND EMISSIONS - dBu/3

START = 30

FREQUENCY - MHz

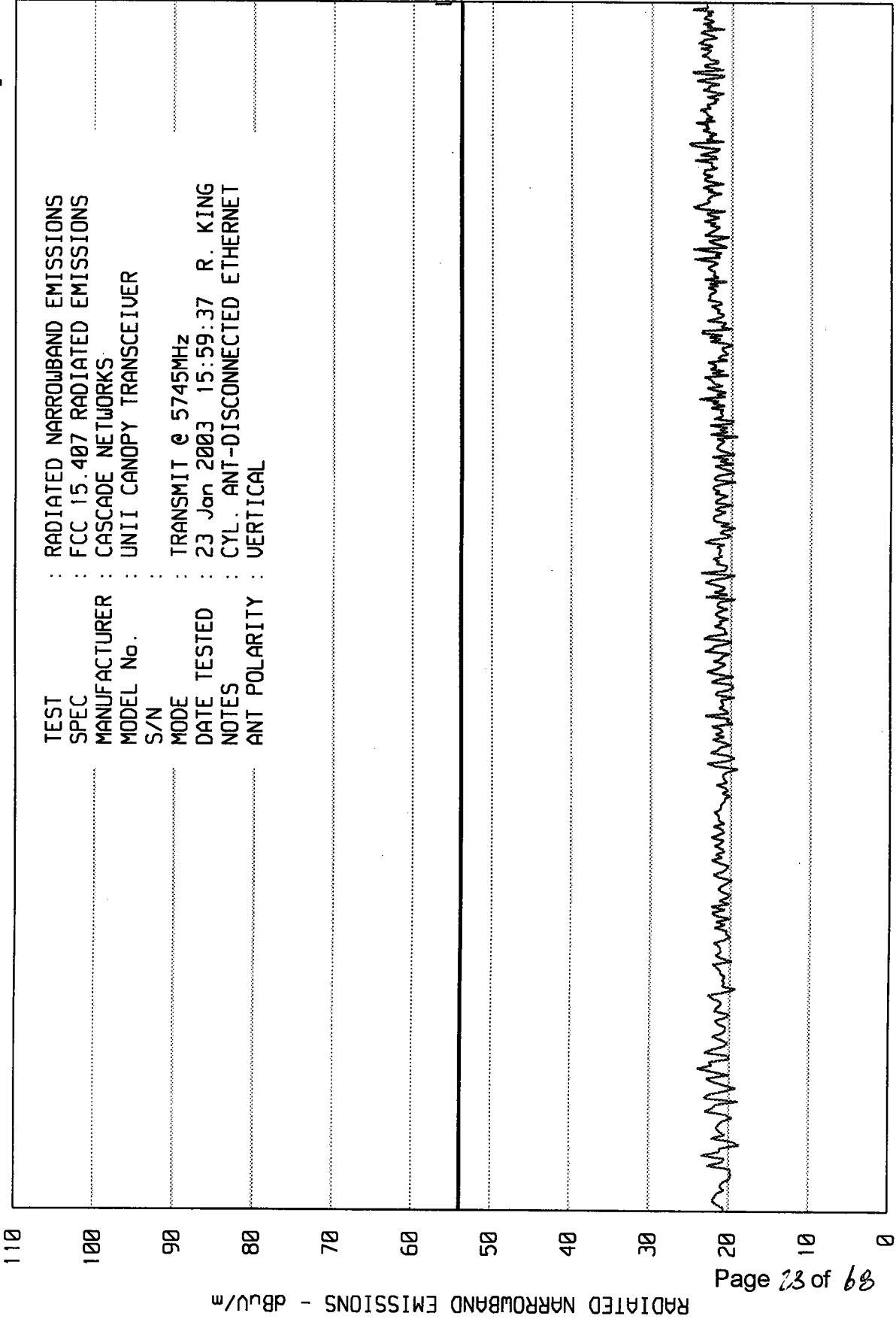
100

STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIU_EM RUN RUN 3

WKAB 11/15/02



STOP = 2000

FREQUENCY - MHz

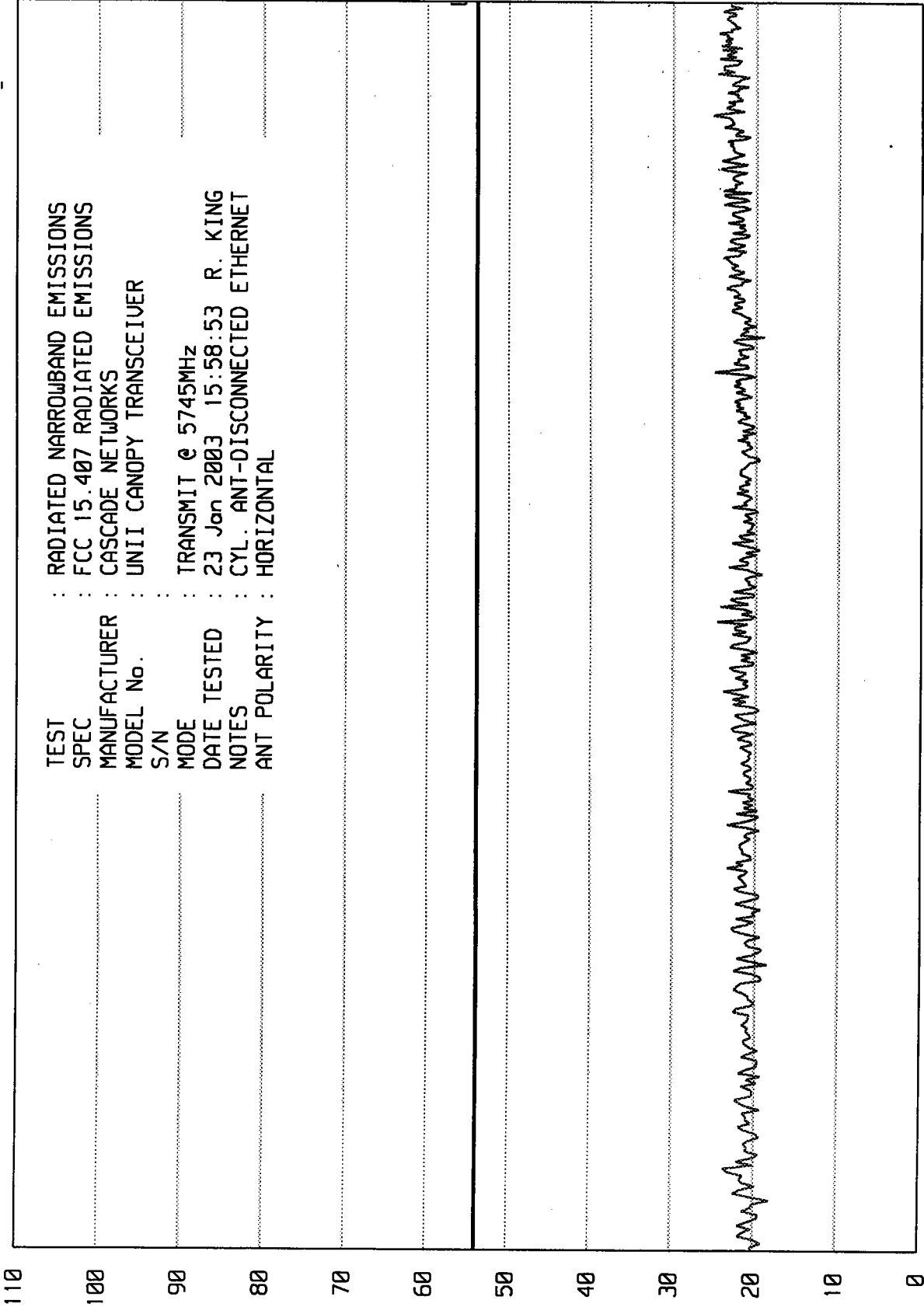
START = 1000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 3

UKA00 11/15/02



RADIATED NARROWBAND EMISSIONS - dBuV/m

Page 27 of 68

START = 1000

FREQUENCY - MHz

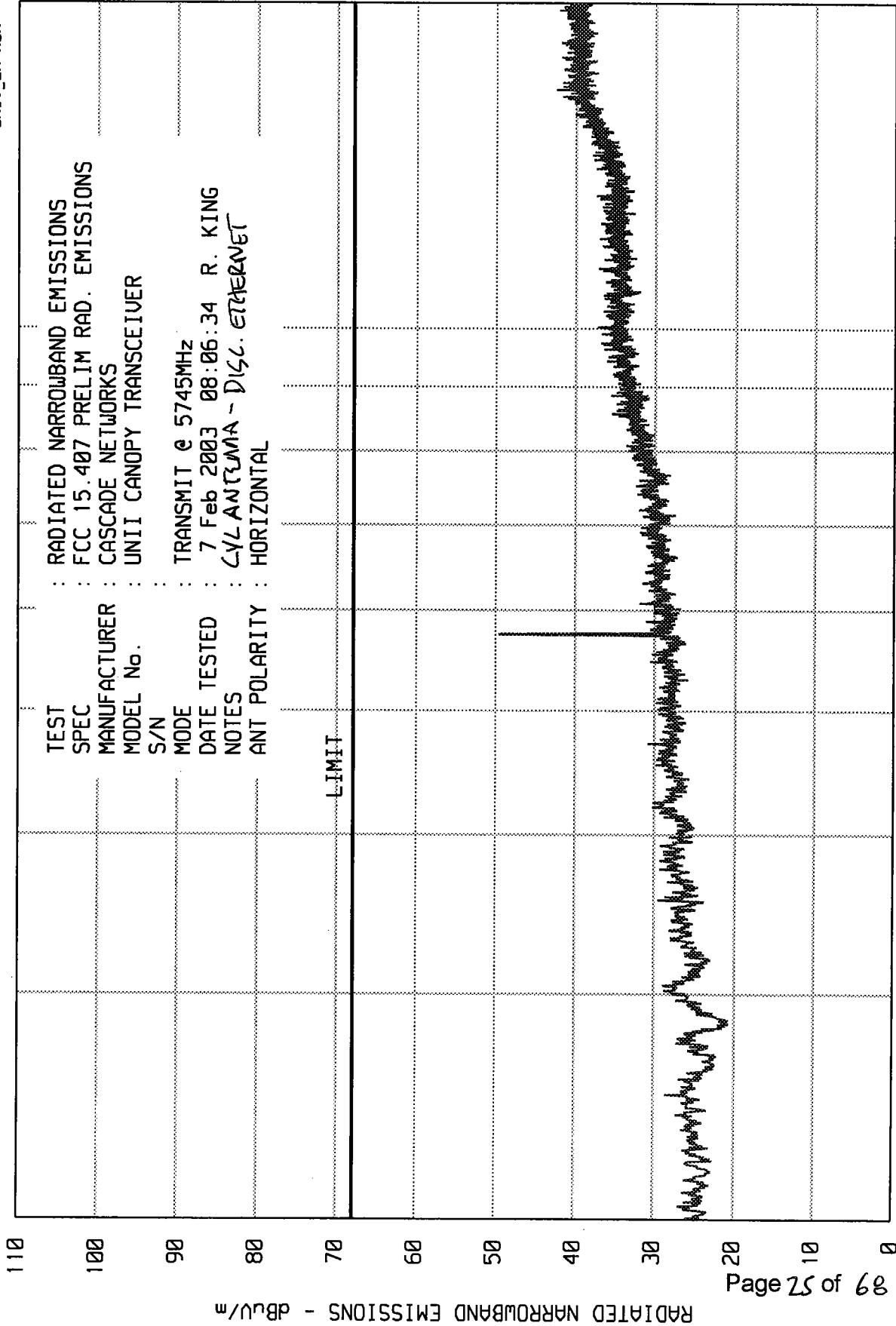
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 1

WKAB 11/15/02



Page 25 of 68

START = 2000

10000

FREQUENCY - MHz

STOP = 18000

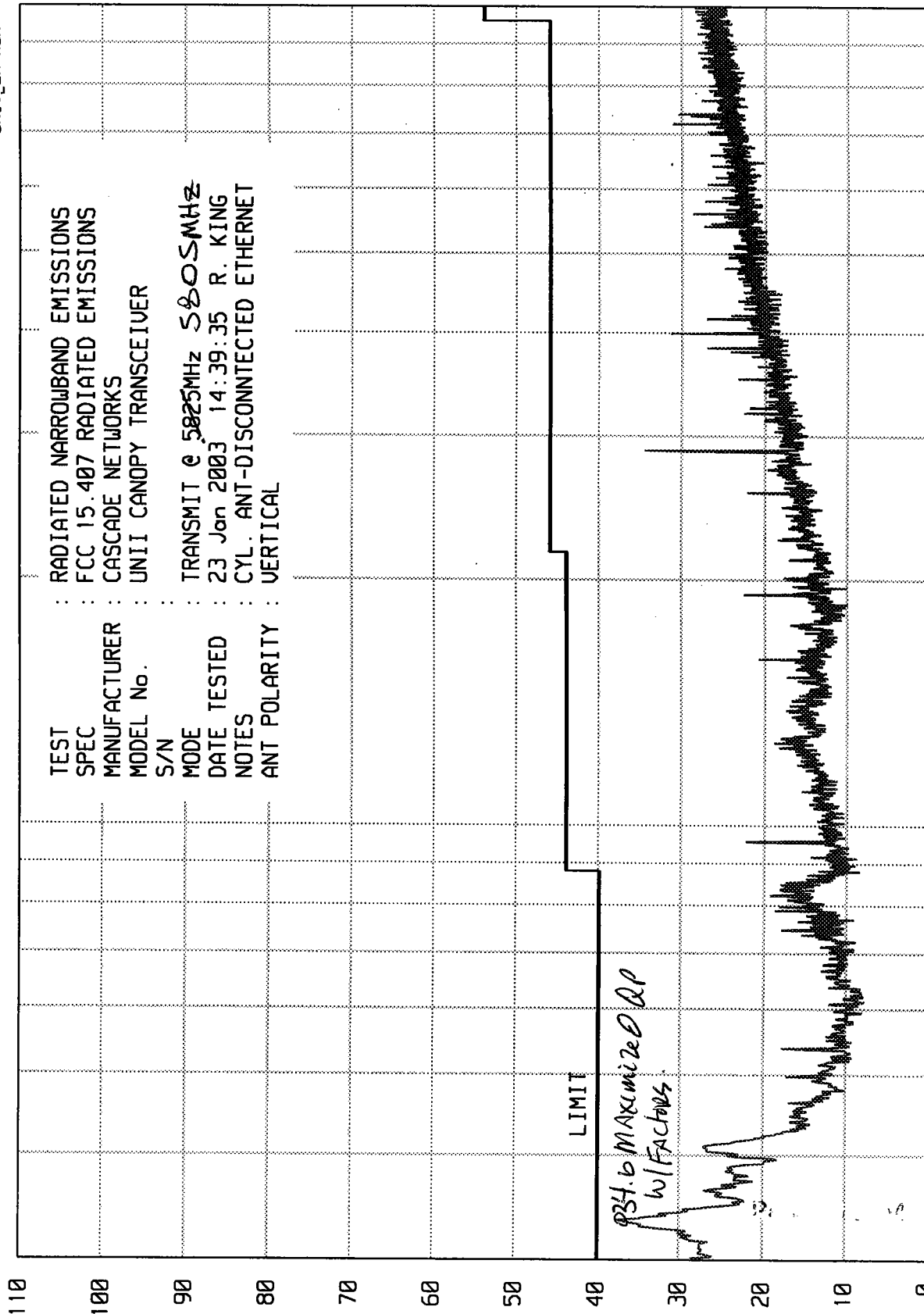
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIVEM RUN RUN 1

UKA0 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 5825MHz 5805MHz
 DATE TESTED : 23 Jan 2003 14:39:35 R. KING
 NOTES : CYL. ANT-DISCONNECTED ETHERNET
 ANT POLARITY : VERTICAL



RADIATED NARROWBAND EMISSIONS - dBu/m

Page 26 of 68

START = 30

FREQUENCY - MHz

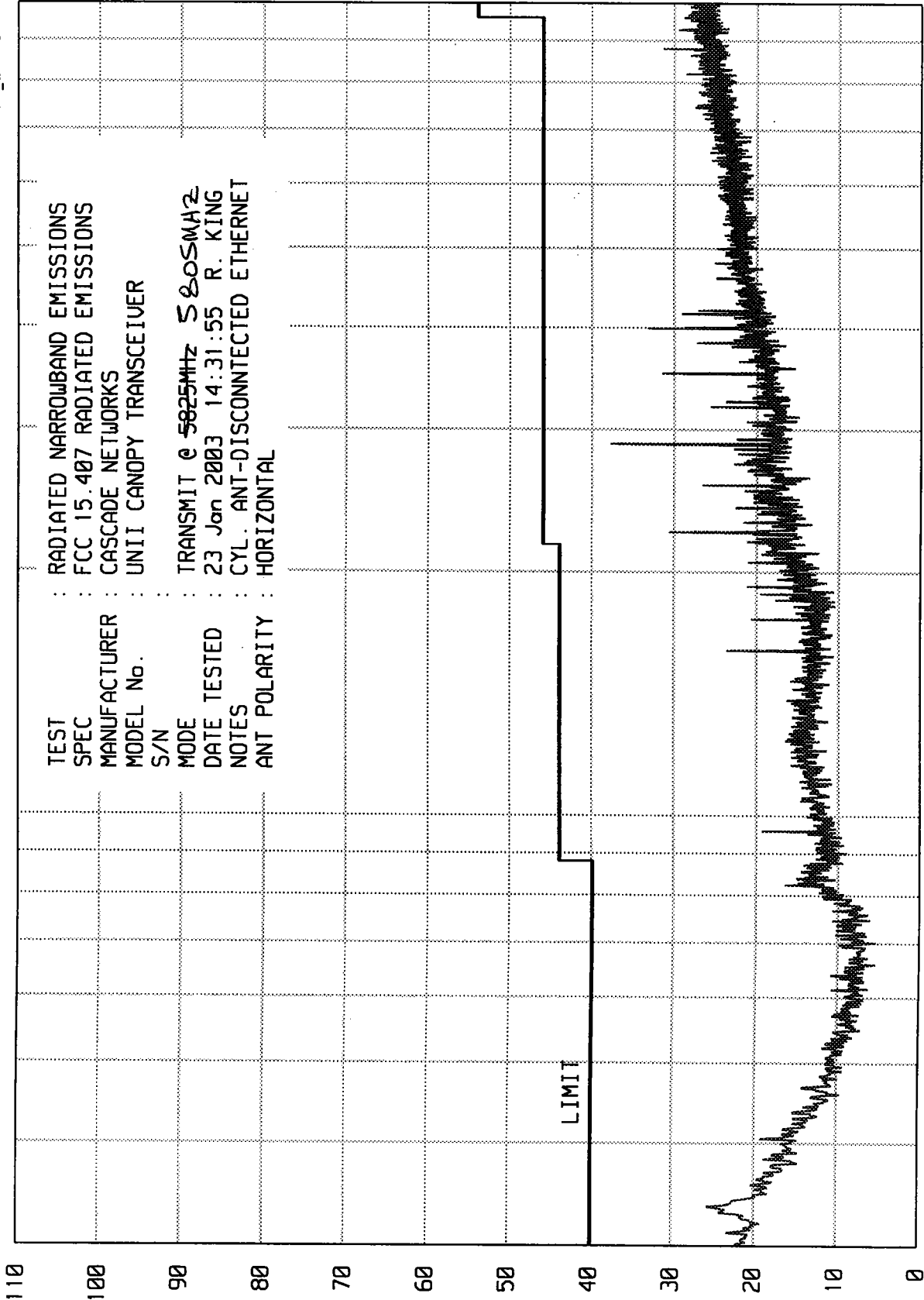
STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIT EM RUN RUN 1

