

Intertek Testing Services

APPLICATION FOR FCC CERTIFICATION

GVC Corporation

900 MHz DSSS Cordless Telephone

Model: CR-252

FCC ID: FNXCR-252

Job # J98033507

Number of Pages: 73

Date of Report: May 15, 1999

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The results contained in this report were derived from measurements performed on the identified test samples. Any implied performance of other samples on this report is dependent on the representative of the samples tested.



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1.0 Summary of Tests

GVC Corporation - Model No.: CR-252 **FCC ID: FNXCR-252**

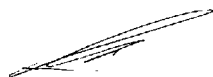
TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(d)	Pass
Out of Band Antenna Conducted Emission	15.247(c)	Pass
Out of Band Radiated Emission	15.247(c)	N/A
Radiated Emission in Restricted Bands	15.35(b)(c)	Pass
AC Conducted Emission	15.207	Pass
Radiated Emission from Digital Part	15.109	Pass
Radiated Emission from Receiver L.O.	15.109	Not Applicable
Processing Gain Measurements	15.247(e)	Provided by applicant
Antenna Requirement	15.203	Pass*

* EUT has non-detachable antenna.



Test Engineer: _____
Cleveland Kwan

Date: May 15, 1999



Telco Manager: _____
C.K. Li

Date: May 15, 1999

2.0 General Description**2.1 Product Description**

The Model CR-252 is a 900 MHz DSSS digital cordless telephone.

Overview of 900 MHz DSSS Cordless Telephone

Applicant	GVC Corporation	
Trade Name & Model No.	Audiovox & TT System/Bell Equipment, CR-252	
FCC Identifier	FNXCR-252	
Use of Product	Cordless Telephone	
Manufacturer & Model of Spread Spectrum Module	GVC Corporation	
Type of Transmission	Direct Sequence	
Rated RF Output (mW)	100	
Frequency Range (MHz)	903.6 - 926.4	
Number of Channel(s)	20	
Antenna(s) & Gain, dBi	0	
Processing Gain Measurements	☒ Will be provided to ITS for submission with the application ☐ Will be provided directly to the FCC reviewing engineer by the client or manufacturer of the spread spectrum module	
Antenna Requirement	☒ The EUT uses a permanently connected antenna. ☐ The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector. ☐ The EUT requires professional installation (attach supporting documentation if using this option).	
Manufacturer name & address	Cherish Enterprise Co., Ltd. Tower A, 11F, No.75, Sec 1, Hsin Tai Wu Rd His-Chin Taipei Hsien, Taiwan, R.O.C.	

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Both AC mains line-conducted and radiated emissions measurements were performed according to the procedures in ANSI C63.4 (1992). Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Data Sheet**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

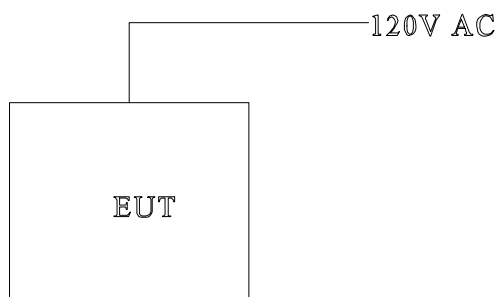
The open area test site and conducted measurement facility used to collect the radiated data is site 1. This test facility and site measurement data have been fully placed on file with the FCC and NVLAP accredited.

3.0 System Test Configuration

3.1 Support Equipment and description

None, the EUT is a standalone device.

3.2 Block Diagram of Test Setup



3.3 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions.

For radiated emission measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power without modulation.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Detector function is in peak mode. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

3.4 Software Exercise Program

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

3.5 Mode of Operation During Test

The EUT was running in a transmitting mode.

3.6 Modifications Required for Compliance

The following modifications were installed during compliance testing in order to bring the product into compliance (Please note that this list does not include changes made specifically by GVC Corporation prior to compliance testing):

No modifications were made to the EUT by Intertek Testing Services.

3.7 Additions, deviations and exclusions from standards

No additions, deviations or exclusion have been made from standard.

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b):

[] The antenna port of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

[X] The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for maximum RES BW and power was read directly in dBm. External attenuation and cable loss were compensated for using the OFFSET function of the analyzer.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm).

For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6) dBm.

(Base Unit)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 903.6	16.3	42.7
Middle Channel: 914.4	15.6	36.3
High Channel: 926.4	13.5	22.4

Cable loss: 1.5 dB External Attenuation: 0 dB

Cable loss, external attenuation: [X] included in OFFSET function
[] added to SA raw reading

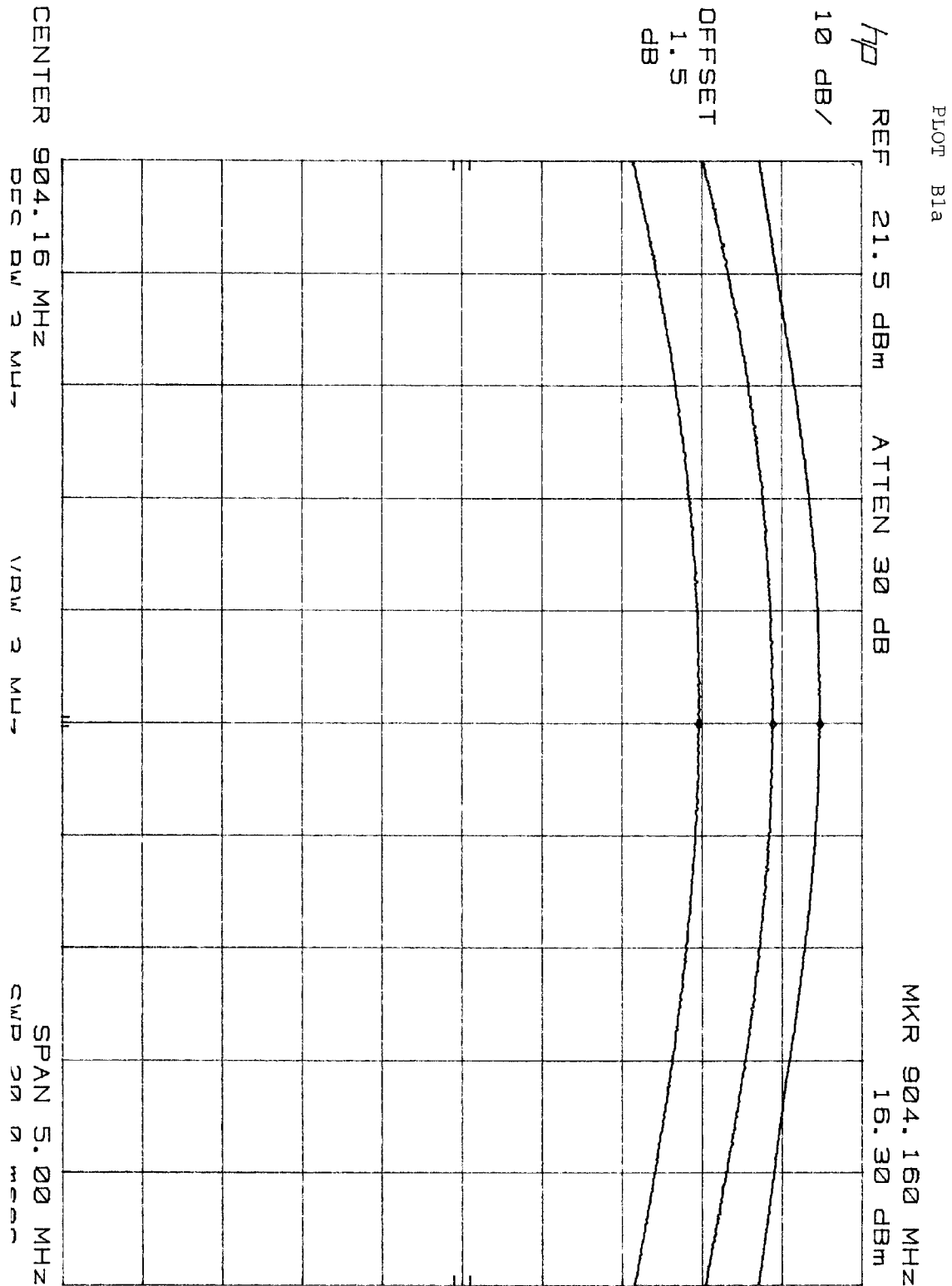
EUT Transmit Antenna Gain(dBi) + dBm max. output level = 16.3 dBm (36 dBm or less)

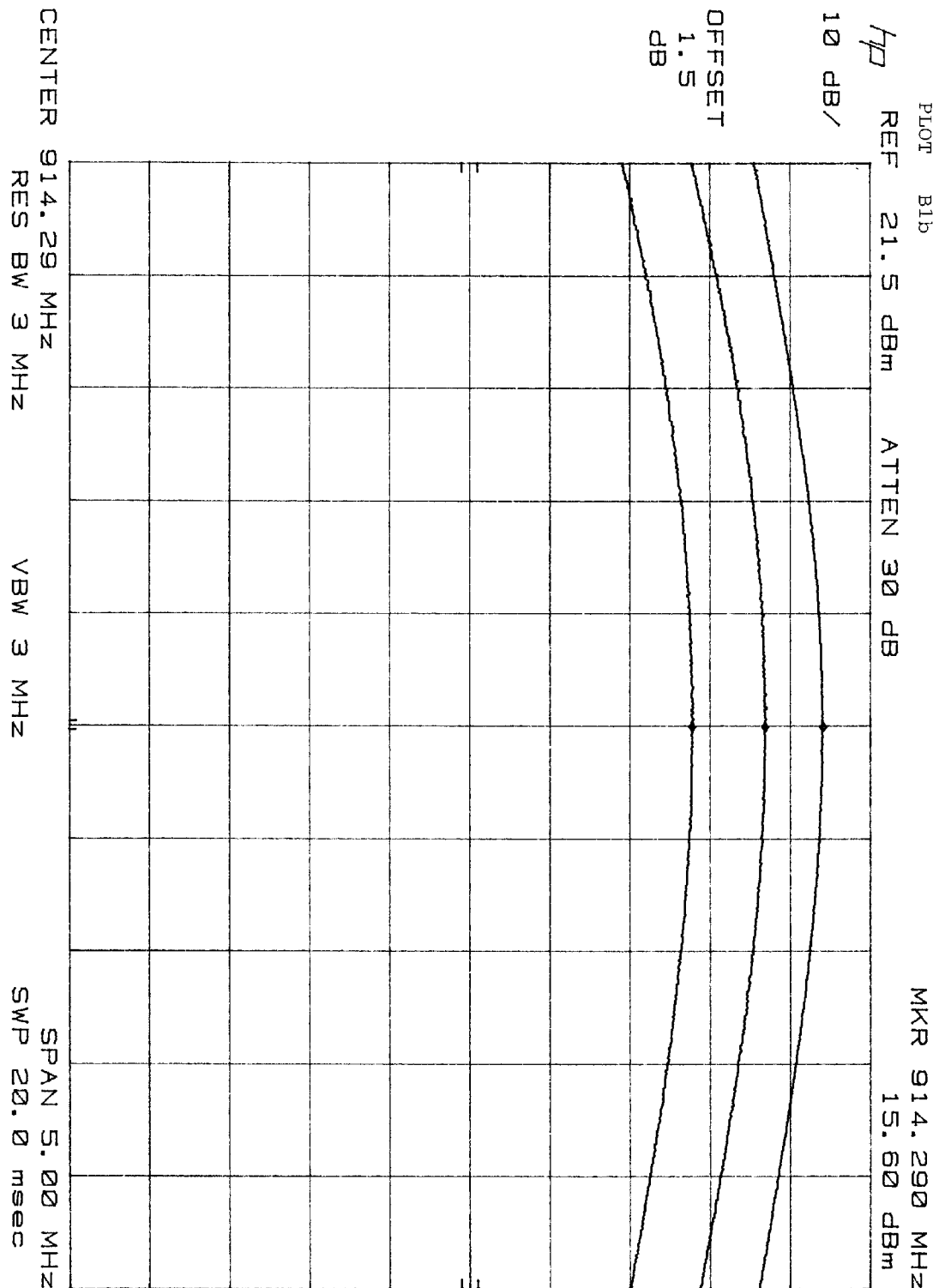
Please refer to the attached plots for details:

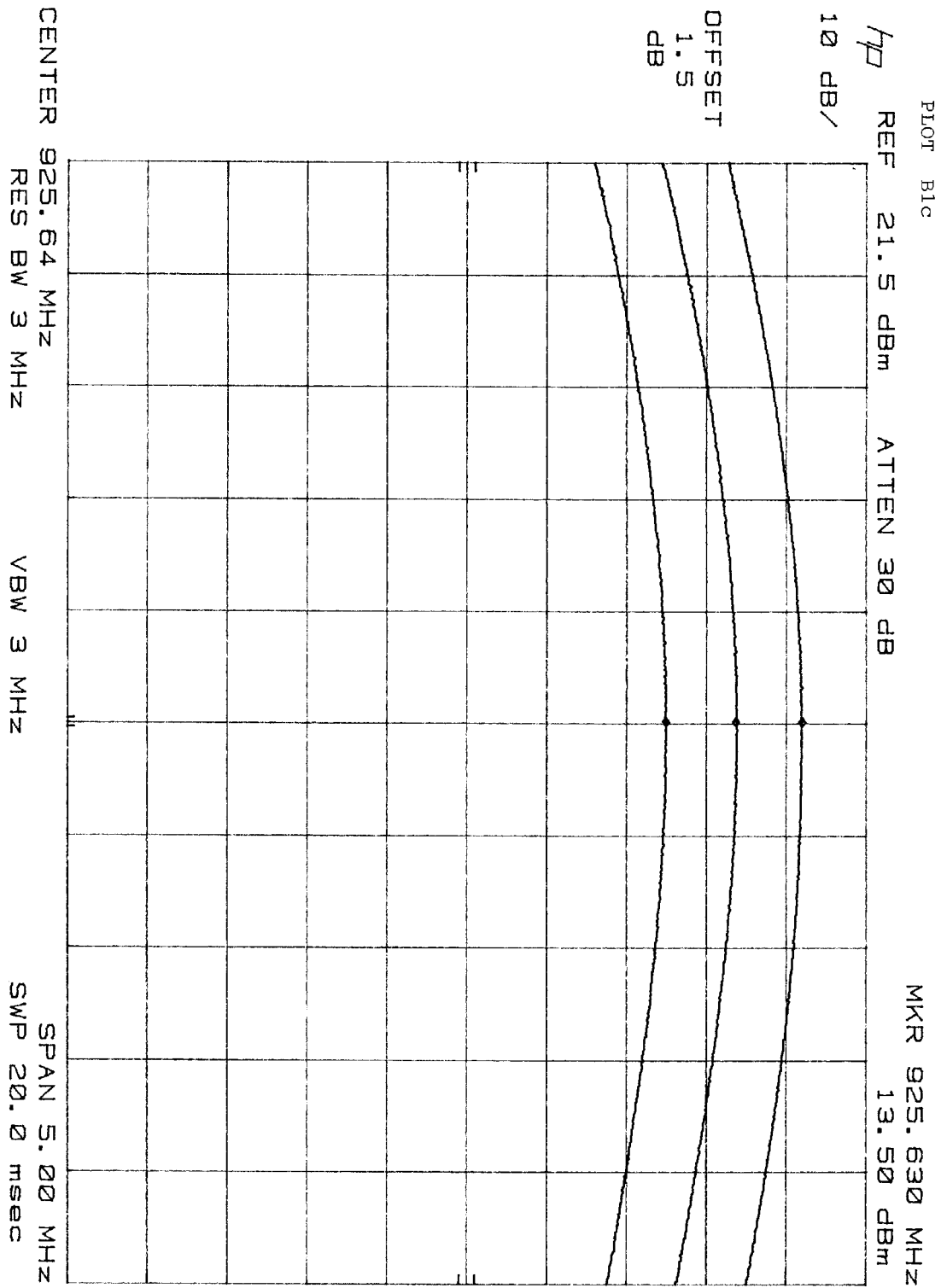
Plot B1a: Low Channel Output Power

Plot B1b: Middle Channel Output Power

Plot B1c: High Channel Output Power







(Handset Unit)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 903.6	17.2	52.7
Middle Channel: 914.4	16.9	49.0
High Channel: 926.4	16.5	44.7

Cable loss: 0 dB External Attenuation: 0 dB

Cable loss, external attenuation: ☒ [X] included in OFFSET function
☐ [] added to SA raw reading

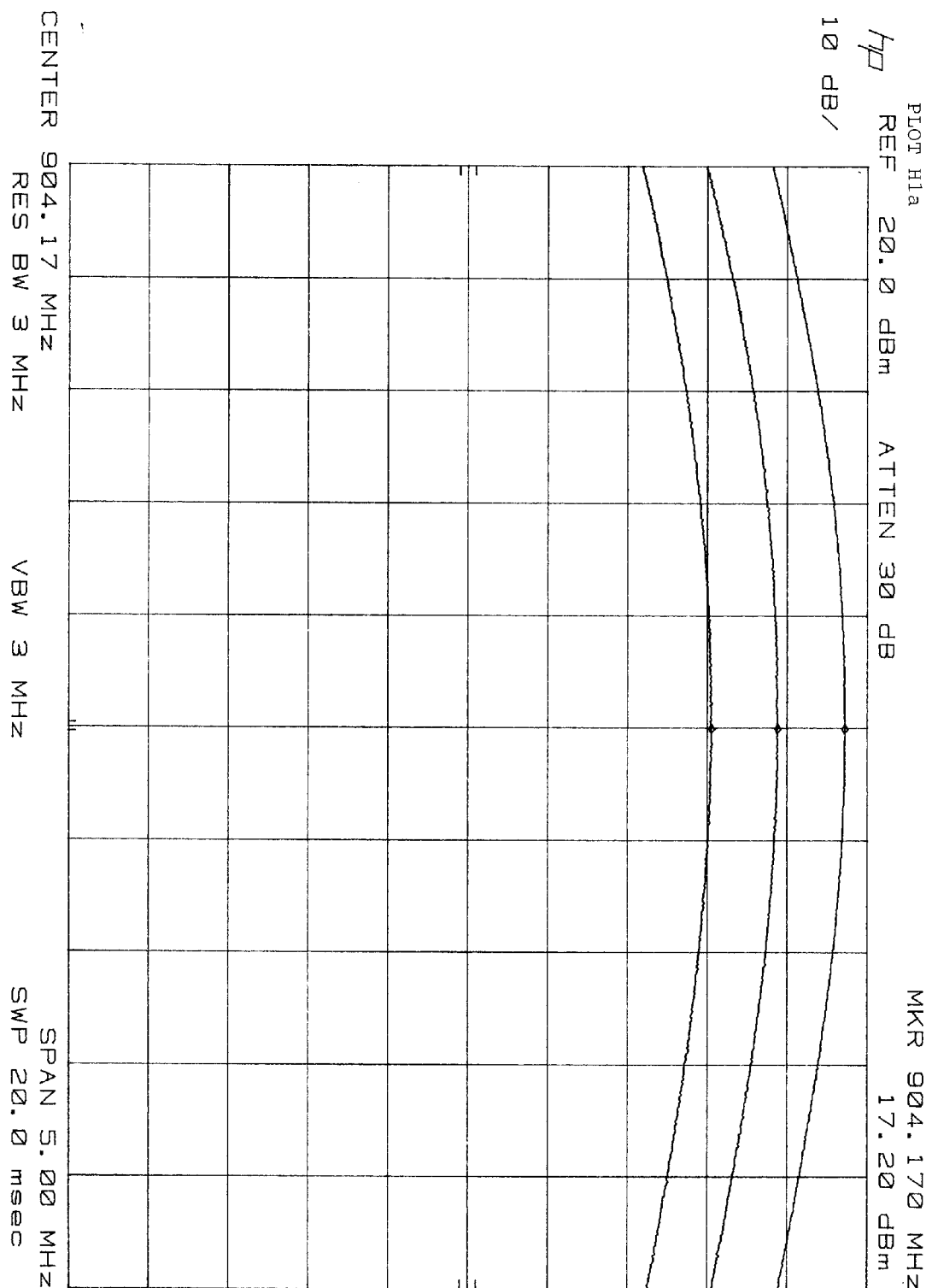
EUT Transmit Antenna Gain(dBi) + dBm max. output level = 17.2 dBm (36 dBm or less)

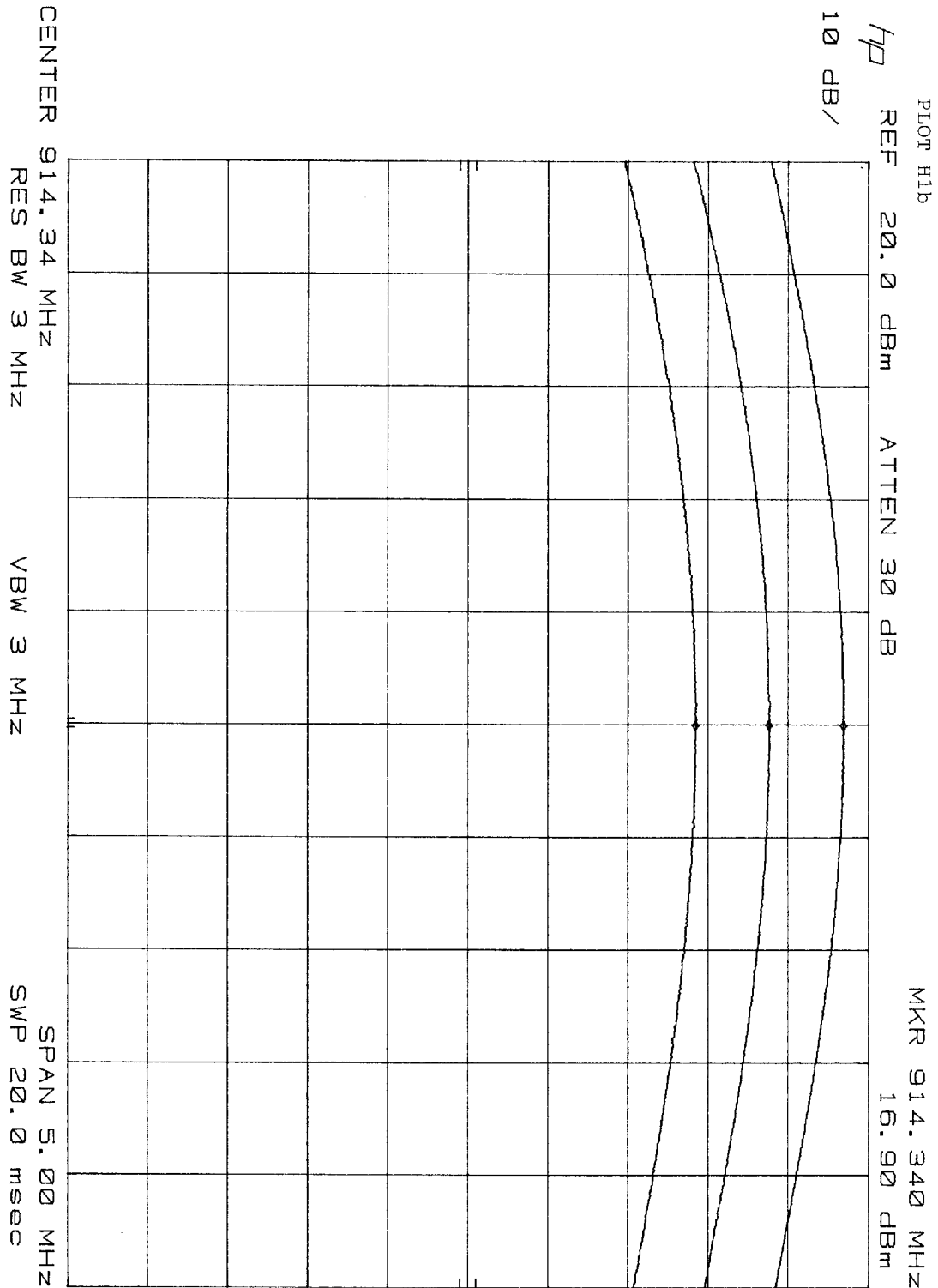
Please refer to the attached plots for details:

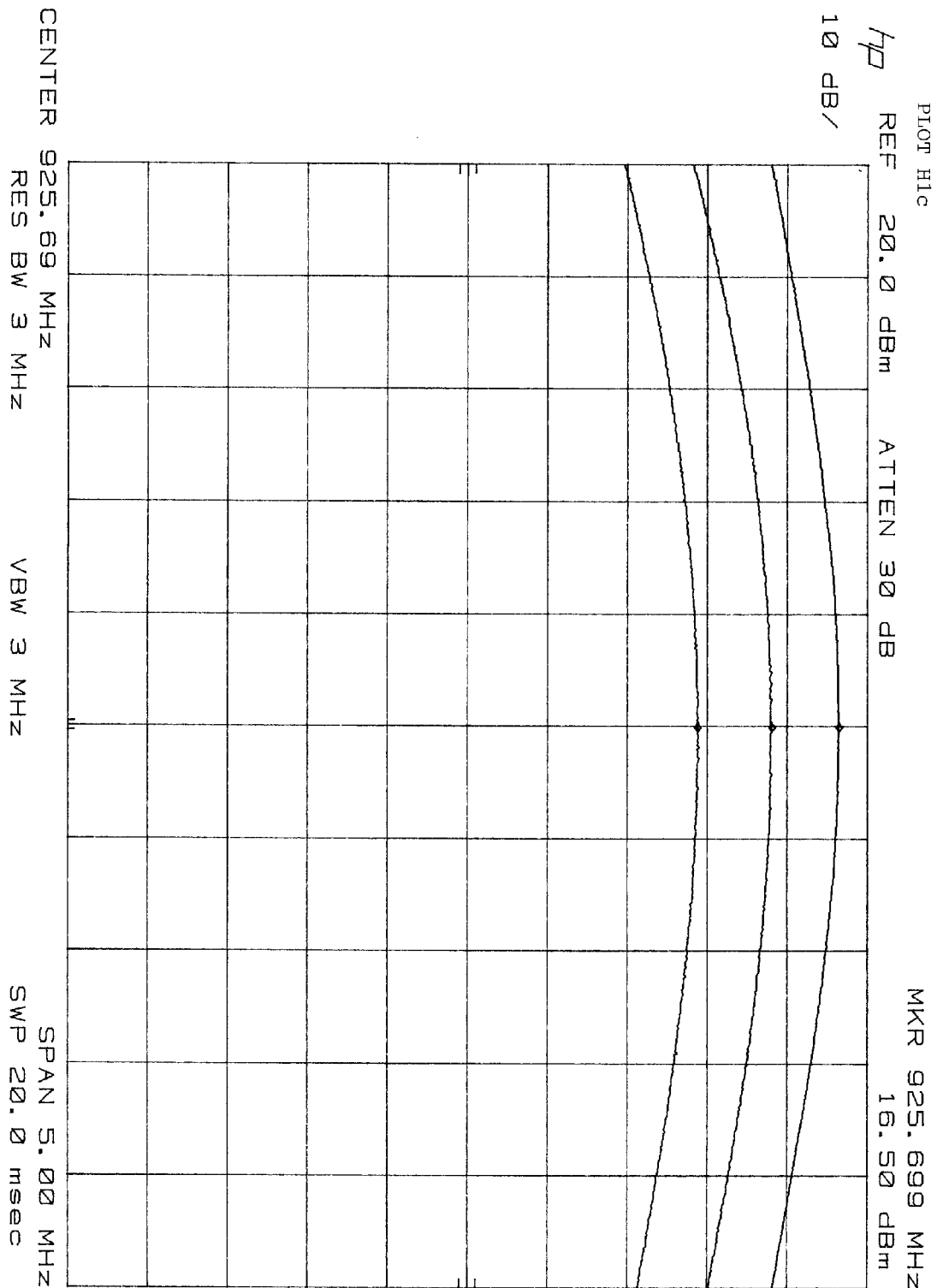
Plot H1a: Low Channel Output Power

Plot H1b: Middle Channel Output Power

Plot H1c: High Channel Output Power







4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

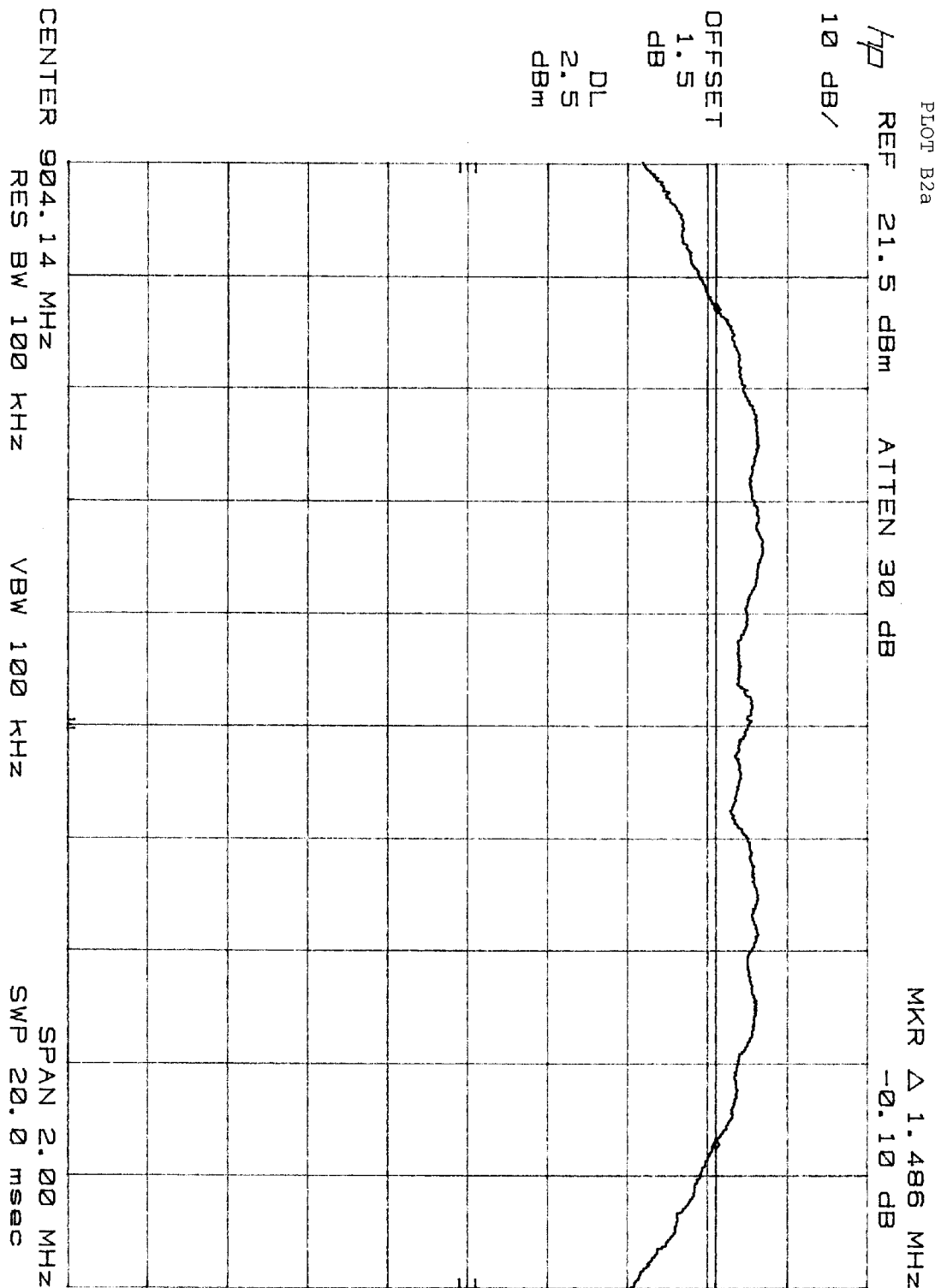
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

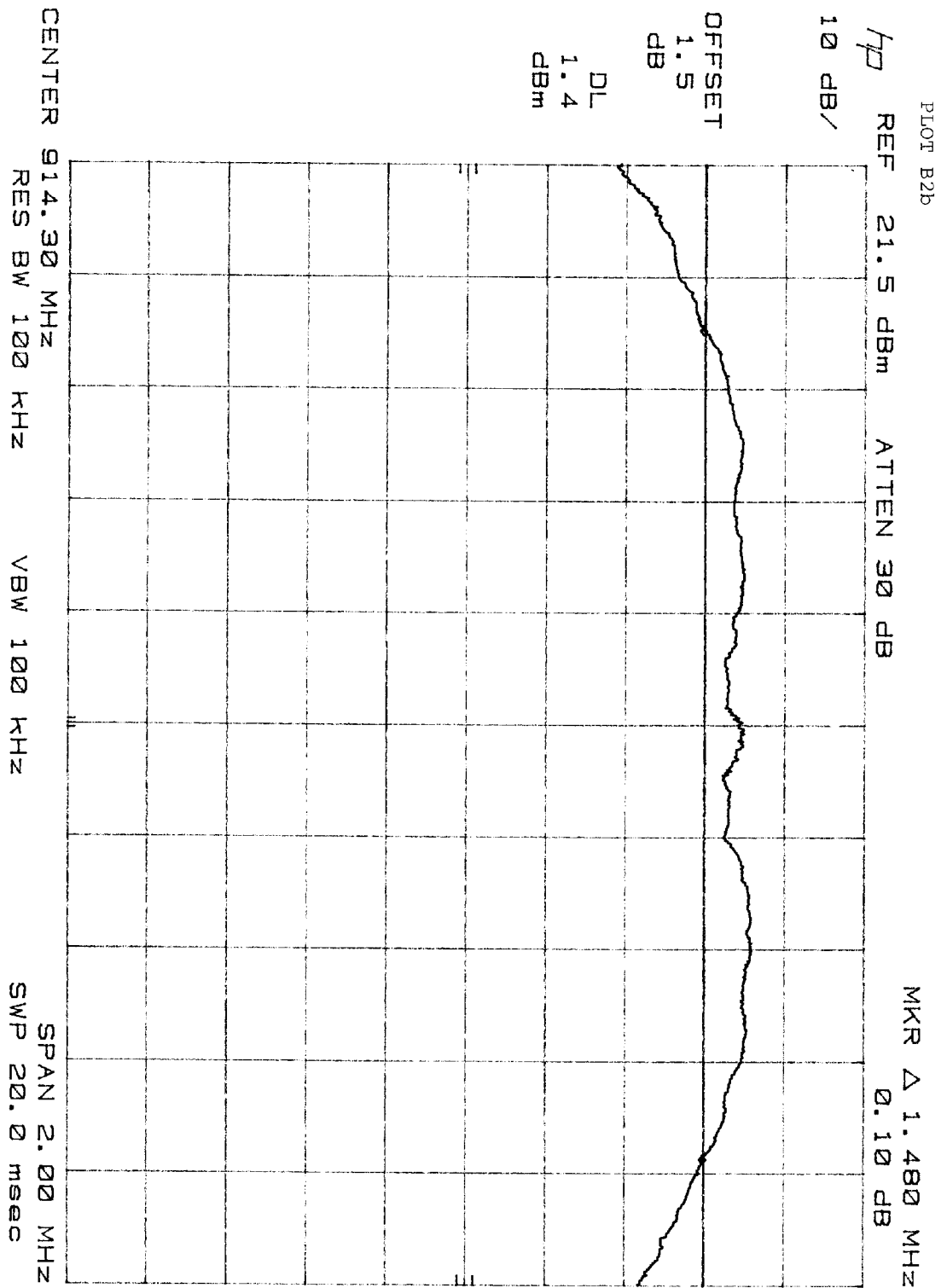
(Base Unit)	
Frequency (MHz)	Max. 6 dB Bandwidth (kHz)
926.4	1450

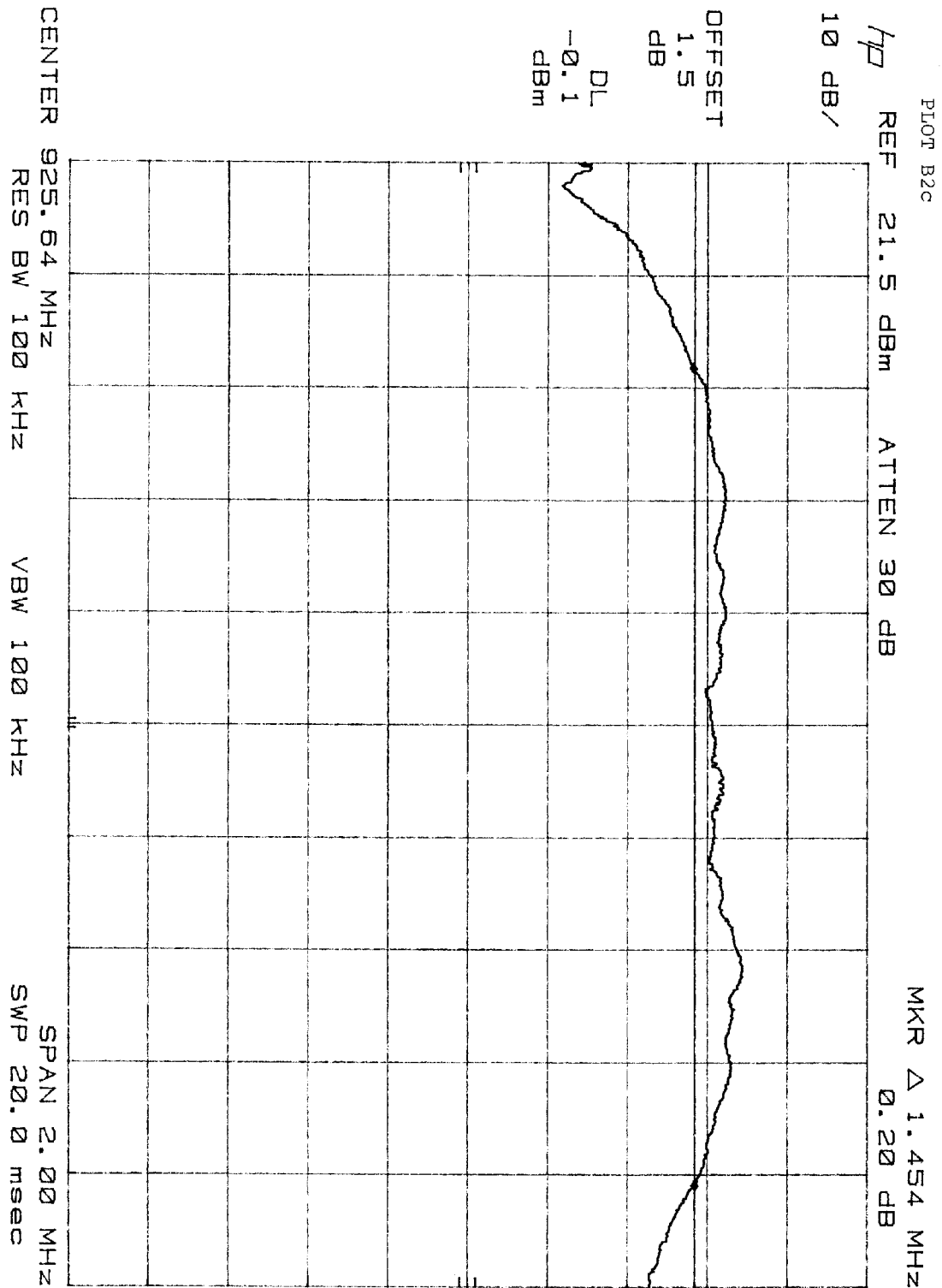
(Handset Unit)	
Frequency (MHz)	Max. 6 dB Bandwidth (kHz)
914.4	1474

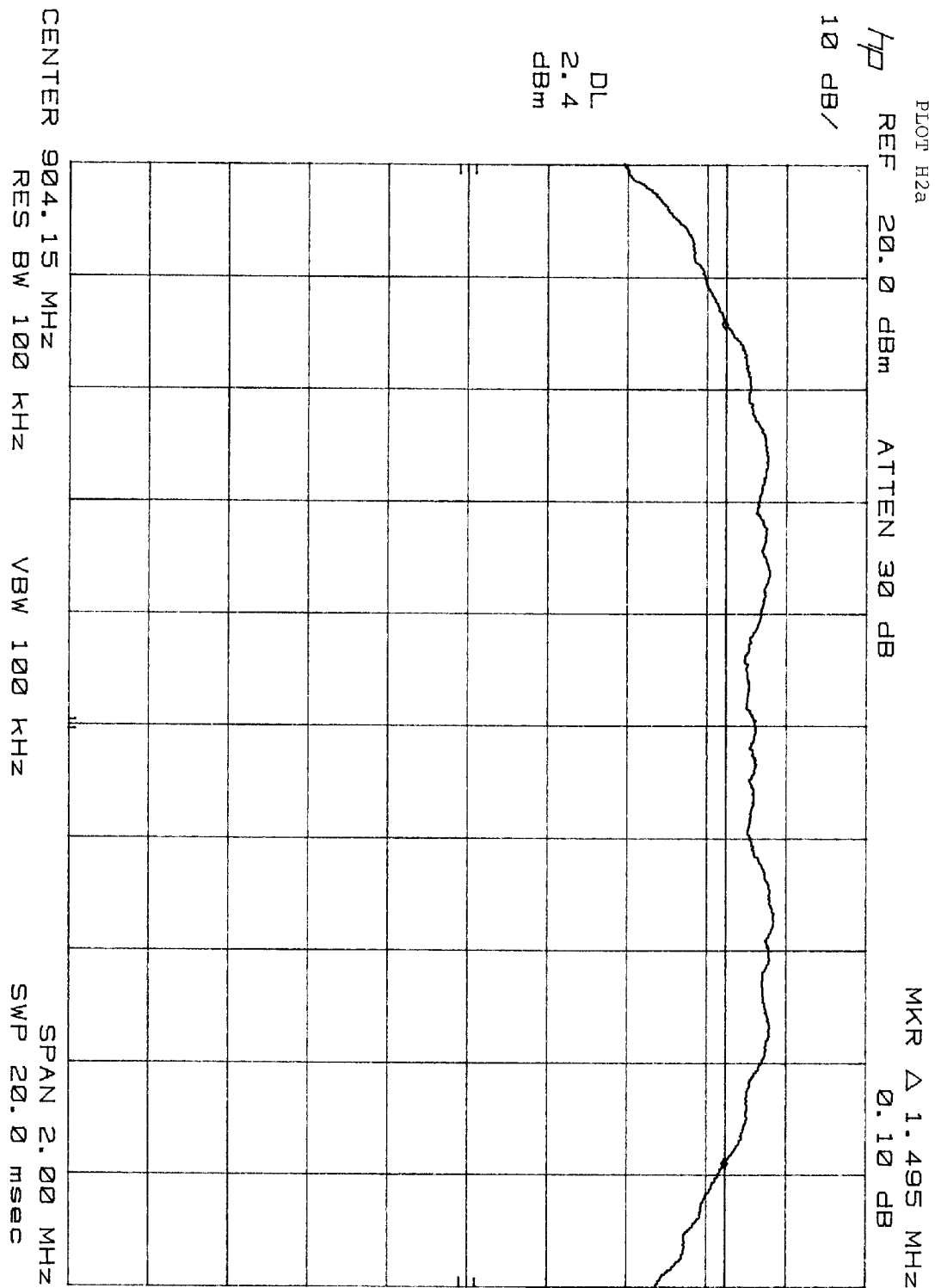
Refer to the following plots for 6 dB bandwidth sharp:

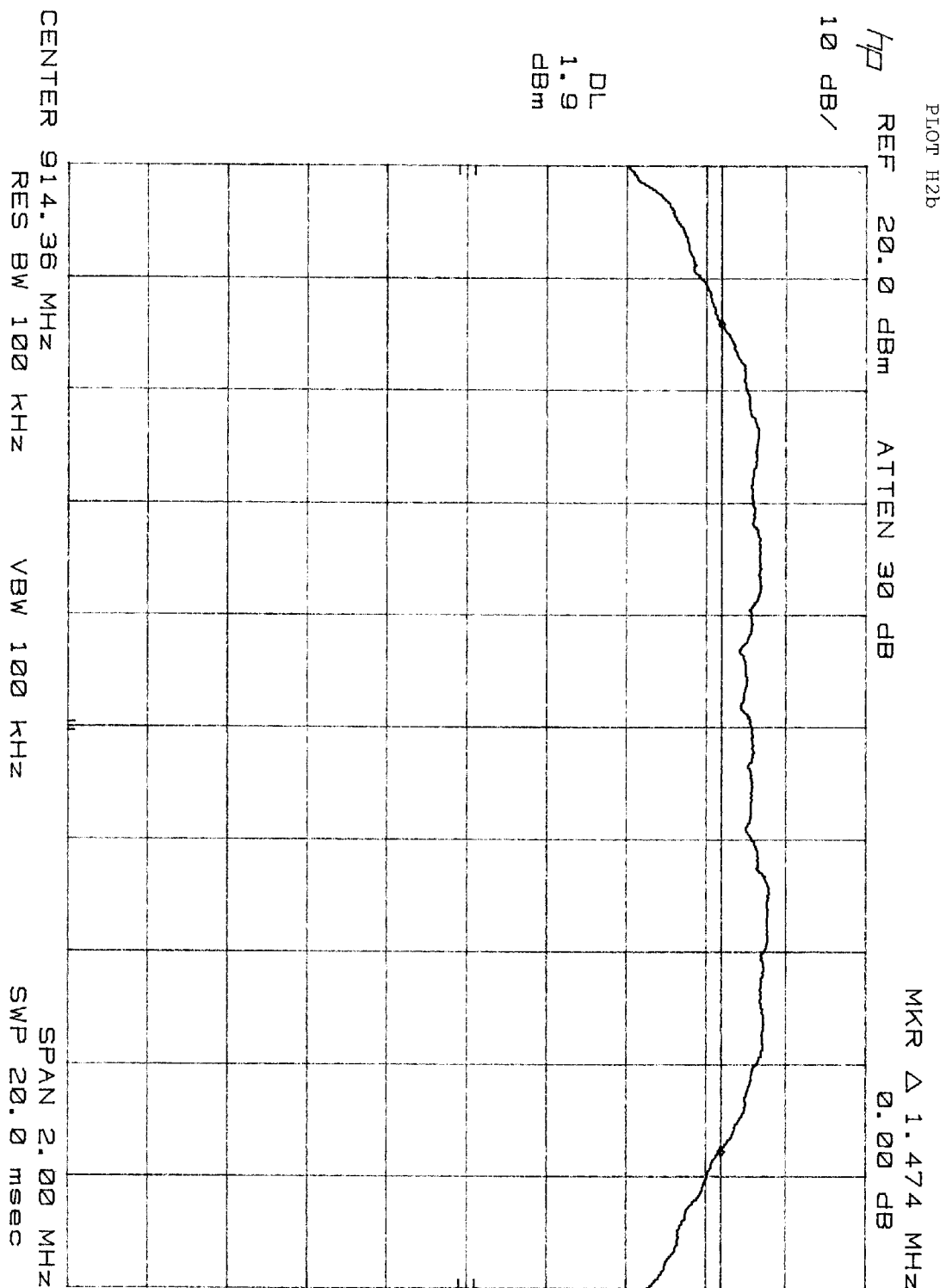
Plot B2a: Low Channel 6 dB RF Bandwidth
Plot B2b: Middle Channel 6 dB RF Bandwidth
Plot B2c: High Channel 6 dB RF Bandwidth
Plot H2a: Low Channel 6 dB RF Bandwidth
Plot H2b: Middle Channel 6 dB RF Bandwidth
Plot H2c: High Channel 6 dB RF Bandwidth











4.3 Maximum Power Density Reading, FCC Rule 15.247(d):

The spectrum analyzer RES BW was set to 3 kHz. The START and STOP frequencies were set to the band edges of the maximum output passband. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs. The specification calls for a 1 second interval at each 3 kHz bandwidth; total SWEEP TIME is calculated as follows:

$$\text{SWEEP TIME (SEC)} = (\text{Fstop, kHz} - \text{Fstart, kHz})/3 \text{ kHz}$$

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

(Base Unit)	
Frequency (MHz)	Power Density (dBm)
903.9	3.4

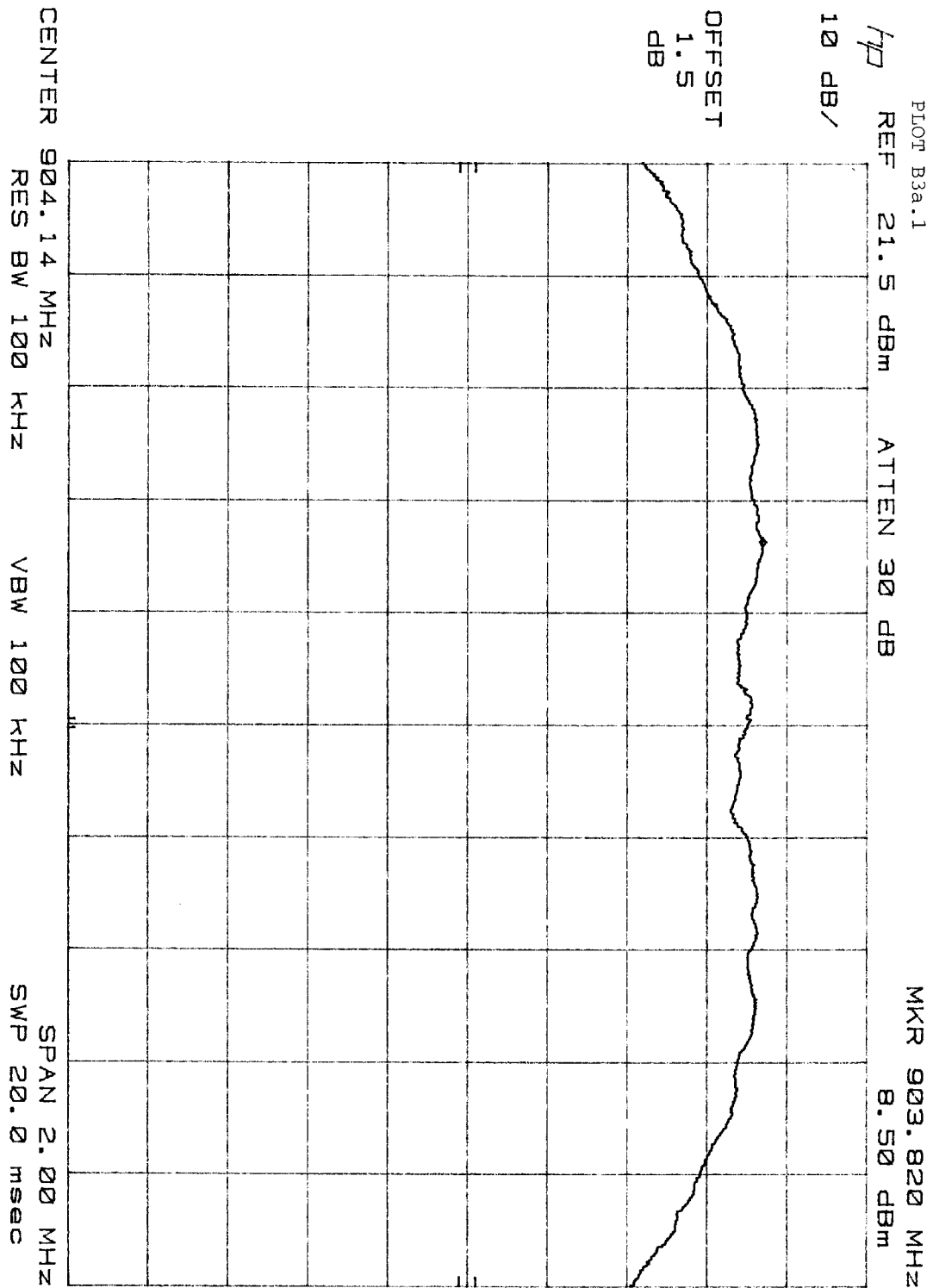
(Handset Unit)	
Frequency (MHz)	Power Density (dBm)
904.7	2.8

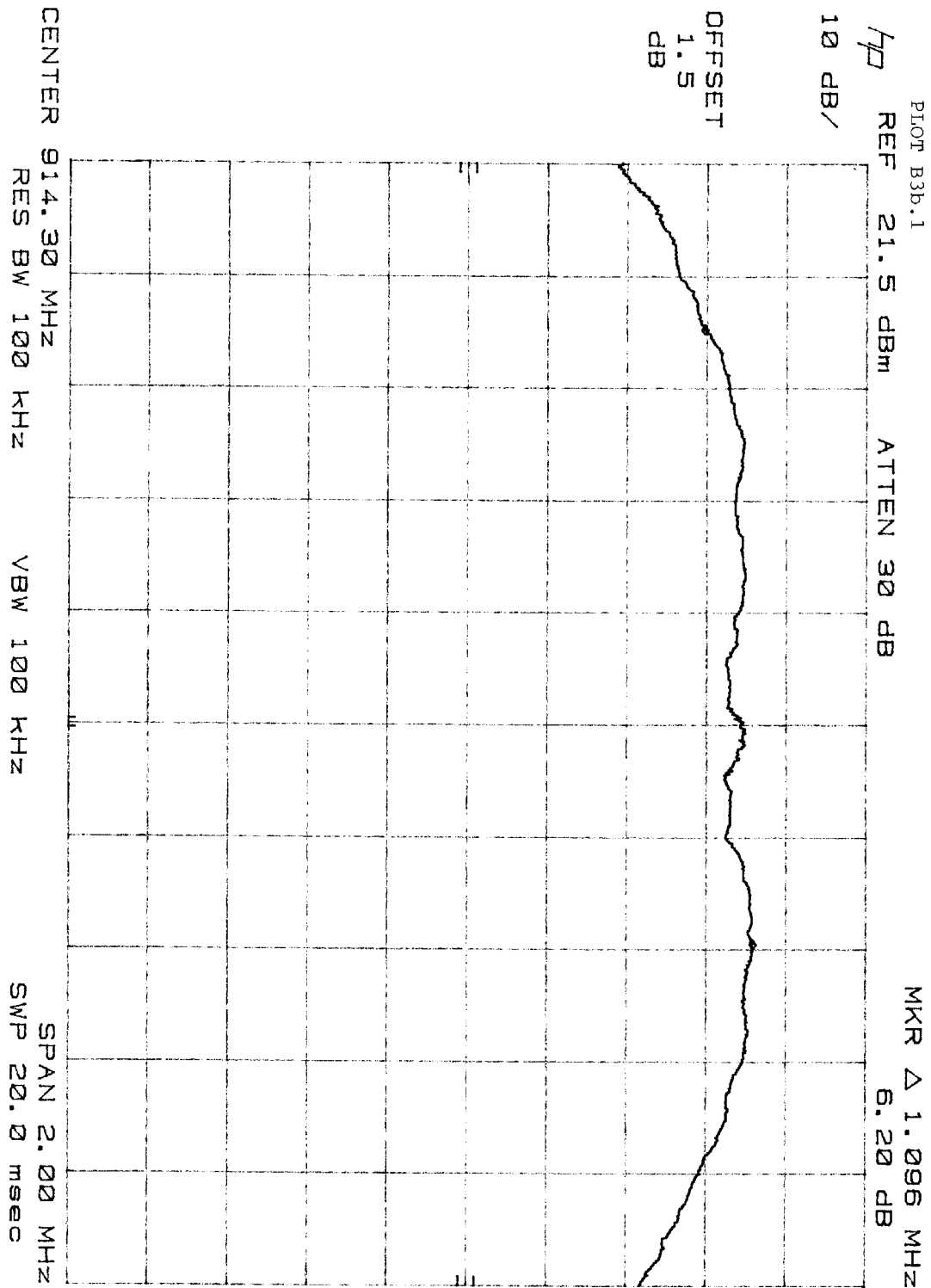
Frequency Span = 600 kHz

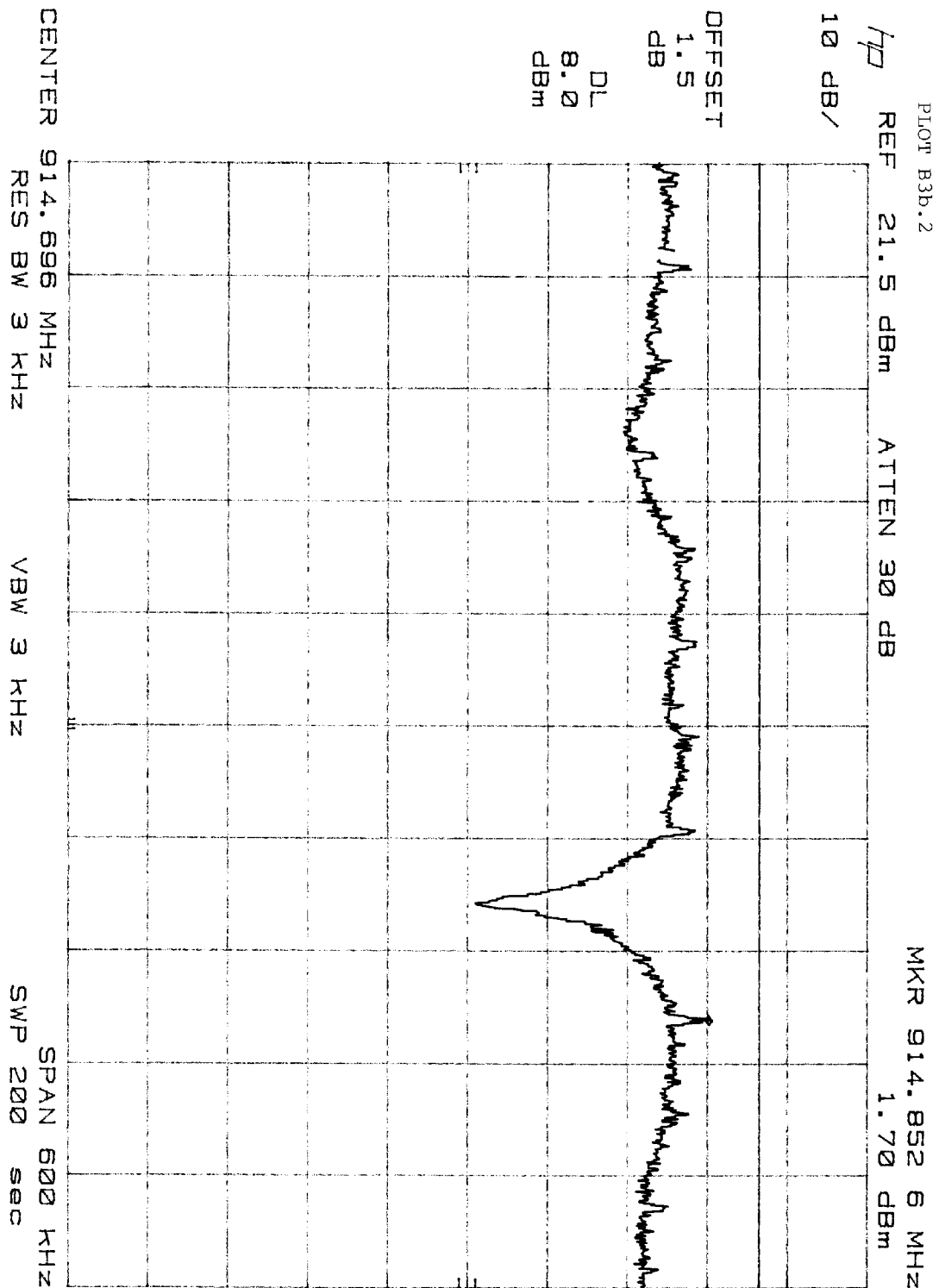
Sweep Time = 600 Frequency Span/3 kHz
= 200 seconds

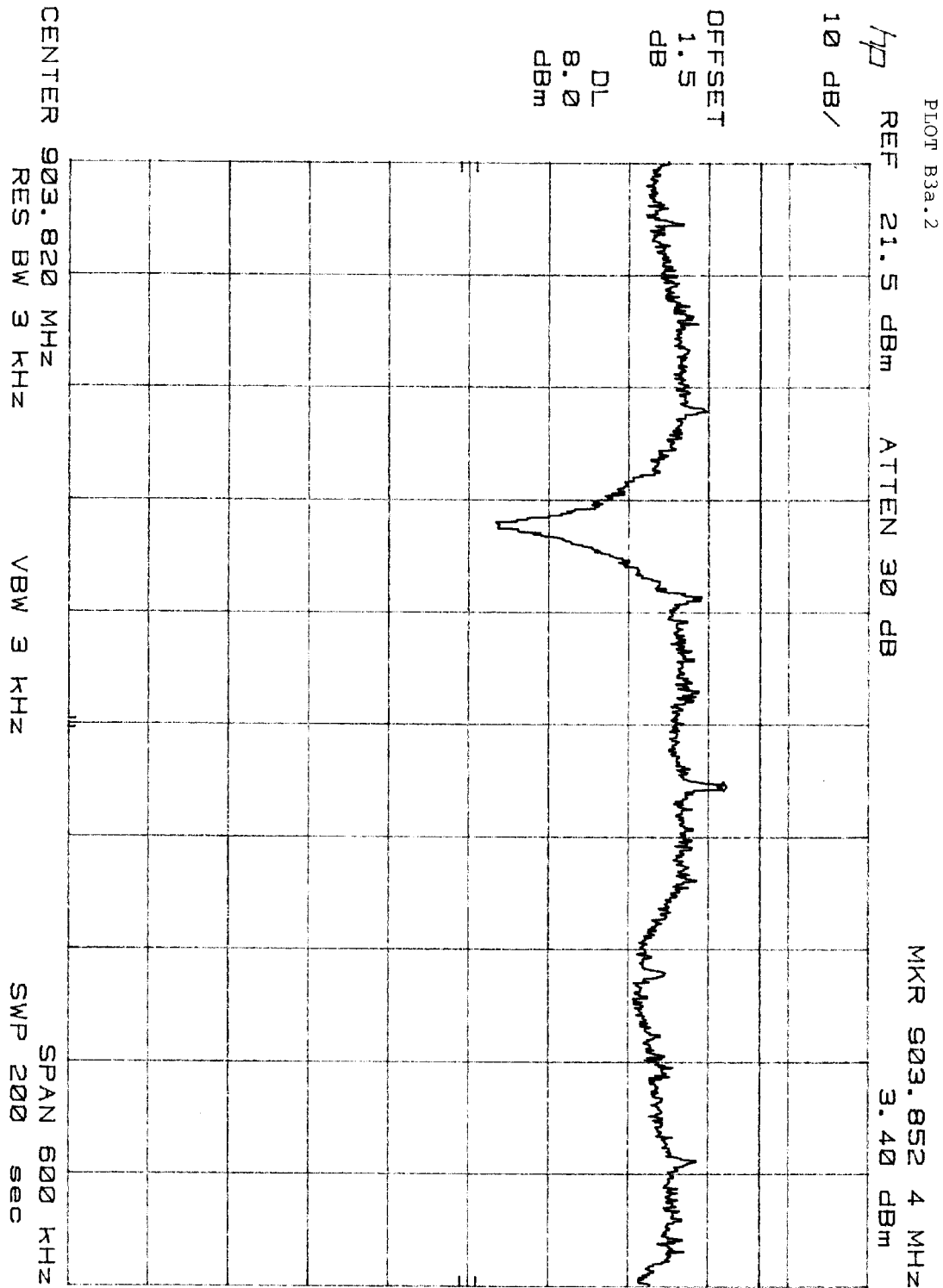
Refer to the following plots for power density data:

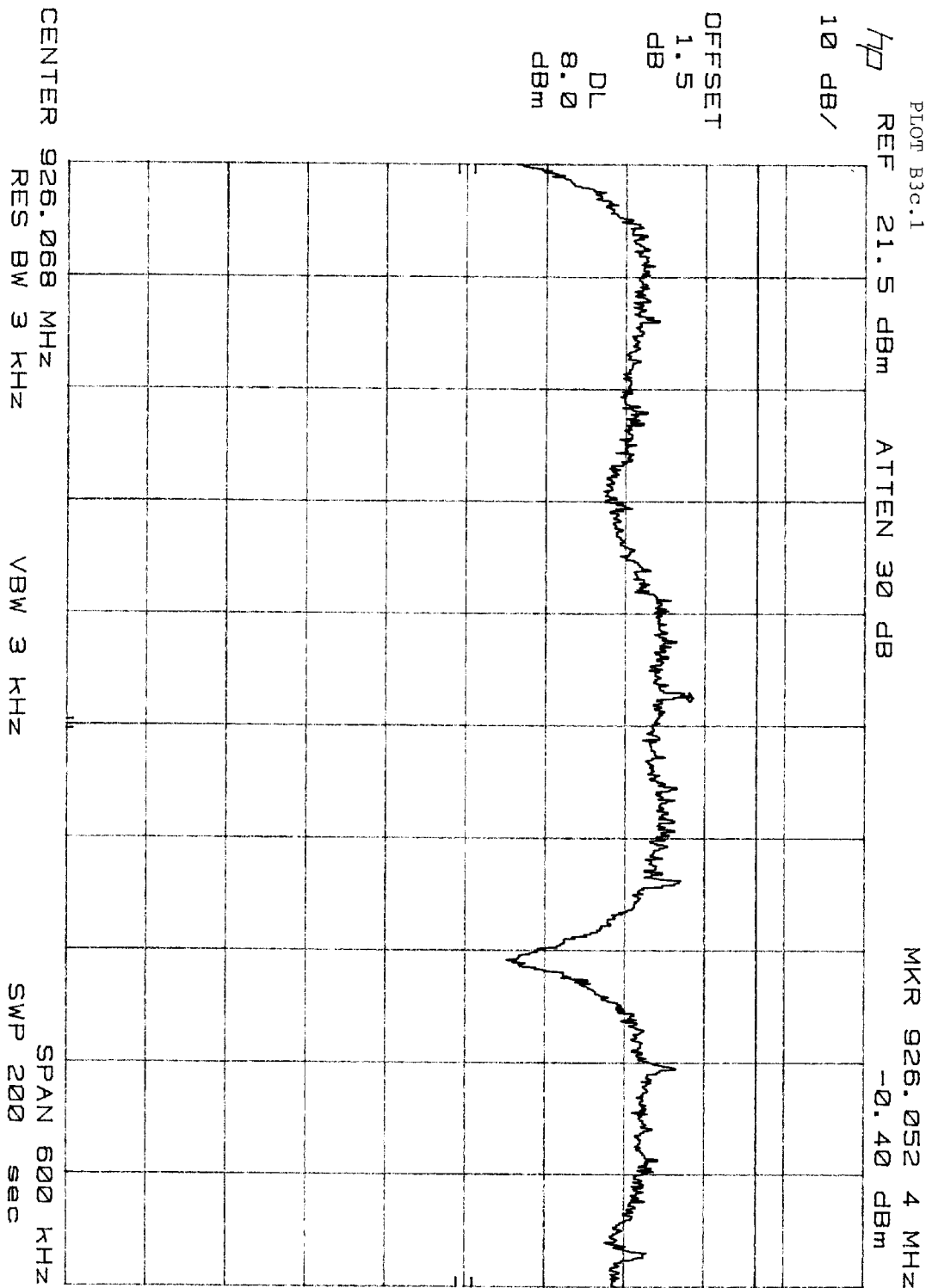
Plot B3a.1 - B3a.2 Low Channel Power Density
Plot B3b.1 - B3b.2 Middle Channel Power Density
Plot B3c.1 - B3c.2: High Channel Power Density
Plot H3a.1 - H3a.2 Low Channel Power Density
Plot H3b.1 - H3b.2 Middle Channel Power Density
Plot H3c.1 - H3c.2: High Channel Power Density

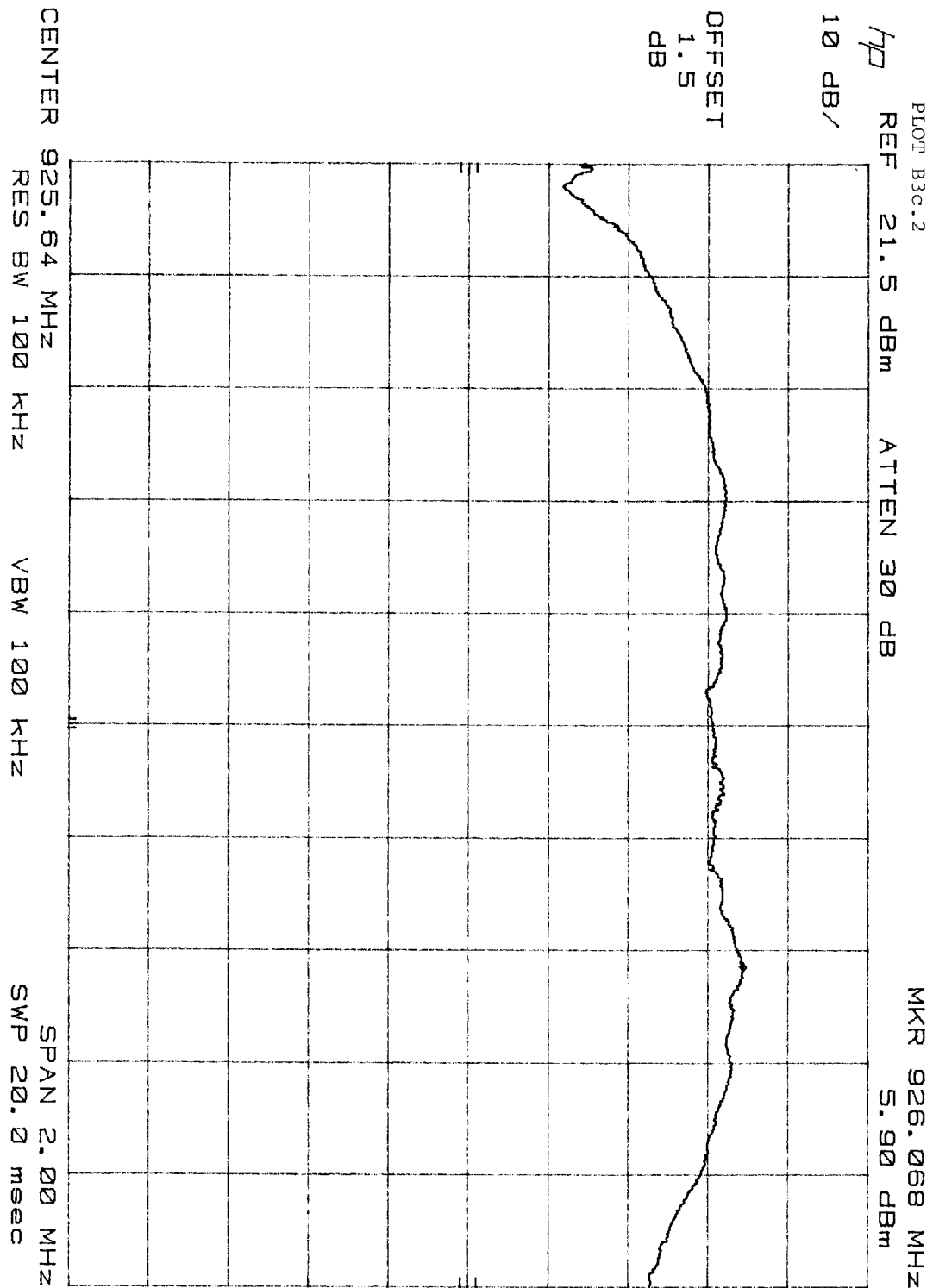


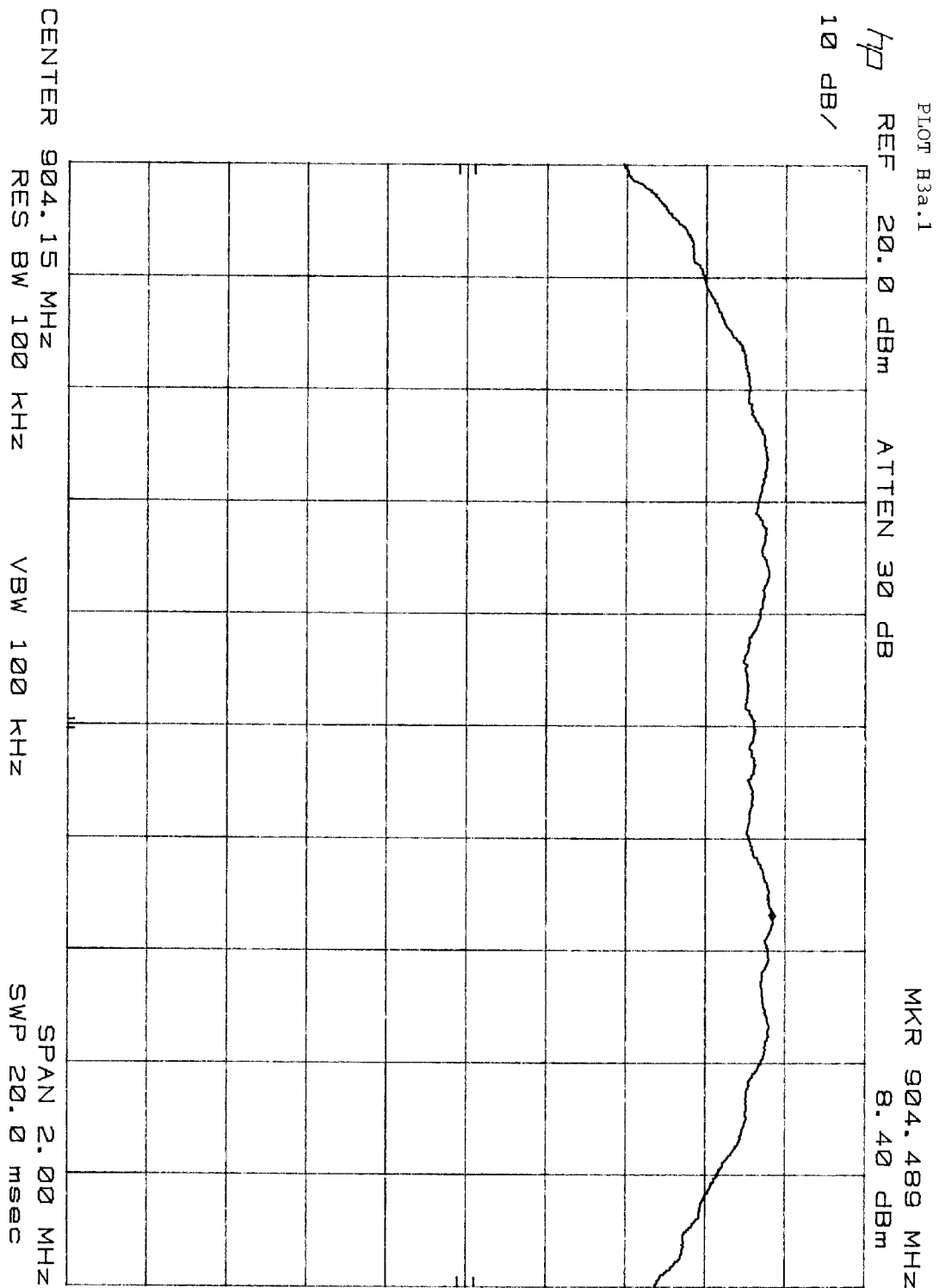


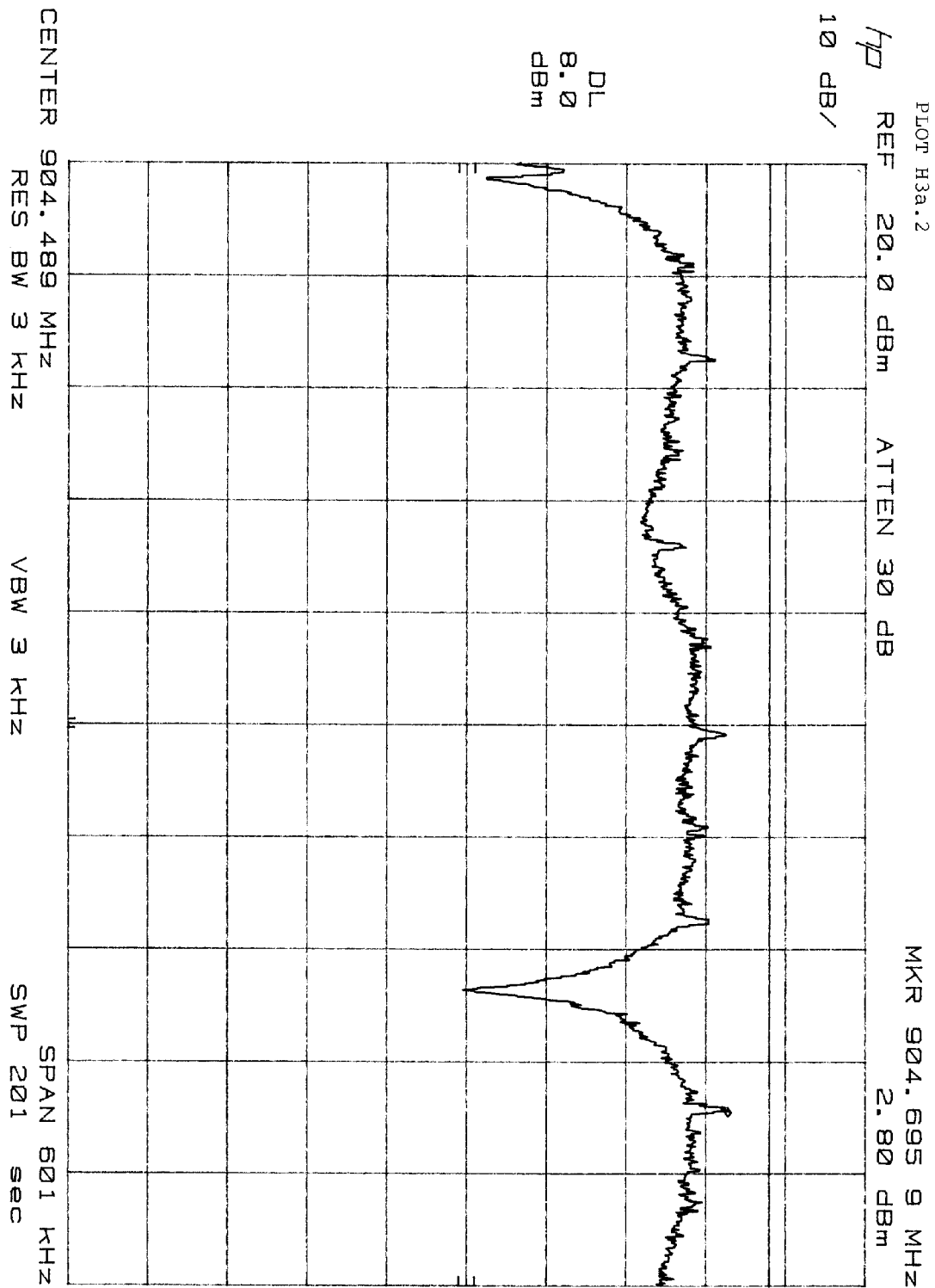


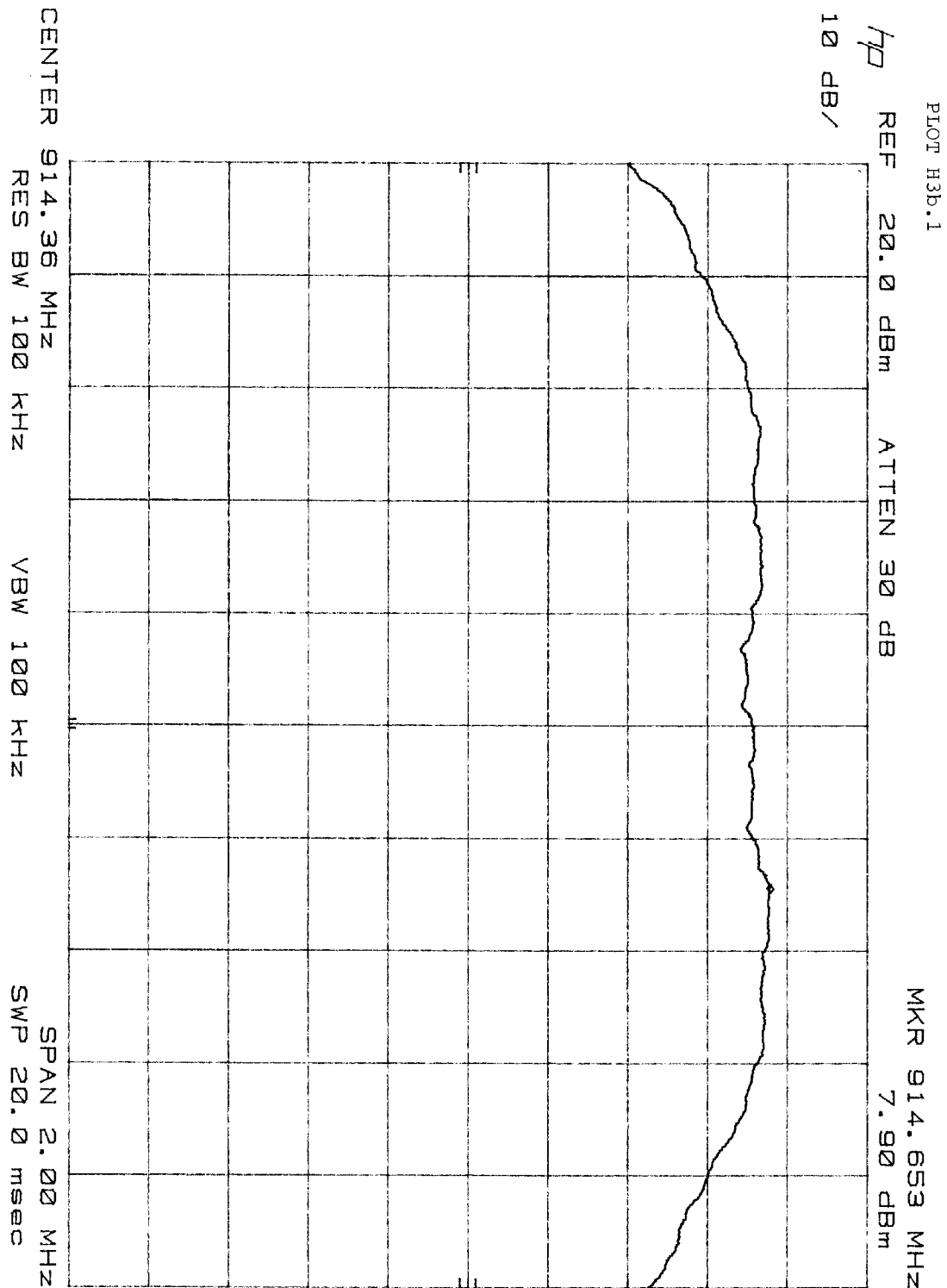


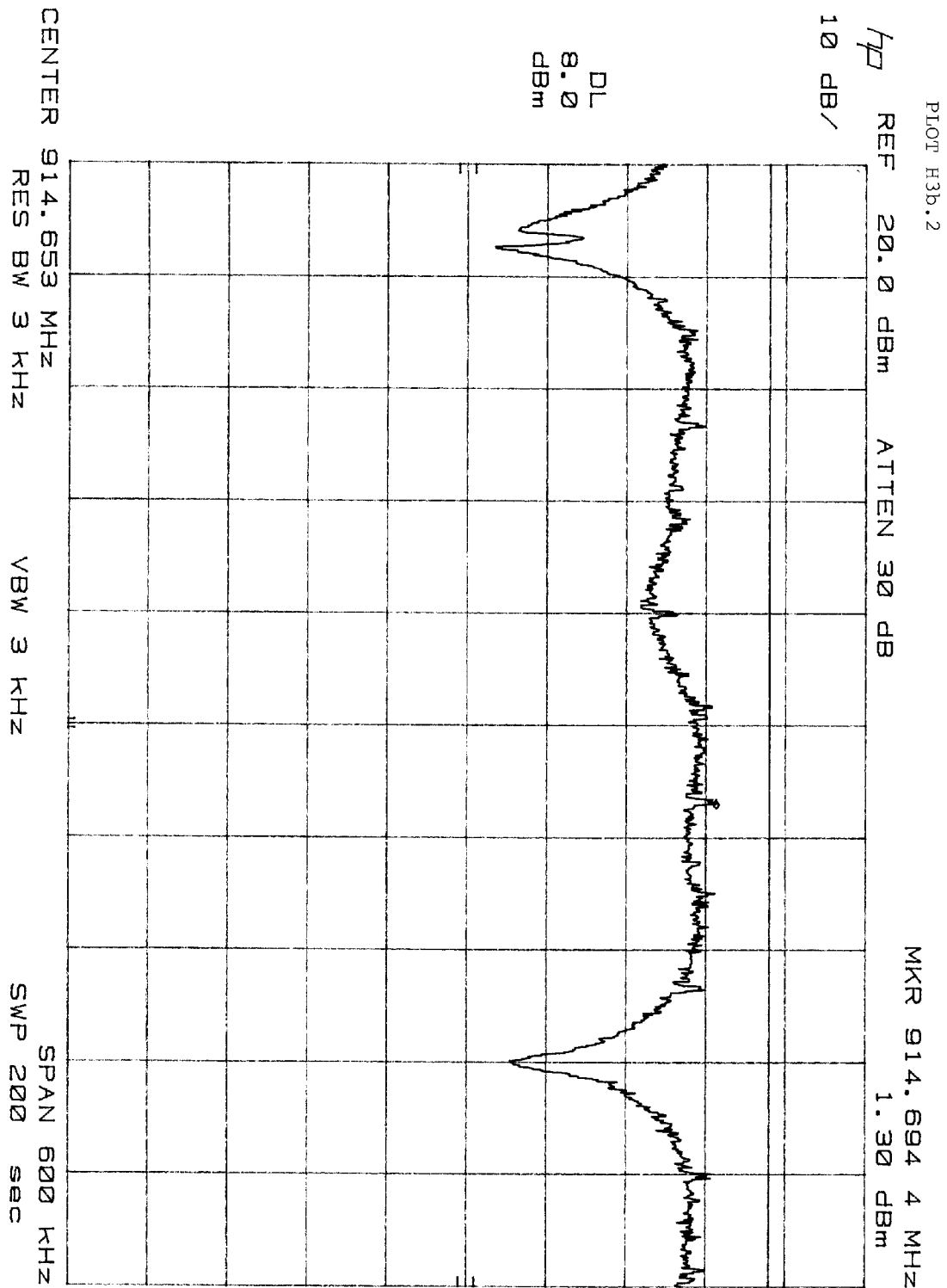


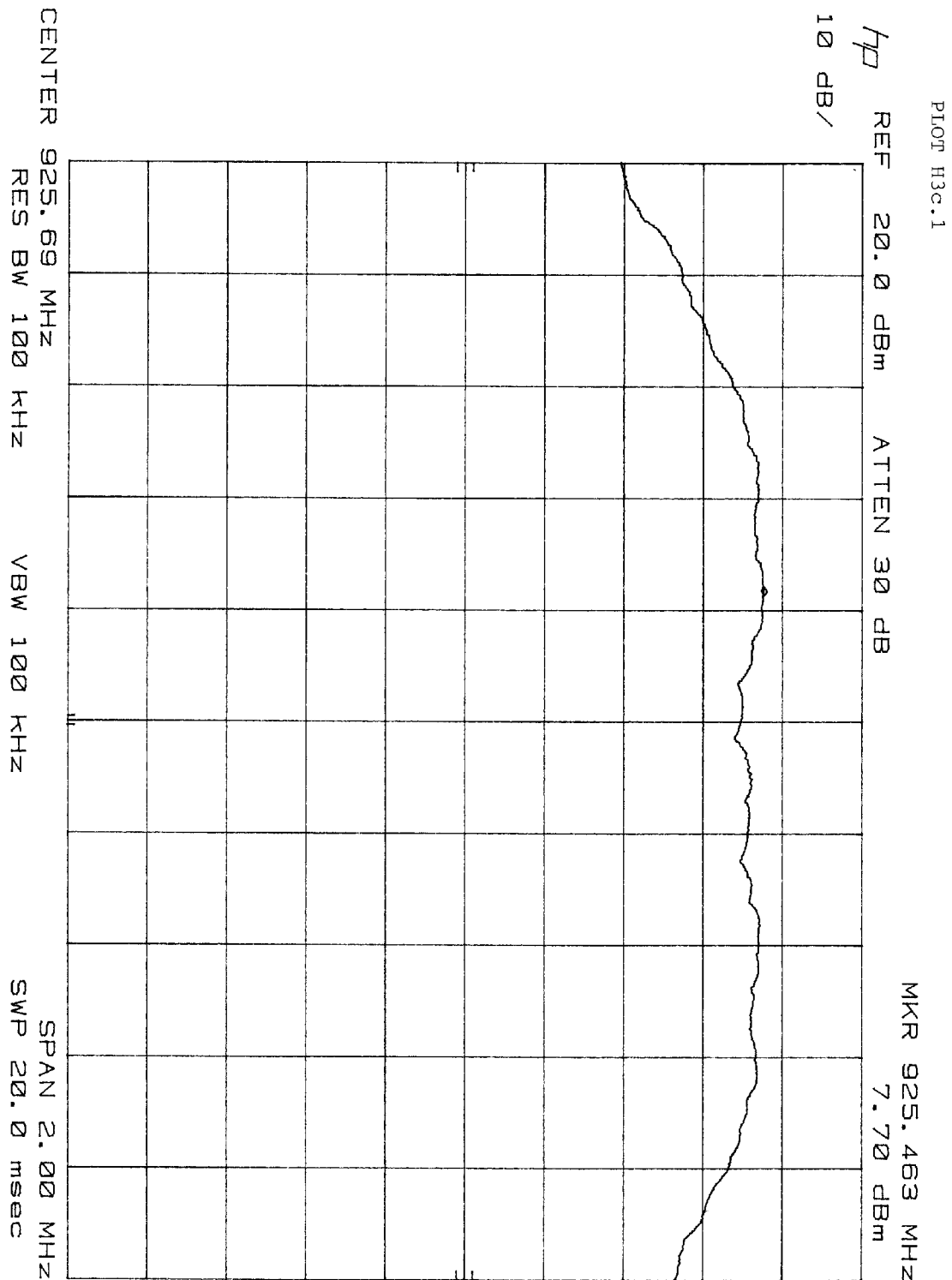


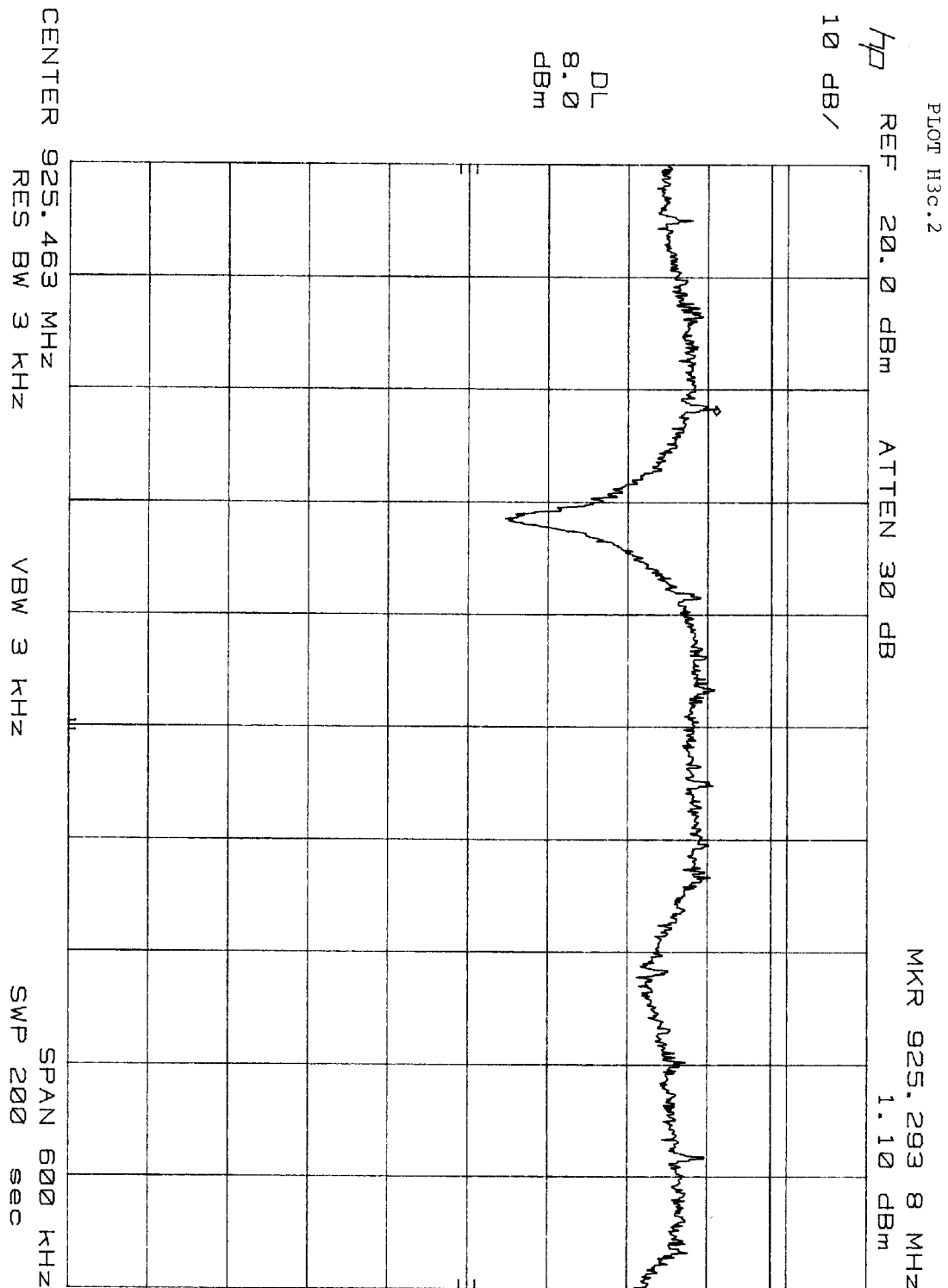












4.4 Out of Band Conducted Emissions, FCC Rule 15.247(c):

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the following plots for out of band conducted emissions data:

Plot B4a.1 - B4a.5: Low Channel Emissions
Plot B4b.1 - B4b.4: Middle Channel Emissions
Plot B4c.1 - B4c.5: High Channel Emissions
Plot H4a.1 - H4a.4: Low Channel Emissions
Plot H4b.1 - H4b.4: Middle Channel Emissions
Plot H4c.1 - H4c.5: High Channel Emissions

4.5 Out of Band Radiated Emissions (for emissions in 4. above that are less than 26 dB below carrier), FCC Rule 15.247(c):

For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

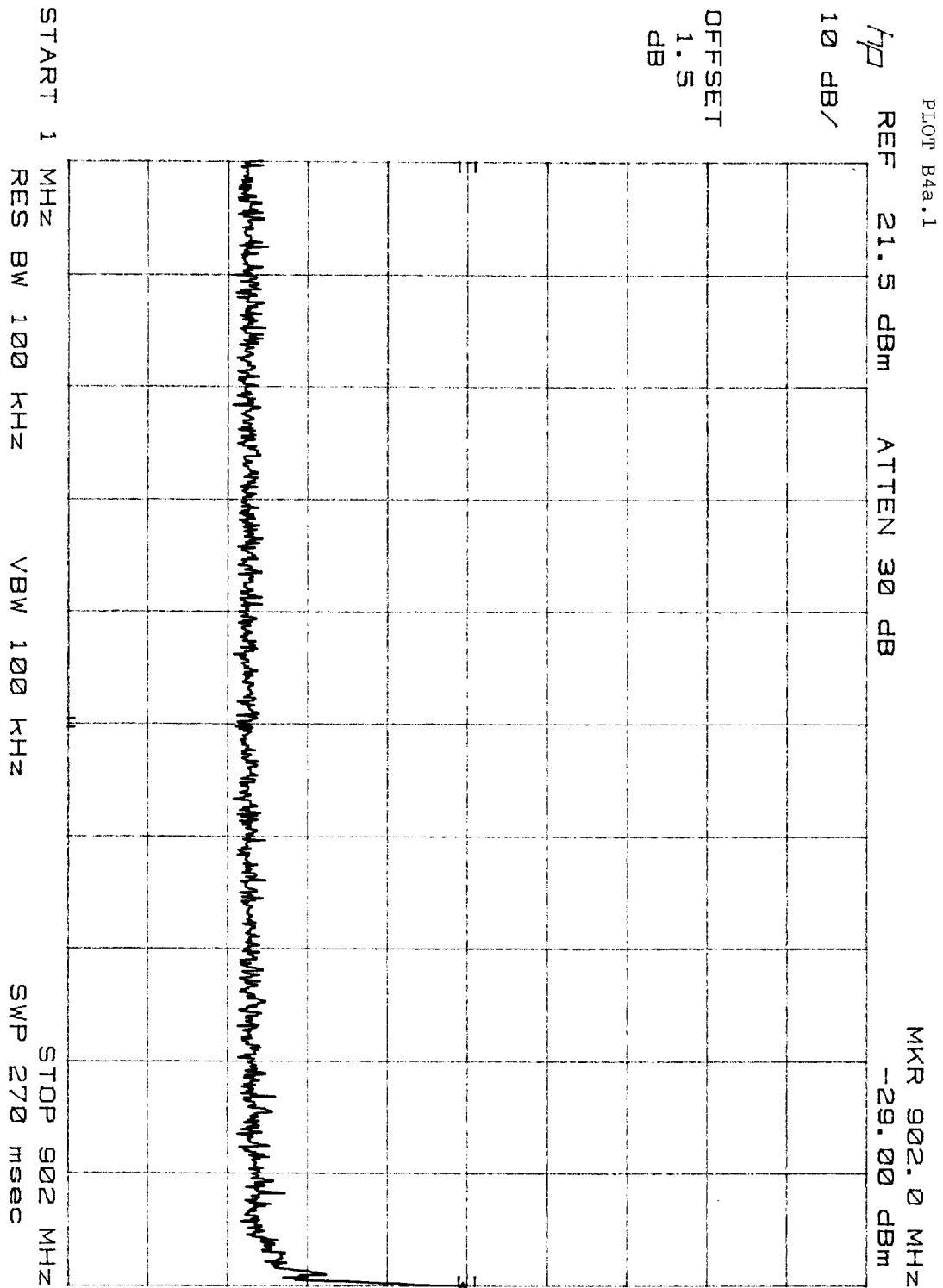
[x] Not required
[] See attached data sheet

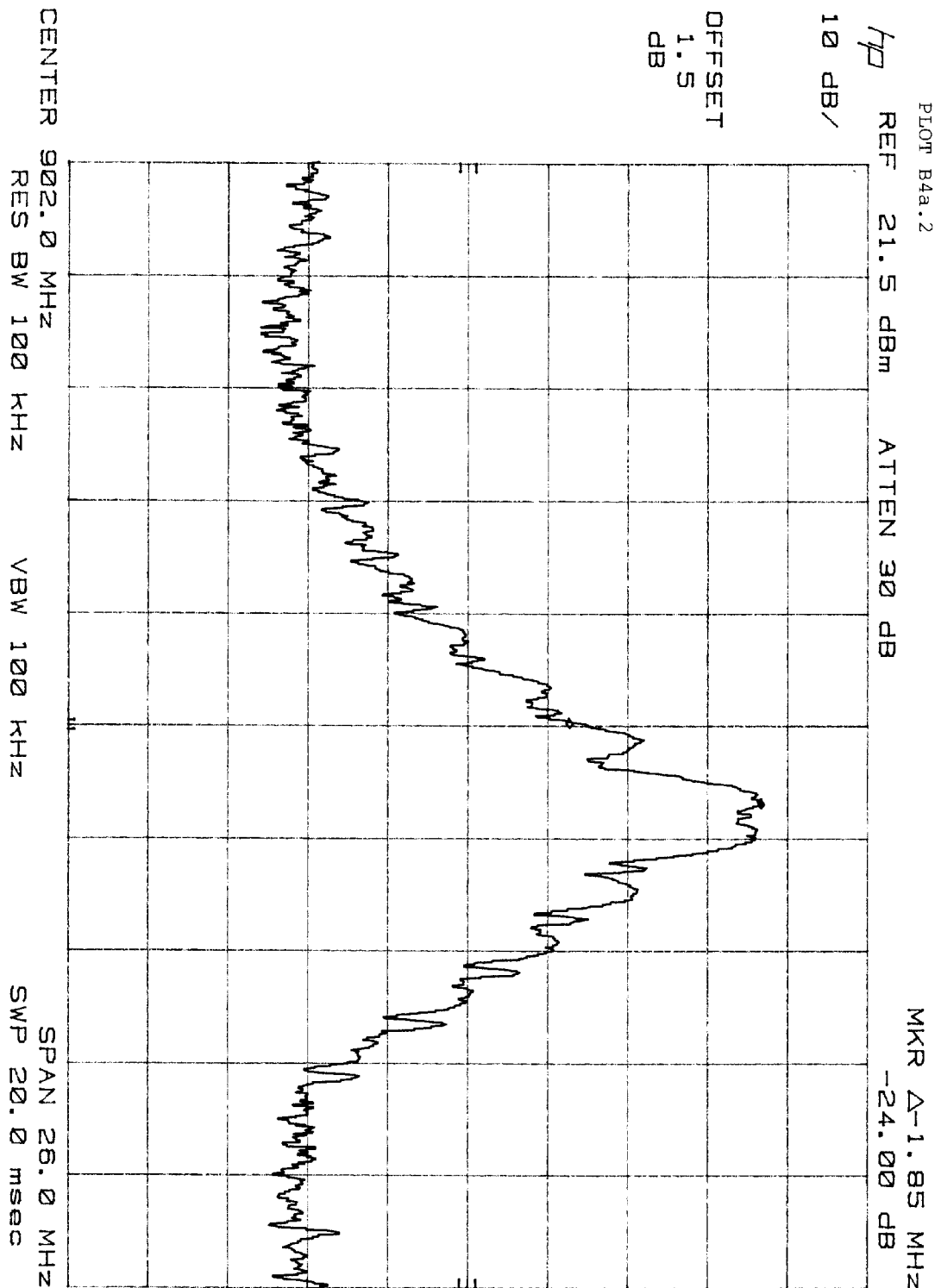
4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

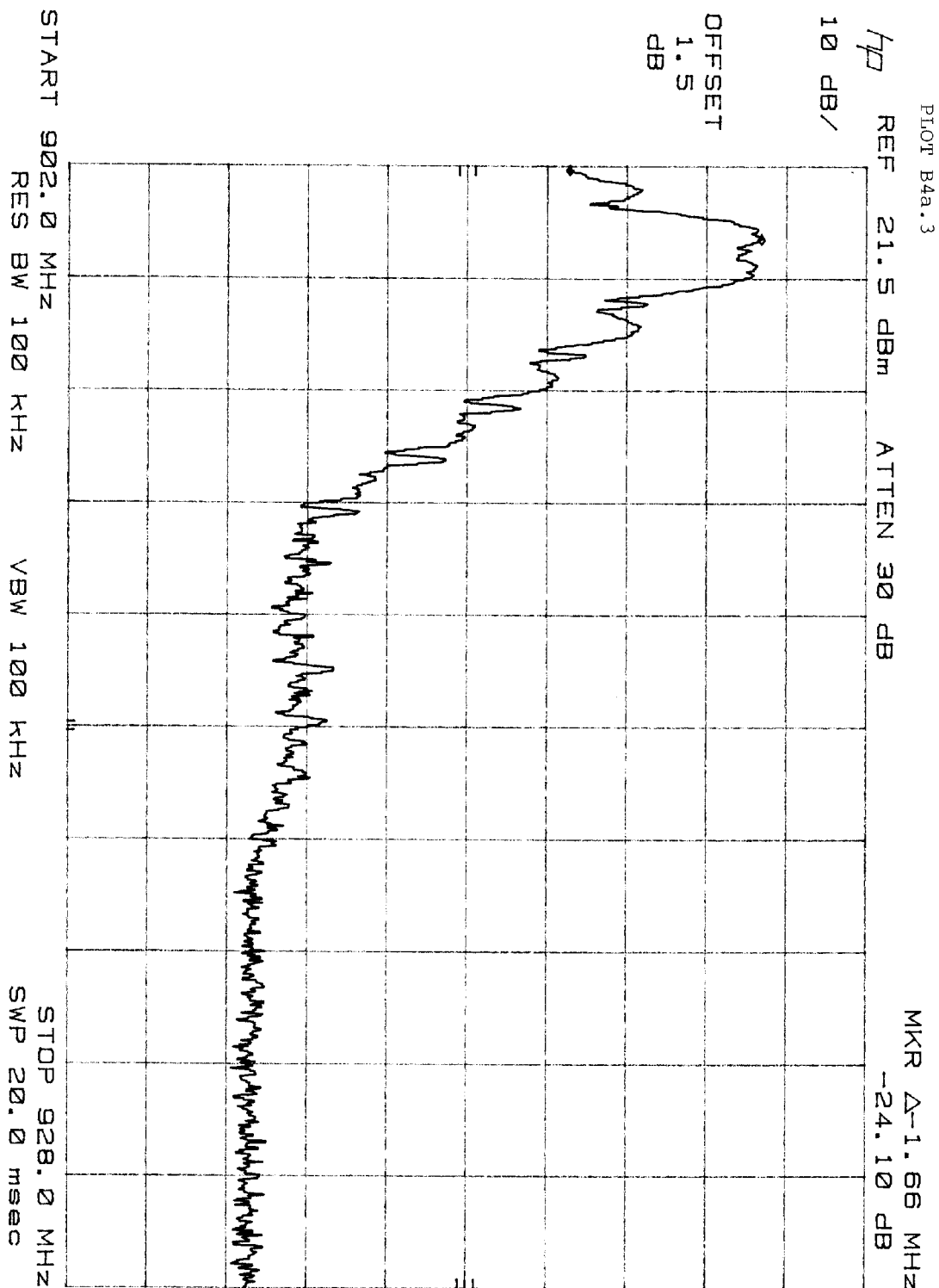
Radiated emission measurements were performed from 30 MHz to <10000> MHz. Analyzer resolution is 100 kHz or greater for 30 MHz to 1000 MHz, 1 MHz for >1000 MHz.

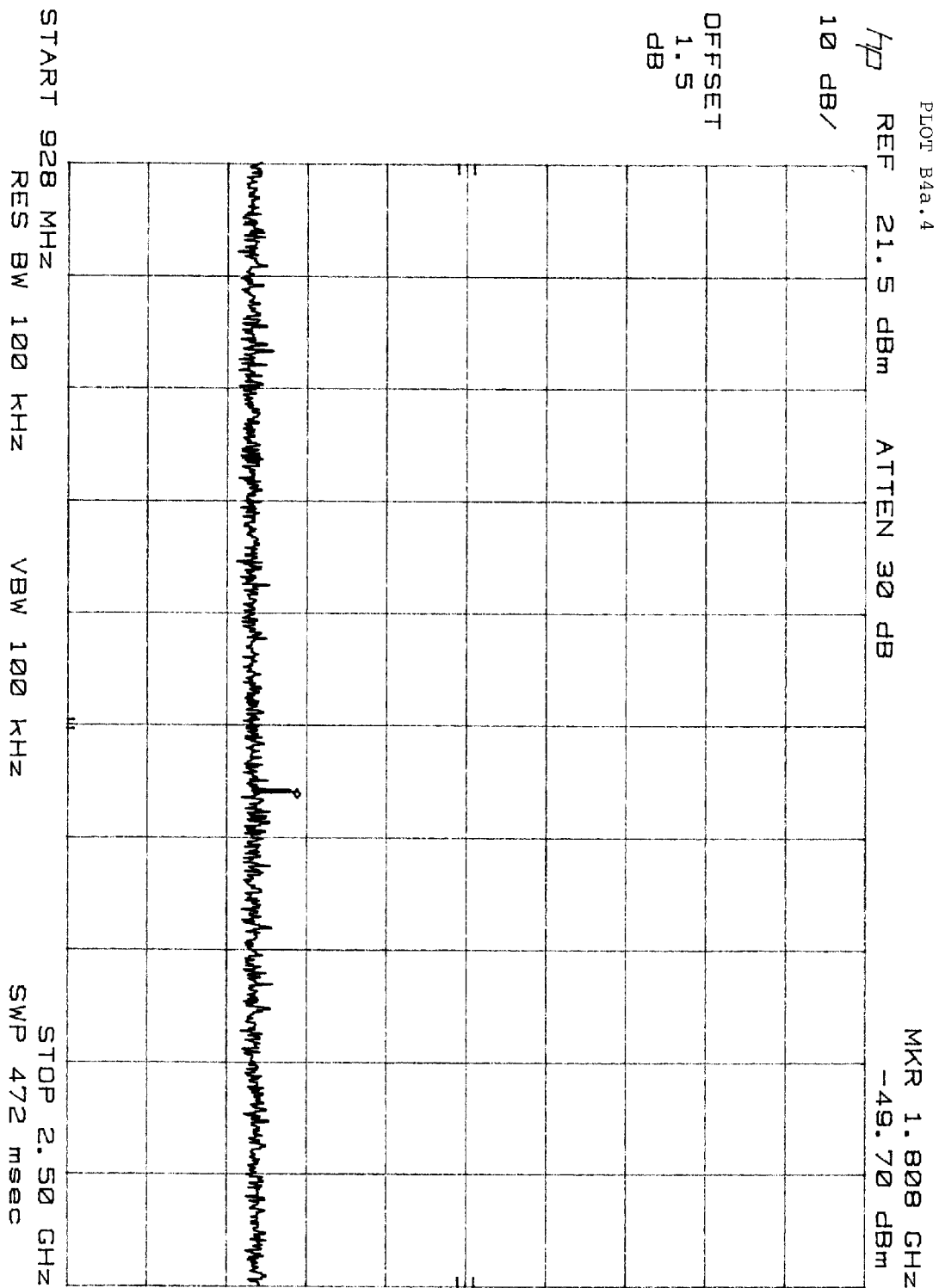
Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

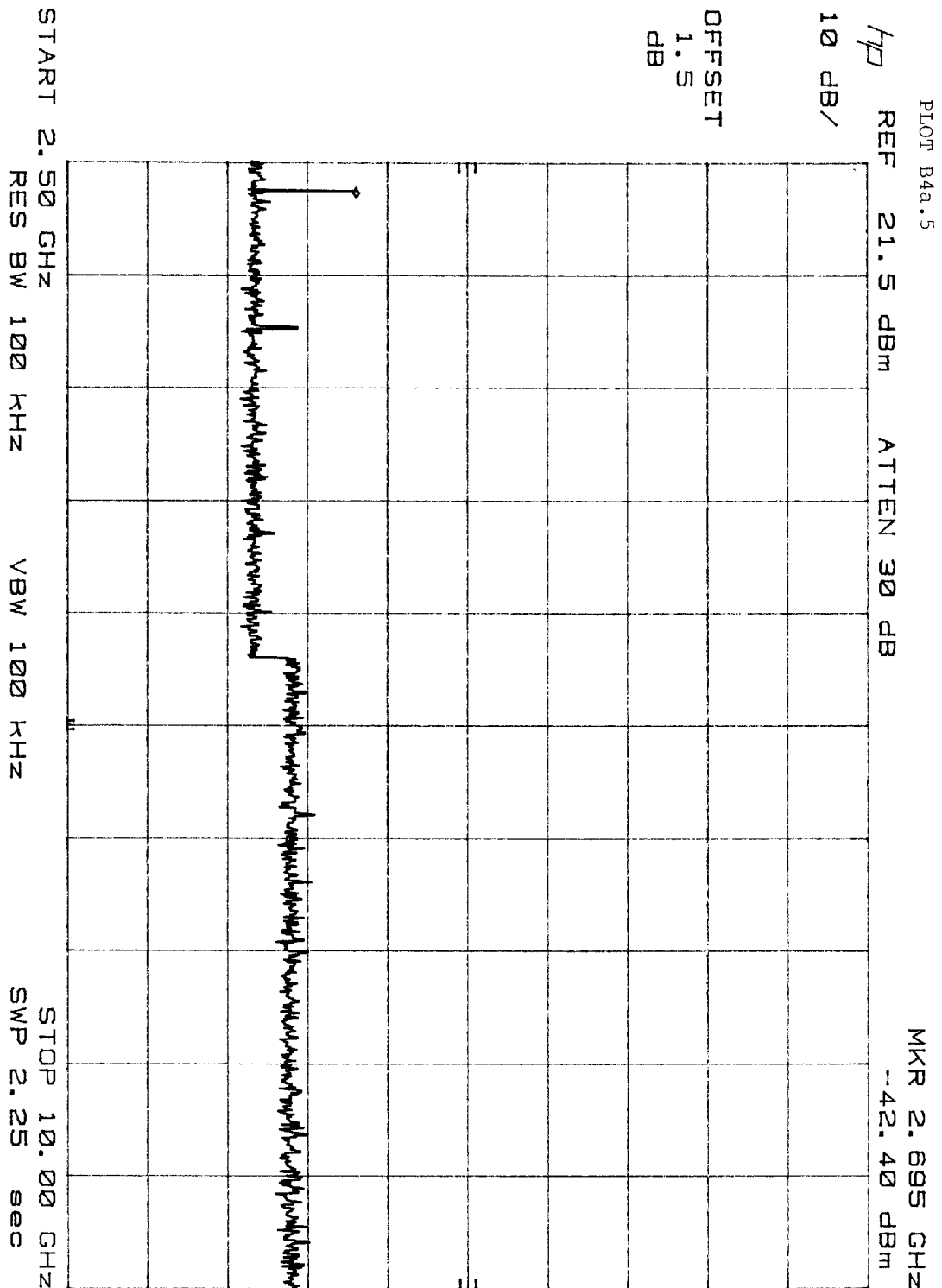
The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

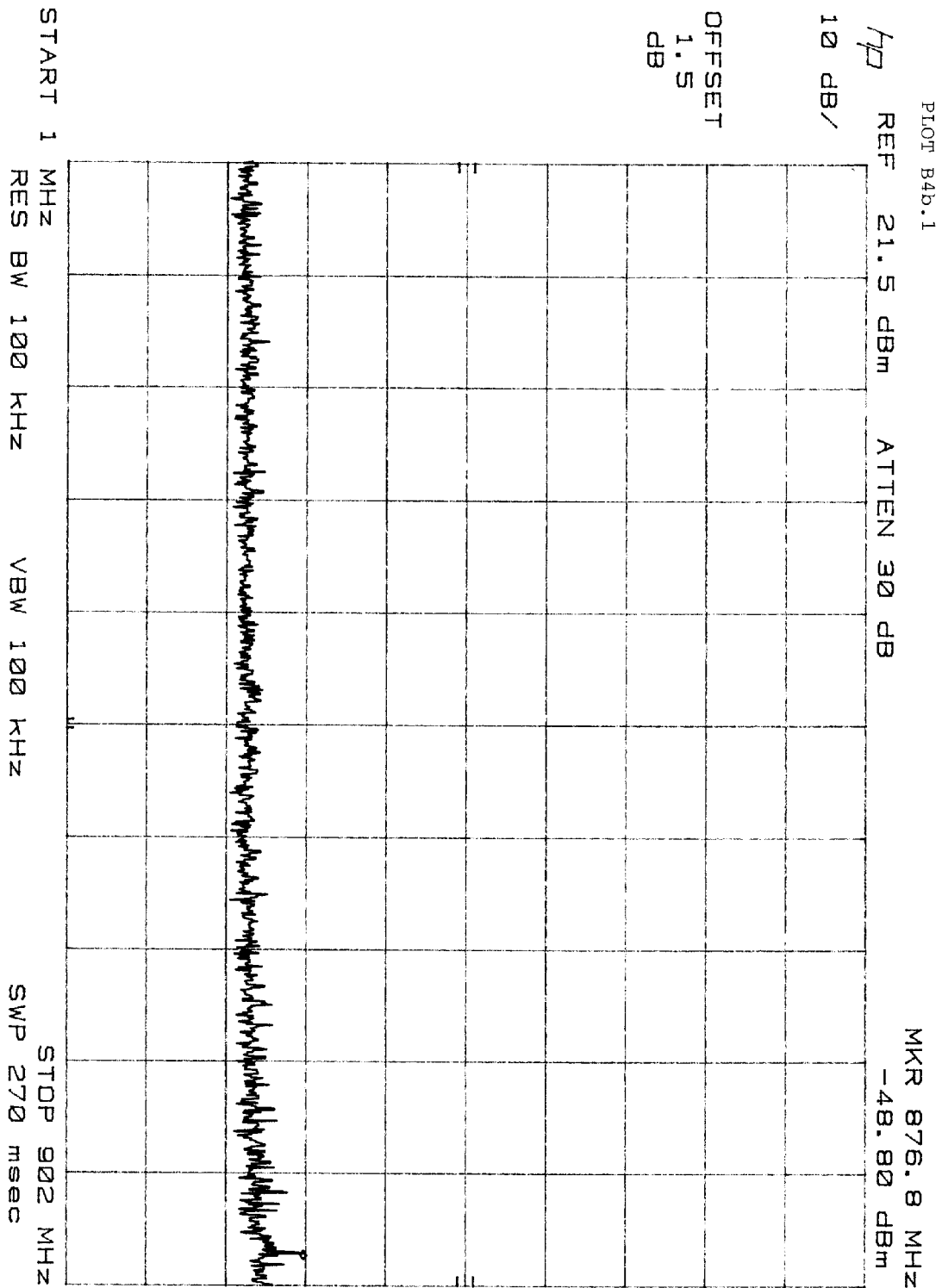


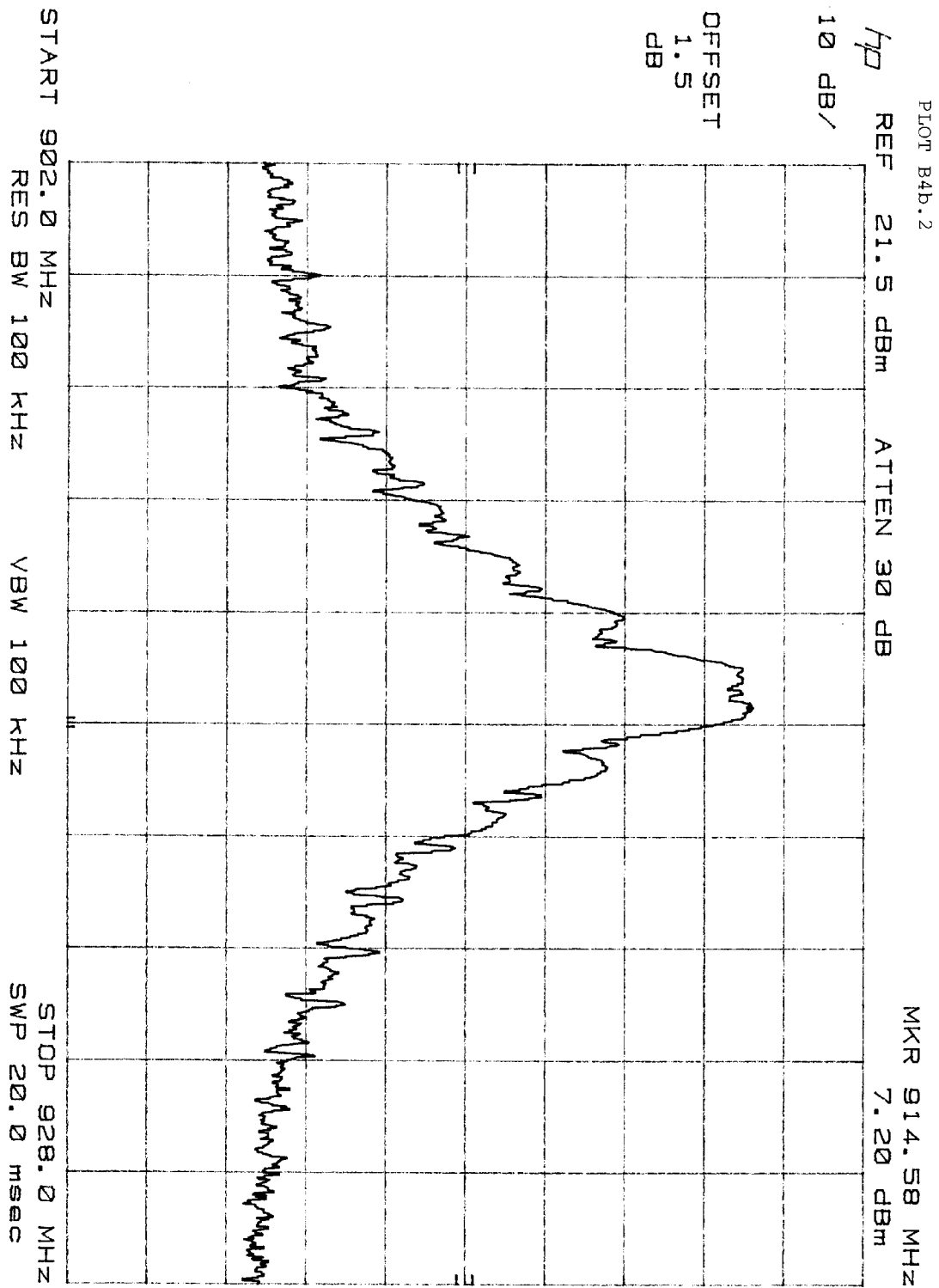


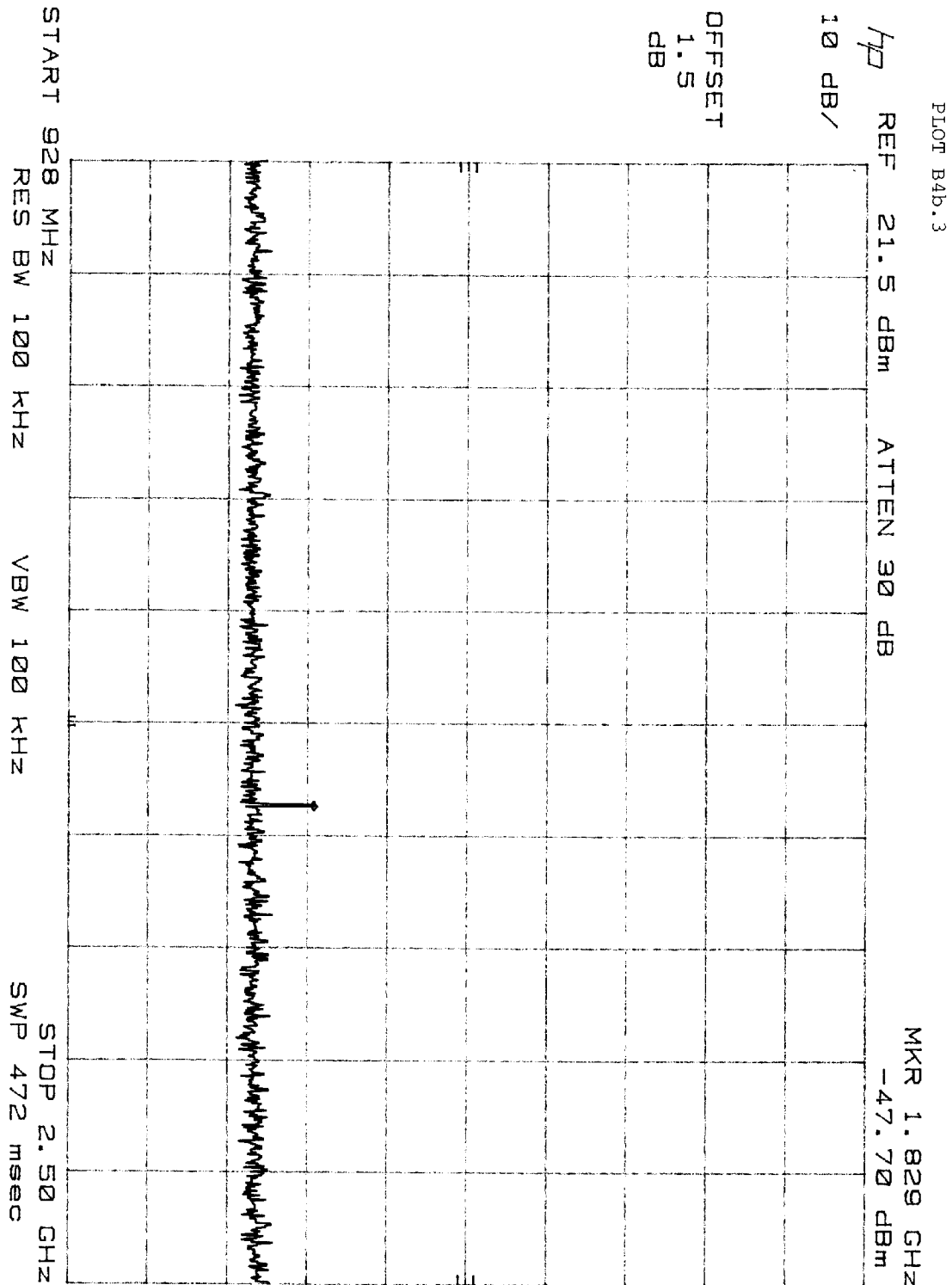


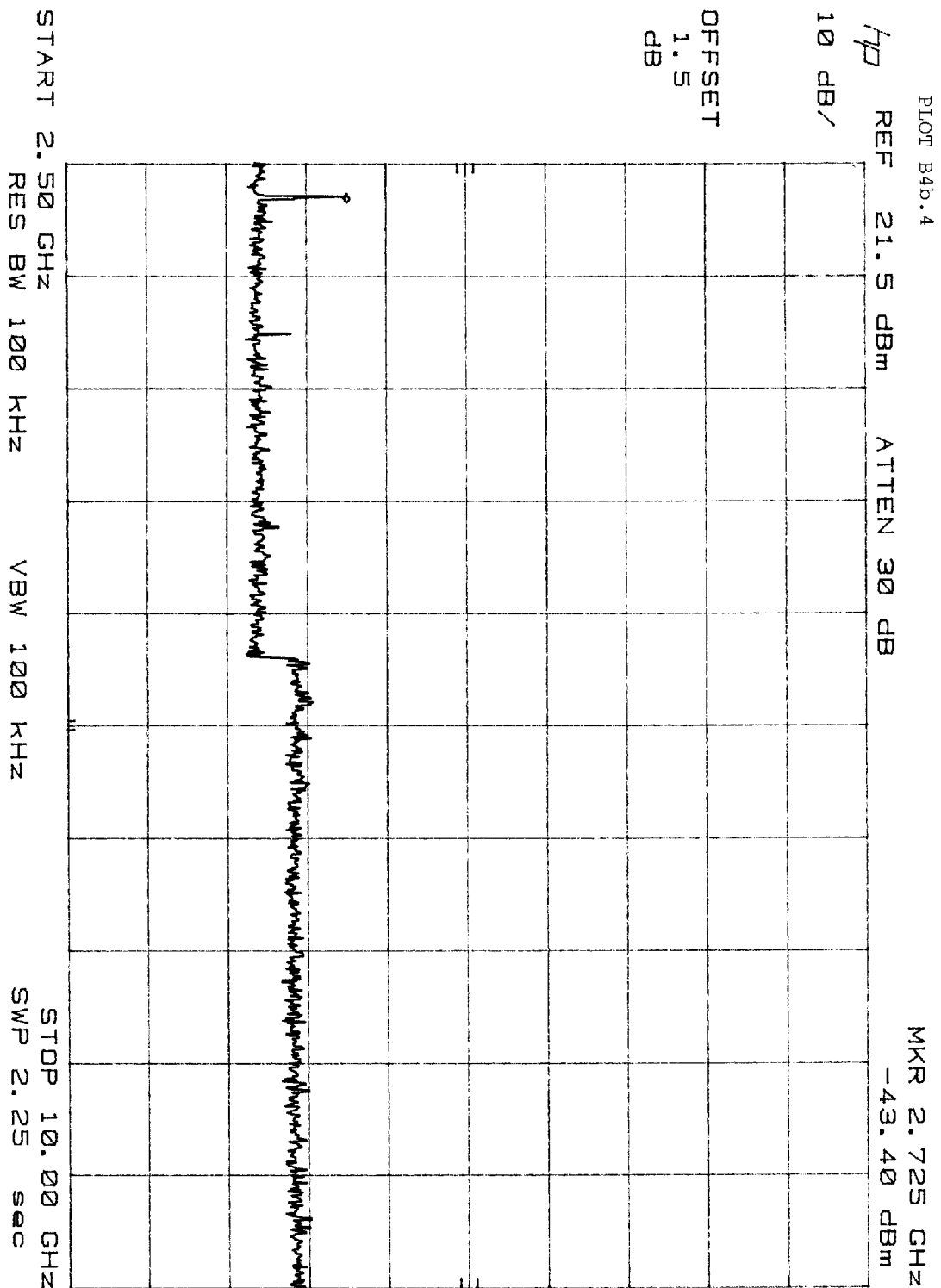


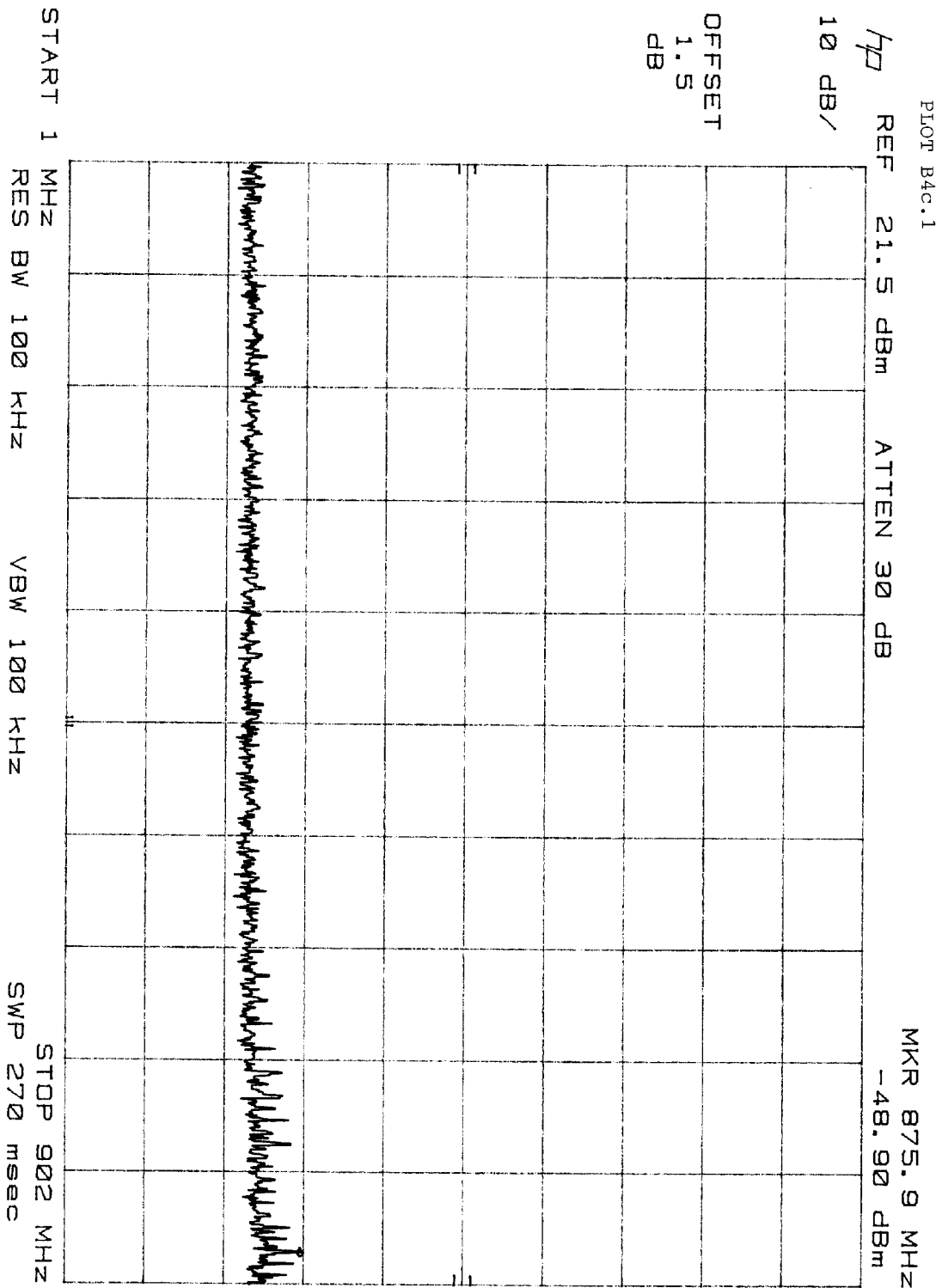


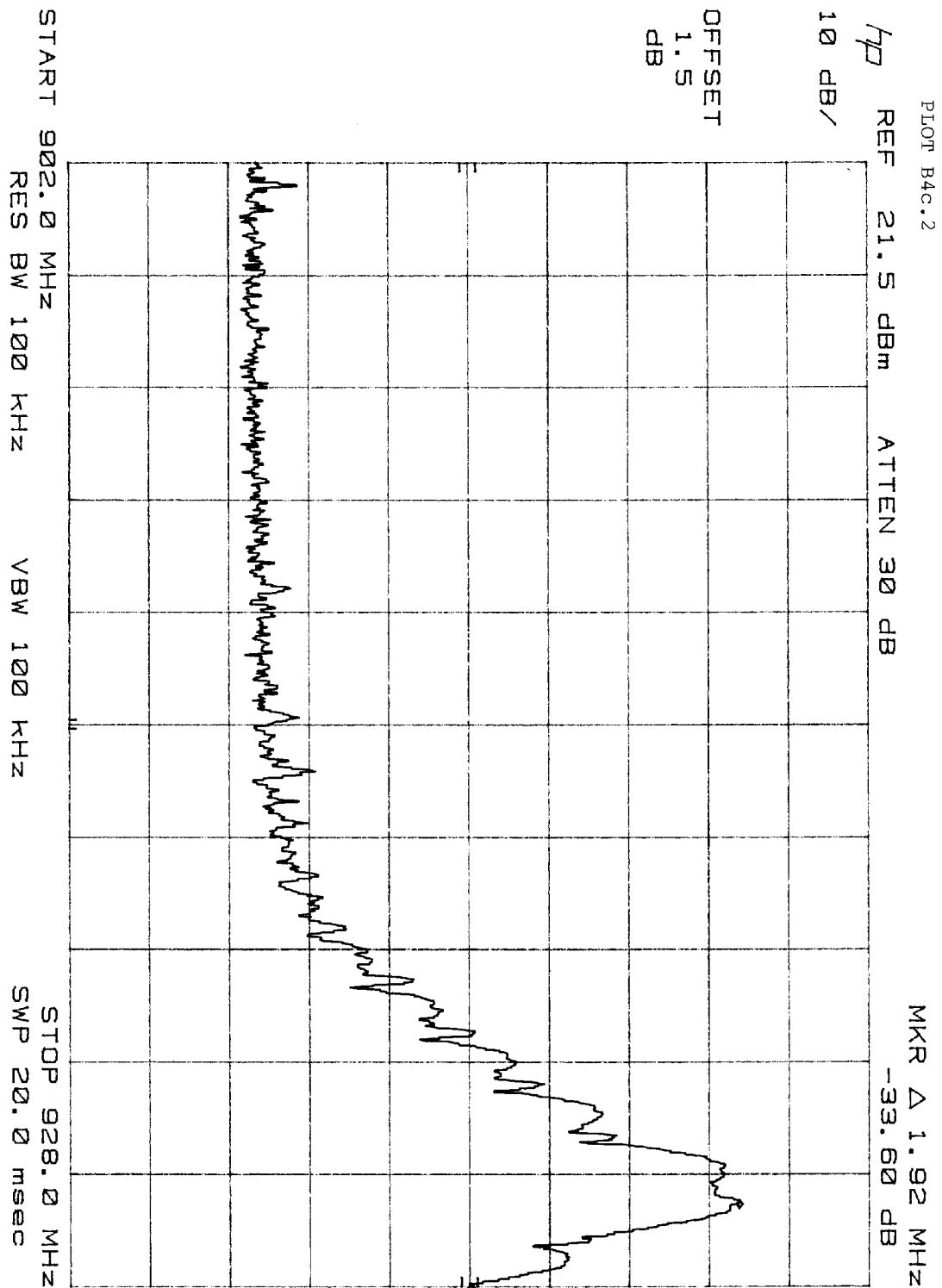


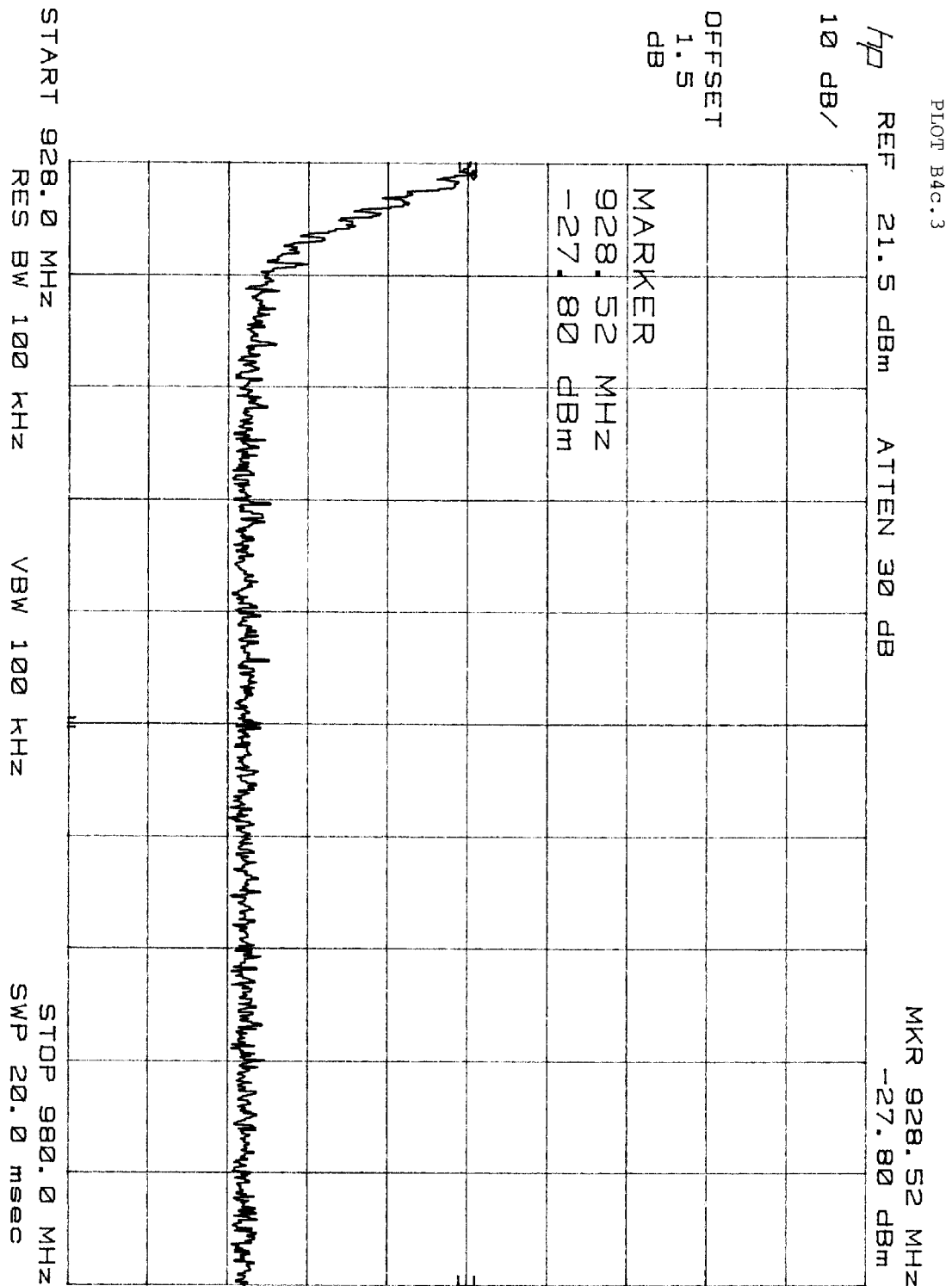


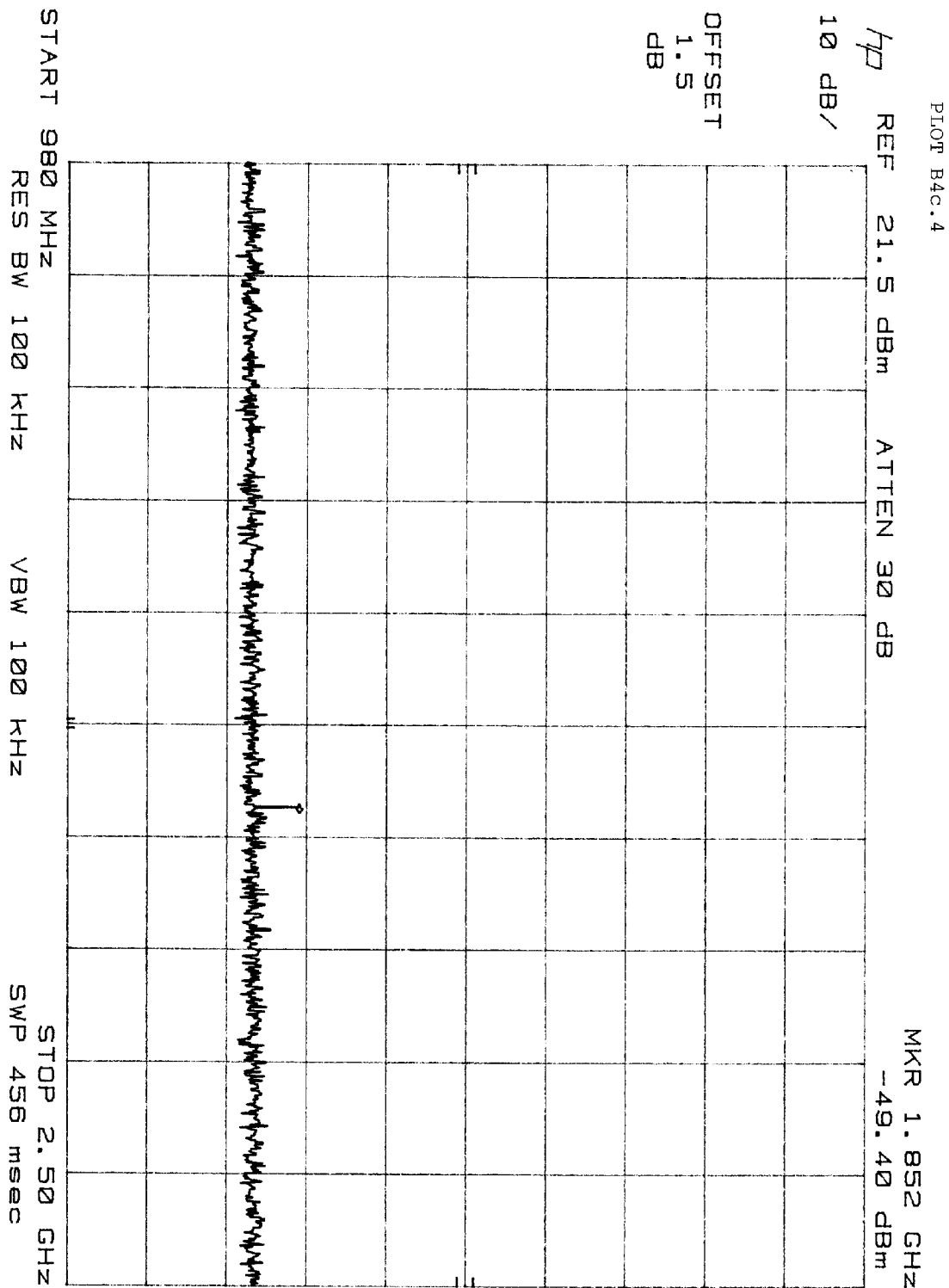


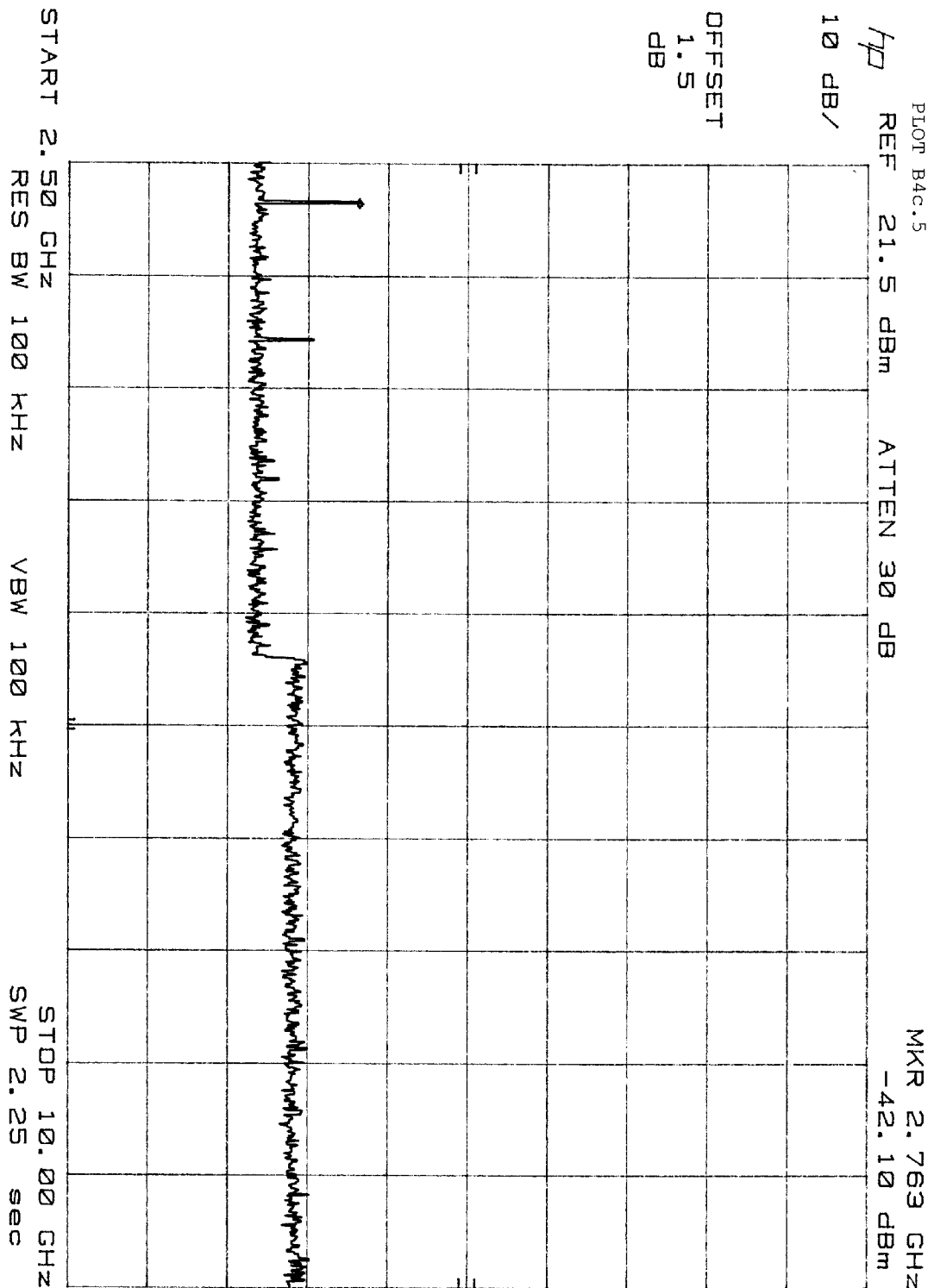


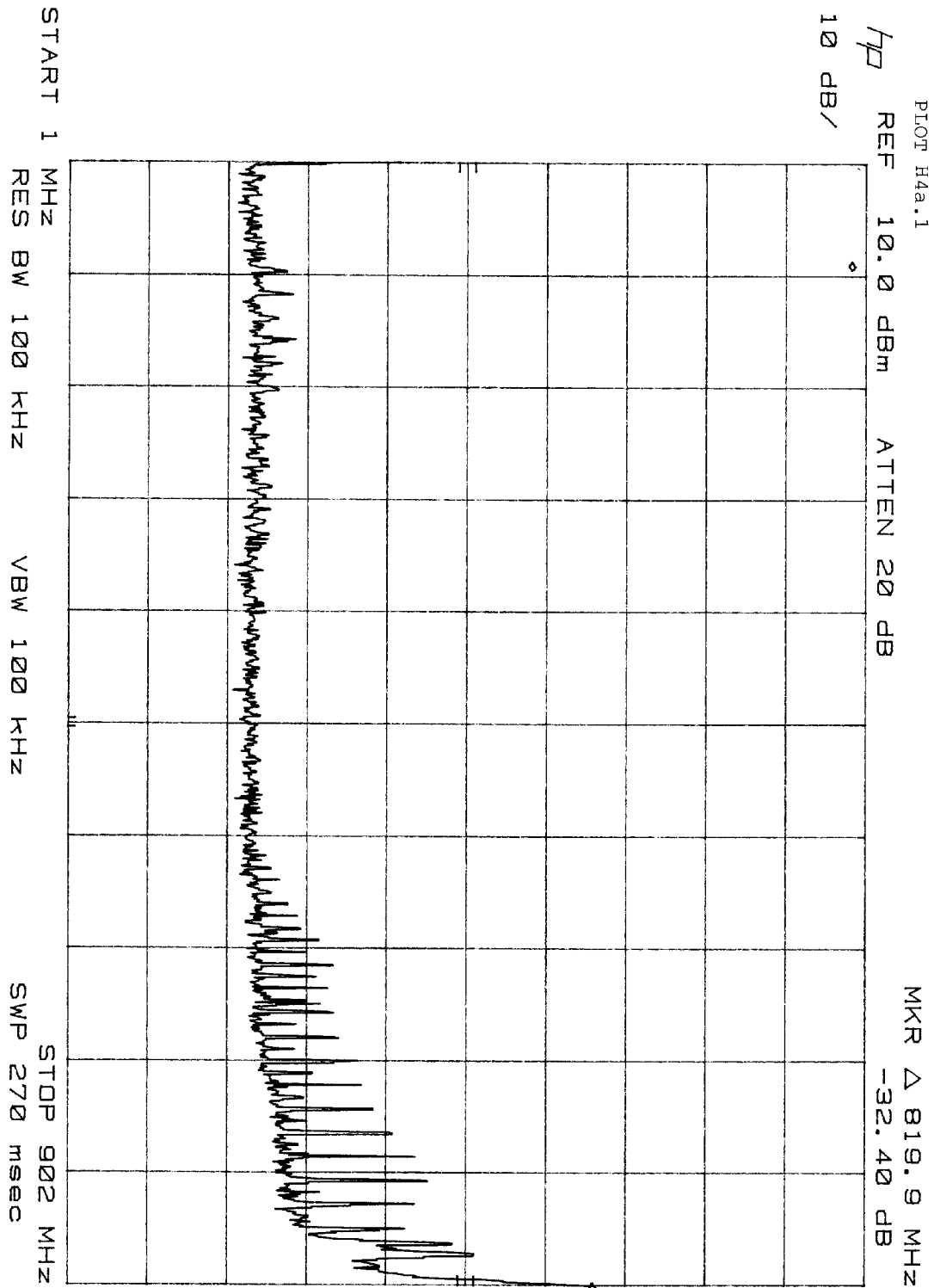


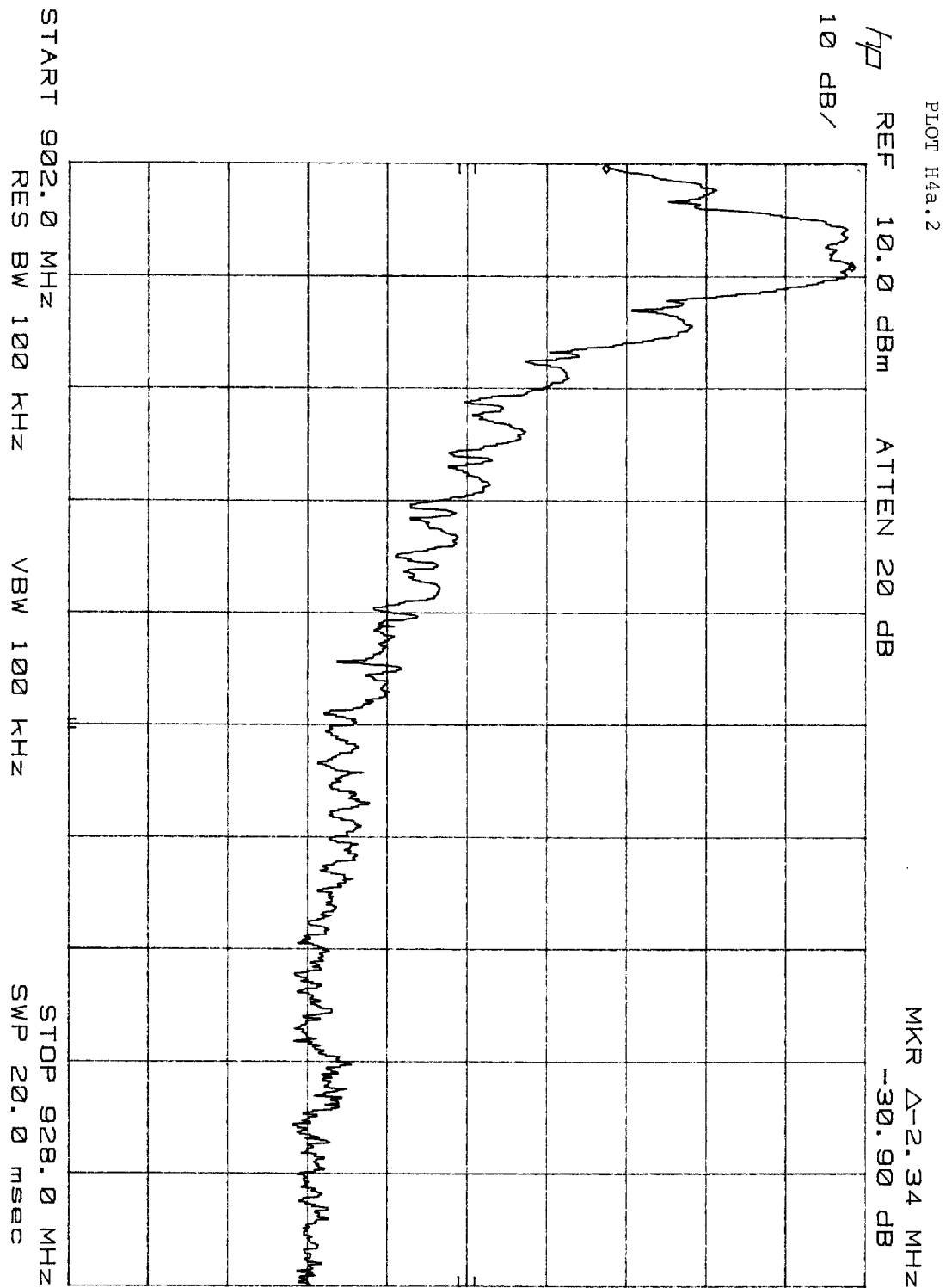


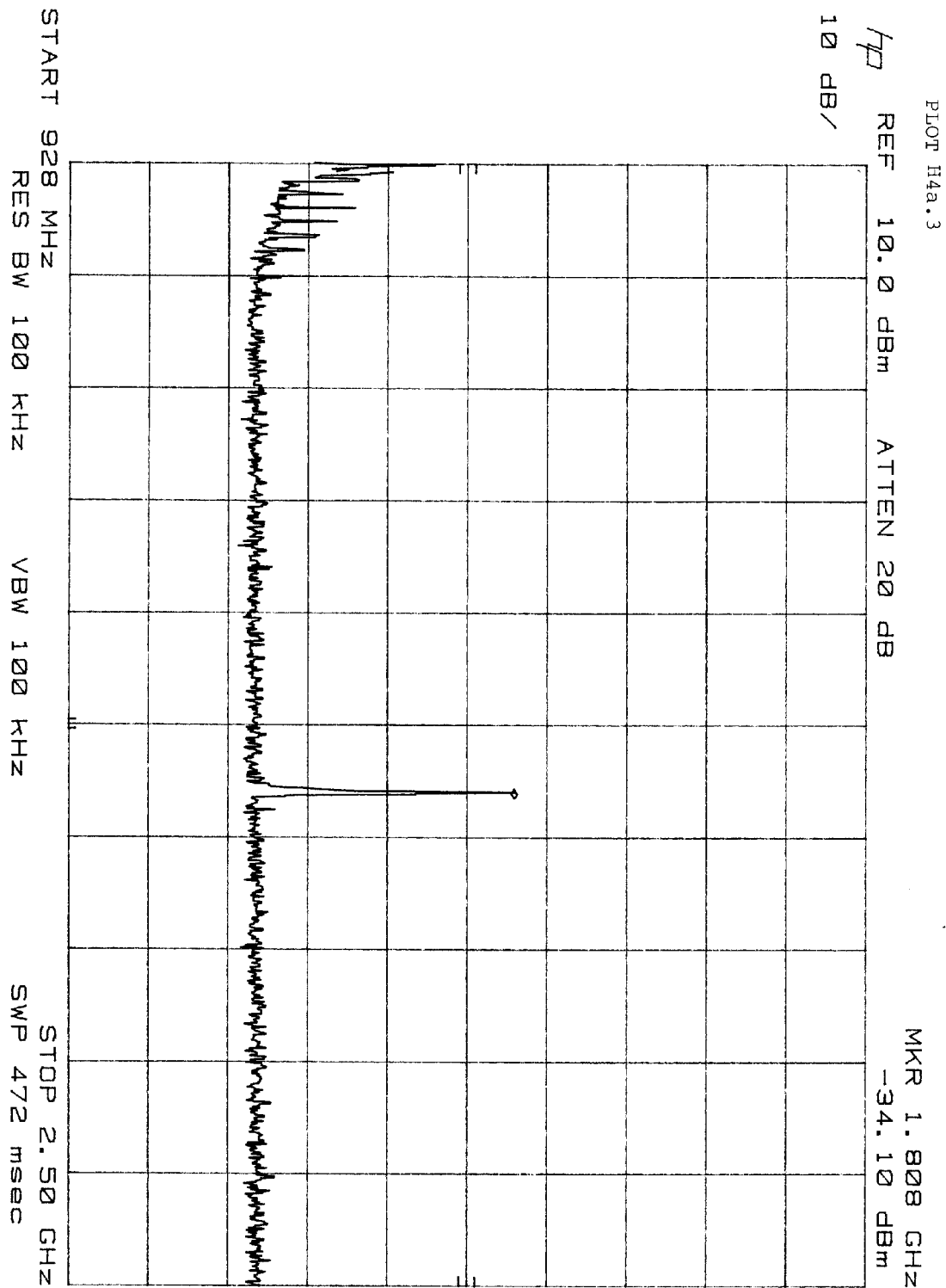


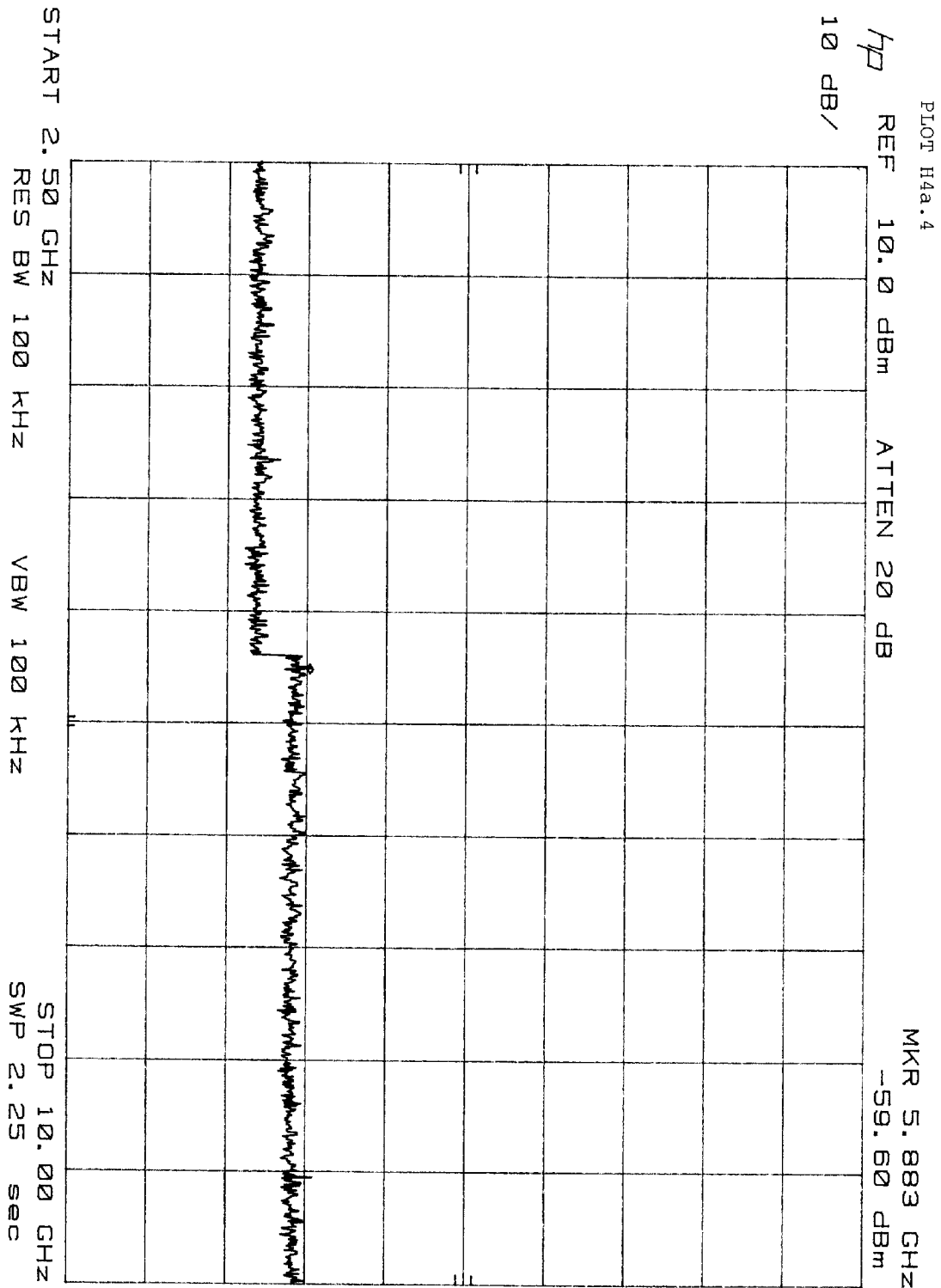


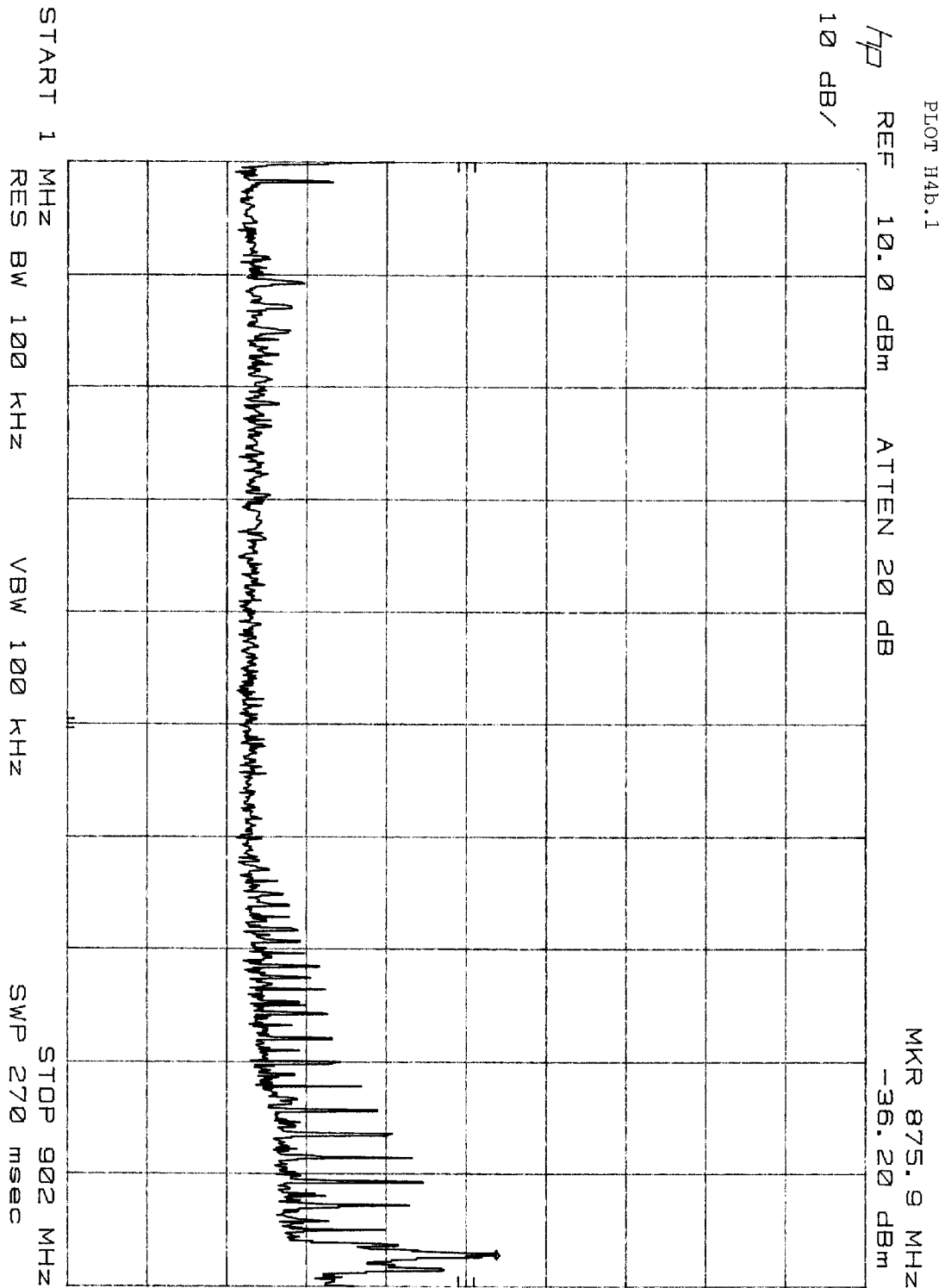


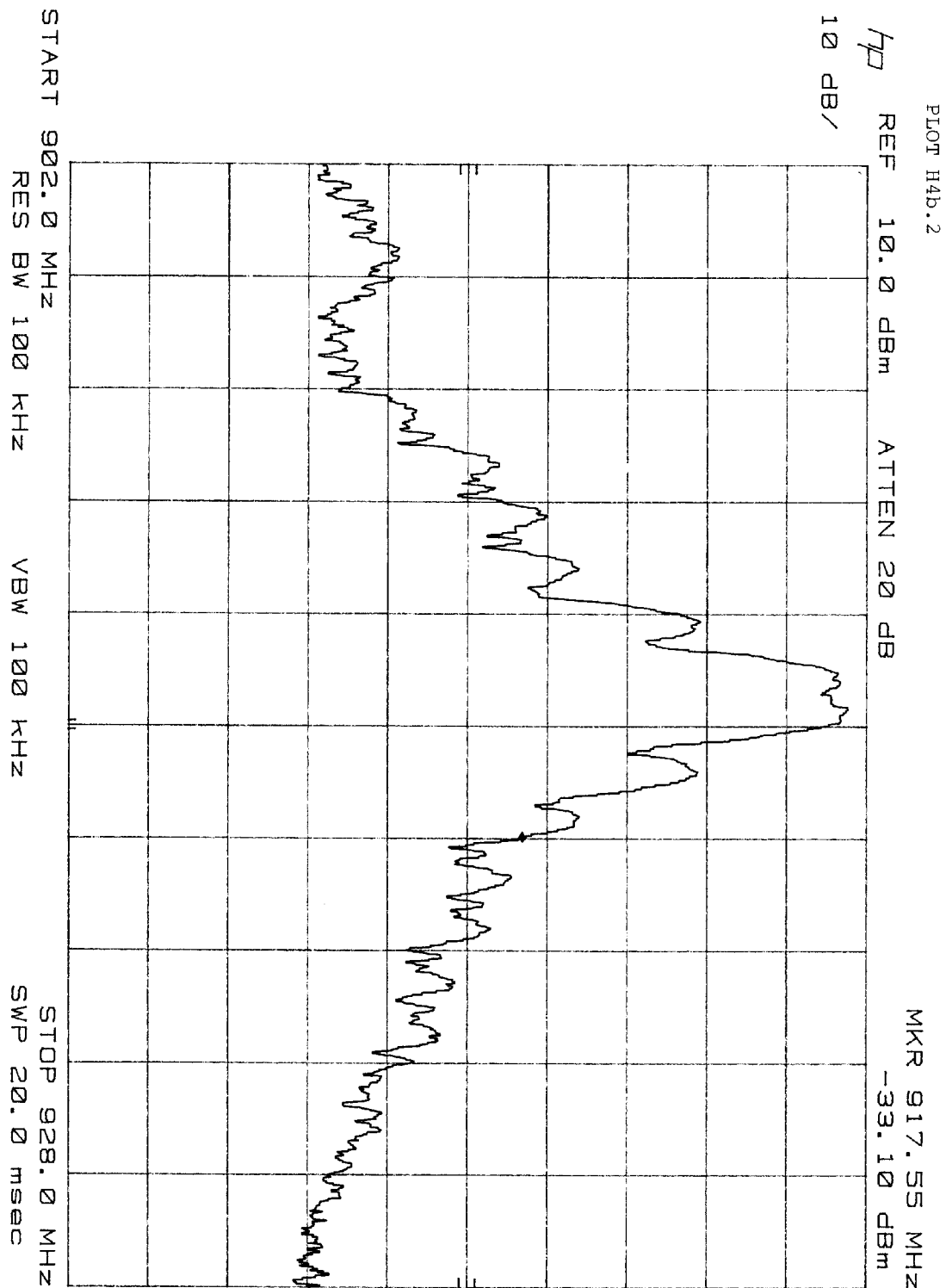


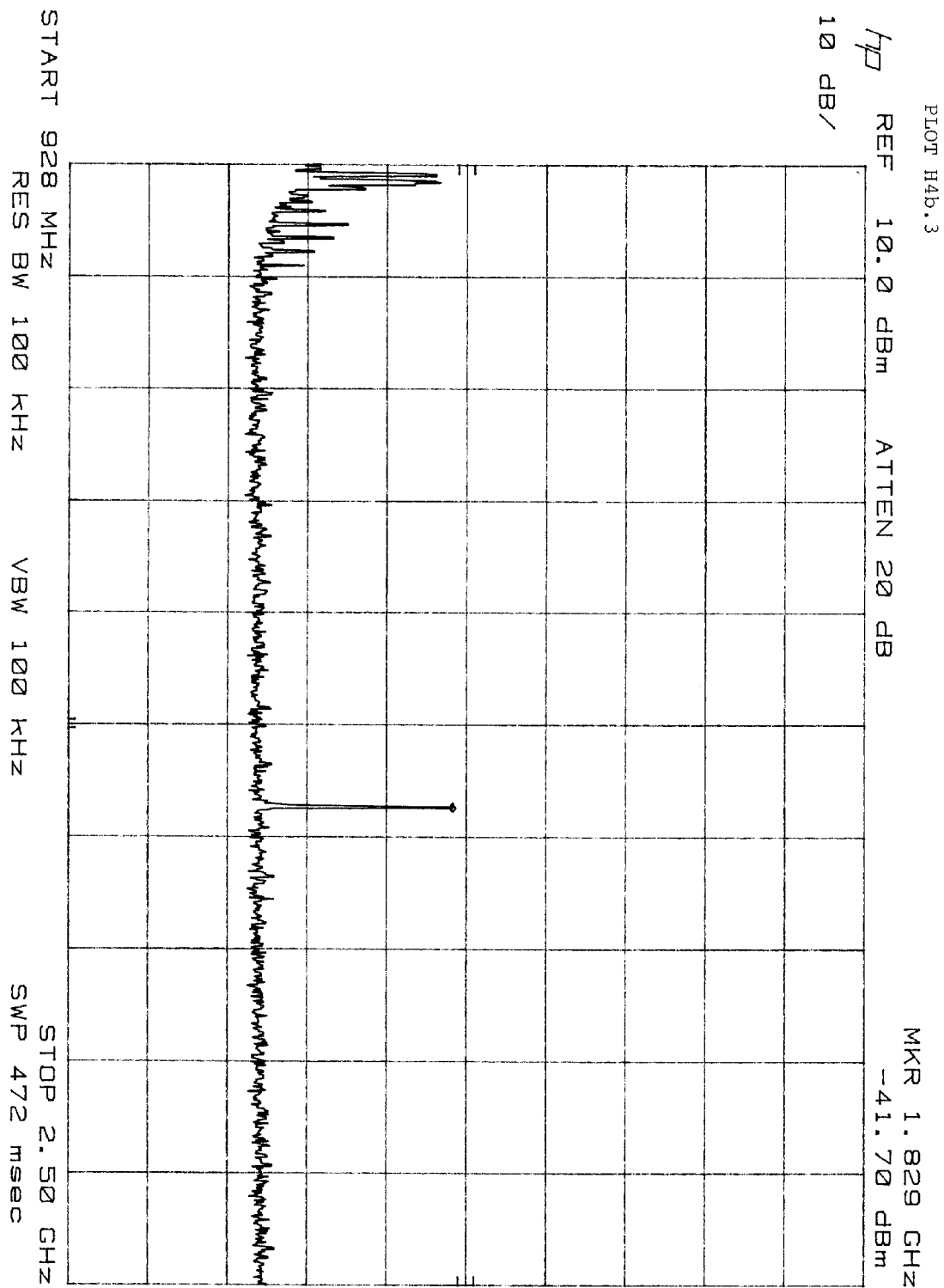


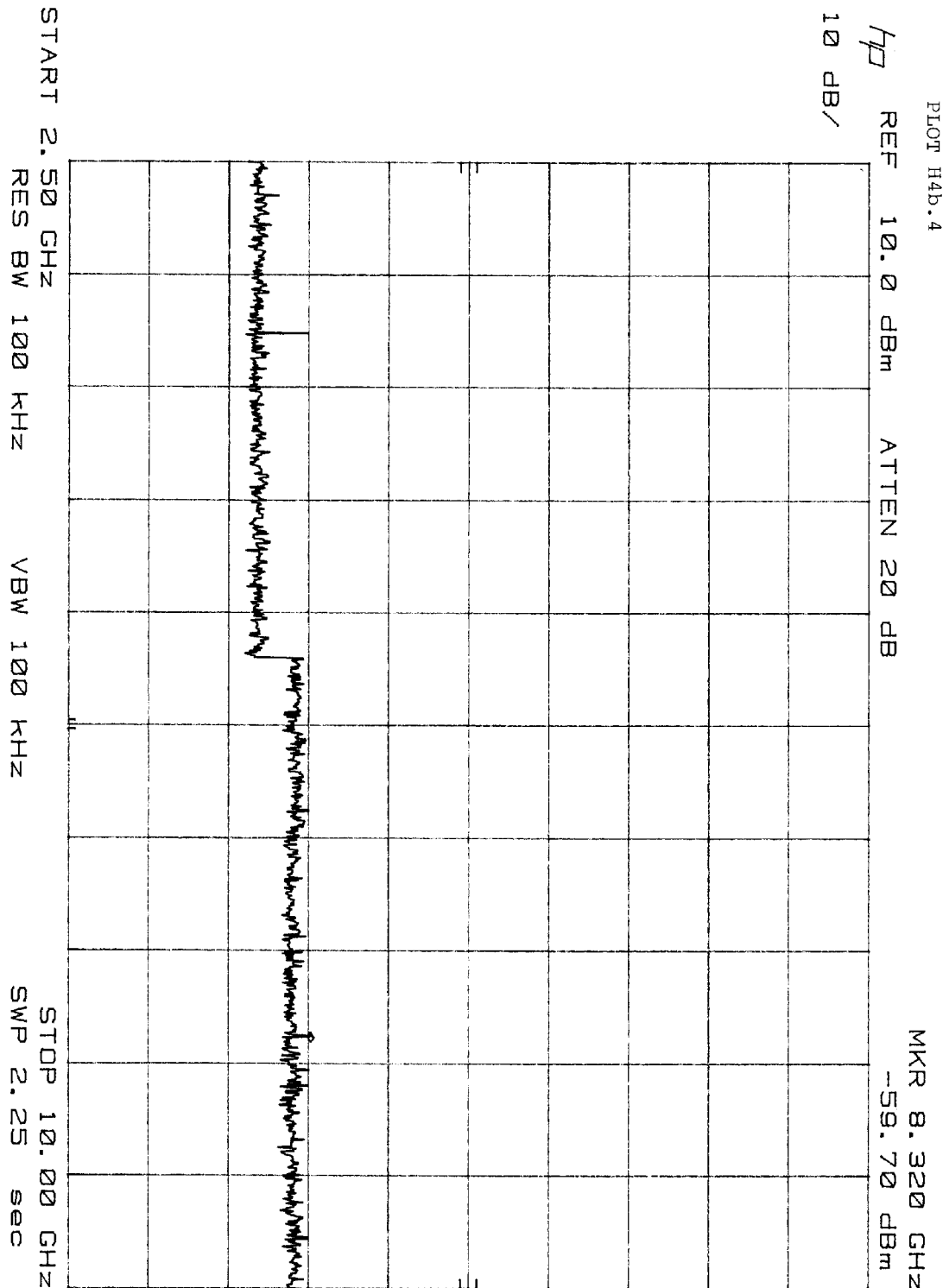


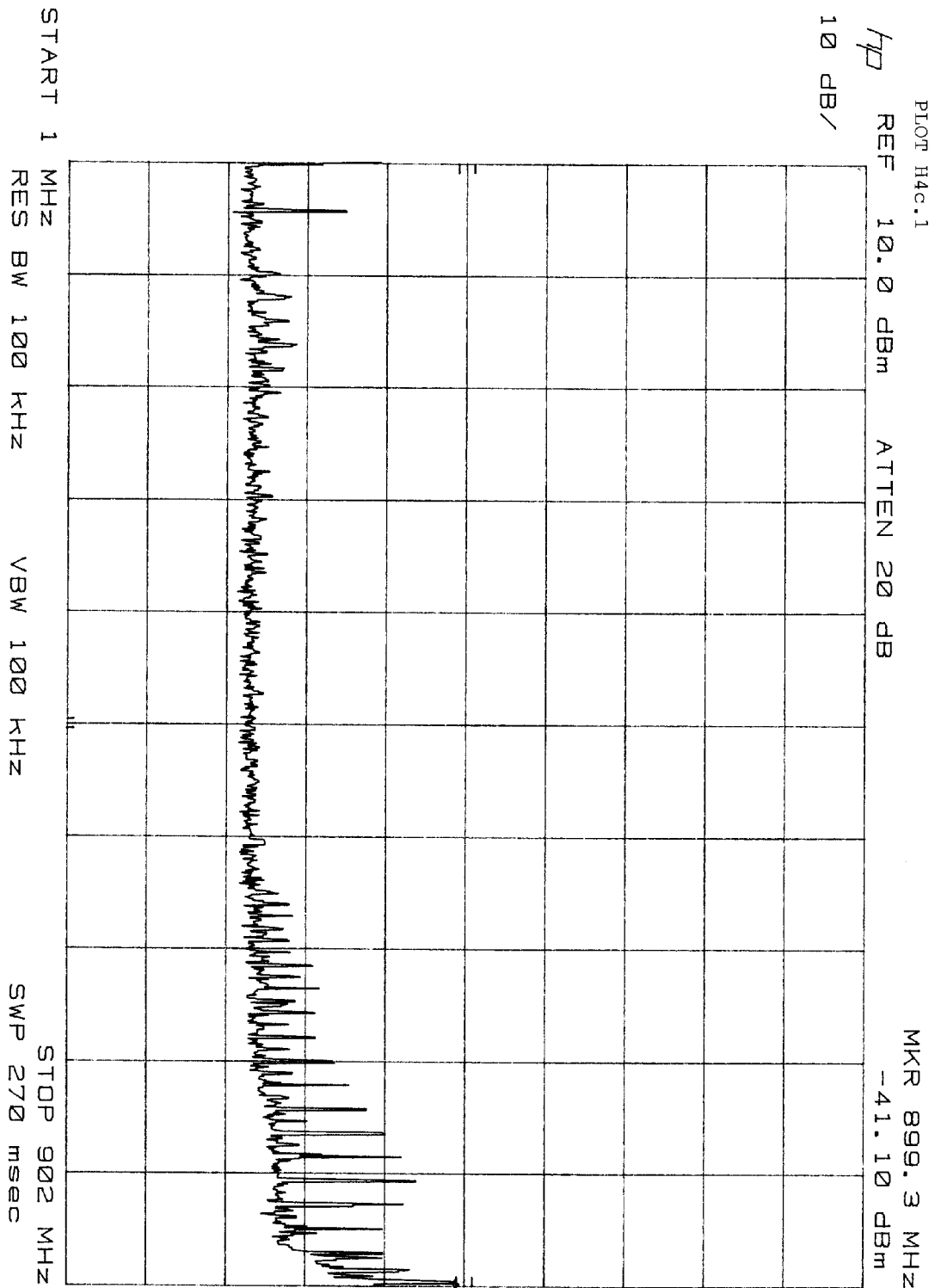


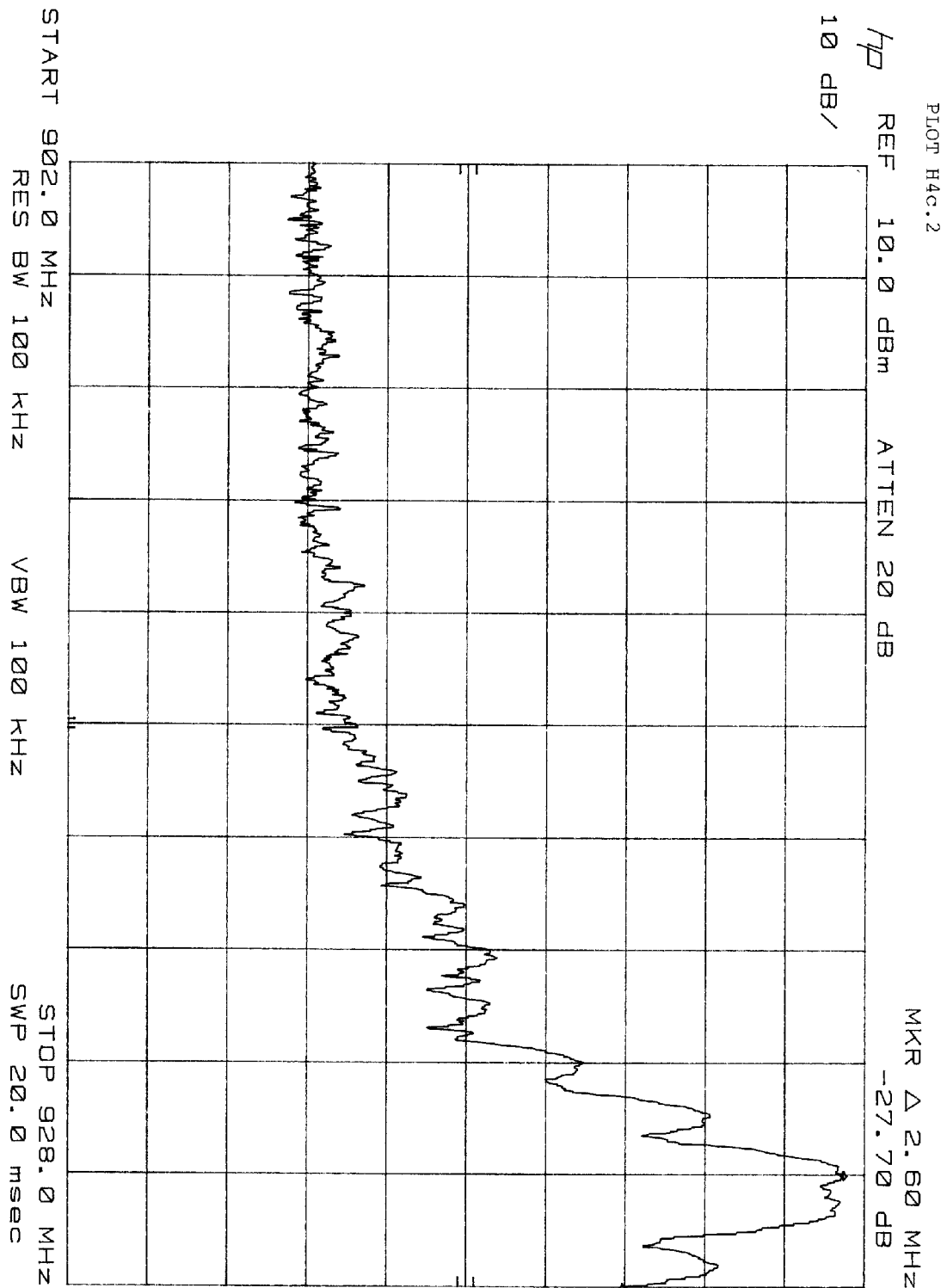


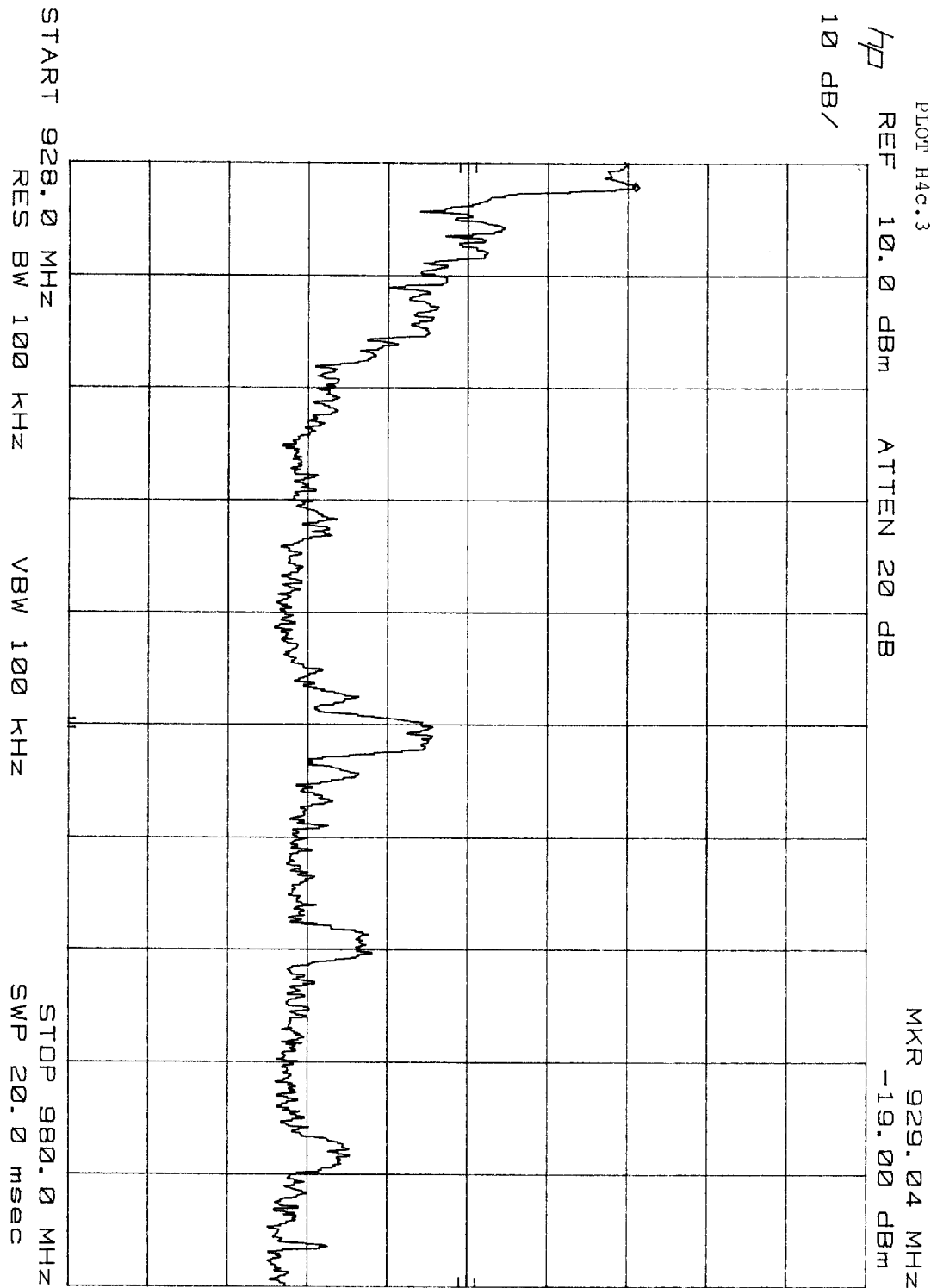


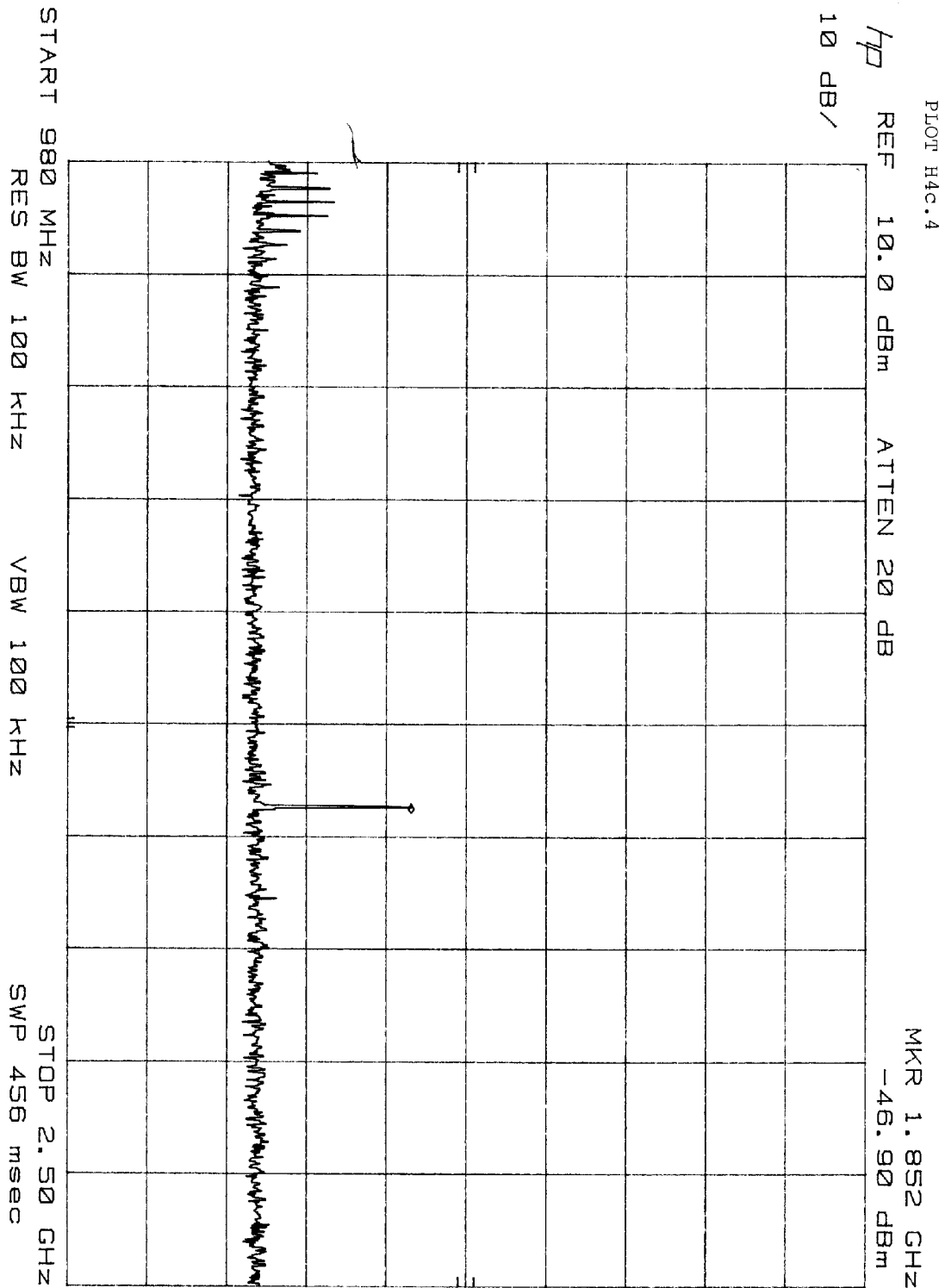


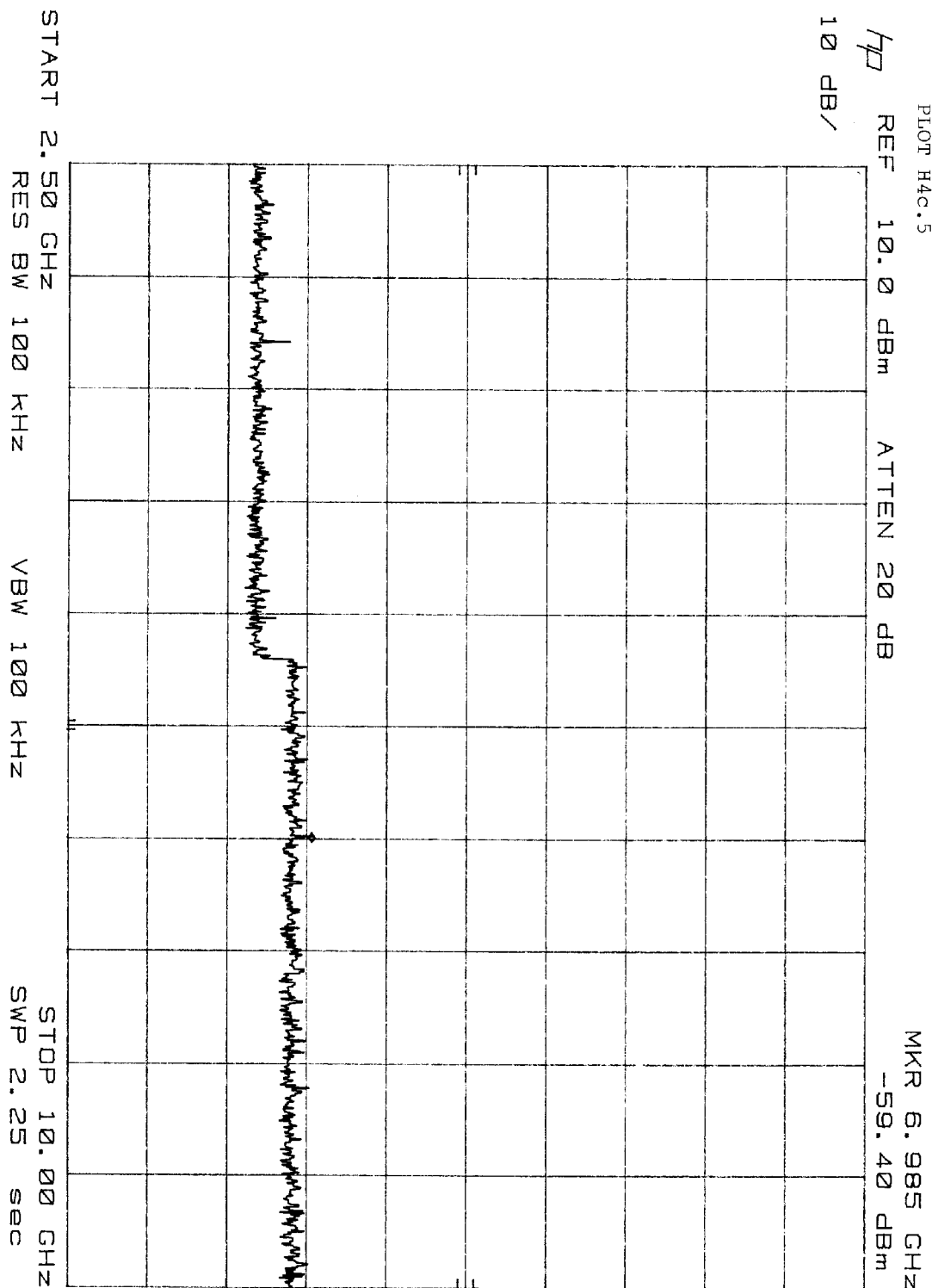








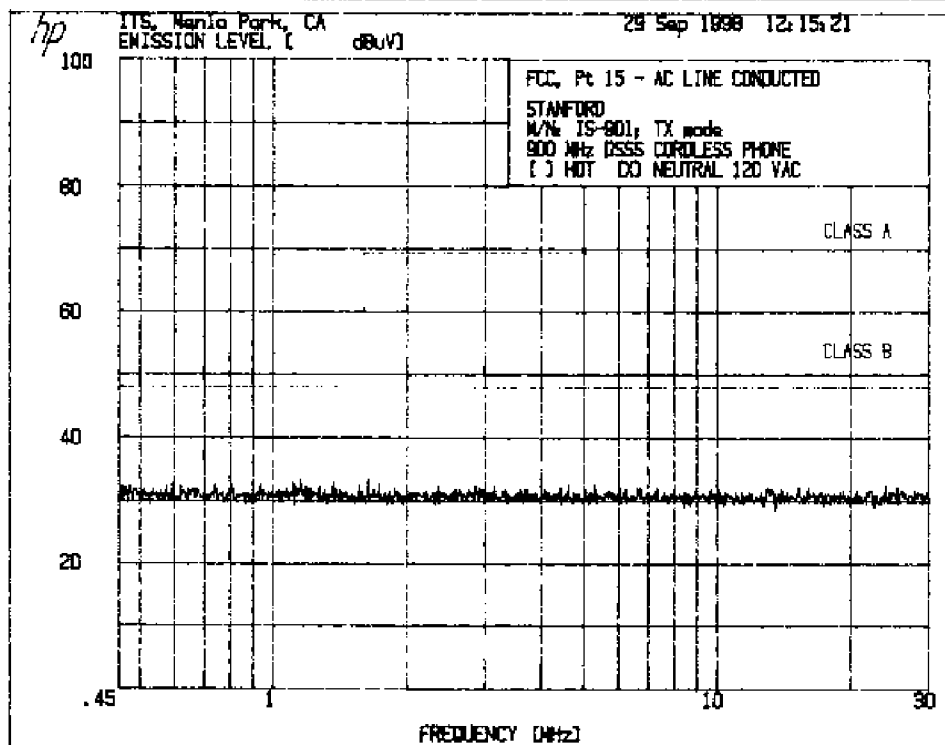
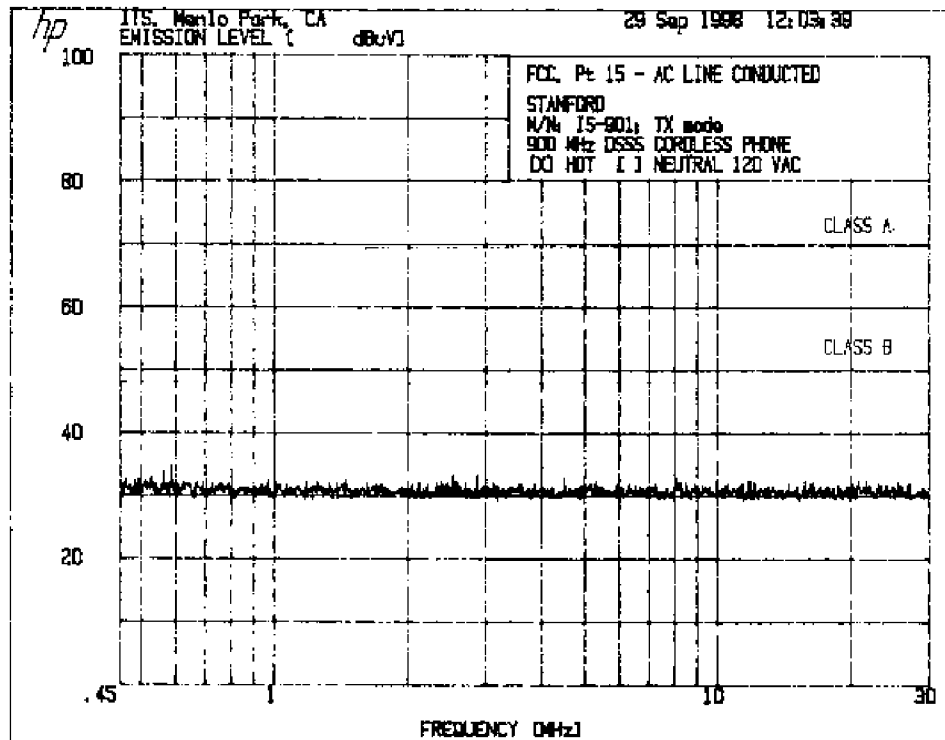




4.7 AC Line Conducted Emission, FCC Rule 15.207:

[] Not required; battery operation only

[x] Test data attached



=====
ITS, Menlo Park, CA 29 Sep 1998 12:03:39
=====

3. FCC CFR 47, Pt 15
3.1 FCC, Pt 15 - AC LINE CONDUCTED

=====
STANFORD
M/N: IS-901; TX mode
900 MHz DSSS CORDLESS PHONE
[X] HOT [] NEUTRAL 120 VAC

PEAKS FOUND ABOVE 33 dBuV

PEAK#	FREQ (MHz)	AMPL (dBuV)
1	.5692	34.1
2	.5936	35.0
3	2.545	33.6
4	2.887	33.8
5	4.541	33.1
6	8.137	33.3

=====
ITS, Menlo Park, CA 29 Sep 1998 12:15:21
=====

3. FCC CFR 47, Pt 15
3.1 FCC, Pt 15 - AC LINE CONDUCTED

=====
STANFORD
M/N: IS-901; TX mode
900 MHz DSSS CORDLESS PHONE
[] HOT [X] NEUTRAL 120 VAC

PEAKS FOUND ABOVE 33 dBuV

PEAK#	FREQ (MHz)	AMPL (dBuV)
1	.5986	33.0
2	1.123	33.0
3	1.166	33.4
4	1.379	33.1
5	1.652	33.6

4.10 Radiated Emissions from Digital Section of Transceiver (Transmitter), FCC Ref: 15.109

- ☐ Not required - No digital part
- ☒ Test results are attached
- ☒ Included in the separate DOC report.

4.11 Radiated Emissions from Receiver Section of Transceiver (L.O. Radiation), FCC Ref: 15.109, 15.111

- ☒ Not required - EUT operation above 960 MHz only
- ☐ Not required - EUT is transmitter only
- ☐ Not performed; exempt until June 1999
- ☐ Test results are attached



1365 Adams Court, Menlo Park, CA 94025

Radiated Emissions Test Data

Company: Stanford
EUT: 900 MHz cordless phone (base unit)
Project #: J98026020
Test Mode: TX/low channel

Model #: IS-901 Digital Spread Spectrum
S/N or FCC: Not labelled
Engineer: Ahmad
Date of Test: 10/5/98 Initial: [signature]

Antenna	Pre-Amp	Cable A	Cable B	OCF	Standard	FCC Part 15.247
Number: B	B	12	0	0	Units: 12	
Model: EMCO 311	CDI_P1000 Green_M+L	None	None	None	Test Distance: 3	meters

Frequency MHz	Reading dB(μV)	Det. P/A/Q	Ant. Pol. H/V	Ant. Factor dB(1/m)	Pre-Amp dB	Insert Loss dB	D.F. dB	Net dB(μV/m)	Limit @3m dB(μV/m)	Margin dB
2712.8	45.0	A	V	27.9	28.4	2.3	0.0	46.8	54.0	-7.2
2712.8	50.0	P	V	27.9	28.4	2.3	0.0	51.8	74.0	-22.2
3616.8	51.0	P	H	31.5	27.8	2.7	0.0	57.4	74.0	-16.7
3616.8	43.0	A	H	31.5	27.8	2.7	0.0	49.4	54.0	-4.6
4521.3	51.0	P	V	32.1	27.9	3.2	0.0	58.4	74.0	-15.6
4521.3	42.0	A	V	32.1	27.9	3.2	0.0	49.4	54.0	-4.6
5425.3	45.0	P	H	32.9	28.3	3.6	0.0	53.1	74.0	-20.9
5425.3	41.2	A	H	32.9	28.3	3.6	0.0	49.3	54.0	-4.7

Notes:
a) P: Peak, A: Average, Q: Quasi Peak, H: Horizontal, V: Vertical, OCF: Other Correction Factor, DF: Distance Factor
b) Insert Loss = Cable A + Cable B + OCF
c) Negative signs (-) in Margin column signify levels below the limits.
d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

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Ver: 4/5/98



1365 Adams Court, Menlo Park CA 94025

Radiated Emissions Test Data

Company: Stanford
EUT: 900 MHz cordless phone (base unit)
Project #: J98026020
Test Mode: TX MID channel

Model #: IS-901 Digital Spread Spectrum
S/N or FCC: Not labelled
Engineer: Alunad
Date of Test: 10/5/98

Antenna	Pre-Amp	Cable A	Cable B	OCF	Standard	FCC Part 15.247
Number: 8	8	12	0	0	Limits	12
Model: EMCO 311	CDI P1000	Green M+L	None	None	Test Distance	3 meters

Frequency MHz	Reading dB(μV)	Det P/A/Q	Ant. Pol. H/V	Ant. Factor dB(1/m)	Pre-Amp dB	Insert. Loss dB	D. F. dB	Net dB(μV/m)	Limit @3m dB(μV/m)	Margin dB
2743.0	45.0	A	V	27.9	28.4	2.3	0.0	46.8	54.0	7.2
2743.0	50.0	P	V	27.9	28.4	2.3	0.0	51.8	74.0	22.2
3658.0	44.0	P	V	31.3	27.8	2.7	0.0	50.2	74.0	23.8
3658.0	38.0	A	V	31.3	27.8	2.7	0.0	44.2	54.0	9.8
4572.0	42.8	P	V	32.1	27.9	3.2	0.0	50.2	74.0	23.8
4572.0	38.0	A	V	32.1	27.9	3.2	0.0	45.4	54.0	8.6
7315.0	40.0	P	V	36.3	28.0	4.3	0.0	52.1	74.0	21.4
7315.0	39.0	A	V	36.3	28.0	4.3	0.0	47.1	54.0	6.4
8228.0	44.0	P	V	36.9	27.2	4.8	0.0	50.4	74.0	23.6
8228.0	35.0	A	V	36.9	27.2	4.8	0.0	40.4	54.0	13.6

Notes:
a) P: Peak, A: Average, Q: Quasi Peak, H: horizontal, V: Vertical, OCF: Other Correction Factor, DF: Distance Factor
b) Insert. Loss = Cable A + Cable B + OCF
c) Negative signs (-) in Margin column signify levels below the limits
d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

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1365 Adams Court, Menlo Park CA 94025

Radiated Emissions Test Data

Company: Stanford
EUT: 900 MHz cordless phone (base unit)
Project #: J98076020
Test Mode: TX high channel

Model #: IS-901 Digital Spread Spectrum
S/N or FCC: Not labelled
Engineer: Ahmad
Date of Test: 10/5/98 Initial: [signature]

Antenna	Pre-Amp	Cable A	Cable B	OCF	Standard	FCC Part 15.247
8	8	12	0	0	12	
Model: FMCO 311 CDI P1000 Green M+L		None	None	None	Test Distance	3 meters

Frequency MHz	Reading dB(μV)	Det. P/A/Q	Ant. Pol. H/V	Ant. Factor dB(1/m)	Pre-Amp dB	Insert. Loss dB	D. F. dB	Noise dB(μV/m)	Limit @3m dB(μV/m)	Margin dB
2776.7	44.0	P	H	28.1	28.4	2.3	0.0	46.0	74.0	-28.0
2776.7	38.0	A	H	28.1	28.4	2.3	0.0	40.0	74.0	-14.0
3703.0	50.0	P	V	31.3	27.8	2.7	0.0	50.2	74.0	-17.8
3703.0	44.0	A	V	31.3	27.8	2.7	0.0	50.2	74.0	-3.8
4629.0	47.0	P	V	32.1	28.0	3.2	0.0	54.3	74.0	-19.7
4629.0	43.0	A	V	32.1	28.0	3.2	0.0	50.3	74.0	-3.7
7406.0	45.0	P	V	35.3	28.0	4.3	0.0	52.0	74.0	-19.4
7406.0	35.0	A	V	35.3	28.0	4.3	0.0	47.6	74.0	-6.4
8332.1	42.0	P	V	36.9	27.2	4.6	0.0	51.5	74.0	-17.5
8332.1	35.0	A	V	36.9	27.2	4.6	0.0	46.5	74.0	-14.5

Notes: a) P= Peak, A= Average, Q= Quasi Peak, H= Horizontal, V= Vertical, OCF= Other Correction Factor, DF= Distance Factor
b) Insert. Loss = Cable A + Cable B + OCF
c) Negative signs (-) in Margin column signify levels below the limits
d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

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Ver4/9/98



1365 Adams Court, Menlo Park CA 94025

Radiated Emissions Test Data

Company: Stanford
EUT: 900 MHz cordless phone (handset)
Project #: J98026020
Test Mode: TX/low channel

Model #: IS-901 Digital Spread Spectrum
S/N or FCC: Not labelled
Engineer: Ahmad
Date of Test: 10/5/98 Initial:

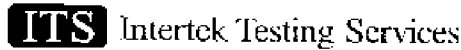
Antenna	Pre-Amp	Cable A	Cable B	OCF	Standard	FCC Part 15.247
B	B	12	0	0		12
Model: EMCO 311	CDL P1000	Green_M+L	None	None	Test Distance	3 meters

Frequency MHz	Reading dB(μV)	Det. P/A/Q	Ant. Pol. H/V	Ant. Factor dB(1/m)	Pre-Amp dB	Insert. Loss dB	D. F. dB	Net dB(μV/m)	Limit @3m dB(μV/m)	Margin dB
2712.0	55.0	P	H	28.1	28.4	2.3	0.0	57.0	74.0	-17.0
2712.0	48.0	A	H	28.1	28.4	2.3	0.0	50.0	54.0	4.0
3616.8	51.0	P	H	31.5	27.8	2.7	0.0	57.4	74.0	-16.7
3616.8	42.0	A	H	31.5	27.8	2.7	0.0	48.4	54.0	5.6
4520.8	45.0	P	H	32.2	27.9	3.0	0.0	50.5	74.0	-23.5
4520.8	41.0	A	H	32.2	27.9	3.0	0.0	46.5	54.0	7.5
7233.0	40.0	P	H	35.5	28.0	4.0	0.0	52.1	74.0	-21.9
7233.0	35.1	A	H	35.5	28.0	4.0	0.0	48.2	54.0	5.8

Notes:
a) P: Peak, A: Average, Q: Quasi-Peak, H: Horizontal, V: Vertical, OCF: Other Correction Factor, DF: Distance Factor
b) Insert. Loss = Cable A + Cable B + OCF
c) Negative signs () in Margin column signify levels below the limits
d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits

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Ver-10/98



1365 Adams Court, Menlo Park CA 94025

Radiated Emissions Test Data

Company: Stanford
EUT: 900 MHz cordless phone (handset)
Project #: J98026020
Test Mode: TX/ MID channel
Model #: JS-901 Digital Spread Spectrum
S/N or FCC: Not labeled
Engineer: Ahmad
Date of Test: 10/5/98 Initial:

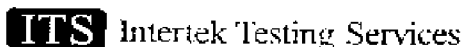
Number:	Antenna	Pre Amp	Cable A	Cable B	OCF	Standard	FCC Part 15.247
8	8	12	0	0	0	12	
Module:	EMCO 311	CDI_P1000 Green M+L	None	None	None	Test Distance	3 meters

Frequency MHz	Reading dB(uV)	Det. P/A/Q	Ant. Pol. H/V	Ant. Factor dB(1/m)	Pre-Amp dB	Insert. Loss dB	D. F. dB	Net dB(uV/m)	Limit @3m dB(uV/m)	Margin dB
2743.6	52.0	P	H	28.1	28.4	2.3	0.0	54.0	74.0	20.0
2743.6	47.0	A	H	28.1	28.4	2.3	0.0	49.0	64.0	5.0
3657.0	49.0	P	V	31.3	27.8	2.7	0.0	55.2	74.0	18.8
3657.0	42.0	A	V	31.3	27.8	2.7	0.0	49.2	64.0	5.8
4571.9	48.0	P	H	32.2	27.9	3.2	0.0	54.5	74.0	19.5
4571.9	41.0	A	H	32.2	27.9	3.2	0.0	49.5	64.0	4.5
7316.0	42.0	P	H	35.5	26.0	4.0	0.0	54.1	74.0	19.9
7316.0	35.0	A	H	35.5	26.0	4.0	0.0	47.1	64.0	6.9

Notes: a) P: Peak; A: Average; Q: Quasi Peak; H: Horizontal; V: Vertical; OCF: Other Correction Factor; DF: Distance Factor
b) Insert. Loss = Cable A + Cable B + OCF
c) Negative signs (-) in Margin column signify levels below the limits.
d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

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Ver:02.058



1365 Adams Court, Menlo Park CA 94025

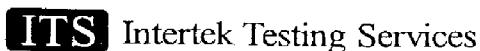
Radiated Emissions Test Data

Company: Stanford
EUT: 900 MHz cordless phone (hand set)
Project #: J98026020
Test Mode: stand-by
Model #: IS-901 Digital Spread Spectrum
S/N or FCC: N/A
Engineer: C. Kwan
Date of Test: 09/30/98 Initial:

Antenna	Pre-Amp	Cable A	Cable B	OCF	Standard	FCC Part 15B
Number: 1	7	13	0	0	Limits:	2
Model: EMCO 314	CPPA_102	S2_3m	None	None	Test Distance:	3 meters

Frequency	Reading	Des.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. F.	Net	Limit @3m	Margin
MHz	dB(uV)	P/A/Q	H/V	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB
277.2	32.6	p	v	11.4	35.1	2.9	0.0	11.8	46.0	-34.2
419.2	31.7	p	v	15.1	34.9	4.3	0.0	16.2	46.0	-29.8
543.2	37.6	p	v	17.1	34.8	5.3	0.0	25.2	46.0	-20.8
628.2	31.2	p	v	18.0	35.2	5.9	0.0	19.9	46.0	-26.1
704.7	31.1	p	v	19.3	36.1	6.6	0.0	20.9	46.0	-25.1
790.2	38.5	p	v	19.7	36.1	7.2	0.0	29.3	46.0	-16.7
837.7	30.1	p	v	20.9	28.4	8.2	0.0	30.6	46.0	-15.2
866.2	30.3	p	v	20.3	27.5	8.7	0.0	31.8	46.0	-14.2

Notes: a) P: Peak, A: Average, Q: Quasi Peak H: Horizontal, V: Vertical, OCF: Other Correction Factor, DF: Distance Factor
b) Insert Loss = Cable A + Cable B + OCF
c) Negative signs (-) in Margin column signify levels below the limits.
d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.



1365 Adams Court, Menlo Park CA 94025

Radiated Emissions Test Data

Company: Stanford Model #: IS-901Digital Spread Spectrum
EUT: 900 MHz cordless phone (base unit) S/N or FCC: N/A
Project #: J98026020 Engineer: C. Kwan
Test Mode: stand by Date of Test: 09/29/98 Initial:

Antenna	Pre-Amp	Cable A	Cable B	OCF	Standard	FCC Part 15B
Number: 1	7	13	0	0	Limits	2
Model: EMCO 314	CPPA_102	S2_3m	None	None	Test Distance	3 meters

Frequency MHz	Reading dB(uV)	Det. P/A/Q	Ant. Pol. H/V	Ant. Factor dB(1/m)	Pre-Amp dB	Insert. Loss dB	D. F. dB	Net dB(uV/m)	Limit @3m dB(uV/m)	Margin dB
144.2	30.5	p	v	8.2	35.3	2.1	0.0	5.5	43.5	-38.0
315.2	30.4	p	v	12.9	34.9	3.1	0.0	11.5	46.0	-34.5
486.2	30.4	p	v	16.4	35.0	5.0	0.0	16.9	46.0	-29.2
505.2	30.1	p	v	16.5	34.8	5.3	0.0	17.1	46.0	-28.9
657.2	30.5	p	v	18.4	35.2	6.3	0.0	20.1	46.0	-25.9
885.2	30.2	p	v	20.9	27.5	8.7	0.0	32.3	46.0	-13.7
904.2	31.0	p	v	21.0	29.1	8.3	0.0	31.3	46.0	-14.8
942.2	31.0	p	v	20.9	29.1	8.3	0.0	31.2	46.0	-14.9

- Notes:**
- a) P: Peak; A: Average; Q: Quasi Peak; H: Horizontal; V: Vertical; OCF: Other Correction Factor; DF: Distance Factor
 - b) Insert. Loss = Cable A + Cable B + OCF.
 - c) Negative signs (-) in Margin column signify levels below the limits.
 - d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.



1365 Adams Court, Menlo Park CA 94025

Radiated Emissions Test Data

Company: Stanford
EUT: 900 MHz cordless phone (base unit)
Project #: J98026020
Test Mode: stand by

Model #: IS-901 Digital Spread Spectrum
S/N or FCC: N/A
Engineer: C Kwan
Date of Test: 09/29/98 Initial:

	Antenna	Pre Amp	Cable A	Cable B	OCF	Standard	FCC Part 15B			
Number:	1	7	13	0	0	Limits	2			
Model:	EMCO 314	CPFA 102	\$2_3m	None	None	Test Distance	3 meters			
Frequency	Reading	Det.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. F.	Net	Limit @3m	Margin
MHz	dB(μV)	P/A/Q	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
144.2	30.5	p	v	8.2	35.3	2.1	0.0	5.5	43.5	-38.0
315.2	30.4	p	v	12.9	34.9	3.1	0.0	11.5	46.0	-34.5
486.2	30.4	p	v	18.4	35.0	5.0	0.0	16.9	46.0	-29.2
505.2	30.1	p	v	15.5	34.8	5.3	0.0	17.1	46.0	-28.9
657.2	30.5	p	v	18.4	35.2	6.3	0.0	21.1	46.0	-25.9
885.2	30.2	p	v	20.9	27.5	8.7	0.0	32.3	46.0	-13.7
904.2	31.0	p	v	21.0	29.1	8.3	0.0	31.3	46.0	-14.8
942.2	31.0	p	v	20.9	29.1	8.3	0.0	31.2	46.0	-14.9

Notes:
a) P, Peak; A, Average; Q, Quasi Peak; H, Horizontal; V, Vertical; OCF, Other Correction Factor; DF, Distance Factor
b) Insert. Loss = Cable A + Cable B + OCF
c) Negative signs (-) in Margin column signify levels below the limits
d) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

4.12 Processing Gain Measurements, FCC Rule 15.247(e)

The processing gain shall be determined from the ratio in dB of the signal to noise ratio with the system spreading code turned OFF, to the signal to noise ratio with the system spreading code turned ON, as measured at the demodulated output of the receiver. The processing gain shall be at least 10 dB for a direct sequence spread spectrum system.

	Refer to attached test procedure and data sheets.
X	Refer to circuit analysis and processing gain calculations provided by manufacturer.

4.13 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEEP function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Duty cycle = Maximum ON time in 100 msec/100

Duty cycle correction, dB = $20 * \log(\text{DC})$

	See attached spectrum analyzer chart(s) for transmitter timing
	See transmitter timing diagram provided by manufacturer
X	Not applicable, duty cycle was not used.