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

ELITE PROJECT: 29337 DATE TESTED: December 8 through 11, 2000

TEST PERSONNEL: Daniel E. Crowder

TEST SPECIFICATION: FCC "Code of Federal Regulations" Title 47
Part 15, Subpart C, Sections 15.207 & 15.209

ENGINEERING TEST REPORT NO. 23301

MEASUREMENT OF RF INTERFERENCE FROM

A PERIMETER ALARM SYSTEM TRANSMITTER

MODEL VER-3500

FOR: Versus Technology, Inc.
2600 Miller Creek Rd.
Traverse City, Michigan

PURCHASE ORDER NO.: RLW-00649

Report By:
Daniel E. Crowder

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

ENGINEERING TEST REPORT NO. 23301

ADMINISTRATIVE DATA AND SUMMARY OF TESTS

DESCRIPTION OF TEST ITEM: Perimeter Alarm System Transmitter

MODEL NOs: VER-3500

SERIAL NOs: None Assigned

MANUFACTURER: Versus Technology, 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: December 8, 2000

DATE TESTED: December 8 through 11, 2000

PERSONNEL (OPERATORS, OBSERVERS, AND CO-ORDINATORS):
CUSTOMER: No Versus Technology, Inc. personnel were present.
ELITE ELECTRONIC: Daniel E. Crowder

ELITE JOB NO.: 29337

ABSTRACT: The model VER-3500 Perimeter Alarm System Transmitter, does meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.207 & 15.209 for Intentional Radiators, when tested per ANSI C63.4-1992.

ENGINEERING TEST REPORT NO. 23301

TABLE OF CONTENTS

TOTAL NUMBER OF PAGES IN THIS DOCUMENT, (INCLUDING DATA SHEETS): 28

ENGINEERING TEST REPORT NO. 23301

MEASUREMENT OF RF INTERFERENCE FROM

A MODEL VER-3500 PERIMETER ALARM SYSTEM TRANSMITTER

1.0 INTRODUCTION:

1.1 DESCRIPTION OF TEST ITEM: This document presents the results of a series of radio interference measurements performed on a Perimeter Alarm System Transmitter, model VER-3500, (hereinafter referred to as the test item). No serial number was assigned to the test item. The test item was designed to transmit at approximately 10kHz using an internal antenna. The tests were performed for Versus Technology, Inc. of Traverse City, Michigan.

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 C, Sections for Intentional 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 C, dated 1 October 1999
- 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 22°C and the relative humidity was 22%.

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 14VAC power via a 2 wire, 1 meter long, unshielded power cord. The 14VAC was supplied from a Racal Power Supply model DV-1485AC. The power supply received 120VAC, 60Hz power.

The high and low leads were connected through a line impedance stabilization network (LISN) which was located on the copper ground plane. The network complies with the requirements of Paragraph 4.1.2 of ANSI C63.4-1992.

2.2 GROUNDING: Since only two wires were used to provide the input power, the test item was ungrounded during the tests.

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

For all tests, the test item was set to transmit continuously. The tests were performed with the test item transmitting at 10kHz.

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.

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

The fundamental, harmonics and spurious radiated emissions were measured with a spectrum analyzer. These measurements were taken with the resolution bandwidth of the measuring instrument adjusted to 100Hz below 150kHz, 10kHz from 150kHz to 30MHz and 120kHz from 30MHz to 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:

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: All radio frequency voltages on the power lines of an intentional radiator shall be below 250uV (quasi-peak) over the frequency range from 0.45MHz to 30MHz. It is also to be noted that if emitted levels in the peak detector function do not exceed the above limits, the test item does meet the intent of these requirements.

4.1.2 PROCEDURES: The interference on each power lead was measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. The meter terminal of the LISN not under test was terminated with 50 ohms. Measurements were first made over the entire frequency range from 450kHz through 30MHz with a peak detector and the results were automatically plotted. The data thus obtained was then searched by the computer for the highest levels. Quasi-peak measurements were automatically performed at the frequencies selected from the highest peak measurements, and the results printed.

4.1.3 RESULTS: The plots of the peak preliminary conducted voltage levels on each power line are presented on data pages 17 and 18. The conducted limit for intentional radiators is shown as a reference. The final quasi-peak results are presented on data pages 19 and 20.

The emissions level closest to the limit (worst case) occurred at 1.95MHz. The emissions level at this frequency was 13.4dB within the limit. Photographs of the test configuration which yielded the highest, or worst case, conducted emission levels are shown on Figure 3.

4.3 RADIATED MEASUREMENTS:

4.3.1 REQUIREMENTS: The test item must comply with the requirements of FCC "Code of Federal Regulations Title 47", Part 15, Subpart C, Section 15.209.

Paragraph 15.209 has the following radiated emission limits:

Frequency MHz	Field Strength uV/m	Measurement Distance (m)
0.009-0.49	2400/f(kHz)	300
0.49-1.705	24000/f(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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 1GHz was investigated using a peak detector function with the bilog antenna

at several heights, horizontal and vertical polarization, and with several different orientations of the test item with respect to the antenna. The maximum levels for each antenna polarization were plotted.

For the frequency range of 10kHz to 150kHz the test distance was reduced from 300 meters to 3 meters, so a correction factor was applied to the measurements. Radiation at 10kHz was measured at several distances and the levels plotted. A straight line was drawn through these points and the slope (which is the propagation loss constant) was calculated. Measurements and calculations are shown in Figure 2. The factors to correct levels at 3 meters to levels at 300 meters are shown on the data page.

The final open field emission tests were performed over the frequency range of 10kHz to 1000MHz. Between 10kHz and 30MHz, a loop antenna was used as the pick-up device. For measurements above 30MHz, a Bilog antenna was used as the pick-up device.

All significant broadband and narrowband signals were measured and recorded.

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 the appropriate 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 3 meters for each antenna polarization to maximize the readings.

4.3.3 RESULTS: The preliminary plots, with the test item transmitting at 10kHz, are presented on data pages 21 through 26. These plots are presented for a reference only, and are not used as official data.

The final open area radiated levels, with the test item transmitting at 10kHz, are presented on data pages 27 and 28. 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 40MHz. The emissions level at this frequency was 0.8dB within the limit. See data page 21 for details. Photographs of the test configuration which yielded the highest, or worst case, radiated emission levels are shown on Figure 4.

5.0 CONCLUSION:

It was found that the Versus Technology, Inc. model VER-3500 Perimeter Alarm System Transmitter, does meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.207 & 15.209 for Intentional Radiators, when tested per ANSI C63.4-1992.

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.

