



MOTOROLA

Global Telecom Solutions Sector

FCC ID: IHET5BL1

SECTION C

**SPURIOUS & HARMONIC
EMISSIONS RADIATED**


Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC4812T @ 800MHz

<i>Radiated Data</i>			<i>Substituted Power</i>				<i>Spec</i>	<i>Result</i>
TX Channel	Spurious Frequency (MHz)	Antenna Polarity	Measured Radiated Field Strength (dBuV/m)	Measured Radiated Field Strength (dBm) (Note 1)	TX Antenna Terminal Voltage (dBm) (Note 2)	EDRP (dBm) (Note 3)	FCC Part 24 MAX LIMIT (dBm)	Pass/Fail
1013	1739.4	H	74.31	-20.918	-29.8	-24.75	- 13	Pass
1013	6593.7	V	43.29	-51.938	-65.2	-57.15	- 13	Pass
777	1739.2087	H	41.8	-53.428	-62.4	-57.35	- 13	Pass
777	6661.775	V	45.11	-50.118	-62.3	-54.25	- 13	Pass

Notes:

1. Converting dBuV/M to dBm at 3 meters
 $(\text{dBuV/M}) + 9.542 - 104.77 \text{dB} = \text{dBm}$
 Converting dBuV/M to dBm at 10 meters
 $(\text{dBuV/M}) + 20 - 104.77 \text{dB} = \text{dBm}$
2. The same horn antenna and measurement system was used for EUT scan and during substitution method. After maximizing the receive antenna and adjusting signal generator power level to measure the same emission level with the spectrum analyzer as with the EUT. Signal generator output level was recorded for each of the spurious frequencies. Test cable was then disconnected from the transmit horn and was connected to the input of the S/A measuring the voltage at the terminals of the antenna.
3. This value was obtained by converting the Equivalent Isotropic Radiated Power (EIRP) to ideal half-wave dipole reference power - (Equivalent Di-Pole Radiated Power - EDRP) per (TIA-603, 2.2.12.2(i)(m))


 Radiated Engineer


 Date

Terry Schwenk



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SECTION D

**SPURIOUS & HARMONIC
EMISSIONS CONDUCTED**

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET5BL1

Summary of Conducted RF Measurements

SC4812T @ 800MHz

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dB μ V)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm	Pass/Fail
777	6944.581	85.81	-21.19	-13	Pass
1013	6952.559	85.7	-21.3	-13	Pass

FCC Max. Limit Per 47 CFR:

“ =Transmitted Power (10 Log₁₀ (P_{watt})) - (43 + 10 Log₁₀ (P_{watt}))dBW

“ =10 Log₁₀ (P_{watt}) - (43 + 10 Log₁₀ (P_{watt}))dBW

“ =-43 dBW

“ =-13 dBm

dBuV-107 = dBm

Engineer: Francisco Avalos 8/10/01
Francisco Avalos Date



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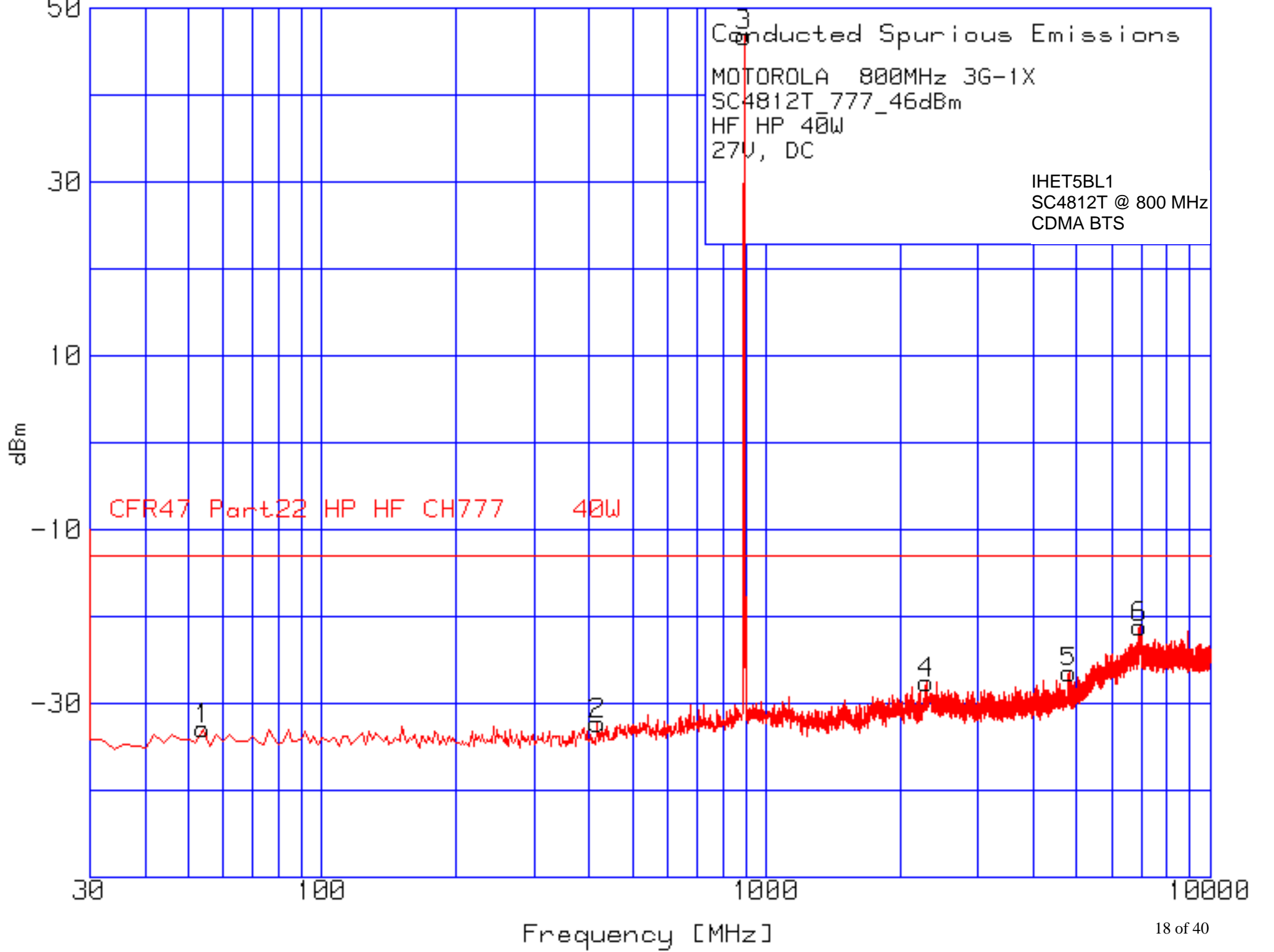
SECTION D

