

11/21/99  
Powerwave Technologies  
200 W

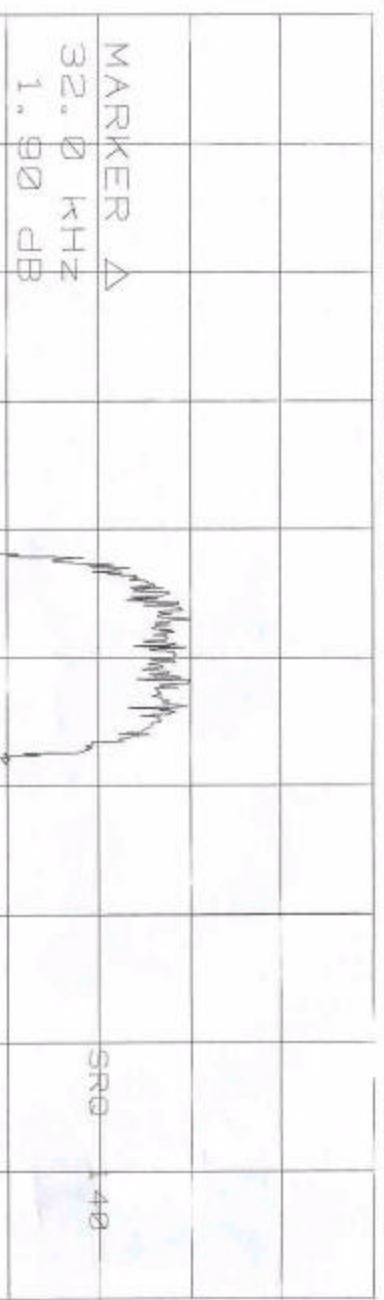
Occupied Bandwidth  
TDMA  
FCC 2.989 & 22.917  
RSS-131, 6.2

SG1 = 6.04 dBm  
fo = 869 MHz

10 dB/Hz REF 61.1 dBm ATTN 20 dB

MKR Δ 32.0 kHz  
1.90 dB

OFFSET  
61.1  
dB  
DL  
-13.0  
dBm



CENTER 869.000 MHz RES BW 300 Hz VBW 300 Hz SWP 6.00 sec SPAN 200 kHz

11/2/99

Powerwave Technologies  
200W

70

10 DB/

Input from signal generator

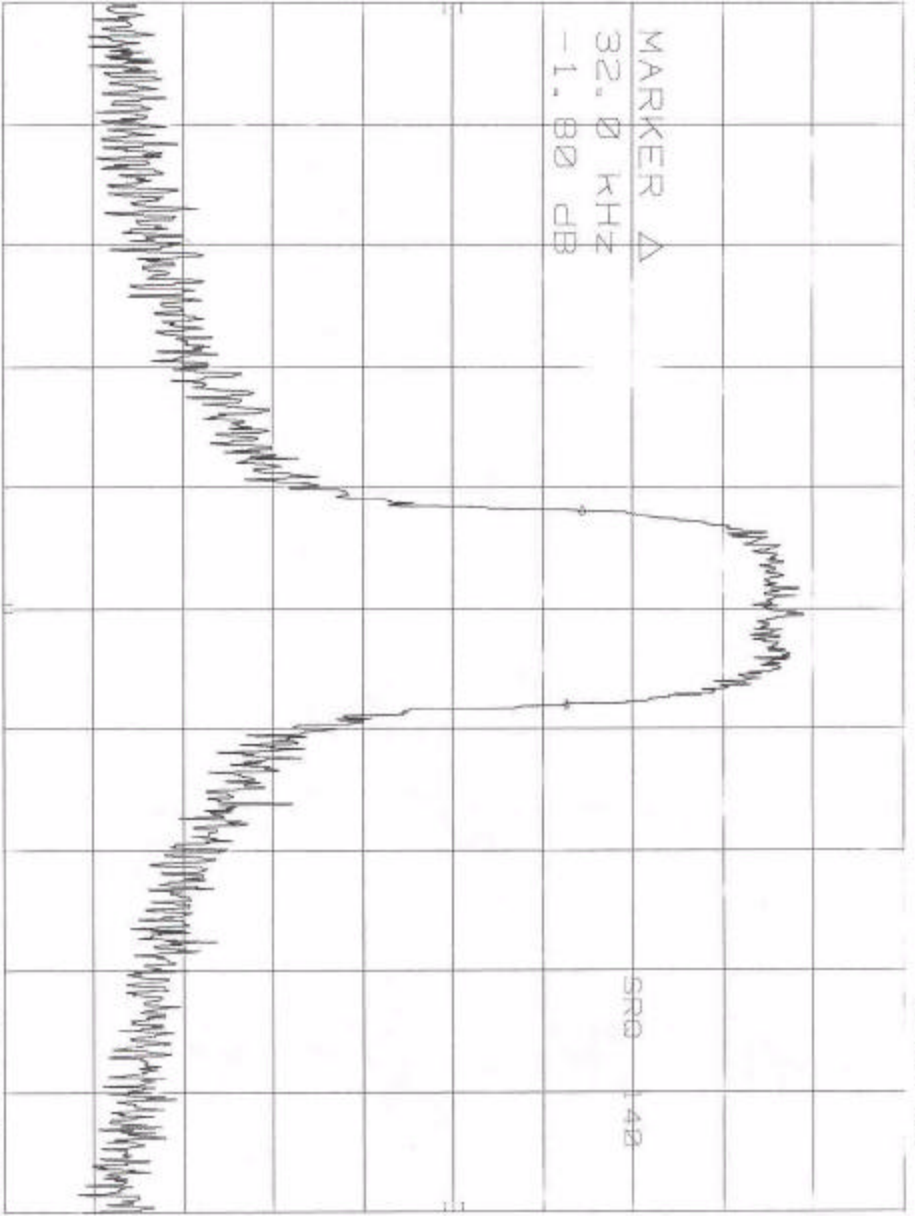
FCC 2989 & 22917 TDMA

K55-131, 6.2

SG1 = 6.0416M  
f<sub>0</sub> = 869MHz

REF 0.0 DBm ATTEN 20 DB

MKR Δ 32.0 KHz  
-1.80 DB



CENTER 869.000 MHz  
RES BW 300 Hz  
VBW 300 Hz  
SPAN 200 KHz  
SWP 5.00 sec

11/12/99  
Powerwave Technologies  
200W

Intermodulation  
TDM A  
 $f_1 = 869 \text{ MHz}$ ,  $f_2 = 894 \text{ MHz}$

SG1 = 2.76 dBm  
SG2 = 3.56 dBm

HP REF 61.1 dBm ATTN 20 dB  
10 dB/

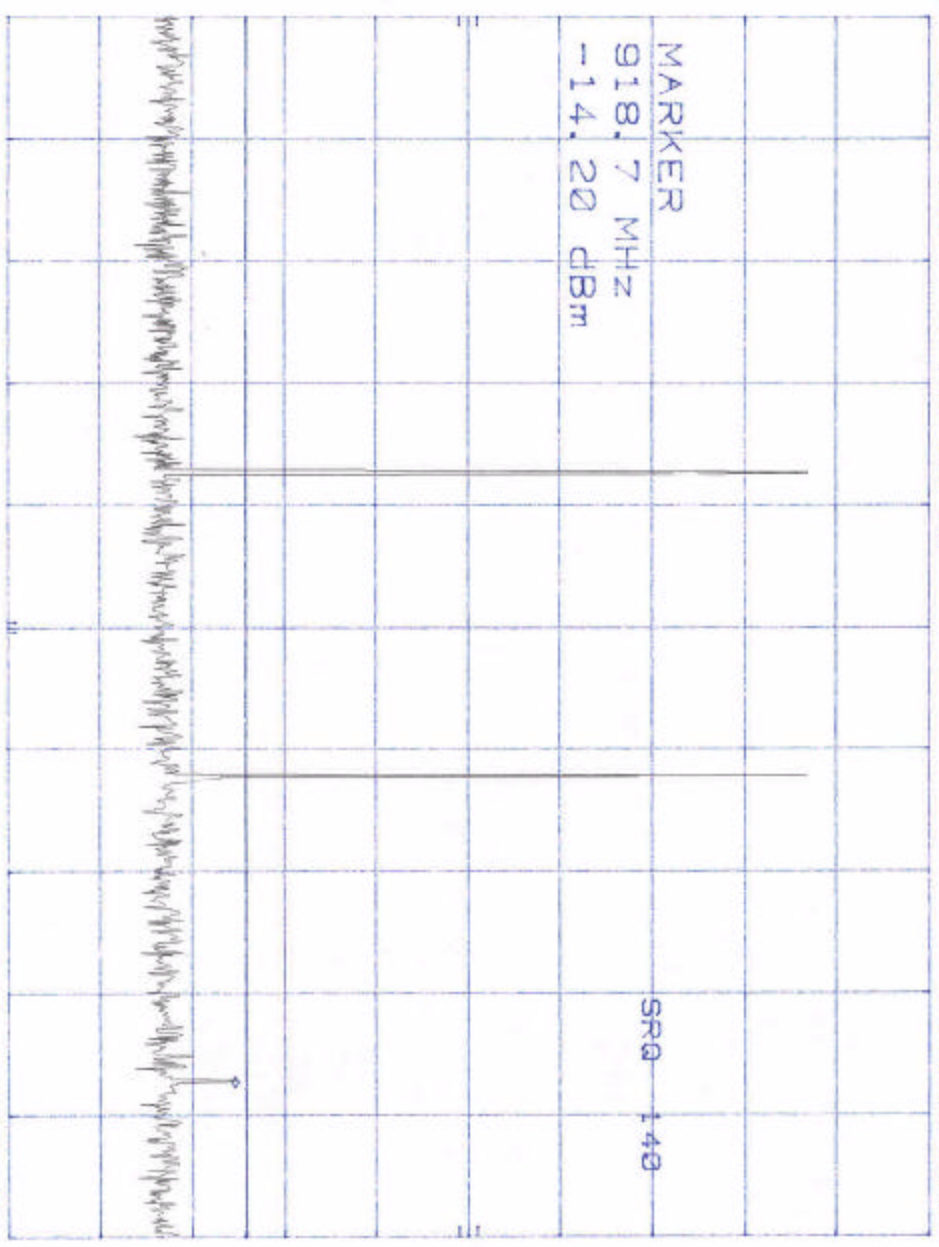
MKR 918.7 MHz  
-14.20 dBm

OFFSET  
61.1  
dB  
DL  
-13.0  
dBm

MARKER  
918.7 MHz  
-14.20 dBm

SR0 140

CENTER 881 MHz RES BW 10 kHz VBW 10 kHz SPAN 100 MHz  
SWP 3.00 sec



11/2/99  
Roverbaire Technologies  
200 W

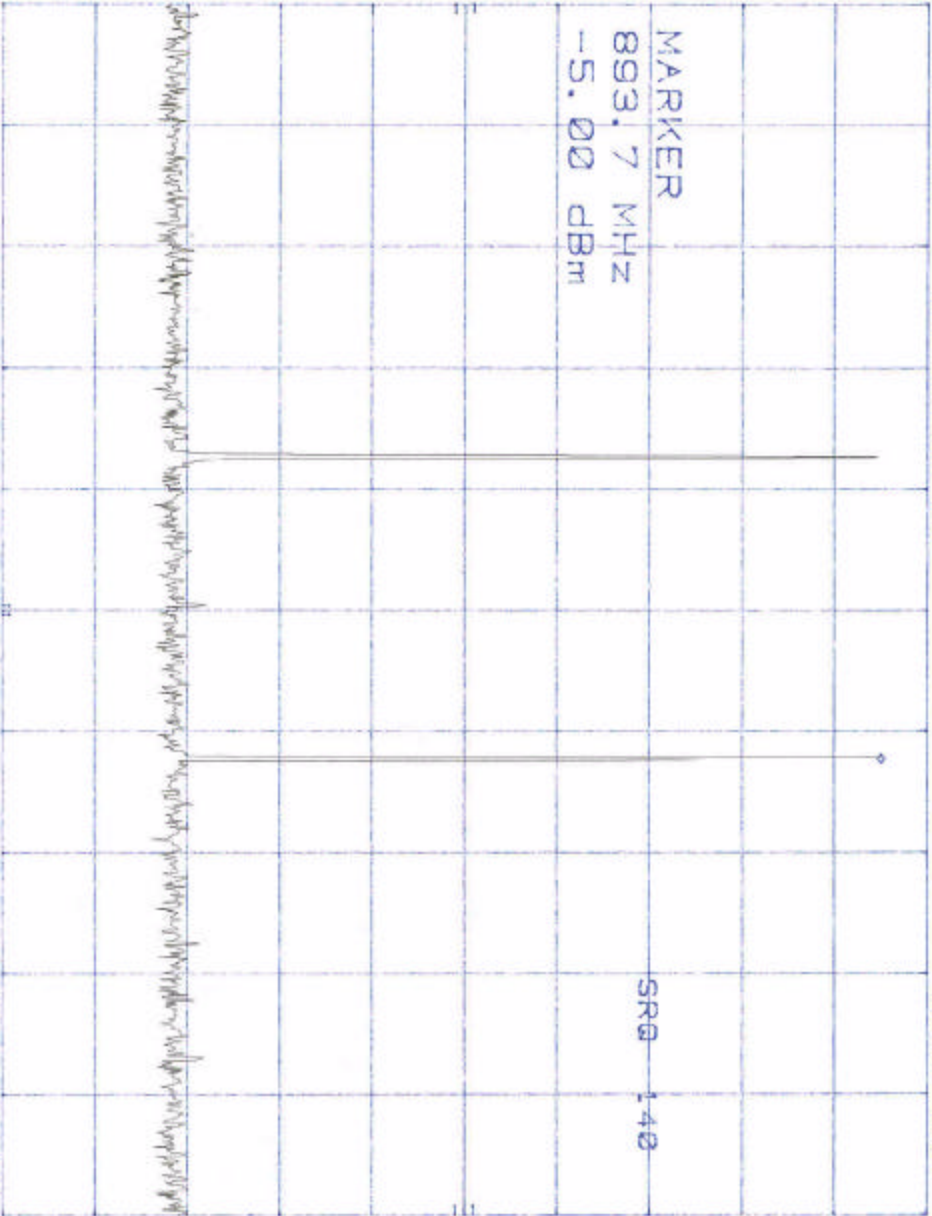
Input From signal generators  
TDM A  
 $f_1 = 869 \text{ MHz}$ ,  $f_2 = 874 \text{ MHz}$

