Marstech Limited

11 Kelfield Street, Etobicoke, Ontario, Canada, M9W 5A1
Telephone (416) 246-1116, Fax (416) 246-1020

[redacted]

Professional Engineers Ontario
Engineering & Administrative
Testing For FCC Submissions/Verifications
Approved Test Facility

TEST REPORT

REPORT DATE:	21 August 2002	REPORT NO:	22182D
CONTENTS:	See Table of Contents		
SUBMITTOR:	ATLINKS USA, Inc. 101 West 103rd Street Indianapolis, IN 46290-1102 USA		
SUBJECT:	Model No: 21006XXX-A		
	FCC ID: G9H2-1006A		
TEST SPECIFICATION	CFR 47 FCC Part 15 NOTE: Tests Conducted Are "Type" Tests.		
DATE SAMPLE RECEIVED:	24 June 2002 and 20 August 2002	DATE TESTED:	15 August 2002, 8 August 2002, 2 August 2002
RESULTS:	Equipment tested complies, with modifications, with referenced specification.		
ALTERATIONS	Alterations required for compliance with referenced specification: 1. C57 changed from 15pF to 5pF. 2. C70 changed from 1pF to 2pF. 3. C69 changed from 0.5pF to 1pF.		
Tested by:	Ed. Chang	Approved by:	Robert G. Marshall, P. Eng.
	Edward Chang	Date:	Aug 28/02

REGISTERED PROFESSIONAL ENGINEER ROBERT G. MARSHALL

TECHNICAL REPORT - FCC 2.1033(b)

Applicant

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

FCC Identifier

G9H2-1006A

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 21006XXX-A is a 2.4GHz single line, spread spectrum, frequency hopping, cordless telephone with caller ID, that operates in the 2403.55 to 2476.95 MHz band. The antenna used for the base and the handset is permanently attached to the EUT. Its actual frequency range is:

Base: 2403.648MHz to 2479.68MHz

Handset: 2403.648MHz to 2479.68MHz

A complete frequency list is shown on the following pages.

NOTE:
1. The base uses 45 Channels.
2. The handset uses 29 Channels but the 29 are selected from 45 Channels. Handsets vary in hop sets but we tested the complete range of 45 channels.

21006 Frequency Table				
Channels	Tx Freq. (MHz)	Tx VCO (MHz)	Rx Freq.(MHz)	Rx VCO (MHz)
0	2403.648	2403.648	2403.648	2291.328
1	2405.376	2405.376	2405.376	2293.056
2	2407.104	2407.104	2407.104	2294.784
3	2408.832	2408.832	2408.832	2296.512
4	2410.560	2410.560	2410.560	2298.240
5	2412.288	2412.288	2412.288	2299.968
6	2414.016	2414.016	2414.016	2301.696
7	2415.744	2415.744	2415.744	2303.424
8	2417.472	2417.472	2417.472	2305.152
9	2419.200	2419.200	2419.200	2306.880
10	2420.928	2420.928	2420.928	2308.608
11	2422.656	2422.656	2422.656	2310.336
12	2424.384	2424.384	2424.384	2312.064
13	2426.112	2426.112	2426.112	2313.792
14	2427.840	2427.840	2427.840	2315.520
15	2429.568	2429.568	2429.568	2317.248
16	2431.296	2431.296	2431.296	2318.976
17	2433.024	2433.024	2433.024	2320.704
18	2434.752	2434.752	2434.752	2322.432
19	2436.480	2436.480	2436.480	2324.160
20	2438.208	2438.208	2438.208	2325.888
21	2439.936	2439.936	2439.936	2327.616
22	2441.664	2441.664	2441.664	2329.344
23	2443.392	2443.392	2443.392	2331.072
24	2445.120	2445.120	2445.120	2332.800
25	2446.848	2446.848	2446.848	2334.528
26	2448.576	2448.576	2448.576	2336.256
27	2450.304	2450.304	2450.304	2337.984
28	2452.032	2452.032	2452.032	2339.712
29	2453.760	2453.760	2453.760	2341.440
30	2455.488	2455.488	2455.488	2343.168
31	2457.216	2457.216	2457.216	2344.896
32	2458.944	2458.944	2458.944	2346.624
33	2460.672	2460.672	2460.672	2348.352
34	2462.400	2462.400	2462.400	2350.080
35	2464.128	2464.128	2464.128	2351.808
36	2465.856	2465.856	2465.856	2353.536
37	2467.584	2467.584	2467.584	2355.264
38	2469.312	2469.312	2469.312	2356.992
39	2471.040	2471.040	2471.040	2358.720
40	2472.768	2472.768	2472.768	2360.448
41	2474.496	2474.496	2474.496	2362.176
42	2476.224	2476.224	2476.224	2363.904
43	2477.952	2477.952	2477.952	2365.632
44	2479.680	2479.680	2479.680	2367.360

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, Calibrated April 2002
2. Spectrum Analyzer: ANRITSU 2601A, S/N MT64544, Calibrated May 2002
3. Spectrum Analyzer: IFR AN940, S/N 635001039, Calibrated March 2002
4. Preamp: HP 8449B, S/N 3008A00378, Calibrated August 2002
5. Horn Antenna: Q-PAR 6878/24, S/N 1721, 1.5-18GHz
6. Line Impedance Stabilization Network.: Marstech, Cal. July 2002

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

September 20, 2000

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

Registration Number: 90578

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:

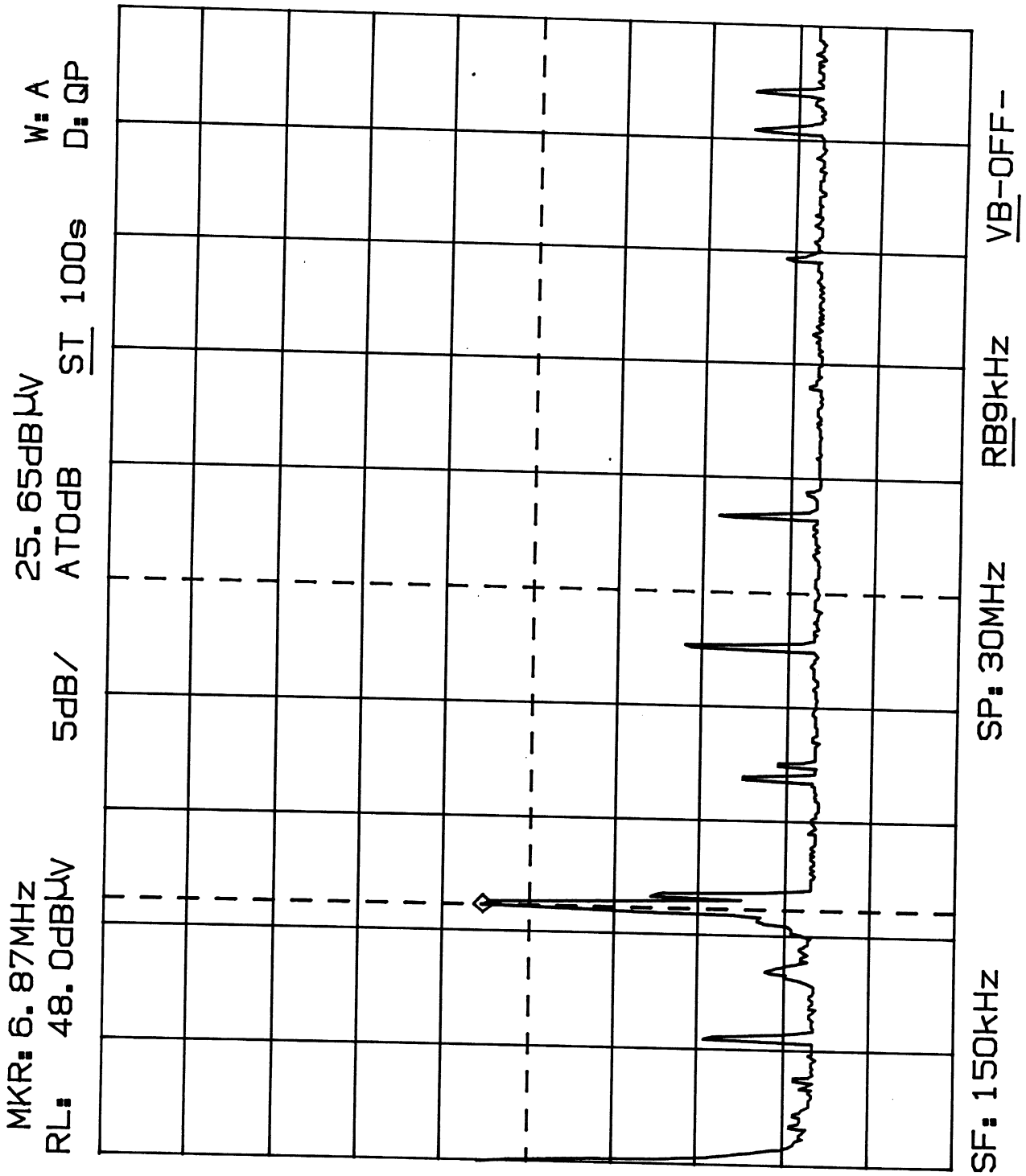
The highest emission read for LINE was 25.65 dBμV@ 6.87 MHz.
The highest emission read for NEUTRAL was 25.32 dBμV@ 6.93 MHz.

The graphs on Exhibit D(1)-8 and -9 represent the emissions taken for this device.

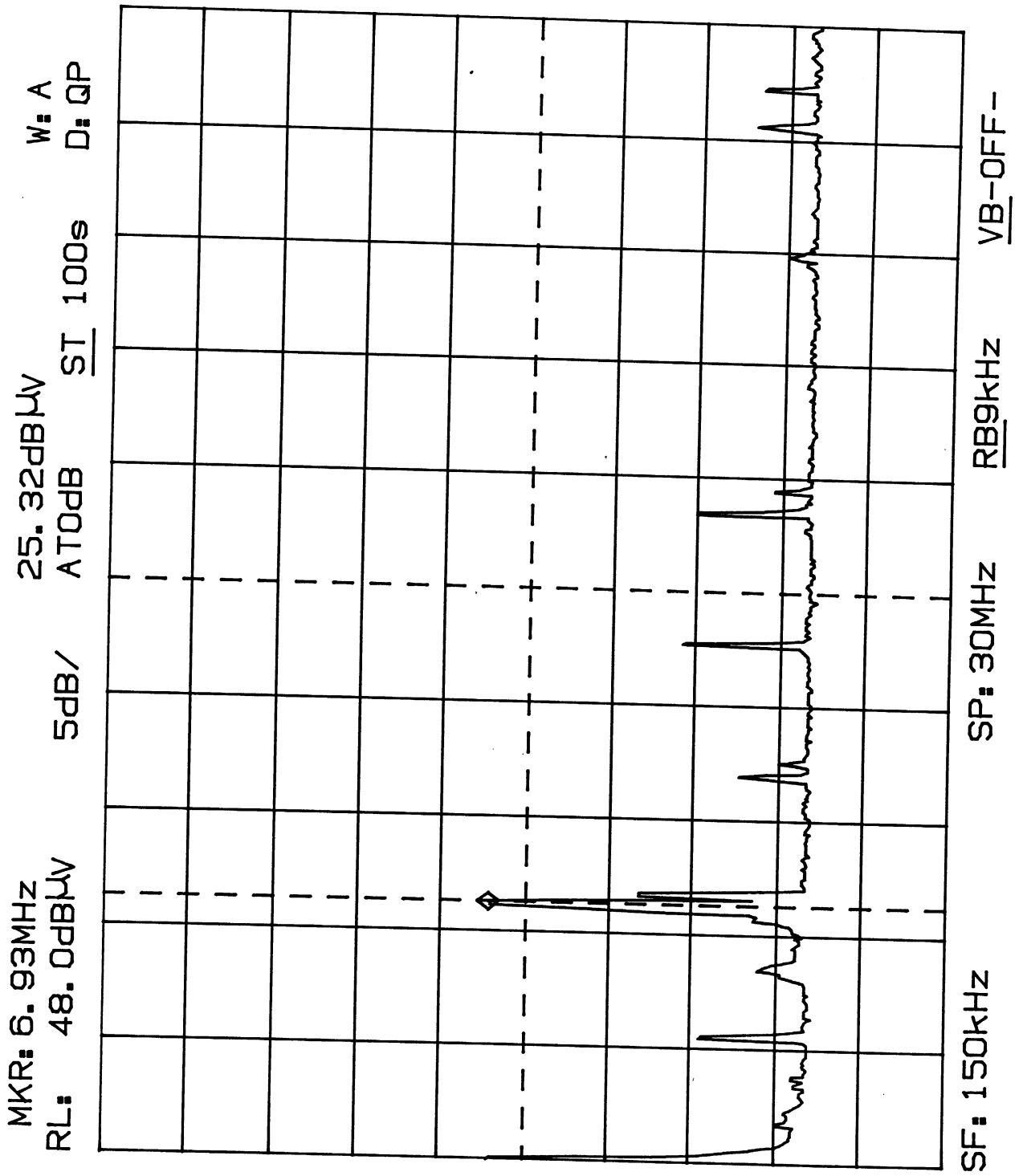
Test Results:

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 21006XXX-A
LINE



POWER LINE CONDUCTED EMISSIONS
MODEL 21006XXX-A
NEUTRAL



FCC ID: G9H2-1006A
Marstech Report No. 22182D
EXHIBIT D(1)-9

15.205(c)/15.209 SPURIOUS RADIATED EMISSIONS IN 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:

The Duty Cycle Correction Factor (DCCF) is calculated according to the formula:

$$20 \log \left[\frac{\text{dwell time}}{100}\right] \text{ ms}$$

For the model 21006XXX-A:

DCCF (Handset) = $20 \log \frac{24.18}{100}$ = 20 log 0.2418 = -12 dB (-12.33)

DCCF (Base) = $20 \log \frac{46.8}{100}$ = 20 log 0.468 = -6 dB (-6.59)

15.205(c)/15.209 FIELD STRENGTH OF RADIATED EMISSIONS IN RESTRICTED BANDS AT 2483.5 MHz

BASE UNIT

Emission Frequency MHZ	Meter Reading @3m dBμV	Antenna	Cable and ACF dB	Field Strength dBμV/M	Pk/Av Ratio (dB) DCCF	Corrected Field Strength dBμV/M	FCC Limit dBμV/M	Margin dB	Detector & BW KHz
Channel 1									
2403.648	69.00	HORN V	33.38	102.38	- -	- - -	- -	- -	PK 1000
4807.292	14.00	HORN V	37.88	51.88	6	45.88	54	-8.12	PK 1000
7210.944	15.00	HORN V	43.34	58.34	6	52.34	54	-1.66	PK 1000
Channel 23									
2441.664	69.00	HORN V	33.46	102.46	- -	- - -	- -	- -	PK 1000
4883.328	12.00	HORN V	38.07	49.07	6	43.07	54	-10.93	PK 1000
7324.992	16.00	HORN V	43.41	59.41	6	53.41	54	-0.59	PK 1000
Channel 45									
2479.680	70.00	HORN V	33.54	103.54	- -	- - -	- -	- -	PK 1000
4959.360	12.00	HORN V	38.26	50.26	6	44.26	54	-9.74	PK 1000
7439.040	14.00	HORN V	44.02	58.02	6	52.02	54	-1.98	PK 1000

15.205(c)/15.209 FIELD STRENGTH OF RADIATED EMISSIONS IN RESTRICTED BANDS AT 2483.5 MHz

HANDSET UNIT

Emission Frequency MHZ	Meter Reading @3m dBμV	Antenna	Cable and ACF dB	Field Strength dBμV/M	Pk/Av Ratio (dB) DCCF	Corrected Field Strength dBμV/M	FCC Limit dBμV/M	Margin dB	Detector & BW KHz
Channel 1									
2403.648	73	HORN H	33.38	106.38	- -	- - -	- -	- -	PK 1000
4807.292	22.00	HORN H	37.88	59.88	12	47.88	54	-6.12	PK 1000
7210.944	16.00	HORN H	43.34	59.34	12	47.34	54	-6.66	PK 1000
Channel 23									
2441.644	73	HORN H	33.46	106.46	- -	- - -	- -	- -	PK 1000
4883.328	17.00	HORN H	38.07	54.07	12	42.07	54	-11.93	PK 1000
7324.992	16.00	HORN H	43.41	59.41	12	47.41	54	-6.59	PK 1000
Channel 45									
2479.680	74	HORN H	33.54	107.54	- -	- - -	- -	- -	PK 1000
4959.360	20.00	HORN H	38.26	58.26	12	46.26	54	-7.74	PK 1000
7439.040	15.00	HORN H	44.02	59.02	12	47.02	54	-6.98	PK 1000

15.205(c)/15.209 FIELD STRENGTH OF RADIATED EMISSIONS IN RESTRICTED BANDS AT 2483.5 MHz

Marker Delta Method

1. The in-band field strength is shown below:
   Base 103.54 dBμV/m
   Handset 107.54 dBμV/m

2. The Delta amplitude in peak hold mode is shown as follows:
   Base -52.18 dB (Refer Exhibit D(1)-50)
   Handset -48.74 dB (Refer Exhibit D(1)-51)

3. The DCCF for the base and handset are in Exhibit D(1)-10.
   Base -6 dB, Handset -12 dB

4. The band edge emissions are therefore as follows:
   Base 103.54 - 52.18 - 6 = 45.36 dBμV/m
   Handset 107.54 - 48.74 - 12 = 46.8 dBμV/m

15.247(a)(1) HOPPING CHANNEL SEPARATION

Requirements:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz 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)-15 to -20 for plotted data

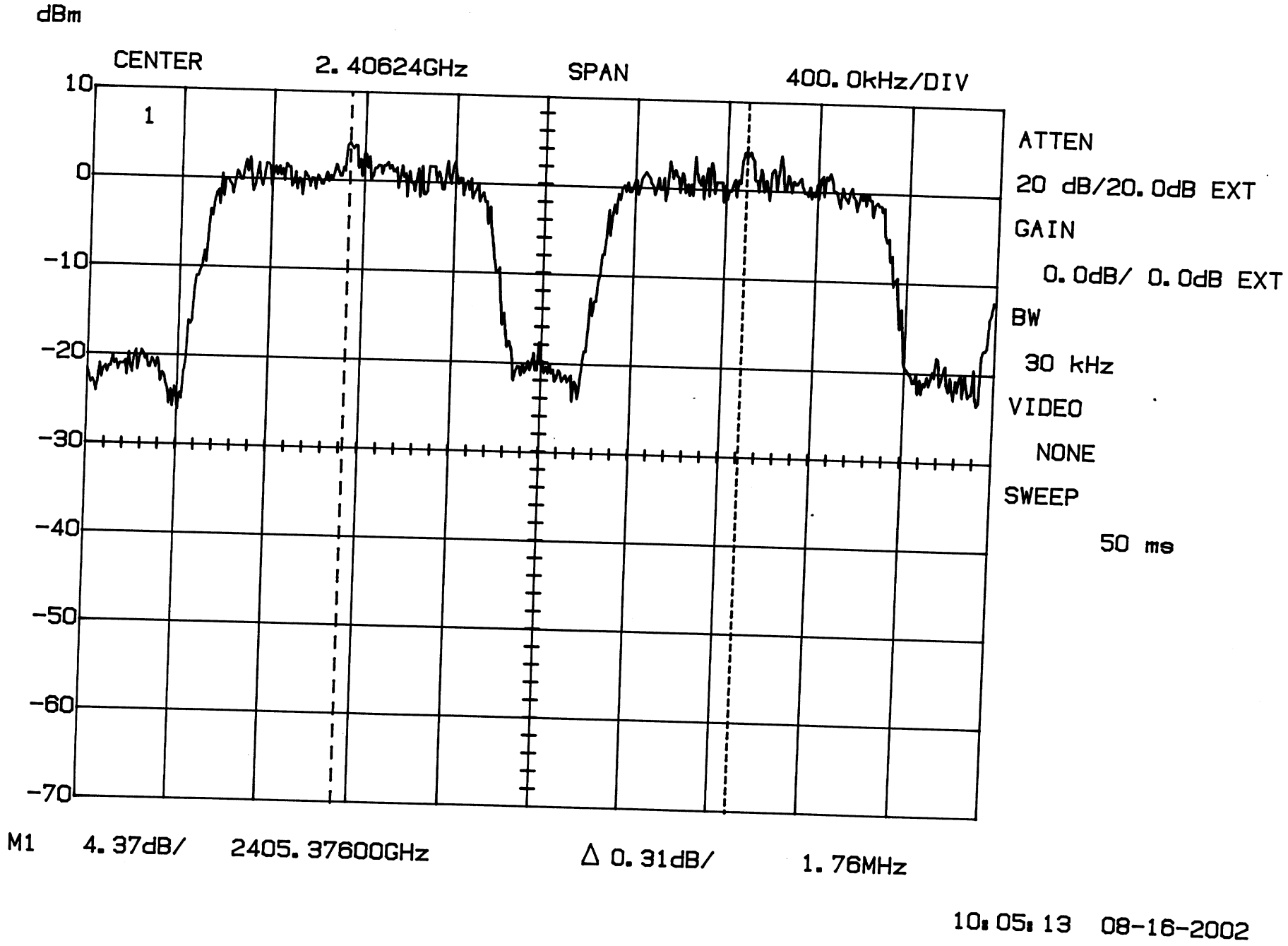
Handset

Channel 2 & 3:	Adjacent Hopping Channel Separation is 1760 kHz.
Channel 21 & 22:	Adjacent Hopping Channel Separation is 1790 kHz.
Channel 36 & 37:	Adjacent Hopping Channel Separation is 1760 kHz.

Base Unit

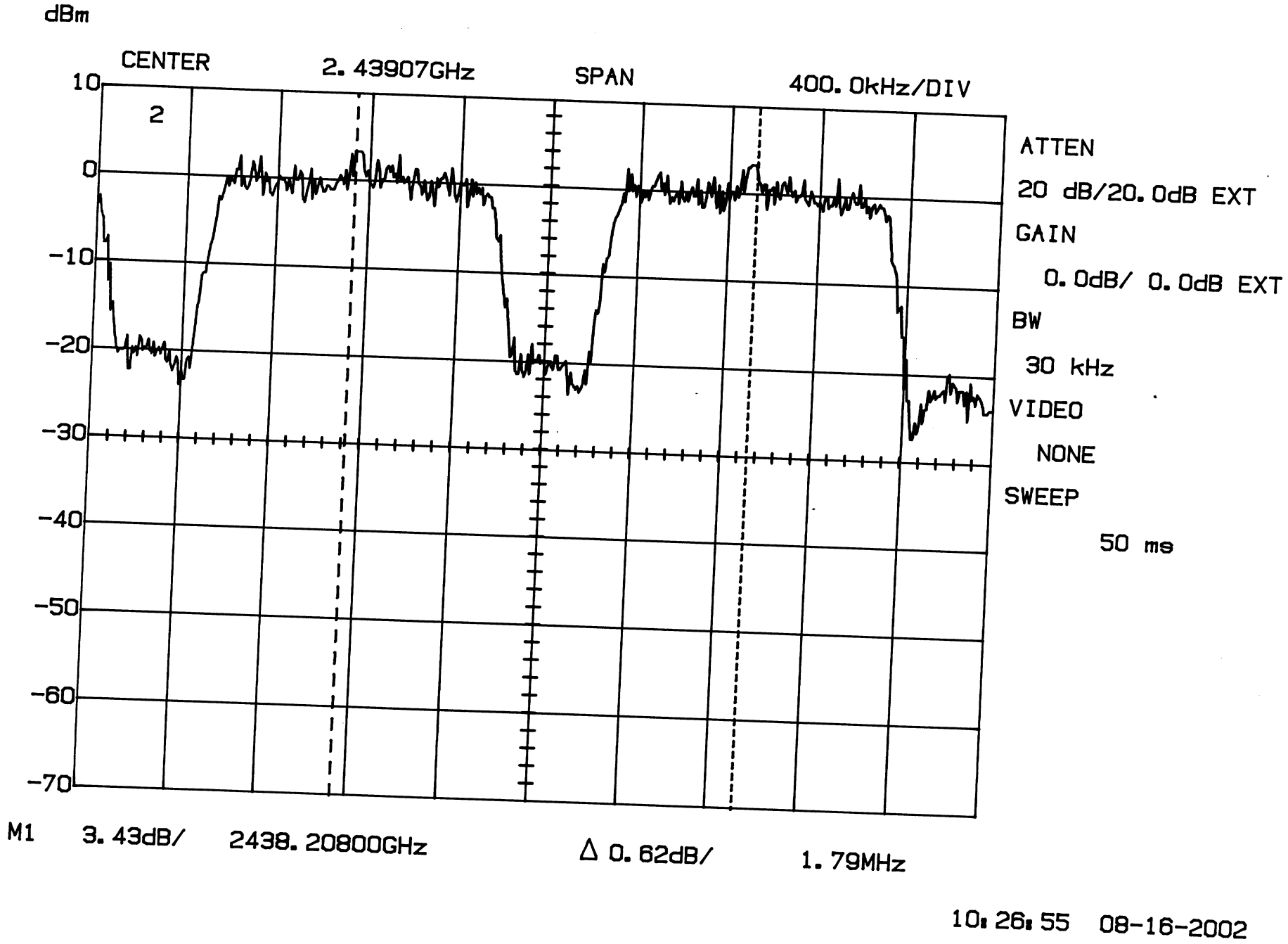
Channel 2:	Adjacent Hopping Channel Separation is 1750 kHz.
Channel 23 & 24:	Adjacent Hopping Channel Separation is 1780 kHz.
Channel 44 & 45:	Adjacent Hopping Channel Separation is 1760 kHz.

Channels 2 and 3 - Handset
MODEL 21006XXX-A

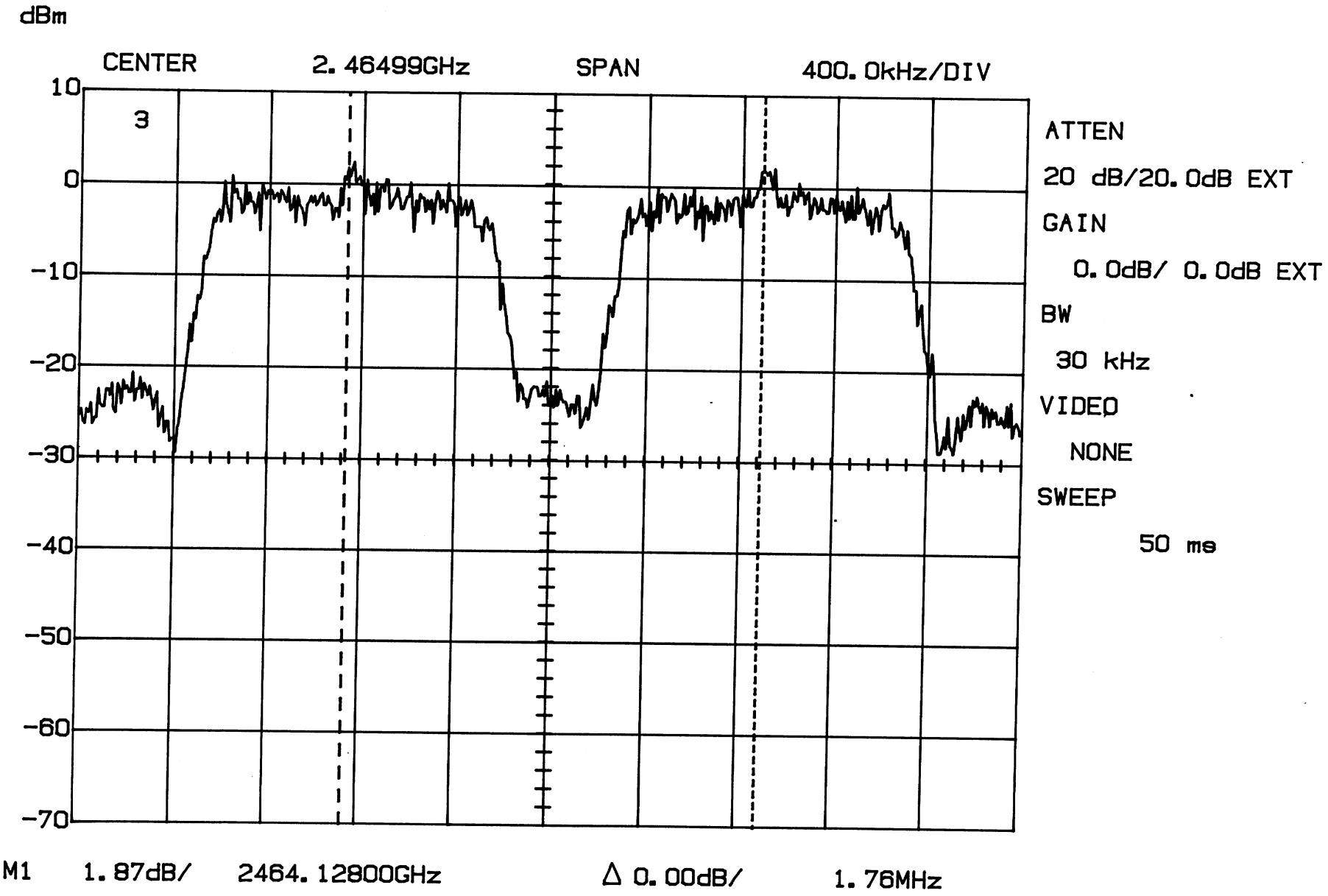


FCC ID: G9H2-1006A

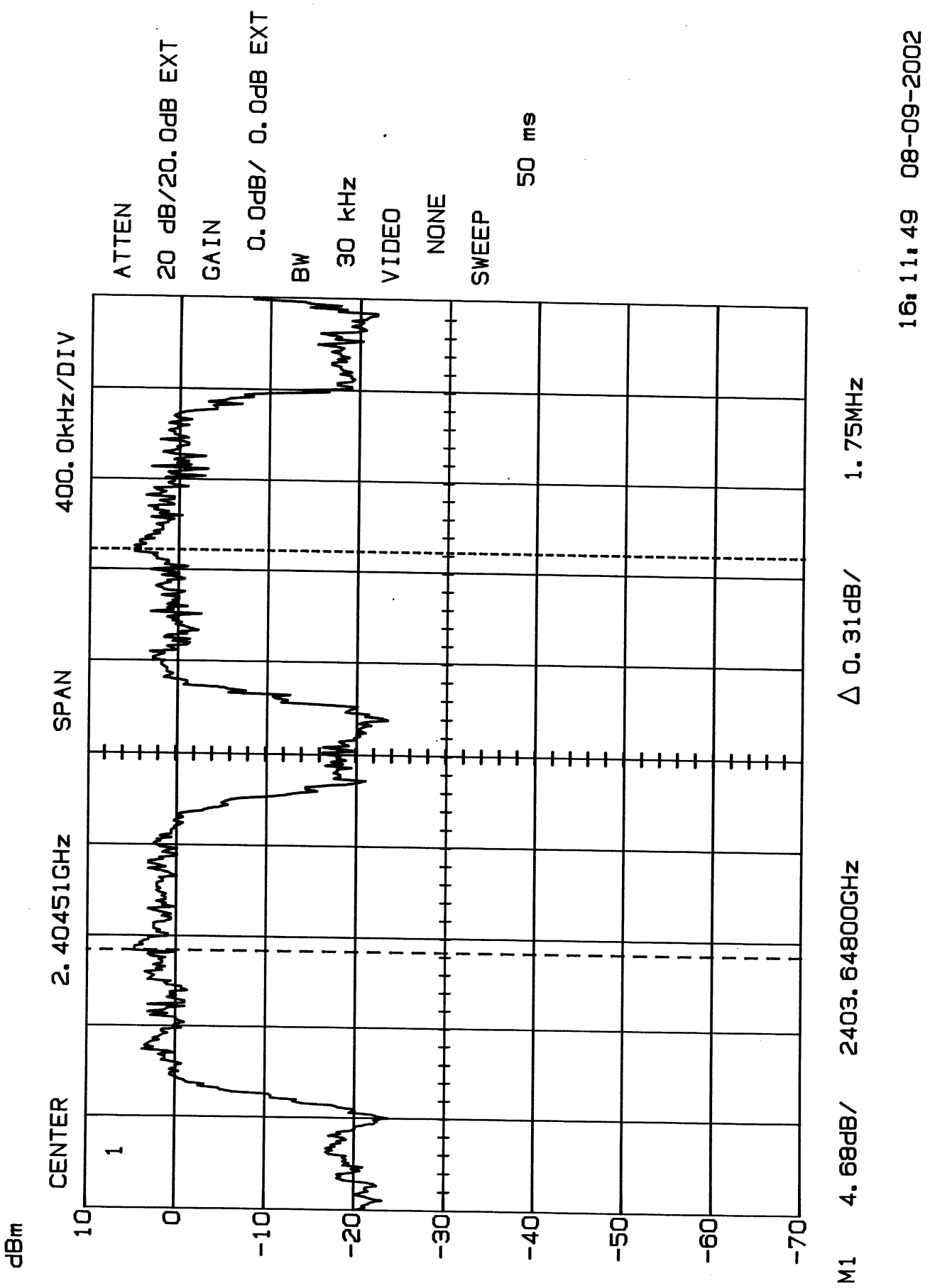
Channels 21 and 22 - Handset
MODEL 21006XXX-A



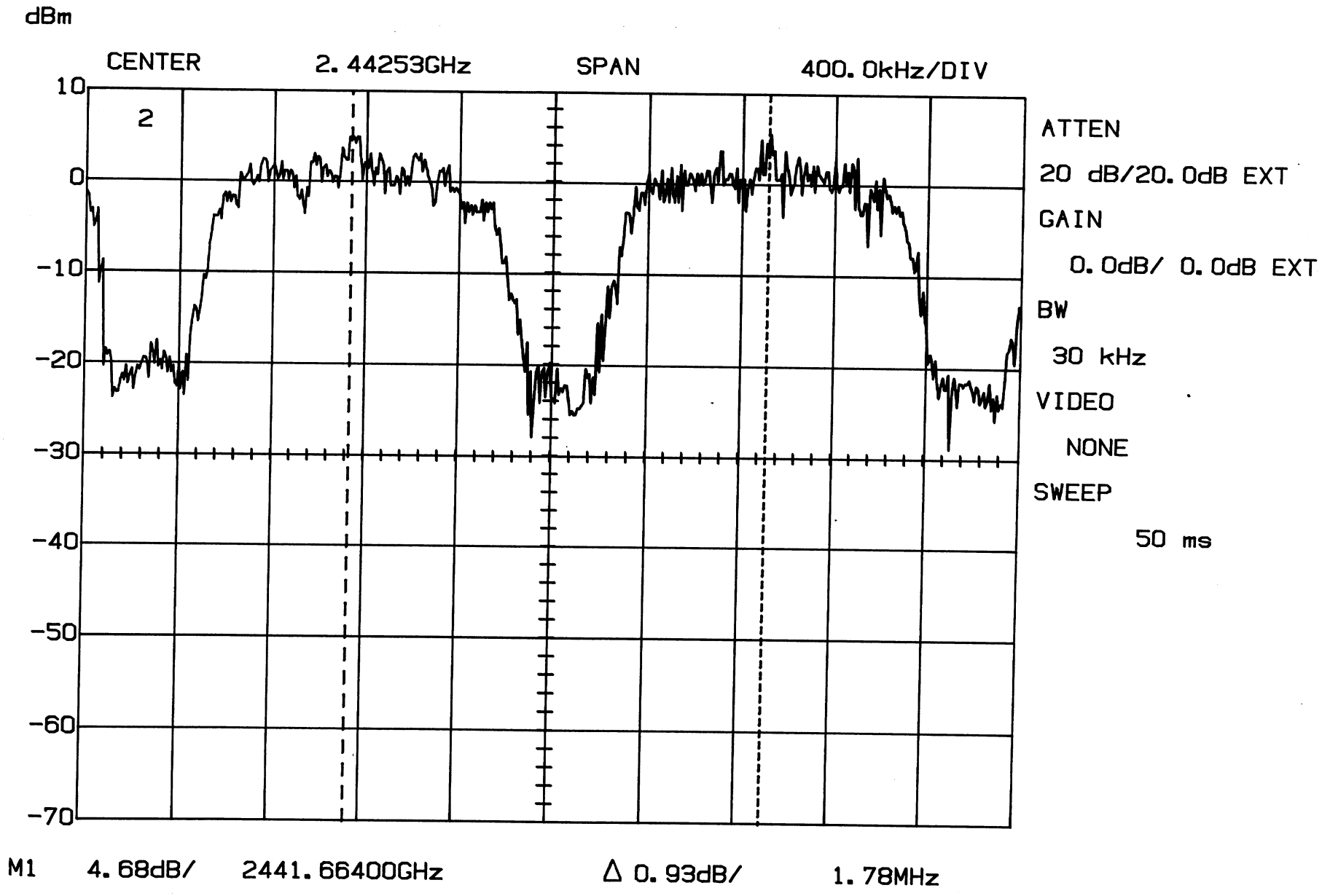
Channels 36 and 37 - Handset
MODEL 21006XXX-A



Channels 1 and 2 - Base
MODEL 21006XXX-A

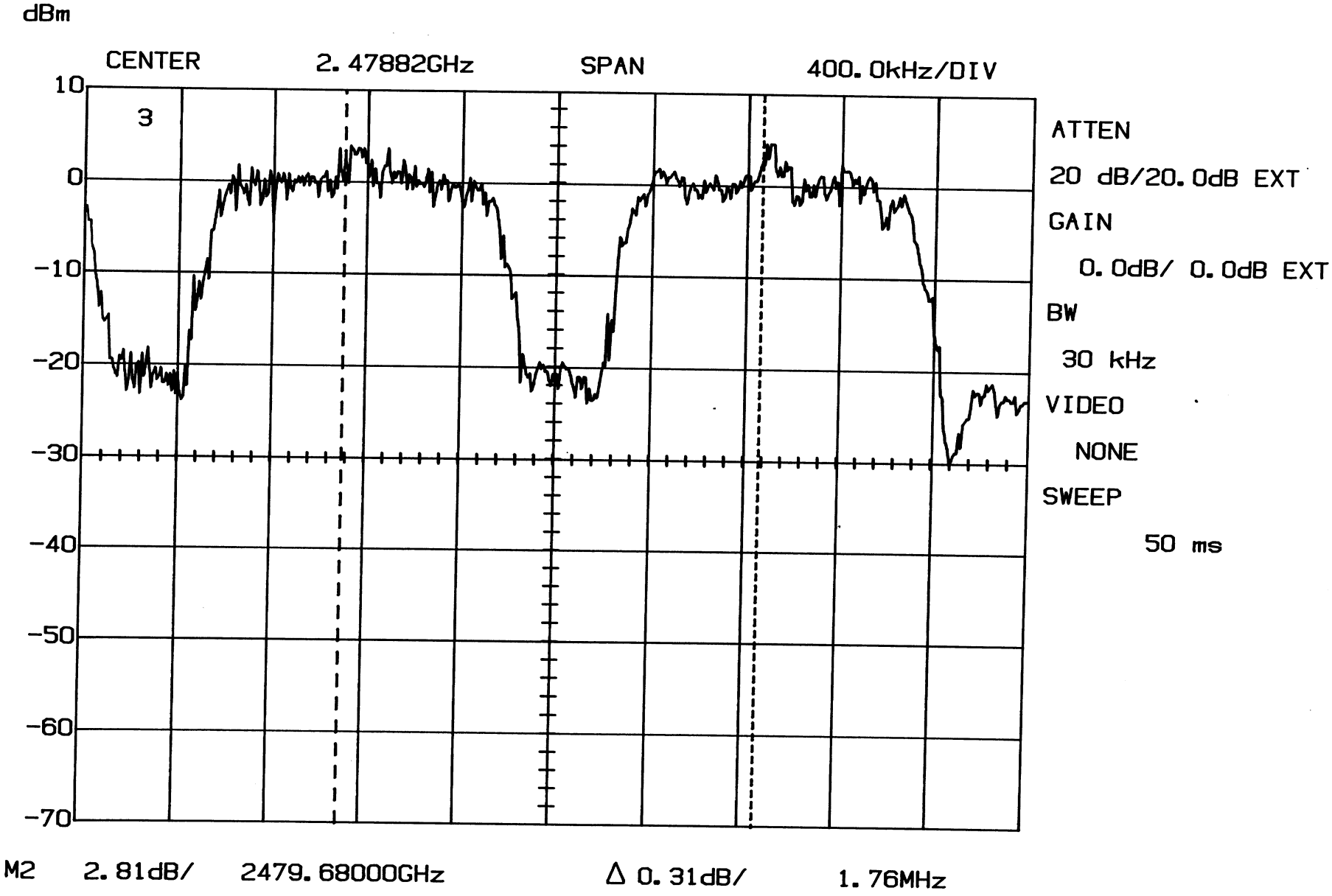


Channels 23 and 24 - Base
MODEL 21006XXX-A



FCC ID: G9H2-1006A

Channels 44 and 45 - Base
MODEL 21006XXX-A



FCC ID: G9H2-1006A
Marstech Report No. 22182D

15.247(a)(1)(iii) 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 45 hopping frequencies and the handset has 29 hopping frequencies.
Refer Exhibit D(1)-22 and-23 for plotted data.

CHANNEL BANDWIDTH

Requirements:

The 20dB bandwidth of the hopping channel is greater than 1 MHz, and has more than 15 non-overlapping channels.

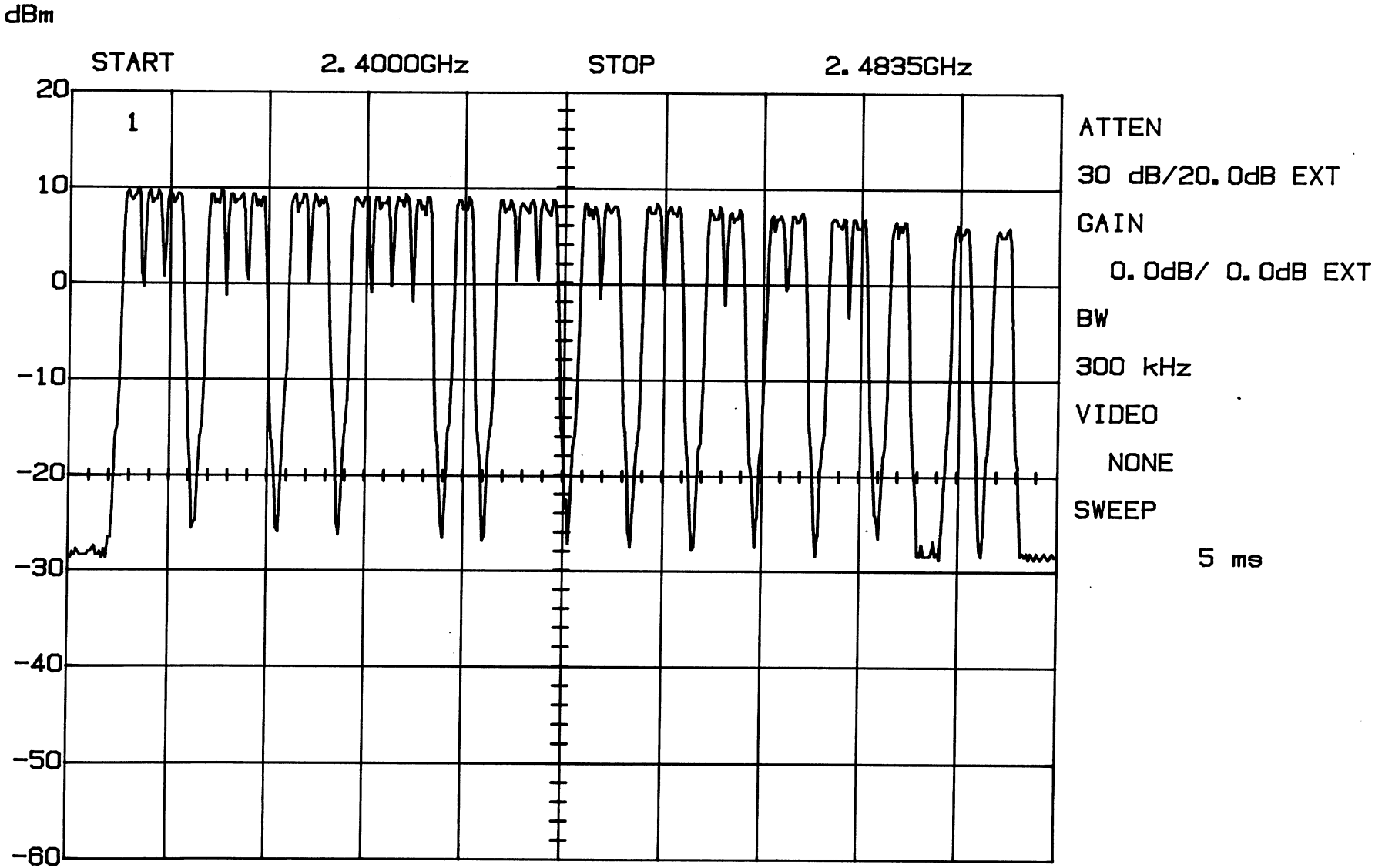
Measurement Procedure

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

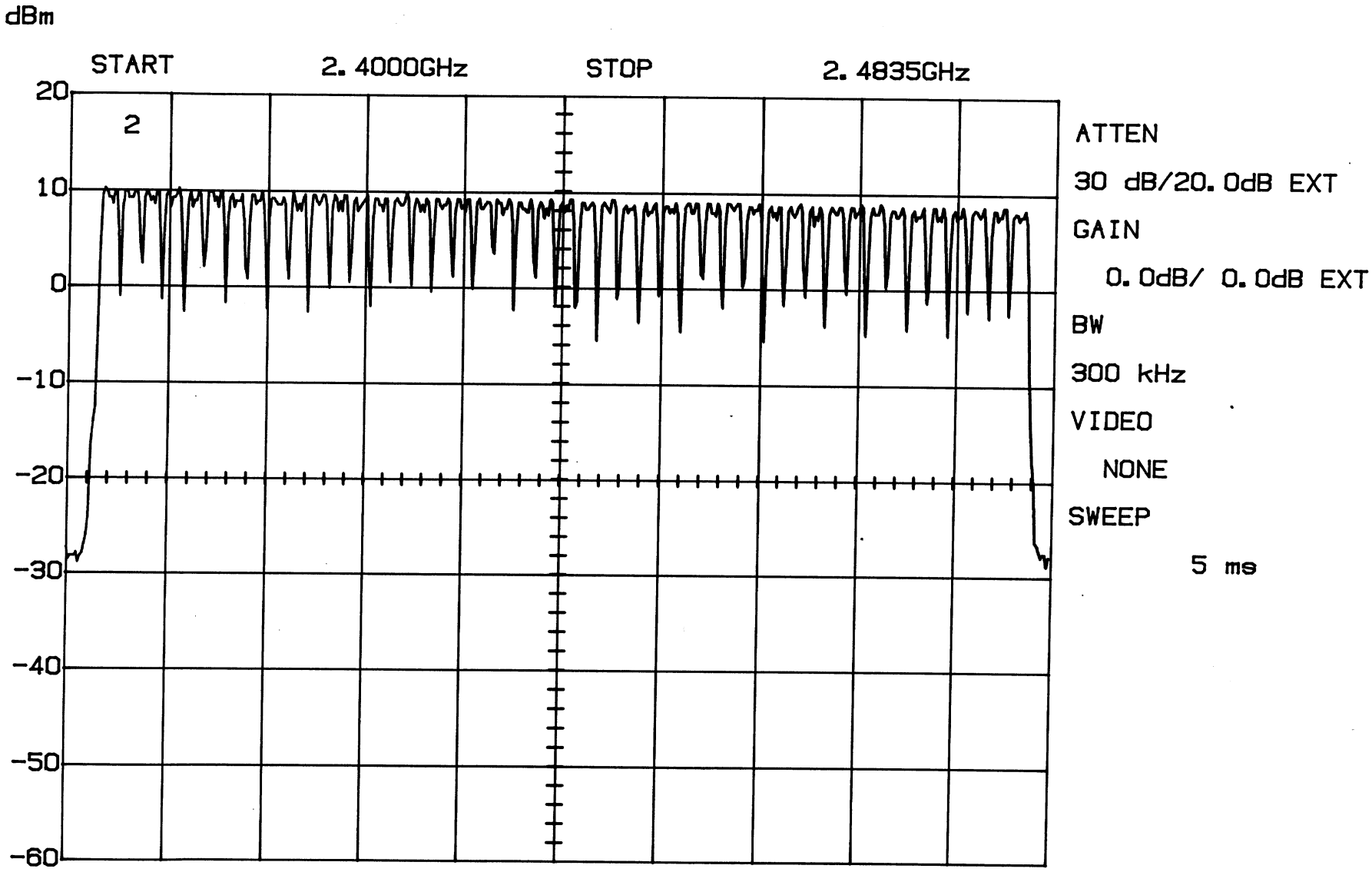
Handset	Channel 1:	Channel Bandwidth is 1410 kHz
	Channel 23:	Channel Bandwidth is 1420 kHz
	Channel 45:	Channel Bandwidth is 1410 kHz
Base Unit	Channel 1:	Channel Bandwidth is 1420 kHz
	Channel 23:	Channel Bandwidth is 1420 kHz
	Channel 45:	Channel Bandwidth is 1430 kHz

Channel 29 - Handset
Hopping Frequencies

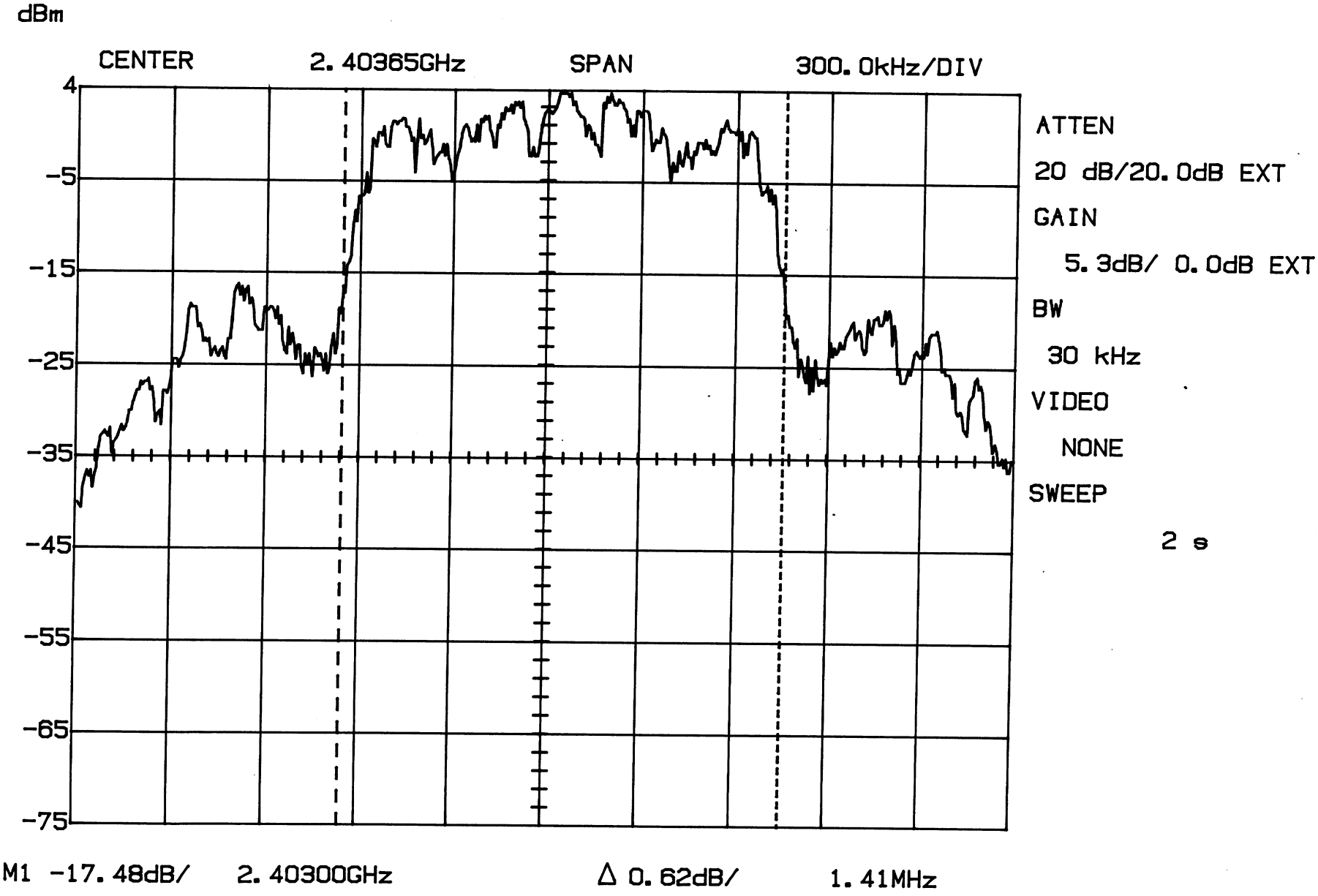


16: 20: 51 08-15-2002

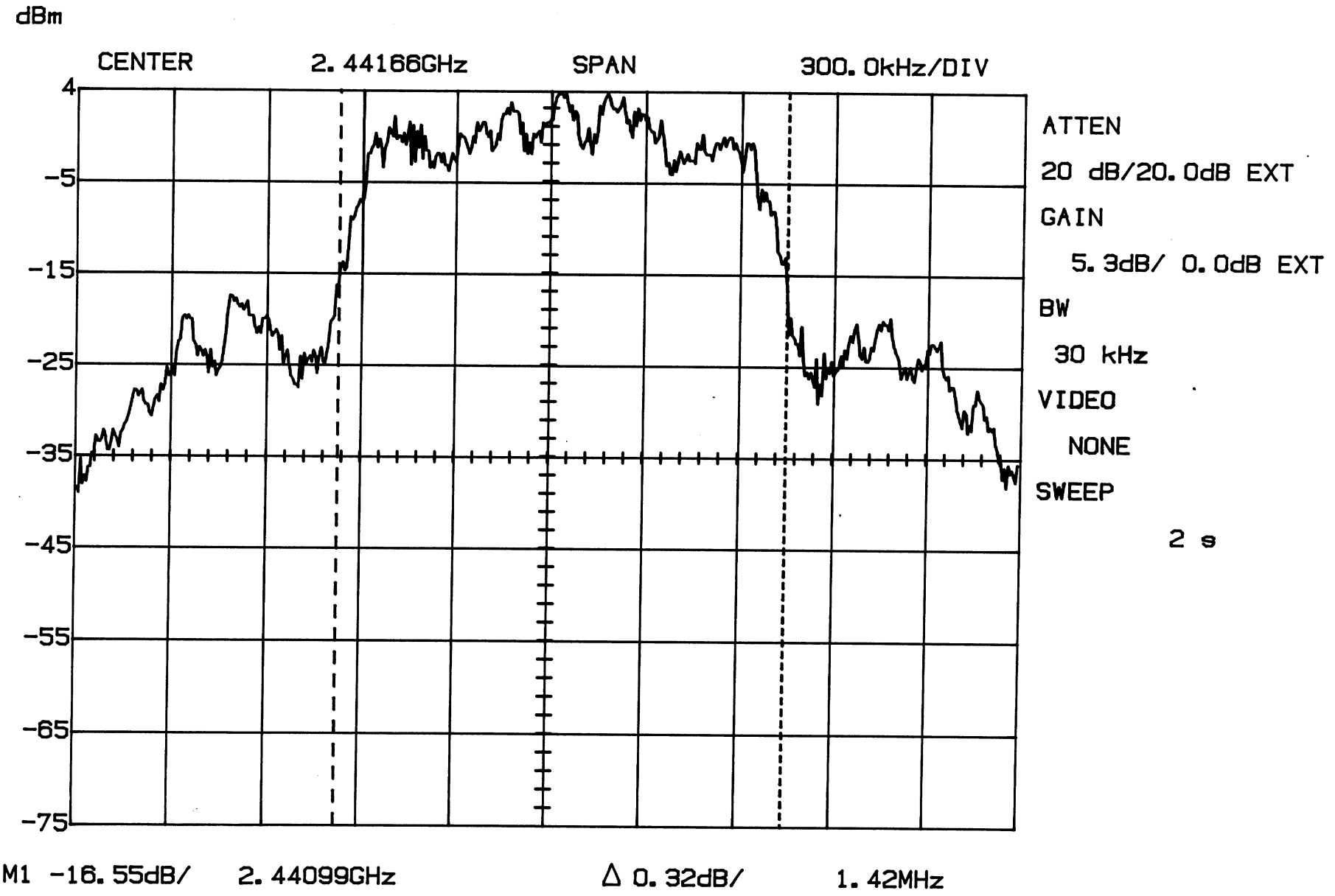
Channel 45 - Base
Hopping Frequencies



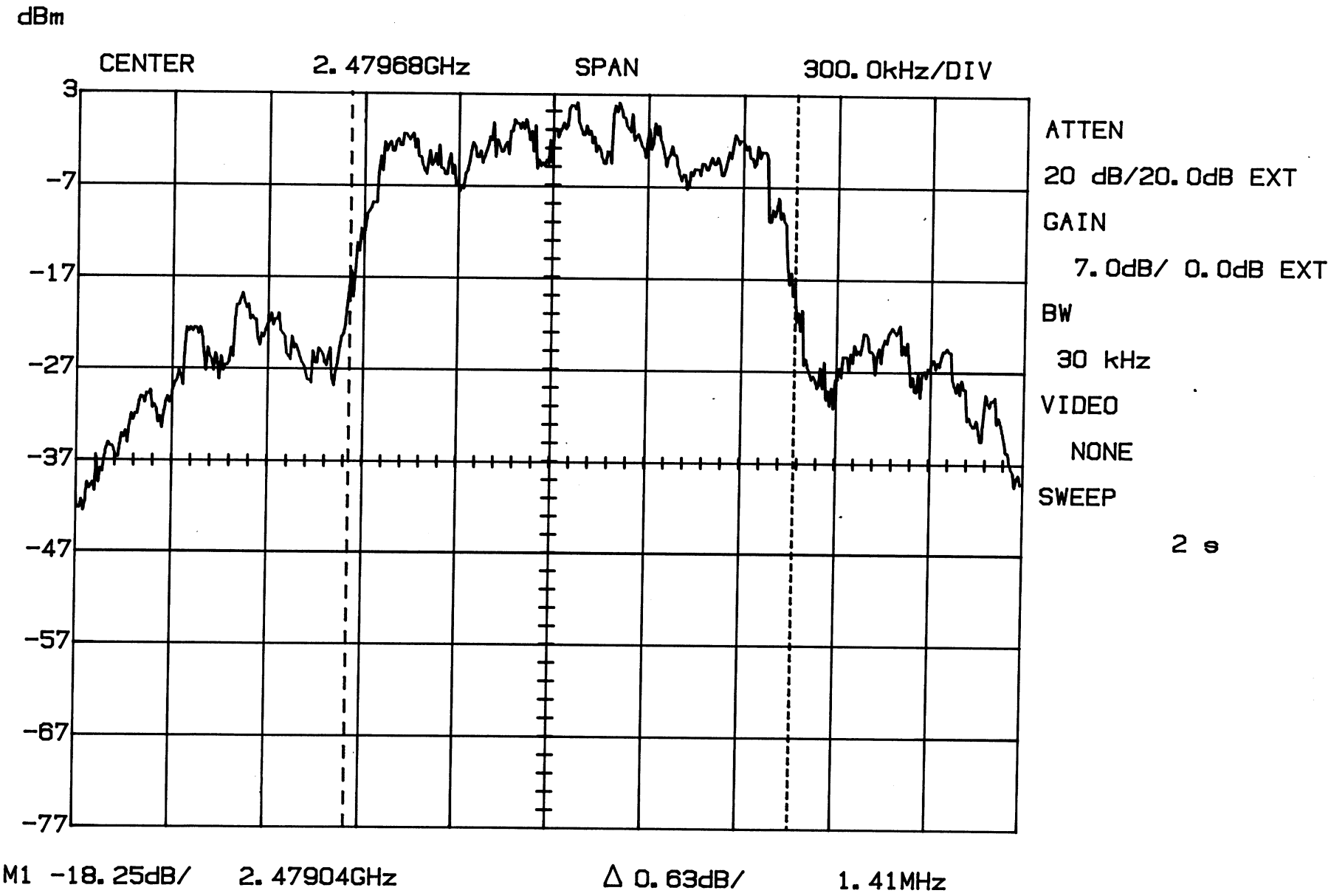
20dB BANDWIDTH
Channel 1 - Handset
MODEL 21006XXX-A



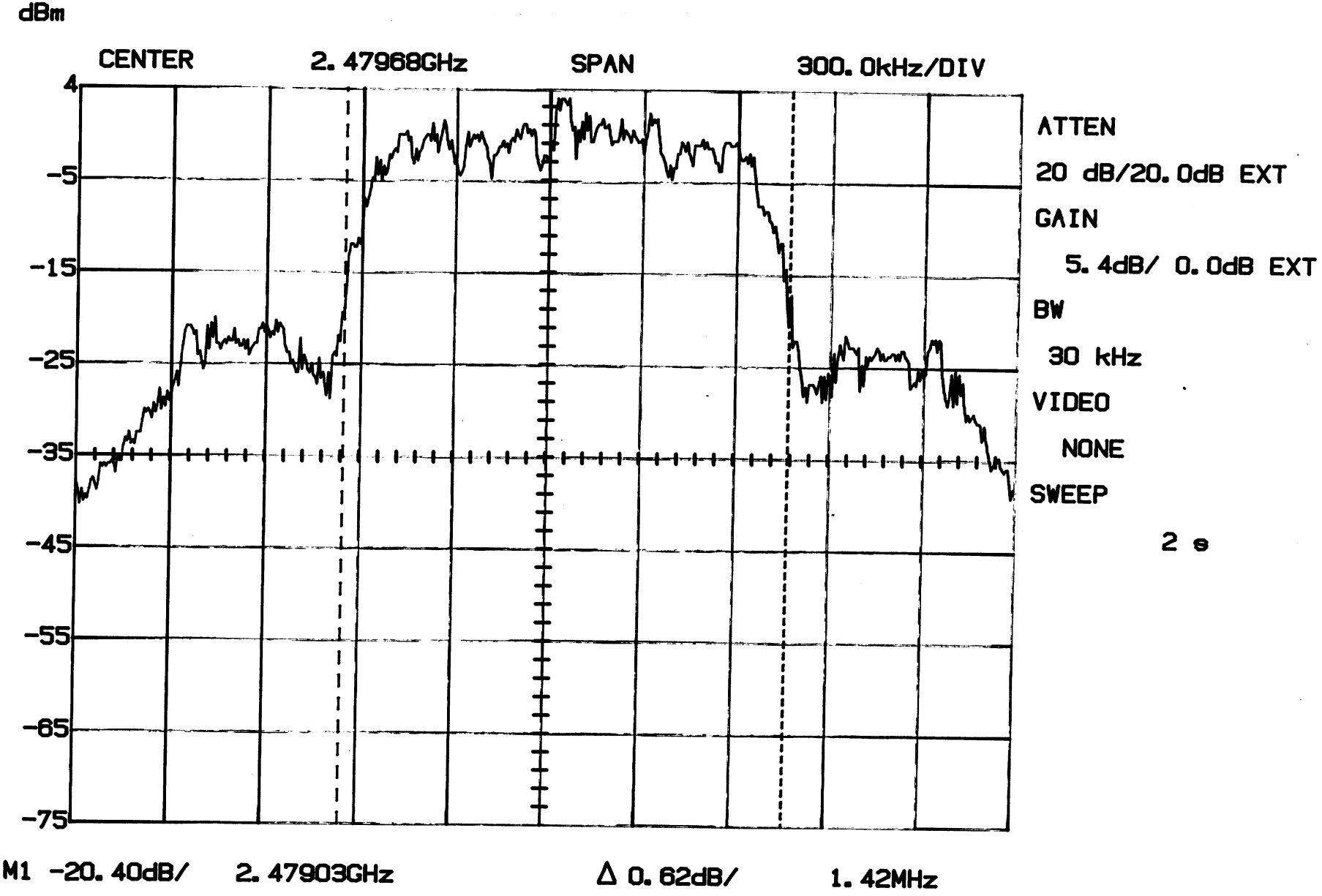
20dB BANDWIDTH
Channel 23 - Handset
MODEL 21006XXX-A



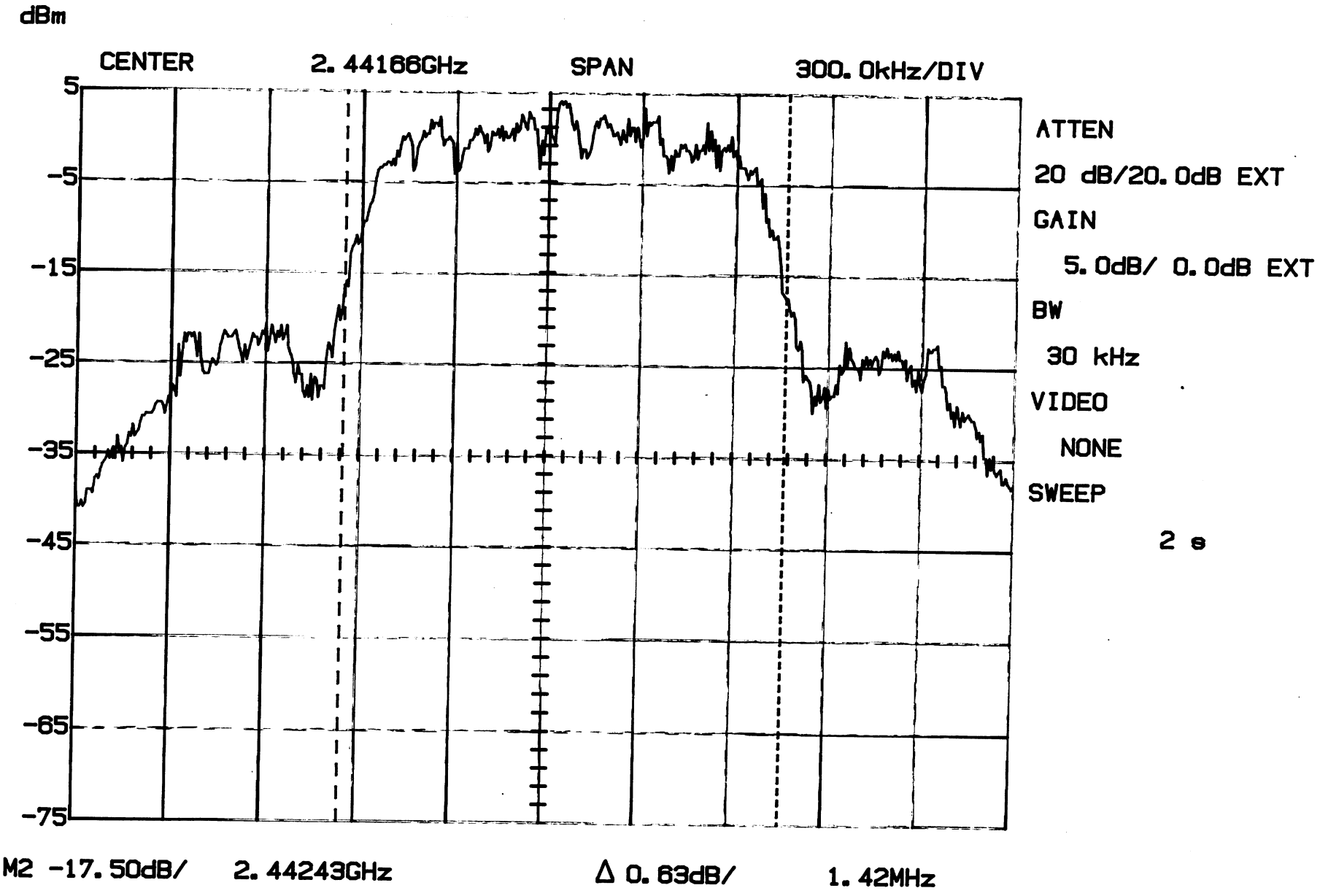
20dB BANDWIDTH
Channel 45 - Handset
MODEL 21006XXX-A



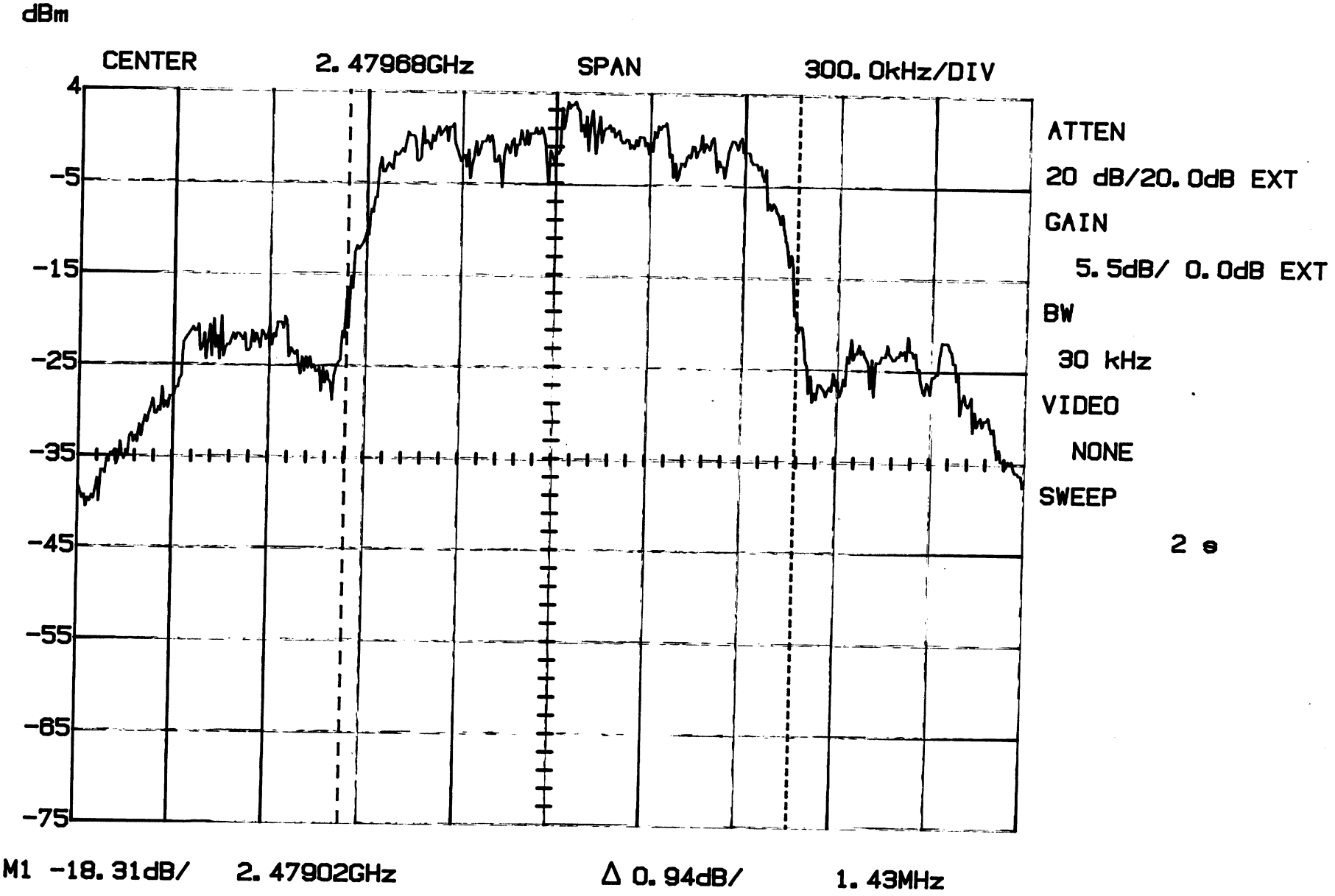
20dB BANDWIDTH
Channel 1 - Base
MODEL 21006XXX-A



20dB BANDWIDTH
Channel 23 - Base
MODEL 21006XXX-A



20dB BANDWIDTH
Channel 45 - Base
MODEL 21006XXX-A



15.247(a)(1)(iii) 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 45=) 18 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 -40 for plotted data.

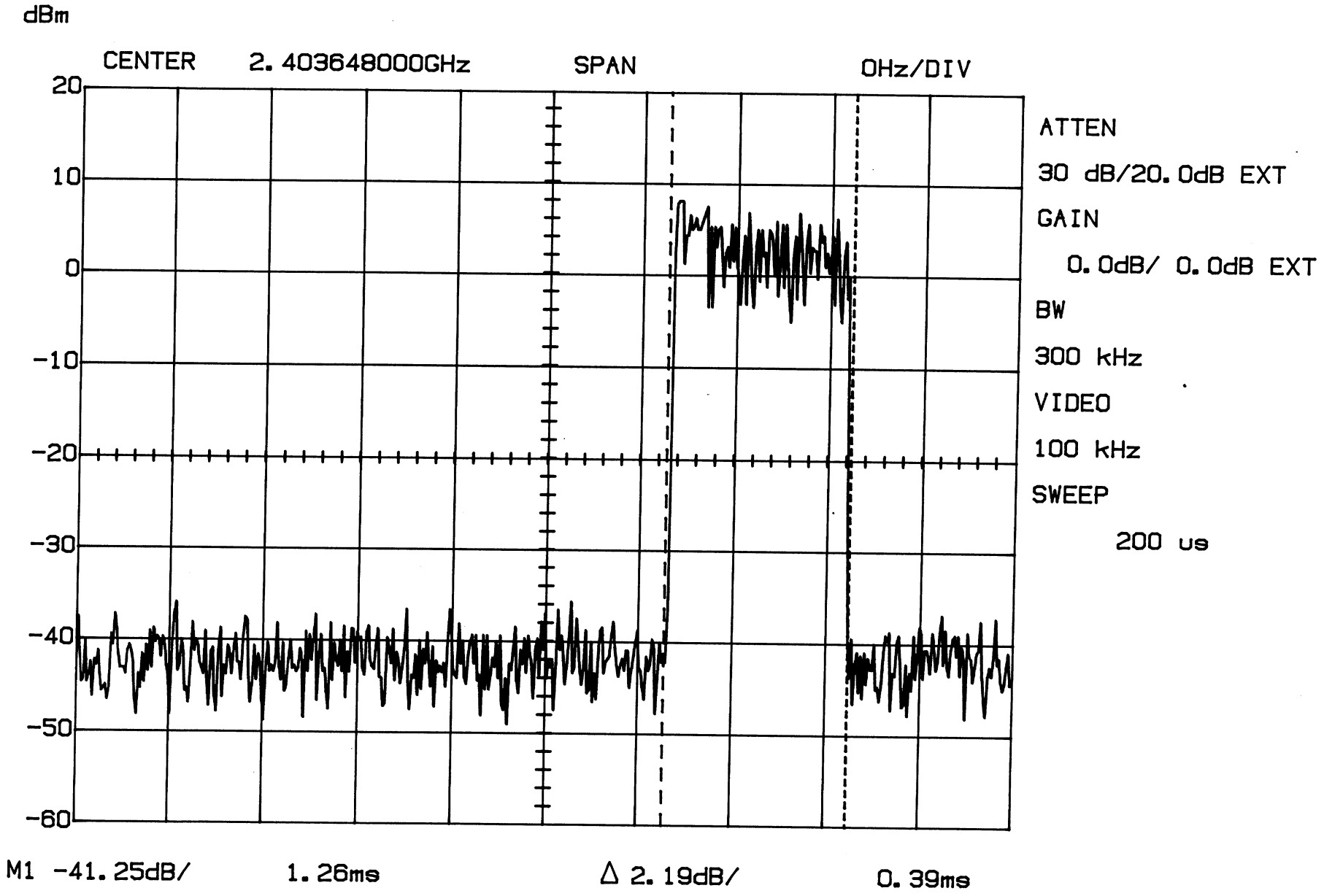
Handset
The dwell time is 0.39 x 62 = 24.18 ms

The maximum time of occupancy for a particular channel is 24.18 ms in any 18 second period.

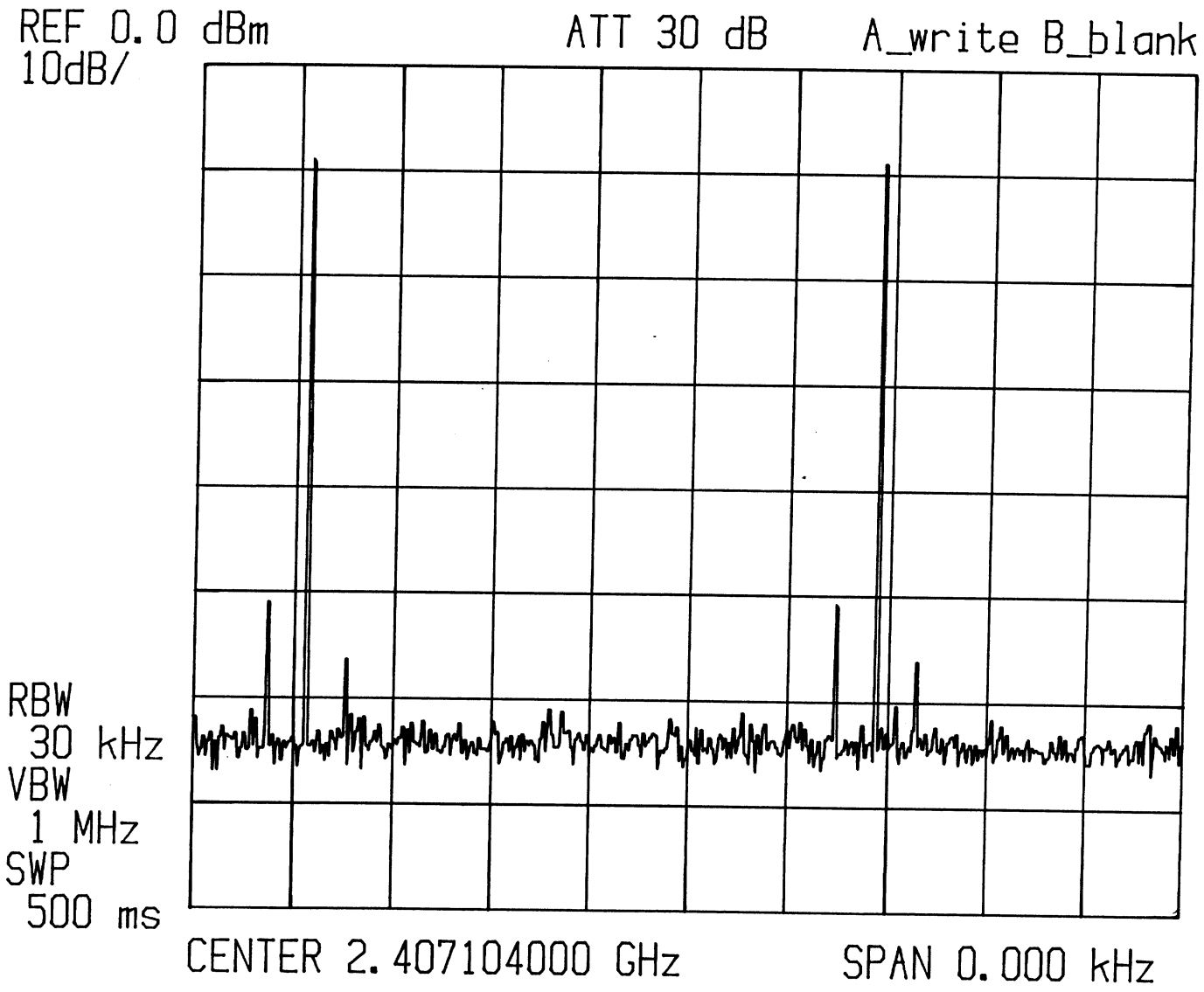
Base Unit
The dwell time is 0.39 x 120 = 46.8 ms

The maximum time of occupancy for a particular channel is 46.8 ms in any 18 second period.

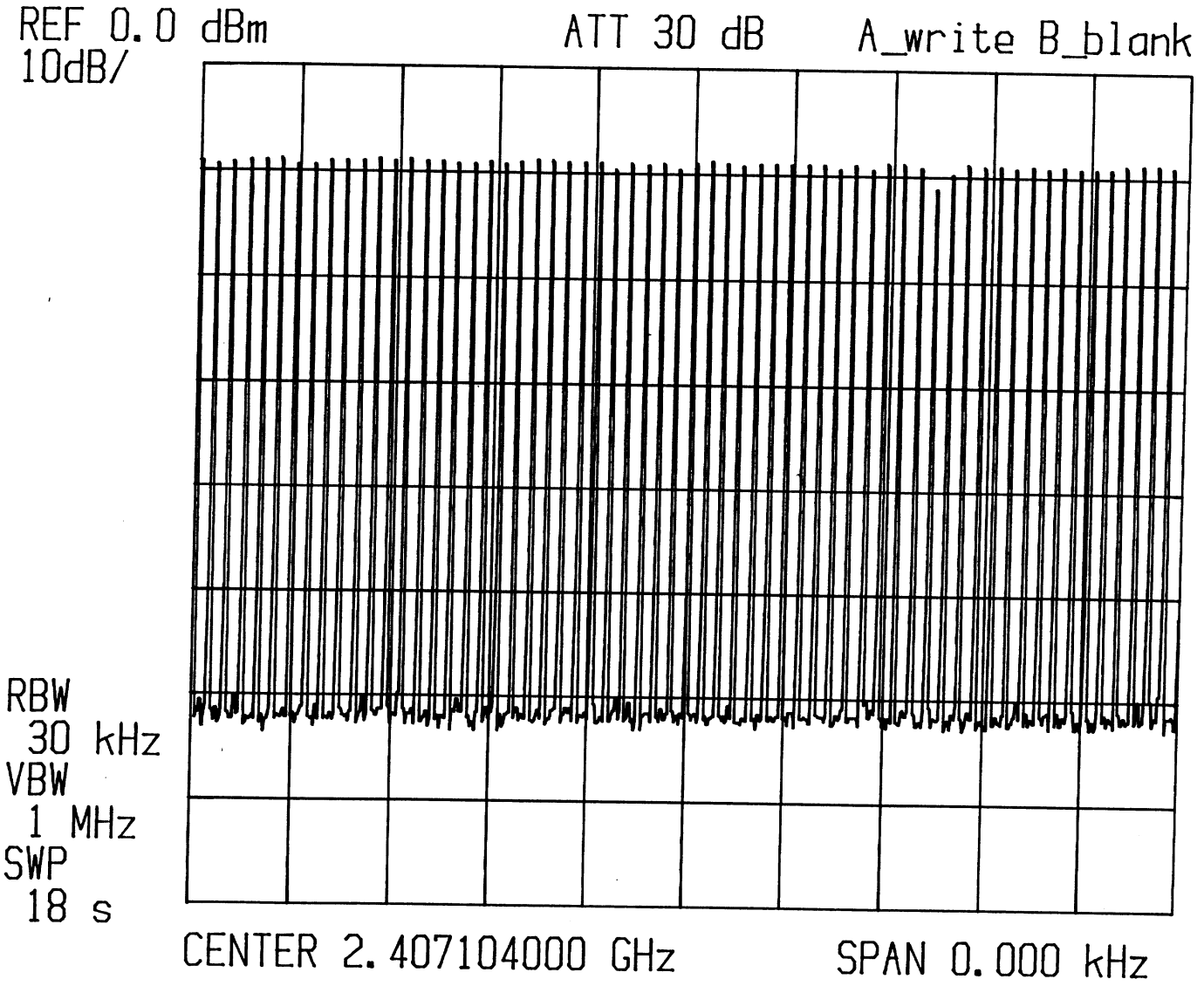
Handset - Dwell Time



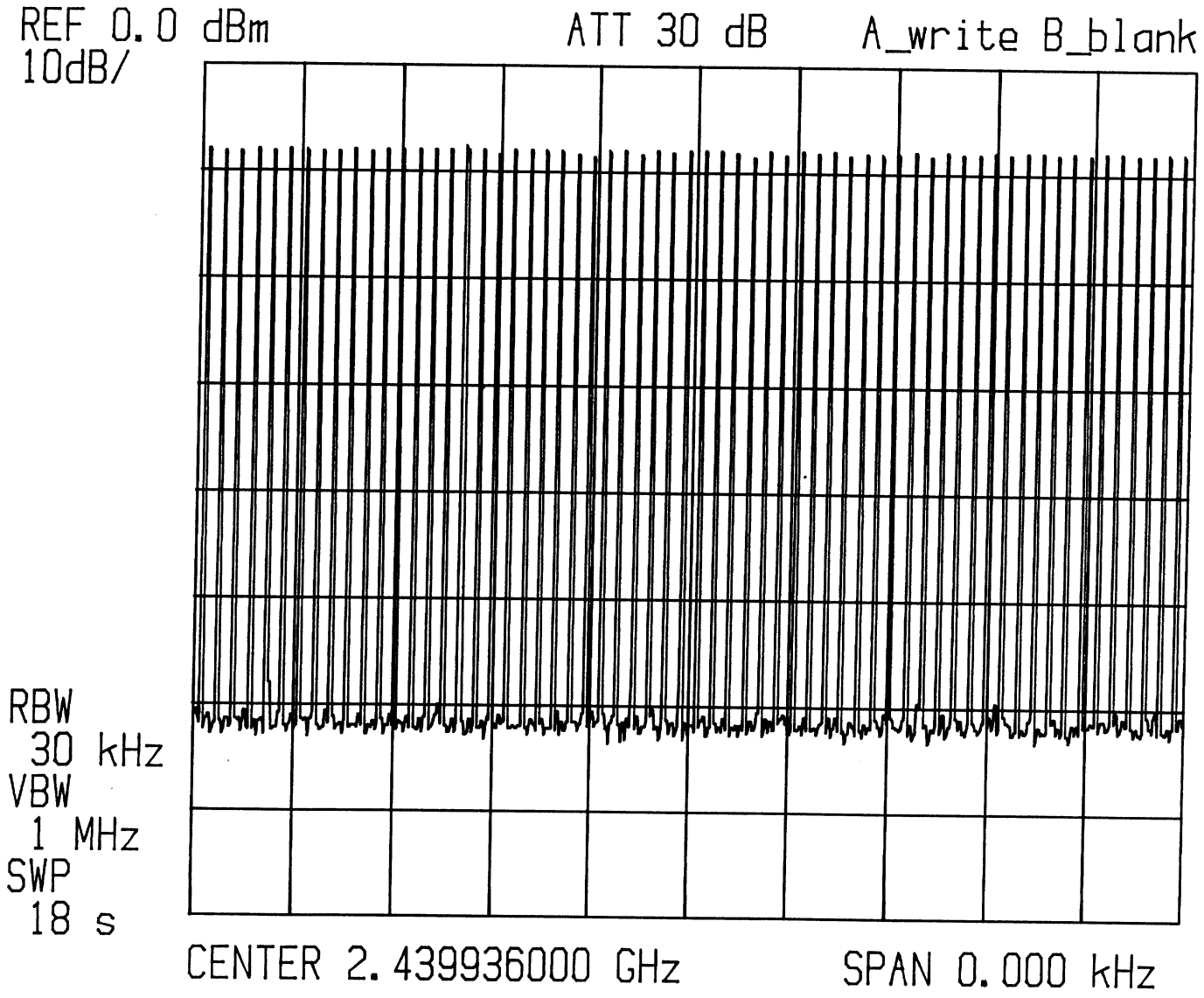
Handset - Dwell Time



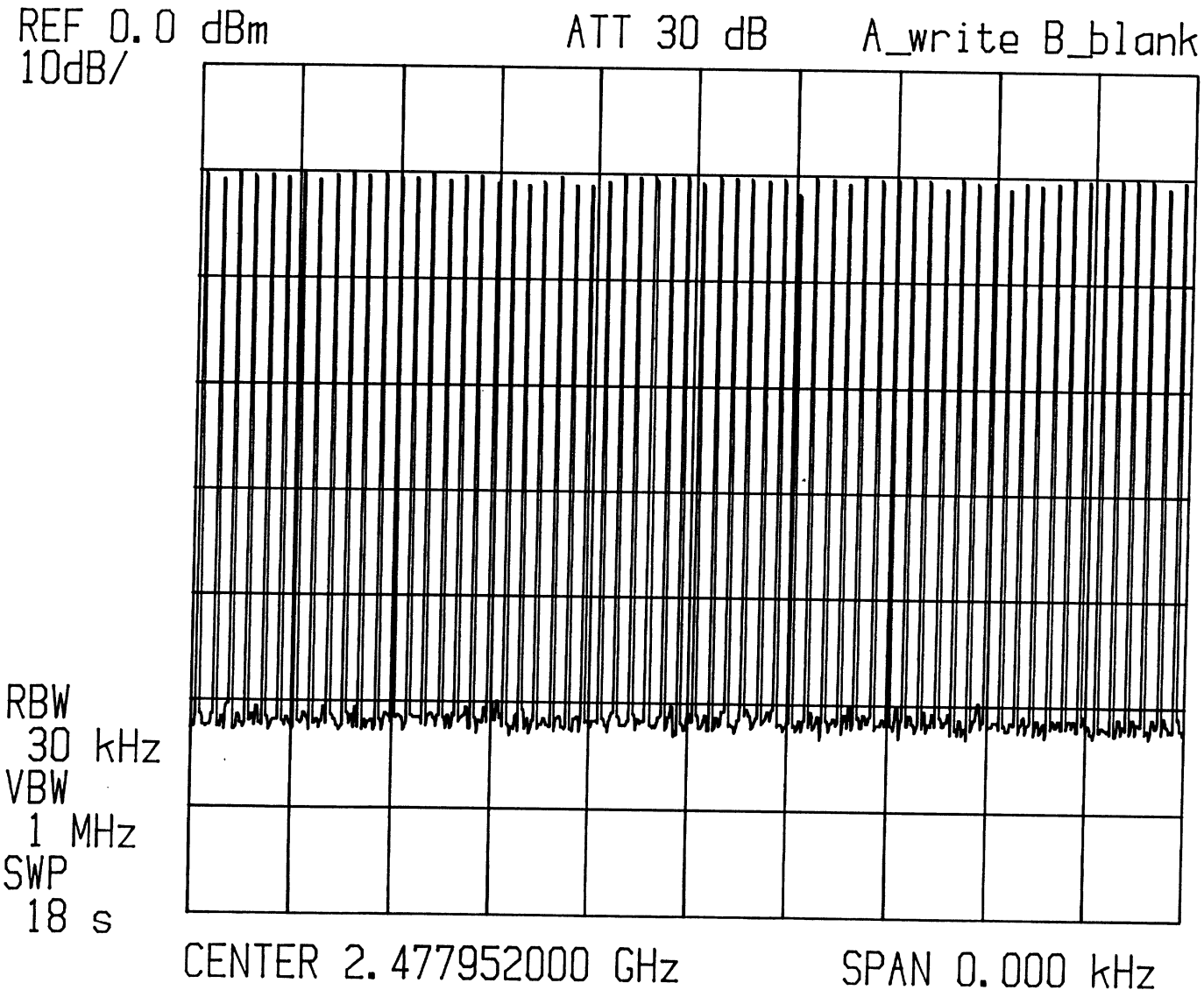
Channel 3 - Handset
Dwell Time



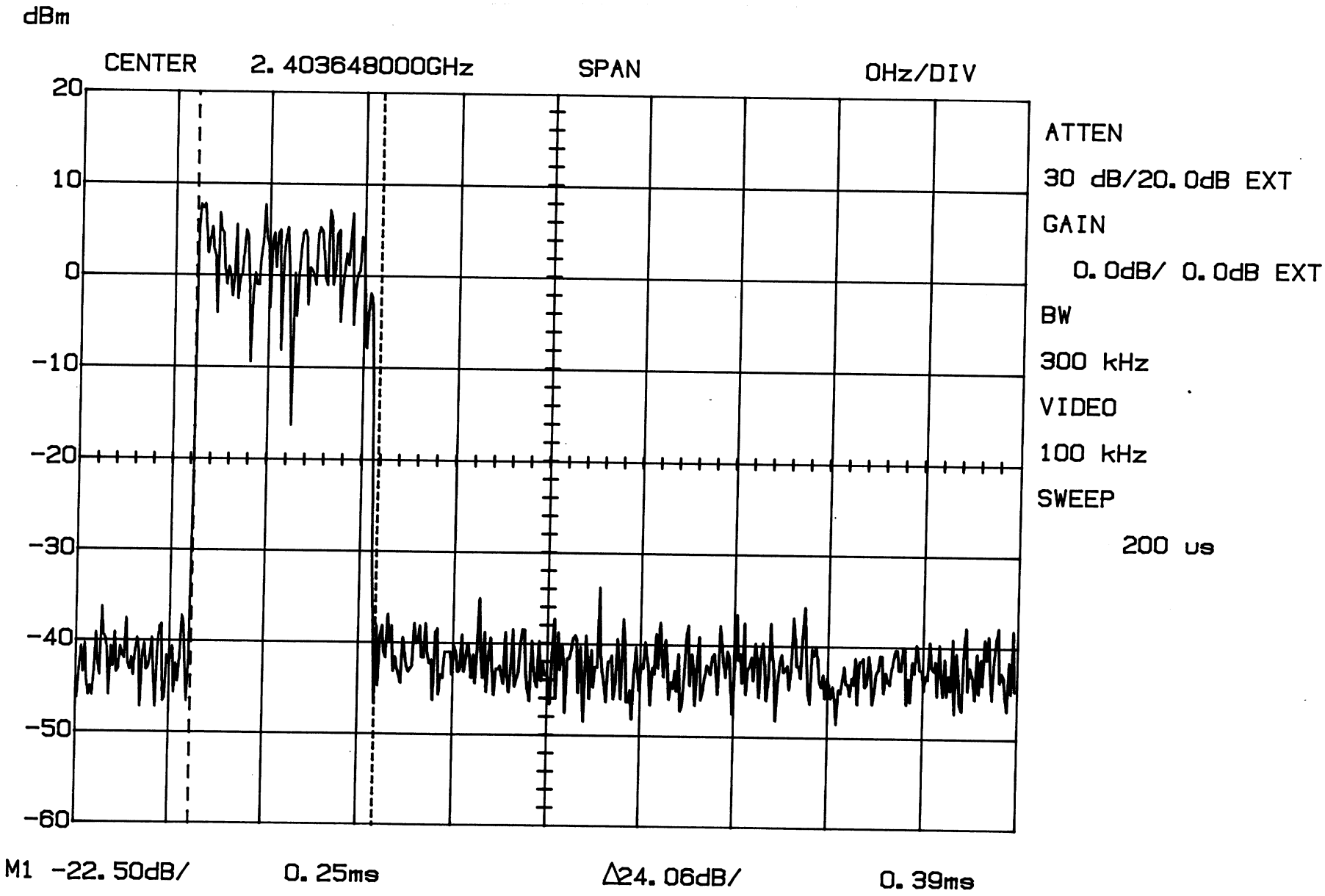
Channel 22 - Handset
Dwell Time



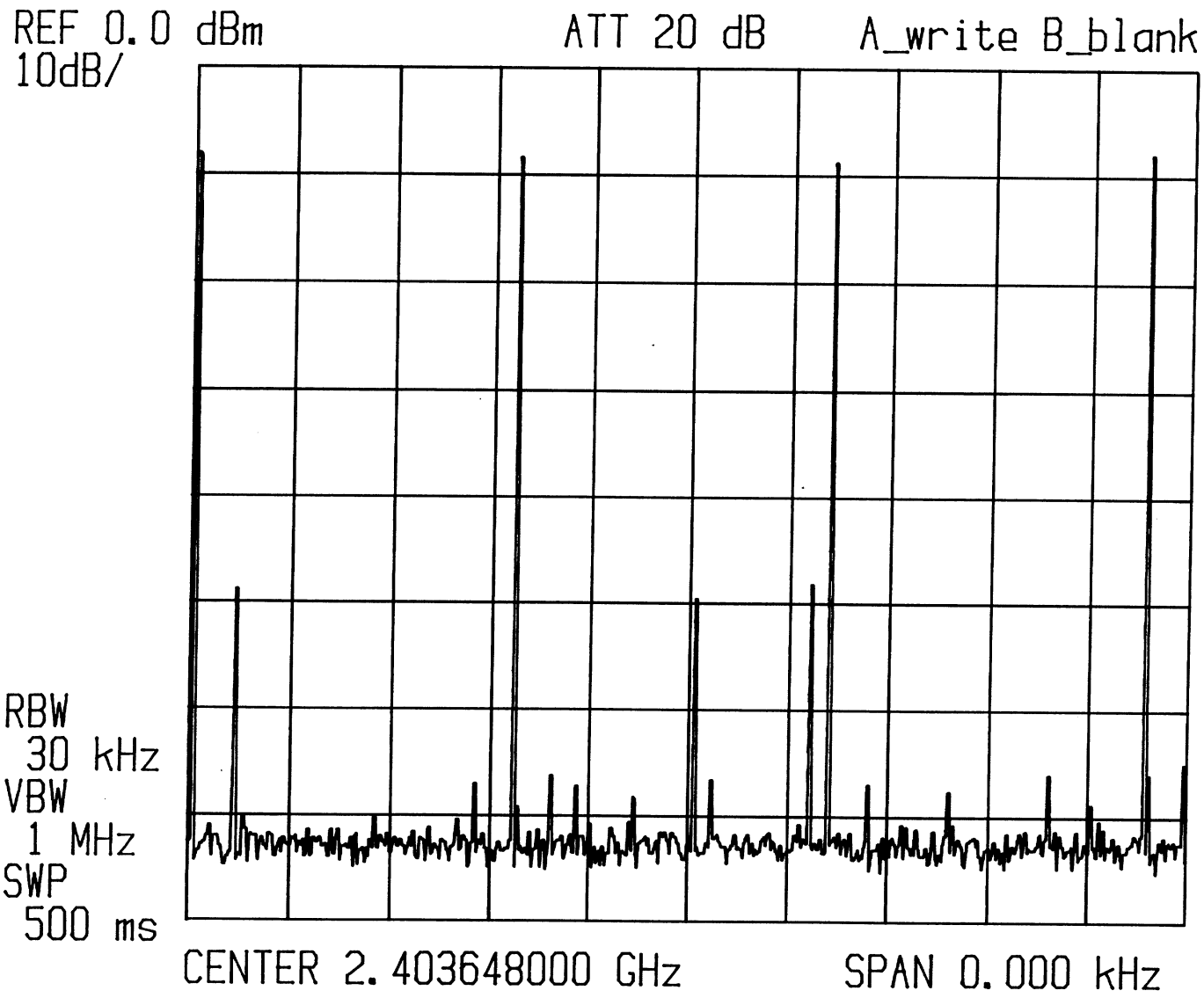
Channel 44 - Handset
Dwell Time



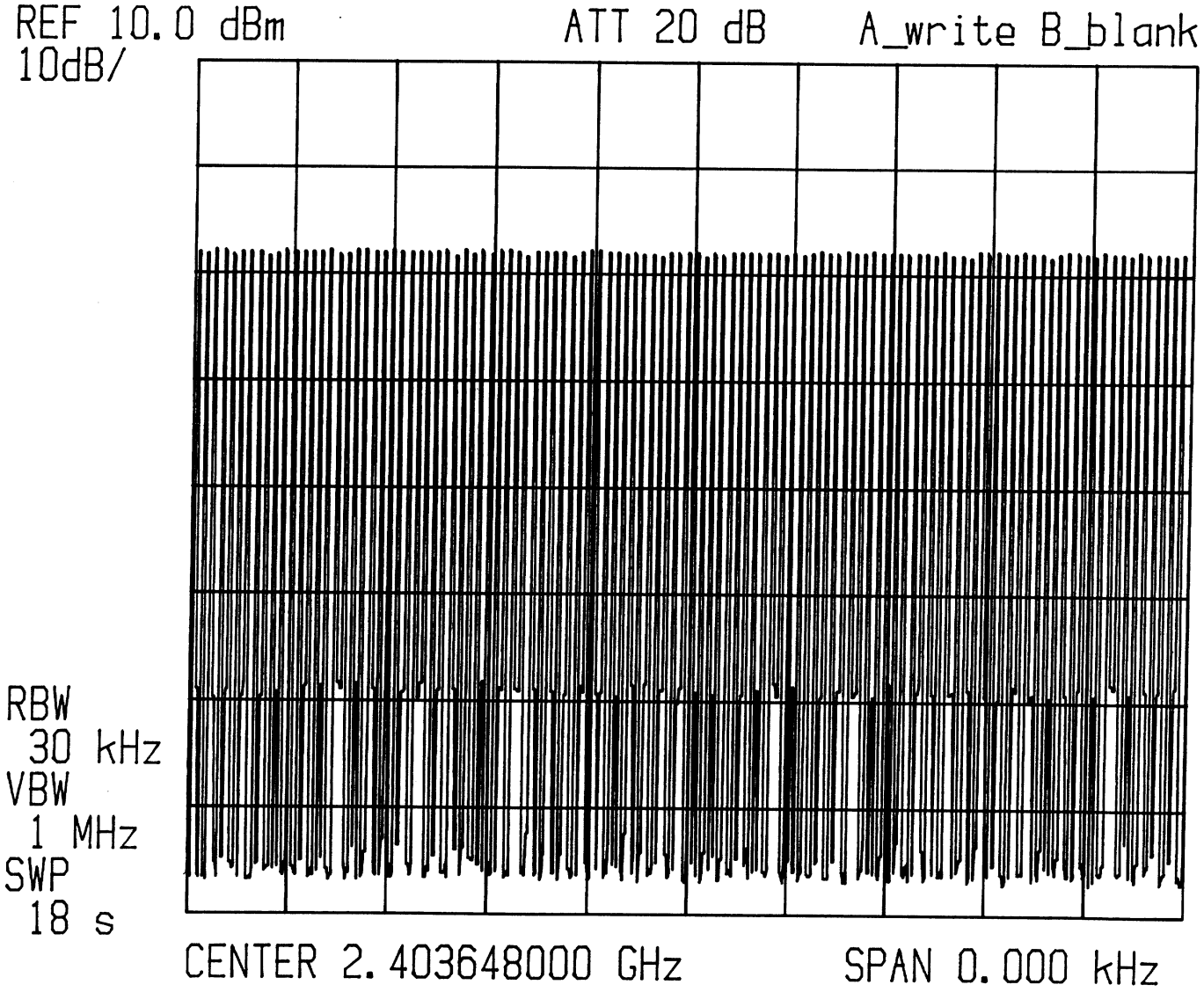
Base - Dwell Time



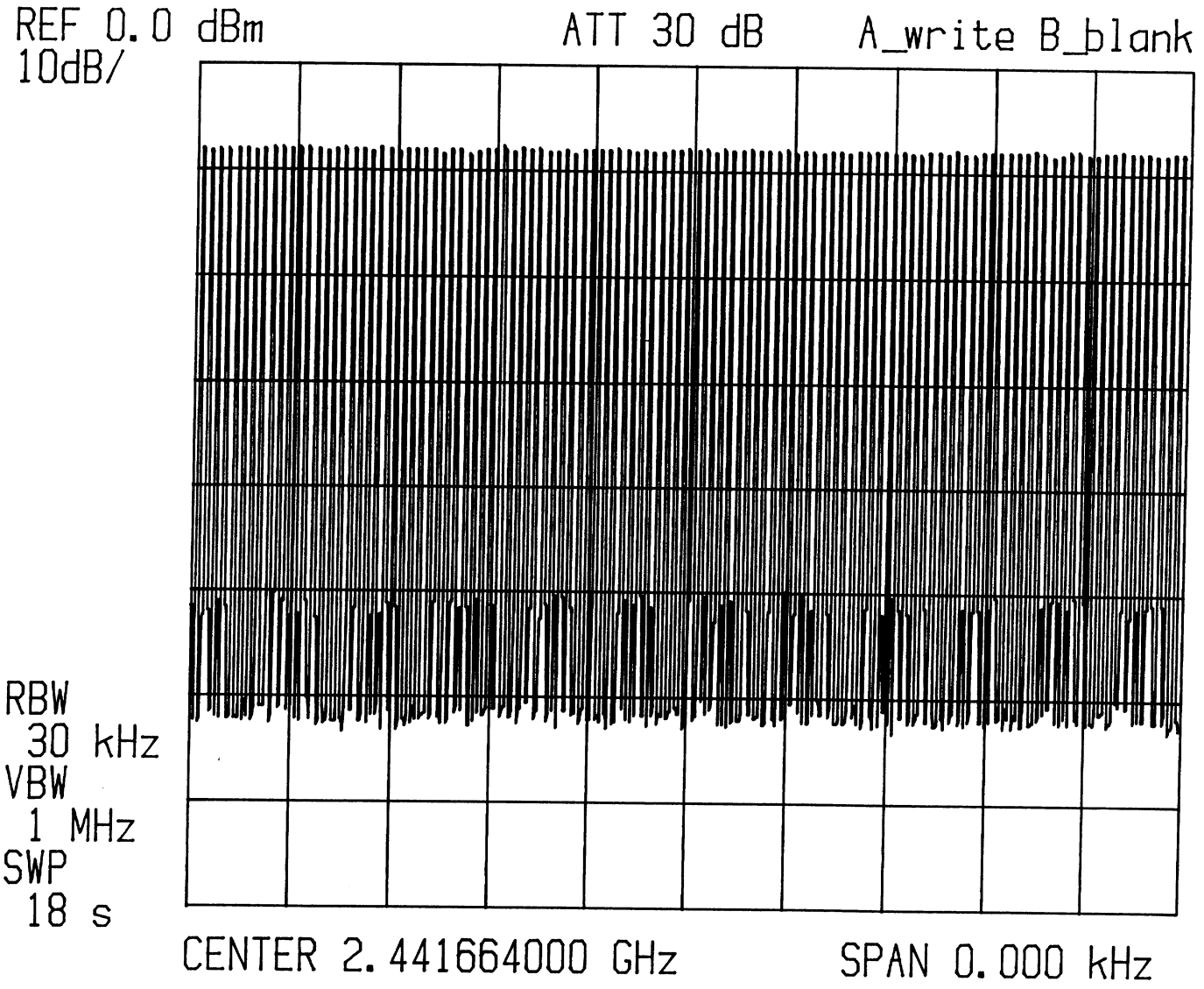
Base - Dwell Time



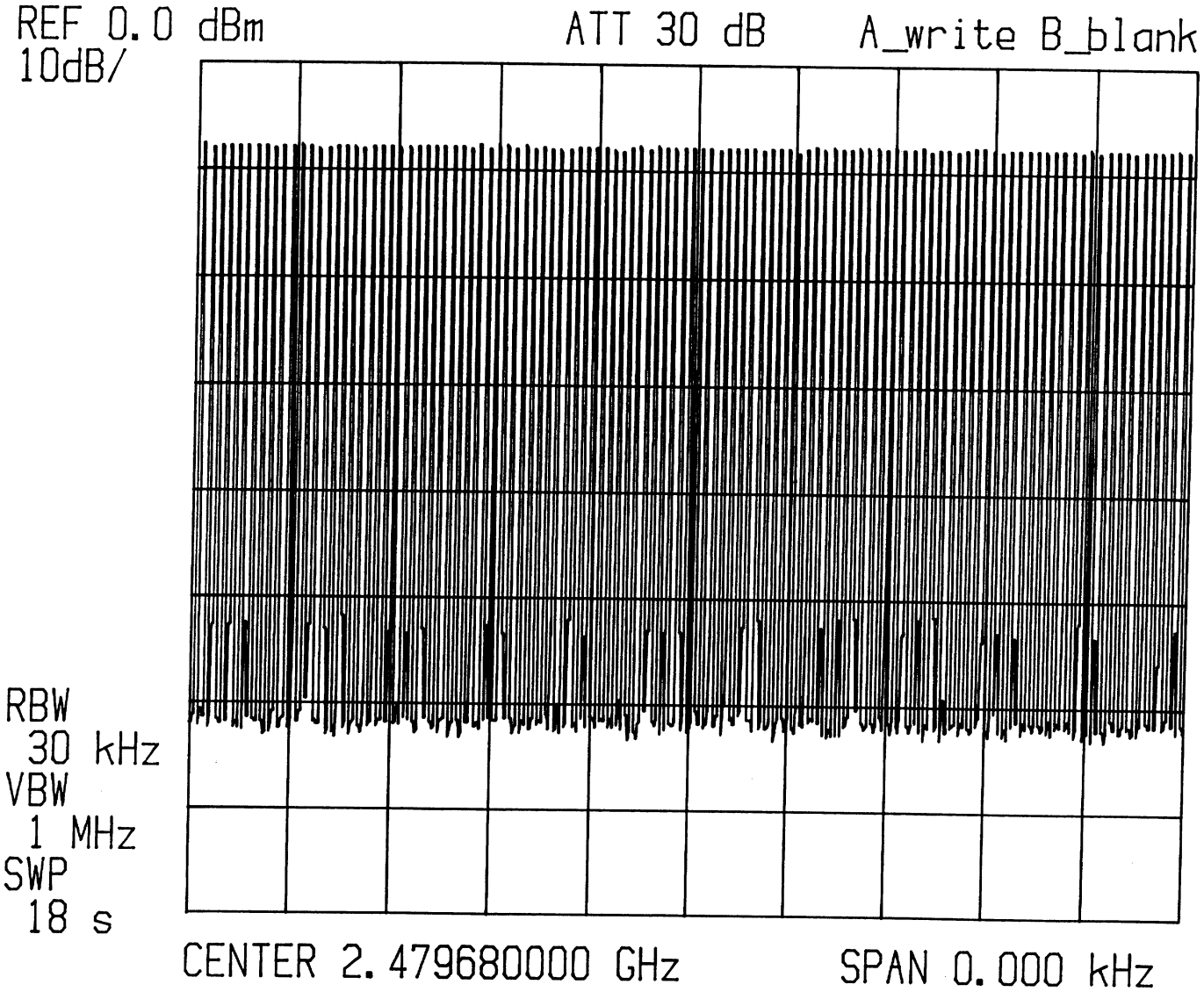
Channel 1 - Base
Dwell Time



Channel 23 - Base
Dwell Time



Channel 45 - Base
Dwell Time



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 1MHz and VBW to 1MHz.

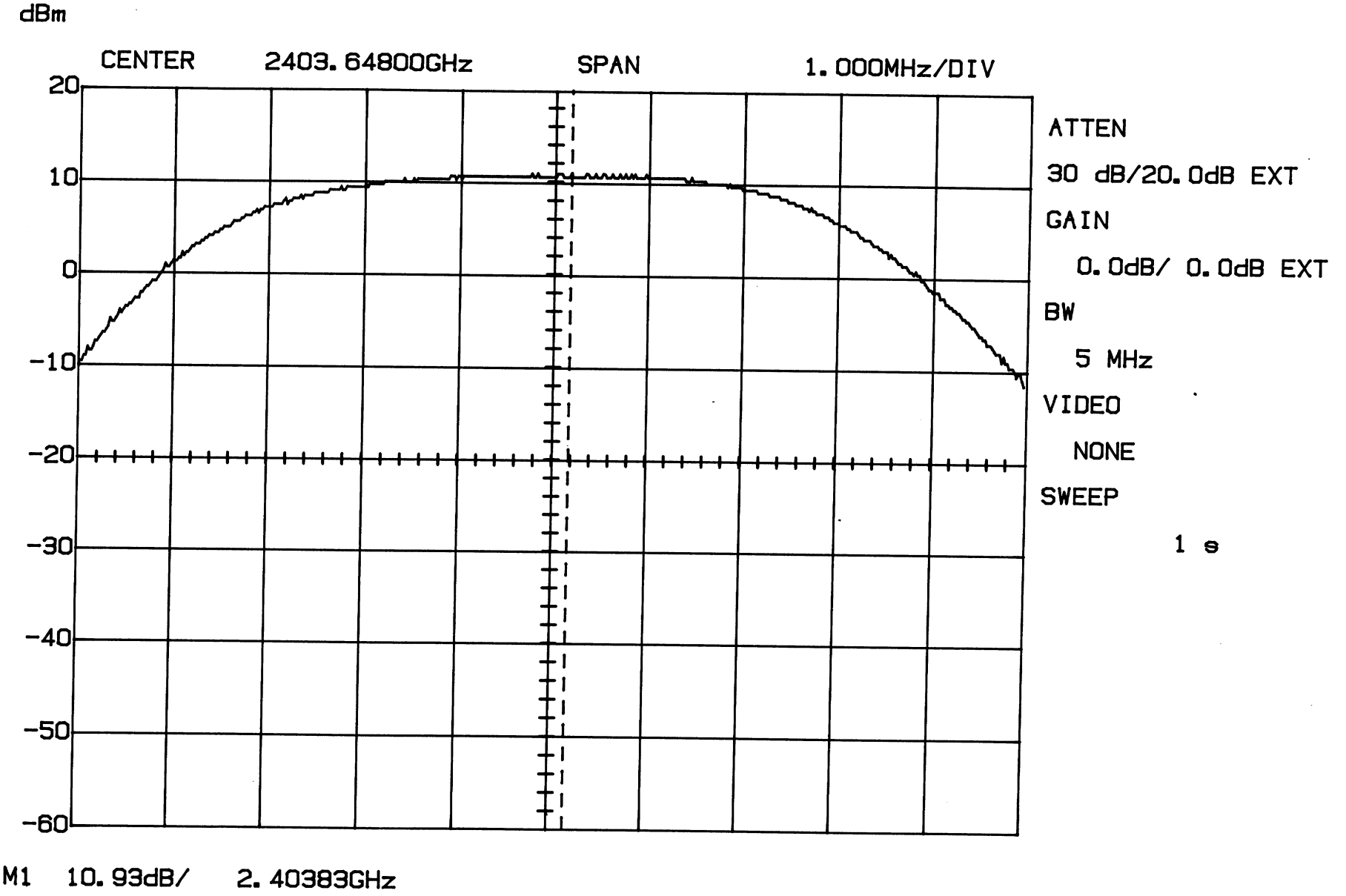
3. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.

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

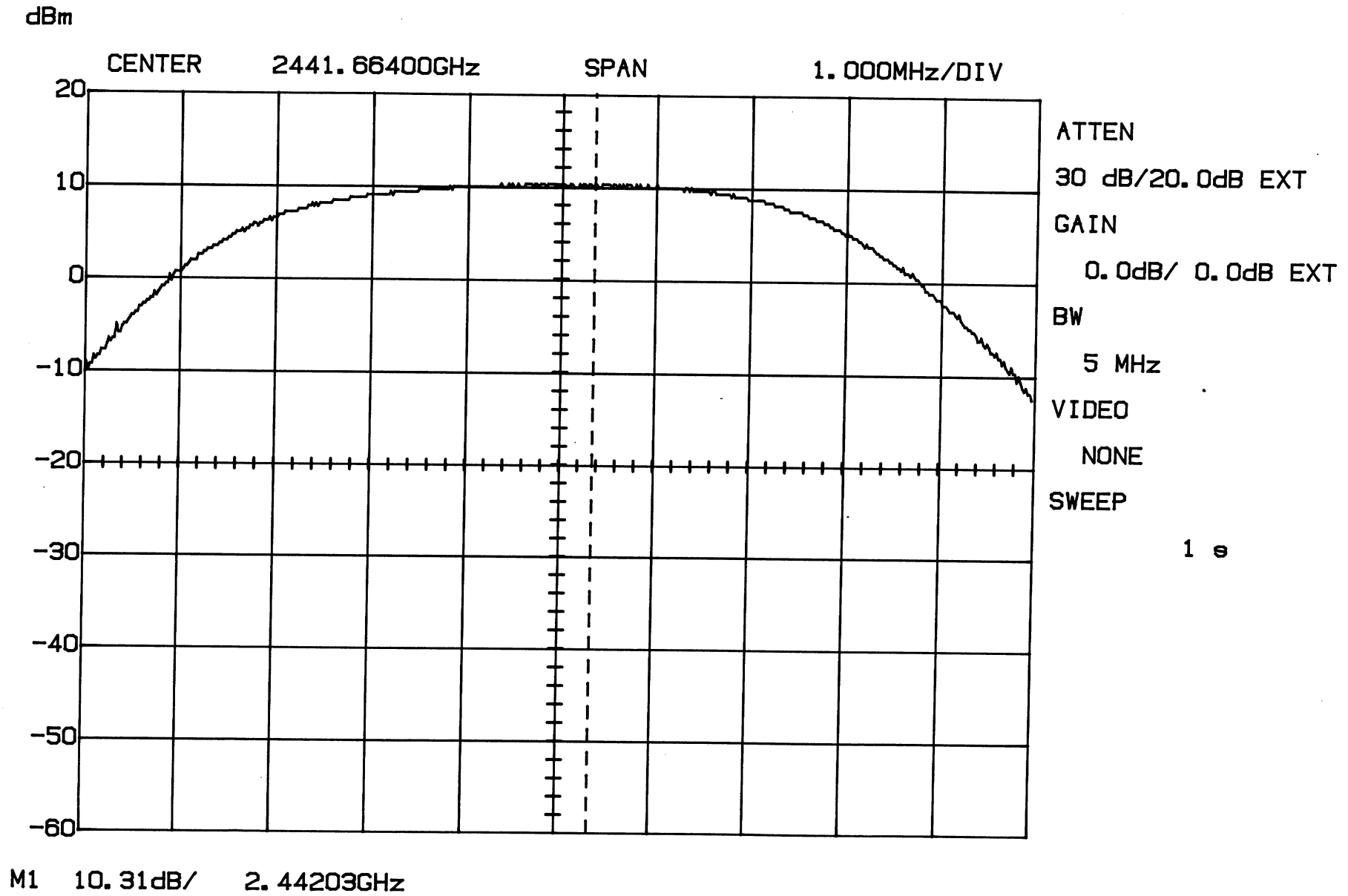
Measurement Data - Refer Exhibit D(1)-42 to -47 for plotted data

Handset	Channel 1:	Output Peak Power is 10.93 dBm = 12.4mW
	Channel 23:	Output Peak Power is 10.31 dBm = 10.76mW
	Channel 45:	Output Peak Power is 8.12 dBm = 6.5mW
Base Unit	Channel 1:	Output Peak Power is 10.93 dBm = 12.59mW
	Channel 23:	Output Peak Power is 10.0 dBm = 10.02mW
	Channel 45:	Output Peak Power is 9.37 dBm = 8.67mW

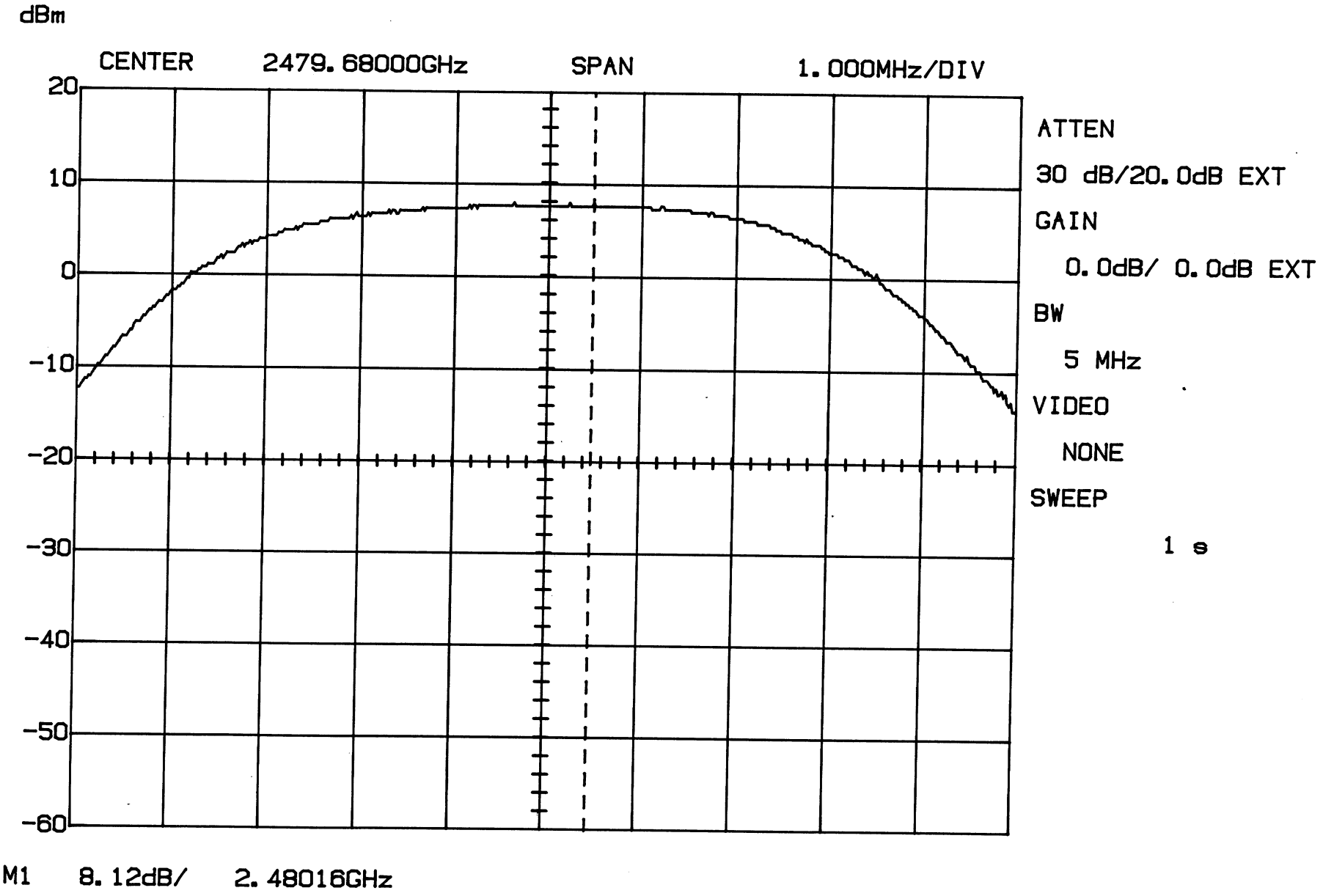
Channel 1 - Handset
Peak Output Power



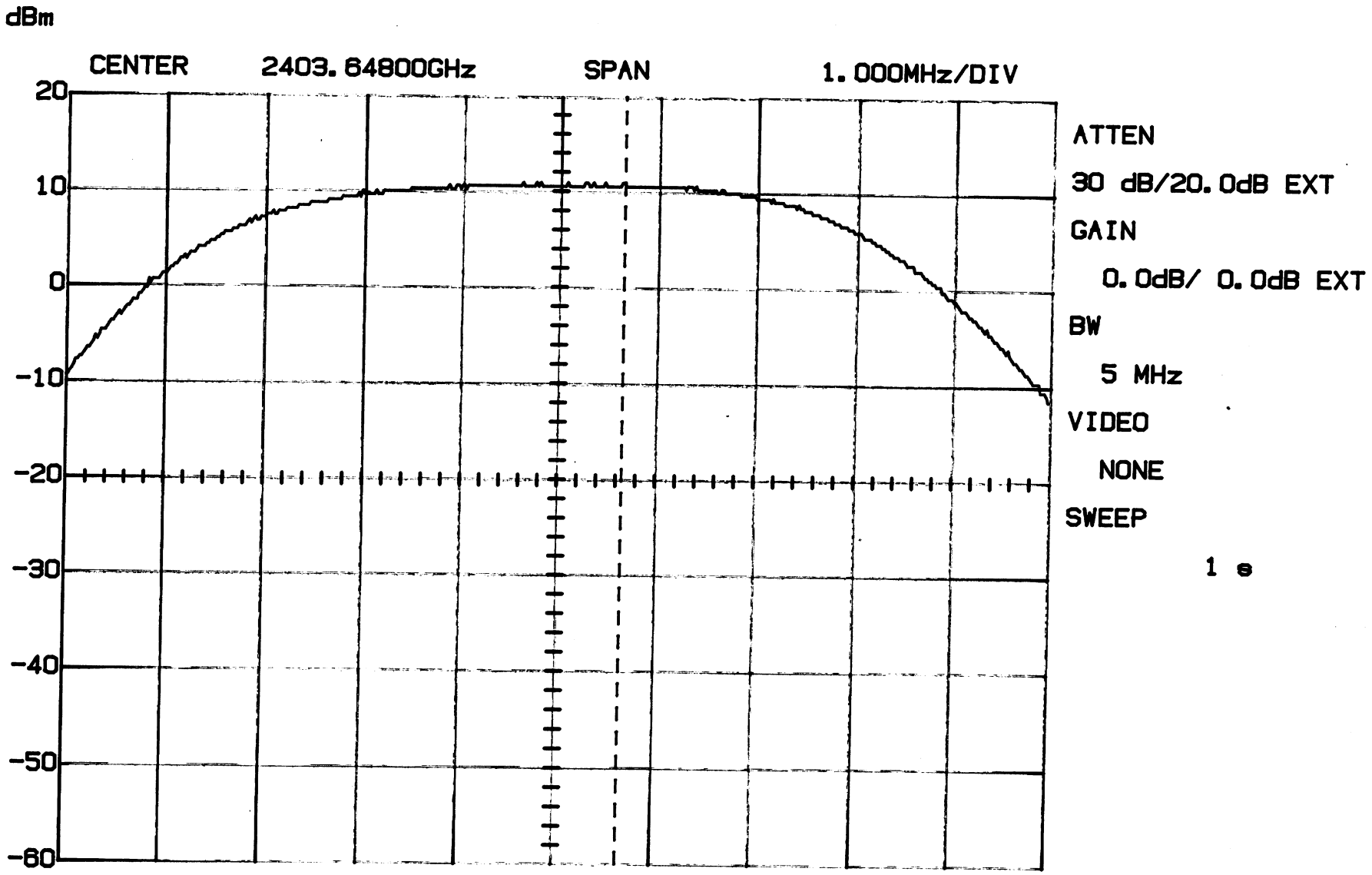
Channel 23 - Handset
Peak Output Power



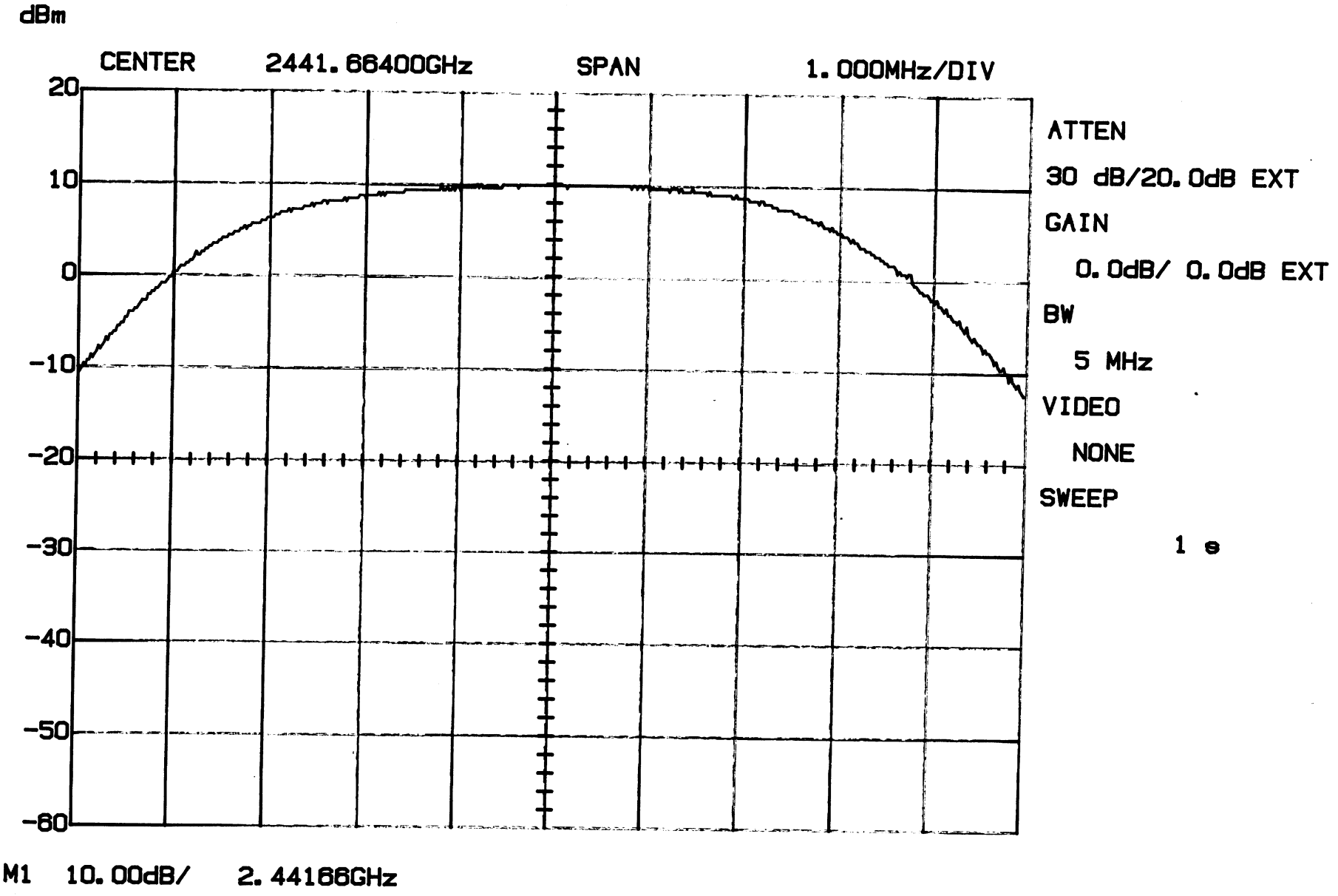
Channel 45 - Handset
Peak Output Power



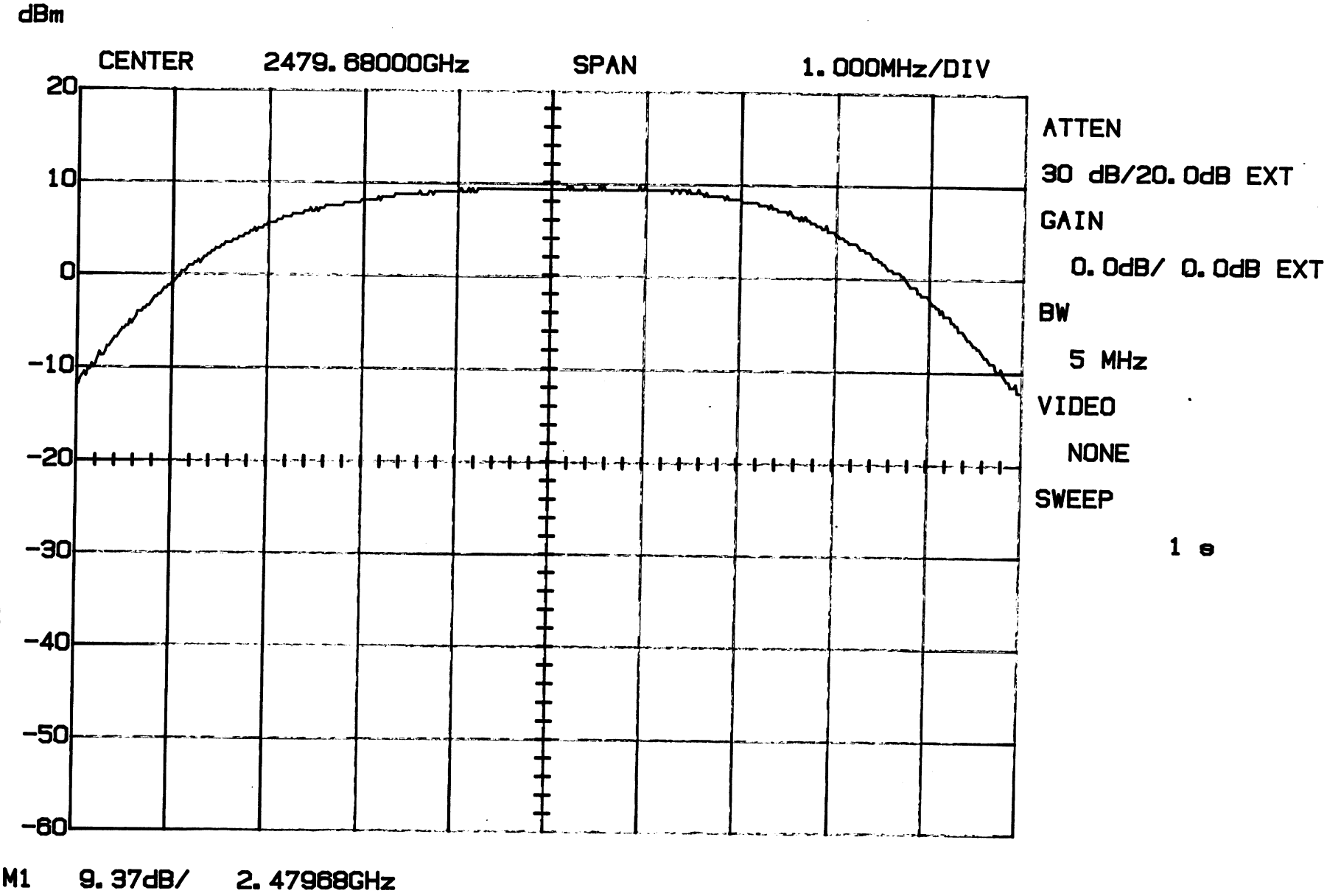
Channel 1 - Base
Peak Output Power



Channel 23 - Base
Peak Output Power



Channel 45 - Base
Peak Output Power



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 30 kHz and frequency span to 3000 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)-49 to -52 for plotted data

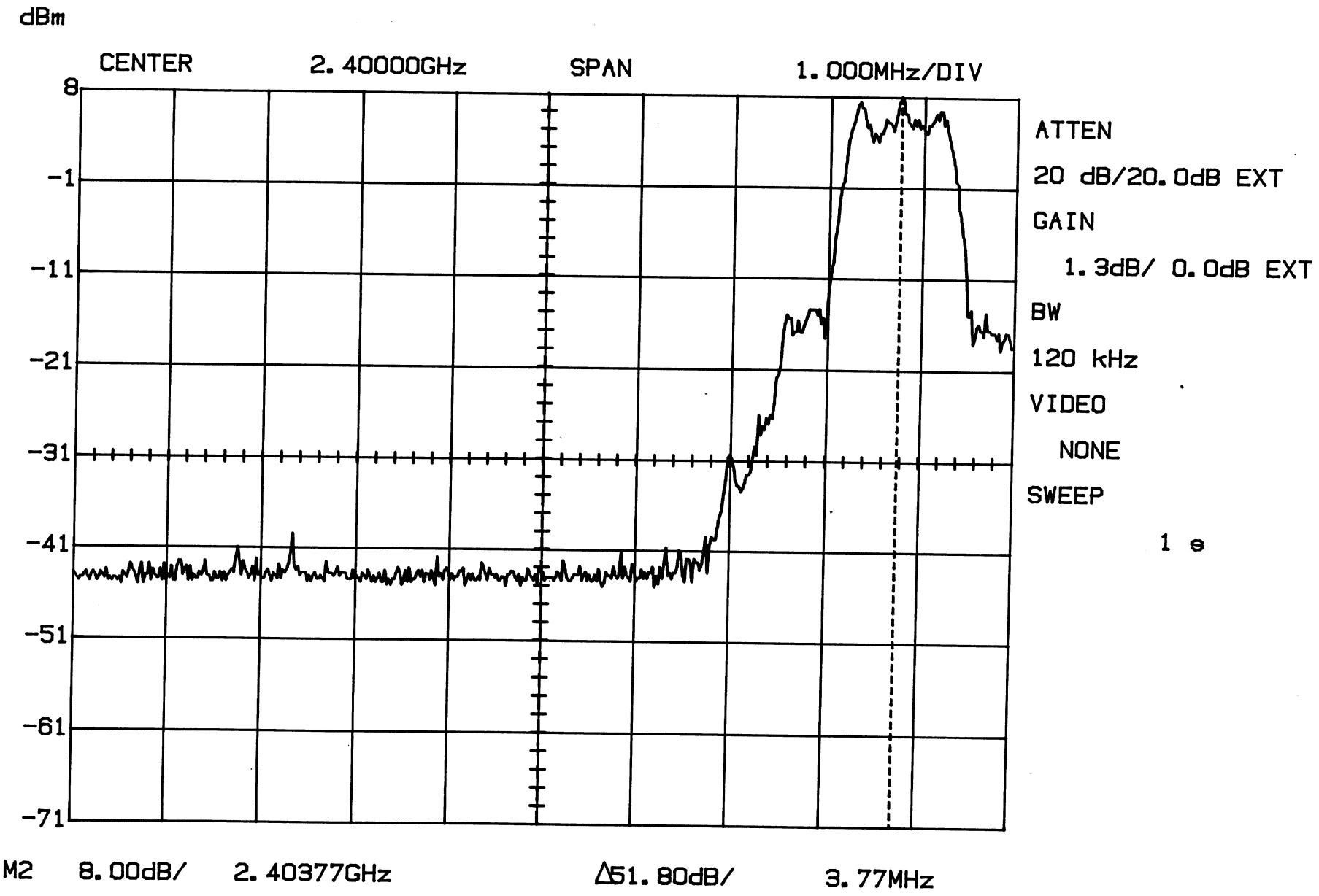
Handset
Lower Band Edge: All emissions in this 100kHz bandwidth are attenuated more than 51.87 dB from the carrier.

Upper Band Edge: All emissions in this 100kHz bandwidth are attenuated more than 48.74 dB from the carrier.

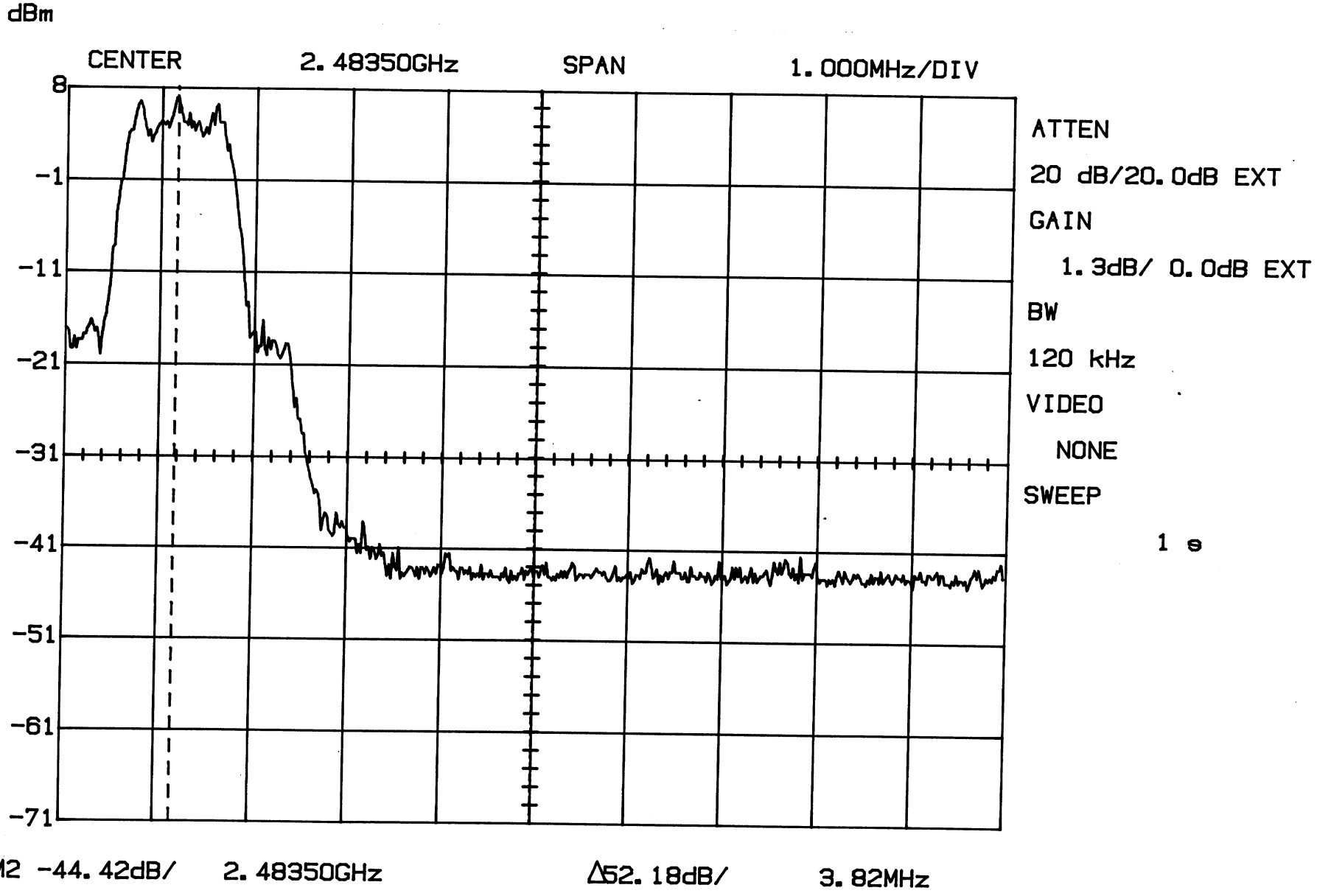
Base Unit
Lower Band Edge: All emissions in this 100kHz bandwidth are attenuated more than 51.8 dB from the carrier

Upper Band Edge: All emissions in this 100kHz bandwidth are attenuated more than 52.18 dB from the carrier.

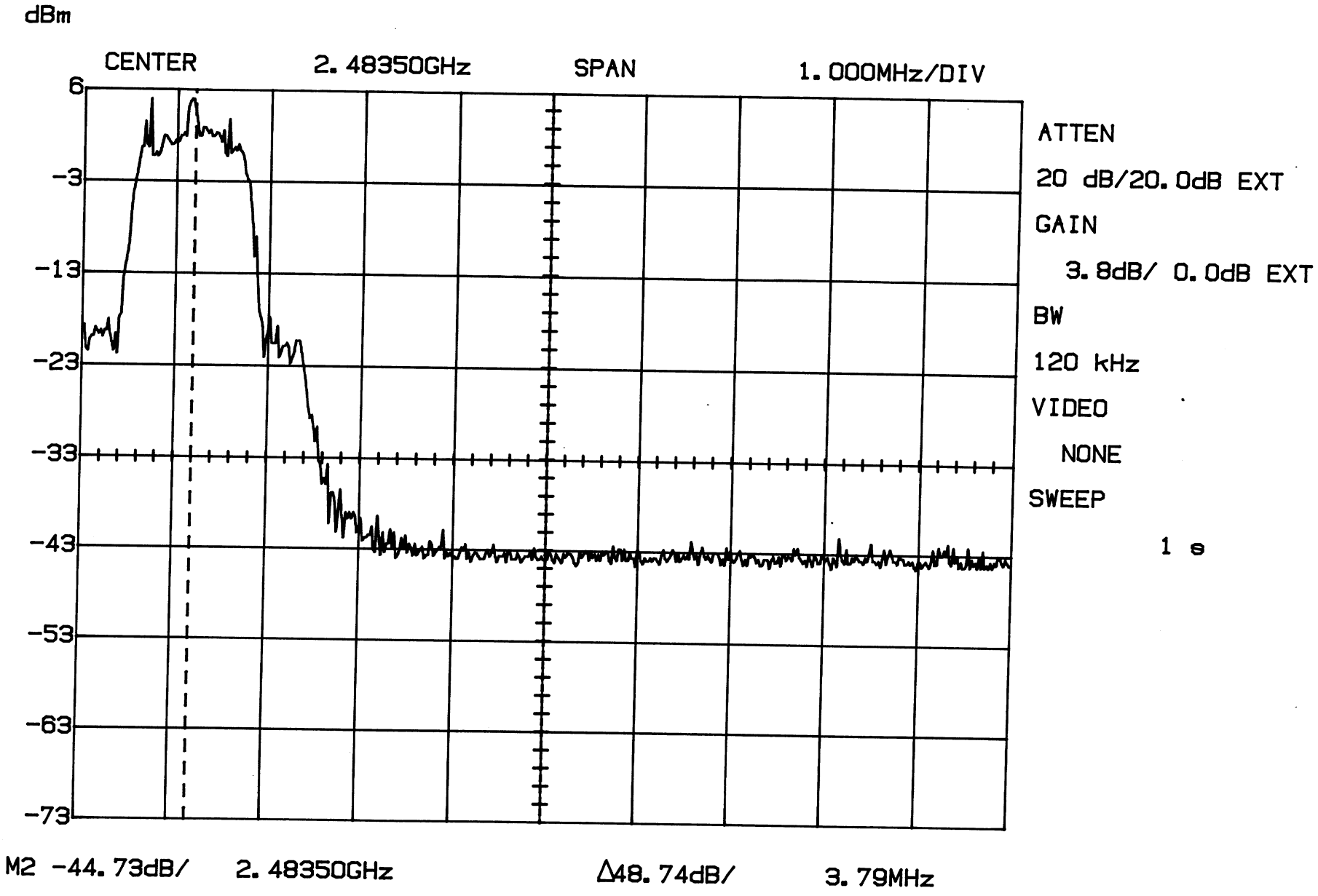
BAND EDGE - Base
MODEL 21006XXX-A



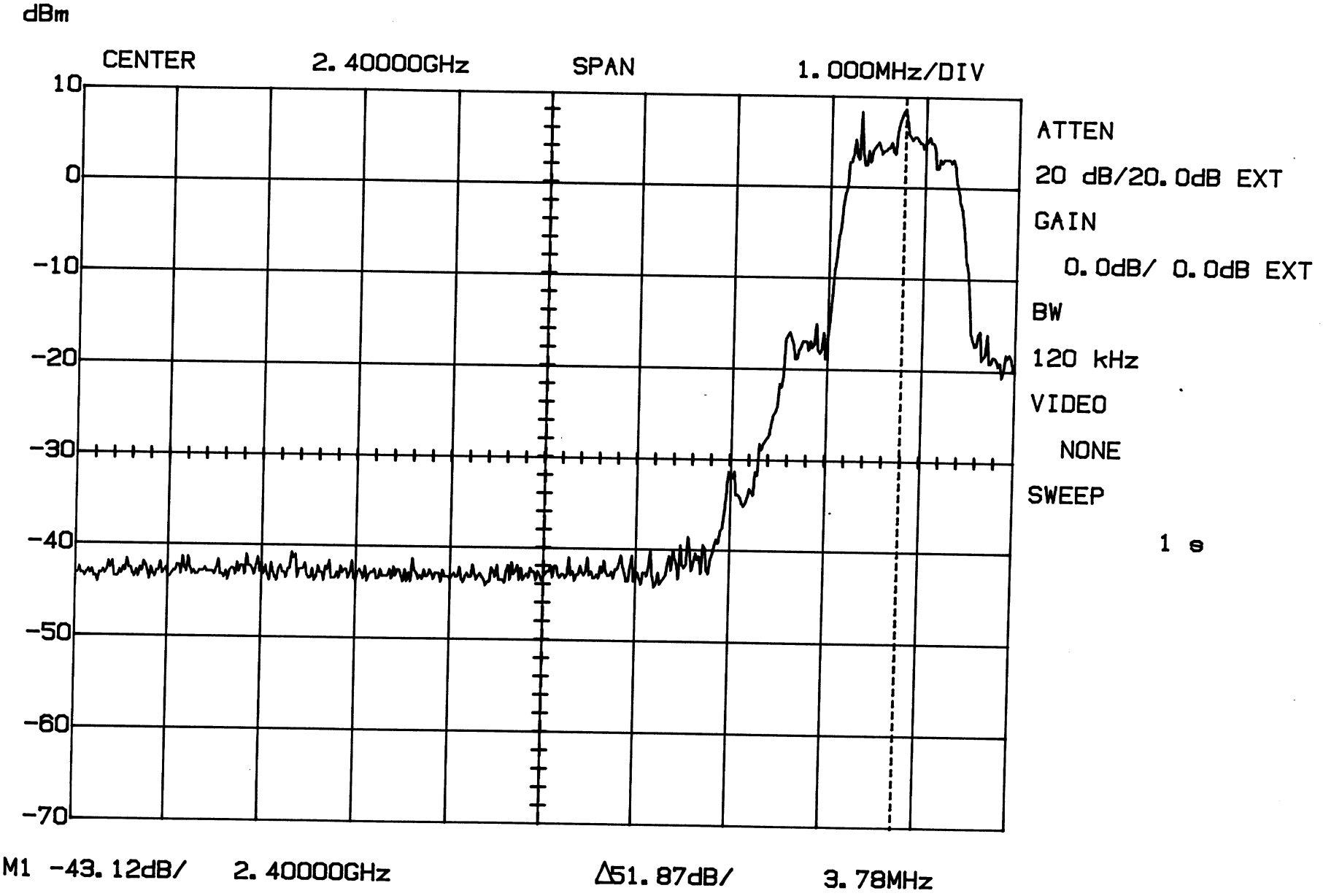
BAND EDGE - Base
MODEL 21006XXX-A



BAND EDGE - Handset
MODEL 21006XXX-A



BAND EDGE - Handset
MODEL 21006XXX-A



15.247(c) SPURIOUS RF CONDUCTED EMISSION

ANTENNA CONDUCTED SPURIOUS EMISSIONS

Frequency MHz		dBc		Frequency MHz		dBc	
BASE				**HANDSET**			
Channel 1				**Channel 1**			
2403.648		0		2403.983		0	
4807.297		-38		4807.296		-46	
Channel 23				**Channel 23**			
2441.664		0		2441.664		0	
4883.325		-40		4883.328		-52	
Channel 45				**Channel 45**			
2479.680		0		2479.601		0	
4959.296		-46		4959.296		-54	

Part 15.247(g): Exhibit D(1)-55 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 D(1)-55 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.

Part 15.247 (g). Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both transmitter and the receiver, must be designed to comply with all the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing a short transmission burst must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

In active mode (there is voice communication), the information (voice) are transmitted continuously.

In idle mode (there is no voice communication), the base will broadcast a pilot signal which is distributed in 16 channels.

Part15.247 (h). The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognized other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

We do not use co-ordination frequency system. The system will adjust its hopping sequence and hopping channel according to the operating mode.

In idle mode, the base will continue to check the pilot signal from other base. If the sequence of pilot signal is same, the base will change to another sequence to avoid the jamming.

In active mode, the base and handset will continue to check the jamming from other system. When a jamming is found, the jammed channel will be skipped, but the total number of channel will be kept greater than 15.

FCC RF EXPOSURE REQUIREMENTS

General Information

FCC ID: G9H2-1006A

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

Environment: General Population/Uncontrolled Exposure

Operating Configurations and Exposure Conditions:

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

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	
Power EIRP (mW)	(in)	(cm)
Base unit: 12.59	0.5	1.3

Conclusion:

The device complies with the MPE requirements by virtue of the fact that it is considered to comply with SAR evaluation without testing.

The power is much less than 50mW.