FCC Part 15
EMI TEST REPORT

of

E.U.T. :AP-2000 5GHz ORiNOCO CardBus NIC

FCC ID. :IMRWLPCE508A

MODEL :PC50E-8-FC/A

for

APPLICANT : Agere Systems Nederland B.V.

ADDRESS : Zadelstede 1-10 3431JZ Nieuwegein, The Netherlands

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN
NO. 34, LIN 5, DING FU TSUN, LINKOU HSIANG
TAIPEI HSIEN, TAIWAN, R.O.C.

Tel: (02) 26023052, 26023054
Fax: (02) 26010910

Report Number: ET91R-07-079-01

TEST REPORT CERTIFICATION

Applicant	: Agere Systems Nederland B.V. Zadelstede 1-10 3431JZ Nieuwegein, The Netherlands
Manufacturer	: Accton Technology Corporation No. 1, Creation Rd. III, Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.
Description of EUT	:
a) Type of EUT	: AP-2000 5GHz ORiNOCO CardBus NIC
b) Trade Name	: ORiNOCO
c) Model No.	: PC50E-8-FC/A
d) Power Supply	: DC 3.3V from Notebook PC
Regulation Applied	: FCC Rules and Regulations Part 15 Subpart B & C (2001)

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

Issued Date: Jul. 30, 2002

Test Engineer: S S Liou
(S. S. Liou)

Approve & Authorized Signer: Will Yauo
Will Yauo, Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

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1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : AP-2000 5GHz ORiNOCO CardBus NIC
b) Trade Name : ORiNOCO
c) Model No. : PC50E-8-FC/A
d) Power Supply : DC 3.3V from Notebook PC

1.2 Characteristics of Device

a) Data Rate : 6, 9, 12, 18, 24, 36, 48, 54 Mbps
b) Operation Frequency : 5.15 ~ 5.35 GHz
c) Rated Output Power : 14 dBm (max.) for 5.15 ~ 5.25 GHz band
16.5 dBm (max.) for 5.25 ~ 5.35 GHz band

1.3 Test Methodology

For AP-2000 5GHz ORiNOCO CardBus NIC, both conducted and radiated emissions were performed according to the procedures illustrated in ANSI C63.4 (1992). Other required measurements were illustrated in separate sections of this test report for details.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at No. 34, Lin 5, Ding Fu Tsun, Linkou Hsiang, Taipei Hsien, Taiwan 244, R.O.C.
This site has been fully described in a report submitted to your office, and accepted in a letter dated Feb. 10, 2000.

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:
A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:
A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device:
A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note: A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following:

Frequency MHz	Emissions μV	Emissions dBμV
0.45 - 30.0	250	48.0

For intentional device, according to § 15.207(a) Line Conducted Emission Limits is same as above table.

(2) Radiated Emission Requirement

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated dBμV/m	Radiated μV/m
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

(3) Antenna Requirement

For intentional device, according to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

According to § 15.407 (d), any U-NII device that operates in the 5.15-5.25 GHz band shall use a transmitting antenna that is an integral part of the device.

(4) Peak Transmit Power Requirement

For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(5) Peak Power Spectral Density Requirement

For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band.

For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(6) Peak Excursion-to-Average Ratio Requirement

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified in this paragraph) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

(7) Undesirable Emission Requirement

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3360-4400	Above 38.6
13.36-13.41			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For both radiated and conducted emissions below 1 GHz, the system was configured for testing in a typical fashion as a customer would normally use it. The peripherals other than EUT were connected in normally standing by situation. Measurement was performed under the condition that a computer program was exercised to simulate data communication of EUT, and the transmission rate was set to maximum allowed by EUT. Three highest emissions were verified with varying placement of the transmitting antenna connected to EUT to maximize the emission from EUT.

For conducted emissions, only measured on TX and RX operation, for the digital circuits portion also function normally whenever TX or RX is operated. For radiated emissions, whichever RF channel is operated, the digital circuits function identically. As the reason, measurement of radiated emissions from digital circuits is only performed with channel 7 by transmitting mode.

During the preliminary test, the worse case is the antenna with a cable, and data presented in this test report just shows the worse case.

3.2 Devices for Tested System

Device	Manufacture	Model	Cable Description
AP-2000 5GHz ORiNOCO CardBus NIC *	Accton Technology Corporation	PC50E-8-FC/A	----
Printer	EPSON	Photo 700	1.2m Shielded Cable
Notebook PC	Tatung Co.	TN-5900	2.5m Unshielded AC Adaptor Power Cord
Modem	Smar TEAM Co.	1200AT	2.0m Shielded Cable
Mouse	HP	M-S34	1.5m Unshielded Cable

Remark "*" means equipment under test.

4 RADIATED EMISSION MEASUREMENTS

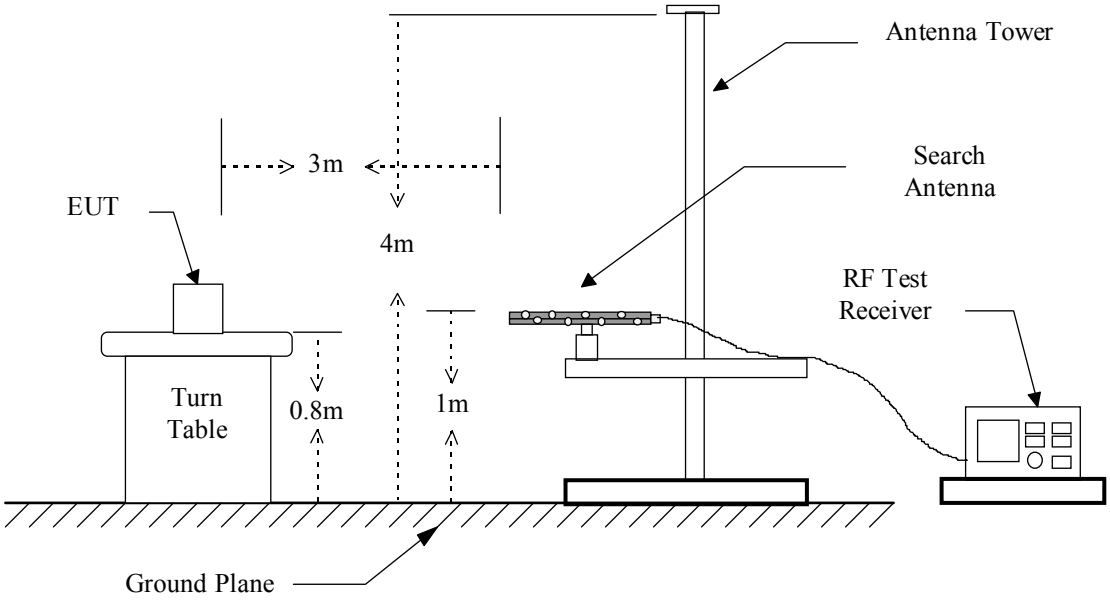
4.1 Applicable Standard

For U-NII devices, according to § 15.407 (b)(5), unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Sec. 15.209.

4.2 Measurement Procedure

1. Setup the configuration per figure 1 for frequencies measured below 1 GHz.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on an open test site.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
4. Repeat step 3 until all frequencies need to be measured was complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

Figure 1: Frequencies measured below 1 GHz configuration



4.3 Measuring Instruments

The following instruments are used for radiated emissions measurement:

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Hewlett-Packard	8568B	01/10/2003
Pre-selector	Hewlett-Packard	85685A	01/10/2003
Quasi Peak Detector	Hewlett-Packard	85650A	01/10/2003
Spectrum Analyzer	Adventest	R3271	09/09/2002
RF Test Receiver	Rohde & Schwarz	ESVS 30	08/05/2002
Horn Antenna	EMCO	3115	05/09/2003
Log periodic Antenna	EMCO	3146	11/04/2002
Biconical Antenna	EMCO	3110B	11/04/2002
Preamplifier	Hewlett-Packard	8449B	05/10/2003
Preamplifier	Hewlett-Packard	8447D	10/14/2002
Spectrum Analyzer	Hewlett-Packard	8564E	04/16/2003

Measuring instrument setup in measured frequency band when specified detector function is used:

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz

4.4 Radiated Emission Data

Emission frequencies below 1 GHz

Test Date : Jul. 29, 2002 Temperature : 27 ℃ Humidity : 70 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
132.186	H	51.9	-11.3	40.6	43.5	-2.9	105	2.90
167.071	V	48.3	-9.1	39.2	43.5	-4.3	85	1.40
175.329	V	42.7	-9.1	33.6	43.5	-9.9	100	1.00
198.241	H	43.9	-7.3	36.6	43.5	-6.9	121	3.40
212.514	H	38.3	-6.3	32.0	43.5	-11.5	84	3.00
335.379	H	47.3	-8.3	39.0	46.0	-7.0	100	3.10

Note:

1. Remark "---" means that the emissions level is too low to be measured.

2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where

Corrected Factor = Antenna FACTOR + Cable Loss + High Pass Filter Loss - Amplifier Gain

4.6 Photos of Radiation Measuring Setup

Please see Setup Photos in Exhibit F.

5 CONDUCTED EMISSION MEASUREMENTS

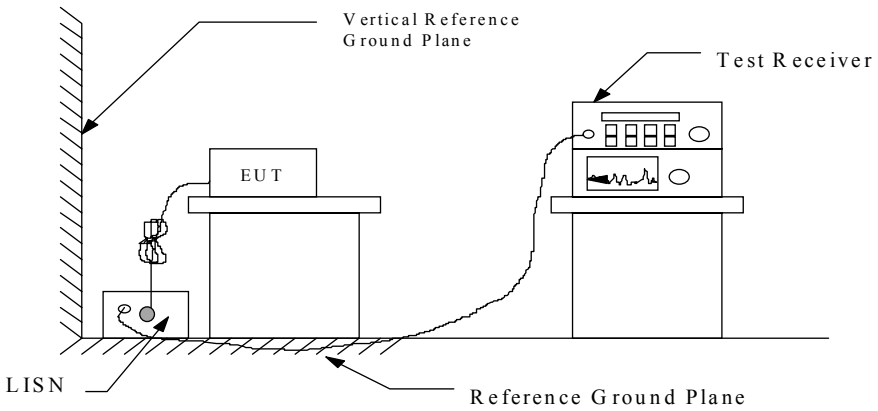
5.1 Standard Applicable

According to § 15.407 (b)(5), any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Sec. 15.207.

5.2 Measurement Procedure

1. Setup the configuration per figure 2.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 6 or 8 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 2: Conducted emissions measurement configuration



5.3 Conducted Emission Data

a) Tx 5180 MHz

Operation Mode : Transmitting / Receiving
Test Date : Jul. 29, 2002 Temperature : 23 ℃ Humidity: 50 %

Frequency	Reading (dBuV)		Factor	Result (dBuV)		Limit	Margin
(MHz)	Va	Vb	(dB)	Va	Vb	(dBuV)	(dB)
0.494	25.7	23.4	0.2	25.9	23.6	48.0	-22.1
3.284	32.1	24.0	0.3	32.4	24.3	48.0	-15.6
3.900	35.9	27.7	0.3	36.2	28.0	48.0	-11.8
4.950	30.1	21.6	0.3	30.4	21.9	48.0	-17.6
10.110	30.1	31.1	0.5	30.6	31.6	48.0	-16.4
20.170	38.4	36.4	0.9	39.3	37.3	48.0	-8.7

b) Tx 5220MHz

Operation Mode : Transmitting / Receiving
Test Date : Jul. 29, 2002 Temperature : 23 ℃ Humidity: 50 %

Frequency	Reading (dBuV)		Factor	Result (dBuV)		Limit	Margin
(MHz)	Va	Vb	(dB)	Va	Vb	(dBuV)	(dB)
0.494	26.3	23.3	0.2	26.5	23.5	48.0	-21.5
3.284	31.8	23.8	0.3	32.1	24.1	48.0	-15.9
3.900	36.5	27.3	0.3	36.8	27.6	48.0	-11.2
4.950	29.5	20.9	0.3	29.9	21.2	48.0	-18.1
10.110	30.9	31.4	0.5	31.4	31.9	48.0	-16.1
20.170	38.0	37.3	0.9	38.9	38.2	48.0	-9.1

c) Tx 5240 MHz

Operation Mode : Transmitting / Receiving
Test Date : Jul. 29, 2002 Temperature : 23 ℃ Humidity: 50 %

Frequency	Reading (dBuV)		Factor	Result (dBuV)		Limit	Margin
(MHz)	Va	Vb	(dB)	Va	Vb	(dBuV)	(dB)
0.494	25.4	23.7	0.2	25.6	23.9	48.0	-22.4
3.284	31.7	23.1	0.3	32.0	23.4	48.0	-16.0
3.900	35.4	28.6	0.3	35.7	28.9	48.0	-12.3
4.950	29.2	21.4	0.3	29.5	21.8	48.0	-18.5
10.110	30.1	30.5	0.5	30.6	31.0	48.0	-17.0
20.170	39.1	36.7	0.9	40.0	37.6	48.0	-8.0

d) Tx 5260 MHz

Operation Mode : Transmitting / Receiving
Test Date : Jul. 29, 2002 Temperature : 23 ℃ Humidity: 50 %

Frequency	Reading (dBuV)		Factor	Result (dBuV)		Limit	Margin
(MHz)	Va	Vb	(dB)	Va	Vb	(dBuV)	(dB)
0.494	24.9	23.1	0.2	25.1	23.3	48.0	-22.9
3.284	32.1	23.4	0.3	32.4	23.7	48.0	-15.6
3.900	36.7	27.2	0.3	37.0	27.5	48.0	-11.0
4.950	29.4	22.3	0.3	29.8	22.7	48.0	-18.2
10.110	29.1	31.1	0.5	29.6	31.7	48.0	-16.3
20.170	38.6	35.6	0.9	39.5	36.5	48.0	-8.5

e) Tx 5280 MHz

Operation Mode : Transmitting / Receiving
Test Date : Jul. 29, 2002 Temperature : 23 ℃ Humidity: 50 %

Frequency	Reading (dBuV)		Factor	Result (dBuV)		Limit	Margin
(MHz)	Va	Vb	(dB)	Va	Vb	(dBuV)	(dB)
0.494	25.9	23.4	0.2	26.1	23.6	48.0	-21.9
3.284	31.1	23.3	0.3	31.4	23.6	48.0	-16.6
3.900	36.5	26.8	0.3	36.8	27.1	48.0	-11.2
4.950	30.3	22.1	0.3	30.6	22.5	48.0	-17.4
10.110	29.4	31.5	0.5	29.9	32.0	48.0	-16.0
20.170	38.2	36.8	0.9	39.1	37.7	48.0	-8.9

f) Tx 5320 MHz

Operation Mode : Transmitting / Receiving
Test Date : Jul. 29, 2002 Temperature : 23 ℃ Humidity: 50 %

Frequency	Reading (dBuV)		Factor	Result (dBuV)		Limit	Margin
(MHz)	Va	Vb	(dB)	Va	Vb	(dBuV)	(dB)
0.494	26.6	23.9	0.2	26.8	24.1	48.0	-21.2
3.284	33.0	23.6	0.3	33.3	23.9	48.0	-14.7
3.900	35.9	28.2	0.3	36.2	28.5	48.0	-11.8
4.950	31.1	20.9	0.3	31.4	21.2	48.0	-16.6
10.110	30.1	30.5	0.5	30.6	31.0	48.0	-17.0
20.170	37.4	36.8	0.9	38.3	37.7	48.0	-9.7

Note: 1. Please see appendix 1 for Plotted Data

2. The expanded uncertainty of the conducted emission tests is 2.45 dB.

5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR

Assume a receiver reading of 22.5 dB μ V is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dB μ V.

RESULT = 22.5 + 0.1 = 22.6 dB μ V
Level in μ V = Common Antilogarithm[(22.6 dB μ V)/20]
= 13.48 μ V

5.5 Conducted Measurement Equipment

The following test equipments are used during the conducted test.

Equipment	Manufacturer	Model No.	Next Cal. Due
RF Test Receiver	Rohde and Schwarz	ESH3	01/03/2003
Spectrum Monitor	Rohde and Schwarz	EZM	N.C.R.
Line Impedance Stabilization network	Kyoritsu	KNW-407	10/14/2002
Line Impedance Stabilization network	Rohde and Schwarz	ESH2-Z5	08/05/2002
Plotter	Hewlett-Packard	7440A	N/A
Shielded Room	Riken		N.C.R.

5.6 Photos of Conduction Measuring Setup

Please see Setup Photos in Exhibit F.

6 ANTENNA REQUIREMENTS

6.1 Standard Applicable

For intentional device, according to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

According to § 15.407 (d), any U-NII device that operates in the 5.15-5.25 GHz band shall use a transmitting antenna that is an integral part of the device.

6.2 Antenna Structure

The antenna of this unit is designed as an integral part of the device. Please see constraction Photos of Exhibit B for details.

The directional gain of the transmitting antenna is 6dBi.

7 EMISSION BANDWIDTH MEASUREMENTS

7.1 Standard Applicable

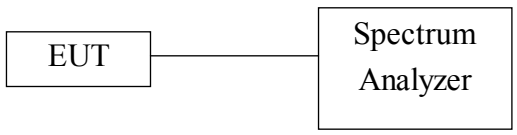
According to 15.407(a)(1), for the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

According to 15.407(a)(2), for the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

7.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 3 without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. Set RBW of spectrum analyzer to 100 kHz and VBW to 1 MHz.
4. Measure the frequency difference of two frequencies that were attenuated 26 dB from the reference level. Record the frequency difference as the emission bandwidth.
5. Repeat above procedures until all frequencies measured were complete.

Figure 3: Emission bandwidth measurement configuration



7.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Hewlett-Packard	8564E	04/16/2003
Plotter	Hewlett-Packard	7440A	N/A

7.4 Measurement Data

Test Date : Jul. 29, 2002 Temperature : 25 ℃ Humidity: 60 %

a) 5180MHz: 26 dB Emission Bandwidth is 27.83 MHz
b) 5220MHz: 26 dB Emission Bandwidth is 30.00 MHz
c) 5240MHz: 26 dB Emission Bandwidth is 28.83 MHz
d) 5260MHz: 26 dB Emission Bandwidth is 35.67 MHz
e) 5300MHz: 26 dB Emission Bandwidth is 35.75 MHz
f) 5320MHz: 26 dB Emission Bandwidth is 36.17 MHz

Note: 1. Please see appendix 2 for Plotted Data
2. The expanded uncertainty of the emission bandwidth tests is 1500Hz.

8 PEAK TRANSMIT POWER MEASUREMENTS

8.1 Standard Applicable

According to 15.407(a)(1), for the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

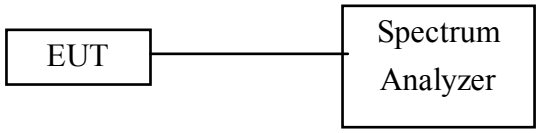
According to 15.407(a)(2), for the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz and VBW to 30 kHz.
4. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.
5. Repeat above procedures until all frequencies measured were complete.

Figure 4: Output power and measurement configuration.



8.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Hewlett-Packard	8564E	04/16/2003
Plotter	Hewlett-Packard	7440A	N/A

8.4 Measurement Data

Peak transmit power limit calculation:

a) 5180MHz: 4 dBm + 10log27.83 = 18.45 dBm > 17 dBm(50mW)
b) 5220MHz: 4 dBm + 10log30.00 = 18.77 dBm > 17 dBm(50mW)
c) 5240MHz: 4 dBm + 10log28.83 = 18.60 dBm > 17 dBm(50mW)
d) 5260MHz: 11 dBm + 10log35.67 = 26.52 dBm > 24 dBm(250mW)
e) 5300MHz: 11 dBm + 10log35.75 = 26.53 dBm > 24 dBm(250mW)
f) 5320MHz: 11 dBm + 10log36.17 = 26.58 dBm > 24 dBm(250mW)

The directional gain of transmit antenna is 6 dBi, no reduction of limit is required.

The peak transmit power limit for 5.15-5.25 GHz band is 17 dBm.

The peak transmit power limit for 5.25-5.35 GHz band is 24 dBm.

Test Date : Jul. 29, 2002 Temperature : 25 ℃ Humidity: 60 %

a) 5180MHz: Peak Transmit Power is 14.1 dBm
b) 5220MHz: Peak Transmit Power is 14.3 dBm
c) 5240MHz: Peak Transmit Power is 14.1 dBm
d) 5260MHz: Peak Transmit Power is 16.9 dBm
e) 5300MHz: Peak Transmit Power is 16.7 dBm
f) 5320MHz: Peak Transmit Power is 17.0 dBm

Note: 1. Please see appendix 3 for Plotted Data
2. The expanded uncertainty of the output power tests is 2dB.

9 PEAK POWER SPECTRAL DENSITY MEASUREMENTS

9.1 Standard Applicable

For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band.

For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz and VBW to 3 MHz.
4. Turn on the video averaging of the spectrum analyzer.
5. Measure the highest amplitude appearing on spectral display. Plot the graph with marking the highest point and edge frequency.
6. Repeat above procedures until all measured frequencies were complete.

9.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Hewlett-Packard	8564E	04/16/2003
Plotter	Hewlett-Packard	7440A	N/A

9.4 Measurement Data

Test Date : Jul. 29, 2002 Temperature : 25 ℃ Humidity: 60 %

a) 5180MHz: Peak Power Spectral Density is –1.50 dBm
b) 5220MHz: Peak Power Spectral Density is –0.50 dBm
c) 5240MHz: Peak Power Spectral Density is –0.50 dBm
d) 5260MHz: Peak Power Spectral Density is 1.83 dBm
e) 5300MHz: Peak Power Spectral Density is 1.83 dBm
f) 5320MHz: Peak Power Spectral Density is 2.33 dBm

Note: 1. Please see appendix 4 for Plotted Data
2. The expanded uncertainty of the Peak Power Spectral Density tests is 2dB.

10 PEAK EXCURSION-to-AVERAGE RATIO MEASUREMENTS

10.1 Standard Applicable

According to 15.407(a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified in this paragraph) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

10.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz and VBW to 1 MHz.
4. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.
5. Set RBW of spectrum analyzer to 1 MHz and VBW to 30 kHz.
6. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.
7. Repeat above procedures until all frequencies measured were complete.

10.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Hewlett-Packard	8564E	04/16/2003
Plotter	Hewlett-Packard	7440A	N/A

10.4 Measurement Data

Test Date : May 23, 2002 Temperature : 25 ℃ Humidity: 60 %

a) 5180MHz: Peak Excursion-to-Average Ratio is 8.67 - 1.00 = 7.67 dBm
b) 5220MHz: Peak Excursion-to-Average Ratio is 8.67 – 0.83 = 7.84 dBm
c) 5240MHz: Peak Excursion-to-Average Ratio is 8.17 – 0.67 = 7.50 dBm
d) 5260MHz: Peak Excursion-to-Average Ratio is 11.00 – 3.50 = 7.50 dBm
e) 5300MHz: Peak Excursion-to-Average Ratio is 11.17 – 3.33 = 7.84 dBm
f) 5320MHz: Peak Excursion-to-Average Ratio is 10.83 – 3.83 = 7.00 dBm

Note: 1. Please see appendix 5 for Plotted Data

2. The expanded uncertainty of the Peak Excursion-to-Average Ratio tests is 2dB.

11 UNDESIRABLE EMISSION MEASUREMENTS

11.1 Standard Applicable

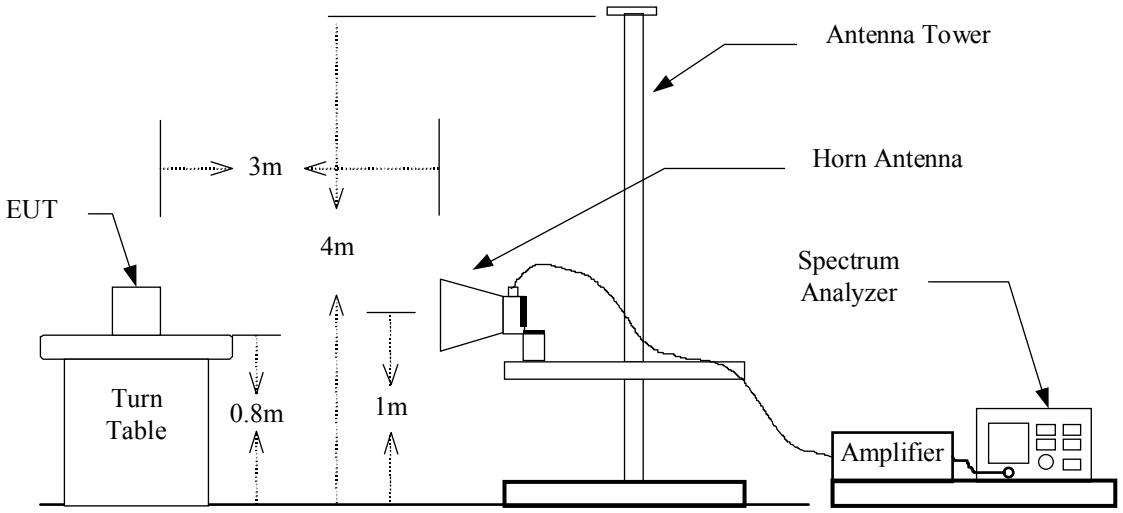
For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

11.2 Measurement Procedure

1. Setup the configuration per figure 5 for frequencies measured above 1 GHz.
2. Adjust the spectrum analyzer for each frequency measured on a 1 MHz frequency span and 100 kHz resolution bandwidth.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 °, and record the highest value indicated on spectrum analyzer as reference value.
4. Repeat step 3 until all frequencies need to be measured was complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Replace the EUT with a horn antenna in horizontally polarized orientation and as the same polarized orientation with search antenna. Connect the horn antenna to a standard signal generator (SG) via a low loss cable. Power on the SG and tune the right frequency in measuring as well as set SG at an appreciated output level. Rise and lower the search antenna to get the highest value on spectrum analyzer, and then hold this position. Adjust the SG output to get an identical value derived from step 3 on spectrum analyzer. Record this value for result calculated.
7. Repeat step 6 until all frequencies need to be measured was complete.
8. Repeat step 7 with horn antenna and search antenna in vertical polarized orientations.

