SC4812T 1X / 1X-EVDO @ 800 MHz CDMA BTS

TEST REPORT EXHIBIT

Index

Section A

Summary of RF Measurements

Summary of Radiated RF Measurements

Worst Case Radiated RF Spur Level for SC4812T 1X-EVDO @ 800MHz CDMA BTS

Radiated RF Measurements					*Spec*	*Result*
Channel	***Spurious Frequency (MHz)***	***Antenna Polarity***	***Measured Radiated Field Strength (dBuV/m)***	***Measured Radiated Field Strength (dBm) (Note 1)***	***FCC Part 22/24 MAX LIMIT (dBm)***	***(Pass/ Fail)***
770	1785	H	67.1	-28.128	-13	Pass

Worst Case Radiated RF Spur Level for SC4812T 1X @ 800MHz CDMA BTS

Radiated RF Measurements					*Spec*	*Result*
Channel	***Spurious Frequency (MHz)***	***Antenna Polarity***	***Measured Radiated Field Strength (dBuV/m)***	***Measured Radiated Field Strength (dBm) (Note 1)***	***FCC Part 22/24 MAX LIMIT (dBm)***	***(Pass/ Fail)***
777	1786	H	64.89	-30.34	-13	Pass

Notes:

1. Converting dBuV/M to dBm at 3 meters:
   (dBuV/M) + 9.542 – 104.77 = dBm
   Converting dBuV/M to dBm at 10 meters:
2. (dBuV/M) + 20 – 104.77 = dBm

10.29.03

Signature Date

Terry Schwenk

Summary of Conducted RF Measurements

SC4812T 1X-EVDO @ 800MHz CDMA BTS

FCC Part 22

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
770	6912.382	85.45	-21.55	-13	Pass

SC4812T 1X @ 800MHz CDMA BTS

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
1013	8697	66.85	-39.15	-13	Pass

Francisco J Avalos 10.29.03

Signature Date

Francisco Avalos

Section B

Summary of Modulation Characteristics

SC4812T 1X-EVDO @ 800MHz CDMA BTS

CHANNEL	TUNE FREQUENCY (MHz)	RHO Measured	RHO Specifications	PASS / FAIL
770	893.10	.99668	> 0.912	Pass
1020	869.91	.99685	> 0.912	Pass

SC4812T 1X @ 800MHz CDMA BTS

CHANNEL	TUNE FREQUENCY (MHz)	RHO Measured	RHO Specifications	PASS / FAIL
777	893.31	.9868	> 0.912	Pass
1013	869.7	.9856	> 0.912	Pass

The BTS was configured for maximum power out of 47.78 dBm and minimum power out of 36.5 dBm respectively. The output power was set respectively to 60.0 Watts or 4.5 Watts using an HP437B power meter