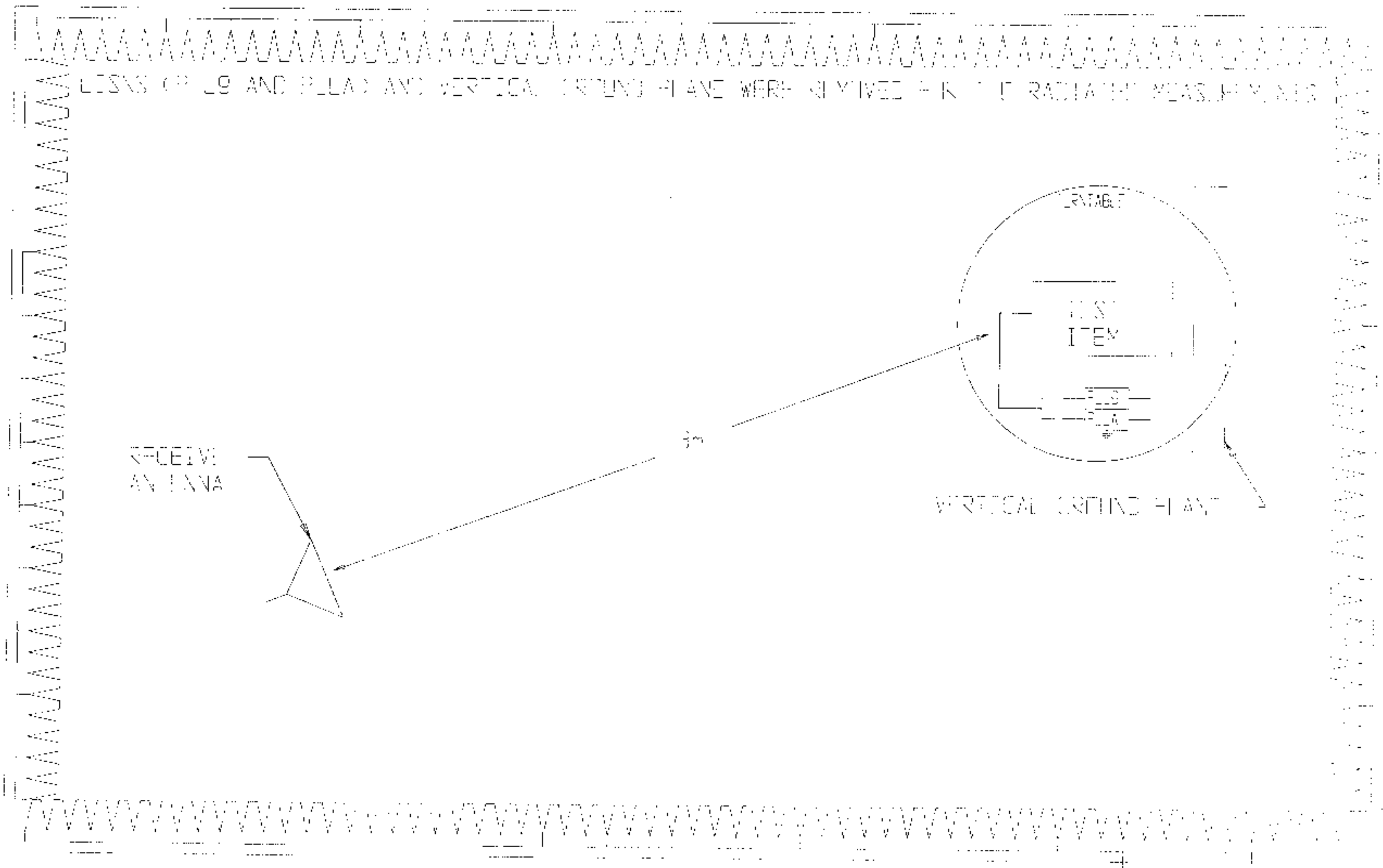
TABLE I: TEST EQUIPMENT LIST

ELITE ELECTRONIC ENG. INC.

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Cal Inv	Due Date
Equipment Type: ACCESSORIES, MISCELLANEOUS								
XZG0	ATTENUATOR/SWITCH DRIVER	HEWLETT PACKARD	11713A	3439A02724	---	01/31/00	12	01/31/01
Equipment Type: AMPLIFIERS								
APK0	PRE-AMPLIFIER	HEWLETT PACKARD	8449B	3008A00662	1-26.5GHZ	01/31/00	12	01/31/01
Equipment Type: ANTENNAS								
NLE0	12" LOOP ANTENNA	ELECTRO-METRICS	ALR-30	761	0.01-30MHZ		NOTE 1	
NTA0	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL611	2057	0.03-2GHZ	05/09/00	12	05/09/01
Equipment Type: ATTENUATORS								
T1K1	10DB, 2.5W LIMITER	HEWLETT PACKARD	11947A	3107A01737	0.009-200MHZ	03/27/00	12	03/27/01
Equipment Type: CONTROLLERS								
CDD2	COMPUTER	HEWLETT PACKARD	D4171A#ABA	US61654645	---		N/A	
CMA0	MULTI-DEVICE CONTROLLER	EMCO	2090	9701-1213	---		N/A	
Equipment Type: PROBES; CLAMP-ON & LISNS								
PLL9	50UH LISN 462D	ELITE	462D/70A	010	0.01-400MHZ	01/21/00	12	01/21/01
PLLA	50UH LISN 462D	ELITE	462D/70A	011	0.01-400MHZ	01/21/00	12	01/21/01
Equipment Type: PRINTERS AND PLOTTERS								
HRE2	LASER JET 5P	HEWLETT PACKARD	C3150A	USHB061201	---		N/A	
Equipment Type: RECEIVERS								
RAC1	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	3407A08369	100HZ-22GHZ	01/19/00	12	01/19/01
RACB	RF PRESELECTOR	HEWLETT PACKARD	85685A	3506A01491	20HZ-2GHZ	05/10/00	12	05/10/01
RAF3	QUASIPEAK ADAPTER	HEWLETT PACKARD	85650A	3303A01775	0.01-1000MHZ	01/19/00	12	01/19/01
RAKG	RF SECTION	HEWLETT PACKARD	85462A	3549A00284	9KHZ-6.5GHZ	01/24/00	12	01/24/01
RAKH	RF FILTER SECTION	HEWLETT PACKARD	85460A	3448A00324	---	01/24/00	12	01/24/01
Equipment Type: TEST CHAMBERS (EMI)								
RM17	3M ANECHOIC CHAMBER MEETS	EMC TEST SYSTEM	3M ANECHOIC		30MHZ-18GHZ	03/21/00	12	03/21/01

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.


RECEIVE
ANTENNA
TEST
ITEM
VERTICAL GROUND PLANE

ETR 23301
FIGURE 2

PROPAGATION LOSS MEASUREMENTS AND CALCULATIONS

TEST DISTANCE (meters)	METER READING (dBuV)
1	119.5
2	103.4
3	94.1
4	86.7
5	80.5

PROPAGATION LOSS = 20 * LOG (Dm/Dl)^N
WHERE : Dm = DISTANCE OF MEASUREMENT
: Dl = LIMIT DISTANCE
: N = SLOPE OF THE LINE

SOLVING FOR N:
N = (dBV2 – dBV1)/(20*LOG(D2/D1))
N = (64.5 – 119.5)/(20 * LOG(10/1))
N = -2.75

PLACING THE SLOPE (N) INTO THE PROPAGATION LOSS EQUATION GIVES YOU:
PROPAGATION LOSS OF 110.0dB AT 300 METER TEST DISTANCE

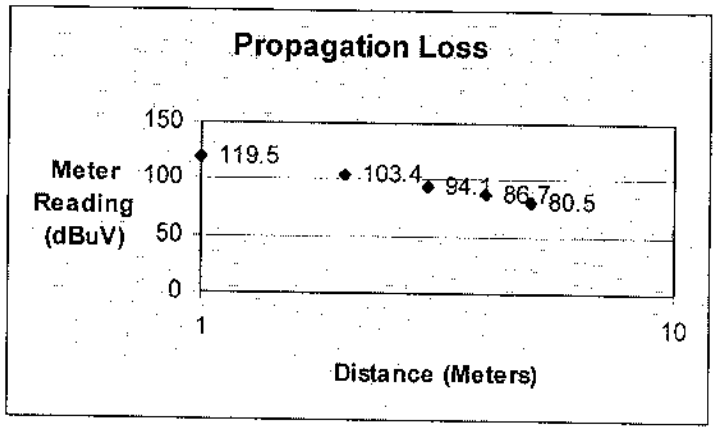
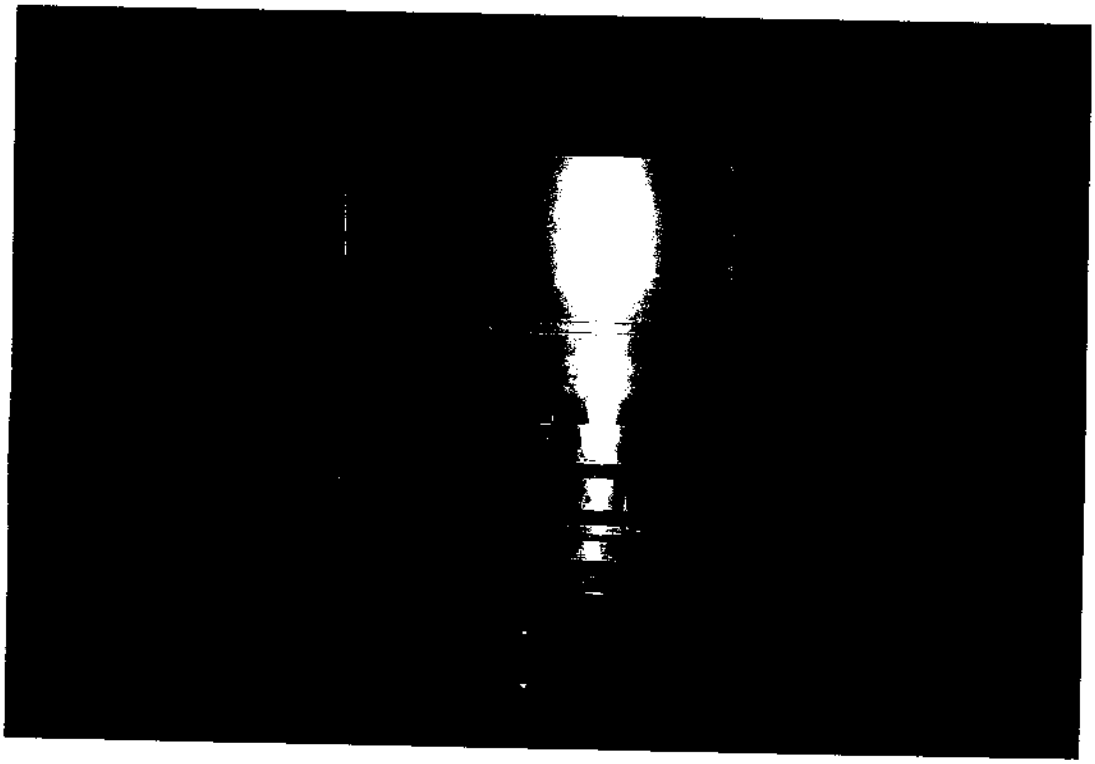
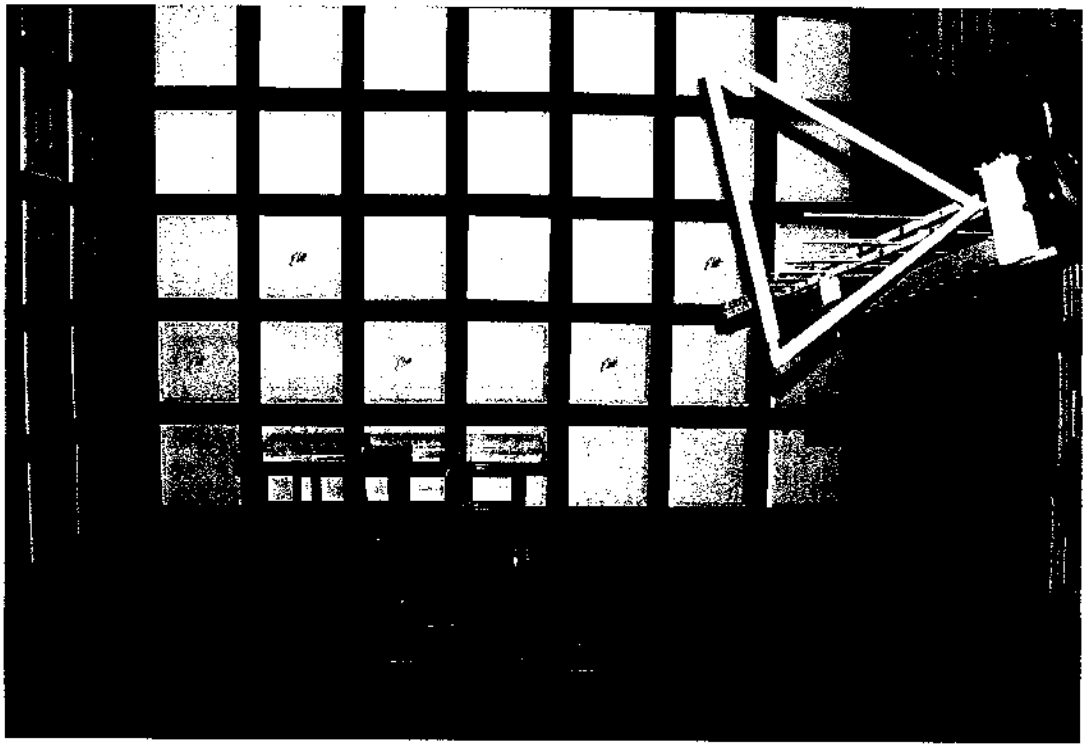


