

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

ELITE PROJECT: 30980

DATES TESTED: May 6 through 10, 2002

TEST PERSONNEL: Mark E. Longinotti; Daniel E. Crowder

TEST SPECIFICATION: Federal Communication Commission (FCC) Part 22
and TIA/EIA/IS-98-A

ENGINEERING TEST REPORT NO. 30980-02

MEASUREMENT OF RF INTERFERENCE FROM

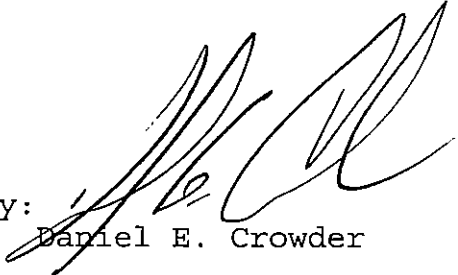
A MODEL SYN9528A

SINGLE CARRIER DUAL BAND RF LINEAR COMPENSATOR

FOR: TRL Technologies
Elgin, IL

PURCHASE ORDER NO: 780-0000000795

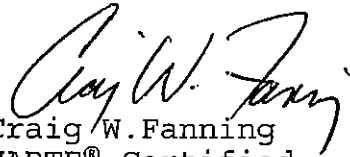
Report By:


Daniel E. Crowder

Witnessed By:

Heip Lam
TRL Technologies

Approved By:


Craig W. Fanning
NARTE® Certified -
ATL-0188-E; EMC-000296-NT

ENGINEERING TEST REPORT NO. 30980-02
ADMINISTRATIVE DATA AND SUMMARY OF TESTS

DESCRIPTION OF TEST ITEM: Single Carrier Dual Band RF Linear
Compensator

MODEL NO: SYN9528A

SERIAL NO: Qual01

MANUFACTURER: TRL Technologies

APPLICABLE SPECIFICATIONS: FCC Part 22

QUANTITY OF ITEMS TESTED: One (1)

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

DATE RECEIVED: May 6, 2002

DATES TESTED: May 6 through 10, 2002

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

CUSTOMER: Heip Lam of TRL Technologies was present.

ELITE ELECTRONIC: Mark E. Longinotti; Daniel E. Crowder

ELITE JOB NO.: 30980

ABSTRACT: The model SYN9528A Single Carrier Dual Band RF Linear
Compensator complies with the technical requirements in FCC Part 22.
See test results and data pages for more details.

TABLE OF CONTENTS

PARAGRAPH	DESCRIPTION OF CONTENTS	PAGE NO.
1.0	INTRODUCTION	4
1.1	DESCRIPTION OF TEST ITEM	4
1.2	PURPOSE	4
1.3	DEVIATIONS, ADDITIONS AND EXCLUSIONS	4
1.4	APPLICABLE DOCUMENTS	4
1.5	SUBCONTRACTOR IDENTIFICATION	5
1.6	LABORATORY CONDITIONS	5
2.0	TEST ITEM SETUP AND OPERATION	5
2.1	POWER INPUT	5
2.2	GROUNDING	5
2.3	PERIPHERAL EQUIPMENT	5
2.4	MODULATION	5
2.5	FREQUENCY SELECTION	6
2.6	RF POWER OUTPUT	6
3.0	TEST EQUIPMENT	7
3.1	TEST EQUIPMENT LIST	7
3.2	CALIBRATION TRACEABILITY	7
4.0	REQUIREMENTS, PROCEDURES AND RESULTS	7
4.1	RF POWER OUTPUT MEASUREMENTS	7
4.1.1	REQUIREMENTS	7
4.1.2	PROCEDURES	7
4.1.3	RESULTS	7
4.2	OCCUPIED BANDWIDTH MEASUREMENTS	8
4.2.1	REQUIREMENTS:	8
4.2.2	PROCEDURES	9
4.2.3	RESULTS	9
4.3	SPURIOUS EMISSIONS AT ANTENNA TERMINAL	10
4.3.1	REQUIREMENTS	10
4.3.2	PROCEDURES	10
4.3.3	RESULTS	11
4.4	FIELD STRENGTH OF SPURIOUS EMISSIONS	11
4.4.1	PRELIMINARY RADIATED MEASUREMENTS	11
4.4.1.1	REQUIREMENTS	11
4.4.1.2	PROCEDURES	11
4.4.1.3	RESULTS	12
4.4.2	FINAL RADIATED EMISSIONS	12
4.4.2.1	REQUIREMENTS	12
4.4.2.2	PROCEDURES	12
4.4.2.3	RESULTS OF OPEN FIELD RADIATED TEST	13
4.5	FREQUENCY STABILITY	14
4.5.1	REQUIREMENTS	14
5.0	CONCLUSION	14
6.0	CERTIFICATION	14
7.0	ENDORSEMENT DISCLAIMER	14
	TABLE I - EQUIPMENT LIST	15

TOTAL NUMBER OF PAGES IN THIS DOCUMENT,
(INCLUDING DATA SHEETS): 64

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

ENGINEERING TEST REPORT NO. 30980-02

MEASUREMENT OF RF INTERFERENCE FROM

A MODEL SYN9528A

SINGLE CARRIER DUAL BAND RF LINEAR COMPENSATOR

1.0 INTRODUCTION:

1.1 DESCRIPTION OF TEST ITEM: During the period of May 6 through 10, 2002, a series of radio interference measurements were performed on a model SYN9528A Single Carrier Dual Band RF Linear Compensator, serial number Qual01, (hereinafter referred to as the test item). The tests were performed for TRL Technologies of Elgin, IL.

The test item is a single carrier RF linear compensator that operates in the Cellular bands, 869MHz to 894MHz and 835MHz to 949MHz. The test item has a rated gain of 10dB.

1.2 PURPOSE: The test series was performed to determine if the test item meets the technical requirements of the FCC Part 22 for Dual Band Cellular Radio.

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 22, dated 1 October 2001
- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 2, 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"

ENGINEERING TEST REPORT NO. 30980-02

- TIA/EIA/IS-98-A, "Recommended Minimum Performance standards for Dual-Mode Wideband Spectrum Cellular Mobile Stations", dated July 1996

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 38%.

2.0 TEST ITEM SETUP AND OPERATION:

2.1 POWER INPUT: The test item obtained 12VDC from a Tektronix PS280 DC Power Supply through two, 1/2 meter long, unshielded leads.

2.2 GROUNDING: Since the test item was powered with 12VDC from a DC power supply, it was ungrounded during the tests.

2.3 PERIPHERAL EQUIPMENT: The following peripheral equipment was submitted with the test item:

ITEM	DESCRIPTION
HP Signal Generator	M/N E4432B, S/N VS39440973
Ophir Amplifier	M/N GRF5064, S/N 1006
HP Power Meter	M/N 437B, S/N 3110A05097, Next Cal 05/27/00

The output of the signal generator was routed through the amplifier. The output of the amplifier was connected to the test item through a 1 meter long coaxial cable. The power meter was connected to the test item through a 1 meter long coaxial cable.

2.4 MODULATION: The test signal was modulated with three different representative types of modulations: (1) Analog - AMPS

30kHz; (2) Digital I/Q modulations - TDMA 30kHz; GSM 300kHz; CDMA 1.23 MHz. The input signals were supplied from an HP M/N E4432B Signal Generator.

The RF Power Output, the Occupied Bandwidth and the Spurious Emissions at Antenna Terminal tests were performed with AMPS, TDMA, GSM and CDMA modulated input signals. The preliminary Field Strength of Spurious Emissions tests were performed with CW, AMPS, TDMA, GSM and CDMA modulated input signals. The final Field Strength of Spurious Emissions tests were performed with CW and GSM modulated input signals.

2.5 FREQUENCY SELECTION: One test frequency was selected for each frequency band. The specified channel spacings for each modulation are shown below:

<u>Modulation</u>	<u>Channel Spacing</u>
AMPS	30kHz
TDMA	30kHz
GSM	300kHz
CDMA	1.23MHz

The specific test frequencies are designated as follows:

<u>Band</u>	<u>Frequency (MHz)</u>
Uplink	836.5

2.6 RF POWER OUTPUT:The input levels were adjusted to reach the rated output levels shown below:

<u>Modulation</u>	<u>Rated Power (dBm)</u>	<u>Rated Power (Watts)</u>
AMPS	27	0.5
TDMA	27	0.5
GSM	29	0.8
CDMA	27	0.5

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.

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).

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 RF POWER OUTPUT MEASUREMENTS:

4.1.1 REQUIREMENTS: In accordance with paragraph 22.913, the effective radiated power (ERP) level is allowed up to 7 watts for mobile transmitters.

4.1.2 PROCEDURES: The test item was adjusted for the rated gain. The test item was operated to measure the output for the uplink path.

- (a) The input signal was set to 836.5MHz.
- (b) The input signal was AMPS modulated.
- (c) The HP 437B Power Meter was connected to the output of the test item and the output of the test item was monitored.
- (d) The amplitude of the input signal was adjusted until the rated output level was measured. The output power level was measured and recorded.
- (e) Steps (b) through (d) were repeated with the input signal TDMA, GSM and CDMA modulated.

4.1.3 RESULTS: The output power measurements are presented on data page 16. The power outputs achieved for the uplink path were 0.5 watts (AMPS Modulation), 0.5 watts (TDMA Modulation), 0.8 watts

(GSM Modulation) and 0.5 watts (CDMA Modulation). The remainder of the tests were performed at these power levels. The power output complies with the FCC requirements.

The ERP limit does not apply to the power output alone, but the combination of the power output and the antenna. Compliance to the power output will be based on the system configuration. Therefore, the ERP requirement cannot be directly applied to the test item.

4.2 OCCUPIED BANDWIDTH MEASUREMENTS:

4.2.1 REQUIREMENTS: For AMPS and TDMA modulations, in accordance with paragraph 22.917(d), the mean power of any emission shall be attenuated below the unmodulated carrier power (P) in accordance with the following schedule:

- (1) On any frequency removed from the carrier frequency by more than 20kHz but not more than 45kHz: At least 26dB
- (2) On any frequency removed from the carrier frequency by more than 45kHz, up to the first multiple of the carrier frequency: At least 60dB or $43 + 10 \log (P)$ dB, whichever is the lesser attenuation.

For GSM modulation, In accordance to Section 2.1049(i); transmitters designed for other types of modulation - when modulated by an appropriate signal of sufficient amplitude to be representative of the type of service in which used. A description of the input signal should be supplied.

For CDMA modulation, in accordance with paragraph 10.5.1.3 of the TIA/EIA/IS-98-A specification, the mean power of any emission shall be attenuated below the unmodulated carrier power (P) in accordance with the following schedule:

- (1) For offset frequencies greater than 900kHz from the CDMA Channel center frequency: At least 42dB
- (2) For offset frequencies greater than 1.98MHz from the CDMA Channel center frequency: At least 54dB

4.2.2 PROCEDURES:

The test was performed using each of the modulation types listed in paragraph 2.2 (AMPS, TDMA, GSM, CDMA).

(a) The input signal was set to 836.5MHz. The input signal level was adjusted to provide the rated level at the test item output. The reference level was recorded.

(b) The input signal was AMPS modulated.

(c) A spectrum analyzer was connected to the output of the test item. With a bandwidth of the spectrum analyzer set to 300 Hz, the output of the test item was measured and recorded.

(d) The input signal from the signal generator was measured with the spectrum analyzer and recorded over the same frequency range.

(e) The modulation was changed to TDMA and steps (c) and (d) were repeated separately with the input signal set to 836.5MHz.

(f) The modulation was changed to GSM and steps (c) and (d) were repeated separately with the input signal set to 836.5MHz. The bandwidth of the spectrum analyzer was set to 30kHz.

(g) The modulation was changed to CDMA and steps (c) and (d) were repeated separately with the input signal set to 836.5MHz. The bandwidth of the spectrum analyzer was set to 30kHz.

4.2.3 RESULTS: The plots of the occupied bandwidth measured with the AMPS modulation of the carrier are presented on data pages 17 through 19. The plots of the occupied bandwidth measured with the TDMA modulation of the carrier are presented on data pages 20 through 22. The plots of the occupied bandwidth measured with the GSM modulation of the carrier are presented on data pages 23 through 25. The plots of the occupied bandwidth measured with the CDMA modulation of the carrier are presented on data pages 26 through 28.

The limits, shown on the plots, are referenced to the power measured from the unmodulated carrier.

As can be seen from the data, the test item output met the occupied bandwidth requirements with the AMPS, TDMA, GSM and CDMA modulations of the carrier. The sideband emissions measured at the

test item output were similar to the sideband emissions measured from the input signals.

4.3 SPURIOUS EMISSIONS AT ANTENNA TERMINAL:

4.3.1 REQUIREMENTS: This test determines whether the test item produces excessive spurious emissions.

In accordance with paragraph 22.917(e), on any frequency twice or more than twice the fundamental frequency, the spurious emissions and intermodulation products shall be attenuated below the unmodulated carrier power (P) by at least $43 + 10 \log(P)$ dB. This requirement translates to a field strength limit of -13dBm (ERP). The peak power of the emissions shall be measured from 30MHz up to the 10th harmonic of the fundamental frequency.

For CDMA modulation, the mean power of any emission shall be attenuated below the unmodulated carrier power (P) in accordance with the following schedule:

- (1) Outside the cellular band (824-949MHz), the attenuation shall be at least $43 + 10 \log(\text{mean output power in watts})$ dB.

4.3.2 PROCEDURES: In general, this test will measure spurious emissions at the antenna terminals. The test was performed using each of the modulation types listed in paragraph 2.2 (AMPS, TDMA, GSM, CDMA).

(a) The input signal was set to 836.5MHz. The input signal level was adjusted to provide the rated level at the test item output.

(b) The input signal was AMPS modulated.

(c) A spectrum analyzer was connected to the output of the test item. The frequency span was adjusted to cover 30 MHz up to 1 GHz. With a bandwidth of the spectrum analyzer set to 100 kHz, the output of the test item was measured and recorded.

(d) The frequency span was adjusted to cover 1 GHz up to 2 GHz. With a bandwidth of the spectrum analyzer set to 1 MHz, the output of the test item was measured and recorded.

(e) The frequency span was adjusted to cover 2 GHz up to 10 GHz. With a bandwidth of the spectrum analyzer set to 1 MHz, the output of the test item was measured and recorded. This range covers up through the 10th harmonic.

(f) Steps (c) through (e) were repeated on the input signal from the signal generator.

(g) The modulation was changed to TDMA, GSM, or CDMA and steps (c) through (f) were repeated separately with the input signal set to 836.5MHz.

4.3.3 RESULTS: The plots of the antenna conducted output measurements are presented on data pages 29 through 52. As can be seen from the data, the test item did not produce spurious emissions in excess of the -13dBm limit.

4.4 FIELD STRENGTH OF SPURIOUS EMISSIONS:

4.4.1 PRELIMINARY RADIATED MEASUREMENTS:

4.4.1.1 REQUIREMENTS: Because emission levels in the open field may be masked by interference from sources other than the test item, preliminary radiated measurements are first performed in the low ambient environment of a shielded enclosure. The radiated emissions from the test item were first measured using peak detection. This data was then automatically plotted. The frequencies with significant emission levels were measured in the open field.

4.4.1.2 PROCEDURES: All preliminary 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 test was performed using each of the modulation types listed in paragraph 2.2 AMPS, TDMA, GSM, CDMA and CW.

(a) The preliminary measurements were performed with the test item operating with an input signal (uplink) at 836.5MHz, with CW modulation. The broadband measuring antenna was positioned at a 1 meter distance from the test item. The frequency range from 30MHz to 10GHz was investigated. The readings were taken with a peak detector function and recorded.

(b) The modulation was changed to AMPS, TDMA, GSM, or CDMA and step (a) was repeated separately with the input signal (uplink) set to 836.5MHz.

4.4.1.3 RESULTS: The preliminary plots are presented on data pages 53 through 62. Factors for the antenna and distance correction were added to the data before it was plotted.

This data is only presented for a reference, and is not used as official data. All significant radiated emissions were subsequently measured at an open field test site.

4.4.2 FINAL RADIATED EMISSIONS:

4.4.2.1 REQUIREMENTS: In accordance with paragraph 22.917(e), on any frequency twice or more than twice the fundamental frequency, the emissions shall be attenuated below the unmodulated carrier power (P) by at least $43 + 10 \log(P)$ dB. This requirement translates to a limit of -13dBm. The peak power of the emissions shall be measured from 30MHz up to the 10th harmonic of the fundamental frequency.

4.4.2.2 PROCEDURES: Final open field measurements 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 final open field emission test procedure is as follows:

- a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
- b) The antenna output was terminated in 50 ohms for the tests.
- c) A double ridged waveguide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
- d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization.
- e) The maximum meter reading was recorded. Measurement BW was 1 MHz and Video of 3MHz. Peak reading were recorded. No averaging methods or corrections were applied.
- f) Measurements were performed with the input signal modulated with CW and GSM.
- g) Measurements were performed separately at each frequency used during the preliminary measurements.

The equivalent power into a dipole antenna was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power another tuned dipole antenna or double ridged waveguide antenna was set in place of test item and connected to a calibrated signal generator. The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The signal level was recorded. The reading was corrected to compensate for cable loss, as required, and when the ridged waveguide antenna was used increased by the difference in gain between the dipole and the waveguide antenna.

4.4.2.3 RESULTS OF OPEN FIELD RADIATED TESTThe final open field radiated levels are presented on data pages 63 and 64. The radiated emissions were measured through the 10th harmonic. All emissions measured from the test item were within the specification limits. The emissions level closest to the limit occurred at 2905.5MHz, with the transmit frequency at 836.5MHz and GSM modulation. The

emissions level at this frequency was 22dB within the limit.

4.5 FREQUENCY STABILITY:

4.5.1 REQUIREMENTS: This requirement does not apply to a Single Carrier Dual Band RF Linear Compensator.

5.0 CONCLUSION:

It was found that the TRL Technologies model SYN9528A Single Carrier Dual Band RF Linear Compensator, complies with the RF Power Output, the Occupied Bandwidth, the Spurious Emissions at Antenna Terminal and the Field Strength of Spurious Emissions requirements of the FCC Part 22 and 2 and TIA/EIA/IS-98-A. The Frequency Stability requirements were deemed to be not applicable.

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 as operated by TRL Technologies personnel. Any electrical or mechanical modification made to the test item subsequent to the specified test date will serve to invalidate the data and void this certification.

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. 30980-02

TABLE 1: 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: ACCESSORIES, MISCELLANEOUS								
XZG3	ATTENUATOR/SWITCH DRIVER	HEWLETT PACKARD	11713A	2421A03059	---		N/A	
Equipment Type: AMPLIFIERS								
APK3	PREAMPLIFIER	AGILENT TECHNOL	8449B	3008A01593	1-26.5GHZ	05/09/02	12	05/09/03
Equipment Type: ANTENNAS								
NTA0	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL611	2057	0.03-2GHZ	05/09/01	12	05/09/02
NWF0	RIDGED WAVE GUIDE	EMCO	3105	2035	1-12.4GHZ	09/08/01	12	09/08/02
NWH0	RIDGED WAVE GUIDE	TENSOR	4105	2081	1-12.4GHZ	08/03/01	12	08/03/02
NW10	RIDGED WAVE GUIDE	AEL	H1498	153	2-18GHZ	09/18/01	12	09/18/02
NW11	RIDGED WAVE GUIDE	AEL	H1498	154	2-18GHZ	09/18/01	12	09/18/02
Equipment Type: ATTENUATORS								
T2D5	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-43	AY9244	DC-18GHZ	01/14/02	12	01/14/03
T2D7	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-43	AY9246	DC-18GHZ	05/16/02	12	05/16/03
Equipment Type: CONTROLLERS								
CDD2	COMPUTER	HEWLETT PACKARD	D4171A#ABA	US61654645	---		N/A	
Equipment Type: PRINTERS AND PLOTTERS								
HRE1	LASER JET 5P	HEWLETT PACKARD	C3150A	USHB061052	---		N/A	
Equipment Type: RECEIVERS								
RAC2	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	3638A08770	100HZ-22GHZ	02/21/02	12	02/21/03
RACD	RF PRESELECTOR	HEWLETT PACKARD	85685A	3010A01205	20HZ-2GHZ	02/21/02	12	02/21/03
RAF5	QUASIPeAK ADAPTOR W/ RECEI	HEWLETT PACKARD	85650A	2043A00151	0.01-1000MHZ	06/11/01	12	06/11/02
Equipment Type: SIGNAL GENERATORS								
GBN2	SIGNAL GENERATOR	ROHDE & SCHWARZ	SMY 02	DE14046	9KHZ-2.080GHZ	05/13/02	12	05/13/03
GDJ1	SYNTHESIZED GENERATOR	HEWLETT PACKARD	8672A	2132A02171	2-18GHZ	04/09/02	12	04/09/03

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.



ETR 30980-02
DATA SHEET

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
S/N : QUAL 01
SPECIFICATION : FCC-22 RF POWER OUTPUT
DATE : MAY 6, 2002

FREQUENCY (MHz)	POWER READING	
	dBm	WATTS
836.5 AMPS Modulation	27	0.5
836.5 NADC Modulation	27	0.5
836.5 CDMA Modulation	27	0.5
836.5 AMPS Modulation	29	0.8

CHECKED BY:

Daniel E. Crowder

16.564

ELITE ELECTRONIC ENGINEERING CO

MKR 836.499 9 MHz
-13.30 dBm

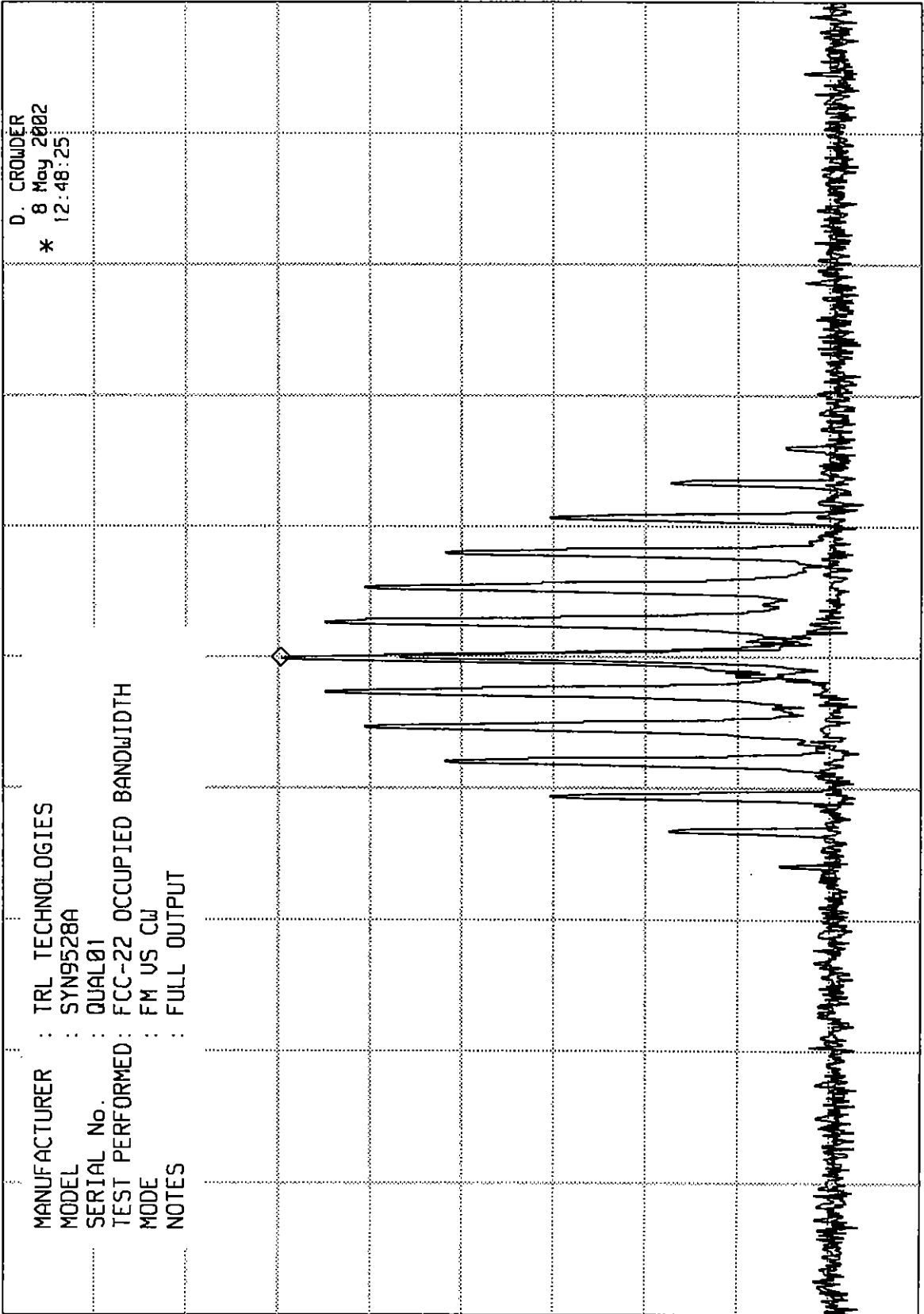
hp

REF 17.0 dBm

ATTEN 30 dB + 40 dB EXT

10 dB/

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED: FCC-22 OCCUPIED BANDWIDTH
MODE : FM US CW
NOTES : FULL OUTPUT



CENTER 836.500 MHz

RES BW 300 Hz (i)

VBW 3 kHz

SPAN 150 kHz

SWP 11.3 sec

ELITE ELECTRONIC ENGINEERING CO

MKR 836.499 9 MHz
-34.70 dBm

hp

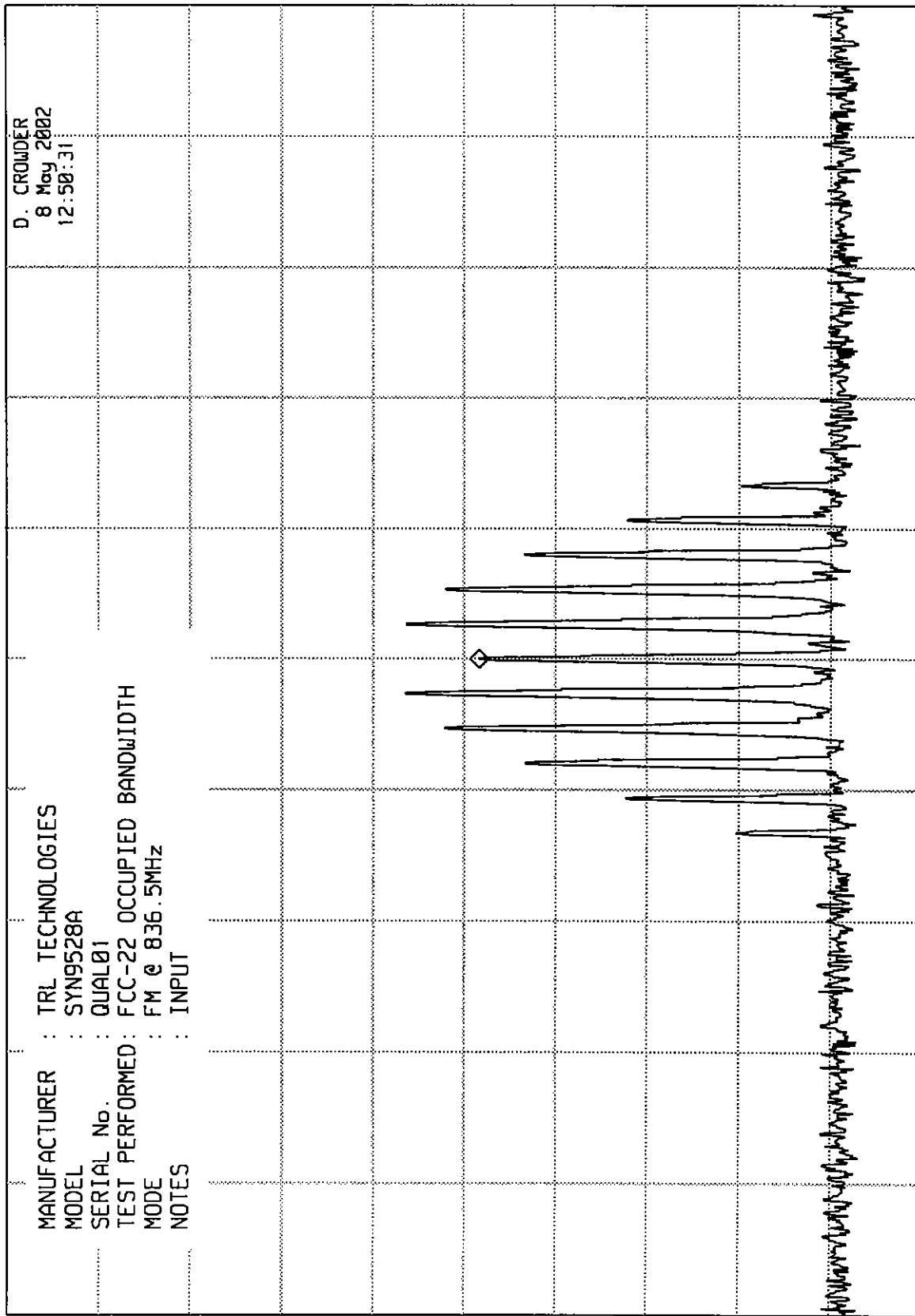
REF 17.0 dBm

ATTEN 30 dB +40 dB SKT

10 dB/

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED : FCC-22 OCCUPIED BANDWIDTH
MODE : FM @ 836.5MHz
NOTES : INPUT

D. CROWDER
8 May 2002
12:50:31



SPAN 150 kHz
SWP 11.3 sec

VBW 3 kHz

HZ (i)

RES BW 300 MHz

CENTER 836.500 MHz

ELITE ELECTRONIC ENGINEERING CO

MKR 836.499 3 MHz
-55.40 dBm

hp

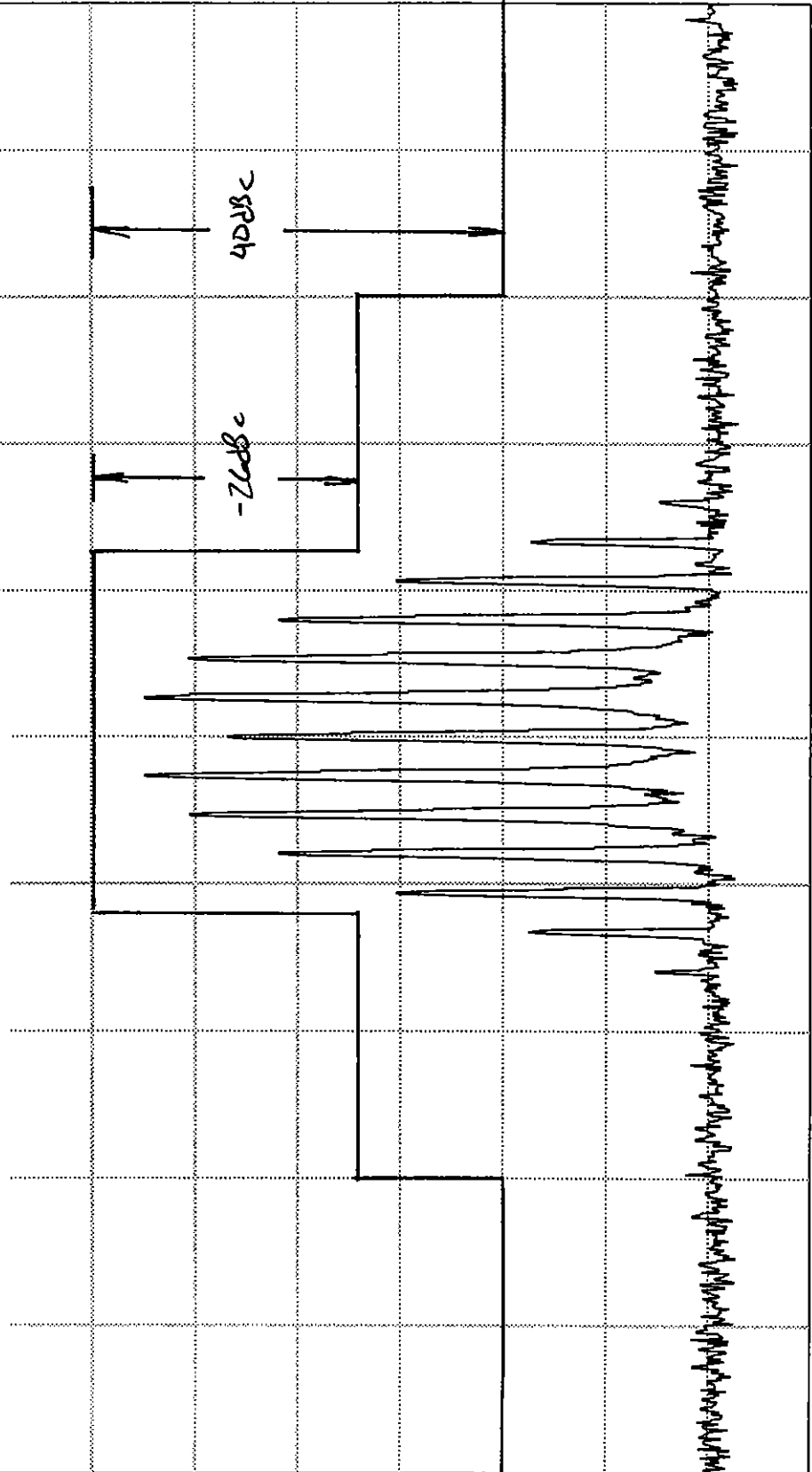
REF 17.0 dBm

ATTEN 30 dB + 40 dB BW

10 dB/

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QVAL01
TEST PERFORMED: FCC-22 OCCUPIED BANDWIDTH
MODE : FM @ 836.5MHz
NOTES : FULL OUTPUT

D. CROWDER
8 May 2002
12:45:39



CENTER 836.500 MHz RES BW 300 Hz (i) UBW 3 kHz SPAN 150 kHz SWP 11.3 sec

ELITE ELECTRONIC ENGINEERING CO

MKR 836.499 9 MHz
-13.20 dBm

hp

REF 17.0 dBm

ATTEN 30 dB +40 dB Ext

10 dB/

MANUFACTURER : TRL TECHNOLOGIES

MODEL : SYN9528A

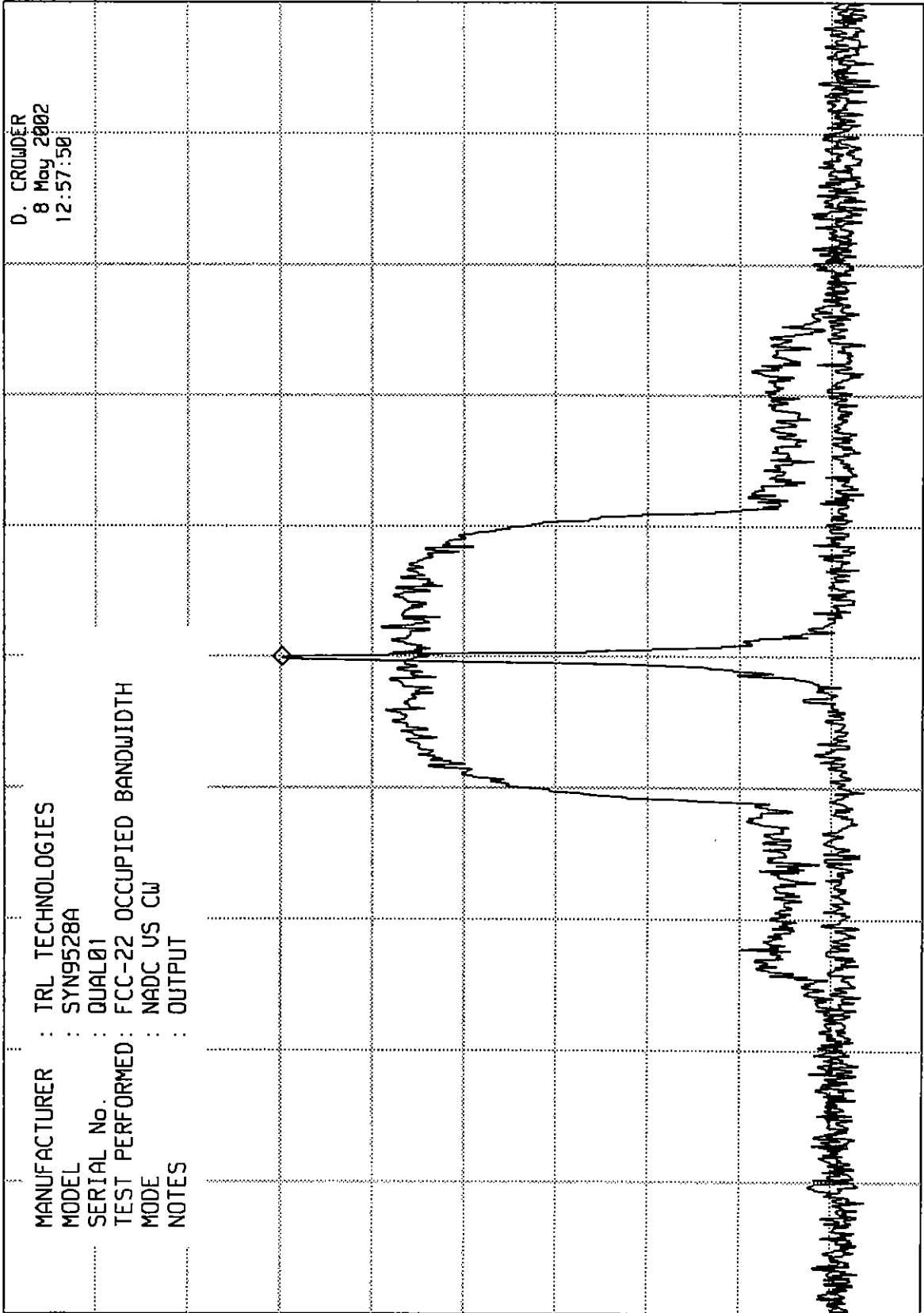
SERIAL No. : QUAL01

TEST PERFORMED: FCC-22 OCCUPIED BANDWIDTH

MODE : NADC US CW

NOTES : OUTPUT

D. CROWDER
8 May 2002
12:57:50



CENTER 836.500 MHz

RES BW 300 Hz (i)

VBW 3 kHz

SPAN 150 kHz

SWP 11.3 sec

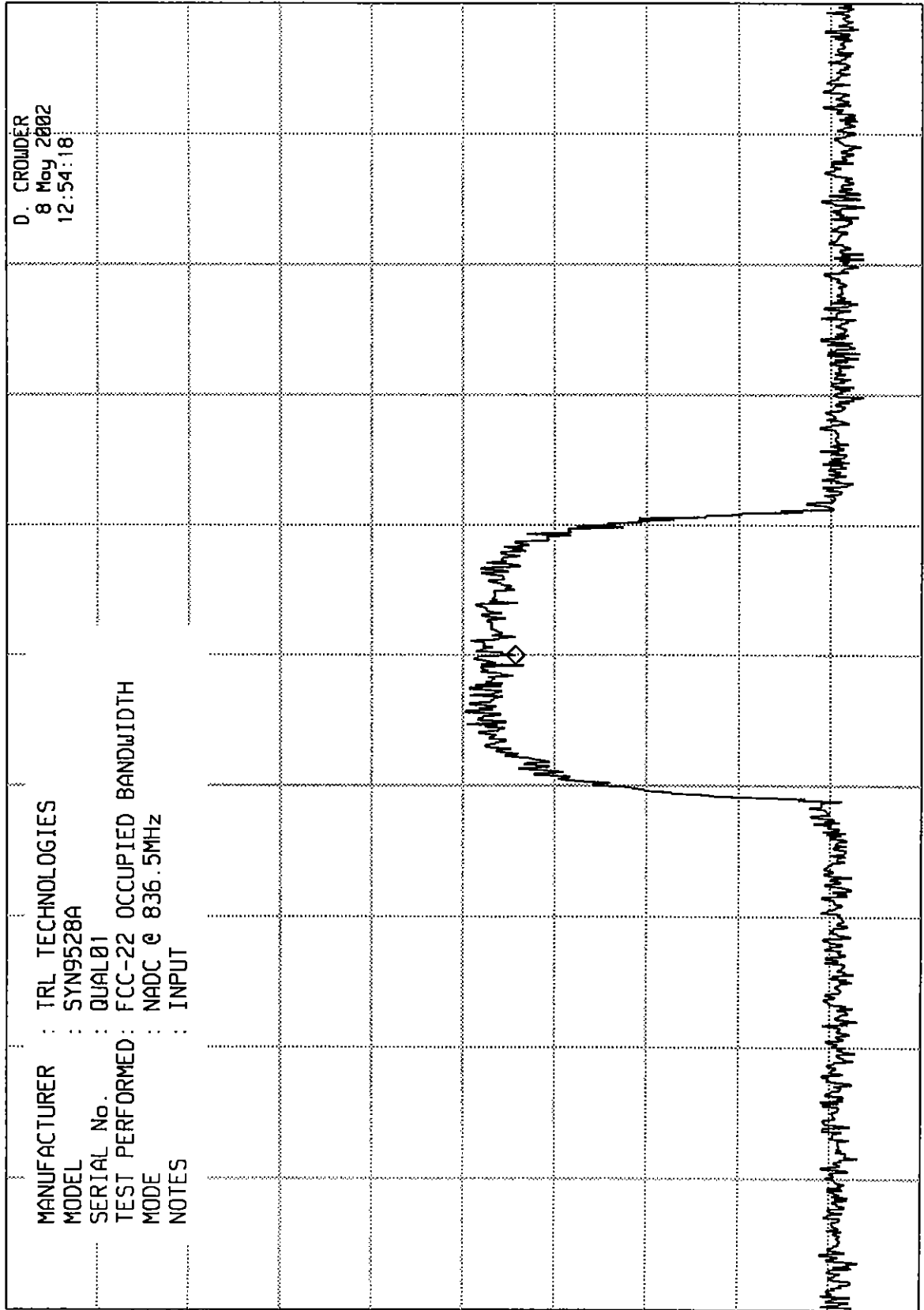
ELITE ELECTRONIC ENGINEERING CO

MKR 836.499 9 MHz
-38.80 dBm

hp

REF 17.0 dBm ATTN 30 dB + 40 dB EXT

10 dB/



CENTER 836.500 MHz RES BW 300 Hz (i) VBW 3 kHz SPAN 150 kHz SWP 11.3 sec

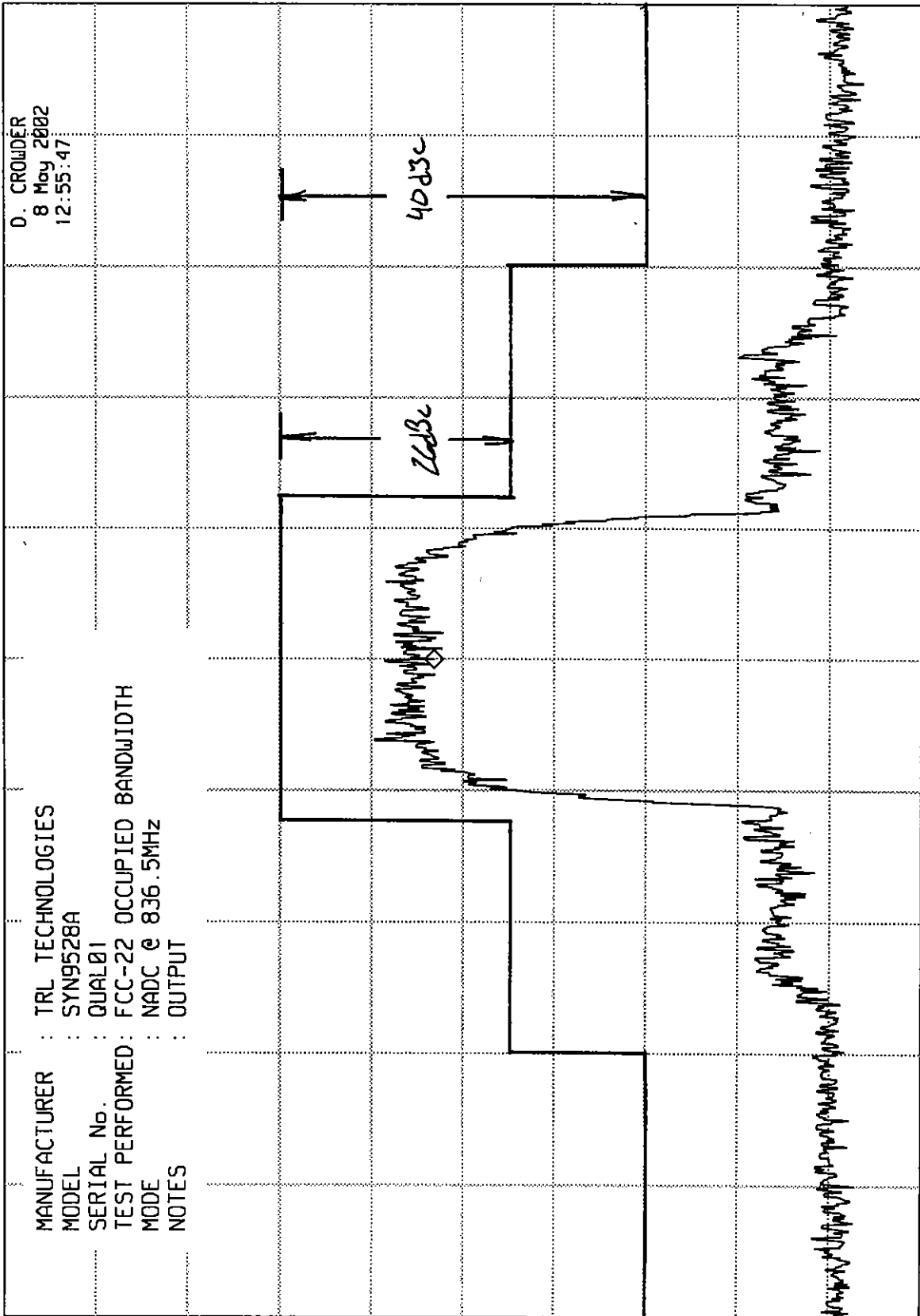
ELITE ELECTRONIC ENGINEERING CO

MKR 836.499 9 MHz
-29.90 dBm

hp

REF 17.0 dBm ATTN 30 dB 440 dB Ext

10 dB/



MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED: FCC-22 OCCUPIED BANDWIDTH
MODE : NADC @ 836.5MHz
NOTES : OUTPUT

D. CROWDER
8 May 2002
12:55:47

40dBc

26dBc

SPAN 150 kHz
SWP 11.3 sec

VBW 3 kHz

Hz (i)

CENTER 836.500 MHz

RES BW 300

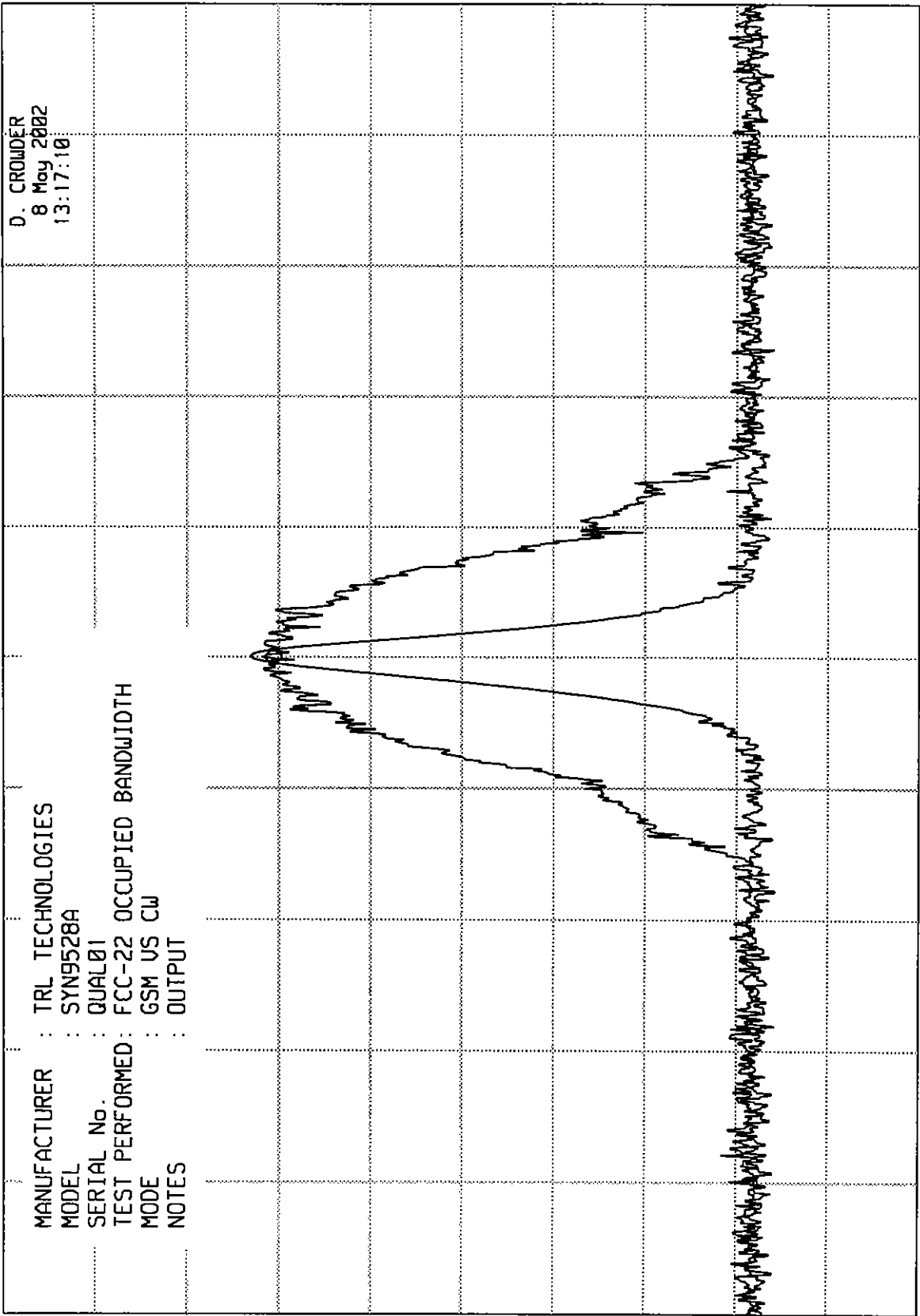
ELITE ELECTRONIC ENGINEERING CO

MKR 836.498 MHz
-12.40 dBm

hp

REF 17.0 dBm ATTN 30 dB + 40dB Ext

10 dB/



ELITE ELECTRONIC ENGINEERING CO

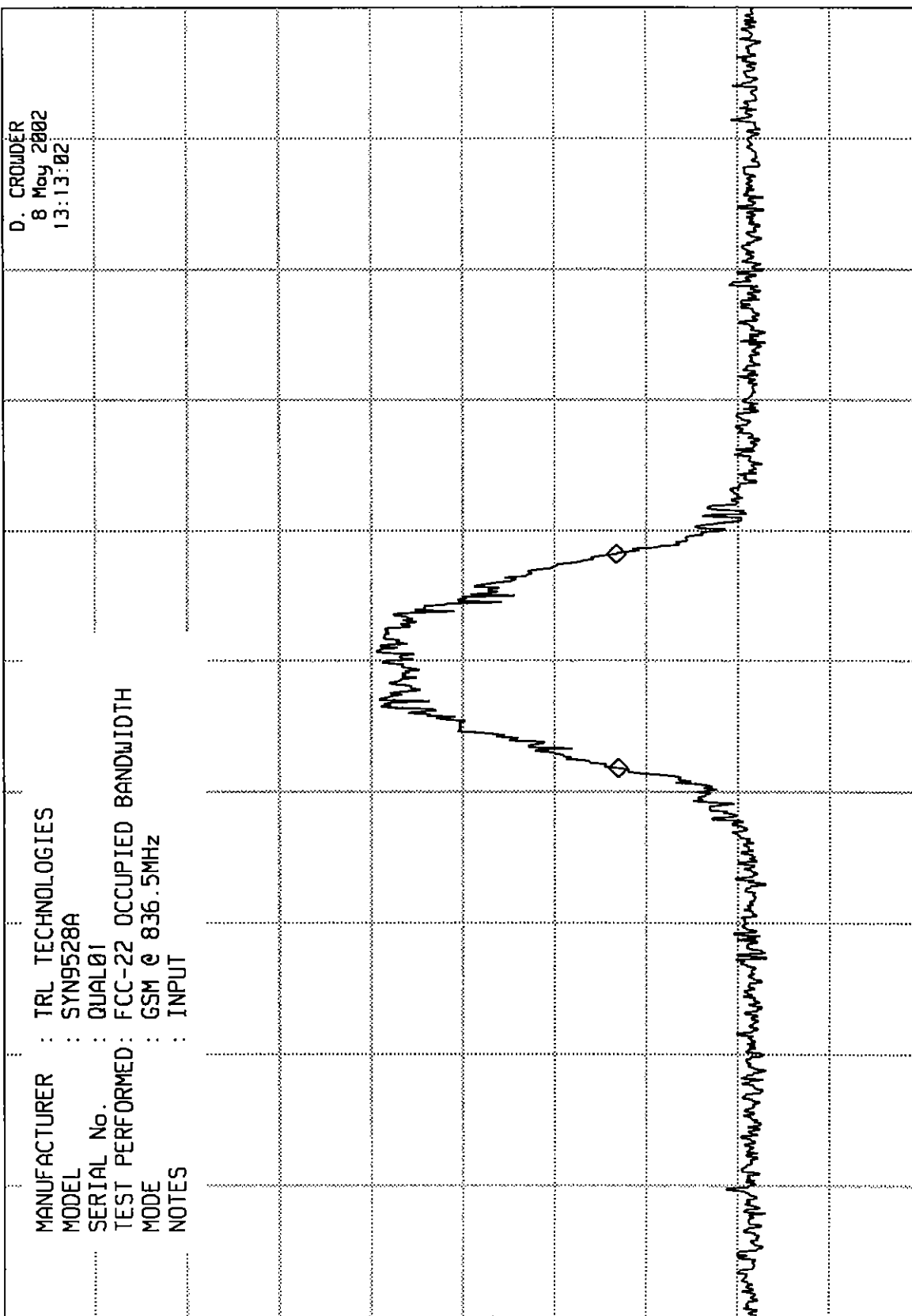
MKR ^-328 kHz
-0.20 dB

hp

REF 17.0 dBm ATTN 30 dB + 40 dB

10 dB/

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED : FCC-22 OCCUPIED BANDWIDTH
MODE : GSM @ 836.5MHz
NOTES : INPUT



CENTER 836.50 MHz SPAN 2.00 MHz
RES BW 30 kHz(i) SWP 20.0 msec
VBW 300 kHz

ELITE ELECTRONIC ENGINEERING CO

MKR ^-326 kHz
-0.50 dB

hp

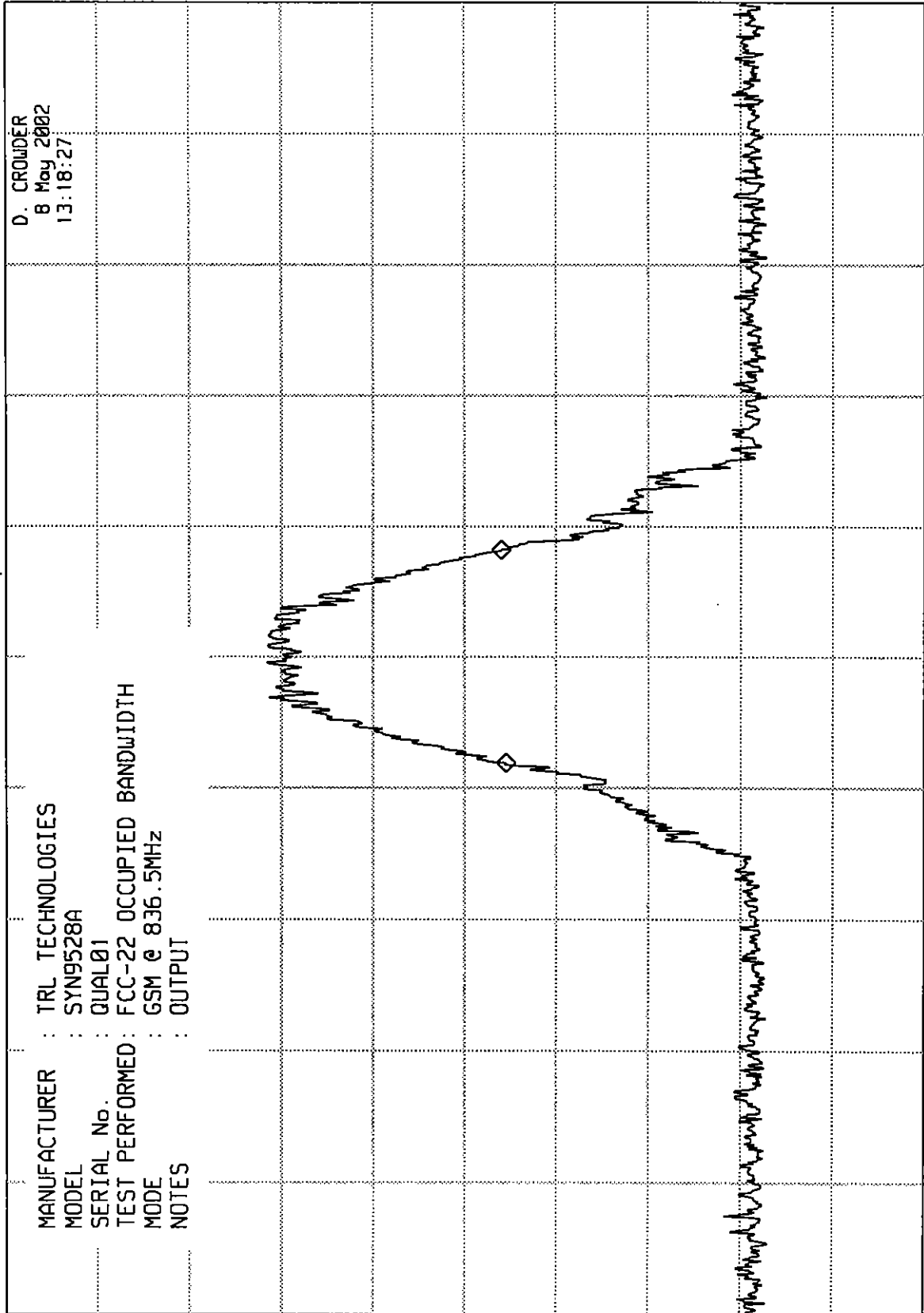
REF 17.0 dBm

ATTEN 30 dB + 40 dB Ext

10 dB/

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QVAL01
TEST PERFORMED : FCC-22 OCCUPIED BANDWIDTH
MODE : GSM @ 836.5MHz
NOTES : OUTPUT

D. CROWDER
8 May 2002
13:18:27



SPAN 2.00 MHz
SWP 20.0 msec

VBW 300 kHz

CENTER 836.50 MHz
RES BW 30 kHz (i)

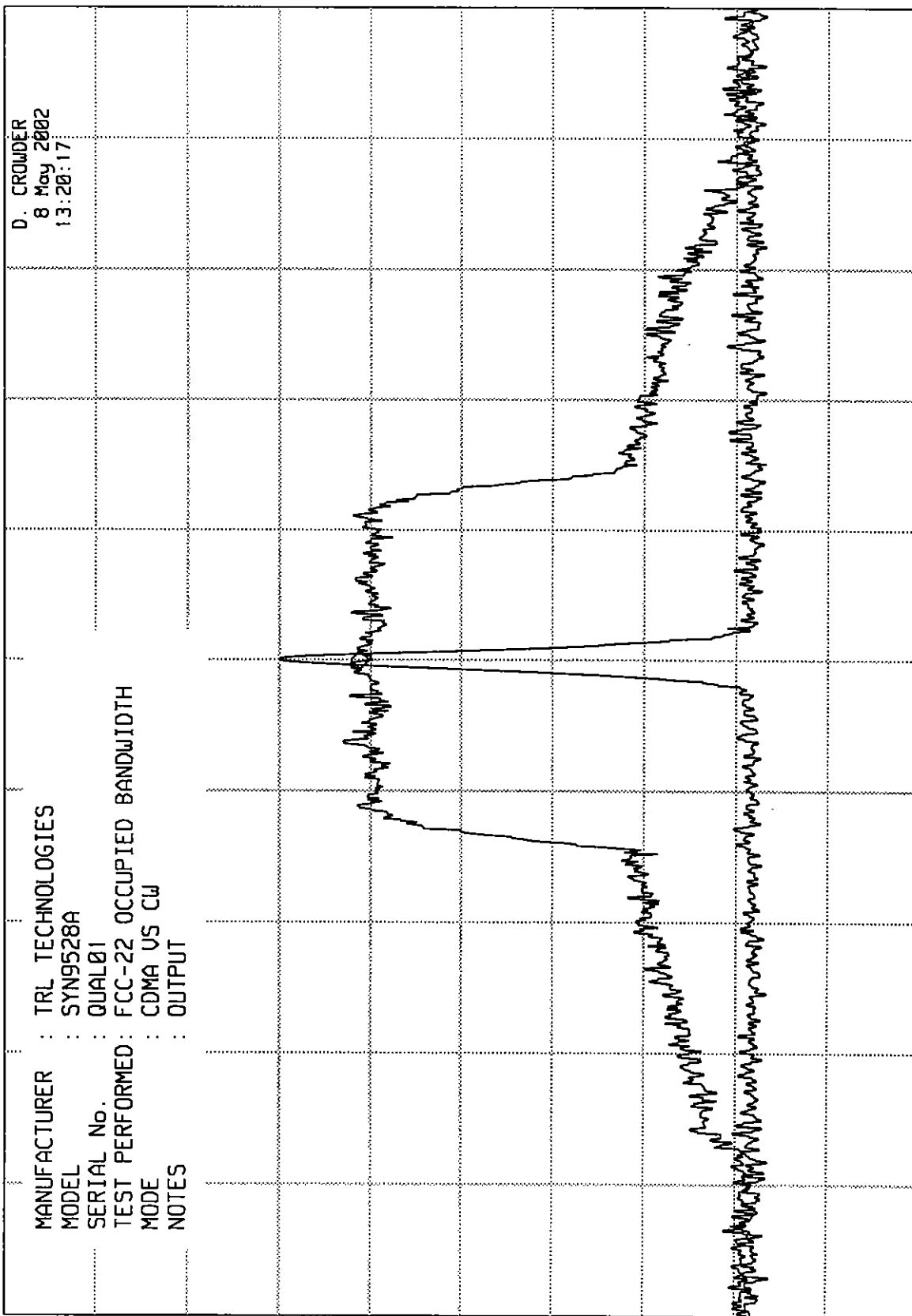
ELITE ELECTRONIC ENGINEERING CO

MKR 836.495 MHz
-21.90 dBm

hp

REF 17.0 dBm ATTN 30 dB + 40 dB Ext

10 dB/



MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED : FCC-22 OCCUPIED BANDWIDTH
MODE : CDMA US CW
NOTES : OUTPUT

CENTER 836.50 MHz RES BW 30 kHz(i) VBW 300 kHz SPAN 5.00 MHz SWP 37.5 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 836.495 MHz
-31.90 dBm

hp

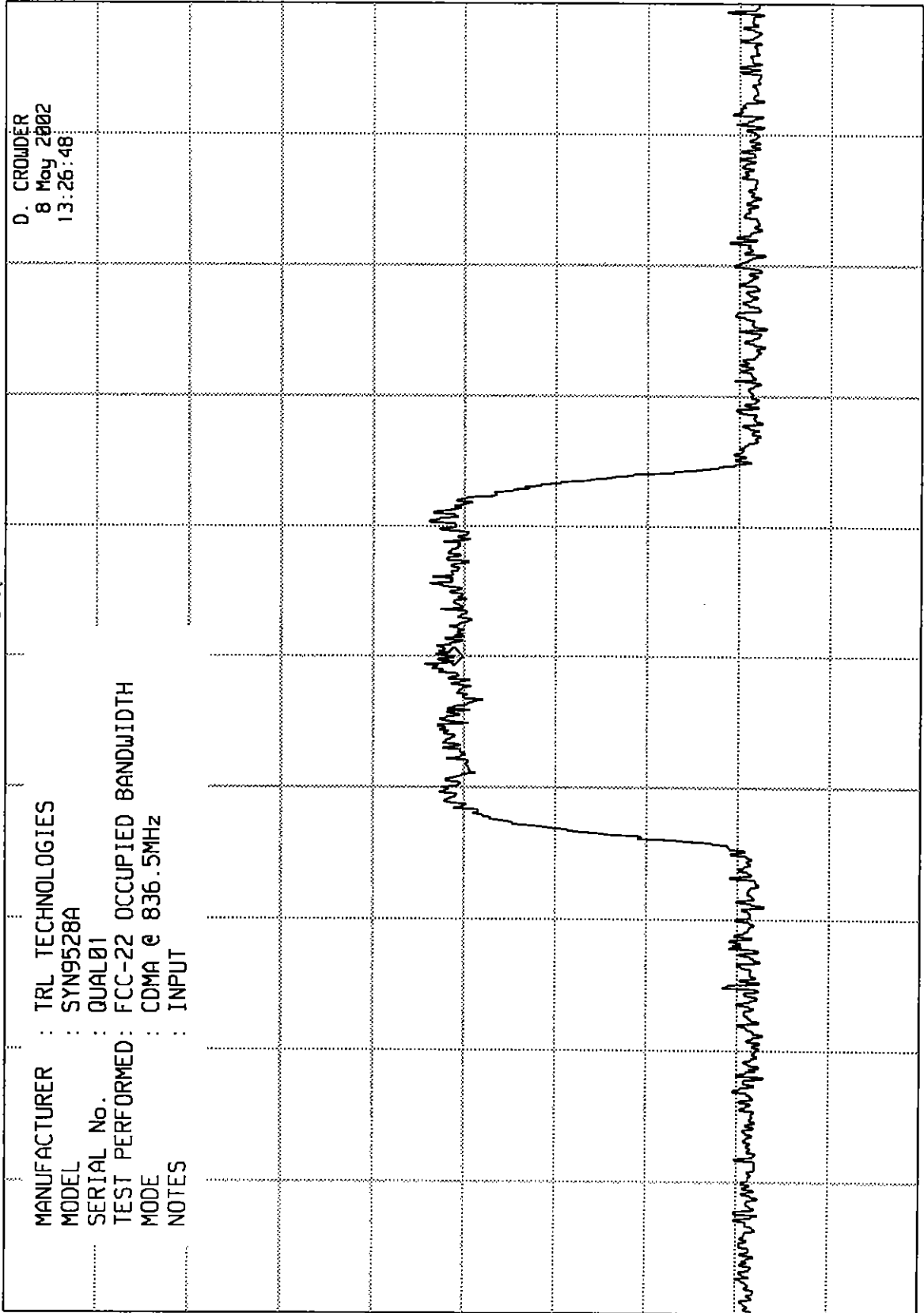
REF 17.0 dBm

ATTEN 30 dB +40 dB EXT

10 dB/

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED: FCC-22 OCCUPIED BANDWIDTH
MODE : CDMA @ 836.5MHz
NOTES : INPUT

D. CROWDER
8 May 2002
13:26:48



SPAN 5.00 MHz
SWP 37.5 msec

VBW 300 kHz

CENTER 836.50 MHz
RES BW 30 kHz(i)

ELITE ELECTRONIC ENGINEERING CO

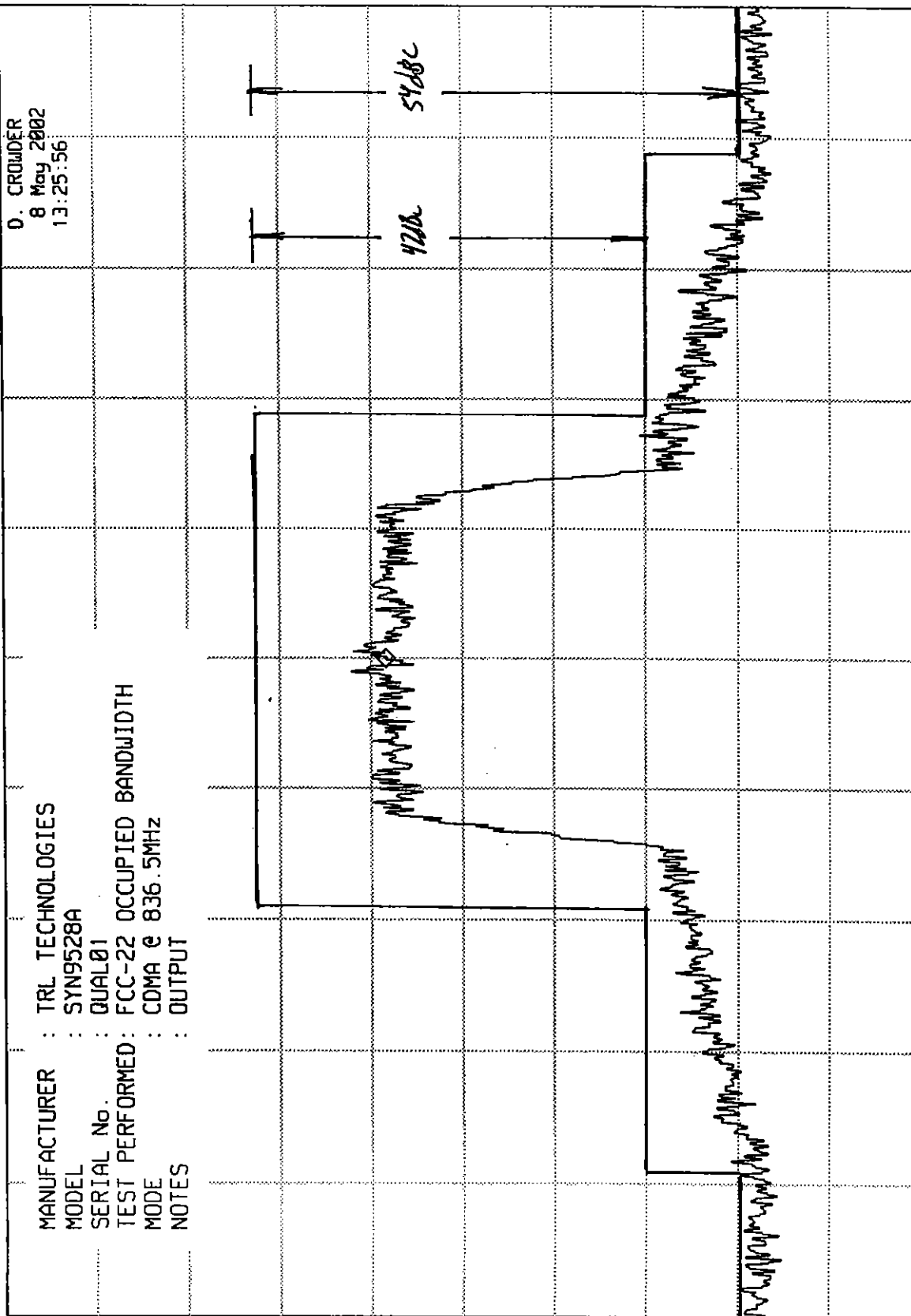
MKR 836.495 MHz

-24.70 dBm

REF 17.0 dBm

ATTEN 30 dB + 40 dB

MANUFACTURER : TRL TECHNOLOGIES
 MODEL : SYN9528A
 SERIAL No. : QUAL01
 TEST PERFORMED : FCC-22 OCCUPIED BANDWIDTH
 MODE : CDMA c 836.5MHz
 NOTES : OUTPUT



D. CROWDER
 8 May 2002
 13:25:56

10 dB/

SPAN 5.00 MHz
 SWP 37.5 msec

VBW 300 kHz

CENTER 836.50 MHz
 RES BW 30 kHz (i)

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-67.80 dBm

hp

REF 7.0 dBm ATTN 30 dB + 40 dB *Ext*

10 dB/

OFFSET

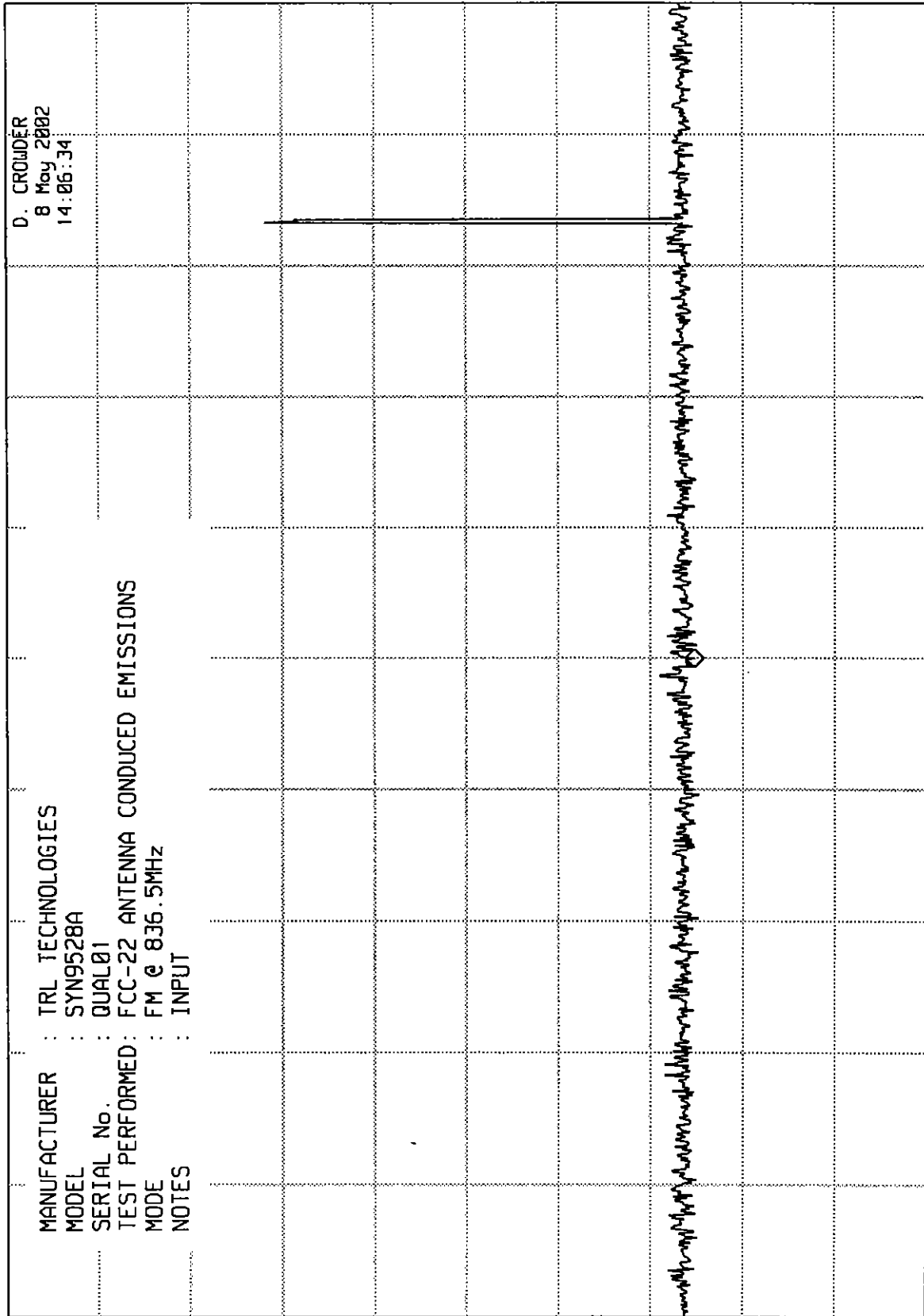
-10.0

dB

DL

-53.0

dBm



START 30 MHz RES BW 100 kHz (i) STOP 1.000 GHz
UBW 1 MHz SWP 728 msec

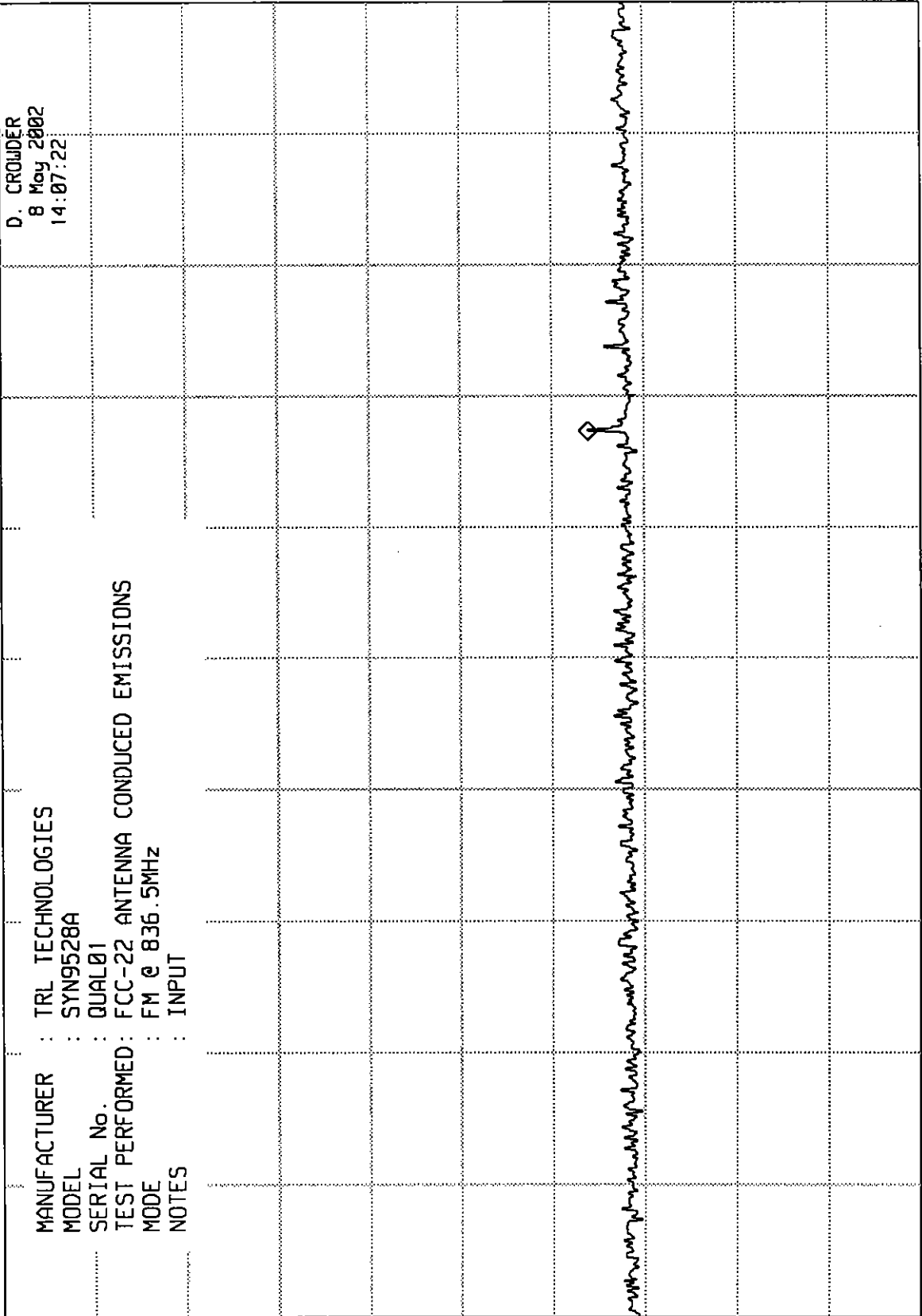
ELITE ELECTRONIC ENGINEERING CO

MKR 1.672 GHz
-64.00 dBm

hp

REF 0.0 dBm

ATTEN 20 dB + 40 dB EXT



10 dB/

OFFSET

-10.0

dB

DL

-53.0

dBm

START 1.00 GHz

RES BW 1 MHz (i)

VBW 3 MHz

STOP 2.00 GHz

SWP 25.0 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 1.672 GHz
-63.70 dBm

hp

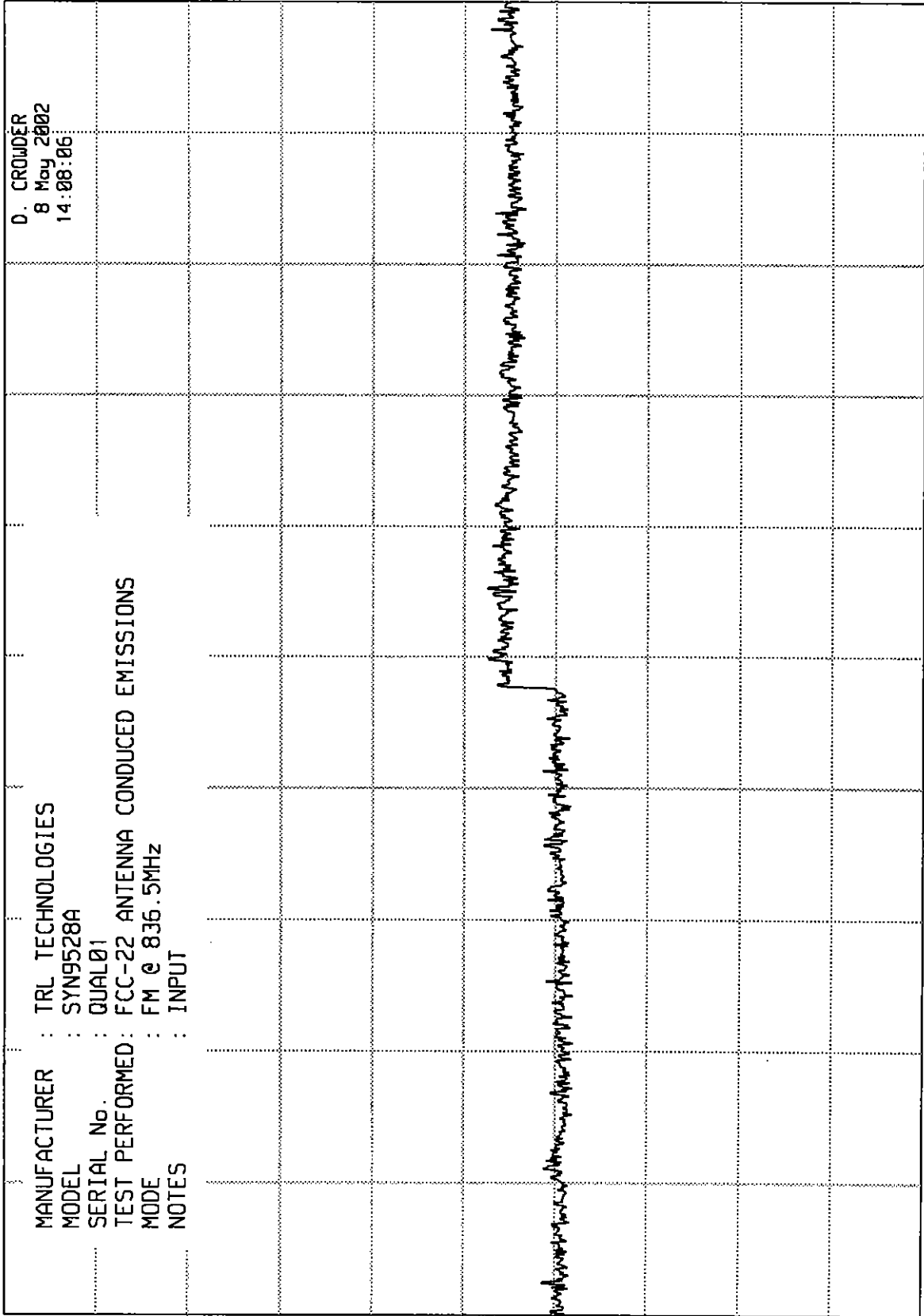
REF -10.0 dBm

ATTEN 10 dB + 40 dB SET

10 dB/

OFFSET
-10.0
dB

DL
-53.0
dBm



START 2.00 GHz
RES BW 1 MHz (i)
STOP 10.00 GHz
SWP 200 msec
VBW 3 MHz

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-67.10 dBm

hp

REF 7.0 dBm

ATTEN 30 dB + 40 dB EXT

10 dB/

OFFSET

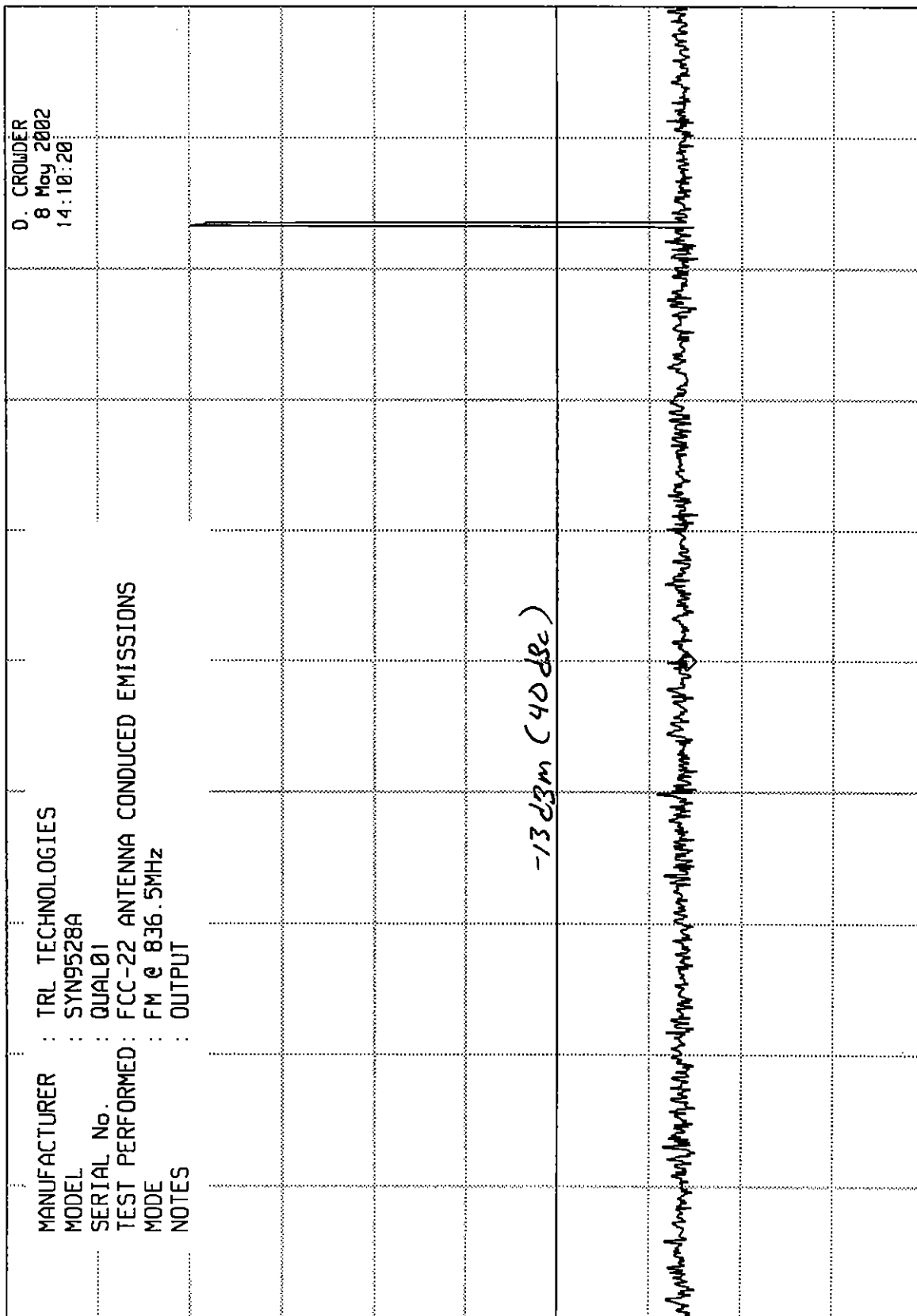
-10.0

dB

DL

-53.0

dBm



START 30 MHz

RES BW 100 kHz (i)

VBW 1 MHz

STOP 1.000 GHz

SWP 728 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 1.672 GHz
-63.70 dBm

hp

REF 0.0 dBm

ATTEN 20 dB + 40dB EXT

10 dB/

OFFSET

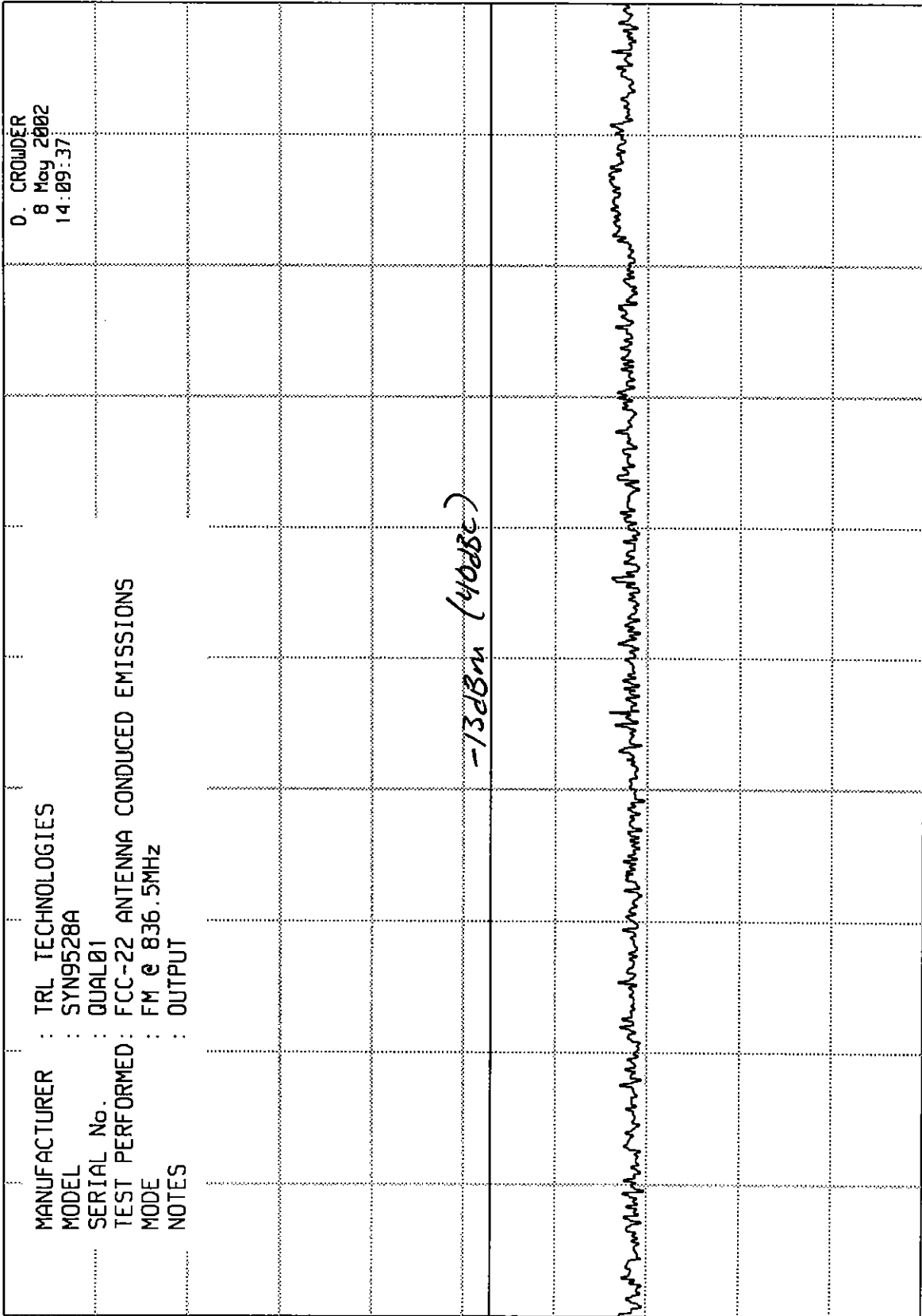
-10.0

dB

DL

-53.0

dBm



START 1.00 GHz

RES BW 1 MHz (i)

VBW 3 MHz

STOP 2.00 GHz

SWP 25.0 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 1.672 GHz
-63.70 dBm

hp

REF -10.0 dBm ATTN 10 dB + 40dB EXT.

10 dB/

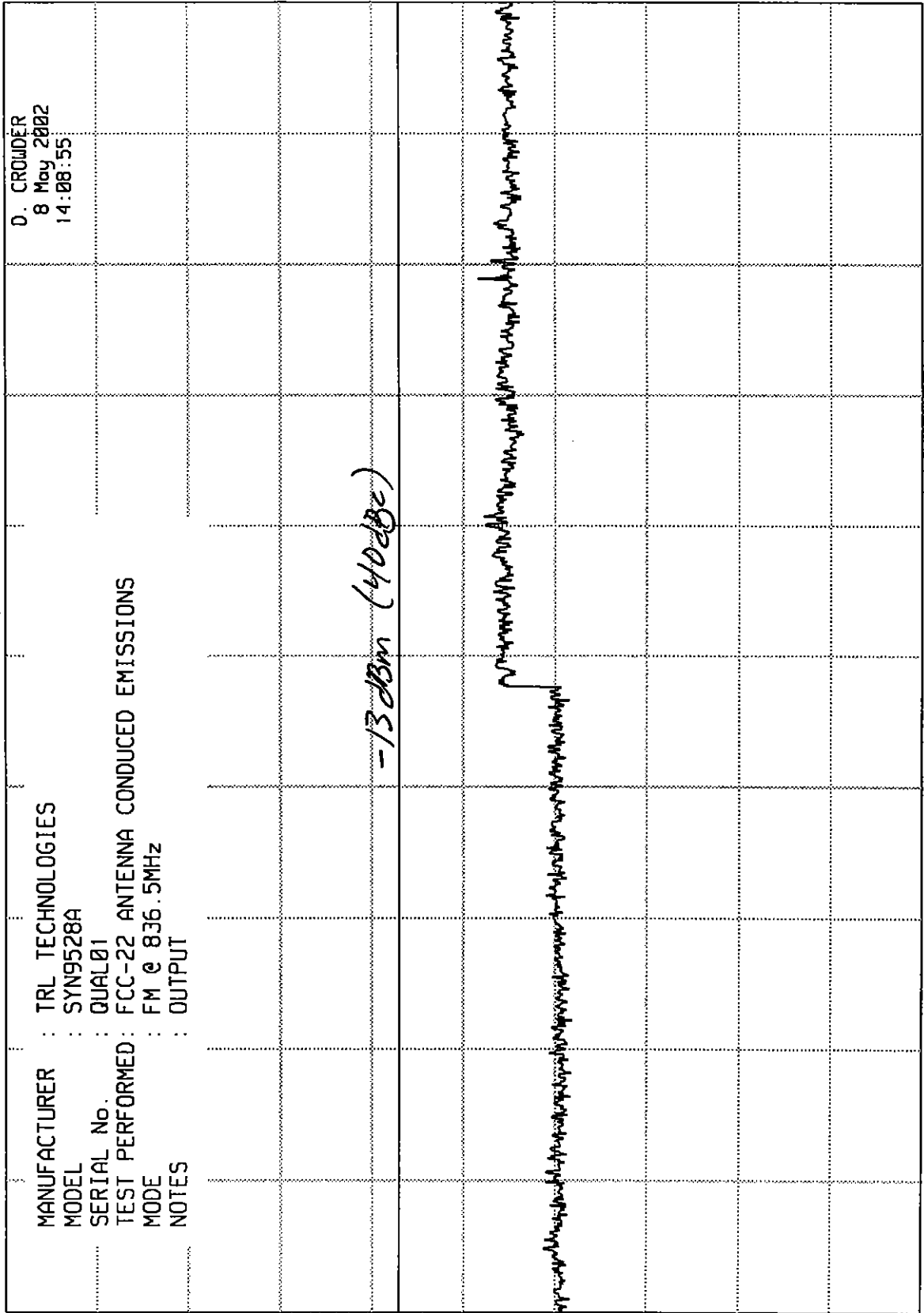
OFFSET

-10.0

dB

DL

-53.0
dBm



START 2.00 GHz RES BW 1 MHz (i) VBW 3 MHz STOP 10.00 GHz
SWP 200 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-65.50 dBm

hp

REF 7.0 dBm

ATTEN 30 dB + 40 dB EXT

10 dB/

OFFSET

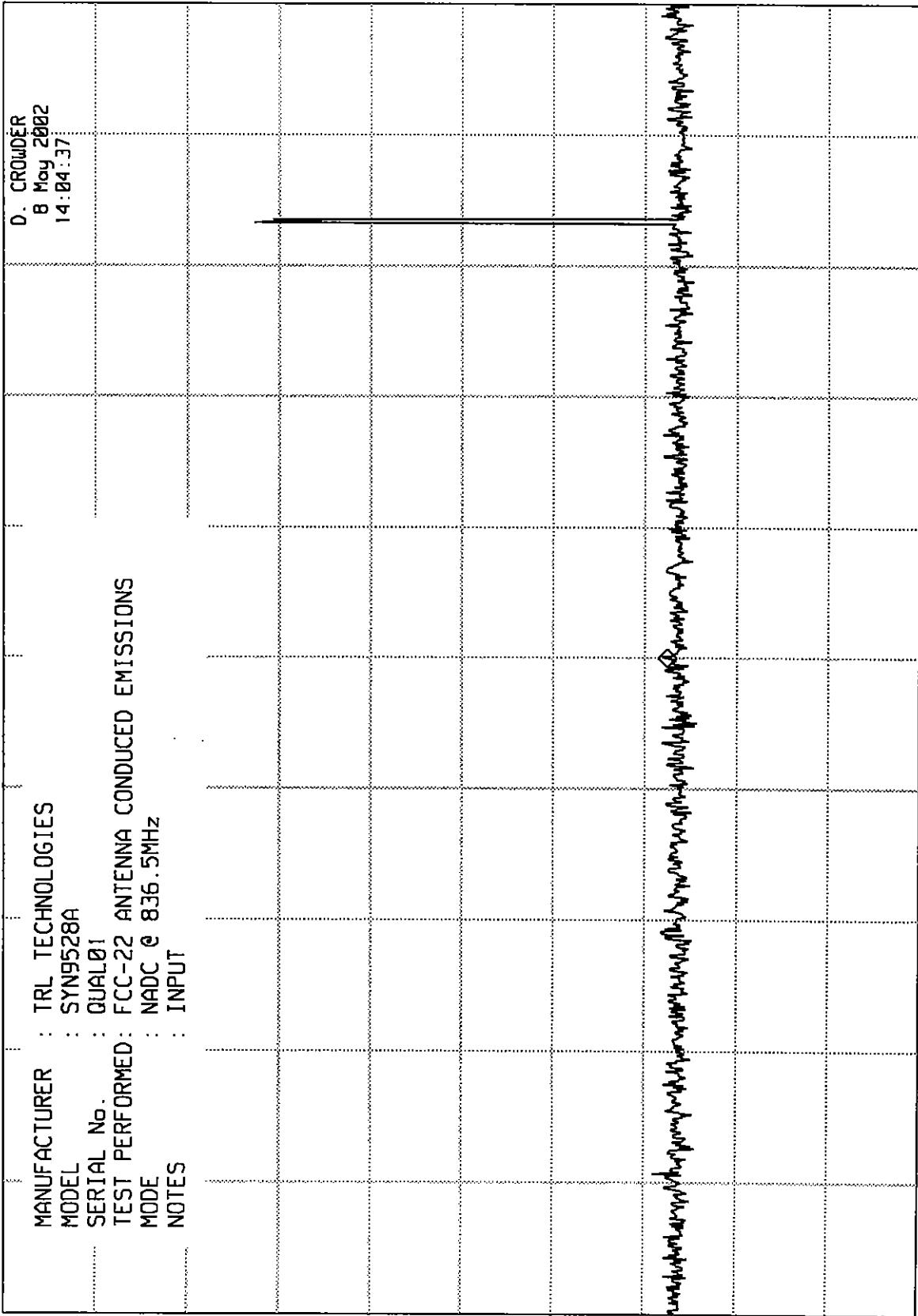
-10.0

dB

DL

-53.0

dBm



START 30 MHz

RES BW 100 kHz(i)

VBW 1 MHz

STOP 1.000 GHz

SWP 728 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 1.672 GHz
-62.20 dBm

hp

REF 0.0 dBm

ATTEN 20 dB + 40 dB Ext

10 dB/

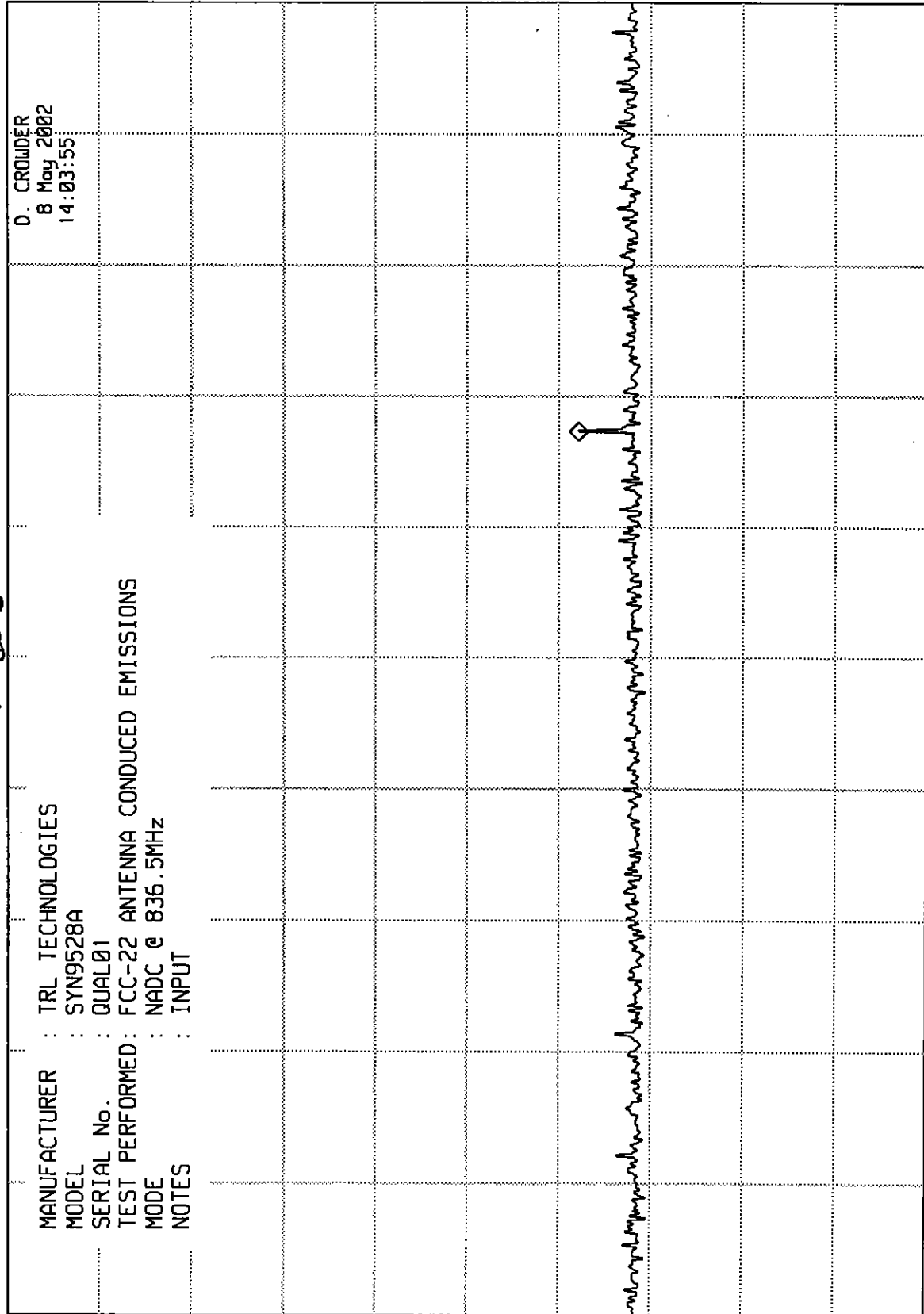
OFFSET

-10.0

dB

DL

-53.0
dBm



START 1.00 GHz

RES BW 1 MHz (1)

VBW 3 MHz

STOP 2.00 GHz

SWP 25.0 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 6.112 GHz
-62.80 dBm

hp

REF -10.0 dBm

ATTEN 10 dB + 40 dB EXT

10 dB/

OFFSET

-10.0

dB

DL

-53.0
dBm

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED: FCC-22 ANTENNA CONDUCTED EMISSIONS
MODE : NADC @ 836.5MHz
NOTES : INPUT

D. CROWDER
8 May 2002
14:03:00



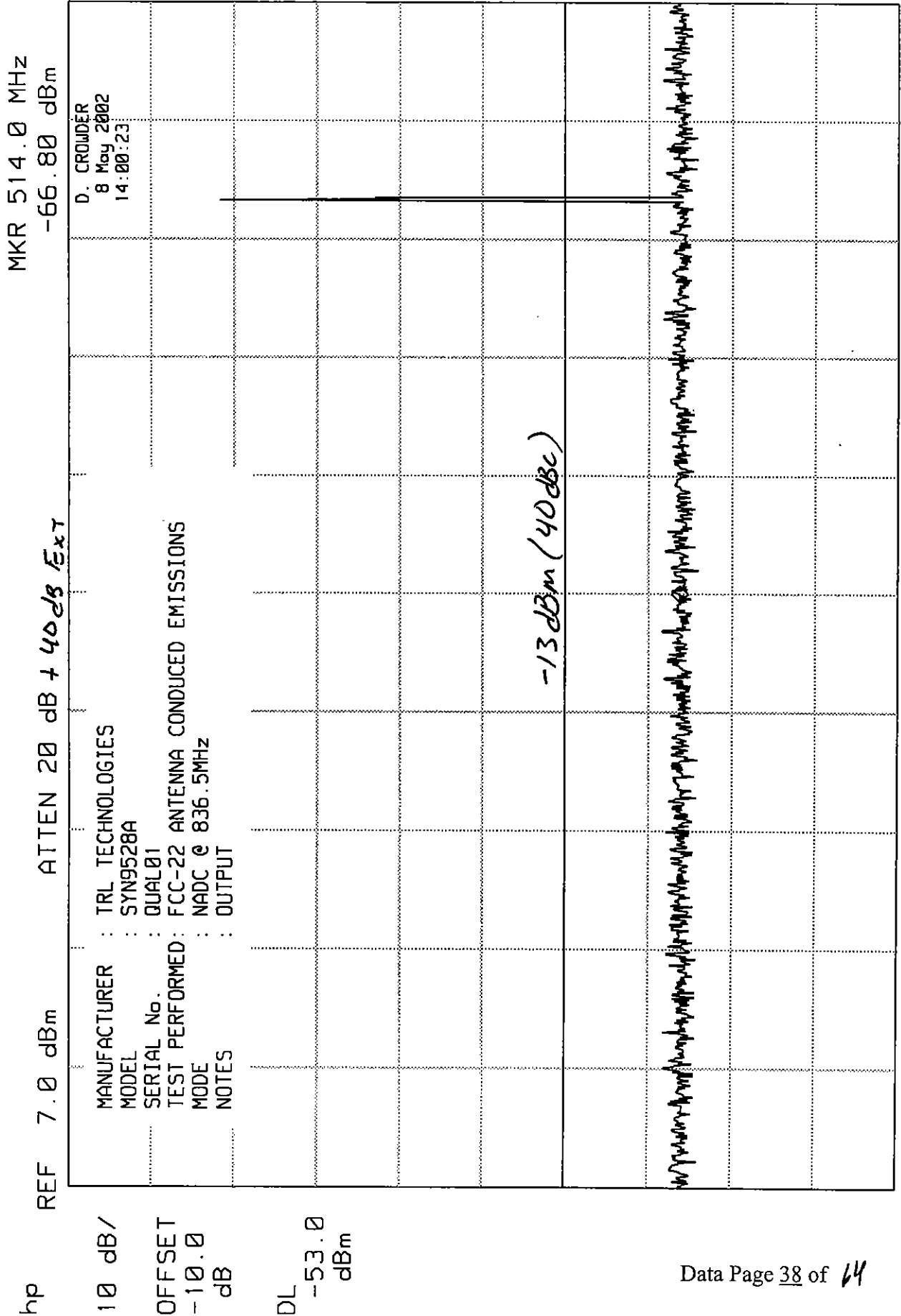
START 2.00 GHz

RES BW 1 MHz (1)

VBW 3 MHz

STOP 10.00 GHz
SWP 200 msec

ELITE ELECTRONIC ENGINEERING CO



MKR 514.0 MHz
-66.80 dBm

2

REF 0.0 dBm

ATTEN 20 dB + 40 dB EXT

10 dB/

MANUFACTURER : IRL TECHNOLOGIES

MODEL : SYN9528A

SERIAL No. : QUAL01

TEST PERFORMED: FCC-22 ANTENNA CONDUCTED EMISSIONS

MODE : NADC @ 836.5MHz

NOTES : OUTPUT

D. CROWDER
8 May 2002
14:01:05

OFFSET

-10.0

13

-53.0 dBm

$-13 \text{ dBm} (40 \text{ dBc})$

Data Page 39 of 64

START 1.00 GHz

RES BW 1 MHz (i)

VBW 3 MHz

```
STOP 2.00 GHz
SWP 25.0 msec
```

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-66.80 dBm

REF -10.0 dBm ATTN 10 dB + 40 dB EXT.

Ω

10 dB/

OFFSET

-10.0

BR

70

-53.0 dBm

MANUFACTURER : TRL TECHNOLOGIES

MODEL : SYN9528A

SERIAL No. : QUALØ1

TEST PERFORMED: FCC-22 ANTENNA CONDUCTED EMISSIONS

MODE : NADC @ 836.5MHz

NOTES : OUTPUT

D. CROWDER

8 May 2002

14:01:59

-13dBm (40dBc)

The first part of the text is a list of names and dates, which appears to be a record of some kind. The names are written in a cursive script, and the dates are written in a more formal, printed style. The names are: "John", "Mary", "James", "Elizabeth", "Thomas", "Sarah", "Michael", "David", "William", "Richard", "Robert", "Henry", "George", "Edward", "Charles", "John", "Mary", "James", "Elizabeth", "Thomas", "Sarah", "Michael", "David", "William", "Richard", "Robert", "Henry", "George", "Edward", "Charles". The dates are: "1790", "1800", "1810", "1820", "1830", "1840", "1850", "1860", "1870", "1880", "1890", "1900", "1910", "1920", "1930", "1940", "1950", "1960", "1970", "1980", "1990", "2000".

START 2.00 GHZ

RES BW 1 MHz (i)

VBW 3 MHz

```
STOP 10.00 GHz
SWP 200 msec
```

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-66.80 dBm

hp

REF 7.0 dBm

ATTEN 30 dB +40 dB Ext

10 dB/

OFFSET

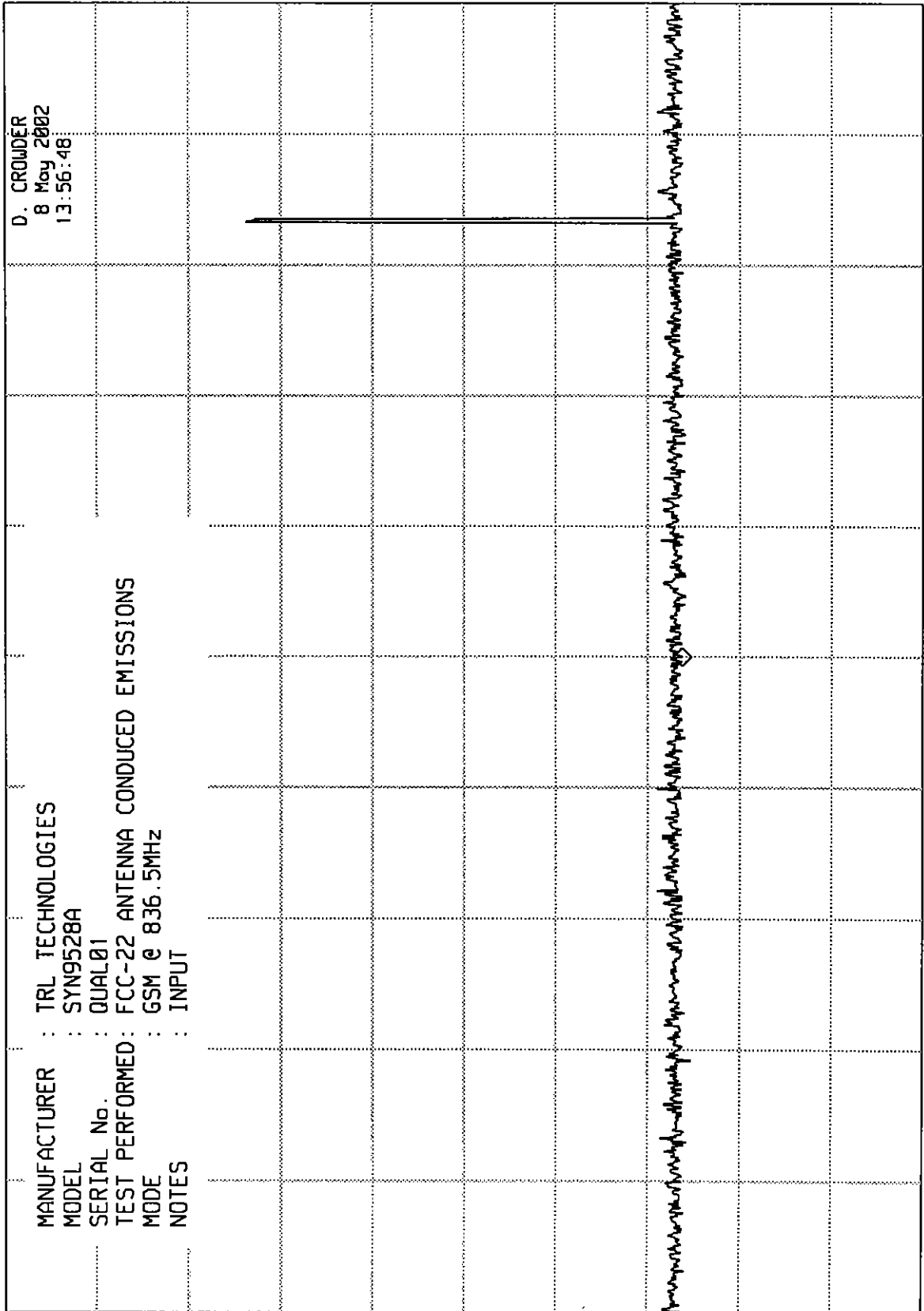
-10.0

dB

DL

-53.0

dBm



START 30 MHz

RES BW 100 kHz(i)

VBW 1 MHz

STOP 1.000 GHz

SWP 728 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 1.672 GHz
-59.70 dBm

REF 0.0 dBm ATTN 20 dB + 40dB Ext

hp

10 dB/

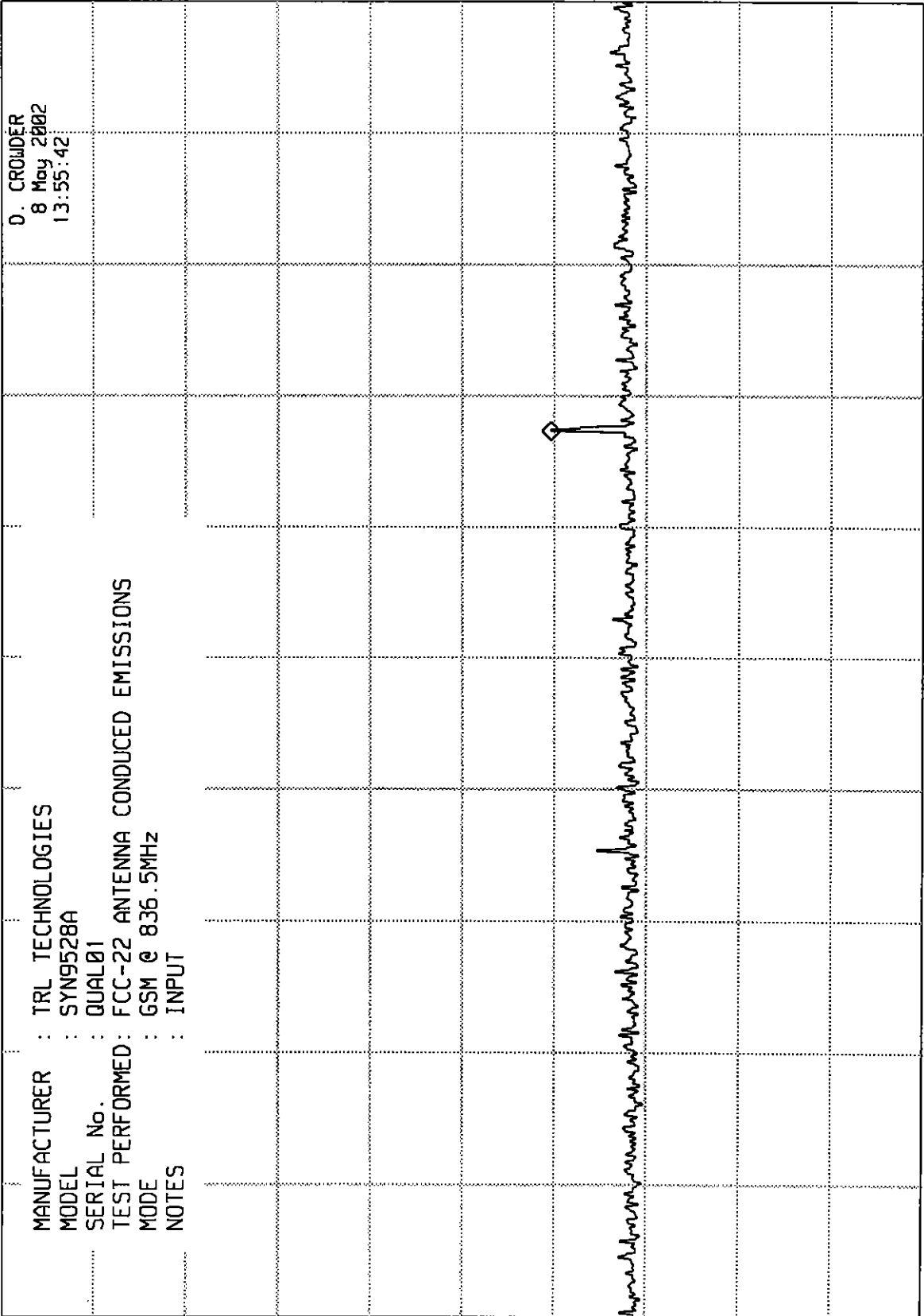
OFFSET

-10.0

dB

DL

-53.0
dBm



START 1.00 GHz RES BW 1 MHz (i) STOP 2.00 GHz
UBW 3 MHz SWP 25.0 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-65.40 dBm

hp

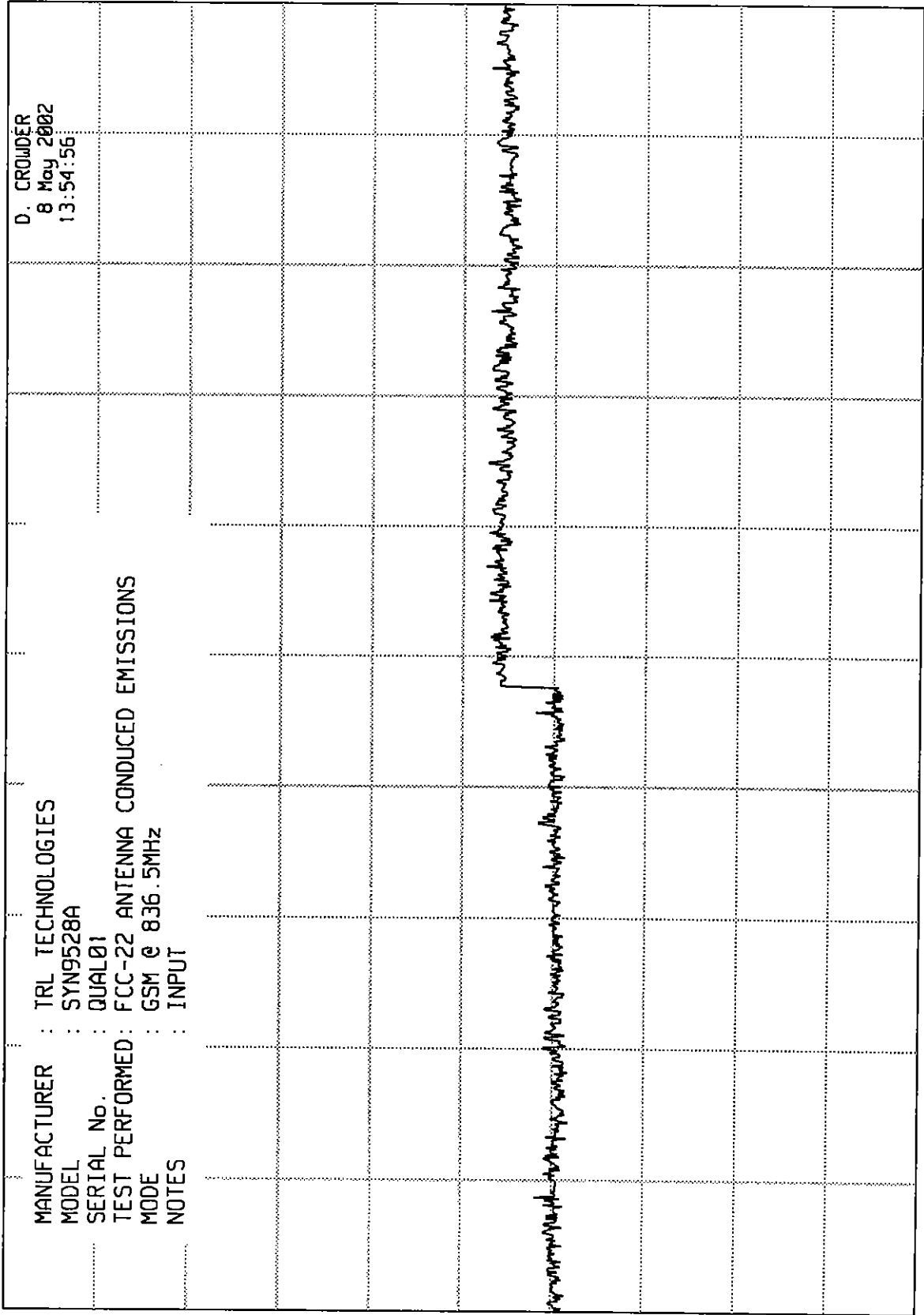
REF -10.0 dBm

ATTEN 10 dB + 40 dB *807*

10 dB/

OFFSET
-10.0
dB

DL
-53.0
dBm



START 2.00 GHz
RES BW 1 MHz(i)
STOP 10.00 GHz
SWP 200 msec
VBW 3 MHz

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-65.40 dBm

hp

REF 7.0 dBm ATTN 20 dB + 40 dB EXT

10 dB/

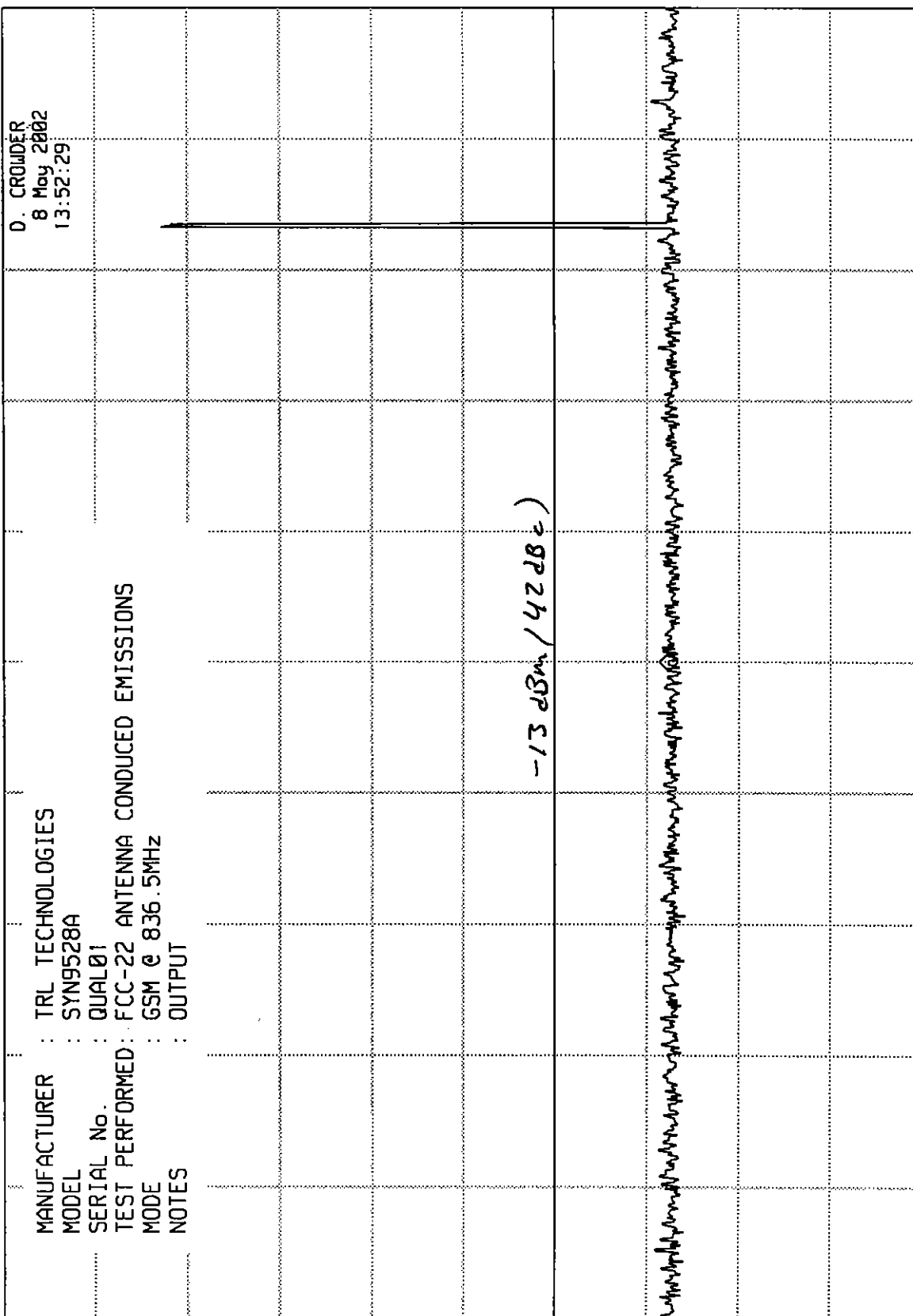
OFFSET

-10.0

dB

DL

-53.0
dBm



START 30 MHz RES BW 100 kHz (i) UBW 1 MHz STOP 1.000 GHz
SWP 728 msec

MKR 514.0 MHz
-65.40 dBm

25

REF 0.0 dBm

ATTEN 20 dB + 40dB ϵ_{ext}

D. CROWDER
8 May 2002
13:53:18

10 dB/

OFFSET

-10.0

 $\frac{B}{R}$

MANUFACTURER : TRL TECHNOLOGIES

MODEL : SYN9528A

SERIAL No. : QUALØ1

TEST PERFORMED: FCC-22 ANTENNA CONDUCTED EMISSIONS

MODE : GSM @ 836.5MHz

NOTES : OUTPUT



53.0

3

$$-13dBW (42dBc)$$
Data Page 45 of 64

START 1.00 GHz

RES BW 1 MHz (i)

UBW 3 MHz

STOP 2.00 GHz
SWP 25.0 msec

25

10 dB/

```
MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
SERIAL No. : QUAL01
TEST PERFORMED: FCC-22 ANTENNA CC
MODE : GSM @ 836.5MHz
NOTES : OUTPUT
```

$-13 \text{ dBm} (42 \text{ dBc})$

1. Definition
 2. Properties
 3. Examples
 4. Applications
 5. Conclusion

Data Page 46 of 64

```

START 2.00 GHz      STOP 10.00 GHz
RES BW 1 MHz(i)     SWP 200 msec
                      VBW 3 MHz

```

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-65.70 dBm

hp

REF 7.0 dBm

ATTEN 20 dB + 40 dB Ext

10 dB/

OFFSET

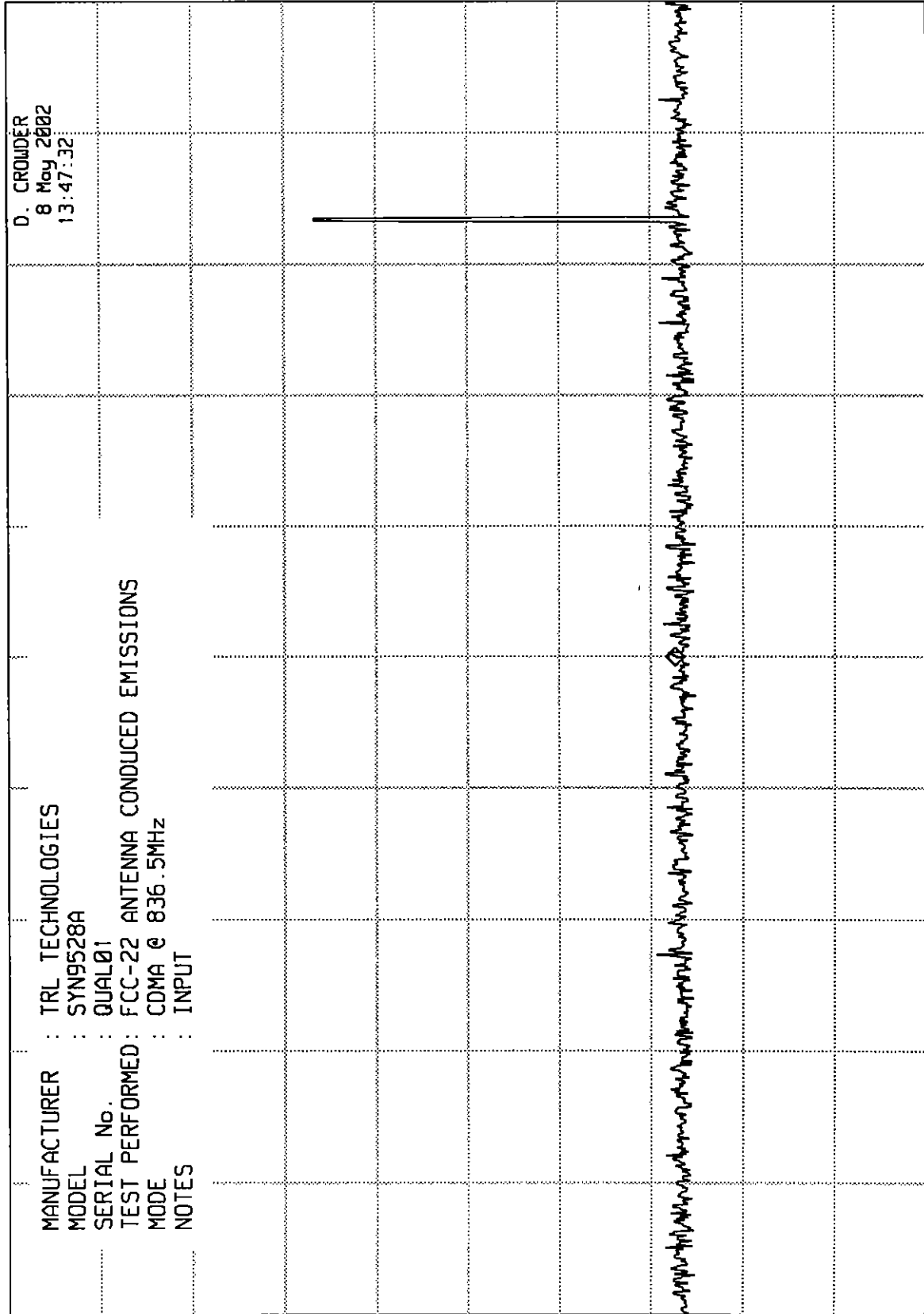
-10.0

dB

DL

-53.0

dBm



START 30 MHz

RES BW 100 kHz (i)

VBW 1 MHz

STOP 1.000 GHz

SWP 728 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 1.672 GHz
-64.40 dBm

hp

REF 0.0 dBm ATTN 20 dB + 40 dB EXT

10 dB/

OFFSET

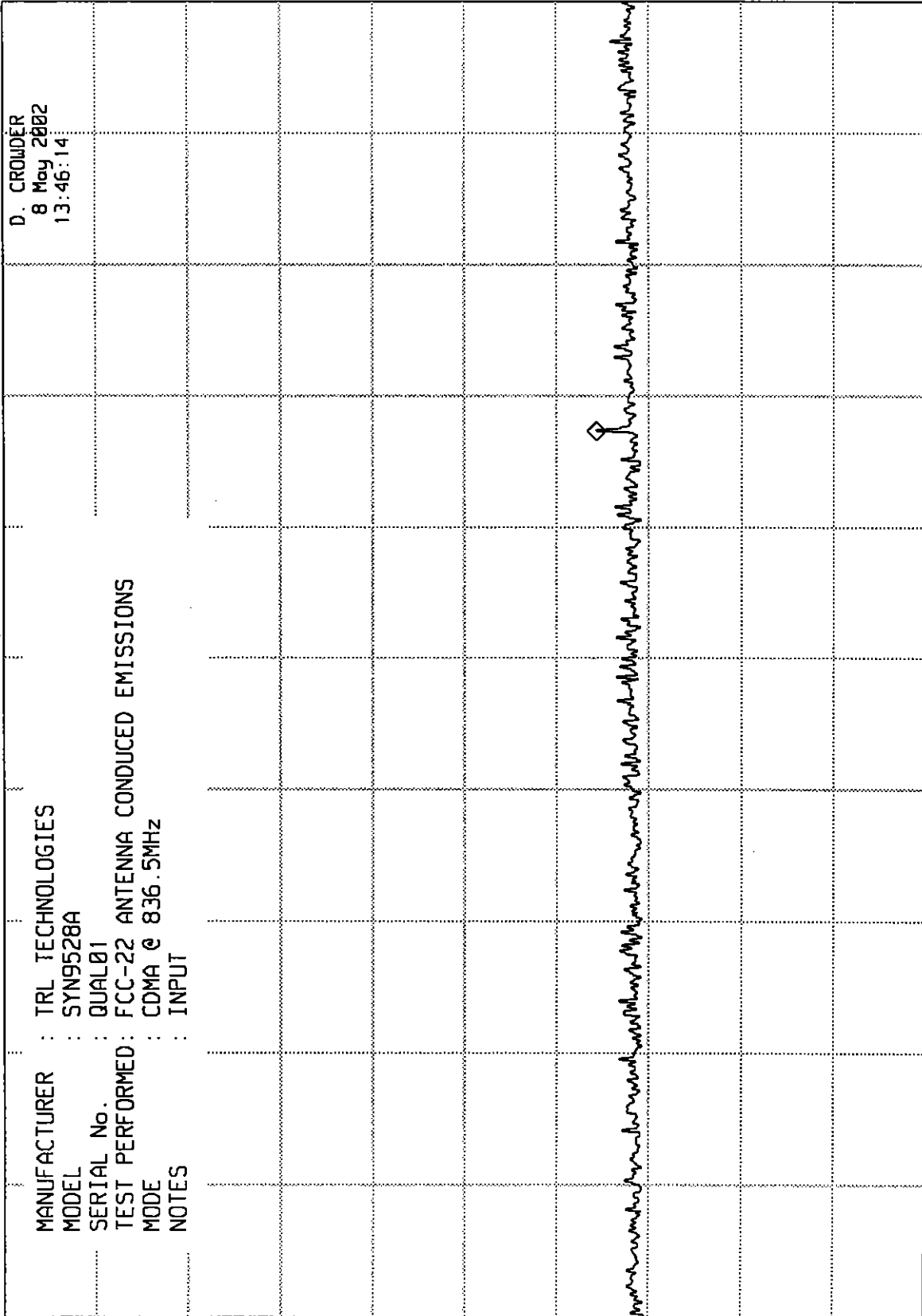
-10.0

dB

DL

-53.0

dBm



START 1.00 GHz RES BW 1 MHz (i) VBW 3 MHz STOP 2.00 GHz
SWP 25.0 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-66.70 dBm

hp

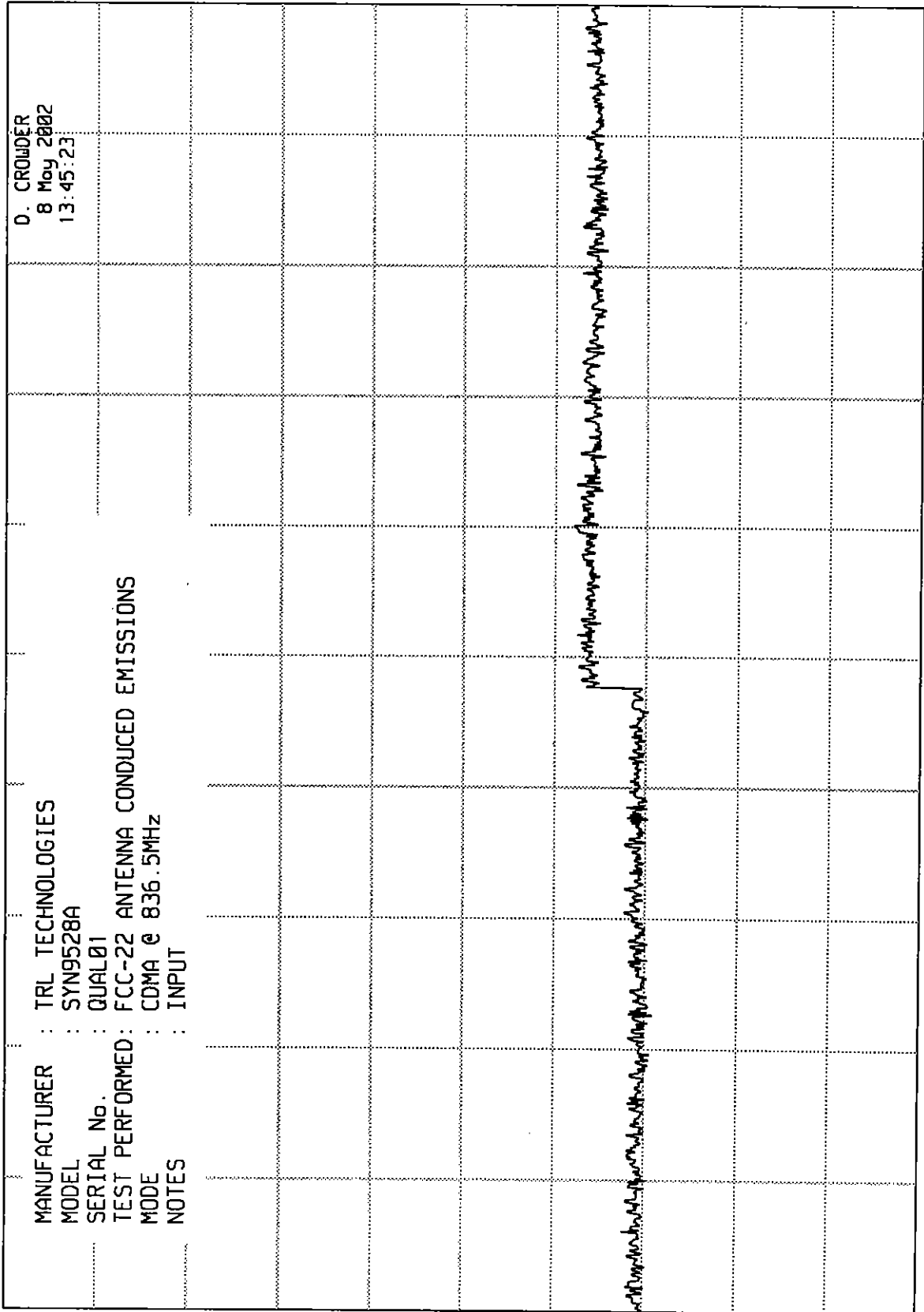
REF 0.0 dBm

ATTEN 10 dB + 40 dB EXT

10 dB/

OFFSET
-10.0
dB

DL
-53.0
dBm

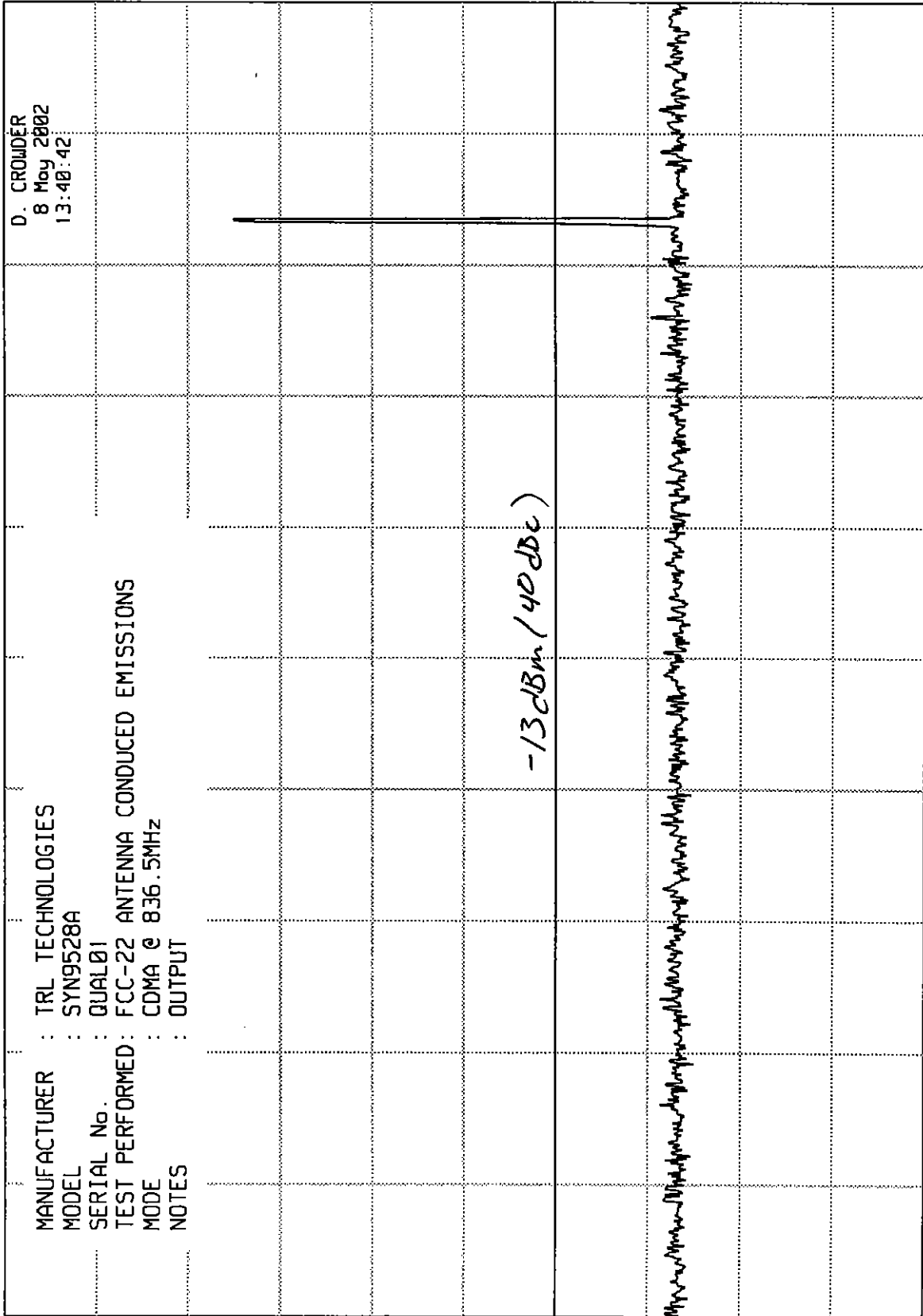


START 2.00 GHz
RES BW 1 MHz (i)
STOP 10.00 GHz
SWP 200 msec
UBW 3 MHz

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-66.70 dBm

REF 7.0 dBm ATTEN 20 dB + 40 dB EXT



hp

10 dB/

DL -53.0
dBm

START 30 MHz RES BW 100 kHz(i) STOP 1.000 GHz
UBW 1 MHz SWP 728 msec

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-66.70 dBm

hp

REF 0.0 dBm

ATTEN 20 dB +40 dB EXT

10 dB/

OFFSET
-10.0
dB

DL
-53.0
dBm

MANUFACTURER : IRL TECHNOLOGIES	D. CROWDER
MODEL : SYN9528A	8 May 2002
SERIAL No. : QUAL01	13:43:15
TEST PERFORMED : FCC-22 ANTENNA CONDUCTED EMISSIONS	
MODE : CDMA @ 836.5MHz	
NOTES : OUTPUT	
-13 dBm (40 dBc)	

START 1.00 GHz
RES BW 1 MHz (i)
STOP 2.00 GHz
SWP 25.0 msec
VBW 3 MHz

ELITE ELECTRONIC ENGINEERING CO

MKR 514.0 MHz
-66.70 dBm

REF 0.0 dBm ATTN 10 dB + 40 dB EXT.

hp

10 dB/

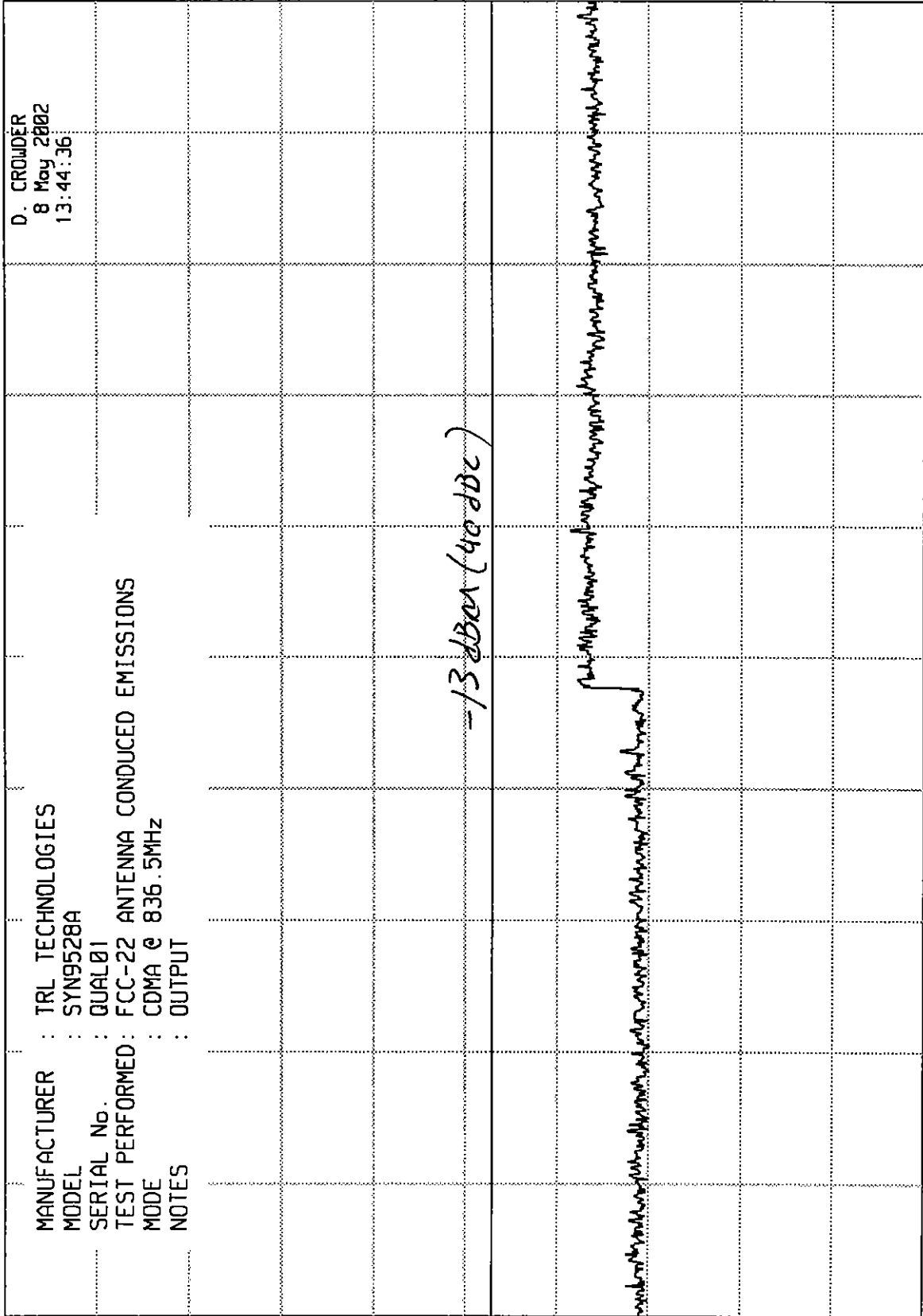
OFFSET

-10.0

dB

DL

-53.0
dBm

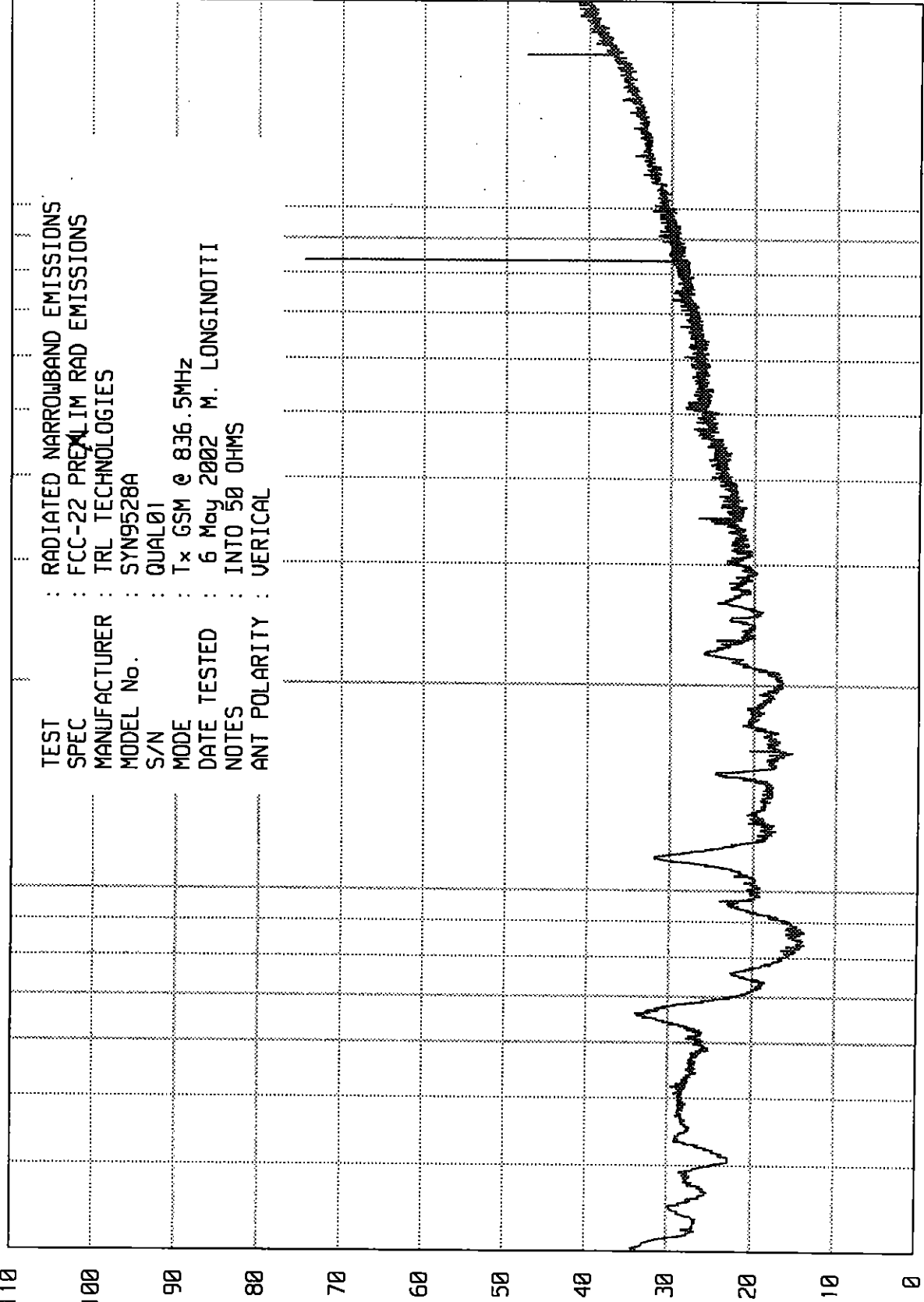


START 2.00 GHz RES BW 1 MHz(i) STOP 10.00 GHz
UBW 3 MHz SWP 200 msec

ELITE ELECTRONIC ENGINEERING Co.
 Downers Grove, Ill. 60515

UNIU_EM RUN RUN 1

WKA0 11/26/01



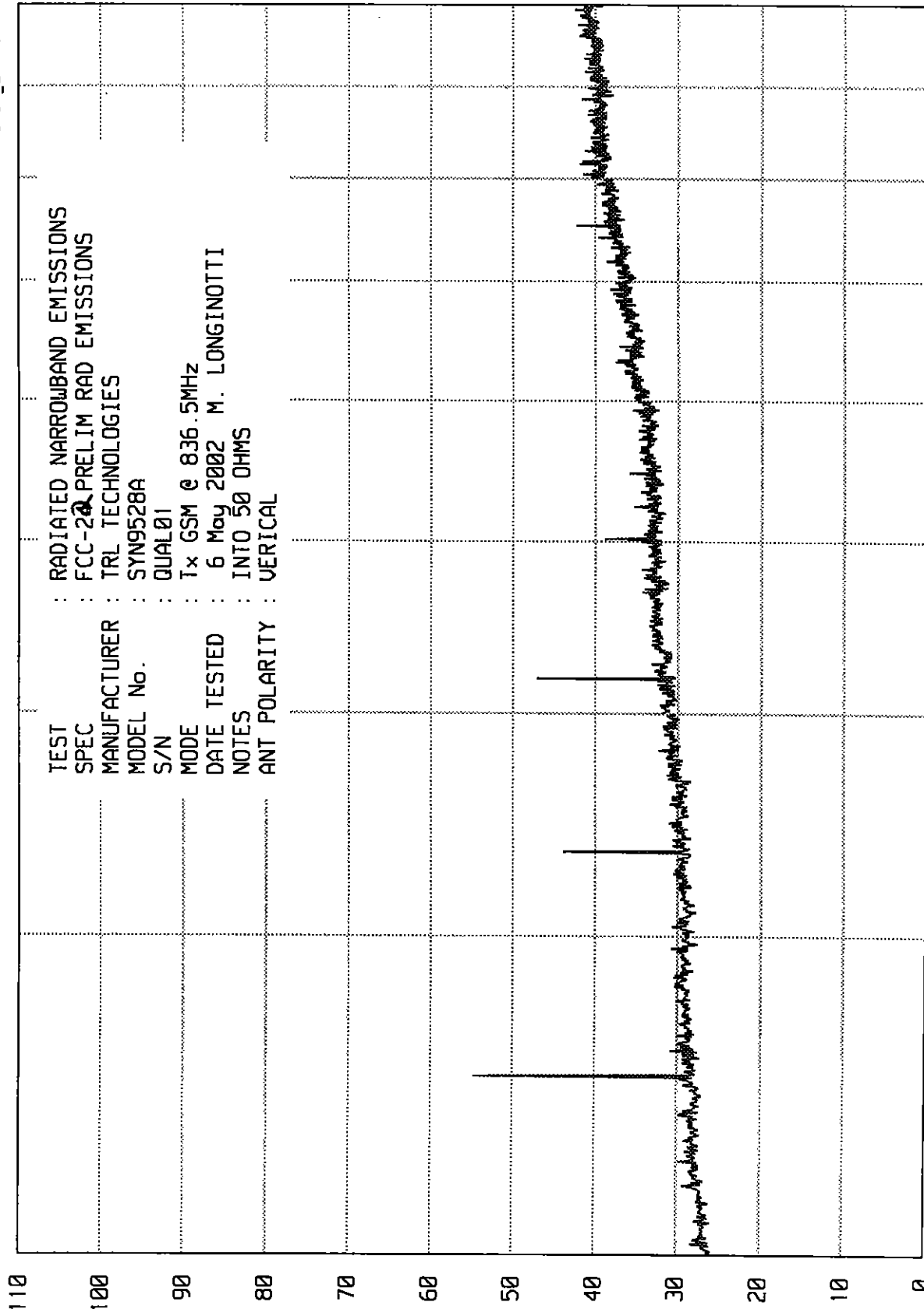
TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : Tx GSM @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

UKA00 11/26/01

UNTU_EM RUN RUN 4



TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-20 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : Tx GSM @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL

RADIATED NARROWBAND EMISSIONS - dBuV/m Data Page 54 of 64

ETR 30980-02

START = 2000

FREQUENCY - MHz

STOP = 10000

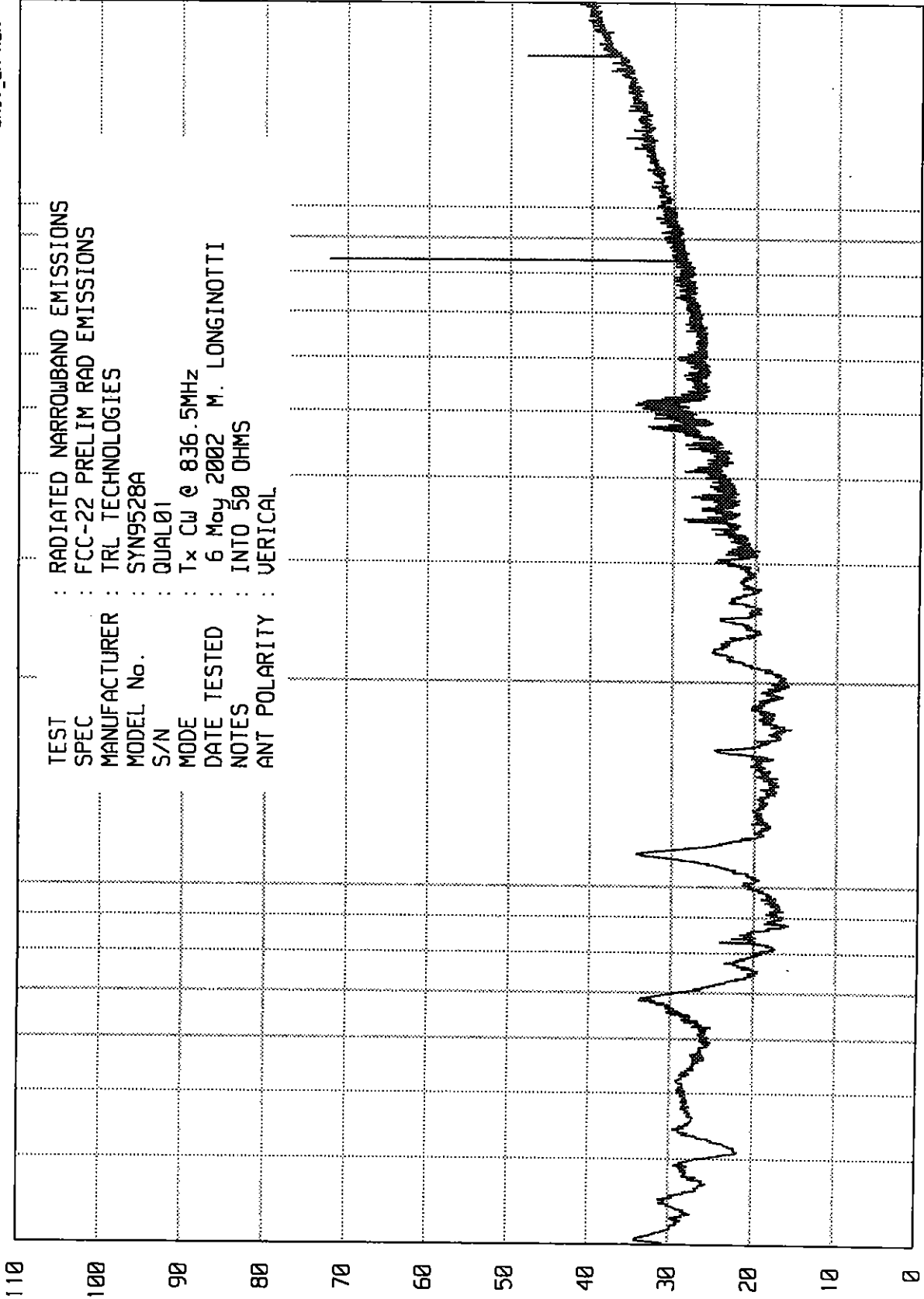
ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

UNIU_EM RUN RUN 1

WKA0 11/26/01

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : Tx CW @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL



START = 30

FREQUENCY - MHz

1000

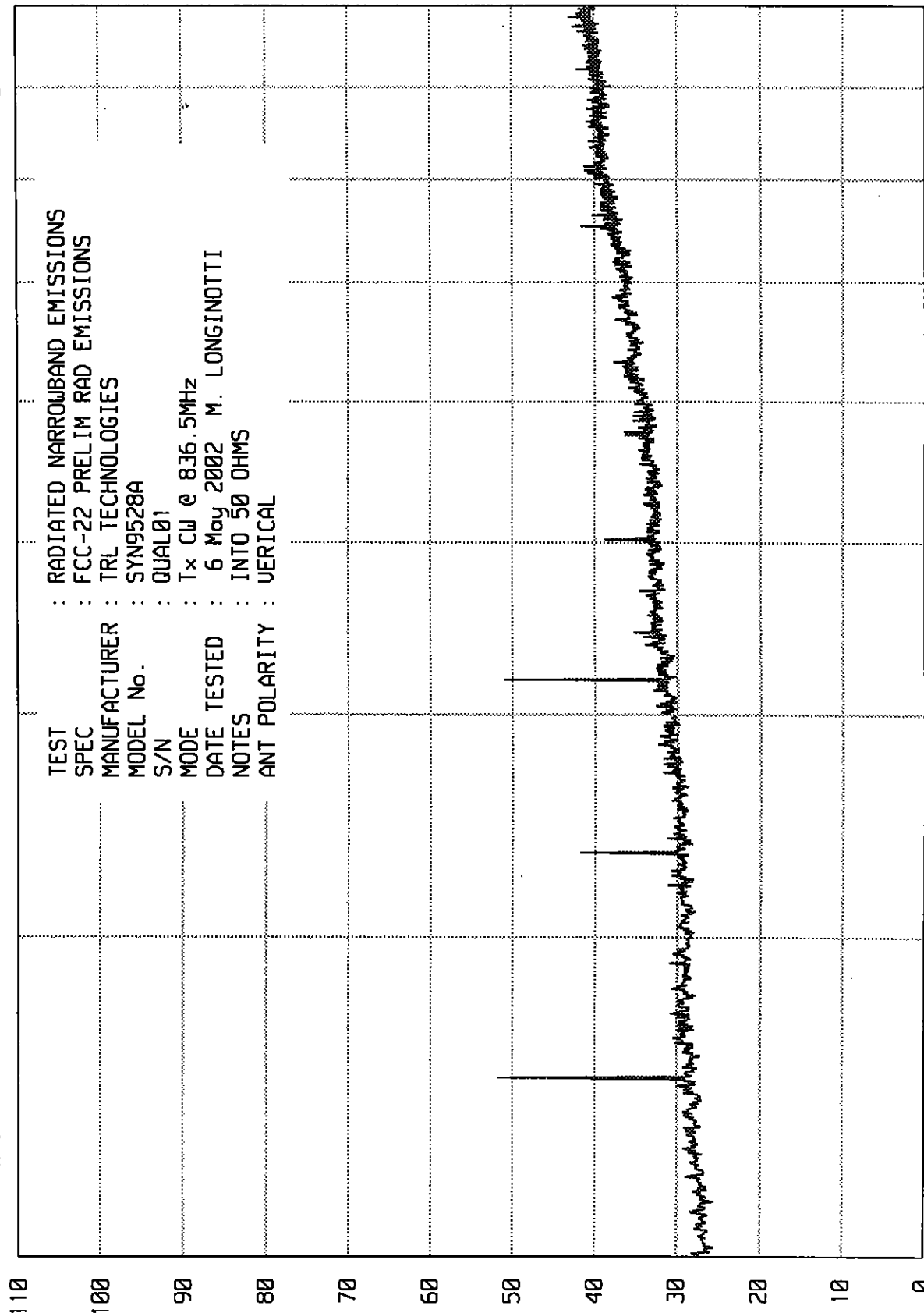
STOP = 2000

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

UNIU_EM RUN RUN 4

WKA0 11/26/01



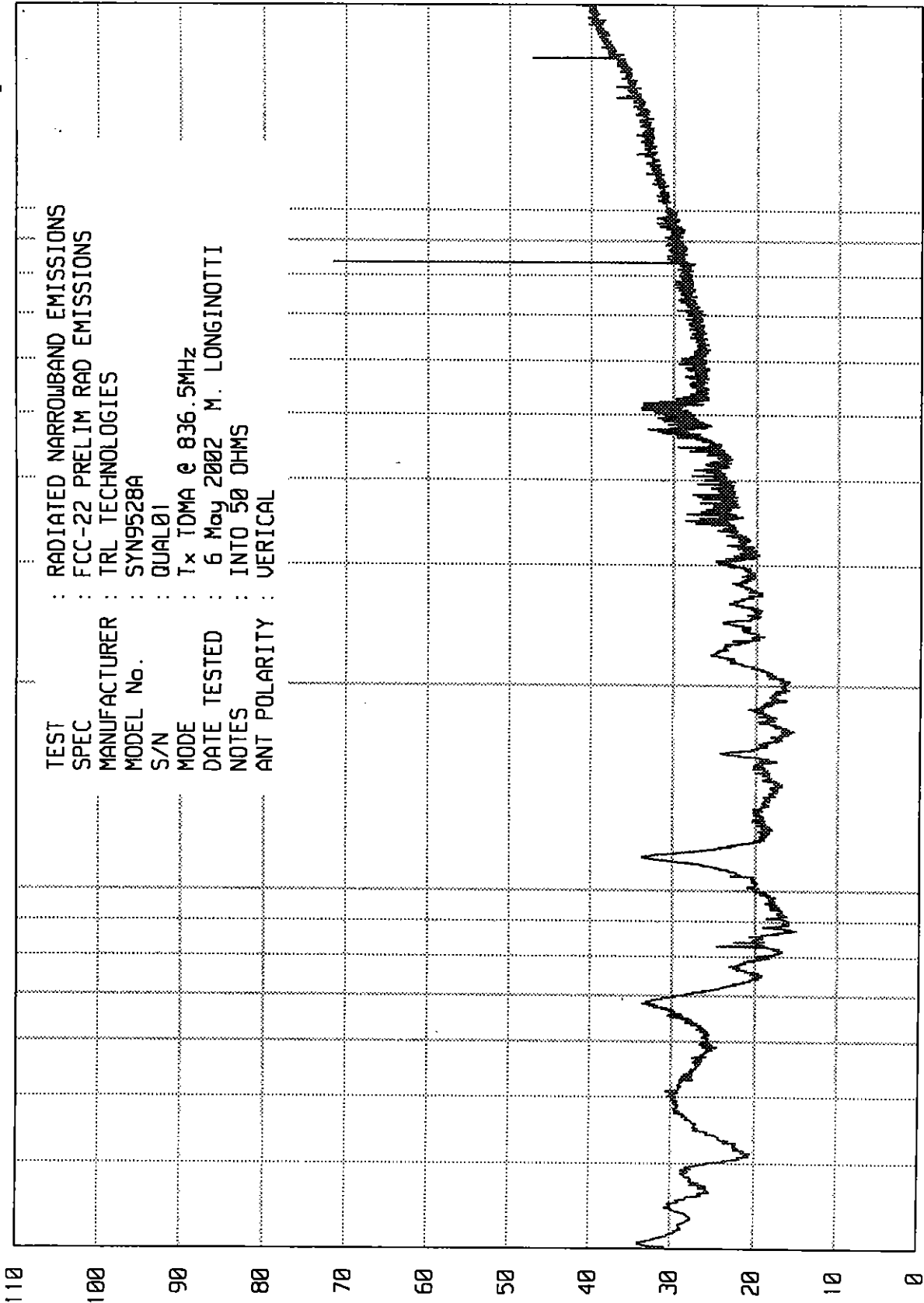
TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : Tx CW @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 1

WKA08 11/26/01



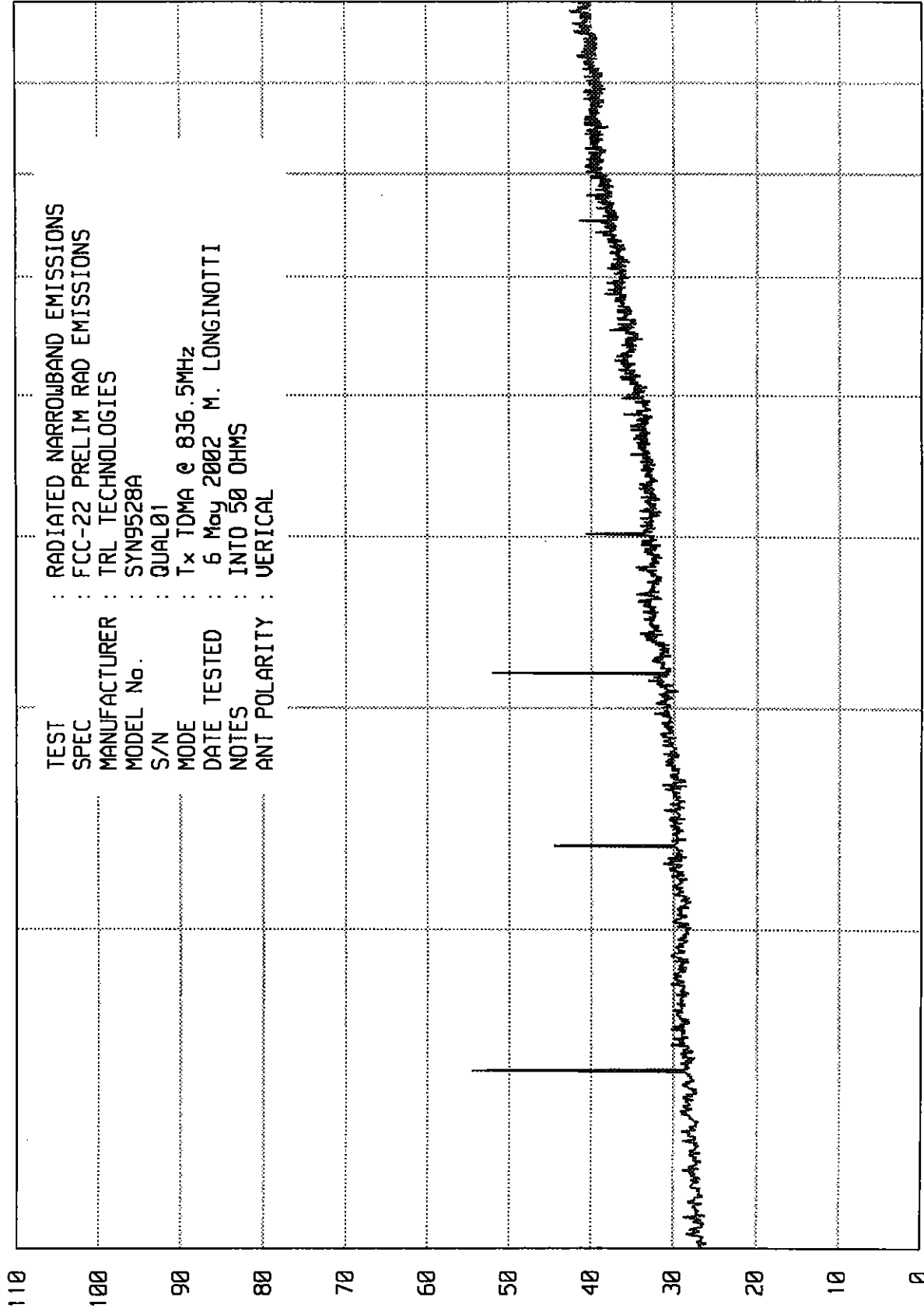
TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : Tx TDMA @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

UNIT EM RUN RUN 4

WKA0 11/26/01



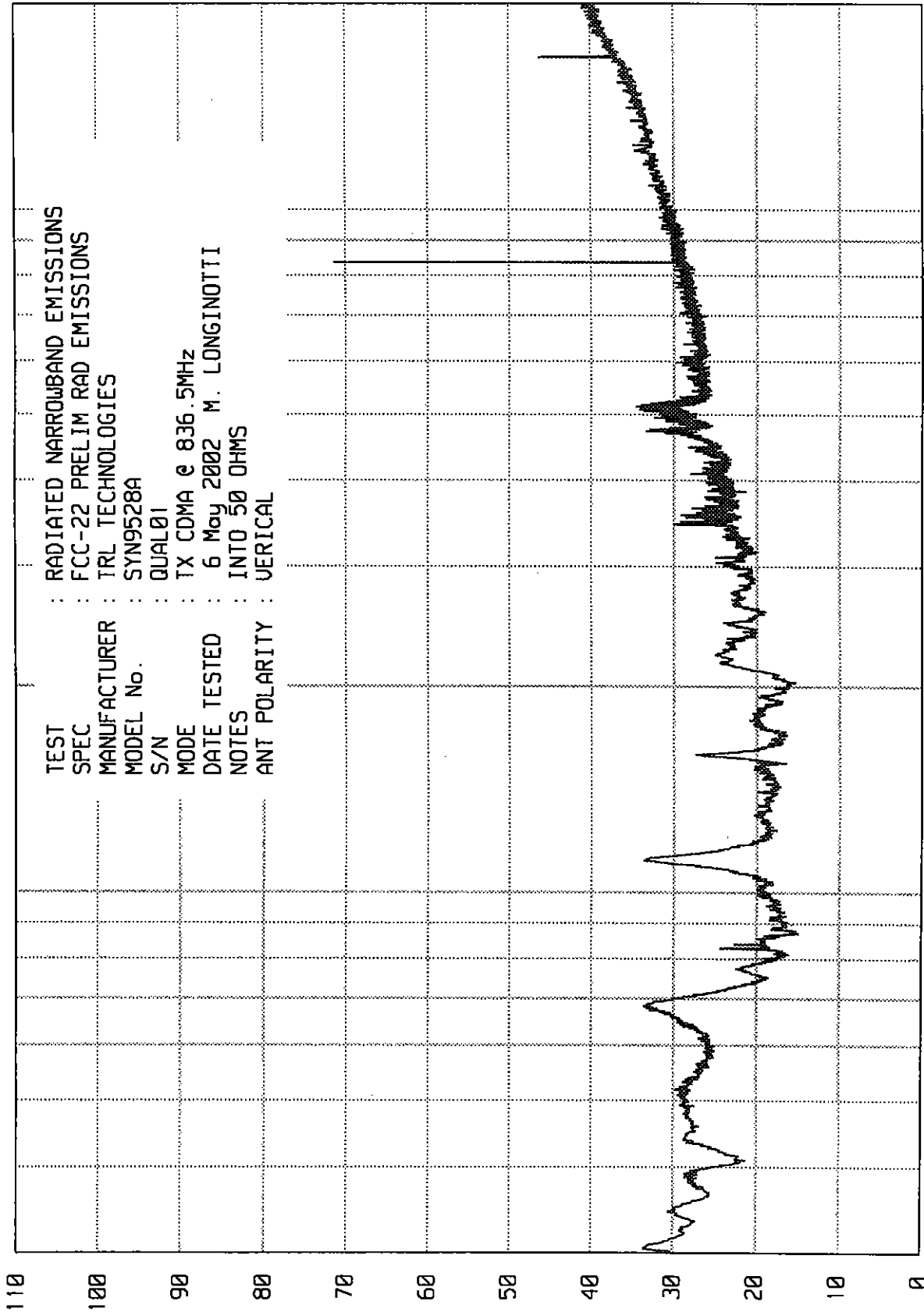
TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : Tx TDMA @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

UK98 11/26/81

UNIT EM RUN RUN 1



TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : TX CDMA @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL

ELITE ELECTRONIC ENGINEERING Co.

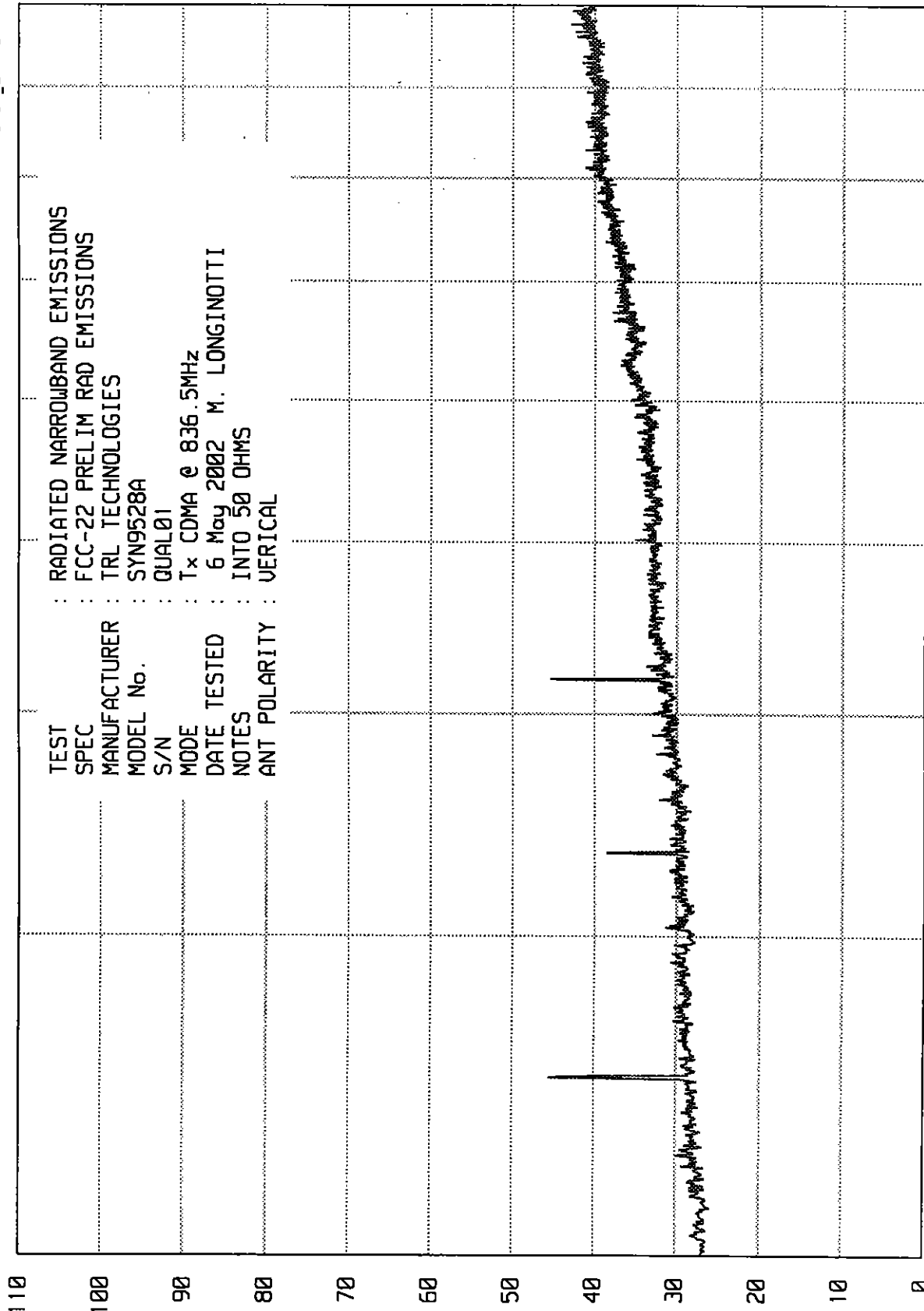
Downers Grove, Ill. 60515

UNIT EM RUN RUN 4

WKA0 11/26/01

EE

TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : T x CDMA @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL



START = 2000

FREQUENCY - MHz

STOP = 10000

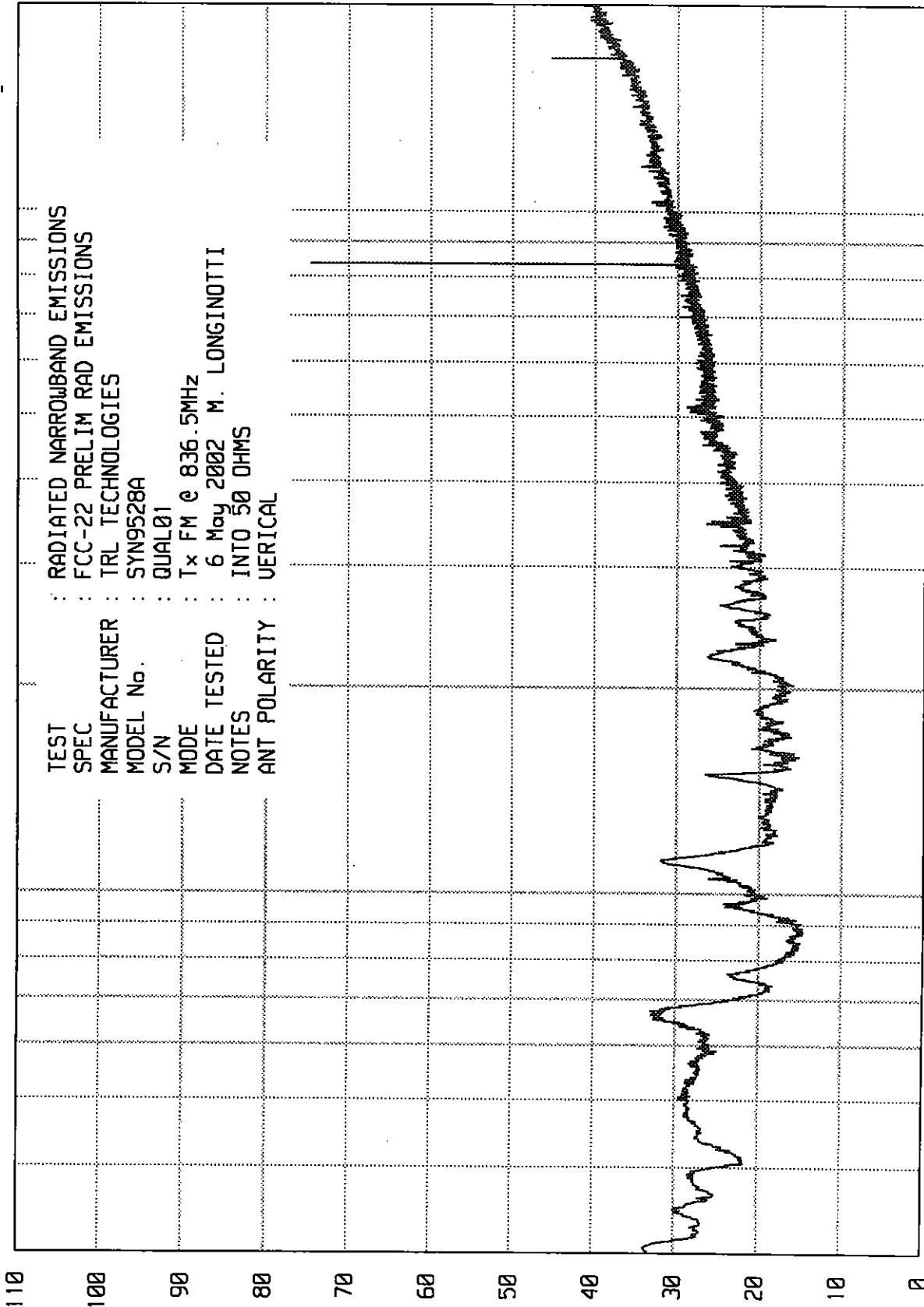
ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

UNITV_EM RUN RUN 1

WKAB 11/26/01

EE



64 of 19 Data Page
RADIATED NARROWBAND EMISSIONS - dBu/m

STOP = 2000

FREQUENCY - MHz

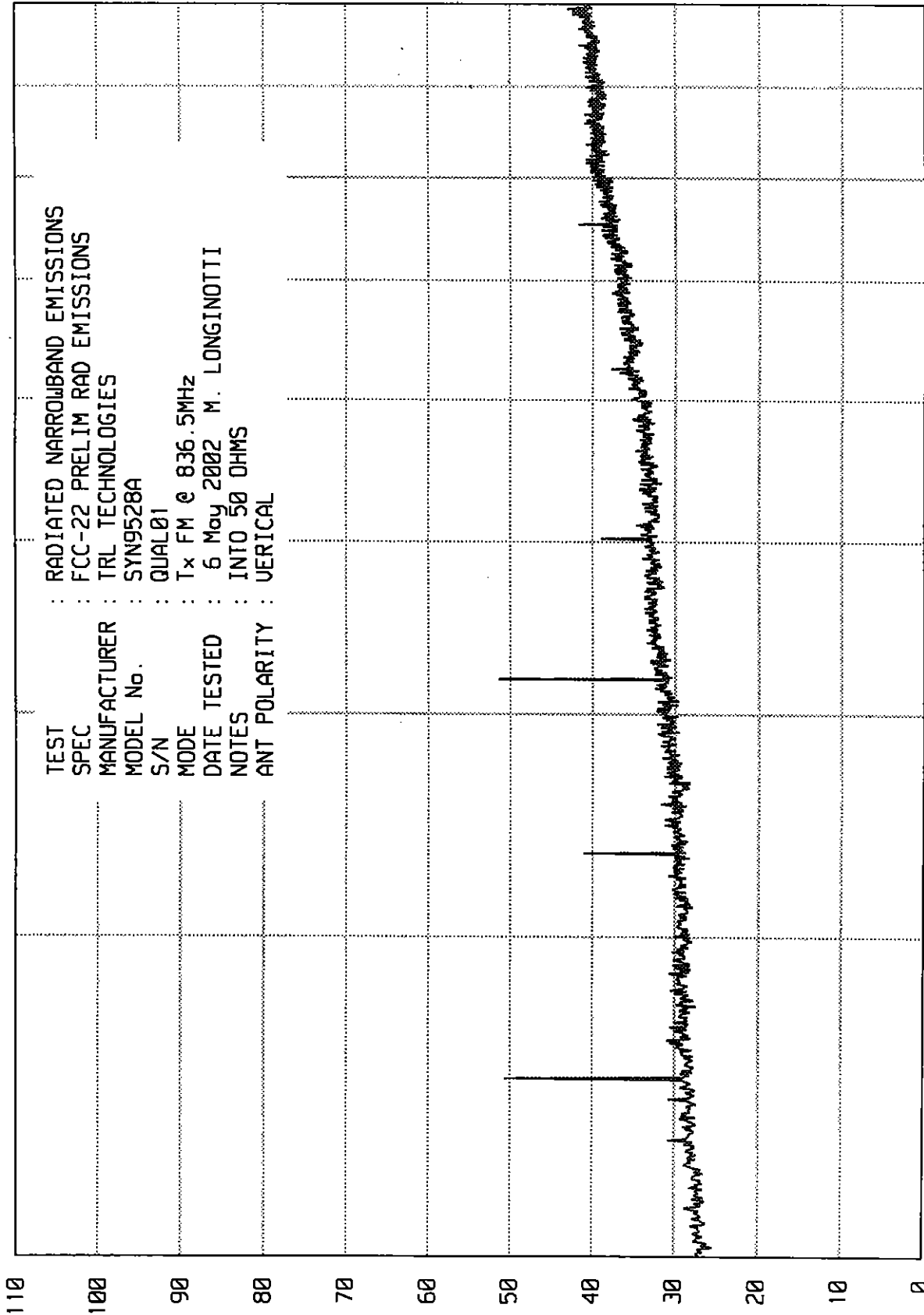
START = 30

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

WKA0 11/26/81

UNIV_EM_RUN RUN 4



TEST : RADIATED NARROWBAND EMISSIONS
 SPEC : FCC-22 PRELIM RAD EMISSIONS
 MANUFACTURER : TRL TECHNOLOGIES
 MODEL No. : SYN9528A
 S/N : QUAL01
 MODE : Tx FM @ 836.5MHz
 DATE TESTED : 6 May 2002 M. LONGINOTTI
 NOTES : INTO 50 OHMS
 ANT POLARITY : VERTICAL

START = 2000

FREQUENCY - MHz

STOP = 10000



ETR 30980 - 02
DATA SHEET

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
S/N : QUAL01
SPECIFICATION : FCC-22 OPEN FIELD SPURIOUS RADIATED EMISSIONS
DATE : MAY 7, 2002
NOTES : CW, FULL OUTPUT
: TEST DISTANCE IS 3 METERS

FREQ. (MHz)	ANT POL	MTR RDG (dBuV)	MATCHED SIGNAL dBm	ANT GAIN dB	CABLE FAC dB	ERP TOTAL dBm	ATTN dB	MIN ATTN dB
1673.0	H	69.7	-38.3	5.0	2.2	-35.5	62.5	40
1673.0	V	64.4	-44.2	5.0	2.2	-41.4	68.4	40
2509.5	H	59.9	-34.7	4.8	2.9	-32.8	59.8	40
2509.5	V	59.1	-44.0	4.8	2.9	-42.1	69.1	40
3346.0	H	52.6	-45.6	5.7	3.4	-43.3	70.3	40
3346.0	V	51.4	-42.0	5.7	3.4	-39.7	66.7	40
4182.5	H	57.1	-41.0	5.8	3.7	-38.9	65.9	40
4182.5	V	54.9	-37.0	5.8	3.7	-34.9	61.9	40
5019.0	H	46.8	-44.5	6.8	4.2	-41.9	68.9	40
5019.0	V	45.8	-49.0	6.8	4.2	-46.4	73.4	40
5855.5	H	46.0	-44.8	6.8	4.5	-42.5	69.5	40
5855.5	V	44.1	-45.5	6.8	4.5	-43.2	70.2	40
6692.0	H	43.4	-50.1	6.9	5.1	-48.3	75.3	40
6692.0	V	42.2	-52.0	6.9	5.1	-50.2	77.2	40
7528.5	H	51.8	-38.6	7.3	5.9	-37.2	64.2	40
7528.5	V	47.2	-44.3	7.3	5.9	-42.9	69.9	40
8365.0	H	42.1	-41.3	7.8	6.3	-39.8	66.8	40
8365.0	V	41.9	-47.5	7.8	6.3	-46.0	73.0	40

CHECKED BY: *Mark E. Longinotti*
Mark E. Longinotti

630164



ETR 30980 - 02
DATA SHEET

MANUFACTURER : TRL TECHNOLOGIES
MODEL : SYN9528A
S/N : NONE ASSIGNED
SPECIFICATION : FCC-22 OPEN FIELD SPURIOUS RADIATED EMISSIONS
DATE : MAY 7, 2002
NOTES : GSM, FULL OUTPUT
: TEST DISTANCE IS 3 METERS

FREQ. (MHz)	ANT POL	MTR RDG (dBuV)	MATCHED SIGNAL dBm	ANT GAIN dB	CABLE FAC dB	ERP TOTAL dBm	ATTN dB	MIN ATTN dB
1673.0	H	73.0	-35.0	5.0	2.2	-32.2	61.2	42
1673.0	V	66.4	-42.0	5.0	2.2	-39.2	68.2	42
2509.5	H	60.5	-34.4	4.8	2.9	-32.5	61.5	42
2509.5	V	62.0	-42.0	4.8	2.9	-40.1	69.1	42
3346.0	H	51.2	-47.5	5.7	3.4	-45.2	74.2	42
3346.0	V	53.1	-40.0	5.7	3.4	-37.7	66.7	42
4182.5	H	58.2	-39.6	5.8	3.7	-37.5	66.5	42
4182.5	V	56.7	-36.0	5.8	3.7	-33.9	62.9	42
5019.0	H	47.7	-43.7	6.8	4.2	-41.1	70.1	42
5019.0	V	47.3	-48.0	6.8	4.2	-45.4	74.4	42
5855.5	H	47.4	-43.5	6.8	4.5	-41.2	70.2	42
5855.5	V	44.9	-44.0	6.8	4.5	-41.7	70.7	42
6692.0	H	41.8	-52.2	6.9	5.1	-50.4	79.4	42
6692.0	V	41.4	-53.0	6.9	5.1	-51.2	80.2	42
7528.5	H	51.5	-39.1	7.3	5.9	-37.7	66.7	42
7528.5	V	51.9	-39.0	7.3	5.9	-37.6	66.6	42
8365.0	H	41.6	-42.1	7.8	6.3	-40.6	69.6	42
8365.0	V	41.4	-47.0	7.8	6.3	-45.5	74.5	42

CHECKED BY: *Mark E. Longinotti*
Mark E. Longinotti