Francisco J Avalos 10.29.03

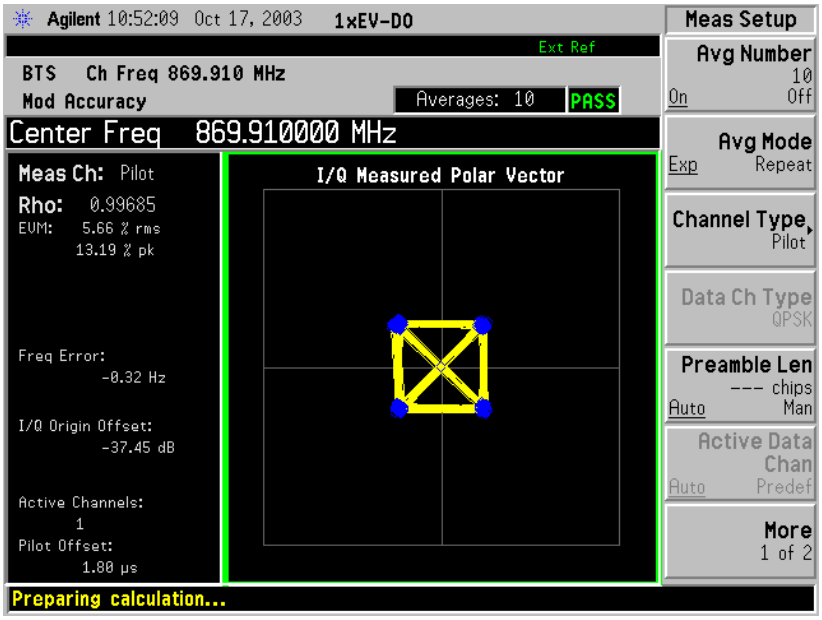
Signature Date

Francisco Avalos

SC4812T 1X-EVDO – Modulation Characteristics

High Power – 47.78 dBm – 8PSK

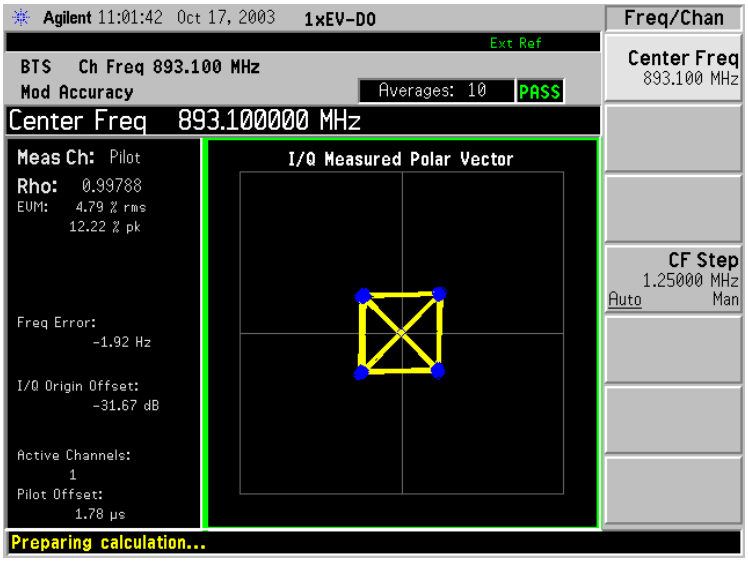
Channel 770 – 893.1 MHz



Channel 1020 – 869.91 MHz

SC4812T 1X-EVDO – Modulation Characteristics

High Power – 47.78 dBm – 16QAM

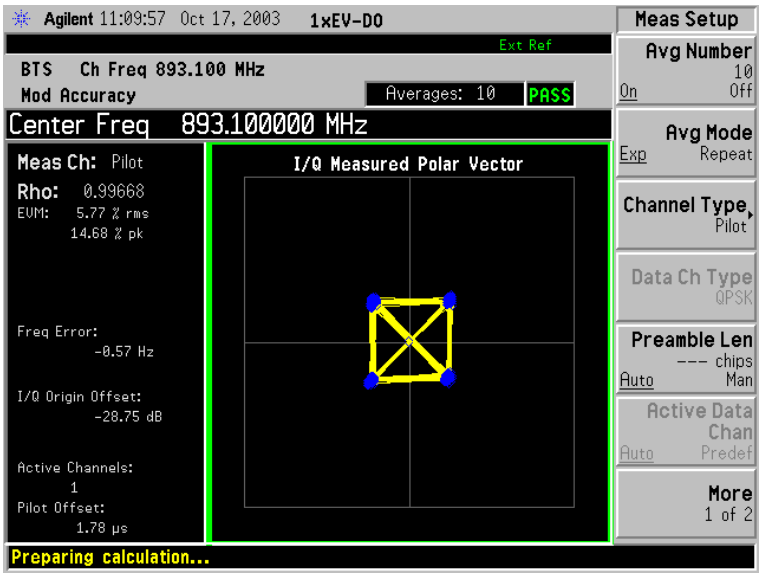


Channel 770 – 893.1 MHz

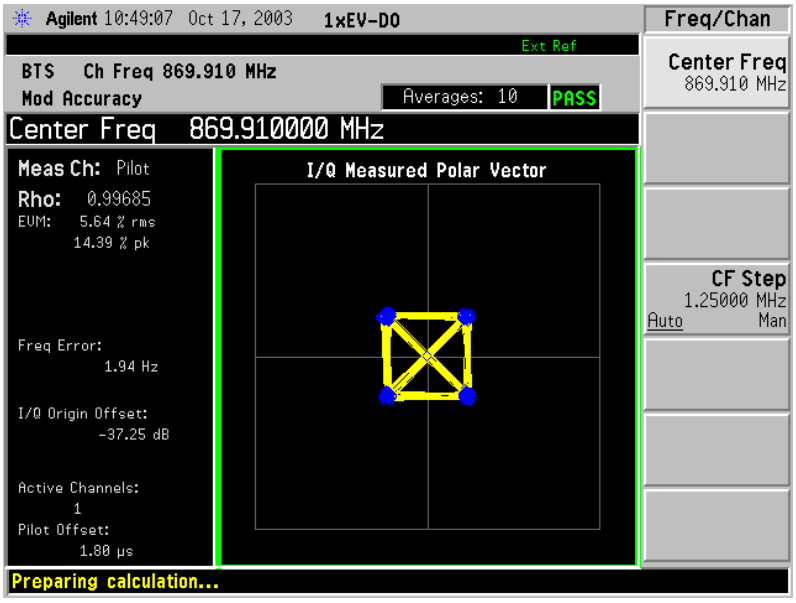
Channel 1020 – 869.91 MHz

SC4812T 1X-EVDO – Modulation Characteristics

Low Power – 36.5 dBm – 8PSK



