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

ELITE PROJECT: 29027 DATE TESTED: August 7 and 8, 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. 22920

MEASUREMENT OF RF INTERFERENCE FROM

FIVE CARD READER TRANSMITTERS

AYH-10, AYJ-10, AYK-10, AYL-10, AYM-10

FOR: Rosslare Enterprises Ltd.
Flat 12,9/F Wing Fat Industrial Bldg.
12 Wang Tai Road
Kowloon Bay, Hong Kong

PURCHASE ORDER NO.: P002186-00

Report By:
Daniel E. Crowder

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

ENGINEERING TEST REPORT NO. 22920

ADMINISTRATIVE DATA AND SUMMARY OF TESTS

DESCRIPTION OF TEST ITEM: Card Reader Transmitters

MODEL NOs: AYH-10, AYJ-10, AYK-10, AYL-10, AYM-10

SERIAL NOs: None Assigned

MANUFACTURER: Rosslare Enterprises Ltd.

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

QUANTITY OF ITEMS TESTED: Five (5)

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

DATE RECEIVED: August 4, 2000

DATE TESTED: August 7 and 8, 2000

PERSONNEL (OPERATORS, OBSERVERS, AND CO-ORDINATORS):
CUSTOMER: No Rosslare Enterprises Ltd. personnel were present.
ELITE ELECTRONIC: Daniel E. Crowder

ELITE JOB NO.: 29027

ABSTRACT: The models AYH-10, AYJ-10, AYK-10, AYL-10, and AYM-10 Card Reader Transmitters, do 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.

The conducted emissions level closest to the limit (worst case) occurred at 18.4MHz. The emissions level at this frequency was 11.2dB within the limit. See data pages 19 and 20 for more detailed results.

The radiated emissions level closest to the limit (worst case) occurred at 124.2kHz. The emissions level at this frequency was 82.8dB within the limit. See data page 26 for more details.

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

ENGINEERING TEST REPORT NO. 22920

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TOTAL NUMBER OF PAGES IN THIS DOCUMENT, (INCLUDING DATA SHEETS): 30

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ENGINEERING TEST REPORT NO. 22920

MEASUREMENT OF RF INTERFERENCE FROM

A MODEL AYE-10 CARD READER 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 five (5) Card Reader Transmitters, (hereinafter referred to as the test item). No serial number were assigned to the test items. The test item was designed to transmit at approximately 125kHz using an internal antenna. All five transmitters have the same circuits but utilize different antennas. The tests were performed for Rosslare Enterprises Ltd. of Hong Kong, China.

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 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 23°C and the relative humidity was 33%.

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 13VDC power via a 4 wire, 1.5 foot long, unshielded power cord. The 13VDC was supplied from a PS51 Power Supply. The power supply received 24VAC, 60Hz power from the secondary of a ATC Frost, Class 2 transformer via a 2 wire, 3.0 foot long, unshielded power cable. The primary of the transformer was connected to the 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 by placing a magnetic card near the reader. Transmission was verified by observation of an LED which changed colors momentarily whenever the transmitter was enabled. The transmitting mechanism automatically

deactivated when the card was taken away from the reader. The tests were performed with the test item transmitting at 125kHz.

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 and 10kHz from 150kHz to 30MHz.

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. The conducted emissions tests were only performed on one test item since all 5 test items have the same circuits.

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 18.4MHz. The emissions level at this frequency was 11.2dB 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

4.3.2.1 PRELIMINARY RADIATED MEASUREMENTS: All preliminary tests were performed in a 17ft. x 12ft. x 8ft. test chamber.

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 broadband measuring antenna was positioned at a 1 meter distance from the test item. The entire frequency range from 10kHz to 30MHz was investigated using a peak detector and automatically plotted. The frequencies where significant emission levels were noted were then remeasured at an open area test site.

(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 125kHz, are presented on data pages 21-25. The plot is presented for a reference only, and are not used as official data.

The final open area radiated levels, with the test item transmitting at 125kHz, are presented on data pages 26-30. 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 124.2kHz. The emissions level at this frequency was 82.8dB 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 Rosslare Enterprises Ltd. models AYH-10, AYJ-10, AYK-10, AYL-10, and AYM-10 Card Reader Transmitters, do 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.

4.3.2.2 FINAL RADIATED MEASUREMENTS: Final open field measurements were manually performed at Elite's open field test site located in Downers Grove, Illinois. The open field test site is located in a clear area and is equipped with a 1/4-inch wire mesh ground plane. The facility complies with the test site criteria in ANSI C63.4-1992 and Section 2.948 of the FCC Rules.

Measurements were performed at a test distance of 3 meters using a peak detector.

Since the test distance was reduced from either 300 or 30 meters to 3 meters, a correction factor was applied to the measurements. Radiation at 125kHz 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 or 30 meters are shown on the data page.

The final open field emission tests were performed over the frequency range of 120kHz to 1500kHz. Between 120kHz and 1500kHz, a loop antenna was used as the pick-up device.

All significant broadband and narrowband signals were measured and recorded.

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

1) Measurements were made using a peak detector and a loop 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.

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: ANTENNAS								
NLS1	24" ACTIVE LOOP ANTENNA	EMCO	6502	8903-2329	0.01-30MHZ	11/29/99	12	11/29/00
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								
CDG5	COMPUTER	HEWLETT PACKARD	D7949T	US9160519	---		N/A	
Equipment Type: PROBES; CLAMP-ON & LISNS								
PLB0	FCC/LISN	CEMEC, INC.	FCC-20-2	1001	0.45-30MHZ	08/30/99	12	08/30/00
Equipment Type: PRINTERS AND PLOTTERS								
HRG0	LASERJET 2100XI	HEWLETT PACKARD	C4170A	USCD047806	---		N/A	
Equipment Type: RECEIVERS								
RAC0	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	2449A01117	100HZ-22GHZ	02/29/00	12	03/01/01
RAC2	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	3638A08770	100HZ-22GHZ	11/09/99	12	11/09/00
RACA	RF PRESELECTOR	HEWLETT PACKARD	85685A	2926A00980	20HZ-2GHZ	03/01/00	12	03/01/01
RACD	RF PRESELECTOR	HEWLETT PACKARD	85685A	3010A01205	20HZ-2GHZ	03/01/00	12	03/01/01
RAF1	QUASIPEAK ADAPTER	HEWLETT PACKARD	85650A	2043A00271	0.01-1000MHZ	02/29/00	12	03/01/01
RAF4	QUASIPEAK ADAPTER	HEWLETT PACKARD	85650A	2043A00320	0.01-1000MHZ	11/10/99	12	11/10/00
Equipment Type: TEST CHAMBERS (EMI)								
RM07	ROOM #7 SHIELDED ENCLOSURE	ACE ENCLOSURES	120DB		DC TO DAYLIGHT		N/A	

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.

