EXHIBIT A

County of Los Angeles

APPLICATION FOR AIRBORNE MICROWAVE DOWNLINK VIDEO EXPERIMENTAL LICENSE

August 9, 1999

Objective

The purpose of this experimental license is to demonstrate that public safety agencies in the Greater Los Angeles area, can use commercially available equipment in the underutilized 2402 to 2448 MHz spectrum to transmit microwave video images from airborne platforms to benefit ground tactical operations.

The specific objectives sought by this experimental license is to prove that public safety agencies in the Los Angeles area can share use of the underutilized 2402 to 2448 MHz spectrum without causing interference amongst themselves, or to existing entities.

If successful, this experiment will help alleviate a critical need that exists in the Greater Los Angeles area for additional microwave frequencies. By working in conjunction with equipment manufacturers and broadcasting entities, public safety agencies intend to maximize the use of the spectrum by using state-of-the-art equipment to minimize bandwidth and signal deviation.

Description of Experimentation

Law enforcement agencies, fire departments, disaster relief agencies and other public safety services have a growing operational need for airborne video communications systems. Such operations allow live video to be transmitted from helicopters and other aircraft to command and control centers on the ground, greatly facilitating emergency response activities. Providing such a "birds eye view" can be invaluable in coordinating response to crimes in progress, directing police officers in pursuit situations, battling building and forest fires, controlling civil disturbances, responding to hostage and barricade situations.

This capability is particularly important in expansive, densely populated areas in Southern California. The County of Los Angeles encompasses approximately 4,083 square miles and has a population of over 9.6 million people. To better serve the growing needs of the citizens of this the most populous and third largest county in the State of California, a new countywide airborne downlink video system will be implemented within the

next few months. The County of Los Angeles is anticipating to begin video downlink experimentation within six months of the Federal Communications Commission's granting of experimental license.

The video downlink system will consist of five remote receive sites strategically located throughout the County of Los Angeles. Each of these remote sites will have the ability to automatically track an airborne unit while in flight. The received real time video will be relayed to a central receive site located in the Los Angeles basin. The video images will then be routed via a communications network (microwave, fiber optics, etc.) to the County's Emergency Operations Center (CEOC), and to agencies belonging to the Los Angeles County Sheriff's Department and County Fire Department.

In addition, the County will have the ability to deploy mobile command units capable of receiving the video images transmitted from the airborne units during those events that require the need for emergency tactical operations. The County of Los Angeles will eventually have a total of three Sheriff's Department helicopters and one Fire Department airborne unit equipped with microwave video equipment. A diagram depicting the County's proposed countywide airborne downlink video system is provided in the Attachment 1. Other public safety agencies in Southern California such as the City of Los Angeles, Long Beach, Glendale, and Burbank will also be deploying similar airborne units.

Present Situation

Law enforcement agencies, fire departments, disaster relief agencies, and other public safety services have a growing operational need for airborne video communications especially during events that require the immediate coordination of limited and crucial public resources. Presently, public safety agencies in the Los Angeles area must coordinate the use of their microwave video frequencies with existing television broadcast entities, making it extremely difficult during events that require the immediate attention, response, and coordination of public resources.

Los Angeles County is presently licensed to operate on 2460.9375 MHz for microwave video operations. This frequency is an offset of microwave channels extensively used by television broadcasters in the Los Angeles basin. Even with coordination with these entities, the County encountered many operational conflicts involving the broadcasters.

Frequency Interference exists due many of the extensive networks in operation by the broadcast companies in Southern California. An example of such network for KNBC is shown on Attachment 2. An alternative to geographically separate transmitters to reduce RF interference is to identify spectrum away from existing broadcast offset frequencies.

Findings

Los Angeles County has identified the spectrum between 2402 MHz and 2448 MHz as underutilized in the Greater Los Angeles area. These frequencies are primarily licensed for use for radio astronomy research, amateur radio, and for industrial/medical instrumentation use. The County has conducted extensive monitoring and data collection of this spectrum to confirm the under-utilization of this spectrum and support data is furnished in an Attachment 3. As shown on the attached data sheet, there are minimal activities detected during our sample interval. RF Signals are at –90 dBm (a level approximating the ambient noise level). RF signal measurements are taken from two of primary radio coverage sites in the County - Oat Mountain and Rio Hondo Hills at different dates and times.

Through experimentation and evaluation, the County intends to prove that the underutilized 2402 to 2448 MHz spectrum can co-exist for public safety agencies and the incumbent users without causing mutual interference to each other, thus avoiding potential confrontational disputes over the use of this very in valuable communications resource.

Theory of Operation

The County intends to demonstrate that equipment presently available in the market place can be programmed to operate on frequencies between 2402

MHz and 2448 MHz using less bandwidth (10 MHz) and deviation (3 MHz) and produce a video image that is useful for public safety agencies. Other users of microwave video equipment, such as broadcasters, use technical parameters that are greater than those proposed by the County. By reducing the operational bandwidth, more channels can be incorporated into the same spectrum thus making more efficient use of this very limited and invaluable spectrum. In this particular case, it is expected that the experimental license will demonstrate that at least four channels of 10 MHz each can be obtained from the proposed spectrum. The experimental license will also help alleviate the critical need for additional spectrum for microwave video communications in the Greater Los Angeles area, thus allowing a better co-existence between public safety agencies and broadcasters in the Los Angeles area. Statements from equipment manufacturers are provided in Attachment 4 to confirm that their products will function with the operational parameters proposed by the County.

Equipment Description

Airborne Transmitters

The airborne downlink video transmitters selected for Sheriff's and Fire Departments helicopters will consist of frequency agile transmitters with high-gain directional antenna driven by GPS and compass to track the ground receive sites. They will also include a trackable omni-directional antenna with a switchable in-line attenuator that will allow variable power output selection by the operator via remote control, and a fixed down-looking transmit antenna with minimum coverage of at least a 60-degree wide cone under the aircraft. This antenna will be used to downlink with the mobile receiver sites.

The airborne video transmitters and antennas will be type accepted by the Federal Communications Commission to operate from 1.7 GHz to 2.5 GHz frequency band. They will also be capable of transmitting with both right hand and left hand circular polarization signal and be switchable by remote from inside the helicopter.

All transmitters will also include at least one audio sub-carrier for the transmission of GPS location data from the helicopter to the ground-base receiving antennas. The sub-carrier frequency will be on 4.830 MHz.

Ground Receiver Systems

Five permanent ground based systems will be capable of receiving airborne downlink video transmission in the 1.7 GHz to 2.5 GHz microwave band including at least one audio sub-carrier. All necessary antenna control functions will be remotely controllable from the Central Receive Site (CRS). The CRS location will serve as the video control center to monitor and distribute the video images to designated County facilities via fiber optics and digital microwave.

Portable/Mobile Receiver Site Systems

The mobile systems will be ruggedized, self-contained, portable receiver stations, which will operate on either AC or DC powers and be capable of being vehicle mounted. Each unit will include a video monitor and signal metering system for best reception tuning.

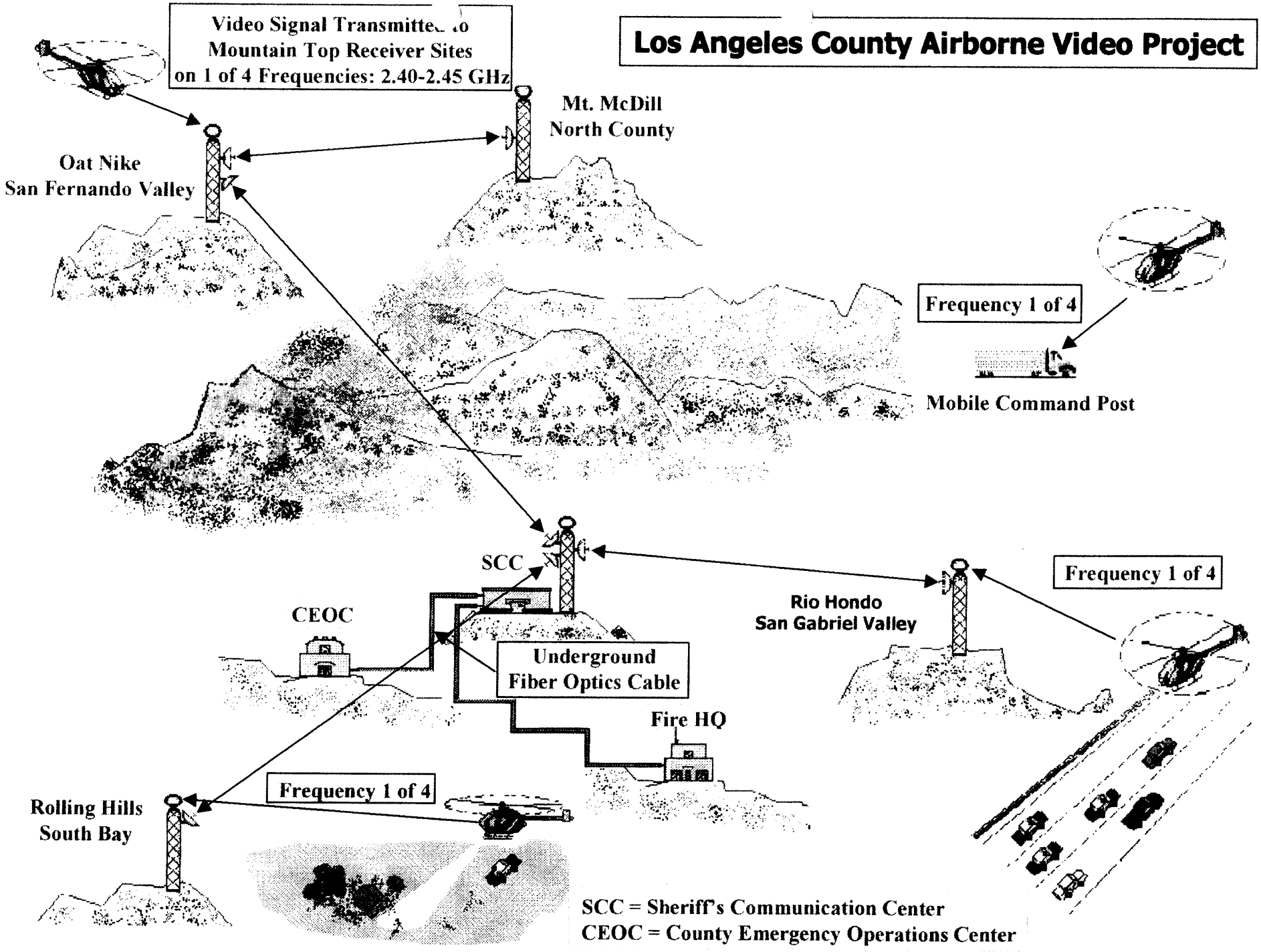
Summary

The County of Los Angeles is applying for a FCC Experimental Radio License for airborne microwave video. With joint efforts of public safety and equipment manufacturers in Southern California, we will be conducting tests on potential application of airborne downlink video using underutilized spectrum in 2402 to 2448 MHz bands. Through careful coordination and testing, the County intends to demonstrate that public safety agencies in the Los Angeles area can share use of the precious spectrum resources without causing harmful interference amongst themselves, or to existing entities.

Attachment 1

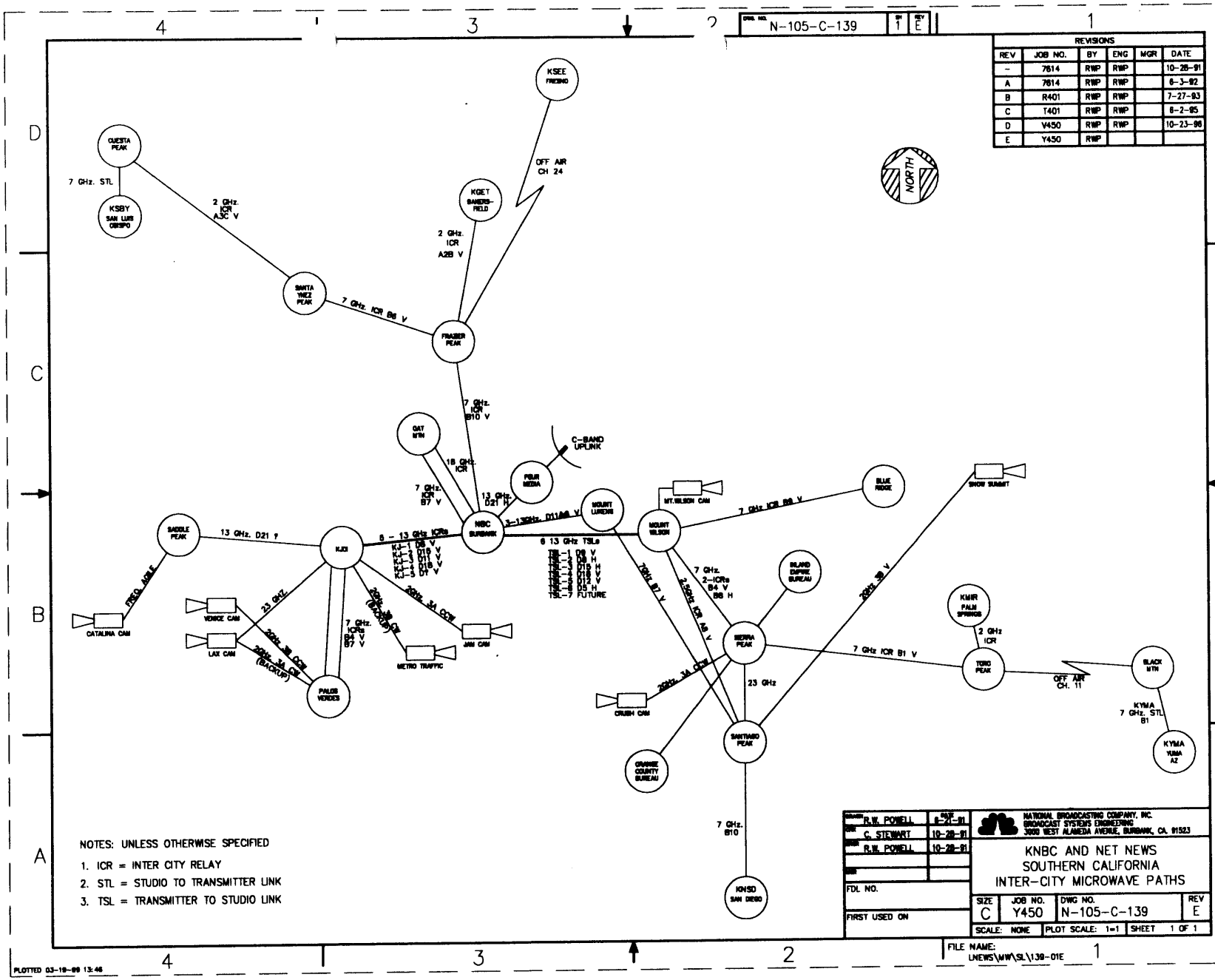
Diagram of Proposed System – County Airborne Video

Los Angeles County Airborne Video Project



Attachment 2

Example of Existing Broadcast Network in Southern California


DWG NO. N-105-C-139
SH 1
REV E
REVISIONS
REV | JOB NO. | BY | ENG | MGR | DATE
- | 7614 | RWP | RWP | | 10-26-91
A | 7614 | RWP | RWP | | 6-3-92
B | R401 | RWP | RWP | | 7-27-93
C | T401 | RWP | RWP | | 6-2-95
D | Y450 | RWP | RWP | | 10-23-96
E | Y450 | RWP | | |
NORTH
KSEE FRESNO
OFF AIR CH 24
CUESTA PEAK
7 GHz. STL
KSBY SAN LUIS OBISPO
2 GHz. ICR A3C V
SANTA YNEZ PEAK
7 GHz. ICR B6 V
KGET BAKERSFIELD
2 GHz. ICR A2B V
FRASER PEAK
7 GHz. ICR B10 V
OAT MTN
18 GHz. ICR
7 GHz. ICR B7 V
13 GHz. D21 H
FOUR MEDIA
C-BAND UPLINK
NBC BURBANK
3-13GHz. D11&B V
MOUNT LUKENS
6 - 13 GHz ICRs
D8 V
D10 V
D12 V
D6 V
D7 V
6 13 GHz TSLs
D8 V
D6 H
D10 V
D12 V
D5 V
D5 H
TSL-7 FUTURE
SADDLE PEAK
13 GHz. D21 ?
KJOI
FREQ. AGILE
CATALINA CAM
VENICE CAM
LAX CAM
2 GHz.
20GHz. 3A QCW
20GHz. 3B QCW (BACKUP)
PALOS VERDES
7 GHz. ICRs B4 V B7 V
20GHz. 3B QCW (BACKUP)
20GHz. 3A QCW
ANN CAM
METRO TRAFFIC
MT. WILSON CAM
MOUNT WILSON
7GHz B7 V
2.5GHz ICR A8 V
7 GHz. 2-ICRs B4 V B6 H
7 GHz ICR B6 V
BLUE RIDGE
SNOW SUMMIT
INLAND EMPIRE BUREAU
SIERRA PEAK
20GHz. 3A QCW
CRUSH CAM
23 GHz
20GHz. 3B V
KMIR PALM SPRINGS
2 GHz ICR
7 GHz ICR B1 V
TORO PEAK
OFF AIR CH. 11
BLACK MTN
KYMA 7 GHz. STL B1
KYMA YUMA AZ
SANTIAGO PEAK
ORANGE COUNTY BUREAU
7 GHz. B10
KNSD SAN DIEGO
NOTES: UNLESS OTHERWISE SPECIFIED
1. ICR = INTER CITY RELAY
2. STL = STUDIO TO TRANSMITTER LINK
3. TSL = TRANSMITTER TO STUDIO LINK
DRAWN R.W. POWELL 6-21-91
CHK C. STEWART 10-28-91
APP R.W. POWELL 10-28-91
FDL NO.
FIRST USED ON
NATIONAL BROADCASTING COMPANY, INC.
BROADCAST SYSTEMS ENGINEERING
3000 WEST ALAMEDA AVENUE, BURBANK, CA. 91523
KNBC AND NET NEWS
SOUTHERN CALIFORNIA
INTER-CITY MICROWAVE PATHS
SIZE C | JOB NO. Y450 | DWG NO. N-105-C-139 | REV E
SCALE: NONE | PLOT SCALE: 1=1 | SHEET 1 OF 1
FILE NAME: LNEWS\MW\SL\139-01E
PLOTTED 03-19-99 13:46

Attachment 3

2380 to 2450 MHz Spectrum Signal Radiation Report

Internal Services Department
Information Technology Services
Network Service Division
Network Field Maintenance Unit

M E M O R A N D U M

March 1, 1999

To: Dennis Hanley, Supervisor

From: Jim Berger, Sr. ECT

Subject: 2380 to 2450 MHz Microwave Spectrum Survey at Rio Hondo Hills and Oat Mountain Microwave Sites

The two Gigahertz spectrum survey for signal radiation was conducted in the following manner. The I.F.R. Systems Incorporated, Model # AN 1840, Serial # 4019, spectrum analyzer was used to measure and record signals from 2380 to 2450 MHz. The antenna system used was a Conifer Parabolic Grid, Model # 26T-2400, Serial # none, which provides approximately 22 dB of gain in either the H or E plane (see attached specification sheet.) A low loss cable with 1.5 dB insertion loss was used to connect the two devices. Figure 1 is a system block diagram of the spectrum analyzer and antenna system used at both sites.