SG1 = 2.76 dBm  
SG2 = 35.6 dBm

10 dB/

REF 0.0 dBm ATTEN 20 dB

MKR 893.7 MHz  
-5.00 dBm



CENTER 891 MHz RES BW 10 kHz VBW 10 kHz SPAN 100 MHz SWP 3.00 sec

11/12/19

Powerwave Technologies  
200 W

2.991 & 22.917

Spurious Emissions  
RSS-131,6.6

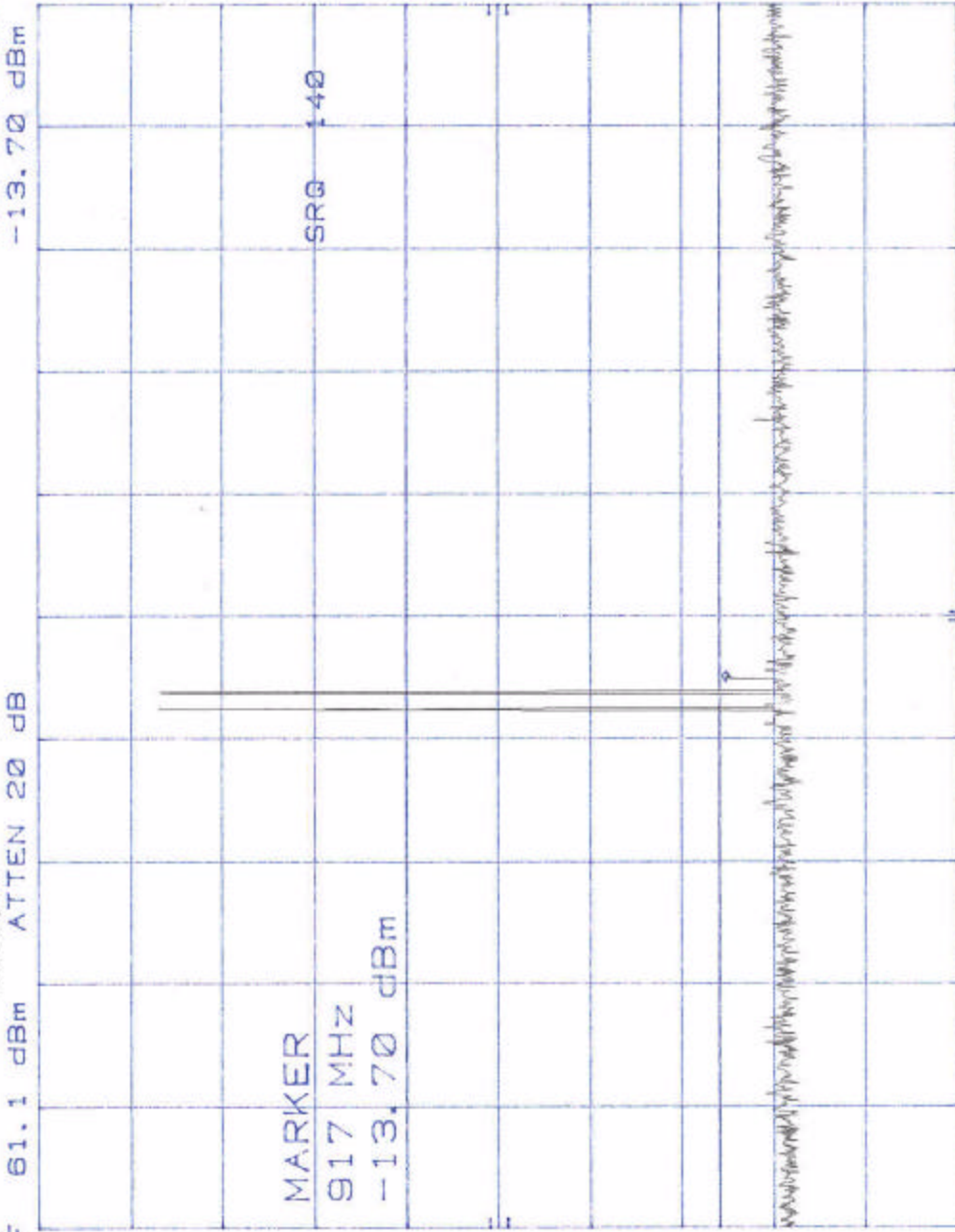
TDMA

f<sub>1</sub> = 869 MHz  
f<sub>2</sub> = 894 MHz

SG1 = 2.76 dBm

SG2 = 3.56 dBm

MKR 917 MHz  
-13.70 dBm



HP REF 61.1 dBm

ATTEN 20 dB

10 dB/

OFFSET

61.1

dB

DL

-13.0

dBm

MARKER

917 MHz

-13.70 dBm

SRQ

140

START 30 MHz

RES BW 10 kHz

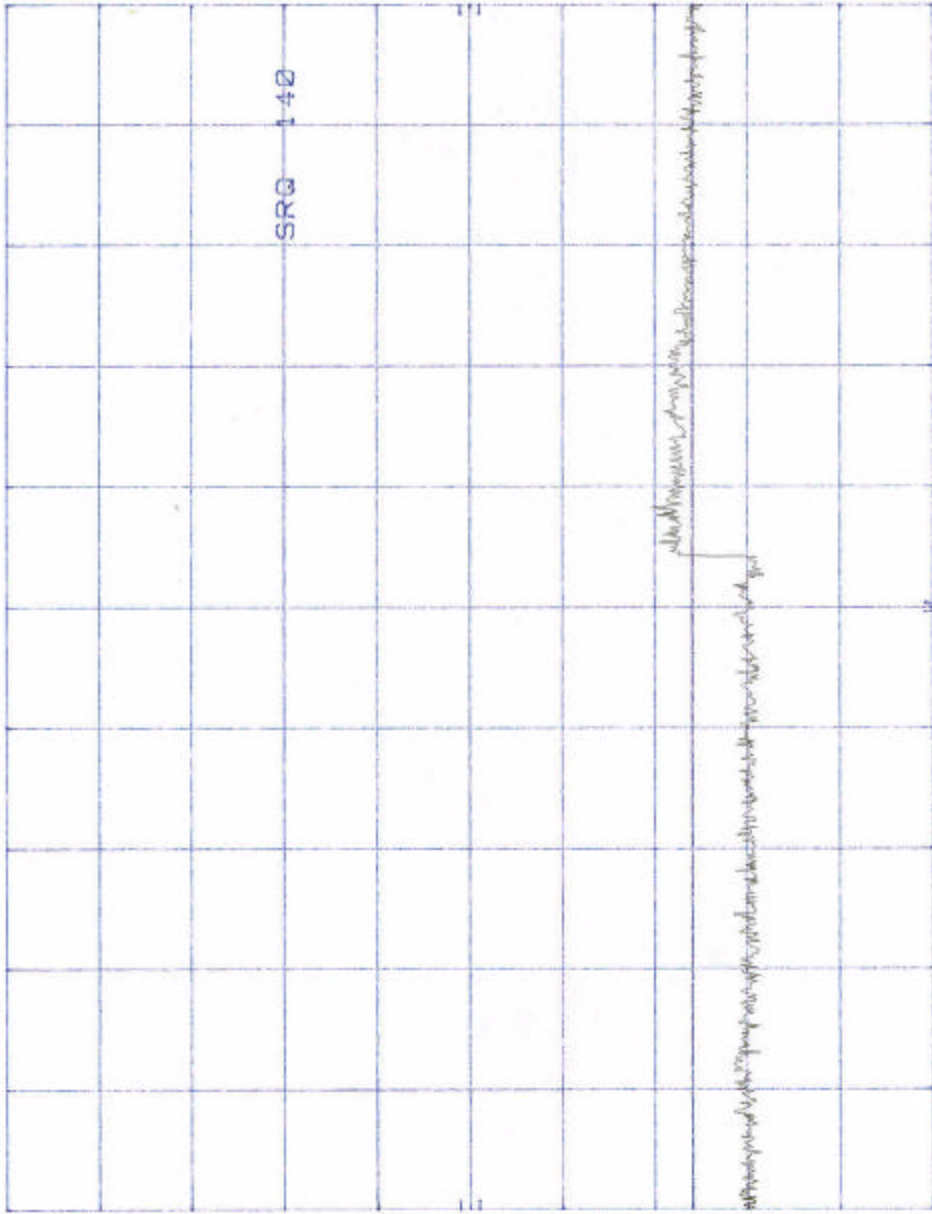
VBW 10 kHz

STOP 2.00 GHz

SWP 59.1 sec

Powerwave Technologies 2.991 & 22.917 SG1 = 2.76 dBm  
 200W Spurious Emissions  $f_1 = 864$  MHz SG2 = 3.56 dBm  
 RSS-131, 6.6  $f_2 = 874$  MHz

hp REF 61.1 dBm ATTN 20 dB



10 dB/

OFFSET  
61.1  
dB

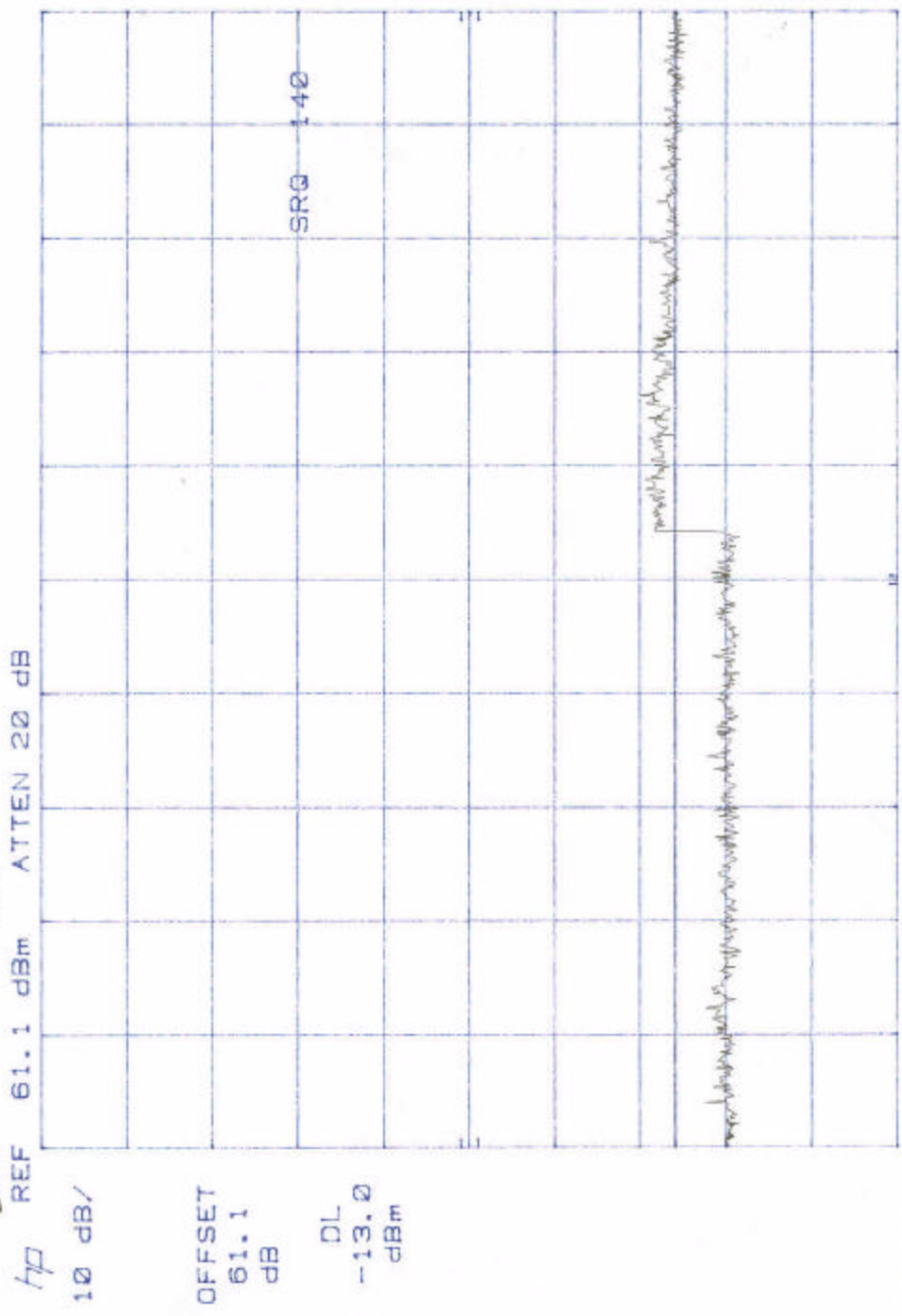
DL  
-13.0  
dBm

START 2.00 GHz RES BW 10 kHz VBW 10 kHz STOP 9.00 GHz  
 SWP 210 sec

11/12/99  
Powerwave Technologies  
200W

2.991 & 22.917  
Spurious Emissions  
RSS-13, 6.6

No input to spectrum analyzer



hp  
10 dB/

OFFSET  
61.1  
dB

DL  
-13.0  
dBm

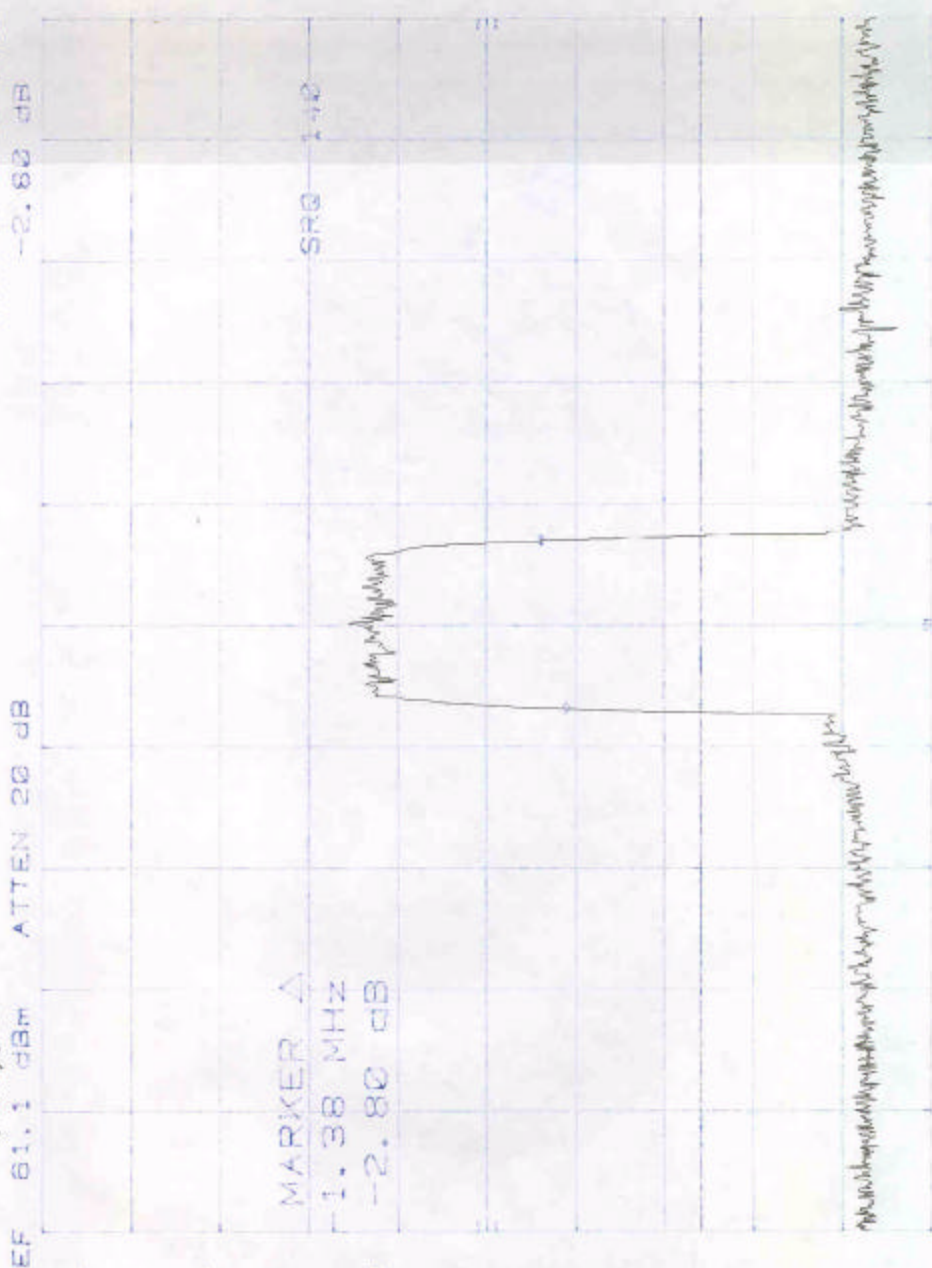
START 2.00 GHz  
RES BW 10 kHz  
STOP 9.00 GHz  
SWP 210 sec  
VBW 10 kHz

