

TESTED BY ORTEL CORPORATION
CONDUCTED MEASUREMENT INFORMATION

Test Equipment Used:

Signal Generator HP8648C, Hewlett Packard
Spectrum Analyzer HP8563E, Hewlett Packard
-RF cables (with SMA connectors), 7/16 to N connectors, N to SMA connectors, attenuation pad (for repeater output), and passive external combiner used for two tone testing.

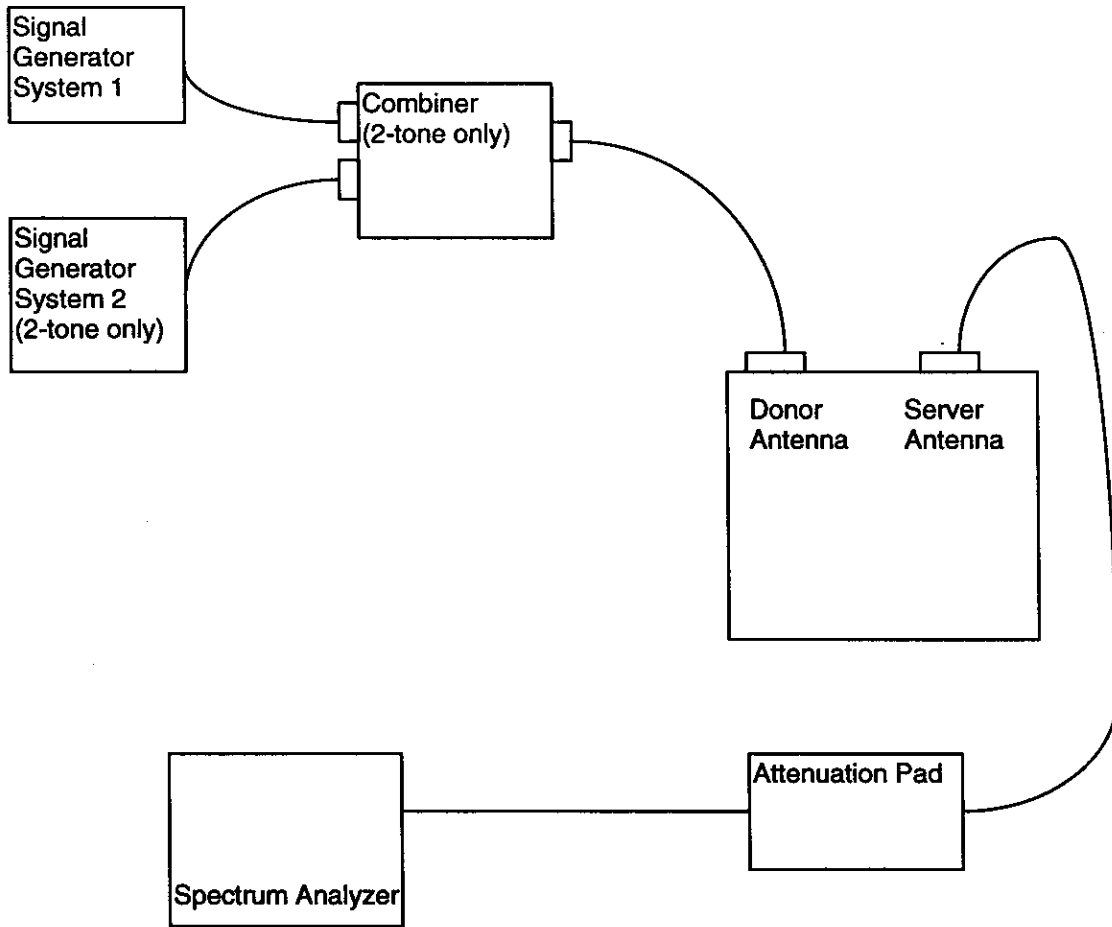
Tests performed for E/F-bands

2.985, 2.989, 2.991, and 24.238 and In/Out

Test setup on next page.

CONDUCTED MEASUREMENT TEST SETUP

TESTED BY ORTEL CORPORATION



Downlink mode shown. For uplink, swap antenna connections at the repeater.
NOTE: All cables, connectors, and the attenuation pad are calibrated out at the

UL Low
E/F Band

Output
 $P_{in} = -48.8$ dBm @ 1885.2 MHz (Ch.1)

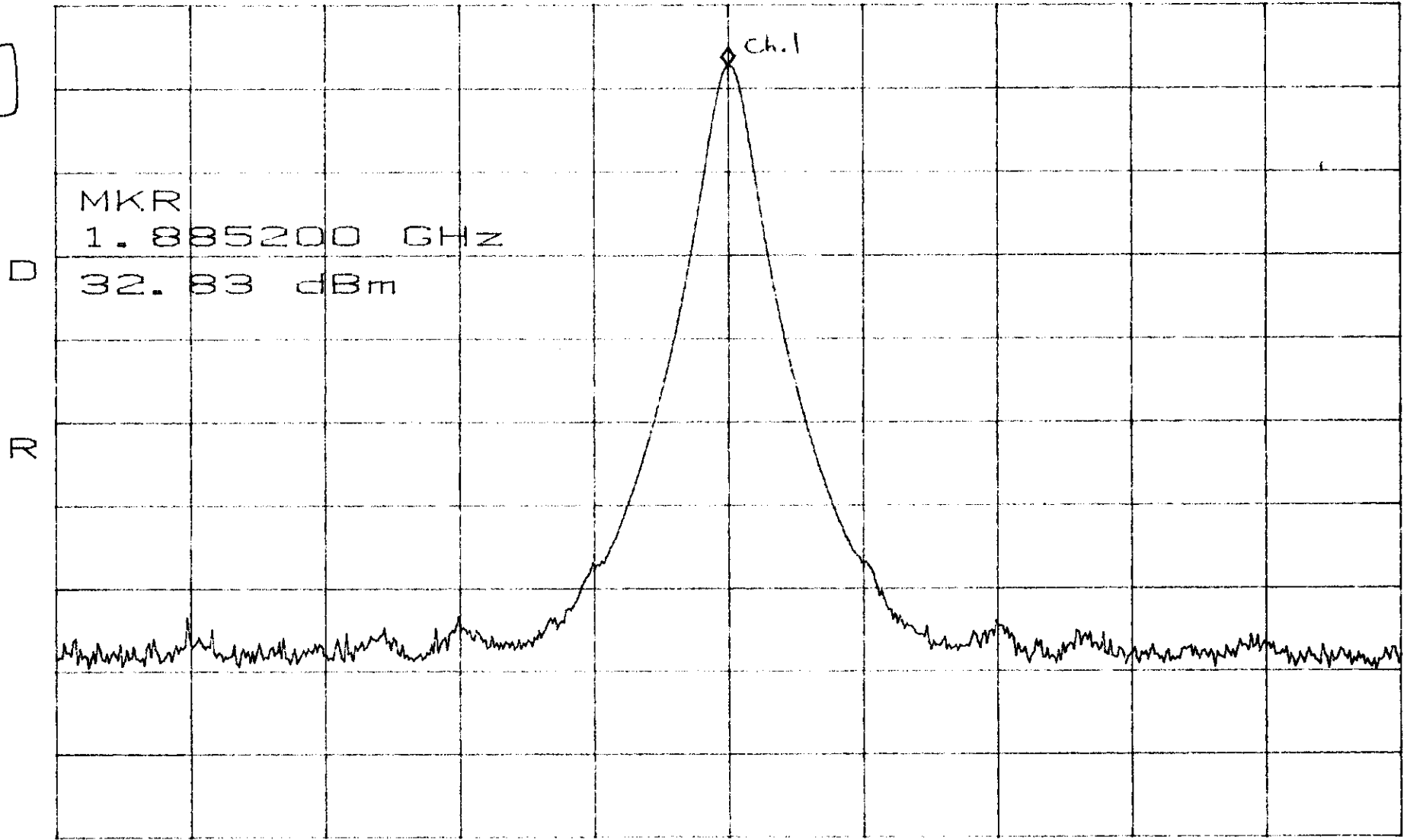
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

cw
10dB/BW

MKR 32.83dBm
1.885200GHz

2.985



CENTER 1.885200GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Low
E/F Band

Output

9/23/98
LB41901

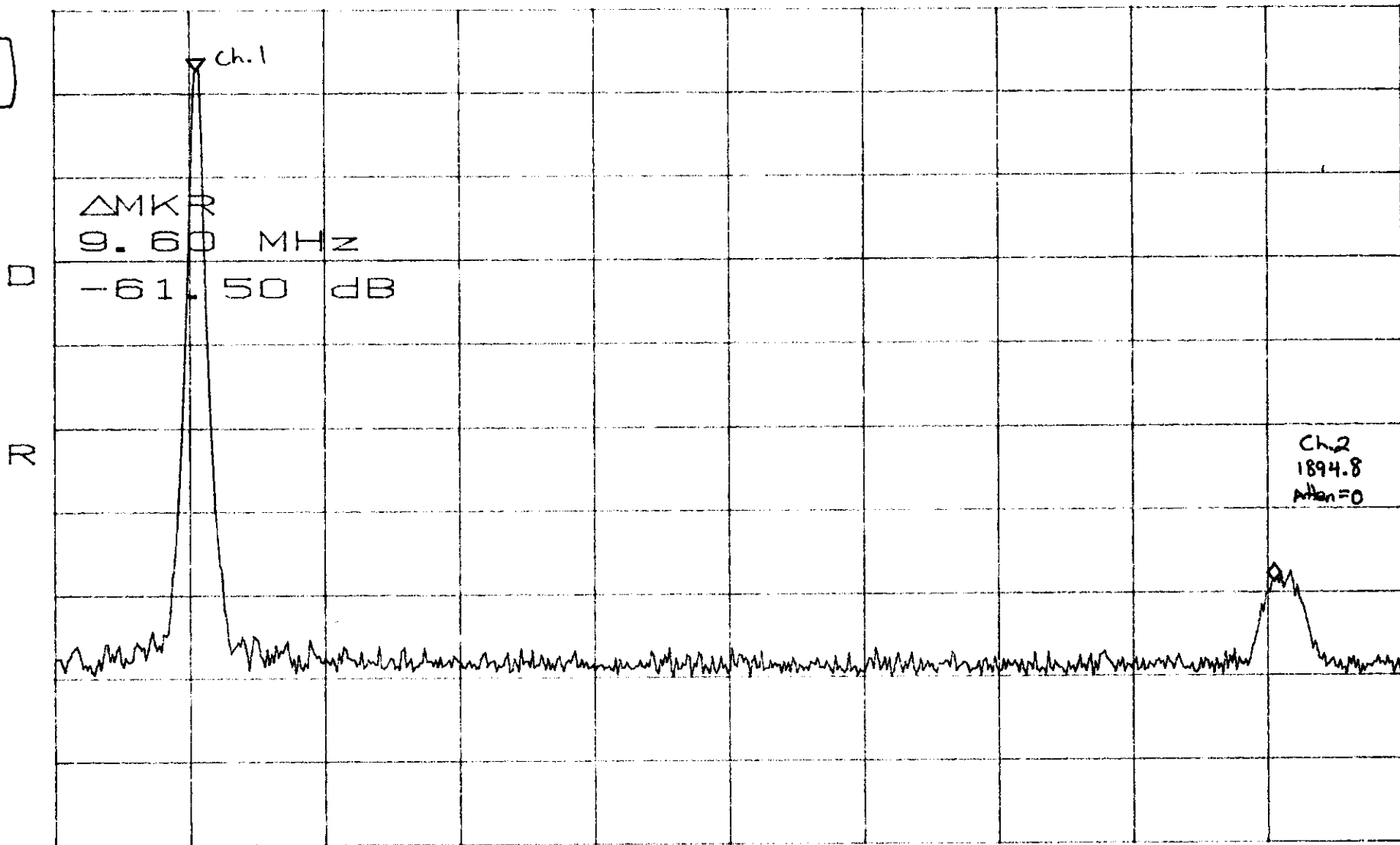
$P_{in} = -48.8 \text{ dBm @ } 1885.2 \text{ MHz (Ch.1)}$

*ATTEN 30dB
BPOS
RL 40.0dBm

CW
10dB/

$\Delta\text{MKR } -61.50\text{dB}$
9.60MHz

2.985



START 1.88400GHz

STOP 1.89600GHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Mid
E/F Band

Output
 $P_{in} = -49.2 \text{ dBm @ } 1890 \text{ MHz (Ch.1)}$

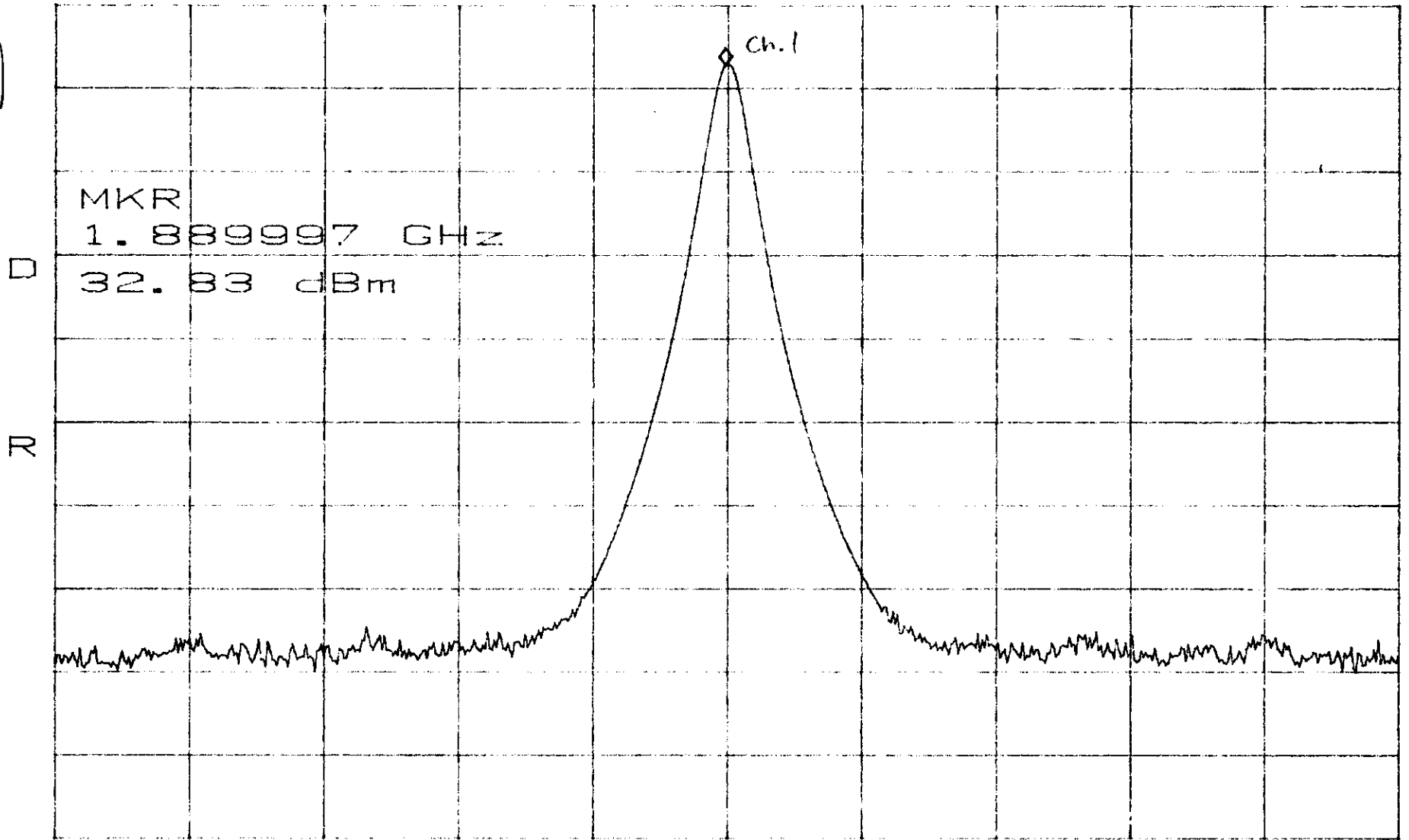
9/23/98
LB41901

*ATTEN 30dB
BPOB
RL 40.0dBm

CW
10dB/

MKR 32.83dBm
1.889997GHz

2.985



CENTER 1.890000GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Mid
E/F Band

Output

9/23/98
LB41901

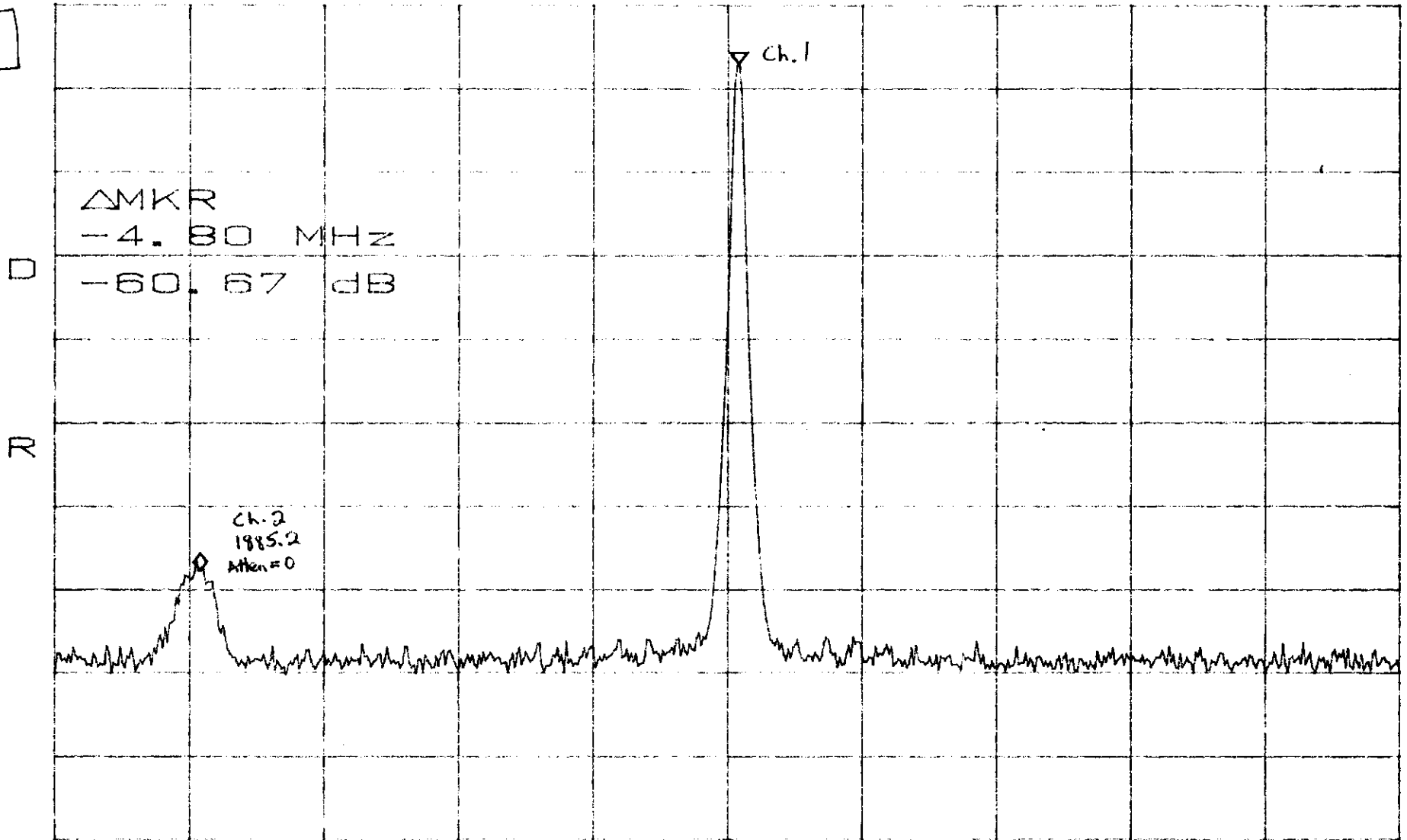
$P_{in} = -49.2 \text{ dBm @ } 1890 \text{ MHz (Ch.1)}$

*ATTEN 30dB
RL 40.0dBm

cw
10dB/

$\Delta\text{MKR } -60.67 \text{ dB}$
 -4.80 MHz

2.985



START 1.88400GHz

STOP 1.89600GHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL High
E/F band

Output
 $P_{in} = -48.4 \text{ dBm @ } 1894.8 \text{ MHz (Ch.1)}$

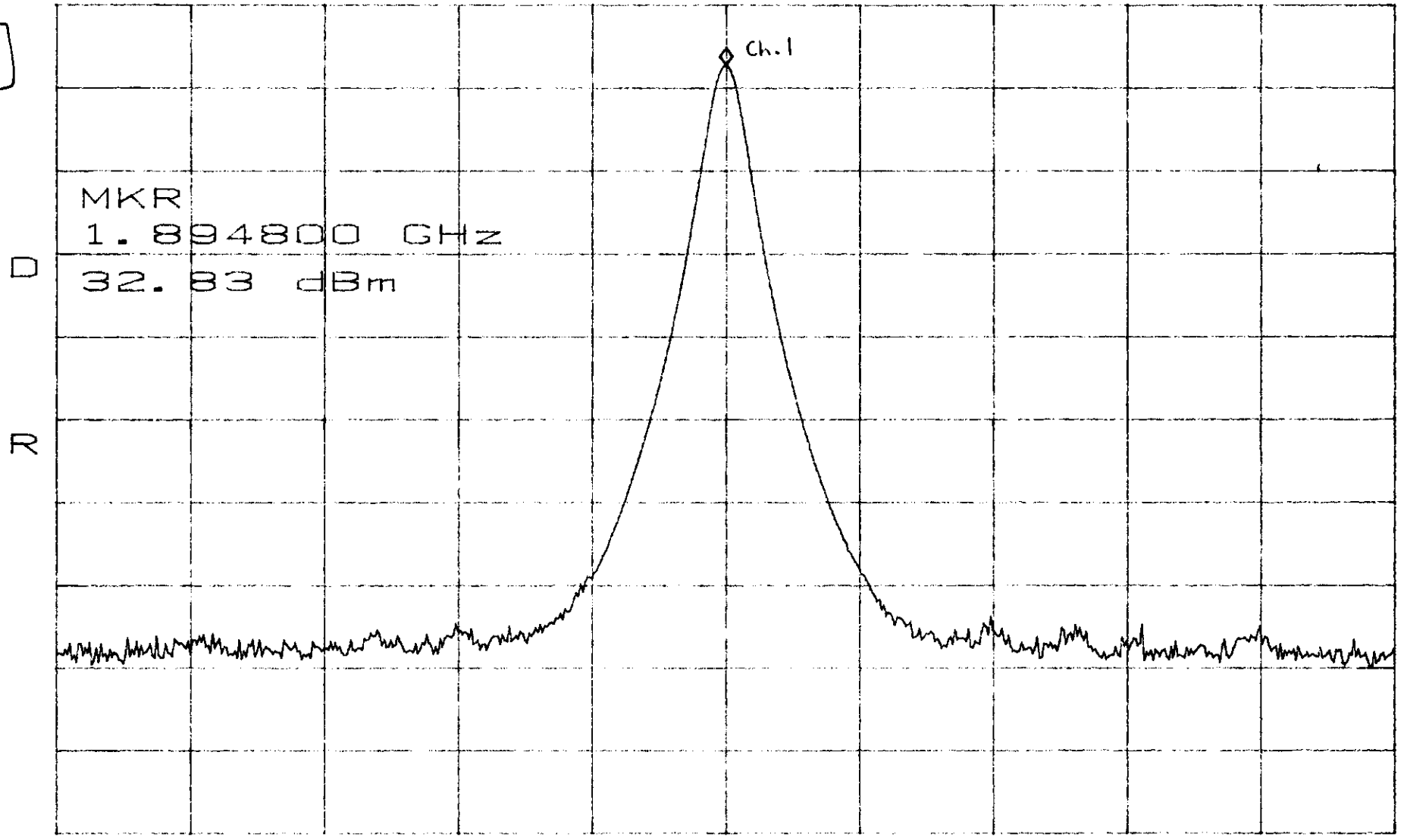
9/23/98
LB41901

*ATTN 30dB
BPOS
RL 40.0dBm

ch
10dB/

MKR 32.83dBm
1.894800GHz

2.985



CENTER 1.894800GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL High
E/F band