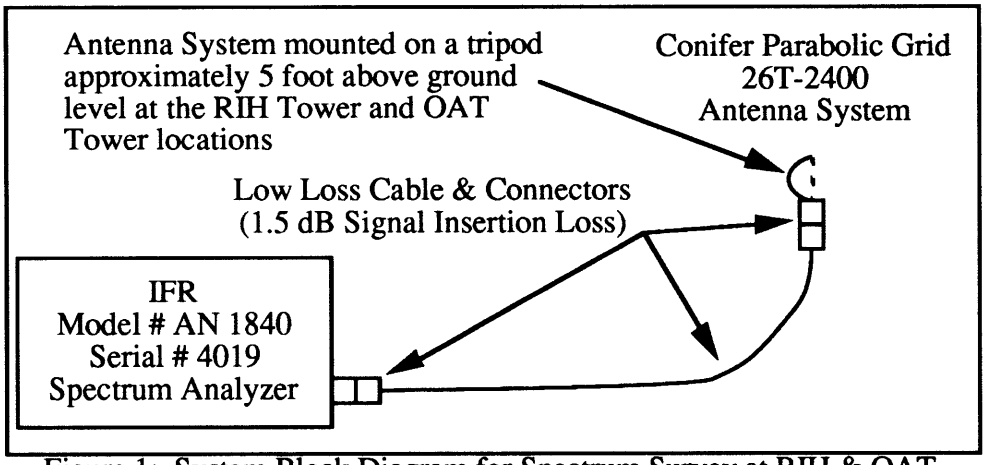


Figure 1: System Block Diagram for Spectrum Survey at RIH & OAT

The test was conducted by sweeping the horizon for 360 degrees, in the horizontal and vertical planes at Oat Mountain (OAT) and Rio Hondo Hills (RIH) sites. The test was conducted on different dates and during normal working hours. The graphs enclosed are the result of the test at each site. Table 1 notes the site parameters for the two sites.

Table 1: Spectrum Survey Site Parameters

SITE	NORTH LATITUDE	WEST LONGITUDE	GROUND ELEVATION	ANTENNA ELEVATION	REMARKS
OAT	34-19-12	118-33-53	1,013.0 Meters	1.6 Meters	
RIH	34-01-05	118-00-46	356.0 Meters	1.6 Meters	

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2.4 - 2.5 GHz *

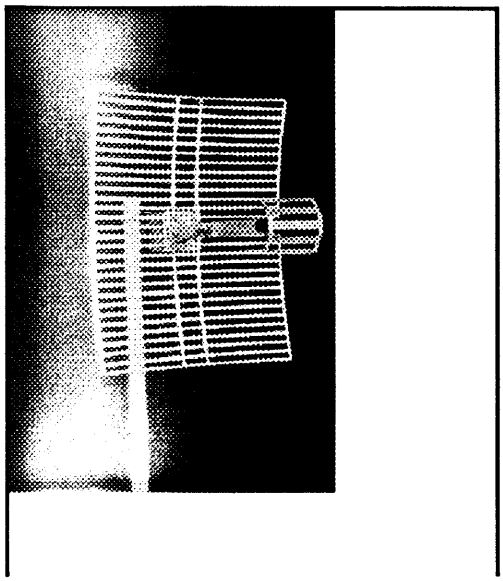
High Performance Receive/Transmit Antennas

WLAN/ISM

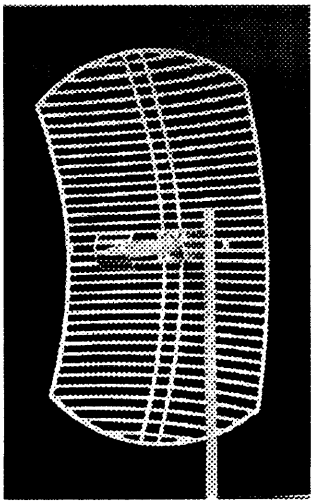
- 18dBi Die-Cast Semi-Parabolic Grid
- 24dBi Die-Cast Semi Parabolic Grid
- Microceptor® Series 11dBi and 16dBi Flat Planar Array
- Microceptor® Series Accessories

Parabolic Antennas
Models 18 and 26

Model 18T-2400



Model 26T-2400



- Commercial Grade
- Low Cost
- Outdoor Weather Sealed
- Consistent High Performance
- Lightest Weight and Most Durable Grid Antennas
- Low Wind Loading
- Easy to Install
- Nonferrous Materials - NO RUST!
- Compact Packaging - Saves on Shipping Costs

	MODEL 18T-2400	**MODEL 26T-2400**
Input Frequency	2400-2500 MHz	2400-2500 MHz
Gain	18dBi	24dBi
-3 dB Beam Width	14^0	7.5^0
Front to Back Ratio	>23 dB	>31 dB
Polarity	Dual	Dual
Cross Polarity Rejection	>23 dB	>26 dB
VSWR (Average)	1.3:1 @ 2400-2500 MHz	1.3:1 @ 2400-2500 MHz
Impedance @ Output	50 OHMS	50 OHMS
Connector "N" Type**	Male	Male
Coaxial Pigtail - RG8**	24 Inches	24 Inches
Input Power	50 Watts	50 Watts
Windloading @ 100 MPH @140 MPH	 39.4 lbs. 77.9 lbs.	 97.0 lbs. 199.5 lbs.
Elevation Adjustment	60^0 in 10^0 Increments	60^0 in 10^0 Increments

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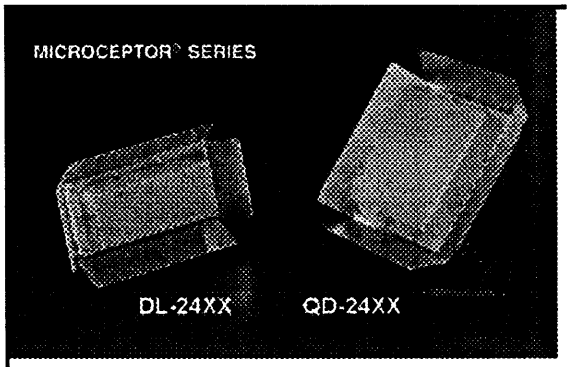
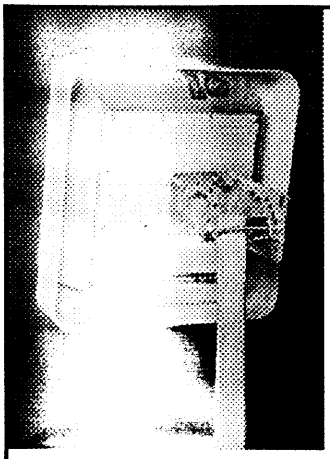
Antenna
Microceptor® Series
Models DL & QD



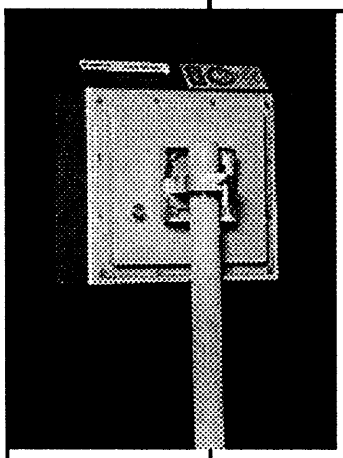
Low Profile
Outdoor Weather Sealed
Reliable
Quick Mount "U" Bracket
Easy to Install
Excellent Cross Pole Patterns
Low Wind Loading
Light Weight

ELECTRICAL SPECIFICATIONS

	DL-2400	DL-2402	QD-2400	QD-2402	DL-2410	DL-2412
Gain	13 dBi	13 dBi	16 dBi	16 dBi	11 dBi	11 dBi
3dB Beamwidth --E Plane --H Plane	27^0 45^0	27^0 45^0	27^0 27^0	27^0 27^0	27^0 75^0	27^0 75^0
F/B Ratio	>40 dB	>40 dB	>40 dB	>40 dB	>25 dB	>25 dB
Cross Pole	>25 dB	>25 dB	>30 dB	>30 dB	>25 dB	>25 dB
VSWR	1.4:1	1.4:1	1.5:1	1.5:1	1.4:1	1.4:1
Impedance	50 OHMS	50 OHMS	50 OHMS	50 OHMS	50 OHMS	50 OHMS
Wind Loading @100 MPH @140 MPH	25.0 lbs. 49.4 lbs.	25.0 lbs. 49.4 lbs.	39.4 lbs. 77.0 lbs.	39.4 lbs. 77.0 lbs.	25.0 lbs. 49.4 lbs.	25.0 lbs. 49.4 lbs.
Polarization	Dual	Dual	Dual	Dual	Dual	Dual
Input Power	50 Watts	50 Watts	50 Watts	50 Watts	50 Watts	50 Watts
Connector "N"	Female	Female	Female	Female	Female	Female
Right Angle Mount	Optional	Optional	Optional	Optional	Optional	Optional
Standard Mount	1-2 in O.D. Pipe	--	1-2 in O.D. Pipe	--	1-2 in O.D. Pipe	--
Elevation Mount	--	60^0 in 10^0 increments or less	--	60^0 in 10^0 increments or less	--	60^0 in 10^0 increments or less



Elevation Mount Model QD-2402 Shown with Optional Right Male Adapter. The Elevation Mount is also available on Models DL-2402 and DL-2412.



Standard Mount Model QD-2400. The Standard Mount is also available on Models DL-2400 and DL-2410.

MECHANICAL SPECIFICATIONS

	DL-24XX	QD-24XX
Size		
Inches	7.5 x 11	10.75 x 11
Millimeters	.30 x .43	.42 x .43
Weight		
Pounds	1.4	2.0
Kilograms	.64	.91
Reflector Material	Stamped Aluminum	Stampled Aluminum
Backplate Bracket Material	Zinc-plated Steel	Zinc-plated Steel
Housing Material	High Impact ABS Plastic	High Impact ABS Plastic
Radome (Optional)	High Impact Polystyrene	High Impact Polystyrene
Micro-Mount (Optional)		
Material	Stainless Steel/Aluminum	tainless Steel/Aluminum
EX-1000 Extension Tube (Optional)		
Size	12 Inches	12 Inches
Material	Aluminum	Aluminum

MICROCEPTOR ACCESSORIES

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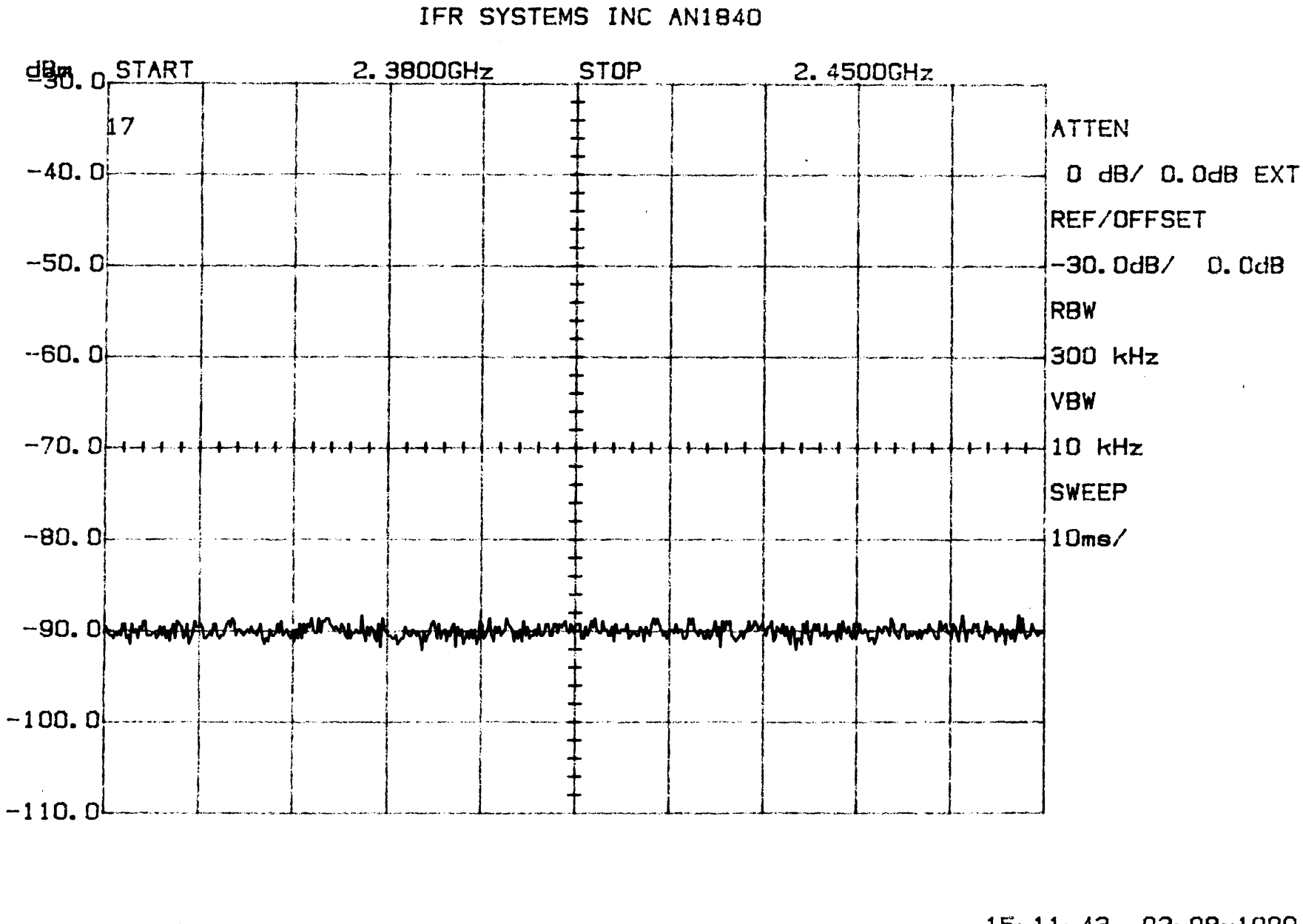
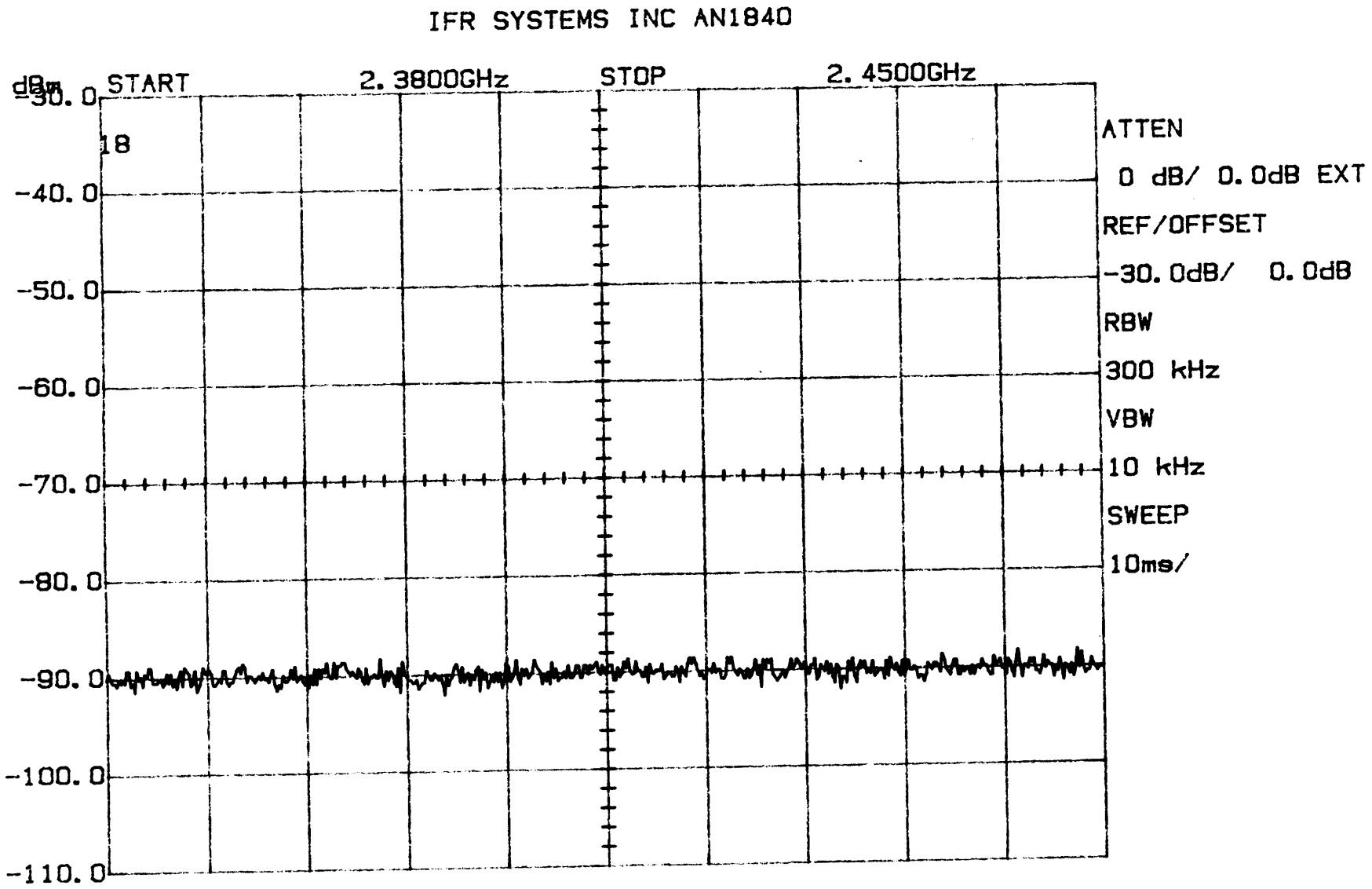
319-753-5508 FAX

