## SC4812T @800 MHz CDMA BTS FRAME

## **TEST REPORT EXHIBIT**

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FCC ID: IHET5YP1

## **SECTION A**

## SUMMARY OF RF MEASUREMENTS

## Summary of Radiated RF Measurements

## WORST TRANSMIT RADIATED RF SPUR LEVEL FOR SC4812T @800 MHz BTS FRAME

SPUR FREQUENCY (GHz)	DISTANCE MEASURED (meters)	SPUR LEVEL MEASURED (dBµV/meter)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
2.609	3	42.52	-52.71	-13

#### FCC Max. Limit Per 47 CFR 22.917:

- " =Transmitted Power (10 Log10 (Pwatt)) (43 + 10 Log10 (Pwatt)) dBW
- " =  $10 \text{ Log}_{10} (P_{\text{watt}}) (43 + 10 \text{ Log}_{10} (P_{\text{watt}})) dBW$
- " =-43 dBW
- " =-13 dBm

Larry J. Collins 1-7-99

Radiated Engineer

Date

## **Summary of Conducted RF Measurements**

SPUR LEVEL MEASURED (dBm)	FREQUENCY (GHz)	SPUR LEVEL SPEC (dBm Max)
-54.26	1.78662	-13.0

Conducted Engineer

Jim 6 Bin 1-7-99

Date



FCC ID: IHET5YP1

## **SECTION B**

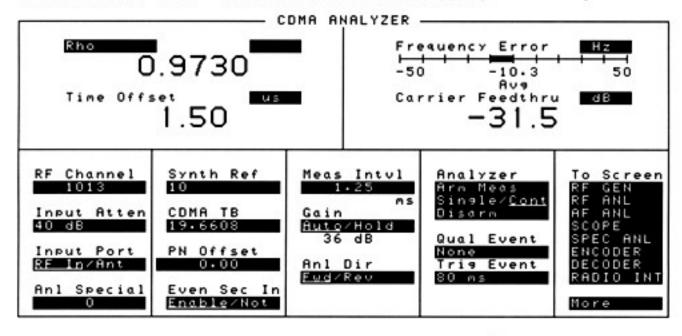
## MODULATION CHARACTERISTICS



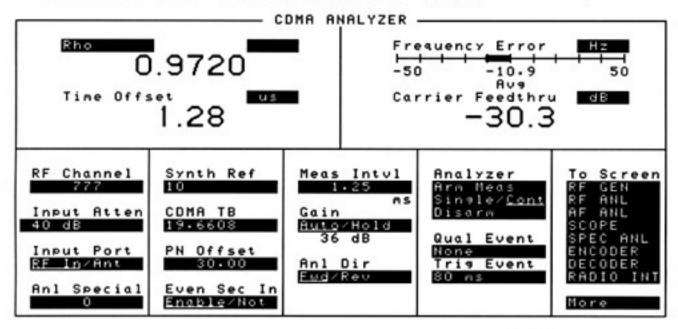
SECTION B FCC ID: IHET5YP1

## MODULATION CHARACTERISTICS

**Maximum Power** 



Channel 1013 869.70 MHz Maximum Power IHET5YP1 SC4812T @800 MHz CDMA BTS Frame



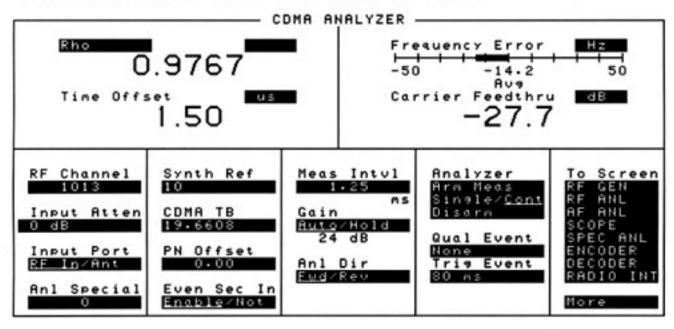
Channel 777 893.31 MHz Maximum Power IHET5YP1 SC4812T @800 MHz CDMA BTS Frame



