

TEST RESULT SUMMARY

FCC PART 90

MANUFACTURER'S NAME	ADC, Incorporated
NAME OF EQUIPMENT	Digivance SMR 20 Watt System
TYPE OF EQUIPMENT	Transports RF between a remote antenna and a customer provided base station
MODEL NUMBER	DGVL-2061XXSYS
MANUFACTURER'S ADDRESS	P. O. Box 1101 Minneapolis MN 55440-1101
TEST REPORT NUMBER	NC303497
TEST DATE	29 July 2003

According to testing performed at TÜV Product Service Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in FCC Part 90.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV Product Service Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the requirements of FCC Part 90.

Date: 01 August 2003

Location: Taylors Falls MN
USA



K. T. H. Rose
Test Technician



T. K. Swanson
Technical Writer

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Not Transferable

EMC EMISSION - TEST REPORT

Test Report File Number: NC303497

Date of Issue: 01 August 2003

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**Effective Isotropic Radiated Power Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.**

*Note: The EUT is a fixed repeater and not a base station.

This measurement was made as a direct conducted emission measurement. The output from the EUT antenna connector was connected to the spectrum analyzer. The Carrier Output, below, was conducted using a single CW signal generator. The spectrum analyzer level was offset to compensate for attenuators and cable loss between the EUT and the analyzer.

A CW signal was used at the low, mid and high parts of the selected band. The spectrum analyzer level was offset by 41.9 dB to compensate for attenuators and cable loss between the EUT and the analyzer.

Band SMR

Carrier Frequency	Carrier Output
851.2 MHz	<u>40.4</u> dBm
858.5 MHz	<u>40.9</u> dBm
865.8 MHz	<u>40.23</u> dBm

**Occupied Bandwidth Modulation Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.**

An input/output Occupied Bandwidth test was done with three different modulation types: FM (1 kHz @ 8 kHz deviation) TDMA, and CDMA. The purpose was to determine the amount of distortion added to different types of modulation schemes by the EUT. The following plots show input signals vs. output signals.

Results:

Pass (see plots)

OCCUPIED BANDWIDTH BAND SMR FM IN

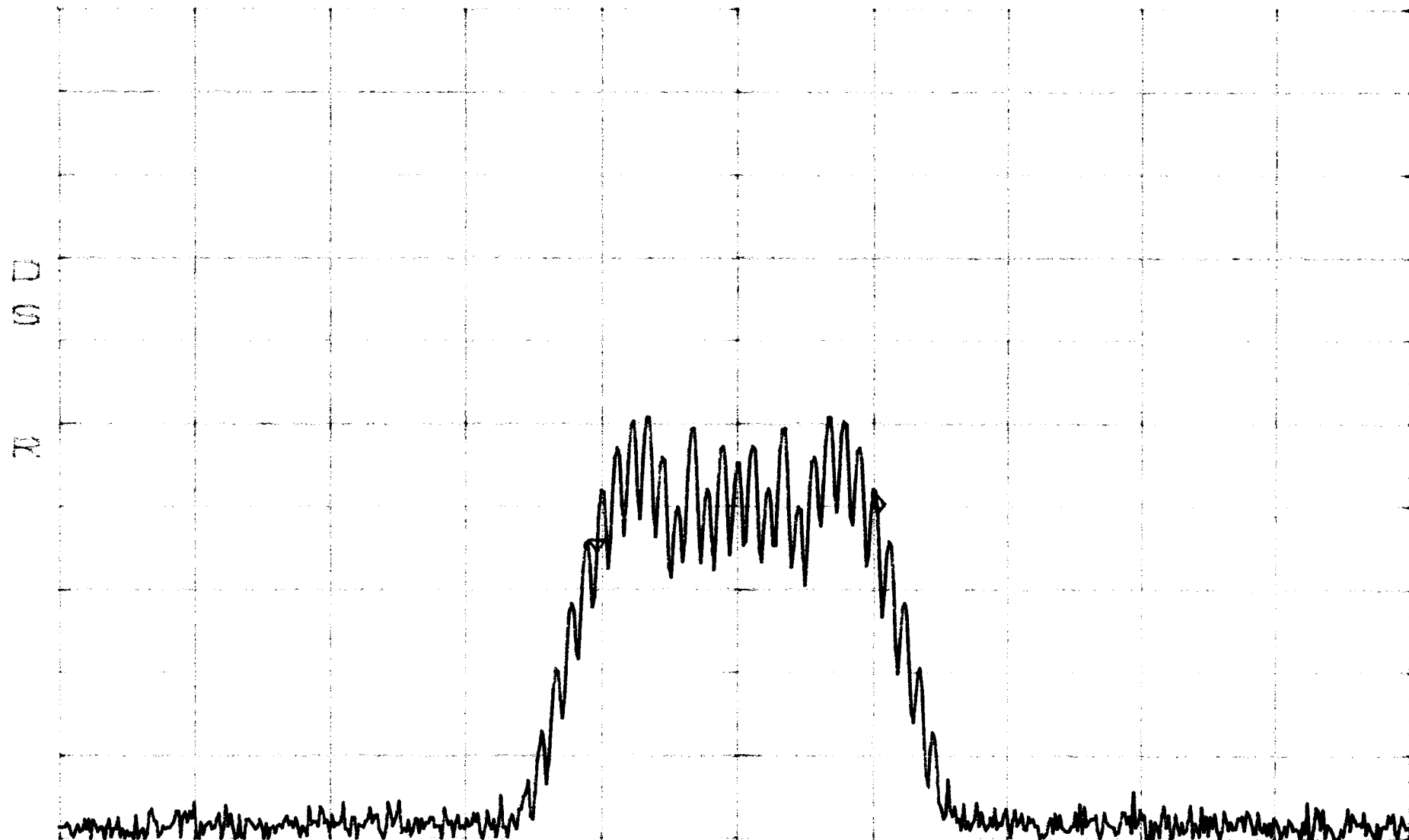
*ATTEN 10dB

AMKR 4.66dB

RL -4dBm

10dB/

18.60kHz



CENTER 858.50000MHz

SPAN 90.00kHz

*RBW 300Hz

*VBW 3.0kHz

SWP 2.5sec

OCCUPIED BANDWIDTH BAND SMR FM OUT

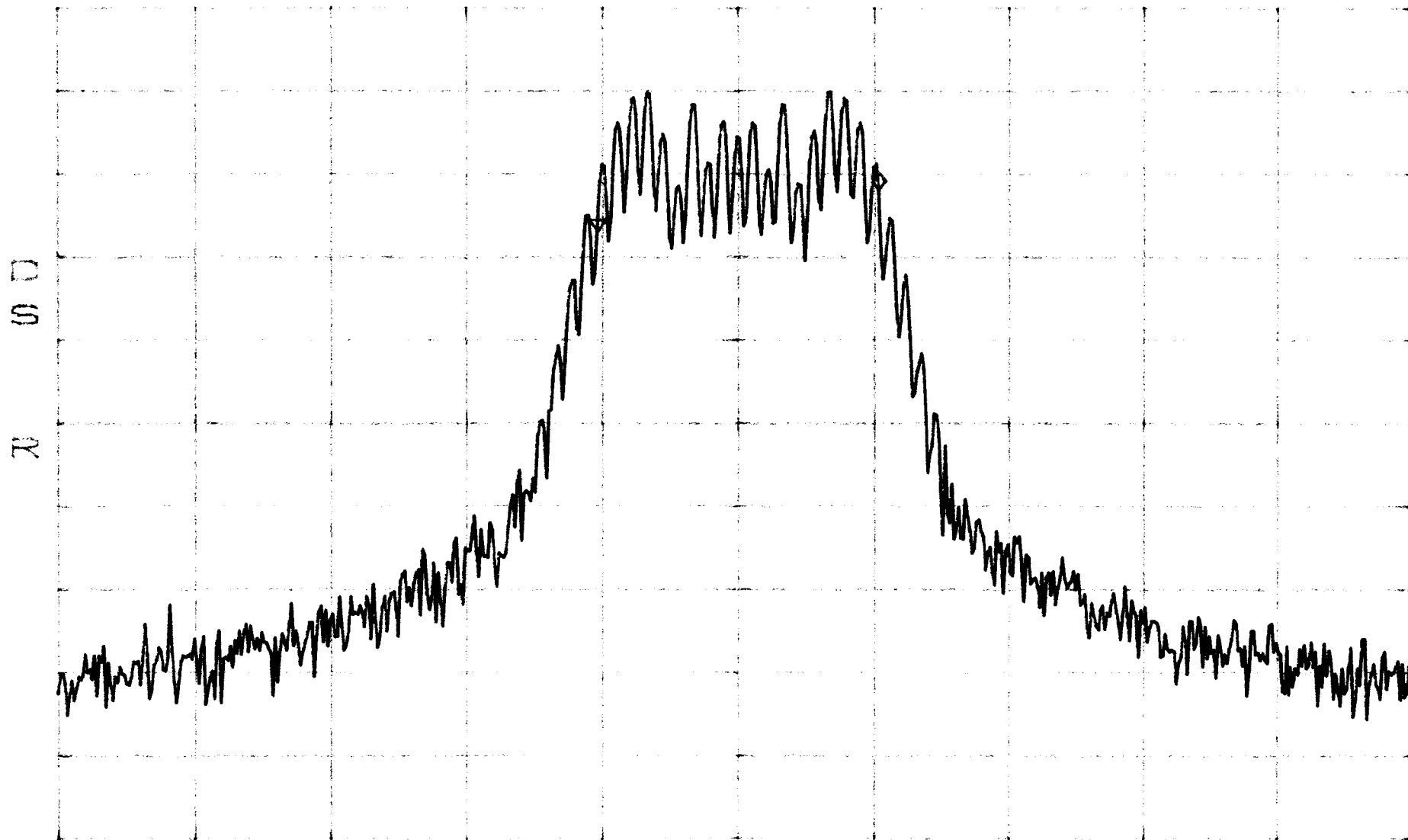
*ATTEN 20dB

ΔMKR 5.00dB

RL 41.9dBm

10dB/

18.60kHz



CENTER 858.50000MHz

SPAN 90.00kHz

*RBW 300Hz

*VBW 3.0kHz

SWP 2.5sec

OCCUPIED BANDWIDTH BAND SMR TDMA IN

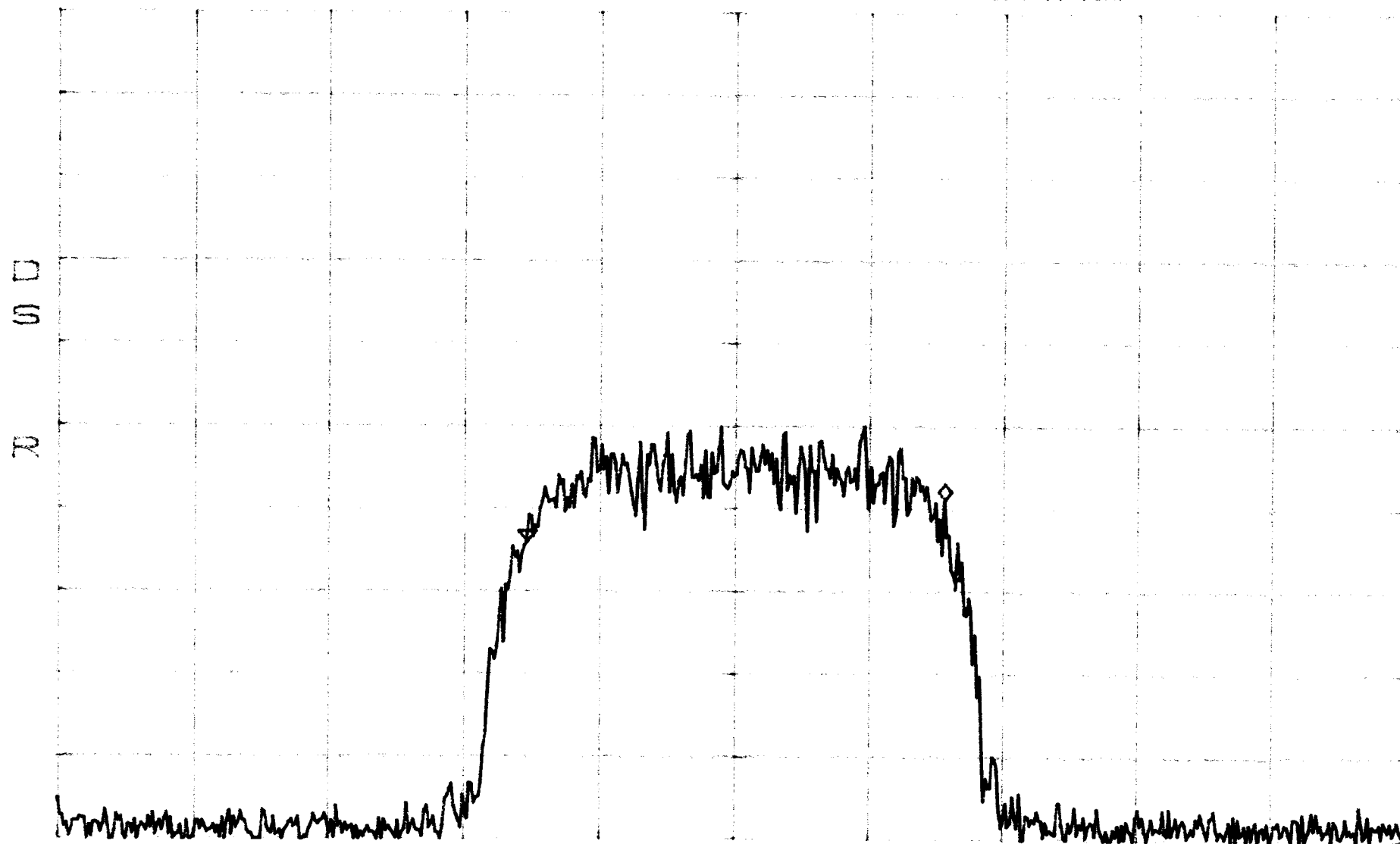
*ATTEN 10dB

BP71 5.17dB

RL -1.4dBm

10dB/

27.90kHz



CENTER 858.50000MHz

SPAN 90.00kHz

*RBW 300Hz

*VBW 3.0kHz

SWP 2.5sec

OCCUPIED BANDWIDTH BAND SMR TDMA OUT

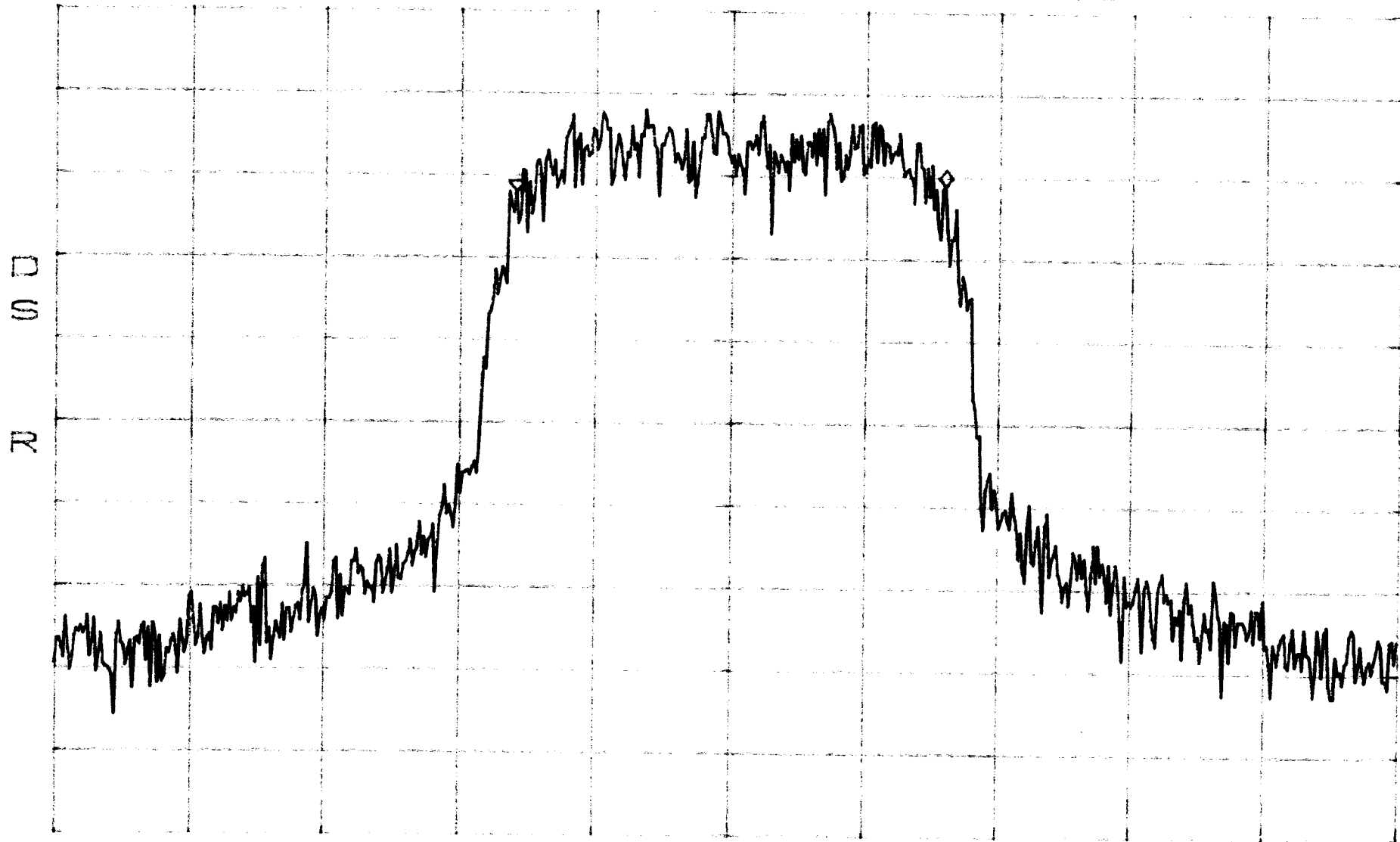
*ATTEN 20dB

ΔMKR 1.00dB

RL 41.9dBm

10dB/

28.65kHz



CENTER 858.50000MHz

SPAN 90.00kHz

*RBW 300Hz

*VBW 3.0kHz

SWP 2.5sec

OCCUPIED BANDWIDTH BAND SMR CDMA IN

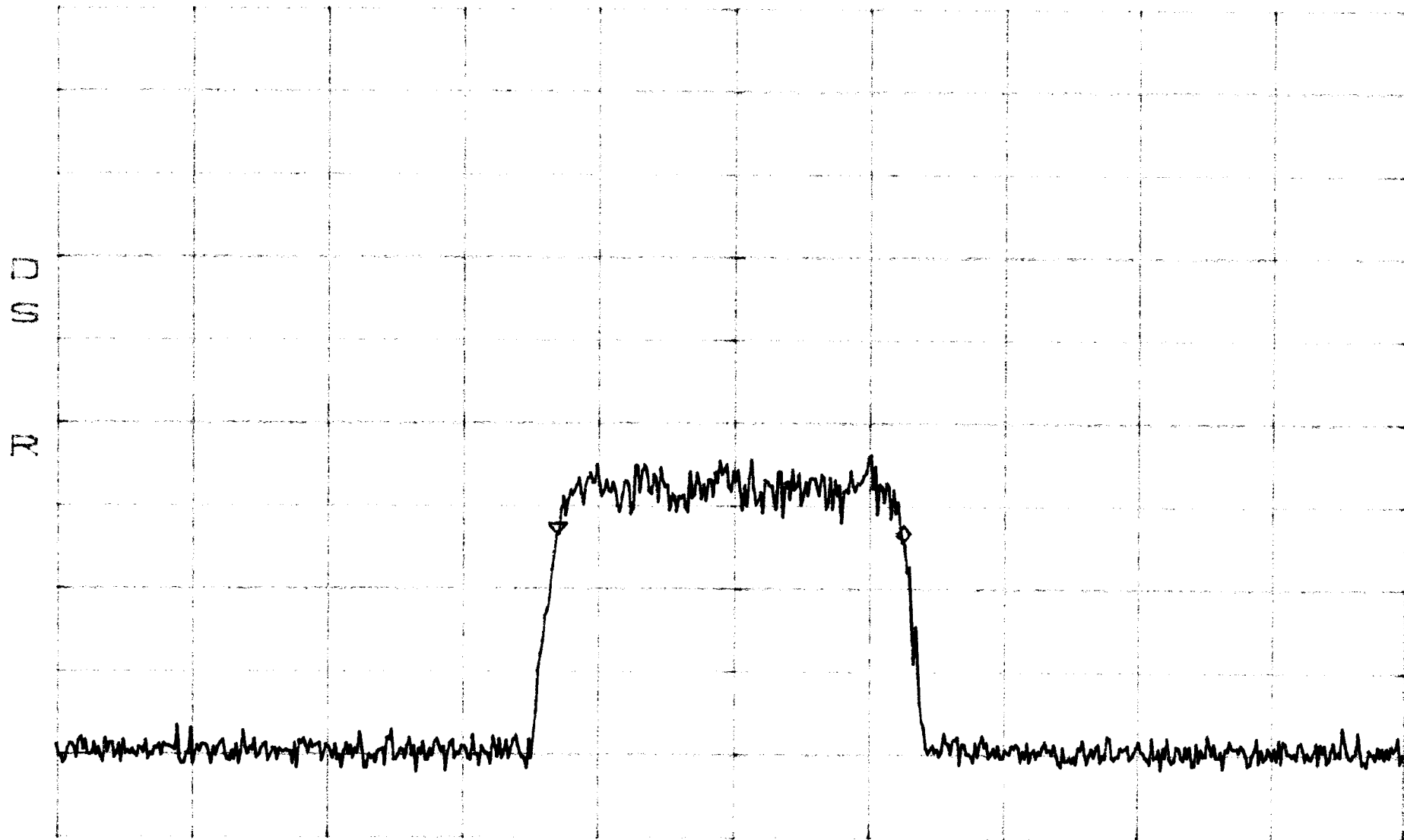
*ATTEN 10dB

BP48 -.84dB

RL -.4dBm

10dB /BP01

1.275MHz



CENTER 858.500MHz

SPAN 5.000MHz

*RBW 10kHz

*VBW 3.0kHz

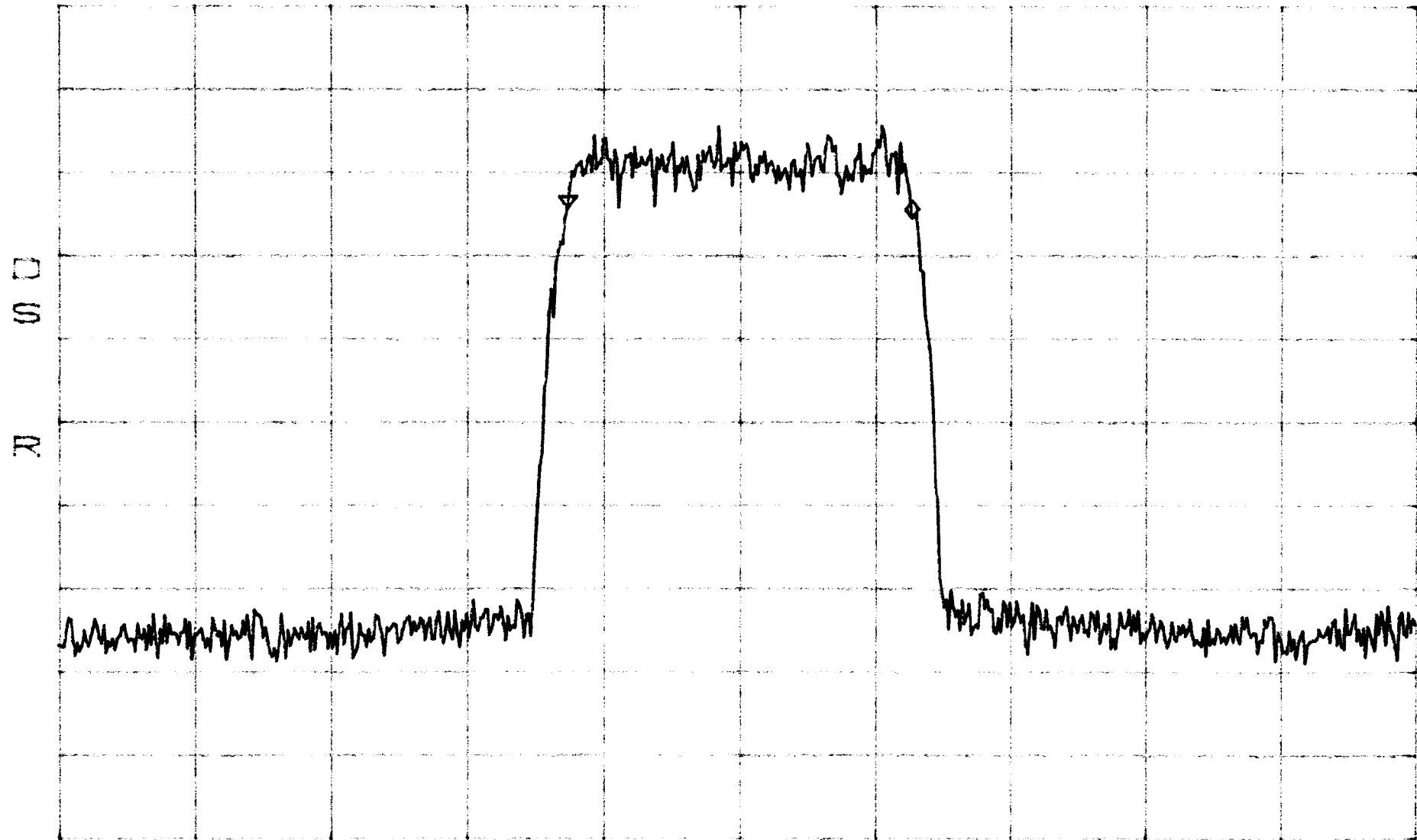
SWP 420ms

OCCUPIED BANDWIDTH BAND SMR CDMA OUT

*ATTEN 20dB
RL 41.9dBm

10dB/

BP91 -1.16dB
1.267MHz



CENTER 858.500MHz

SPAN 5.000MHz

*RBW 10kHz

*VBW 3.0kHz

SWP 420ms

Conducted Emission Limits Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.

The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10th harmonic of the highest carrier frequency. Test signals used: CW, FM (1 kHz @ 8 kHz deviation), TDMA, and CDMA. The different signals were input one at a time to the EUT. In all cases, the out of band emissions were less than -13dBm from the equation
$$(19\text{dBm} - [43 + 10\log(0.08\text{W})])$$

Band edge compliance is also demonstrated using a FM signal at the upper and lower limits of the band and a resolution bandwidth of 300 Hz.

Results:

Pass (see plots)

CONDUCTED EMISSIONS BAND SMR LOW

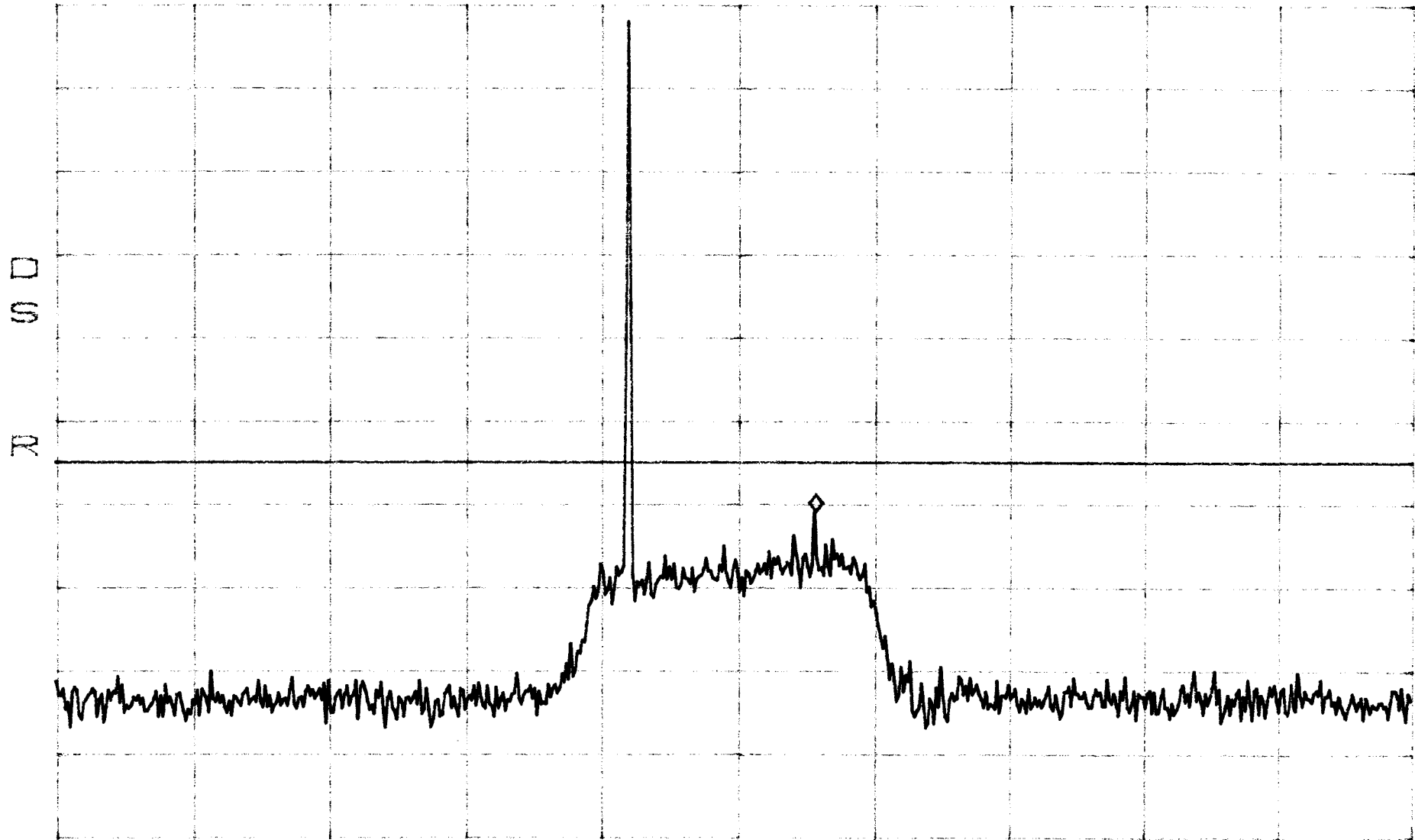
*ATTEN 20dB

MKR -18.77dBm

RL 41.9dBm

10dB/

864.2MHz



CENTER 858.5MHz

SPAN 100.0MHz

*RBW 30kHz

VBW 30kHz

SWP 280ms

CONDUCTED EMISSIONS BAND SMR LOW

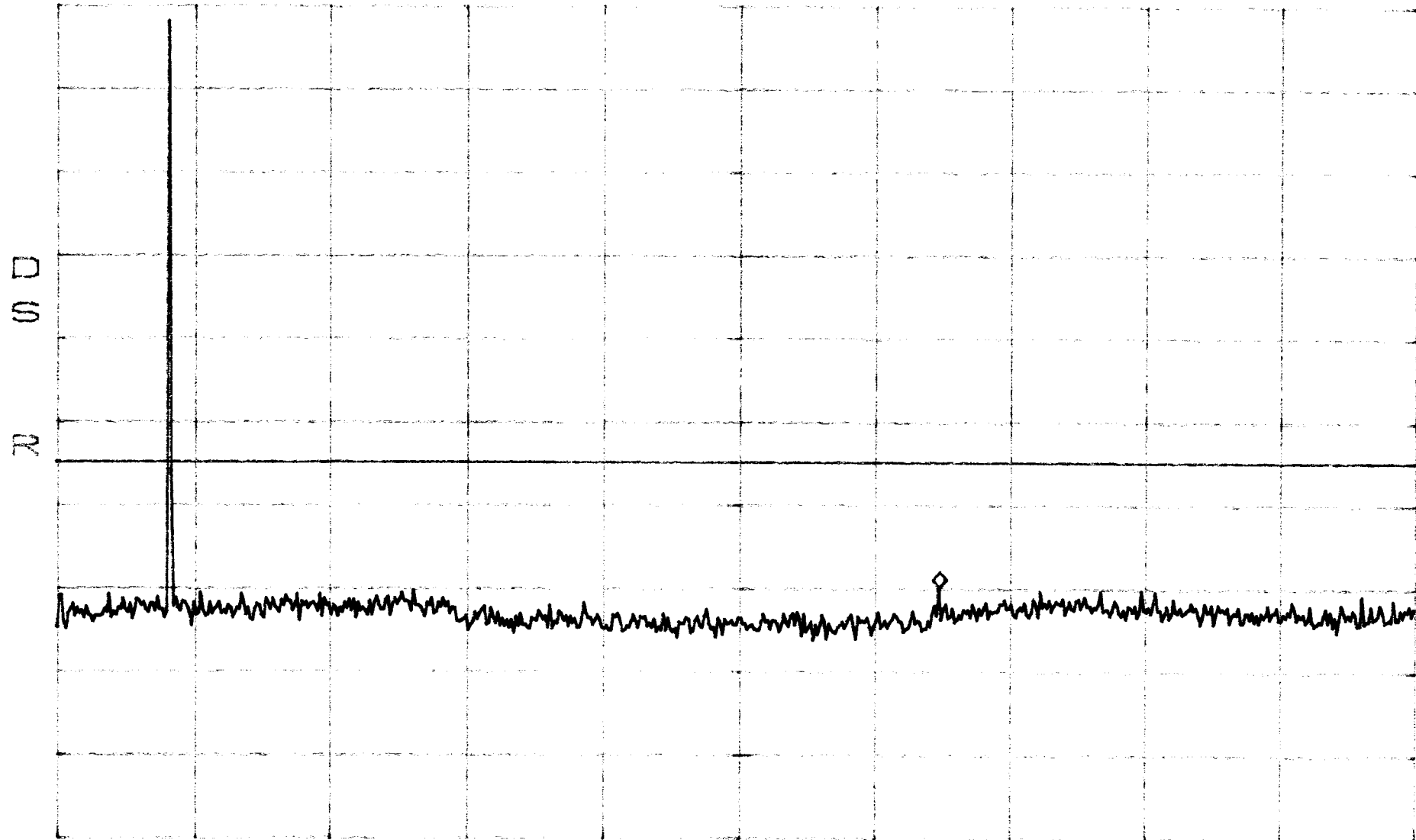
*ATTEN 20dB

MKR --27.93dBm

RL 41.9dBm

10dB/

6.494GHz



START 30MHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 280mg

CONDUCTED EMISSIONS BAND SMR MID

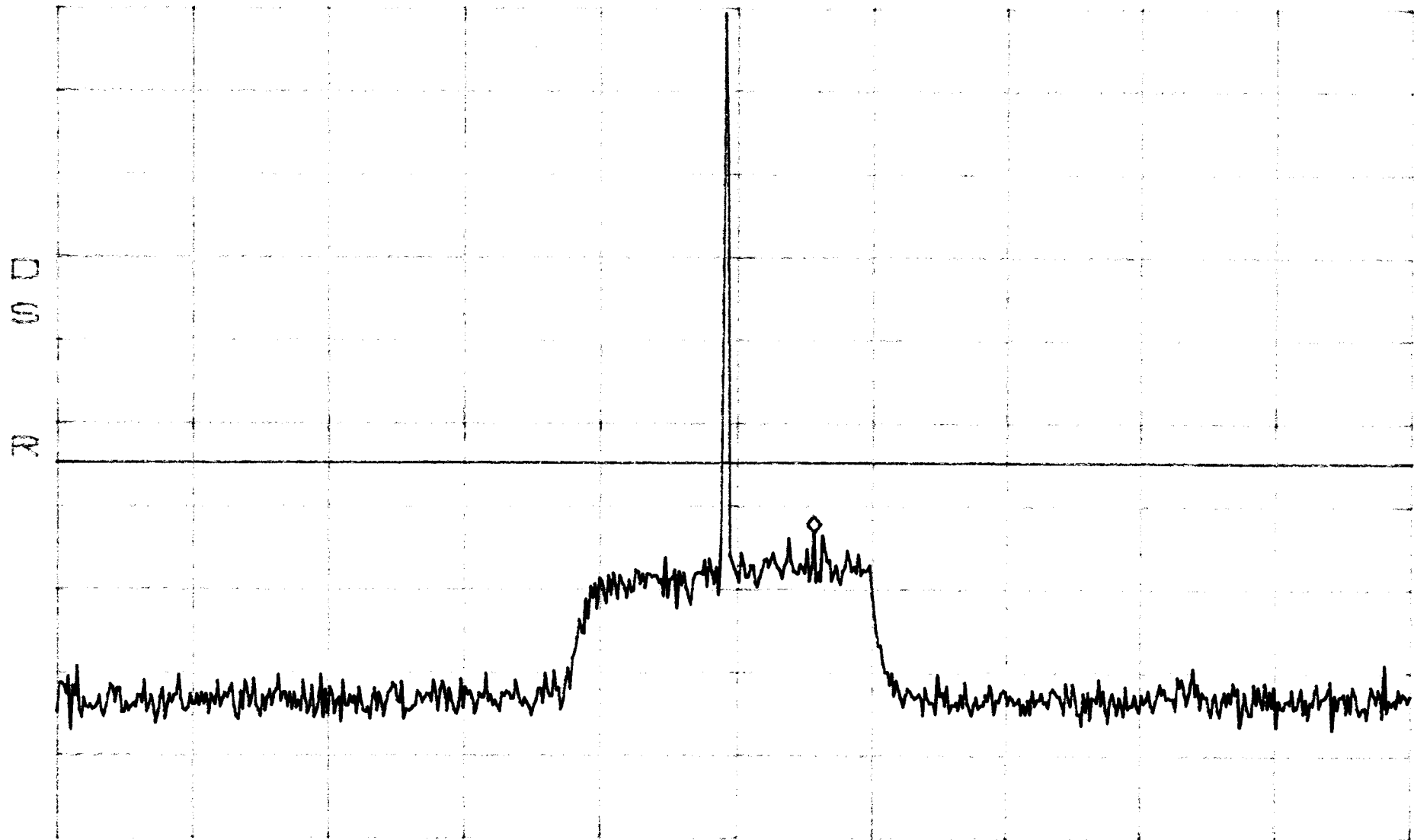
*ATTEN 20dB

MKR -21.27dBm

RL 41.9dBm

10dB/

864.2MHz



CENTER 858.5MHz

SPAN 100.0MHz

*RBW 30kHz

VBW 30kHz

SWP 280ms

CONDUCTED EMISSIONS BAND SMR MID

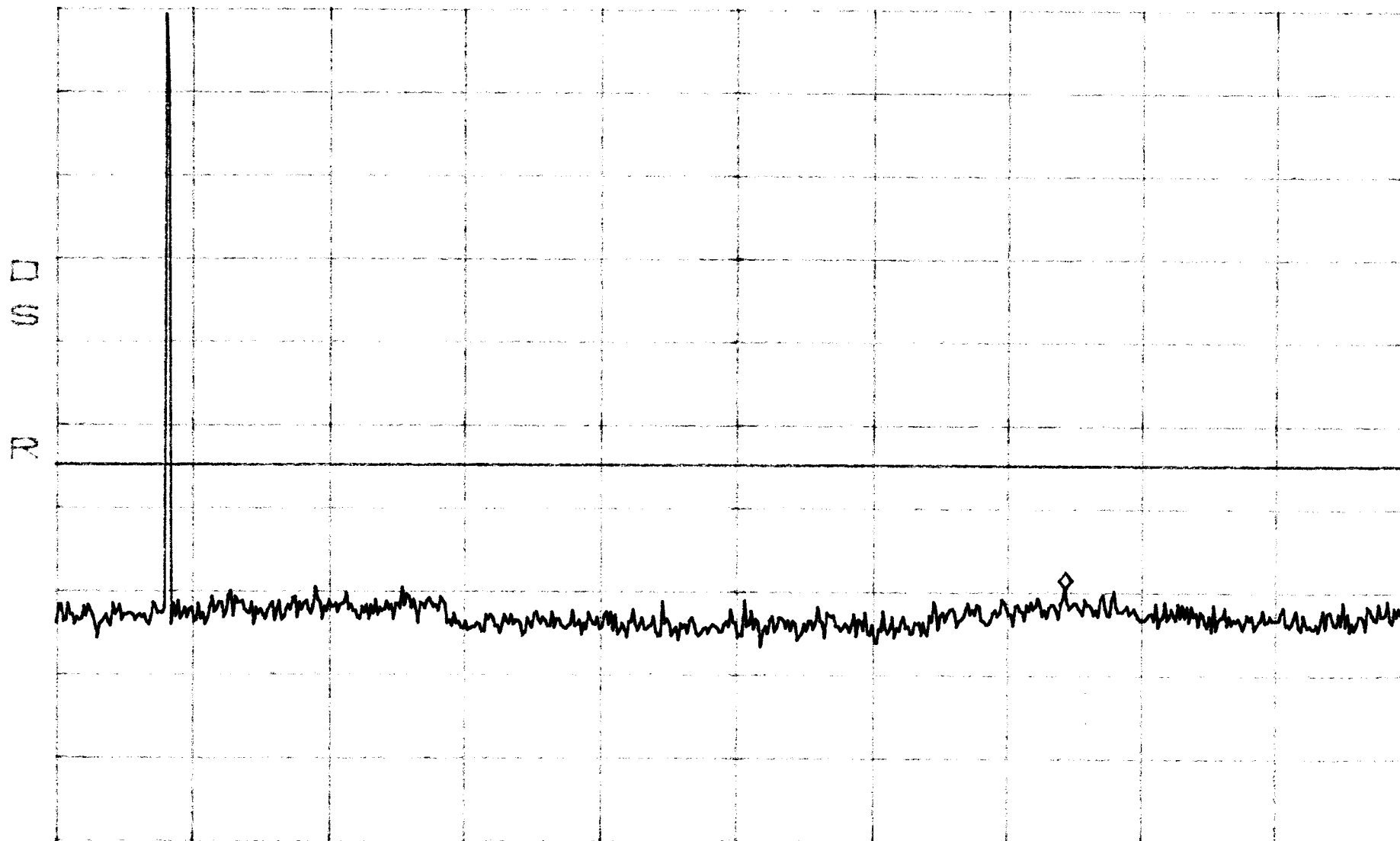
*ATTN 20dB

MKR -27.60dBm

RL 41.9dBm

10dB/

7.441GHz



START 30MHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 280ms

CONDUCTED EMISSIONS BAND SMR HIGH

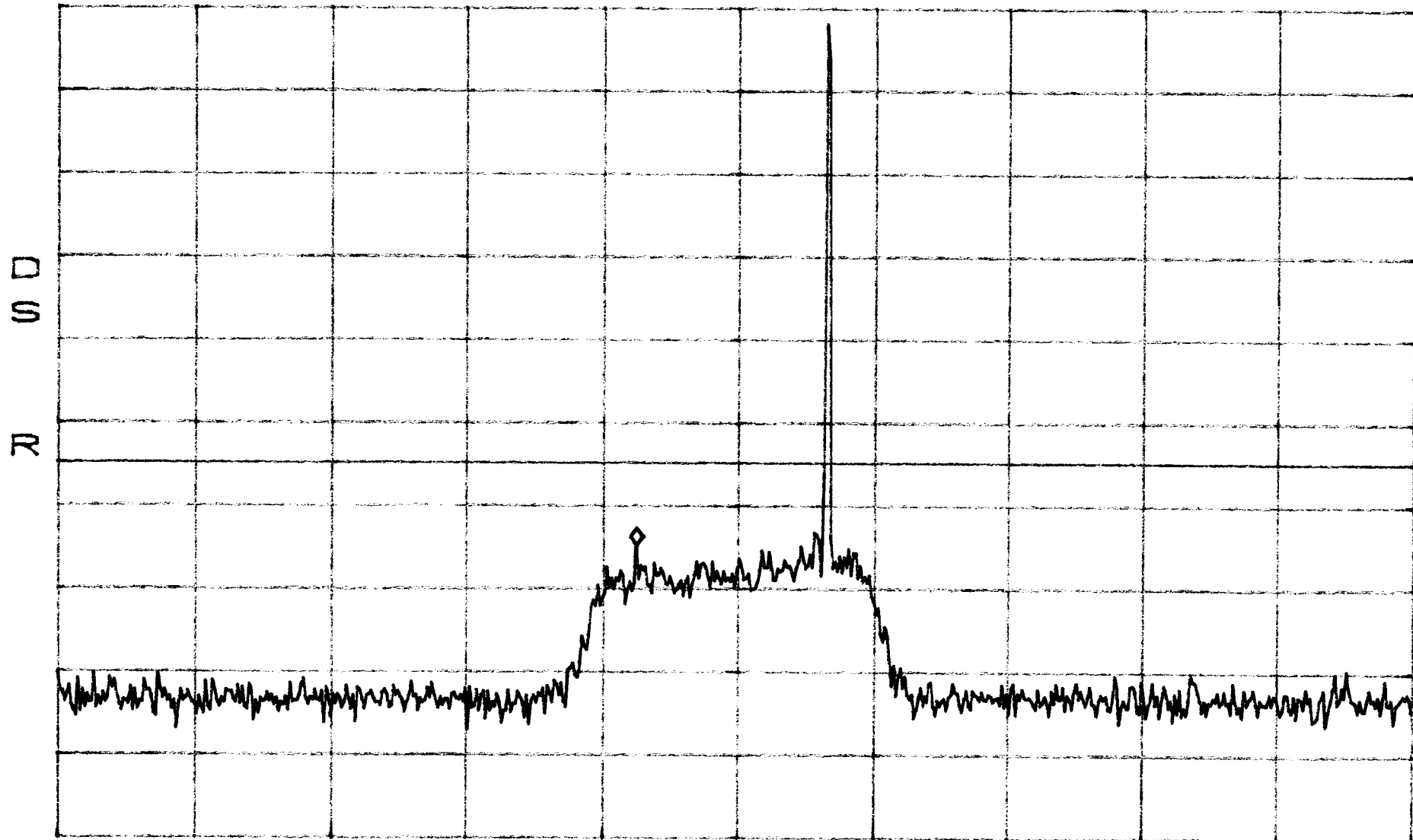
*ATTEN 20dB

RL 41.9dBm

10dB/

MKR -22.77dBm

858.0MHz



CENTER 858.5MHz

SPAN 100.0MHz

*RBW 30kHz

VBW 30kHz

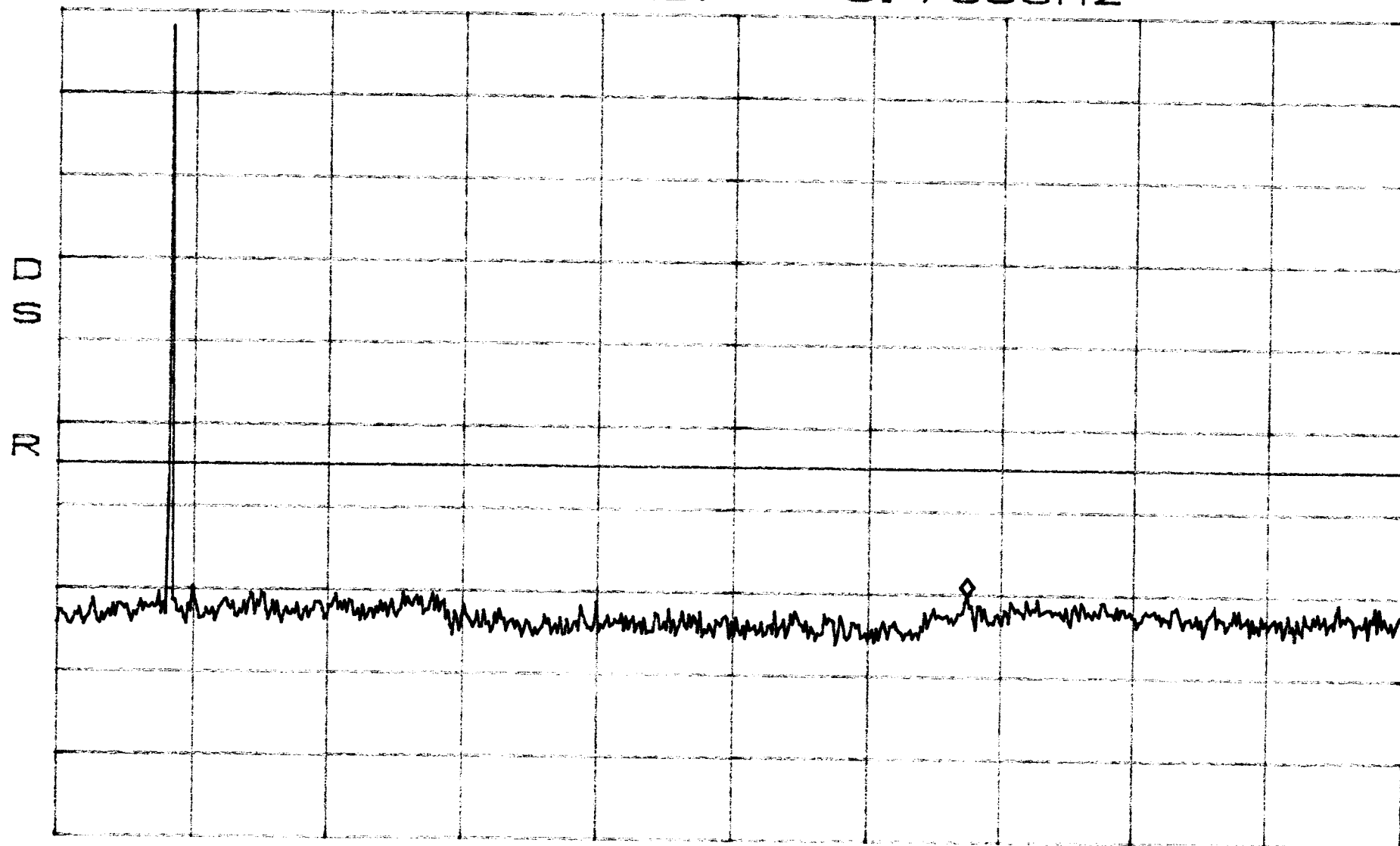
SWP 280ms

CONDUCTED EMISSIONS BAND SMR HIGH

*ATTEN 20dB
RL 41.9dBm

10dB/

MKR -28.10dBm
6.760GHz



START 30MHz STOP 10.000GHz
*RBW 300kHz VBW 300kHz SWP 280ms

CONDUCTED EMISSIONS BAND SMR FM

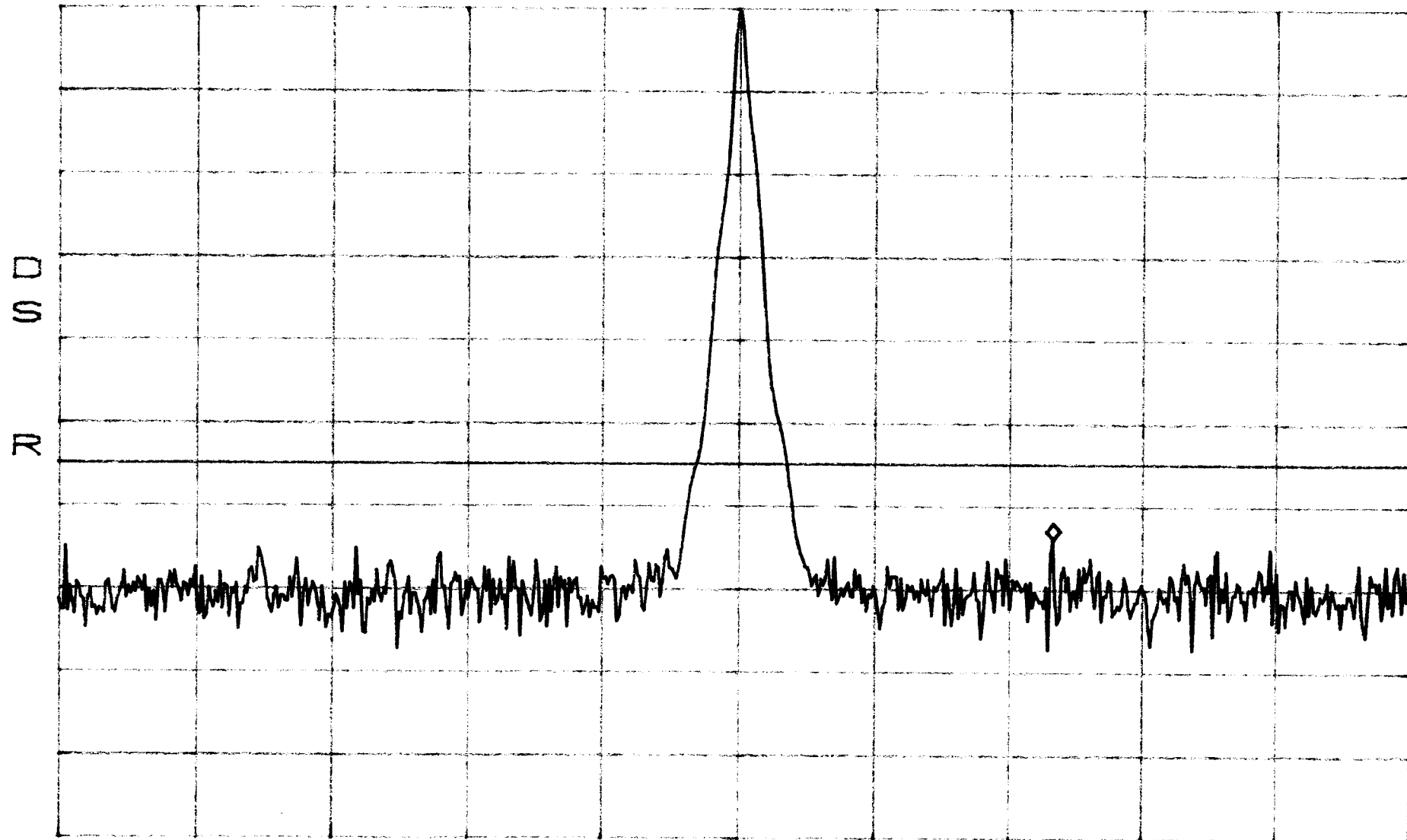
*ATTEN 20dB

MKR -21.93dBm

RL 41.9dBm

10dB/

859.667MHz



CENTER 858.500MHz

SPAN 5.000MHz

*RBW 30kHz

VBW 30kHz

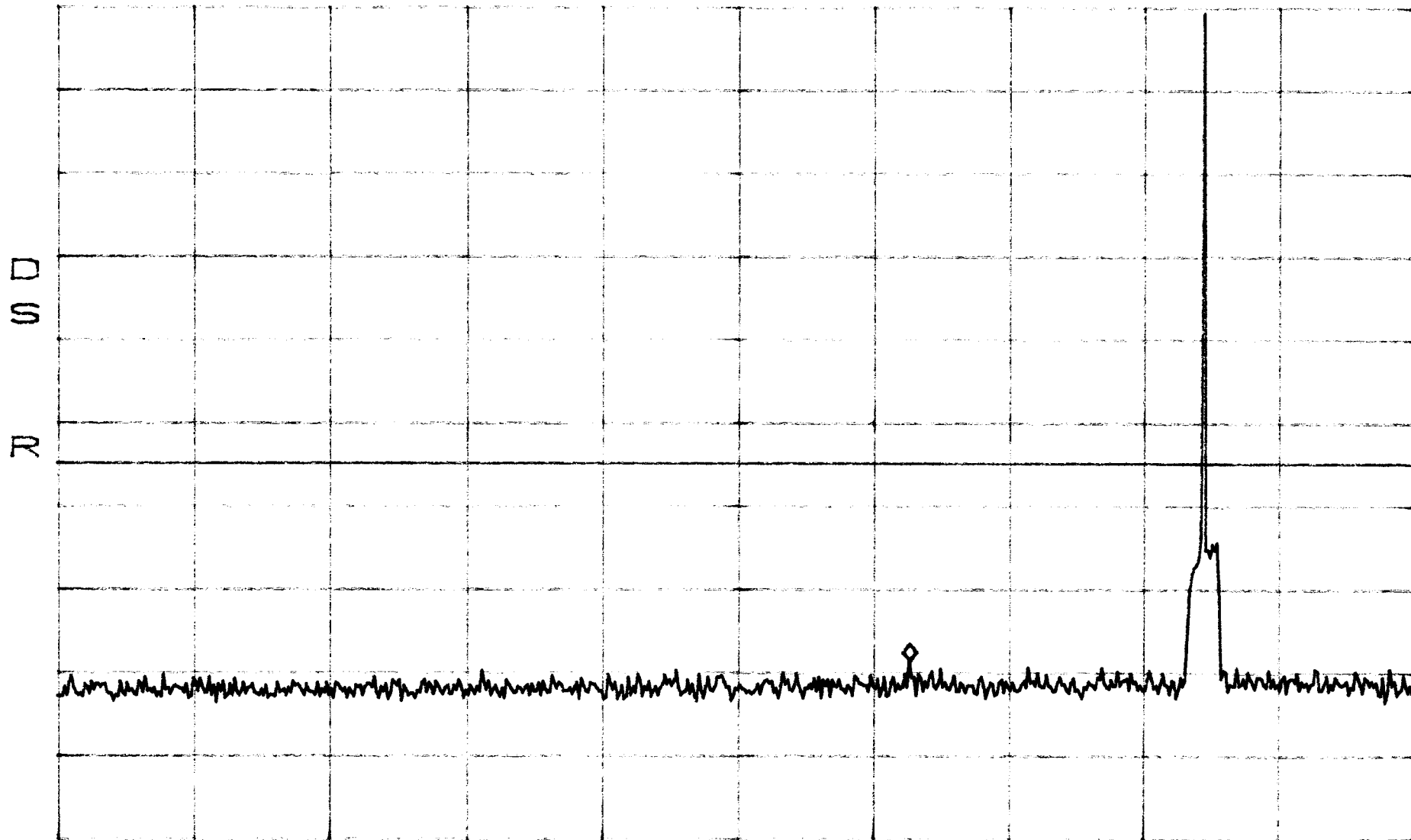
SWP 50ms

CONDUCTED EMISSIONS BAND SMR FM

*ATTEN 20dB
RL 41.9dBm

10dB/

MKR -36.60dBm
637.9MHz



START 30.0MHz STOP 1.0000GHz
*RBW 30kHz VBW 30kHz SWP 2.7sec

CONDUCTED EMISSIONS BAND SMR FM

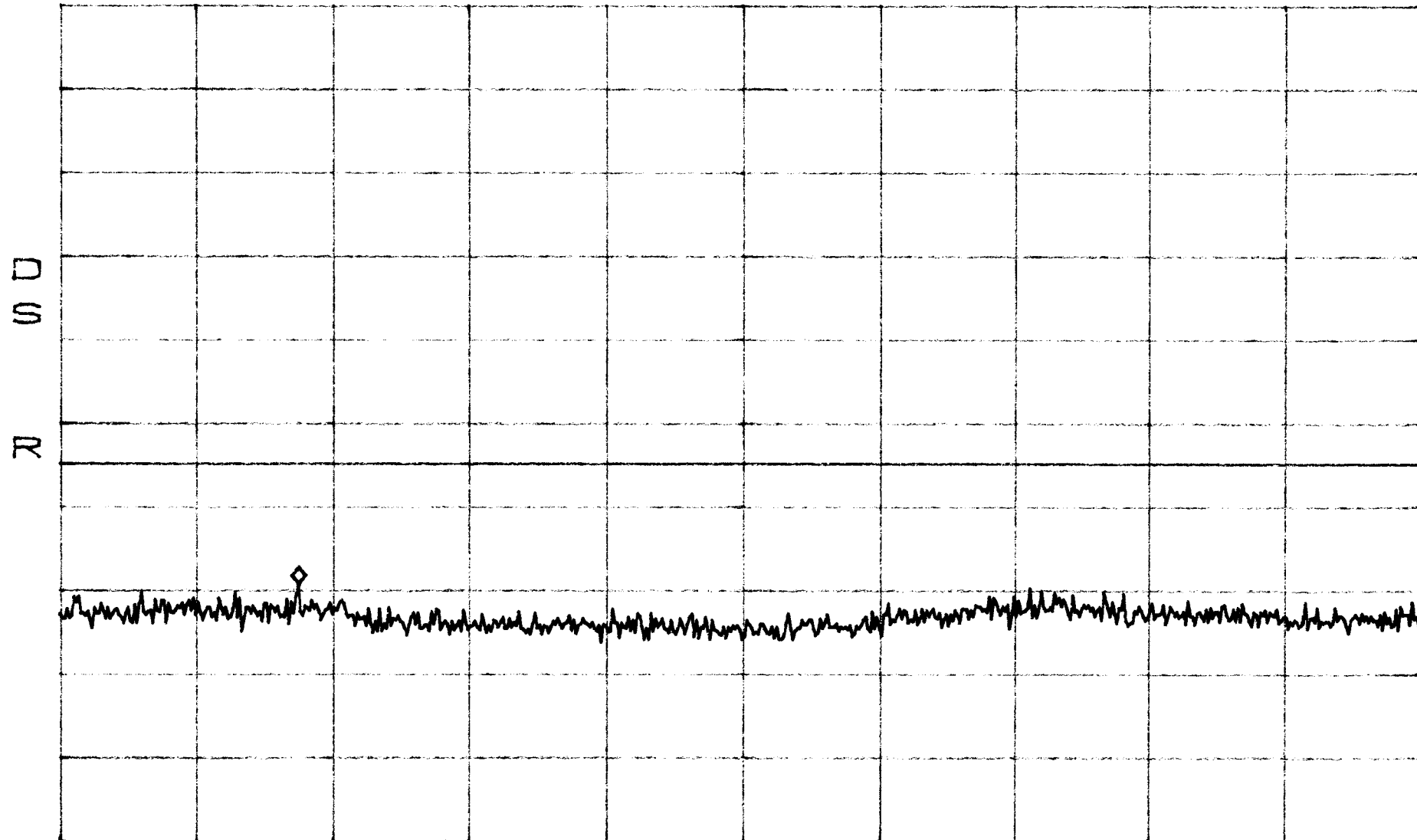
*ATTEN 20dB

MKR -27.27dBm

RL 41.9dBm

10dB/

2.575GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

CONDUCTED EMISSIONS BAND SMR TDMA

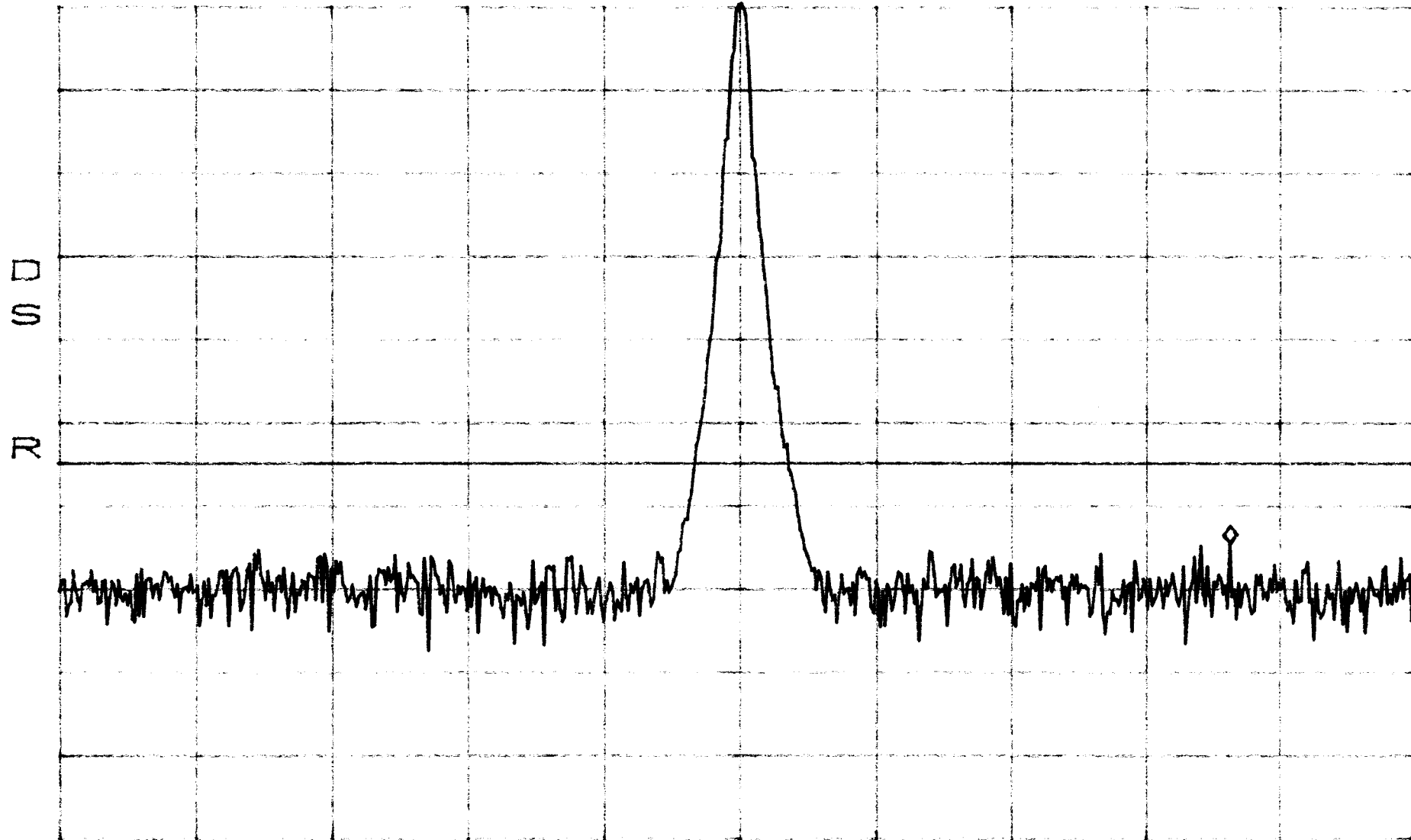
*ATTN 20dB

MKR -22.43dBm

RL 41.9dBm

10dB/

860.317MHz



CENTER 858.500MHz

SPAN 5.000MHz

*RBW 30kHz

VBW 30kHz

SWP 50ms

CONDUCTED EMISSIONS BAND SMR TDMA

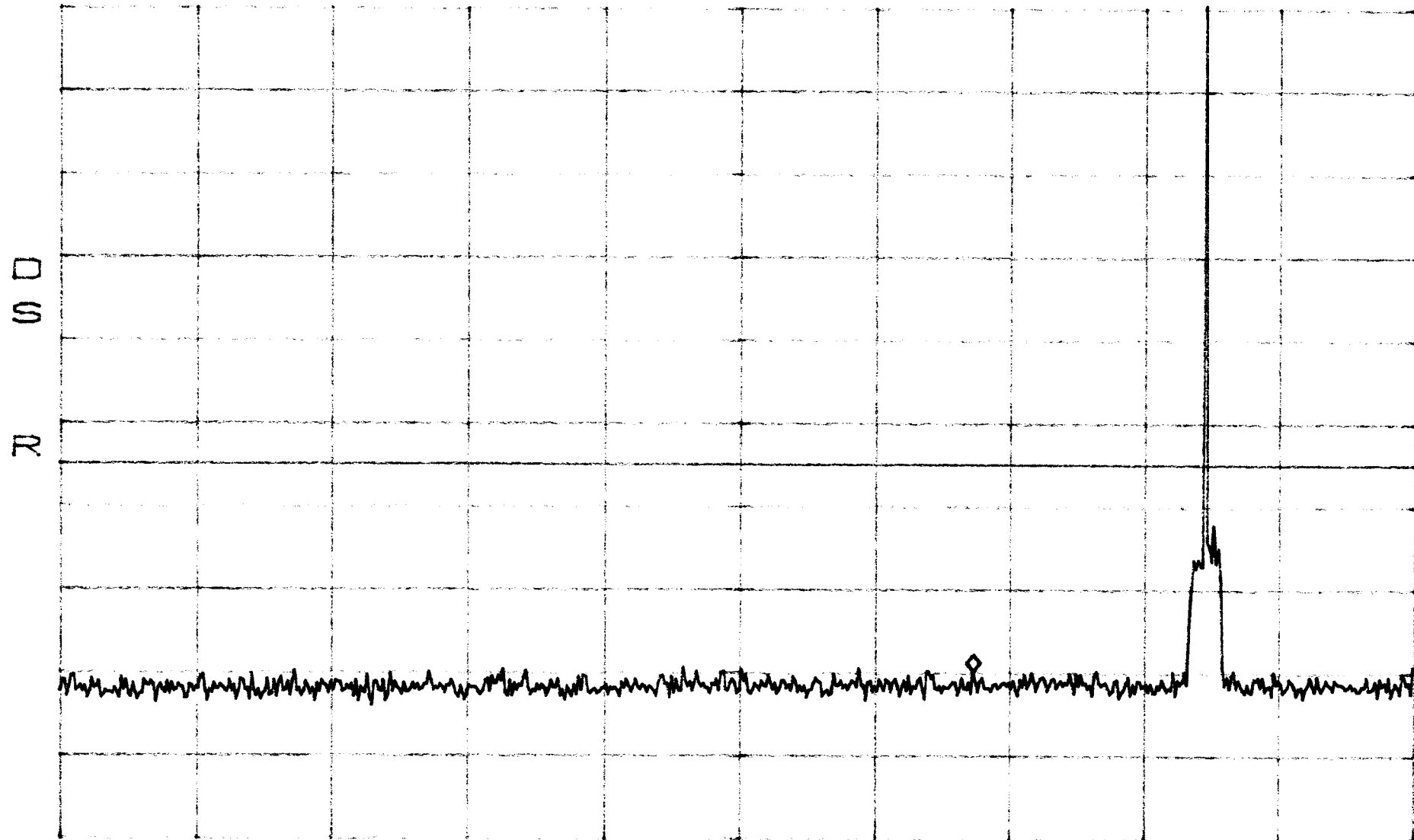
*ATTEN 20dB

RL 41.9dBm

10dB/

MKR -37.77dBm

683.1MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

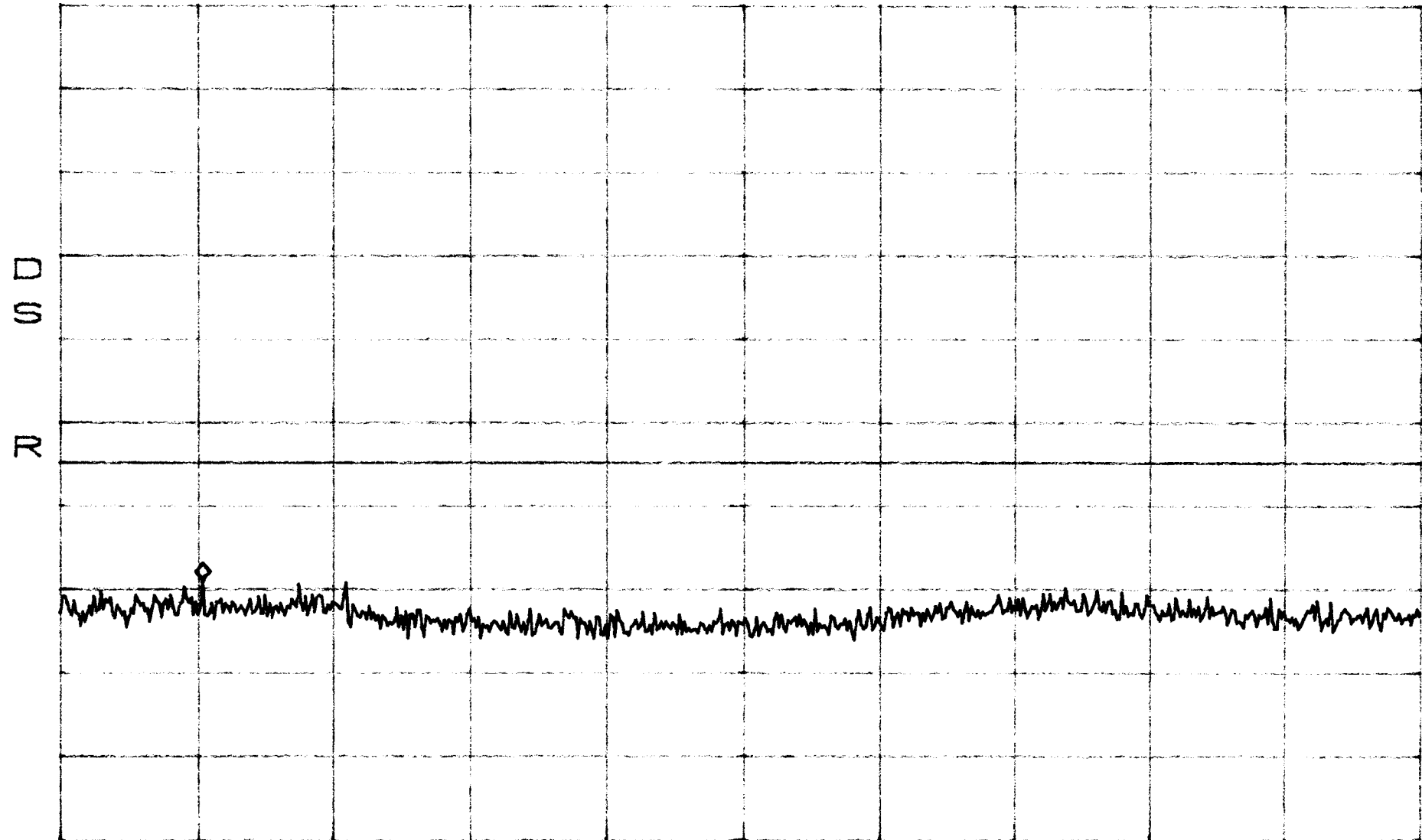
SWP 2.7sec

CONDUCTED EMISSIONS BAND SMR TDMA

*ATTEN 20dB
RL 41.9dBm

MKR -26.93dBm
1.930GHz

10dB/



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

CONDUCTED EMISSIONS BAND SMR CDMA

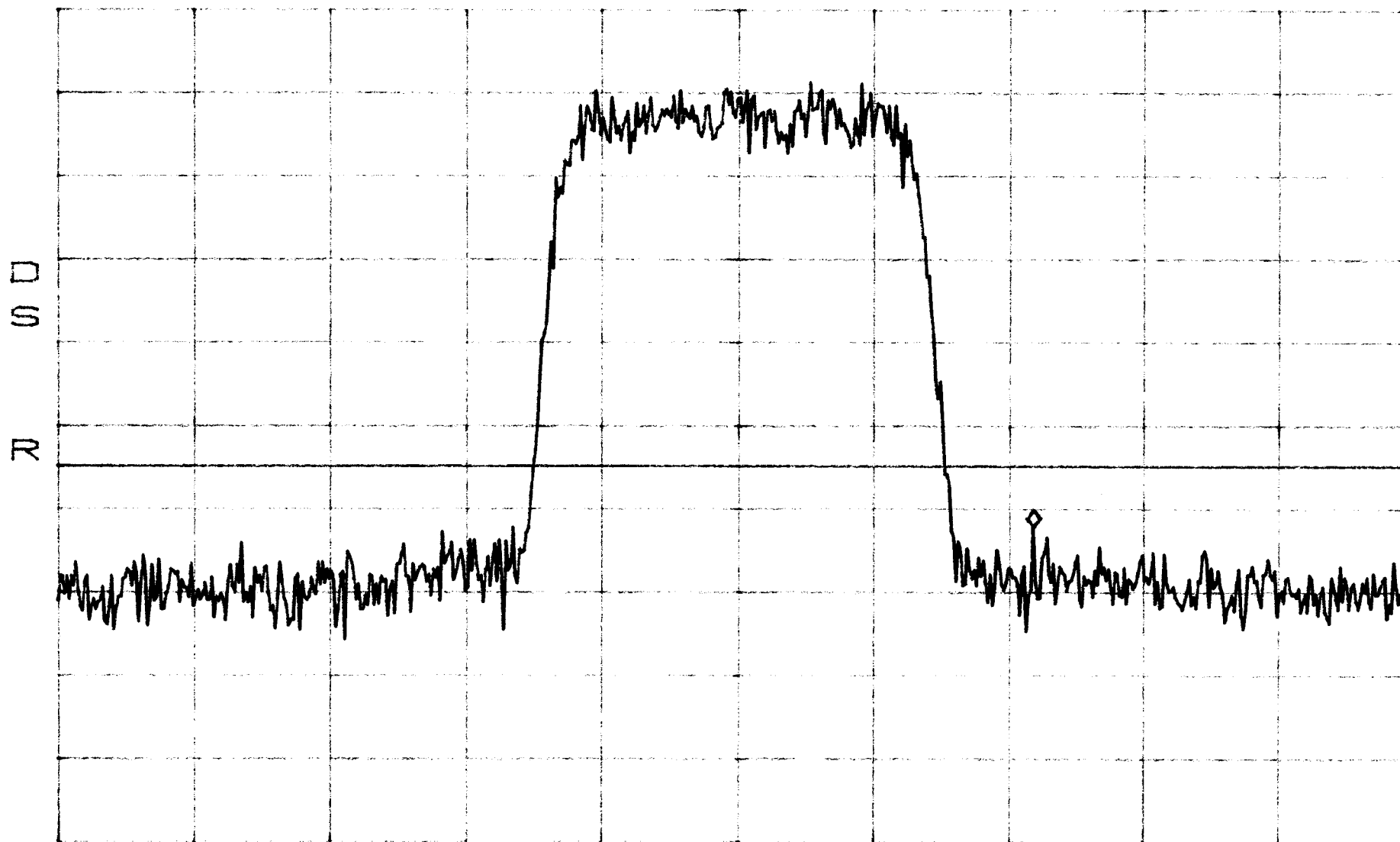
*ATTEN 20dB

MKR -20.10dBm

RL 41.9dBm

10dB/

858.592MHz



CENTER 858.500MHz

SPAN 5.000MHz

*RBW 30kHz

VBW 30kHz

SWP 50ms

CONDUCTED EMISSIONS BAND SMR CDMA

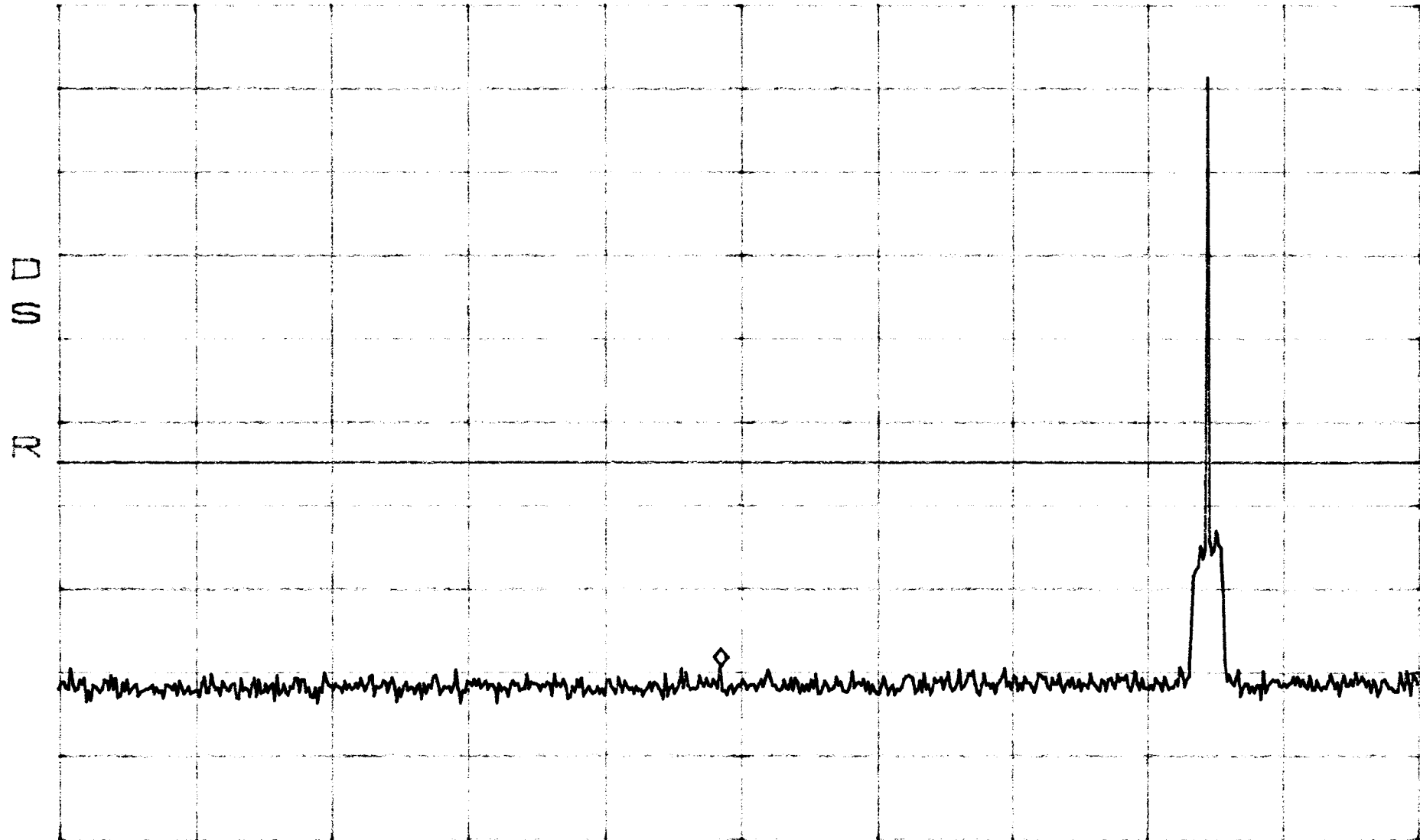
*ATTEN 20dB

MKR -37.27dBm

RL 41.9dBm

10dB/

500.5MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

SWP 2.7sec

CONDUCTED EMISSIONS BAND SMR CDMA

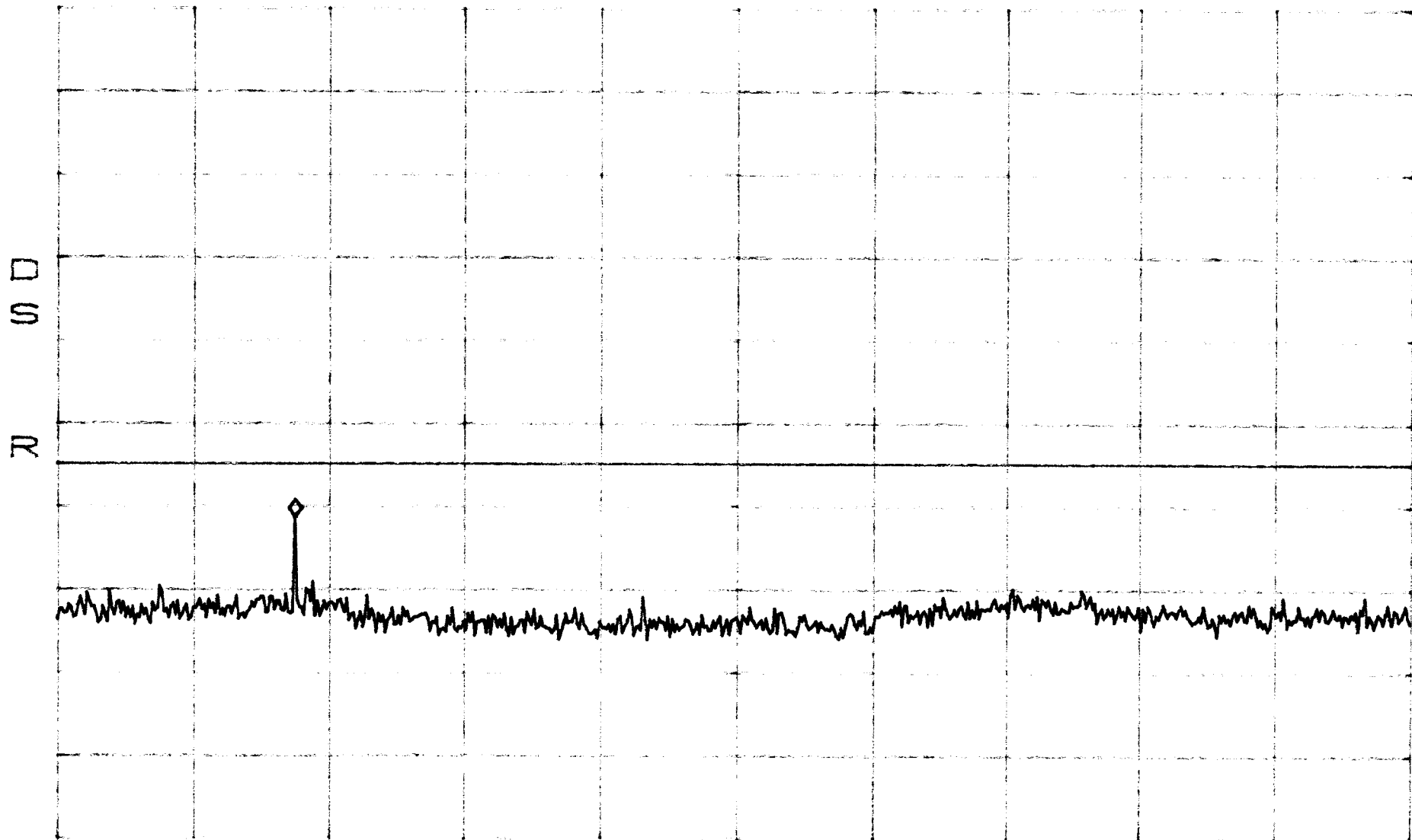
*ATTEN 20dB

MKR -19.27dBm

RL 41.9dBm

10dB/

2.575GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

CONDUCTED EMISSIONS BAND SMR

BAND EDGE

FM

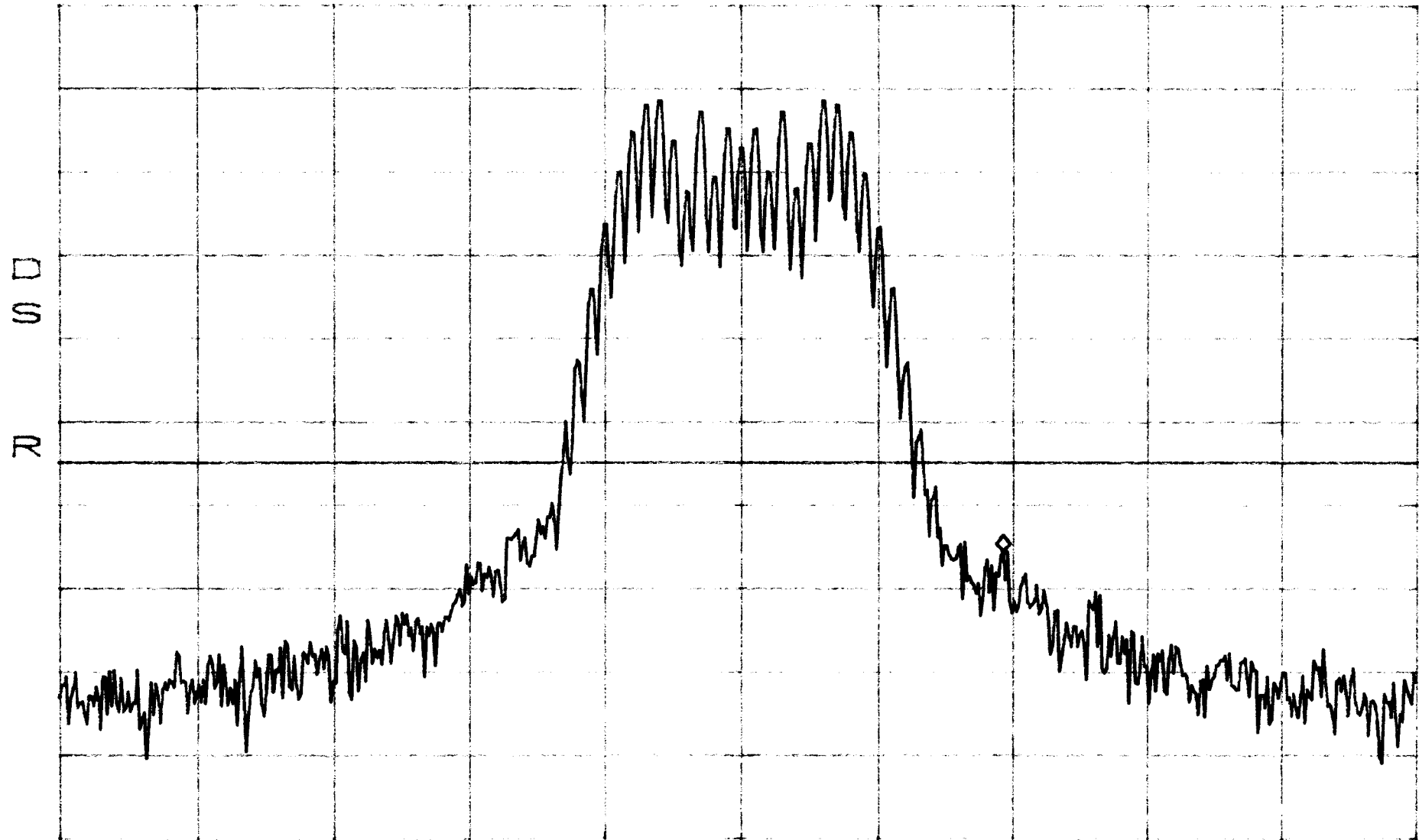
*ATTEN 20dB

MKR -23.60dBm

RL 41.9dBm

10dB/

851.2193MHz



CENTER 851.2000MHz

SPAN 100.0kHz

*RBW 300Hz

VBW 300Hz

SWP 2.8sec

CONDUCTED EMISSIONS BAND SMR

BAND EDGE

FM

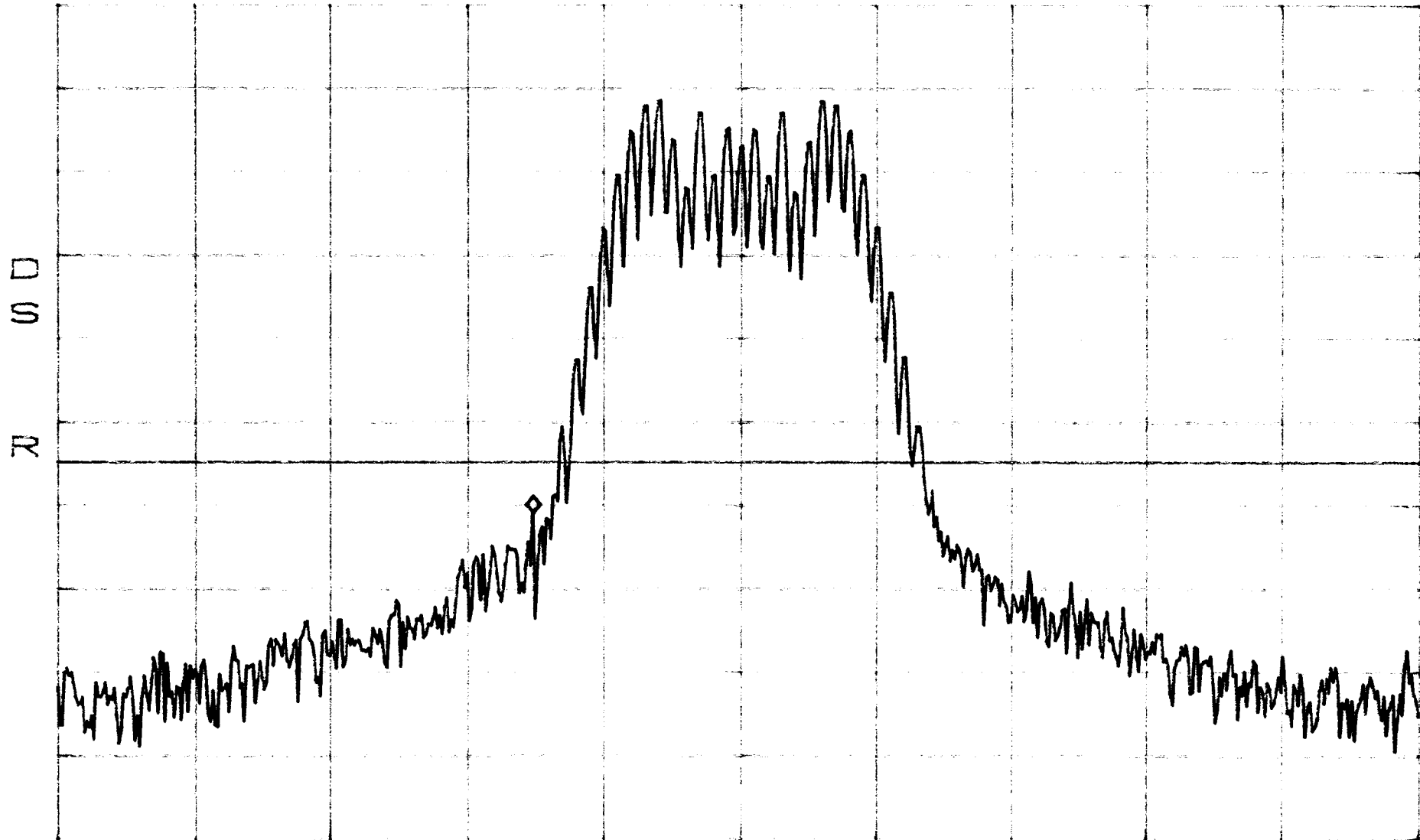
*ATTEN 20dB

MKR -18.93dBm

RL 41.9dBm

10dB/

865.7848MHz



CENTER 865.8000MHz

SPAN 100.0kHz

*RBW 300Hz

VBW 300Hz

SWP 2.8sec

RADIATED EMISSIONS



Test Report #: NC303497 Run 1 Test Area: OW

EUT Model #: DGVL-206100SYS Date: 7/29/03

EUT Serial #: NONE EUT Power: 40VDC\120VAC Temperature: 19.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: ADC Rel. Humidity: 62.0 %

EUT Description: DIGIVANCE SMR 20 WATT SYSTEM

Notes: LIMIT = -13dBm. Substitution determined 83.8dBuV/m = -13dBm.

Data File Name: 3497.dat

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List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 -13dBm 83.8dBuV/m	DELTA2
TRANSMITTING AT 851 MHZ LOW CHANNEL						
39.9 MHz	67.3 Pk	0.6 / 16.83 / 28.3 / 0.0	56.43	V / 1.00 / 0	-27.37	n/a
38.4 MHz	65.65 Pk	0.6 / 17.42 / 28.3 / 0.0	55.37	V / 1.00 / 0	-28.43	n/a
75.23 MHz	71.4 Pk	0.81 / 8.25 / 28.2 / 0.0	52.26	V / 1.00 / 0	-31.54	n/a
84.76 MHz	75.45 Pk	0.9 / 7.22 / 28.2 / 0.0	55.37	V / 1.00 / 0	-28.43	n/a
142.018 MHz	79.15 Pk	1.13 / 8.89 / 28.3 / 0.0	60.87	V / 1.00 / 0	-22.93	n/a
213.017 MHz	63.1 Pk	1.4 / 10.77 / 28.2 / 0.0	47.07	V / 1.00 / 0	-36.73	n/a
221.201 MHz	49.5 Pk	1.4 / 11.02 / 28.2 / 0.0	33.72	V / 1.00 / 0	-50.08	n/a
235.932 MHz	52.8 Pk	1.46 / 11.3 / 28.26 / 0.0	37.3	V / 1.00 / 0	-46.5	n/a
284.022 MHz	61.9 Pk	1.63 / 12.8 / 28.27 / 0.0	48.05	V / 1.00 / 0	-35.75	n/a
355.02 MHz	57.7 Pk	1.85 / 15.0 / 28.2 / 0.0	46.35	V / 1.00 / 0	-37.45	n/a
426.024 MHz	69.8 Pk	2.0 / 16.9 / 28.09 / 0.0	60.61	V / 1.00 / 0	-23.19	n/a
497.01 MHz	54.95 Pk	2.2 / 17.45 / 28.1 / 0.0	46.5	V / 1.00 / 0	-37.3	n/a
568.027 MHz	60.8 Pk	2.33 / 18.32 / 28.1 / 0.0	53.35	V / 1.00 / 0	-30.45	n/a
639.025 MHz	55.95 Pk	2.5 / 19.81 / 28.0 / 0.0	50.26	V / 1.00 / 0	-33.54	n/a
710.024 MHz	63.1 Pk	2.65 / 20.36 / 28.0 / 0.0	58.11	V / 1.00 / 0	-25.69	n/a
852.027 MHz	48.35 Pk	2.9 / 22.3 / 27.7 / 0.0	45.85	V / 1.00 / 0	-37.95	n/a
923.02 MHz	51.8 Pk	2.96 / 23.47 / 27.7 / 0.0	50.53	V / 1.00 / 0	-33.27	n/a
976.259 MHz	36.1 Pk	3.12 / 22.4 / 27.7 / 0.0	33.92	V / 1.00 / 0	-49.88	n/a
994.014 MHz	47.6 Pk	3.17 / 22.7 / 27.7 / 0.0	45.77	V / 1.00 / 0	-38.03	n/a
1.065 GHz	48.5 Pk	3.27 / 23.1 / 27.7 / 0.0	47.17	V / 1.00 / 0	-36.63	n/a
1.207 GHz	37.4 Pk	3.34 / 24.04 / 27.71 / 0.0	37.07	V / 1.00 / 0	-46.73	n/a
1.349 GHz	39.6 Pk	3.6 / 25.76 / 27.88 / 0.0	41.09	V / 1.00 / 0	-42.71	n/a
1.42 GHz	43.35 Pk	3.7 / 26.1 / 27.95 / 0.0	45.2	V / 1.00 / 0	-38.6	n/a
1.562 GHz	40.05 Pk	3.89 / 26.8 / 28.09 / 0.0	42.65	V / 1.00 / 0	-41.15	n/a
1.702 GHz	45.65 Pk	4.03 / 28.37 / 27.99 / 0.0	50.07	V / 1.00 / 0	-33.73	n/a

Tested by:

KTHR

Printed

Signature

Reviewed
by:

TKS

Printed

Signature

RADIATED EMISSIONS



Test Report #: NC303497 Run 1 Test Area: OW

EUT Model #: DGVL-206100SYS Date: 7/29/03

EUT Serial #: NONE EUT Power: 40VDC\120VAC Temperature: 19.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: ADC Rel. Humidity: 62.0 %

EUT Description: DIGIVANCE SMR 20 WATT SYSTEM

Notes: LIMIT = -13dBm. Substitution determined 83.8dBuV/m = -13dBm.

Data File Name: 3497.dat

Page: 2 of 7

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 -13dBm 83.8dBuV/m	DELTA2
284.022 MHz	76.18 Pk	1.63 / 12.8 / 28.27 / 0.0	62.33	V / 2.50 / 0	-21.47	n/a
355.02 MHz	62.02 Pk	1.85 / 15.0 / 28.2 / 0.0	50.67	V / 2.50 / 0	-33.13	n/a
994.014 MHz	49.29 Pk	3.17 / 22.7 / 27.7 / 0.0	47.46	V / 2.50 / 0	-36.34	n/a
1.207 GHz	42.25 Pk	3.34 / 24.04 / 27.71 / 0.0	41.92	V / 2.50 / 0	-41.88	n/a
1.349 GHz	41.28 Pk	3.6 / 25.76 / 27.88 / 0.0	42.77	V / 2.50 / 0	-41.03	n/a
1.702 GHz	54.73 Pk	4.03 / 28.37 / 27.99 / 0.0	59.15	V / 2.50 / 0	-24.65	n/a
221.201 MHz	50.19 Pk	1.4 / 11.02 / 28.2 / 0.0	34.41	V / 2.50 / 90	-49.39	n/a
426.024 MHz	71.83 Pk	2.0 / 16.9 / 28.09 / 0.0	62.64	V / 2.50 / 90	-21.16	n/a
639.025 MHz	59.42 Pk	2.5 / 19.81 / 28.0 / 0.0	53.73	V / 2.50 / 90	-30.07	n/a
1.349 GHz	41.48 Pk	3.6 / 25.76 / 27.88 / 0.0	42.97	V / 2.50 / 90	-40.83	n/a
1.562 GHz	41.89 Pk	3.89 / 26.8 / 28.09 / 0.0	44.49	V / 2.50 / 90	-39.31	n/a
39.9 MHz	69.15 Pk	0.6 / 16.83 / 28.3 / 0.0	58.28	V / 1.00 / 90	-25.52	n/a
1.207 GHz	44.45 Pk	3.34 / 24.04 / 27.71 / 0.0	44.12	V / 1.00 / 90	-39.68	n/a
1.702 GHz	58.3 Pk	4.03 / 28.37 / 27.99 / 0.0	62.72	V / 1.00 / 90	-21.08	n/a
852.03 MHz	54.0 Pk	2.9 / 22.3 / 27.7 / 0.0	51.5	V / 1.00 / 180	-32.3	n/a
994.01 MHz	54.2 Pk	3.17 / 22.7 / 27.7 / 0.0	52.37	V / 1.00 / 180	-31.43	n/a
1.702 GHz	58.75 Pk	4.03 / 28.37 / 27.99 / 0.0	63.17	V / 2.50 / 180	-20.63	n/a
1.562 GHz	44.25 Pk	3.89 / 26.8 / 28.09 / 0.0	46.85	V / 2.50 / 270	-36.95	n/a
1.562 GHz	50.8 Pk	3.89 / 26.8 / 28.09 / 0.0	53.4	V / 2.50 / 270	-30.4	n/a
426.024 MAXED OUT						
426.024 MHz	76.25 Pk	2.0 / 16.9 / 28.09 / 0.0	67.06	V / 1.30 / 25	-16.74	n/a
PRESCAN GRAPHS ARE MAX HOLD FULL 360 DEGREES AND 1-4 METERS						
1.717 GHz	63.2 Pk	4.07 / 28.78 / 27.98 / 0.0	68.07	V / 1.30 / 146	-15.73	n/a
TRANSMITTING AT 858.5 MHZ MID CHANNEL NO HIGHER LEVELS OR OTHER FREQ. DETECTED						
1.732 GHz	66.7 Pk	4.11 / 28.42 / 27.96 / 0.0	71.26	H / 1.20 / 142	-12.54	n/a
TRANSMITTING AT 866 MHZ HIGH CHANNEL NO HIGHER LEVELS OR OTHER FREQ. DETECTED						

Tested by: KTHR

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Reviewed by: TKS

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Signature

RADIATED EMISSIONS



Test Report #: NC303497 Run 1 Test Area: OW

EUT Model #: DGVL-206100SYS Date: 7/29/03

EUT Serial #: NONE EUT Power: 40VDC\120VAC Temperature: 19.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: ADC Rel. Humidity: 62.0 %

EUT Description: DIGIVANCE SMR 20 WATT SYSTEM

Notes: LIMIT = -13dBm. Substitution determined 83.8dBuV/m = -13dBm.

Data File Name: 3497.dat

Page: 3 of 7

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 -13dBm 83.8dBuV/m	DELTA2
221.201 MHz	51.25 Pk	1.4 / 11.02 / 28.2 / 0.0	35.47	H / 1.00 / 0	-48.33	n/a
710.024 MHz	65.2 Pk	2.65 / 20.36 / 28.0 / 0.0	60.21	H / 1.00 / 0	-23.59	n/a
923.02 MHz	53.32 Pk	2.96 / 23.47 / 27.7 / 0.0	52.05	H / 1.00 / 0	-31.75	n/a
1.349 GHz	42.93 Pk	3.6 / 25.76 / 27.88 / 0.0	44.42	H / 1.00 / 0	-39.38	n/a
213.017 MHz	71.4 Pk	1.4 / 10.77 / 28.2 / 0.0	55.37	H / 1.00 / 270	-28.43	n/a
710.02 MHz	66.45 Pk	2.65 / 20.36 / 28.0 / 0.0	61.46	H / 1.00 / 270	-22.34	n/a
852.03 MHz	58.75 Pk	2.9 / 22.3 / 27.7 / 0.0	56.25	H / 1.00 / 270	-27.55	n/a
923.02 MHz	62.3 Pk	2.96 / 23.47 / 27.7 / 0.0	61.03	H / 1.00 / 270	-22.77	n/a
976.26 MHz	37.4 Pk	3.12 / 22.4 / 27.7 / 0.0	35.22	H / 1.00 / 270	-48.58	n/a
1.065 GHz	49.8 Pk	3.27 / 23.1 / 27.7 / 0.0	48.47	H / 1.00 / 270	-35.33	n/a
355.02 MHz	63.6 Pk	1.85 / 15.0 / 28.2 / 0.0	52.25	H / 1.00 / 180	-31.55	n/a
1.065 GHz	52.5 Pk	3.27 / 23.1 / 27.7 / 0.0	51.17	H / 1.00 / 180	-32.63	n/a
213.017 MHz	74.3 Pk	1.4 / 10.77 / 28.2 / 0.0	58.27	H / 1.00 / 90	-25.53	n/a
221.201 MHz	56.65 Pk	1.4 / 11.02 / 28.2 / 0.0	40.87	H / 2.50 / 90	-42.93	n/a
710.02 MAXED OUT						
710.02 MHz	71.8 Pk	2.65 / 20.36 / 28.0 / 0.0	66.81	H / 1.40 / 139	-16.99	n/a
568.027 MHz	62.3 Pk	2.33 / 18.32 / 28.1 / 0.0	54.85	H / 1.40 / 139	-28.95	n/a
1.349 GHz	43.44 Pk	3.6 / 25.76 / 27.88 / 0.0	44.93	H / 1.40 / 139	-38.87	n/a
HIGH CHANNEL						
TRANSMITTING AT 866 MHZ HIGH CHANNEL NO HIGHER LEVELS OR OTHER FREQ. DETECTED						
1.732 GHz	59.25 Pk	4.11 / 28.42 / 27.96 / 0.0	63.81	H / 1.40 / 139	-19.99	n/a
MID CHANNEL						
TRANSMITTING AT 866 MHZ HIGH CHANNEL NO HIGHER LEVELS OR OTHER FREQ. DETECTED						
1.717 GHz	54.4 Pk	4.07 / 28.78 / 27.98 / 0.0	59.27	H / 1.40 / 139	-24.53	n/a
SCAN FROM 30 MHZ TO 2GHZ THREE CHANNELS 360 DEGREES 1-4 METERS HIGH						
2.059 GHz	36.15 Pk	4.76 / 29.73 / 27.51 / 0.0	43.12	V / 1.00 / 0	-40.68	n/a

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RADIATED EMISSIONS



Test Report #: NC303497 Run 1 Test Area: OW

EUT Model #: DGVL-206100SYS Date: 7/29/03

EUT Serial #: NONE EUT Power: 40VDC\120VAC Temperature: 19.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: ADC Rel. Humidity: 62.0 %

EUT Description: DIGIVANCE SMR 20 WATT SYSTEM

Notes: LIMIT = -13dBm. Substitution determined 83.8dBuV/m = -13dBm.

Data File Name: 3497.dat

Page: 4 of 7

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 -13dBm 83.8dBuV/m	DELTA2
2.13 GHz	33.85 Pk	5.0 / 29.89 / 27.47 / 0.0	41.27	V / 1.00 / 0	-42.53	n/a
2.322 GHz	34.9 Pk	5.23 / 30.31 / 27.34 / 0.0	43.09	V / 1.00 / 0	-40.71	n/a
2.334 GHz	38.15 Pk	5.2 / 30.34 / 27.33 / 0.0	46.35	V / 1.00 / 0	-37.45	n/a
2.414 GHz	35.95 Pk	5.13 / 30.51 / 27.33 / 0.0	44.26	V / 1.00 / 0	-39.54	n/a
2.553 GHz	38.65 Pk	5.29 / 30.78 / 27.49 / 0.0	47.23	V / 1.00 / 0	-36.57	n/a
2.556 GHz	34.5 Pk	5.3 / 30.79 / 27.5 / 0.0	43.09	V / 1.00 / 0	-40.71	n/a
2.84 GHz	35.2 Pk	5.75 / 31.24 / 27.55 / 0.0	44.64	V / 1.00 / 0	-39.16	n/a
2.982 GHz	33.9 Pk	5.9 / 31.47 / 27.52 / 0.0	43.75	V / 1.00 / 0	-40.05	n/a
2.13 GHz	35.9 Pk	5.0 / 29.89 / 27.47 / 0.0	43.32	V / 0.00 / 90	-40.48	n/a
2.84 GHz	34.15 Pk	5.75 / 31.24 / 27.55 / 0.0	43.59	V / 0.00 / 90	-40.21	n/a
2.84 GHz	40.7 Pk	5.75 / 31.24 / 27.55 / 0.0	50.14	V / 0.00 / 180	-33.66	n/a
MID CHANNEL						
2.576 GHz	41.45 Pk	5.33 / 30.82 / 27.51 / 0.0	50.09	V / 1.60 / 300	-33.71	n/a
HIGH CHANNEL						
2.598 GHz	33.7 Pk	5.36 / 30.86 / 27.52 / 0.0	42.4	V / 1.60 / 300	-41.4	n/a
2.598 GHz	40.95 Pk	5.36 / 30.86 / 27.52 / 0.0	49.65	H / 1.47 / 266	-34.15	n/a
MID CHANNEL						
2.576 GHz	45.8 Pk	5.33 / 30.82 / 27.51 / 0.0	54.44	H / 1.47 / 266	-29.36	n/a
LOW CHANNEL						
2.13 GHz	35.75 Pk	5.0 / 29.89 / 27.47 / 0.0	43.17	H / 1.00 / 180	-40.63	n/a
2.553 GHz	49.2 Pk	5.29 / 30.78 / 27.49 / 0.0	57.78	H / 1.00 / 180	-26.02	n/a
2.84 GHz	43.9 Pk	5.75 / 31.24 / 27.55 / 0.0	53.34	H / 1.00 / 180	-30.46	n/a
2.553 GHz	39.6 Pk	5.29 / 30.78 / 27.49 / 0.0	48.18	H / 1.00 / 270	-35.62	n/a
4.255 GHz	49.7 Pk	7.32 / 33.84 / 41.2 / 0.0	49.67	H / 1.00 / 0	-34.13	n/a
4.182 GHz	45.7 Pk	7.08 / 33.95 / 41.04 / 0.0	45.68	H / 1.00 / 0	-38.12	n/a
5.112 GHz	39.8 Pk	8.2 / 35.12 / 40.85 / 0.0	42.28	H / 1.00 / 0	-41.52	n/a

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RADIATED EMISSIONS



Test Report #: NC303497 Run 1 Test Area: OW

EUT Model #: DGVL-206100SYS Date: 7/29/03

EUT Serial #: NONE EUT Power: 40VDC\120VAC Temperature: 19.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: ADC Rel. Humidity: 62.0 %

EUT Description: DIGIVANCE SMR 20 WATT SYSTEM

Notes: LIMIT = -13dBm. Substitution determined 83.8dBuV/m = -13dBm.

Data File Name: 3497.dat

Page: 5 of 7

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 -13dBm 83.8dBuV/m	DELTA2
5.957 GHz	41.5 Pk	9.55 / 36.72 / 41.0 / 0.0	46.77	H / 1.00 / 0	-37.03	n/a
4.255 GHZ MAXED OUT						
4.255 GHz	50.6 Pk	7.32 / 33.84 / 41.2 / 0.0	50.57	H / 1.50 / 160	-33.23	n/a
MID CHANNEL						
4.293 GHz	49.85 Pk	7.45 / 33.79 / 41.22 / 0.0	49.87	H / 1.50 / 160	-33.93	n/a
5.151 GHz	42.15 Pk	8.23 / 35.2 / 40.75 / 0.0	44.83	H / 1.50 / 160	-38.97	n/a
6.01 GHz	45.8 Pk	9.73 / 36.79 / 41.14 / 0.0	51.17	H / 1.50 / 160	-32.63	n/a
HIGH CHANNEL						
4.33 GHz	46.9 Pk	7.57 / 33.74 / 41.3 / 0.0	46.91	H / 1.50 / 160	-36.89	n/a
5.196 GHz	43.7 Pk	8.26 / 35.29 / 40.83 / 0.0	46.43	H / 1.50 / 160	-37.37	n/a
6.062 GHz	45.0 Pk	9.9 / 36.75 / 41.1 / 0.0	50.55	H / 1.50 / 160	-33.25	n/a
4.33 GHz	46.85 Pk	7.57 / 33.74 / 41.3 / 0.0	46.86	V / 1.00 / 316	-36.94	n/a
MID CHANNEL						
4.293 GHz	45.05 Pk	7.45 / 33.79 / 41.22 / 0.0	45.07	V / 1.00 / 160	-38.73	n/a
LOW CHANNEL						
4.26 GHz	44.15 Pk	7.34 / 33.84 / 41.2 / 0.0	44.13	V / 1.00 / 160	-39.67	n/a
SCAN COMPLETE SCANNED FROM 30MHZ TO 10GHZ V/H 360 DEGREES 1-4 METERS THREE CHANNEL LOW, MID, AND HIGH						

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RADIATED EMISSIONS



Test Report #: NC303497 Run 1 Test Area: OW
EUT Model #: DGVL-206100SYS Date: 7/29/03
EUT Serial #: NONE EUT Power: 40VDC\120VAC Temperature: 19.0 °C
Test Method: FCC B Air Pressure: 99.0 kPa
Customer: ADC Rel. Humidity: 62.0 %

EUT Description: DIGIVANCE SMR 20 WATT SYSTEM

Notes: LIMIT = -13dBm. Substitution determined 83.8dBuV/m = -13dBm.

Data File Name: 3497.dat

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Measurement summary for limit1: FCC Pt 24 3m (Pk)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 -13dBm 83.8dBuV/m
1.732 GHz	66.7 Pk	4.11 / 28.42 / 27.96 / 0.0	71.26	H / 1.20 / 142	-12.54

Substitution performed on highest (worst case) emission (1.732 GHz).

Level measured = -28.54dBm

Final level with cable loss and antenna factor = -25.54

Level - Cable loss + Antenna dBi gain = Power Out
-28.54 - 4dB + 7dB = -25.54dBm = 2.79uW

Tested by: KTHR

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RADIATED EMISSIONS



Test Report #: NC303497 Run 1 Test Area: OW

EUT Model #: DGVL-206100SYS Date: 7/29/03

EUT Serial #: NONE EUT Power: 40VDC\120VAC Temperature: 19.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: ADC Rel. Humidity: 62.0 %

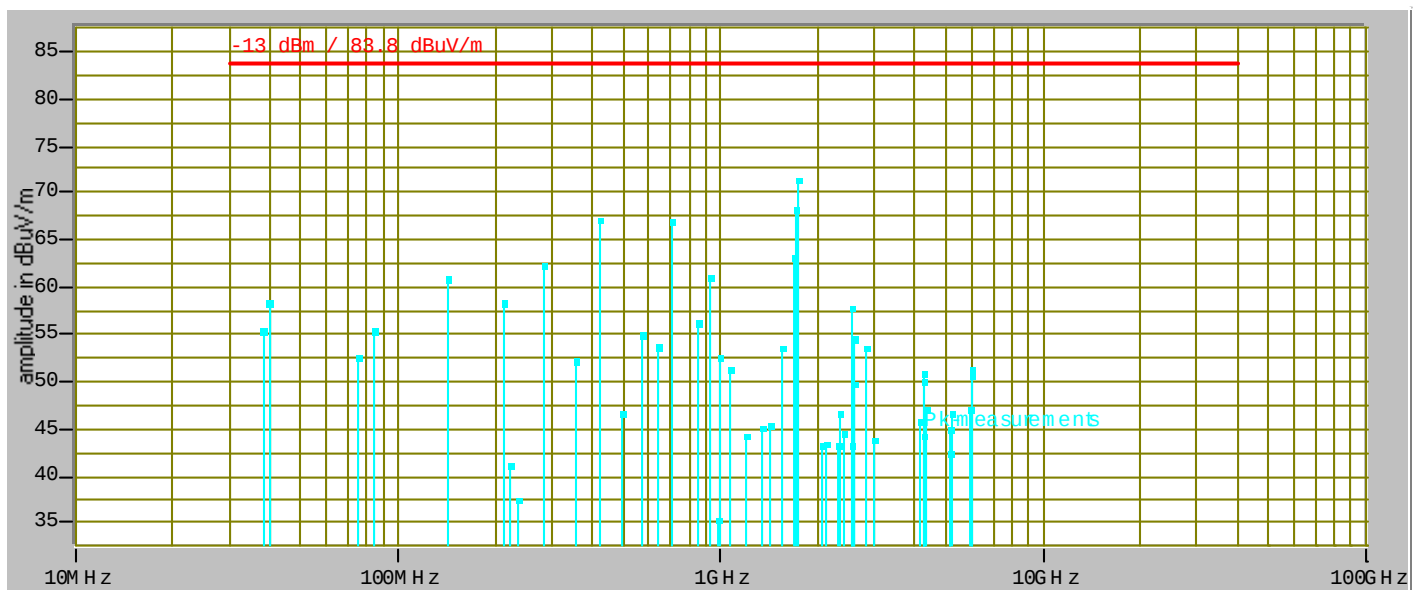
EUT Description: DIGIVANCE SMR 20 WATT SYSTEM

Notes: LIMIT = -13dBm. Substitution determined 83.8dBuV/m = -13dBm.

Data File Name: 3497.dat

Page: 7 of 7

Graph:



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Frequency Tolerance Test for ADC Inc. Digivance SMR 20 Watt System Model Number DGVL-2061XXSYS.

EUT SMR

Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
102 VAC	851.200 MHz	851.200 MHz	Yes
120 VAC	851.200 MHz	851.200 MHz	Yes
138 VAC	851.200 MHz	851.200 MHz	Yes
102 VAC	858.500 MHz	858.500 MHz	Yes
120 VAC	858.500 MHz	858.500 MHz	Yes
138 VAC	858.500 MHz	858.500 MHz	Yes
102 VAC	865.800 MHz	865.800 MHz	Yes
120 VAC	865.800 MHz	865.800 MHz	Yes
138 VAC	865.800 MHz	865.800 MHz	Yes
Temperature	Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C	851.200 MHz	851.200 MHz	Yes
-20 Deg. C	851.200 MHz	851.200 MHz	Yes
-10 Deg. C	851.200 MHz	851.200 MHz	Yes
0 Deg. C	851.200 MHz	851.200 MHz	Yes
10 Deg. C	851.200 MHz	851.200 MHz	Yes
20 Deg. C	851.200 MHz	851.200 MHz	Yes
30 Deg. C	851.200 MHz	851.200 MHz	Yes
40 Deg. C	851.200 MHz	851.200 MHz	Yes
50 Deg. C	851.200 MHz	851.200 MHz	Yes
-30 Deg. C	858.500 MHz	858.500 MHz	Yes
-20 Deg. C	858.500 MHz	858.500 MHz	Yes
-10 Deg. C	858.500 MHz	858.500 MHz	Yes
0 Deg. C	858.500 MHz	858.500 MHz	Yes
10 Deg. C	858.500 MHz	858.500 MHz	Yes
20 Deg. C	858.500 MHz	858.500 MHz	Yes
30 Deg. C	858.500 MHz	858.500 MHz	Yes
40 Deg. C	858.500 MHz	858.500 MHz	Yes
50 Deg. C	858.500 MHz	858.500 MHz	Yes
-30 Deg. C	865.800 MHz	865.800 MHz	Yes
-20 Deg. C	865.800 MHz	865.800 MHz	Yes
-10 Deg. C	865.800 MHz	865.800 MHz	Yes
0 Deg. C	865.800 MHz	865.800 MHz	Yes
10 Deg. C	865.800 MHz	865.800 MHz	Yes
20 Deg. C	865.800 MHz	865.800 MHz	Yes
30 Deg. C	865.800 MHz	865.800 MHz	Yes
40 Deg. C	865.800 MHz	865.800 MHz	Yes
50 Deg. C	865.800 MHz	865.800 MHz	Yes

Note: EUT Host is specified for indoor use only with temperature range of 0 to +50° C and was tested within its range.

Note: EUT STM and LPA are specified with a temperature range of -30 to +50° C and were tested within their range.

**CDMA Mask Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.**

For the CDMA modulation type emission mask test, the average value of the center frequency will be 16.23dB down from the CW peak power. On any frequency removed from the center carrier frequency by up to 750 kHz the emissions are at or below 16.23dB below the peak power. On any frequency between 750 kHz and 1.98 MHz the emissions are below 45dB below the peak power. On any frequency removed from the carrier frequency by more than 1.98 MHz the emissions are below 60dB below the peak power. The test was performed at the low, mid, and high parts of the respective SMR band.

Results:

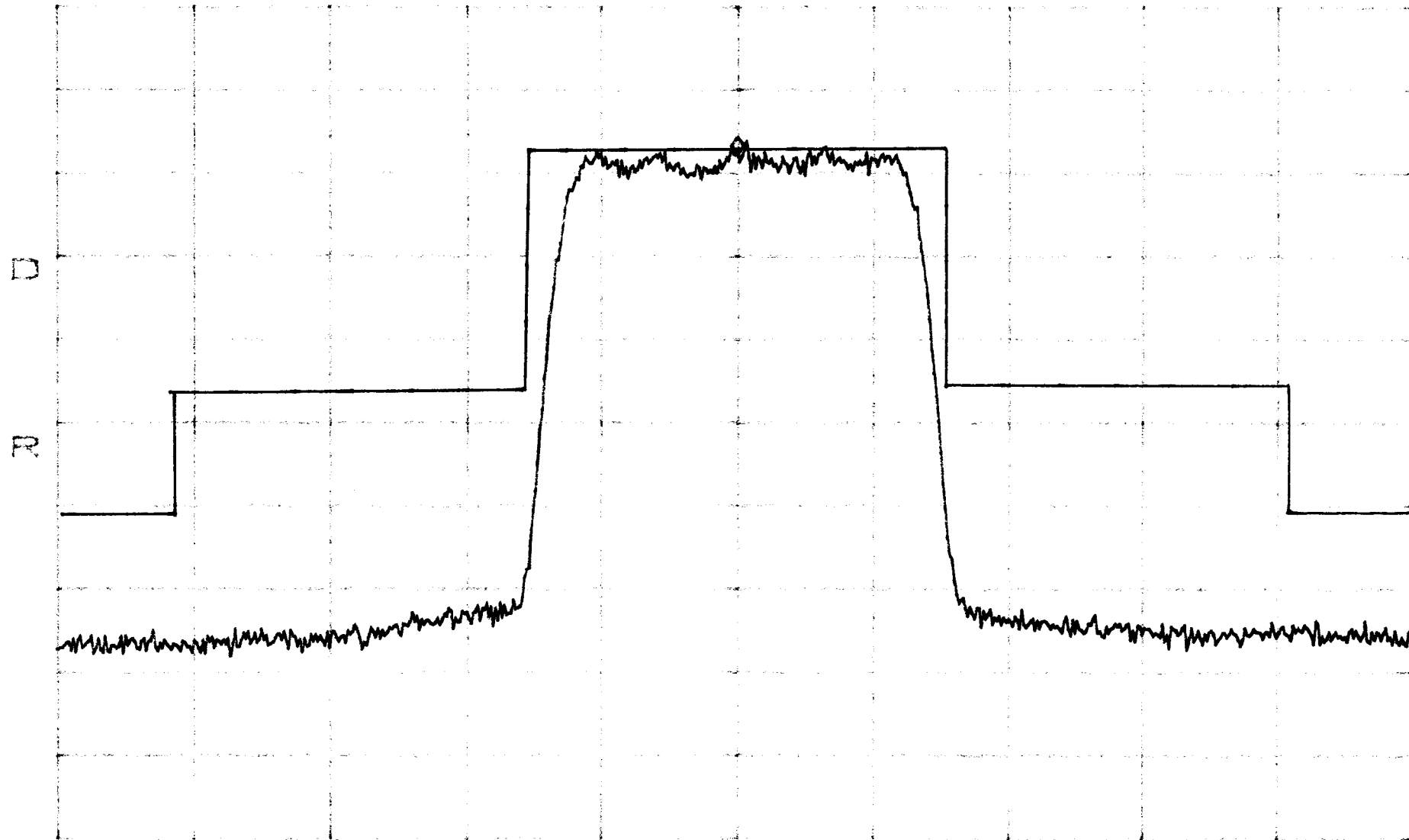
Pass (see plots)

CDMA MASK

BAND SMR

LOW

*ATTEN 20dB VAVG 100 MKR 24.23dBm
RL 41.9dBm 10dB/ 852.000MHz



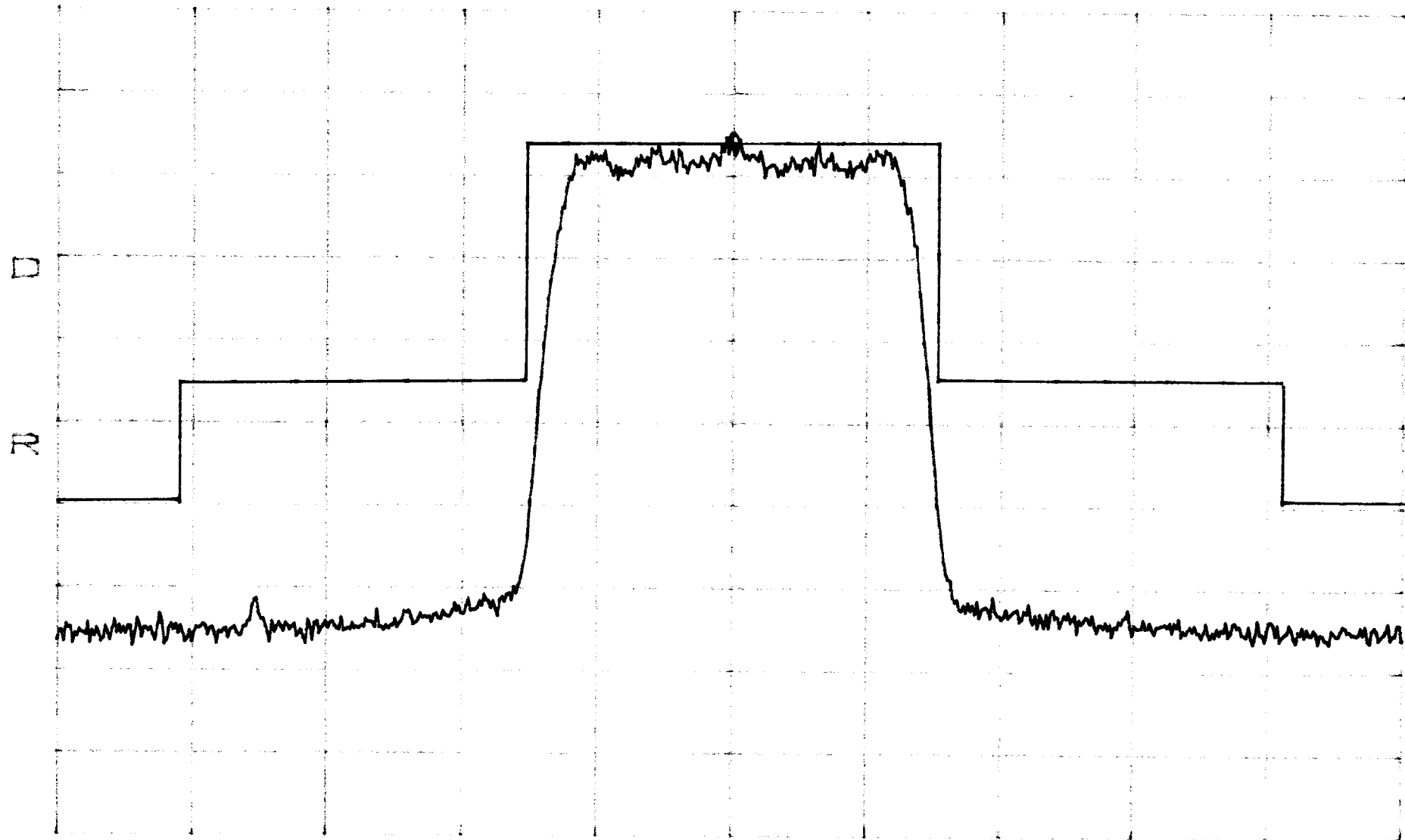
CENTER 852.000MHz SPAN 5.000MHz
*RBW 30kHz VBW 30kHz SWP 50ms

CDMA MASK

BAND SMR

MID

*ATTEN 20dB VAVG 100 MKR 25.23dBm
RL 41.9dBm 10dB/ 858.500MHz

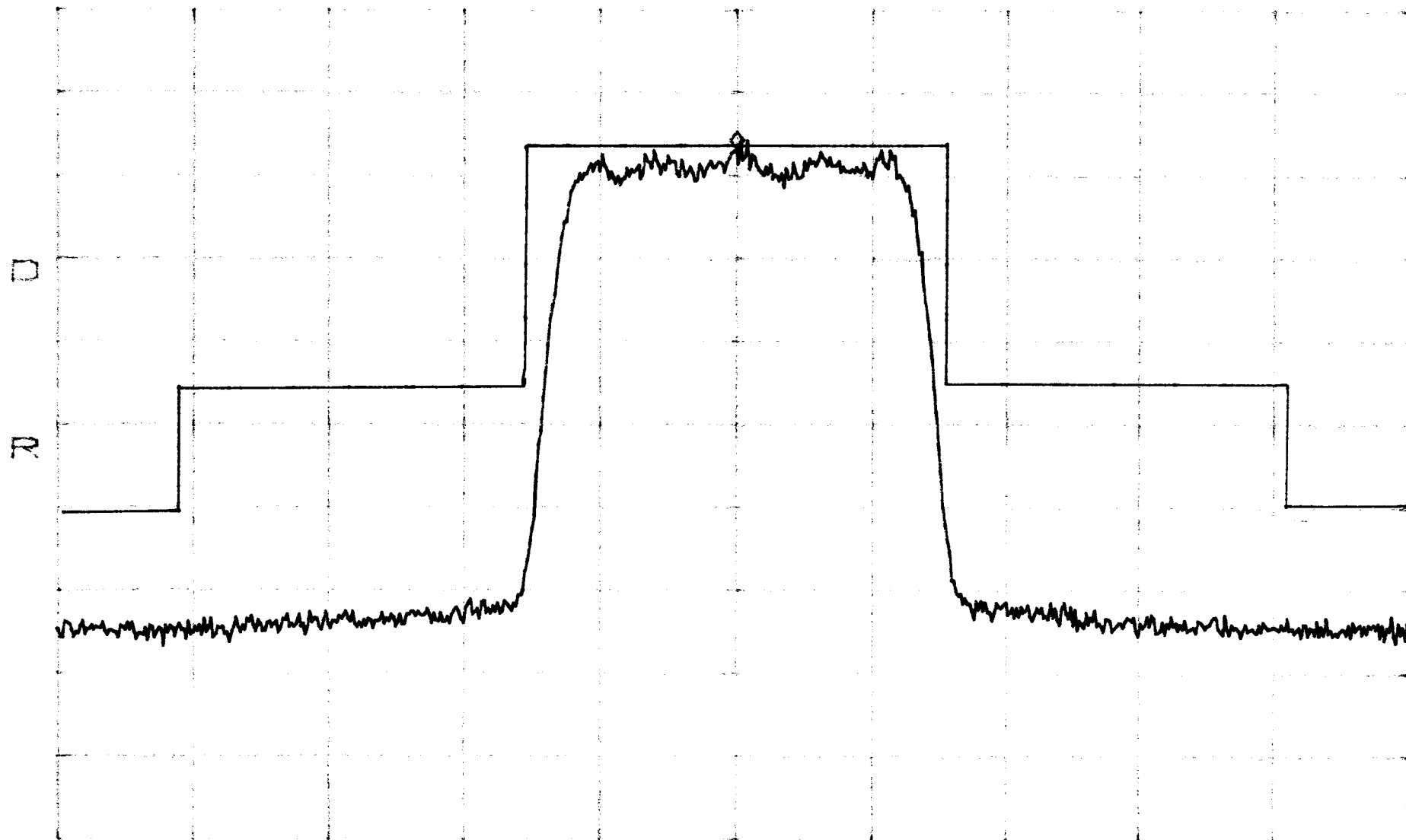


CENTER 858.500MHz SPAN 5.000MHz
*RBW 30kHz VBW 30kHz SWP 50ms

CDMA MASK HIGH

BAND SMR

*ATTN 20dB VAVG 100 MKR 25.23dBm
RL 41.9dBm 10dB/865.000MHz



CENTER 865.000MHz SPAN 5.000MHz
*RBW 30kHz VBW 30kHz SWP 50ms

**Inter-Modulation Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.**

The intermodulation product test was performed for each bandwidth setting of the EUT. Two tests were performed with each modulation type. Test 1 was with two signals input into the EUT at lower end channels. Test 2 was with two signals, one at a lower end channel and one at a higher end channel. The modulation types tested were CDMA, TDMA, and FM (1 kHz @ 8 kHz deviation). An investigation was made from 30 MHz to the 10th harmonic of the highest fundamental frequency (~10 GHz).

Results:

Pass (see plots)

INTERMODULATION BAND SMR

CLOSE

FM

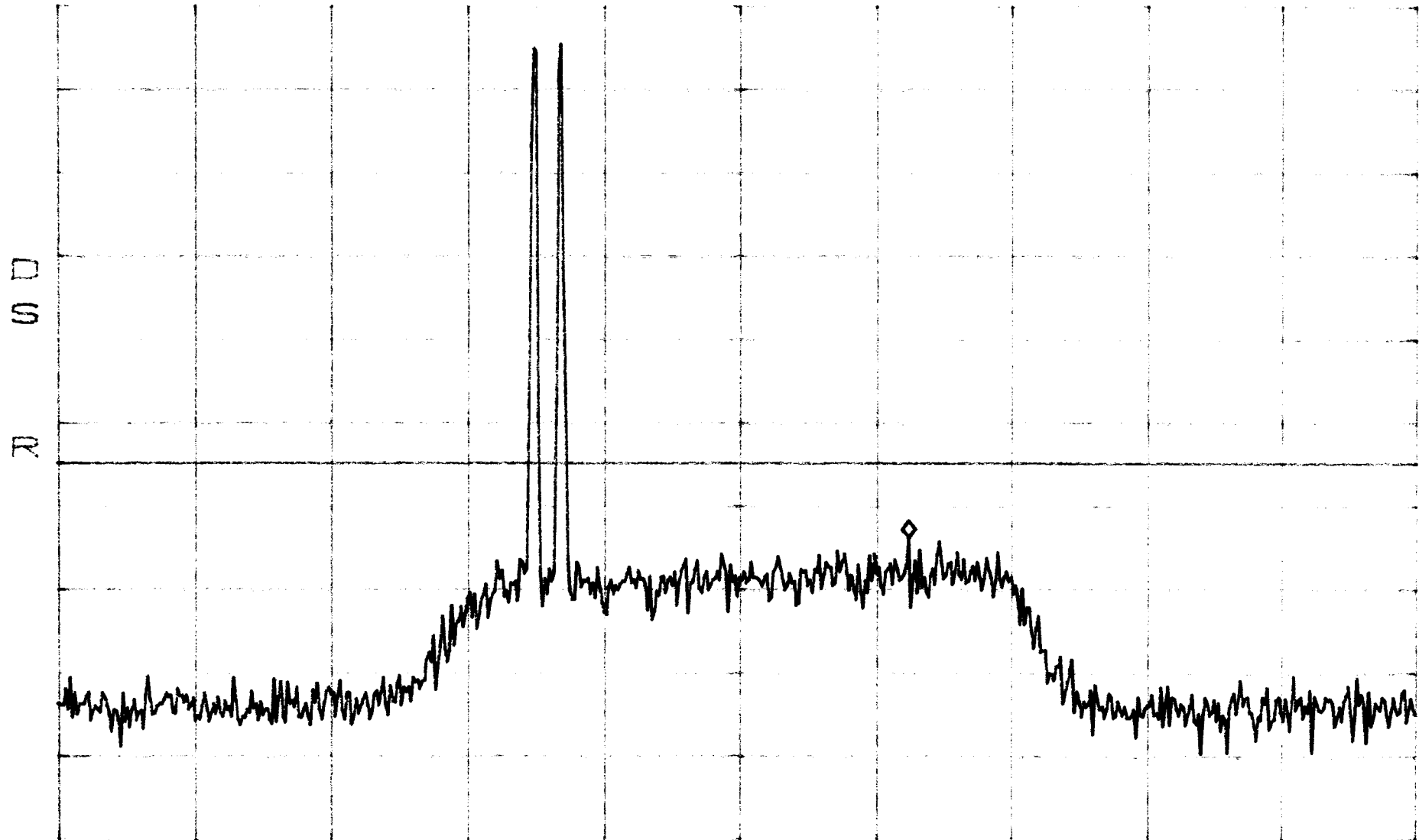
*ATTEN 20dB

RL 41.9dBm

10dB/

MKR -21.77dBm

864.87MHz



CENTER 858.50MHz

SPAN 50.00MHz

*RBW 30kHz

VBW 30kHz

SWP 140ms

INTERMODULATION BAND SMR

CLOSE

FM

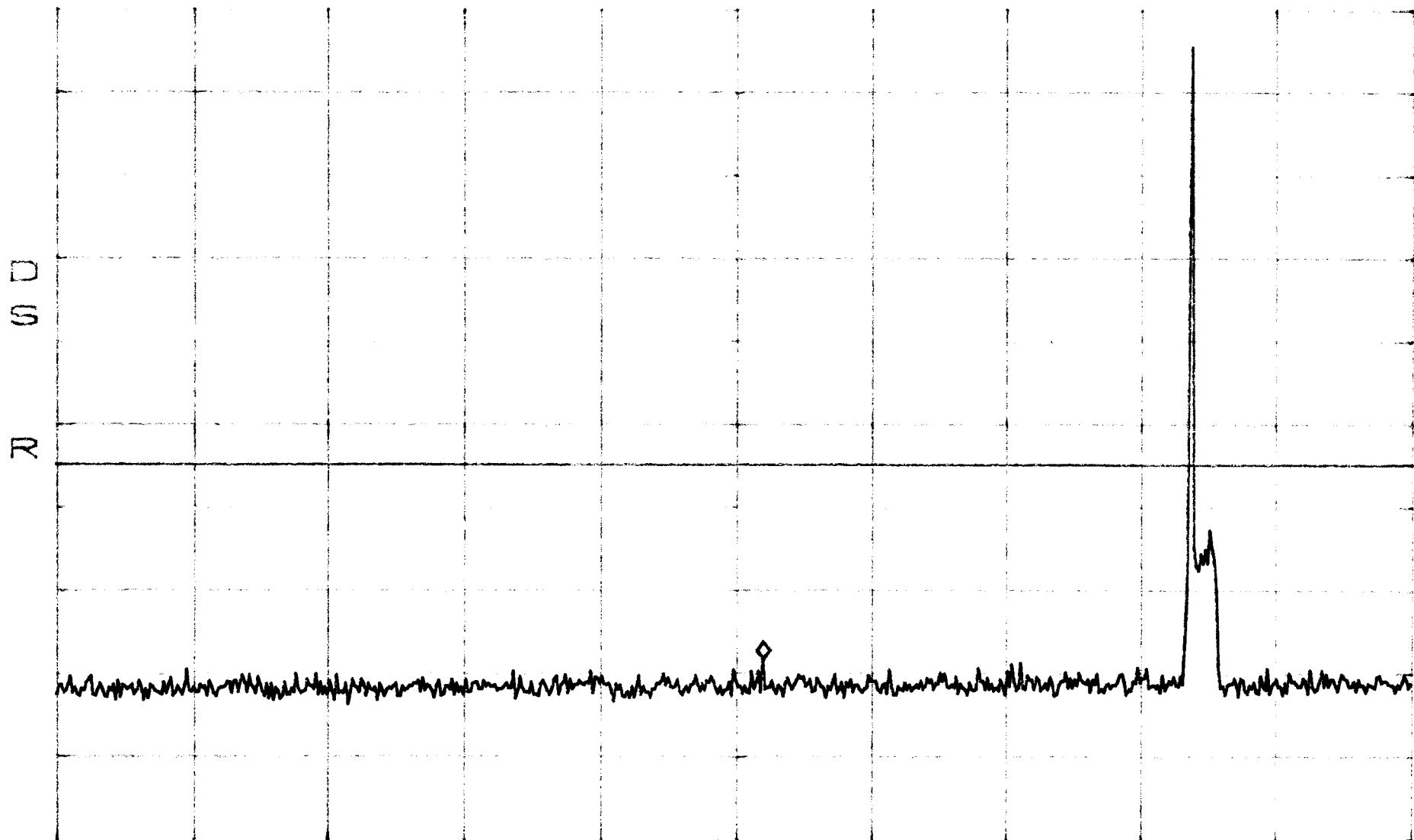
MKR -36.27dBm

*ATTN 20dB

RL 41.9dBm

10dB/

534.4MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

SWP 2.7sec

INTERMODULATION BAND SMR

CLOSE

FM

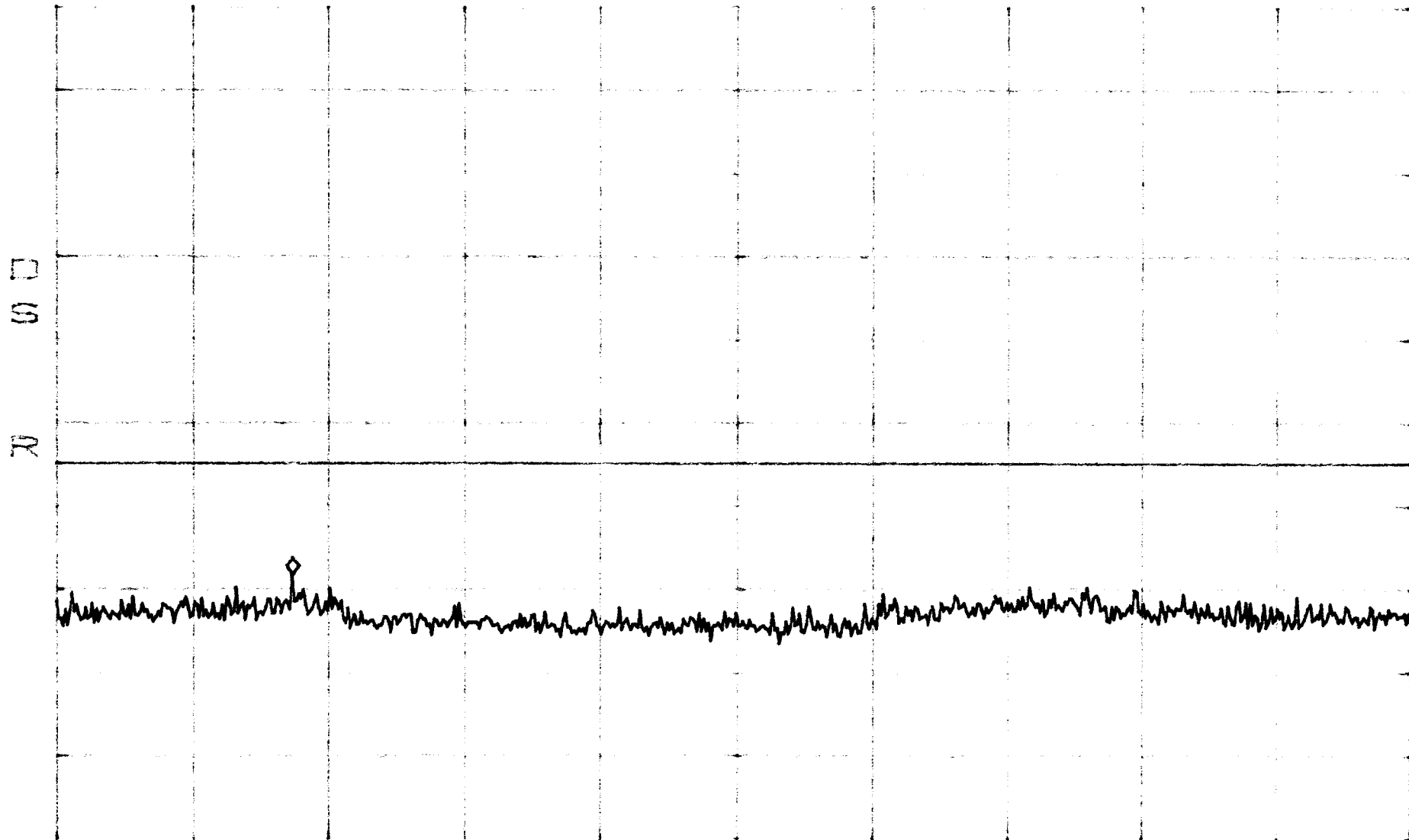
*ATTEN 20dB

MKR -26.27dBm

RL 41.9dBm

10dB/

2.560GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250mg

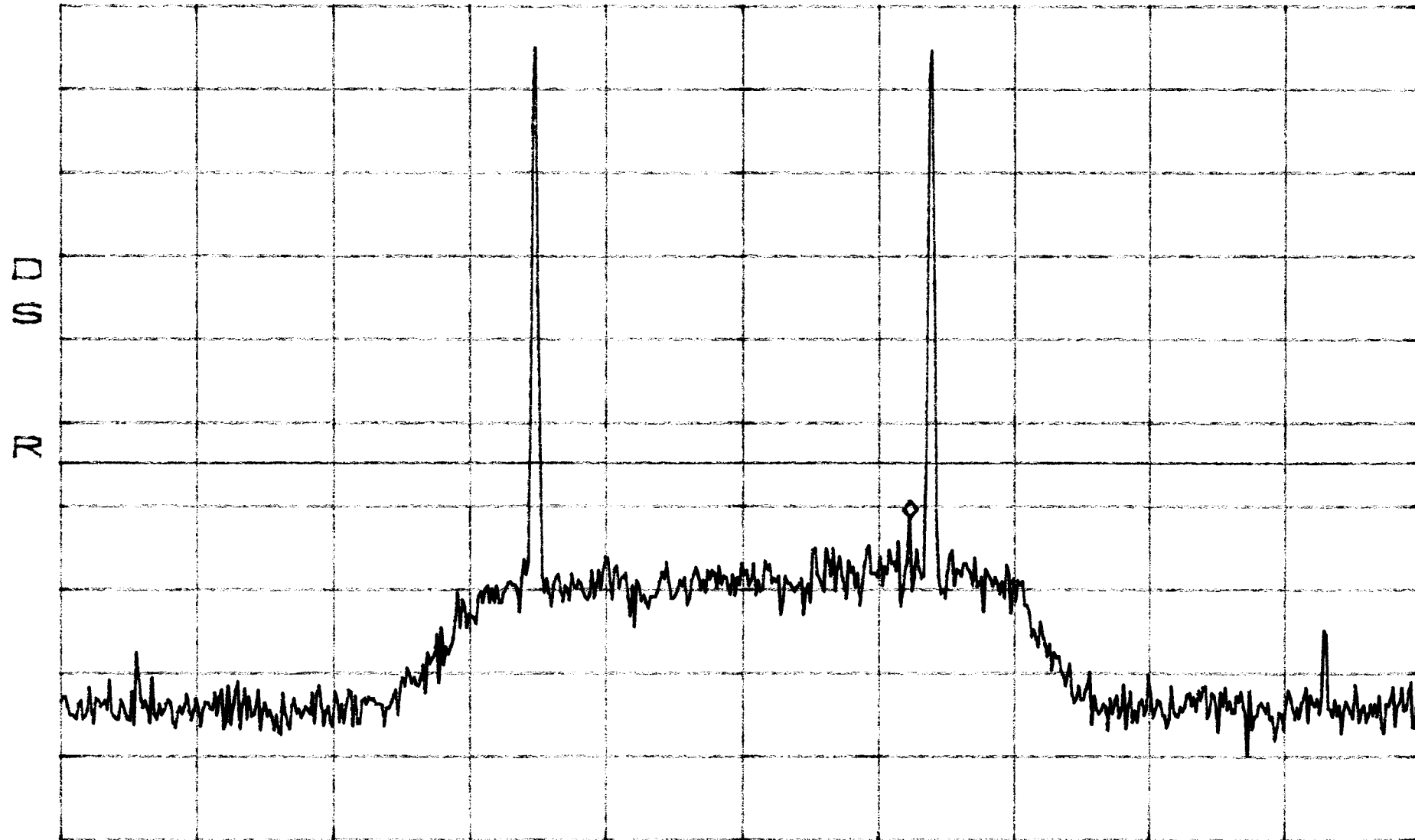
INTERMODULATION BAND SMR

APART
FM

*ATTEN 20dB
RL 41.9dBm

10dB/

MKR -19.43dBm
864.67MHz



CENTER 858.50MHz

SPAN 50.00MHz

*RBW 30kHz

VBW 30kHz

SWP 140ms

INTERMODULATION BAND SMR

APART

FM

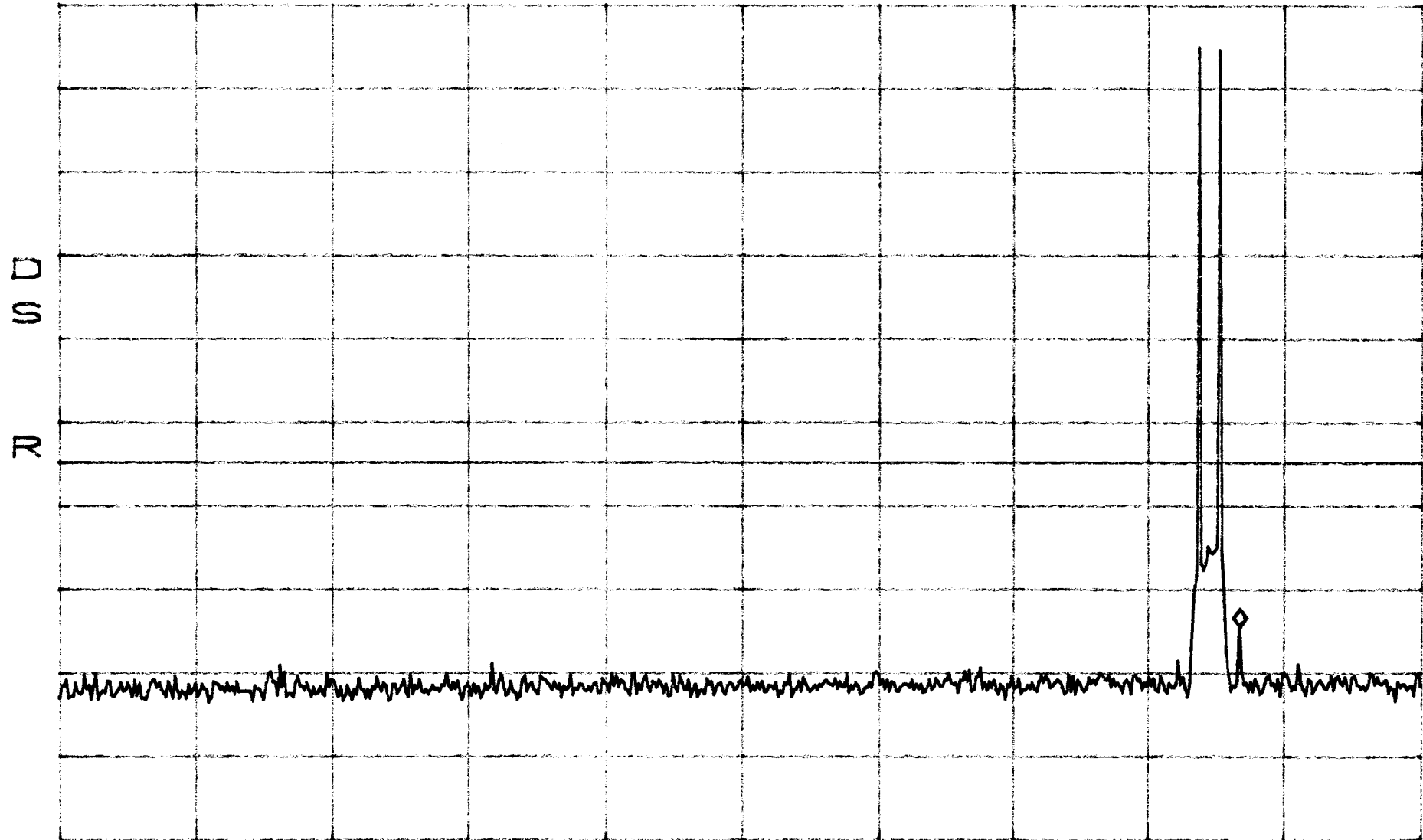
*ATTEN 20dB

MKR -32.43dBm

RL 41.9dBm

10dB/

872.3MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

SWP 2.7sec

INTERMODULATION BAND SMR

APART

FM

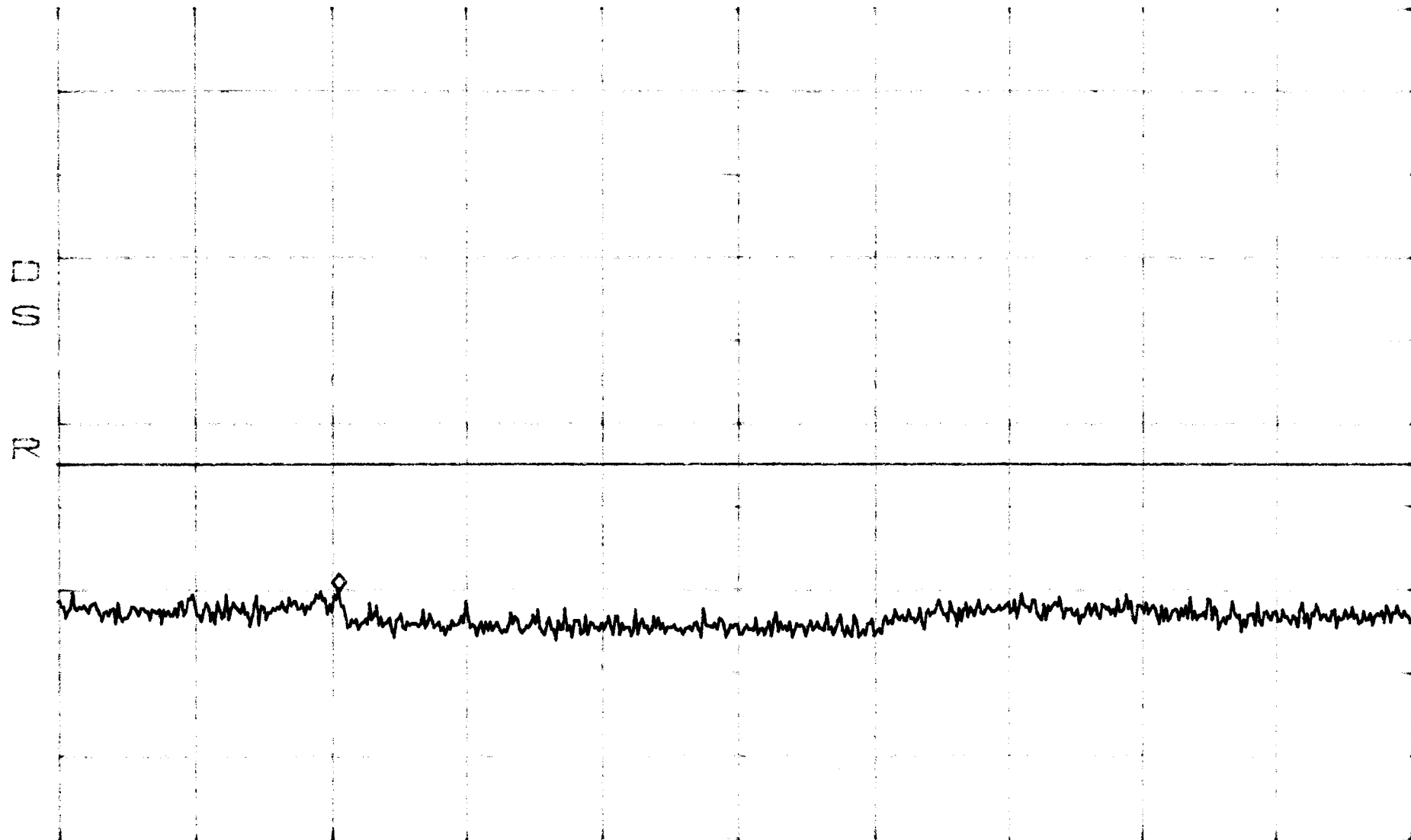
*ATTN 20dB

MKR -28.10dBm

RL 41.8dBm

10dB/

2.845GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

INTERMODULATION

BAND SMR

CLOSE
TDMA

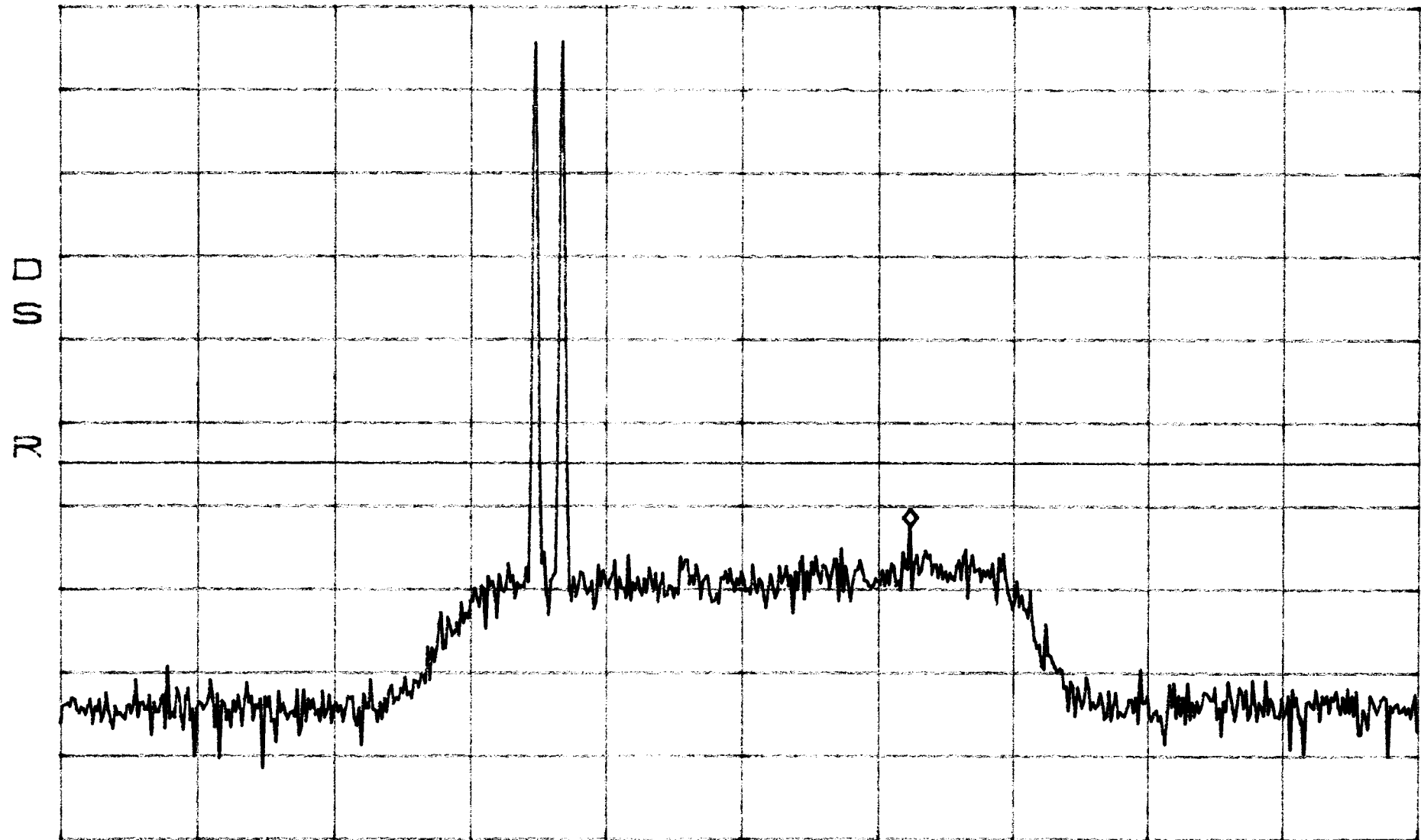
MKR -20.43dBm

*ATTEN 20dB

RL 41.9dBm

10dB/

864.67MHz



CENTER 858.50MHz

SPAN 50.00MHz

*RBW 30kHz

VBW 30kHz

SWP 140ms

INTERMODULATION BAND SMR

CLOSE

TDMA

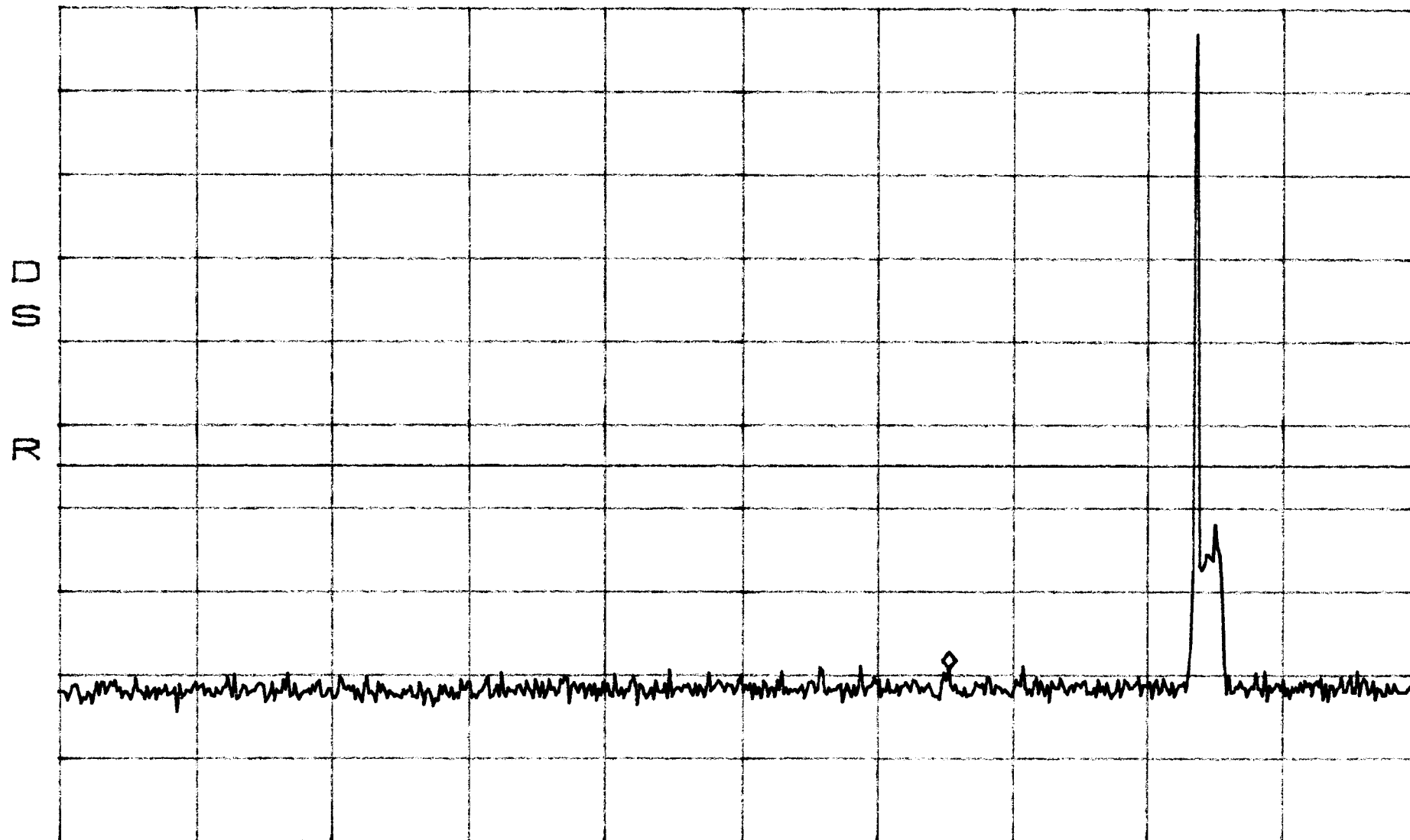
*ATTEN 20dB

RL 41.9dBm

10dB/

MKR -37.27dBm

663.7MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

SWP 2.7sec

INTERMODULATION BAND SMR

CLOSE

TDMA

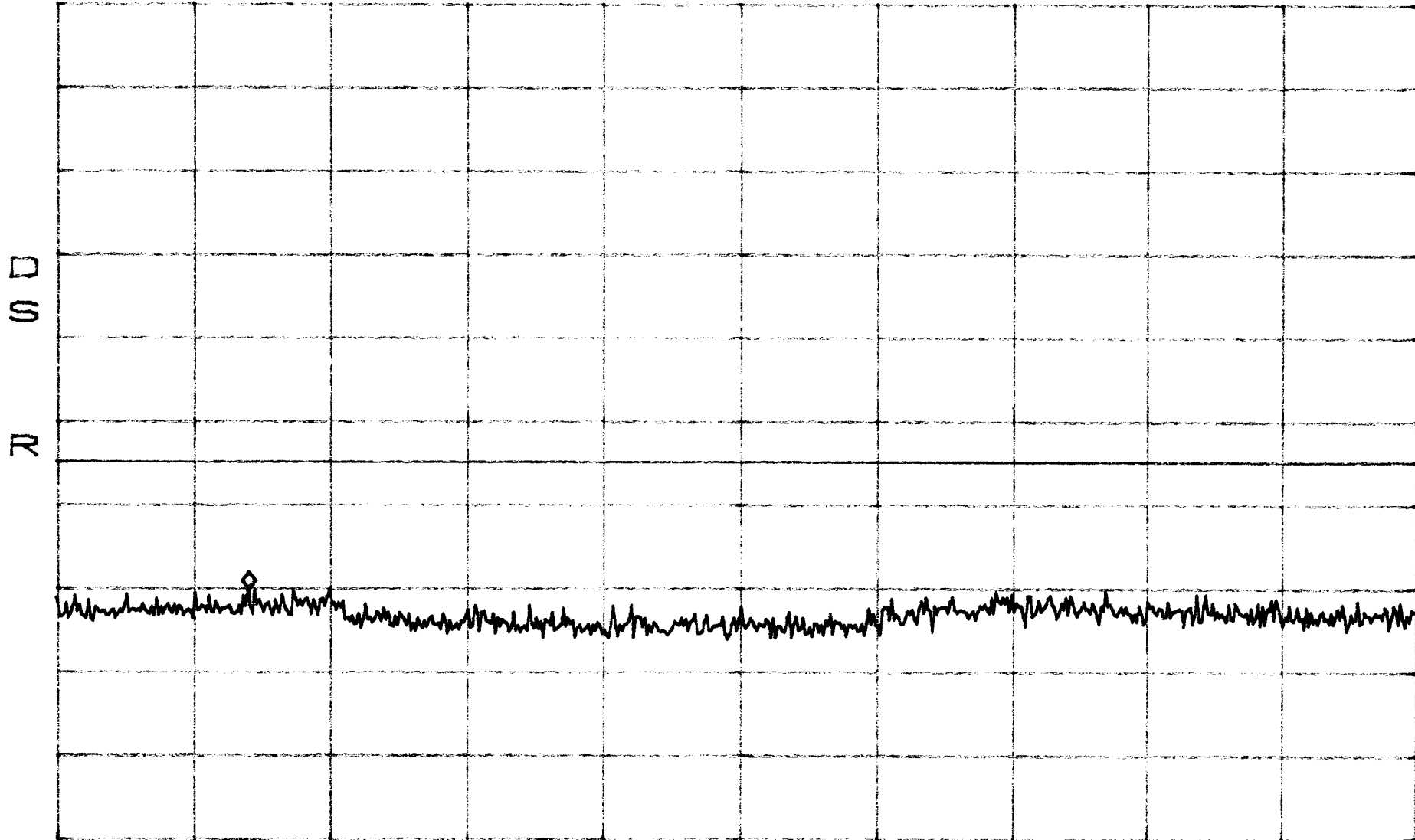
*ATTEN 20dB

MKR -28.10dBm

RL 41.9dBm

10dB/

2.260GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

INTERMODULATION BAND SMR

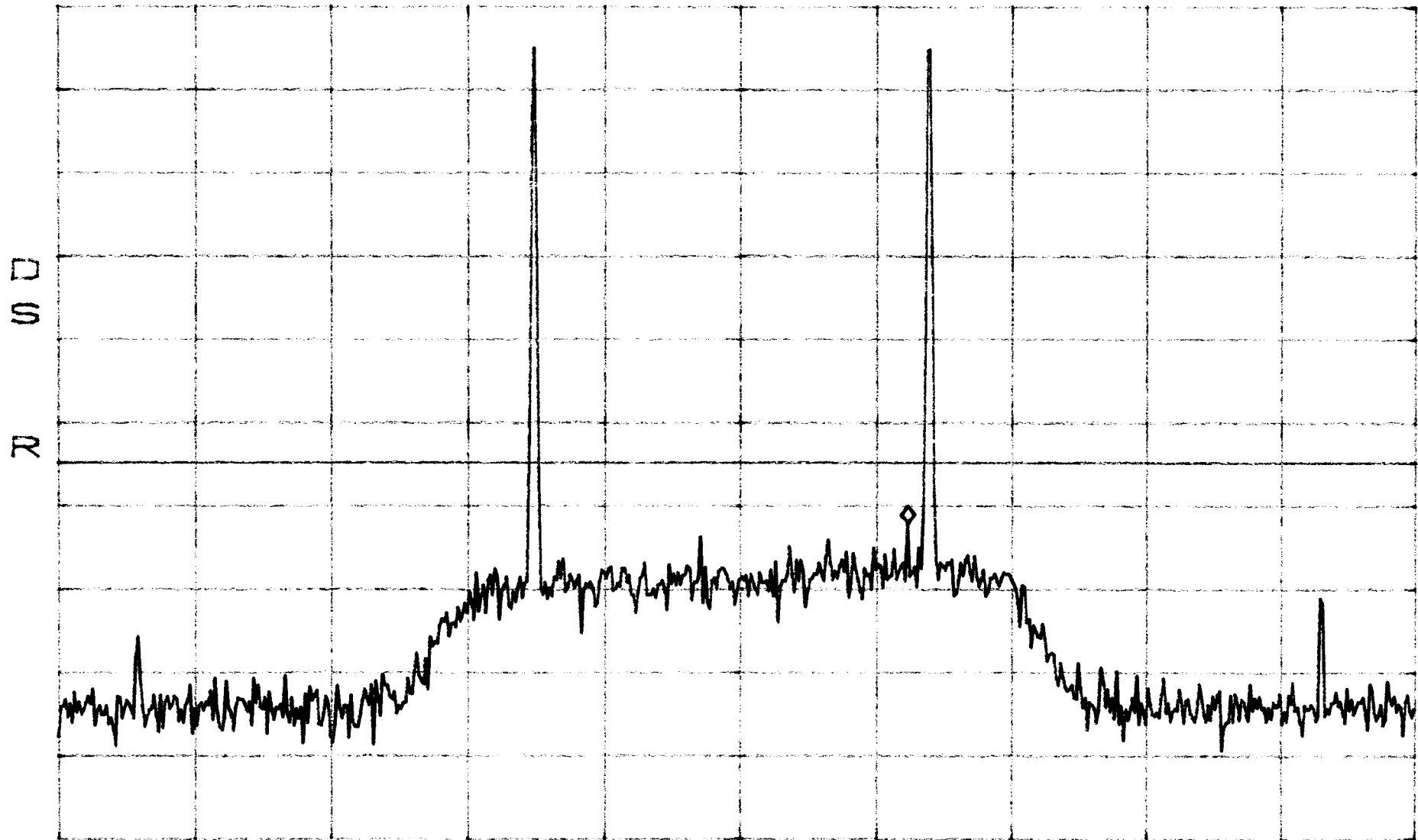
APART
TDMA

*ATTEN 20dB

RL 41.9dBm

MKR -20.10dBm

864.67MHz



CENTER 858.50MHz

SPAN 50.00MHz

*RBW 30kHz

VBW 30kHz

SWP 140ms

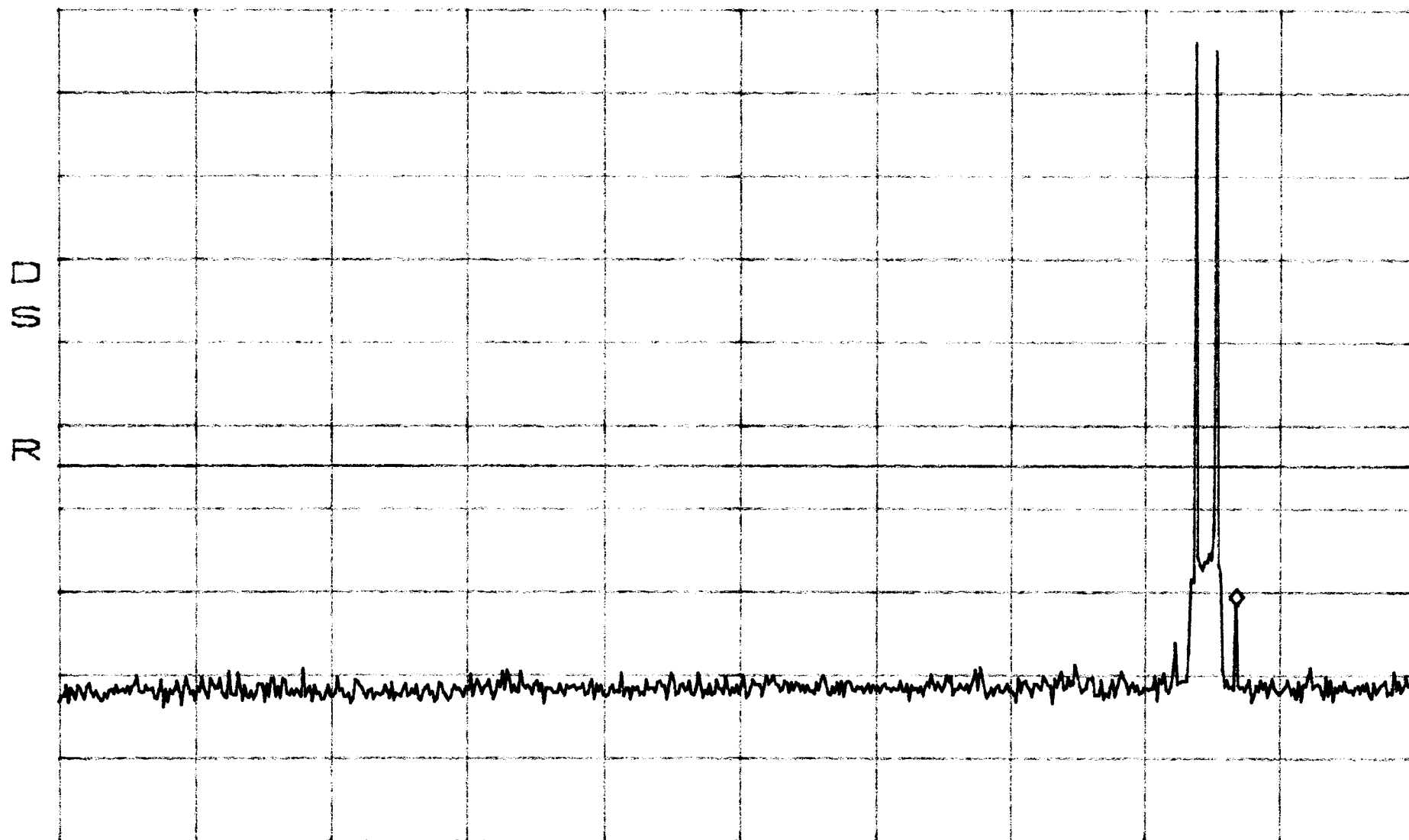
INTERMODULATION BAND SMR

APART
TDMA

*ATTEN 20dB
RL 41.9dBm

10dB/

MKR -29.60dBm
872.3MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

SWP 2.7sec

INTERMODULATION BAND SMR

APART
TDMA

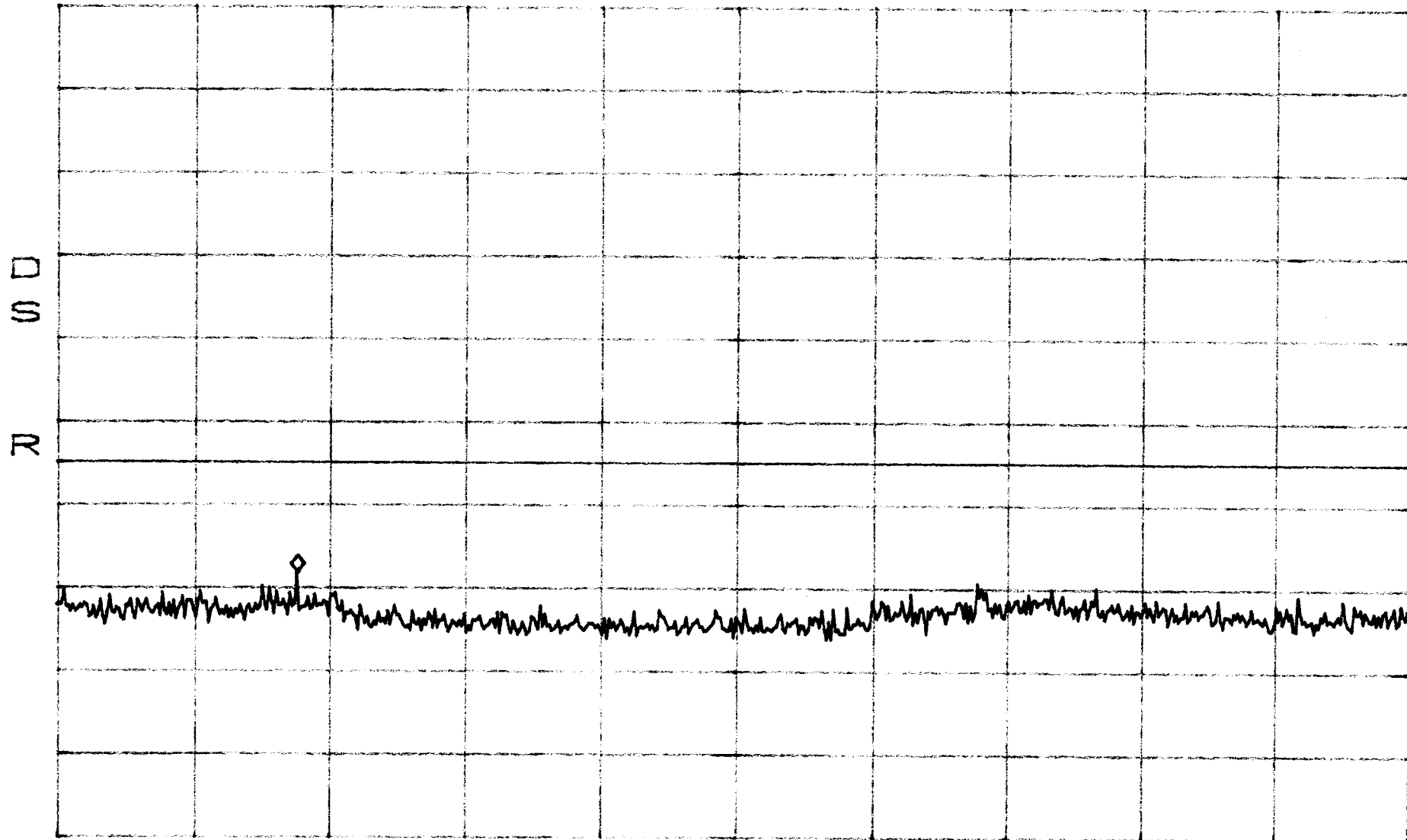
*ATTEN 20dB

MKR -26.10dBm

RL 41.9dBm

10dB/

2.590GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

INTERMODULATION BAND SMR

CLOSE
CDMA

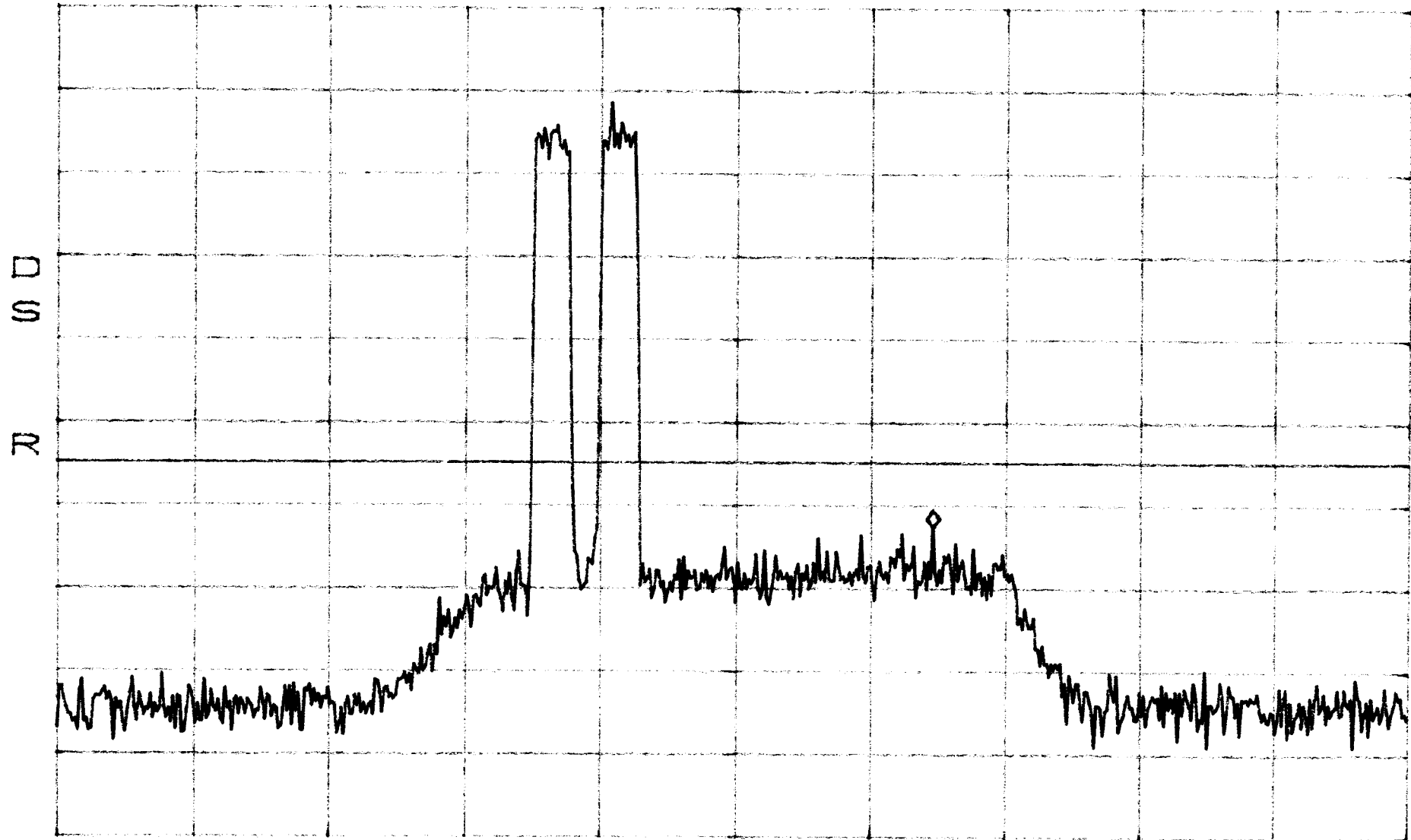
*ATTEN 20dB

RL 41.9dBm

MKR -20.60dBm

858.598

10dB/



CENTER 858.50MHz

SPAN 50.00MHz

*RBW 30kHz

VBW 30kHz

SWP 140ms

INTERMODULATION BAND SMR

CLOSE
CDMA

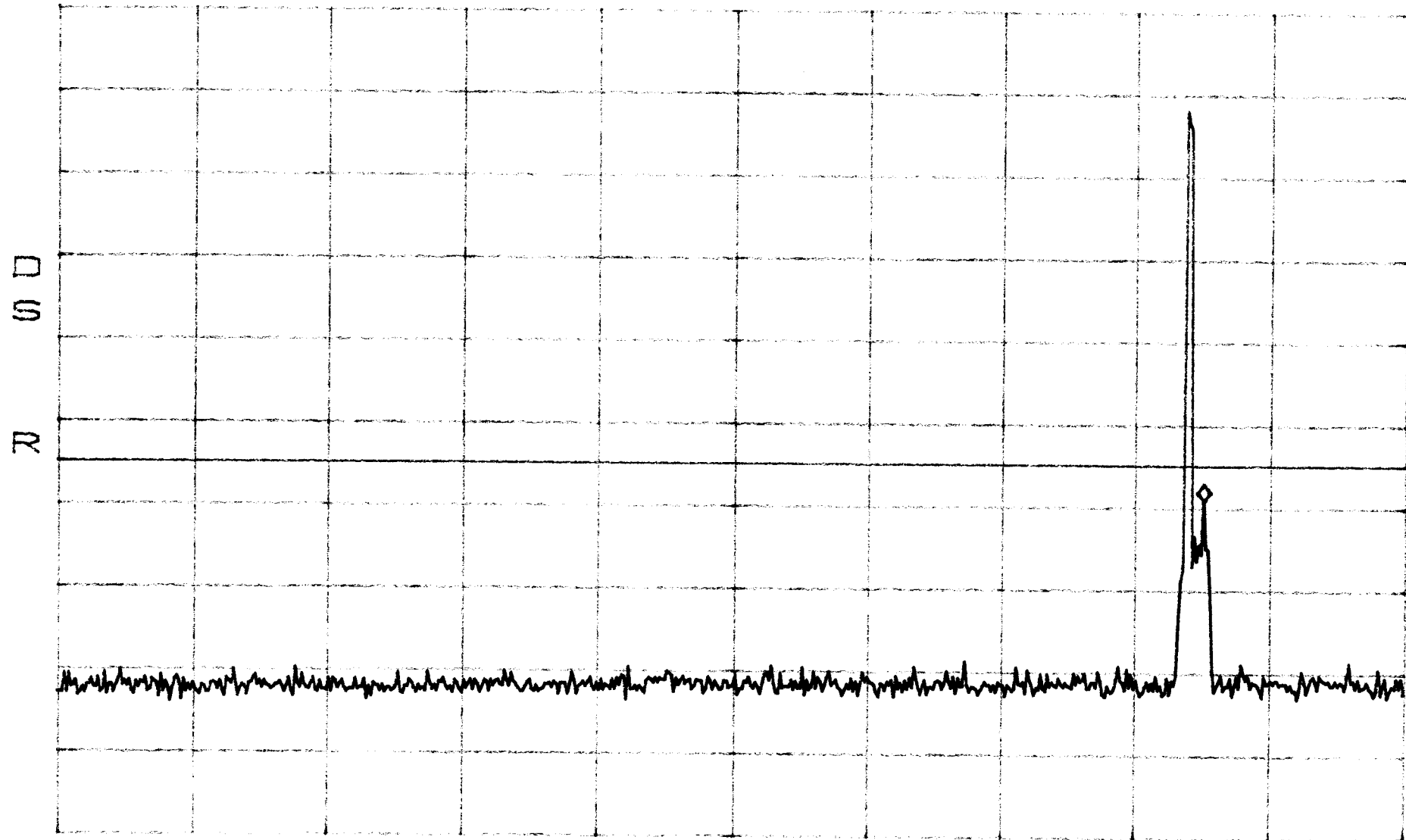
*ATTEN 20dB

RL 41.9dBm

10dB/

MKR -17.10dBm

856.1MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

SWP 2.7sec

INTERMODULATION BAND SMR

CLOSE
CDMA

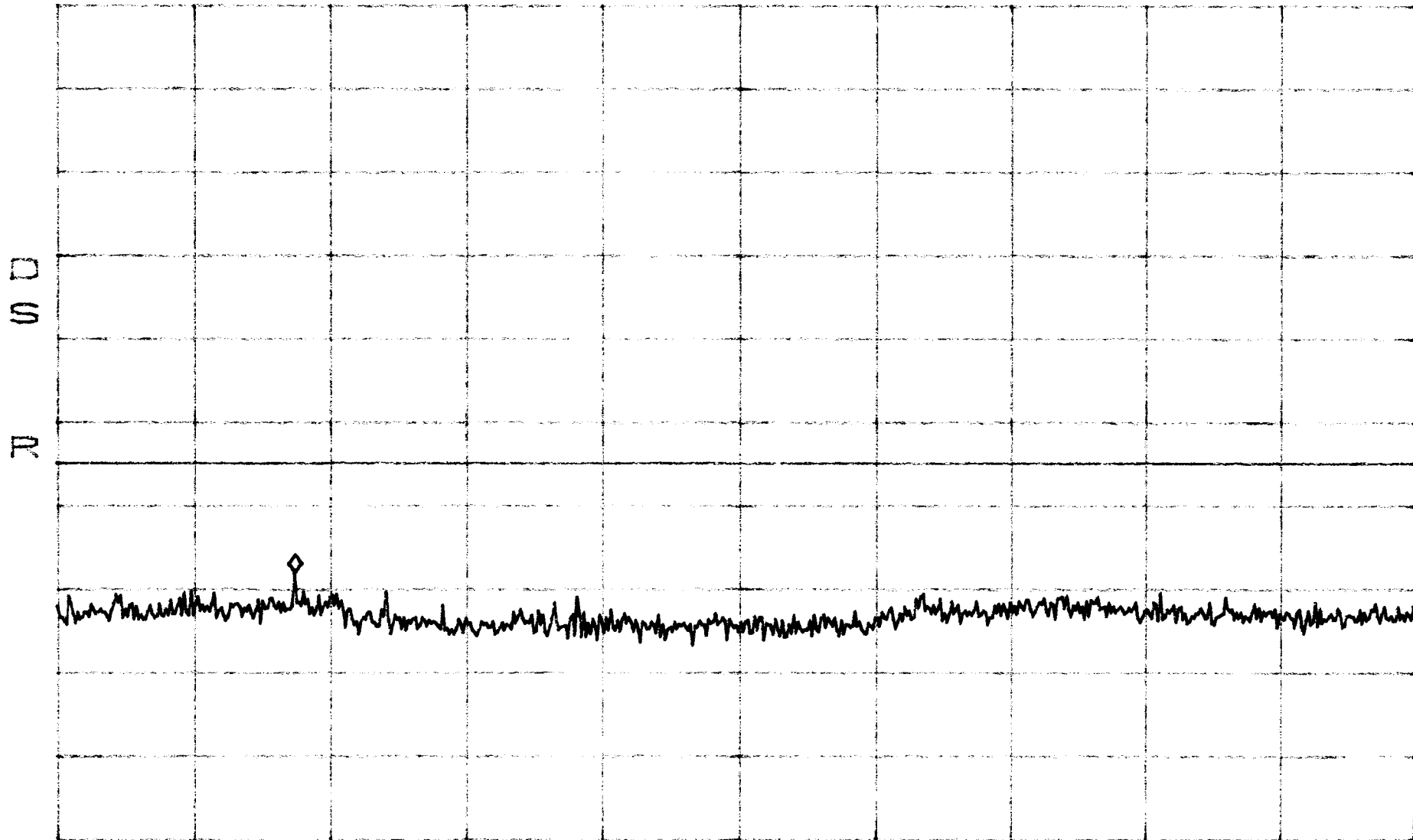
*ATTEN 20dB

RL 41.9dBm

10dB/

MKR -25.93dBm

2.560GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

INTERMODULATION BAND SMR

APART
CDMA

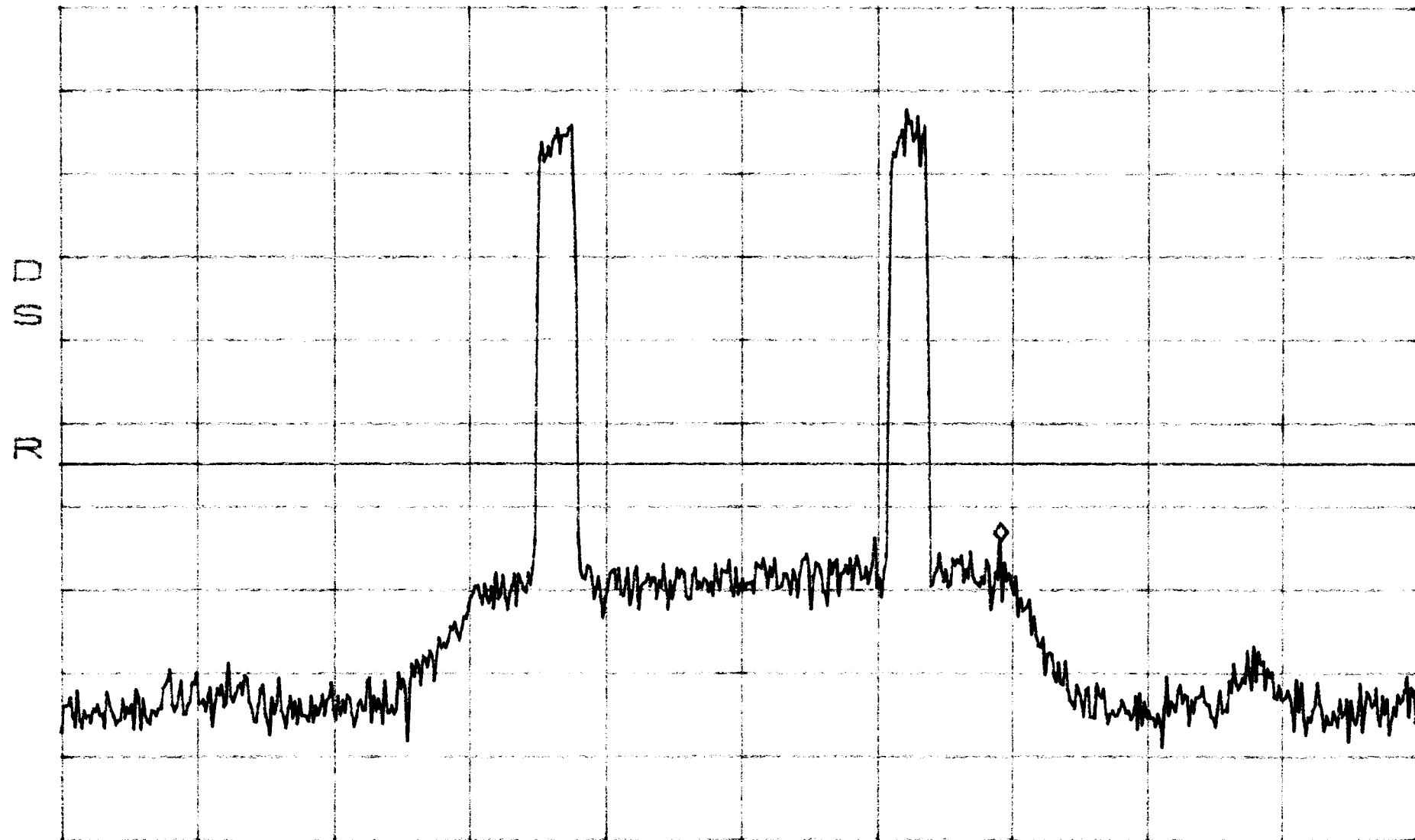
*ATTEN 20dB

RL 41.9dBm

10dB/

MKR -22.10dBm

858.08MHz



CENTER 858.50MHz

SPAN 50.00MHz

*RBW 30kHz

VBW 30kHz

SWP 140ms

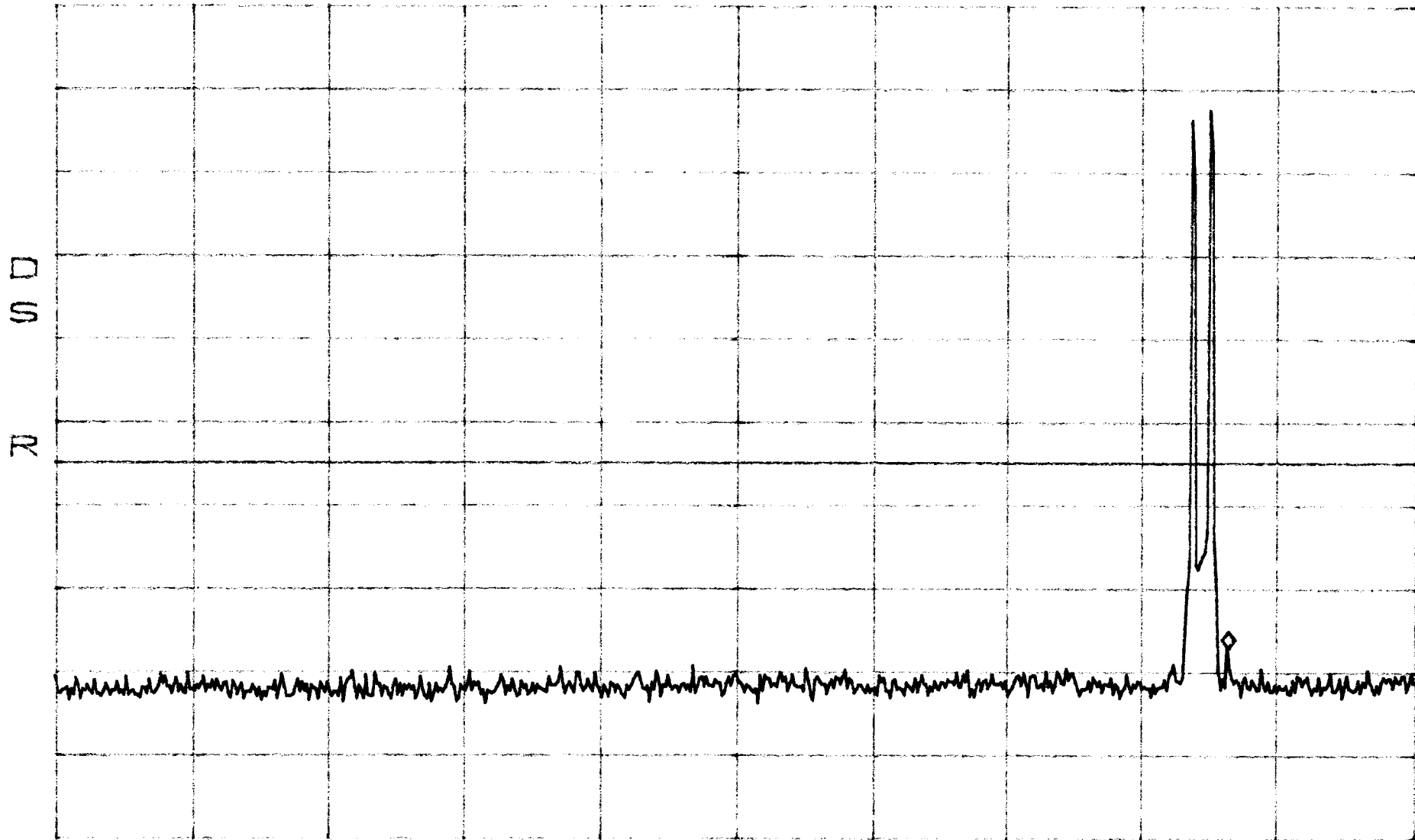
INTERMODULATION BAND SMR

APART
CDMA

*ATTEN 20dB
RL 41.9dBm

10dB/

MKR -35.10dBm
869.1MHz



START 30.0MHz

STOP 1.0000GHz

*RBW 30kHz

VBW 30kHz

SWP 2.7sec

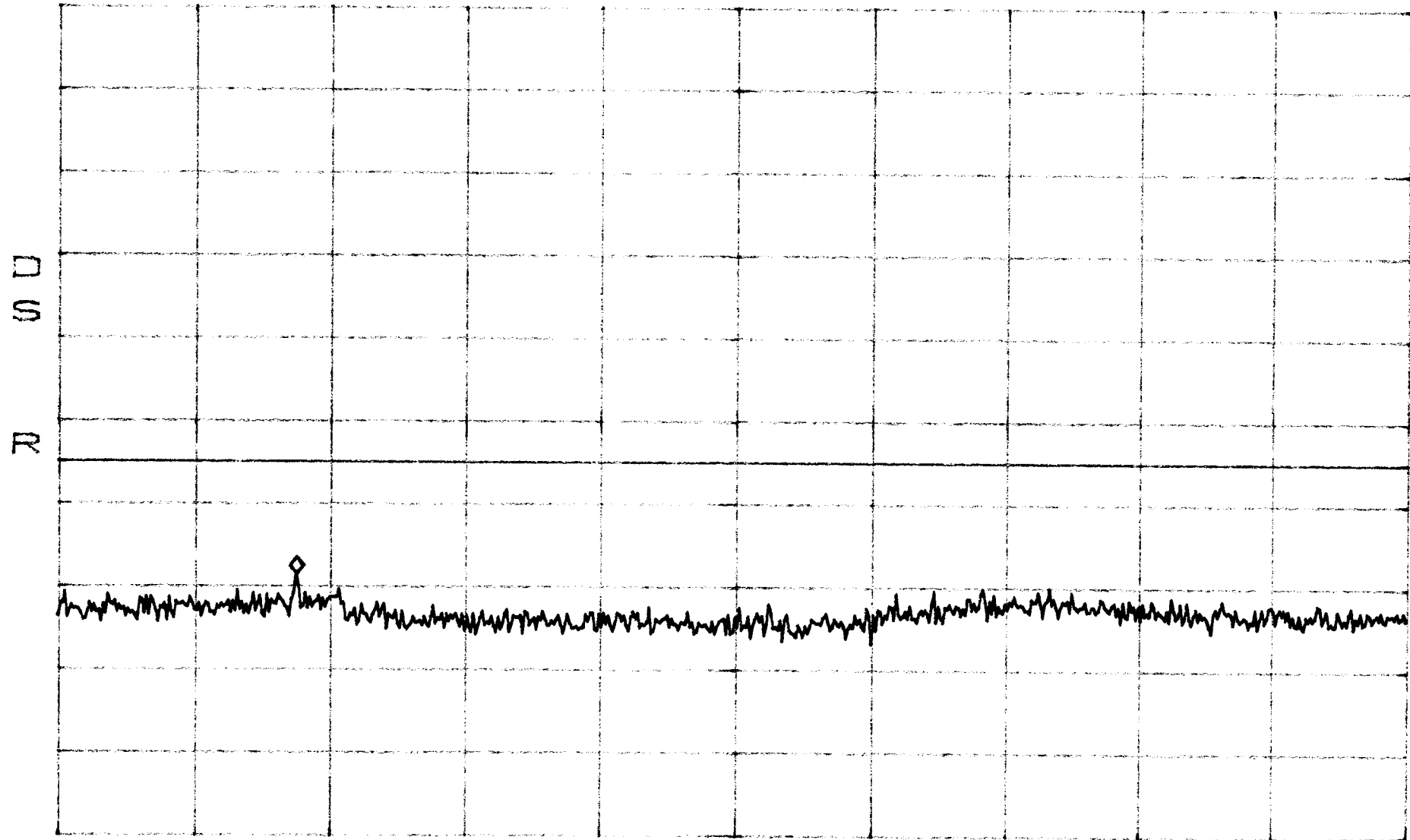
INTERMODULATION BAND SMR

APART
CDMA

*ATTEN 20dB
RL 41.9dBm

10dB/

MKR -26.43dBm
2.575GHz



START 1.000GHz

STOP 10.000GHz

*RBW 300kHz

VBW 300kHz

SWP 250ms

Test Equipment List

Table 1 Test Equipment

Equipment	MFG/Model	ADC Serial Number	Calibration Due. (NIST)
Signal Generator	HP/E4432B	83781	March 04
Signal Generator	HP/E4437B	39260515	September 04
Combiner	Mini-Circuits/ZAPD-21	N/A	CNR
Attenuator	50FH-030-300	N/A	CNR
Spectrum Analyzer	HP/HP8563E	MC27690	June 04
DC Power Supply	Xantrex/HPD60-5	MC27841	CNR
Power Meter	Rohde+Schwarz	MC21672	February 04
Variable Auto Transformer	Staco/1520CT	MC44655	CNR
Multimeter	Fluke/87	MC15896	April 04
Freq. Counter	HP/5347A	MC27569	January 04
Temperature Chamber	Thermotron	MC27885	CNR
Spectrum Analyzer	HP/8594E	MC27761	April 04

Note: Any equipment used in testing that has a Calibration Not Required (CNR) listing is verified and compensated for with NIST traceable calibrated equipment.

Test equipment List:

	TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ -	3932	8566B	Hewlett-Packard	Spectrum Analyzer	2115A00853	9-03-03
■ -	3931	85662A	Hewlett-Packard	Analyzer Display	2112A02220	9-03-03
■ -	2682	85650A	Hewlett-Packard	Quasi-Peak Adapter	2811A01127	2-08-04
■ -	3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	101	3-04-04
■ -	2074	3115	Electro-Mechanics (EMCO)	Ridge Guide Antenna	2504	10-15-03
■ -	2665	ZHL-1042J	Mini-Circuits	Preamplifier	32296	10-15-03
■ -	2478	AWT-18037	Avantek	Preamplifier 8-18 GHz	1001-9226	4-17-04
■ -	2477	AFT-8434	Avantek	Preamplifier 4-8 GHz	2613A92801	4-17-04
■ -	2396	2520	Wavetek	Signal Generator	6271013	6-04-04
■ -	3236	UHAP-10dB	Schwarzbeck	Dipole Antenna 300-1000	164	N/A

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.

Applicant -- NOTE: This information will be input into your test report as shown below.
Press the F1 key at any time to get HELP for the current field selected.

Company: ADC Inc.

Address: P.O. Box 1101
Minneapolis, MN 55440-1101

Contact: Mark F. Miska Position: Compliance Engineer

Phone: 952-917-0326 Fax: 952-917-0181

E-mail Address: mark_miska@adc.com

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description Transports RF between a remote antenna and a customer provided base station.

EUT Name Digivance SMR 20 Watt System

Model No.: DGVL-2061XXSYS Serial No.: None

Product Options: None

Configurations to be tested: 20 Watt LPA with System

Test Objective

- | | |
|--|---|
| ☐ EMC Directive 89/336/EEC (EMC) | ☒ FCC: Class ☐ A ☐ B Part <u>90</u> |
| Std: _____ | ☐ VCCI: Class ☐ A ☐ B |
| ☐ Machinery Directive 89/392/EEC (EMC) | ☐ BCIQ: Class ☐ A ☐ B |
| Std: _____ | ☐ Canada: Class ☐ A ☐ B |
| ☐ Medical Device Directive 93/42/EEC (EMC) | ☐ Australia: Class ☐ A ☐ B |
| Std: _____ | ☐ Other: _____ |
| ☐ Vehicle Directive 72/245/EEC (EMC) | |
| Std: _____ | |
| ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC) | |

TÜV Product Service Certification Requested

- | | |
|--|---|
| ☐ Attestation of Conformity (AoC) | ☐ International EMC Mark (IEM) |
| ☐ Certificate of Conformity (CoC) | ☐ Compliance Document |
| Protection Class (N/A for vehicles) | ☐ Class I ☐ Class II ☐ Class III |
- (Press F1 when field is selected to show additional information on Protection Class.)

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

EMC Test Plan and Constructional Data Form

**Failure - Complete this section if testing will not be attended by the customer.**

If a failure occurs, TUV Product Service should:

- ☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____
- ☐ Continue testing to complete test series.
- ☐ Continue testing to define corrective action.
- ☐ Stop testing.

EUT Specifications and RequirementsLength: 19" Width: 26" Height: 23" Weight: 47 LB**Power Requirements***Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)*Voltage: 115 VAC (If battery powered, make sure battery life is sufficient to complete testing.)# of Phases: 1Current (Amps/phase(max)): 10.0 Current (Amps/phase(nominal)): 9.0

Other _____

Other Special Requirements

None

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

Host indoor only with STM and LPA indoor or outdoor. System is typically employed as a Microcell.

EUT Power Cable

- | | | | |
|---|----|--|------------------------------|
| ☐ Permanent | OR | ☒ Removable | Length (in meters): <u>1</u> |
| ☐ Shielded | OR | ☒ Unshielded | |
| ☐ Not Applicable | | | |

EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables												
Interface			Shielding									
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent
EXAMPLE: RS232	☐	☒	2	☒	☐	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	☒	☐
RF "N" type	☒	☐	3	☒	☐	Braid	Coaxial	N	50 Ohms	>3	☒	☐
Alarm	☒	☐	1	☐	☒	Not Specified	N/A	6 Pin Standoff		>3	☒	☐
Alarm	☒	☐	1	☐	☒	Not Specified	N/A	4 Pin Standoff		>3	☒	☐
Fiber	☐	☒	2	☐	☒	N/A	N/A	SC	N/A	>3	☒	☐
9 Pin Din	☐	☒	2	☒	☐	Not Specified	AC Coupled	Din		>3	☒	☐
Net in	☐	☒	1	☐	☒	Not Specified	N/A	Cat 5		>3	☒	☐
Net out	☐	☒	1	☐	☒	Not Specified	N/A	Cat 5		3	☒	☐
DC power block	☒	☐	1	☐	☒	None		Terminal		>3	☒	☐
AC power	☒	☐	1	☐	☒	None				<3	☒	☐
STM to Amp Interconnect	☒	☒	1	☒	☒	Varied	Chassis	Special		.3	☒	☐
Battery Connection	☐	☐	1	☐	☒	N/A	N/A	2 Pin Standoff		<1	☒	☐
	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: Version 0.00.00.12

Description: Digivance Element Management System (DEMS). System Management and Interface Matching Software.

