ITS Intertek Testing Services
ETL SEMKO

FCC Parts 22 and 24 Test Report

Performed on the

TDMA/AMPS Cellular and PCS Telephone
Model: TCD588
For
Philips Consumer Communications
FCC ID: M7VTCD588

Date of Test: March 7-9, 2000

Report #: J20004218

Total No. of Pages Contained in this Report: 20 + data pages

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FCC Parts 22, 24 Certification, Ver 7/98

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1.0 Introduction

1.1 Test Summary

FCC RULE	DESCRIPTION OF TEST	RESULT	PAGE
2.1046	RF Power Output	Pass	3
22.913, 24.232	ERP, EIRP	Pass	4
2.1047	Modulation Requirements	Pass	5
22.915(d)(1)	Audio Filter Characteristics	Pass	8
2.1049 22.917(b)(d)	Emission Limitation, Occupied Bandwidth	Pass	11
2.1051, 22.917(e) 22.917(f), 24.238(a)	Out of Band Emissions at Antenna Terminals Mobile Emissions In Base Frequency Range	Pass	13
2.1053	Field Strength of Spurious Radiation	Pass	14
15.107	Line Conducted Emissions	Pass	15
2.1055	Frequency Stability vs. Temperature	Pass	16
2.1055	Frequency Stability vs. Voltage	Pass	17
2.1091, 2.1093	Specific Absorption Rate	Pass	18

Tested By: _____ _____
Ollie Moyrong Date

Approved By: _____ _____
David Chernomordik Date

Philips Consumer Communications, TDMA/AMPS Cellular Phone Date of Test: March 7-9, 2000
FCC ID: M7VTCD588

1.2 Product Description

The Philips Consumer Communications Model TCD 588 is a dual mode, dual band TDMA and AMPS cellular radio telephone.

For more information, please refer to the attached product description.

Use of Product	Portable Cellular and PCS Phone
Whether quantity (>1) production is planned	[X] Yes, [ ] No
Cellular Phone standards	[X] AMPS [X] TDMA
Type(s) of Emission	40K0F8W, 40K0F1D, 30K0G7D
Allowed Deviation	12± 10% (AMPS mode)
Range of RF Output	27.1 dBm
Frequency Range	824 - 849 (AMPS & TDMA), 1850 - 1910 (TDMA)
Antenna(e) & Gain	0 dBi
Detachable antenna ? Receiver L.O. frequency External input	[ ]Yes [X] No [X] Audio [ ] Digital Data

1.3 Related Submittal(s) Grants

[X] None

[ ] DOC for computer section, a separate DOC is prepared.

2.0 RF Power Output, FCC §2.1046

2.1 Test Procedure

The transmitter output was connected to a calibrated coaxial attenuator, the other end of which was connected to a spectrum analyzer. Transmitter output was read off the spectrum analyzer in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the spectrum analyzer reading. An HP power meter was also used to measure the RF power.

Tests were performed at three frequencies (low, middle, and high channels) and on all power levels which can be setup on the transmitters.

2.2 Test Equipment

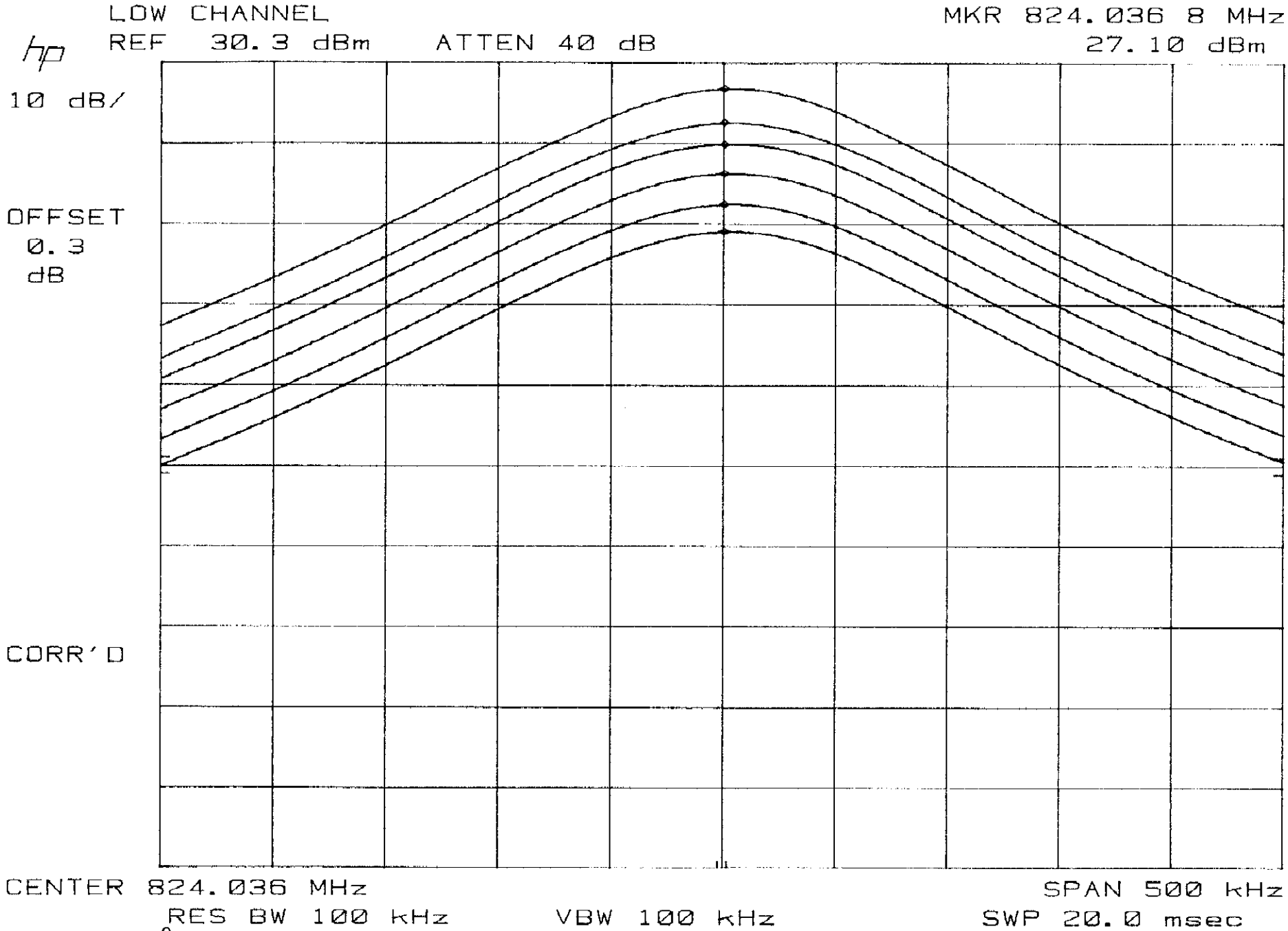
Hewlett Packard 8481A Power Sensor, 435B Power Meter
Hewlett Packard HP8566B Spectrum Analyzer, 100 Hz - 22 GHz
Tektronix 2784 Spectrum Analyzer, 100 Hz - 40 GHz

2.3 Test Results

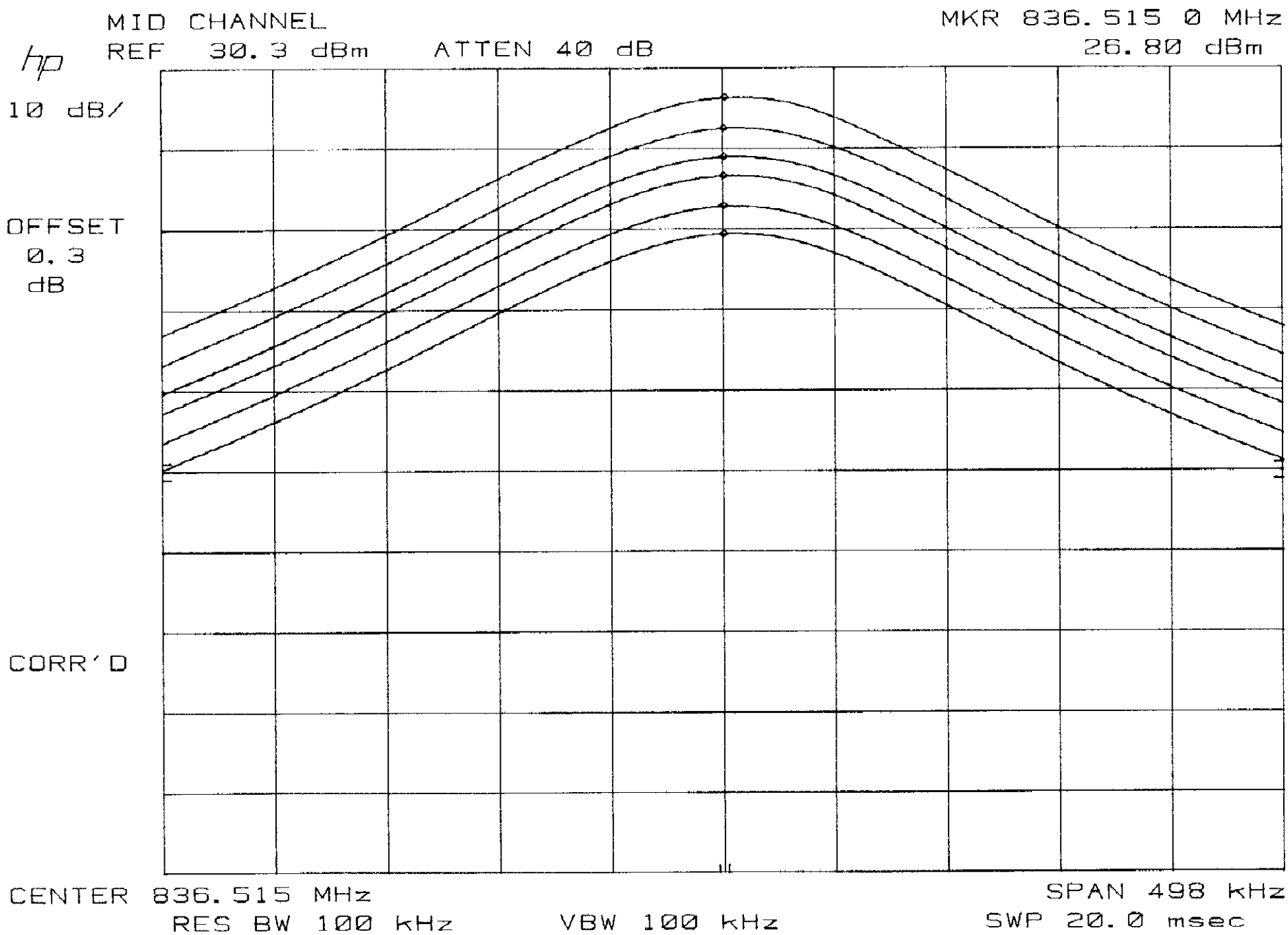
Frequency (MHz)	Measured Power (dBm)
824	27.1
836.5	26.8
849	25.8
1850	26.8
1880	23.6
1909.9	23.7

For more details refer to the attached plots:

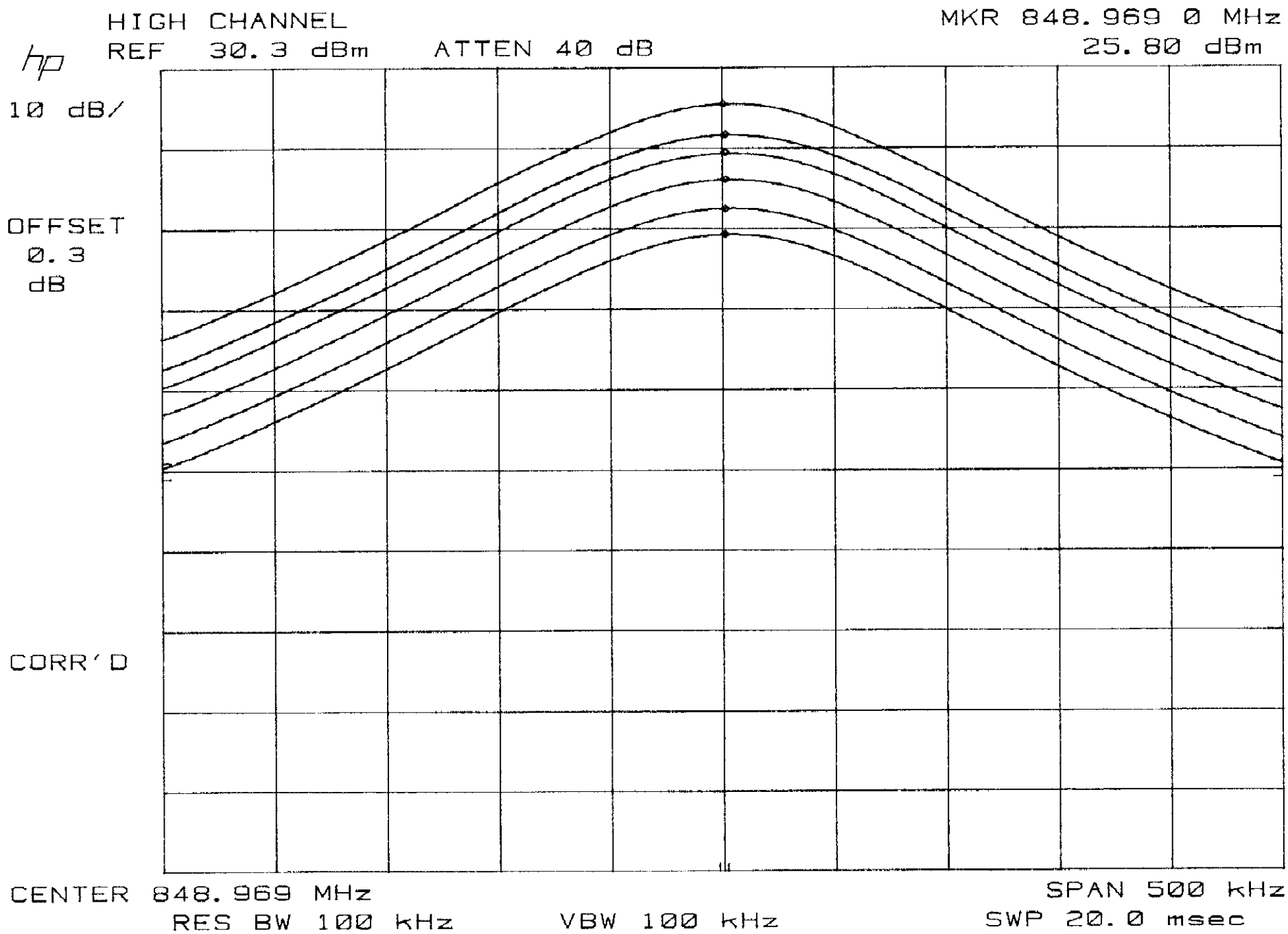
AMPS Mode	
Plot Number	Description
2.3.a	Low Channel
2.3.b	Middle Channel
2.3.c	High Channel
TDMA Mode	
Plot Number	Description
2.3.d	Low Channel
2.3.e	Middle Channel
2.3.f	High Channel


LOW CHANNEL
REF 30.3 dBm
ATTEN 40 dB
MKR 824.036 8 MHz
27.10 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
CENTER 824.036 MHz
SPAN 500 kHz
RES BW 100 kHz
VBW 100 kHz
SWP 20.0 msec

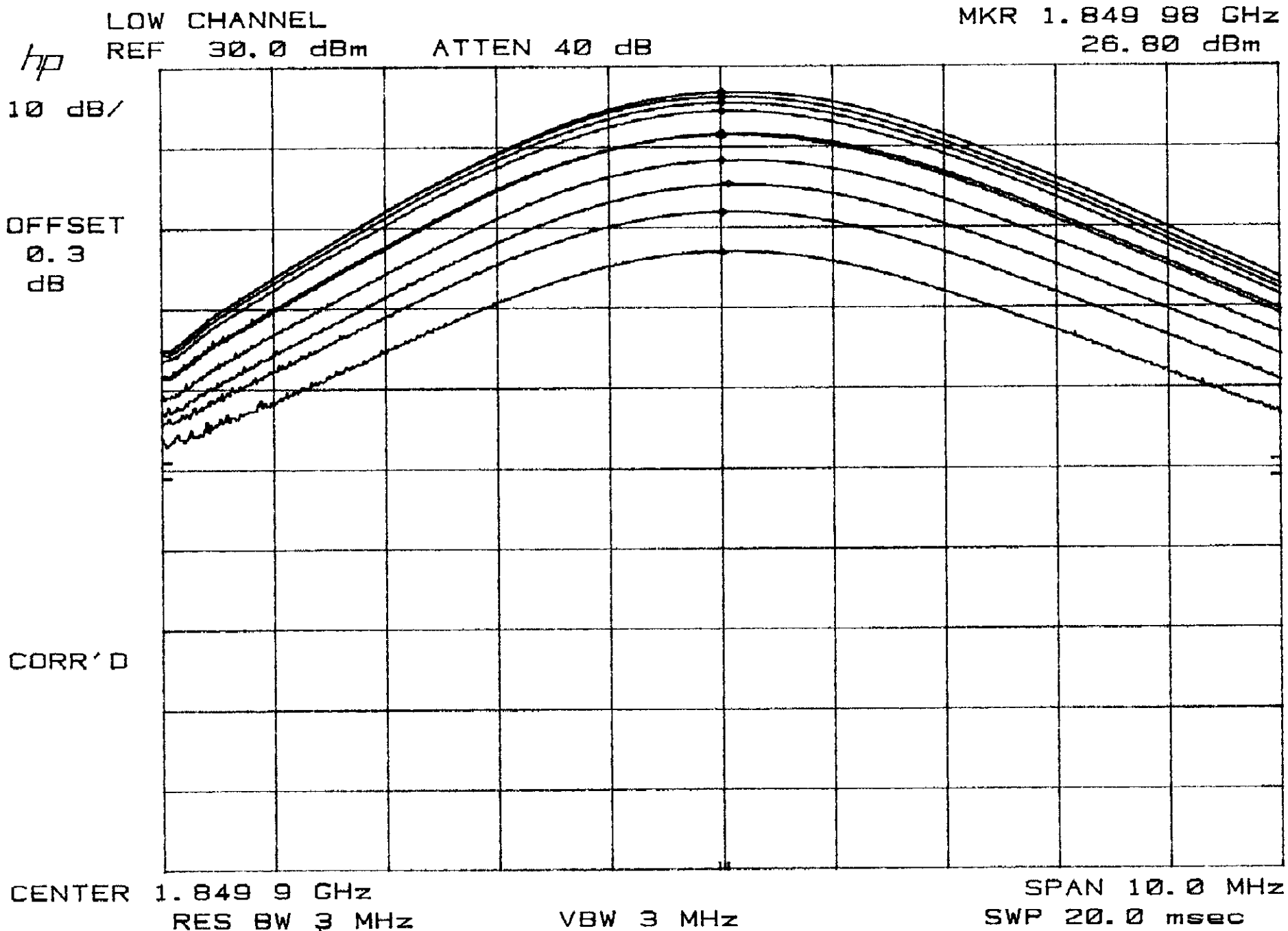
Plot 2.3.a


MID CHANNEL
REF 30.3 dBm
ATTEN 40 dB
MKR 836.515 0 MHz
26.80 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
CENTER 836.515 MHz
SPAN 498 kHz
RES BW 100 kHz
VBW 100 kHz
SWP 20.0 msec

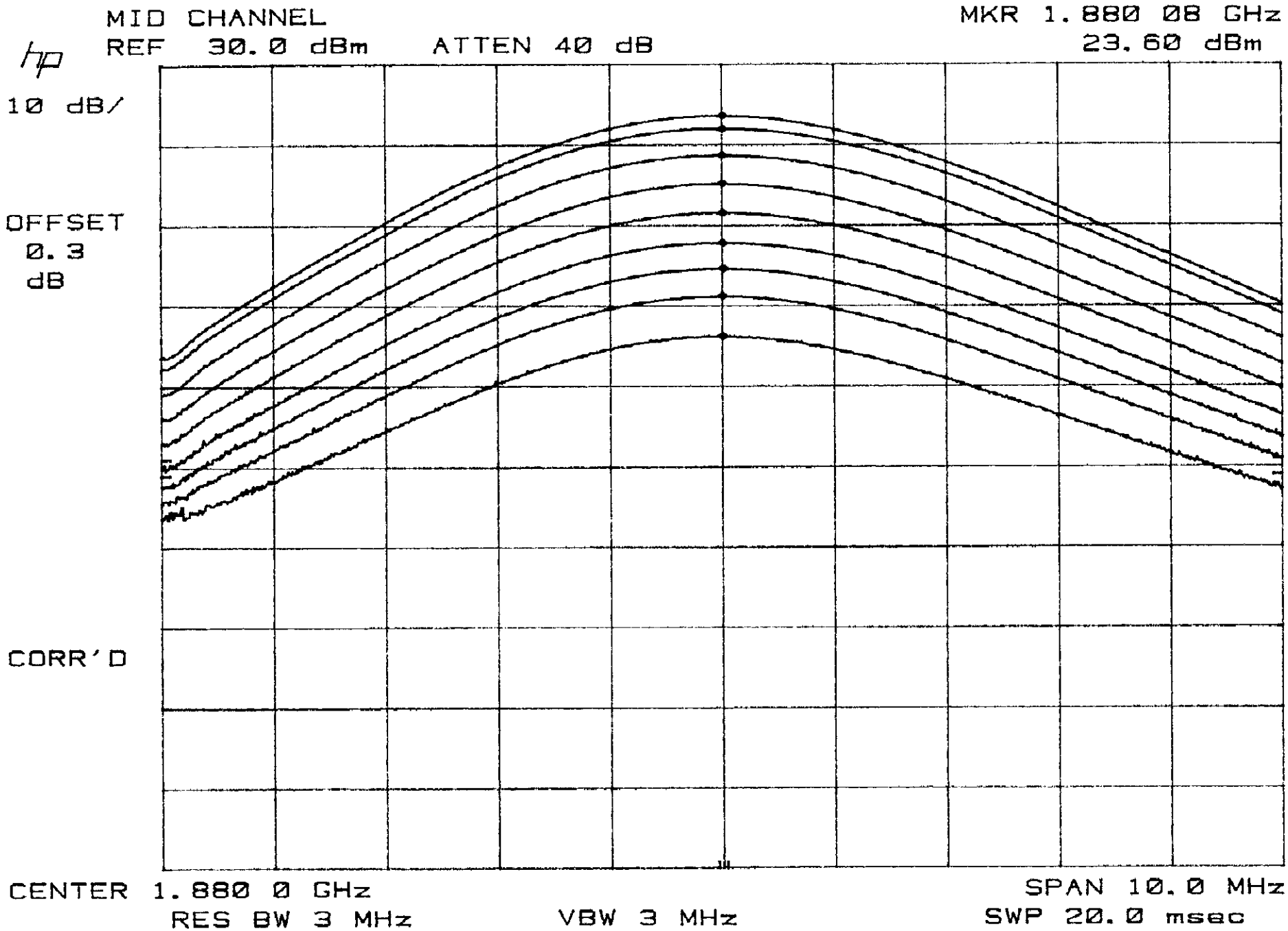
Plot 2.3.6


HIGH CHANNEL
REF 30.3 dBm
ATTEN 40 dB
MKR 848.969 0 MHz
25.80 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
CENTER 848.969 MHz
SPAN 500 kHz
RES BW 100 kHz
VBW 100 kHz
SWP 20.0 msec

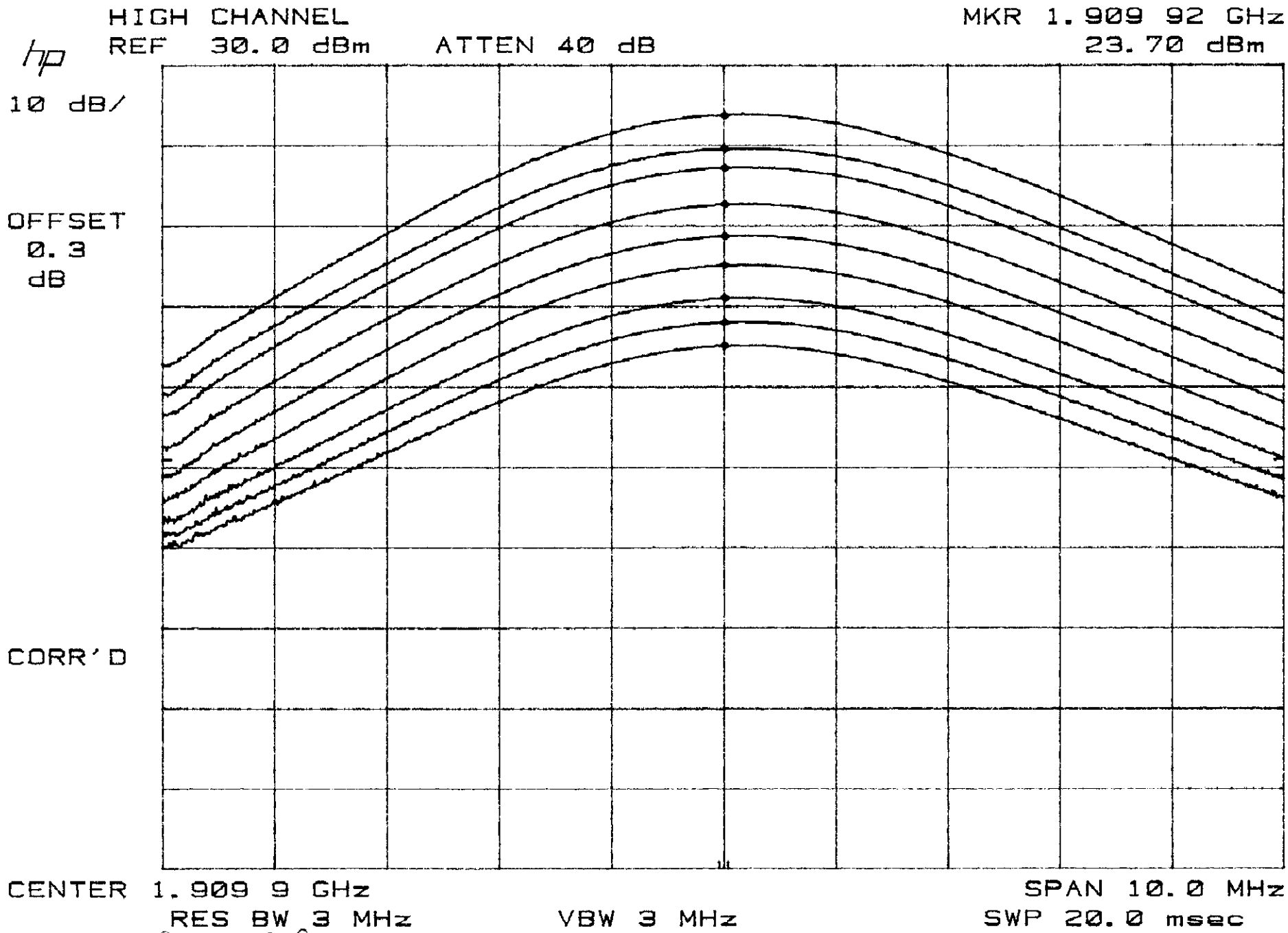
Plot 2.3.C


LOW CHANNEL
REF 30.0 dBm
ATTEN 40 dB
MKR 1.849 98 GHz
26.80 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
CENTER 1.849 9 GHz
RES BW 3 MHz
VBW 3 MHz
SPAN 10.0 MHz
SWP 20.0 msec

Plot 2.3.d


MID CHANNEL
REF 30.0 dBm
ATTEN 40 dB
MKR 1.880 00 GHz
23.60 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
CENTER 1.880 0 GHz
RES BW 3 MHz
VBW 3 MHz
SPAN 10.0 MHz
SWP 20.0 msec

Plot 2.3.e.


HIGH CHANNEL
MKR 1.909 92 GHz
REF 30.0 dBm
ATTEN 40 dB
23.70 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
CENTER 1.909 9 GHz
SPAN 10.0 MHz
RES BW 3 MHz
VBW 3 MHz
SWP 20.0 msec

Plot 2.3.f

Philips Consumer Communications, TDMA/AMPS Cellular Phone Date of Test: March 7-9, 2000
FCC ID: M7VTCD588

3.0 Radiated Power

FCC э 22.913

The Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC э 24.232

The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

3.1 Test Procedure

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane on an open test site.

The radiated emission at the fundamental frequency was measured at 3m distance with a test antenna and spectrum analyzer. During the measurement, the resolution and video bandwidths of the spectrum analyzer were set to 100 kHz (for frequencies below 1 GHz) and 1 MHz (for frequencies above 1 GHz).