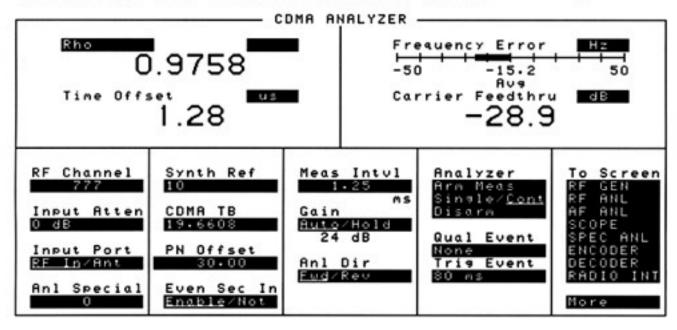
SECTION B FCC ID: IHET5YP1

## MODULATION CHARACTERISTICS

**Minimum Power** 



Channel 1013 869.70 MHz Minimum Power IHET5YP1 SC4812T @800 MHz CDMA BTS Frame



Channel 777 893.31 MHz Minimum Power

IHET5YP1 SC4812T @800 MHz CDMA BTS Frame



FCC ID: IHET5YP1

## **SECTION C**

## SPURIOUS & HARMONIC EMISSIONS RADIATED

### Radiated RF Measurements

#### WORST RADIATED RF SPUR LEVEL FOR SC4812T @800 MHz

TRANSMIT CHANNEL	SPUR FREQUENCY (GHz)	MEASURED SIGNAL LEVEL dBuV/meter	MEASURED Signal Level (dBm)	FCC, Part 22 MAX LIMIT (dBm)
1013V	2.609	42.04	-53.19	-13
1013H	2.609	42.52	-52.71	-13
777V	2.679	36.43	-58.50	-13
777H	2.679	38.20	-57.03	-13

Converting dBuV/meter to dBm when Part 22 is done at 3 meters.

- (dBuV/M / 20) \* (Inverse Log) = uV/M
- Log(uV/M/57735) \* 20 = dBm

Example 42.52 dBuV/m to dBm

Lewy & Collis 1-7-39

(42.52 dBuV/m / 20) \* (Inverse Log) = 68.60 uV/M Log (68.60 uV/m/ 57735) \* 20 = -52.71 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

Radiated Engineer

Date



FCC ID: IHET5YP1

## **SECTION D**

## **SPURIOUS & HARMONIC**

## **EMISSIONS CONDUCTED**

NOTE: The plots for conducted spurious and harmonic emissions are measured in peak mode. The higher (than 46.5 dBm) levels measured in peak mode are expected, due to typical CDMA peak to average performance. The average power level was set to 46.5 dBm using an HP438A power meter.

