Intertek Testing Services

APPLICATION FOR FCC CERTIFICATION

Sony Corporation

DSSS Cordless Telephone

Model: SPP-A9276

FCC ID: AK8SPPA9276

Job # J2016882

Number of Pages: 15 + Supporting Data and Documents

Report # 20168821
Date of Report: June 27, 2000

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.

Table of Contents

1.0 Summary of Tests

DSSS Cordless Telephone – Models: SPP-A9276 & SPP-S9226
FCC ID: AK8SPPA9276

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
RF Exposure Requirement	2.1093	Not applicable, power less than 100 mW

Test Engineer: for Ollie Moyong Date: 6/30/00

Engineering Mgr: David Chernomordik Date: 6/30/00
David Chernomordik

2.0 General Description

2.1 Product Description

The Model SPP-A9276 is a DSSS cordless telephone. For more details, please refer to the attached page.

A production version of the sample was received on June 13, 2000 in good condition.

Overview of Models SPP-A9276 & SPP-S9226

Applicant	Sony Corporation
Trade Name & Model No.	Sony, SPP-A9276 & SPP-S9226
FCC Identifier	AK8SPPA9276
Use of Product	Cordless Telephone
Manufacturer & Model of Spread Spectrum Module	Sony Corporation
Type of Transmission	Direct Sequence
Rated RF Output (mW)	64.5
Frequency Range (MHz)	906.75 – 923.25
Number of Channel(s)	23
Antenna(s) & Gain, dBi	0
Processing Gain Measurements	[X] 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	[X] 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	Sony Corporation 6-7-35 Kitashinagawa, Shinagawa-ku Tokyo, Japan 141-001

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 site1. This test facility and site measurement data have been fully placed on file with the FCC and NVLAP accredited.

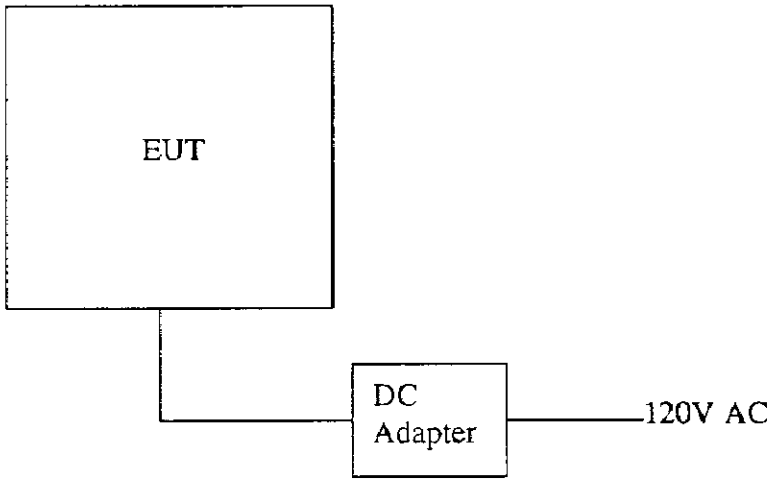
3.0 System Test Configuration

3.1 Support Equipment and description

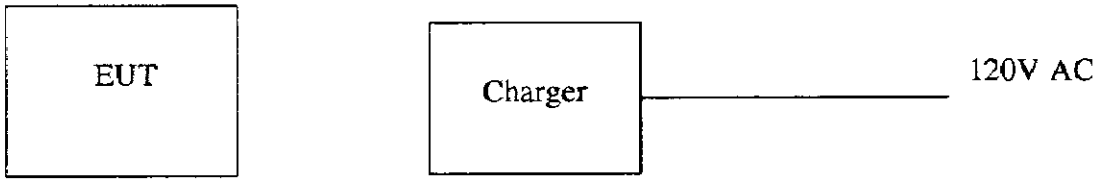
None, the EUT was tested as a standalone device.

3.2 Block Diagram of Test Setup

BASE



HANDSET



* = EUT ** = No ferrites on video cable	S = Shielded; U = Unshielded	F = With Ferrite

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.

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. 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 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 Conducted Output Power, FCC RULES 15.247(b):

Test Procedure

The output of the transmitter was connected to a spectrum analyzer. The resolution bandwidth of the spectrum analyzer was set to 3 MHz. The cable loss was included as "OFFSET".

Test Result

Base		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel:	17.5	56.2
Middle Channel:	17.6	57.5
High Channel:	17.6	57.5

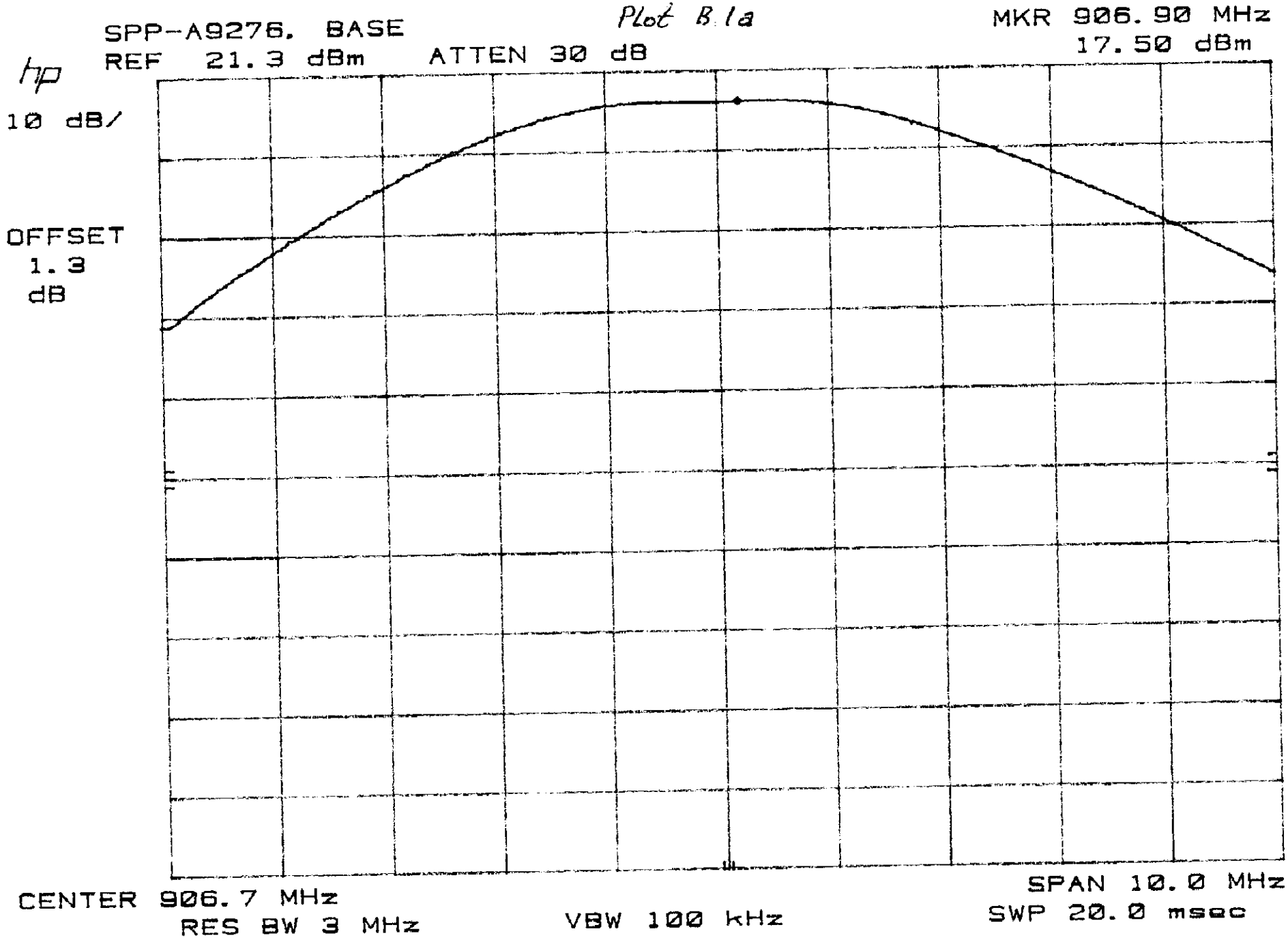
Please refer to the attached plots.

Plot B1a: Low Channel Output Power
Plot B1b: Middle Channel Output Power
Plot B1c: High Channel Output Power

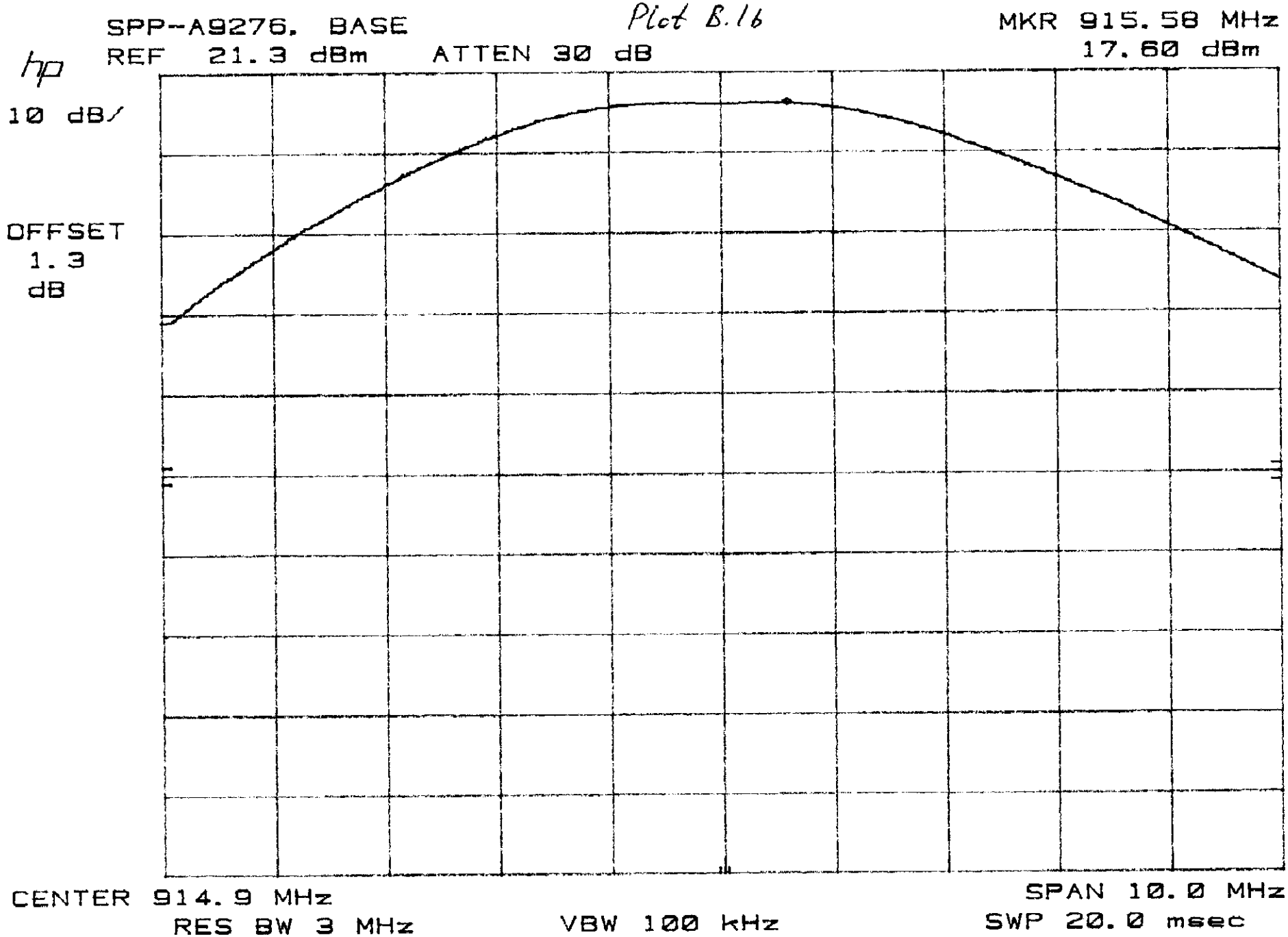
Handset		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel	18.1	64.5
Middle Channel:	18.0	63.1
High Channel:	17.6	57.5

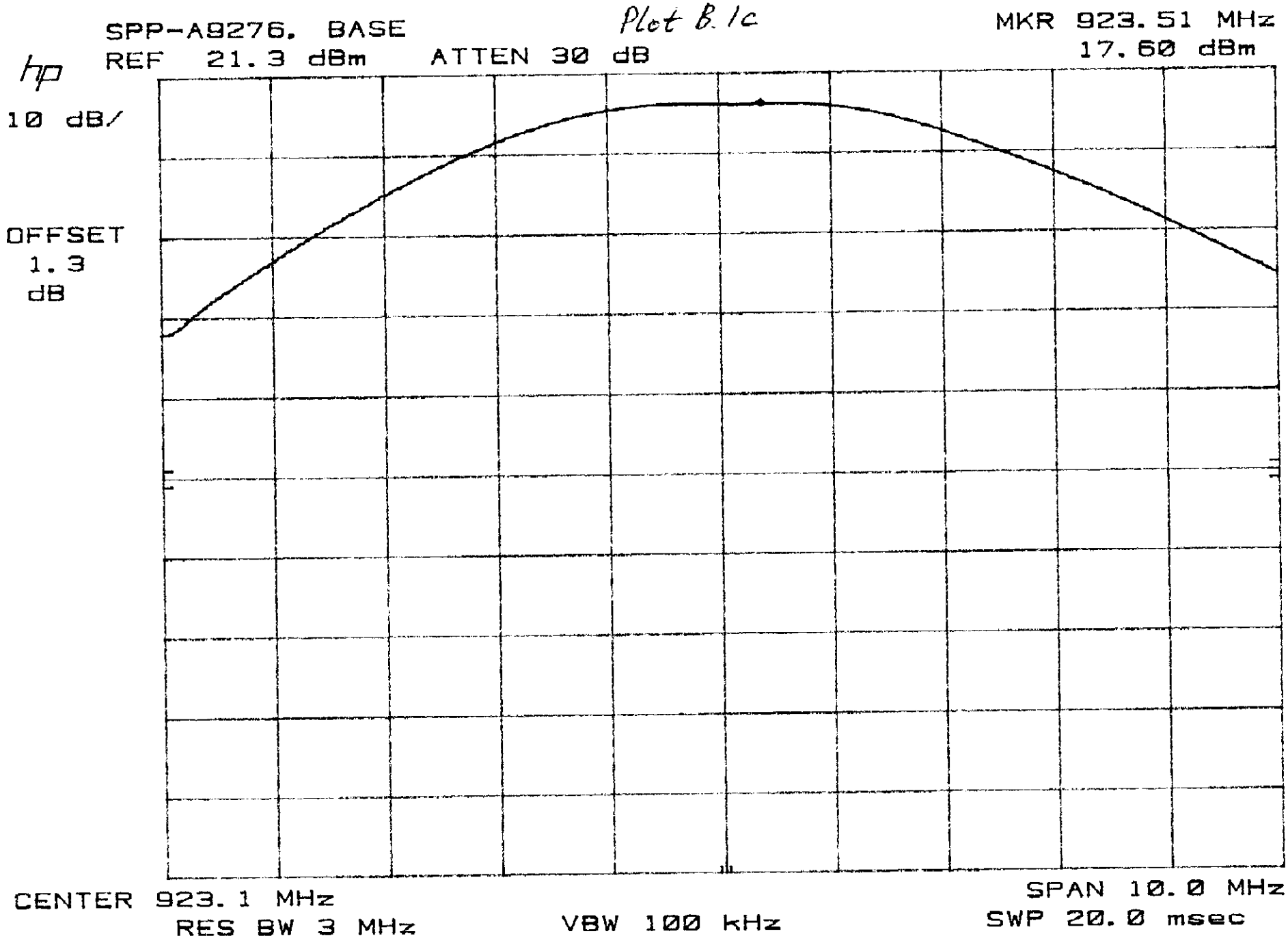
Please refer to the attached plots.

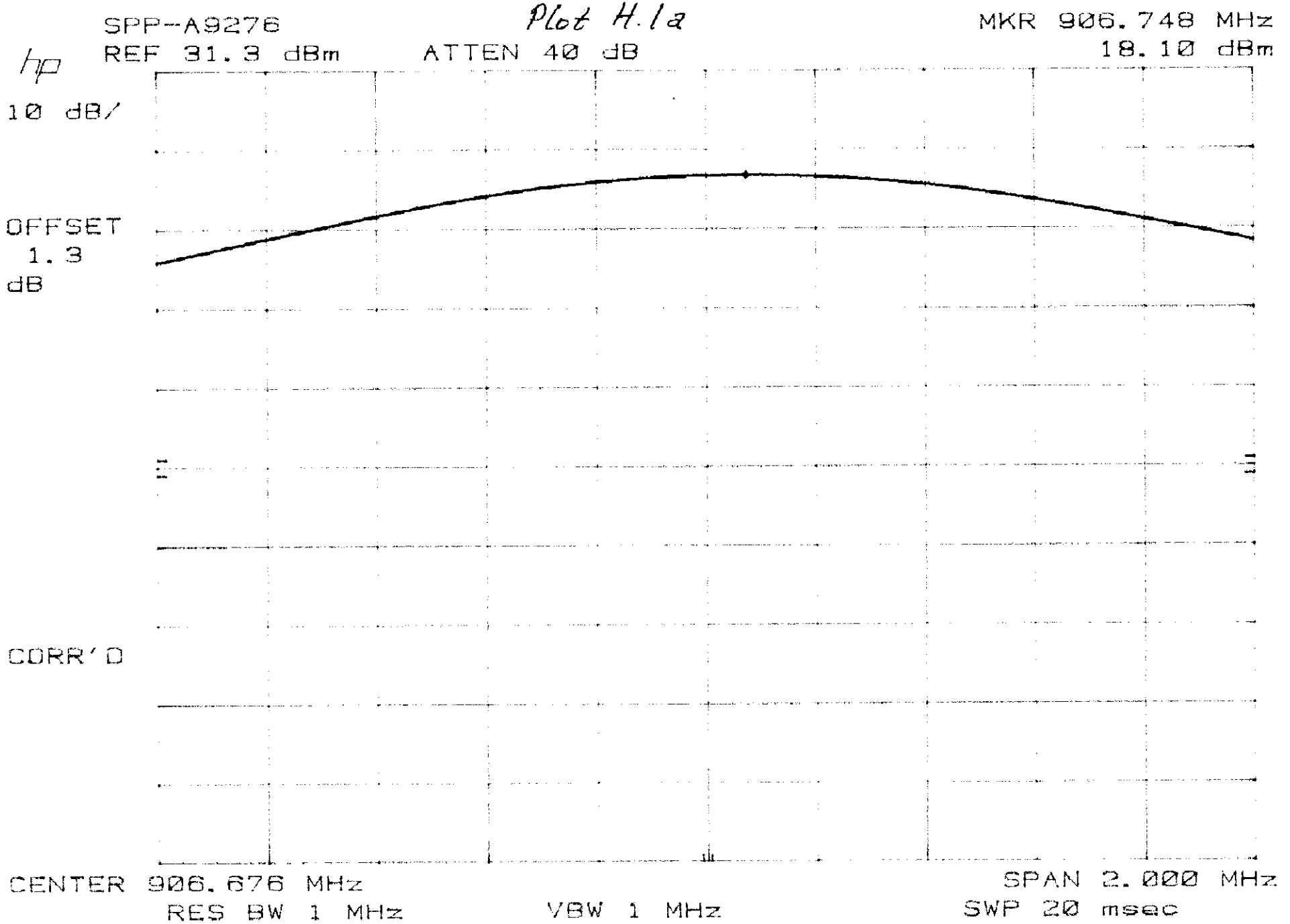
Plot H1a: Low Channel Output Power
Plot H1b: Middle Channel Output Power
Plot H1c: High Channel Output Power


SPP-A9276. BASE
Plot B.1a
MKR 906.90 MHz
17.50 dBm
REF 21.3 dBm
ATTEN 30 dB
hp
10 dB/
OFFSET
1.3
dB
CENTER 906.7 MHz
RES BW 3 MHz
VBW 100 kHz
SPAN 10.0 MHz
SWP 20.0 msec

Plot B.16


SPP-A9276. BASE
REF 21.3 dBm
ATTEN 30 dB
MKR 915.58 MHz
17.60 dBm
hp
10 dB/
OFFSET
1.3
dB
CENTER 914.9 MHz
RES BW 3 MHz
VBW 100 kHz
SPAN 10.0 MHz
SWP 20.0 msec


SPP-A9276. BASE
Plot B.1c
MKR 923.51 MHz
17.60 dBm
REF 21.3 dBm
ATTEN 30 dB
10 dB/
OFFSET
1.3
dB
CENTER 923.1 MHz
RES BW 3 MHz
VBW 100 kHz
SPAN 10.0 MHz
SWP 20.0 msec


Plot H.1a
SPP-A9276
REF 31.3 dBm
ATTEN 40 dB
MKR 906.748 MHz
18.10 dBm
10 dB/
OFFSET
1.3
dB
CORR'D
CENTER 906.676 MHz
SPAN 2.000 MHz
RES BW 1 MHz
VBW 1 MHz
SWP 20 msec

4.2 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		
Frequency (MHz)	Min. 6 dB Bandwidth (kHz)	Limit (kHz)
923.25	1842	>500

Refer to the attached plots.