UKA00 11/15/02



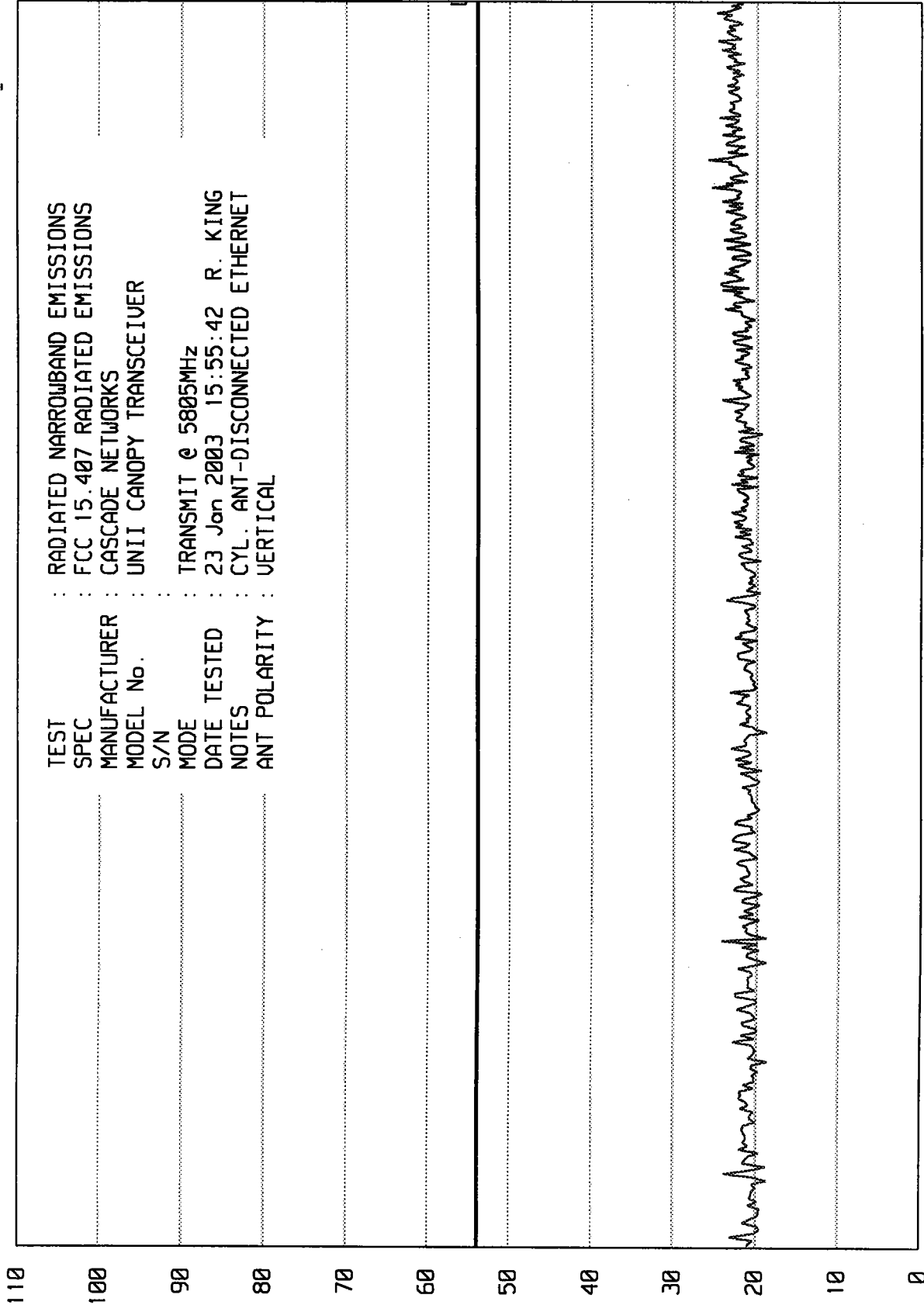
TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 5825MHz S80SMAH2
 DATE TESTED : 23 Jan 2003 14:31:55 R. KING
 NOTES : CYL. ANT-DISCONNECTED ETHERNET
 ANT POLARITY : HORIZONTAL

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITU_EM RUN RUN 3

UKA0 11/15/02



TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 5805MHz
 DATE TESTED : 23 Jan 2003 15:55:42 R. KING
 NOTES : CYL. ANT-DISCONNECTED ETHERNET
 ANT POLARITY : VERTICAL

RADIATED NARROWBAND EMISSIONS - dBuV/m

Page 28 of 68

START = 1000

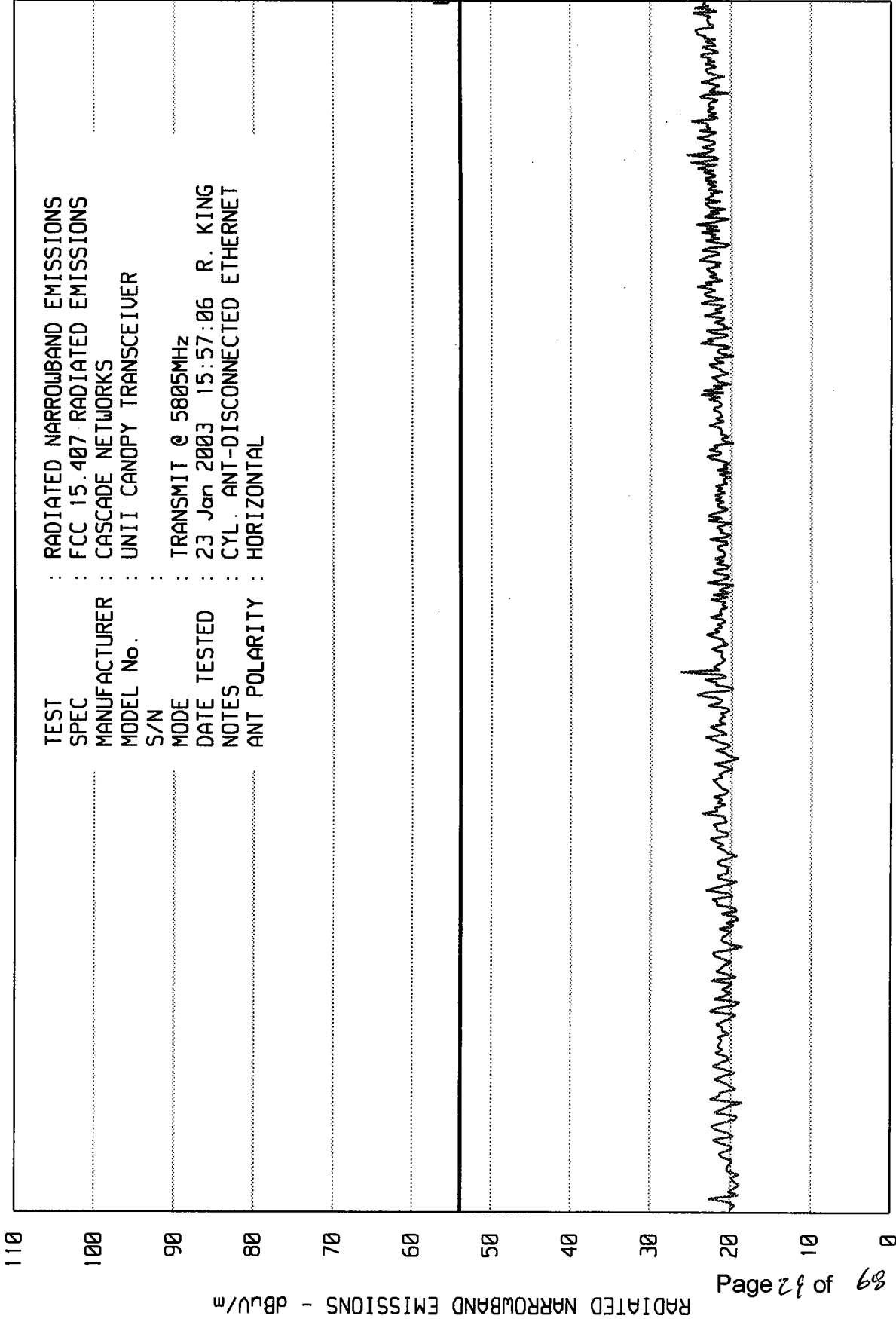
FREQUENCY - MHz

STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIU_EM RUN RUN 3

UKA0 11/15/02



STOP = 2000

FREQUENCY - MHz

START = 1000

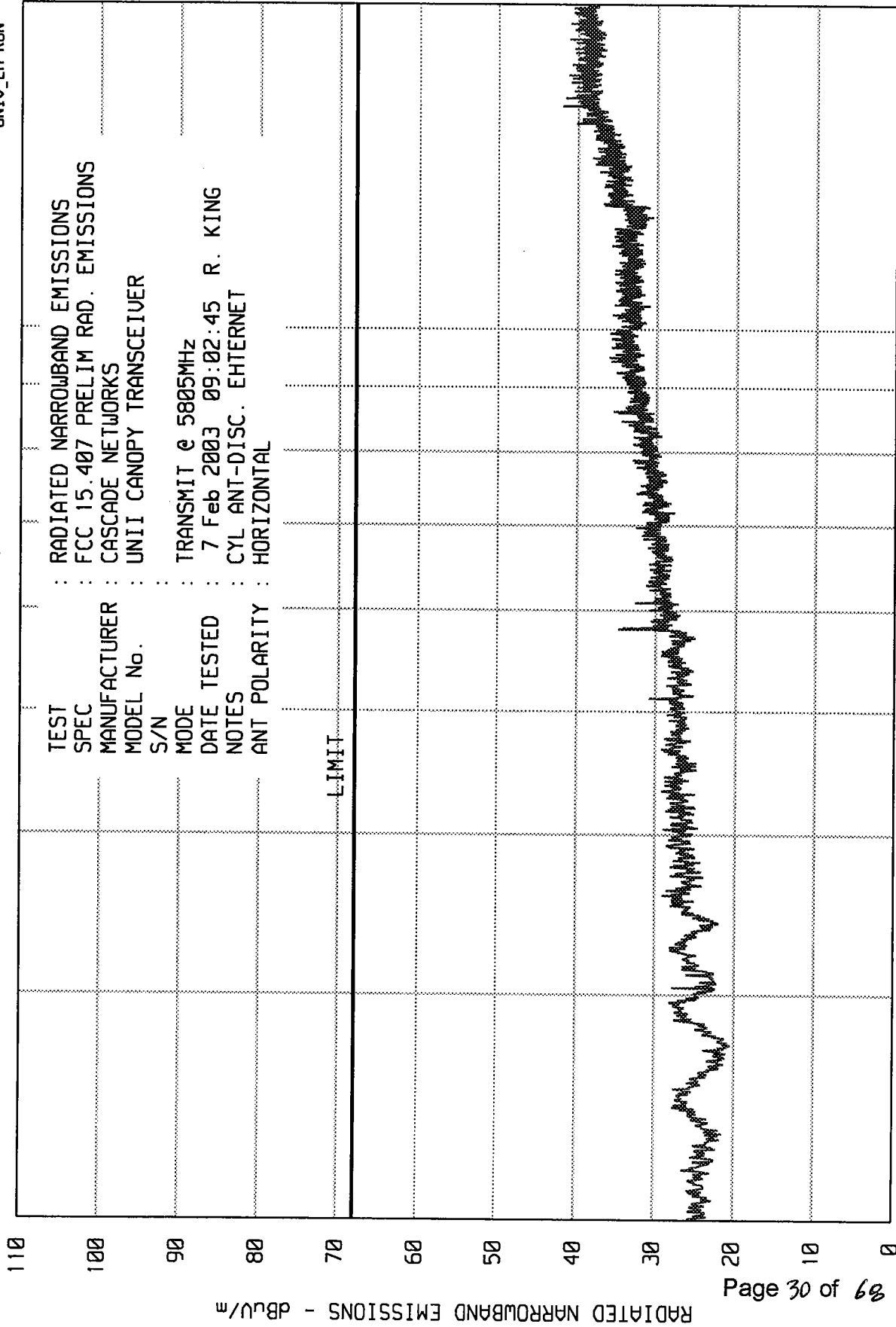
RADIATED NARROWBAND EMISSIONS - dBu/m

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA0 11/15/02

UNITV_EM RUN RUN 1



START = 2000

FREQUENCY - MHz

10000

STOP = 18000

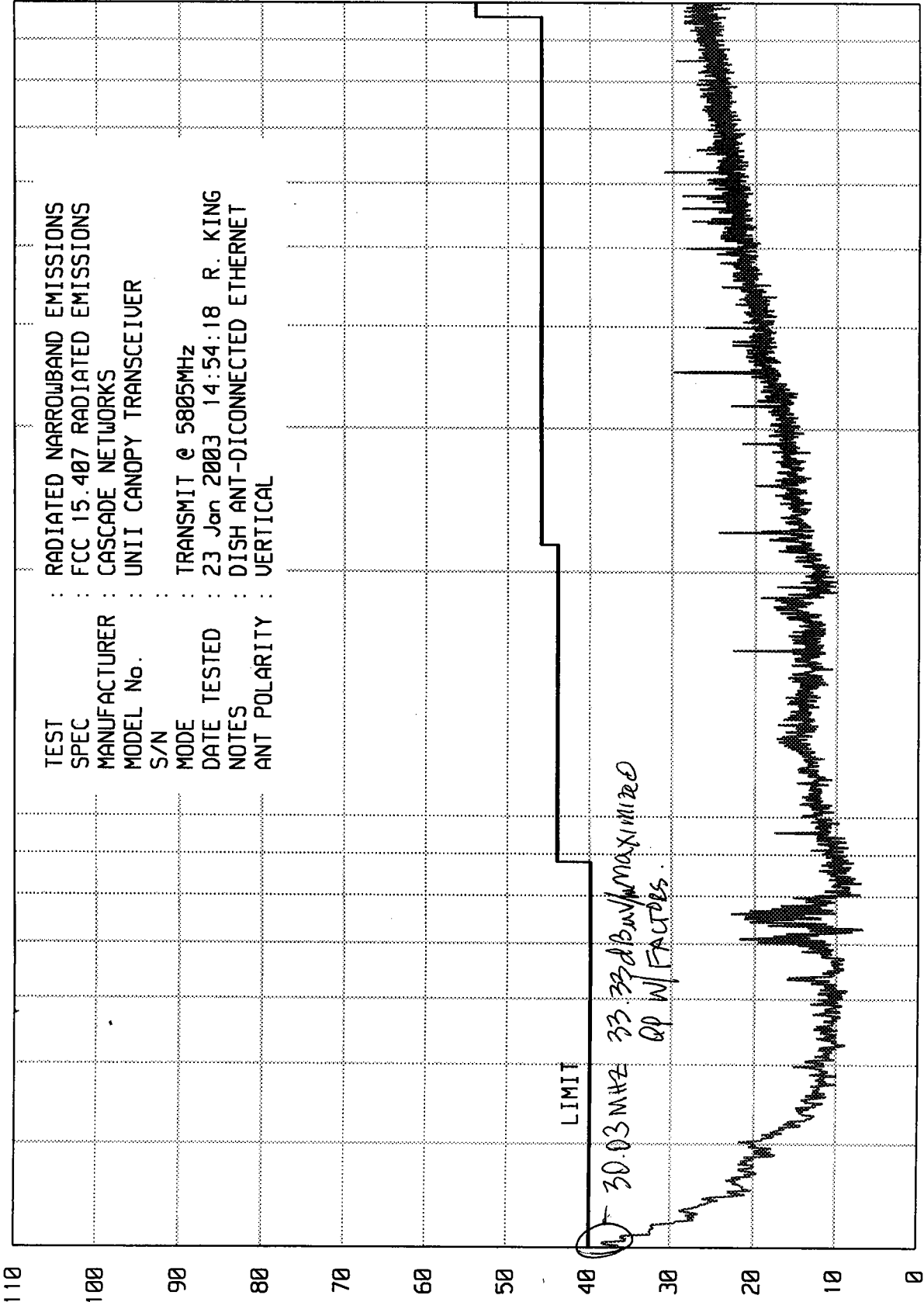
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIV_EM RUN RUN 1

UKA0 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 5805MHz
 DATE TESTED : 23 Jan 2003 14:54:18 R. KING
 NOTES : DISH ANT-DISCONNECTED ETHERNET
 ANT POLARITY : VERTICAL



RADIATED NARROWBAND EMISSIONS - dBu/m

Page 3/ of 68

START = 30

FREQUENCY - MHz

STOP = 1000

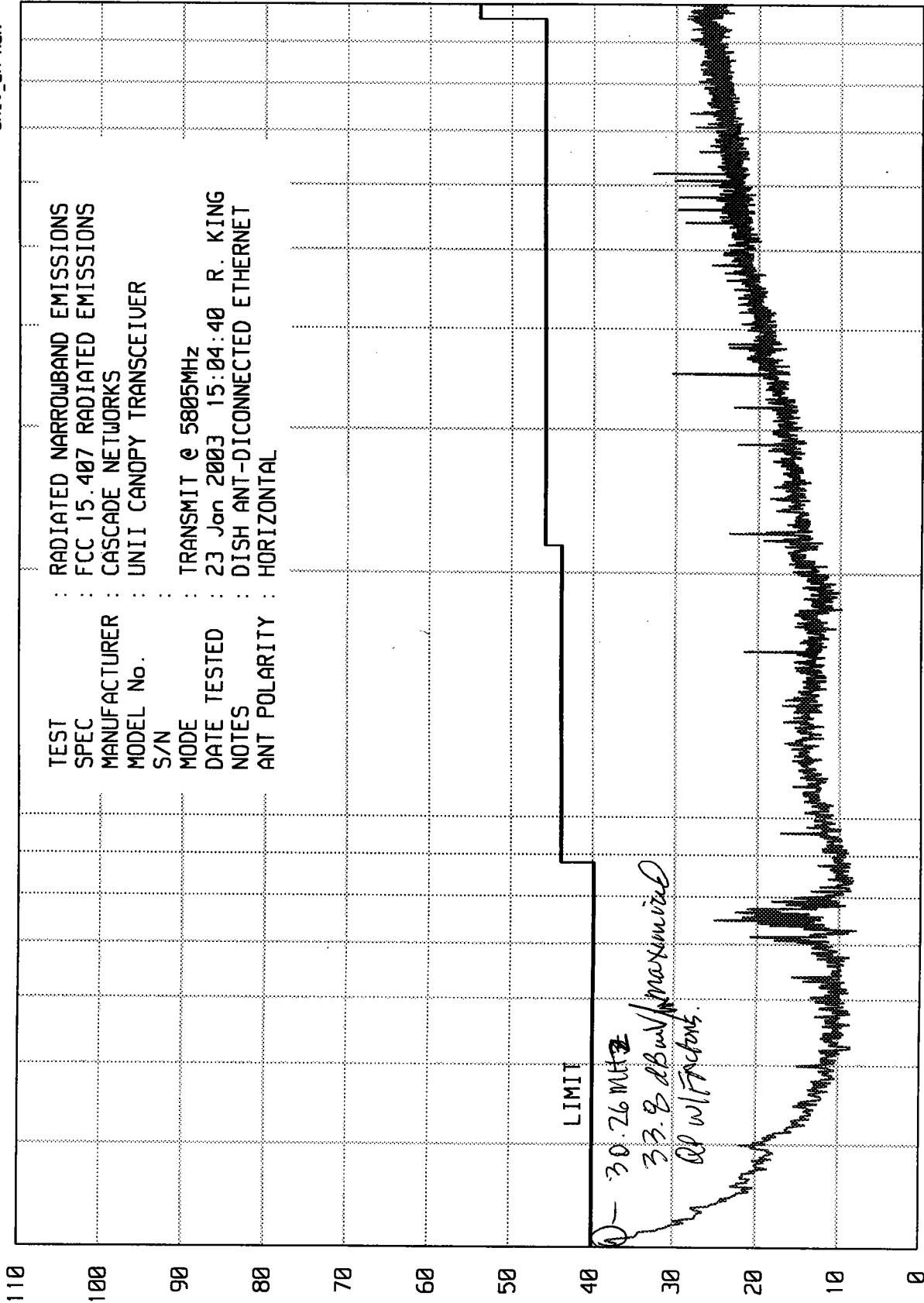
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIT EM RUN RUN 1

UKA00 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 5805MHz
 DATE TESTED : 23 Jan 2003 15:04:40 R. KING
 NOTES : DISH ANT-DISCONNECTED ETHERNET
 ANT POLARITY : HORIZONTAL