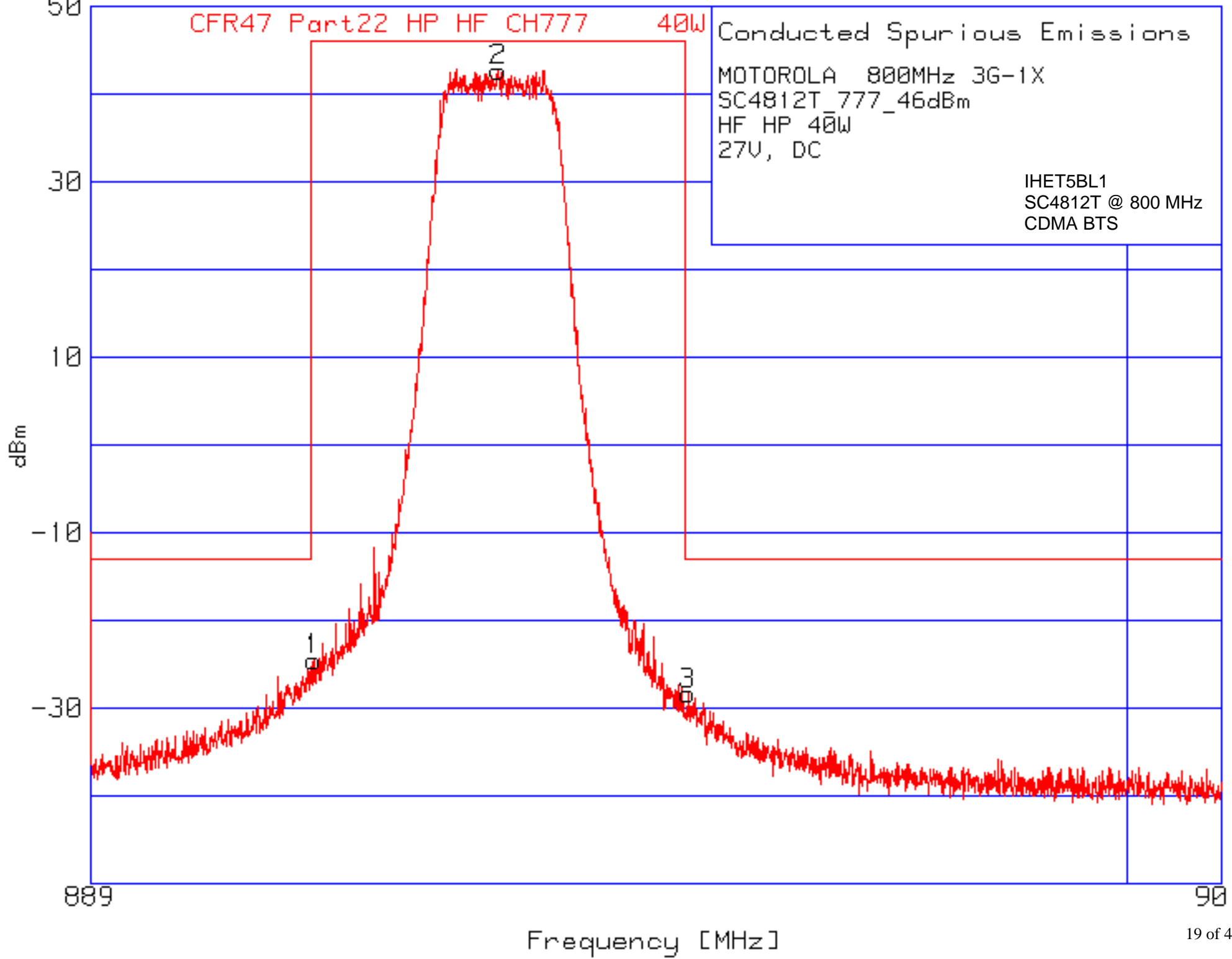
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SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1013

Maximum Power







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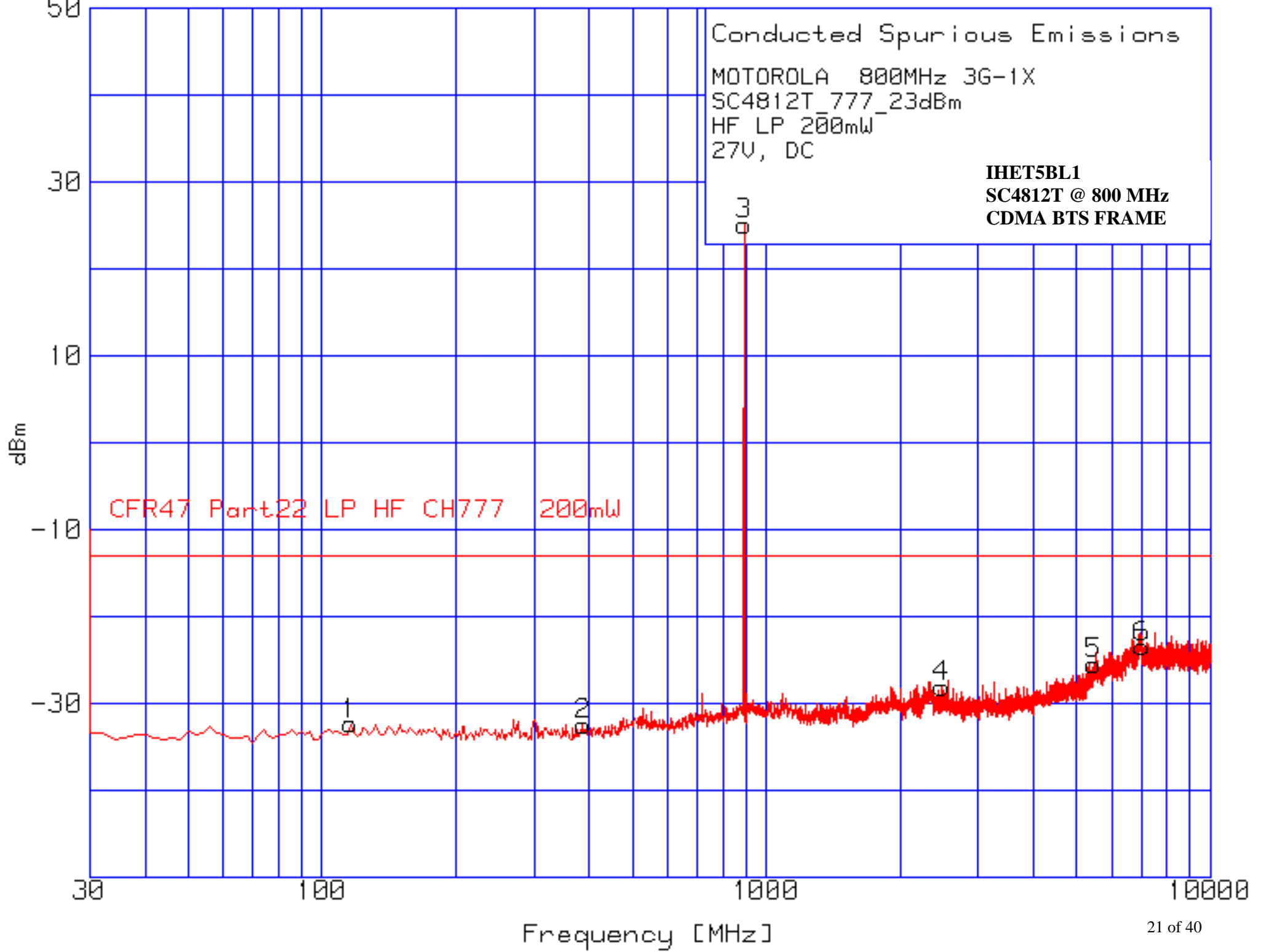
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**SPURIOUS & HARMONIC
EMISSIONS CONDUCTED**