Figure 5: Frequencies measured above 1 GHz configuration



11.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	Hewlett-Packard	8568B	01/10/2003
Quasi Peak Detector	Hewlett-Packard	85650A	01/10/2003
Pre-selector	Hewlett-Packard	85685A	01/10/2003
Spectrum Analyzer	Hewlett-Packard	8564E	05/16/2003
Horn Antenna	EMCO	3115	05/14/2003
Log periodic Antenna	EMCO	3146	11/02/2002
Biconical Antenna	EMCO	3110B	11/02/2002
Preamplifier	Hewlett-Packard	8449B	05/10/2003
Preamplifier	Hewlett-Packard	8447D	10/14/2002

Measuring instrument setup in frequency band measured is as following:

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz

11.4 Measurement Data

A. Tx 5180 MHz ; Rx 4144 MHz

Operated mode : Normal Test Date : Jul. 29, 2002

Temperature : 25℃ Humidity : 60%

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	EIRP Result (dBm) H	V	Limit (dBm)	Margin (dB)
10358.300	60.5	60.3	-25.9	-27.1	-3.2	-29.1	-30.3	-27.0	-2.1
15550.000	54.5	53.2	-27.1	-28.1	-4.0	-31.1	-32.1	-27.0	-4.1
20720.000	---	---	---	---	---	---	---	-27.0	---
25900.000	---	---	---	---	---	---	---	-27.0	---
31080.000	---	---	---	---	---	---	---	-27.0	---
36260.000	---	---	---	---	---	---	---	-27.0	---
4144.000	---	---	---	---	---	---	---	-27.0	---
8288.000	---	---	---	---	---	---	---	-27.0	---
12432.000	---	---	---	---	---	---	---	-27.0	---
16576.000	---	---	---	---	---	---	---	-27.0	---
20720.000	---	---	---	---	---	---	---	-27.0	---

Note:

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following:

   EIRP Result ＝ SG Reading ＋Cable Loss

B. Tx 5220 MHz ; Rx 4176 MHz

Operated mode : Normal Test Date : Jul. 29, 2002

Temperature : 25℃ Humidity : 60%

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	EIRP Result (dBm) H	V	Limit (dBm)	Margin (dB)
10440.700	58.8	62.0	-27.4	-25.1	-3.2	-30.6	-28.3	-27.0	-1.3
15661.200	52.0	53.0	-29.6	-27.8	-4.0	-33.6	-31.8	-27.0	-4.8
20880.000	---	---	---	---	---	---	---	-27.0	---
26100.000	---	---	---	---	---	---	---	-27.0	---
31320.000	---	---	---	---	---	---	---	-27.0	---
36540.000	---	---	---	---	---	---	---	-27.0	---
4176.000	---	---	---	---	---	---	---	-27.0	---
8352.000	---	---	---	---	---	---	---	-27.0	---
12528.000	---	---	---	---	---	---	---	-27.0	---
16704.000	---	---	---	---	---	---	---	-27.0	---
20880.000	---	---	---	---	---	---	---	-27.0	---

Note:

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following:

   EIRP Result ＝ SG Reading ＋Cable Loss

C. Tx 5240 MHz ; Rx 4192 MHz

Operated mode : Normal Test Date : Jul. 29, 2002

Temperature : 25℃ Humidity : 60%

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	EIRP Result (dBm) H	V	Limit (dBm)	Margin (dB)
10480.500	60.3	60.2	-25.7	-26.4	-3.2	-28.9	-29.6	-27.0	-1.9
15721.300	48.9	52.0	-32.6	-28.6	-4.0	-36.6	-32.6	-27.0	-5.6
20960.000	---	---	---	---	---	---	---	-27.0	---
26200.000	---	---	---	---	---	---	---	-27.0	---
31440.000	---	---	---	---	---	---	---	-27.0	---
36680.000	---	---	---	---	---	---	---	-27.0	---
4192.000	---	---	---	---	---	---	---	-27.0	---
8384.000	---	---	---	---	---	---	---	-27.0	---
12576.000	---	---	---	---	---	---	---	-27.0	---
16768.000	---	---	---	---	---	---	---	-27.0	---
20960.000	---	---	---	---	---	---	---	-27.0	---

Note:

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following:

   EIRP Result ＝ SG Reading ＋Cable Loss

D. Tx 5260 MHz ; Rx 4208 MHz

Operated mode : Normal Test Date : Jul. 29, 2002

Temperature : 25℃ Humidity : 60%

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	EIRP Result (dBm) H	V	Limit (dBm)	Margin (dB)
10519.000	59.3	60.8	-26.6	-25.7	-3.2	-29.8	-28.9	-27.0	-1.9
15777.000	48.2	46.8	-33.3	-34.2	-4.0	-37.3	-38.2	-27.0	-10.3
21040.000	---	---	---	---	---	---	---	-27.0	---
26300.000	---	---	---	---	---	---	---	-27.0	---
31560.000	---	---	---	---	---	---	---	-27.0	---
36820.000	---	---	---	---	---	---	---	-27.0	---
4208.000	---	---	---	---	---	---	---	-27.0	---
8416.000	---	---	---	---	---	---	---	-27.0	---
12624.000	---	---	---	---	---	---	---	-27.0	---
16832.000	---	---	---	---	---	---	---	-27.0	---
21040.000	---	---	---	---	---	---	---	-27.0	---

Note:

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following:

   EIRP Result ＝ SG Reading ＋Cable Loss

E. Tx 5280 MHz ; Rx 4224 MHz

Operated mode : Normal Test Date : Jul. 29, 2002

Temperature : 25℃ Humidity : 60%

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	EIRP Result (dBm) H	V	Limit (dBm)	Margin (dB)
10561.200	59.9	59.8	-25.8	-27.1	-3.2	-29.0	-30.3	-27.0	-2.0
15840.200	50.3	46.5	-31.6	-34.8	-4.0	-35.6	-38.8	-27.0	-8.6
21120.000	---	---	---	---	---	---	---	-27.0	---
26400.000	---	---	---	---	---	---	---	-27.0	---
31680.000	---	---	---	---	---	---	---	-27.0	---
36960.000	---	---	---	---	---	---	---	-27.0	---
4224.000	---	---	---	---	---	---	---	-27.0	---
8448.000	---	---	---	---	---	---	---	-27.0	---
12672.000	---	---	---	---	---	---	---	-27.0	---
16896.000	---	---	---	---	---	---	---	-27.0	---
21120.000	---	---	---	---	---	---	---	-27.0	---

Note:

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following:

   EIRP Result ＝ SG Reading ＋Cable Loss

F. Tx 5320 MHz ; Rx 4256 MHz

Operated mode : Normal Test Date : Jul. 29, 2002

Temperature : 25℃ Humidity : 60%

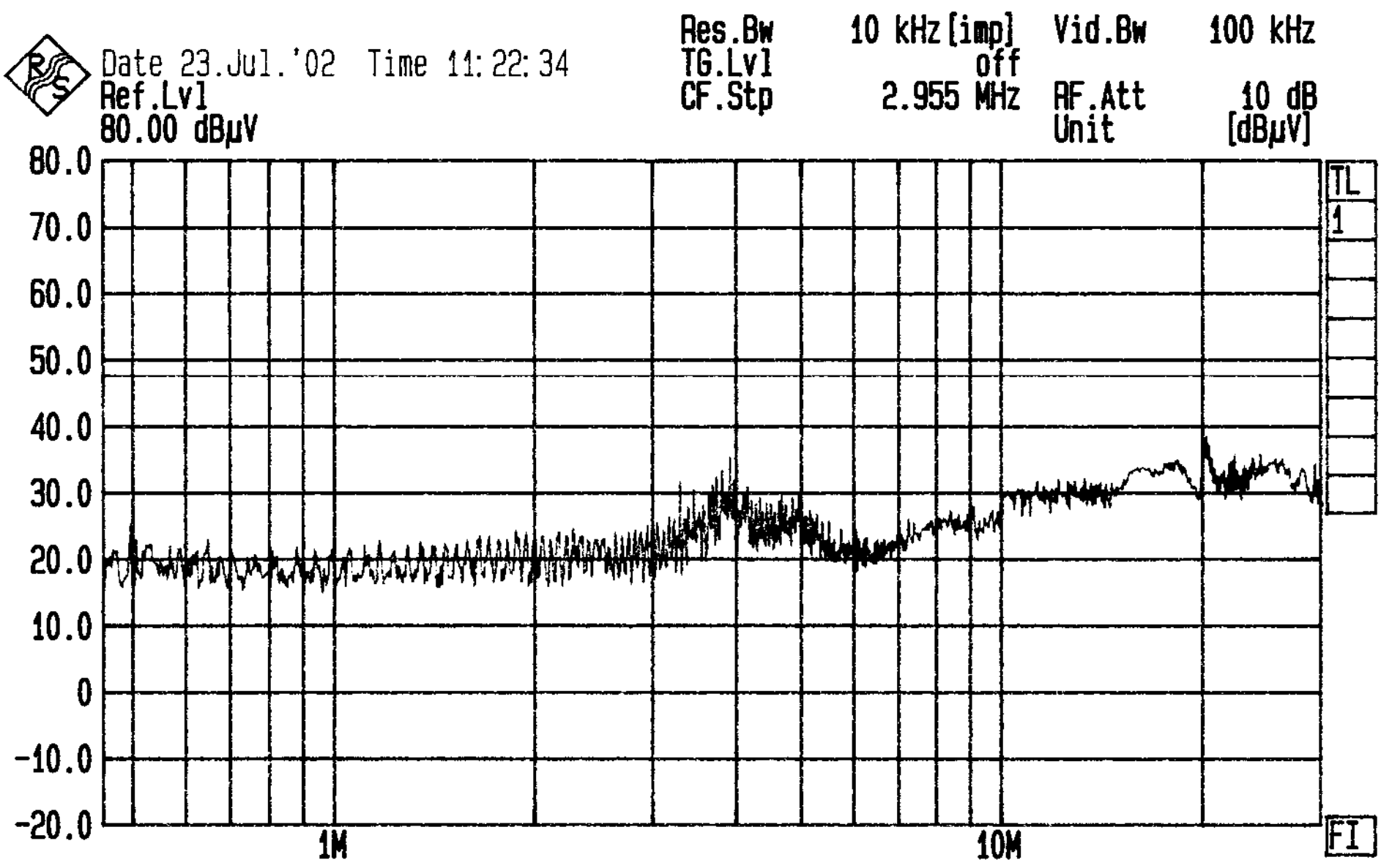
Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	EIRP Result (dBm) H	V	Limit (dBm)	Margin (dB)
10640.700	59.7	60.2	-25.5	-27.0	-3.2	-28.7	-30.2	-27.0	-1.7
15961.700	51.5	49.2	-31.4	-32.1	-4.0	-35.4	-36.1	-27.0	-8.4
21280.000	---	---	---	---	---	---	---	-27.0	---
26600.000	---	---	---	---	---	---	---	-27.0	---
31920.000	---	---	---	---	---	---	---	-27.0	---
37240.000	---	---	---	---	---	---	---	-27.0	---
4256.000	---	---	---	---	---	---	---	-27.0	---
8512.000	---	---	---	---	---	---	---	-27.0	---
12768.000	---	---	---	---	---	---	---	-27.0	---
17024.000	---	---	---	---	---	---	---	-27.0	---
21280.000	---	---	---	---	---	---	---	-27.0	---

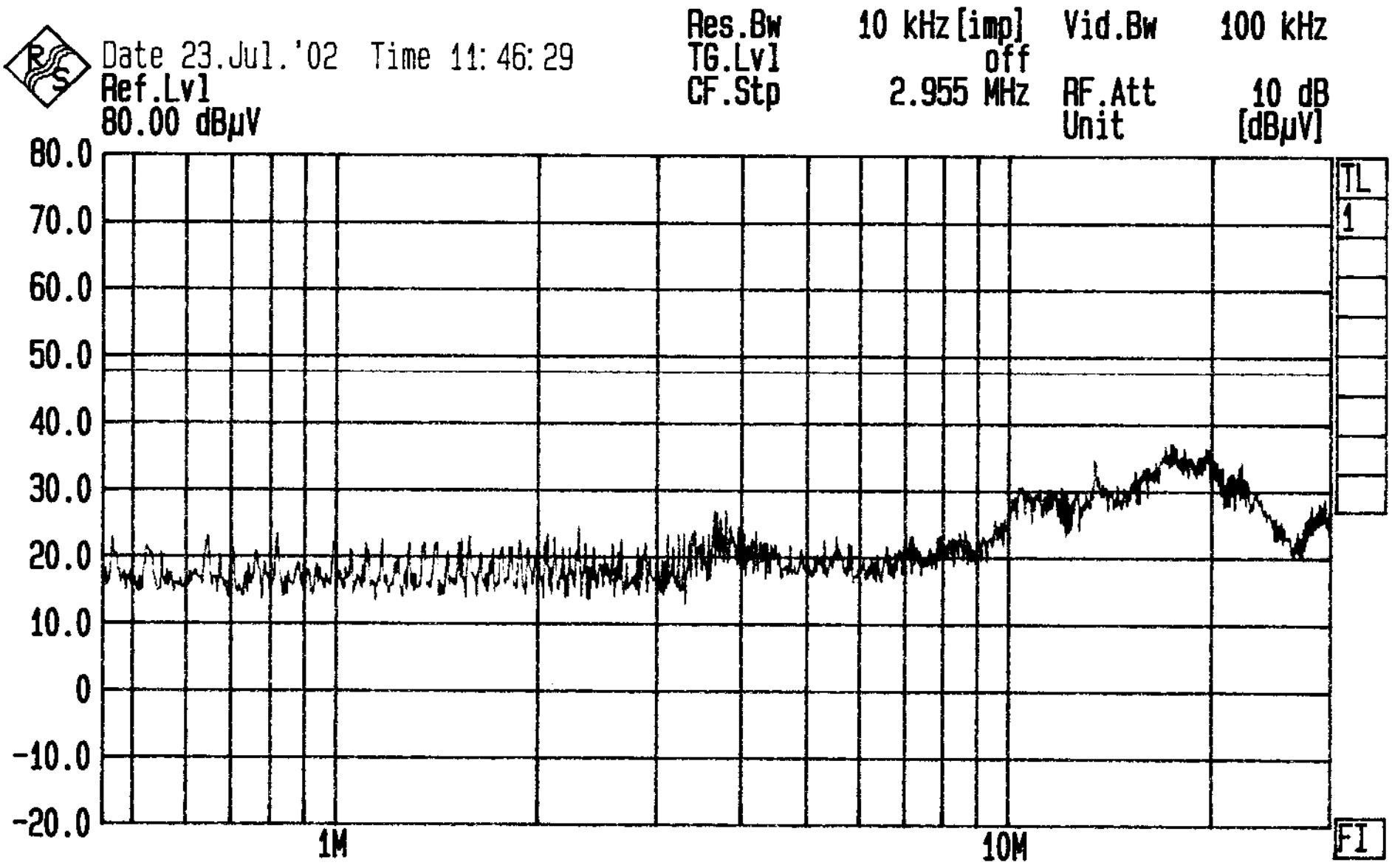
Note:

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following:

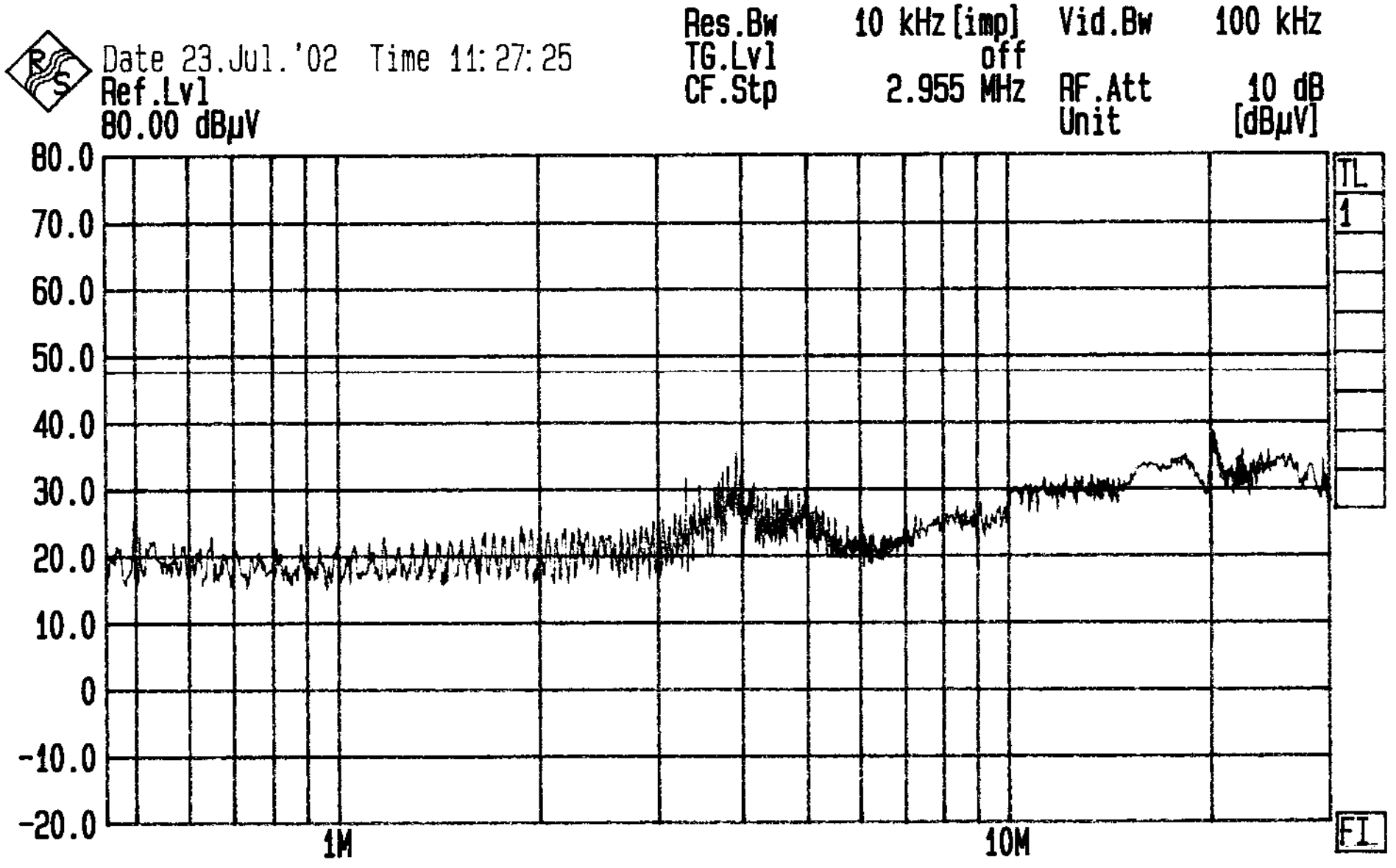
   EIRP Result ＝ SG Reading ＋Cable Loss

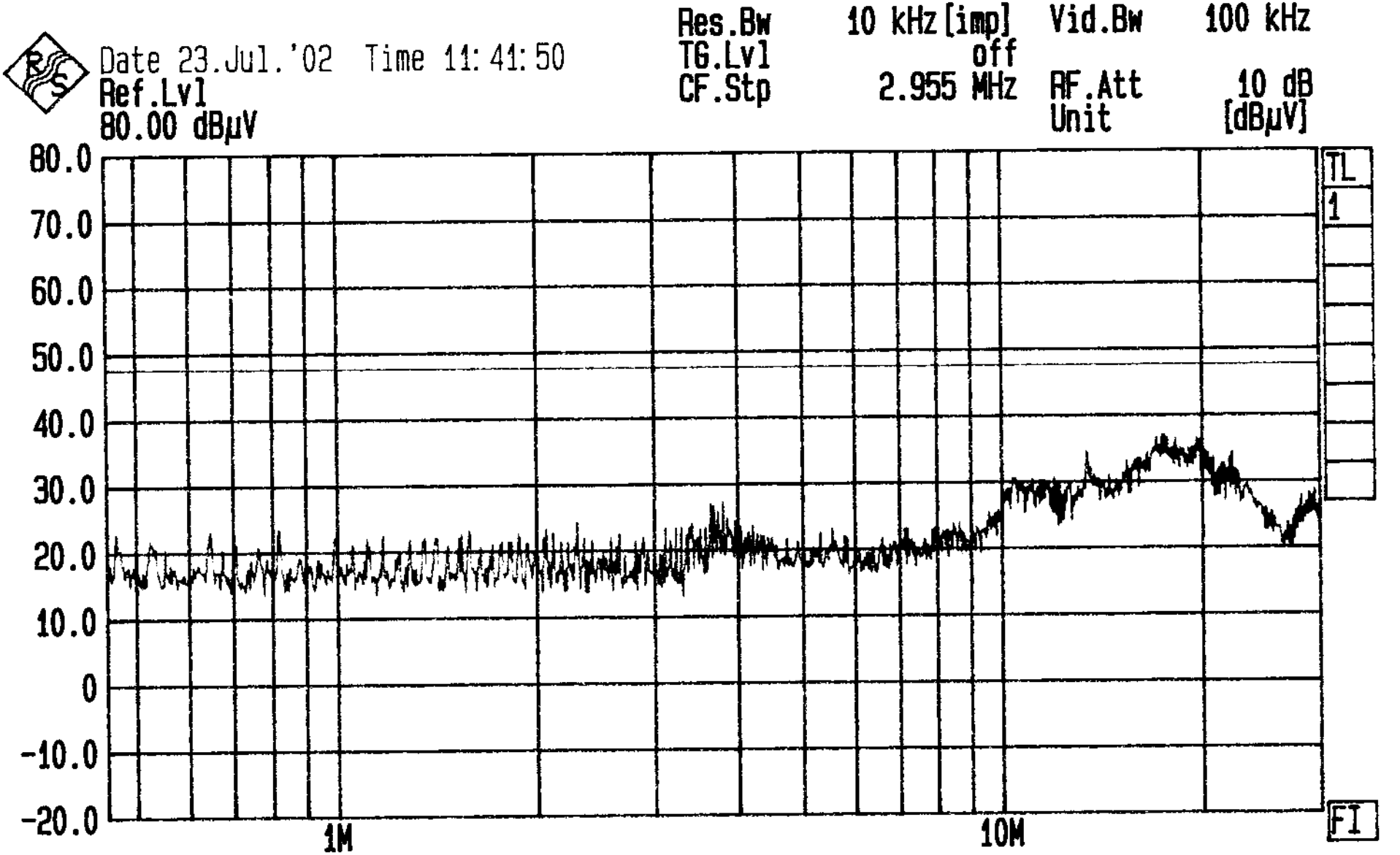
Appendix 1: Ploted Data of Power Line Conducted Emissions

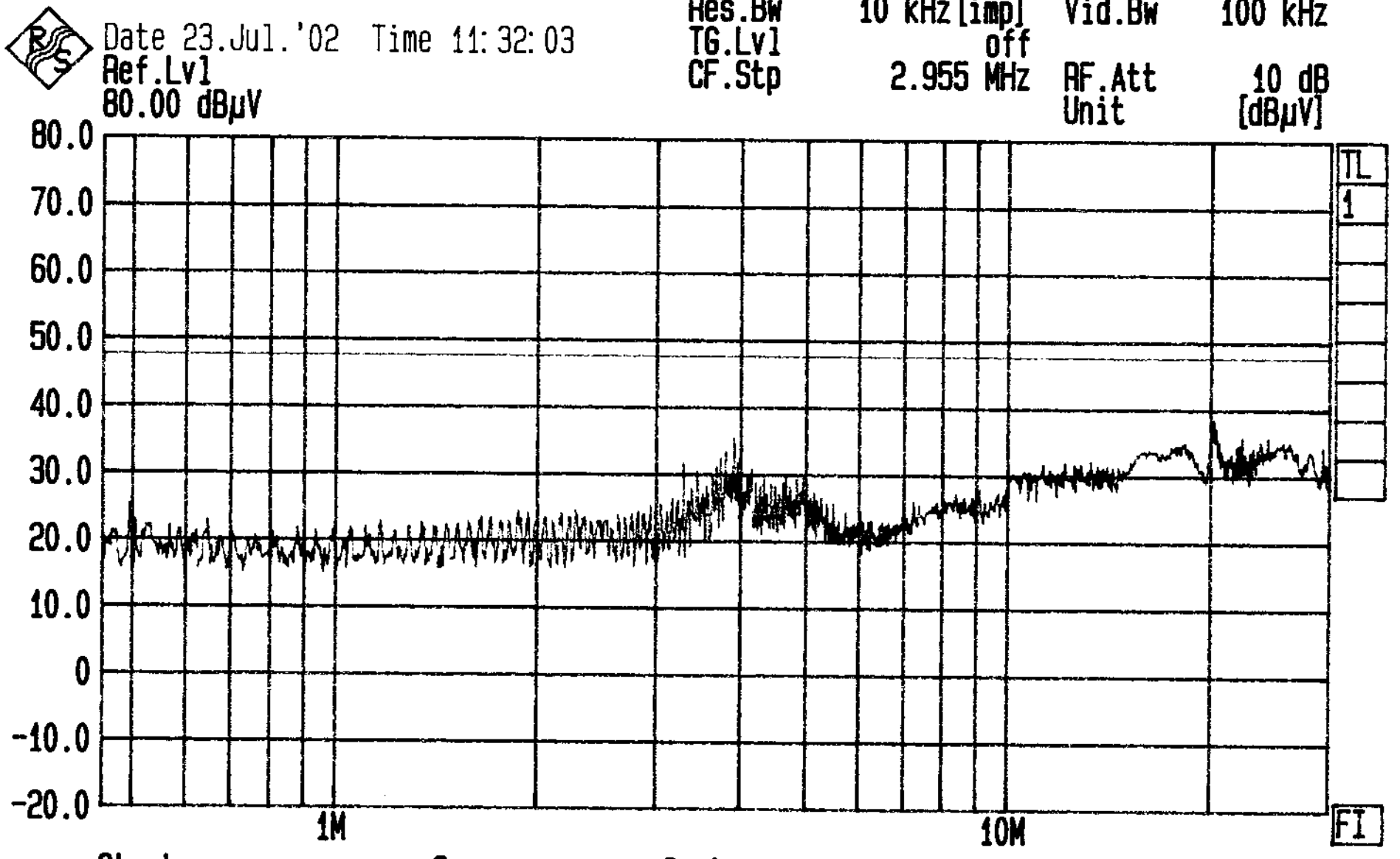

Date 23.Jul.'02 Time 11:22:34
Res.Bw 10 kHz[imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Ref.Lvl
80.00 dBµV
Unit [dBµV]
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start 450 kHz
Span 29.55 MHz
Center 3.67423 MHz
Sweep 1.68 s
Stop 30 MHz
CONDUCTION TEST
EUT: 5GHz PCCard
1: QP., CLASS B LIMIT
MODEL: PC50E-8-FC/A
MODE: 5180MHz
LISN: Va
ETC EMI LAB.