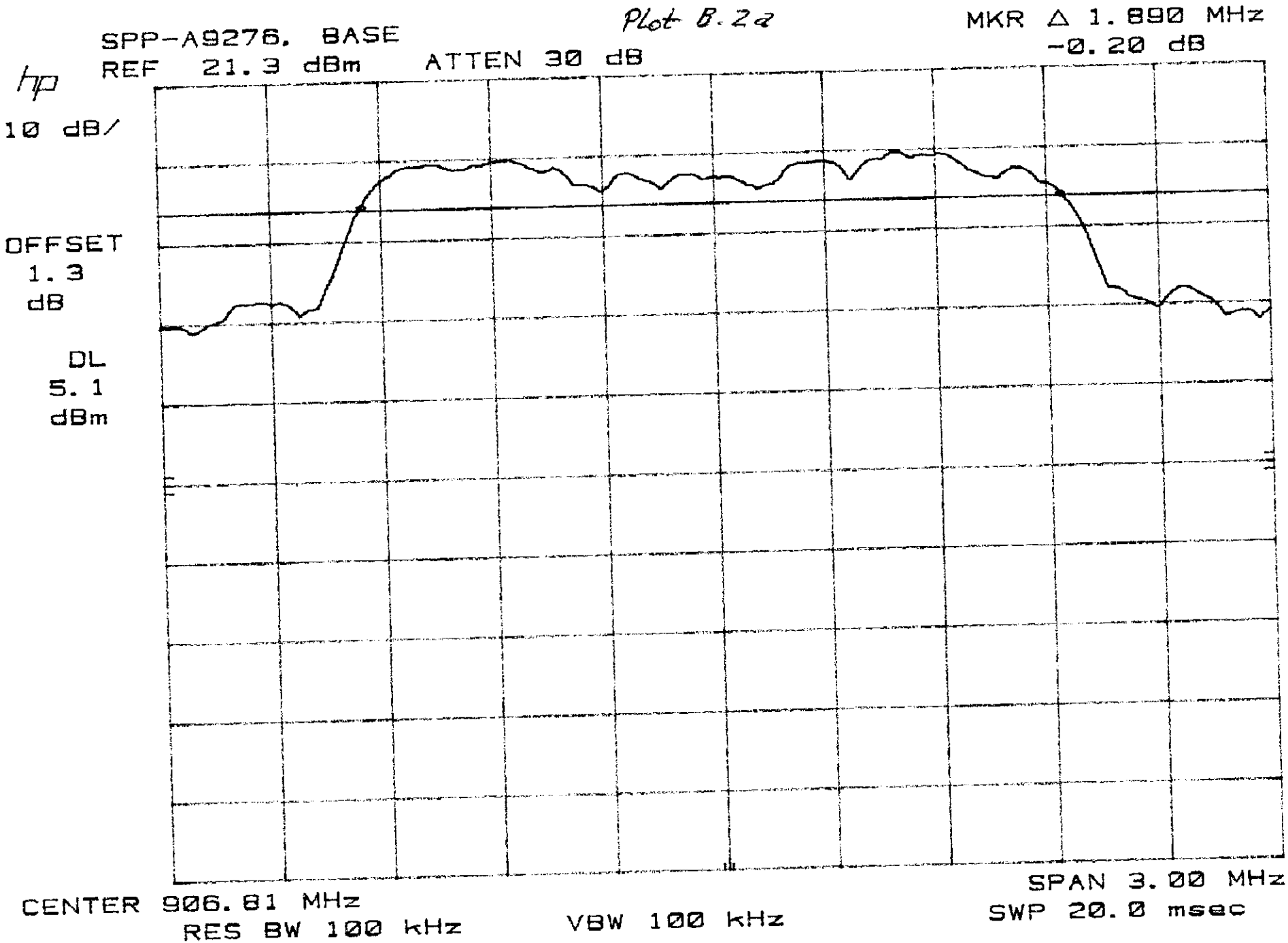
Plot B2a: Low Channel 6 dB RF Bandwidth
Plot B2b: Middle Channel 6 dB RF Bandwidth
Plot B2c: High Channel 6 dB RF Bandwidth

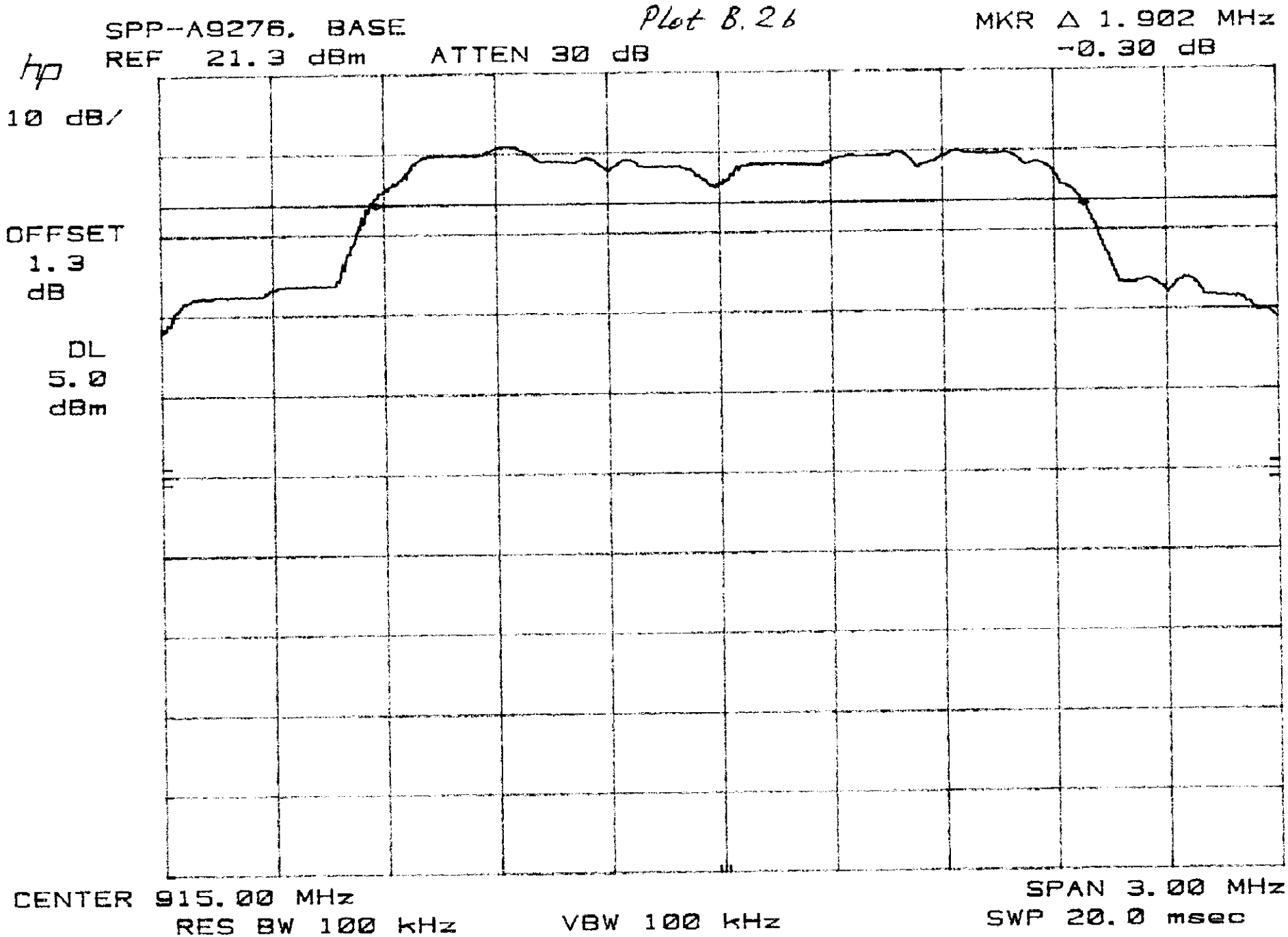
Handset		
Frequency (MHz)	Min. 6 dB Bandwidth (kHz)	Limit (kHz)
915.0	1932	>500

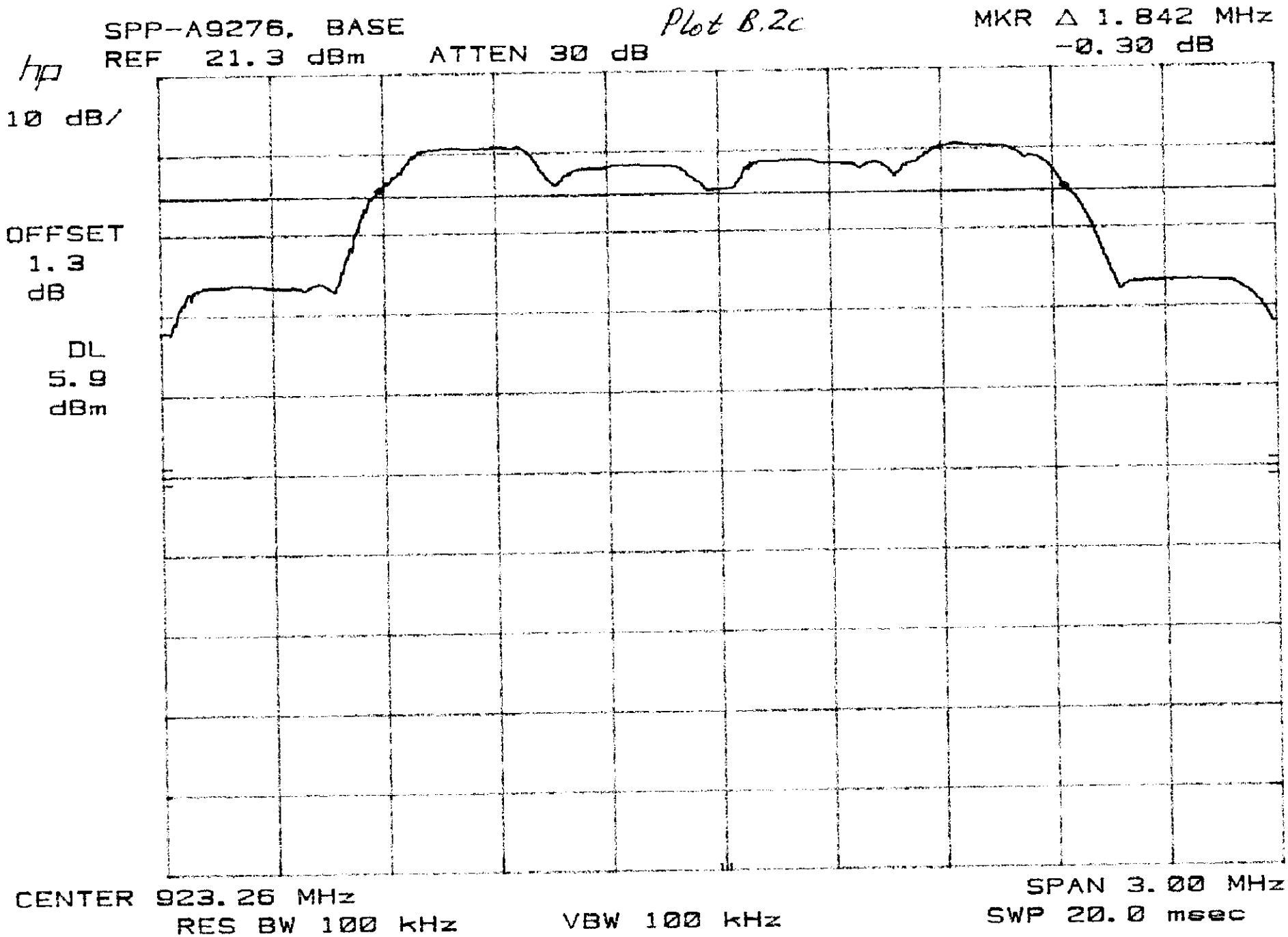
Refer to the attached plots.

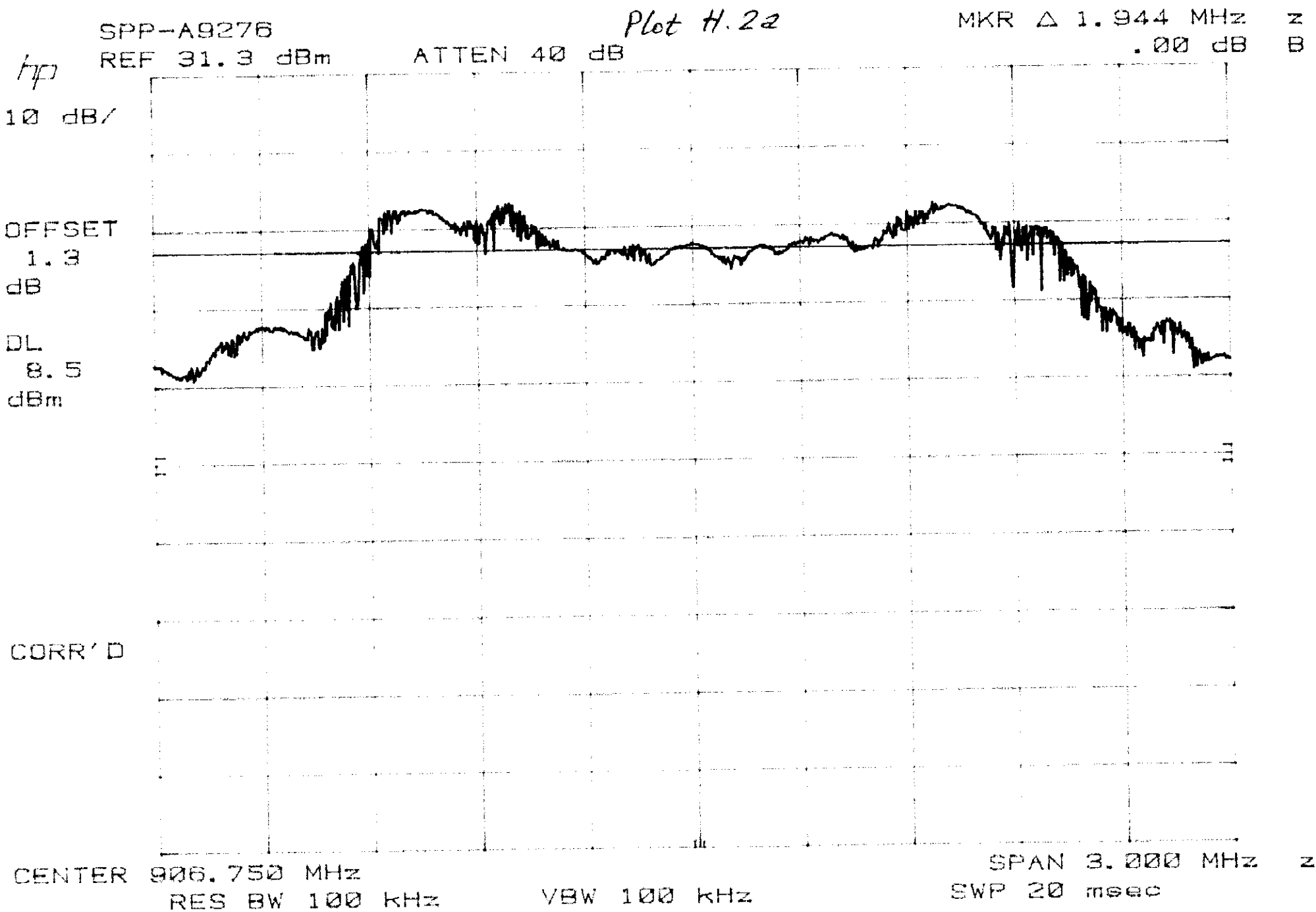
Plot H2a: Low Channel 6 dB RF Bandwidth
Plot H2b: Middle Channel 6 dB RF Bandwidth
Plot H2c: High Channel 6 dB RF Bandwidth

Plot 8.2a


SPP-A9276. BASE
REF 21.3 dBm
ATTEN 30 dB
MKR Δ 1.890 MHz
-0.20 dB
10 dB/
OFFSET
1.3
dB
DL
5.1
dBm
CENTER 906.81 MHz
RES BW 100 kHz
VBW 100 kHz
SPAN 3.00 MHz
SWP 20.0 msec


SPP-A9276. BASE
Plot B.26
MKR Δ 1.902 MHz
REF 21.3 dBm
ATTEN 30 dB
-0.30 dB
hp
10 dB/
OFFSET
1.3
dB
DL
5.0
dBm
CENTER 915.00 MHz
SPAN 3.00 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 20.0 msec


SPP-A9276, BASE
Plot B.2c
MKR Δ 1.842 MHz
-0.30 dB
hp
REF 21.3 dBm
ATTEN 30 dB
10 dB/
OFFSET
1.3
dB
DL
5.9
dBm
CENTER 923.26 MHz
RES BW 100 kHz
VBW 100 kHz
SPAN 3.00 MHz
SWP 20.0 msec


SPP-A9276
Plot H.2a
MKR Δ 1.944 MHz
.00 dB
REF 31.3 dBm
ATTEN 40 dB
10 dB/
OFFSET
1.3
dB
DL
8.5
dBm
CORR'D
CENTER 906.750 MHz
RES BW 100 kHz
VBW 100 kHz
SPAN 3.000 MHz
SWP 20 msec

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

The spectrum analyzer was connected to the output of the transmitter. 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:

SWEEP TIME (SEC) = (Fstop, kHz - Fstart, kHz)/3 kHz

Base		
Frequency (MHz)	Power Density (dBm)	Limit (dBm)
907.45	6.5	8.0

Handset		
Frequency (MHz)	Power Density (dBm)	Limit (dBm)
906.0	5.4	8.0

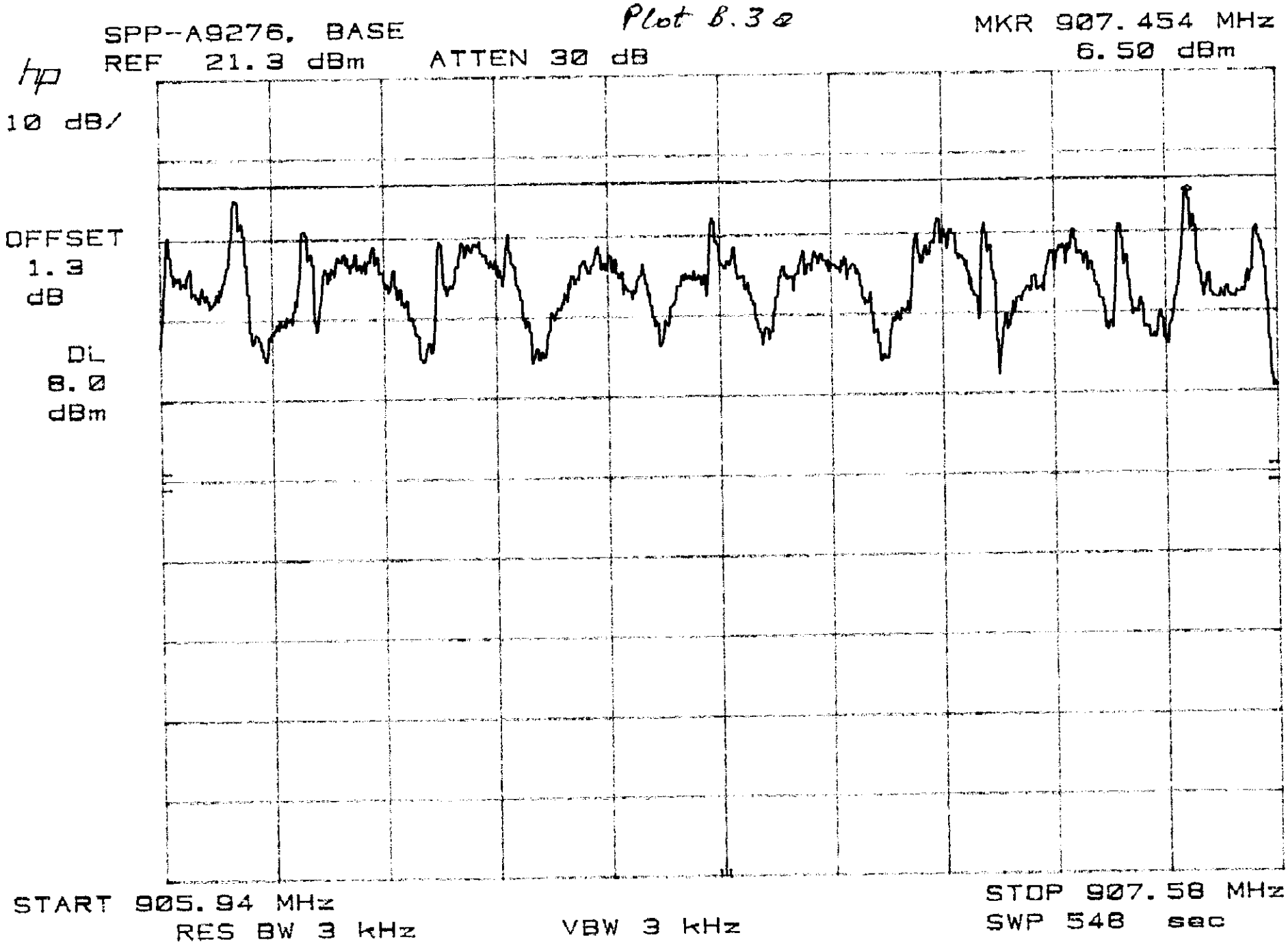
Frequency Span = 1575 kHz

Sweep Time = 600 Frequency Span/3 kHz
= 525 seconds

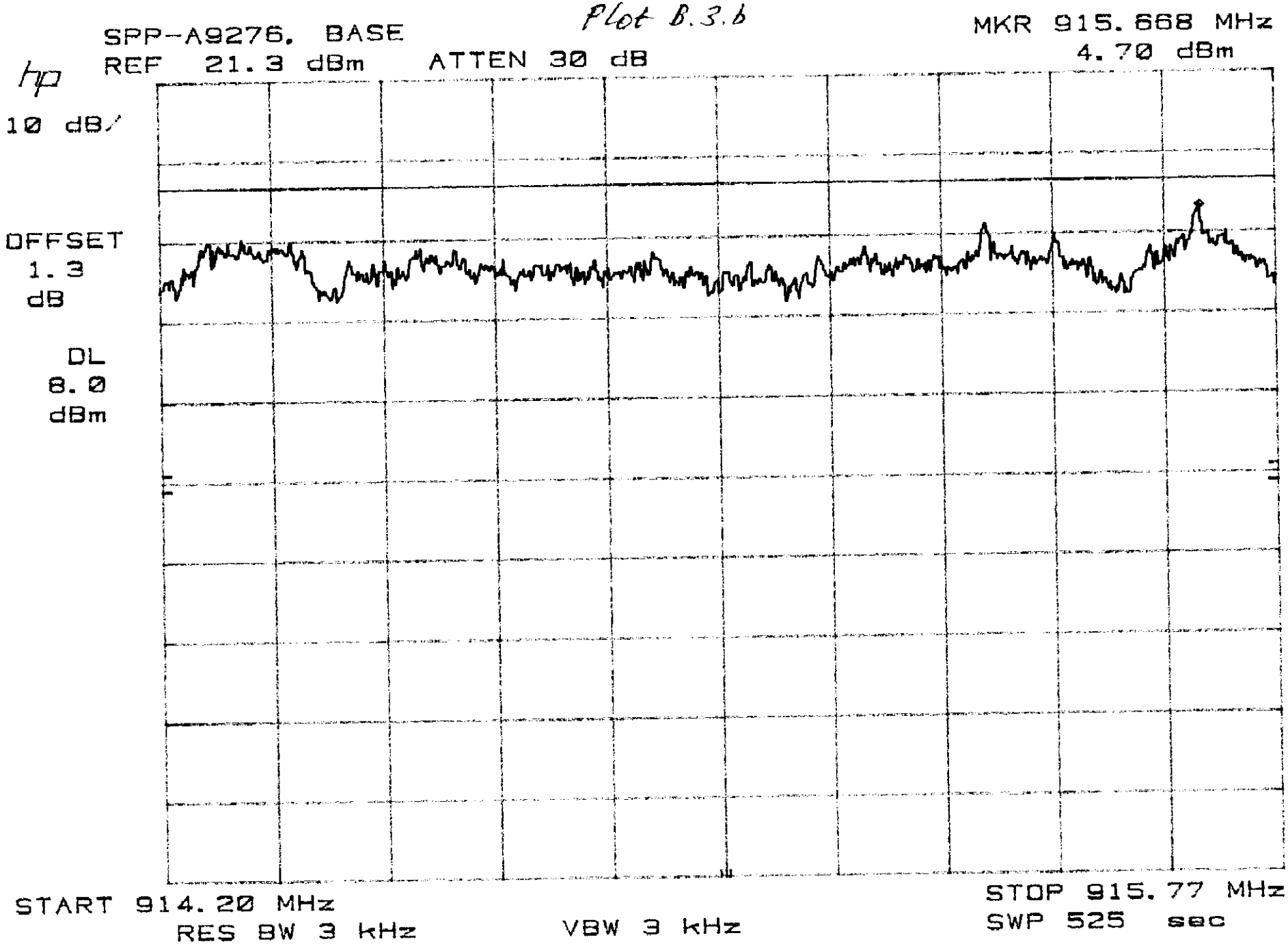
Refer to the attached plots.