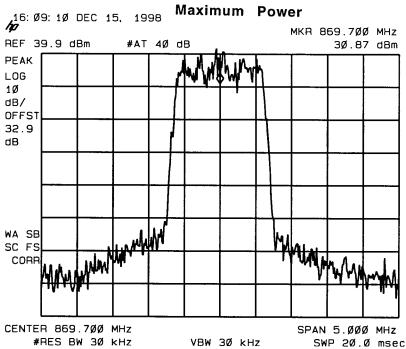


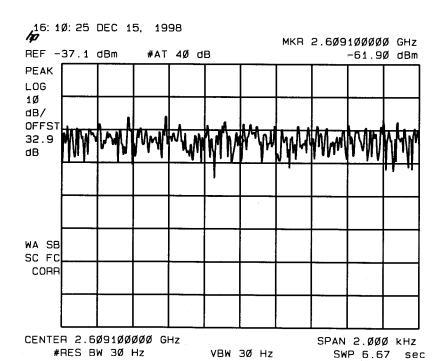
SECTION D FCC ID: IHET5YP1

## SPURIOUS & HARMONIC EMISSIONS CONDUCTED

## **CDMA Transmitter Channel 1013**

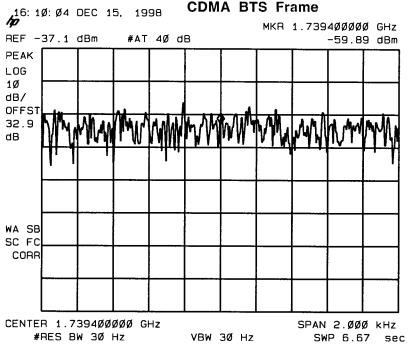
**Maximum Power** 

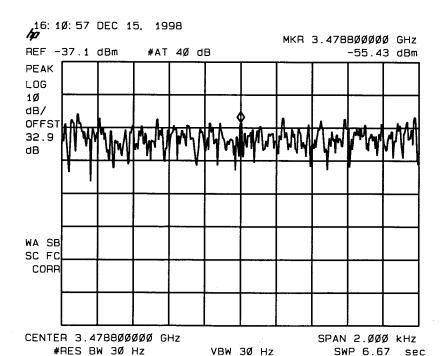




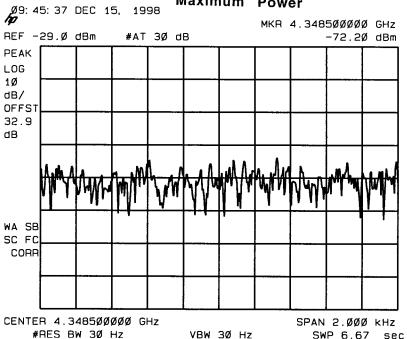
## SC4812T @800 MHz

btsate 12-15-98 17:14:01

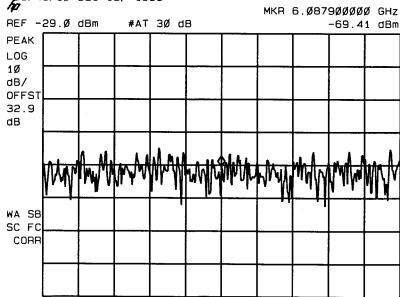




#### Channel 1013 Maximum Power







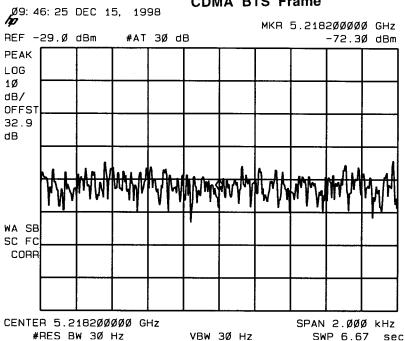
CENTER 6.087900000 GHz #RES BW 30 Hz

VBW 3Ø Hz

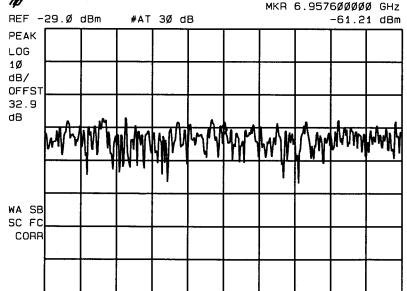
SPAN 2.ØØØ kHz SWP 6.67 sec

#### IHET5YP1 SC4812T @800 MHz CDMA BTS Frame

btsate 12-15-98 10:51:15



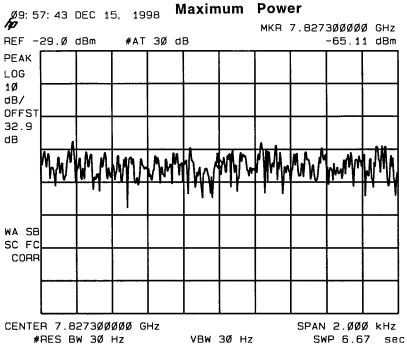




CENTER 6.9576ØØØØØ GHz #RES BW 3Ø Hz

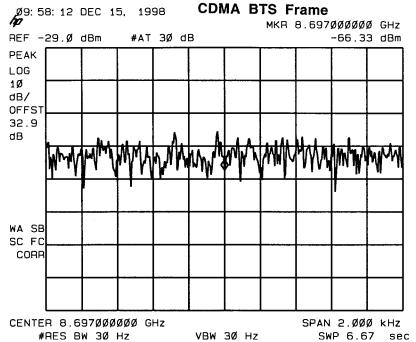
VBW 3Ø Hz

SPAN 2.ØØØ kHz SWP 6.67 sec



#### IHET5YP1 SC4812T @800 MHz

btsate 12-15-98 11:01:16