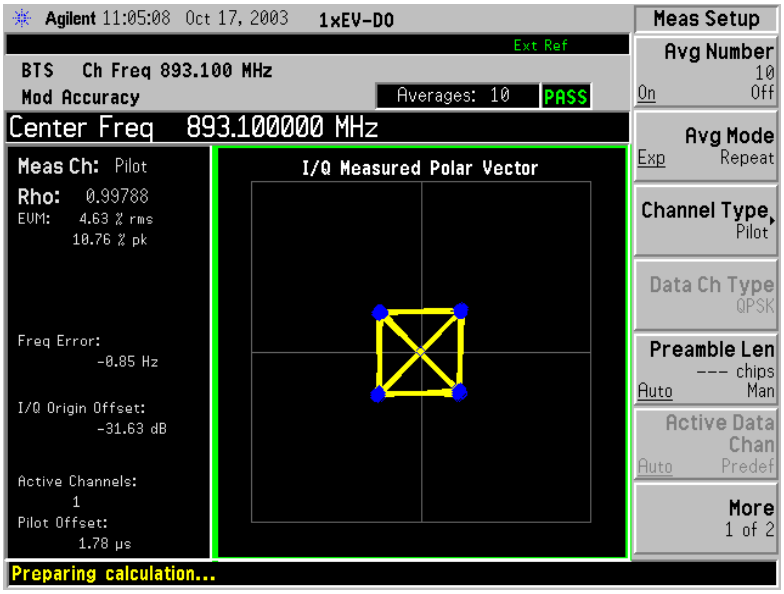
Channel 770 – 893.1 MHz



Channel 1020 – 869.91 MHz

SC4812T 1X-EVDO – Modulation Characteristics

Low Power – 36.5 dBm – 16QAM

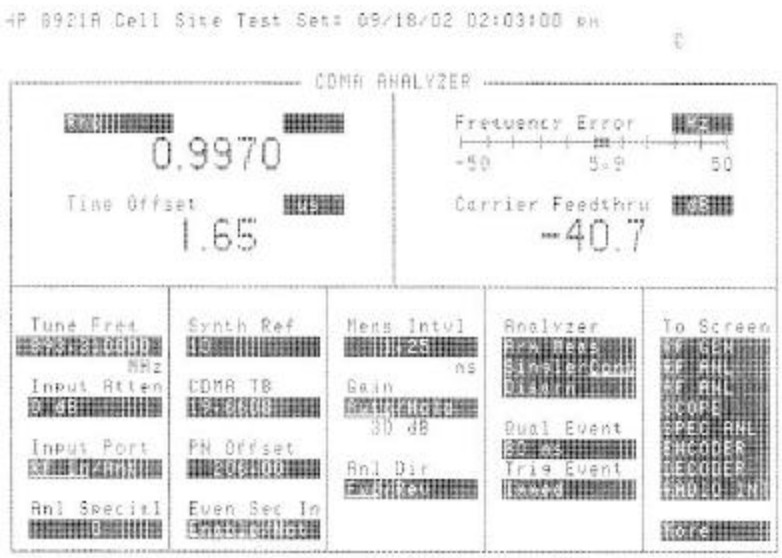


Channel 770 – 893.1 MHz

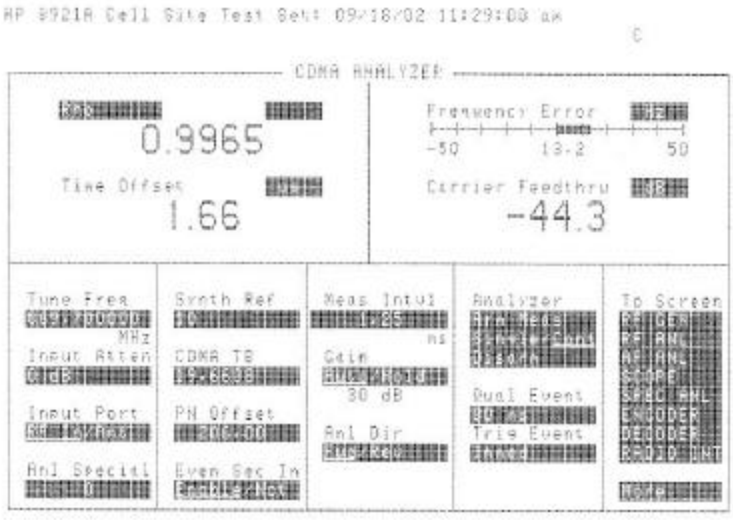
Channel 1020 – 869.91 MHz

SC4812T 1X – Modulation Characteristics

High Power – 47.78 dBm



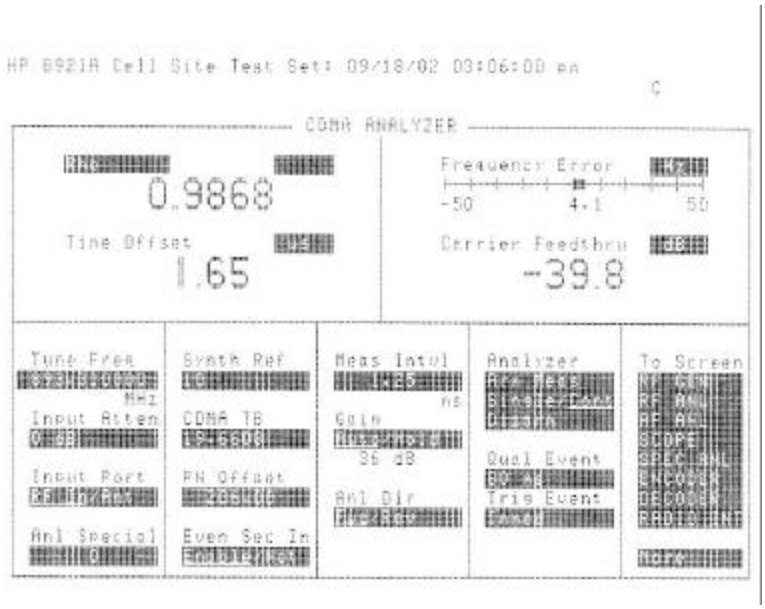
Channel 777 – 893.31 MHz



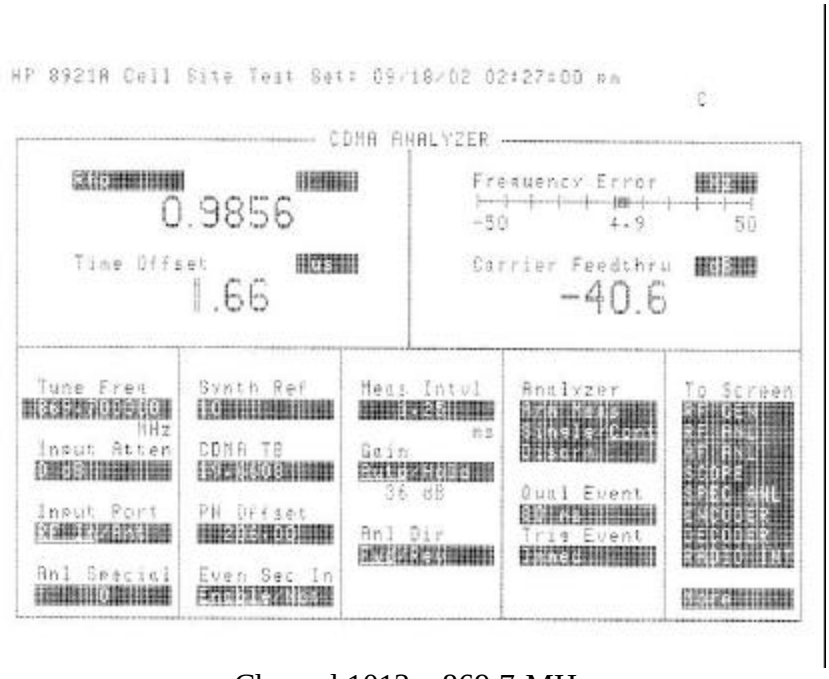
Channel 1013 – 869.7 MHz

SC4812T 1X – Modulation Characteristics