Test Date:	**February 8, 1999**
Location:	**Rio Hondo Hills**
Frequency:	**2380 TO 2450 MHz Spectrum Survey**

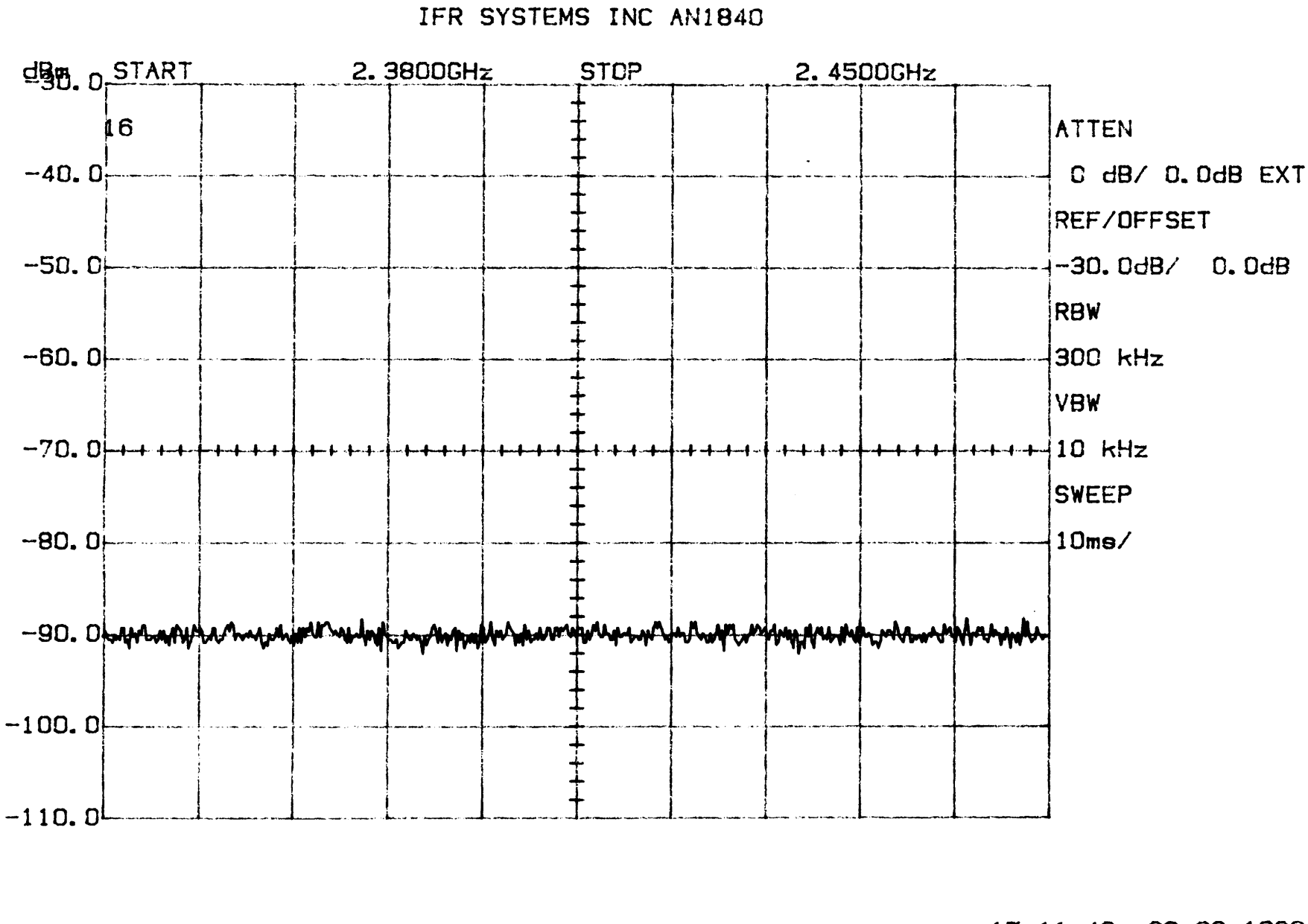
Site: Rio Hondo Polarity: Horizontal Azimuth: 200° Set 1



Site: Rio Hondo Polarity: Horizontal Azimuth: 250° Set 1



Site: Rio Hondo Polarity: Horizontal Azimuth: 040° Set 1



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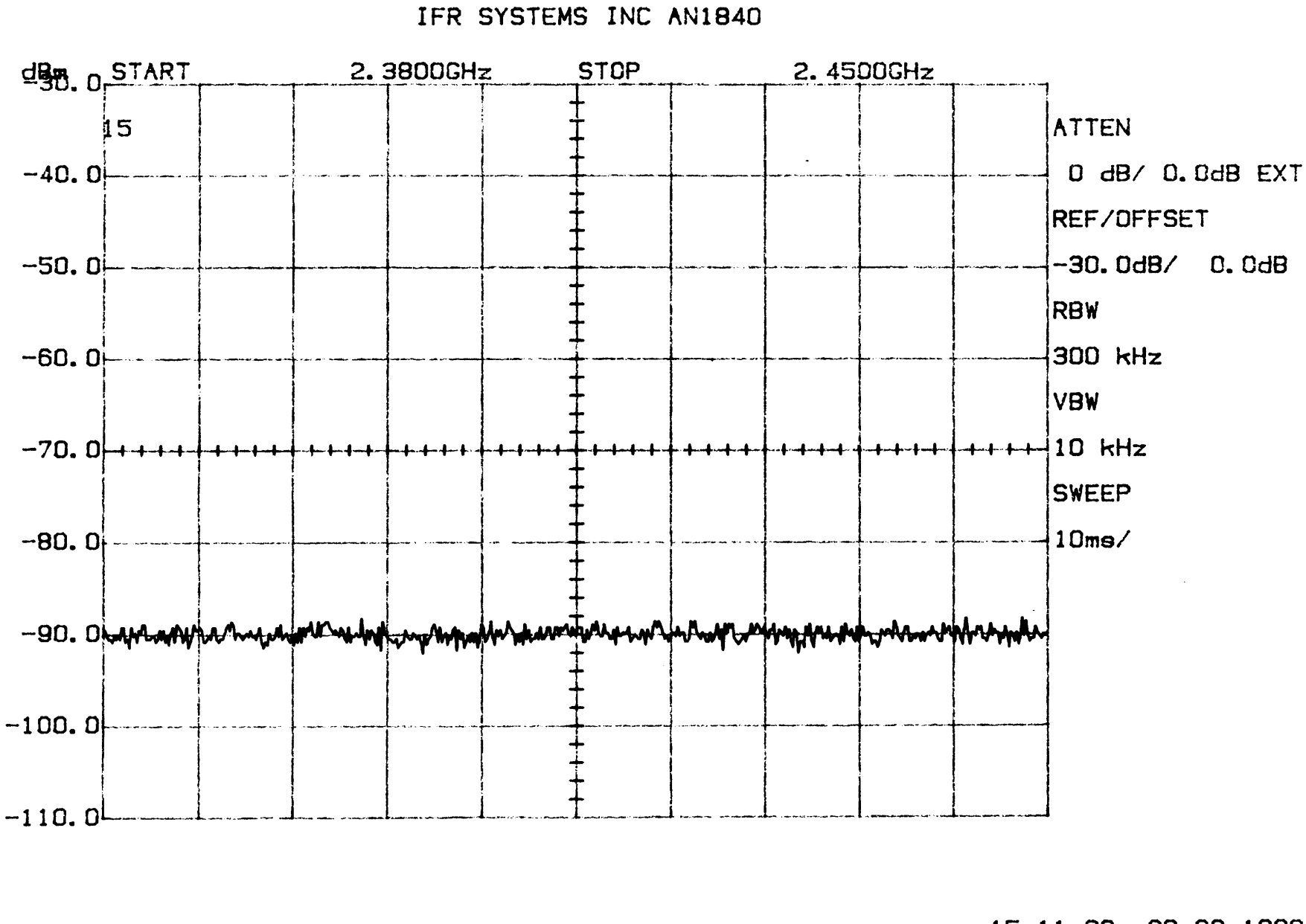

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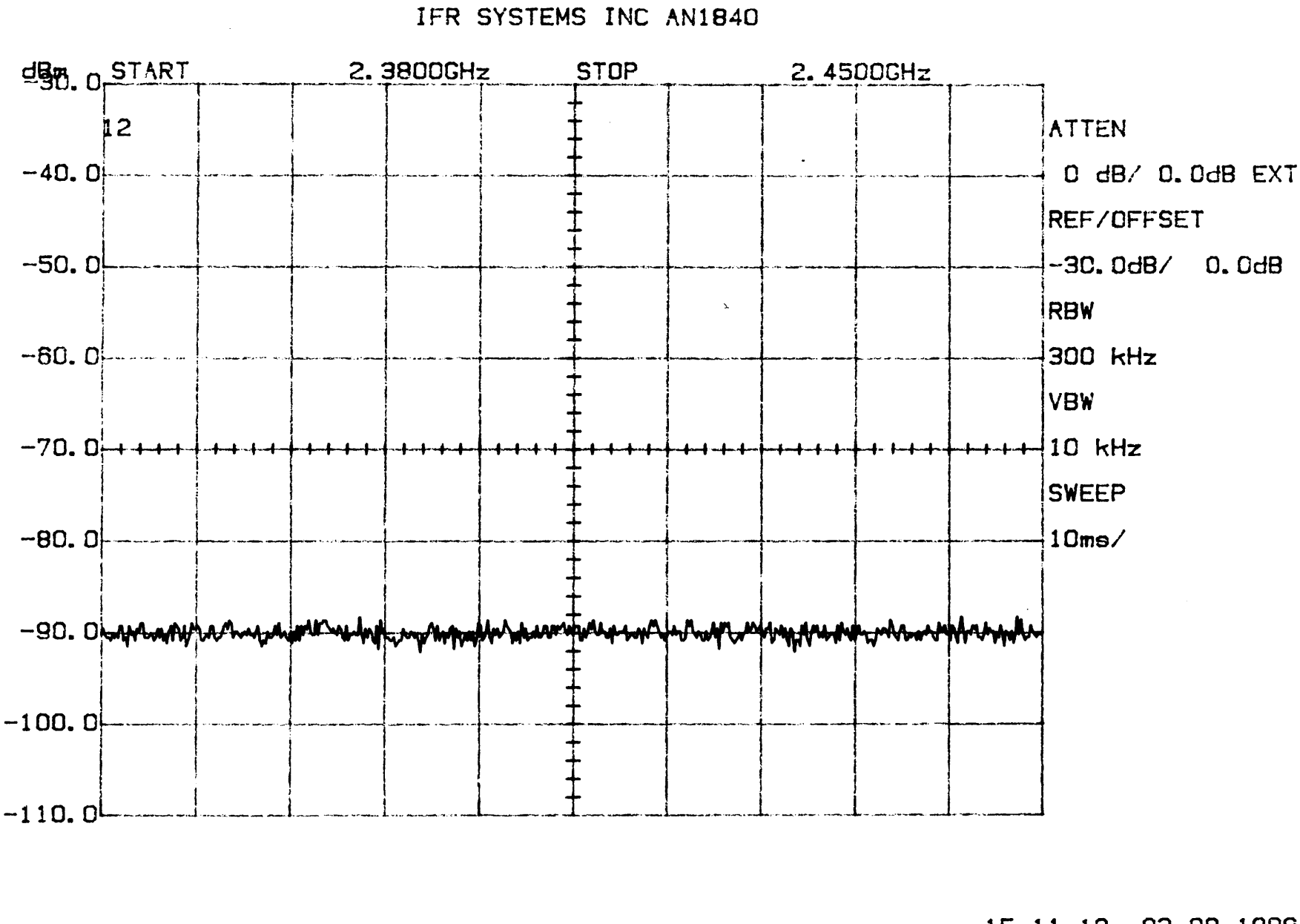

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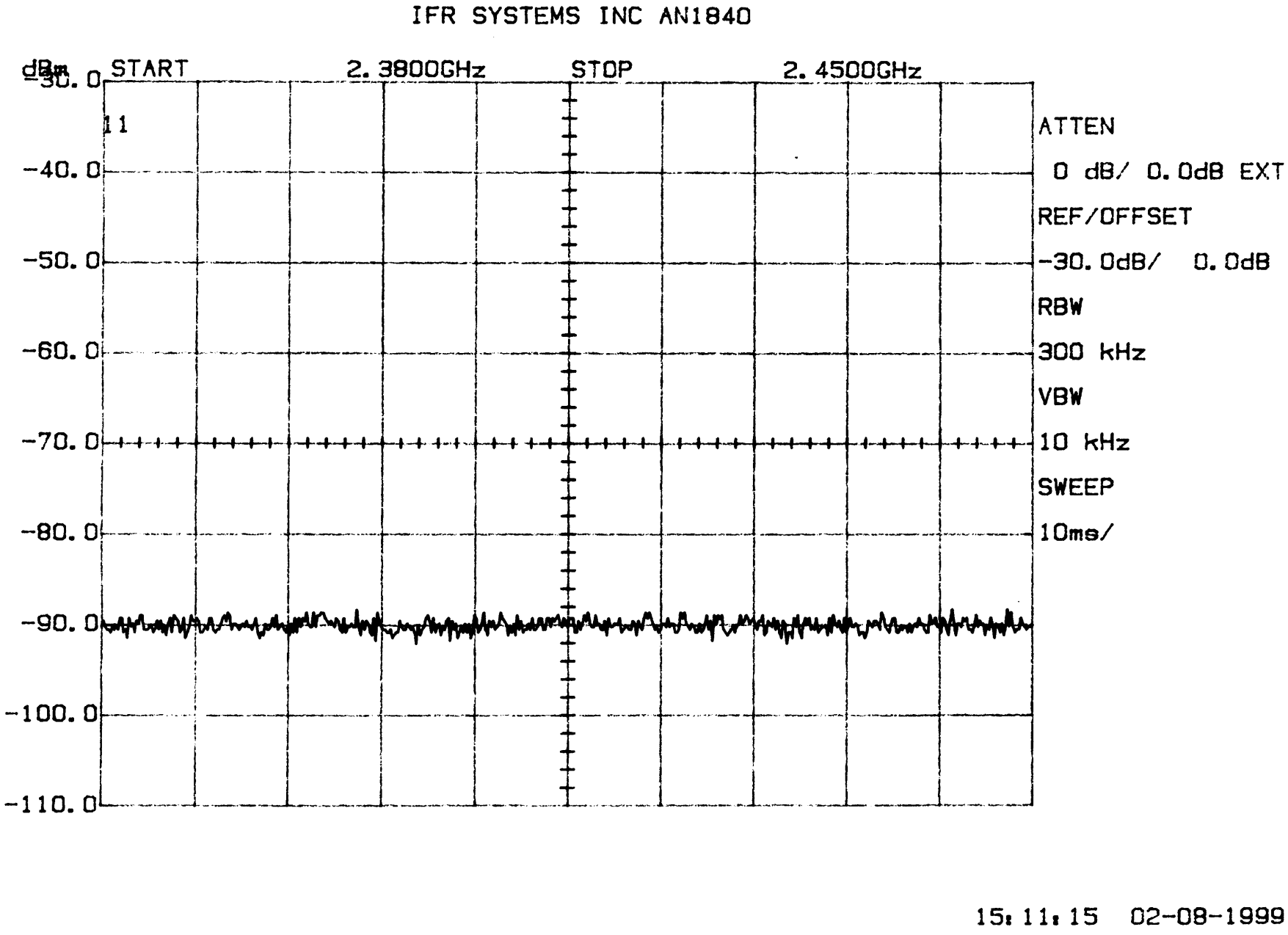