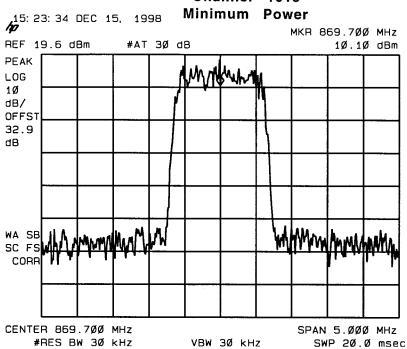
**SECTION D** 

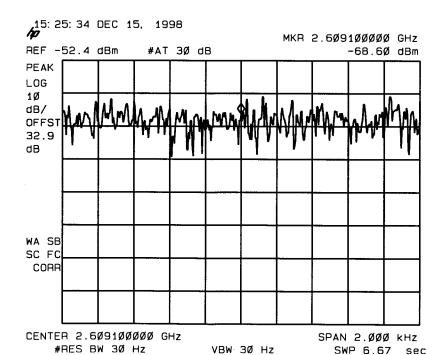
FCC ID: IHET5YP1

## SPURIOUS & HARMONIC EMISSIONS CONDUCTED

## **CDMA Transmitter Channel 1013**

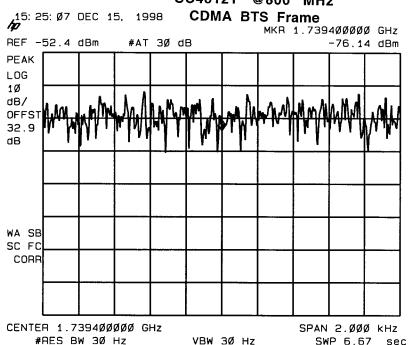
**Minimum Power** 

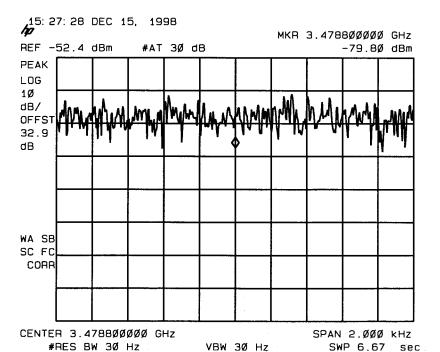


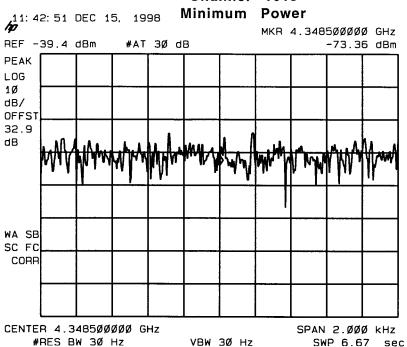


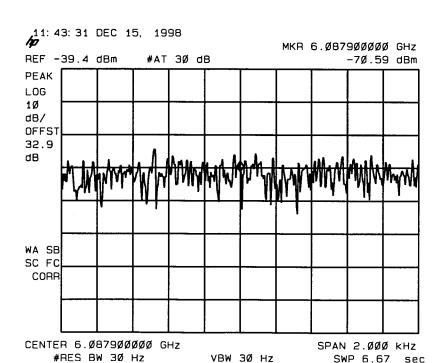
#### IHET5YP1 SC4812T @800 MHz

btsate 12-15-98 16:30:32



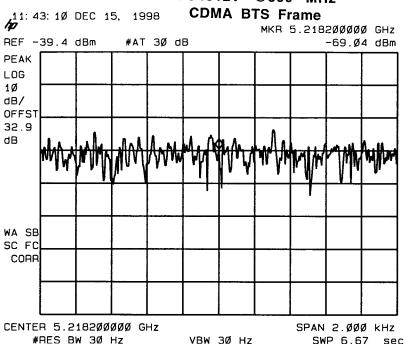


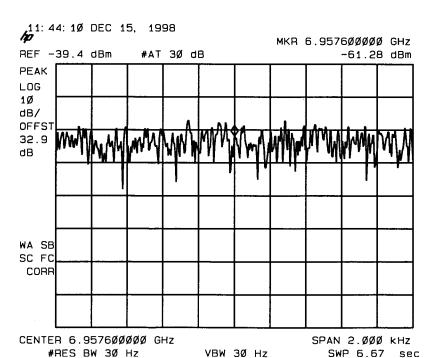


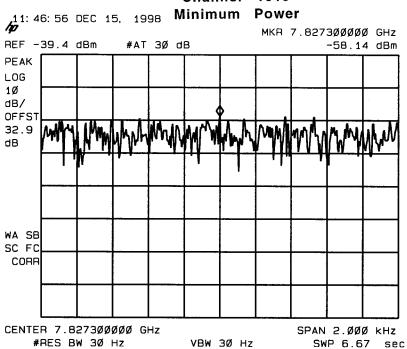


#### IHET5YP1 SC4812T @800 MHz **CDMA BTS Frame**

btsate 12-15-98 12:47:14







#### IHET5YP1 SC4812T @800 MHz

btsate 12-15-98 12:50:28

11: 47: 24 DEC 15, 1998 **CDMA BTS Frame** MKR 8.697ØØØØØ GHz REF -39.4 dBm #AT 3Ø dB -57.55 dBm PEAK LOG 1Ø dB/ OFFST 32.9 dΒ WA SB SC FC CORR CENTER 8.697ØØØØØØ GHz SPAN 2.ØØØ kHz #RES BW 3Ø Hz VBW 3Ø Hz SWP 6.67 sec



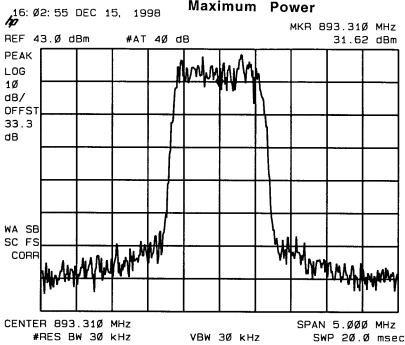
**SECTION D** 

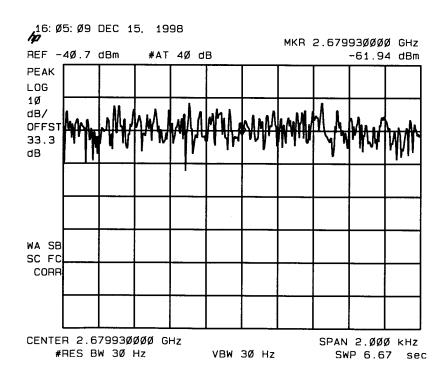
FCC ID: IHET5YP1

## SPURIOUS & HARMONIC EMISSIONS CONDUCTED

# CDMA Transmitter Channel 777 Maximum Power

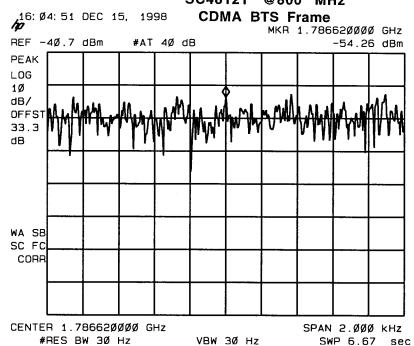
## Channel 777 Maximum Power

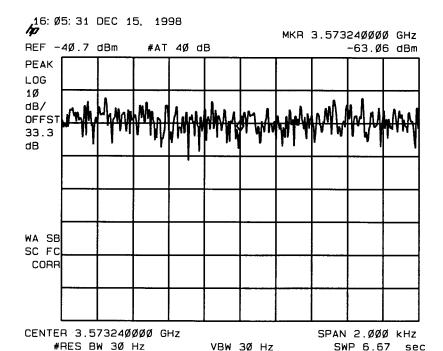


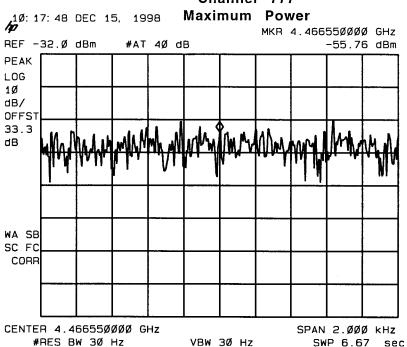


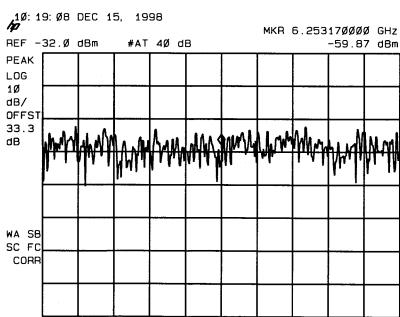
#### IHET5YP1 SC4812T @800 MHz

12-15-98 17:08:35









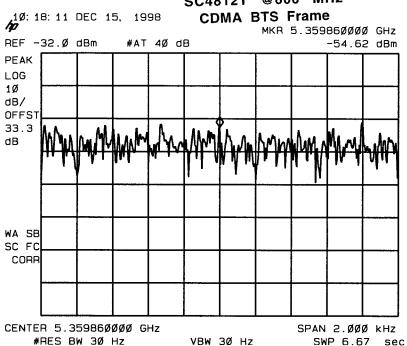
CENTER 6.25317ØØØØ GHZ #RES BW 30 Hz

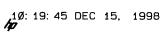
VBW 3Ø Hz

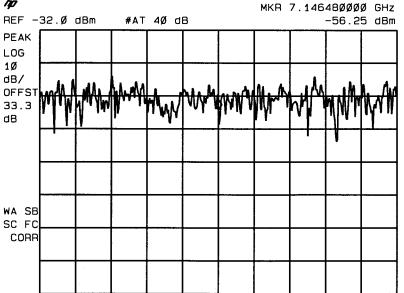
SPAN 2.ØØØ KHZ SWP 6.67 sec

#### IHET5YP1 SC4812T @800 MHz

btsate 12-15-98 11:22:50





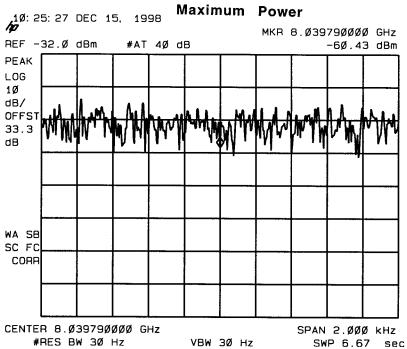


CENTER 7.146480000 GHz #RES BW 30 Hz

VBW 3Ø Hz

SPAN 2.ØØØ kHz SWP 6.67 sec

#### Channel 777 Maximum Power



#### IHET5YP1 SC4812T @800 MHz **CDMA BTS Frame**

12-15-98 11:29:07

10: 26: 02 DEC 15, 1998 MKR 8.9331ØØØØØ GHz REF -32.Ø dBm #AT 4Ø dB -59.24 dBm PEAK LOG 1Ø dB/ OFFST 33.3 dΒ WA SB SC FC CORR CENTER 8.9331ØØØØØ GHz SPAN 2.ØØØ kHz

VBW 30 Hz

SWP 6.67 sec

#RES BW 3Ø Hz



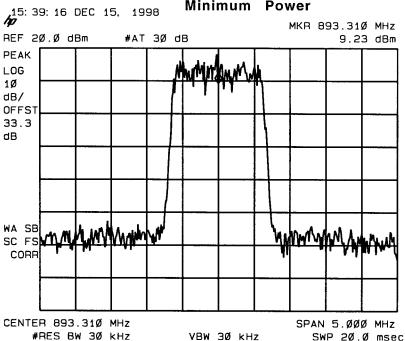
**SECTION D** 

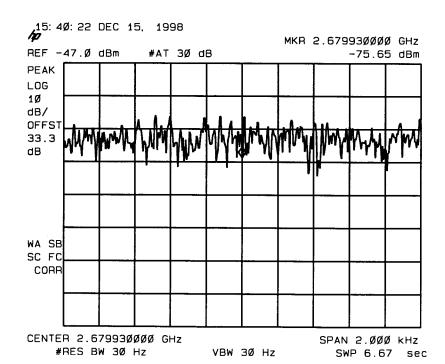
FCC ID: IHET5YP1

## SPURIOUS & HARMONIC EMISSIONS CONDUCTED

# CDMA Transmitter Channel 777 Minimum Power

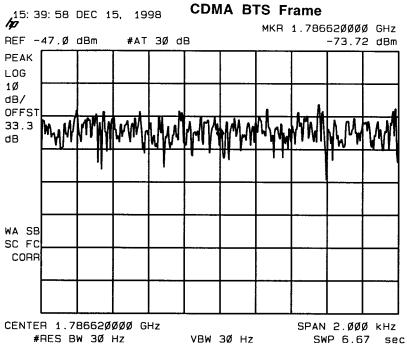
#### Channel 777 Minimum Power

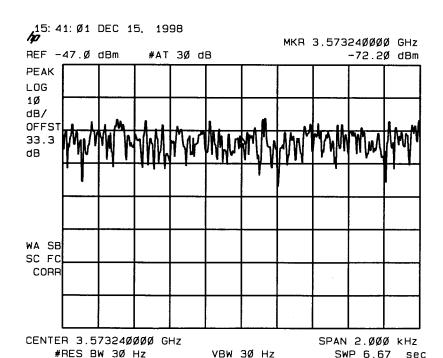




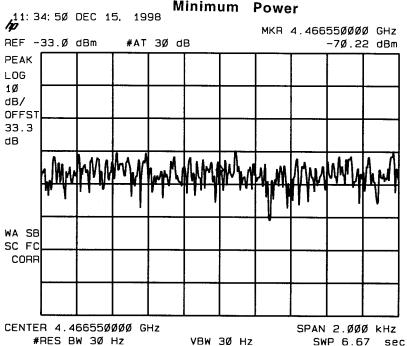
#### IHET5YP1 SC4812T @800 MHz CDMA BTS Frame

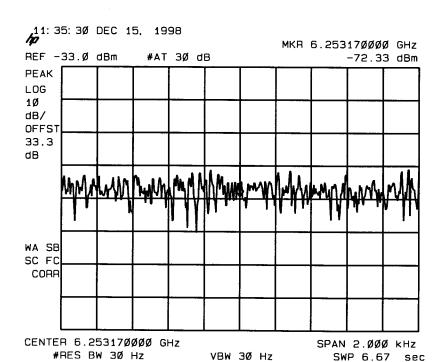
btsate 12-15-98 16:44:05





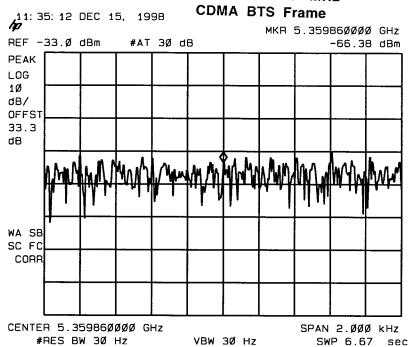
#### Channel 777 Minimum Power

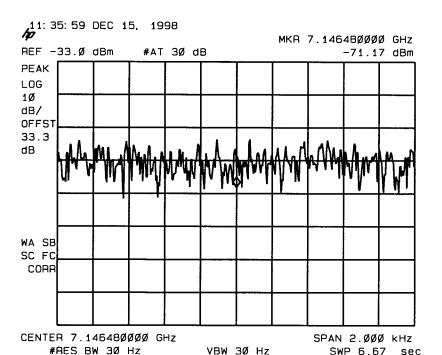


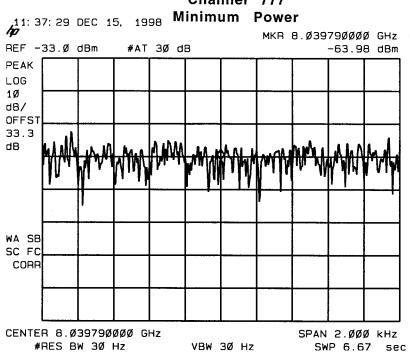


#### IHET5YP1 SC4812T @800 MHz CDMA BTS Frame

btsate 12-15-98 12:39:03

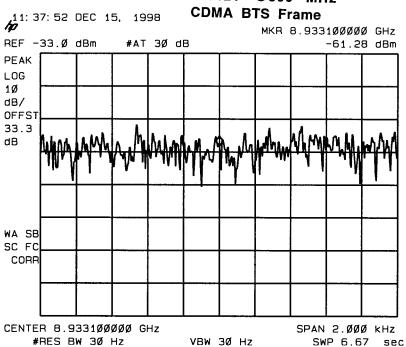






#### **IHET5YP1** SC4812T @800 MHz **CDMA BTS Frame**

btsate 12-15-98 12:40:56





FCC ID: IHET5YP1

## **SECTION E**

## **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.

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

Example: 30.49 dBm + 16.12 dB 46.61 dBm

The output power was set to 46.5 dBm using an HP438A power meter.

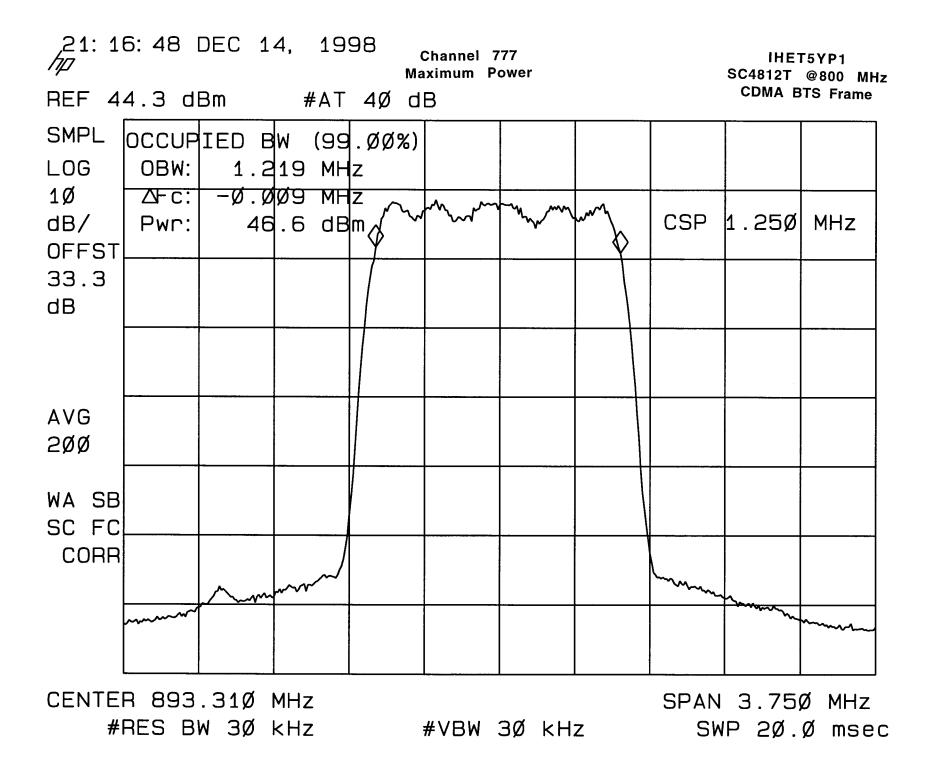


SECTION E FCC ID: IHET5YP1

## **OCCUPIED BANDWIDTH**

**Maximum Power** 

21: 14: Ø5 DEC 14, 1998 Channel 1013 IHET5YP1 Maximum Power SC4812T @800 MHz **CDMA BTS Frame** REF 43.9 dBm #AT 4Ø dB SMPL OCCUPIED BW (99.00%) LOG OBW: 1.219 MHz 1Ø -Ø.ØØ9 MHz ΔFc: CSP 1.250 MHz dB/ 46.4 dBm Pwr: OFFST 32.9 dB AVG 2ØØ WA SB SC FC CORR CENTER 869.700 MHz SPAN 3.75Ø MHz #RES BW 3Ø kHz #VBW 3Ø kHz SWP 20.0 msec





SECTION E FCC ID: IHET5YP1

## **OCCUPIED BANDWIDTH**

## **Minimum Power**

21: 27: Ø1 DEC 14, 1998 IHET5YP1 Channel 1013 SC4812T @800 MHz Minimum Power **CDMA BTS Frame** REF 18.9 dBm #AT 4Ø dB SMPL OCCUPIED BW (99.00%) LOG OBW: 1.219 MHz 1Ø ΔFC: -Ø.ØØ9 MHZ 23.8 dBm∜ CSP 1.25Ø dB/ MHz Pwr: OFFST 32.9 dB AVG 2ØØ WA SB SC FC CORR

CENTER 869.700 MHz #RES BW 30 kHz

#VBW 3Ø kHz

SPAN 3.75Ø MHz SWP 2Ø.Ø msec 21: 25: 51 DEC 14, 1998 Channel 777 IHET5YP1 Minimum Power SC4812T @800 MHz **CDMA BTS Frame** REF 19.3 dBm #AT 4Ø dB SMPL OCCUPIED BW (99.00%) LOG OBW: 1.228 MHz 1Ø ΔFC: -Ø.Ø14 MHZ CSP 1.250 MHz dB/ 23.6 dBm() Pwr: OFFST 33.3 dB AVG 2ØØ WA SB SC FC CORR CENTER 893.31Ø MHz SPAN 3.75Ø MHz