Worst case emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna. The spectrum analyzer reading was recorded and the field strength (E in dBuV/m) was calculated. ERP & EIRP in dBm were calculated as follows:

$$ERP = E - 97.4; \qquad EIRP = E - 95.3$$

In addition, ERP in frequency band 824-849 MHz was measured using a substitution method. The EUT was replaced by half-wave dipole connected to a signal generator. The spectrum analyzer reading was recorded and ERP was calculated as follows:

$$ERP = R_1 - R_2 + V_g,$$

where R_1 & R_2 are spectrum analyzer readings in dBuV when measured field strength from EUT & generator accordingly; V_g is the generator output in dBm

3.2 Test Equipment

Hewlett Packard HP8566B Spectrum Analyzer
EMCO 3148 Log Periodic Antenna
EMCO 3115 Horn Antenna
CDI Robert's Antenna
Rohde & Schwarz SMH 44 signal generator

3.3 Test Results

Passes	Refer to the attached data sheets.

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Tx @ 824.04 MHz, 836.5 MHz, and 848.97 MHz
Engineer:	Ollie Moyrong
Date:	March_6_2000

Radiated Power

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	ERP (dBm)
824.0	3.0	V	100.7	23.3	0.0	0.0	2.0	126.0	28.6
836.5	3.0	V	100.8	23.4	0.0	0.0	2.0	126.2	28.8
849.0	3.0	V	101.3	23.4	0.0	0.0	2.0	126.7	29.3

Job No.: J20004218
Company: Phlips
Model: OZEO
Test Mode: Tx @ 824.04 MHz, 836.5 MHz, and 848.97 MHz
Date : March 6, 2000

Radiated Power (Substitution Method)

Freq. (MHz)	Antenna Polarizatio n (H/V)	Spectrum Analyzsr Reading (dBuV)	Spectrum Analyzer Reading Signal Gen. + Tuned Dipole db(uV)	Signal Generator Power dBm	ERP (dBm)
824.0	V	100.7	92.5	17.0	25.2
836.5	V	100.8	91.3	17.0	26.5
849.0	V	101.3	90.7	17.0	27.6

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Tx @ 1850 MHz, 1879.9 MHz, and 1909.9 MHz
Engineer:	Ollie Moyrong
Date:	March_6_2000

Radiated Power

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	EIRP (dBm)
1850.0	3.0	V	88.6	30.1	0.0	0.0	3.1	121.8	26.5
1879.9	3.0	V	83.6	30.1	0.0	0.0	3.1	116.8	21.5
1909.9	3.0	V	82.9	30.1	0.0	0.0	3.1	116.1	20.8

4.0 **Modulation Deviation Limiting**, FCC § 2.1047, § 22.915(b)(c)

4.1 Test Procedure

The RF output of the transceiver was connected to the input of an FM deviation meter through sufficient attenuation so as not to overload the meter or distort the readings. An audio signal generator with a variable attenuator on the output was coupled into the external microphone jack of the transceiver, or alternatively, the microphone element was removed and the generator output was connected to the microphone wires by clip leads.

At three different modulating frequencies, the output level of the audio generator was varied and the FM deviation level was recorded (Table 4.1a).

In addition, the audio signal was adjusted to obtain 8 kHz deviation at 1 kHz modulation frequency. Then the input signal was increased in 1 step by 20 dB and the peak deviation and steady state deviation were recorded. This test was performed at modulation frequencies from 300 Hz to 3 kHz.

4.2 Test Equipment

Marconi 2955A Radio Communication Test Set
Leader LFG-1300S Function Generator
LMV-182 AC Millivoltmeter

4.3 Test Results

The deviation is not to exceed 12 kHz. The EUT passed the test. See test data in table 4.1a.

Table 4.1a Modulation Deviation Limiting			
Ouput Level (mV)	FM Deviation in kHz at Indicated Modulating Frequency		
	3000 Hz	1000 Hz	300 Hz
0.1	2.1	1.2	.8
0.2	2.7	1.4	.8
.3	3.2	1.6	.8
.5	4.1	2.0	.8
1.0	5.7	2.7	.9
2.0	8.0	3.7	1.1
3.0	9.7	4.5	1.3
5.0	10.7	5.9	1.6
7.0	10.7	6.9	1.8
10.0	10.8	8.2	2.2
15.0	11.2	10.1	2.7
20.0	11.3	11.4	3.0
30.0	11.4	10.7	3.7
40.0	11.4	10.7	4.2
50.0	11.4	10.6	5.1
60.0	11.4	10.7	6.9
70.0	11.4	10.7	7.3
80.0	11.4	10.8	7.3
90.0	11.4	10.8	7.1
100.0	11.4	10.8	7.0
110.0	11.4	10.8	6.9
150.0	11.4	10.8	7.5
160.0	11.4	10.8	7.7
170.0	11.4	10.8	7.9
180.0	11.4	10.8	8.1
190.0	11.4	10.8	8.2
200	11.4	10.8	8.3
250	11.4	10.8	8.5
300	11.4	10.8	8.6
400	11.4	10.8	8.6
450	11.4	10.8	8.6
500	11.4	10.8	8.6
600	11.4	10.8	8.6
650	11.4	10.8	8.6
700	11.4	10.8	8.6
800	11.3	10.8	8.6
900	11.3	10.8	8.7
1000	11.3	10.8	8.7

Middle Channel: 836.52 MHz

Table 4.1b
Frequency Deviation

Frequency kHz	Initial Deviation	Peak Deviation	Steady State Deviation
0.3	1.9	8.1	7.3
0.5	3.9	8.7	8.5
0.7	5.5	11.2	11.1
0.9	7.2	11.3	11.2
1.0	8.1	10.8	10.7
1.2	9.4	11.9	11.8
1.4	10.6	11.5	11.4
1.6	10.8	11.2	11.1
1.8	10.8	11.3	11.2
2.0	11.2	11.3	11.2
2.4	11.4	11.4	11.3
2.8	11.1	11.4	11.3
3.0	10.8	11.4	11.3

Test Conditions:

V_{mp} = 9.6 mV
Deviation = 8 kHz at 1 kHz modulation frequency
Middle Channel = 836.52 MHz

5.0 Audio Filter Characteristics, FCC § 22.915(d)

For mobile stations, these signals must be attenuated, relative to the level at 1 kHz, as follows:

(i) In the frequency ranges of 3.0 to 5.9 kHz and 6.1 to 15.0 kHz, signals must be attenuated by at least 40 log (f/3) dB, where f is the frequency of the signal in kHz.

(ii) In the frequency range of 5.9 to 6.1 kHz, signals must be attenuated at least 35 dB.

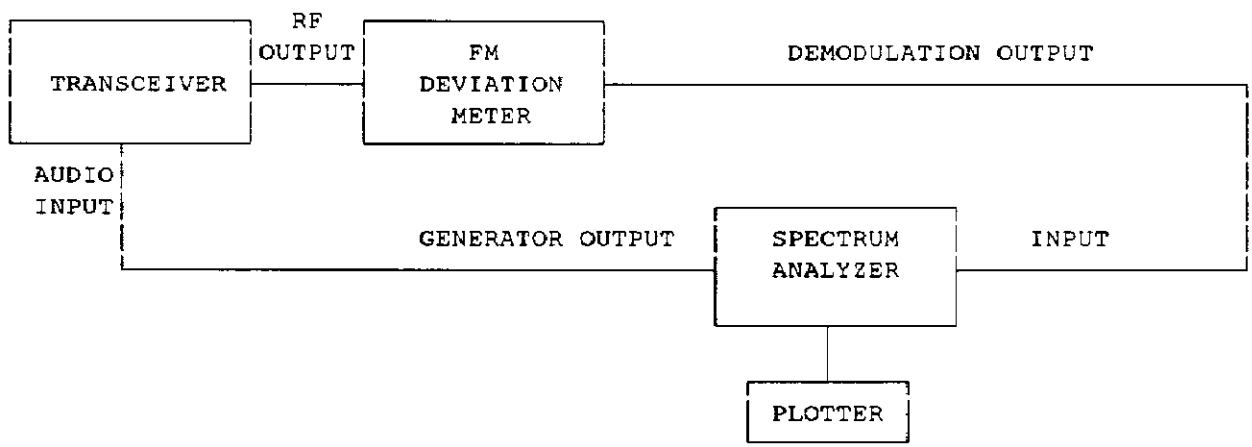
(iii) In the frequency range above 15 kHz, signals must be attenuated at least 28 dB.

5.1 Test Procedure

The RF output of the transceiver was connected to the input of an FM deviation meter through sufficient attenuation so as not to overload the meter or distort the readings. An audio signal generator with a variable attenuator on the output was coupledl into the external microphone jack of the transceiver, or alternatively, the microphone element was removed and the generator output was connected to the microphone wires by clip leads.

The audio signal at the transceiver audio input was adjusted to obtain 8-9 kHz deviation at the more sensitive modulation frequency (approximately 2.7 kHz). The audio frequency was varied from 300 Hz to 30 kHz and the deviation was measured while maintaining a constant input level. Using the level measured at 1 kHz as a reference (0 dB), the audio filter response was calculated (See Table 5-1).

In addition, the test was performed according to the block diagram shown below.



On that block diagram, the HP 3885A spectrum analyzer having the tracing generator, and the Marconi 2955A Radio Communication Test Set having an output of a demodulator, are used. After the calibration was made (the -20 dBm reading of the spectrum analyzer corresponds to the 9 kHz deviation) the spectrum analyzer was set to scan the frequency from 300 Hz to 30 kHz, with the same audio input level as described above, and with compressor OFF and expander OFF.

The audio filter response was plotted directly from the spectrum analyzer (Refer to Plots # 5.1.a, 5.1.b.

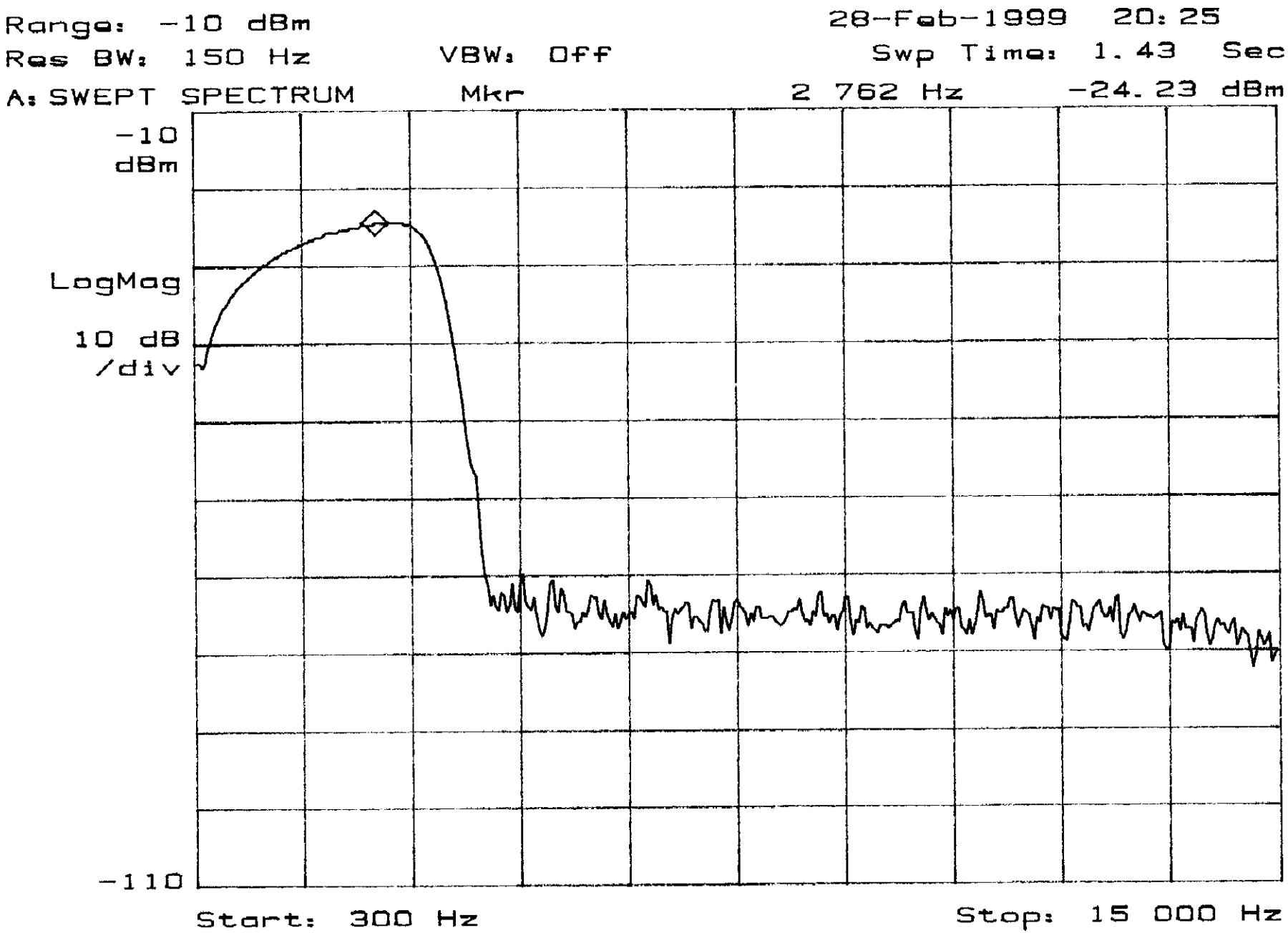
5.2 Test Equipment

Marconi Instruments 2955A Radio Communications Test Set
HP 3588A Spectrum Analyzer
HP 7470A Plotter
Leader LFG-1300S Function Generator
LMV-182 AC Millivoltmeter

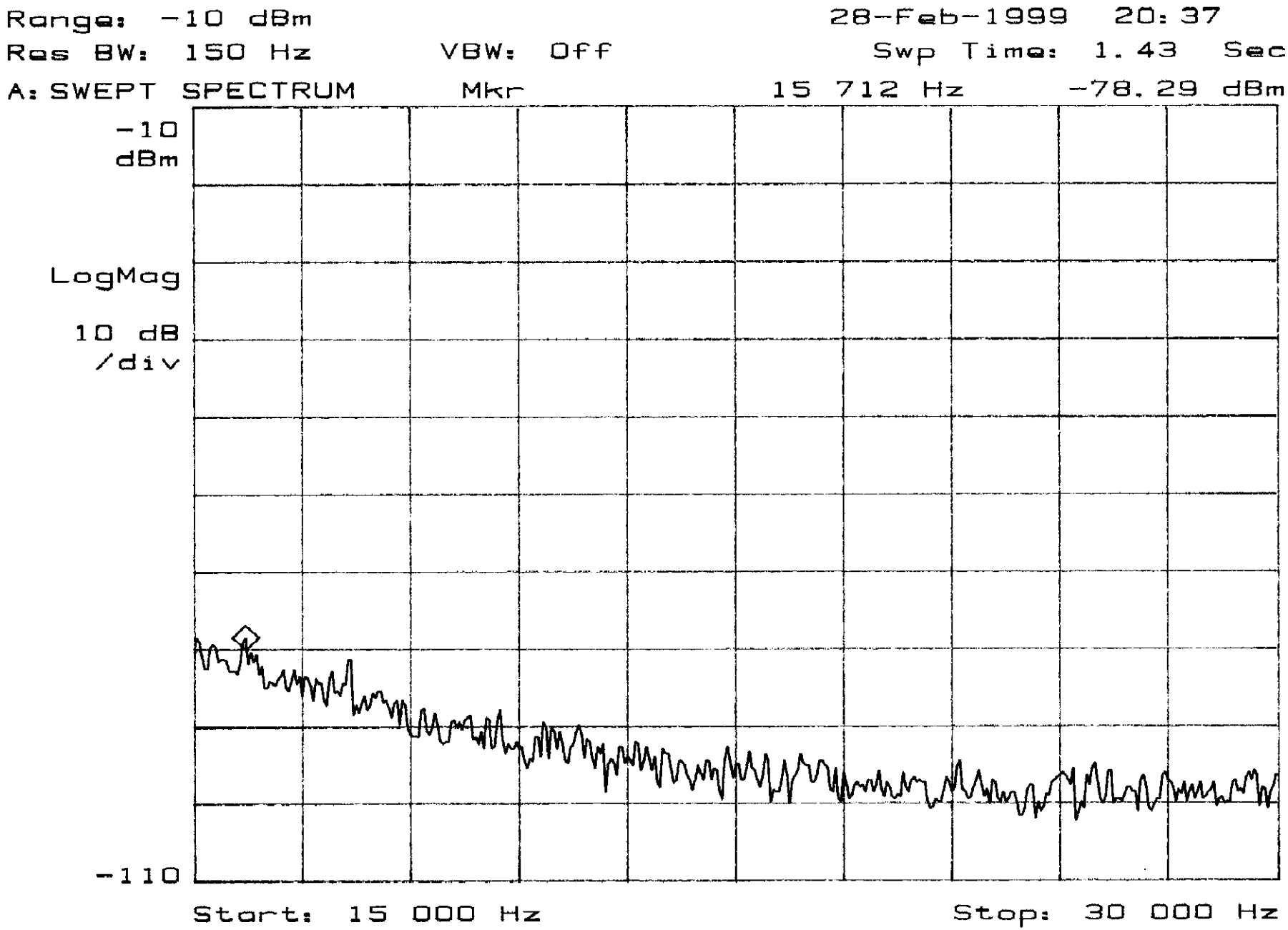
5.3 Test Results

Passed, refer to the attached plots.

Table 5.1 Audio Filter Characteristics		
Modulation Frequency kHz	Relative Level dBm	Attenuation
0.3	-42.3	9.7
0.4	-43.1	10.5
0.5	-39.4	6.8
0.6	-37.2	4.6
0.7	-35.2	2.6
0.8	-33.6	1.0
0.9	-32.6	0.0
1.0	-32.6	0.0
1.2	-29.8	-2.8
1.4	-28.9	-3.7
1.6	-27.5	-5.1
1.8	-26.5	-6.1
2.0	-26.0	-6.6
2.2	-25.3	-7.2
2.5	-24.8	-7.8
3.0	-24.1	-8.5
3.5	-26.7	-5.9
4.0	-47.8	15.2
4.5	-72.3	39.7
5.0	-74.7	42.1
5.5	-75.9	43.3
5.9	-76.8	44.2
6.0	-76.7	44.1
6.1	-74.6	42.0
8.0	-75.9	43.3
10.0	-75.0	42.4
15.0	-79.8	47.2
20.0	-90.5	57.9
30.0	-96.2	63.6


Range: -10 dBm
28-Feb-1999 20:25
Res BW: 150 Hz
VBW: Off
Swp Time: 1.43 Sec
A: SWEPT SPECTRUM
Mkr
2 762 Hz
-24.23 dBm
-10
dBm
LogMag
10 dB
/div
-110
Start: 300 Hz
Stop: 15 000 Hz
WAITING FOR ARM

Plot 5.1.9


Range: -10 dBm
28-Feb-1999 20:37
Res BW: 150 Hz
VBW: Off
Swp Time: 1.43 Sec
A: SWEPT SPECTRUM
Mkr
15 712 Hz
-78.29 dBm
-10
dBm
LogMag
10 dB
/div
-110
Start: 15 000 Hz
Stop: 30 000 Hz
WAITING FOR ARM

Plot 5.1.b

6.0 Emission Limitations, Occupied Bandwidth, FCC § 2.1049, 22.917(b)(d)

For F3E/F3D emission mask uses with audio filter, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier wave (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz: at least 26 dB;

(2) On any frequency removed from the carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency: at least 60 dB or 43 + 10 log P dB, whichever is the lesser attenuation.

For F1D emission mask, the mean power of emissions must be attenuated below the mean power of the unmodualted carrier (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but no more than 45 kHz: at least 26 dB;

(2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz: at least 45 dB;

(2) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple ofthe carrier frequency: at least 60 dB or 43 +10 log P db, whichever is the lesser attenuation.

6.1 Test Procedure

The RF output of the transceiver was connected to the input of the spectrum analyzer through sufficient attenuation. The audio generator was connected to the audio input of the transceiver.

The spectrum with no modulation was recorded. The audio input signal was adjusted to obtain the frequencies deviation equal 6 kHz at the audio frequency of maximum response which was determined measuring deviation versus frequency from 300 Hz to 3.5 kHz and was found 2.8 kHz. The audio input level was increased by 16 dB. The audio frequency was set to the frequency 2.5 kHz.

The resolution bandwidth of the spectrum analyzer was set at 300 Hz and the spectrum was recorded in the frequency band ±50 kHz and ±100 kHz from the carrier frequency. The same plots has been done for wideband emissions, SAT, ST, DTMF9, Voice, some of the combinations of these modulating signals and in TDMA mode.

Note: Some of the plots were only done in the frequency band of ±50 kHz since it was clear from these plots, that the levels of emissions were well below the limits.

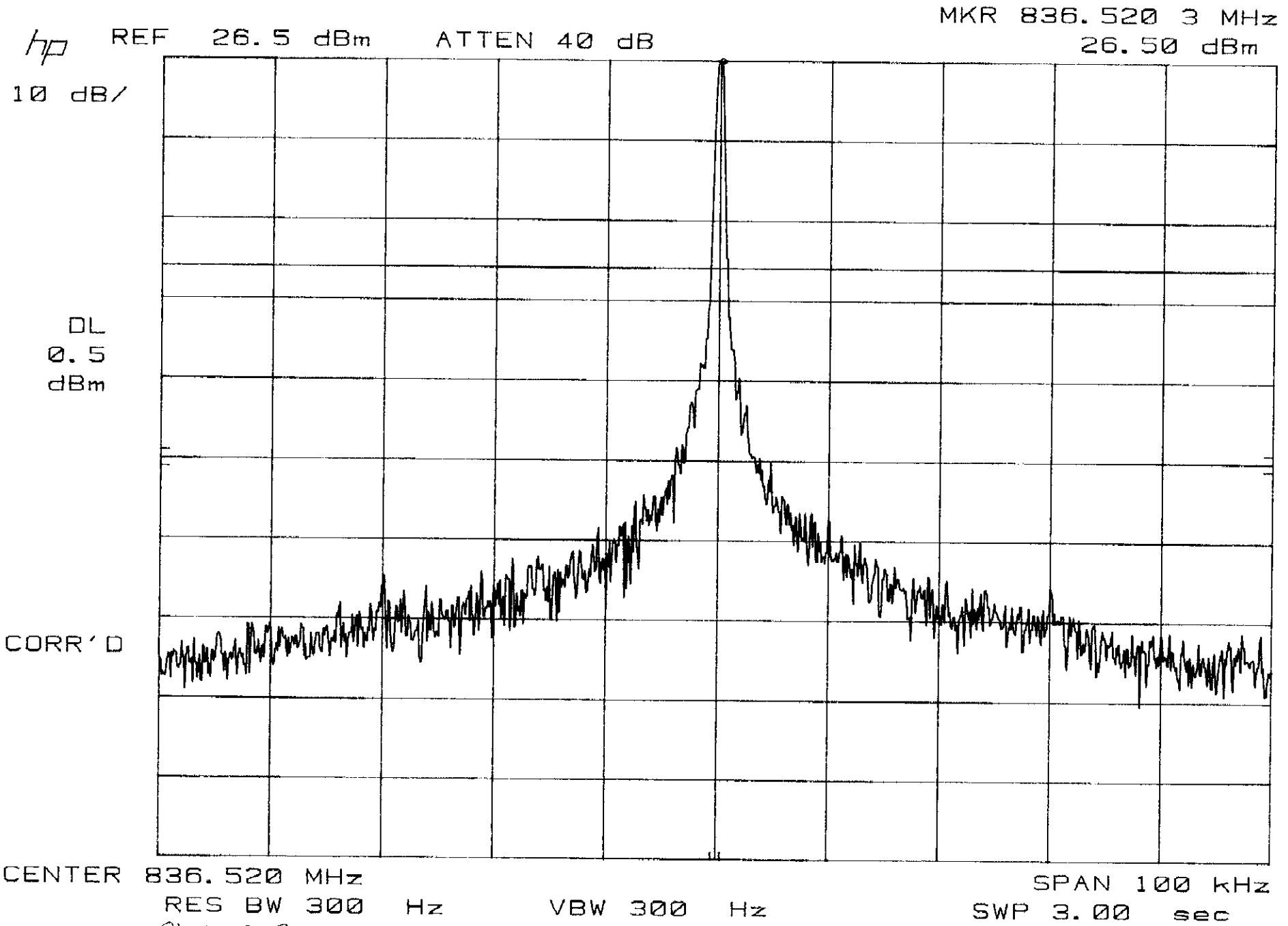
6.2 Test Equipment

HP 8566B Spectrum Analyzer
Leader LFG-1300S Function Generator
Leader LMV-182 AC Millivoltmeter
Marconi 2955A Radio Communication Test Set
HP 7470A Plotter

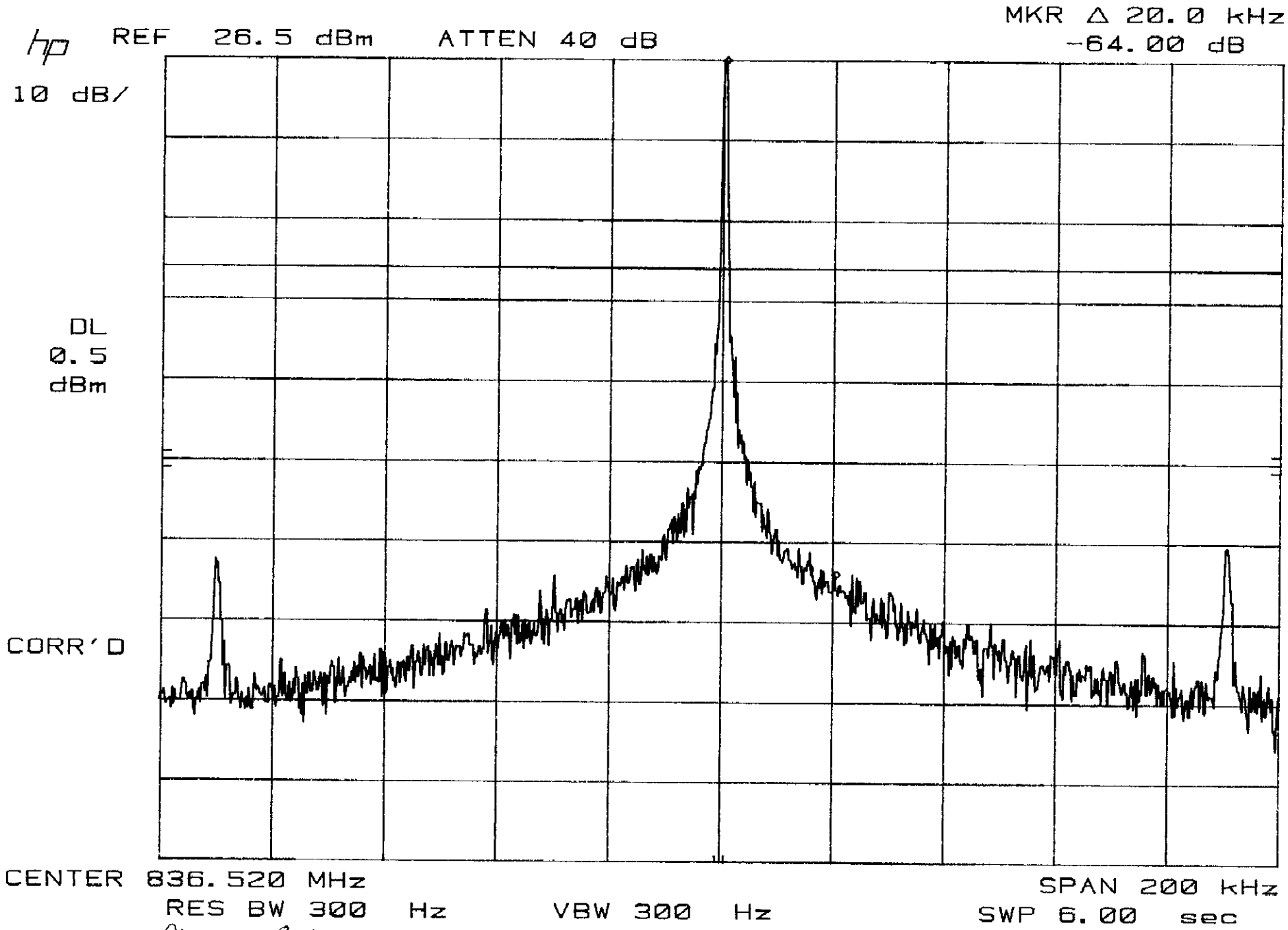
6.3 Test Results

Passes	Refer to the attached plots.

