MOTOROLA

Global Telecom Solutions Sector

FCC ID: IHET5BL1

SECTION C

SPURIOUS & HARMONIC EMISSIONS RADIATED

APPLICANT: MOTOROLA TRANSCEIVER TYPE: IHET5BL1

Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC4812T @ 800MHz

Radiated Data			*Substituted Power*				*Spec*	*Result*
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
   (dBuV/M) +9.542-104.77dB=dBm
   Converting dBuV/M to dBm at 10 meters
   (dBuV/M) +20 -104.77dB=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

MOTOROLA

Global Telecom Solutions Sector

FCC ID: IHET5BL1

SECTION D

SPURIOUS & HARMONIC

EMISSIONS CONDUCTED

APPLICANT: MOTOROLA **TRANSCEIVER TYPE: IHET5BL1**

Summary of Conducted RF Measurements

SC4812T @ 800MHz

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBµV)	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 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

dBuV-107 = dBm

Engineer: Francisco Avalos 8/10/01

Francisco Avalos Date

MOTOROLA

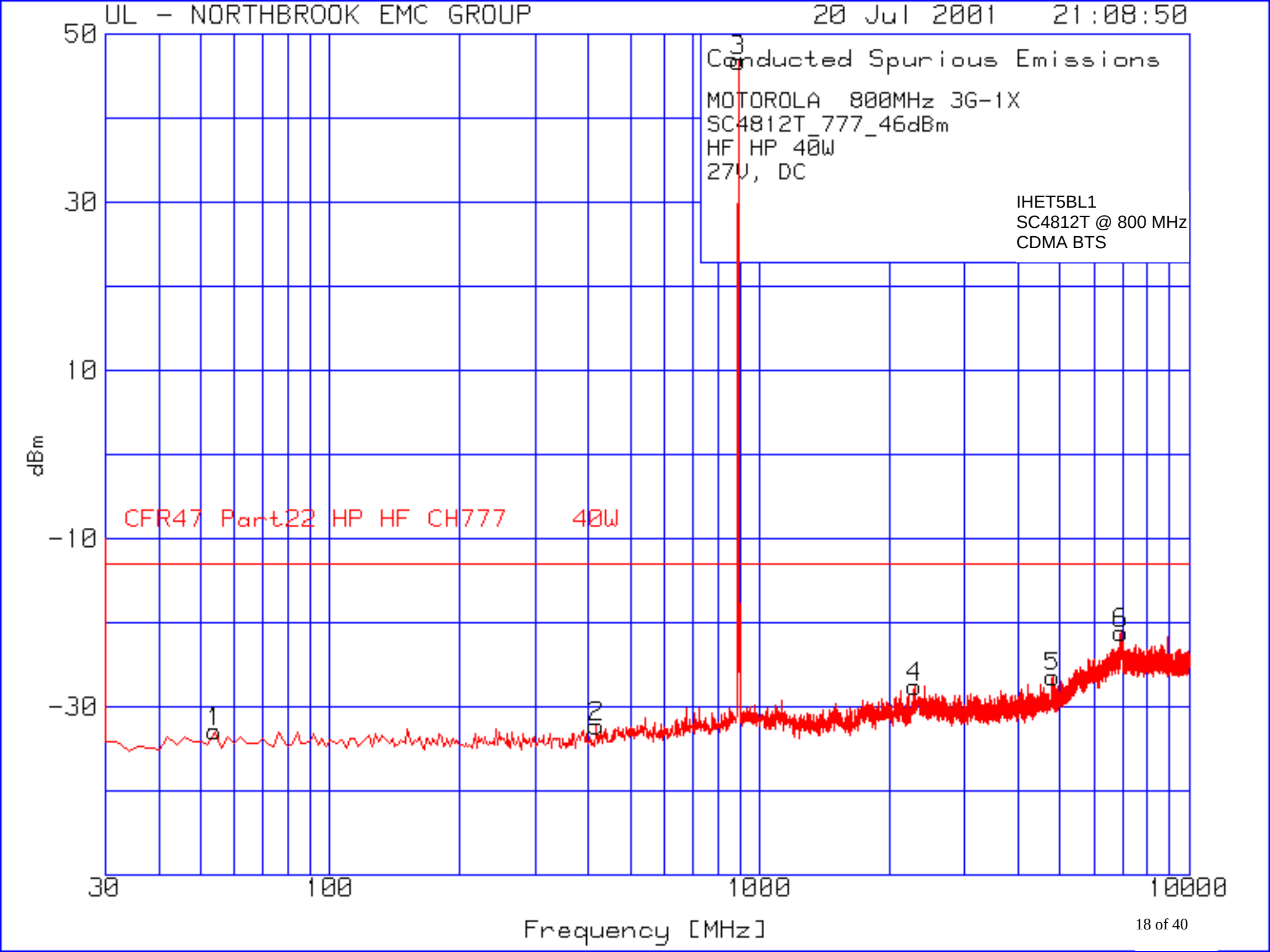
Global Telecom Solutions Sector

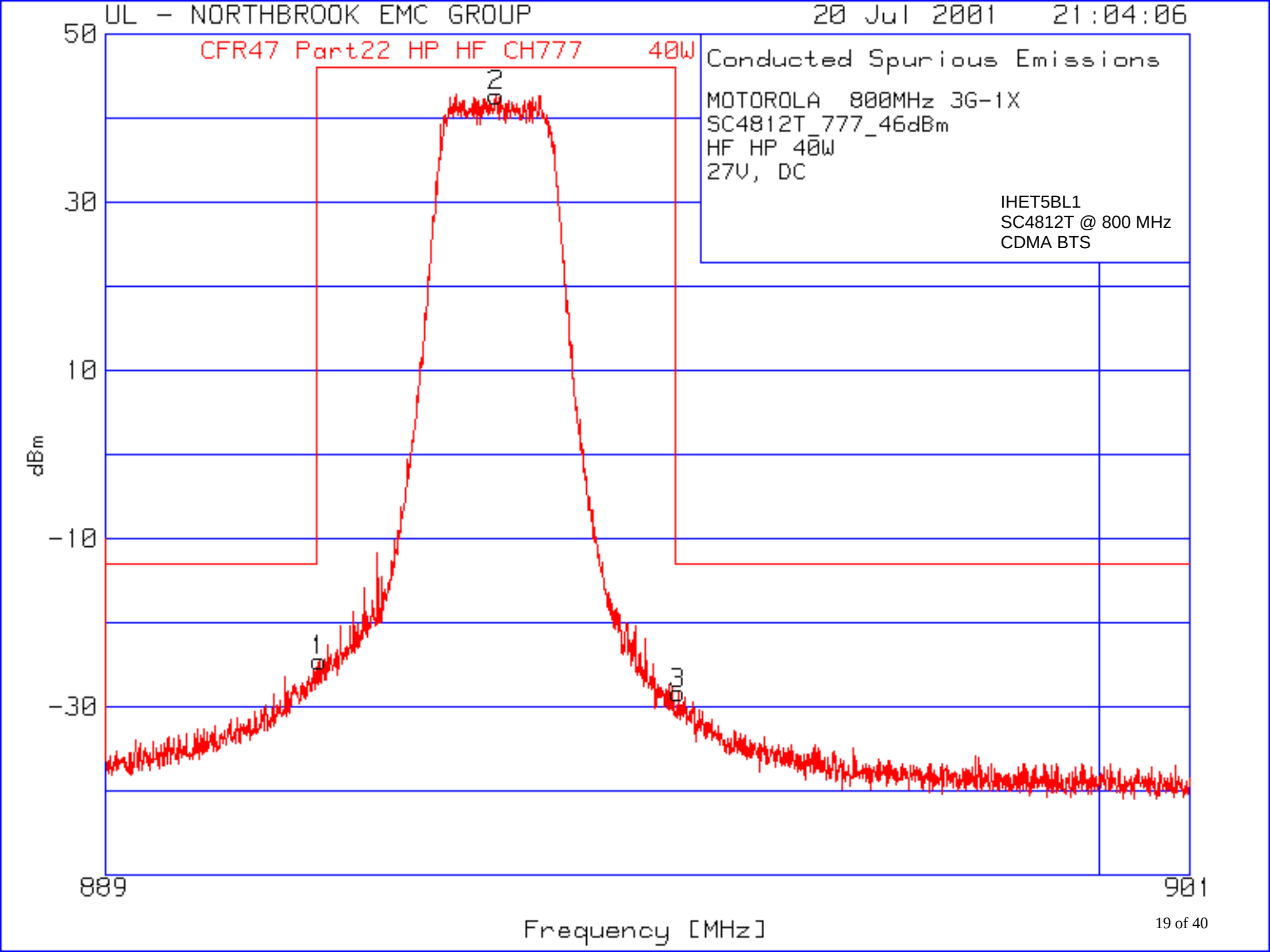
SECTION D **FCC ID: IHET5BL1**

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1013

Maximum Power


UL – NORTHBROOK EMC GROUP
20 Jul 2001 21:08:50
Conducted Spurious Emissions
MOTOROLA 800MHz 3G-1X
SC4812T_777_46dBm
HF HP 40W
27V, DC
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS
CFR47 Part22 HP HF CH777 40W
dBm
50
30
10
-10
-30
30
100
1000
10000
Frequency [MHz]
1
2
3
4
5
6