Plot B3a Low Channel Power Density
Plot B3b Middle Channel Power Density
Plot B3c High Channel Power Density
Plot H3a Low Channel Power Density
Plot H3b Middle Channel Power Density
Plot H3c High Channel Power Density

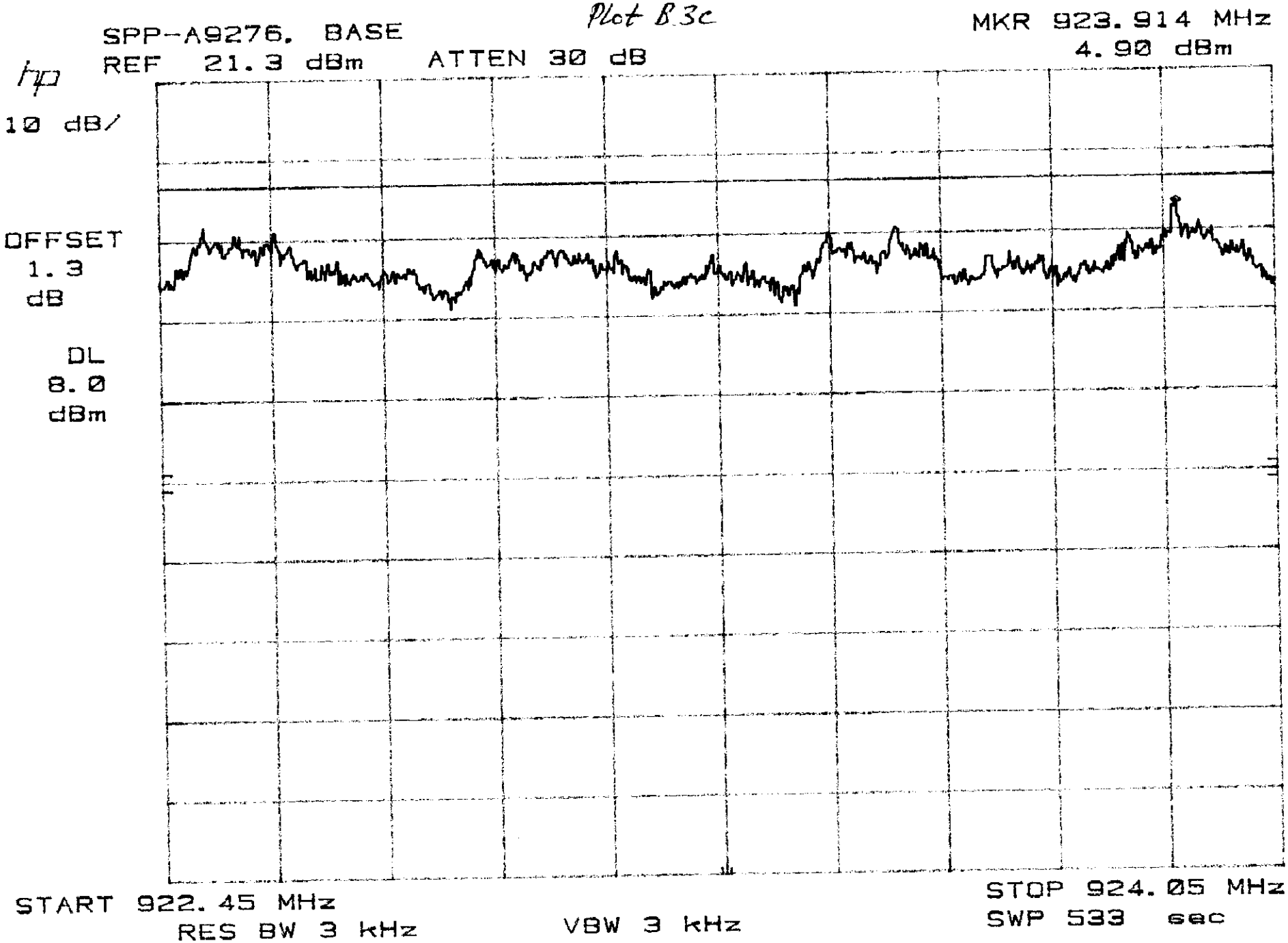
Plot 8.3e


SPP-A9276, BASE
REF 21.3 dBm
ATTEN 30 dB
MKR 907.454 MHz
6.50 dBm
hp
10 dB/
OFFSET
1.3
dB
DL
8.0
dBm
START 905.94 MHz
RES BW 3 kHz
VBW 3 kHz
STOP 907.58 MHz
SWP 548 sec

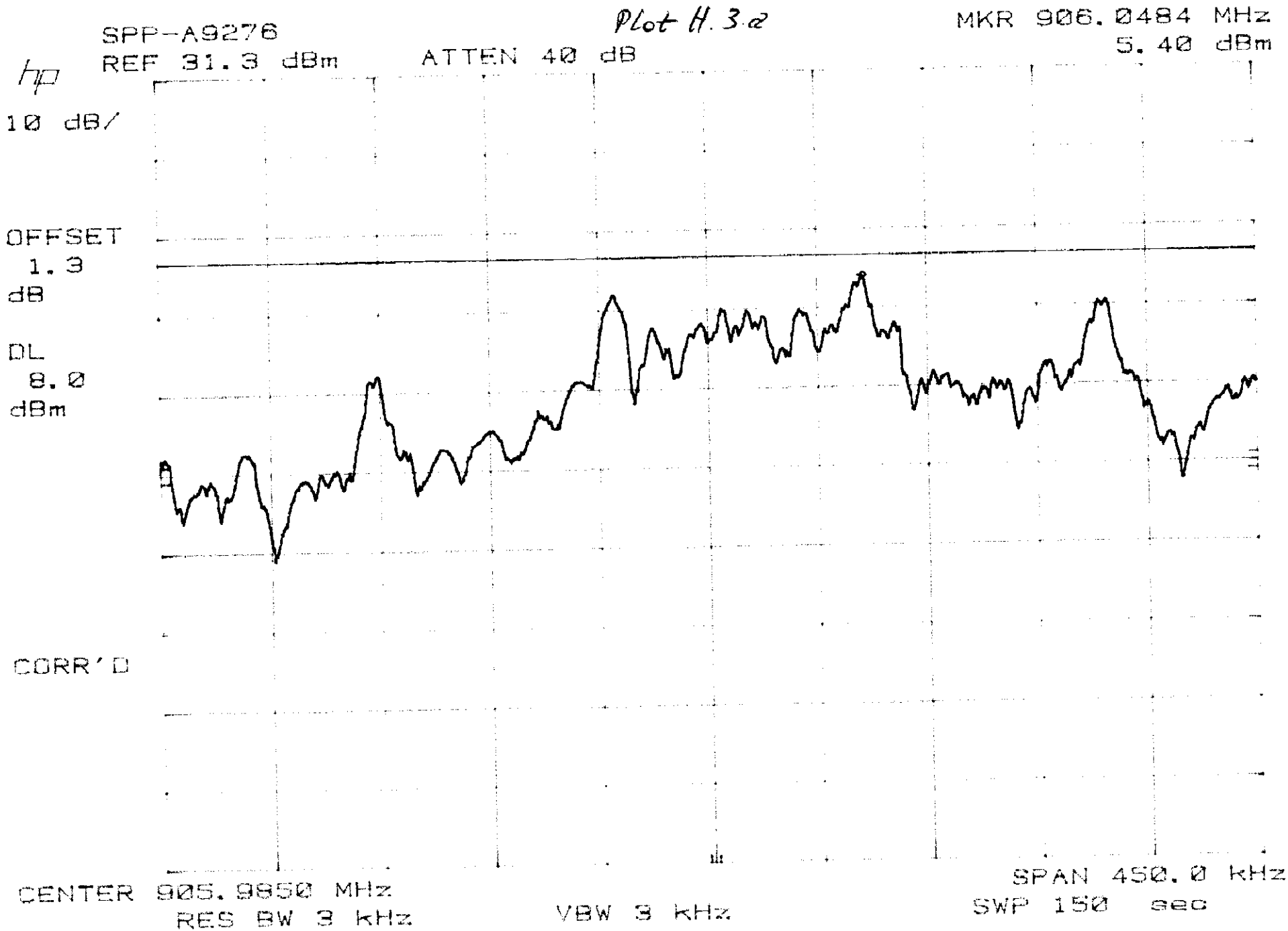
Plot B.3.b

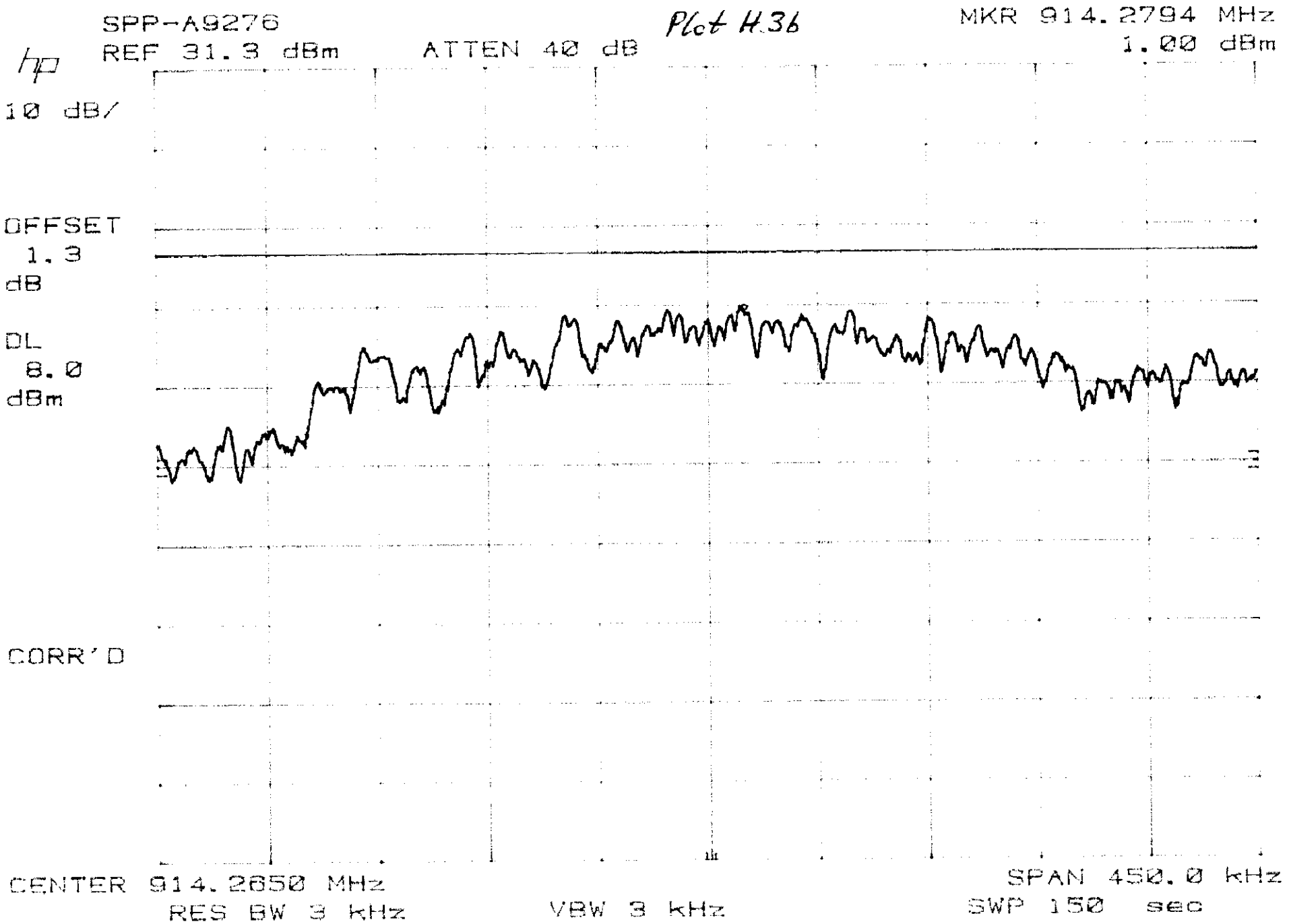

SPP-A9276, BASE
REF 21.3 dBm
ATTEN 30 dB
MKR 915.668 MHz
4.70 dBm
hp
10 dB/
OFFSET
1.3
dB
DL
8.0
dBm
START 914.20 MHz
RES BW 3 kHz
VBW 3 kHz
STOP 915.77 MHz
SWP 525 sec

Plot B.3c

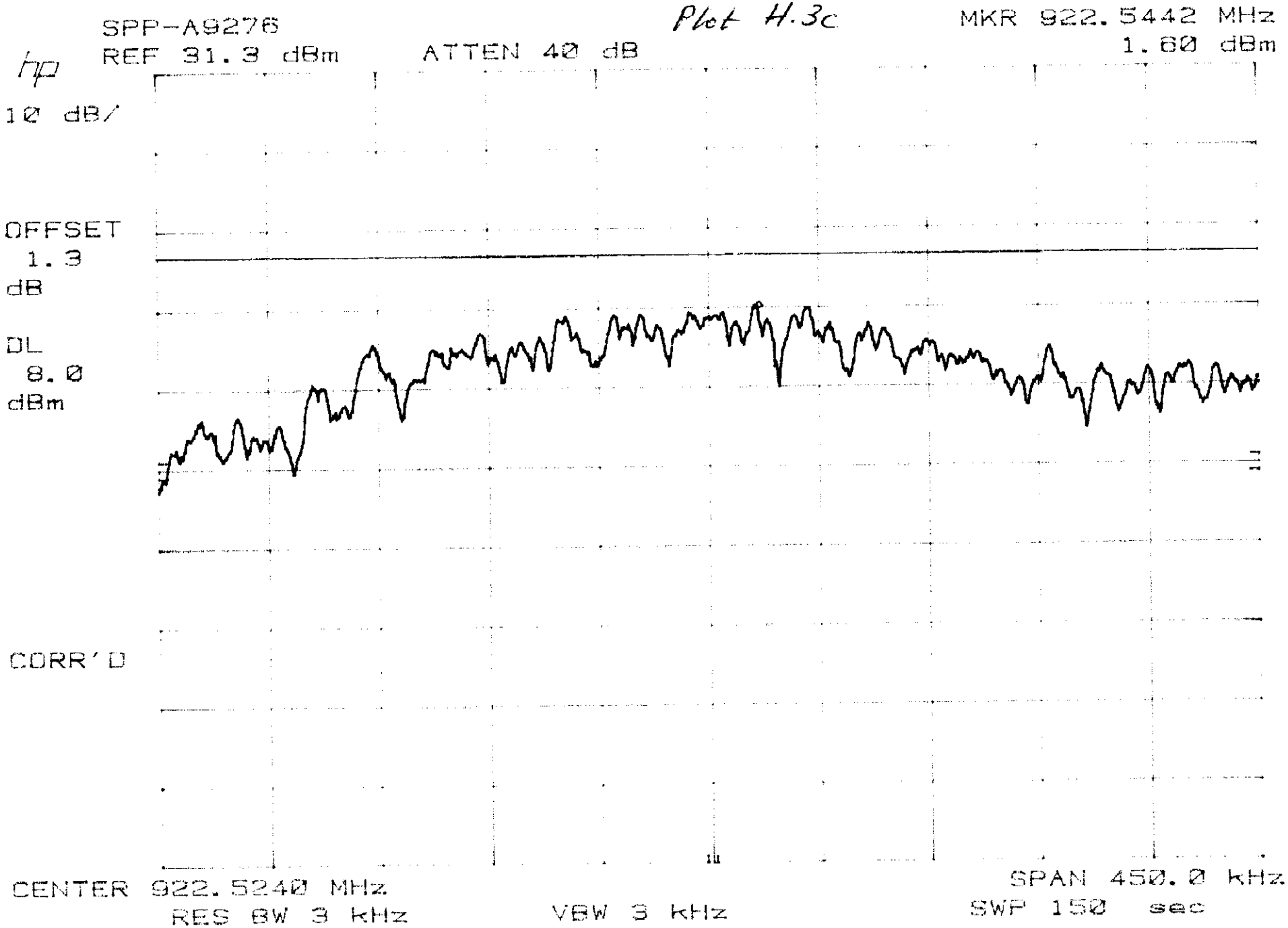

SPP-A9276. BASE
REF 21.3 dBm
ATTEN 30 dB
MKR 923.914 MHz
4.90 dBm
hp
10 dB/
OFFSET
1.3
dB
DL
8.0
dBm
START 922.45 MHz
RES BW 3 kHz
VBW 3 kHz
STOP 924.05 MHz
SWP 533 sec

Plot H.3.a


SPP-A9276
REF 31.3 dBm
ATTEN 40 dB
MKR 906.0484 MHz
5.40 dBm
10 dB/
OFFSET
1.3
dB
DL
8.0
dBm
CORR'D
CENTER 905.9850 MHz
RES BW 3 kHz
VBW 3 kHz
SPAN 450.0 kHz
SWP 150 sec


SPP-A9276
Plot H.36
MKR 914.2794 MHz
REF 31.3 dBm
ATTEN 40 dB
1.00 dBm
10 dB/
OFFSET
1.3
dB
DL
8.0
dBm
CORR'D
CENTER 914.2650 MHz
SPAN 450.0 kHz
RES BW 3 kHz
VBW 3 kHz
SWP 150 sec

Plot H.3c


SPP-A9276
REF 31.3 dBm
ATTEN 40 dB
MKR 922.5442 MHz
1.60 dBm
10 dB/
OFFSET
1.3
dB
DL
8.0
dBm
CORR'D
CENTER 922.5240 MHz
RES BW 3 kHz
VBW 3 kHz
SPAN 450.0 kHz
SWP 150 sec

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

Refer to the attached plots.

Base
Plot B4a.1 - B4a.4: Low Channel Emissions
Plot B4b.1 - B4b.3: Middle Channel Emissions
Plot B4c.1 - B4c.4: High Channel Emissions

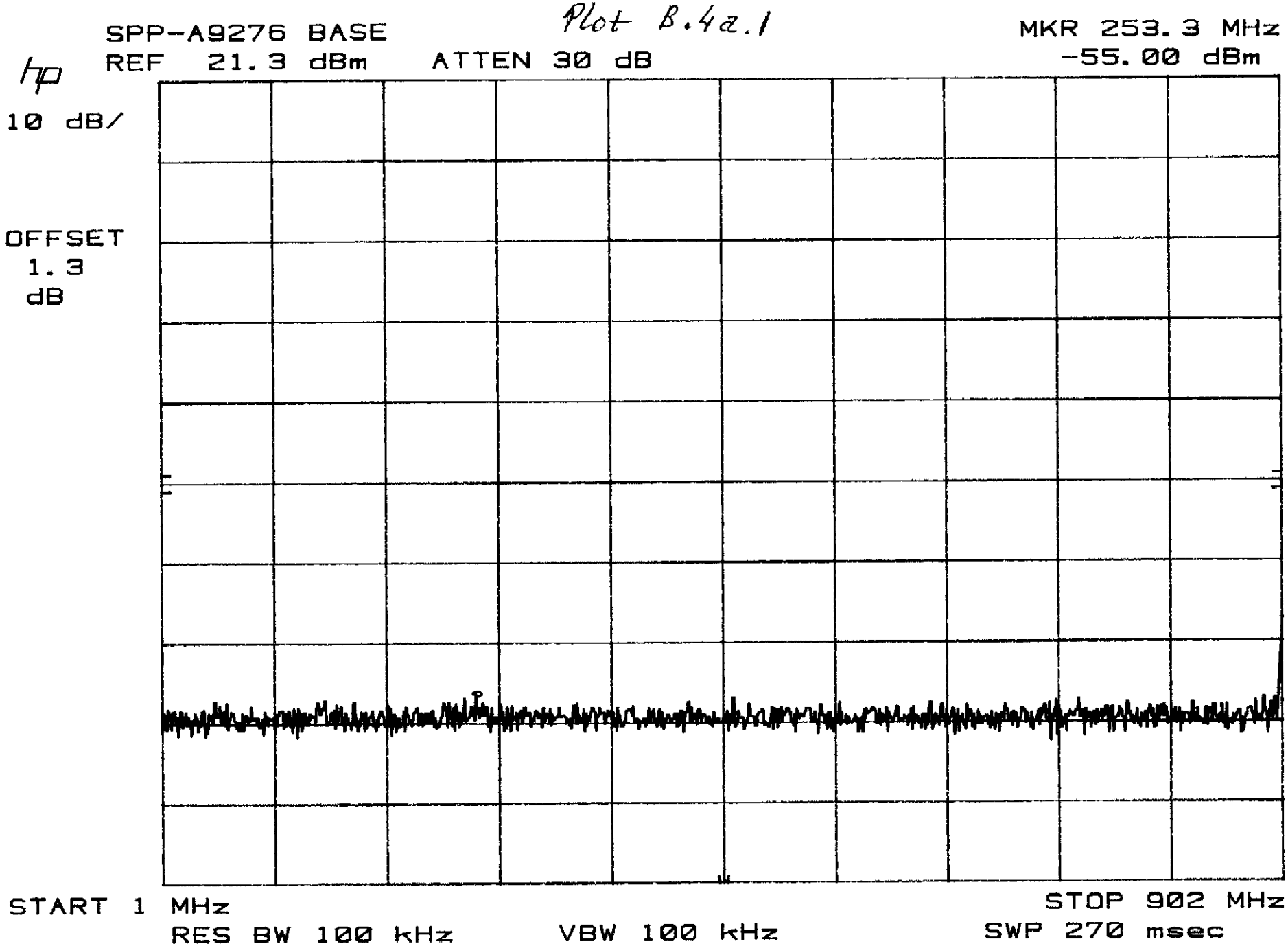
Handset
Plot H4a.1 - H4a.4: Low Channel Emissions
Plot H4b.1 - H4b.3: Middle Channel Emissions
Plot H4c.1 - H4c.4: High Channel Emissions

4.5 Out of Band Radiated Emissions (for emissions in 4. above that are less than 20 dB below carrier), FCC Rule 15.247(c):

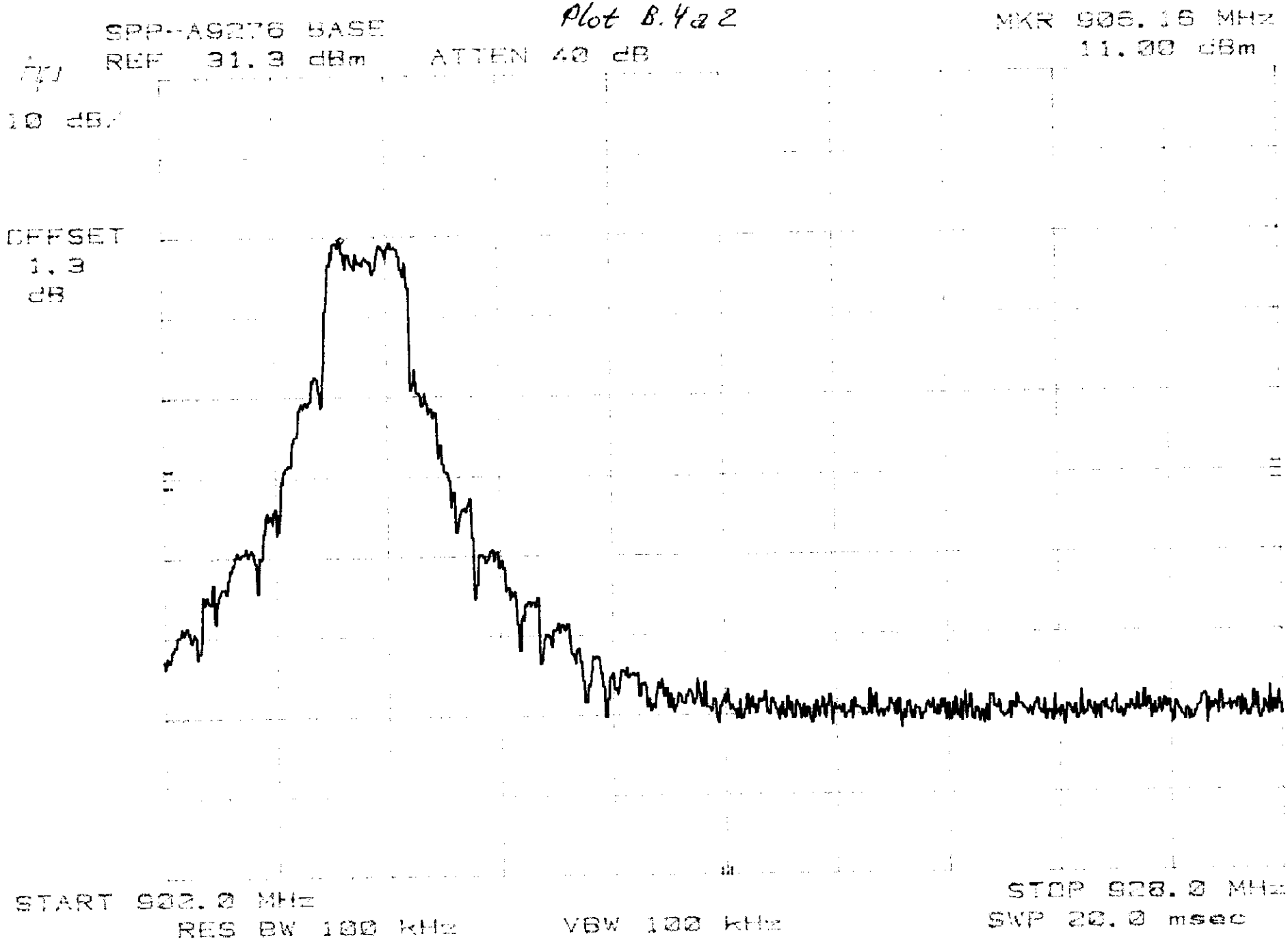
For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