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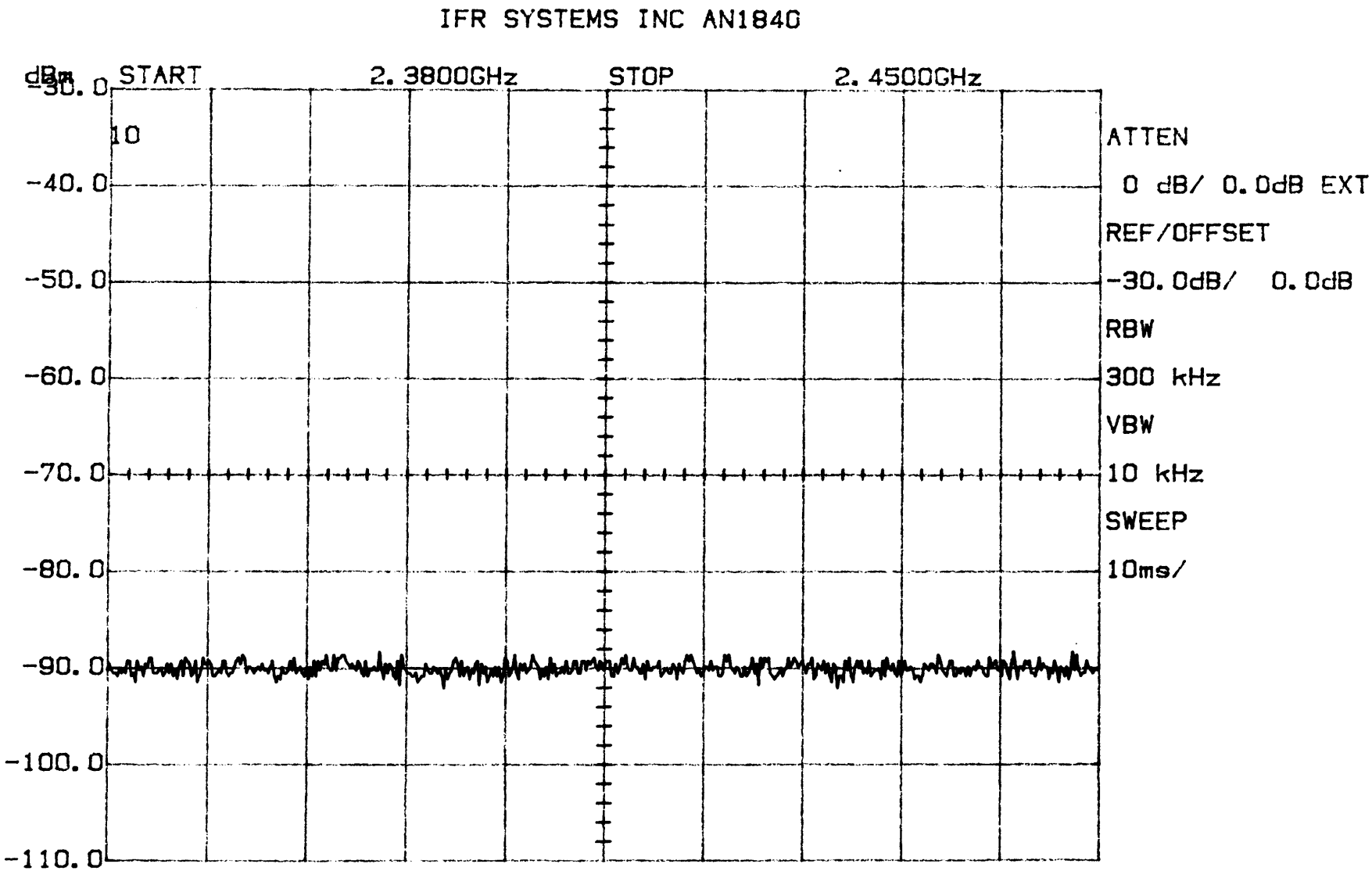

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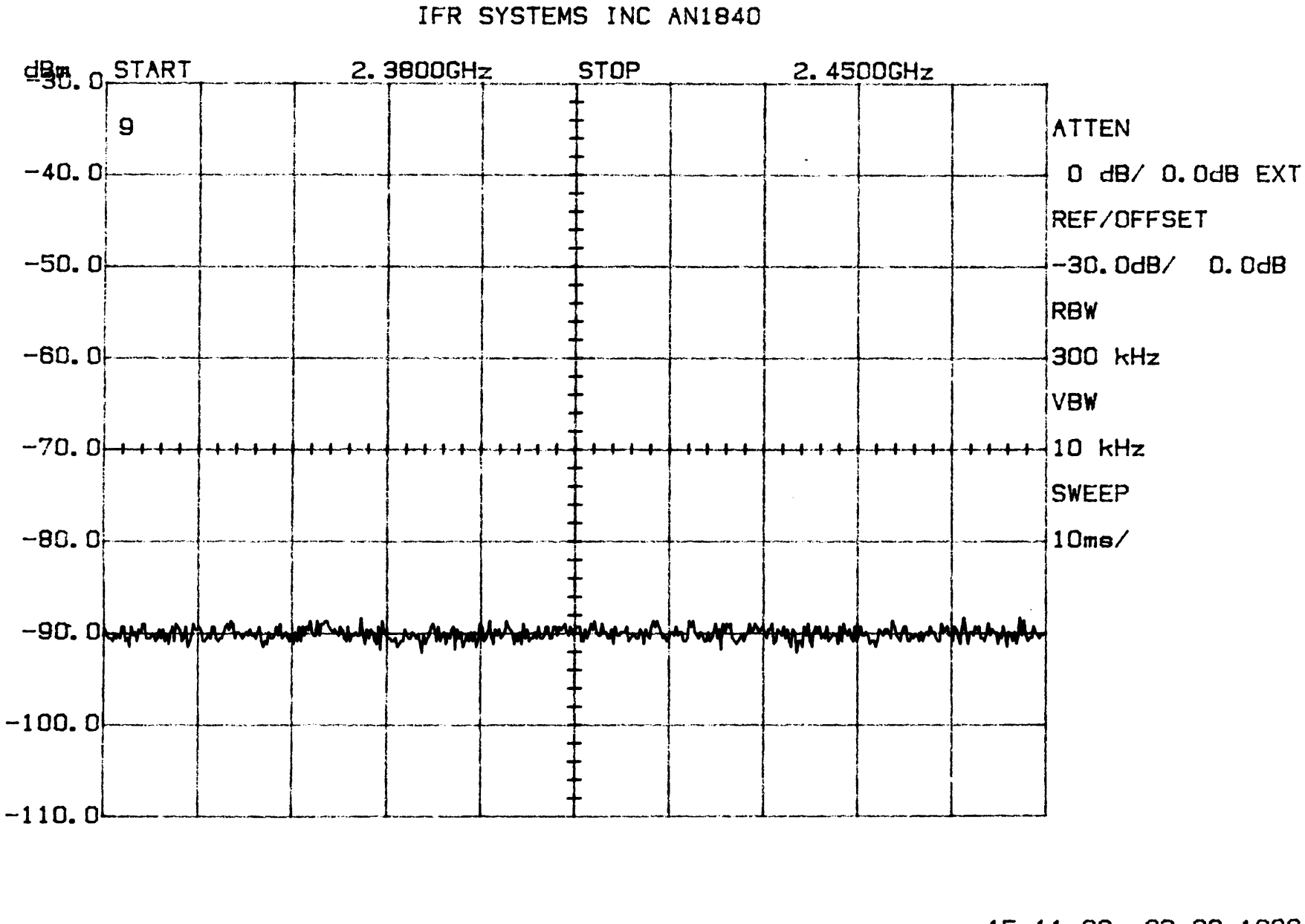

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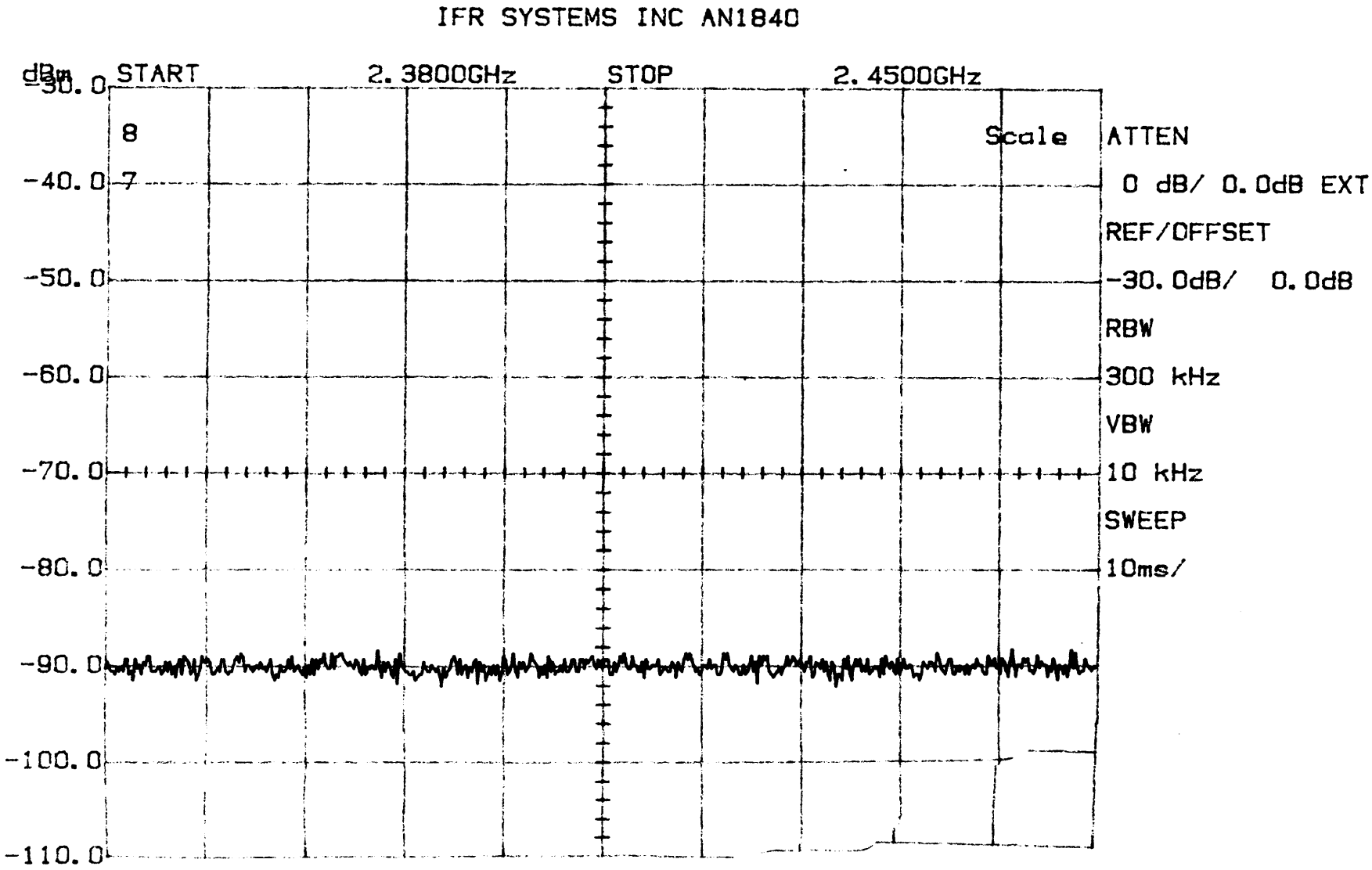