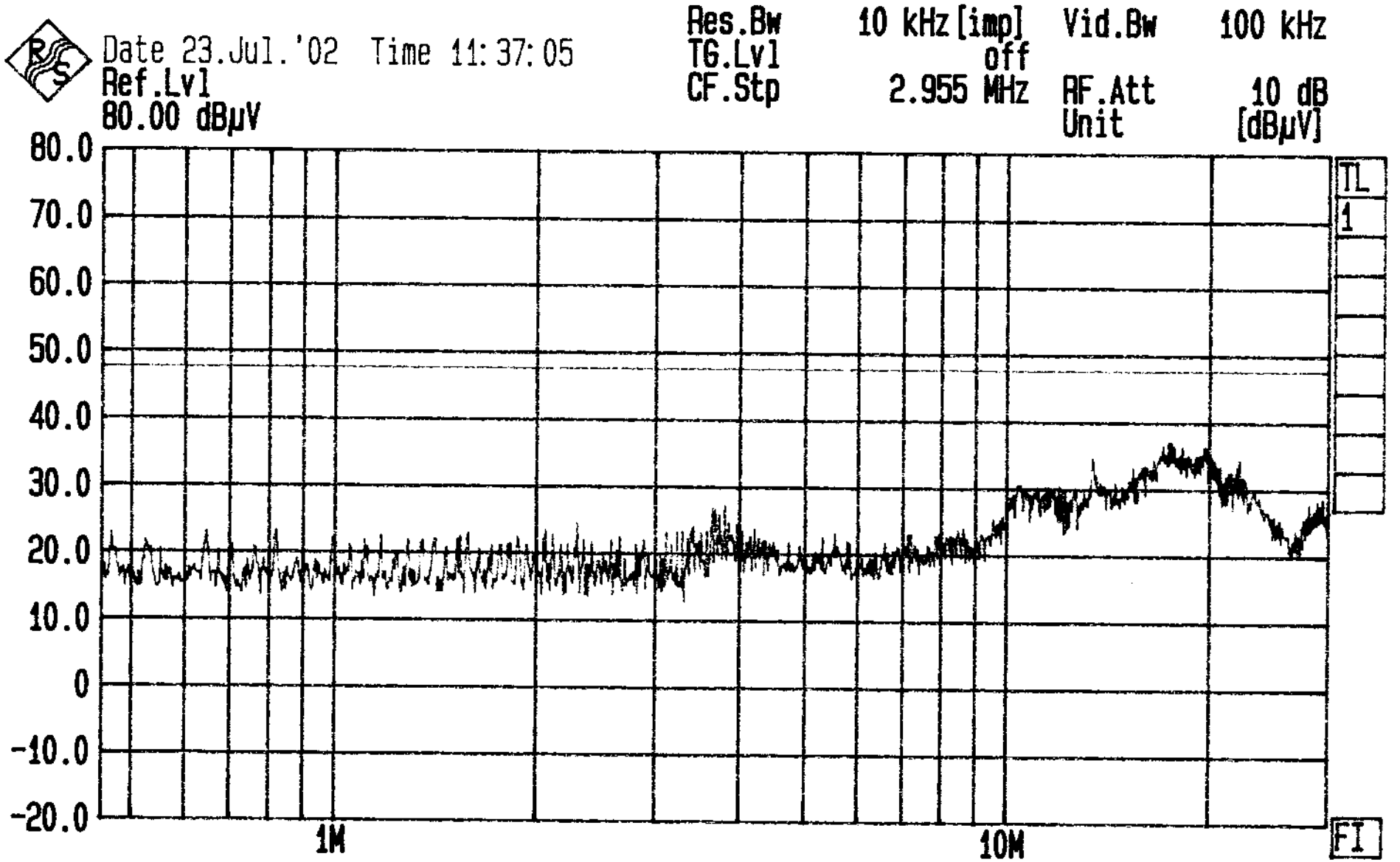
CONDUCTION TEST
MODEL: PC50E-8-FC/A
EUT: 5GHz PCCard
MODE: 5180MHz
LISN: Vb
1: QP., CLASS B LIMIT
ETC EMI LAB.

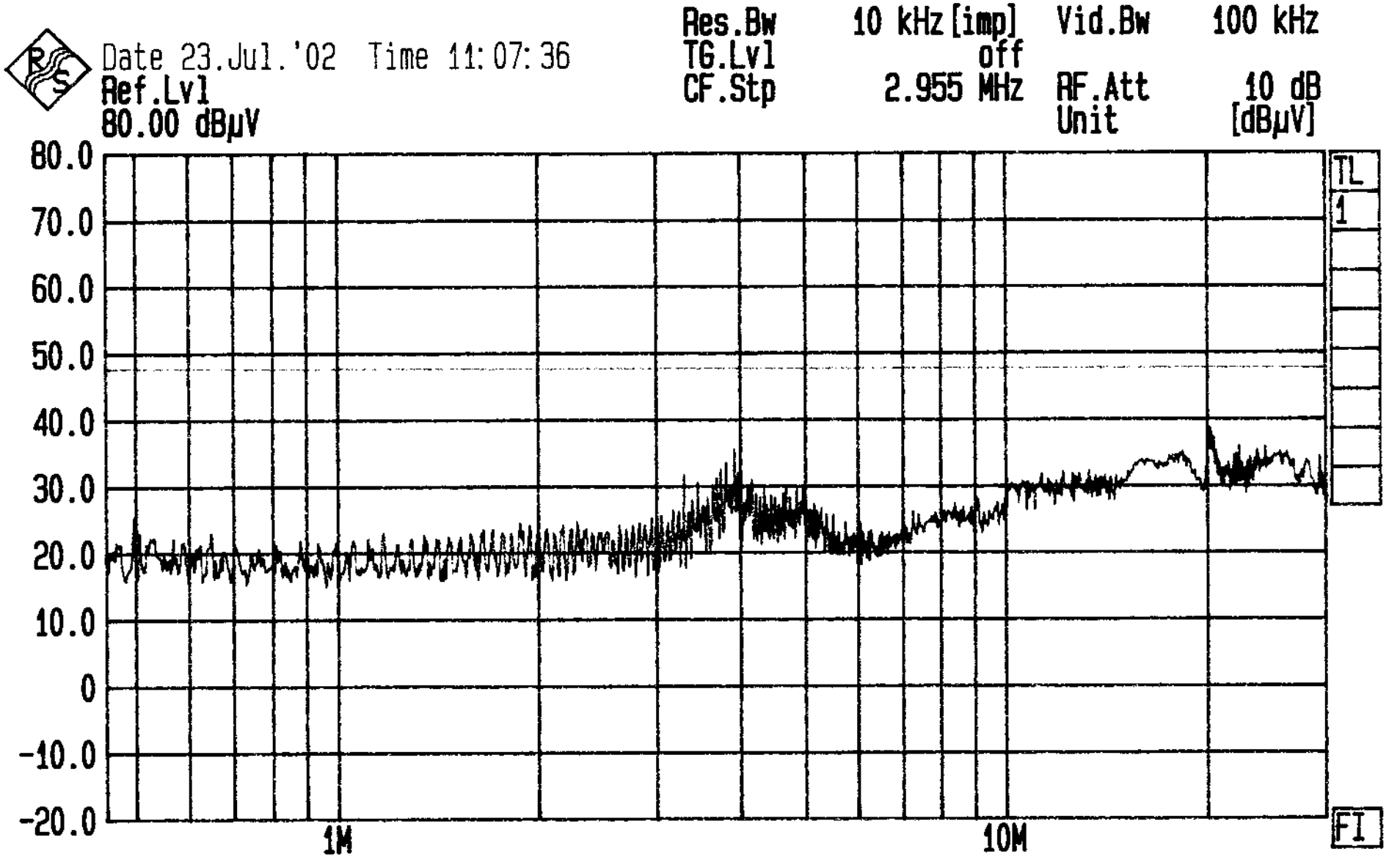

Date 23.Jul.'02 Time 11:27:25
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
80.00 dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start
450 kHz
Span
29.55 MHz
Center
3.67423 MHz
Sweep
1.68 s
Stop
30 MHz
CONDUCTION TEST
EUT: 5GHz PCCard
1: QP., CLASS B LIMIT
MODEL: PC50E-8-FC/A
MODE: 5220MHz
LISN: Va
ETC EMI LAB.

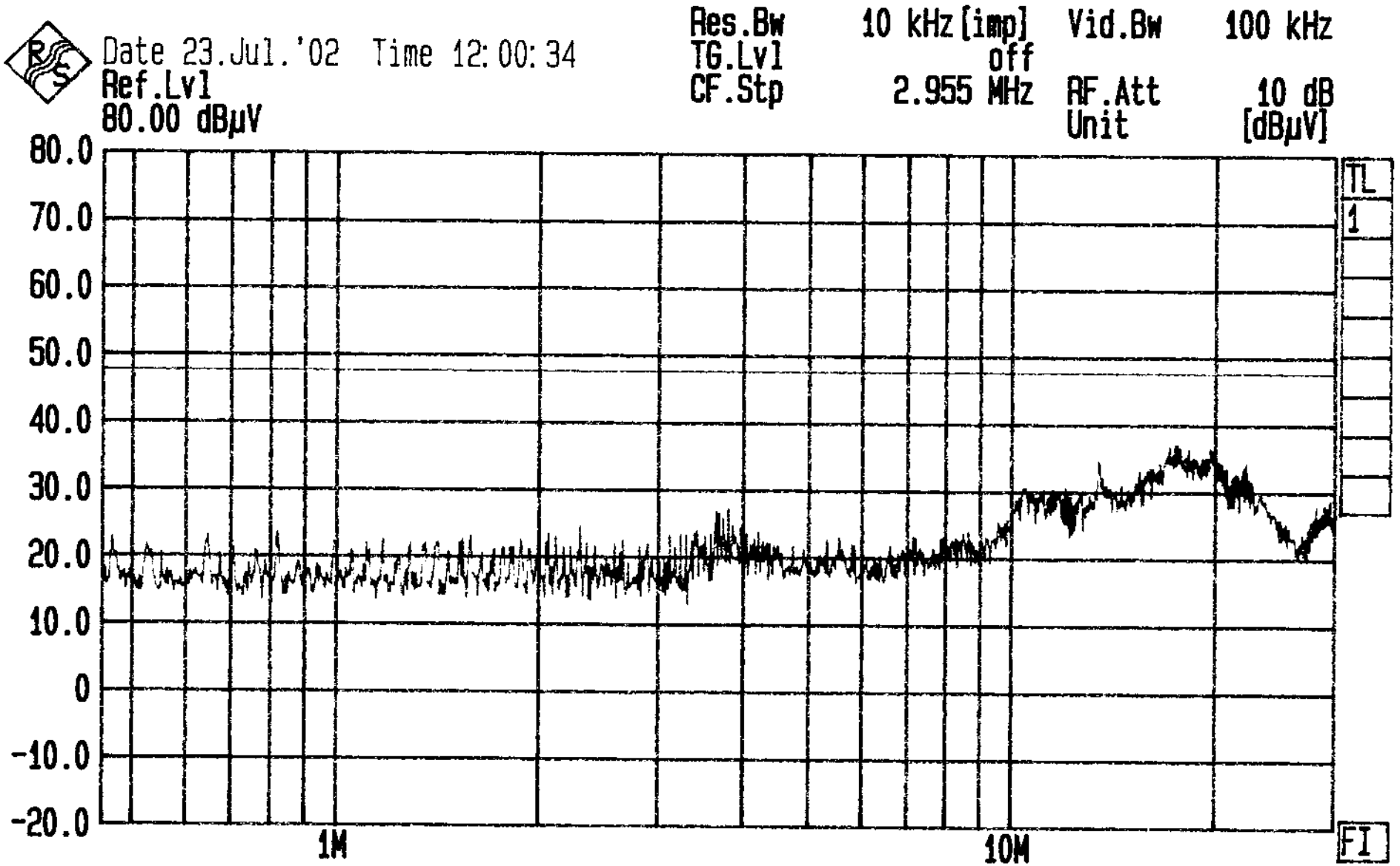

Date 23.Jul.'02 Time 11:41:50
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
80.00 dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start
450 kHz
Span
29.55 MHz
Center
3.67423 MHz
Sweep
1.68 s
Stop
30 MHz
CONDUCTION TEST
MODEL: PC50E-8-FC/A
EUT: 5GHz PCCard
MODE: 5220MHz
LISN: Vb
1: QP., CLASS B LIMIT
ETC EMI LAB.

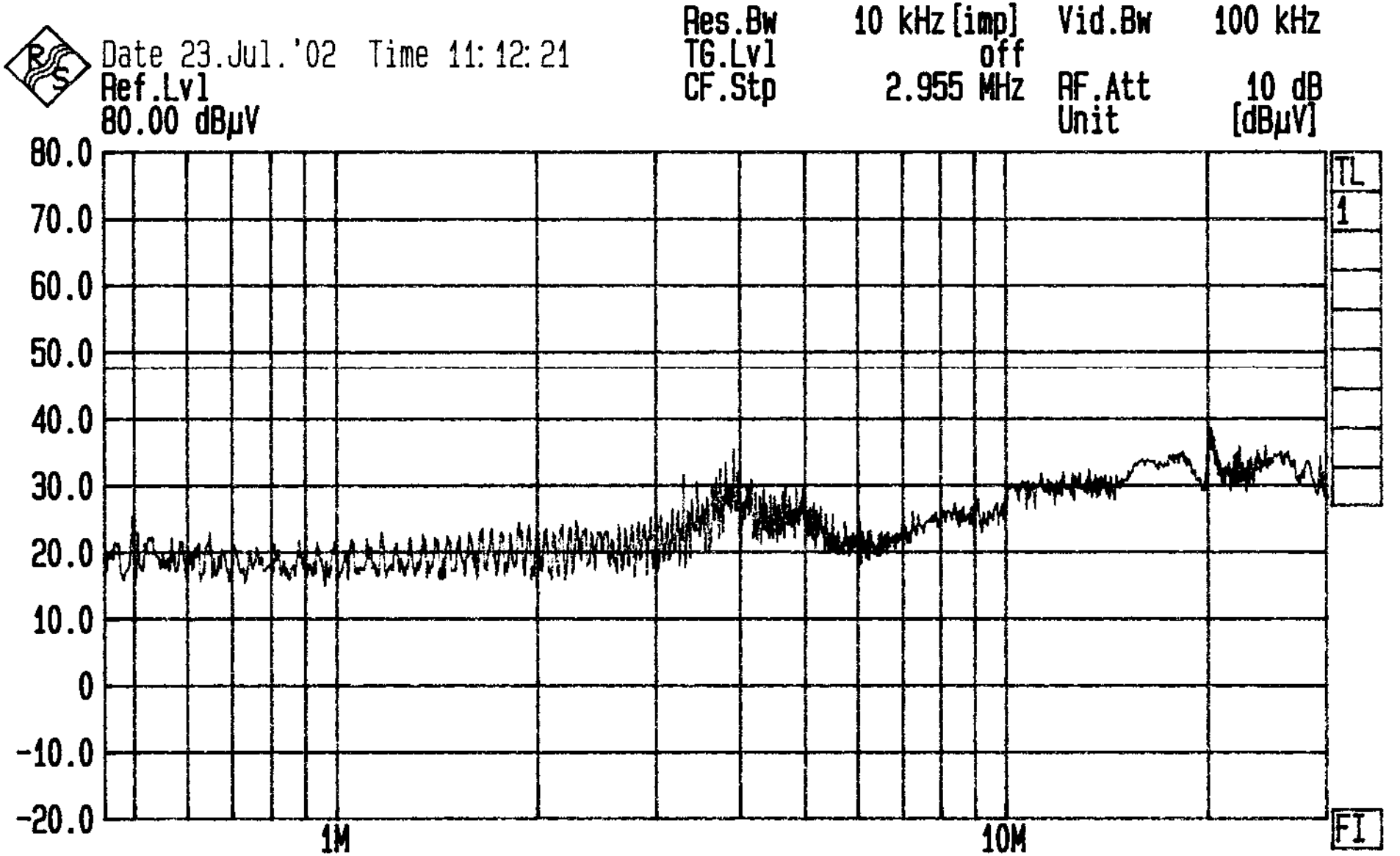


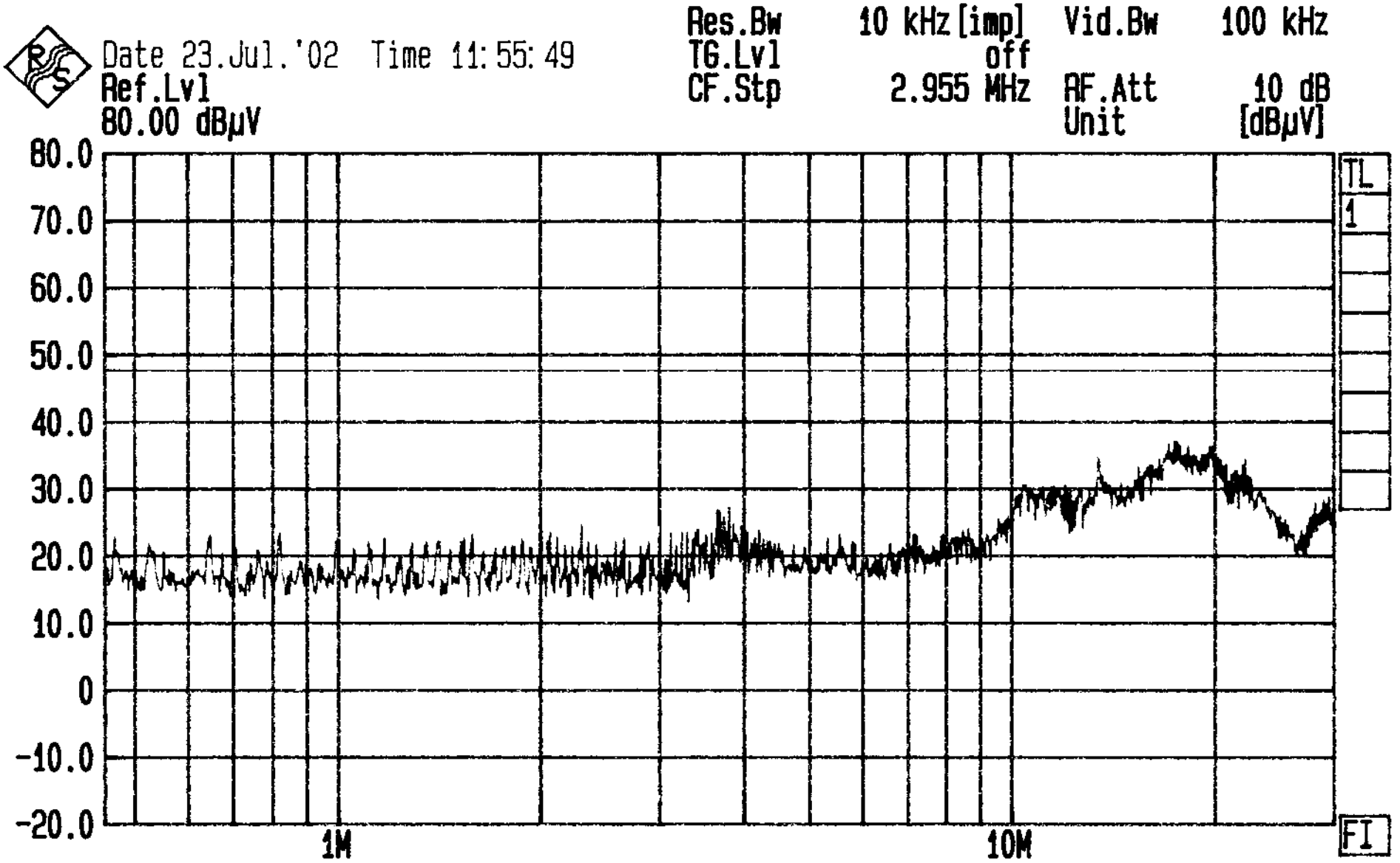
CONDUCTION TEST
MODEL: PC50E-8-FC/A
EUT: 5GHz PCCard
MODE: 5240MHz
LISN: Va
1: QP., CLASS B LIMIT
ETC EMI LAB.

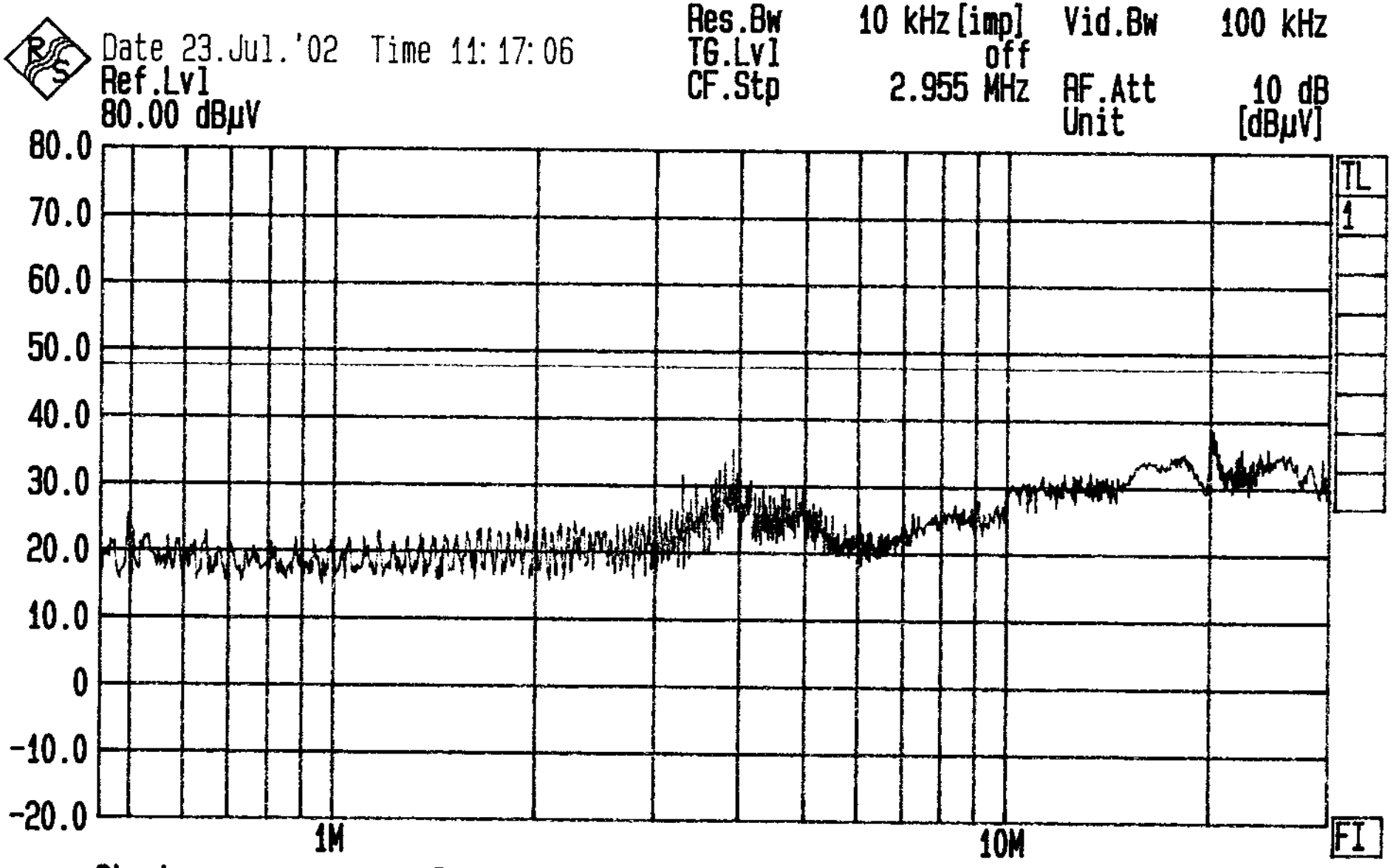

Date 23.Jul.'02 Time 11:37:05
Res.Bw 10 kHz [imp]
TG.Lvl off
CF.Stp 2.955 MHz
Vid.Bw 100 kHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
80.00 dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
1M
10M
TL
1
FI
Start 450 kHz
Span 29.55 MHz
Center 3.67423 MHz
Sweep 1.68 s
Stop 30 MHz
CONDUCTION TEST
MODEL: PC50E-8-FC/A
EUT: 5GHz PCCard
MODE: 5240MHz
LISN: Vb
1: QP., CLASS B LIMIT
ETC EMI LAB.