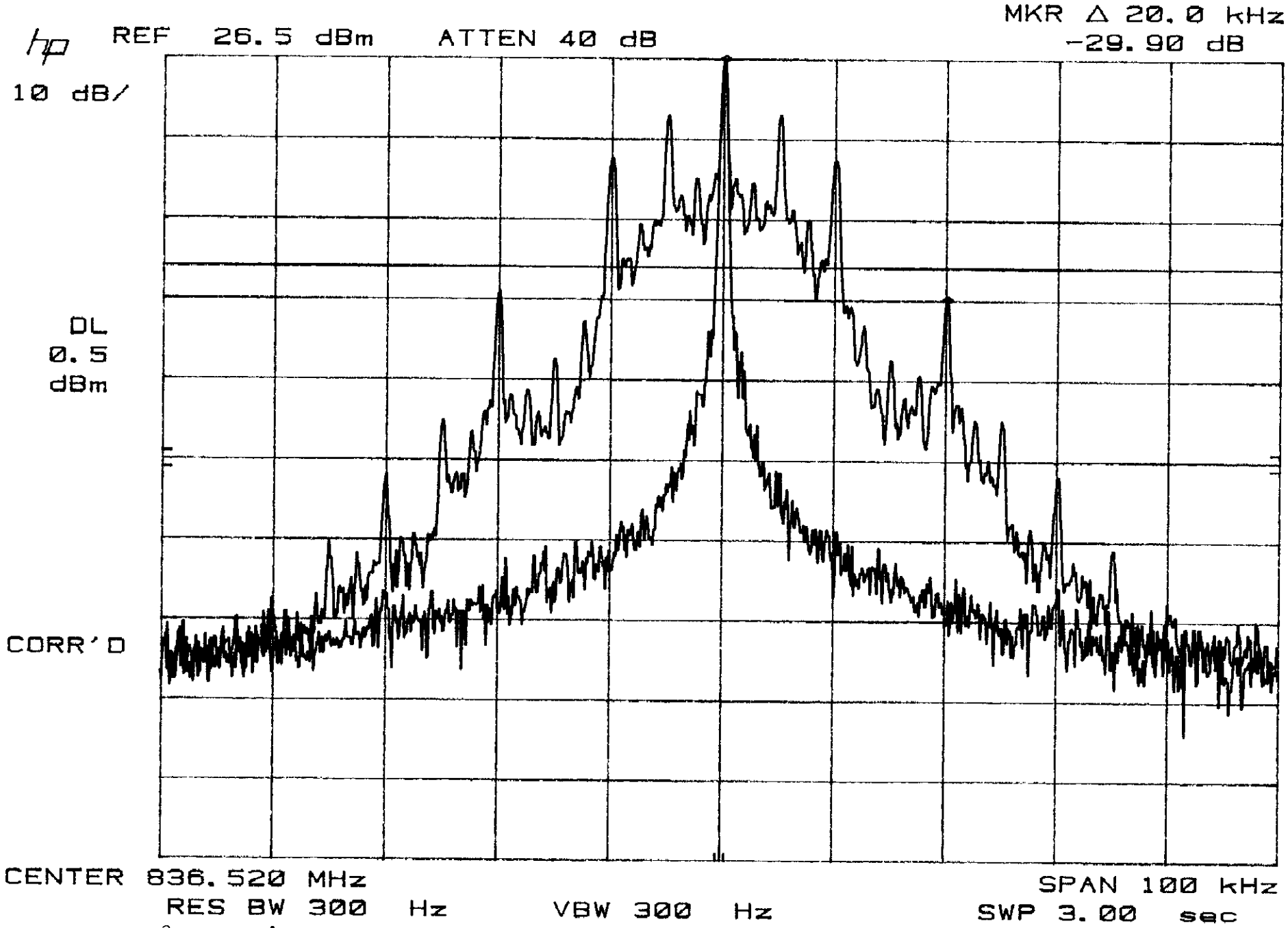
Plot Number	Description
6.3.a	Carrier frequency, no modulation, scan 100 kHz
6.3.b	Carrier frequency, no modulation, scan 200 kHz
6.3.c	Wideband emissions (0, 1, 0, 1), scan 100 kHz
6.3.d	Wideband emissions (0, 1, 0, 1), scan 200 kHz
6.3.e	DTMF "9"
6.3.f	SAT (6 kHz, 2 kHz deviation)
6.3.g	ST (10 kHz, 8 kHz deviation), scan 100 kHz
6.3.h	ST & SAT (6 kHz & 10 kHz), scan 100 kHz
6.3.i	ST & SAT (6 kHz & 10 kHz), scan 200 kHz
6.3.j	DTMF & SAT, scan 100 kHz
6.3.k	Voice (2.5 kHz), scan 100 kHz
6.3.l	Voice (2.5 kHz) & SAT (6 kHz), scan 100 kHz
6.3.m	Voice (2.5 kHz) & SAT (6 kHz), low power
6.3.n	TDMA mode, scan 100 kHz
6.3.o	TDMA mode, $\pi/4$ QPSK, 200 kHz
6.3.p	TDMA mode, scan 200 kHz


hp
REF 26.5 dBm
ATTEN 40 dB
MKR 836.520 3 MHz
26.50 dBm
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

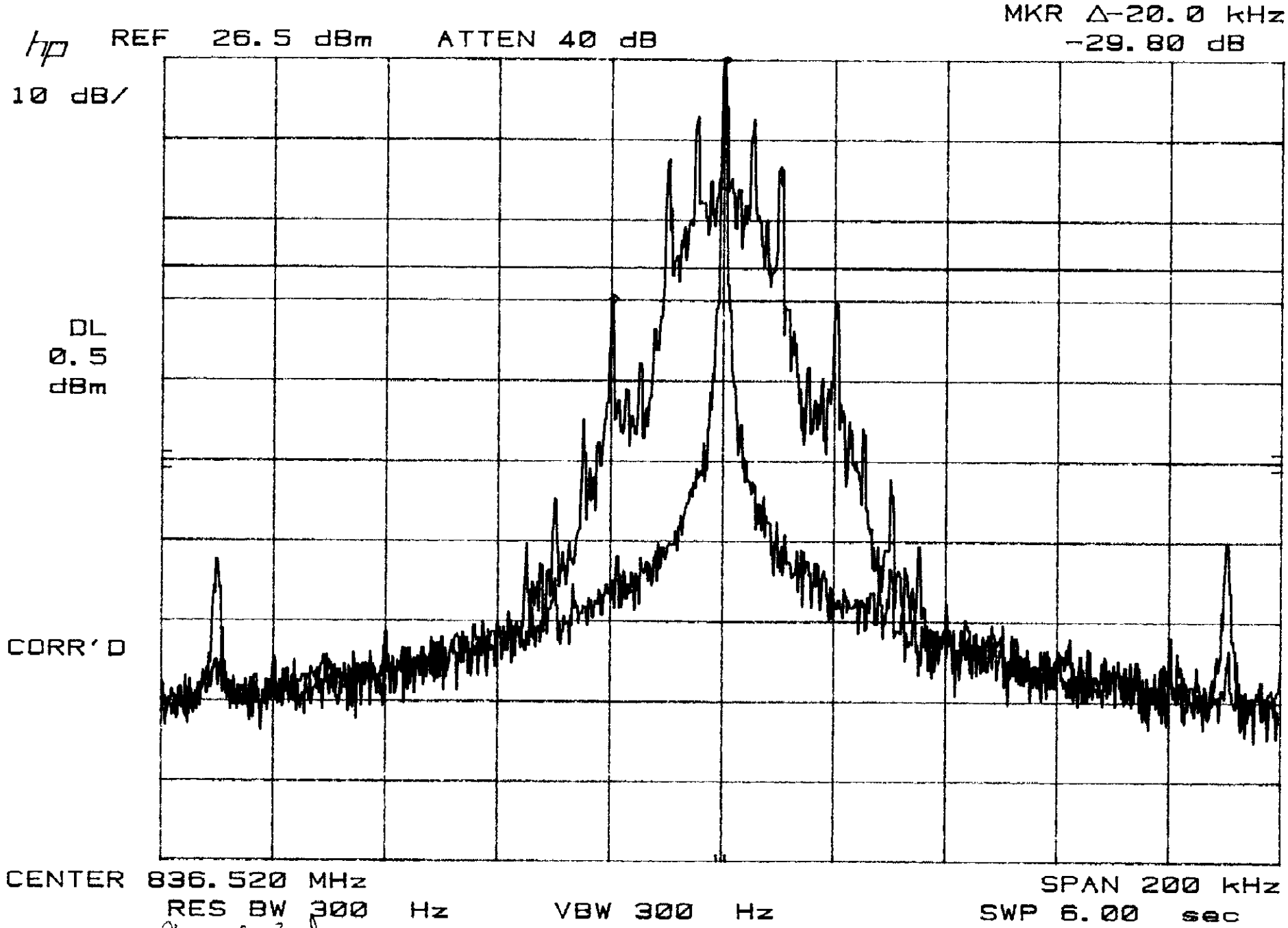
Blox 6.3.9


REF 26.5 dBm
ATTEN 40 dB
MKR Δ 20.0 kHz
-64.00 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 200 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 6.00 sec

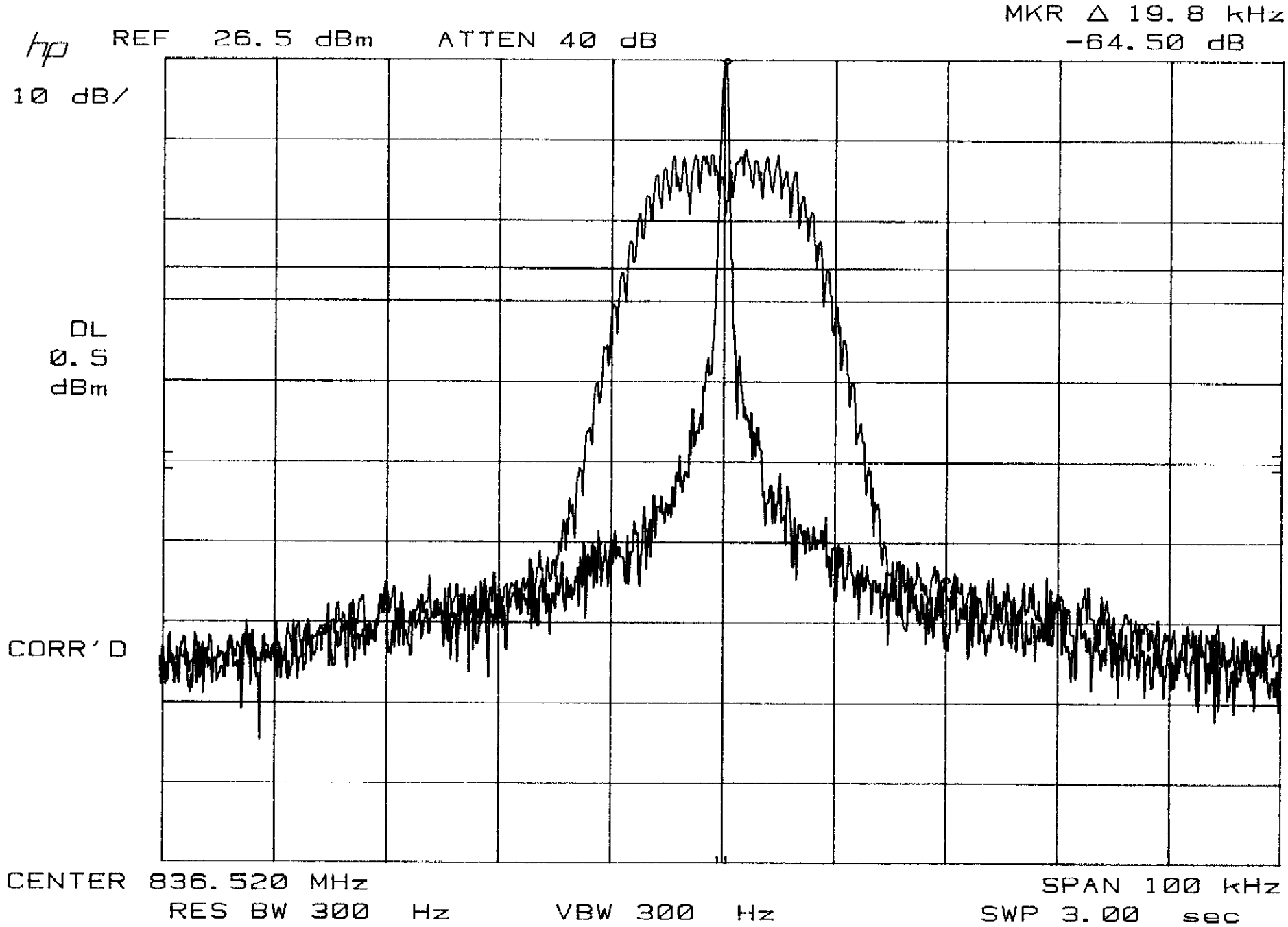
Plot 6.3.b


MKR Δ 20.0 kHz
-29.90 dB
REF 26.5 dBm
ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

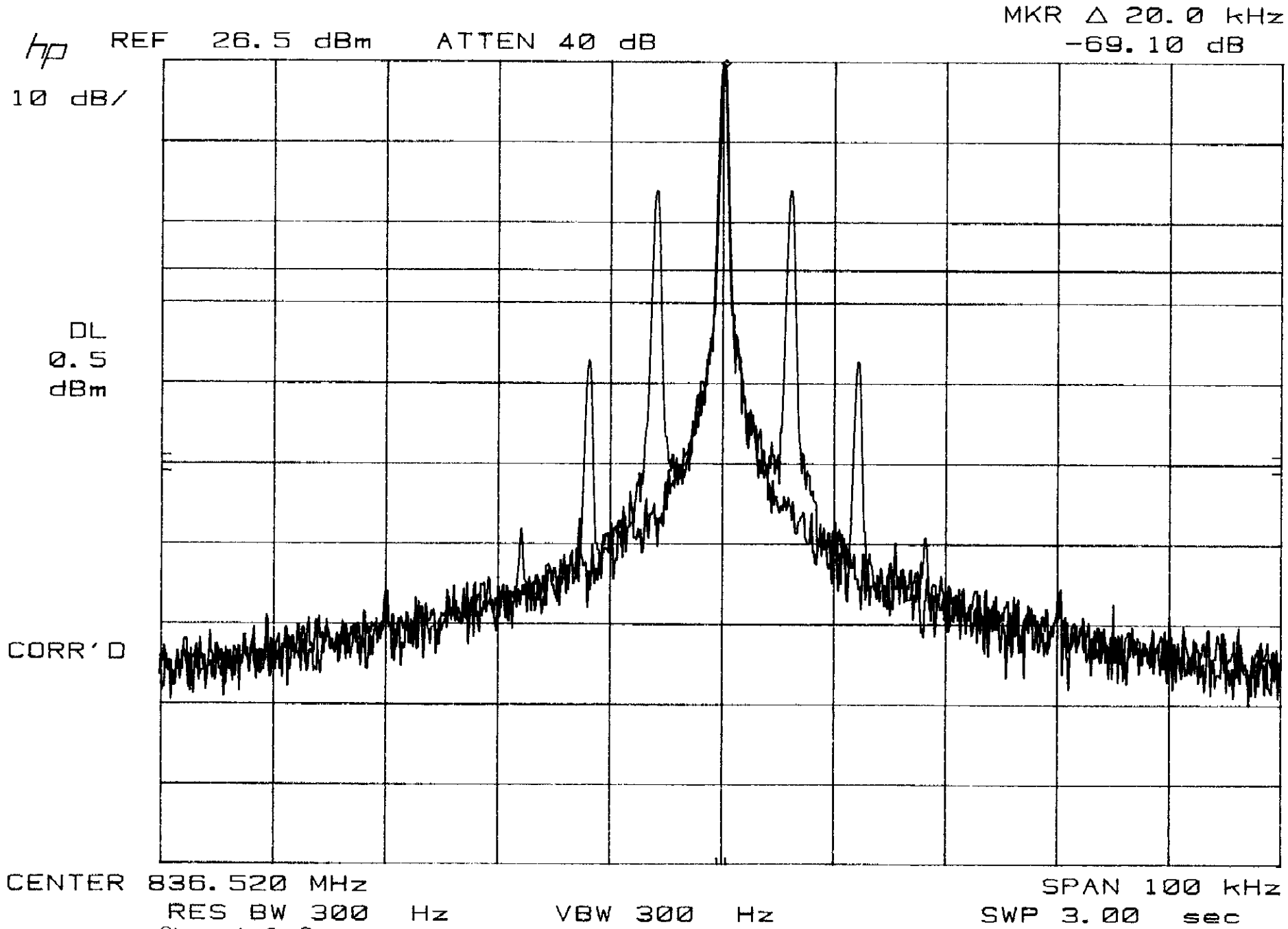
Plot 6.3.C


MKR Δ-20.0 kHz
-29.80 dB
REF 26.5 dBm
ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 200 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 6.00 sec

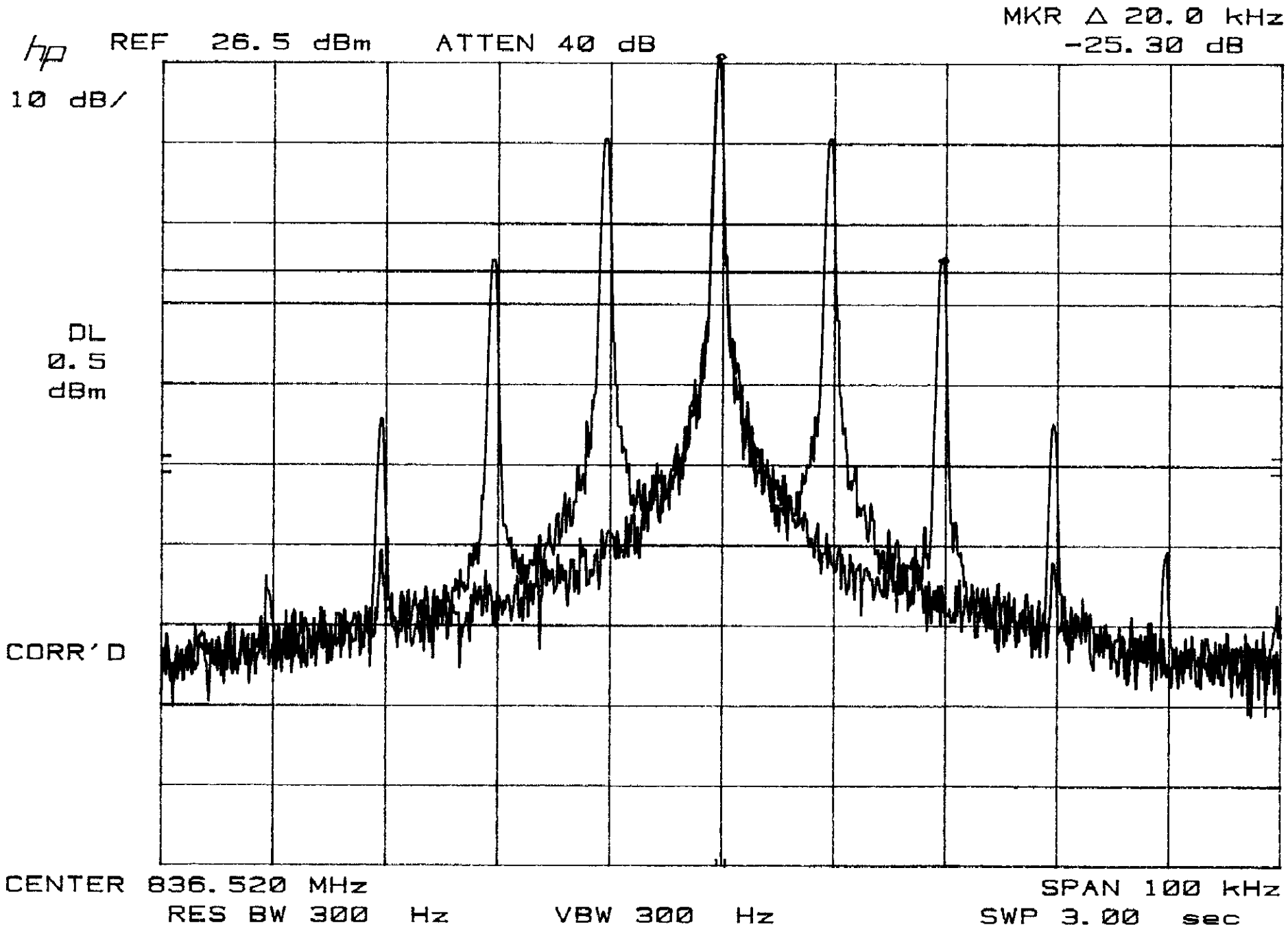
Plot 6.3.d


MKR Δ 19.8 kHz
-64.50 dB
hp REF 26.5 dBm ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

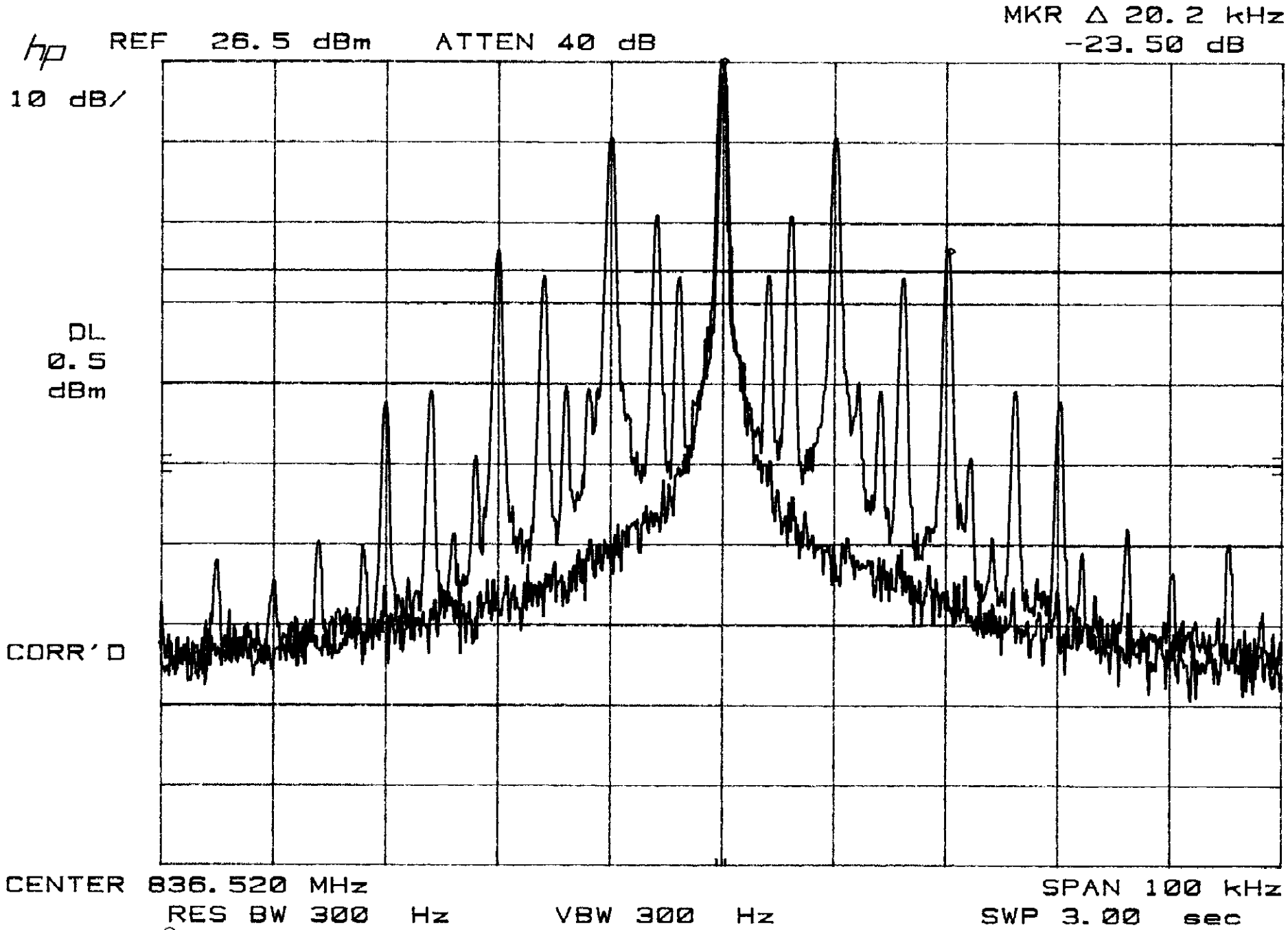
Plot 6.3.e


MKR Δ 20.0 kHz
-69.10 dB
hp REF 26.5 dBm ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

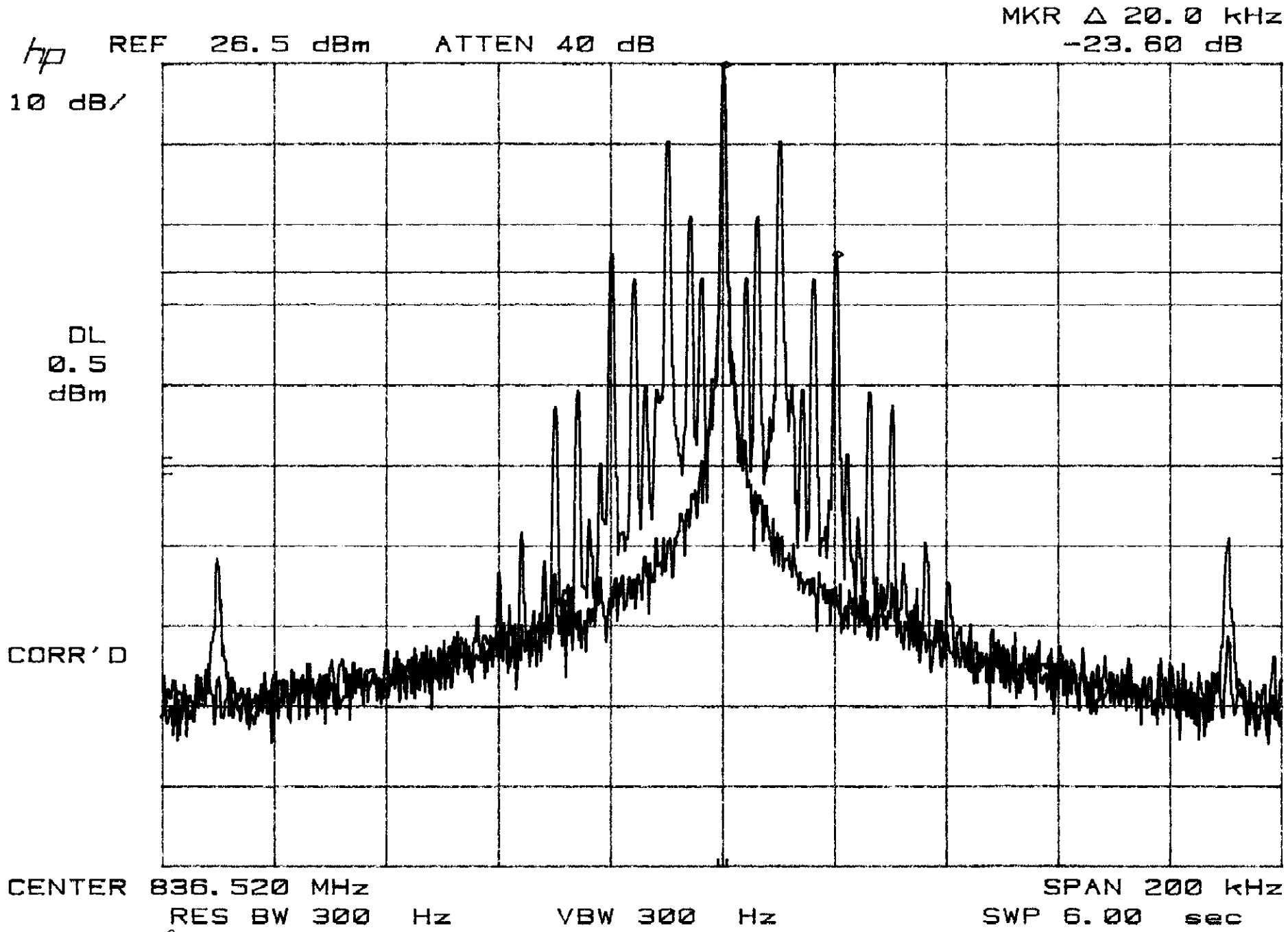
Plot 6.3.F


MKR Δ 20.0 kHz
-25.30 dB
REF 26.5 dBm
ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