CDMA Transmitter Channel 1013

Minimum Power

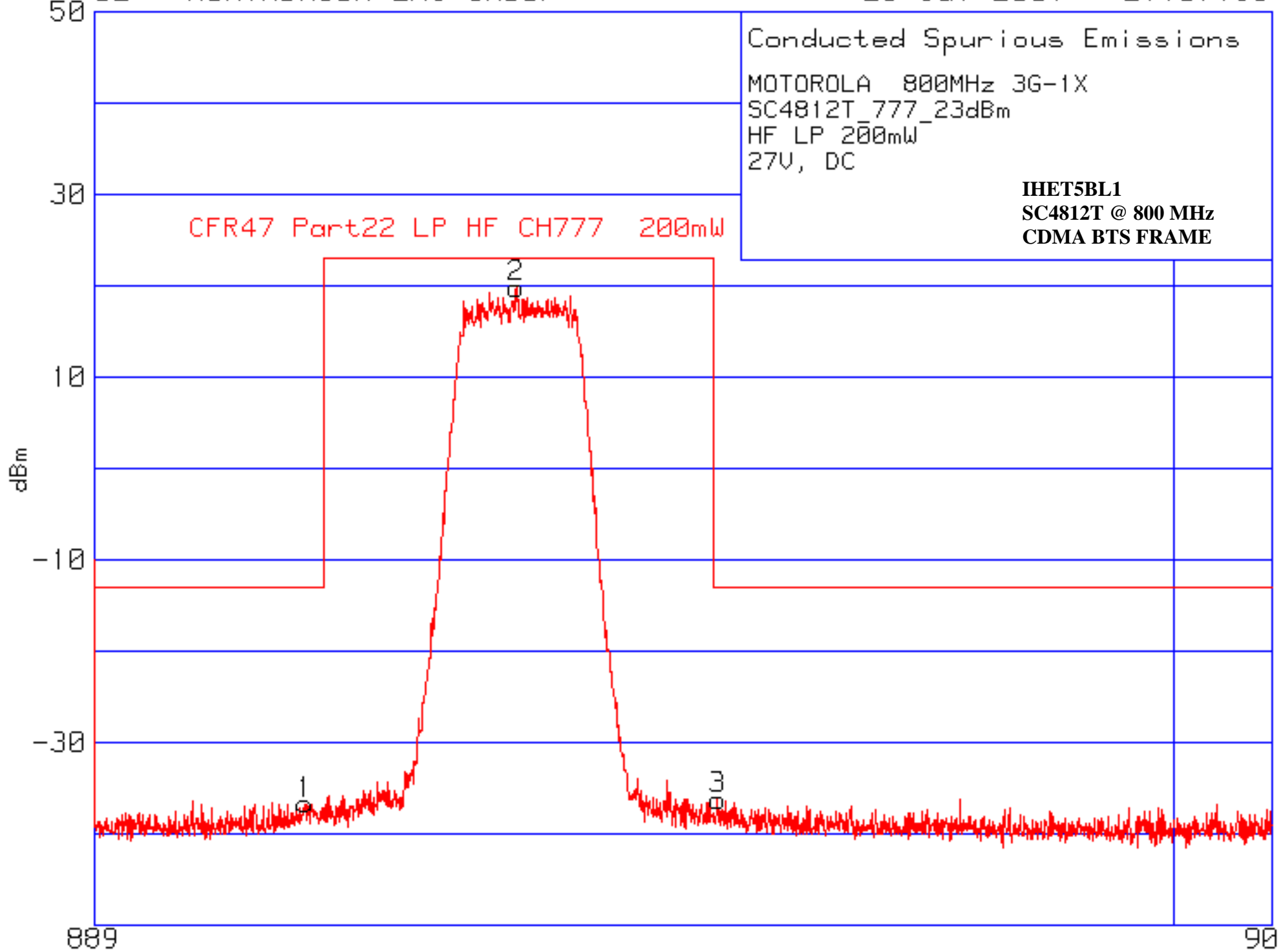


Conducted Spurious Emissions

MOTOROLA 800MHz 3G-1X
SC4812T_777_23dBm
HF LP 200mW
27V, DC

IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

CFR47 Part22 LP HF CH777 200mW





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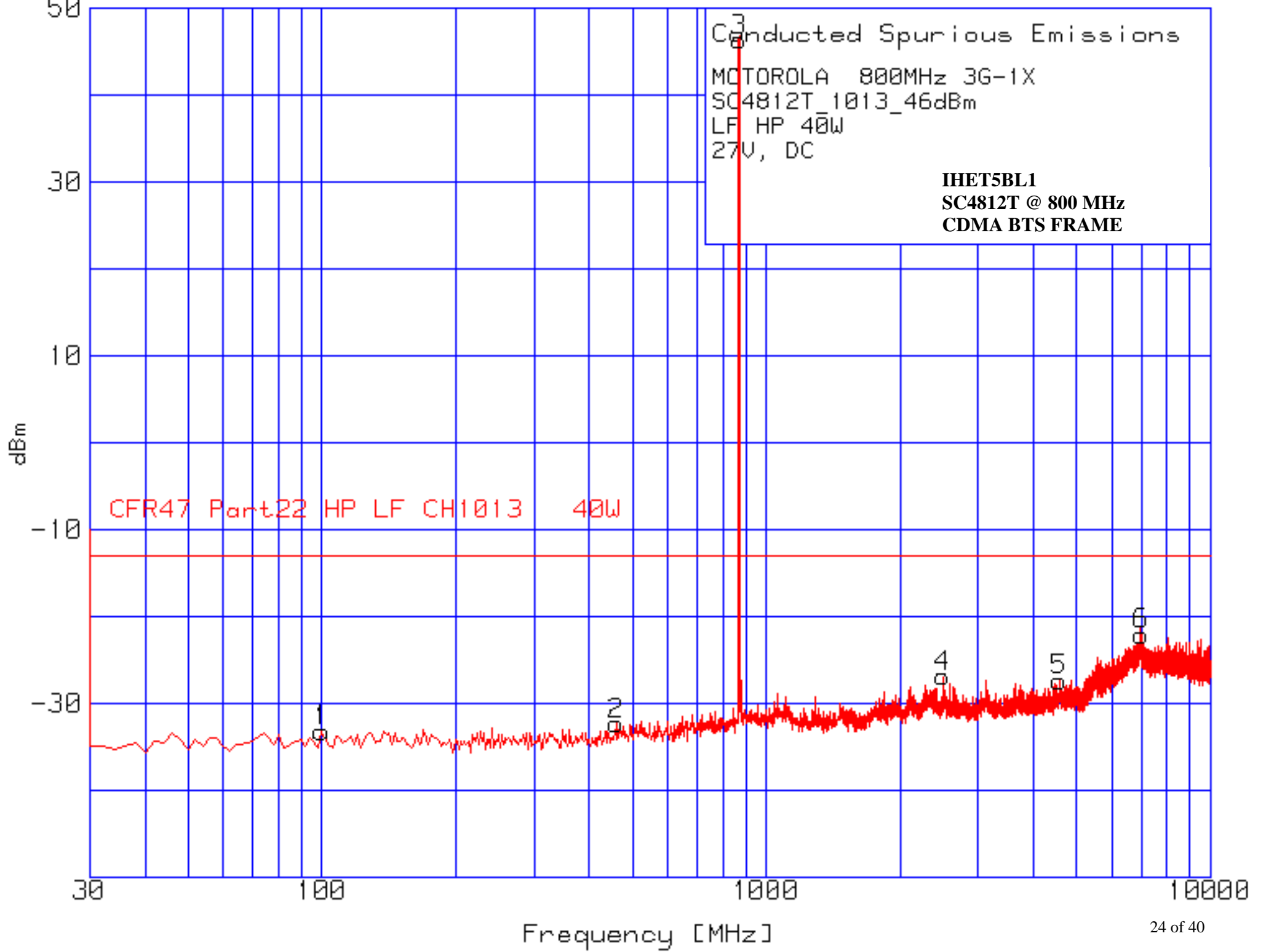
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SPURIOUS & HARMONIC EMISSIONS CONDUCTED

