SC4812T @1.9 GHz CDMA BTS Frame

EXHIBIT #6

Test Report Index

Exhibit #	Description
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6B	Modulation Characteristics
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MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

EXHIBIT #6A

SUMMARY OF RF MEASUREMENTS

APPLICANT: MOTOROLA **TRANSCEIVER TYPE: IHET6YR1**

Summary of Radiated RF Measurements

WORST TRANSMIT RADIATED RF SPUR LEVEL FOR SC4812T @1.9 GHz BTS FRAME

SPUR FREQUENCY (GHz)	DISTANCE MEASURED (meters)	SPUR LEVEL MEASURED (dBµV/meter)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
3.97750	3	76.442	-18.79	-13

FCC Max. Limit Per 47 CFR 22.917:

" =Transmitted Power ($10 \log_{10} (P_{watt})$) - ($43 + 10 \log_{10} (P_{watt})$)dBW

" =$10 \log_{10} (P_{watt})$ - ($43 + 10 \log_{10} (P_{watt})$)dBW

" =-43 dBW

" =-13 dBm

Engineer: Melissa A. VanDine 10/9/98
Date

APPLICANT: MOTOROLA TRANSCEIVER TYPE: IHET6YR1

Summary of Conducted RF Measurements

SPUR LEVEL MEASURED (dBm)	FREQUENCY (GHz)	SPUR LEVEL SPEC (dBm Max)
-24.95	19.8875	-13.0

Engineer: Melissa A VanBrie 10/9/98
Date

MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

EXHIBIT #6B

MODULATION CHARACTERISTICS

HP E6380A Cell Site Test Set: 09/24/98 10:33:00 am

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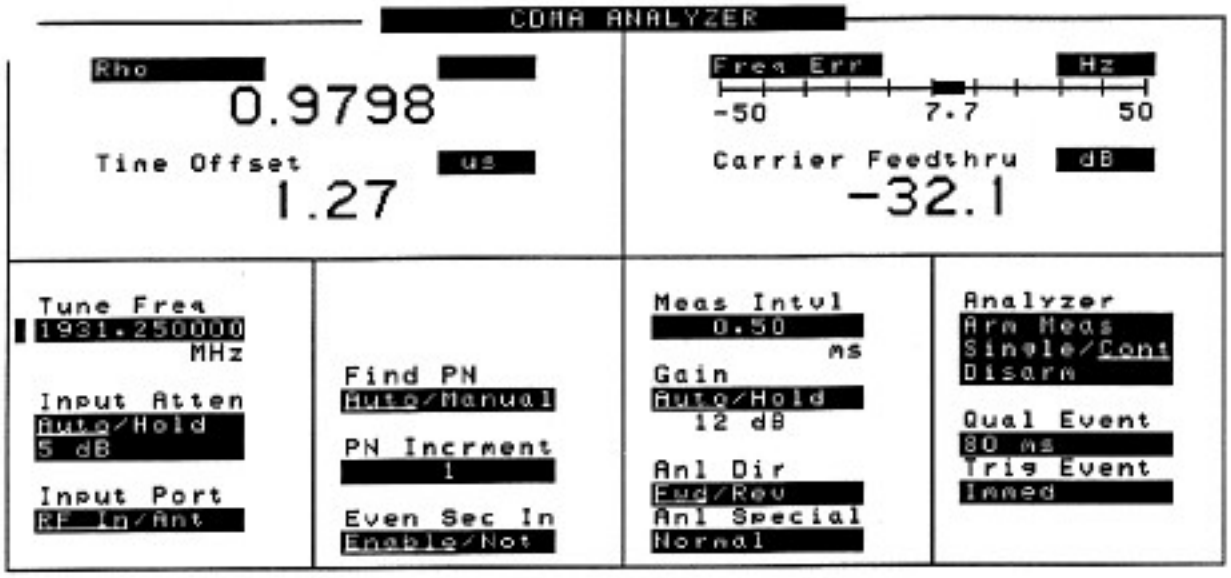

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 25
Maximum Power

HP E6380A Cell Site Test Set: 09/24/98 10:27:00 am

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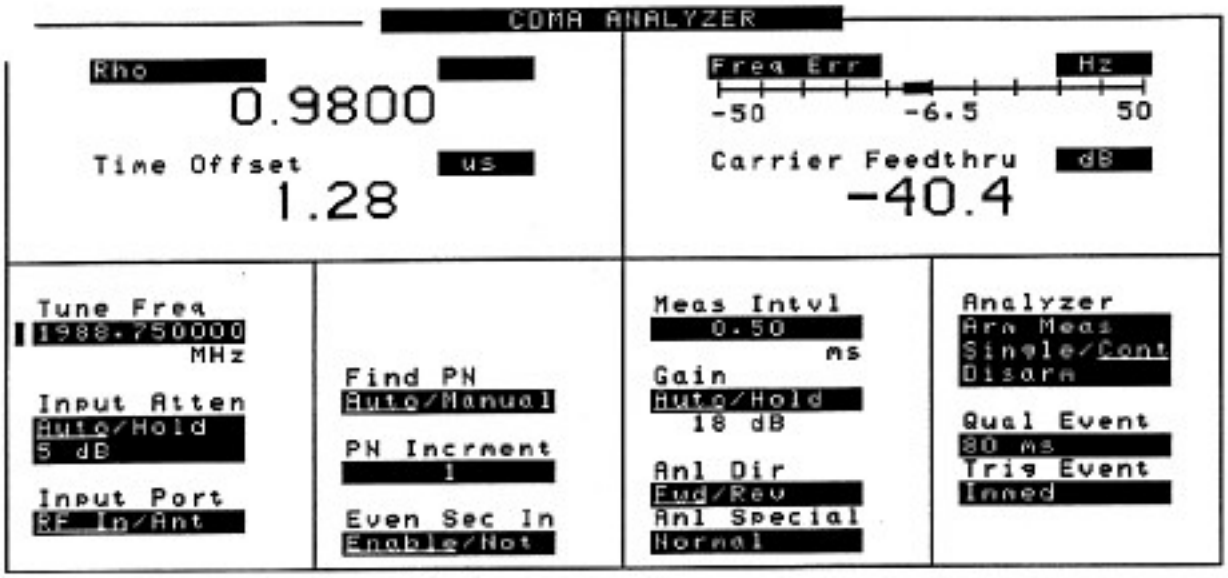

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 1175
Maximum Power

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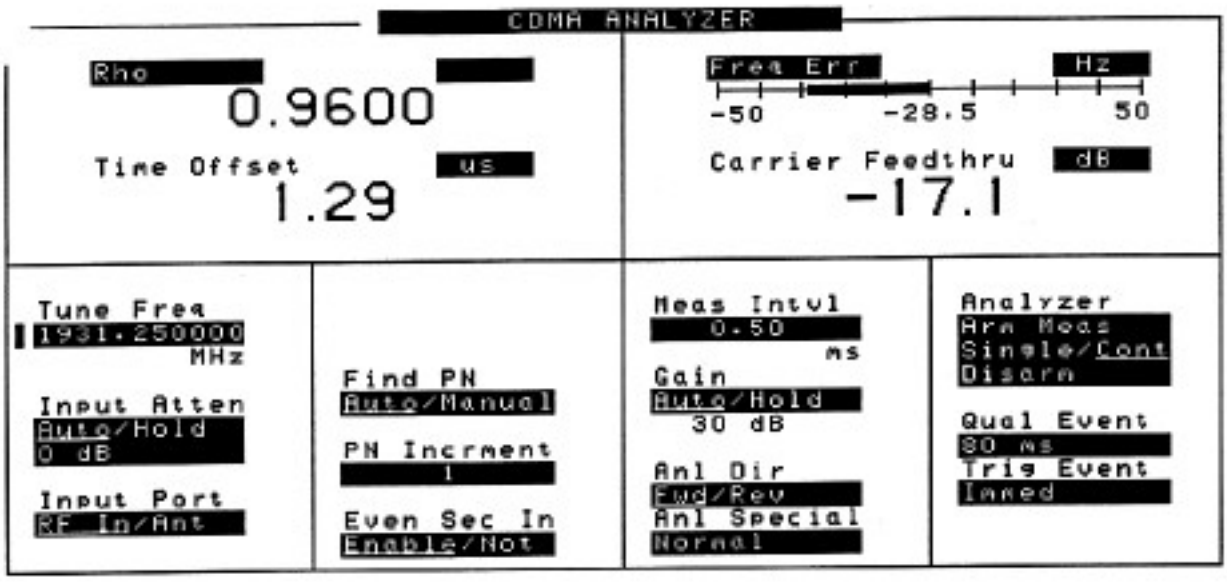

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 25
Minimum Power

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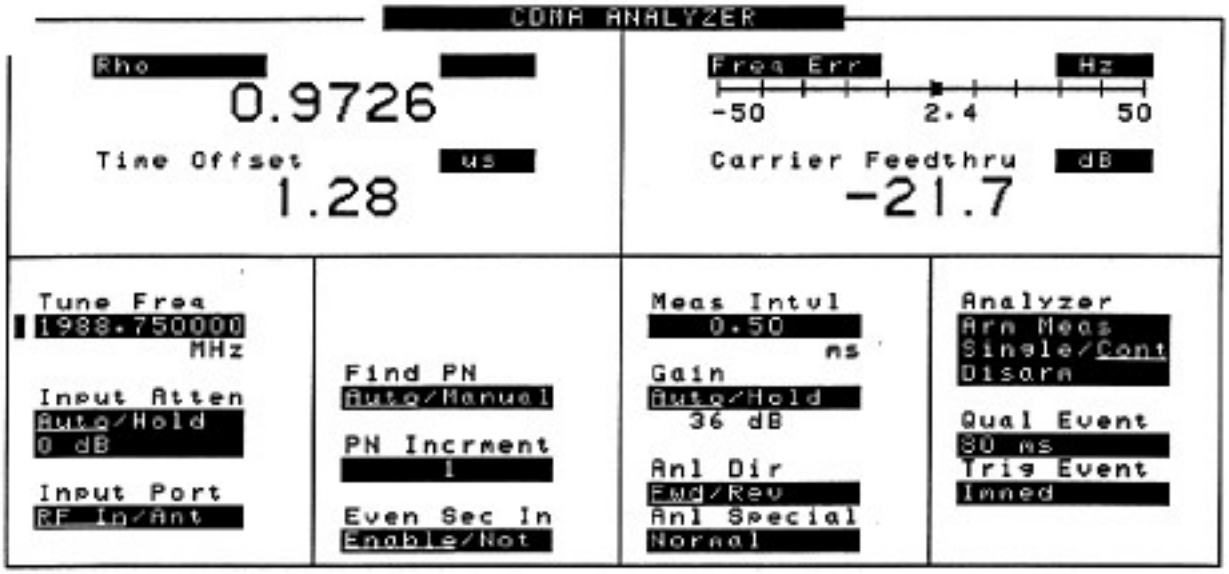


SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 1175
Minimum Power

MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

EXHIBIT #6C

SPURIOUS & HARMONIC EMISSIONS RADIATED

APPLICANT: MOTOROLA **TRANSCEIVER TYPE: IHET6YR1**

Radiated RF Measurements

WORST RADIATED RF SPUR LEVEL FOR SC4812T @1.9 GHz

TRANSMIT CHANNEL	SPUR FREQUENCY (GHz)	MEASURED SIGNAL LEVEL dBuV/meter	MEASURED Signal Level (dBm)	FCC, Part 24 MAX LIMIT (dBm)
25V	3.862	72.32	-22.91	-13
25H	3.862	73.57	-21.65	-13
1175V	3.977	75.93	-19.30	-13
1175H	3.977	76.44	-18.79	-13

Converting dBuV/meter to dBm when Part 24 is done at 3 meters.

1. (dBuV/M / 20) *(Inverse Log) = uV/M
2. Log(uV/M /57735) * 20 = dBm

Example 76.44 dBuV/m to dBm

(76.44 dBuV/m / 20) * (Inverse Log) = 6638.96 uV/M

Log(6638.96 uV/m/ 57735) * 20 = -18.79 dBm

If the test is done at 10 meters, the first formula would remain the same. The 2nd is as follows

Log[(uV/m * 1/ (3 * 57735)/10)] * 20 dBm

Engineer: Melissa A Vandine 10/9/98

Date

MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

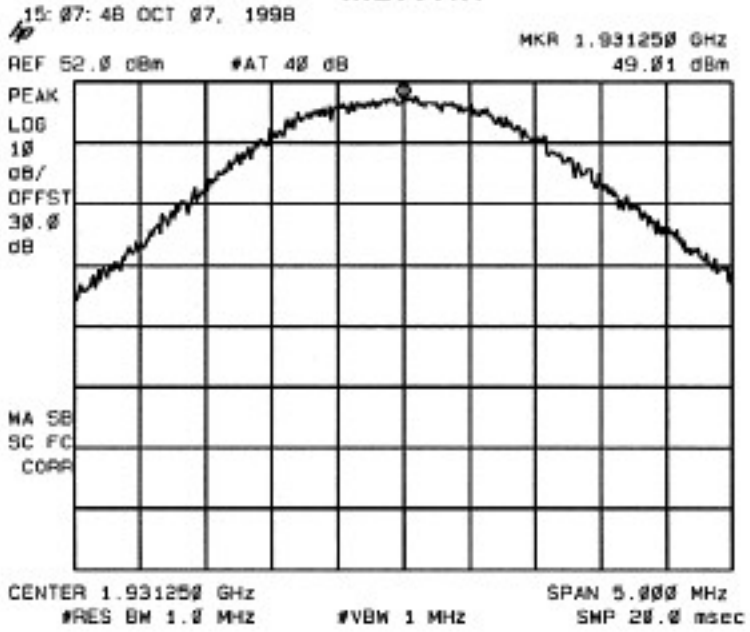
EXHIBIT #6D

SPURIOUS & HARMONIC

EMISSIONS CONDUCTED

NOTE: The plots for conducted spurious and harmonic emissions are measured in peak mode. The higher (than 44.88 watts) levels measured in peak mode are expected, due to typical CDMA peak to average performance. The average power level was set to 44.88 watts using an HP438A power meter.

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 25
Maximum Power

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10-07-98
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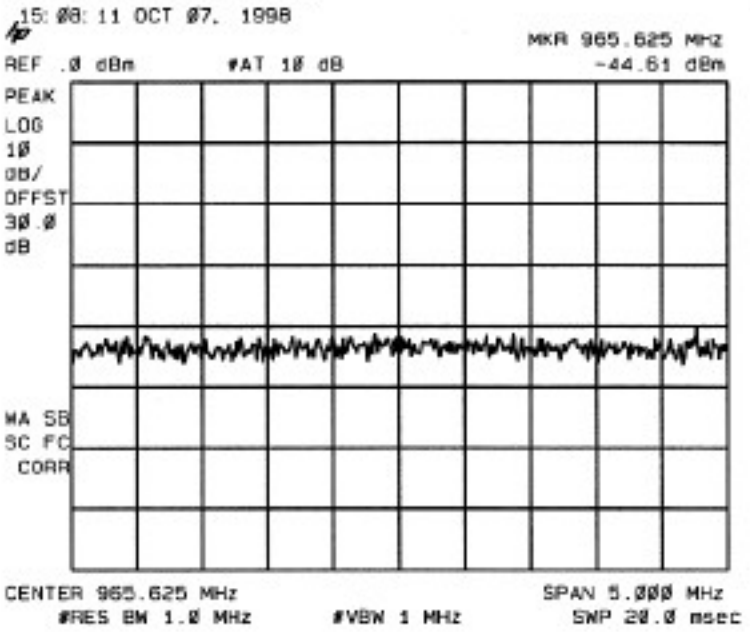
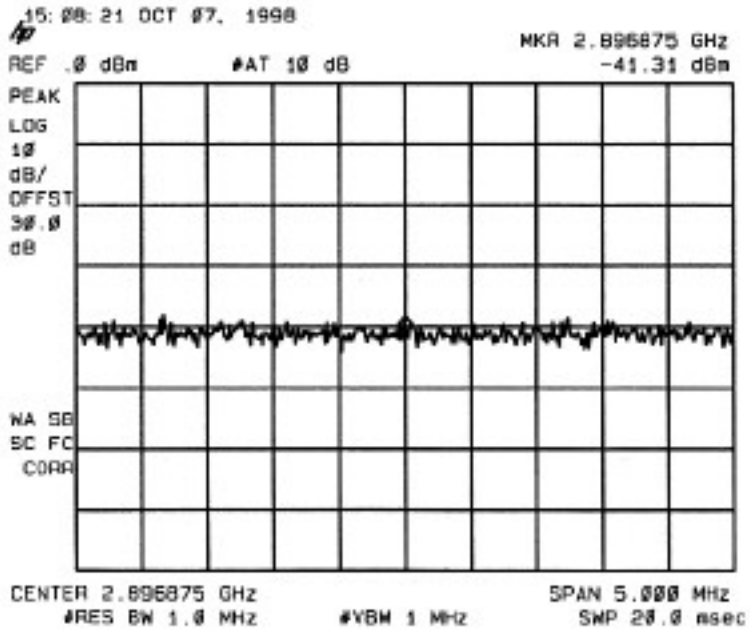
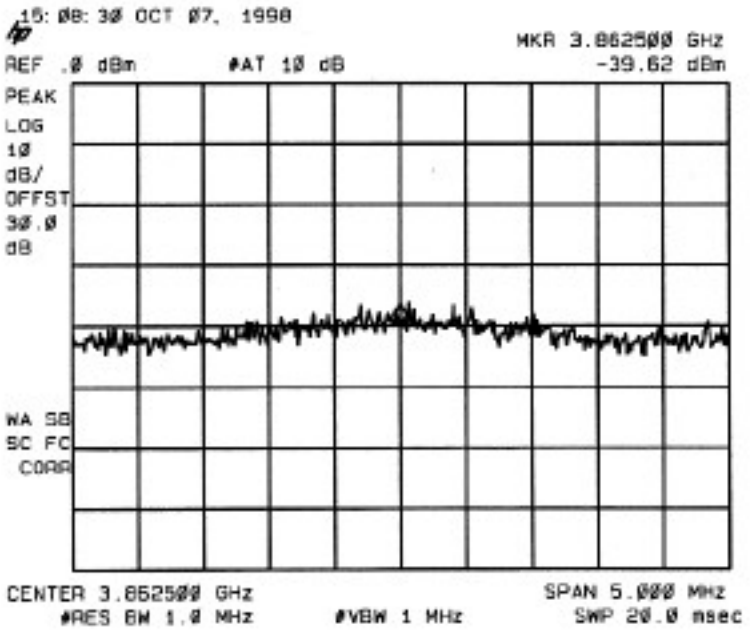
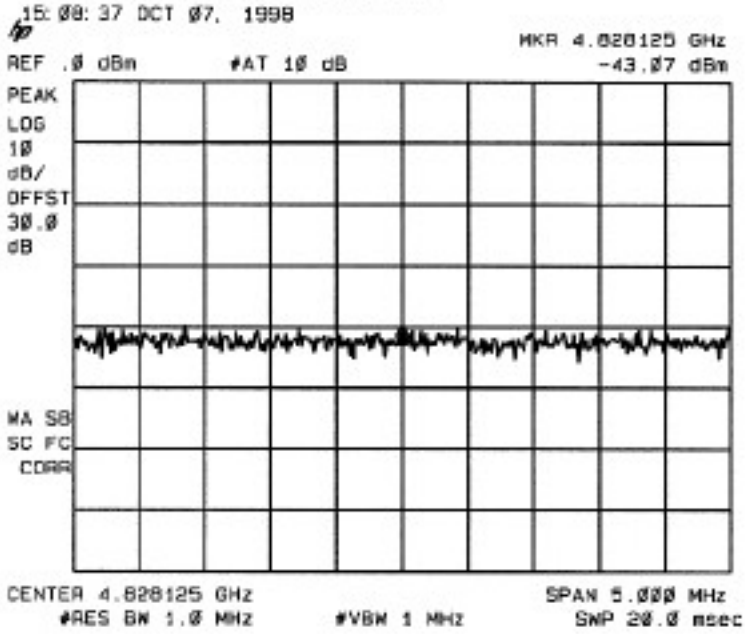