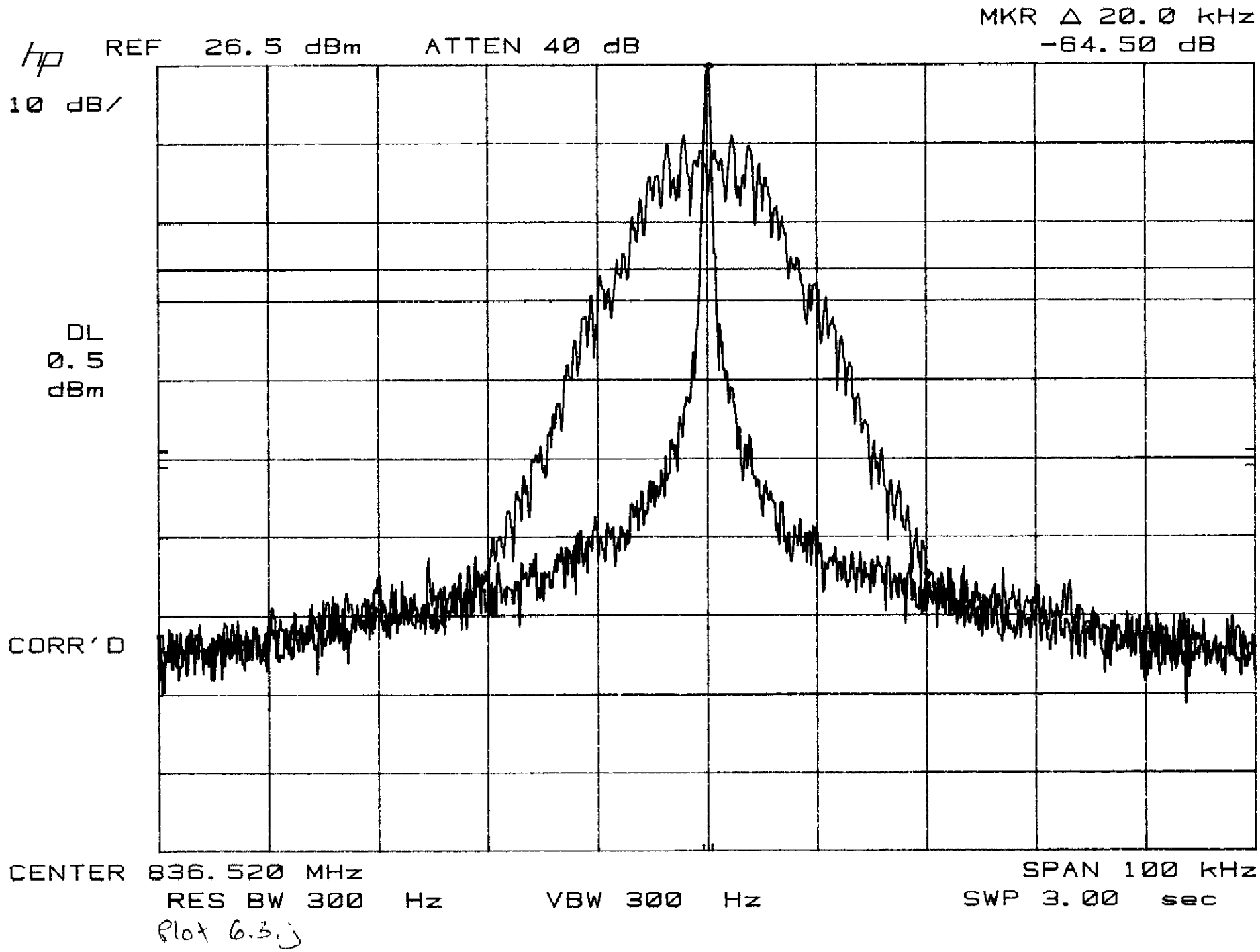
Plot 6.3.9


MKR Δ 20.2 kHz
-23.50 dB
hp REF 26.5 dBm ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

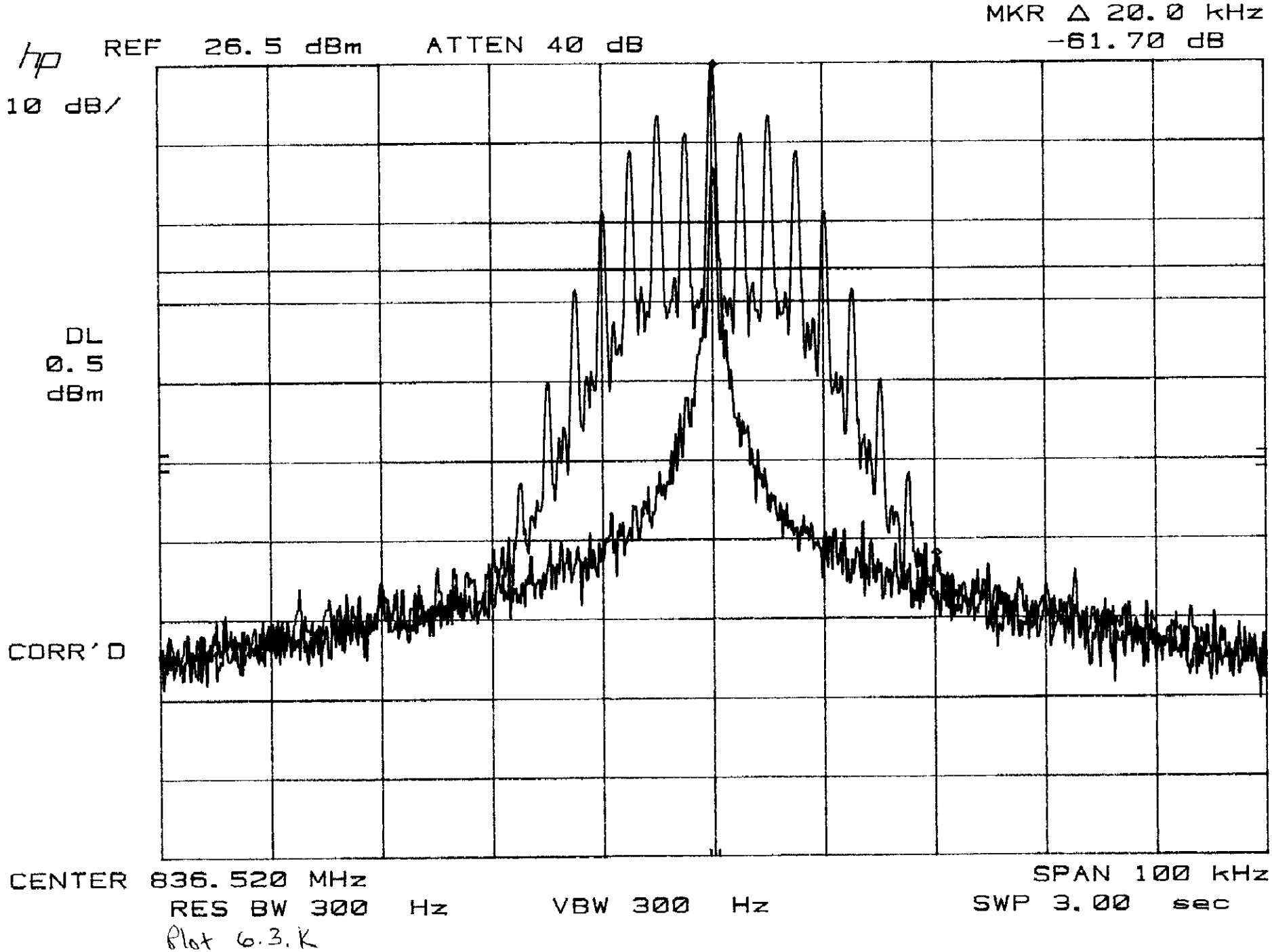
Plot 6.3.h


MKR Δ 20.0 kHz
-23.60 dB
hp REF 26.5 dBm ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 200 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 6.00 sec

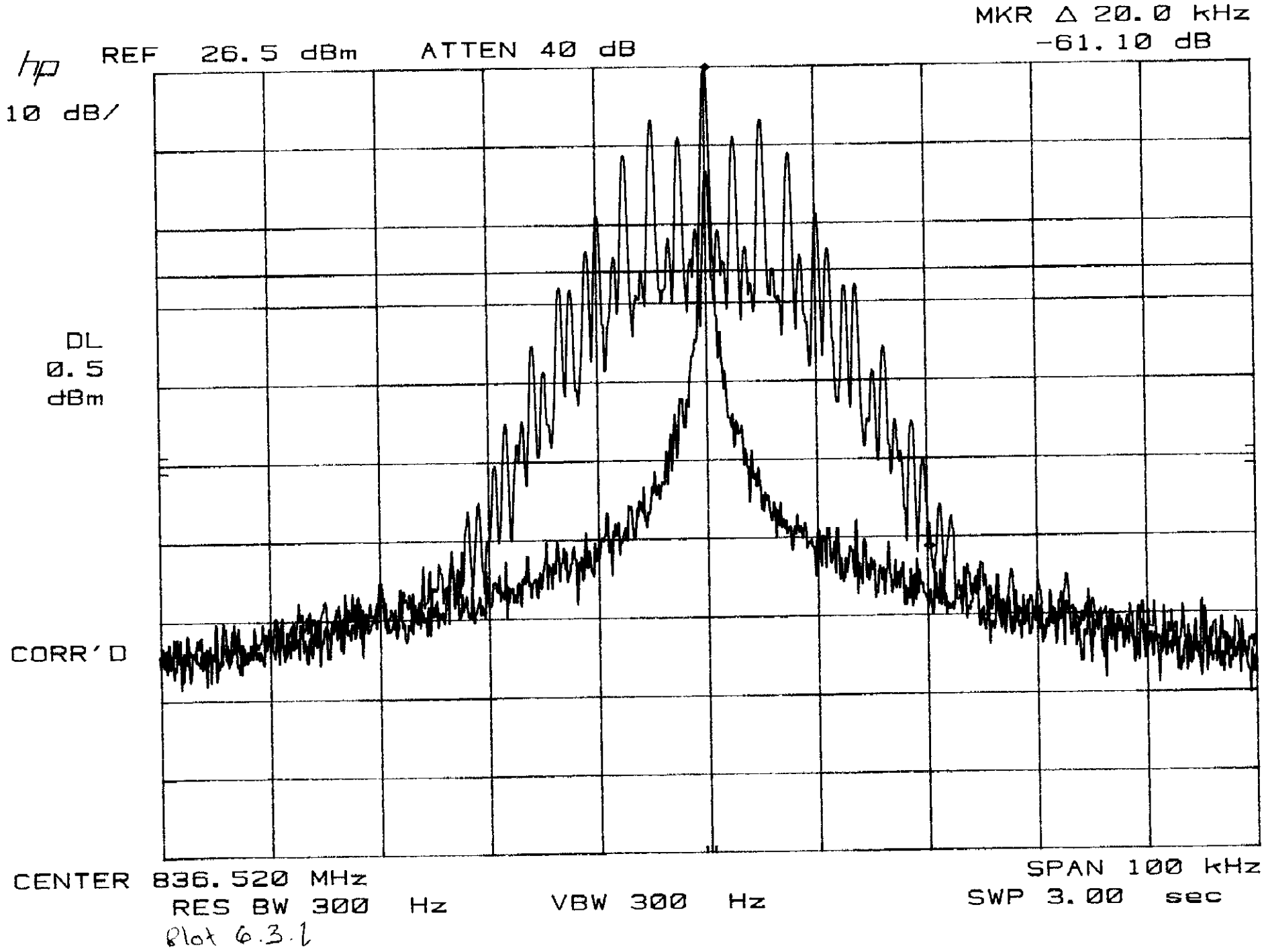
Plot 6.3.1


MKR Δ 20.0 kHz
-64.50 dB
REF 26.5 dBm
ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

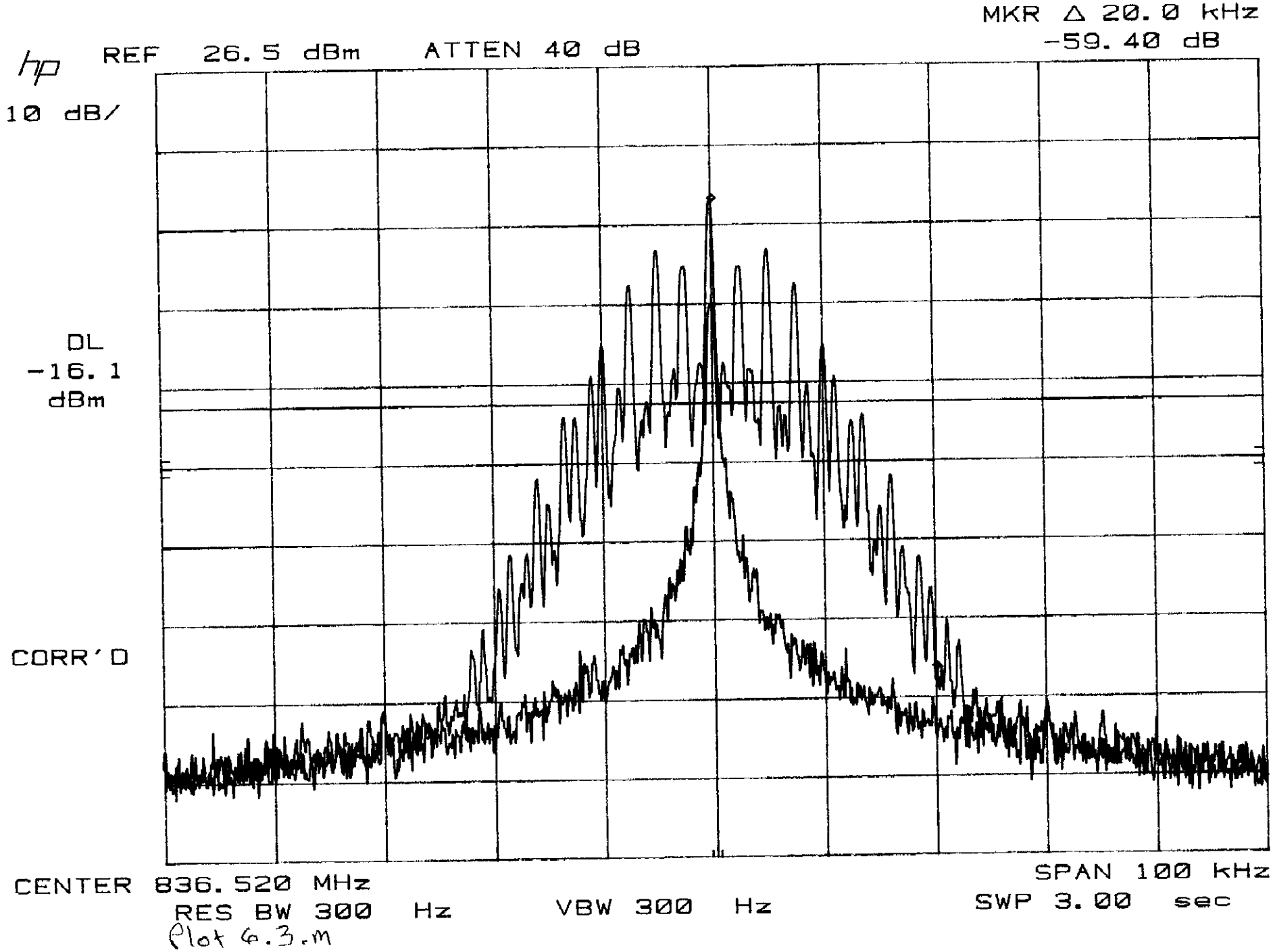
Plot 6.3.j


MKR Δ 20.0 kHz
-61.70 dB
hp REF 26.5 dBm ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

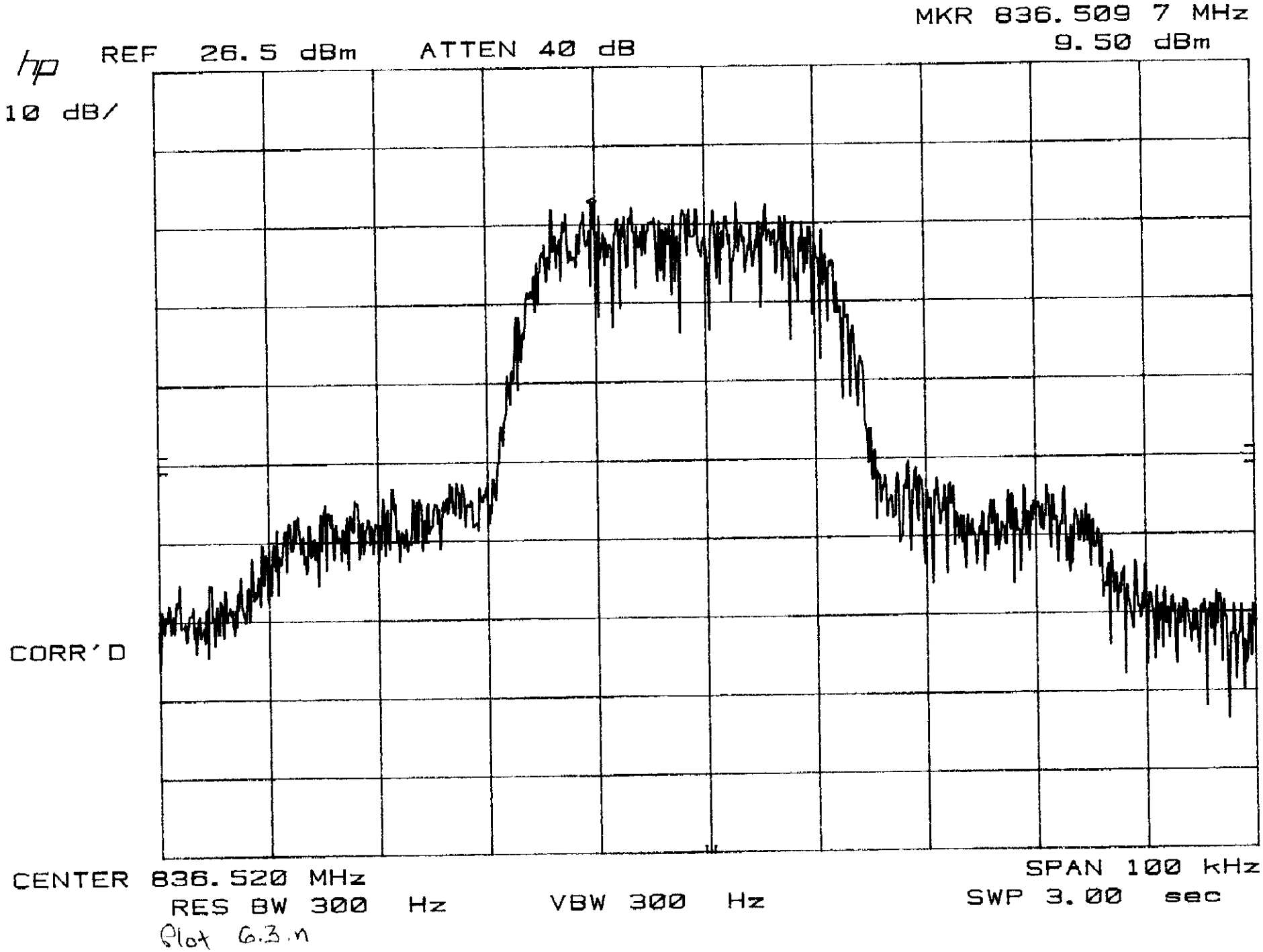
Plot 6.3.K


MKR Δ 20.0 kHz
-61.10 dB
REF 26.5 dBm
ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

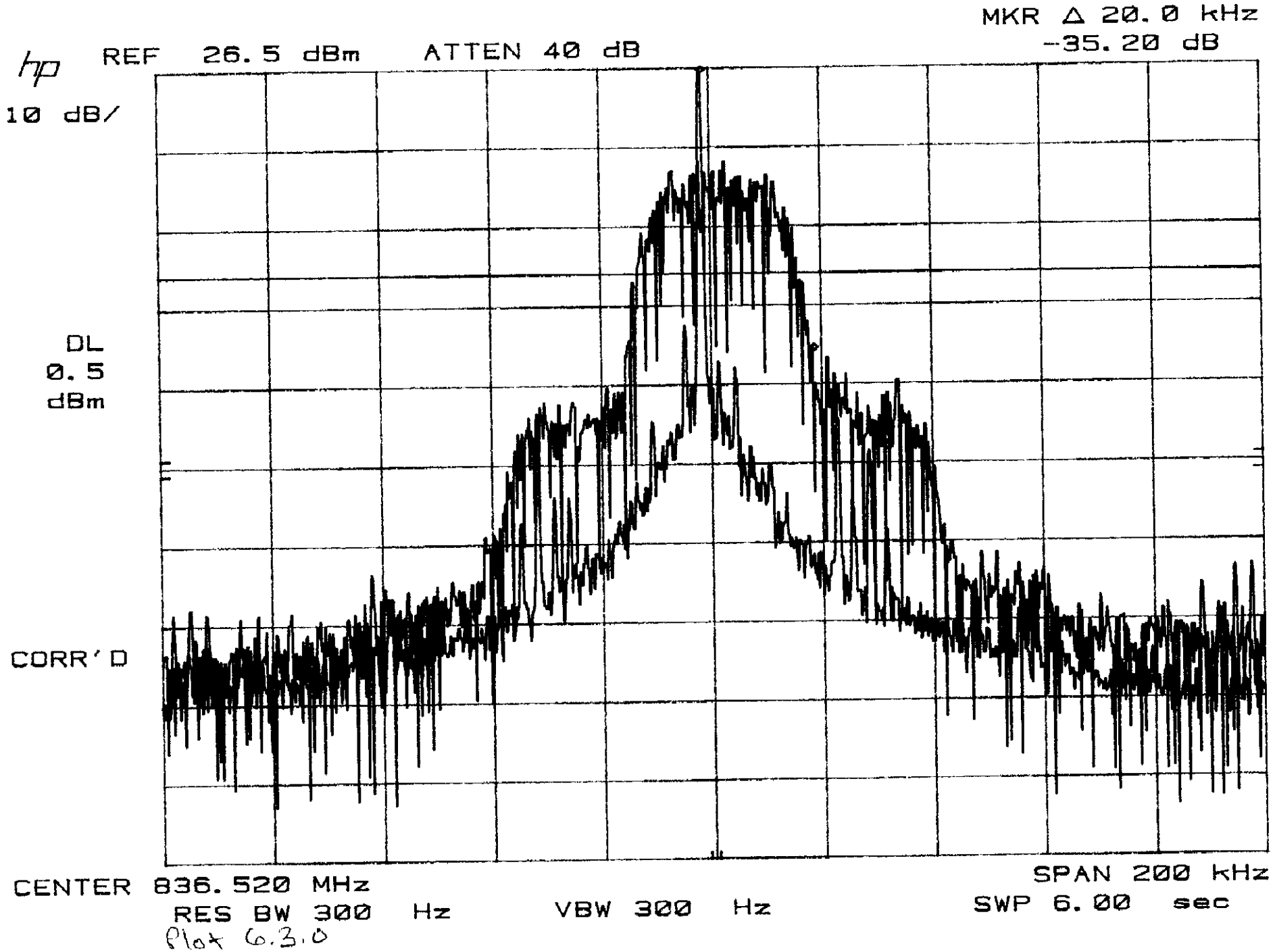
Plot 6.3.1


MKR Δ 20.0 kHz
-59.40 dB
REF 26.5 dBm
ATTEN 40 dB
10 dB/
DL
-16.1
dBm
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

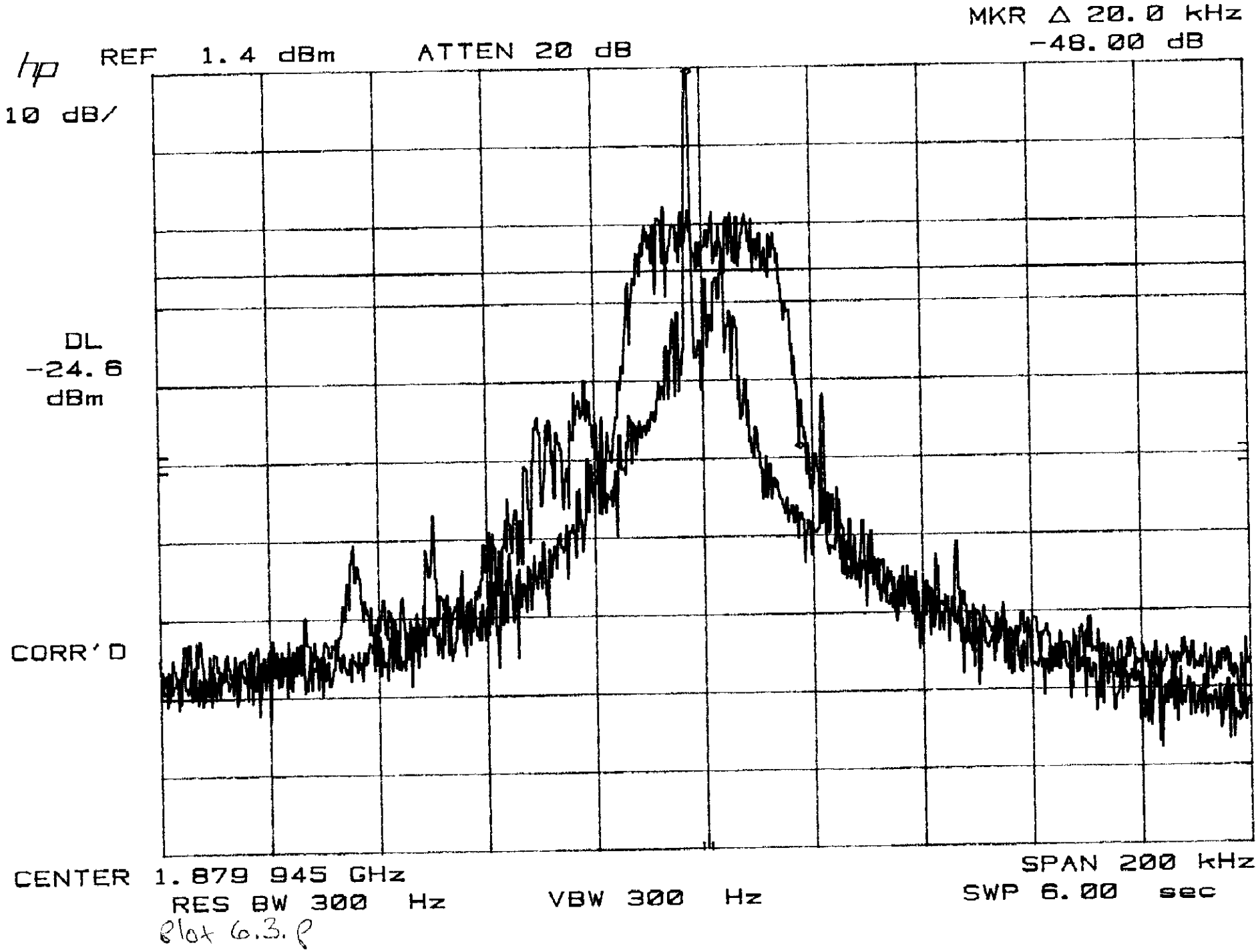
Plot 6.3.m


MKR 836.509 7 MHz
9.50 dBm
REF 26.5 dBm
ATTEN 40 dB
10 dB/
CORR'D
CENTER 836.520 MHz
SPAN 100 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 3.00 sec

Plot 6.3.n


MKR Δ 20.0 kHz
-35.20 dB
REF 26.5 dBm
ATTEN 40 dB
10 dB/
DL
0.5
dBm
CORR'D
CENTER 836.520 MHz
SPAN 200 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 6.00 sec

Plot 6.3.0


MKR Δ 20.0 kHz
-48.00 dB
hp REF 1.4 dBm
ATTEN 20 dB
10 dB/
DL
-24.6
dBm
CORR'D
CENTER 1.879 945 GHz
SPAN 200 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 6.00 sec

Plot 6.3.P

7.0 **Out of Band Emissions at Antenna Terminals** , FCC § 22.917(e), 22.917(f), 24.238(a)

Out of Band Emissions:

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least 43 + 10 log P dB.

Mobile Emissions in Base Frequency Range:

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80 dBm at the transmit antenna connector.

7.1 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 30 kHz. The audio modulating signal was adjusted like it is described in Section 6.1 of this report. Sufficient scans were taken to show the outband emissions if any up to 10th harmonic.

