



Greg Czumak <GCZUMAK@fcc.gov> on 08/07/98 11:13:58 AM

To: Martin Kies/Ortel Corporation  
cc:  
Subject: Question Regarding 2 tone IMD Plots -Reply

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Martin,

Because the proposed bands overlap a previously approved band, using CW for the IM test for the proposed bands is acceptable, provided that **you submit CW IM test results for the approved band for which a modulated IM test was performed, for comparison to the results for the proposed bands.**

Please contact me with any further questions.

>>> <m kies@ortel.com> 08/06/98 04:10pm >>>

Greg:

Ortel was granted FCC type acceptance on 6/9/98 for model repeater CSR, FCC ID LB41901 (this was a class 2 permissive change to add the C band block to the already approved A and B band blocks). For this application, 2 tone IMD plots were submitted using the actual modulated signals (GSM for PCS1900).

Ortel would like to file another class 2 permissive change to add D/E/F blocks. These blocks use exactly the same manufacturer and parts for filtering, just with a different passband. All other electrical components are exactly the same.

If possible, Ortel would like to submit this new application without 2 tone plots that use actual modulated signals.

If this is not acceptable, can we test 2-tone IMD with CW signals (as we did some time ago)?

Please let me know of the options available.

Thanks,

Martin ("mkies@ortel.com")

DL Inputs: 1975.2 (ch.1)  
1976.2 (ch.2)

Output Intermods

10/8/98  
LB41901

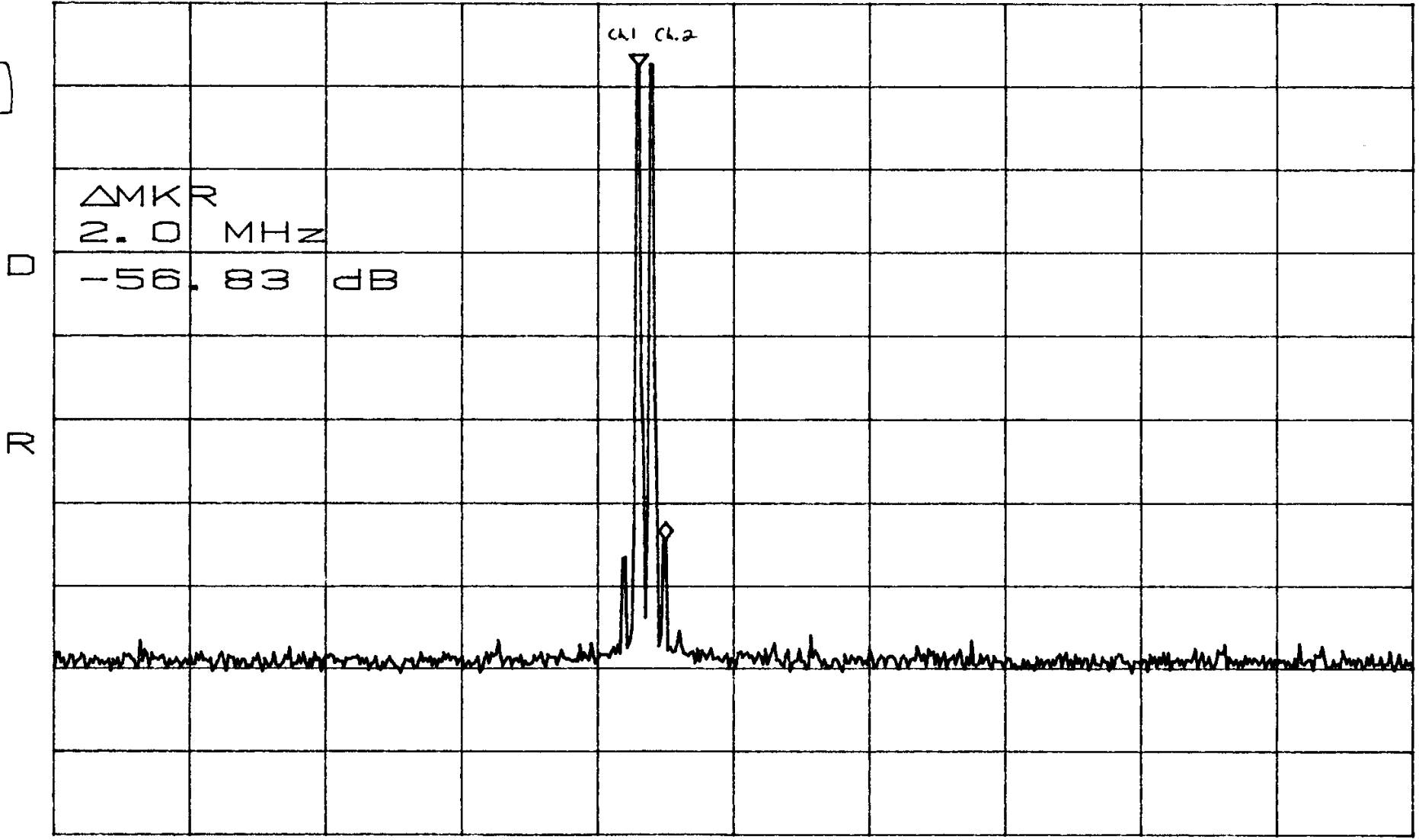
C-band Comparison Plot

ATTEN 30dB  
RL 40.0dBm

$\Delta$ MKR -56.83dB  
2.0MHz

10dB/

2-tone



CENTER 1.9825GHz SPAN 100.0MHz  
\*RBW 30kHz \*VBW 30kHz SWP 280ms

DL Inputs: 1975.2 (ch.1)  
1976.2 (ch.2)

Output Intermod

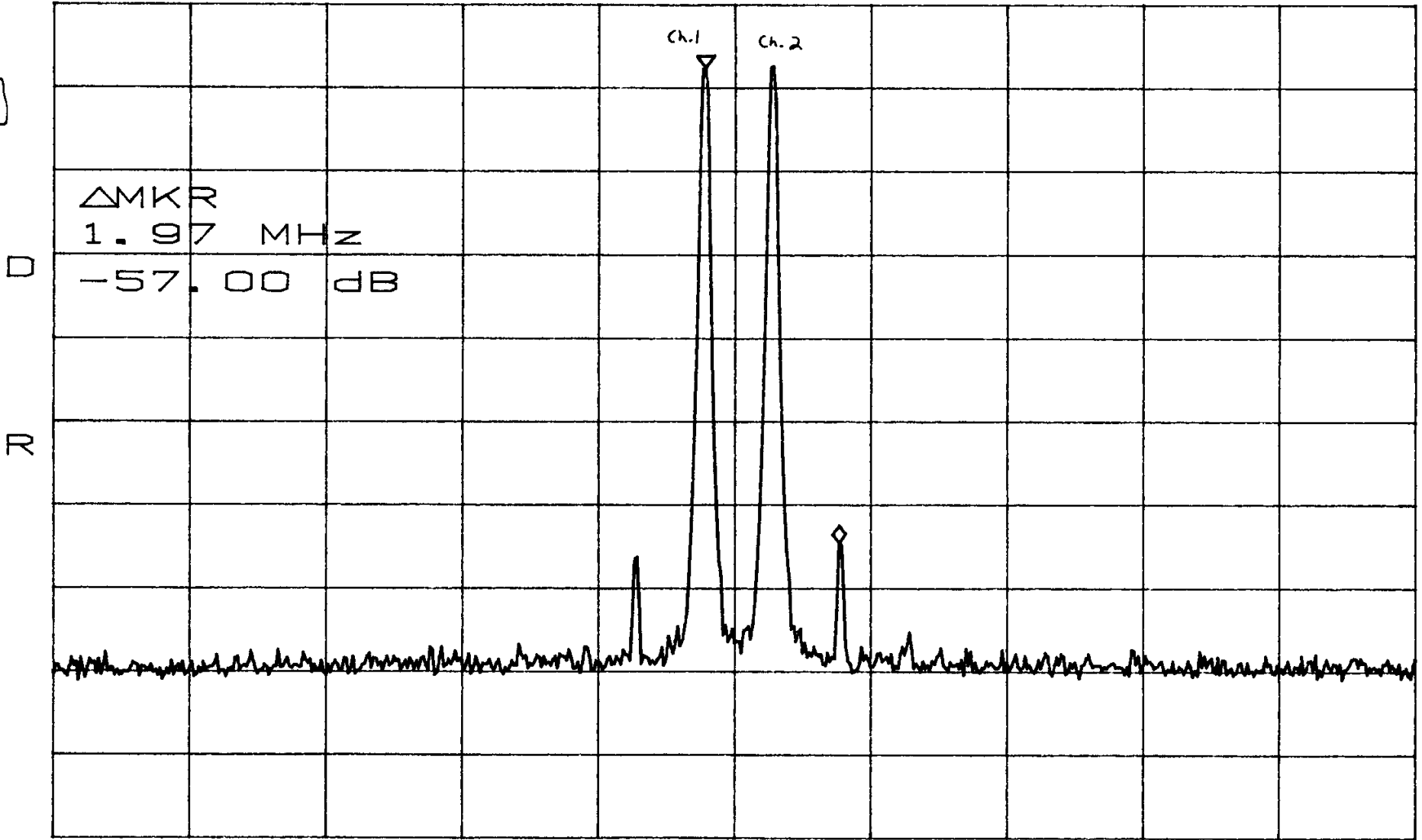
10/3/98  
LB41901

C-band Comparison Plot

ATTN 30dB  
RL 40.0dBm

$\Delta$ MKR -57.00dB  
1.97MHz

2-tone



CENTER 1.97570GHz SPAN 20.00MHz  
\*RBW 30kHz \*VBW 30kHz SWP 56.0ms

DL Inputs: 1975.2 (Ch.1)  
1976.2 (Ch.2)

Inputs for IMD  
Over C-band

10/8/98  
LB41901

C-band Comparison Plot

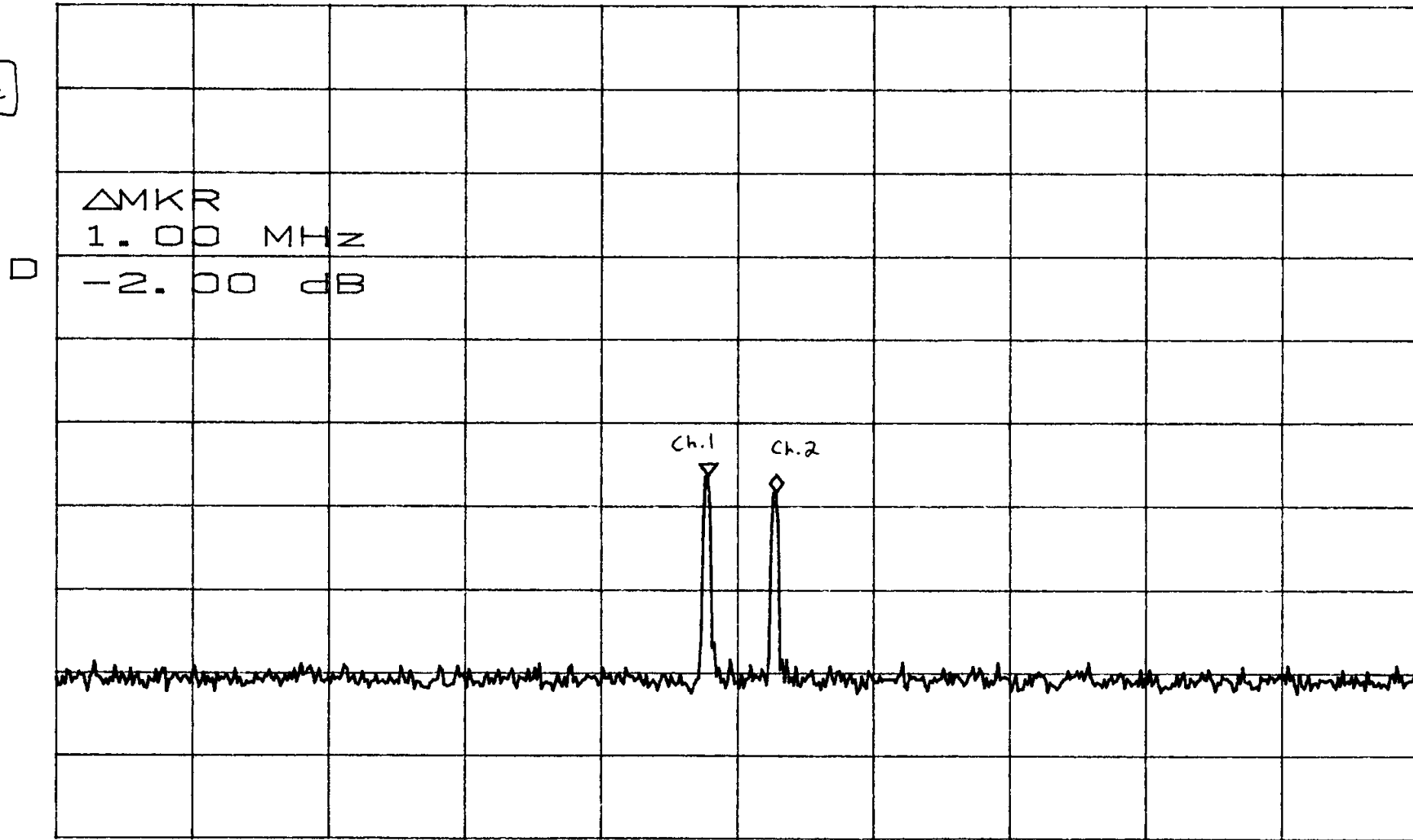
ATTEN 10dB

RL 0dBm

CW-source  
10dB/

$\Delta$ MKR -2.00dB  
1.00MHz

2-tone



CENTER 1.97570GHz

SPAN 20.00MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 56.0ms

DL Inputs: 1975.2 (ch.1)  
1982.4 (ch.2)

Output Intermods

10/8/98  
LB41901

C-band Comparison Plots

ATTEN 30dB

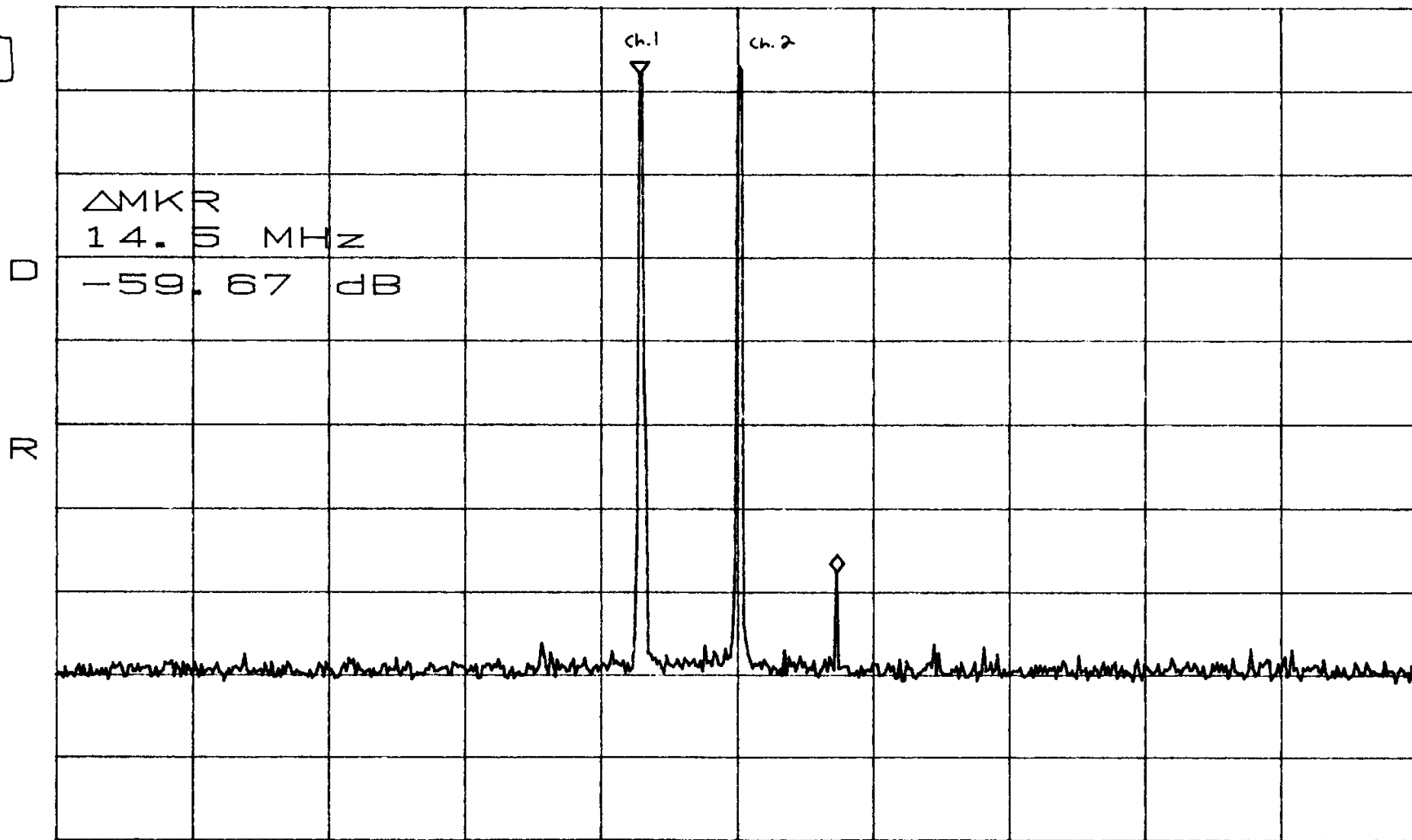
RL 40.0dBm

$\Delta$ MKR -59.67dB

10dB/

14.5MHz

2-tone



CENTER 1.9825GHz

SPAN 100.0MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 280ms

DL Inputs: 1975.2 (ch.1)  
1982.4 (ch.2)

Output Intermods

10/8/98  
LB41901

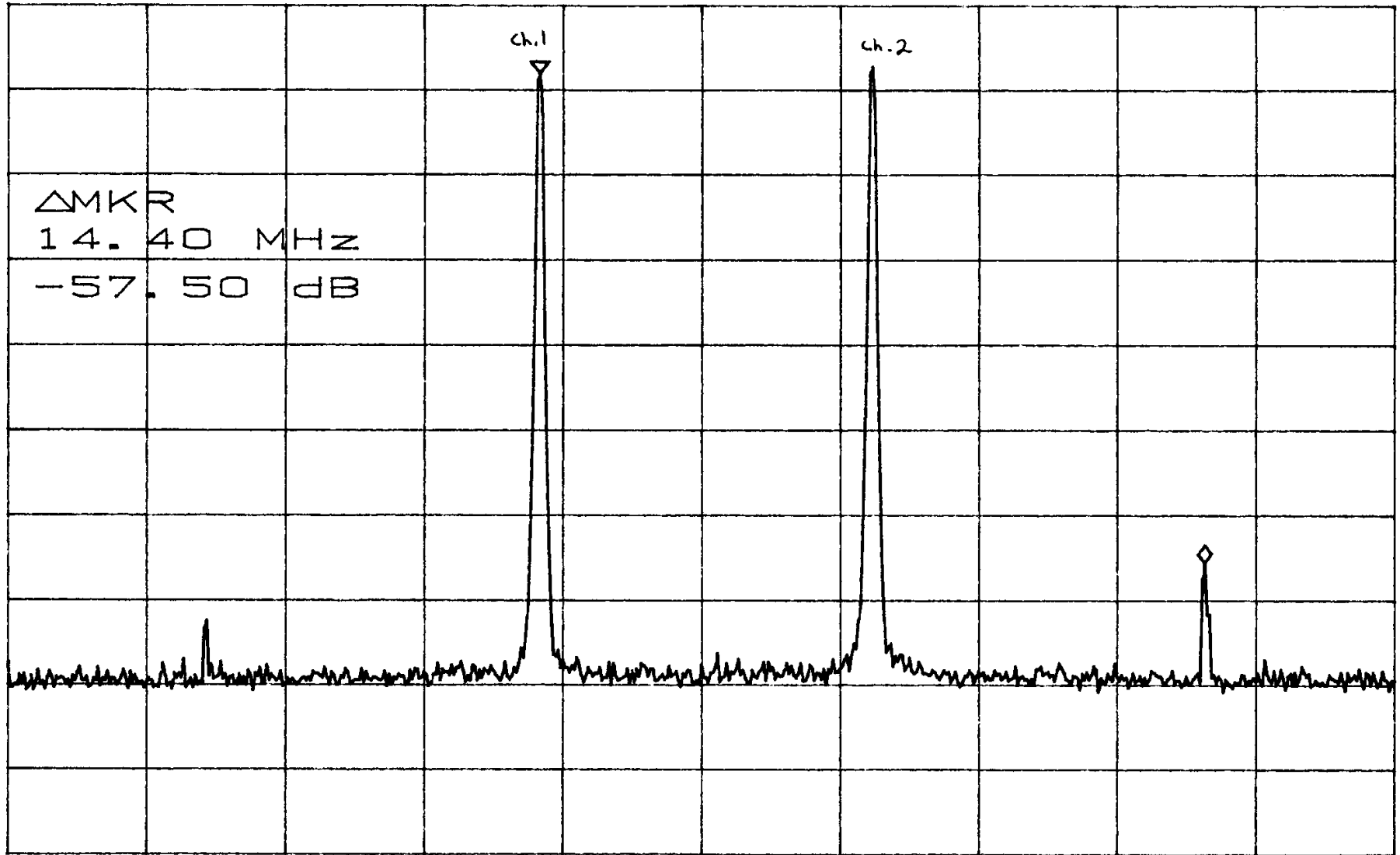
C-band Comparison Plots

ATTEN 30dB

RL 40.0dBm

$\Delta$ MKR -57.50dB

14.40MHz



CENTER 1.97880GHz

SPAN 30.00MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 84.0ms

DL Inputs: 1975.2 (Ch.1)  
1982.4 (Ch.2)

Inputs for IMD  
Over C-band

10/8/98  
LB41901

C-band Comparison Plots

ATTEN 10dB

CW-source

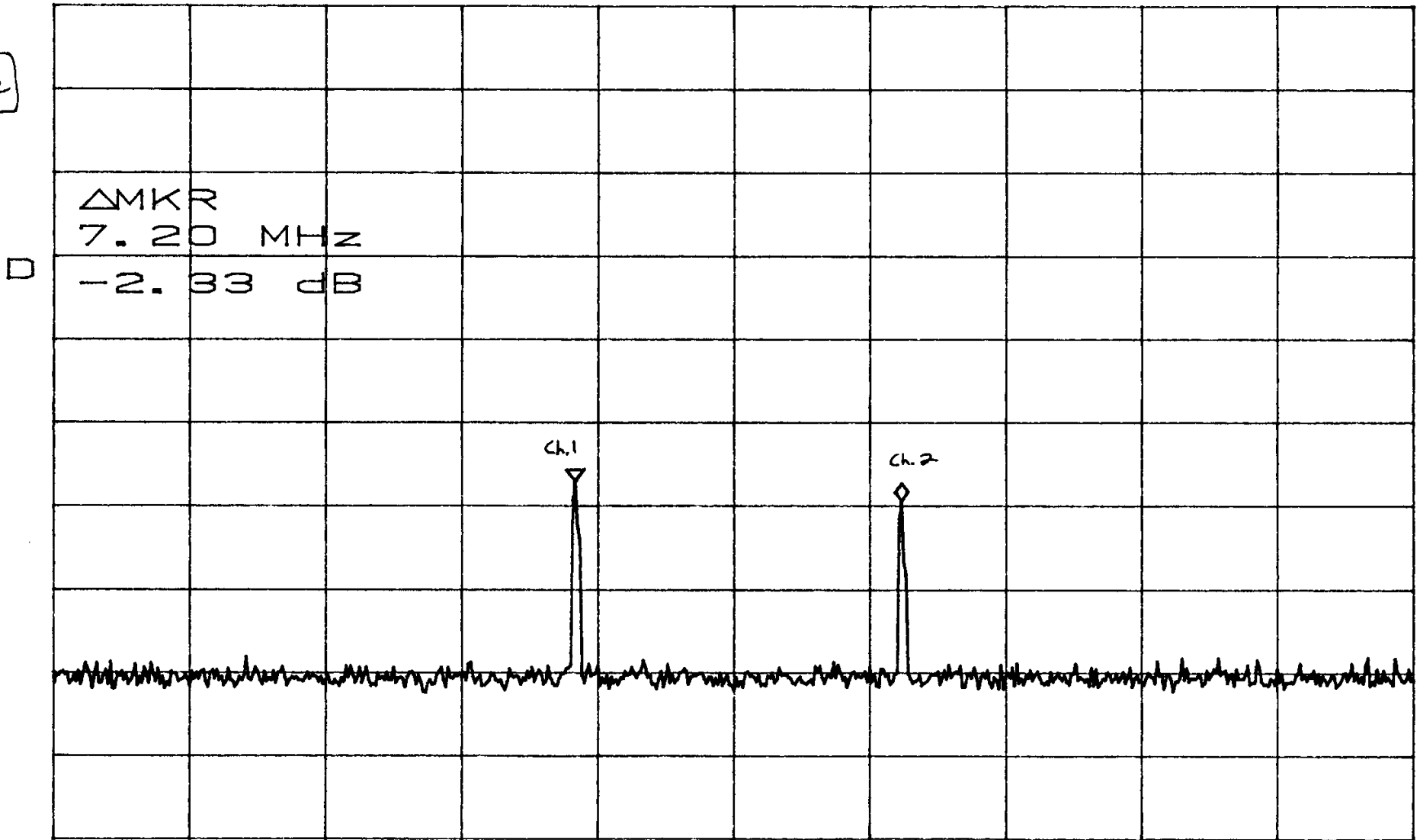
$\Delta$ MKR -2.33dB

RL 0dBm

10dB/BPO1

7.20MHz

2-tone



CENTER 1.97880GHz

SPAN 30.00MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 84.0ms

DL Inputs: 1975.2 (ch.1)  
1989.8 (ch.2)

Output Intermod

10/8/98  
LB41901

C-band Comparison Plots

ATTEN 30dB

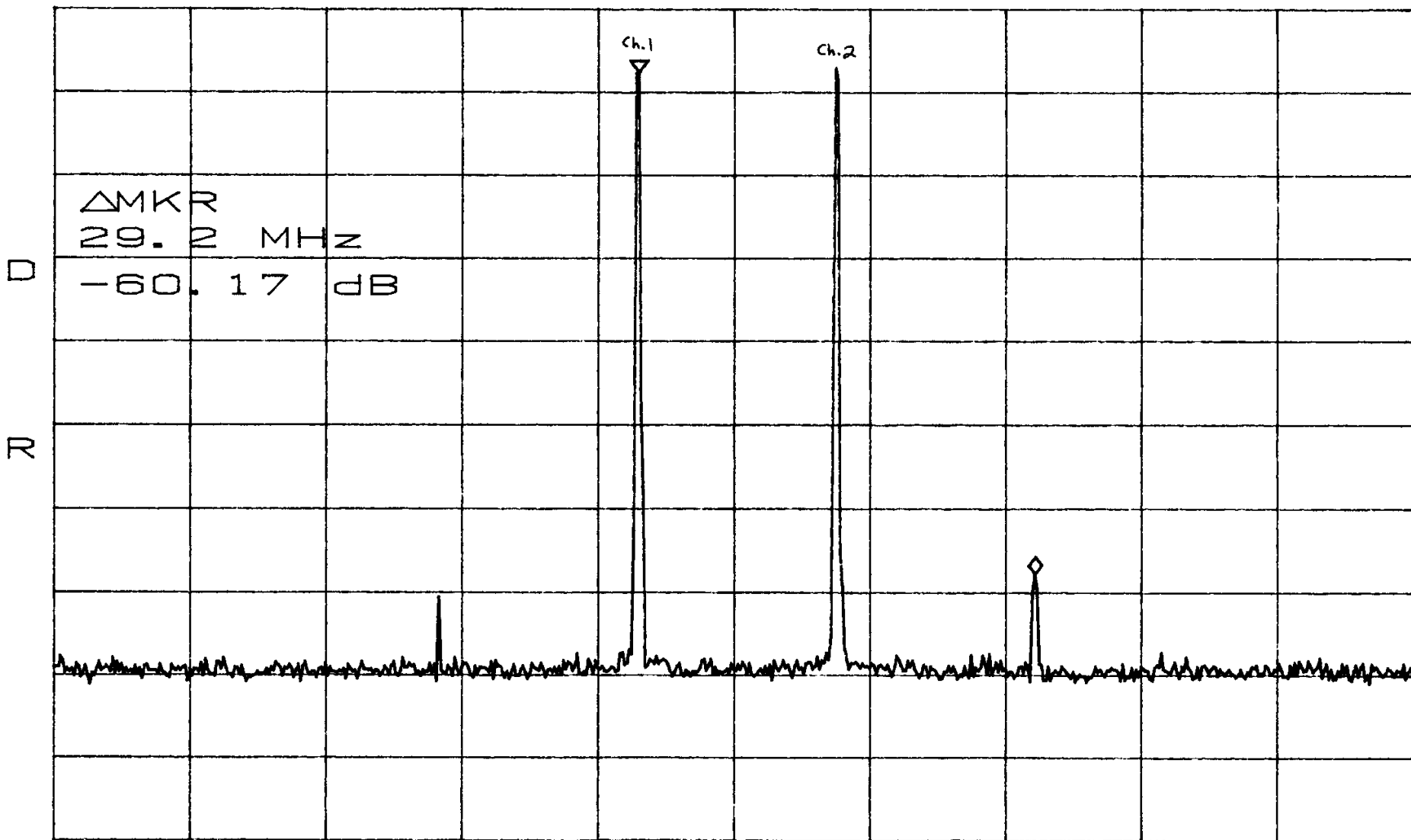
$\Delta$ MKR -60.17dB

RL 40.0dBm

10dB/

29.2MHz

2-tone



$\Delta$ MKR  
29.2 MHz  
-60.17 dB

CENTER 1.9825GHz

SPAN 100.0MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 280ms



DL Inputs: 1975.2 (ch.1)  
1989.8 (ch.2)

Output Intermods

10/8/98  
LB41901

C-band Comparison Plots

ATTEN 30dB

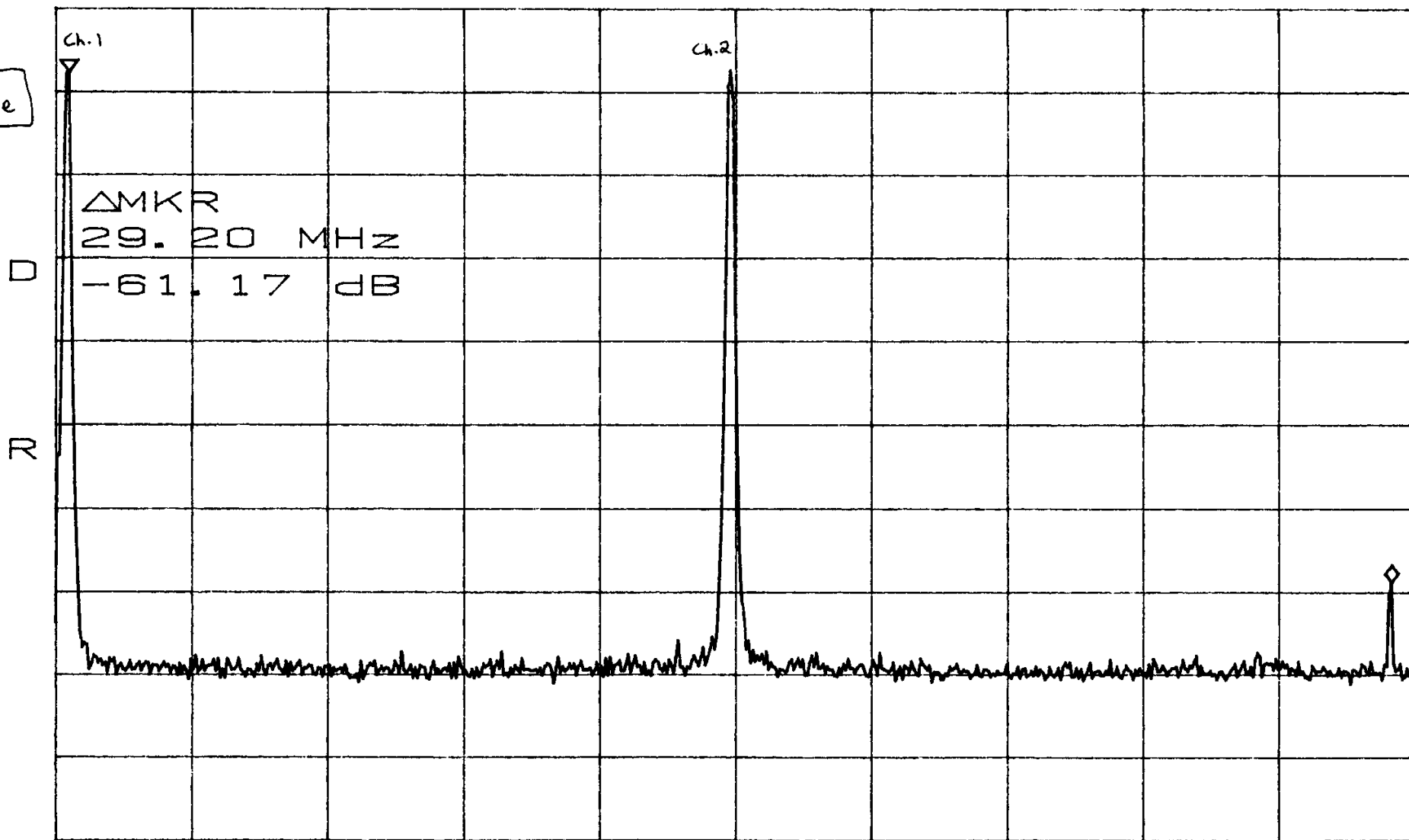
$\Delta$ MKR -61.17dB

RL 40.0dBm

1dB/1

29.20MHz

2-tone



CENTER 1.99000GHz

SPAN 30.00MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 84.0ms

DL Inputs: 1975.2 (ch.1)  
~~1989.8~~ 1989.8 (ch.2)

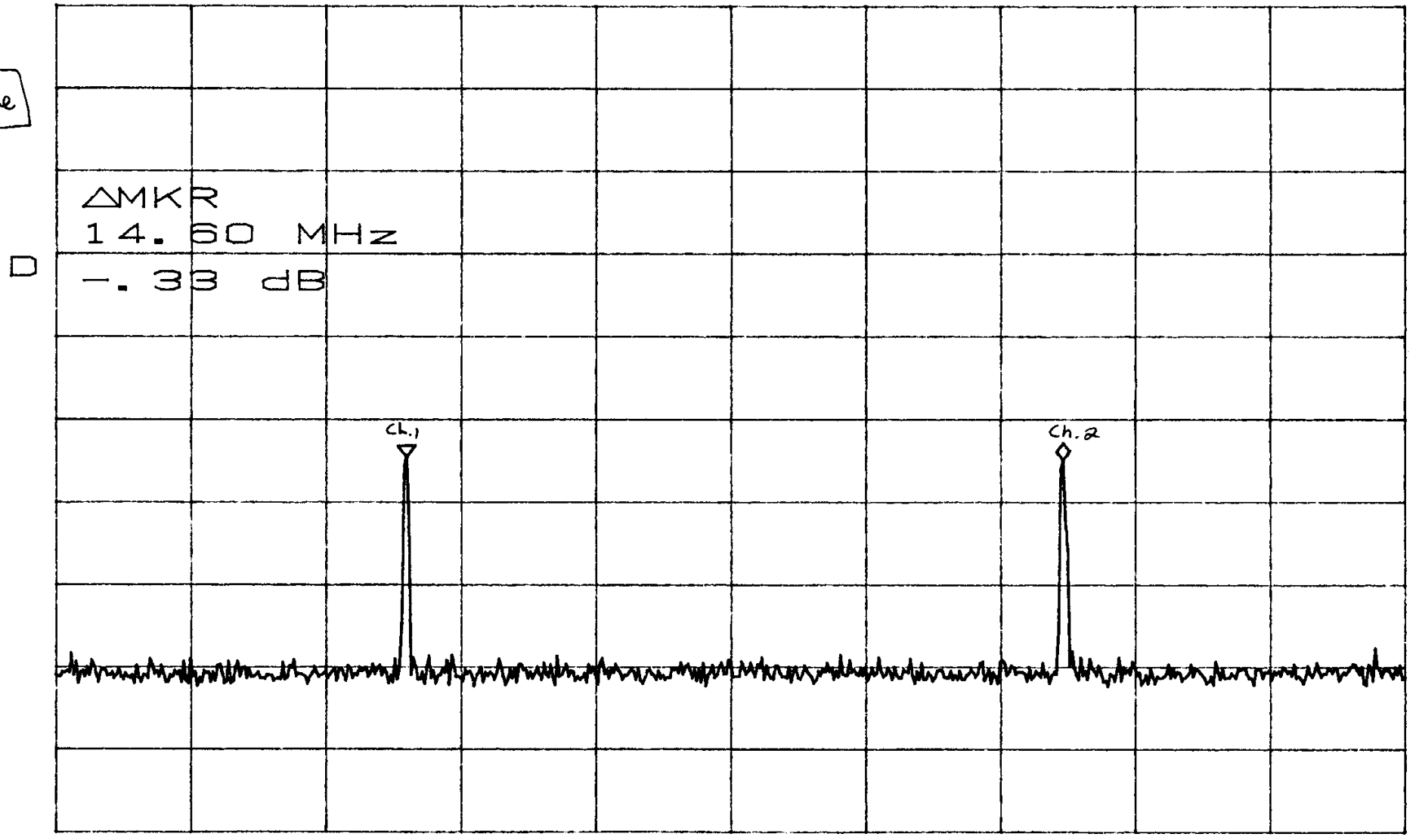
10/8/98  
LB41901

C-band Comparison Plat,  
ATTEN 10dB  
RL 0dBm

Inputs for IMD  
Over C-band  
CW-source  
10dB/

$\Delta$ MKR -.33dB  
14.60MHz

2-tone



CENTER 1.98250GHz SPAN 30.00MHz  
\*RBW 30kHz \*VBW 30kHz SWP 84.0ms

UL Inputs: 1895.2 MHz (ch.1)  
1896.2 MHz (ch.2)

Output Intermod

16/8/98  
LB41901

C-Band Comparison Plots

ATTEN 30dB

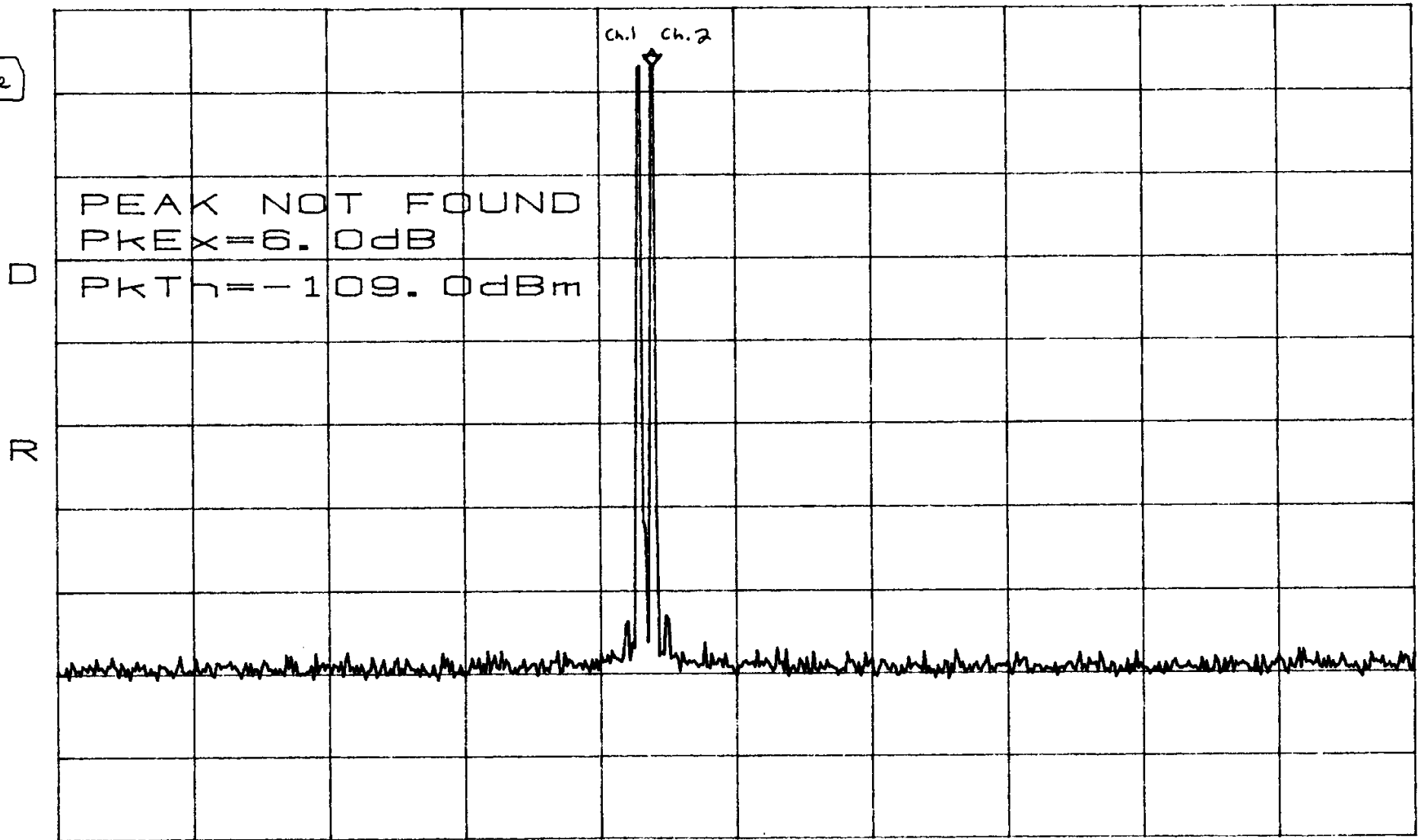
$\Delta$ MKR 0dB

RL 40.0dBm

10dB/

0Hz

2-tone



CENTER 1.9025GHz

SPAN 100.0MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 280ms

UL Inputs: 1895.2 (ch.1)  
1896.2 (ch.2)

Output Intermod,

10/8/98  
LB41901

C-band Comparison Plots

ATTEN 30dB

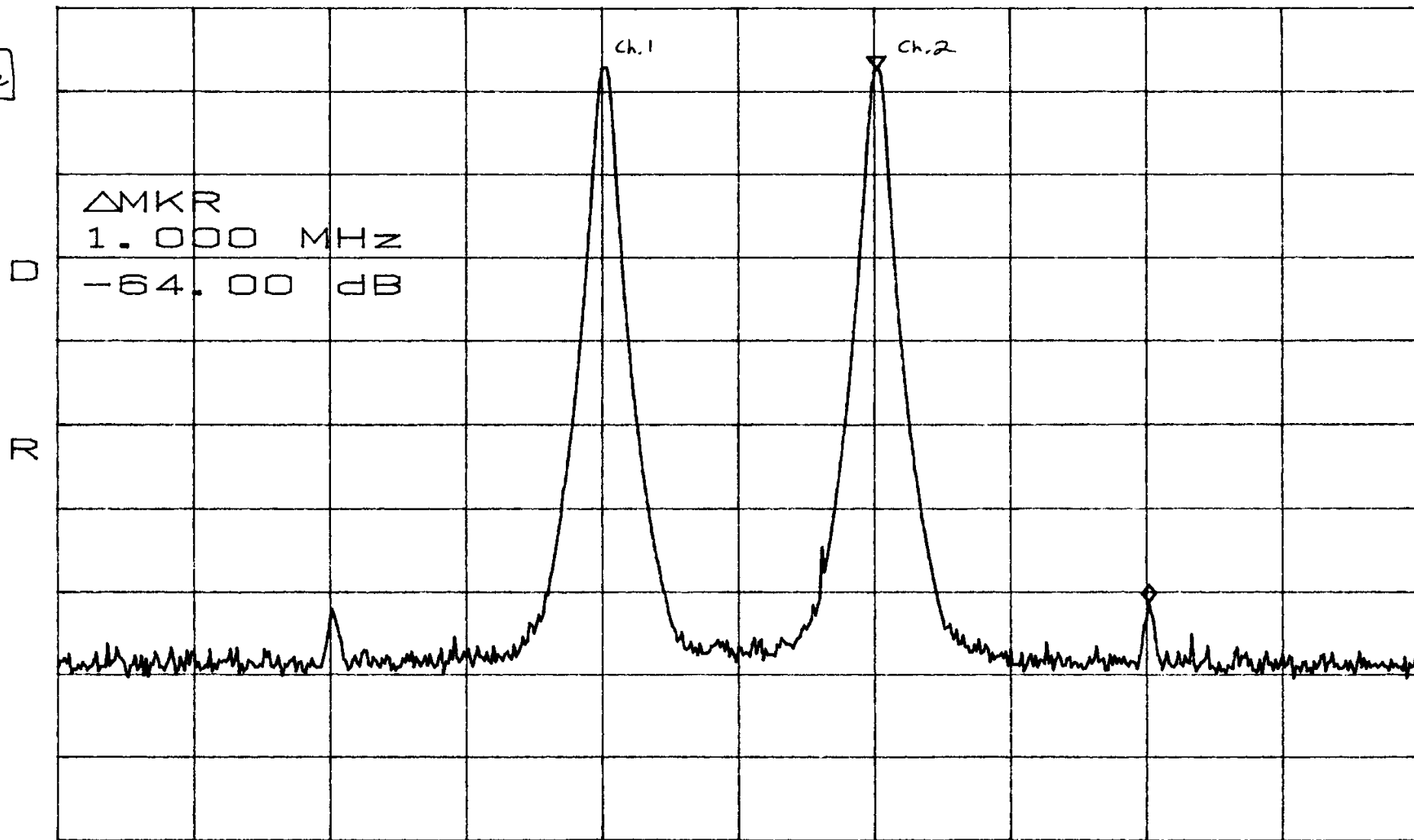
RL 40.0dBm

$\Delta$ MKR -64.00dB

10dB/

1.000MHz

2-tone



CENTER 1.895700GHz

SPAN 5.000MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 50.0ms

UL Inputs: 1895.2 (Ch.1)  
1896.2 (Ch.2)

10/8/98  
LB41901

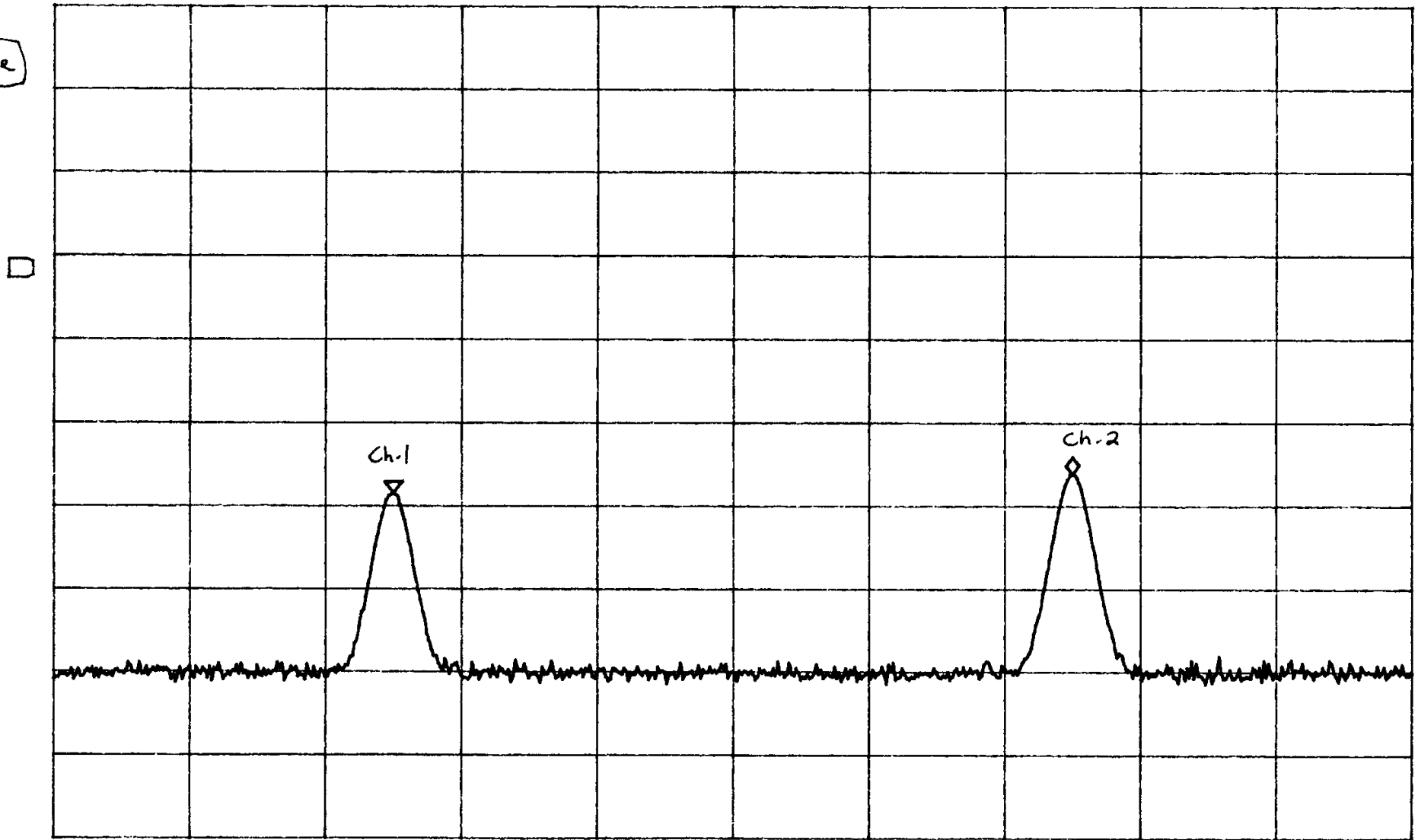
C-band Comparison Plot,  
ATTEN 10dB  
RL 0dBm

~~Inputs~~ Inputs for IMD  
Over C-band

CW-Source  
10dB/

$\Delta$ MKR 2.33dB  
1.000MHz

2-tone



CENTER 1.895700GHz      SPAN 2.000MHz  
\*RBW 30kHz      \*VBW 30kHz      SWP 50.0ms

UL Inputs: 1845.2 (Ch.1)  
1902.4 (Ch.2)

10/8/98  
LB41901

Output Intermod

C-band Comparison Plots

ATTEN 30dB

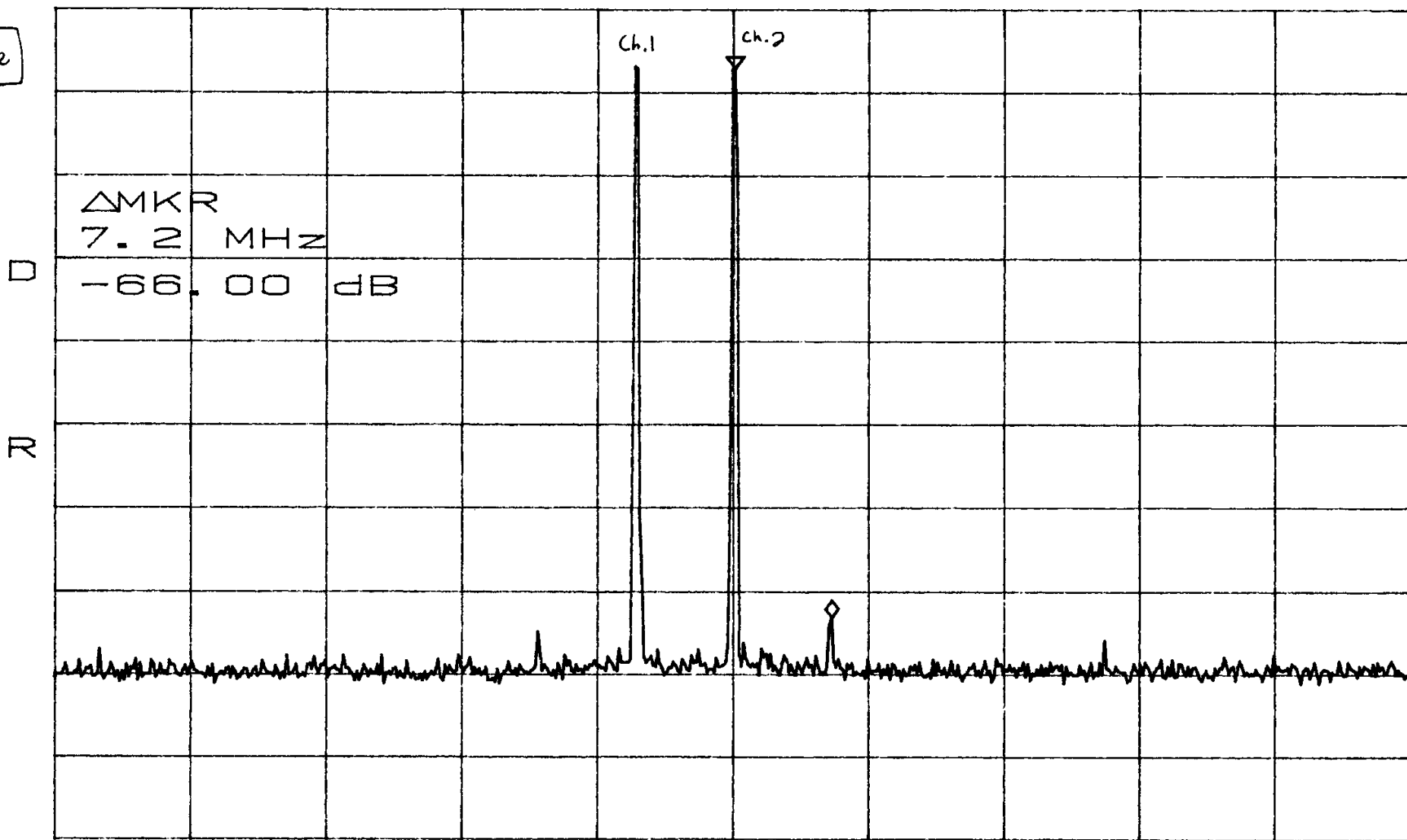
$\Delta$ MKR -66.00dB

RL 40.0dBm

10dB/

7.2MHz

2-tone



CENTER 1.9025GHz

SPAN 100.0MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 280ms

UL Inputs: 1895.2 (Ch.1)  
1902.4 (Ch.2)

10/8/98  
LB41901

C-band Comparison Plots

Output Intermod

ATTEN 30dB

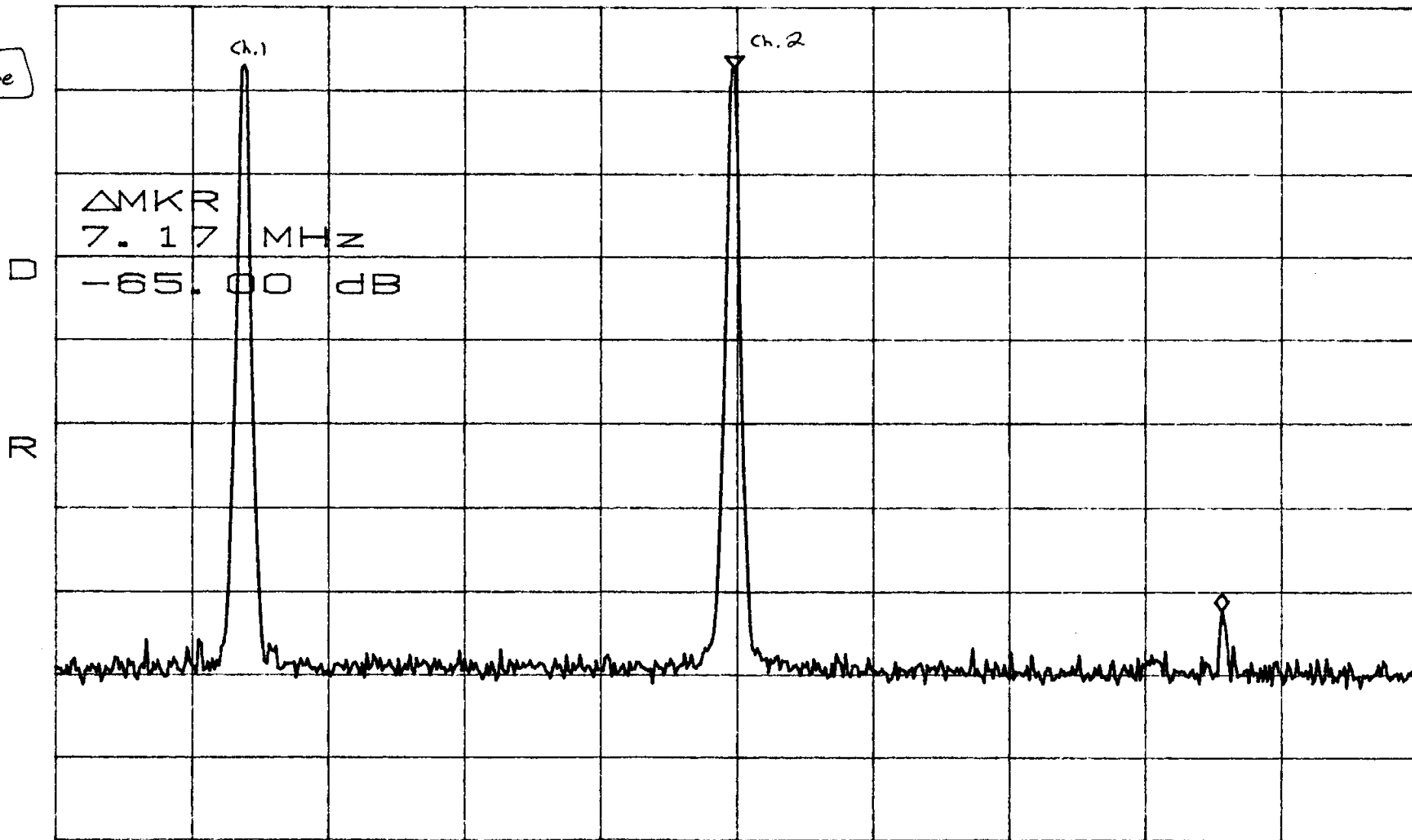
$\Delta$ MKR -65.00dB

RL 40.0dBm

10dB/

7.17MHz

2-tone



CENTER 1.90250GHz

SPAN 20.00MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 56.0ms

UL Inputs: 1895.2 (ch.1)  
1902.4 (ch.2)

10/8/98  
LB41901

C-band Comparison Plots

Inputs for IMD  
Over C-band

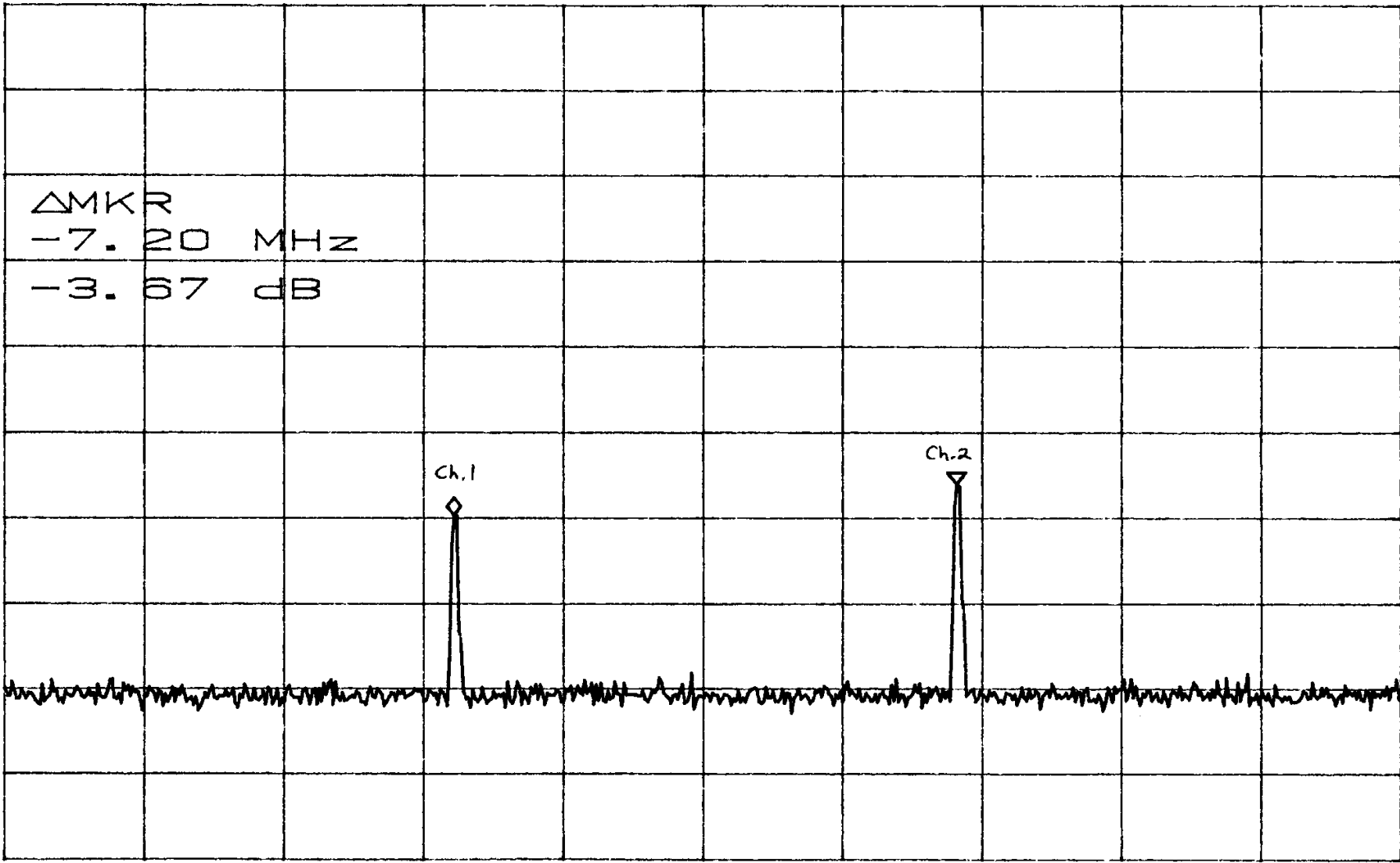
ATTEN 10dB  
BPO1  
RL 0dBm

cw-sources  
10dB/

$\Delta$ MKR -3.67dB  
-7.20MHz

2-tone

D



CENTER 1.89880GHz

SPAN 20.00MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 56.0ms



UL Inputs: 1895.2 (Ch.1)  
1909.8 (Ch.2)

10/8/98

LB41901

Output Intermod

C-band Comparison Plots

ATTN 30dB

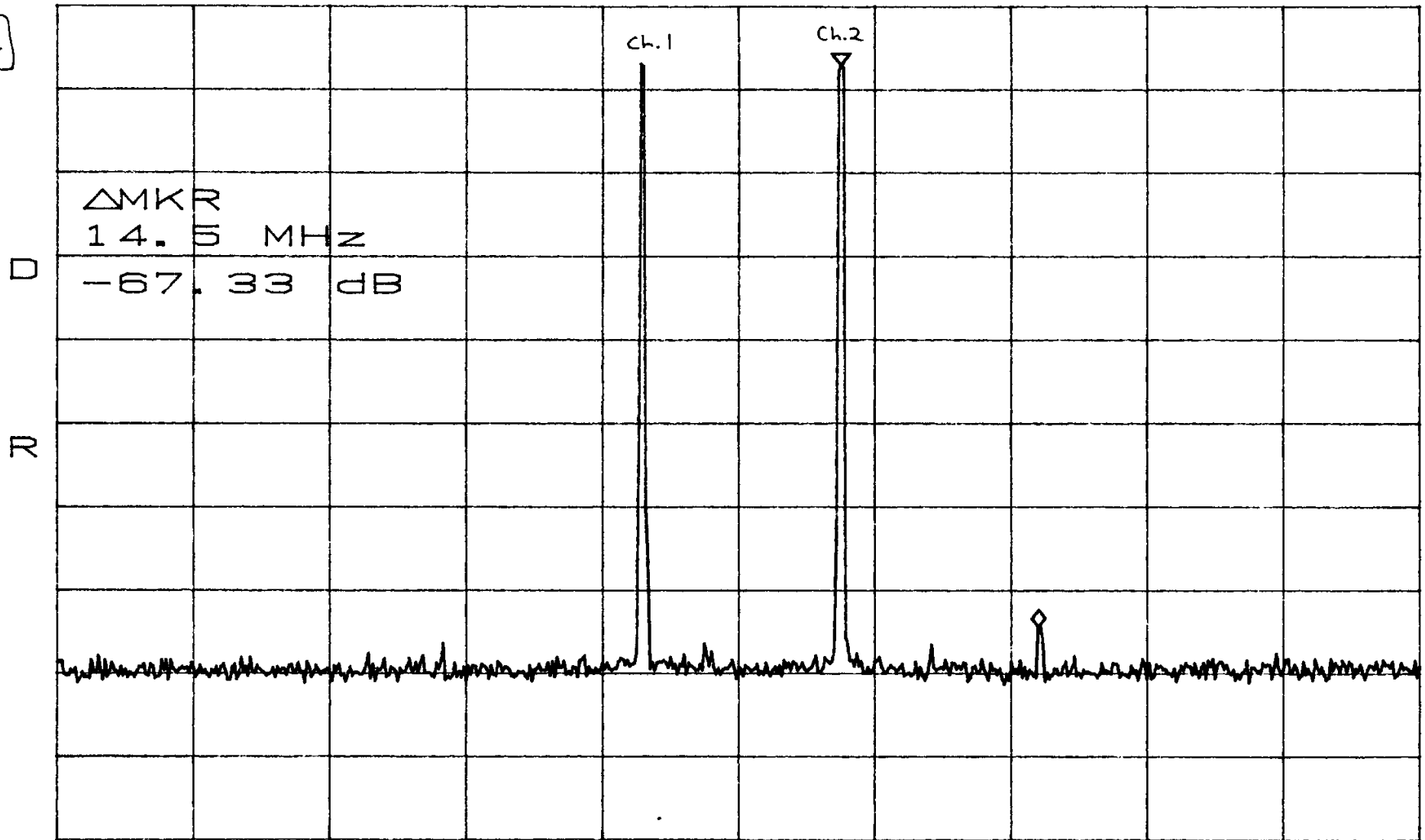
$\Delta$ MKR -67.33dB

RL 40.0dBm

10dB/BPO1

14.5MHz

2-tone



CENTER 1.9025GHz

SPAN 100.0MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 280ms

UL Inputs: 1895.2 (ch.1)  
1902.4 (ch.2)

C-band Comparison Plots

ATTEN 30dB

RL 40.0dBm

Output Intermod

10/8/98  
LB41901

$\Delta$ MKR -66.00dB

10dB/

14.57MHz

2-tone



$\Delta$ MKR  
14.57 MHz  
-66.00 dB

CENTER 1.91705GHz

SPAN 20.00MHz

\*RBW 30kHz

\*VBW 30kHz

SWP 56.0ms

UL Inputs: 1895.2 (Ch.1)  
1902.4 (Ch.2)

(-band Comparison Plots  
ATTEN 10dB  
RL 0dBm

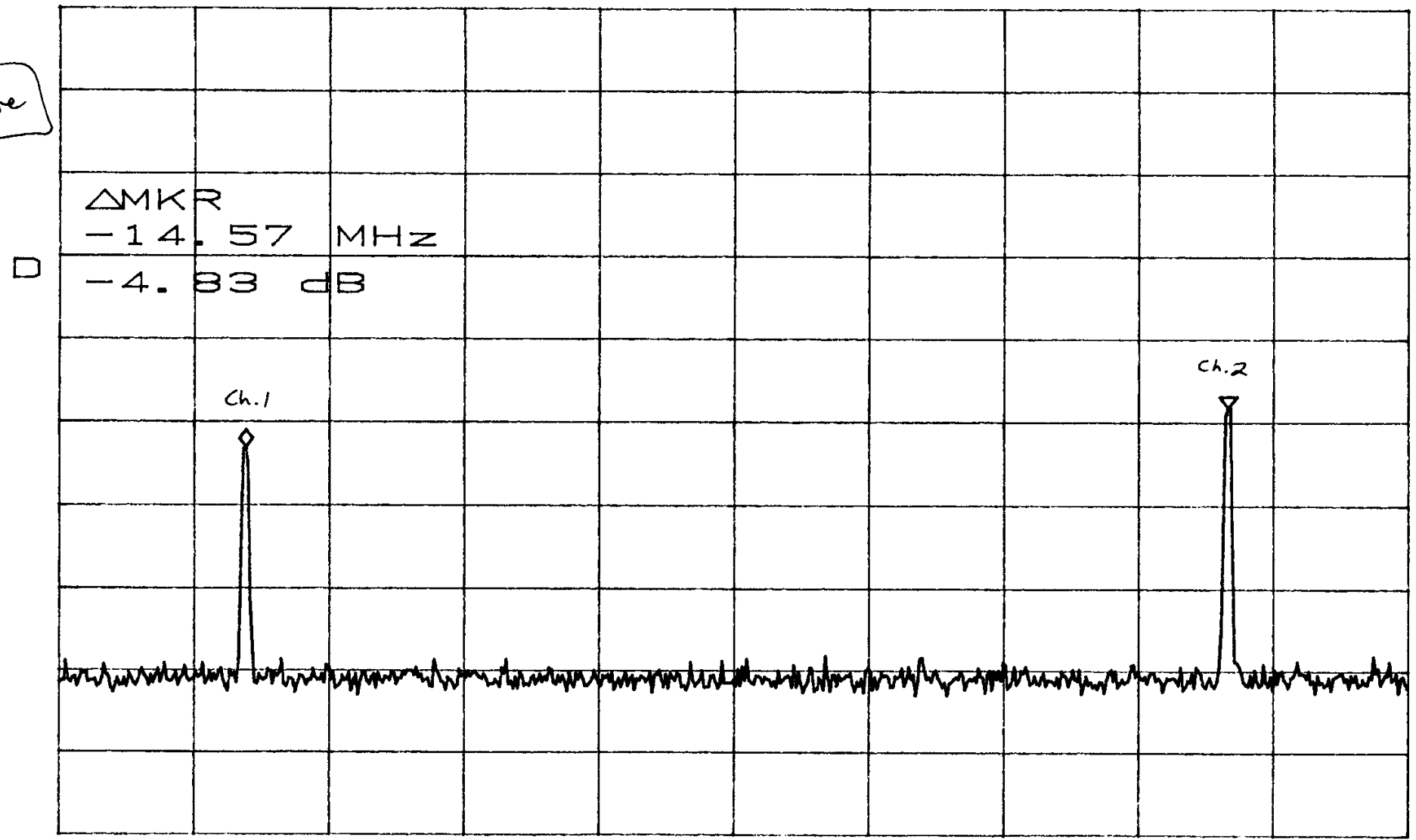
Inputs for IMD  
Over C-band

CW-source  
10dB/

10/8/94  
LB41901

$\Delta$ MKR -4.83dB  
-14.57MHz

2-tone



$\Delta$ MKR  
-14.57 MHz  
-4.83 dB

Ch.1

Ch.2

CENTER 1.90250GHz SPAN 20.00MHz  
\*RBW 30kHz \*VBW 30kHz SWP 56.0ms