11/2/99  
Powerwave Technology  
200W

Occupied Bandwidth  
CDMA  
FCC 2.989e 22.917  
RSS-131, 6.2

$f_0 = 869$  MHz  
SGF = 600 dBm

MARKER  $\Delta$  1.38 MHz  
-2.80 dB



REF 61.1 dBm ATTN 20 dB

MARKER  $\Delta$   
1.38 MHz  
-2.80 dB

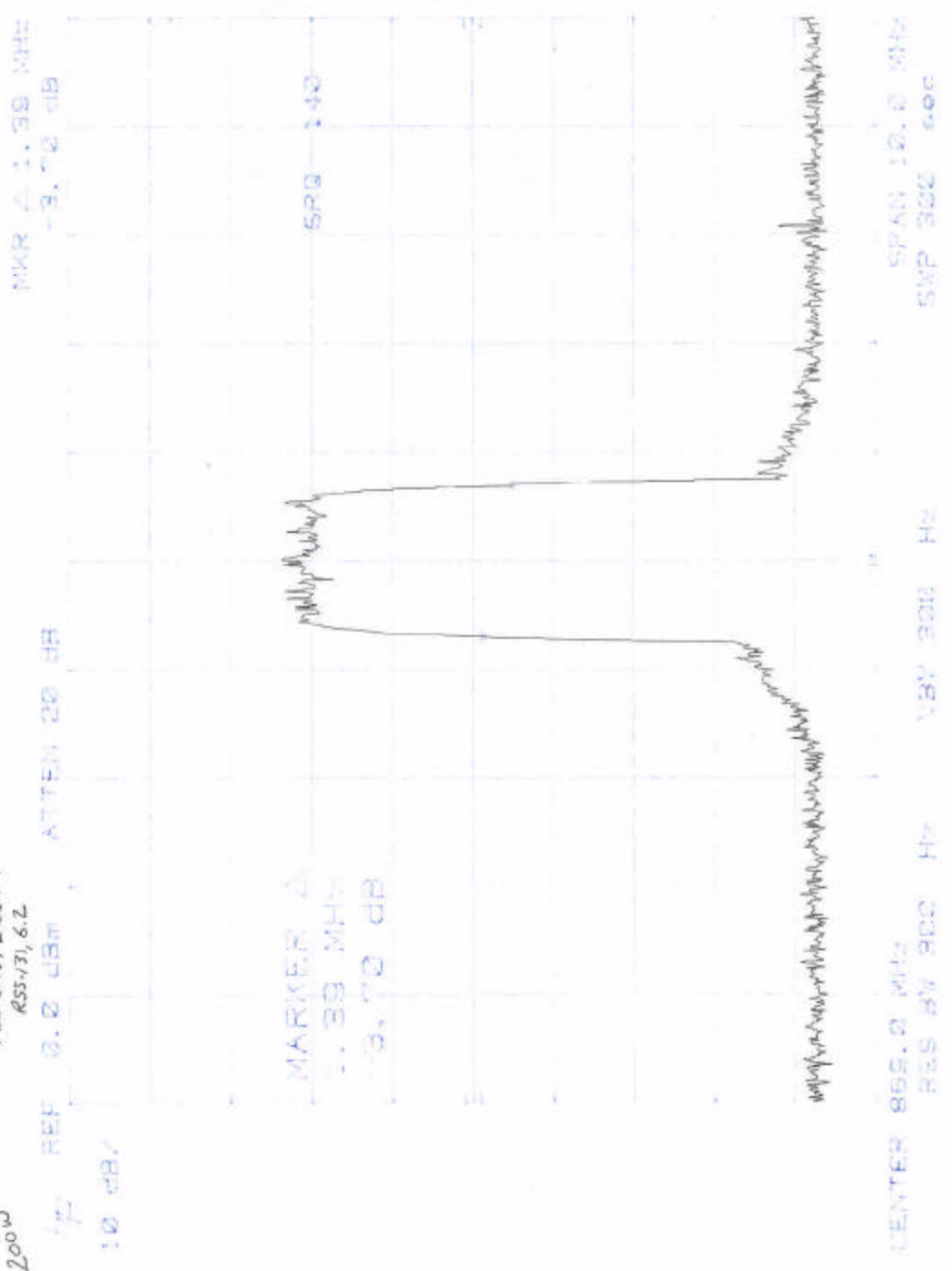
OFFSET  
61.1  
dB  
DL  
-13.0  
dBm

CENTER 869.0 MHz  
RES BW 300 Hz  
SPAN 10.0 MHz  
SMP 300 sec



11/2/98  
Powerwave Technologies  
200W

Input from Signal generator  
CDMA  
FCC 2.989 & 22.917  
RSS=17, 6.2  
 $f_c = 869 \text{ MHz}$   
SG1 = 6.00 MHz



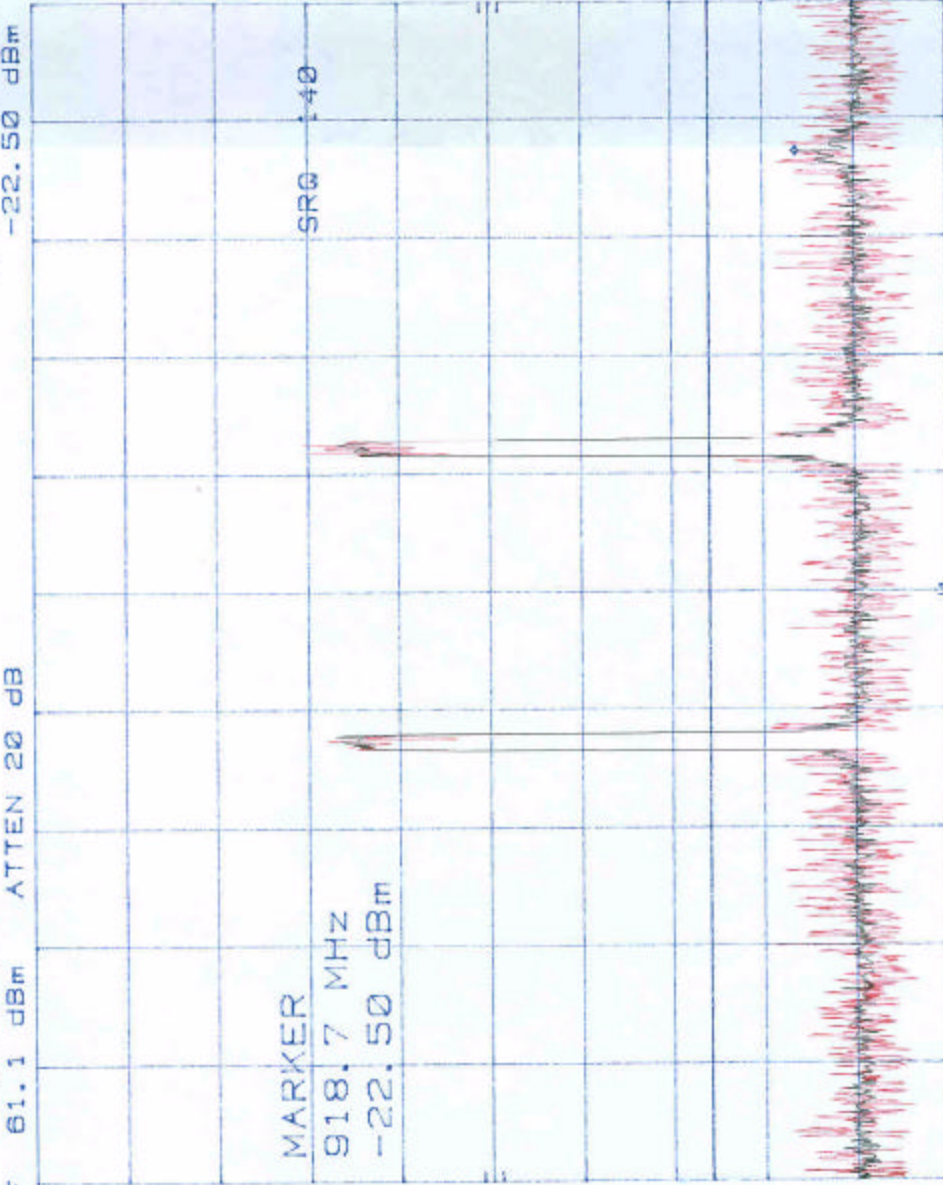
11/2/99  
Powerwave Technologies  
200W

Intermodulation  
CDMA  
 $f_1 = 869 \text{ MHz}$   $f_2 = 894 \text{ MHz}$

SG1: 2.92dBm  
SG2: 3.88dBm

Video Averaging on

MR 918.7 MHz  
-22.50 dBm



REF 61.1 dBm ATTEN 20 dB

10 dB/

SAMPLE

OFFSET

61.1  
dB

DL  
-13.0  
dBm

VID AVG  
10

CENTER 881 MHz  
RES BW 10 kHz

VBW 10 kHz

SWP 3.00 sec

SPAN 100 MHz

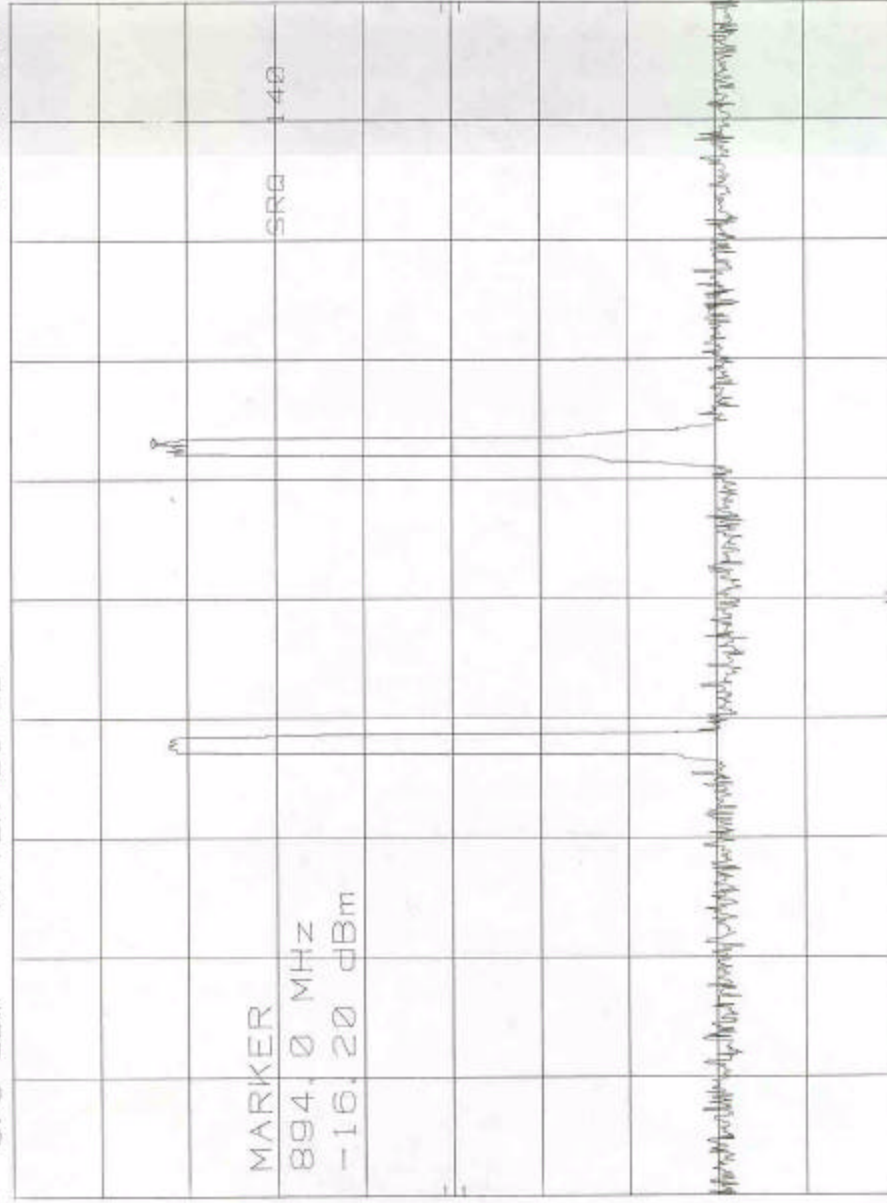
11/12/19  
Powerwave Technologies  
200W

Input from signal generators  
CDMA  
 $f_1 = 869 \text{ MHz}$   $f_2 = 894 \text{ MHz}$   
SG1 = 2.92 dBm  
SG2 = 3.88 dBm