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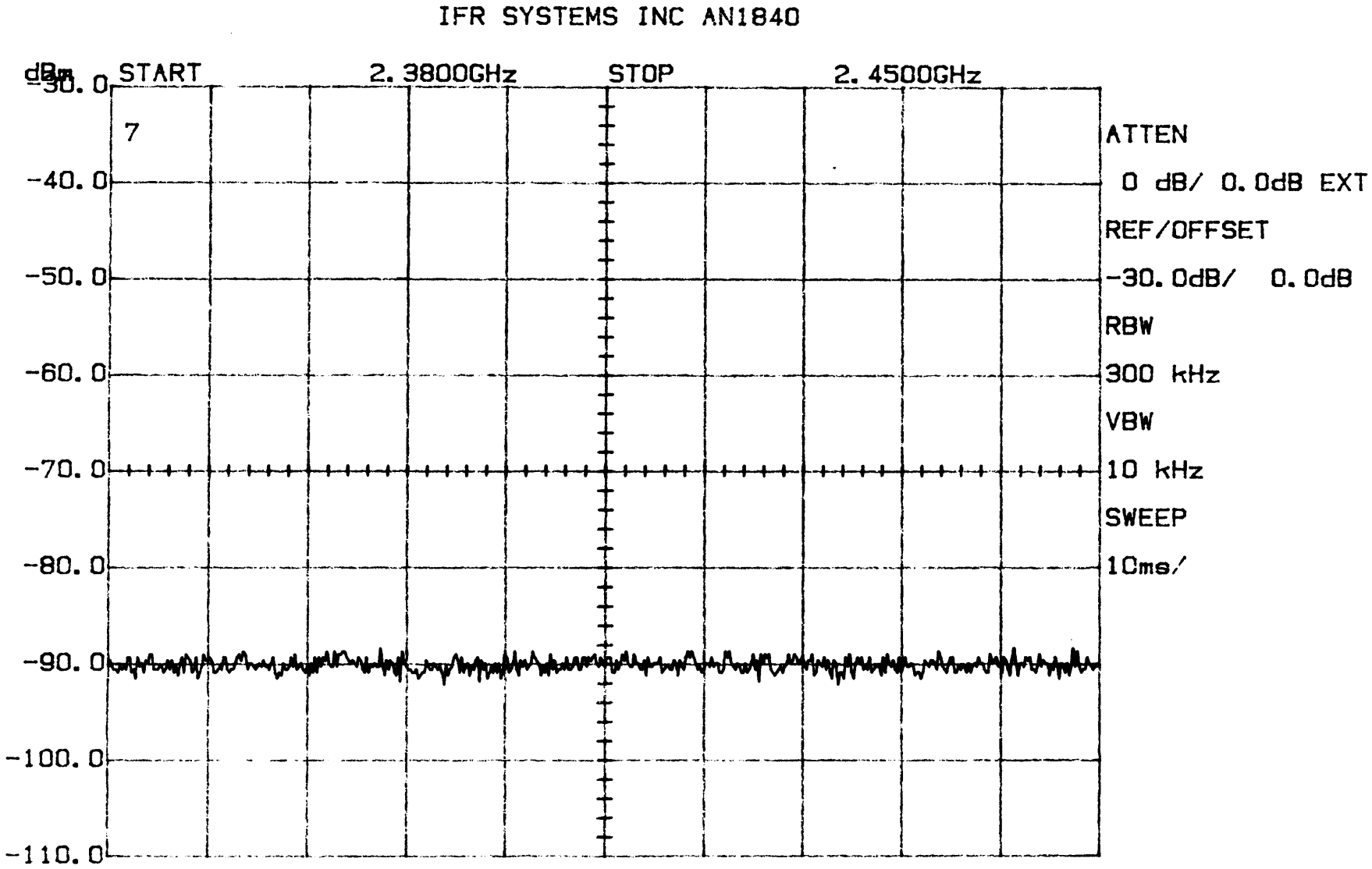
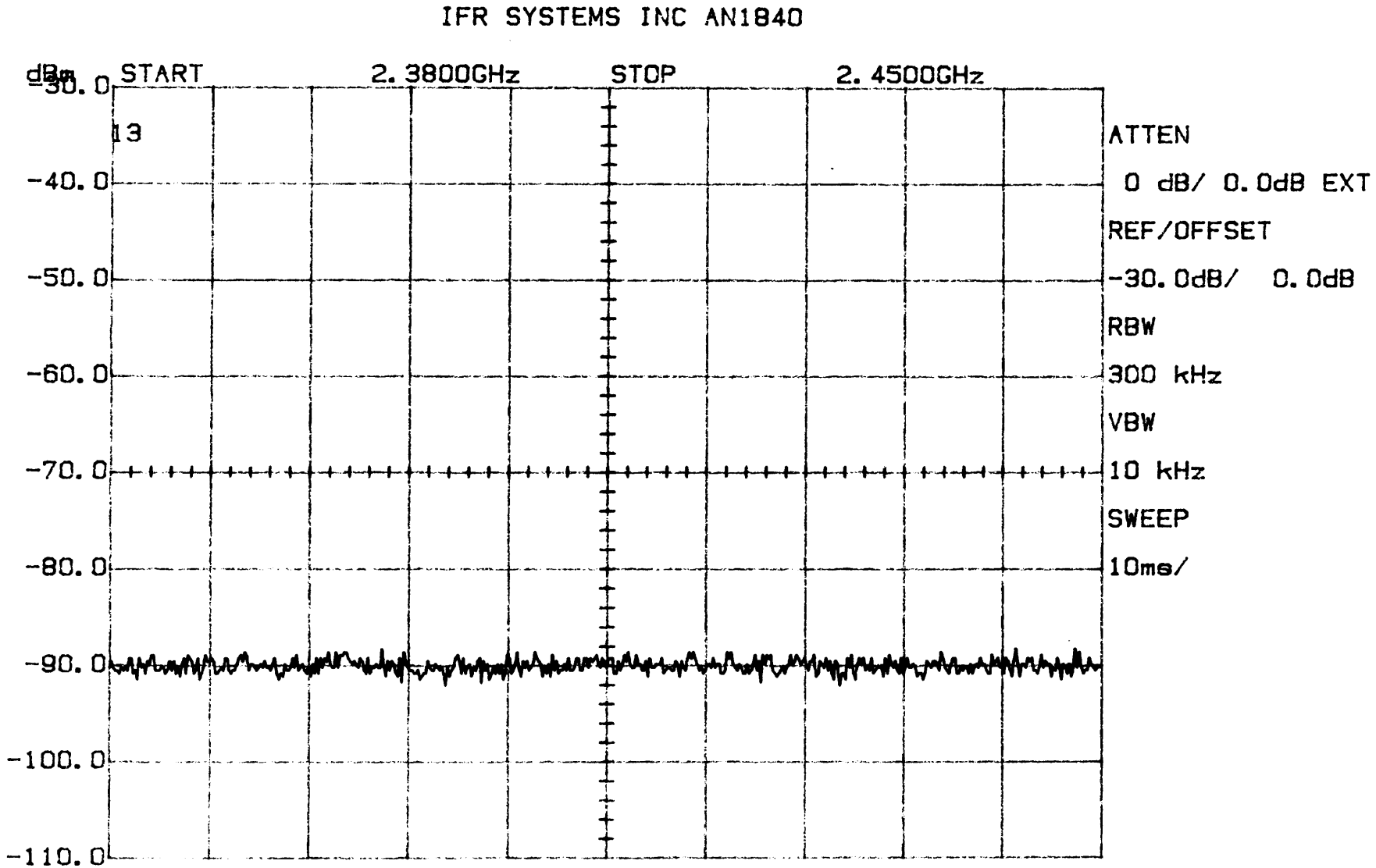
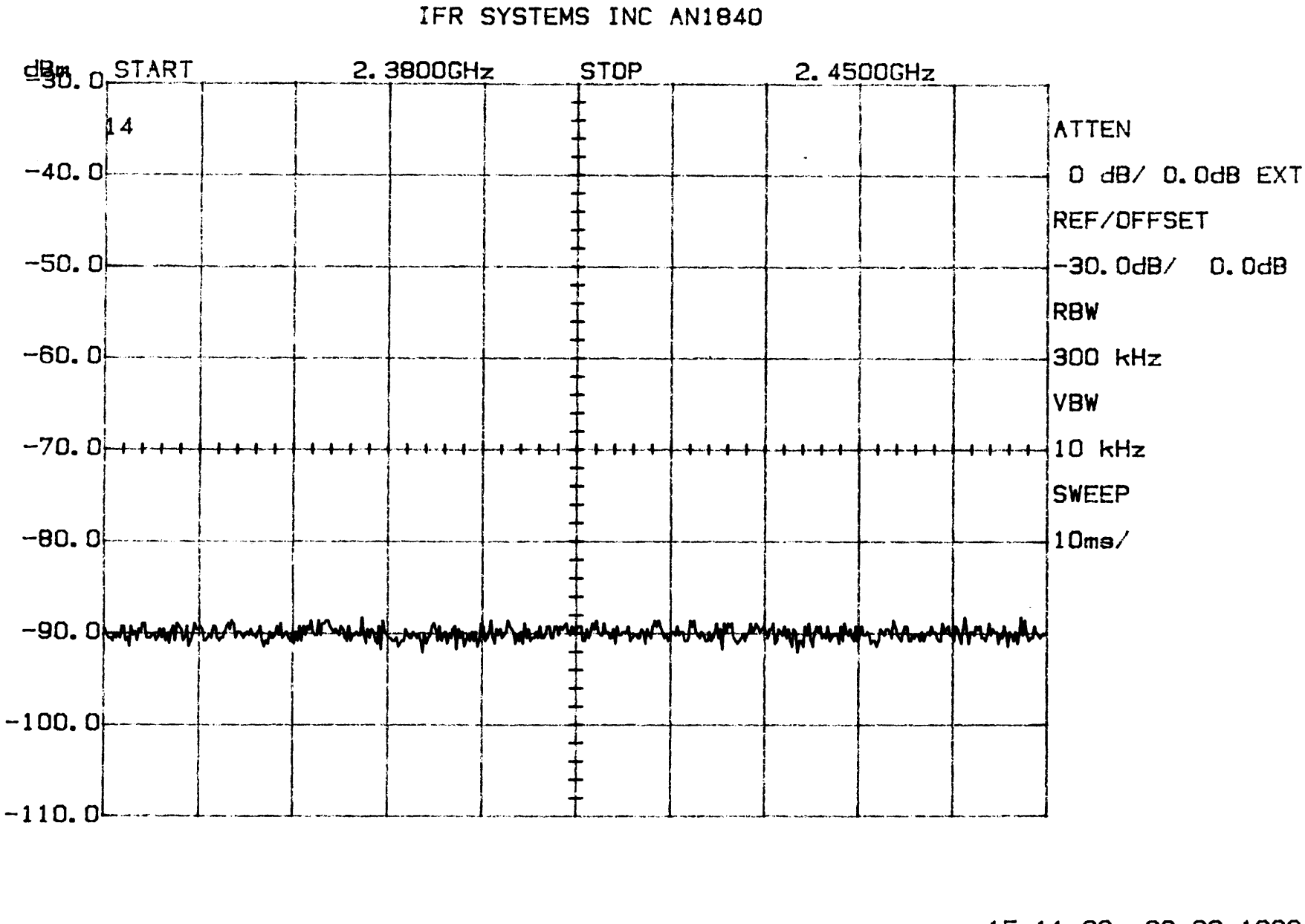


Site: Rio Hondo Polarity: Vertical Azimuth: 200° Set 1



Site: Rio Hondo Polarity: Vertical Azimuth: 250° Set 1



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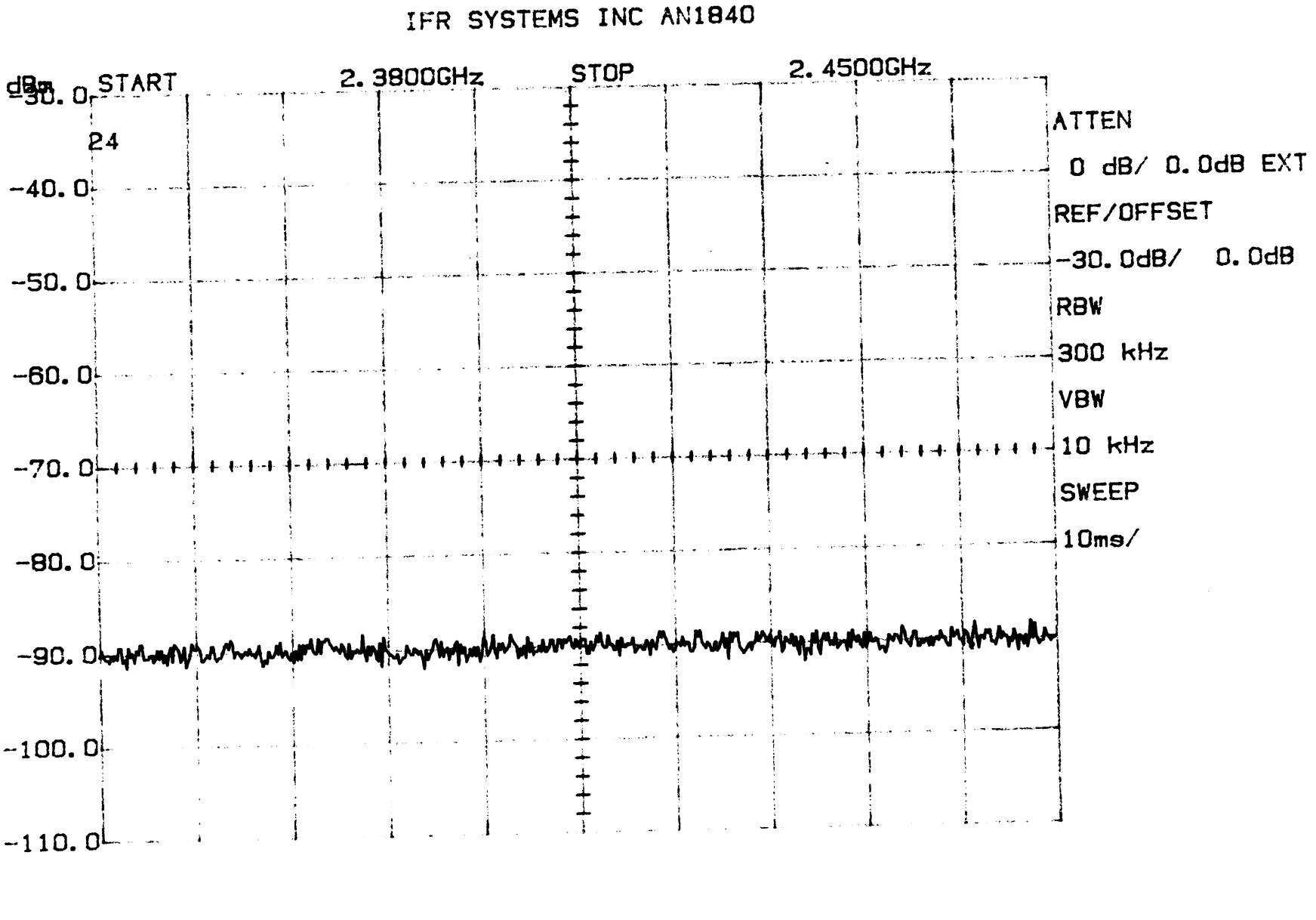
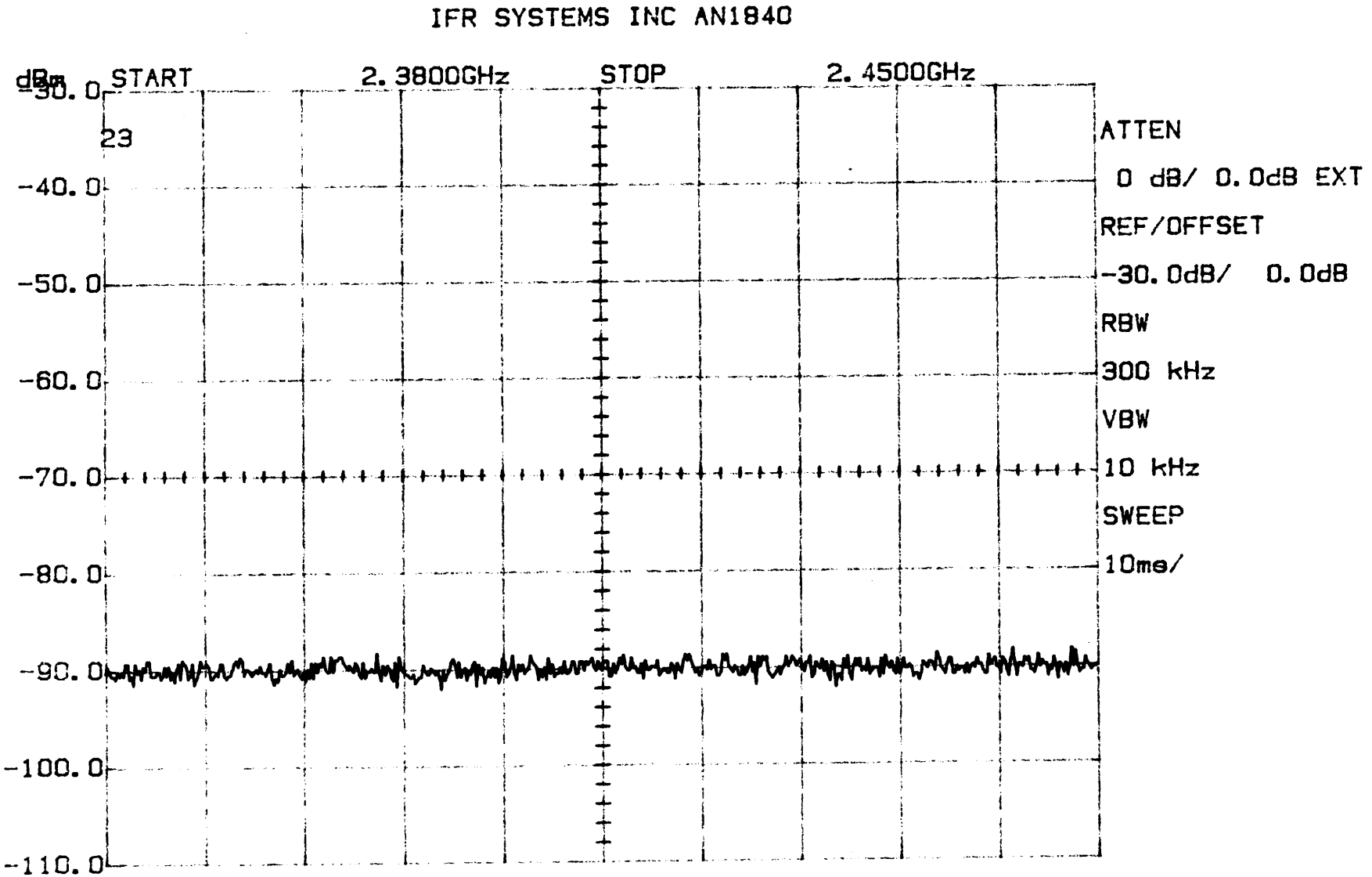
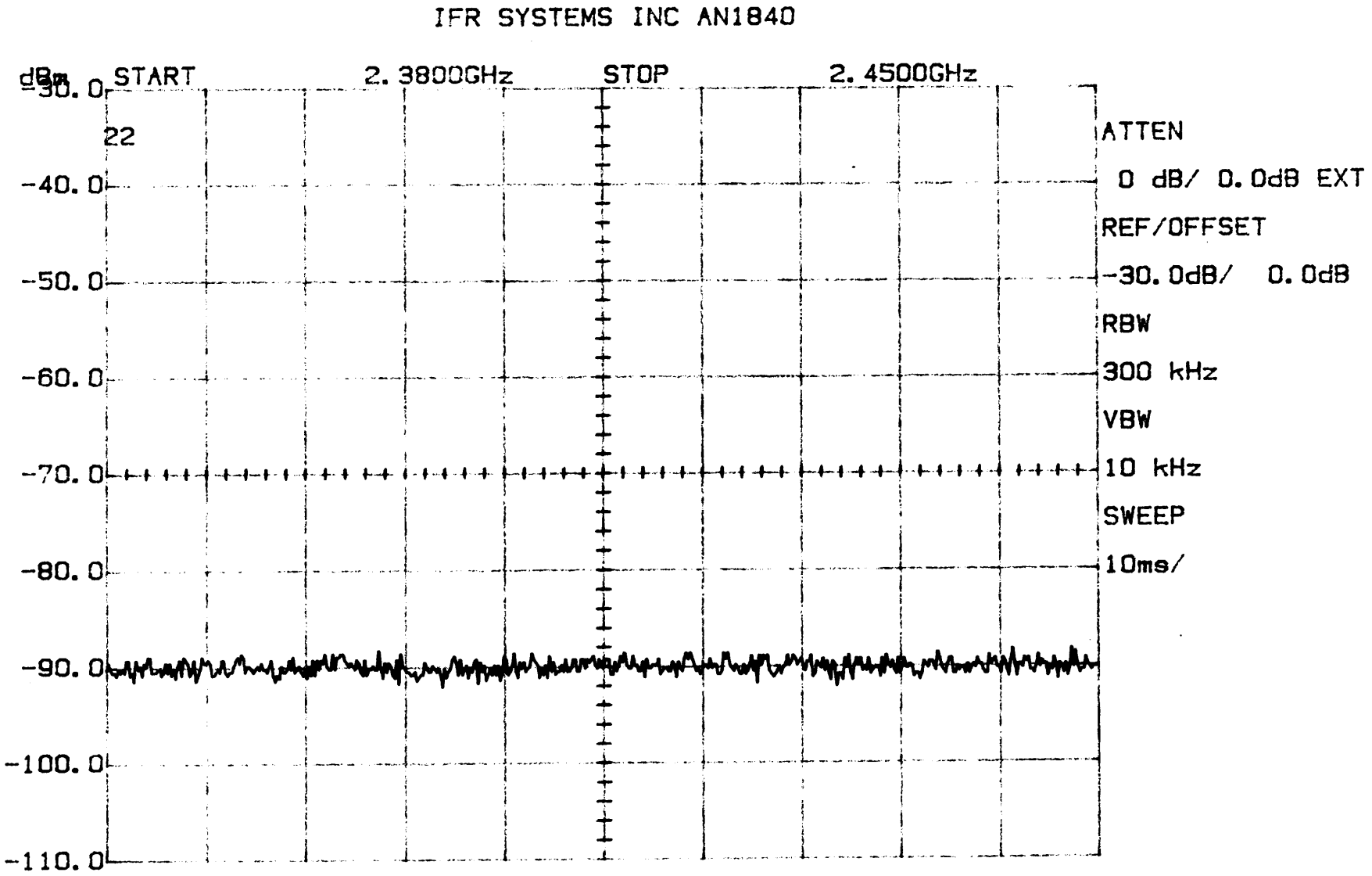


Site: Rio Hondo Polarity: Horizontal Azimuth: 160° Set 2

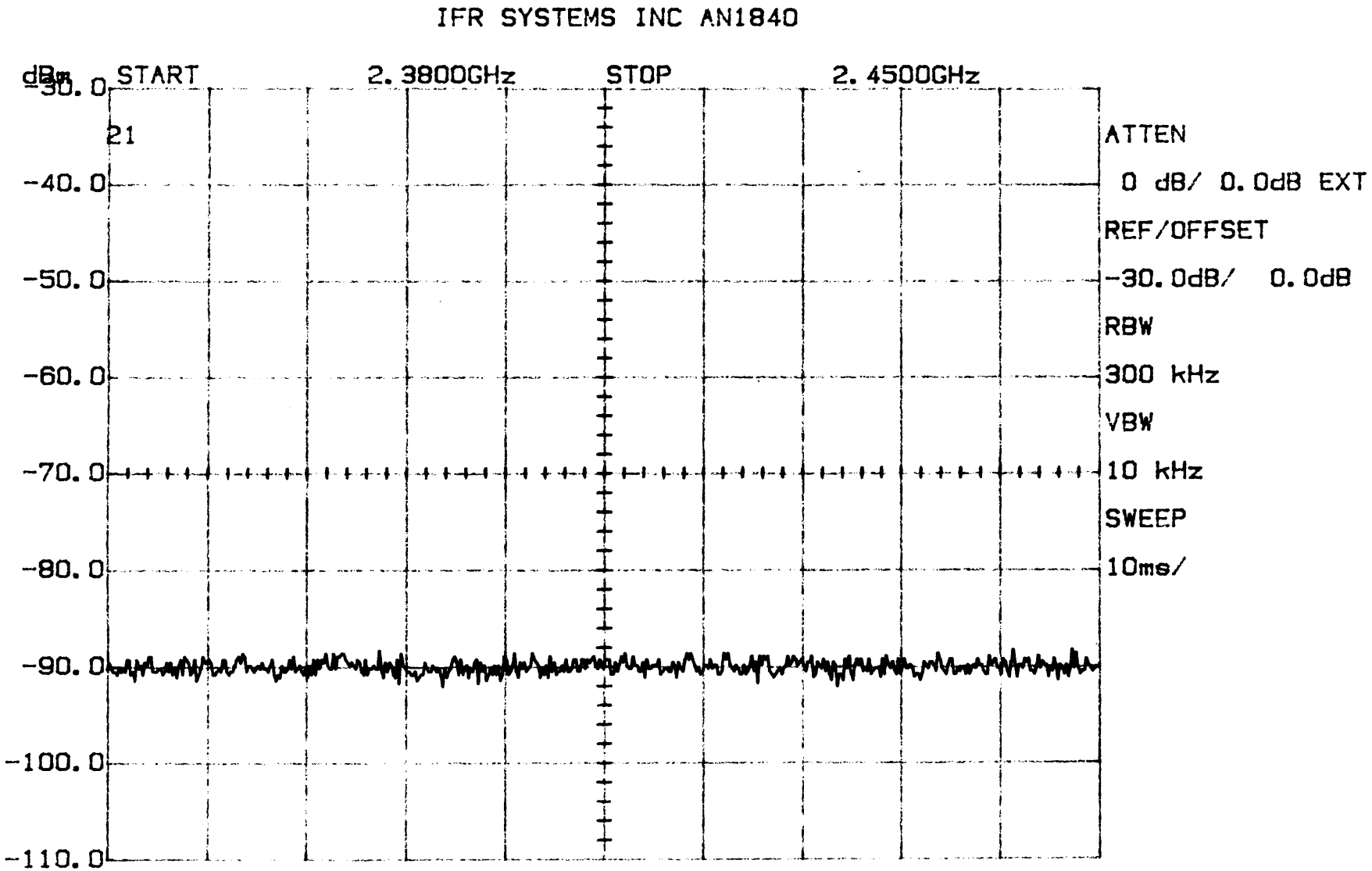


Site: Rio Hondo Polarity: Horizontal Azimuth: 040° Set 2

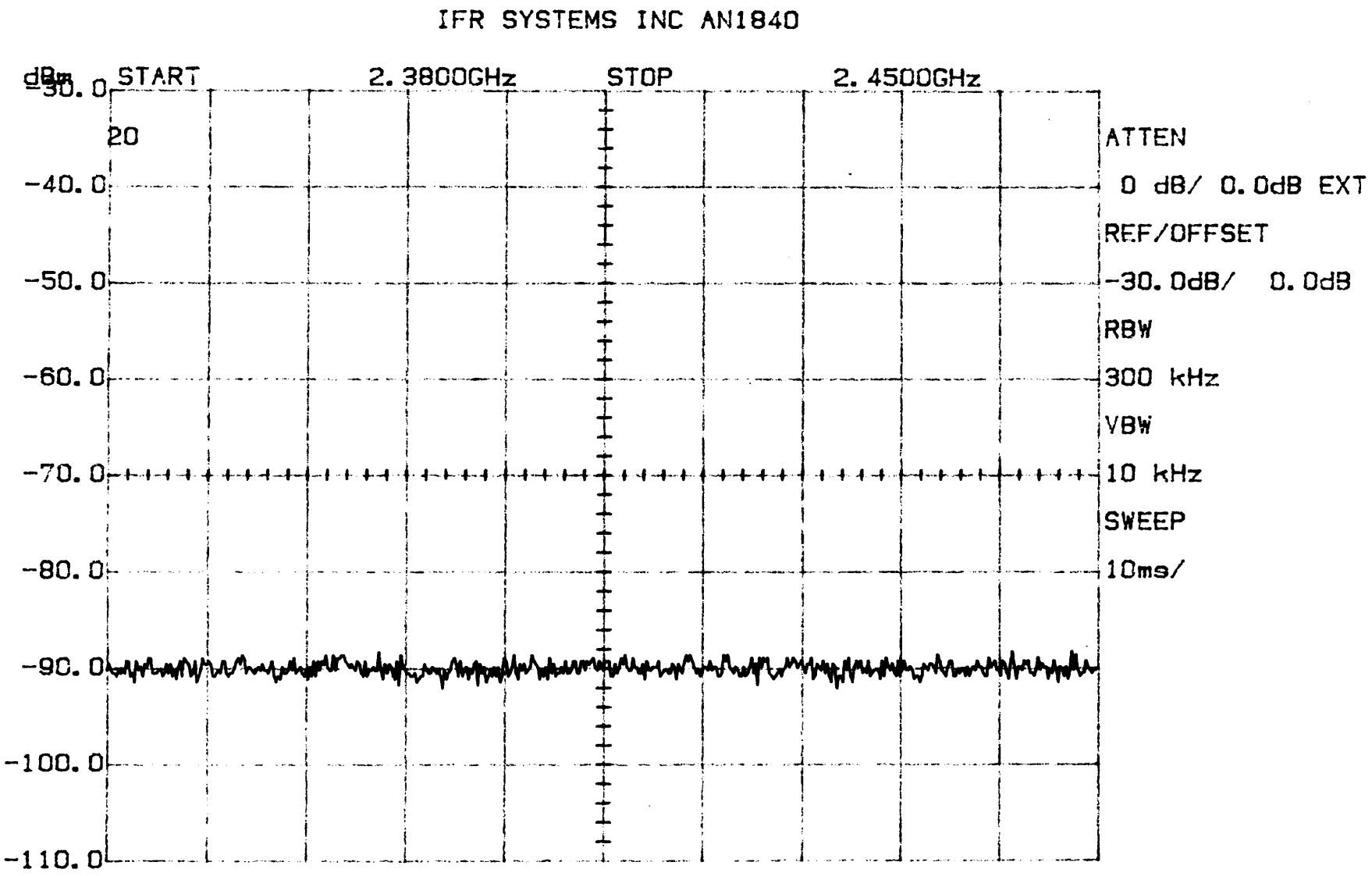


15:11:54 02-08-1999

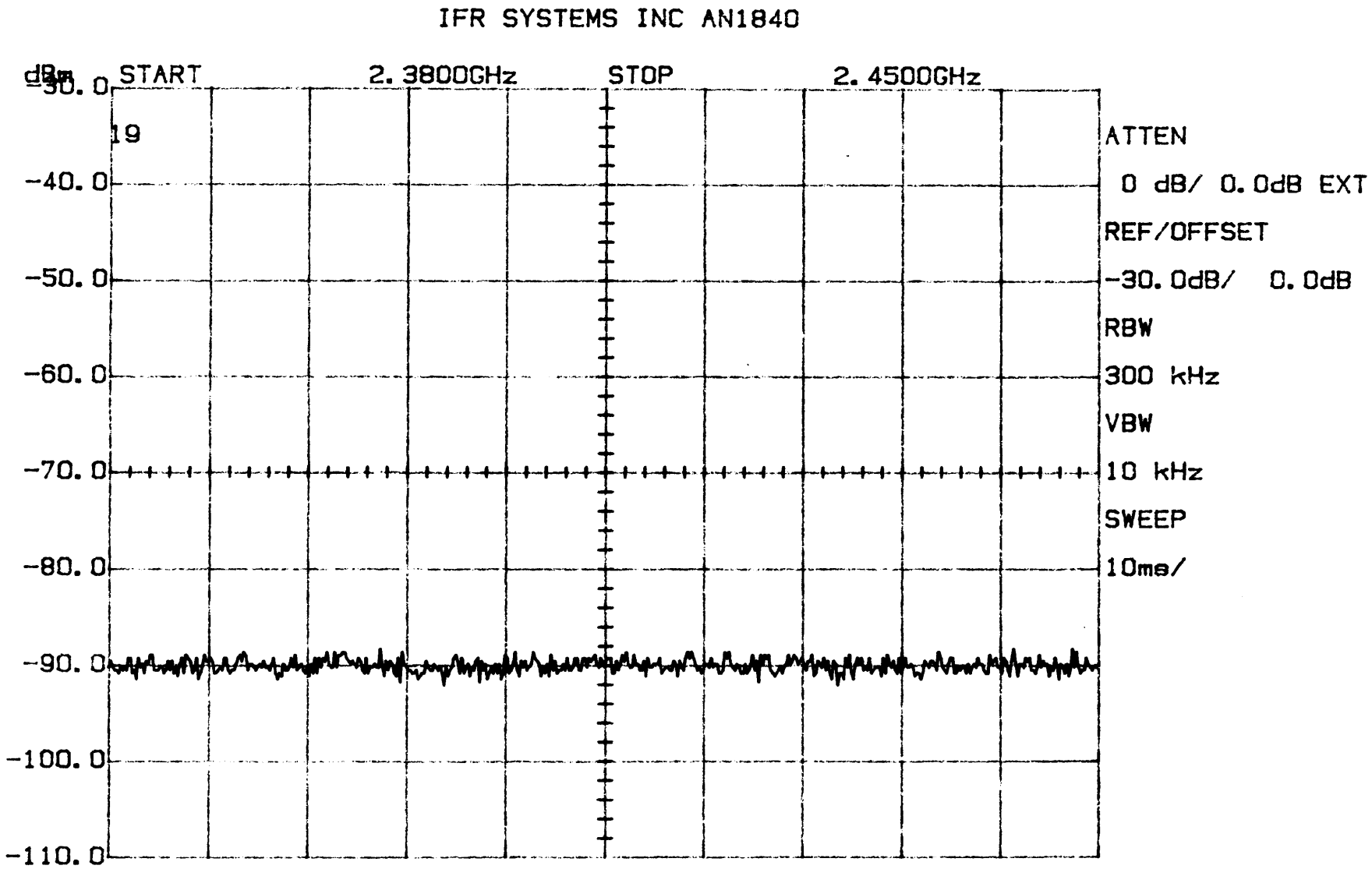
Site: Rio Hondo Polarity: Vertical Azimuth: 040° Set 2



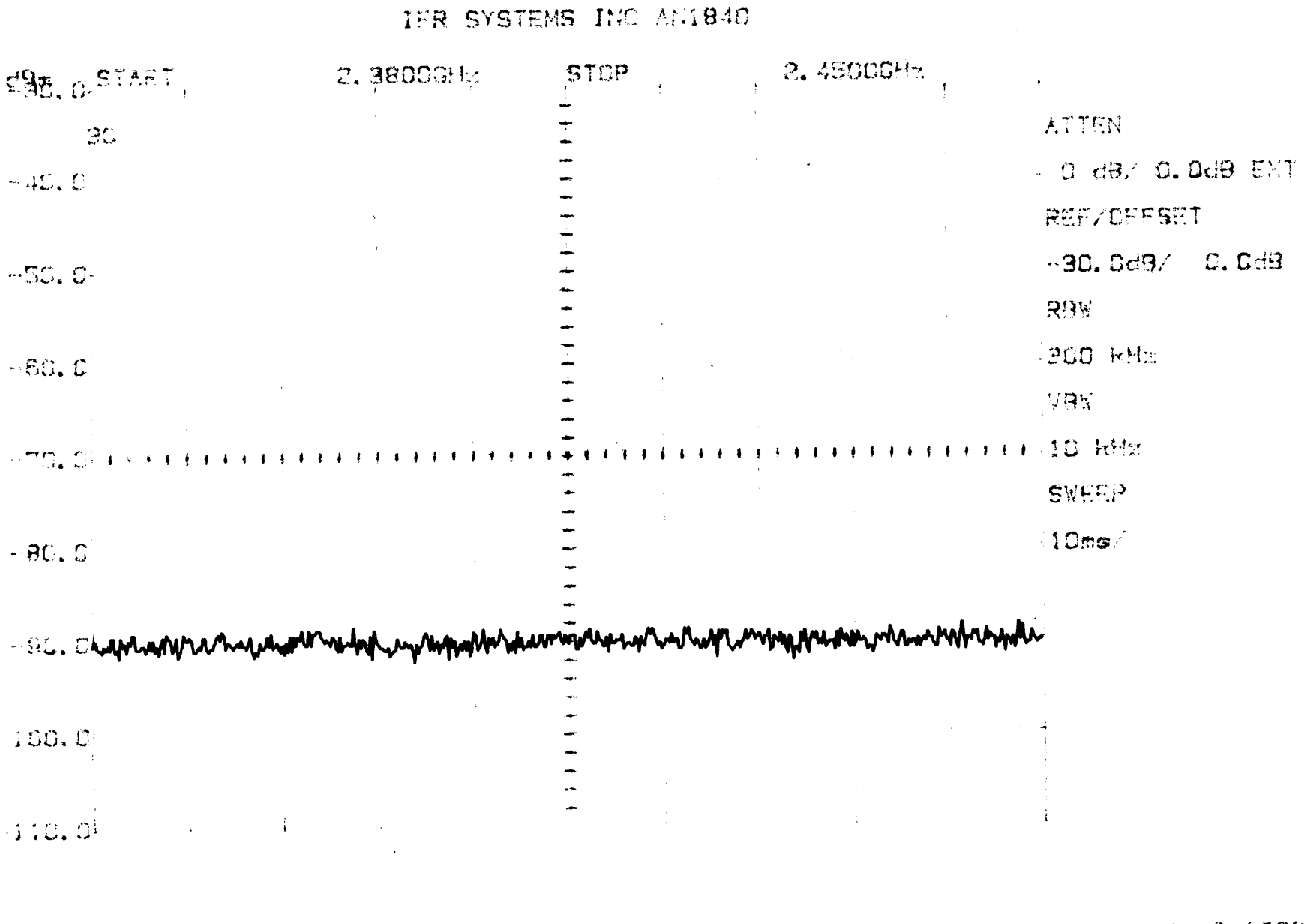
Site: Rio Hondo Polarity: Vertical Azimuth: 160° Set 2



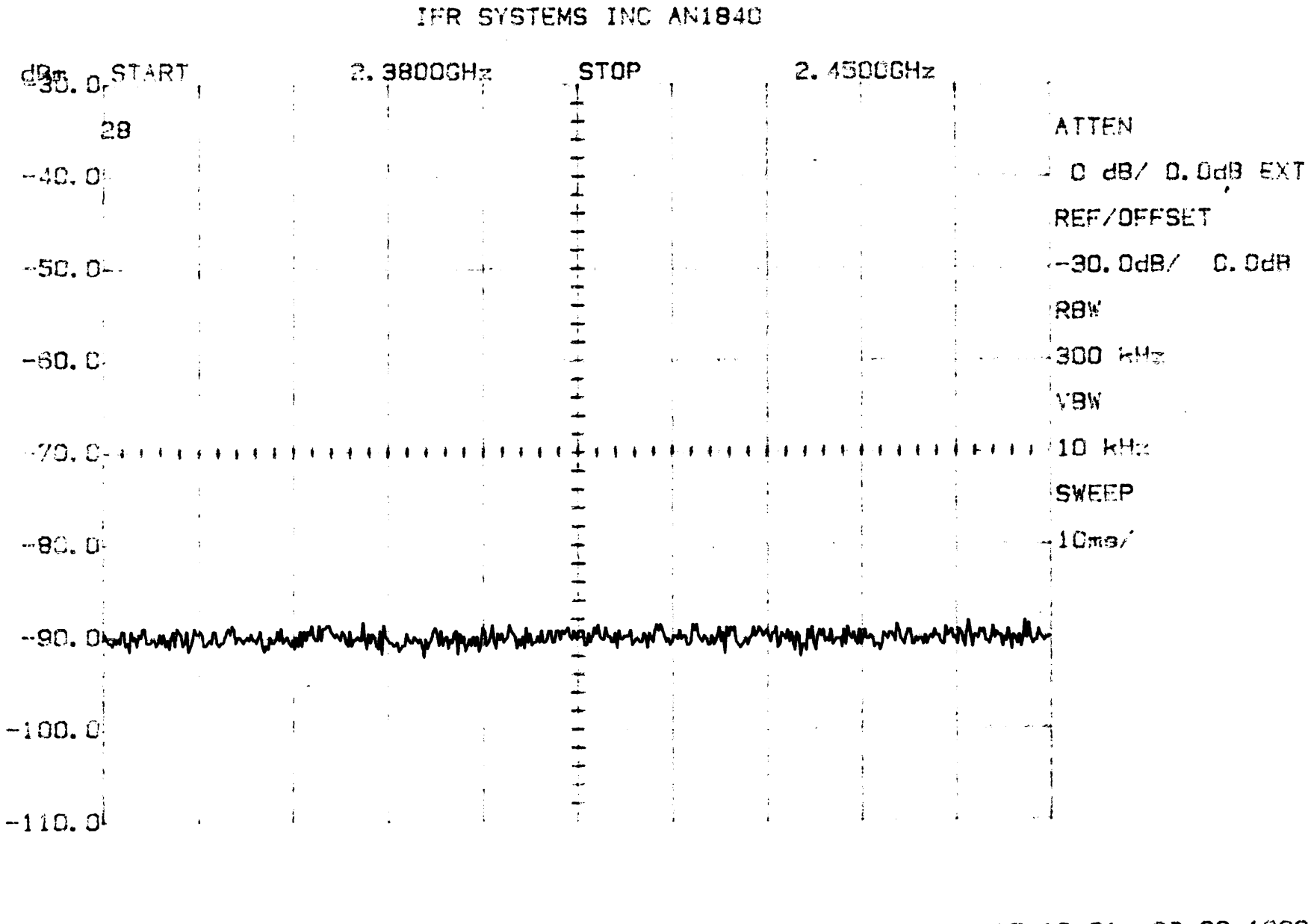
Site: Rio Hondo Polarity: Vertical Azimuth: 220° Set 2



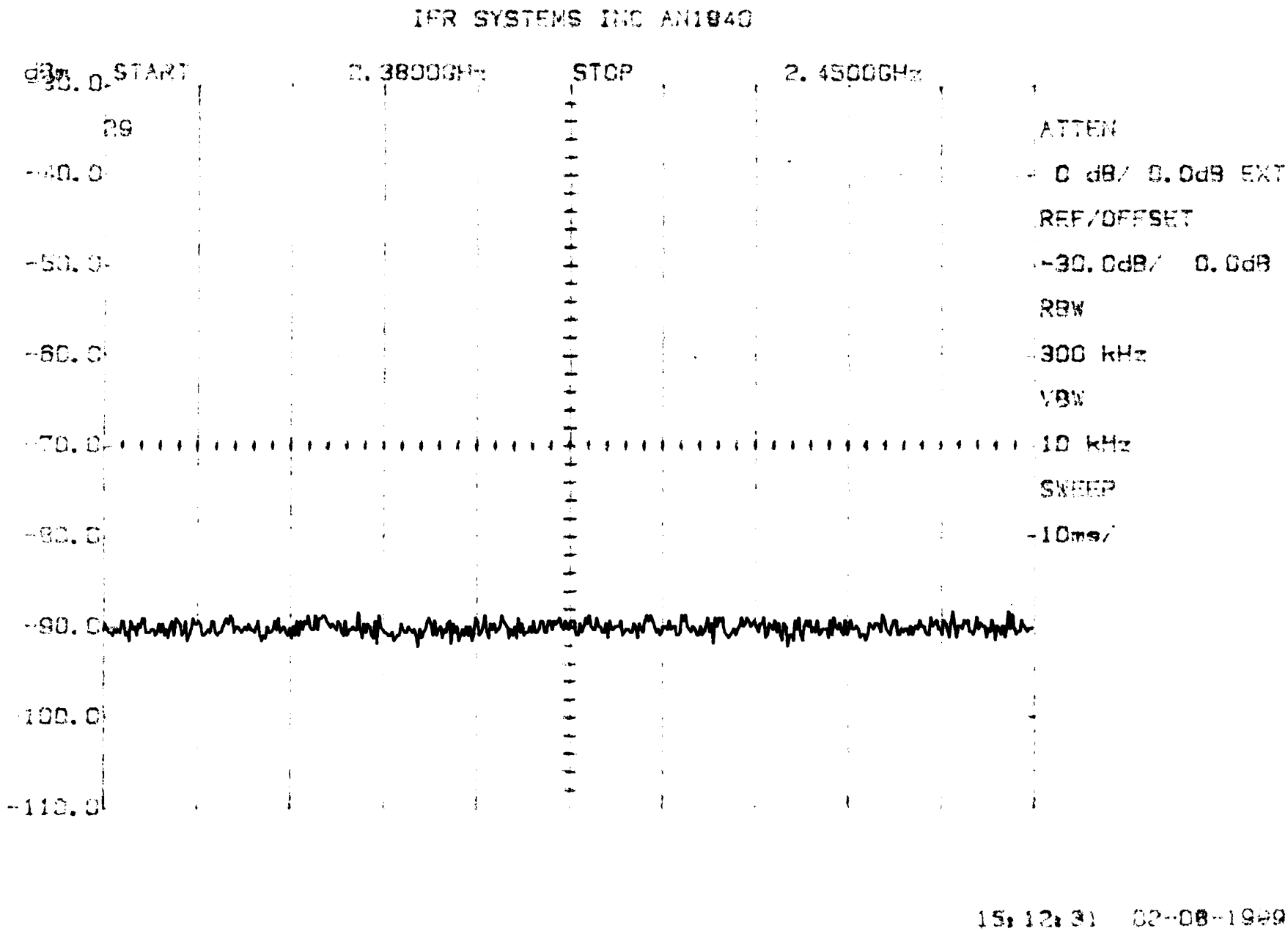
Site: Rio Hondo Polarity: Vertical Azimuth: 040° Set 2



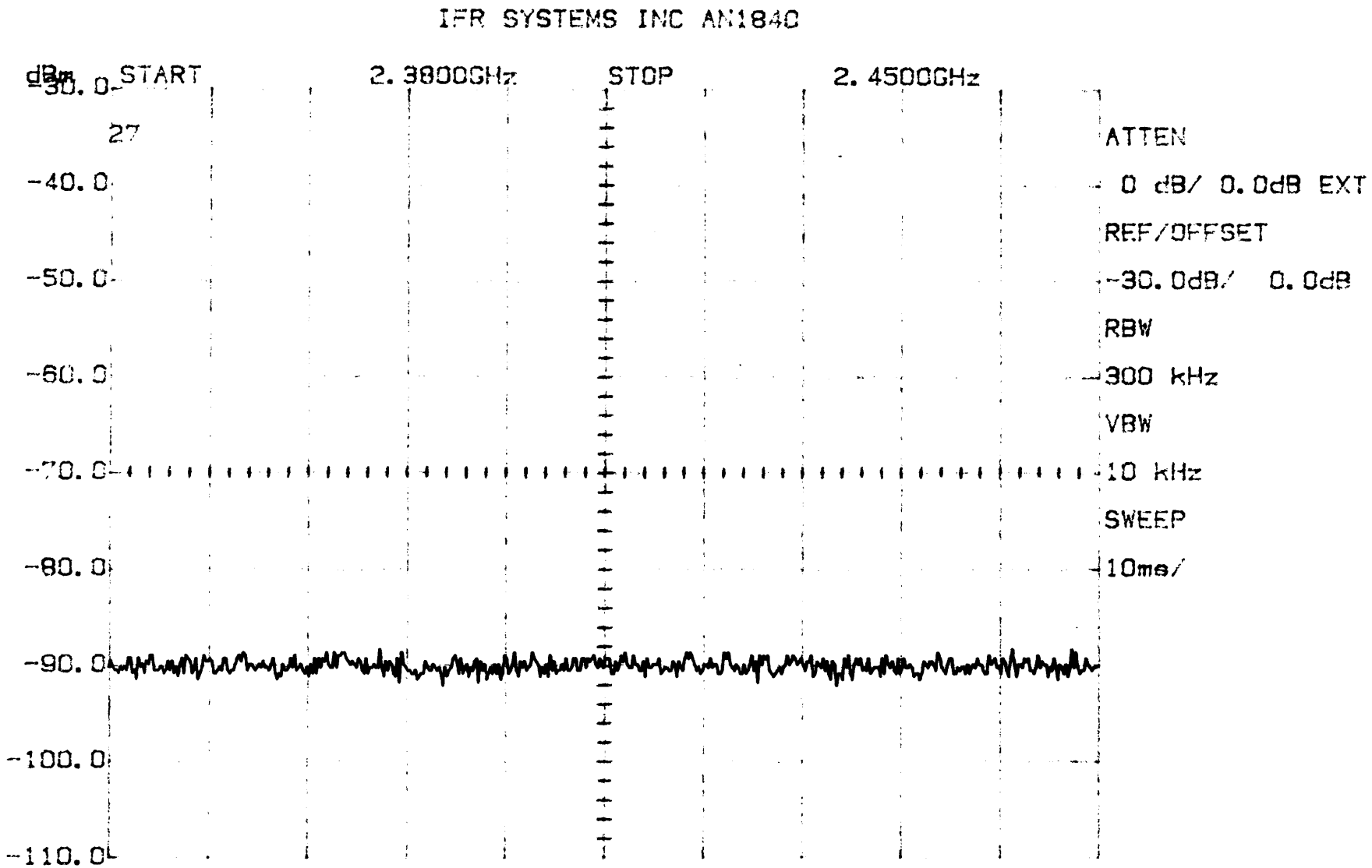
Site: Rio Hondo Polarity: Horizontal Azimuth: 200° Set 2



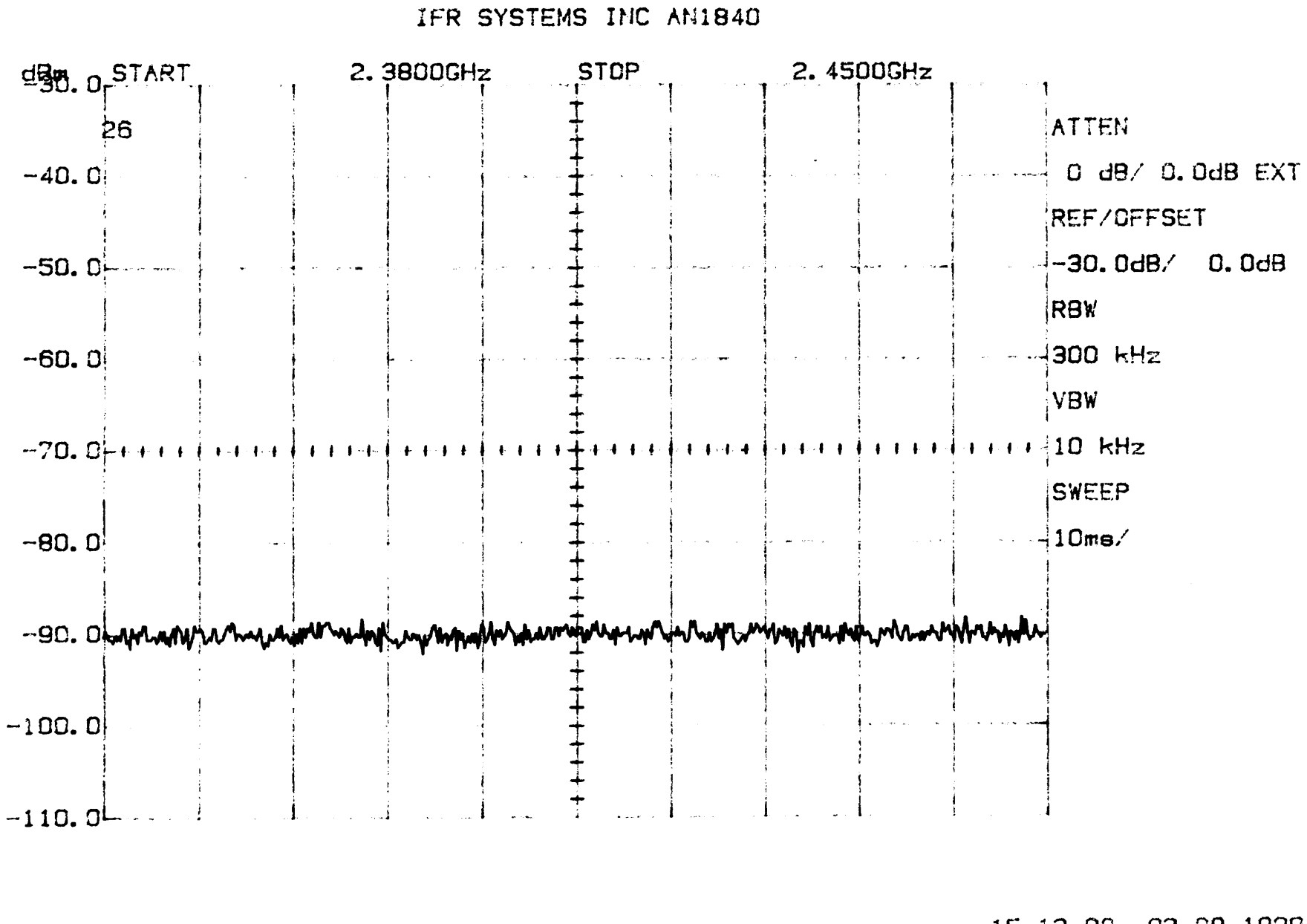
Site: Rio Hondo Polarity: Horiaontal Azimuth: 280° Set 2



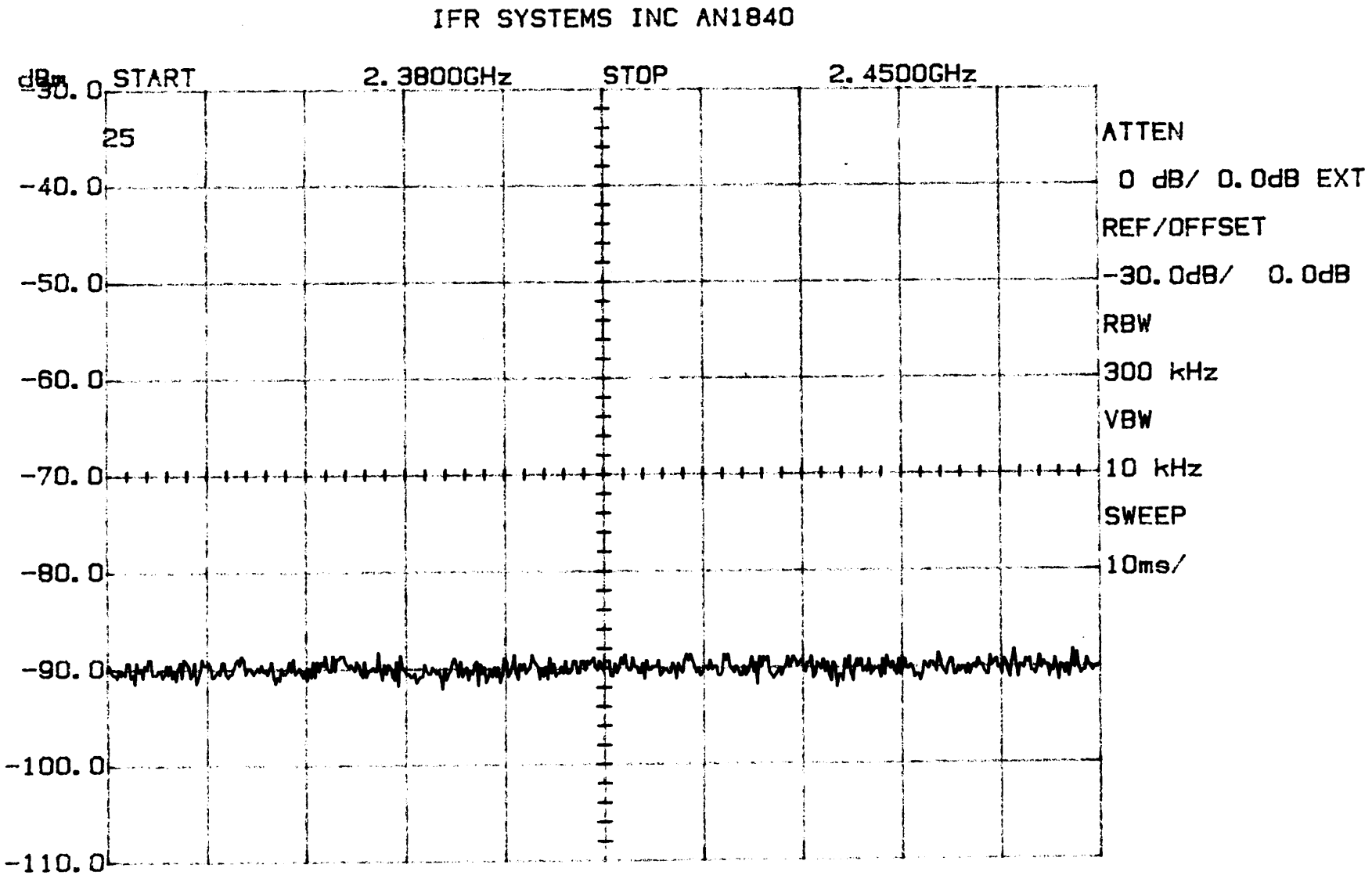
Site: Rio Hondo Polarity: Vertical Azimuth: 200° Set 2