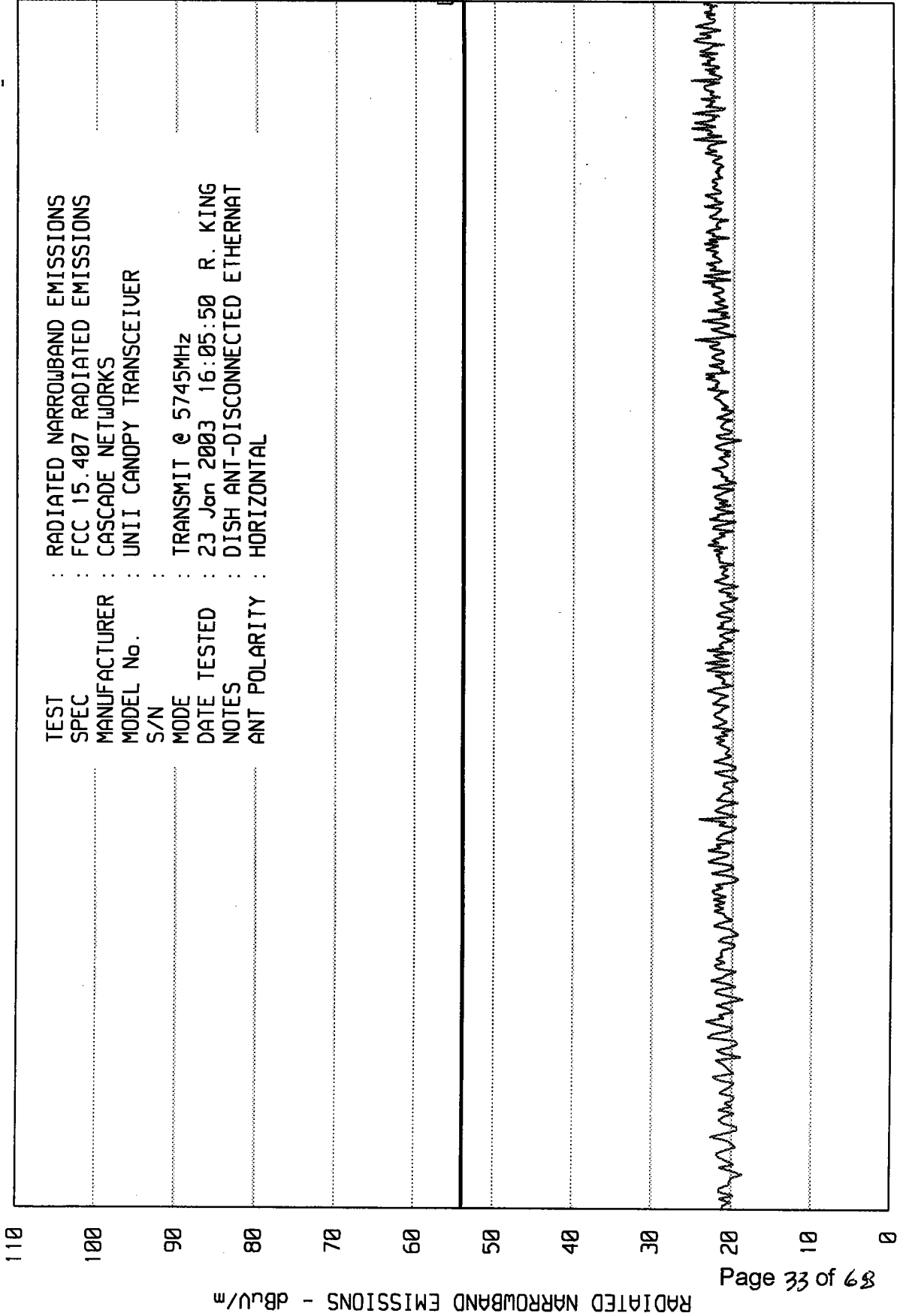
START = 30

STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIU_EM RUN RUN 3

WKA0 11/15/02



TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.407 RADIATED EMISSIONS
MANUFACTURER : CASCADE NETWORKS
MODEL No. : UNII CANOPY TRANSCEIVER
S/N :
MODE : TRANSMIT @ 5745MHz
DATE TESTED : 23 Jan 2003 16:05:50 R. KING
NOTES : DISH ANT-DISCONNECTED ETHERNAT
ANT POLARITY : HORIZONTAL

START = 1000

FREQUENCY - MHz

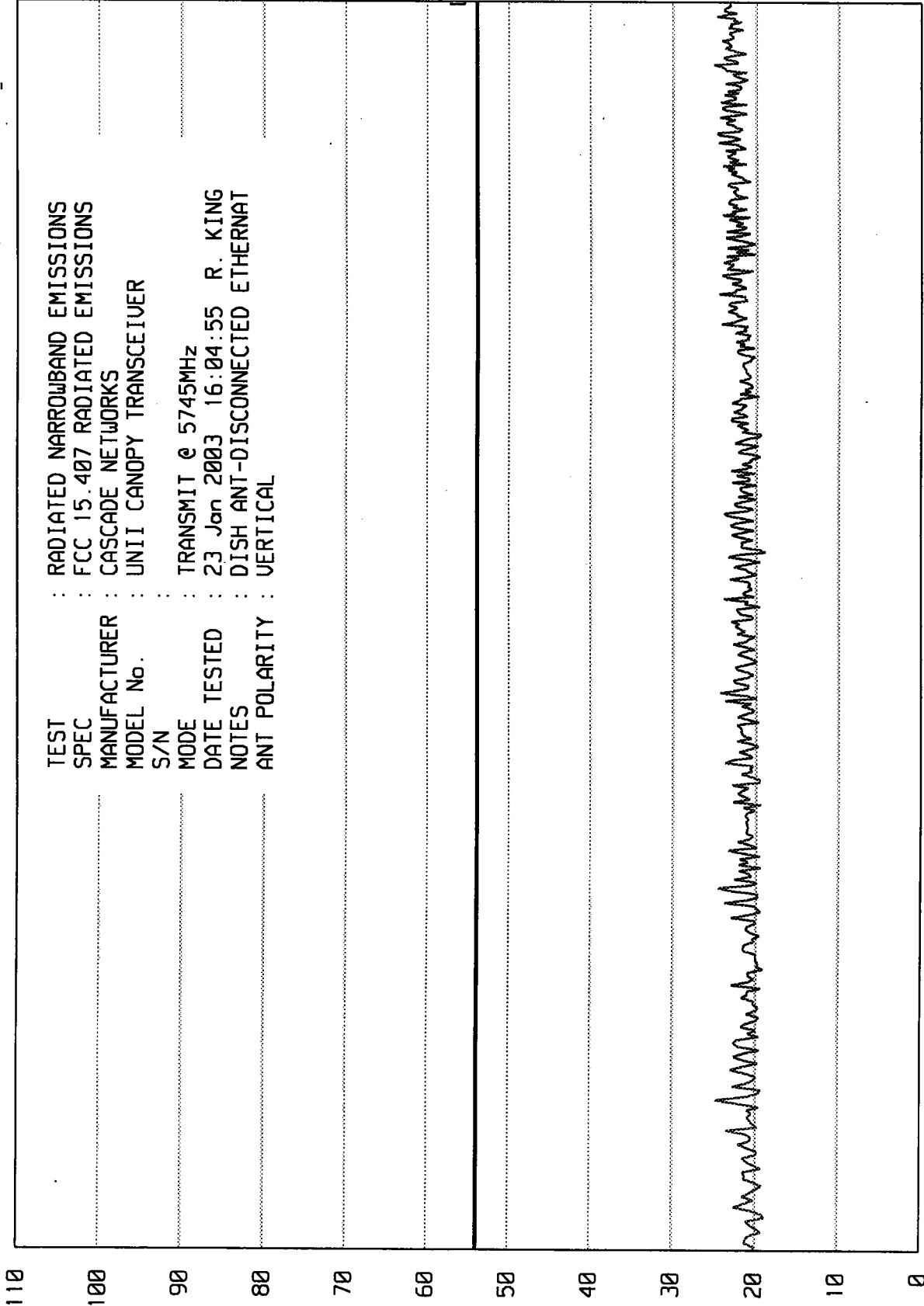
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 3

WKA0 11/15/02



RADIATED NARROWBAND EMISSIONS - dBuV/m

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START = 1000

FREQUENCY - MHz

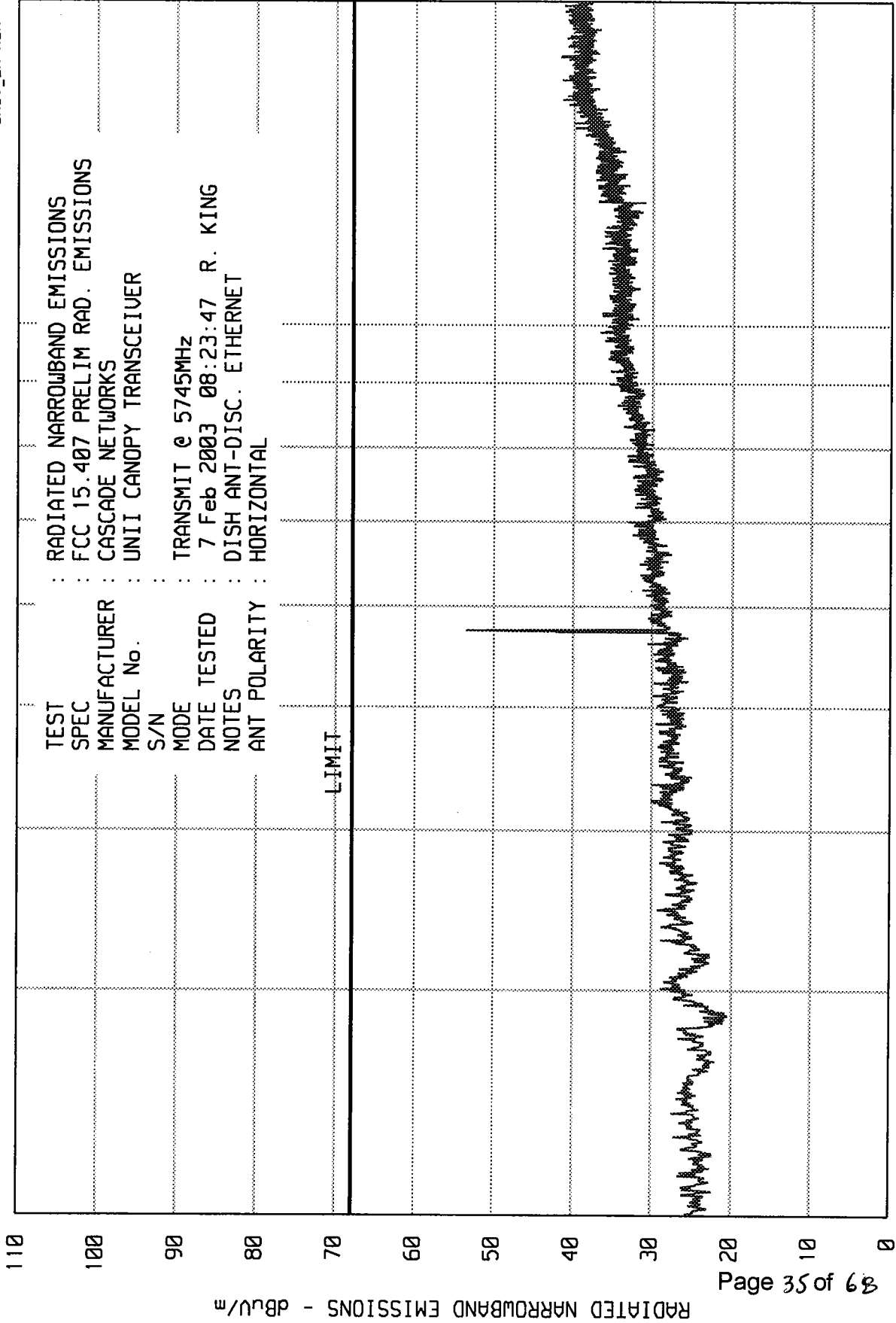
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

WKA0 11/15/02

UNITV_EM RUN RUN 1



START = 2000

FREQUENCY - MHz

10000

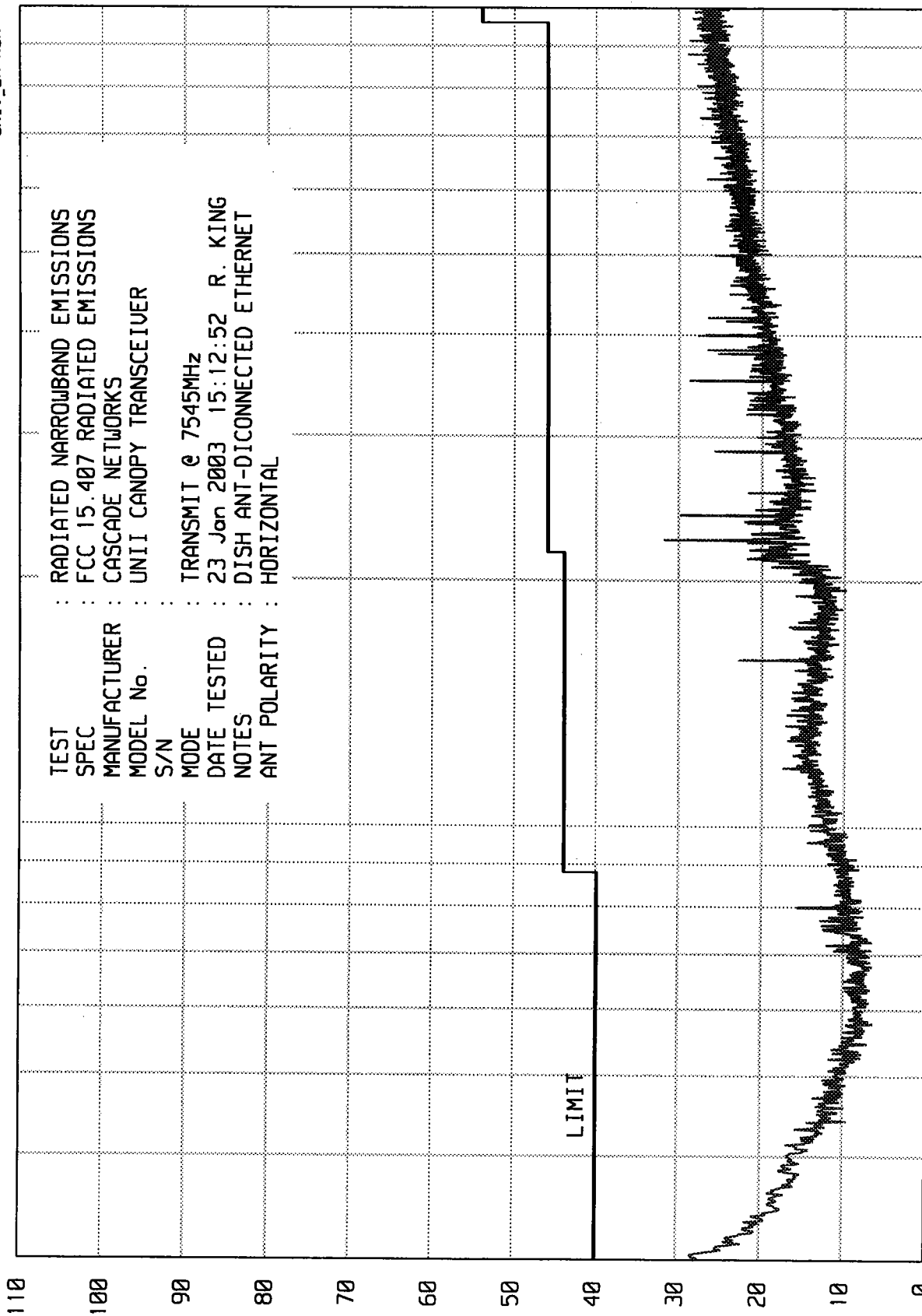
STOP = 18000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 1

UKA0 11/15/02



RADIATED NARROWBAND EMISSIONS - dBuV/m

Page 2 of 6

START = 30

FREQUENCY - MHz

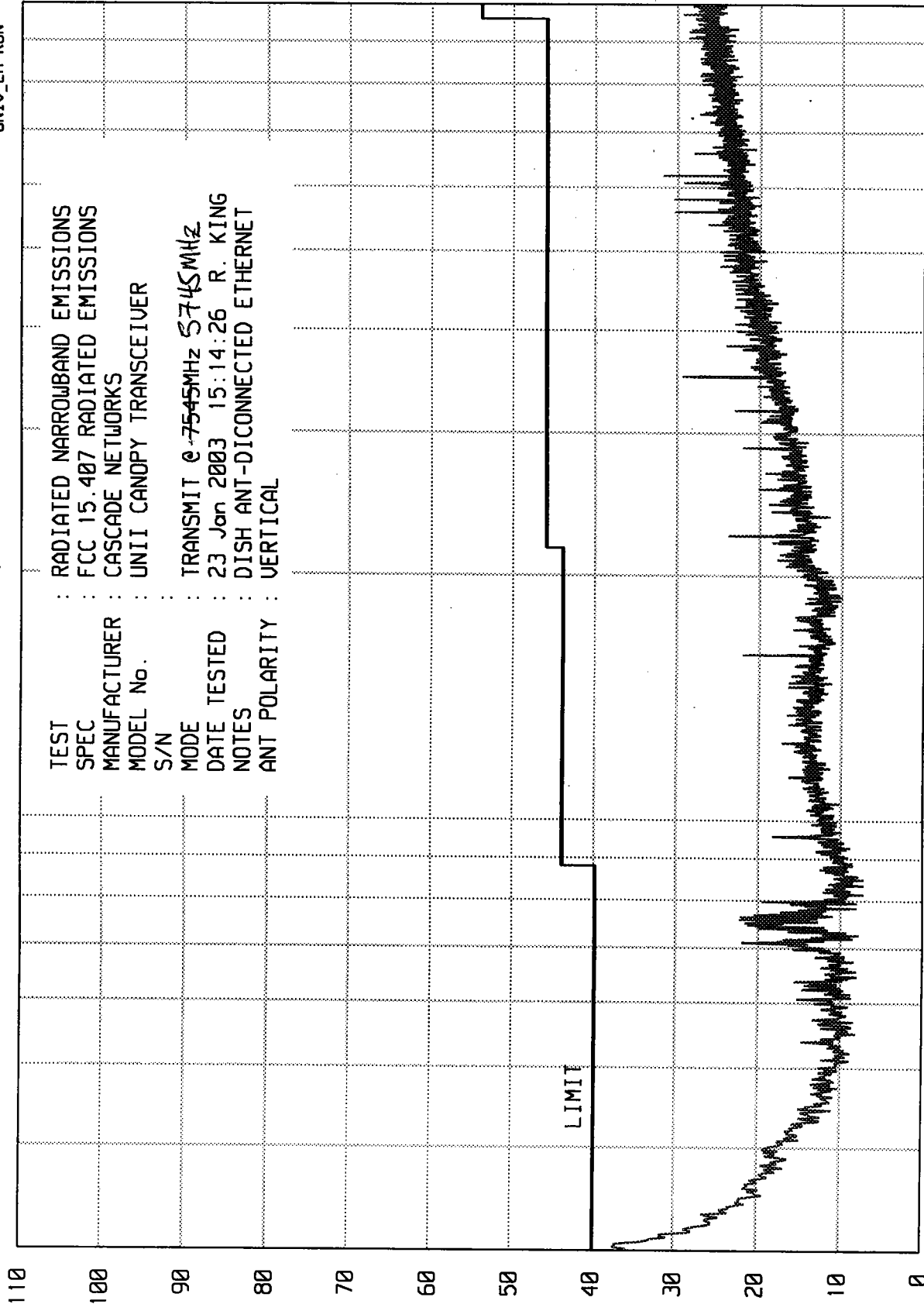
STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIV_EM RUN RUN 1

UKA08 11/15/02



TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 7545MHz 5745MHz
 DATE TESTED : 23 Jan 2003 15:14:26 R. KING
 NOTES : DISH ANT-DISCONNECTED ETHERNET
 ANT POLARITY : VERTICAL

