

ELITE ELECTRONIC ENGINEERING INCORPORATED  
1516 CENTRE CIRCLE  
DOWNERS GROVE, ILLINOIS 60515-1082

ELITE PROJECT: 27764

DATE TESTED: June 7, 1999

TEST PERSONNEL: Mark E. Longinotti

TEST SPECIFICATION: FCC "Code of Federal Regulations" Title 47  
Part 15, Subpart B

ENGINEERING TEST REPORT NO. 21754  
MEASUREMENT OF RF INTERFERENCE FROM  
A MODEL JCI RX  
SUPER-REGENERATIVE RECEIVER

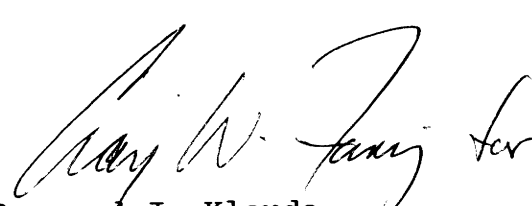
FOR: Chamberlain Manufacturing  
Elmhurst, IL

PURCHASE ORDER NO: 30357

Report By:

  
Neil J. Hurley

Approved By:

  
Raymond J. Klouda  
Registered Professional  
Engineer of Illinois - 44894

ADMINISTRATIVE DATA AND SUMMARY OF TESTS

**DESCRIPTION OF TEST ITEM:** Super-Regenerative Receiver

**MODEL NO:** JCI RX

**SERIAL NO:** 14D562A

**MANUFACTURER:** Chamberlain Manufacturing

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

**QUANTITY OF ITEMS TESTED:** One (1)

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

**DATE RECEIVED:** June 7, 1999

**DATE TESTED:** June 7, 1999

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

**CUSTOMER:** No Chamberlain Manufacturing personnel were present.

**ELITE ELECTRONIC:** Mark E. Longinotti

**ELITE JOB NO.:** 27764

**ABSTRACT:** The model JCI RX Super-Regenerative Receiver, does meet the radiated emission requirements of the FCC "Code of Federal Regulations", Title 47, Part 15, Subpart B for unintentional radiators (receivers).

The radiated emissions level closest to the limit (worst case) occurred at 799.99MHz with the test item cohered. The emissions level at this frequency was 15.7dB within the limit. See data pages 18 through 20 and 25 through 27 for more details.

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

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TOTAL NUMBER OF PAGES IN THIS DOCUMENT,  
(INCLUDING DATA SHEETS): 27

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ENGINEERING TEST REPORT NO. 21754  
MEASUREMENT OF RF INTERFERENCE FROM  
A MODEL JCI RX  
SUPER-REGENERATIVE RECEIVER

**1.0 INTRODUCTION:**

**1.1 DESCRIPTION OF TEST ITEM:** On June 7, 1999, a series of radio interference measurements were performed on a model JCI RX Super-Regenerative Receiver, serial number 14D562A, (hereinafter referred to as the test item). The tests were performed for Chamberlain Manufacturing of Elmhurst, IL.

The test item is a super-regenerative type receiver designed to tune at approximately 390MHz. The test item is installed in a 12VDC automotive battery and has an internal antenna.

**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 unintentional radiators. 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 B for unintentional radiators, dated 1 October 1998
- ANSI C63.4-1992, "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 20°C and the relative humidity was 55%.

**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 obtained 12VDC power from the automotive battery in which it was installed.

**2.2 GROUNDING:** Since the test item was installed in a 12VDC automotive battery, the test item was ungrounded during the tests.

**2.3 PERIPHERAL EQUIPMENT:** No peripheral equipment was required for operation of the test item.

**2.4 OPERATIONAL MODE:** For all tests the test item was placed on a 80cm high non-conductive stand.

For all tests, the test item was energized. When the test item is energized, it is in the normal mode of operation, waiting for a transmitted signal. The test item was operated both cohered by an external -77dBm (unmodulated) signal at 390MHz via a stub antenna, and uncohered with no transmitted signal.

**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.

Radiated emissions were performed with an HP 85462A 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. Measurements above 1GHz were performed with a 1MHz bandwidth and the average detector function.

**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:

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  |

**4.0 REQUIREMENTS, PROCEDURES AND RESULTS:**

**4.1 POWERLINE CONDUCTED EMISSIONS:**

**4.1.1 REQUIREMENTS:** Since the test item was powered by the automotive battery in which it was installed, no conducted emissions tests were performed.

**4.2 RADIATED MEASUREMENTS:**

**4.2.1 REQUIREMENTS:** All emanations from an unintentional radiator shall be below the levels shown on the following table.

**RADIATION LIMITS FOR UNINTENTIONAL RADIATORS**

| Frequency<br>MHz | Distance between Test Item<br>and Antenna in Meters | Field Strength<br>uV/m |
|------------------|-----------------------------------------------------|------------------------|
| 30-88            | 3                                                   | 100                    |
| 88-216           | 3                                                   | 150                    |
| 216-960          | 3                                                   | 200                    |
| Above 960        | 3                                                   | 500                    |

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

**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.

Since a quasi-peak detector requires long integration times, it is not practical to automatically sweep through the quasi-peak 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 detector.

The broadband measuring antenna was positioned at a 3 meter distance from the test item. The frequency range from 30MHz to 1000MHz was investigated using a peak detector function with the bilog antenna at several heights, horizontal and vertical antenna polarization, and with several different orientations of the test item with respect to

the antenna. The maximum levels for each antenna polarization were plotted.

Preliminary measurements made above 1GHz were measured using a peak detector function and automatically plotted. A double ridged waveguide antenna is used at one antenna height and the turntable is set with one orientation of the test item with respect to the antenna. The broadband measuring antenna was positioned at a 3 meter distance from the test item.

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

- 1) Below 1GHz measurements were made using a quasi-peak detector and a broadband bi-log antenna.
- 2) Above 1GHz measurements were made using an average detector and a double ridged waveguide antenna.
- 3) To ensure that maximum 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 operated both cohered by an external -77dBm (unmodulated) signal at 390MHz via a stub antenna, and uncohered with no transmitted signal.

**4.2.3 RESULTS:** The preliminary plots are presented on data pages 14 through 17 and 21 through 24. The plots of data from 30MHz to 2000MHz represent composite maximum peak readings of multiple antenna heights and multiple orientations of the test item. The plots



are presented for a reference only, and are not used as official data.

The final open area radiated levels are presented on data pages 18 through 20 and 25 through 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 799.99MHz with the test item cohered. The emissions level at this frequency was 15.7dB within the limit. See data pages 18 through 20 and 25 through 27 for details. Photographs of the test configuration which yielded the highest, or worst case, radiated emission levels are shown on Figures 2 and 3.

#### **5.0 CONCLUSION:**

It was found that the Chamberlain Manufacturing model JCI RX Super-Regenerative Receiver, serial number 14D562A, does meet the radiated interference requirements of Section 15.109 of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart B for unintentional radiators (receivers).