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



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Maximum Power

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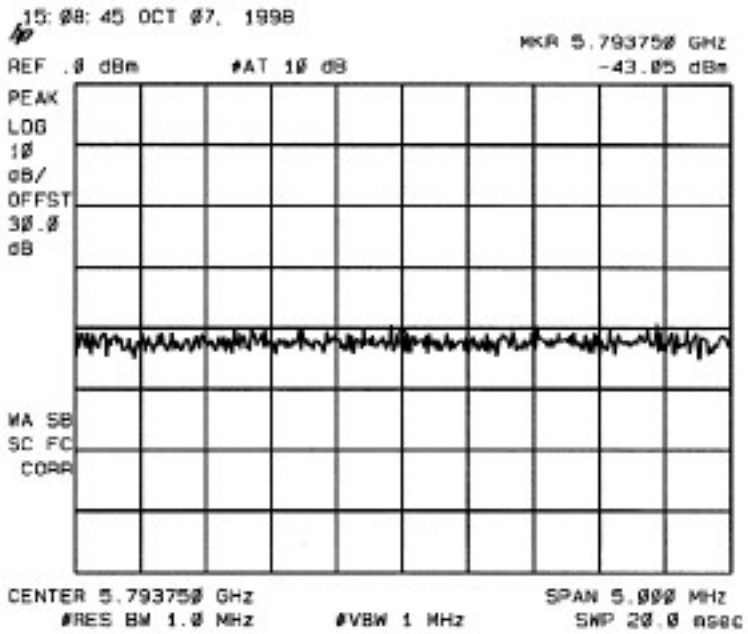
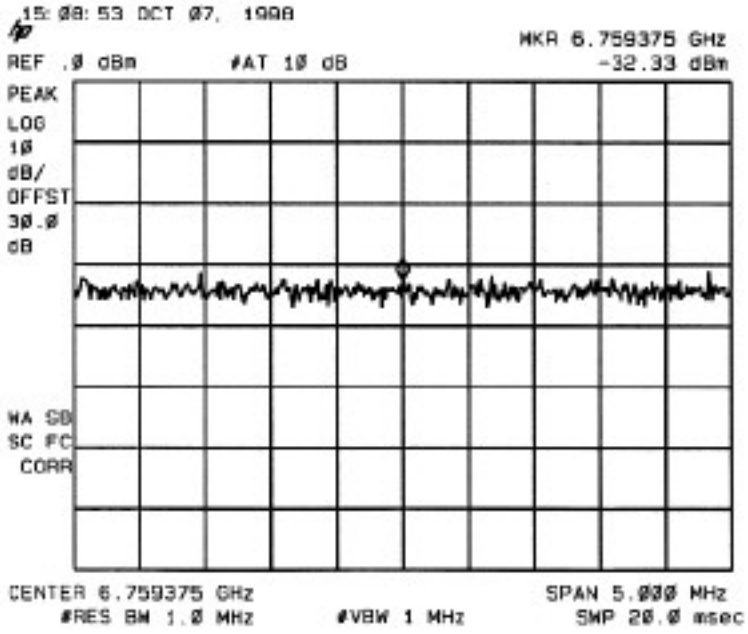
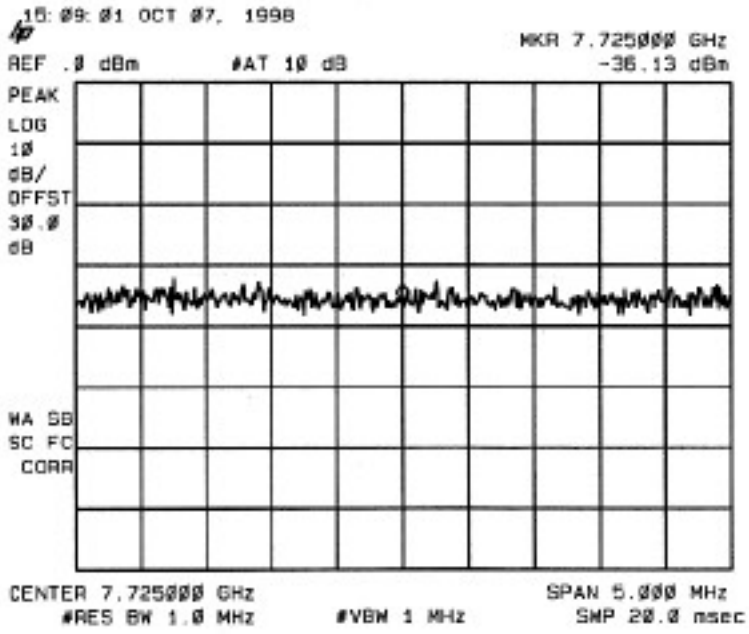
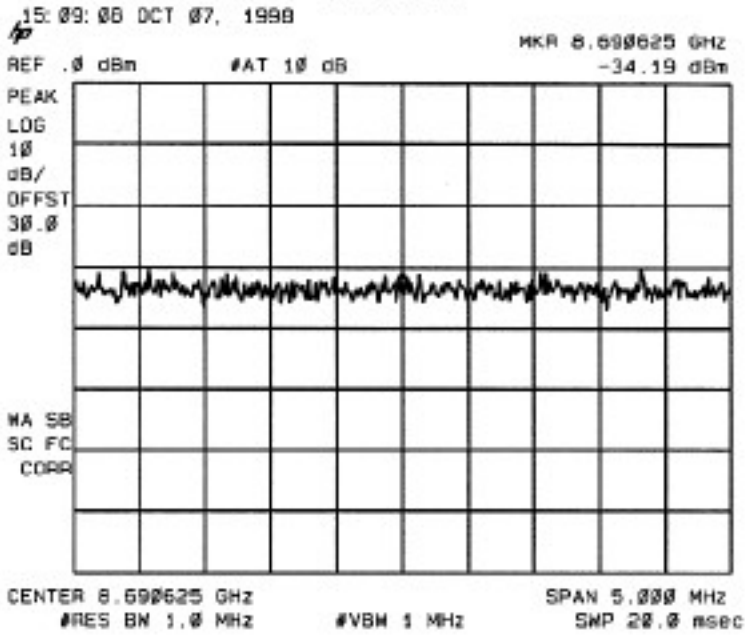






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 25
Maximum Power

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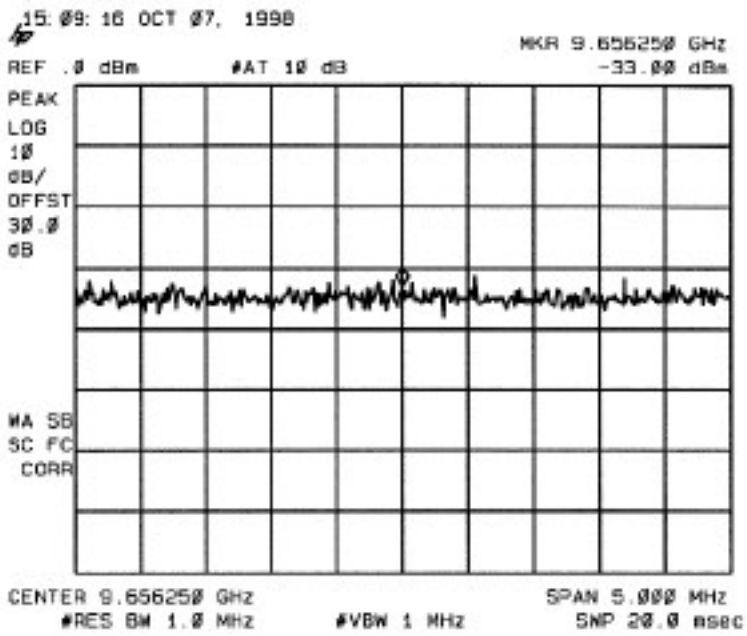
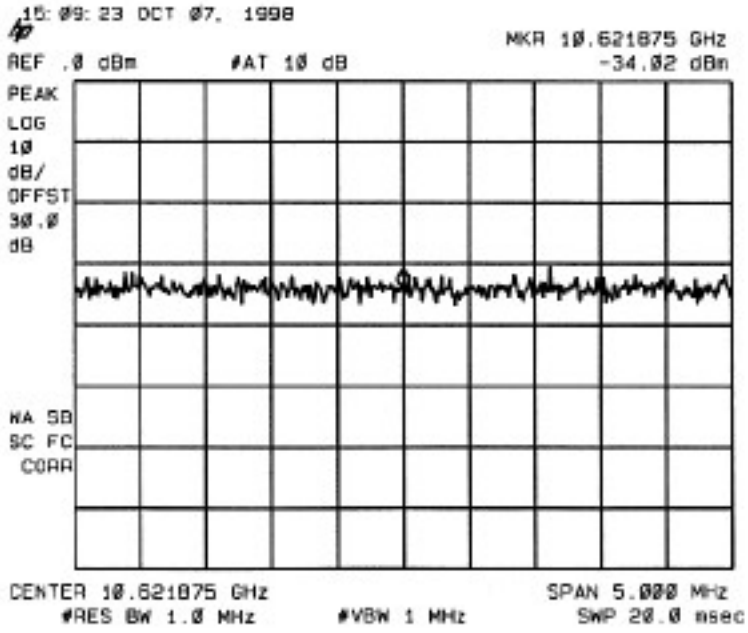
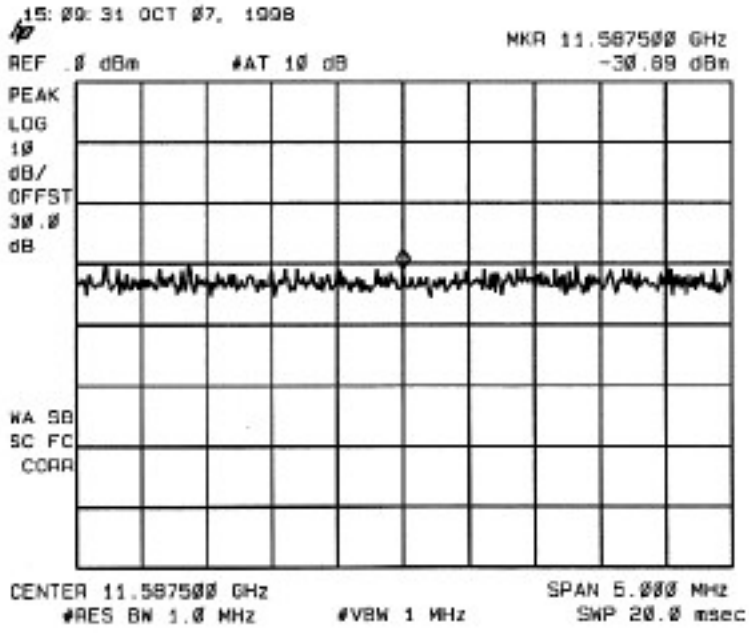
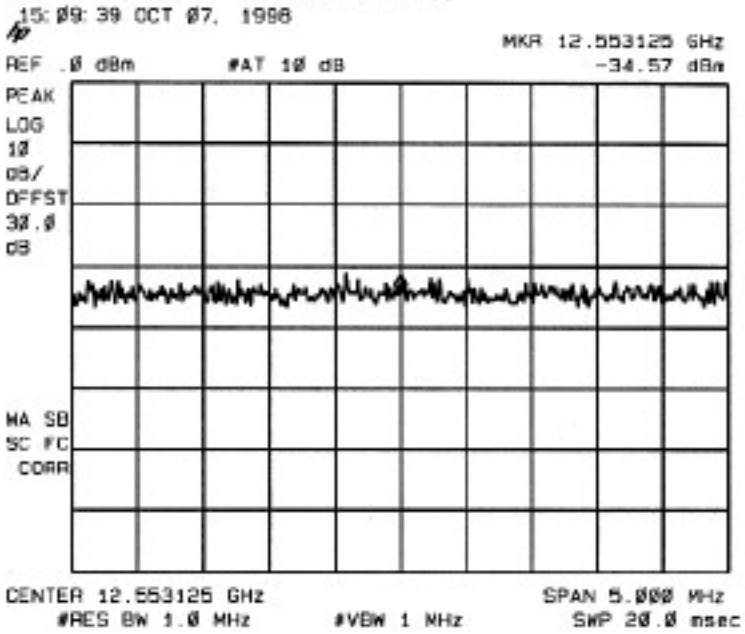






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 25
Maximum Power

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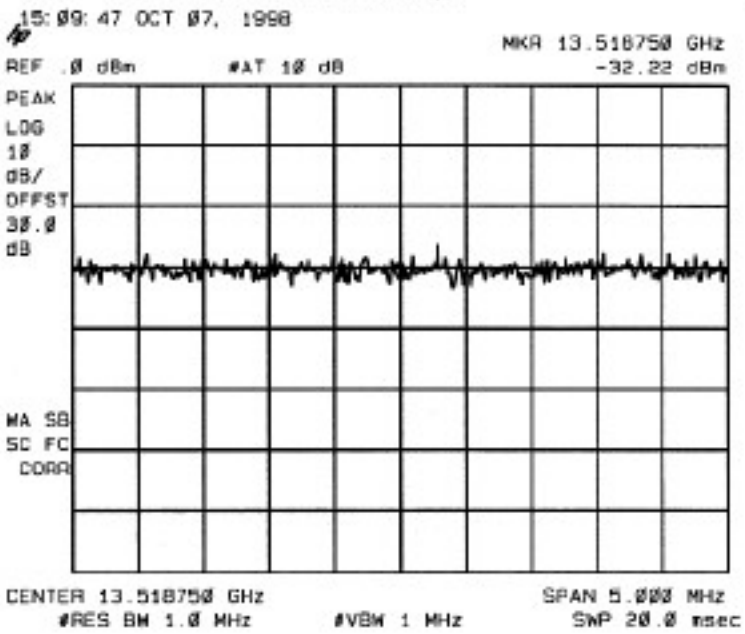
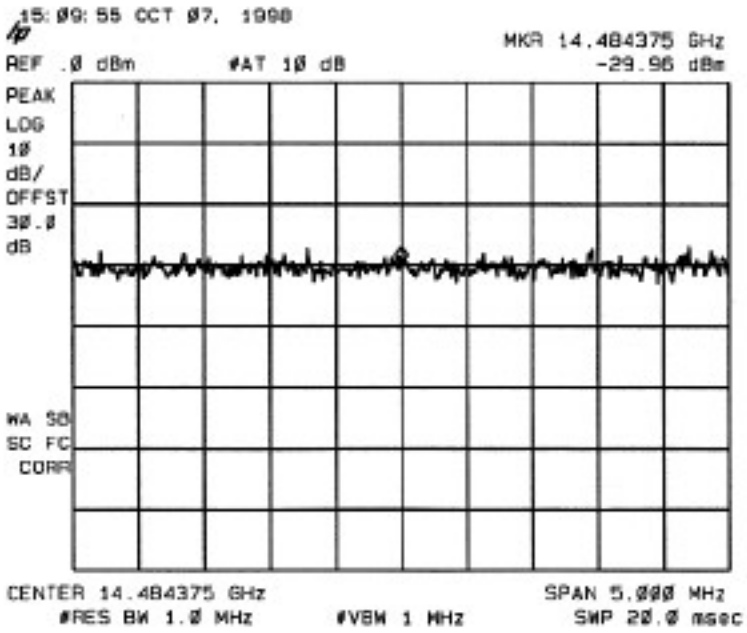
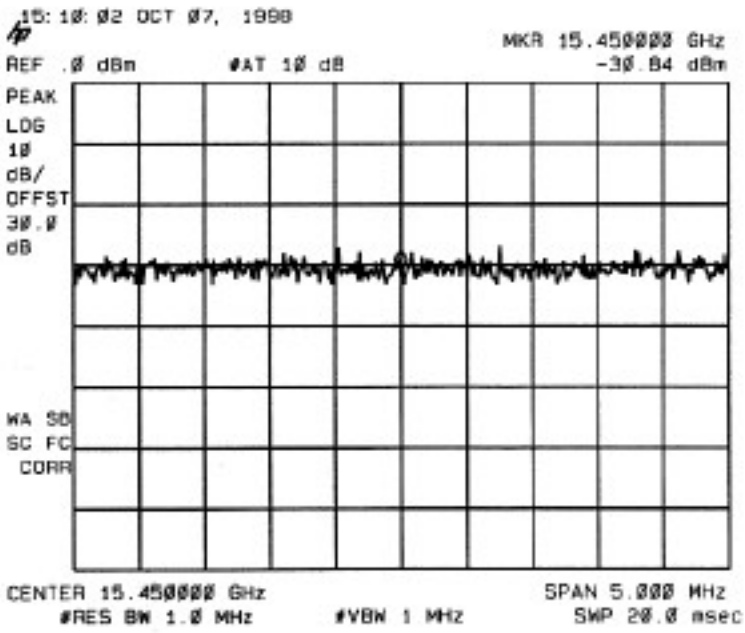
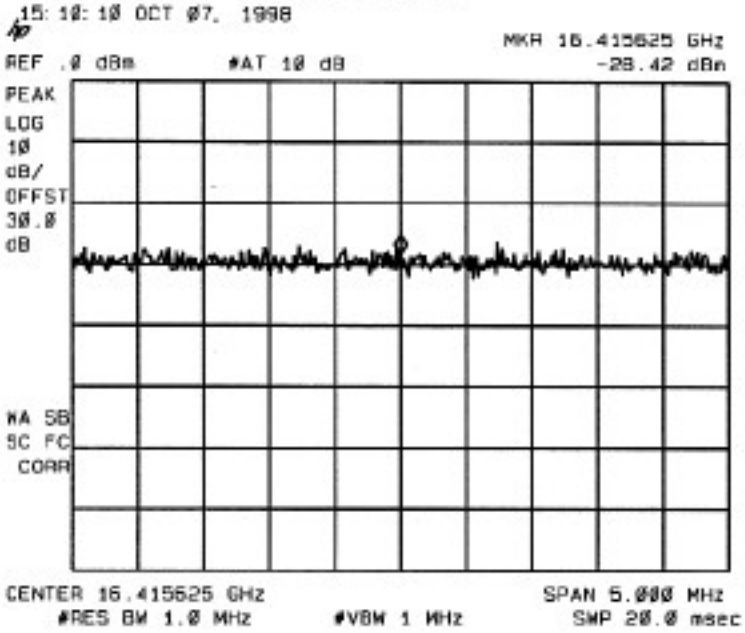






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 25
Maximum Power

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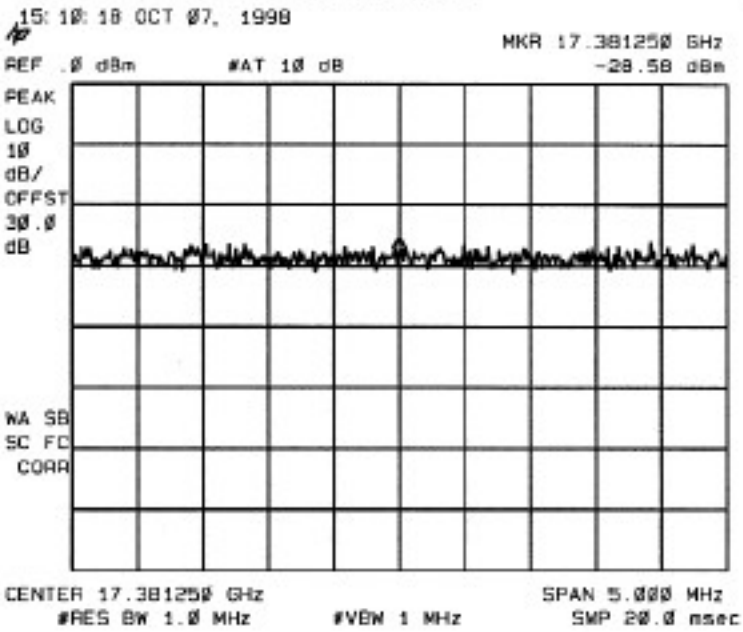
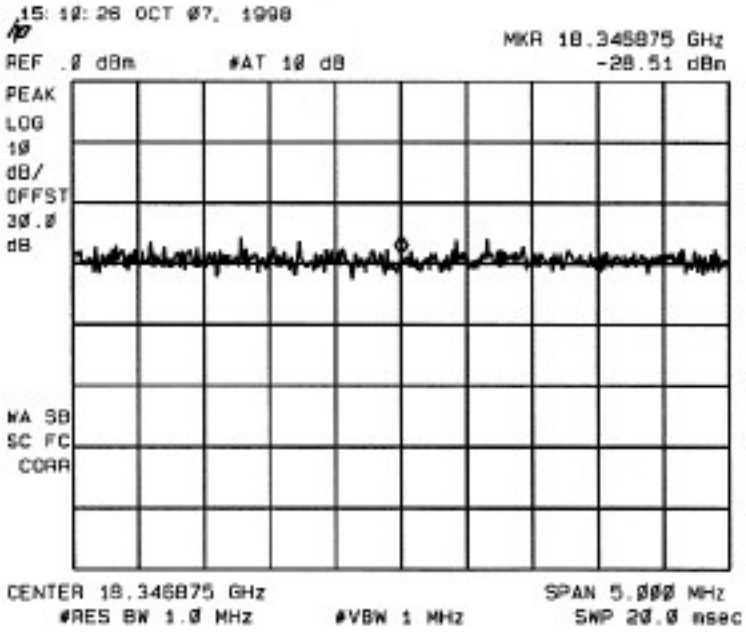
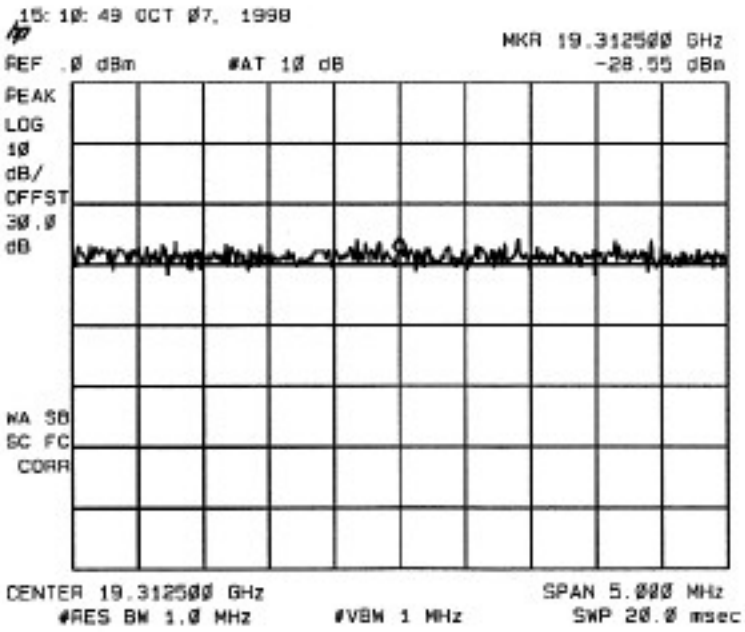
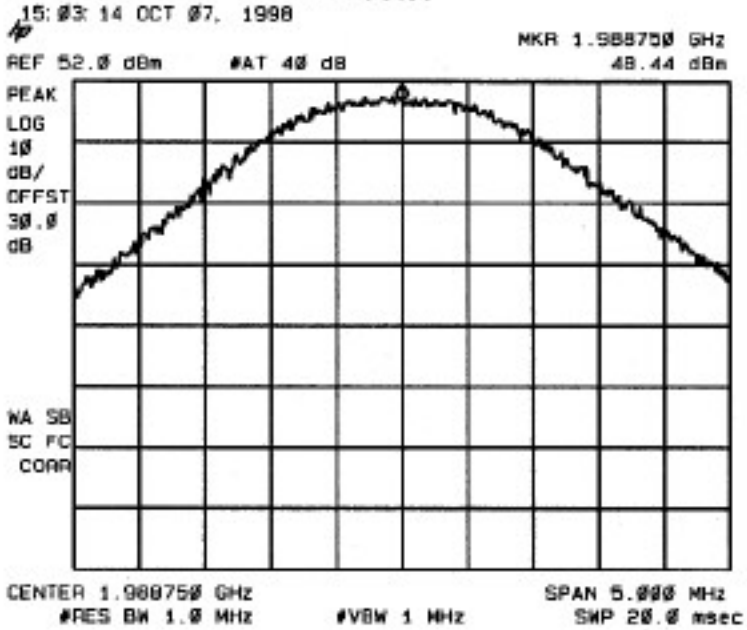


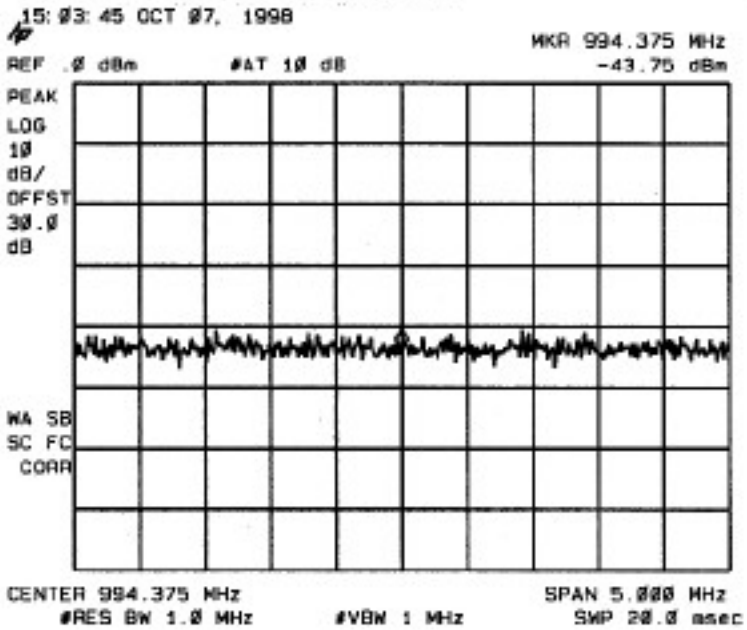


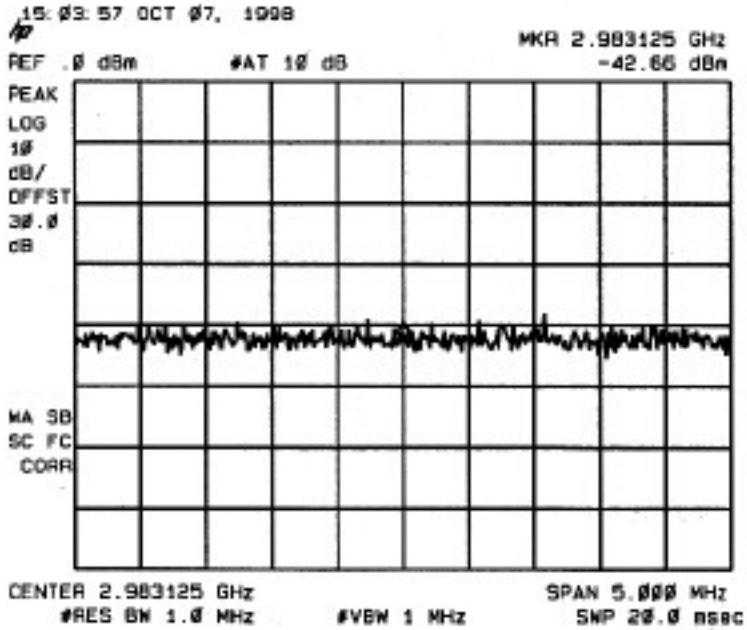


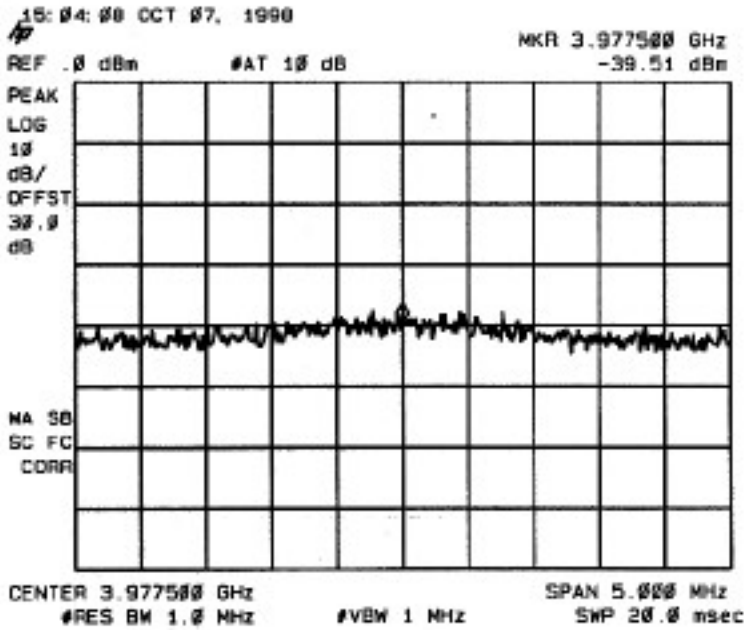
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



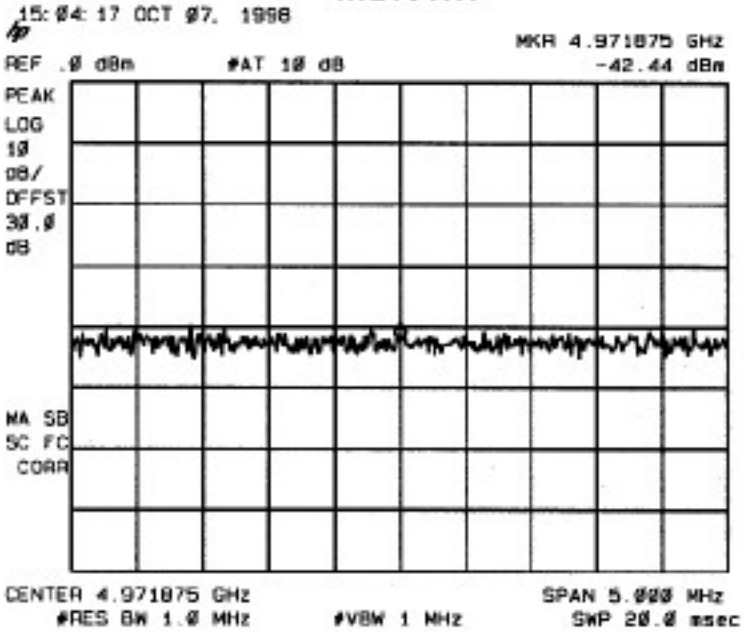
Channel 1175
Maximum Power







SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 1175
Maximum Power

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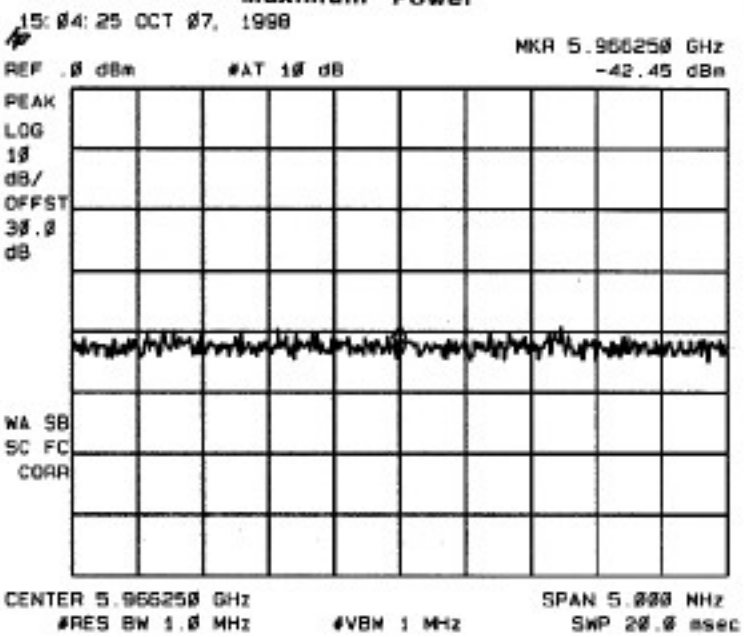
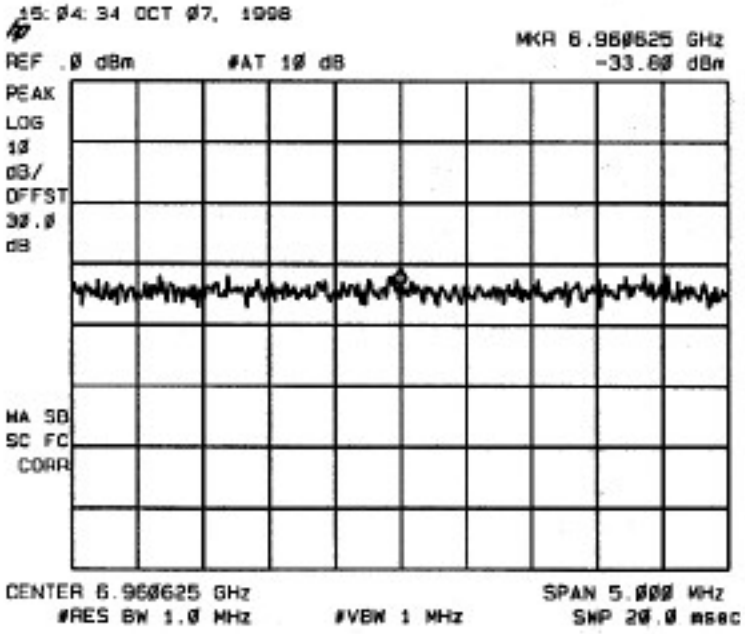
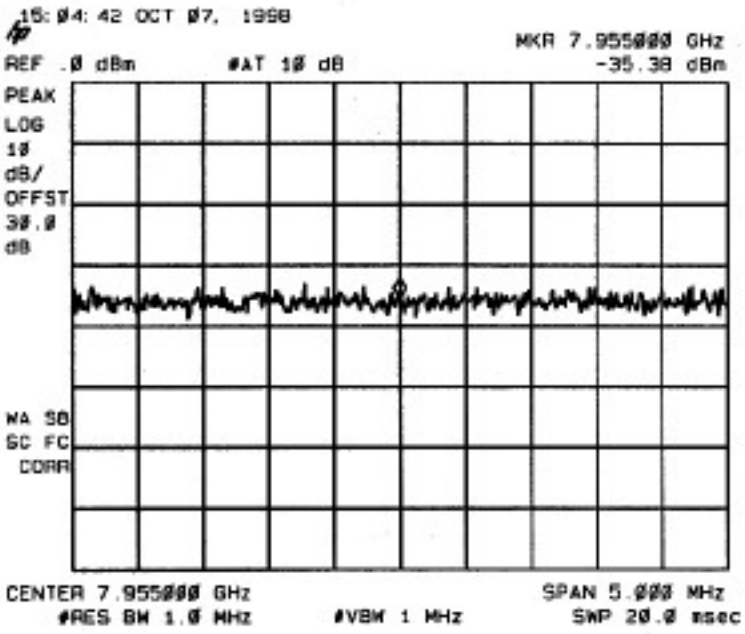
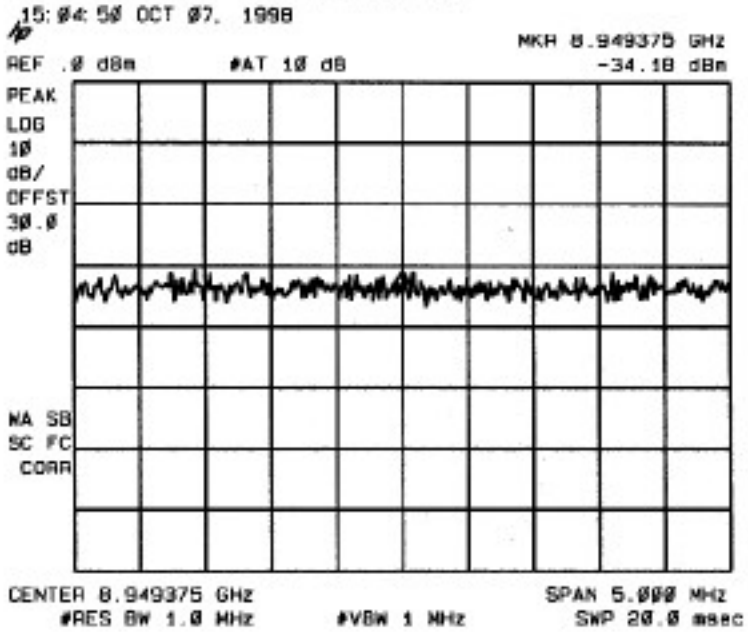






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 1175
Maximum Power

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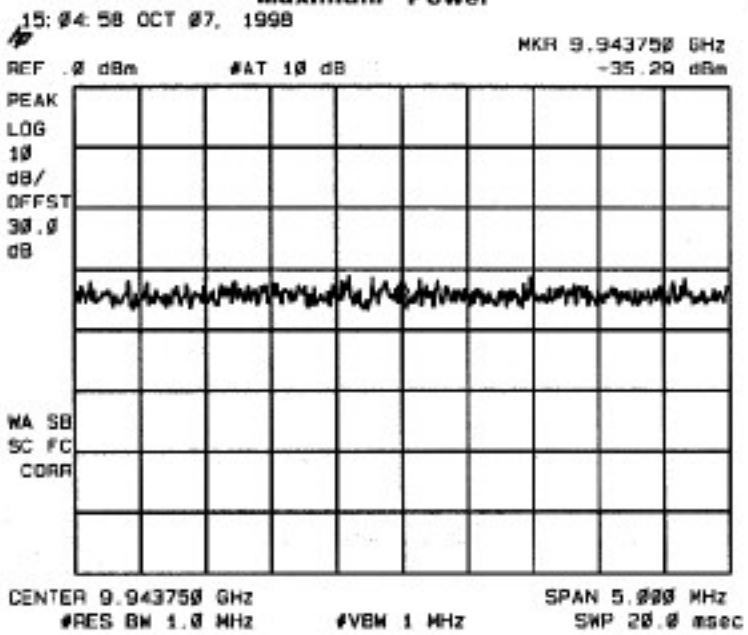
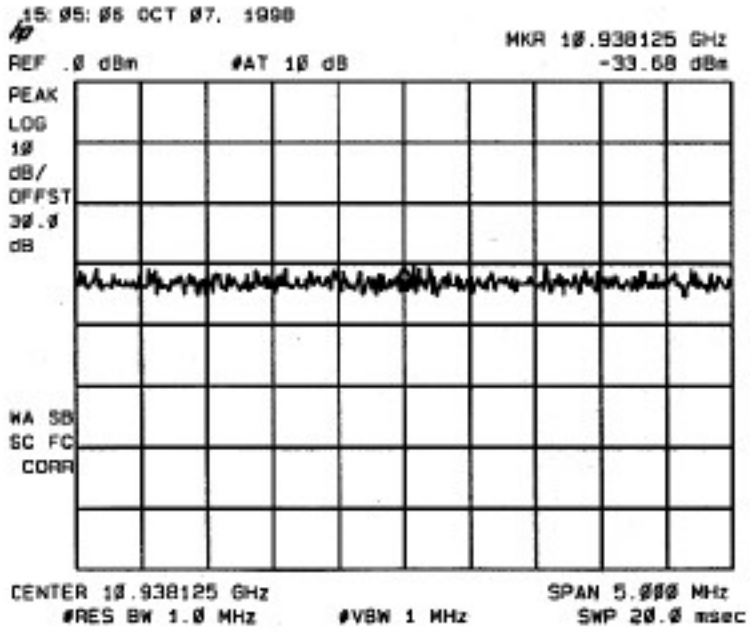
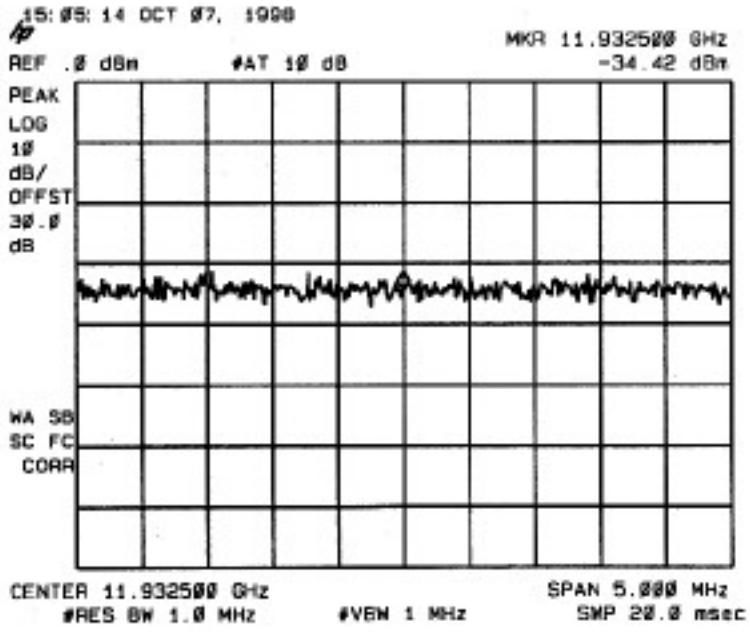
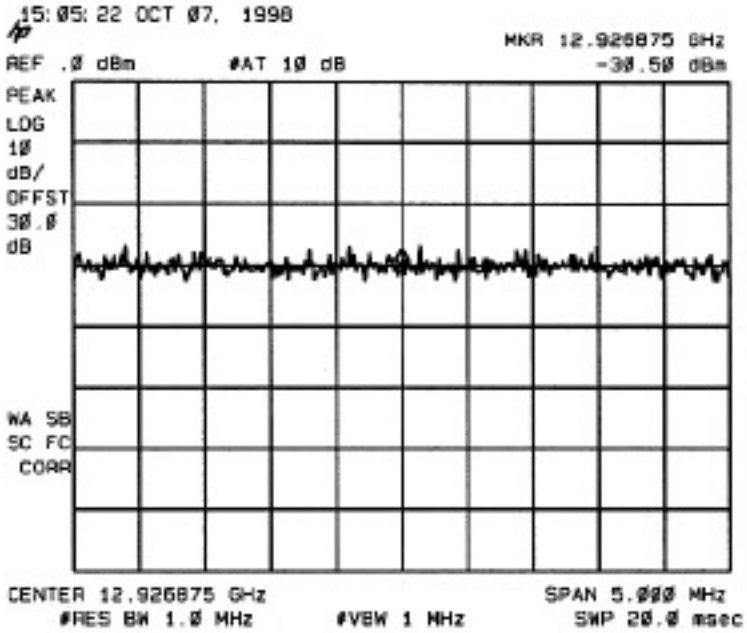






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 1175
Maximum Power

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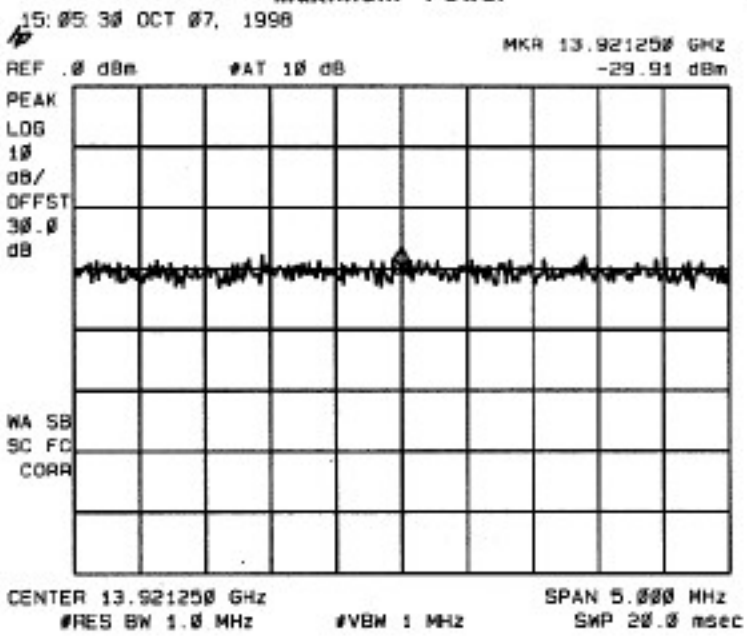
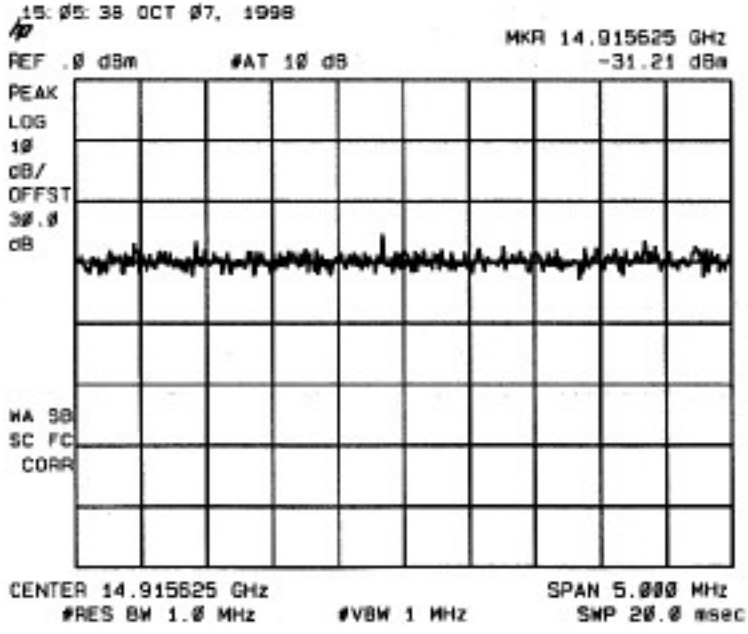
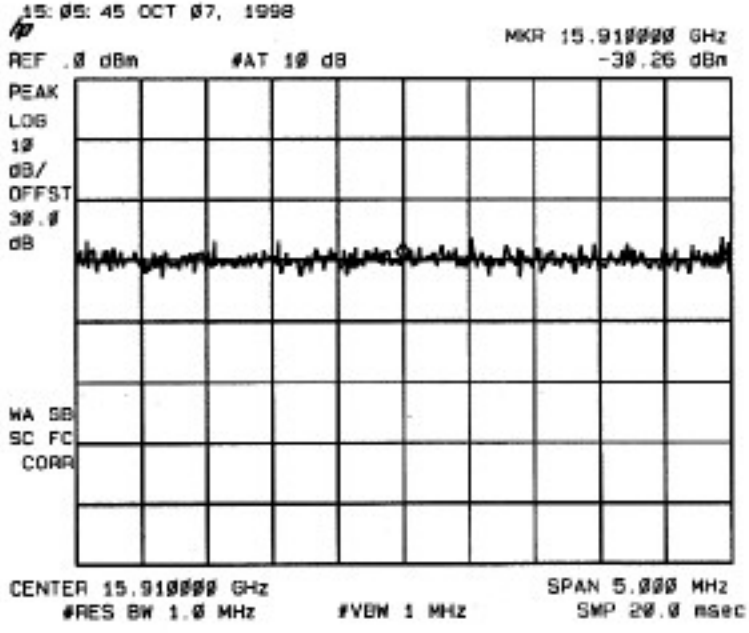
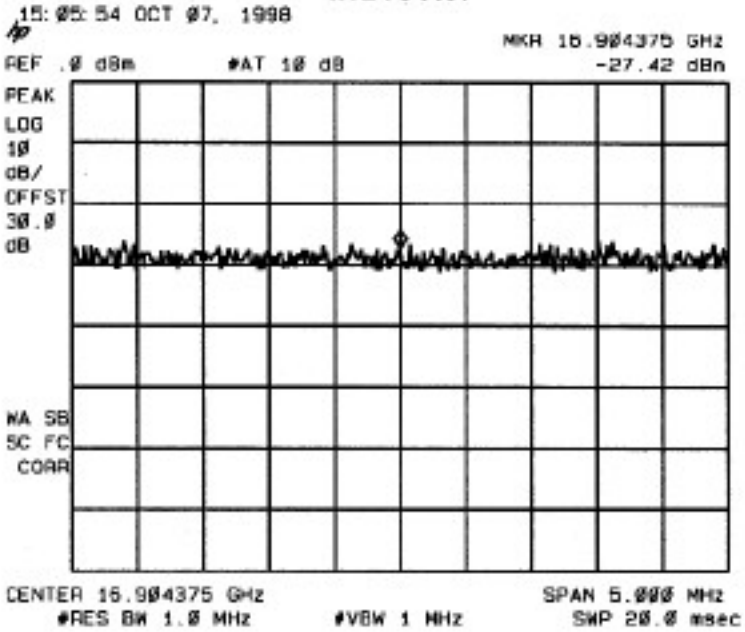






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 1175
Maximum Power

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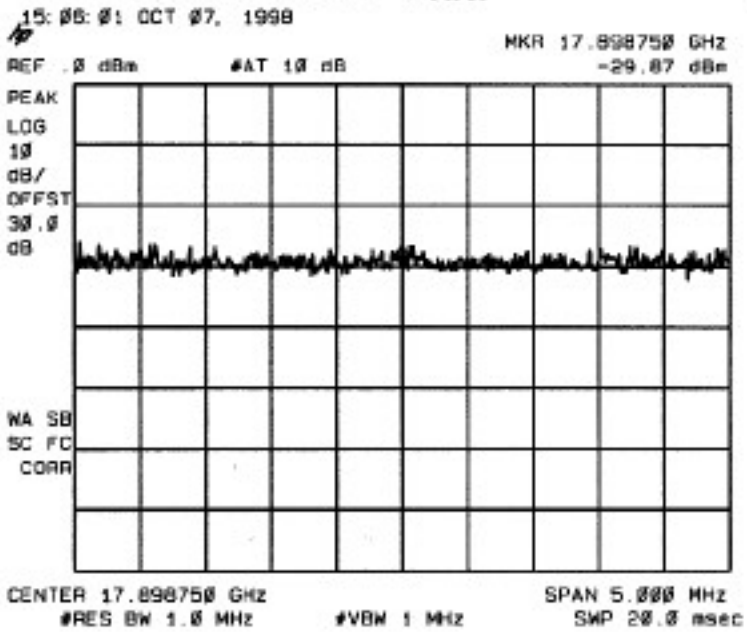
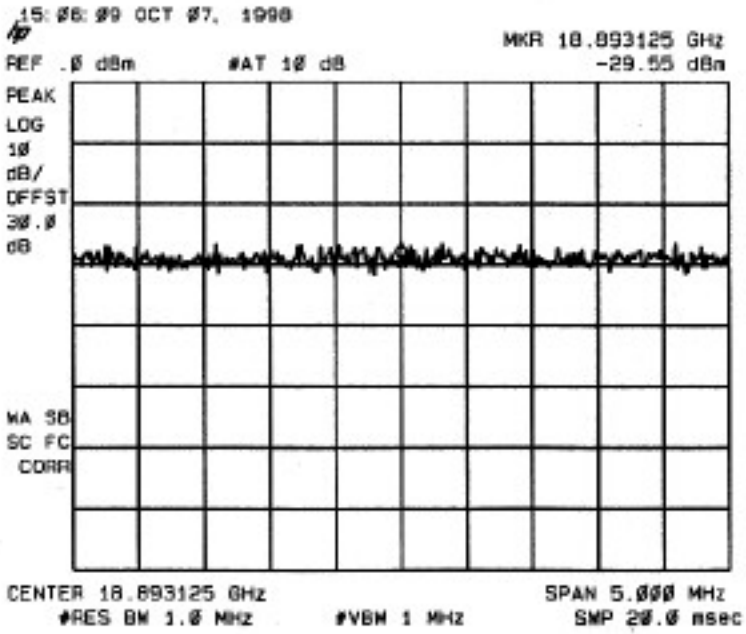
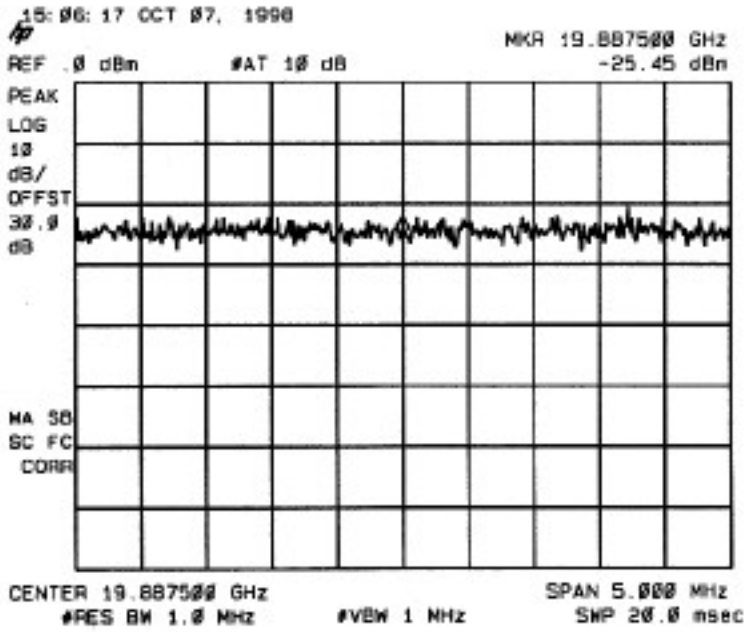
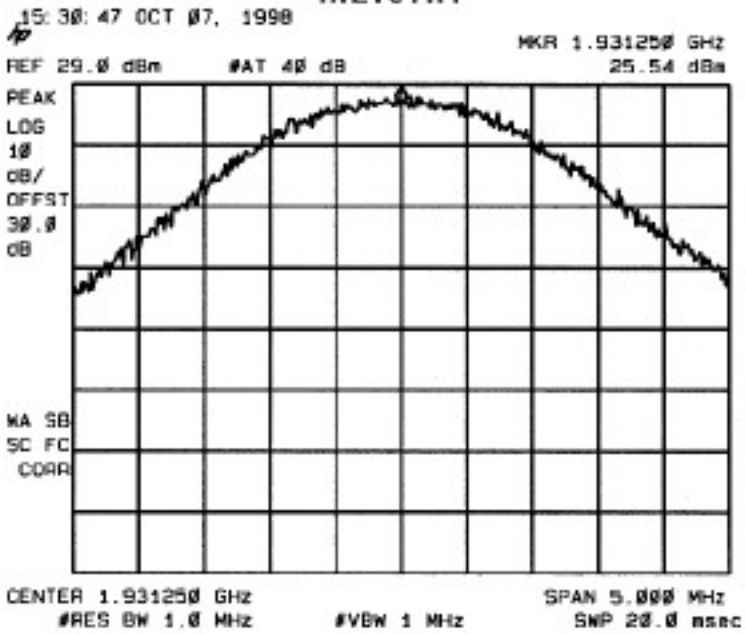






SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



Channel 25
Minimum Power

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10-07-98
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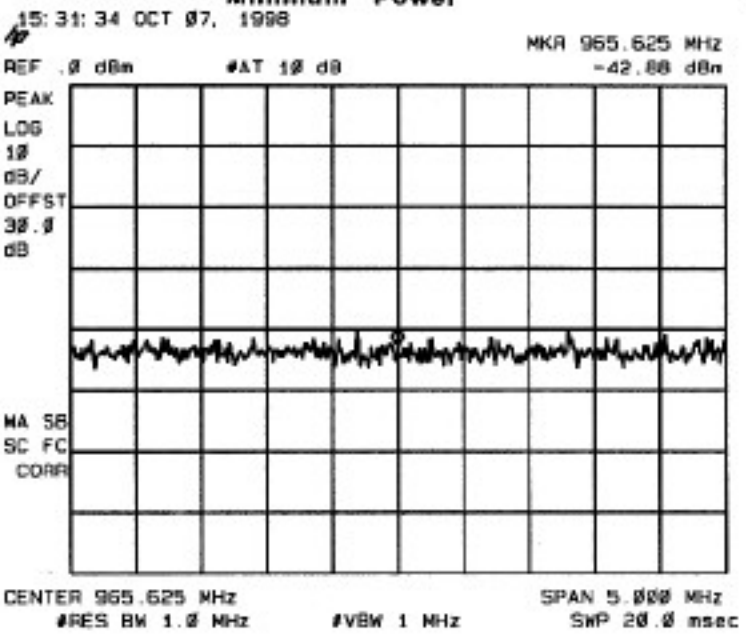
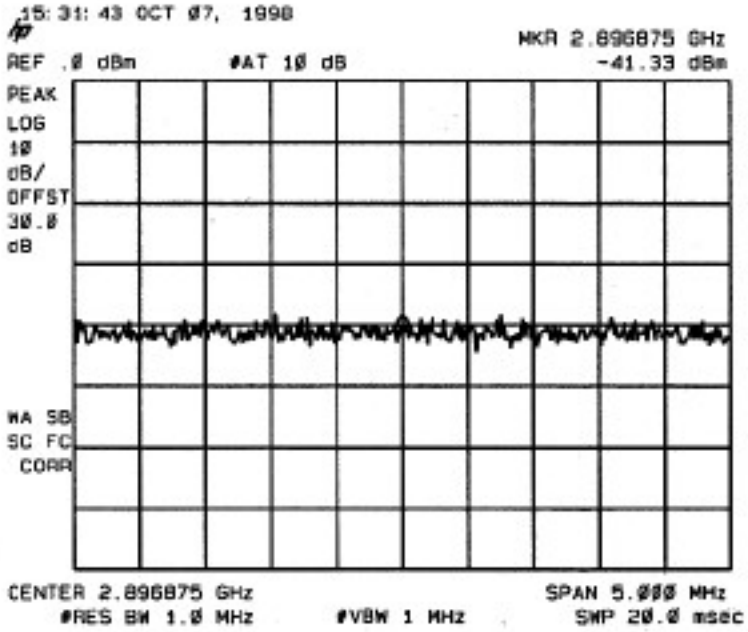
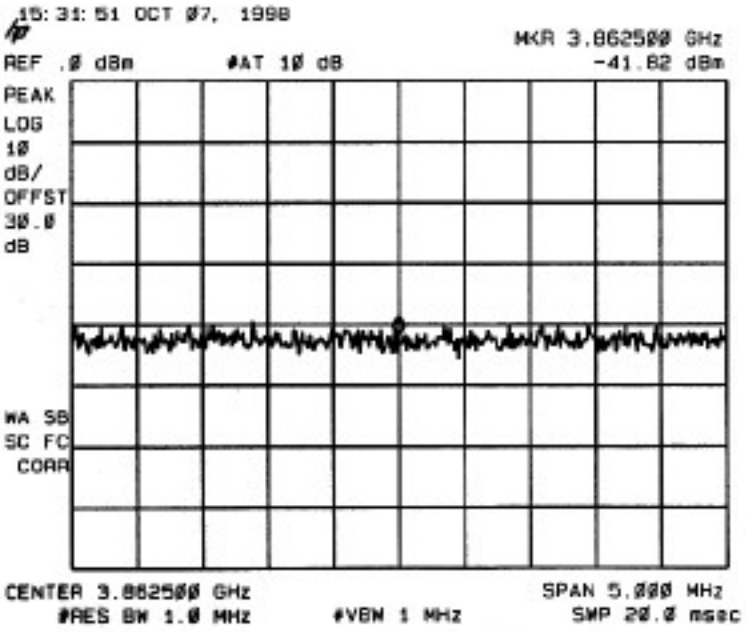
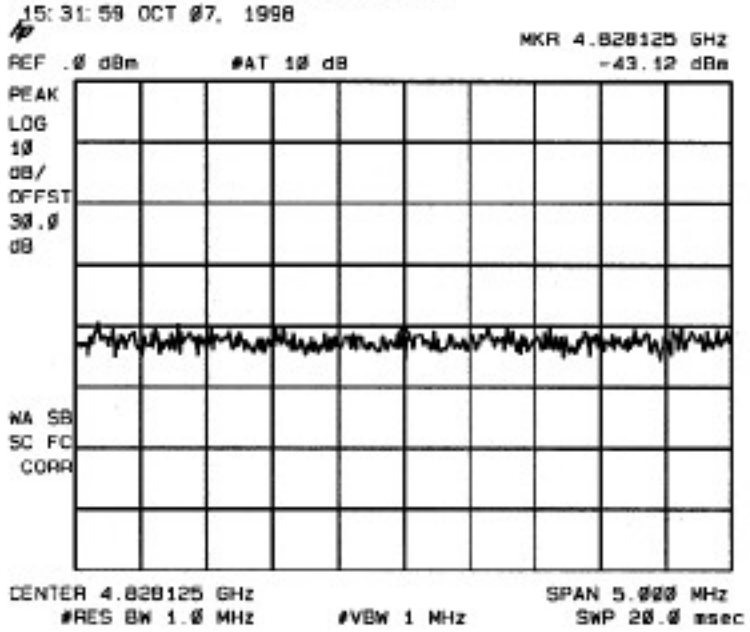




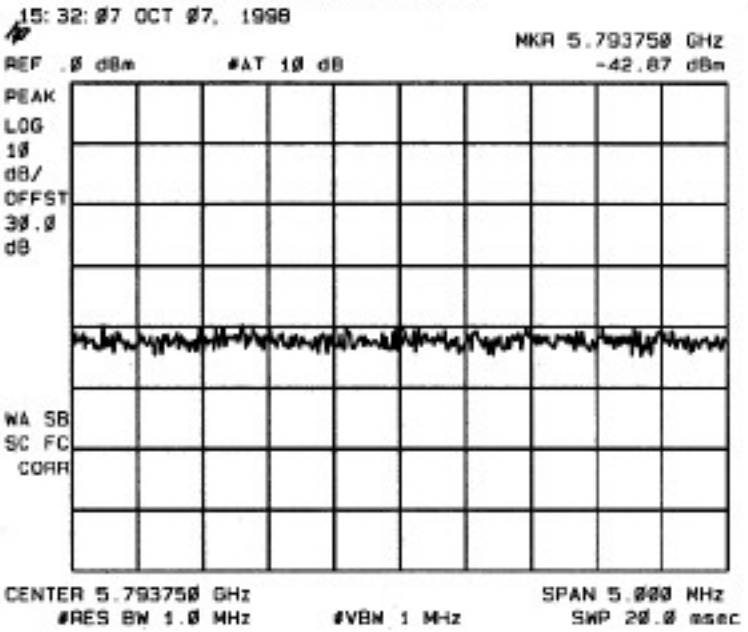


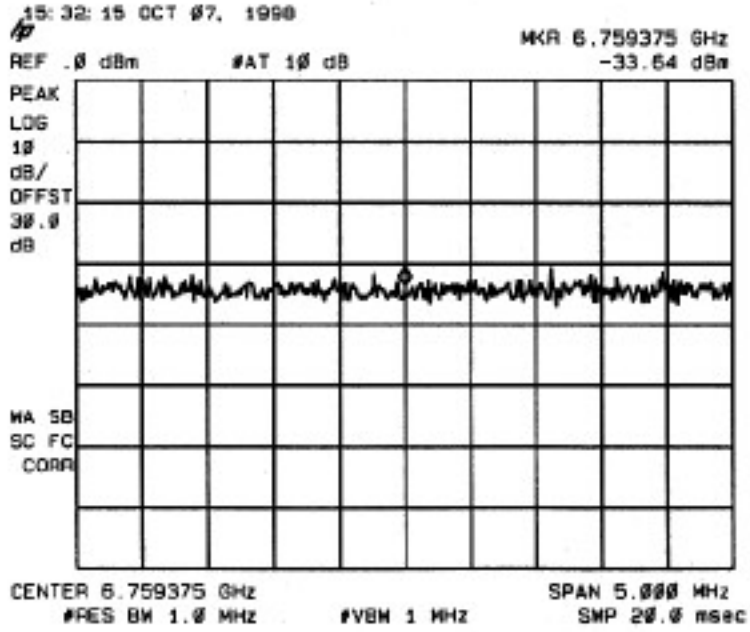
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

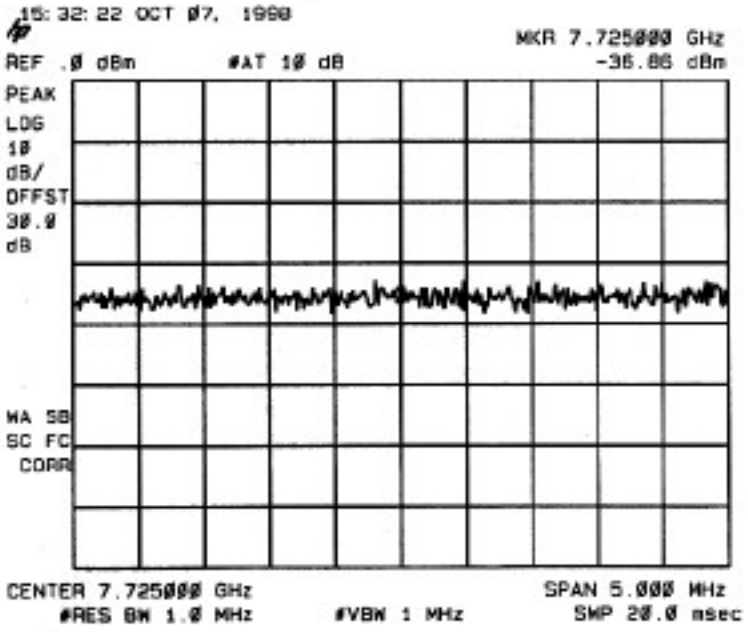


Channel 25
Minimum Power

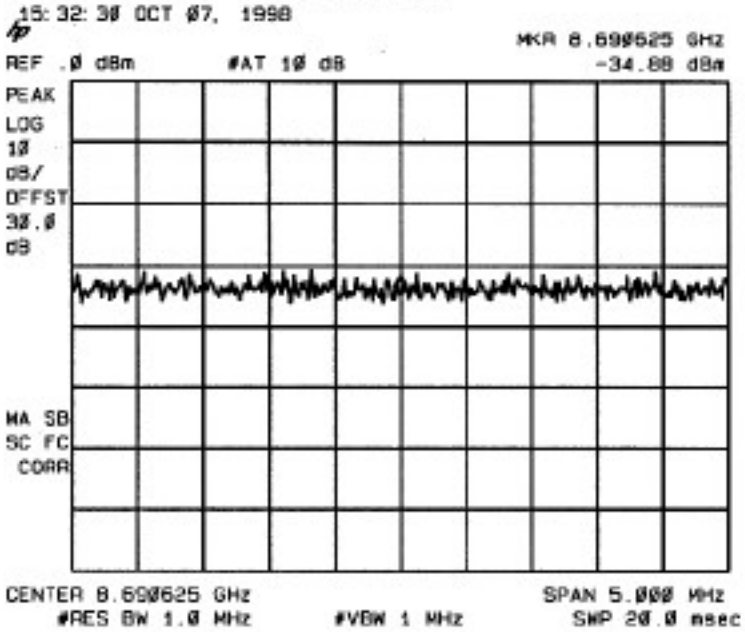
btssto
10-07-98
17:36:10





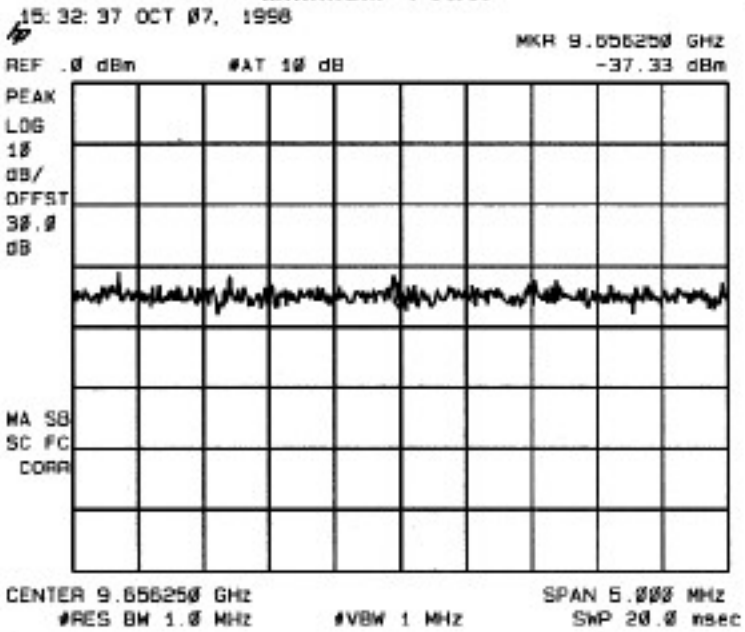


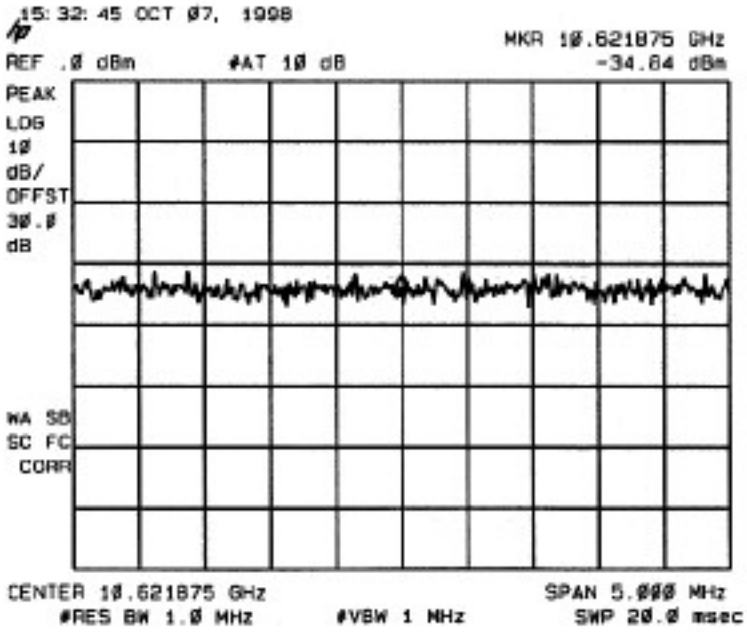
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

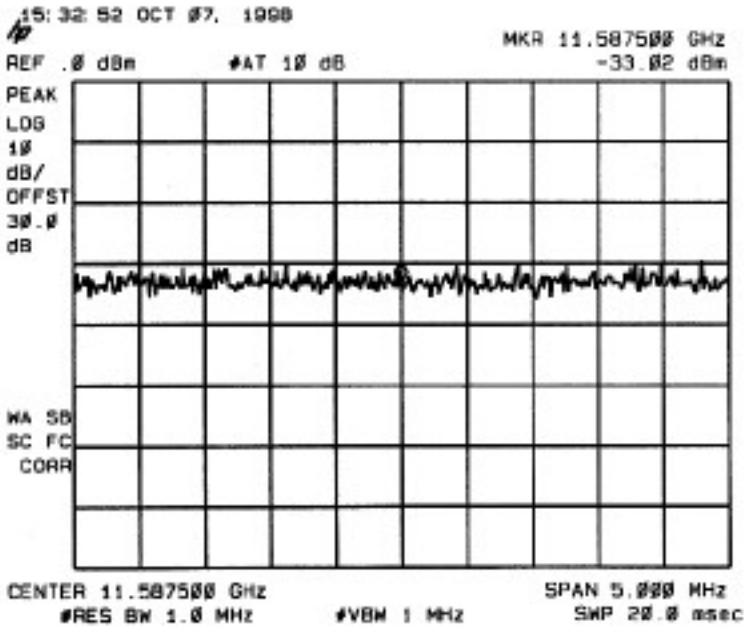


Channel 25
Minimum Power

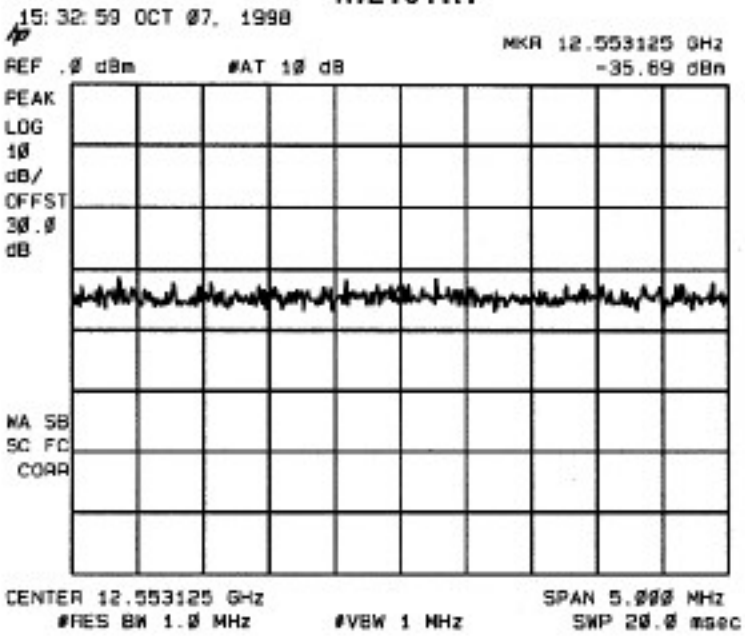
bkwatkin
10-07-98
17:35:40





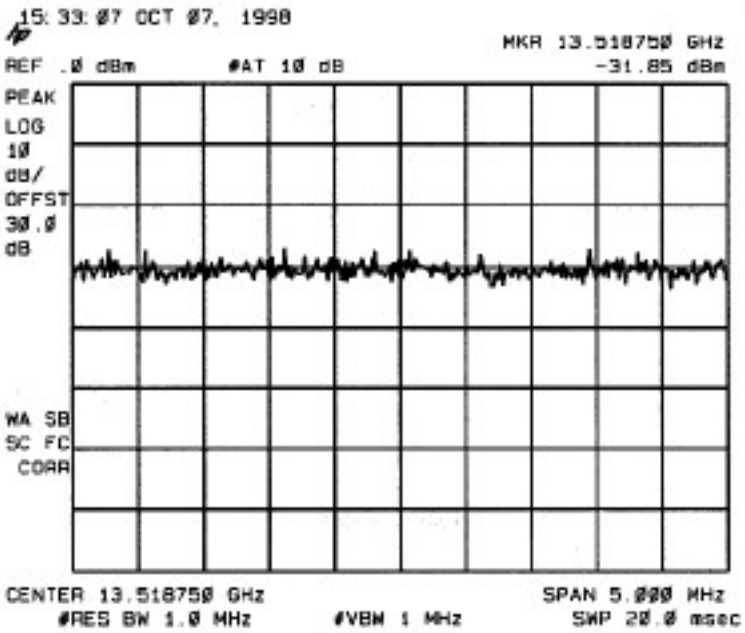


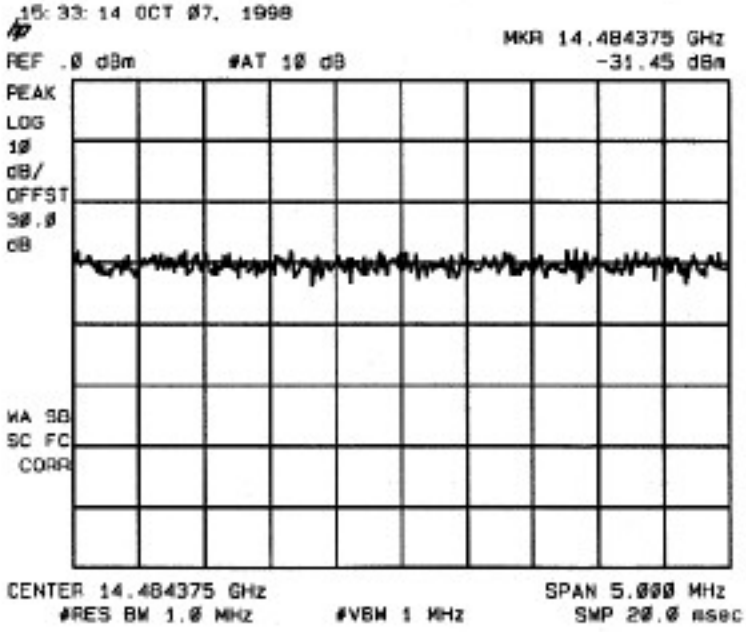
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

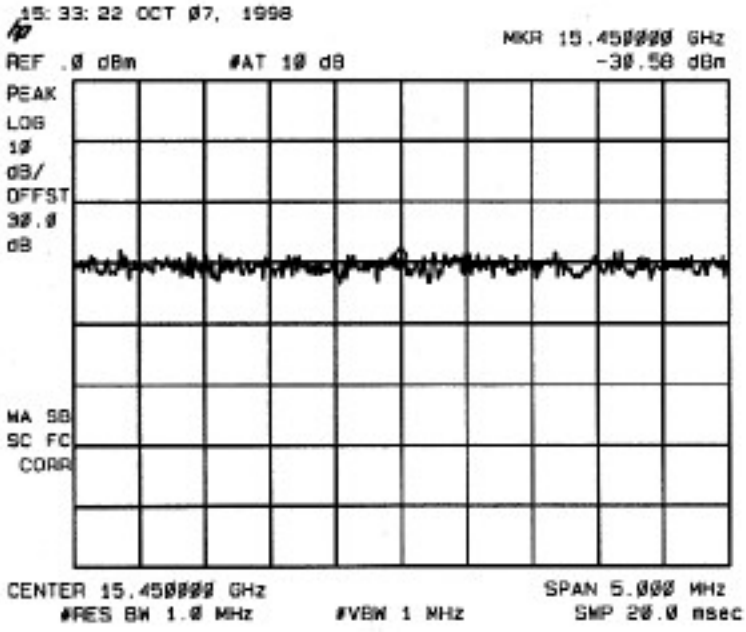


Channel 25
Minimum Power

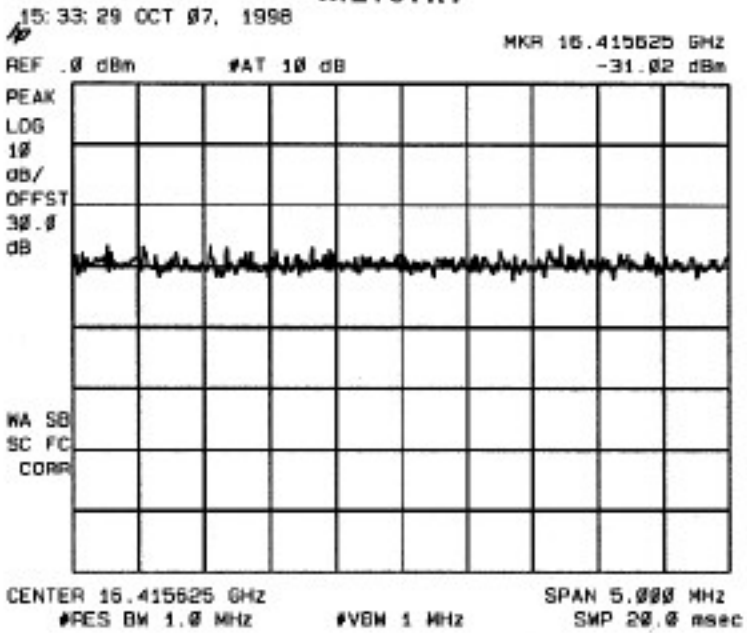
bsaste
10-07-98
17:36:10



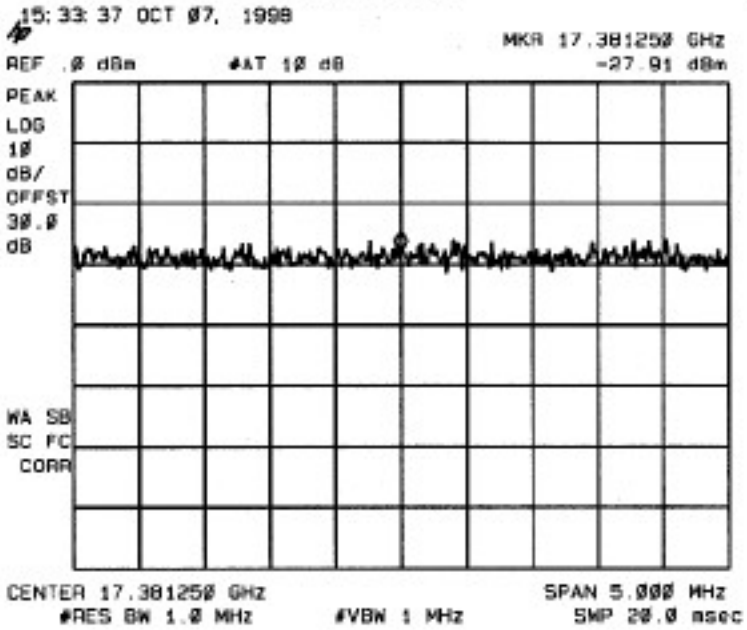


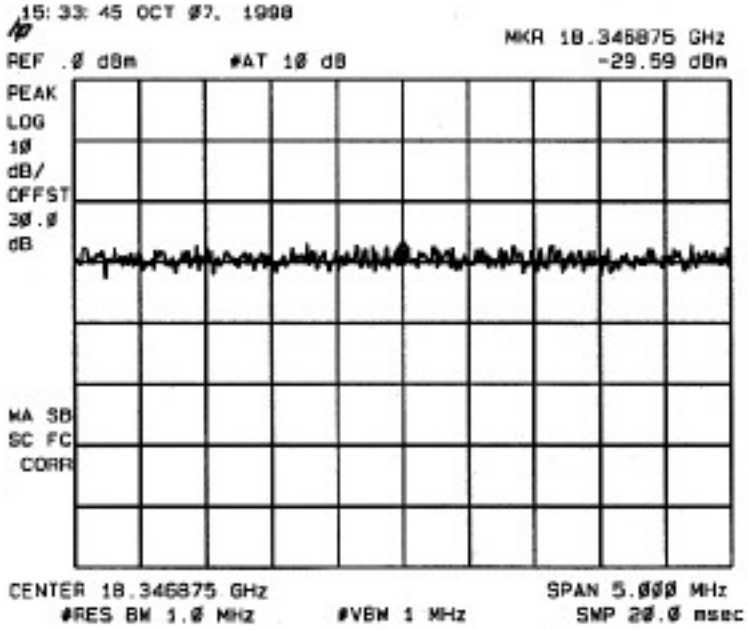


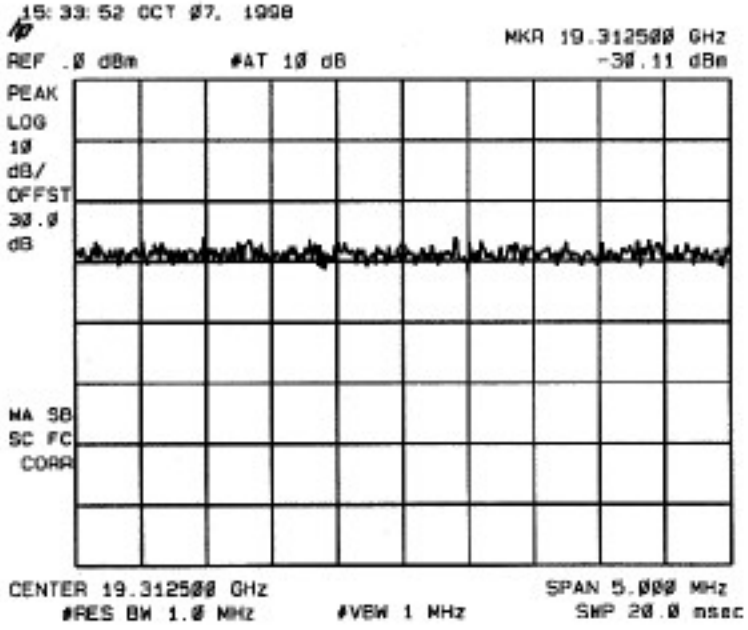
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1



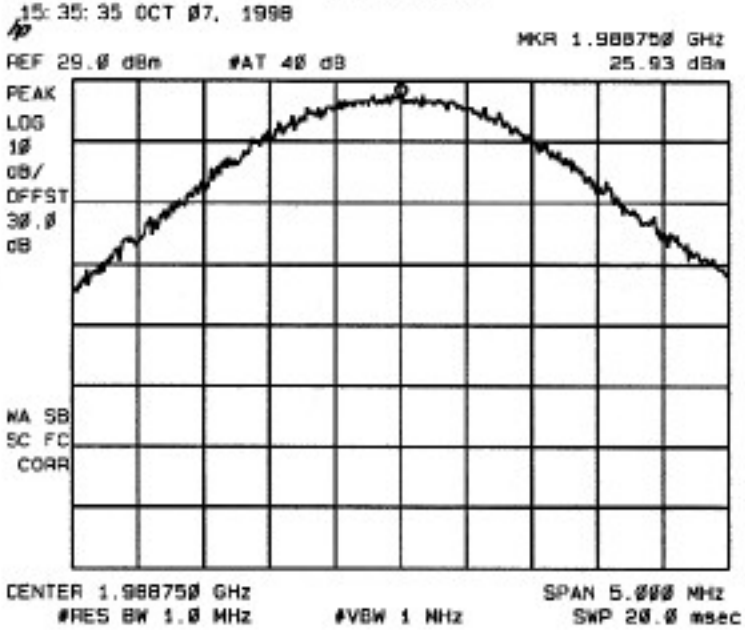
Channel 25
Minimum Power





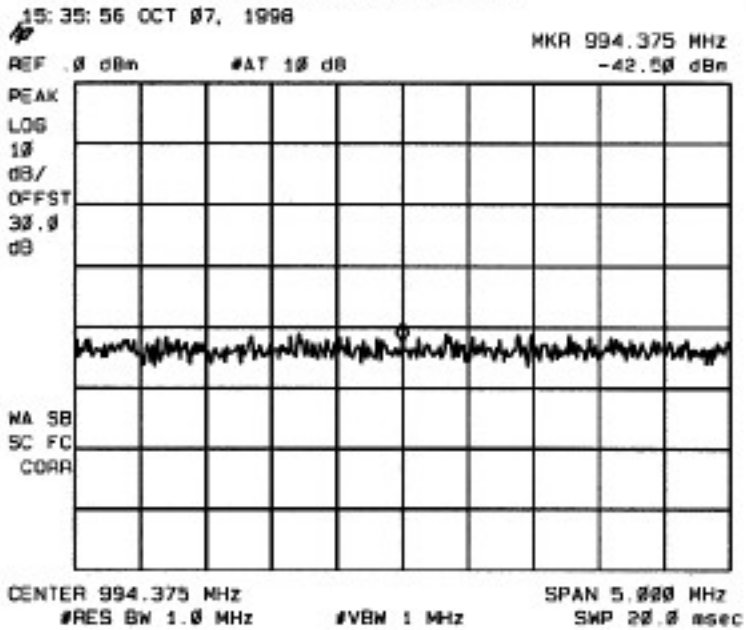


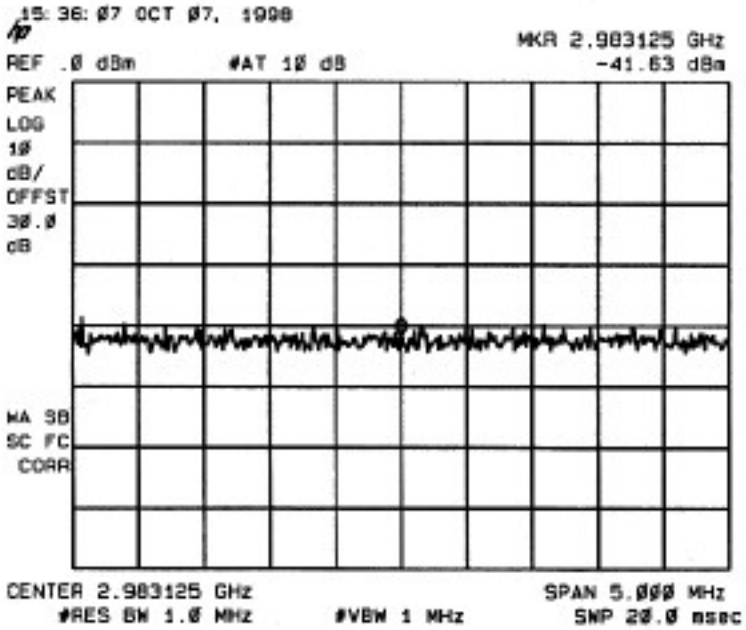
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

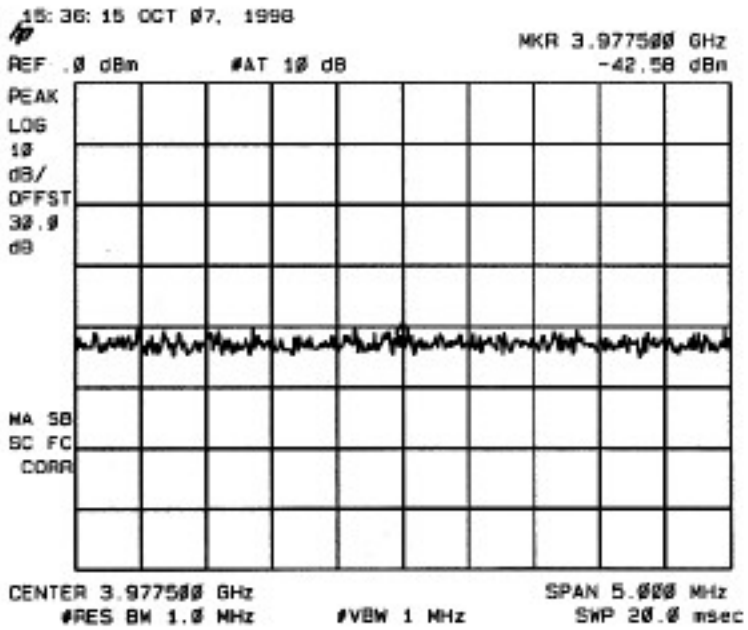


Channel 1175
Minimum Power

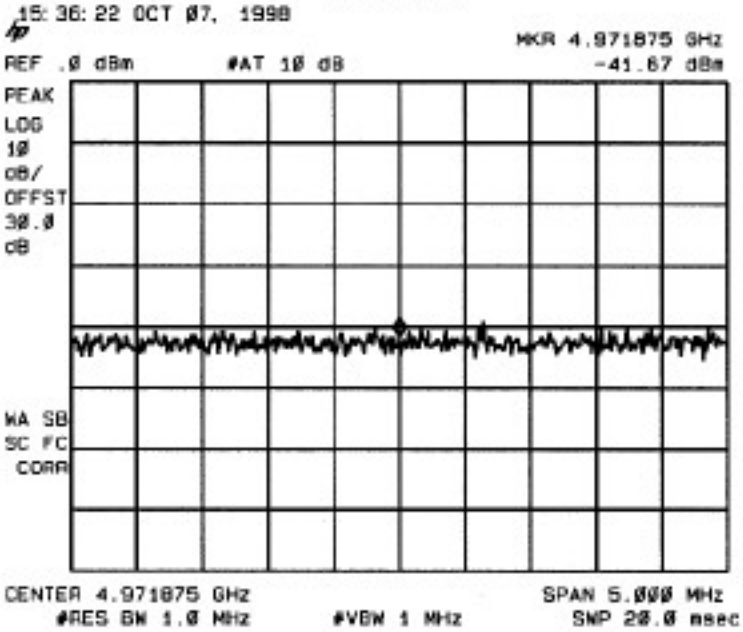
bcate
10-07-98
17:39:03





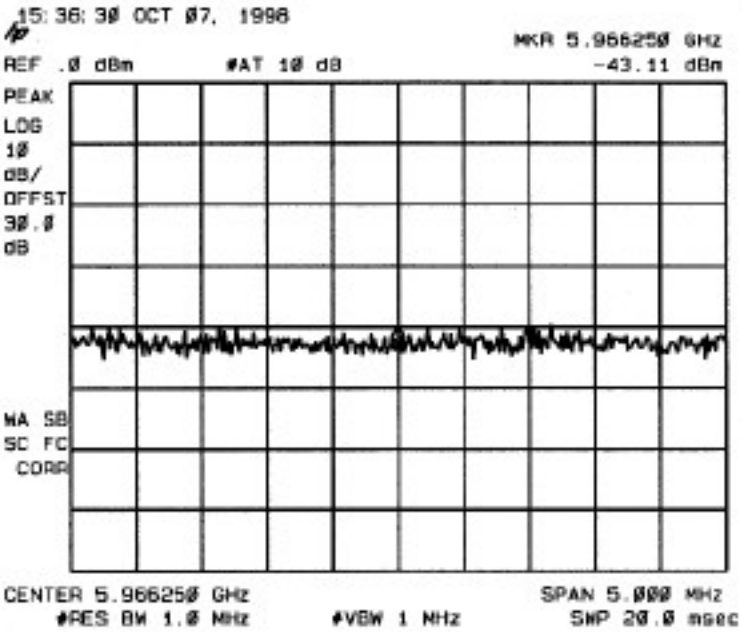


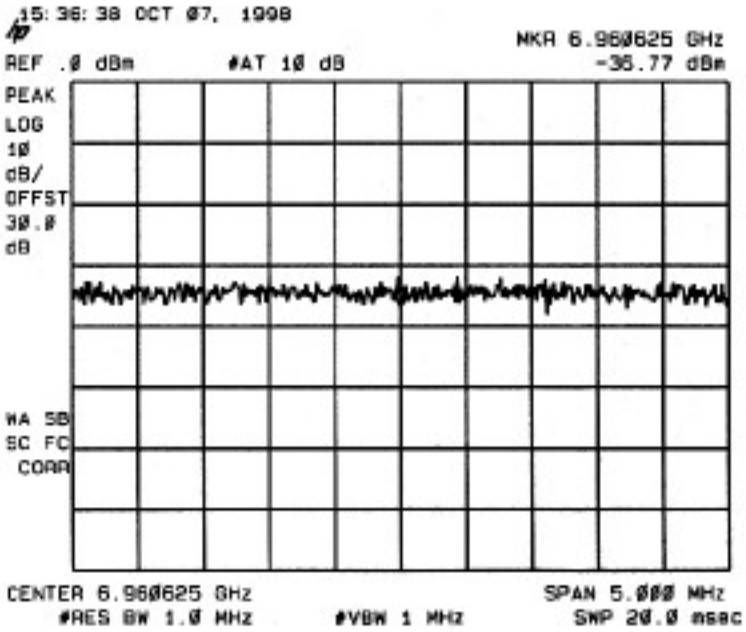
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

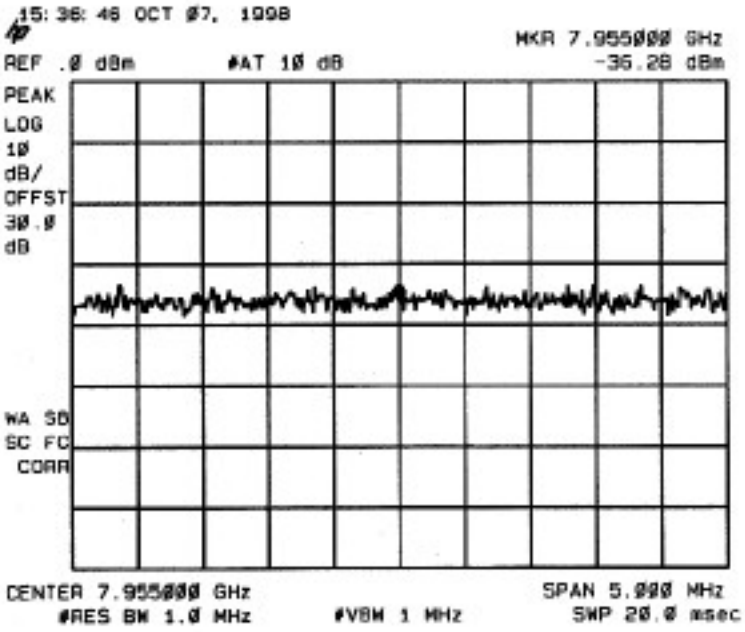


Channel 1175
Minimum Power

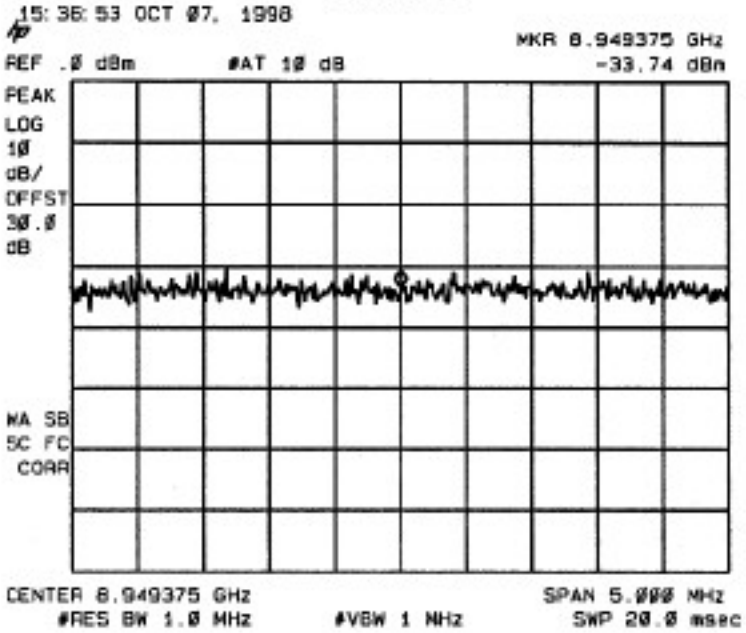
btsate
10-07-98
17:39:34





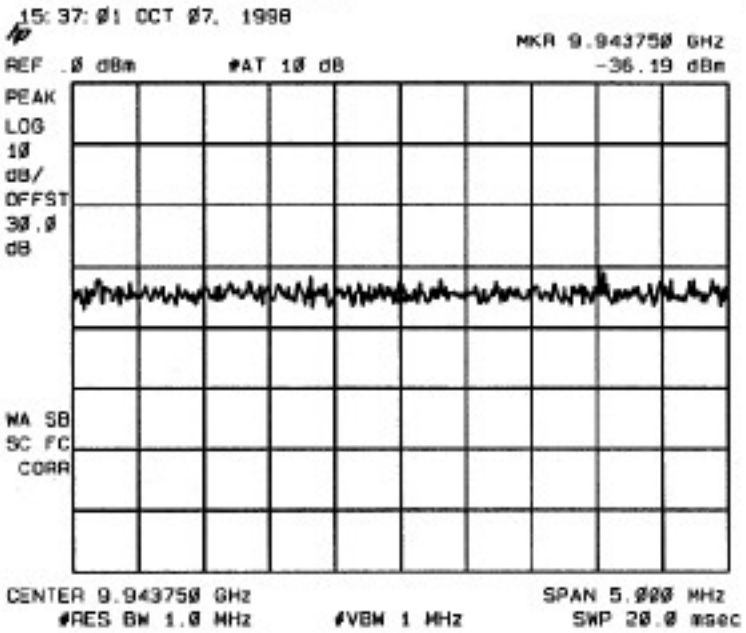


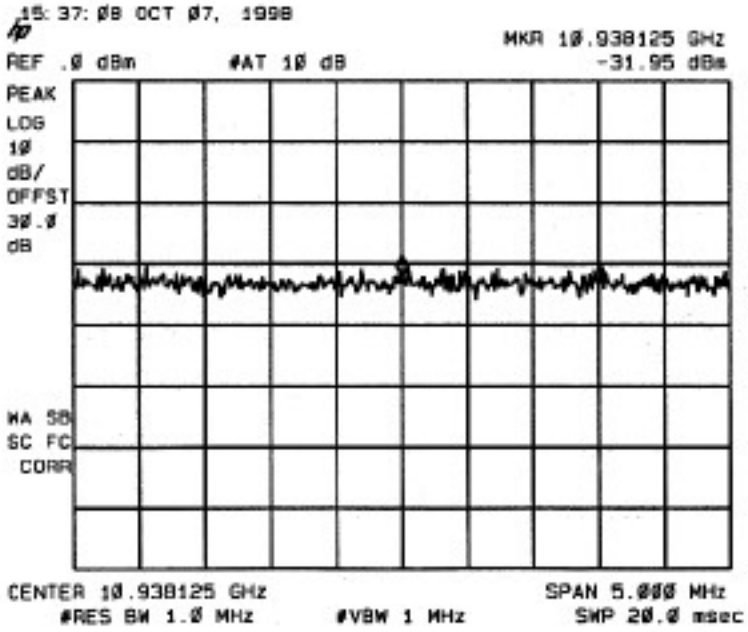
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

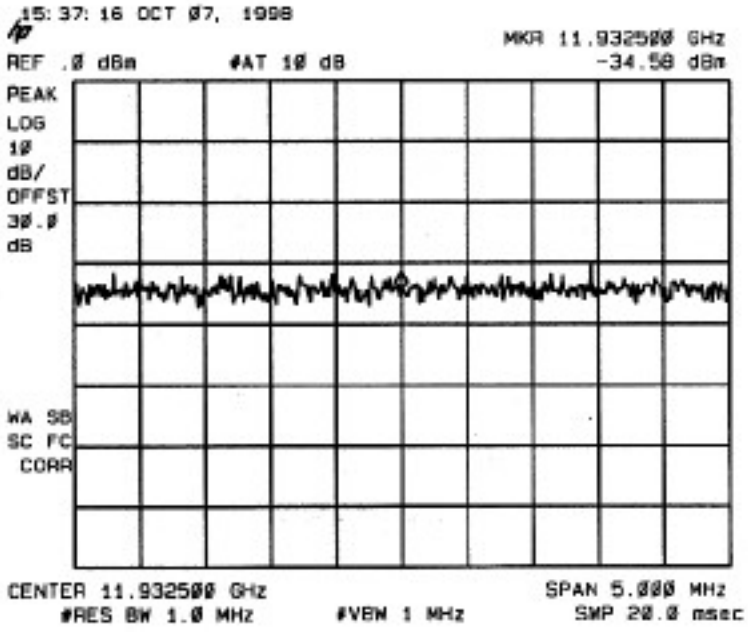


Channel 1175
Minimum Power

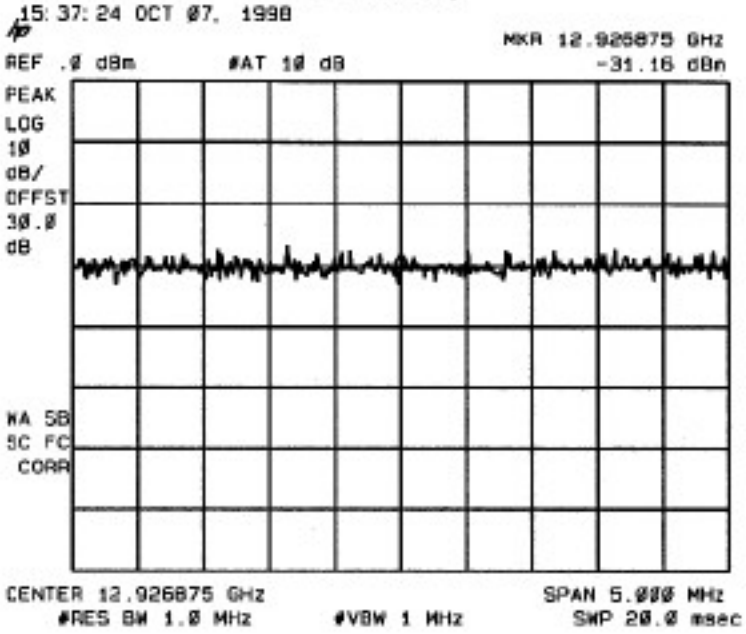
bcsate
10-07-98
15:40:04





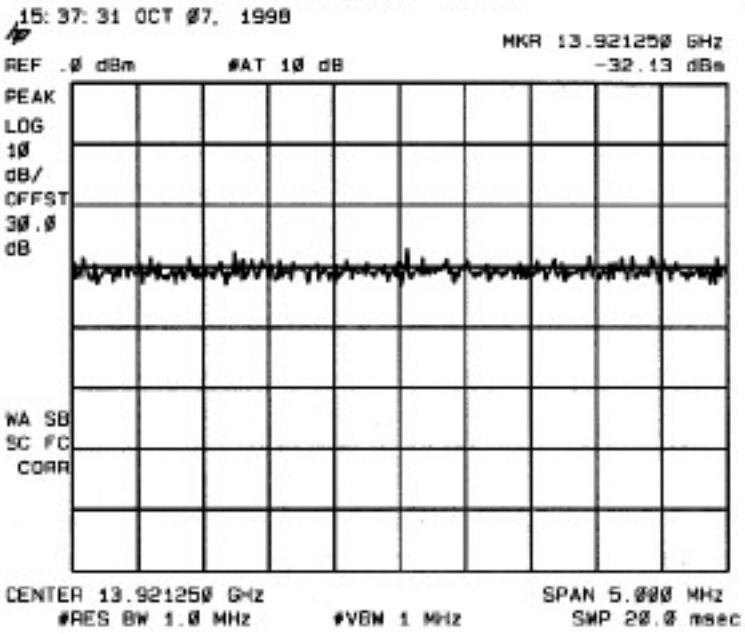


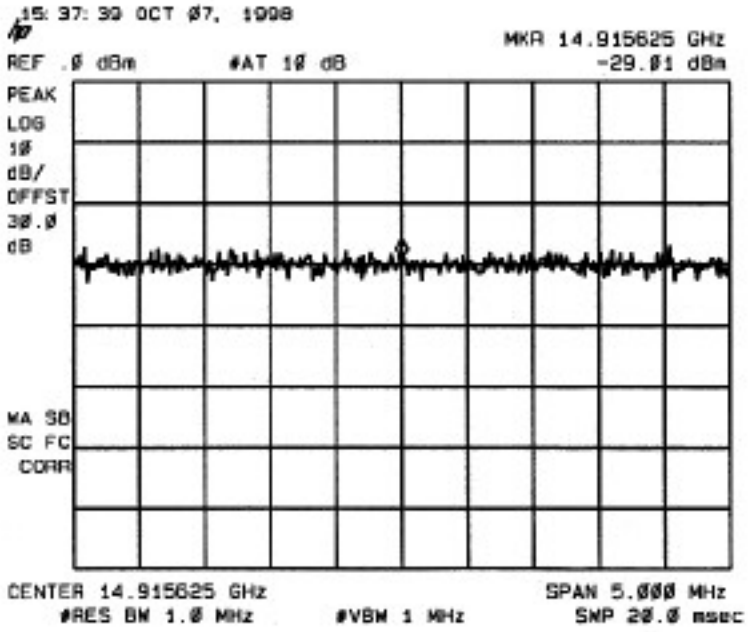
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

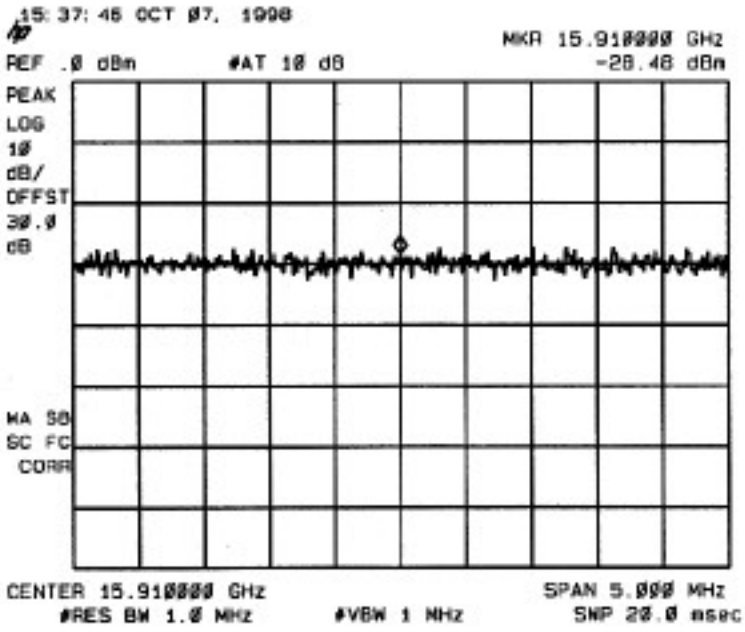


Channel 1175
Minimum Power

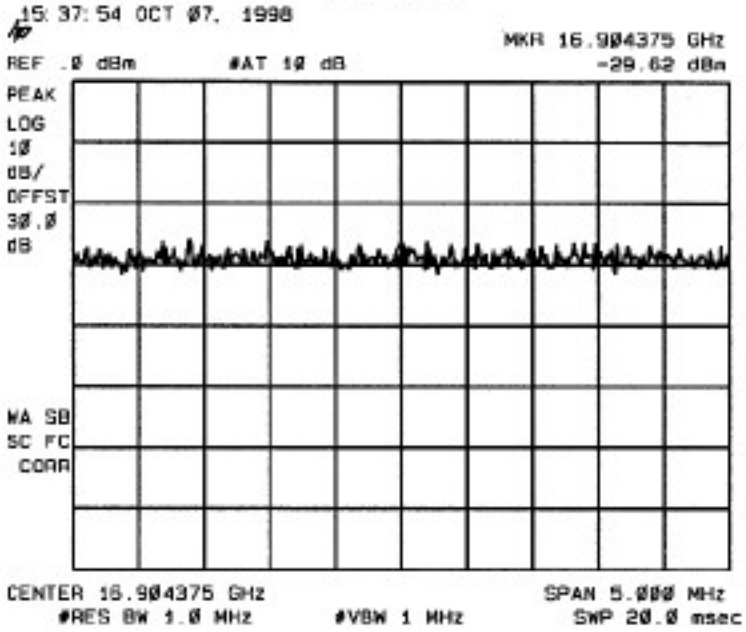
btsstm
10-07-98
17:40:35





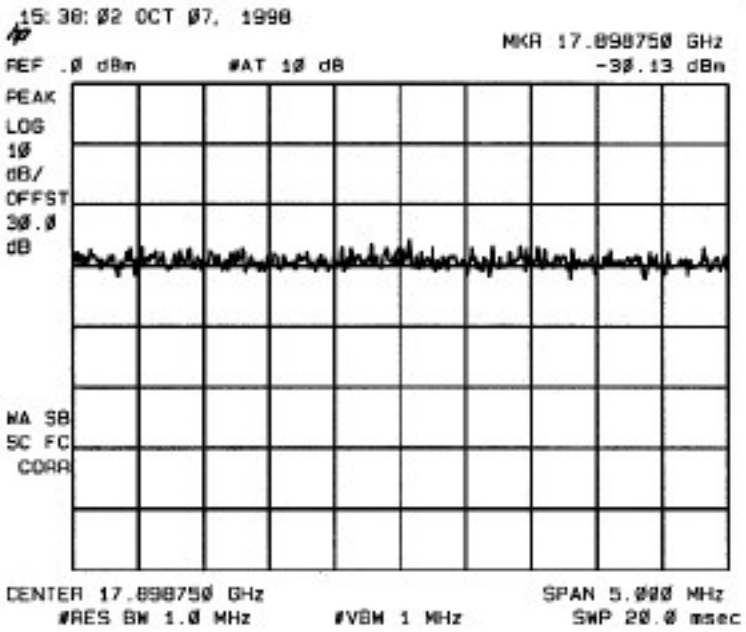


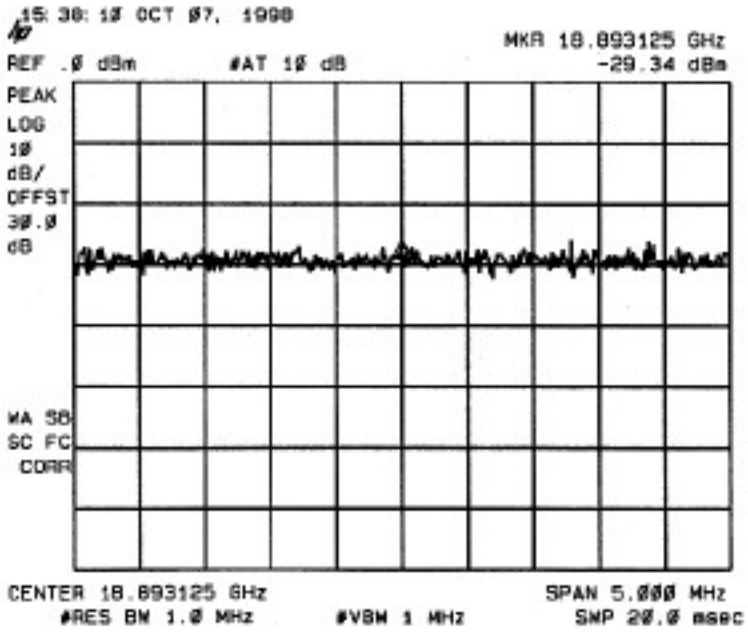
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

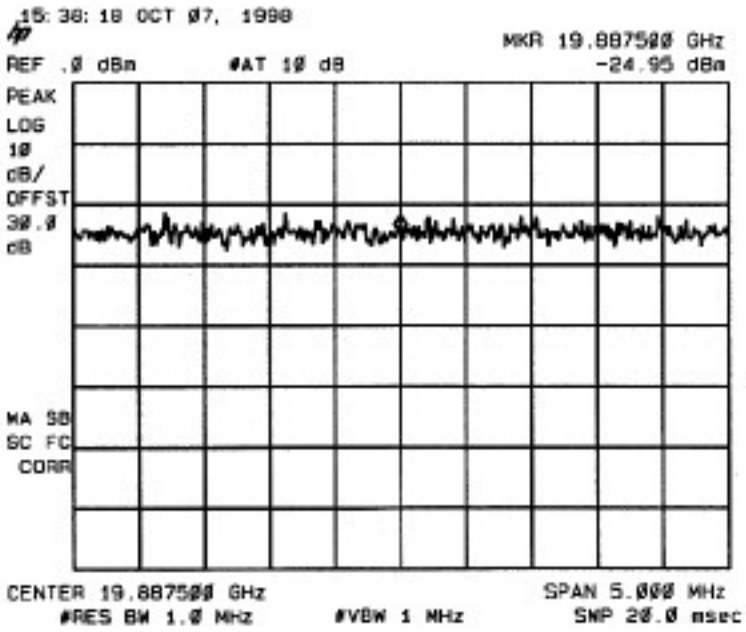


Channel 1175
Minimum Power

bsaace
10-07-98
17:41:06







MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

EMISSIONS IN THE 1 MHz BW LOCATED 1 MHz AWAY FROM THE LOWER EDGE OF THE FREQUENCY BLOCK AT 1928.5 MHz

Maximum Power

CDMA TX @ 46.5 dBm CH. 25 at (1931.25 MHz)

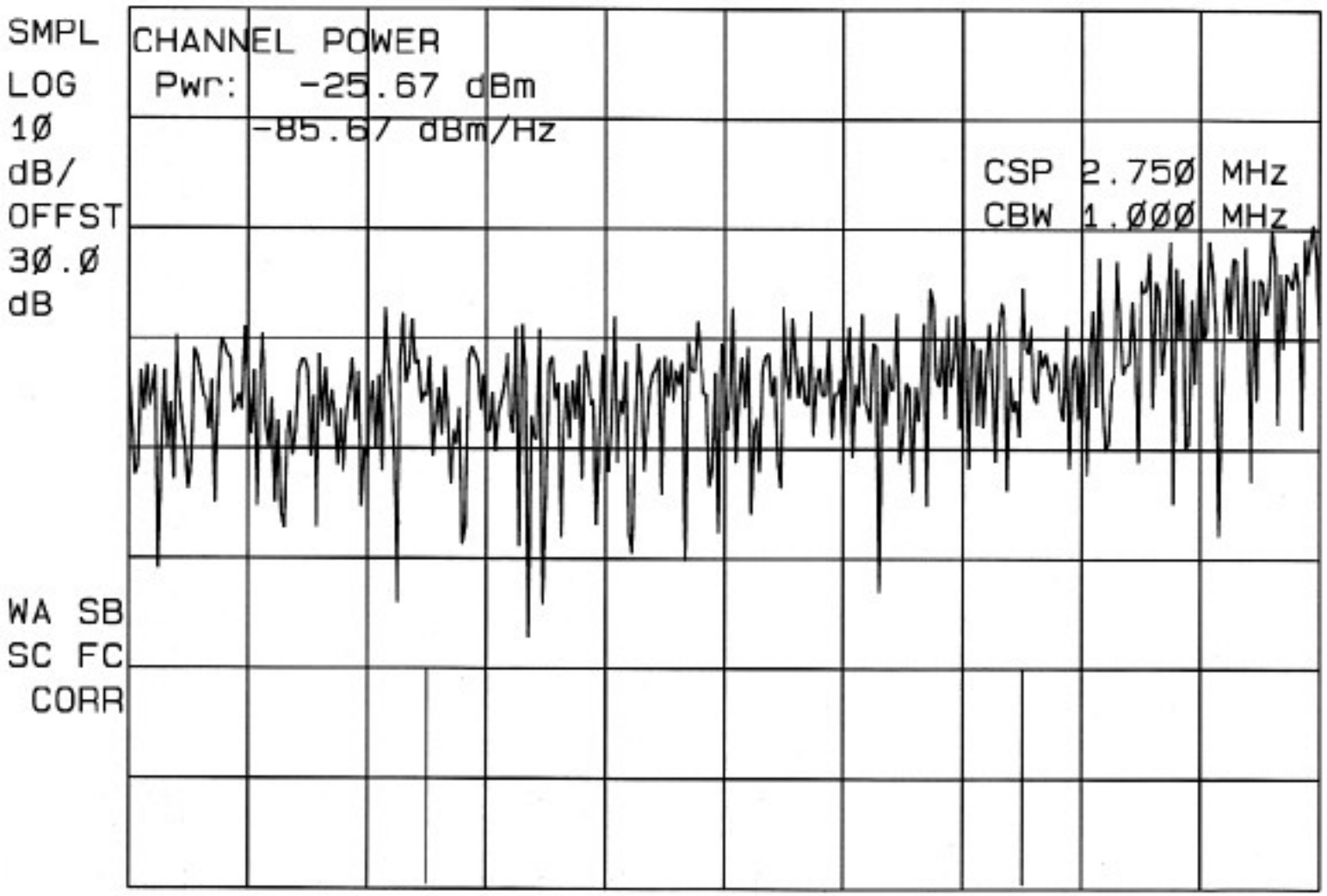
NOTE: The configuration which created the following plots had 30.0 dB of attenuation from the SC4812T 1.9 GHz CDMA BTS Frame output to the spectrum analyzer input.

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 25
Maximum Power

btsste
10-07-98
16:45:47

14: 42: 59 OCT Ø7, 1998



MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

EMISSIONS IN THE 1 MHz BW LOCATED 1 MHz AWAY FROM THE UPPER EDGE OF THE FREQUENCY BLOCK AT 1991.5 MHz

Maximum Power

CDMA TX @ 46.5 dBm CH. 1175 at (1988.75 MHz)

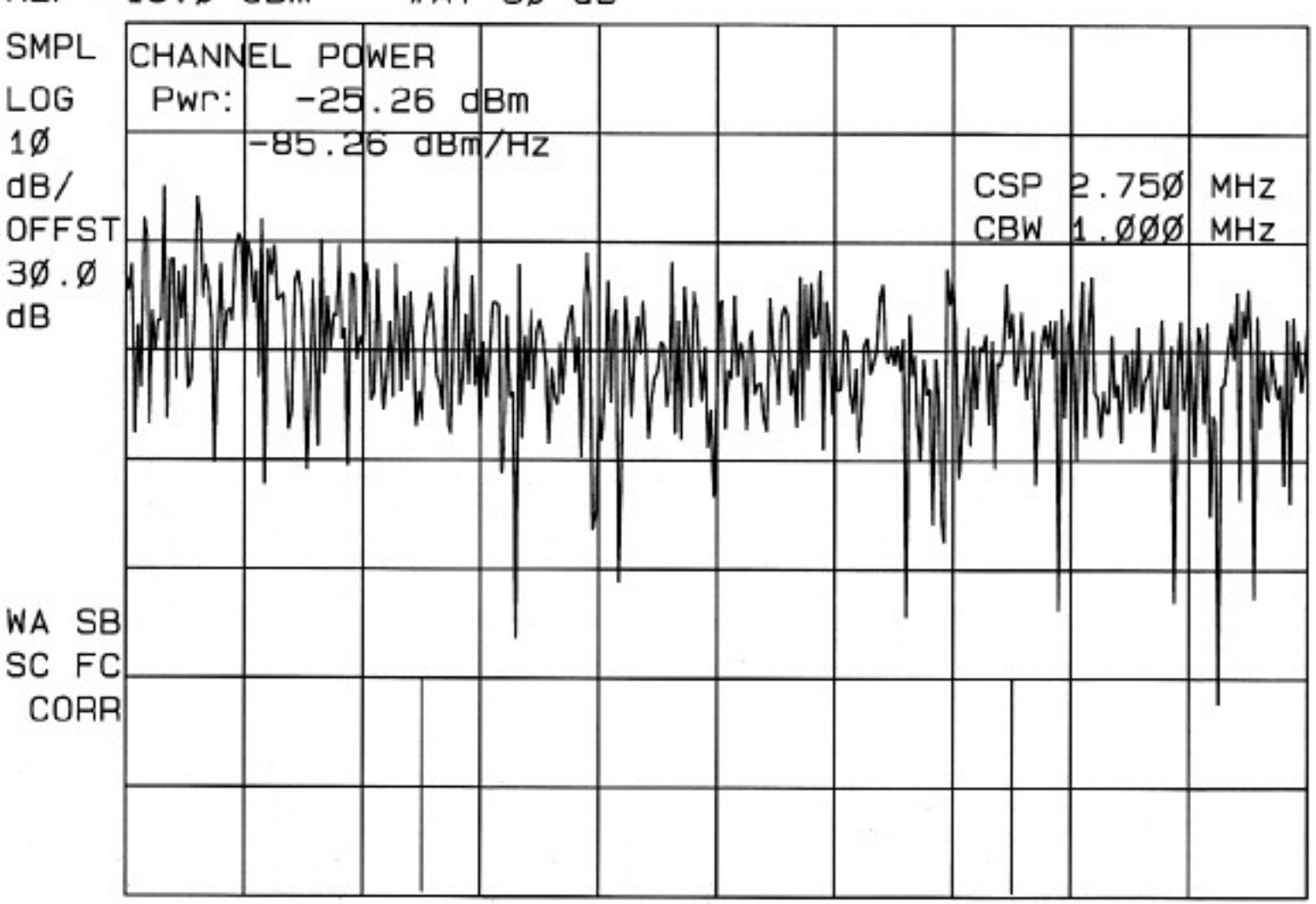
NOTE: The configuration which created the following plots had 30.0 dB of attenuation from the SC4812T 1.9 GHz CDMA BTS Frame output to the spectrum analyzer input.

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 1175
Maximum Power

btsatm
10-07-98
17:01:48

14: 59: Ø1 OCT Ø7, 1998



MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

EMISSIONS IN THE 1 MHz BW LOCATED 1 MHz AWAY FROM THE LOWER EDGE OF THE FREQUENCY BLOCK AT 1928.5 MHz

Minimum Power

CDMA TX @ 23.5 dBm CH. 25 at (1931.25 MHz)

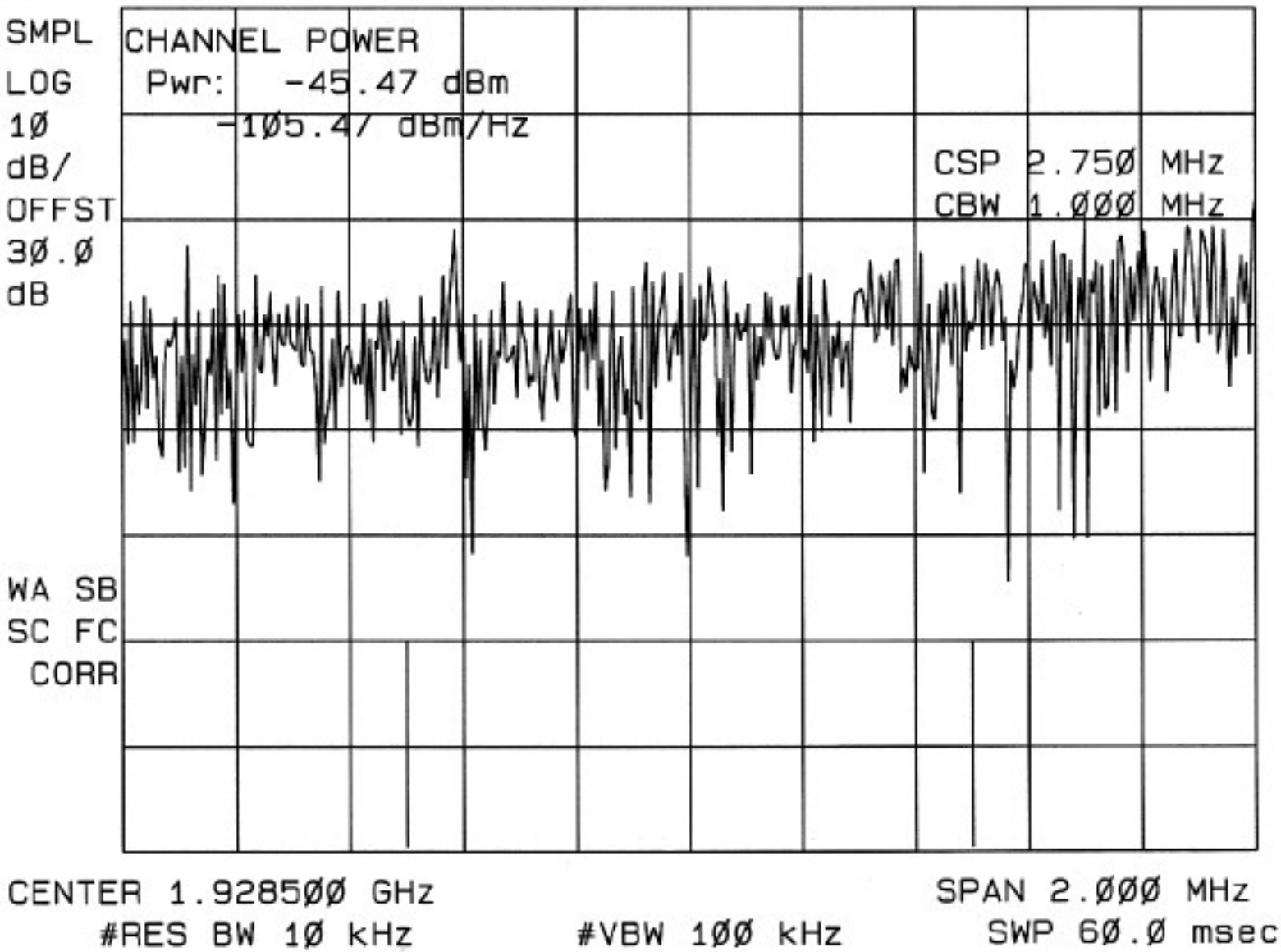
NOTE: The configuration which created the following plots had 30.0 dB of attenuation from the SC4812T 1.9 GHz CDMA BTS Frame output to the spectrum analyzer input.

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 25
Minimum Power

btssite
10-07-98
15:03:43

15: 59: 56 OCT Ø7, 1998



MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6YR1

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

EMISSIONS IN THE 1 MHz BW LOCATED 1 MHz AWAY FROM THE UPPER EDGE OF THE FREQUENCY BLOCK AT 1991.5 MHz

Minimum Power

CDMA TX @ 23.5 dBm CH. 1175 at (1988.75 MHz)

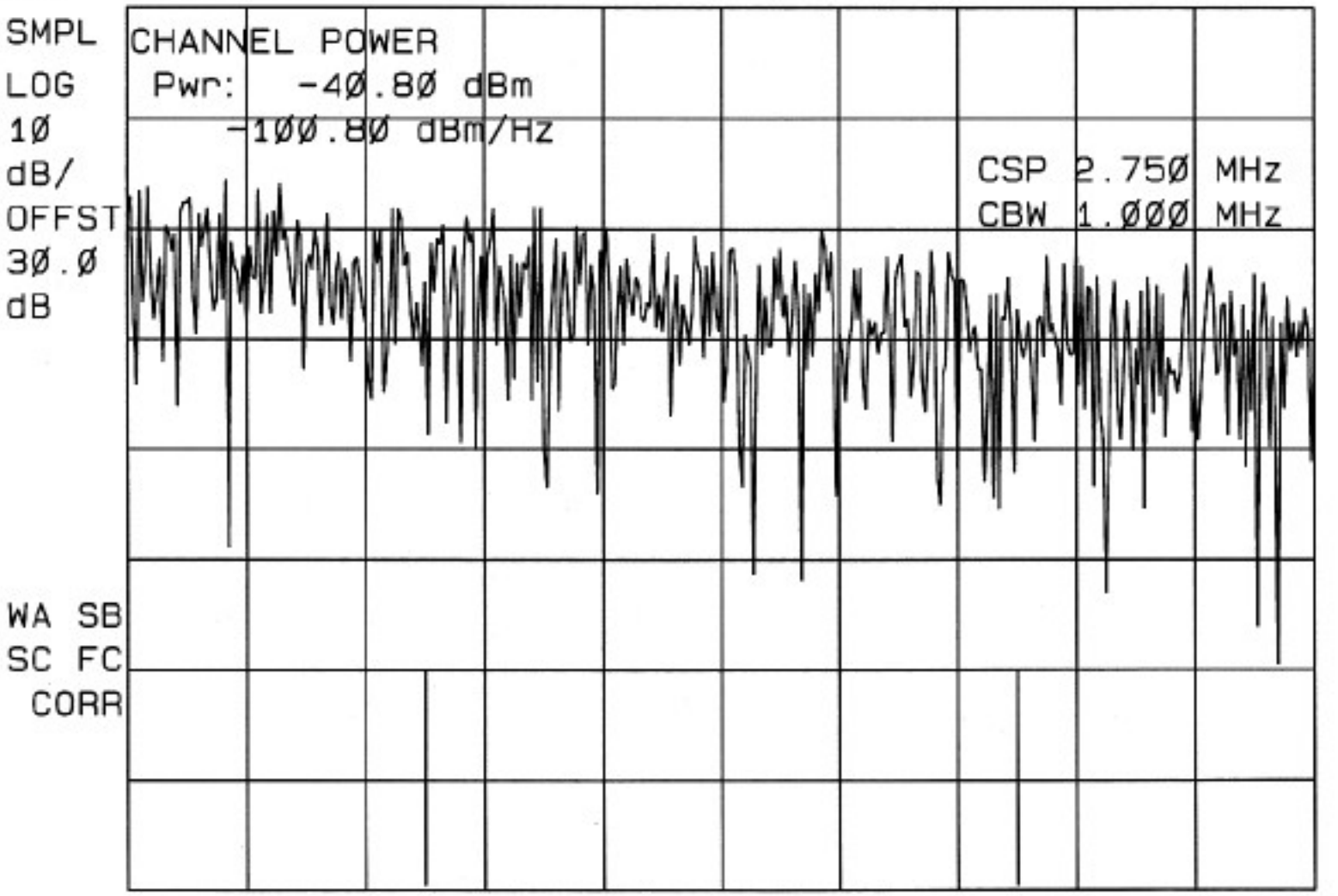
NOTE: The configuration which created the following plots had 30.0 dB of attenuation from the SC4812T 1.9 GHz CDMA BTS Frame output to the spectrum analyzer input.

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 1175
Minimum Power

10-07-98
16:03:47

16: Ø1: ØØ OCT Ø7, 1998



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Cellular Infrastructure Group

FCC ID: IHET6YR1

EXHIBIT #6E

OCCUPIED BANDWIDTH

NOTE: The occupied bandwidth plots are measured in a 30 kHz resolution bandwidth. The following formula is used to obtain the correct zero dB reference point relative to the bandwidth of the 1.2288 MHz CDMA signal.

$$\text{Power(measured in 30 kHz bandwidth)} + 10\log\left(\frac{1.2288\,MHz}{30\,kHz}\right)$$

Example: 30.49 dBm + 16.12 dB≈ 46.61 dBm

The output power was set to 44.88 Watts using an HP438A power meter.

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

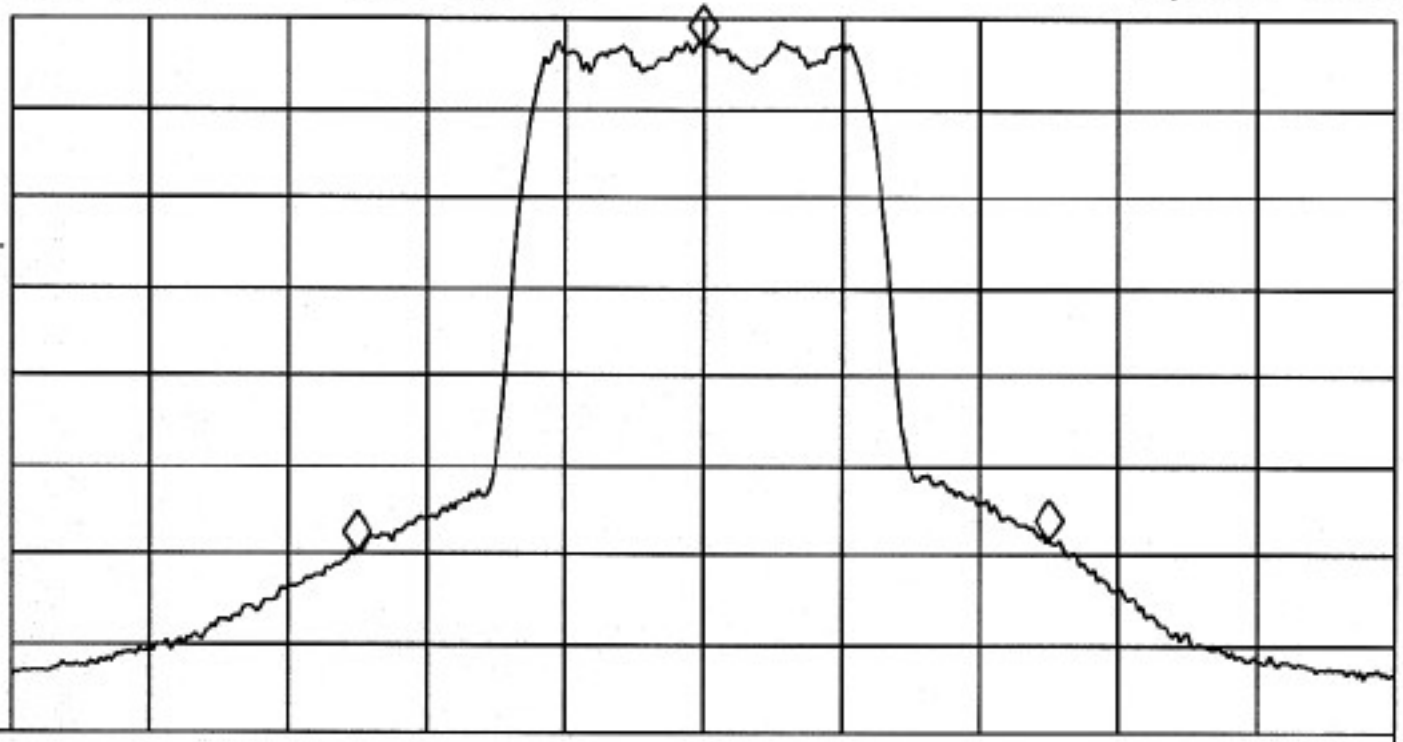
Channel 25
Maximum Power

btsate
10-07-98
16:53:58

14: 51: 11 OCT Ø7, 1998

MKR 1.931250 GHz
30.49 dBm

REF 33.6 dBm #AT 3Ø dB



Marker	Trace	Type	Freq / Time	Amplitude
1:	(A)	Freq	1931.25Ø MHz	3Ø.49 dBm
2:	(A)	Freq	193Ø.ØØØ MHz	-26.28 dBm
3:	(A)	Freq	1932.5ØØ MHz	-24.86 dBm
4:	Inactive			

CENTER 1.931250 GHz
RES BW 3Ø kHz
#VBW 1ØØ kHz
SPAN 5.ØØØ MHz
SWP 2Ø.Ø msec

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

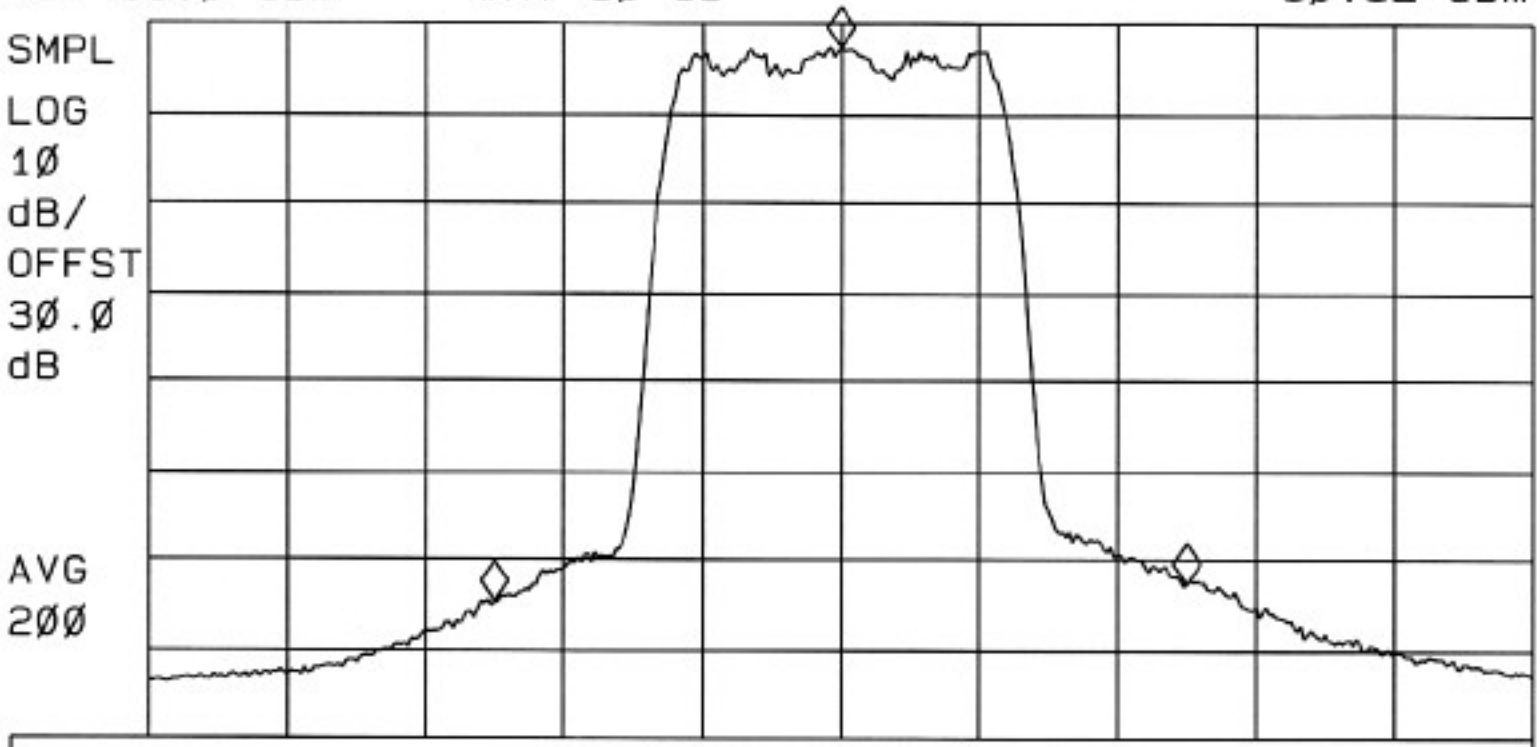
Channel 1175
Maximum Power

bcaate
10-07-98
16:58:58

14: 56: 1Ø OCT Ø7, 1998

MKR 1.988750 GHz
3Ø.32 dBm

REF 33.Ø dBm #AT 3Ø dB



Marker	Trace	Type	Freq / Time	Amplitude
1:	(A)	Freq	1988.75Ø MHz	3Ø.32 dBm
2:	(A)	Freq	1987.5ØØ MHz	-31.76 dBm
3:	(A)	Freq	199Ø.ØØØ MHz	-29.71 dBm
4:	Inactive			

CENTER 1.988750 GHz
RES BW 3Ø kHz
#VBW 1ØØ kHz
SPAN 5.ØØØ MHz
SWP 2Ø.Ø msec

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Channel 25
Minimum Power

btsate
10-07-98
17:59:09

15: 56: 22 OCT Ø7, 1998

MKR 1.931250 GHz
7.36 dBm

REF 9.6 dBm #AT 2Ø dB

Marker	Trace	Type	Freq / Time	Amplitude
1:	(A)	Freq	1931.25Ø MHz	7.36 dBm
2:	(A)	Freq	193Ø.ØØØ MHz	-49.48 dBm
3:	(A)	Freq	1932.5ØØ MHz	-5Ø.Ø2 dBm
4:	Inactive			

CENTER 1.931250 GHz
SPAN 5.ØØØ MHz

#RES BW 3Ø kHz
#VBW 1ØØ kHz
SWP 2Ø.Ø msec

SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

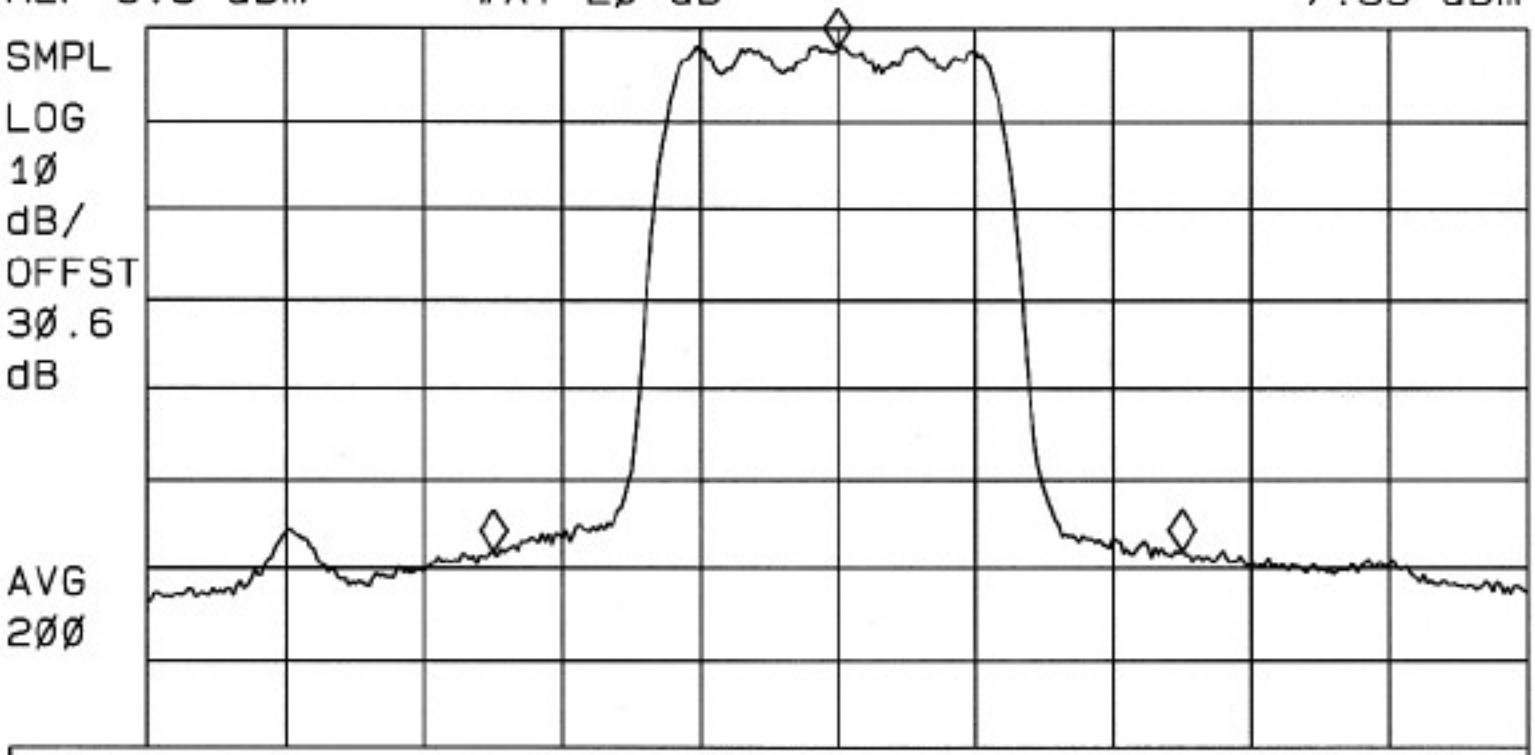
Channel 1175
Minimum Power

btsste
10-07-98
17:53:24

15:50:36 OCT 07, 1998

MKR 1.988750 GHz
7.39 dBm

REF 9.6 dBm #AT 20 dB



Marker	Trace	Type	Freq / Time	Amplitude
1:	(A)	Freq	1988.750 MHz	7.39 dBm
2:	(A)	Freq	1987.500 MHz	-48.56 dBm
3:	(A)	Freq	1990.000 MHz	-48.49 dBm
4:	Inactive			

CENTER 1.988750 GHz
#RES BW 30 kHz
#VBW 100 kHz
SPAN 5.000 MHz
SWP 20.0 msec

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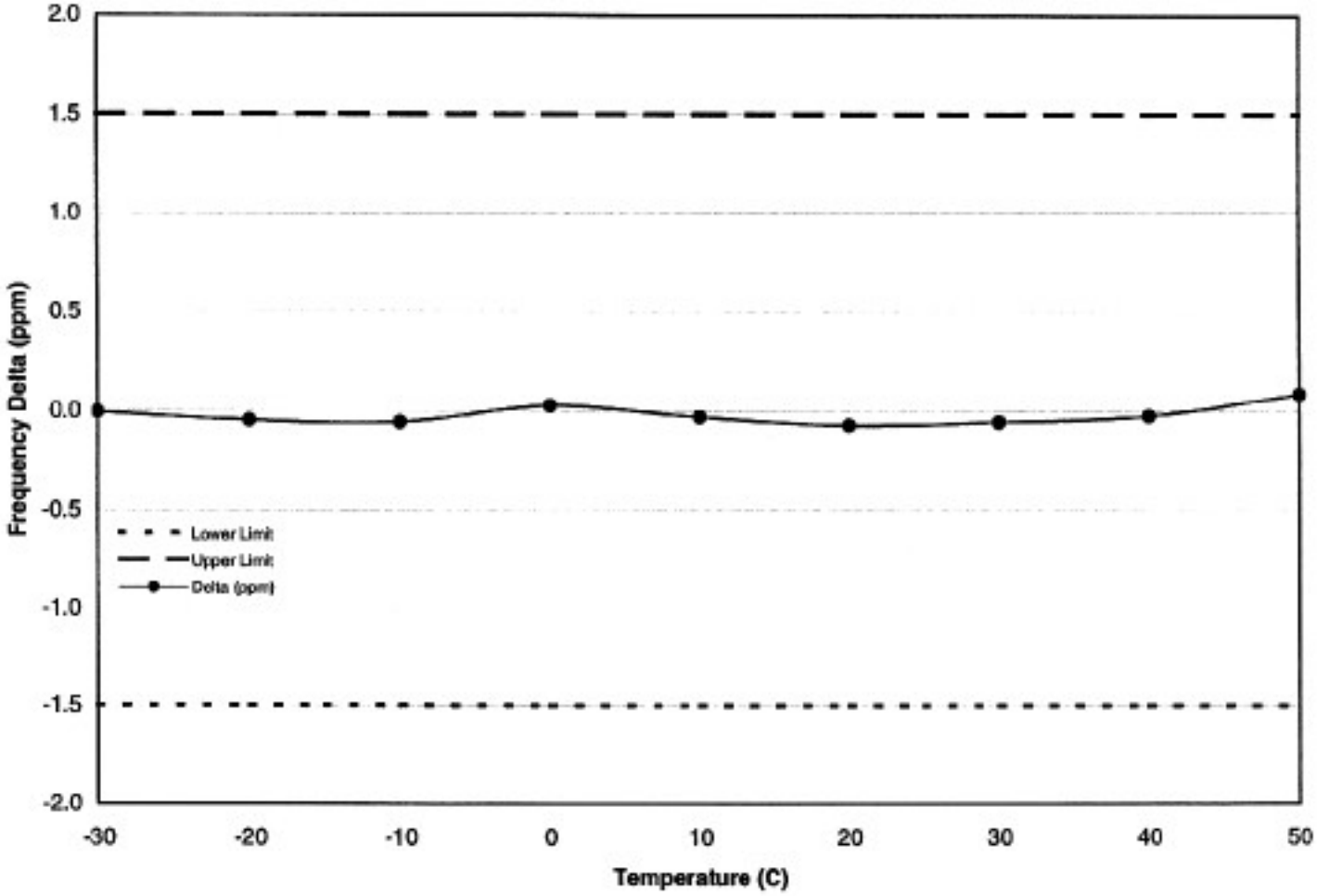
Cellular Infrastructure Group

FCC ID: IHET6YR1

EXHIBIT #6F

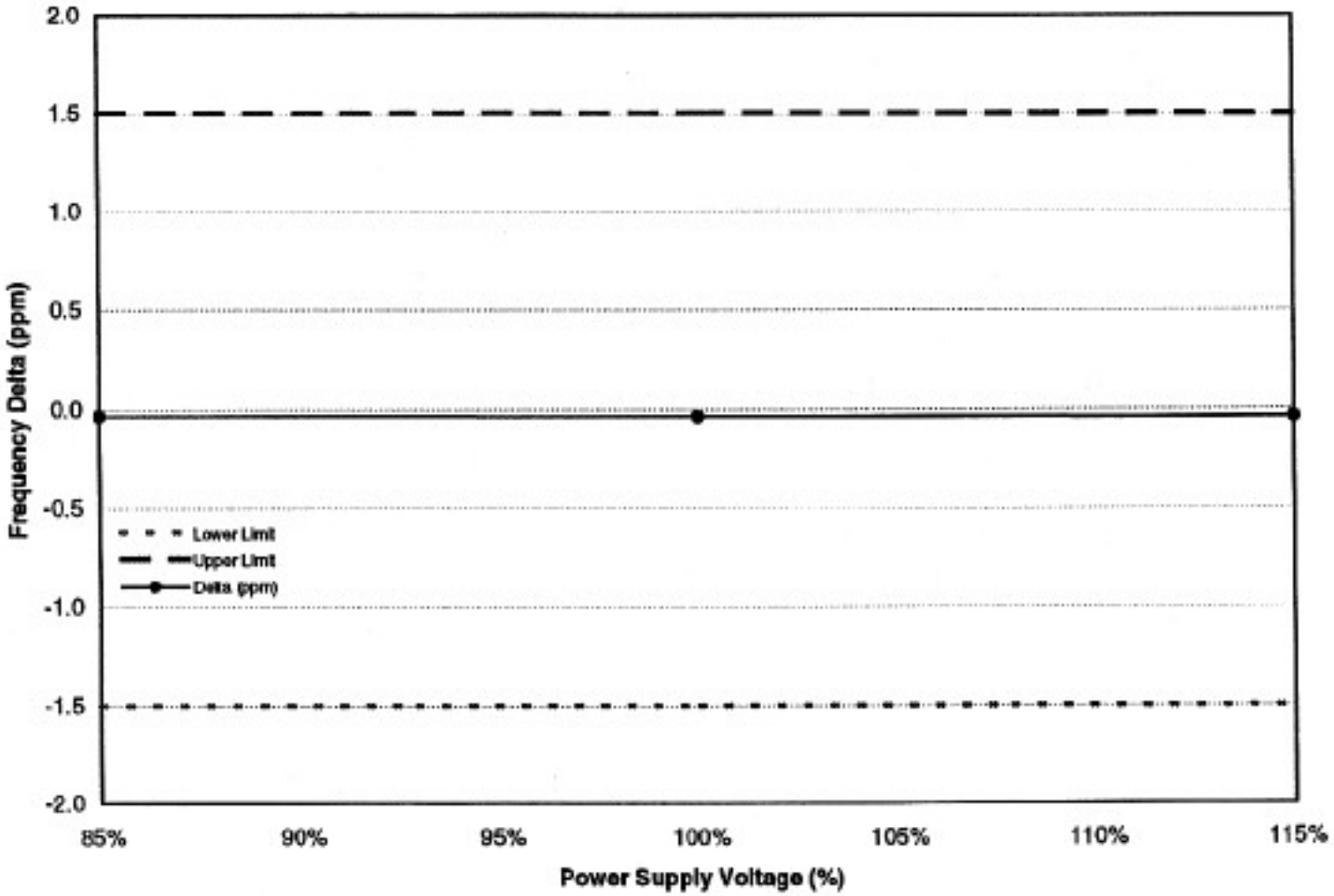
FREQUENCY STABILITY

Frequency Stability Over Temperature - CSM1



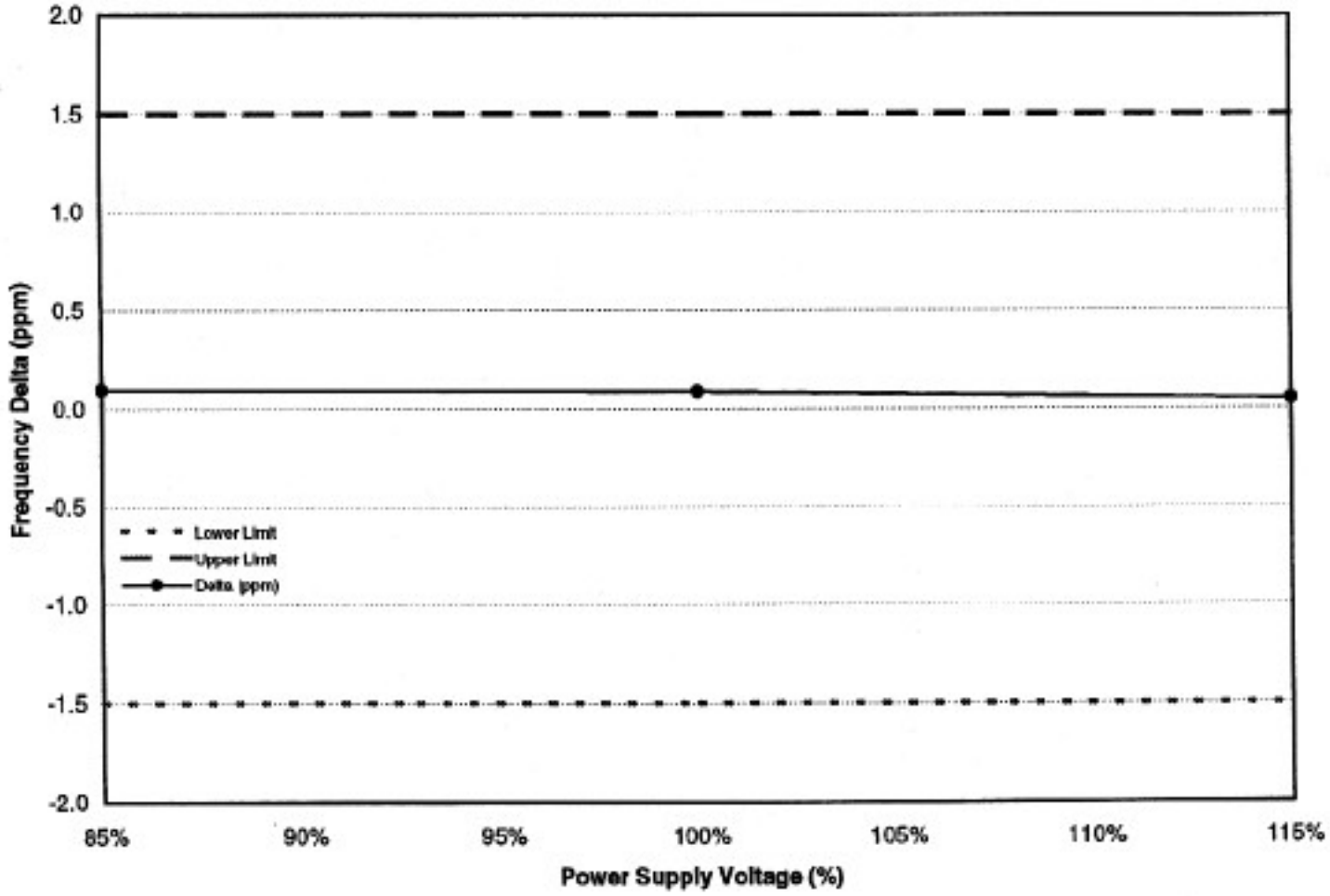
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Frequency Stability with Varying Supply Voltage - CSM1



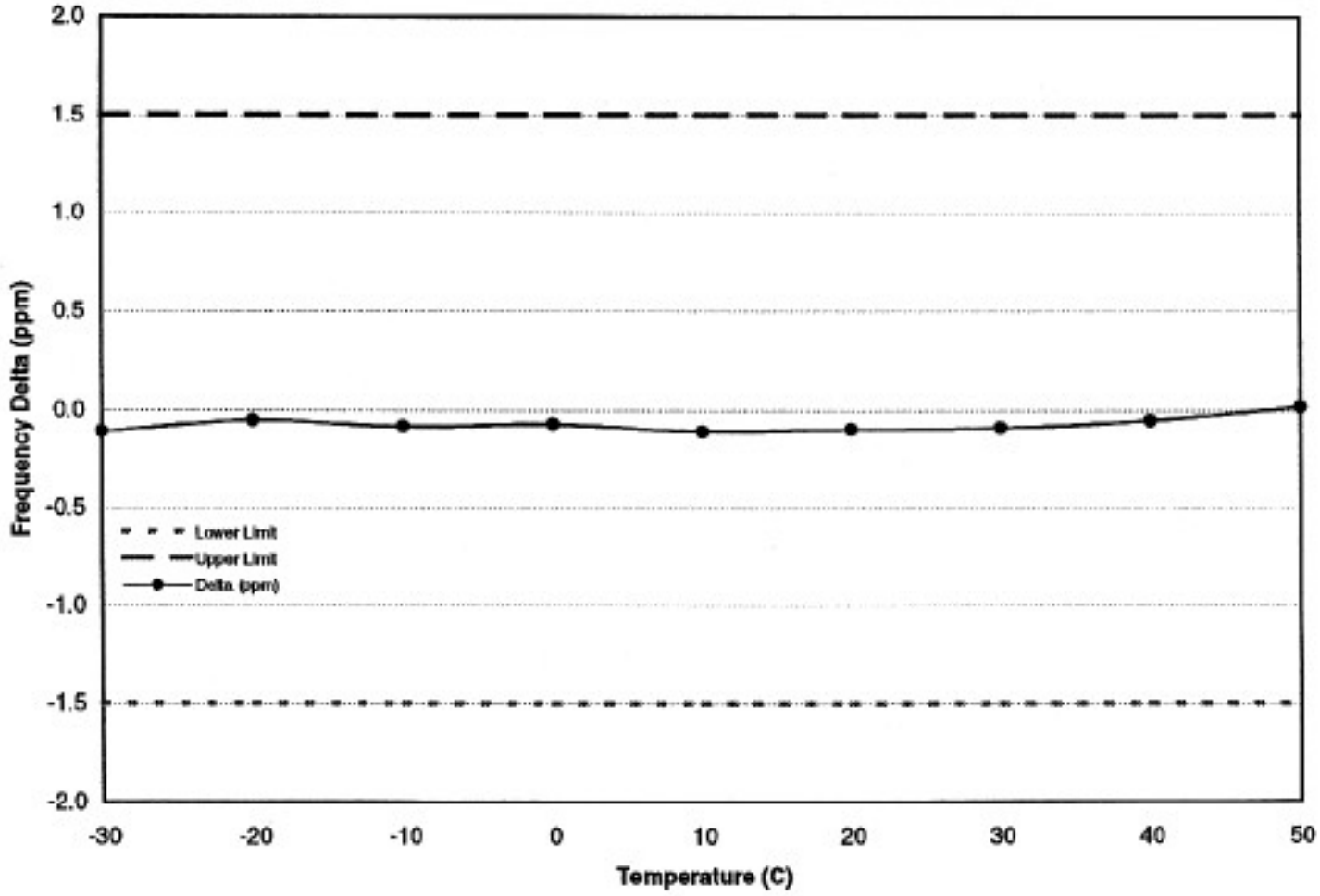
SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Frequency Stability with Varying Supply Voltage - CSM2



SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1

Frequency Stability Over Temperature - CSM2



SC4812T 1.9 GHz
CDMA BTS Frame
IHET6YR1