Output
 $P_{in} = -48.4 \text{ dBm @ } 1894.8 \text{ MHz (ch.1)}$

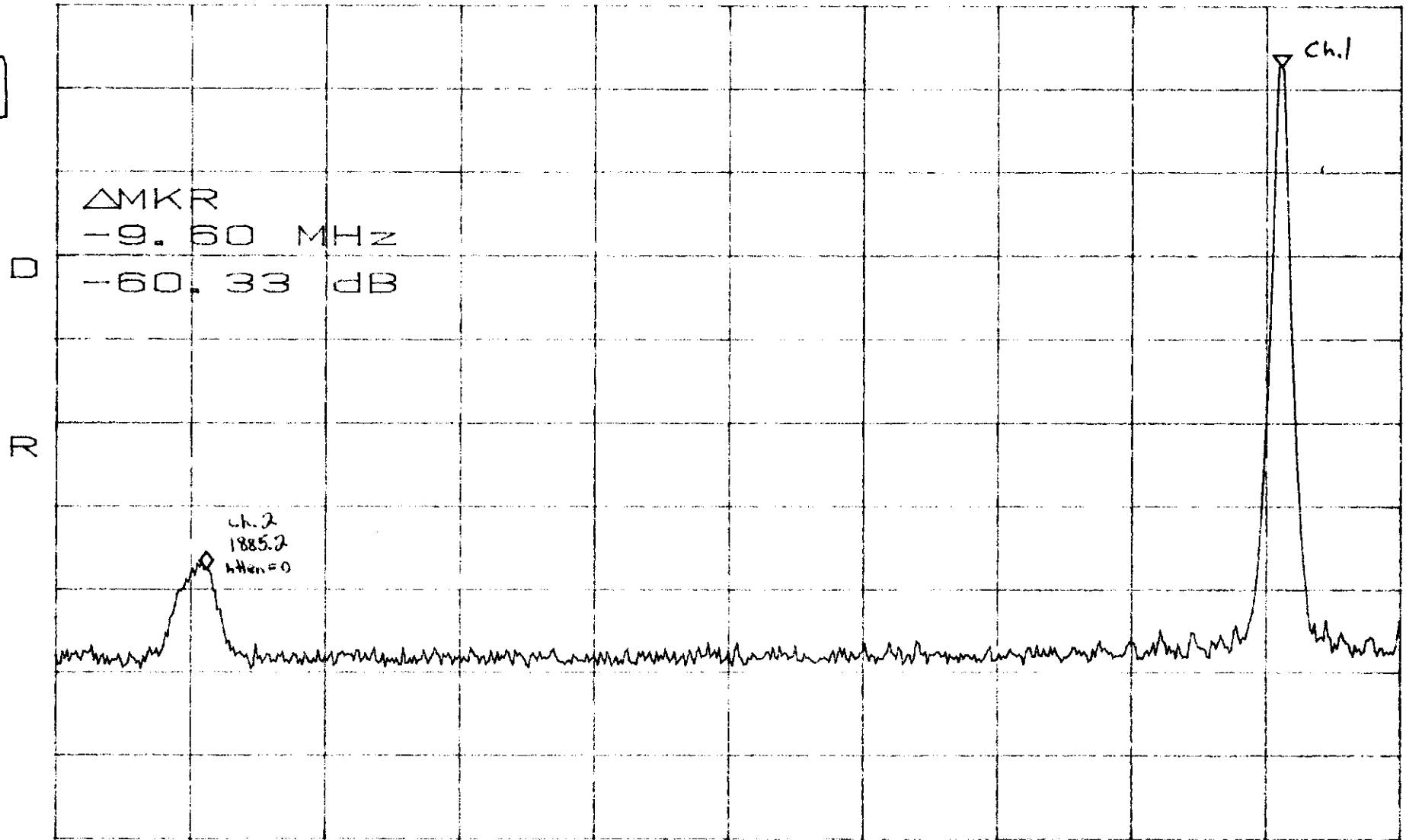
9/23/98
LB41901

*ATTEN 30dB
BPOB
RL 40.0dBm

cw
10dB/

$\Delta \text{MKR } -60.33 \text{ dB}$
 -9.60 MHz

2.985



START 1.88400GHz

STOP 1.89600GHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Low

E/F Band

*ATTEN 30dB

RL 40.00dBm

Output

$P_{in} = -55.5 \text{ dBm} @ 1965.2 \text{ MHz (ch.1)}$

cw

10dB/

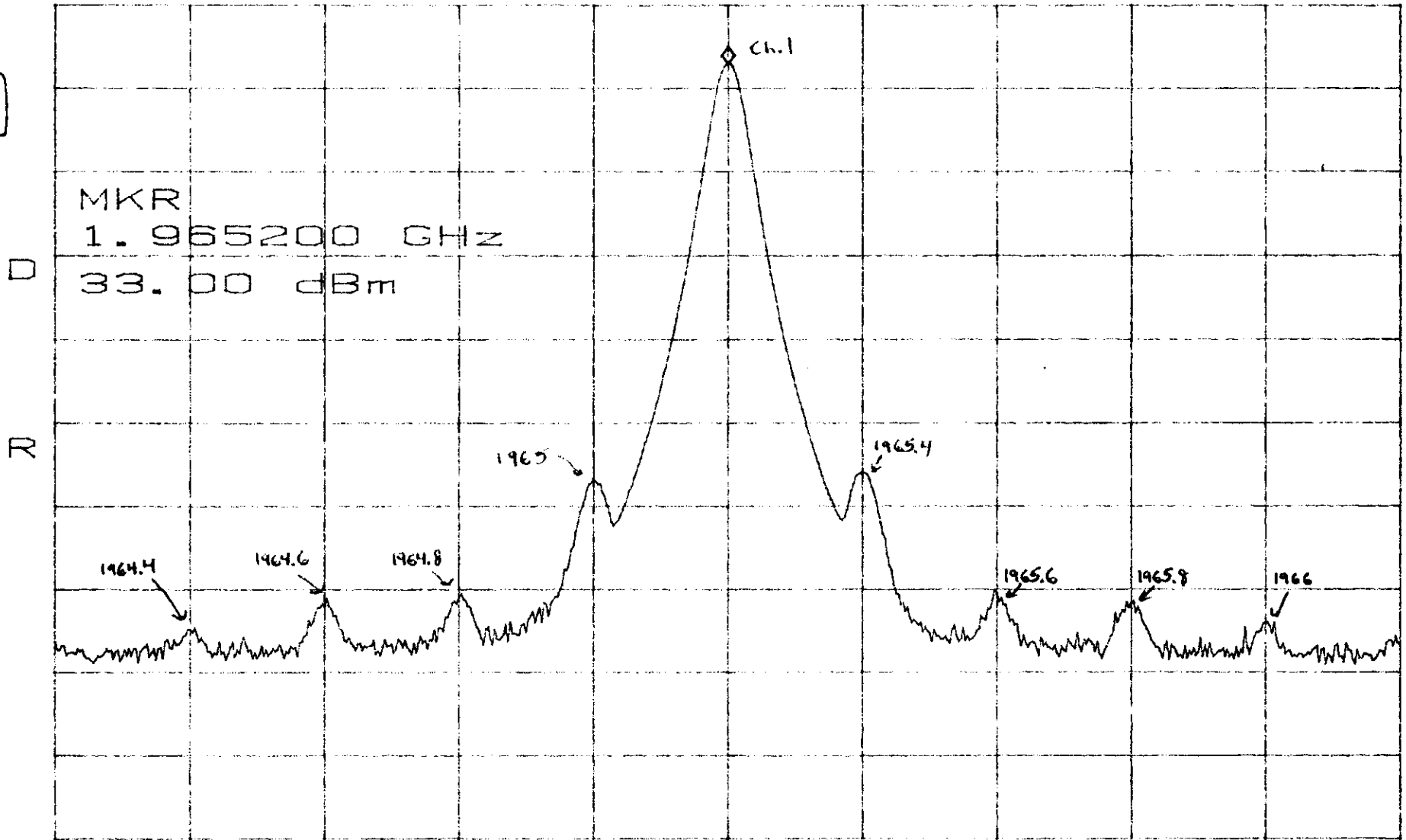
9/23/98

LB41901

MKR 33.00dBm

1.965200GHz

2.985



CENTER 1.965200GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

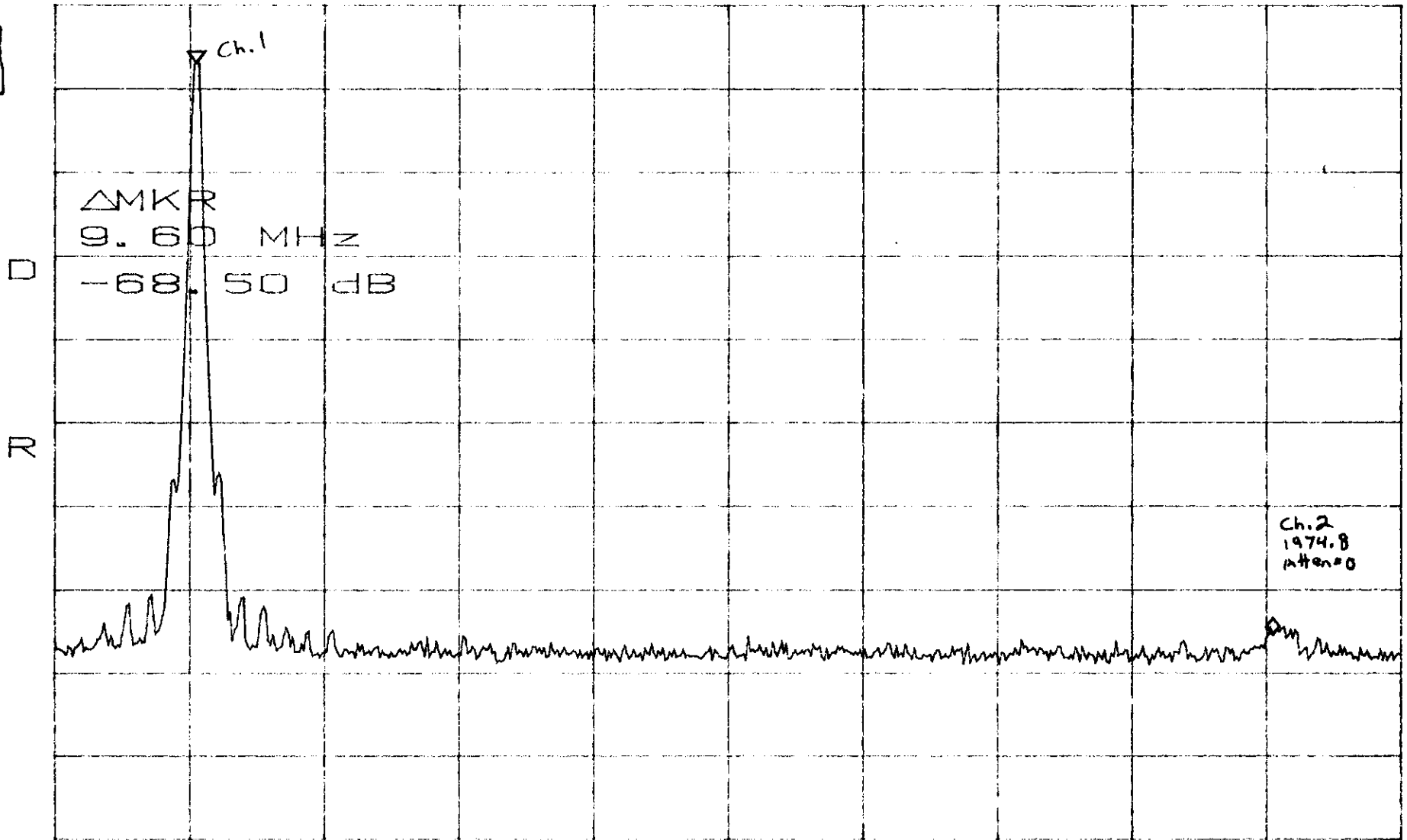
DL Low
E/F Band

9/23/98
LB41901

*ATTEN 30dB
BPOS
RL 40.00dBm

Output
 $P_{in} = -55.5 \text{ dBm @ } 1965.2 \text{ MHz (Ch. 1)}$
cw
10dB/
 $\Delta \text{MKR } -68.50 \text{ dB}$
9.60MHz

2.985



Ch. 2
1974.8
atten=0

START 1.96400GHz STOP 1.97600GHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

DL Mid
E/F Band

Output
 $P_{in} = -55.6 \text{ dBm @ } 1970 \text{ MHz (ch.1)}$

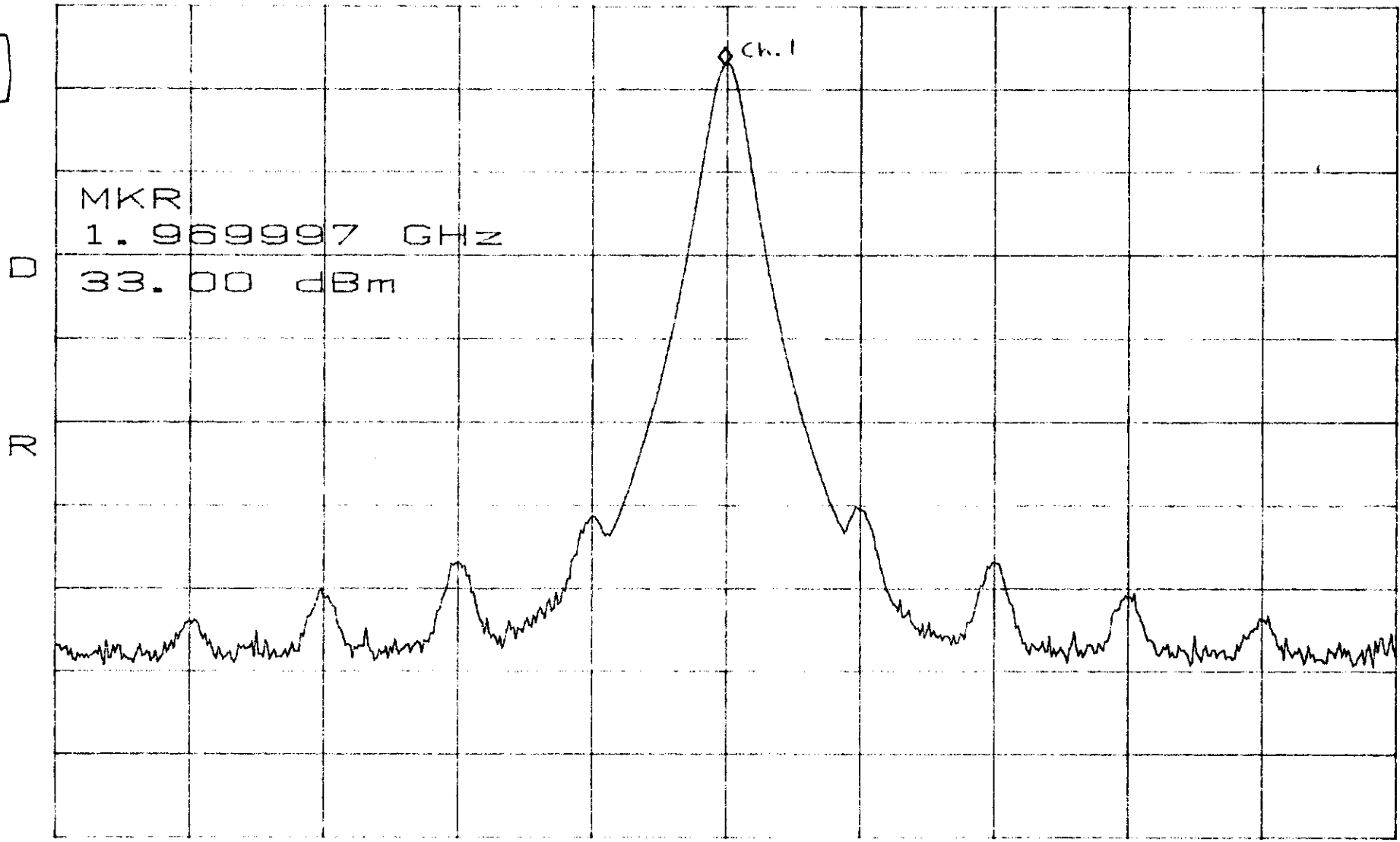
9/23/98
LB41901

*ATTEN 30dB
BPOB
RL 40.0dBm

CW
10dB/

MKR 33.00dBm
1.969997GHz

2.985



CENTER 1.970000GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Mid
E/F band

Output
 $P_{in} = -55.6 \text{ dBm @ } 1970 \text{ MHz (Ch.1)}$

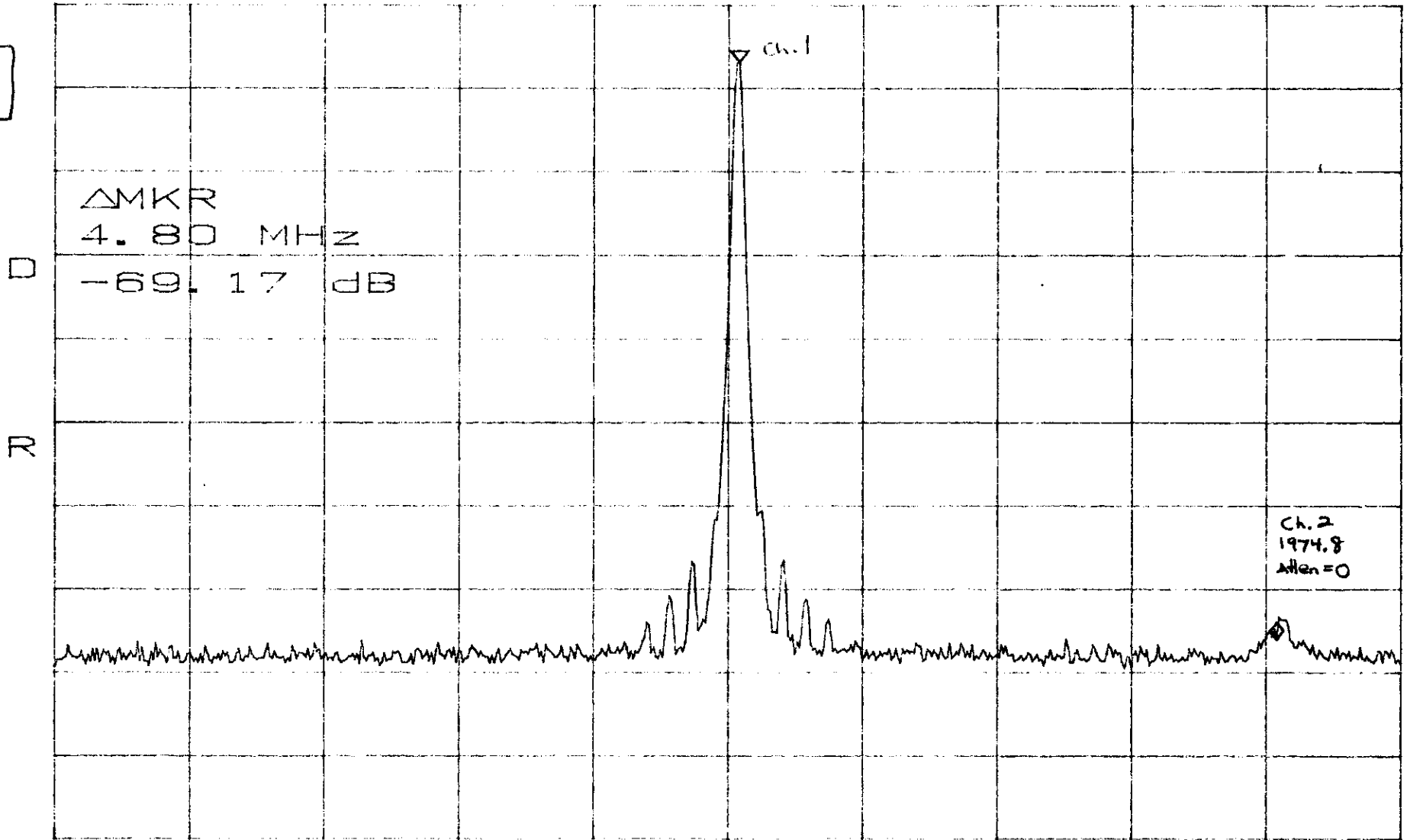
9/23/98
LB41901

*ATTN 30dB
BPO 4.80 MHz

cw
10dB/

$\Delta\text{MKR} -69.17 \text{ dB}$
4.80 MHz

2.985



START 1.96400GHz

STOP 1.97600GHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL High
E/F Band

Output

9/23/98

LB41901

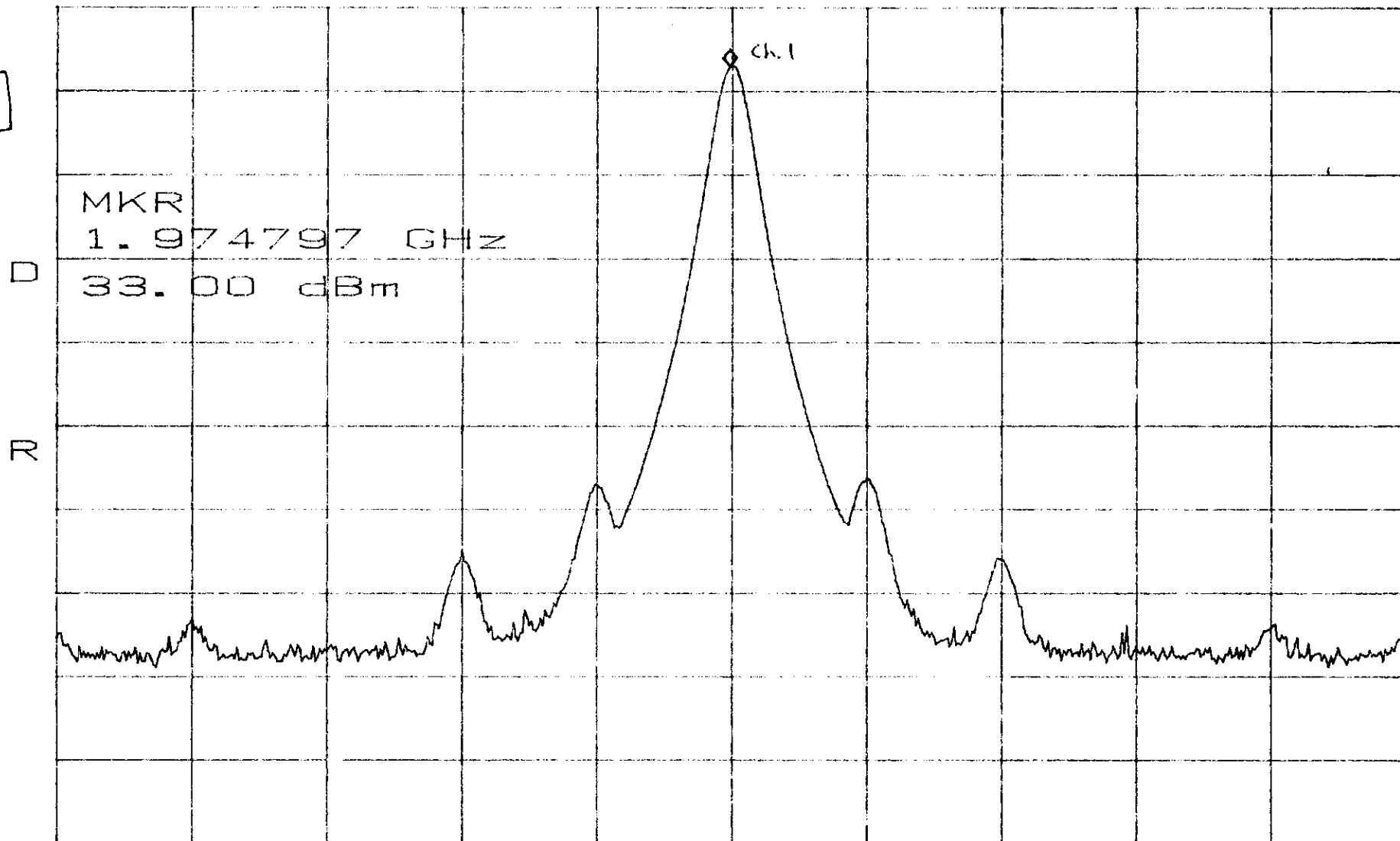
$P_{out} = -55.5$ dBm @ 1974.8 MHz (ch.1)

*ATTEN 30dB
BPOB
RL 40.0dBm

CW
10dB/

MKR 33.00dBm
1.974797GHz

2.985



CENTER 1.974800GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL High
E/F Band

Output
 $P_{in} = -55.5 \text{ dBm @ } 1974.8 \text{ MHz (Ch.1)}$

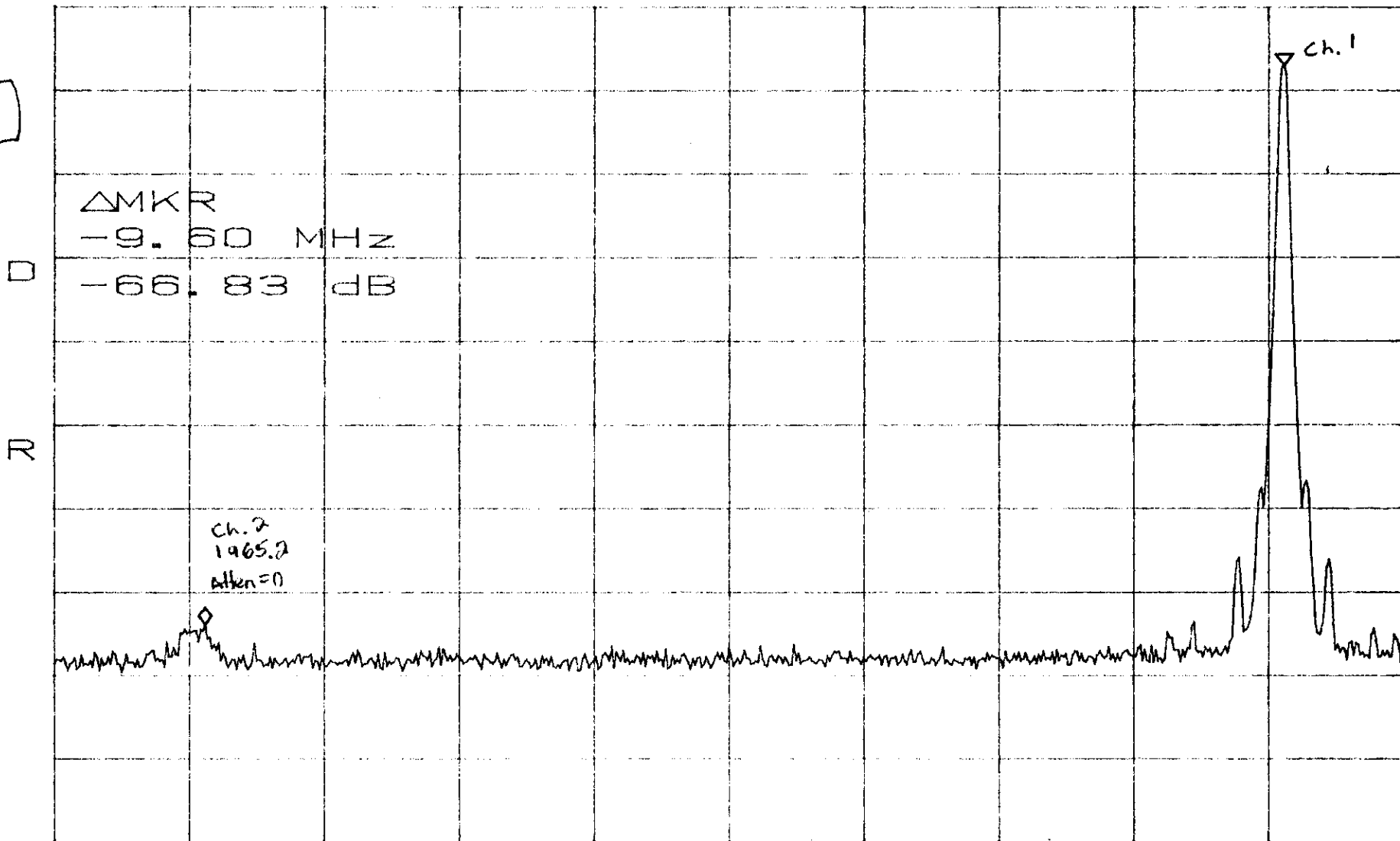
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

ch
10dB/

$\Delta \text{MKR } -66.83 \text{ dB}$
 -9.60 MHz

2.985



START 1.96400GHz

STOP 1.97600GHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Low
E/F Band

Occupied BW
CW

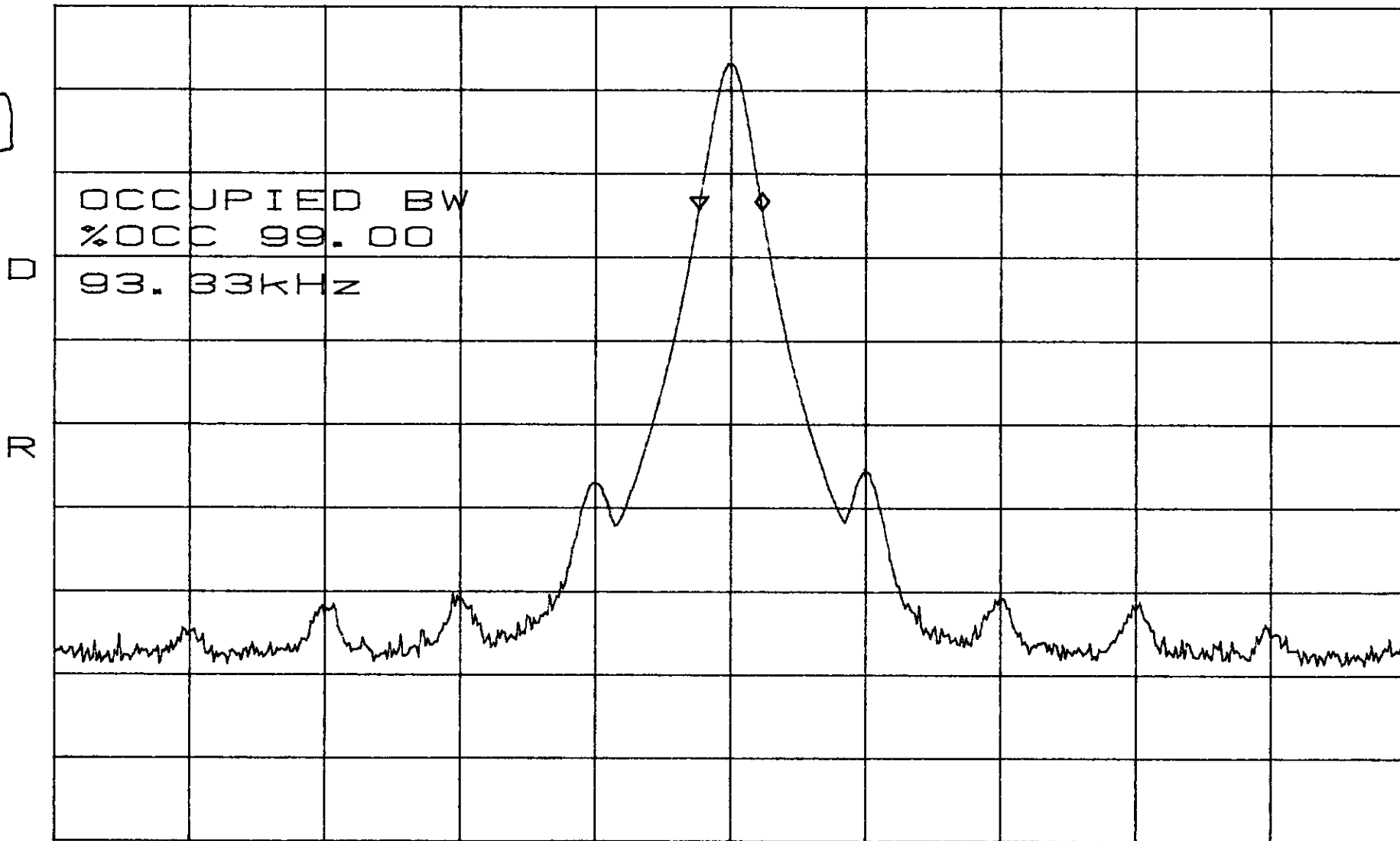
9/23/98
LB41901

*ATTEN 30dB
mBPO 40.0dBm

10dB/

ΔMKR -.16dB
93kHz

2.989



CENTER 1.965200GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Mid
E/F Band

Occupied BW
cw source

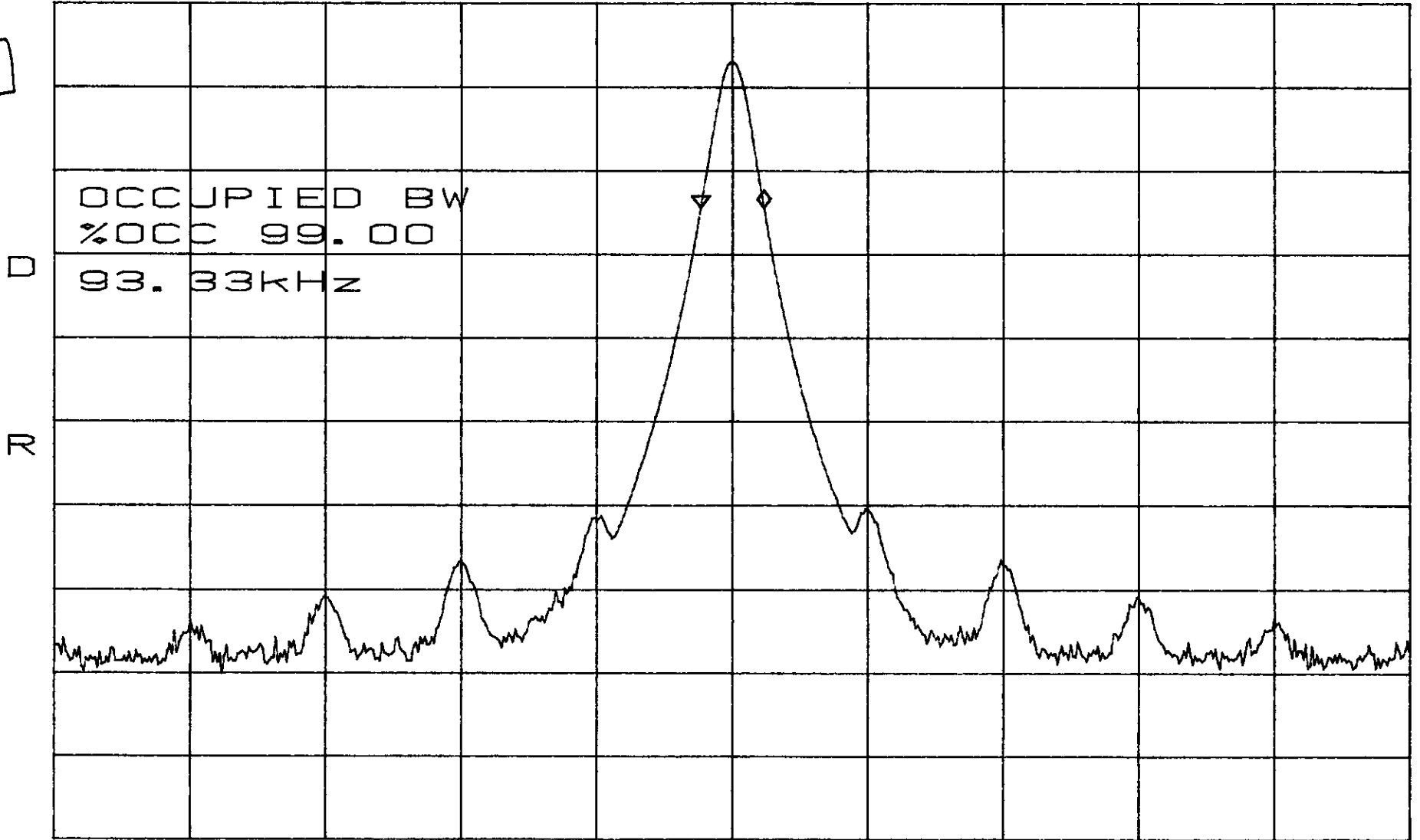
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