70 REF 0.0 dBm  
10 dB/

ATTEN 20 dB

MARKER 894.0 MHz  
-16.20 dBm



CENTER 881 MHz  
RES BW 10 kHz

VBW 10 kHz

SPAN 100 MHz  
SWP 3.00 sec

11/2/99 Powerwave Technologies  
200W

Intermodulation

SG1 = 2.92 dBm  
SG2 = 3.88 dBm

CDMA

$f_1 = 269 \text{ MHz}$   $f_2 = 874 \text{ MHz}$

MKR 919.7 MHz  
-13.30 dBm

ATTEN 20 dB

HP

REF 61.1 dBm

10 dB/

OFFSET

61.1  
dB

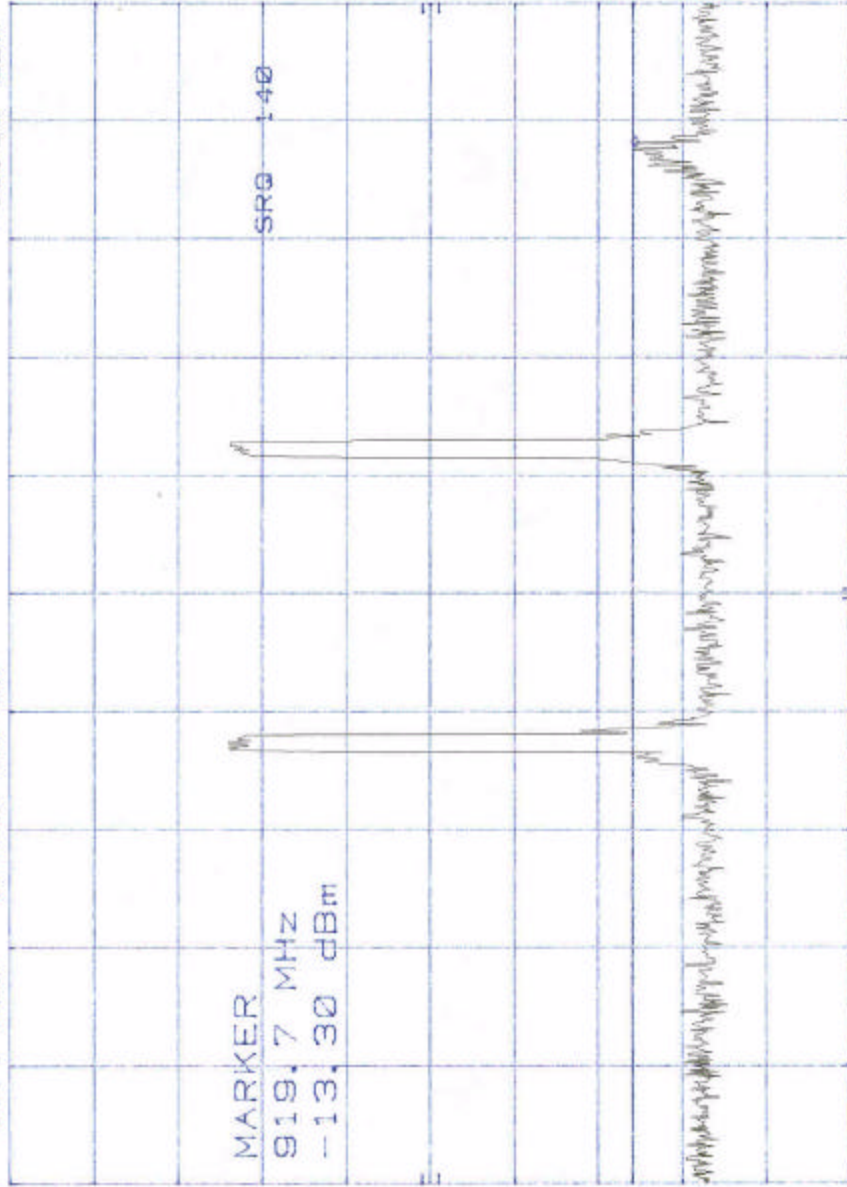
DL  
-13.0  
dBm

MARKER

919.7 MHz

-13.30 dBm

SR0 140



CENTER 881 MHz

RES BW 10 kHz

VBW 10 kHz

SPAN 100 MHz

SWP 3.00 sec

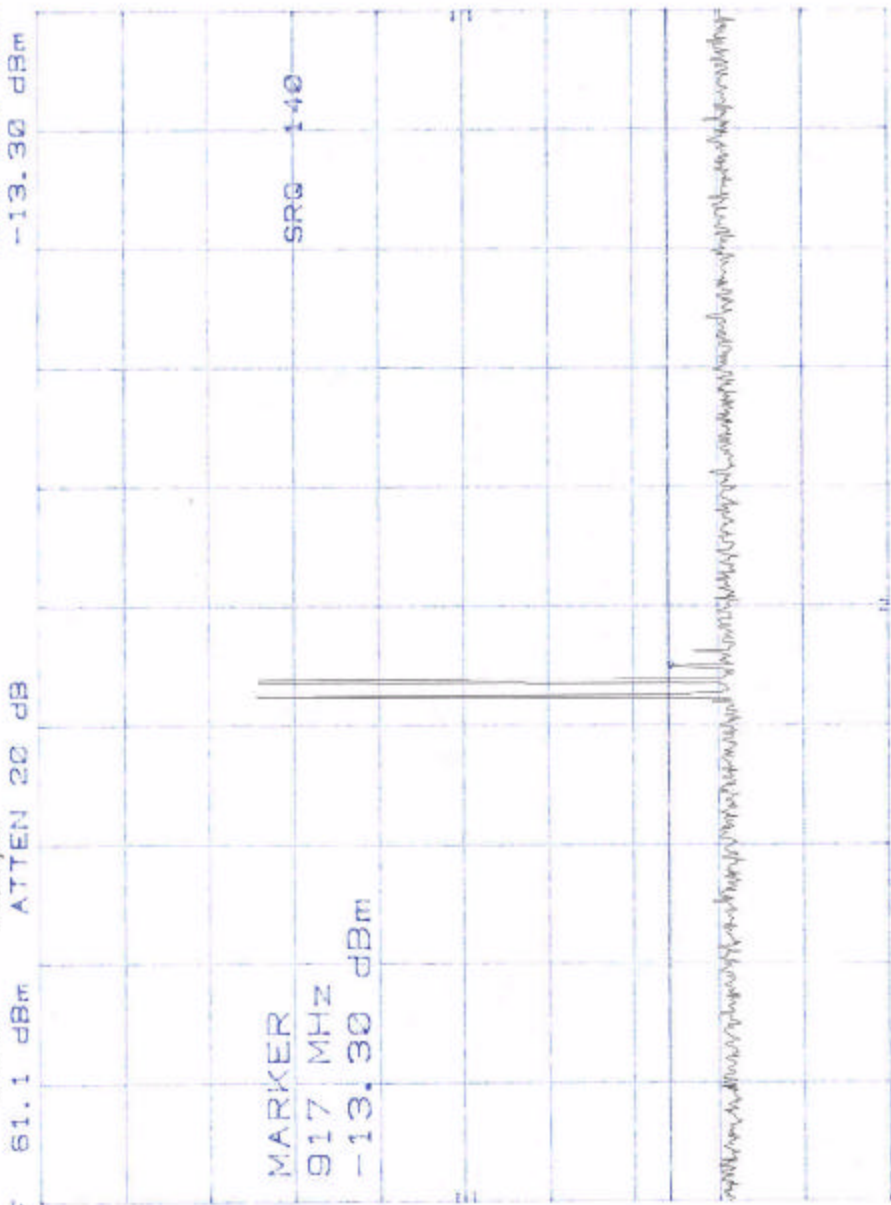
11/2/99  
Powerwave Technologies  
200W

Spurious Emissions  
2.991 & 22.917  
CDMA

$f_1 = 867 \text{ MHz}$   
 $f_2 = 894 \text{ MHz}$   
RSS-131.6.6

SG1 = 2.92 dBm  
SG2 = 3.88 dBm

MKR 917 MHz  
-13.30 dBm



10 dB/

OFFSET  
61.1  
dB  
DL  
-13.0  
dBm

START 30 MHz RES BW 10 kHz VBW 10 kHz STOP 2.00 GHz  
SWP 59.1 sec

11/12/99  
Powerwave Technologies  
200W

Spurious Emissions  
2.991 & 22.917  
CDMA

$f_1 = 867\text{MHz}$   
 $f_2 = 894\text{MHz}$   
RSS-131, 6.6

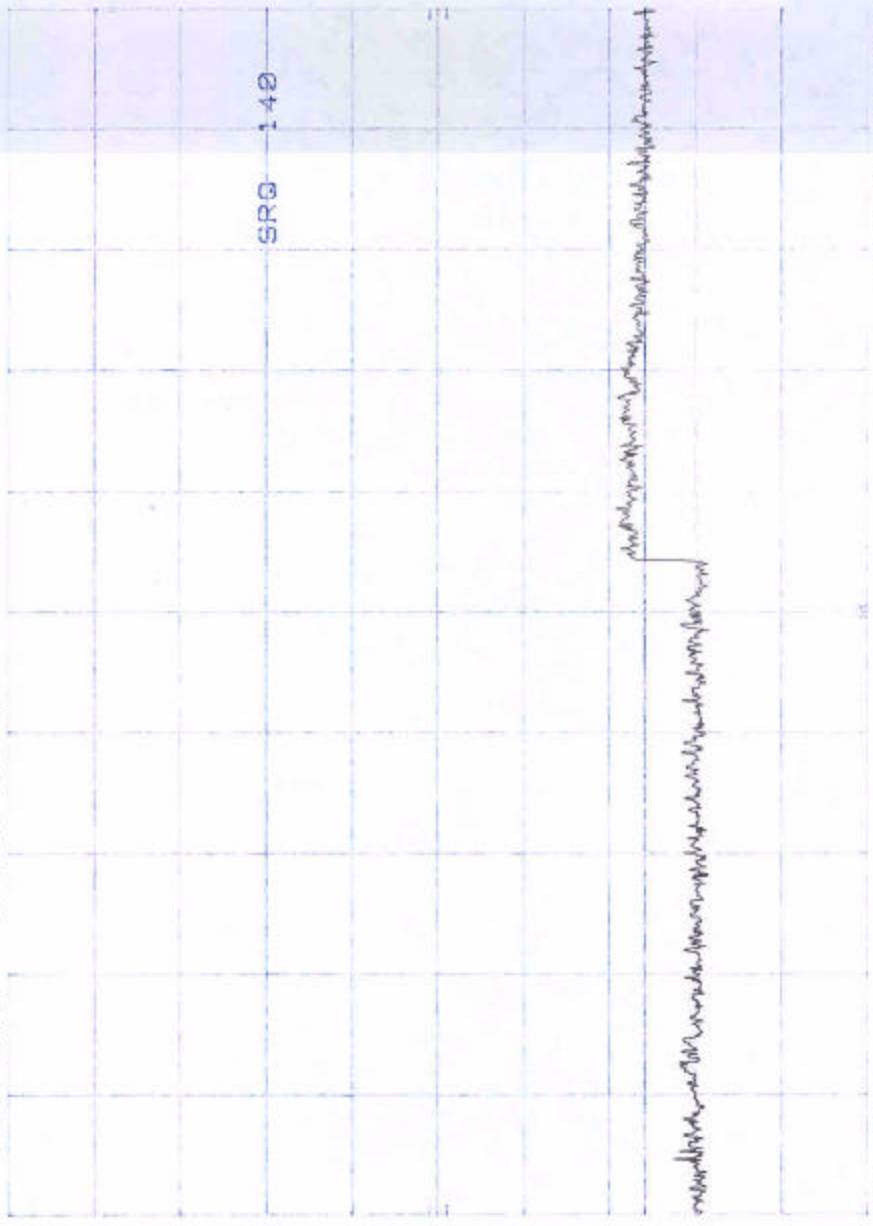
SG1 = 2.92 dBm  
SG2 = 3.88 dBm

hp REF 61.1 dBm ATTEN 20 dB

10 dB/

OFFSET  
61.1  
dB

DL  
-13.0  
dBm

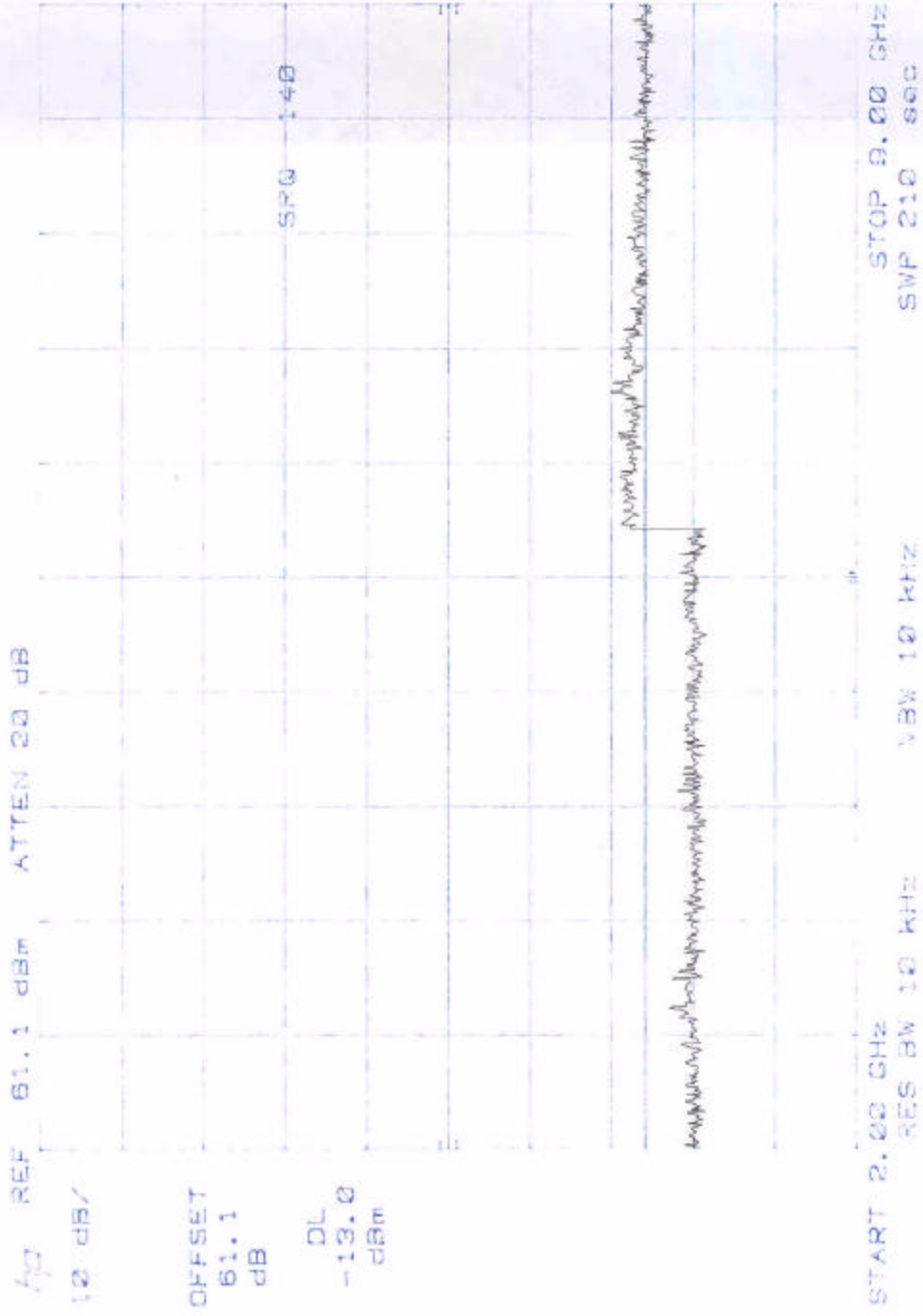


START 2.00 GHz RES BW 10 kHz VBW 10 kHz STOP 9.00 GHz  
SWP 210 sec

11/2/99  
Powerwave Technologies  
200W

Spurious Emissions  