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Max composite in and out
- 2.
- 3.

EUT System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
Host Unit	DGVL-202000HUR	None	
STM	DGVL-202000STM	None	
LPA	DGVL-206000LPA	None	
Digivance LRCS SMR 20 Watt System Model DGVL-2061XXSYS consist of the HU, STM, and LPA.			

EMC Test Plan and Constructional Data Form



Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)			
<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
Signal Generator	HP E4436B	963739	
DC Power Supply	HPD 60-5	MC27884	

Oscillator Frequencies			
<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>

Power Supply			
<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Type</i>
ADC			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters		
<i>Manufacturer</i>	<i>Model #</i>	<i>Location in EUT</i>
None		

EMC Test Plan and Constructional Data Form

**Critical EMI Components (Capacitors, ferrites, etc.)**

Description	Manufacturer	Part # or Value	Qty	Component # / Location
None				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

None

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization Signatures

A handwritten signature in dark ink, appearing to read "Mark D. Miedner".

Customer authorization to perform tests
according to this test plan.

A handwritten date "7-22-03" in dark ink.

Date

Test Plan/CDF Prepared By (please print)

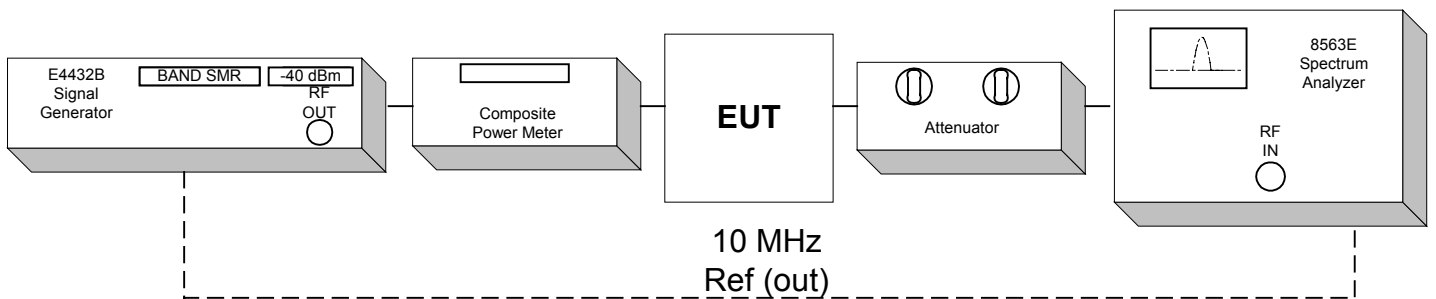
Date

Reviewed by TÜV Product Service Associate

Date

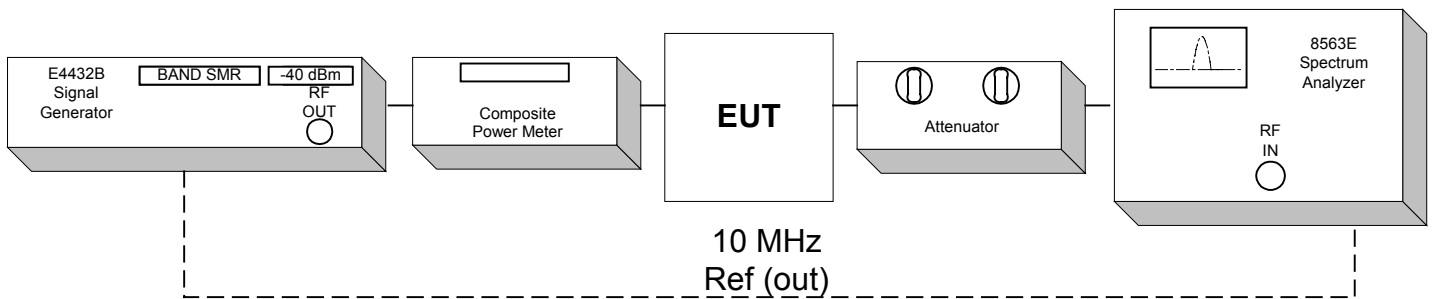
**CDMA Mask Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.**

Test Set-up



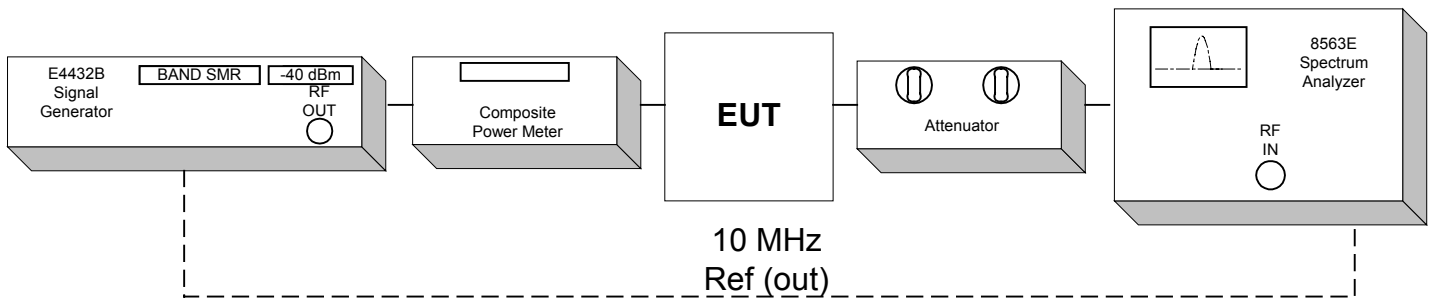
Conducted Emission Limits Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.

Test Set-up



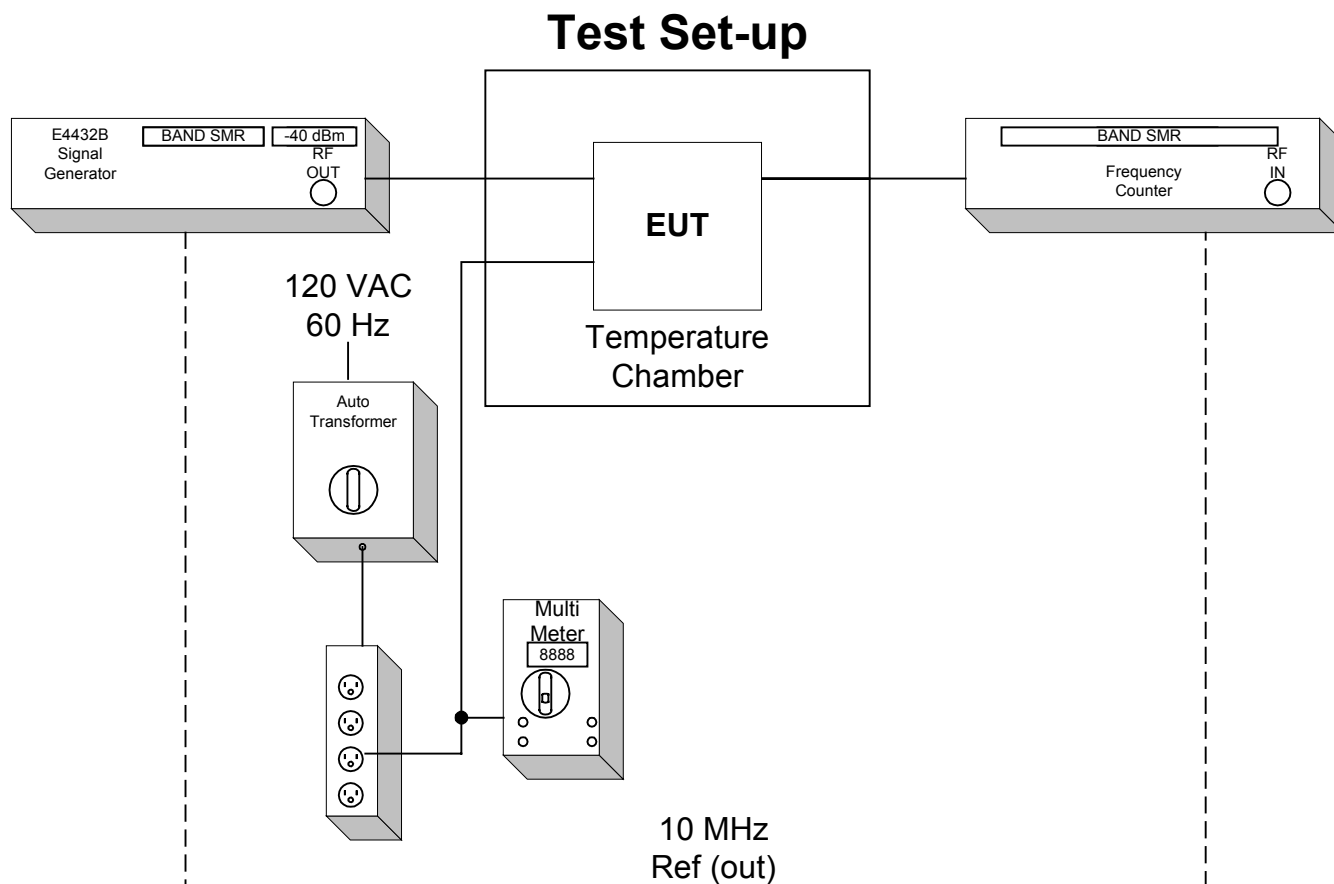
Effective Isotropic Radiated Power Limit Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.

Test Set-up

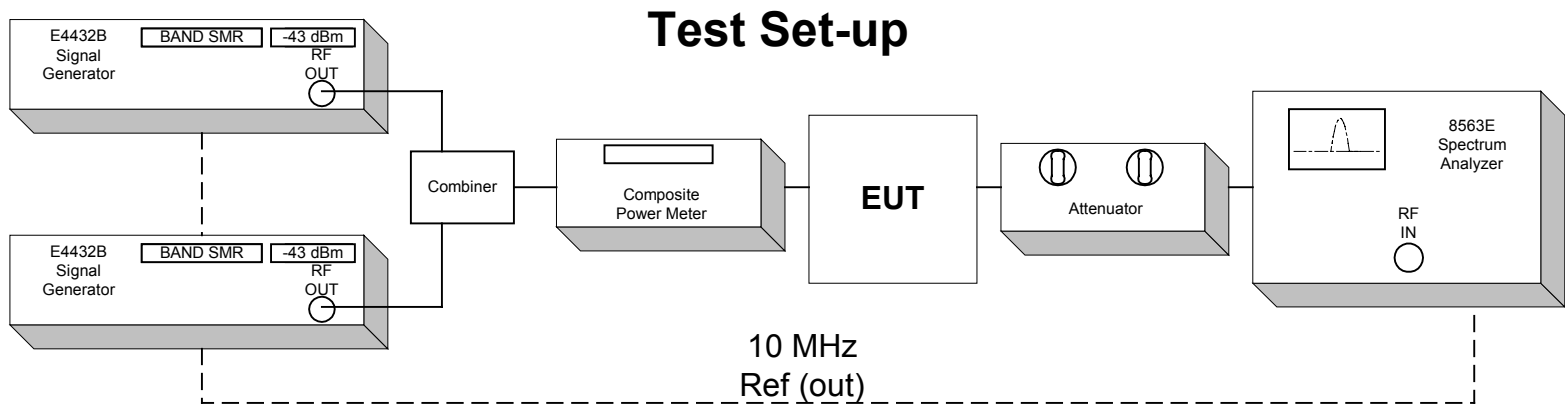


Frequency Tolerance Test for ADC Inc. Digivance SMR 20 Watt System Model Number DGVL-2061XXSYS.

EUT Host is specified for indoor use only with temperature range of 0° to +50° C, and was tested with its range.
EUT STM and LPA are specified with a temperature range of -30° to +50° C and were tested with their range.

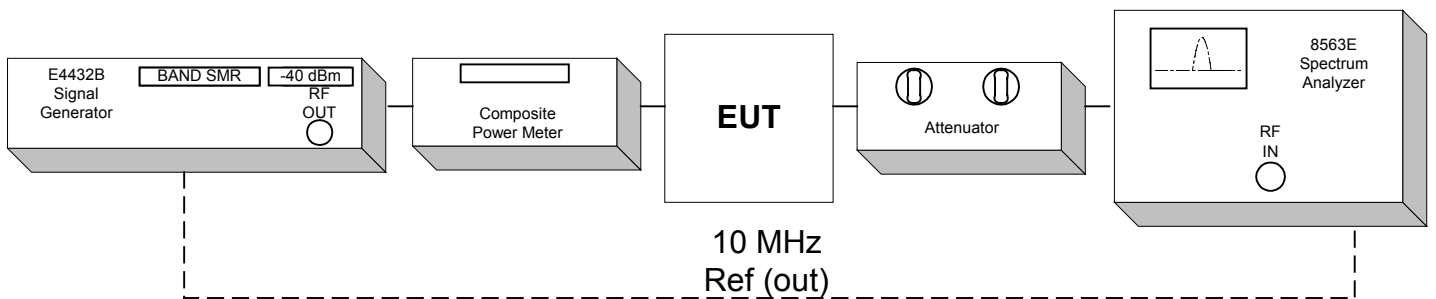


**Inter-Modulation Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGVL-2061XXSYS.**



Occupied Bandwidth Modulation Test for ADC Inc.
Digivance SMR 20 Watt System
Model Number DGPL-2061XXSYS.

Test Set-up

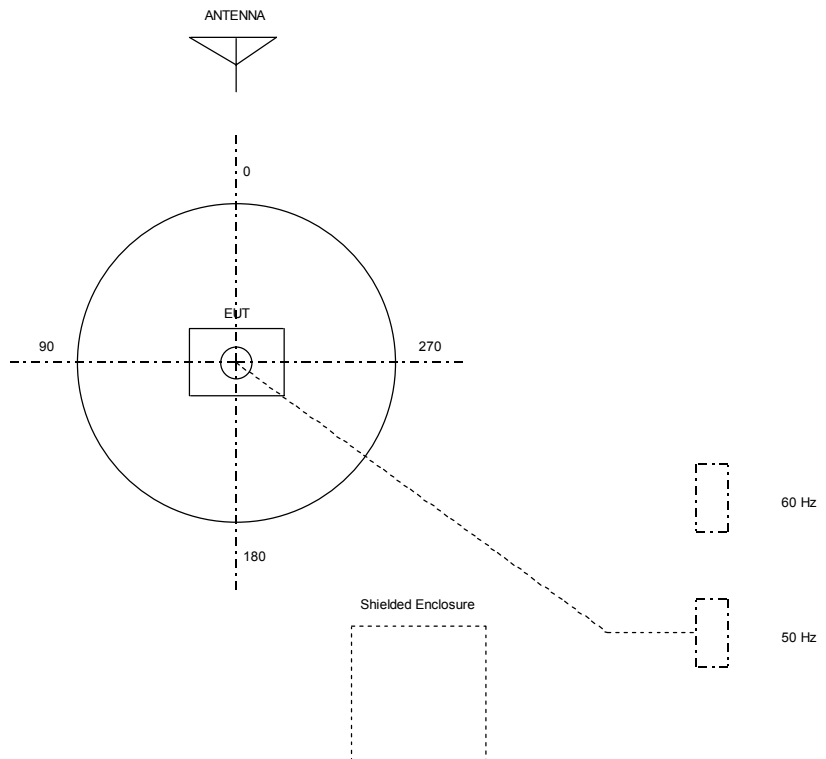


TEST SETUP FOR EMISSIONS TESTING

OAKWOOD LAB

Notes:

1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to test area.
2. 50 Hz and 60 Hz are power panels for alternating current.
3. The antenna may be positioned horizontally 3 or 10 meters from the center of the turntable.
4. The circle is a 6.7 meter diameter turntable.
5. A ground plane is in the plane of this sheet.
6. The test sample is shown in the azimuthal position representing zero degrees.



RADIATED EMISSIONS

The final level, expressed in dB μ V/m, is arrived at by taking the reading from the spectrum analyzer (Level dB μ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has the FCC limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment B. The amplifier gain is automatically accounted for by using an analyzer offset.

Example:

FREQ (MHz)	LEVEL (dBuV)	CABLE/ANT/PREAMP (dB) (dB/m) (dB)					FINAL (dBuV/m)	POL/HGT/AZ (m) (deg)			DELTA1 FCC
60.80	42.5Qp	+	1.2	+	10.9	- 25.5 =	29.1	V	1.0	0.0	-10.9

SUBSTITUTION ANTENNA

The substitution antenna is used to replace the EUT for tests in which a transmitting parameter(i.e. frequency error, effective radiated power, spurious emissions and adjacent channel power) is being measured. The substitution antenna is connected to a calibrated signal generator. The frequency of the calibrated signal generator is set to the frequency of the emission component detected. The test antenna is raised and lowered through the specified range of height to ensure the maximum signal is received. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the emission component was measured, corrected for any change of input attenuator setting of the measuring receiver. The input level to the substitution antenna is recorded as power level, corrected for any change of input attenuator setting of the measuring receiver.