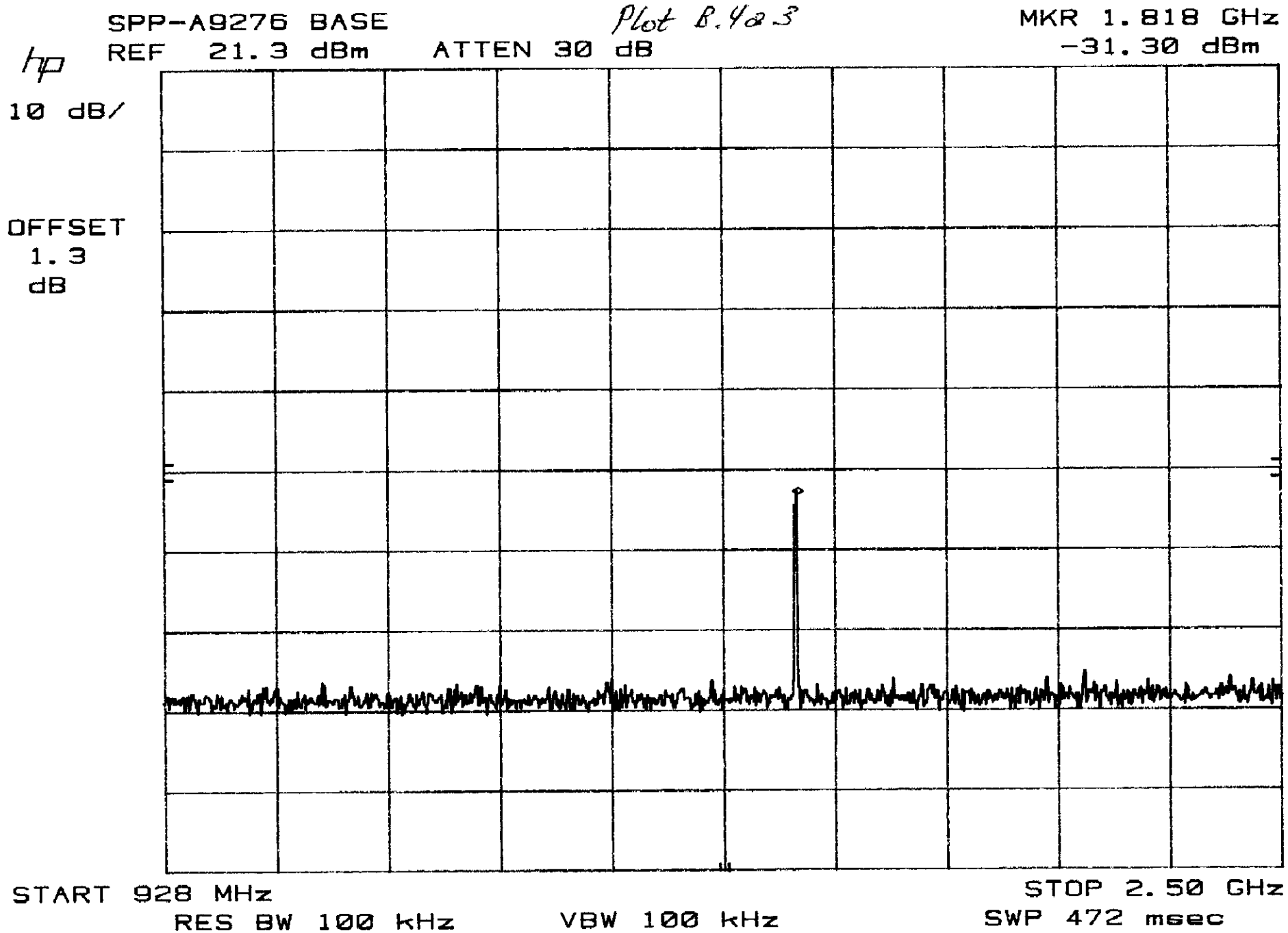
[x] Not required
[ ] See attached data sheet

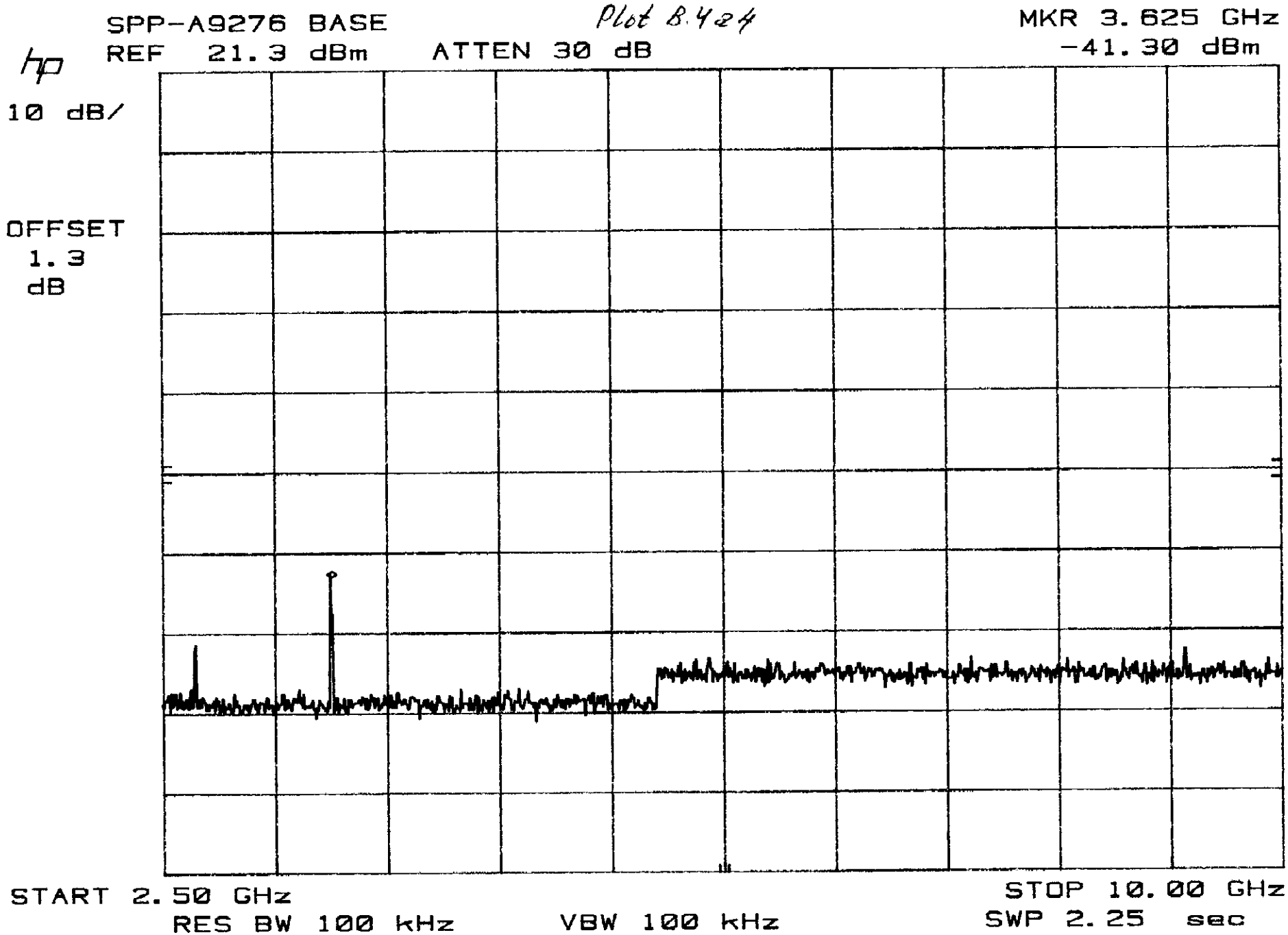
Plot B.4a.1


SPP-A9276 BASE
REF 21.3 dBm
ATTEN 30 dB
MKR 253.3 MHz
-55.00 dBm
10 dB/
OFFSET
1.3
dB
START 1 MHz
STOP 902 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 270 msec

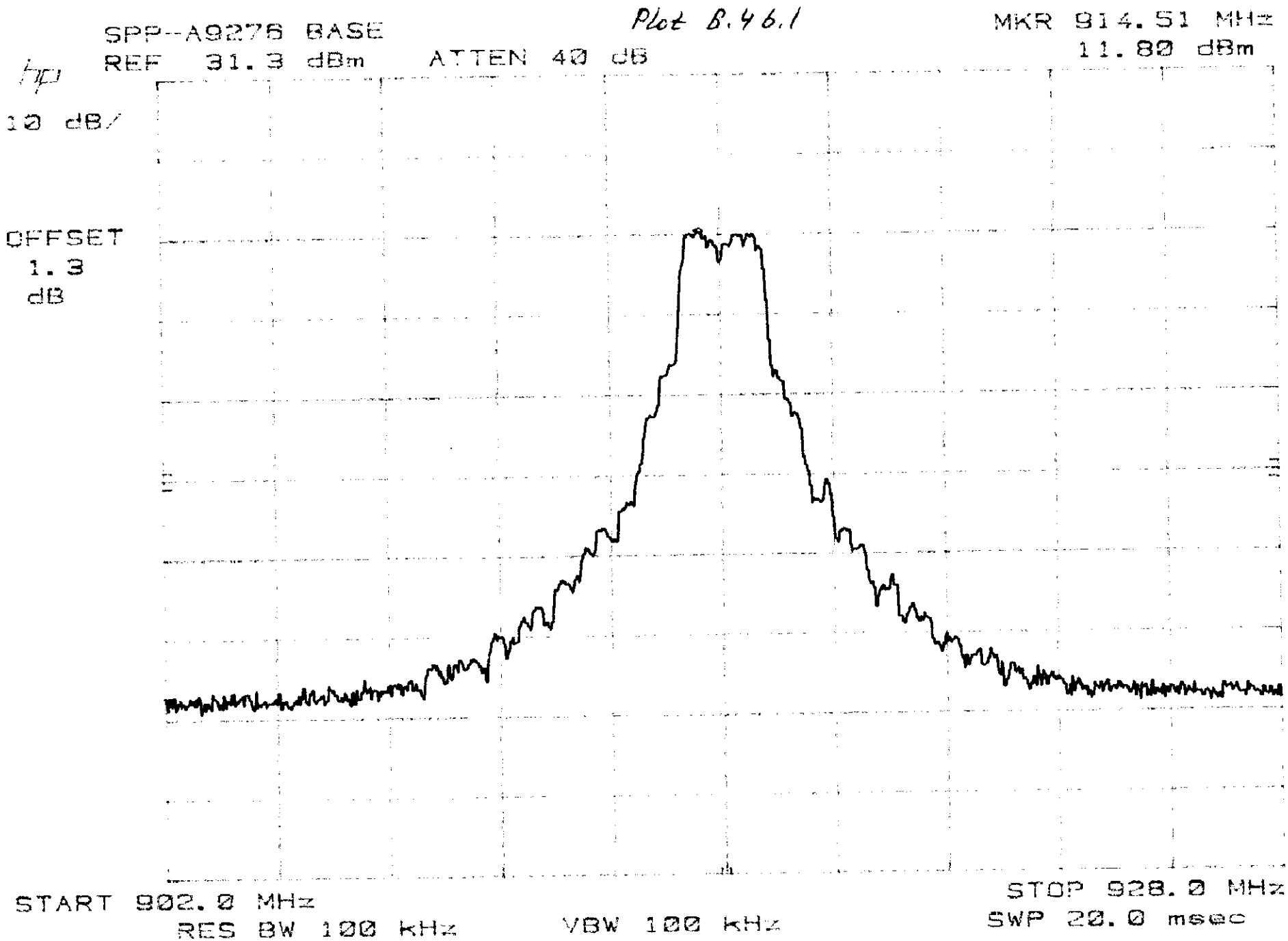
Plot B.4a 2


SPP-A9276 BASE
REF 31.3 dBm
ATTEN 40 dB
MKR 906.16 MHz
11.00 dBm
10 dB/
OFFSET
1.3
dB
START 902.0 MHz
RES BW 100 kHz
VBW 100 kHz
STOP 928.0 MHz
SWP 20.0 msec

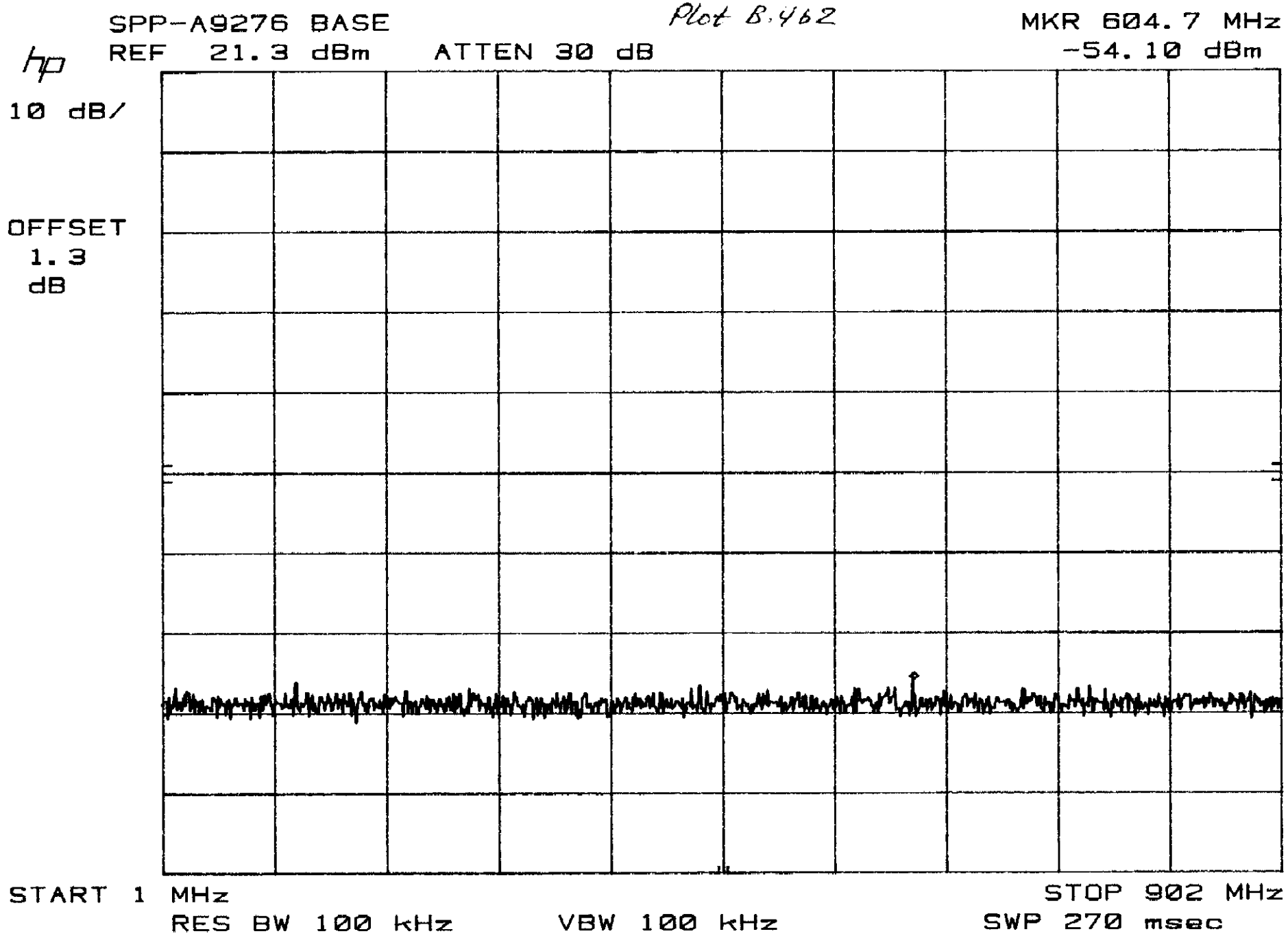

SPP-A9276 BASE
Plot 8.4a.3
MKR 1.818 GHz
REF 21.3 dBm
ATTEN 30 dB
-31.30 dBm
10 dB/
OFFSET
1.3
dB
START 928 MHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 472 msec

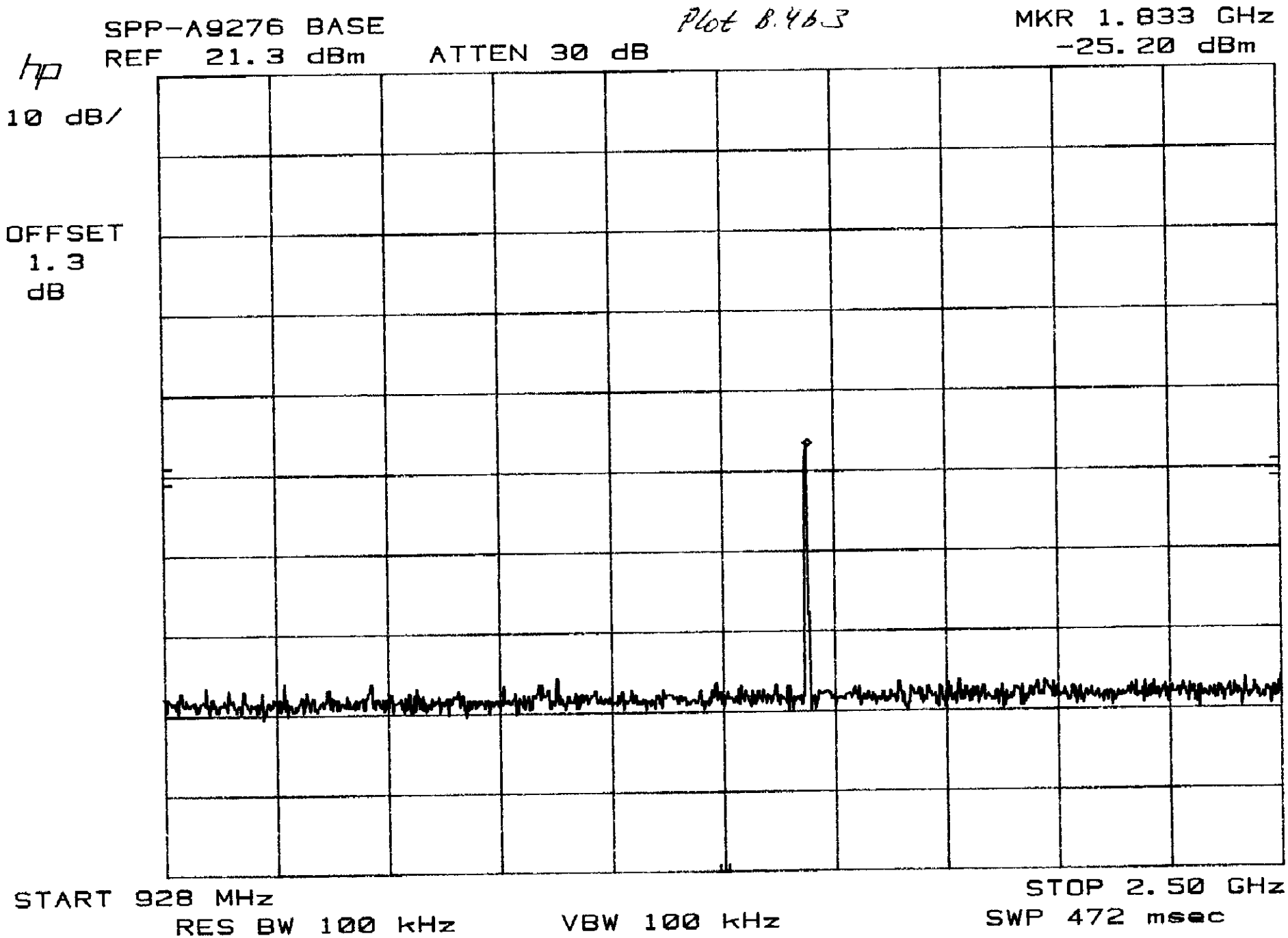

SPP-A9276 BASE
Plot 8.424
MKR 3.625 GHz
REF 21.3 dBm
ATTEN 30 dB
-41.30 dBm
10 dB/
OFFSET
1.3
dB
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 2.25 sec