2.991 & 22.917 R53-31, 6.6  
CDMA

No input to spectrum analyzer



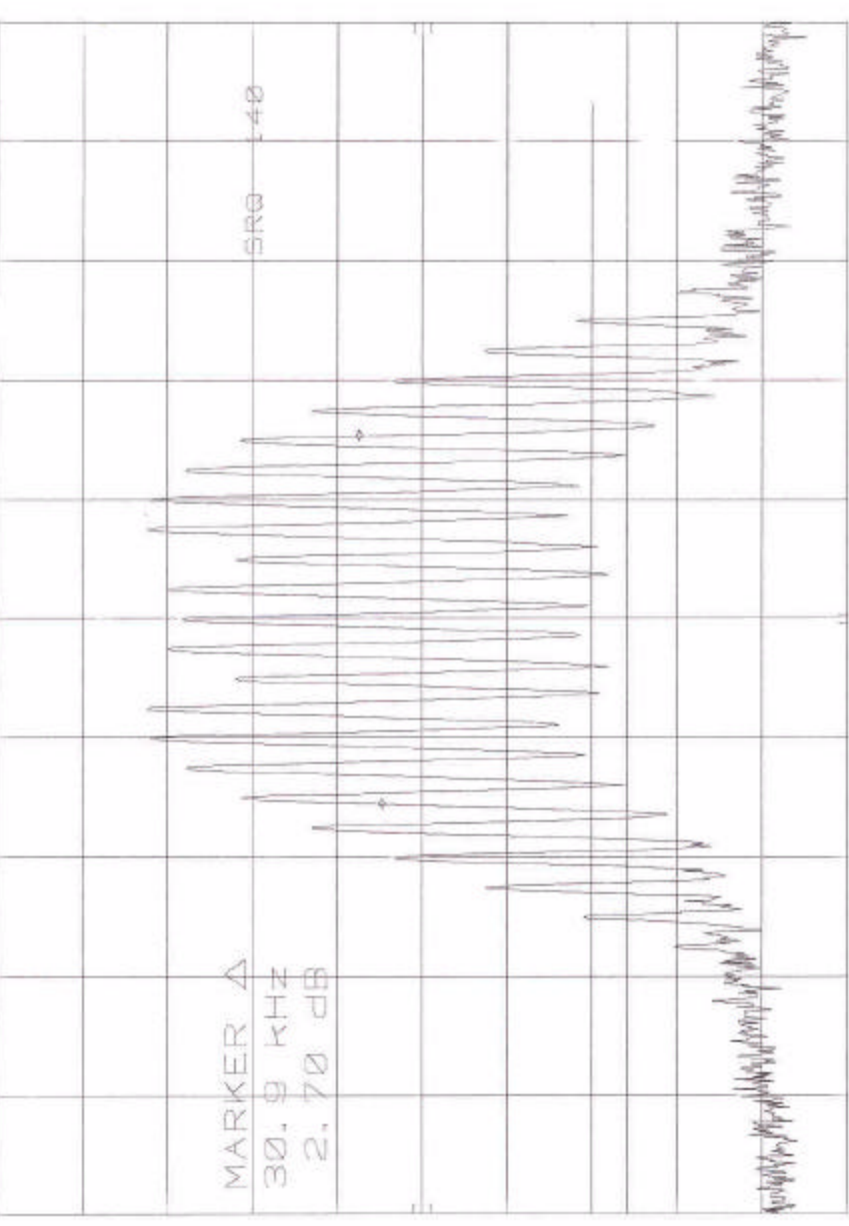
11/12/19  
Powerwave Technologies  
200W

Occupied Bandwidth  
AMPS Voice  
FCC 2.989 & 22.917  
135-131.62

$f_c = 819$  MHz  
SG1: 6.06 dBm

MKR  $\Delta$  30.9 kHz  
2.70 dB

REF 61.1 dBm ATTEN 20 dB



10 dB/

OFFSET  
61.1  
dB

DL  
-13.0  
dBm

MARKER  $\Delta$   
30.9 kHz  
2.70 dB

SR0 1.40

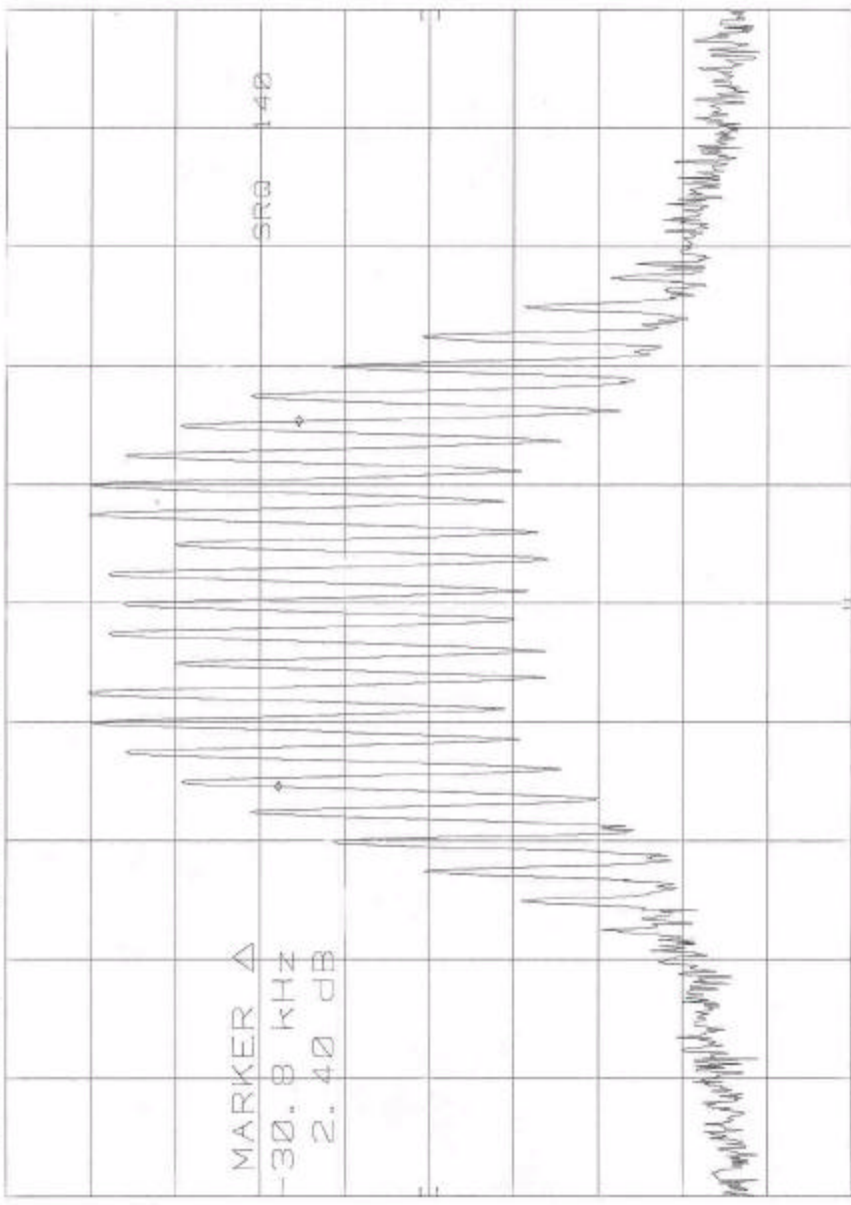
CENTER 869.000 MHz  
RES BW 300 Hz  
VBW 300 Hz  
SWP 3.00 sec  
SPAN 100 kHz



11/12/199  
Powerwise Technologies  
200 W

Input from signal generator  
AMPS Voice  
Fcc 2.989822.917  
RSS-131.6.2

MARKER  $\Delta$ -30.8 KHz  
2.40 dB



10 dB/

CENTER 869.000 MHz  
RES BW 300 Hz  
VBW 300 Hz  
SWP 3.00 sec  
SPAN 100 kHz

11/12/99  
Powerwave Technologies  
200W

Intermodulation  
AMPS Voice  
 $f_1 = 869 \text{ MHz}$   $f_2 = 894 \text{ MHz}$

SG1 = 3.06 dBm  
SG2 = 3.88 dBm

MARKER 918.7 MHz  
-13.20 dBm

REF 61.1 dBm

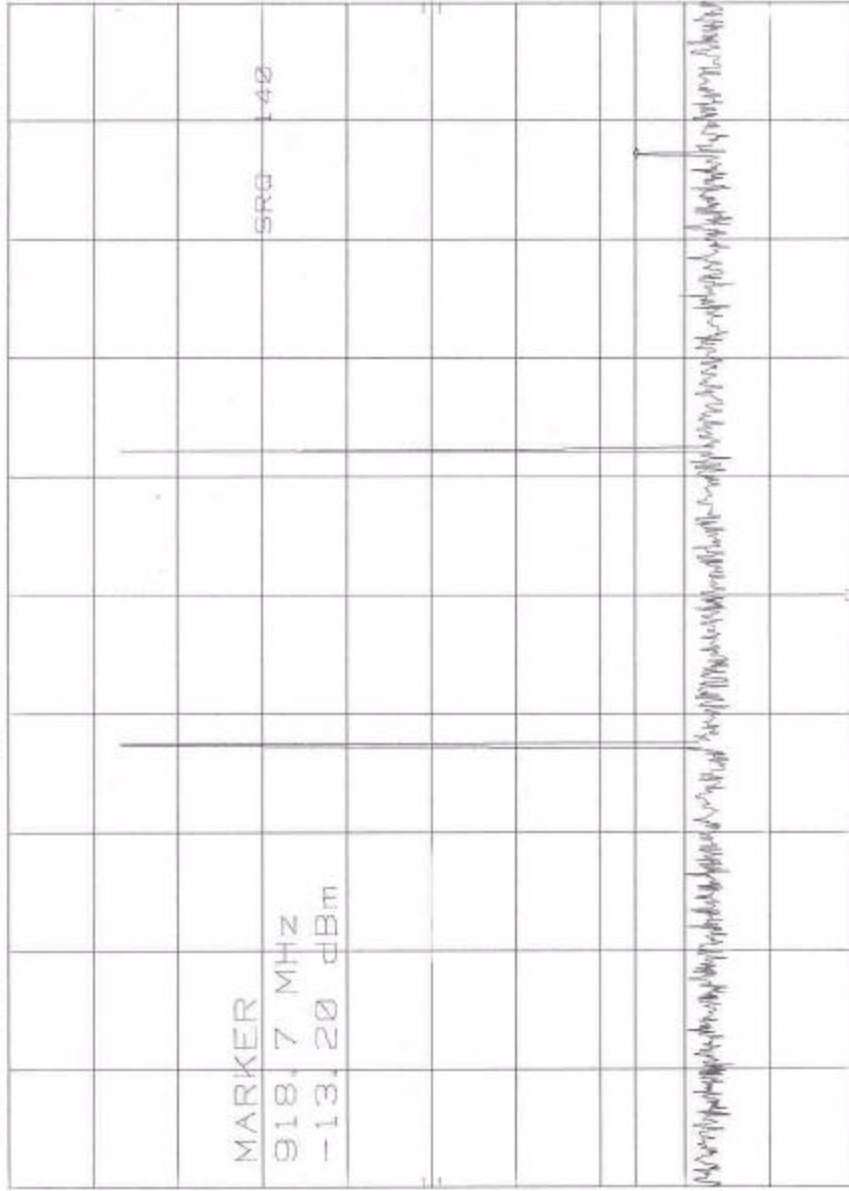
ATTEN 20 dB

hp 10 dB/

OFFSET 61.1 dB  
DL -13.0 dBm

MARKER 918.7 MHz  
-13.20 dBm

SRG 140



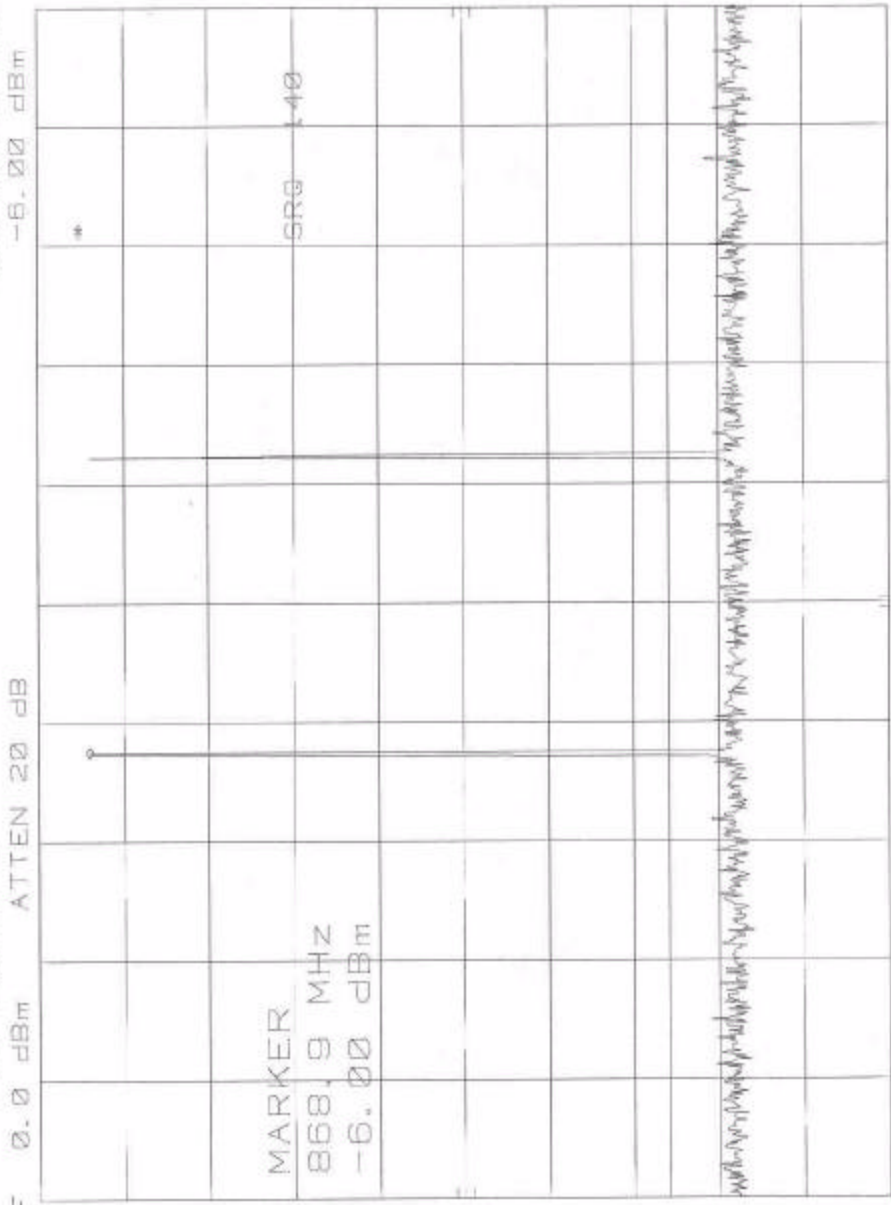
CENTER 881 MHz  
RES BW 10 kHz  
SPAN 100 MHz  
SWP 3.00 sec  
VBW 10 kHz

11/12/99  
Powerwave Technologies  
200W

Input from Signal generators  
AMPS Voice  
 $f_1 = 869 \text{ MHz}$   $f_2 = 894 \text{ MHz}$