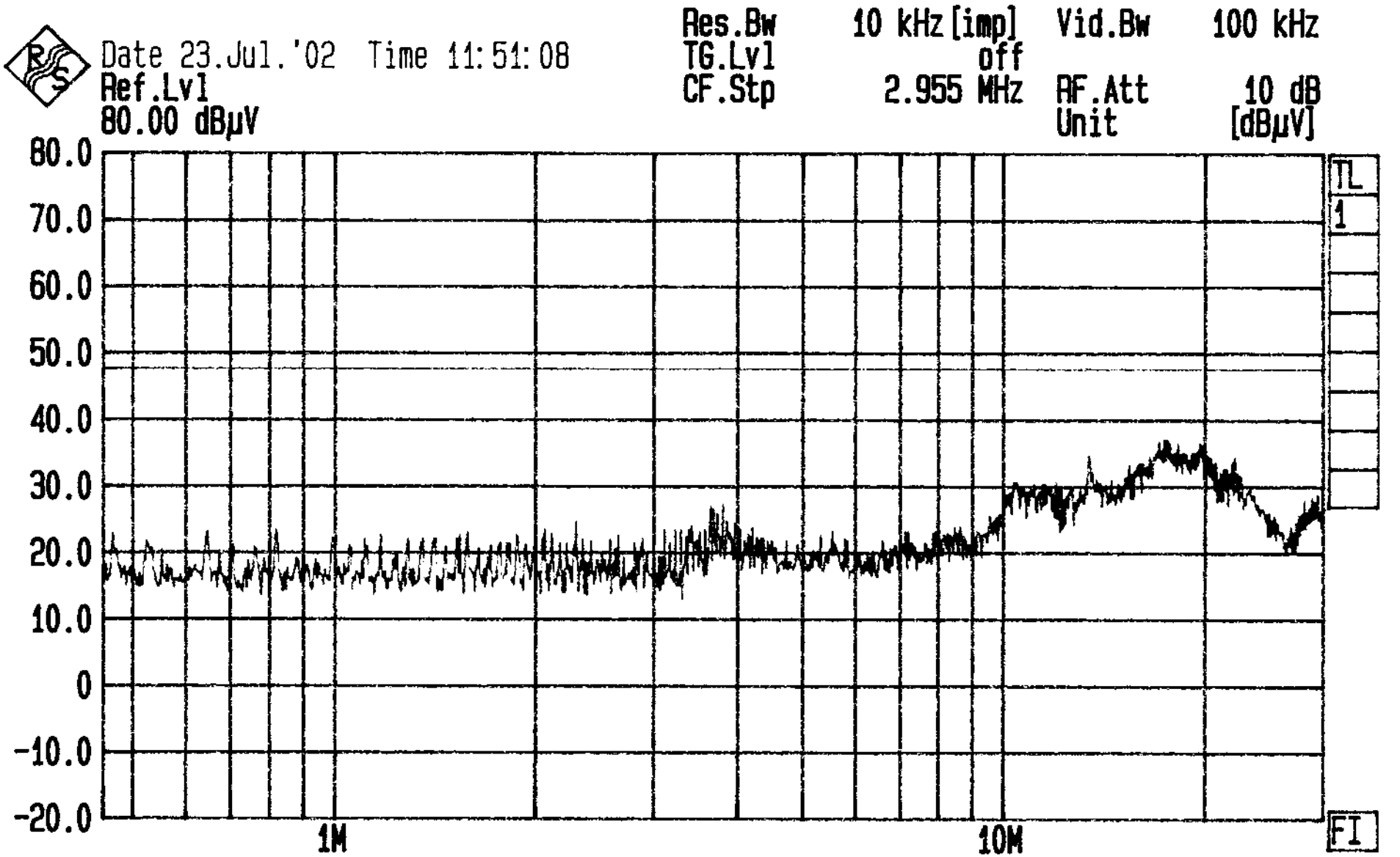

Date 23.Jul.'02 Time 11:07:36
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
80.00 dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start 450 kHz
Span 29.55 MHz
Center 3.67423 MHz
Sweep 1.68 s
Stop 30 MHz
CONDUCTION TEST
EUT: 5GHz PCCard
1: QP., CLASS B LIMIT
MODEL: PC50E-8-FC/A
MODE: 5260MHz
LISN: Va
ETC EMI LAB.


Date 23.Jul.'02 Time 12:00:34
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
80.00 dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start
450 kHz
Span
29.55 MHz
Center
3.67423 MHz
Sweep
1.68 s
Stop
30 MHz
CONDUCTION TEST
MODEL: PC50E-8-FC/A
EUT: 5GHz PCCard
MODE: 5260MHz
LISN: Vb
1: QP., CLASS B LIMIT
ETC EMI LAB.

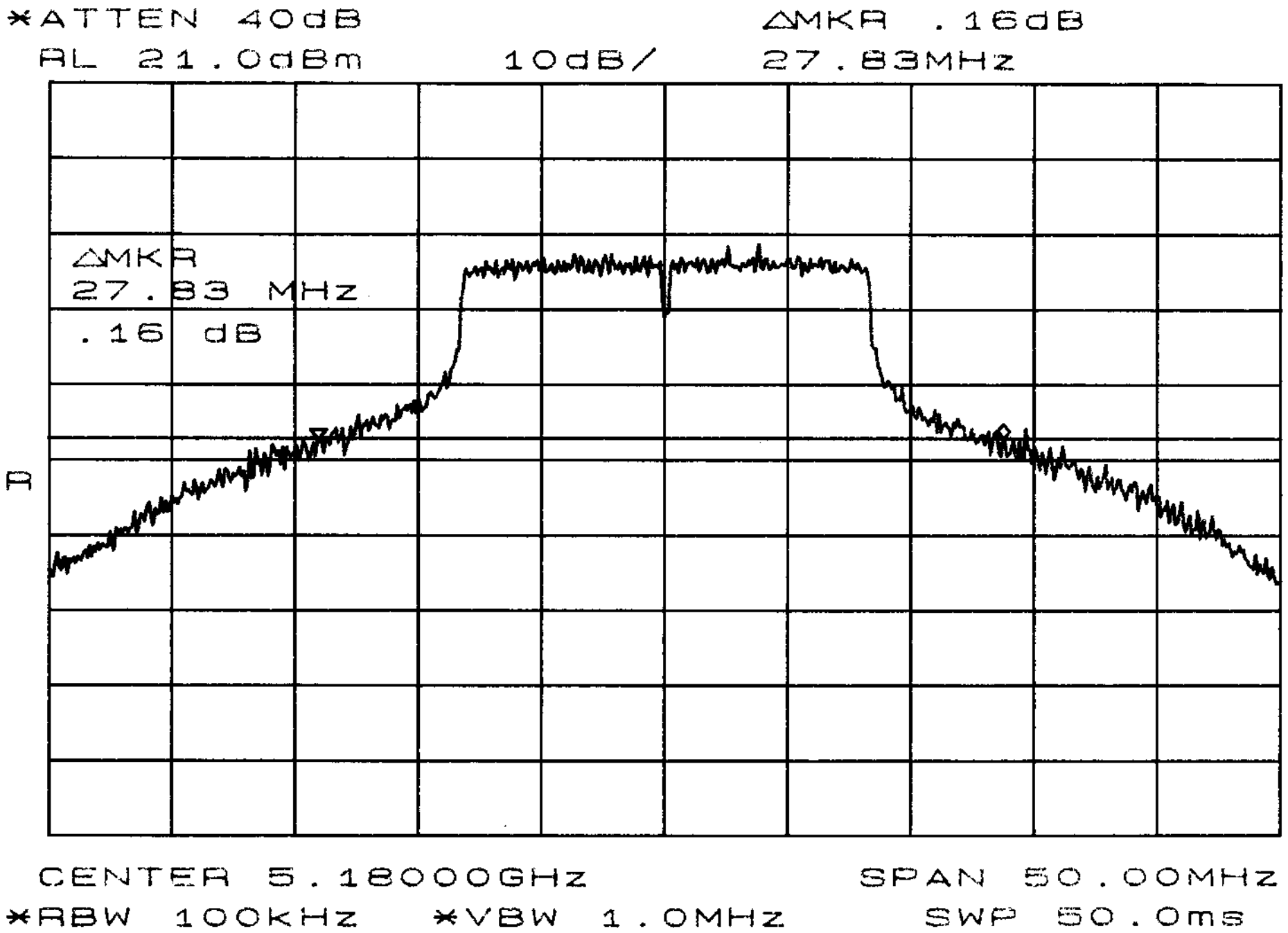

Date 23.Jul.'02 Time 11:12:21
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Ref.Lvl
80.00 dBµV
Unit [dBµV]
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start 450 kHz
Span 29.55 MHz
Center 3.67423 MHz
Sweep 1.68 s
Stop 30 MHz
CONDUCTION TEST
EUT: 5GHz PCCard
1: QP., CLASS B LIMIT
MODEL: PC50E-8-FC/A
MODE: 5280MHz
LISN: Va
ETC EMI LAB.

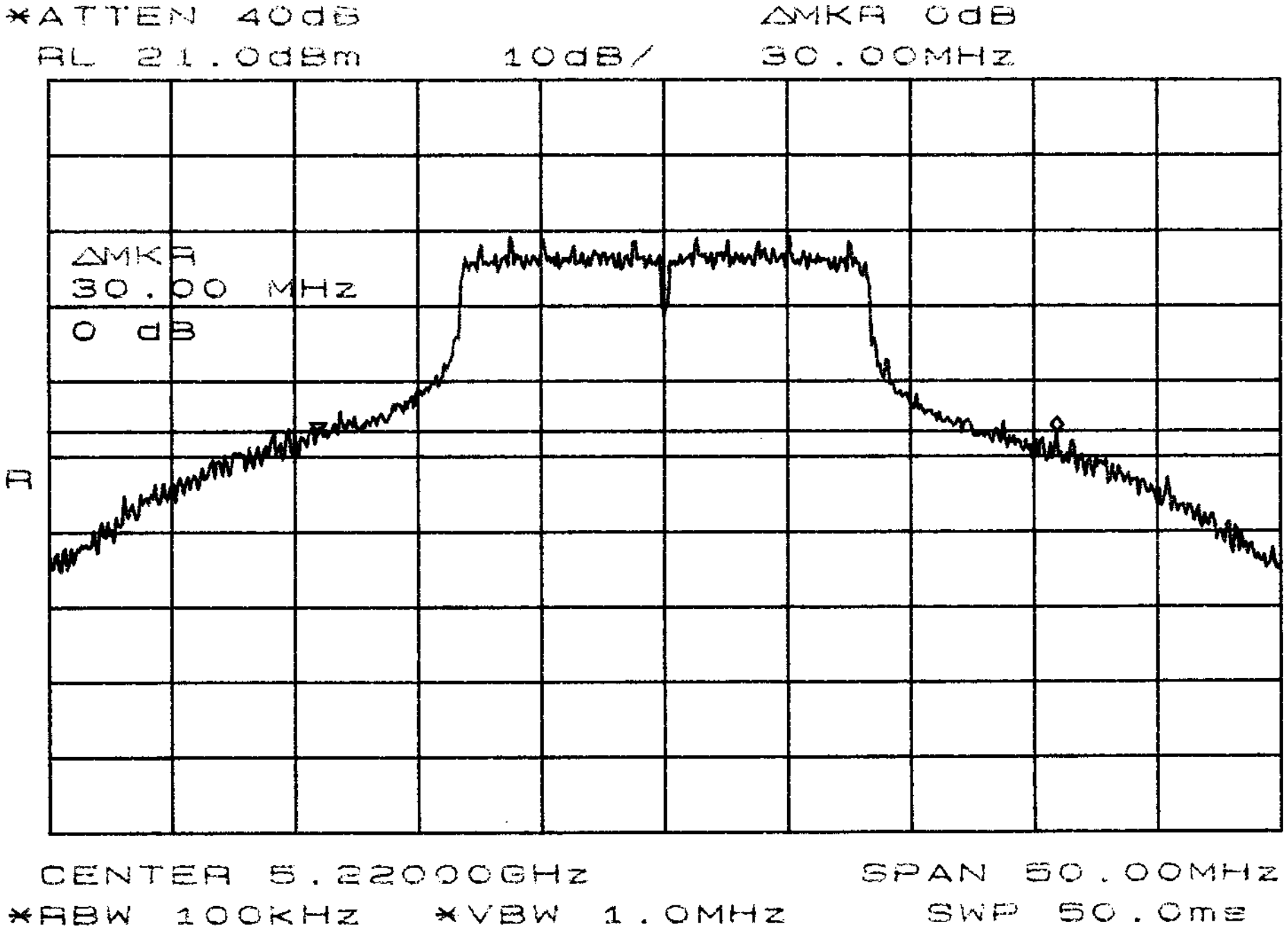

Date 23.Jul.'02 Time 11:55:49
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Ref.Lvl
80.00 dBµV
Unit [dBµV]
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start 450 kHz
Span 29.55 MHz
Center 3.67423 MHz
Sweep 1.68 s
Stop 30 MHz
CONDUCTION TEST
EUT: 5GHz PCCard
1: QP., CLASS B LIMIT
MODEL: PC50E-8-FC/A
MODE: 5280MHz
LISN: Vb
ETC EMI LAB.

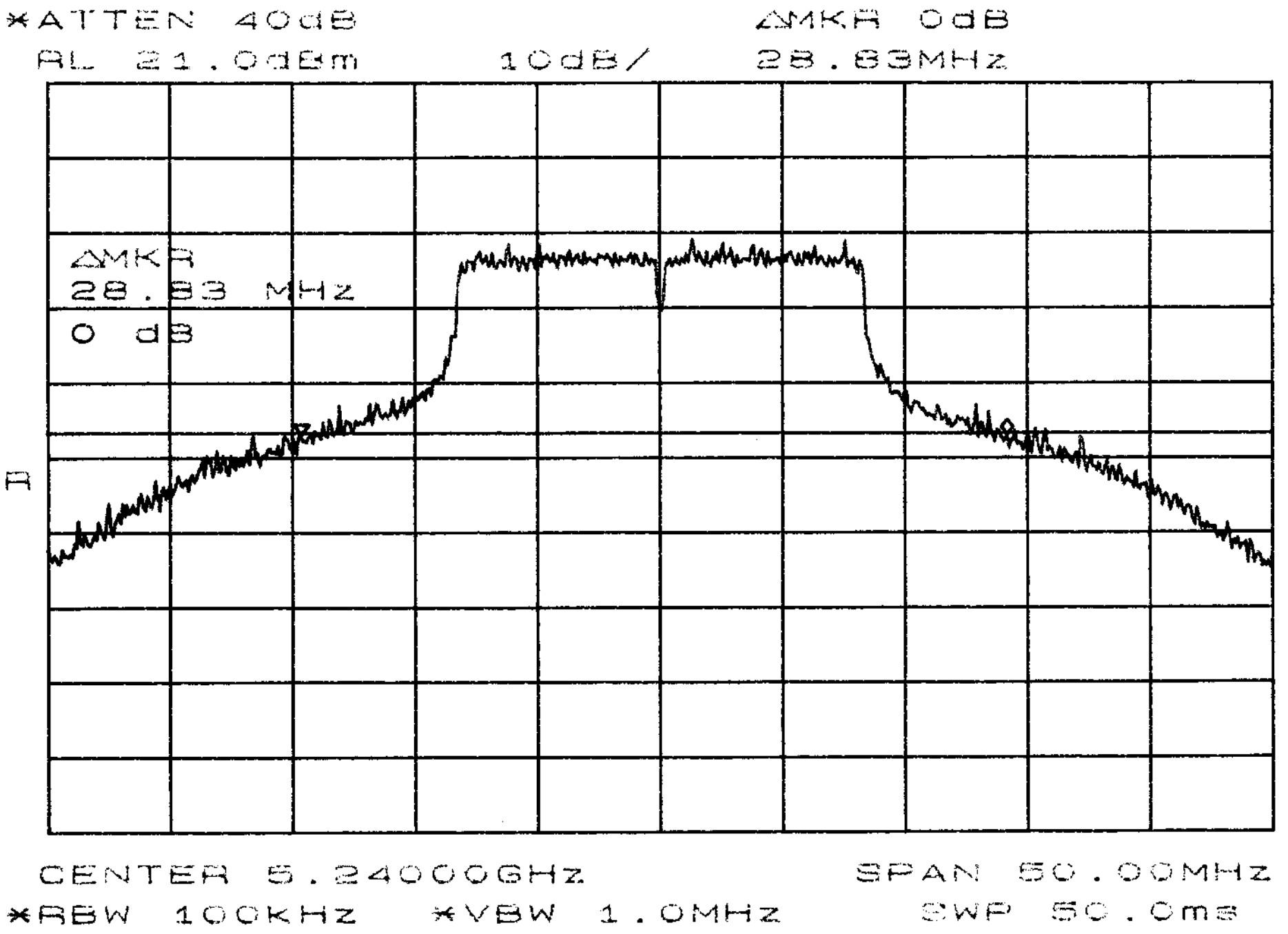

Date 23.Jul.'02 Time 11:17:06
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
80.00 dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start 450 kHz
Span 29.55 MHz
Center 3.67423 MHz
Sweep 1.68 s
Stop 30 MHz
CONDUCTION TEST
MODEL: PC50E-8-FC/A
EUT: 5GHz PCCard
MODE: 5320MHz
LISN: Va
1: QP., CLASS B LIMIT
ETC EMI LAB.

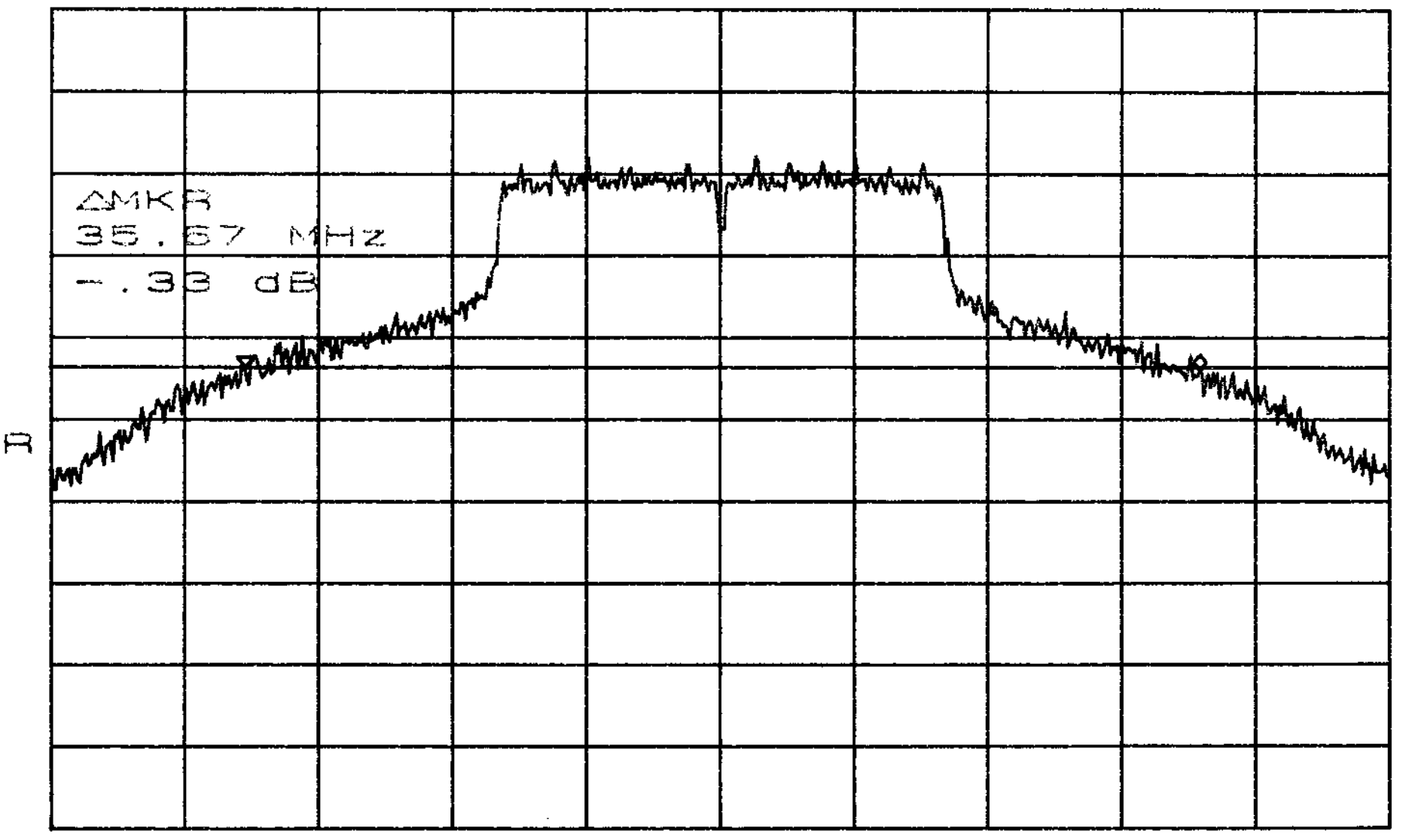

Date 23.Jul.'02 Time 11:51:08
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 2.955 MHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
80.00 dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TL
1
FI
1M
10M
Start 450 kHz
Span 29.55 MHz
Center 3.67423 MHz
Sweep 1.68 s
Stop 30 MHz
CONDUCTION TEST
EUT: 5GHz PCCard
1: QP., CLASS B LIMIT
MODEL: PC50E-8-FC/A
MODE: 5320MHz
LISN: Vb
ETC EMI LAB.