Low Power – 26.0 dBm



Channel 777 – 893.31 MHz



Channel 1013 – 869.7 MHz

Section C

Spurious and Harmonic Emissions Radiated

Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC4812T 1X-EVDO @ 800MHz CDMA BTS

Radiated RF Measurements					*Spec*	*Result*
Channel	***Spurious Frequency (MHz)***	***Antenna Polarity***	***Measured Radiated Field Strength (dBuV/m)***	***Measured Radiated Field Strength (dBm) (Note 1)***	***FCC Part 22/24 MAX LIMIT (dBm)***	***(Pass/ Fail)***
770	1785	H	67.1	-28.128	-13	Pass
1020	1785	V	65.4	-29.828	-13	Pass

Worst Case Radiated RF Spur Levels for SC4812T 1X @ 800MHz CDMA BTS

Radiated RF Measurements					*Spec*	*Result*
Channel	***Spurious Frequency (MHz)***	***Antenna Polarity***	***Measured Radiated Field Strength (dBuV/m)***	***Measured Radiated Field Strength (dBm) (Note 1)***	***FCC Part 22/24 MAX LIMIT (dBm)***	***(Pass/ Fail)***
777	1786	H	64.89	-30.34	-13	Pass
1013	1739	V	63.513	-31.72	-13	Pass

Notes:

1. Converting dBuV/M to dBm at 3 meters:
   (dBuV/M) + 9.542 – 104.77 = dBm
   Converting dBuV/M to dBm at 10 meters:
   (dBuV/M) + 20 – 104.77 = dBm