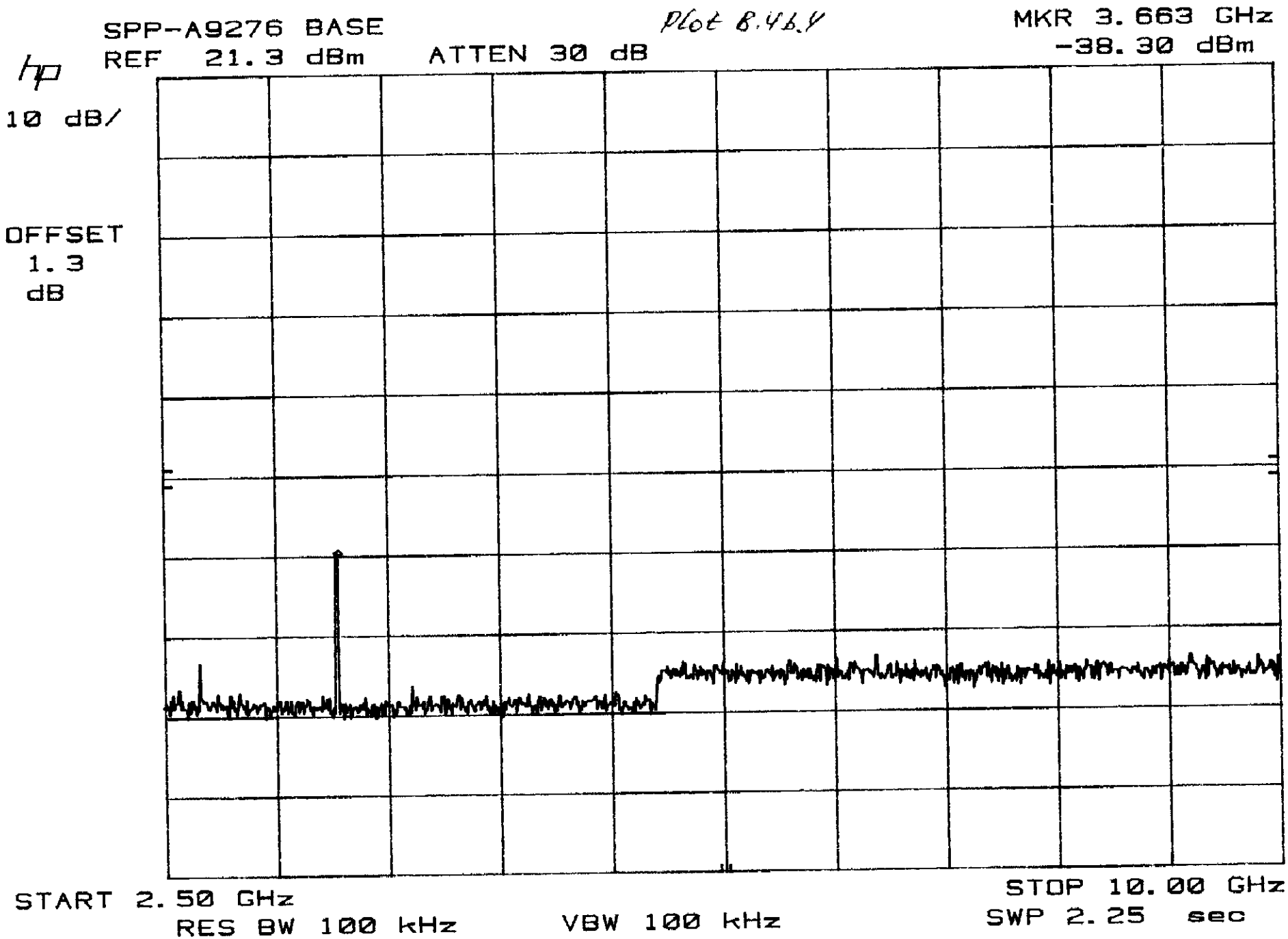
Plot B.46.1

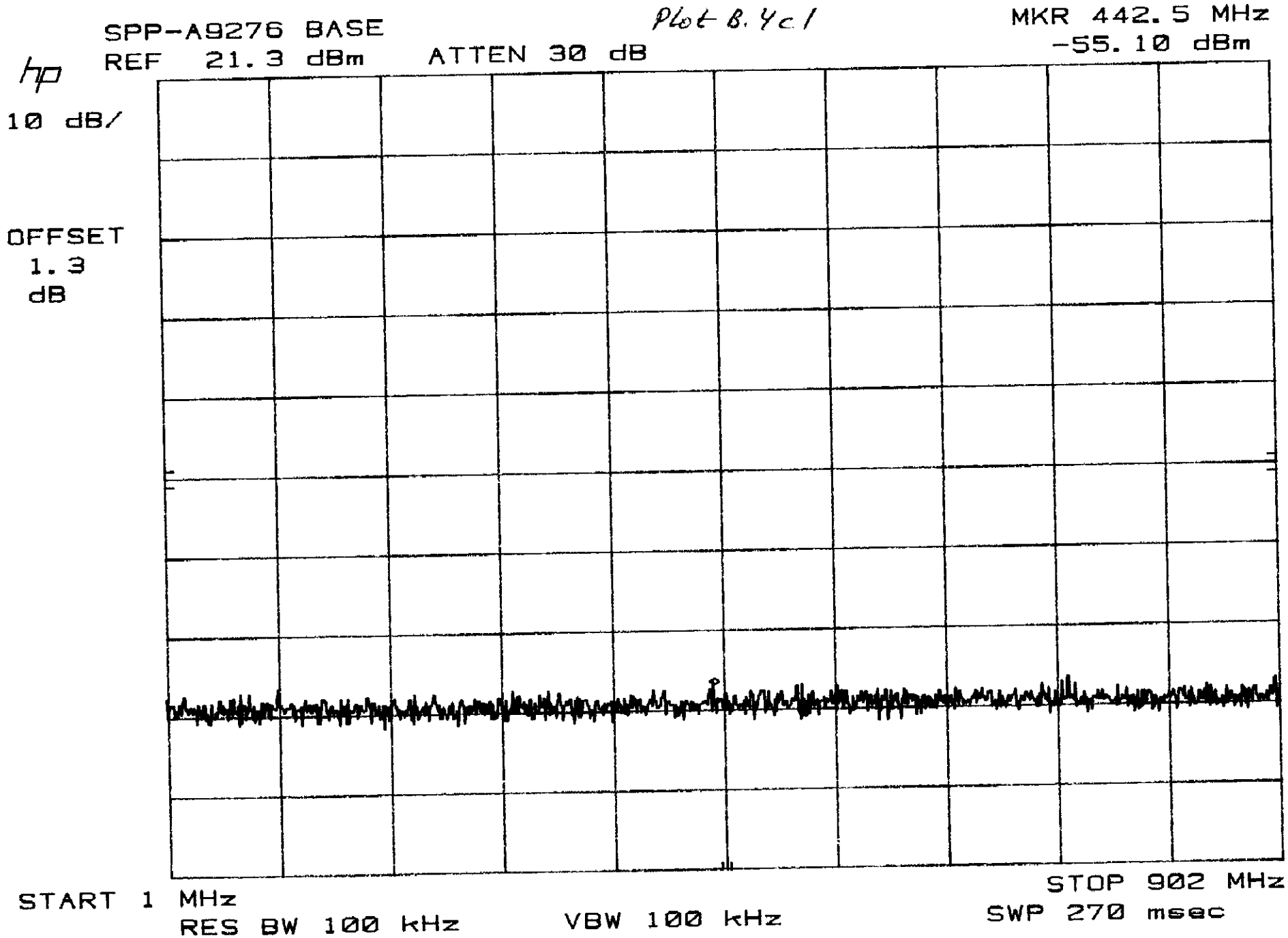

SPP-A9276 BASE
REF 31.3 dBm
ATTEN 40 dB
MKR 914.51 MHz
11.80 dBm
10 dB/
OFFSET
1.3
dB
START 902.0 MHz
RES BW 100 kHz
VBW 100 kHz
STOP 928.0 MHz
SWP 20.0 msec

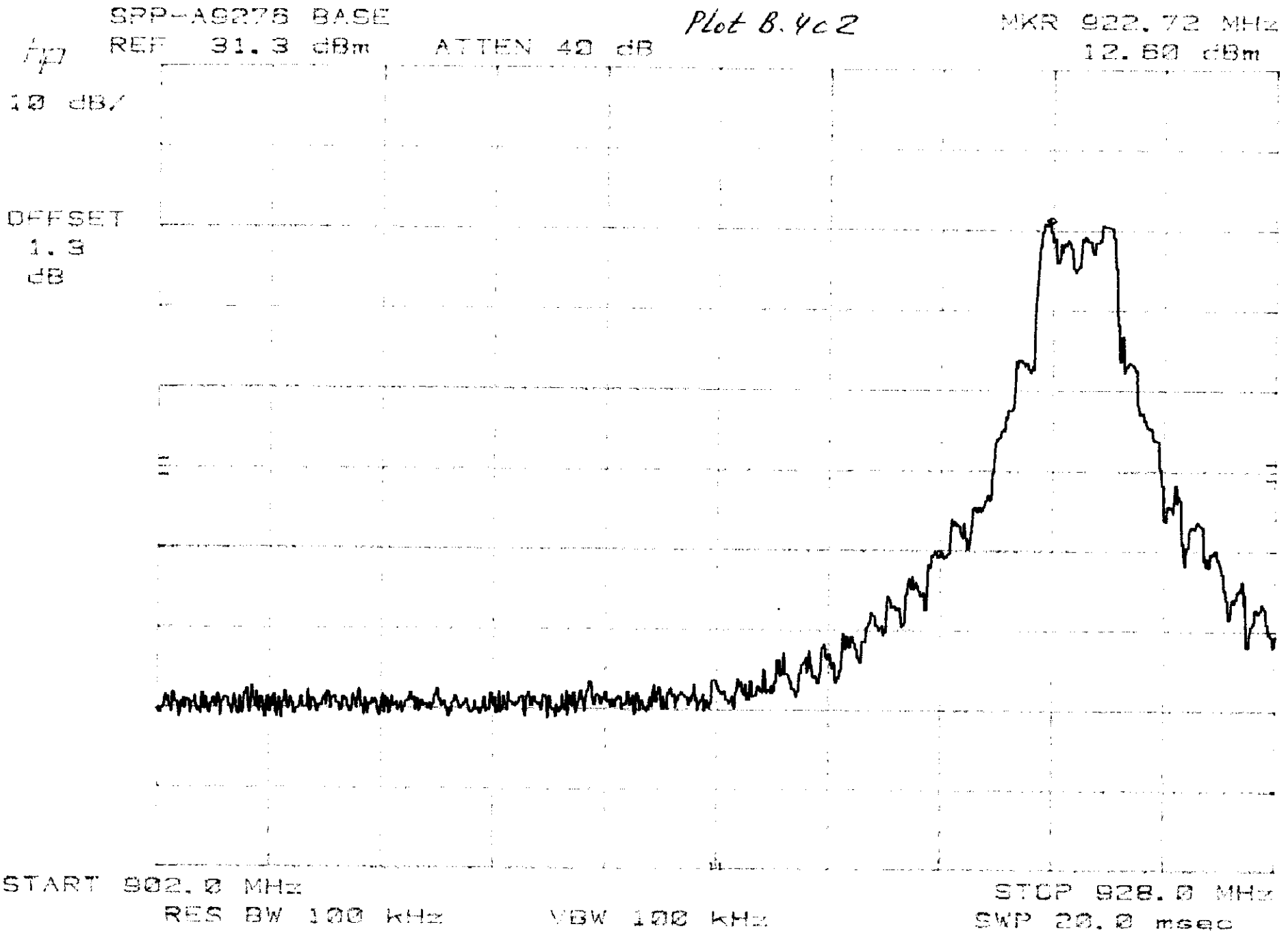
Plot B.462

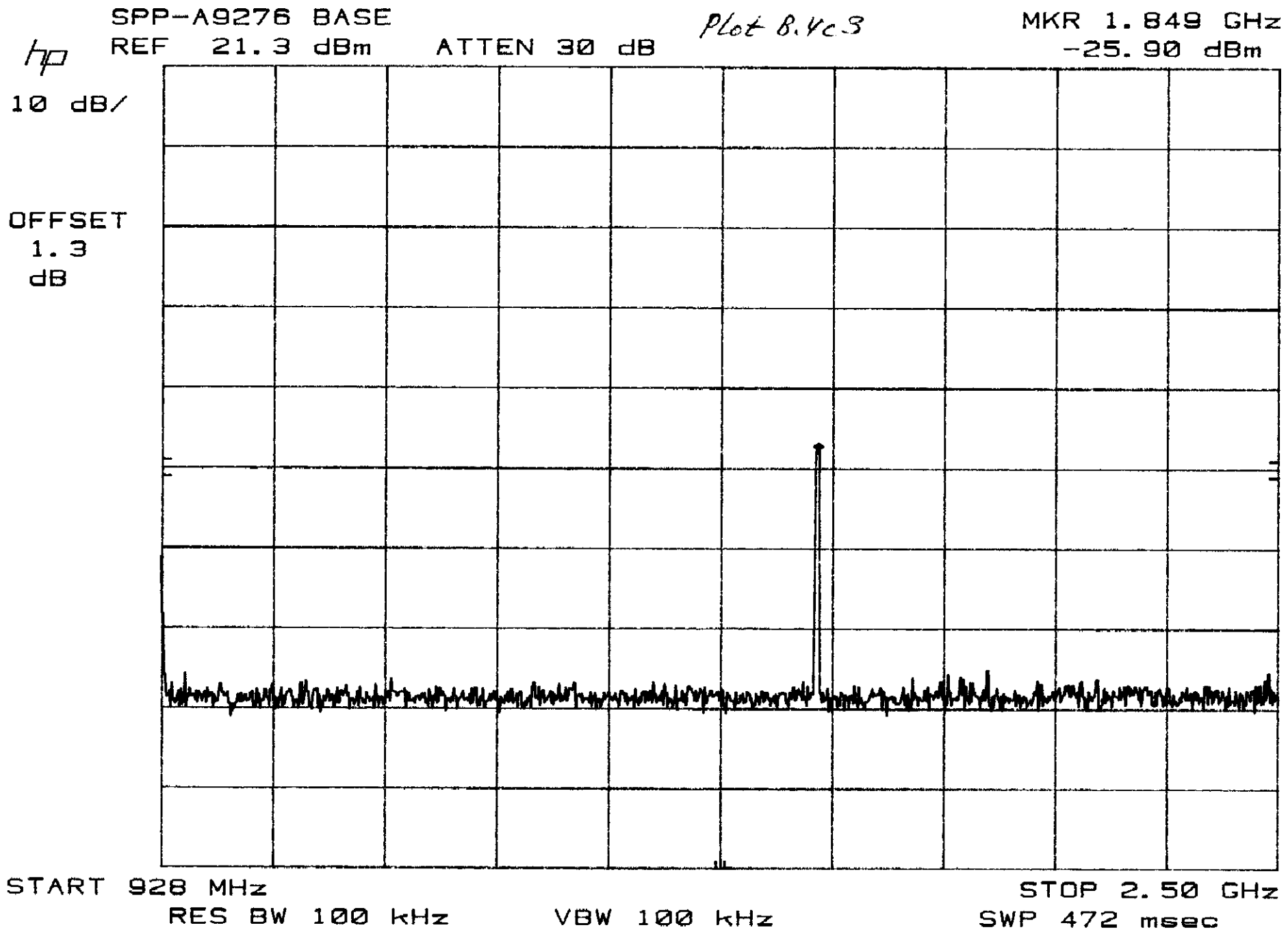

SPP-A9276 BASE
REF 21.3 dBm
ATTEN 30 dB
MKR 604.7 MHz
-54.10 dBm
10 dB/
OFFSET
1.3
dB
START 1 MHz
STOP 902 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 270 msec

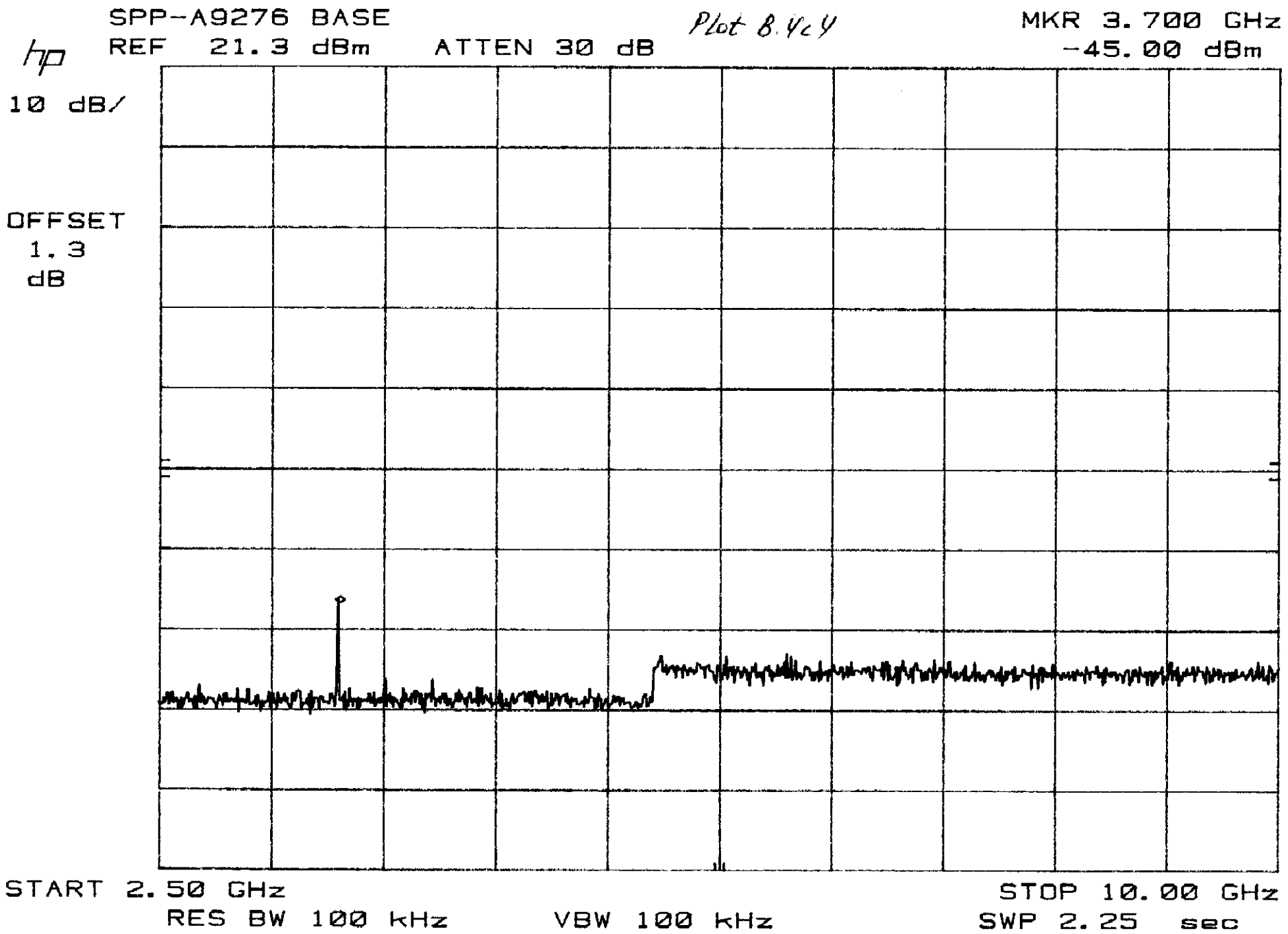

SPP-A9276 BASE
Plot 8.463
MKR 1.833 GHz
REF 21.3 dBm
ATTEN 30 dB
-25.20 dBm
10 dB/
OFFSET
1.3
dB
START 928 MHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 472 msec


SPP-A9276 BASE
Plot 8.4b.4
MKR 3.663 GHz
REF 21.3 dBm
ATTEN 30 dB
-38.30 dBm
10 dB/
OFFSET
1.3
dB
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 2.25 sec

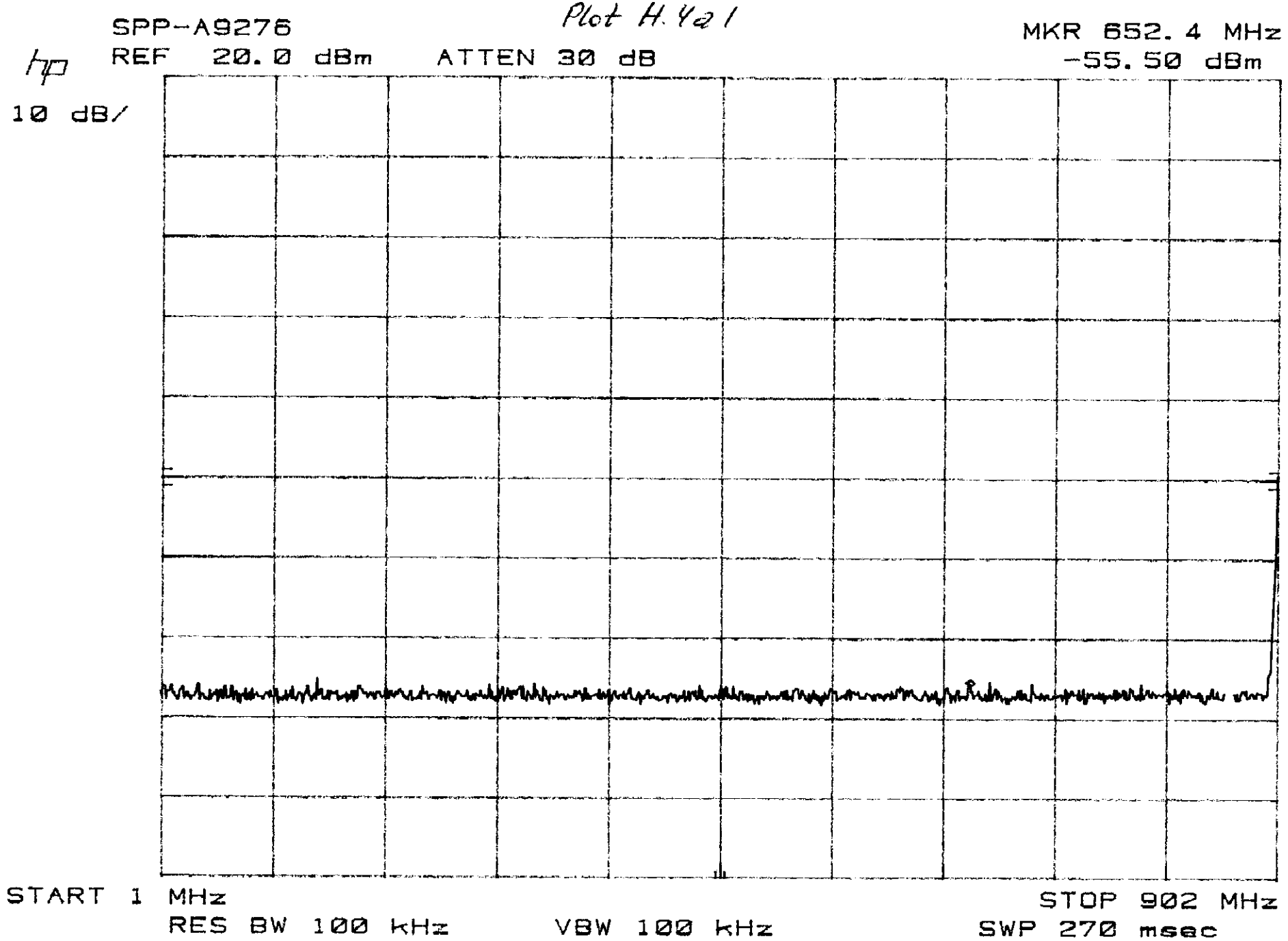

SPP-A9276 BASE
Plot B. Ycl
MKR 442.5 MHz
REF 21.3 dBm
ATTEN 30 dB
-55.10 dBm
hp
10 dB/
OFFSET
1.3
dB
START 1 MHz
STOP 902 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 270 msec

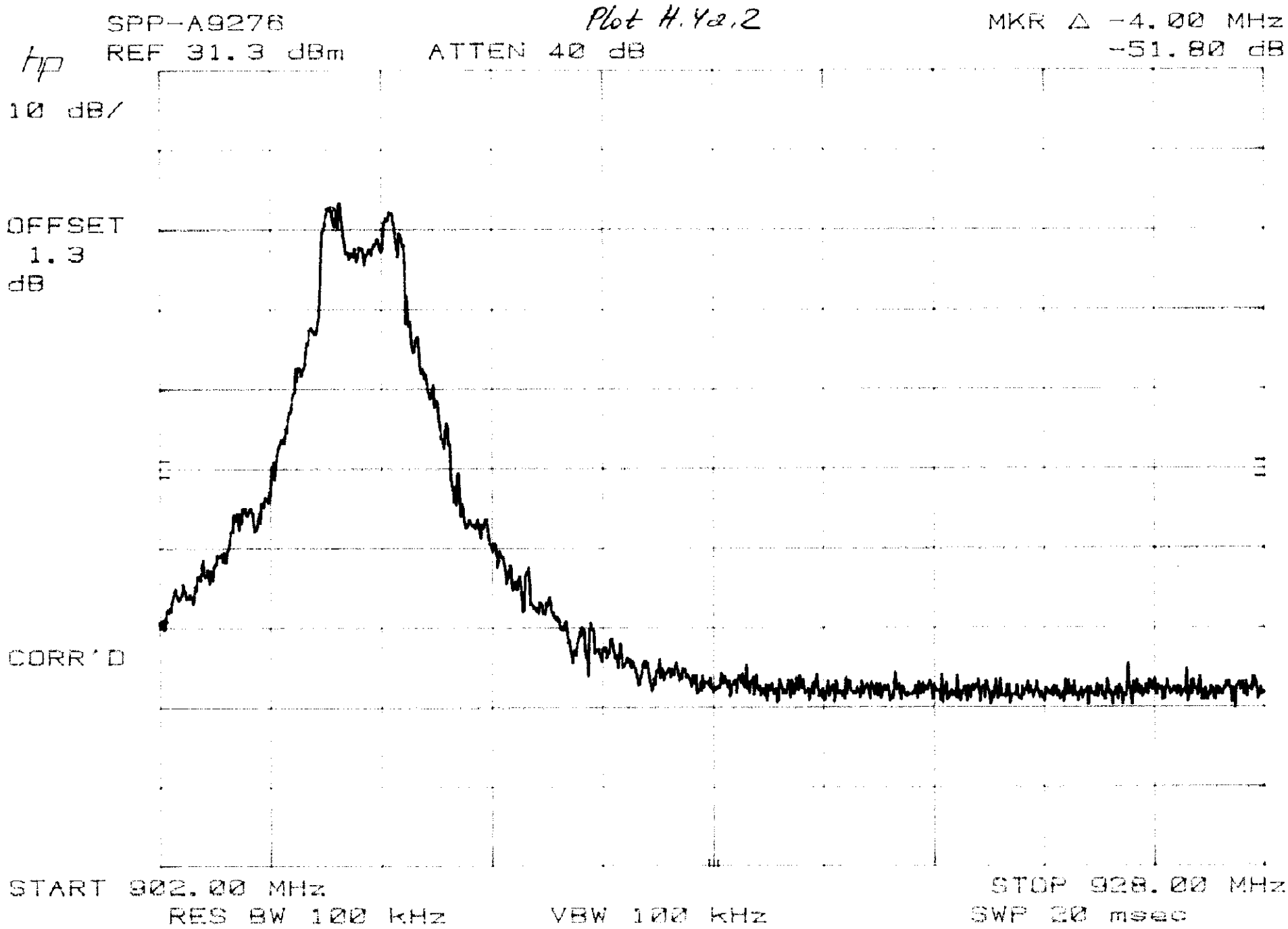

SPP-AS275 BASE
REF 31.3 dBm
ATTEN 40 dB
Plot B.4c2
MKR 922.72 MHz
12.60 dBm
10 dB/
OFFSET
1.3
dB
START 902.0 MHz
RES BW 100 kHz
VBW 100 kHz
STOP 928.0 MHz
SWP 20.0 msec