Site: Rio Hondo Polarity: Vertical Azimuth: 280° Set 2

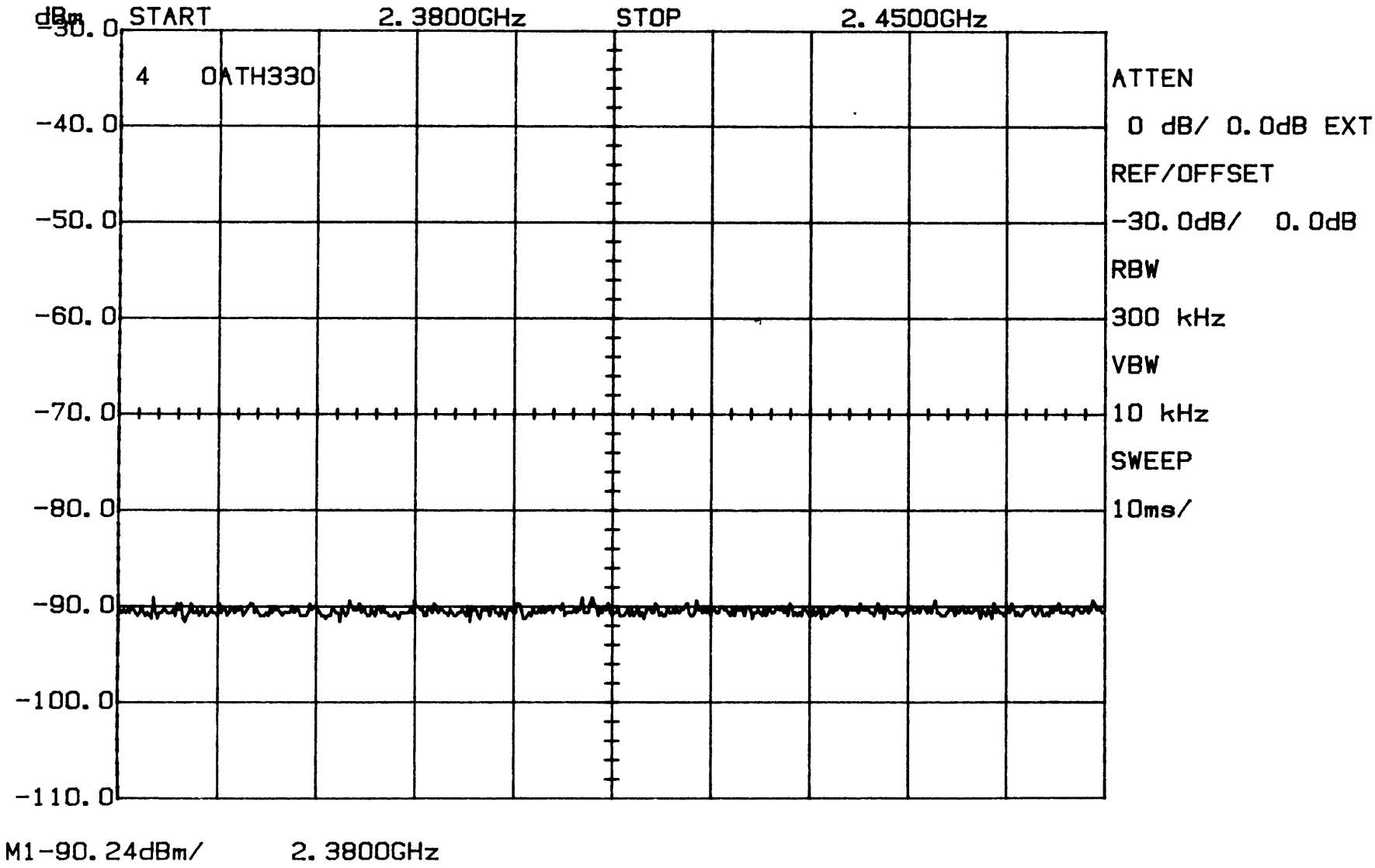


Site: Rio Hondo Polarity: Vertical Azimuth: 040° Set 2



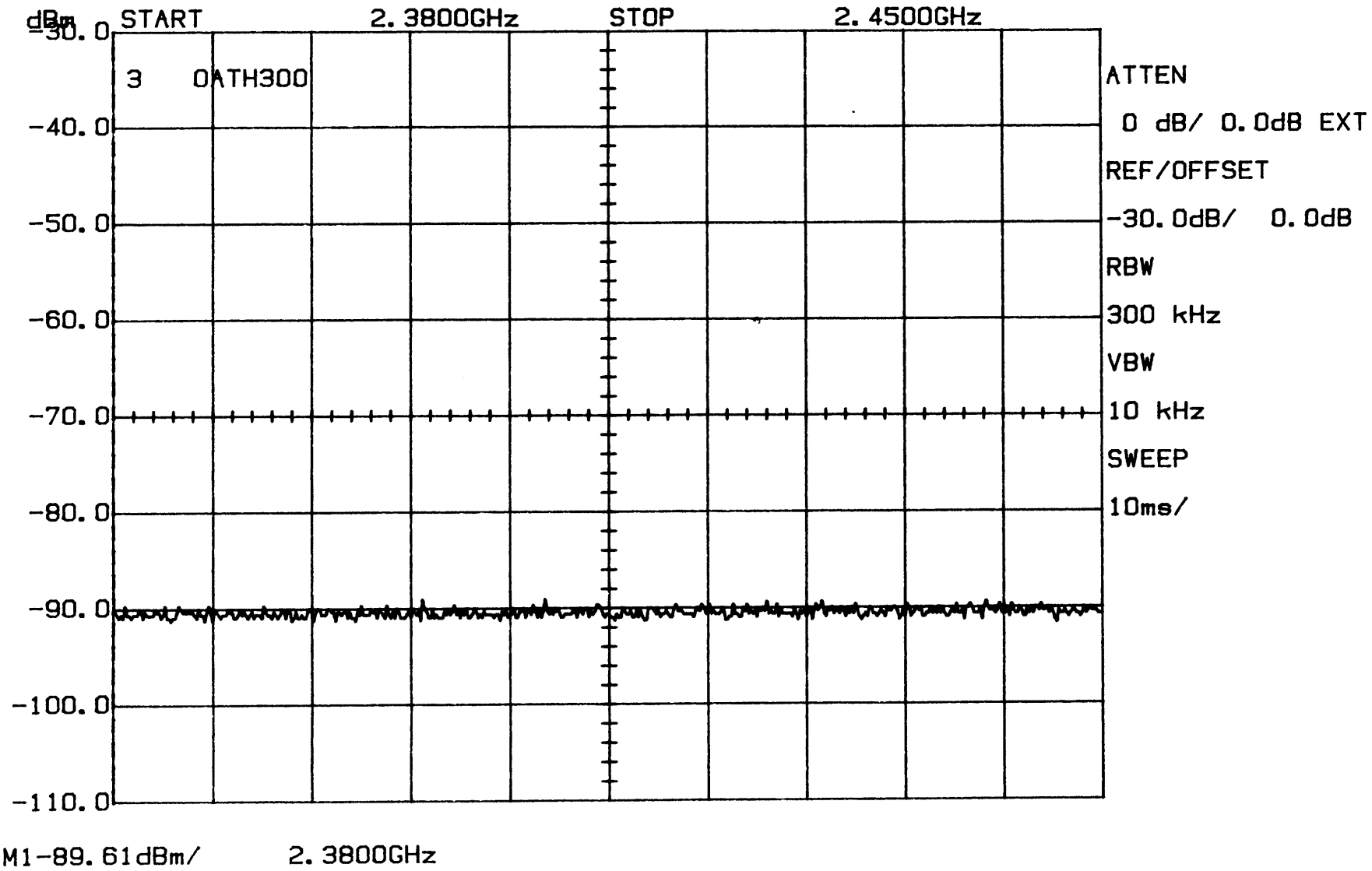
Test Date: February 19, 1999
Location: OAT MOUNTAIN
Frequency: 2380 TO 2450 MHz Spectrum Survey

IFR SYSTEMS INC AN1840



13:21:49 02-19-1999

IFR SYSTEMS INC AN1840



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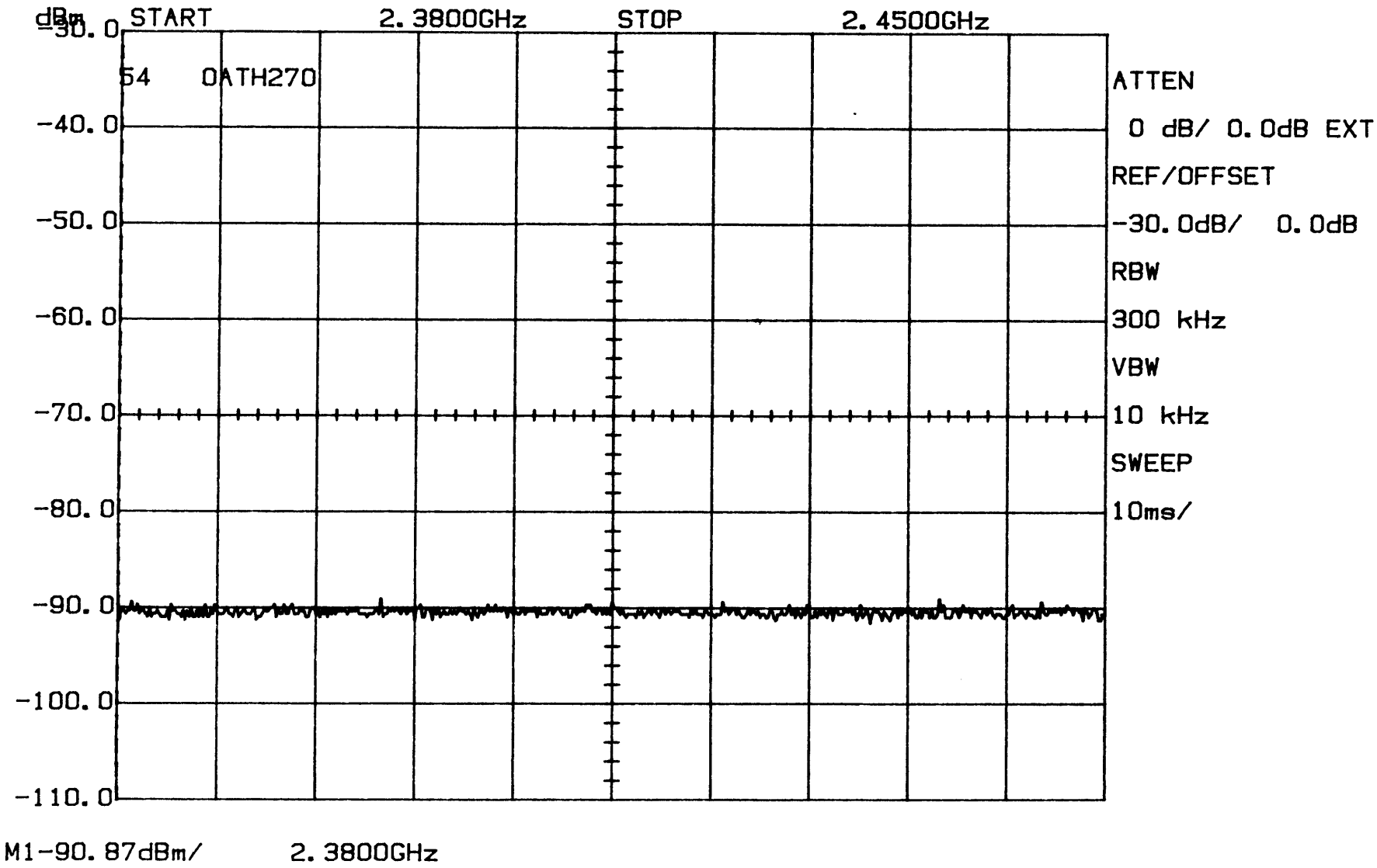
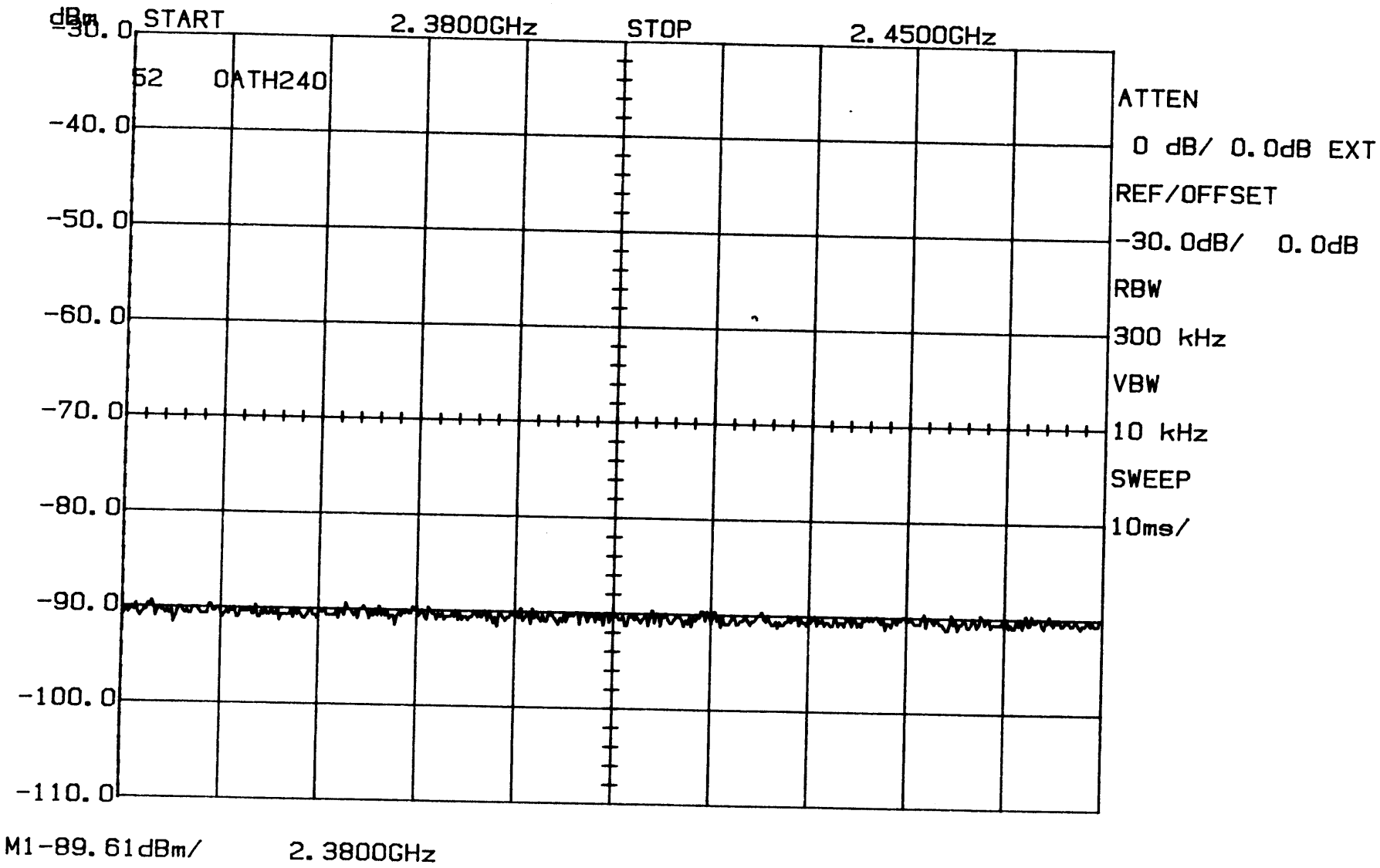
IFR SYSTEMS INC AN1840



M1-90.87dBm/ 2.3800GHz

13:19:48 02-19-1999

IFR SYSTEMS INC AN1840



13:18:39 02-19-1999