RADIATED NARROWBAND EMISSIONS - dBu/m

Page 37 of 68

START = 30

FREQUENCY - MHz

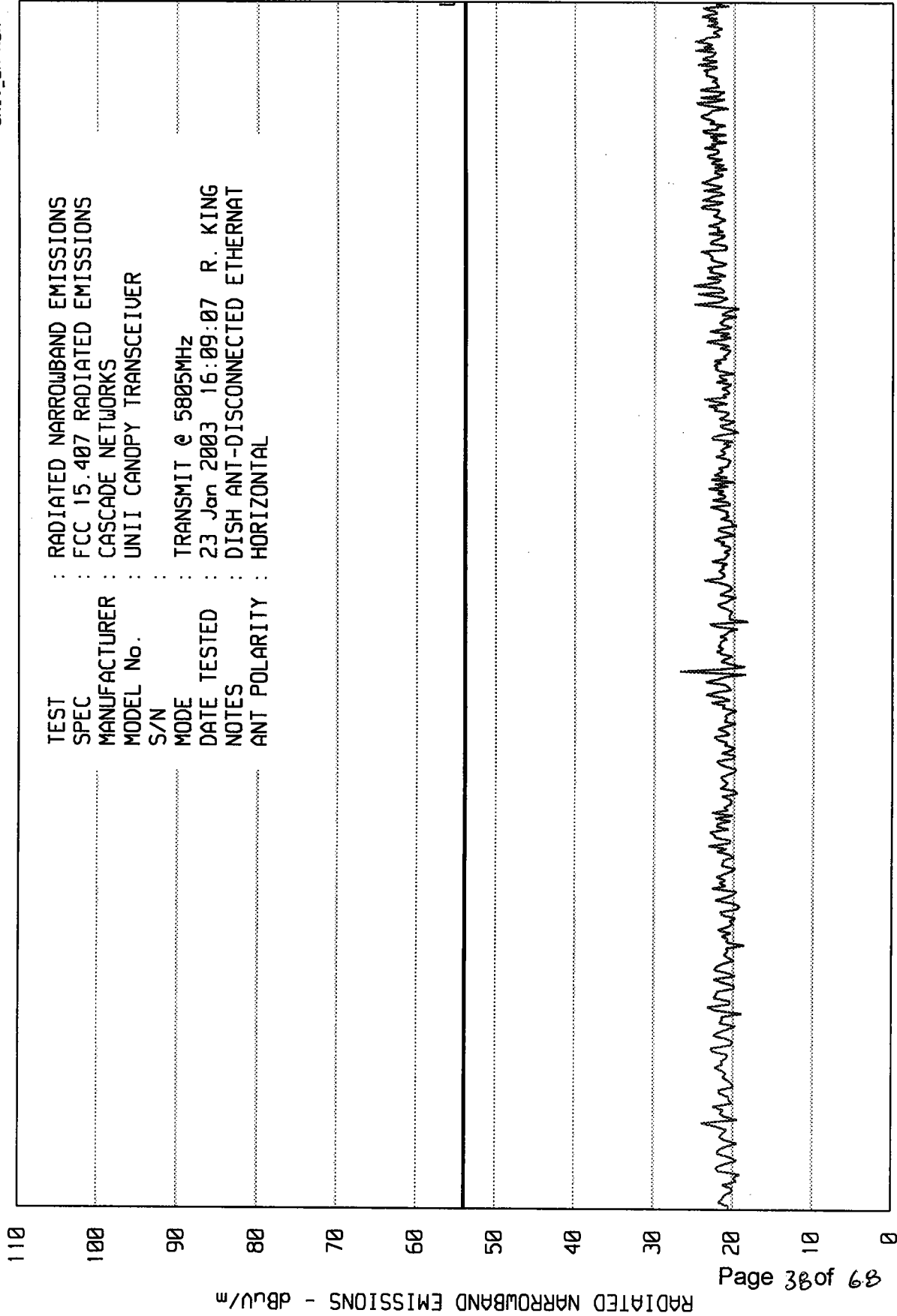
STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA00 11/15/02

UNITV_EM RUN RUN 3



START = 1000

FREQUENCY - MHz

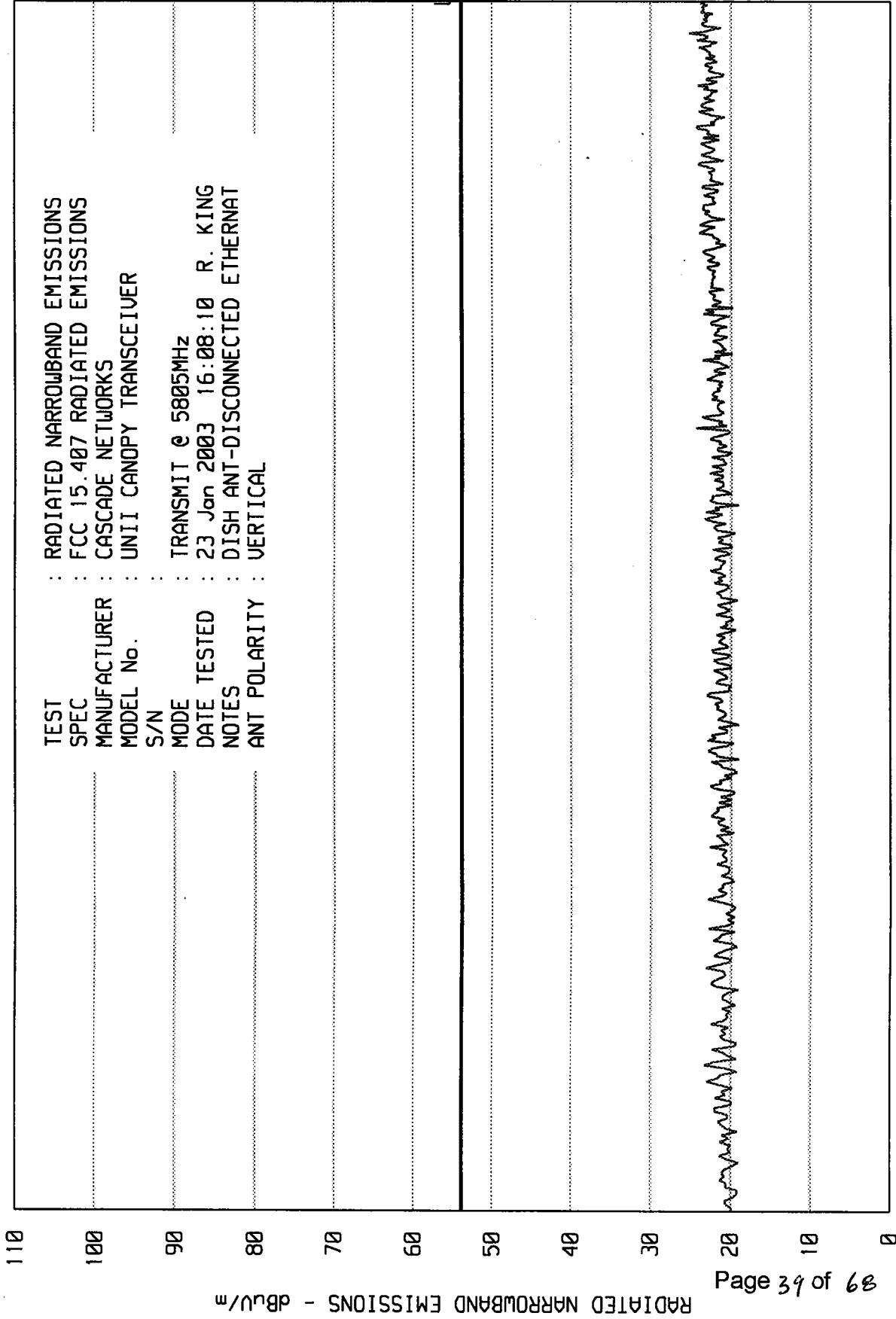
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 3

UKA00 11/15/02



STOP = 2000

FREQUENCY - MHz

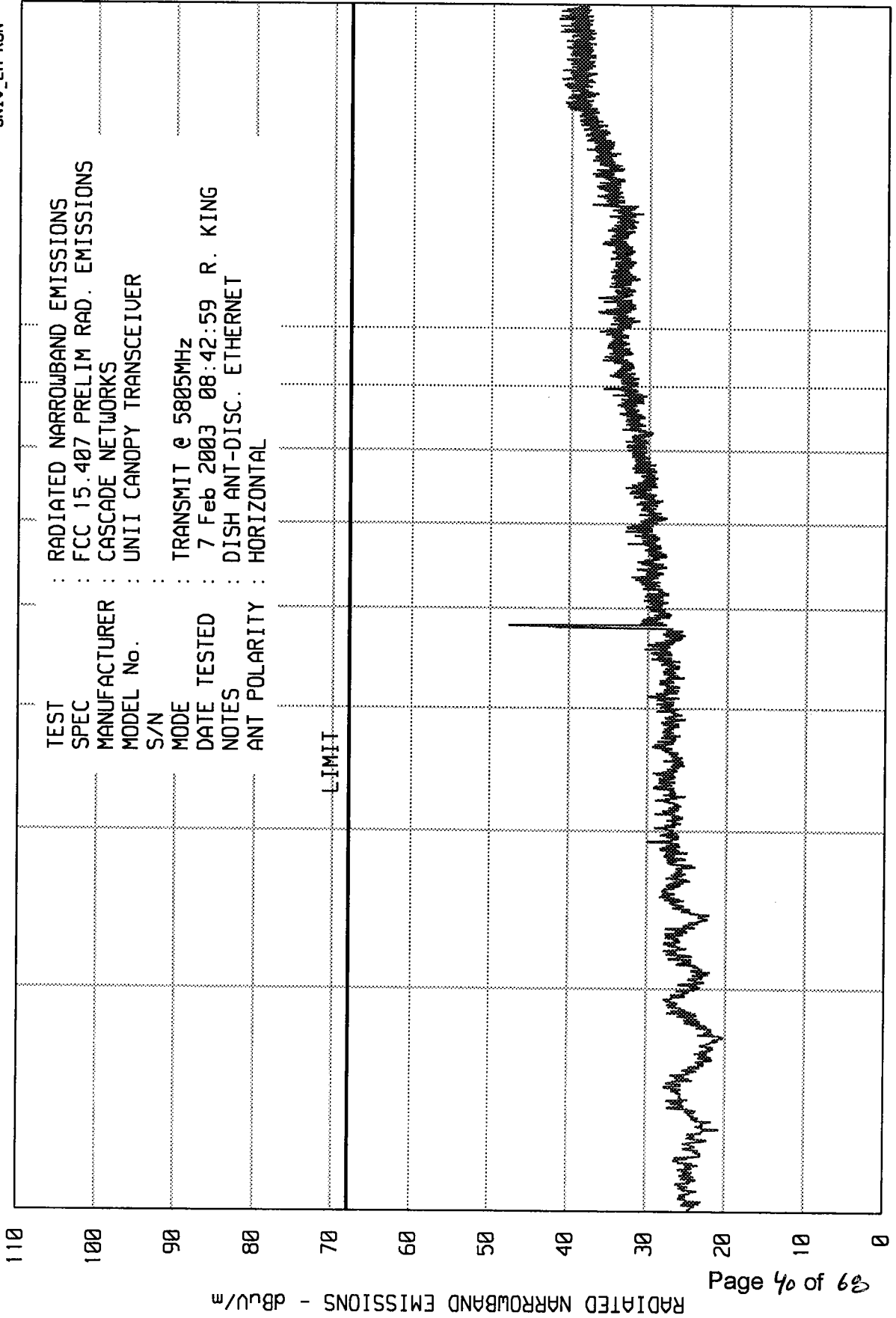
START = 1000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

WKAB 11/15/02

UNIV_EM RUN RUN 1



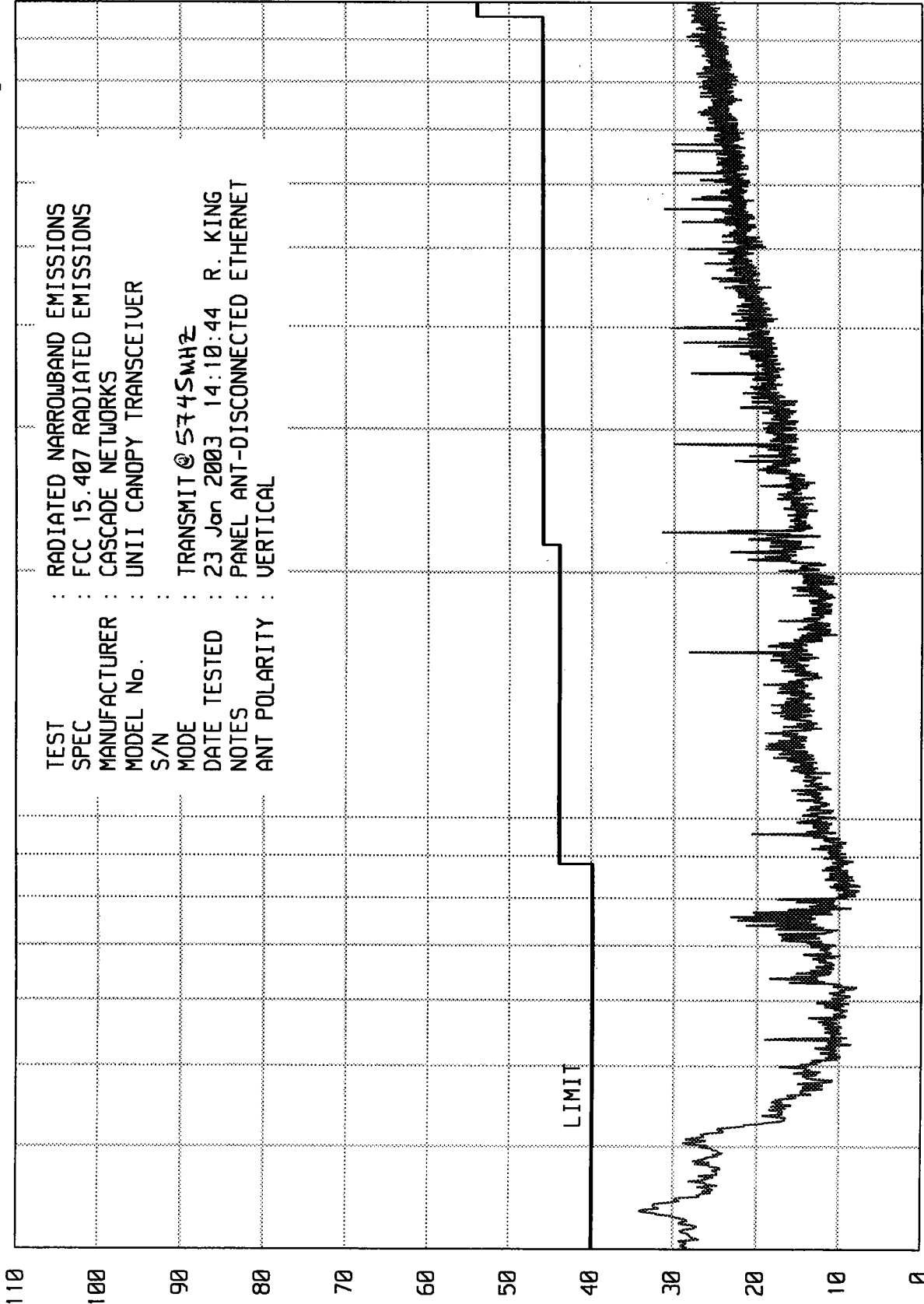
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIU_EM RUN RUN 1

WKA0 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 5745MHz
 DATE TESTED : 23 Jan 2003 14:10:44 R. KING
 NOTES : PANEL ANT-DISCONNECTED ETHERNET
 ANT POLARITY : VERTICAL



START = 30

FREQUENCY - MHz

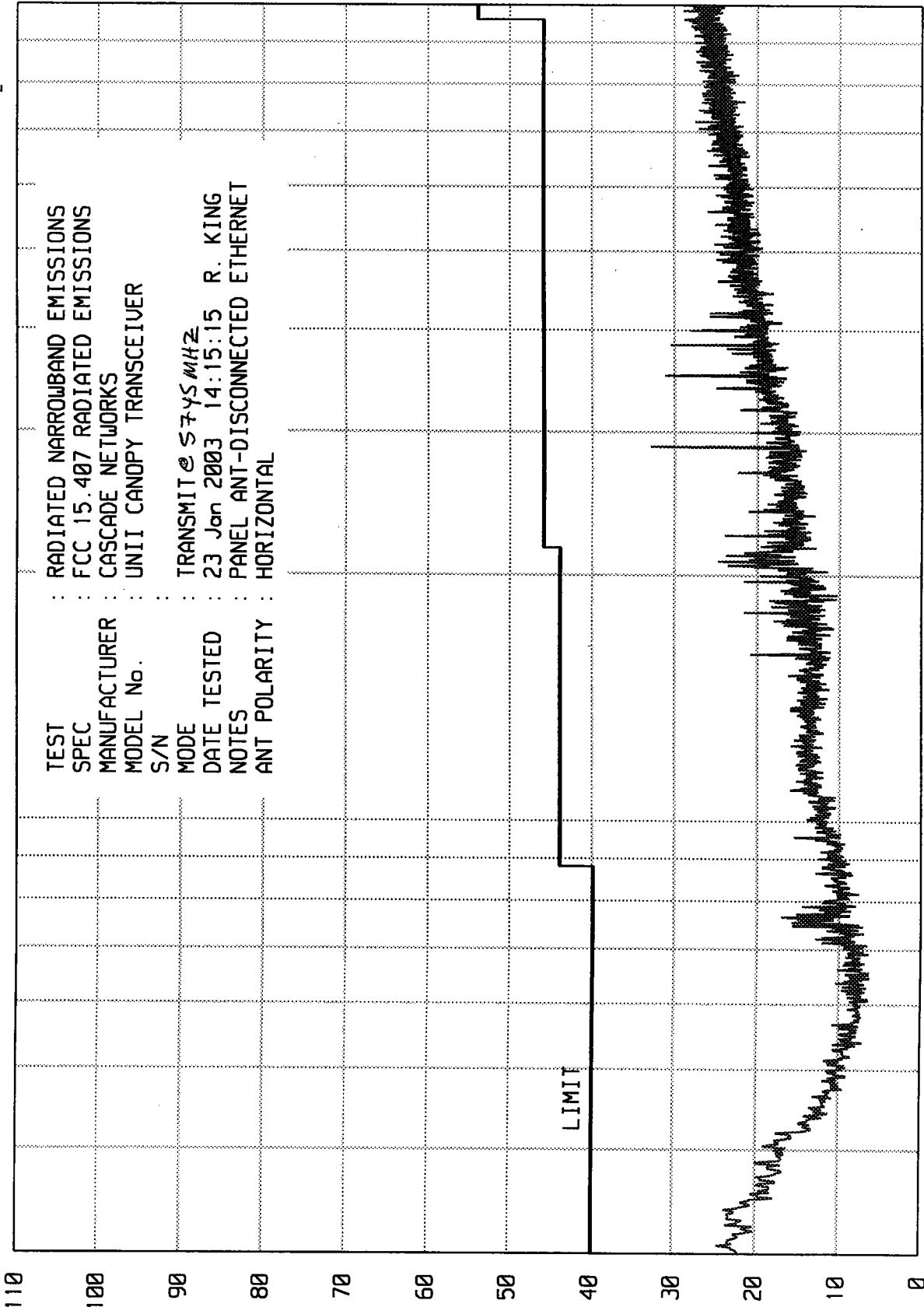
STOP = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNTU_EM RUN RUN 1

WKAB 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.407 RADIATED EMISSIONS
MANUFACTURER : CASCADE NETWORKS
MODEL No. : UNII CANOPY TRANSCEIVER
S/N :
MODE : TRANSMITTER 57.45 MHz
DATE TESTED : 23 Jan 2003 14:15:15 R. KING
NOTES : PANEL ANT-DISCONNECTED ETHERNET
ANT POLARITY : HORIZONTAL