#### **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.

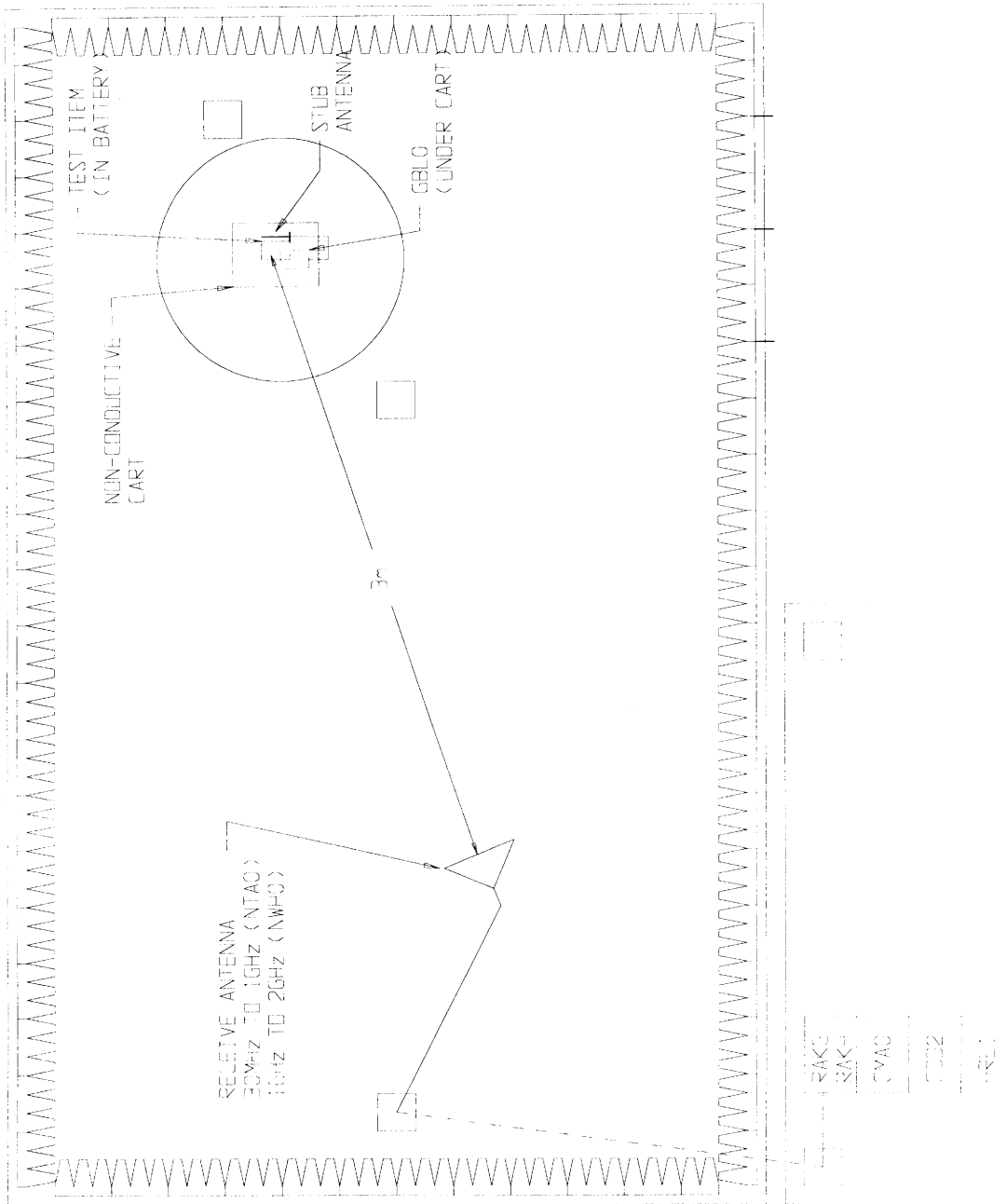
# ENGINEERING TEST REPORT NO. 21754

TABLE I: TEST EQUIPMENT LIST

| ELITE ELECTRONIC ENG. INC.            |                         |                 |              |            |                 |             | Page: 1          |
|---------------------------------------|-------------------------|-----------------|--------------|------------|-----------------|-------------|------------------|
| Eq ID                                 | Equipment Description   | Manufacturer    | Model No.    | Serial No. | Frequency Range | Cal Date    | Cal Inv Due Date |
| Equipment Type: ANTENNAS              |                         |                 |              |            |                 |             |                  |
| NTAO                                  | BILOG ANTENNA           | CHASE EMC LTD.  | BILOG CBL611 | 2057       | .03-2GHZ        | 04/10/99 12 | 04/10/00         |
| NWHO                                  | DOUBLE RIDGED WAVEGUIDE | TENSOR          | 4105         | 2081       | 1-12.4GHZ       | 08/26/98 12 | 08/26/99         |
| Equipment Type: CONTROLLERS           |                         |                 |              |            |                 |             |                  |
| CDD2                                  | COMPUTER                | HEWLETT PACKARD | D4171A#ABA   | US61654645 | ---             |             | N/A              |
| CMAO                                  | MULTI-DEVICE CONTROLLER | EMCO            | 2090         | 9701-1213  | ---             |             | N/A              |
| Equipment Type: PRINTERS AND PLOTTERS |                         |                 |              |            |                 |             |                  |
| HRE1                                  | LASER JET 5P            | HEWLETT PACKARD | C3150A       | USHB061052 | ---             |             | N/A              |
| Equipment Type: RECEIVERS             |                         |                 |              |            |                 |             |                  |
| RAKG                                  | RF SECTION              | HEWLETT PACKARD | 85462A       | 3549A00284 | 9KHZ-6.5GHZ     | 02/02/99 12 | 02/02/00         |
| RAKH                                  | RF FILTER SECTION       | HEWLETT PACKARD | 85460A       | 3448A00324 | ---             | 02/02/99 12 | 02/02/00         |
| Equipment Type: SIGNAL GENERATORS     |                         |                 |              |            |                 |             |                  |
| GBLO                                  | SYNTHESIZED GENERATOR   | HEWLETT PACKARD | 8656B        | 2523A01727 | 0.1-990MHZ      | 09/16/98 12 | 09/16/99         |

Cal. Interval: Listed in Months I/O: Initial Only N/A: Not Applicable

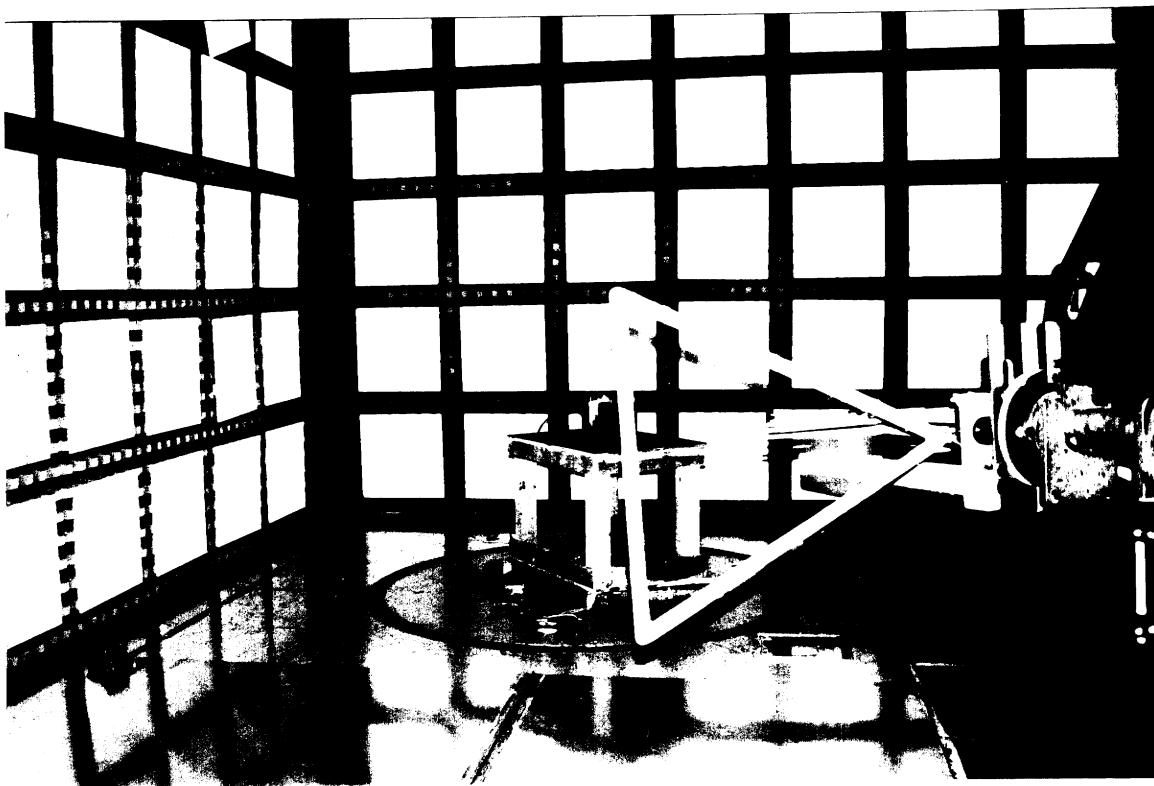
Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.