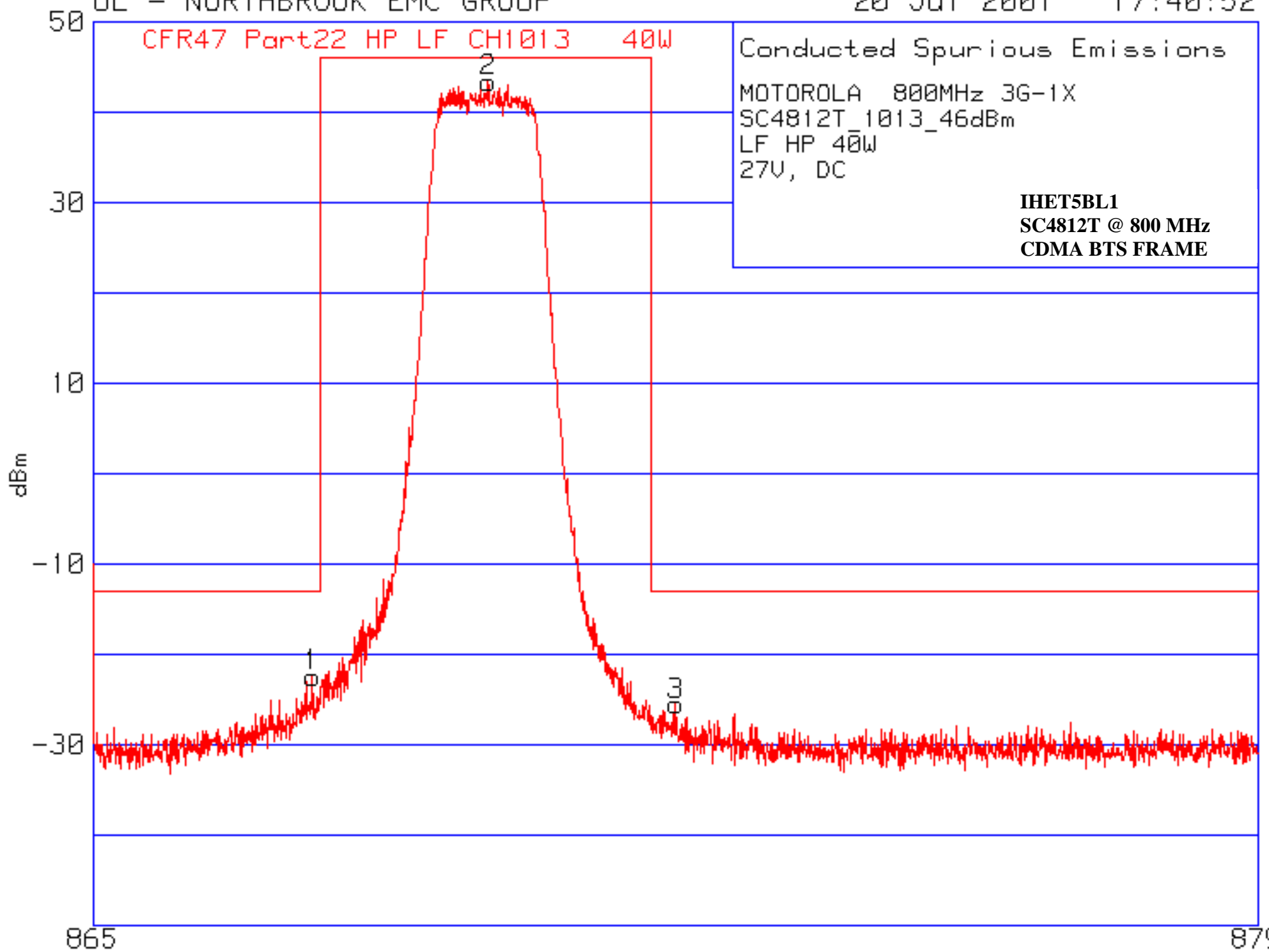
CDMA Transmitter Channel 777

Maximum Power



CFR47 Part22 HP LF CH1013 40W

Conducted Spurious Emissions
MOTOROLA 800MHz 3G-1X
SC4812T_1013_46dBm
LF HP 40W
27V, DC
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME





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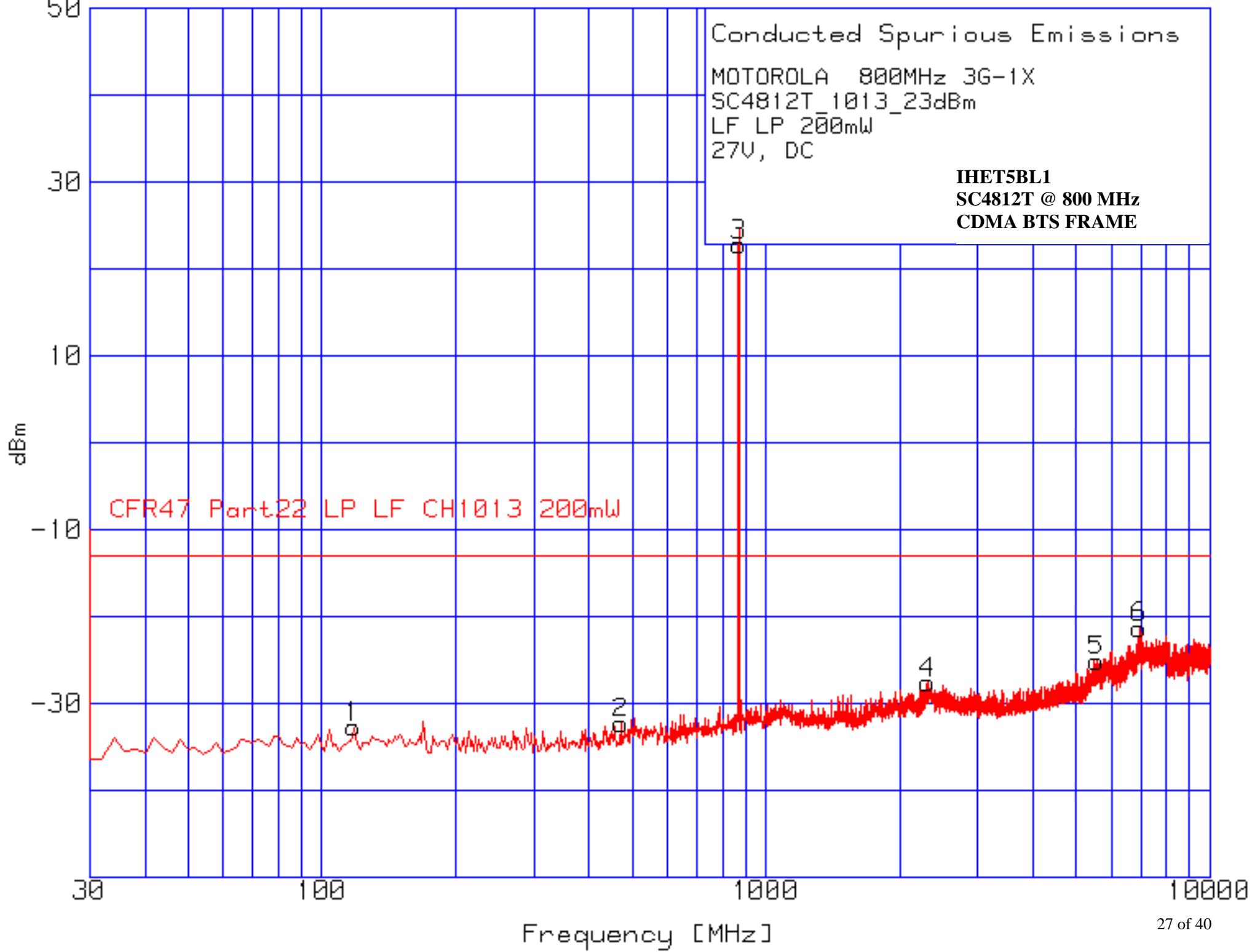
SECTION D

