Marstech Limited

11 Kelfield Street, Etobicoke, Ontario, Canada, M9W 5A1
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Authorized by: Professional Engineers Ontario — Engineering & Administrative

Designated by Industry Canada — Testing For FCC Submissions/Verifications

Approved Test Facility

TEST REPORT			
REPORT DATE:	30 July 2003		REPORT NO: 23202D
CONTENTS:	See Table of Contents		
SUBMITTOR:	ATLINKS USA, Inc. 101 West 103rd Street Indianapolis, IN 46290-1102 USA		
SUBJECT:	Model No:	**25830XXX-A**	
	FCC ID:	G9H2-5830A	
TEST SPECIFICATION	CFR 47 FCC Part 15 FCC DA 00-705 "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems." NOTE: Tests Conducted Are "Type" Tests.		
DATE SAMPLE RECEIVED:	09 June 2003	DATE TESTED:	27 June 2003; 02, 16, 22, 24 and 25 July 2003
RESULTS:	Equipment tested complies with referenced specification with the following modifications:		
ALTERATIONS	**Handset RF Module:** **1. Capacitor, 1nF was added at PA_EN terminal and TX_EN terminal.** **2. Capacitor, C37 was changed from 22pF**		
Tested by:	Ed. Chang	Approved by:	Robert G. Marshall
	Edward Chang	Date:	Aug 6/03

REGISTERED PROFESSIONAL ENGINEER — R. G. MARSHALL

TECHNICAL REPORT - FCC 2.1033(b)

Applicant

ATLINKS USA, Inc.
101 West 103rd Street
Indianapolis, IN
46290-1102 USA

FCC Identifier

G9H2-5830A

Manufacturer

Huiyang CCT Telecommunications Products Co. Ltd.
CCT Technology Park, San He Economic Experimental Zone
Huiyang City, Guangdong Province
P. R. of China

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EXHIBIT D

[FCC Ref. 2.1033(b)(6)]

"Report of Measurements"

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TEST REPORT CONTAINING:

PRODUCT DESCRIPTION

The Model 25830XXX-A is a 5.8GHz/2.4GHz single line, spread spectrum, frequency hopping, cordless telephone with caller ID, that operates from 5760.719 to 5838.312 MHz and 2401.808 to 2479.401 MHz. The antenna used for the base and the handset are permanently attached to the EUT.

Refer to Exhibit B(1)-6, B(1)-20 and B(1)-21 for frequency channels information and frequency list.

NOTE: 1. The base and handset use 75 Channels.

TEST FACILITY AND EQUIPMENT LIST

FACILITIES

Radiated	ANSI C63.4 (FCC OET/55) open field 3 metre test range. This test range is protected from the cold and moisture by a non-conductive enclosure.
Conducted	2.5m Anechoic Chamber

EQUIPMENT

Anritsu 2601A Spectrum Analyzer
Advantest R3261A Spectrum Analyzer
Hewlett-Packard RF generator # 8640 B with an 002 doubler
A.H. Systems biconical antenna; ..... 20 MHz to 330 MHz
A.H. Systems log periodic antenna; ..... 300 MHz to 1.8 GHz
Compliance Design P950 Preamp (16 dB) ... 25 MHz to 1.0 GHz

NOTE:

The Anritsu 2601A Spectrum Analyzer and the Advantest R3261A Spectrum Analyzer are calibrated annually, and that calibration is directly traceable to the National Research Council of Canada. (NRC) This equipment is only used by qualified technicians and only for the purpose of EMI measurements. The three metre test range has been carefully evaluated to the ANSI document C63.4 and will be remeasured for reflections and losses every three years.

ADDITIONAL TEST EQUIPMENT LIST

1. Spectrum Analyzer: HP 8591EM, S/N 3639A00995, (9KHz - 1.8GHz), Calibrated April 2003
2. Spectrum Analyzer: ANRITSU 2601A, S/N MT64544, (10KHz - 2.2GHz), Calibrated May 2003
3. Spectrum Analyzer: IFR AN940, S/N 635001039, (9KHz - 26.5GHz), Calibrated March 2003
4. Preamp: HP 8449B, S/N 3008A00378, (1 - 26.5GHz), Calibrated August 2002
5. Horn Antenna: Q-PAR 6878/24, S/N 1721, (1.5-18GHz)
6. Horn Antenna: A. H. Systems SAS 572, S/N 164 (18 - 26.5GHz)
7. Line Impedance Stabilization Network.: Marstech, Cal. July 2003

FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

September 20, 2000

Registration Number: 90578

Electrohome Electronics Ltd.
809 Wellington St. N.
Kitchener, Ontario N2G 4J6
Canada
Attention: Gerry Gallagher

Re: Measurement facility located at Roseville
3 meter-site
Date of Listing: September 20, 2000

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, E-Filing, OET Equipment Authorization Electronic Filing.

Sincerely,

Thomas W. Phillips

Thomas W Phillips
Electronics Engineer

15.107 (a) POWER LINE CONDUCTED INTERFERENCE

Requirements:

Frequency of Emission (MHZ)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Test Procedure:

ANSI STANDARD C63.4-1992. using a 50uH LISN. Both lines were observed with the EUT transmitting. The bandwidth of the spectrum analyzer was 9KHz QP with an appropriate sweep speed. The ambient temperature of the EUT was 24°C with a humidity of 60%.

The spectrum was scanned from 0.15 to 30MHz.

Test Data:

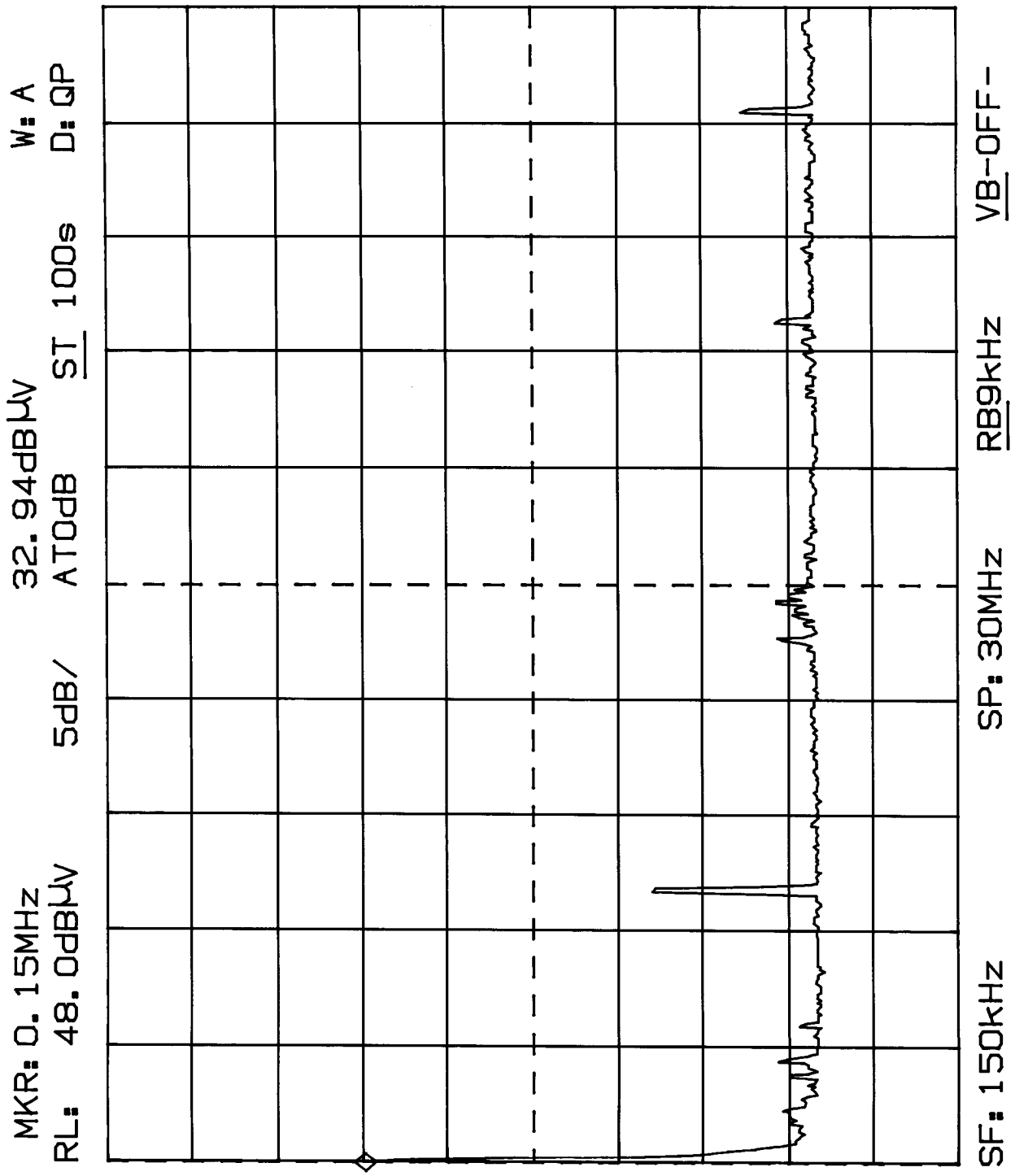
The highest emission read for LINE was 32.94 dBμV@ 0.15 MHz.
The highest emission read for NEUTRAL was 36.81 dBμV@ 0.15 MHz.

The graphs on Exhibit D(1)-7 and -8 represent the emissions taken for this device.

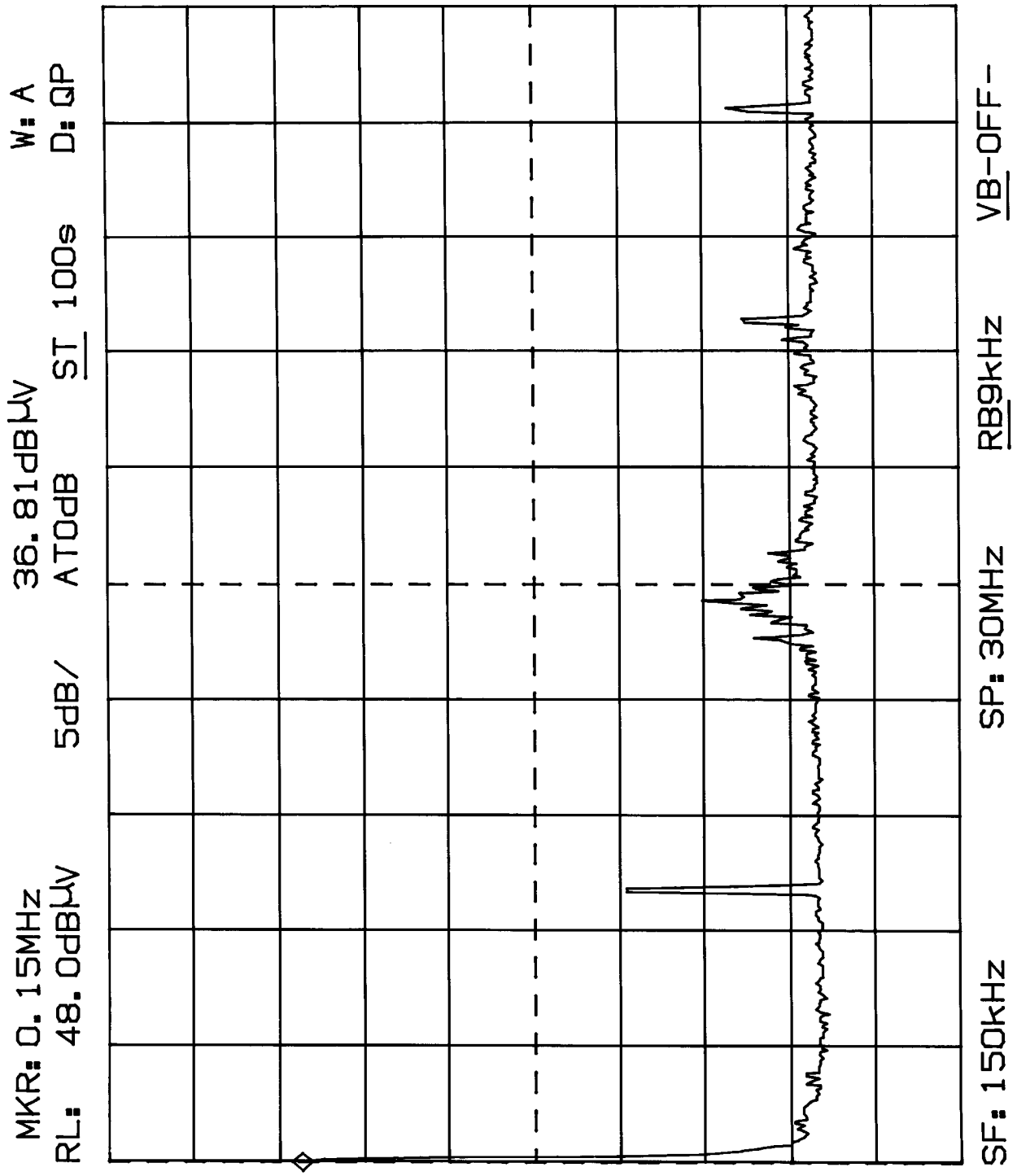
Test Results:

Both lines were observed. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

POWER LINE CONDUCTED EMISSIONS
MODEL 25830XXX-A; LINE



POWER LINE CONDUCTED EMISSIONS
MODEL 25830XXX-A; NEUTRAL



15.205(c)/15.209 **SPURIOUS RADIATED EMISSIONS INCLUDING RESTRICTED BANDS**

Procedure

The test procedure used was ANSI STANDARD C63.4-1992 and DA-00-705 using an appropriate spectrum analyzer, as listed in the Test Equipment List. The bandwidth (RBW) of the spectrum analyzer was 100KHz/120KHz up to 1GHz with an appropriate sweep speed. The RBW above 1.0GHz was = 1.0MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the EUT was 24˚C with a humidity of 60%.

Requirements:

Emissions that fall in the restricted bands (15.205) must be less than 54dBμV/m

Test Data:

Refer to Exhibit D(1)-10 to D(1)-11

15.205(c)/15.209 **FIELD STRENGTH OF RADIATED EMISSIONS INCLUDING RESTRICTED BANDS**

BASE UNIT

Frequency Band MHz	Meter Reading (Peak) @3m dBμV/M	Meter Reading (Average) @3m dBμV/M	Antenna and Polarization	Cable & Antenna Factor	Peak F. S. dBμV/M	Average F. S dBuV/M	Average FCC Limit	Margin dB
Channel 1								
5760.718	**80.00**	---	**Horn V**	**39.48**	**119.48**	---	---	---
11521.436	11.00	1.00	Horn H	49.25	60.25	50.25	54	-3.75
17282.154	11.00	---	Horn H	55.52	66.52	---	99.48	-32.96
Channel 44								
5799.069	**77.00**	---	**Horn V**	**39.57**	**116.57**	---	---	---
11598.138	---							
17397.207	---							
Channel 75								
5838.311	**75.00**	---	**Horn V**	**39.66**	**114.66**	---	---	---
11676.622	---							

1. If the peak meets the average limit, nothing further is required.
2. If the peak exceeds the average limit, then an average measurement is required (may be calculated) and must be below the average limit and also;
3. The peak measurement cannot exceed the average limit +20dB.

15.205(c)/15.209 **FIELD STRENGTH OF RADIATED EMISSIONS INCLUDING RESTRICTED BANDS**

HANDSET UNIT

Frequency Band MHz	Meter Reading (Peak) @3m dBμV/M	Meter Reading (Average) @3m dBμV/M	Antenna and Polarization	Cable & Antenna Factor	Peak F. S. dBμV/M	Average F. S dBuV/M	Average FCC Limit	Margin dB
Channel 1								
2401.808	**78.00**	**---**	**Horn V**	**33.08**	**111.08**	**---**	**---**	**---**
4803.616	28.00	3.00	Horn H	38.28	66.28	41.28	54	-12.72
7205.424	17.00	1.00	Horn H	43.94	60.94	44.94	54	-9.06
9607.232	16.00	---	Horn H	46.90	62.90	---	91.08	-28.18
Channel 44								
2441.158	**78.90**	**---**	**Horn V**	**33.20**	**112.10**	**---**	**---**	**---**
4880.316	30.00	3.00	Horn H	38.47	68.47	41.47	54	-12.53
7320.474	15.00	0.00	Horn H	44.06	59.06	44.06	54	-9.94
9760.632	19.00	---	Horn H	47.06	66.06	---	92.10	-26.04
Channel 75								
2479.401	**79.00**	**---**	**Horn V**	**33.23**	**112.23**	**---**	**---**	**---**
2483.500	28.00	2.00	Horn V	33.89	61.89	35.89	54	-18.11
4958.802	28.00	3.00	Horn H	40.30	68.30	43.30	54	-10.70
7438.703	---							
9917.604	23.00	---	Horn H	47.14	70.14	---	92.23	-22.09

1. If the peak meets the average limit, nothing further is required.
2. If the peak exceeds the average limit, then an average measurement is required (may be calculated) and must be below the average limit and also:
3. The peak measurement cannot exceed the average limit +20dB.

Model 25830A

Statement for test report:

"No spurious emissions were found between 20 and 40 GHz."

The following test equipment was used:

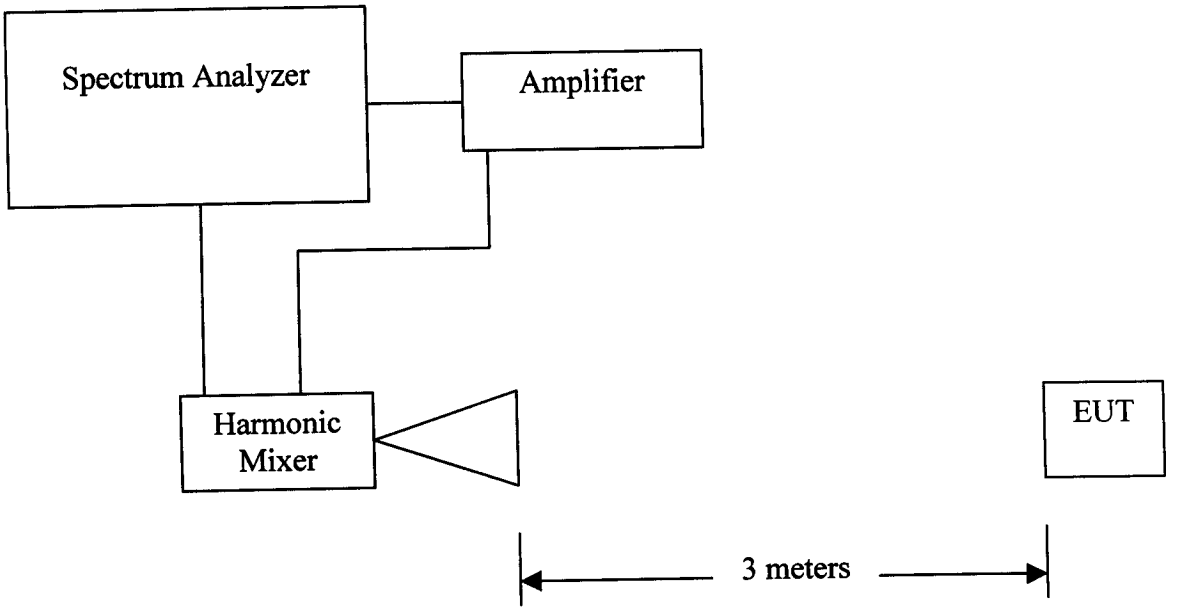
Spectrum Analyzer:
HP model 8566B, S/N: 3144A20661 / 3138A07786

Amplifier:
HP model 11975A, S/N 2738A01969

Harmonic Mixer:
HP model 11970A, S/N 2332A01982
Horn Antenna:
Systron Donner model DBD-520-20, not serialized

Harmonic Mixer:
HP model 11970K, S/N 3003A04991
Horn Antenna:
Systron Donner model DBE-520-20, not serialized

Test Setup Diagram:



15.247(a)(1) HOPPING CHANNEL SEPARATION

Requirements:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

Measurement Procedure

1. Position the EUT without connection to the Spectrum Analyzer (SA). Turn on the EUT and connect it to the SA. Then set it to any one convenient frequency within its operating range.

2. By using the MaxHold function record the separation of two adjacent channels.

3. Measure the frequency difference of these two adjacent channels by SA MARK function and then plot the result on the SA screen.

4. Repeat above procedures until all frequencies measured were complete.

Measurement Data - Refer Exhibit D(1)-13 to -18 for plotted data

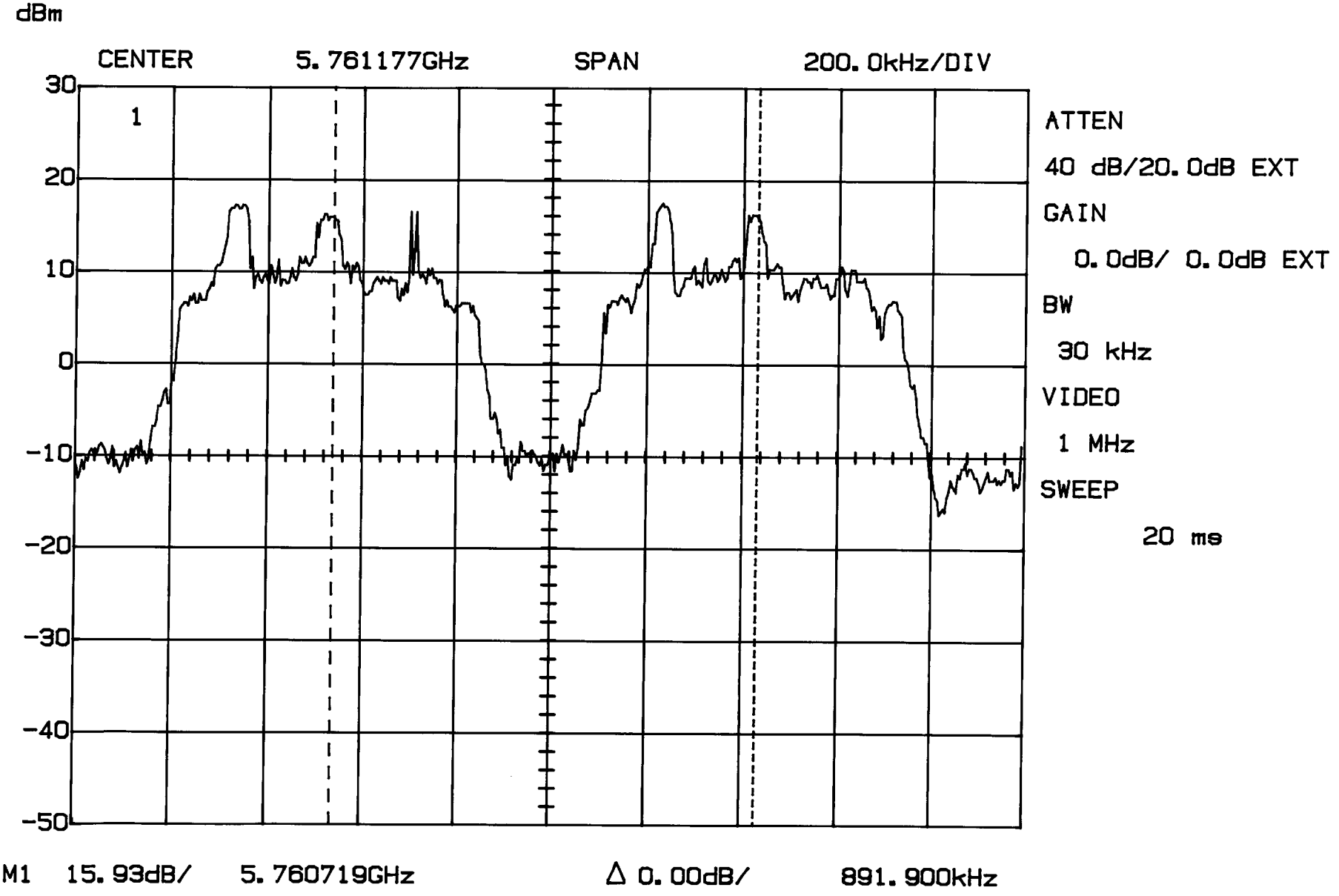
Base Unit

Low Channel:	Adjacent Hopping Channel Separation is 891 kHz.
Mid Channel:	Adjacent Hopping Channel Separation is 900 kHz.
High Channel:	Adjacent Hopping Channel Separation is 903 kHz.

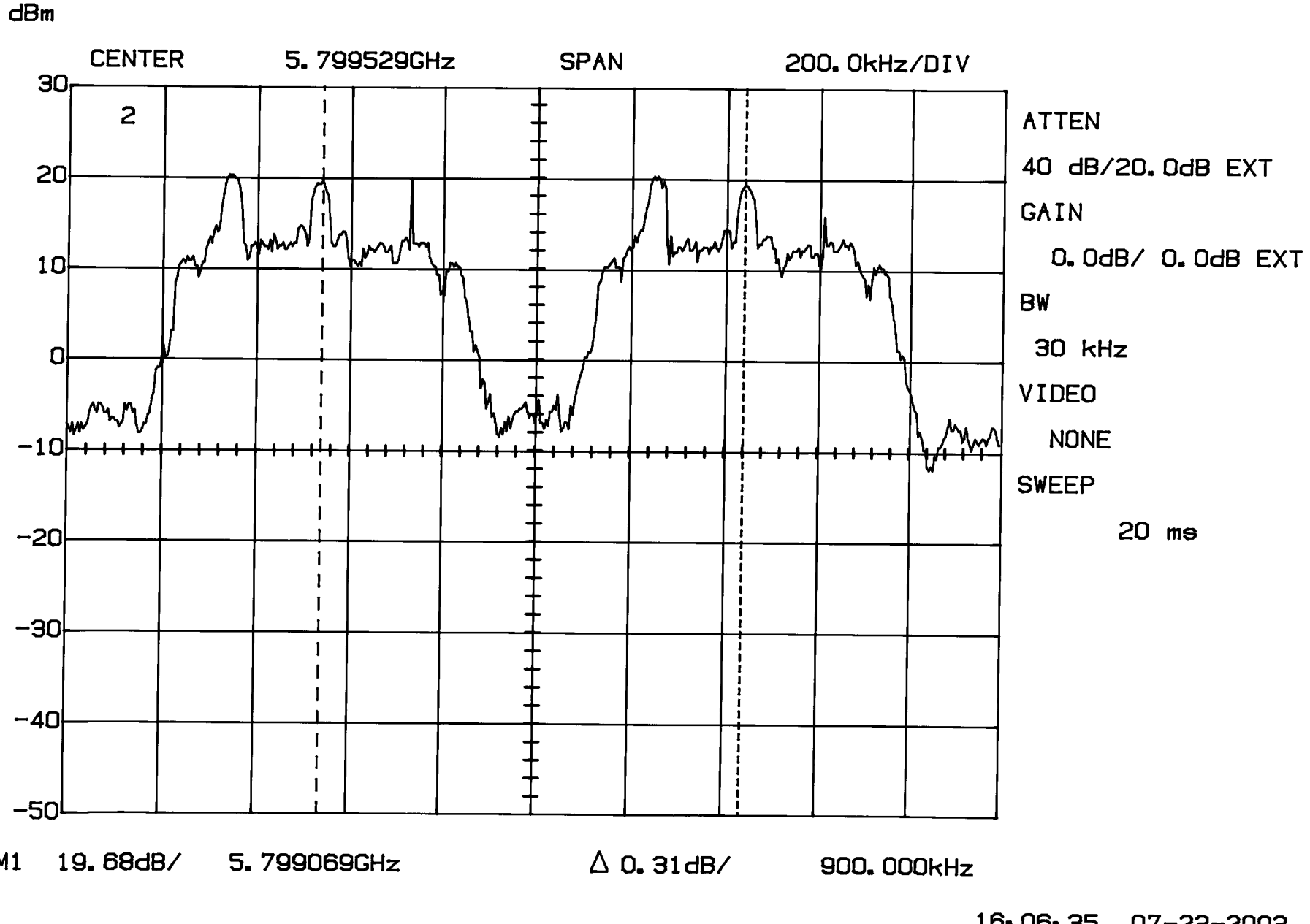
Handset Unit

Low Channel:	Adjacent Hopping Channel Separation is 892 kHz.
Mid Channel:	Adjacent Hopping Channel Separation is 892 kHz.
High Channel:	Adjacent Hopping Channel Separation is 892 kHz.

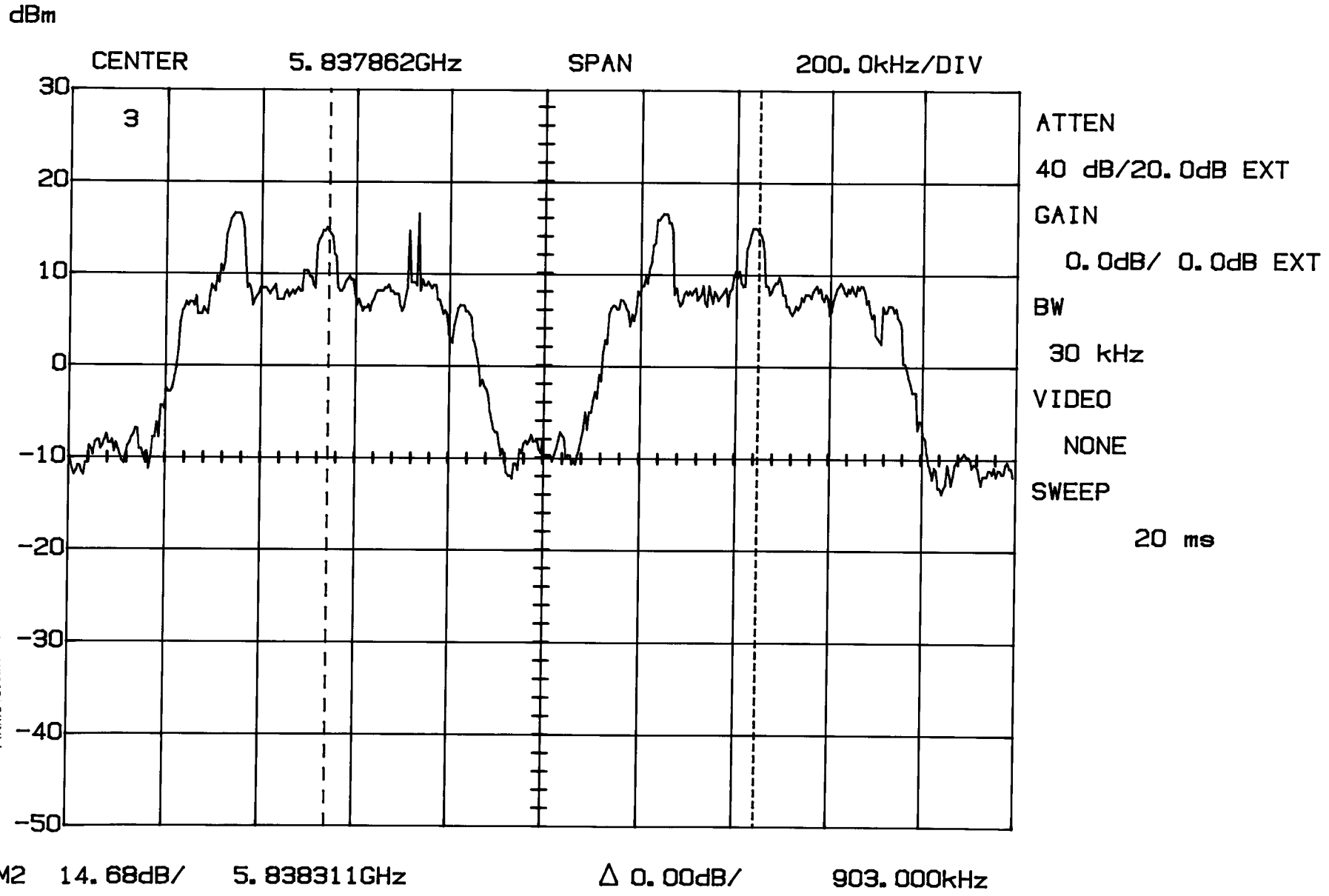
HOPPING CHANNEL SEPARATION
Base - Low Channel
MODEL 25830XXX-A



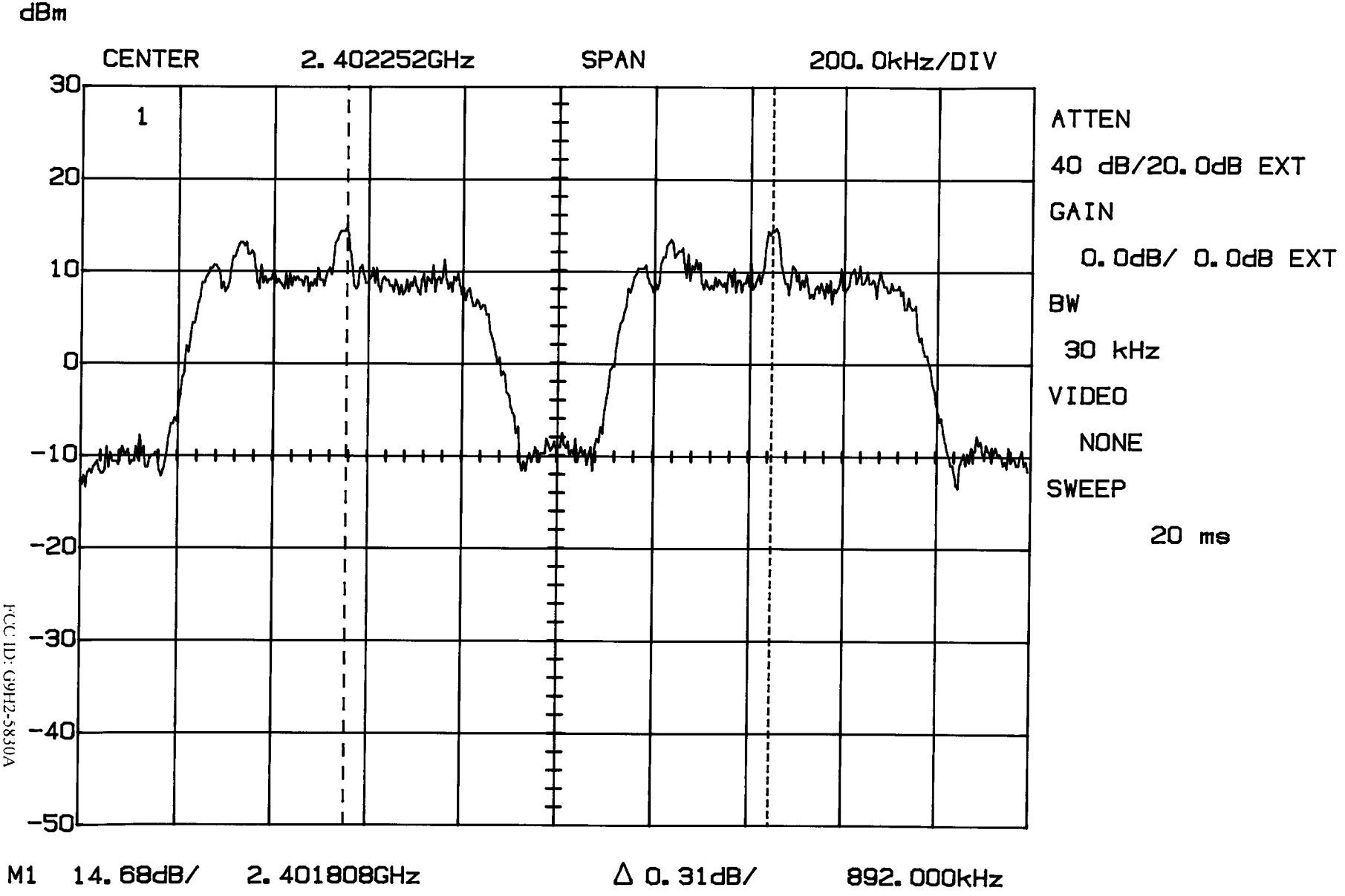
HOPPING CHANNEL SEPARATION
Base - Mid Channel
MODEL 25830XXX-A



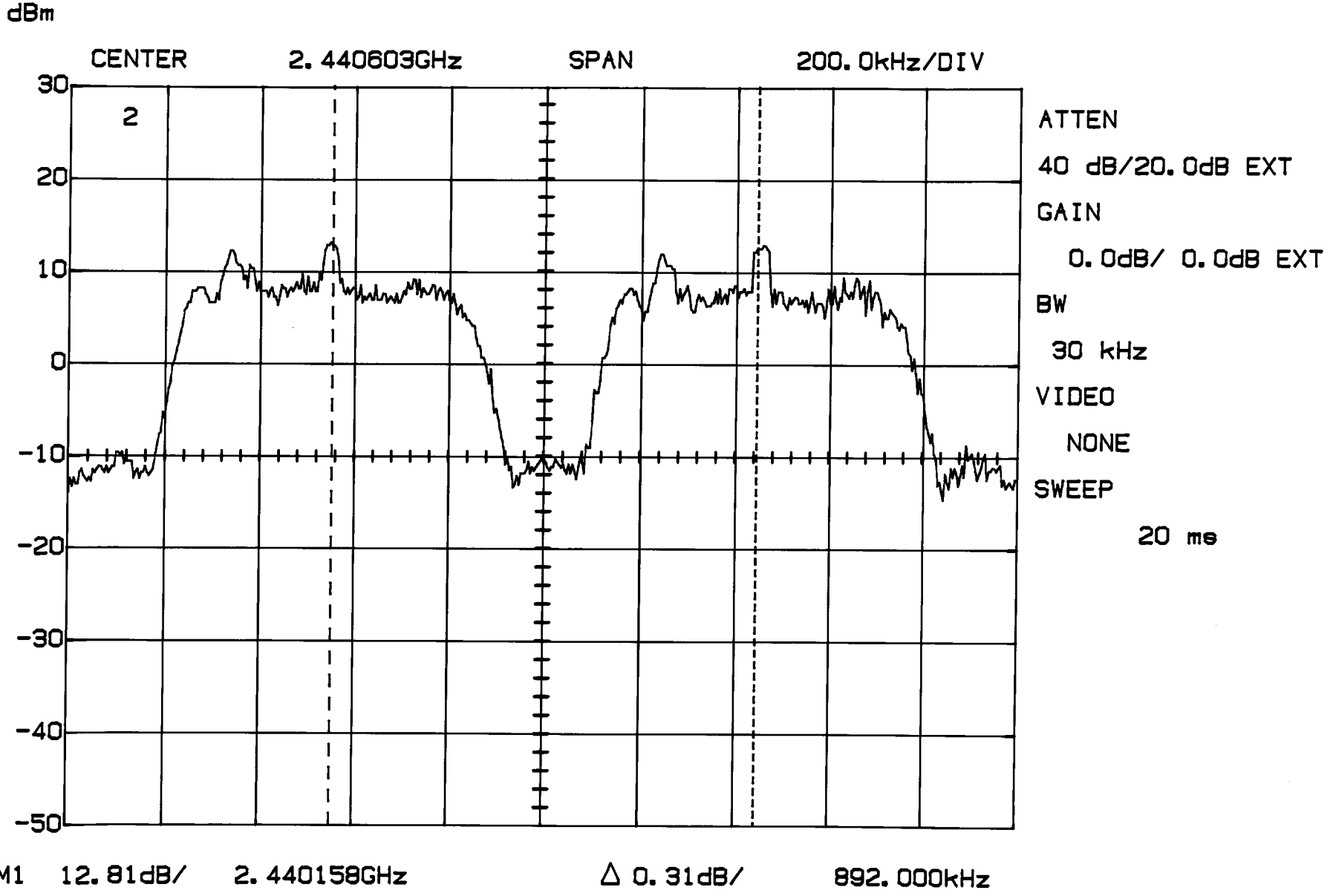
HOPPING CHANNEL SEPARATION
Base - High Channel
MODEL 25830XXX-A



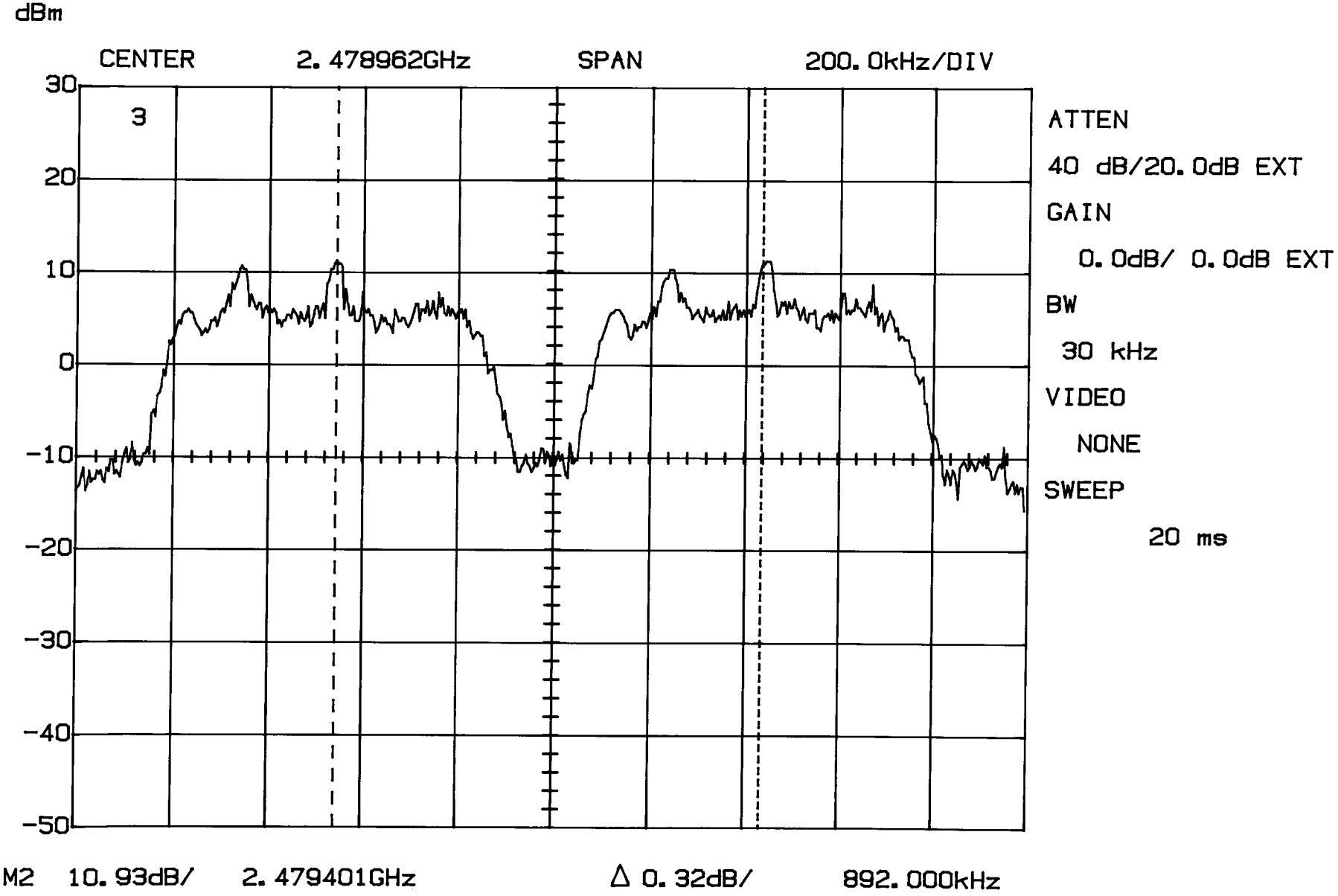
HOPPING CHANNEL SEPARATION
Handset - Low Channel
MODEL 25830XXX-A



HOPPING CHANNEL SEPARATION
Handset - Mid Channel
MODEL 25830XXX-A



HOPPING CHANNEL SEPARATION
Handset - High Channel
MODEL 25830XXX-A



15.247(a)(1)(ii) FREQUENCY HOPPING SYSTEMS

NUMBER OF HOPPING FREQUENCIES USED

Requirements:

Frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

Measurement Procedure

1. Position the EUT without connection to Spectrum Analyzer (SA). Turn on the EUT and connect its antenna terminal to SA via a low loss cable and set it to any one measured frequency within its operating range and ensure that the SA is operated in its linear range.
2. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all of the signals from each channel until each one has been recorded.
3. Set the SA on View mode and plot the results on SA screen.
4. Repeat the above procedures until all frequencies measured are complete.

Measurement Data

The base has 75 hopping frequencies and the handset has 75 hopping frequencies. **Refer Exhibit D(1)-20 and -23 for plotted data.**

CHANNEL BANDWIDTH [15.247(a)]

Requirements:

The 20dB bandwidth of the hopping channel is less than 1 MHz.

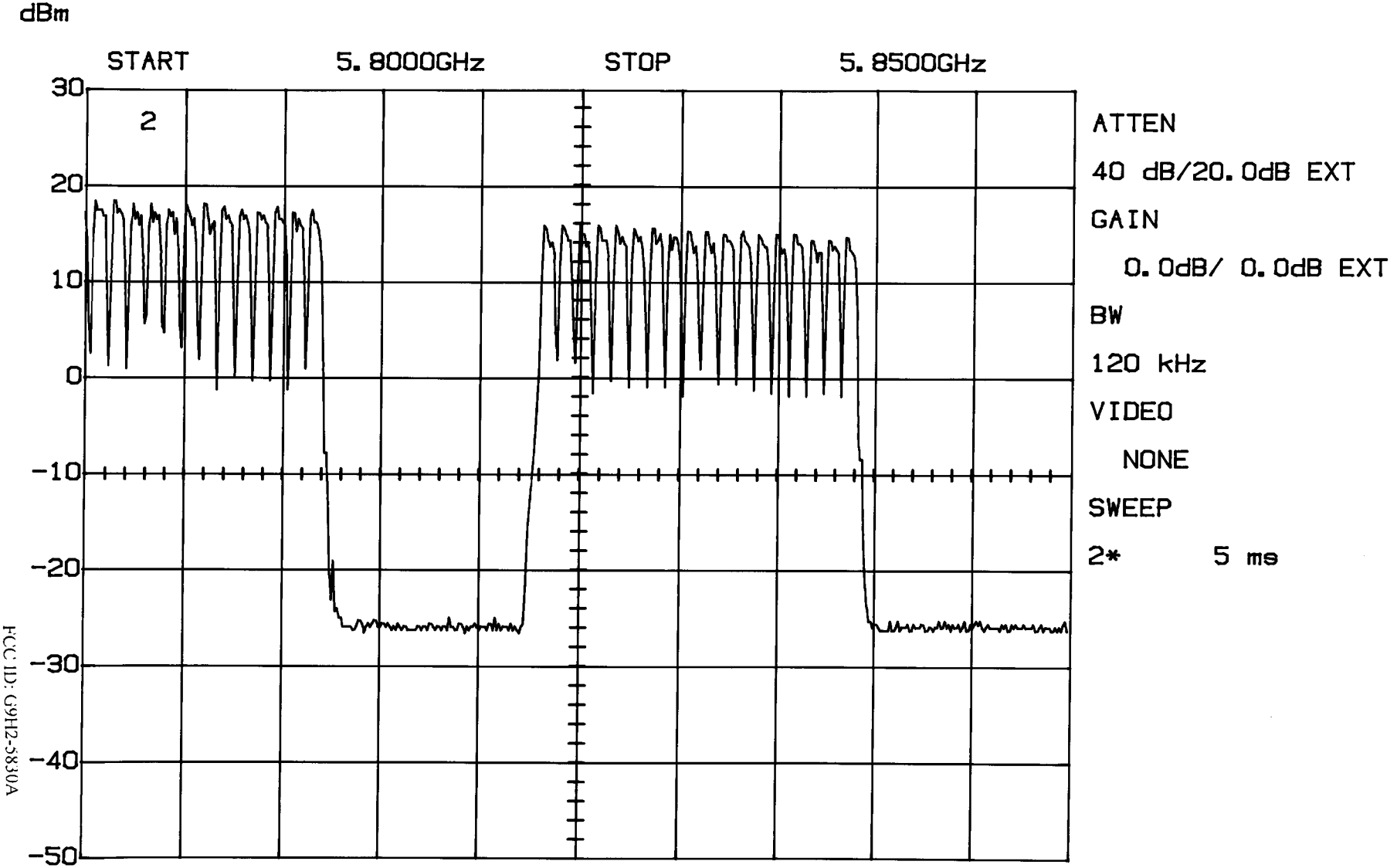
Measurement Procedure

1. Position the EUT without connection to the Spectrum Analyzer (SA). Turn on the EUT and connect it to the SA. Then set it to any one convenient frequency within its operating range. Set a reference level on the SA equal to the highest peak value.
2. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
3. Repeat above procedures until all frequencies measured were complete.

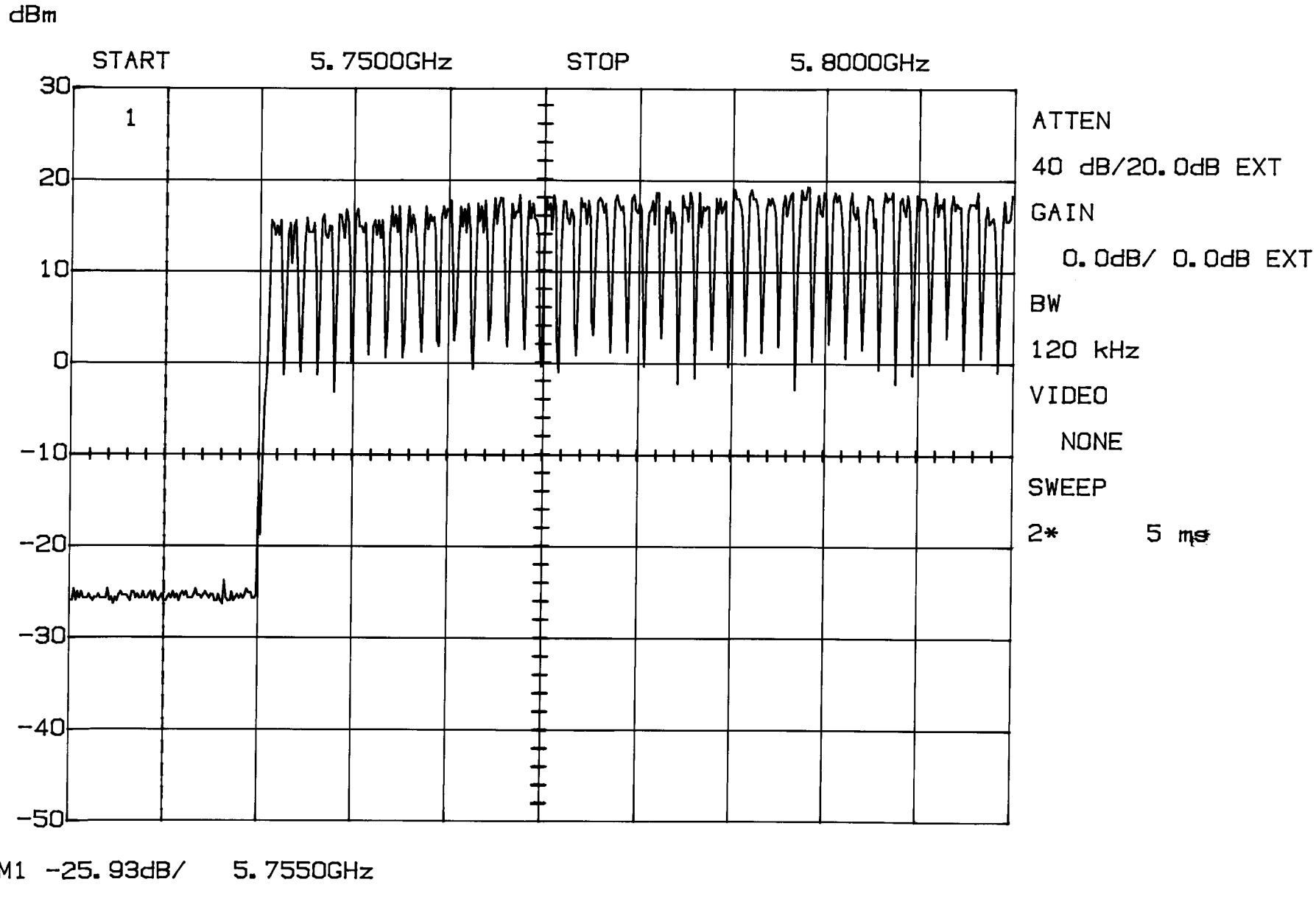
Measurement Data - **Refer Exhibit D(1)-24 to -29 for plotted data**

Base	Channel 1:	Channel Bandwidth is 670 kHz.
	Channel 44:	Channel Bandwidth is 700 kHz.
	Channel 75:	Channel Bandwidth is 700 kHz.
Handset Unit	Channel 1:	Channel Bandwidth is 712 kHz.
	Channel 44:	Channel Bandwidth is 710 kHz
	Channel 75:	Channel Bandwidth is 748 kHz

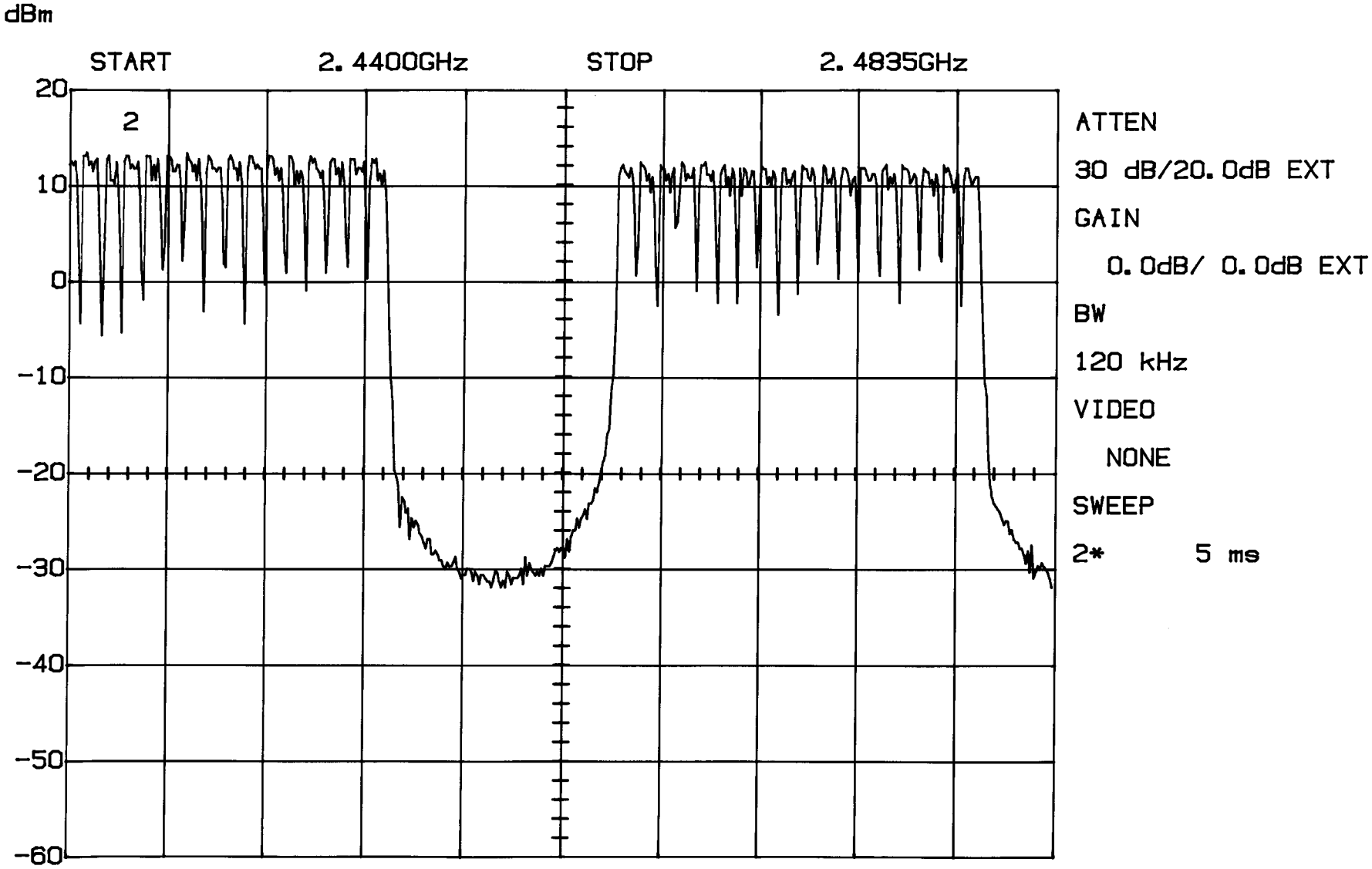
HOPPING FREQUENCY (Base) - Max. Channel
MODEL 25830XXX-A



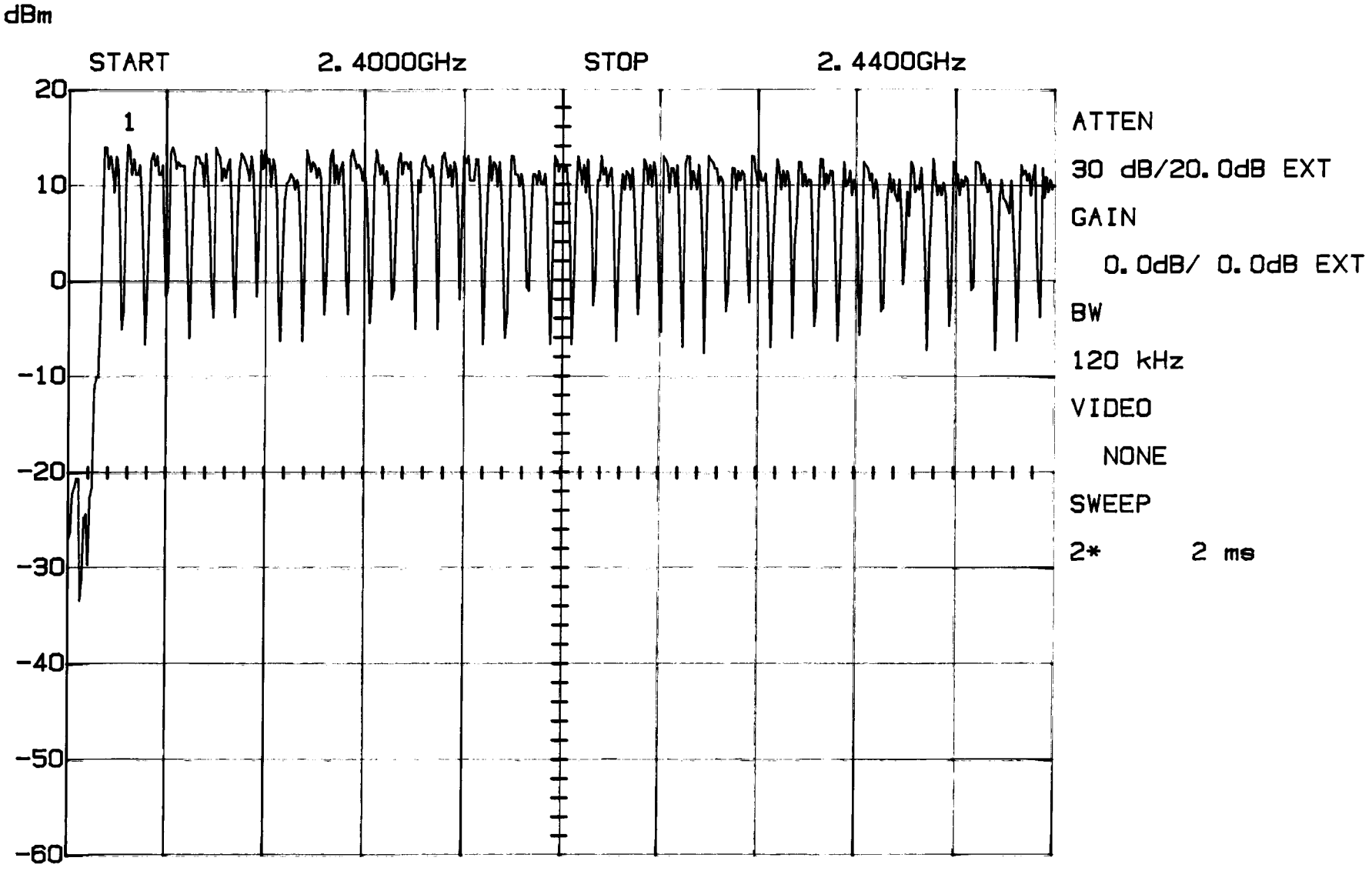
HOPPING FREQUENCY (Base) - Max. Channel
MODEL 25830XXX-A



HOPPING FREQUENCY (Handset) - Max. Channel
MODEL 25830XXX-A

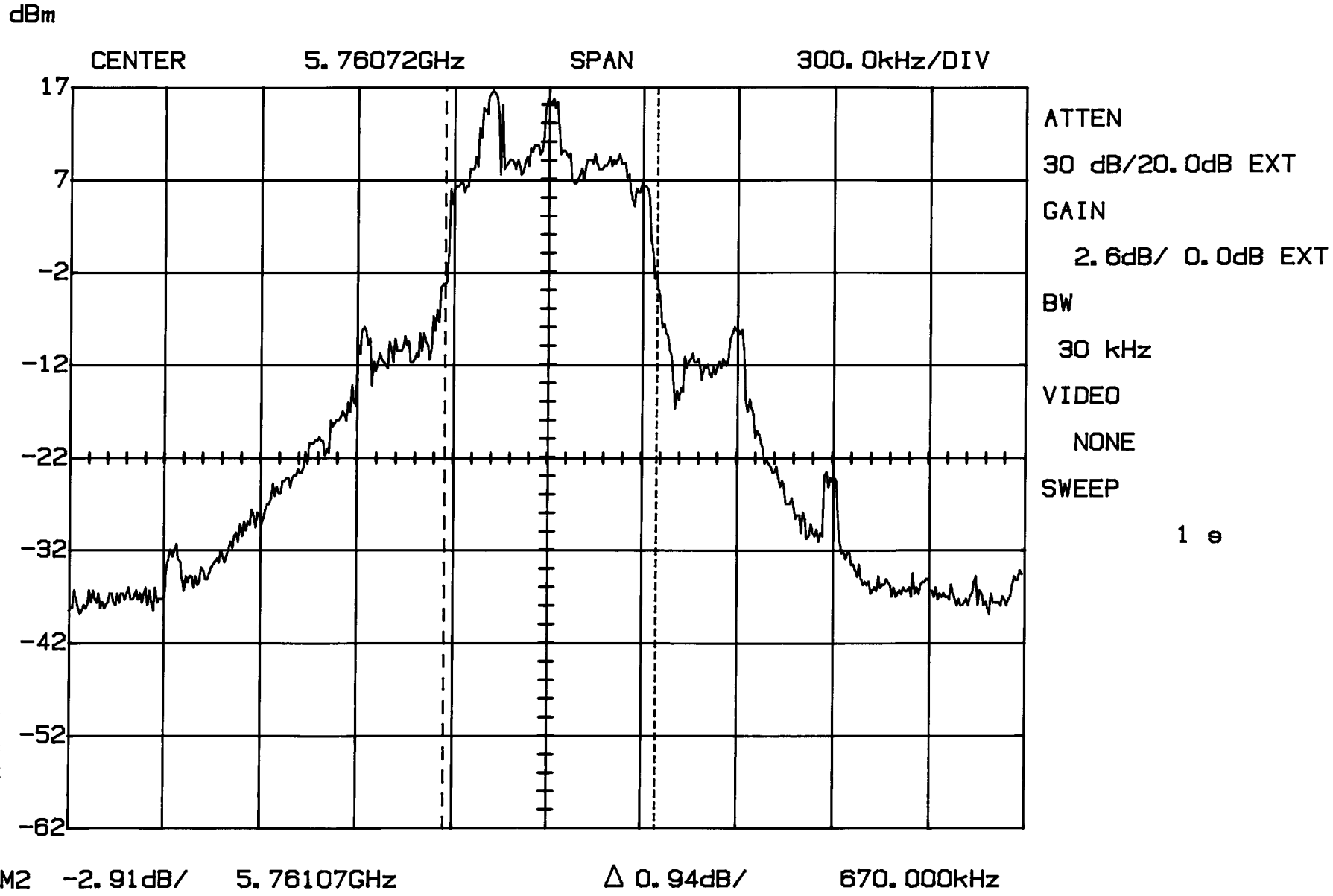


HOPPING FREQUENCY (Handset) - Max. Channel
MODEL 25830XXX-A

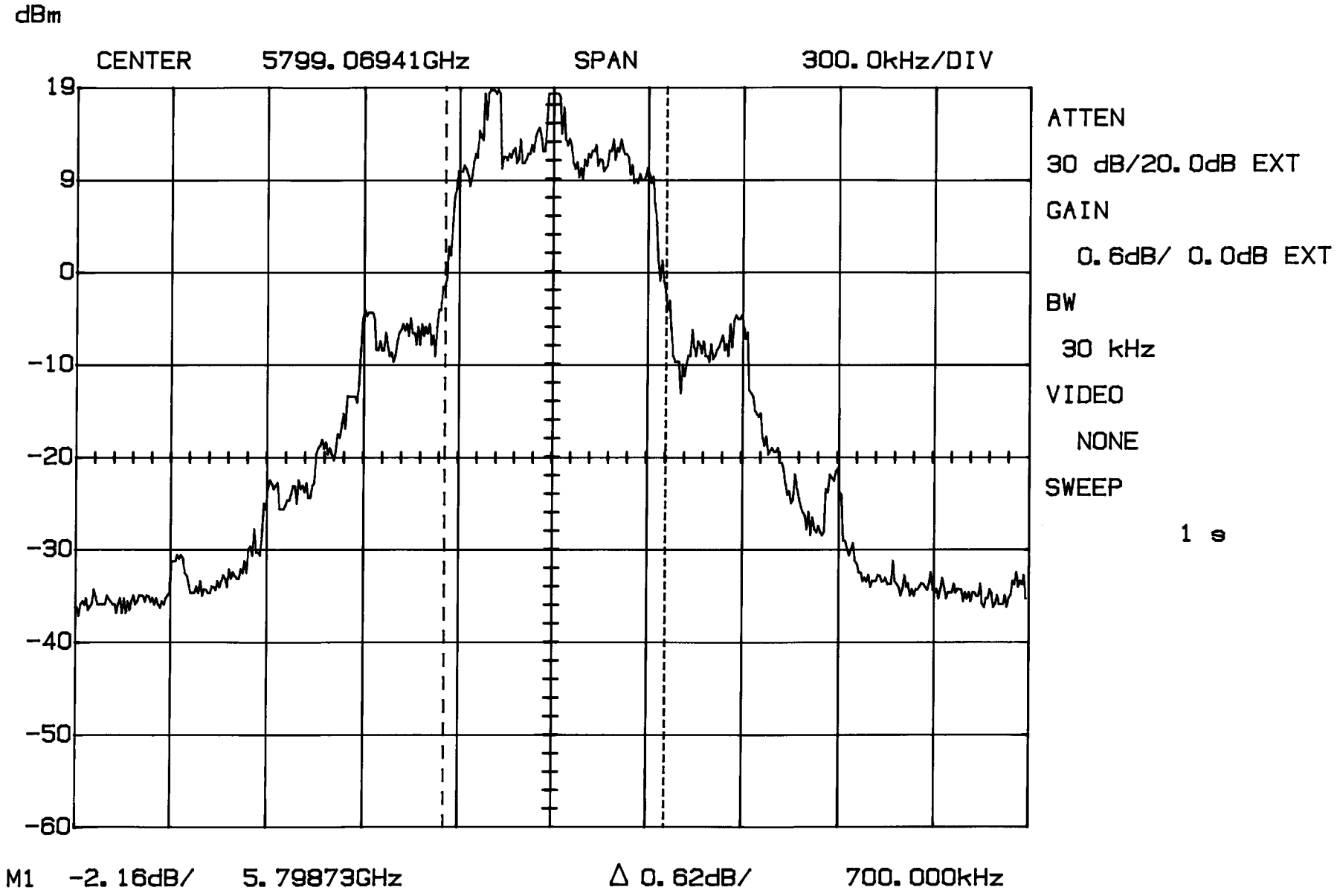


11: 54: 54 07-23-2003

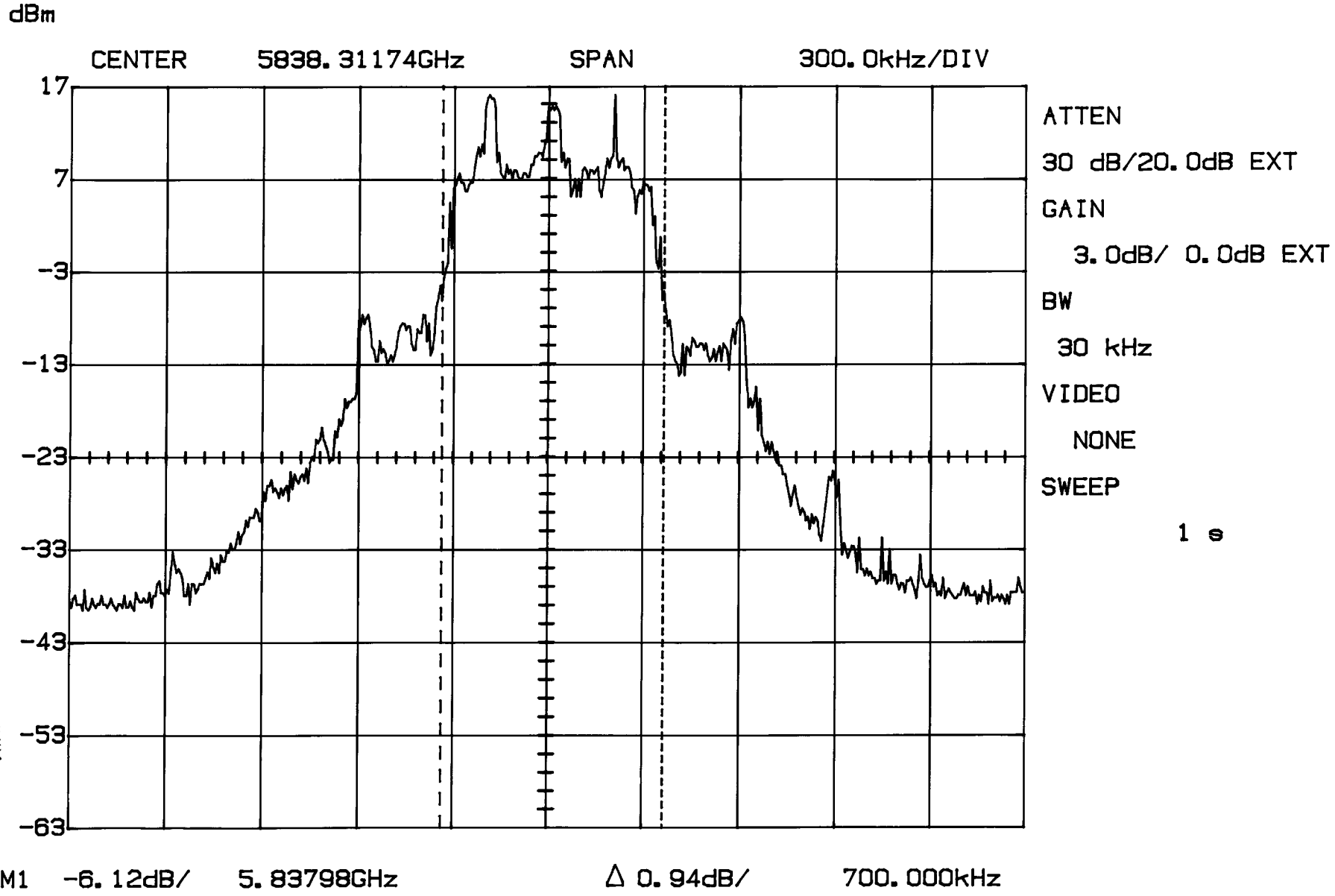
20 dB BANDWIDTH (Base) - CH1
MODEL 25830XXX-A



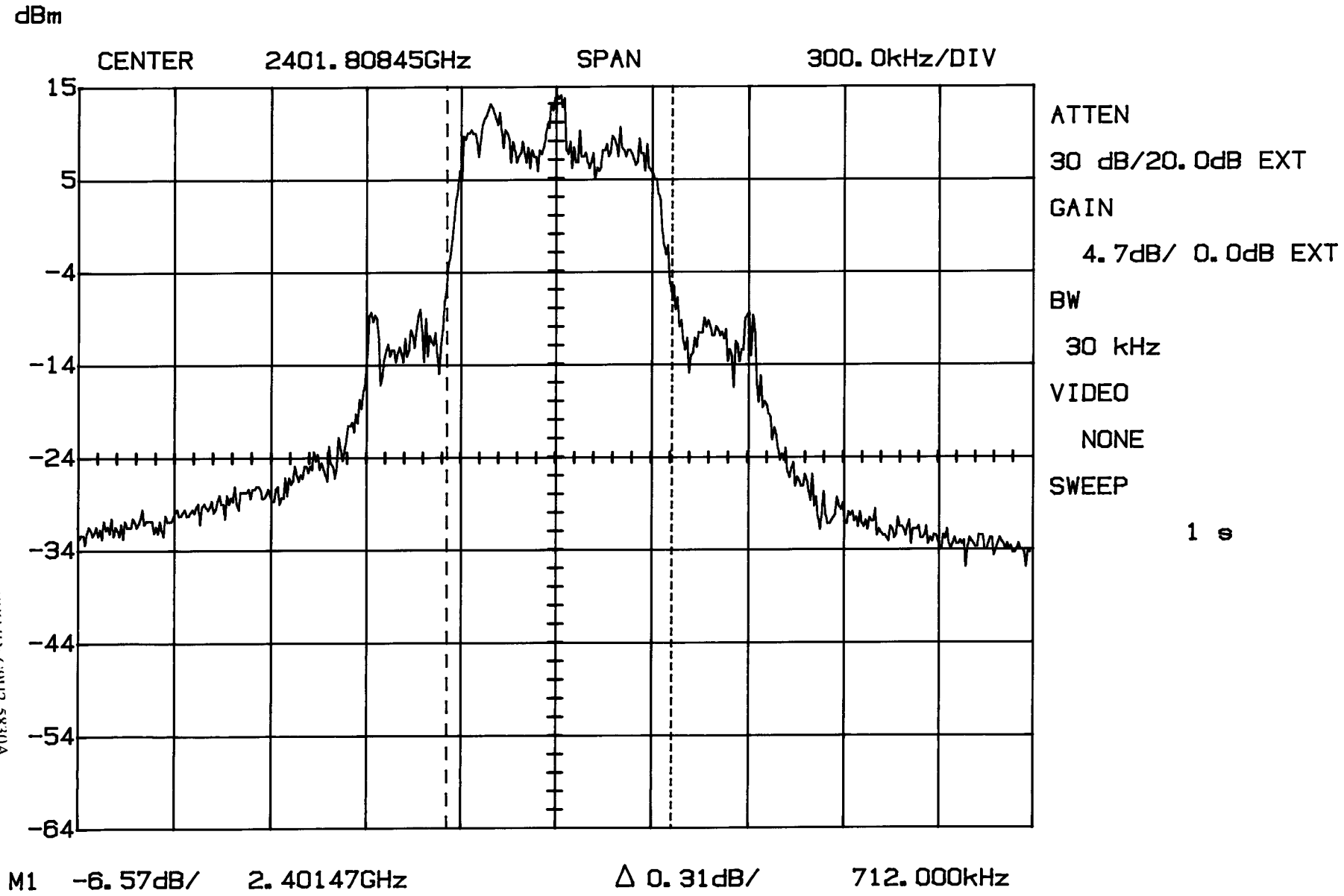
20 dB BANDWIDTH (Base) - CH44
MODEL 25830XXX-A



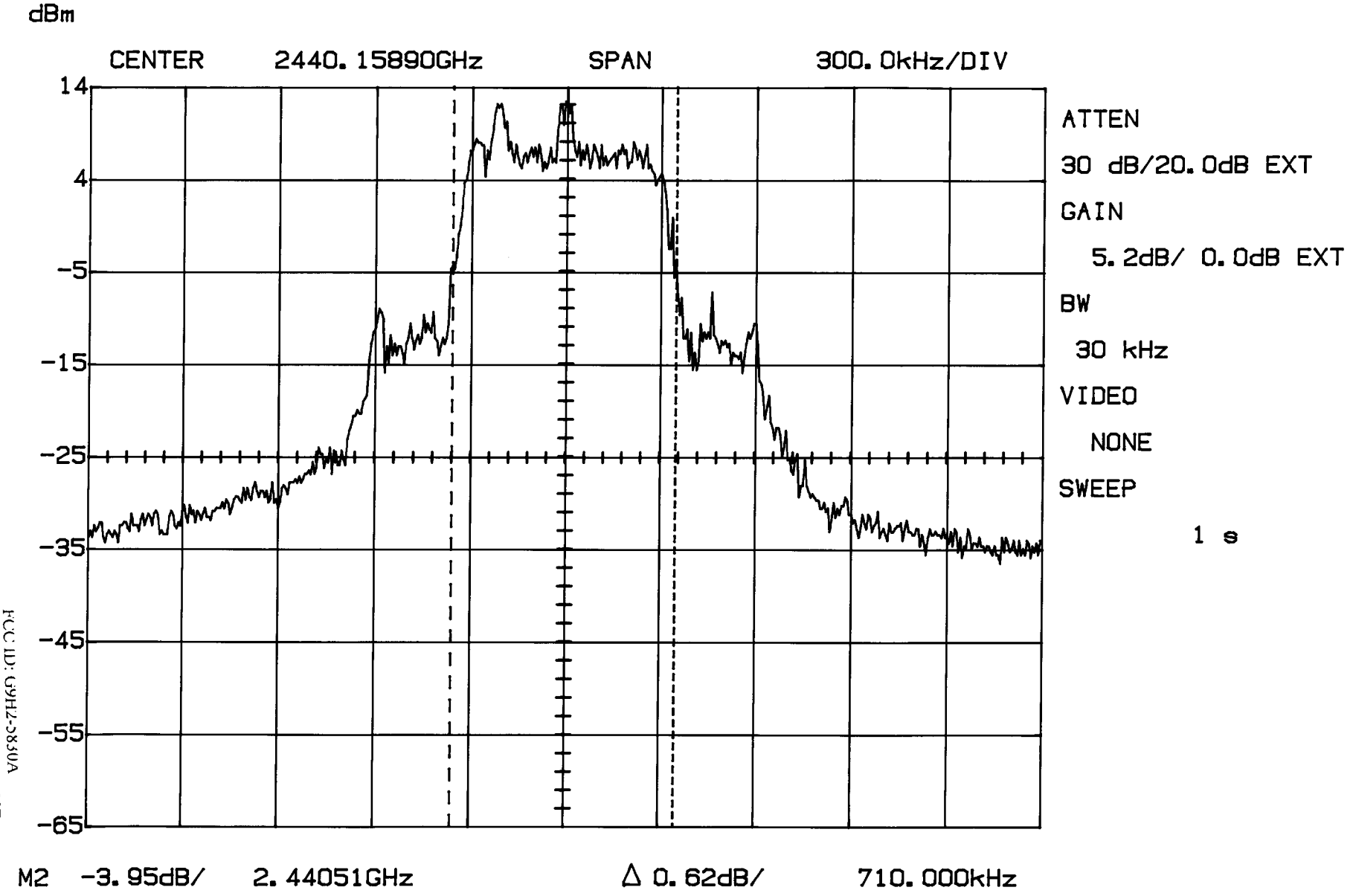
20 dB BANDWIDTH (Base) - CH 75
MODEL 25830XXX-A



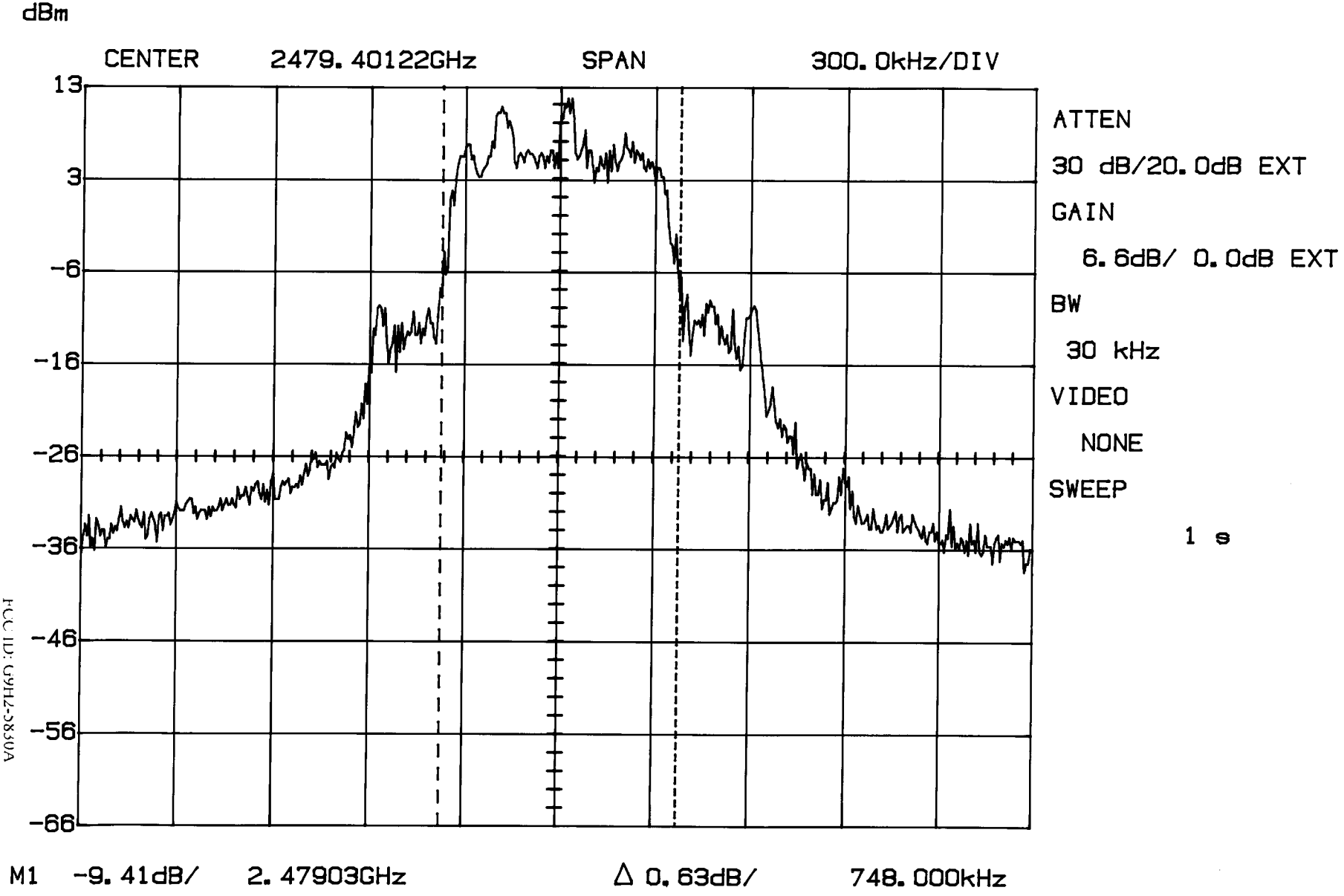
20 dB BANDWIDTH (Hnadset)
MODEL 25830XXX-A



20 dB BANDWIDTH (Handset) - CH44
MODEL 25830XXX-A



20 dB BANDWIDTH (Handset) - CH 75
MODEL 25830XXX-A



15.247(a)(1)(ii) FREQUENCY HOPPING SYSTEMS (continued)

DWELL TIME ON EACH CHANNEL

Requirements:

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a (0.4 x **75)** 30 second period.

Measurement Procedure

1. Position the EUT without connection to Spectrum Analyzer (SA). Turn on the EUT and connect its antenna terminal to SA via a low loss cable and set it to any one measured frequency within its operating range and ensure that the SA is operated in its linear range.

2. Adjust the centre frequency of SA on any frequency to be measured and set SA to zero span mode. Set RBW and VBW of SA to proper value.

3. Measure the time duration of one transmission on the measured frequency and then plot the result with the time difference of this time duration.

4. Repeat the above procedures until all frequencies measured were complete.

Measurement Data - Refer Exhibit D(1)-31 to -37 for plotted data.

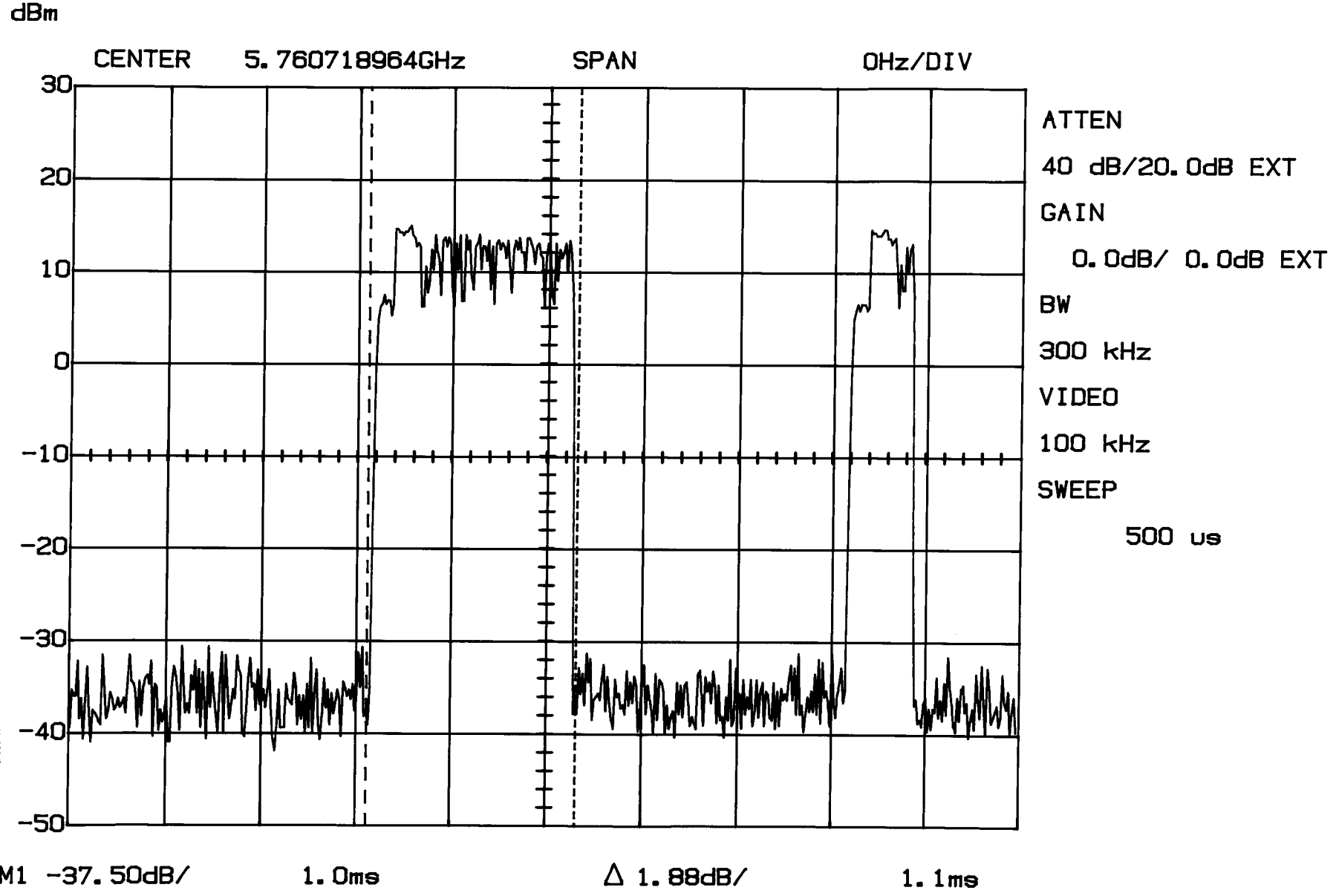
Base Unit
The dwell time is (1.10 mS x 40) + (0.40 mS x 40) = 60 mS

The maximum time of occupancy for a particular channel is 60 mS in any 30 second period.

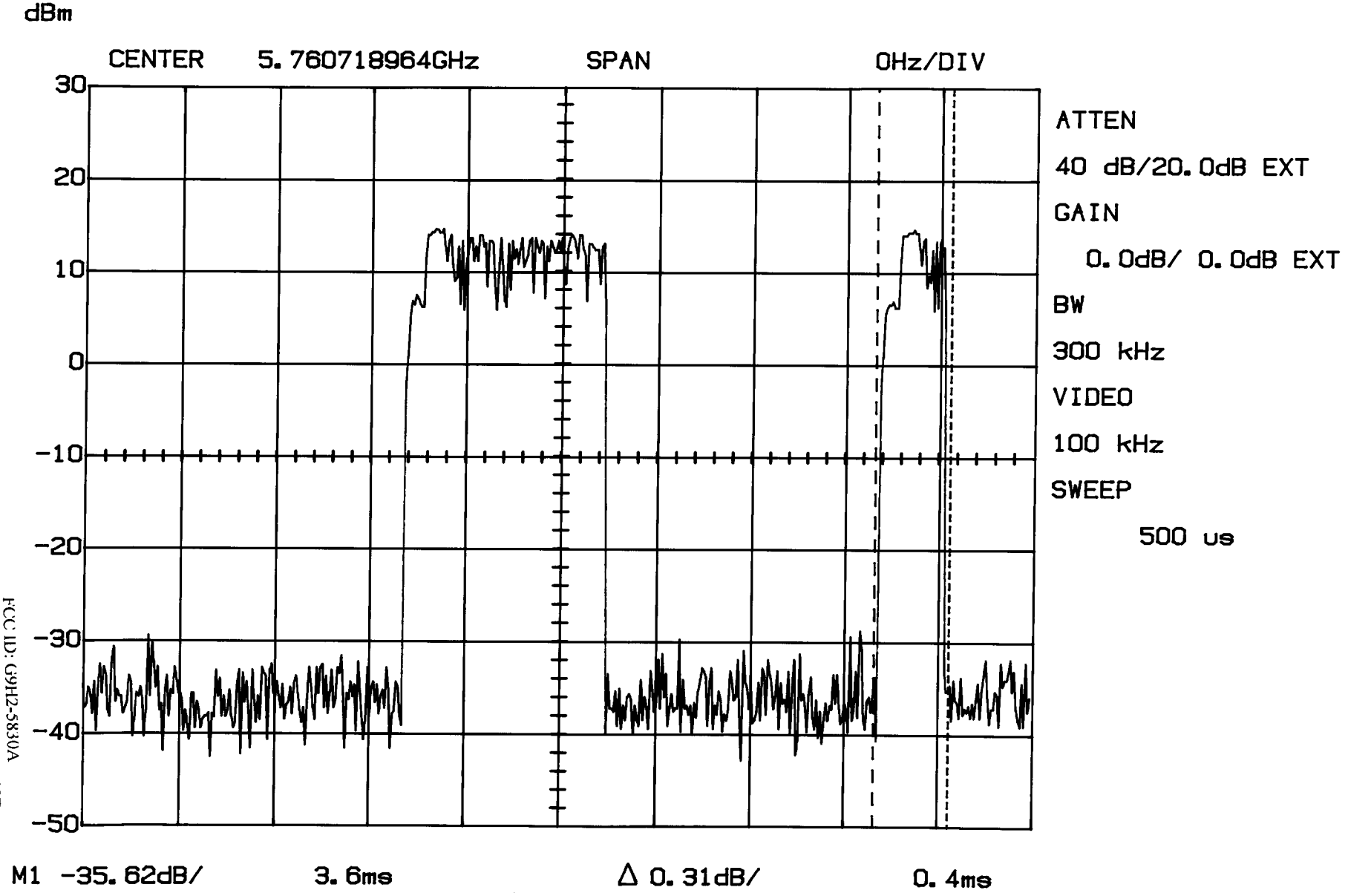
Handset Unit
The dwell time is (1.06 mS x 40 = 42.4 mS

The maximum time of occupancy for a particular channel is 42.4 mS in any 30 second period.

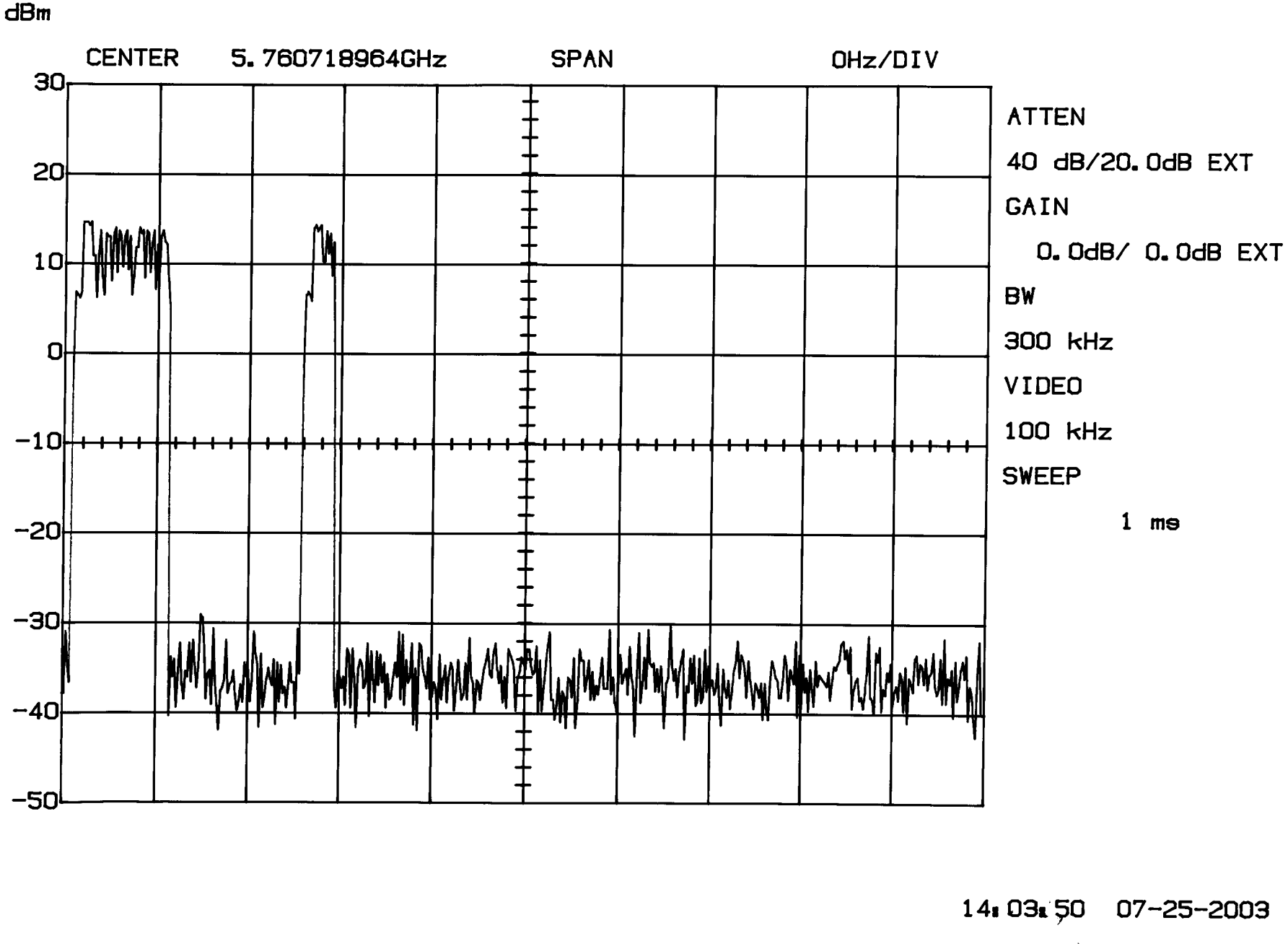
DWELL TIME (Time Slot).
Base
MODEL 25830XXX-A



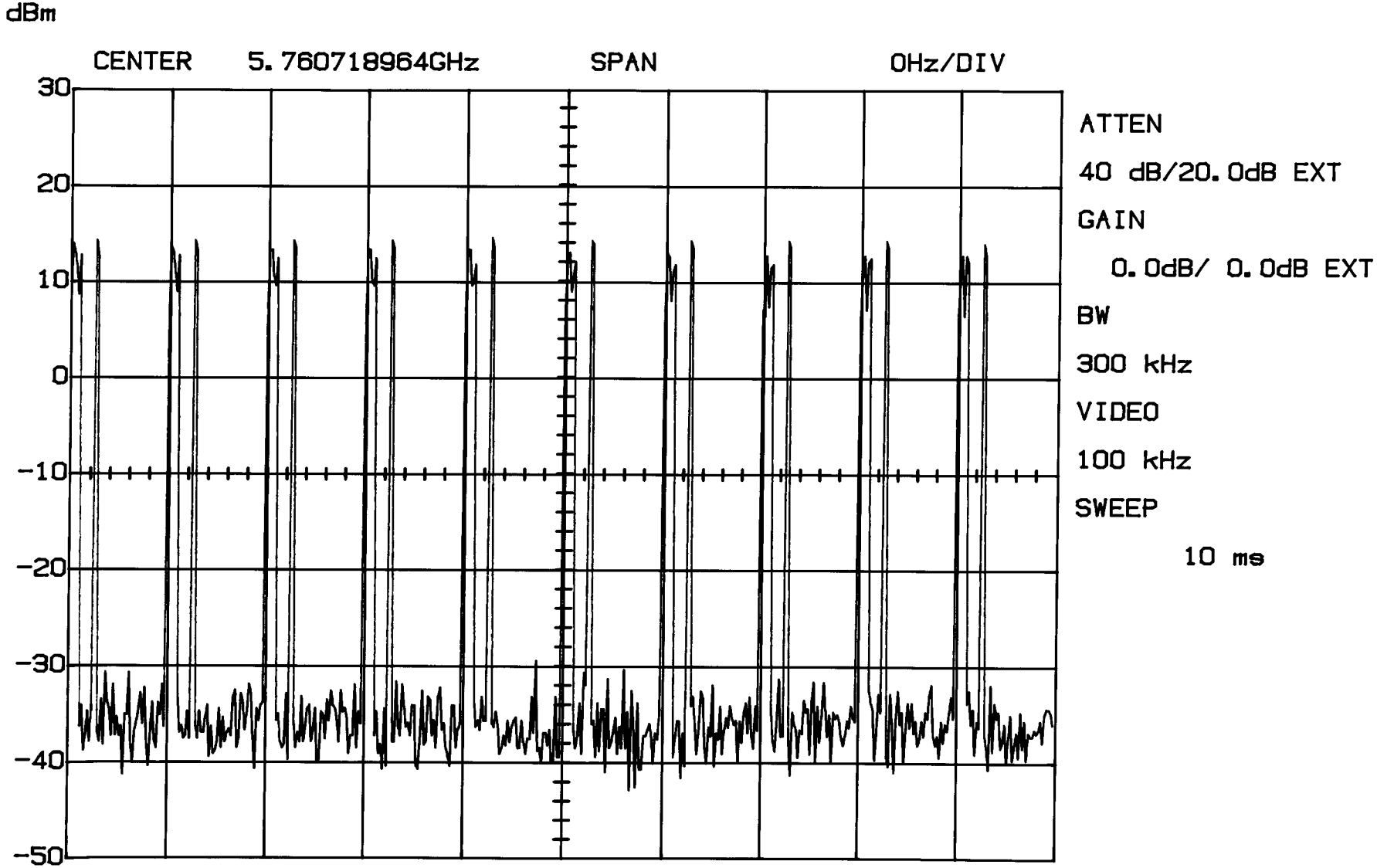
DWELL TIME (Time Slot)
Base
MODEL 25830XXX-A



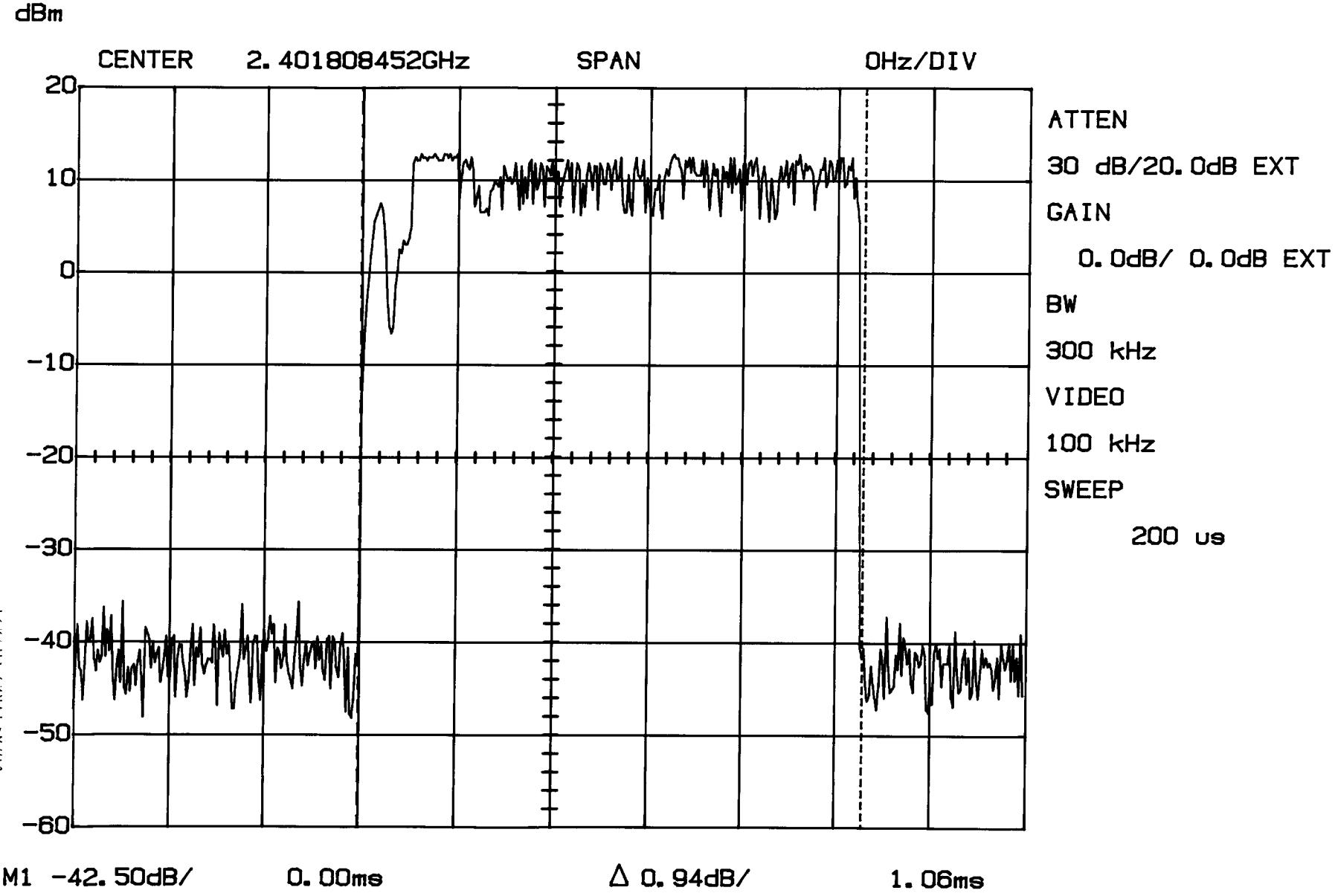
DWELL TIME (Slots/Frame)
Base
MODEL 25830XXX-A



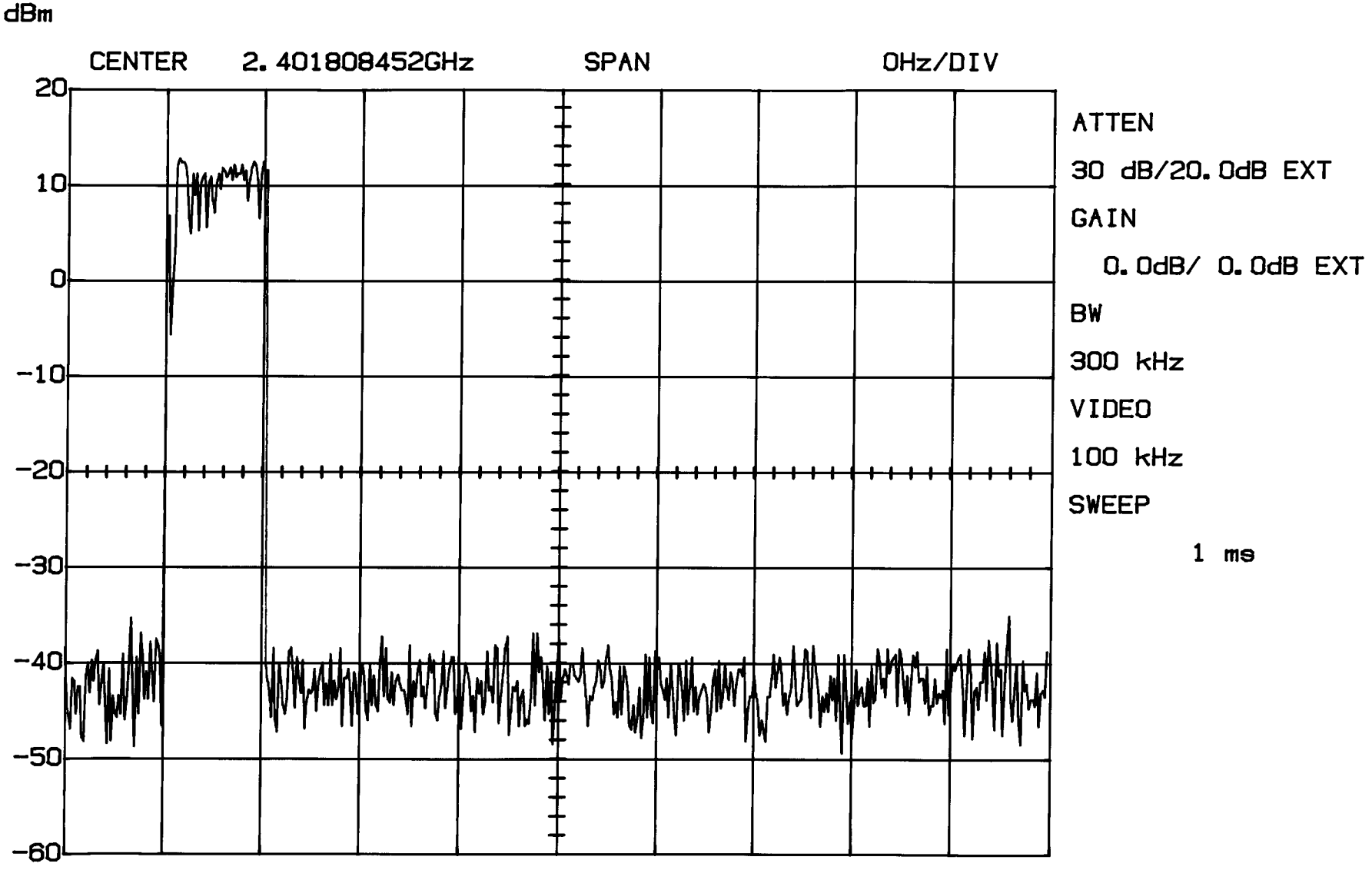
DWELL TIME
Base
MODEL 25830XXX-A



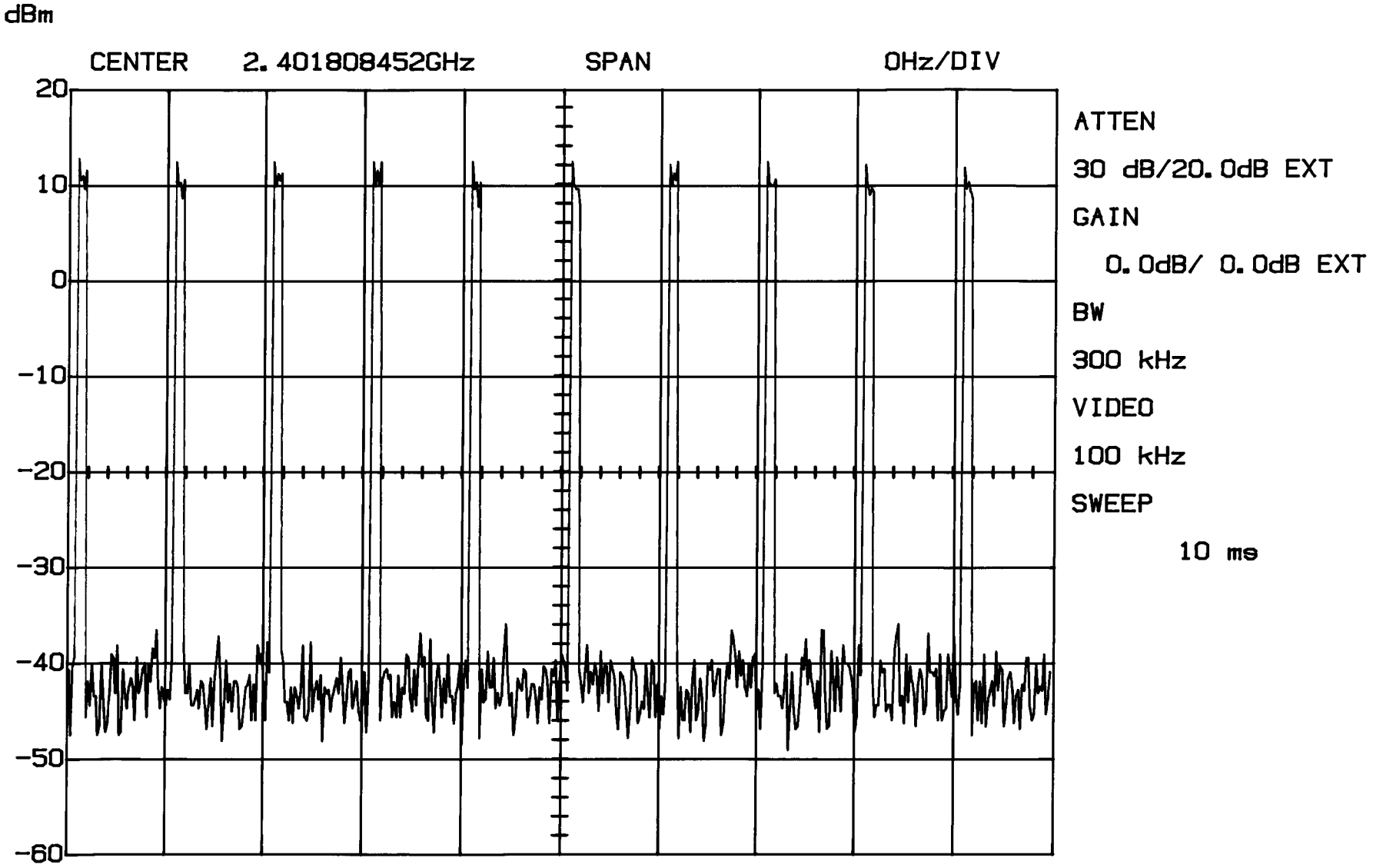
DWELL TIME (Time Slot)
Handset
MODEL 25830XXX-A



DWELL TIME (Slots/Frame)
Handset
MODEL 25830XXX-A



DWELL TIME
Handset
MODEL 25830XXX-A



15.247(b) (1) MAXIMUM PEAK OUTPUT POWER

Requirements:

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHZ band: 1 Watt. For all other frequency hopping systems in the 2400-2483.5 band: 0.125 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Measurement Procedure

1. Position the EUT without connection to Spectrum Analyzer (SA). Turn on the EUT and connect its antenna terminal to SA via a low loss cable and set it to any one measured frequency within its operating range and ensure that the SA is operated in its linear range.

2. Set RBW of SA to 5MHz and VBW to NONE.

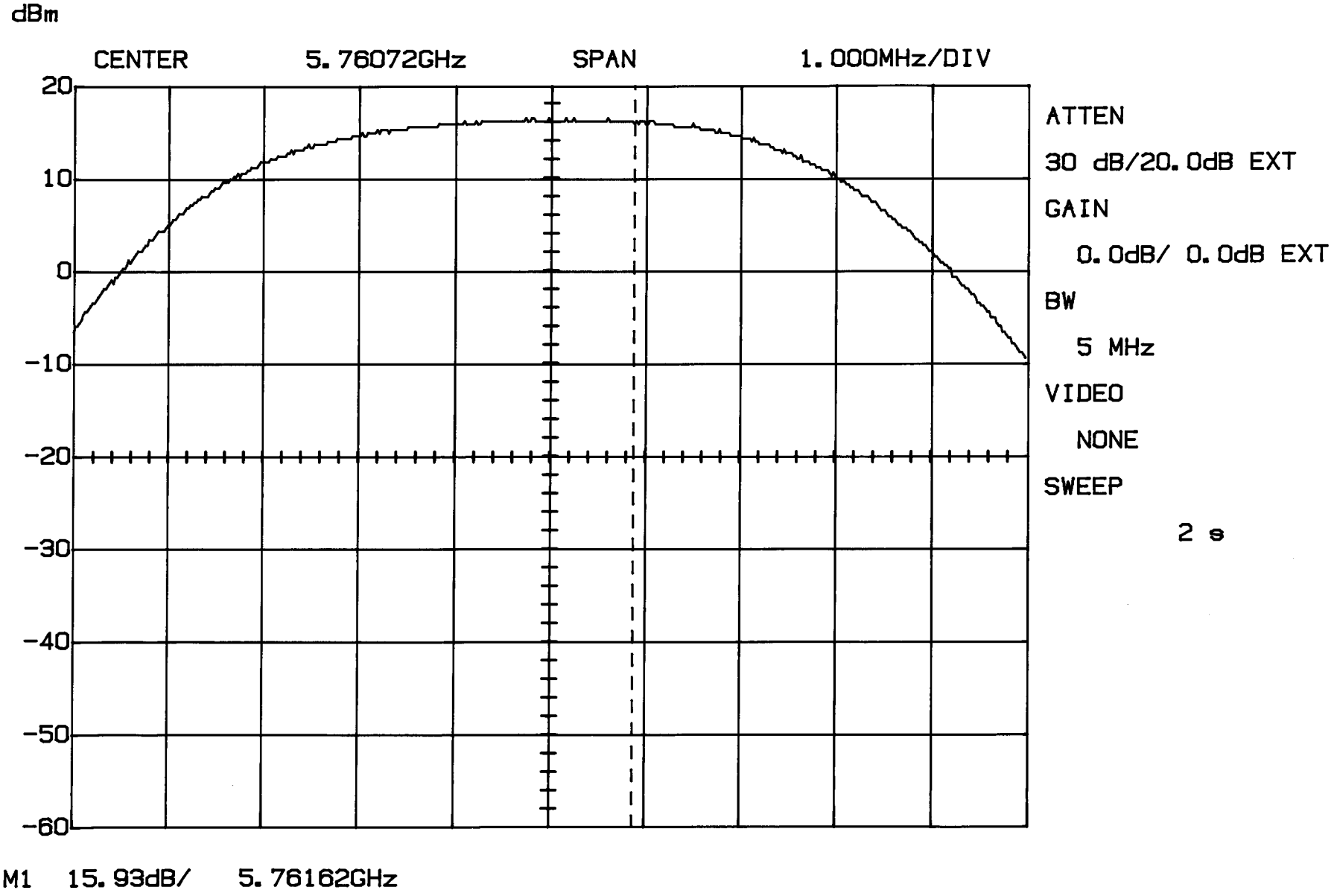
3. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.

4. Repeat the above procedures until all frequencies measured were complete.

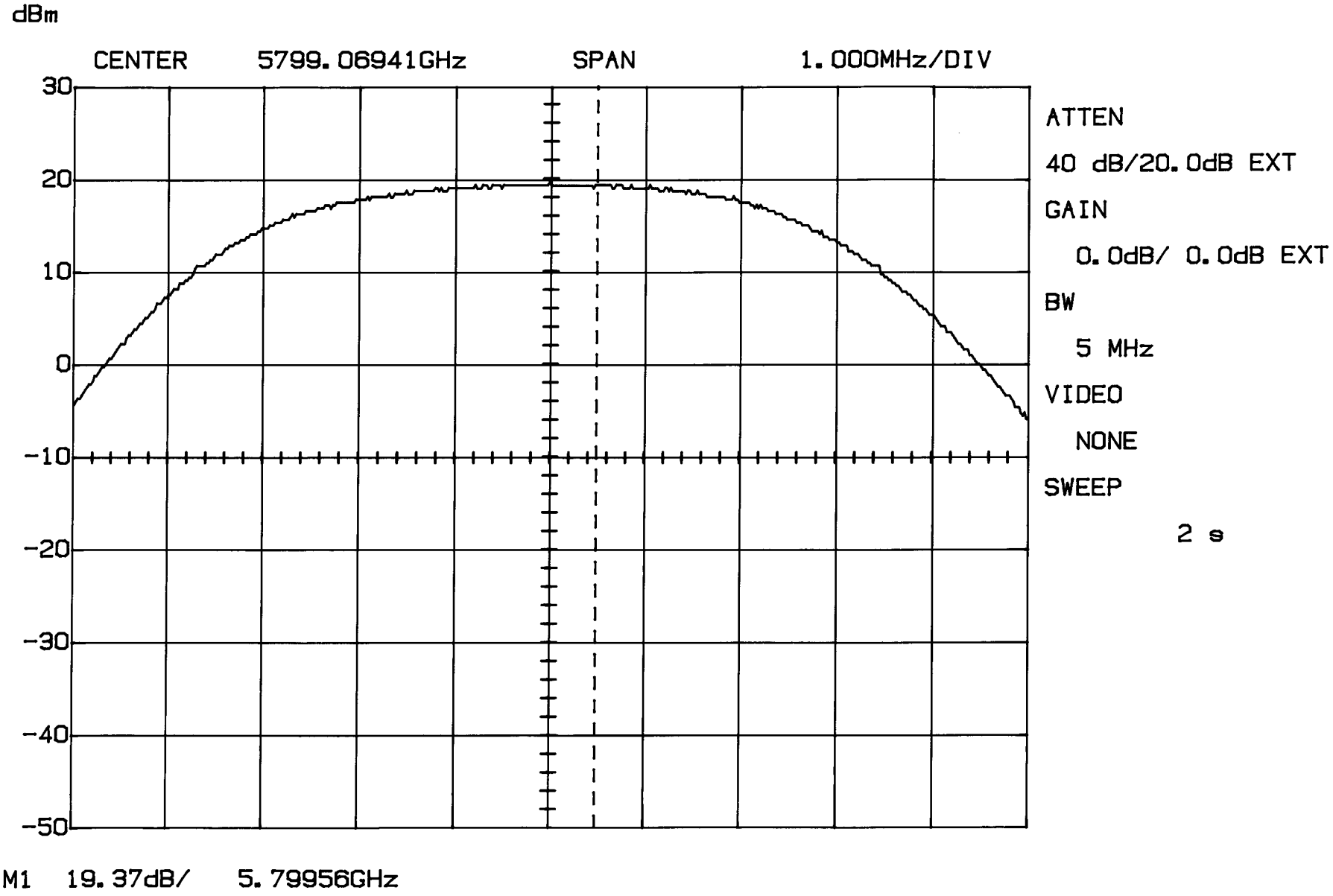
Measurement Data - Refer Exhibit D(1)-39 to -44 for plotted data

Base	Channel 1:	Output Peak Power is 15.93 dBm = 39 mW.
	Channel 44:	Output Peak Power is 19.37 dBm = 86 mW.
	Channel 75:	Output Peak Power is 15.62 dBm = 36 mW.
Handset Unit	Channel 1:	Output Peak Power is 14.37 dBm = 27 mW.
	Channel 44:	Output Peak Power is 13.75 dBm = 23 mW.
	Channel 75:	Output Peak Power is 12.50 dBm = 18 mW.

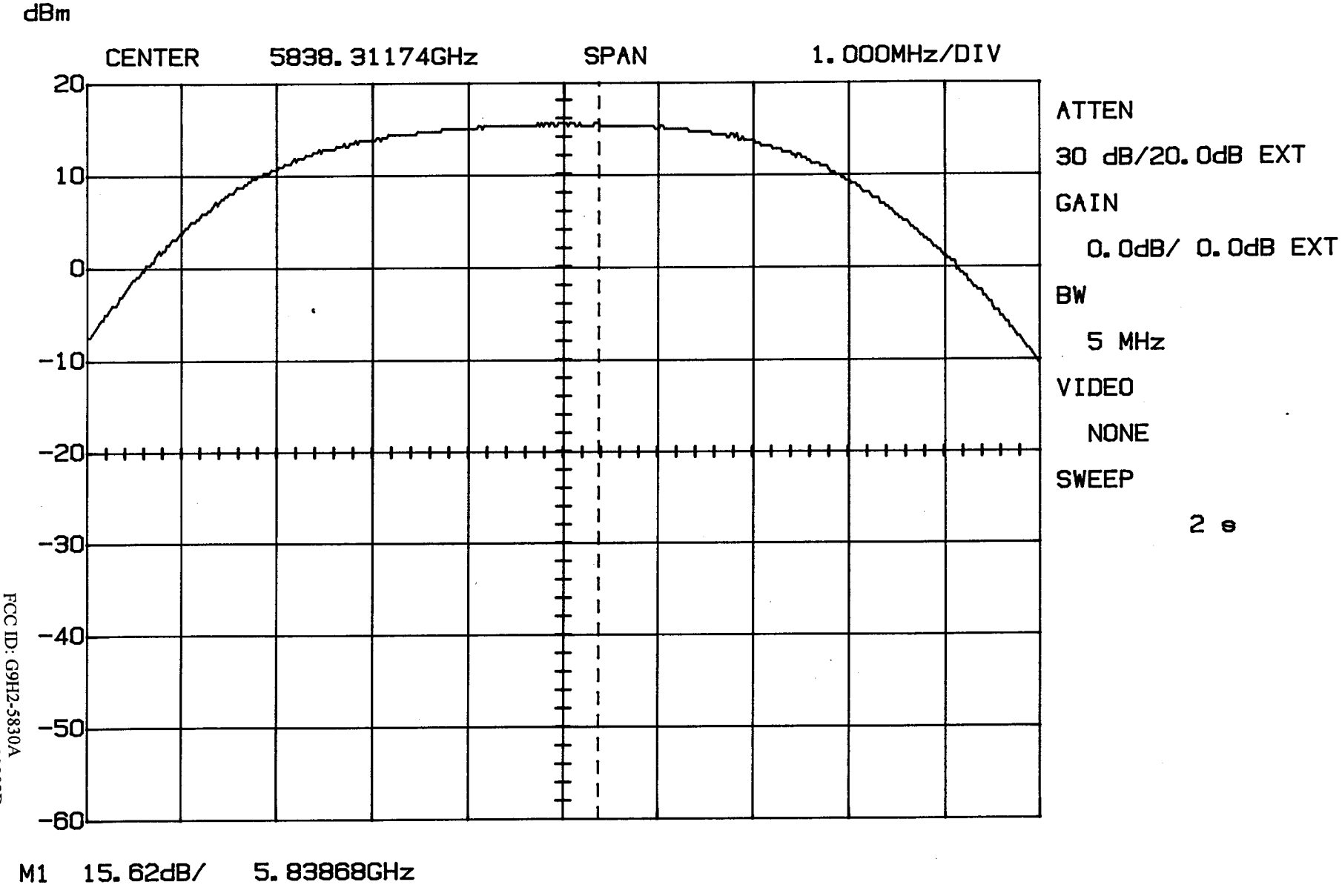
MAXIMUM PEAK POWER
Base - Channel 1
MODEL 25830XXX-A



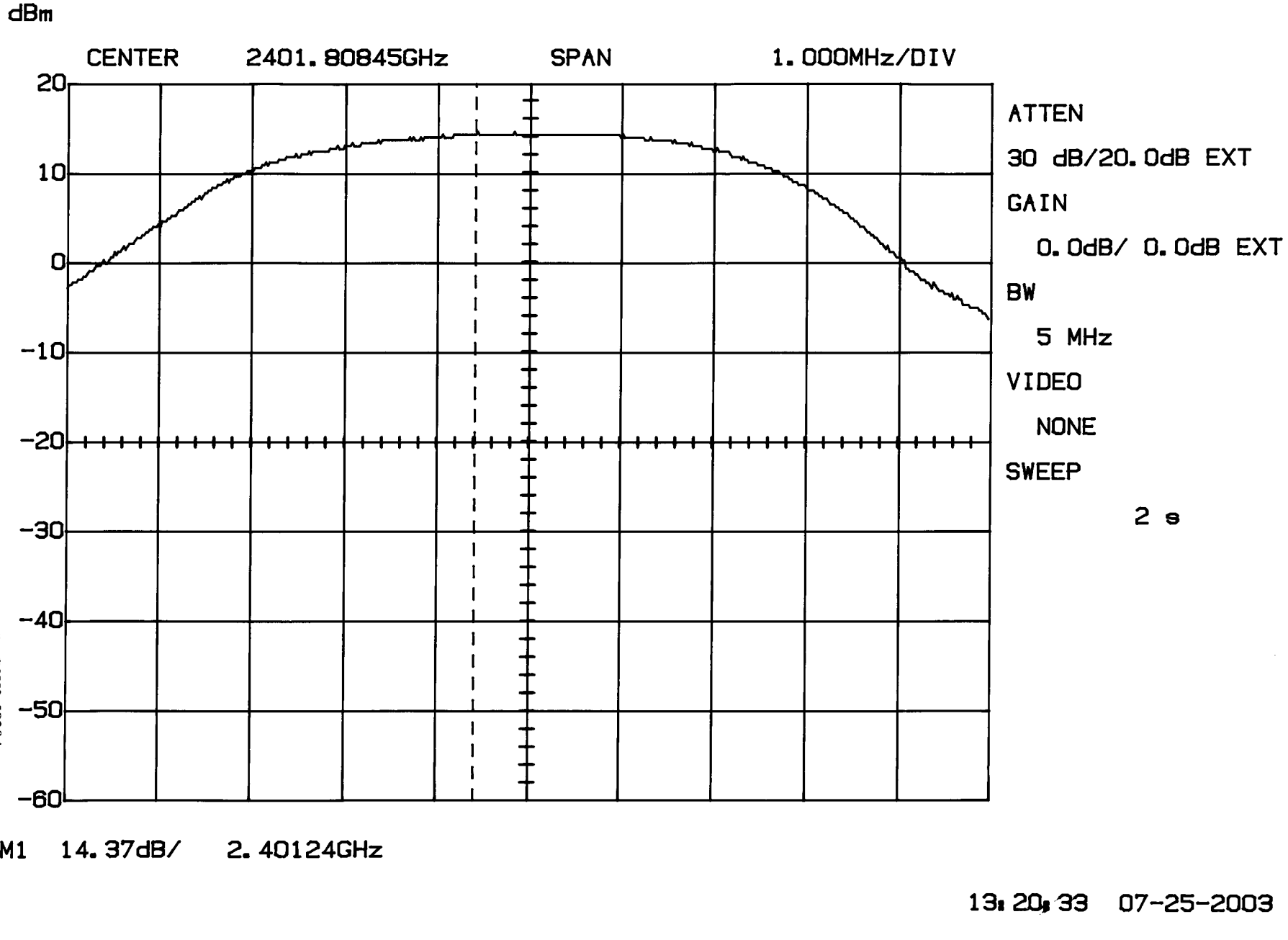
MAXIMUM PEAK POWER
Base - Channel 44
MODEL 25830XXX-A



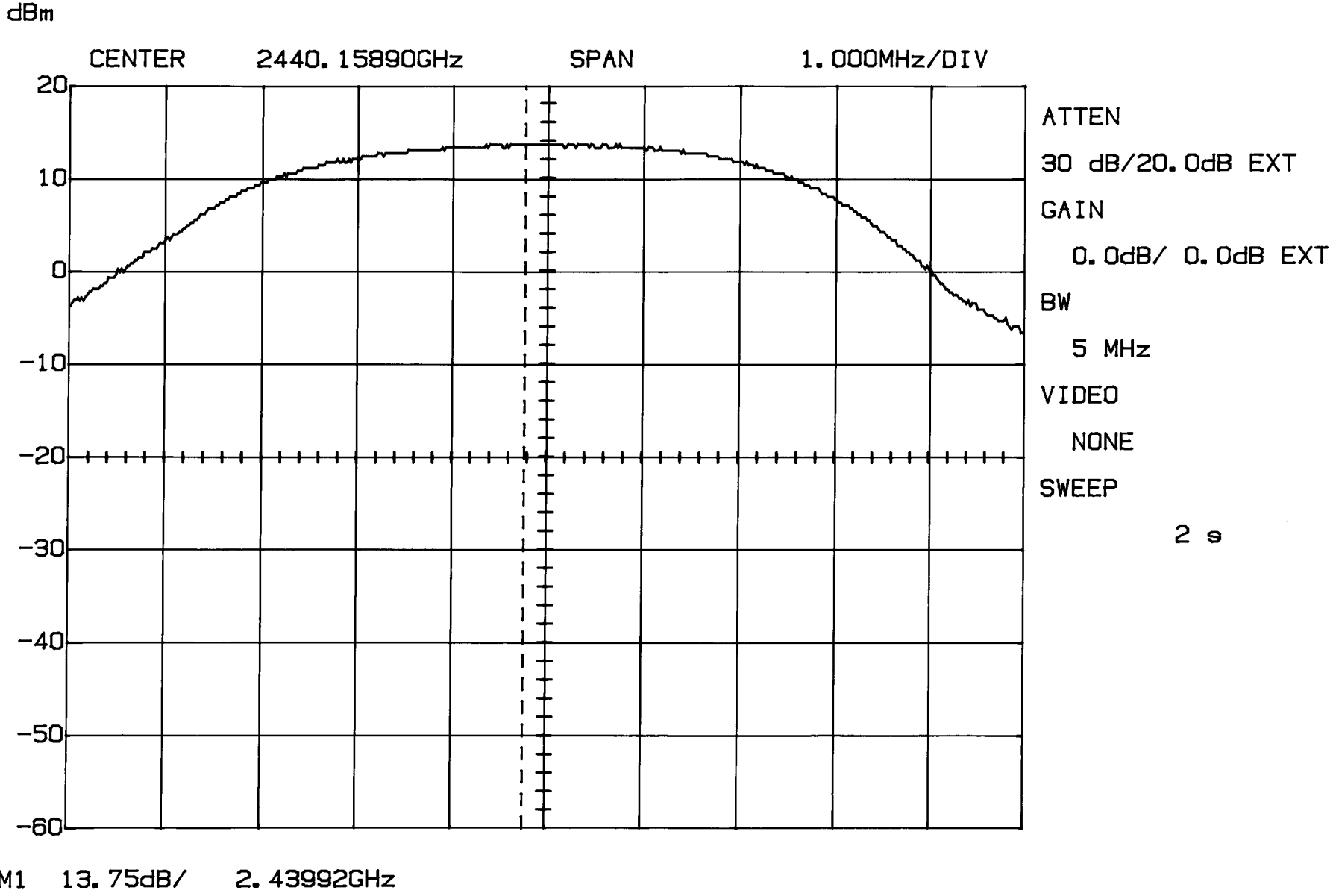
MAXIMUM PEAK POWER
Base - Channel 75
MODEL 25830XXX-A



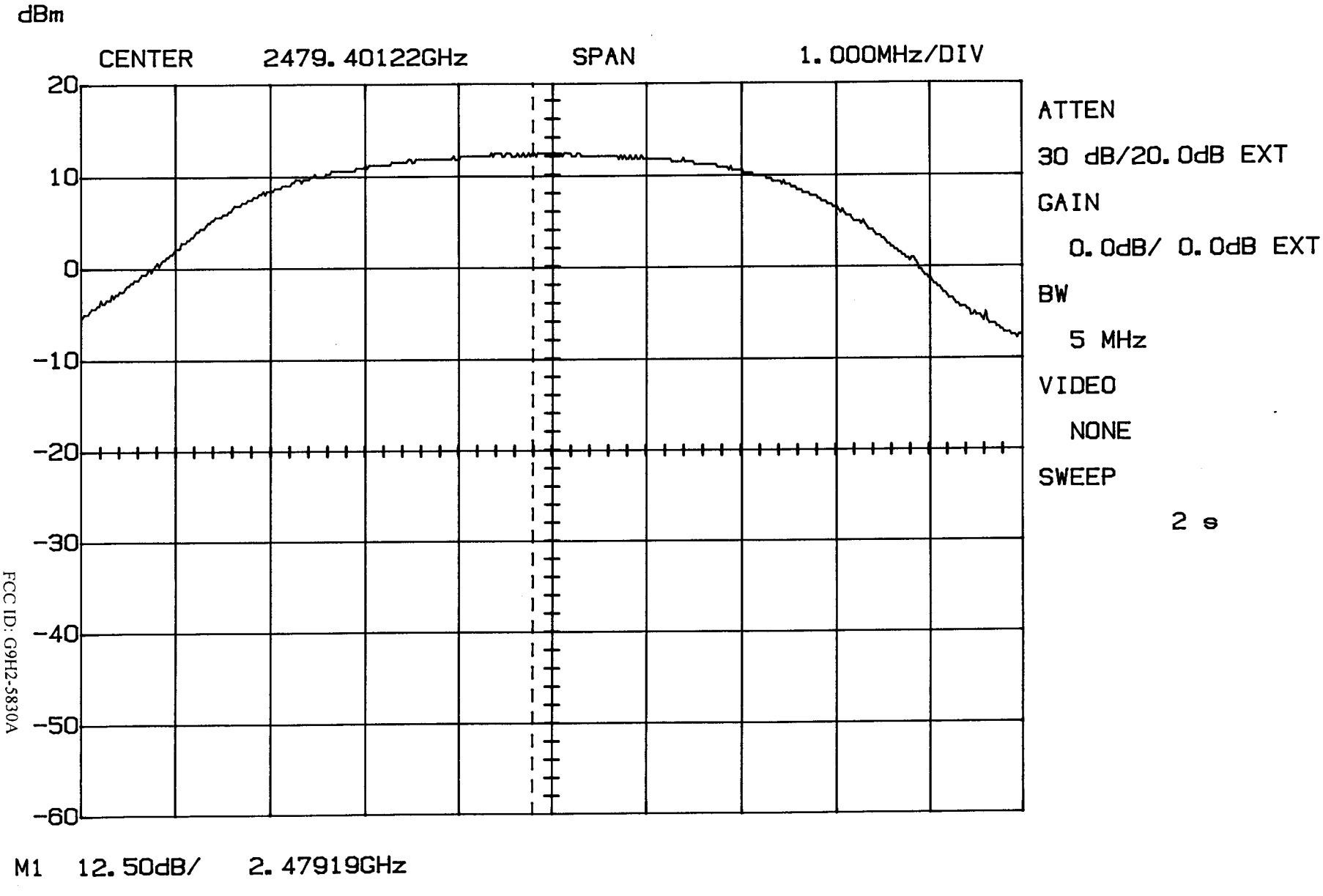
MAXIMUM PEAK POWER
Handset - Channel 1
MODEL 25830XXX-A



MAXIMUM PEAK POWER
Handset - Channel 44
MODEL 25830XXX-A



MAXIMUM PEAK POWER
Handset - Channel 75
MODEL 25830XXX-A



15.247(c) BANDWIDTH OF BAND EDGE MEASUREMENT

Requirements:

In any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Measurement Procedure

1. Position the EUT without connection to Spectrum Analyzer (SA). Turn on the EUT and connect its antenna terminal to SA via a low loss cable and set it to any one measured frequency within its operating range and ensure that the SA is operated in its linear range.

2. Set RBW to 120 kHz and suitable frequency span 500 KHz or 1000 kHz; VBW = none.

3. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

4. Repeat the above procedures until all frequencies measured were complete.

5. Note: Measurements made with hopping and modulation.

Measurement Data - Refer Exhibit D(1)-46 to -49 for plotted data

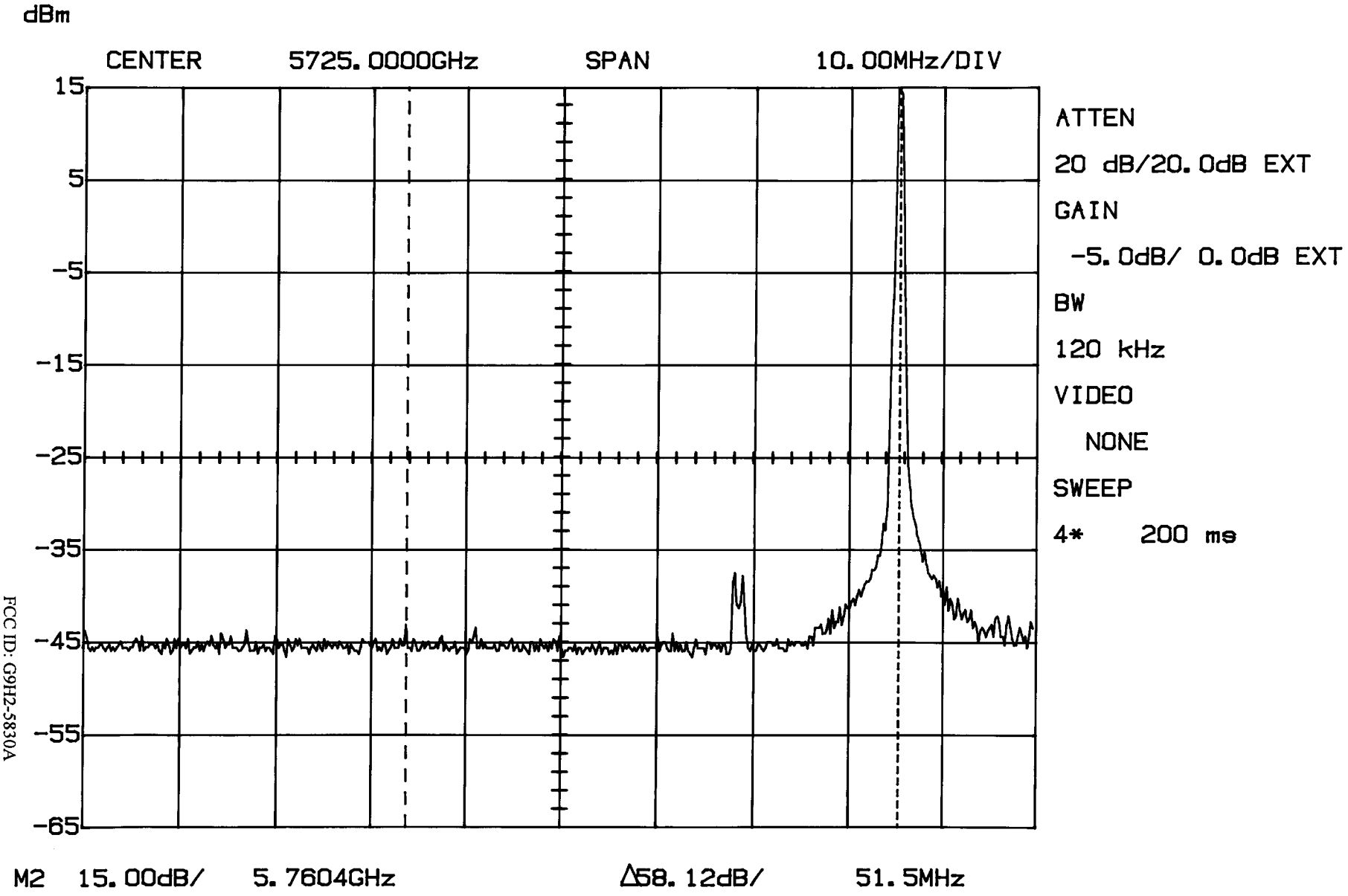
Base Unit
Lower Band Edge: All emissions in this 100 kHz bandwidth are attenuated more than 58.12 dB.

Upper Band Edge: All emissions in this 100 kHz bandwidth are attenuated more than 45.62 dB.

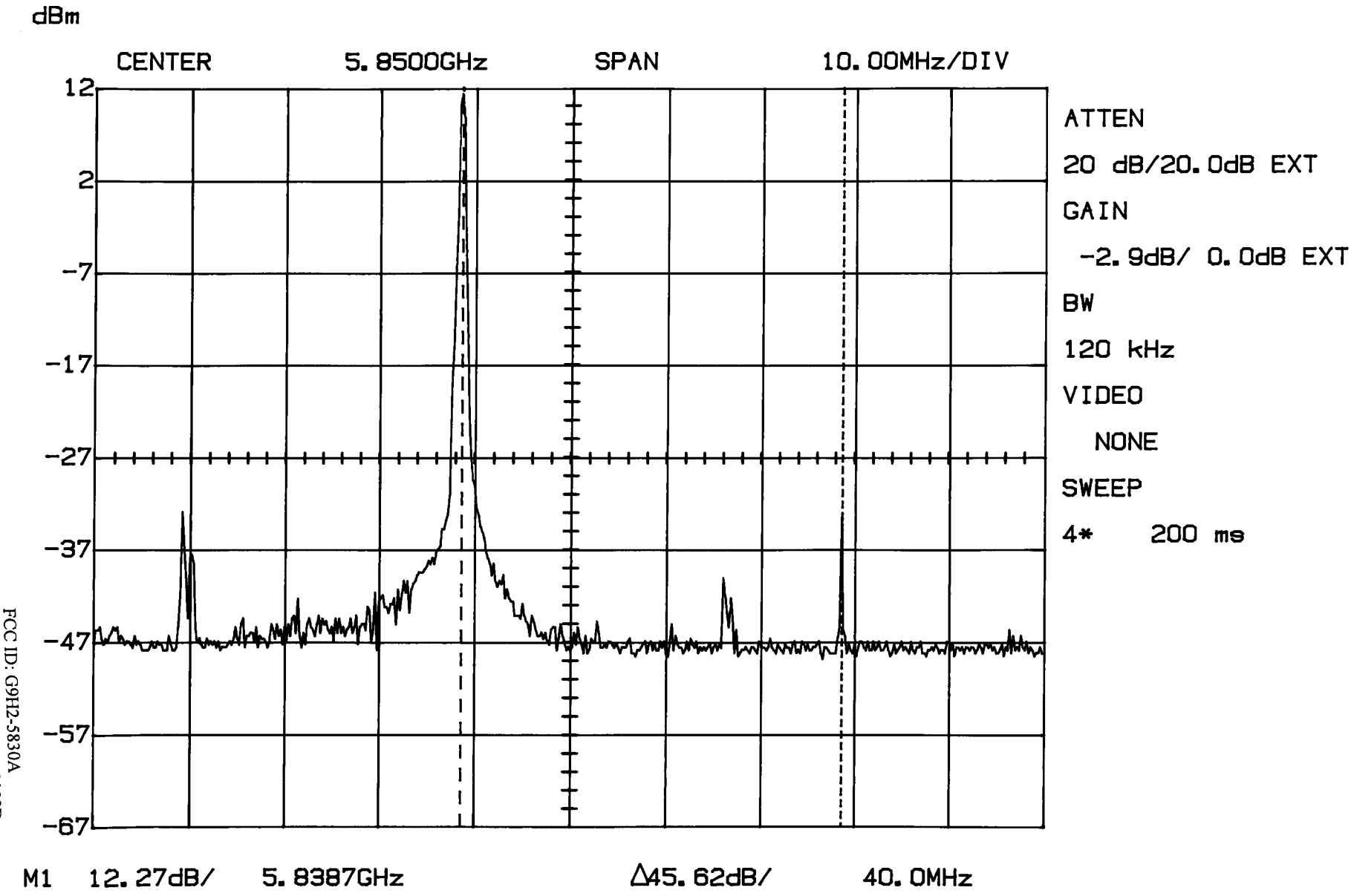
Handset Unit
Lower Band Edge: All emissions in this 100 kHz bandwidth are attenuated more than 36.87 dB.

Upper Band Edge: All emissions in this 100 kHz bandwidth are attenuated more than 51.55 dB.

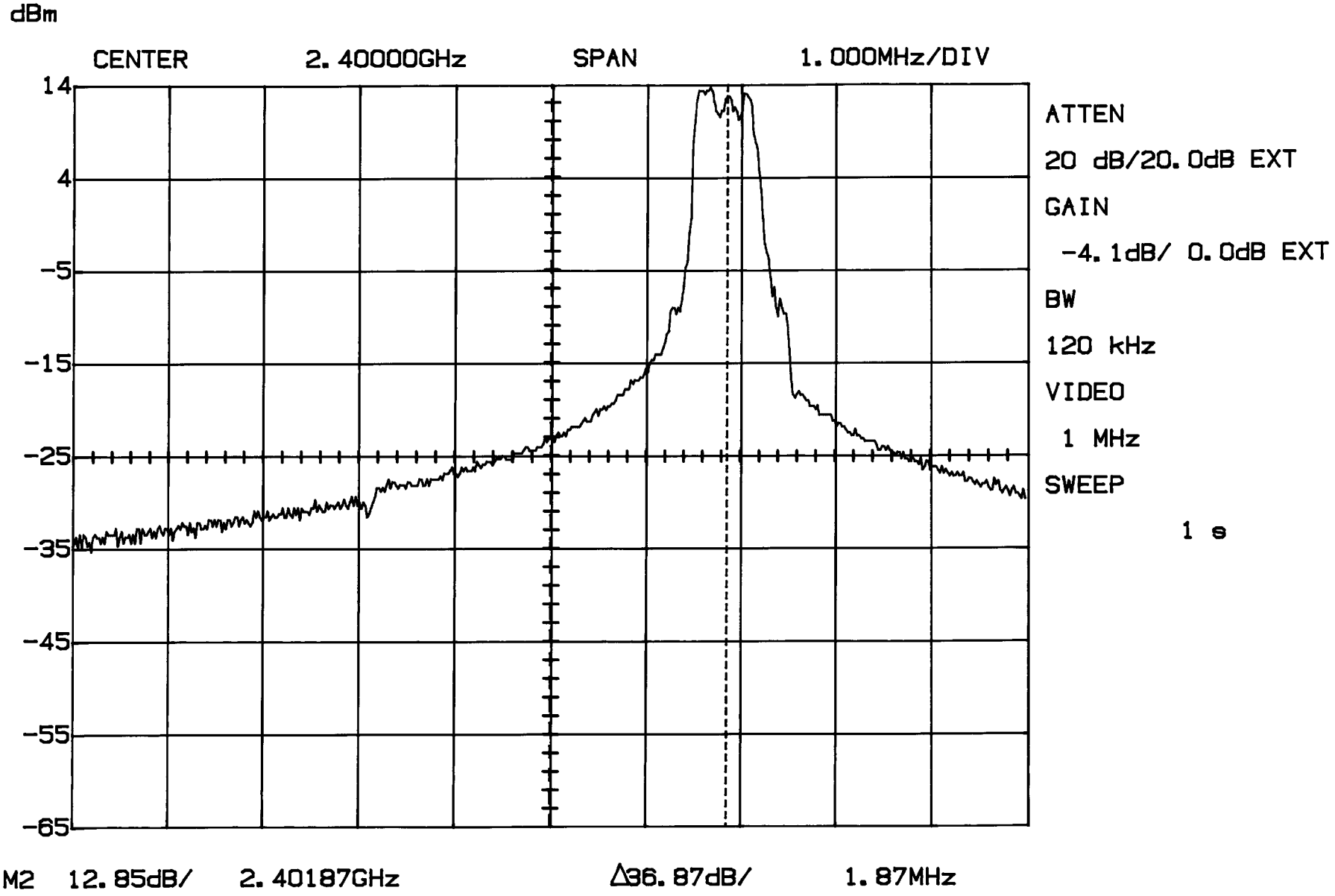
BAND EDGE - Base (CH1)
MODEL 25830XXX-A



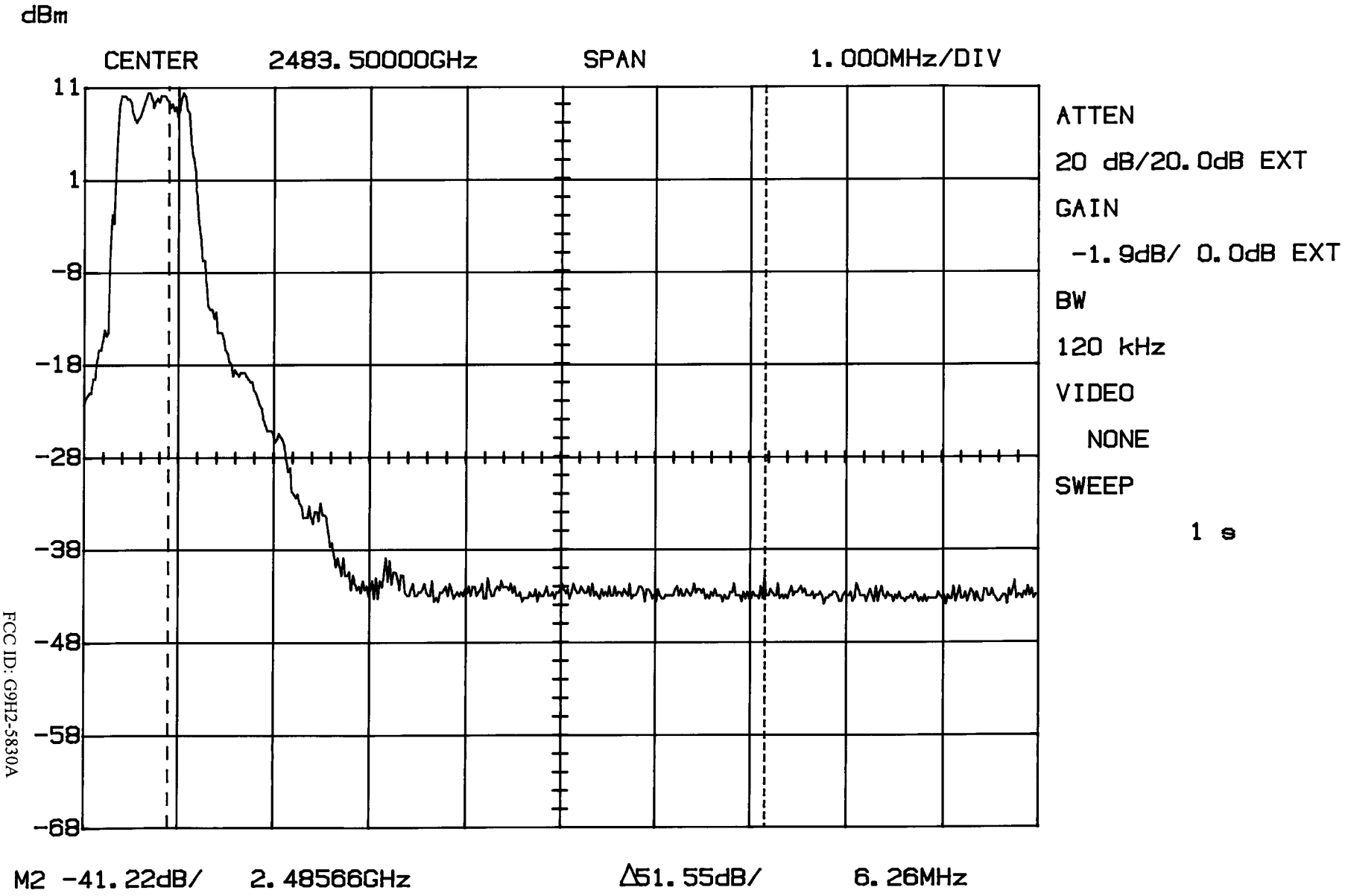
BAND EDGE - Base (CH75)
MODEL 25830XXX-A



BAND EDGE - Handset (CH1)
MODEL 25830XXX-A



BAND EDGE - Handset (CH75)
MODEL 25830XXX-A



Part 15.247(g): Exhibit B(1)-18 to -19 provides information on how the system is designed while the transmitter is presented with a continuous voice stream and a description of the system transmitting short bursts.

Part 15.247(h): Exhibit B(1)-19 provides information concerning the avoidance of simultaneous occupancy of hopping frequencies by multiple transmitters, system synchronization procedure, frequency hopping algorithm, hopping tables, and dual slot diversity.

FCC RF EXPOSURE REQUIREMENTS

General Information

FCC ID: G9H2-5830A 5.8GHz (Base) 2.4GHz (Handset)

Device Category:
EUT: Base Unit: Mobile per Part 2.1091
EUT: Handset Unit: Portable per Part 2.1093

Environment: General Population/Uncontrolled Exposure

Operating Configurations and Exposure Conditions:

The EUT base unit is normally operated at least 20 cm away from the human body.

The EUT handset complies with the MPE requirements by virtue of the fact that it is considered to comply with SAR evaluation without testing. The power is less than 25mW. See EIRP measurement on Exhibit D(2)-3.

Maximum Permissible Exposure Calculation: Base Unit

The minimum separation distance, for compliance with the limit, is calculated as follows:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

The limit for general population/uncontrolled exposure environment above 1500MHz is 1mW/cm2

Separation Distance	Antenna Gain (dBi)	
	Integral	
Time Division Source Based Average Power EIRP (mW)	(in)	(cm)
39.9	0.7	1.78

RF Exposure Calculations

1. The limit for general population/uncontrolled environment above 1500 MHz is 1.0 mW/cm^2.

2. The Field Strength $E\ V/M = \sqrt{1.00 \times 3770} = 61.4$

3. The distance d to achieve the 1.0 mW/cm^2 power density is as follows

$$d = \frac{\sqrt{30 \times P \times G}}{E}$$

$$d = \frac{\sqrt{30 \times 0.0399\ W \times 1}}{61.4} = \frac{1.094}{61.4} = 1.78\,cm$$

RF Field Strength Calculations:

1. F .S. = 119.48 dBuV/m

2. $F.S. = antilog \frac{119.48}{20} = antilog\ 5.974 = 0.9419 V/M$

3. $ERP \frac{(0.9419)^2 \times 9}{49.2} = 162.3\ mW$

4. EIRP = 162.3 x 1.64 = 266.17 mW

5. Time Division Source Based Average Power

$$= 266.17 \times \frac{1.10mS\ (ontime\ slots + 0.40mS)}{10mS} = 266.17 \times .15 = \underline{39.9\ mW}$$

Conclusion:

The device complies with the MPE requirements by providing a safe separation distance between the antenna, including any radiating structure, and any persons (human body excluding hands, wrists, ankles, and feet).

Proposed RF Exposure Safety Information to Include in User's Manual:

WARNING: For compliance with the RF exposure requirements regulated by the FCC (Federal Communications Commission), the transmitter's antennae are contained within the EUT enclosure, and an additional separation distance of more than eight inches (20 cm) shall be maintained between the transmitter base enclosure and any part of the user's body.

RF Field Strength Calculations: Handset Unit

1. F.S. = 112.23 dBuV/m

2. $F.S.\ antilog\ \frac{112.23}{20} = antilog\ 5.61 = 0.7490\ V/M$

3. $ERP\ \frac{(0.7490)^2\ X\ 9}{49.2} = 102.6\ mW$

4. EIRP = 102.6 x 1.64 = 168.3 mW

5. Time Division Source Based Average Power

$$= 168.3\ x\ \frac{1.06\ mS\ (ontime\ 1\ slot)}{10mS} = 168.3\ x\ 0.106 = \underline{17.8\ mW}.$$

Time Division Source Based Average Power is determined by multiplying the EIRP as show in 4. above by the ratio of the SLOT(s) ON TIME divided by the FRAME period. In the above example, the slot is 1.06 mS divided by Frame Time 10 mS or 0.106 or 10.6% [see B(1)-7].