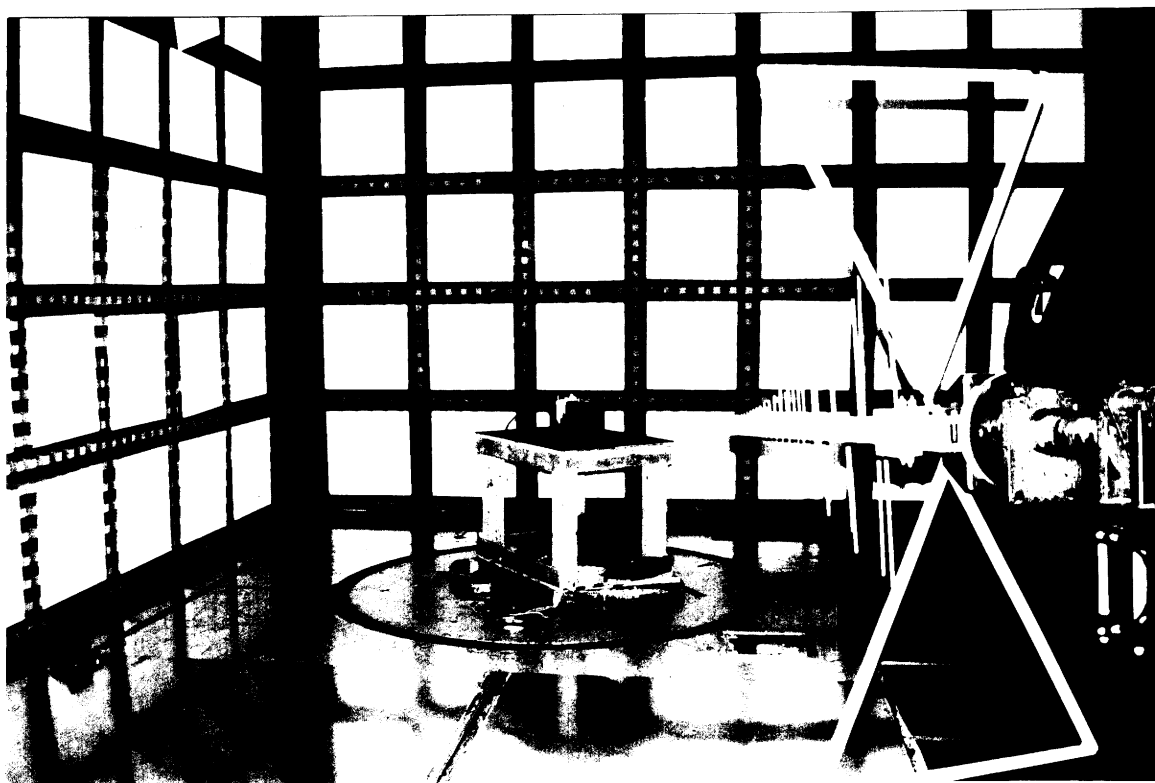
21754

REVISIONS: TEST ITEM SETUP FOR RADIATION EMISSIONS MEASUREMENT

FIGURE 2

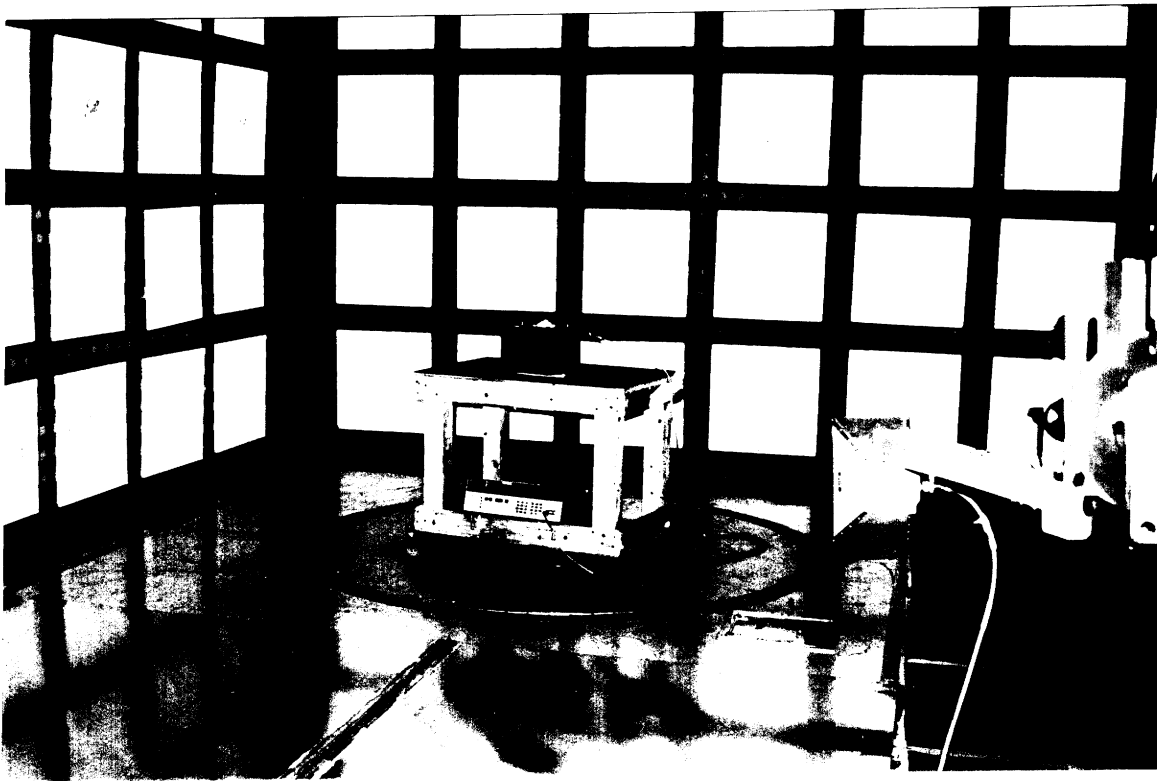


TEST SETUP FOR RADIATED EMISSIONS MEASUREMENTS  
MAXIMIZED FOR MEASUREMENT OF WORST CASE EMISSIONS  
HORIZONTAL POLARIZATION

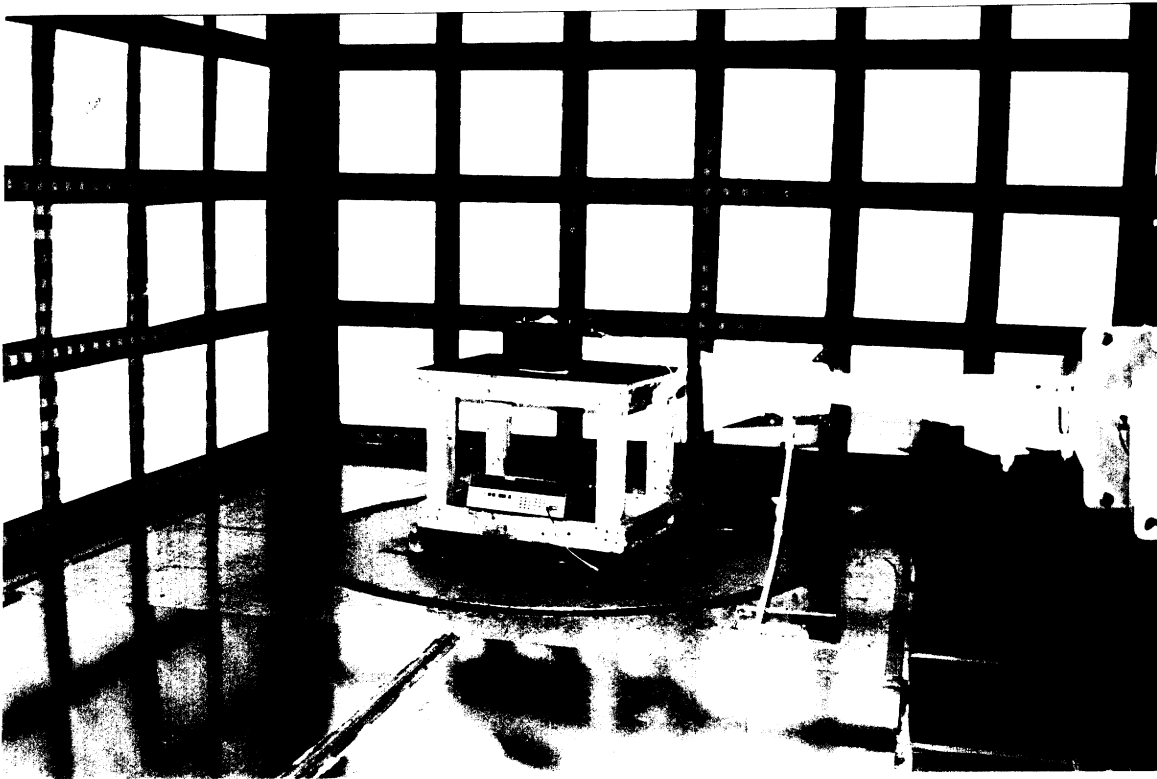


TEST SETUP FOR RADIATED EMISSIONS MEASUREMENTS  
MAXIMIZED FOR MEASUREMENT OF WORST CASE EMISSIONS  
VERTICAL POLARIZATION

FIGURE 3



TEST SETUP FOR RADIATED EMISSIONS MEASUREMENTS  
MAXIMIZED FOR MEASUREMENT OF WORST CASE EMISSIONS  
HORIZONTAL POLARIZATION



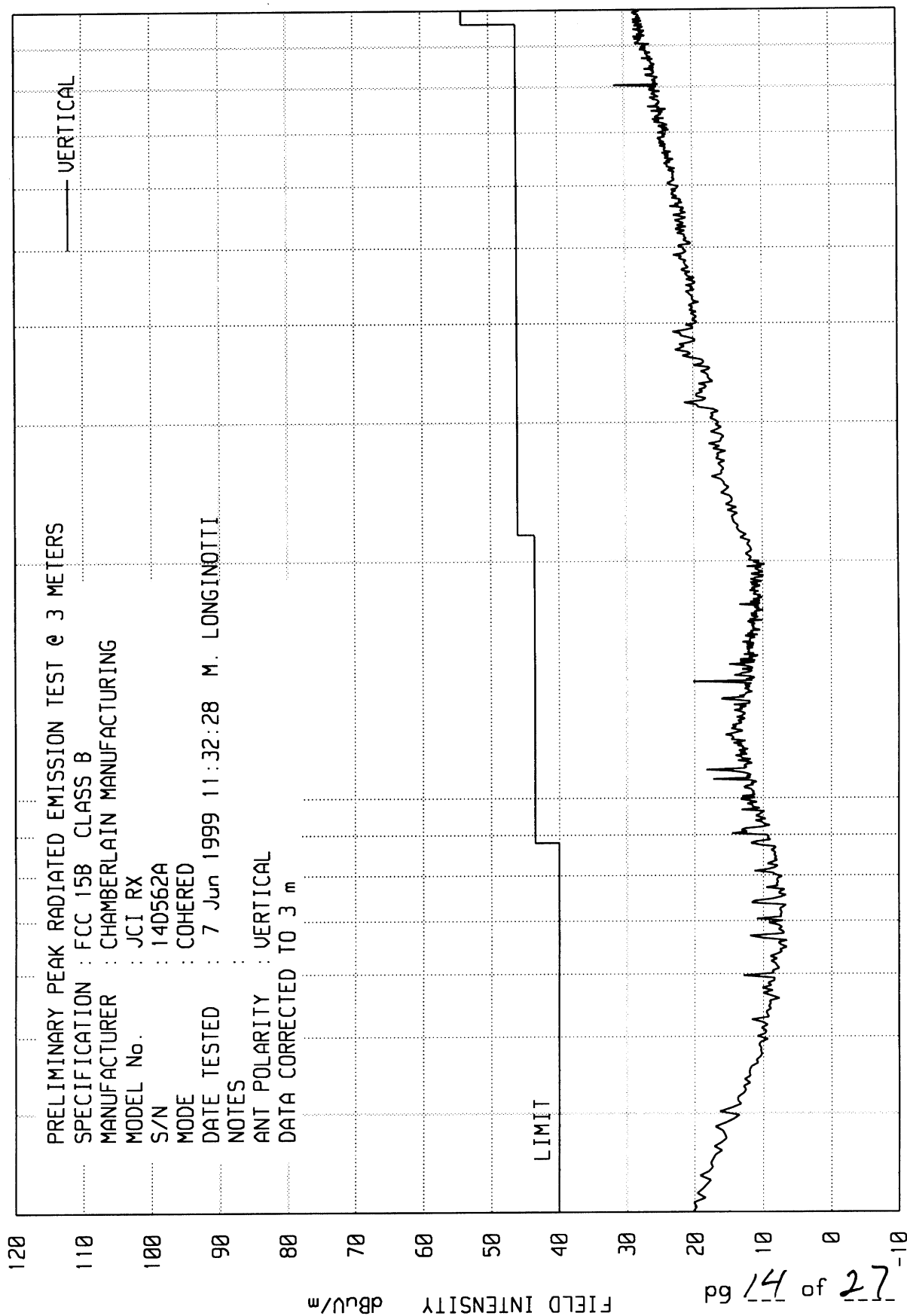
TEST SETUP FOR RADIATED EMISSIONS MEASUREMENTS  
MAXIMIZED FOR MEASUREMENT OF WORST CASE EMISSIONS  
VERTICAL POLARIZATION

# ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

8546A RE RUN 4

u0800 10/23/98

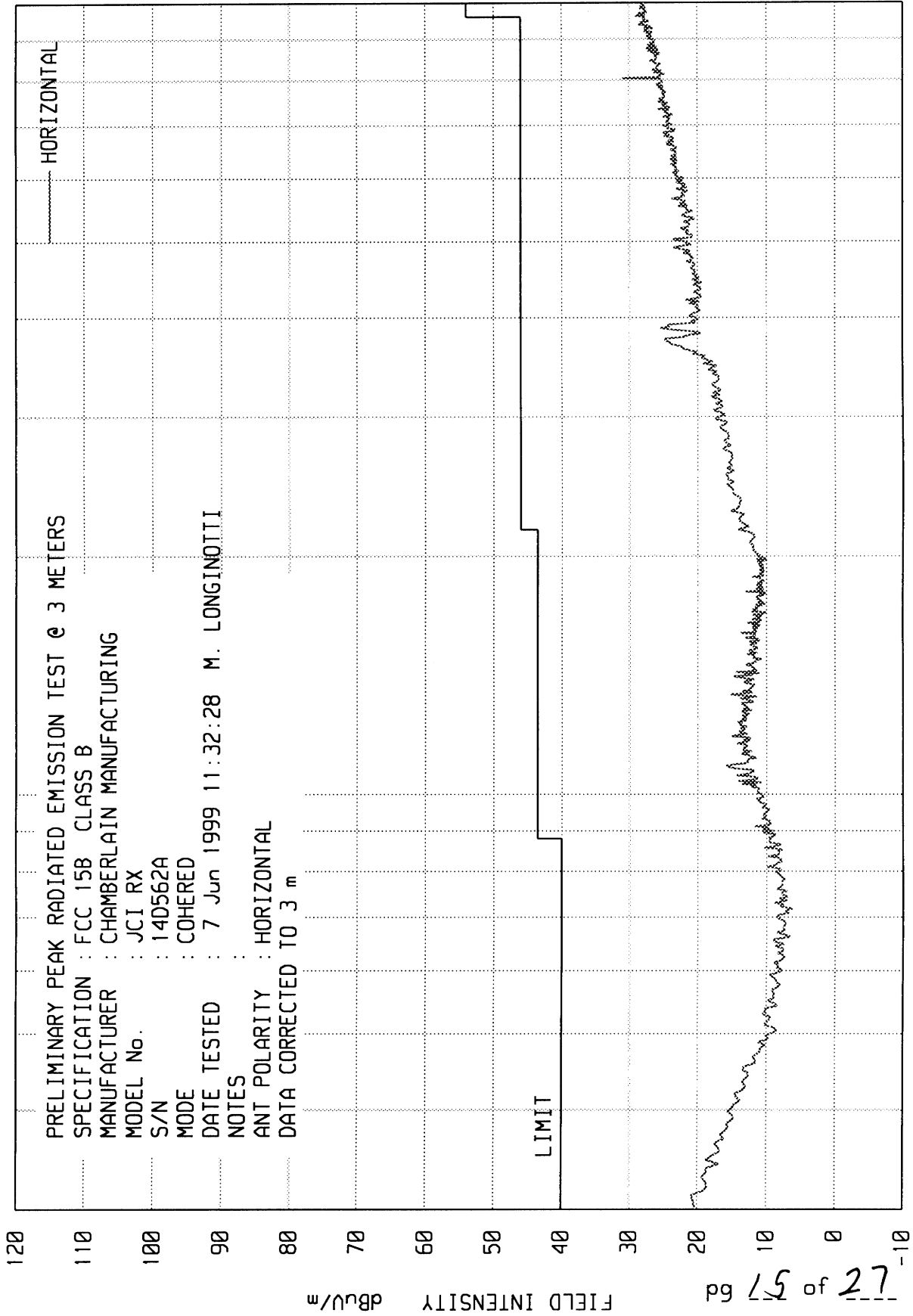


# ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

8546A RE RUN 4

W088 10/23/98



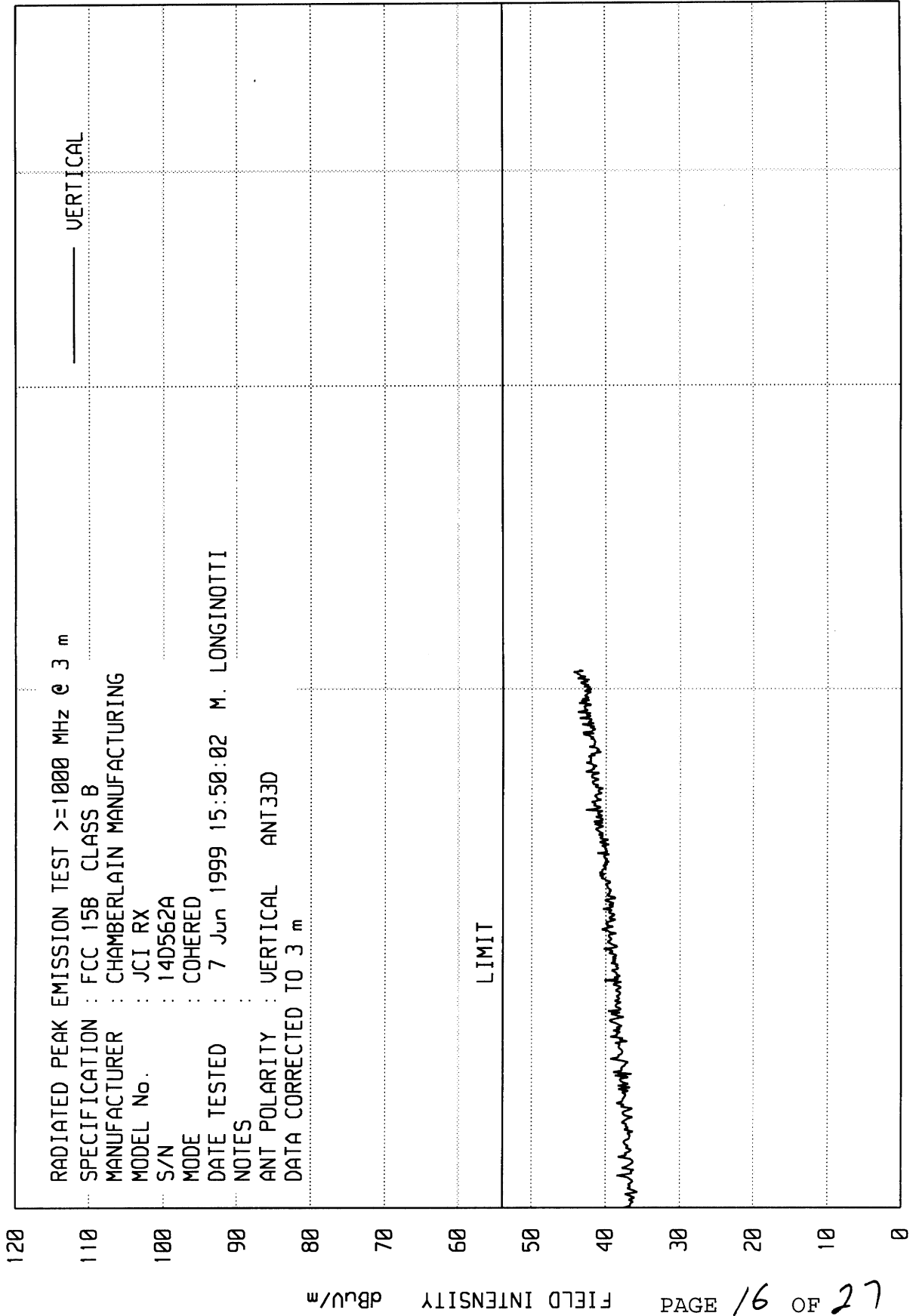
EE

## ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

8546A HF RUN 4

WOCB 12/15/97



dBuV/m

FIELD INTENSITY

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START = 1000

FREQUENCY - MHz

STOP = 5000

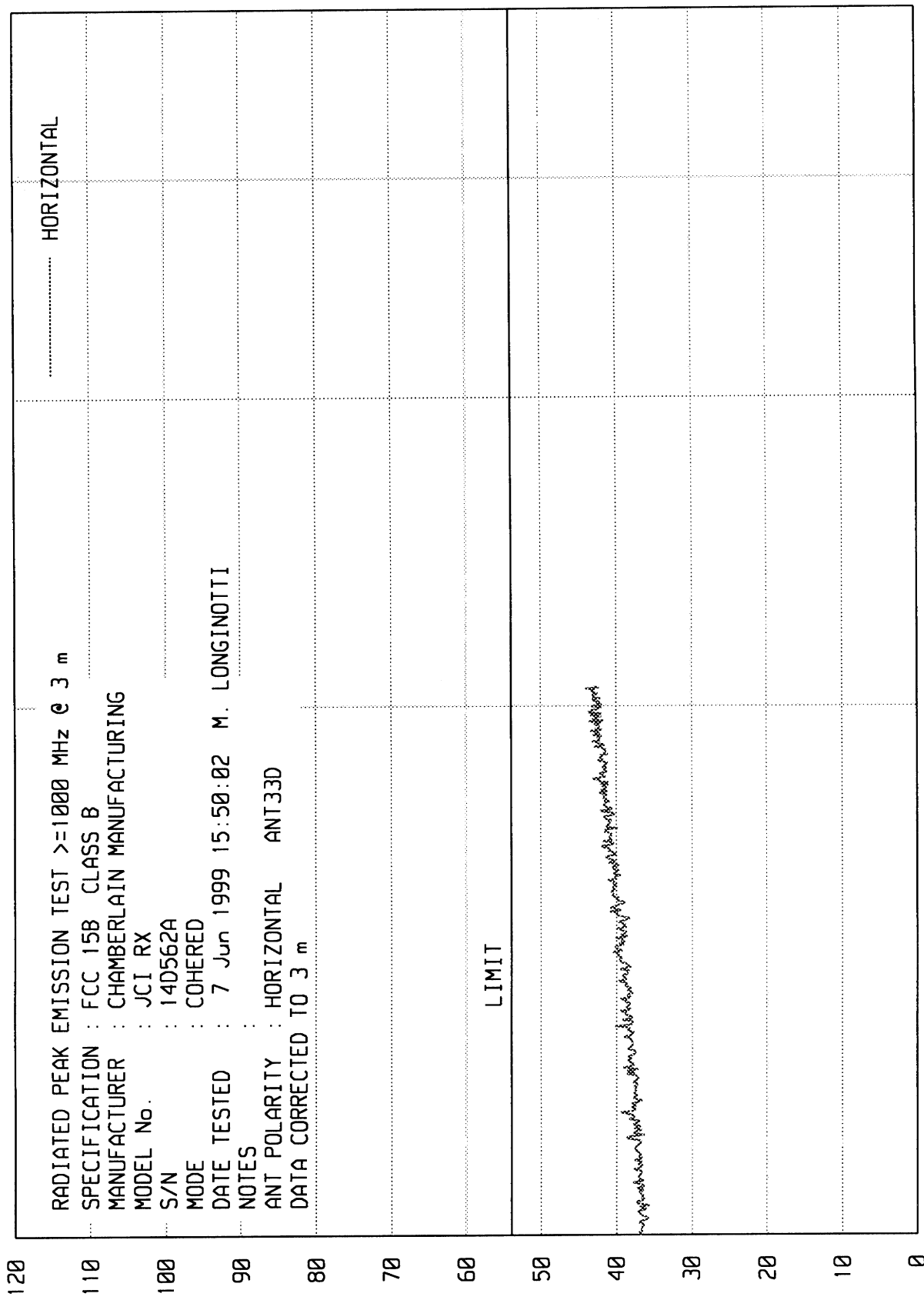


ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

8546A HF RUN 4

W0C0 12/15/97



RADIATED PEAK EMISSION TEST >=1000 MHz @ 3 m  
SPECIFICATION : FCC 15B CLASS B  
MANUFACTURER : CHAMBERLAIN MANUFACTURING  
MODEL No. : JCI RX  
S/N : 14D562A  
MODE : COHERED  
DATE TESTED : 7 Jun 1999 15:50:02 M. LONGINOTTI  
NOTES :  
ANT POLARITY : HORIZONTAL ANT33D  
DATA CORRECTED TO 3 m

START = 1000

FREQUENCY - MHz

STOP = 5000

RADIATED QP EMISSION MEASUREMENTS in a 3 m ANECHOIC ROOM  
SPECIFICATION : FCC 15B CLASS B  
MANUFACTURER : CHAMBERLAIN MANUFACTURING  
MODEL NO. : JCI RX  
SERIAL NO. : 14D562A  
TEST MODE : COHERED  
NOTES :  
TEST DATE : 7 Jun 1999 11:32:28  
TEST DISTANCE : 3 m (DATA EXTRAPOLATED TO 3 m)

| FREQUENCY | QP      | ANT  | CBL | DIST | TOTAL  | QP     | AZ  | ANT | POLAR |
|-----------|---------|------|-----|------|--------|--------|-----|-----|-------|
| MHz       | READING | FAC  | FAC | FAC  | dBuV/m | LIMIT  | deg | HT  |       |
|           | dBuV    | dB   | dB  | dB   |        | dBuV/m |     | cm  |       |
| 30.43     | -8.5    | 19.2 | .7  | 0.0  | 11.4   | 40.0   | -0  | 340 | H     |
| 59.48     | .7      | 6.9  | .8  | 0.0  | 8.4    | 40.0   | -0  | 120 | V     |
| 86.38     | -8.7    | 8.3  | .9  | 0.0  | .4     | 40.0   | 180 | 120 | V     |
| 107.92    | .7      | 11.6 | .9  | 0.0  | 13.3   | 43.5   | 0   | 340 | V     |
| 139.99    | 7.4     | 11.5 | 1.1 | 0.0  | 20.0   | 43.5   | 0   | 120 | V     |
| 146.99    | 0.0     | 11.2 | 1.1 | 0.0  | 12.3   | 43.5   | 0   | 120 | V     |
| 174.98    | -.7     | 10.1 | 1.2 | 0.0  | 10.6   | 43.5   | 0   | 120 | V     |
| 261.22    | -8.2    | 12.9 | 1.7 | 0.0  | 6.4    | 46.0   | 180 | 120 | V     |
| 368.28    | 2.5     | 15.6 | 2.1 | 0.0  | 20.2   | 46.0   | 180 | 120 | H     |
| 385.06    | 4.9     | 16.0 | 2.2 | 0.0  | 23.0   | 46.0   | 180 | 120 | H     |
| 574.47    | -8.4    | 18.8 | 2.9 | 0.0  | 13.3   | 46.0   | 240 | 340 | H     |
| 688.59    | -7.3    | 19.7 | 3.2 | 0.0  | 15.6   | 46.0   | 300 | 340 | V     |
| 761.12    | -8.0    | 20.6 | 3.4 | 0.0  | 16.0   | 46.0   | 120 | 340 | V     |
| 799.99    | 5.9     | 20.9 | 3.5 | 0.0  | 30.3   | 46.0   | -0  | 200 | V     |
| 934.84    | -7.4    | 22.6 | 3.8 | 0.0  | 19.0   | 46.0   | 300 | 120 | H     |

RADIATED QP EMISSION MEASUREMENTS in a 3 m ANECHOIC ROOM  
SPECIFICATION : FCC 15B CLASS B  
MANUFACTURER : CHAMBERLAIN MANUFACTURING  
MODEL NO. : JCI RX  
SERIAL NO. : 14D562A  
TEST MODE : COHERED  
NOTES :  
TEST DATE : 7 Jun 1999 11:32:28  
TEST DISTANCE : 3 m (DATA EXTRAPOLATED TO 3 m)

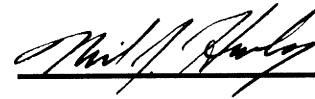
| FREQUENCY | QP      | ANT  | CBL | DIST | TOTAL  | QP     | AZ  | ANT | POLAR |
|-----------|---------|------|-----|------|--------|--------|-----|-----|-------|
| MHz       | READING | FAC  | FAC | FAC  | dBuV/m | LIMIT  | deg | HT  |       |
|           | dBuV    | dB   | dB  | dB   |        | dBuV/m |     | cm  |       |
| 389.99    | -4.0    | 16.1 | 2.2 | 0.0  | 14.3   | 46.0   | 125 | 120 | V     |
| 390.00    | -1.7    | 16.1 | 2.2 | 0.0  | 16.6   | 46.0   | 180 | 120 | H     |
| 779.85    | -7.8    | 20.7 | 3.5 | 0.0  | 16.4   | 46.0   | 265 | 142 | H     |
| 779.85    | -7.7    | 20.7 | 3.5 | 0.0  | 16.5   | 46.0   | 142 | 160 | V     |

ETR No.  
ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : CHAMBERLAIN MANUFACTURING  
MODEL : JCI RX SUPERREGENRATIVE RECEIVER  
S/N : 14D562A  
SPECIFICATION : FCC 15B  
TEST : RADIATED EMISSIONS TEST ABOVE 1GHz  
MODE : COHERED  
DATE : JUNE 7, 1999  
NOTES :  
RECEIVEVER : HP 8566 W/ HP85650A QP ADAPTOR  
VALUES MEASURED WITH A PEAK DETECTOR USING A 1MHz RESOULUTION BANDWIDTH,  
A 10Hz VIDEO BANDWIDTH AND A 5 SECOND SWEEP TIME

| FREQUENCY | ANT | METER   |         | ANTENNA | CABLE |        |       |       |
|-----------|-----|---------|---------|---------|-------|--------|-------|-------|
| MHz       | POL | READING | AMBIENT | FACTOR  | LOSS  | TOTAL  | TOTAL | LIMIT |
|           |     | dBuV    |         | dB      | dB    | dBuV/m | uV/m  | uV/m  |
| 1170.0    | V   | 6.7     | AMBIENT | 24.2    | 4.6   | 35.5   | 59.6  | 500   |
| 1170.0    | H   | 6.7     | AMBIENT | 24.2    | 4.6   | 35.5   | 59.6  | 500   |
| 1560.0    | V   | 7.4     | AMBIENT | 25.4    | 5.7   | 38.5   | 84.1  | 500   |
| 1560.0    | H   | 7.4     | AMBIENT | 25.4    | 5.7   | 38.5   | 84.1  | 500   |
| 1950.0    | V   | 8.4     | AMBIENT | 27.3    | 6.6   | 42.3   | 130.3 | 500   |
| 1950.0    | H   | 8.4     | AMBIENT | 27.3    | 6.6   | 42.3   | 130.3 | 500   |

CHECKED BY:



FREQUENCY - MHZ

START = 30

1001

8546A RE RUN 5

ELITE ELECTRONIC ENGINEERING Co.  
Downers Grove, Ill. 60515

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7-6d

FIELD INTENSITY dBu/m

120  
110  
100  
90  
80  
70  
60  
50  
40  
30  
20  
10  
0  
-10

PRELIMINARY PEAK RADIATED EMISSION TEST @ 3 METERS  
SPECIFICATION : FCC 15B CLASS B  
MANUFACTURER : CHAMBERLAIN MANUFACTURING  
MODEL No. : JCI RX  
S/N : 14D562A  
MODE : UNCOHERED  
DATE TESTED : 7 Jun 1999 13:08:03 M. LONGINOTTI  
NOTES :  
ANT POLARITY : VERTICAL  
DATA CORRECTED TO 3 m

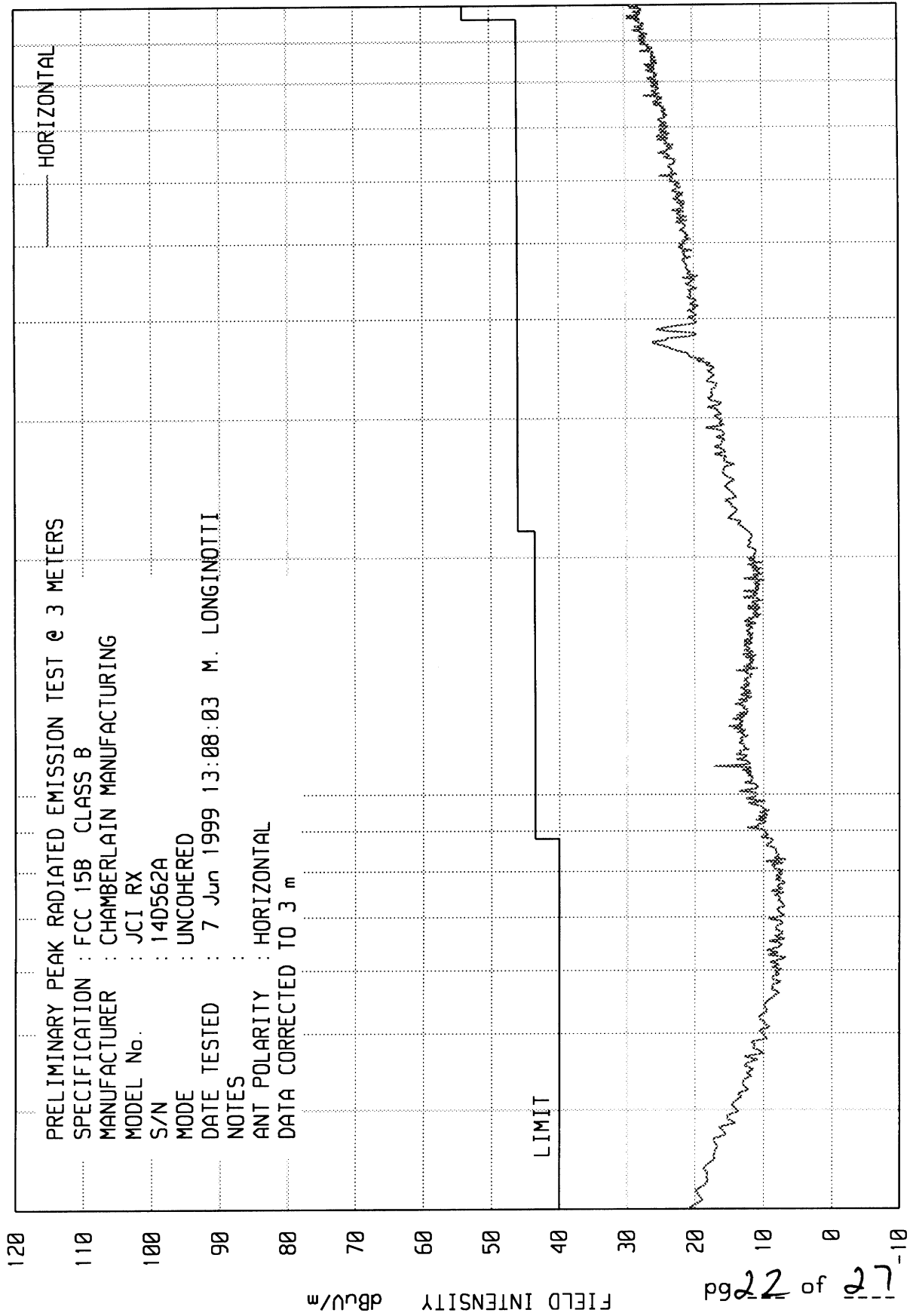
— VERTICAL

LIMIT

ELITE ELECTRONIC ENGINEERING Co.  
Downers Grove, Ill. 60515

10080 10/23/98

8546A RE RUN 5

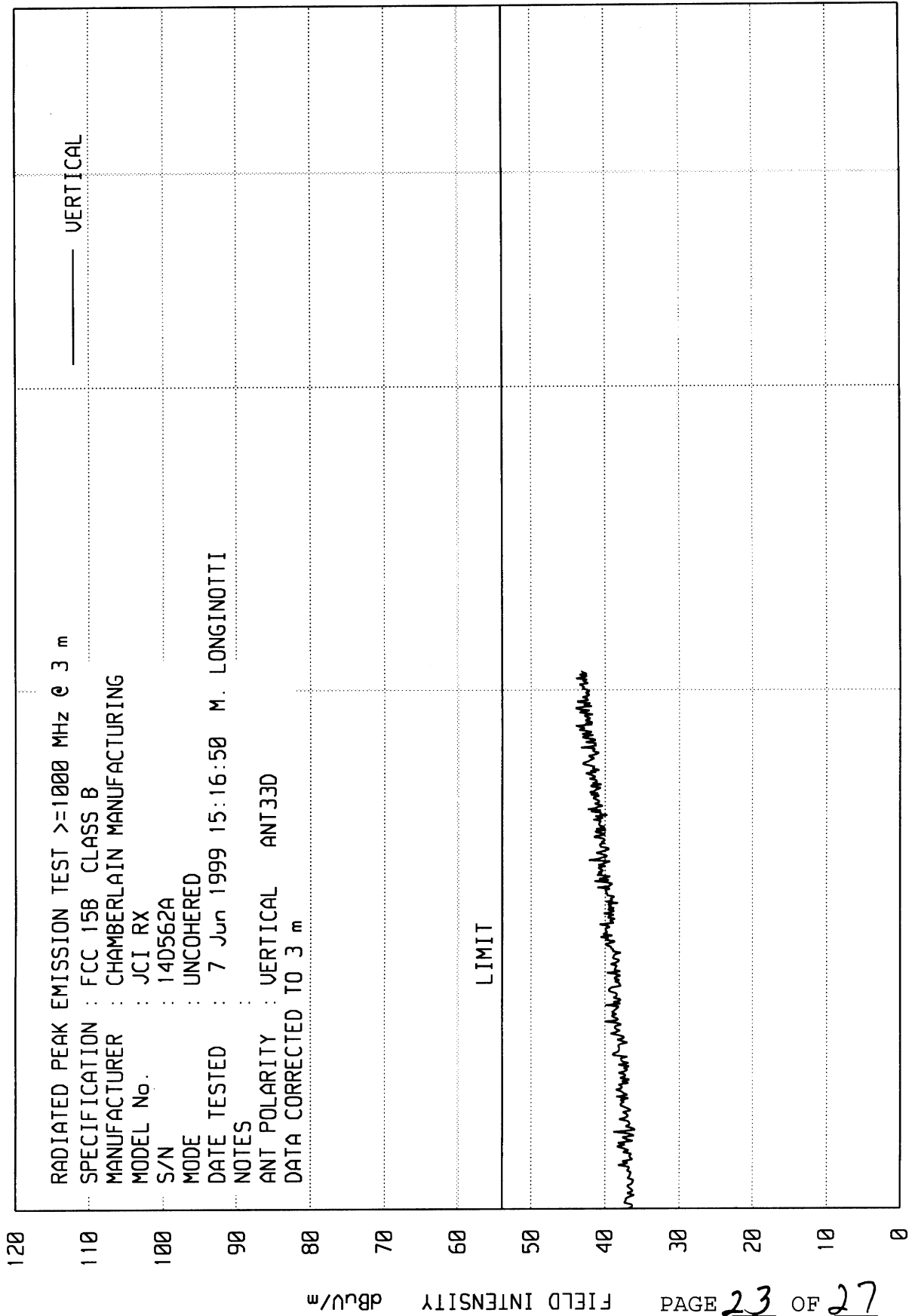


## ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

8546A HF RUN 3

W000 12/15/97



START = 1000

FREQUENCY - MHz

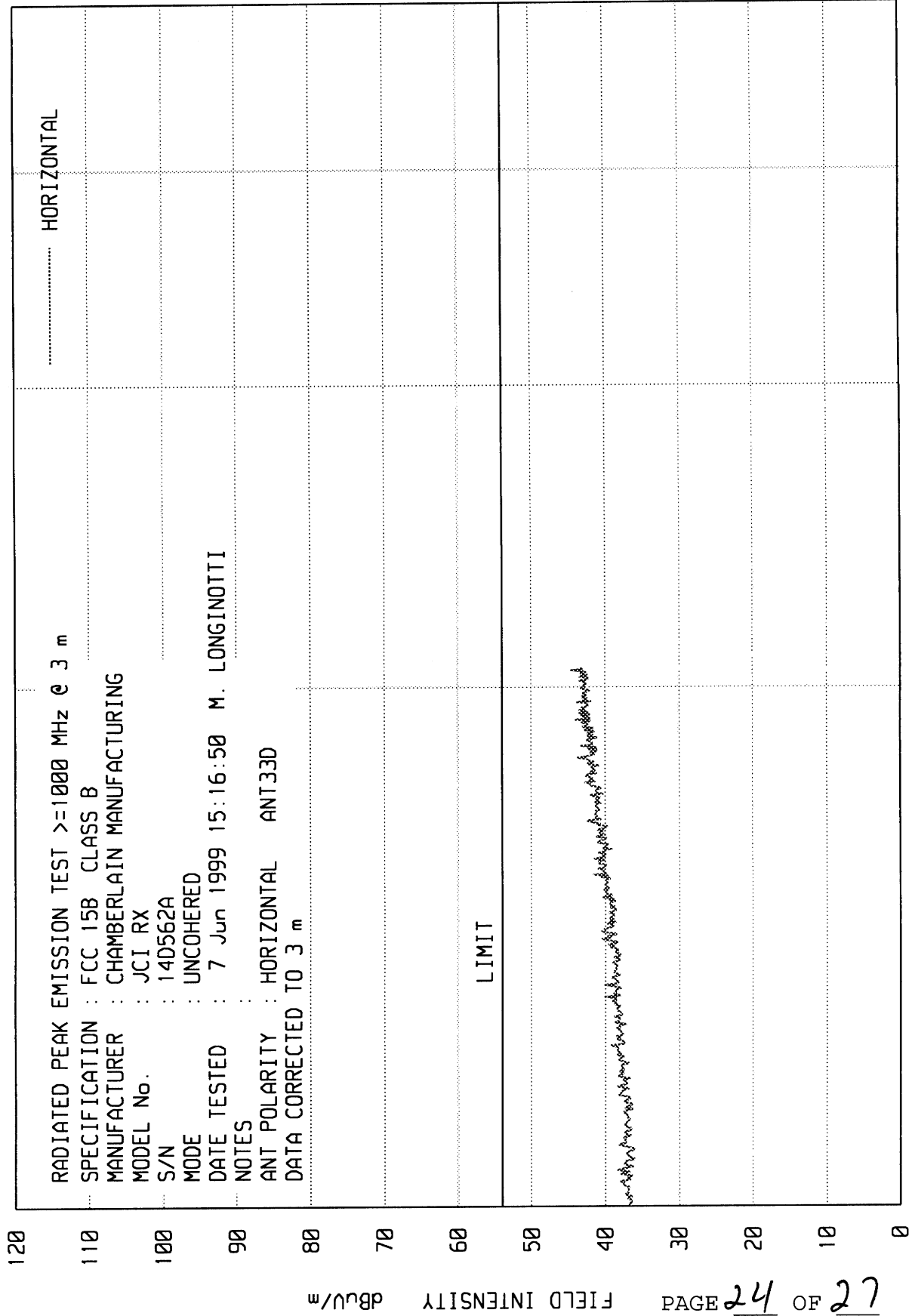
STOP = 5000

## ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

8546A HF RUN 3

JOC0 12/15/97



dBuV/m

FIELD INTENSITY

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START = 1000

FREQUENCY - MHz

STOP = 5000



RADIATED QP EMISSION MEASUREMENTS in a 3 m ANECHOIC ROOM  
SPECIFICATION : FCC 15B CLASS B  
MANUFACTURER : CHAMBERLAIN MANUFACTURING  
MODEL NO. : JCI RX  
SERIAL NO. : 14D562A  
TEST MODE : UNCOHERED  
NOTES :  
TEST DATE : 7 Jun 1999 13:08:03  
TEST DISTANCE : 3 m (DATA EXTRAPOLATED TO 3 m)

| FREQUENCY | QP      | ANT  | CBL | DIST | TOTAL  | QP     | AZ  | ANT | POLAR |
|-----------|---------|------|-----|------|--------|--------|-----|-----|-------|
| MHz       | READING | FAC  | FAC | FAC  | dBuV/m | LIMIT  | deg | HT  |       |
|           | dBuV    | dB   | dB  | dB   |        | dBuV/m |     | cm  |       |
| 51.83     | -7.0    | 8.8  | .8  | 0.0  | 2.5    | 40.0   | 60  | 200 | H     |
| 90.07     | 4.6     | 8.9  | .9  | 0.0  | 14.3   | 43.5   | 240 | 120 | V     |
| 107.92    | 6.7     | 11.6 | .9  | 0.0  | 19.3   | 43.5   | 300 | 340 | V     |
| 121.11    | -9.0    | 12.6 | 1.0 | 0.0  | 4.6    | 43.5   | 60  | 340 | H     |
| 145.24    | -7.6    | 11.2 | 1.1 | 0.0  | 4.8    | 43.5   | 180 | 120 | V     |
| 182.34    | -8.7    | 9.9  | 1.3 | 0.0  | 2.4    | 43.5   | 300 | 120 | V     |
| 250.85    | -7.8    | 12.7 | 1.6 | 0.0  | 6.5    | 46.0   | 120 | 120 | V     |
| 369.75    | 3.2     | 15.6 | 2.1 | 0.0  | 20.9   | 46.0   | 180 | 120 | H     |
| 370.07    | 3.1     | 15.6 | 2.1 | 0.0  | 20.9   | 46.0   | 180 | 120 | H     |
| 563.67    | -8.3    | 18.6 | 2.9 | 0.0  | 13.1   | 46.0   | 120 | 200 | V     |
| 680.86    | -7.1    | 19.6 | 3.2 | 0.0  | 15.8   | 46.0   | 300 | 200 | H     |
| 764.46    | -8.1    | 20.6 | 3.4 | 0.0  | 16.0   | 46.0   | -0  | 200 | H     |
| 896.99    | -7.4    | 22.2 | 3.8 | 0.0  | 18.5   | 46.0   | 240 | 200 | H     |