FCC ID: IHET5BL1

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 777

Minimum Power



Conducted Spurious Emissions

MOTOROLA 800MHz 3G-1X

SC4812T_1013_23dBm

LF LP 200mW

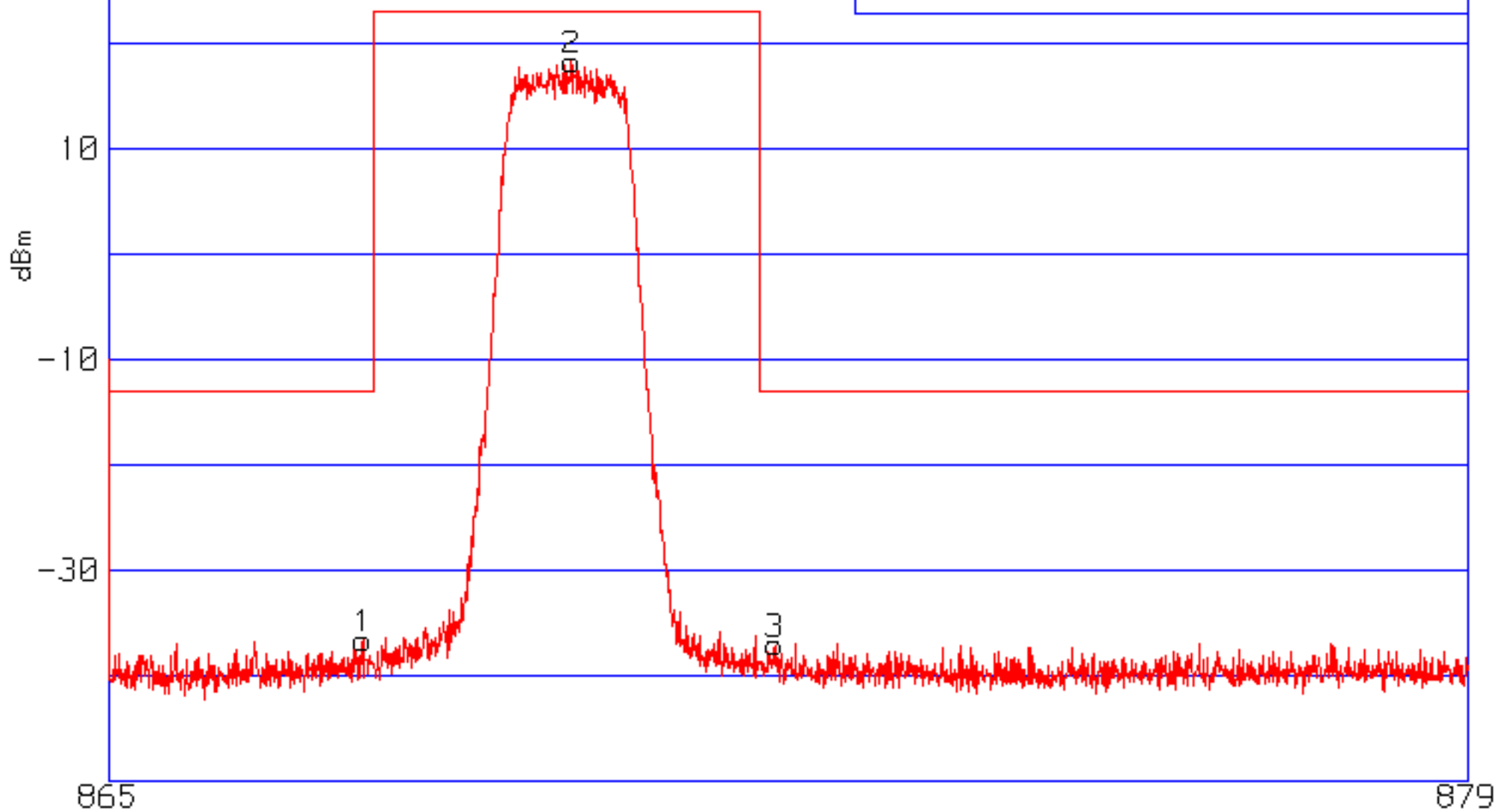
27V, DC

IHET5BL1

SC4812T @ 800 MHz

CDMA BTS FRAME

CFR47 Part22 LP LF CH1013 200mW





SECTION E

OCCUPIED BANDWIDTH

SC4812T

NOTE: The BTS was configured for maximum power out of 46.0 dBm and minimum power out of 23.0 dBm respectively. The max and min output power was set to 40.0 Watts or 200 mWatts respectively using an HP437B power meter.

The following formula is used to obtain the correct set power reference point from which the OBW of the CDMA signal is obtained. See example calculation below:

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

$$\text{Example: } 29.88\text{dBm} + 16.12\text{dB} = 46.0\text{dBm}$$

The occupied bandwidth is measured in a 30 kHz resolution bandwidth. The summary is listed below.

CHANNEL/POWER	FREQUENCY (MHz)	MEASURED (MHz)	FCC LIMIT (MHz)	PASS/FAIL
1013/MAX	869.7	1.219	1.25	Pass
777/MAX	893.31	1.219	1.25	Pass
1013/MIN	869.7	1.219	1.25	Pass
777/MIN	893.31	1.219	1.25	Pass