UL - NORTHBROOK EMC GROUP
20 Jul 2001 21:04:06
CFR47 Part22 HP HF CH777 40W
Conducted Spurious Emissions
MOTOROLA 800MHz 3G-1X
SC4812T_777_46dBm
HF HP 40W
27V, DC
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS
50
30
10
-10
-30
dBm
889
901
Frequency [MHz]
1
2
3

MOTOROLA

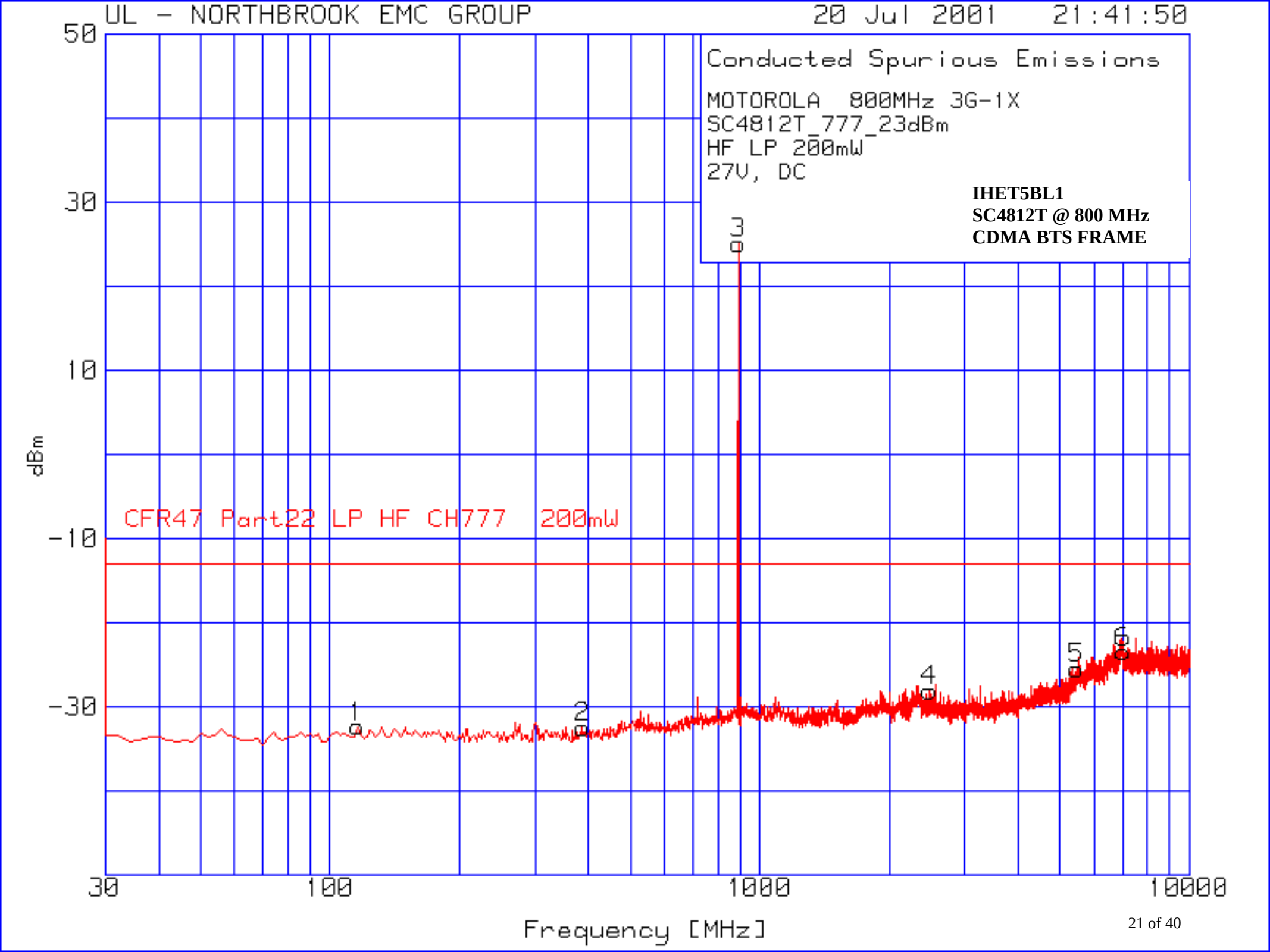
Global Telecom Solutions Sector

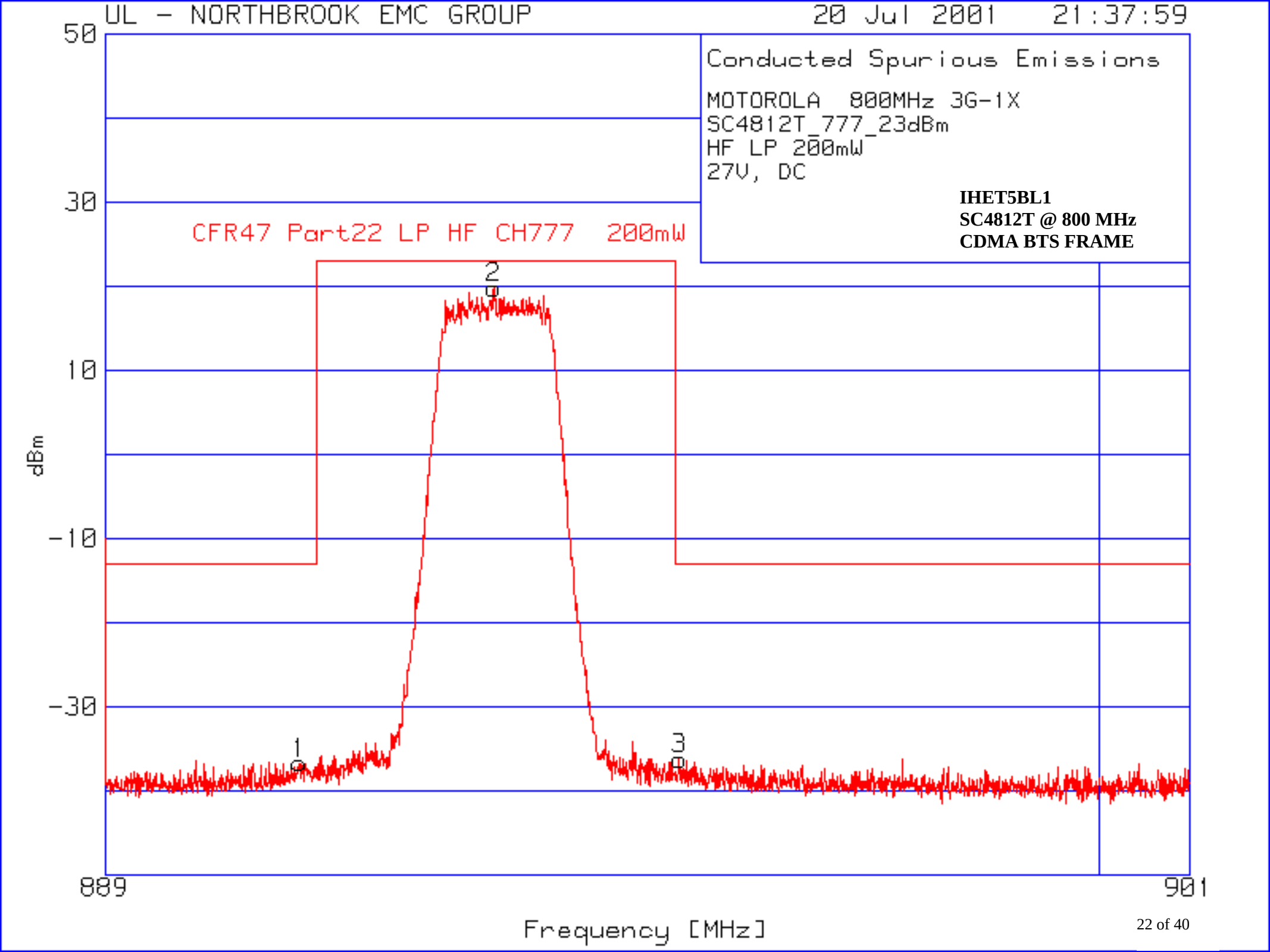
SECTION D **FCC ID: IHET5BL1**

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1013

Minimum Power


UL – NORTHBROOK EMC GROUP
20 Jul 2001 21:41:50
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
dBm
50
30
10
-10
-30
30
100
1000
10000
Frequency [MHz]
1
2
3
4
5
6


UL – NORTHBROOK EMC GROUP
20 Jul 2001 21:37:59
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
50
30
10
-10
-30
dBm
1
2
3
889
901
Frequency [MHz]

MOTOROLA

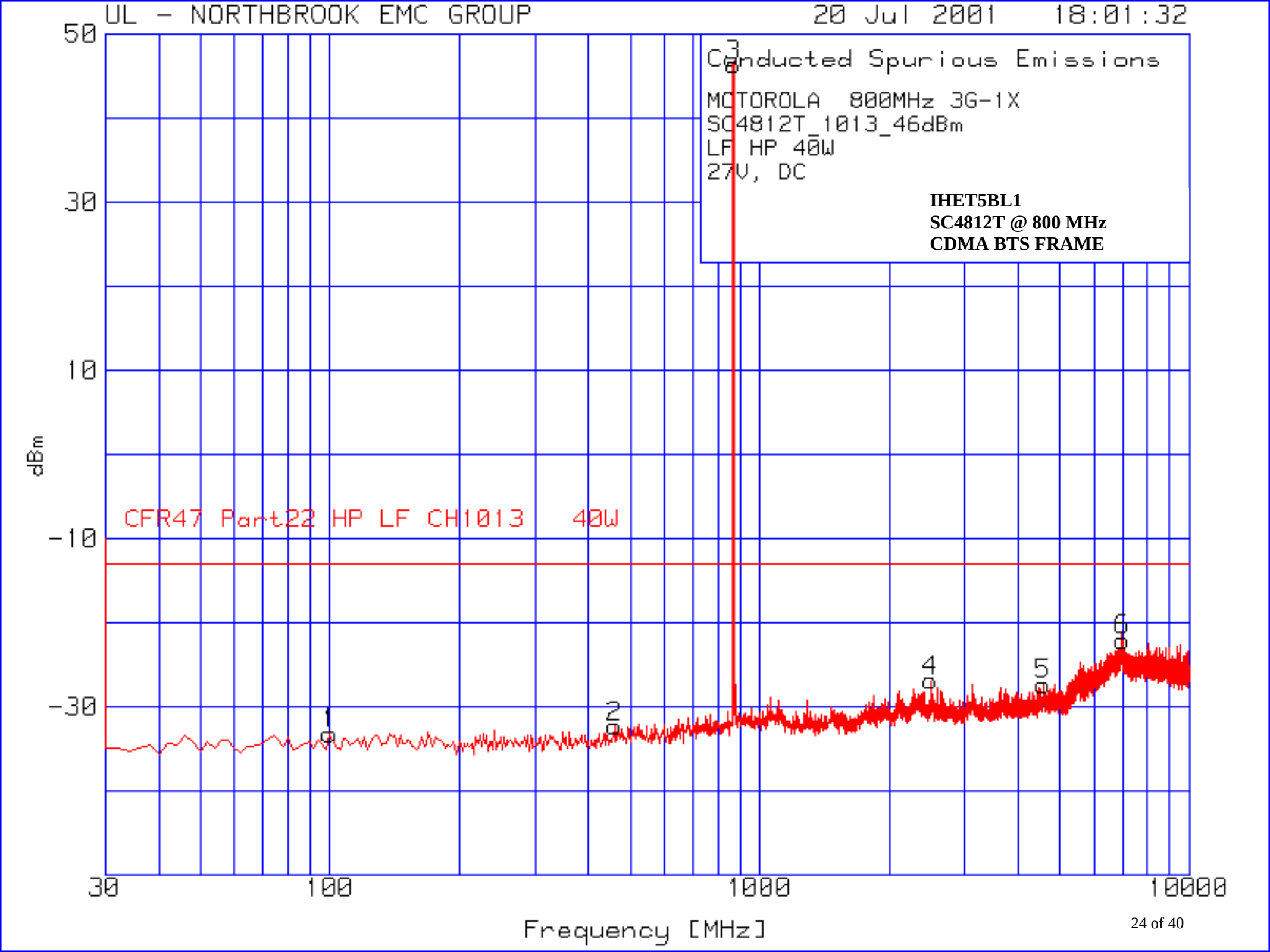
Global Telecom Solutions Sector

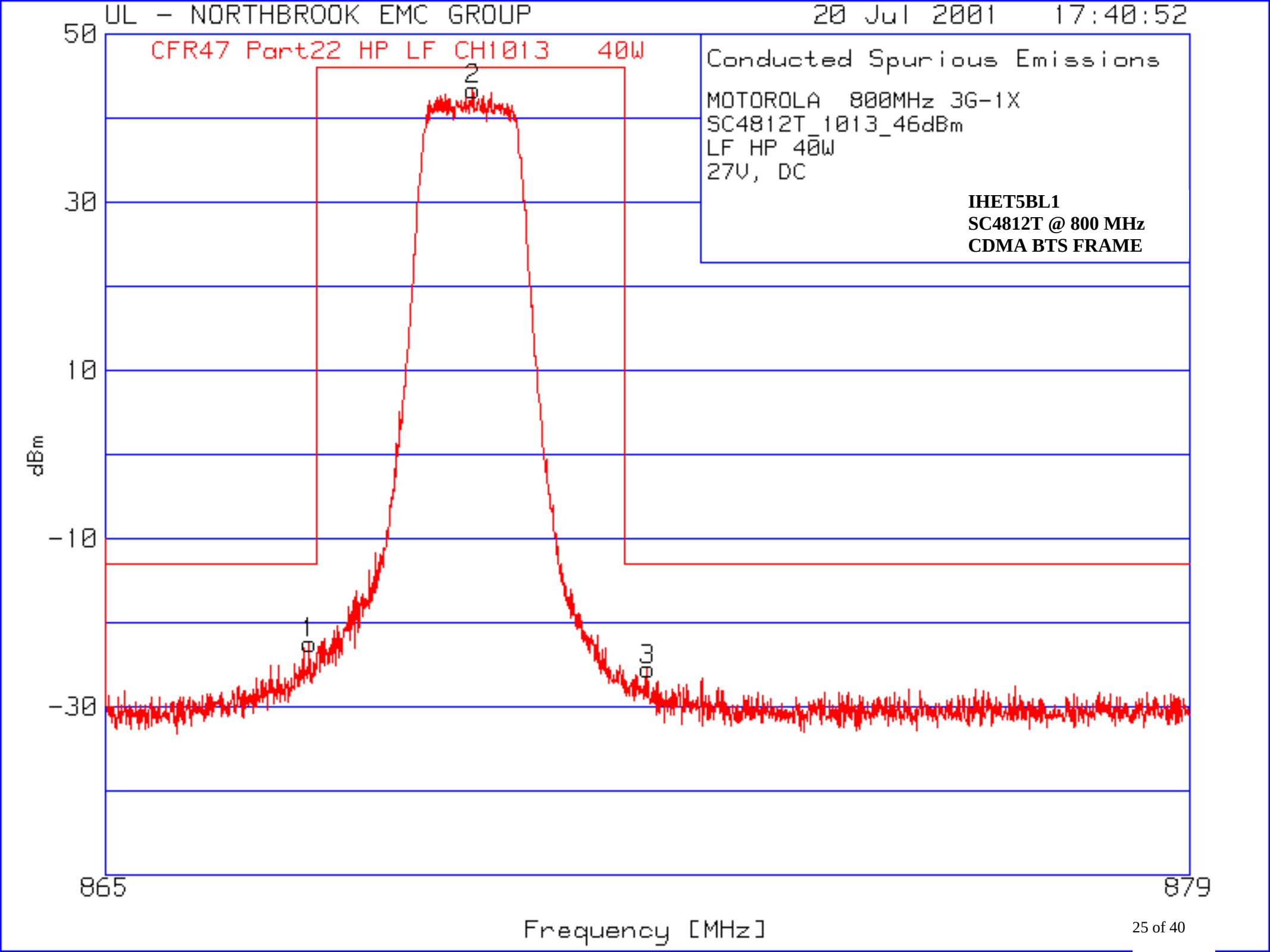
SECTION D **FCC ID: IHET5BL1**

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 777

Maximum Power


UL – NORTHBROOK EMC GROUP
20 Jul 2001 18:01:32
Conducted Spurious Emissions
MOTOROLA 800MHz 3G-1X
SC4812T_1013_46dBm
LF HP 40W
27V, DC
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME
CFR47 Part22 HP LF CH1013 40W
50
30
10
-10
-30
dBm
30
100
1000
10000
Frequency [MHz]


UL – NORTHBROOK EMC GROUP
20 Jul 2001 17:40:52
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
50
30
10
-10
-30
dBm
865
879
Frequency [MHz]

MOTOROLA

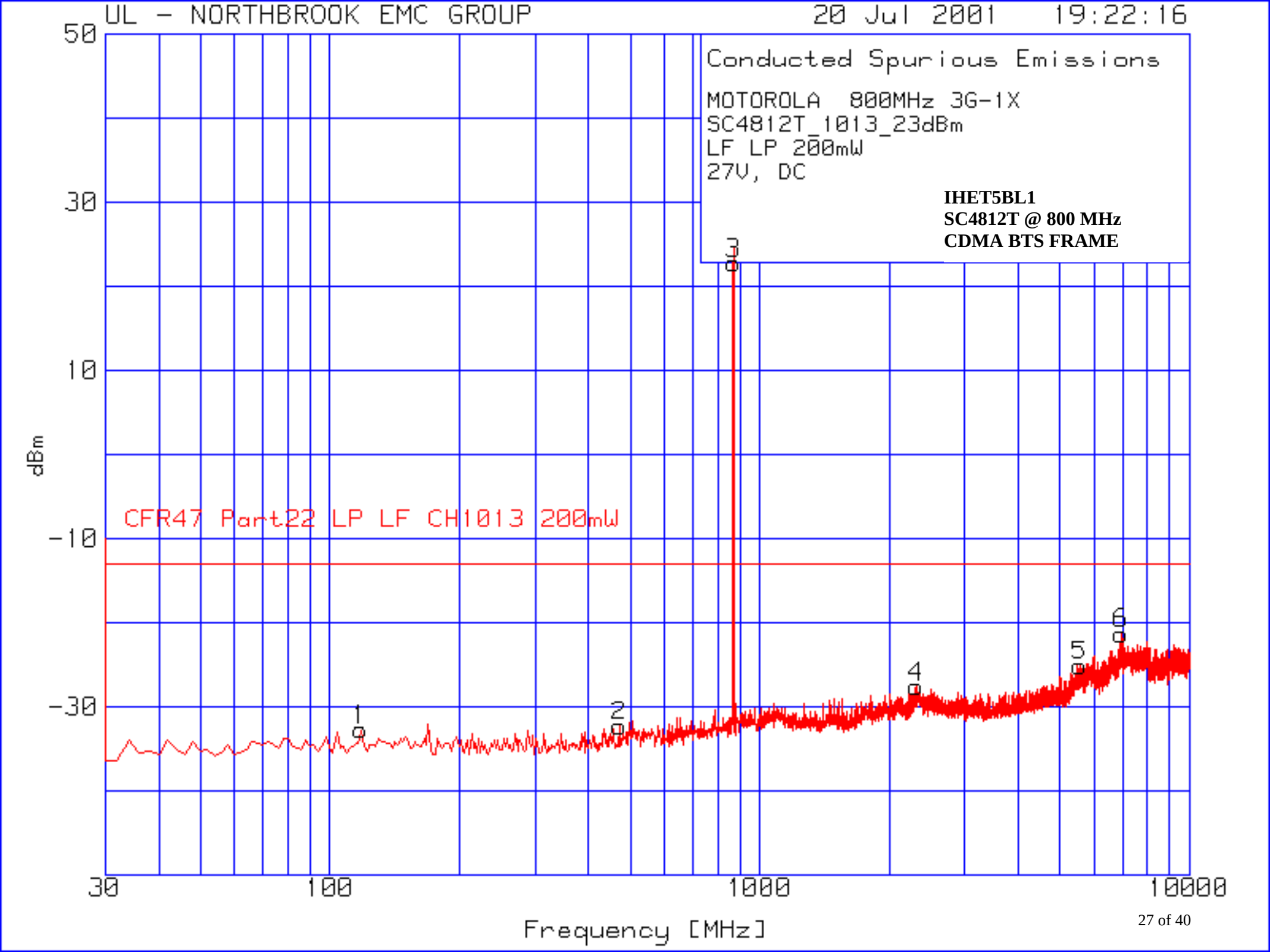
Global Telecom Solutions Sector

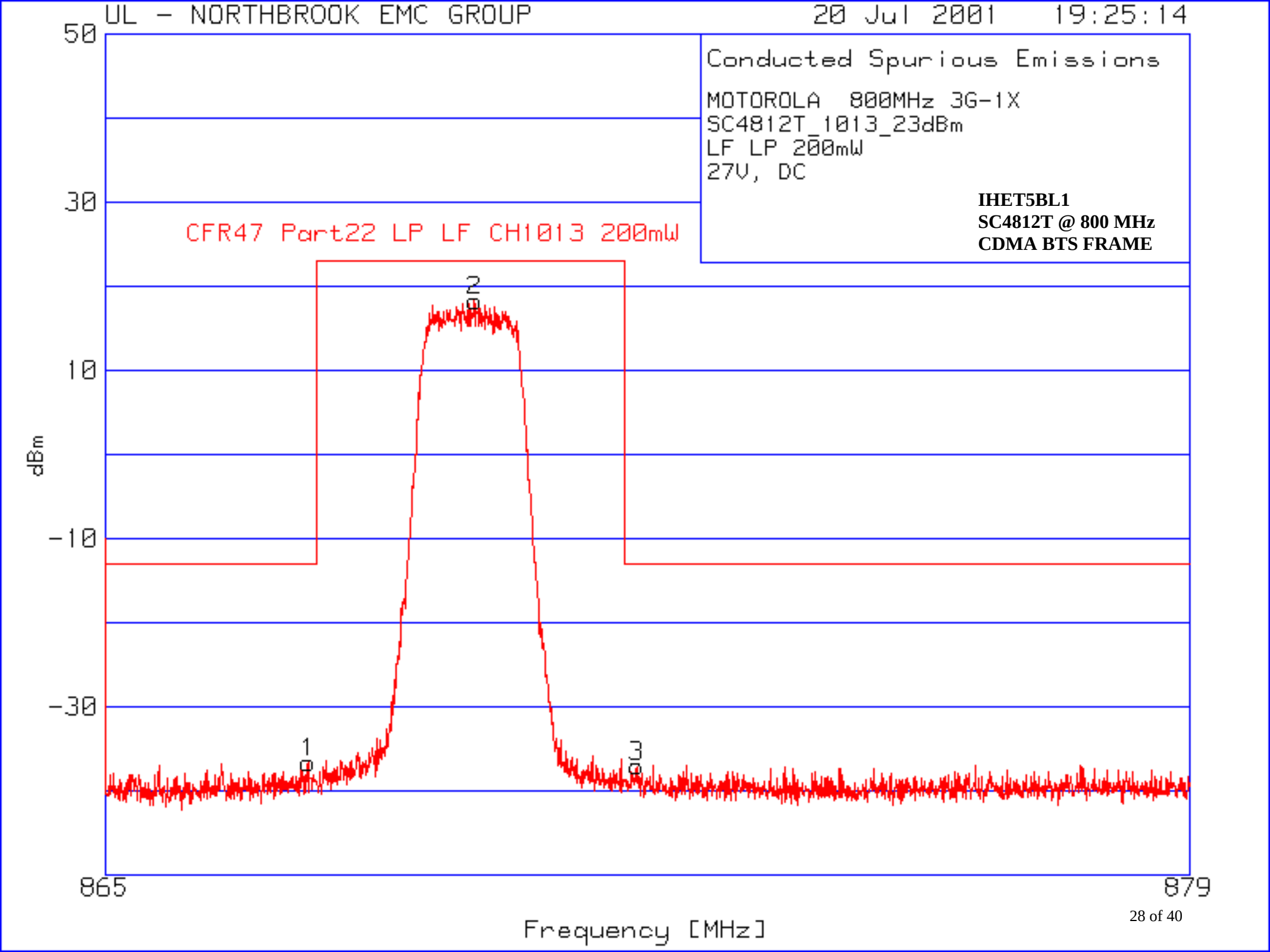
SECTION D **FCC ID: IHET5BL1**

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 777

Minimum Power


UL – NORTHBROOK EMC GROUP
20 Jul 2001 19:22:16
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
dBm
50
30
10
-10
-30
30
100
1000
10000
Frequency [MHz]
1
2
3
4
5
6


UL – NORTHBROOK EMC GROUP
20 Jul 2001 19:25:14
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
50
30
10
-10
-30
dBm
865
879
Frequency [MHz]

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:

Power (measured in 30kHz bandwidth) + 10 log (1.2288 MHz / 30 kHz)

Example: 29.88dBm + 16.12dB = 46.0dBm

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

MOTOROLA

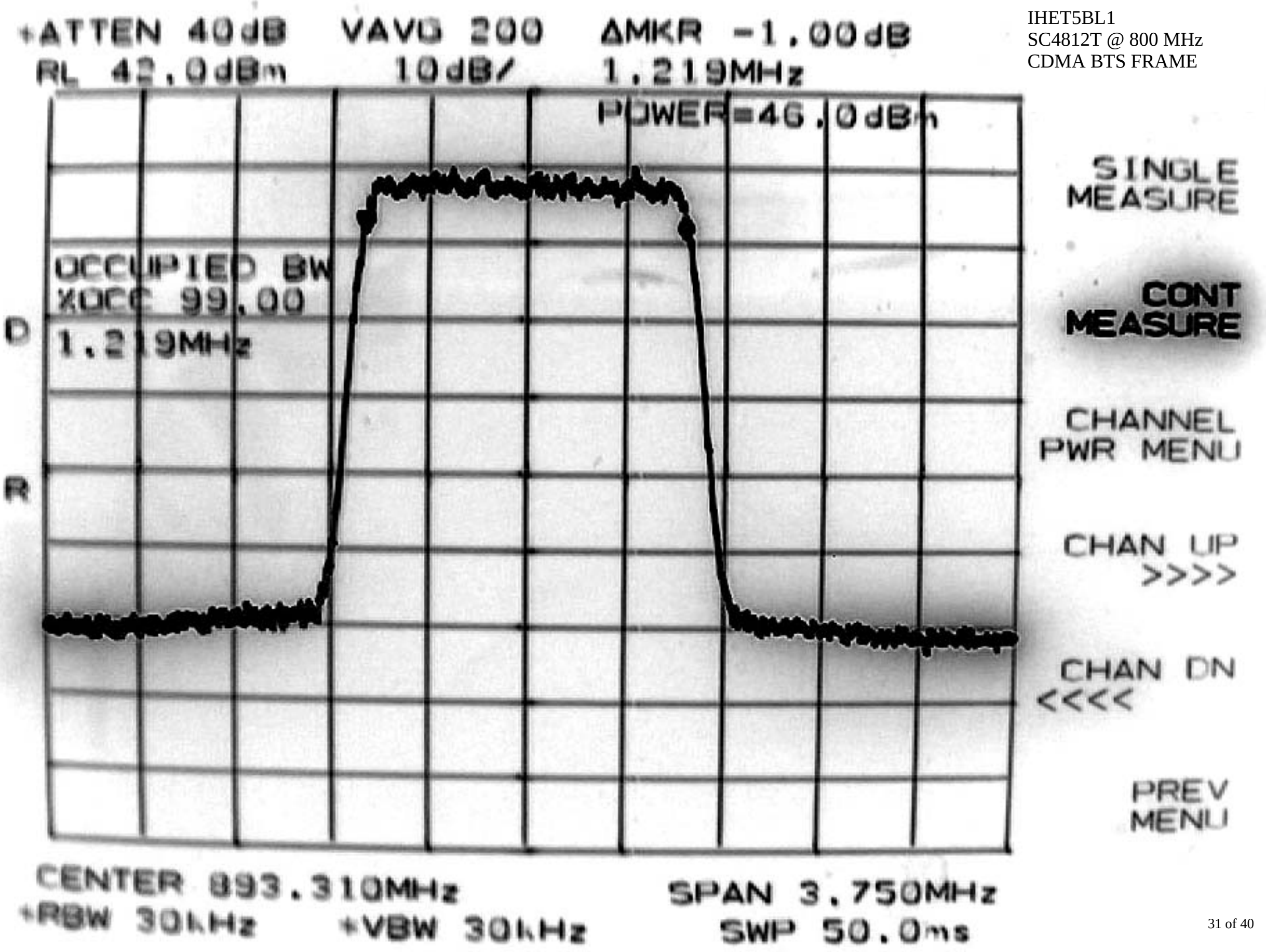
Global Telecom Solutions Sector

SECTION E **FCC ID: IHET5BL1**

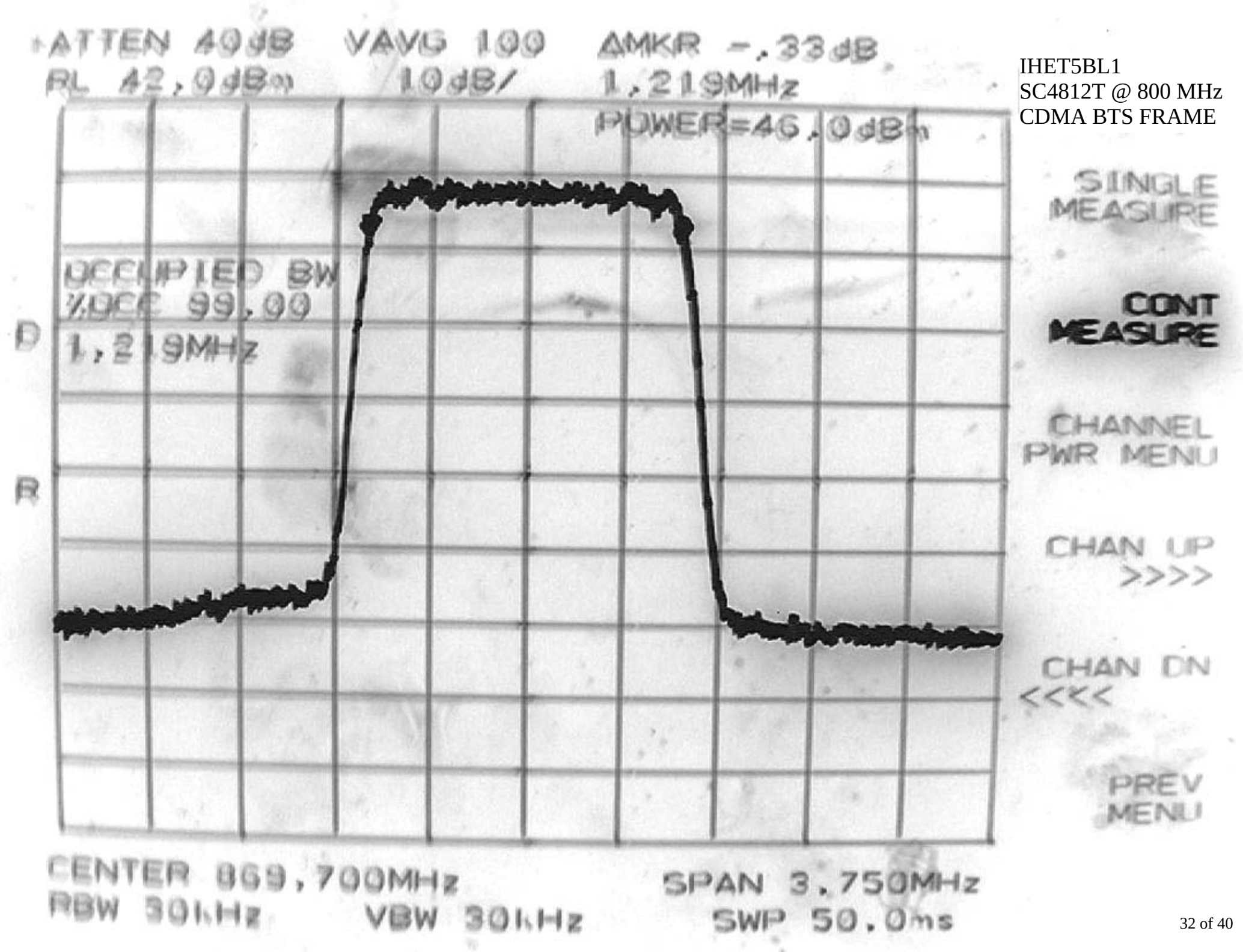
OCCUPIED BANDWIDTH

Maximum Power

IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME



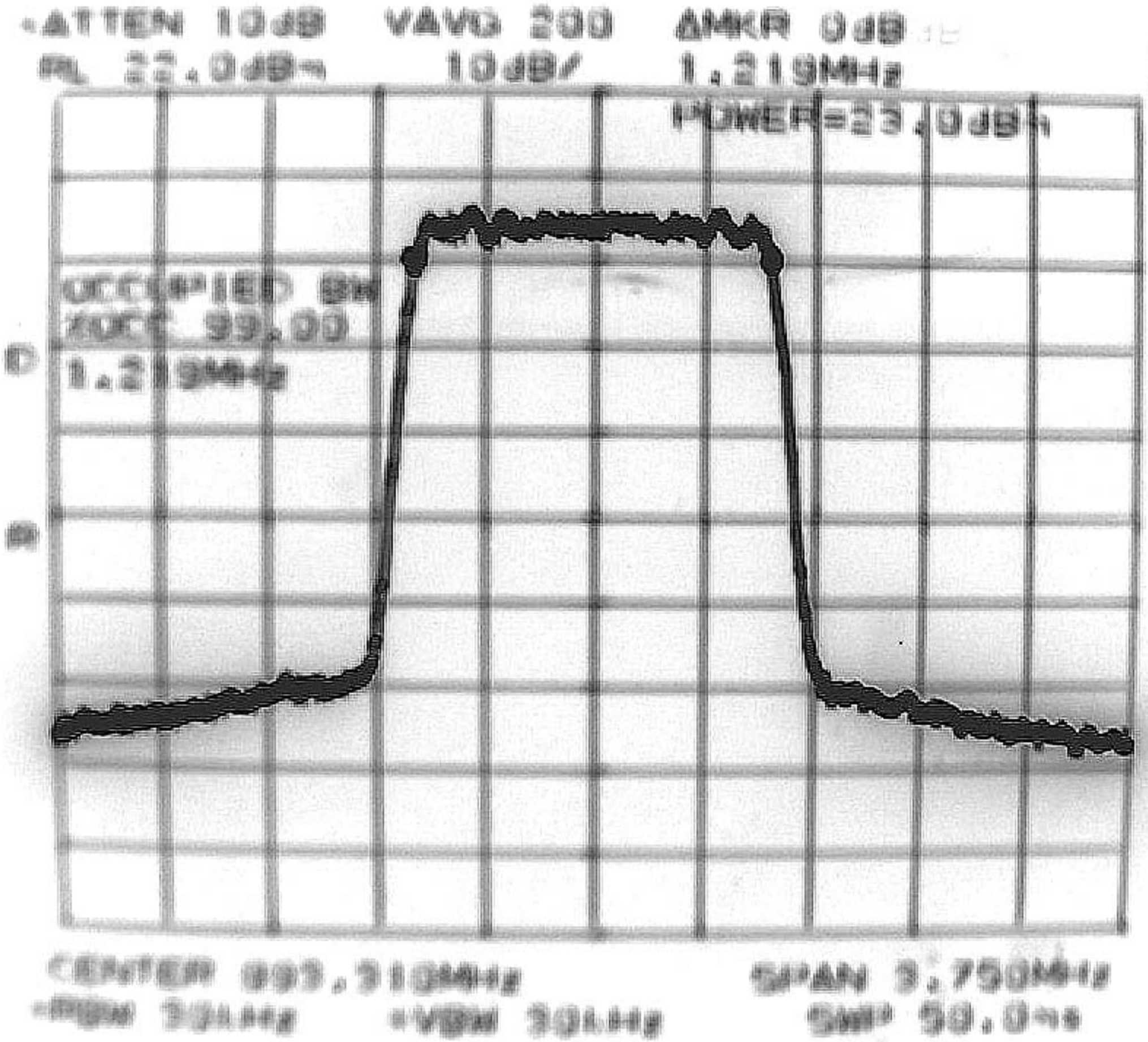
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME



OCCUPIED BANDWIDTH

Minimum Power

IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME



SINGLE MEASURE

CONT MEASURE

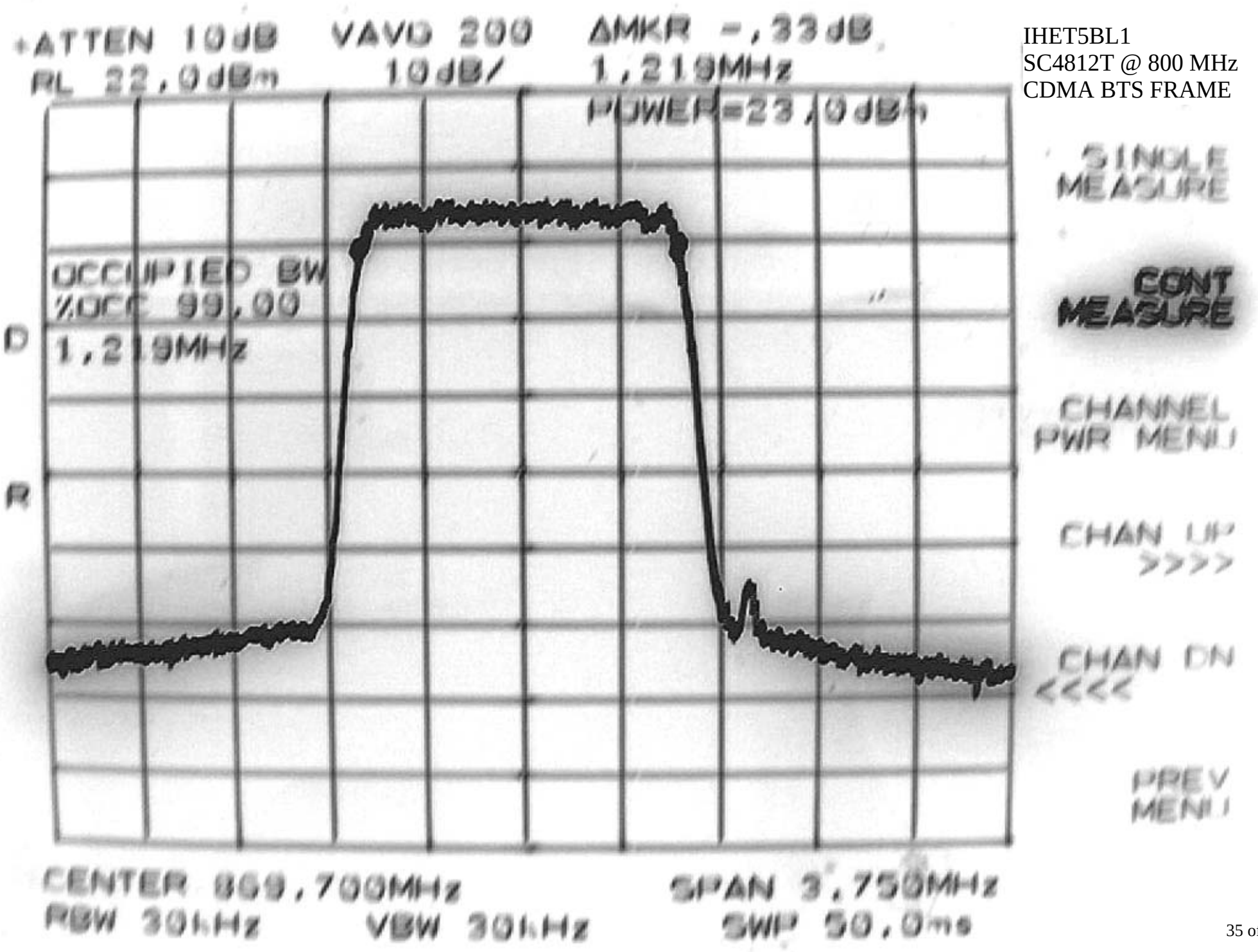
CHANNEL PWR MENU

CHAN UP >>>>

CHAN DN <<<<

OCCUPIED BW MENU

IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME



SECTION F

FREQUENCY STABILITY

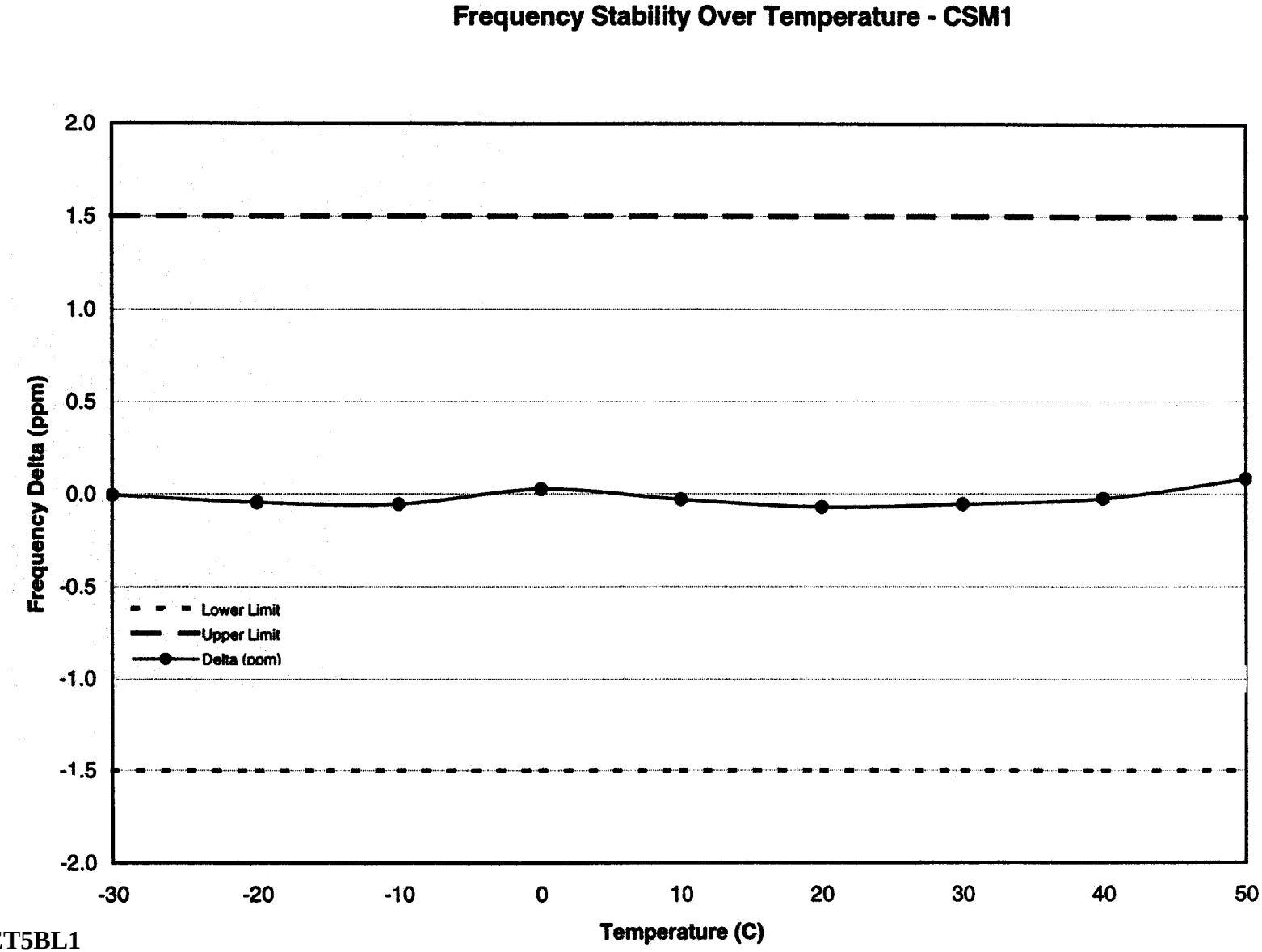
SC4812T

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

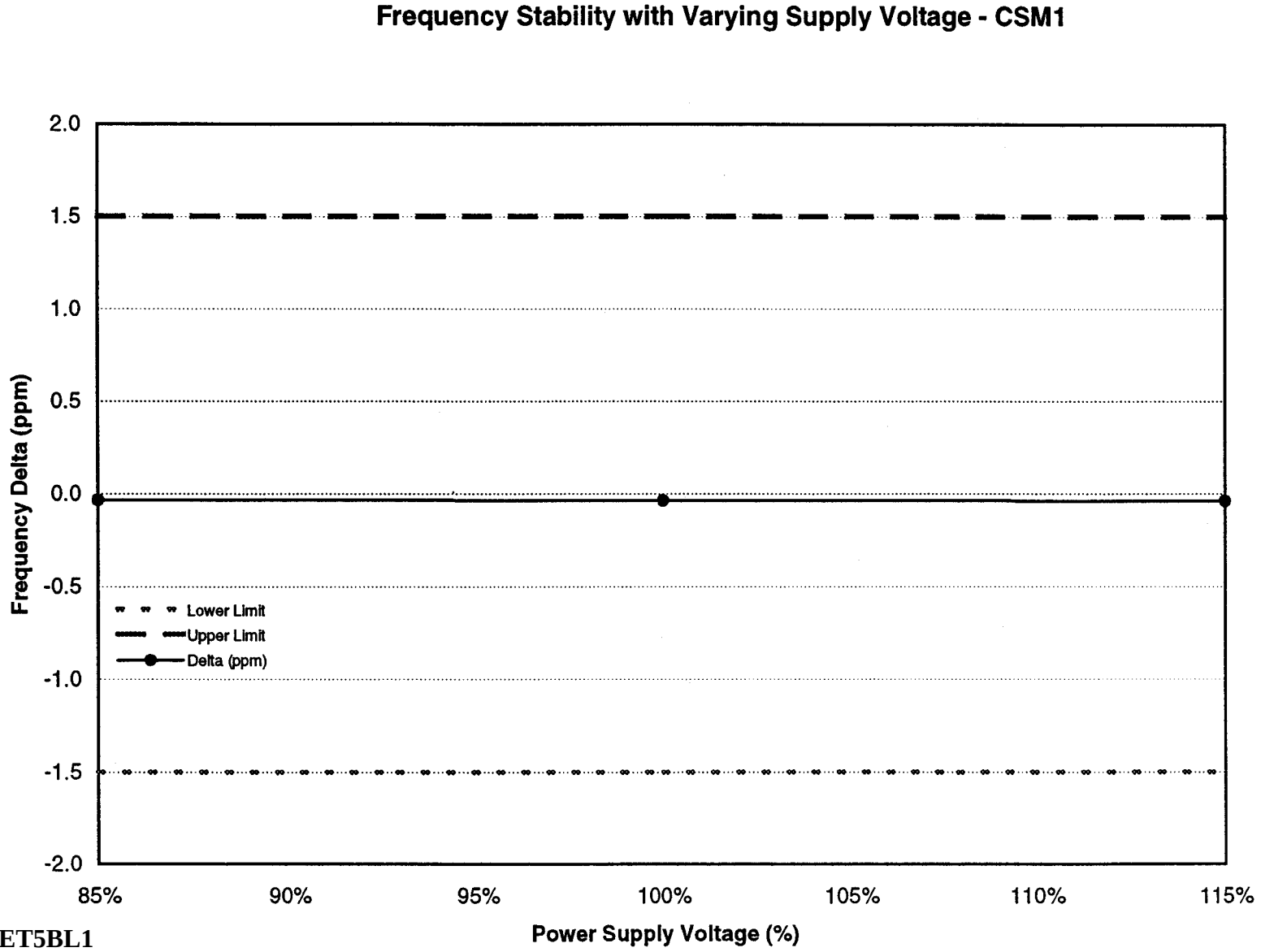
MODE	TEMPERATURE	Δ PPM	FCC REQUIREMENT	PASS/FAIL
CSM1	-30 to +50°c	<0.2	+/-1.5 ppm max	Pass
CSM2	-30 to +50°c	<0.2	+/-1.5 ppm max	Pass

Signature: _____ 8/3/01

Engineer: Terry Schwenk Date

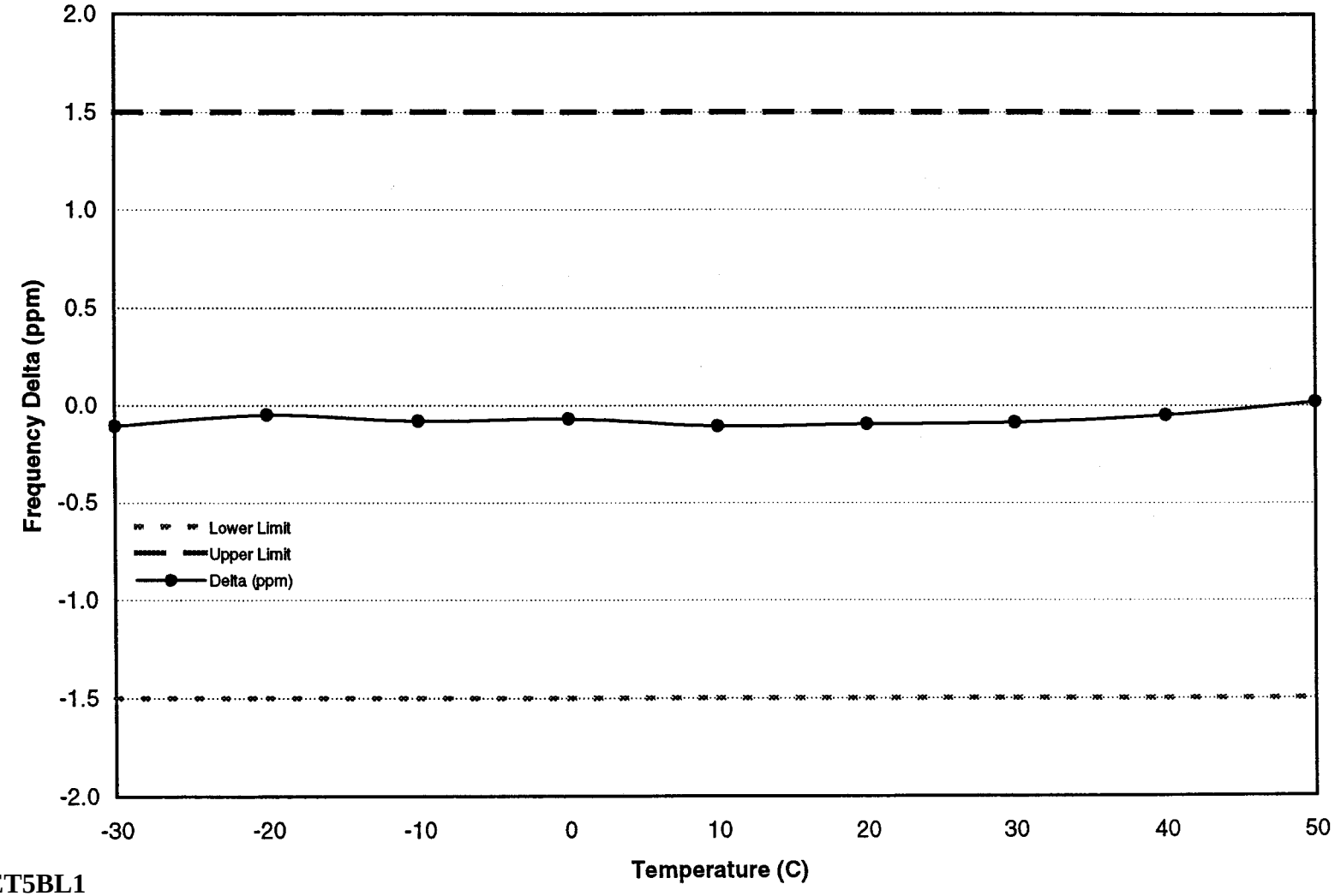


IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME



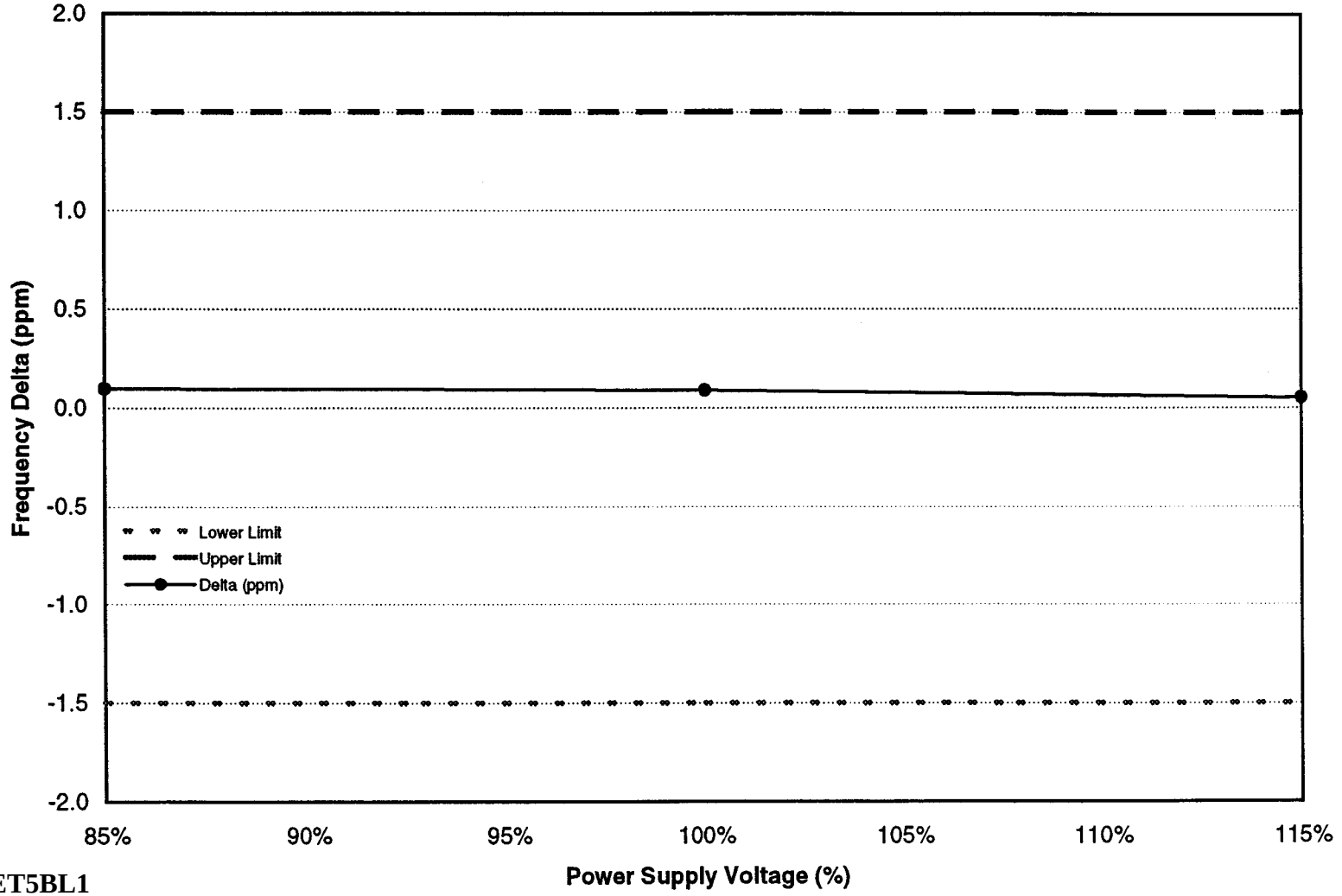
IHET5BL1
SC4812T @ 800 MHz
CDMA BTS FRAME

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