10.29.03

Signature Date

Terry Schwenk

Section C

Spurious and Harmonic Emissions Conducted

Conducted RF Measurements

SC4812T 1X-EVDO @ 800MHz CDMA BTS
FCC Part 22

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
770	6912.382	85.45	-21.55	-13	Pass
1020	6960.992	85.26	-21.74	-13	Pass

SC4812T 1X @ 800MHz CDMA BTS
FCC Part 22

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
1013	8697	66.85	-39.15	-13	Pass

FCC Maximum 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

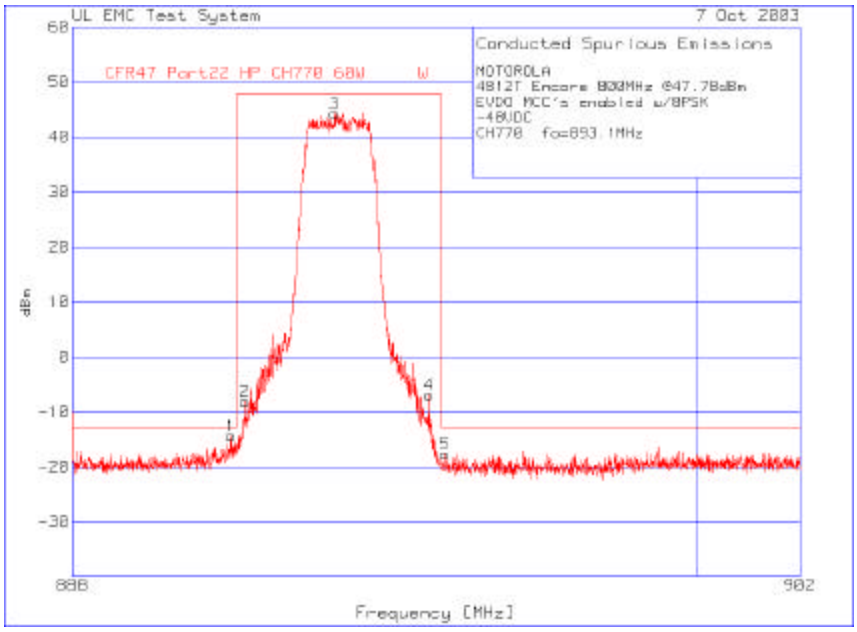
Francisco J Avalos 10.29.03

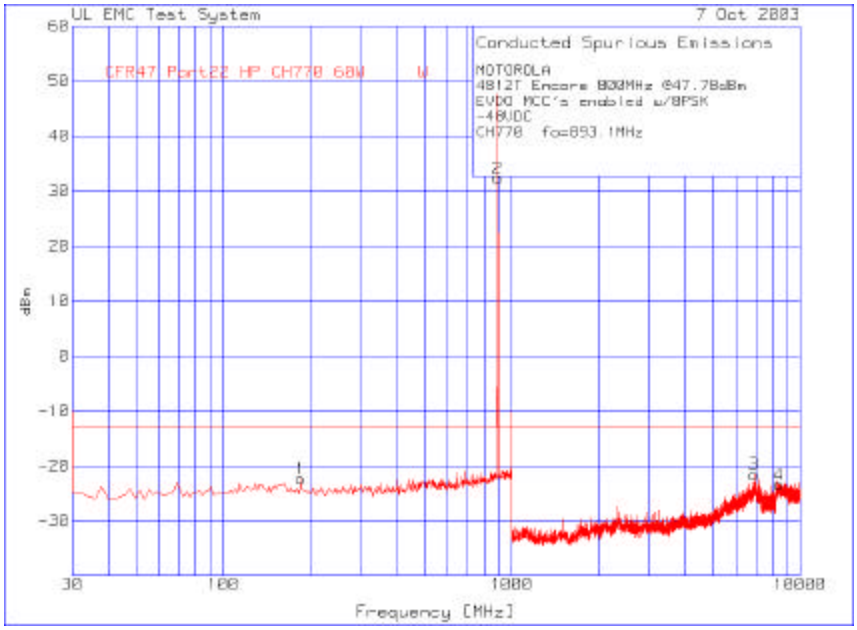
Signature Date

Francisco Avalos

Spurious and Harmonic Emissions Conducted