Engineer: Francisco Avalos

Signature: Francisco Avalos 8/3/01

Date



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SECTION E

FCC ID: IHET5BL1

OCCUPIED BANDWIDTH

Maximum Power

ATTEN 40dB
RL 42.0dBm

VAVG 100
10dB/

ΔMKR -.33dB
1.219MHz

IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

POWER=46.0dBm

OCCUPIED BW
%OCC 99.00
1.219MHz

SINGLE
MEASURE

CONT
MEASURE

CHANNEL
PWR MENU

CHAN UP
>>>>

CHAN DN
<<<<

PREV
MENU

CENTER 869.700MHz

SPAN 3.750MHz

RBW 30kHz

VBW 30kHz

SWP 50.0ms



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SECTION E

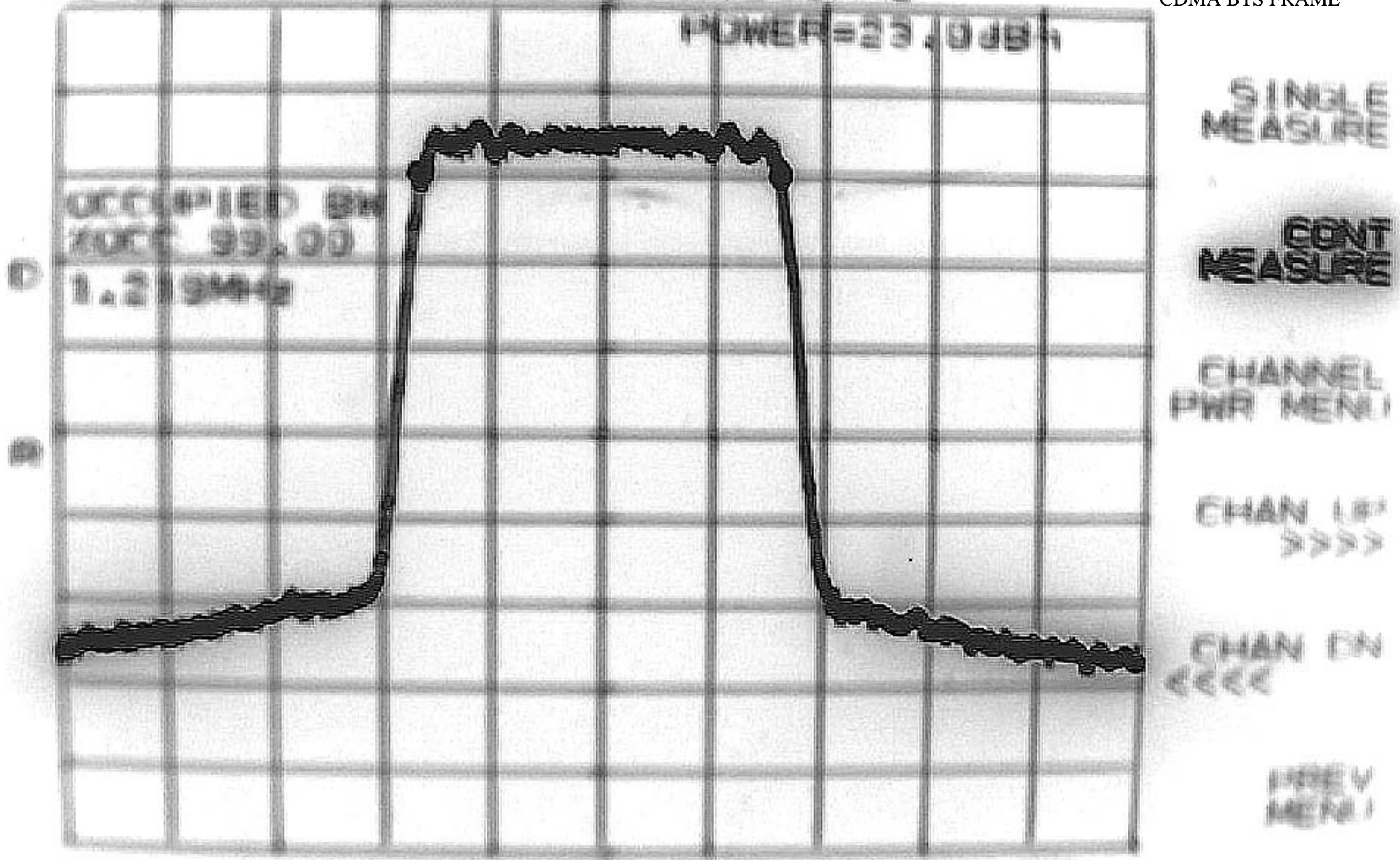
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OCCUPIED BANDWIDTH

Minimum Power

ATTEN 10dB VAVO 200 ANKR 0dB
RES 22.0dB /SPAN 10dB FREQ 1.215MHz

IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

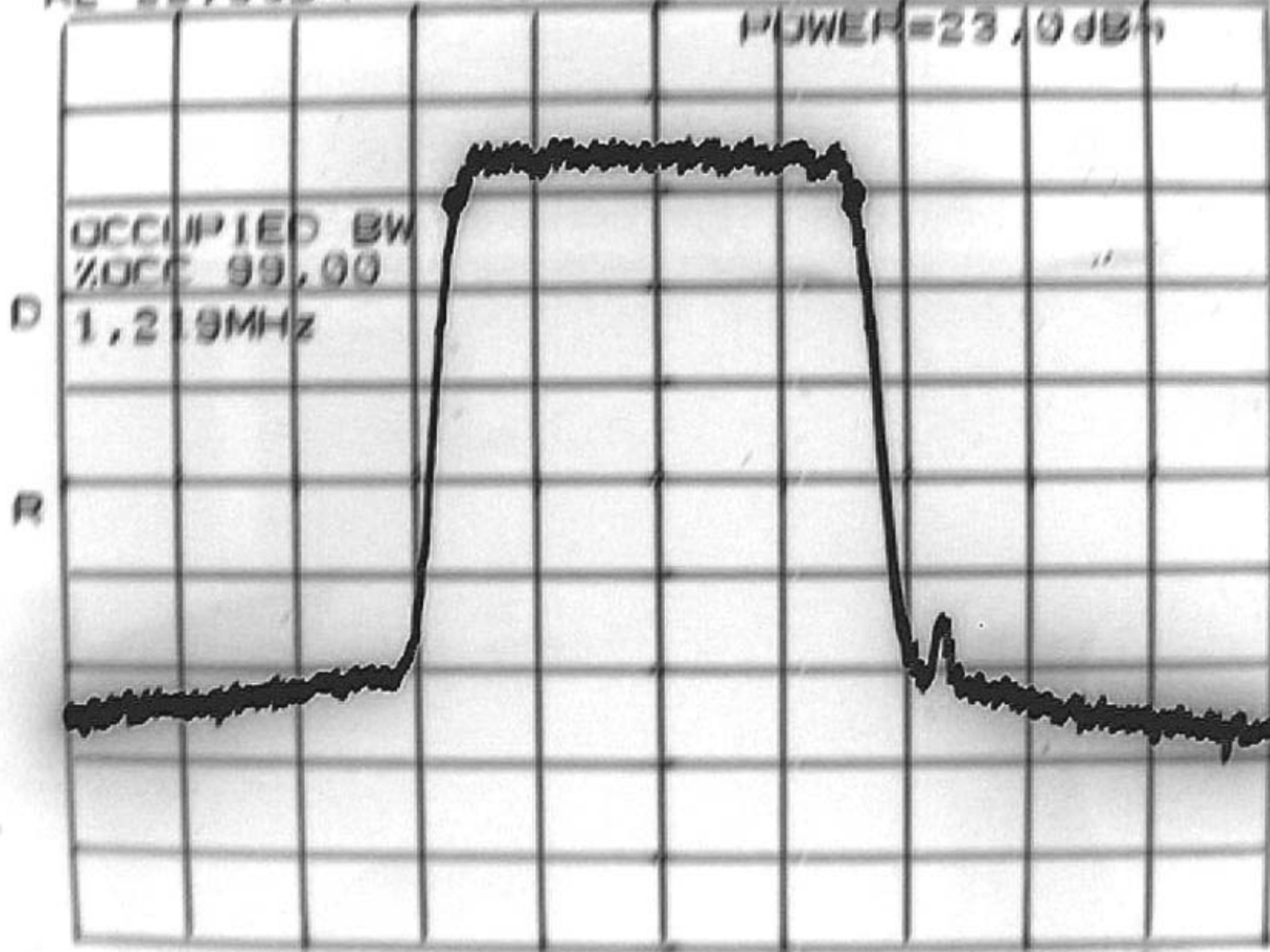


CENTER 1.215MHz SPAN 3.750MHz
RES 22.0dB VAVO 200 ANKR 0dB

+ATTEN 10dB VAVG 200 ΔMKR =,33dB
RL 22,0dBm 10dB/ 1,219MHz

IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

POWER=23,0dBm



OCCUPIED BW
%OCC 99,00
1,219MHz

SINGLE
MEASURE

CONT
MEASURE

CHANNEL
PWR MENU

CHAN UP
>>>>

CHAN DN
<<<<

PREV
MENU

CENTER 869,700MHz SPAN 3,750MHz
RBW 30kHz VBW 30kHz SWP 50,0ms



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SECTION F

FREQUENCY STABILITY

SC4812T

MODE	27V POWER	WORST CASE Δ PPM	FCC REQUIREMENT	PASS/FAIL
CSM1	85-115%	<0.02	+/-1.5 ppm max	Pass
CSM2	85-115%	<0.02	+/-1.5 ppm max	Pass

MODE	TEMPERATURE	Δ PPM	FCC REQUIREMENT	PASS/FAIL
CSM1	-30 to +50°c	<0.2	+/-1.5 ppm max	Pass
CSM2	-30 to +50°c	<0.2	+/-1.5 ppm max	Pass