SG1 = 3.06 dBm  
SG2 = 3.88 dBm

MKR 888.9 MHz  
-6.00 dBm



10 dB/

MARKER

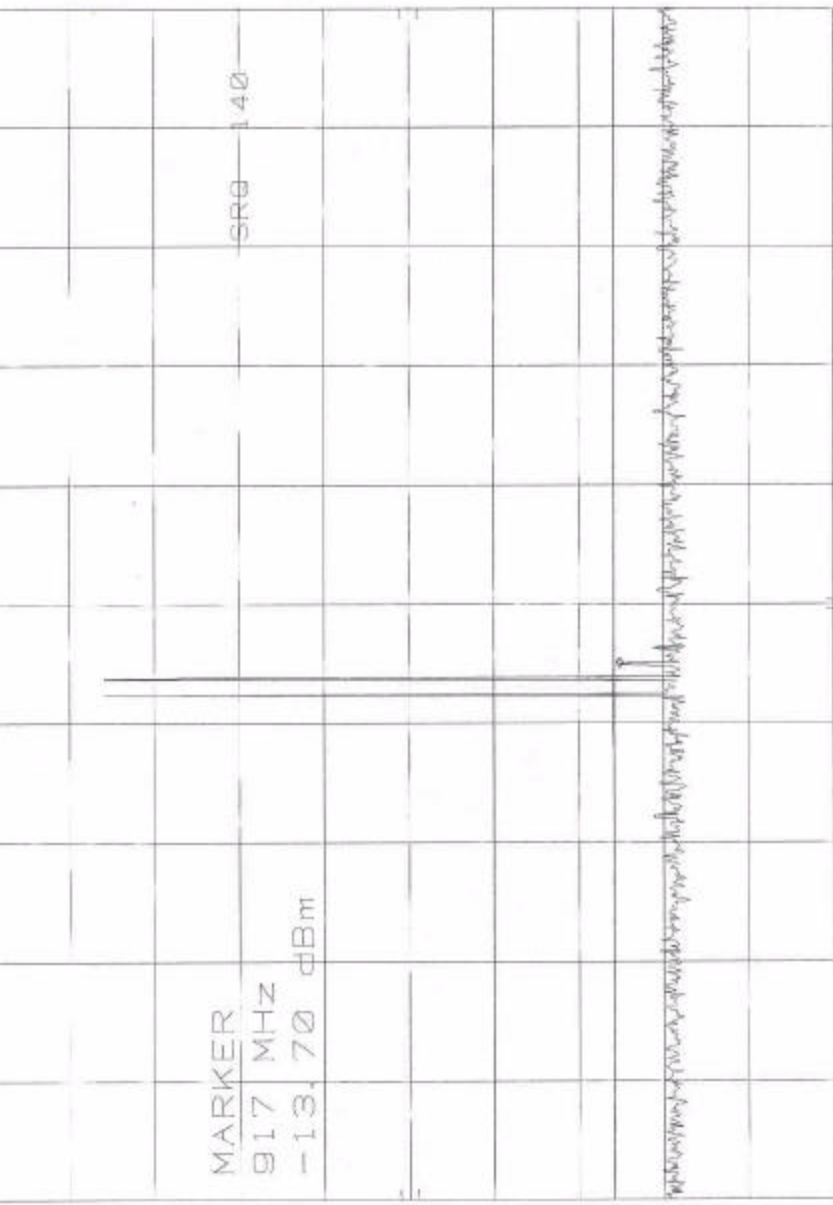
868.9 MHz  
-6.00 dBm

DL  
-74.1  
dBm

CENTER 881 MHz  
RES BW 10 kHz  
VBW 10 kHz  
SPAN 100 MHz  
SWP 3.00 sec

11/12/99  
 Powerwave Technologies  
 200W  
 Spurious Emissions  
 AMPS Voice  
 FCC 2.991 & 22.917  
 RSS-131, 2.6

HP REF 61.1 dBm ATTEN 20 dB



10 dB/

OFFSET  
 61.1  
 dB  
 DL  
 -13.0  
 dBm

START 30 MHz RES BW 10 kHz VBW 10 kHz STOP 2.00 GHz  
 SWP 59.1 sec

11/12/11  
Powerwave Technologies  
200 W

Spurious Emissions  
AMPS Voice  
FCC 2.491 & 2.497  
RSS-131, 6.6

$f_1 = 869 \text{ MHz}$   
 $f_2 = 874 \text{ MHz}$

SG1: 3.04 dBm  
SG2: 3.88 dBm

REF 61.1 dBm ATTEN 20 dB

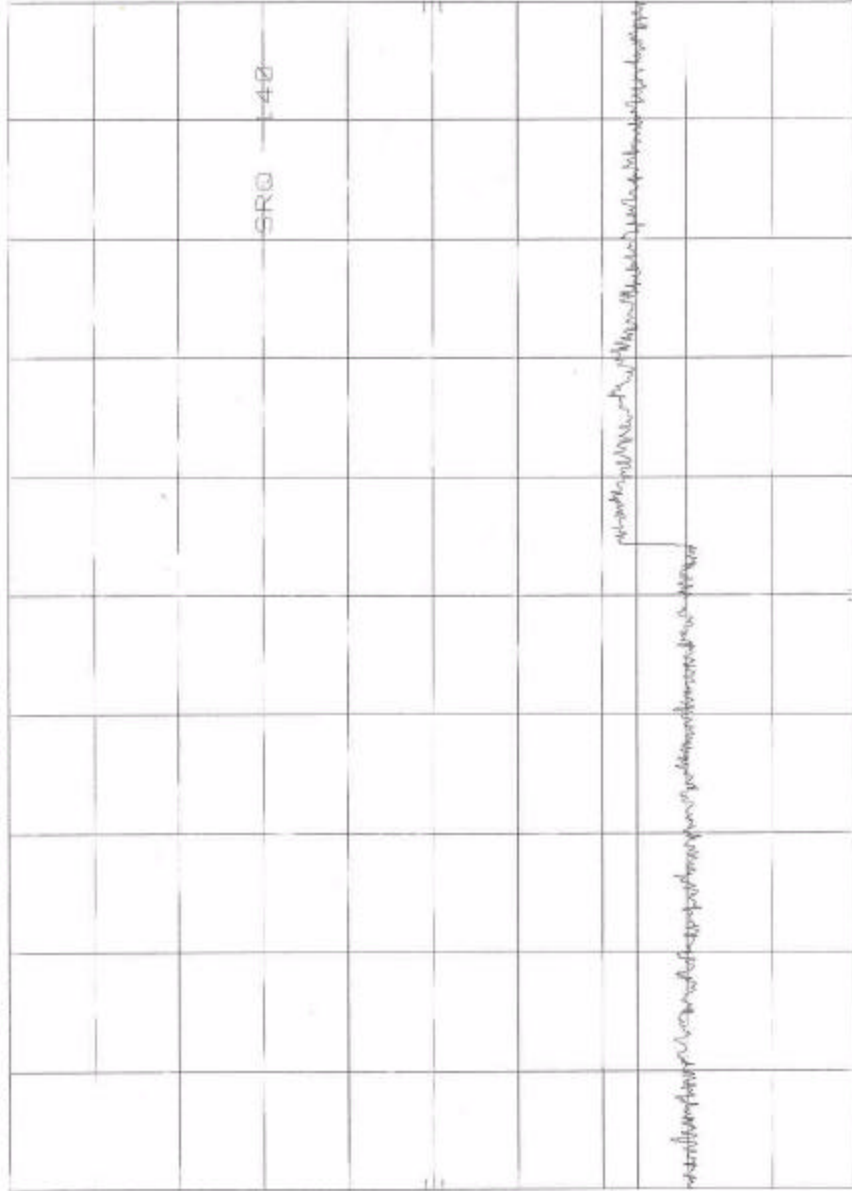
10 dB/

OFFSET

61.1  
dB

DL

-13.0  
dBm



START 2.00 GHz  
RES BW 10 kHz

VBW 10 kHz

STOP 9.00 GHz  
SWP 210 sec

11/12/19  
Powerwave Technologies  
200W

Spurious Emissions  
AMPS Voice  
2.991 & 22.917  
RSS: 131.6.6

No input to spectrum analyzer

HP REF 61.1 dBm  
ATTEN 20 dB  
10 dB/

OFFSET  
61.1  
dB

DL  
-13.0  
dBm



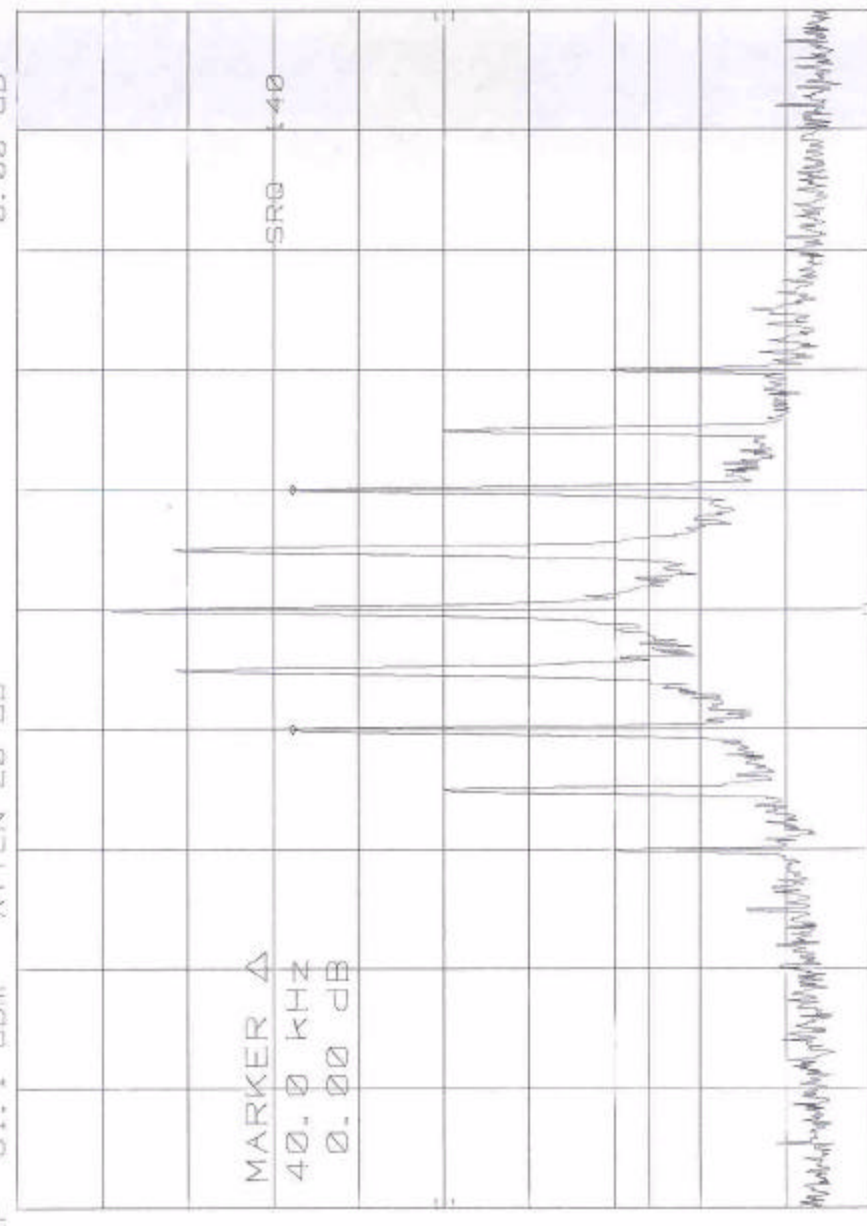
11/12/99  
Powerwave Technologies  
200W

Occupied Bandwidth  
AMPS wideband Data  
FCC 2.989 & 22.917  
RSS-131.6.2

$f_c = 869 \text{ MHz}$   
SG1 = 6.06 dBm

MKR  $\Delta$  40.0 kHz  
0.00 dB

REF 61.1 dBm ATTEN 20 dB



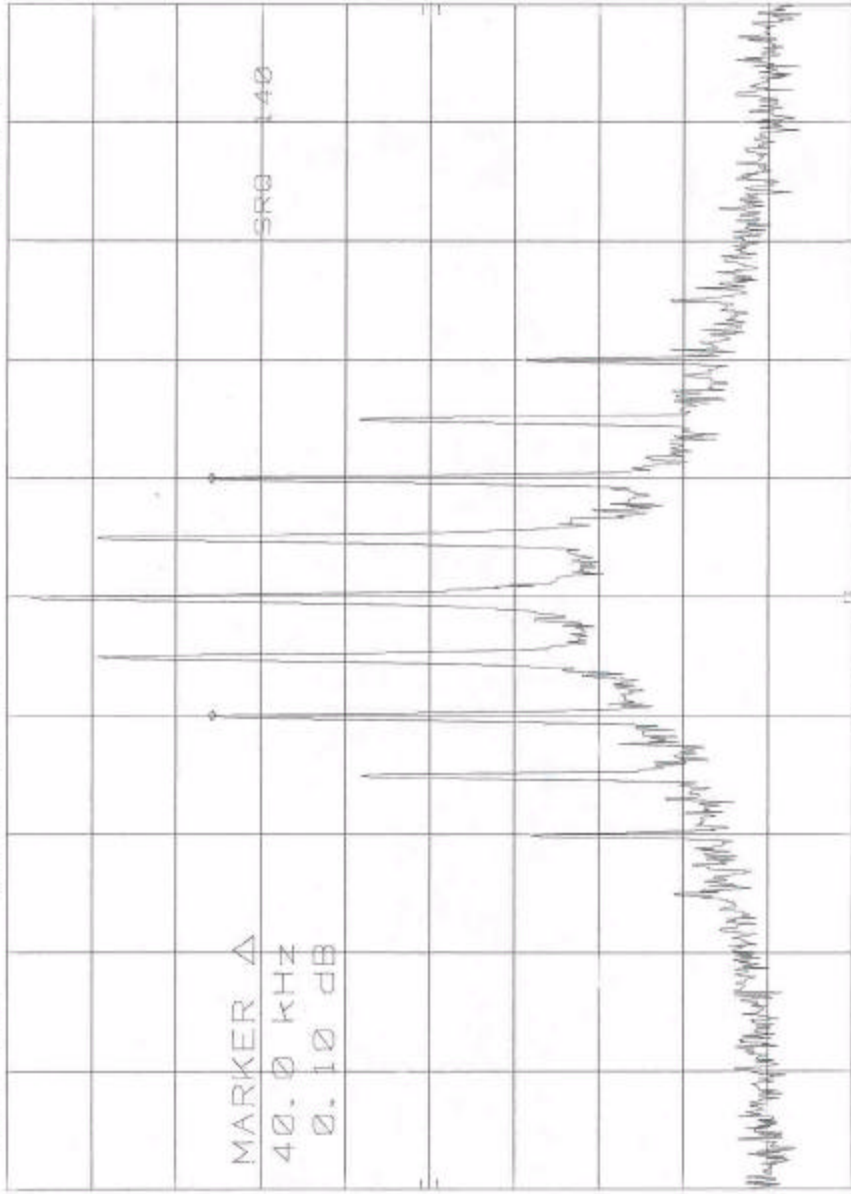
CENTER 869.000 MHz  
RES BW 300 Hz  
SPAN 200 kHz  
SWP 6.00 sec  
VBW 300 Hz

11/12/99  
Powerwave Technologies  
200w

Input from signal generator  
AMPS Wideband Data  
FCC 2.989 & 22.917  
RSS-131 G.2  
 $f_0 = 869 \text{ MHz}$   
SGI = 6.06 dBm

hp  
REF 10 dB

MKR  $\Delta$  40.0 kHz  
0.10 dB

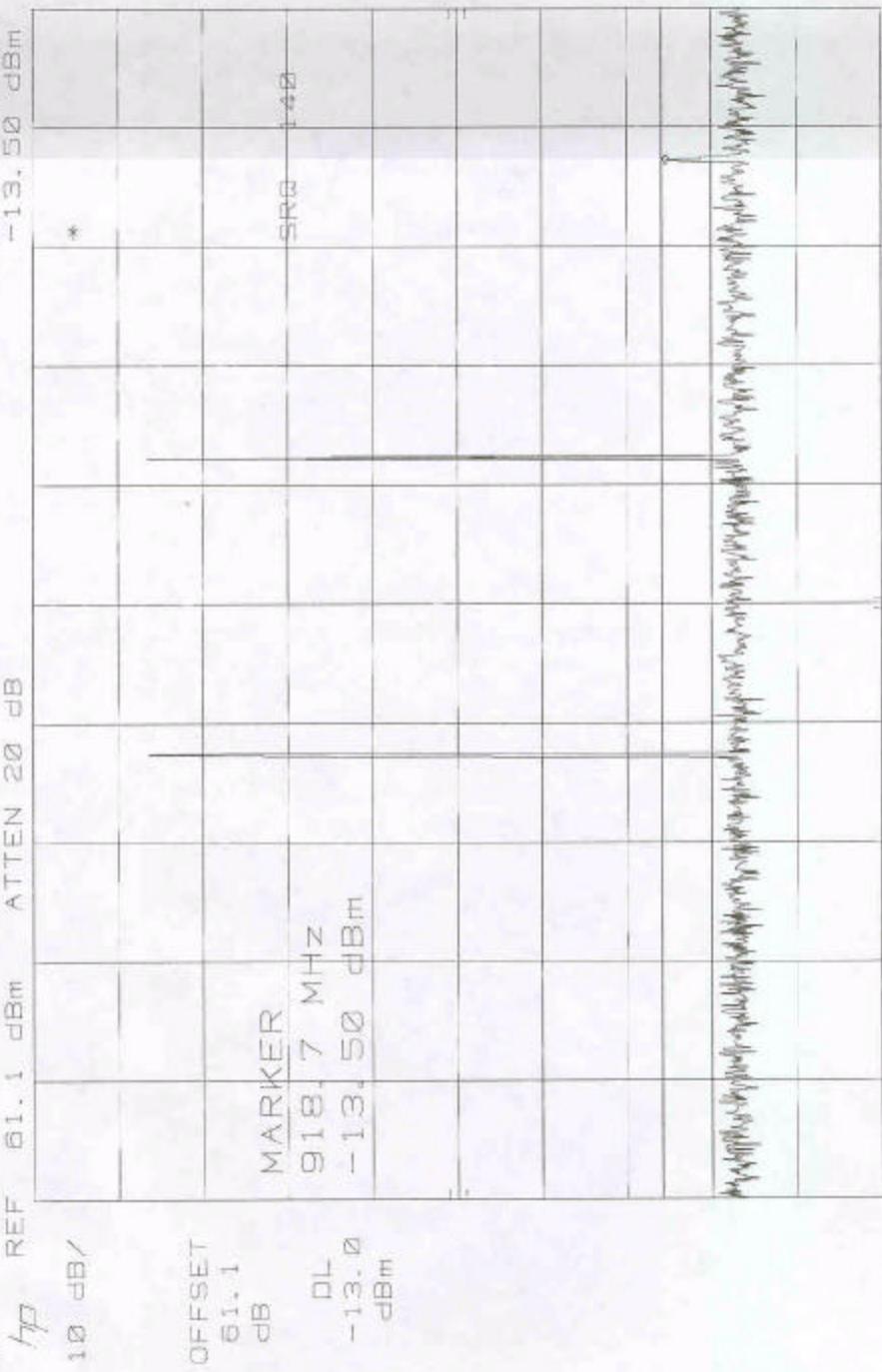


CENTER 869.000 MHz  
RES BW 300 Hz  
SPAN 200 kHz  
SWP 6.00 sec  
VBW 300 Hz



11/12/19  
Powerwave Technologies  
200W

Intermodulation  
AMPS Wideband Data  
 $f_1 = 869 \text{ MHz}$   $f_2 = 894 \text{ MHz}$   
SG1 = 3.06 dBm  
SG2 = 3.88 dBm



100 MHz

SPAN 100 MHz

SWP 3.00 sec

10 kHz

VBW 10 kHz

881 MHz

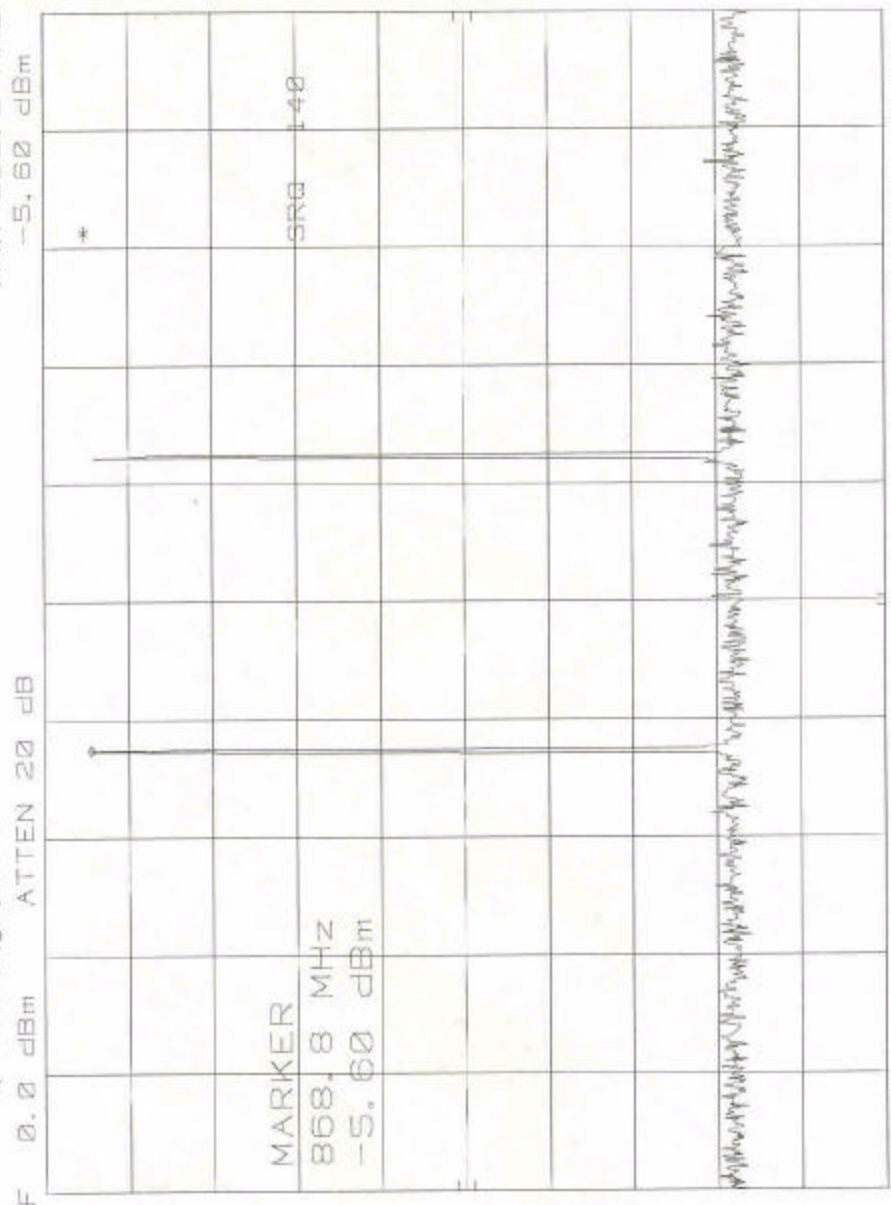
RES BW 10 kHz

CENTER 881 MHz

11/12/99  
Powerwave Technologies  
200W

Input from signal generators  
AMPS Wideband Data  
SG1 = 3.06 dBm  
SG2 = 3.88 dBm  
f<sub>1</sub> = 869 MHz f<sub>2</sub> = 894 MHz

MKR 868.8 MHz  
-5.60 dBm

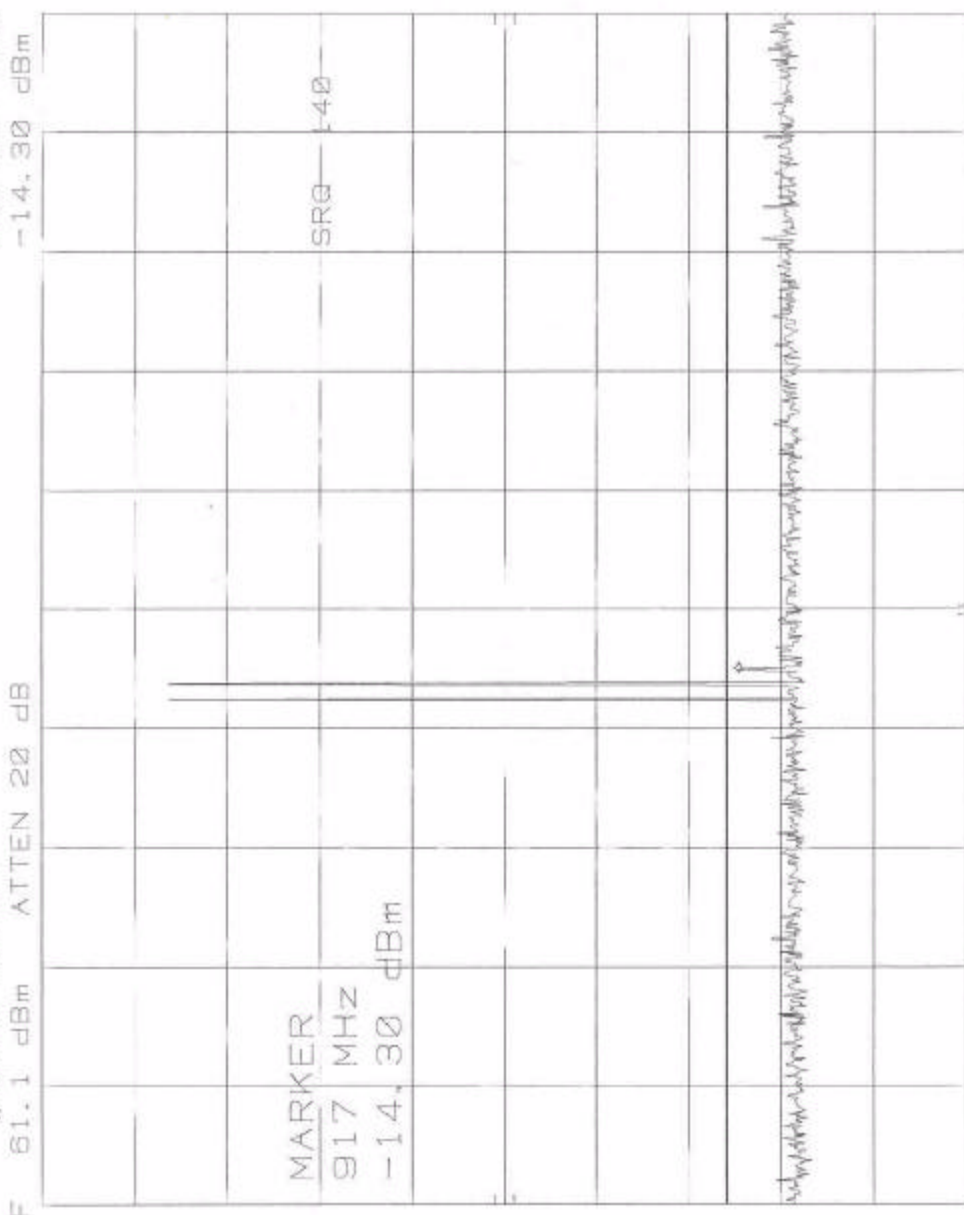


CENTER 861 MHz  
RES BW 10 kHz  
SPAN 100 MHz  
SWP 3.00 sec

11/12/99  
Powerwave Technologies  
200W

Spurious Emissions  
AMPS Wideband Data  
 $f_1 = 869 \text{ MHz}$   $f_2 = 894 \text{ MHz}$   
FCC 2.991 & 22.917  
RSS-131, 2.6  
SG1 = 3.06 dBm  
SG2 = 3.88 dBm

MARKER 917 MHz  
-14.30 dBm



10 dB/

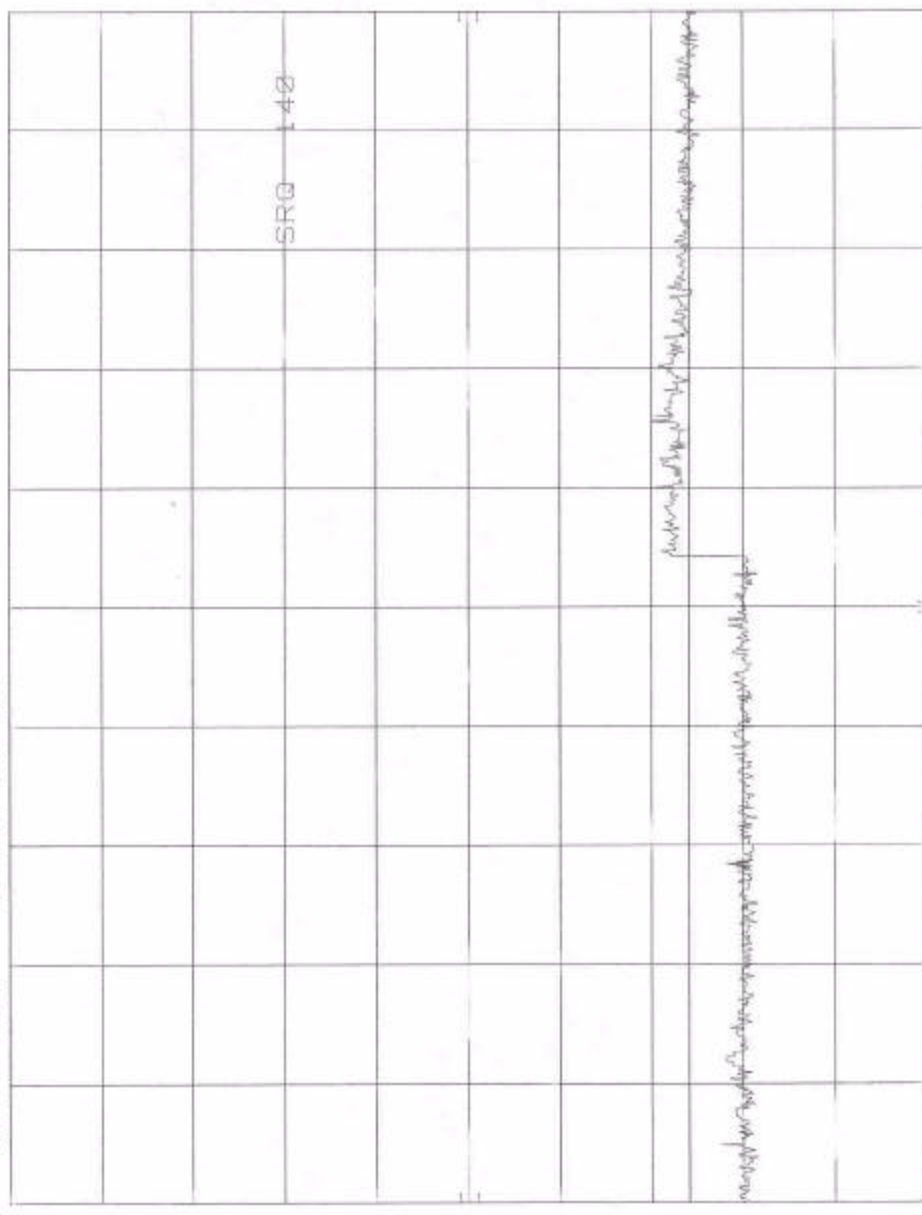
OFFSET  
61.1  
dB  
DL  
-13.0  
dBm

START 30 MHz  
RES BW 10 kHz  
VBW 10 kHz  
STOP 2.00 GHz  
SWP 59.1 sec

11/12/99  
 Procurewave Technologies  
 200W

Spurious Emissions  
 AMPS Wideband Data  
 $f_1 = 869\text{MHz}$   $f_2 = 894\text{MHz}$   
 FCC 2991 & 22.917  
 RSS-131, 6.6  
 SG1 = 3.06 dBm  
 SG2 = 3.88 dBm