7.2 Test Equipment

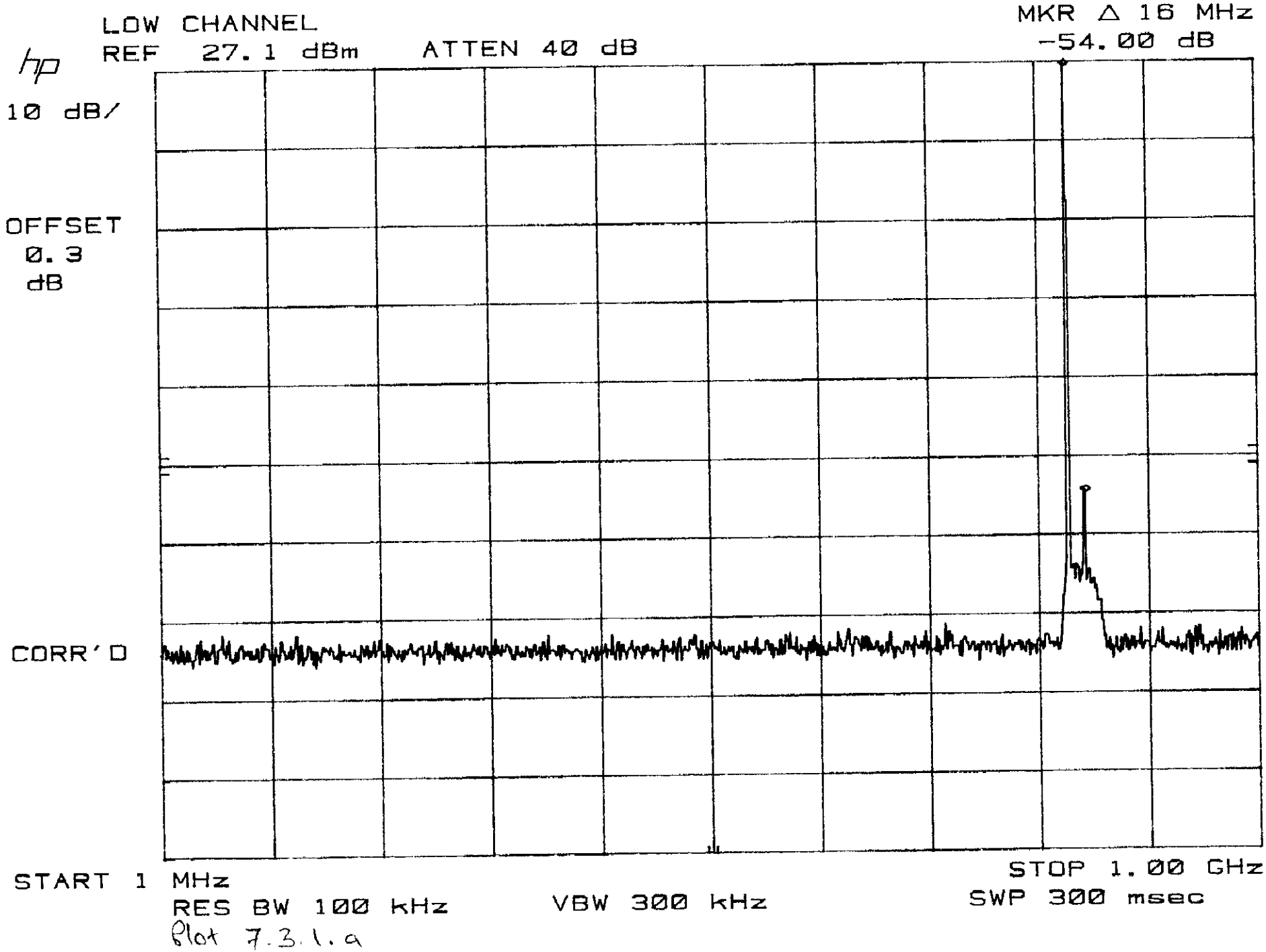
HP 8566B Spectrum Analyzer
Leader LFG-1300S Function Generator
Leader LMV-182 AC Millivoltmeter

7.3 Test Results

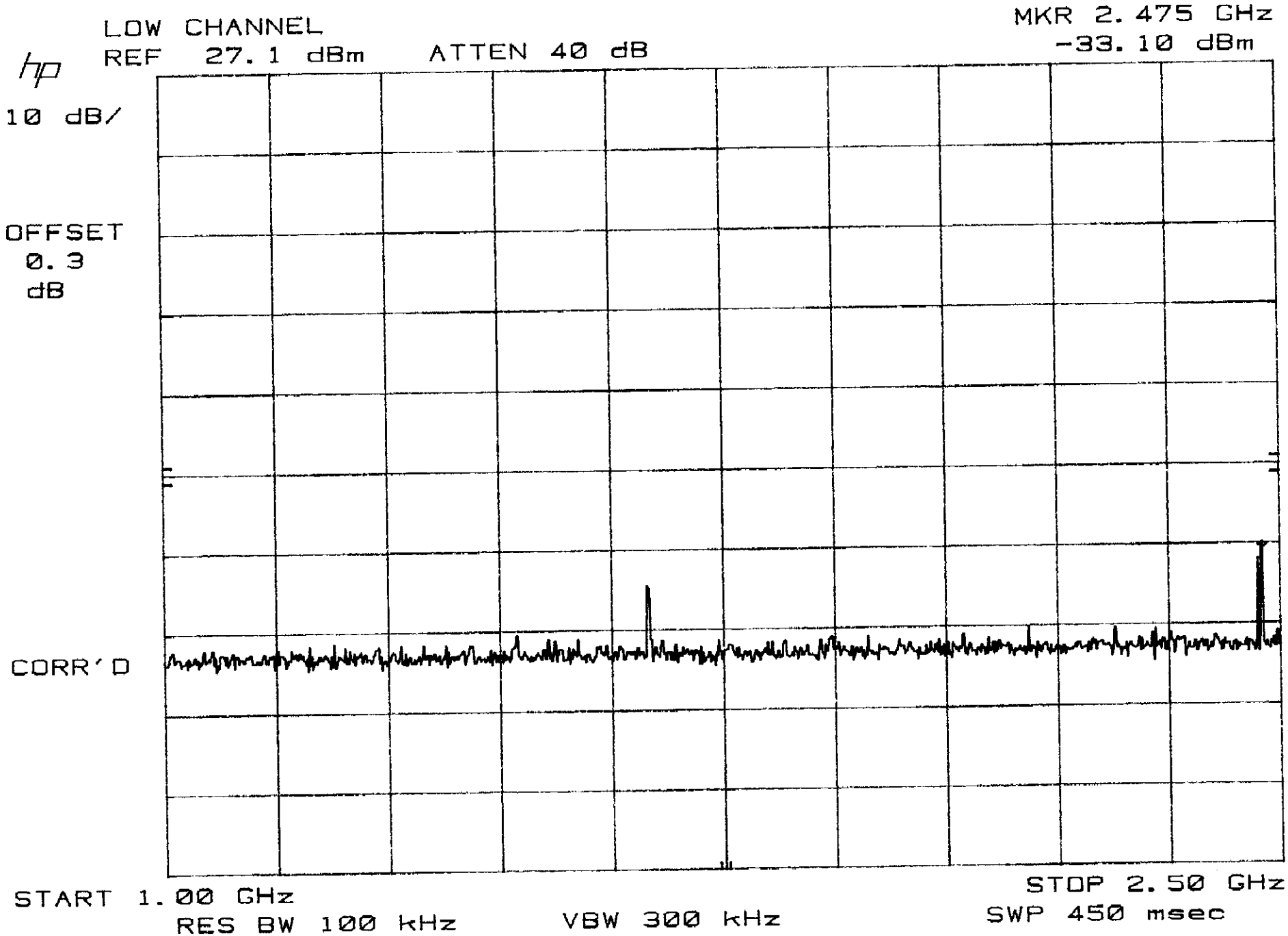
Passed	Refer to the attached plots.

AMPS Mode	
Plot Number	**Description**
7.3.1.a - 7.3.1.d	Low Channel
7.3.2.a - 7.3.2.d	Middle Channel
7.3.3.a - 7.3.3.d	High Channel

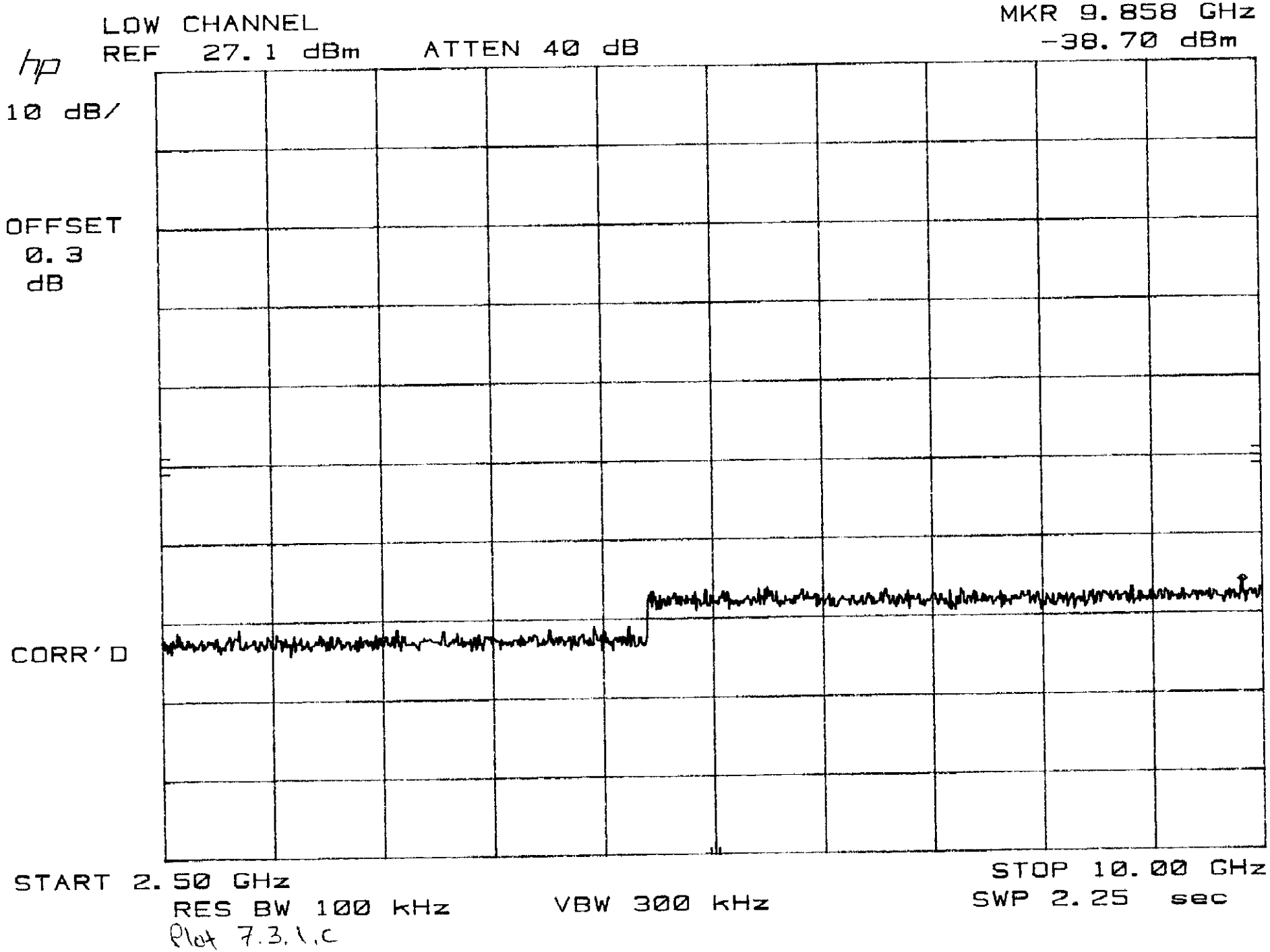
TDMA Mode	
Plot Number	**Description**
7.3.4.a - 7.3.4.d	Low Channel
7.3.5.a - 7.3.5.d	Middle Channel
7.3.6.a - 7.3.6.d	High Channel


LOW CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR Δ 16 MHz
-54.00 dB
10 dB/
OFFSET
0.3
dB
CORR'D
START 1 MHz
RES BW 100 kHz
VBW 300 kHz
STOP 1.00 GHz
SWP 300 msec

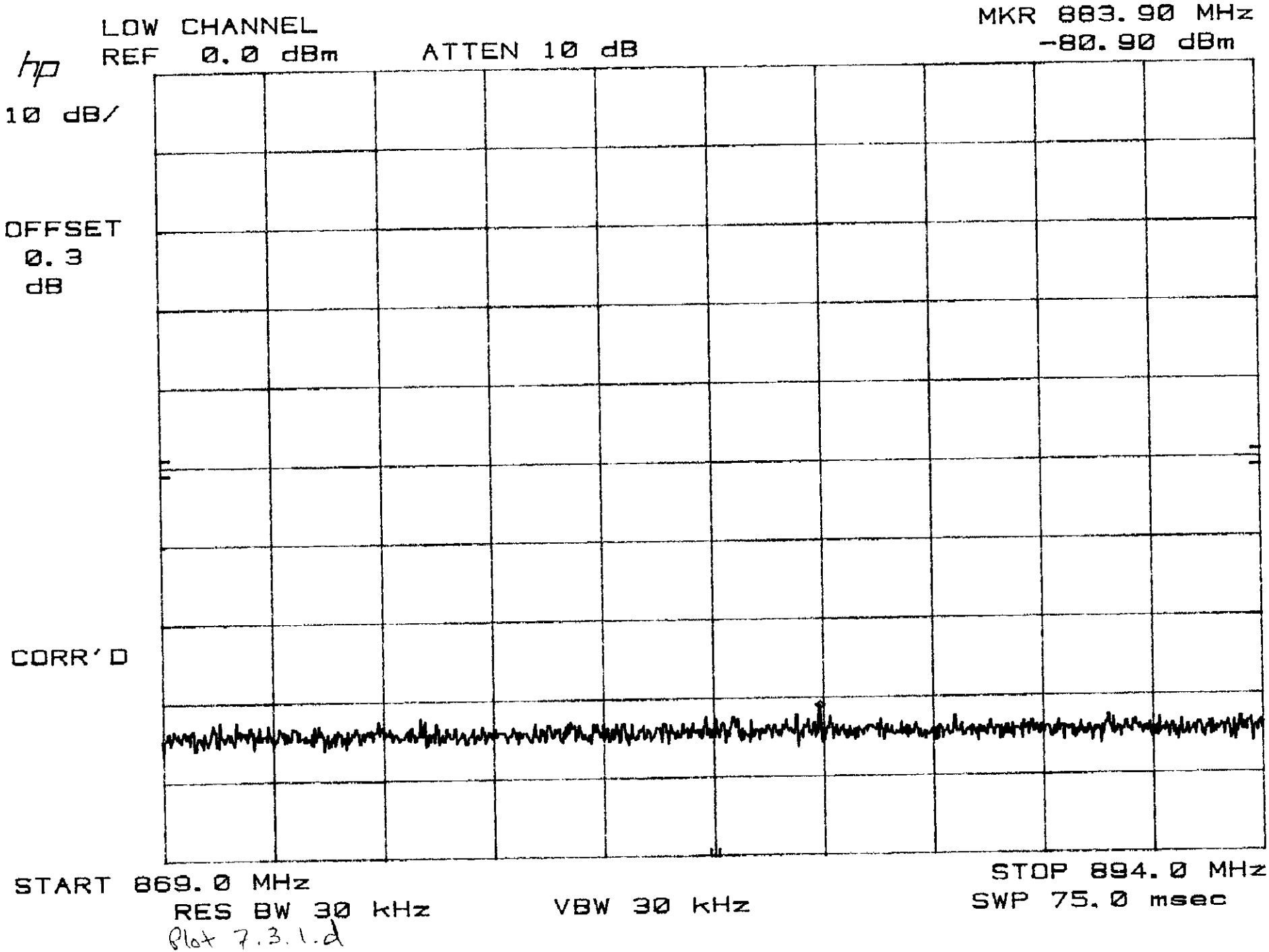
Plot 7.3.1.a


LOW CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR 2.475 GHz
-33.10 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 1.00 GHz
RES BW 100 kHz
VBW 300 kHz
STOP 2.50 GHz
SWP 450 msec

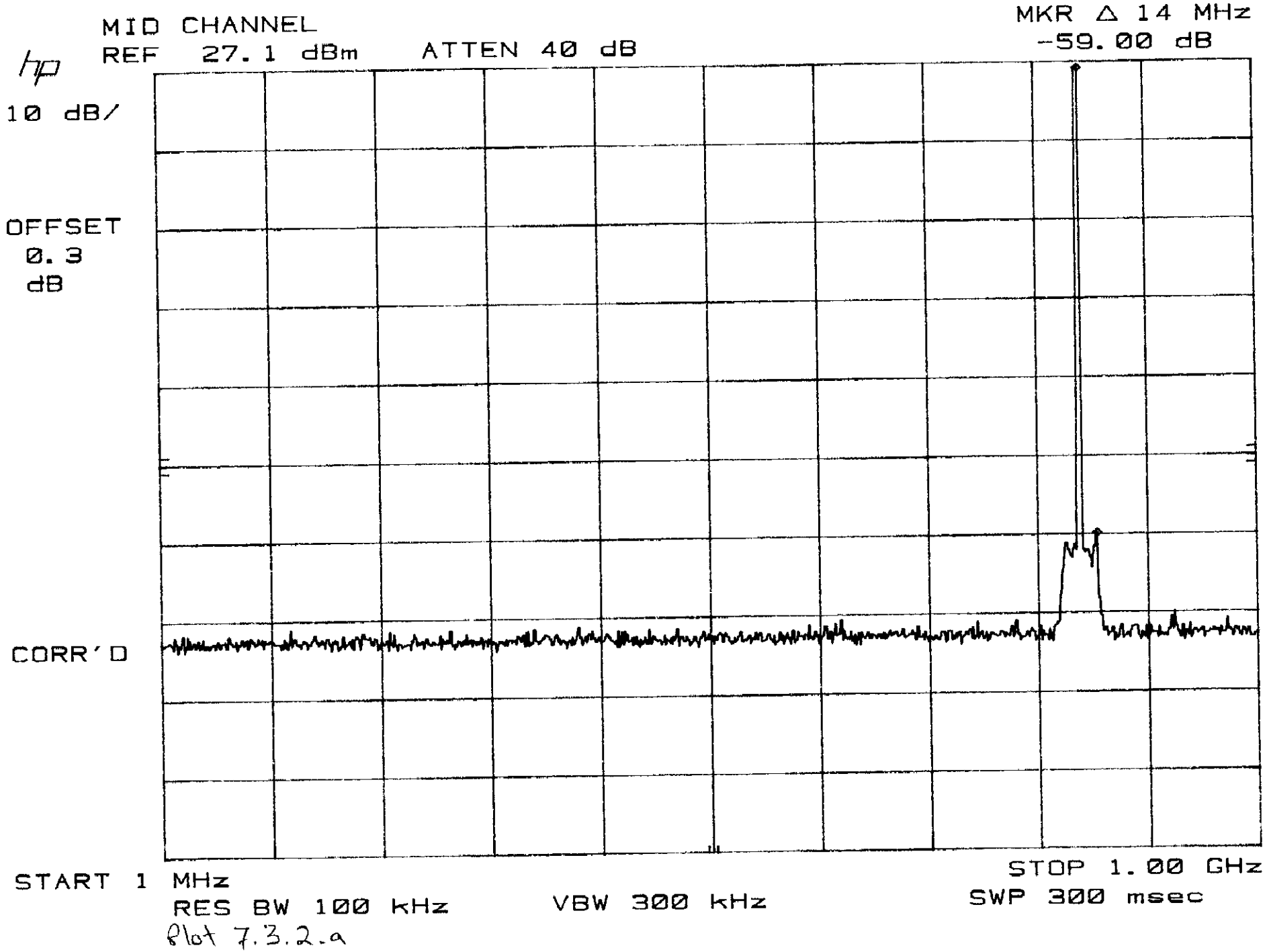
Plot 7.3.1.b


LOW CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR 9.858 GHz
-38.70 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
STOP 10.00 GHz
SWP 2.25 sec

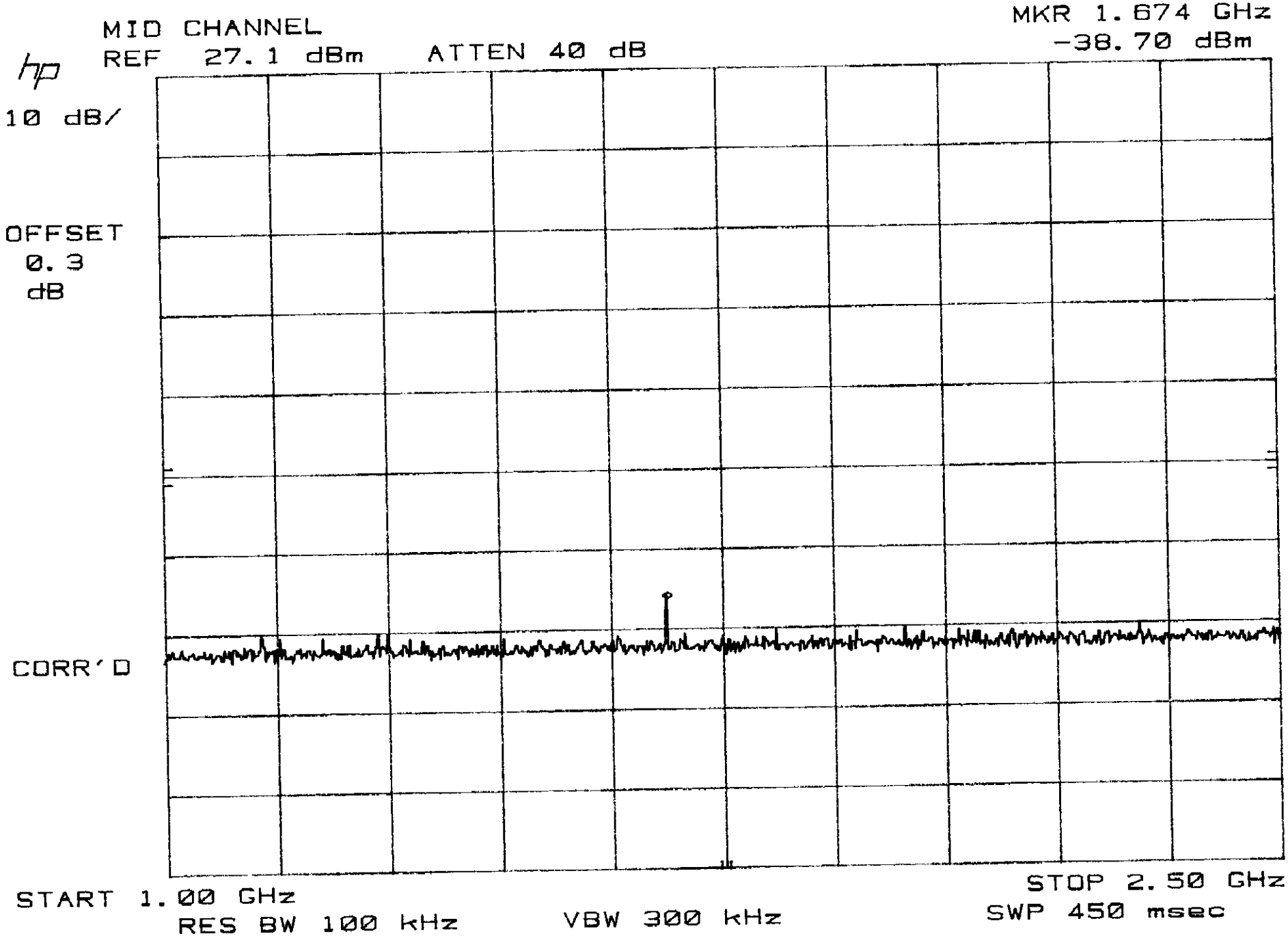
Plot 7.3.1.c


LOW CHANNEL
REF 0.0 dBm
ATTEN 10 dB
MKR 883.90 MHz
-80.90 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 869.0 MHz
RES BW 30 kHz
VBW 30 kHz
STOP 894.0 MHz
SWP 75.0 msec

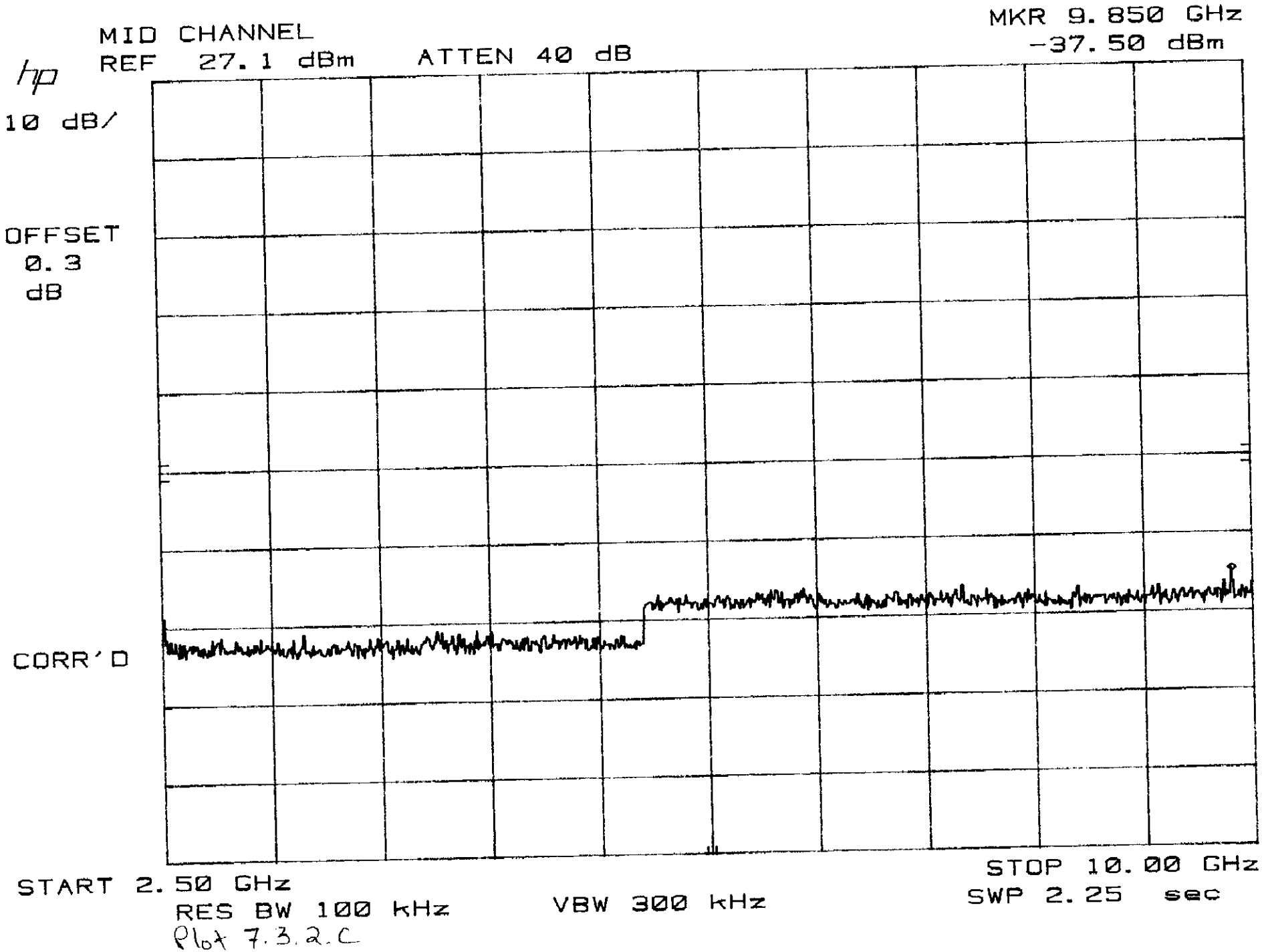
Plot 7.3.1.d


MID CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR Δ 14 MHz
-59.00 dB
10 dB/
OFFSET
0.3
dB
CORR'D
START 1 MHz
RES BW 100 kHz
VBW 300 kHz
STOP 1.00 GHz
SWP 300 msec

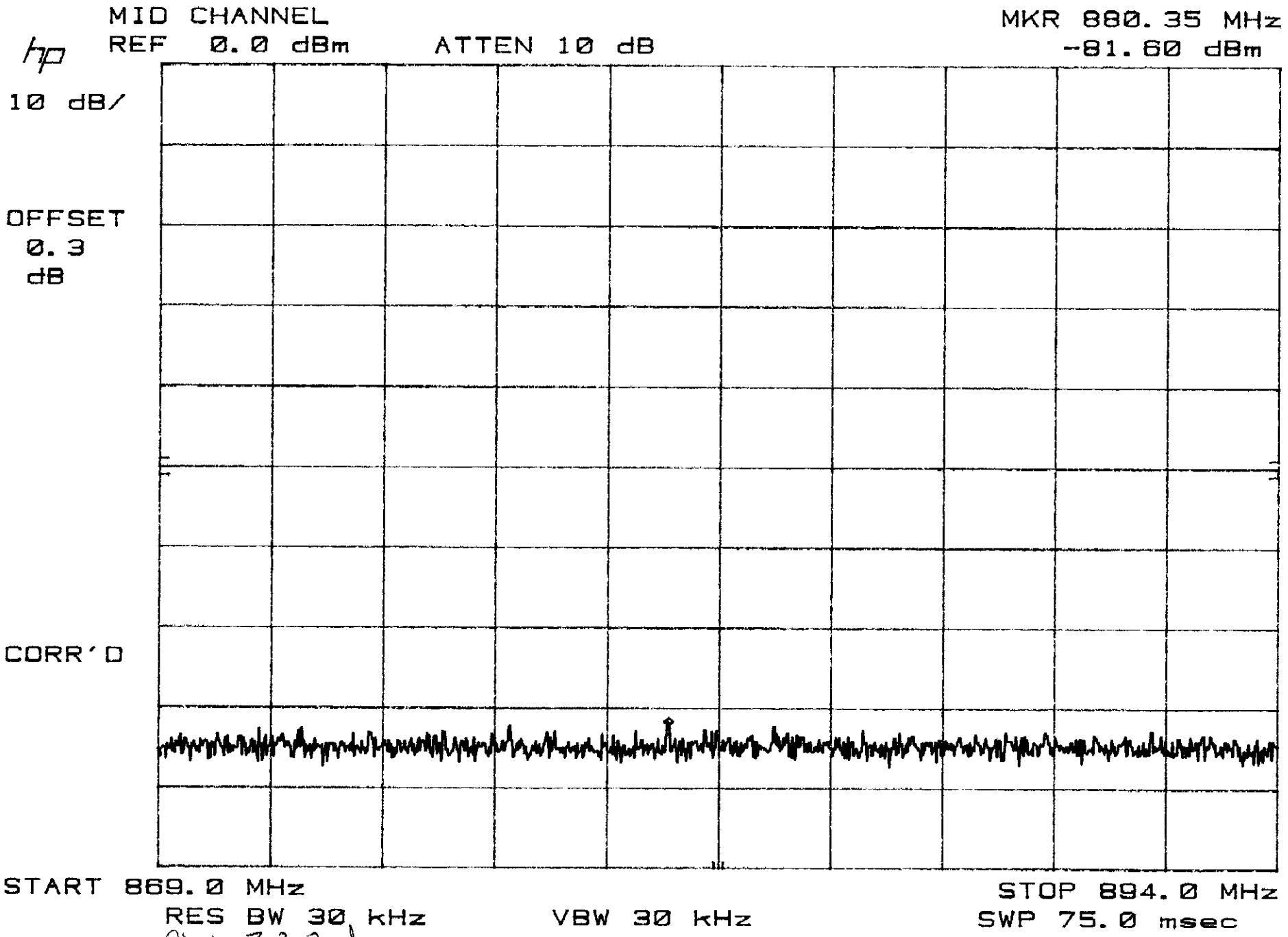
Plot 7.3.2.a


MID CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR 1.674 GHz
-38.70 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 1.00 GHz
RES BW 100 kHz
VBW 300 kHz
STOP 2.50 GHz
SWP 450 msec

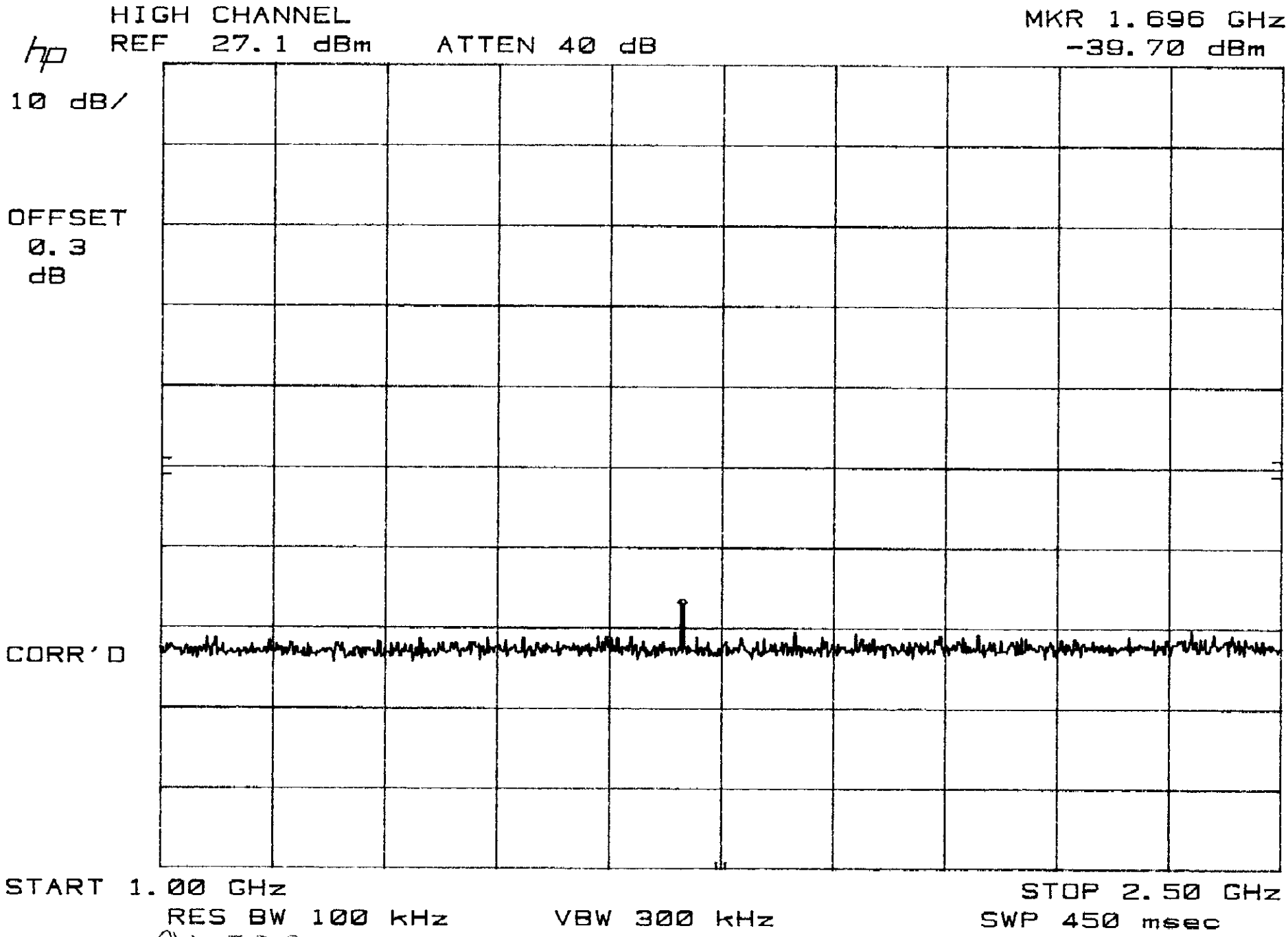
Plot 7.3.2.b


MID CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR 9.850 GHz
-37.50 dBm
hp
10 dB/
OFFSET
0.3
dB
CORR'D
START 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
STOP 10.00 GHz
SWP 2.25 sec

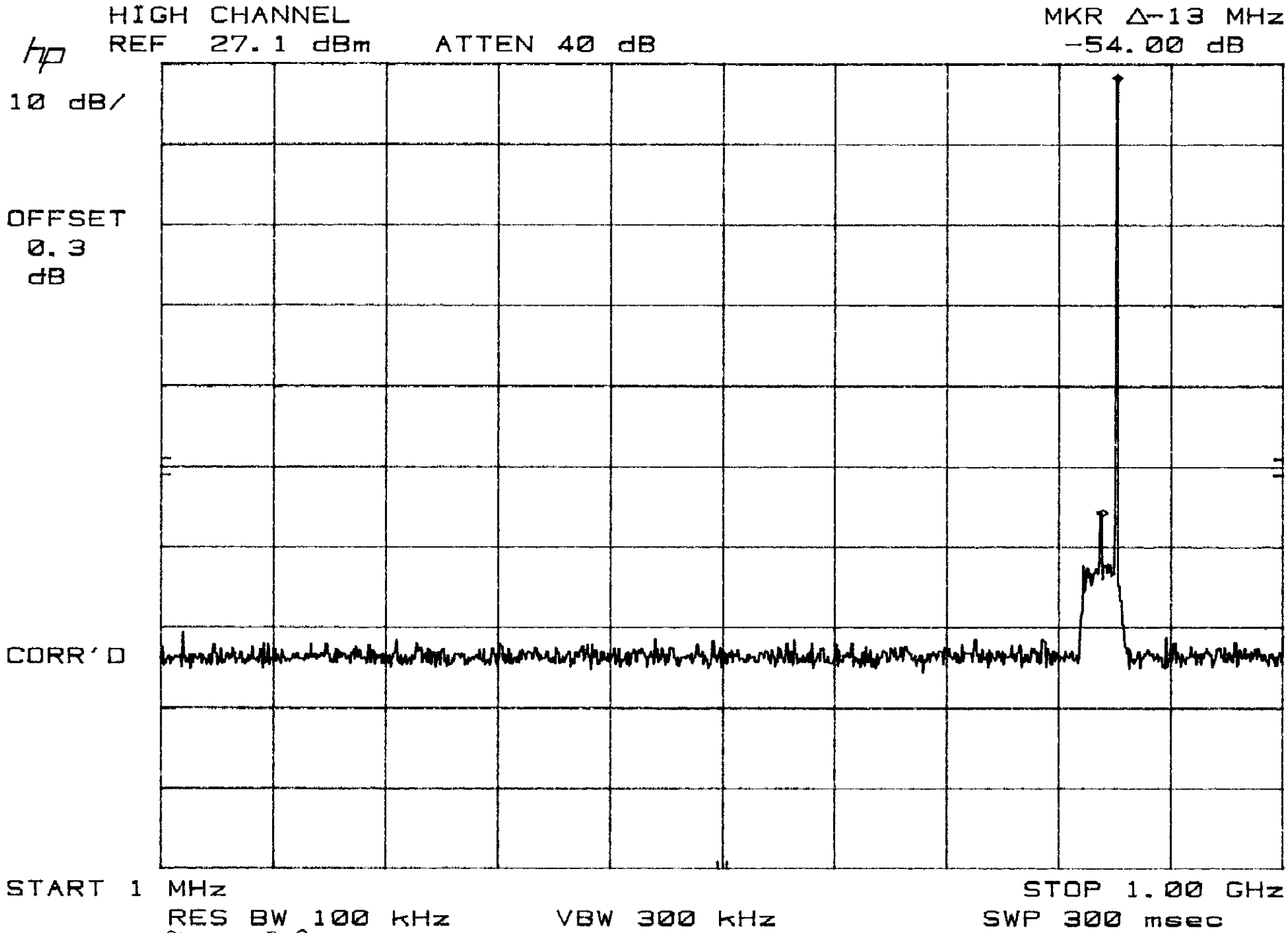
Plot 7.3.2.C


MID CHANNEL
REF 0.0 dBm
ATTEN 10 dB
MKR 880.35 MHz
-81.60 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 869.0 MHz
STOP 894.0 MHz
RES BW 30 kHz
VBW 30 kHz
SWP 75.0 msec

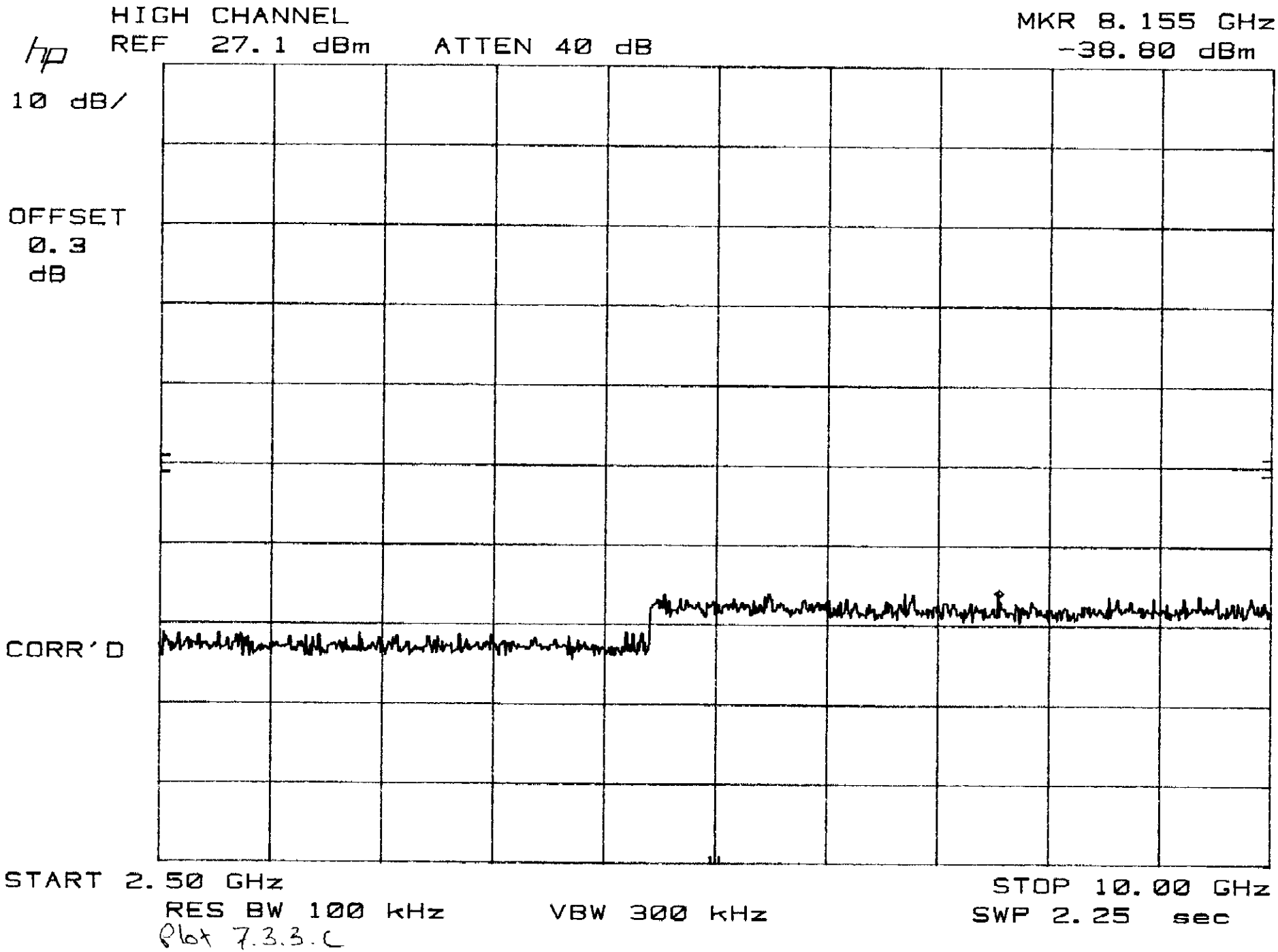
Plot 7.3.2.d


HIGH CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR 1.696 GHz
-39.70 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 1.00 GHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 450 msec

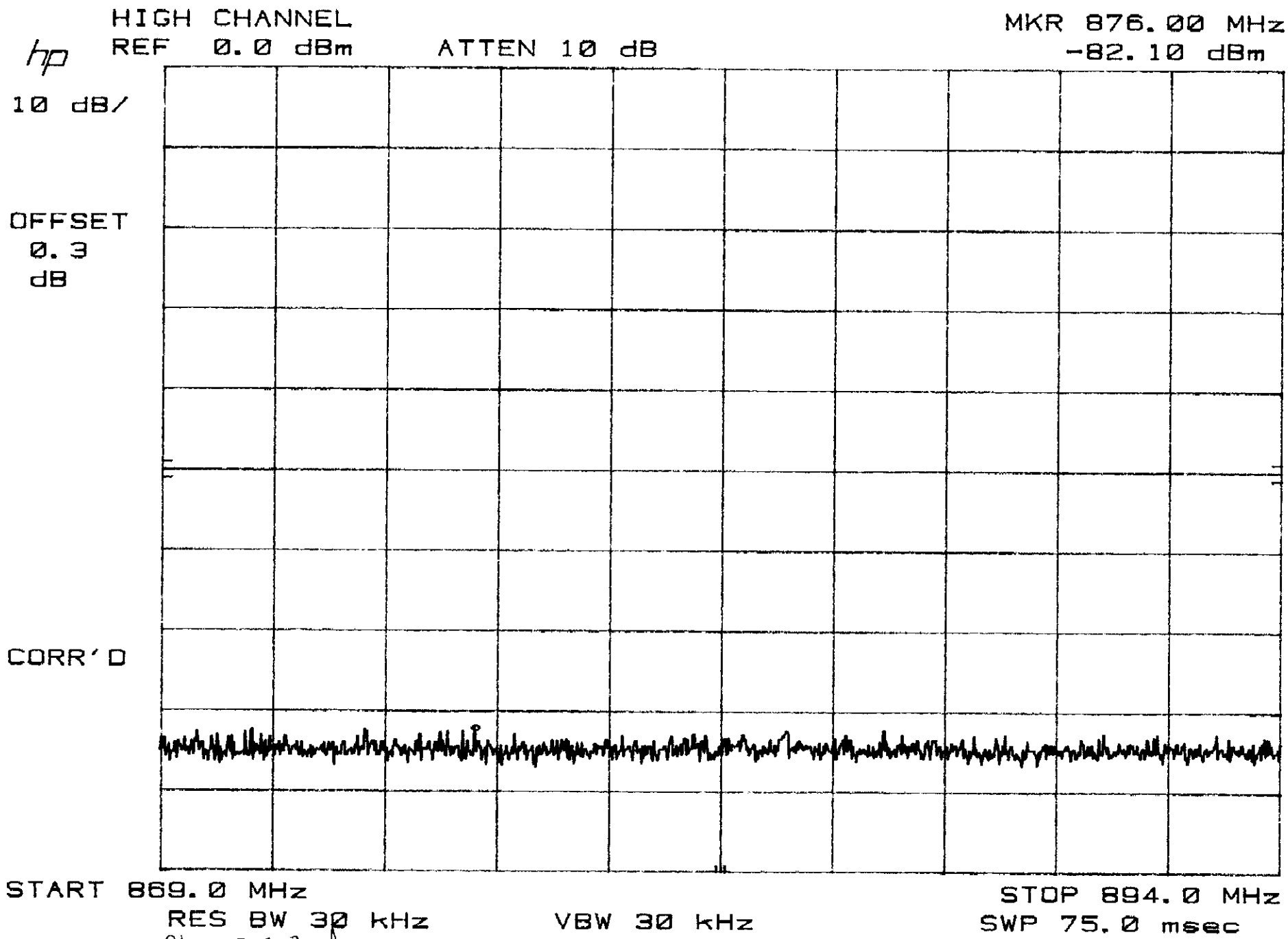
Plot 7.3.3.9


HIGH CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR Δ-13 MHz
-54.00 dB
10 dB/
OFFSET
0.3
dB
CORR'D
START 1 MHz
STOP 1.00 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 300 msec

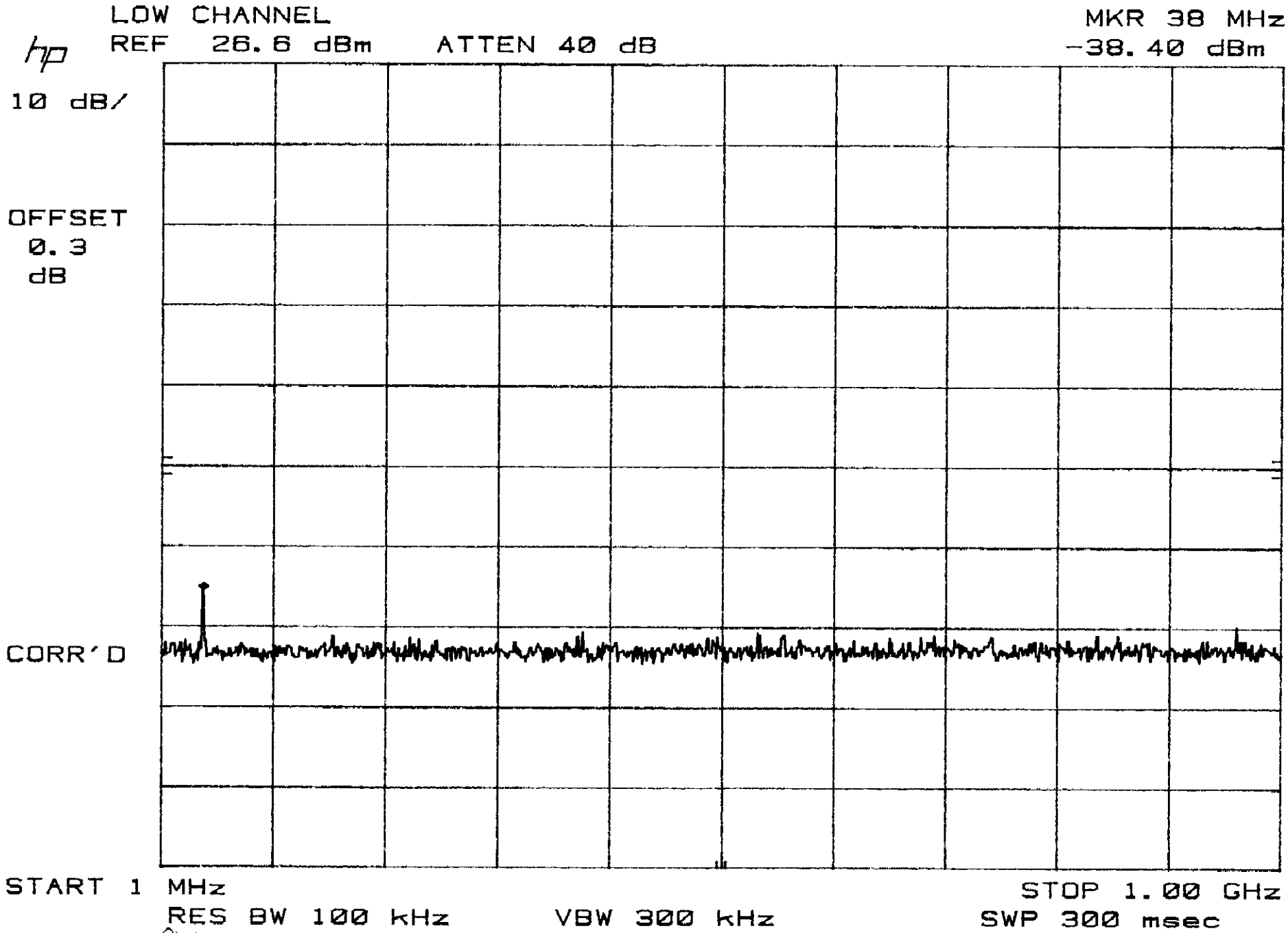
Plot 7.3.3.b


HIGH CHANNEL
REF 27.1 dBm
ATTEN 40 dB
MKR 8.155 GHz
-38.80 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
STOP 10.00 GHz
SWP 2.25 sec

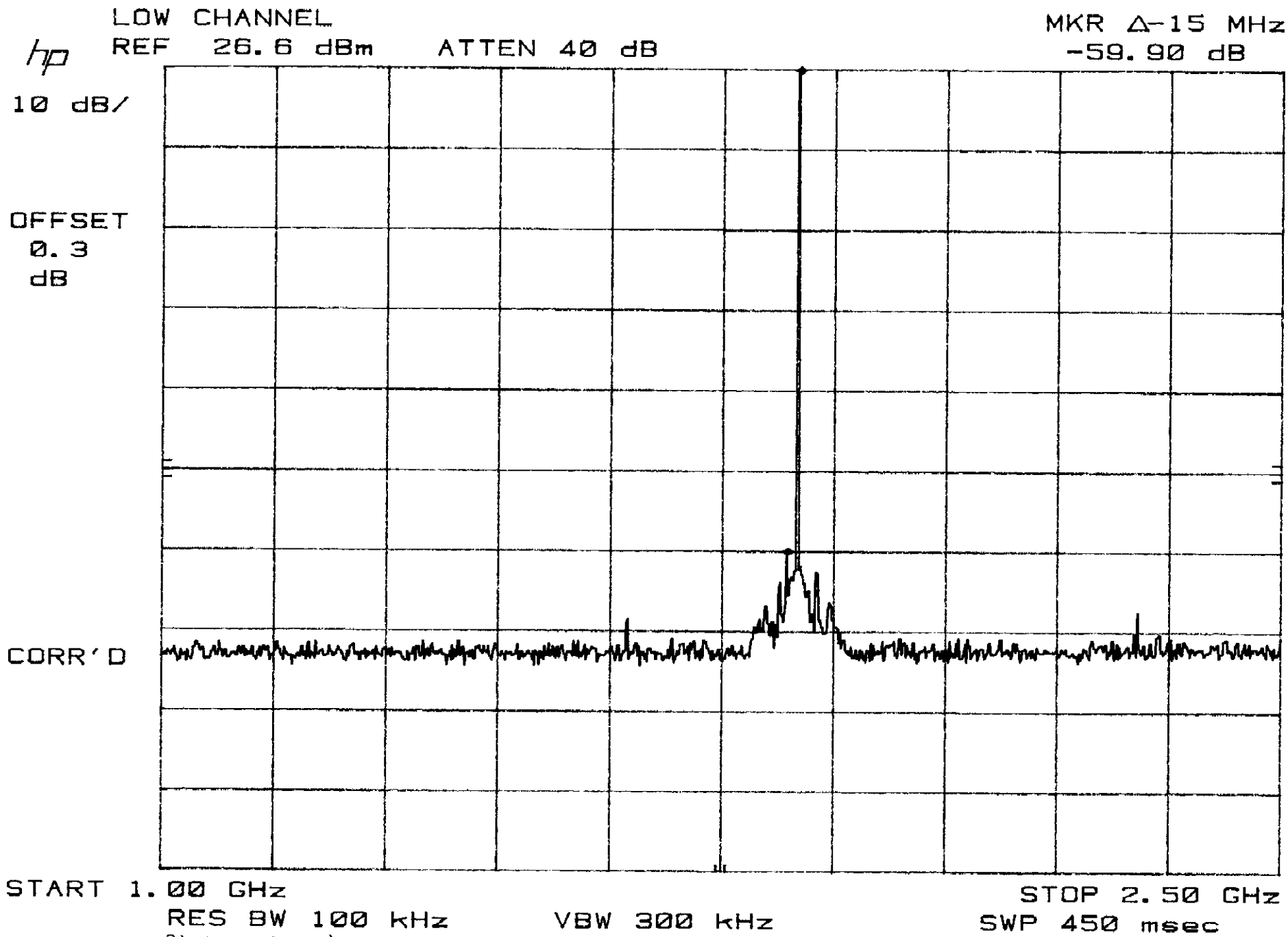
Plot 7.3.3.C


HIGH CHANNEL
REF 0.0 dBm
ATTEN 10 dB
MKR 876.00 MHz
-82.10 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 869.0 MHz
STOP 894.0 MHz
RES BW 30 kHz
VBW 30 kHz
SWP 75.0 msec

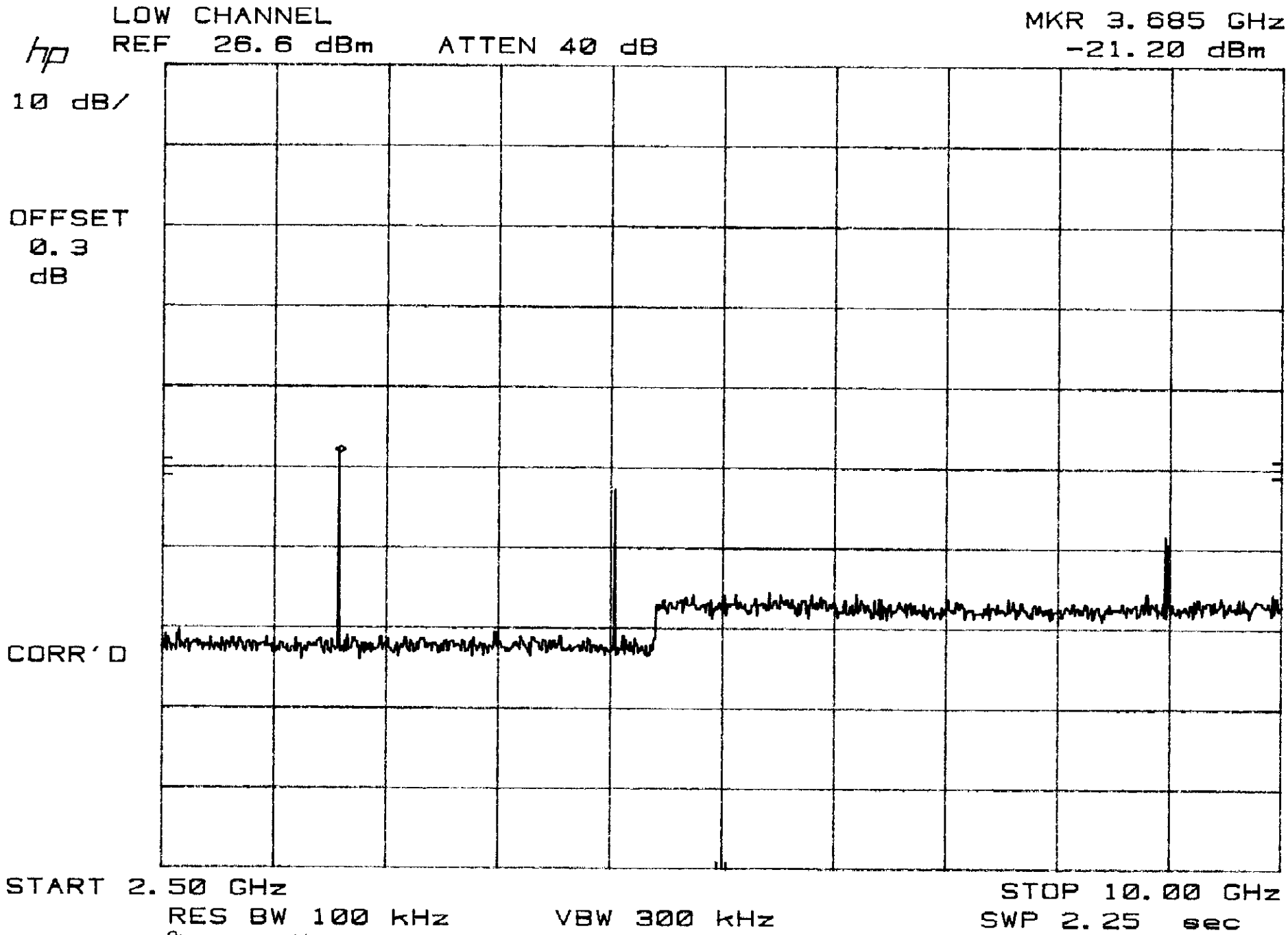
Plot 7.3.3.d


LOW CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 38 MHz
-38.40 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 1 MHz
STOP 1.00 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 300 msec

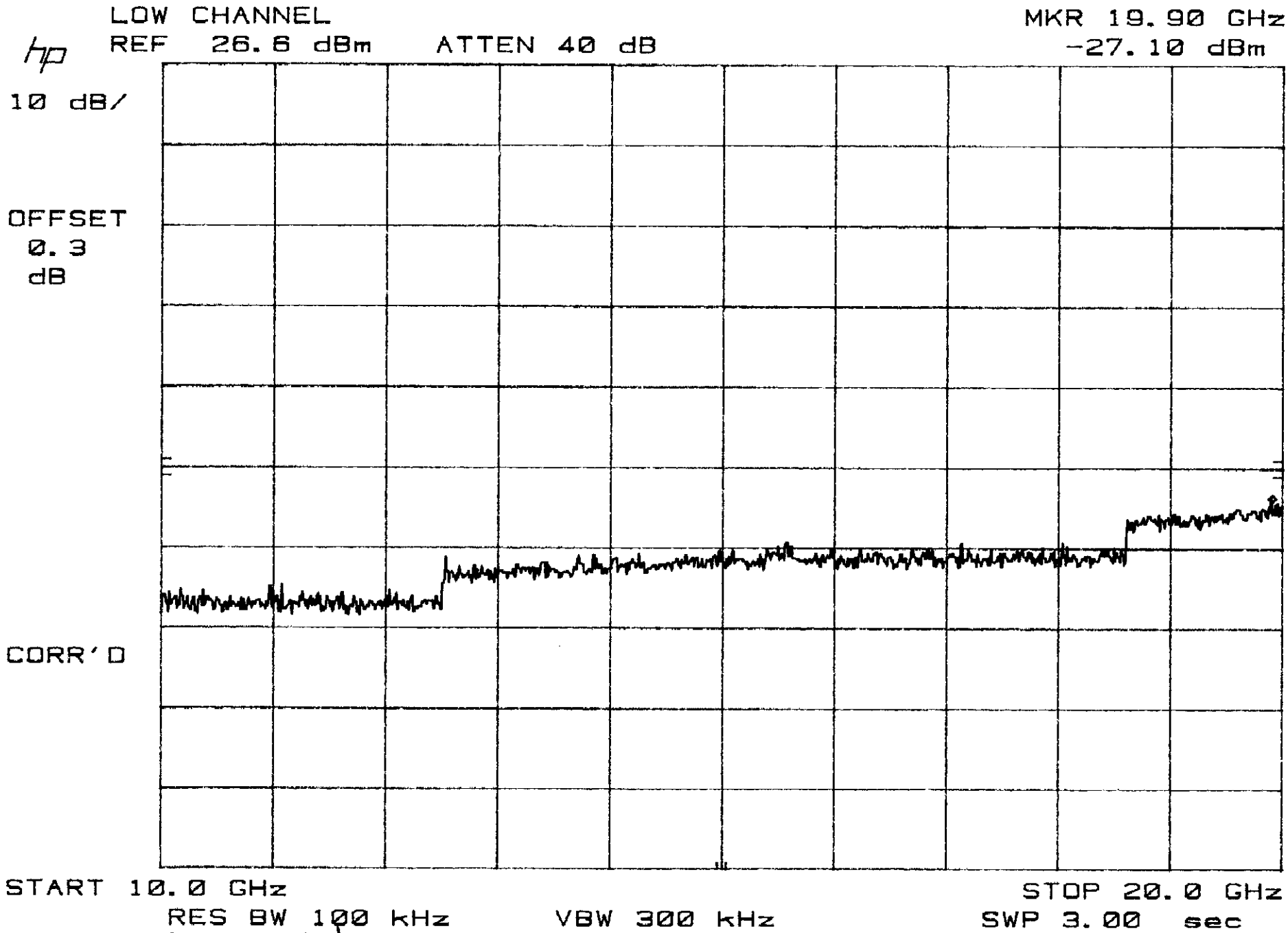
Plot 7.3.4.9


LOW CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR Δ-15 MHz
-59.90 dB
10 dB/
OFFSET
0.3
dB
CORR'D
START 1.00 GHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 450 msec

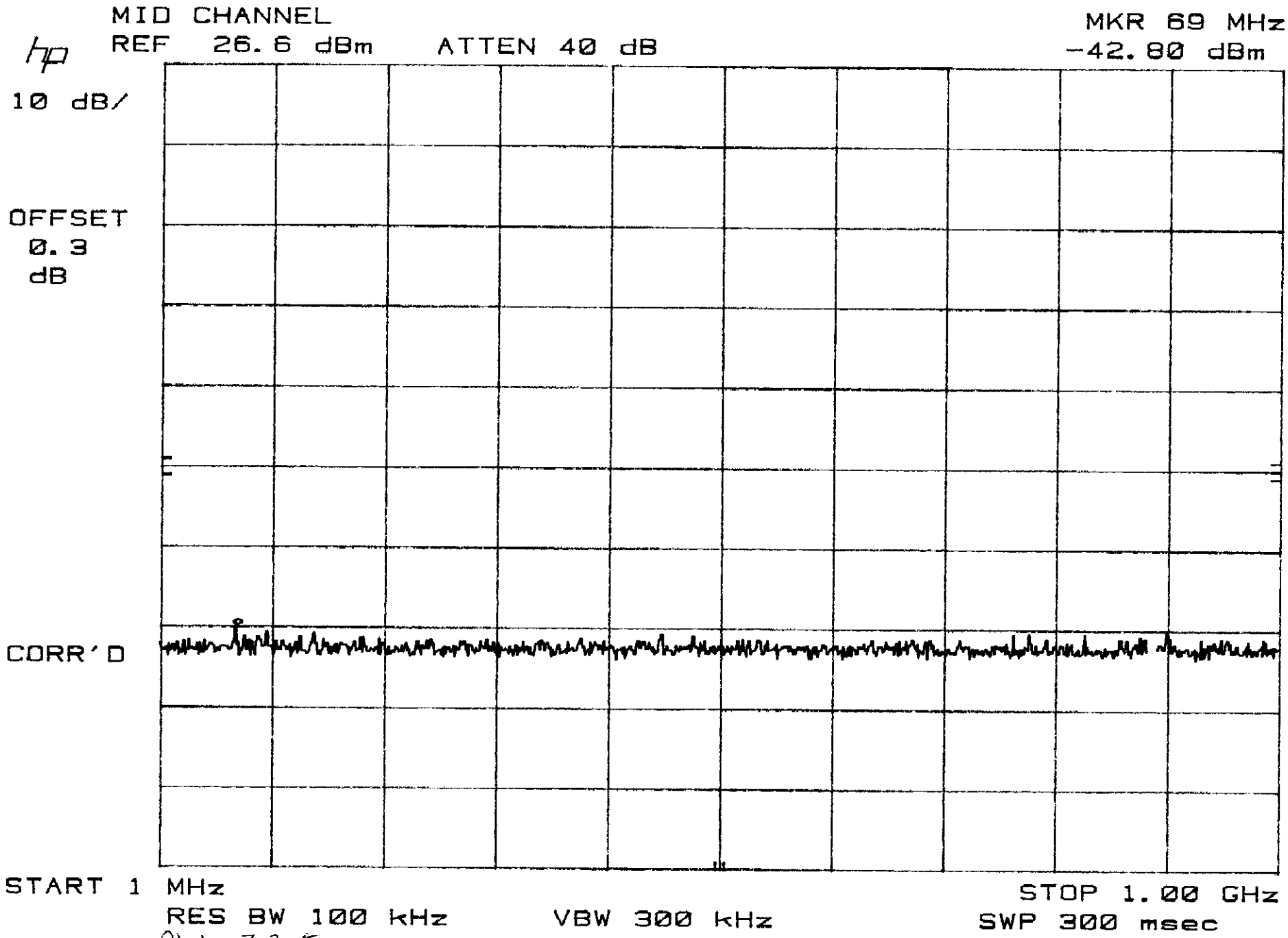
Plot 7.3.4.b


LOW CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 3.685 GHz
-21.20 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
STOP 10.00 GHz
SWP 2.25 sec

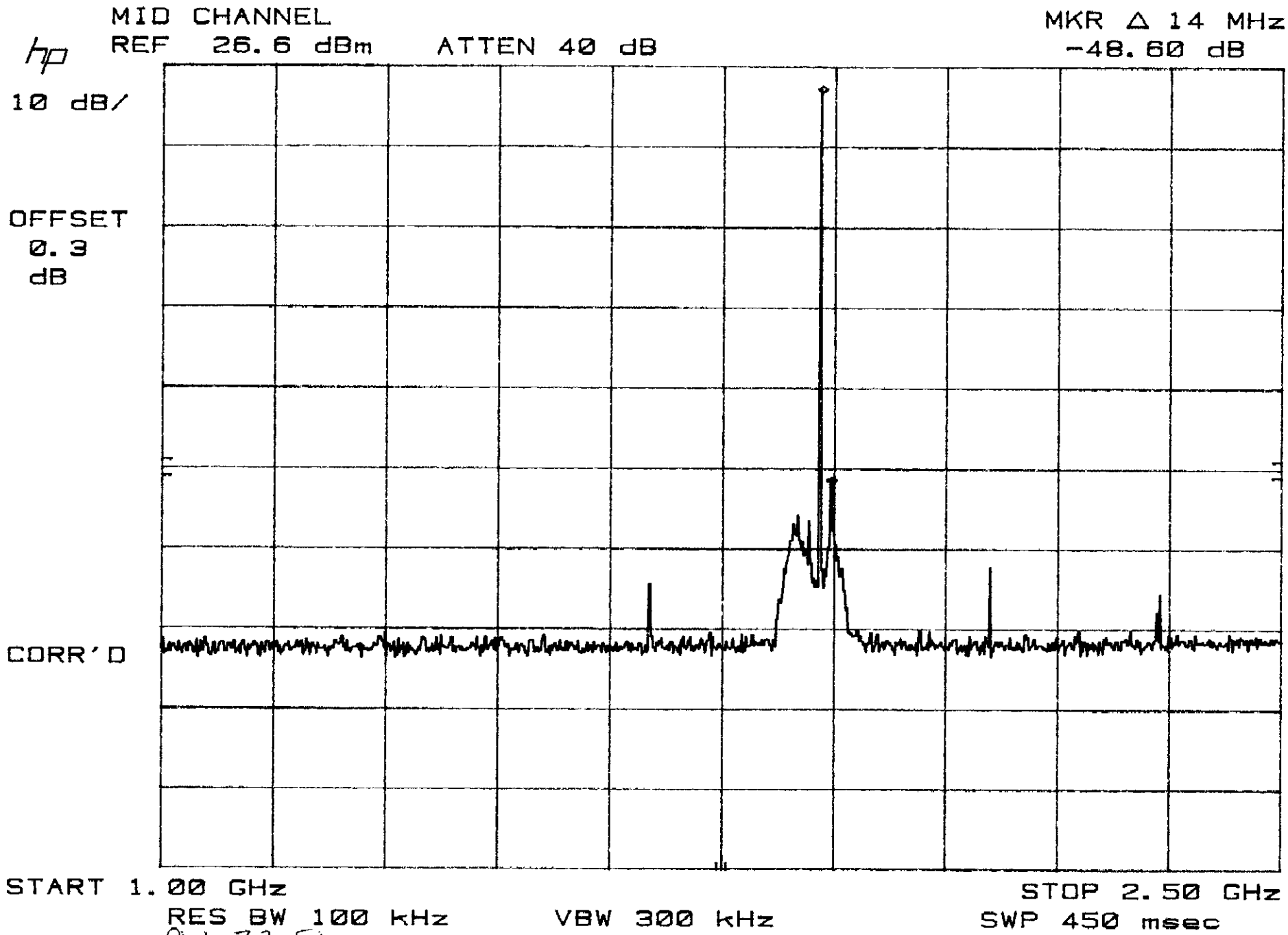
Plot 7.3.4.C


LOW CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 19.90 GHz
-27.10 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 10.0 GHz
STOP 20.0 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 3.00 sec

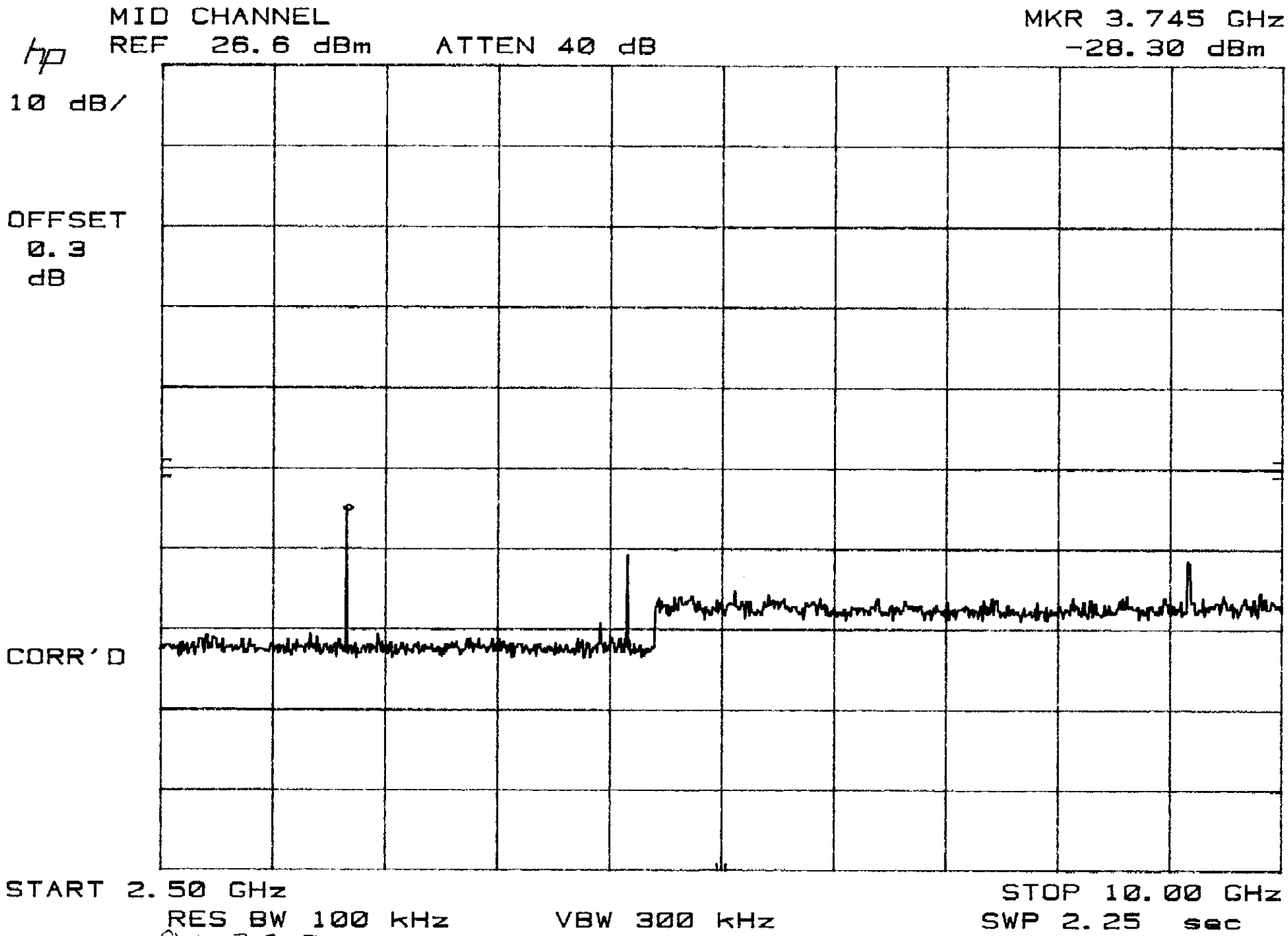
Plot 7.3.4.d


MID CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 69 MHz
-42.80 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 1 MHz
RES BW 100 kHz
VBW 300 kHz
STOP 1.00 GHz
SWP 300 msec

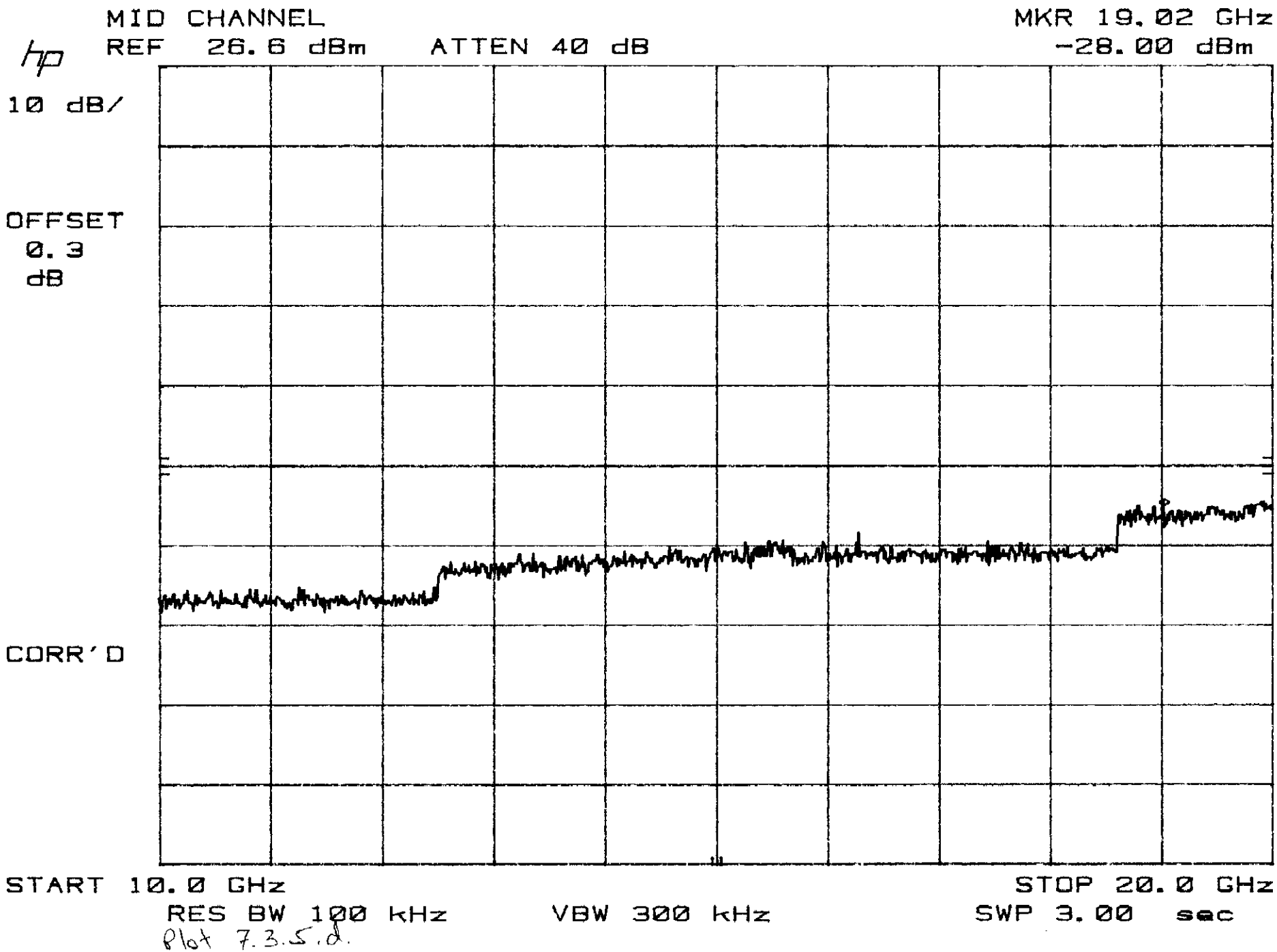
Plot 7.3.5.9


MID CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR Δ 14 MHz
-48.60 dB
10 dB/
OFFSET
0.3
dB
CORR'D
START 1.00 GHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 450 msec

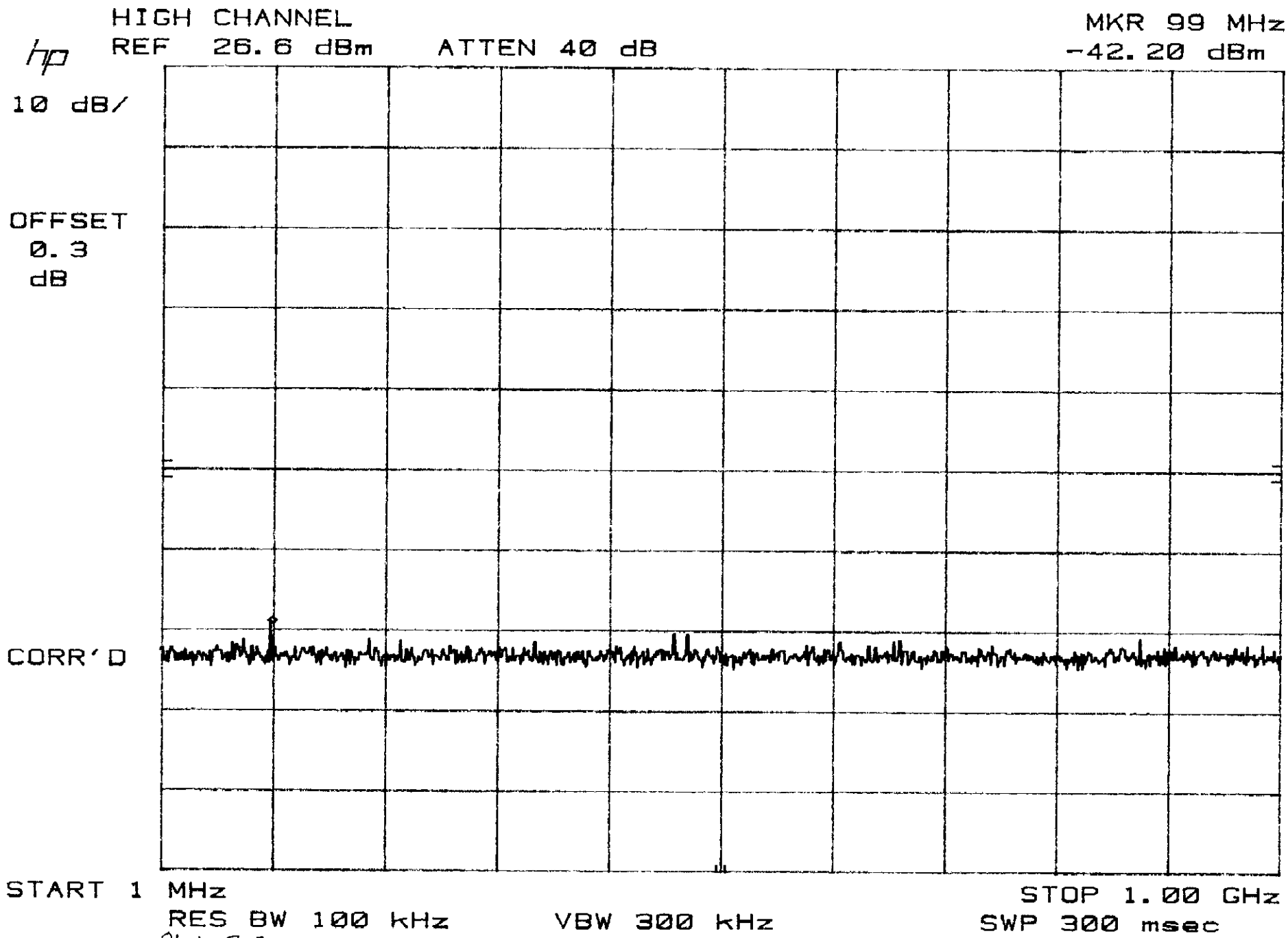
Plot 7.3.5.b


MID CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 3.745 GHz
-28.30 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 2.25 sec

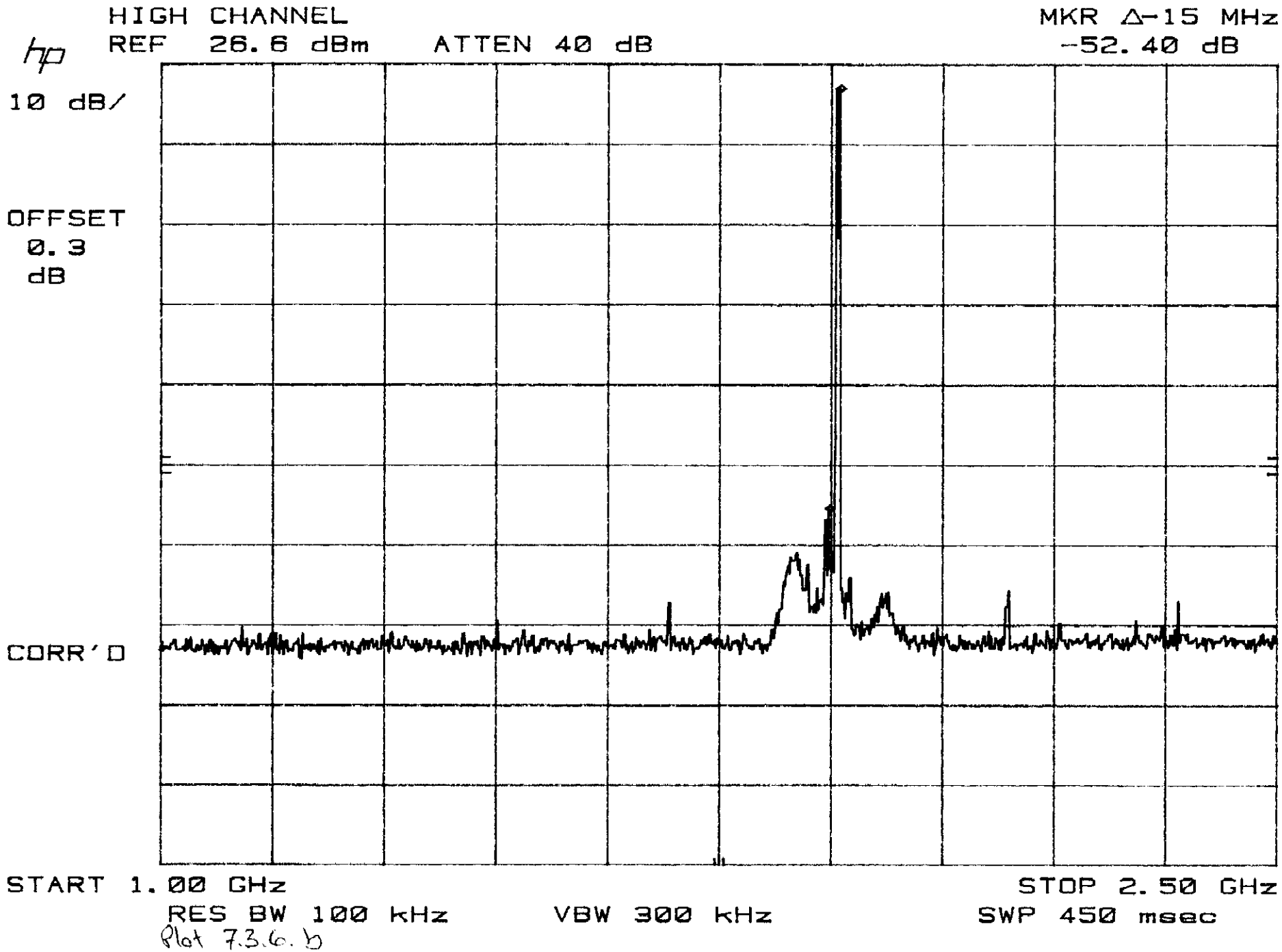
Plot 7.3.5.C


MID CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 19.02 GHz
-28.00 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 10.0 GHz
STOP 20.0 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 3.00 sec

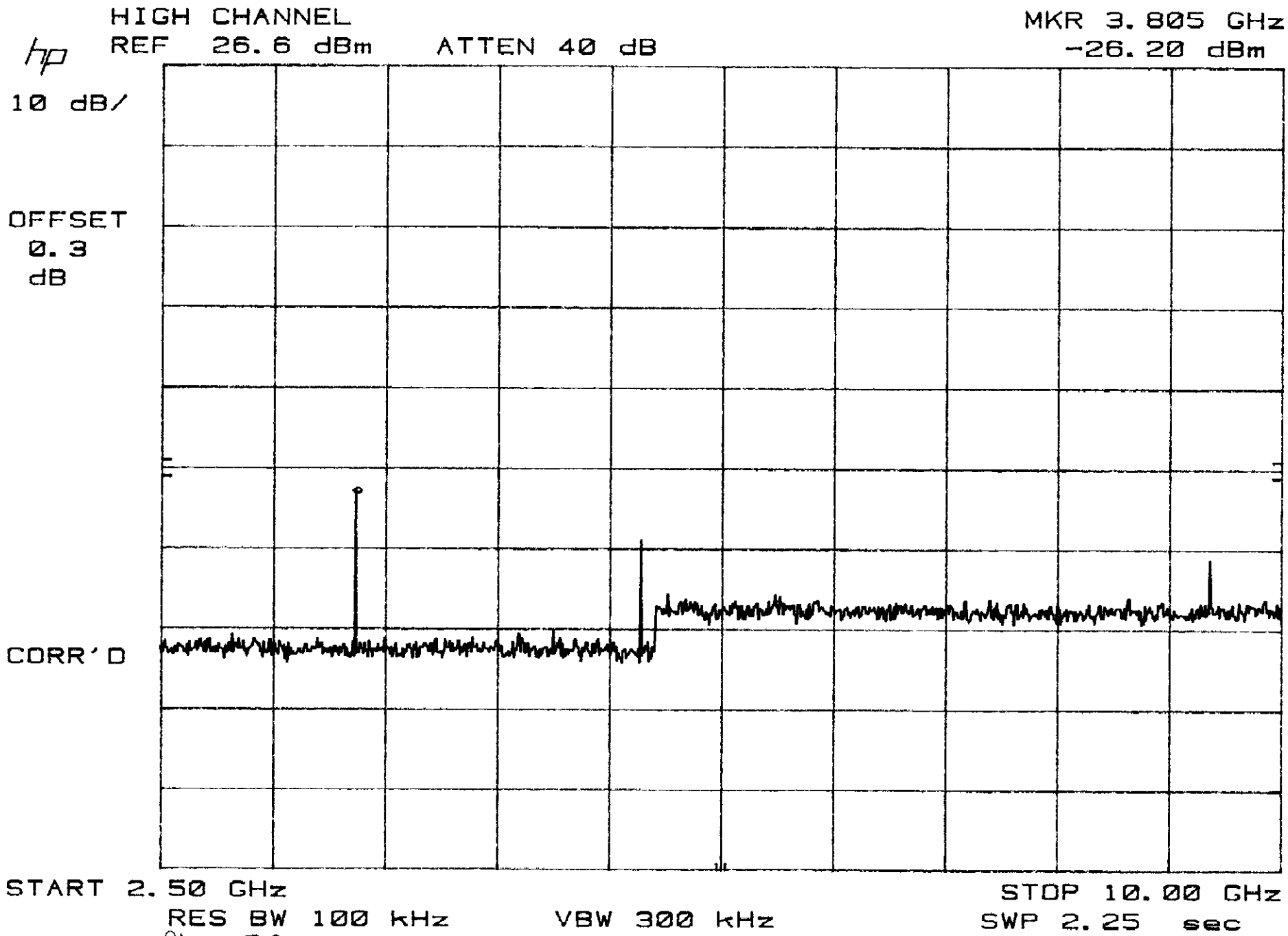
Plot 7.3.5.d.


HIGH CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 99 MHz
-42.20 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 1 MHz
STOP 1.00 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 300 msec

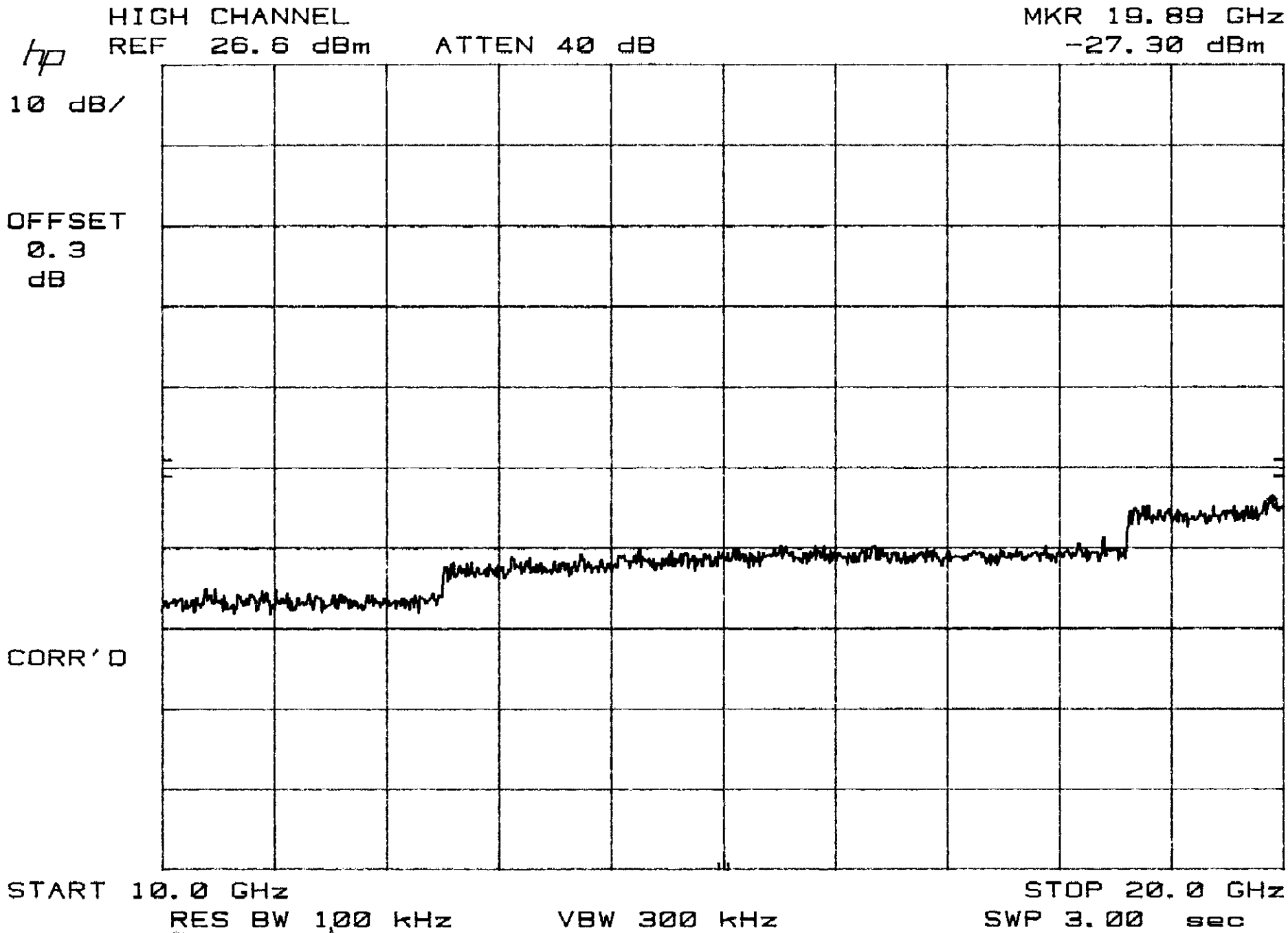
Plot 7.3.6.9


HIGH CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR Δ-15 MHz
-52.40 dB
10 dB/
OFFSET
0.3
dB
CORR'D
START 1.00 GHz
STOP 2.50 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 450 msec

Plot 7.3.6.b


HIGH CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 3.805 GHz
-26.20 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 2.50 GHz
STOP 10.00 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 2.25 sec

Plot 7.3.6.C


HIGH CHANNEL
REF 26.6 dBm
ATTEN 40 dB
MKR 19.89 GHz
-27.30 dBm
10 dB/
OFFSET
0.3
dB
CORR'D
START 10.0 GHz
STOP 20.0 GHz
RES BW 100 kHz
VBW 300 kHz
SWP 3.00 sec

Plot 7.3.6.d

8.0 Field Strength of Spurious Radiation, FCC § 2.1053

8.1 Test Procedure

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

The frequency range up to tenth harmonic of each of the three fundamental frequency (low, middle, and high channels) was investigated.

The spurious emissions attenuation was calculated as the difference between Field strength in dBuV/m at the fundamental frequency (See Section 3) and at the spurious emissions frequency.

8.2 Test Equipment

EMCO 3115 Horn Antenna
HP 8566B Spectrum Analyzer
Tektronix 2782 Spectrum Analyzer
Low Pass Filter
Preamplifier

8.3 Test Results

Test Result:	Passed, refer to the attached

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Tx @ Low Channel: 824.04 MHz
Engineer:	Ollie Moyrong
Date:	March_6_2000

Spurious Harmonic Attenuation

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Spurious Attenuation (dB)	Margin (dB)
824.0	3.0	V	100.7	23.3	0.0	0.0	2.0	126.0	N/A	N/A
1648.1	3.0	V	30.5	26.6	0.0	0.0	3.0	60.1	65.9	-25.8
2472.2	3.0	V	42.6	30.4	0.0	0.0	2.3	75.3	50.7	-10.6
3296.2	3.0	V	19.0	32.5	0.0	0.0	2.7	54.2	71.8	-31.7
4120.2	3.0	H	26.9	34.5	-27.9	0.0	2.9	36.4	89.6	-49.5
4944.3	3.0	H	27.5	34.3	-28.3	0.0	3.5	37.0	89.0	-48.9
5768.3	3.0	H	35.8	36.4	-28.3	0.0	3.9	47.8	78.2	-38.1
6592.4	3.0	H	27.5	36.7	-28.0	0.0	4.3	40.5	85.5	-45.4
7416.4	3.0	H	27.4	38.5	-27.8	0.0	4.6	42.7	83.3	-43.2
8240.4	3.0	H	26.9	38.8	-27.1	0.0	4.7	43.3	82.7	-42.6

Measured conducted power = 27.1 dBm
Spurious emission attenuation limit = 40.1 dB

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Tx @ Mid Channel: 836.5 MHz
Engineer:	Ollie Moyrong
Date:	March_6_2000

Spurious Harmonic Attenuation

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Spurious Attenuation (dB)	Margin (dB)
836.5	3.0	V	100.8	23.4	0.0	0.0	2.0	126.2	N/A	N/A
1673.1	3.0	V	37.3	26.6	0.0	0.0	3.0	66.9	59.3	-19.5
2509.6	3.0	V	40.7	30.4	0.0	0.0	2.3	73.4	52.8	-13.0
3346.1	3.0	V	18.9	32.5	0.0	0.0	2.7	54.1	72.1	-32.3
4182.6	3.0	H	25.0	34.5	-27.9	0.0	2.9	34.5	91.7	-51.9
5019.1	3.0	H	32.5	34.3	-28.3	0.0	3.5	42.0	84.2	-44.4
5855.7	3.0	H	36.9	36.4	-28.3	0.0	3.9	48.9	77.3	-37.5
6692.2	3.0	V	28.2	36.4	-28.0	0.0	4.3	40.9	85.3	-45.5
7528.7	3.0	H	29.0	38.5	-27.8	0.0	4.6	44.3	81.9	-42.1
8365.2	3.0	V	27.6	40.3	-27.1	0.0	4.7	45.5	80.7	-40.9

Measured conducted power = 26.8 dBm
Spurious emission attenuation limit = 39.8 dB

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Tx @ High Channel: 848.97 MHz
Engineer:	Ollie Moyrong
Date:	March_6_2000

Spurious Harmonic Attenuation

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Spurious Attenuation (dB)	Margin (dB)
849.0	3.0	V	101.3	23.4	0.0	0.0	2.0	126.7	N/A	N/A
1698.0	3.0	V	40.3	26.6	0.0	0.0	3.0	69.9	56.8	-18.0
2547.0	3.0	V	42.0	30.4	0.0	0.0	2.3	74.7	52.0	-13.2
3396.0	3.0	V	19.0	32.5	0.0	0.0	2.7	54.2	72.5	-33.7
4244.9	3.0	H	23.0	34.5	-27.9	0.0	2.9	32.5	94.2	-55.4
5093.9	3.0	H	34.2	34.3	-28.3	0.0	3.5	43.7	83.0	-44.2
5942.8	3.0	H	30.9	36.4	-28.3	0.0	3.9	42.9	83.8	-45.0
6791.8	3.0	H	30.4	37.8	-28.0	0.0	4.3	44.5	82.2	-43.4
7640.8	3.0	H	25.0	38.5	-27.8	0.0	4.6	40.3	86.4	-47.6
8489.8	3.0	H	25.0	38.8	-27.1	0.0	4.7	41.4	85.3	-46.5

Measured conducted power = 25.8 dBm
Spurious emission attenuation limit = 38.8 dB

ITS Intertek Testing Services

Job No.: J20004218
Company: Philips
Model: OZEO
Test Mode: Tx @ Low Channel: 1850.0 MHz
Engineer: Ollie Moyrong
Date: March_6_2000

Spurious Harmonic Attenuation

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Spurious Attenuation (dB)	Margin (dB)	
1850.0	3.0	V	88.6	30.1	0.0	0.0	3.1	121.8	N/A	N/A	
3700.0	3.0	H	32.2	32.1	0.0	0.0	2.8	67.1	54.7	-14.9	
5550.0	3.0	H	53.6	36.2	-28.3	0.0	3.7	65.2	56.6	-16.8	
7400.0	3.0	H	40.2	38.4	-27.2	0.0	4.6	56.0	65.8	-26.0	
9250.0	3.0	H	54.2	39.0	-27.3	0.0	5.0	70.9	50.9	-11.1	
11100.0	3.0	H	48.6	40.7	-33.0	0.0	5.8	62.1	59.7	-19.9	
12950.0	3.0	H	33.7	40.0	-33.0	0.0	6.2	46.9	74.9	-35.1	
14800.0	3.0	H	31.7	41.7	-33.0	0.0	6.9	47.3	74.5	-34.7	*
16550.0	3.0	H	31.5	41.3	-33.0	0.0	7.5	47.3	74.5	-34.7	*
18500.0	3.0	H	32.4	44.0	-33.0	0.0	7.7	51.1	70.7	-30.9	*

Measured conducted power = 26.8 dBm
Spurious emission attenuation limit = 39.8 dB
*: Noise floor

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Tx @ Mid Channel: 1879.9 MHz
Engineer:	Ollie Moyrong
Date:	March_6_2000

Spurious Harmonic Attenuation

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Spurious Attenuation (dB)	Margin (dB)	
1879.9	3.0	V	83.6	30.1	0.0	0.0	3.1	116.8	N/A	N/A	
3759.9	3.0	H	28.0	34.5	0.0	0.0	2.9	65.4	51.4	-14.8	
5639.9	3.0	H	39.5	36.2	-28.3	0.0	3.7	51.1	65.7	-29.1	
7519.9	3.0	H	45.2	38.4	-27.2	0.0	4.6	61.0	55.8	-19.2	
9399.9	3.0	H	42.8	39.0	-27.3	0.0	5.0	59.5	57.3	-20.7	
11279.7	3.0	H	38.5	41.9	-33.0	0.0	5.8	53.2	63.6	-27.0	
13159.7	3.0	H	32.6	40.0	-33.0	0.0	6.2	45.8	71.0	-34.4	
15039.7	3.0	H	32.7	41.7	-33.0	0.0	6.9	48.3	68.5	-31.9	*
16919.6	3.0	H	32.0	43.0	-33.0	0.0	7.5	49.5	67.3	-30.7	*
18799.6	3.0	H	36.0	44.0	-33.0	0.0	7.7	54.7	62.1	-25.5	*

Measured conducted power = 23.6 dBm
Spurious emission attenuation limit = 36.6 dB
*: Noise floor

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Tx @ High Channel: 1909.9 MHz
Engineer:	Ollie Moyrong
Date:	March_6_2000

Spurious Harmonic Attenuation

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Spurious Attenuation (dB)	Margin (dB)	
1909.9	3.0	V	82.9	30.1	0.0	0.0	3.1	116.1	N/A	N/A	
3819.9	3.0	H	24.8	34.5	0.0	0.0	2.9	62.2	53.9	-17.2	
5729.9	3.0	H	50.4	36.2	-28.3	0.0	3.7	62.0	54.1	-17.4	
7639.8	3.0	H	44.5	38.4	-27.2	0.0	4.6	60.3	55.8	-19.1	
9549.7	3.0	H	46.4	39.0	-27.3	0.0	5.0	63.1	53.0	-16.3	
11459.8	3.0	H	37.6	41.9	-33.0	0.0	5.8	52.3	63.8	-27.1	
13369.5	3.0	H	33.5	40.5	-33.0	0.0	6.2	47.2	68.9	-32.2	
15279.4	3.0	H	32.6	42.2	-33.0	0.0	6.9	48.7	67.4	-30.7	*
17189.3	3.0	H	33.5	43.0	-33.0	0.0	7.5	51.0	65.1	-28.4	*
19099.1	3.0	H	36.6	44.0	-33.0	0.0	7.7	55.3	60.8	-24.1	*

Measured conducted power = 23.7 dBm
Spurious emission attenuation limit = 36.7 dB
*: Noise floor

ITS Intertek Testing Services

Job No.:	J20004218
Company:	Philips
Model:	OZEO
Test Mode:	Rx
Engineer:	Ollie Moyrong
Date:	March_9_2000

FCC Part 15.109 Class B Radiated Emissions

Frequency (MHz)	Antenna Location (m)	Antenna Polariz. (H/V)	Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Correction Factor (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Limit At 3 m (dBuV/m)	Margin (dB)
37.33	3.0	H	7.5	10.6	0.0	0.0	1.0	19.1	40.0	-21.0
41.48	3.0	H	9.6	10.6	0.0	0.0	1.0	21.2	40.0	-18.8
62.22	3.0	H	16.5	5.2	0.0	0.0	1.1	22.8	40.0	-17.2
70.52	3.0	H	13.1	7.2	0.0	0.0	1.2	21.5	40.0	-18.5
87.10	3.0	H	9.7	8.1	0.0	0.0	1.3	19.1	40.0	-20.9
124.43	3.0	H	10.5	7.2	0.0	0.0	1.4	19.1	43.5	-24.4
174.20	3.0	H	8.9	9.1	0.0	0.0	1.7	19.7	43.5	-23.8
236.42	3.0	H	5.9	11.5	0.0	0.0	2.0	19.4	46.0	-26.6

Notes: Negative signs (-) in the Margin column signify levels below the limit.
Readings followed by a '*' are Quasi-peak measurements. All other readings are peak measurements.
All other emissions not reported are at least 10 dB below the applicable limits.
Frequency range of investigation is 30 MHz - 1 GHz.

9.0 Line Conducted Emissions. FCC § 15.107

9.1 Test Procedure

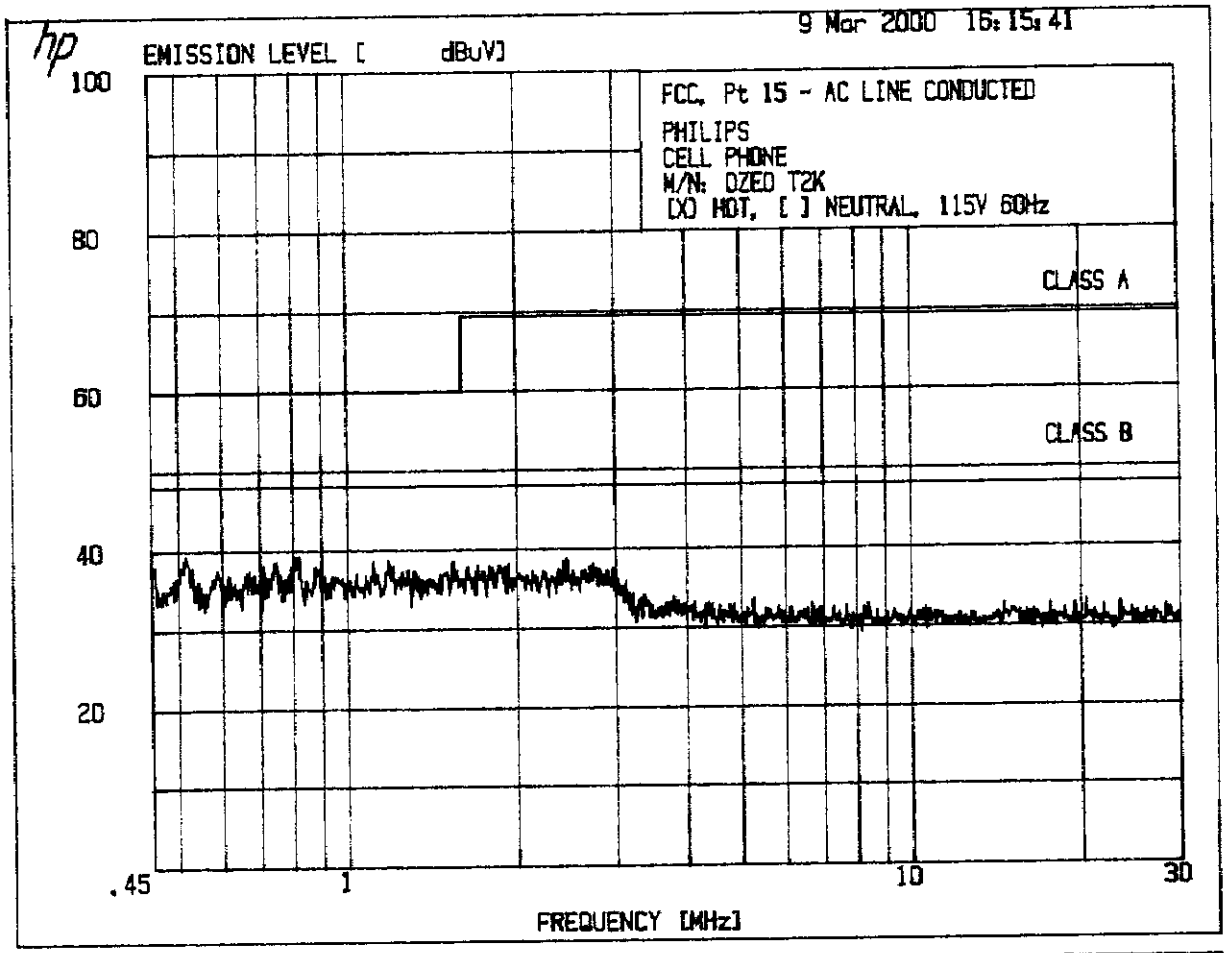
Test procedure described in the ANSI C63.4 Standard was employed.

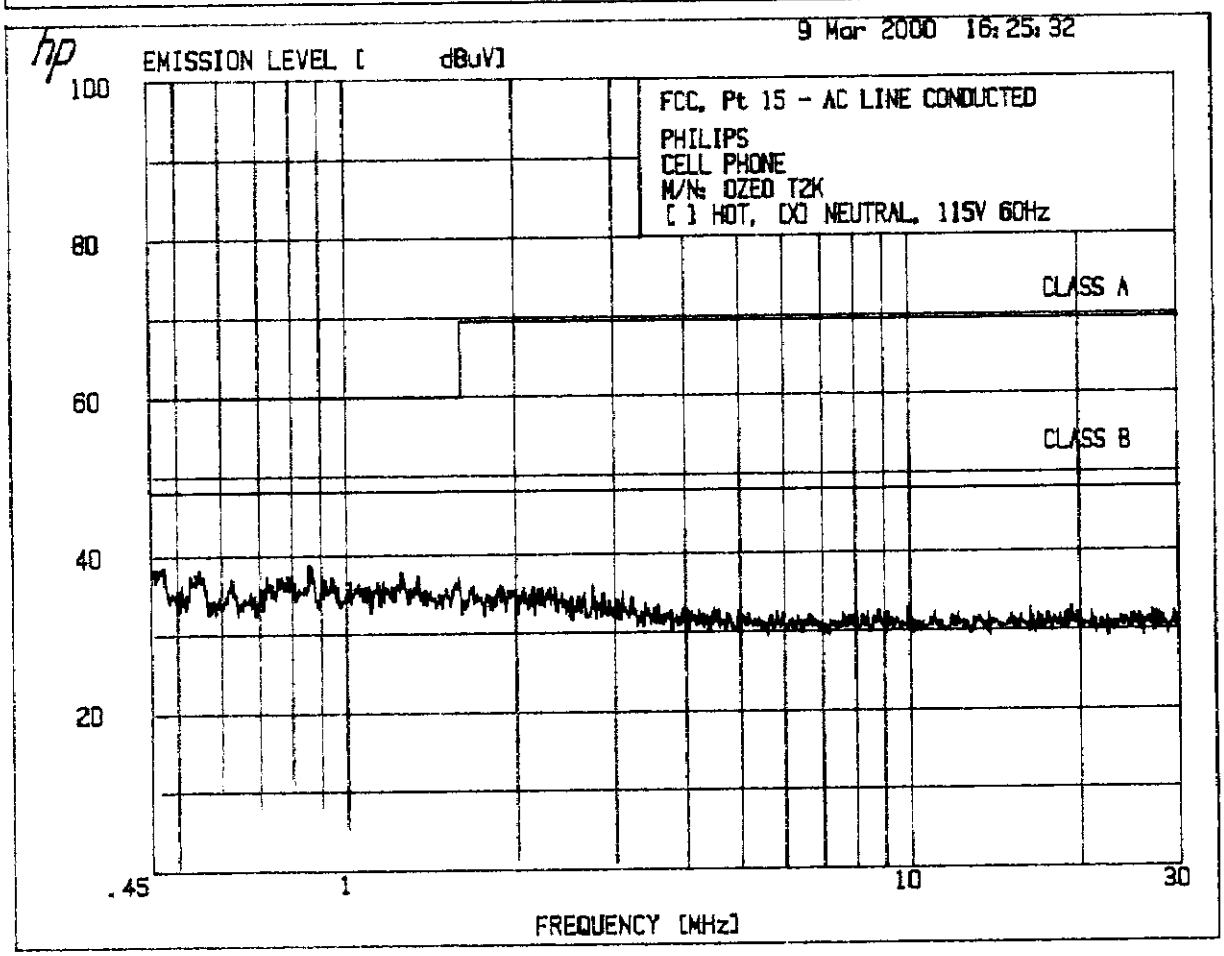
The EUT was connected to the DC power supply (Topward Electric Instrument, Model No.: TPS 4000), that was connected to the AC line through the LISNs.

Both HOT and NEUTRAL leads were tested.

9.2 Test Results - Line Conducted Emissions

Refer to the attached test data.


9 Mar 2000 16:15:41
EMISSION LEVEL [dBuV]
100
80
60
40
20
.45
1
10
30
FCC, Pt 15 - AC LINE CONDUCTED
PHILIPS
CELL PHONE
M/N: OZEO T2K
[X] HOT, [ ] NEUTRAL, 115V 60Hz
CLASS A
CLASS B
FREQUENCY [MHz]


9 Mar 2000 16:25:32
EMISSION LEVEL [dBuV]
100
80
60
40
20
.45
1
10
30
FCC, Pt 15 - AC LINE CONDUCTED
PHILIPS
CELL PHONE
M/N: OZEO T2K
[ ] HOT, [X] NEUTRAL, 115V 60Hz
CLASS A
CLASS B
FREQUENCY [MHz]

8 Mar 2000 16:25:32

3. FCC CFR 47, Pt 15

3.1 FCC, Pt 15 - AC LINE CONDUCTED

PHILIPS
CELL PHONE
M/N: 9ZBD T2K
[ ] HOT, [X] NEUTRAL, 115V 60Hz

PEAKS FOUND ABOVE 37 dBuV

PEAK#	FREQ (MHz)	AMPL (dBuV)
1	.5527	38.2
2	.7259	37.3
3	.8063	37.5
4	.9559	38.8
5	.9106	37.2
6	1.263	37.7
7	1.351	37.2
8	1.598	37.0

8 Mar 2000 15:13:41

3. FCC CFR 47, Pt 15

3.1 FCC, Pt 15 - AC LINE CONDUCTED

PHILIPS
CELL PHONE
M/N: 0ZEC T2K
[X] HOT, [ ] NEUTRAL, 115V 60Hz

PEAKS FOUND ABOVE 38 dBuV

PEAK#	FREQ (MHz)	AMPL(dBuV)
1	.5212	39.2
2	.7169	38.1
3	.7508	38.5
4	.8268	39.2
5	1.110	38.6
6	1.191	38.6
7	1.551	38.5
8	1.946	38.0
9	2.472	38.8
10	2.745	38.1

10.0 Frequency Stability vs Temperature, FCC § 2.1055, § 22.355
Frequency Tolerance: ±2.5 ppm

10.1 Test Procedure

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feedthrough attenuators. The EUT was placed inside the temperature chamber. The DC leads, RF output cable, and external PTT cable exited the chamber through an opening made for that purpose.

After the temperature stabilized for approximately 20 minutes, the external PTT switch was activated, and the frequency output was recorded from the counter.

10.2 Test Equipment

Temperature Chamber, -50C to +100C
Hewlett Packard 5383A Frequency Counter
Goldstar DC Power Supply, GR303
Rohde & Schwarz ESVP Test Receiver

10.3 Test Results

Test Result:	Passed

Frequency: 836.52 MHz			
Temperature, C	Frequency (MHz)	Difference (Hz)	Output Power, (dBm)
60	836.519013	-987	26.8
50	836.519588	-412	26.8
40	836.519838	-162	26.8
30	836.519763	-237	26.9
20	836.519700	-300	26.7
10	836.519813	-187	26.7
0	836.519688	-312	26.5
-10	836.519775	-225	26.5
-20	836.519900	-100	26.4
-30	836.519625	-375	26.4

11.0 Frequency Stability vs Voltage, FCC § 2.1055, § 22.355

Frequency Tolerance: ±2.5 ppm

11.1 Test Procedure

An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminates; i.e., the battery end point. The output frequency was recorded for each battery voltage.

11.2 Test Equipment

Hewlett Packard 5383A Frequency Counter
DC Power Supply
Rohde & Schwarz ESVP Test Receiver

11.3 Test Results.

Test Result:	Passed

Frequency; 836.52 MHz (Middle Channel)		
D.C. Volts	Frequency (MHz)	Difference (Hz)
4.3	836.520515	515
3.7	836.520510	510
3.1	836.520525	525
2.9	836.520545	545

12.0 Miscellaneous Comments

None.