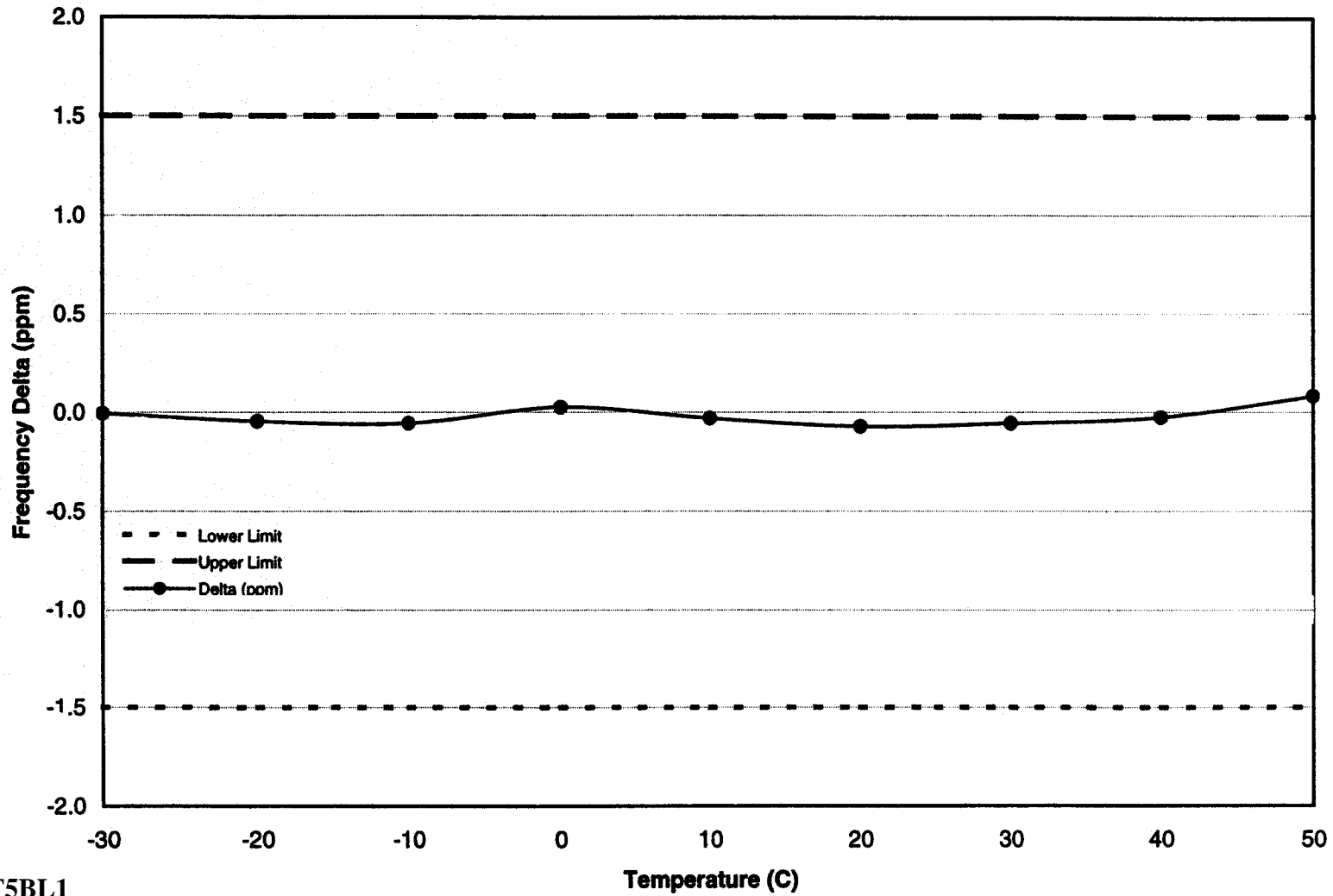
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Terry Schwenk 8/3/01