#VBW 3Ø kHz

SWP 20.0 msec

#RES BW 3Ø kHz

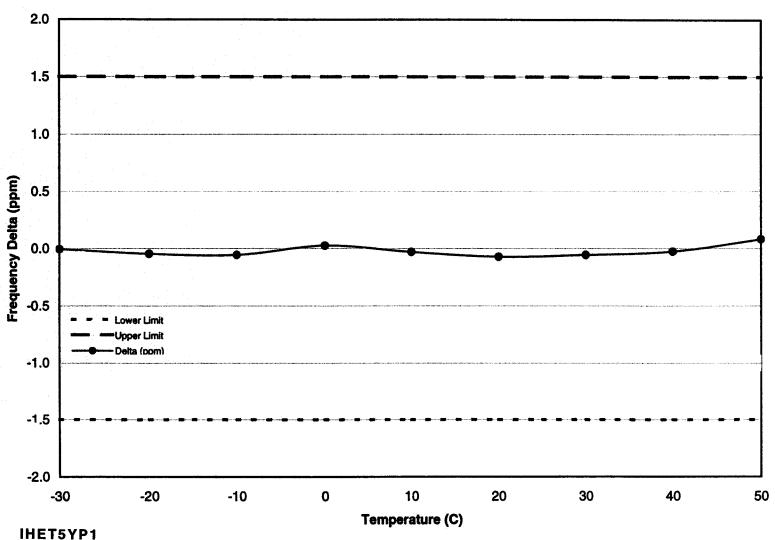


FCC ID: IHET5YP1

## **SECTION F**

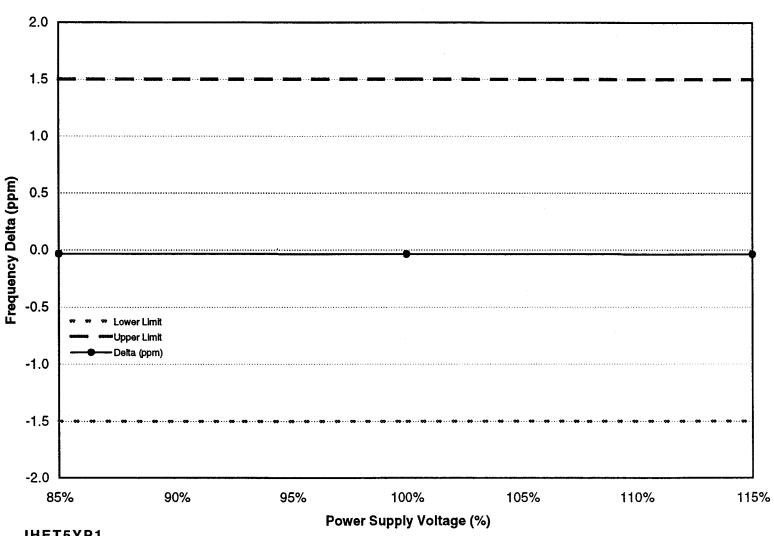
## FREQUENCY STABILITY

### Frequency Stability Over Temperature - CSM1



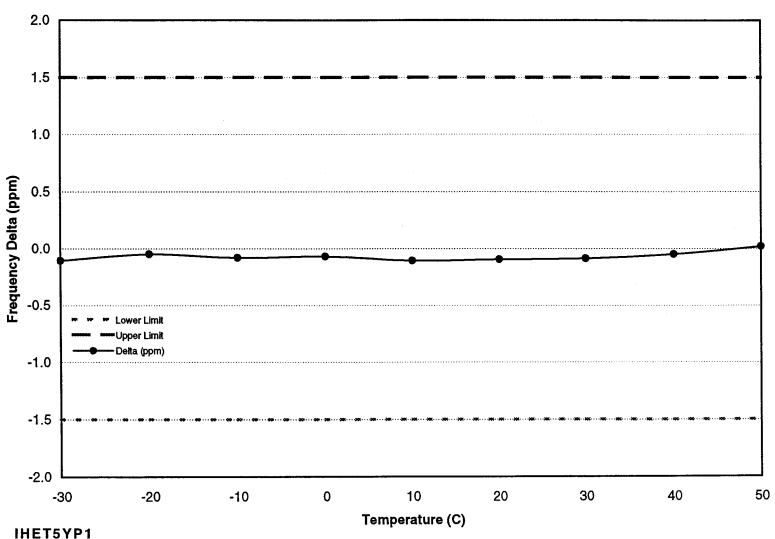
SC4812T @800 MHz CDMA BTS Frame

#### Frequency Stability with Varying Supply Voltage - CSM1



IHET5YP1 SC4812T @800 MHz CDMA BTS Frame

### **Frequency Stability Over Temperature - CSM2**



IHET5YP1 SC4812T @800 MHz CDMA BTS Frame

### Frequency Stability with Varying Supply Voltage - CSM2