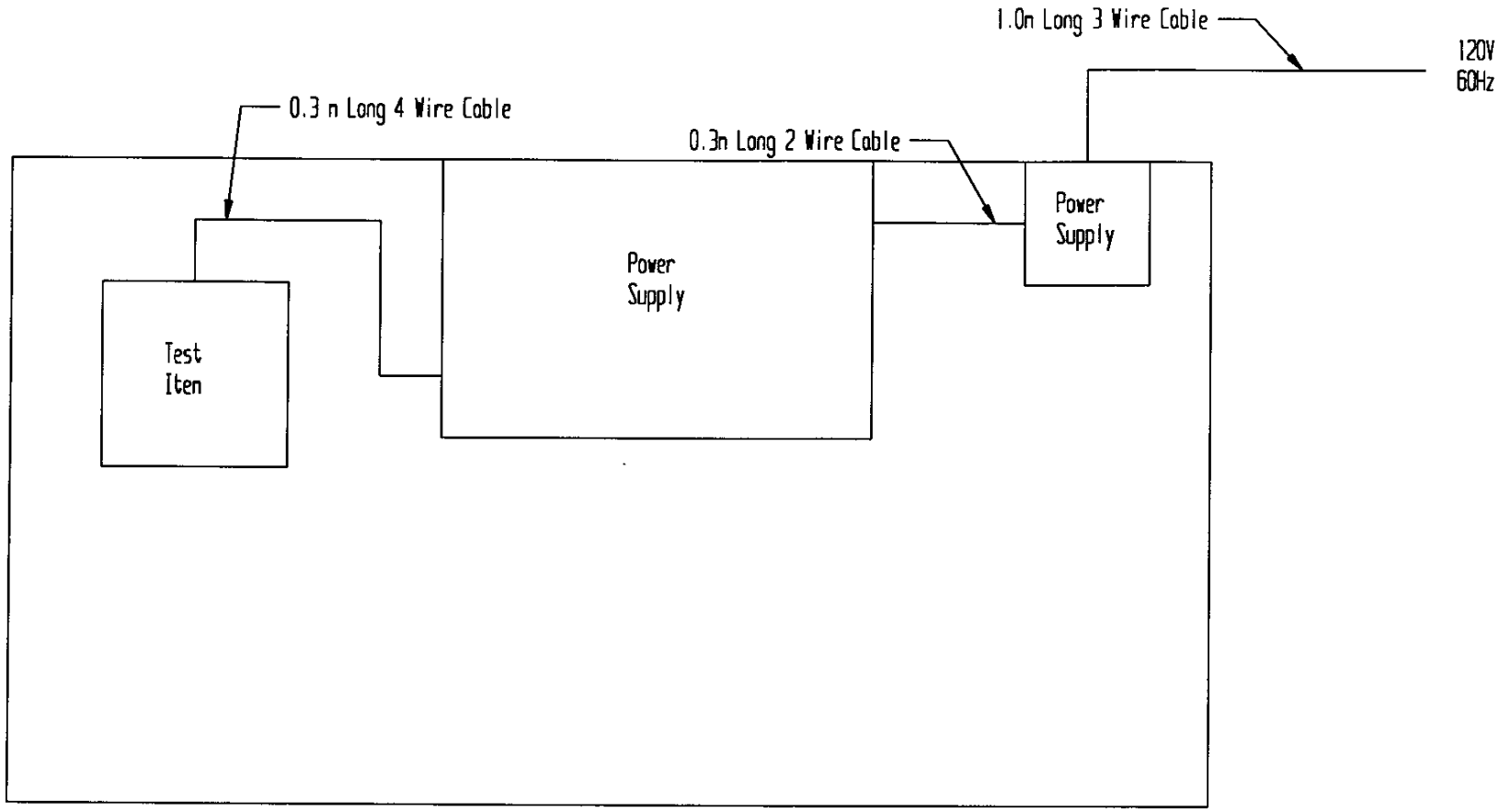

Figure 1 - Block Diagram of Test Eqiupment Setup

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FIGURE 2

PROPAGATION LOSS MEASUREMENTS AND CALCULATIONS

TEST DISTANCE (meters)	METER READING (dBuV)
3	52.7
4	46.1
5	38.4

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 = (38.4 – 52.7)/(20 * LOG(5/3))
N = -3.23

PLACING THE SLOPE (N) INTO THE PROPAGATION LOSS EQUIATION GIVES YOU:
PROPAGATION LOSS OF 129.2dB AT 300 METER TEST DISTANCE
PROPAGATION LOSS OF 64.6dB AT 30 METER TEST DISTANCE

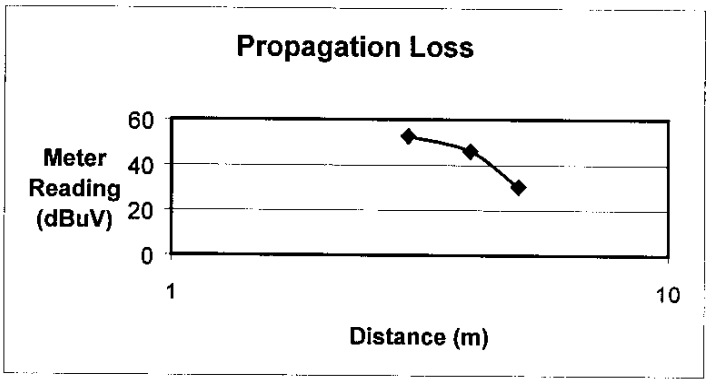
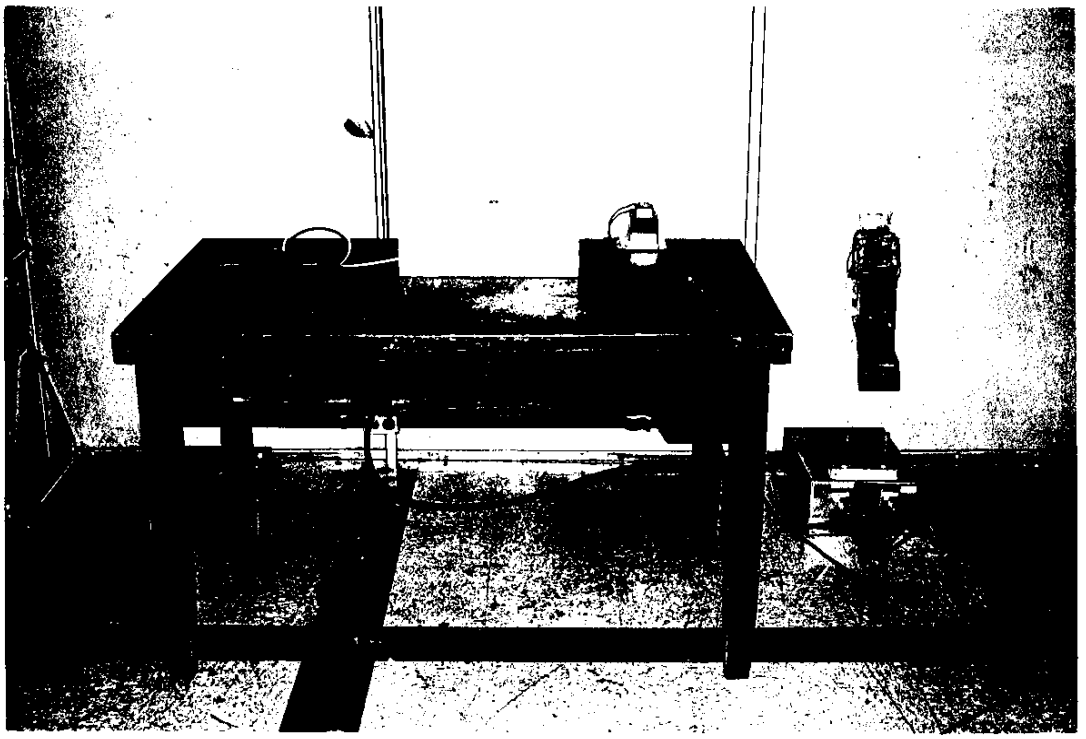
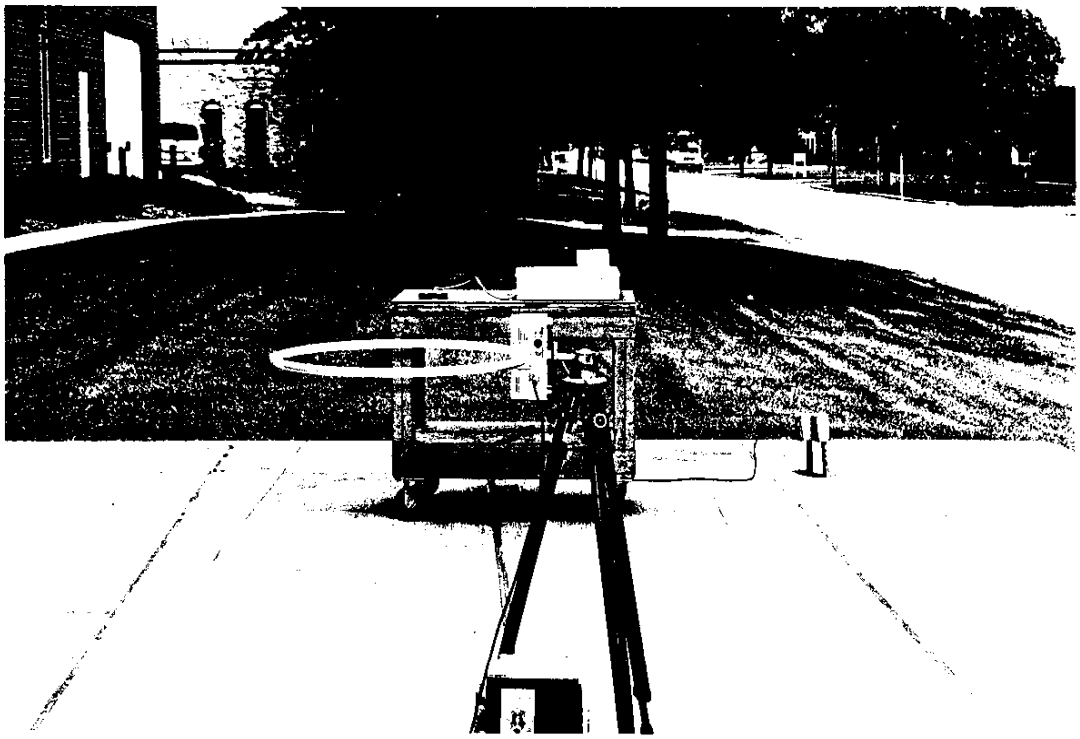


FIGURE 3

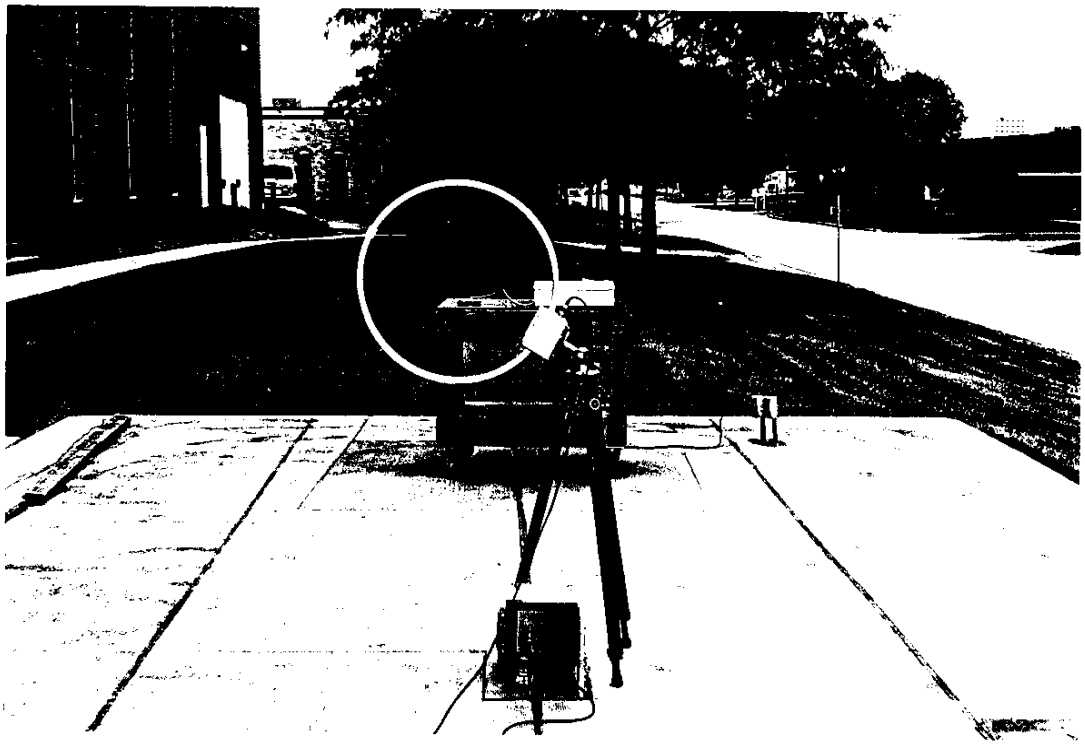


TEST SETUP FOR CONDUCTED EMISSIONS MEASUREMENT
MAXIMIZED FOR MEASUREMENT OF WORST CASE EMISSIONS

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

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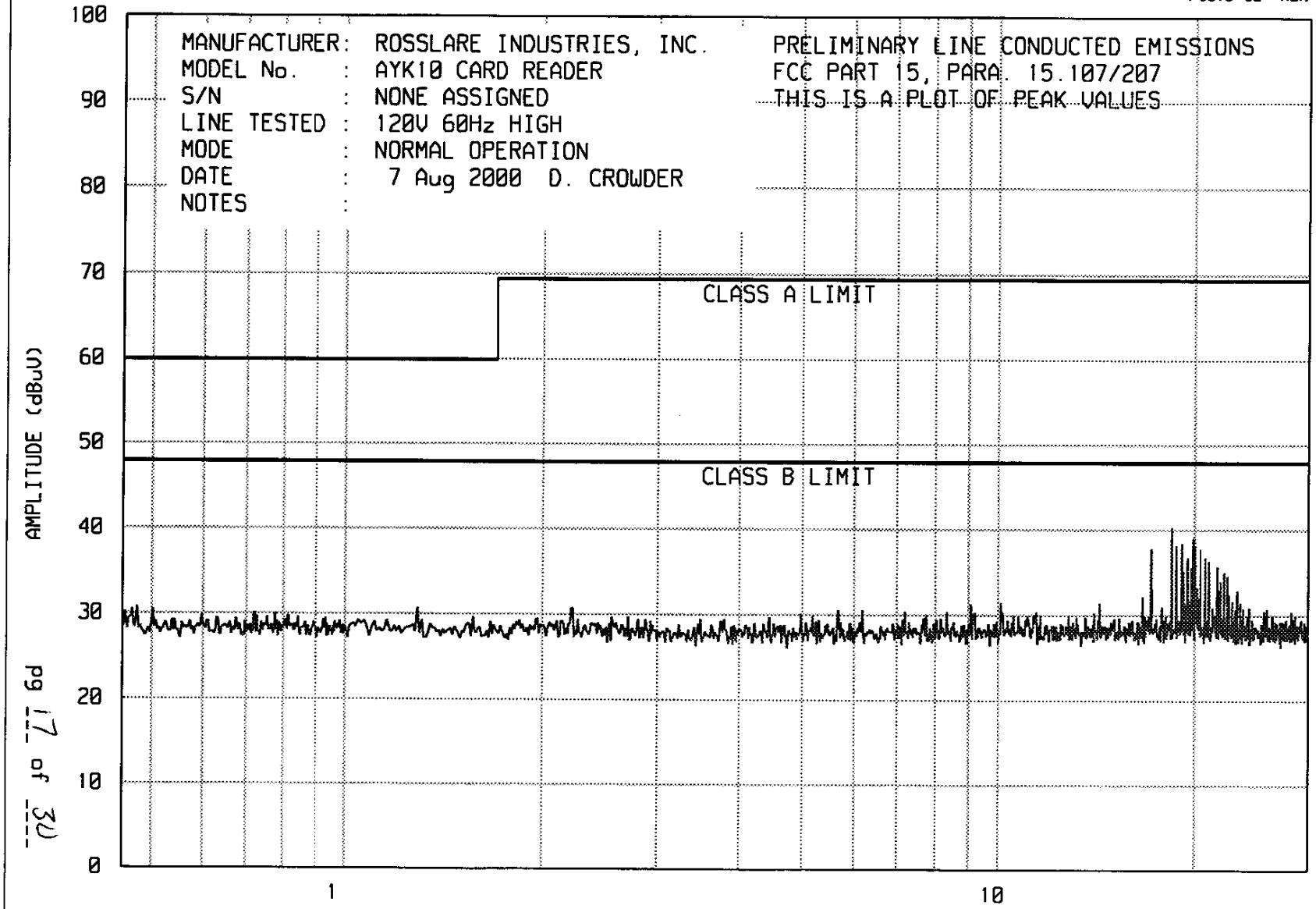
Downers Grove, Ill. 60515

WEA0 10/08/99 FCC15 CE RUN 1



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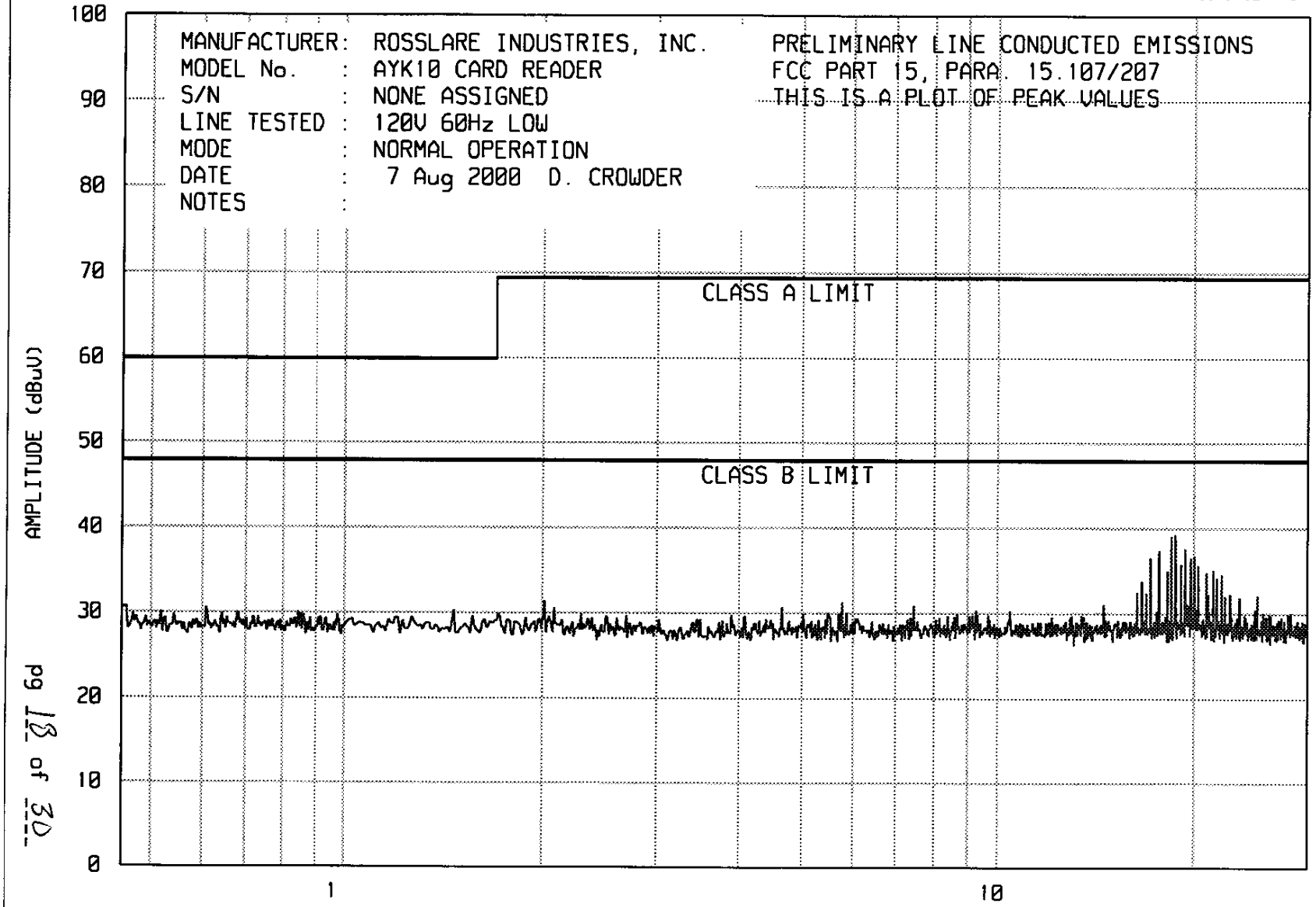
Downers Grove, Ill. 60515

WEA0 10/08/99 FCC15 CE RUN 2



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ETR No. 22920 RUN 1

ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : ROSSLARE INDUSTRIES, INC.
MODEL : AYK10 CARD READER
S/N : NONE ASSIGNED
SPECIFICATION : FCC DIGITAL EQUIPMENT, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120V 60Hz HIGH
MODE : NORMAL OPERATION
DATE : 7 Aug 2000
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. uV	LIMIT uV
.464	37.3	250
.715	14.6	250
.832	14.6	250
1.289	14.6	250
2.214	14.9	250
2.542	14.6	250
3.469	14.6	250
3.924	15.7	250
4.970	15.9	250
5.689	14.9	250
6.158	14.9	250
7.305	14.9	250
8.283	14.9	250
9.023	14.9	250
10.051	14.9 BB	250
11.358	14.9	250
12.769	14.9	250
14.258	19.6	250
16.612	35.4	250
17.137	50.3	250
17.659	64.8	250
18.445	69.3	250
20.014	45.5	250
21.714	40.8	250
22.760	31.9	250
23.545	22.8	250
25.900	20.1	250
28.254	15.9	250
28.675	14.9	250

CHECKED BY: DC
D. CROWDER

ETR No. 22920 RUN 2

ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : ROSSLARE INDUSTRIES, INC.
MODEL : AYK10 CARD READER
S/N : NONE ASSIGNED
SPECIFICATION : FCC DIGITAL EQUIPMENT, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120V 60Hz LOW
MODE : NORMAL OPERATION
DATE : 7 Aug 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	44.0	250
.638	14.9	250
.836	14.6	250
1.465	14.6	250
2.010	14.6 BB	250
2.695	14.6	250
3.922	15.7	250
4.577	14.6	250
4.625	14.6	250
5.732	14.9	250
6.017	14.9	250
7.453	15.1	250
9.287	15.1	250
10.451	14.9	250
12.950	15.4	250
14.518	18.1	250
16.612	30.8	250
17.659	54.1	250
17.920	59.1	250
18.705	55.0	250
20.013	40.5	250
20.405	49.0	250
22.105	30.3	250
23.283	23.6	250
23.544	21.3	250
25.112	19.6	250
27.467	16.4	250
28.254	15.7	250
28.908	14.9	250

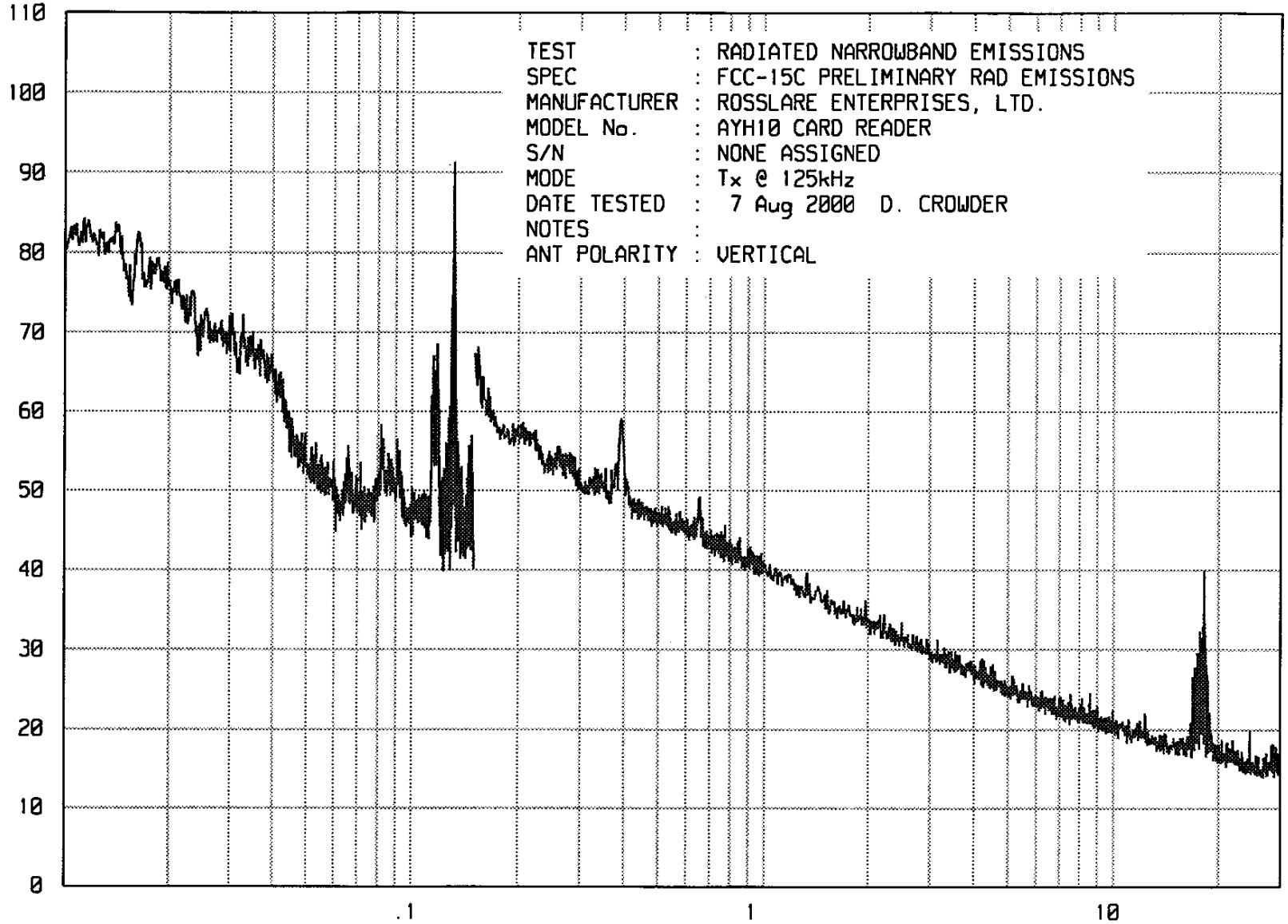
 CHECKED BY: DEC
D. CROWDER

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

WKA0 09/13/99

UNIV_EM RUN RUN 1



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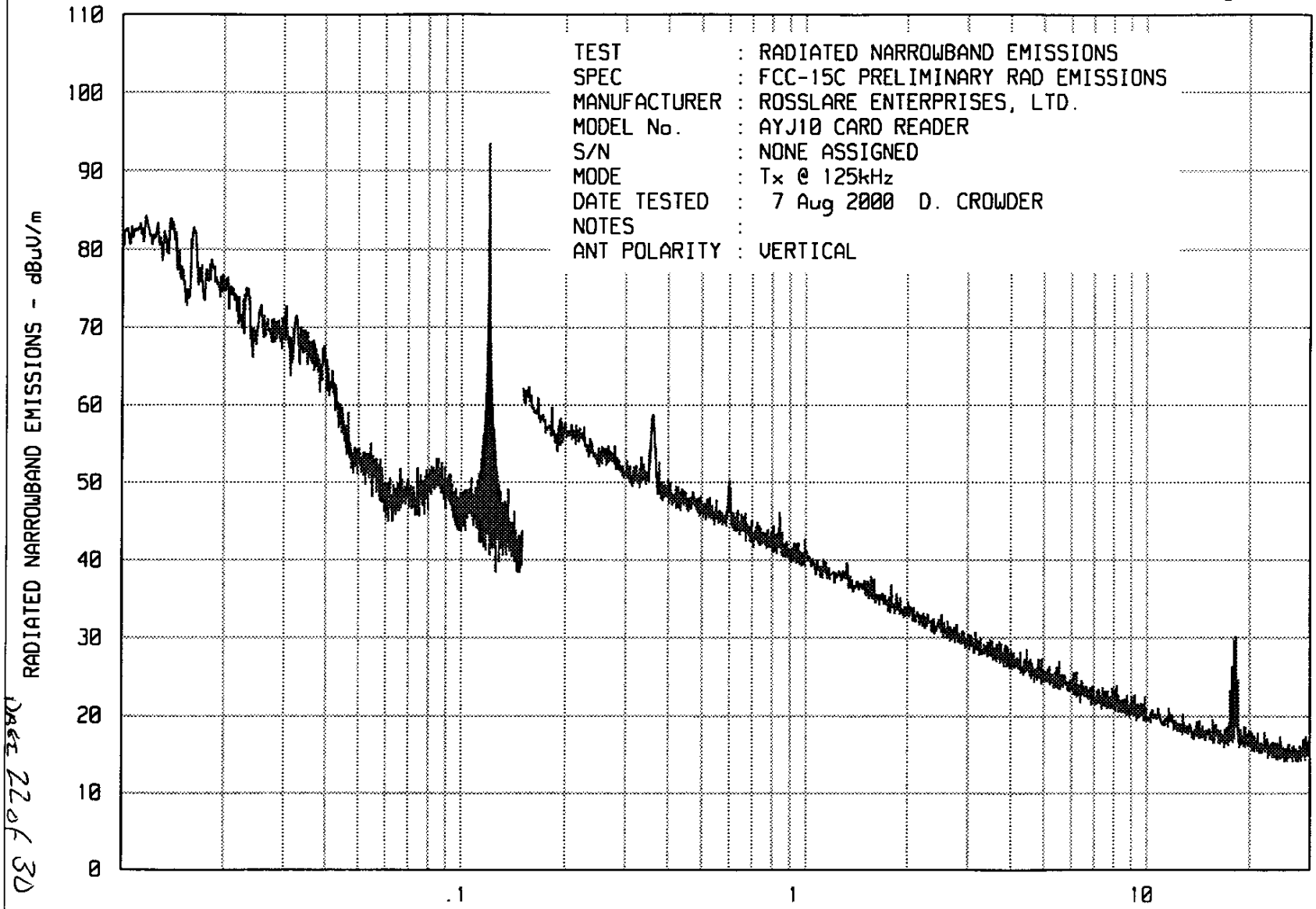

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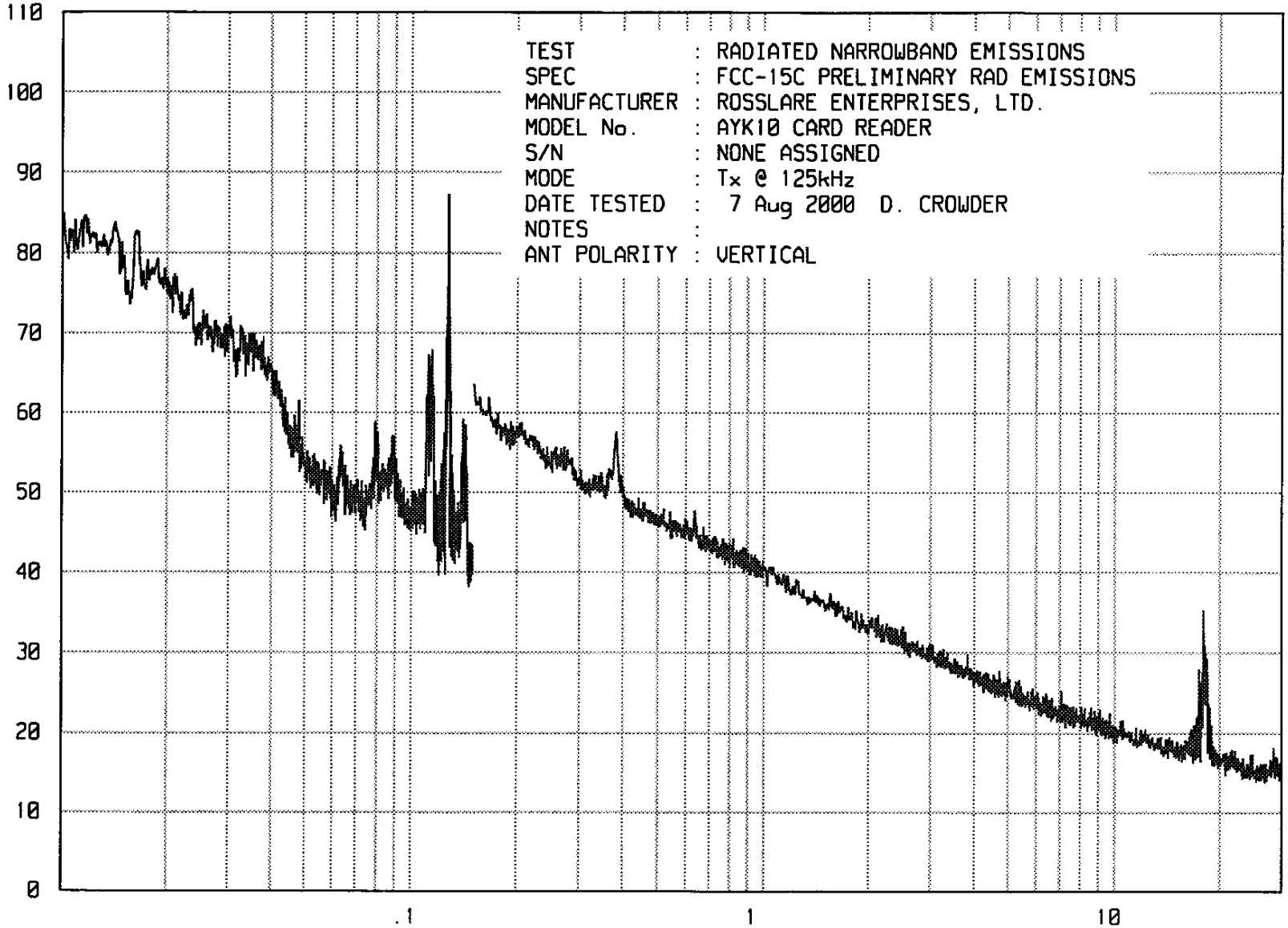
WKA0 09/13/99

UNIV_EM RUN RUN 1



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ELITE ELECTRONIC ENGINEERING Co.

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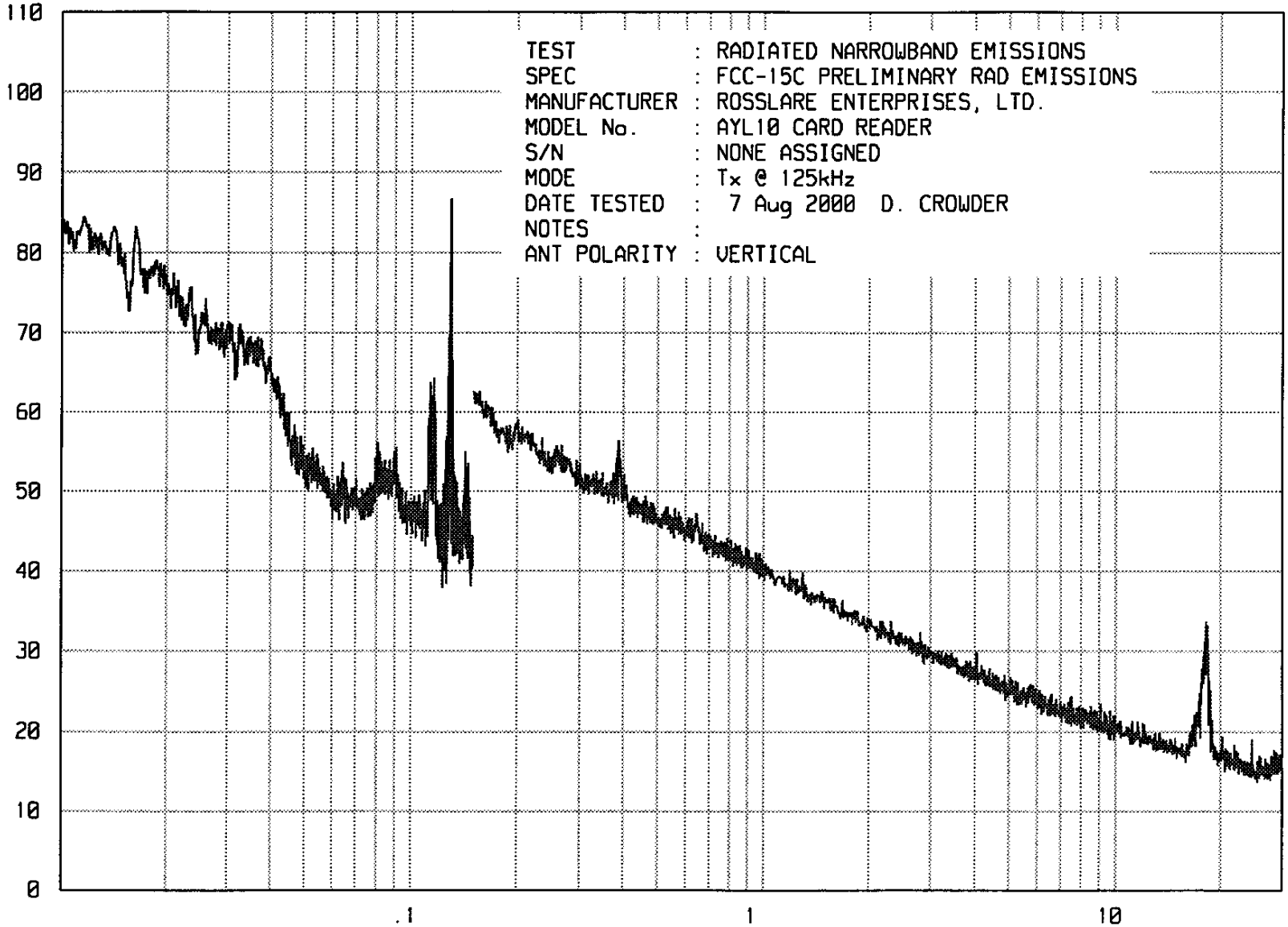
WKA0 09/13/99

UNIV_EM RUN RUN 1



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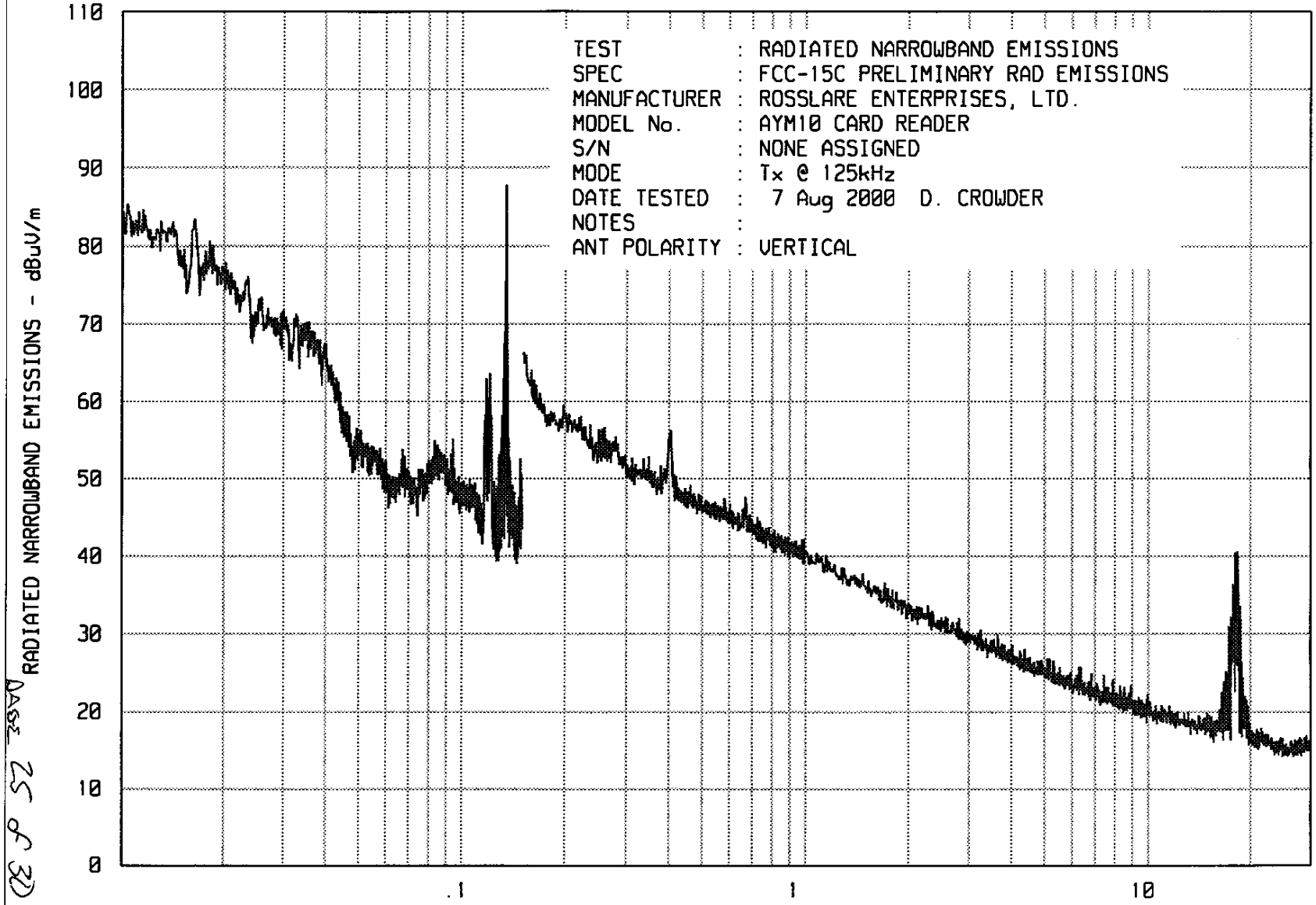
Downers Grove, Ill. 60515

WKA0 09/13/99 UNIV_EM RUN RUN 1



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ETR 22920
DATA SHEET

RADIATED EMISSION MEASUREMENTS
SPECIFICATION : FCC-15C (15.209)
MANUFACTURER : ROSSLARE ENTERPRISES, LTD.
MODEL NO. : AYH-10
SERIAL NO. : NONE ASSIGNED
NOTES :
TEST DATE : 8 AUGUST 2000
TEST DISTANCE : 3m

FREQUENCY (MHz)	ANT POL	MTR RDG dBuV	ANT FAC dB	DIST CORR dB	TOTAL dBuV/m	TOTAL uV/m	LIMIT uV/m
124.2	H	61.8	10.3	129.2	-57.1	0.0014	19.3
124.2	V	56.3	10.3	129.2	-62.6	0.0007	19.3
248.4	H	31.2 AMB	10.1	129.2	-87.9	0.0000	9.7
248.4	V	31.8 AMB	10.1	129.2	-87.3	0.0000	9.7
372.6	H	23.8 AMB	10.1	129.2	-95.3	0.0000	6.4
372.6	V	23.7 AMB	10.1	129.2	-95.4	0.0000	6.4
496.8	H	22.2 AMB	10.0	64.6	-32.4	0.0240	48.3
496.8	V	31.4 AMB	10.0	64.6	-23.2	0.0692	48.3
621.0	H	23.0 AMB	10.0	64.6	-31.6	0.0263	38.6
621.0	V	24.1 AMB	10.0	64.6	-30.5	0.0299	38.6
745.2	H	18.8 AMB	10.0	64.6	-35.8	0.0162	32.2
745.2	V	28.9 AMB	10.0	64.6	-25.7	0.0519	32.2
869.4	H	28.6 AMB	10.0	64.6	-26.0	0.0501	27.6
869.4	V	18.6 AMB	10.0	64.6	-36.0	0.0158	27.6
993.6	H	14.9 AMB	10.2	64.6	-39.5	0.0106	24.2
993.6	V	17.6 AMB	10.2	64.6	-36.8	0.0145	24.2
1117.8	H	14.5 AMB	10.4	64.6	-39.7	0.0104	21.5
1117.8	V	15.1 AMB	10.4	64.6	-39.1	0.0111	21.5
1242.0	H	12.5 AMB	10.4	64.6	-41.7	0.0082	19.3
1242.0	V	18.8 AMB	10.4	64.6	-35.4	0.0170	19.3

H – HORIZONTAL
V – VERTICAL

AMB - AMBIENT

CHECKED BY: DMV

ETR 22920
DATA SHEET

RADIATED EMISSION MEASUREMENTS
SPECIFICATION : FCC-15C (15.209)
MANUFACTURER : ROSSLARE ENTERPRISES, LTD.
MODEL NO. : AYJ-10
SERIAL NO. : NONE ASSIGNED
NOTES :
TEST DATE : 8 AUGUST 2000
TEST DISTANCE : 3m

FREQUENCY (MHz)	ANT POL	MTR RDG dBuV	ANT FAC dB	DIST CORR dB	TOTAL dBuV/m	TOTAL uV/m	LIMIT uV/m
124.2	H	58.1	10.3	129.2	-60.8	0.0009	19.3
124.2	V	49.3	10.3	129.2	-69.6	0.0003	19.3
248.4	H	27.0 AMB	10.1	129.2	-92.1	0.0000	9.7
248.4	V	30.3 AMB	10.1	129.2	-88.8	0.0000	9.7
372.6	H	24.3 AMB	10.1	129.2	-94.8	0.0000	6.4
372.6	V	29.0 AMB	10.1	129.2	-90.1	0.0000	6.4
496.8	H	21.9 AMB	10.0	64.6	-32.7	0.0232	48.3
496.8	V	22.5 AMB	10.0	64.6	-32.1	0.0248	48.3
621.0	H	19.9 AMB	10.0	64.6	-34.7	0.0184	38.6
621.0	V	21.8 AMB	10.0	64.6	-32.8	0.0229	38.6
745.2	H	16.9 AMB	10.0	64.6	-37.7	0.0130	32.2
745.2	V	27.2 AMB	10.0	64.6	-27.4	0.0427	32.2
869.4	H	29.1 AMB	10.0	64.6	-25.5	0.0531	27.6
869.4	V	23.2 AMB	10.0	64.6	-31.4	0.0269	27.6
993.6	H	29.8 AMB	10.2	64.6	-24.6	0.0589	24.2
993.6	V	21.7 AMB	10.2	64.6	-32.7	0.0232	24.2
1117.8	H	14.6 AMB	10.4	64.6	-39.6	0.0105	21.5
1117.8	V	18.6 AMB	10.4	64.6	-35.6	0.0166	21.5
1242.0	H	12.7 AMB	10.4	64.6	-41.5	0.0084	19.3
1242.0	V	21.9 AMB	10.4	64.6	-32.3	0.0243	19.3

H – HORIZONTAL
V – VERTICAL

AMB - AMBIENT

CHECKED BY: DM

ETR 22920
DATA SHEET

RADIATED EMISSION MEASUREMENTS
SPECIFICATION : FCC-15C (15.209)
MANUFACTURER : ROSSLARE ENTERPRISES, LTD.
MODEL NO. : AYK-10
SERIAL NO. : NONE ASSIGNED
NOTES :
TEST DATE : 8 AUGUST 2000
TEST DISTANCE : 3m

FREQUENCY (MHz)	ANT POL	MTR RDG dBuV	ANT FAC dB	DIST CORR dB	TOTAL dBuV/m	TOTAL uV/m	LIMIT uV/m
123.8	H	58.7	10.3	129.2	-60.2	0.0010	19.4
123.8	V	49.8	10.3	129.2	-69.1	0.0004	19.4
247.6	H	29.0 AMB	10.1	129.2	-90.1	0.0000	9.7
247.6	V	30.7 AMB	10.1	129.2	-88.4	0.0000	9.7
371.4	H	25.8 AMB	10.1	129.2	-93.3	0.0000	6.5
371.4	V	29.1 AMB	10.1	129.2	-90.0	0.0000	6.5
495.2	H	23.8 AMB	10.0	64.6	-30.8	0.0288	48.5
495.2	V	22.9 AMB	10.0	64.6	-31.7	0.0260	48.5
619.0	H	19.5 AMB	10.0	64.6	-35.1	0.0176	38.8
619.0	V	26.0 AMB	10.0	64.6	-28.6	0.0372	38.8
742.8	H	18.4 AMB	10.0	64.6	-36.2	0.0155	32.3
742.8	V	28.1 AMB	10.0	64.6	-26.5	0.0473	32.3
866.6	H	29.8 AMB	10.0	64.6	-24.8	0.0575	27.7
866.6	V	24.0 AMB	10.0	64.6	-30.6	0.0295	27.7
990.4	H	15.7 AMB	10.2	64.6	-38.7	0.0116	24.2
990.4	V	22.2 AMB	10.2	64.6	-32.2	0.0245	24.2
1114.2	H	14.5 AMB	10.4	64.6	-39.7	0.0104	21.5
1114.2	V	19.7 AMB	10.4	64.6	-34.5	0.0188	21.5
1238.0	H	12.7 AMB	10.4	64.6	-41.5	0.0084	19.4
1238.0	V	23.1 AMB	10.4	64.6	-31.1	0.0279	19.4

H – HORIZONTAL
V – VERTICAL

AMB - AMBIENT

CHECKED BY: DM

ETR 22920
DATA SHEET

RADIATED EMISSION MEASUREMENTS
SPECIFICATION : FCC-15C (15.209)
MANUFACTURER : ROSSLARE ENTERPRISES, LTD.
MODEL NO. : AYL-10
SERIAL NO. : NONE ASSIGNED
NOTES :
TEST DATE : 8 AUGUST 2000
TEST DISTANCE : 3m

FREQUENCY (MHz)	ANT POL	MTR RDG dBuV	ANT FAC dB	DIST CORR dB	TOTAL dBuV/m	TOTAL uV/m	LIMIT uV/m
123.5	H	60.0	10.3	129.2	-58.9	0.0011	19.4
123.5	V	52.7	10.3	129.2	-66.2	0.0005	19.4
247.0	H	27.4 AMB	10.1	129.2	-91.7	0.0000	9.7
247.0	V	33.3 AMB	10.1	129.2	-85.8	0.0001	9.7
370.5	H	27.6 AMB	10.1	129.2	-91.5	0.0000	6.5
370.5	V	27.2 AMB	10.1	129.2	-91.9	0.0000	6.5
494.0	H	21.4 AMB	10.0	64.6	-33.2	0.0219	48.6
494.0	V	27.5 AMB	10.0	64.6	-27.1	0.0442	48.6
617.5	H	21.4 AMB	10.0	64.6	-33.2	0.0219	38.9
617.5	V	23.8 AMB	10.0	64.6	-30.8	0.0288	38.9
741.0	H	17.4 AMB	10.0	64.6	-37.2	0.0138	32.4
741.0	V	25.1 AMB	10.0	64.6	-29.5	0.0335	32.4
864.5	H	23.8 AMB	10.0	64.6	-30.8	0.0288	27.8
864.5	V	28.2 AMB	10.0	64.6	-26.4	0.0479	27.8
988.0	H	15.3 AMB	10.2	64.6	-39.1	0.0111	24.3
988.0	V	23.6 AMB	10.2	64.6	-30.8	0.0288	24.3
1111.5	H	15.5 AMB	10.4	64.6	-38.7	0.0116	21.6
1111.5	V	23.5 AMB	10.4	64.6	-30.7	0.0292	21.6
1235.0	H	22.9 AMB	10.4	64.6	-31.3	0.0272	19.4
1235.0	V	23.5 AMB	10.4	64.6	-30.7	0.0292	19.4

H – HORIZONTAL
V – VERTICAL

AMB - AMBIENT

CHECKED BY: _____

ETR 22920
DATA SHEET

RADIATED EMISSION MEASUREMENTS
SPECIFICATION : FCC-15C (15.209)
MANUFACTURER : ROSSLARE ENTERPRISES, LTD.
MODEL NO. : AYM-10
SERIAL NO. : NONE ASSIGNED
NOTES :
TEST DATE : 8 AUGUST 2000
TEST DISTANCE : 3m

FREQUENCY (MHz)	ANT POL	MTR RDG dBuV	ANT FAC dB	DIST CORR dB	TOTAL dBuV/m	TOTAL uV/m	LIMIT uV/m
122.7	H	59.9	10.3	129.2	-59.0	0.0011	19.6
122.7	V	55.8	10.3	129.2	-63.1	0.0007	19.6
245.4	H	28.1 AMB	10.1	129.2	-91.0	0.0000	9.8
245.4	V	23.8 AMB	10.1	129.2	-95.3	0.0000	9.8
368.1	H	24.2 AMB	10.1	129.2	-94.9	0.0000	6.5
368.1	V	33.0 AMB	10.1	129.2	-86.1	0.0000	6.5
490.8	H	21.9 AMB	10.0	64.6	-32.7	0.0232	48.9
490.8	V	21.4 AMB	10.0	64.6	-33.2	0.0219	48.9
613.5	H	23.8 AMB	10.0	64.6	-30.8	0.0288	39.1
613.5	V	23.4 AMB	10.0	64.6	-31.2	0.0275	39.1
736.2	H	32.2 AMB	10.0	64.6	-22.4	0.0759	32.6
736.2	V	28.9 AMB	10.0	64.6	-25.7	0.0519	32.6
858.9	H	27.9 AMB	10.0	64.6	-26.7	0.0462	27.9
858.9	V	20.0 AMB	10.0	64.6	-34.6	0.0186	27.9
981.6	H	15.0 AMB	10.2	64.6	-39.4	0.0107	24.4
981.6	V	19.1 AMB	10.2	64.6	-35.3	0.0172	24.4
1104.3	H	20.0 AMB	10.4	64.6	-34.2	0.0195	21.7
1104.3	V	19.1 AMB	10.4	64.6	-35.1	0.0176	21.7
1227.0	H	22.9 AMB	10.4	64.6	-31.3	0.0272	19.6
1227.0	V	17.8 AMB	10.4	64.6	-36.4	0.0151	19.6

H – HORIZONTAL
V – VERTICAL

AMB - AMBIENT

CHECKED BY: DM