10dB/

Δ MKR 0dB
93kHz

2.989



CENTER 1.970000GHz SPAN 2.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

DL High
E/F Band

Occupied BW
CW

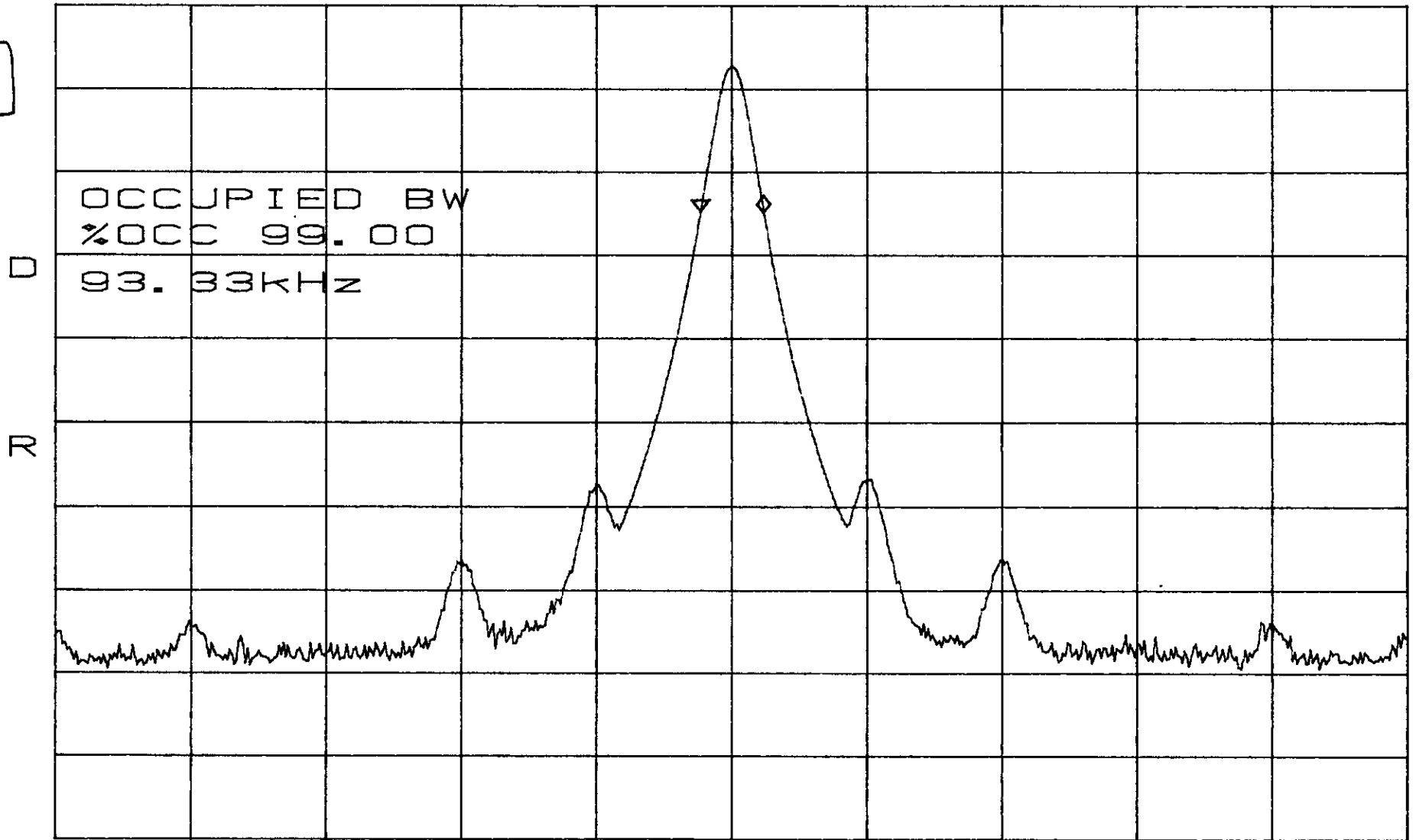
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

1dB/

Δ MKR -.16dB
93kHz

2.989



CENTER 1.974800GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Low
E/F Band

Occupied BW
CW

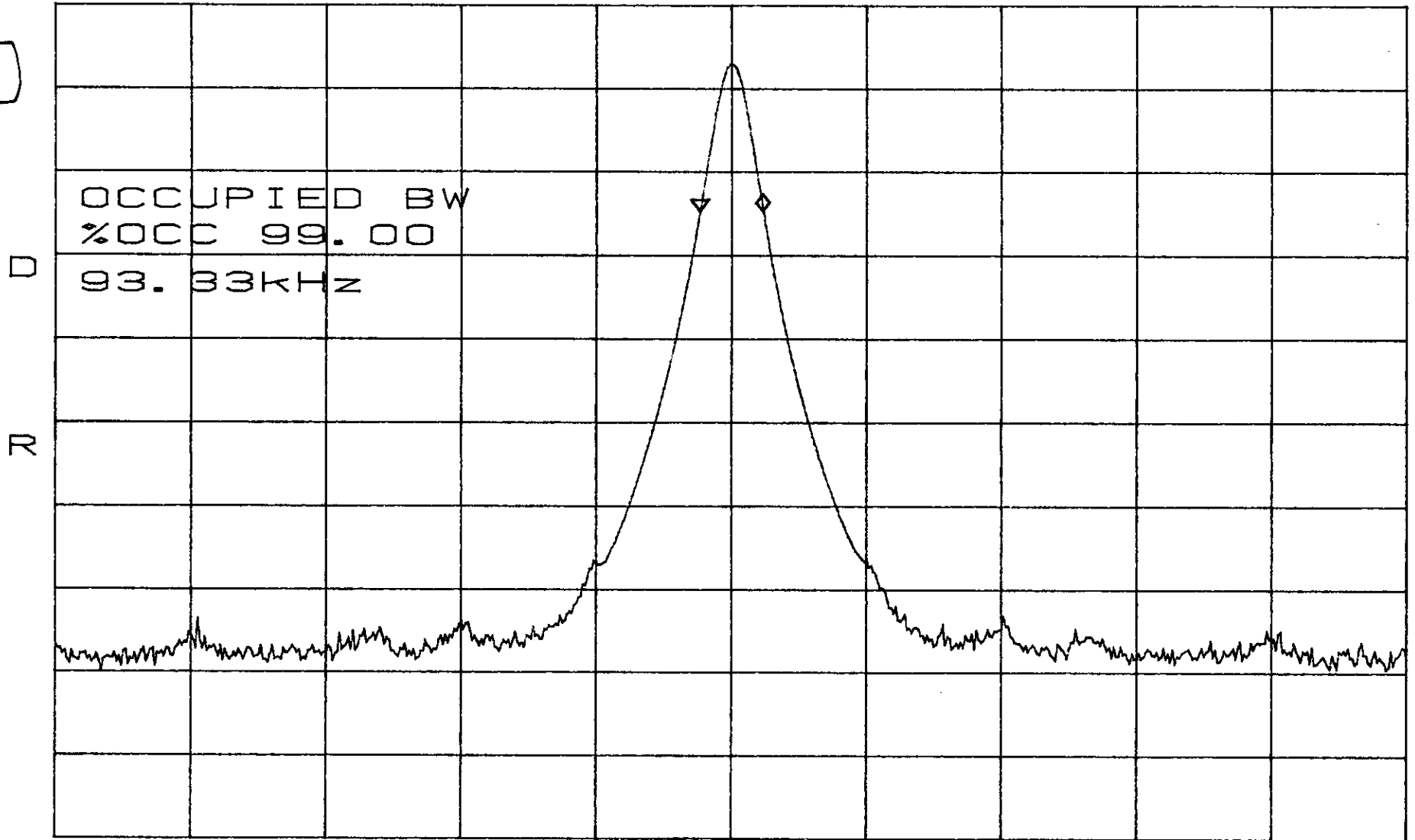
9/23/98
LE41901

*ATTEN 30dB
RL 40.0dBm

10dB/

ΔMKR 0dB
93kHz

2.989



CENTER 1.885200GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Mid
E/F Band

Occupied BW
cw

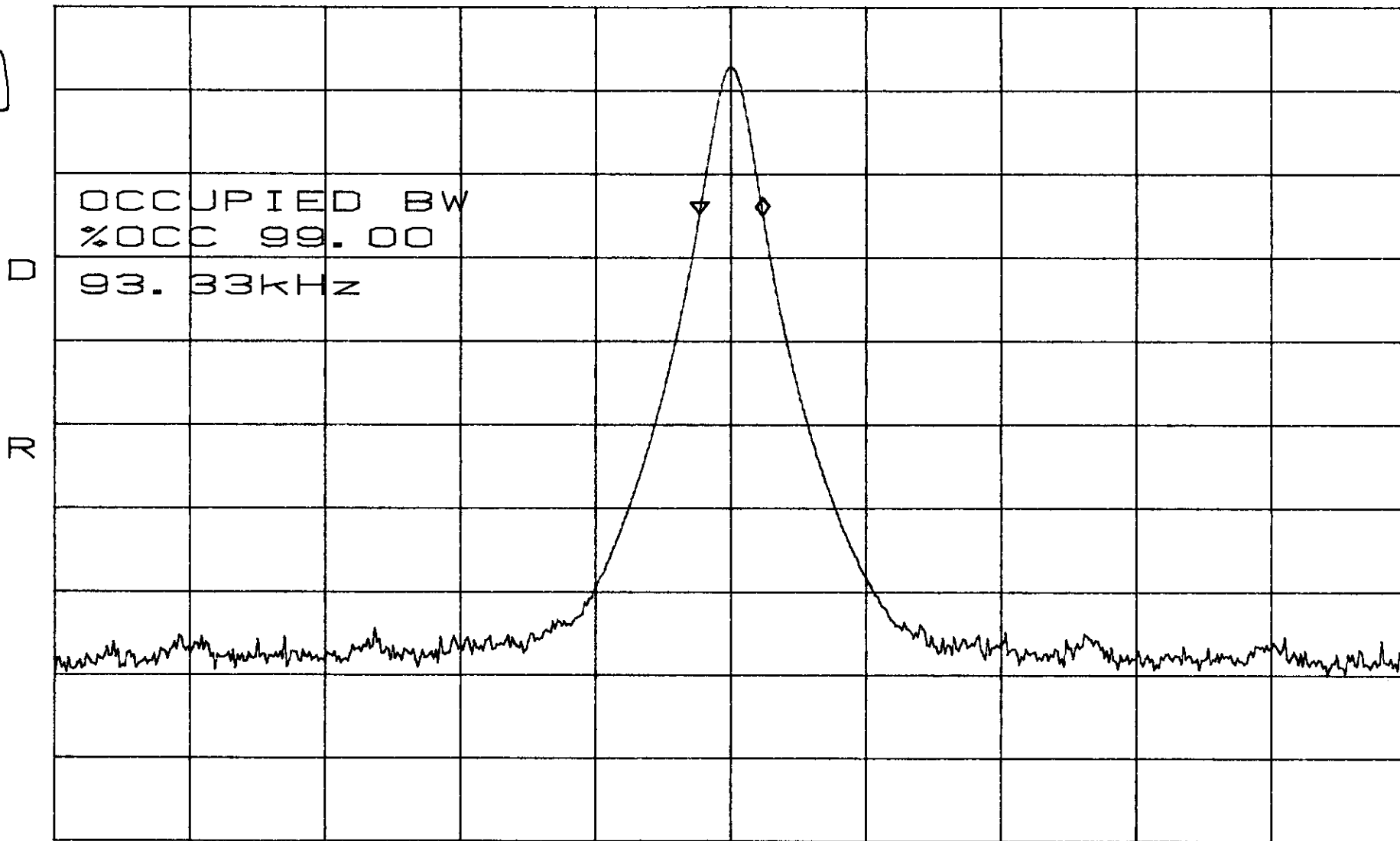
9/23/98
LB41901

*ATTEN 30dB
BPOB
RL 40.0dBm

10dB/

ΔMKR -.16dB
93kHz

2.989



CENTER 1.890000GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL High
E/F Band

Occupied BW
CW

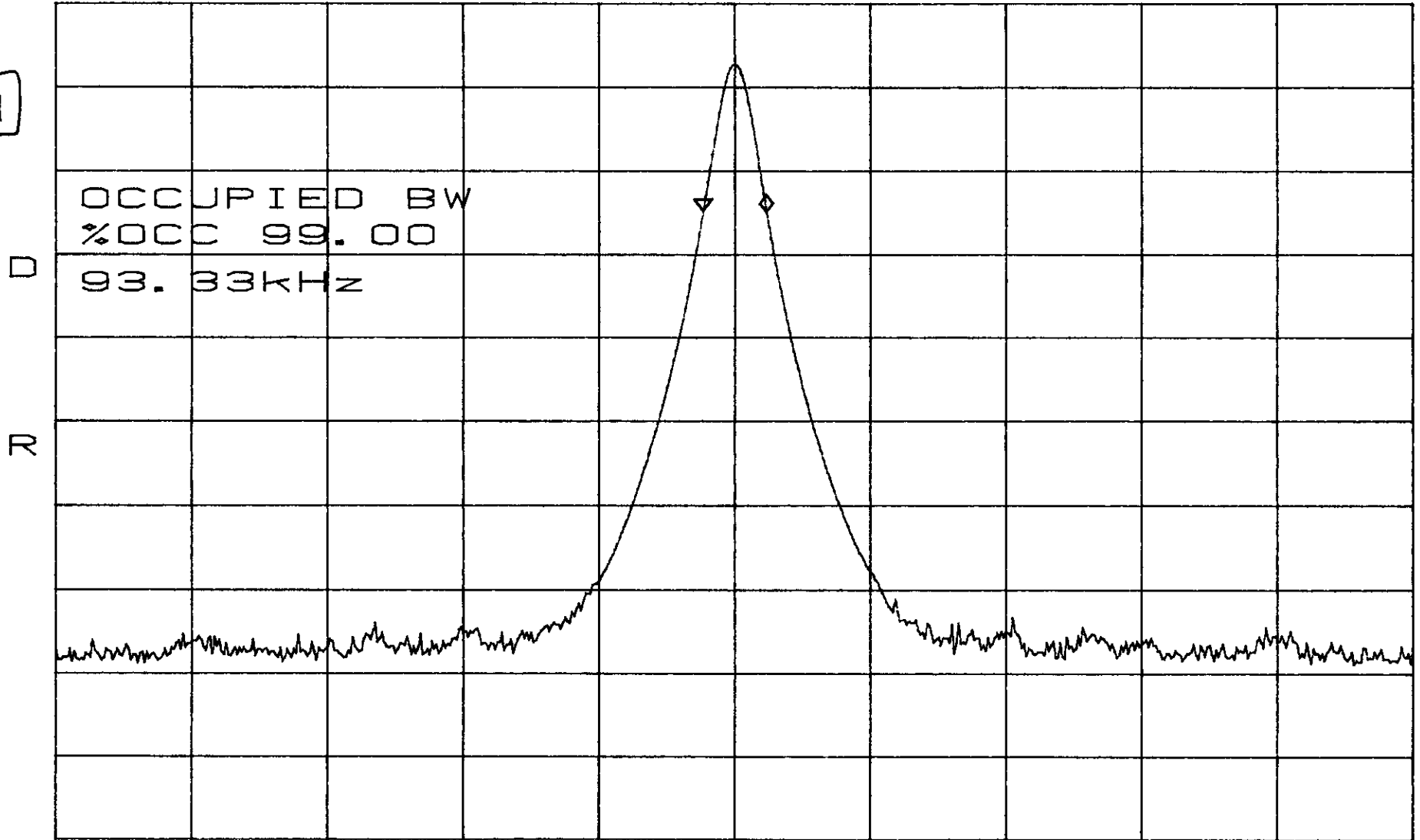
9/23/98
LB41901

*ATTEN 30dB
BPOS
RL 40.0dBm

10dB/

ΔMKR -.16dB
93kHz

2.989



CENTER 1.894800GHz

SPAN 2.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Low
E/F Band

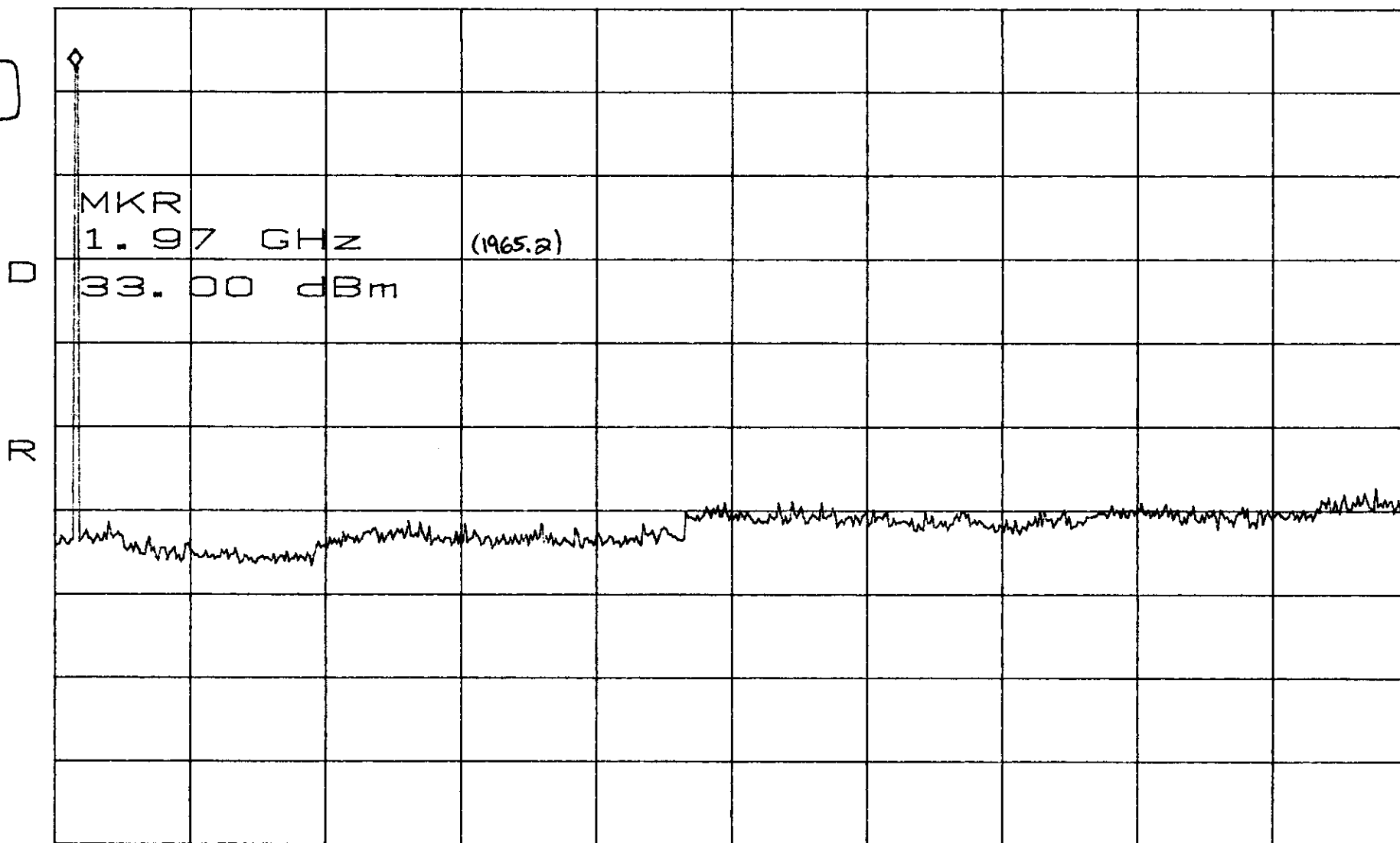
cw

9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

MKR 33.00dBm
1.97GHz

2.991



START 1.60GHz

STOP 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 500ms

DL Mid
E/F Band

CW

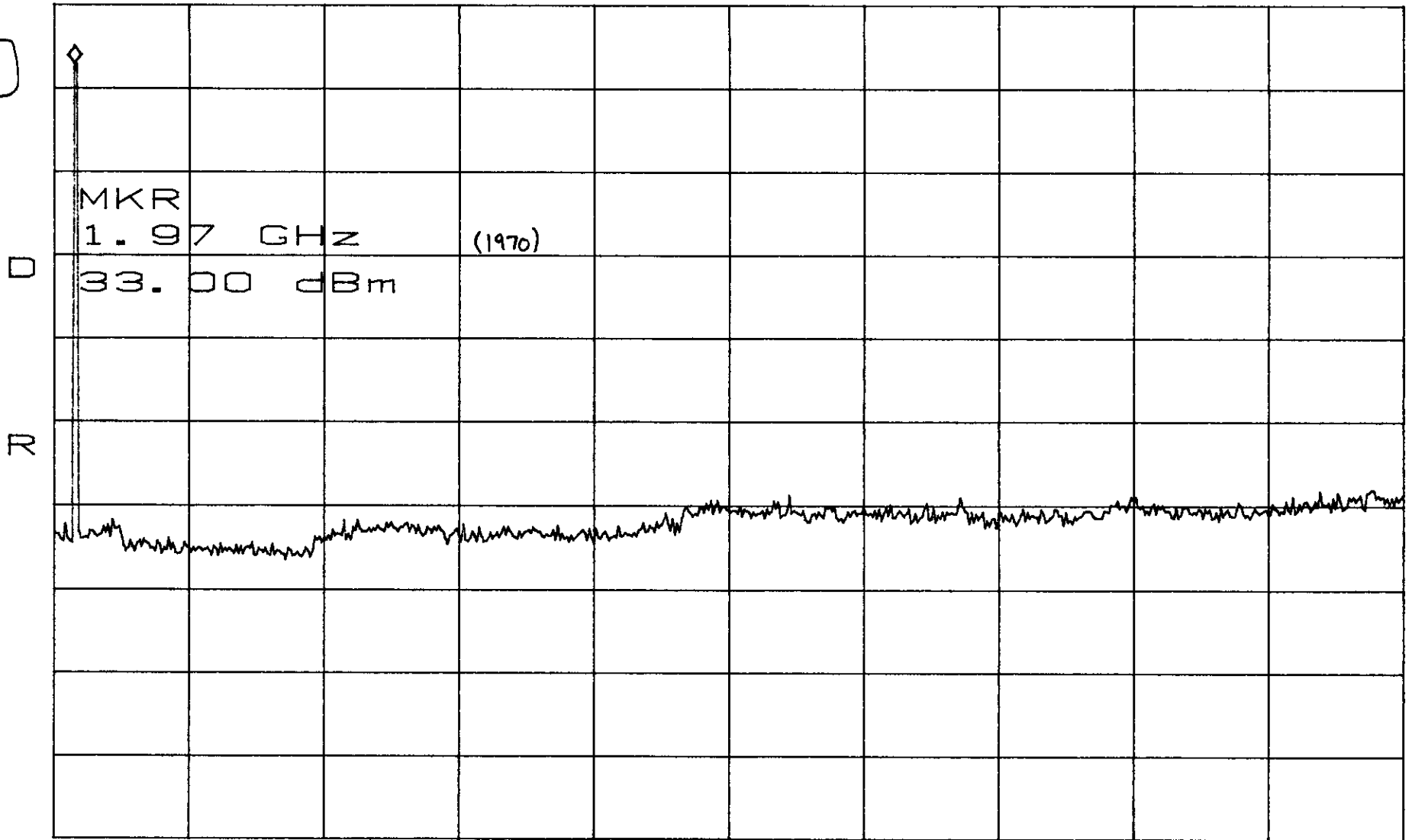
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

10dB/

MKR 33.00dBm
1.97GHz

2.991



START 1.60GHz

STOP 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 500ms

DL High
E/F Band

CW

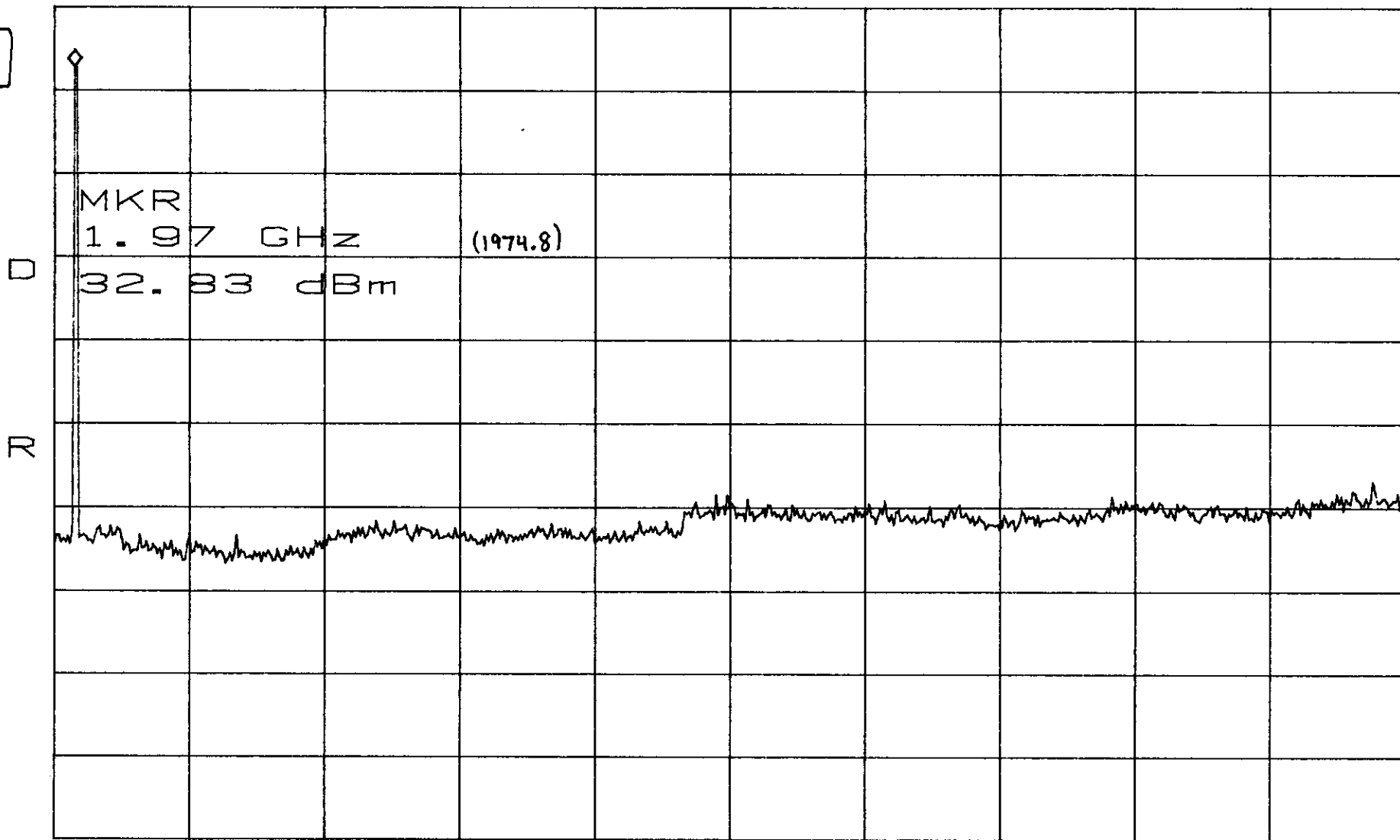
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