STOP = 1000

FREQUENCY - MHz

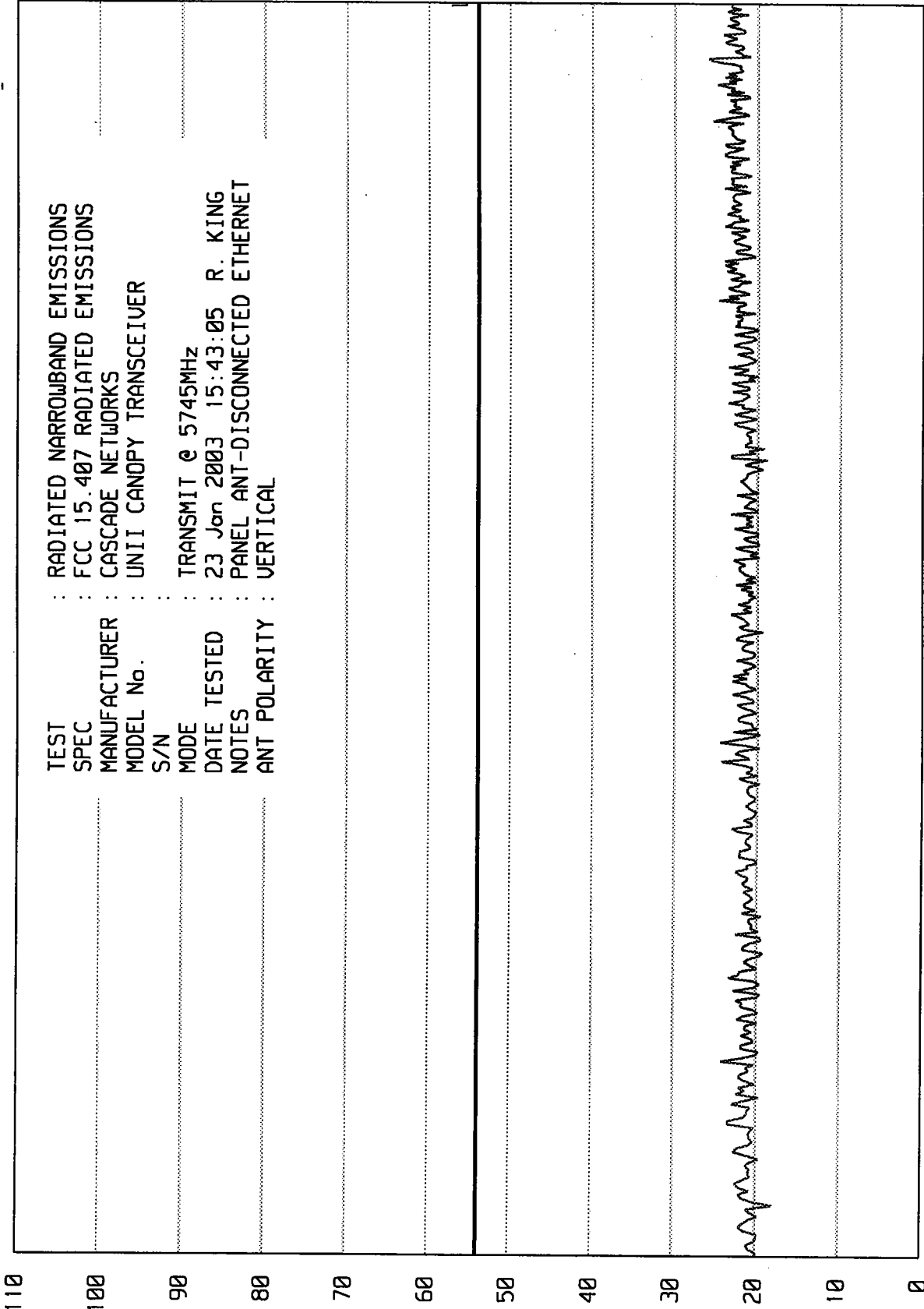
START = 30

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIU_EM RUN RUN 3

WKAO 11/15/02



STOP = 2000

FREQUENCY - MHz

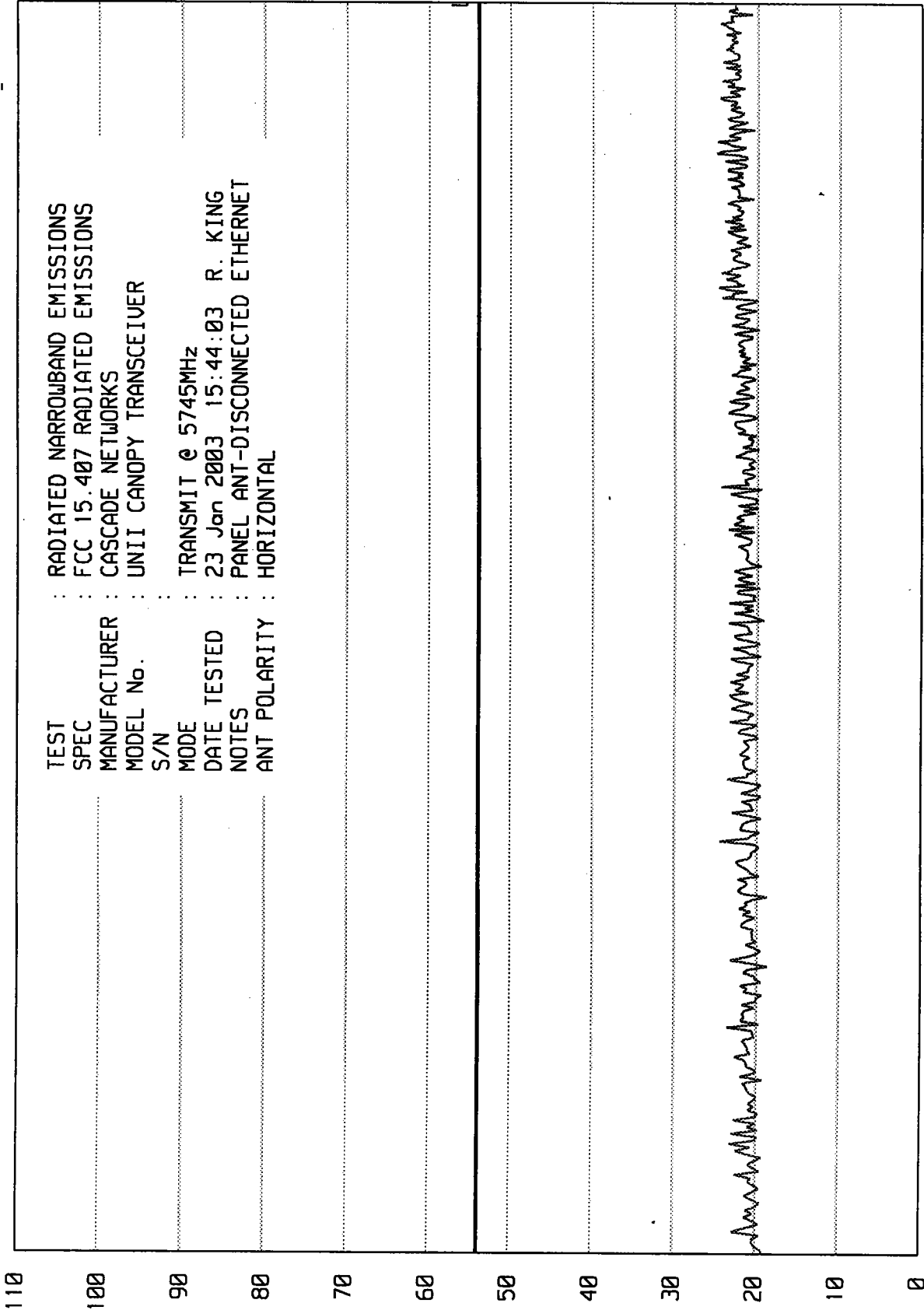
START = 1000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA00 11/15/02

UNITV_EM RUN RUN 3



RADIATED NARROWBAND EMISSIONS - dBuV/m

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START = 1000

FREQUENCY - MHz

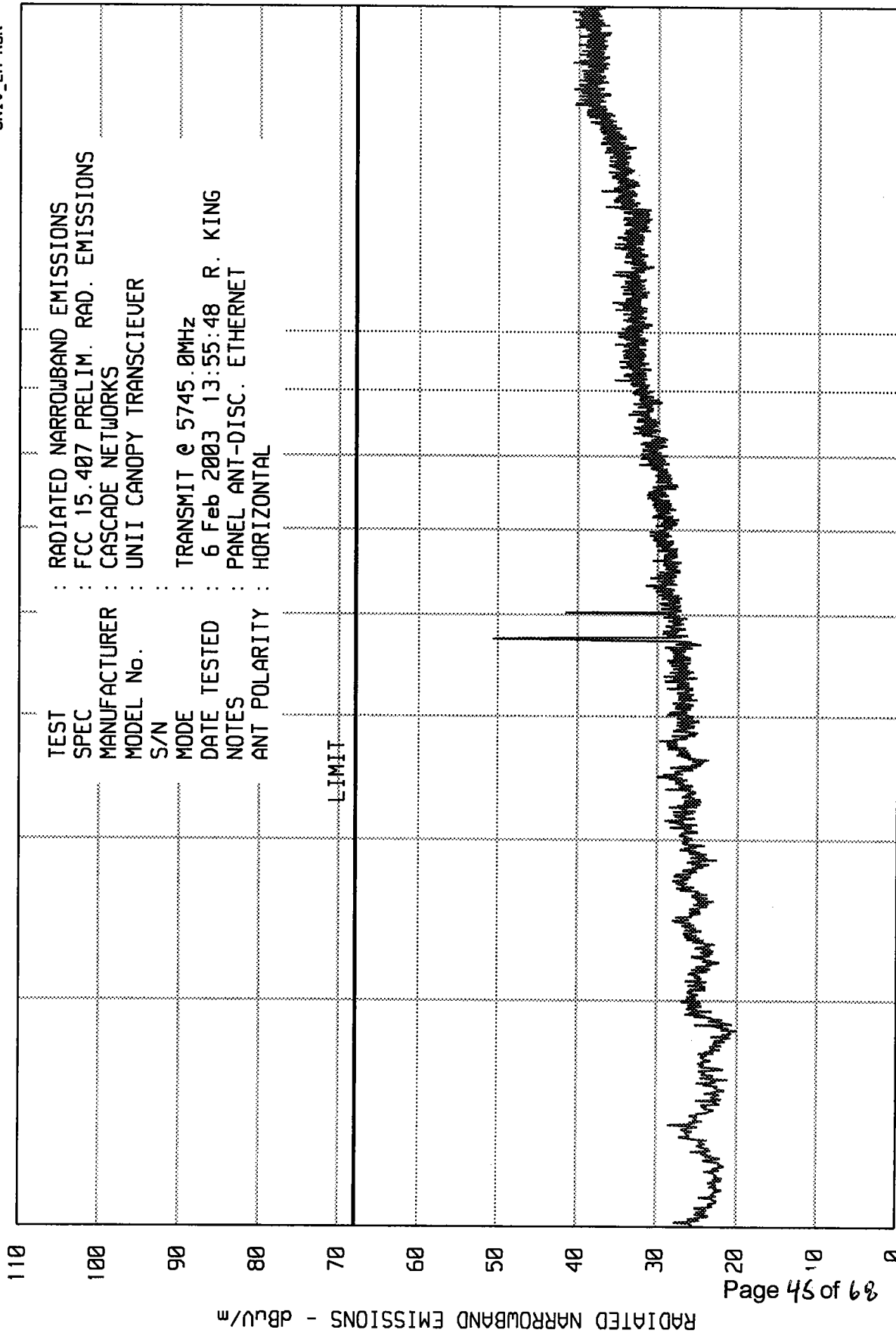
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

WKA0 11/15/02

UNITV_EM RUN RUN 1



START = 2000

FREQUENCY - MHz

10000

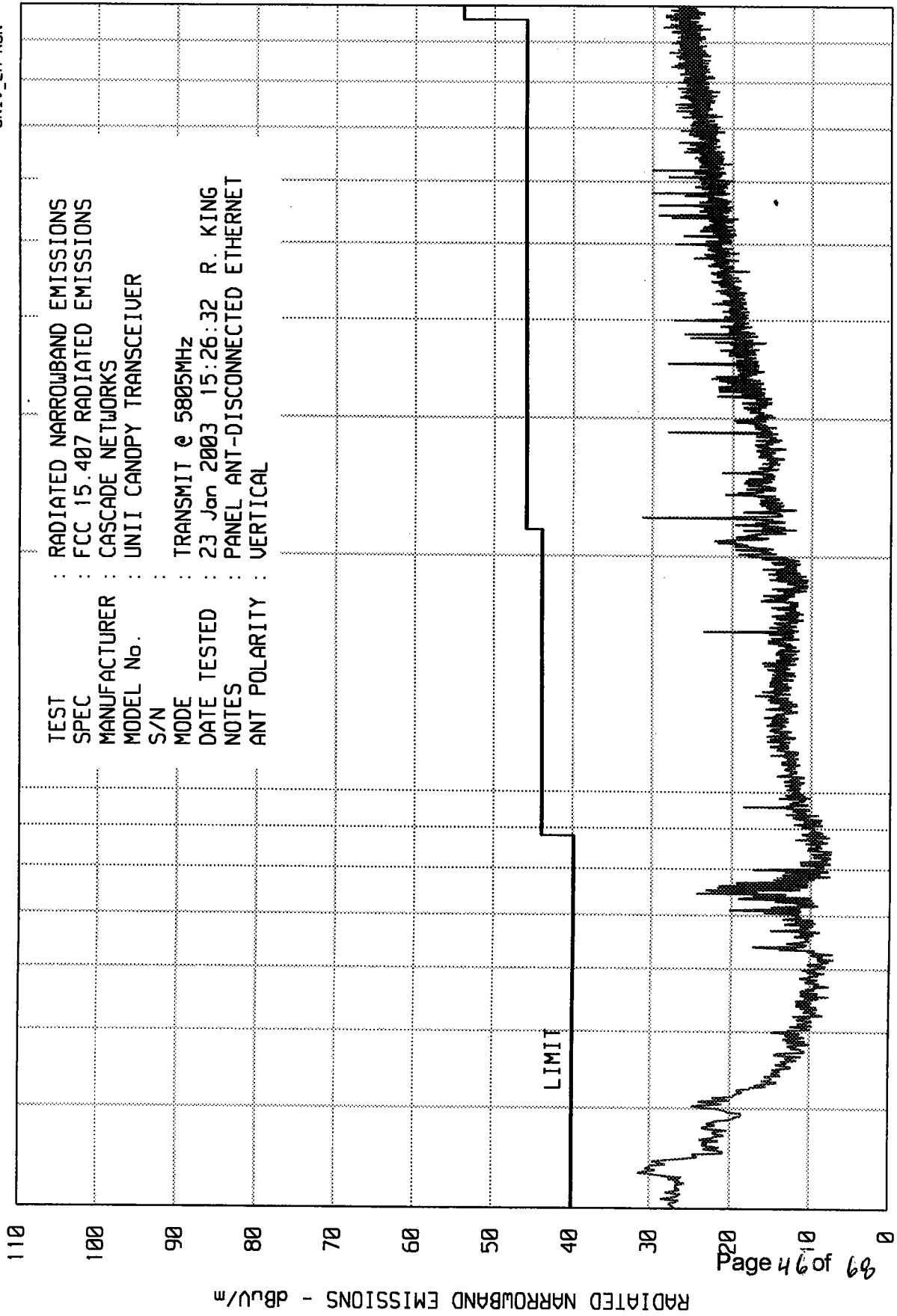
STOP = 18000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 1

WKA0 11/15/02



START = 30

FREQUENCY - MHz

STOP = 1000

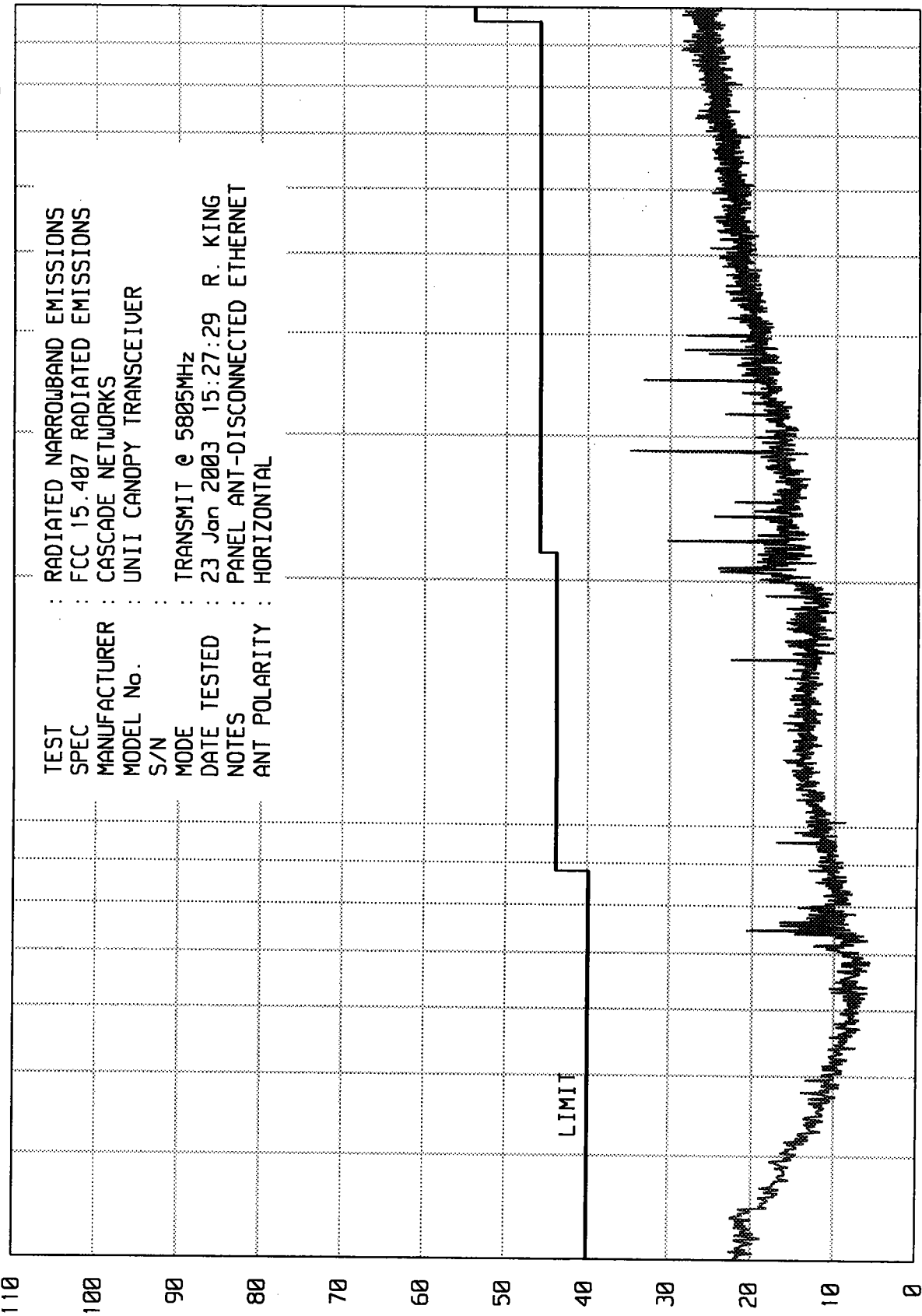
ETR 31804-07

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIV_EM RUN 1

WKA0 11/15/02



START = 30

FREQUENCY - MHz

STOP = 1000

RADIATED NARROWBAND EMISSIONS - dBu/m

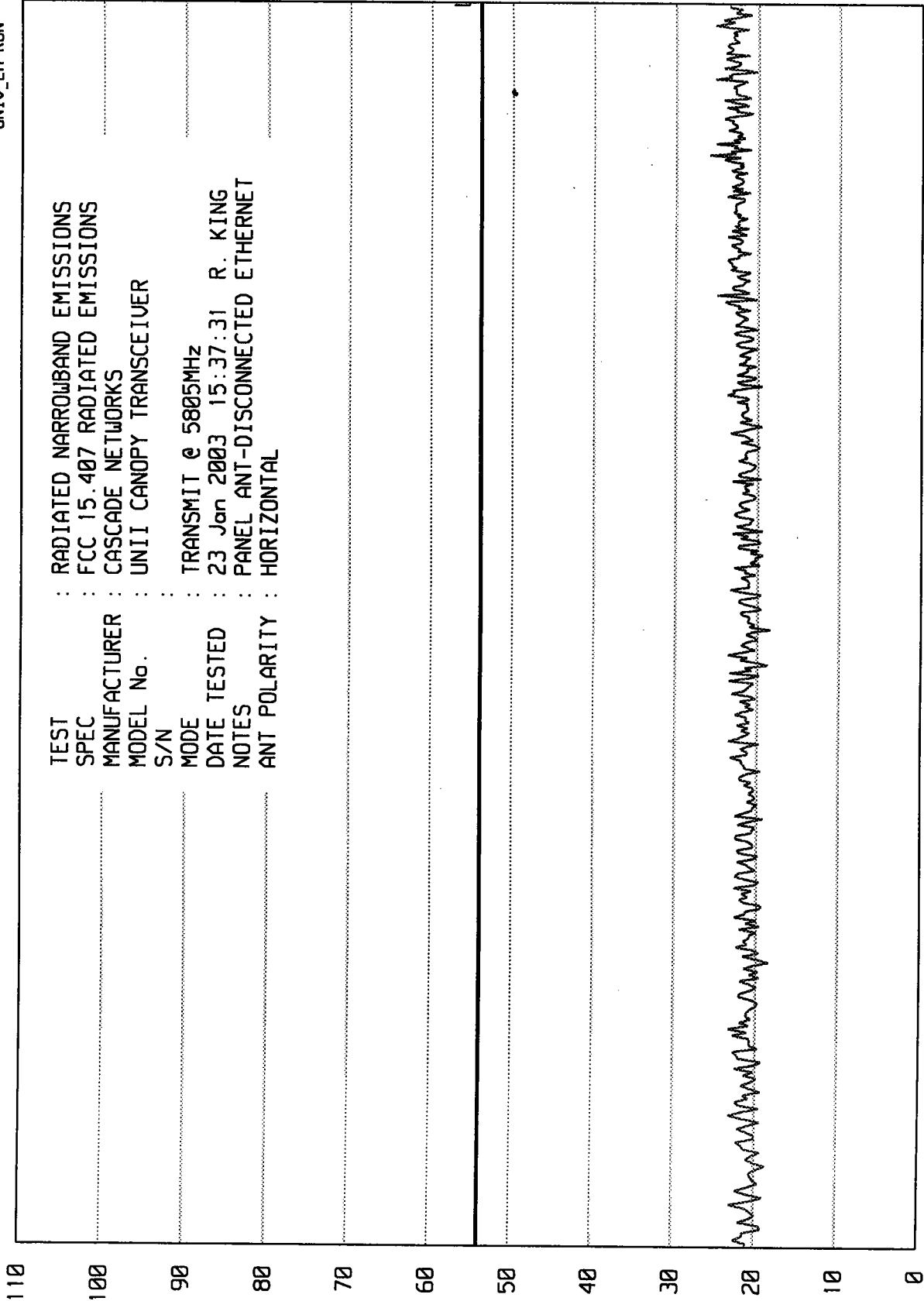
39 f. 74

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 3

UKA00 11/15/02



TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 RADIATED EMISSIONS
 MANUFACTURER : CASCADE NETWORKS
 MODEL No. : UNII CANOPY TRANSCEIVER
 S/N :
 MODE : TRANSMIT @ 5805MHz
 DATE TESTED : 23 Jan 2003 15:37:31 R. KING
 NOTES : PANEL ANT-DISCONNECTED ETHERNET
 ANT POLARITY : HORIZONTAL