| 928.95    | -7.3    | 22.5 | 3.8 | 0.0  | 19.0   | 46.0   | 240 | 120 | H     |

RADIATED QP EMISSION MEASUREMENTS in a 3 m ANECHOIC ROOM  
SPECIFICATION : FCC 15B CLASS B  
MANUFACTURER : CHAMBERLAIN MANUFACTURING  
MODEL NO. : JCI RX  
SERIAL NO. : 14D562A  
TEST MODE : UNCOHERED  
NOTES :  
TEST DATE : 7 Jun 1999 13:08:03  
TEST DISTANCE : 3 m (DATA EXTRAPOLATED TO 3 m)

| FREQUENCY | QP      | ANT  | CBL | DIST | TOTAL  | QP     | AZ  | ANT | POLAR |
|-----------|---------|------|-----|------|--------|--------|-----|-----|-------|
| MHz       | READING | FAC  | FAC | FAC  | dBuV/m | LIMIT  | deg | HT  |       |
|           | dBuV    | dB   | dB  | dB   |        | dBuV/m |     | cm  |       |
| 389.85    | -1.0    | 16.1 | 2.2 | 0.0  | 17.2   | 46.0   | 180 | 120 | H     |
| 389.85    | -6.7    | 16.1 | 2.2 | 0.0  | 11.6   | 46.0   | 244 | 167 | V     |
| 779.85    | -1.8    | 20.7 | 3.5 | 0.0  | 22.5   | 46.0   | -0  | 200 | H     |
| 779.85    | -7.6    | 20.7 | 3.5 | 0.0  | 16.6   | 46.0   | 69  | 158 | V     |

ETR No.  
ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : CHAMBERLAIN MANUFACTURING  
 MODEL : JCI RX SUPERREGENRATIVE RECEIVER  
 S/N : 14D562A  
 SPECIFICATION : FCC 15B  
 TEST : RADIATED EMISSIONS TEST ABOVE 1GHz  
 MODE : UNCOHERED  
 DATE : JUNE 7, 1999  
 NOTES :  
 RECEIVER : HP 8566 W/ HP85650A QP ADAPTOR  
 VALUES MEASURED WITH A PEAK DETECTOR USING A 1MHz RESOLUTION BANDWIDTH,  
 A 10Hz VIDEO BANDWIDTH AND A 5 SECOND SWEEP TIME

| FREQUENCY | ANT | METER   |         | ANTENNA | CABLE |        |       |       |
|-----------|-----|---------|---------|---------|-------|--------|-------|-------|
| MHz       | POL | READING | AMBIENT | FACTOR  | LOSS  | TOTAL  | TOTAL | LIMIT |
|           |     | dBuV    |         | dB      | dB    | dBuV/m | uV/m  | uV/m  |
| 1170.0    | V   | 6.7     | AMBIENT | 24.2    | 4.6   | 35.5   | 59.6  | 500   |
| 1170.0    | H   | 6.7     | AMBIENT | 24.2    | 4.6   | 35.5   | 59.6  | 500   |
| 1560.0    | V   | 7.4     | AMBIENT | 25.4    | 5.7   | 38.5   | 84.1  | 500   |
| 1560.0    | H   | 7.3     | AMBIENT | 25.4    | 5.7   | 38.4   | 83.2  | 500   |
| 1950.0    | V   | 8.4     | AMBIENT | 27.3    | 6.6   | 42.3   | 130.3 | 500   |
| 1950.0    | H   | 8.4     | AMBIENT | 27.3    | 6.6   | 42.3   | 130.3 | 500   |

CHECKED BY:

