

FCC ID: LB41901CDMA

D-Band Packet



May 27, 1997

FEDERAL COMMUNICATIONS COMMISSION
Equipment Authorization Division, Applications Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

Re: CDMA Test Data Submitted to the FCC (D-band)
FCC ID: LB41901CDMA
S/N of Unit: 0141

The test data measured by Ortel for the CDMA repeater is in accordance as outlined per the FCC requirements in Parts 2.985, 2.989, 2.991, and 24.238. Additionally, the data for intermodulation and input/output spreading were also in accordance to the guidelines set forth by the FCC via fax and verbal communication.

Sincerely,

Martin R. Kies
Quality Engineer

File: "CDMATYPE.DOC"



Industry Canada Industrie Canada

1241 Clyde Avenue
Ottawa, Ontario
K2C 1Y3

FAX. NO. (613) 952-1088

June 19, 1997

OUR FILE: 6030-2728
SUBMISSION NO. 18117R

Ortel Corporation
2015 West Chestnut Street
Alhambra, CA
91803, U.S.A.

Attention: Mr. Martin Kies

Dear Mr. Kies:

This is in reply to the application for reassessment, submitted
your behalf by TUV Product Service, for the model listed below.

I have reviewed the related documents and this previously
certified device continues to meet our procedural and specification
requirements when modified as described.

A new certification certificate was required.

<u>MODEL NO.</u>	<u>CERTIFICATE NO.</u>	<u>CERTIFICATION NO.</u>
CDR1901-1-X (D-band)	7428A	2778 331 126

Sincerely

Gabriel Clavel
Certification Officer
Telecom Certification Section

GHC/mb
Attachments: certificate 7428A
cc: Mary Washington, TUV Product Service

Canada



RADIO EQUIPMENT CERTIFICATE OF TYPE APPROVAL

CERTIFICAT D'HOMOLOGATION DE MATÉRIEL RADIO

CERTIFICATION No. ► 2778 331 126
No. DE CERTIFICATION

ISSUED TO ► ORTEL CORPORATION
DÉLIVRÉ A

TYPE OF EQUIPMENT ► CDMA REPEATER
GENRE DE MATÉRIEL

TRADE NAME AND MODEL ► CDR1901-1-X
MARQUE ET MODELE

FREQUENCY RANGE ► 1850 - 1990 MHz
BANDE DE FRÉQUENCES

EMISSION DESIGNATION ► 1M50GXW
DESIGNATION D'ÉMISSION

R.F. POWER RATING ► 2 Watts
PUISSANCE NOMINALE H.F.

CERTIFIED TO ► SPECIFICATION RSS133 ISSUE 1
CERTIFIÉ SELON LE CHIER DES CHARGES ÉDITION

The X in the model number is used to signify the band splits.
Supplementary test for frequencies of block 'D' dated June 2, 1997

Certification of equipment means only that the equipment has met the requirements of the above noted specification. License applications, where applicable to use certified equipment, are acted on accordingly by the issuing office and will depend on the existing radio environment, service and location of operation.

This certificate is issued on condition that the holder complies and will continue to comply with the requirements of the radio standards specifications and procedures issued by the Department.

ISSUED UNDER THE AUTHORITY OF MINISTER OF INDUSTRY
DELIVRE AVEC L'AUTORISATION DU MINISTRE DES INDUSTRIE

DATE April 14, 1997

L'homologation de matériel terminal signifie seulement qu'il est conforme aux exigences du cashier des charges mentionné ci-dessus. Les demandes de licence, le cas échéant en vue de l'utilisation de matériel certifié seront traitées en conséquence par le bureau chargé de délivrer lesdites licences, en tenant compte du milieu radioélectrique ambiant du service radio existant et de l'emplacement de la station.

Le présent certificat est délivré à condition que le détenteur se conforme et continue à se conformer aux cashiers des charges et procédures sur les normes radioélectriques publiées par le ministère.

FOR

DIRECTOR GENERAL
SPECTRUM
ENGINEERING
BRANCH

DIRECTEUR GÉNÉRAL
GÉNIE
DU SPECTRE

Canada



RADIO EQUIPMENT CERTIFICATE OF TYPE APPROVAL

CERTIFICAT D'HOMOLOGATION DE MATÉRIEL RADIO

CERTIFICATION No. No. DE CERTIFICATION	➤	2778 331 126
ISSUED TO DÉLIVRÉ À	➤	ORTEL CORPORATION
TYPE OF EQUIPMENT GENRE DE MATÉRIEL	➤	CDMA REPEATER
TRADE NAME AND MODEL MARQUE ET MODÈLE	➤	CDR1901-1-X
FREQUENCY RANGE BANDE DE FRÉQUENCES	➤	1850 MHz to 1965 MHz
EMISSION DESIGNATION DESIGNATION D'ÉMISSION	➤	1M50GXW
R.F. POWER RATING PUISSANCE NOMINALE H.F.	➤	2 Watts
CERTIFIED TO CERTIFIÉ SELON LE	➤	SPECIFICATION CHIER DES CHARGES
		RSS133
		ISSUE 1 ÉDITION

The X in the model number is used to signify the band splits.
Supplementary test for frequencies of block 'D' dated June 2, 1997. FREQUENCY BAND A/B/D

Certification of equipment means only that the equipment has met the requirements of the above noted specification. License applications, where applicable to use certified equipment, are acted on accordingly by the issuing office and will depend on the existing radio environment, service and location of operation.

This certificate is issued on condition that the holder complies and will continue to comply with the requirements of the radio standards specifications and procedures issued by the Department.

ISSUED UNDER THE AUTHORITY OF MINISTER OF INDUSTRY
DELIVRE AVEC L'AUTORISATION DU MINISTRE DES INDUSTRIE

DATE April 14, 1997

L'homologation de matériel terminal signifie seulement qu'il est conforme aux exigences du cahier des charges mentionné ci-dessus. Les demandes de licence, le cas échéant en vue de l'utilisation de matériel certifié seront traitées en conséquence par le bureau chargé de délivrer lesdites licences, en tenant compte du milieu radioélectrique ambiant, du service radio existant et de l'emplacement de la station.

Le présent certificat est délivré à condition que le détenteur se conforme et continue à se conformer aux cahiers des charges et procédures sur les normes radioélectriques publiées par le ministère.

FOR

DIRECTOR GENERAL
SPECTRUM
ENGINEERING
BRANCH

DIRECTEUR GÉNÉRAL
GÉNIE
DU SPECTRE

GRANT OF EQUIPMENT AUTHORIZATION

Type Acceptance
Permissive Change Grant

Date of Grant: June 27, 1997

Ortel Corporation
2015 W. Chestnut Street
Alhambra, CA 91803-1542

File No.: 31010/EQU 17.9

Application dated: June 6, 1997

Attention: Martin R. Kies, Quality Engineer

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for
the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER

LB41901CDMA

Name of Grantee

Ortel Corporation

Equipment Class : Non-Broadcast Transmitter

Note(s)	Rule Part(s)	Frequency Range (MHz)	Output Watts	Frequency Tolerance	Emission
BC	24	1850-1885	2	AMP	-
BC	24	1930-1965	2	AMP	-

Authorized for use with 1M25FXW CDMA Designators.

BC: The output power is continuously variable from the value listed in
this entry to 5%-10% of the value listed.Mail to:
Mary Washington, EMC Engineer
TUV Product Service
10040 Mesa Rim Road
San Diego, CA 92121

(D-band)

FAXTÜV PRODUCT SERVICE
10040 Mesa Rim Rd
San Diego CA 92121

Date	07/02/97
Number of pages including cover sheet	2

To: Ortel Corporation	
	Martin Kles
CC:	
Fax Number	(818) 281-7913

From: TÜV PS San Diego	
	Mary Washington
Phone	(619)-546-3999
Fax Number	(619)-546-0364

REMARKS

X Urgent

For your review

Reply ASAP

Please comment

MESSAGE:

Hi Martin,

Following is the revised IC certificate for the CDMA repeater. If you have any questions, please contact me.

Take Care

Mary



Industry Canada Industrie Canada

1241 Clyde Avenue
Ottawa, Ontario
K2C 1Y3

FAX. NO. (613) 952-1088

June 19, 1997

OUR FILE: 6030-2728
SUBMISSION NO. 18117R

Ortel Corporation
2015 West Chestnut Street
Alhambra, CA
91803, U.S.A.

Attention: Mr. Martin Kies

Dear Mr. Kies:

This is in reply to the application for reassessment, submitted
your behalf by TUV Product Service, for the model listed below.

I have reviewed the related documents and this previously
certified device continues to meet our procedural and specification
requirements when modified as described.

A new certification certificate was required.

<u>MODEL NO.</u>	<u>CERTIFICATE NO.</u>	<u>CERTIFICATION NO.</u>
CDR1901-1-X	7428A	2778 331 126

Sincerely

Gabriel Clavel
Certification Officer
Telecom Certification Section

GHC/mb
Attachments: certificate 7428A
cc: Mary Washington, TUV Product Service

Canada

FCC Part 2.985: RF Output Power

DUT: Model CDR-1901-1-D (D-Band CDMA Repeater)
S/N: 141
Test Date: 5/27/97
FCC ID: LB41901CDMA
Company: Ortel Corporation

****RF Output Power Measured with Power Meter**
(HP Model: 438A Ortel Asset Number: 18808)

UPLINK:

Channel	Frequency (MHz)	Output Power (dBm)
325	1866.25	31.75
350	1867.50	31.69
375	1868.75	31.63

DOWNLINK:

Channel	Frequency (MHz)	Output Power (dBm)
325	1946.25	32.71
350	1947.50	32.75
375	1948.75	32.78

****Per FCC request to use power meter.**

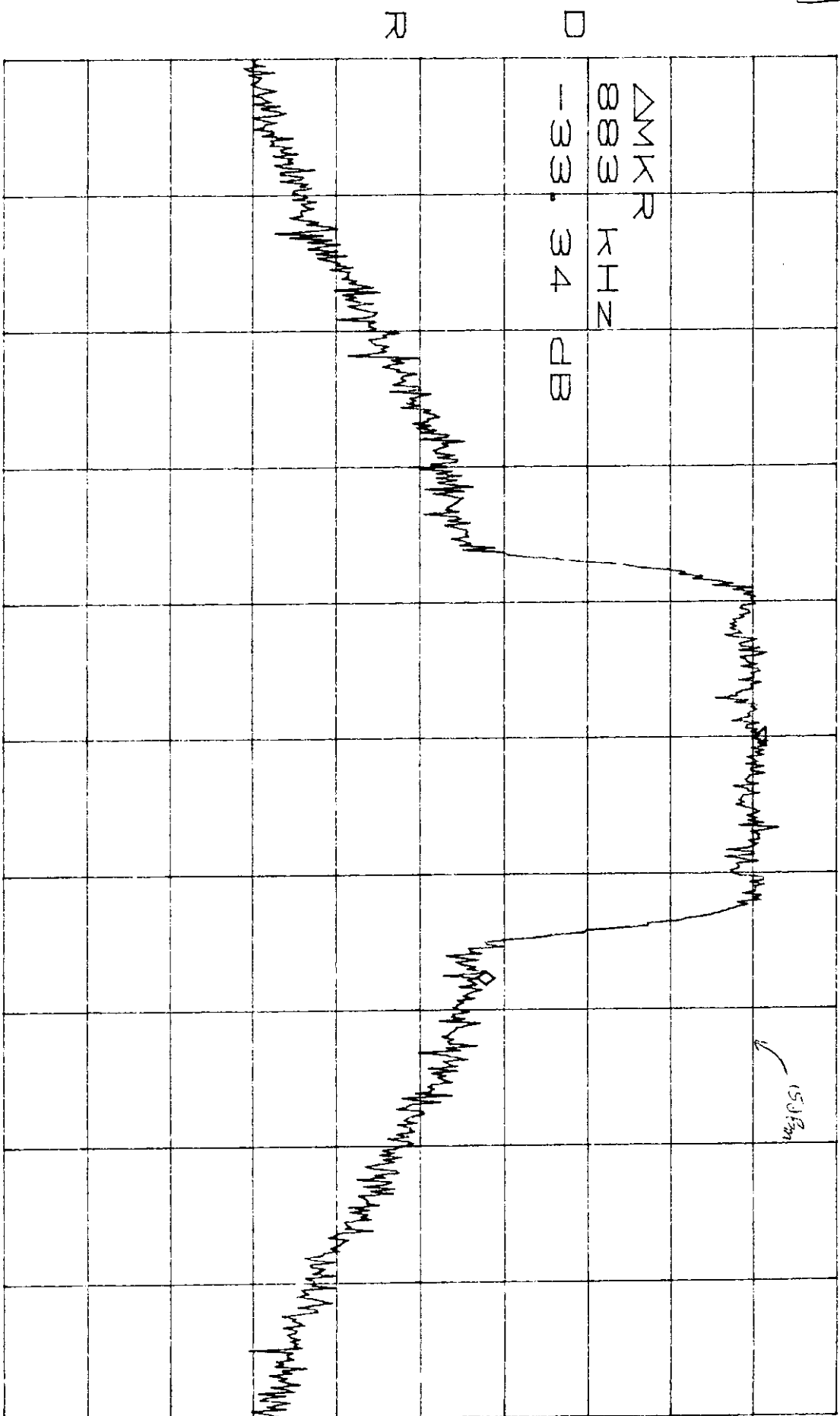
COR 0-band
S/N 0.141

DL
Ch. 385 (New channel)

5/37/97
CPMA Signal

*ATTEN 10dB VAVG 10 ΔMKR -33.34dB
RL 25.0dB 10dB/ 883KIN

2.989



D R

CENTER 1.946250GHZ SPAN 5.000MHZ
*RBW 30KIN *VBW 30KIN SWP 50.0ms

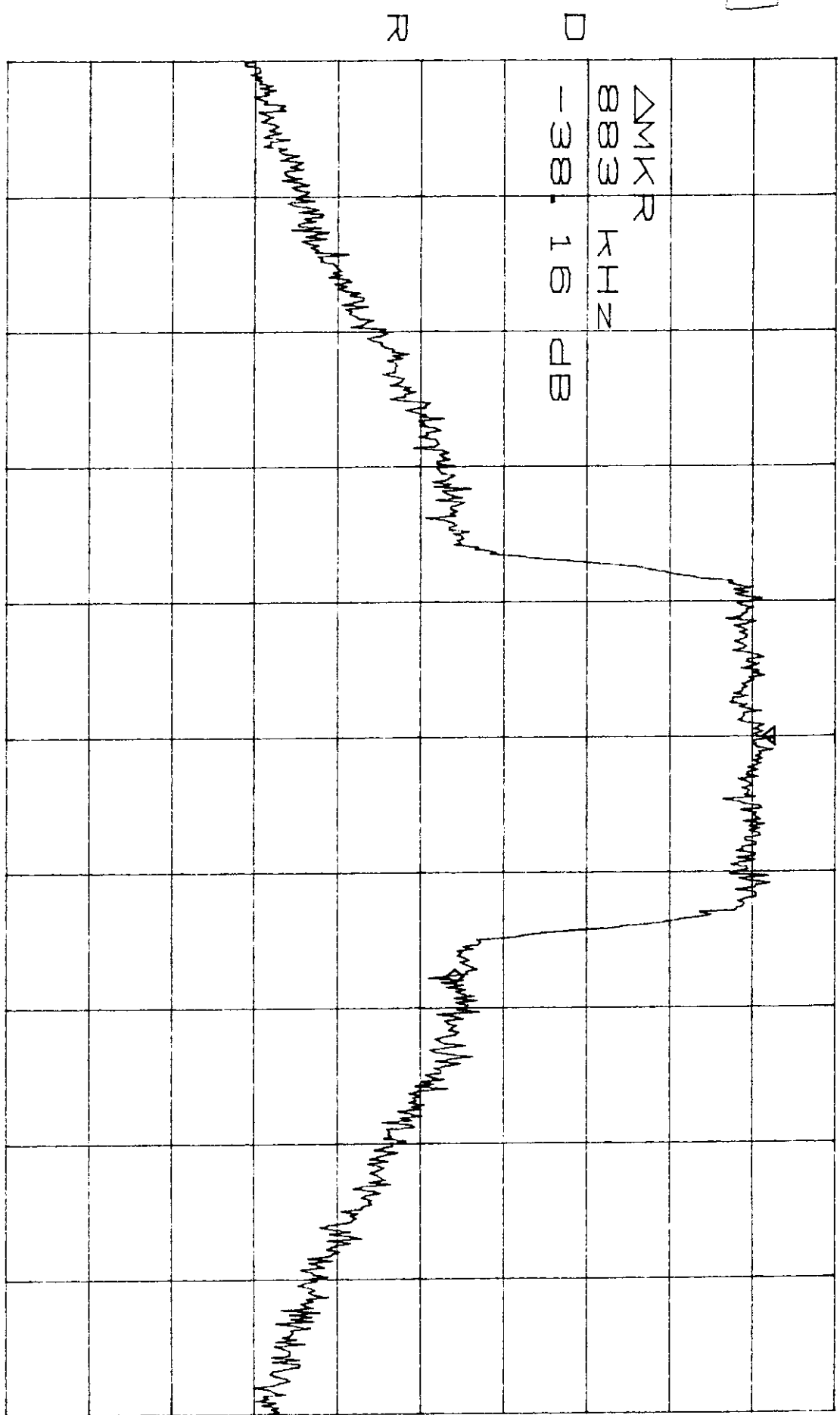
COR 0-band
S/N 0141

OL
Ch. 375 (high channel)

5/37/97
CPMA Signal

*ATTEN 10DB VAVG 10 ΔMKR -38.16DB
RL 25.0DBM 10DB/ 883KHZ

2989



CENTER 1.948750GHZ SPAN 5.000MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms

COR P-band
S/N 641

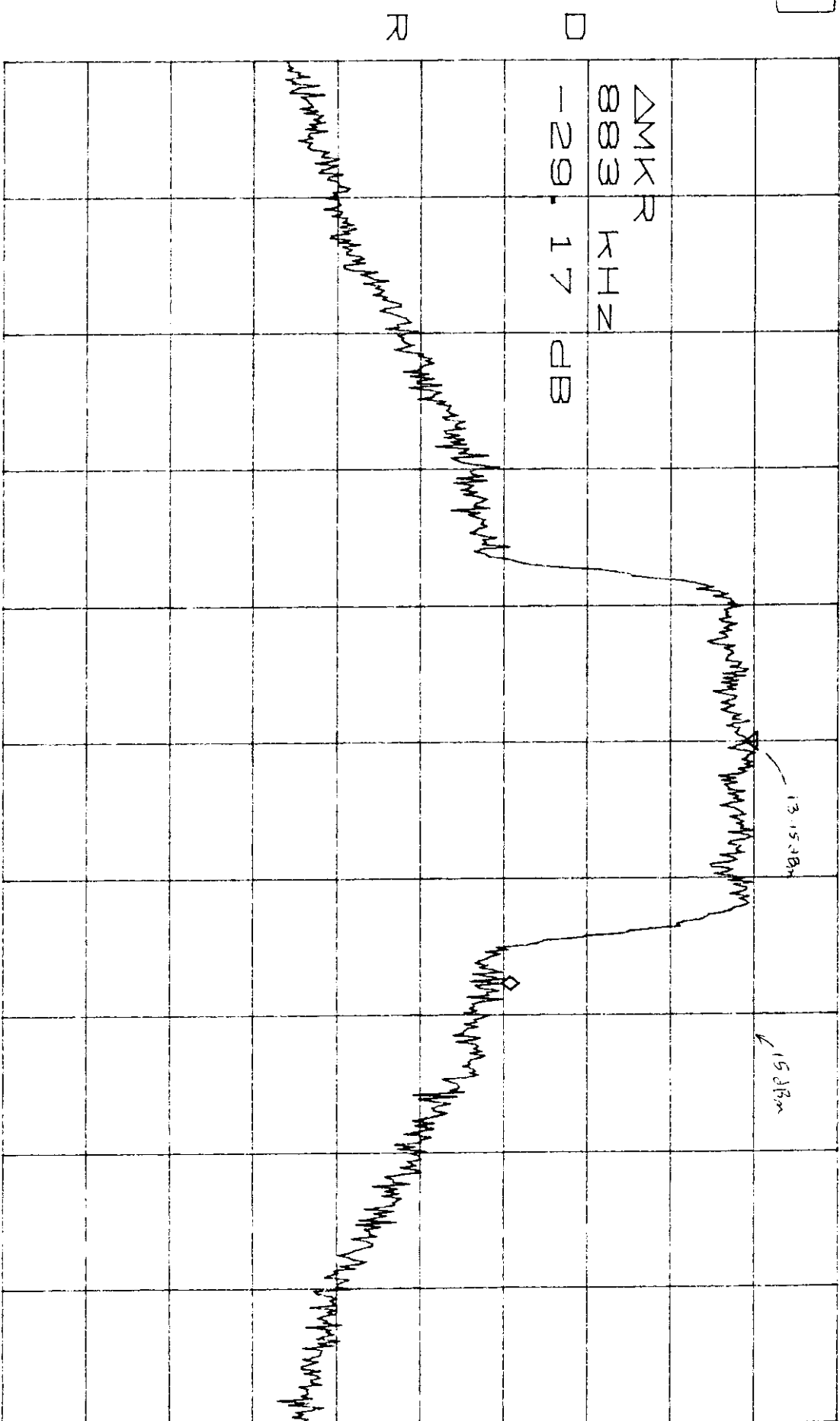
UL
Ch. 3.35 (low channel)

5/27/97

COMA Signal

*ATTEN 10dB VAVG 10 Δ MKR -29.17dB
RL 25.0dBm 10dB/ 883kHz

2.989



CENTER 1.866250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CNR D-band
S/N 0.141

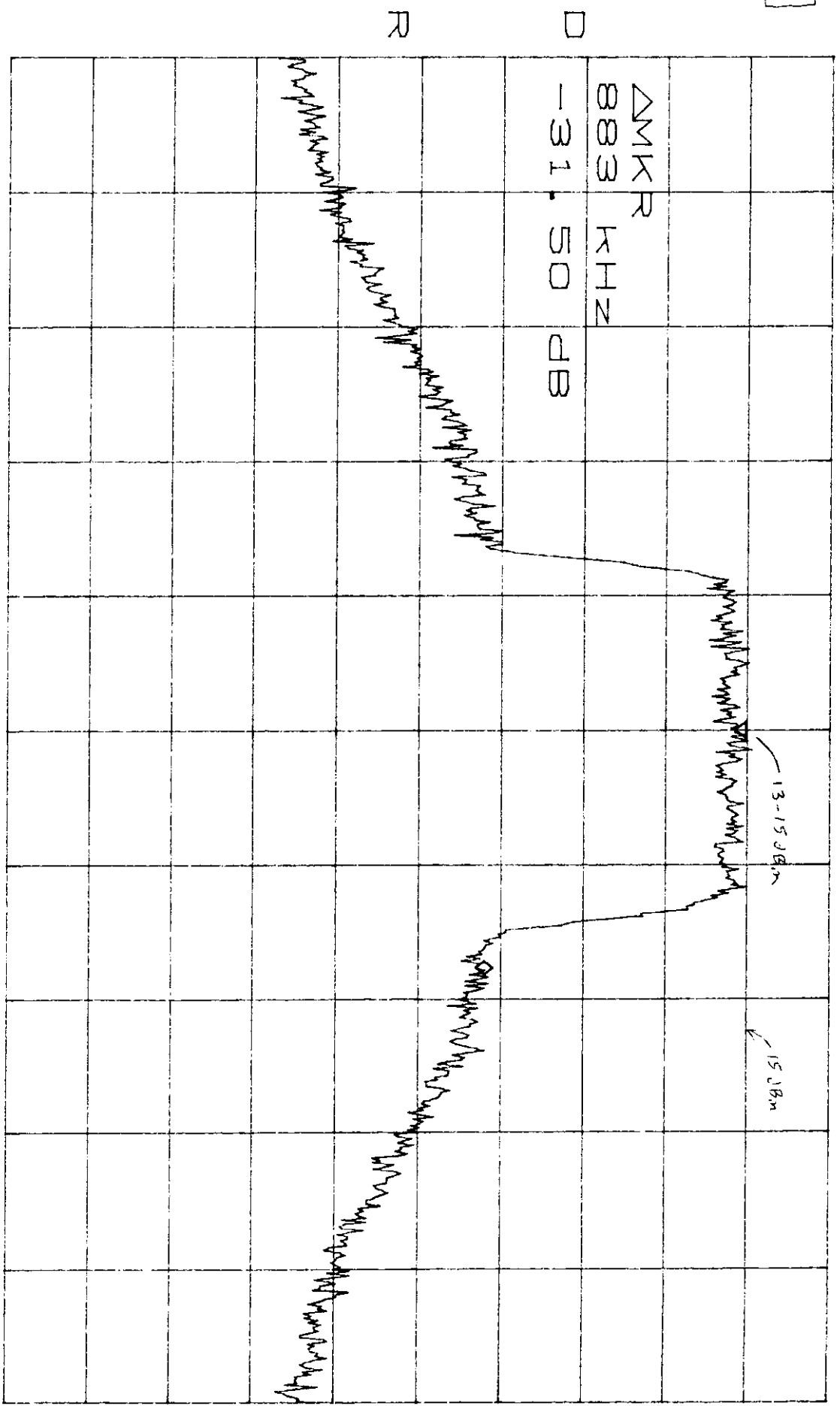
UL
Ch. 37.5 (high channel)

5/27/97

CPMA Signal

*ATTEN 10dB VAVG 10 ΔMKR -31.50dB
RL 25.00dB 10dB/ 883kHz

2.989



CENTER 1.868750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR P-band
S/N 0141

DL

Ch 385 (low channel)

COMA Signal

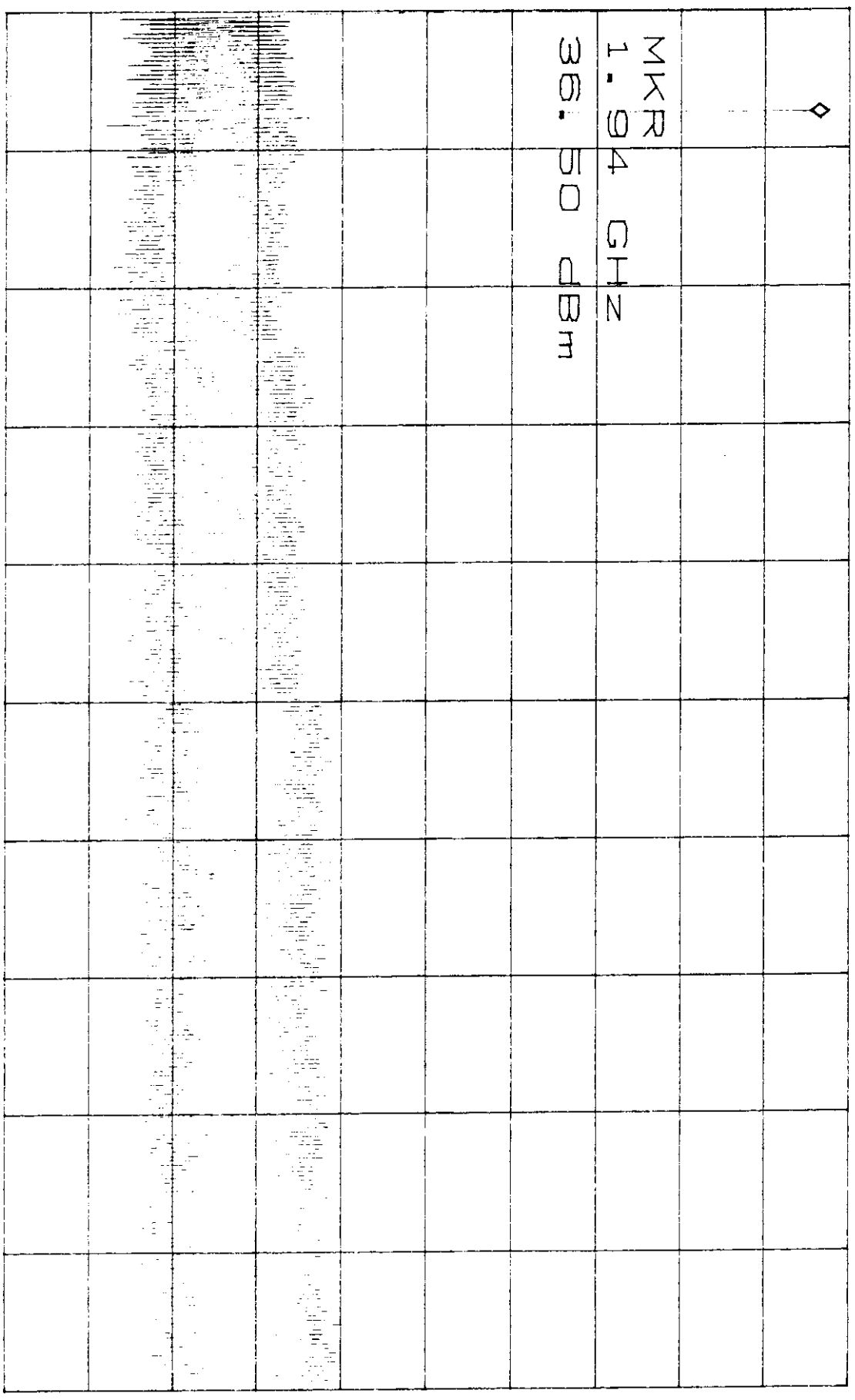
5/27/97

*ATTEN 20dB
RL 41.00dBm

10dB/

MKR 36.50dBm
1.94GHz

2.991



R

CENTER 13.25GHz SPAN 26.50GHz
*RBW 1.0MHz *VBW 1.0MHz SWP 530ms

COR D-band

S/N 0141

PL

CH 375 (high channel)

5/27/97
CMA Signal

*ATTEN 20dB

MKR 36.17dBm

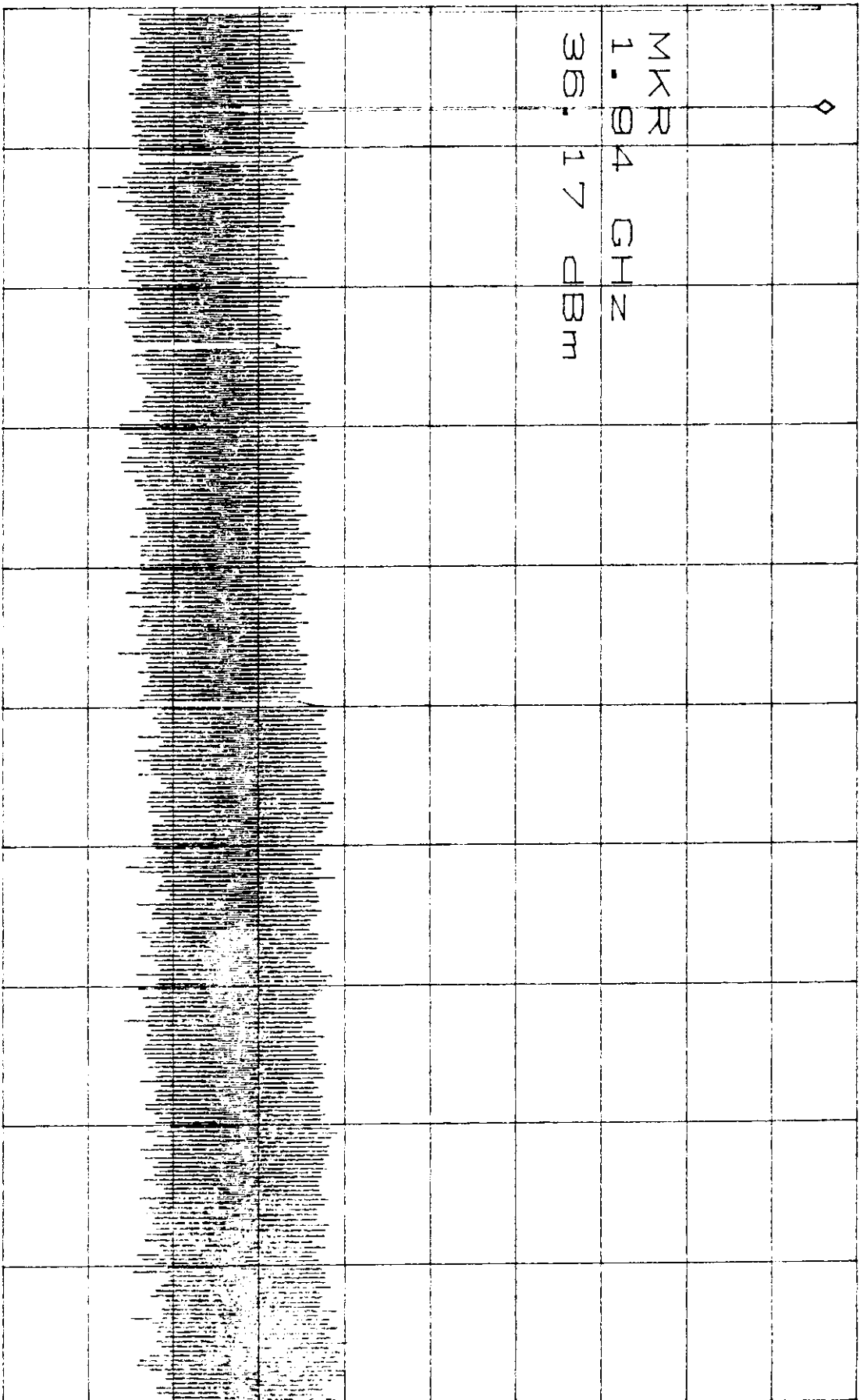
RL 41.0dBm

10dB/

1.94GHz

2.991

R



CENTER 13.25GHz

SPAN 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 530ms

COR D-band

S/N 0141

DL

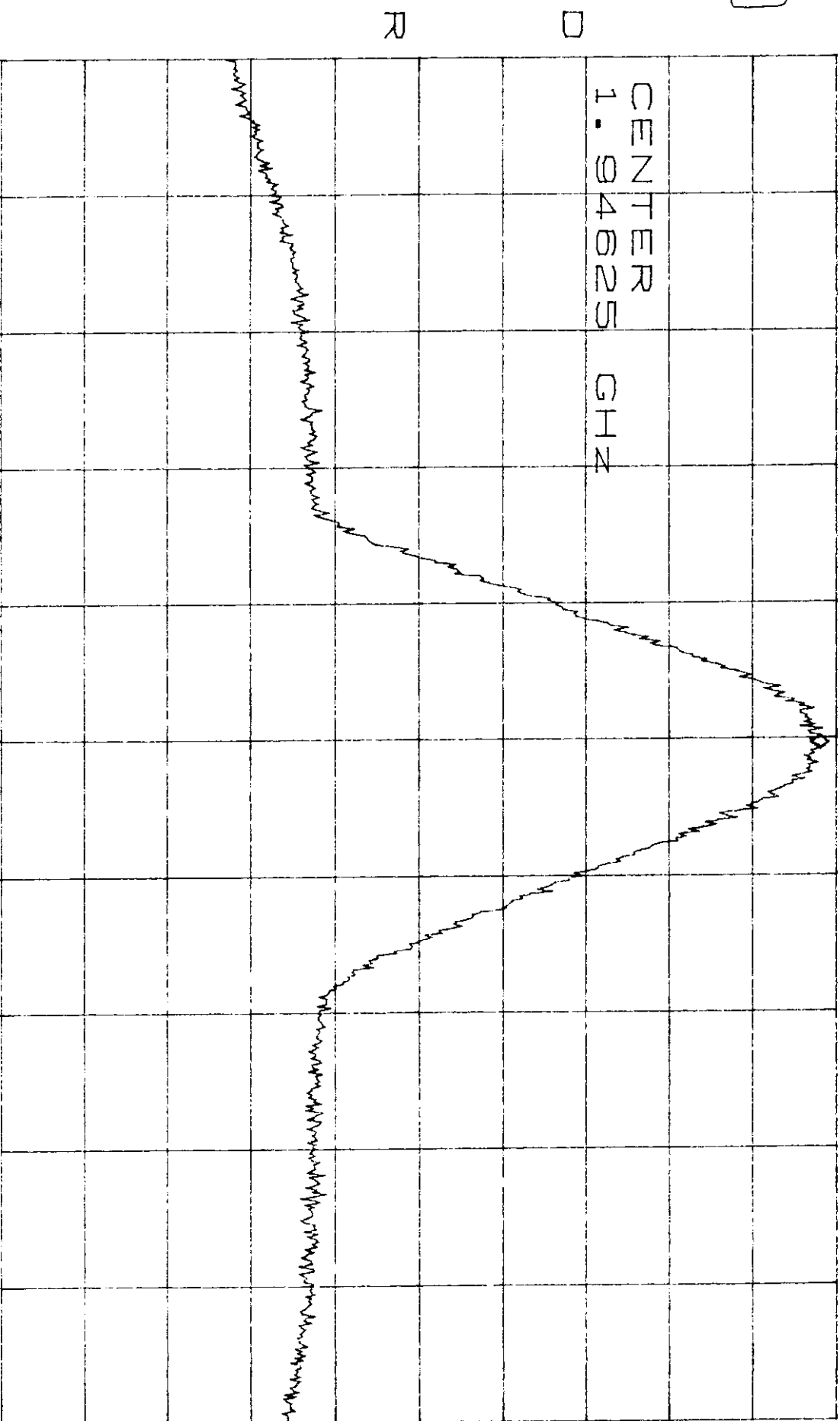
Ch. 335 (low channel)

COMA Signal

5/27/97

*ATTEN 10dB VAVG 10 MKR 27.00dBm
RL 30.00dBm 10dB/ 1.94633GHz

2.991



CENTER 1.94625GHz SPAN 25.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

COR 0-band

OL

SLM 0141

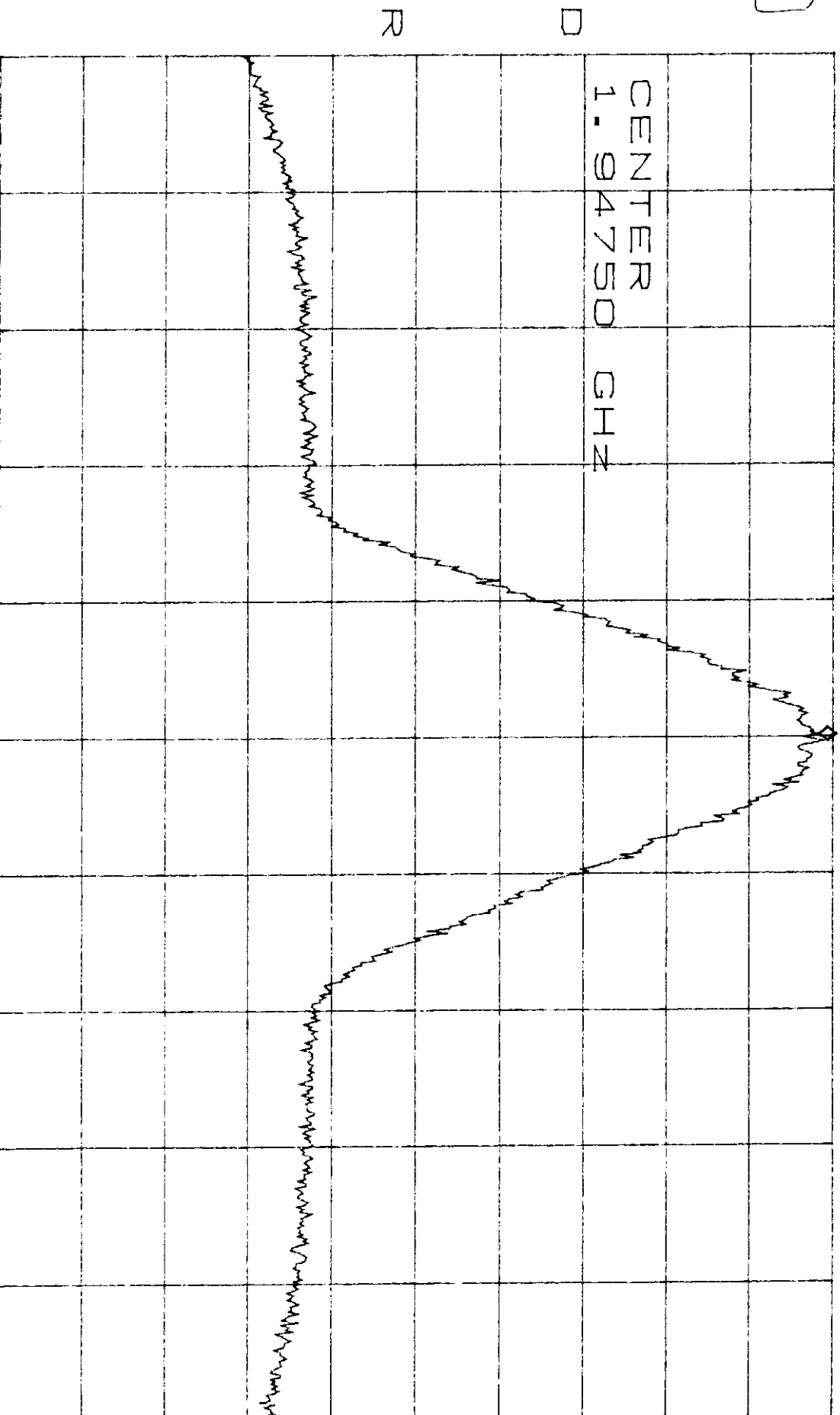
Ch.350 (mid channel)

COMA Signal

5/27/97

*ATTEN 10DB VAVG 10 MKR 28.33DBm
RL 30.0DBm 10DB/ 1.94746GHz

2.991



CENTER 1.94750GHz SPAN 25.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

COR D-band
S/N 0141

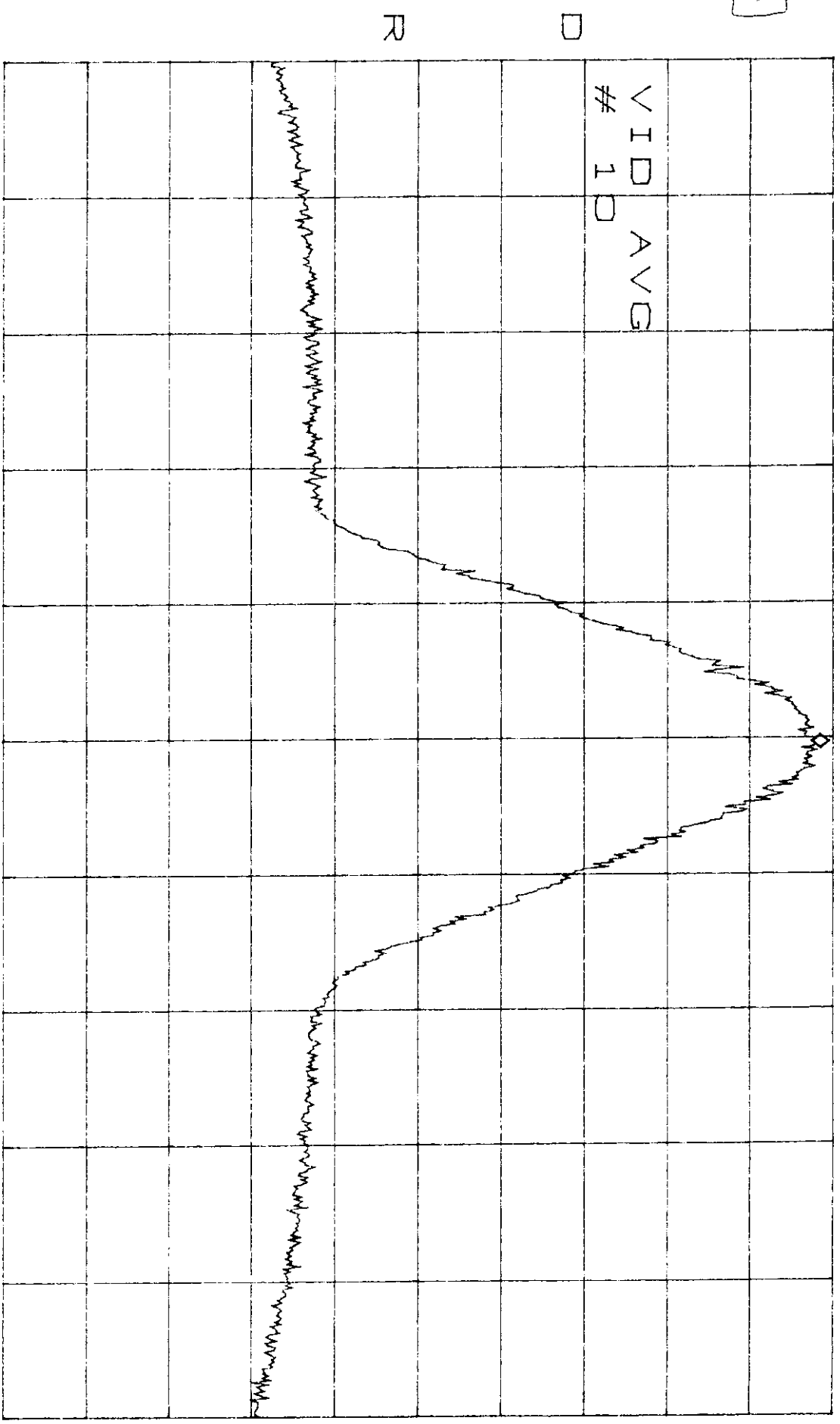
DL
Ch. 375 (high channel)

COMA Signal

5/27/97

*ATTEN 10DB VAVG 10 MKR 27.50DBm
RL 30.00DBm 10DB/ 1.94883GHz

2.991



CENTER 1.94875GHz SPAN 25.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

CPR - P-band

S/N 0141

UL

Ch. 385 (low channel)

5/27/97

COMA Syna

*ATTEN 20DB

MKR 33.17DBM

RL 41.0DBM

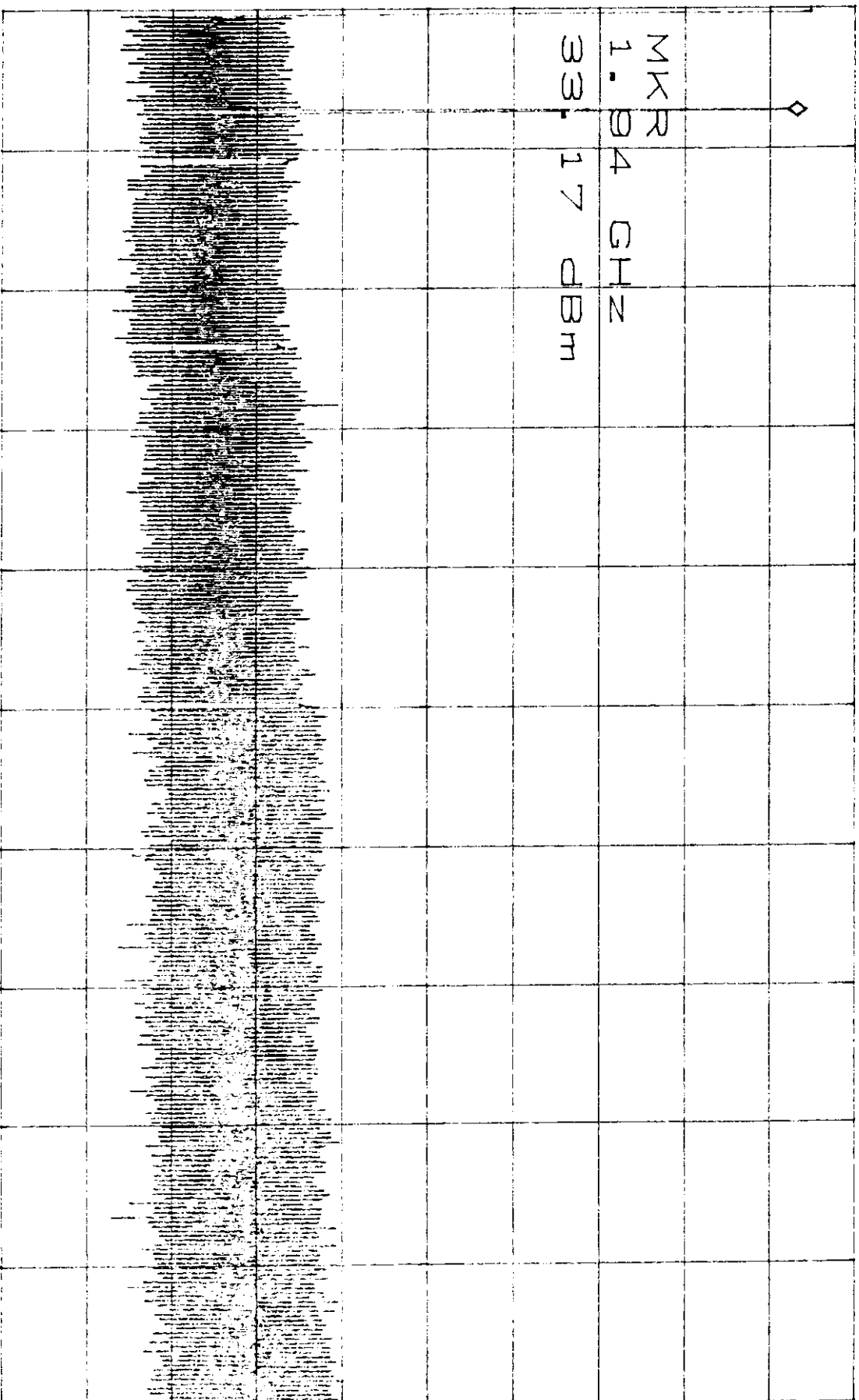
10DB/

1.94GHZ

2.991

MK 1.04 GHz
33.17 DBM

R



CENTER 13.25GHz

SPAN 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 530ms

COR D-band

S/N 0141

UL

Ch 375 (high channel)

5/37/97

C/DMA Signal

NK R 33.07 dBm

*ATTEN 20 dB

RL 41.0 dB

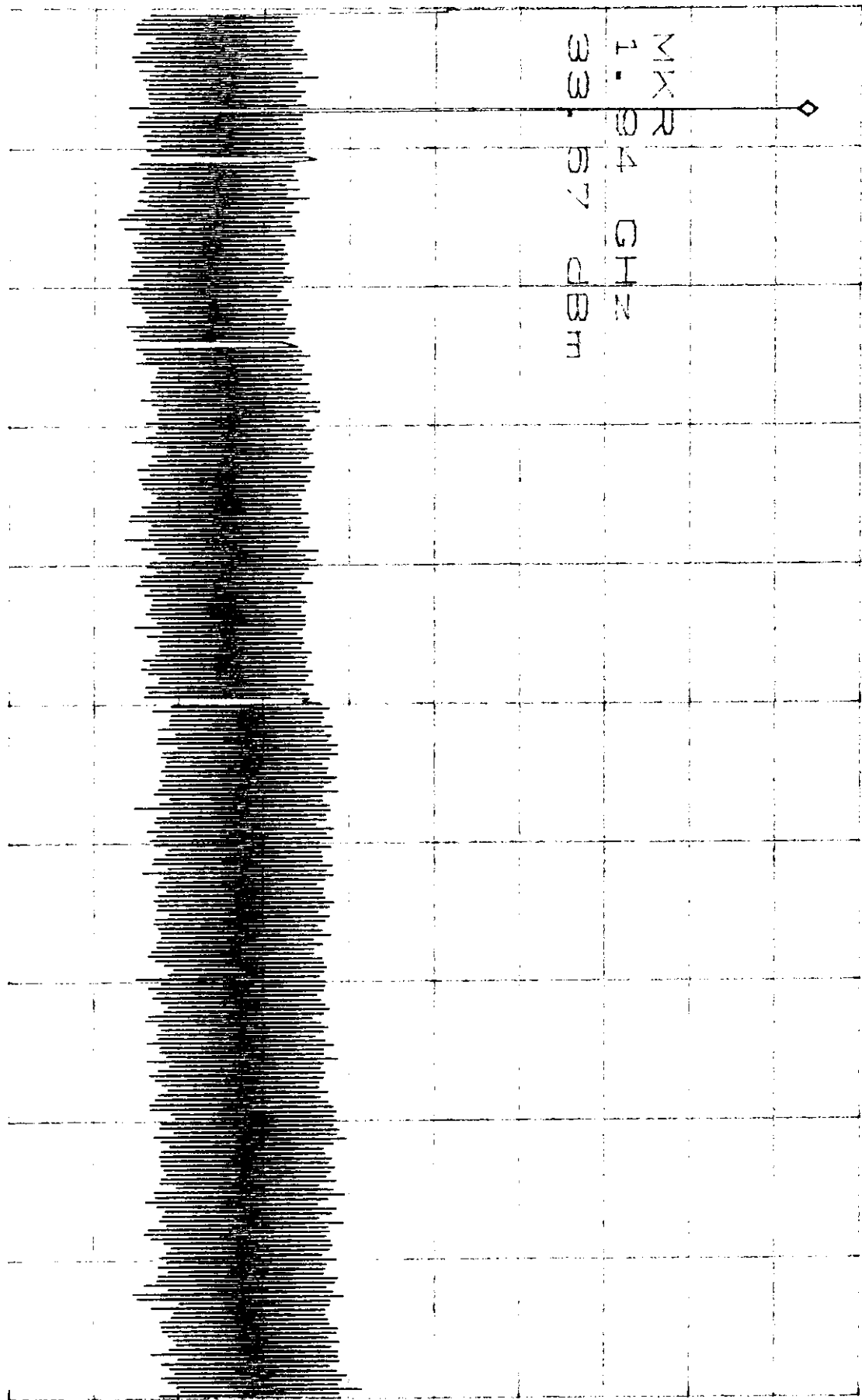
10 dB

1.04 GHz

3991

NK R 33.07 dB

R



CENTER 13.25 GHz

SPAN 26.50 GHz

*RESW 1.0 MHz

*VBW 1.0 MHz

SWP 530 ms

CDR 0-bnd

UL

5/27/97

S/N 0141

Ch 385 (low channel)

CPMA Signal

* ATTEN 100dB

VAVG 10

NKR 25.50GHz

RL 00.00dB

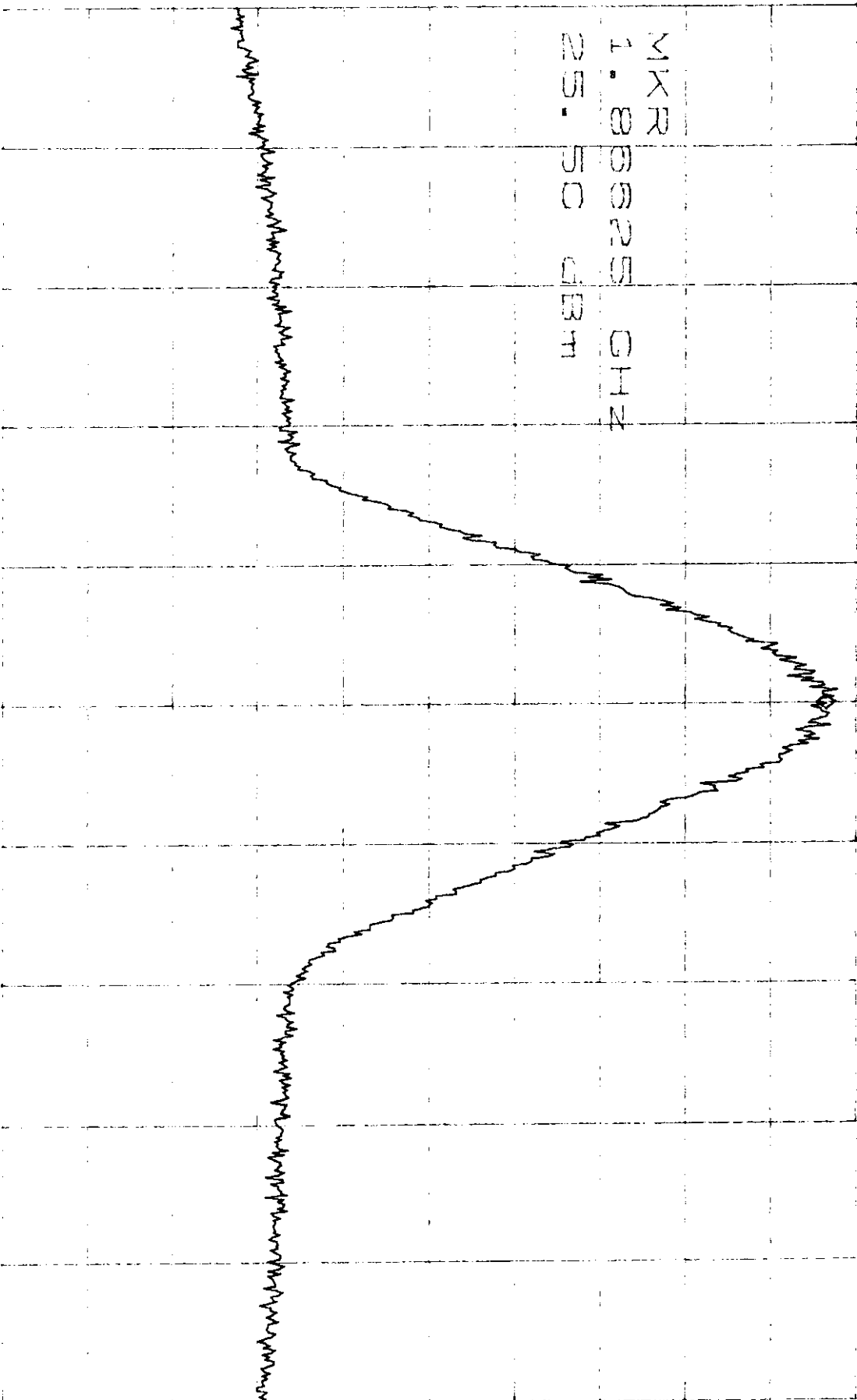
100dB

1.80025GHz

3.9941

ΣX 00.00dB
F. 00.00dB
N. 00.00dB

R



CENTER 1.80025GHz

SPAN 25.00MHz

* RBW 1.0MHz

* VBW 1.0MHz

SWE 50.0ms

CPR D-band

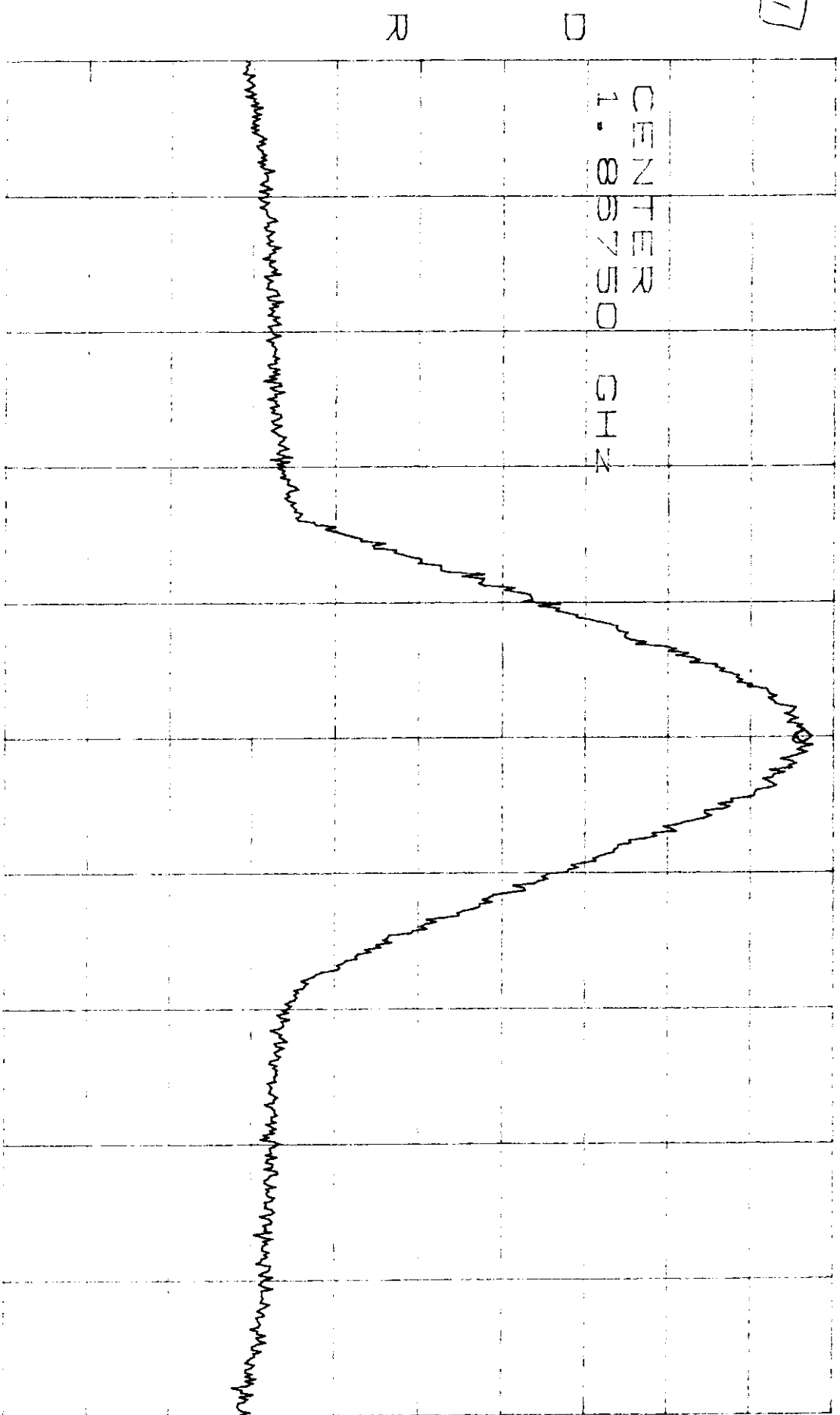
S/N 0141

UL
Ch 350 (mid channel)

5/27/97
CDMA Signal

*ATTEN 10dB VAVG 10 MKR 25.33dBm
RL 30.0dBH 10dBH 1.86750GHz

3991



*RBW 1.0MHz *VBW 1.0MHz

COR D-band

UL

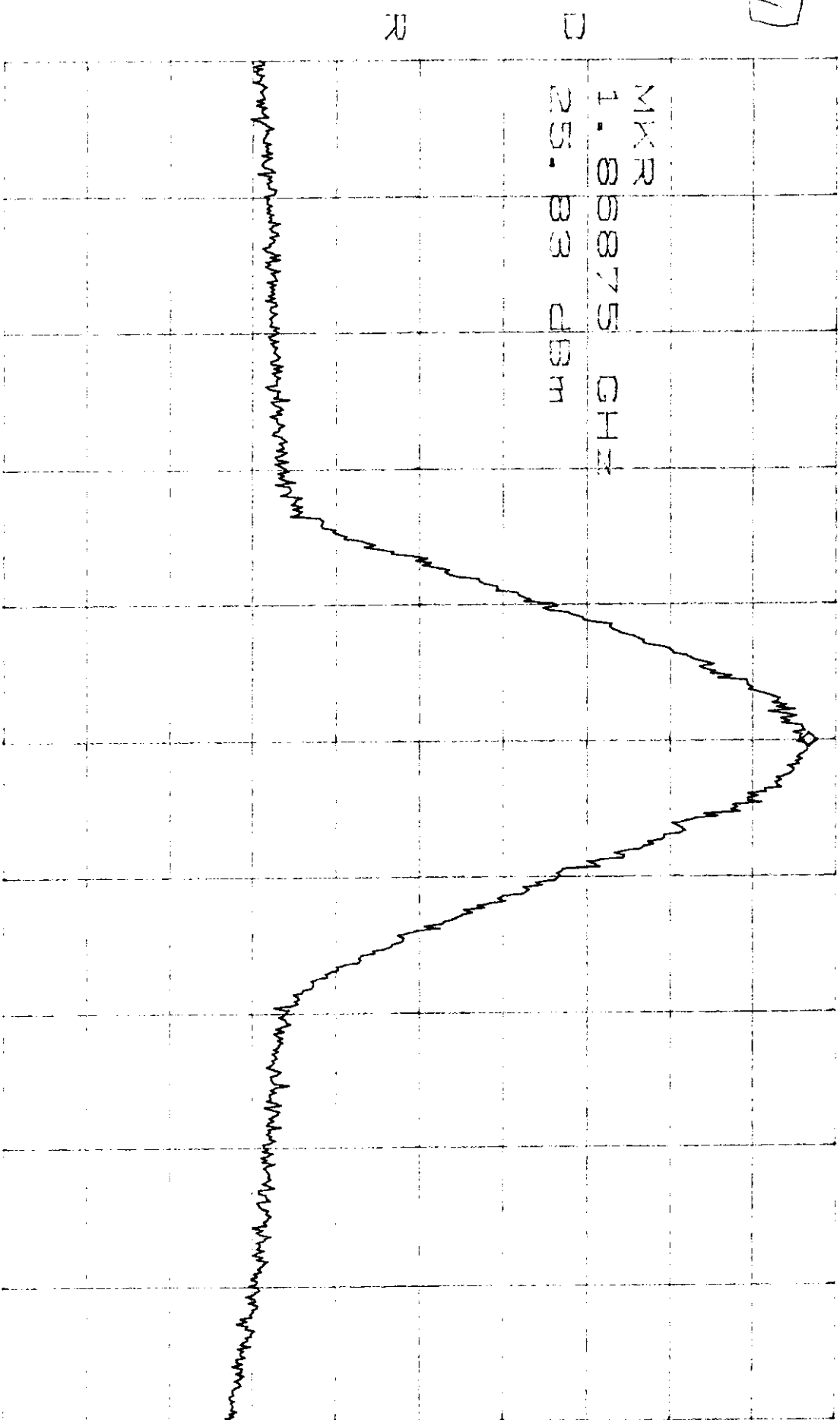
S/N 0141

Ch. 375 (high channel)

5/27/97
COMA Sigma

*ATTEN 100dB VAVG 10 MKR 25.83dBm
RL 30.00dB 1.86875GHz

21991



R

D

CENTER 1.86875GHz

SPAN 25.00MHz

*RBW 1.0MHz *VBW 1.0MHz

SWP 50.0ms

CDR P-band

PL

5/27/97

S/N 0141

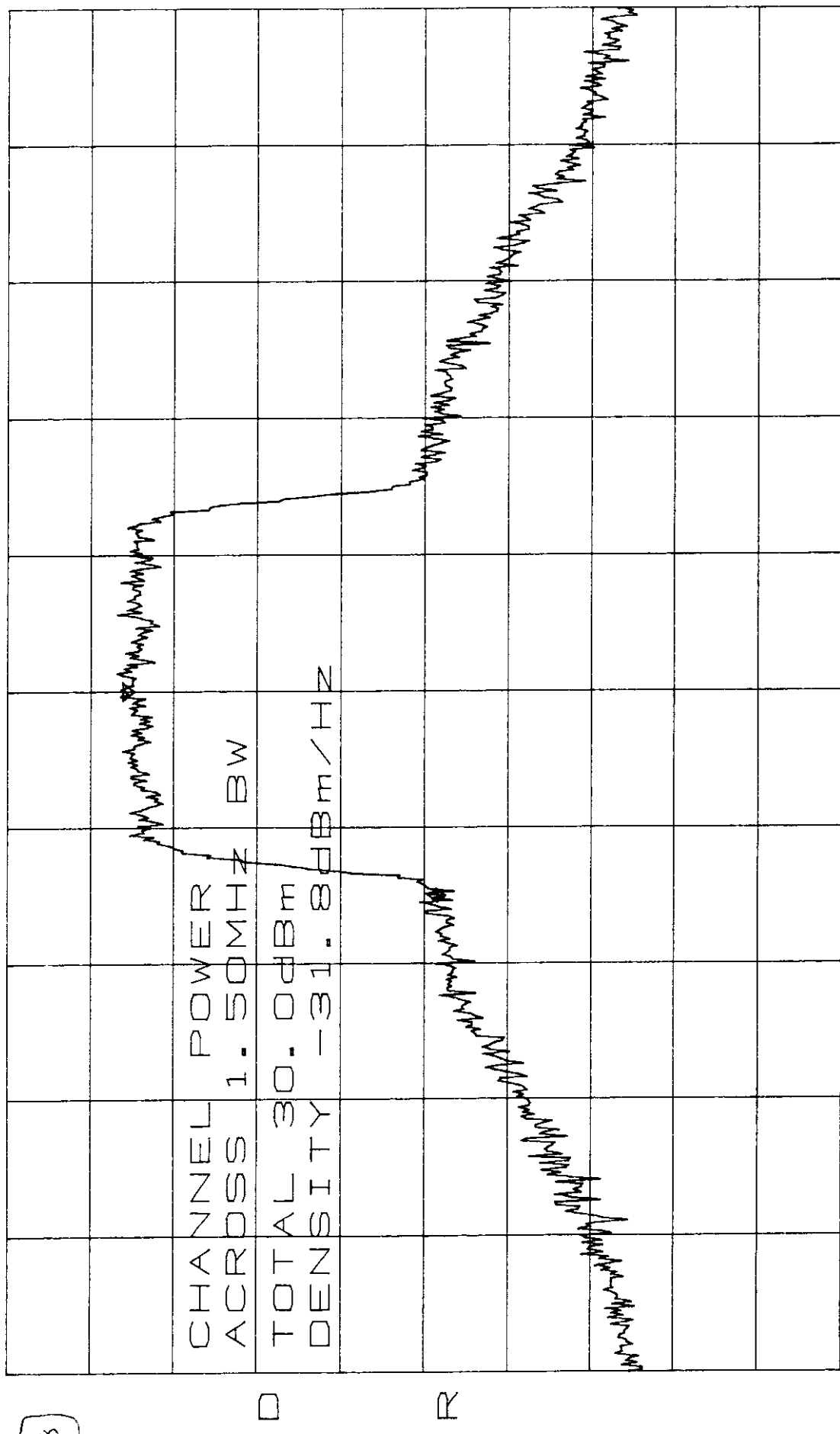
ch.325 (low channel)

Fundamental

CDMA Signal

*ATTEN 10dB VAVG 10 ΔMKR -37.33dB

RL 30.0dBm 10dB/-750kHz



24.238

CENTER 1.946250GHZ SPAN 5.000MHZ

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

COR. D-band

DL

5/27/97

S/N 0141

ch.325 (low channel)

Fundamental

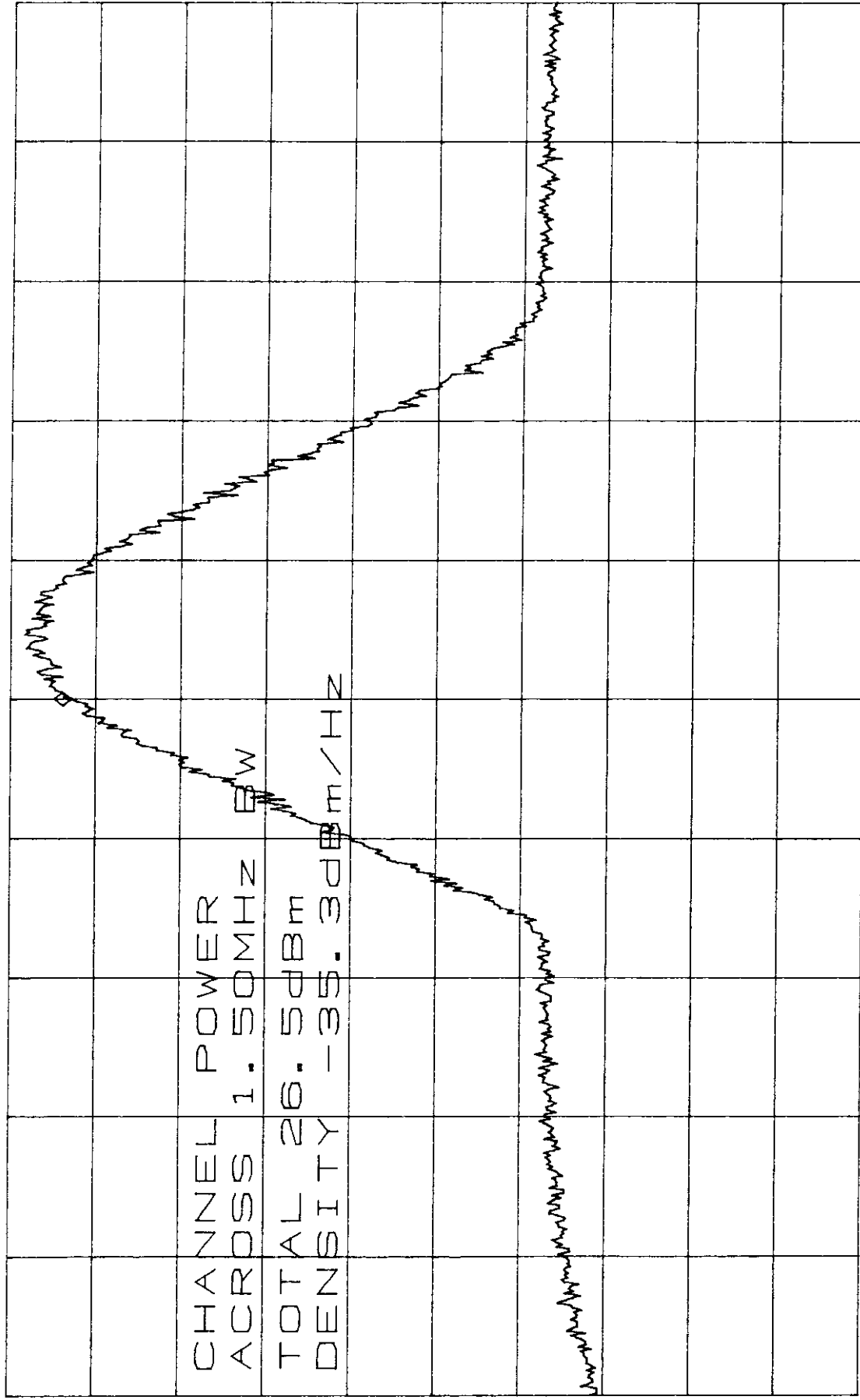
CMA Signal

*ATTEN 10dB VAVG 10 MKR 22.83dBm

RL 30.0dBm 10dB/ 1.94550GHz

24.338

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 26.5dBm
DENSITY -35.3dBm/Hz



CENTER 1.94550GHz

SPAN 20.00MHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 50.0ms

CPR D-band
S/N 0141

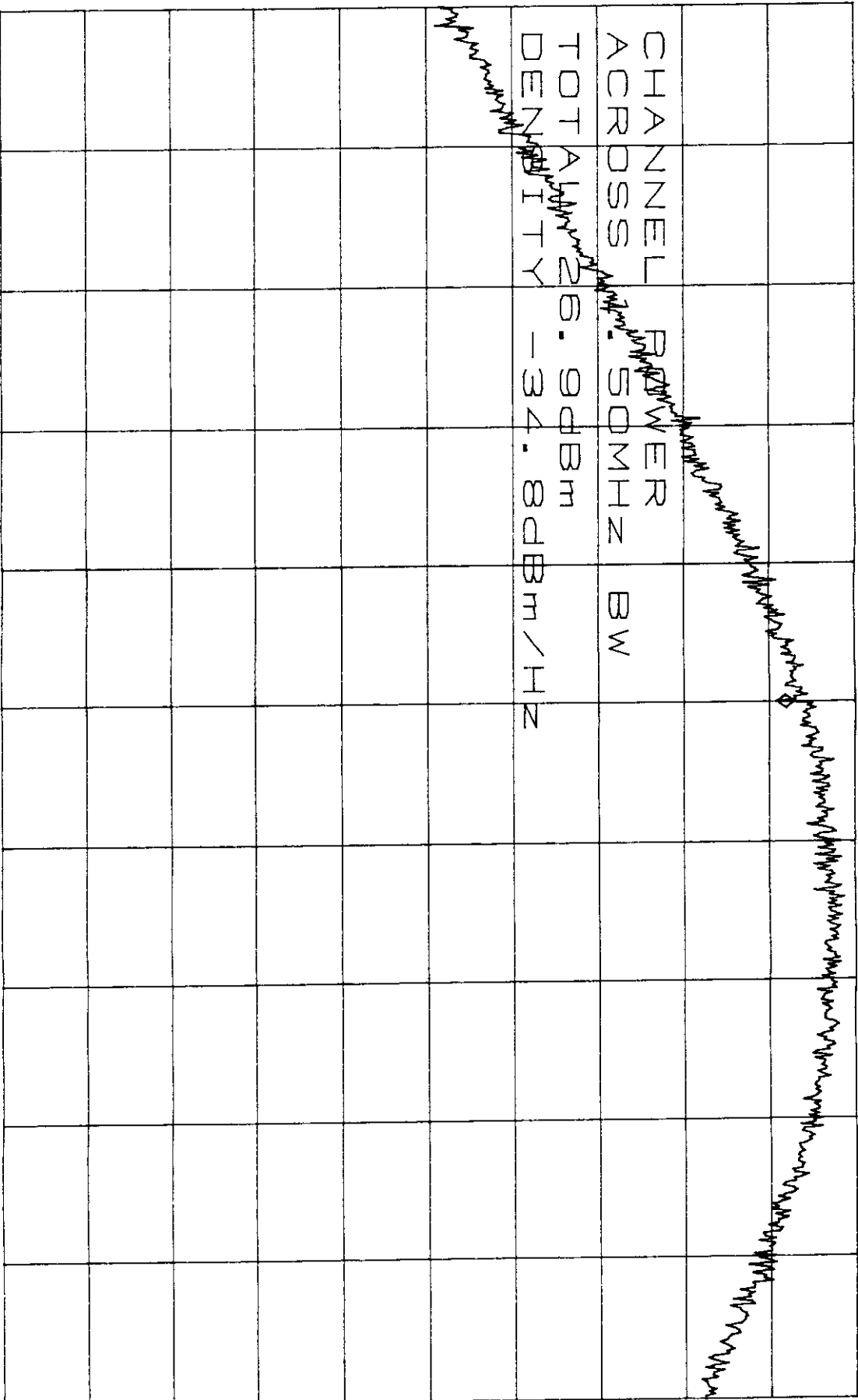
DL
Ch. 335 (low channel)

Below
Fundamental

5/27/97
CPR A Signal

*ATTEN 10dB VAVG 10 MKR 20.83dBm
RL 30.0dBm 10dB/ 1.945500GHz

24238



CENTER 1.945500GHz SPAN 5.000MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

COR P-band

S/N 0141

PL-
Ch 335 (low channel)

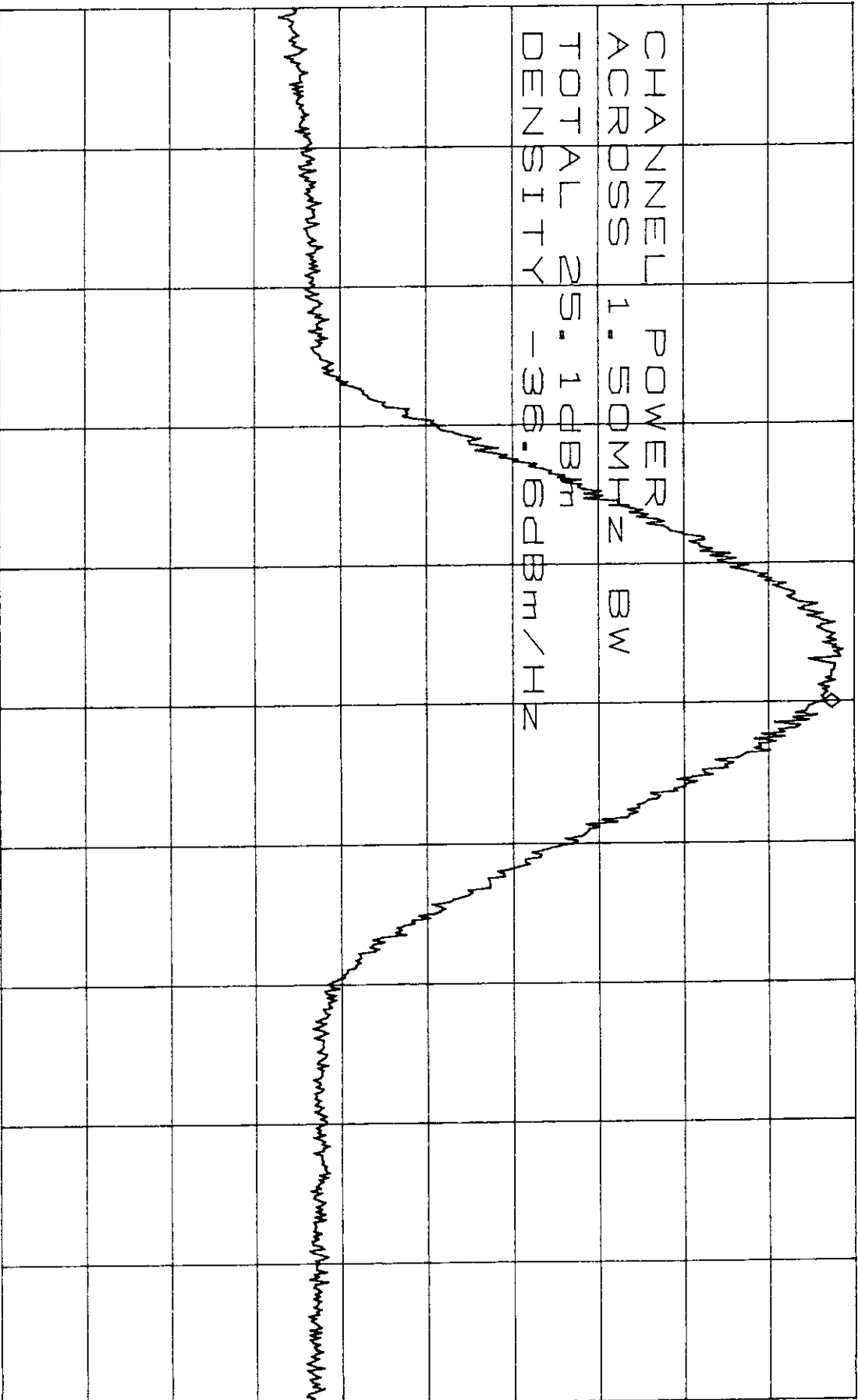
Above
Fundamental

5/27/97
CIMA Signal

*ATTEN 10dB VAVG 10 MKR 26.33dBm
RL 30.0dBm 10dB/ 1.94700GHz

24.238

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 25.1dBm
DENSITY -36.6dBm/Hz



D
R

CENTER 1.94700GHz SPAN 20.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

COR P-band

PL

Above

5/37/97

S/N 0141

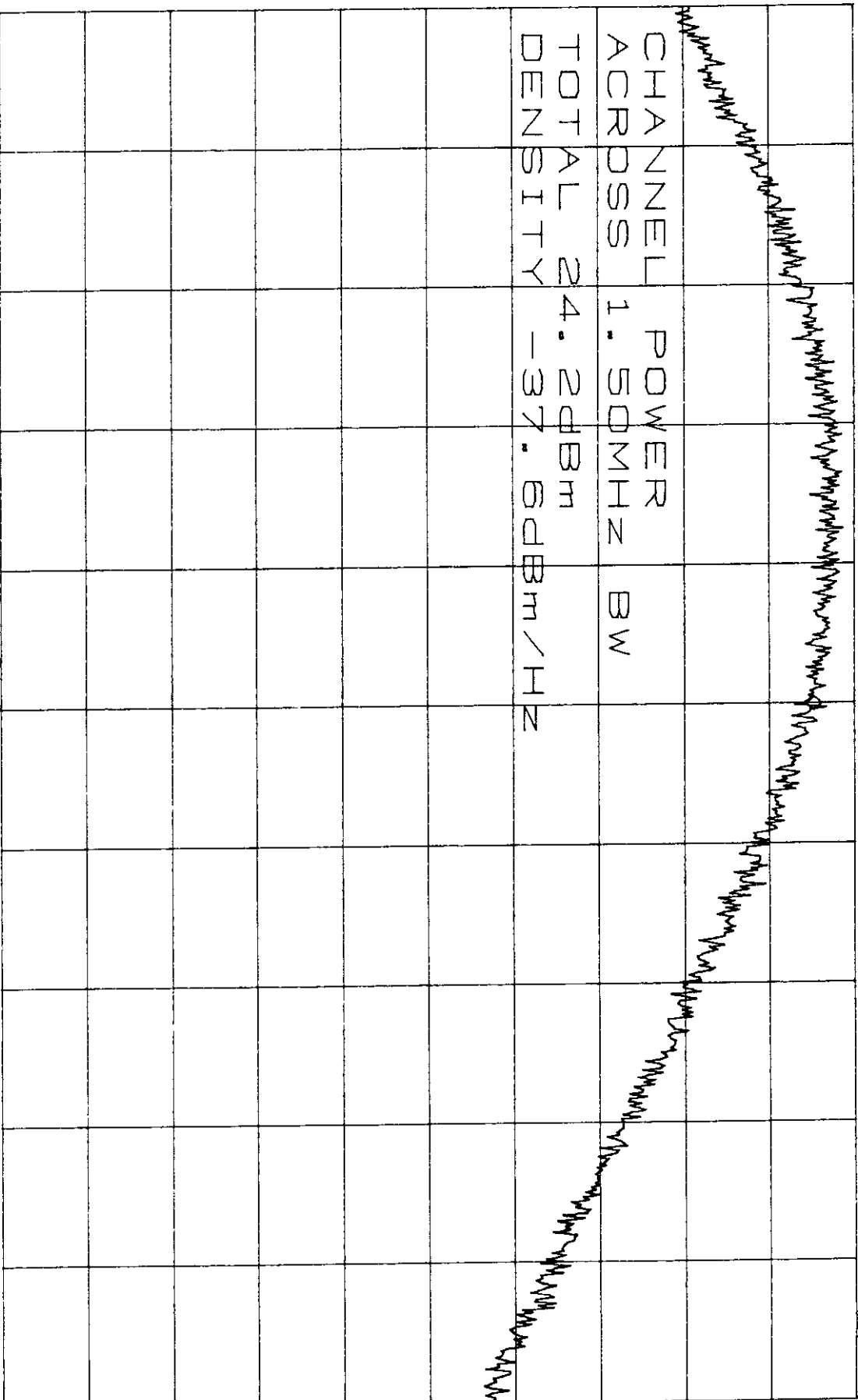
Ch 335 (New channel)

Fundamental

CDMA Signal

*ATTEN 10dB VAVG 10 MKR 24.17dBm
RL 30.0dBm 10dB/ 1.947000GHZ

24.338



CH 335 POWER BANDWIDTH
ACROSS 1.50 MHz BW
TOTAL 24.338 dBm
DENSITY -37.6 dBm/Hz

R

D

CENTER 1.947000GHZ SPAN 5.000MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms

CDR D-band
S/N 0141

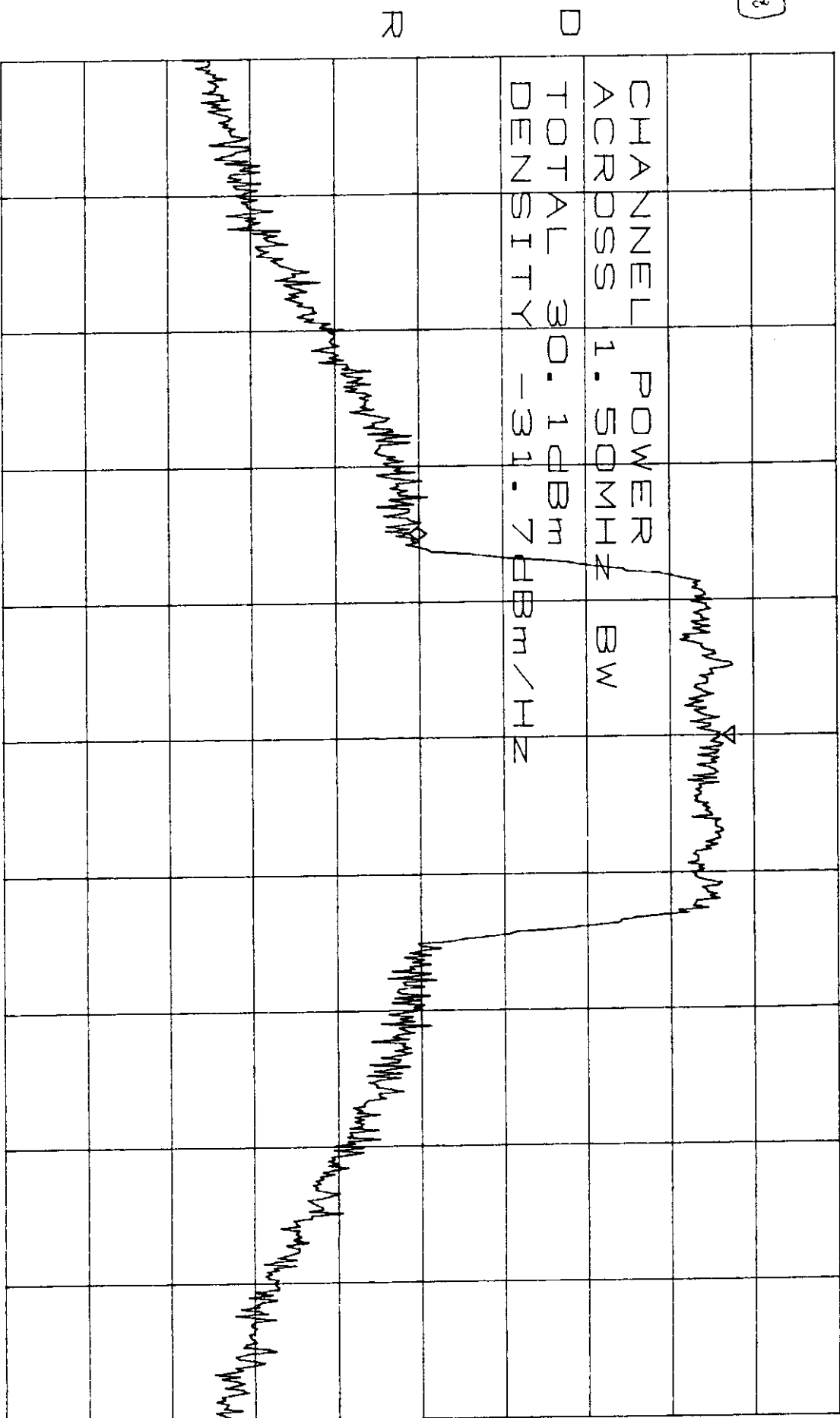
DL
Ch. 375 (high channel)

Fundamentals!

5/27/97
CDMA Signal

*ATTEN 10dB VAVG 10 ΔMKR -37.50dB
RL 30.00dB 10dB/

24.338



CENTER 1.948750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band

DL

S/N 0141

Ch. 375 (high channel)

Belu

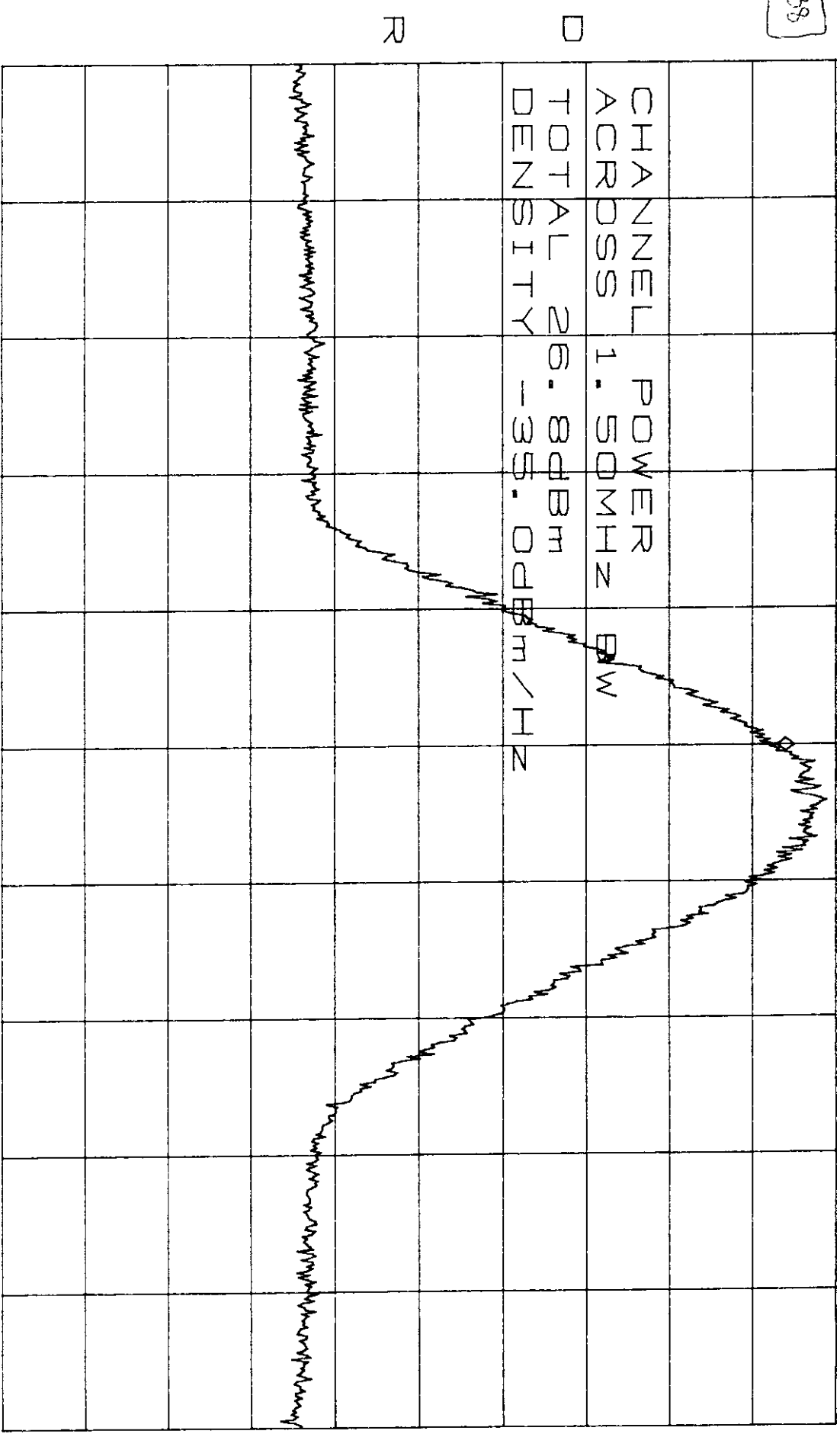
Fundamental

5/27/97

CDMA Signal

*ATTEN 10dB VAVG 10 MKR 23.00dBm
RL 30.00dBm 10dB/ 1.94800GHz

24.338



CENTER 1.94800GHz SPAN 20.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

CDR D-band
SIN 0141

DL
Ch 375 (high channel)

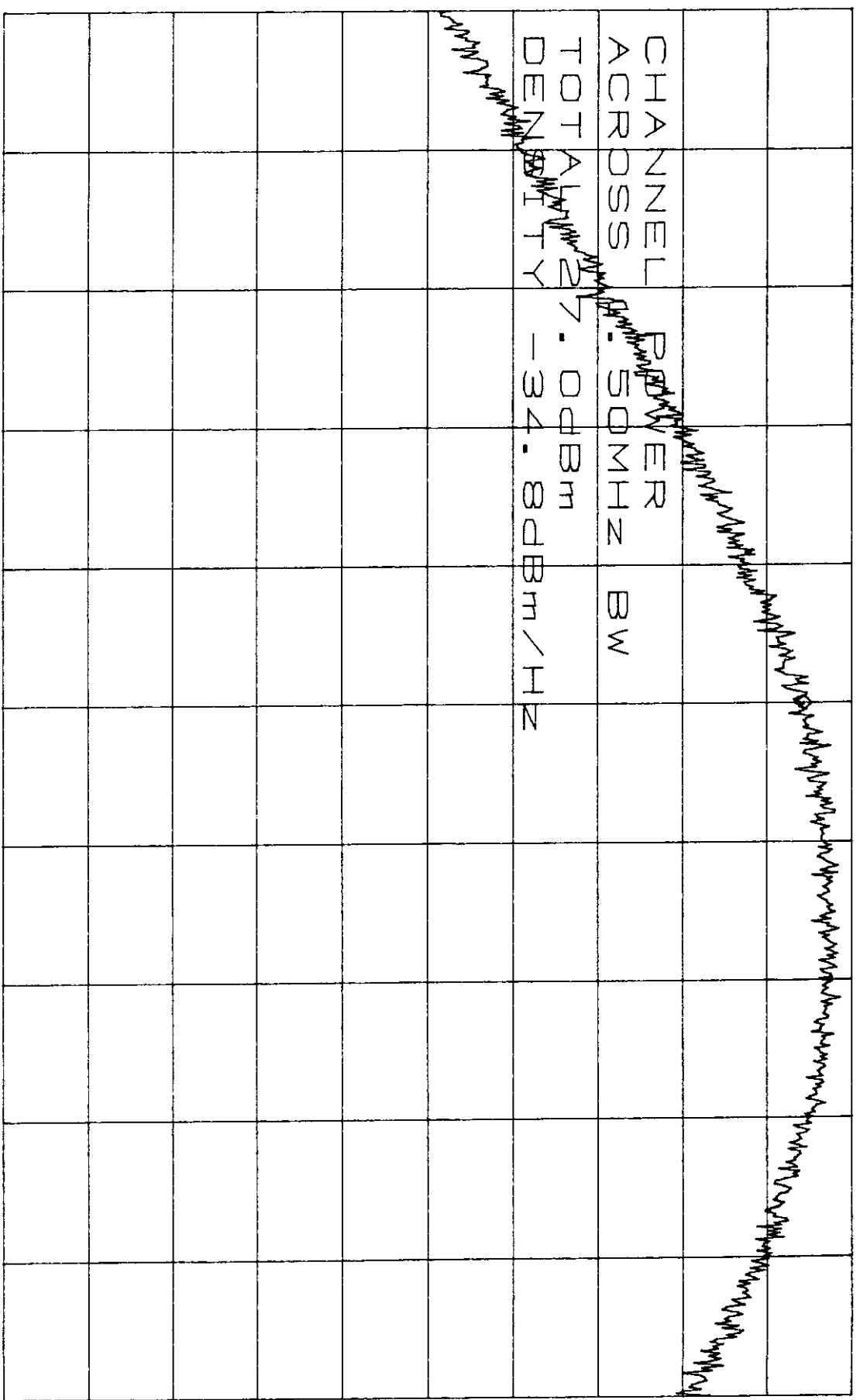
Below
Fundamental

5/27/97
CISMA Signal

*ATTEN 10dB VAVG 10 MKR 23.33dBm
RL 30.0dBm 10dB/ 1.948000GHz

24 238

D
R



CENTER 1.948000GHz SPAN 5.000MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

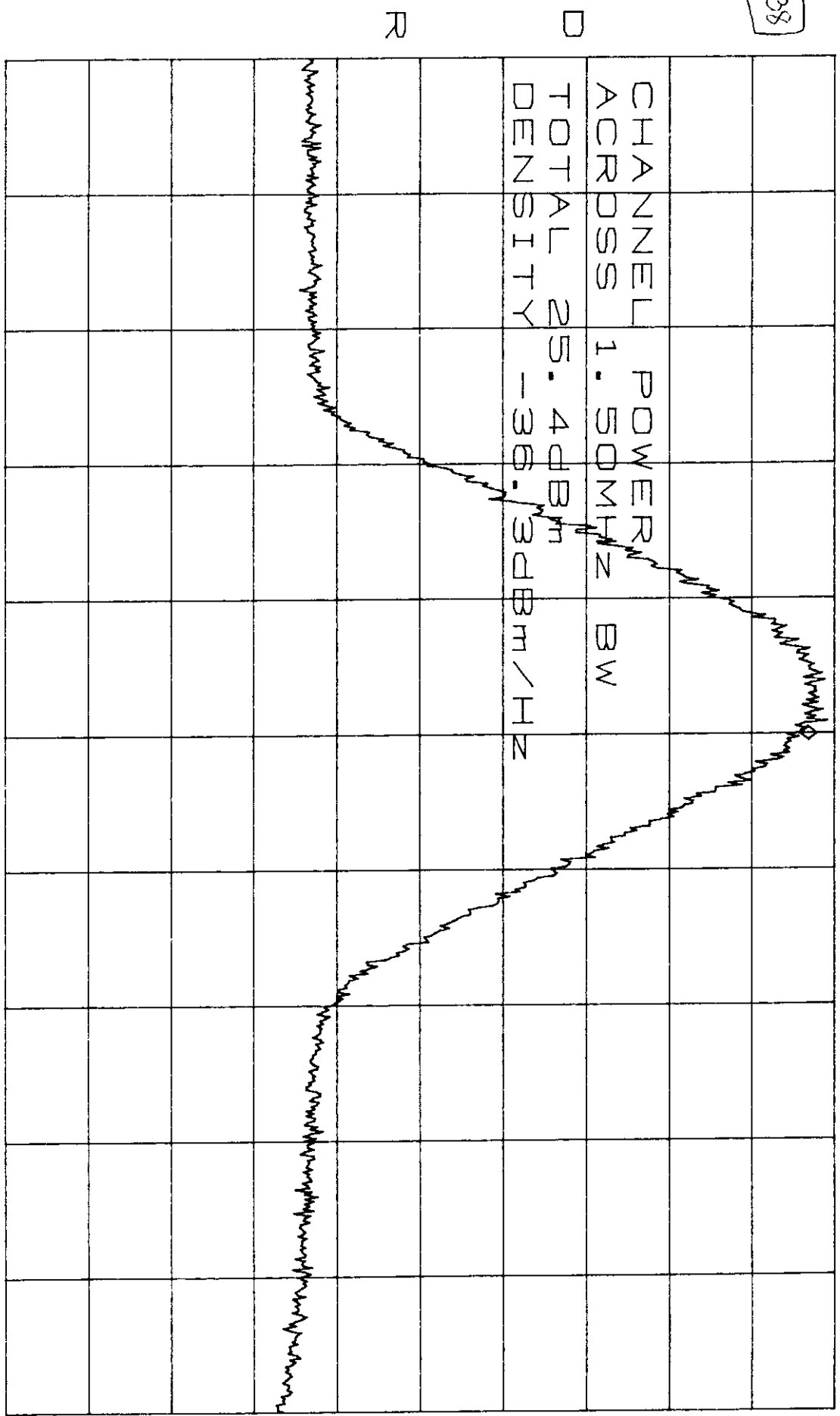
COR 0-band
S/N 0141

DL
Ch. 375 (high channel)

Above
Fundamental
5/37/97
CMAA Syna /

*ATTEN 10dB VAVG 10 MKR 25.83dBm
RL 30.0dBm 10dB/ 1.94950GHz

24238



CENTER 1.94950GHz SPAN 20.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

CDR D-band

D_L

Above

5/27/97

S/N 0141

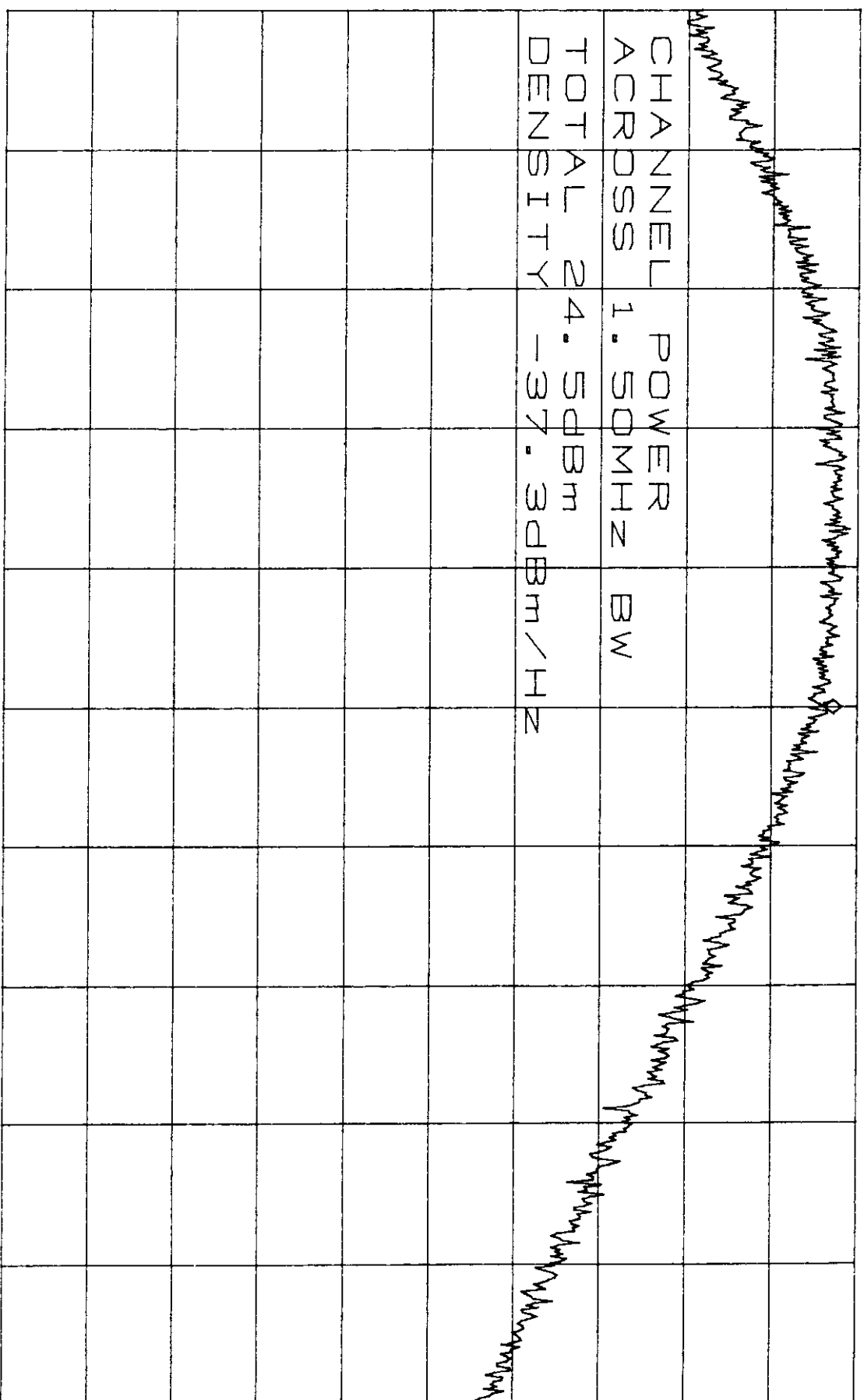
Ch. 375 (high channel)

Fundamental

CDMA Signal

*ATTEN 10dB VAVG 10 MKR 26.17dBm
RL 30.0dBm 10dB/ 1.949500GHz

24.238



R

D

CENTER 1.949500GHz SPAN 5.000MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

CNR P-band

UL

Fundamental

5/27/97

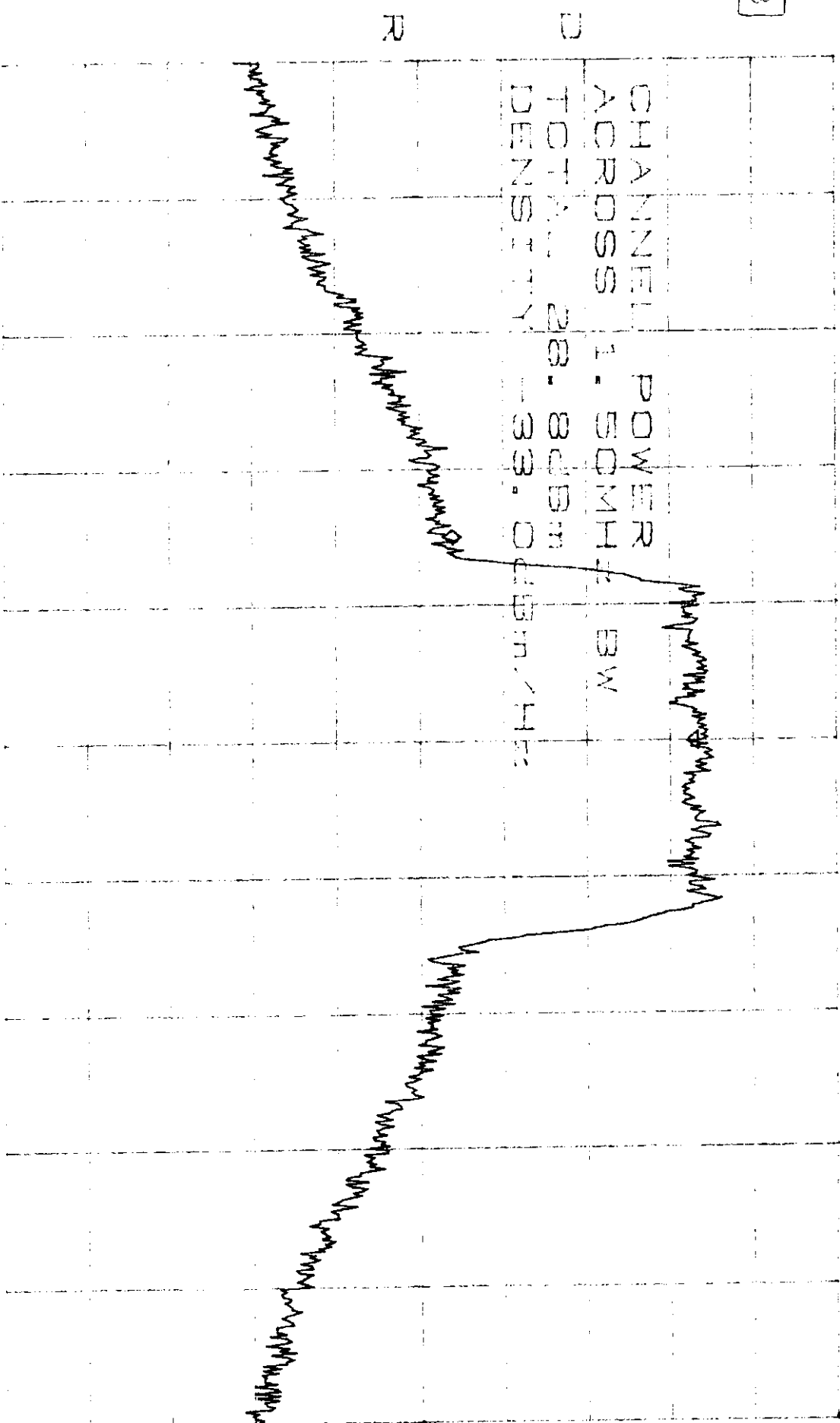
S/N 0141

Ch. 335 (low channel)

CIMA Signal

* ATTEN 10DB VAVG 10 2MKR 120. 17DB

24.238



CENTER F. 3000000Hz SPAN 5.000MHz

* RBW 30KHz * VBW 30KHz SWP 50.0ms

5/27/97

CPMAA Signal

CO
OT
UT
UT
OT
OT
I
N

三、一、四

U.S. DEPT. OF JUSTICE

天
下
萬
物
皆
有
其
理

CDR D-band

UL

Below

5/27/97

S/N 0141

Ch. 385 (low channel)

Fundamental

CDMA Signal

*ATTEN 10dB VAVG 10 MKR 23.17dBm
RL 30.0dB 10dB/ 1.865500CHz

24.238

0
CIRZEL DEBER
ACROSS 150MIN BW
FOCAL 25.00dB
DEZ 30.0dB/HK
R

CENTER 1.865500CHz SPAN 5.000MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0CHz

COR D-band

UL

Above

5/27/97

S/N 0141

Ch. 335 (low channel)

Fundamental

CDMA Signal

*ATTEN 10dB

VAVG 10

MKR 23.67dBm

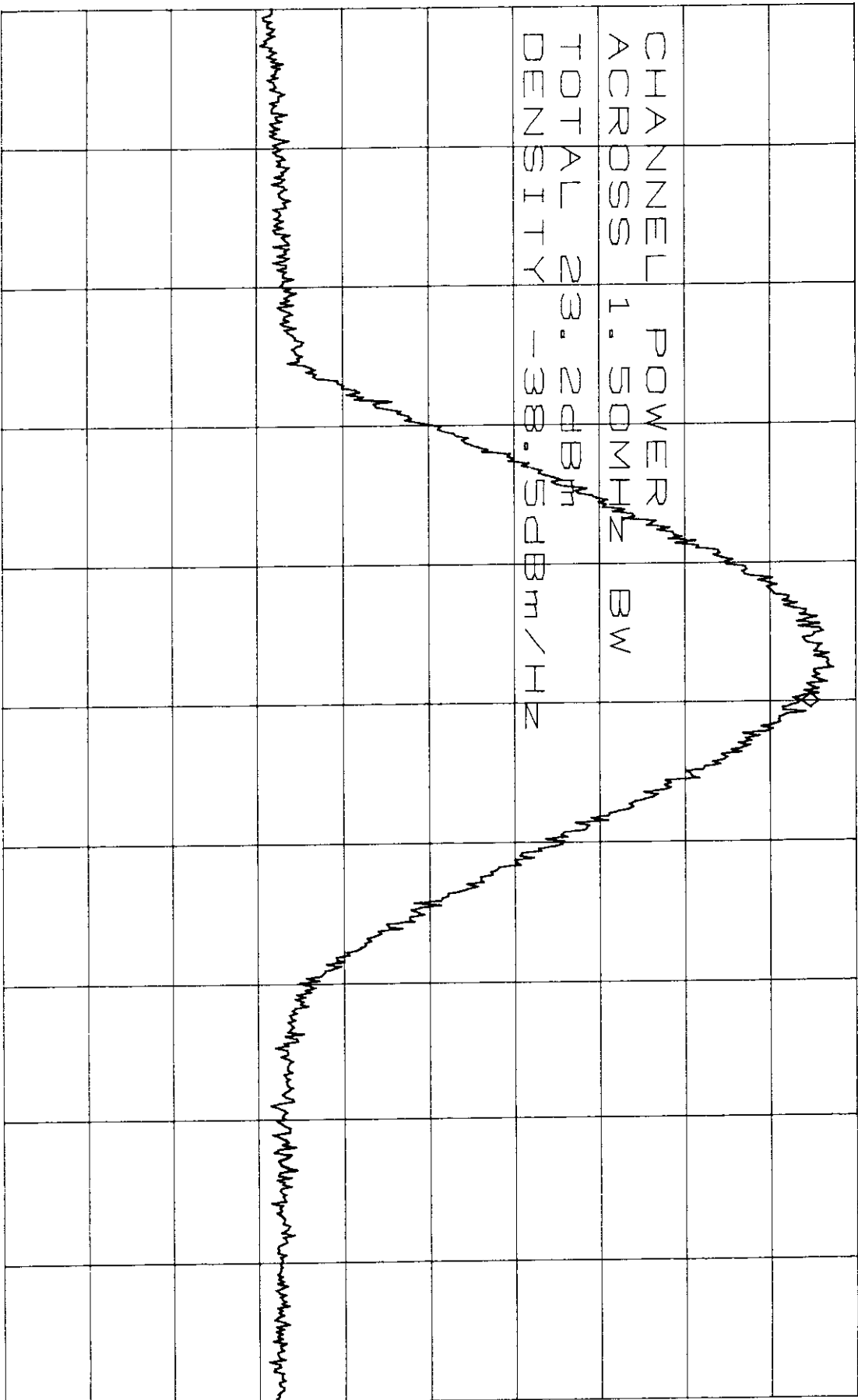
RL 30.0dBm

10dB/

1.86700GHz

24.235

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 23.2dBm
DENSITY -38.5dBm/Hz



R

D

CENTER 1.86700GHz

SPAN 20.00MHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 50.0ms

COR 0-band

U_L

Above

5/27/97

S/N 0141

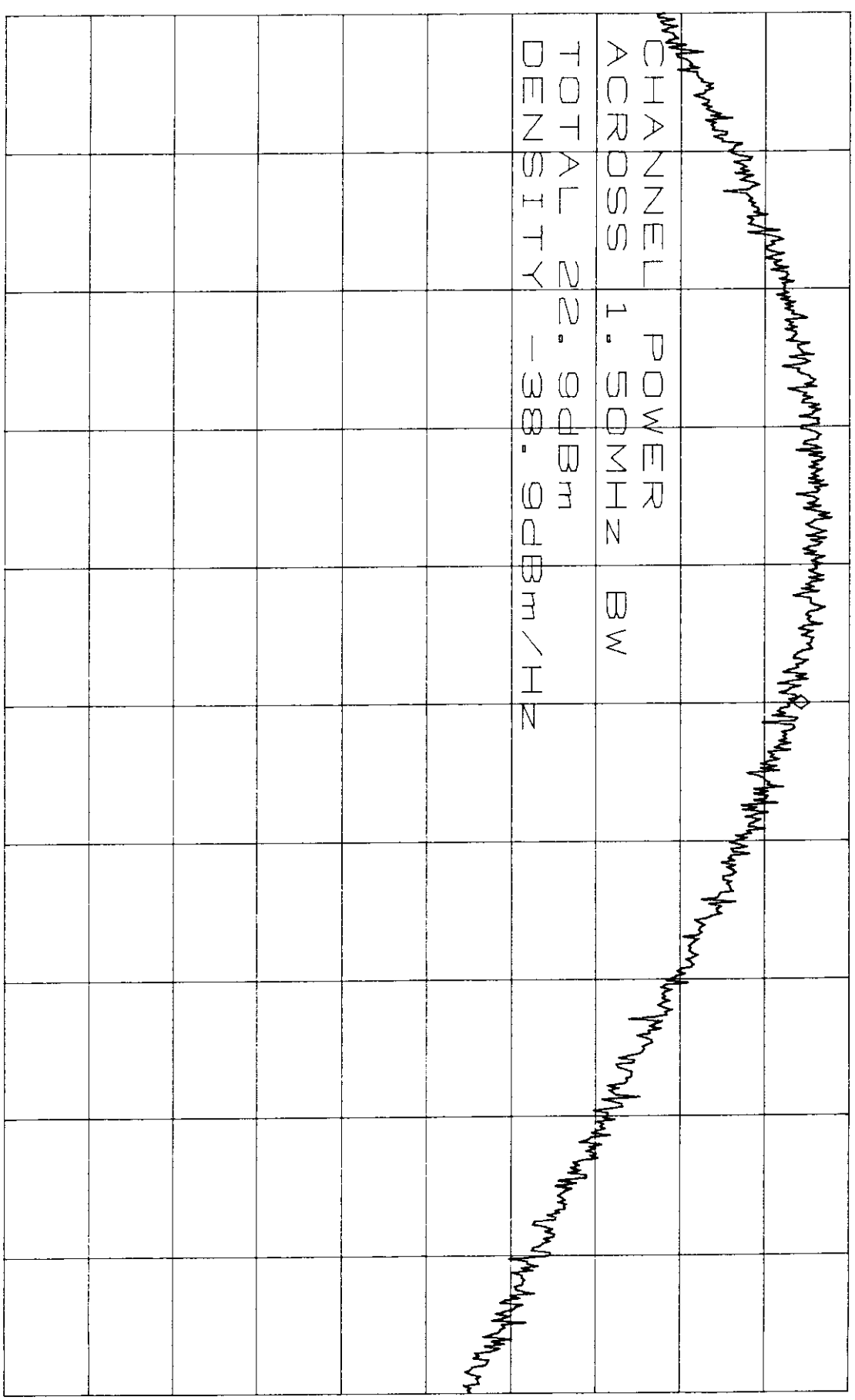
Ch. 3.35 (low channel)

Fundamental

CPMA Signal

*ATTEN 10dB VAVG 10 MKR 23.33dBm
RL 30.0dBm 10dB/ 1.867000GHz

24.2356



CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 22.9dBm
DENSITY -38.9dBm/Hz

R

CENTER 1.867000GHz SPAN 5.000MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

COR D-band

S/N 0141

UL

Ch. 375 (high channel)

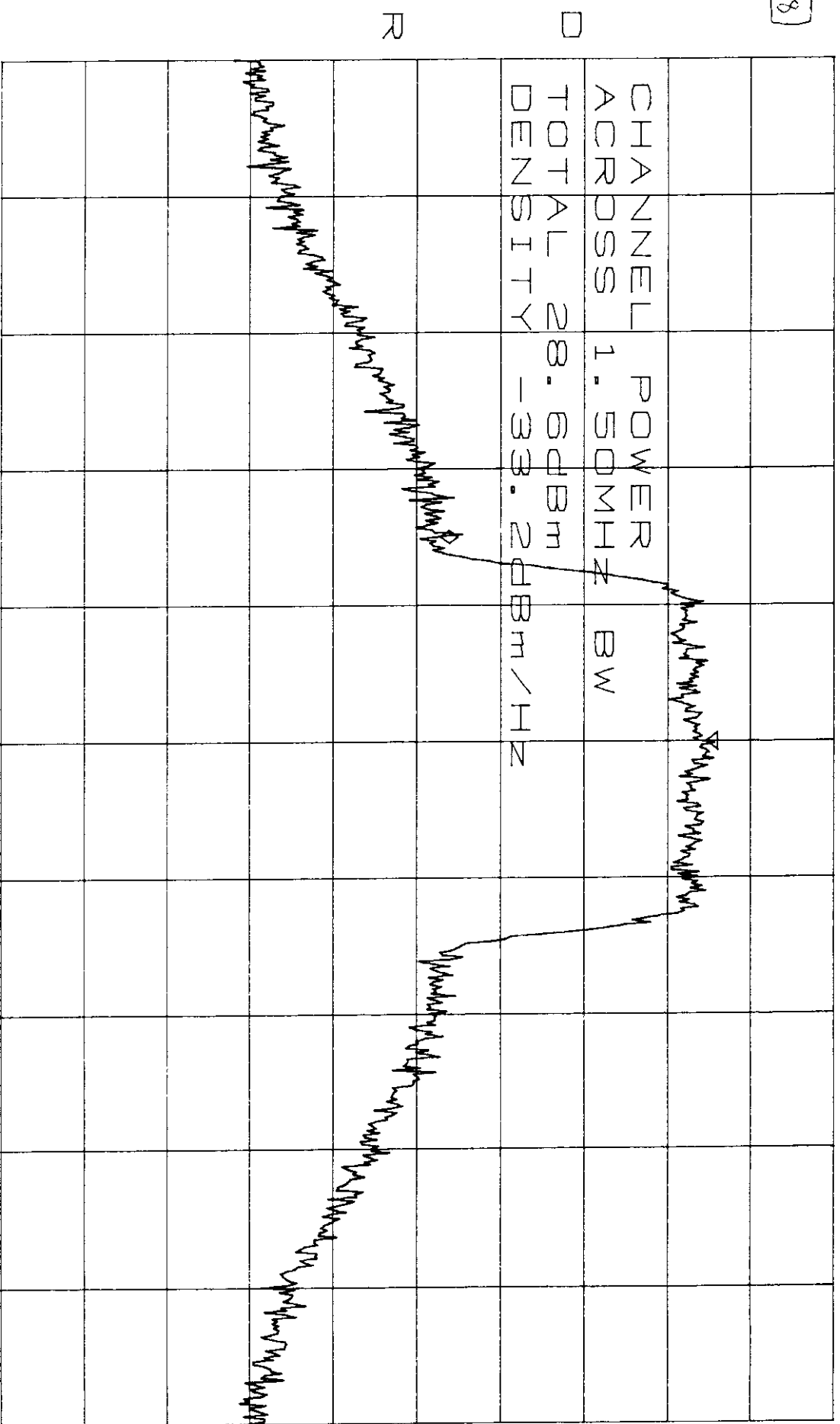
Fundamental

5/27/97

CDMA Signal

*ATTEN 10dB VAVG 10 ΔMKR -31.84dB
RL 30.0dBm 10dB/-750kHz

24.238



CENTER 1.868750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

COR D-band

UL

Below

5/27/97

S/N 0141

Ch 375 (high channel)

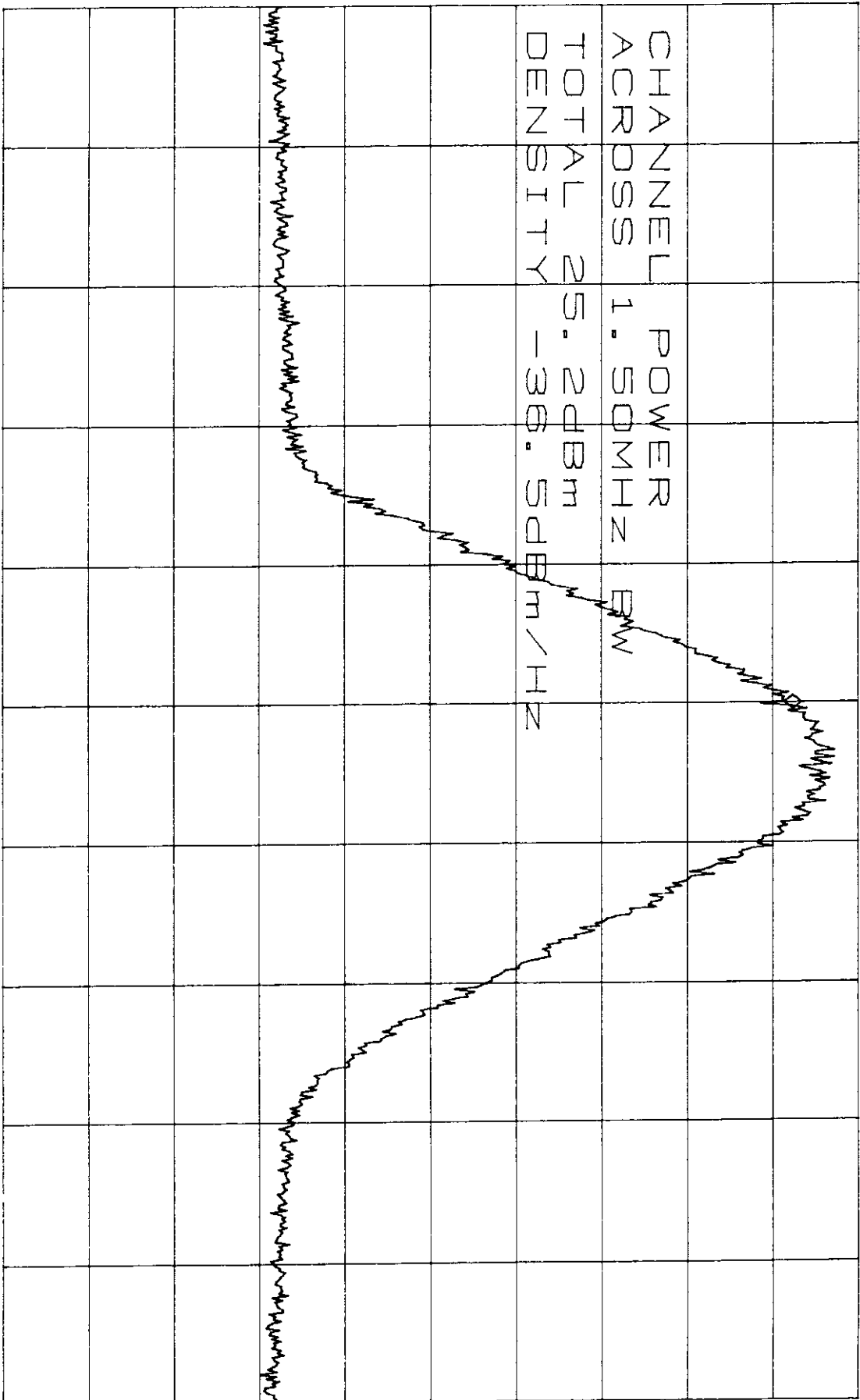
Fundamental

CMAA Signal

*ATTEN 10dB VAVG 10 MKR 21.33dBm
RL 30.0dBm 10dB/ 1.86800GHz

24.238

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 25.2dBm
DENSITY -36.5dBm/Hz



R

D

CENTER 1.86800GHz

SPAN 20.00MHz

*RBW 1.0MHz

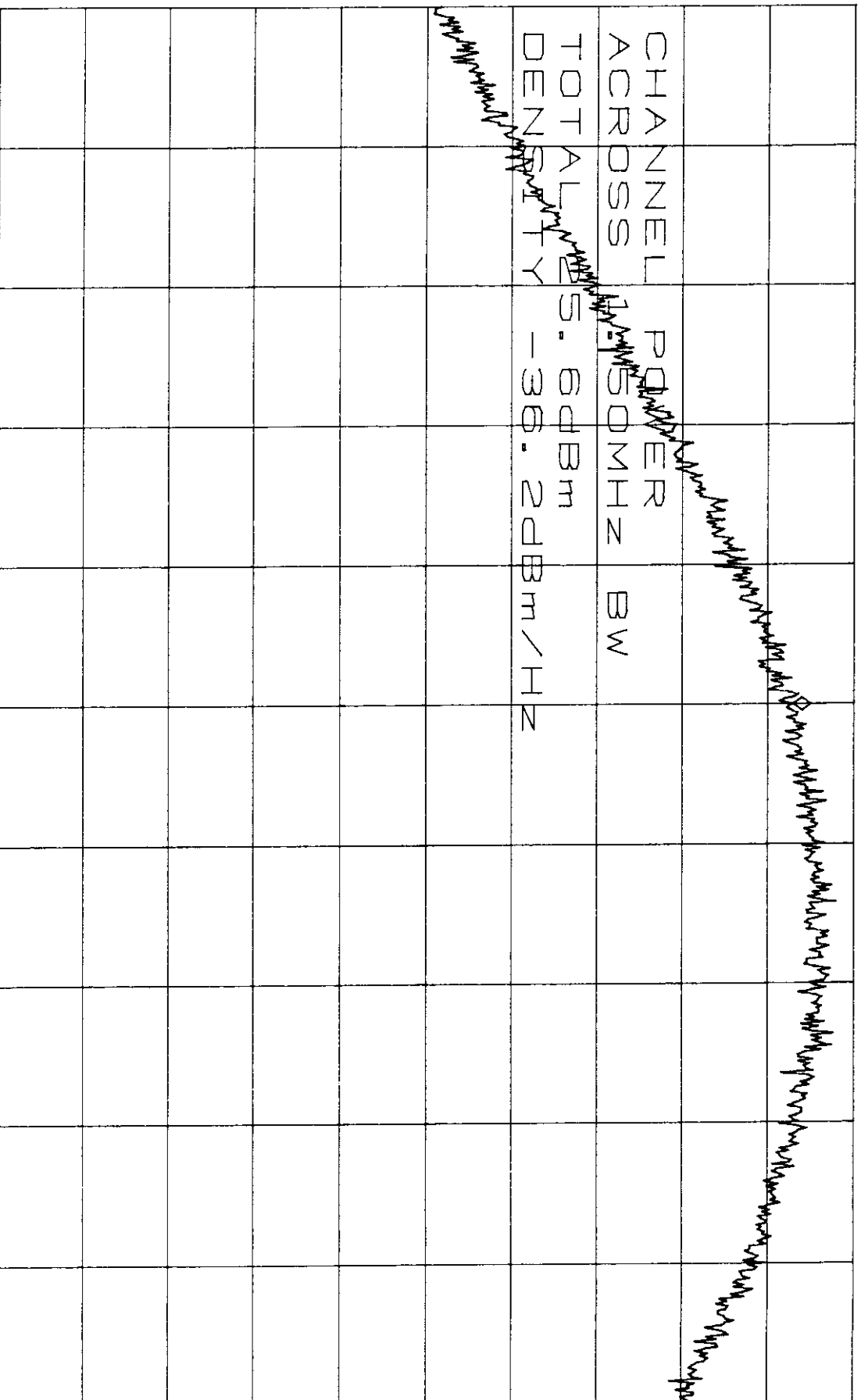
*VBW 1.0MHz

SWP 50.0ms

5/27/97

CDMA Signal

۲۱۳۰



CENTER 1. 868000GHZ SPAN 5. 0000MHZ
*RBW 1. 0MHZ *VBW 1. 0MHZ SWP 50. 0MS

CPR D-band

S/N 0141

UL

Ch. 375 (high channel)

Above

Fundamental

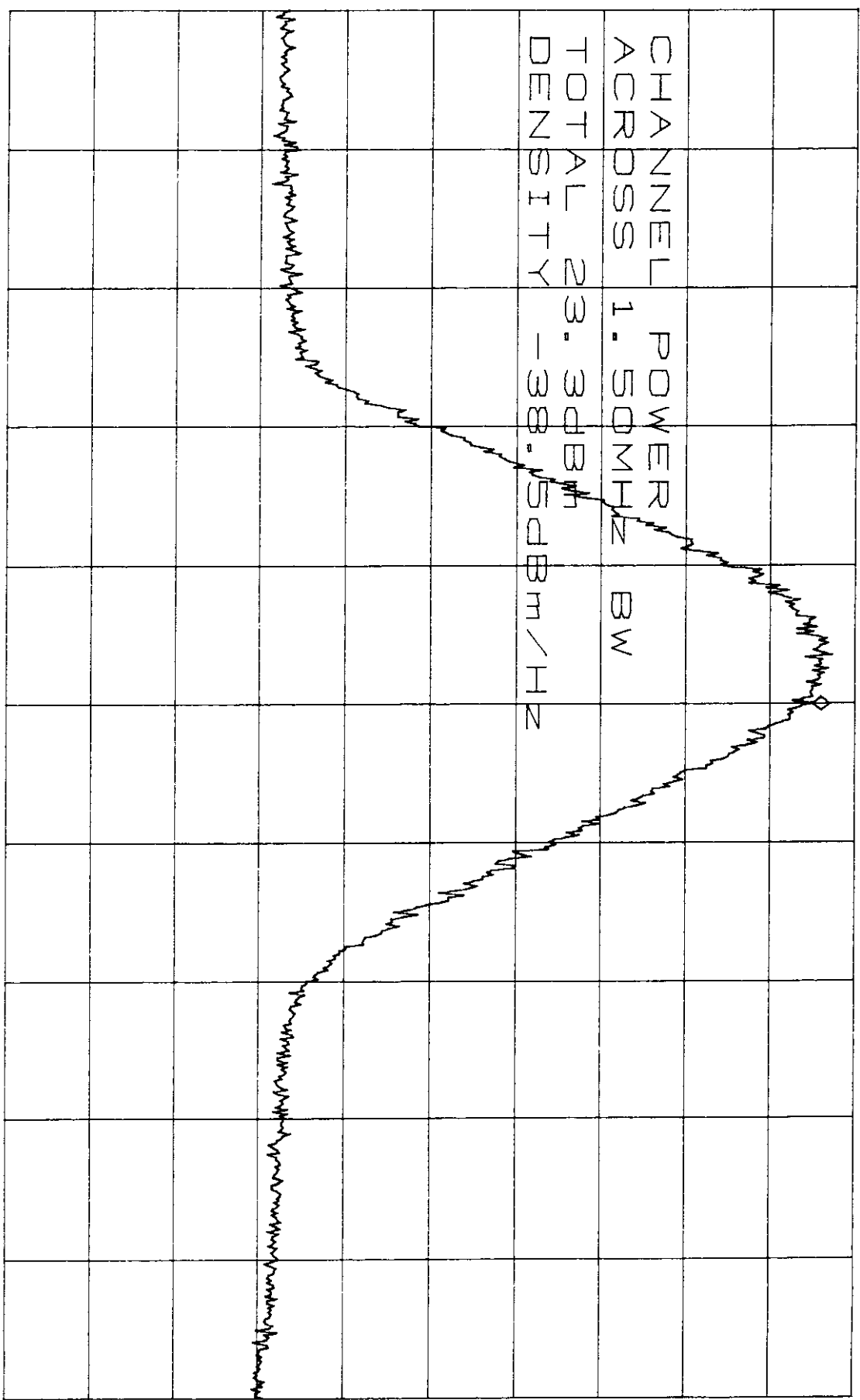
5/27/97

CIT49 Signal

*ATTEN 10dB VAVG 10 MKR 25.00dBm
RL 30.00dBm 10dB/ 1.86950GHz

24.338

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 23.3dBm
DENSITY -38.15dBm/Hz



R

D

CENTER 1.86950GHz SPAN 20.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

57

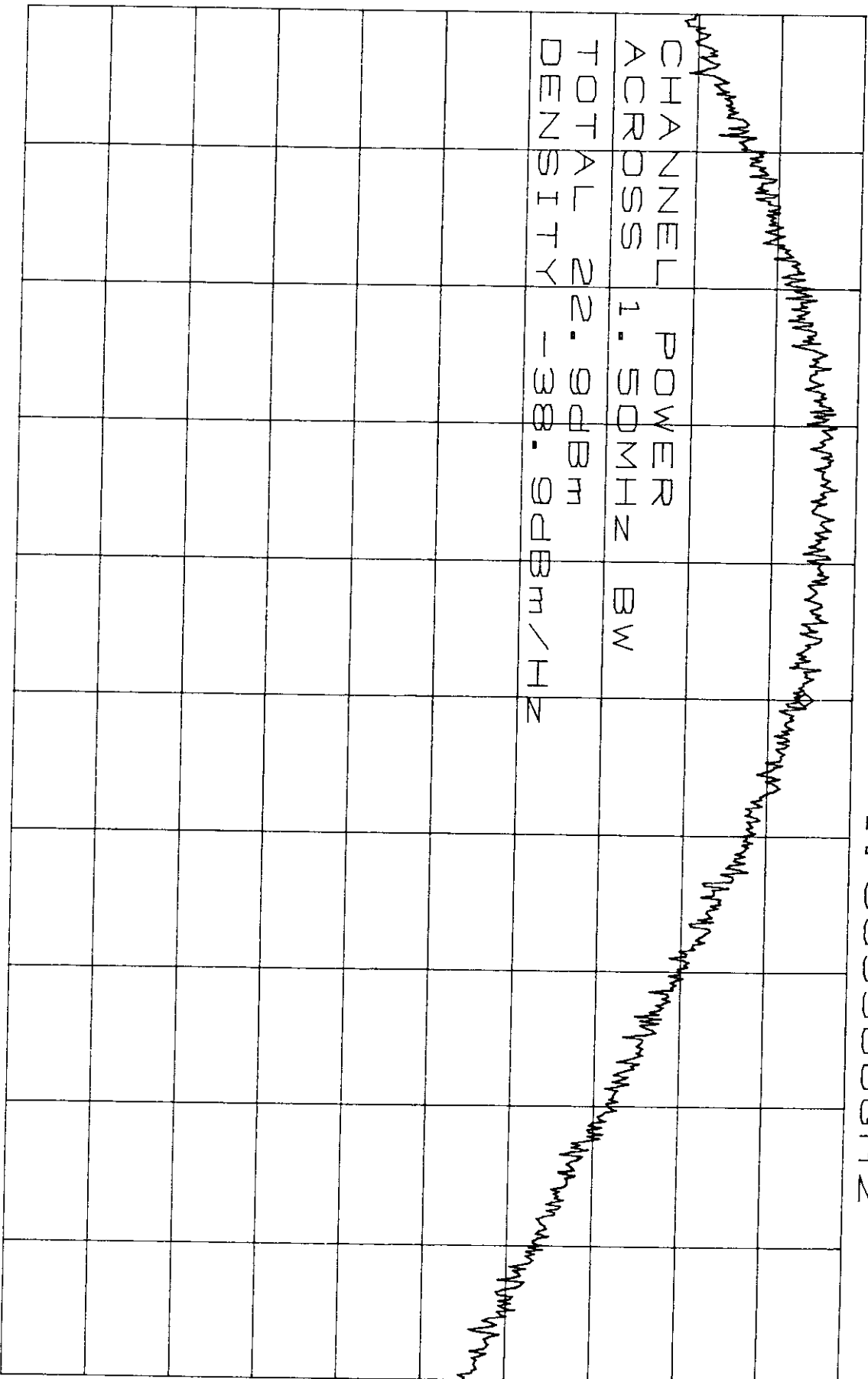
Ch. 375 (high channel)

Abuse
Fundamental

5/27/97
COMA Sigsbee

*ATTEN	100B	VAVG	10	NKR	23.	33	TH	BE
R	30.00B	100B	/	1.00	00	00	00	IN

24-238



२



* R W Z T E R . O N I N * > B W . O M I N S P A Z U . O O Z I N



FACSIMILE
TRANSMISSION

DATE: 6/26/97

TO: Mary Washington

FROM: Martin Kies

SUBJECT: Additional Plots for FCC Packet (LB41901C/DMA D-band)

Number of pages, including cover sheet 6. If you do not receive all of this transmission, please call 818-281-3636 and ask for the sender.

CONFIDENTIALITY NOTE: The documents accompanying this telecopy transmission contain information from Ortel Corporation which is confidential and/or legally privileged. The information is intended for the use of the individual or entity named as the recipient on the transmission sheet. If you are not the intended recipient, you are hereby notified that you have received this information in error and any review, disclosure, copying, use, distribution or the taking of any action in reliance on the contents of this telecopied information is strictly prohibited, and that the documents should be returned to Ortel Corporation immediately. In this regard, if you have received this telecopy in error, please notify us by telephone immediately so that we can arrange for the return of the original documents to us at no cost to you.

Mary:

For your records.

Thanks!

Martin

2015 W. CHESTNUT ST. ALHAMBRA, CALIFORNIA, U.S.A. 91803-1542
TEL: 818-281-3636 FAX: 818-281-8231



FACSIMILE
TRANSMISSION

DATE: 6/26/97

TO: Tim Maguire

FROM: Martin Kies

SUBJECT: D-band CDMA: additional input plots with 20 dB gain

Number of pages, including cover sheet 5. If you do not receive all of this transmission, please call 818-281-3636 and ask for the sender.

CONFIDENTIALITY NOTE: The documents accompanying this telecopy transmission contain information from OrtTel Corporation which is confidential and/or legally privileged. The information is intended for the use of the individual or entity named as the recipient on the transmission sheet. If you are not the intended recipient, you are hereby notified that you have received this information in error and any review, disclosure, copying, use, distribution or the taking of any action in reliance on the contents of this telecopied information is strictly prohibited, and that the documents should be returned to OrtTel Corporation immediately. In this regard, if you have received this telecopy in error, please notify us by telephone immediately so that we can arrange for the return of the original documents to us at no cost to you.

Tim:

Here is the additional input signal plots for the LB41901CDMA D-band packet.

As we talked yesterday, this should complete the D-band CDMA data. If this does fulfill all of the requirements, please let me know (my phone # is 818-293-3640 or e-mail is "mkies@ortel.com").

Thank you!

Martin

S/N 0141

Ch. 325 (low channel)

Input

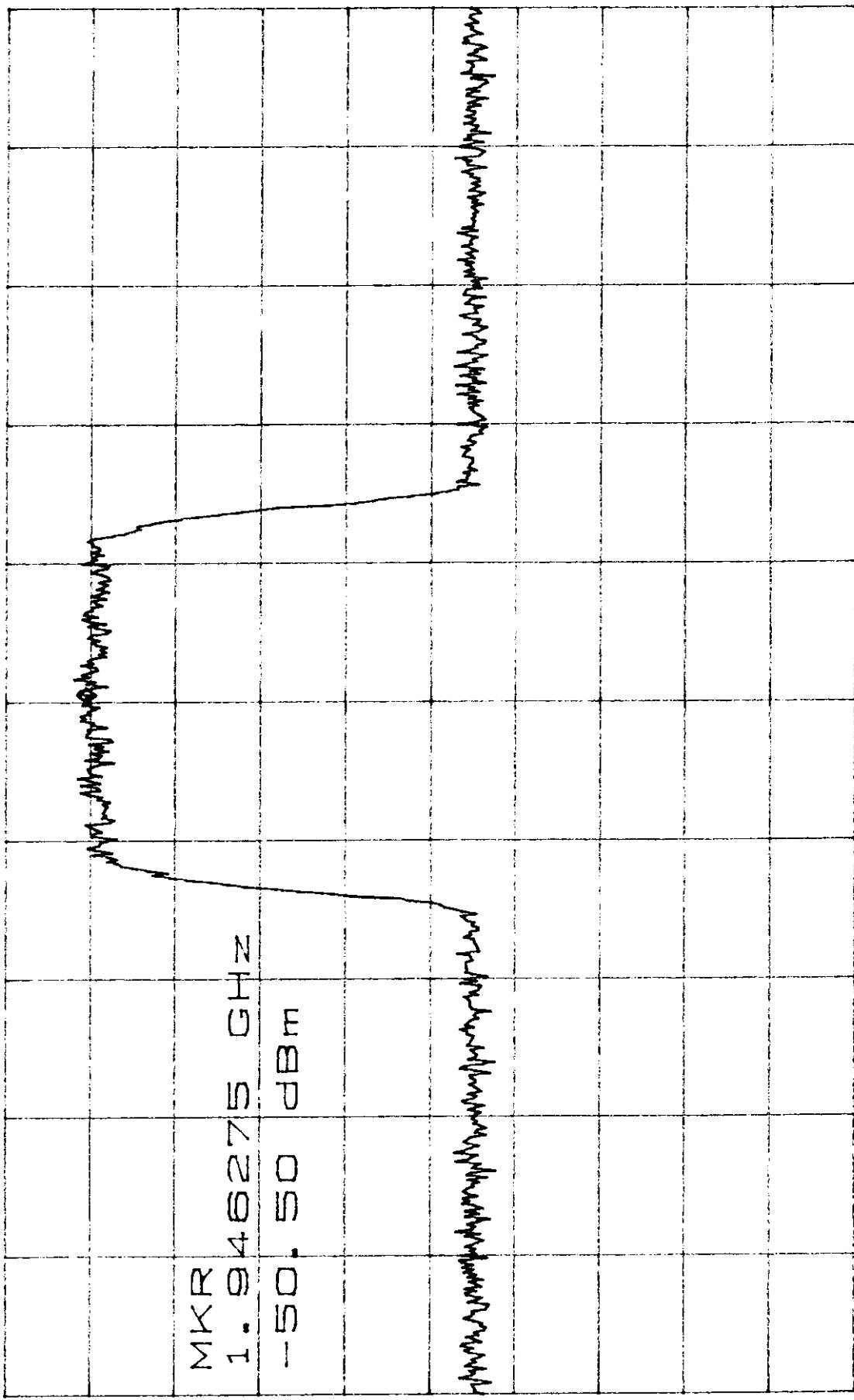
9/26/97

(to get maximum output)
~ +20dB ext gain (Mini-Circuits ZFL-2000)
CDMA Signal

ATTEN 10dB VAVG 10 MKR -50.50dBm
RL -40.00dBm 10dB/ 1.946275GHZ

In/out

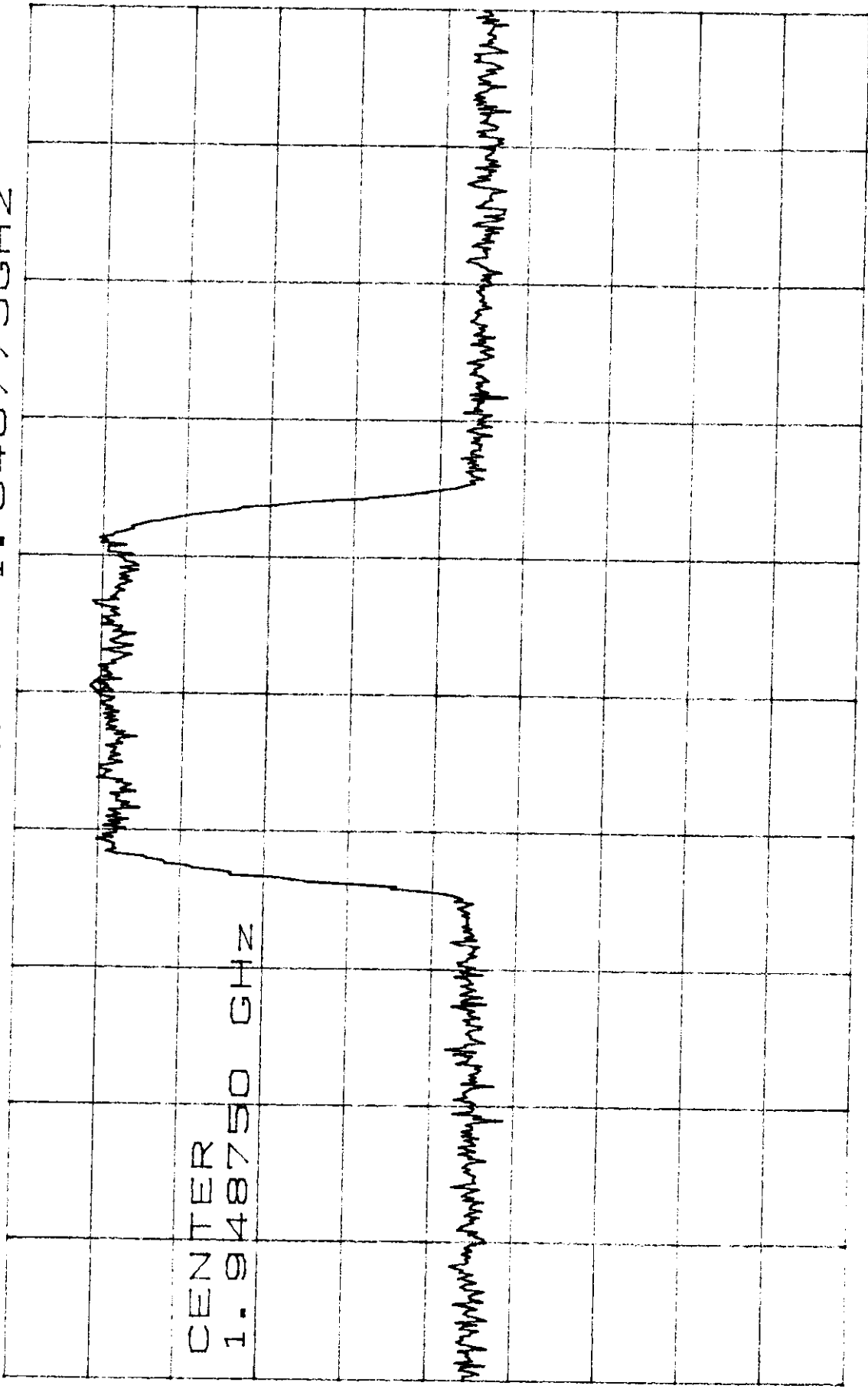
MKR
1.946275 GHZ
-50.50 dBm



CENTER 1.946250GHZ SPAN 5.000MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms

S/N 0141 Ch. 375 (high channel) Input (to get maximum output) 6/26/91
 ~ +20dB ext gain (Mini-Circuits ZFL-2000) CDMA Signal

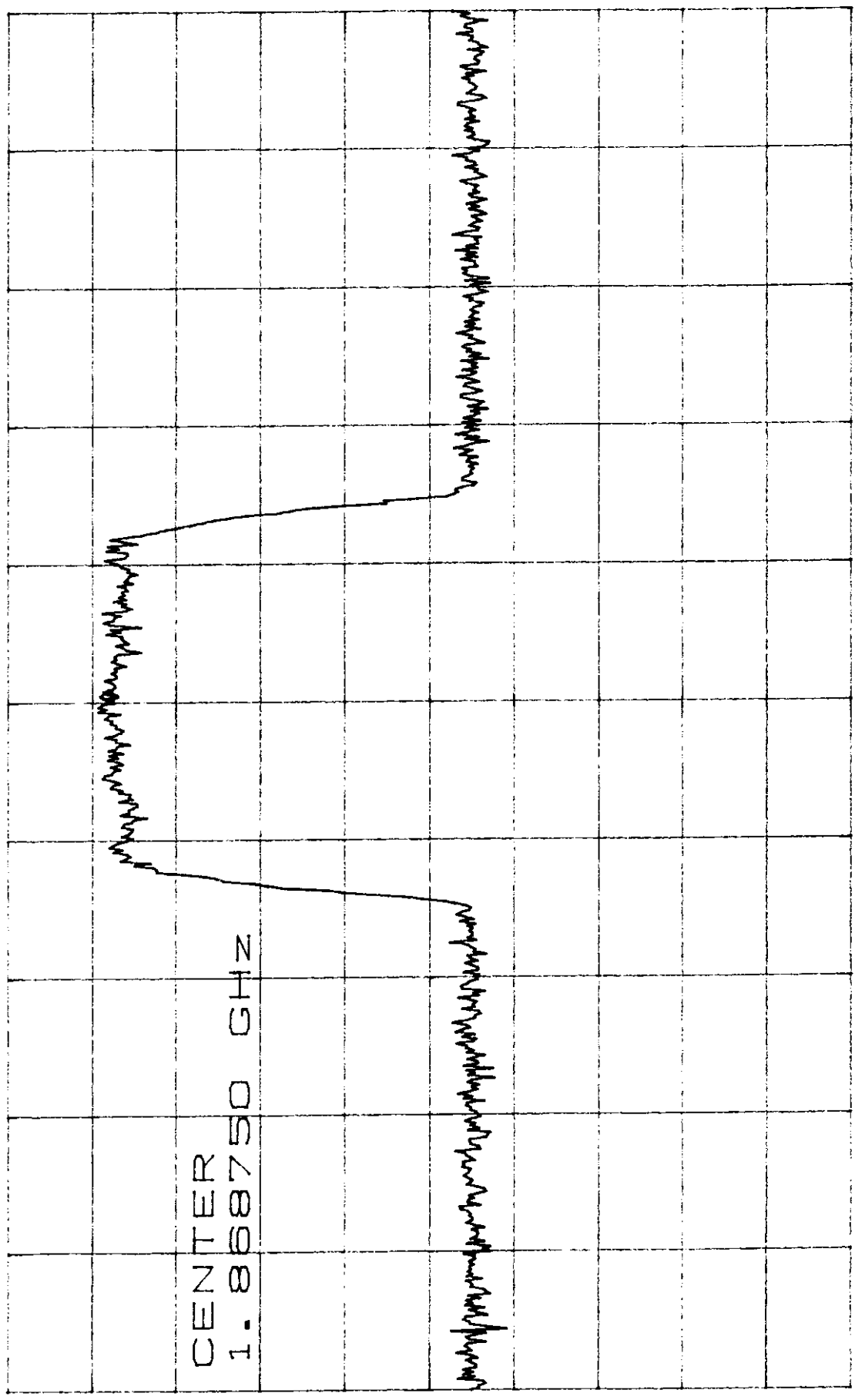
ATTN 10dB VAVG 10 MKR -50.83dBm
 RL -40.0dBm 10dB/ 1.948775GHz



CENTER 1.948750GHz SPAN 5.000MHz
 *RBW 30kHz *VBW 30kHz SWP 50.0ms

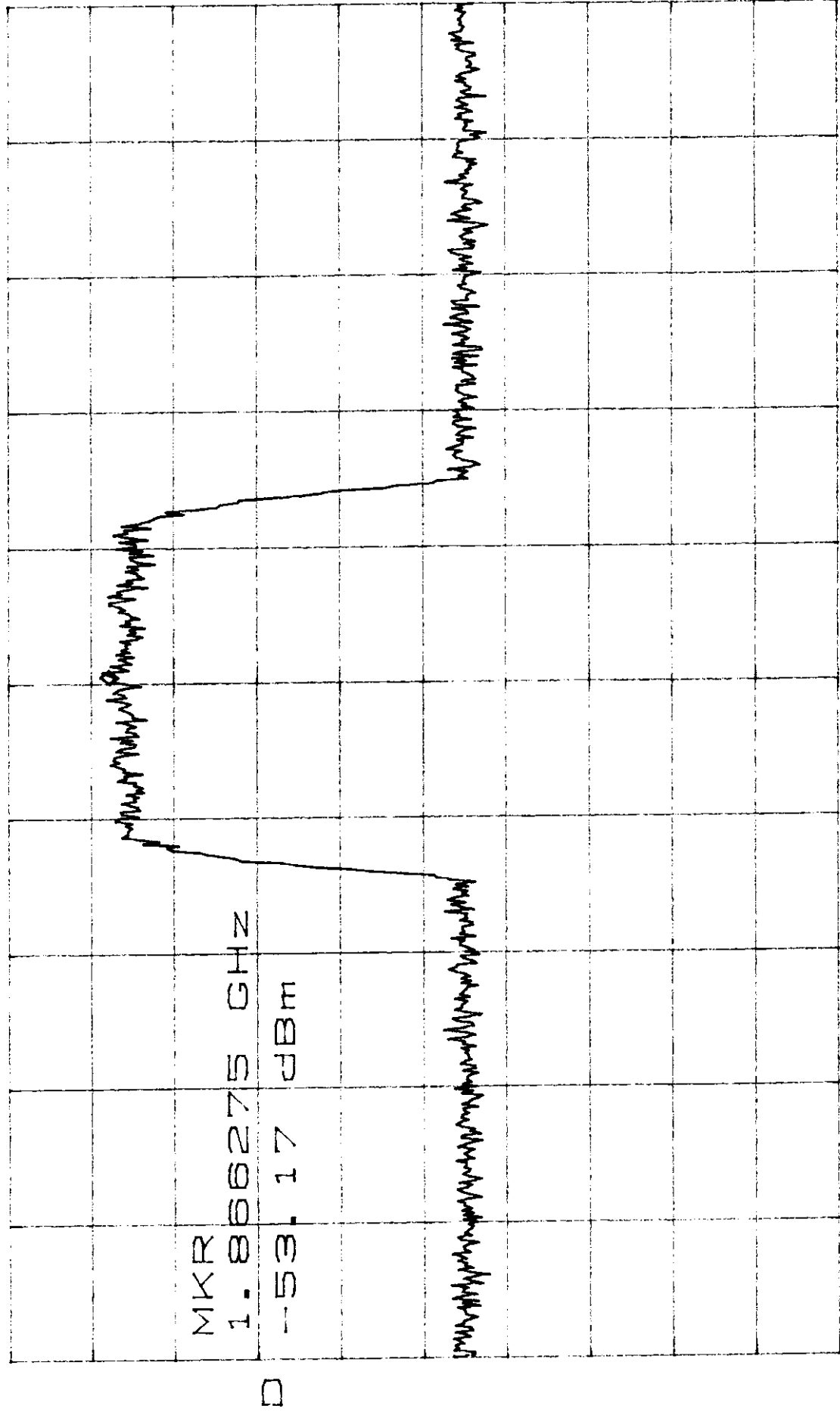
CDMA D-band S/N 0141 Ch.375 (high channel) (to get maximum output) CDMA Signal

ATTEN 10dB VAVG 10 MKR -53.00dBm
RL -40.00dBm 10dB/ 1.868775GHZ



CENTER 1.868750GHZ SPAN 5.000MHZ
*RBW 30kHz *VBW 30kHz SWP 50.0ms

Ch. 325 (low channel) (to get maximum output) CDMA Signal
 S/N 0141 ~ +20dB ext gain (Mini-Circuits ZFL-2000)
 ATTN 10dB VAVG 10 MKR -53.17dBm
 RL -40.0dBm 10dB/ 1.866275GHz



CENTER 1.866250GHz SPAN 5.000MHz
 *RBW 30kHz *VBW 30kHz SWP 50.0ms

COR-D-band
S/N 0141

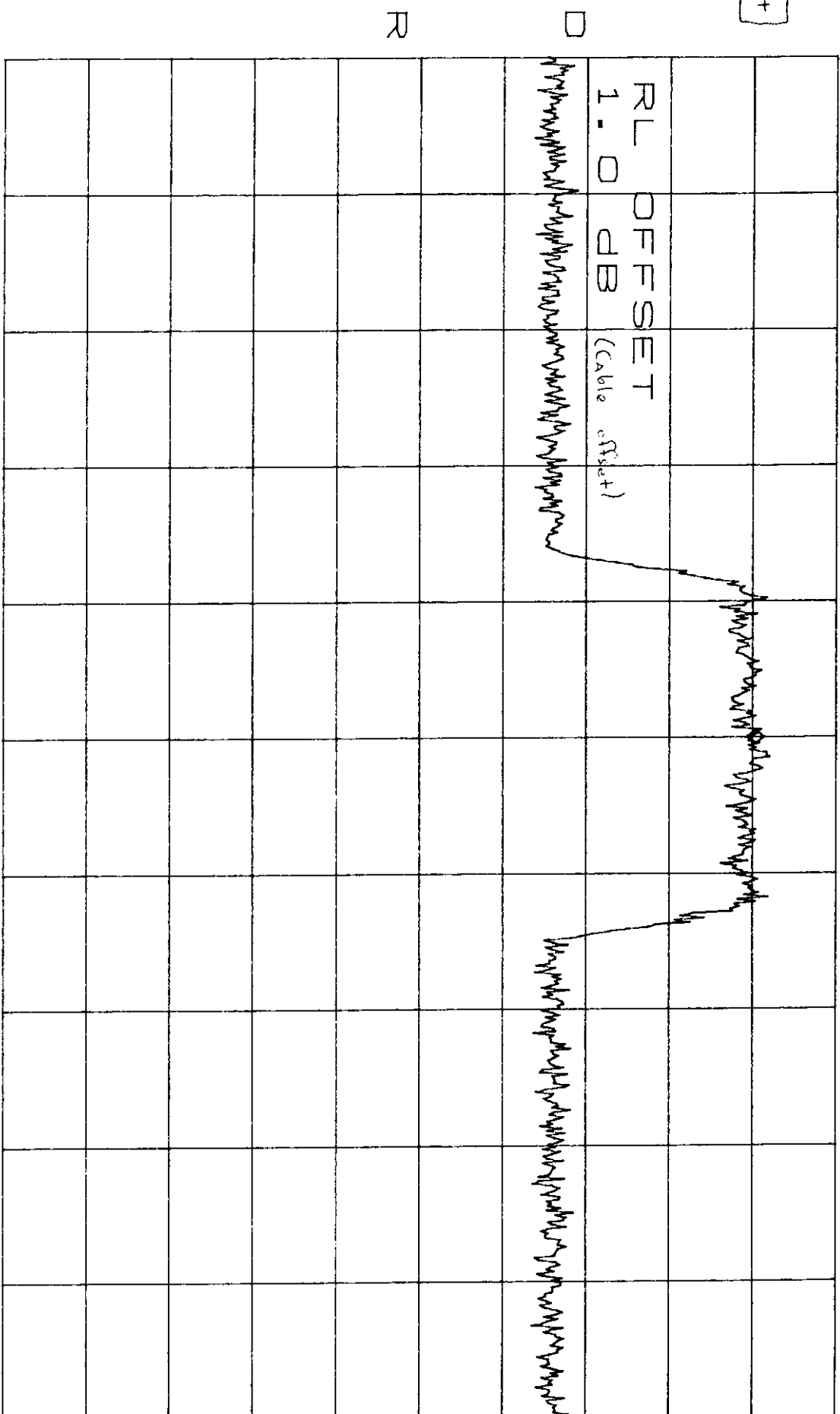
PL
Ch. 3A5 (low channel)

Input
(to get maximum output)

5/28/97
COMA Signal

*ATTEN 10dB VAVG 10 MKR -70.67dBm
RL -60.00dBm 10dB/ 1.946250GHz

In/out

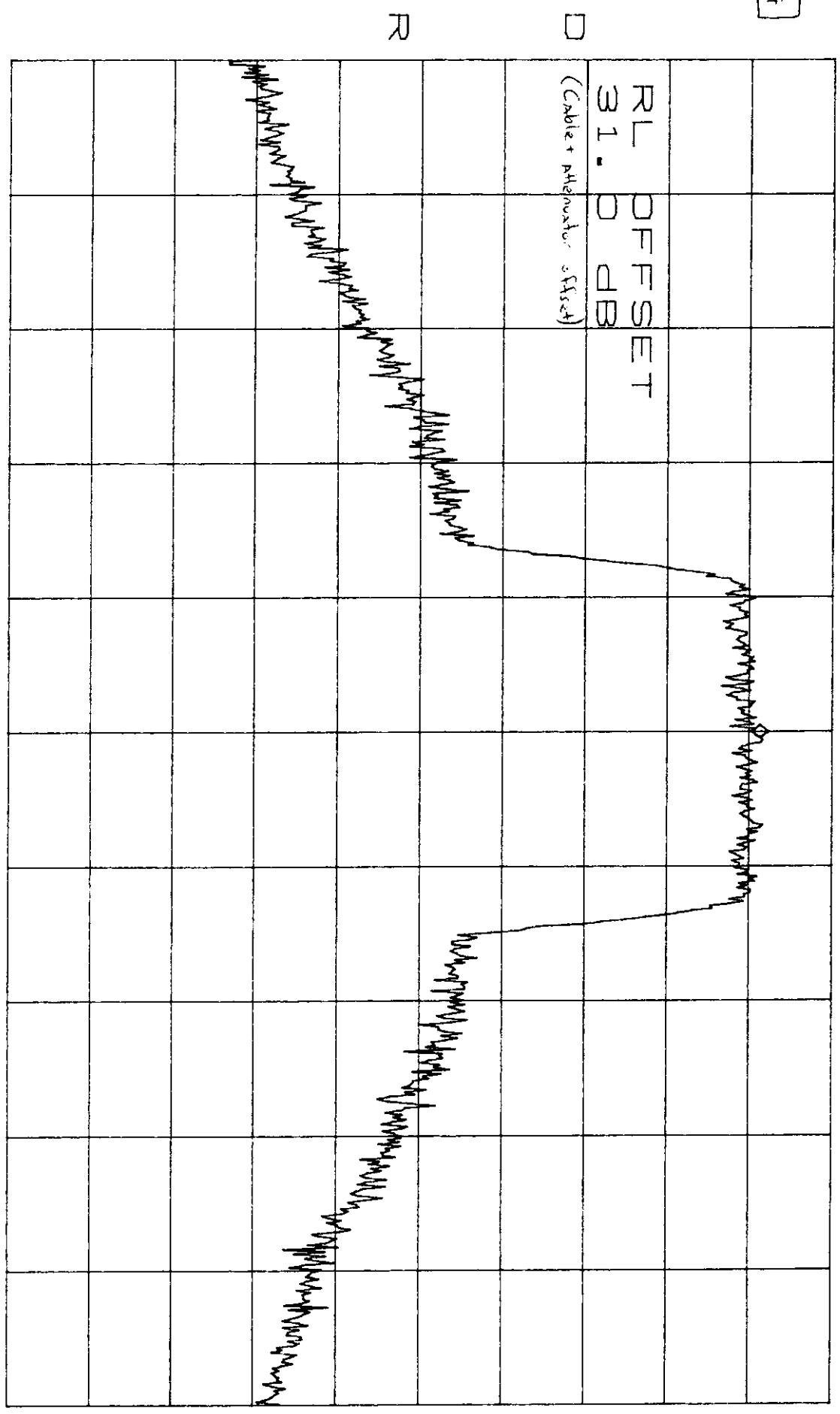


CENTER 1.946250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band
S/N 0141
DL
Ch. 325 (low channel)
Output
5/28/97
CDMA Signal

*ATTEN 10dB VAVG 10 MKR 15.33dBm
RL 25.0dBm 10dB/ 1.946250GHz

In/out



CENTER 1.946250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

COR D-band

S/N 0141

DL

Ch. 375 (high channel)

Input

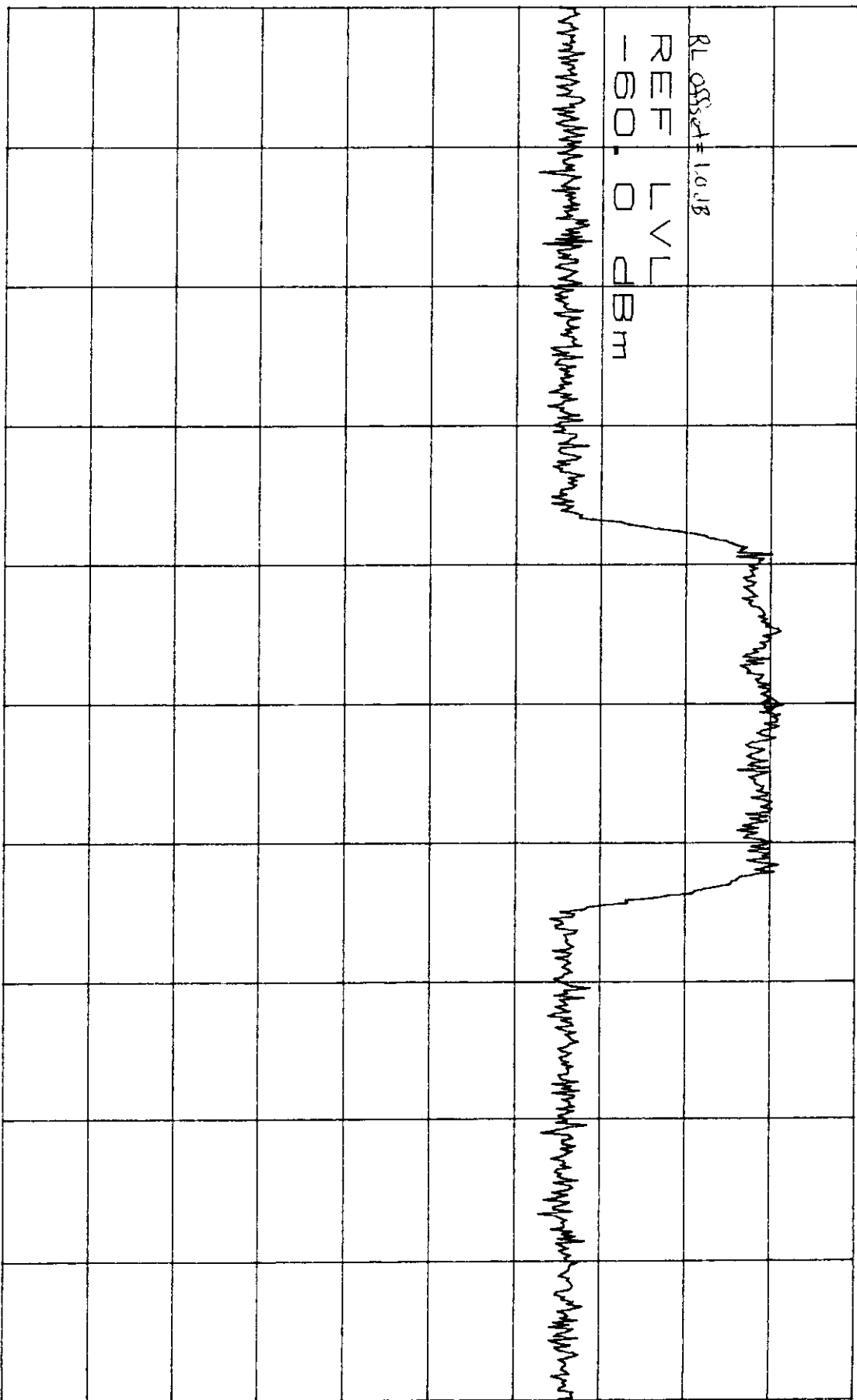
(to get max output)

5/28/97

CDMA Signal

*ATTEN 10dB VAVG 10 MKR -71.00dBm
RL -60.00dBm 10dB/ 1.948750GHz

In/out



R

D

CENTER 1.948750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band

OL

S/N 6141

Ch. 375 (high channel)

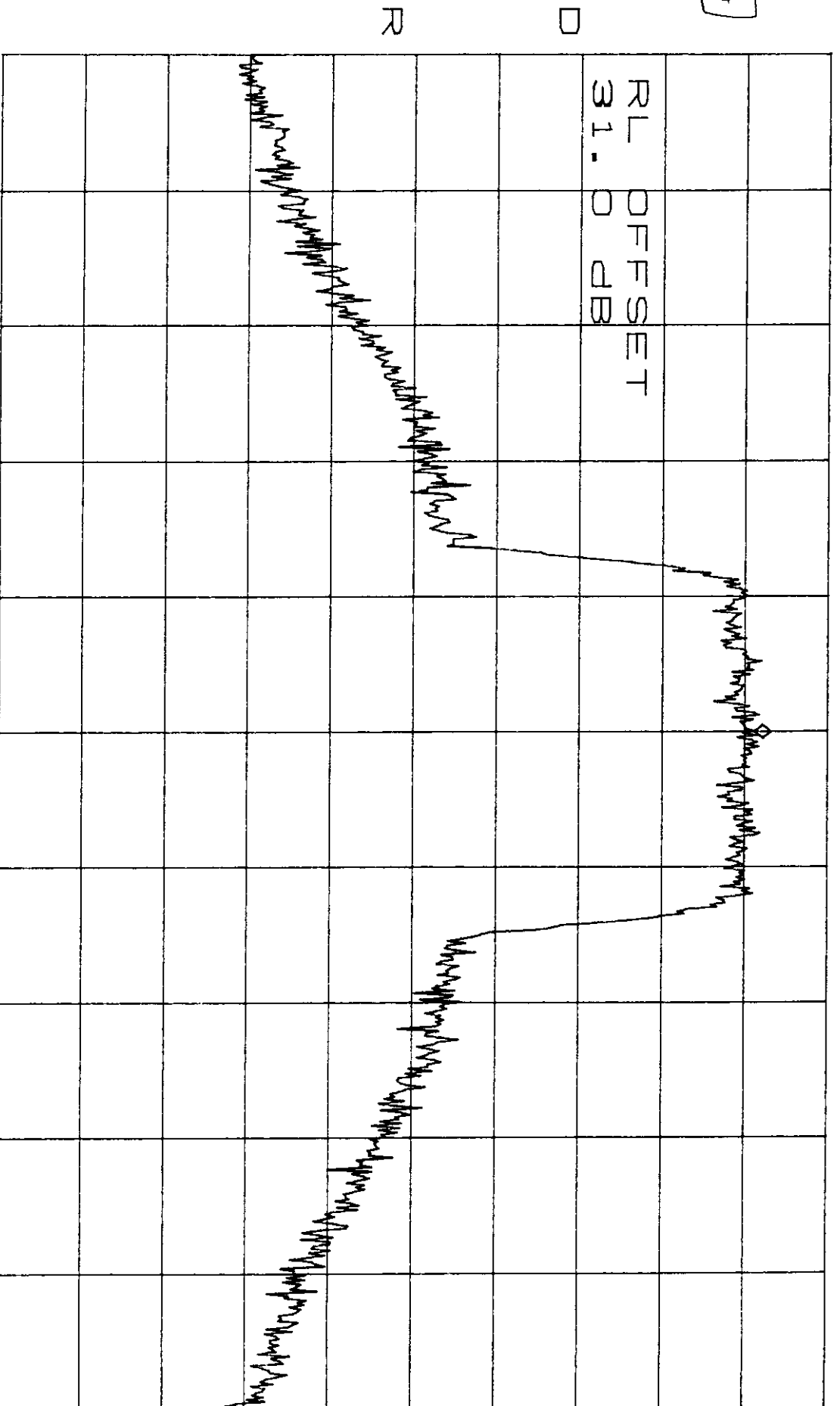
Output

5/28/97

CDMA Signal

*ATTEN 10dB VAVG 10 MKR 16.17dBm
RL 25.0dBm 10dB/ 1.948750GHz

In/out



CENTER 1.948750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band

S/N 0141

UL

Ch.375 (high channel)

Input

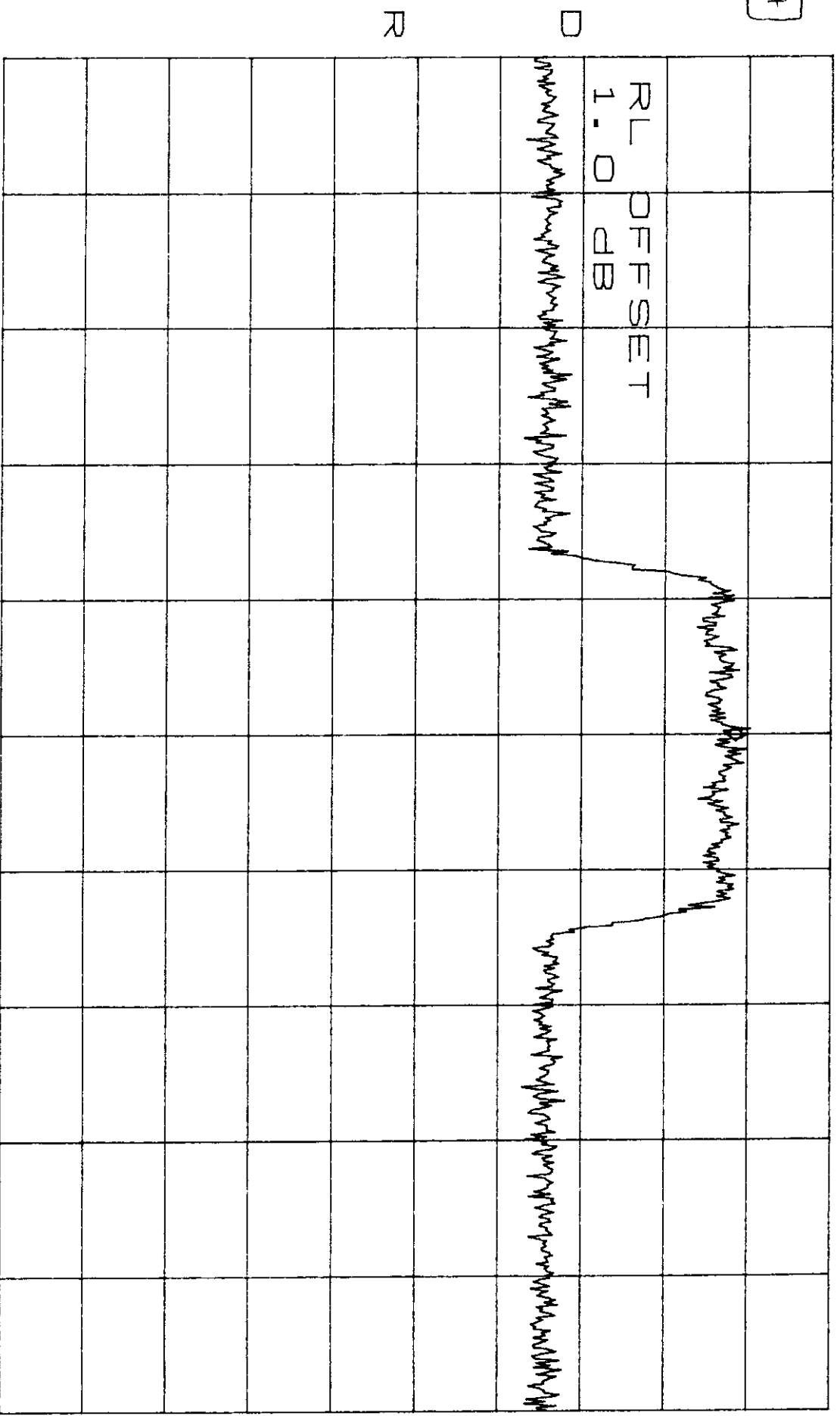
(to get max output)

5/28/97

CDMA Signal

*ATTEN 10dB VAVG 10 MKR -72.50dBm
RL -60.00dBm 10dB/ 1.868750GHz

In/out



R

D

CENTER 1.868750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band
S/N 0141

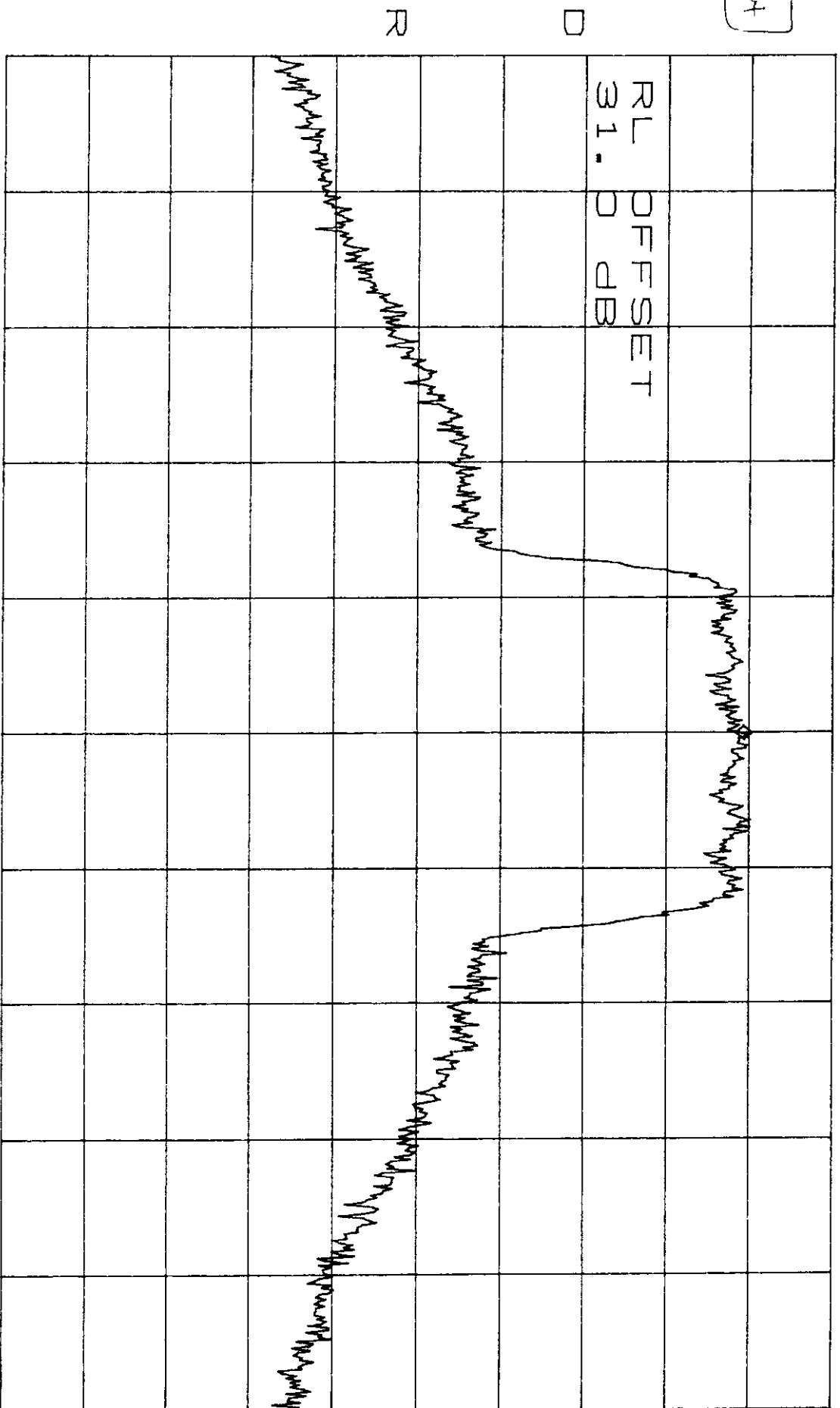
VL
Ch.375 (high channel)

Output

5/28/97
CDMA Signal

*ATTEN 10dB VAVG 10 MKR 13.33dBm
RL 25.0dBm 10dB/ 1.868750GHz

In/out



D
R

CENTER 1.868750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band

UL

Input

5/28/97

S/N 0141

Ch.325 (low channel)

(to get max output)

CDMA Signal

*ATTEN 10dB VAVG 10 MKR -73.17dBm
RL -60.00dBm 10dB/ 1.866250GHz

In/Out

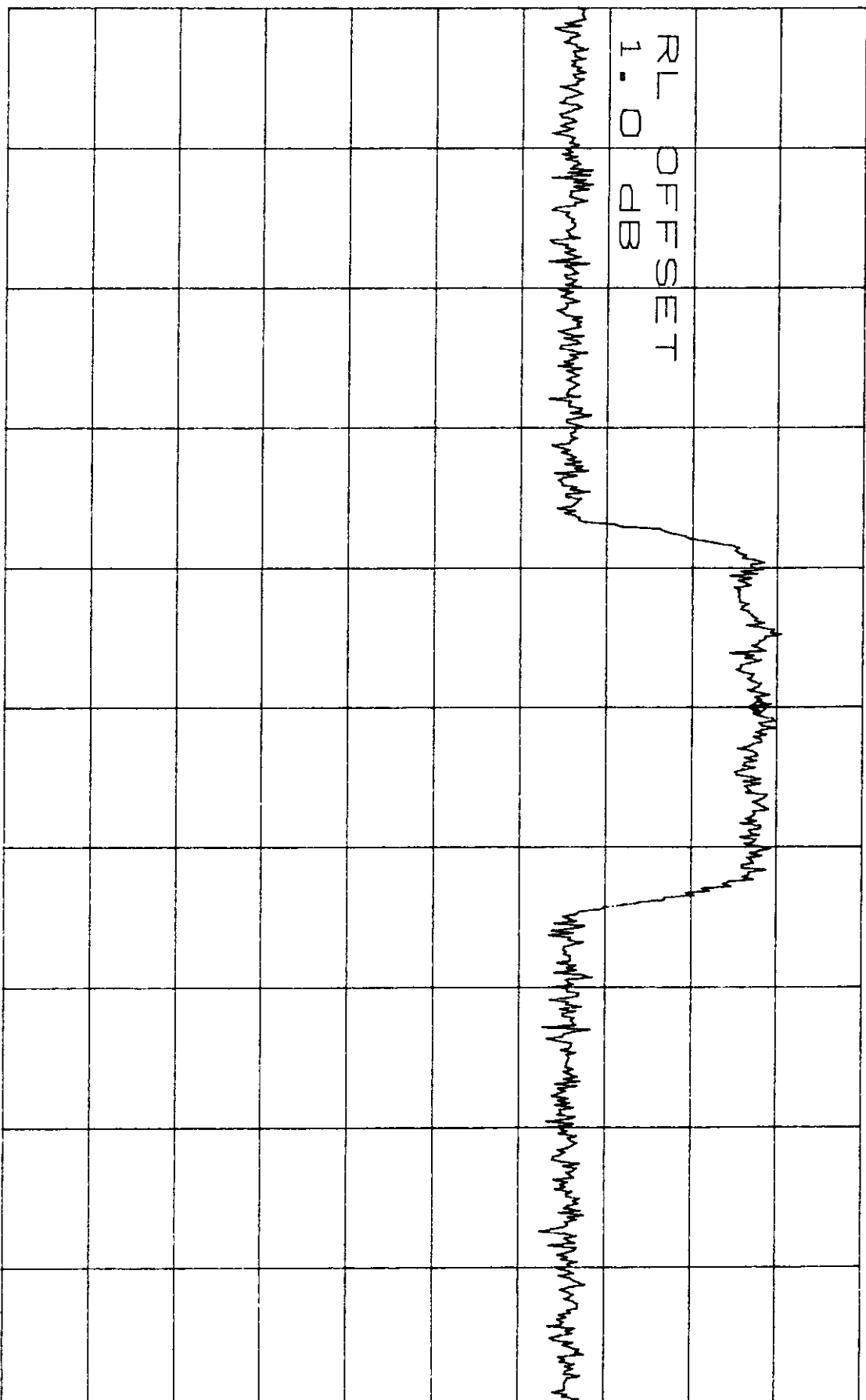
D

RL OFFSET
1.0 dB

Waveform plot showing signal level across the frequency span.

Waveform plot showing signal level across the frequency span.

R



CENTER 1.866250GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

CDR D-band
S/N 0141

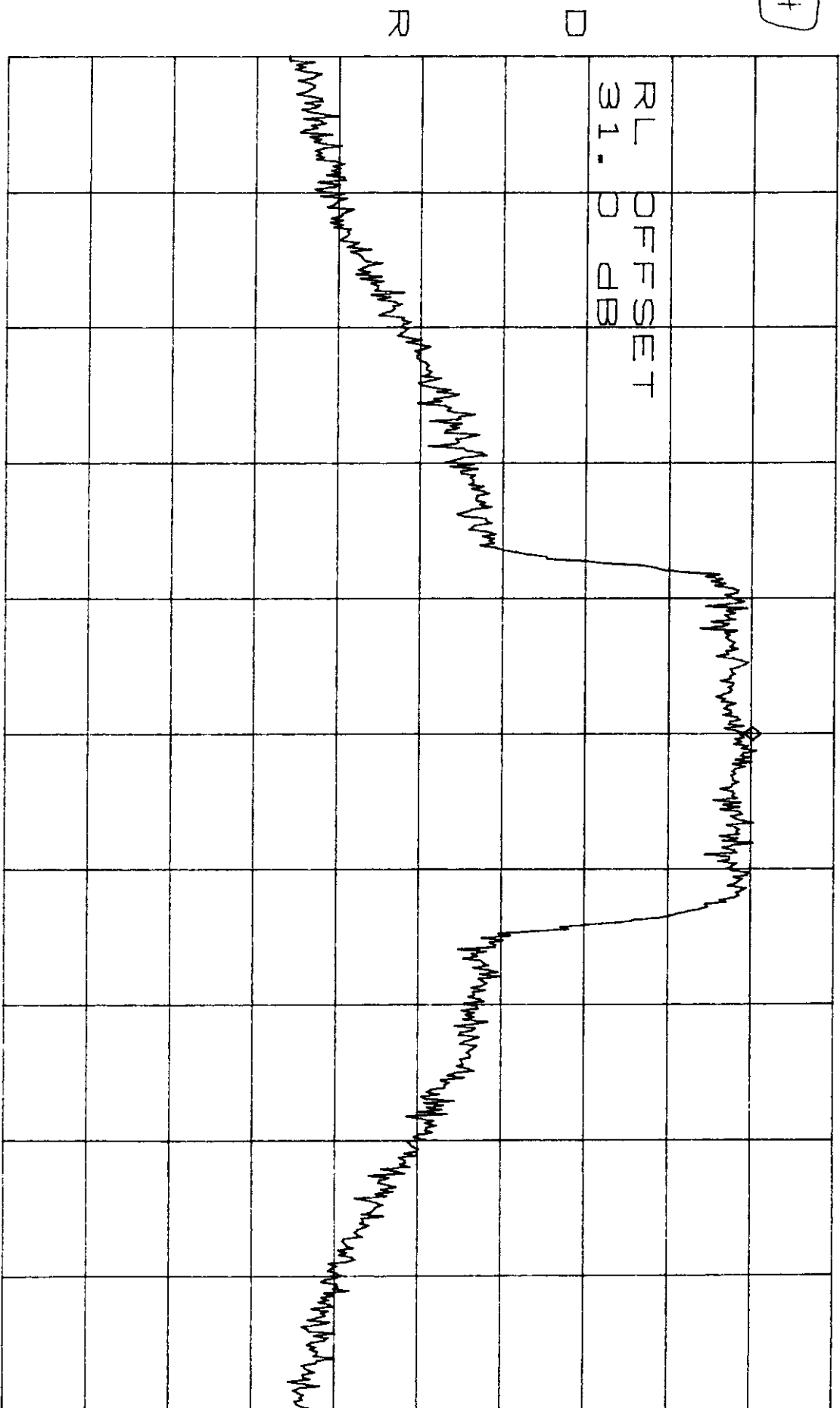
UL
ch.3a5 (low channel)

Output

5/28/97
CDMA Signal

*ATTEN 10dB VAVG 10 MKR 14.17dBm
RL 25.0dBm 10dB/ 1.866250GHz

In/out



CENTER 1.866250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

78

5/28/97

Set to Cr. 325

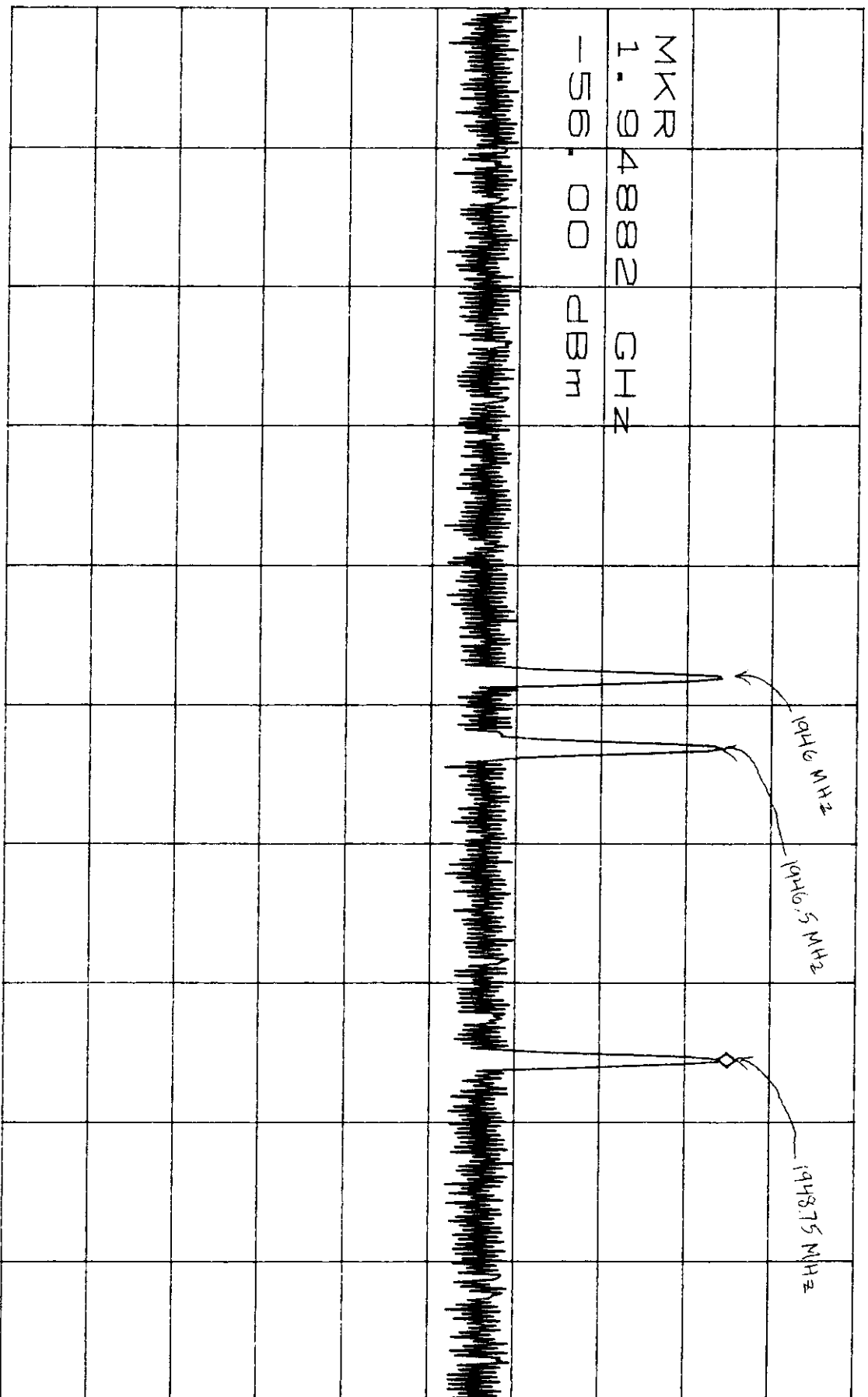
CW Signal

Σ
Σ
π
1
Π
Π
.
□
□
□
Π
Π
Ξ

10/11/20

T
.
6
4
00
00
N
G
I
N

3-tone



刀

CENTER 1. 94625GHN

SPAN 10.00M IN

* R W M W O K I N

*
>
B
M
T
.
O
K
I
N

SMITHSONIAN INSTITUTION

CDR D-band

DL

Output

5/28/97

S/N 0141

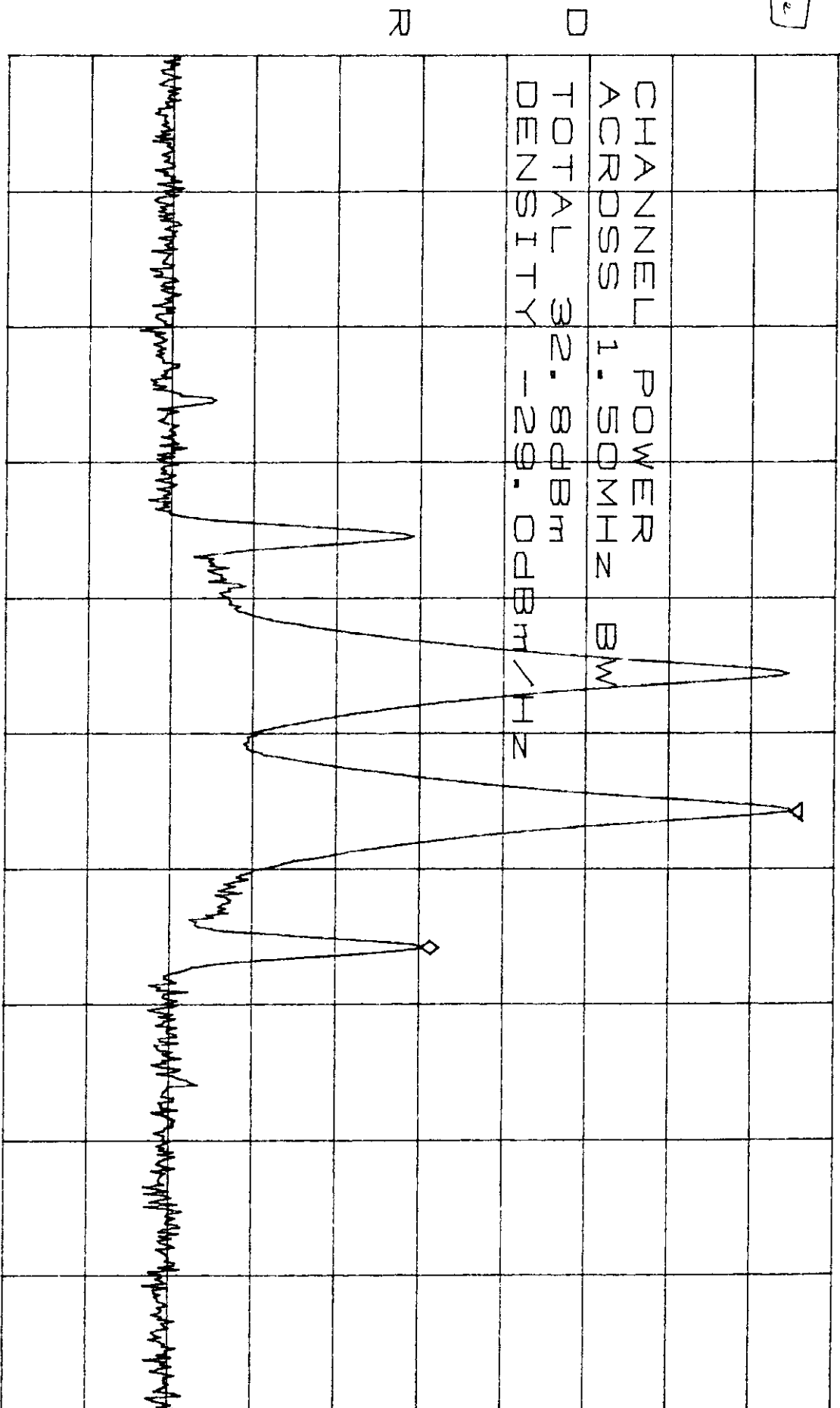
Set to Ch. 335

Intermed

CW signal

*ATTEN 20dB VAVG 10 ΔMKR -44.50dB
RL 35.0dBm 10dB/ 500kHz

3-tone



*RBW 30kHz *VBW 30kHz SWP 50.0ms

COR 0-band

DL

Output

5/28/97

S/N 0141

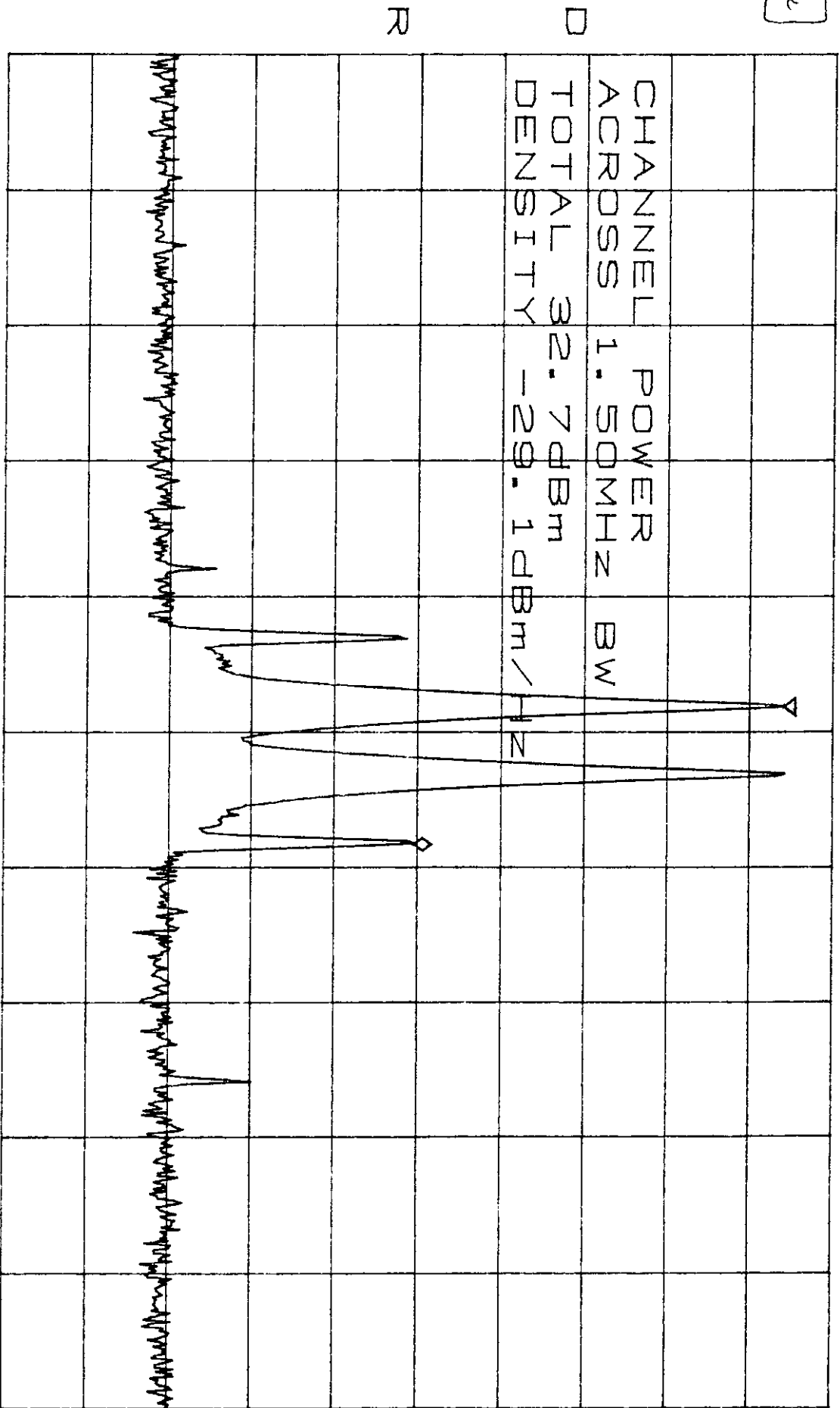
Set to ch. 335

Intermed

CW Signal

*ATTEN 20dB VAVG 10 ZMKR -44.50dB
RL 35.0dBm 10dB/ 1.02MHz

3-tone



CENTER 1.94625GHz SPAN 10.00MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

COR 0-band

DL

Output

5/28/97

S/N 0141

Set to ch. 325

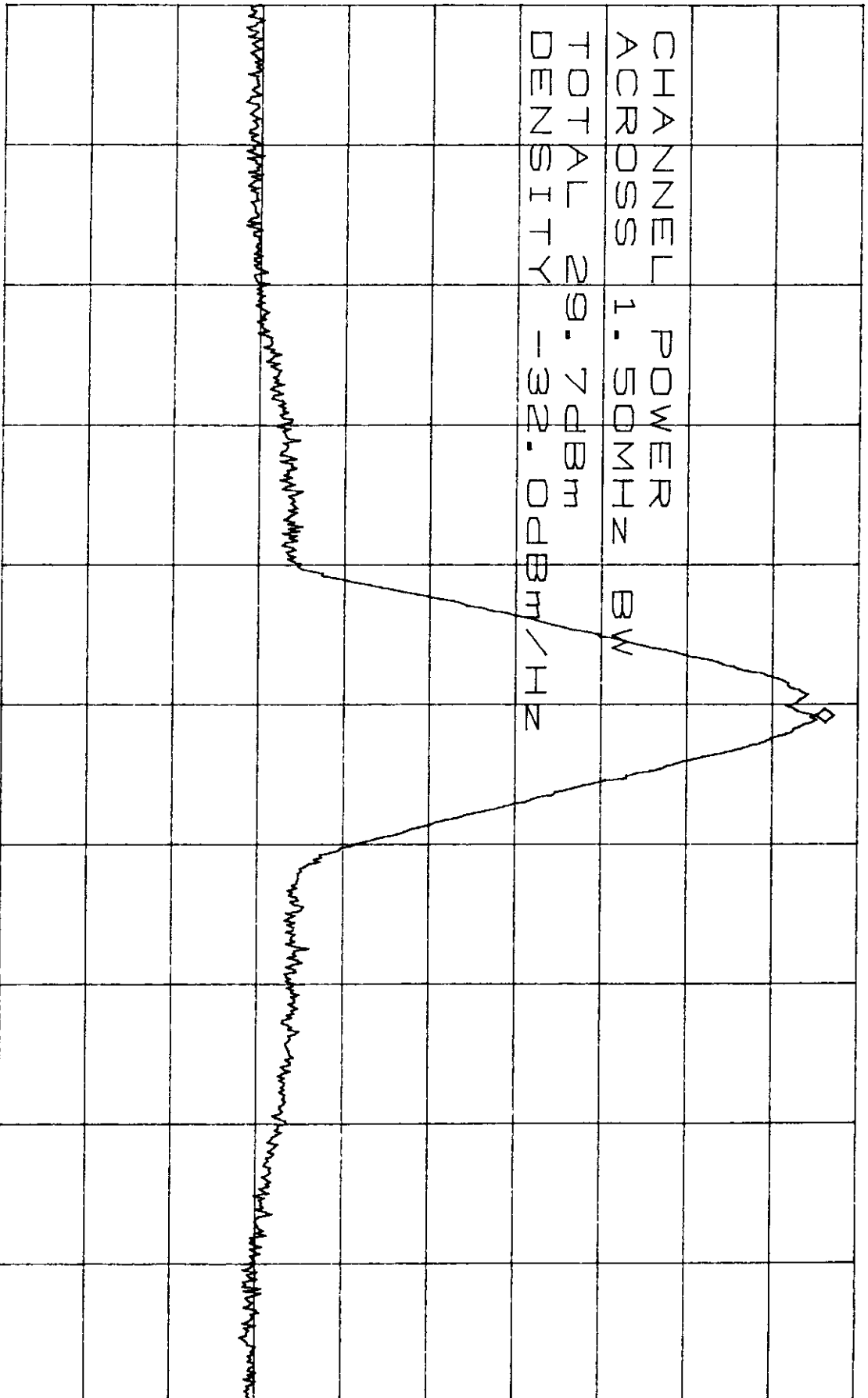
Intermed

Ch Signal

*ATTEN 20dB VAVG 10 MKR 30.17dBm
RL 35.0dBm 10dB/ 1.94658GHz

3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 29.7dBm
DENSITY -32.0dBm/Hz



CENTER 1.94625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

COR D-band
S/N 0141

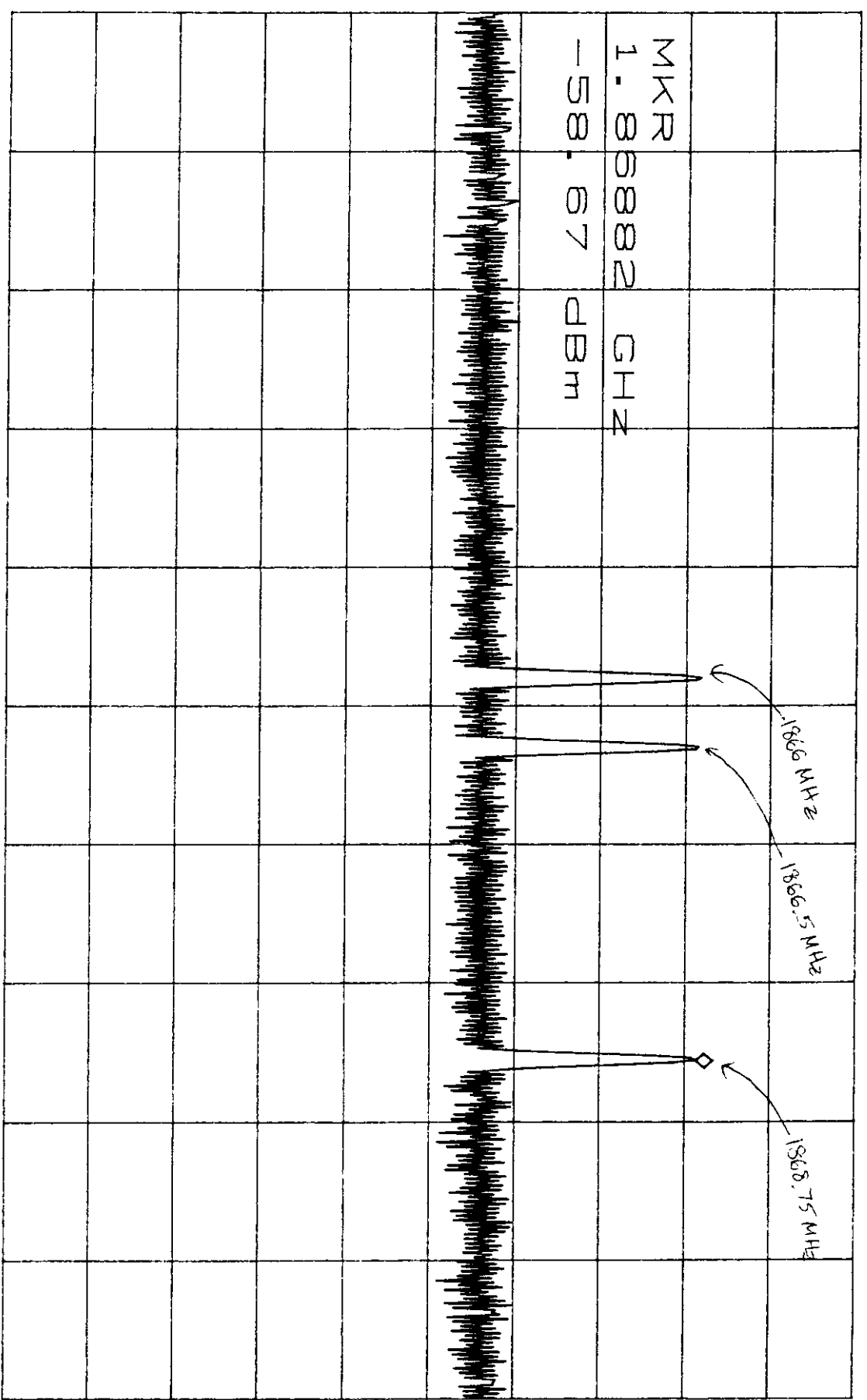
UL
Set to Ch 325

Input
Signals

5/28/97
CW Signal

*ATTEN 20dB VAVG 0 MKR -58.67dBm
RL -40.00dBm 10dB/ 1.86882GHz

3-tone



R

CENTER 1.86625GHz SPAN 10.00MHz
*RBW 30kHz *VBW 1.0kHz SWP 840ms

COR D-band

UL

Output

5/28/97

S/N 0141

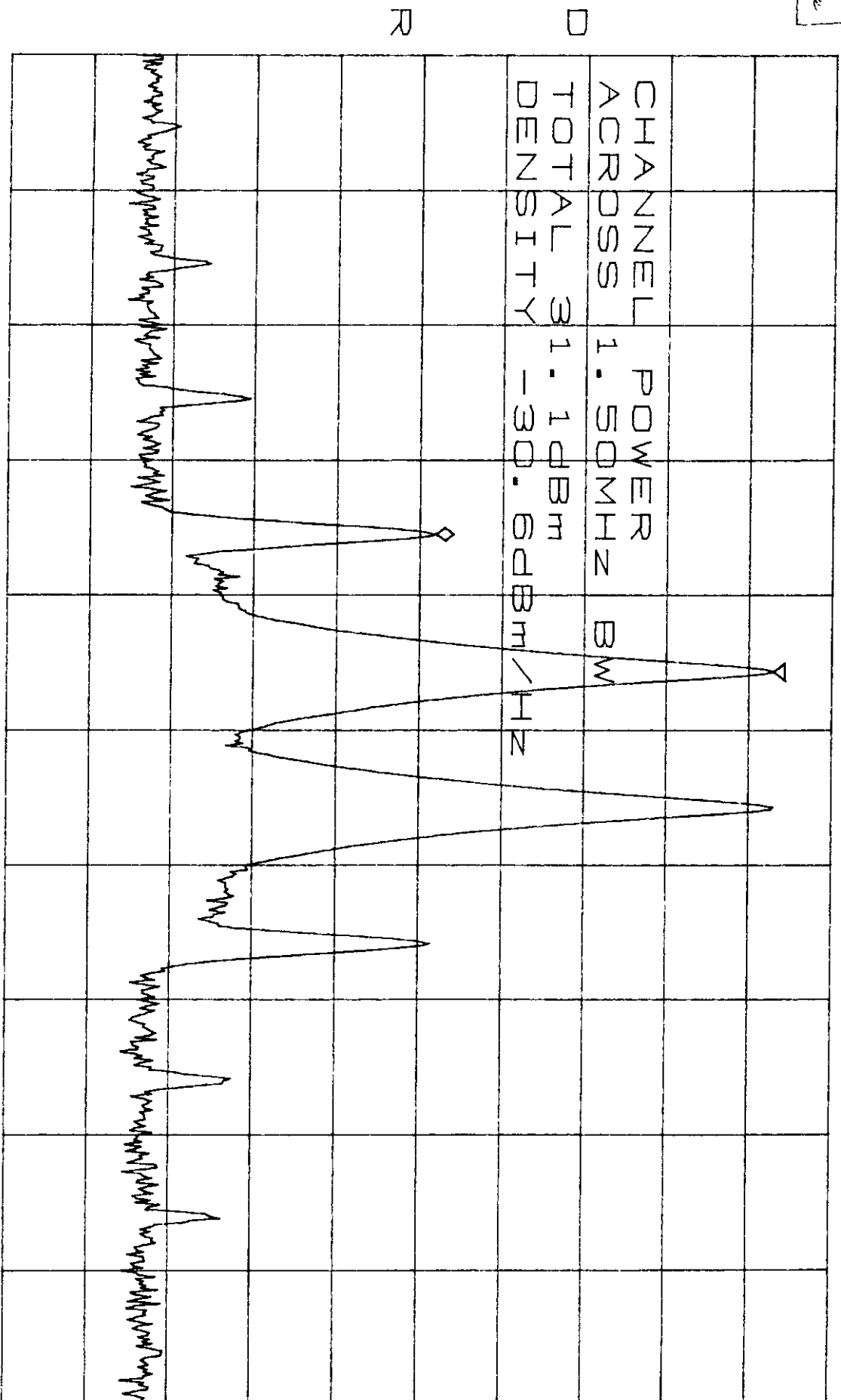
Set to ch. 325

Intermed

CW Signal

* ATTEN 20DB VAVG 10 ΔMKR -41.00DB
RL 35.00DB 10DB/ -500KHZ

3-tone



CENTER 1.866250GHZ SPAN 5.000MHZ
* RBW 30KHZ * VBW 30KHZ SWP 50.0ms

COR D-band

VL

Output

5/28/97

S/N 0141

Set to Ch. 325

Intermod

CW Signal

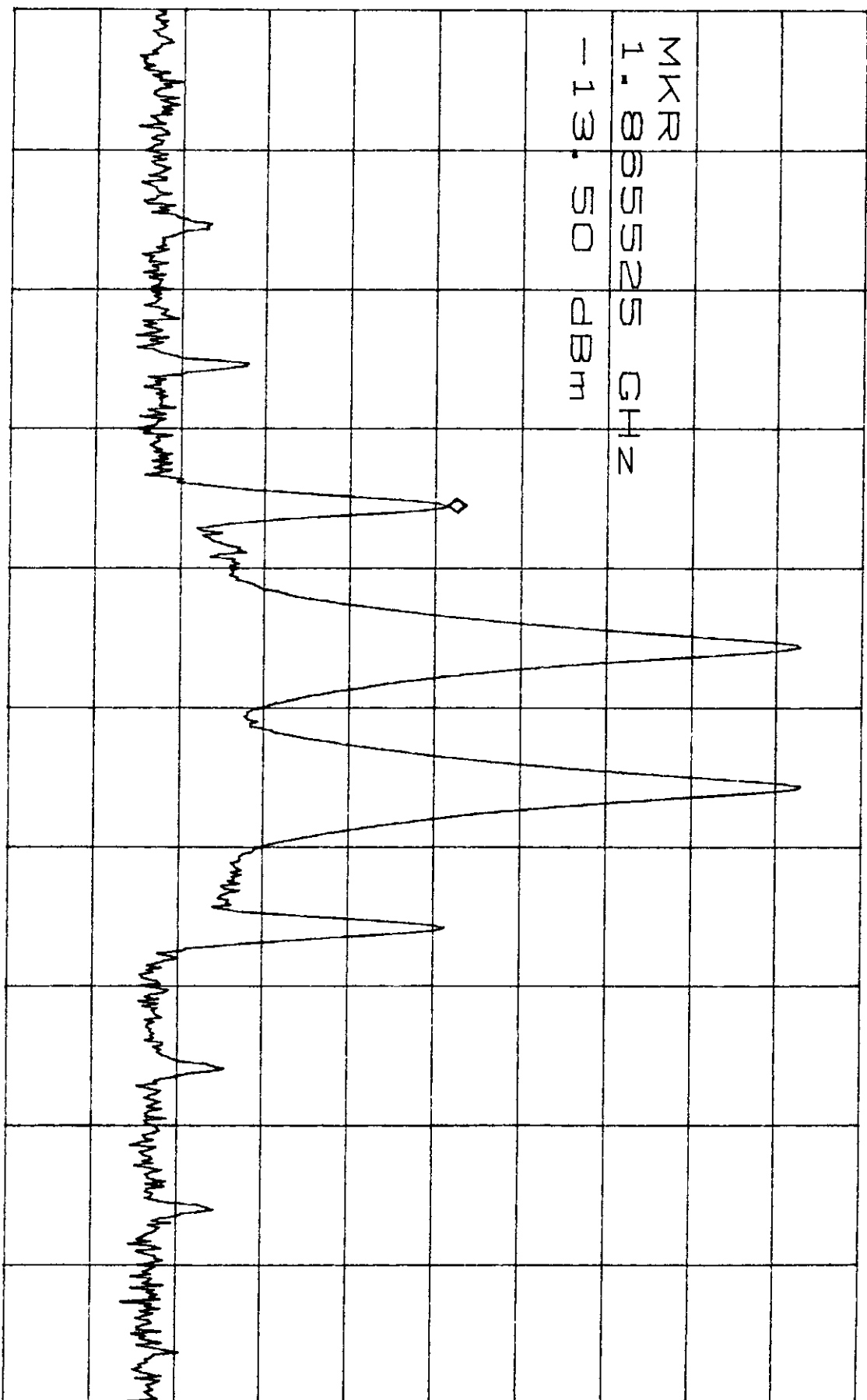
*ATTEN 20dB VAVG 10 MKR -13.50dBm
RL 35.0dBm 10dB/ 1.865525GHz

3-line

D

MKR
1.865525 GHz
-13.50 dBm

R



CENTER 1.866250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

COR D-band

VL

S/N 0141

Set to Ch. 385

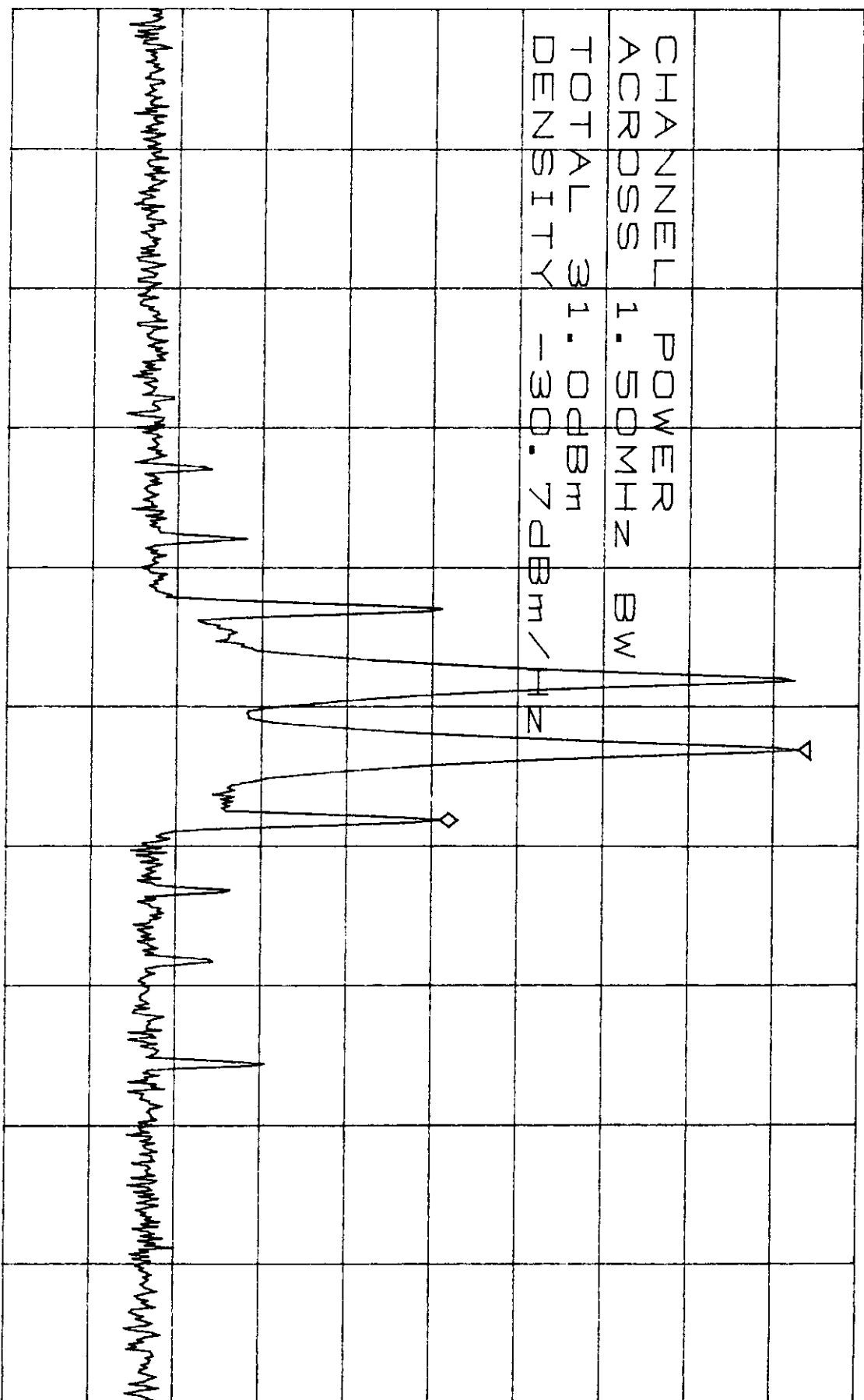
Output
Intermod

5/28/97
CW Signal

*ATTEN 20DB VAVG 10 ΔMKR -42.00DB
RL 35.00DB 10DB/ 500KHZ

3-tone

CHANNEL POWER
ACROSS 1.50MHZ BW
TOTAL 31.00DBm
DENSITY -30.7DBm/HZ



CENTER 1.86625GHZ SPAN 10.00MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms

COR 0-band
S/N 0141

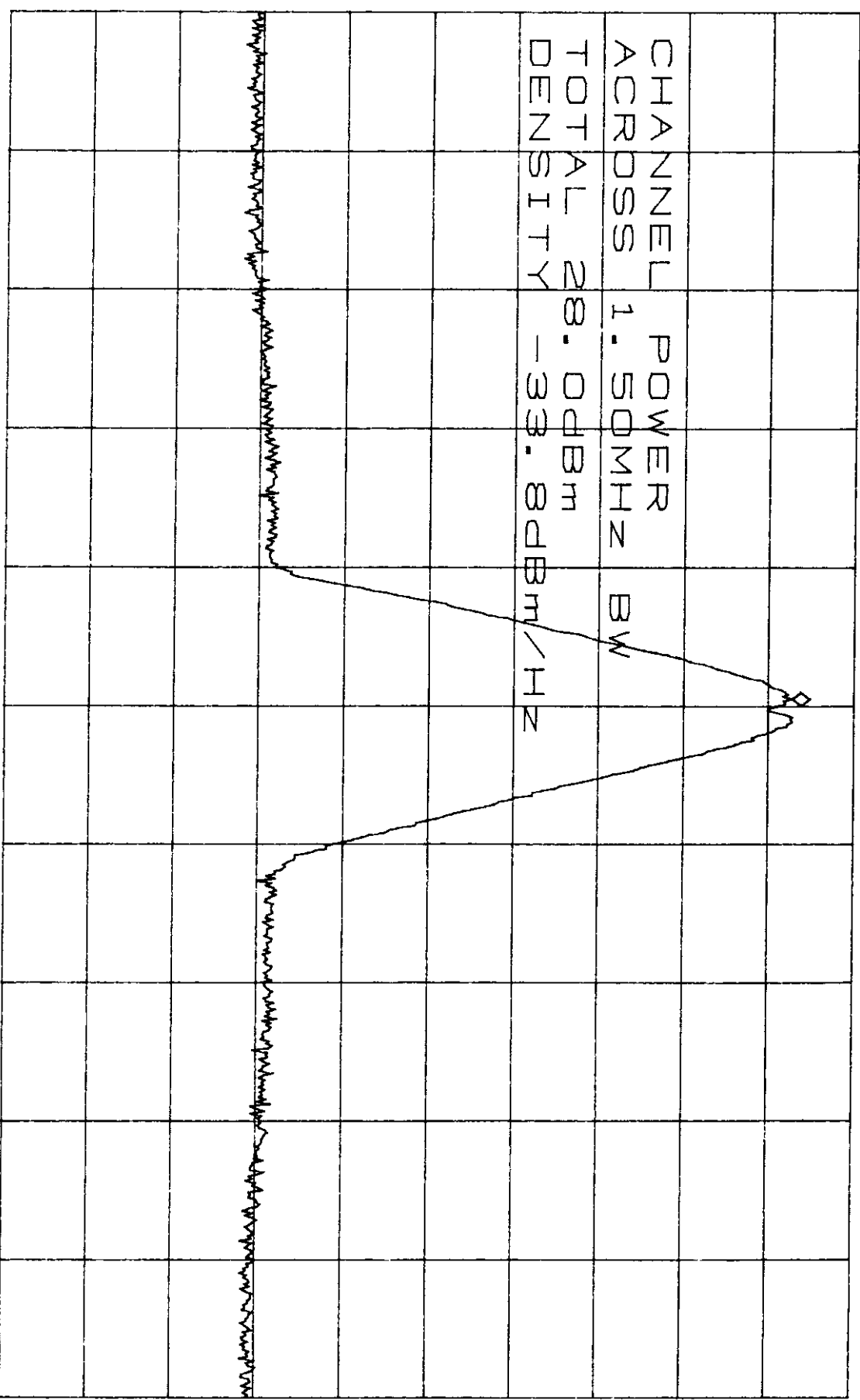
UL
Set to Ch. 335

Output
Intermed

5/28/97
CW Signal

*ATTEN 20dB VAVG 10 MKR 27.83dBm
RL 35.0dBm 10dB/ 1.86605GHz

3-band



D
R

CENTER 1.86625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

CDR 0-band
S/N 0111

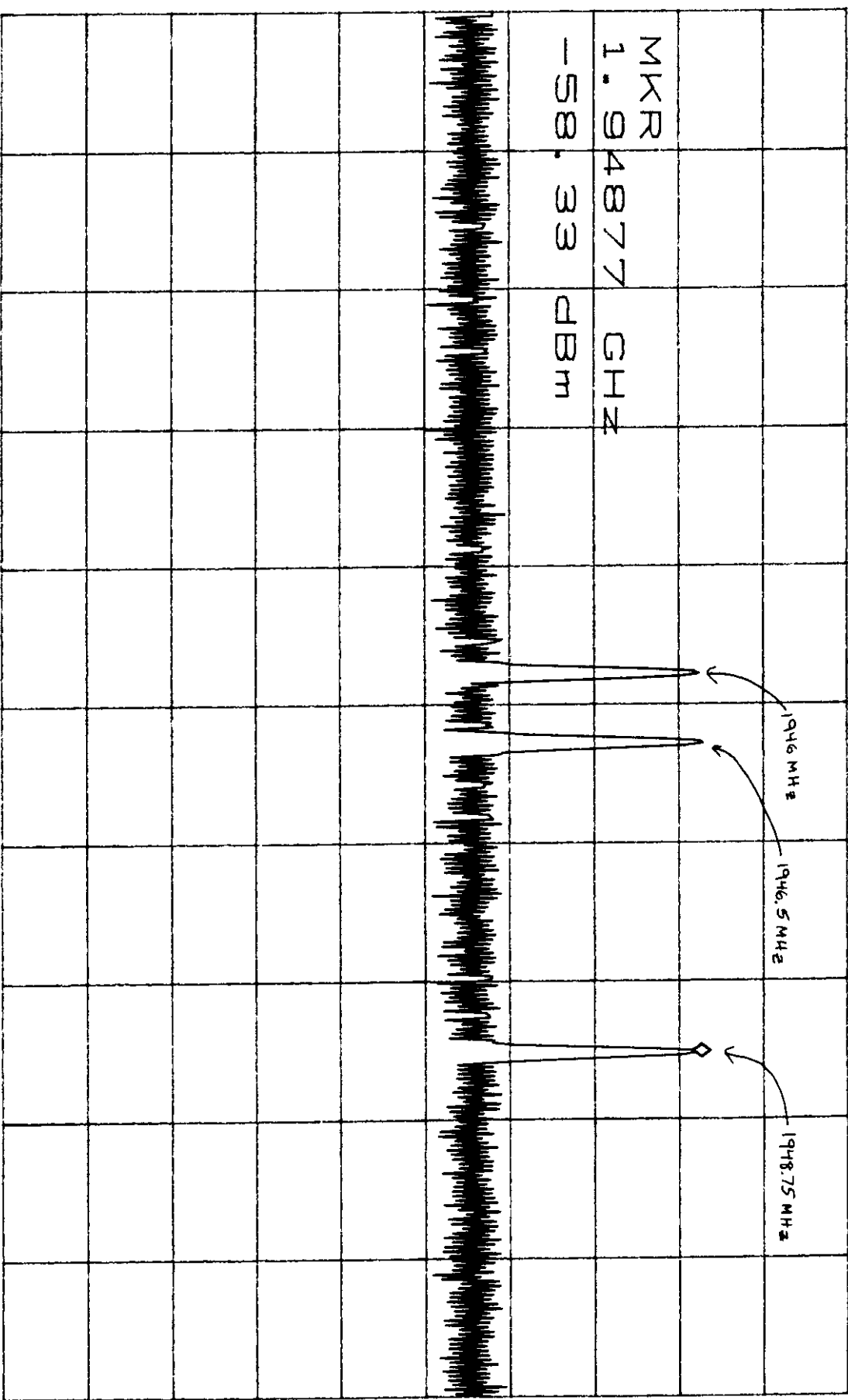
DL
Set to Ch. 325

Input
Signals

6/3/97
CW Signals

*ATTEN 20dB
RL -40.00dBm
10dB/
MKR -58.33dBm
1.94877GHz

3-tone



R

CENTER 1.94625GHz
*RBW 30kHz
*VBW 1.0kHz
SPAN 10.00MHz
SWP 840ms

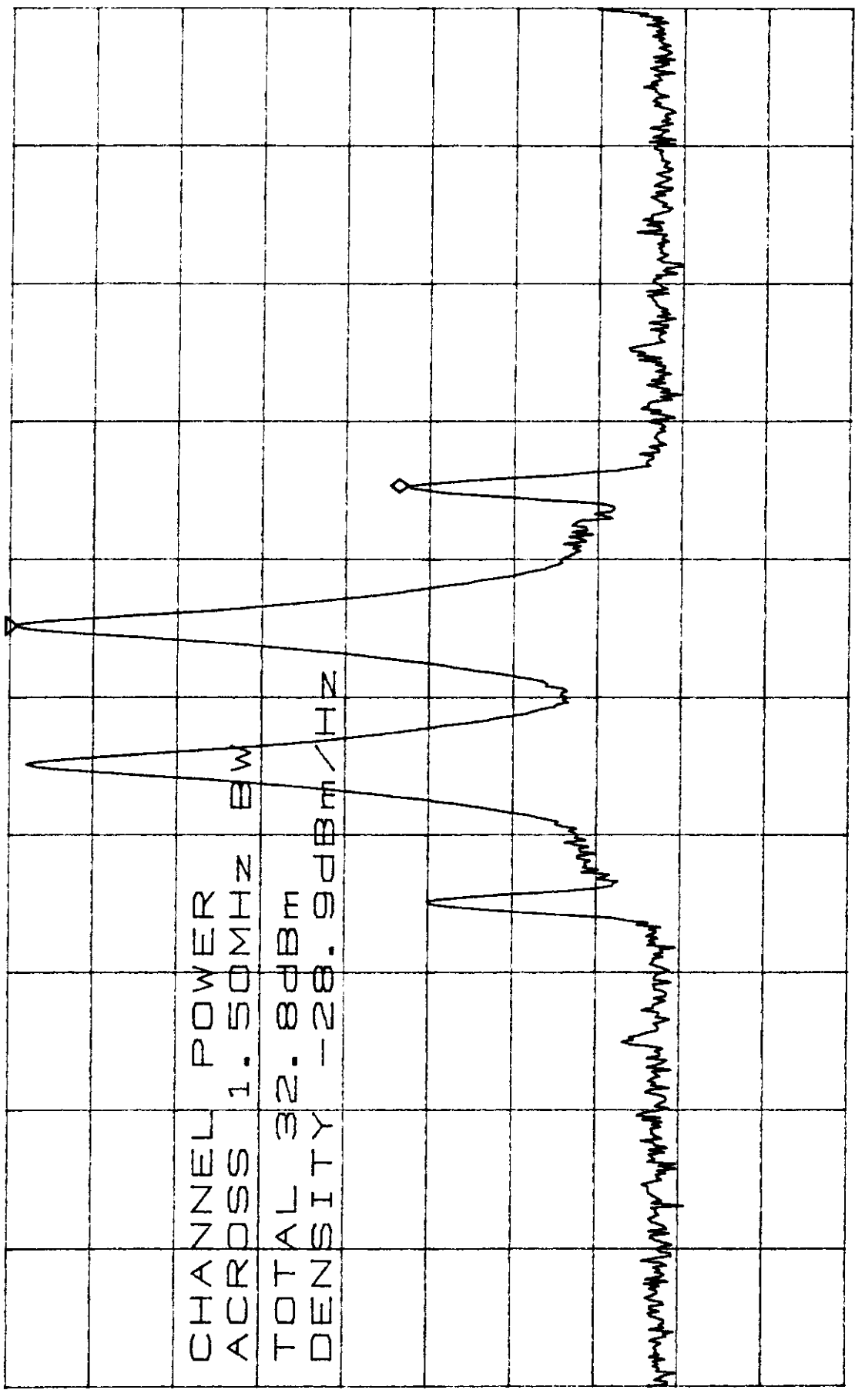
6/3/97
CW Signals

Output
Intermod

Set to Ch. 325

CDK D-band
S/N 0141

*ATTEN 20dB VAVG 10 ΔMKR -46.50dB
RL 31.0dBm 10dB/ 508kHz



3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 32.8dBm
DENSITY -28.9dBm/Hz

CENTER 1.946250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CUR D-band

S/N 0141

Set to ch. 325

DL

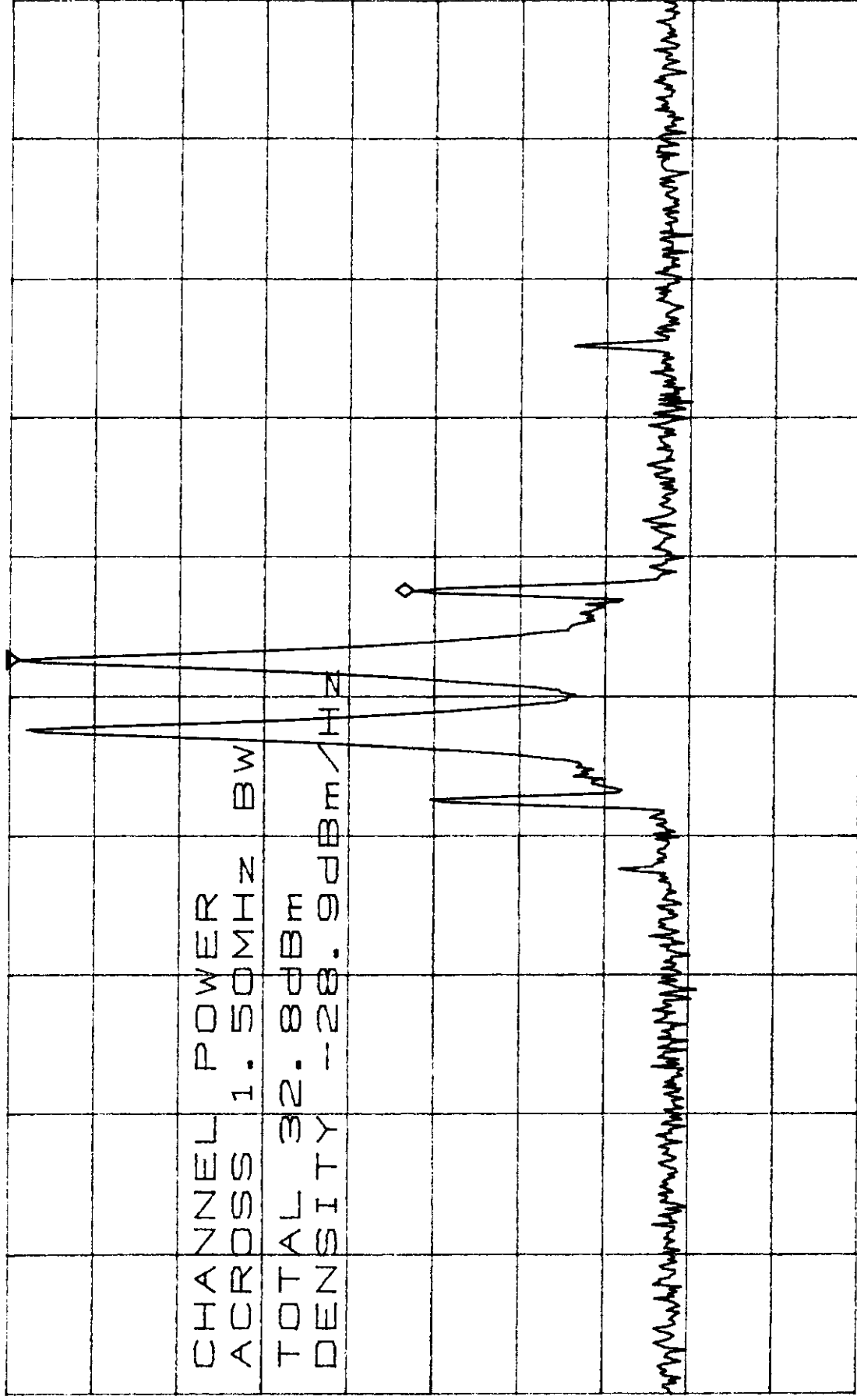
Output
Intermed

6/3/97
CW Signals

*ATTEN 20dB VAVG 10 Δ MKR -46.50dB
RL 31.0dBm 10dB/ 500kHz

3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 32.8dBm
DENSITY -28.9dBm/Hz



CENTER 1.94625GHz SPAN 10.00MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band

S/N 0141

DL

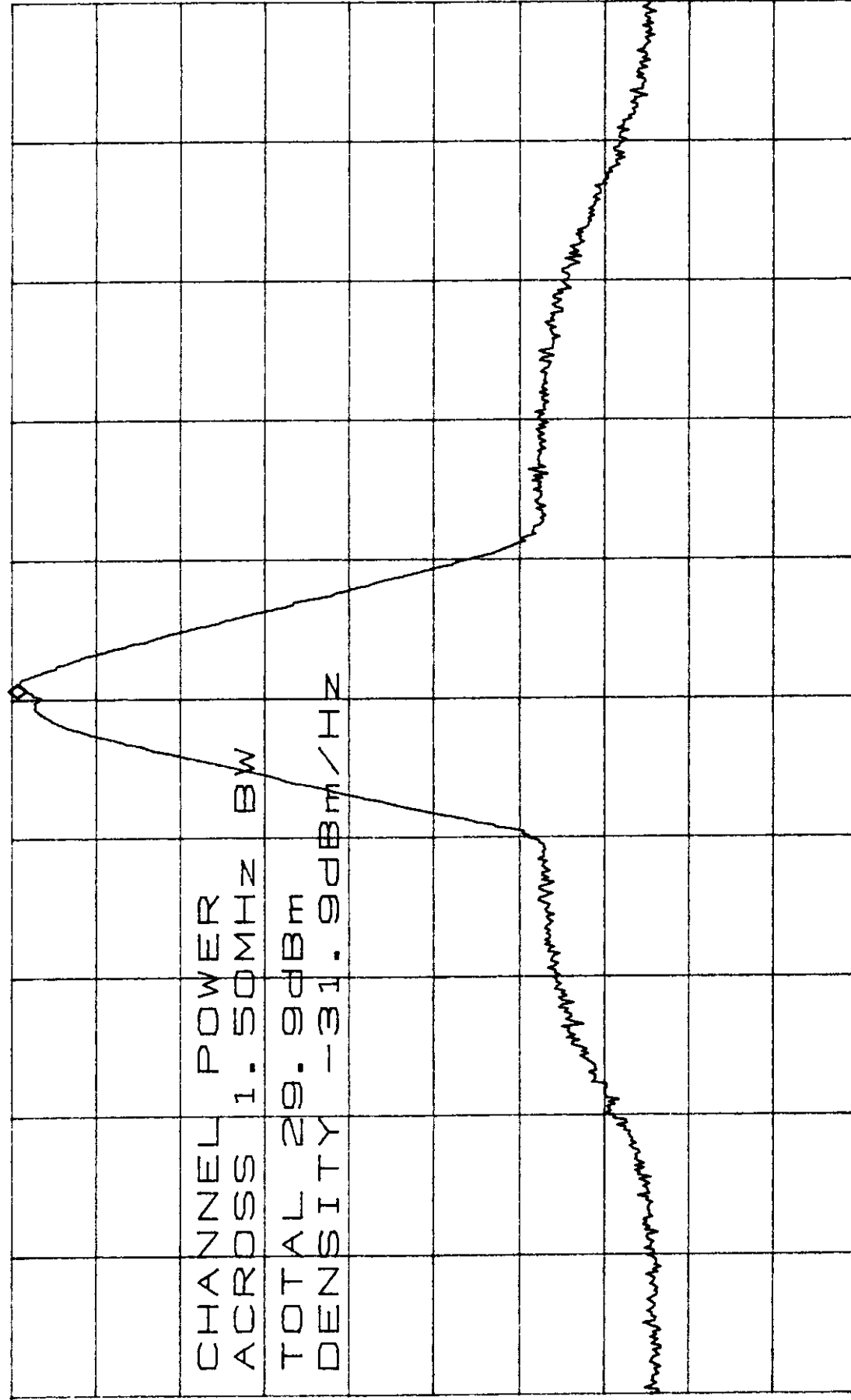
Set to ch.325

Output
Intermod

6/3/97

CW Signal

*ATTEN 20dB VAVG 10 MKR 29.33dBm
RL 31.0dBm 10dB/ 1.94652GHz



CENTER 1.94625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

CDK D-band

UL

Input
Signal

6/3/97
CW Signals

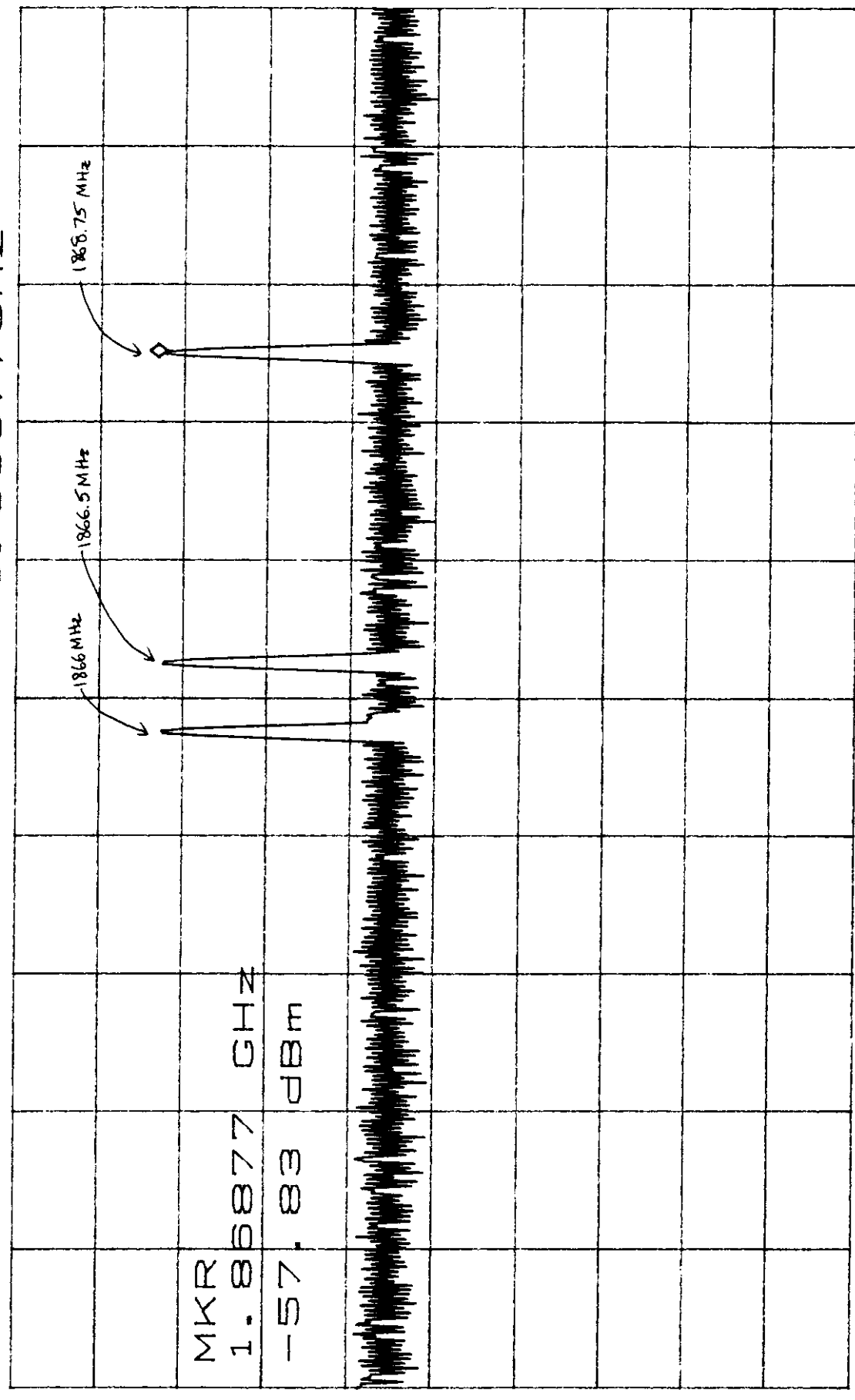
Set to Ch. 325

S/N 0141

*ATTEN 20dB MKR -57.83dBm
RL -40.0dBm 10dB/ 1.86877GHz

3-tone

MKR
1.86877 GHz
-57.83 dBm



R

CENTER 1.86625GHz SPAN 10.00MHz
*RBW 30kHz *VBW 1.0kHz SWP 840ms

CUR V-band

UL

Output

8/5/91

S/N 0141

Set to Ch. 325

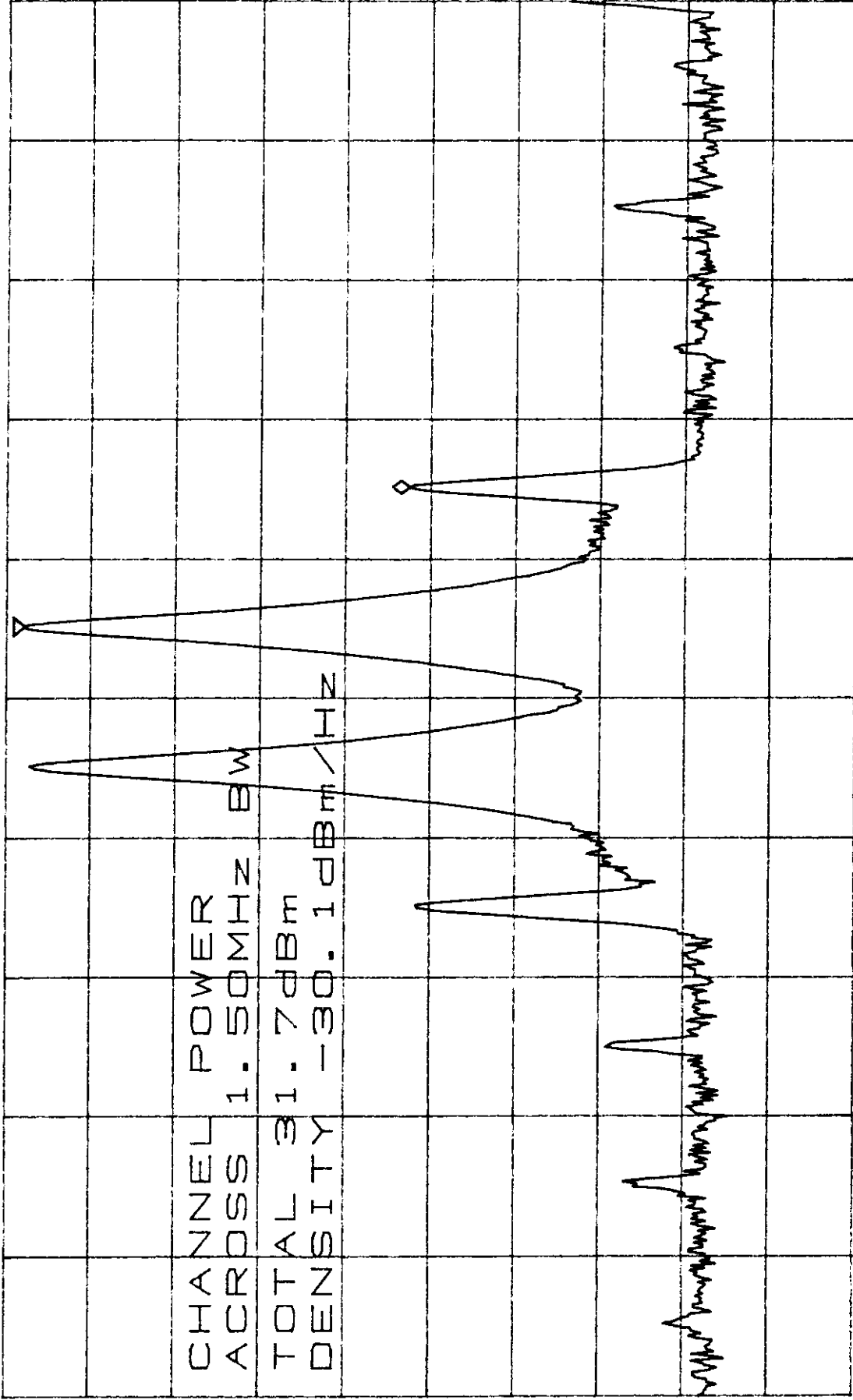
Intermod

CW Signal

*ATTEN 20dB VAVG 10 ΔMKR -45.33dB
RL 31.0dBm 10dB/ 500kHz

3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 31.7dBm
DENSITY -30.1dBm/Hz



CENTER 1.866250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band

S/N 0141

UL

Set to ch. 325

Output

Intermod

G/3/97

CW Signals

*ATTEN 20dB

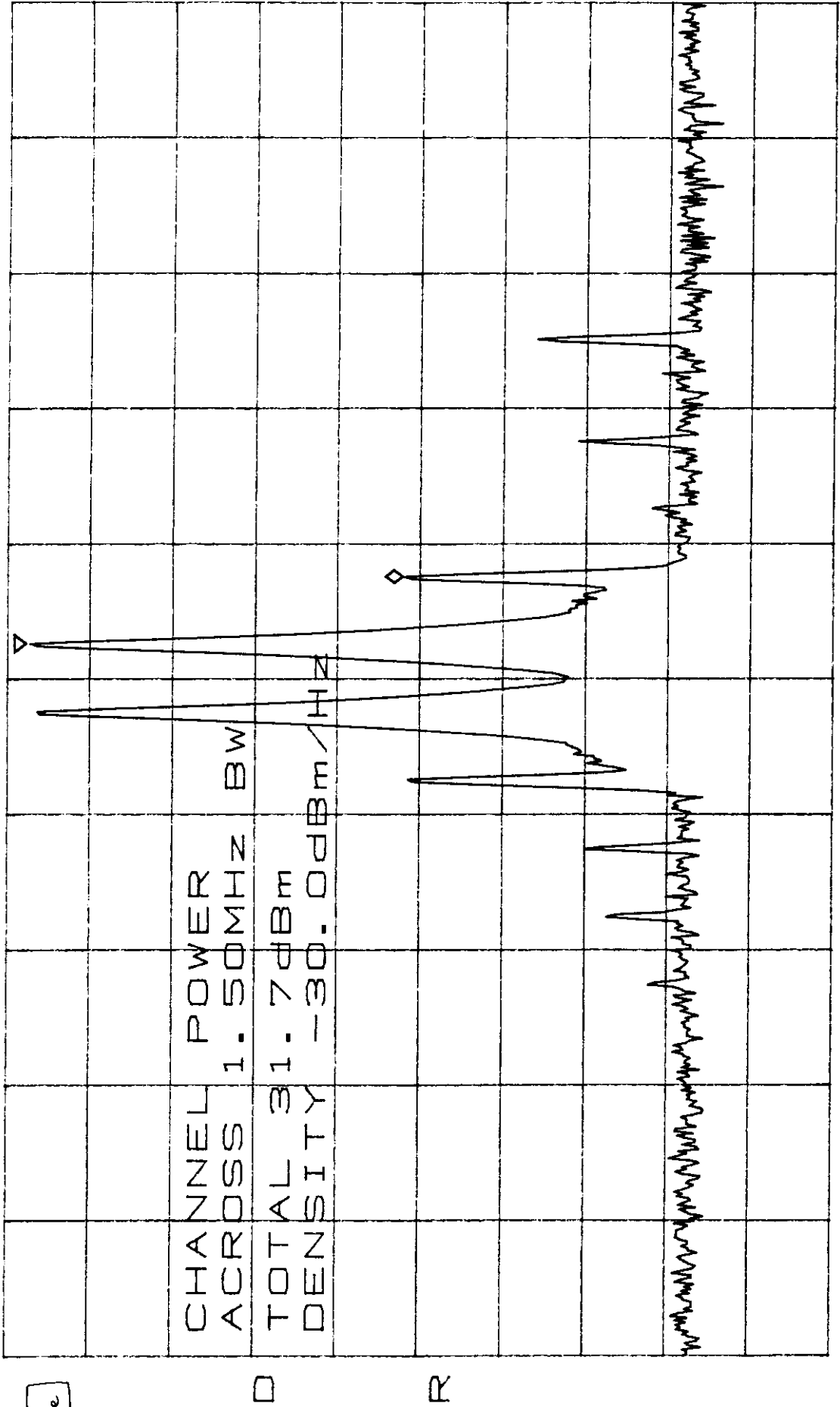
RL 31.0dBm

VAVG 10

Δ MKR -45.66dB

10dB/

500kHz



CENTER 1.86625GHz

*RBW 30kHz

*VBW 30kHz

SPAN 10.00MHz

SWP 50.0ms

CDR D-band
S/N 0141

UL
Set to CL325

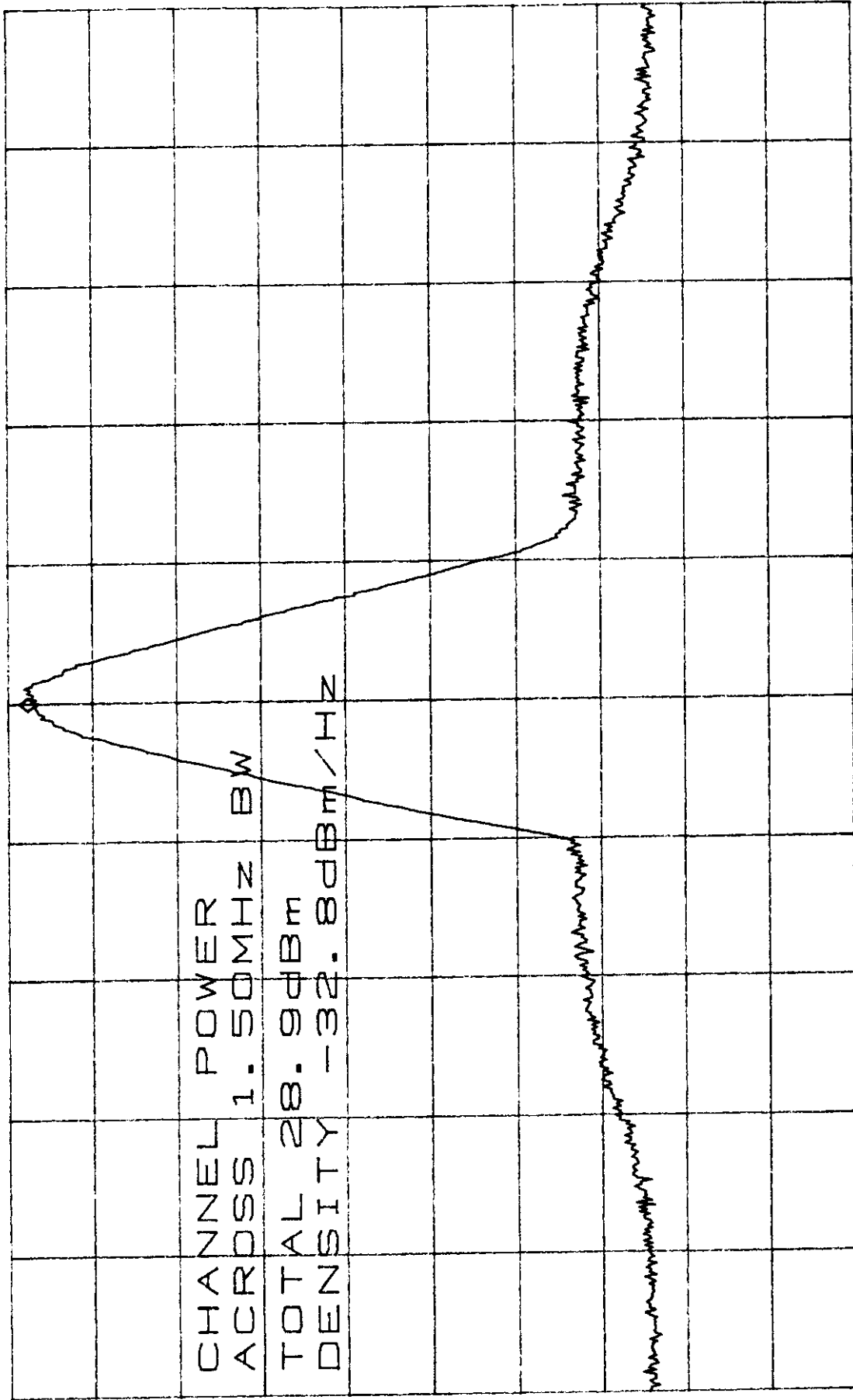
Output
Intermod

6/3/97
CW Signal

*ATTEN 20dB VAVG 10 MKR 27.67dBm
RL 31.0dBm 10dB/ 1.86625GHz

3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 28.9dBm
DENSITY -32.8dBm/Hz



CENTER 1.86625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

06 June 1997

Chief, Equipment Authorization Branch
Federal Communications Commission
P. O. Box 358315
Pittsburgh, PA 15251-5315

RE: Application for Type Acceptance
FCC ID: LB41901CDMA

Dear Sir/Madam:

Transmitted herewith, on behalf of ORTEL CORPORATION, is the application (FCC Form 731) for the Equipment Authorization by the Certification for the CDMA Repeater.

Enclosed is additional test data to show compliance of Ortel Corporation's D band CDMA repeater. The difference between the D band CDMA repeater and the previously certified A and B band CDMA is the filtering. All channelizers, control module power supplies, LNAs, PAs are the same. Included is the test report containing all the required information and a check for \$45. Ortel would like to add the D band unit to the existing grant for this repeater. The occupied bandwidth is 1.5 MHz. The emission designator is GXW.

Please note that TÜV Product Service is the authorized agent for ORTEL. Direct all communications and send the grant to TÜV Product Service.

If you have any questions concerning this application, please contact me at 619 546 3999, Ext. 430.

Sincerely,



Mary Washington
EMC Engineer

enclosures

06 June 1997

Manager, Equipment Certification
DOC Certification and Engineering Bureau
1241 Clyde Avenue
Ottawa, Ontario
Canada K2C1Y3

RE: (1) Ortel Corporation
(2) Certificate Number: 2778331126
(3) CDMA Repeater

Dear Sir or Madame:

Enclosed is additional test data to show compliance of Ortel Corporation's D band CDMA repeater. The difference between the D band CDMA repeater and the previously certified A and B band CDMA is the filtering. All channelizers, control module power supplies, LNAs, PAs are the same. Included is the test report containing all the required information and a check for \$256.68 in US dollars payable to the Receiver General. Ortel would like to add the D band unit to the existing certificate for this repeater. The occupied bandwidth is 1.5 MHz. The emission designator is GXW.

Please note that TÜV Product Service is the authorized agent for ORTEL. Direct all communications and send the certificate to TÜV Product Service.

If you have any questions concerning this application, please contact me.

Sincerely,



Mary Washington
EMC Engineer

14786

TUV PRODUCT SERVICE
10040 MESA RIM ROAD 619-546-3999
SAN DIEGO, CA 92121

90-3582/1222

DATE 6/6/97

PAY TO THE ORDER OF

Federal Communication Commission \$45.00 —

DOLLARS  Security Feature
Inkjet Printing

forty five no/100



FOR Ortel Corp. D-Band CDMA Repeater

Frank Hessel

⑈014786⑈ ⑆12223582⑆ 002⑈308169⑈

TUV PRODUCT SERVICE
10040 MESA RIM ROAD 619-546-3999
SAN DIEGO, CA 92121

14780

90-3502/1222

PAY
TO THE
ORDER OF

Receiver General

DATE MAY 29, 1997

Two hundred fifty six & 68/100

\$ 256.68



1815 La Jolla Village Drive, San Diego, CA 92131
(619) 571-6200

DOLLARS ☒ Federal Reserve

FOR Ortel Corp.

⑆014780⑆ ⑆122235821⑆ 002⑆308169⑆

John R. [Signature]

Appendix III

Annexe III

Industry Industrie APPLICATION AND AGREEMENT DEMANTE ET ACCORD RELATIFS
Canada Canada FOR RADIO EQUIPMENT AUX ESSAIS ET À LA CERTIFICATION
CERTIFICATION / TESTING DE MATÉRIEL RADIO

File No. - N° du dossier

Purchase Order - Bon d'achat

1 - APPLICANT / REQUÉRANT

Name - Nom ORTEL CORPORATION	Street Address - Numéro et rue 2015 West Chestnut Street	
City - Ville Alhambra	Province or State - Province ou État California	Postal Code - Code postal 91803
Contact's Name - Personne ressource Mr. Martin Kies	Facsimile - Fac-similé 818 281 7913	Tel. No. - N° de tél. 818 293 3640

2 - EQUIPMENT / MATÉRIEL

Name - Nom ORTEL CORPORATION	Street Address - Numéro et rue 2015 West Chestnut Street	
City - Ville Alhambra	Province or State - Province ou État California	Postal Code - Code postal 91803
Trade Name - Marque de commerce MirroCell	Type or Model - type ou modèle CDR1901-1-D	Kind of Equipment - Genre de matériel CDMA PCS Repeater

3 - CONTACT IN CANADA / CONTACT AU CANADA

Name - Nom FutureCom Systems Group, Inc.	Street Address - Numéro et rue 110 Snow Boulevard, Unit 3	
City - Ville Concord	Province or State - Province ou État Ontario	Postal Code - Code postal L4K 4B8
Contact's Name - Personne ressource Mr. Christopher K. Downes	Tel. No. - N° de tél. 903 660 8548	

4 - SERVICE REQUESTED / SERVICE DEMANDÉ

☒ Certified under Certifié en vertu de	RSS-133	
Certification based on test report from Certification fondée sur un rapport d'essais	☐ the Industry Canada laboratory du laboratoire d'Industrie Canada	☒ another laboratory d'un autre laboratoire
Performed on a Effectués sur un	☒ production model modèle de série	☐ production prototype prototype de série
☒ Certification assessment fee, payable to Receiver General attached Ci-joins un chèque à l'ordre du Receveur Général en couverture des droits de certification	\$256.68	
☐ Laboratory testing only: Specify tests required. Unless otherwise requested, all applicable tests as for certification will be carried out. Essais en laboratoire seulement: Préciser les essais requis. Sauf indications contraires, tous les essais de certification seront effectués.		

5 - AGREEMENT / ACCORD

1. The applicant warrants that:	1. Le requérant atteste que :
(a) the unit of equipment tested, if a productive model, is a randomly selected, representative sample;	(a) s'il s'agit d'un modèle de série, le matériel qui fait l'objet de l'essai est un échantillon représentatif choisi au hasard;
(b) the test results submitted are a true representation of the characteristics of the equipment type for which certification is requested.	(b) les résultats de l'essai présentés illustrent exactement les caractéristiques du type de matériel pour lequel la certification est demandée.
2. The applicant agrees to:	2. Le requérant convient :
(a) accept full responsibility for all initial and subsequent departmental charges arising from this application;	(a) d'accepter la pleine responsabilité quant à tous les droits initiaux et subséquents fixés par le Ministère conséquemment à la présente demande ;
(b) fulfill all conditions and responsibilities in accordance with Radio Standards Procedure 100.	(b) de remplir toutes les conditions et de s'acquitter de toutes les responsabilités conformément à la Procédure concernant les normes radioélectriques n° 100.
<i>Mary Washington</i> <i>June 6, 1997</i> Signature of Applicant or Agent - Signature du requérant ou de l'agent Date	
Name and title of applicant (please print or type) - Nom et titre du requérant (dactylographier ou écrire en lettres moulées)	
Name - Nom Mr. Martin Kies	Title - Titre Quality Engineer

APPLICATION FOR EQUIPMENT AUTHORIZATION

For
FCC
use
only

See 47 CFR 1.1103 for FEE TYPE CODES and FEES, and paragraph C of the attached instructions.

SECTION I - ALL ITEMS IN THIS SECTION MUST BE COMPLETED

APPLICANT'S FULL BUSINESS NAME
ORTEL CORPORATION

APPLICANT'S MAILING ADDRESS (Line 1) (Maximum 35 characters)
2015 West Chestnut Street

APPLICANT'S MAILING ADDRESS (Line 2) (if required) (Maximum 35 Characters)

CITY
Alhambra

STATE OR COUNTRY (if foreign address)	ZIP CODE	COMPLETE FCC IDENTIFIER:	
		GRANTEE CODE	EQUIPMENT PRODUCT CODE (14 characters maximum)
CA	91803-1542	L B 4	1901CDMA

Enter in column (A) the correct Fee Type Code for the service for which you are applying. Fee Type Codes may be found in FCC Fee Filing Guides and paragraph C of attached instructions. Enter in Column (C) the result obtained from multiplying the value of the Fee Type Code in Column (A) by the number entered in Column (B).

	(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
(1)	E A T	0 0 0 1	\$45.00	

SECTION II - Use only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

	(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
(2)		0 0 0 1	\$	
(3)		0 0 0 1	\$	
(4)		0 0 0 1	\$	
ADD ALL AMOUNTS SHOWN IN COLUMN C, LINES (1) THROUGH (4), AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE. →			TOTAL AMOUNT REMITTED WITH THIS APPLICATION OR FILING \$45.00	FOR FCC USE ONLY

(5) NAME AND TITLE OF PERSON AT ABOVE ADDRESS FOR CONTACT, OR TO RECEIVE GRANT
(THIS ITEM MUST BE COMPLETED):

Martin R. Kies, Quality Engineer

SECTION III FCC ID: LB41901CDMA				Bureau Use Only
1.(a) INSTEAD OF APPLICANT, FCC IS AUTHORIZED TO MAIL ORIGINAL GRANT TO (See instructions): Firm Name, TUV Product Service number, street, 10040 Mesa Rim Road city, state, and ZIP Code <i>Ortel</i>				
(b) NAME AND Mary Wasl <i>Correction</i>		ADDRESS TO RECEIVE GRANT:		
2. INFORMATION Firm Name, contact person, number, street, 10040 Mesa Rim Road city, San Diego state, CA and ZIP Code 92121 <i>Pough</i>		FORM ITEM 5, PAGE 1 (See instructions):		
3.(a) TELEPHONE NUMBER (Include area code and extension - USA ONLY): 619 546 3999, Ext 430		3.(b) FAX NUMBER (Include area code and extension - USA ONLY): 619 548 0364		
4. Does this application include a request for confidentiality for any portion(s) of the data contained in this application pursuant to 47 CFR 0.459 of the Commission's Rules? (See instructions) ☒ Yes ☐ No				
5. Does the applicant desire the Commission to defer grant of this application pursuant to 47 CFR 0.457(d)(1)(II)? (See instructions) ☐ Yes ☒ No				
6. Kind of equipment authorization requested (check ONE box only): ☐ Certification ☒ Type Acceptance ☐ Type Approval ☐ Notification				
7.(a) Kind of equipment: CDMA PCS Repeater		(b) Equipment will be operated under FCC Rule Part (s): 2 and 24		
8. Application is for (Check ONE box only): ☒ 1 Original equipment ☐ 2 Change in identification of presently authorized equipment* ☐ 3 Class II permissive change or modification of presently authorized equipment			9.(a) FCC ID before change in identification: (b) Grant date of FCC ID in 9(a) above:	
*If box 2 is checked, complete items 9(a) and (b).				
10. EQUIPMENT SPECIFICATIONS:				
(a) Frequency range in MHz	(b) Rated RF power output in watts	(c) Frequency tolerance % Hz, ppm	(d) Emission designator	(e) Microprocessor model number
Uplink - 1865-1870 MHz Downlink - 1945-1950 MHz	2 W Uplink and Downlink	--	GXW	S87C751-2A2B
11. Type of equipment tested: ☒ Production ☐ Pre-Production ☐ Prototype				
12.(a) Is the equipment, or section(s) thereof, subject to more than one equipment authorization? If YES, complete items 12(b), (c), (d), or (e) as appropriate. ☐ Yes ☒ No				
(b) Additional equipment authorization(s) required for equipment: ☐ Certification ☐ Type Acceptance ☐ Type Approval ☐ Notification				
(c) Granted FCC ID or FCC ID listed on RX or RX section application:		(d) Granted FCC ID or FCC ID listed on TX or TX section application:		(e) Granted FCC ID or FCC ID listed on other device application:

SECTION III

Bureau Use Only

1.(a) INSTEAD OF APPLICANT, FCC IS AUTHORIZED TO MAIL ORIGINAL GRANT TO (See instructions):

Firm Name, TÜV Product Service
number, street, 10040 Mesa Rim Road
city, San Diego
state, CA
and ZIP Code 92121

(b) NAME AND TITLE OF PERSON AT ABOVE ADDRESS TO RECEIVE GRANT:

Mary Washington, EMC Engineer

2. INFORMATION CONTACT, IF DIFFERENT FROM ITEM 5, PAGE 1 (See instructions):

Firm Name, TÜV Product Service
contact person, Mary Washington
number, street, 10040 Mesa Rim Road
city, San Diego
state, CA
and ZIP Code 92121

3.(a) TELEPHONE NUMBER (include area code and extension -
USA ONLY):
619 546 3999, Ext 4303.(b) FAX NUMBER (include area code and extension -
USA ONLY):
619 546 03644. Does this application include a request for confidentiality for any portion(s) of the data contained in this
application pursuant to 47 CFR 0.459 of the Commission's Rules? (See instructions) ☒ Yes ☐ No5. Does the applicant desire the Commission to defer grant of this application
pursuant to 47 CFR 0.457(d)(1)(ii)? (See instructions) ☐ Yes ☒ No6. Kind of equipment authorization
requested (check ONE box only): ☐ Certification ☒ Type Acceptance ☐ Type Approval ☐ Notification7.(a) Kind of equipment:
CDMA PCS Repeater(b) Equipment will be operated under FCC Rule Part (s):
2 and 24

8. Application is for (Check ONE box only):

☒ 1 Original
equipment ☐ 2 Change in identification
of presently authorized
equipment* ☐ 3 Class II permissive change
or modification of presently
authorized equipment

9.(a) FCC ID before change in identification:

(b) Grant date of FCC ID in 9(a) above:

*If box 2 is checked, complete items 9(a) and (b).

10. EQUIPMENT SPECIFICATIONS:

(a) Frequency range in MHz	(b) Rated RF power output in watts	(c) Frequency tolerance %, Hz, ppm	(d) Emission designator	(e) Microprocessor model number
Uplink - 1865-1870 MHz Downlink - 1945-1950 MHz	Uplink 1.5 Downlink 1.9	--	GXW	S87C751-2A2B

11. Type of equipment
tested: ☒ Production ☐ Pre-Production ☐ Prototype12.(a) Is the equipment, or section(s) thereof, subject to more than one equipment authorization?
If YES, complete items 12(b), (c), (d), or (e) as appropriate. ☐ Yes ☒ No(b) Additional equipment authorization(s)
required for equipment: ☐ Certification ☐ Type Acceptance ☐ Type Approval ☐ Notification(c) Granted FCC ID or FCC ID listed
on RX or RX section application:(d) Granted FCC ID or FCC ID listed
on TX or TX section application:(e) Granted FCC ID or FCC ID listed
on other device application:

13.(a) Testing facility, if different from applicant or contact person:
SAME

(b) Mailing address
number, street
city,
state,
and ZIP code

(c) Telephone No. (Area code and number):
(USA ONLY)

(d) FAX No. (Area code and number):
(USA ONLY)

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(A)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

14. APPLICANT ANTI-DRUG ABUSE CERTIFICATION:

By checking **yes**, the applicant certifies that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a), or, in the case of a non-individual applicant (e.g. corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits, that includes FCC benefits, pursuant to that section. For the definition of a "party" for these purposes, see 47 CFR 1.2002(b).

☒ Yes ☐ No

15. APPLICANT CERTIFICATION:

I certify that I am authorized to sign for the applicant and that all the statements in this application and in the exhibits attached hereto are true and correct to the best of my knowledge and belief. If the applicant is not the actual manufacturer of the equipment listed herein, appropriate arrangements have been made with the manufacturer to ensure that production units of this equipment bearing the FCC IDENTIFIER listed in this application will continue to comply with the Commission's requirements. If an agent has been authorized to sign this application it is under that the applicant remains responsible for all statements herein.

▲ Written signature of authorized signer

▲ Date (Month, Day, Year)

▲ Typed/printed name of authorized signer

▲ Title of authorized signer

16.(a) AGENT CERTIFICATION:

I certify that I am authorized to sign this application on behalf of the applicant. A copy of the authorization will be submitted upon request by the FCC. It is understood that the FCC reserves the right to contact the applicant at any time.

▲ Written signature of authorized agent
Mary Washington

▲ Date (Month, Day, Year)
June 6, 1997

Mary Washington

TÜV Product Service, EMC Engineer

▲ Typed/printed name and title of authorized agent

▲ Business name of authorized agent

(b) Agent address
number, street 10040 Mesa Rim Road
city, San Diego
state, CA
and ZIP code 92121

(c) Telephone No. (Area code and number):
(USA ONLY) 619 546 3999

(d) FAX No. (Area code and number):
(USA ONLY) 619 546 0364

NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT OF 1974 AND THE PAPERWORK REDUCTION ACT OF 1980

The solicitation of personal information requested in this form is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to evaluate the equipment, to maintain a computer database of authorized equipment, and to determine whether grant of this application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. All information provided in this form will be available for public inspection, unless otherwise determined pursuant to 47 CFR, Section 0.459; 5 U.S.C. Section 552. If information requested in this form is not provided, processing of the application may be delayed or the application may be returned without action pursuant to the Commission's Rules. Your response is required to obtain the requested equipment authorization. THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

Public reporting burden for this collection of information is estimated to vary from 18 hours to 30 hours per response, with an average of 24 hours per response, including time for reviewing instructions, searching existing data sources, gathering information and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any aspect of this collection of information, including suggestions for reducing this burden, to Federal Communications Commission, AMD-IRS, REcords Management Division, Washington, DC 20554, and to the Office of Information and Regulatory Affairs, of Office of Management and Budget, Paperwork Reduction Project (3060-0057), Washington, DC 20503.



May 27, 1997

FEDERAL COMMUNICATIONS COMMISSION
Equipment Authorization Division, Applications Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

Re: CDMA Test Data Submitted to the FCC (D-band)
FCC ID: LB41901CDMA
S/N of Unit: 0141

The test data measured by Ortel for the CDMA repeater is in accordance as outlined per the FCC requirements in Parts 2.985, 2.989, 2.991, and 24.238. Additionally, the data for intermodulation and input/output spreading were also in accordance to the guidelines set forth by the FCC via fax and verbal communication.

Sincerely,

Martin R. Kies
Quality Engineer

File: "CDMATYPE.DOC"

EMC EMISSION - TEST REPORT

UNITED STATES STANDARD 47 CFR PART 2, SUBPART J

Test Report File No. : **S7221-06** Date of Issue: 02 June 1997

Model / Serial No. : CDR-1901-1-D / 0141

Product Type : CDMA Repeater

Applicant : ORTEL CORPORATION

Manufacturer : ORTEL CORPORATION

License holder : ORTEL CORPORATION

Address : 2015 West Chestnut Street
: Alhambra, CA 91803

Test Result : ☒ **Positive** ☐ **Negative**

Test Project Number
Reference(s) : **S101722101-06**

Total pages - Test Report : 12

TÜV Product Service, Inc. is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV Product Service reports apply only to the specific sample tested under stated test conditions. It is the manufacturer's responsibility to assure the continued compliance of production units of this model. TÜV Product Service, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service, Inc. issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP or any agency of the US government.

TÜV Product Service, Inc. and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

DIRECTORY - EMISSIONS
Test Report

	Pages
Test Report	1 - 12
Directory	2
Test Regulations	3
General Remarks and Summary	12
Equipment	
Conducted Emissions	10/150/450 kHz - 30 MHz
Radiated Emissions	10 kHz - 30 MHz
Radiated Emissions	30 MHz - 1000 MHz
Interference Power	30 MHz - 300 MHz
Equivalent Radiated Emissions	1 GHz - 18 GHz

Technical Documentation

Test Data Sheets and Test Setup Drawing(s)	TD1
--	-----

Appendices

Appendix A	A1
Test Setups (Photographs)	
Appendix B	B1
Product Information Form(s)	
Appendix C	C1
Change History	
Appendix D	D1
Testing Facility Approval Certificates: VCCI (3), NVLAP, EN 45001	
Appendix E	E1
Supplemental Information	

EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

- | | | |
|---|---|--|
| ☐ - EN 50081-1 / 1991 | | |
| ☐ - EN 55011 / 1991 | ☐ - Group 1 | ☐ - Group 2 |
| | ☐ - Class A | ☐ - Class B |
| ☐ - EN 55013 / 1990 | | |
| ☐ - EN 55014 / 1987 | ☐ - Household appliances and similar | |
| | ☐ - Portable tools | |
| | ☐ - Semiconductor devices | |
| ☐ - EN 55014 / A2:1990 | | |
| ☐ - EN 55014 / 1993 | ☐ - Household appliances and similar | |
| | ☐ - Portable tools | |
| | ☐ - Semiconductor devices | |
| ☐ - EN 55015 / 1987 | | |
| ☐ - EN 55015 / A1:1990 | | |
| ☐ - EN 55015 / 1993 | | |
| ☐ - EN 55022 / 1987 | ☐ - Class A | ☐ - Class B |
| ☐ - EN 55022 / 1994 | ☐ - Class A | ☐ - Class B |
| ☐ - BS | | |
| ☐ - VCCI | ☐ - Class 1 ITE | ☐ - Class 2 ITE |
| ☒ - 47 CFR Part 2, Subpart J, Paragraph 2.993 | | |
| ☐ - 47 CFR Part 15, Subpart B | | |
| ☐ - 107(b) | | |
| ☐ - 107(a) | | |
| ☐ - 107(e) | ☐ - Class A | ☐ - Class B |
| ☐ - 109(b) | | |
| ☐ - 109(a) | | |
| ☐ - 109(g) | ☐ - Class A | ☐ - Class B |
| ☐ - AS 3548 (1992) | ☐ - Class A | ☐ - Class B |
| ☐ - CISPR 11 (1990) | ☐ - Group 1 | ☐ - Group 2 |
| | ☐ - Class A | ☐ - Class B |
| ☐ - CISPR 22 (1993) | ☐ - Class A | ☐ - Class B |



Environmental Conditions In The Laboratory:

	<u>Actual</u>
Temperature:	: 23 °C
Relative Humidity:	: 50 %
Atmospheric Pressure:	: 1000 mBar

Power Supply Utilized:

Power supply system	: 120 V / 60 Hz / 1 ϕ
---------------------	----------------------------

Symbol Definitions:

- - Applicable
- - Not Applicable



Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE) measurements were performed at the following test location:

■ - Test not applicable

- - SR-2, Shielded Room, 12' x 24' x 10', Metal Chamber
- - SR-3, Shielded Room, 12' x 20' x 8', Metal Chamber
- - SR-4, Shielded Room, 10' x 17' x 8', Copper Screen Chamber
- - SR-5, Shielded Room, 16' x 28' x 15', Metal, Semi-Anechoic Chamber
- - CSR-1, Shielded Room, 10' x 7' x 7', Metal Chamber

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.
□ - NM-7A, NM-17/27, NM-37/57, NM-67, CCA-7, & H/P 9836 HP-1B Computer	156, 162-166	Automated RFI Measurement System (ARMS), NO 1	Eaton/Aitech	(multiple)
□ - NM-17/27, NM-37/57, CA-7, and H/P 9826 Computer	168, 170, 177, 178	Automated RFI Measurement System (ARMS), NO 2	Eaton/Aitech	(multiple)
□ - H/P Spectrum Analyzer, Model 8568B; Display Section RF Analyzer Section, H/P 85350A, Quasi-Peak Adapter H/P Computer System, Model 310 with HP 8568A Software	187, 188	Automated RFI Measurement System (ARMS)	Various	(multiple)
□ - LISN-3, 50 A	262-263	Power Mains Network (LISN), 50 μH/250 μH/50 Ω/0.25 μF	Fischer Custom Communications, Inc.	3-4
□ - LISN-3, 50 A	264, 265	Power Mains Network (LISN), 50 μH/250 μH/50 Ω/0.25 μF	Fischer Custom Communications, Inc.	5-6
□ - LISN-2, 25 A	413	Power Mains Network (LISN), 50 μH/250 μH/50 Ω/0.25 μF	Fischer Custom Communications, Inc.	7
□ - LISN-2, 25 A	--	Power Mains Network (LISN), 50 μH/250 μH/50 Ω/0.25 μF	Fischer Custom Communications, Inc.	7
□ - FCC-LISN-50-25-2	553	Power Mains Network (LISN), 50 μH/250 μH/50 Ω/0.25 μF	Fischer Custom Communications, Inc.	112
□ - FCC-LISN-50-25-2	552	Power Mains Network (LISN), 50 μH/250 μH/50 Ω/0.25 μF	Fischer Custom Communications, Inc.	113
□ - 8012-50-R-12-BNC	266	LISN, 50 μH/50 Ω/0.1 μF	Solar Electronics Co.	--
□ - 9252-50-R-24-BNC	458	LISN, 50 μH /250 μH/50 Ω/ 0.25 μF	Solar Electronics Co.	941719
□ - 9252-50-R-24-BNC	457	LISN, 50 μH /250 μH/50 Ω/ 0.25 μF	Solar Electronics Co.	941720
□ - MDS-21	277	Absorbing Clamp	Rohde & Schwarz	821023
□ - ESHS 20	428	EMI Test Receiver	Rohde & Schwarz	837055/001
□ - ESHS 30	459	EMI Test Receiver	Rohde & Schwarz	832354/004
□ - CAT-20	598	20 dB Attenuator	Mini-Circuits	--
□ - CAT-20	615	20 dB Attenuator	Mini-Circuits	--

Remarks:



Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

The **RADIATED EMISSIONS (MAGNETIC FIELD)** measurements were performed at the following test location:

☒ - Test not applicable

- ☐ - SR-2, Shielded Room, 12' x 24' x 10', Metal Chamber
- ☐ - SR-3, Shielded Room, 12' x 20' x 8', Metal Chamber
- ☐ - SR-4, Shielded Room, 10' x 17' x 8', Copper Screen Chamber
- ☐ - SR-5, Shielded Room, 16' x 28' x 15', Metal, Semi-Anechoic Chamber
- ☐ - TR-1, Shielded Room, 16.5' x 10' x 7.5', Copper Screen Chamber
- ☐ - CSR-1, Shielded Room, 10' x 7' x 7', Metal Chamber

Testing was performed at a test distance of :

- ☐ - 3 meters
- ☐ - 30 meters

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.
☐ - NM-7A, NM-17/27, NM-37/57, NM-67, CCA-7, and H/P 9836 HP-1B Computer	159, 162, 166	Automated RFI Measurement System (ARMS), NO. 1	Eaton/Ailtech	(multiple)
☐ - NM-17/27, NM-37/57, CA-7, & H/P 9836 Computer	168, 170, 177, 178	Automated RFI Measurement System (ARMS), NO. 2	Eaton/Ailtech	(multiple)
☐ - AT-205/URM-16	201	Loop Antenna	Eaton/Ailtech	64090
☐ - 94593-1	205	Loop Antenna	Eaton/Ailtech	0264

Remarks: _____



Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The **RADIATED EMISSIONS (ELECTRIC FIELD)** measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

■ - Test not applicable

- ☐ - Roof (Small Open Area Test Site)
- ☐ - Canyon #1 (10- and 30-Meter Open Area Test Site), Carroll Canyon, San Diego
- ☐ - Canyon #2 (3- and 10-Meter Open Area Test Site), Carroll Canyon, San Diego

Testing was performed at a test distance of :

- ☐ - 3 meters
- ☐ - 10 meters
- ☐ - 30 meters

Test Equipment Used :

	Model No.	Prop. No.	Description	Manufacturer	Serial No.
☐	NM-37/57A	420	QATS measurement set (Roof)	Eaton/Ailtech	0561-09261
	CCA-7	373			0773-03117
☐	NM-37/57	17	QATS measurement set (Canyon)	Eaton/Ailtech	0709-82078
	CCA-7	172			0187-0322
☐	HFH 2-Z2	208	Antenna, Loop	Rohde & Schwarz	880
☐	3104	235	Antenna, Biconical	EMCO	3031
☐	3110	451	Antenna, Biconical	EMCO	1378
☐	94455-1	22	Antenna, Biconical	Eaton/Ailtech	0811
☐	3110B	431	Antenna, Biconical	EMCO	9508-2
☐	CBL6111	460	Antenna, Bilog	Chase	1013
☐	CBL6111	461	Antenna, Bilog	Chase	1291
☐	3146	242	Antenna, Log Periodic Dipole	EMCO	1597
☐	3146	243	Antenna, Log Periodic Dipole	EMCO	106X
☐	3146	244	Antenna, Log Periodic Dipole	EMCO	1063
☐	7405	570	Loop Probes	EMCO	9104-1959
☐	8566B	404	Spectrum Analyzer	Hewlett Packard	2311A02209
☐	85662B	406	Spectrum Analyzer Display	Hewlett Packard	2309A04682
☐	ESVS 30	427	EMI Test Receiver	Rohde & Schwarz	830350/006
☐	ESVS 30	466	EMI Test Receiver	Rohde & Schwarz	833825/003

Remarks:

Emissions Test Conditions: INTERFERENCE POWER

The **INTERFERENCE POWER** measurements were performed by using the absorbing clamp on the mains and interface cables in the frequency range 30 MHz - 300 MHz at the following test location :

■ - Test not applicable

- ☐ - SR-2, Shielded Room, 12' x 24' x 10', Metal Chamber
- ☐ - SR-3, Shielded Room, 12' x 20' x 8', Metal Chamber
- ☐ - SR-4, Shielded Room, 10' x 17' x 8', Copper Screen Chamber
- ☐ - SR-5, Shielded Room, 16' x 28' x 15', Metal, Semi-Anechoic Chamber
- ☐ - CSR-1, Shielded Room, 10' x 7' x 7', Metal Chamber

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.
☐ - MDS-21	277	Absorbing Clamp	Rohde & Schwarz	821023
☐ - NM-7A, NM-17/27, NM-37/57, NM-67, CCA-7, & H/P 9836 HP-1B Computer	156, 162-166	Automated RFI Measurement System (ARMS), NO. 1	Eaton/Ailtech	(multiple)
☐ - NM-17/27, NM-37/57, CCA-7, & H/P 9826 Computer	166-170, 177-178	Automated RFI Measurement System (ARMS), NO. 2	Eaton/Ailtech	(multiple)
☐ - H/P Spectrum Analyzer, Model 8568B; Display Section RF Analyzer Section; H/P 85650A, Quasi-Peak Adapter H/P Computer System, Model 310 with HP 85869A Software	181-188	Automated RFI Measurement System (ARMS)	Hewlett Packard	2304A04531 2304A02500 2811A01325
☐ - ESVS 30	427	EMI Test Receiver	Rohde & Schwarz	830350/006
☐ - ESVS 30	466	EMI Test Receiver	Rohde & Schwarz	830350/003

Remarks: _____

**Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)**

The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range 1 GHz - 18 GHz were performed in a horizontal and vertical polarization at the following test location :

☐ - Test not applicable

- - Roof (Small Open Area Test Site)
- ☐ - Canyon #1 (10- and 30-Meter Open Area Test Site), Carroll Canyon, San Diego
- ☐ - Canyon #2 (3- and 10-Meter Open Area Test Site), Carroll Canyon, San Diego

Testing was performed at a test distance of:

- ☐ - 1 meters
- - 3 meters
- ☐ - 10 meters

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.
■ - 8566B	407	Spectrum Analyzer	Hewlett Packard	2311A02209
■ - 85662B	406	Spectrum Analyzer Display	Hewlett Packard	2309A04682
☐ - 3115	453	Antenna, Double Ridge Guide	EMCO	9412-4363
■ - 3115	251	Antenna, Double Ridge Guide	EMCO	2495
☐ - AFD3-0102-13-ST	366	Pre-Amplifier (38 dB gain), 1 to 2 GHz	Miteq, Inc.	16429
■ - AFD3-0208-40-ST	367	Pre-Amplifier (30 dB gain), 2 to 8 GHz	Miteq, Inc.	155382
☐ - AFS4-08001800-70-10P-4	368	Pre-Amplifier (22 dB gain), 8 to 18 GHz	Miteq, Inc.	167
☐ - 91888-2	252	Horn Antenna (1 to 2 GHz)	Eaton	101
☐ - 91889-2	253	Horn Antenna (2 to 3.6 GHz)	Eaton	101
☐ - 91892-1	254	Reflector Antenna (3.6 to 18 GHz)	Eaton	--
☐ - 94613-1	255	Horn Antenna (3.6 to 7.6 GHz)	Eaton	--
☐ - 91891-2	256	Horn Antenna (7.3 to 12 GHz)	Eaton	--
☐ - 94614-1	257	Horn Antenna (12 to 18 GHz)	Eaton	--

Remarks: _____



Equipment Under Test (EUT) Test Operation Mode - Emissions Tests :

The equipment under test was operated under the following conditions during emissions testing:

- ☐ - Standby
- ☐ - Test Program (H - Pattern)
- ☐ - Test Program (Color Bar)
- ☐ - Test Program (Customer Specified)
- ☐ - Practice Operation
- ☒ - Normal Operating Mode
- ☐ - _____

Configuration of the equipment under test:

- ☐ - See Constructional Data Form in Appendix B - Page B2
- ☒ - See Product Information Form(s) in Appendix B - Page B2

The following peripheral devices and interface cables were connected during the testing:

- | | |
|---|----------------|
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - unshielded power cable | |
| ☐ - unshielded cables | |
| ☐ - shielded cables | MPS.No.: _____ |
| ☐ - customer specific cables | |
| ☐ - _____ | |
| ☐ - _____ | |



Emissions Test Results:

Conducted Emissions, 10/150/450 kHz - 30 MHz

☐ - PASS ☐ - FAIL ☒ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Radiated Emissions (Magnetic Field), 10 kHz - 30 MHz

☐ - PASS ☐ - FAIL ☒ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Radiated Emissions (Electric Field), 30 MHz - 1000 MHz

☐ - PASS ☐ - FAIL ☒ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Interference Power at the Mains and Interface Cables, 30 MHz - 300 MHz

☐ - PASS ☐ - FAIL ☒ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Equivalent Radiated Emissions, 1 GHz - 18 GHz

☒ - PASS ☐ - FAIL ☐ - NOT APPLICABLE

Minimum limit margin _____ 20.1 dB at _____ 3895 MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: Downlink

GENERAL REMARKS:

SUMMARY:

All tests according to the regulations cited on page 3 were

■ - Performed

□ - Not Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements cited on page 3.

□ - **Does not** fulfill the general approval requirements cited on page 3.

Statement of Measurement Uncertainty

The data and results referenced in this document are true and accurate. There may be some degree or level of measurement uncertainty. As EN 45001 does not allow recommendations to be included in the test report, the reader is encouraged to request a copy of the TÜV policy concerning pass or fail judgment with respect to possible measurement uncertainties.

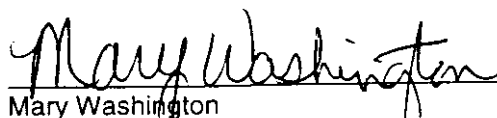
Equipment Received Date: 22 May 1997

Testing Start Date: 22 May 1997

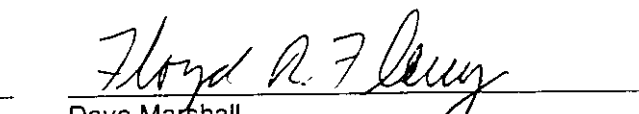
Testing End Date: 22 May 1997

- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:


Mary Washington
(EMC Engineer)

Responsible Test Engineer:


m Dave Marshall
(EMC Test Engineer)



Technical Documentation

Test Data Sheets
and
Test Setup Drawing(s)

REPORT NO: S-7221DATE: 22 MAY 97

TEST: _____

CUSTOMER: ORTEL CORPEUT: MODEL CDR1901D CDMA Channel Selective RepeaterSPECIFICATION: FCC Part 2 Para 2.993

Downlink

Frequency MHz	Peak Vertical dBμV	Peak Horizontal dBμV	Distance Factor dB	Correction Factor dB/m	Emission Level dBμV/m	Limit dBμV/m	EUT Margin dB
1946.25	31.3	28.2	-	5 + 27.5	63.8	-	
3892.5	11.5	10.3	0	7.5 + 34.2	53.2	84.4	-31.2
5838.7	1.4	1.8	↓	9.6 36.5	47.9	↓	-36.5
7785.0	2.0	2.0	↓	11.1 + 37.4	50.5	↓	-33.9
9731.25	-0.5	-0.5	↓	13.1 38.7	51.3	↓	-33.1
1947.5	31.8	27.9	0	32.5		-	
3895	17.0	18.6	↓	41.7	64.3	84.4	-20.1
5842.5	4.5	6.4	↓	46.1	52.5	↓	-31.9
7789	5.4	6.7	↓	48.5	55.2	↓	-29.2
9737.5	-	-	↓	51.8	54.8	↓	-
1948.75	33.5	31.4	0	32.5	66	-	
3897.5	14.1	18.8	↓	41.7	60.5	84.4	-23.9
5846.2	6.5	6.8	↓	46.1	52.9	↓	-31.5
7795	2.0	6.1	↓	48.5	54.6	↓	-29.8
9743.7	-	-	-	51.8	-	↓	-

- NOTES:
1. RBW = 1 MHz; VBW = 1 MHz
 2. Receive antenna = Eaton 3115 #251
 3. Amplifier 2-8 GHz #367
 4. EUT S/N: 0141 Coax # 655, 656, 658

Dunshill

REPORT NO: S-7221DATE: 22 May 97

TEST: _____

CUSTOMER: ORTEL CORPEUT: MDA CDR1901DSPECIFICATION: FCC Part 2 Para 2.99.3

UPLINK

Frequency MHz	Peak Vertical dBμV	Peak Horizontal dBμV	Distance Factor dB	Correction Factor dB/m	Emission Level dBμV/m	Limit dBμV/m	EUT Margin dB
1866.25	35.7	36	0	32.5	68.5	—	
3732.5	16.4	17.6		41.7	59.3	84.4	-25.1
5598.7	5.7	8.9		46.1	55	↓	-29.4
7464.9	7	9.9		48.5	58.4	↓	-26
9331.2	2	4.1	↓	51.8	55.9	↓	-28.5
1862.5	36	37.3	0	32.5	69.8	—	
3735	16.8	16.8 20.5		41.7	62.2	84.4	-22.2
5602	8.2	8.2 8.8		46.1	54.9	↓	-29.5
7469.9	8.8	8.8 7.7	↓	48.5	57.3	↓	-27.1
9337	—	3.7 —		51.8	—	↓	—
1868.75	39.0	40.7	0	32.5	73.2	—	
3737.5	15.8	18.4		41.7	60.1	84.4	-24.3
5606.2	7.1	6.8		46.1	53.2	↓	-31.2
7475	8.9	7.7	↓	48.5	57.4	↓	-27
9243.7	—	—		51.8	—	↓	—

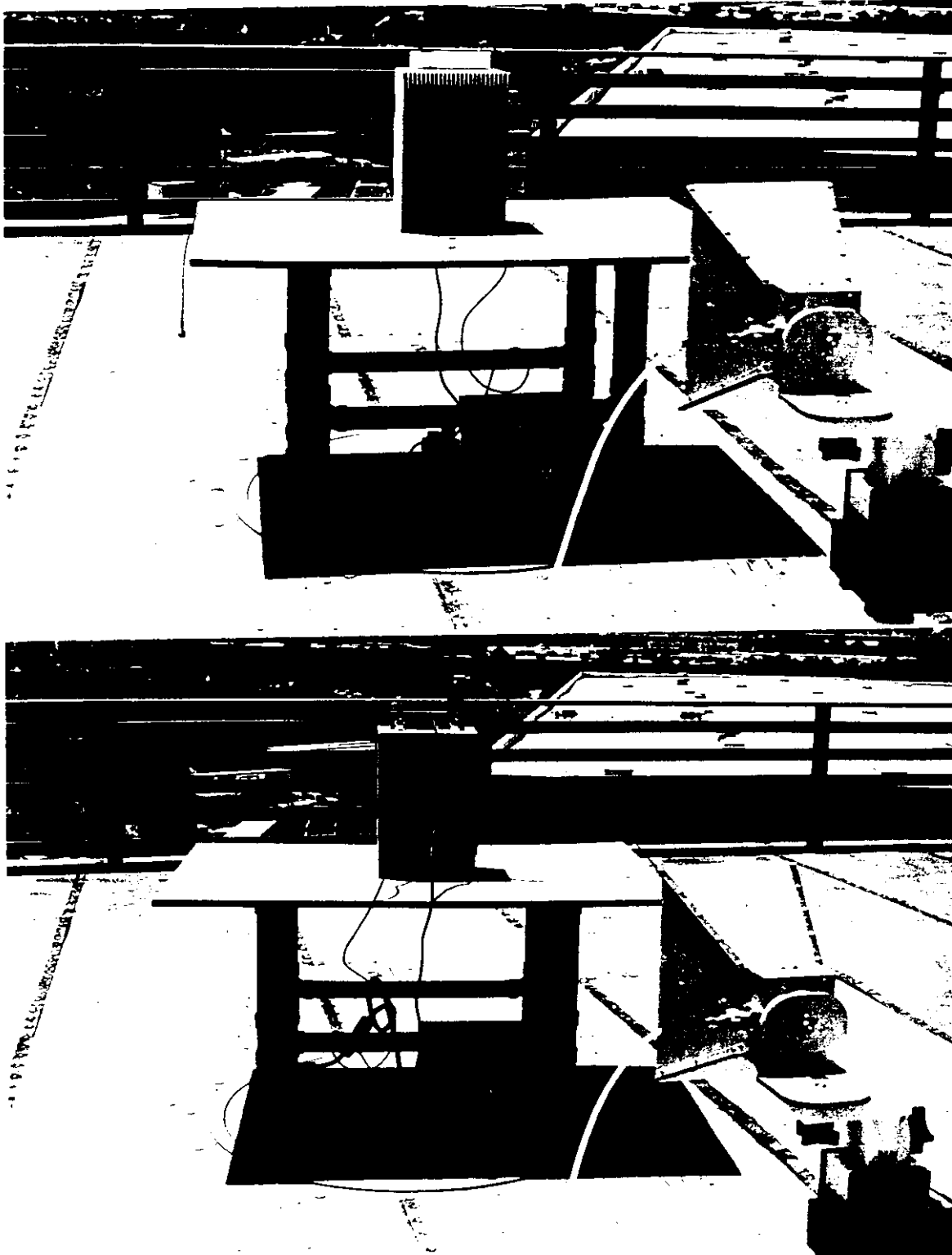
- NOTES: 1. RBW = 1 MHz; VBW = 1 MHz
 2. Receive antenna = EMCO 3115-25-1
 3. Amplifier 2-8 GHz # 367
 4. EUT SN: 0141 COAX # 655, 656, 658

D. Marshall

Appendix A

Test Setups
(Photographs)

Photograph of Test Setup:
Radiated Emissions 1 - 18 GHz



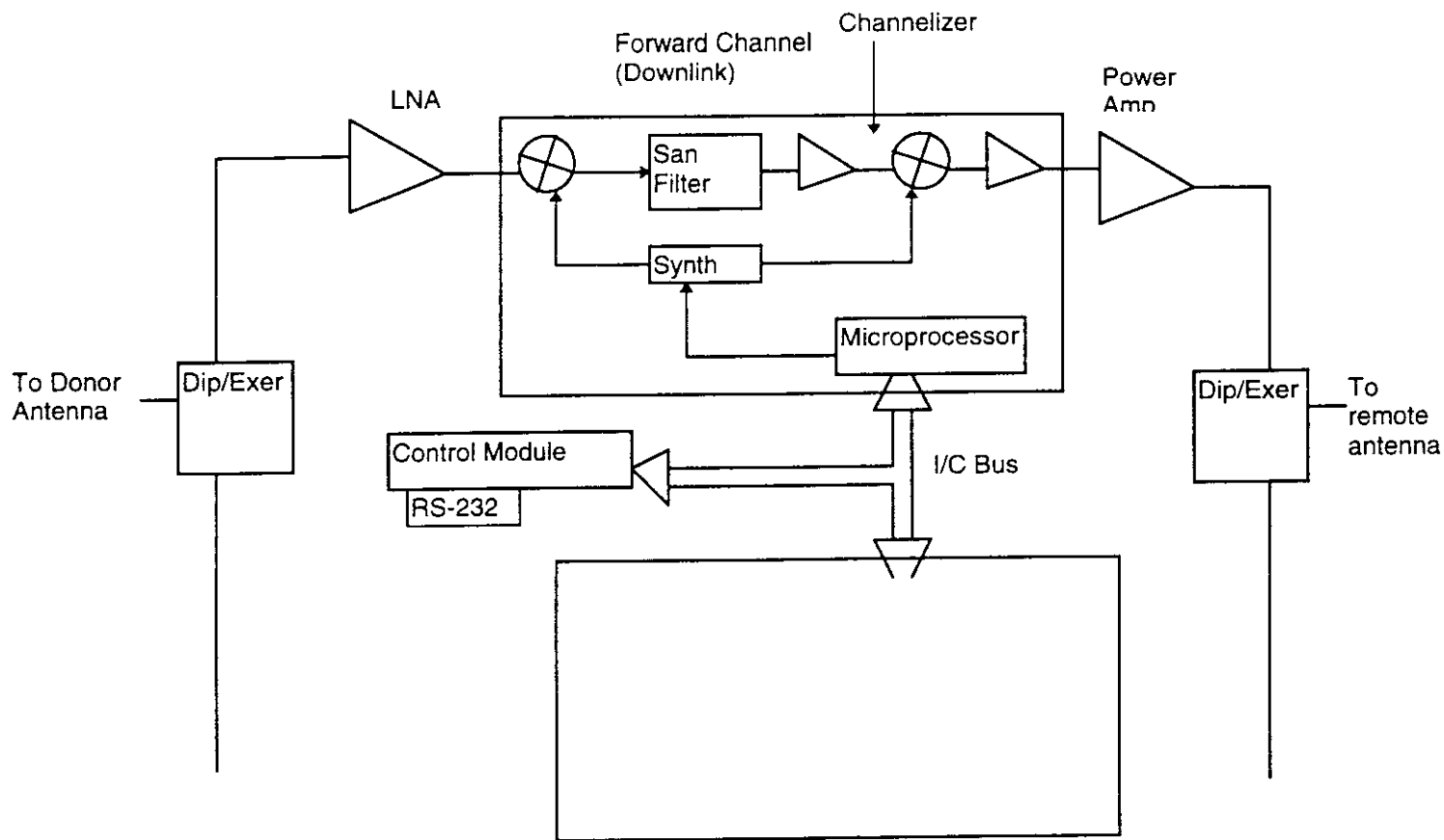


Appendix B

Product Information Form(s)



CUSTOMER INFORMATION			
COMPANY NAME:		ORTEL CORPORATION	
COMPANY ADDRESS:		2015 West Chestnut Street	
		Alhambra, CA 91803	
PHONE NUMBER:		818 293 3640	
FAX NUMBER:		818 281 7913	
CUSTOMER CONTACT:		Martin Kies	
PRODUCT DESCRIPTION			
NAME, MODEL, SERIAL # OF EUT:		CDMA Repeater, Model CDR-1901-1-D, S/N 0141	
DESCRIPTION OF EUT:		CDMA Repeater	
POWER INTERFACE			
FREQUENCY/AC/DC VOLTAGE:		50, 60 Hz/115 Vac	
PHASES/CURRENT:		1/1.3 (nominal)	
POWER SUPPLY			
DESCRIPTION:		DC-DC	
MANUFACTURER, MODEL #:		Vicor, VI-250-CU	
SWITCHING FREQUENCY:		100 kHz	
POWER WIRING			
HARD WIRED/FLEXIBLE:		Hard wired	
SHIELDED/UNSHIELDED:		--	
REMOVABLE/ATTACHED:		--	
RFI SUPPRESSION			
BEFORE TEST:		PCBs housed in modular sections.	
POWERLINE FILTER: MODEL #:		Little Fuse, #848003 European part number 3A (UL, FCC, CSA approved)	
CABINET SHIELDING:		Shielded	
PLATING TYPE:		--	
OPERATING MODE(S):		Normal	
EUT CONFIGURATIONS:		--	
INTERFACING, SIMULATOR OR MONITORING EQUIPMENT:			
Description	Model #	Serial #	FCC ID/Other
--			
I/O PORTS:		2	
Function	Cable Length	Type	Shield Termination
UL in, DL out antenna	--	7/16" female	--
UL out, DL in antenna	--	7/16" female	--
BLOCK DIAGRAM:		See page B3.	





Appendix C

Change History

Not Applicable



Appendix D

Testing Facilities

Certificates of Approval

VCCI (3), NVLAP, EN 45001



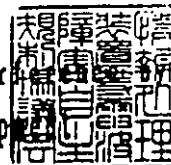
CERTIFICATE

Facility: Enclosure No. 1
(Conducted Interference Measurement)
Company : TÜV Product Service Inc.
Address : 7562 Trade Street, San Diego,
CA 92121 U. S. A.

*This is to certify that the following measuring facility
has been registered in accordance with the Regulations
for Voluntary Control Measures, Article 8.*

Registration No. : C-211
Date of Registration : December 26, 1994
This Certificate is valid until October 5, 1997.

Voluntary Control Council for Interference
Information Technology Equipment





CERTIFICATE

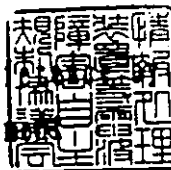
Facility: Enclosure No. 2
(Conducted Interference Measurement)

Company : TÜV Product Service Inc.
Address : 7562 Trade Street, San Diego,
CA 92121 U. S. A.

*This is to certify that the following measuring facility
has been registered in accordance with the Regulations
for Voluntary Control Measures, Article 8.*

Registration No. : C-212
Date of Registration : December 26, 1994
This Certificate is valid until October 5, 1997.

Voluntary Control Council for Inter
Information Technology Equip





CERTIFICATE

Facility: Carroll Canyon Site
(Radiation 3, 10, 30meter site)

Company : TÜV Product Service Inc.

Address : 7562 Trade Street, San Diego,
CA 92121 U.S.A.

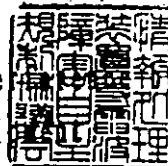
*This is to certify that the following measuring facility
has been registered in accordance with the Regulations
for Voluntary Control Measures, Article 8.*

Registration No. : R-212

Date of Registration : December 26, 1994

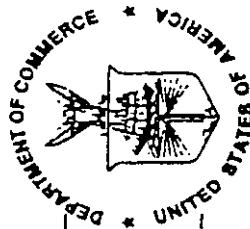
This Certificate is valid until October 5, 1997.

Voluntary Control Council for Inter-
Information Technology Equipment



United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]



ISO/IEC GUIDE 25:1980
ISO 9002:1987

Certificate of Accreditation

TUV PRODUCT SERVICE, INC.
SAN DIEGO, CA

is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:

**ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS
FCC**

December 31, 1997

Effective through

[Signature]

For the National Institute of Standards and Technology
NVLAP Lab Code: 100268-0

NVLAP-01C (11-96)



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-0001

December 19, 1996

Mr. John G. Smith
TUV Product Service, Inc.
10040 Mesa Rim Road
San Diego, CA 92121

NVLAP Lab Code: 100268-0

Dear Mr. Smith:

I am pleased to inform you that continuing accreditation for specific test methods in Electromagnetic Compatibility & Telecommunications, FCC is granted to your organization under the National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is effective until December 31, 1997, provided that your organization continues to comply with accreditation requirements contained in the NVLAP Procedures.

Your Certificate of Accreditation is enclosed along with a statement of your Scope of Accreditation. You may reproduce these documents in their entirety and announce your organization's accreditation status using the NVLAP logo in business publications, the trade press, and other business-oriented literature. Accreditation does not relieve your organization from observing and complying with any applicable existing laws and/or regulations.

We are pleased to have you participate in NVLAP and look forward to your continued association with this program. If you have any questions concerning your NVLAP accreditation, please direct them to Jon Crickenberger, Sr. Program Manager, Laboratory Accreditation Program, National Institute of Standards and Technology, Building 820, Room 282, Gaithersburg, MD 20899-0001; (301) 975-4016.

Sincerely,

James L. Cigler, Chief
Laboratory Accreditation Program

Enclosure(s)

NIST

Page D6 of D15

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation



Page: 1 of 1

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 100263-0

TUV PRODUCT SERVICE, INC.

10040 Mesa Rim Road
San Diego, CA 92121

Mr. John G. Smith

Phone: 619-546-3999 Fax: 619-546-0364

NVLAP Code Designation / Description

International Special Committee on Radio Interference (CISPR) Methods

12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

Federal Communications Commission (FCC) Methods

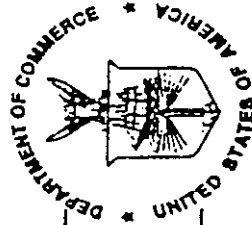
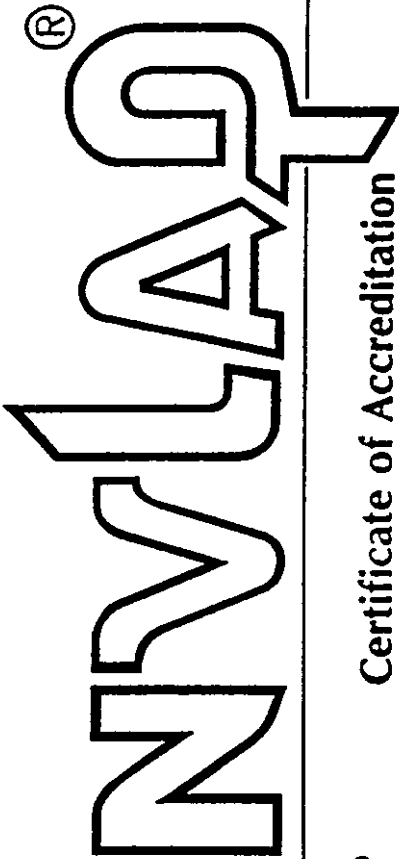
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
12/F01b Radiated Emissions

December 31, 1997

Effective through

A handwritten signature in dark ink, appearing to read "John G. Smith".
For the National Institute of Standards and Technology

United States Department of Commerce
National Institute of Standards and Technology



ISO/IEC GUIDE 25:1980
ISO 9002:1987

Certificate of Accreditation

TUV PRODUCT SERVICE, INC.
SAN DIEGO, CA

is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:

**ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS
MIL-STD-462**

December 31, 1997

Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 160268-0

NVLAP-01C (11-96)



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-0001

December 19, 1996

Mr. John G. Smith
TUV Product Service, Inc.
10040 Mesa Rim Road
San Diego, CA 92121

NVLAP Lab Code: 100268-0

Dear Mr. Smith:

I am pleased to inform you that continuing accreditation for specific test methods in Electromagnetic Compatibility, MIL-STD-462 is granted to your organization under the National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is effective until December 31, 1997, provided that your organization continues to comply with accreditation requirements contained in the NVLAP Procedures.

Your Certificate of Accreditation is enclosed along with a statement of your Scope of Accreditation. You may reproduce these documents in their entirety and announce your organization's accreditation status using the NVLAP logo in business publications, the trade press, and other business-oriented literature. Accreditation does not relieve your organization from observing and complying with any applicable existing laws and/or regulations.

We are pleased to have you participate in NVLAP and look forward to your continued association with this program. If you have any questions concerning your NVLAP accreditation, please direct them to Jon Crickenberger, Sr. Program Manager, Laboratory Accreditation Program, National Institute of Standards and Technology, Building 820, Room 282, Gaithersburg, MD 20899-0001; (301) 975-4016.

Sincerely,

James L. Cigler, Chief
Laboratory Accreditation Program

Enclosure(s)

NIST

Page D9 of D15

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation



Page: 1 of 2

ELECTROMAGNETIC COMPATIBILITY, MIL-STD 462

NVLAP LAB CODE 100268-0

TUV PRODUCT SERVICE, INC.

10040 Mesa Rim Road

San Diego, CA 92121

Mr. John G. Smith

Phone: 619-546-3999 Fax: 619-546-0364

Military Standard 462, Measurement of Electromagnetic Interference Characteristics

NVLAP Code Designation

Conducted Emissions:

12/A01	MIL-STD-462 Method CE01
12/A04	MIL-STD-462 Method CE02
12/A06	MIL-STD-462 Method CE03
12/A08	MIL-STD-462 Method CE04
12/A10	MIL-STD-462 Method CE06
12/A12	MIL-STD-462 Method CE07

Conducted Susceptibility:

12/B01	MIL-STD-462 Method CS01
12/B02	MIL-STD-462 Method CS02
12/B04	MIL-STD-462 Method CS03/CS04/CS05/CS08

December 31, 1997

Effective through

A handwritten signature in black ink, appearing to read "John G. Smith".
For the National Institute of Standards and Technology

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation



Page: 2 of 2

ELECTROMAGNETIC COMPATIBILITY, MIL-STD 462

NVLAP LAB CODE 100268-0

TUV PRODUCT SERVICE, INC.

Military Standard 462, Measurement of Electromagnetic Interference Characteristics

NVLAP Code Designation

12/B05 MIL-STD-462 Method CS06

12/B06 MIL-STD-462 Method CS07

12/B07 MIL-STD-462 Method CS09

Radiated Emissions:

12/D01 MIL-STD-462 Method RE01

12/D02 MIL-STD-462 Method RE02

12/D03 MIL-STD-462 Method RE03

Radiated Susceptibility:

12/E01 MIL-STD-462 Method RS01

12/E02 MIL-STD-462 Method RS02

12/E03 MIL-STD-462 Method RS03 (Consult laboratory for field strengths available)

12/E04 MIL-STD-462 Method RS03 employing RADHAZ procedures for high level testing
(Consult laboratory for field strengths available)

December 31, 1997

Effective through

A handwritten signature in black ink, appearing to read "John L. Galt". Below the signature is a horizontal line.
For the National Institute of Standards and Technology



FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

July 10, 1996

IN REPLY REFER TO
31040/SIT
1300F2

TUV Product Service
10040 Mesa Rim Road
San Diego, CA 92121-2912

Attention: John G. Smith

Re: Measurement facility located at Carroll Canyon, Site No. 2
(3 and 10 meters)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

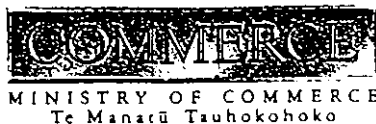
Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is published periodically and is also available on the Laboratory's Public Access Link as described in the enclosed Public Notice.

Sincerely,

Thomas W. Phillips
Electronics Engineer
Customer Service Branch

Enclosure:
PAL PN

Page D12 of D15

ENG 3/9
AJD

1 May 1997

TUV Product Service Inc
1775 Old Highway 8
Suite 104
New Brighton
MN 55112-1891
UNITED STATES OF AMERICA

Attention: Mr Daniel D Hoolihan

Dear Sir

LABORATORY APPROVAL

Thank you for your submission of 11 April regarding the approval of your testing laboratories at New Brighton, Boulder and San Diego to the Ministry of Commerce's laboratory approval criteria. Thank you for your interest in this matter.

I am pleased to advise that your submission has been successful and these laboratories have been added to the list of Ministry-approved laboratories. Your approved status is valid until 1 April 1999. Renewal of your approval at this time will require further demonstration of your compliance with the approval criteria. You will be advised of the requirements of renewal prior to the expiry date of your approval.

If you have any further questions on this matter please do not hesitate to contact me.

Yours faithfully

Andrew Dyke
Senior Technical Officer(Regulatory)

COMMUNICATIONS DIVISION - RADIO OPERATIONS

Ensuring New Zealand has the best possible communications environment

Head Office, Ministry of Commerce Building, 33 Bowen Street, P.O. Box 2847, Wellington, New Zealand. Telephone (04) 472 0030. Fax (04) 473 2489

Page D13 of D15

CERTIFICATE FOR LISTING
A97/TH/0098

TUV PRODUCT SERVICE
(SAN DIEGO)

is an AUSTEL listed test house having satisfied
NATA's (or its Associates with which it has a
MoU or MRA for mutual recognition of test houses)
requirements for testing to the following standards:

AS/NZS 3548 Limits and methods
of measurement of radio disturbance
characteristics of information technology
equipment



Rex Christensen
General Manager
Technical Branch

Date 11 February 1997

This certificate is valid as long as the accreditation is
maintained with NATA or its Associate.



AUSTEL
AUSTRALIAN
TELECOMMUNICATIONS
AUTHORITY

Page D14 of D15

CERTIFICATE



**CERTIFICATE OF COMPLIANCE OF THE
QUALITY SYSTEM WITH
REQUIREMENTS MENTIONED BELOW**

TÜV PRODUCT SERVICE GmbH certifies that

**TÜV PRODUCT SERVICE Inc.,
USA**

in the facilities

Test Laboratories
10040 Mesa Rim Road, San Diego CA 92121

for the following areas:

Services for EMC and Product Safety Testing

has established and is operating a quality system which meets the
requirement(s) of the internal quality management system of TÜV
PRODUCT SERVICE GmbH which is based on EN 45001:05/90.

Munich, 18 May, 1995

TÜV PRODUCT SERVICE GmbH

For the Executive Committee of TÜV PRODUCT SERVICE

Dr. Wolfgang Kreinberg

TÜV PRODUCT SERVICE GmbH, Ridlerstrasse 31, 80339 Munich, Germany

Appendix E

Supplemental Information

FCC Part 2.985: RF Output Power

DUT: Model CDR-1901-I-D (D-Band CDMA Repeater)
S/N: 141
Test Date: 5/27/97

FCC ID: LB41901CDMA
Company: Ortel Corporation

****RF Output Power Measured with Power Meter**
(HP Model: 438A Ortel Asset Number: 18808)

UPLINK:

Channel	Frequency (MHz)	Output Power (dBm)
325	1866.25	31.75
350	1867.50	31.69
375	1868.75	31.63

DOWNLINK:

Channel	Frequency (MHz)	Output Power (dBm)
325	1946.25	32.71
350	1947.50	32.75
375	1948.75	32.78

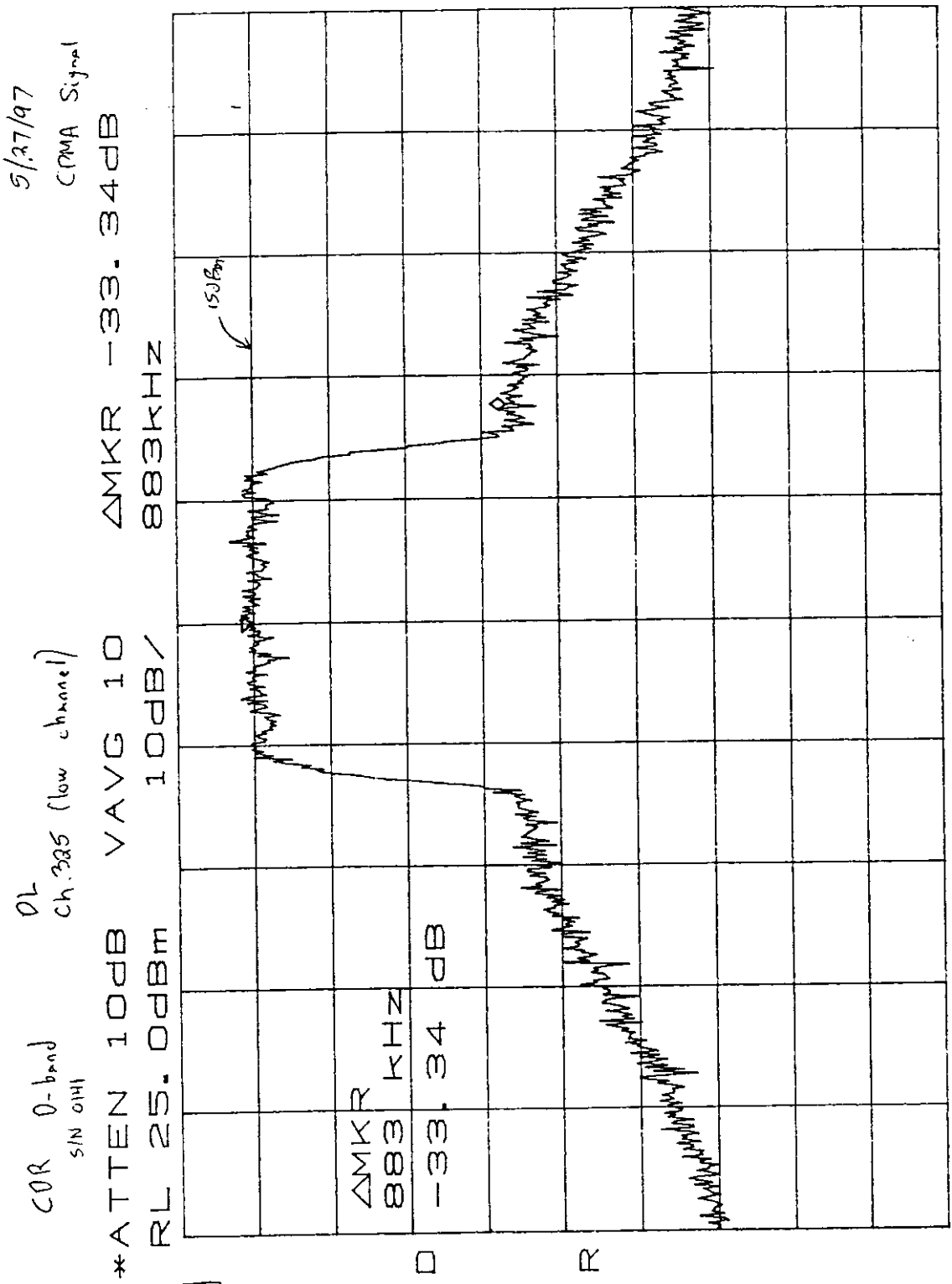
****Per FCC request to use power meter.**

File: Cdma_fcc.xls

Tab: D-Band



Tested by ORTEL CORPORATION



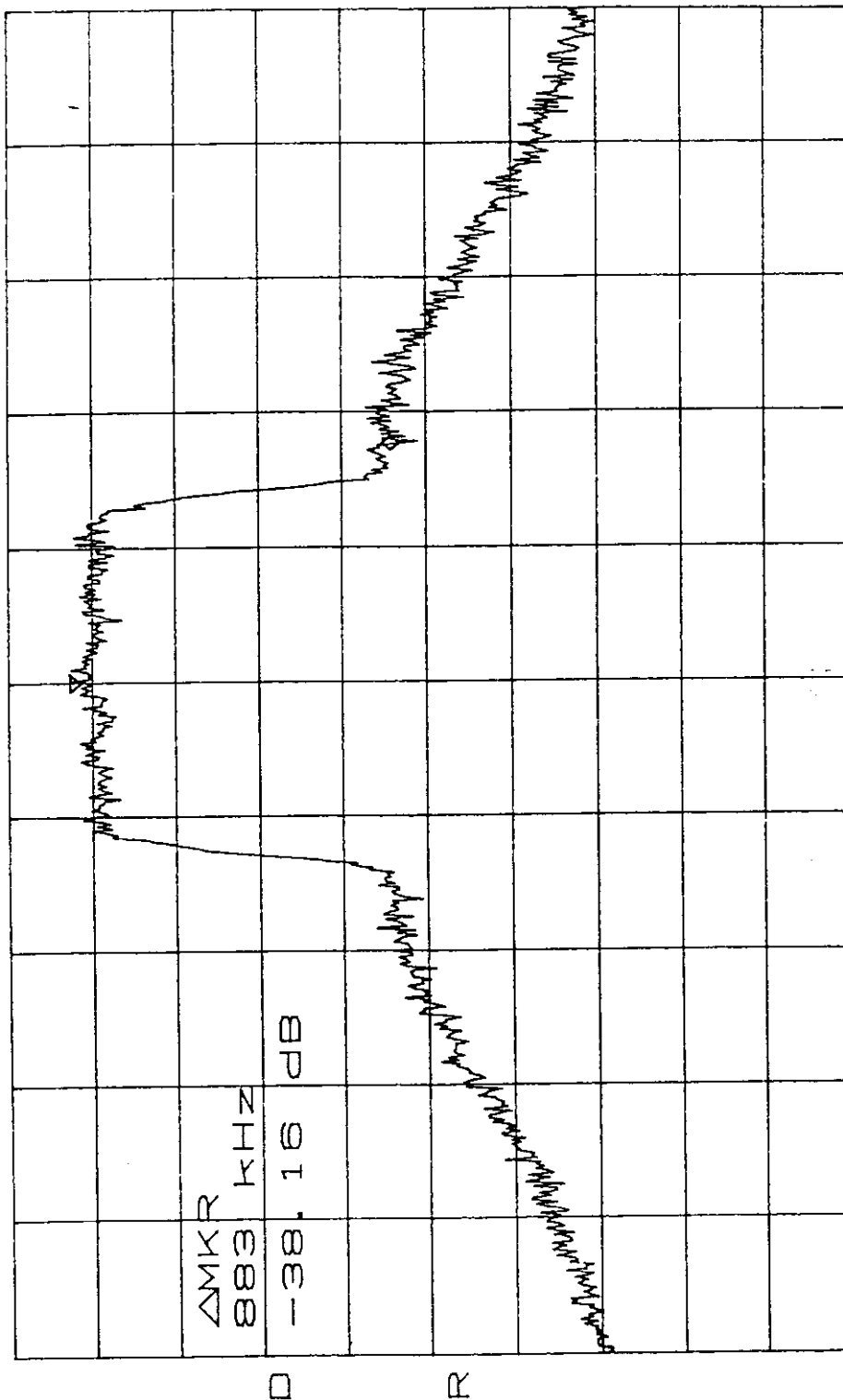
CENTER 1.946250GHZ
*RBW 30KHZ *VBW 30KHZ
SPAN 5.000MHZ SWP 50.0ms

2.959

Tested by ORTEL CORPORATION

DL
Ch. 375 (high channel)
5/27/97
CPMA Signal

*ATTEN 10dB VAVG 10 ΔMKR -38.16dB
RL 25.0dBm 10dB/ 883KHz

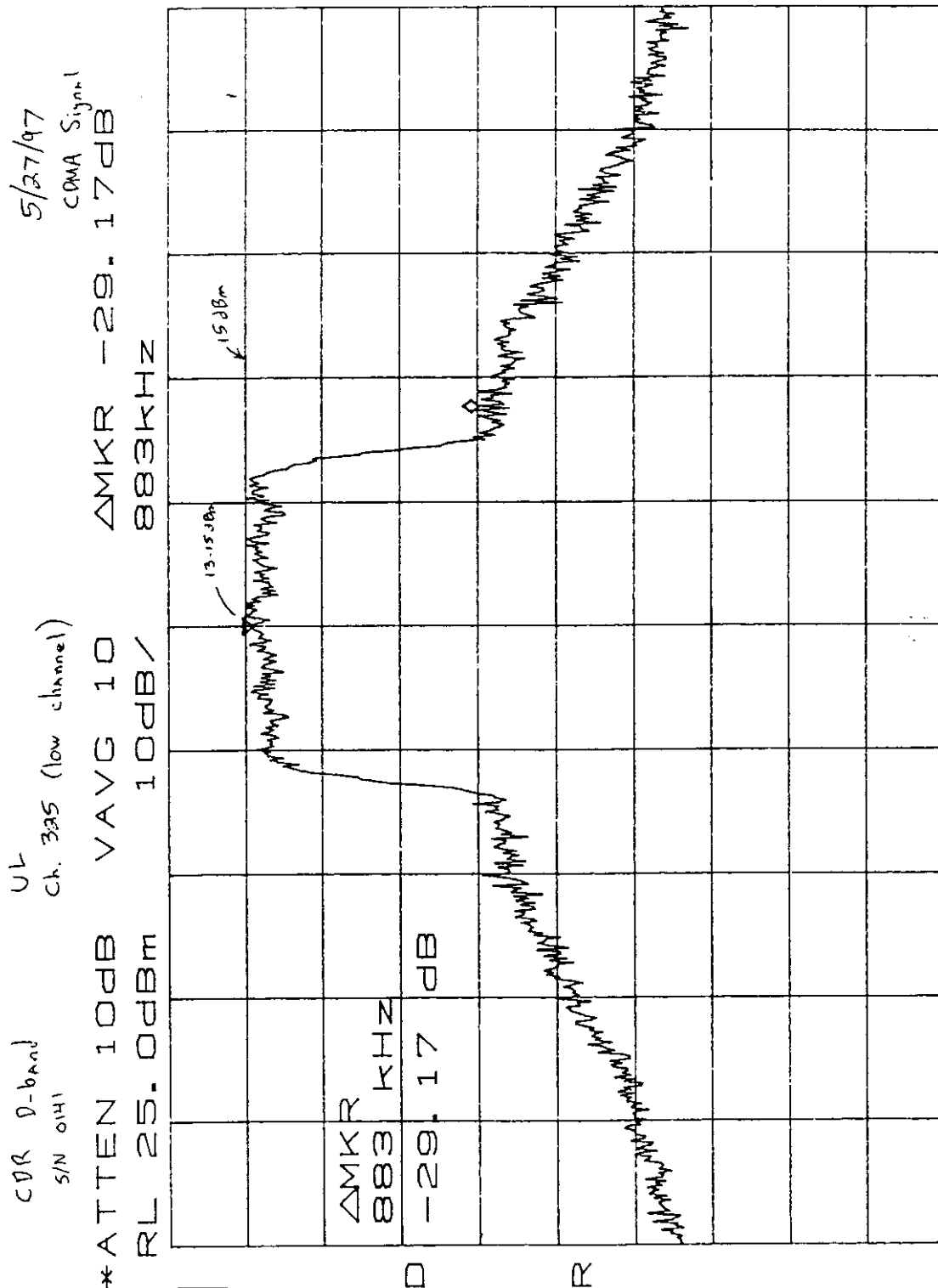


2.989

CENTER 1.948750GHZ SPAN 5.000MHZ
*RBW 30KHz *VBW 30KHz SWP 50.0ms



Tested by ORTEL CORPORATION

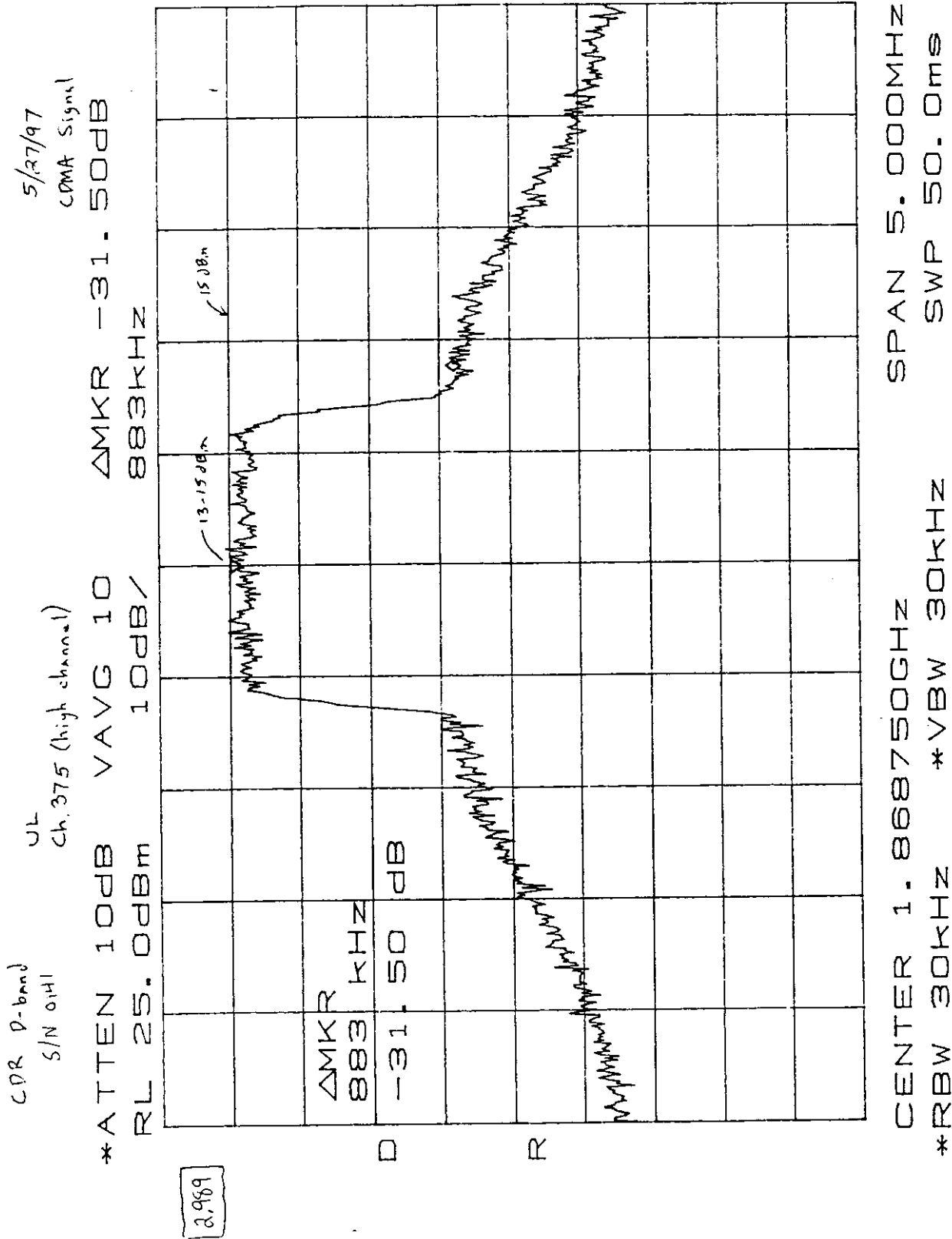


CENTER 1.866250GHZ SPAN 5.000MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms

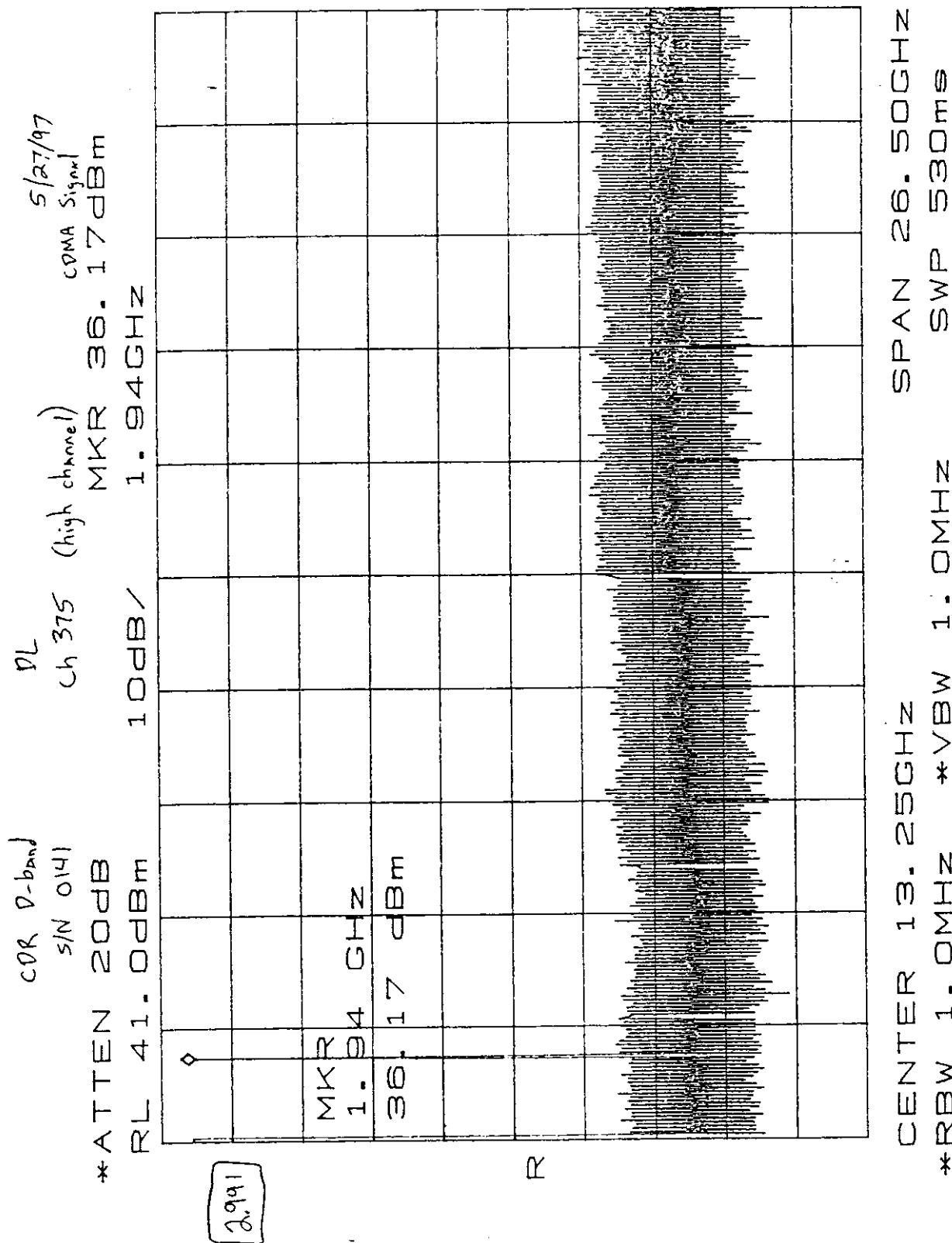
2.989



Tested by ORTEL CORPORATION



Tested by ORTEL CORPORATION

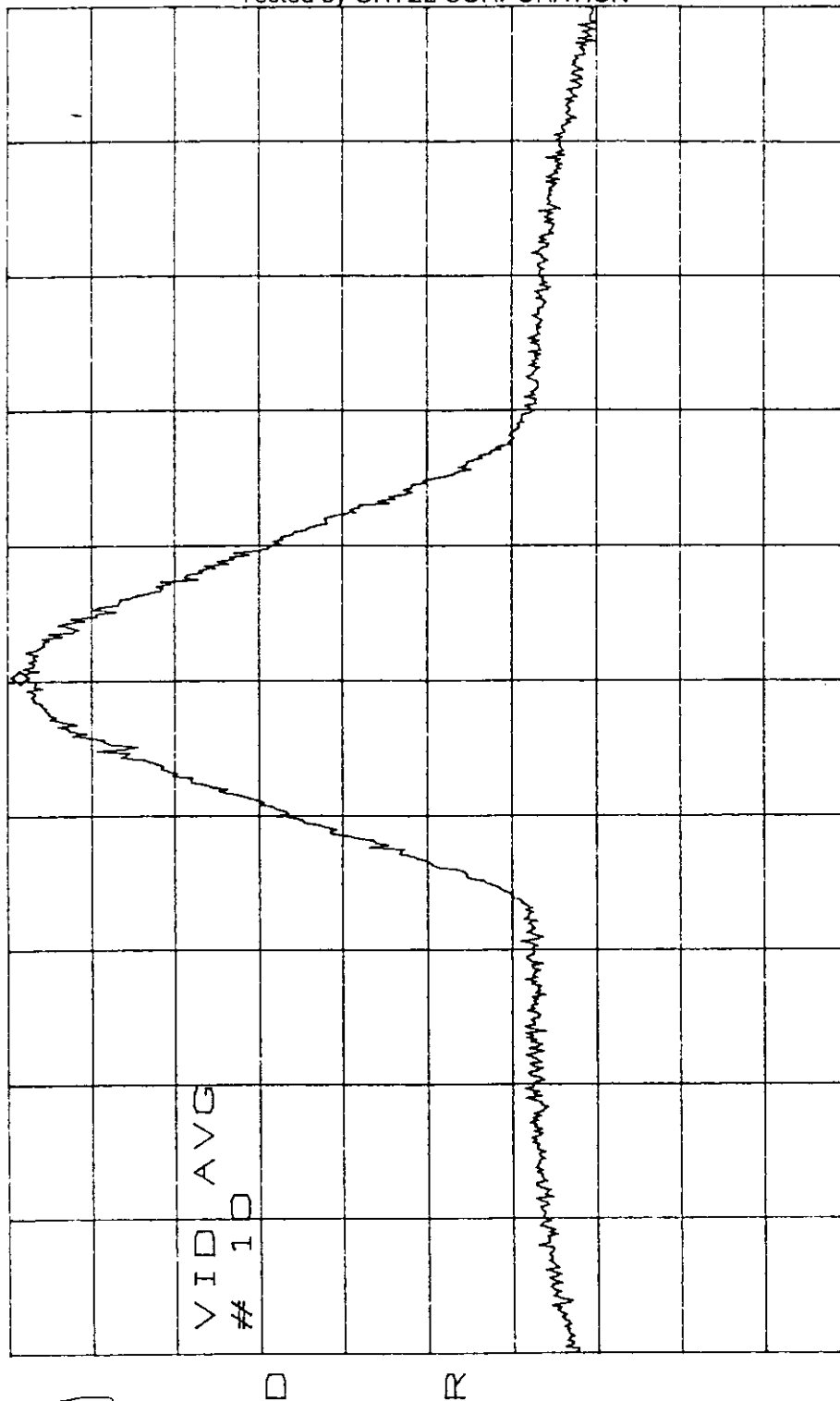




Tested by ORTEL CORPORATION

DL
Ch 375 (high channel)
5/27/97
CDMA Signal

*ATTEN 10dB VAVG 10 MKR 27.50dBm
RL 30.00dBm 10dB/ 1.94883GHz



2.941

CENTER 1.94875GHz SPAN 25.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

Tested by ORTEL CORPORATION

5/27/97

CDMA Signal

DL
Ch. 350 (mid channel)

COR 0-band
S/N 0.41

MKR 28.33dBm

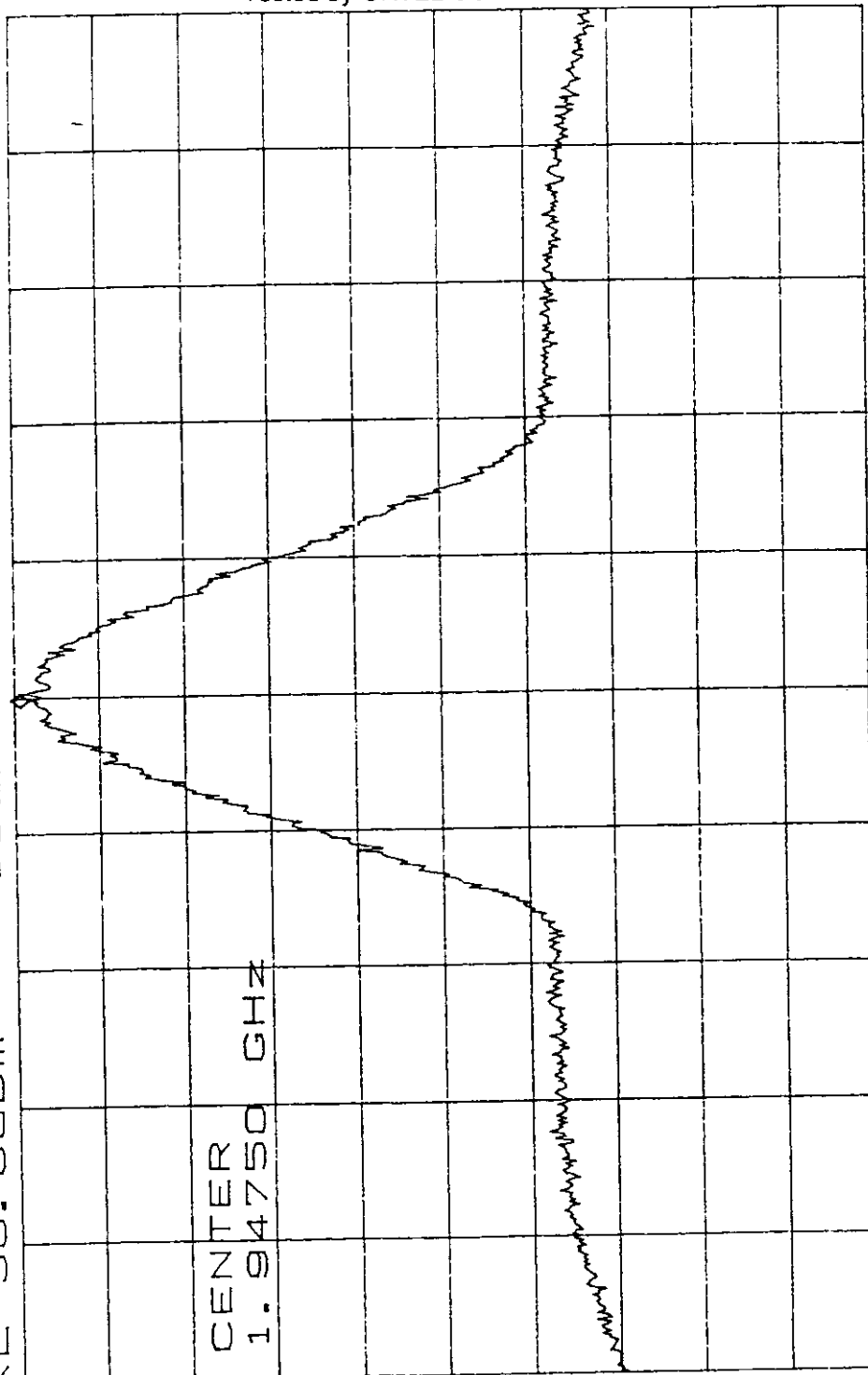
VAVG 10

*ATTEN 10dB

1.94746GHz

10dB/

RL 30.0dBm



SPAN 25.00MHz

CENTER 1.94750GHz

SWP 50.0ms

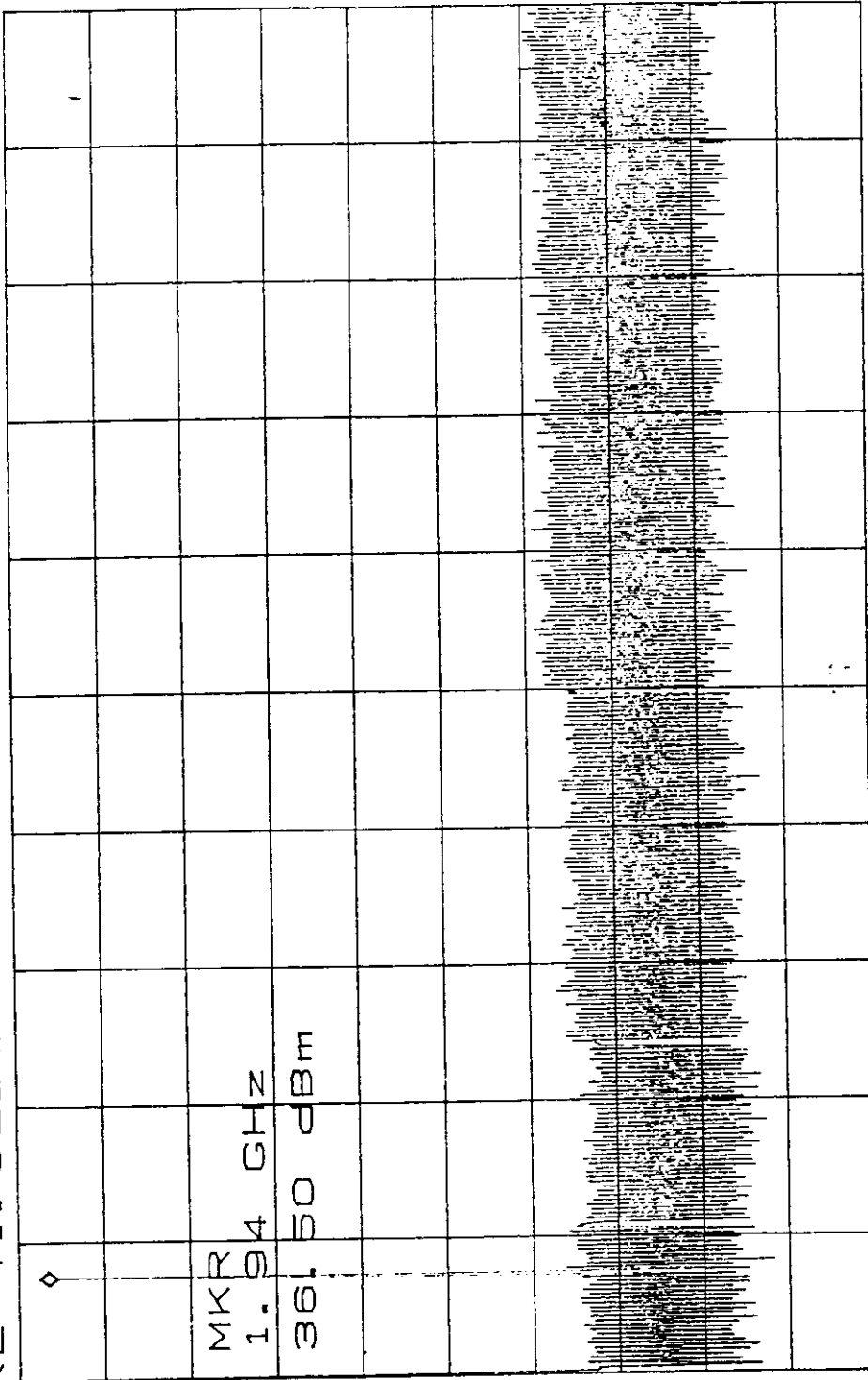
*VBW 1.0MHz

*RBW 1.0MHz



Tested by ORTEL CORPORATION

DL 5/27/97
CDR D-band S/N 0141
Ch 385 (low channel) MKR 36.50dBm
*ATTEN 20dB
RL 41.0dBm
10dB/ 1.94GHz



CENTER 13.25GHz
*RBW 1.0MHz *VBW 1.0MHz
SPAN 26.50GHz SWP 530ms

2,991



Tested by ORTEL CORPORATION

5/27/97

CDMA Signal

PL
Ch.325 (low channel)

CDR D-band
S/N 0141

MKR 27.00dBm

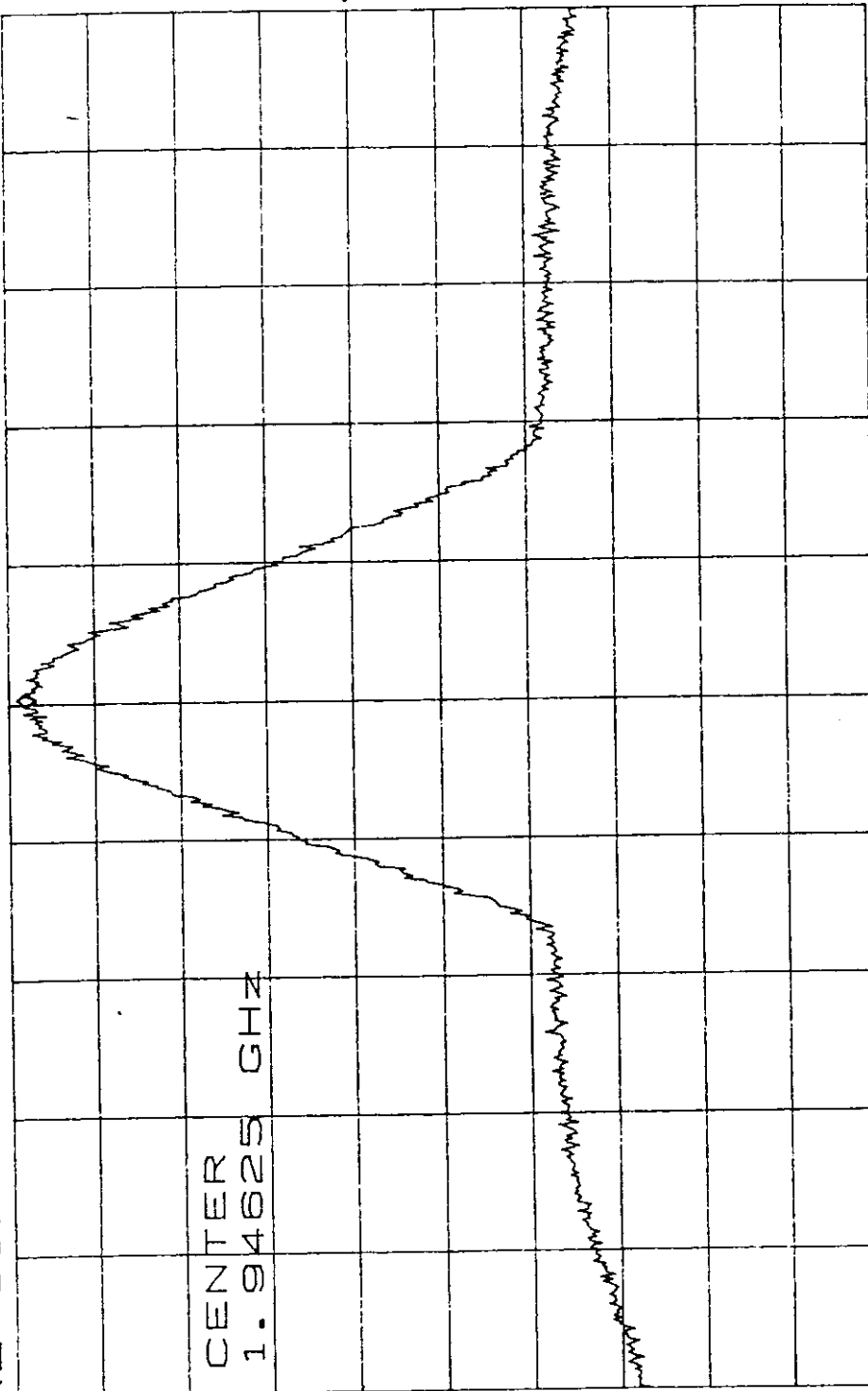
VAVG 10

*ATTEN 10dB

RL 30.00dBm

10dB/

1.94633GHz



2.991

SPAN 25.00MHz

CENTER 1.94625GHz

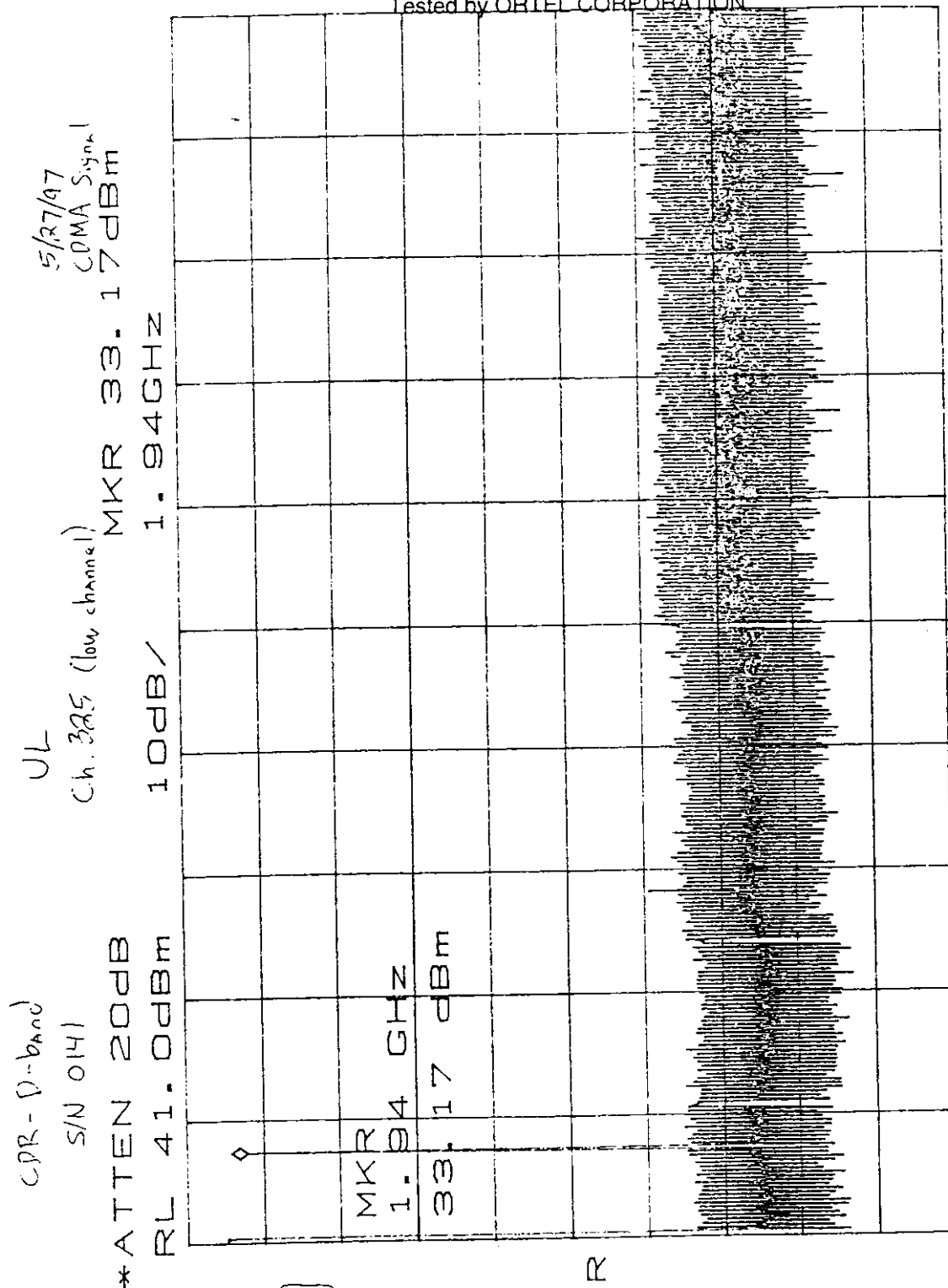
SWP 50.0ms

*VBW 1.0MHz

*RBW 1.0MHz



Tested by ORTEL CORPORATION



CENTER 13.25GHz
 *RBW 1.0MHz *VBW 1.0MHz
 SPAN 26.50GHz
 SWP 530ms

2991

R

Tested by ORTEL CORPORATION

5/27/97

CDMA Signal

UL
Ch 325 (low channel)

MKR 25.50dBm

1.86625GHz

VAVG 10

10dB/

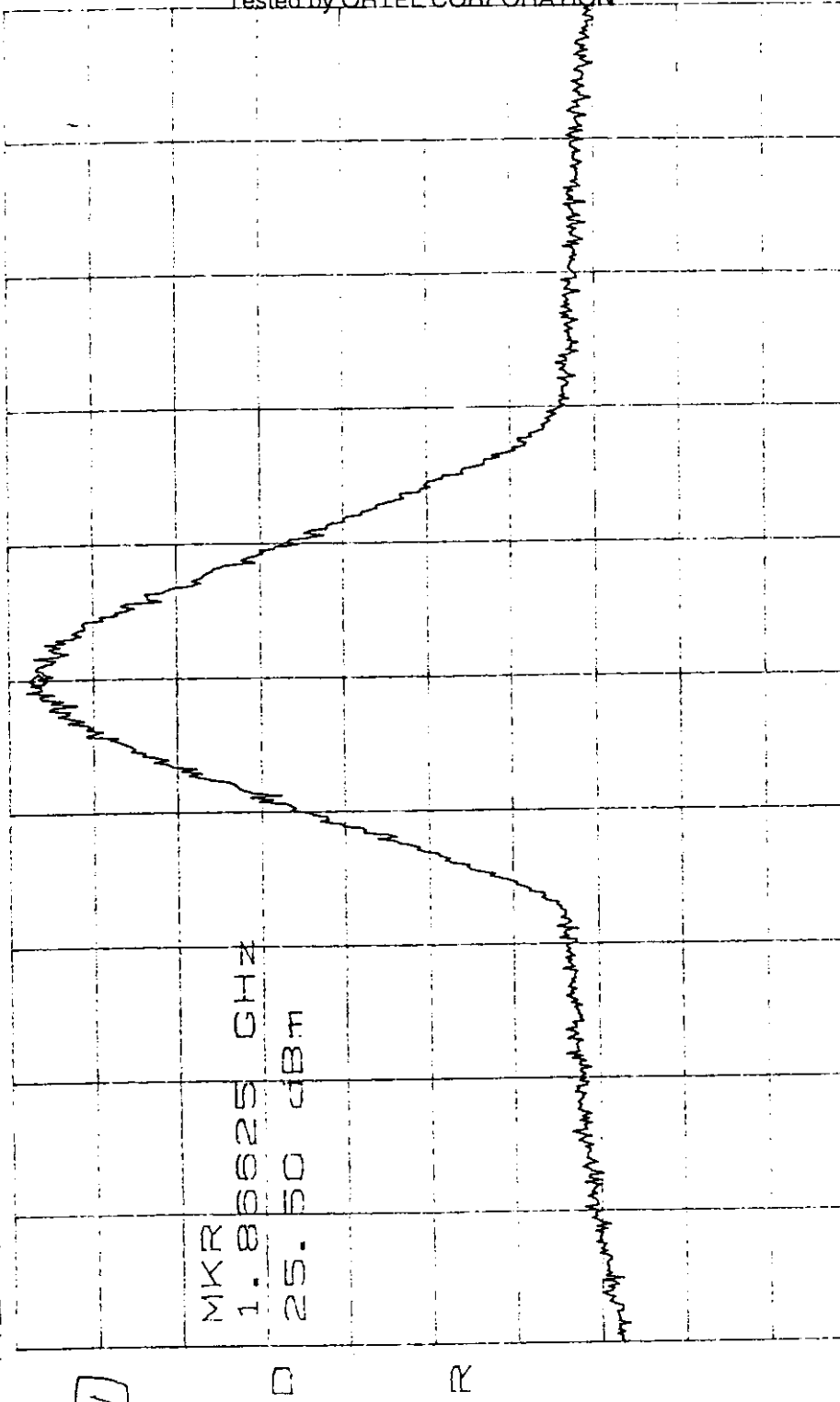
*ATTEN 10dB

RL 30.0dBm

MKR
1.86625 GHz

25.50 dBm

2.991



SPAN 25.00MHz

SWP 50.0ms

CENTER 1.86625GHz

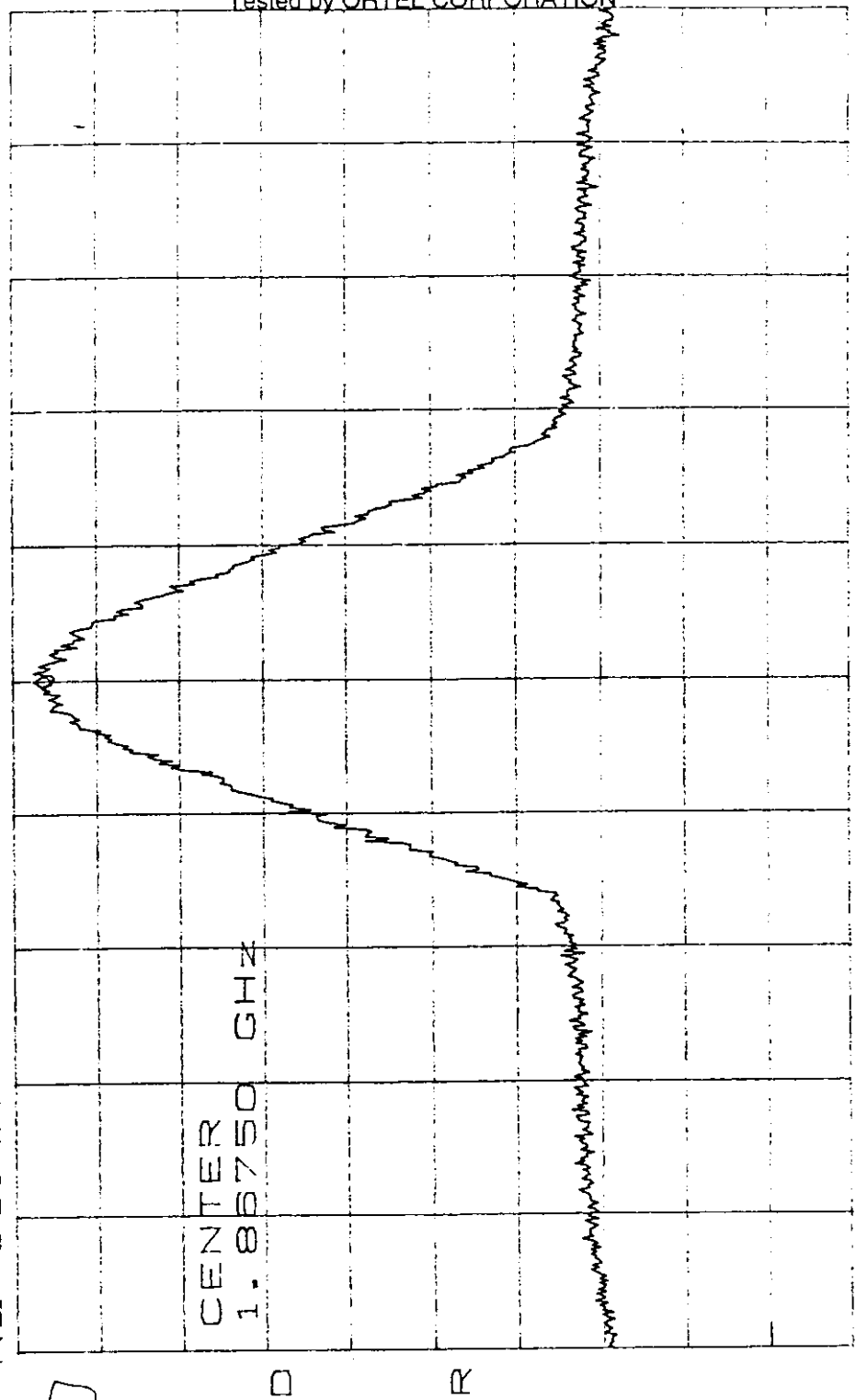
*VBW 1.0MHz

*RBW 1.0MHz



Tested by ORTEL CORPORATION

5/27/97
CDMA Signal
UL
(Ch 350 (mid channel))
*ATTEN 10dB VAVG 10 MKR 25.33dBm
RL 30.00dBm 10dB/ 1.86750GHz



CENTER 1.86750GHz
*RBW 1.0MHz *VBW 1.0MHz
SPAN 25.00MHz SWP 50.0ms

3991

Tested by ORTEL CORPORATION

5/27/97
CDMA Signal

MKR 33.67 dBm

1.94 GHz

UL

Ch 375 (high channel)

10 dB

*ATTEN 20 dB

RL 41.0 dBm

CDR D-band

S/N 0141

2991

MKR
1.94 GHz
33.67 dBm

R

SPAN 26.50 GHz

SWP 530 ms

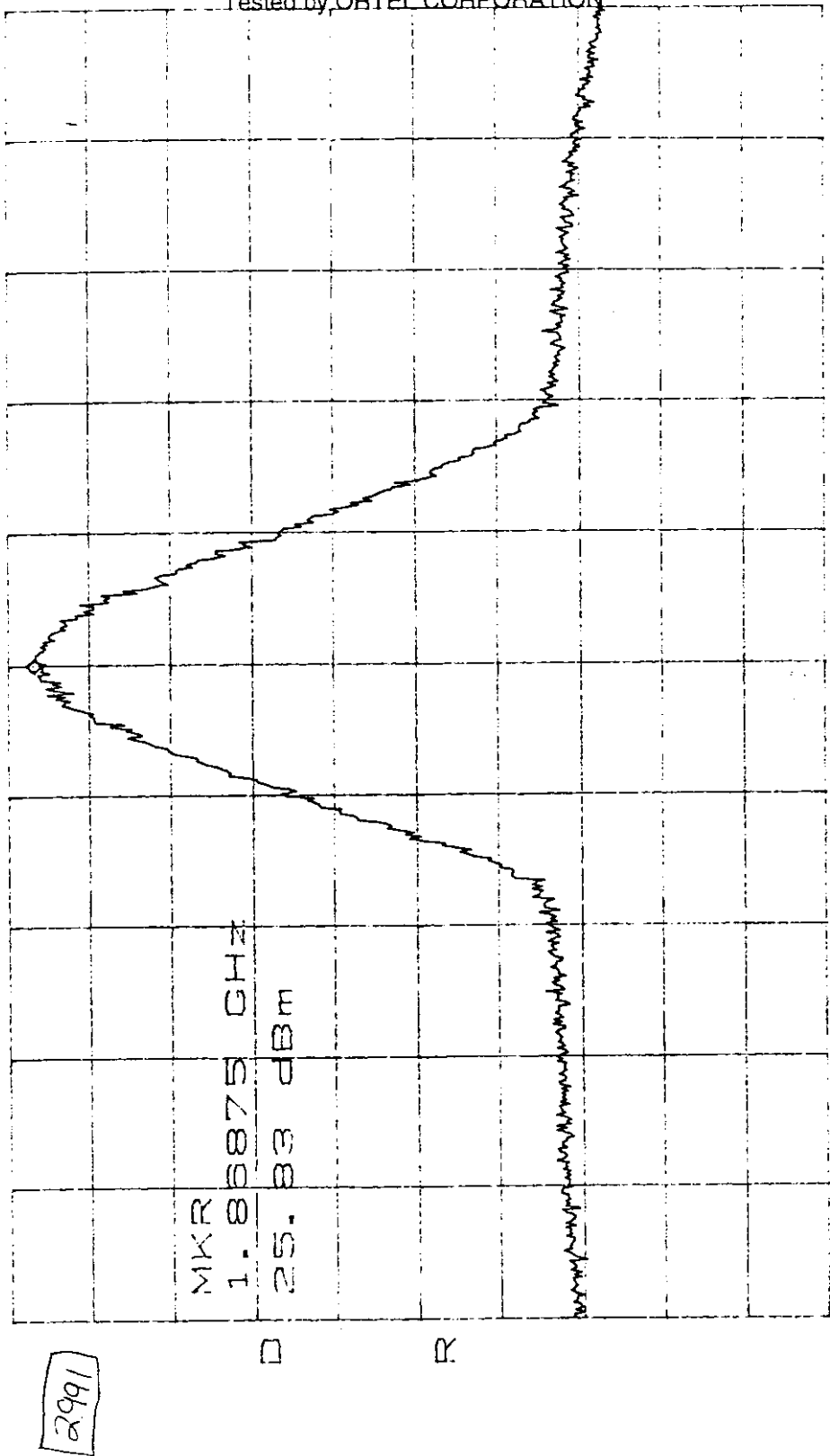
CENTER 13.25 GHz

*RBW 1.0 MHz *VBW 1.0 MHz



Tested by ORTEL CORPORATION

COR D-band
S/N 0141
UL
Ch. 375 (high channel)
5/27/97
CDMA Signal
*ATTEN 10dB
VAVG 10
MKR 25.83dBm
RL 30.0dBm
10dB/
1.86875GHz



CENTER 1.86875GHz
SPAN 25.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
SWP 50.0ms



Tested by ORTEL CORPORATION

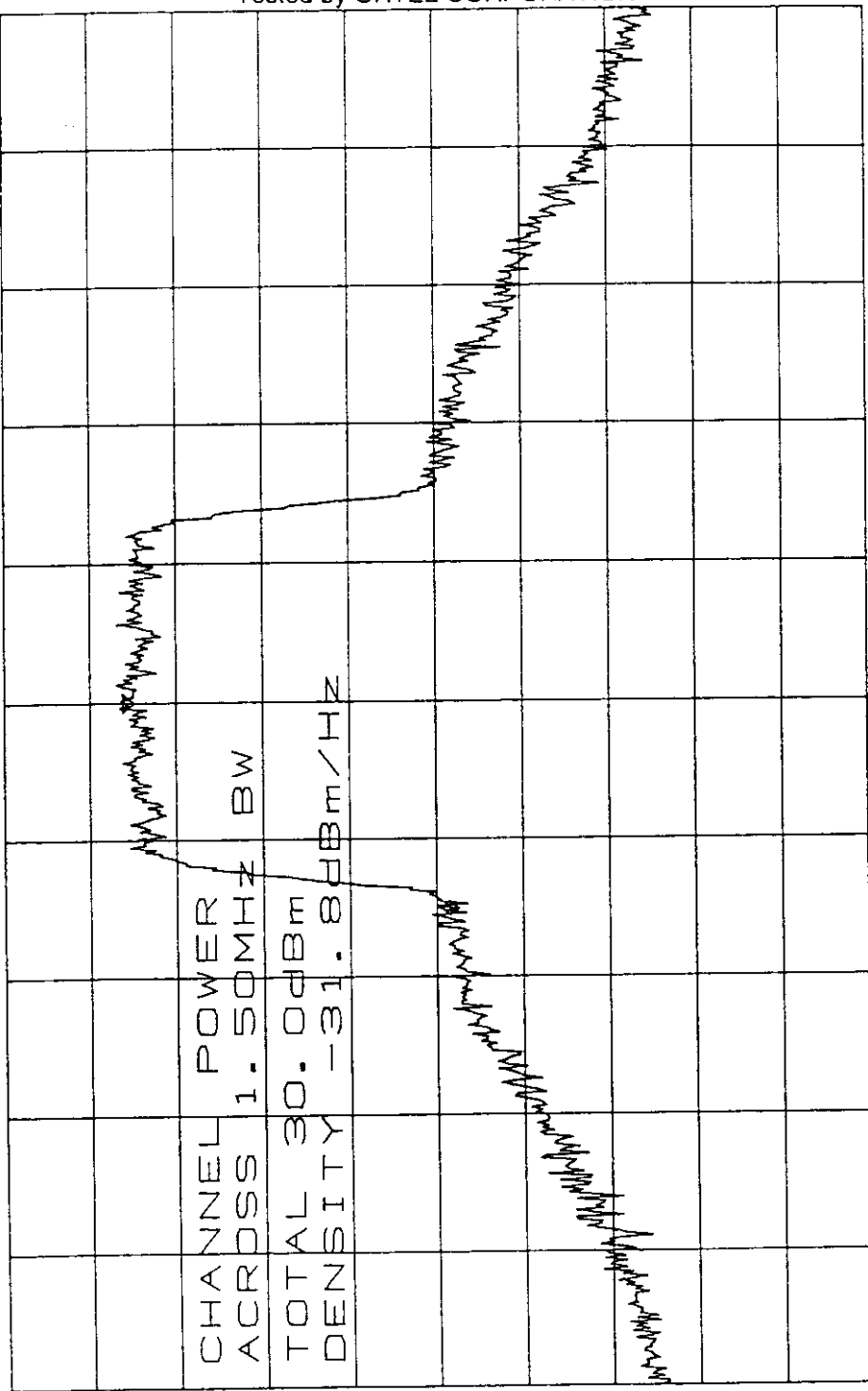
5/2/97
CDMA Signal

Fundamental

PL
ch. 3.25 (low channel)

CDR P-band
S/N 0141

* ATTN 10dB VAVG 10 Δ MKR -37.33dB
RL 30.0dBm 10dB/-750kHz



24.238

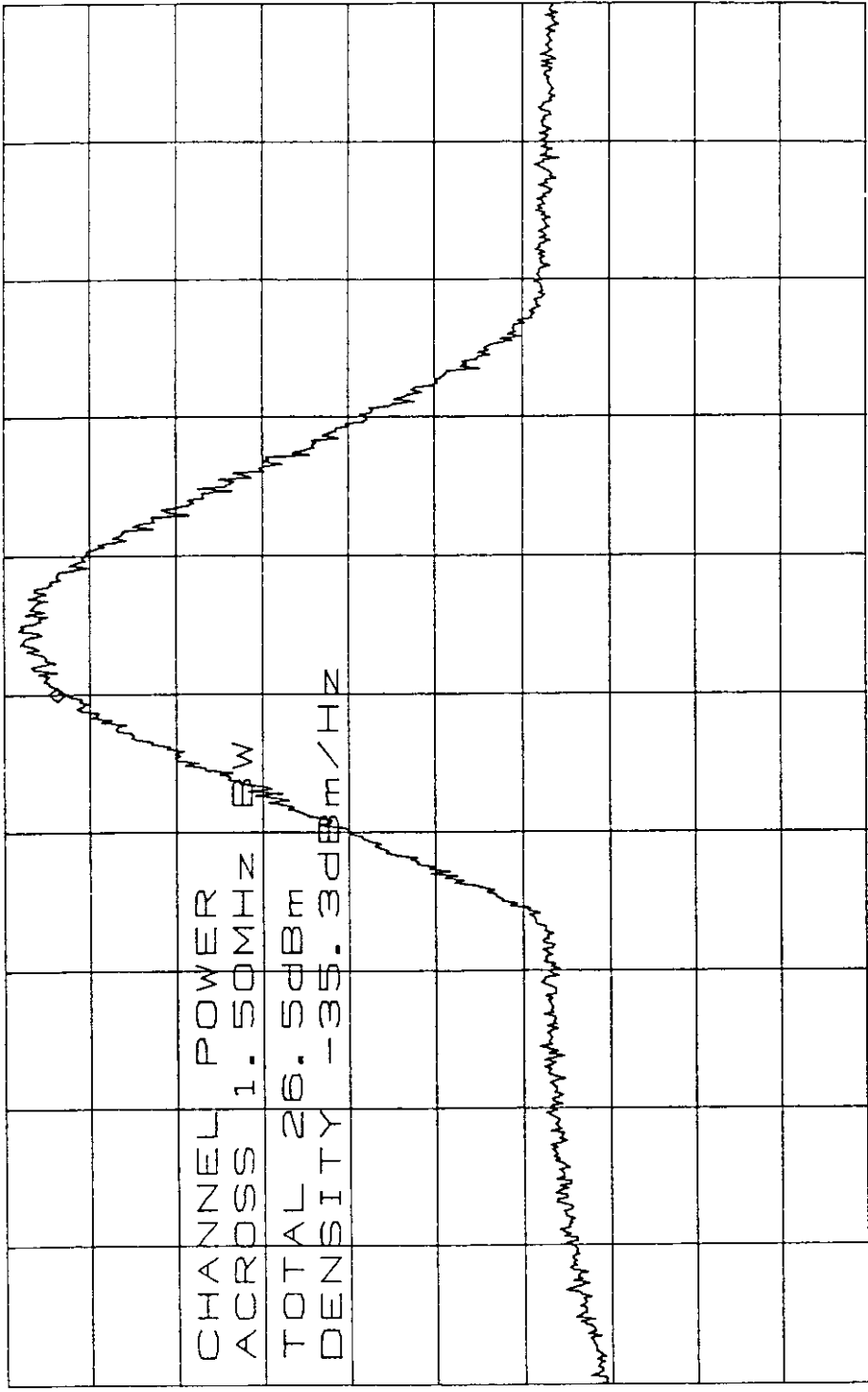
CENTER 1.946250GHZ SPAN 5.000MHZ
* RBW 30kHz * VBW 30kHz SWP 50.0ms



Tested by ORTEL CORPORATION

CDR. D-band
S/N 0141
DL
ch 335 (low channel)
30dB
30/27/47
30dB
Fundamental
CDMA Signal

*ATTEN 10dB VAVG 10 MKR 22.83dBm
RL 30.0dBm 10dB/ 1.94550GHZ



CENTER 1.94550GHZ SPAN 20.00MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms

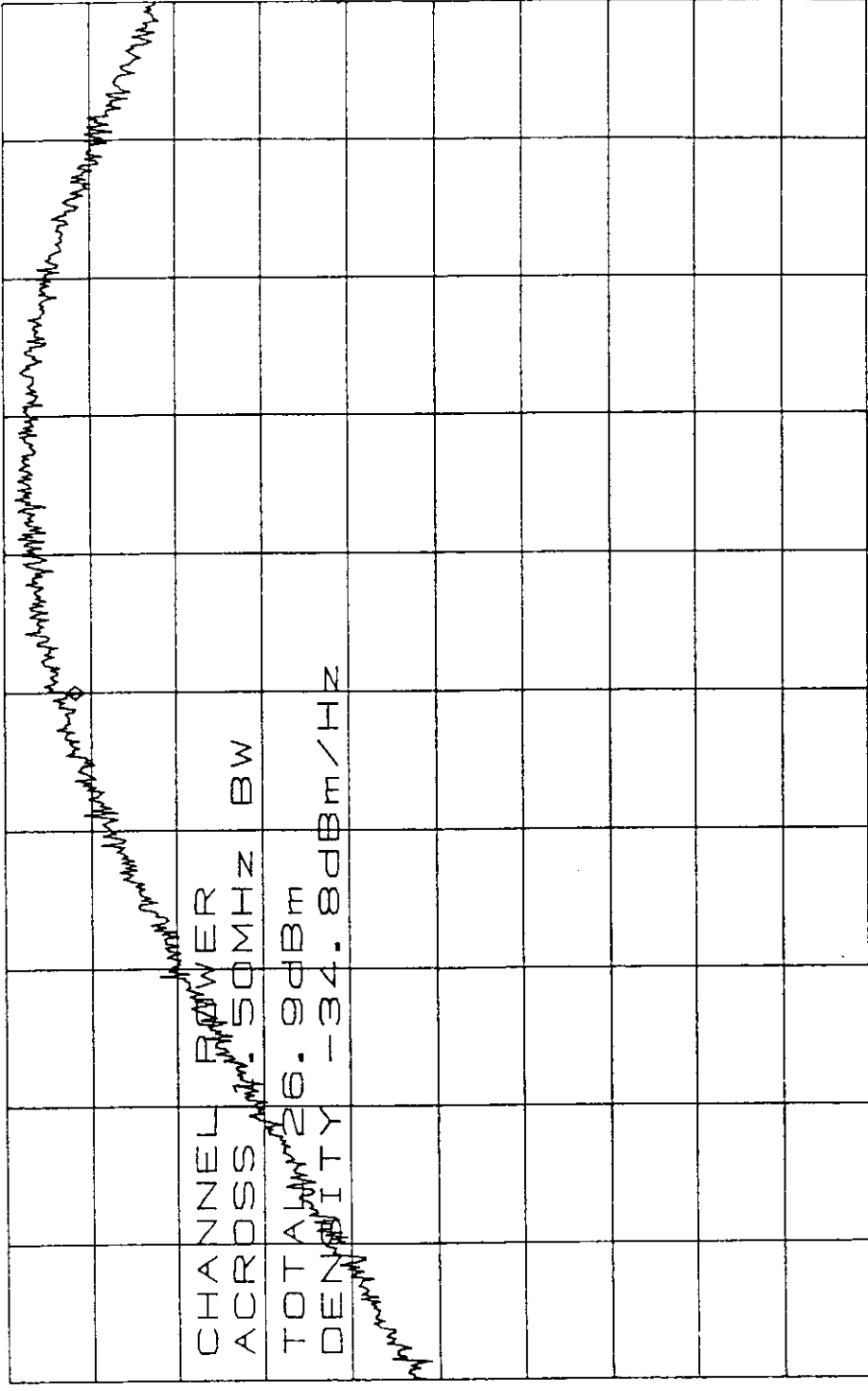
24.039



Tested by ORTEL CORPORATION

PL 15/27/97
Ch 235 (low channel)
Below Fundamental
CDMA Signal

*ATTEN 10dB VAVG 10 MKR 20.83dBm
RL 30.0dBm 10dB/ 1.945500GHZ



34.338

CENTER 1.945500GHZ SPAN 5.000MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms

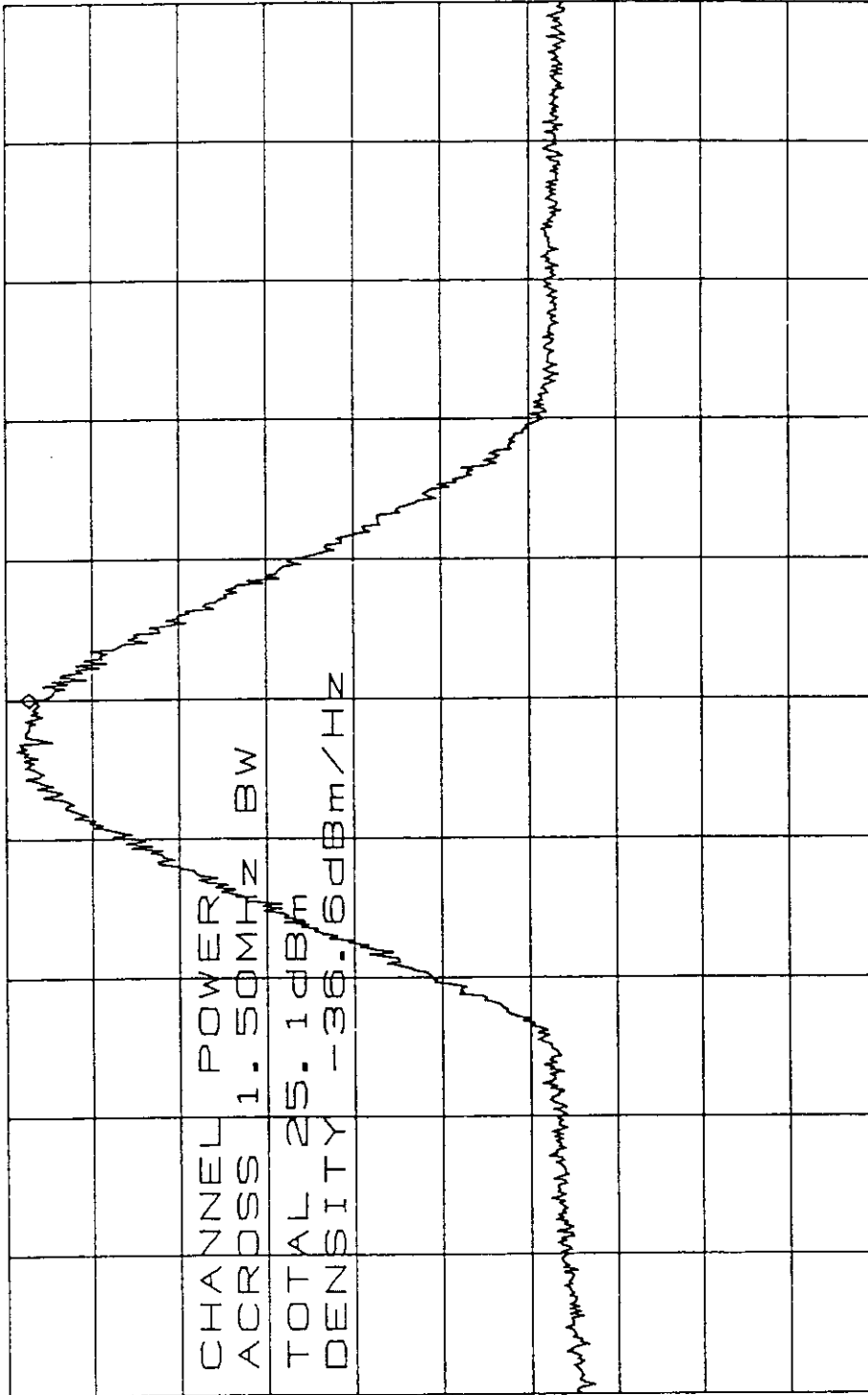
Tested by ORTEL CORPORATION

5'21/17
CDMA Signal
Above
Fundamental

PL
(in 3.35 (for channel))

CDR P-band
5N/0141

*ATTEN 10dB VAVG 10 MKR 26.33dBm
RL 30.0dBm 1.94700GHz



24.239

CENTER 1.94700GHz SPAN 20.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

Tested by ORTEL CORPORATION

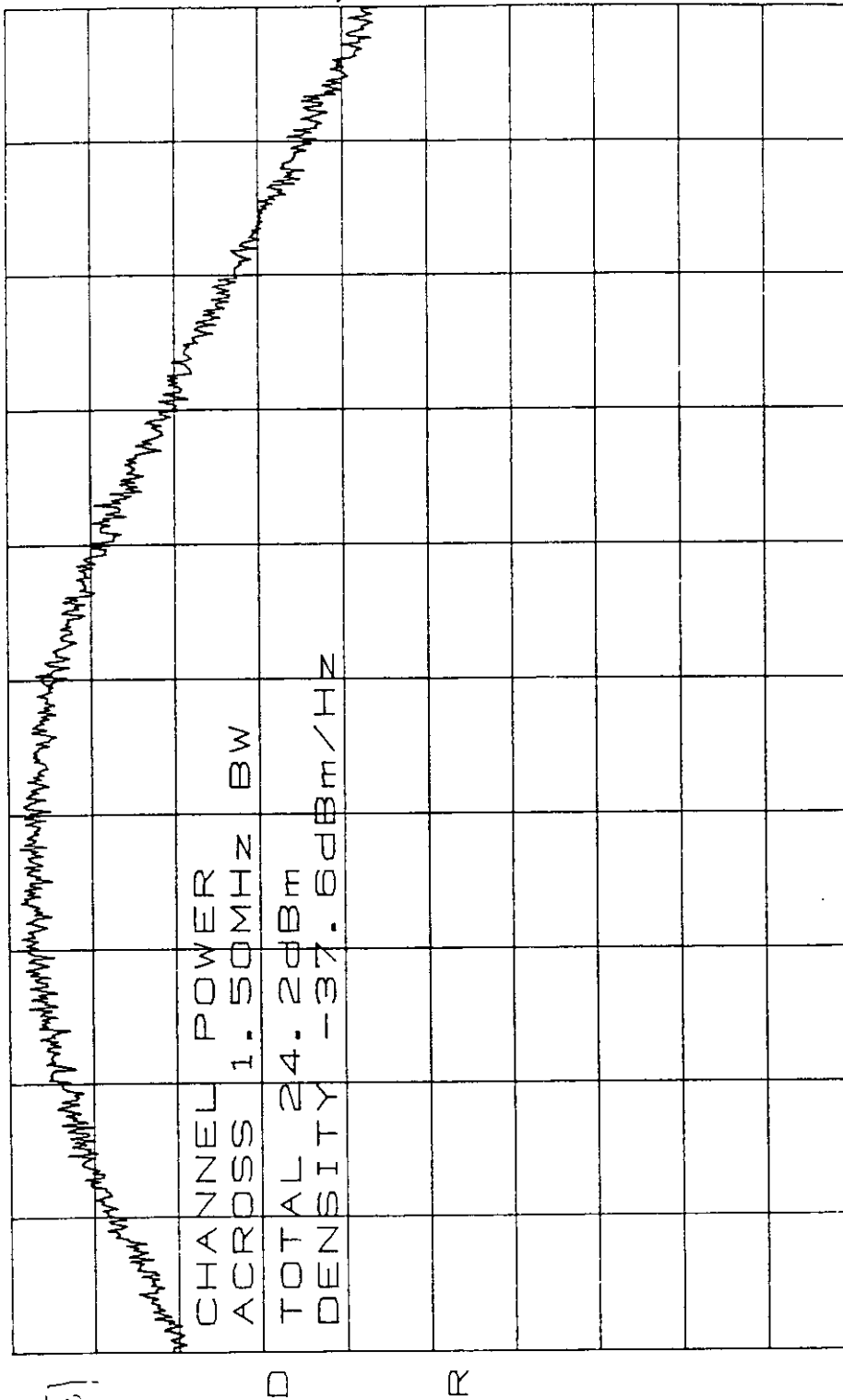
5/21/97
CDMA Signal

Power
Fundamental

PL
Ch335 (low channel)

CDR P-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 24.17dBm
RL 30.0dBm 10dB/ 1.947000GHZ



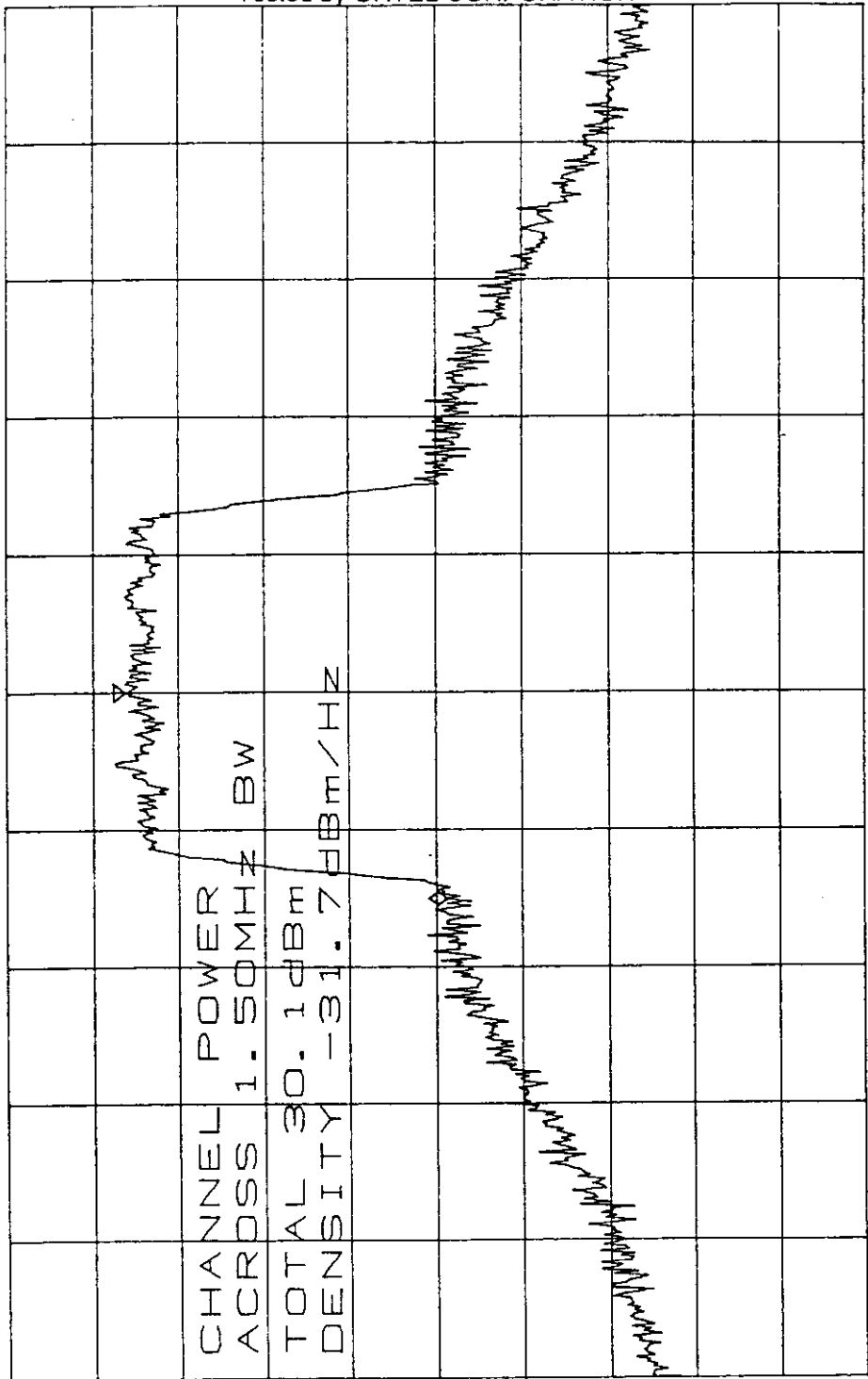
CENTER 1.947000GHZ SPAN 5.000MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms



Tested by ORTEL CORPORATION

CPR D-band
S/N 0141
DL
Ch. 375 (high channel)
Fundamental
5/21/97
CDMA Signal

*ATTEN 10dB VAVG 10 ΔMKR -37.50dB
RL 30.0dBm 10dB/-750KHz



24.238

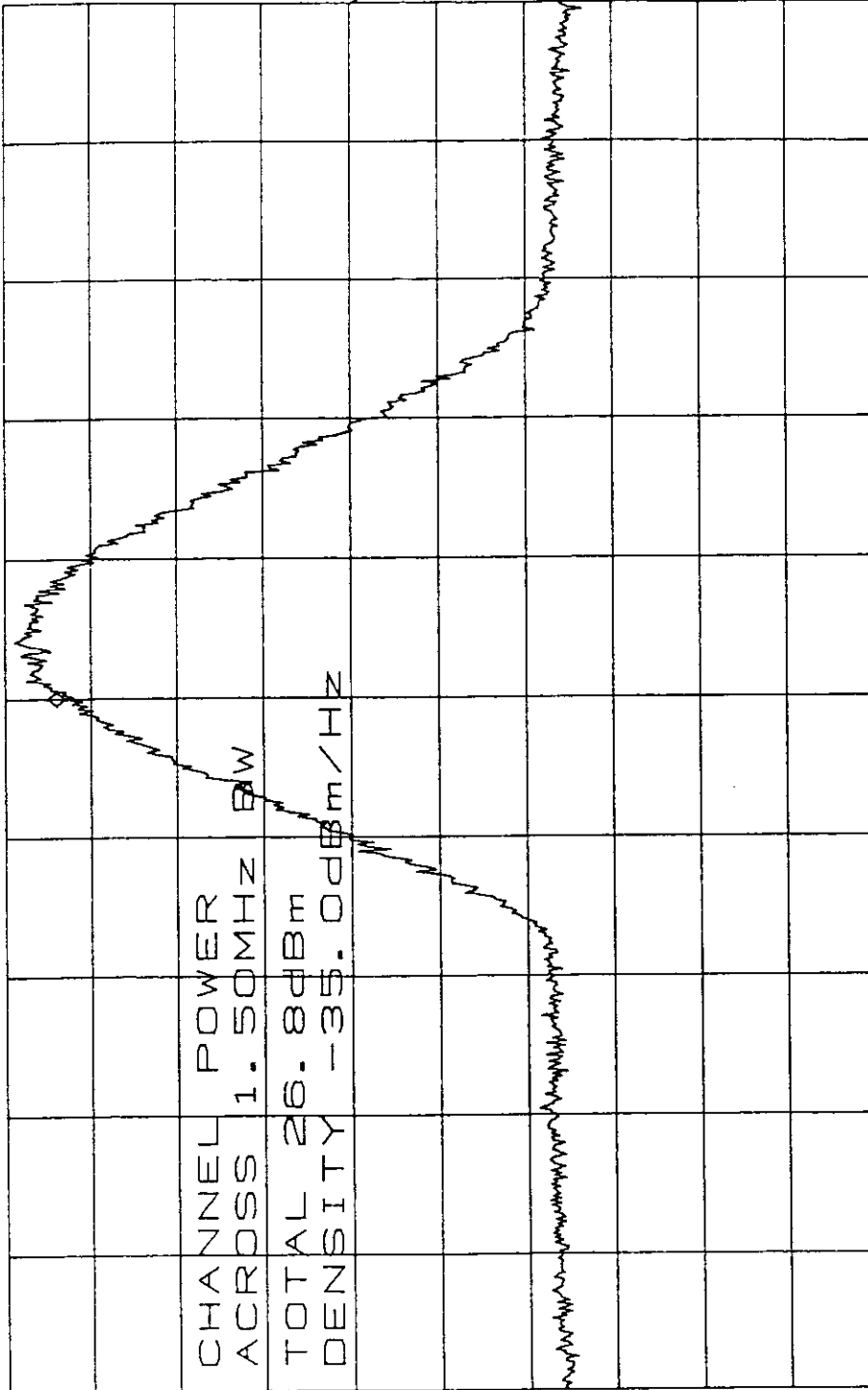
CENTER 1.948750GHz SPAN 5.000MHz
*RBW 30KHz *VBW 30KHz SWP 50.0ms



Tested by ORTEL CORPORATION

CDR D-band 0L 5/17/97
S/N 0141 Ch 375 (high channel) Below Fundamental CDMA Signal

*ATTEN 10dB VAVG 10 MKR 23.00dBm
RL 30.00dBm 10dB/ 1.948000GHZ



CENTER 1.948000GHZ SPAN 20.00MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms



Tested by ORTEL CORPORATION

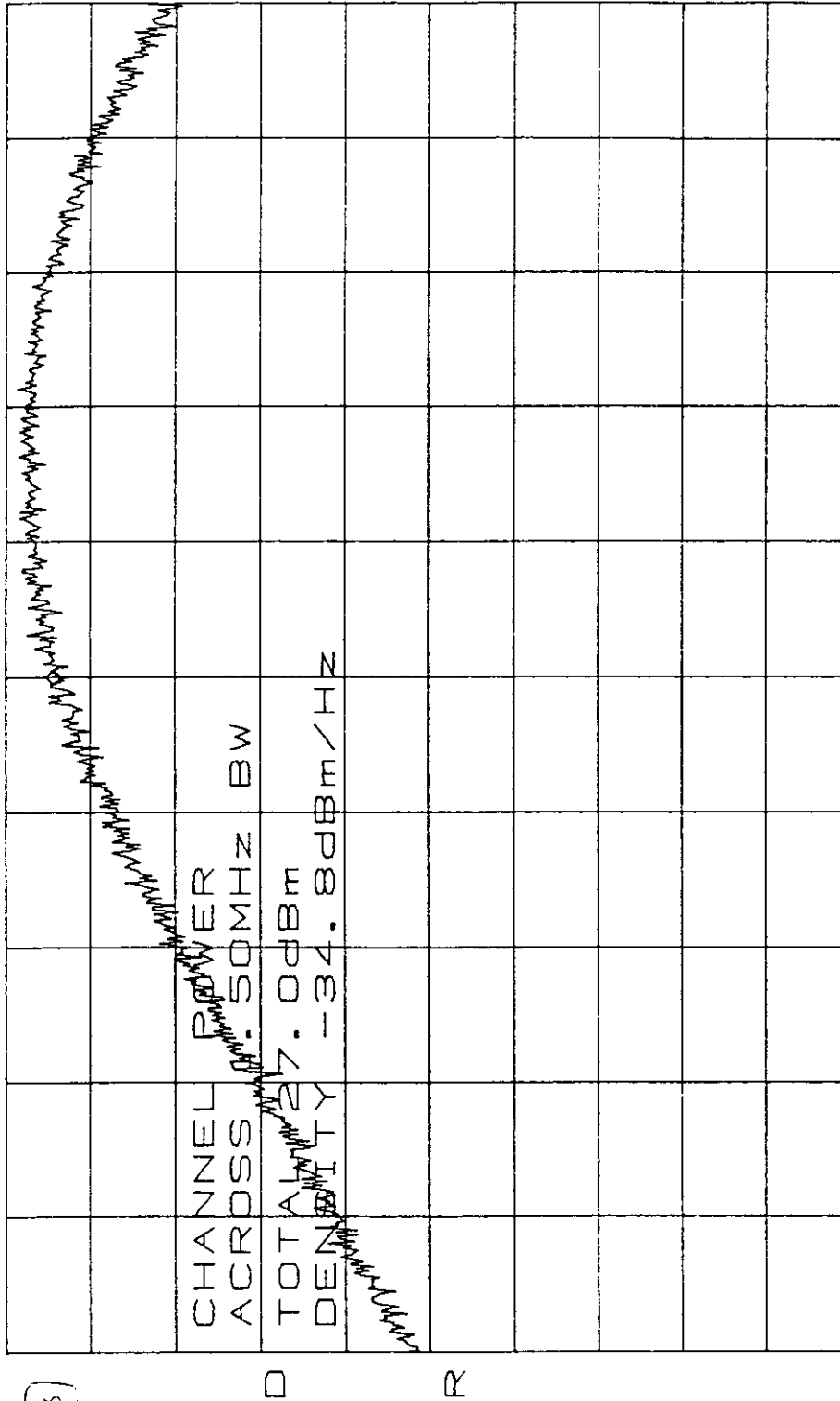
5/27/97
CPSA Signal

Beber
Fundamental

PL
CH 375 (high channel)

COR D-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 23.33dBm
RL 30.00dBm 10dB/ 1.948000GHZ



CENTER 1.948000GHZ SPAN 5.000MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms

Tested by ORTEL CORPORATION

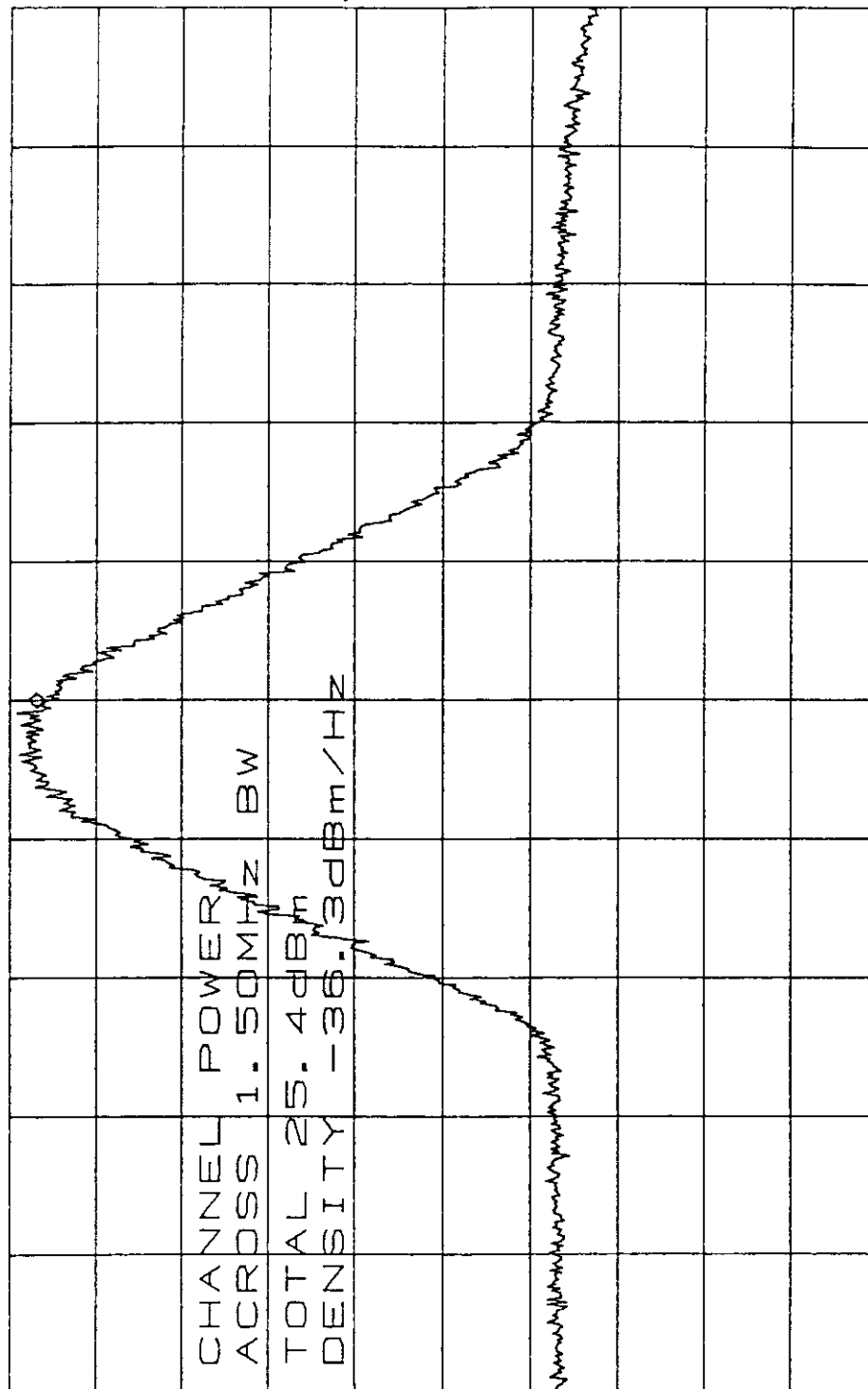
5/27/97
CDMA Signal

Above
Fundamental

PL
Ch 375 (high channel)

COR P-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 25.83dBm
RL 30.0dBm 10dB/ 1.94950GHZ



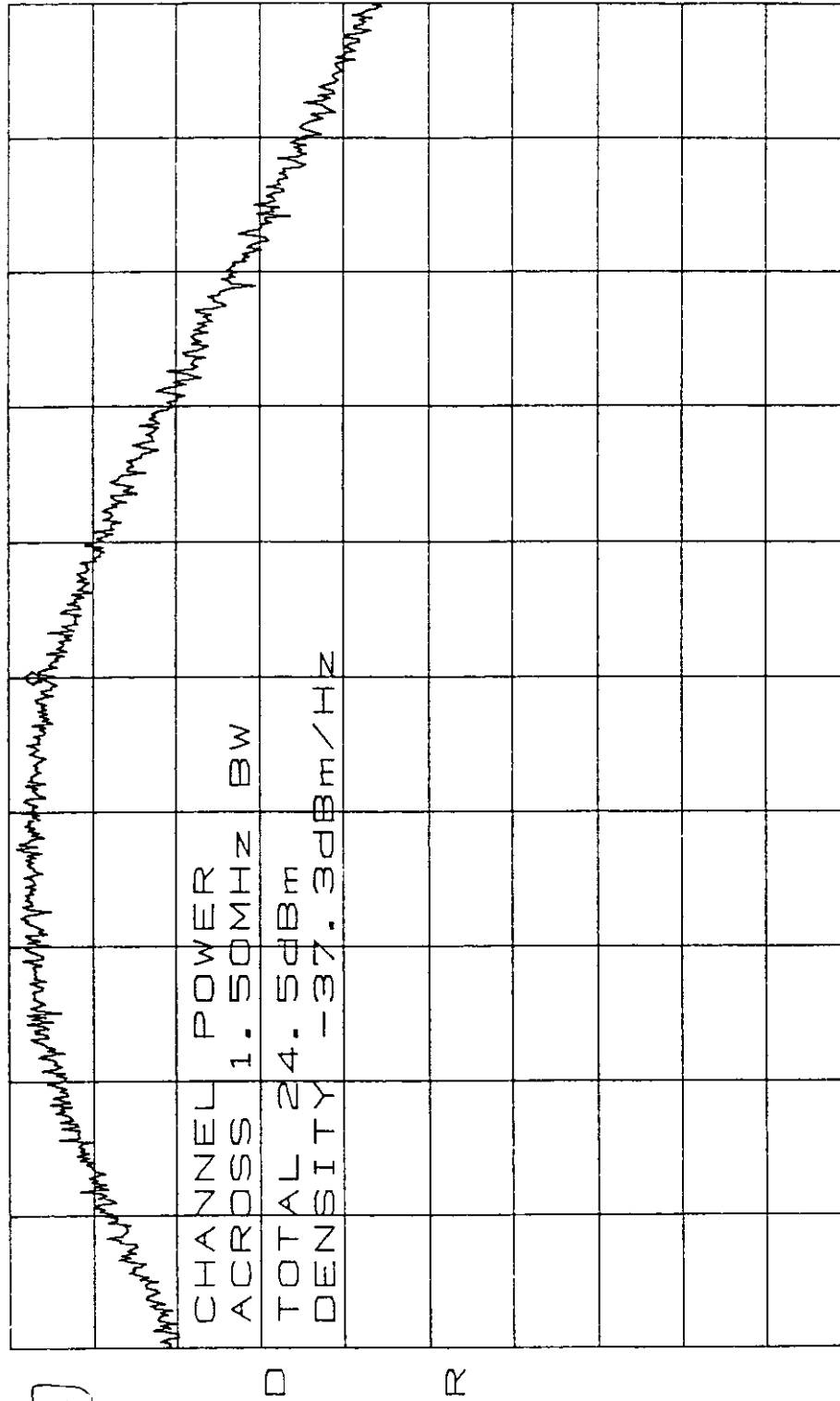
34338

CENTER 1.94950GHZ SPAN 20.00MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms



Tested by ORTEL CORPORATION

C/P R D-band D₁
 S/N 0141 Ch. 375 (high channel)
 *ATTEN 10dB VAVG 10 MKR 26.17dBm
 RL 30.0dBm 10dB/ 1.949500GHZ
 5/24/97
 CPMA Signal
 Above Fundamental



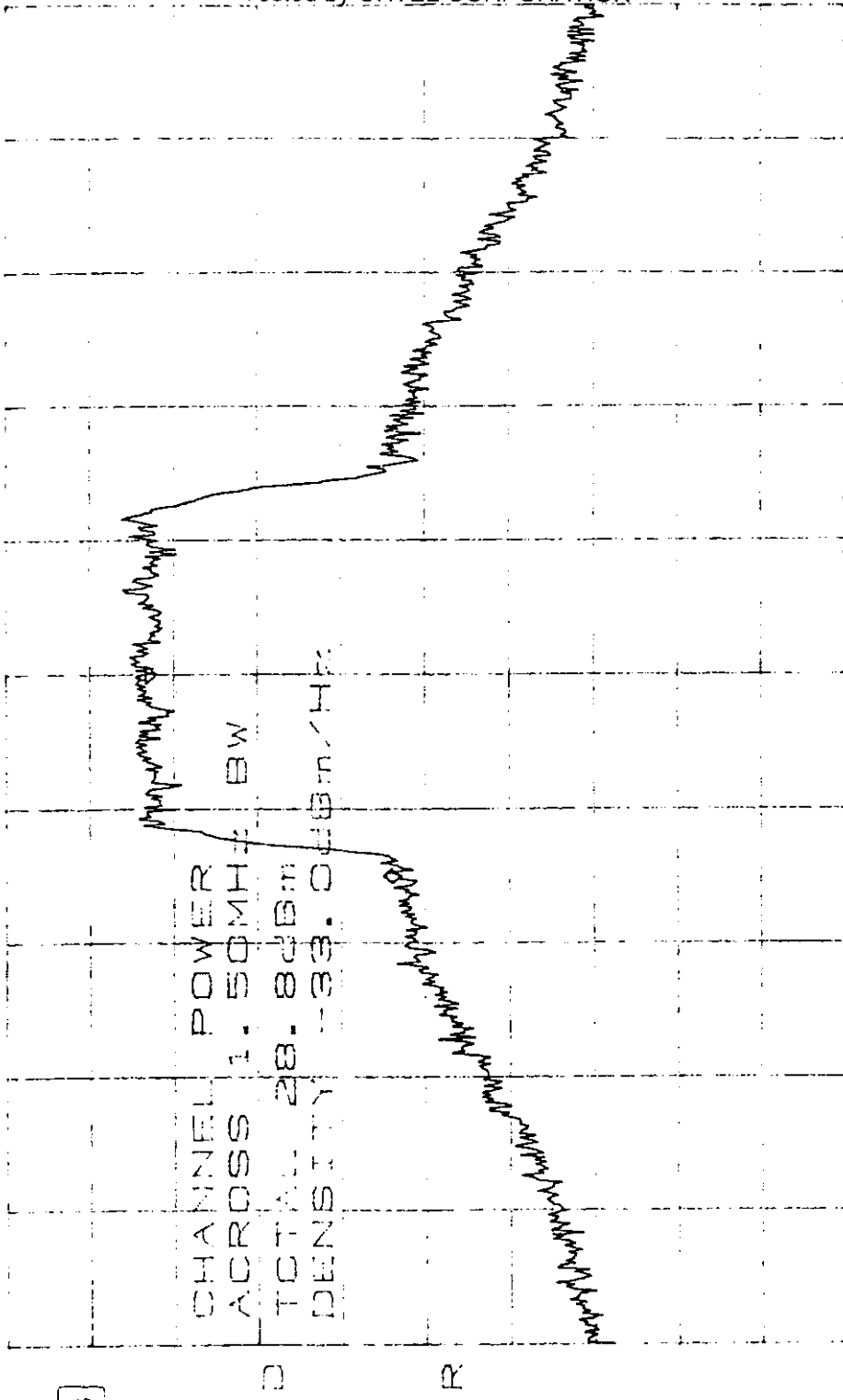
CENTER 1.949500GHZ SPAN 5.000MHZ
 *RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

24.338



Tested by ORTEL CORPORATION

5/17/07
CDMA Signal
Fundamental
UL
Ch 335 (low channel)
CPR P-band
S/N 0.41
*ATTEN 10dB VAVG 10
RL 30.00dB 10dB
*AMKR -29.17dB
-750KHz



CENTER 1.8662500GHz
SPAN 5.000MHz
RBW 30KHz
*VBW 30KHz
SWP 50.00%



Tested by ORTEL CORPORATION

5/27/97
CDMA Signal

Below
Fundamental

MKR 21.83dBm
1.865500MHz

UL
CH 333 (New channel)

VAG 10
10dB

CPR P-band
S/N 0.14

*ATTEN 10dB
REL 30.0dBm

24.239

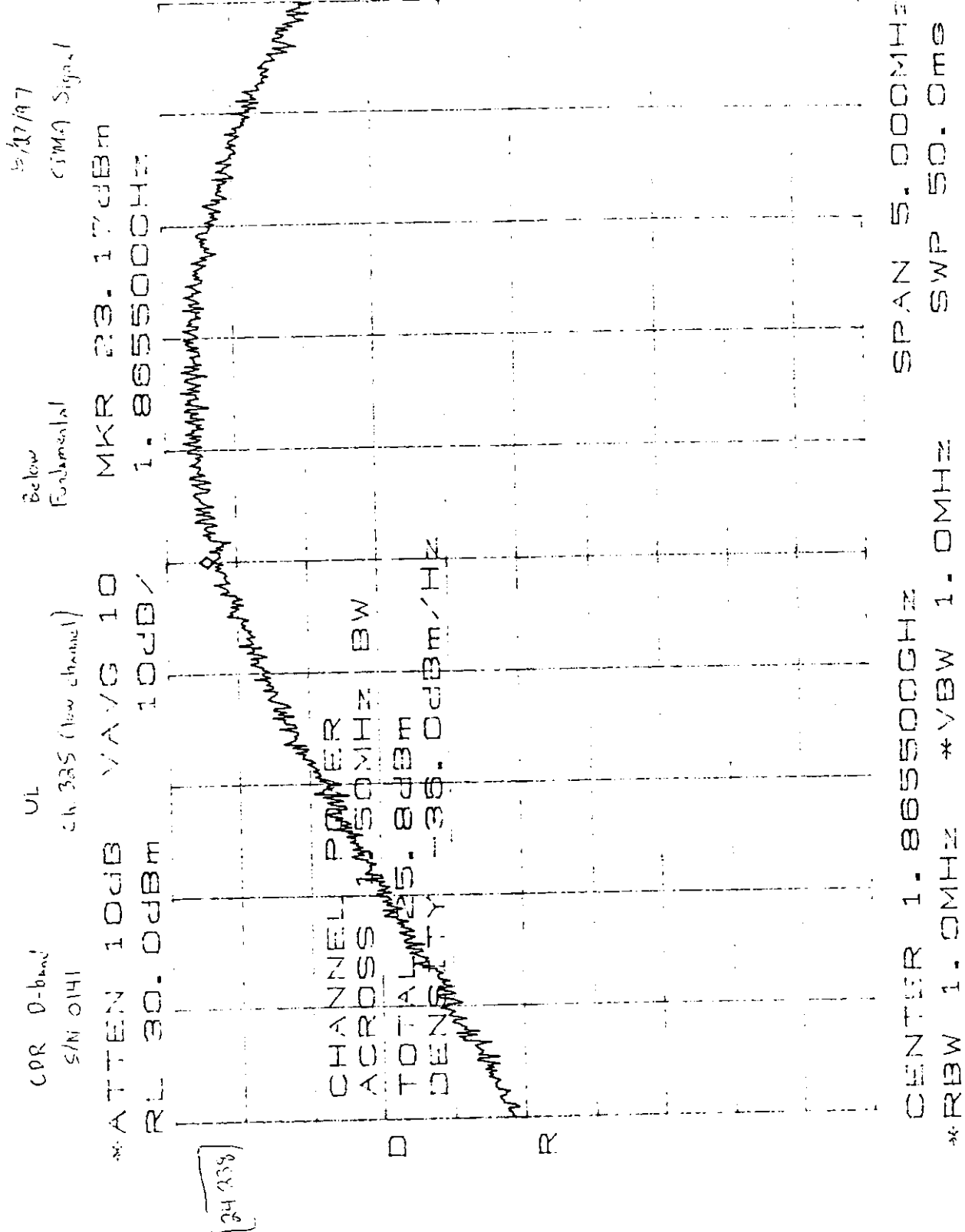
CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 25.4dBm
DENSITY -36.3dBm/MHz

SPAN 20.00MHz
SWP 50.0MHz

CENTER 1.865500MHz
*VBW 1.0MHz
*CRBW 1.0MHz



Tested by ORTEL CORPORATION





Tested by ORTEL CORPORATION

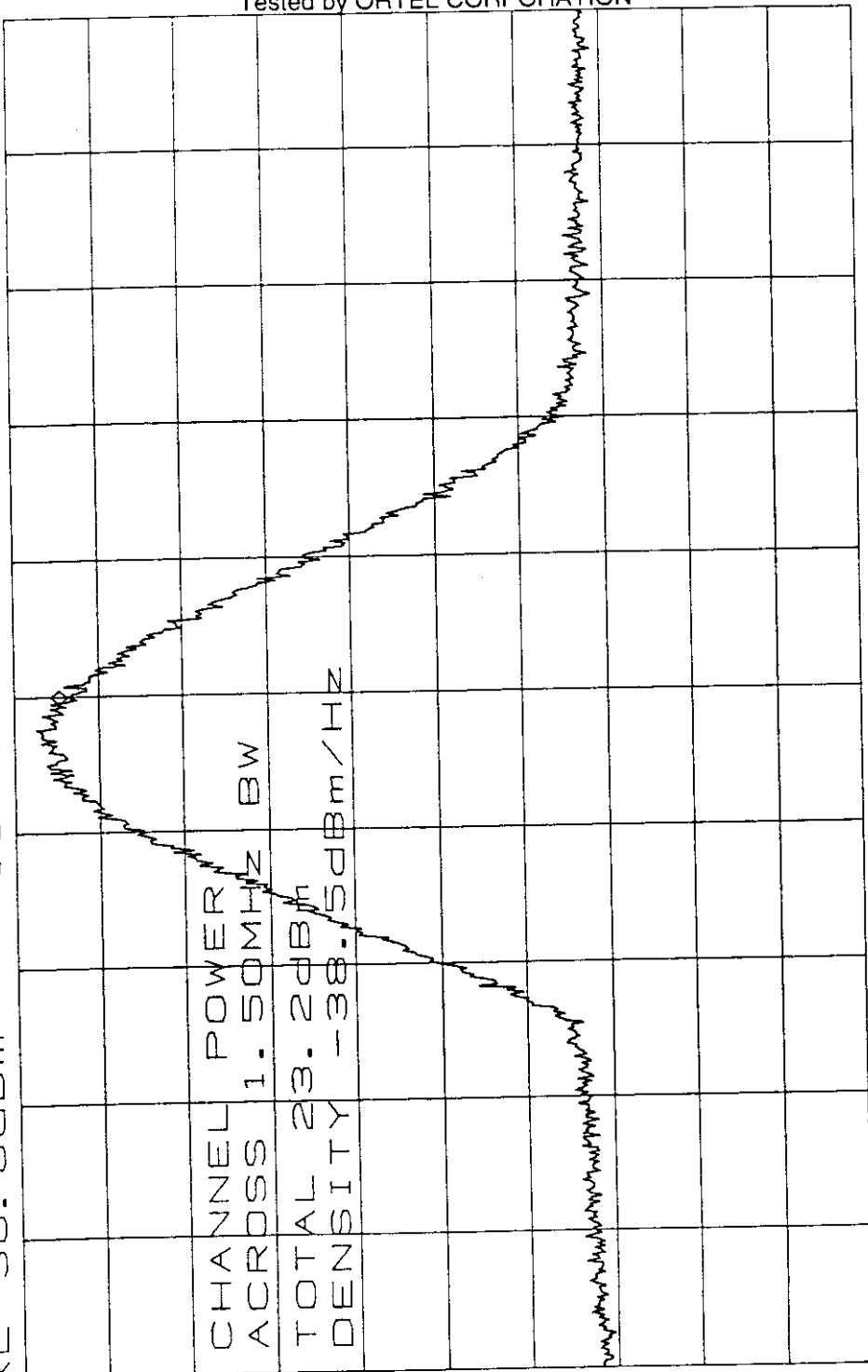
5/27/97
CMG Signl

Above
Fundamental

UL
CH 335 (low channel)

COR D-band
SIN 0.41

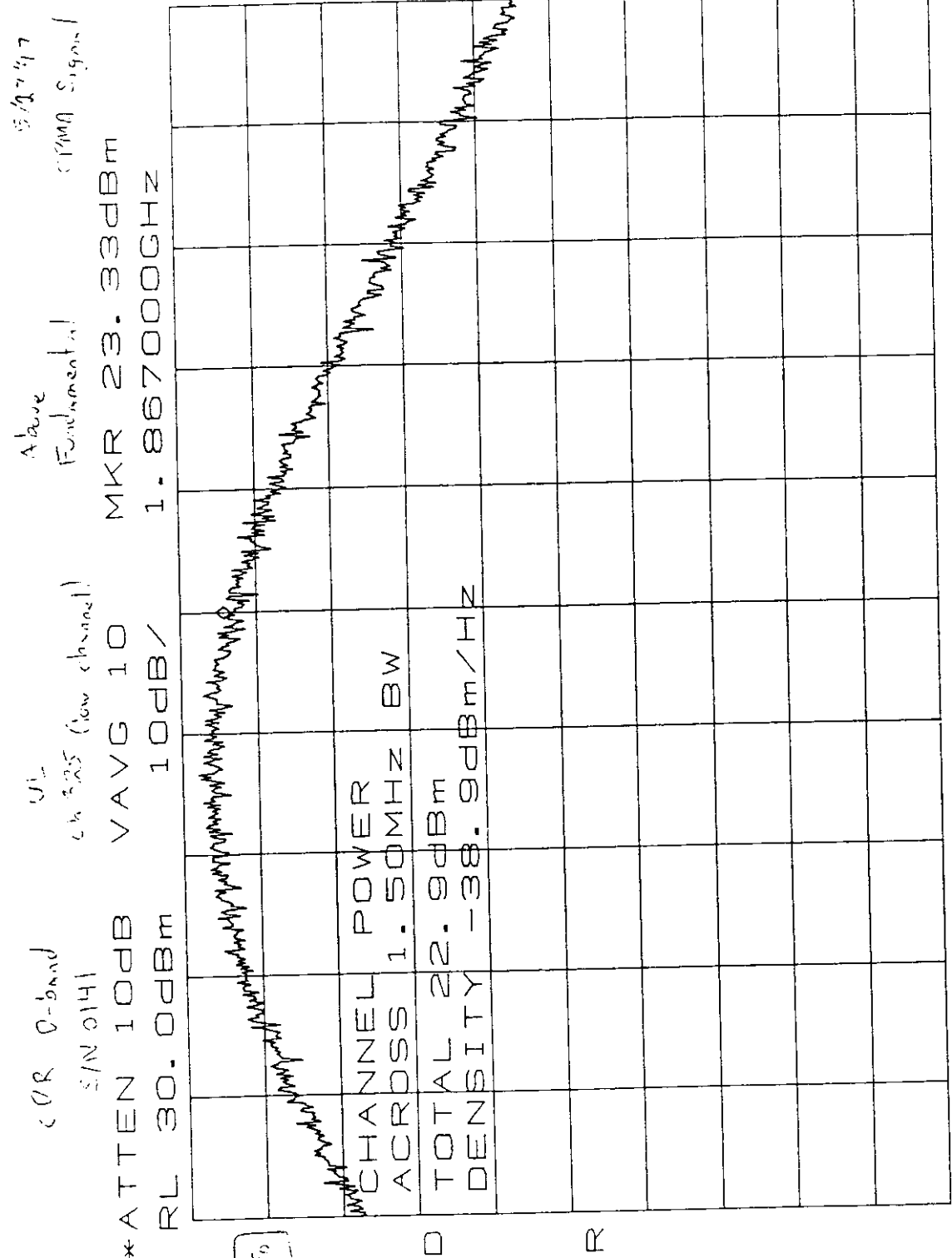
*ATTEN 10dB VAVG 10 MKR 23.67dBm
RL 30.0dBm 10dB/ 1.86700GHZ



14.339

CENTER 1.86700GHZ SPAN 20.00MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms

Tested by ORTEL CORPORATION

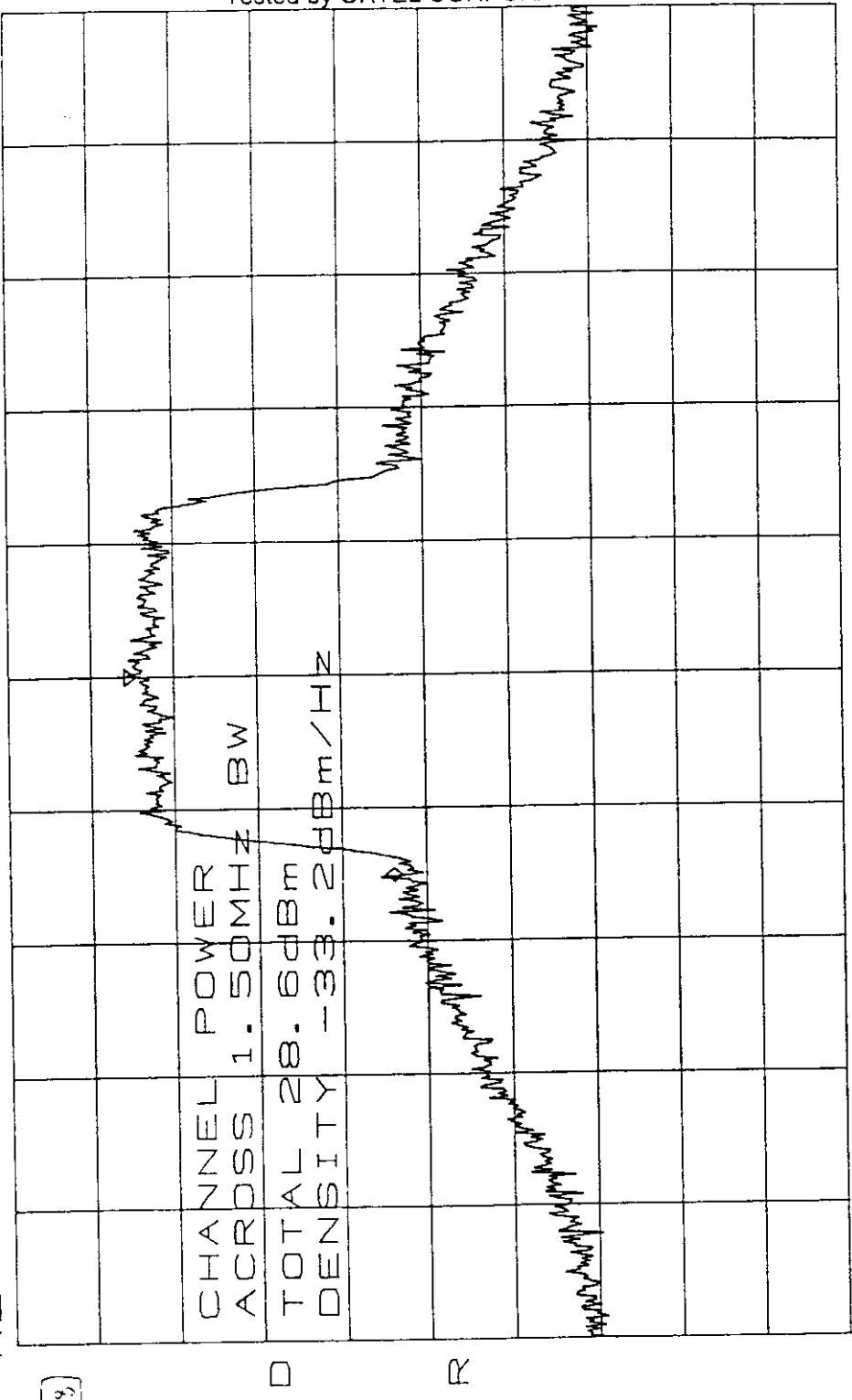


CENTER 1.867000GHZ
*RBW 1.0MHZ *VBW 1.0MHZ
SPAN 5.000MHZ
SWP 50.0FS



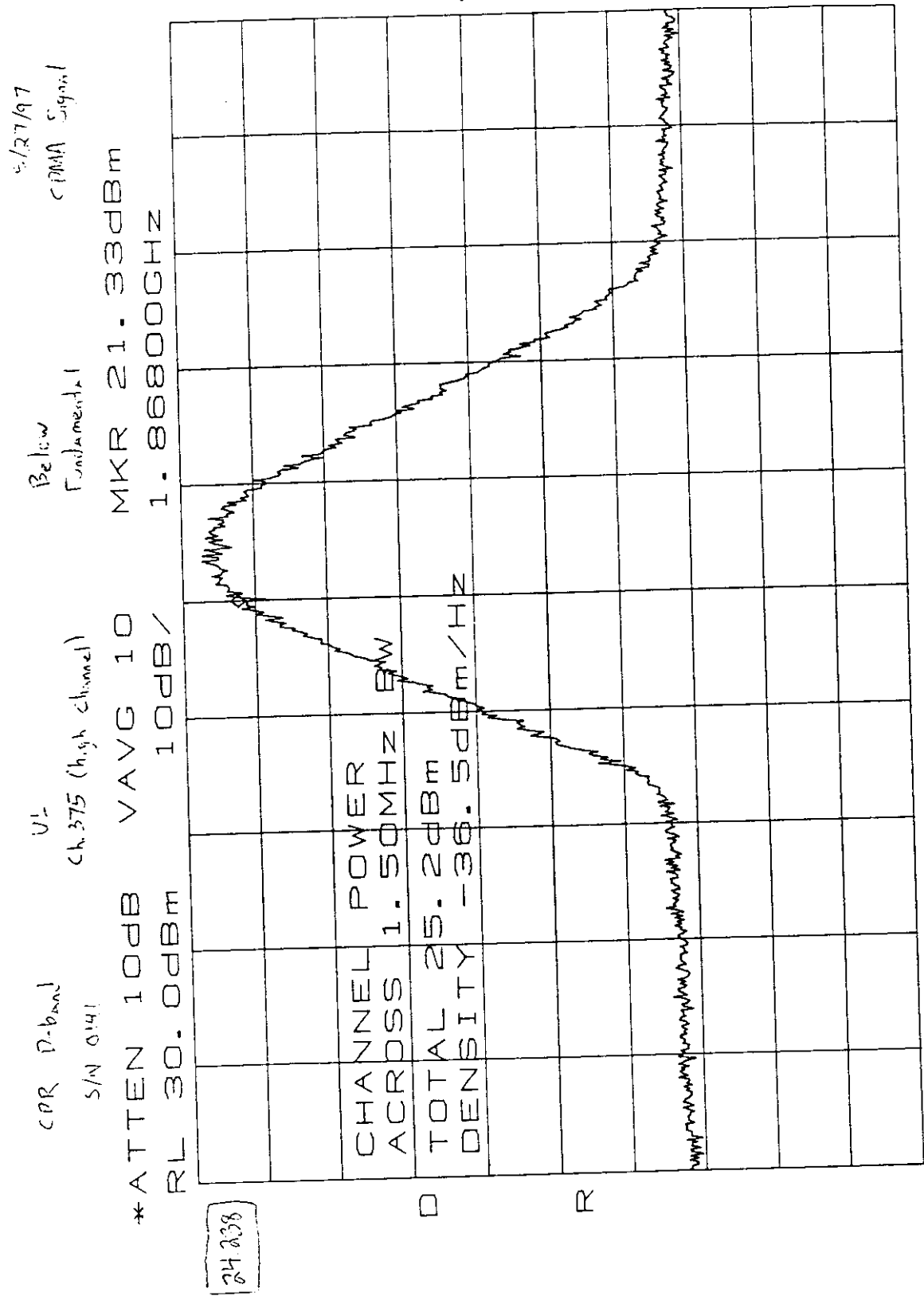
Tested by ORTEL CORPORATION

5/27/97
CDMA Signal
Fundamental
UL
Ch 375 (high channel)
*ATTEN 10dB VAVG 10 ΔMKR -31.84dB
RL 30.0dBm 10dB/-750kHz



CENTER 1.868750GHZ SPAN 5.000MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms

Tested by ORTEL CORPORATION



CENTER 1.86800GHZ
*RBW 1.0MHZ *VBW 1.0MHZ
SPAN 20.00MHZ
SWP 50.00FS



Tested by ORTEL CORPORATION

5/27/97
CPMA Signal

Below

Fundamental

CH 375 (high channel)

CPR D-band

S/N 0141

MKR 23.00dBm

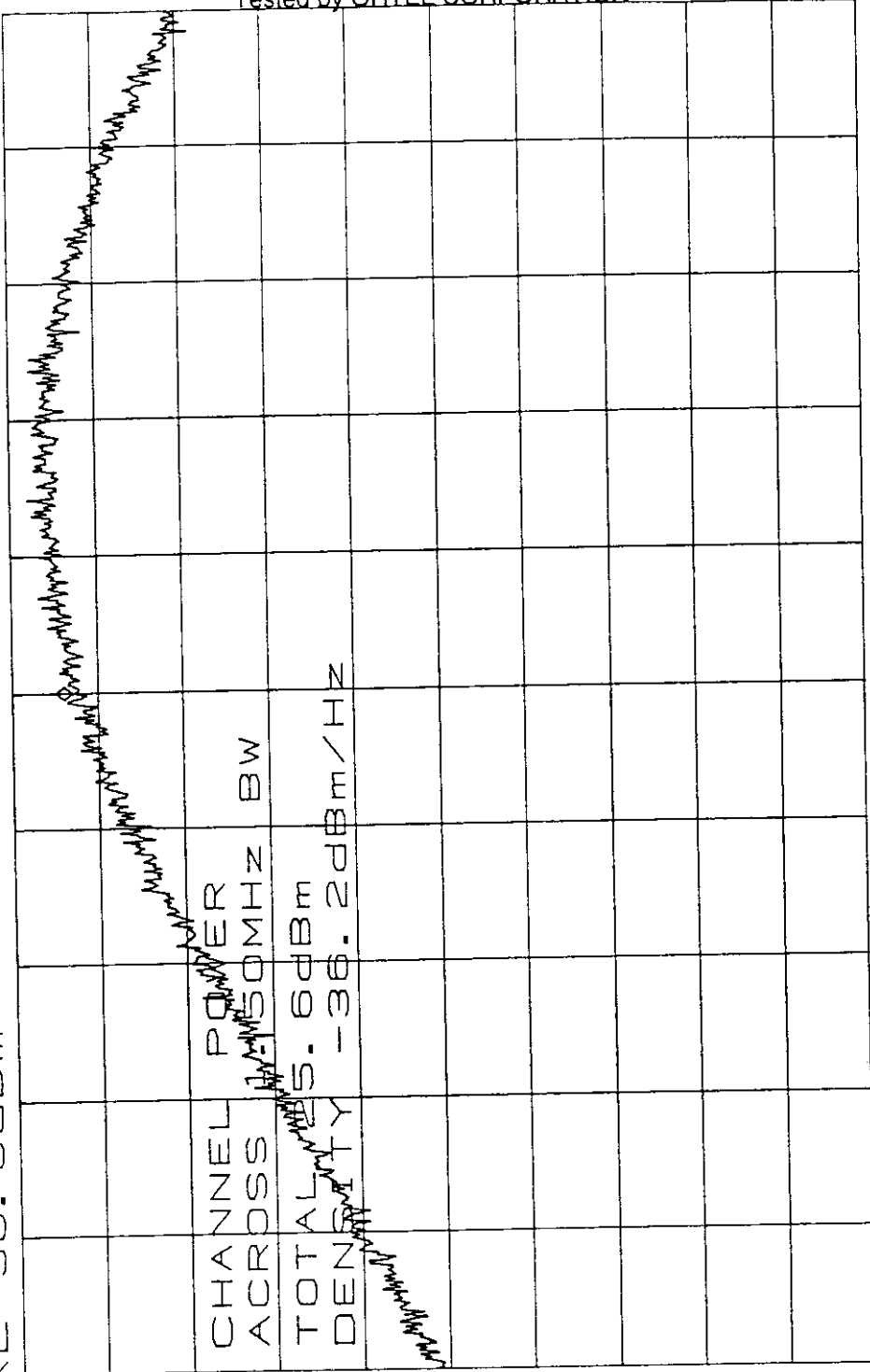
1.8680000GHZ

VAVG 10

10dB/

*ATTEN 10dB

RL 30.0dBm



34.038

CHANNEL POWER

ACROSS 1.50MHz BW

TOTAL 5.6dBm

DENSITY -36.2dBm/Hz

SPAN 5.000MHz

SWP 50.0ms

CENTER 1.8680000GHZ

*RBW 1.0MHz *VBW 1.0MHz

Tested by ORTEL CORPORATION

5/27/97
CDMA Signal

Above
Fundamental

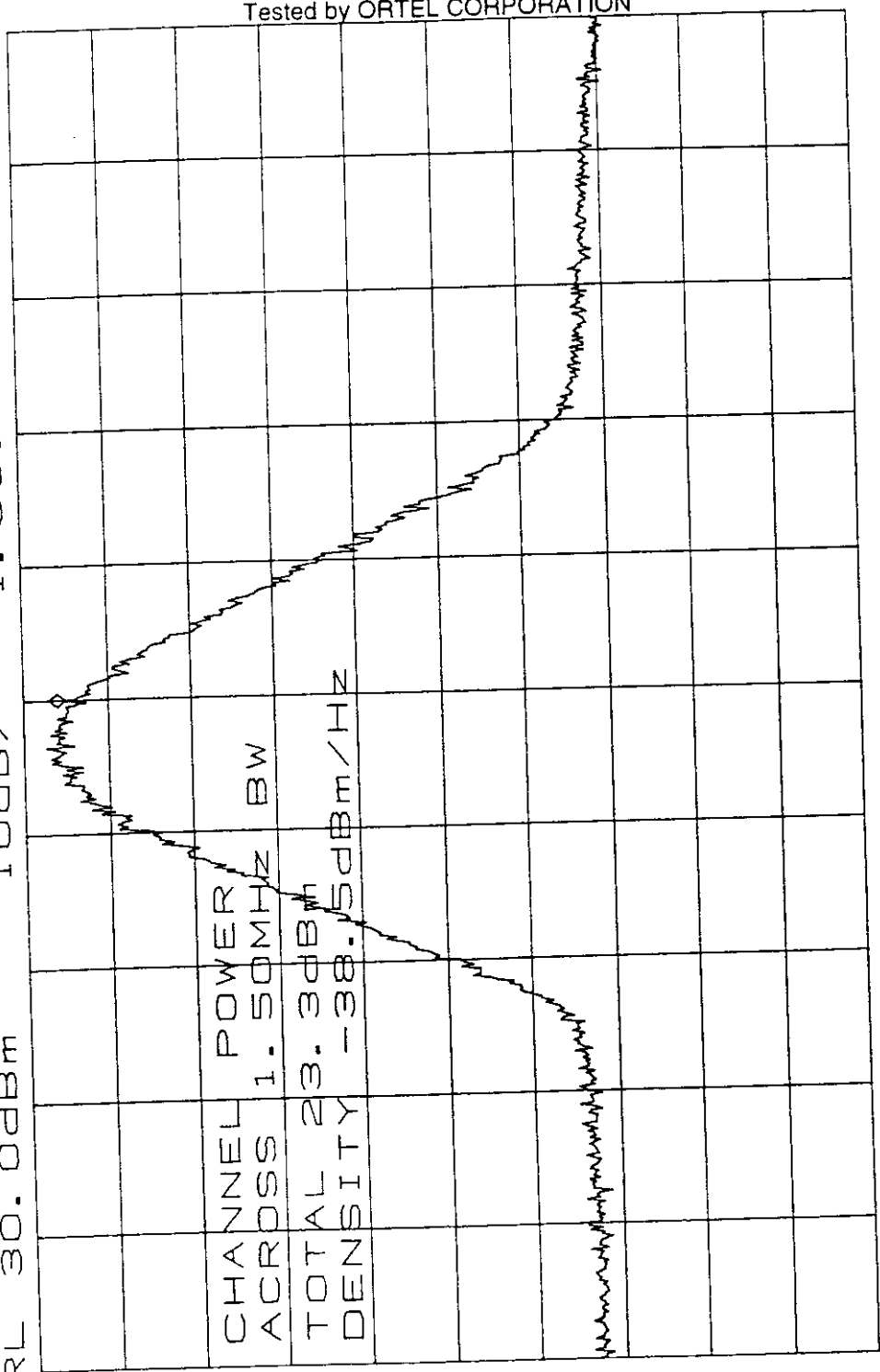
UL
Ch 375 (High channel)

CPR 0-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 25.00dBm
RL 30.00dBm 10dB/ 1.86950GHz

24.239

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 23.3dBm
DENSITY -38.5dBm/Hz



CENTER 1.86950GHz SPAN 20.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms



Tested by ORTEL CORPORATION

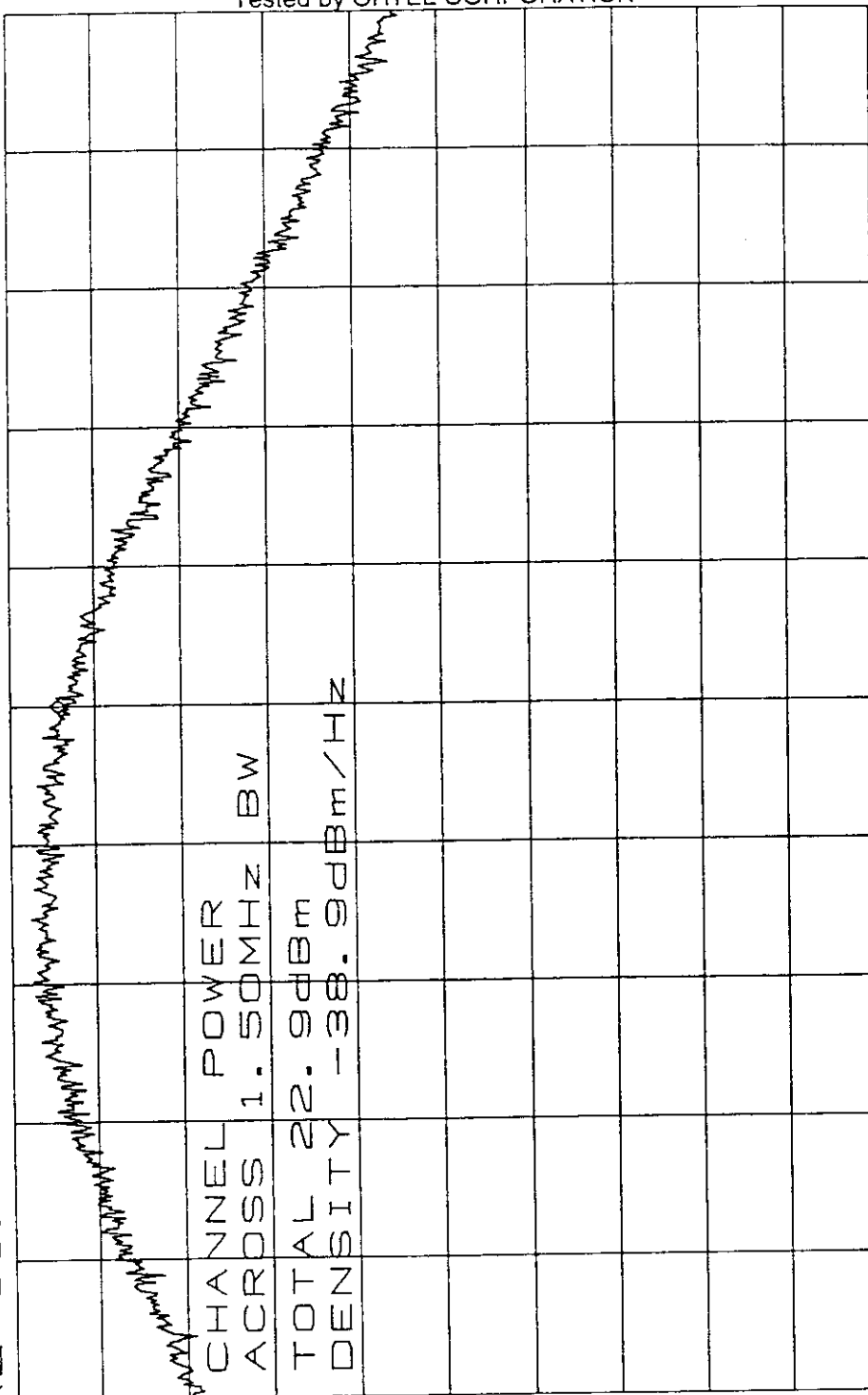
5/27/97
COWA S.90-1

Above
Fundamental

UL
Ch.375 (high channel)

CDR D-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 23.33dBm
RL 30.0dBm 1.869500GHZ



24.238

CENTER 1.869500GHZ SPAN 5.000MHZ
*RBW 1.0MHZ *VBW 1.0MHZ SWP 50.0ms

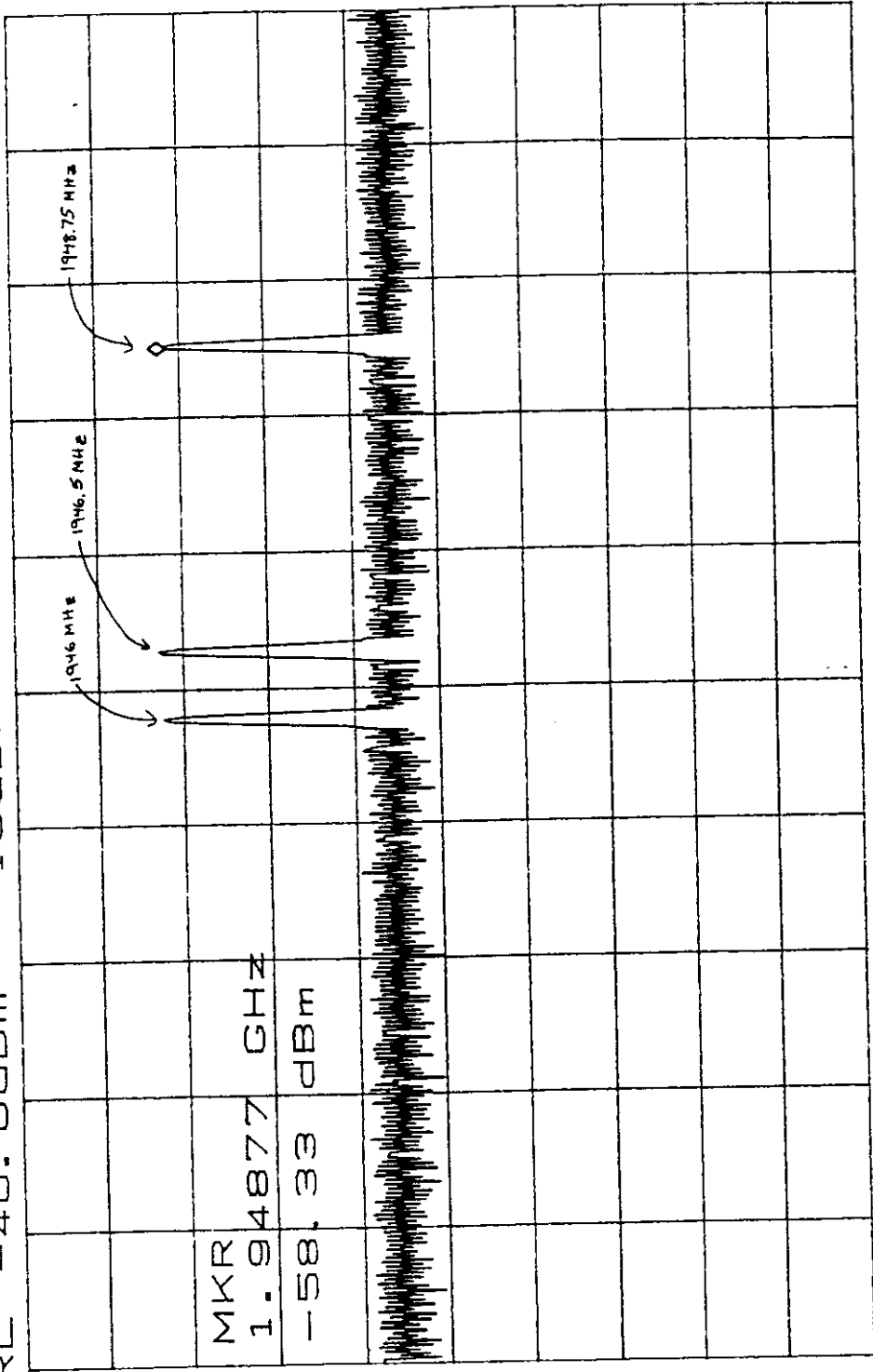


Tested by ORTEL CORPORATION

CDR D-band DL
S/N 041 Set to Ch. 325
6/3/97
CW Signals,
Input
Signals,

*ATTEN 20dB
MKR -58.33dBm
RL -40.00dBm
10dB/
1.94877GHz

3-tone



CENTER 1.94625GHz
*RBW 30kHz
*VBW 1.0kHz
SPAN 10.00MHz
SWP 840ms



Tested by ORTEL CORPORATION

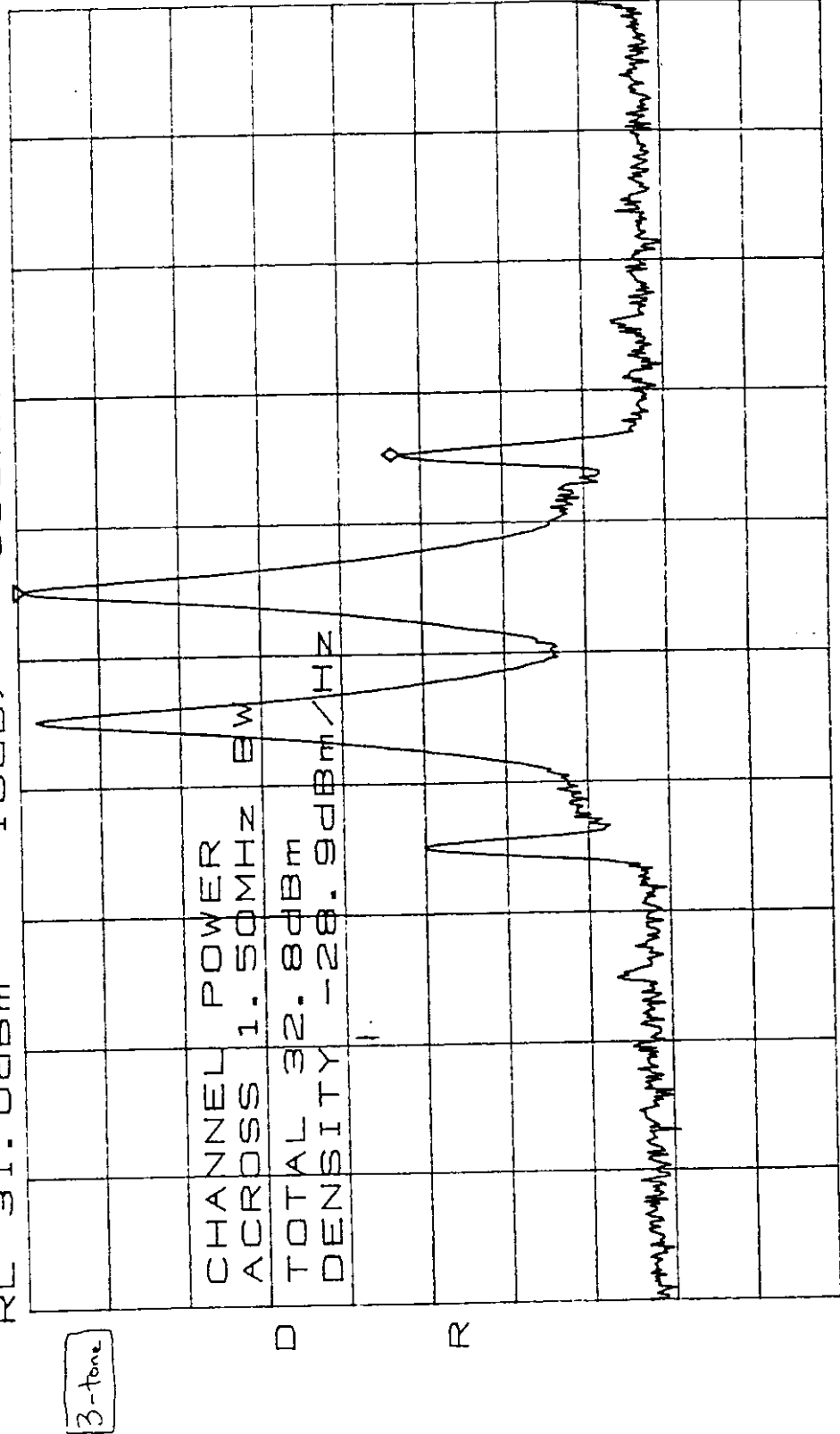
6/3/97
CW Signal

Output
Intermod

DL
Set to Ch. 325

CDR D-band
S/N 0141

*ATTEN 20dB VAVG 10 Δ MKR -46.50dB
RL 31.0dBm 10dB/ 508kHz



CENTER 1.946250GHZ SPAN 5.000MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms



Tested by ORTEL CORPORATION

9/3/91
CW Signal

Output
Intermed

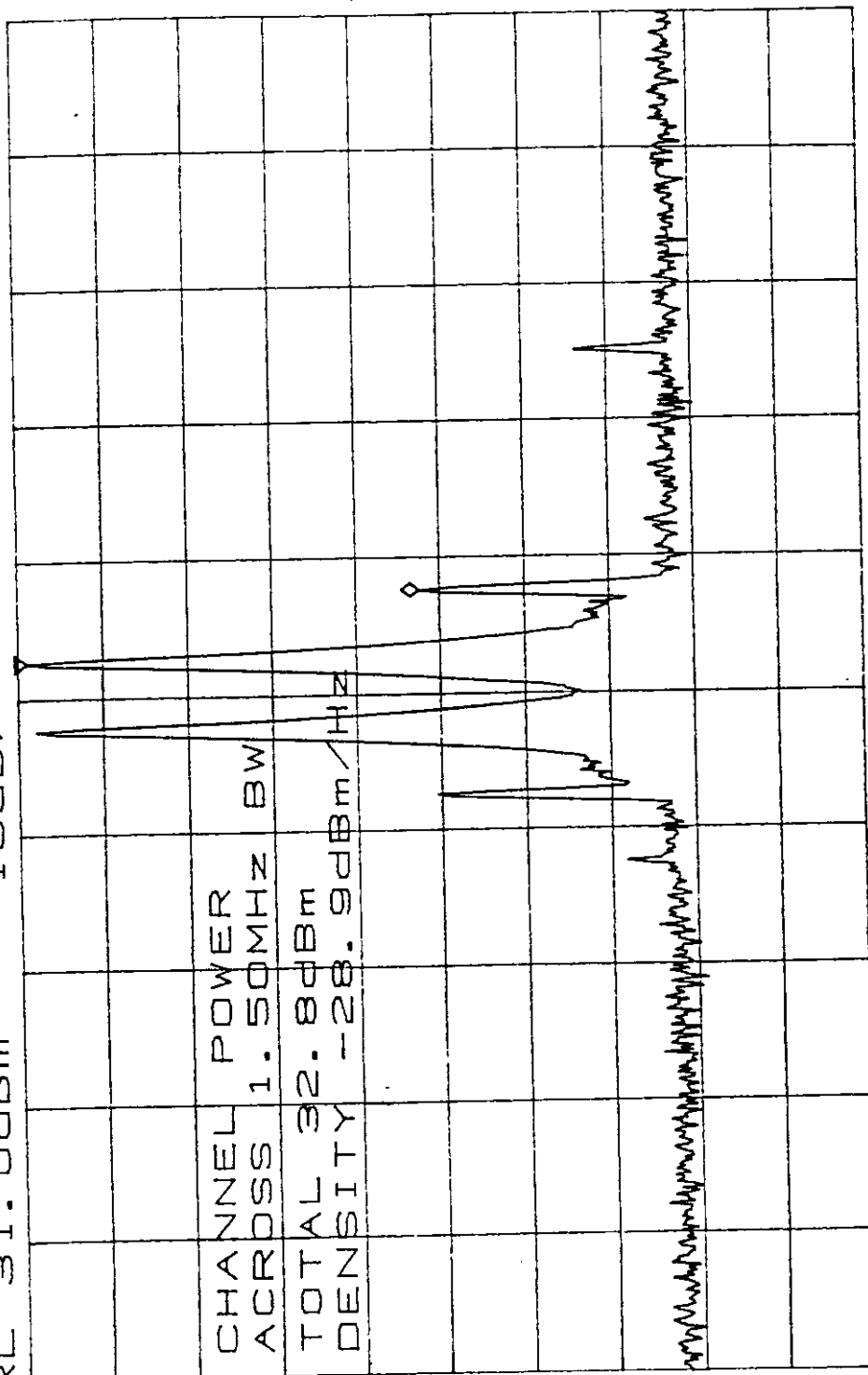
DL
Set to ch. 325

CVK D-band
S/N 0141

*ATTEN 20dB VAVG 10 ΔMKR -46.50dB
RL 31.0dBm 10dB/ 500kHz

3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 32.8dBm
DENSITY -28.9dBm/HZ



CENTER 1.94625GHz
*RBW 30kHz *VBW 30kHz
SPAN 10.00MHz SWP 50.0ms



Tested by ORTEL CORPORATION

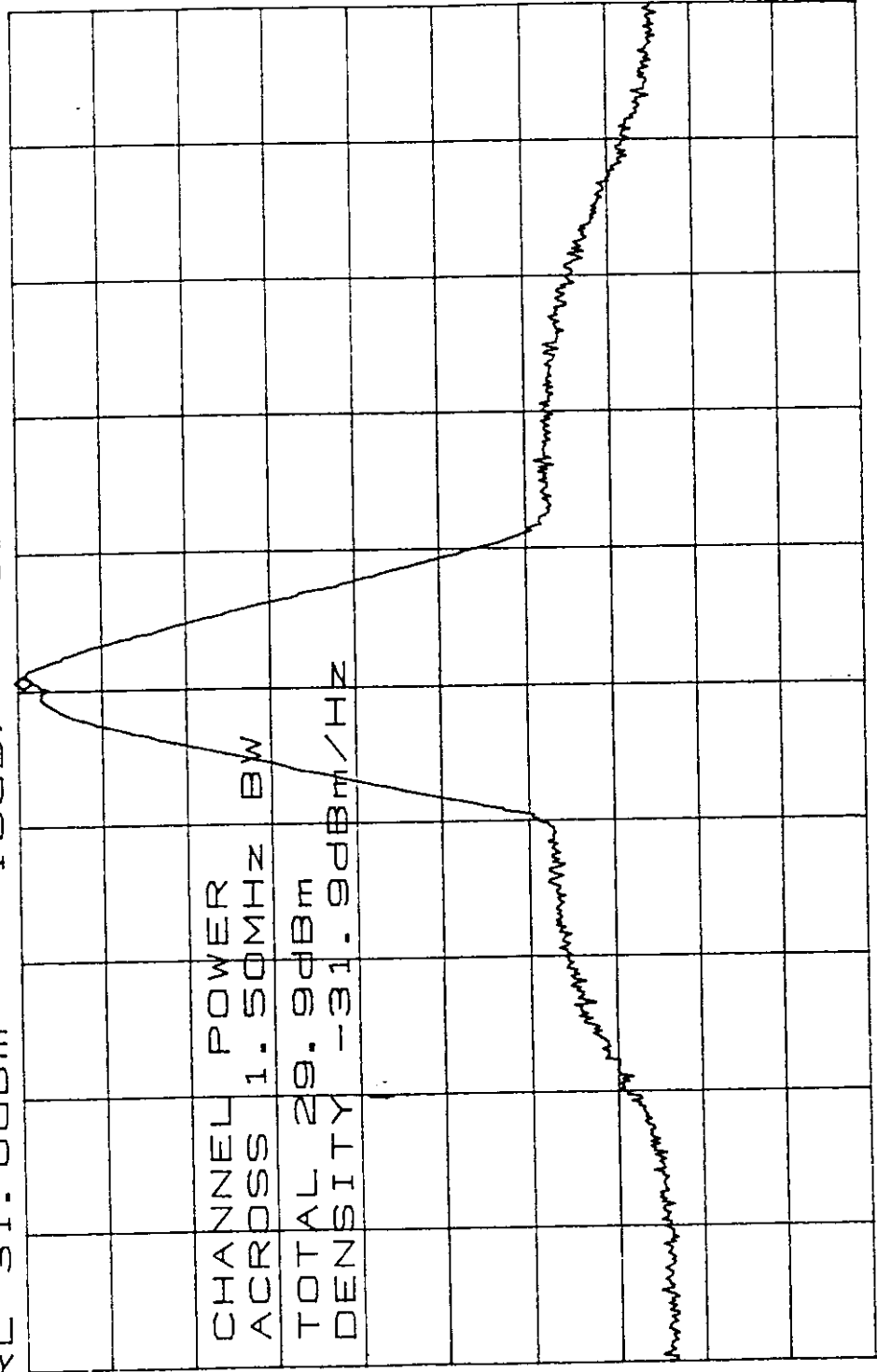
CDR D-band
S/N 0141

DL
Set to ch.325

Output
Intermod

6/3/97
CW Signal

*ATTEN 20dB VAVG 10 MKR 29.33dBm
RL 31.0dBm 10dB/ 1.94652GHz



3-tone

CENTER 1.94625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

Tested by ORTEL CORPORATION

6/3/97
CW Signals

Input
Signals

UL
Set to Ch. 325

CDR D-band

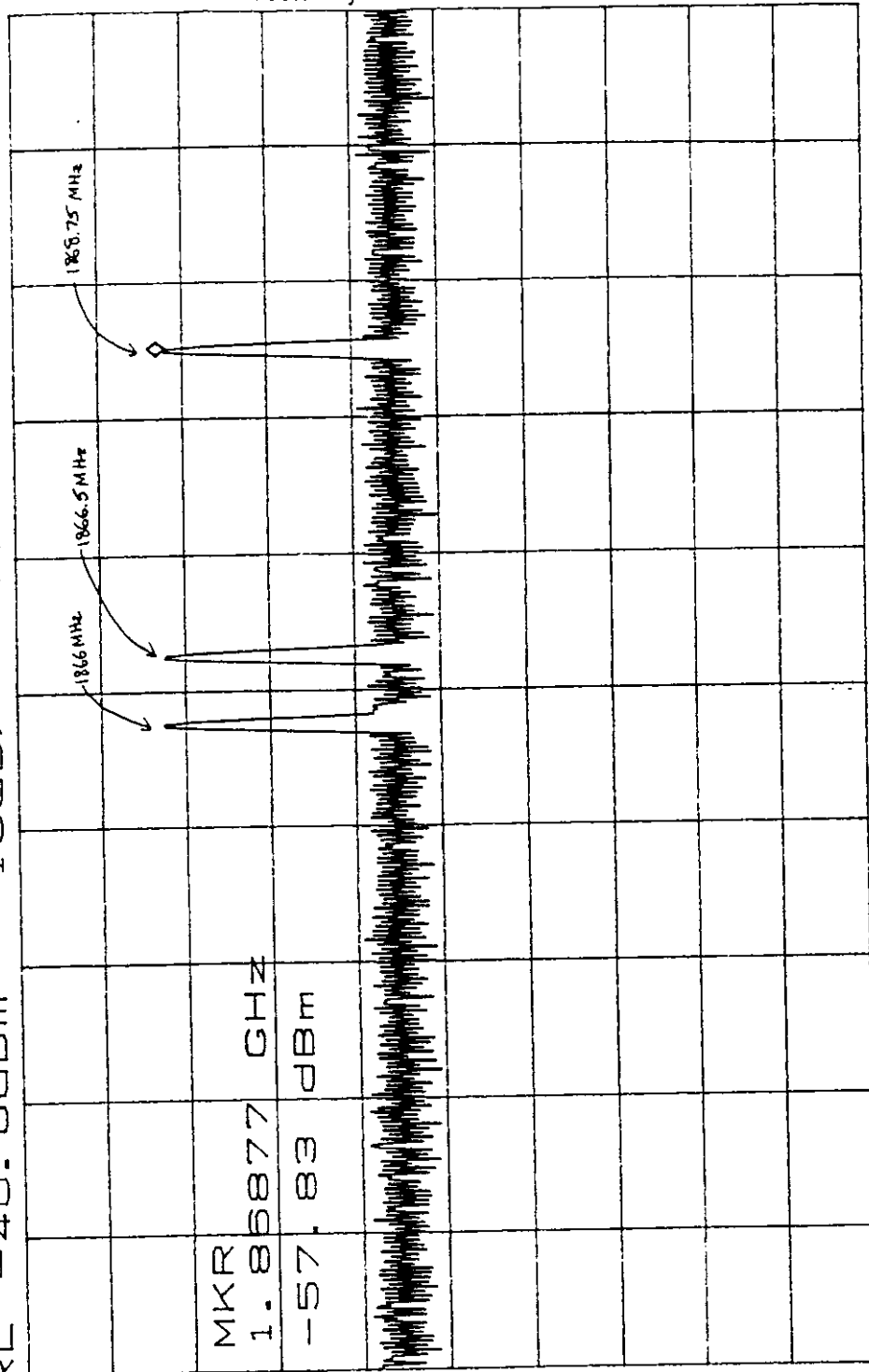
S/N 0141

MKR -57.83dBm

1.86877GHz

*ATTEN 20dB

RL -40.0dBm



3-Tone

SPAN 10.00MHz

SWP 840ms

CENTER 1.86625GHz

*VBW 1.0KHz

*RBW 30KHz



Tested by ORTEL CORPORATION

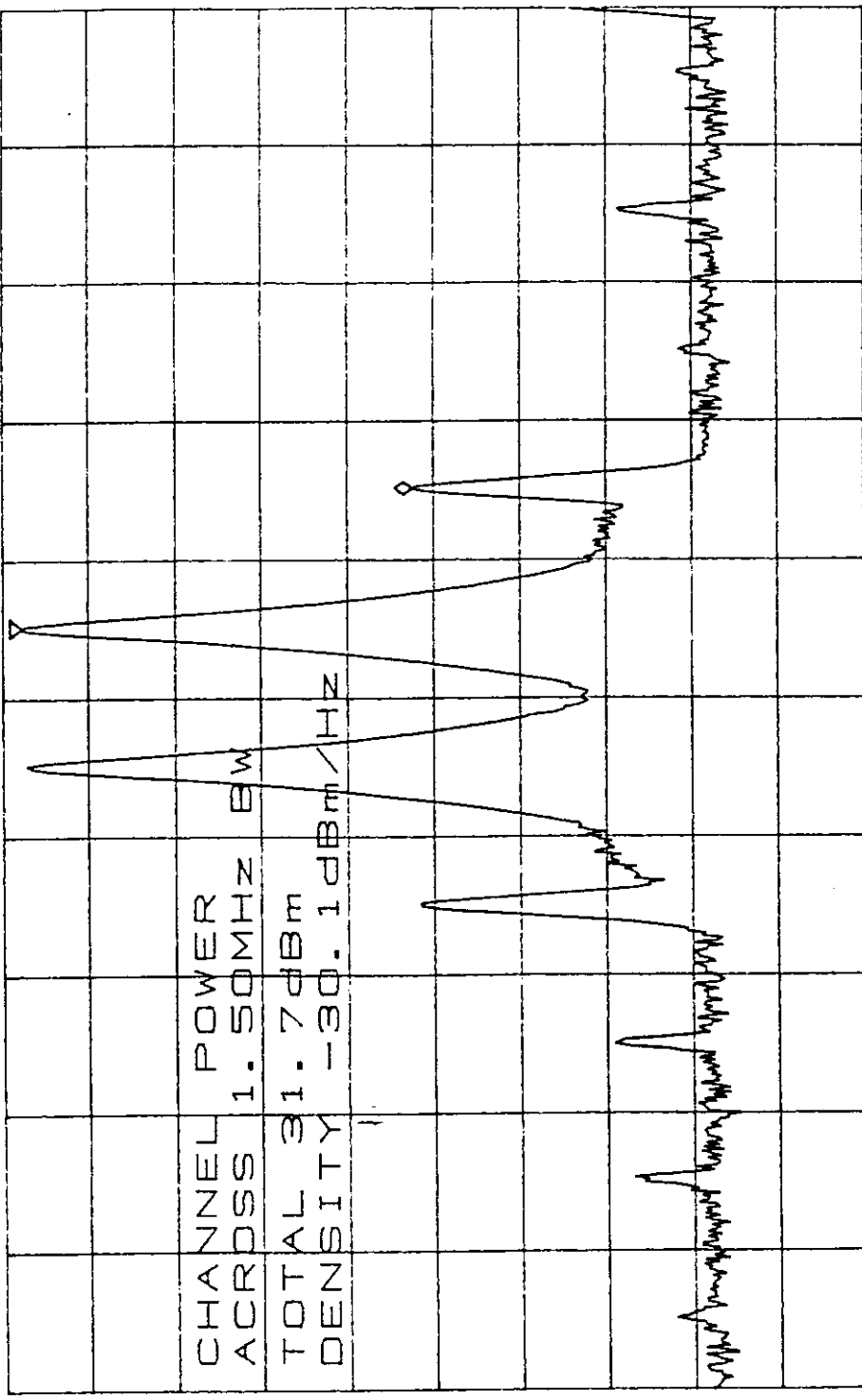
01/31/1
CW Signal

Output
Intermod

UL
Set to CH.325

COR D-band
S/N 0141

* ATTN 20dB VAVG 10 Δ MKR -45.33dB
RL 31.0dBm 10dB/ 500kHz



CENTER 1.866250GHZ SPAN 5.000MHZ
*RBW 30kHz *VBW 30kHz SWP 50.0ms

Tested by ORTEL CORPORATION

6/3/97
CW Signals

Output
Intermod

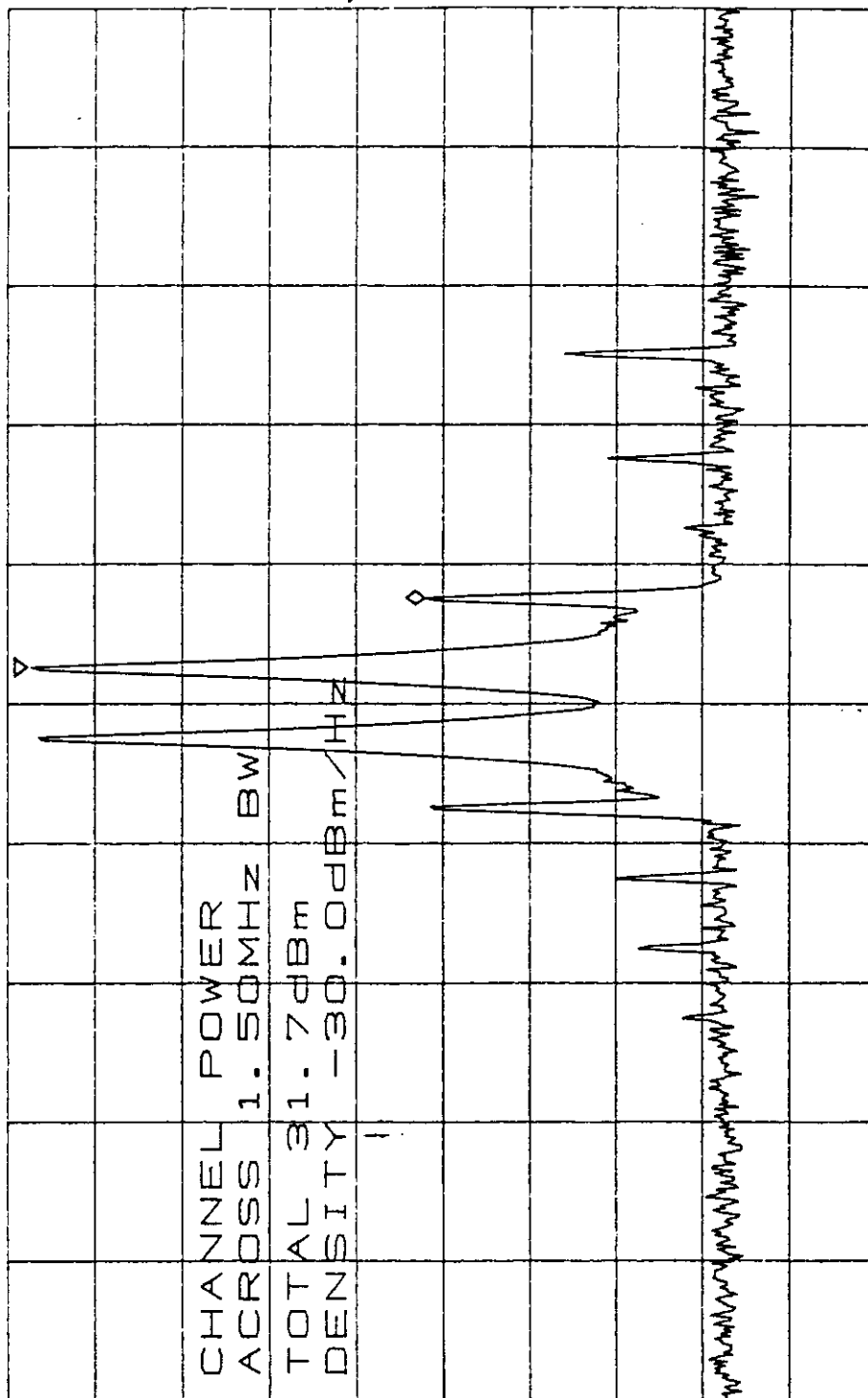
UL
Set to Ch. 325

CDR D-band
S/N 0141

*ATTEN 20dB VAVG 10 ΔMKR -45.66dB
RL 31.0dBm 10dB/ 500kHz

3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 31.7dBm
DENSITY -30.0dBm/Hz



CENTER 1.86625GHz SPAN 10.00MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms



Tested by ORTEL CORPORATION

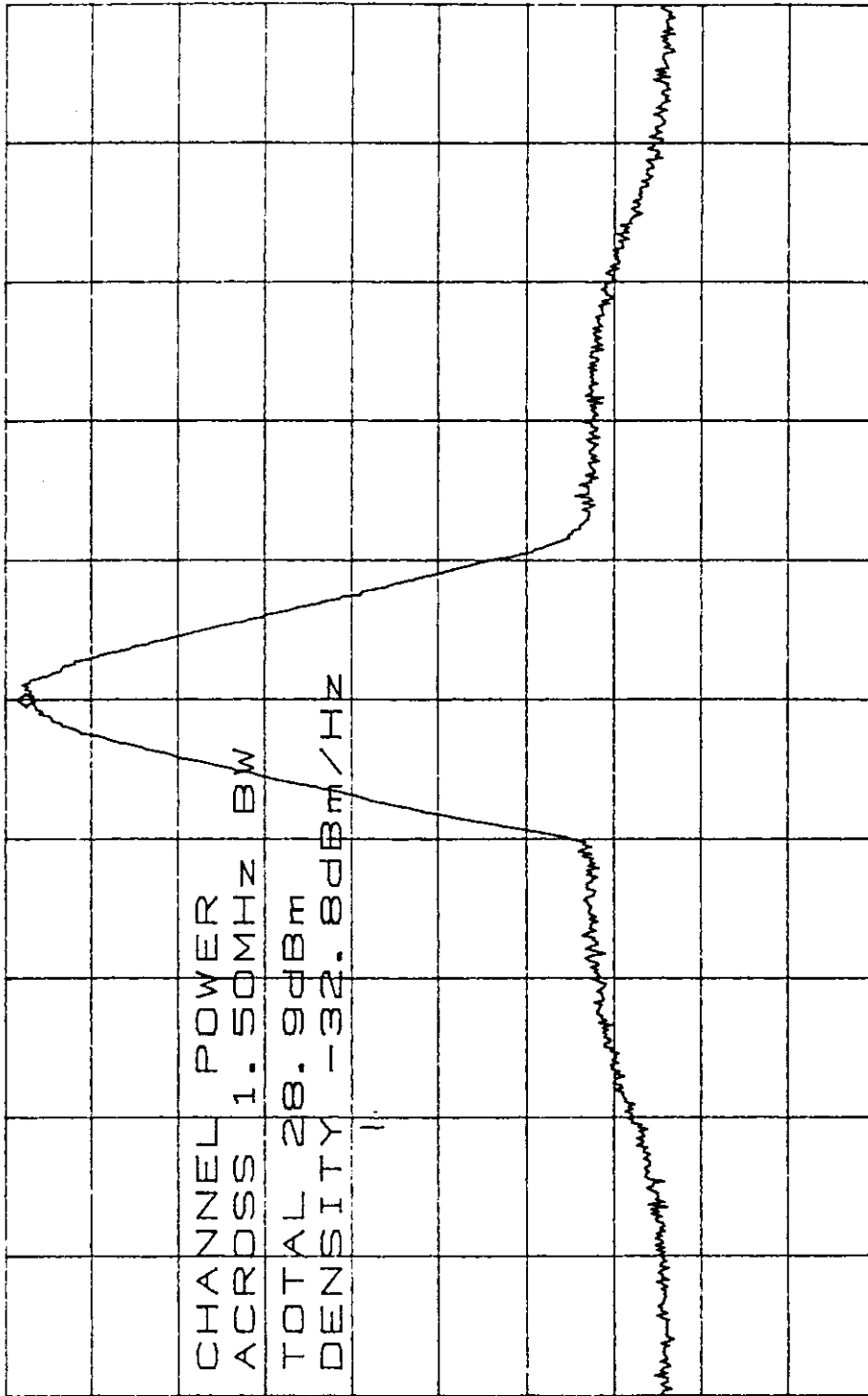
6/3/97
CW Signal

Output
Intermod

UL
Set to CL325

CDR D-band
S/N 0141

*ATTEN 20dB VAVG 10 MKR 27.67dBm
RL 31.0dBm 10dB/ 1.86625GHz



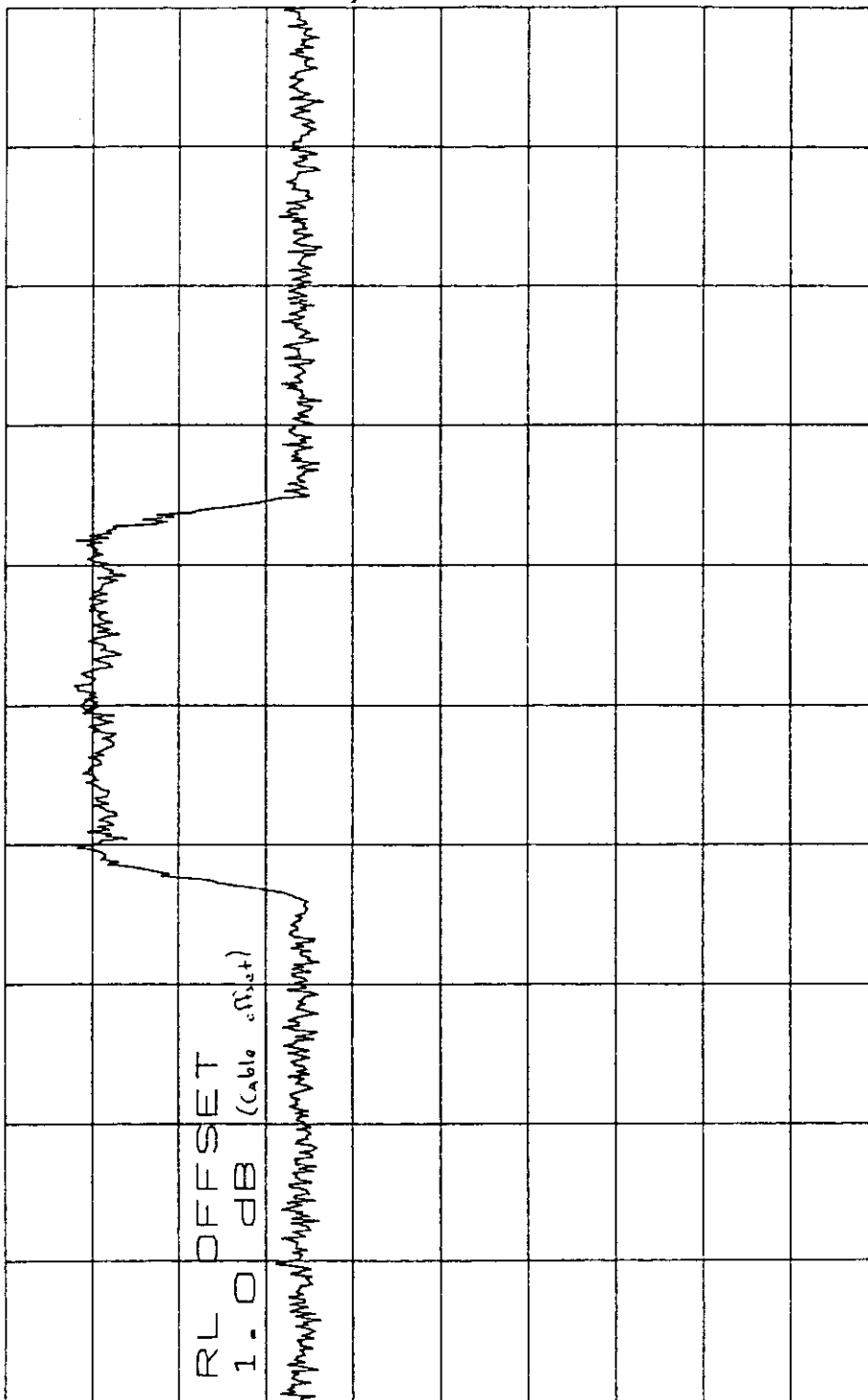
CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 28.9dBm
DENSITY -32.8dBm/Hz

CENTER 1.86625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms



Tested by ORTEL CORPORATION

5/28/97
CDMA Signal
Input
(to get maximum output)
MKR -70.67dBm
1.946250GHz
COR - 0.6and
S/N 0141
PL
Ch. 325 (low channel)
*ATTEN 10dB VAVG 10
RL -60.0dBm 10dB/
1.0dB



CENTER 1.946250GHz
*RBW 30KHz *VBW 30KHz
SPAN 5.000MHz SWP 50.0ms



Tested by ORTEL CORPORATION

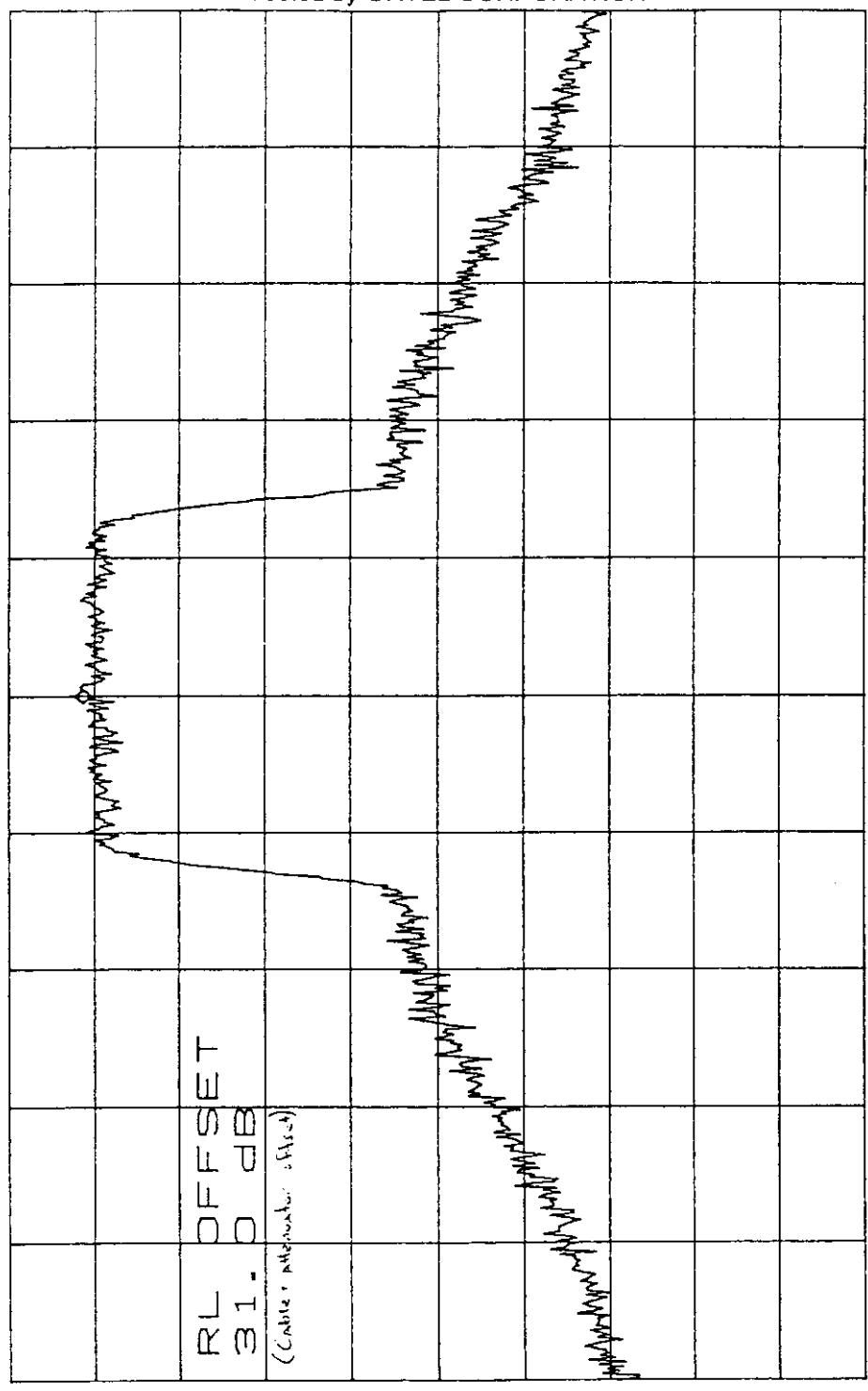
5/28/97
CDMA Signal

Output

DL
Ch. 325 (low channel)

CDR D-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 15.33dBm
RL 25.0dBm 10dB/ 1.946250GHz



In/out

RL OFFSET
31.0 dB
(Cable + attenuator offset)

CENTER 1.946250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

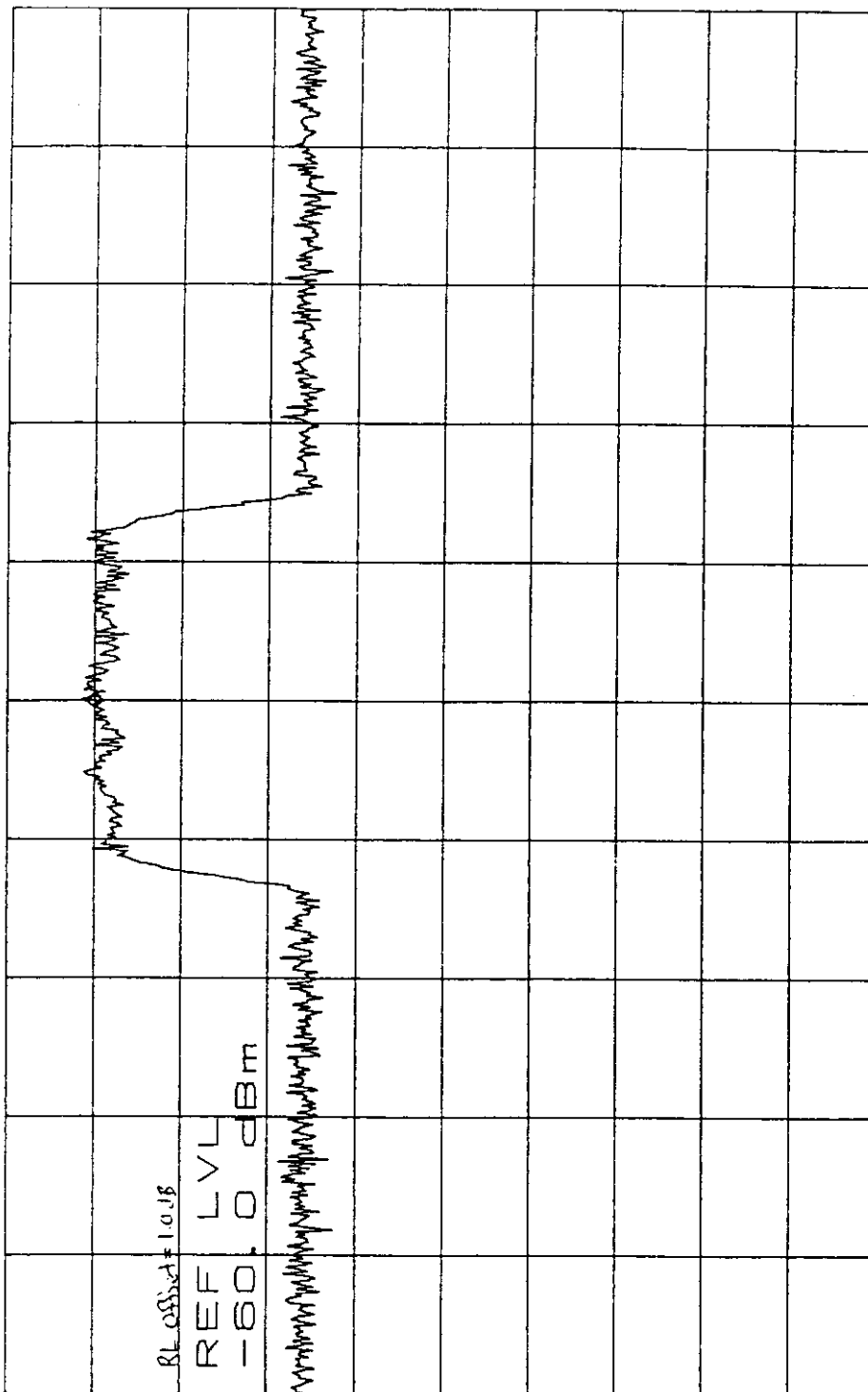
Tested by ORTEL CORPORATION

DL
Ch. 375 (high channel)
S/N 0141

Input
(to get max output)

CDR D-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR -71.00dBm
RL -60.00dBm 10dB/ 1.948750GHz



CENTER 1.948750GHz
*RBW 30kHz *VBW 30kHz
SPAN 5.000MHz SWP 50.0ms

Tested by ORTEL CORPORATION

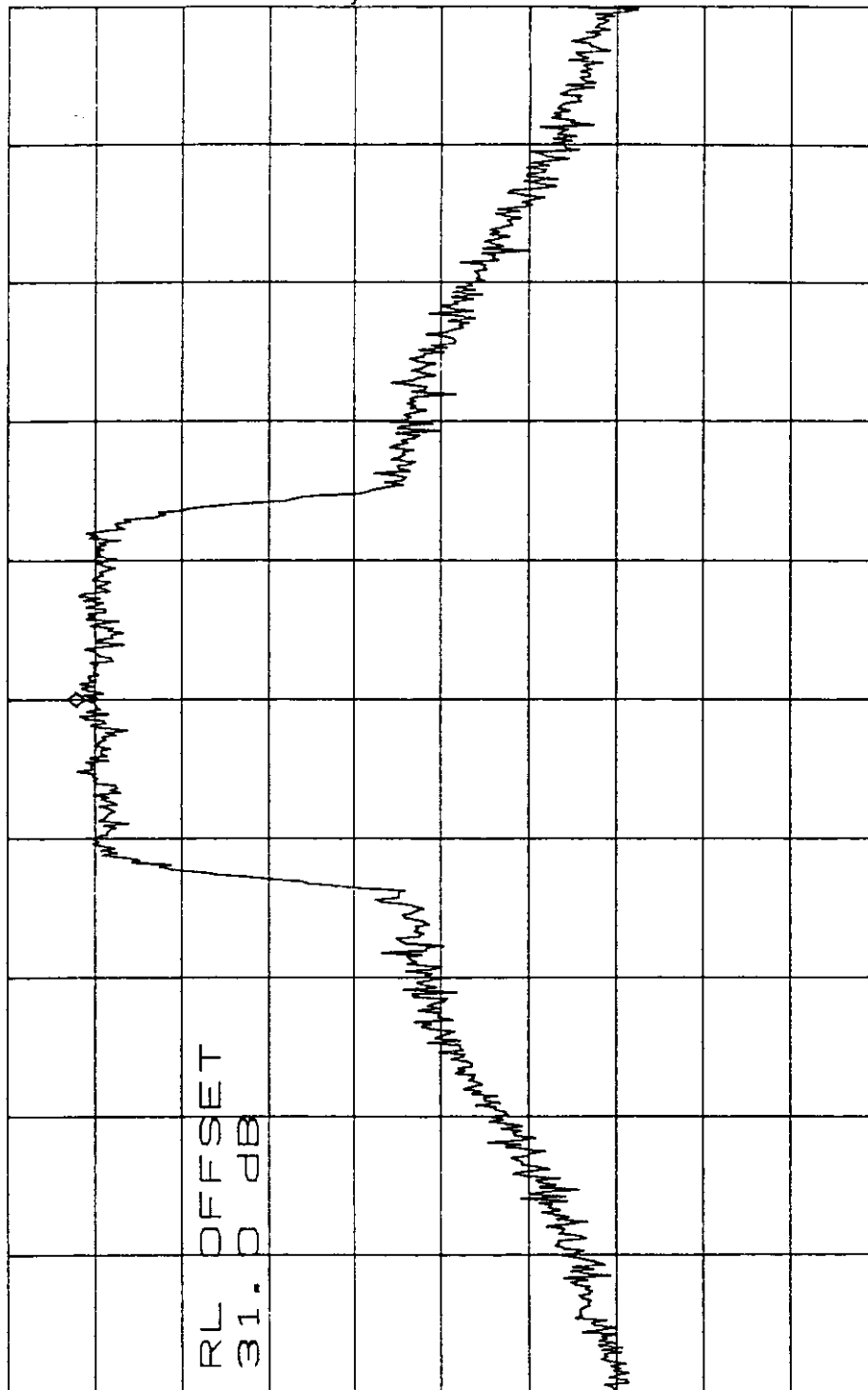
5/28/97
CDMA Signal

DL
Ch. 375 (high channel)

Output

CDR D-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 16.17dBm
RL 25.0dBm 10dB/ 1.948750GHz



In/out

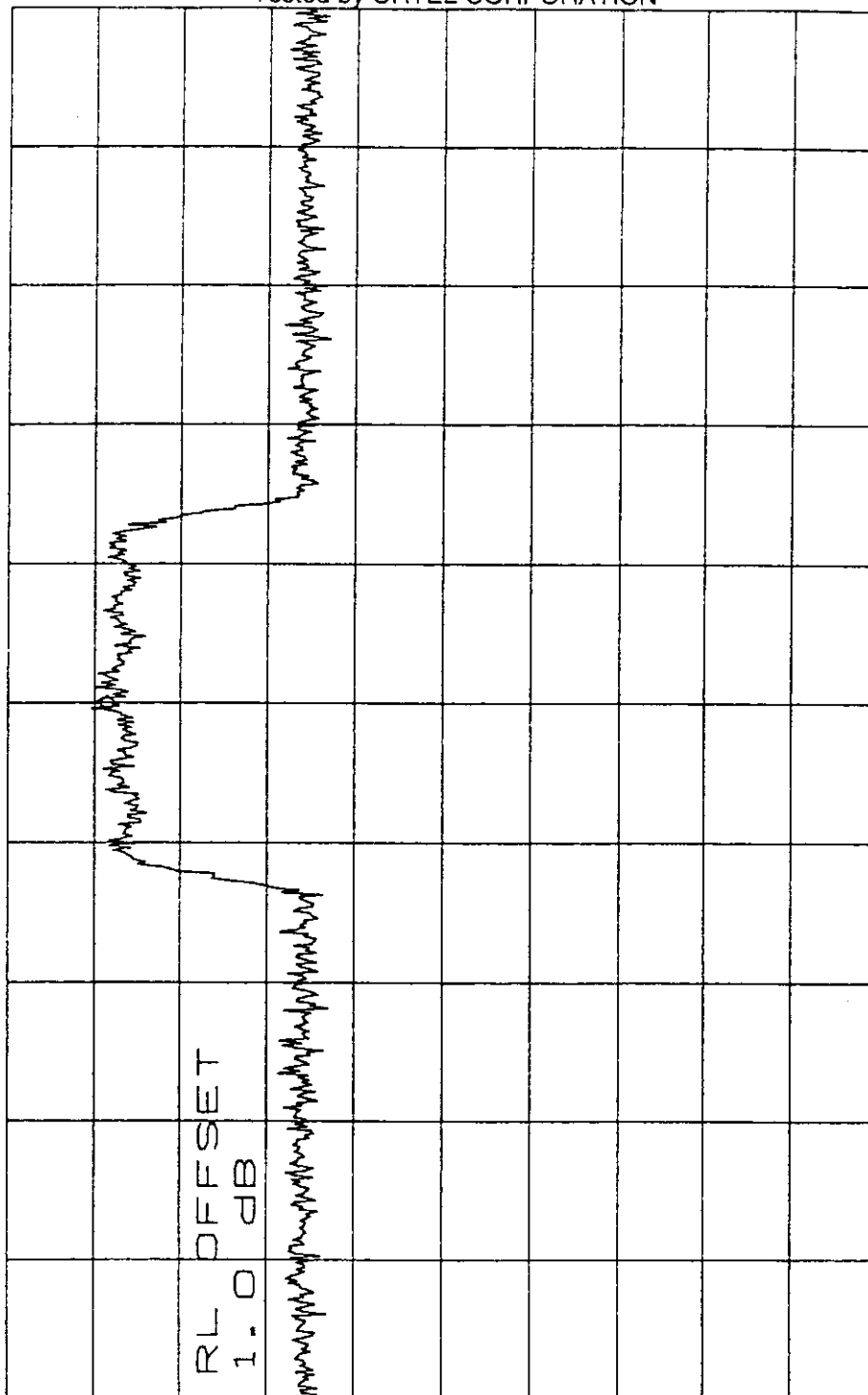
RL OFFSET
31.0 dB

CENTER 1.948750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

Tested by ORTEL CORPORATION

CDR D-band S/N 0141 UL Ch.375 (high channel) Input (to get max output) 5/26/97 CDMA Signal

*ATTEN 10dB VAVG 10 MKR -72.50dBm
RL -60.00dBm 10dB/ 1.868750GHZ



CENTER 1.868750GHZ SPAN 5.000MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms

In/out



Tested by ORTEL CORPORATION

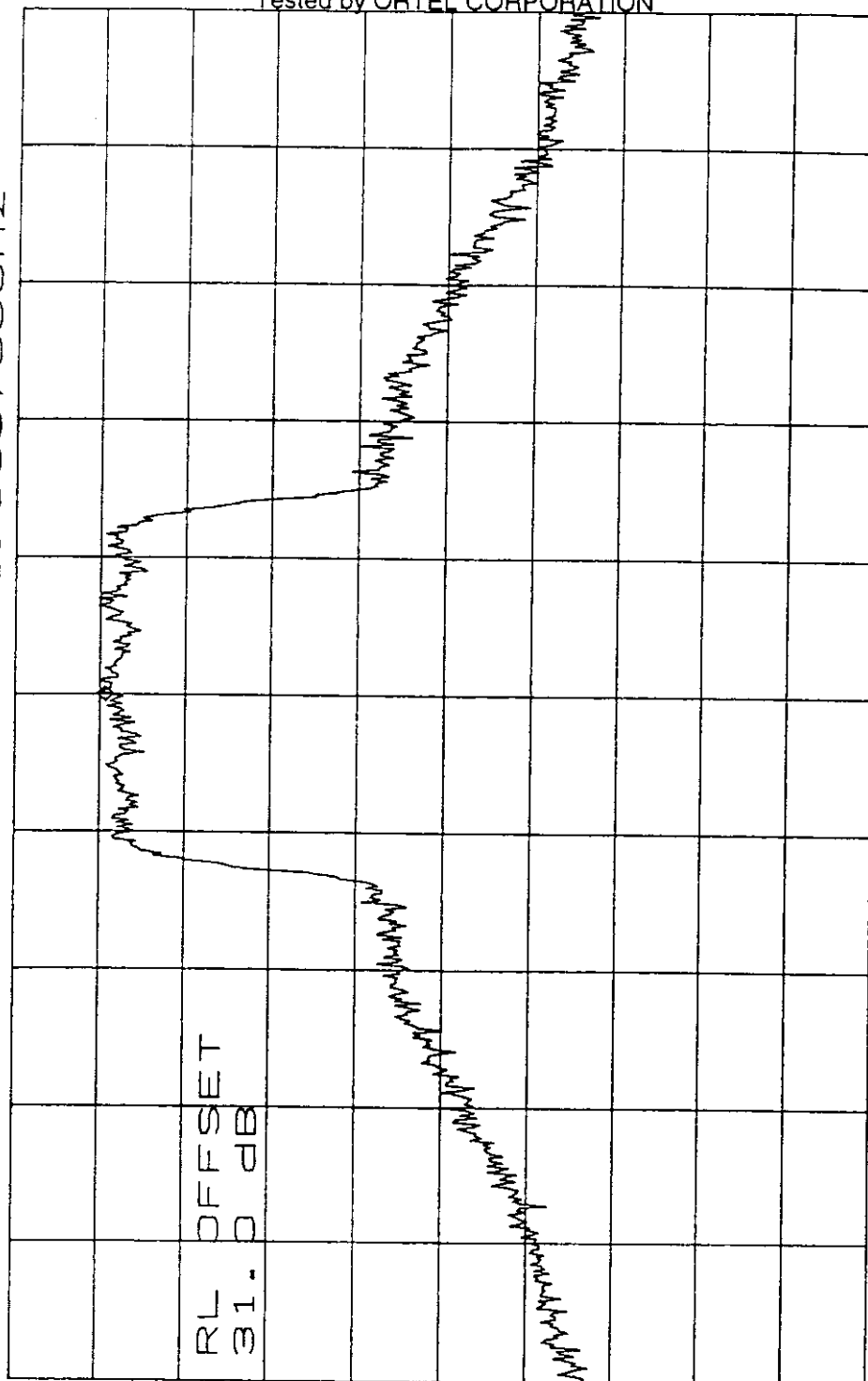
5/20/97
CDMA Signal

Output

UL
Ch. 375 (high channel)

CDR D-band
S/N 0141

*ATTEN 10dB VAVG 10 MKR 13.33dBm
RL 25.0dBm 10dB/ 1.868750GHz



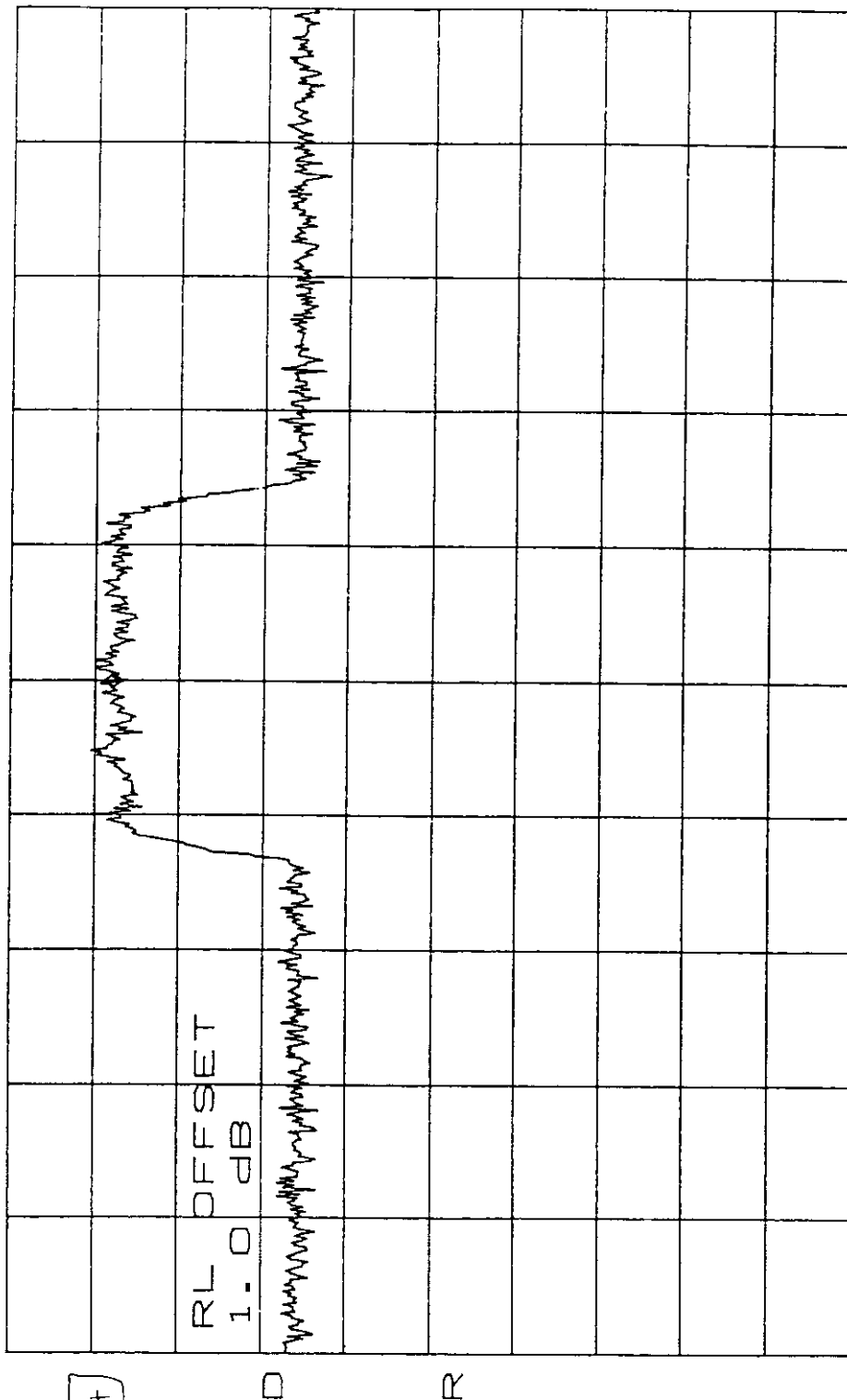
In/out

CENTER 1.868750GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms



Tested by ORTEL CORPORATION

CDR D-band
S/N 0141
UL
ch. 325 (low channel)
Input
(to get max output)
CDMA Signal
5/28/97
*ATTEN 10dB
RL -60.0dBm
VAVG 10
10dB/
MKR -73.17dBm
1.866250GHz



In/out

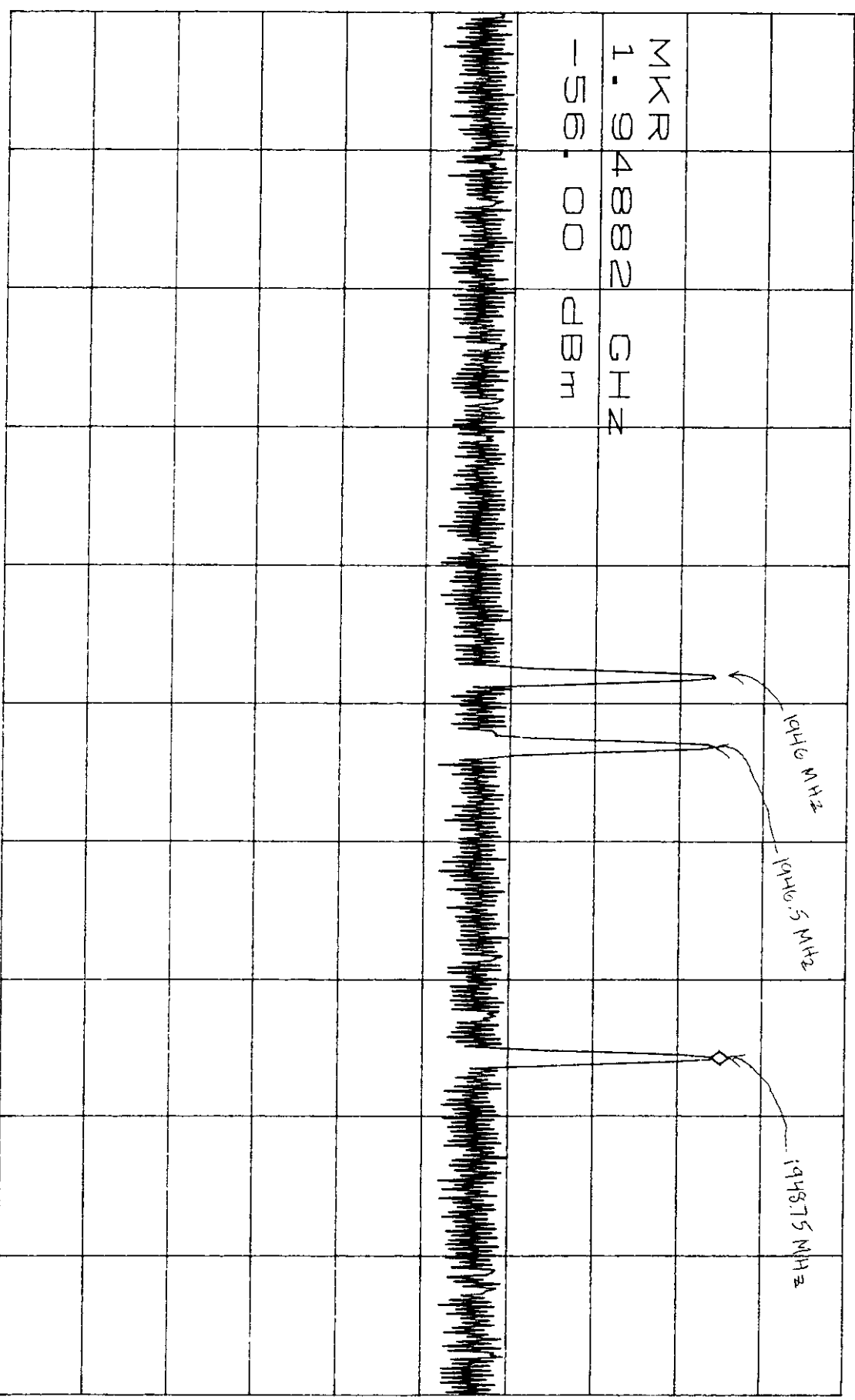
CENTER 1.866250GHz
*RBW 30kHz
*VBW 30kHz
SPAN 5.000MHz
SWP 50.0ms

COR 0-band
 S/N 0141
 Set to Ch. 325

Input
 Signals
 CW Signal
 9/28/97

*ATTEN 20dB
 RL -40.00dBm
 10dB/
 1.94882GHz
 MKR -56.00dBm

3-tone



R

CENTER 1.94825GHz
 *RBW 30kHz
 *VBW 1.0kHz
 SPAN 10.00MHz
 SWP 840ms

CDR D-band
S/N 0141

DL
Set to Ch. 335

Output
Intermed

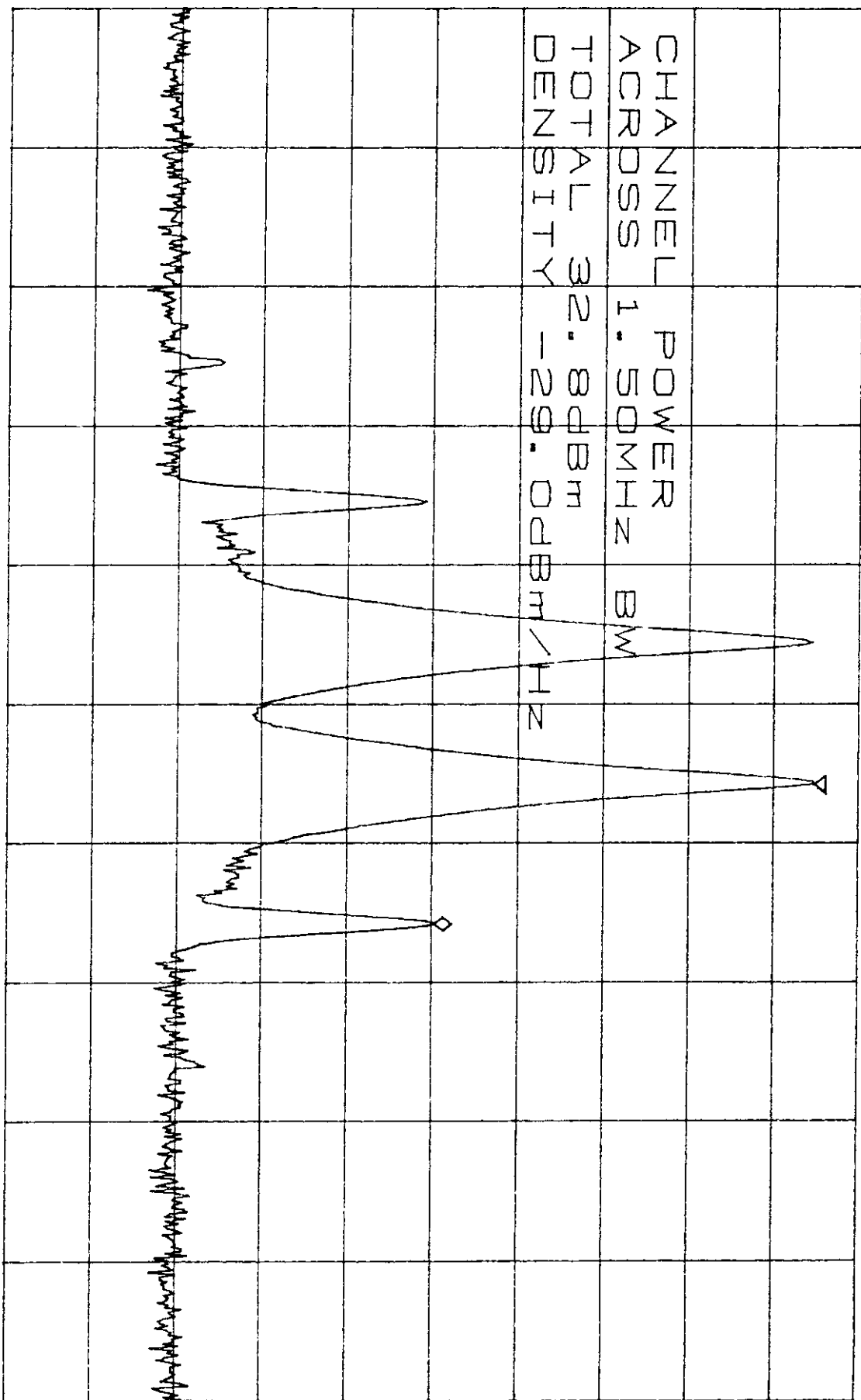
5/28/97
CW signal

*ATTEN 20dB VAVG 10 ΔMKR -44.50dB
RL 35.0dBm 10dB/ 500kHz

3-tone

D
CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 32.8dBm
DENSITY -29.0dBm/Hz

R



CENTER 1.946250GHz SPAN 5.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

COR 0-band

DL

Output

5/28/97

S/N 0141

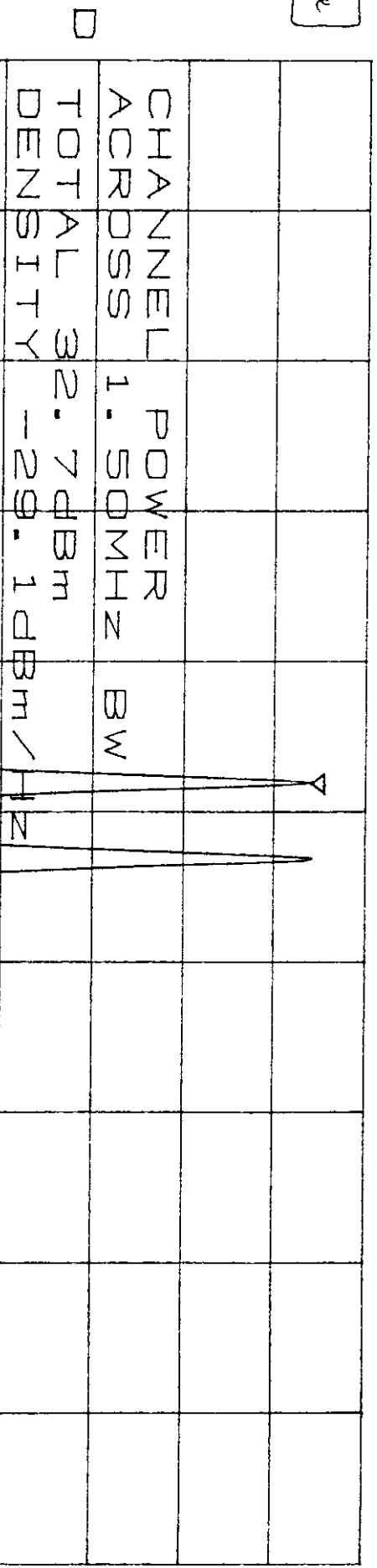
Set to ch. 335

Internal

CW Signal

*ATTEN 20dB VAVG 10 ΔMKR -44.50dB
RL 35.00dB 10dB/ 1.02MHz

3-tone



R

CENTER 1.94625GHz SPAN 10.00MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

CDR D-band
S/N 0141

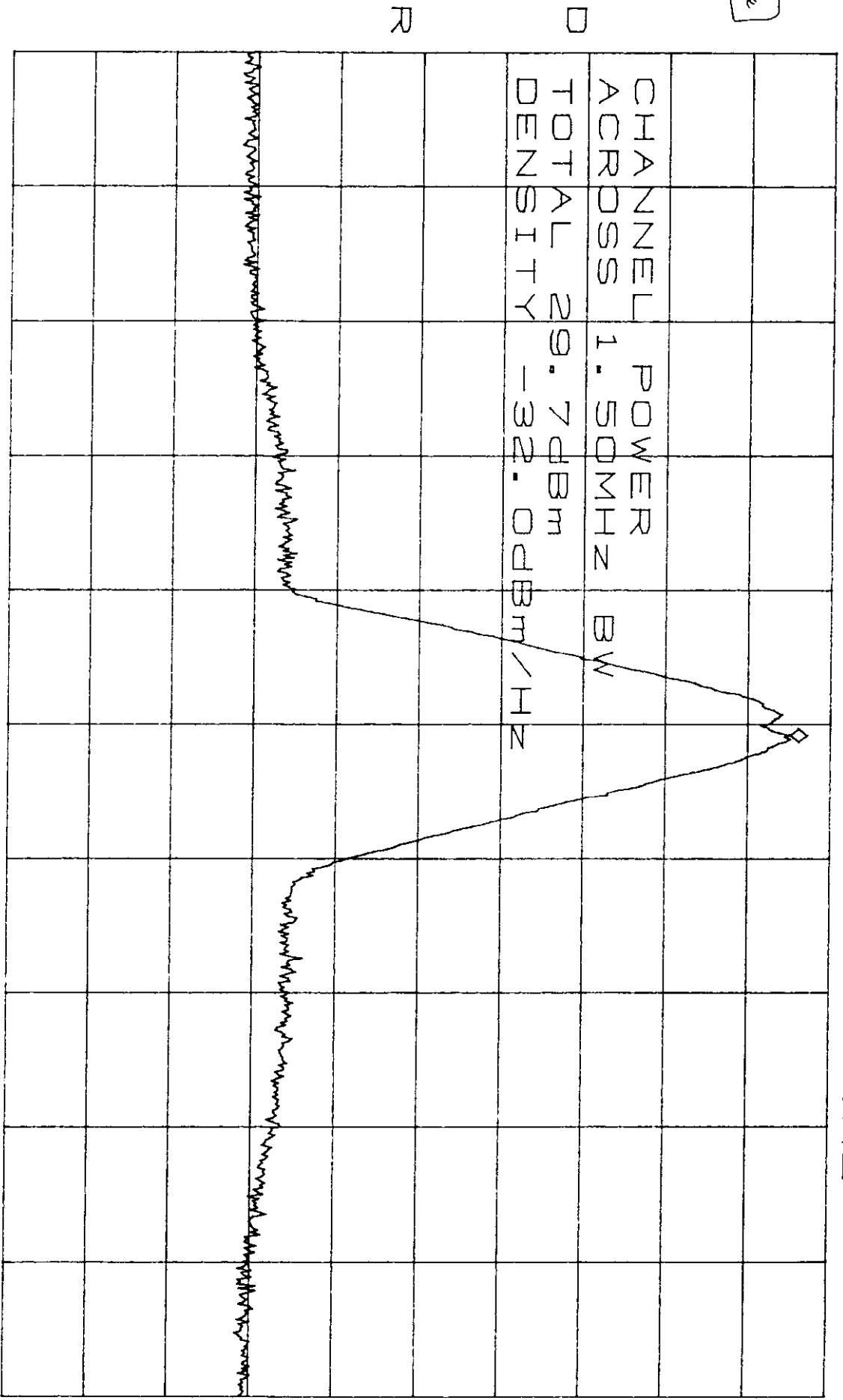
DL
Set to ch. 325

Output
Intermod

5/28/97
CW Signal

*ATTEN 20dB VAVG 10 MKR 30.17dBm
RL 35.0dBm 10dB/ 1.94658GHz

3-tone



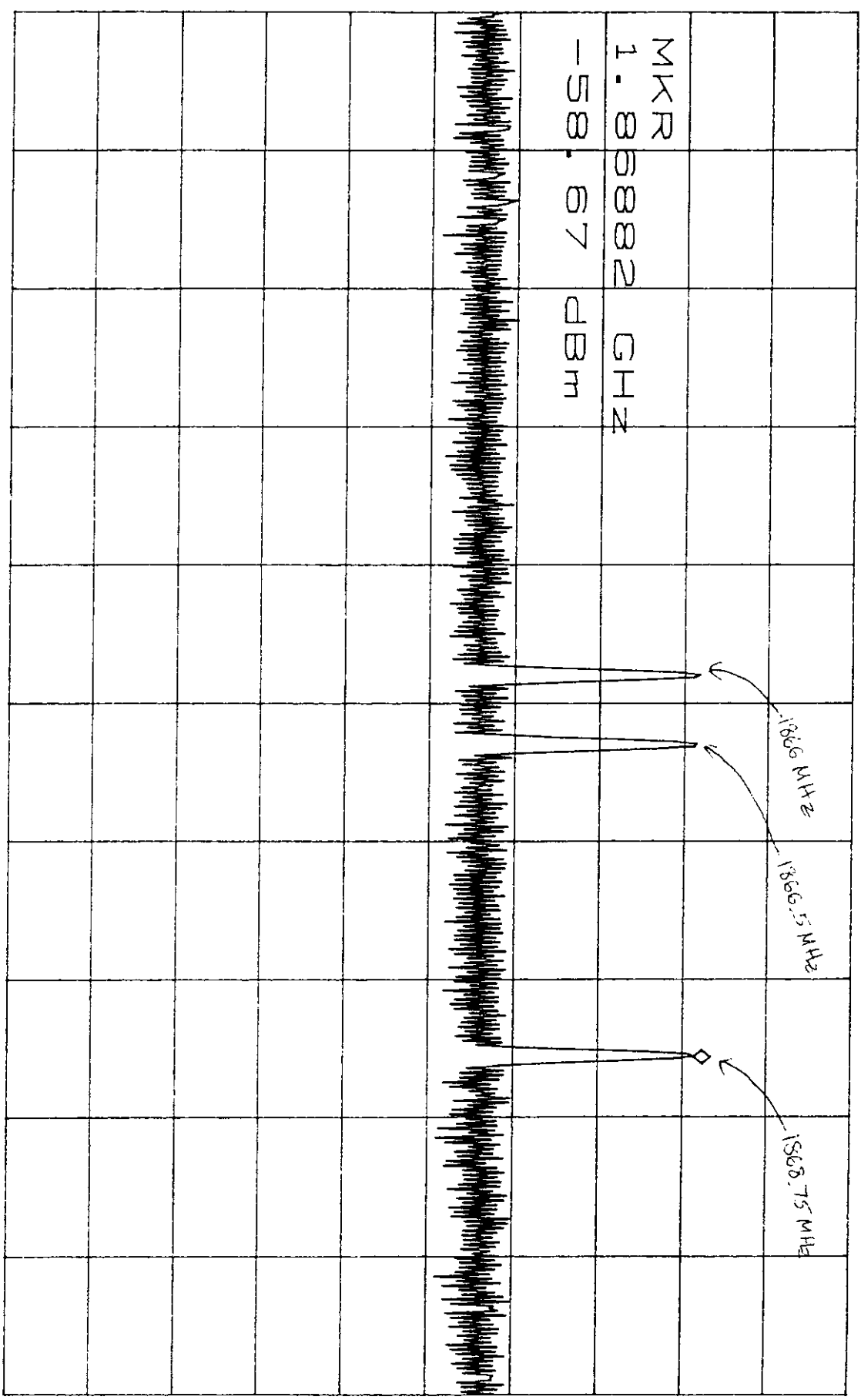
CENTER 1.94625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

COR D-band
S/N 0141
Set to CH325

5/28/97
Input
Signals
CW Signal

*ATTEN 20DB VAVG 0 MKR -58.67DBm
RL -40.0DBm 10DB/ 1.86882GHz

3-tone



R

CENTER 1.868825GHz SPAN 10.00MHz
*RBW 30kHz *VBW 1.0kHz SWP 840ms

COR D-band

UL

S/N 0141

Set to ch. 325

Output

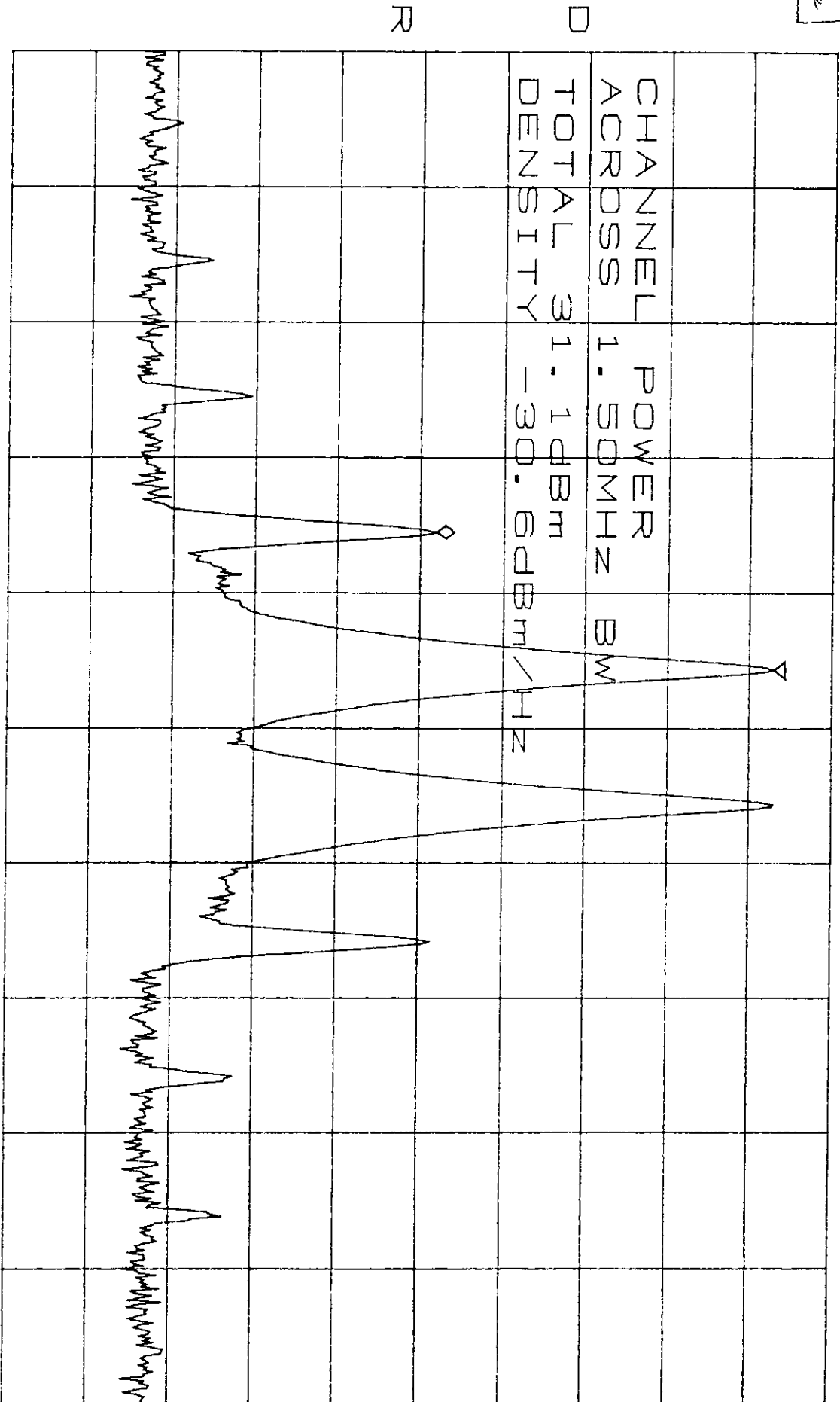
Intermod

5/23/87

CW Signal

*ATTEN 20dB VAVG 10 ΔMKR -41.00dB
RL 35.00dB 10dB/ -508KHz

3-tone



R

D

CENTER 1.866250GHz SPAN 5.000MHz
*RBW 30KHz *VBW 30KHz SWP 50.0ms

COR D-band

VL

Output

5/28/97

S/N 0141

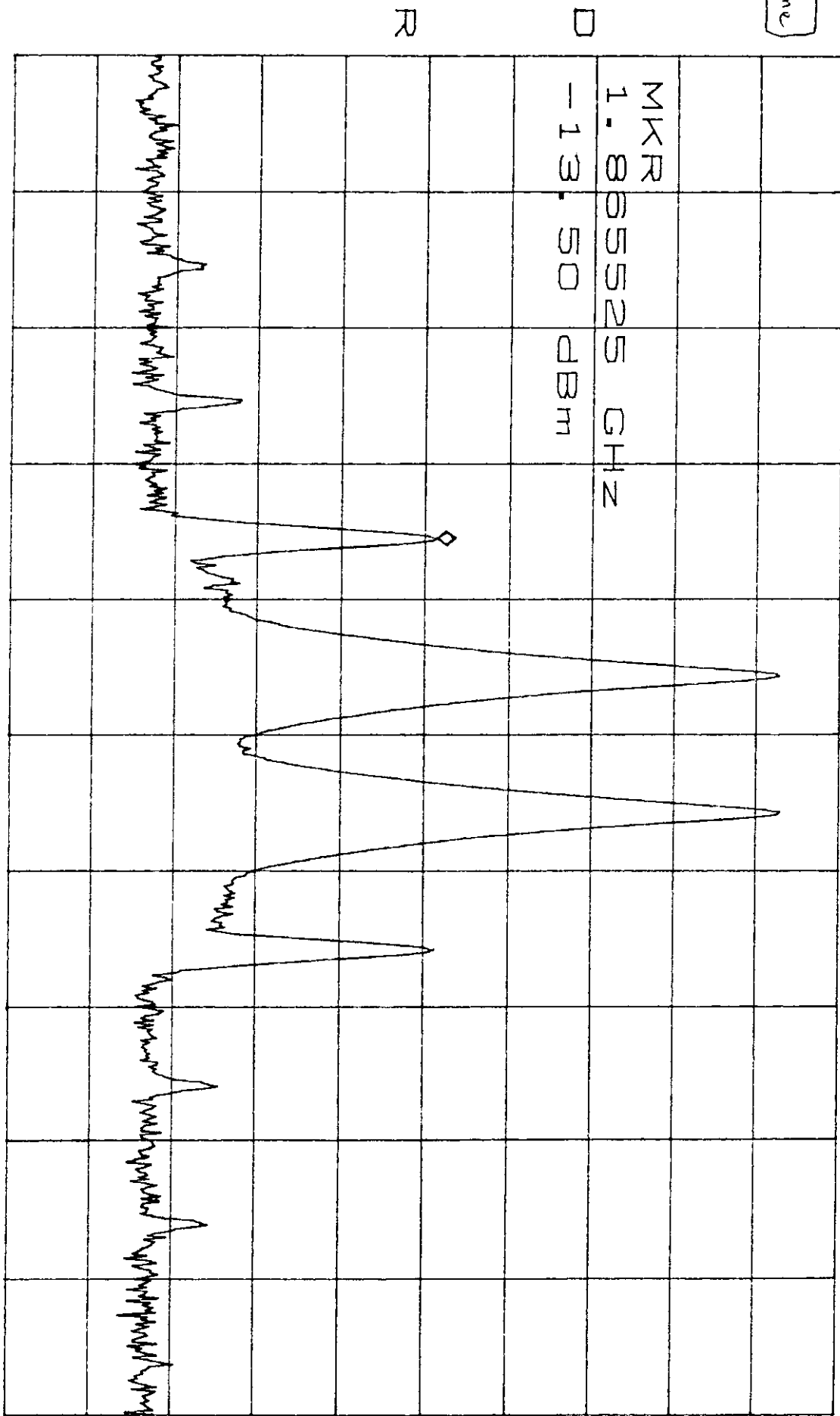
Set to Ch. 325

Intermod

CW Signal

*ATTEN 20DB VAVG 10 MKR -13.50DBM
RL 35.0DBM 10DB/ 1.865525GHZ

3-tone



CENTER 1.866250GHZ SPAN 5.000MHZ
*RBW 30KHZ *VBW 30KHZ SWP 50.0ms

COR D-band

VL

S/N 0141

Set to Ch. 335

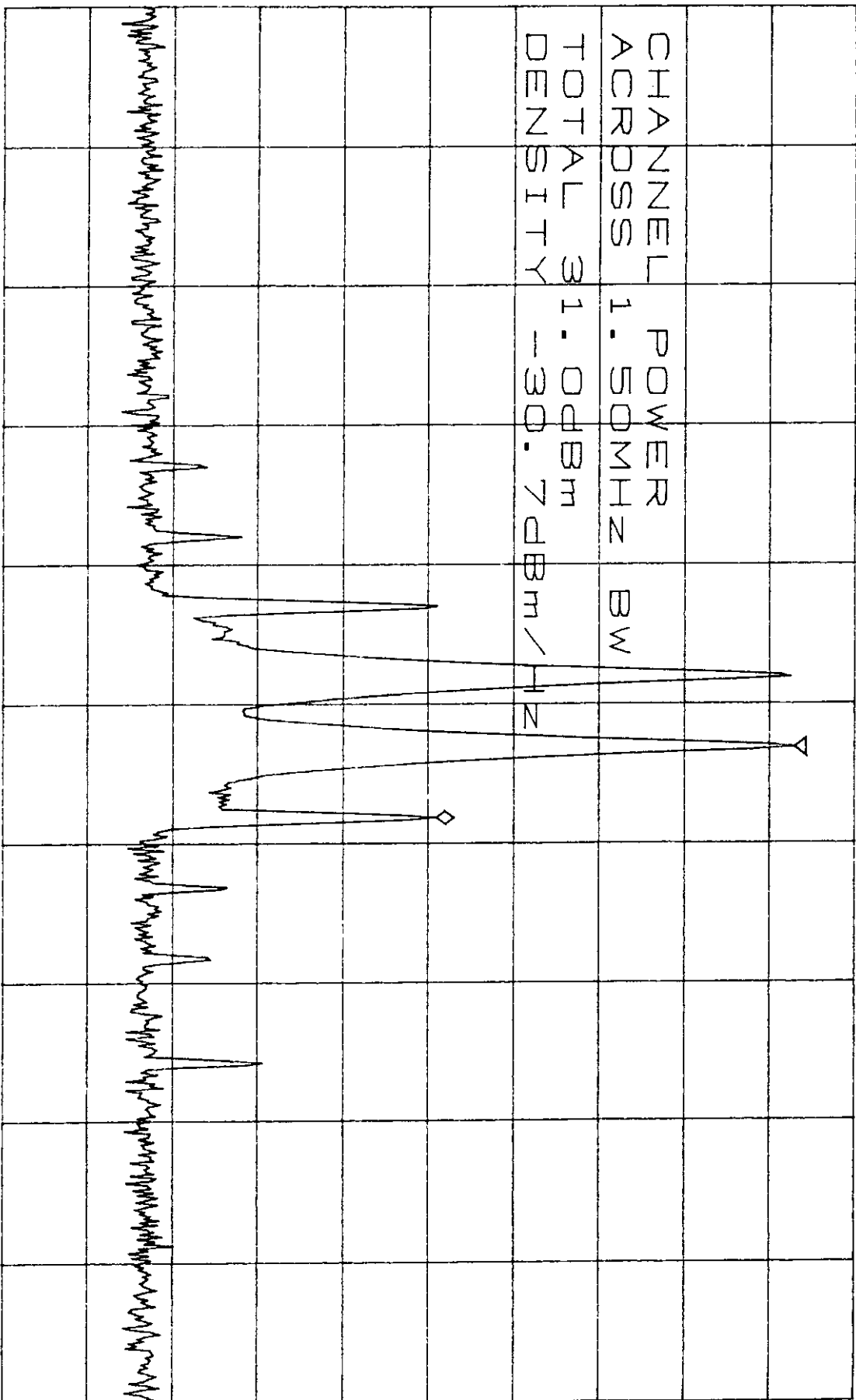
Output
Inform

5/28/97
CW Signal

*ATTEN 20dB VAVG 10 ΔMKR -42.00dB
RL 35.00dB 10dB/ 500kHz

3-tone

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 31.00dBm
DENSITY -30.7dBm/Hz



R

D

CENTER 1.86625GHz SPAN 10.00MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

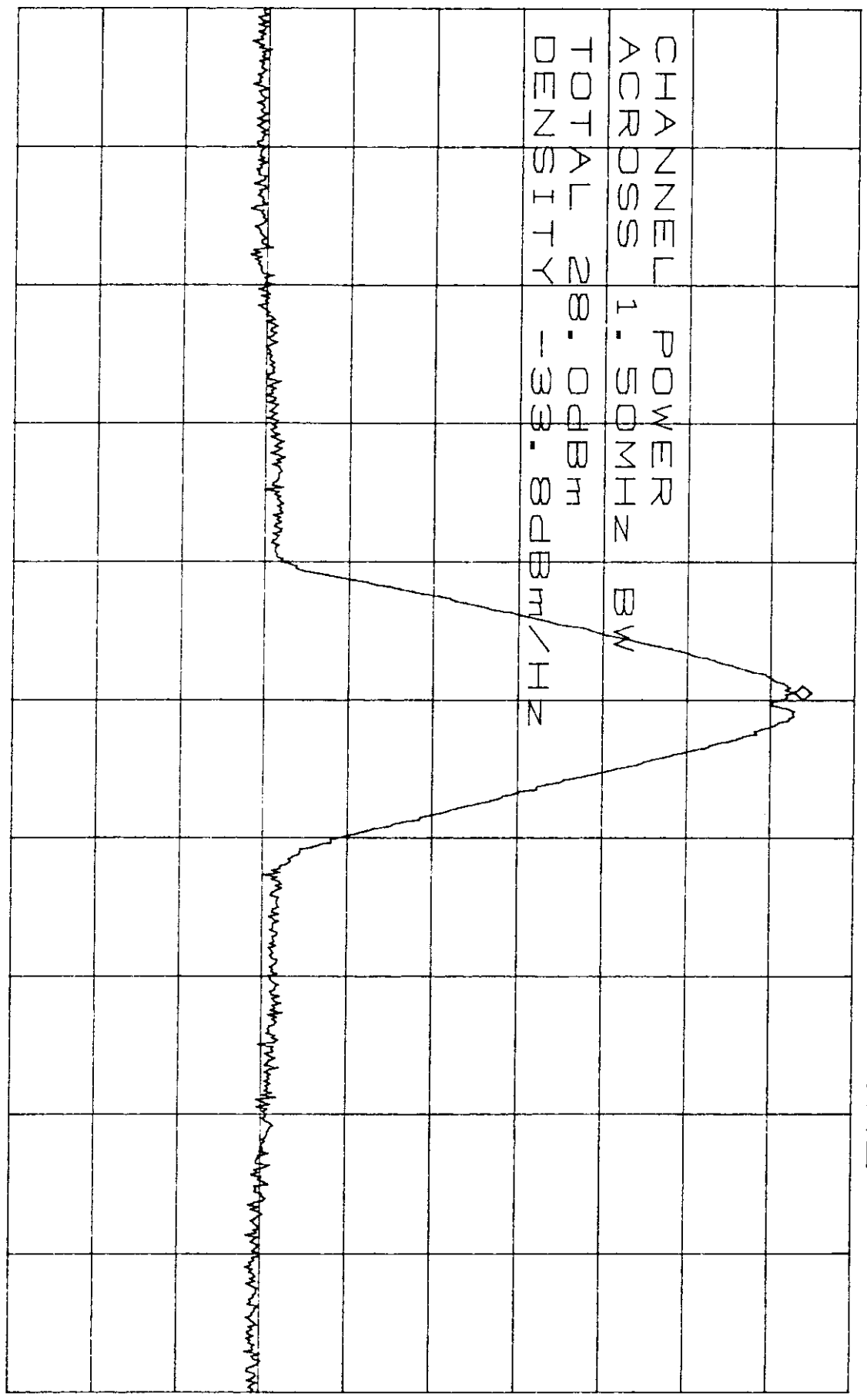
COR D-band
S/N 0141
Set to Ch. 335

Output
Intermed
5/28/97
CW Signal

*ATTEN 20dB VAVG 10 MKR 27.83dBm
RL 35.0dBm 10dB/ 1.86605GHz

3-ton

CHANNEL POWER
ACROSS 1.50MHz BW
TOTAL 28.0dBm
DENSITY -33.8dBm/Hz



CENTER 1.86625GHz SPAN 40.00MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

REPORT NO: S-7221DATE: 22 May 97

TEST: _____

CUSTOMER: ORTEL CORPEUT: MDL CDR1901DSPECIFICATION: FCC Part 2 Para 2.993

UPLINK

Frequency MHz	Peak Vertical dBμV	Peak Horizontal dBμV	Distance Factor dB	Correction Factor dB/m	Emission Level dBμV/m	Limit dBμV/m	EUT Margin dB
1866.25	35.7	36	—	32.5	68.5	—	
3732.5	16.4	17.6		41.7	59.3	84.4	-25.1
5598.7	5.7	8.9		46.1	55	↓	-29.4
7464.9	7	9.9		48.5	58.4	↓	-26
9331.2	2	4.1		51.8	55.9	↓	-28.5
1867.5	36	37.3		32.5	69.8	—	
3735	16.8	16.8 20.5		41.7	62.2	84.4	-22.2
5602	8.2	8.2 8.8		46.1	54.9	↓	-29.5
7469.9	8.8	8.8 7.7		48.5	57.3	↓	-27.1
9337	—	3.7 —		51.8	—	↓	—
1868.75	39.0	40.7		32.5	73.2	—	
3737.5	15.8	18.4		41.7	60.1	84.4	-24.3
5606.2	7.1	6.8		46.1	53.2	↓	-31.2
7475	8.9	7.7		48.5	57.4	↓	-27
9343.7	—	—		51.8	—	↓	—

- NOTES: 1. RBW = 1 MHz; VBW = 1 MHz
 2. Receive antenna = EMCO 3115-251
 3. Amplifier 2-8 GHz # 367
 4. EUT SN: 0141 Coax # 655, 656, 658

D. Marshall

REPORT NO: 5-7221REFERENCE
ONLYDATE: 22 MAY 97

TEST: _____

CUSTOMER: ORTEL CORPEUT: MODEL CDR1901D CDMA Channel Selective RepeaterSPECIFICATION: FCC Part 2 Para 2.993

Downlink

Frequency MHz	Peak Vertical dBμV	Peak Horizontal dBμV	Distance Factor dB	Correction Factor dB/m	Emission Level dBμV/m	Limit dBμV/m	EUT Margin dB
1946.25	31.3	28.2	-	5 + 27.5	63.8	-	
3892.5	11.5	10.3		7.5 + 34.2	53.2	84.4	-31.2
5838.7	1.4	1.8		9.6 36.5	47.9	↓	-36.5
7785.0	2.0	2.0		11.1 + 37.4	50.5	↓	-33.9
9731.25	-0.5	-0.5		13.1 38.7	51.3	↓	-33.1
1947.5	31.8	29.9		32.5		-	
3895	17.0	18.6		41.7	64.3	84.4	-20.1
5842.5	4.5	6.4		46.1	52.5	↓	-31.9
7789	5.4	6.7		48.5	55.2	↓	-29.2
9737.5	-	-		51.8	57.8	↓	-
1948.75	33.5 28.8	31.4		32.5	66	-	
3897.5	14.1	18.8		41.7	60.5	84.4	-23.9
5846.2	6.5	6.8		46.1	52.9		-31.5
7795	2.0	6.1		48.5	54.6	↓	-29.8
9743.7	-	-	-	51.8	-	↓	-

- NOTES: 1. RBW = 1 MHz; VBW = 1 MHz
 2. Receive antenna = Eaton 3115 #251
 3. Amplifier 2-8 GHz #367
 4. EUT S/N: 0141 Coax # 655, 656, 658

Drumshell

Connections:

Tektronix
AWG2021

R+S
835.8011.58

I	<u>BNC</u>	Ch. 1
Q	<u>BNC</u>	Ch. 2
IEE488	<u>IEE488</u>	IEE488

Make sure you have software for AWG2021 CDMA signal.
Files are "ARB0" and "ARB1"

2021: On. Hit "Load/Save" button. Load "ARB0" and "ARB1".

Hit "Setup", push ch. 1, highlight "ARBØ", OK.
push ch. 2, "ARB1", OK.
(twice)

Hit "Filter", push ch.1 till get 1 MHz, push ch.2 till get 1 MHz.

Hit "Amplitude", $ch.1 = ch.2 = 1.0 \text{ V}$

Push "Ch. 1" and "Ch. 2" until light on.

Display should go from  to 

R+S : On.

To change frequency, use "RF/CF" light on, input via keypad.
To change amplitude use "A" light on.

To change Amplitude, use "LevRF" light on, input via keypad.

To turn RF on/off :

"Int/On" = on (green light on for variation area)
"off" = off (" " off " " " ")

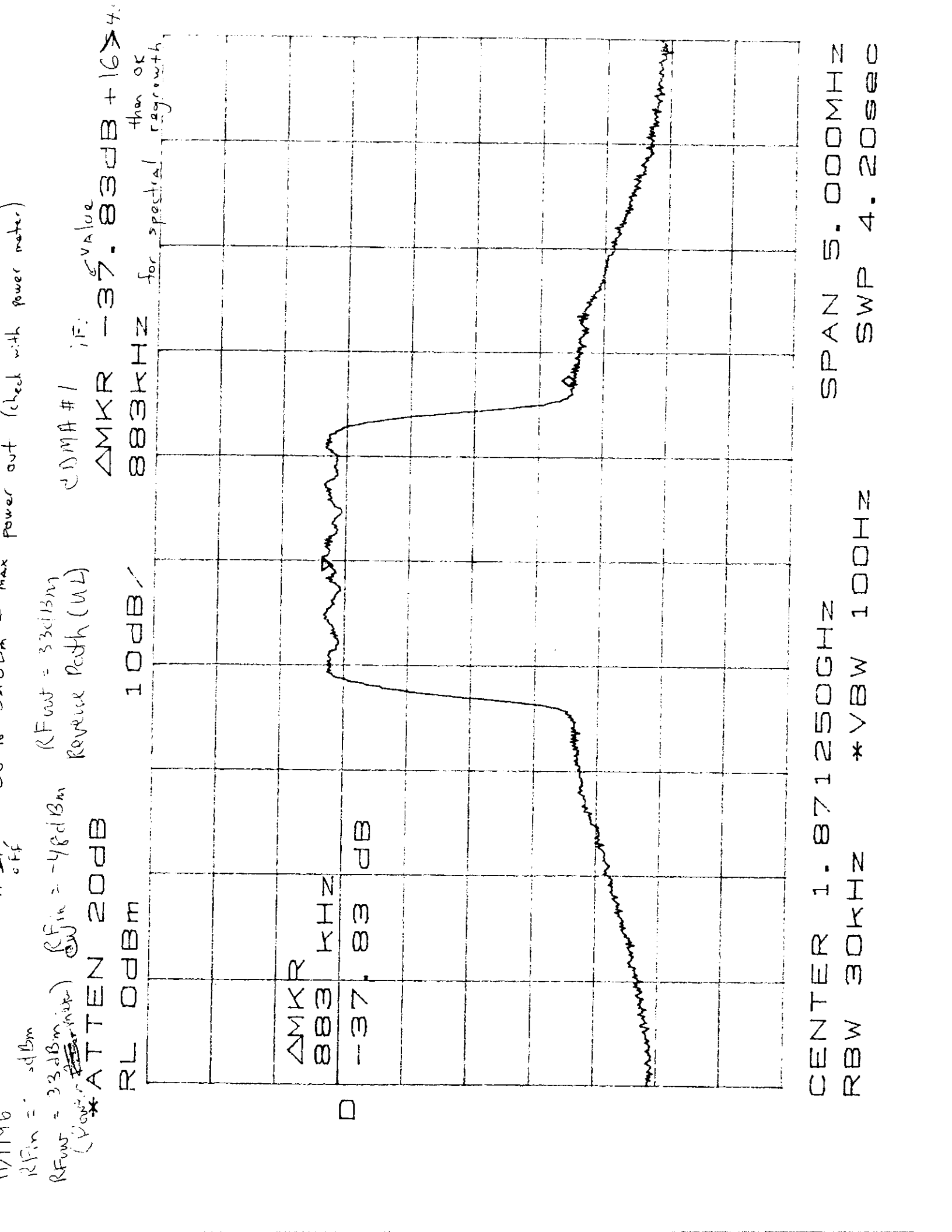
To get CDMA signal, use "I/Q" button. (light on)

If any problem with R+S, hit blue "shift", then "preset". Redo.

4P438 Power Meter:

Short inputs.

On, zero, "log err" is normal, cal factor, enter 98.8, cal adjust, 100 enter, offset 30 enter, push osc ~ 30.05 dBm OK, disconnect, turn off osc, ready to measure



9.0 CHANNEL AND FREQUENCY PLAN

9.1 FREQUENCY BLOCKS

Block Designator	Reverse Frequency	Forward Frequency
A	1850 - 1865 MHz	1930 - 1945 MHz
B	1870 - 1885 MHz	1950 - 1965 MHz
C	1895 - 1910 MHz	1975 - 1990 MHz
D	1865 - 1870 MHz	1945 - 1950 MHz
E	1885 - 1890 MHz	1965 - 1970 MHz
F	1890 - 1895 MHz	1970 - 1975 MHz

9.2 CHANNEL PLAN

CHANNELS	Channel Number	Center Frequency (MHz)
Reverse	$0 < N < 1199$	$1850.000 + 0.050 N$
Forward	$0 < N < 1199$	$1930.000 + 0.050 N$

9.3 PREFERRED SET CHANNEL NUMBERS - A BAND

CHANNEL	FORWARD (MHz)	REVERSE (MHz)
25	1931.25	1851.25
50	1932.50	1852.50
75	1933.75	1853.75
100	1935.00	1855.00
125	1936.25	1856.25
150	1937.50	1857.50
175	1938.75	1858.75
200	1940.00	1860.00
225	1941.25	1861.25
250	1942.50	1862.50
275	1943.75	1863.75

9.4 PREFERRED SET CHANNEL NUMBERS - B BAND

CHANNEL	FORWARD (MHz)	REVERSE (MHz)
425	1951.25	1871.25
450	1952.50	1872.50
475	1953.75	1873.75
500	1955.00	1875.00
525	1956.25	1876.25
550	1957.50	1877.50
575	1958.75	1878.75
600	1960.00	1880.00
625	1961.25	1881.25
650	1962.50	1882.50
675	1963.75	1883.75

9.5 PREFERRED SET CHANNEL NUMBERS - C BAND

CHANNEL	FORWARD (MHz)	REVERSE (MHz)
925	1976.25	1896.25
950	1977.50	1897.50
975	1978.75	1898.75
1000	1980.00	1900.00
1025	1981.25	1901.25
1050	1982.50	1902.50
1075	1983.75	1903.75
1100	1985.00	1905.00
1125	1986.25	1906.25
1150	1987.50	1907.50
1175	1988.75	1908.75

9.6 PREFERRED SET CHANNEL NUMBERS - D BAND

CHANNEL	FORWARD (MHz)	REVERSE (MHz)
325	1946.25	1866.25
350	1947.50	1867.50
375	1948.75	1868.75

9.7 PREFERRED SET CHANNEL NUMBERS - E BAND

CHANNEL	FORWARD (MHz)	REVERSE (MHz)
725	1966.25	1886.25
750	1967.50	1887.50
775	1968.75	1888.75

9.8 PREFERRED SET CHANNEL NUMBERS - F BAND

CHANNEL	FORWARD (MHz)	REVERSE (MHz)
825	1971.25	1891.25
850	1972.50	1892.50
875	1973.75	1893.75