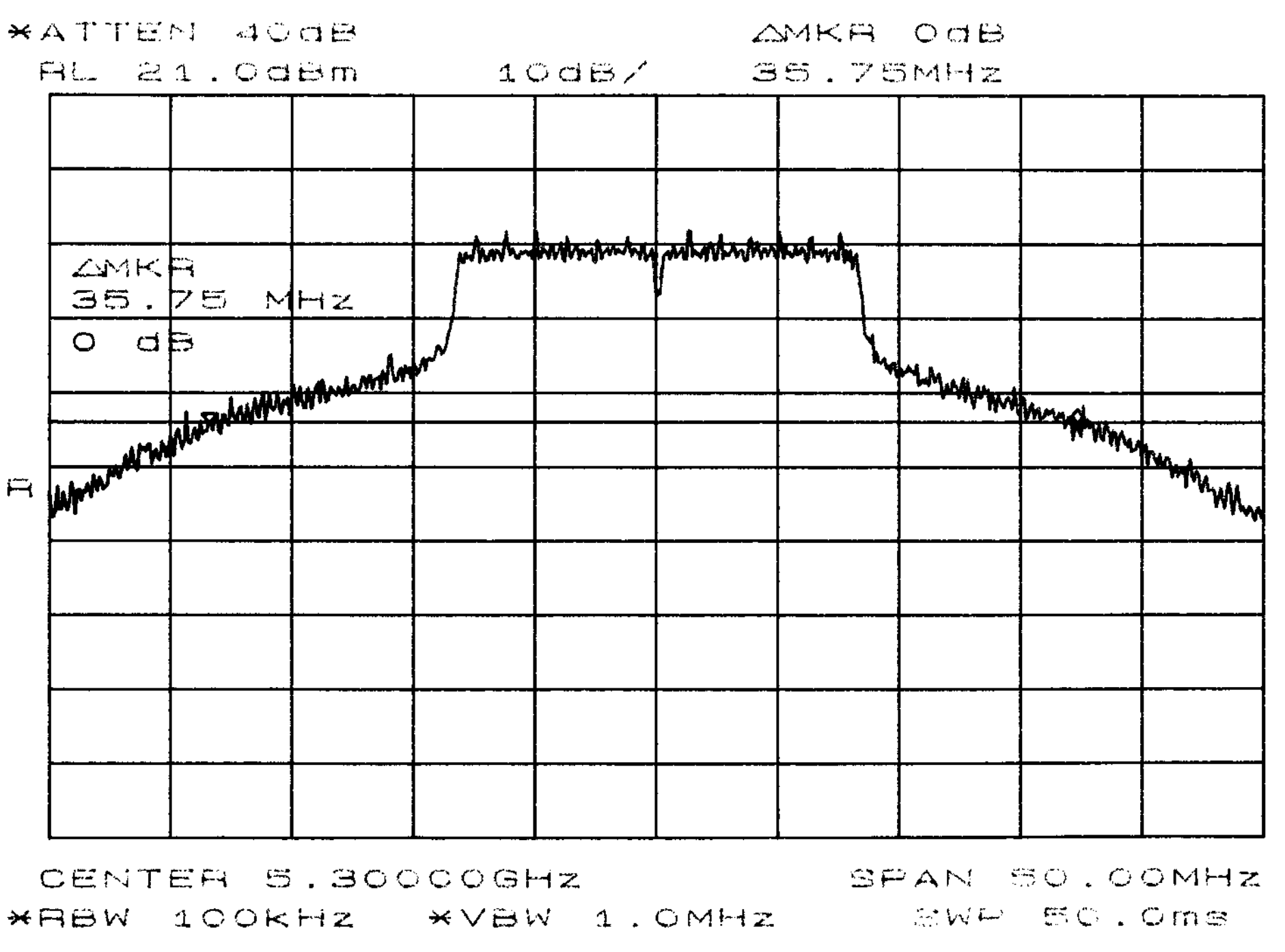
Appendix 2: Ploted Data of Emissions Bandwidth

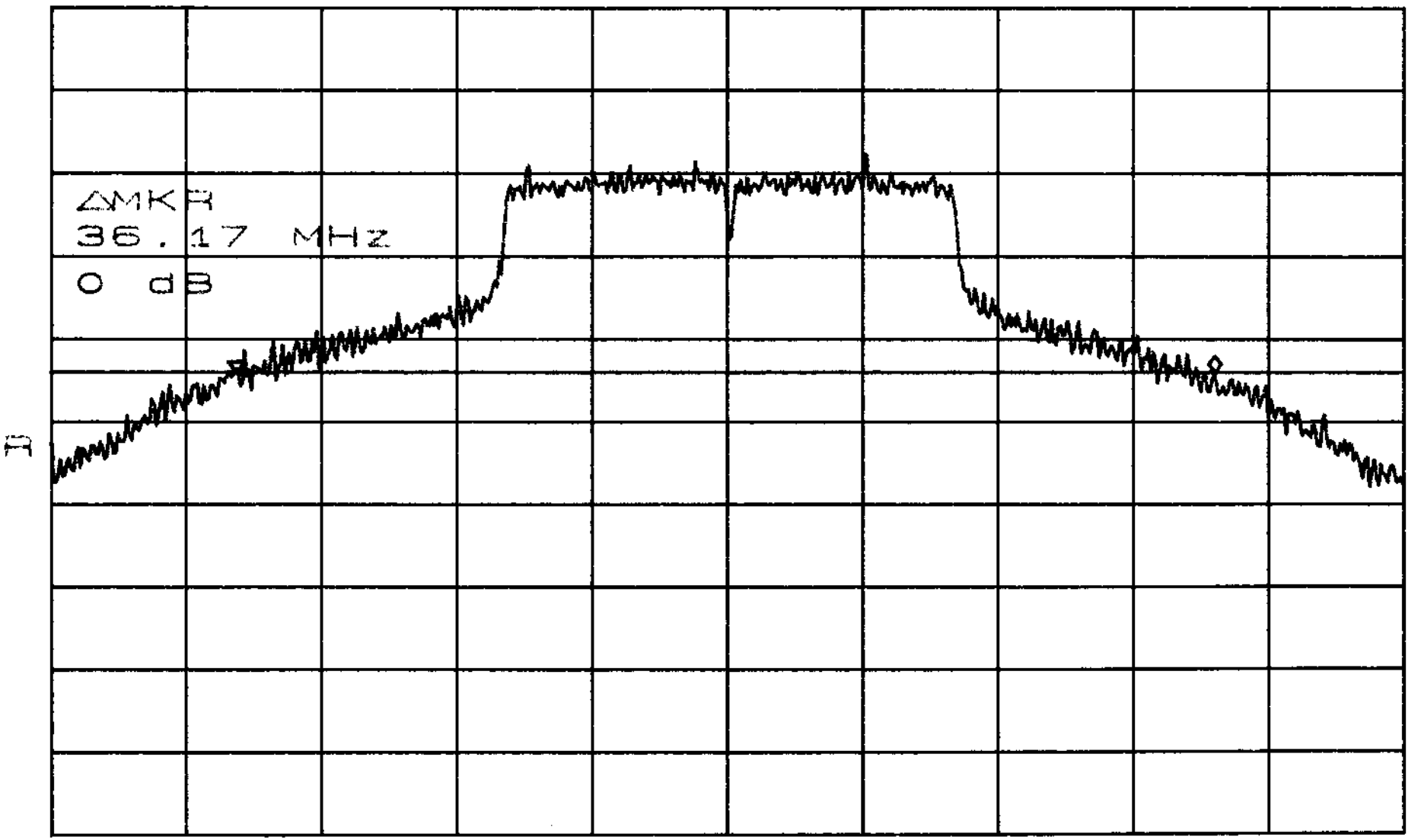

*ATTEN 40dB
ΔMKR .16dB
RL 21.0dBm
10dB/
27.83MHz
ΔMKR
27.83 MHz
.16 dB
R
CENTER 5.18000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 1.0MHz
SWP 50.0ms


*ATTEN 40dB
ΔMKR 0dB
RL 21.0dBm
10dB/
30.00MHz
ΔMKR
30.00 MHz
0 dB
R
CENTER 5.22000GHz
SPAN 50.00MHz
*RBW 100KHz
*VBW 1.0MHz
SWP 50.0ms

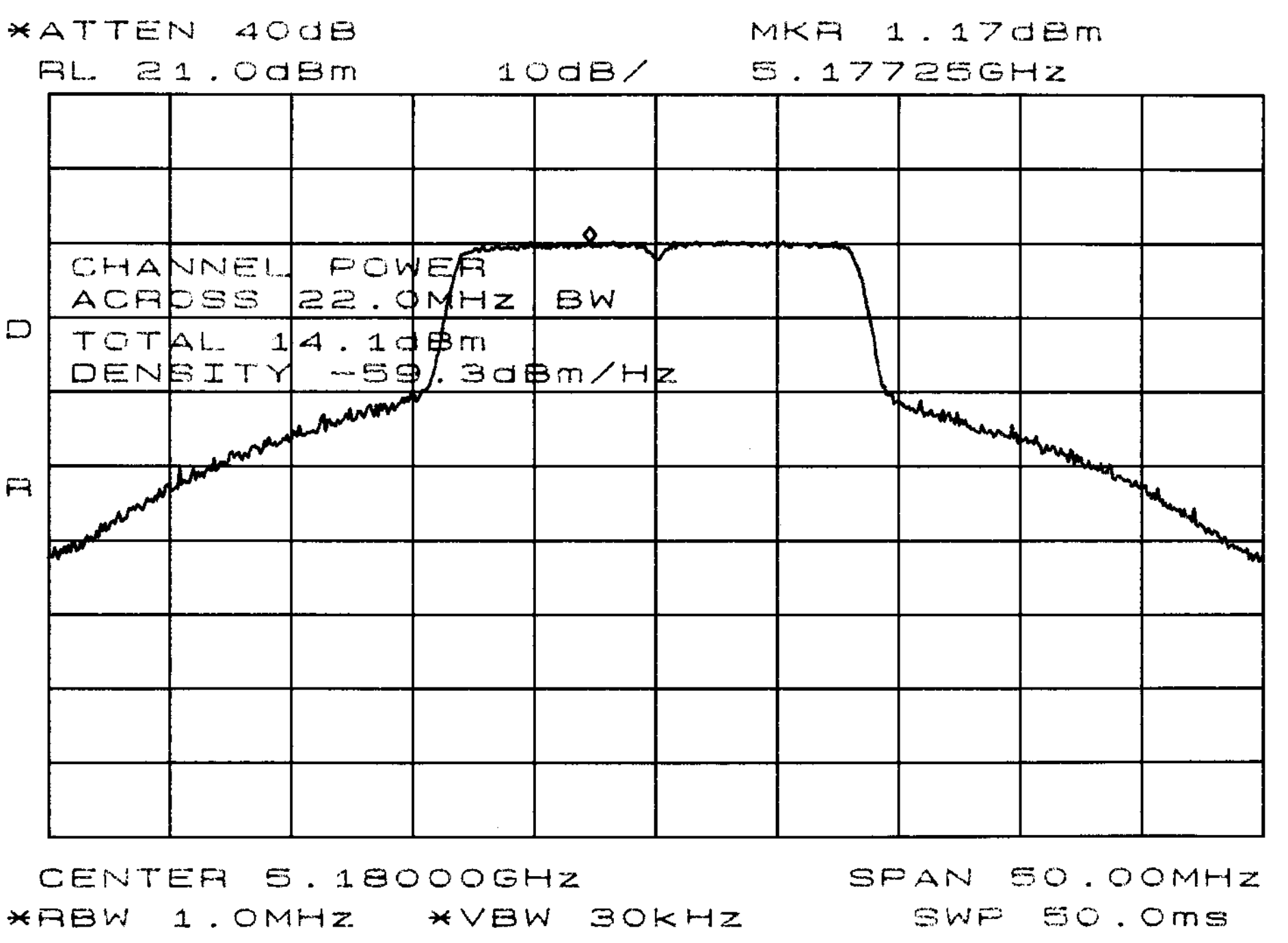

*ATTEN 40dB
ΔMKR 0dB
RL 21.0dBm
10dB/
28.83MHz
ΔMKR
28.83 MHz
0 dB
CENTER 5.24000GHz
SPAN 50.00MHz
*RBW 100KHz
*VBW 1.0MHz
SWP 50.0ms

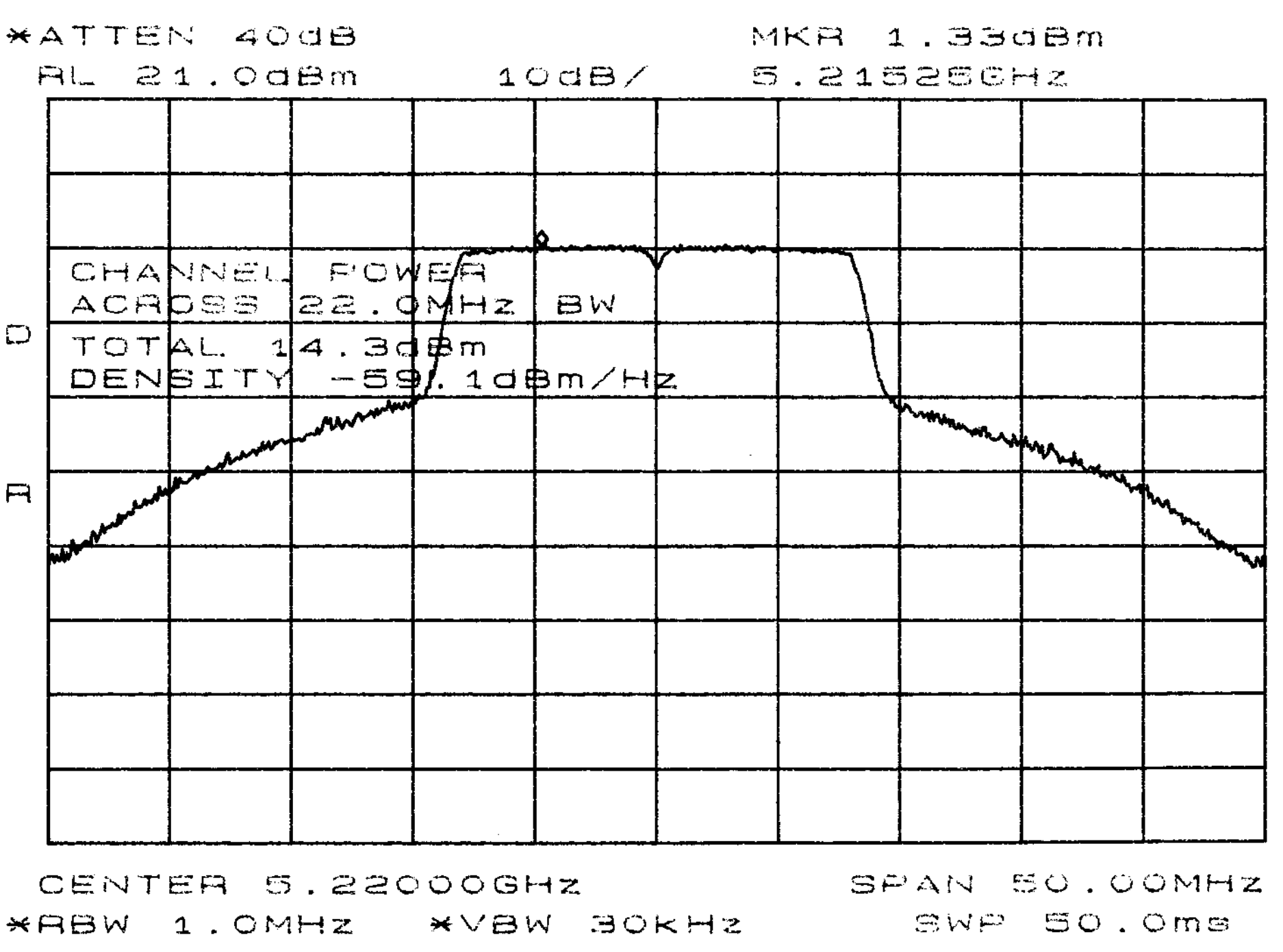

*ATTEN 40dB
ΔMKR -.33dB
RL 21.0dBm
10dB/
35.67MHz
ΔMKR
35.67 MHz
-.33 dB
R
CENTER 5.260000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 1.0MHz
SWP 50.0ms

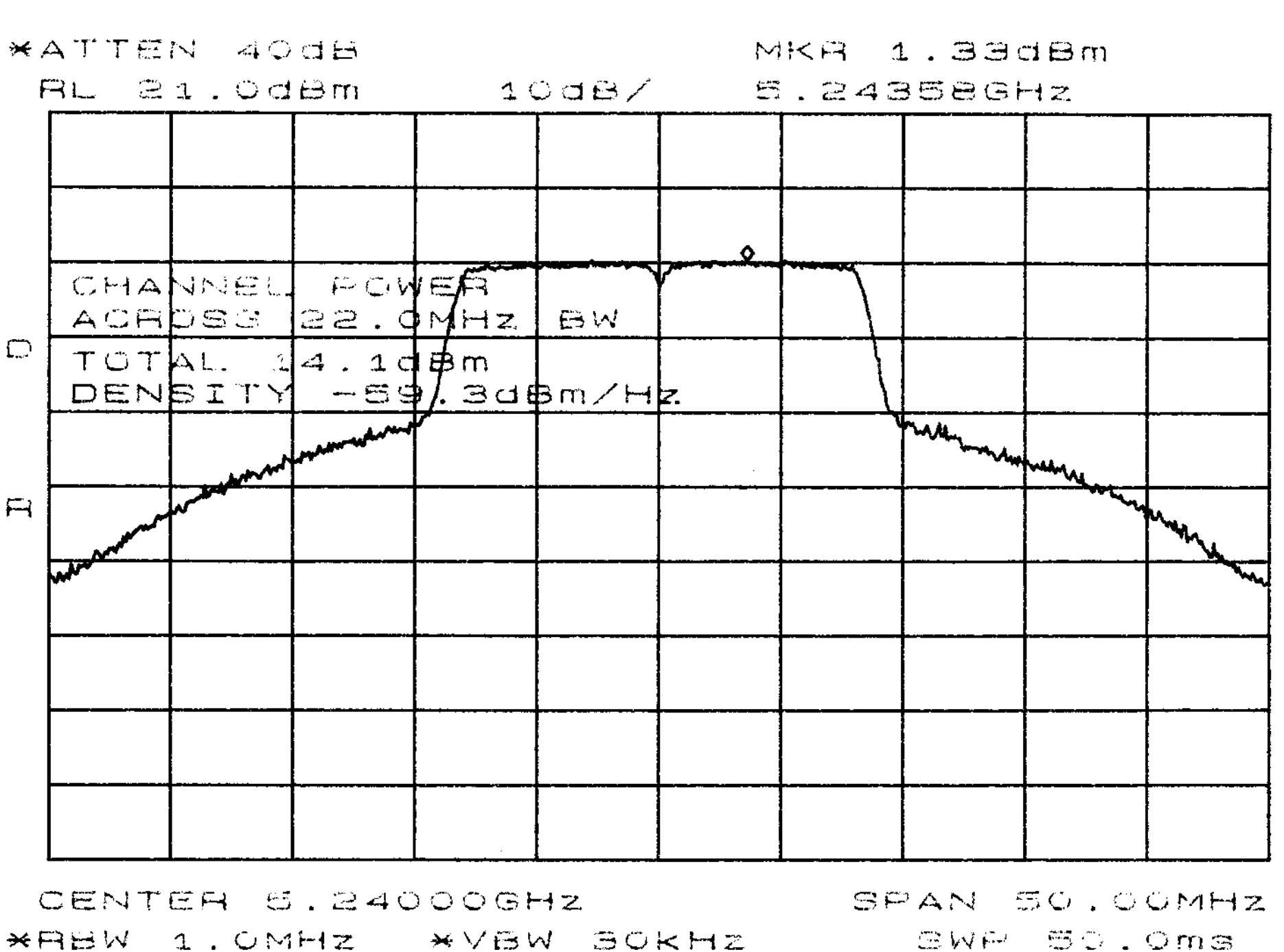

*ATTEN 40dB
ΔMKR 0dB
RL 21.0dBm
10dB/
35.75MHz
ΔMKR
35.75 MHz
0 dB
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 100KHz
*VBW 1.0MHz
SWP 50.0ms

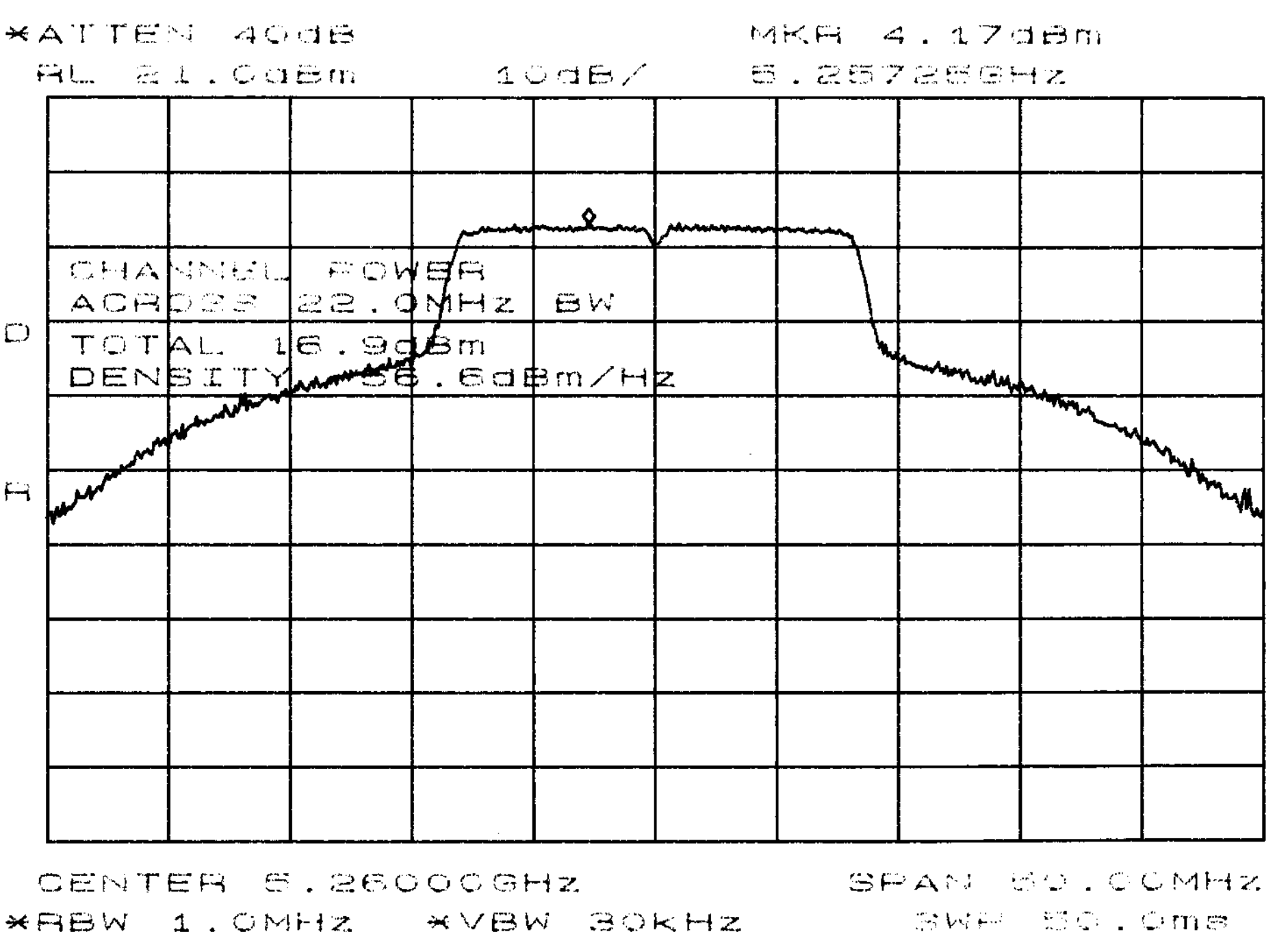

*ATTEN 40dB
ΔMKR 0dB
RL 21.0dBm
10dB/
36.17MHz
ΔMKR
36.17 MHz
0 dB
CENTER 5.32000GHz
SPAN 50.00MHz
*RBW 100KHz
*VBW 1.0MHz
SWP 50.0ms

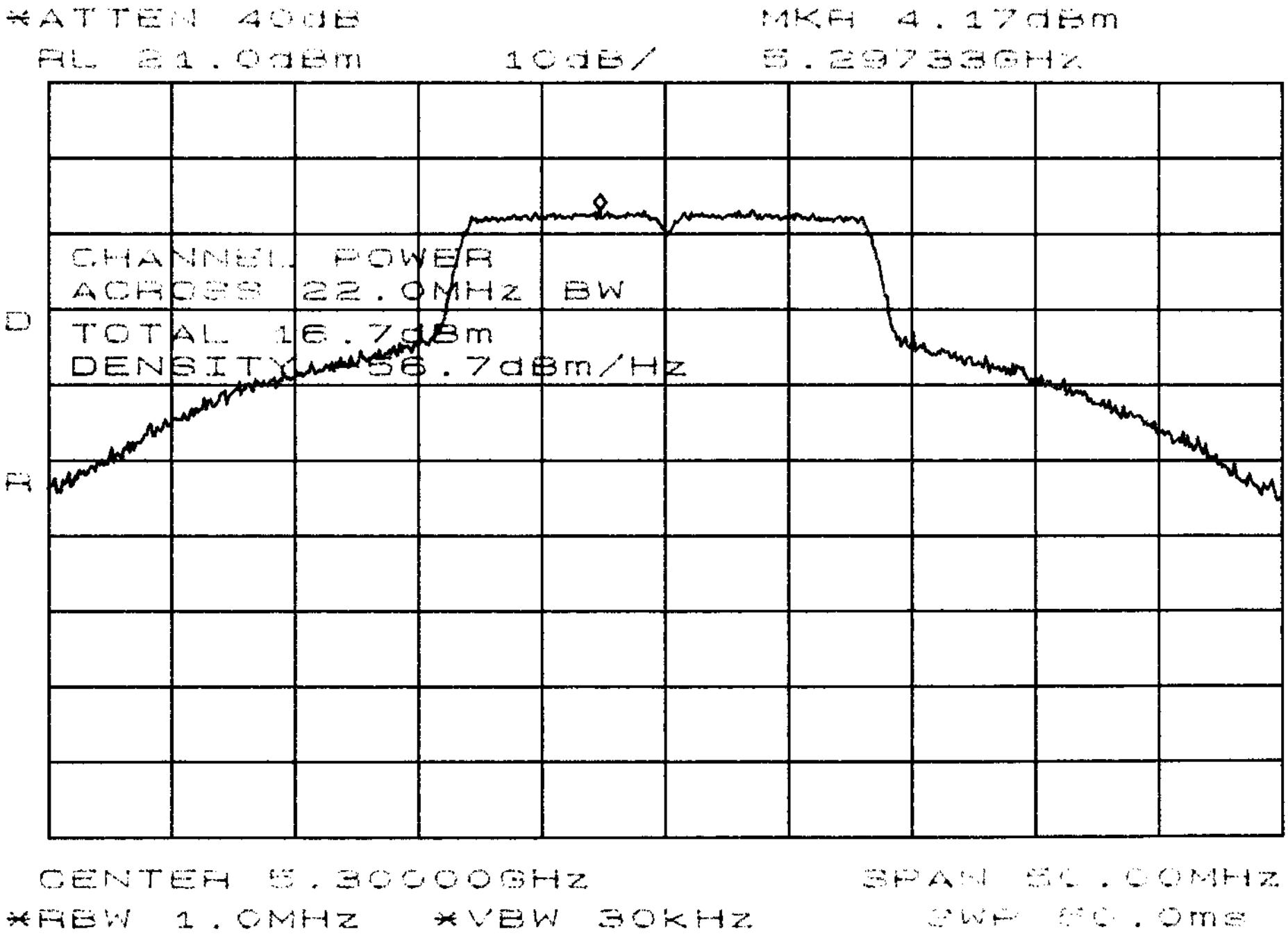
Appendix 3: Ploted Data of Output Peak Power