Engineer: Terry Schwenk

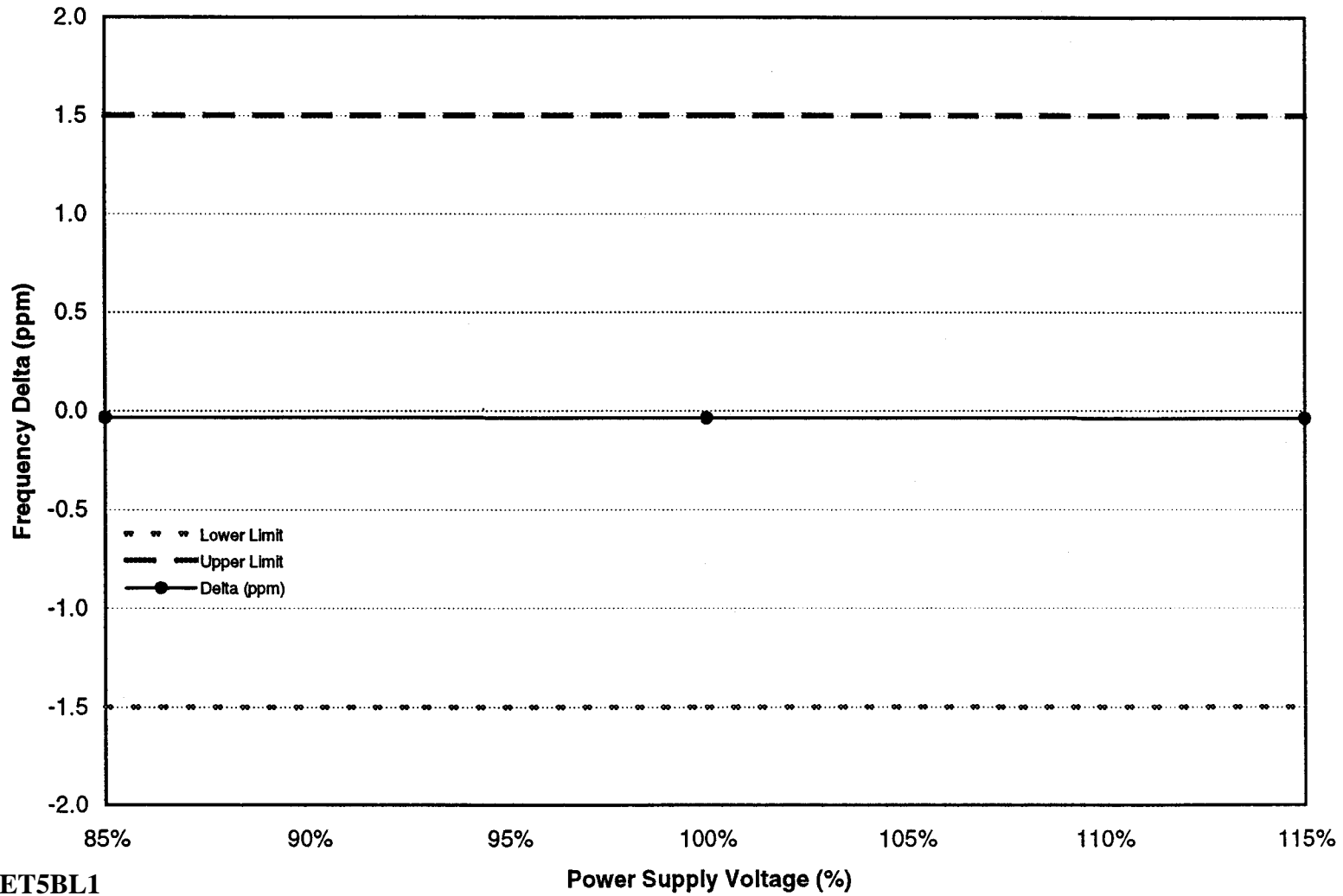
Date

Frequency Stability Over Temperature - CSM1



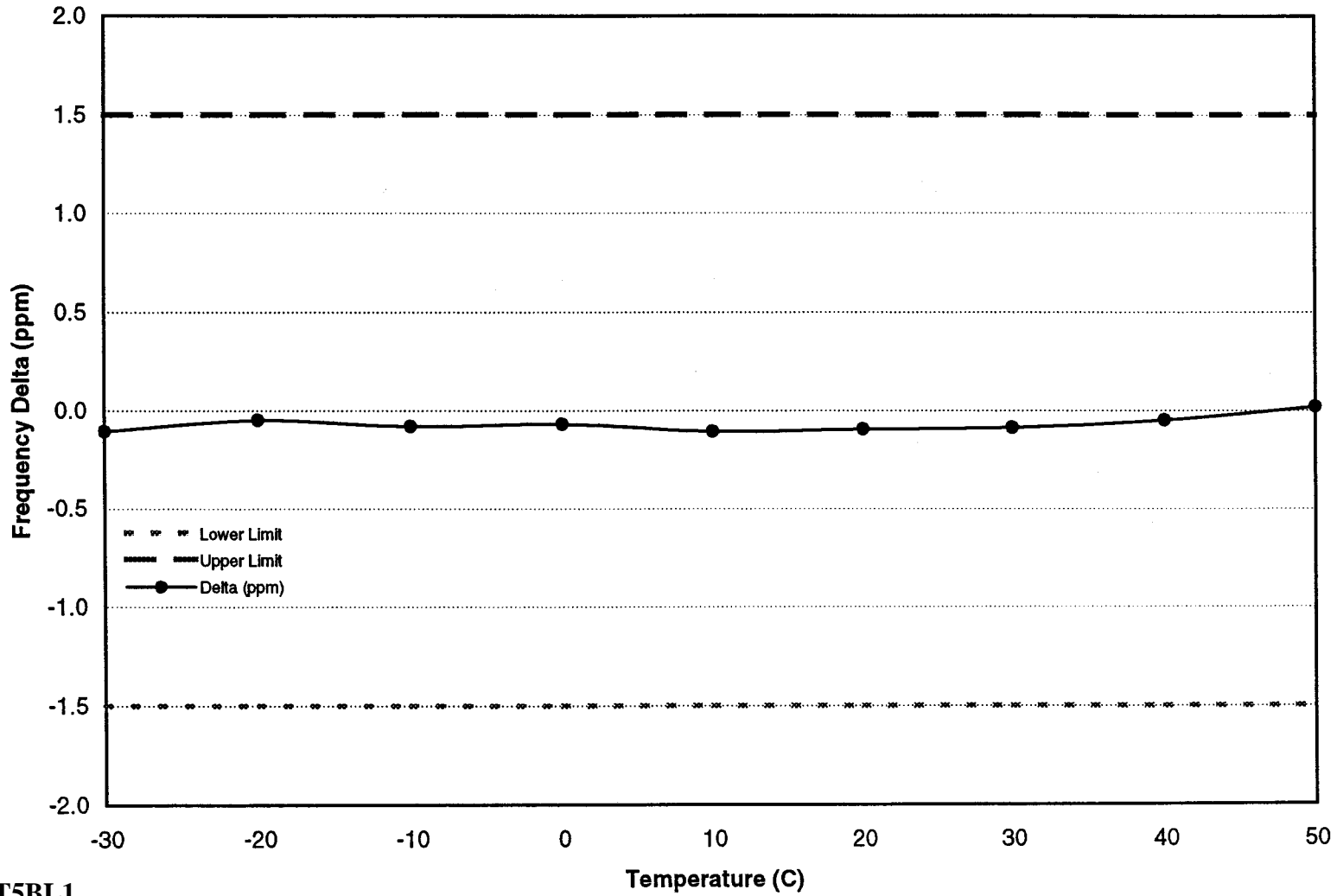
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

Frequency Stability with Varying Supply Voltage - CSM1



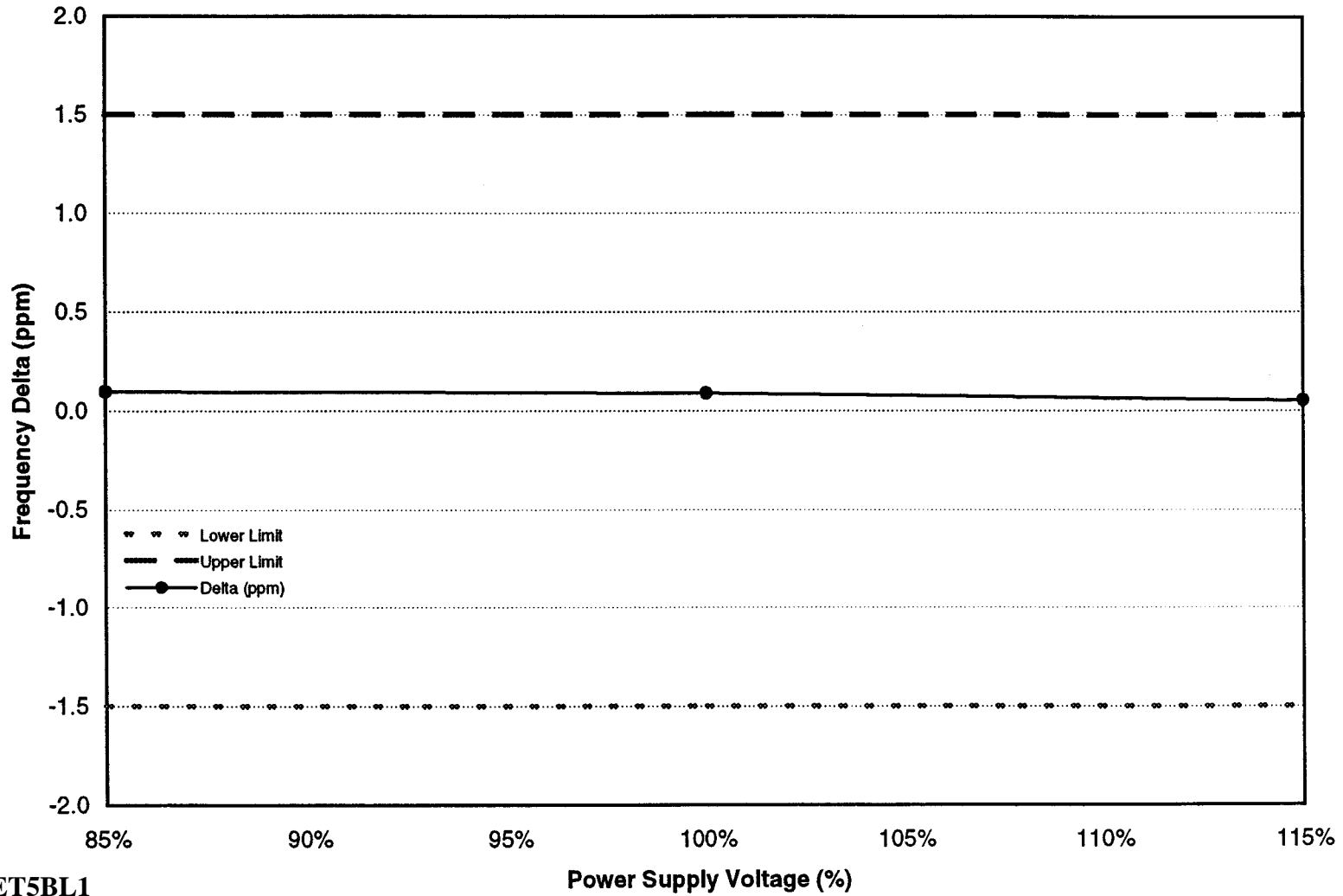
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

Frequency Stability Over Temperature - CSM2



IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

Frequency Stability with Varying Supply Voltage - CSM2



IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME