

Marstech Limited

11 Kelfield Street, Etobicoke, Ontario, Canada, M9W 5A1

Telephone (416) 246-1116, Fax (416) 246-1020

Authorized by:
Professional Engineers
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Engineering &
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Testing For FCC
Submissions/Verifications

Approved Test Facility



TEST REPORT

REPORT DATE:	June 21, 2001		REPORT NO:	21212D
CONTENTS:	See Table of Contents			
SUBMITTOR:	ATLINKS USA, Inc. 101 West 103 rd Street Indianapolis, IN 46290-1102 USA			
SUBJECT:	Model No: 27930XXX-M FCC ID: G9H2-7930			
TEST SPECIFICATION	CFR 47 FCC Part 15 Sections: 15.35, 15.109, 15.209 and 15.249 NOTE: Tests Conducted Are "Type" Tests.			
DATE SAMPLE RECEIVED:	June 8, 2001	DATE TESTED:	June 19, 2001	
RESULTS:	Equipment tested complies with referenced specification.			
ALTERATIONS	None.			
Tested by:	Edward Chang	Approved by:	R. G. MARSHALL	
Date:	July 4/01	Robert G. Marshall, P. Eng.		

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TECHNICAL REPORT - FCC 2.1033(b)

Applicant

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

FCC Identifier

G9H2-7930

Manufacturer

Integrated Display Technology Telecommunications (Shenzhen) Co. Ltd.
Block D, Xixian Chen Tian Industrial Estate
Xixian Town, Baoan City, China

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EXHIBIT D

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

"Report of Measurements"

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PRODUCT DESCRIPTION

The Model 27930XXX-D is a 2.4GHz single line cordless telephone with caller ID and optional headset.. The antenna used for the base and the handset is permanently attached to the UUT. Its actual frequency range is:

Base: 2402.80 - 2404.80MHz

Handset: 2474.3 - 2476.25MHz

TEST EQUIPMENT LIST - MARSTECH

- 1 Spectrum Analyzer: HP 8591EM, S/N 3639A00995, Calibrated April 2001.
- 2 Spectrum Analyzer: ANRITSU 2601A, S/N MT64544, Calibrated May 2001.
- 3 Spectrum Analyzer: IFR AN940, S/N 635001039, Calibrated March 2001.
- 4 Preamp: HP 8449B, S/N 3008A00378, Calibrated August 2000.
- 5 Horn Antenna: Q-PAR 6878/24, S/N 1721, 1.5-18GHz.
- 6 Line Impedance Stabilization Network.: Marstech,

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
Eaton dipole antennas; T1, T2, T3 25 MHz to 1.0 GHz
Roberts dipole antennas; T1, T2, T3 & T4 25 MHz to 1.0 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.

TEST PROCEDURE

GENERAL:

Shielded interface cables were used in all cases except for cables connecting to the telephone line and the power cords. A test program was run which simulated a normal transmission.

POWER LINE CONDUCTED INTERFERENCE:

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

BANDWIDTH 20dB:

The measurements were made with the spectrum analyzer's resolution bandwidth (RBW)=100KHz and the video bandwidth (VBW)=1.0MHz and the span set as shown on plot.

POWER OUTPUT:

The radiated output power was measured with the spectrum analyzer and Bilog Antenna.

RADIATION INTERFERENCE:

The test procedure used was ANSI STANDARD C63.4-1992 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 = 1MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 24°F with a humidity of 60%.

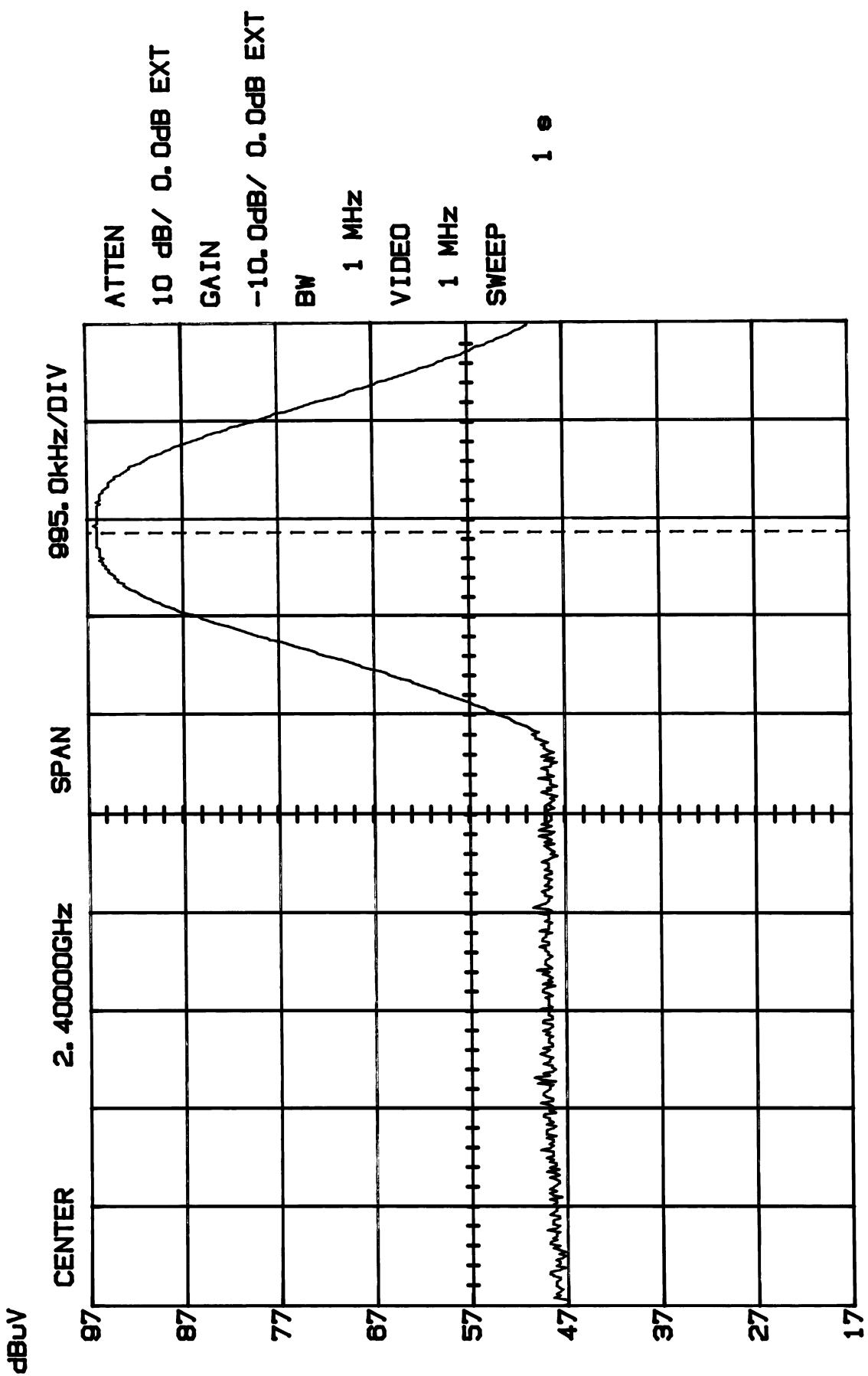
15.249 (c) BAND EDGES

Requirements: Emissions outside of the frequency band must be attenuated 50dB below the fundamental.

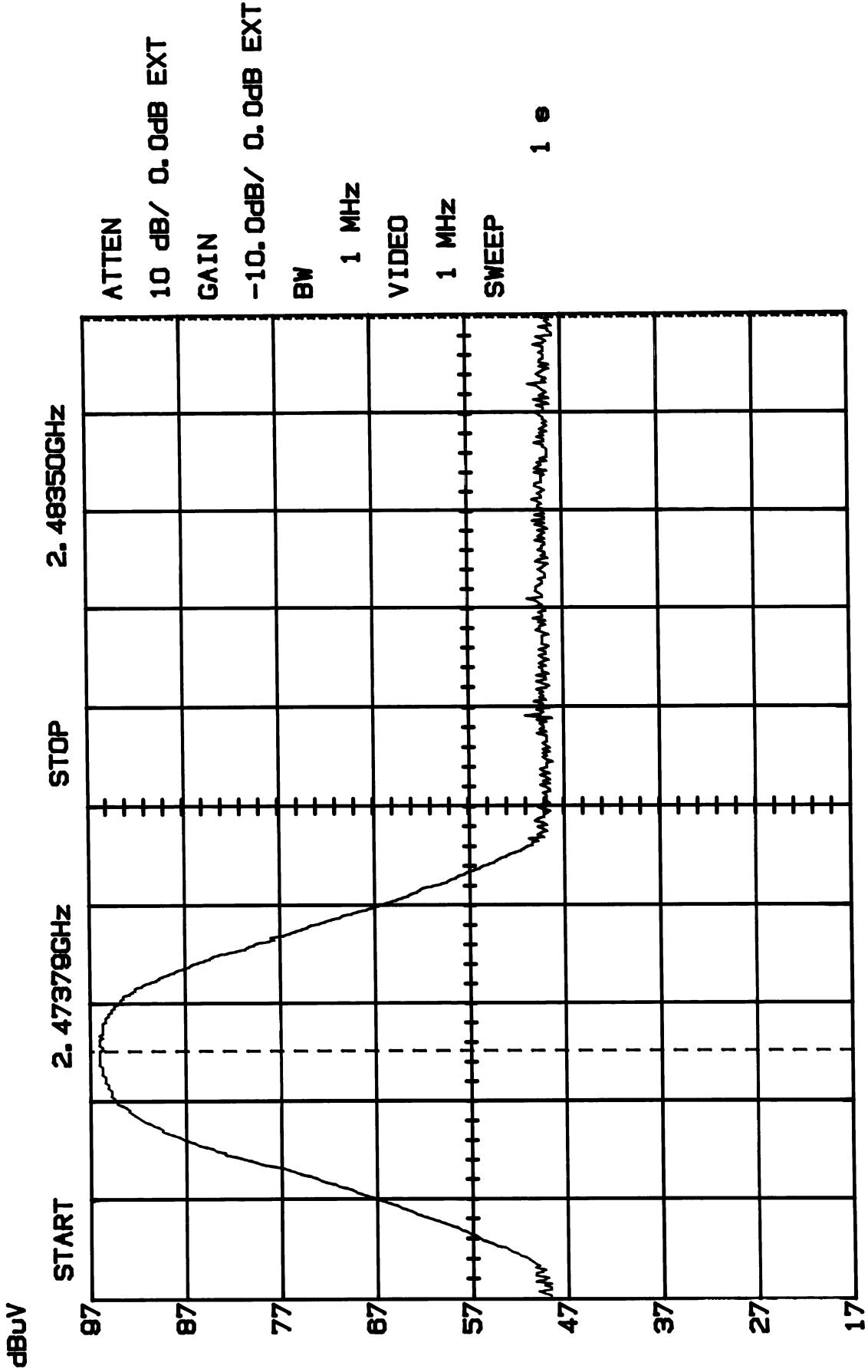
Measurement: The base was attenuated by 50 dB. The handset was attenuated by 50 dB.

Measurement Data: The Bandedge was measured at the Low end of the band for the base, and the High end of the band for the handset. See Plots in Attachment 3.

BAND EDGE
MODEL 27930XXX-M



BAND EDGE
MODEL 27930XXX-M



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EXHIBIT D(1)-8

2.202 BANDWIDTH

Handset

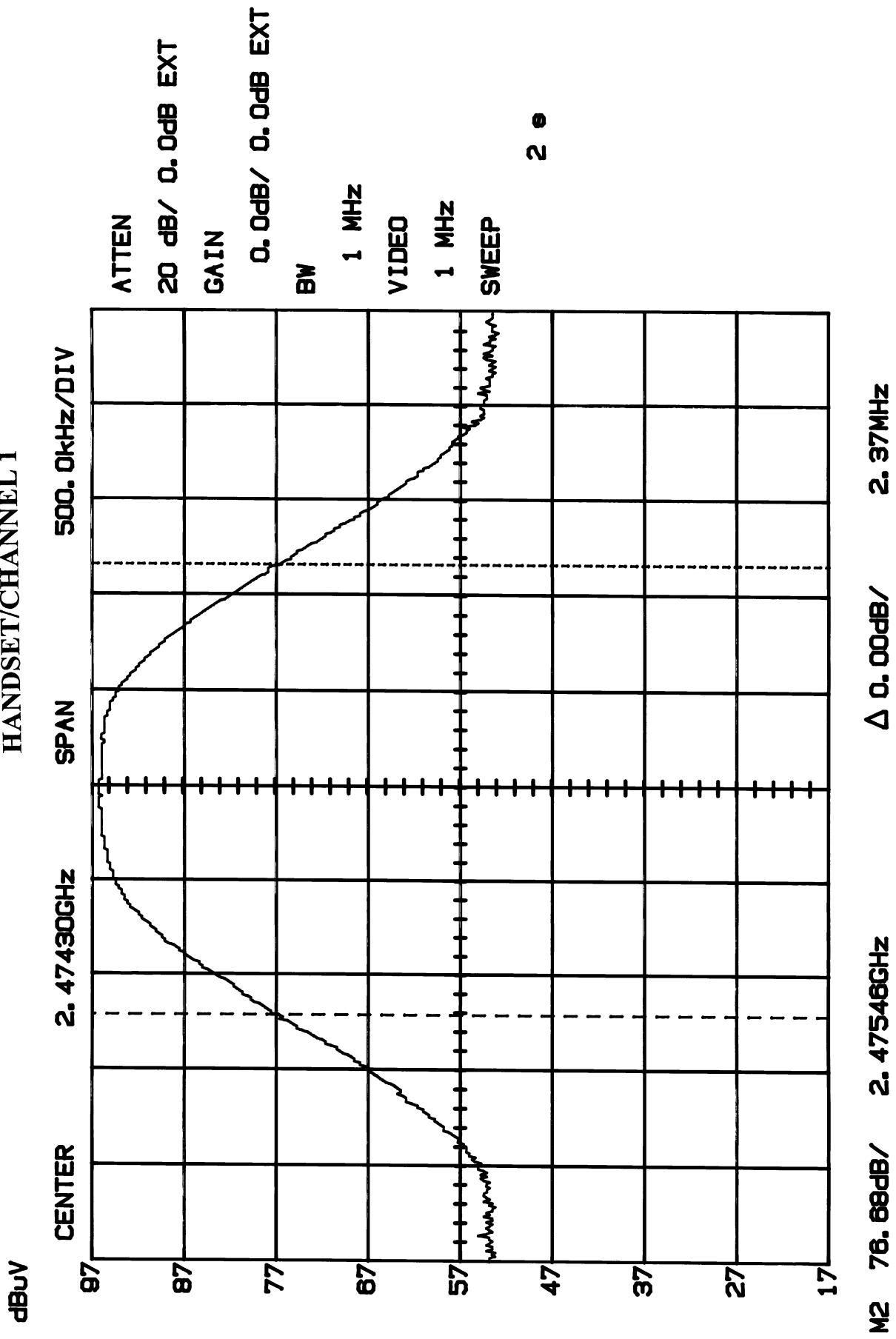
Channel 1: 2.37MHz [Refer to Exhibit D(1)-10]
Channel 40: 2.4 MHZ [Refer to Exhibit D(1)-11]