FIGURE 3

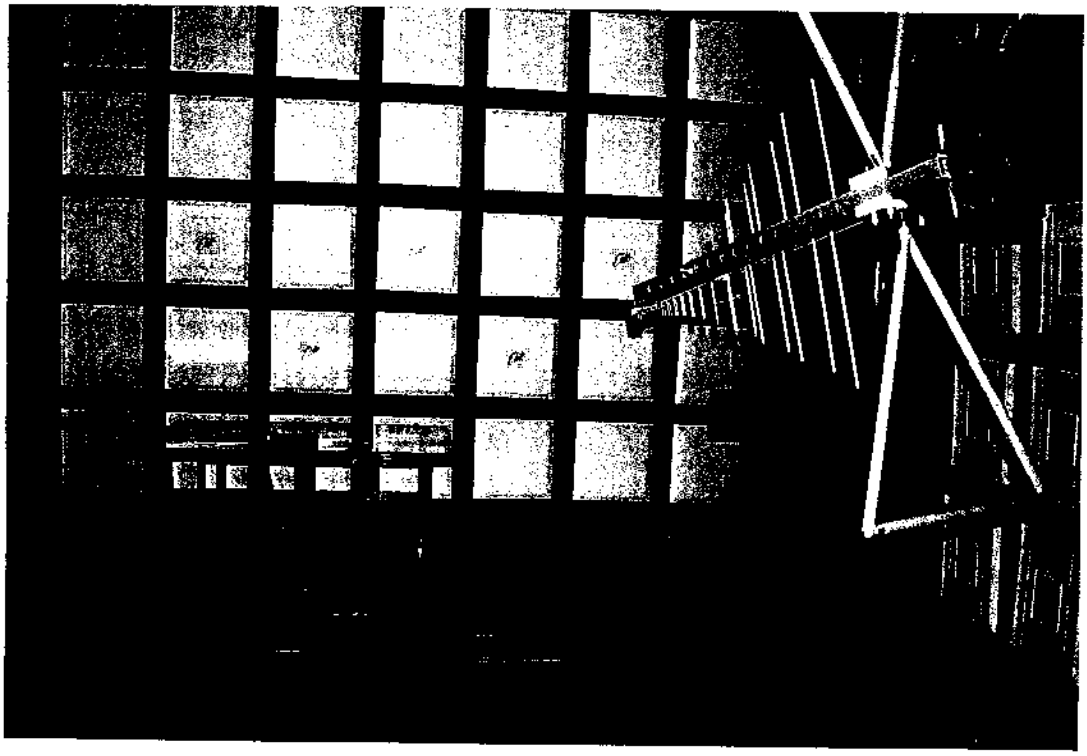


TEST SETUP FOR CONDUCTED EMISSIONS MEASUREMENT
MAXIMIZED FOR MEASUREMENT OF WORST CASE EMISSIONS

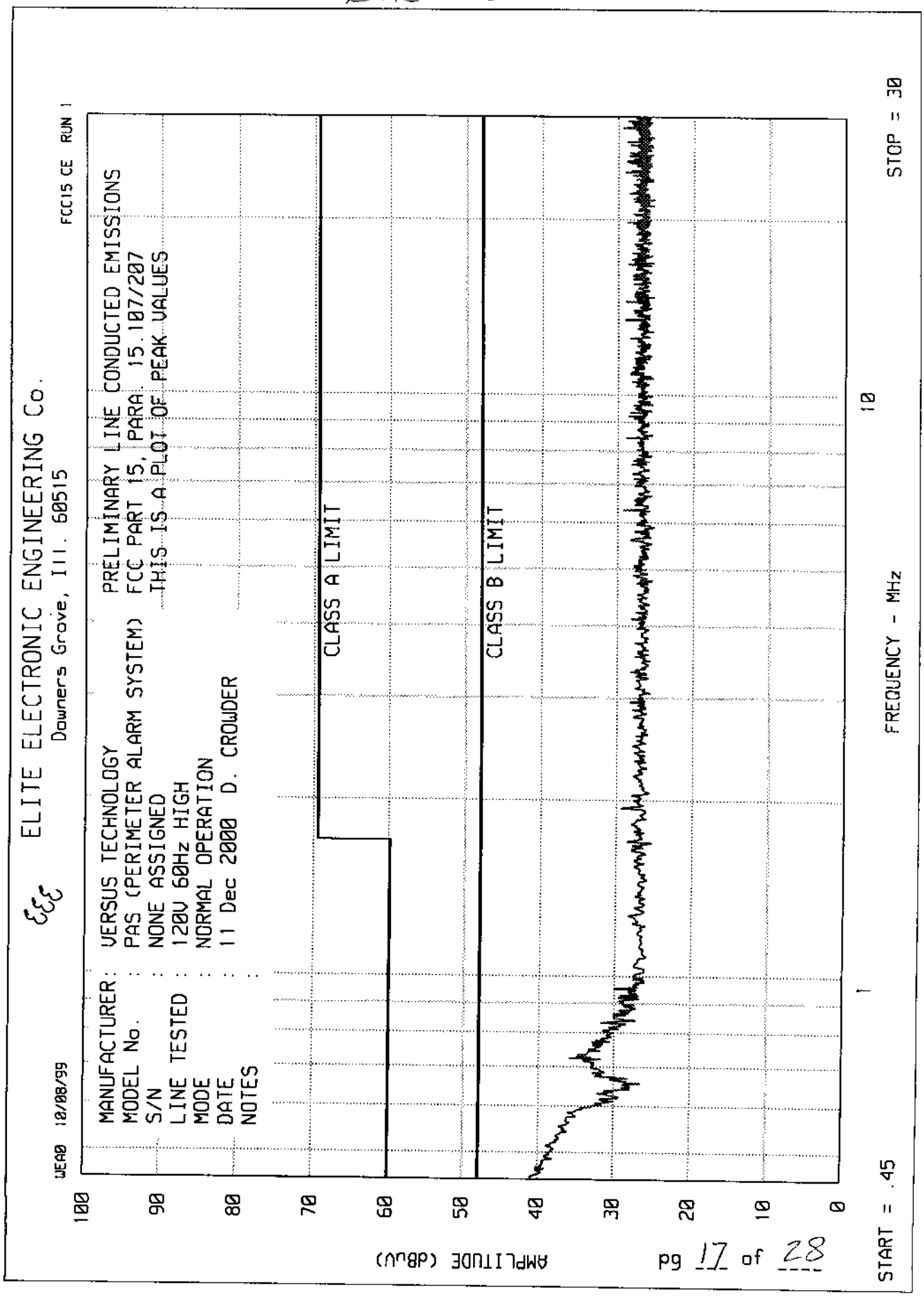
FIGURE 4

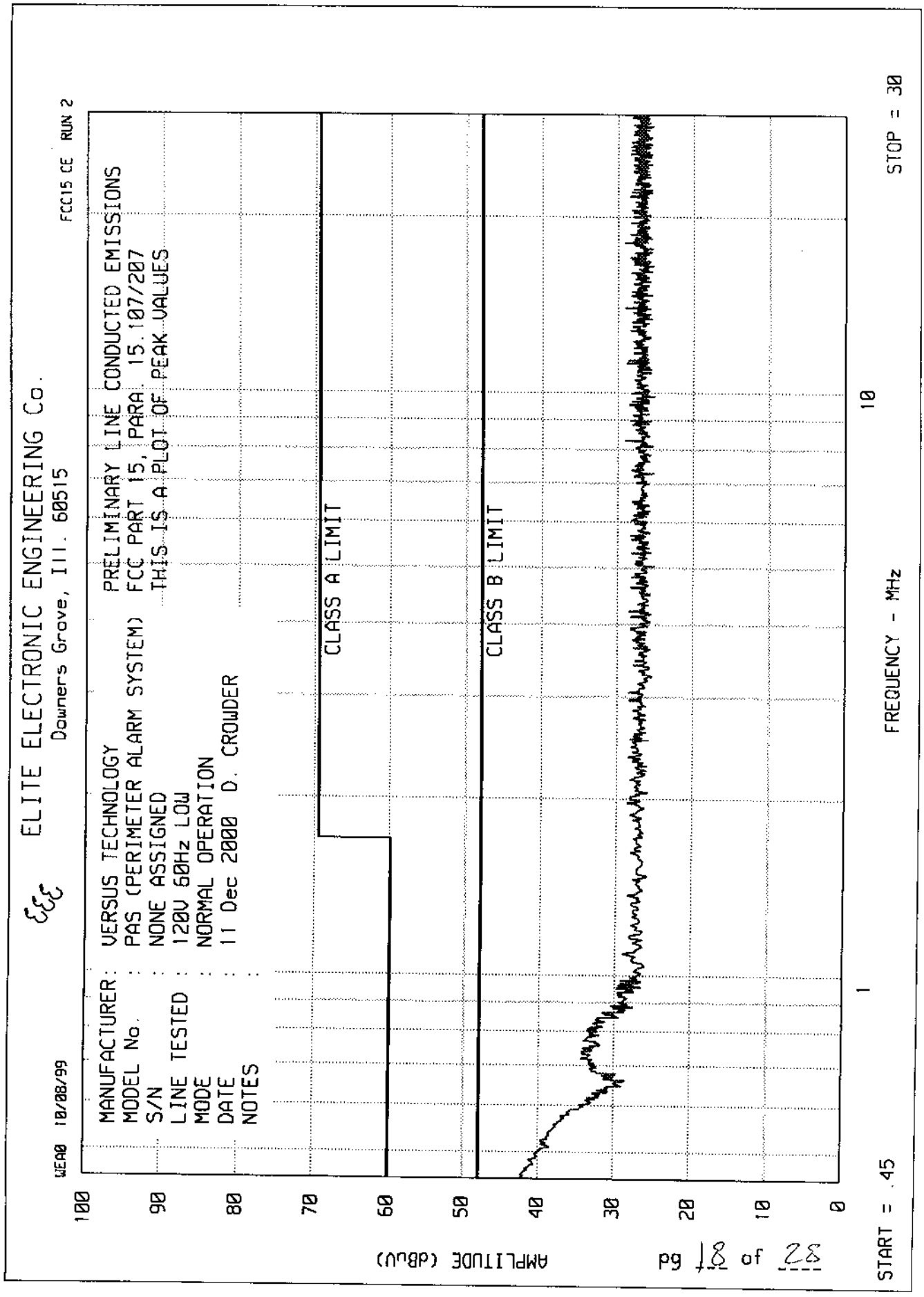


TEST SETUP FOR RADIATED EMISSIONS MEASUREMENTS
MAXIMIZED FOR MEASUREMENT OF WORST CASE EMISSIONS
HORIZONTAL POLARIZATION



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


ELITE ELECTRONIC ENGINEERING Co.
Downers Grove, Ill. 60515
FCC15 CE RUN 1
WEA0 10/08/99
MANUFACTURER: VERSUS TECHNOLOGY
MODEL No. : PAS (PERIMETER ALARM SYSTEM)
S/N : NONE ASSIGNED
LINE TESTED : 120V 60Hz HIGH
MODE : NORMAL OPERATION
DATE : 11 Dec 2000 D. CROWDER
NOTES :
PRELIMINARY LINE CONDUCTED EMISSIONS
FCC PART 15, PARA. 15.107/207
THIS IS A PLOT OF PEAK VALUES
CLASS A LIMIT
CLASS B LIMIT
AMPLITUDE (dBuV)
FREQUENCY - MHz
START = .45
STOP = 30
100
90
80
70
60
50
40
30
20
10
0
1
10


ELITE ELECTRONIC ENGINEERING Co.
Downers Grove, Ill. 60515
WEA0 10/08/99
FCC15 CE RUN 2
MANUFACTURER: VERSUS TECHNOLOGY
MODEL No. : PAS (PERIMETER ALARM SYSTEM)
S/N : NONE ASSIGNED
LINE TESTED : 120V 60Hz LOW
MODE : NORMAL OPERATION
DATE : 11 Dec 2000 D. CROWDER
NOTES :
PRELIMINARY LINE CONDUCTED EMISSIONS
FCC PART 15, PARA. 15.107/207
THIS IS A PLOT OF PEAK VALUES
CLASS A LIMIT
CLASS B LIMIT
AMPLITUDE (dBuV)
FREQUENCY - MHz
START = .45
1
10
STOP = 30
100
90
80
70
60
50
40
30
20
10
0

ETR No. 23301

RUN 1

ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : VERSUS TECHNOLOGY
MODEL : PAS (PERIMETER ALARM SYSTEM)
S/N : NONE ASSIGNED
SPECIFICATION : FCC DIGITAL EQUIPMENT, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120V 60Hz HIGH
MODE : NORMAL OPERATION
DATE : 11 Dec 2000
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. uV	LIMIT uV
.450	43.6 BB	250
.712	22.4 BB	250
.765	21.3	250
.821	20.4	250
1.254	19.6	250
1.920	20.1	250
2.930	19.9	250
3.281	25.6	250
4.064	19.9	250
5.569	19.6	250
6.267	19.9	250
6.631	20.1	250
8.403	19.9	250
9.171	19.6	250
9.423	19.9	250
10.833	19.6	250
12.483	19.9	250
13.403	19.9	250
15.999	20.1	250
16.683	19.9	250
19.743	19.9	250
20.388	19.9	250
22.158	19.6	250
24.144	19.9	250
25.133	20.1	250
27.173	20.1	250
28.698	19.9	250

CHECKED BY: DC
D. CROWDER

ETR No. 2350 1

RUN 2

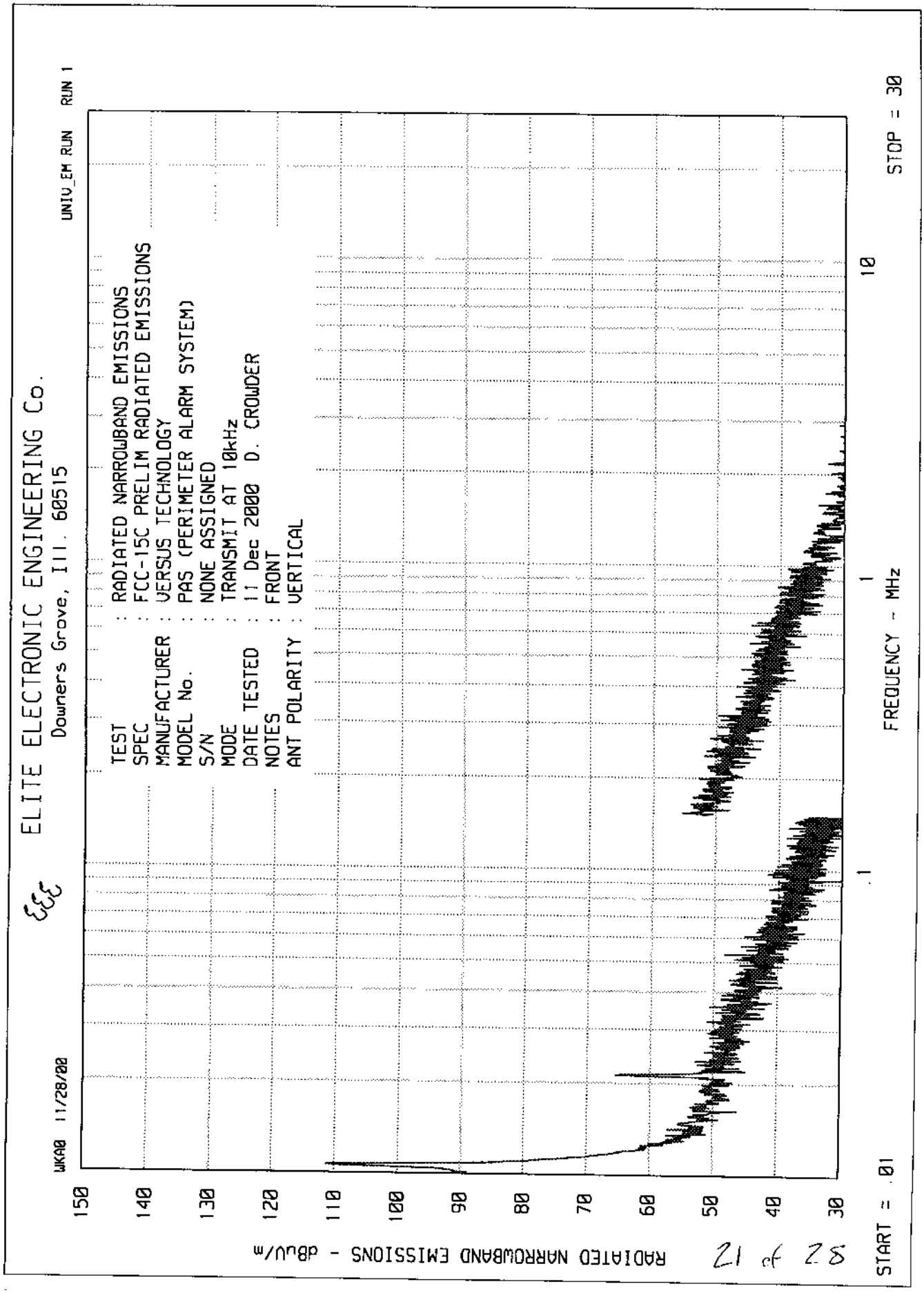
ELITE ELECTRONIC ENGINEERING CO.

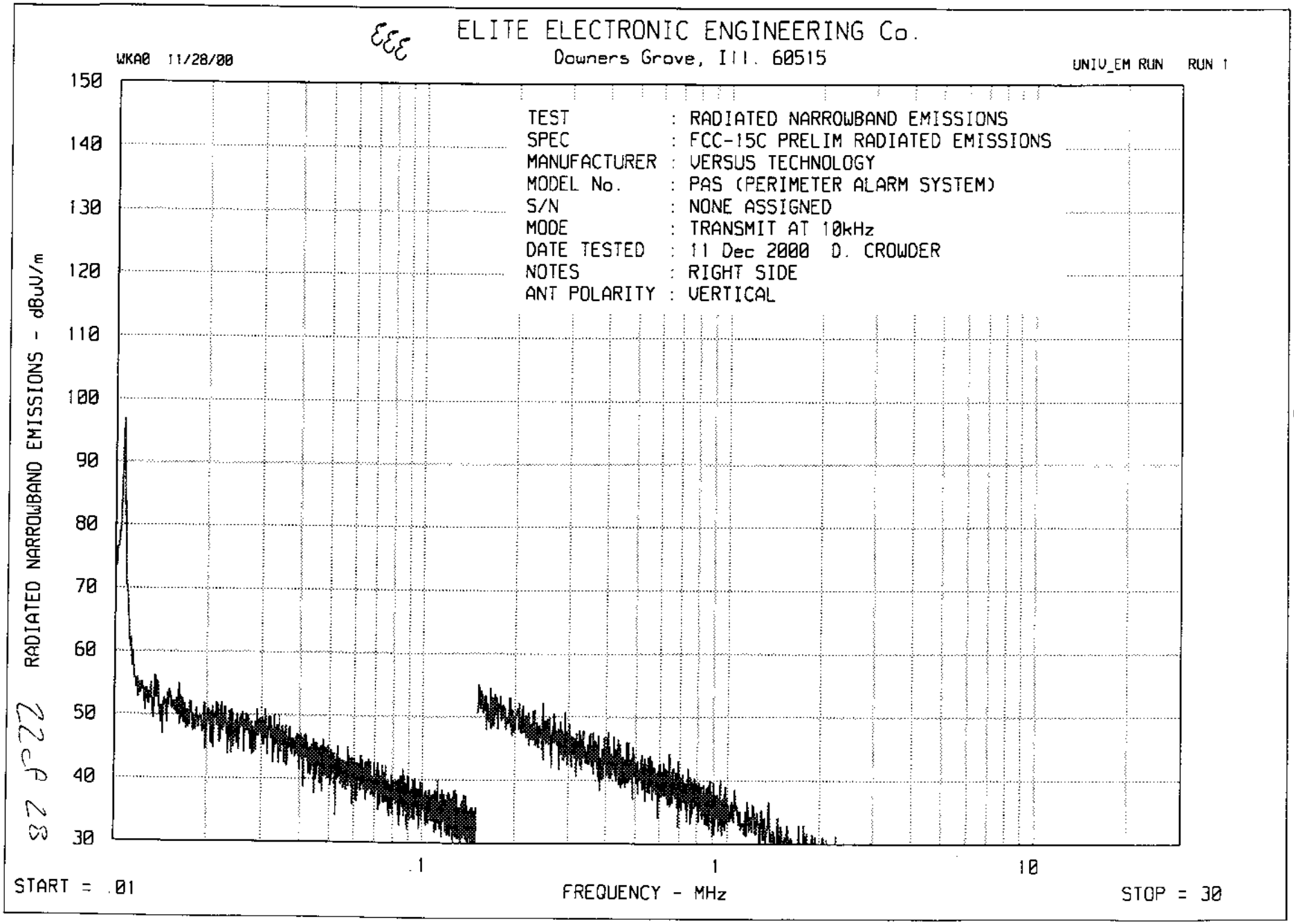
MANUFACTURER : VERSUS TECHNOLOGY
MODEL : PAS (PERIMETER ALARM SYSTEM)
S/N : NONE ASSIGNED
SPECIFICATION : FCC DIGITAL EQUIPMENT, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120V 60Hz LOW
MODE : NORMAL OPERATION
DATE : 11 Dec 2000
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. uV	LIMIT uV
.450	45.5 BB	250
.707	22.1	250
.816	20.9	250
1.070	19.9	250
1.954	53.8	250
2.342	19.9	250
3.007	25.3	250
4.175	19.9	250
5.648	19.6	250
6.011	19.9	250
8.243	20.1	250
9.503	20.1	250
11.217	19.6	250
12.758	19.9	250
13.958	19.9	250
14.413	19.9	250
16.038	20.1	250
18.043	19.9	250
18.648	19.9	250
21.618	19.9	250
21.677	19.9	250
23.883	19.9	250
24.173	19.9	250
25.653	19.9	250
26.888	19.9	250
29.637	19.9	250

CHECKED BY: DW
D. CROWDER

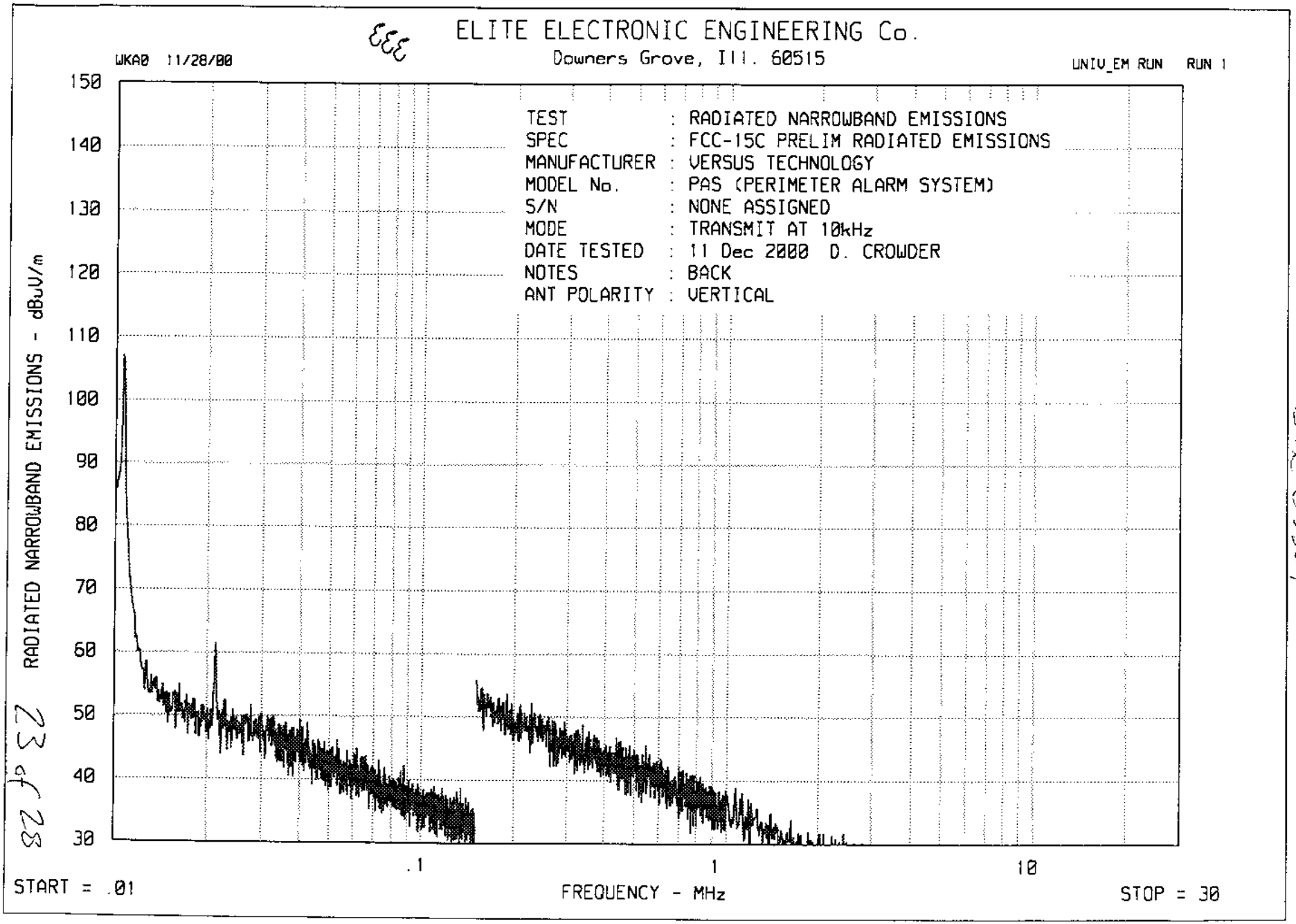
ETR 23301


ELITE ELECTRONIC ENGINEERING Co.
Downers Grove, Ill. 60515
UNIV_EM RUN RUN 1
WKA0 11/28/00
TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC-15C PRELIM RADIATED EMISSIONS
MANUFACTURER : VERSUS TECHNOLOGY
MODEL No. : PAS (PERIMETER ALARM SYSTEM)
S/N : NONE ASSIGNED
MODE : TRANSMIT AT 10kHz
DATE TESTED : 11 Dec 2000 D. CROWDER
NOTES : FRONT
ANT POLARITY : VERTICAL
RADIATED NARROWBAND EMISSIONS - dBuV/m
150
140
130
120
110
100
90
80
70
60
50
40
30
START = .01
.1
1
10
STOP = 30
FREQUENCY - MHz



87 of 228

FTE 23301



ETL 23301

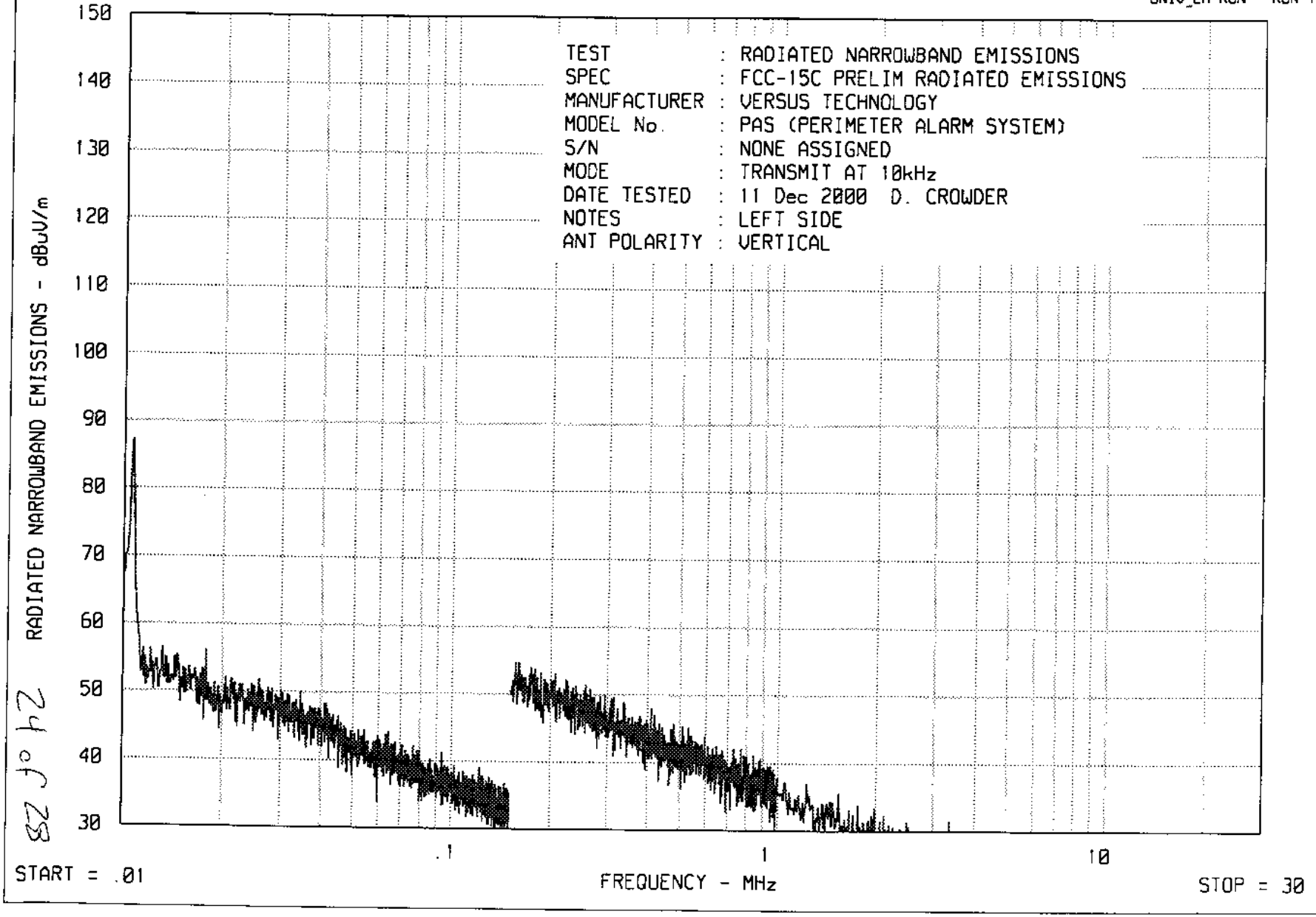
23 of 28

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

WKA0 11/28/00

UNIV_EM RUN RUN 1



82 of 24 hz

ETE 23301

ETR 23301

EEE ELITE ELECTRONIC ENGINEERING Co.
Downers Grove, Ill. 60515

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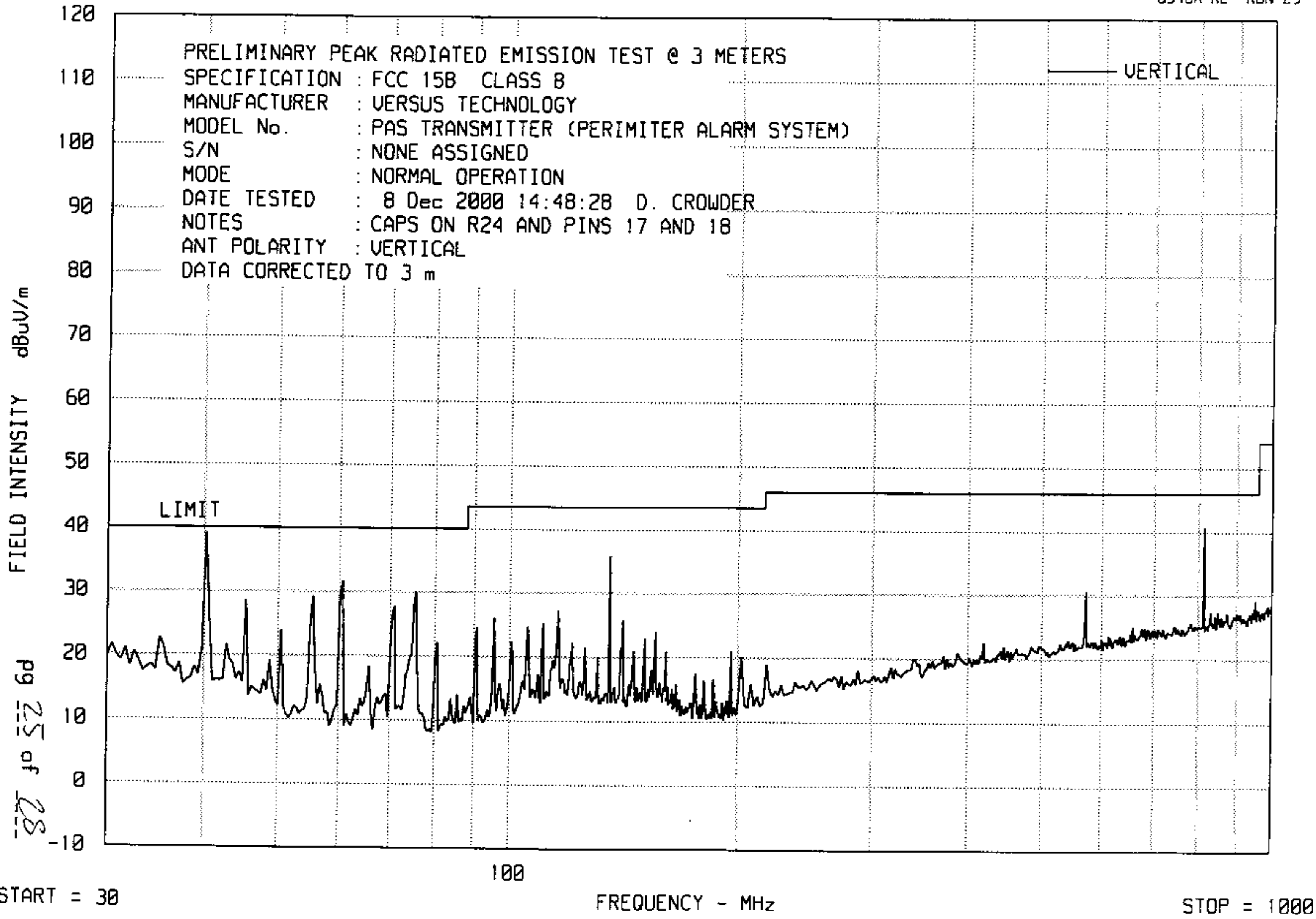

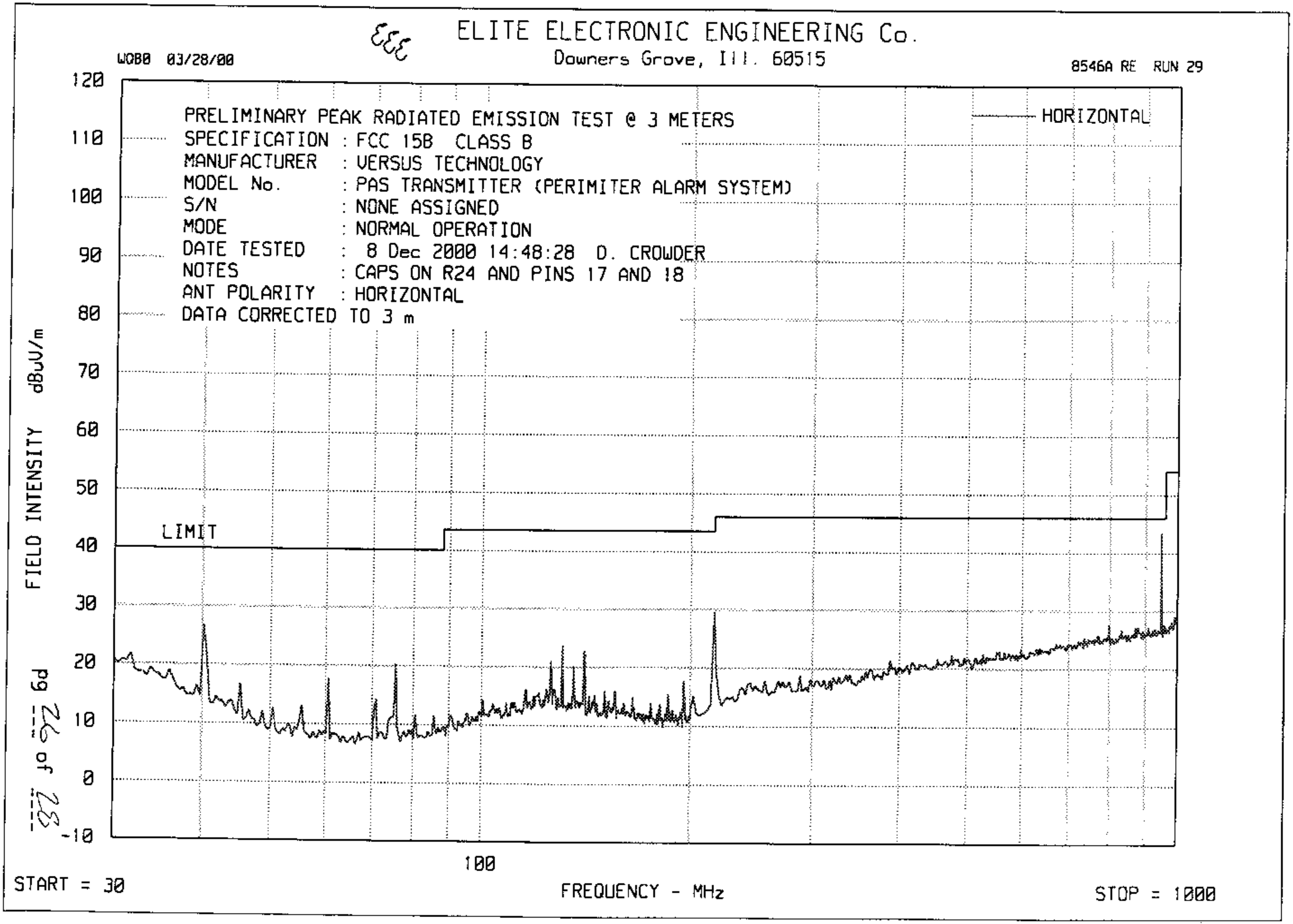
ELITE ELECTRONIC ENGINEERING Co.
Downers Grove, Ill. 60515
WOB0 03/28/00
8546A RE RUN 29
PRELIMINARY PEAK RADIATED EMISSION TEST @ 3 METERS
SPECIFICATION : FCC 15B CLASS B
MANUFACTURER : VERSUS TECHNOLOGY
MODEL No. : PAS TRANSMITTER (PERIMITER ALARM SYSTEM)
S/N : NONE ASSIGNED
MODE : NORMAL OPERATION
DATE TESTED : 8 Dec 2000 14:48:28 D. CROWDER
NOTES : CAPS ON R24 AND PINS 17 AND 18
ANT POLARITY : HORIZONTAL
DATA CORRECTED TO 3 m
HORIZONTAL
LIMIT
FIELD INTENSITY dBuV/m
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
100
FREQUENCY - MHz
START = 30
STOP = 1000
pg 26 of 28

ETR 23301

ETR 23301
DATA SHEET

RADIATED EMISSION MEASUREMENTS
SPECIFICATION : FCC-15C (15.209)
MANUFACTURER : VERSUS TECHNOLOGY, INC.
MODEL NO. : VER-3500 PAS (PERIMETER ALARM SYSTEM)
SERIAL NO. : PROTOTYPE
NOTES :
TEST DATE : 14 DECMEBER 2000
TEST DISTANCE : 3m

FREQUENCY (kHz)	ANT POL	MTR RDG dBuV	ANT FAC dB	DIST CORR dB	TOTAL dBuV/m	TOTAL uV/m	LIMIT uV/m
10.752	H	94.1	19.5	110	3.6	1.5136	223.2
10.752	V	86.7	19.5	110	-3.8	0.6457	223.2
21.504	H	58.8	14.4	110	-36.8	0.0145	111.6
21.504	V	50.6	14.4	110	-45.0	0.0056	111.6
32.256	H	50.4	13.9	110	-45.7	0.0052	74.4
32.256	V	41.8 AMB	13.9	110	-54.3	0.0019	74.4
43.008	H	41.1 AMB	12.7	110	-56.2	0.0015	55.8
43.008	V	39.2 AMB	12.7	110	-58.1	0.0012	55.8
53.760	H	41.8 AMB	10.9	110	-57.3	0.0014	44.6
53.760	V	40.7 AMB	10.9	110	-58.4	0.0012	44.6
64.512	H	37.2 AMB	10.7	110	-62.1	0.0008	37.2
64.512	V	36.8 AMB	10.7	110	-62.5	0.0007	37.2
75.264	H	35.5 AMB	10.5	110	-64.0	0.0006	31.9
75.264	V	35.9 AMB	10.5	110	-63.6	0.0007	31.9
86.016	H	34.3 AMB	10.4	110	-65.3	0.0005	27.9
86.016	V	35.1 AMB	10.4	110	-64.5	0.0006	27.9
96.768	H	34.7 AMB	10.4	110	-64.9	0.0006	24.8
96.768	V	34.5 AMB	10.4	110	-65.1	0.0006	24.8
107.520	H	33.1 AMB	10.4	110	-66.5	0.0005	22.3
107.520	V	33.7 AMB	10.4	110	-65.9	0.0005	22.3

H - HORIZONTAL
V - VERTICAL

AMB - AMBIENT

CHECKED BY: _____

ETR No. 2330.1 8546A
DATA SHEET TEST NO. 29

RADIATED QP EMISSION MEASUREMENTS in a 3 m SEMI-ANECHOIC ROOM
SPECIFICATION : FCC 15B CLASS B
MANUFACTURER : VERSUS TECHNOLOGY
MODEL NO. : PAS TRANSMITTER (PERIMITER ALARM SYSTEM)
SERIAL NO. : NONE ASSIGNED
TEST MODE : NORMAL OPERATION
NOTES : CAPS ON R24 AND PINS 17 AND 18
TEST DATE : 8 Dec 2000 14:48:28
TEST DISTANCE : 3 m (DATA EXTRAPOLATED TO 3 m)

FREQUENCY MHz	QP READING dBuV	ANT FAC dB	CBL FAC dB	EXT ATTN dB	DIST FAC dB	TOTAL dBuV/m	QP LIMIT dBuV/m	AZ deg	ANT HT cm	POLAR
40.02	24.4	14.4	.4	0.0	0.0	39.2	40.0	120	120	V
60.03	25.6	7.0	.5	0.0	0.0	33.2	40.0	120	200	V
75.04	23.9	7.1	.7	0.0	0.0	31.7	40.0	60	120	V
115.07	14.1	12.3	.9	0.0	0.0	27.3	43.5	300	200	V
135.08	-.6	12.0	1.0	0.0	0.0	12.4	43.5	-0	340	V
155.09	11.2	11.0	1.1	0.0	0.0	23.3	43.5	-0	120	V
175.10	4.4	10.0	1.2	0.0	0.0	15.6	43.5	180	120	V
222.40	-7.5	11.3	1.4	0.0	0.0	5.2	46.0	180	200	H
339.02	.2	14.9	1.9	0.0	0.0	17.0	46.0	300	120	V
421.90	-7.3	16.6	2.2	0.0	0.0	11.6	46.0	300	200	V
577.68	-8.4	19.0	2.6	0.0	0.0	13.2	46.0	60	340	V
658.19	-7.3	19.7	2.8	0.0	0.0	15.2	46.0	60	200	V
791.47	-7.6	20.9	3.1	0.0	0.0	16.3	46.0	240	200	H
818.04	-7.8	21.2	3.1	0.0	0.0	16.5	46.0	240	340	V
942.24	-7.7	22.2	3.4	0.0	0.0	17.9	46.0	120	200	H

tested by: D. CROWDER