HP REF 61.1 dBm ATTEN 20 dB



10 dB/

OFFSET  
 61.1  
 dB

DL  
 -13.0  
 dBm

START 2.00 GHz RES BW 10 kHz VBW 10 kHz STOP 9.00 GHz  
 SWP 210 sec

11/2/99  
Powerware Technologies  
200W

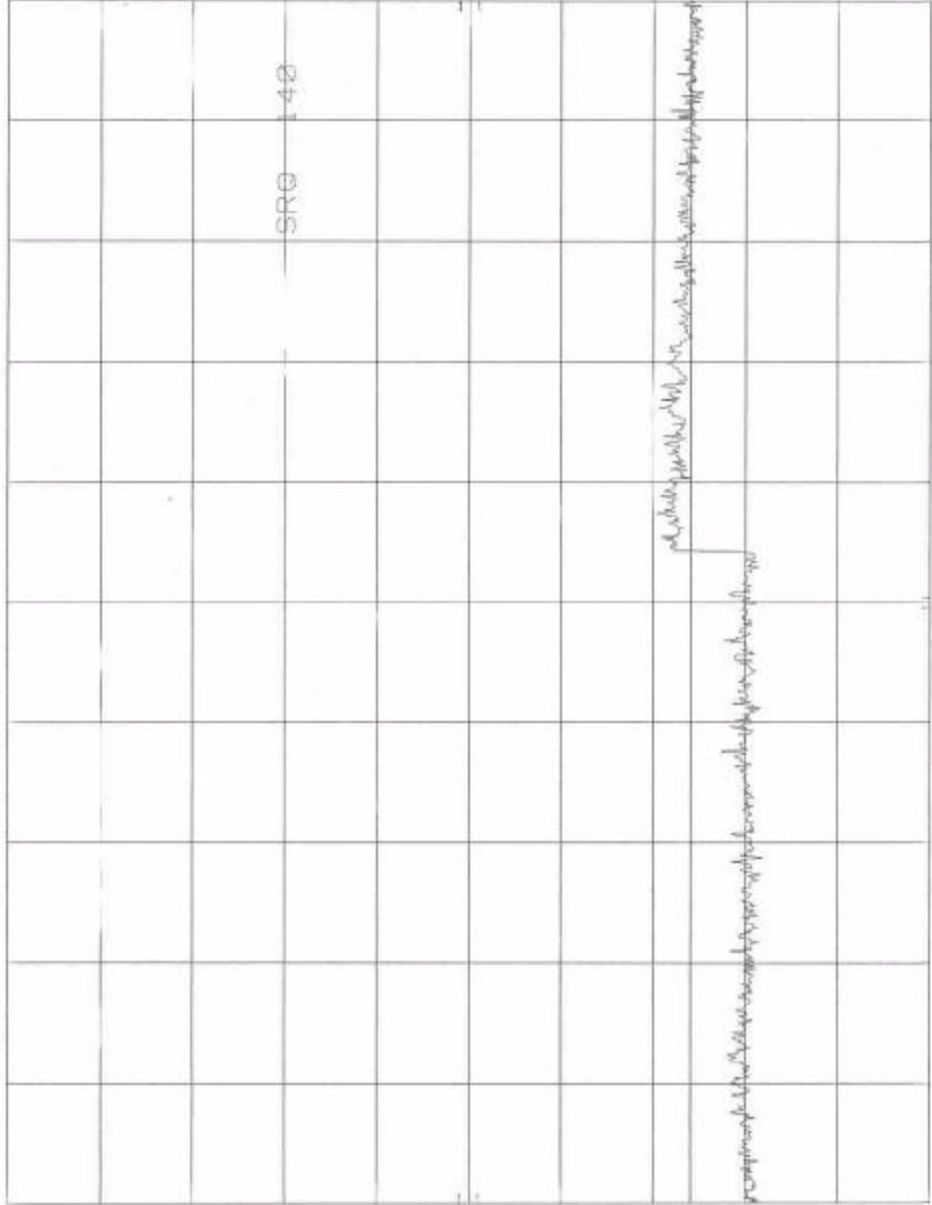
Spurious Emissions  
AMPS Wideband Data  
2.991 & 22.917  
RSS-131.66

No input to spectrum analyzer

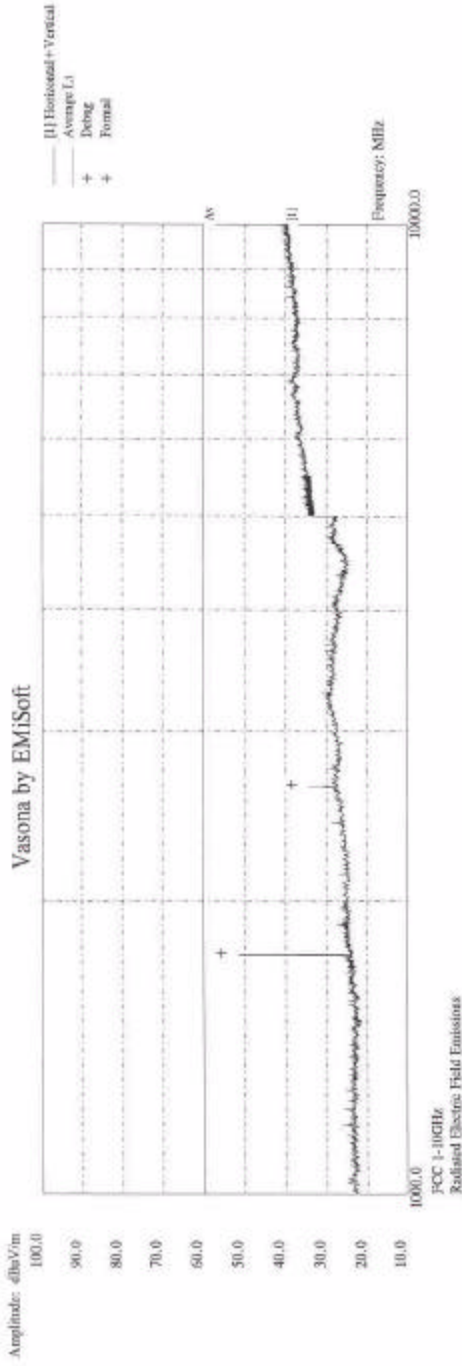
REF 61.1 dBm ATTEN 20 dB

10 dB/

OFFSET  
61.1  
dB  
DL  
-13.0  
dBm



START 2.00 GHz RES BW 10 kHz VBW 10 kHz STOP 9.00 GHz  
SWP 210 sec



Results Title : FCC 1-10GHz  
 Test Laboratory : BABT Product Service Santa CI  
 Engineer/User : Kim Nguyen  
 Equipment [EUT] : NTL107AA & NTL107AC

Details

Powerwave Technologies Inc.

Configuration : 881MHz carrier

Filed on : 11 Nov 99 at 13:30

Vasona is a trademark of EMiSoft Ltd  
 Another test and assessment product from EMiSoft!

Debug Data

No	Frequency MHz	Raw dBuv	Cable Loss dB	AF dB	Level dBuV/m	Emission Type	Pol	Hgt cm	Azt Deg	Limit dB	Margin Pass dB	Comments
1	1762.915	56.36	3.59	-8.56	51.39	Debug	V	97	13	60.0	-8.61	Pass
2	2639.939	34.95	4.64	-5.3	34.29	Debug	V	97	13	60.0	-25.71	Pass

Pass

1



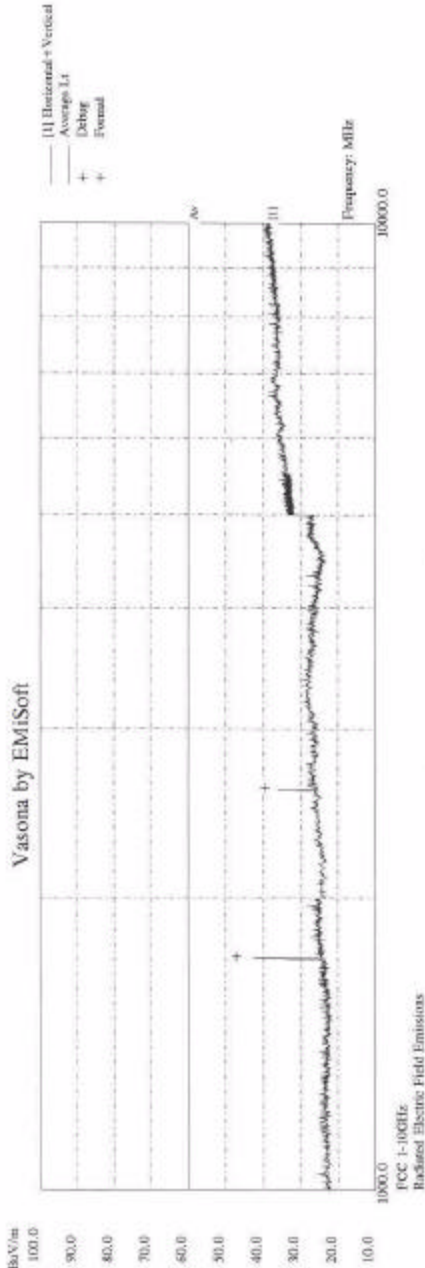


34.67 Debug V 402 13 60.0 -21.33 Pass



4

4	4323.013	27.07	6.56	-2.24	33.9	Lnlog	V	406	13	60.0	-27.1	Pass
					31.39	Dchug	V	406	13	60.0	-28.61	Pass



CARRIER = 869 MHz (Quick Scan)

Results Title : FCC 1-10GHz  
Test Laboratory : EMiSoft Test Laboratories  
Engineer/User : Andy Griffin  
Equipment [EUT] :

Details

Configuration

Current time : 11 Nov 99 at 8:12:6

Vasona is a trademark of EMiSoft Ltd  
Another test and assessment product from EMiSoft !

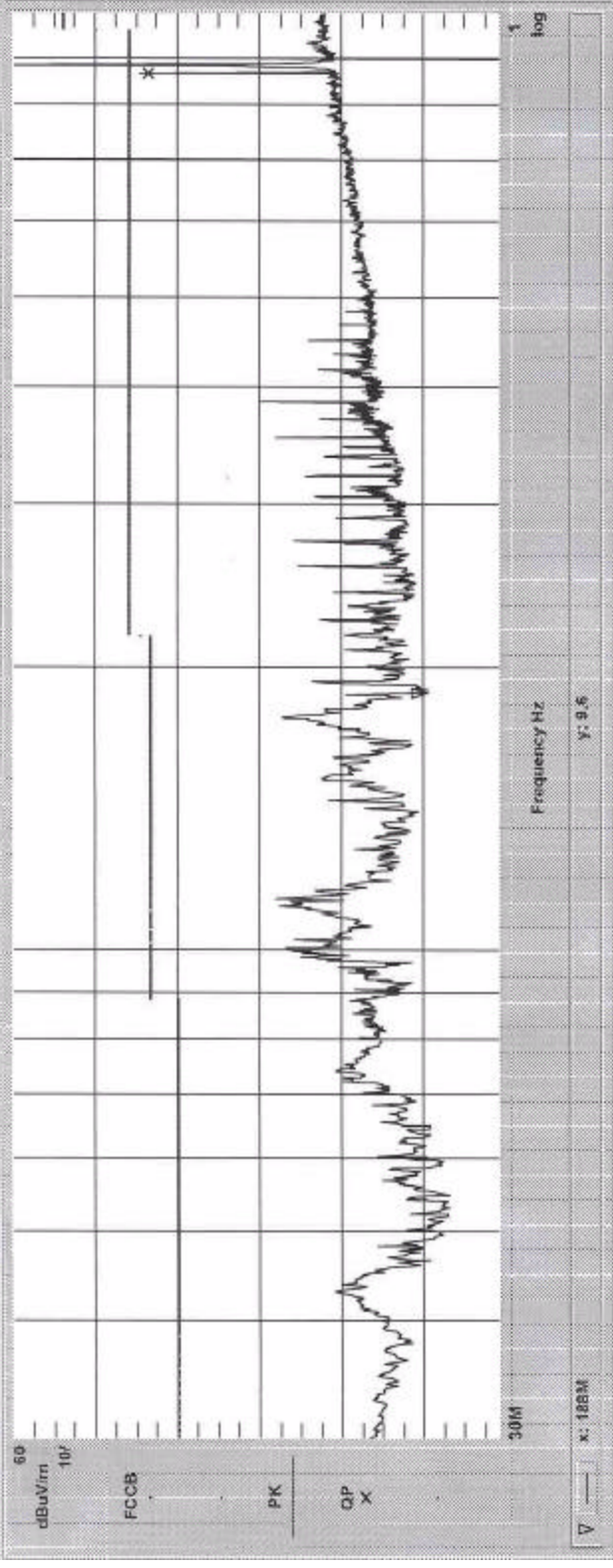
Debug Data

No	Frequency MHz	Raw dBuV	Cable Loss dB	AP Level dBuV/m	Emission Type	Fd	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	.000	0	0	0	Preview		0	0	0	0	0	Pass
2	1737.000	48.0	3.56	-8.71	Preview		100	330	60.0	-17.16	0	Pass
3	3591.230	35.97	4.6	-5.48	Preview		100	330	60.0	-17.16	0	Pass

35.09 Debug V 104 26 60.0 -24.91 Pass

Wed 10/Nov/1999 19:21:26

Final001.re3 10/Nov/1999 C. Pang A3368, POWERWAVE, NTL107AA & NTL107AC, 200W Output, CW, Full Scan



Freq Mhz	PK Level	QP Level	AV Level	QP Limit	AV Limit	PK Delta	QP Delta	AV Delta	Angle	Height	Polar
863.75	44.69	43.7		46		-1.31		-2.3	323	103	H
862.5	73.19			46		27.2			26	404	H
113	28.21			43.5		-15.3			336	254	H
177	27.35			43.5		-16.1			14	104	H
384.5	29.85			46		-16.2			15	99	V
99.825	27			43.5		-16.5			26	253	H
352.5	28.12			46		-17.9			203	99	V
42.95	20.95			40		-19			160	100	V
74.1	20.69			40		-19.3			26	253	H
193	23.68			43.5		-19.8			14	104	H
273	25.88			46		-20.1			336	103	H
75.15	19.8			40		-20.2			26	404	H
257	25.24			46		-20.8			247	104	H
87.75	19.14			40		-20.9			26	404	H
152	22.6			43.5		-20.9			50	253	H

Test Technician  
*Chris Pang*  
 DATE: 11-10-99