Base:

Channel 1: 2.39MHz [Refer to Exhibit D(1)-12]
Channel 40: 2.37MHz [Refer to Exhibit D(1)-13]

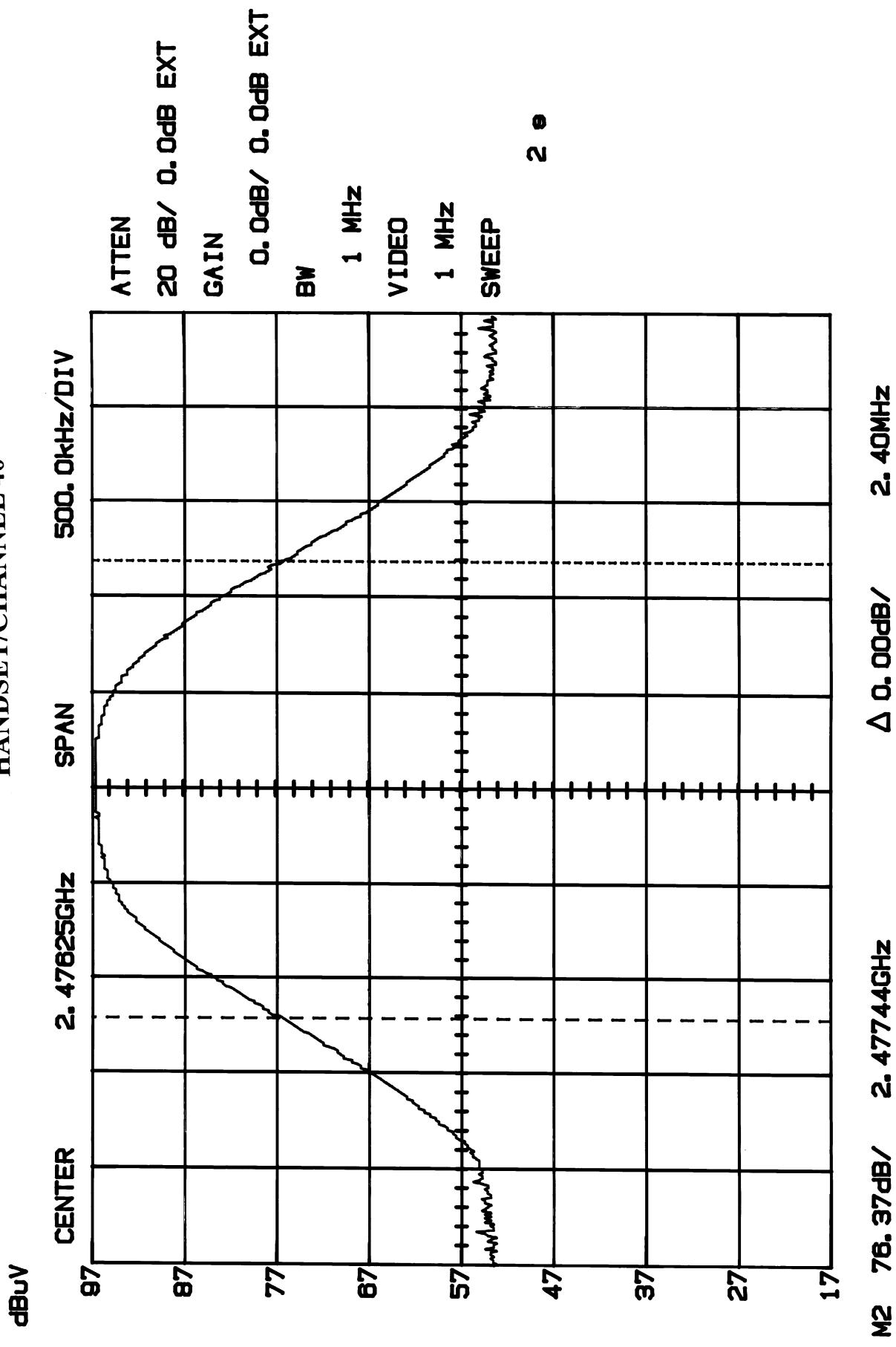
BANDWIDTH = 2.4MHz

BANDWIDTH
MODEL 27930XXX-M
HANDSET/CHANNEL 1

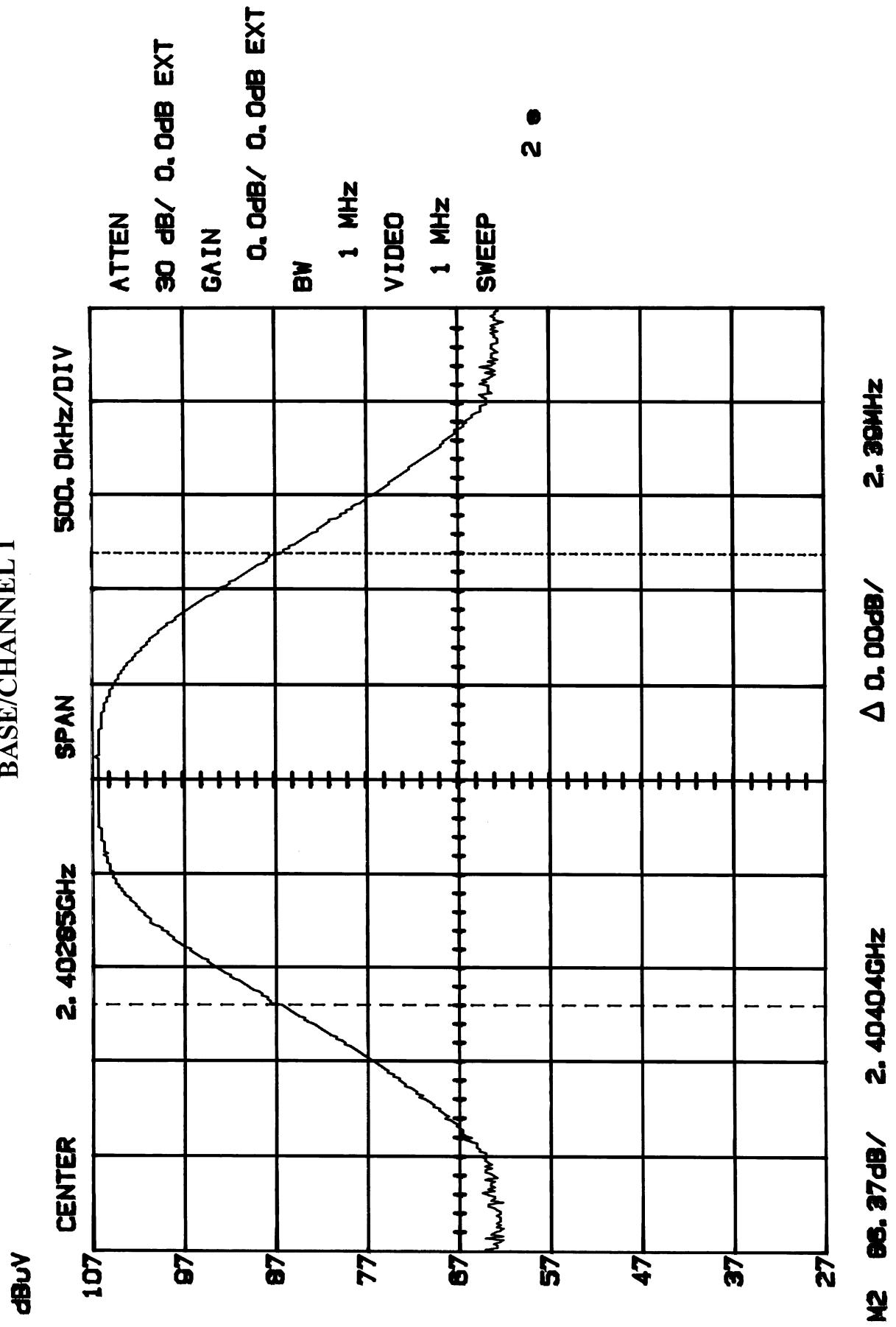


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EXHIBIT D(1)-10

BANDWIDTH
MODEL 27930XXX-M
HANDSET/CHANNEL 40

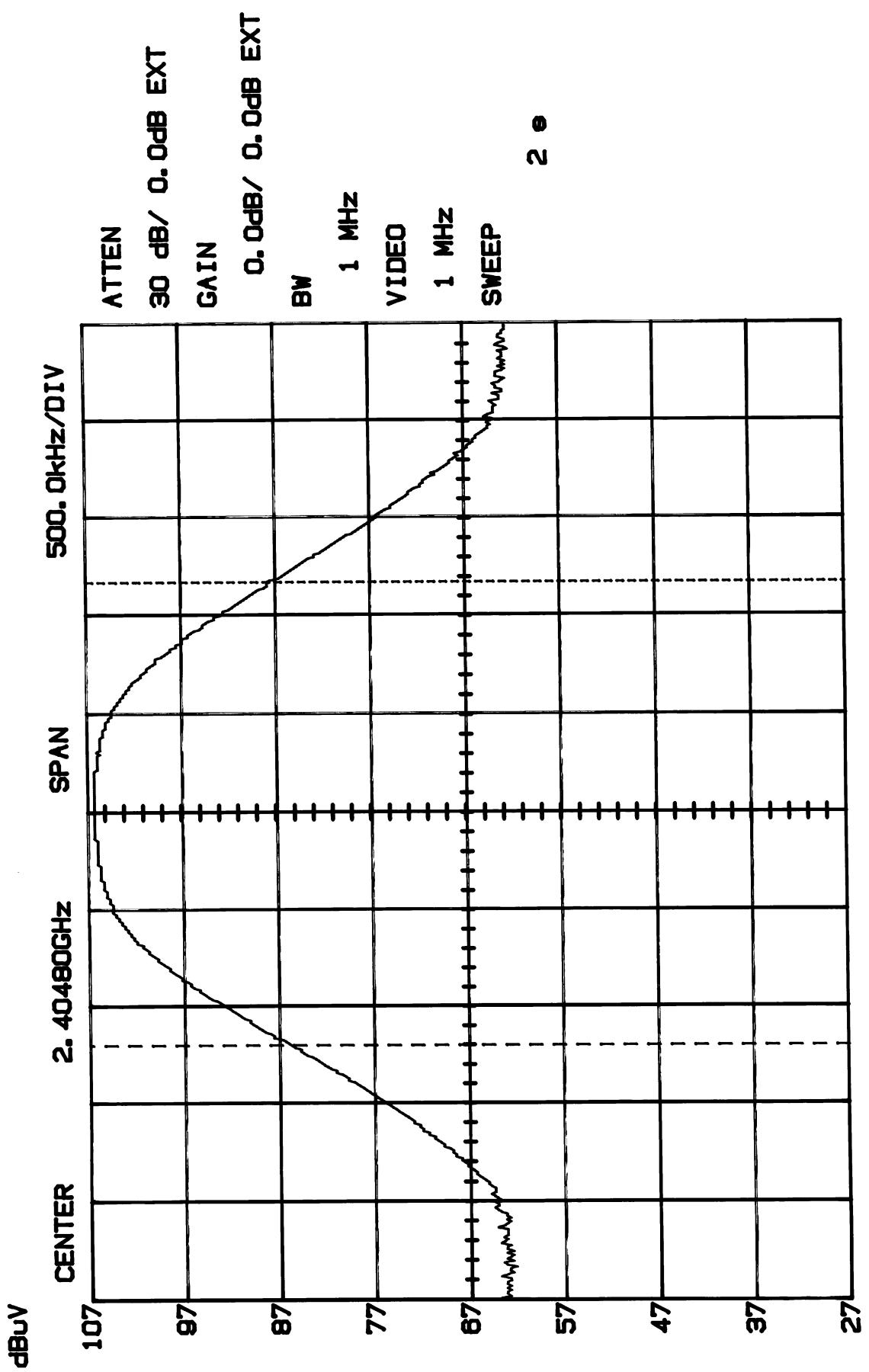


**BANDWIDTH
MODEL 27930XXX-M
BASE/CHANNEL 1**



FCC ID: 2-7930
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EXHIBIT D(1)-12

BANDWIDTH
MODEL 27930XXX-M
BASE/CHANNEL 40



15.107 (a) POWER LINE CONDUCTED INTERFERENCE

Requirements: 0.45 - 30MHz 250 μ V or 47.96dB μ V

Test Procedure: ANSI STANDARD C63.4-1992.
The spectrum was scanned from 0.45 to 30MHz.

Test Data:

THE HIGHEST EMISSION READ FOR LINE WAS 17.93 dB μ V @ 7.20 MHz.

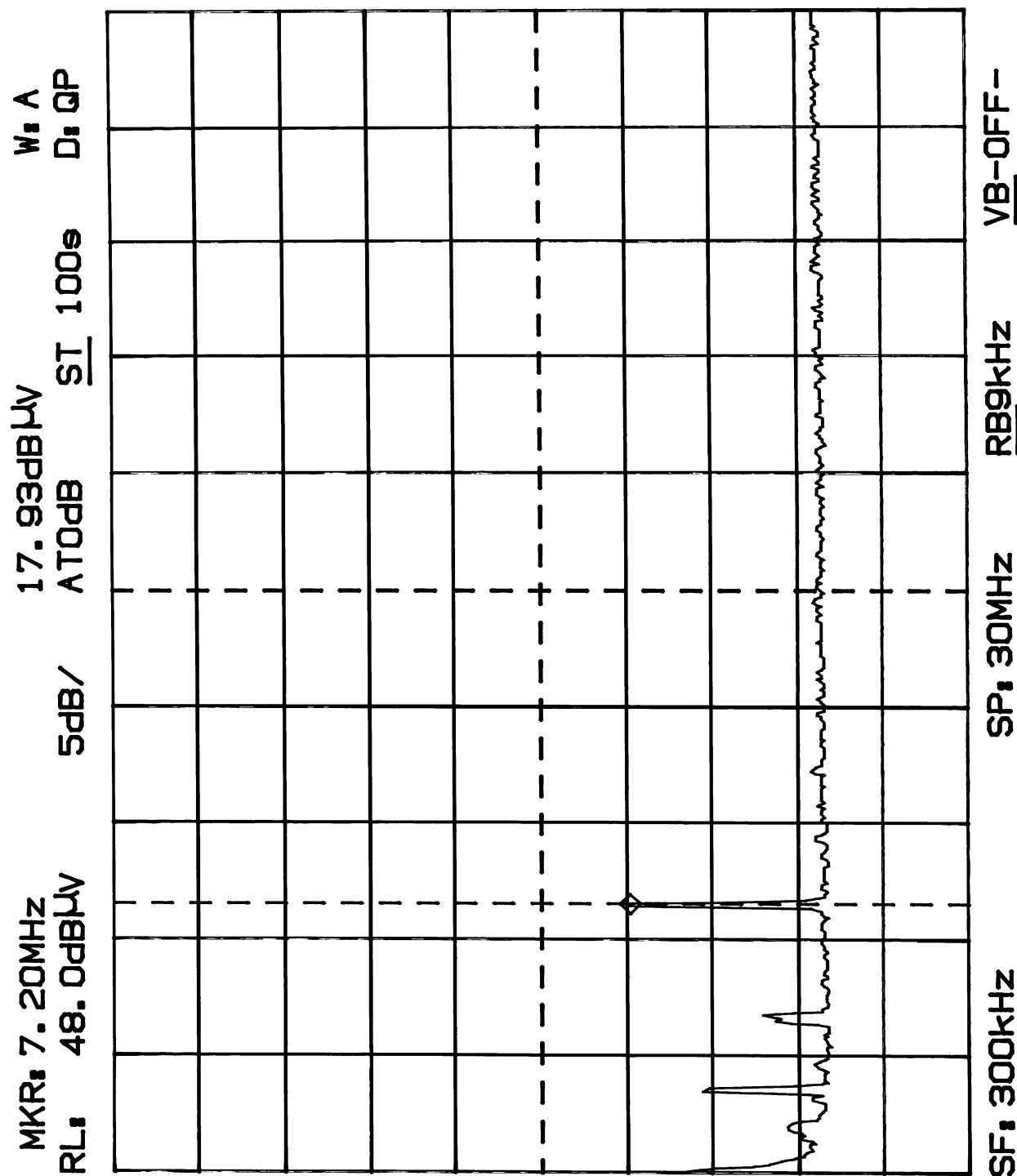
THE HIGHEST EMISSION READ FOR NEUTRAL WAS 17.01 dB μ V @ 7.20 MHz

Exhibits D(1)-15 and -16 represent the emissions taken for this device.

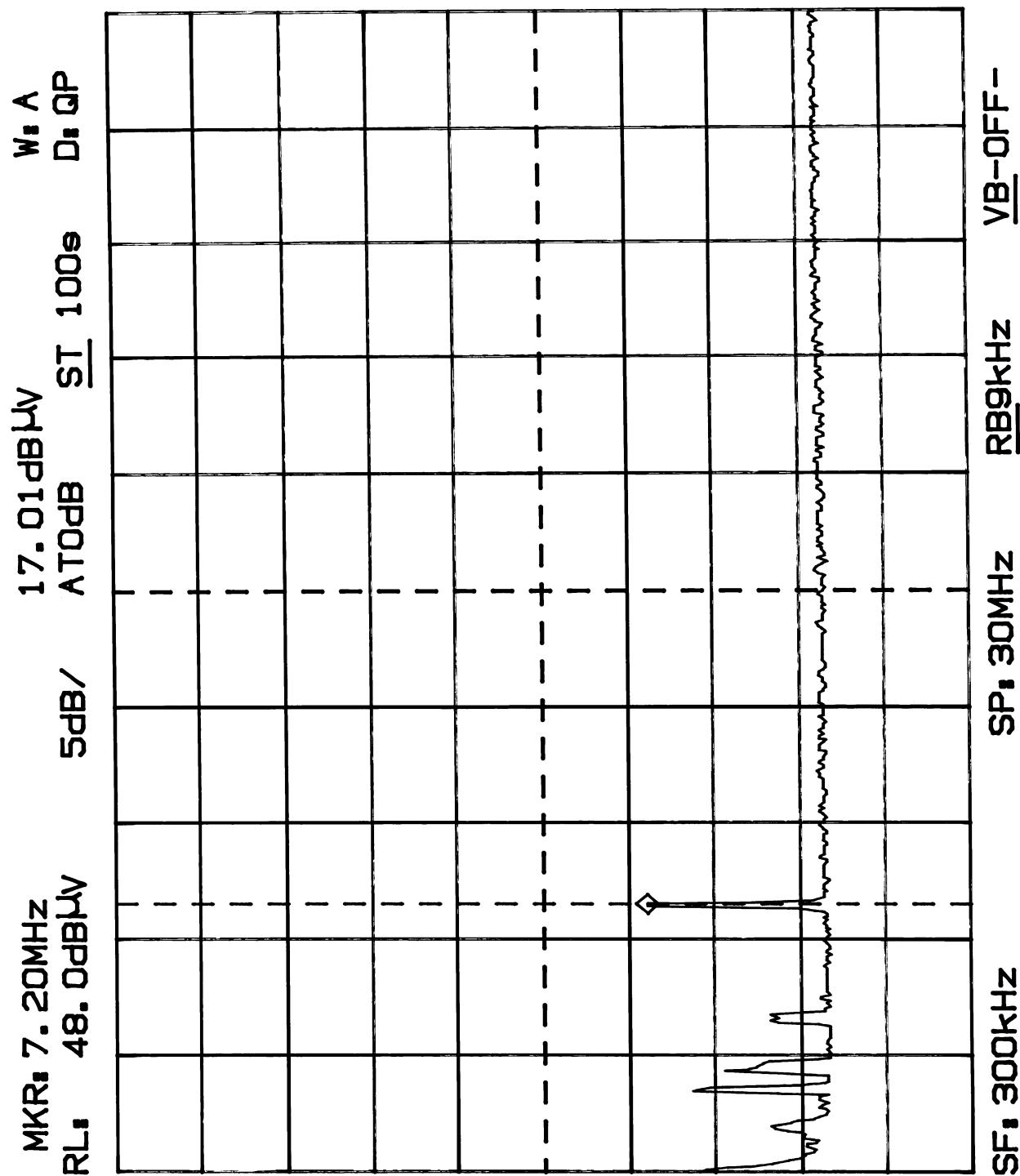
Test Results:

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 27930XXX-M
LINE



POWER LINE CONDUCTED EMISSIONS
MODEL 27930XXX-M
NEUTRAL



15.249 (a) and 15.249 (b)
FIELD STRENGTH OF EMISSIONS

Requirements:

<u>Field Strength of Fundamental</u>	<u>Field Strength of Harmonics</u>	<u>15.209</u>
	30-88 MHz	40 dB μ V/m@ 3m
2.4023-2.4806 GHz 94dB μ V	54 dB μ V/m@ 3m	88-216 MHz 43.5
	216-960 MHz	46
	Above 960 MHz	54

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

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

FIELD STRENGTH OF EMISSIONS

Test Data:

Emission Frequency MHZ	Meter Reading @3m dB μ V	Antenna	Cable and ACF dB	Field Strength dB μ V/M	FCC Limit dB μ V/M	Margin dB	Detector & BW KHz
Handset Unit							
<u>Channel 1</u>							
2474.30	55.00	HORN V	33.50	88.5	94	-5.50	PK 1000
4948.60	---						
7422.90	---						
<u>Channel 40</u>							
2476.25	55.00	HORN V	33.50	88.5	94	-5.50	PK 1000
4952.50	---						
7428.75	---						
Base Unit							
<u>Channel 1</u>							
2402.80	57.00	HORN V	33.38	90.38	94	-3.62	PK 1000
4805.60	---						
7208.40	---						
<u>Channel 40</u>							
2404.80	57.00	HORN V	33.38	90.38	94	-3.62	PK 1000
4809.60	---						
7214.40	---						