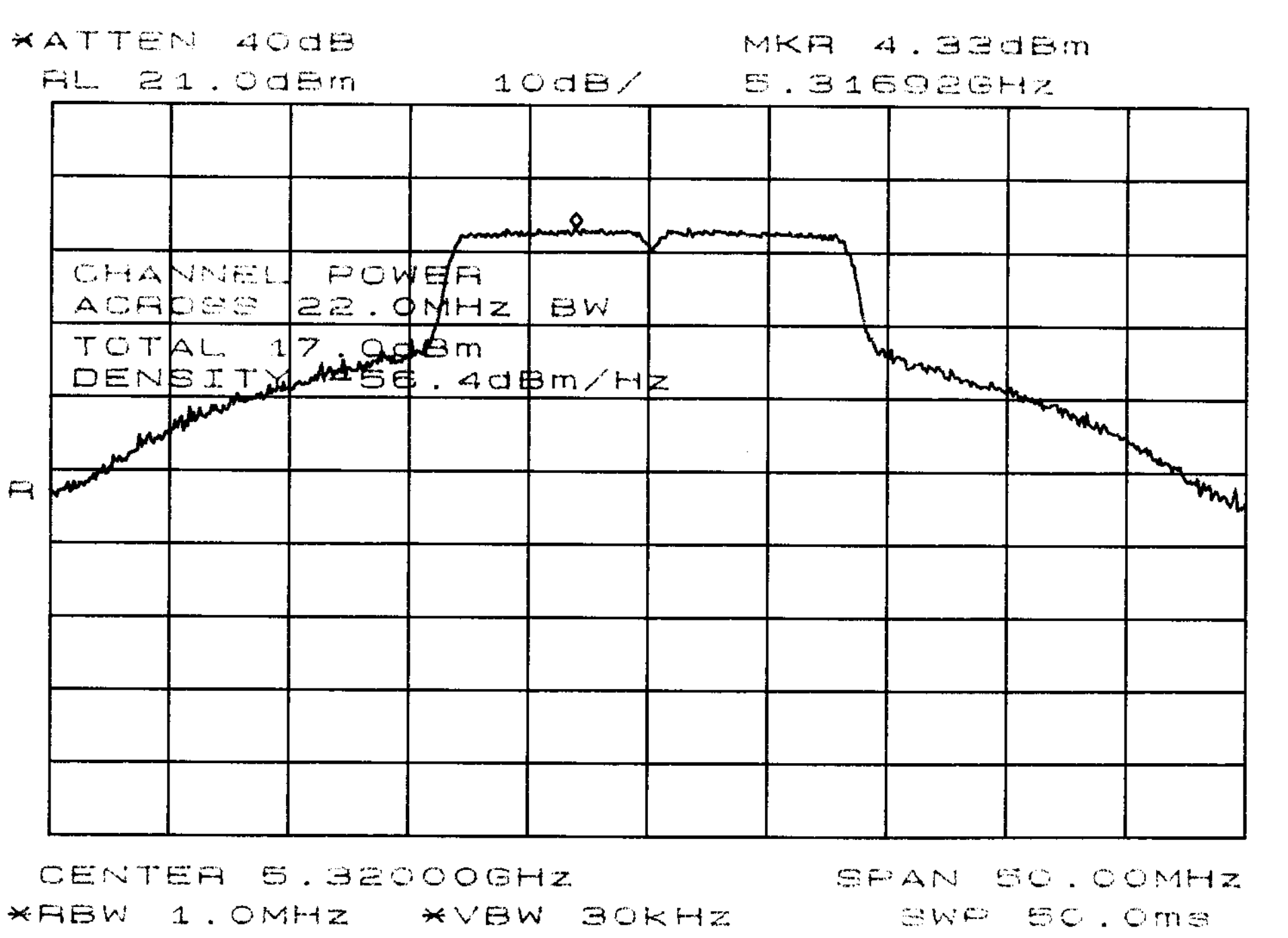

*ATTEN 40dB
MKR 1.17dBm
RL 21.0dBm
10dB/
5.17725GHz
CHANNEL POWER
ACROSS 22.0MHz BW
TOTAL 14.1dBm
DENSITY -59.3dBm/Hz
D
R
CENTER 5.18000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30kHz
SWP 50.0ms


*ATTEN 40dB
MKR 1.33dBm
RL 21.0dBm
10dB/
5.215250GHz
CHANNEL POWER
ACROSS 22.0MHz BW
TOTAL 14.3dBm
DENSITY -59.1dBm/Hz
CENTER 5.22000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30KHz
SWP 50.0ms

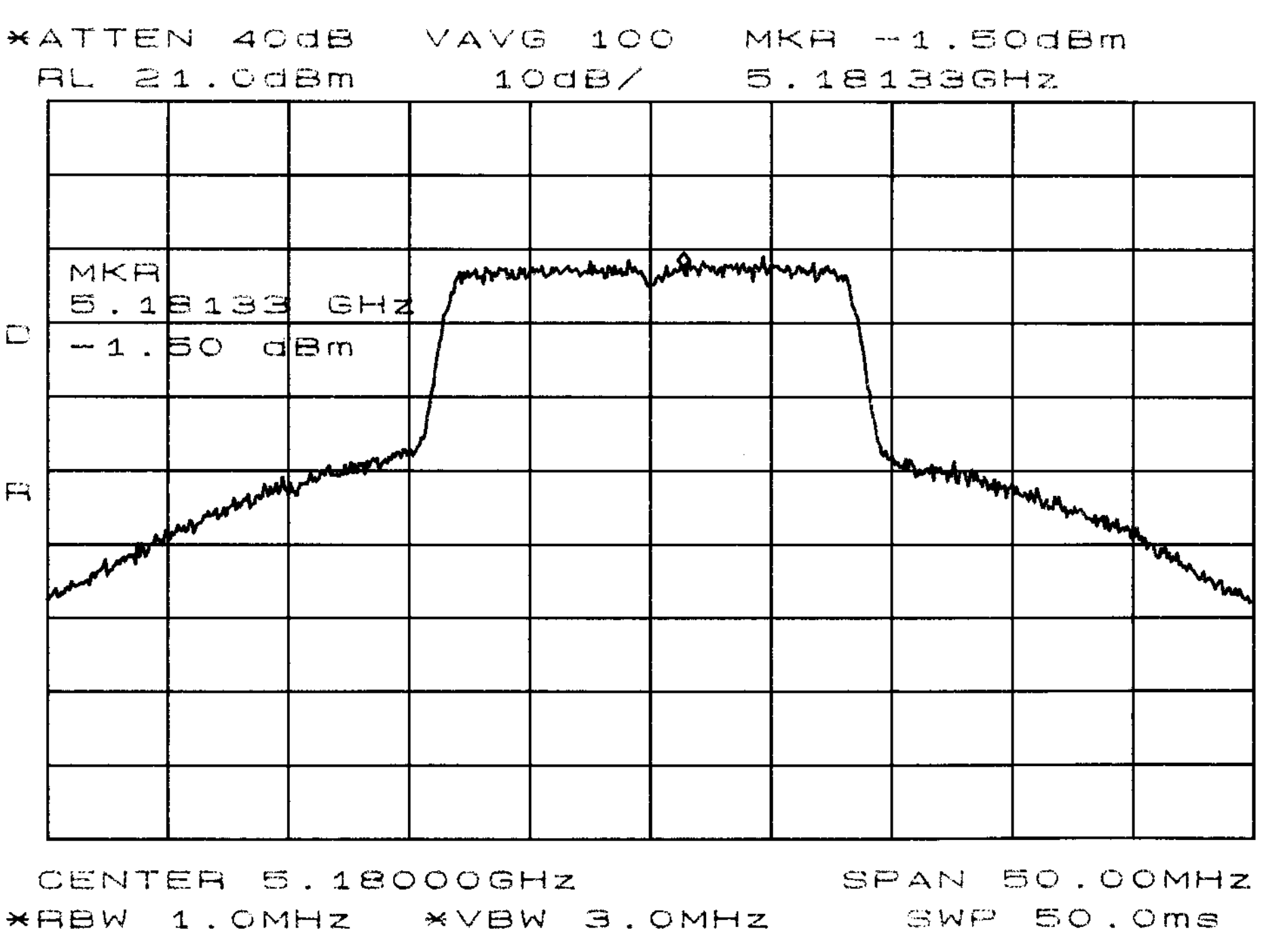

*ATTEN 40dB
MKR 1.33dBm
RL 21.0dBm
10dB/
5.243588GHz
CHANNEL POWER
ACROSS 22.0MHz BW
TOTAL 14.1dBm
DENSITY -59.3dBm/Hz
CENTER 5.24000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30KHz
SWP 50.0ms

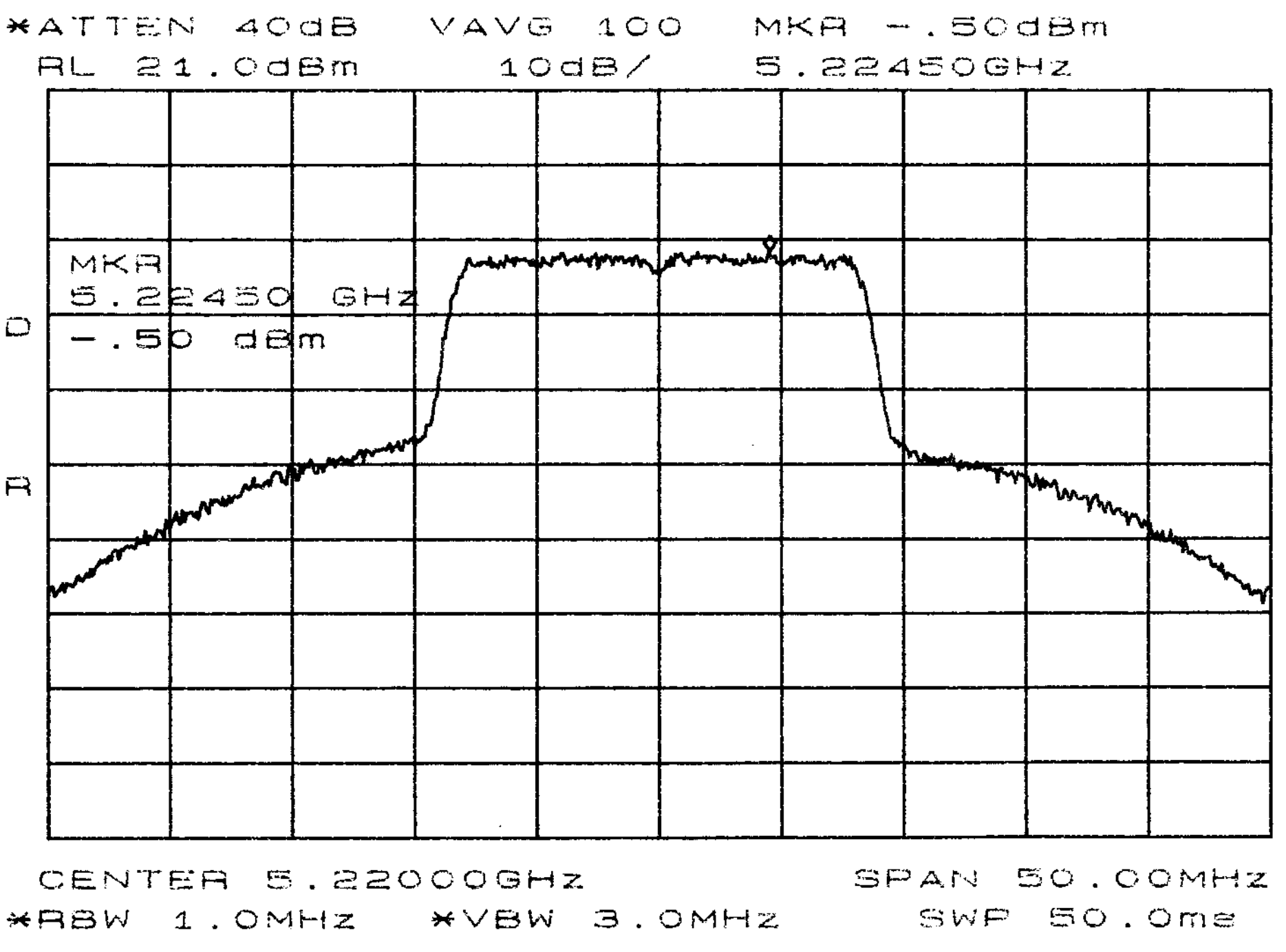

*ATTEN 40dB
MKR 4.170dBm
RL 21.00dBm
10dB/
5.257250GHz
CHANNEL POWER
ACROSS 22.0MHz BW
TOTAL 16.90dBm
DENSITY -56.60dBm/Hz
D
R
CENTER 5.260000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30kHz
SWP 50.0ms

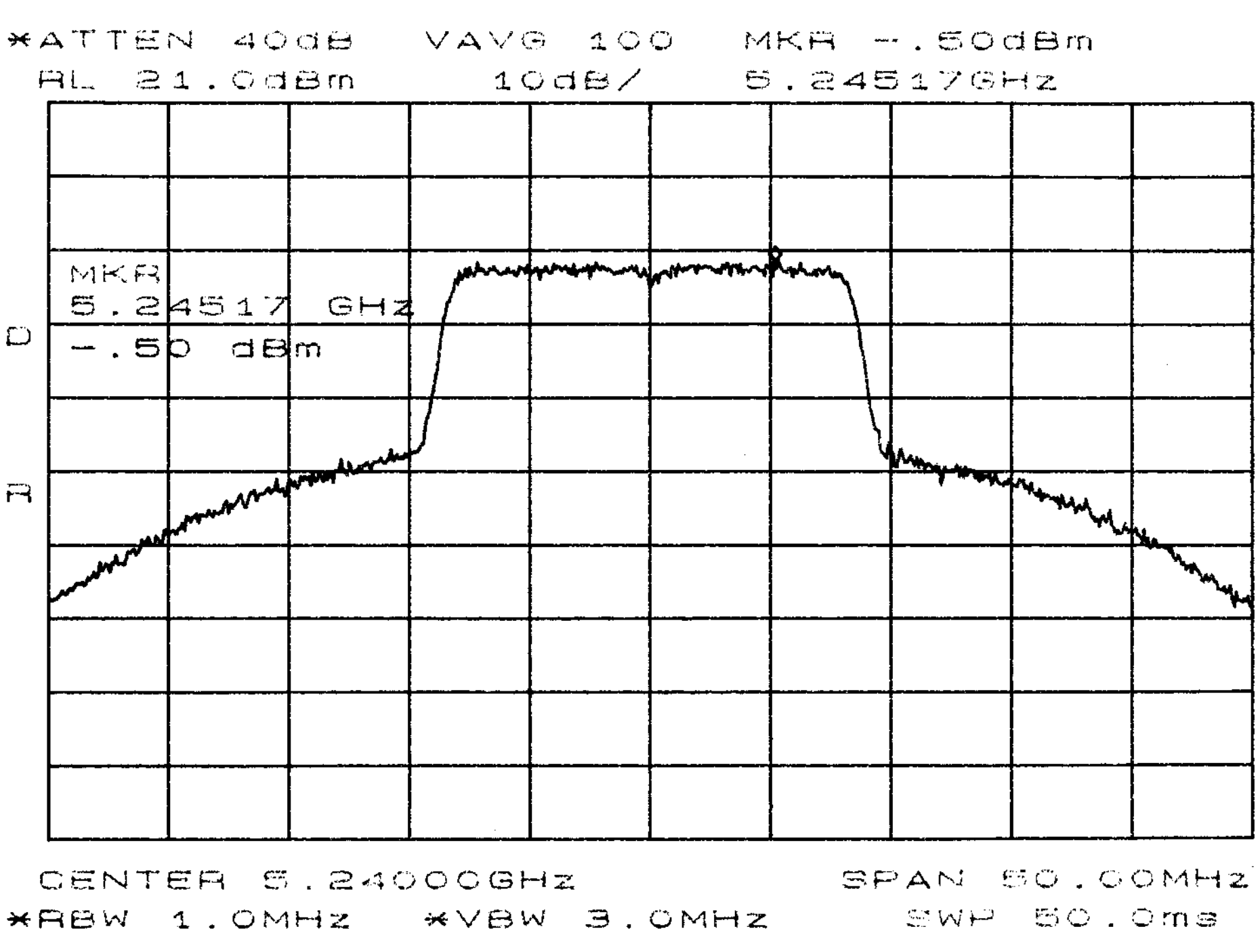

*ATTEN 40dB
MKR 4.17dBm
RL 21.0dBm
10dB/
5.297330GHz
CHANNEL POWER
ACROSS 22.0MHz BW
TOTAL 16.7dBm
DENSITY -56.7dBm/Hz
D
R
CENTER 5.300000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30kHz
SWP 50.0ms

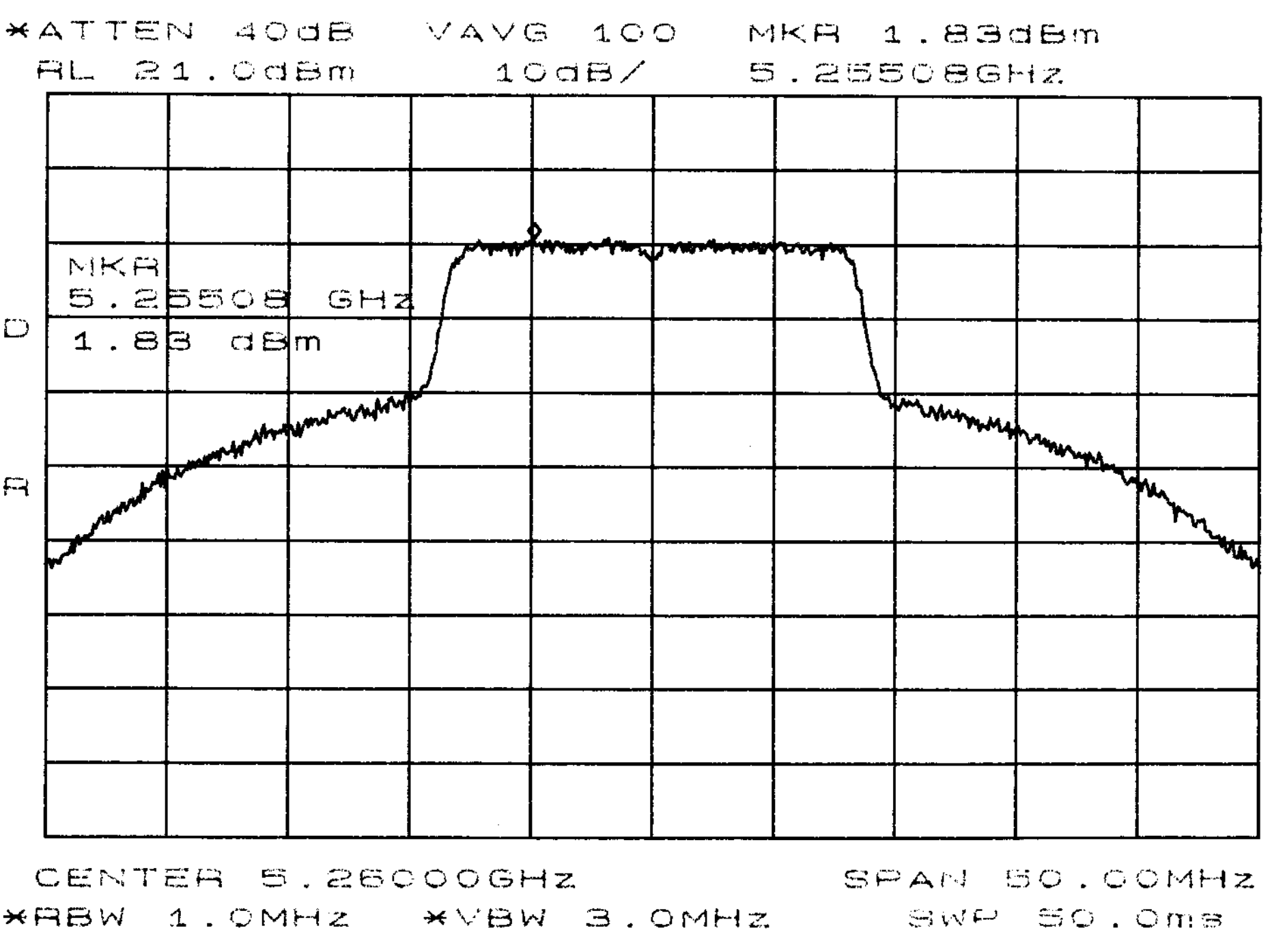

*ATTEN 40dB
MKR 4.32dBm
RL 21.0dBm
10dB/
5.316926GHz
CHANNEL POWER
ACROSS 22.0MHz BW
TOTAL 17.0dBm
DENSITY -56.4dBm/Hz
R
CENTER 5.320000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30KHz
SWP 50.0ms

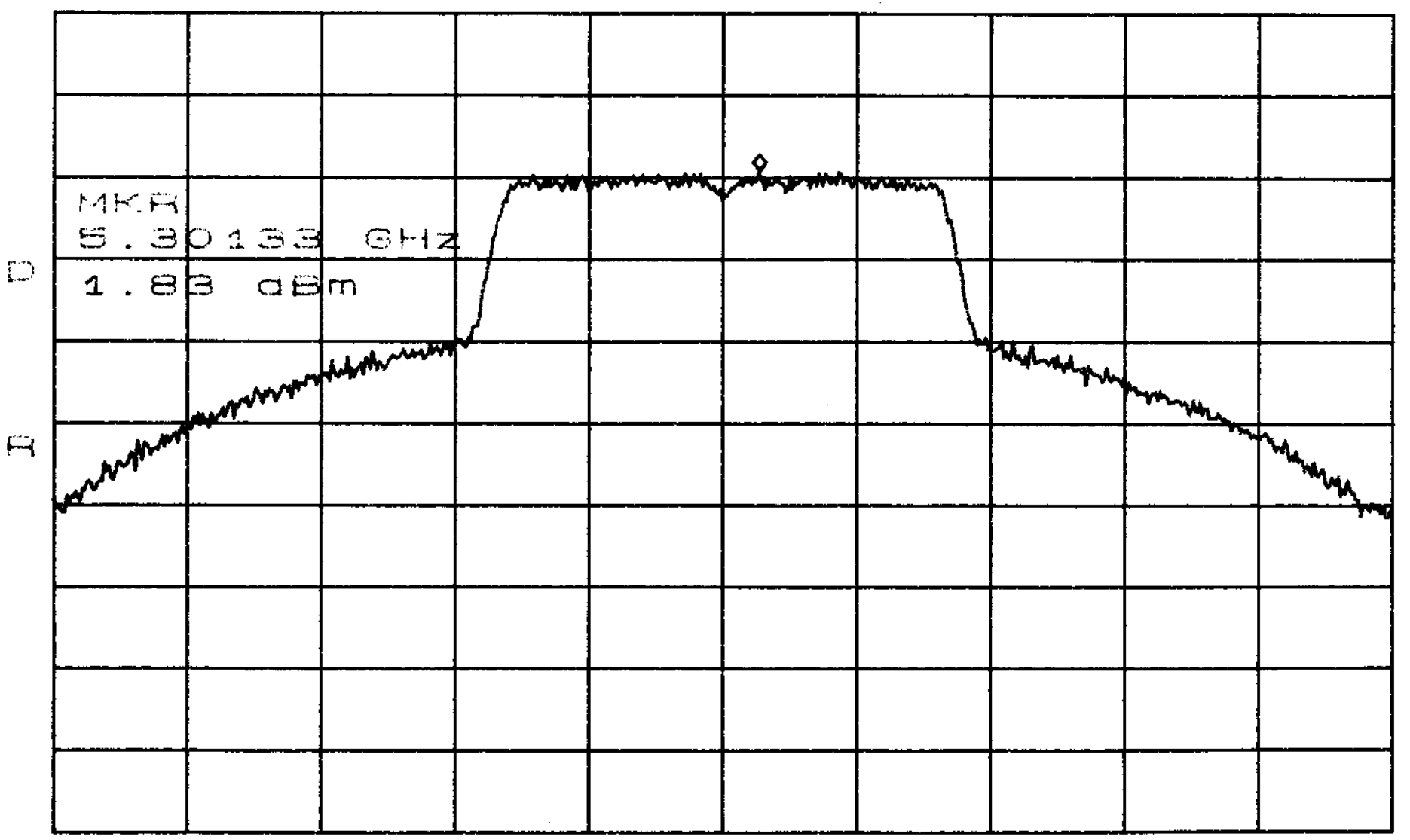
Appendix 4: Ploted Data of Peak Power Spectral Density

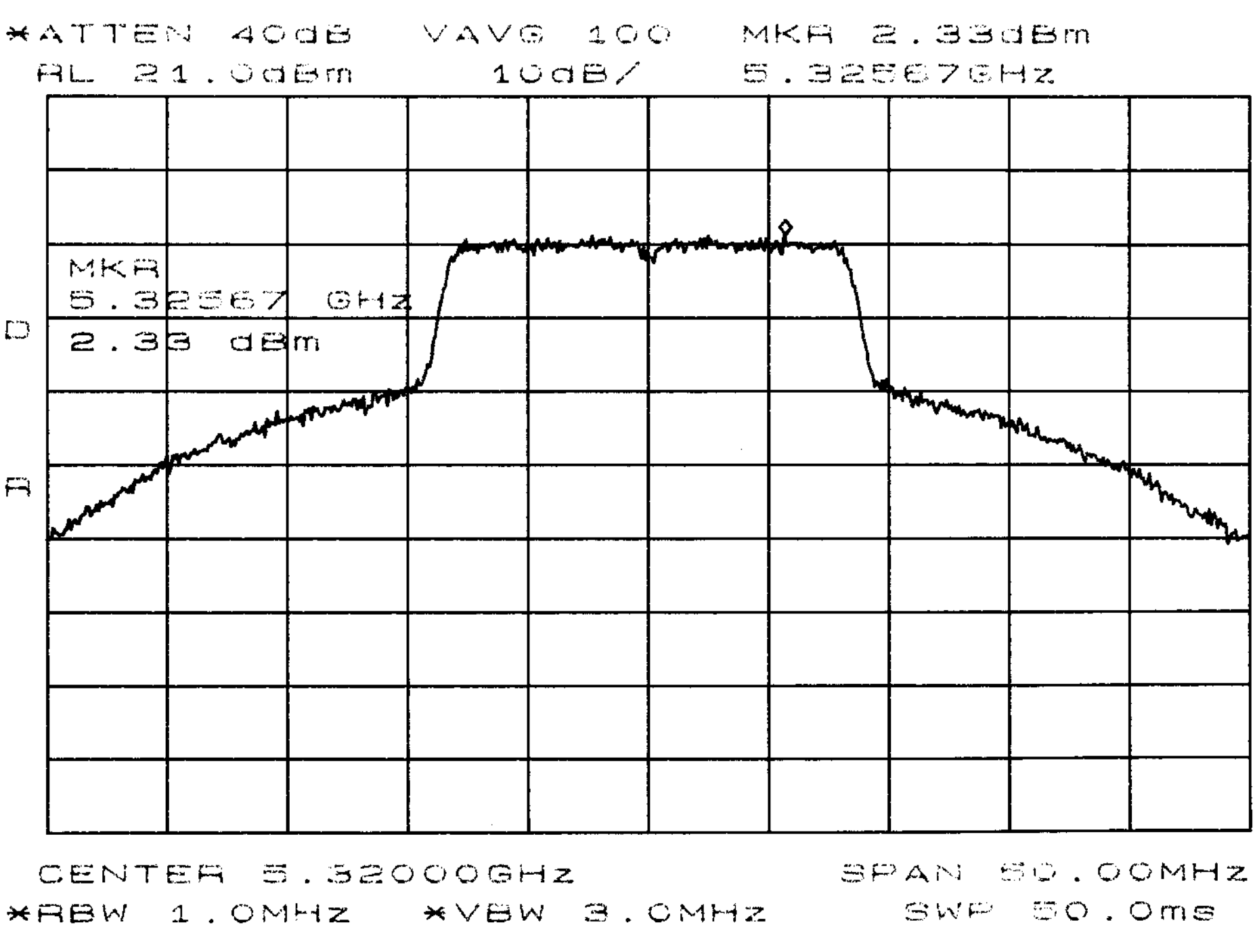

*ATTEN 40dB VAVG 100 MKR -1.50dBm
RL 21.0dBm 10dB/ 5.181336GHz
MKR
5.18133 GHz
-1.50 dBm
CENTER 5.18000GHz
SPAN 50.00MHz
*RBW 1.0MHz *VBW 3.0MHz
SWP 50.0ms