MKR 32.83dBm
1.97GHz

10dB/

2.991



START 1.60GHz

STOP 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 500ms

UL Low

E/F Band

CW

9/23/98

LB41901

*ATTEN 30dB

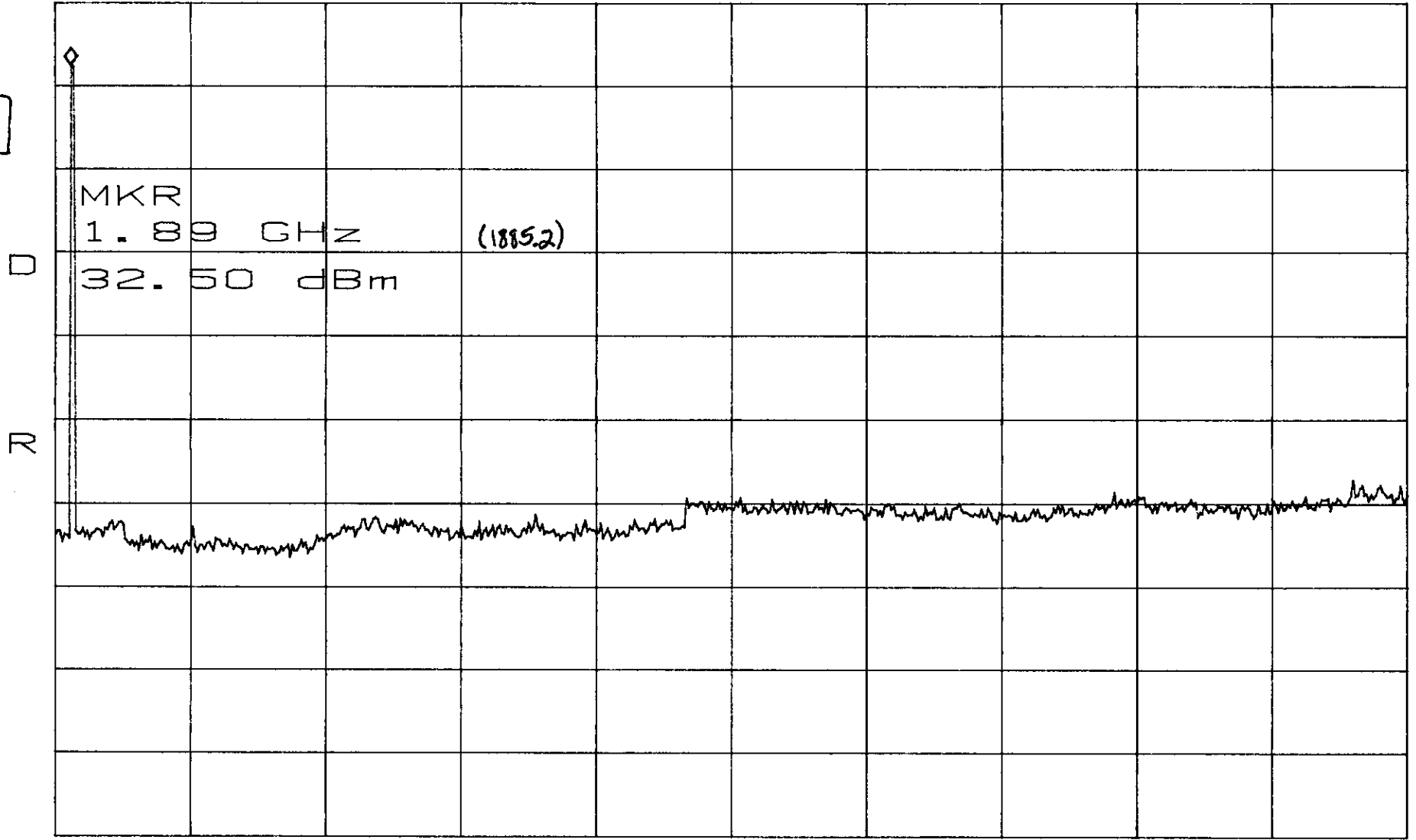
RL 40.0dBm

MKR 32.50dBm

1.89GHz

10dB/

2.991



START 1.60GHz

STOP 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 500ms

UL Mid
E/F Band

CW

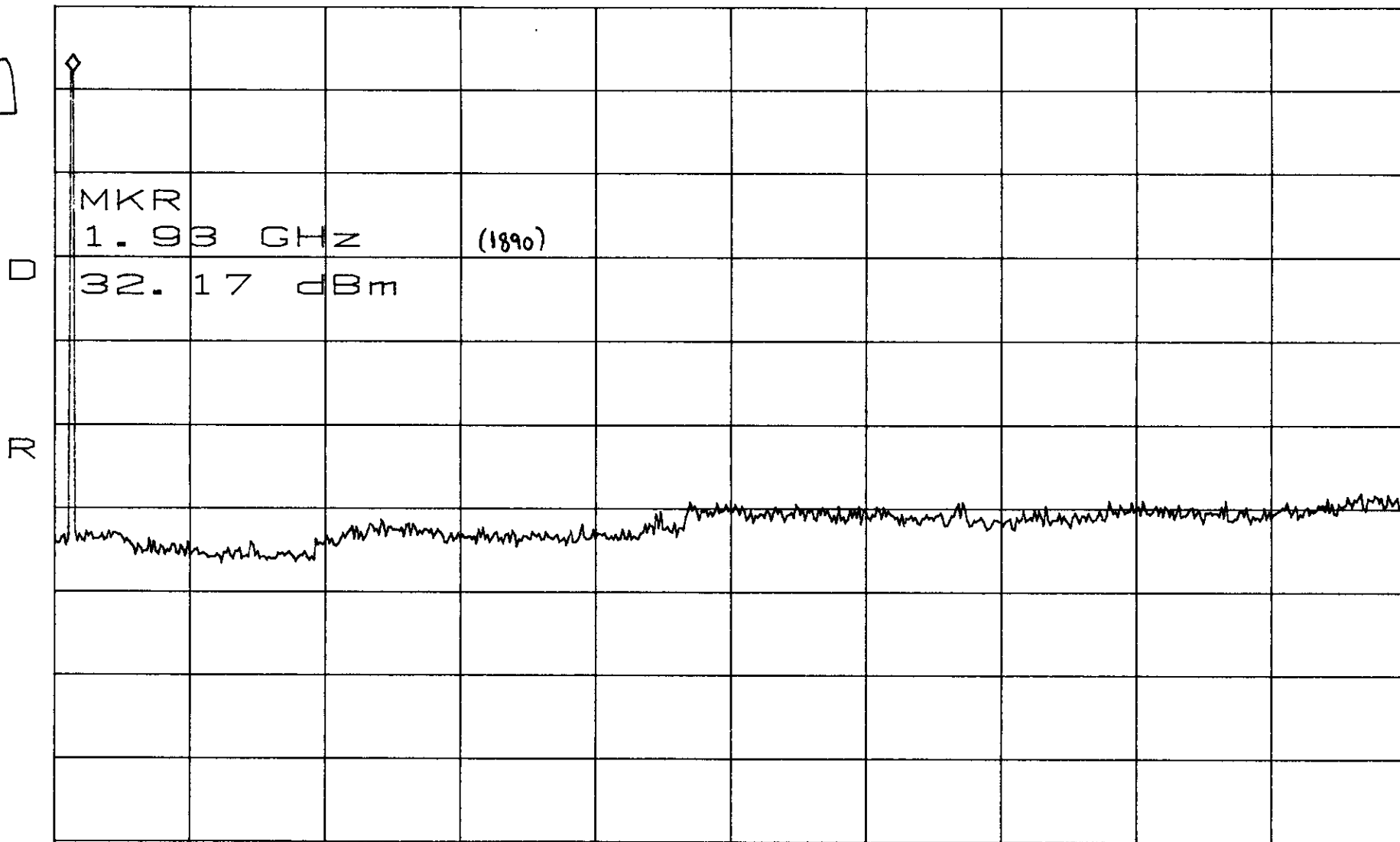
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

10dB/

MKR 32.17dBm
1.93GHz

2.991



START 1.60GHz

STOP 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 500ms

UL High
E/F Band

CW

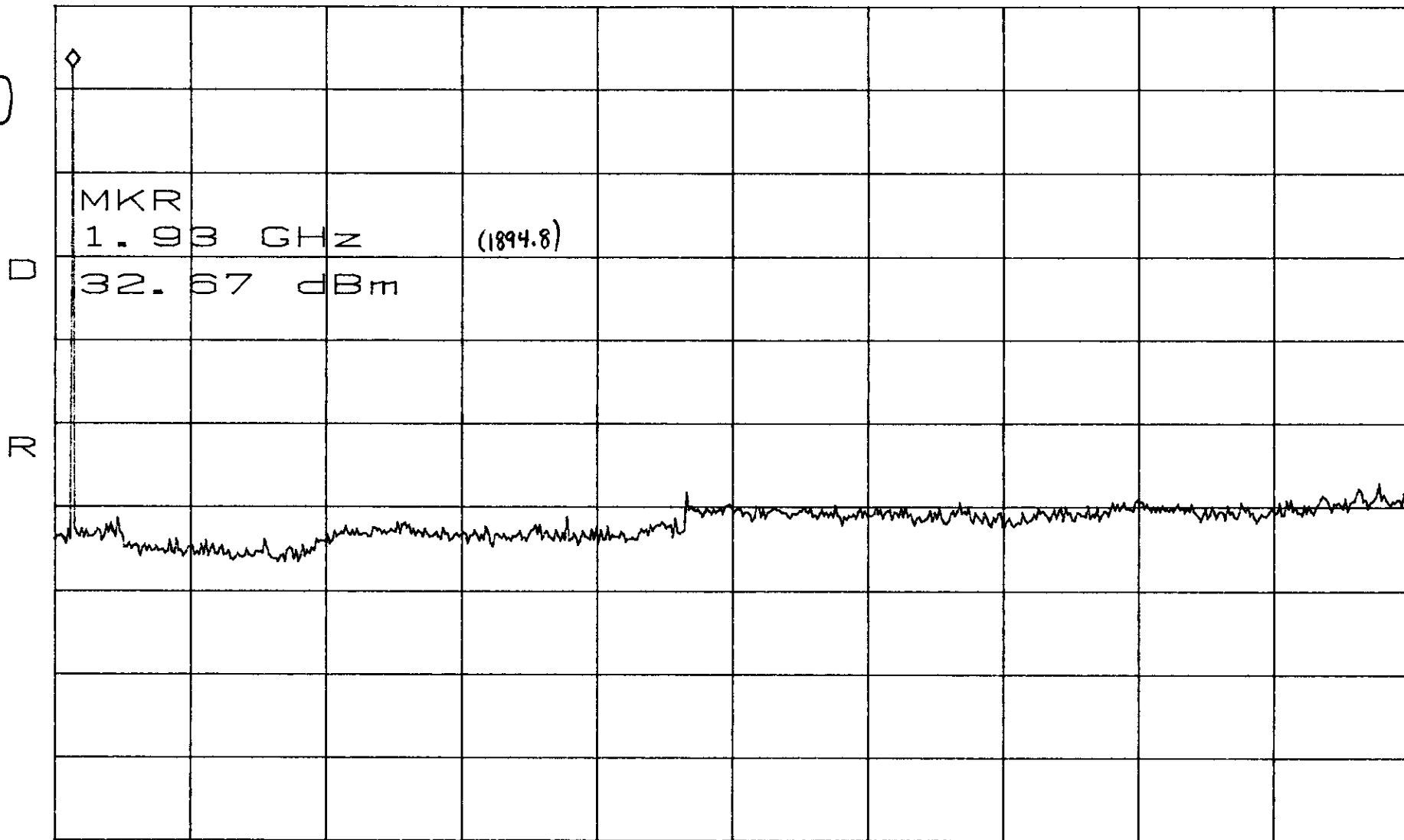
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

MKR 32.67dBm
1.93GHz

10dB/

2.991



START 1.60GHz

STOP 26.50GHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 500ms

DL Low
E/F Band

Output
cw

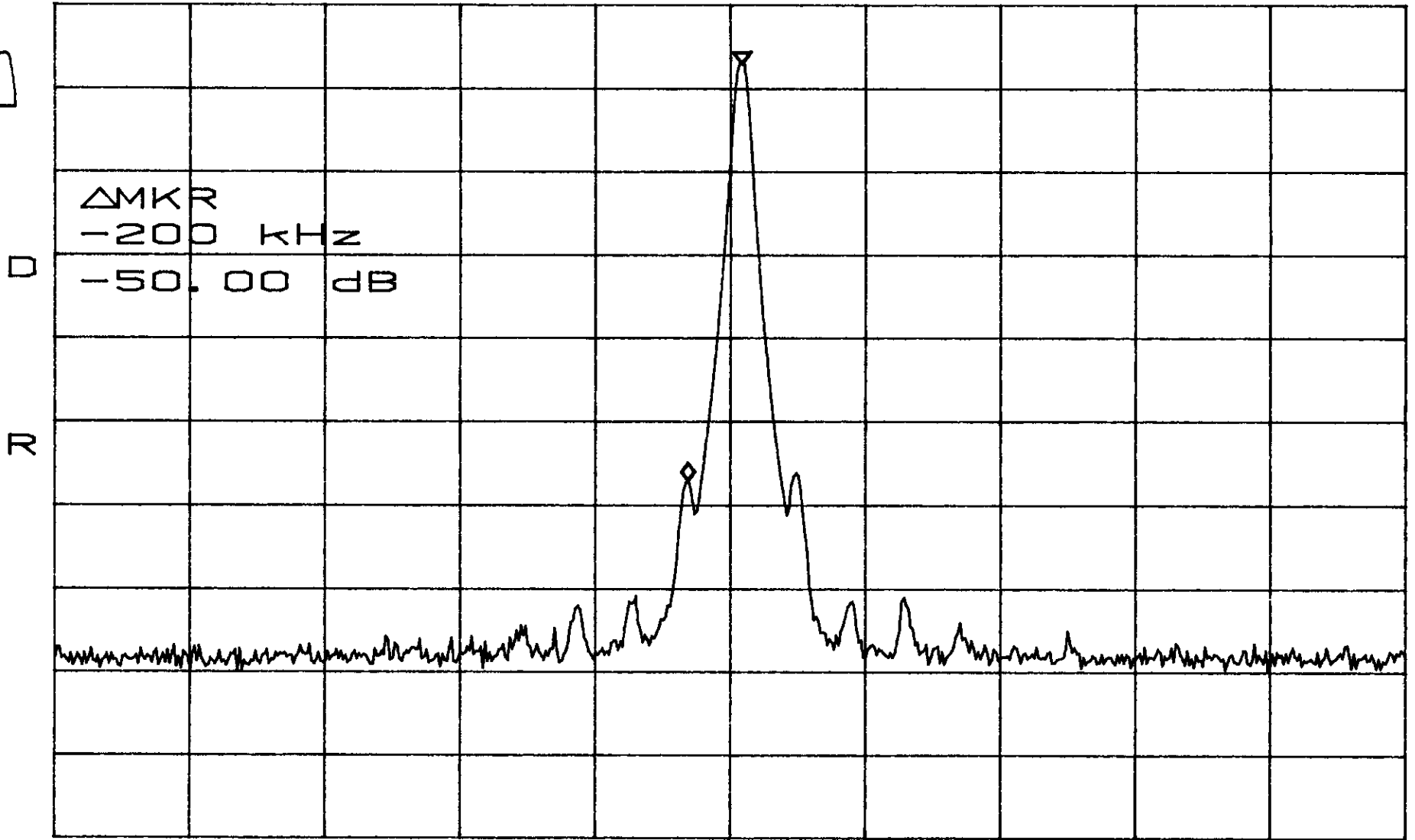
9/23/98
LB41961

ATTEN 30dB
BPO3
RL 40.0dBm

1dB/

Δ MKR -50.00dB
BPO0.05
-200kHz

24.238



CENTER 1.965200GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Low

E/F Band

Input

cw - source

9/23/98

LB41901

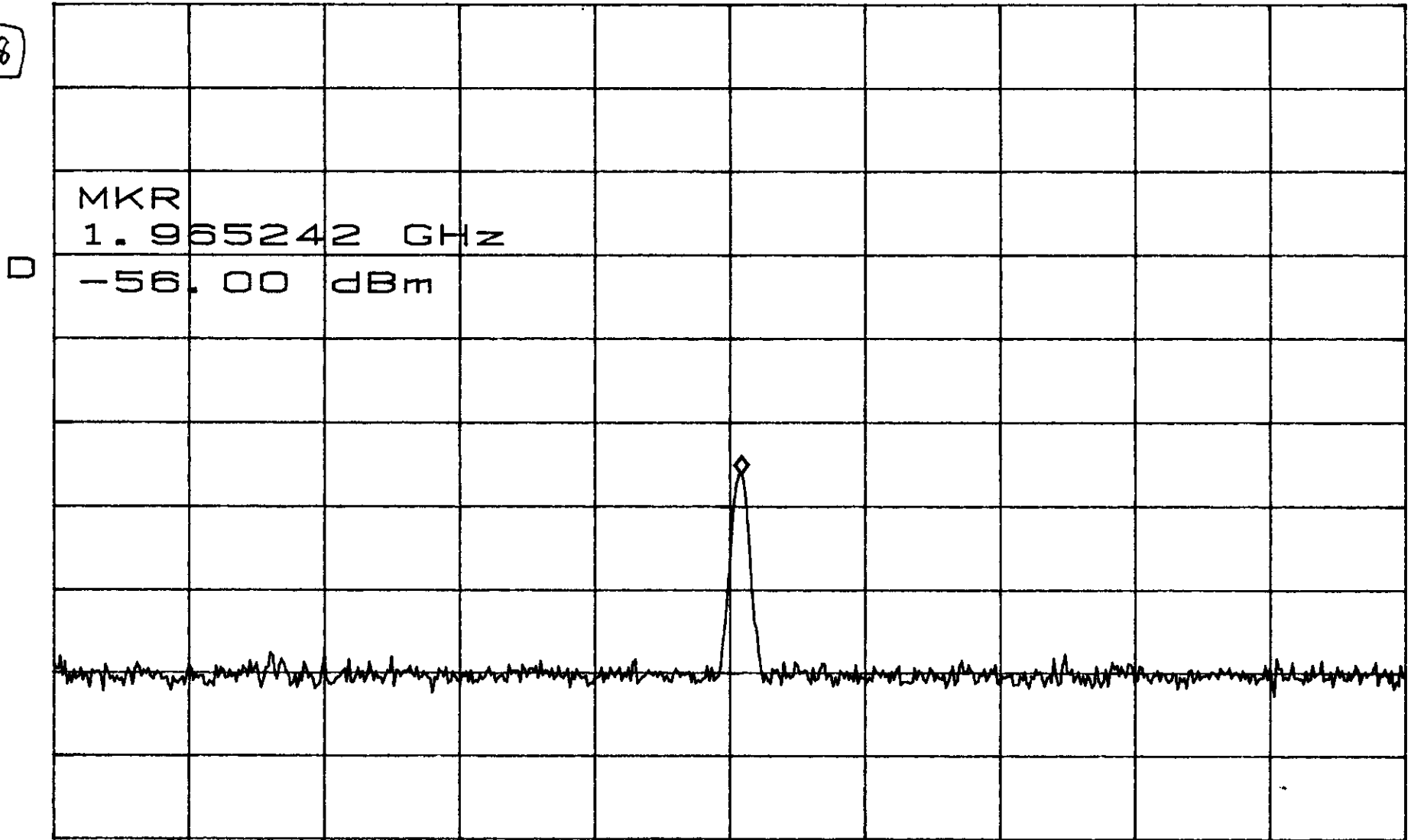
ATTEN 10dB

RL 0dBm

MKR -56.00dBm

1.965242GHz

24.238



CENTER 1.965200GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Low
E/F Band

Output
cw

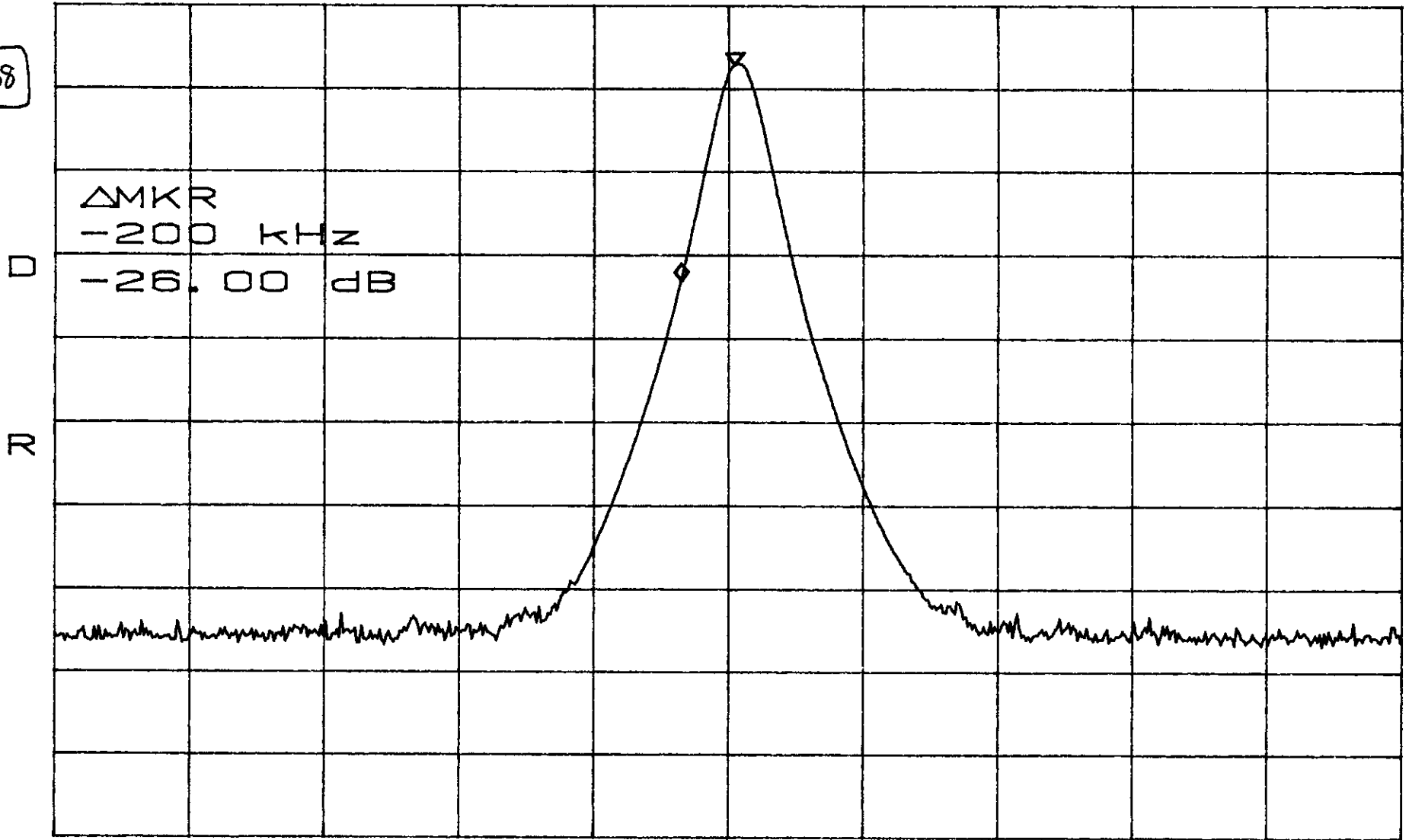
9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/

Δ MKR -26.00dB
-200kHz

24.238



CENTER 1.965200GHz

SPAN 5.000MHz

*RBW 100kHz

*VBW 30kHz

SWP 50.0ms

DL Low
E/F Band

Output
cw

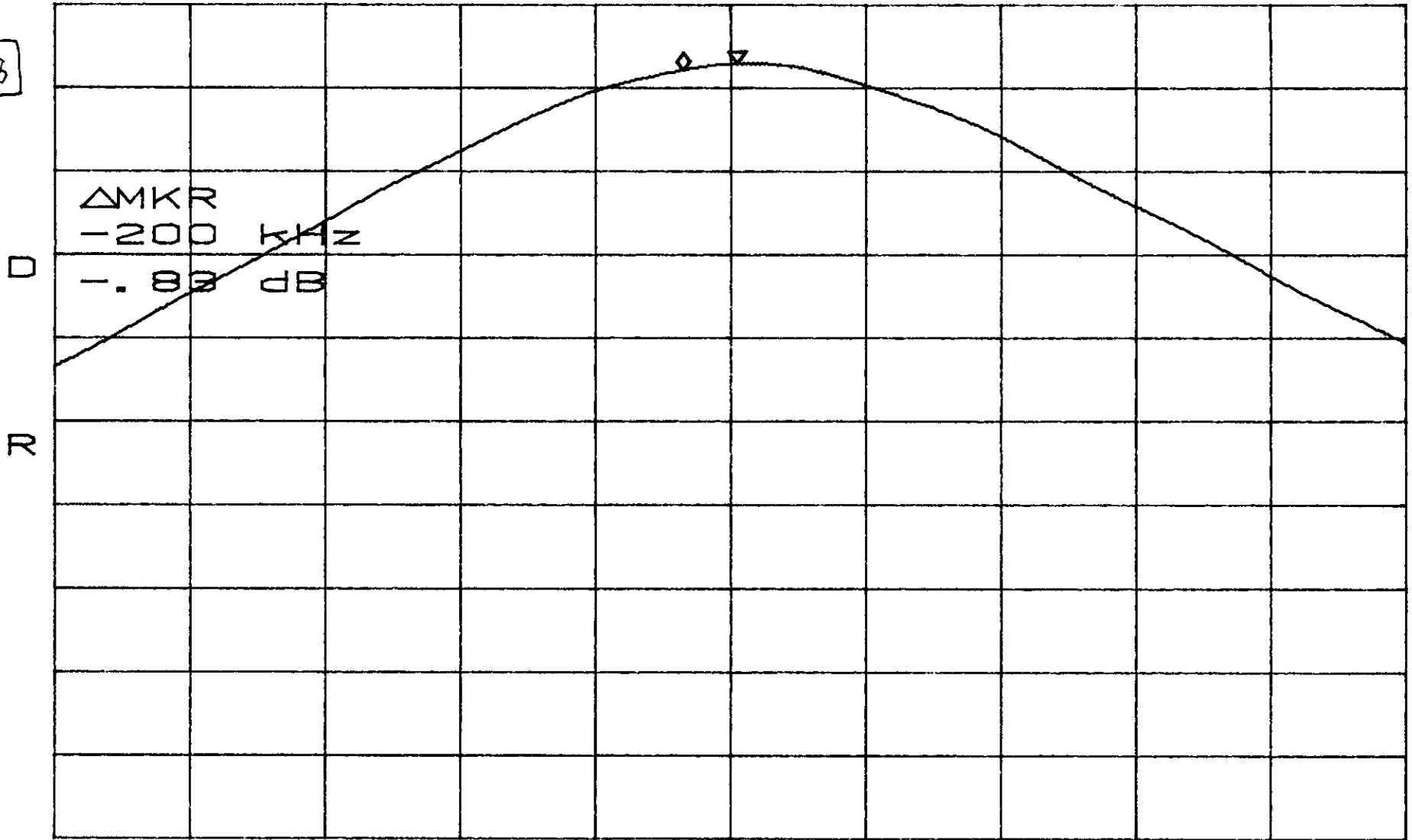
9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/
/BPO1

Δ MKR -.83dB
-200kHz

24.238



CENTER 1.965200GHz SPAN 5.000MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

DL Low
E/F-Band

Output
cw

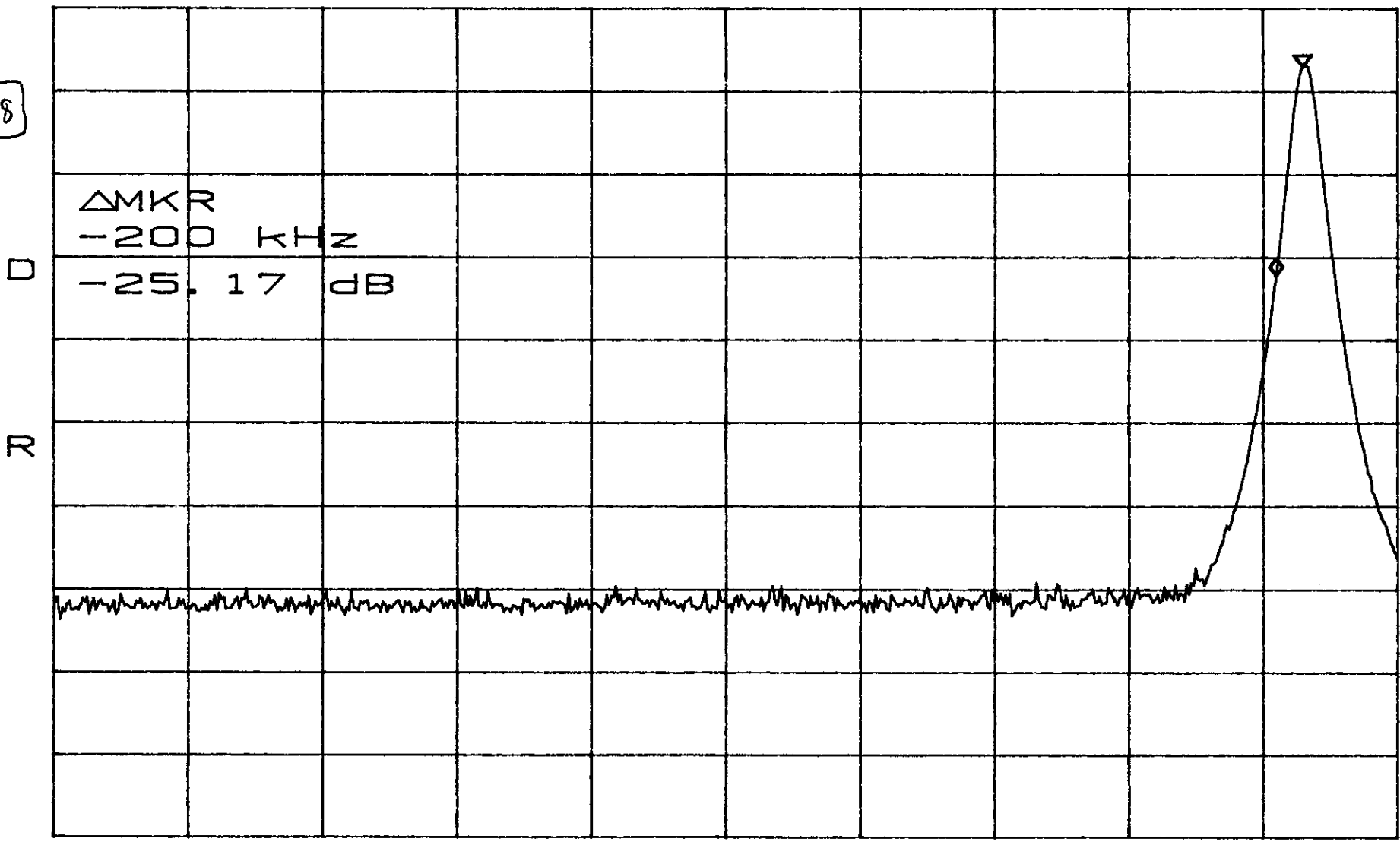
9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/

Δ MKR -25.17dB
-200kHz

24.238



CENTER 1.96100GHz SPAN 10.00MHz
*RBW 100kHz *VBW 1.0MHz SWP 50.0ms

DL Low
E/F Band

Output
CW-source

9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/
BP01

Δ MKR -5.17dB
-200kHz

24.238



CENTER 1.96100GHz

SPAN 10.00MHz

*RBW 300kHz

*VBW 1.0MHz

SWP 50.0ms

DL High
E/F Band

DL Output
cw source

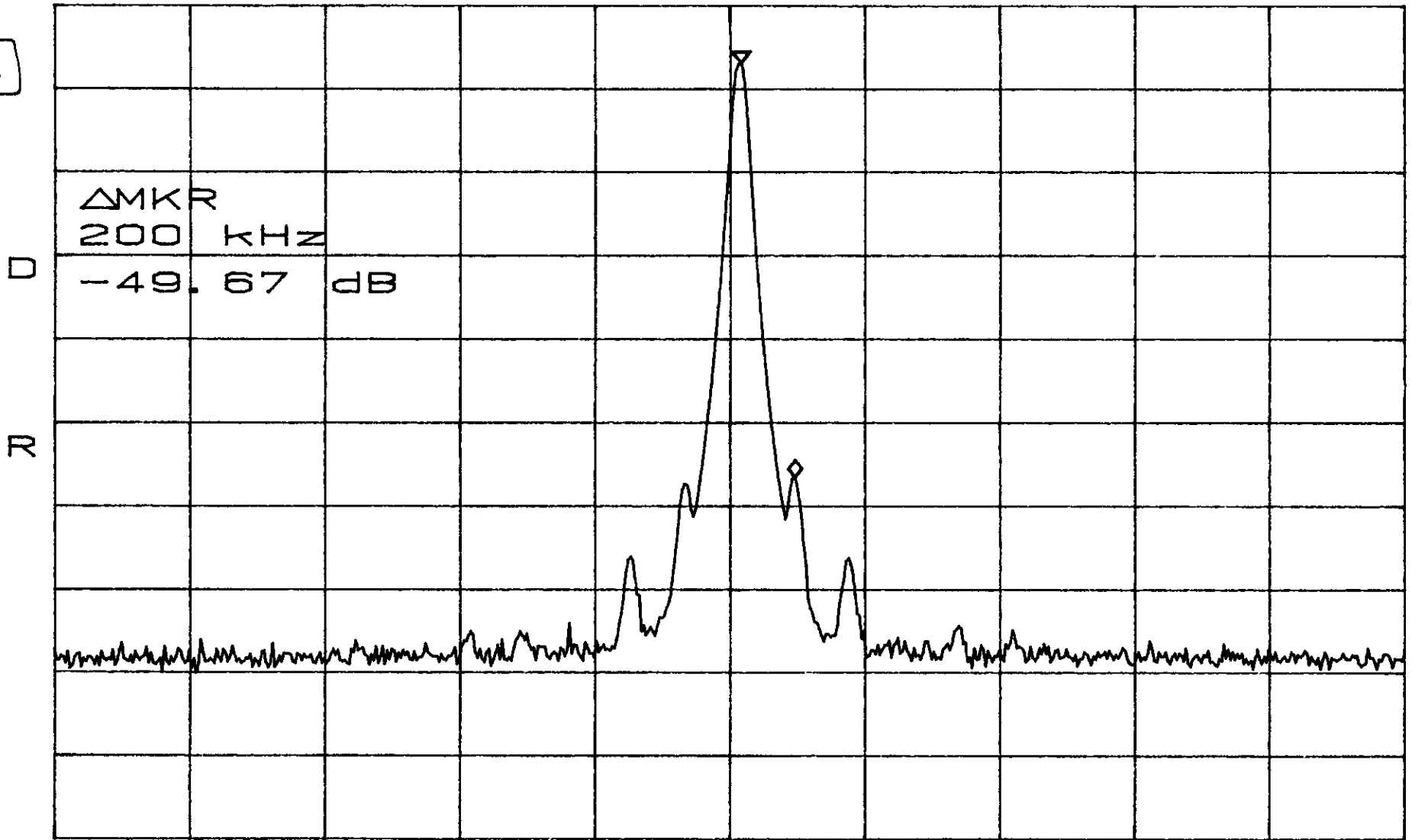
9/23/98
LB41901

ATTEN 30dB
BP03
RL 40.0dBm

10dB/
BP01

Δ MKR -49.67dB
200kHz

24.298



CENTER 1.974800GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL High

E/F Band

ATTEN 10dB

RL 0dBm

Input

cw source

10dB/

9/23/98

LB41901

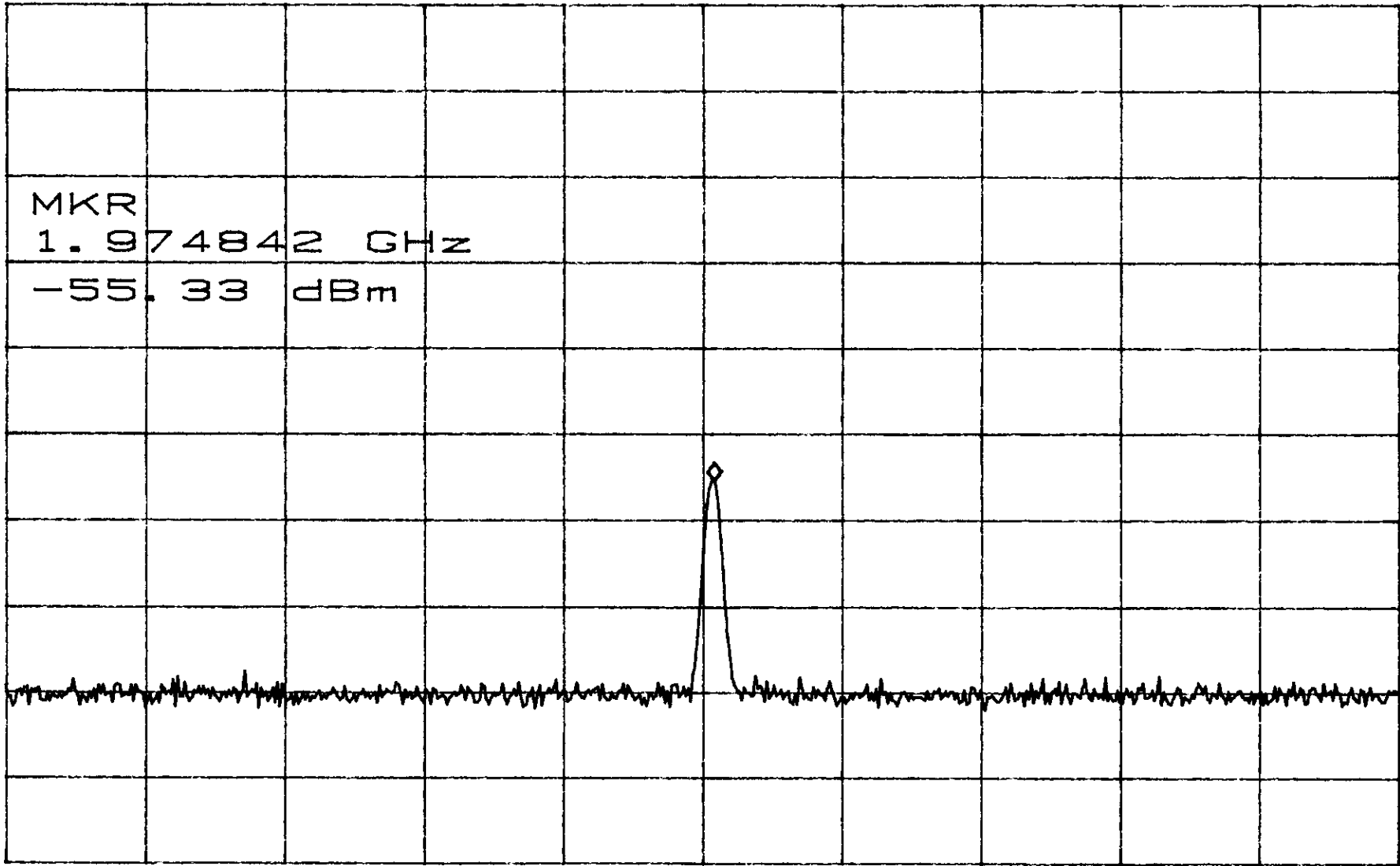
MKR -55.33dBm

1.974842GHz

24.238

D

MKR
1.974842 GHz
-55.33 dBm



CENTER 1.974800GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL High

E/F Band

Output

cw

9/23/98

LB41901

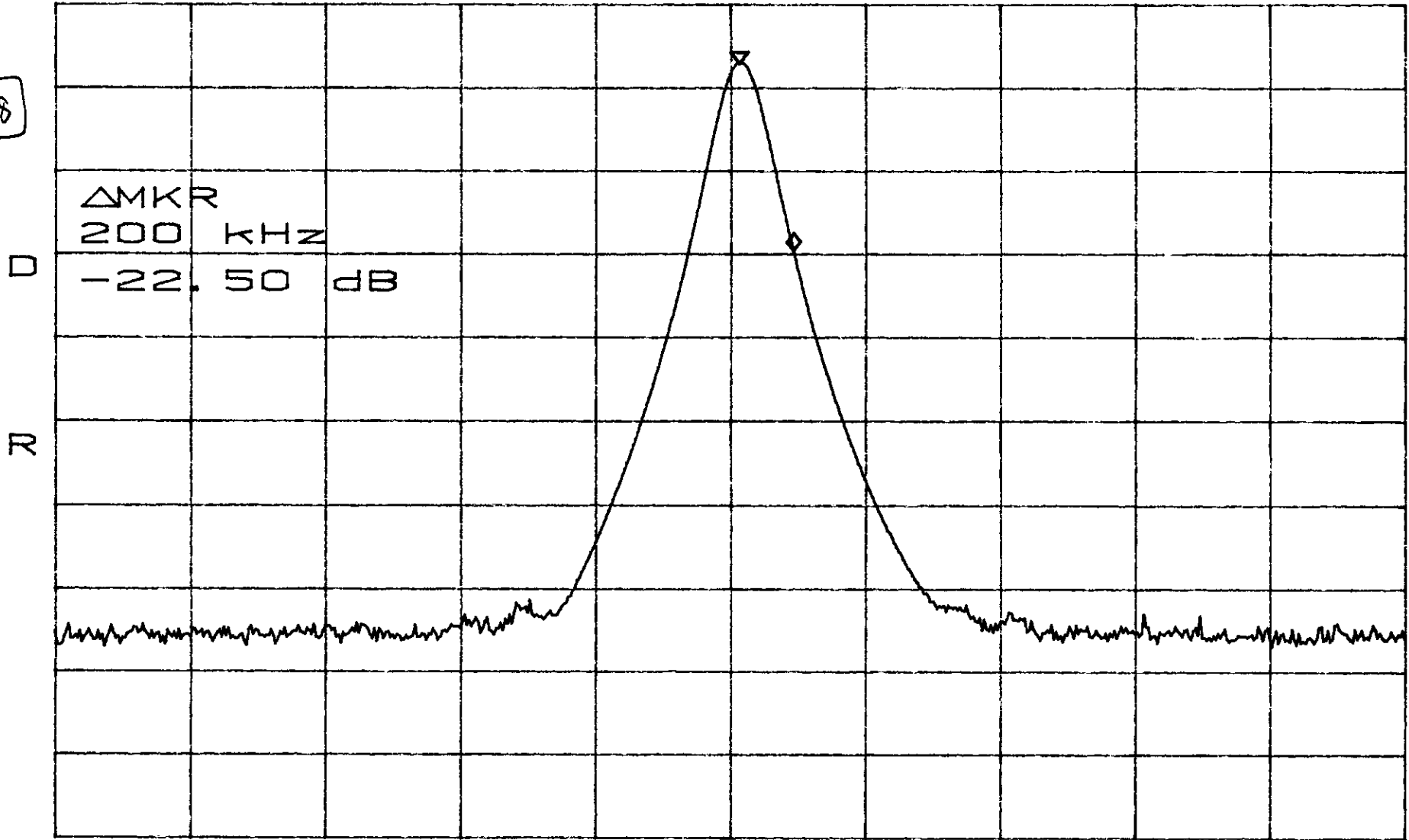
ATTEN 30dB

RL 40.0dBm

Δ MKR -22.50dB

200kHz

24.238



CENTER 1.974800GHz

SPAN 5.000MHz

*RBW 100kHz

*VBW 30kHz

SWP 50.0ms

DL High
E/F Band

Output
cw

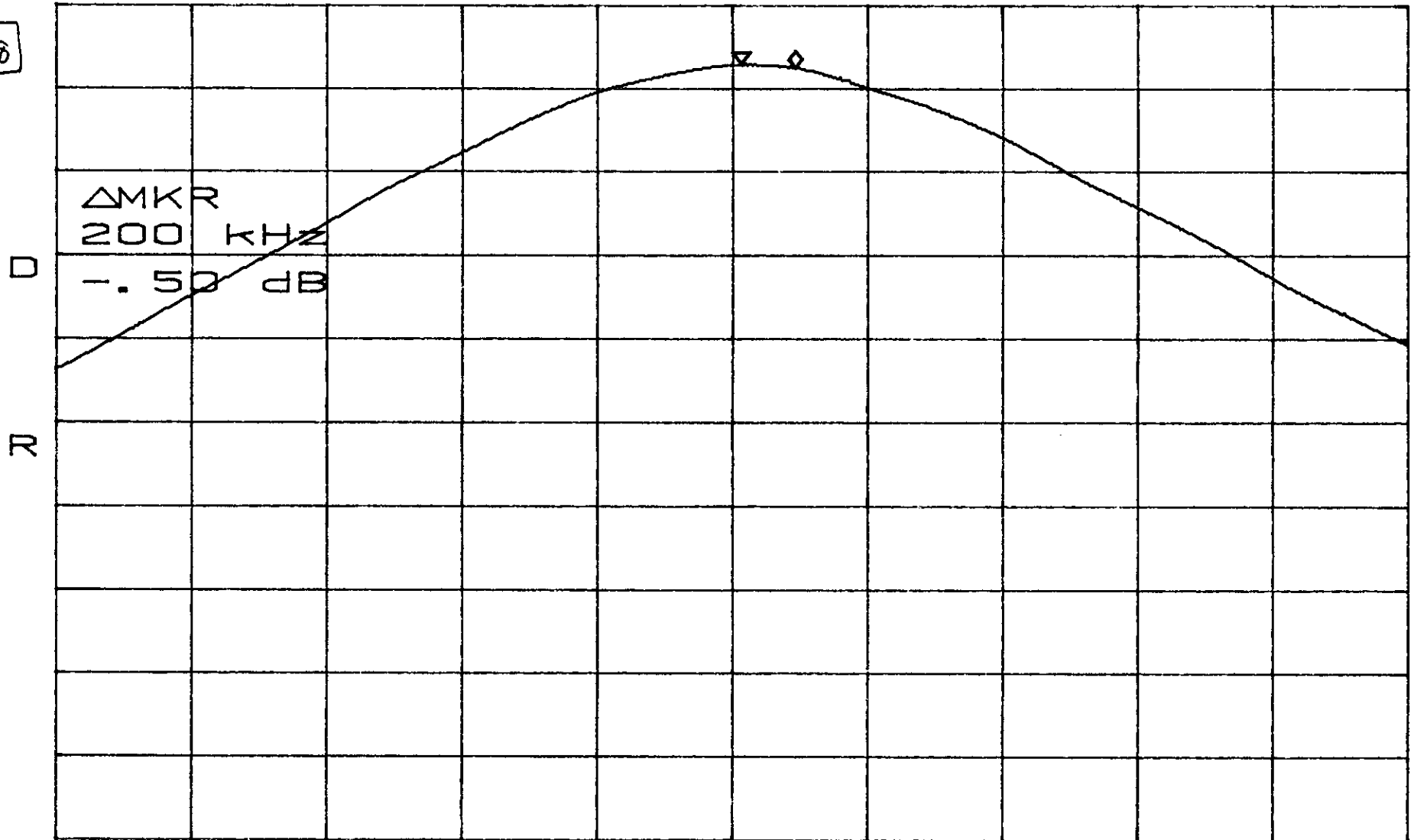
9/23/98
LB41901

ATTEN 30dB
BPOE
RL 40.0dBm

1dB/

ΔMKR -.50dB
200kHz

24.238



CENTER 1.974800GHz

SPAN 5.000MHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 50.0ms

DL High
E/F Band

Output
cw

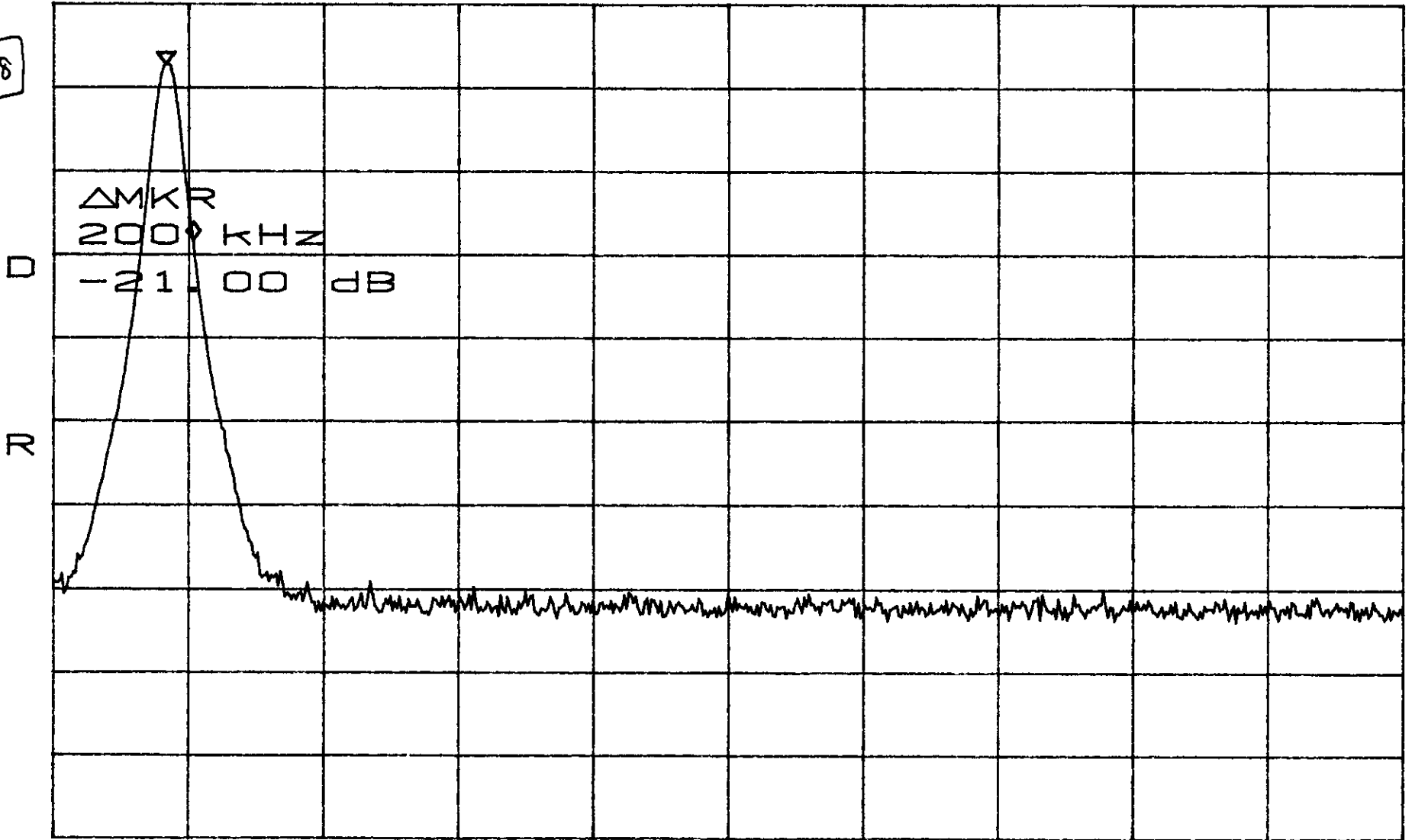
9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/

Δ MKR -21.00dB
200kHz

24.238



CENTER 1.97900GHz

SPAN 10.00MHz

*RBW 100kHz

*VBW 1.0MHz

SWP 50.0ms

DL High
E/F Band

Output
cw

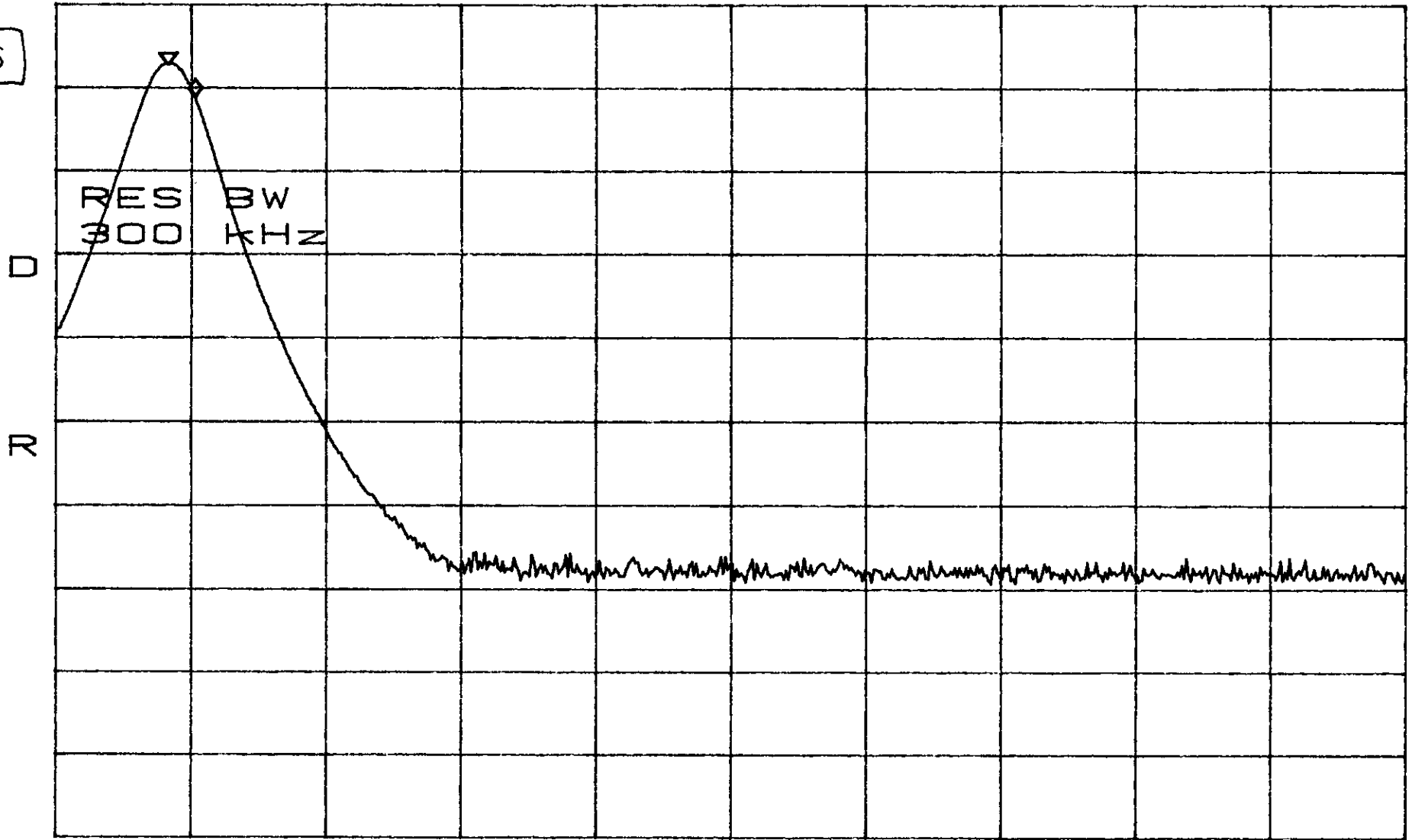
9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/
BP01

Δ MKR -3.83dB
200kHz

24.238



CENTER 1.97900GHz

SPAN 10.00MHz

*RBW 300kHz

*VBW 1.0MHz

SWP 50.0ms

UL Low

E/F Band

Output

cw

9/25/98

LB41901

*ATTEN 30dB

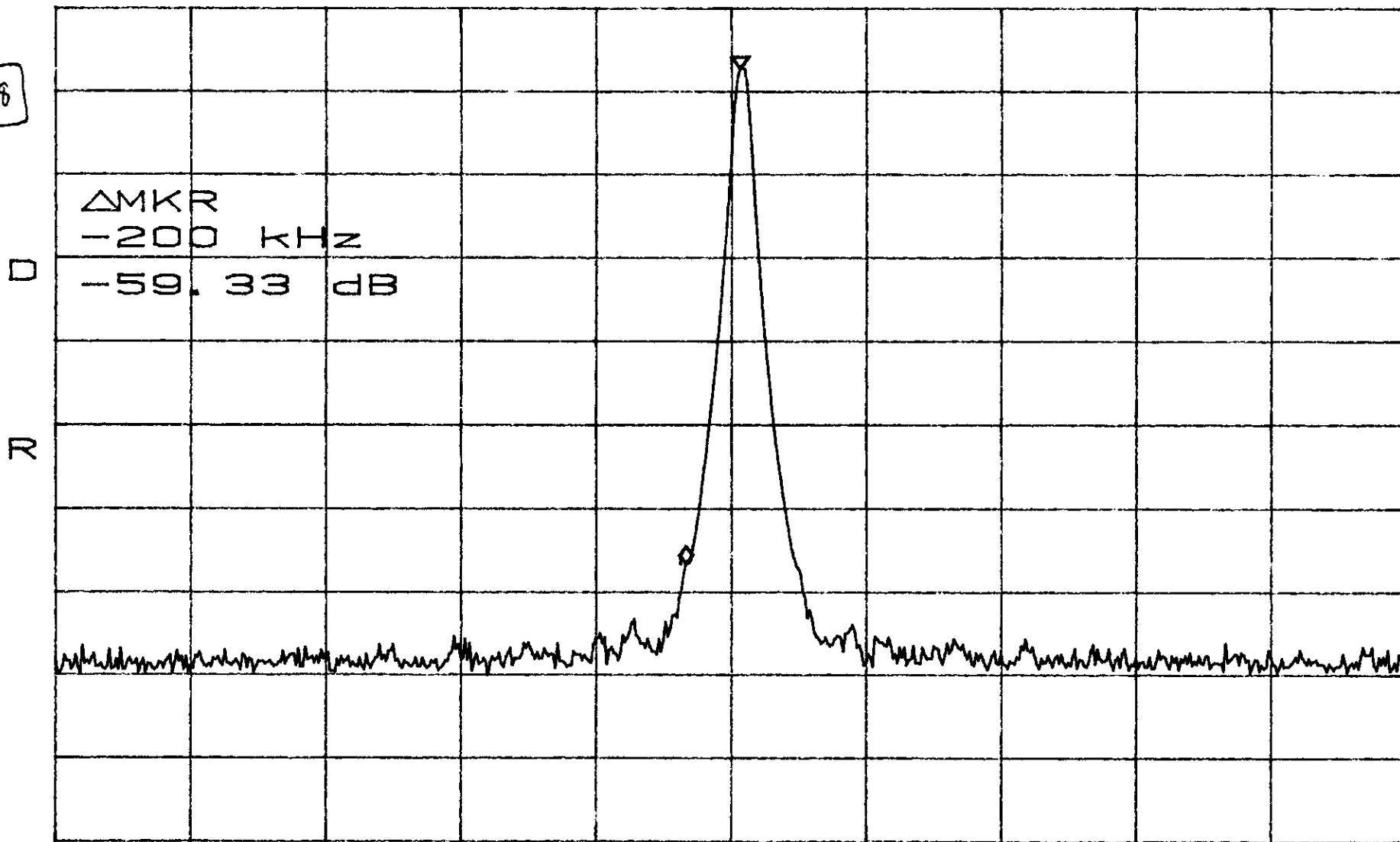
RL 40.0dBm

10dB/

ΔMKR -59.33dB

-200kHz

24.238



CENTER 1.885200GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Low
E/F Band

Input
cw source

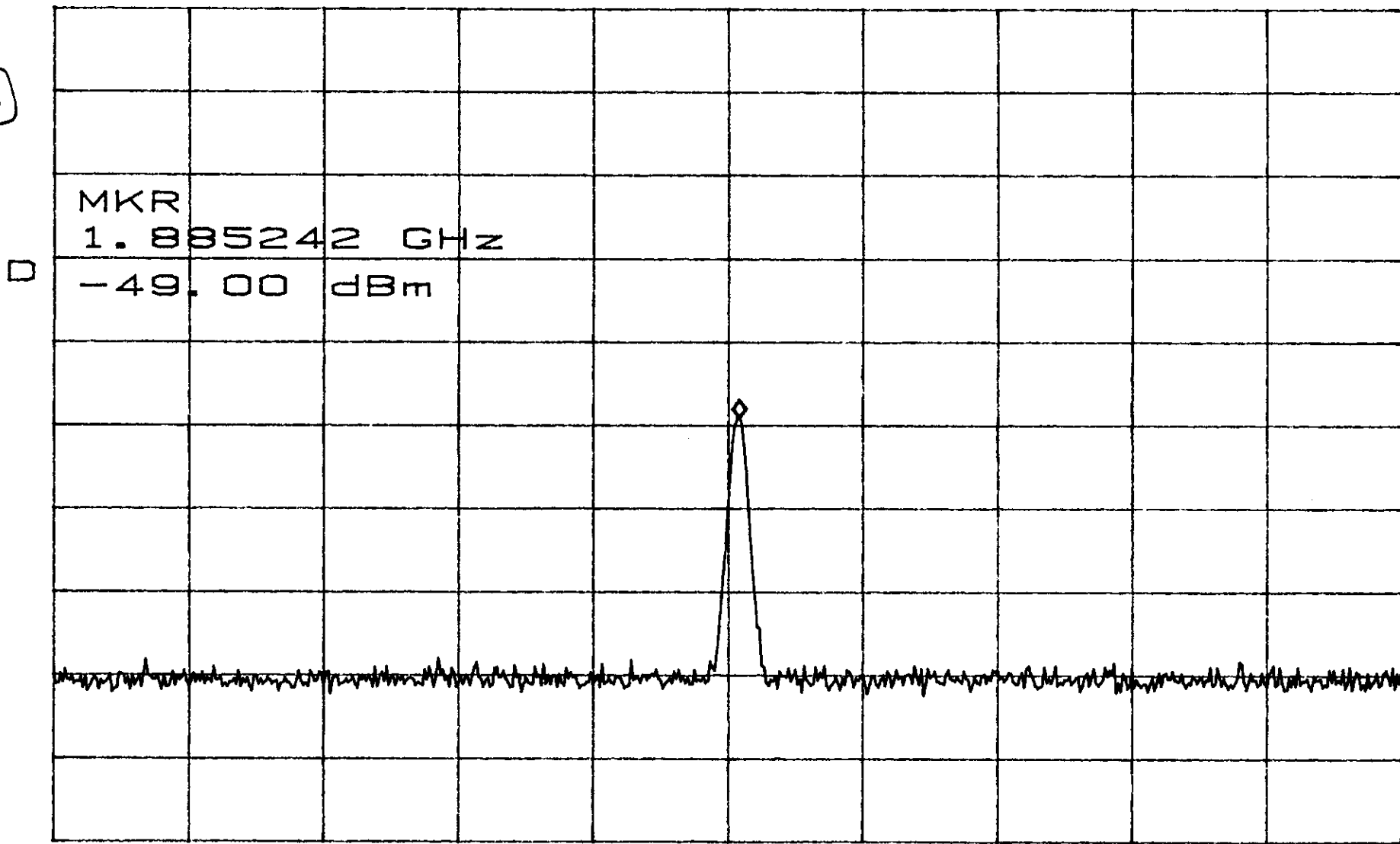
9/25/98
LB41901

ATTEN 10dB
RL 0dBm

10dB/

MKR -49.00dBm
1.885242GHz

24.238



CENTER 1.885200GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Low

E/F Band

ATTEN 30dB

RL 40.0dBm

Output

cw

10dB / BP01

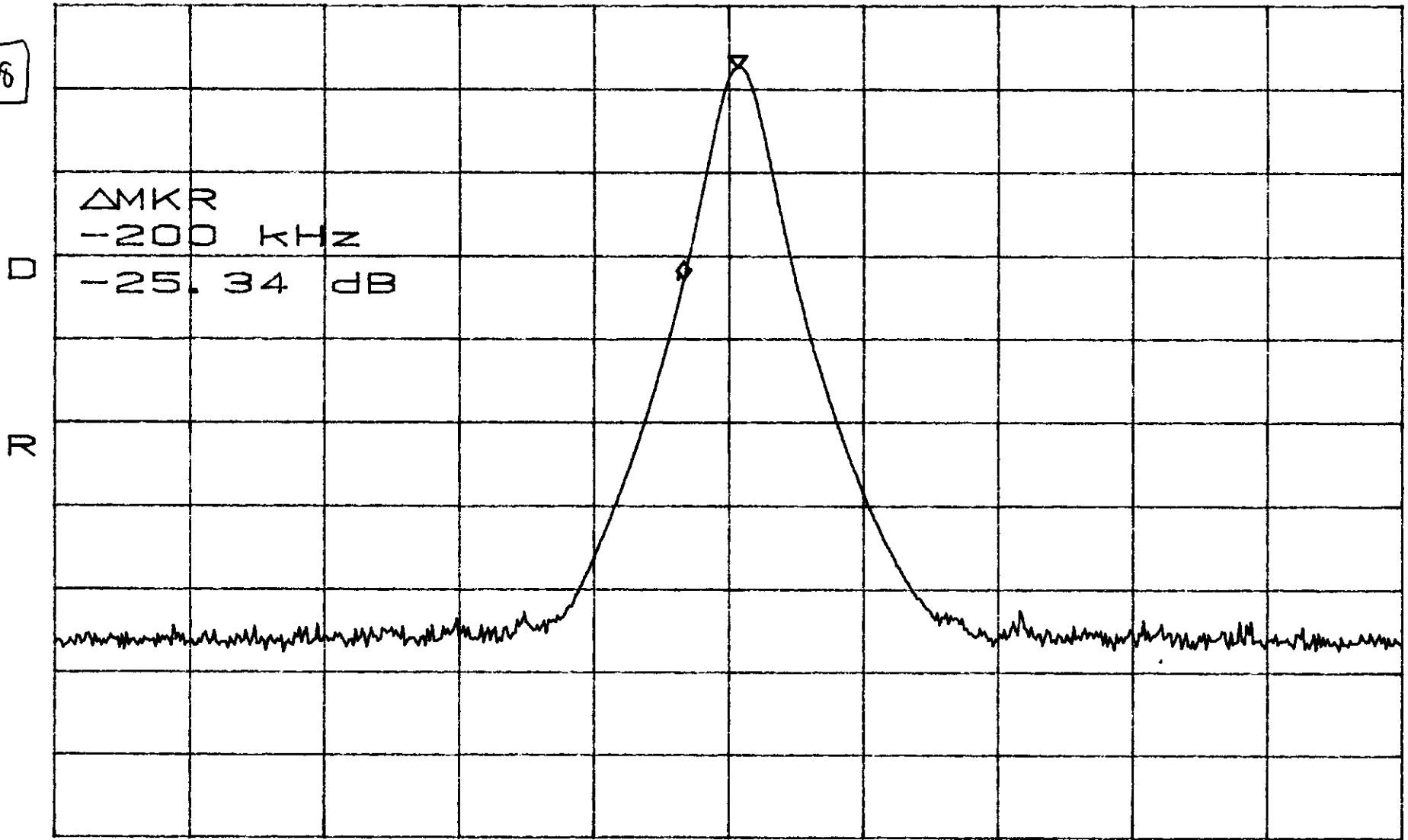
9/25/98

LB41901

Δ MKR -25.34dB

-200kHz

24.236



CENTER 1.885200GHz

SPAN 5.000MHz

*RBW 100kHz

*VBW 30kHz

SWP 50.0ms

UL Low
E/F Band

Output
cw

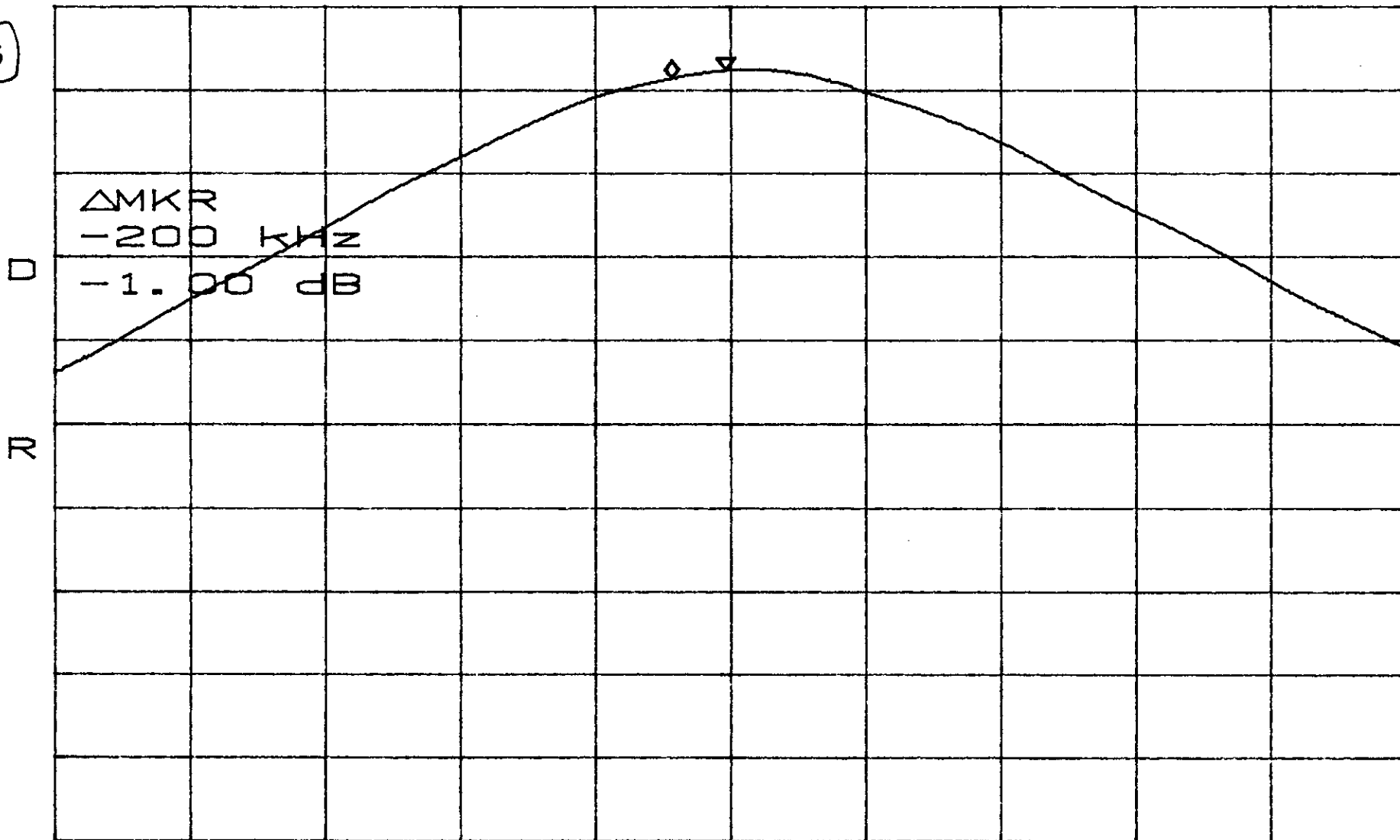
9/25/98
LB41901

ATTN 30dB
RL 40.0dBm

10dB/

ΔMKR -1.00dB
-200kHz

24.238



CENTER 1.885200GHz SPAN 5.000MHz
*RBW 1.0MHz *VBW 1.0MHz SWP 50.0ms

UL Low
E/F Band

Output
cw

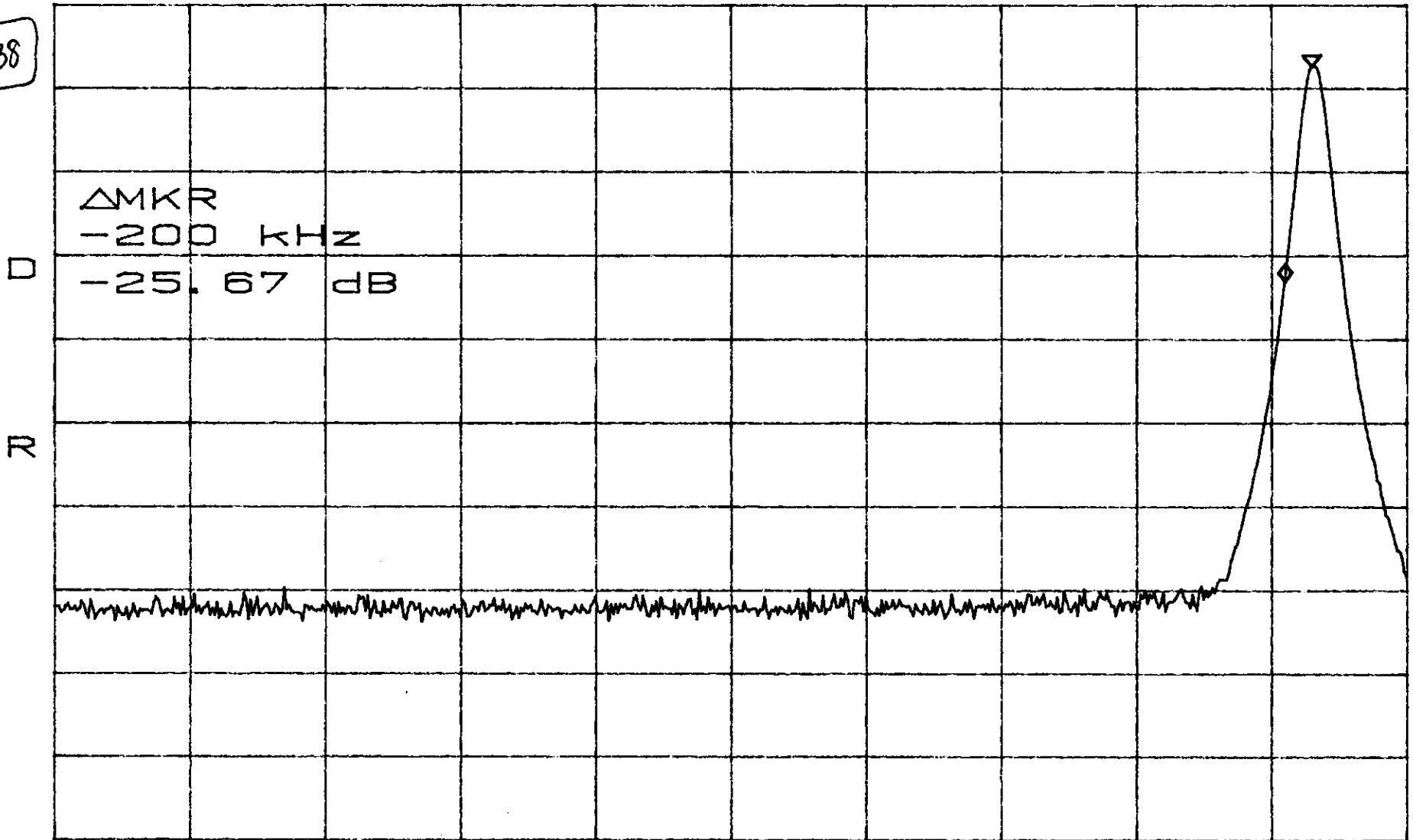
9/25/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/
BPO1

Δ MKR -25.67dB
-200kHz

24.238



CENTER 1.88100GHz

SPAN 10.00MHz

*RBW 100kHz

*VBW 1.0MHz

SWP 50.0ms

UL Low
E/F Band

Output
cw

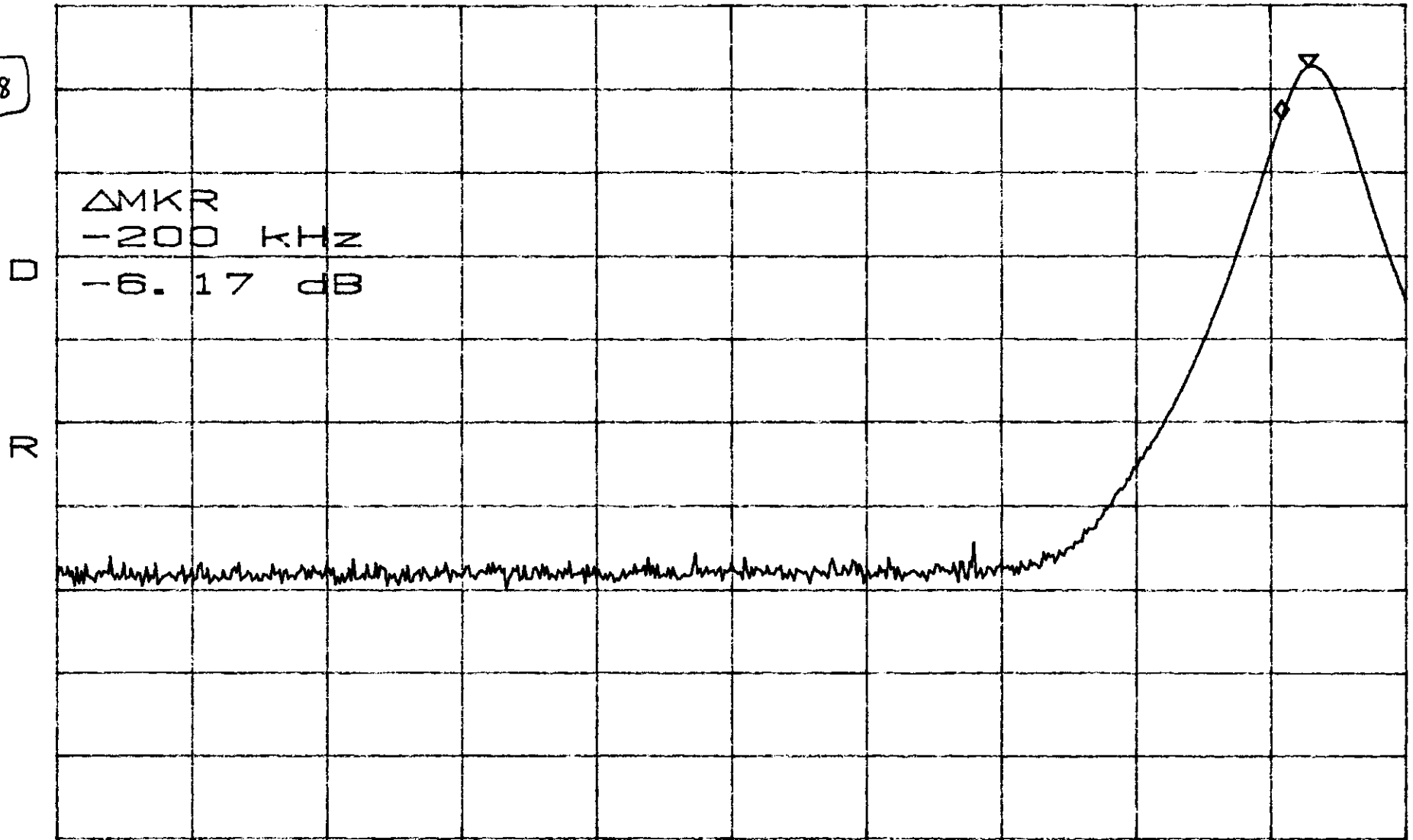
9/25/98
LB41901

ATTEN 30dB
BPOB
RL 40.0dBm

10dB/

Δ MKR -6.17dB
-200kHz

24.238



CENTER 1.88100GHz SPAN 10.00MHz
*RBW 300kHz *VBW 1.0MHz SWP 50.0ms

UL High
E/F Band

Output
cw

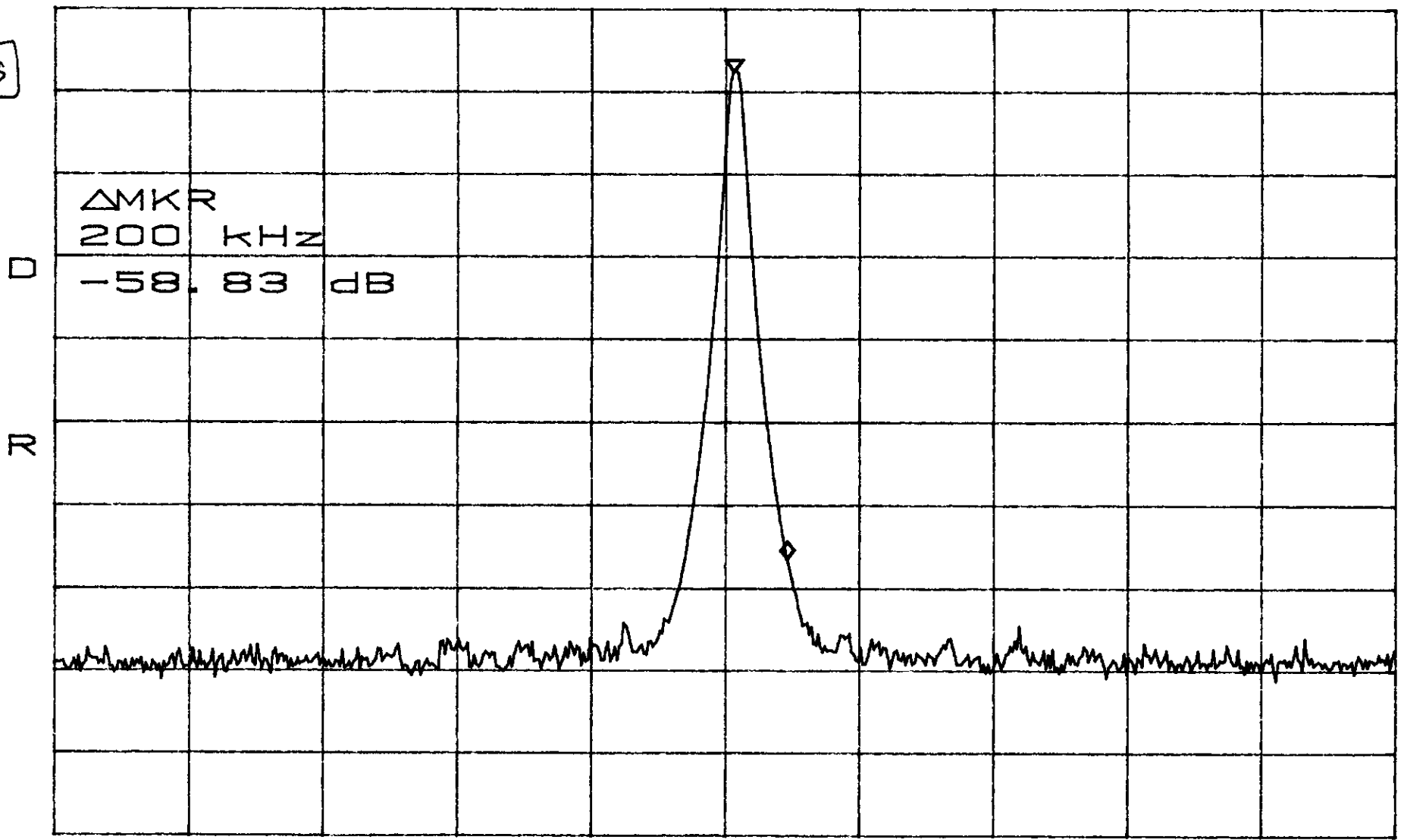
9/25/98
LB41901

*ATTEN 30dB
BPO0
RL 40.0dBm

10dB/
/BPO1

Δ MKR -58.83dB
200kHz

24.738



CENTER 1.894800GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL High
E/F Band

Input

9/25/98

LB41901

*ATTEN 10dB

CW source

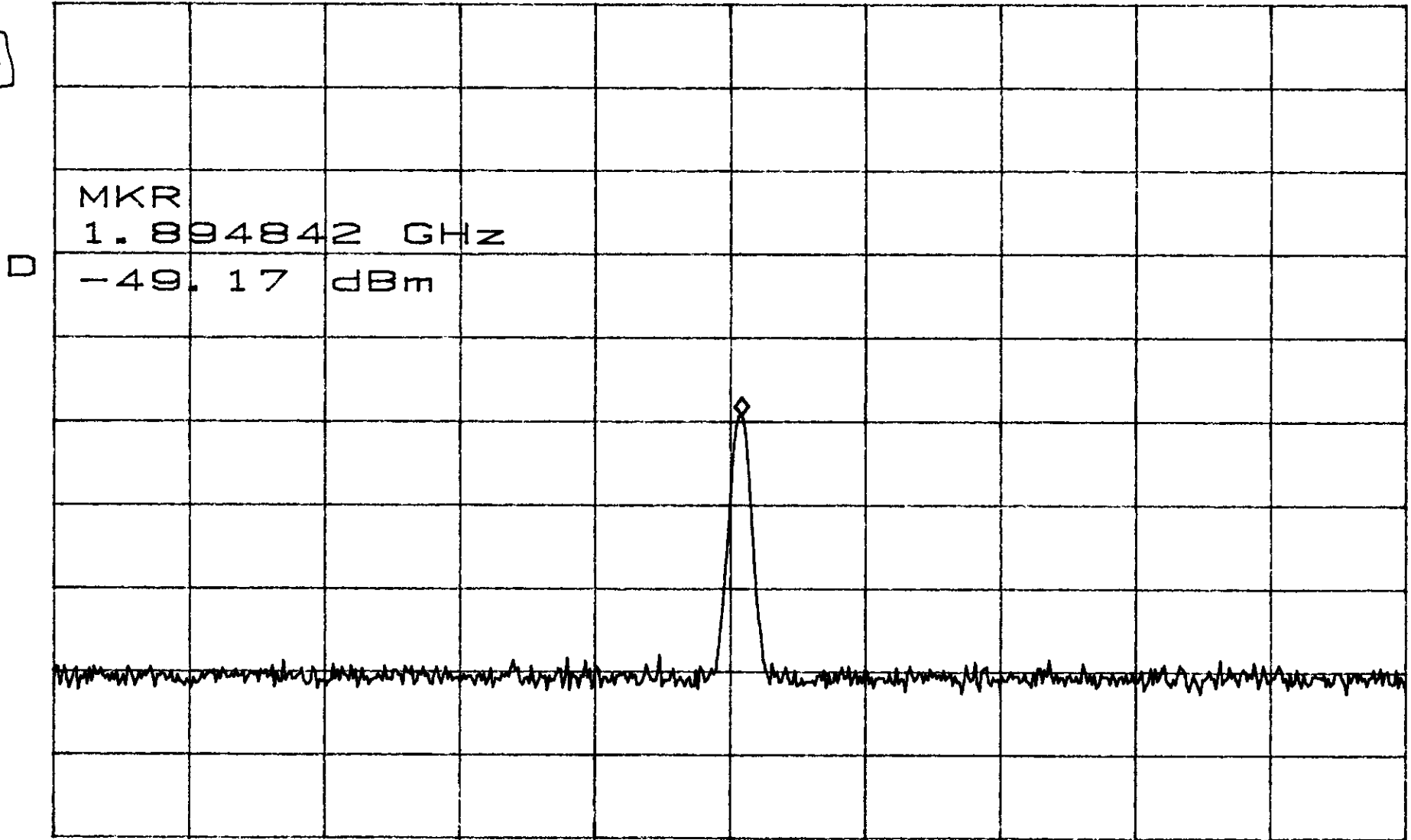
MKR -49.17dBm

RL 0dBm

10dB/

1.894842GHz

24.238



CENTER 1.894800GHz

SPAN 5.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL High
E/F Band

Output

9/25/98

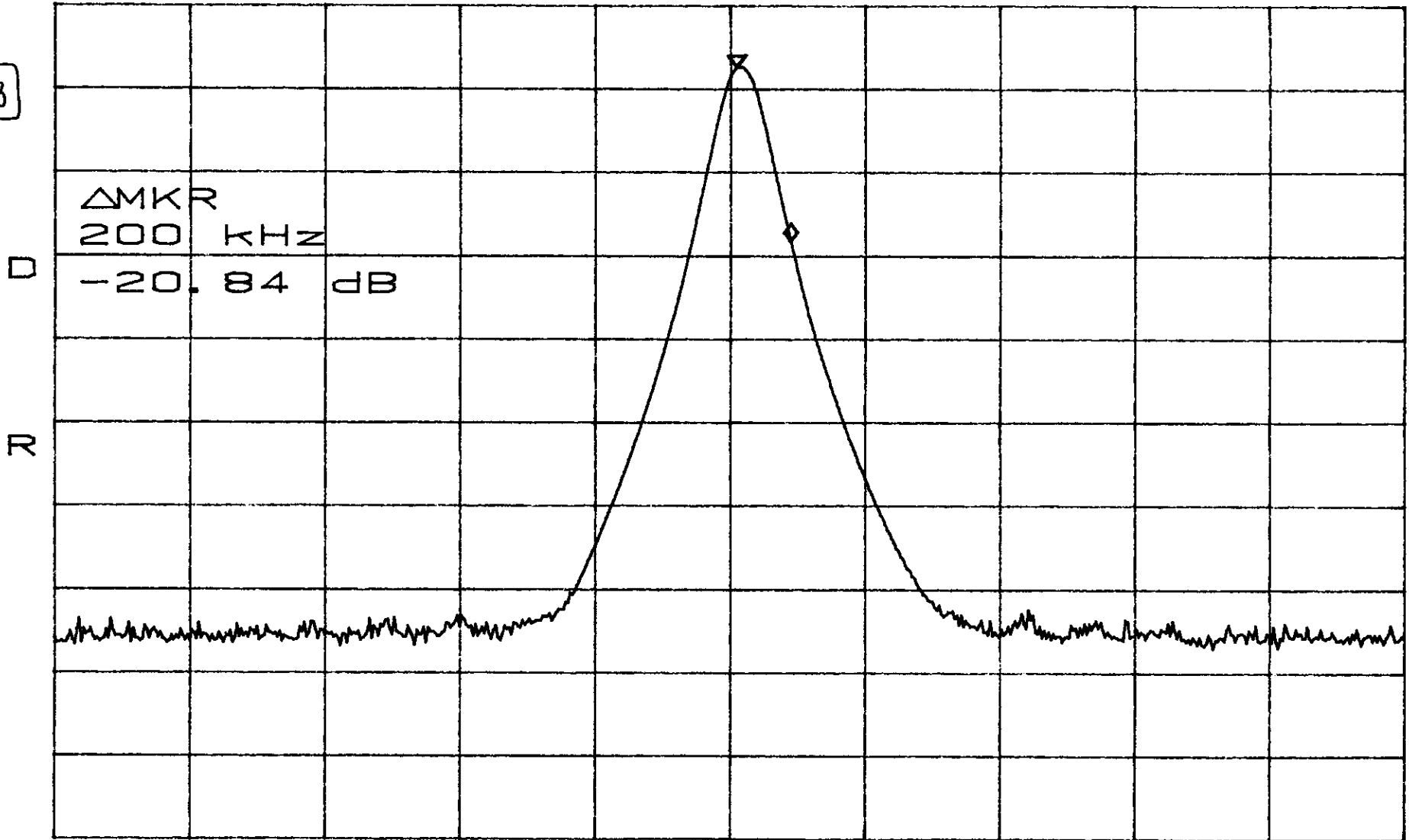
L841901

*ATTEN 30dB
RL 40.0dBm

cw
10dB/
/BP01

Δ MKR -20.84dB
200kHz

24.238



CENTER 1.894800GHz

SPAN 5.000MHz

*RBW 100kHz

*VBW 30kHz

SWP 50.0ms

UL High
E/F Band

Output
CW

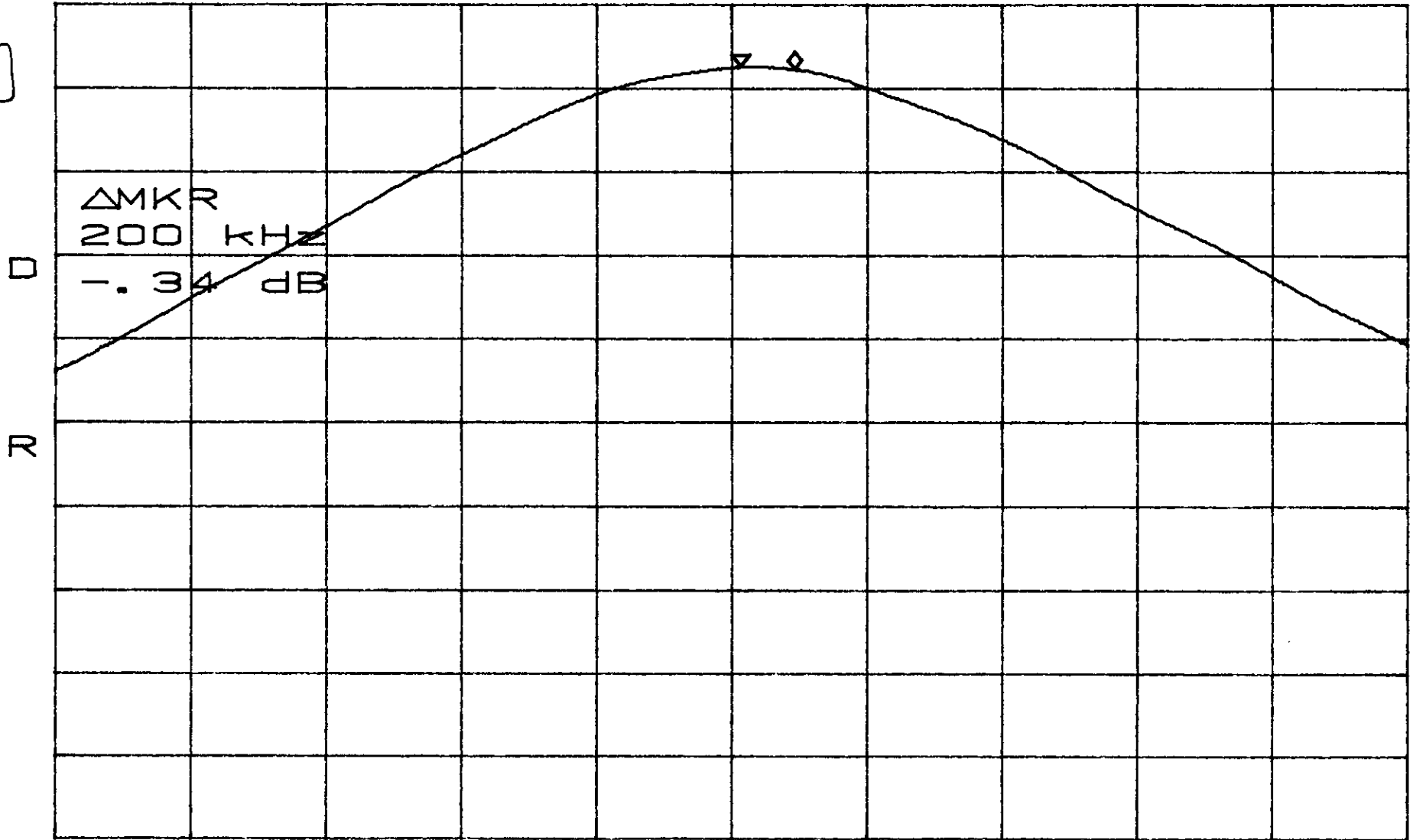
9/25/98
LB41901

*ATTEN 30dB
BPOE 30dB
RL 40.0dBm

10dB/

ΔMKR -.34dB
200kHz

24.236



CENTER 1.894800GHz

SPAN 5.000MHz

*RBW 1.0MHz

*VBW 1.0MHz

SWP 50.0ms

UL High
E/F Band

Output
cw

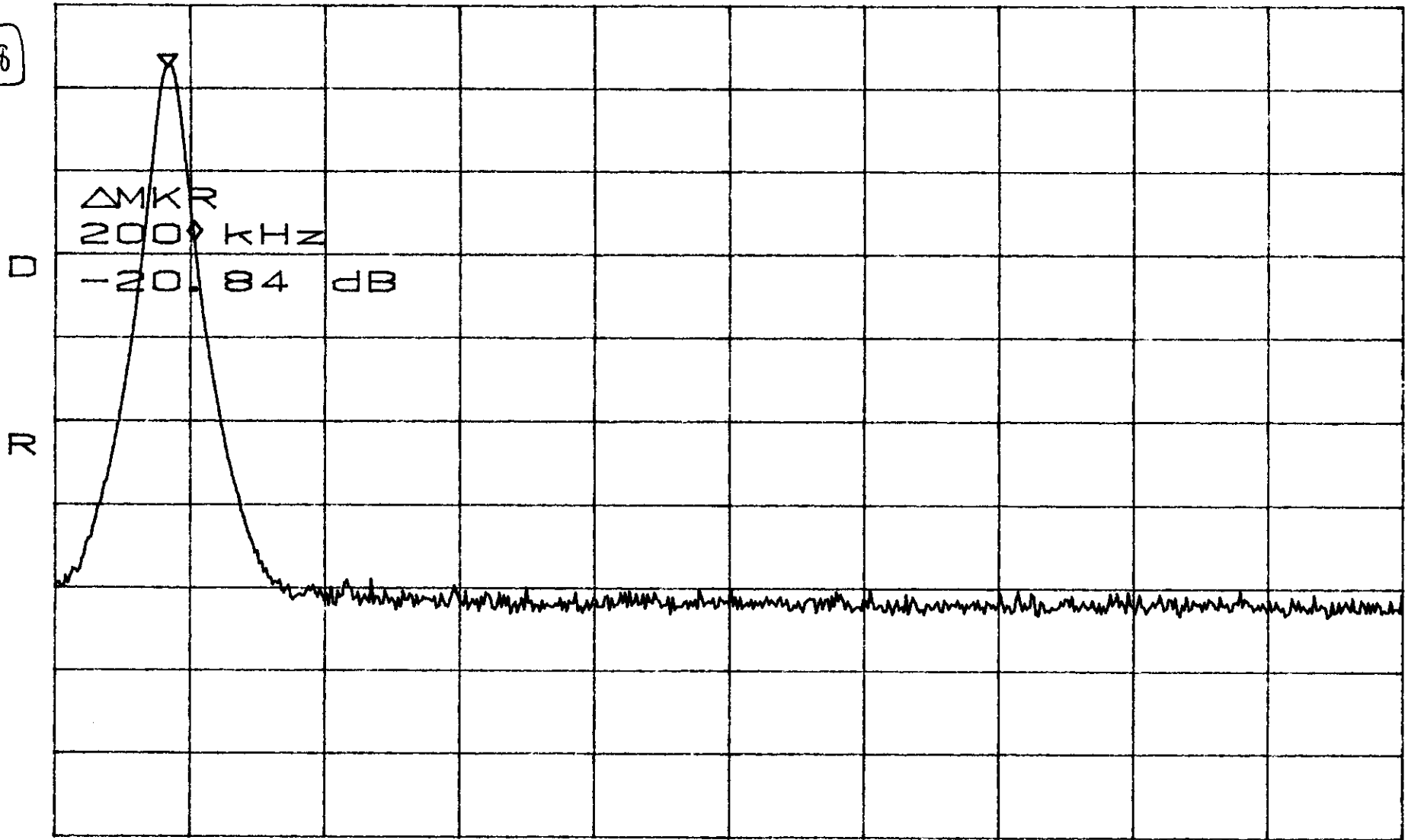
9/25/98
LB41901

*ATTEN 30dB
RL 40.0dBm

10dB/

Δ MKR -20.84dB
200kHz

24.295



CENTER 1.89900GHz

SPAN 10.00MHz

*RBW 100kHz

*VBW 1.0MHz

SWP 50.0ms

UL High
E/F Band

Output
cw

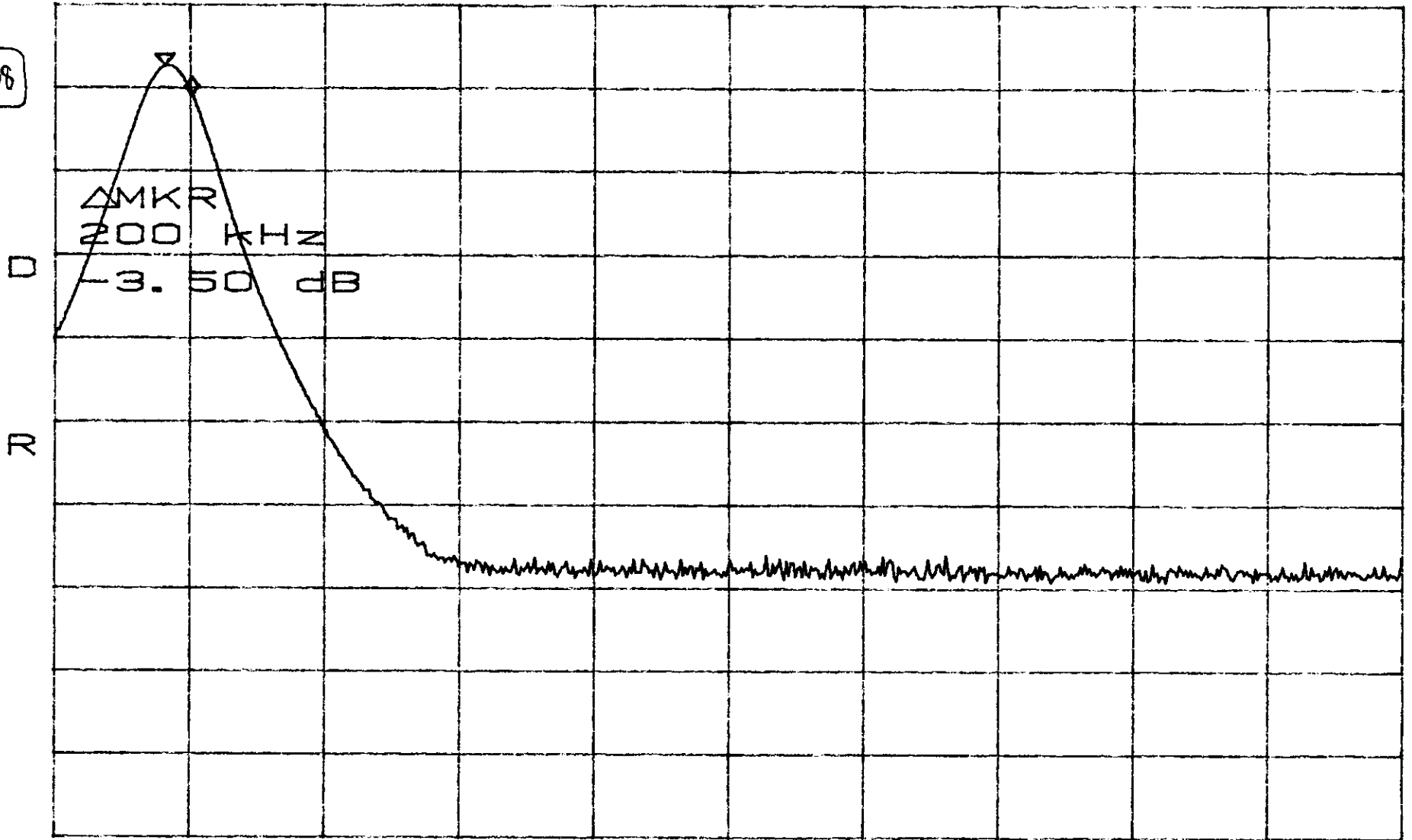
9/25/98
LB41901

*ATTEN 30dB
RL 40.0dBm

10dB/

Δ MKR -3.50dB
200kHz

24.238



CENTER 1.89900GHz

SPAN 10.00MHz

*RBW 300kHz

*VBW 1.0MHz

SWP 50.0ms

DL Low
E/F Band

Input
cw

9/23/98
LB41901

ATTEN 10dB
RL 0dBm

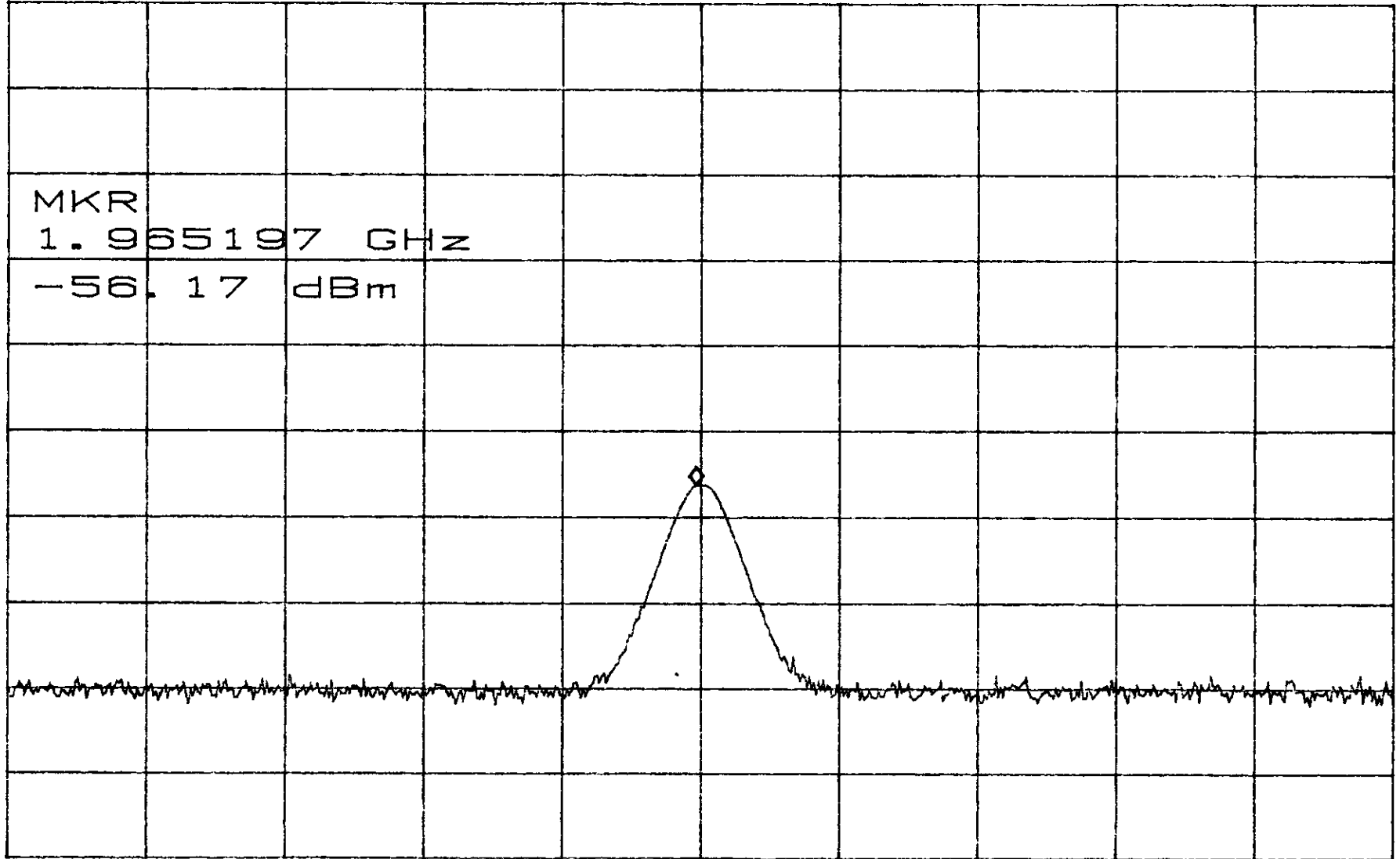
10dB/

MKR -56.17dBm
1.965197GHz

In/out

D

MKR
1.965197 GHz
-56.17 dBm



CENTER 1.965200GHz
*RBW 30kHz *VBW 30kHz

SPAN 1.000MHz
SWP 50.0ms

DL Low
E/F Band

Output
CV

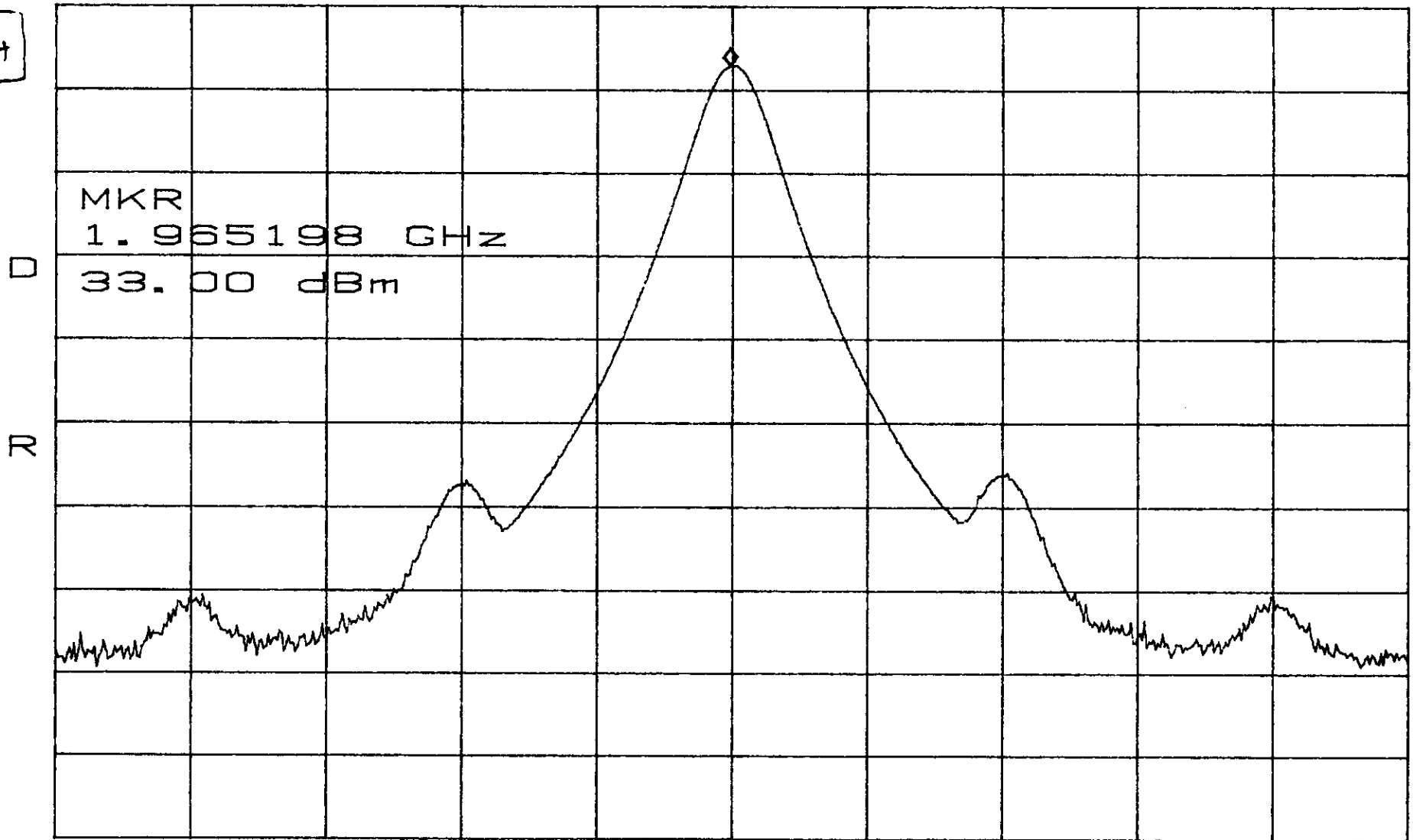
9/23/98
LB41901

ATTEN 30dB
BPO3
RL 40.0dBm

10dB/

MKR 33.00dBm
1.965198GHz

In/Out



CENTER 1.965200GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Mid
E/F Band

Input
CW

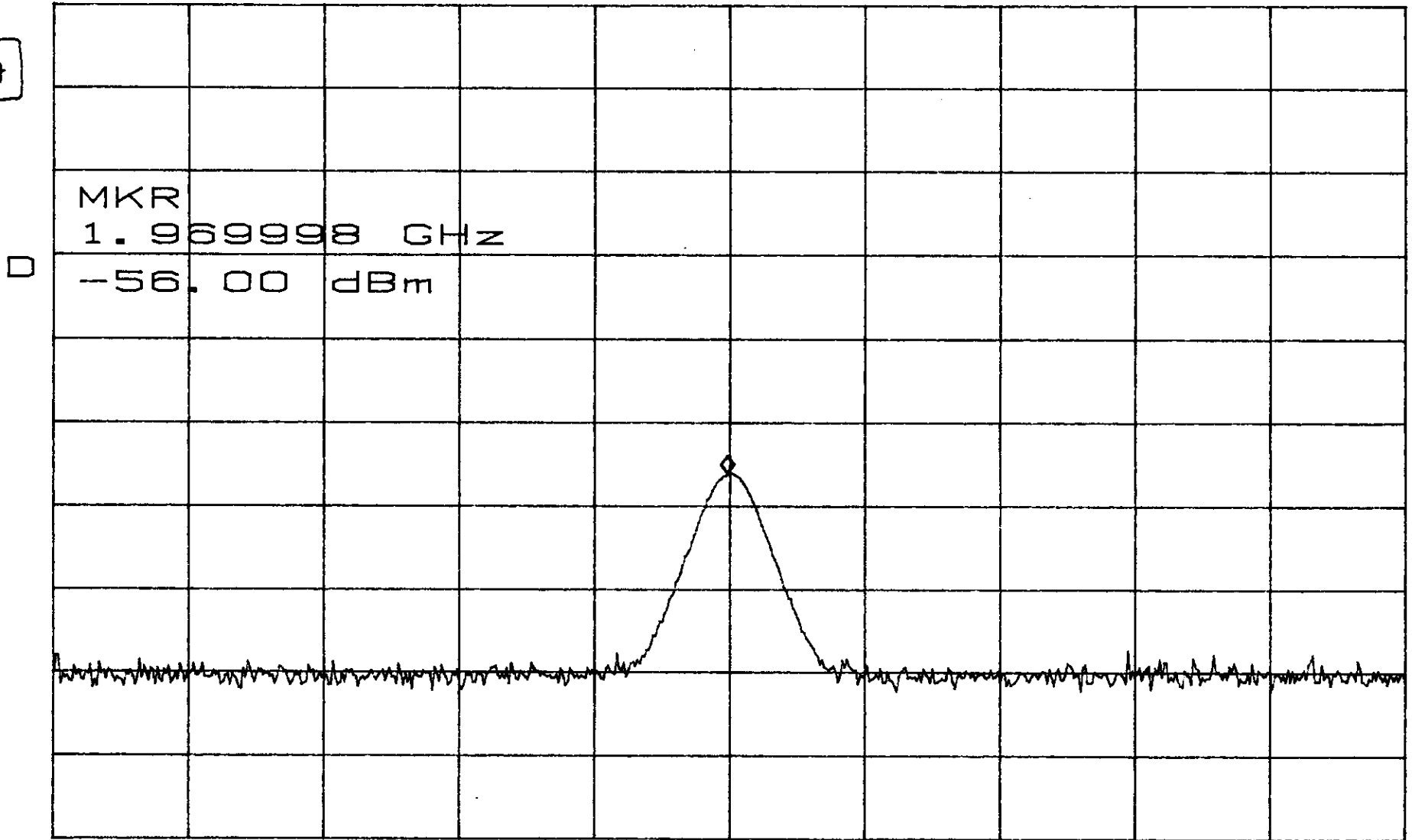
9/23/98
LB41901

ATTEN 10dB
RL 0dBm

10dB/

MKR -56.00dBm
1.969998GHz

In/out



CENTER 1.970000GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL Mid

E/F Band

ATTEN 30dB

RL 40.0dBm

Output

cw

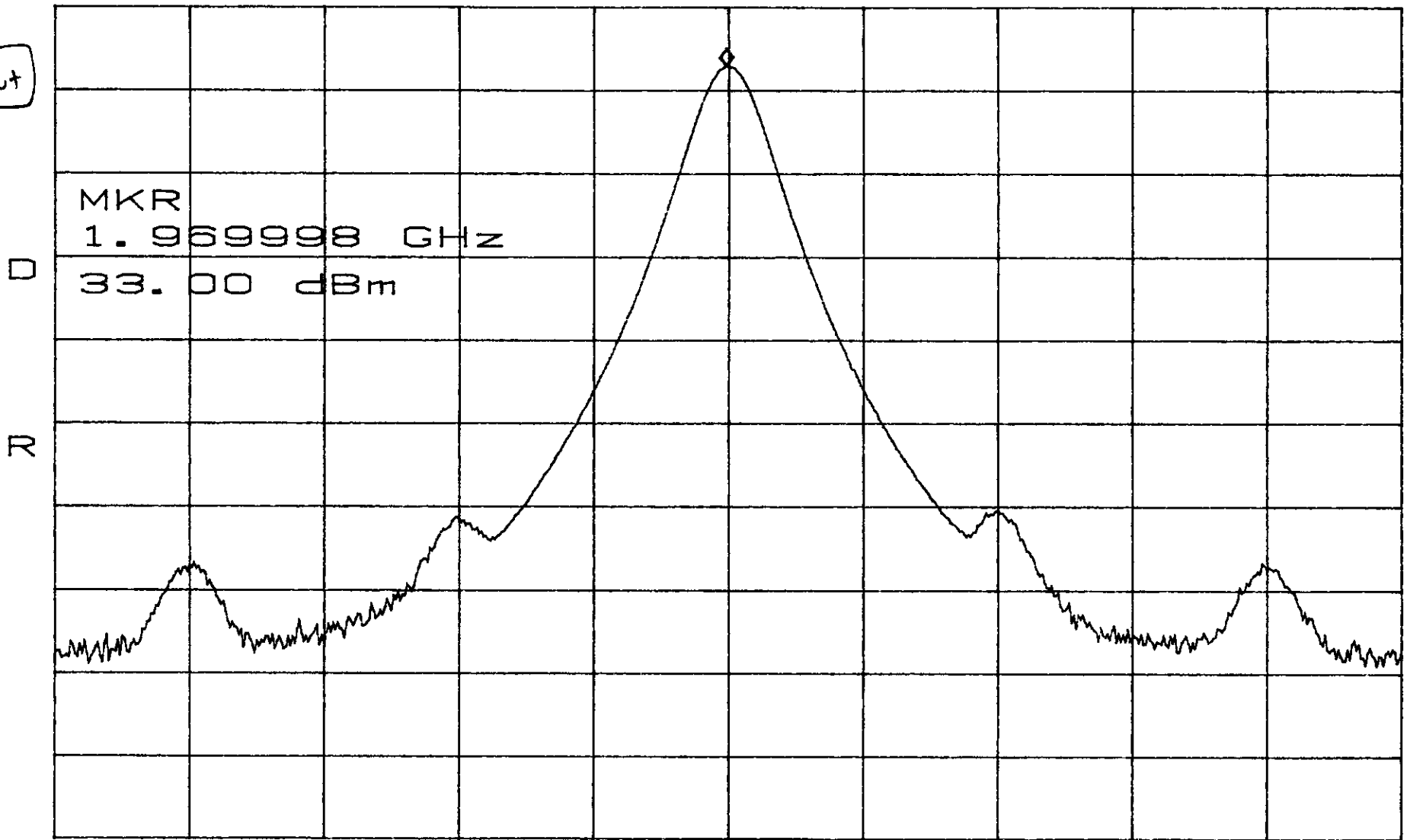
9/23/98

LB41901

MKR 33.00dBm

1.969998GHz

In/Out



CENTER 1.970000GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL High
E/F Band

Input

9/23/98

LB41901

ATTEN 10dB

cw

MKR -55.67dBm

RL 0dBm

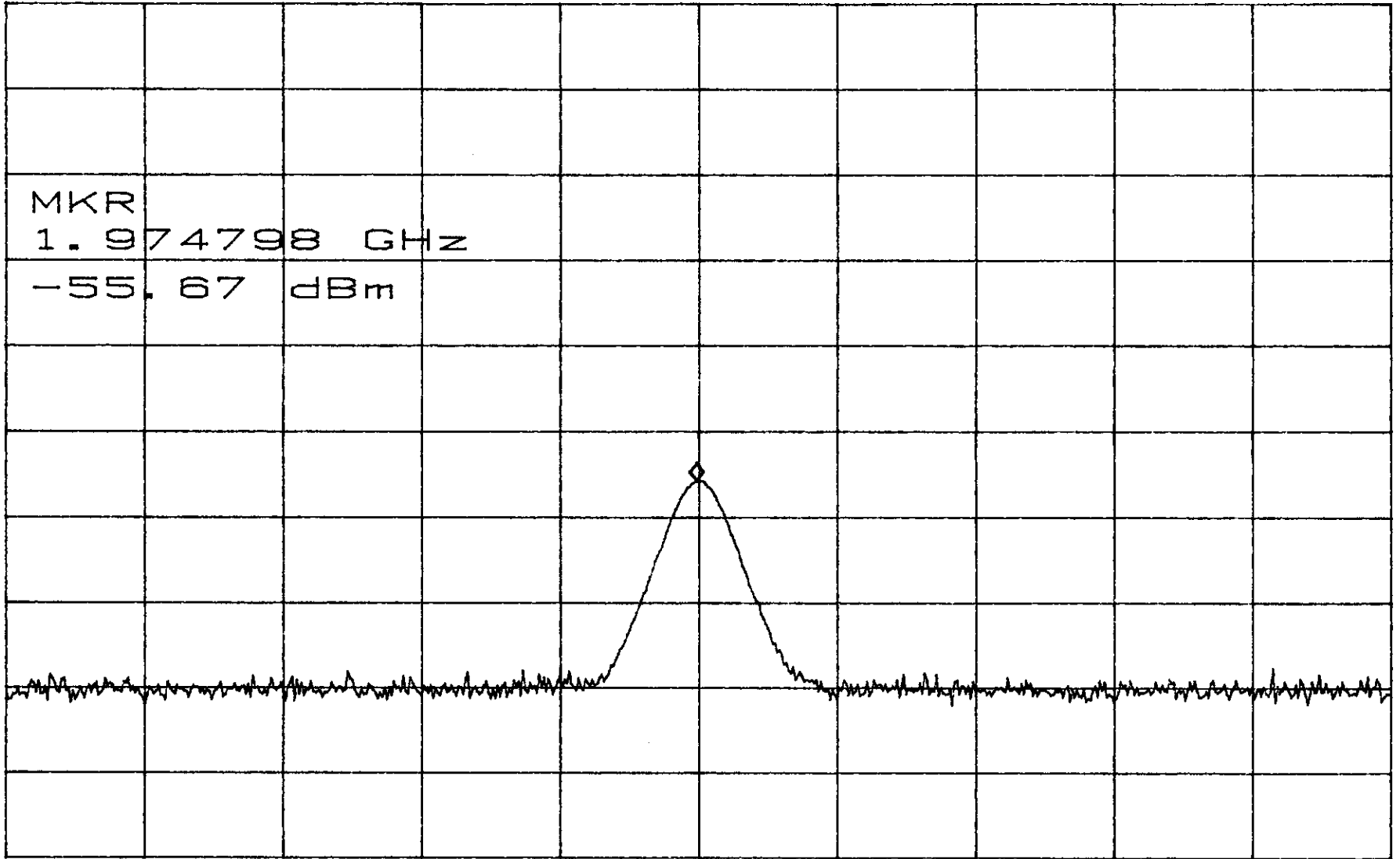
10dB/

1.974798GHz

In/out

D

MKR
1.974798 GHz
-55.67 dBm



CENTER 1.974800GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

DL High
E/F Band

Output
CW

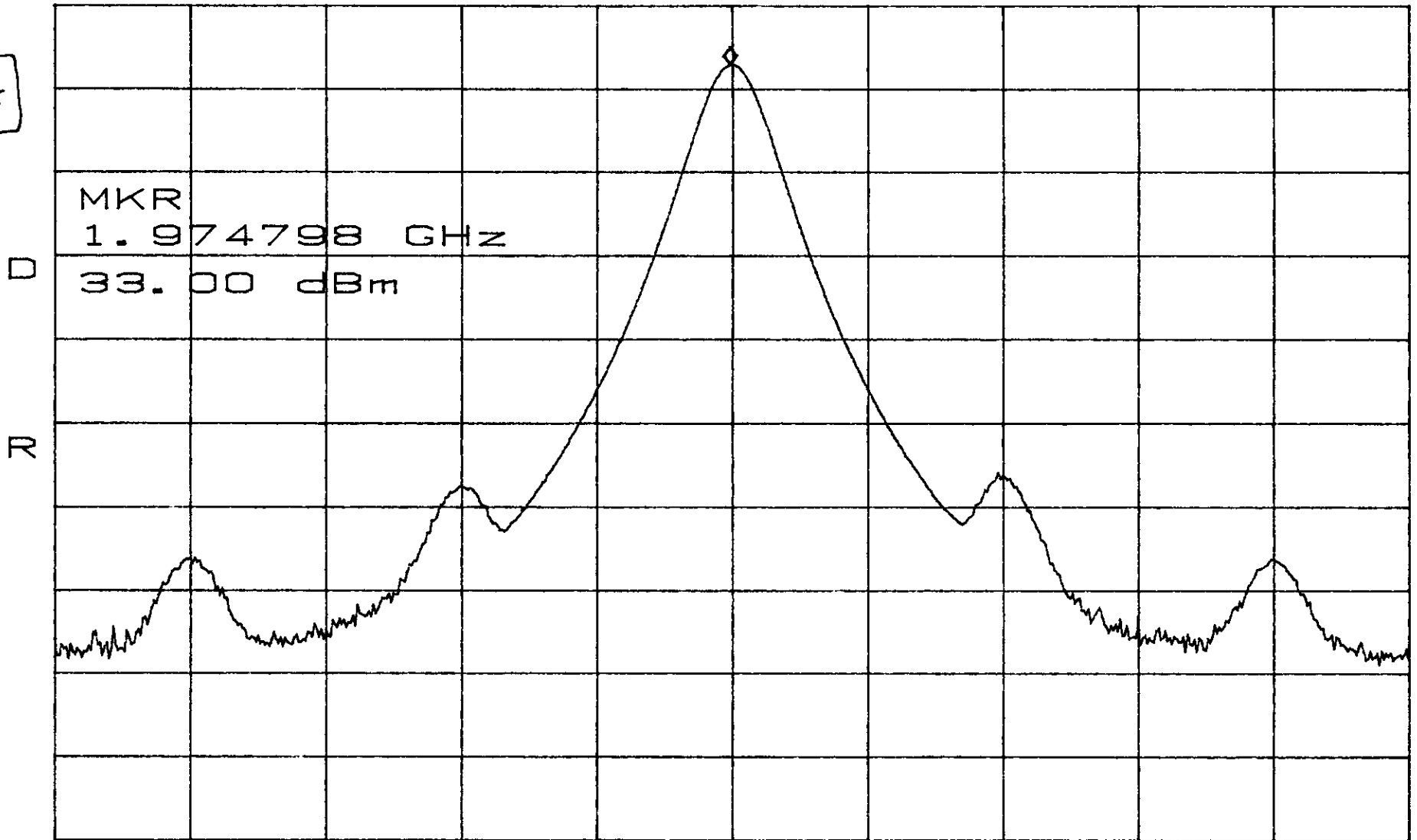
9/23/98
LB41901

ATTEN 30dB
RL 40.00dBm

10dB/

MKR 33.00dBm
1.974798GHz

In/Out



MKR
1.974798 GHz
33.00 dBm

CENTER 1.974800GHz SPAN 1.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

UL Low

E/F Band

Input
CW

9/23/98

LB41901

ATTEN 10dB

MKR -45.33dBm

RL 0dBm

10dB/

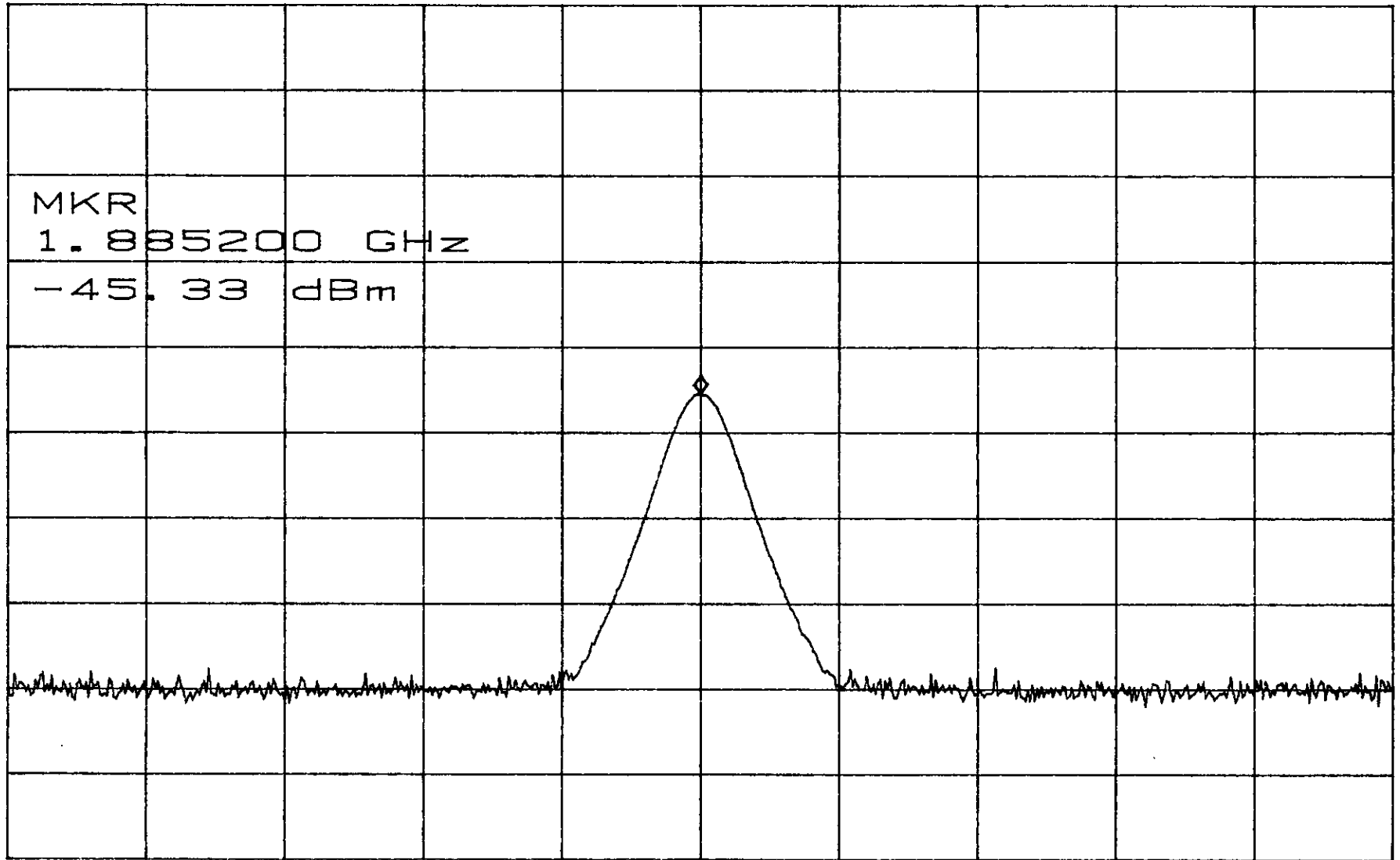
1.885200GHz

In/Out

D

MKR
1.885200 GHz

-45.33 dBm



CENTER 1.885200GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Low
E/F Band

Output
CW

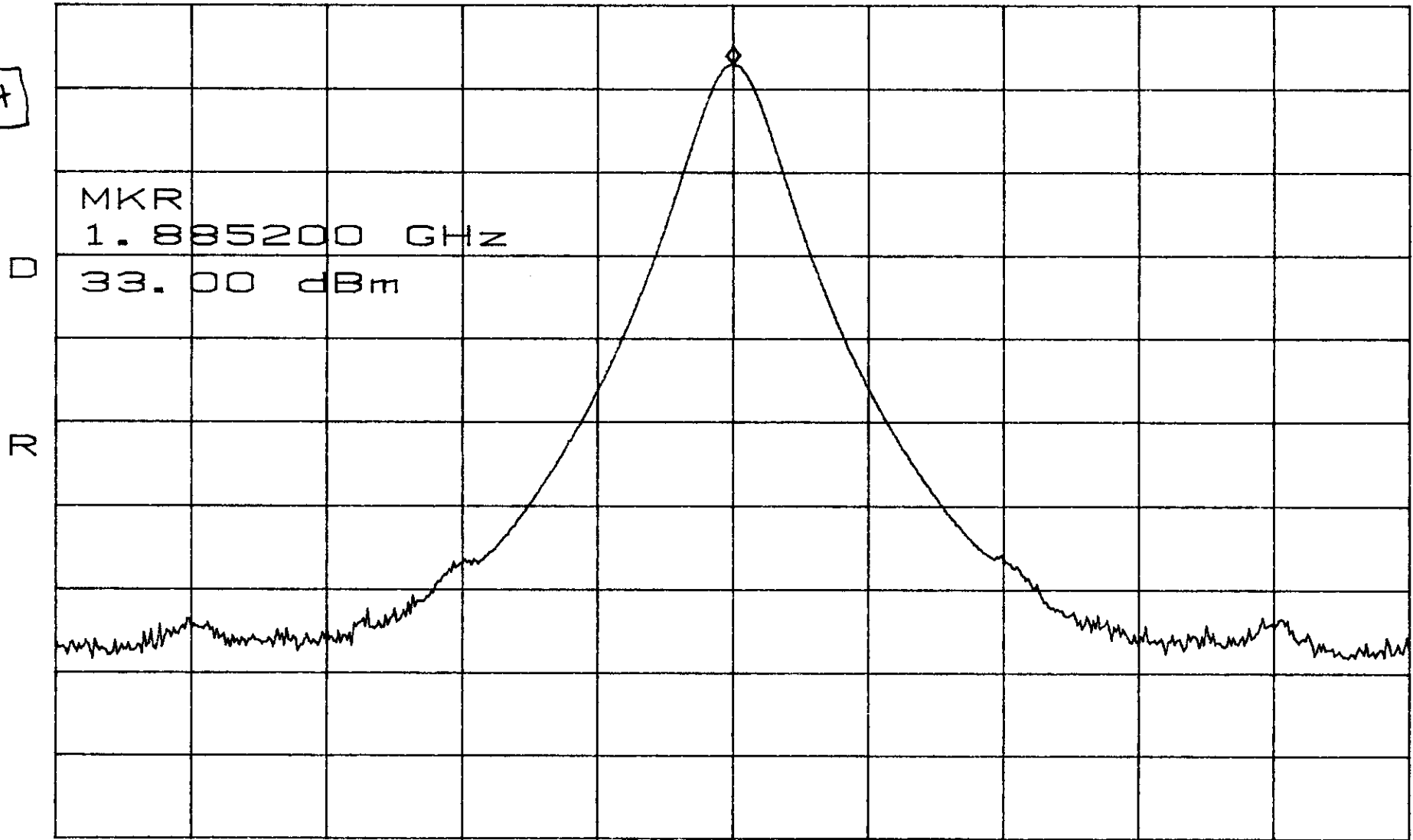
9/23/98
LB41901

*ATTEN 30dB
RL 40.0dBm

10dB/

MKR 33.00dBm
1.885200GHz

In/Out



CENTER 1.885200GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL Mid
E/F Band

Input
cw

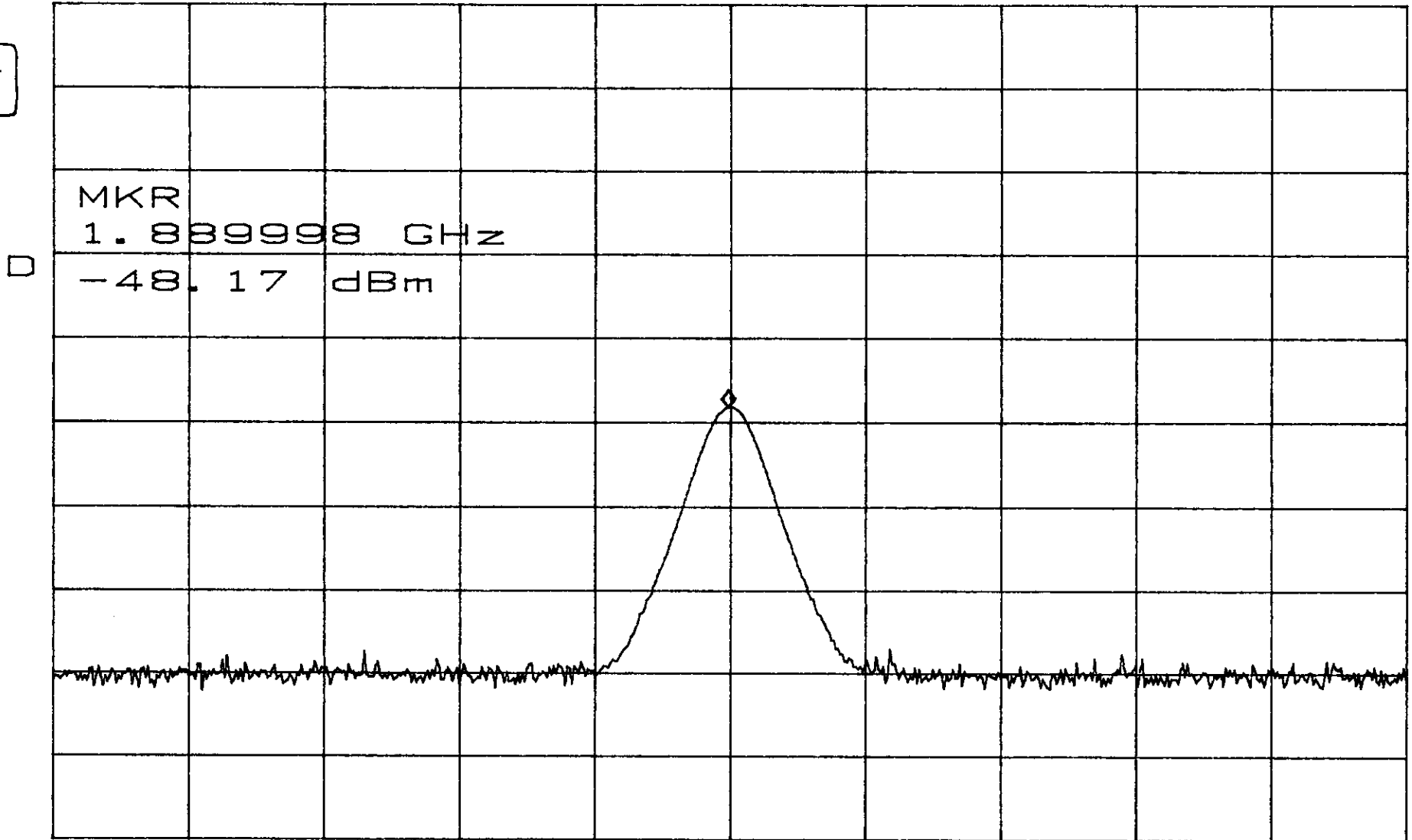
9/23/98
LB41901

ATTEN 10dB
RL 0dBm

10dB/

MKR -48.17dBm
1.889998GHz

In/Out



CENTER 1.890000GHz SPAN 1.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

UL Mid
E/F Band

Output
cw

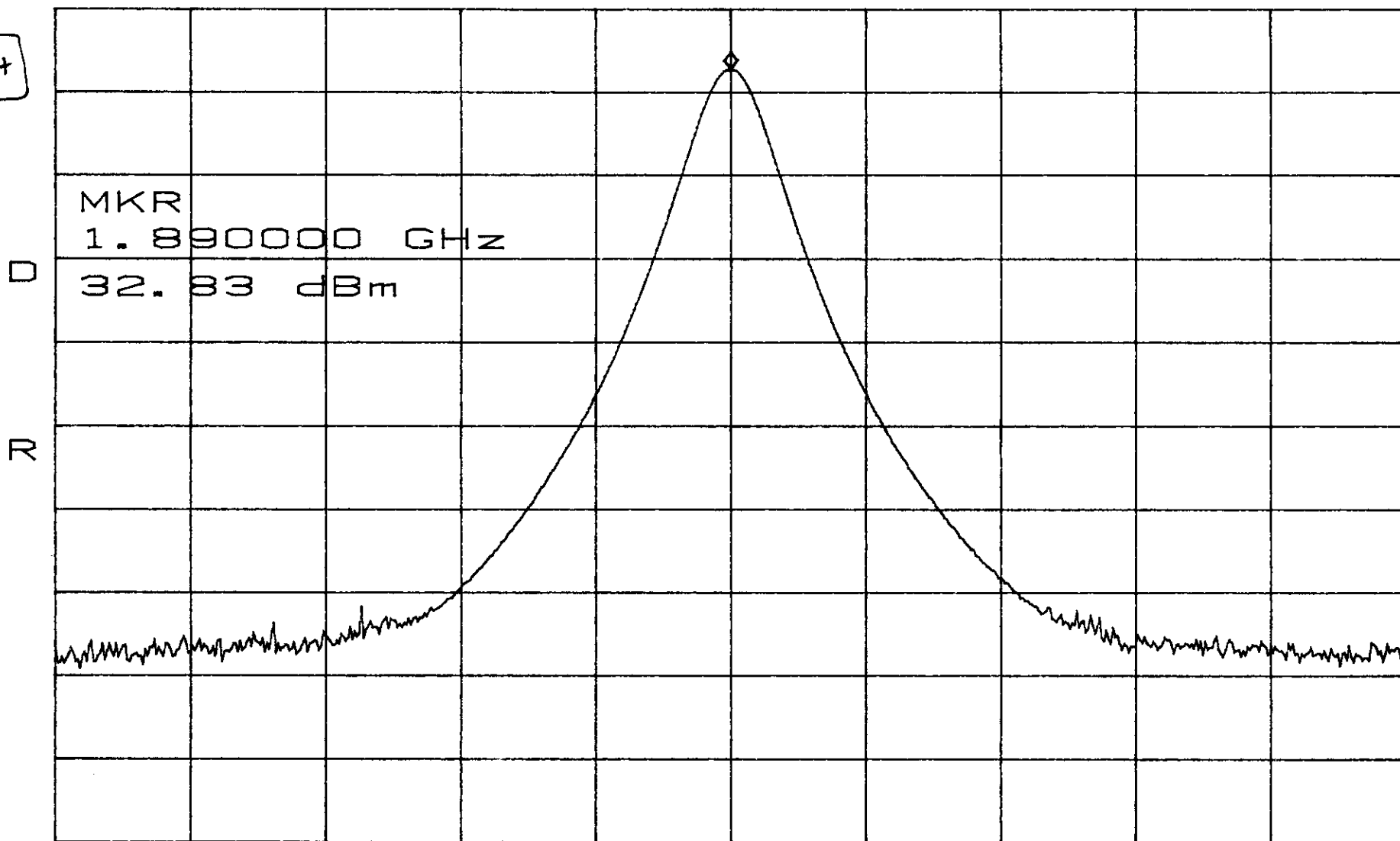
9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/

MKR 32.83dBm
1.890000GHz

In/out



CENTER 1.890000GHz SPAN 1.000MHz
*RBW 30kHz *VBW 30kHz SWP 50.0ms

UL High
E/F Band

Input
cw

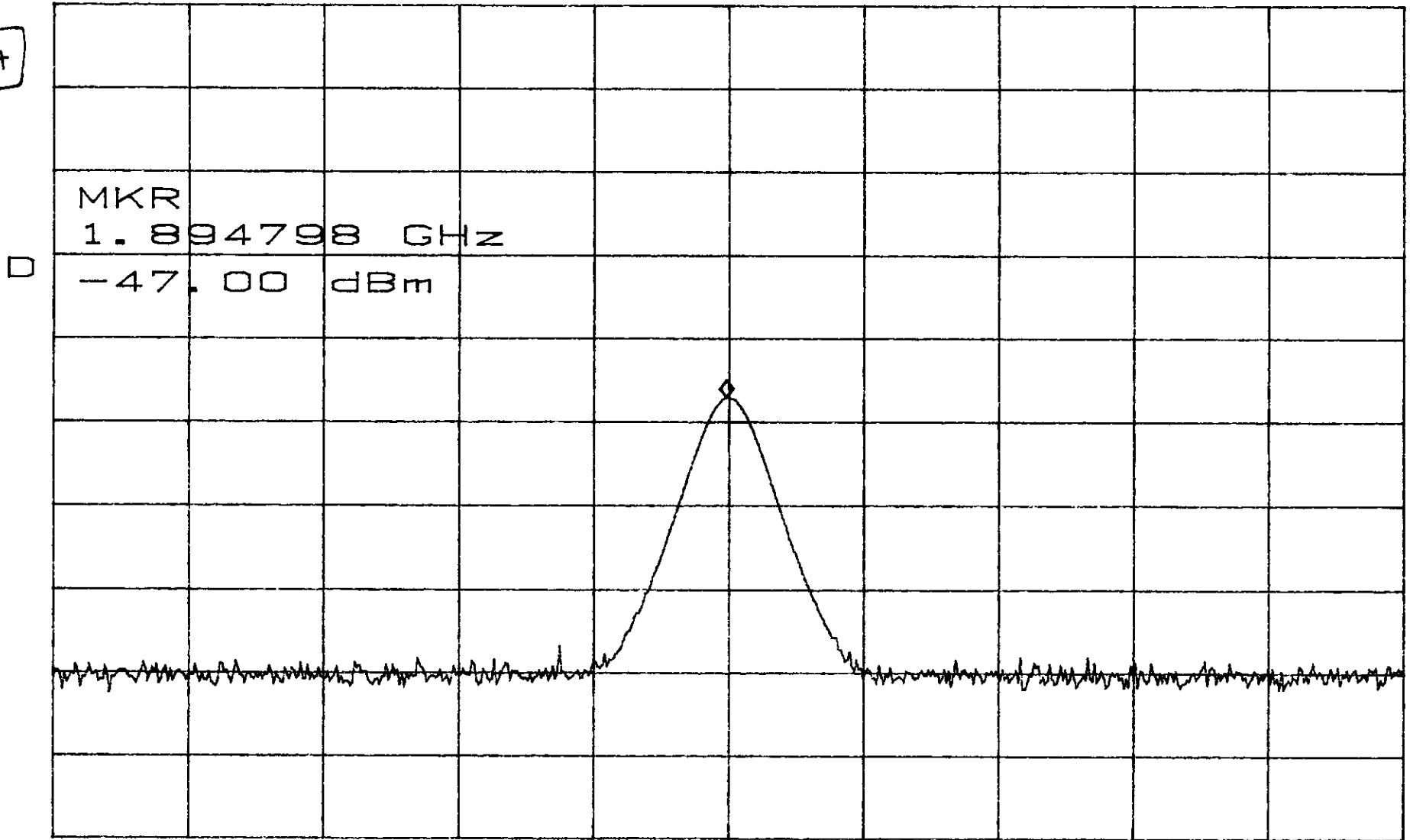
9/23/98
LB41901

ATTEN 10dB
RL 0dBm

10dB/
BPO/

MKR -47.00dBm
1.894798GHz

In/Out



CENTER 1.894800GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms

UL High
E/F Band

Output
cw

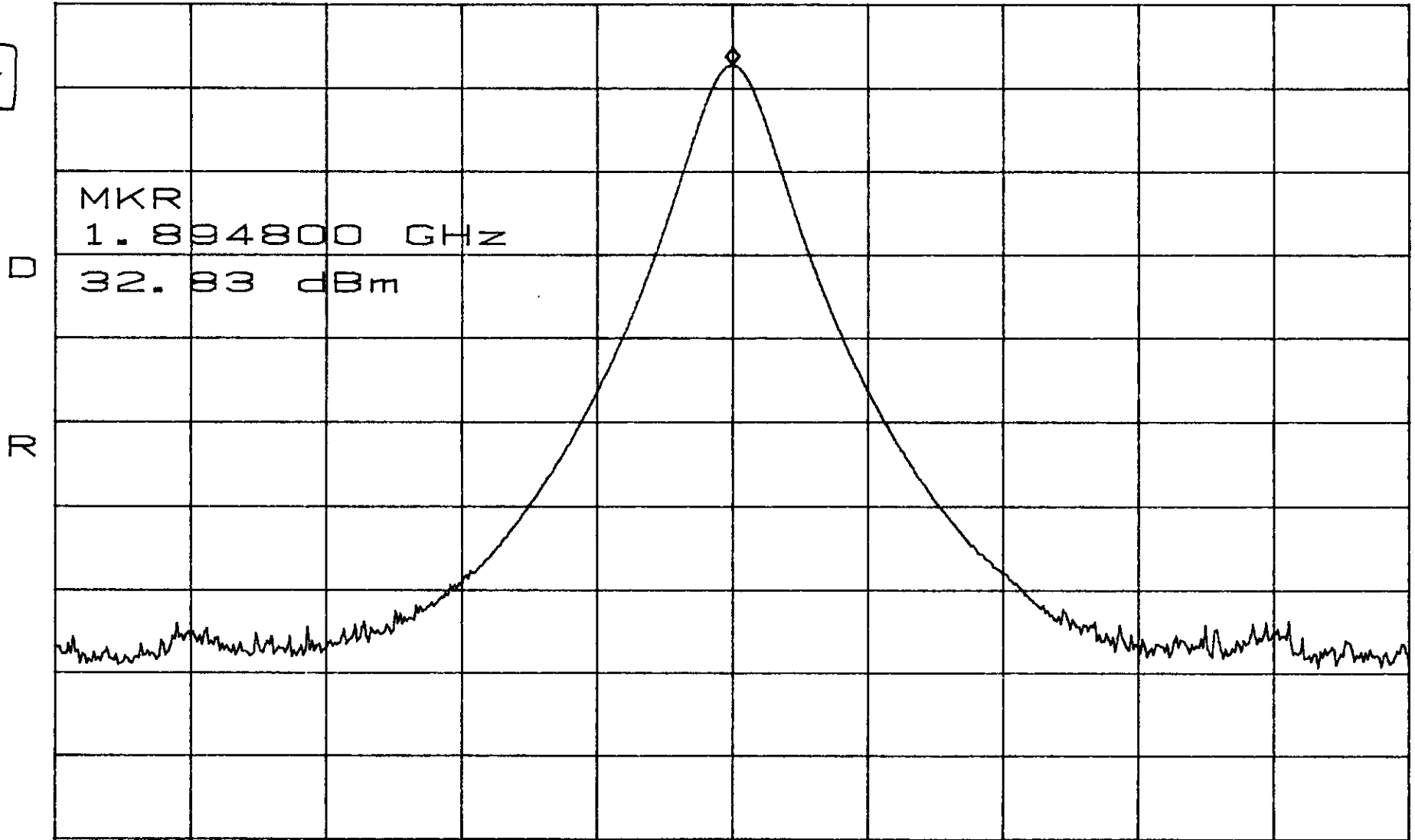
9/23/98
LB41901

ATTEN 30dB
RL 40.0dBm

10dB/

MKR 32.83dBm
1.894800GHz

In/Out



CENTER 1.894800GHz

SPAN 1.000MHz

*RBW 30kHz

*VBW 30kHz

SWP 50.0ms