RADIATED NARROWBAND EMISSIONS - dBuV/m

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START = 1000

FREQUENCY - MHz

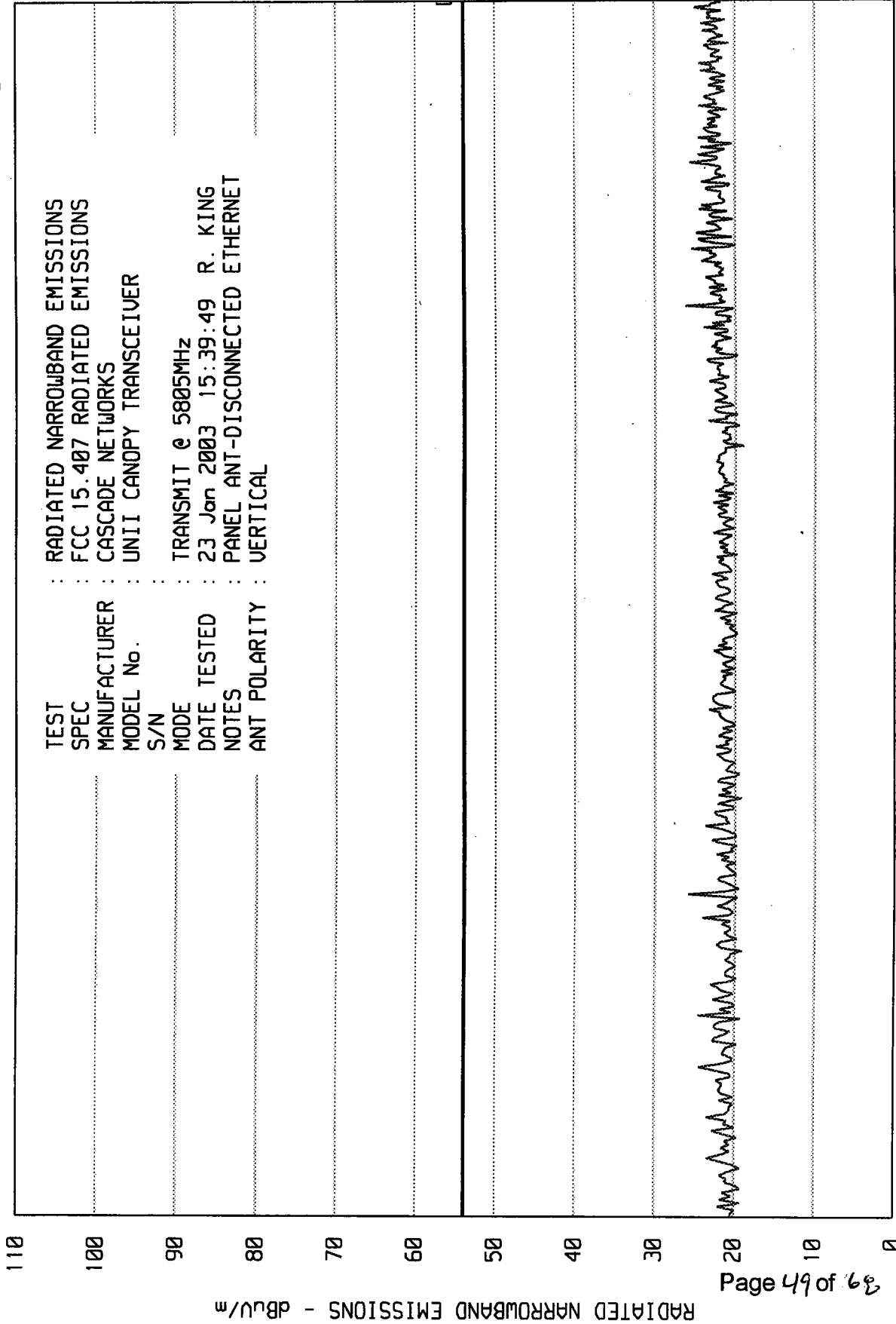
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

11/15/02

UNIU_EM RUN RUN 3



START = 1000

FREQUENCY - MHz

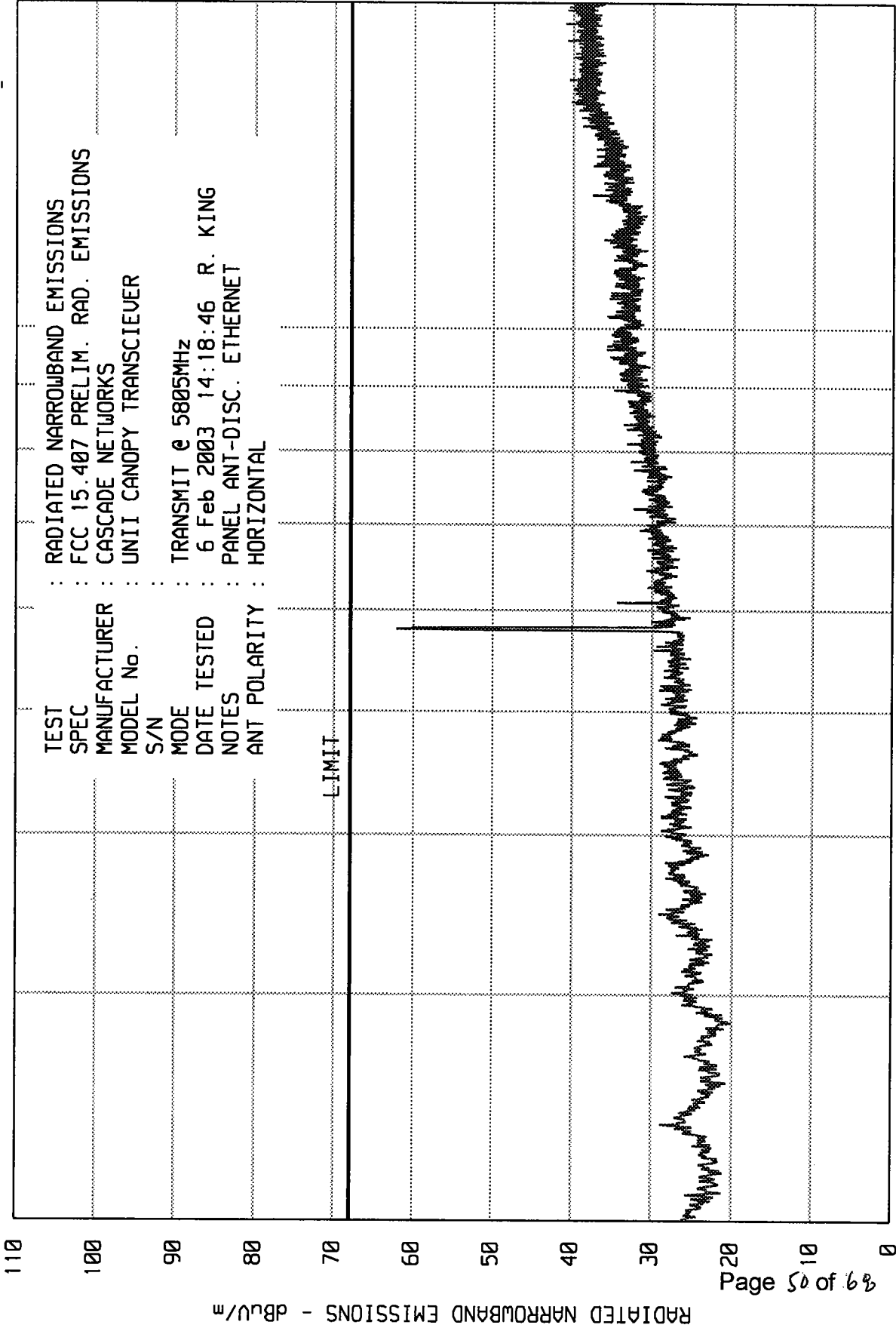
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIV_EM RUN RUN 1

11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.407 PRELIM. RAD. EMISSIONS
MANUFACTURER : CASCADE NETWORKS
MODEL No. : UNII CANOPY TRANSCIEVER
S/N :
MODE : TRANSMIT @ 5805MHz
DATE TESTED : 6 Feb 2003 14:18:46 R. KING
NOTES : PANEL ANT-DISC. ETHERNET
ANT POLARITY : HORIZONTAL



START = 2000

FREQUENCY - MHz

10000

STOP = 18000

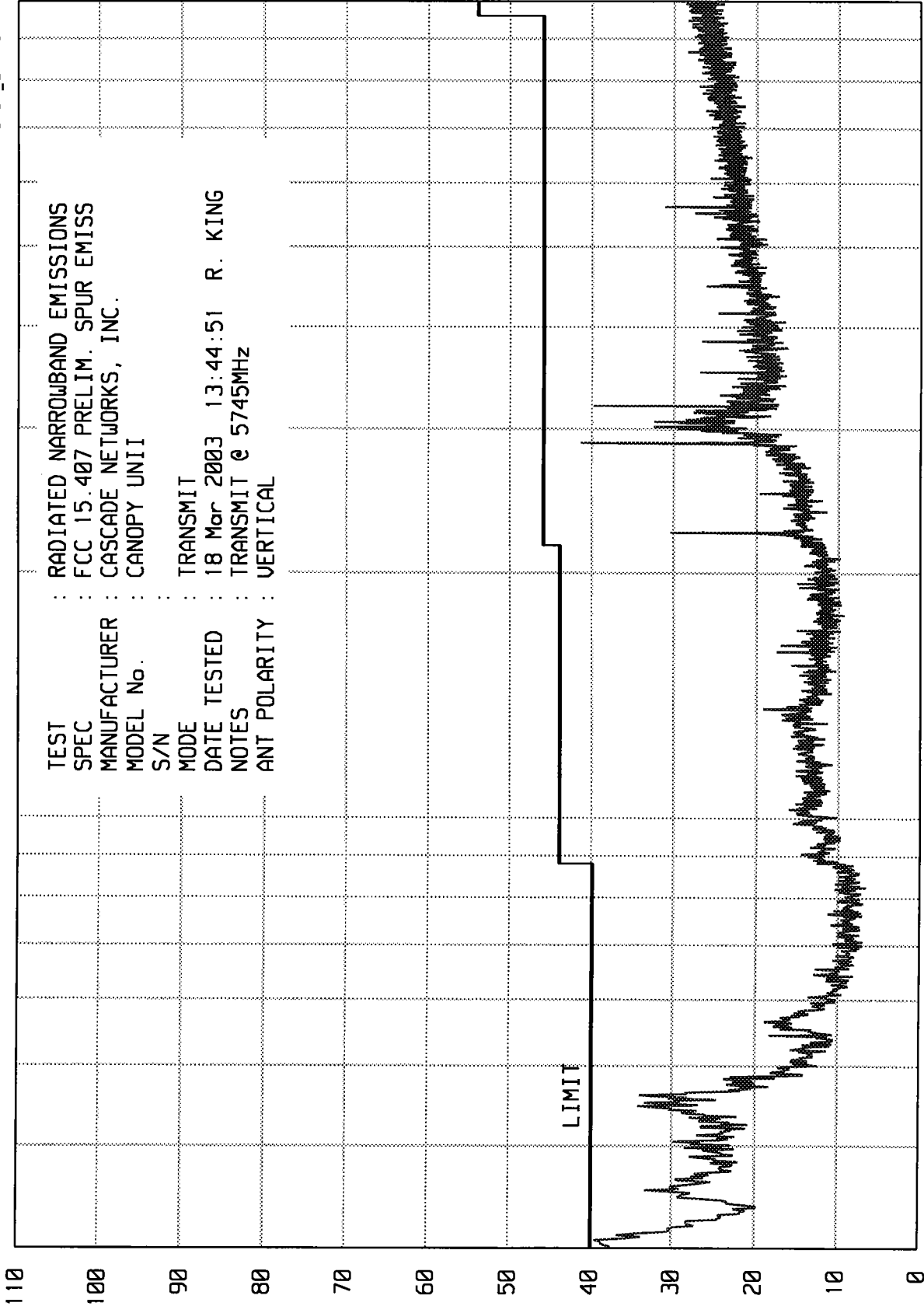
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIV_EM RUN RUN 2

UKA0 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 PRELIM. SPUR EMISS
 MANUFACTURER : CASCADE NETWORKS, INC.
 MODEL No. : CANOPY UNIT
 S/N :
 MODE : TRANSMIT
 DATE TESTED : 18 Mar 2003 13:44:51 R. KING
 NOTES : TRANSMIT @ 5745MHz
 ANT POLARITY : VERTICAL



STOP = 1000

FREQUENCY - MHz

START = 30

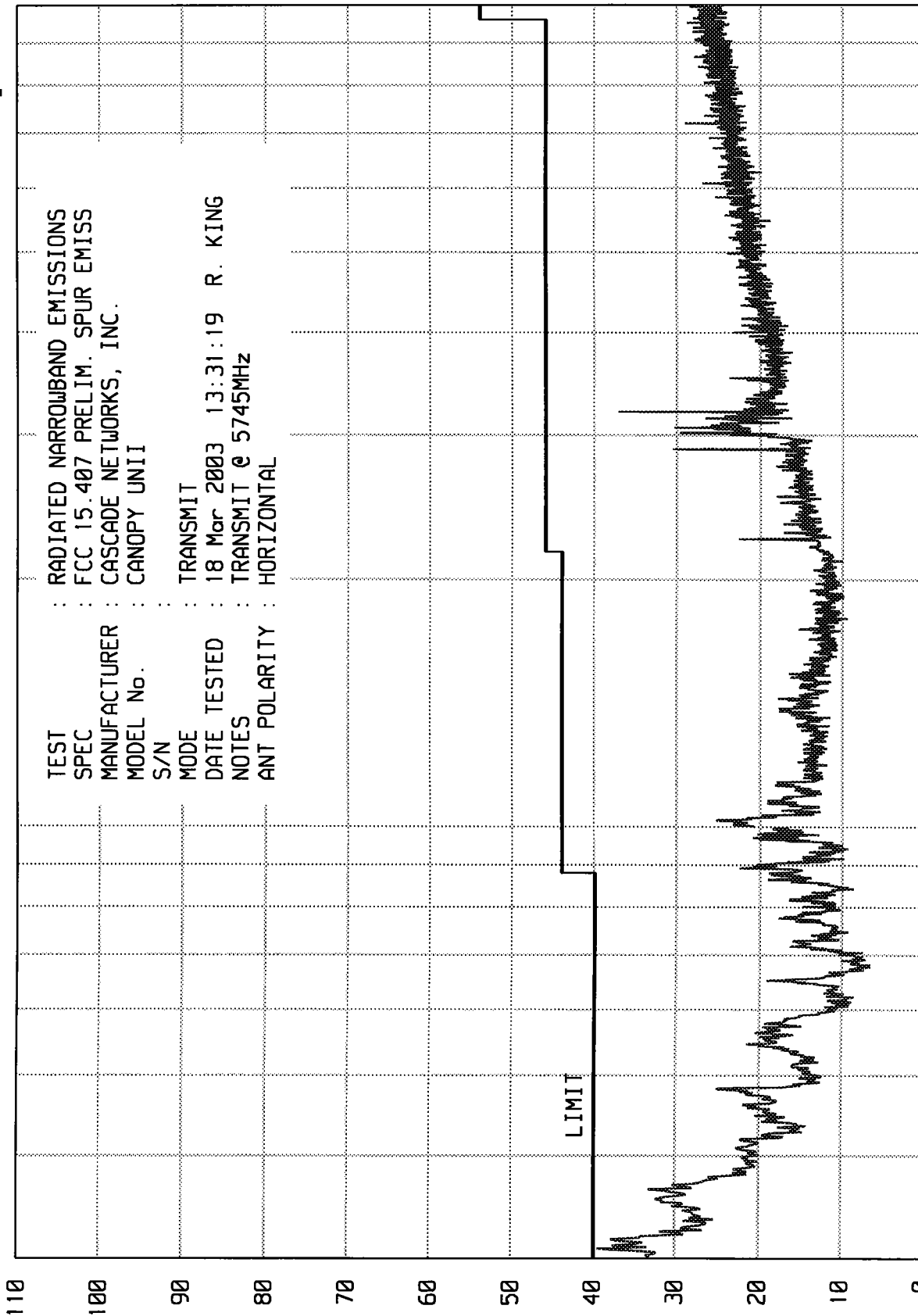
09 10 15

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNIU_EM RUN RUN 2

WKA0 11/15/02



TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 PRELIM. SPUR EMISS
 MANUFACTURER : CASCADE NETWORKS, INC.
 MODEL No. : CANOPY UNIT
 S/N :
 MODE : TRANSMIT
 DATE TESTED : 18 Mar 2003 13:31:19 R. KING
 NOTES : TRANSMIT @ 5745MHz
 ANT POLARITY : HORIZONTAL

RADIATED NARROWBAND EMISSIONS - dBuV/m

52 of 68

START = 30

100

FREQUENCY - MHz

STOP = 1000

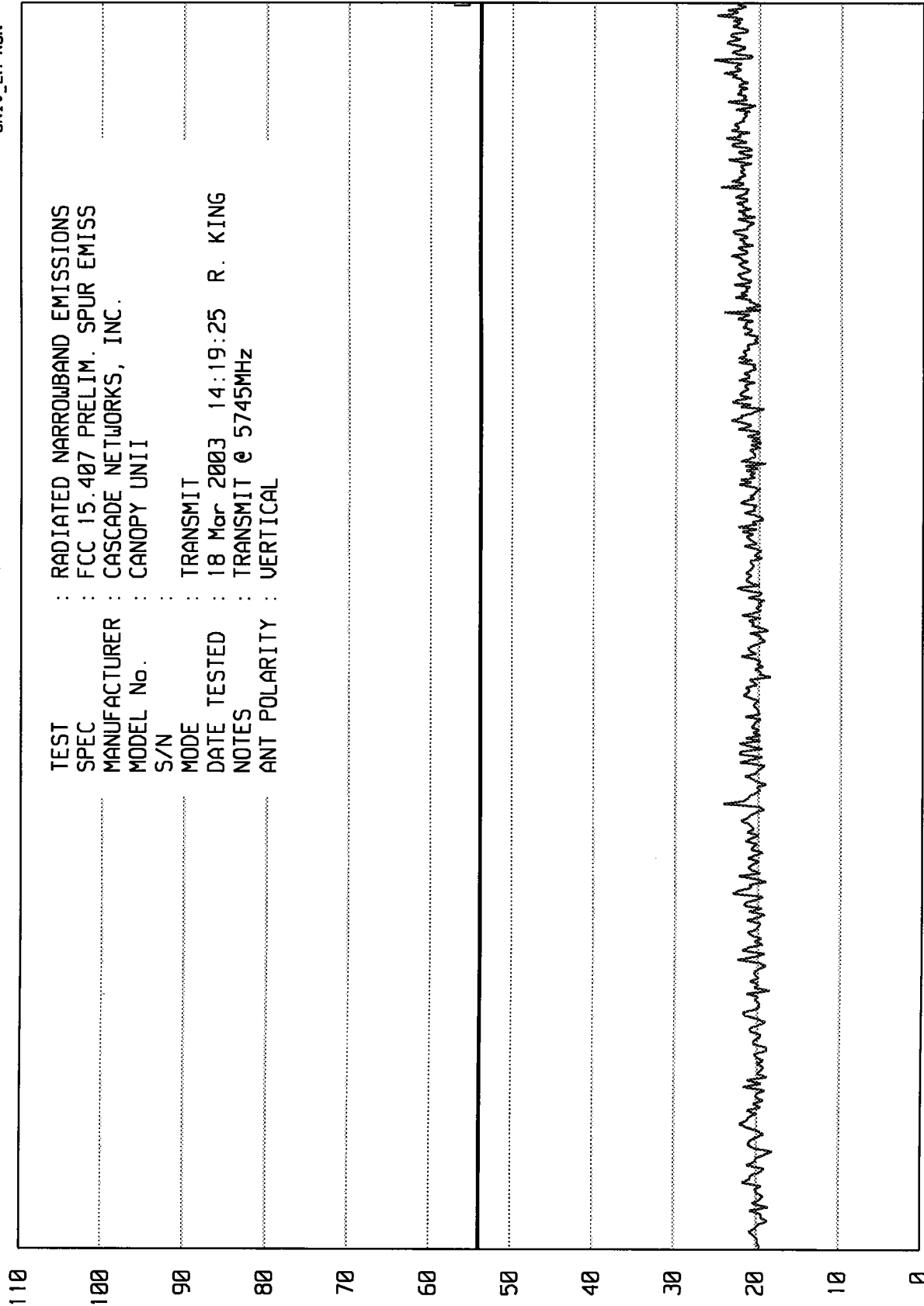
ETR 31804-01

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNTU_EM RUN RUN 3

UKAB 11/15/02



RADIATED NARROWBAND EMISSIONS - dBu/m

53 of 68

START = 1000

FREQUENCY - MHz

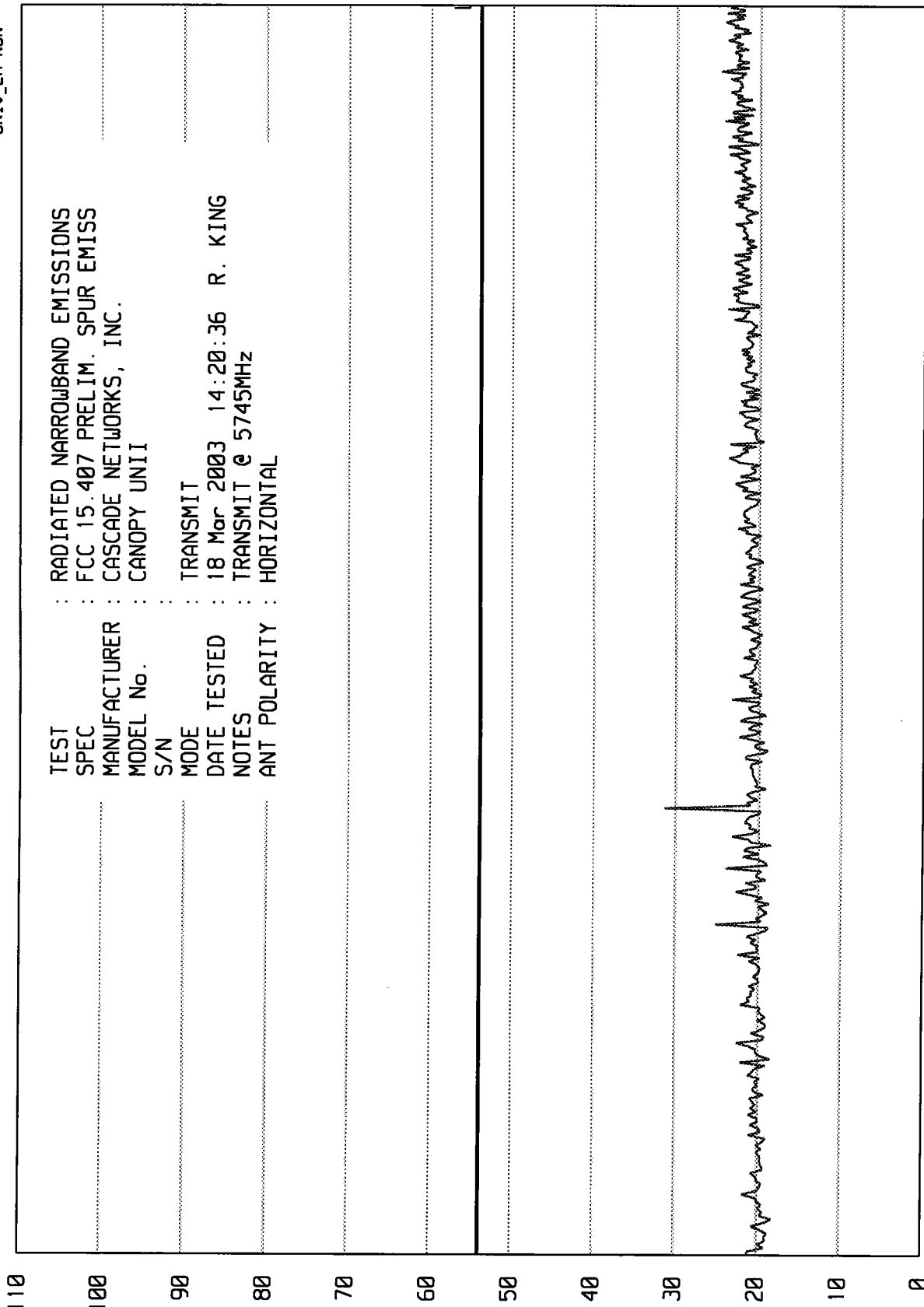
STOP = 2000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNTV_EM RUN RUN 3

WKAB 11/15/02



STOP = 2000

FREQUENCY - MHz

START = 1000

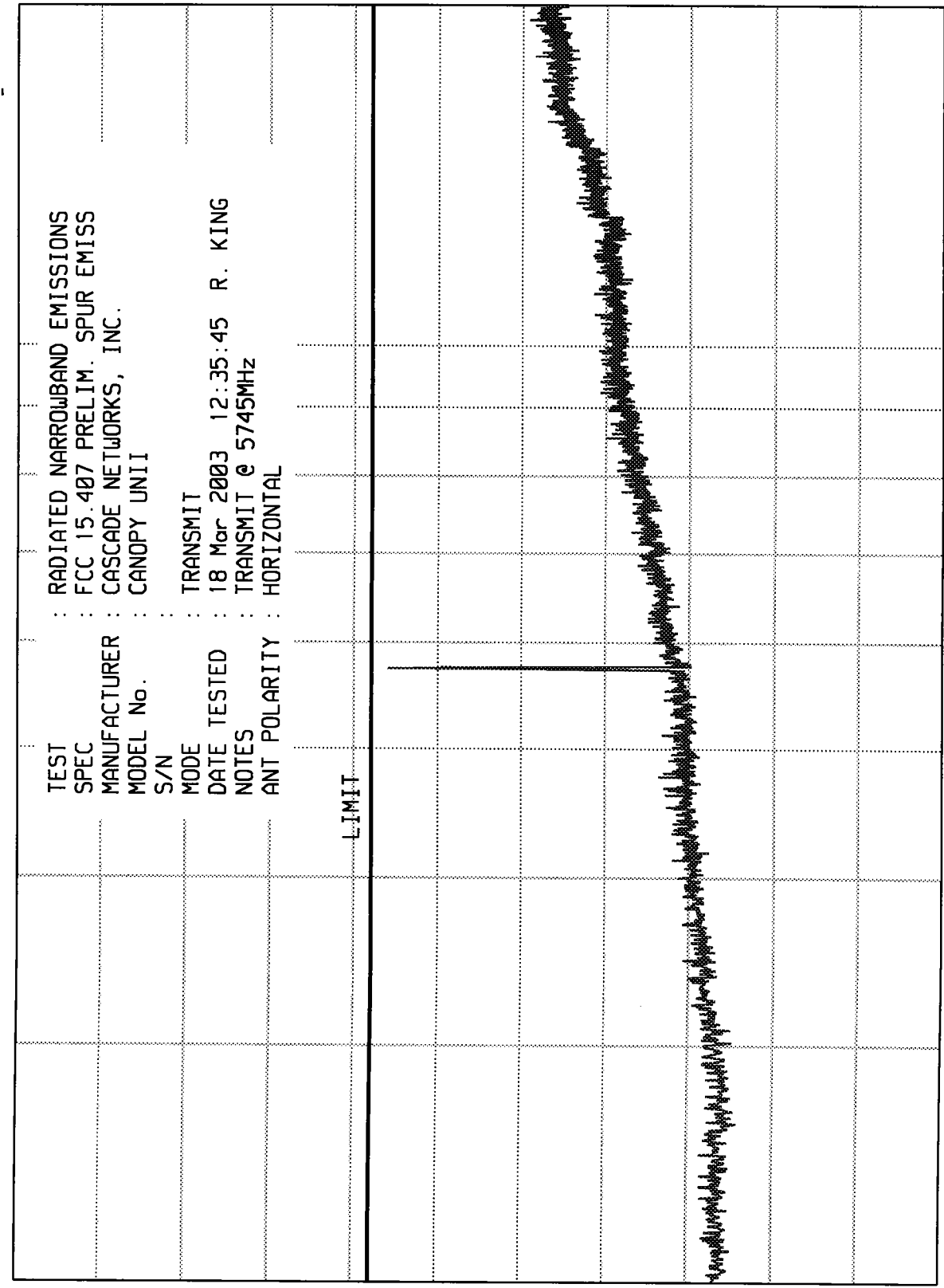
89 of 85

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNTV_EM RUN RUN 1

UKA00 11/15/02



10000

STOP = 18000

START = 2000

29 of 55

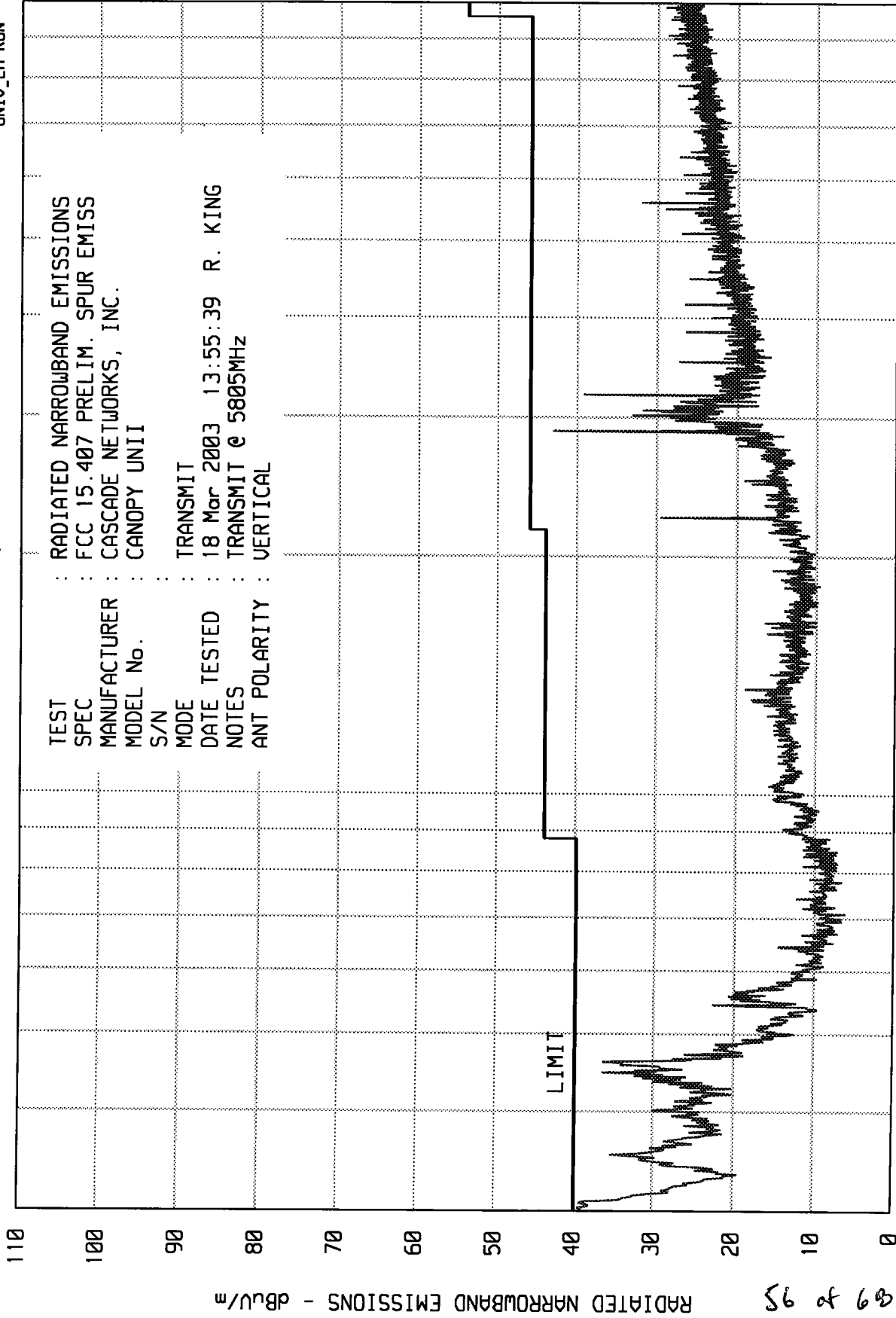
ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 2

UKA00 11/15/02

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC 15.407 PRELIM. SPUR EMISS
 MANUFACTURER : CASCADE NETWORKS, INC.
 MODEL No. : CANOPY UNIT II
 S/N :
 MODE : TRANSMIT
 DATE TESTED : 18 Mar 2003 13:55:39 R. KING
 NOTES : TRANSMIT @ 5805MHz
 ANT POLARITY : VERTICAL



STOP = 1000

FREQUENCY - MHz

100

START = 30

89 of 95

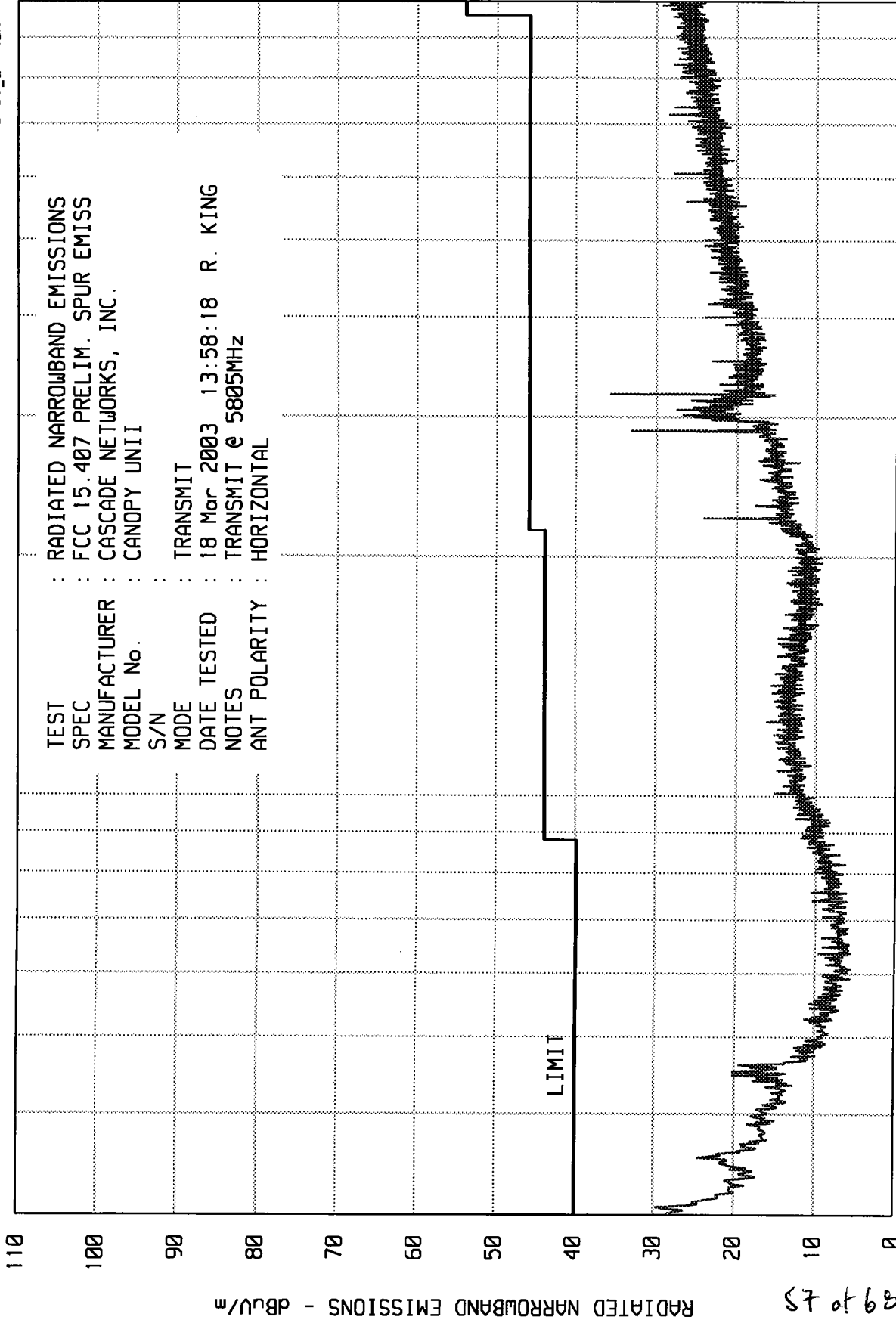
ETR 31804-01

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 2

LKAB 11/15/02



START = 30

FREQUENCY - MHz

STOP = 1000

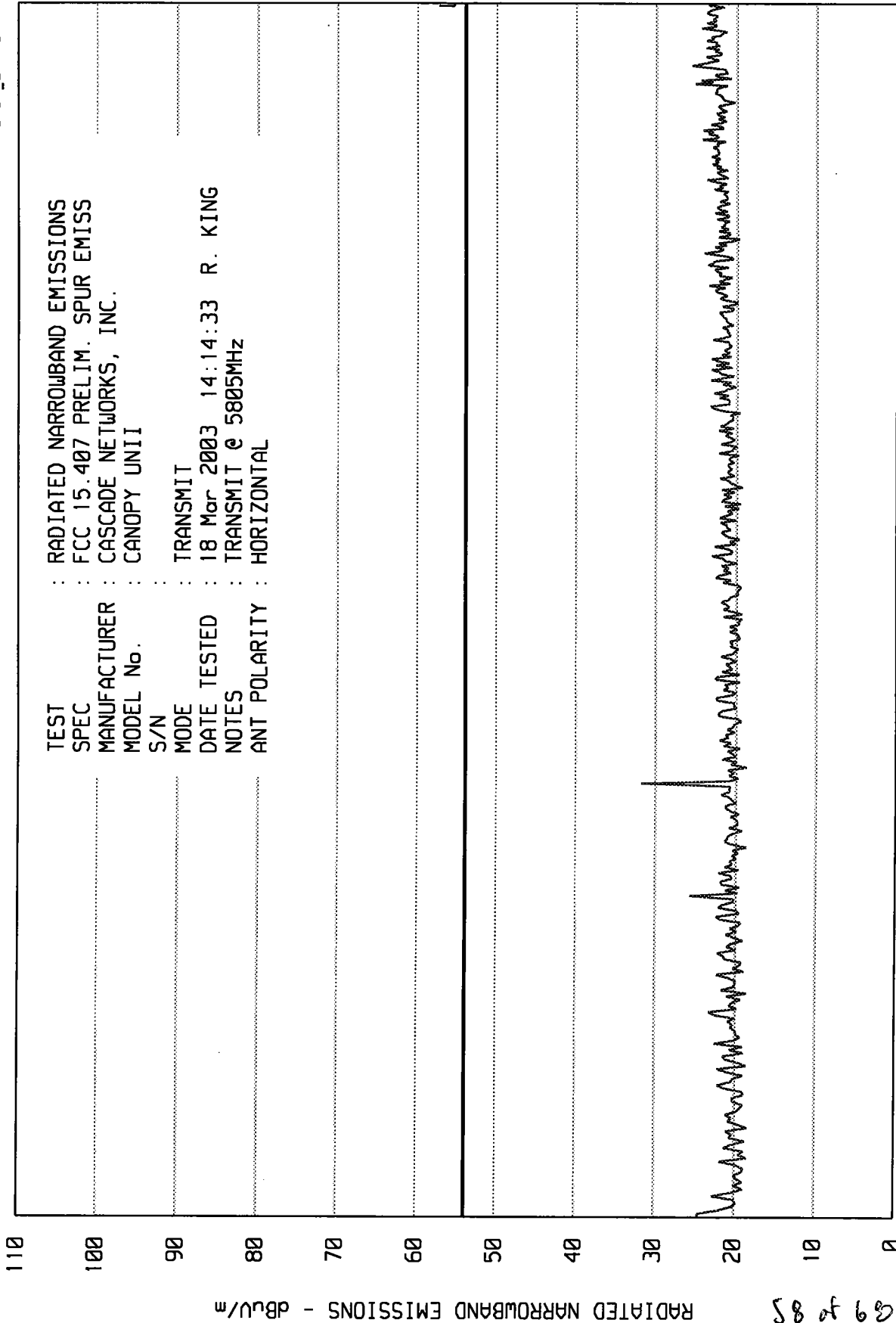
ETR 31804-01

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKA08 11/15/02

UNIT EM RUN RUN 3



START = 1000

FREQUENCY - MHz

STOP = 2000

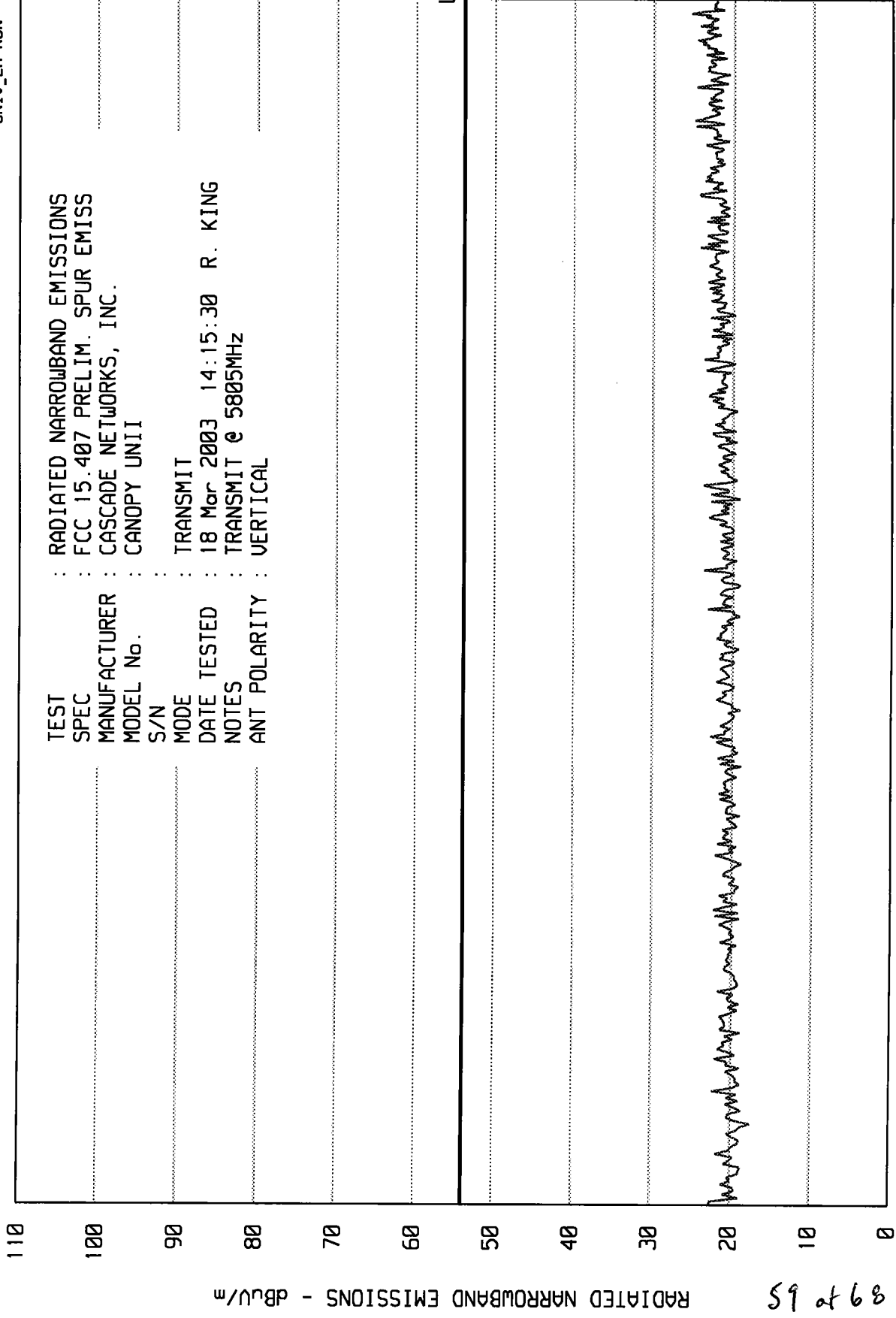
ETR 31804-01

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UKAB 11/15/02

UNITV_EM RUN RUN 3



STOP = 2000

FREQUENCY - MHz

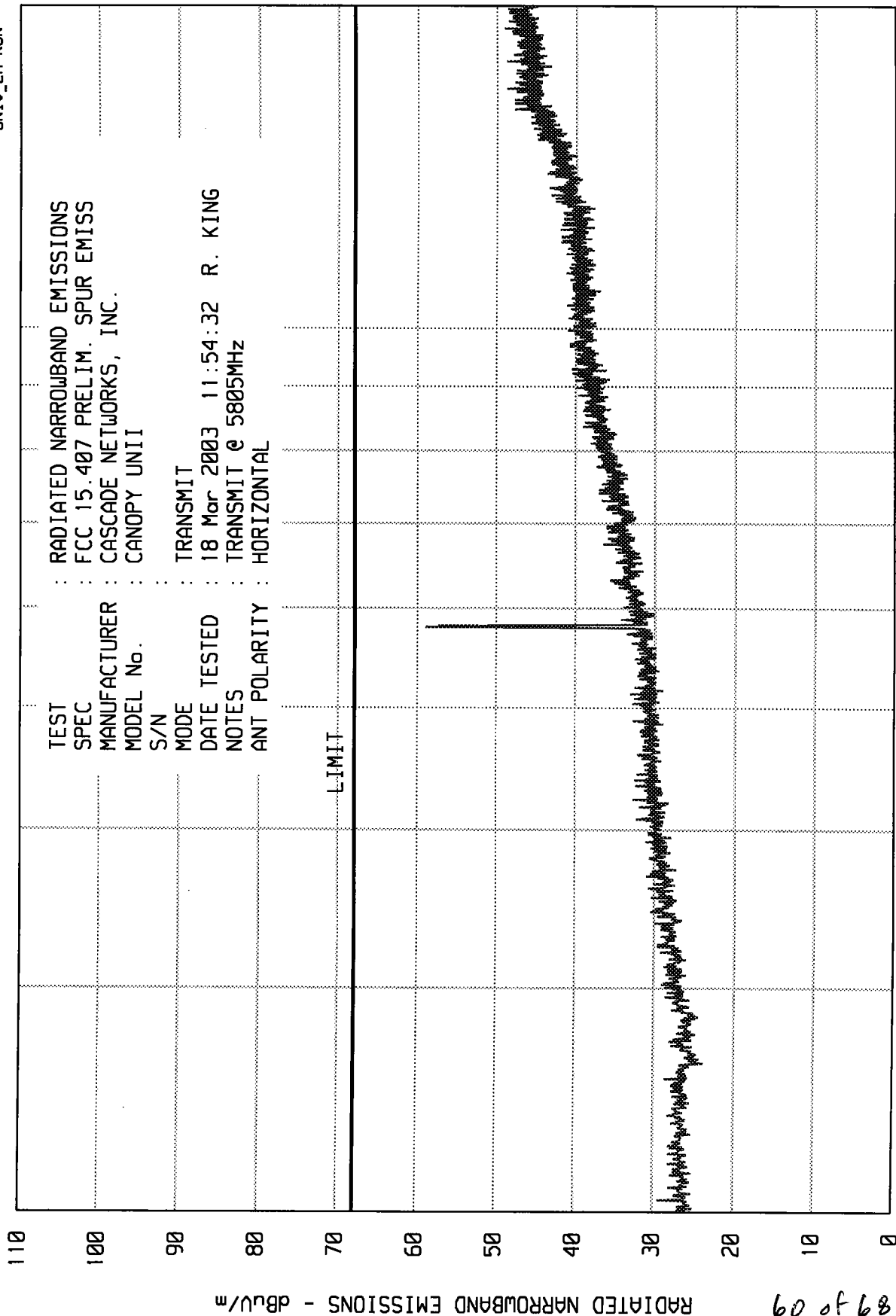
START = 1000

ELITE ELECTRONIC ENGINEERING Inc.

Downers Grove, Ill. 60515

UNTU_EM RUN RUN 1

UKA00 11/15/02





ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
MODEL : MOTOROLA CANOPY
S/N : NONE ASSIGNED
SPECIFICATION : FCC 15.407
DATE : JANUARY 20, 2003
NOTES : CYLINDER ANTENNA TRANSMITTING AT 5745.0MHz
: TEST DISTANCE IS 3 METERS
: EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5745.0	H	TOTAL					34.9	36
5745.0	V	TOTAL					26.7	36
5745.0	H	1MHz	117.4	18.3	9.0	-5.4	21.9	
5745.0	V	1MHz	107.5	10.1	9.0	-5.4	13.7	
11490.0	H	1MHz	37.9	-41.8	15.0	-8.3	-35.1	-27
11490.0	V	1MHz	38.1	-42.0	15.0	-8.3	-35.3	-27
17235.0	H	1MHz	42.0	-54.8	13.6	-10.1	-51.2	-27
17235.0	V	1MHz	40.9	-55.1	13.6	-10.1	-51.5	-27
22980.0	H	1MHz	42.0	-53.9	12.7	0.0	-41.2	-27
22980.0	V	1MHz	41.8	-53.7	12.7	0.0	-41.0	-27
28725.0	H	1MHz	33.6	-57.8	15.4	0.0	-42.4	-27
28725.0	V	1MHz	33.1	-57.6	15.4	0.0	-42.2	-27
34470.0	H	1MHz	32.9	-61.1	16.8	0.0	-44.3	-27
34470.0	V	1MHz	33.0	-61.2	16.8	0.0	-44.4	-27

CHECKED BY:

Richard E. King
RICHARD E. KING



ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
 MODEL : MOTOROLA CANOPY
 S/N : NONE ASSIGNED
 SPECIFICATION : FCC 15.407
 DATE : JANUARY 20, 2003
 NOTES : CYLINDER ANTENNA TRANSMITTING AT 5805.0MHz
 : TEST DISTANCE IS 3 METERS
 : MEASUREMENT BANDWIDTH IS 1MHz
 : EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5805.0	H	TOTAL					34.6	36
5805.0	V	TOTAL					21.8	36
5805.0	H	1MHz	115.4	17.9	9.1	-5.4	21.6	
5805.0	V	1MHz	104.3	5.1	9.1	-5.4	8.8	
11610.0	H	1MHz	37.7	-39.2	15.1	-8.3	-32.4	-27
11610.0	V	1MHz	38.4	-41.2	15.1	-8.3	-34.4	-27
17415.0	H	1MHz	40.3	-55.3	13.7	-10.1	-51.7	-27
17415.0	V	1MHz	40.0	-54.9	13.7	-10.1	-51.3	-27
23220.0	H	1MHz	41.6	-54.7	12.8	0.0	-41.9	-27
23220.0	V	1MHz	41.4	-54.3	12.8	0.0	-41.5	-27
29025.0	H	1MHz	33.4	-57.4	15.5	0.0	-41.9	-27
29025.0	V	1MHz	32.9	-57.8	15.5	0.0	-42.3	-27
34830.0	H	1MHz	32.4	-61.3	16.8	0.0	-44.5	-27
34830.0	V	1MHz	32.8	-60.8	16.8	0.0	-44.0	-27

CHECKED BY: *Richard E. King*
 RICHARD E. KING



ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
MODEL : MOTOROLA CANOPY
S/N : NONE ASSIGNED
SPECIFICATION : FCC 15.407
DATE : JANUARY 20, 2003
NOTES : PANEL ANTENNA TRANSMITTING AT 5745.0MHz
: TEST DISTANCE IS 3 METERS
: MEASUREMENT BANDWIDTH IS 1MHz
: EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5745.0	H	TOTAL					33.8	36
5745.0	V	TOTAL					23.4	36
5745.0	H	1MHz	115.7	17.2	9.0	-5.4	20.8	
5745.0	V	1MHz	107.7	6.8	9.0	-5.4	10.4	
11490.0	H	1MHz	37.9	-39.2	15.0	-8.3	-32.5	-27
11490.0	V	1MHz	38.0	-43.1	15.0	-8.3	-36.4	-27
17235.0	H	1MHz	40.4	-54.6	13.6	-10.1	-51.1	-27
17235.0	V	1MHz	40.5	-55.3	13.6	-10.1	-51.7	-27
22980.0	H	1MHz	41.7	-53.1	12.7	0.0	-40.4	-27
22980.0	V	1MHz	41.2	-53.8	12.7	0.0	-41.1	-27
28725.0	H	1MHz	33.8	-57.6	15.4	0.0	-42.2	-27
28725.0	V	1MHz	33.3	-57.9	15.4	0.0	-42.5	-27
34470.0	H	1MHz	32.6	-61.3	16.8	0.0	-44.5	-27
34470.0	V	1MHz	33.1	-61.5	16.8	0.0	-44.7	-27

CHECKED BY:

Richard E. King
RICHARD E. KING



ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
 MODEL : MOTOROLA CANOPY
 S/N : NONE GIVEN
 SPECIFICATION : FCC 15.407
 DATE : JANUARY 20, 2003
 NOTES : PANEL ANTENNA TRANSMITTING AT 5805.0MHz
 : TEST DISTANCE IS 3 METERS
 : MEASUREMENT BANDWIDTH IS 1MHz
 : EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5805.0	H	TOTAL					34.0	36
5805.0	V	TOTAL					23.0	36
5805.0	H	1MHz	115.6	17.3	9.1	-5.4	21.0	
5805.0	V	1MHz	106.6	6.3	9.1	-5.4	10.0	
11610.0	H	1MHz	38.6	-40.0	15.1	-8.3	-33.2	-27
11610.0	V	1MHz	40.0	-42.0	15.1	-8.3	-35.2	-27
17415.0	H	1MHz	39.9	-55.5	13.7	-10.1	-51.9	-27
17415.0	V	1MHz	40.9	-54.7	13.7	-10.1	-51.1	-27
23220.0	H	1MHz	42.7	-54.2	12.8	0.0	-41.4	-27
23220.0	V	1MHz	42.8	-54.1	12.8	0.0	-41.3	-27
29025.0	H	1MHz	33.6	-57.2	15.5	0.0	-41.7	-27
29025.0	V	1MHz	32.1	-57.8	15.5	0.0	-42.3	-27
34830.0	H	1MHz	32.7	-61.2	16.8	0.0	-44.4	-27
34830.0	V	1MHz	32.6	-60.9	16.8	0.0	-44.1	-27

CHECKED BY: *Richard E. King*
 RICHARD E. KING



ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
MODEL : MOTOROLA CANOPY
S/N : NONE ASSIGNED
SPECIFICATION : FCC 15.407
DATE : JANUARY 20, 2003
NOTES : DISH ANTENNA TRANSMITTING AT 5745MHz
: TEST DISTANCE IS 3 METERS
: MEASUREMENT BANDWIDTH IS 1MHz
: EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5745.0	H	TOTAL					42.0	53
5745.0	V	TOTAL					32.8	53
5745.0	H	1MHz	125.9	25.4	9.0	-5.4	29.0	
5745.0	V	1MHz	114.3	16.2	9.0	-5.4	19.8	
11490.0	H	1MHz	37.7	-39.2	15.0	-8.3	-32.5	-27
11490.0	V	1MHz	36.2	-43.1	15.0	-8.3	-36.4	-27
17235.0	H	1MHz	40.2	-54.6	13.6	-10.1	-51.0	-27
17235.0	V	1MHz	41.6	-55.3	13.6	-10.1	-51.7	-27
22980.0	H	1MHz	41.4	-53.1	12.7	0.0	-40.4	-27
22980.0	V	1MHz	42.1	-53.8	12.7	0.0	-41.1	-27
28725.0	H	1MHz	33.9	-57.6	15.4	0.0	-42.2	-27
28725.0	V	1MHz	33.2	-57.9	15.4	0.0	-42.5	-27
34470.0	H	1MHz	32.6	-61.3	16.8	0.0	-44.5	-27
34470.0	V	1MHz	32.9	-61.5	16.8	0.0	-44.7	-27

CHECKED BY:

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ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
MODEL : MOTOROLA CANOPY
S/N : NONE ASSIGNED
SPECIFICATION : FCC 15.407
DATE : JANUARY 20, 2003
NOTES : DISH ANTENNA TRANSMITTING AT 5805MHz
: TEST DISTANCE IS 3 METERS
: EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5805.0	H	TOTAL					37.1	53
5805.0	V	TOTAL					33.5	53
5805.0	H	1MHz	118.4	20.4	9.1	-5.4	24.1	
5805.0	V	1MHz	114.3	16.8	9.1	-5.4	20.5	
11610.0	H	1MHz	38.4	-39.2	15.1	-8.3	-32.4	-27
11610.0	V	1MHz	39.1	-42.3	15.1	-8.3	-35.5	-27
17415.0	H	1MHz	39.5	-55.1	13.7	-10.1	-51.5	-27
17415.0	V	1MHz	39.9	-54.6	13.7	-10.1	-51.0	-27
23220.0	H	1MHz	41.4	-54.1	12.8	0.0	-41.3	-27
23220.0	V	1MHz	42.1	-54.4	12.8	0.0	-41.6	-27
29025.0	H	1MHz	33.2	-57.2	15.5	0.0	-41.7	-27
29025.0	V	1MHz	32.5	-57.6	15.5	0.0	-42.1	-27
34830.0	H	1MHz	32.5	-60.9	16.8	0.0	-44.1	-27
34830.0	V	1MHz	32.9	-61.2	16.8	0.0	-44.4	-27

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ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
MODEL : MOTOROLA CANOPY
S/N : NONE ASSIGNED
SPECIFICATION : FCC 15.407
DATE : MARCH 19, 2003
NOTES : METAL BOX ROD ANTENNA TRANSMITTING AT 5745MHz
: TEST DISTANCE IS 3 METERS
: MEASUREMENT BANDWIDTH IS 1MHz
: EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5745.0	H	TOTAL					17.1	36
5745.0	V	TOTAL					31.6	36
5745.0	H	1MHz	91.7	0.5	9.0	-5.4	4.1	
5745.0	V	1MHz	111.5	15.0	9.0	-5.4	18.6	
11490.0	H	1MHz	36.9	-39.2	15.0	-8.3	-32.5	-27
11490.0	V	1MHz	36.1	-43.1	15.0	-8.3	-36.4	-27
17235.0	H	1MHz	40.4	-54.6	13.6	-10.1	-51.0	-27
17235.0	V	1MHz	41.6	-55.3	13.6	-10.1	-51.7	-27
22980.0	H	1MHz	42.8	-52.0	12.7	0.0	-39.3	-27
22980.0	V	1MHz	41.6	-52.0	12.7	0.0	-39.3	-27
28725.0	H	1MHz	35.1	-57.1	15.4	0.0	-41.7	-27
28725.0	V	1MHz	34.2	-57.2	15.4	0.0	-41.8	-27
34470.0	H	1MHz	34.4	-60.0	16.8	0.0	-43.2	-27
34470.0	V	1MHz	35.4	-59.0	16.8	0.0	-42.2	-27

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ETR 31804-01
DATA SHEET

MANUFACTURER : CASCADE NETWORKS
MODEL : MOTOROLA CANOPY
S/N : NONE GIVEN
SPECIFICATION : FCC 15.407
DATE : MARCH 19, 2003
NOTES : METAL BOX ROD ANTENNA TRANSMITTING AT 5805MHz
: TEST DISTANCE IS 3 METERS
: MEASUREMENT BANDWIDTH IS 1MHz
: EIRP (1MHz) + 13dB = TOTAL EIRP

FREQ. (MHz)	ANT. POL.	BW	MTR. READING (dBuV)	MATCHED SIGNAL (dBm)	ANT. GAIN	CABLE LOSS (dB)	EIRP (dBm)	LIMIT (dBm)
5805.0	H	TOTAL					11.9	36
5805.0	V	TOTAL					31.9	36
5805.0	H	1MHz	90.3	-4.8	9.1	-5.4	-1.1	
5805.0	V	1MHz	111.8	15.2	9.1	-5.4	18.9	
11610.0	H	1MHz	34.1	-39.2	15.1	-8.3	-32.4	-27
11610.0	V	1MHz	34.3	-42.3	15.1	-8.3	-35.5	-27
17415.0	H	1MHz	39.4	-55.1	13.7	-10.1	-51.5	-27
17415.0	V	1MHz	39.2	-54.6	13.7	-10.1	-51.0	-27
23220.0	H	1MHz	41.3	-51.0	12.8	0.0	-38.2	-27
23220.0	V	1MHz	42.3	-52.0	12.8	0.0	-39.2	-27
29025.0	H	1MHz	35.1	-57.2	15.5	0.0	-41.7	-27
29025.0	V	1MHz	35.0	-57.3	15.5	0.0	-41.8	-27
34830.0	H	1MHz	35.8	-59.0	16.8	0.0	-42.2	-27
34830.0	V	1MHz	34.8	-59.1	16.8	0.0	-42.3	-27

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