*ATTEN 40dB VAVG 100 MKR -.50dBm
RL 21.0dBm 10dB/ 5.22450GHz
MKR
5.22450 GHz
-.50 dBm
D
R
CENTER 5.22000GHz
SPAN 50.00MHz
*RBW 1.0MHz *VBW 3.0MHz
SWP 50.0ms

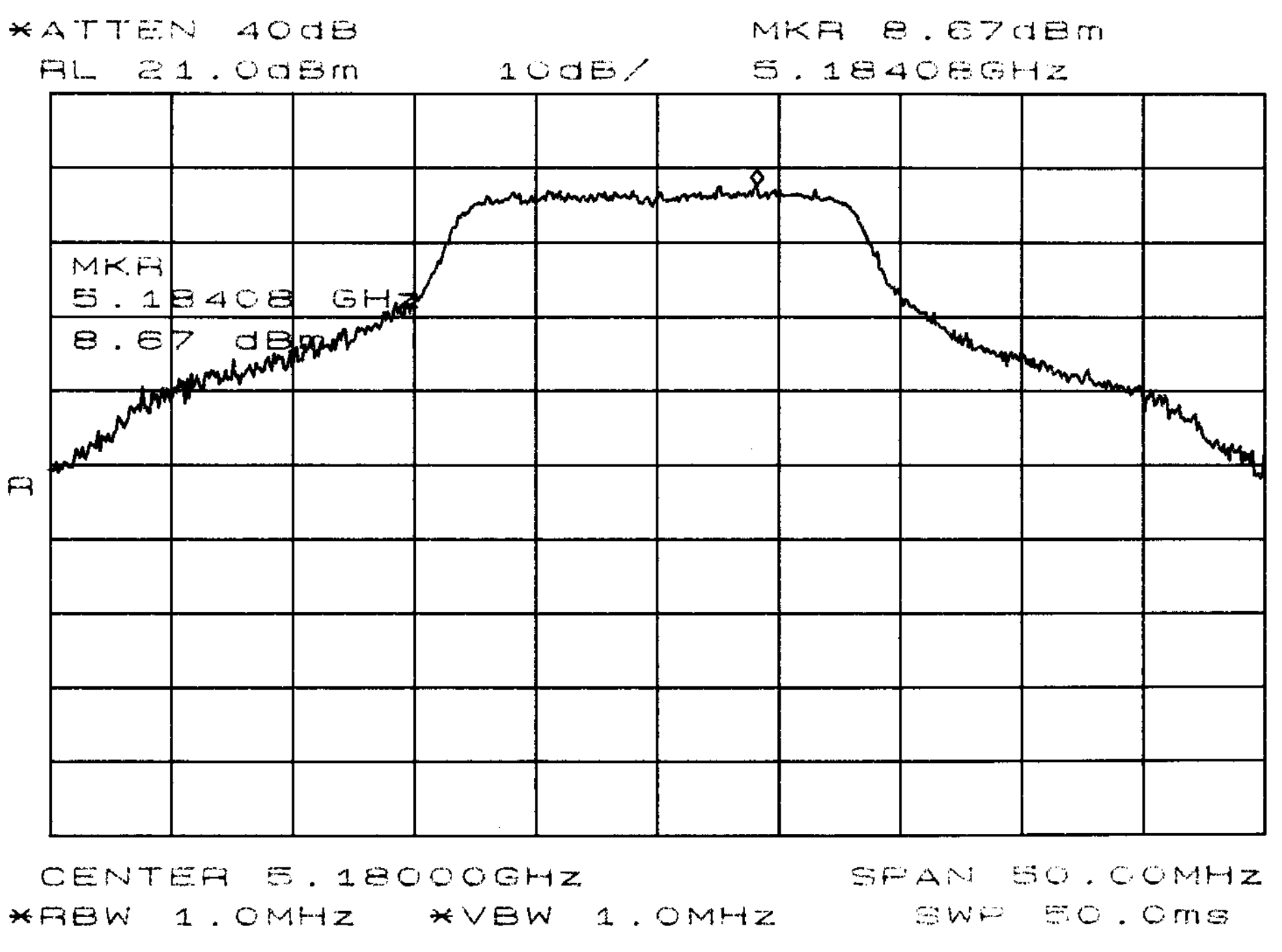

*ATTEN 40dB
VAVG 100
MKR -.50dBm
RL 21.0dBm
10dB/
5.245170GHz
MKR
5.245170 GHz
-.50 dBm
D
R
CENTER 5.240000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 3.0MHz
SWP 50.0ms

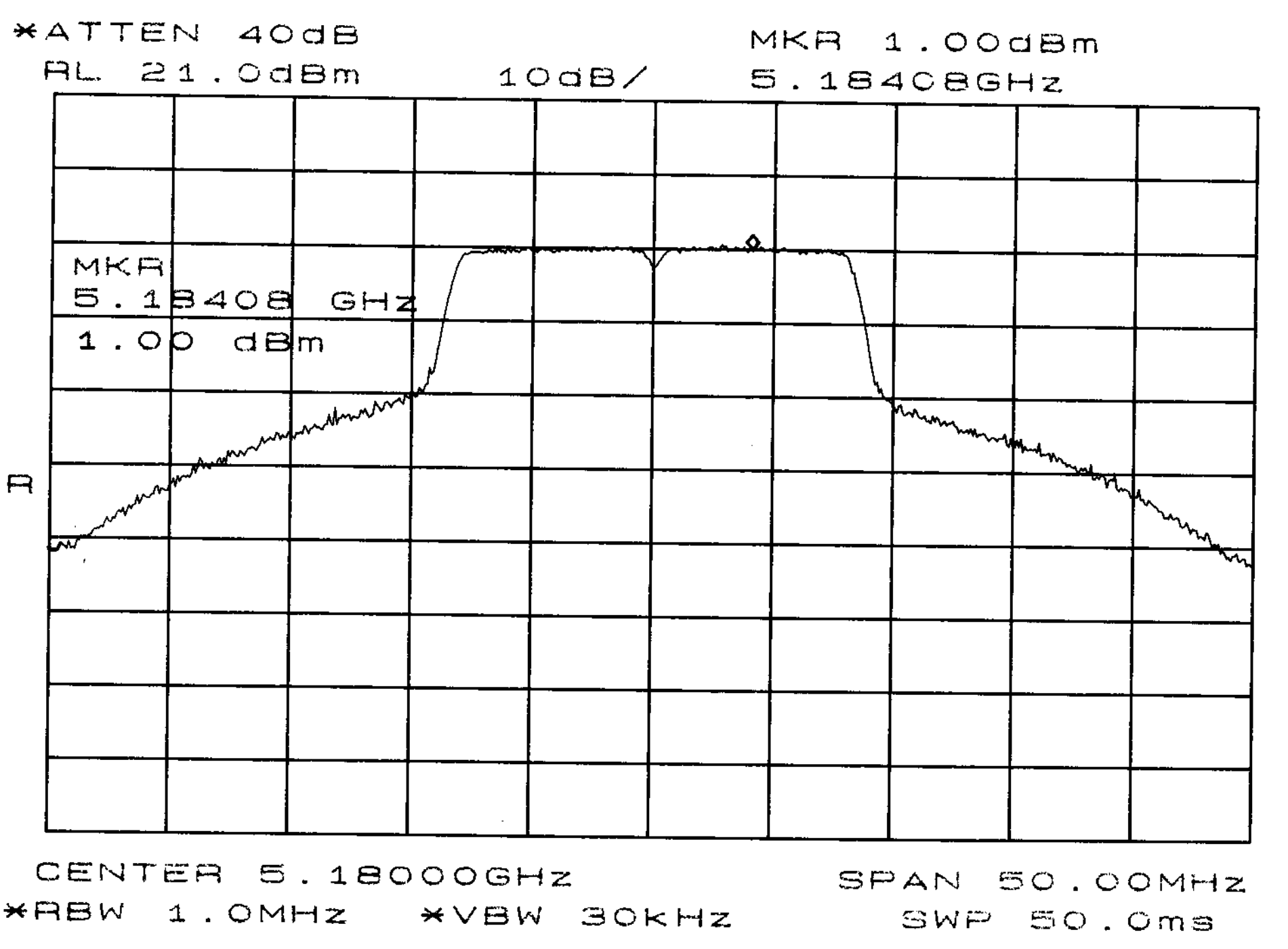

*ATTEN 40dB VAVG 100 MKR 1.83dBm
RL 21.0dBm 10dB/ 5.25508GHz
MKR
5.25508 GHz
1.83 dBm
D
R
CENTER 5.26000GHz SPAN 50.00MHz
*RBW 1.0MHz *VBW 3.0MHz SWP 50.0ms

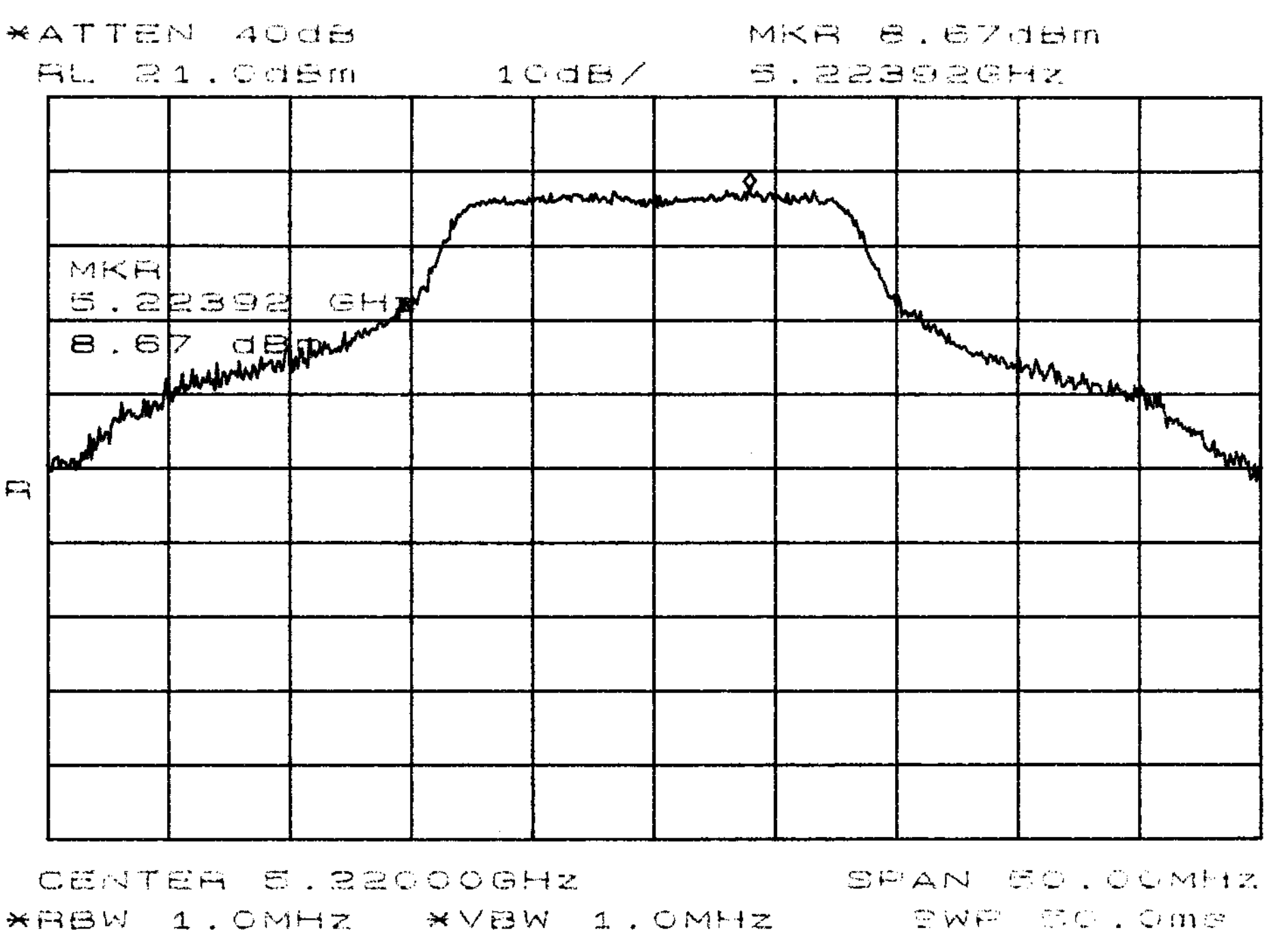

*ATTEN 40dB
VAVG 100
MKR 1.83dBm
RL 21.0dBm
10dB/
5.301336Hz
MKR
5.301336 GHz
1.83 dBm
D
R
CENTER 5.300000GHz
SPAN 80.00MHz
*RBW 1.0MHz
*VBW 3.0MHz
SWP 50.0ms

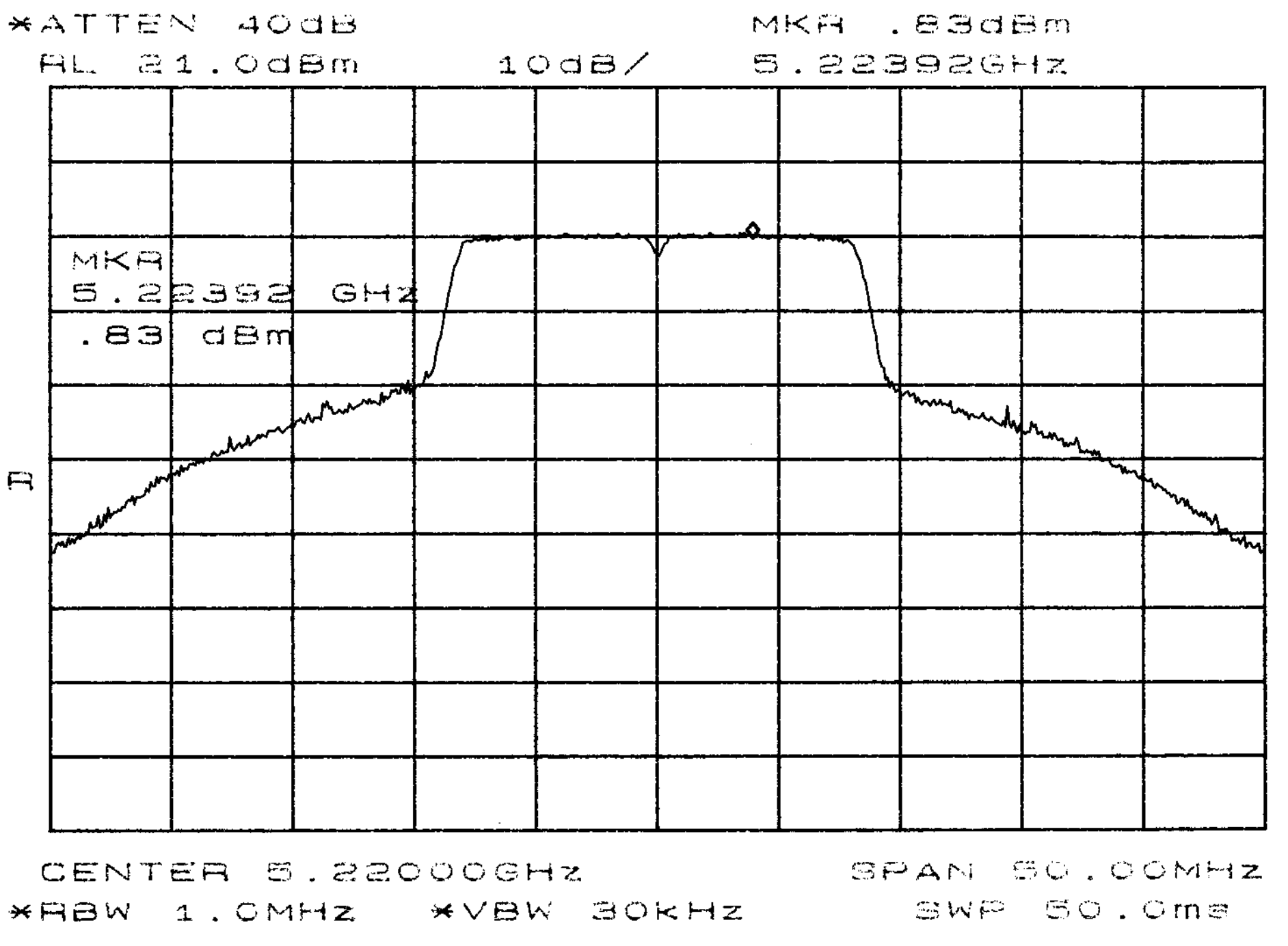

*ATTEN 40dB
VAVG 100
MKR 2.33dBm
RL 21.0dBm
10dB/
5.325670GHz
MKR
5.32567 GHz
2.33 dBm
D
B
CENTER 5.32000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 3.0MHz
SWP 50.0ms

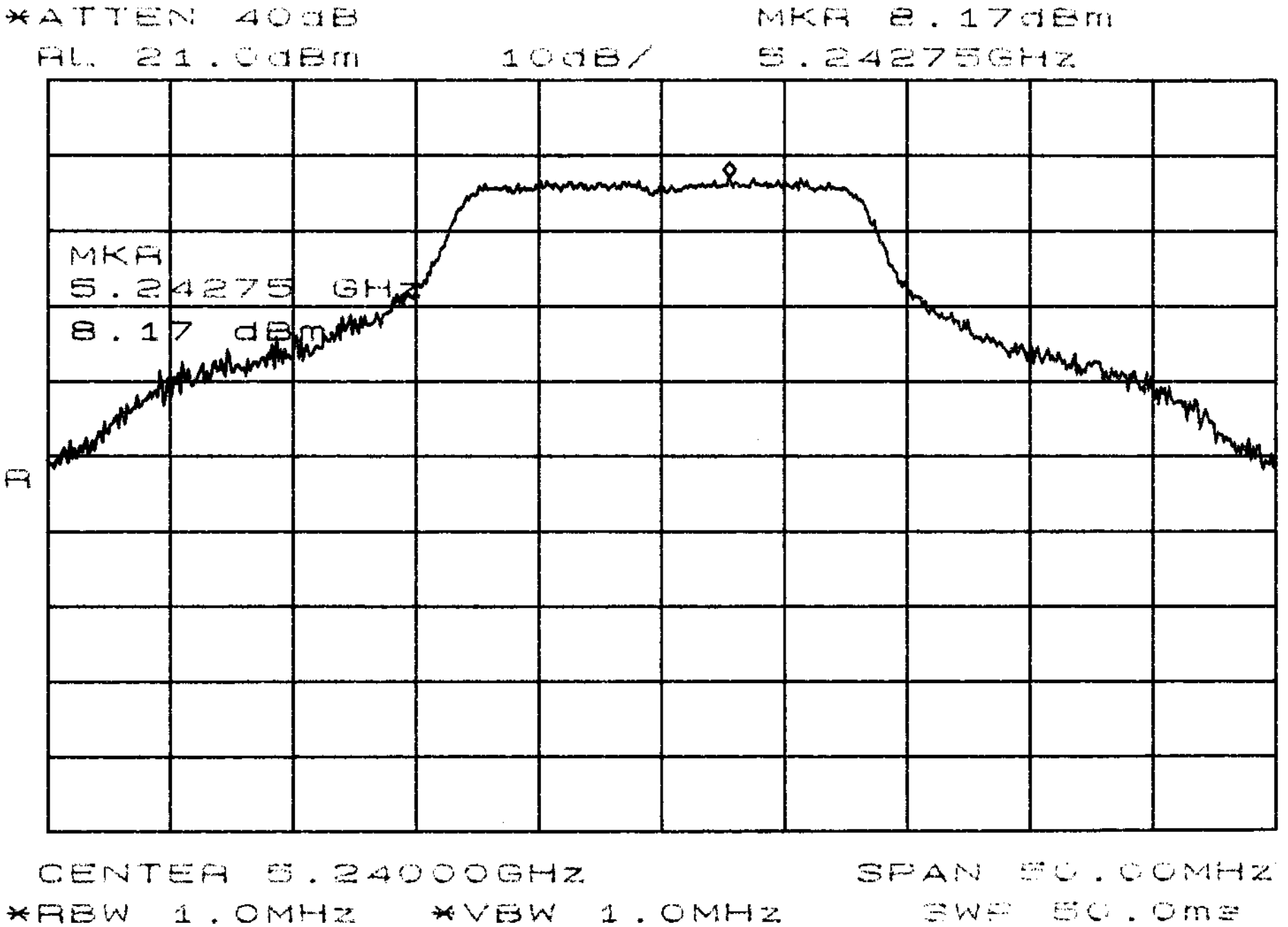
Appendix 5: Ploted Data of Peak Excursion-to-Average Ratio

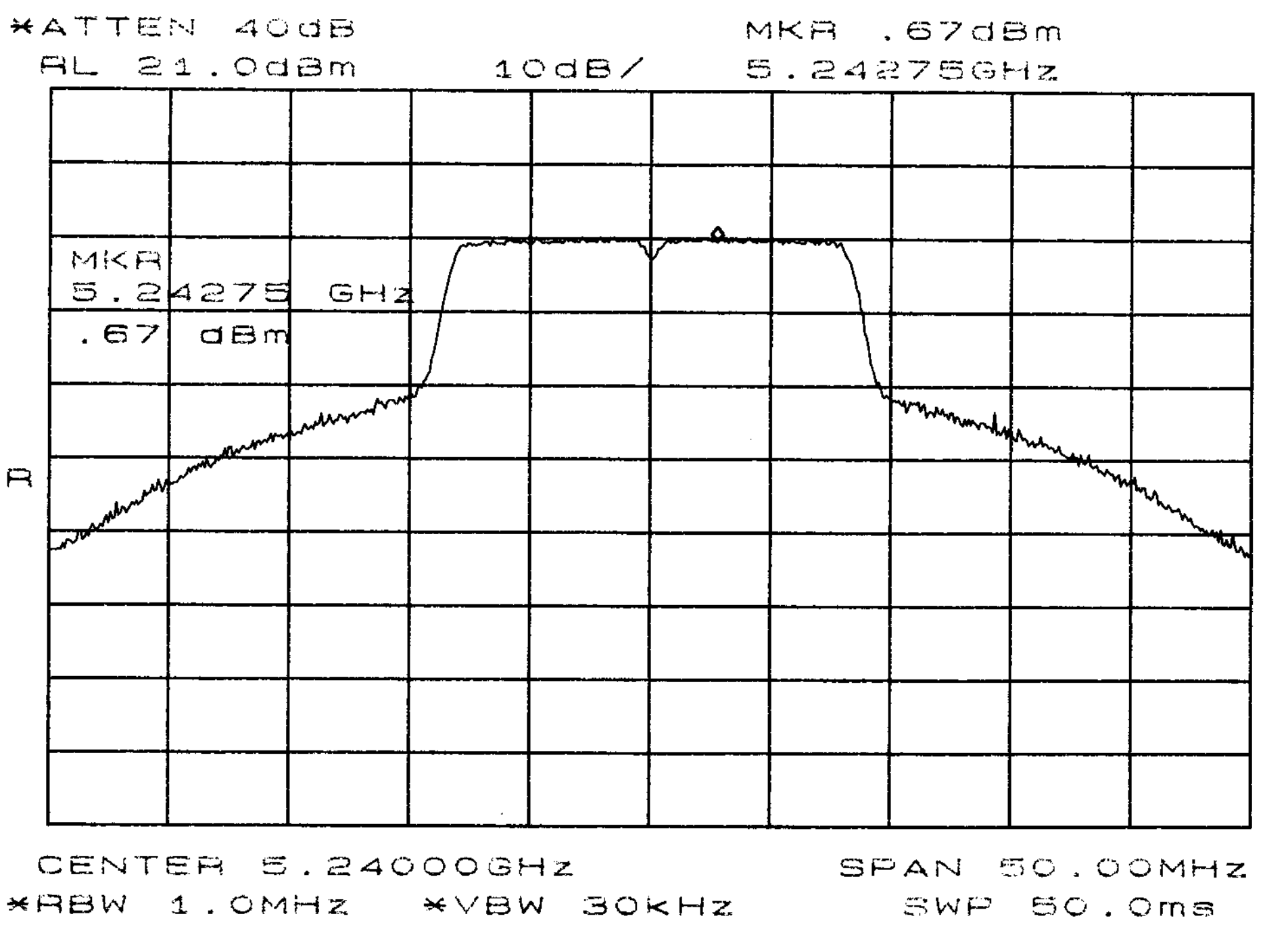

*ATTEN 40dB
MKR 8.67dBm
RL 21.0dBm
10dB/
5.184068GHz
MKR
5.18408 GHz
8.67 dBm
R
CENTER 5.18000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
SWP 50.0ms