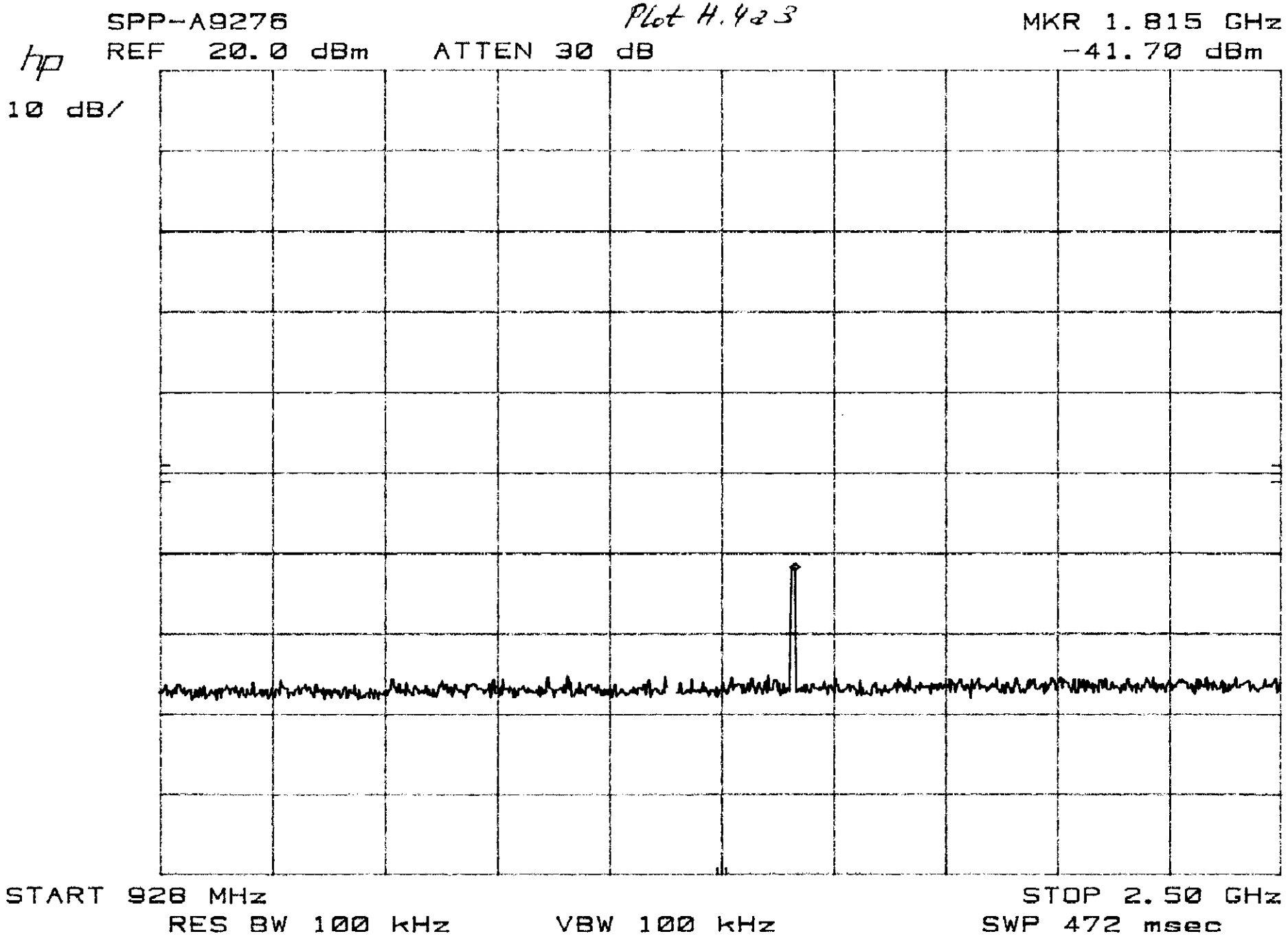

SPP-A9276 BASE
Plot 8.4c.3
MKR 1.849 GHz
REF 21.3 dBm
ATTEN 30 dB
-25.90 dBm
10 dB/
OFFSET
1.3
dB
START 928 MHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 472 msec

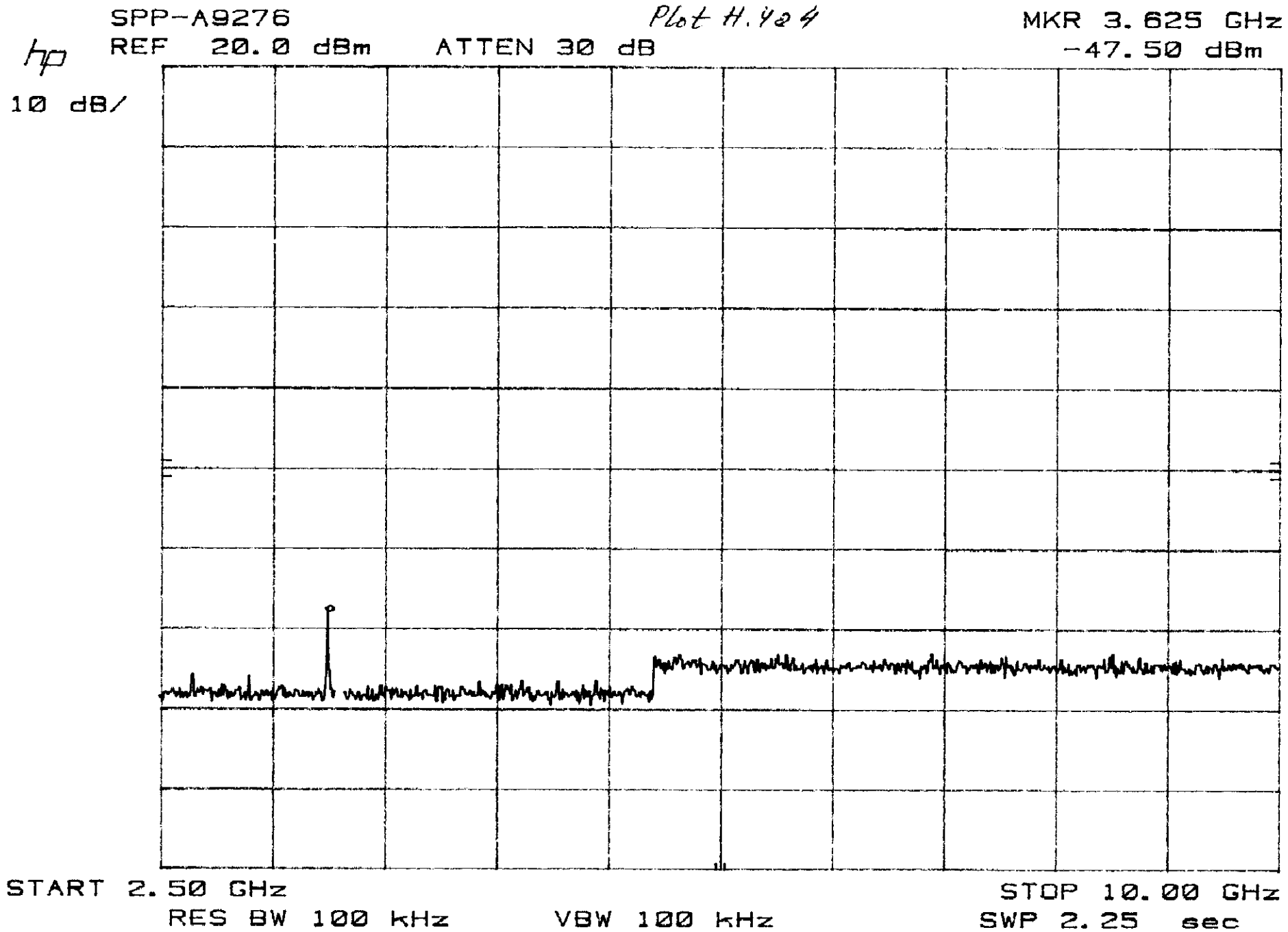

SPP-A9276 BASE
Plot 8.4c4
MKR 3.700 GHz
REF 21.3 dBm
ATTEN 30 dB
-45.00 dBm
hp
10 dB/
OFFSET
1.3
dB
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 2.25 sec

Plot H.4a1


SPP-A9276
hp
REF 20.0 dBm
ATTEN 30 dB
MKR 652.4 MHz
-55.50 dBm
10 dB/
START 1 MHz
STOP 902 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 270 msec


SPP-A9276
Plot H.Ya.2
MKR Δ -4.00 MHz
REF 31.3 dBm
ATTEN 40 dB
-51.80 dB
10 dB/
OFFSET
1.3
dB
CORR'D
START 902.00 MHz
STOP 928.00 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 20 msec


SPP-A9276
Plot 4.423
MKR 1.815 GHz
hp
REF 20.0 dBm
ATTEN 30 dB
-41.70 dBm
10 dB/
START 928 MHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 472 msec


SPP-A9276
Plot H.424
MKR 3.625 GHz
REF 20.0 dBm
ATTEN 30 dB
-47.50 dBm
10 dB/
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 2.25 sec

SPP-A9276

Plot #461

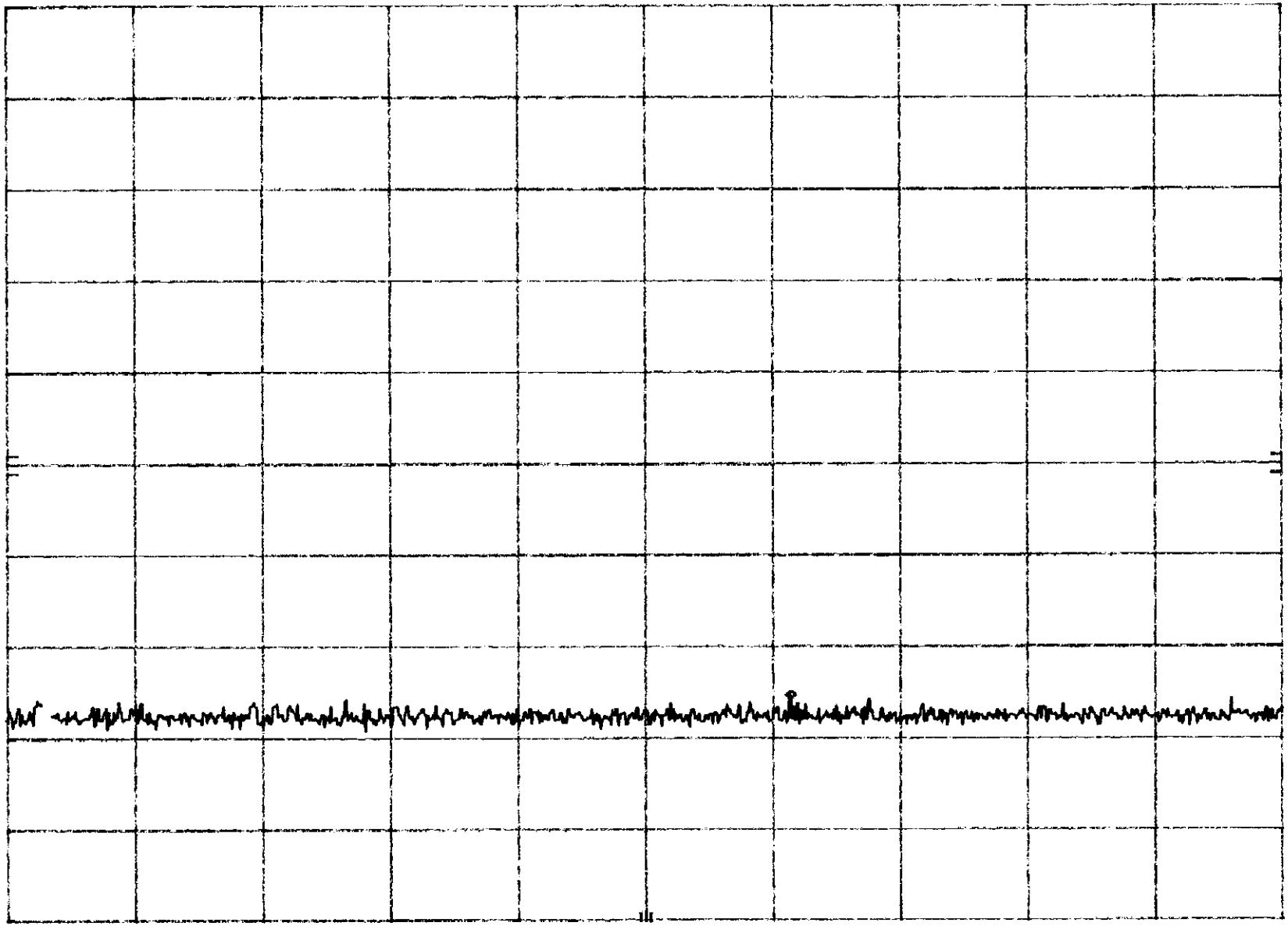
MKR 553.3 MHz

REF 20.0 dBm ATTEN 30 dB

-55.30 dBm

hp

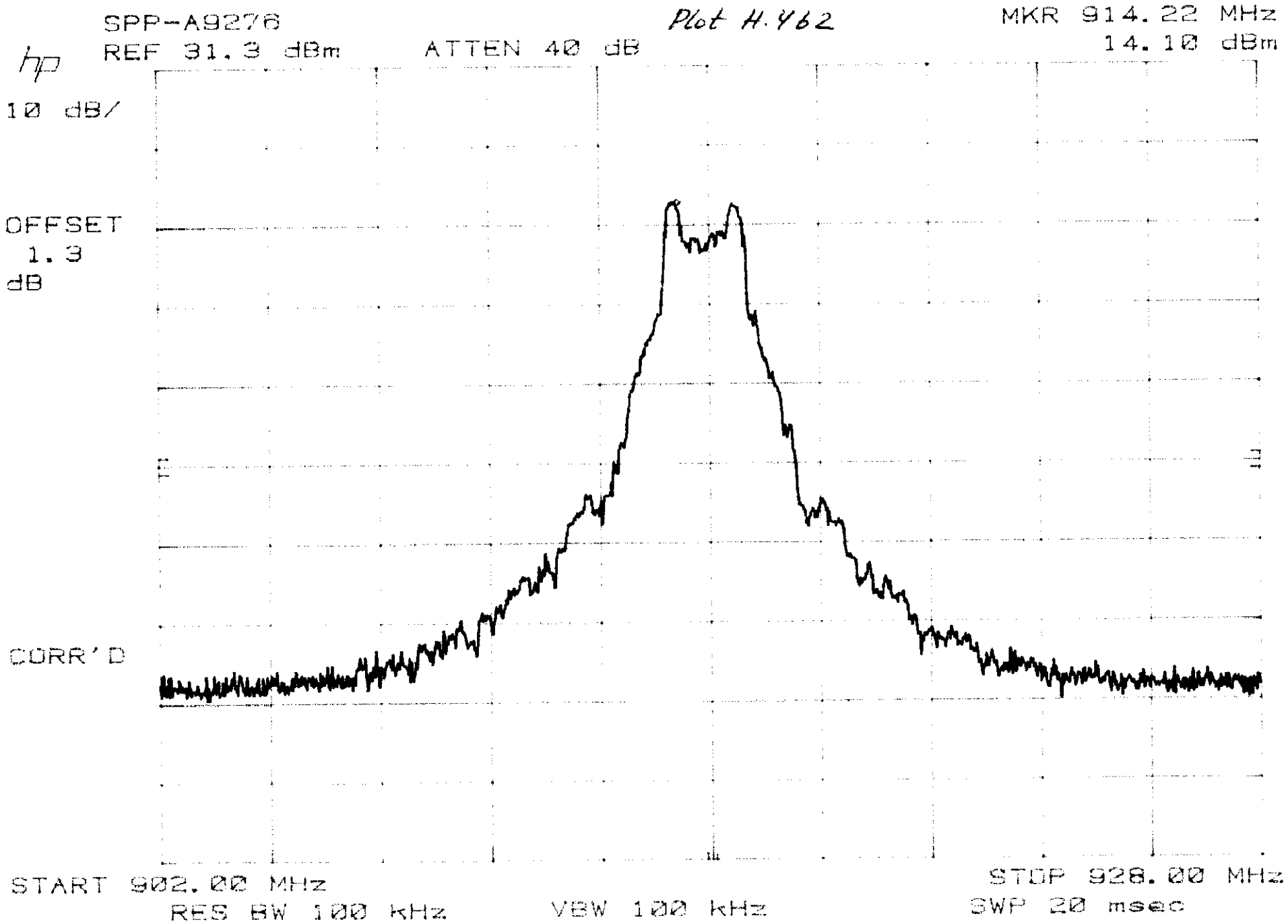
10 dB/

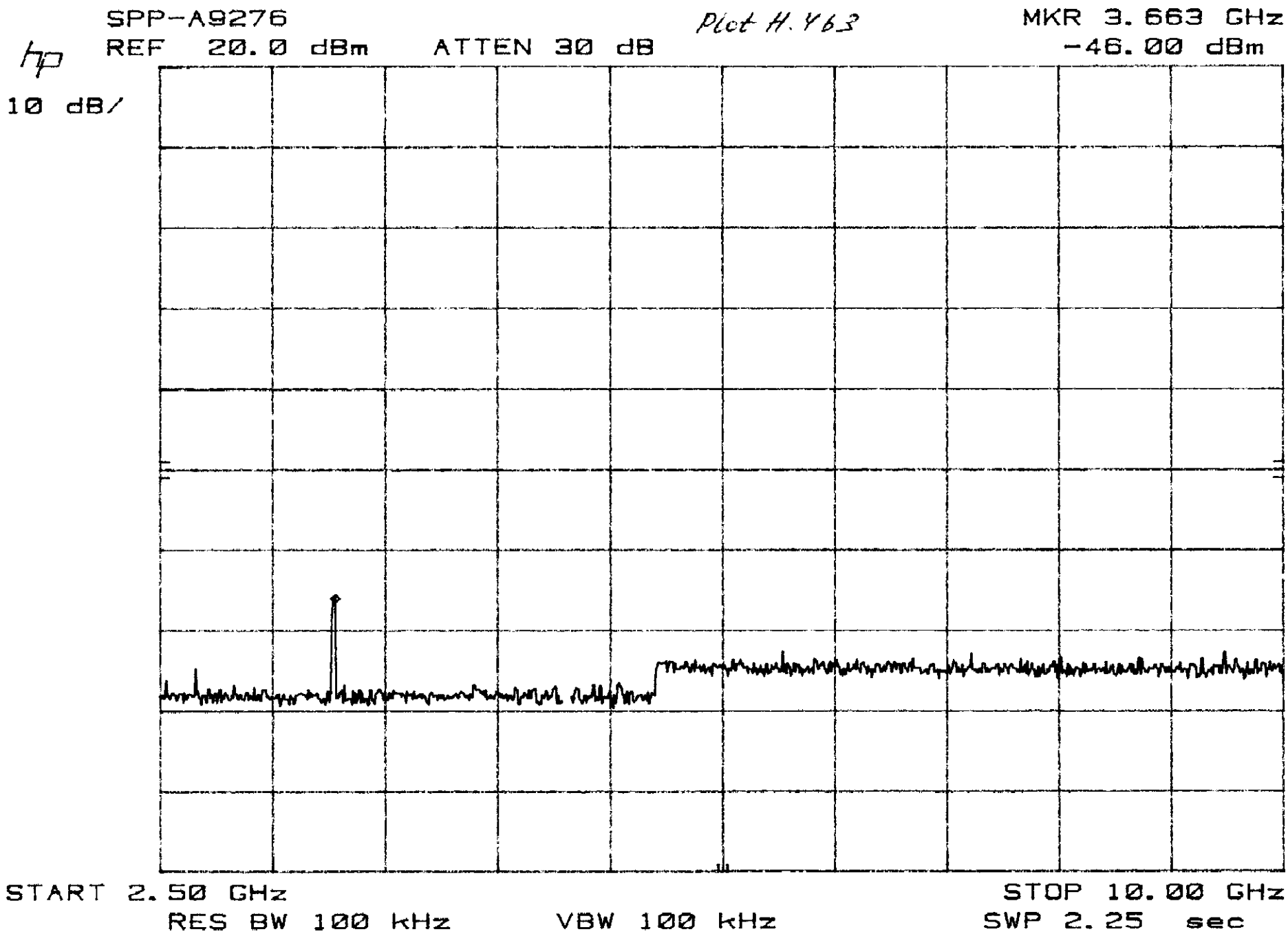


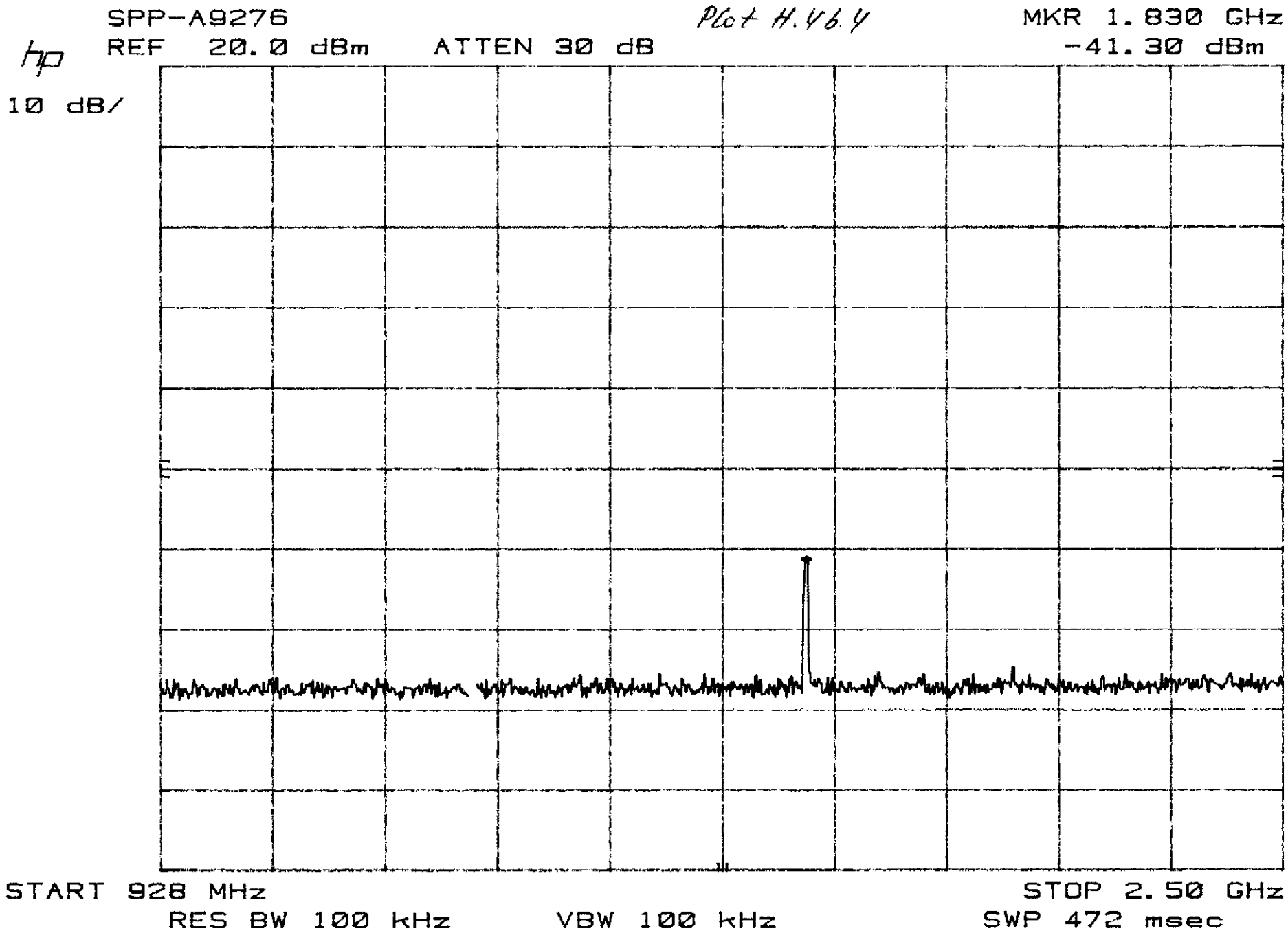
START 1 MHz

STOP 902 MHz

RES BW 100 kHz VBW 100 kHz SWP 270 msec


SPP-A9276
Plot H.462
MKR 914.22 MHz
REF 31.3 dBm
ATTEN 40 dB
14.10 dBm
10 dB/
OFFSET
1.3
dB
CORR'D
START 902.00 MHz
STOP 928.00 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 20 msec


SPP-A9276
Plot H.Y63
MKR 3.663 GHz
REF 20.0 dBm
ATTEN 30 dB
-46.00 dBm
10 dB/
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 2.25 sec


SPP-A9276
Plot H.46.4
MKR 1.830 GHz
REF 20.0 dBm
ATTEN 30 dB
-41.30 dBm
10 dB/
START 928 MHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 472 msec

SPP-A9276

Plot 4.9c1

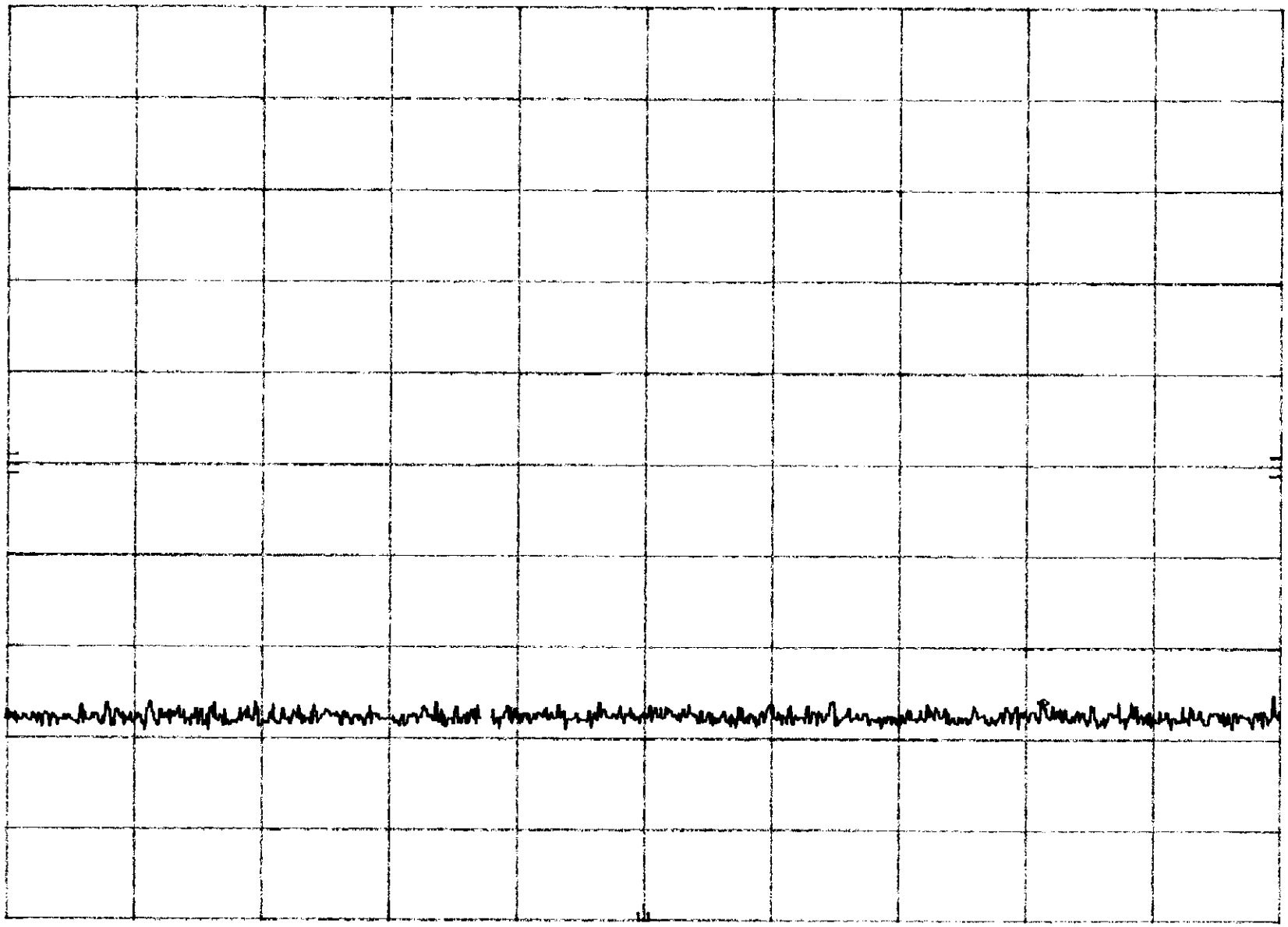
MKR 733.5 MHz

hp

REF 20.0 dBm ATTEN 30 dB

-55.90 dBm

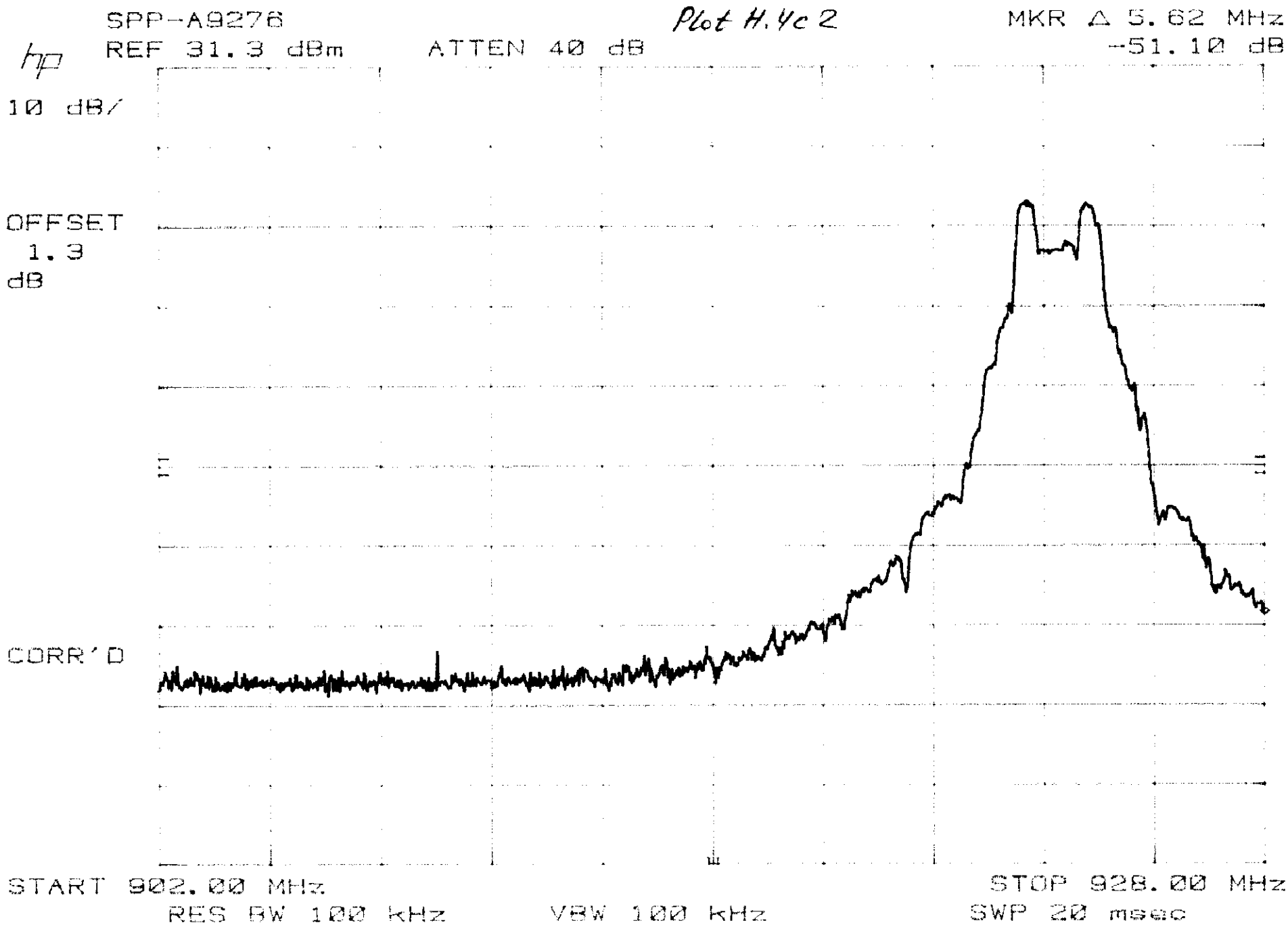
10 dB/

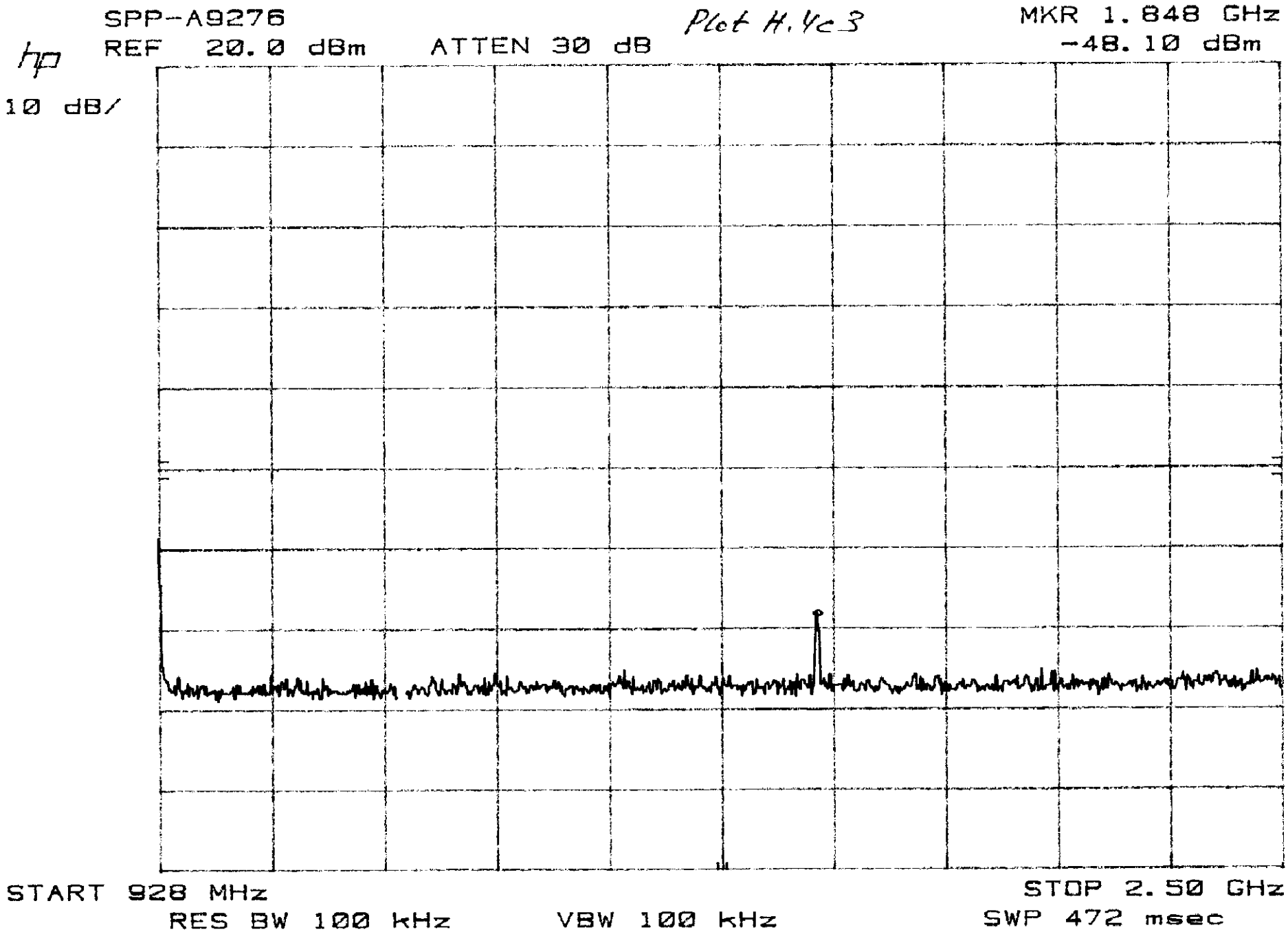


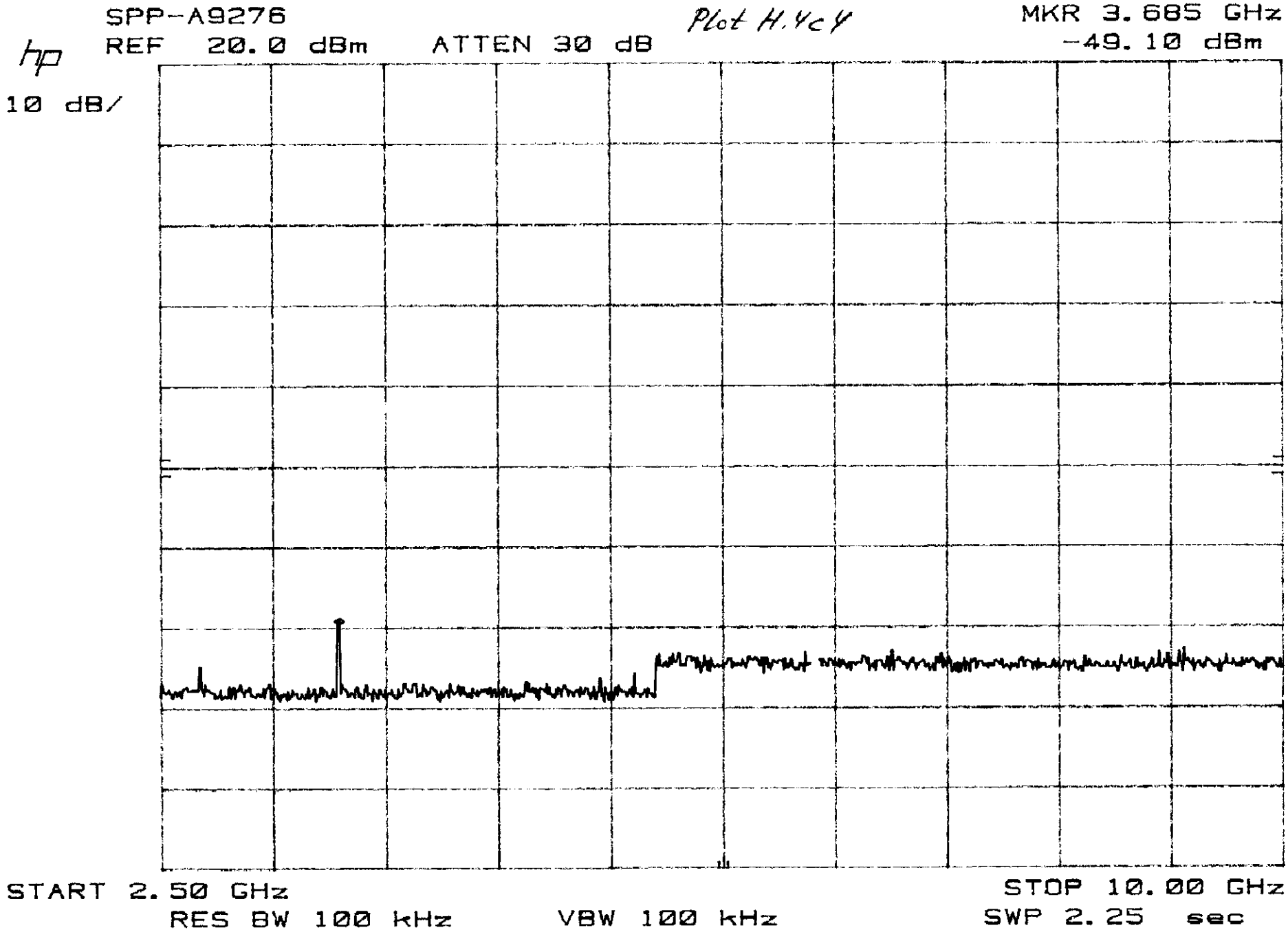
START 1 MHz

STOP 902 MHz

RES BW 100 kHz VBW 100 kHz SWP 270 msec


SPP-A9276
Plot H.4c 2
MKR Δ 5.62 MHz
REF 31.3 dBm
ATTEN 40 dB
-51.10 dB
10 dB/
OFFSET
1.3
dB
CORR'D
START 902.00 MHz
STOP 928.00 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 20 msec


SPP-A9276
Plot H.4c3
MKR 1.848 GHz
hp
REF 20.0 dBm
ATTEN 30 dB
-48.10 dBm
10 dB/
START 928 MHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 472 msec


SPP-A9276
Plot H.4c4
MKR 3.685 GHz
REF 20.0 dBm
ATTEN 30 dB
-49.10 dBm
10 dB/
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 2.25 sec

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

Radiated emission measurements were performed from 30 MHz to 25,000 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 and average detections unless otherwise specified.

Refer to the attached test data.

Radiated Emissions in restricted bands

Companyy:	Sony Corporation			Model #:	Base unit		Standard		FCC § 15.247		
EUT:	Cordless telephone, 900 MHz			S/N #:	37		Limits_		11		
Project #:	J2016882			Test Date:	June 13, 2000		Test Distance		3	meters	
Test Mode:	Normal operation			Engineer:	Bruce G.		Duty Relaxation		0	dB	
	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used	
Number:	1	14	8	4	8	0	0	21	0	0	
Model:	EMCO 3143	EMCO 3115	EMCO 3115	None	CDI_P1000	None	None	Gm_M+L	None	None	

Frequency	eading	Detector	Ant	Amp	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. 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
Tx @923.26												
2769.70E+0	48.0	Peak	8	8	V	30.6	28.4	2.3	0.0	52.5	74.0	-21.5
2769.70E+0	42.7	Ave.	8	8	V	30.6	28.4	2.3	0.0	47.2	54.0	-6.8
3693.00E+0	38.0	Ave.	8	8	V	33.0	27.8	2.7	0.0	45.9	54.0	-8.1
3693.00E+0	45.5	Peak	8	8	V	33.0	27.8	2.7	0.0	53.4	74.0	-20.6
4616.28E+0	43.0	Peak	8	8	V	34.0	28.0	3.2	0.0	52.2	74.0	-21.8
4616.28E+0	35.1	Ave.	8	8	V	34.0	28.0	3.2	0.0	44.3	54.0	-9.7
7386.00E+0	31.2	Ave.	8	8	V	37.0	28.0	4.3	0.0	44.5	54.0	-9.5
7386.00E+0	41.4	Peak	8	8	V	37.0	28.0	4.3	0.0	54.7	74.0	-19.3
8309.30E+0	28.5	Ave.	8	8	V	37.5	27.2	4.8	0.0	43.6	54.0	-10.4
8309.30E+0	38.8	Peak	8	8	V	37.5	27.2	4.8	0.0	53.9	74.0	-20.1
Tx @ 915												
2745.00E+0	49.7	Peak	8	8	V	30.6	28.4	2.3	0.0	54.2	74.0	-19.8
2745.00E+0	44.1	Ave.	8	8	V	30.6	28.4	2.3	0.0	48.6	54.0	-5.4
3659.30E+0	41.7	Ave.	8	8	V	33.0	27.8	2.7	0.0	49.6	54.0	-4.4
3659.30E+0	48.6	Peak	8	8	V	33.0	27.8	2.7	0.0	56.5	74.0	-17.5
4574.97E+0	40.4	Peak	8	8	V	34.0	27.9	3.2	0.0	49.7	74.0	-24.3
4574.97E+0	33.4	Ave.	8	8	V	34.0	27.9	3.2	0.0	42.7	54.0	-11.3
7319.98E+0	28.5	Ave.	8	8	V	37.0	28.0	4.3	0.0	41.8	54.0	-12.2
7319.98E+0	38.5	Peak	8	8	V	37.0	28.0	4.3	0.0	51.8	74.0	-22.2
8235.00E+0	29.2	Ave.	8	8	V	37.5	27.2	4.8	0.0	44.3	54.0	-9.7
8235.00E+0	39.0	Peak	8	8	V	37.5	27.2	4.8	0.0	54.1	74.0	-19.9
9150.00E+0	29.0	Ave.	8	8	V	39.7	26.8	4.7	0.0	46.6	54.0	-7.4
9150.00E+0	39.5	Peak	8	8	V	39.7	26.8	4.7	0.0	57.1	74.0	-16.9
Tx @906.72												
2720.27E+0	43.2	Ave.	8	8	V	30.6	28.4	2.3	0.0	47.7	54.0	-6.3
2720.27E+0	48.2	Peak	8	8	V	30.6	28.4	2.3	0.0	52.7	74.0	-21.3
3627.00E+0	41.2	Ave.	8	8	V	33.0	27.8	2.7	0.0	49.1	54.0	-4.9
3627.00E+0	48.1	Peak	8	8	V	33.0	27.8	2.7	0.0	56.0	74.0	-18.0
4533.76E+0	32.6	Ave.	8	8	V	34.0	27.9	3.2	0.0	41.9	54.0	-12.1
4533.76E+0	43.6	Peak	8	8	V	34.0	27.9	3.2	0.0	52.9	74.0	-21.1
5440.55E+0	31.8	Ave.	8	8	V	35.4	28.3	3.5	0.0	42.4	54.0	-11.6
5440.55E+0	44.0	Peak	8	8	V	35.4	28.3	3.5	0.0	54.6	74.0	-19.4
7254.10E+0	29.3	Ave.	8	8	V	37.0	28.0	4.3	0.0	42.6	54.0	-11.4
7254.10E+0	39.7	Peak	8	8	V	37.0	28.0	4.3	0.0	53.0	74.0	-21.0
8160.80E+0	28.8	Ave.	8	8	V	37.5	27.2	4.8	0.0	43.9	54.0	-10.1
8160.80E+0	39.9	Peak	8	8	V	37.5	27.2	4.8	0.0	55.0	74.0	-19.0
9067.50E+0	28.5	Ave.	8	8	V	39.7	26.8	4.7	0.0	46.1	54.0	-7.9
9067.50E+0	39.3	Peak	8	8	V	39.7	26.8	4.7	0.0	56.9	74.0	-17.1

Radiated Emissions in restricted bands

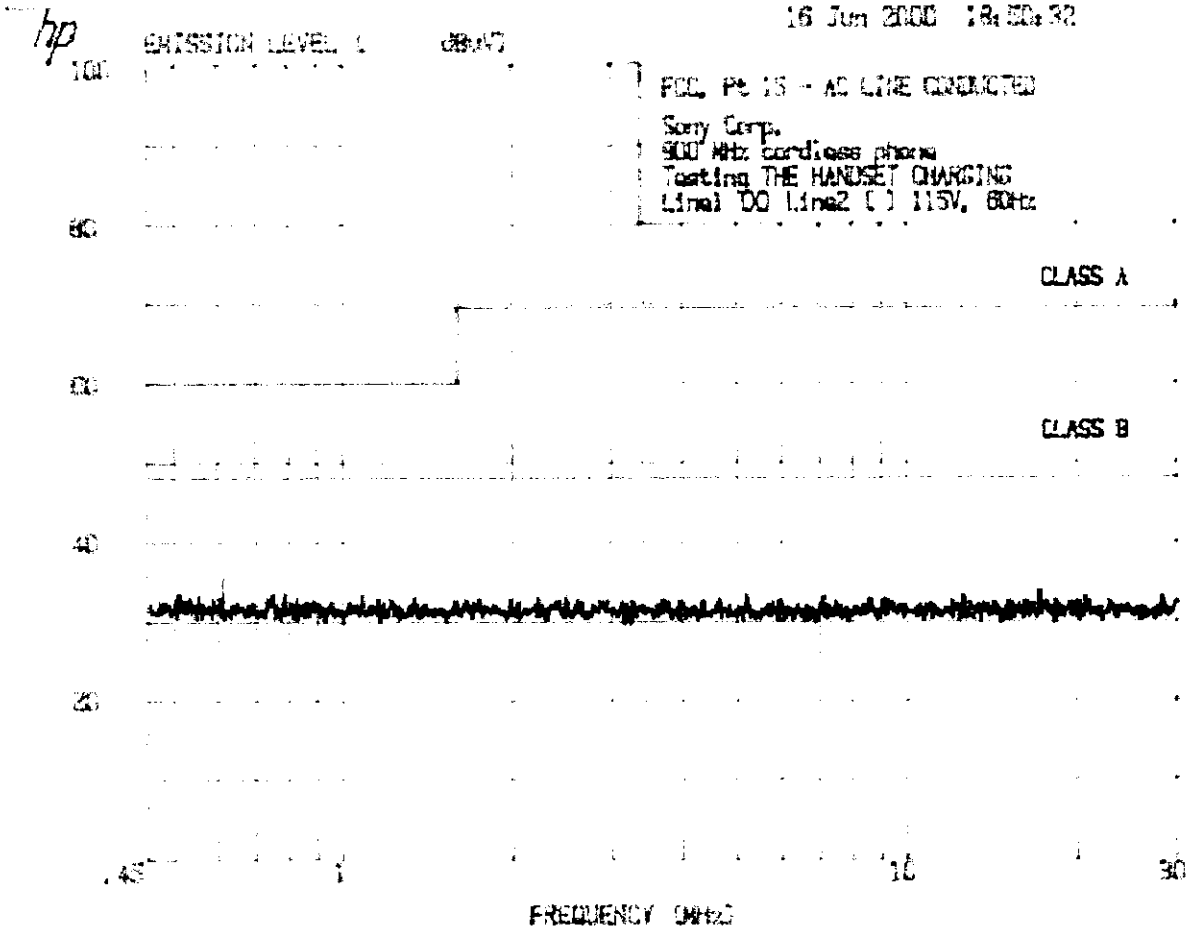
Company:	Sony Corporation	Model #:	Handset	Standard	FCC § 15.247
EUT:	Cordless telephone, 900 MHz	S/N #:		Limits	11
Project #:	J2016882	Test Date:	June 13, 2000	Test Distance	3 meters
Test Mode:	Normal operation	Engineer:	Bruce G.	Duty Relaxation	0 dB

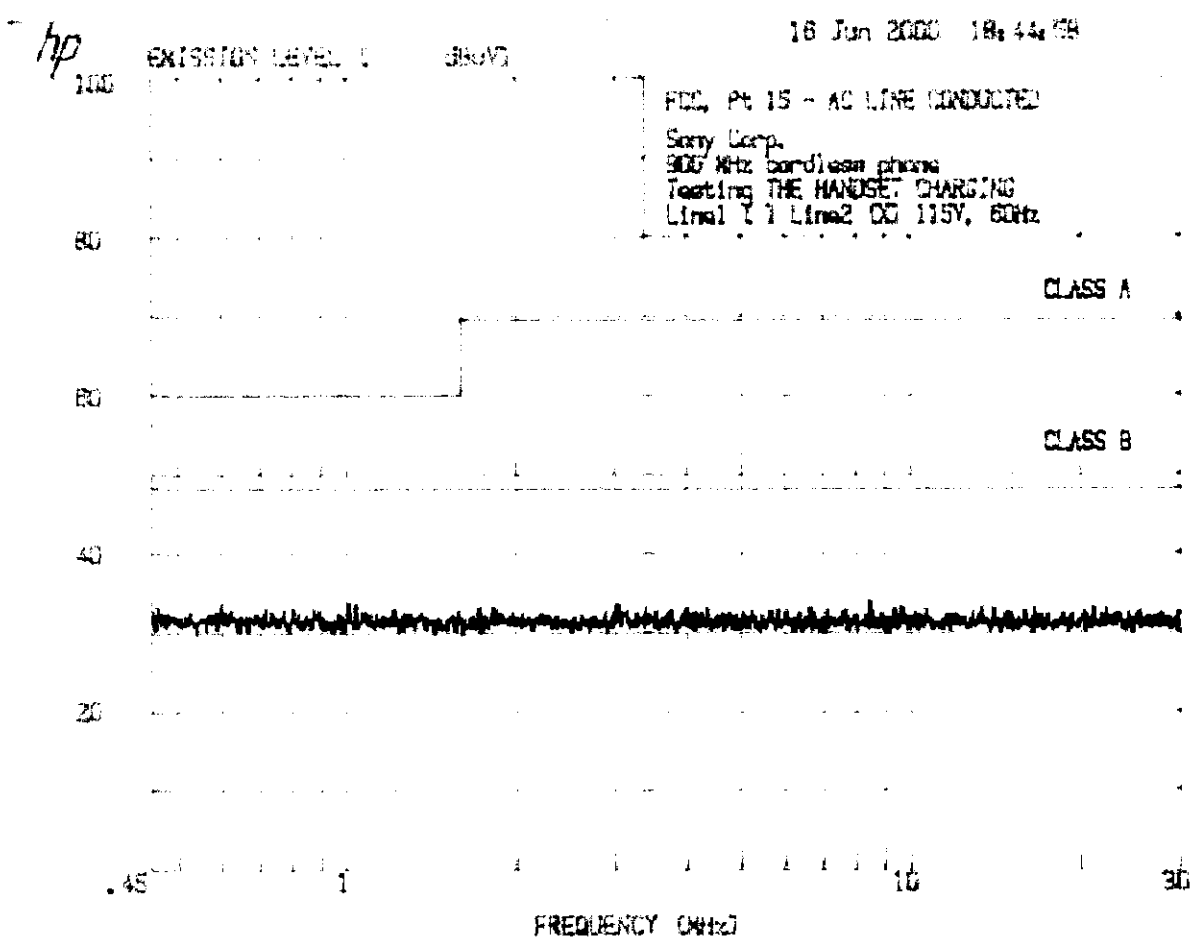
	Antenna Used				Pre-Amp Used			Cable Used			Transducer Used	
Number:	1	14	8		4	8	0	0	21	0	0	
Model:	EMCO 3143	EMCO 3115	EMCO 3115		None	CDI_P1000	None	None	Gm_M+L	None	None	
Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
tx@906.7												
2720.30E+0	48.3	Peak	8	8	V	30.6	28.4	2.3	0.0	52.8	74.0	-21.2
2720.30E+0	42.3	Ave.	8	8	V	30.6	28.4	2.3	0.0	46.8	54.0	-7.2
3627.00E+0	41.0	Ave.	8	8	V	33.0	27.8	2.7	0.0	48.9	54.0	-5.1
3627.00E+0	48.0	Peak	8	8	V	33.0	27.8	2.7	0.0	55.9	74.0	-18.1
4533.80E+0	32.1	Ave.	8	8	V	34.0	27.9	3.2	0.0	41.4	54.0	-12.6
4533.80E+0	42.3	Peak	8	8	V	34.0	27.9	3.2	0.0	51.6	74.0	-22.4
5440.60E+0	33.0	Ave.	8	8	V	35.4	28.3	3.5	0.0	43.6	54.0	-10.4
5440.60E+0	43.0	Peak	8	8	V	35.4	28.3	3.5	0.0	53.6	74.0	-20.4
7254.10E+0	29.0	Ave.	8	8	V	37.0	28.0	4.3	0.0	42.3	54.0	-11.7
7254.10E+0	39.0	Peak	8	8	V	37.0	28.0	4.3	0.0	52.3	74.0	-21.7
8160.80E+0	28.0	Ave.	8	8	V	37.5	27.2	4.8	0.0	43.1	54.0	-10.9
8160.80E+0	39.1	Peak	8	8	V	37.5	27.2	4.8	0.0	54.2	74.0	-19.8
9067.50E+0	28.6	Ave.	8	8	V	39.7	26.8	4.7	0.0	46.2	54.0	-7.8
9067.50E+0	39.3	Peak	8	8	V	39.7	26.8	4.7	0.0	56.9	74.0	-17.1
tx @923.26												
2769.70E+0	48.9	Peak	8	8	V	30.6	28.4	2.3	0.0	53.4	74.0	-20.6
2769.70E+0	40.5	Ave.	8	8	V	30.6	28.4	2.3	0.0	45.0	54.0	-9.0
3692.90E+0	44.0	Peak	8	8	V	33.0	27.8	2.7	0.0	51.9	74.0	-22.1
3692.90E+0	36.7	Ave.	8	8	V	33.0	27.8	2.7	0.0	44.6	54.0	-9.4
4616.28E+0	34.7	Ave.	8	8	V	34.0	28.0	3.2	0.0	43.9	54.0	-10.1
4616.28E+0	45.4	Peak	8	8	V	34.0	28.0	3.2	0.0	54.6	74.0	-19.4
7386.00E+0	30.0	Ave.	8	8	V	37.0	28.0	4.3	0.0	43.3	54.0	-10.7
7386.00E+0	40.0	Peak	8	8	V	37.0	28.0	4.3	0.0	53.3	74.0	-20.7
8309.35E+0	26.2	Ave.	8	8	V	37.5	27.2	4.8	0.0	41.3	54.0	-12.7
8309.35E+0	35.3	Peak	8	8	V	37.5	27.2	4.8	0.0	50.4	74.0	-23.6
tx@915.0												
2745.00E+0	44.0	Ave.	8	8	V	30.6	28.4	2.3	0.0	48.5	54.0	-5.5
2745.00E+0	48.3	Peak	8	8	V	30.6	28.4	2.3	0.0	52.8	74.0	-21.2
3660.00E+0	42.0	Ave.	8	8	V	33.0	27.8	2.7	0.0	49.9	54.0	-4.1
3660.00E+0	48.0	Peak	8	8	V	33.0	27.8	2.7	0.0	55.9	74.0	-18.1
4575.00E+0	38.6	Peak	8	8	V	34.0	27.9	3.2	0.0	47.9	74.0	-26.1
4575.00E+0	34.8	Ave.	8	8	V	34.0	27.9	3.2	0.0	44.1	54.0	-9.9
7320.00E+0	28.0	Ave.	8	8	V	37.0	28.0	4.3	0.0	41.3	54.0	-12.7
7320.00E+0	39.8	Peak	8	8	V	37.0	28.0	4.3	0.0	53.1	74.0	-20.9
8235.00E+0	25.5	Ave.	8	8	V	37.5	27.2	4.8	0.0	40.6	54.0	-13.4
8235.00E+0	35.0	Peak	8	8	V	37.5	27.2	4.8	0.0	50.1	74.0	-23.9
9150.00E+0	35.7	Peak	8	8	V	39.7	26.8	4.7	0.0	53.3	74.0	-20.7
9150.00E+0	25.5	Ave.	8	8	V	39.7	26.8	4.7	0.0	43.1	54.0	-10.9

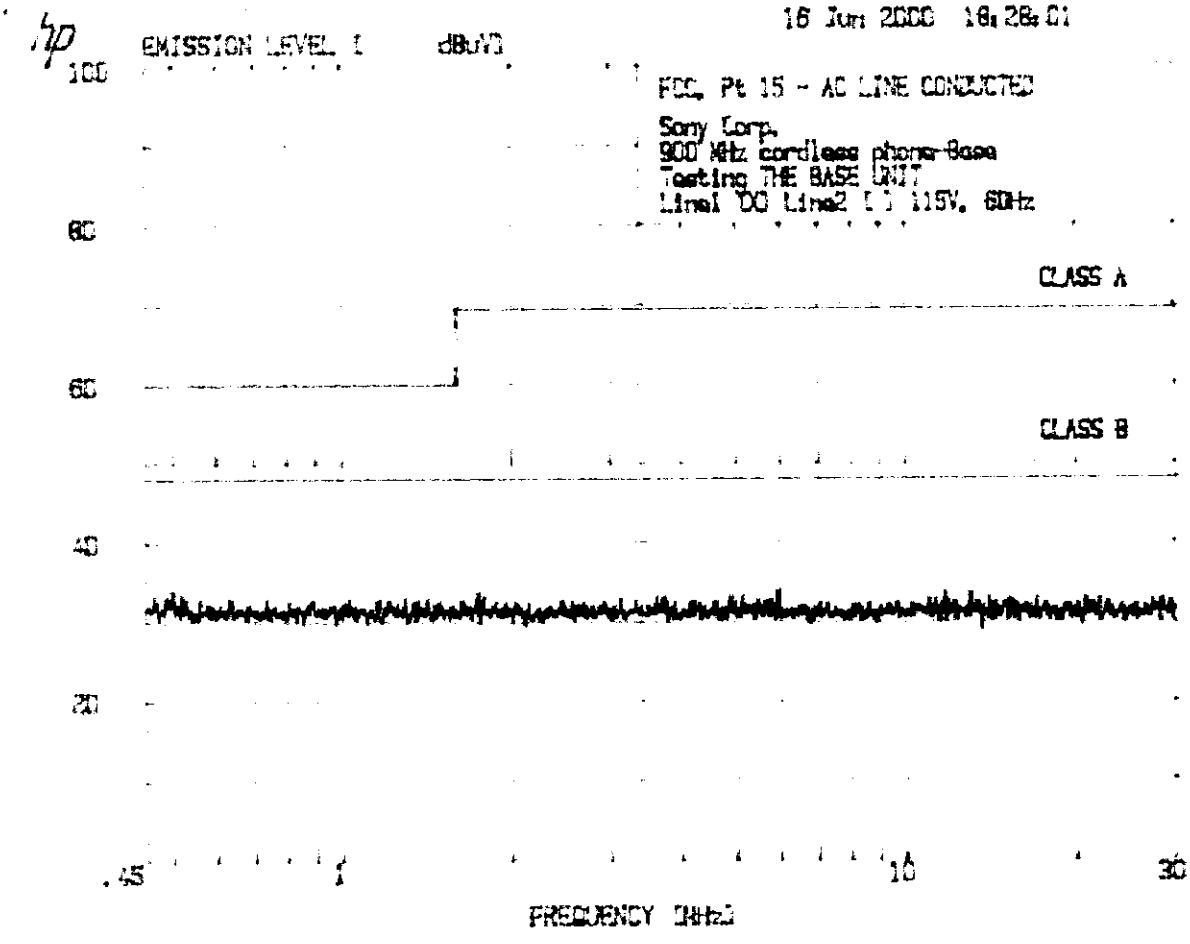
4.7 AC Line Conducted Emission, FCC Rule 15.207:

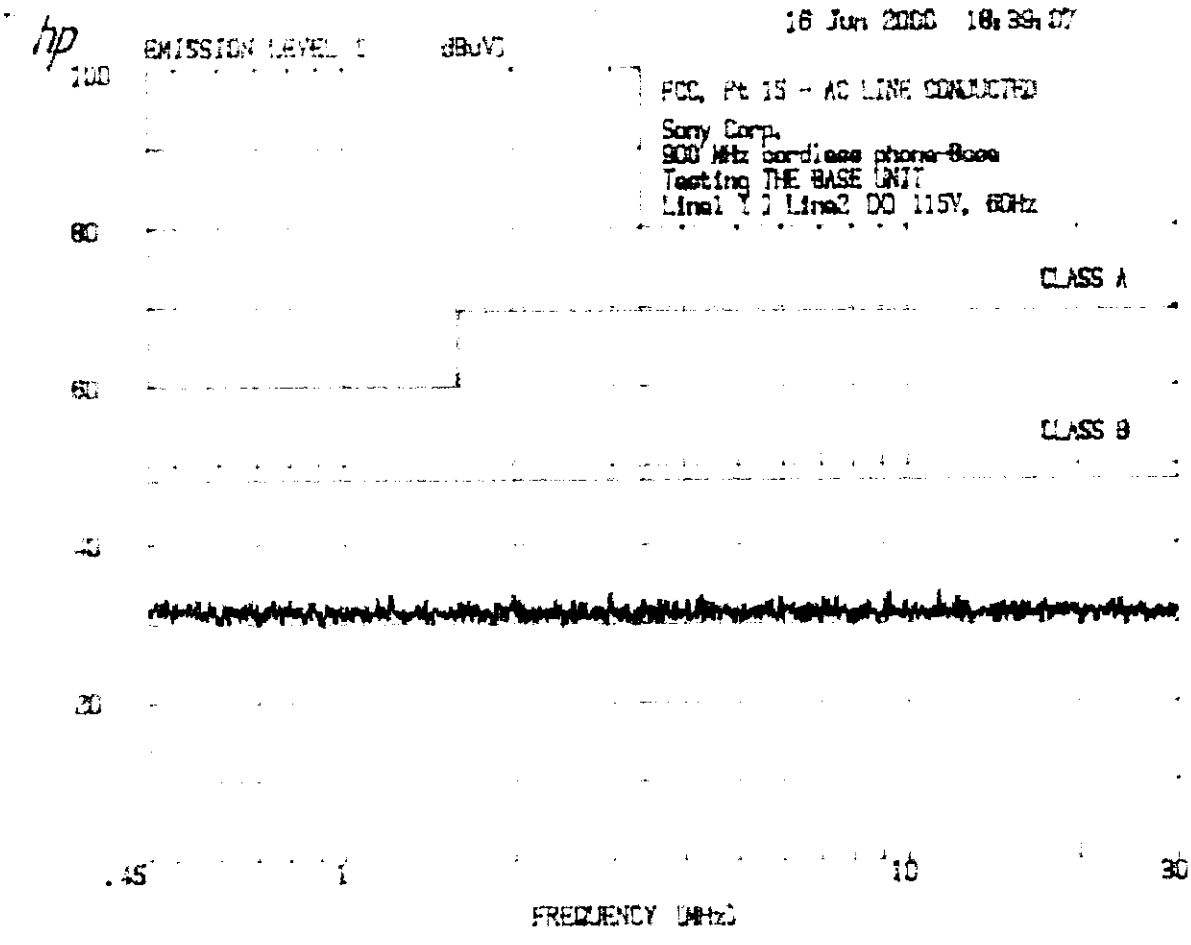
[ ] Not required; battery operation only

[x] Refer to the attached test data.


16 Jun 2000 18:50:32
EMISSION LEVEL (dBuV)
FCC, Pt 15 - AC LINE CONDUCTED
Sony Corp.
900 MHz cordless phone
Testing THE HANDSET CHARGING
Line1 [X] Line2 [ ] 115V, 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY (MHz)


16 Jun 2000 18:44:08
EMISSION LEVEL (dBuV)
FCC, Pt 15 - AC LINE CONDUCTED
Sony Corp.
900 MHz cordless phone
Testing THE HANDSET CHARGING
Line1 [X] Line2 [X] 115V, 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY (MHz)


16 Jun 2000 18:28:01
EMISSION LEVEL 1 dBuV
100
80
60
40
20
FCC, Pt 15 - AC LINE CONDUCTED
Sony Corp.
900 MHz cordless phone-Base
Testing THE BASE UNIT
Line1 DO Line2 [ ] 115V, 60Hz
CLASS A
CLASS B
.45
1
10
30
FREQUENCY (MHz)


16 Jun 2000 18:39:07
EMISSION LEVEL 1 dBuV
100
80
60
40
20
FCC, Pt 15 - AC LINE CONDUCTED
Sony Corp.
900 MHz cordless phone-Base
Testing THE BASE UNIT
Line1 [ ] Line2 DO 115V, 60Hz
CLASS A
CLASS B
.45
1
10
30
FREQUENCY (MHz)

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

[ ] Not required - No digital part
[X] Test results are attached
[ ] Included in the separate DOC report.

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

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

ITS Intertek Testing Services

Radiated emissions

Company:	Sony Corporation	Model #:	Handset	Standard_	FCC § 15B	
EUT:	Cordless telephone, 900 MHz	S/N #:	37	Limits	2	
Project #:	J2016882	Test Date:	June 16, 2000	Test Distance_	3	meters
Test Mode:	Normal operation	Engineer:	Bruce G.	Duty Relaxation	0	dB

	Antenna Used			Pre-Amp Used		Cable Used				Transducer Used
Number:	1	7	9	5	4	0	1	0	0	0
Model:	EMCO 3143	EM LPA-25	EMCO 3104	CDI_P950	None	None	Site 2 3m	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. 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
131.90E+0	17.2	QP	9	4	V	13.0	0.0	2.0	0.0	32.2	43.5	-11.3
250.00E+0	15.0	QP	7	4	V	13.6	0.0	3.0	0.0	31.6	46.0	-14.4
288.00E+0	14.1	QP	7	4	V	14.8	0.0	3.1	0.0	32.0	46.0	-14.0
410.00E+0	6.3	QP	7	4	V	16.2	0.0	3.8	0.0	26.3	46.0	-19.7
502.00E+0	5.5	QP	7	4	V	18.4	0.0	4.3	0.0	28.2	46.0	-17.8
681.00E+0	3.0	QP	7	4	V	20.7	0.0	5.6	0.0	29.3	46.0	-16.7

ITS Intertek Testing Services

Radiated emissions

Company:	Sony Corporation	**Model #:**	Base unit	**Standard_**	**FCC § 15B**	
EUT:	Cordless telephone, 900 MHz	**S/N #:**	37	**Limits**	2	
Project #:	J2016882	**Test Date:**	June 16, 2000	**Test Distance_**	3	meters
Test Mode:	Normal operation	**Engineer:**	Bruce G.	**Duty Relaxation**	0	dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	1	7	9	5	4	0	1	0	0	0
Model:	EMCO 3143	EM LPA-25	EMCO 3104	CDI_P950	None	None	Site 2 3m	None	None	None

Frequency	Reading	Detector	Ant.	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. 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
131.07E+0	23.5	QP	9	4	V	13.2	0.0	2.0	0.0	38.7	43.5	-4.8
262.13E+0	23.2	QP	7	4	V	14.2	0.0	3.0	0.0	40.4	46.0	-5.6
300.00E+0	14.9	QP	7	4	V	15.5	0.0	3.2	0.0	33.6	46.0	-12.4
305.00E+0	8.0	QP	7	4	V	16.0	0.0	3.2	0.0	27.2	46.0	-18.8
310.00E+0	8.0	QP	7	4	V	16.4	0.0	3.2	0.0	27.6	46.0	-18.4
327.65E+0	23.5	QP	7	4	V	16.2	0.0	3.2	0.0	42.9	46.0	-3.1

4.10 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.

4.11 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(DC)

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

5.0 Miscellaneous Information or Other Comments

None.