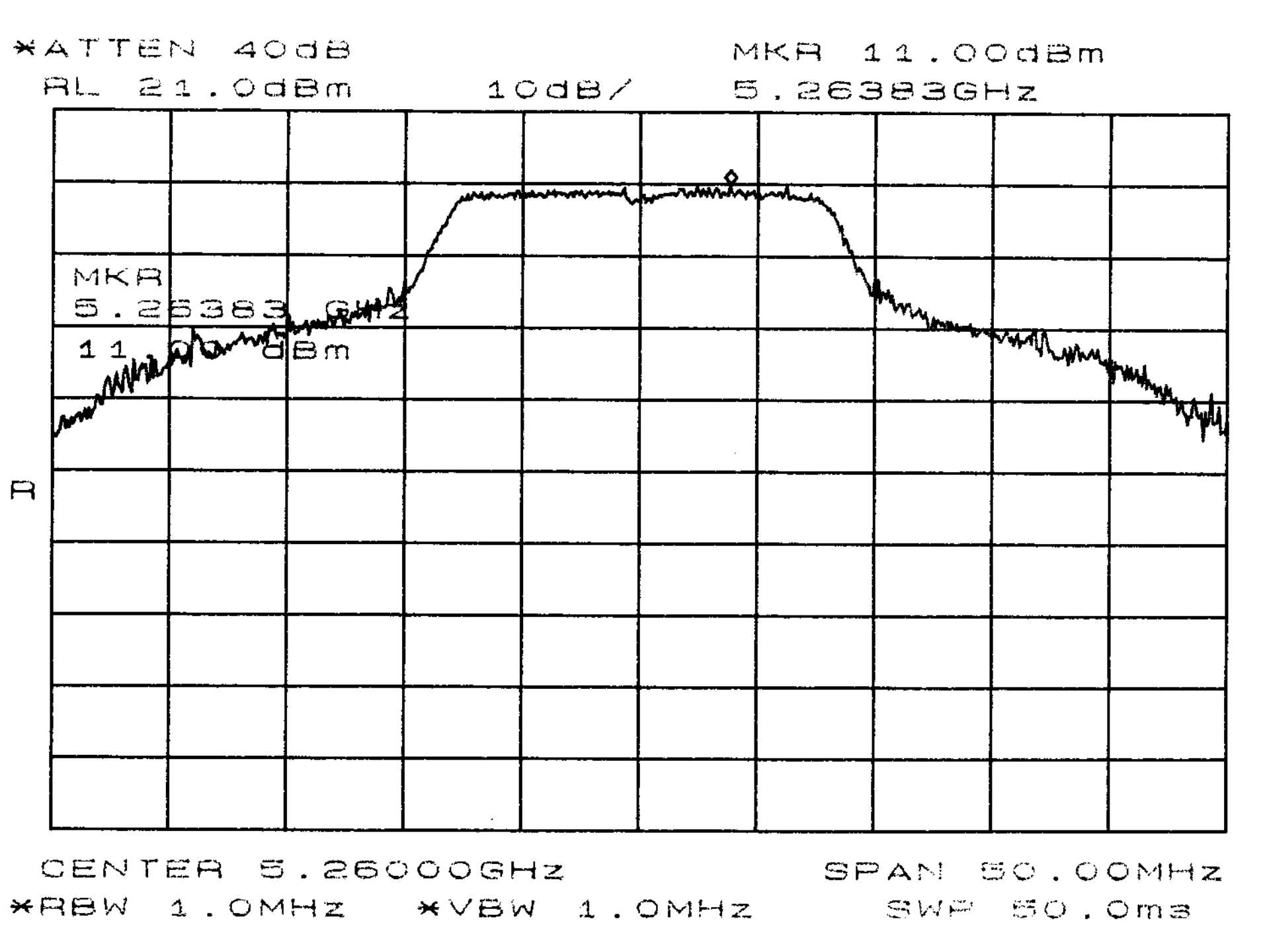

*ATTEN 40dB
RL 21.0dBm
10dB/
MKR 1.00dBm
5.18408GHz
MKR
5.18408 GHz
1.00 dBm
R
CENTER 5.18000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30kHz
SWP 50.0ms

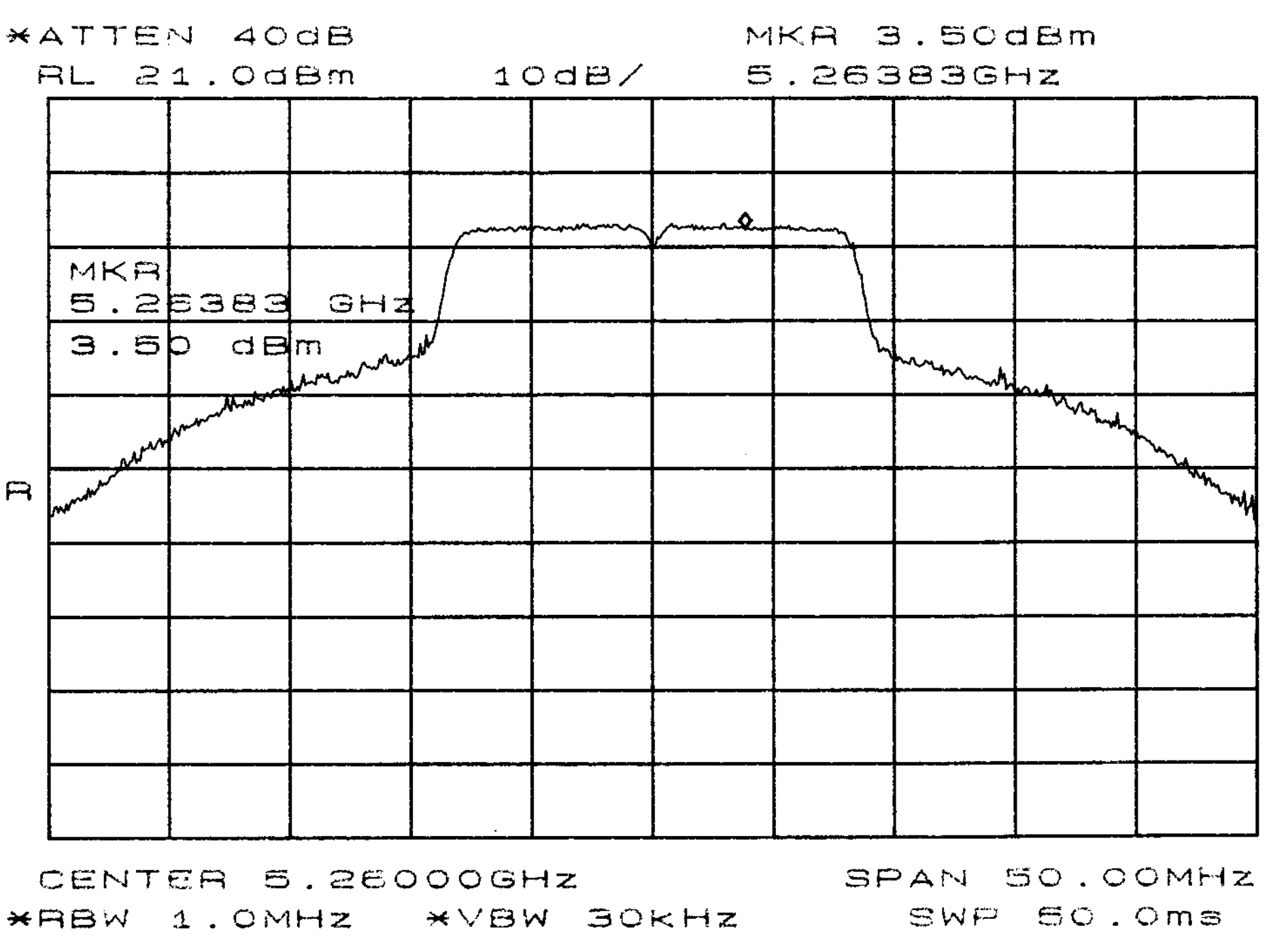

*ATTEN 40dB
MKR 8.67dBm
RL 21.0dBm
10dB/
5.223926Hz
MKR
5.22392 GHz
8.67 dBm
CENTER 5.2200GHz
SPAN 50.0MHz
*RBW 1.0MHz
*VBW 1.0MHz
SWP 50.0ms

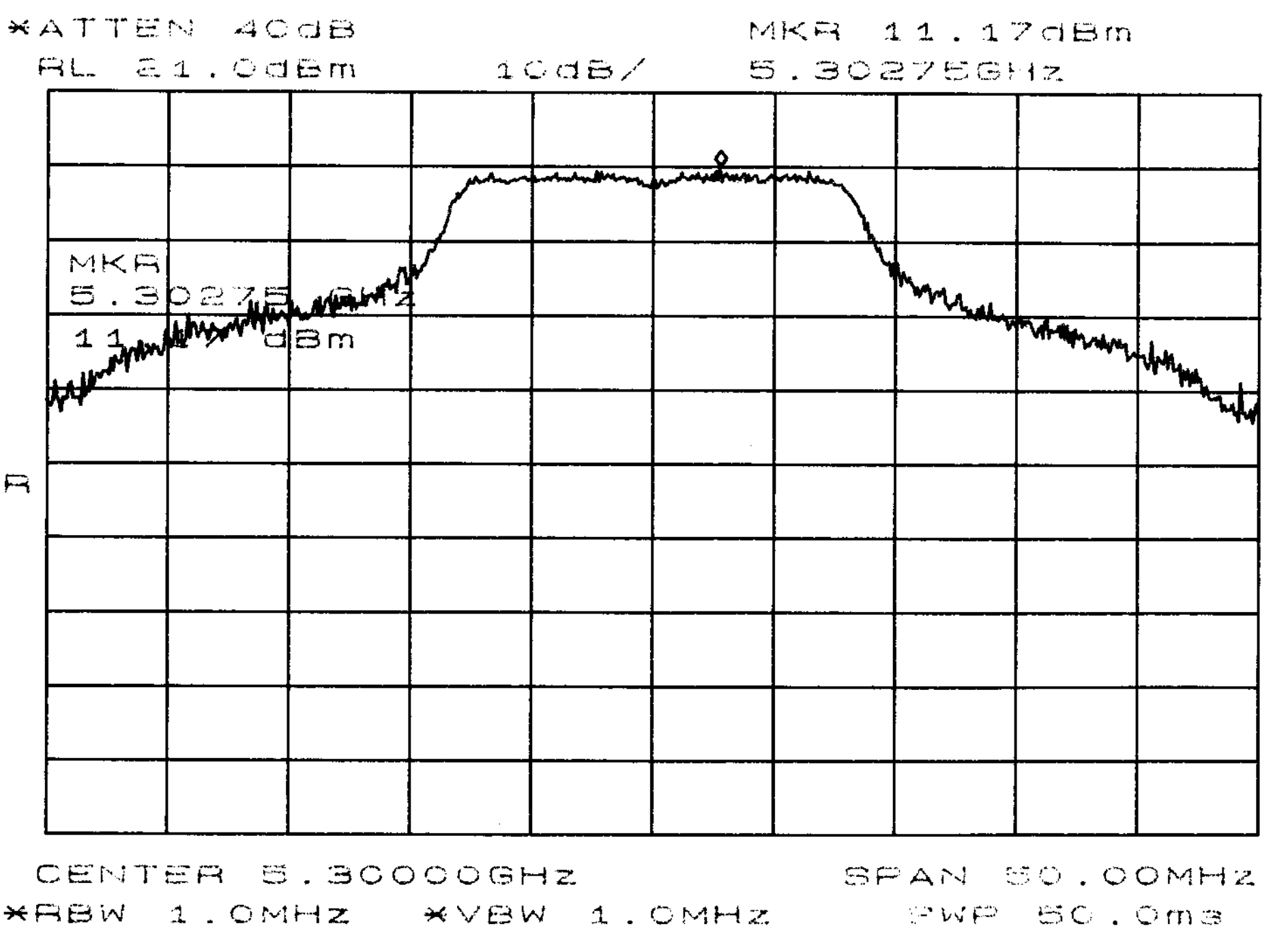

*ATTEN 40dB
MKR .83dBm
RL 21.0dBm
10dB/
5.22392GHz
MKR
5.22392 GHz
.83 dBm
CENTER 5.22000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30KHz
SWP 50.0ms

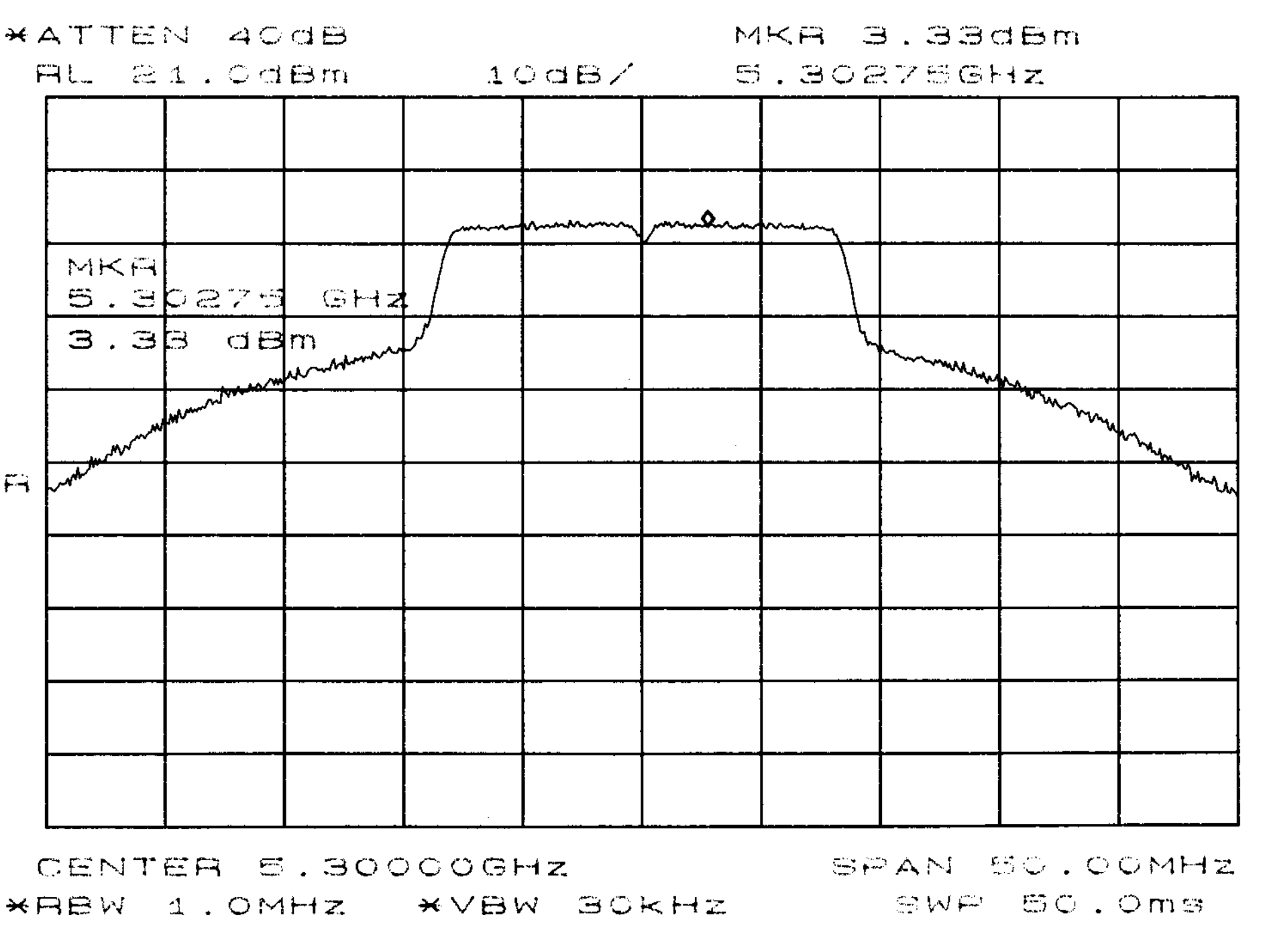

*ATTEN 40dB
MKR 8.17dBm
RL 21.00dBm
10dB/
5.24275GHz
MKR
5.24275 GHz
8.17 dBm
R
CENTER 5.24000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
SWP 50.0ms

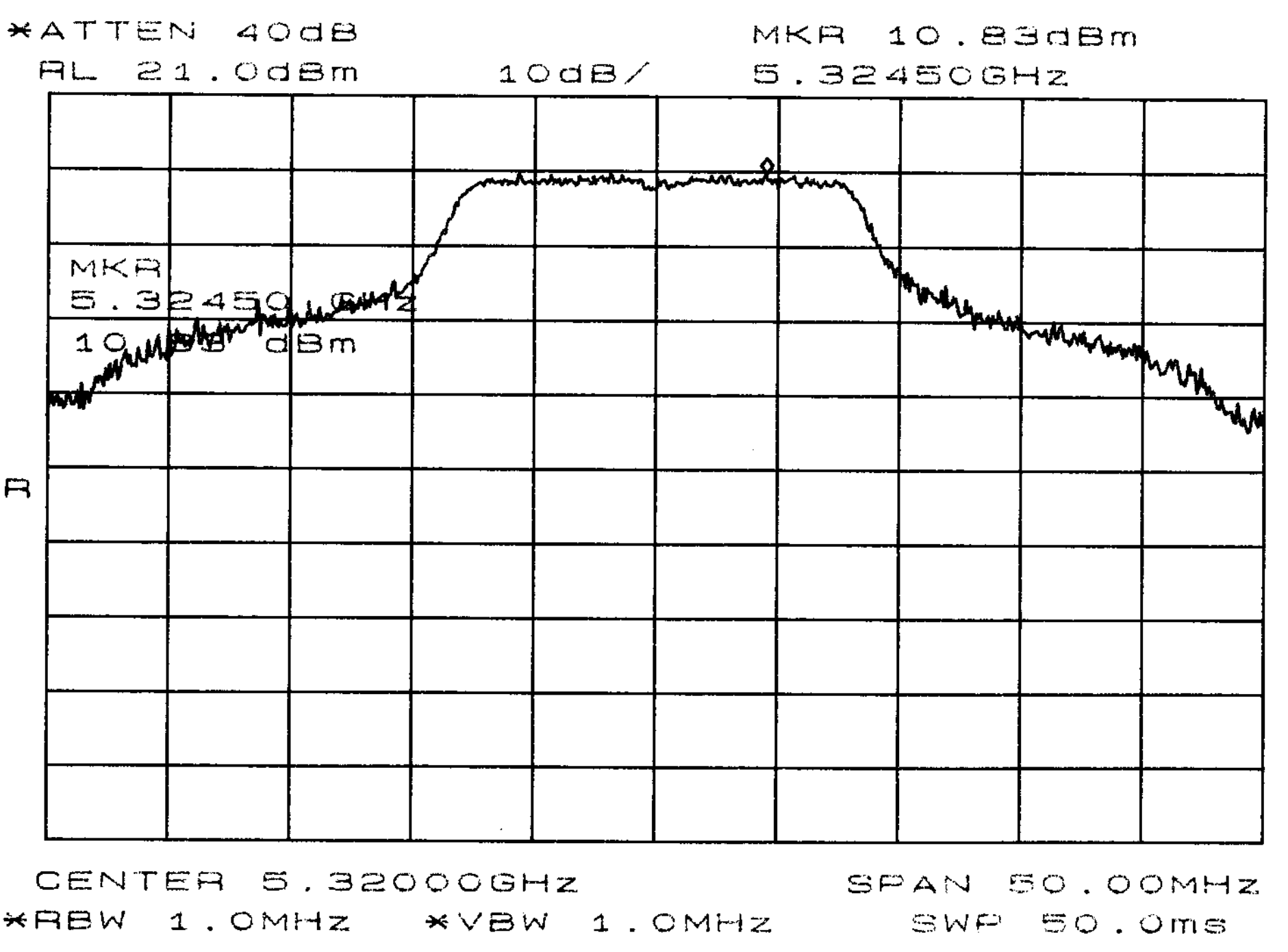

*ATTEN 40dB
MKR .67dBm
RL 21.0dBm
10dB/
5.24275GHz
MKR
5.24275 GHz
.67 dBm
R
CENTER 5.24000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30KHz
SWP 50.0ms

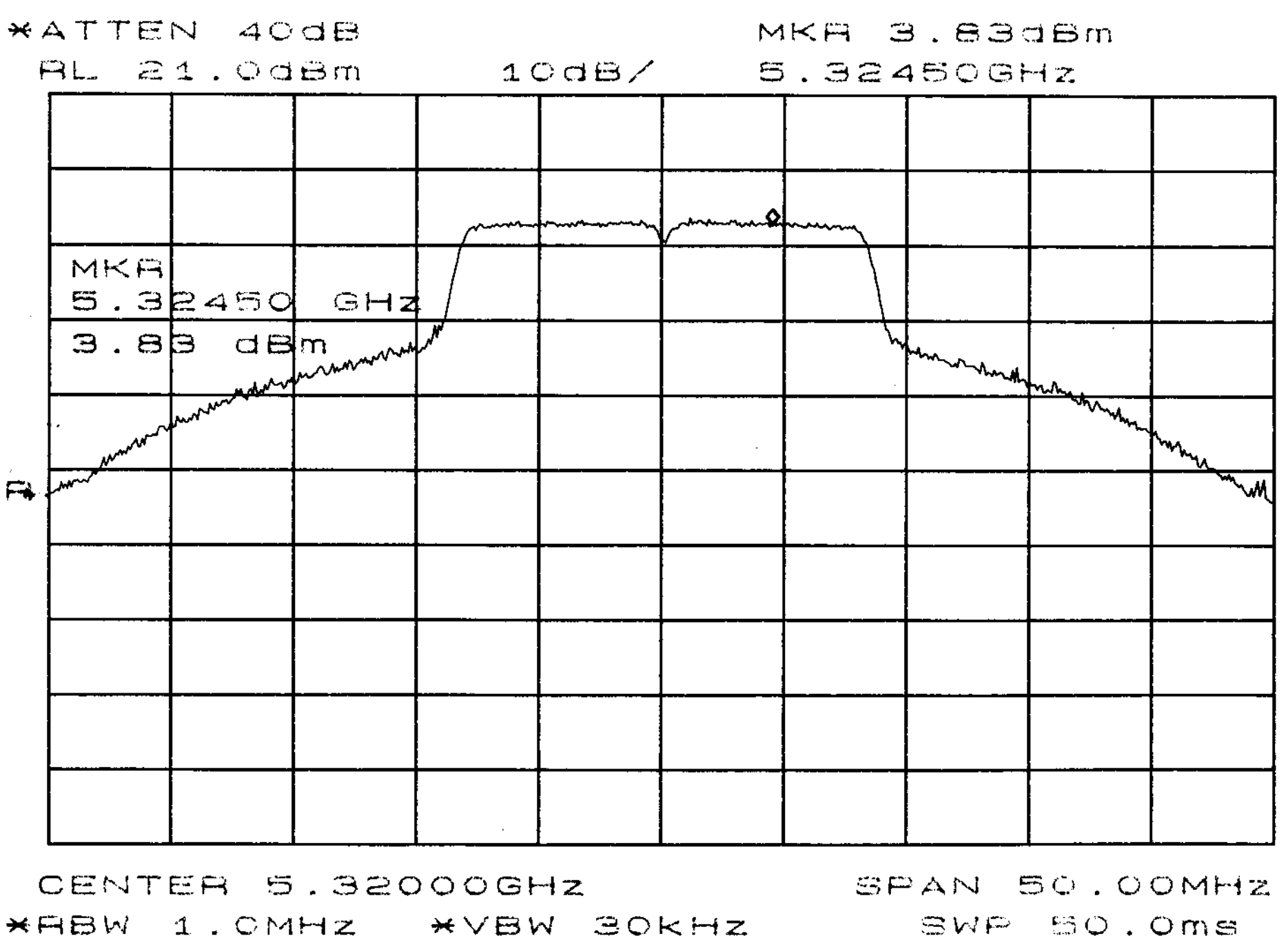

*ATTEN 40dB
MKR 11.00dBm
RL 21.0dBm
10dB/
5.263836GHz
MKR
5.26383 GHz
11.00 dBm
R
CENTER 5.26000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
SWP 50.0ms


*ATTEN 40dB
MKR 3.50dBm
RL 21.0dBm
10dB/
5.26383GHz
MKR
5.26383 GHz
3.50 dBm
R
CENTER 5.26000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30KHz
SWP 50.0ms


*ATTEN 40dB
RL 21.0dBm
10dB/
MKR 11.17dBm
5.302756Hz
MKR
5.302756 GHz
11 dBm
R
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
PWP 50.0ms


*ATTEN 40dB
MKR 3.33dBm
RL 21.0dBm
10dB/
5.302750GHz
MKR
5.302750 GHz
3.33 dBm
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30kHz
SWP 50.0ms


*ATTEN 40dB
MKR 10.83dBm
RL 21.0dBm
10dB/
5.32450GHz
MKR
5.32450 GHz
10.83 dBm
R
CENTER 5.32000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
SWP 50.0ms


*ATTEN 40dB
MKR 3.83dBm
RL 21.0dBm
10dB/
5.32450GHz
MKR
5.32450 GHz
3.83 dBm
CENTER 5.32000GHz
SPAN 50.00MHz
*RBW 1.0MHz
*VBW 30KHz
SWP 50.0ms