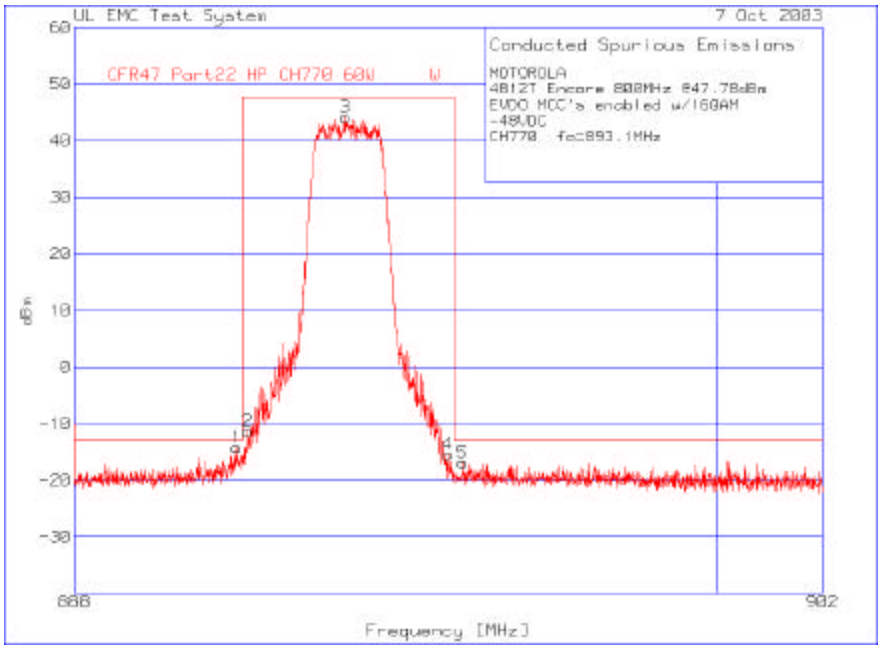
CDMA Channel 770 – 47.78 dBm – 8PSK

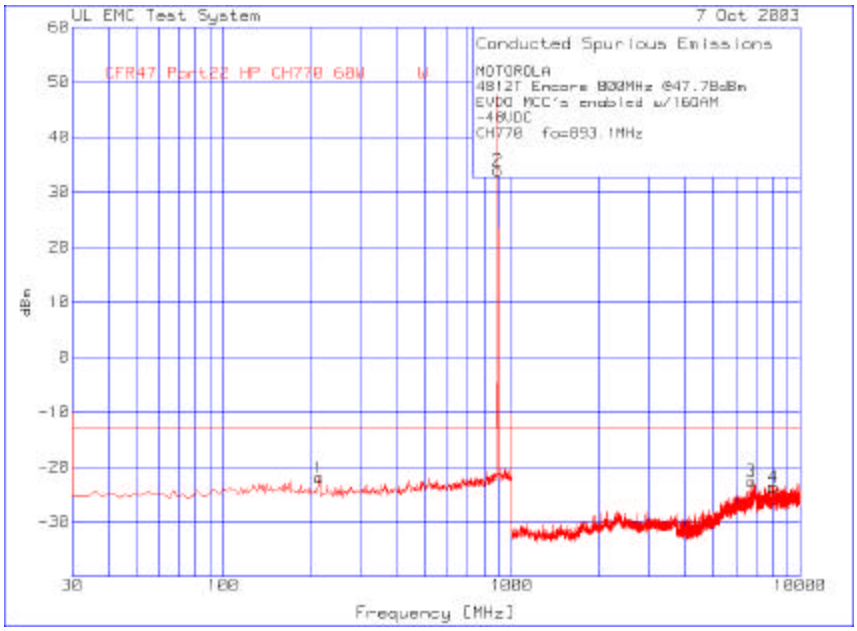




Spurious and Harmonic Emissions Conducted

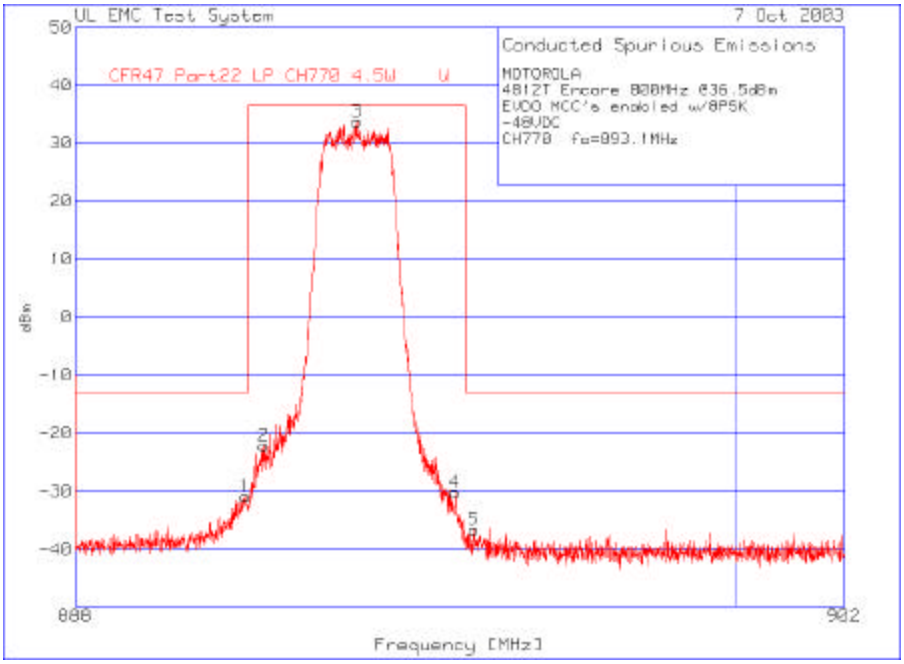
CDMA Channel 770 – 47.78 dBm – 16QAM

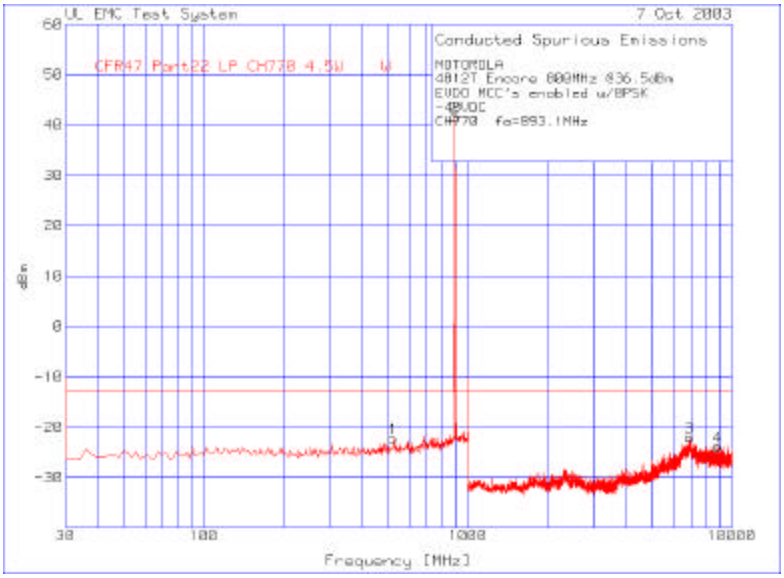




Spurious and Harmonic Emissions Conducted

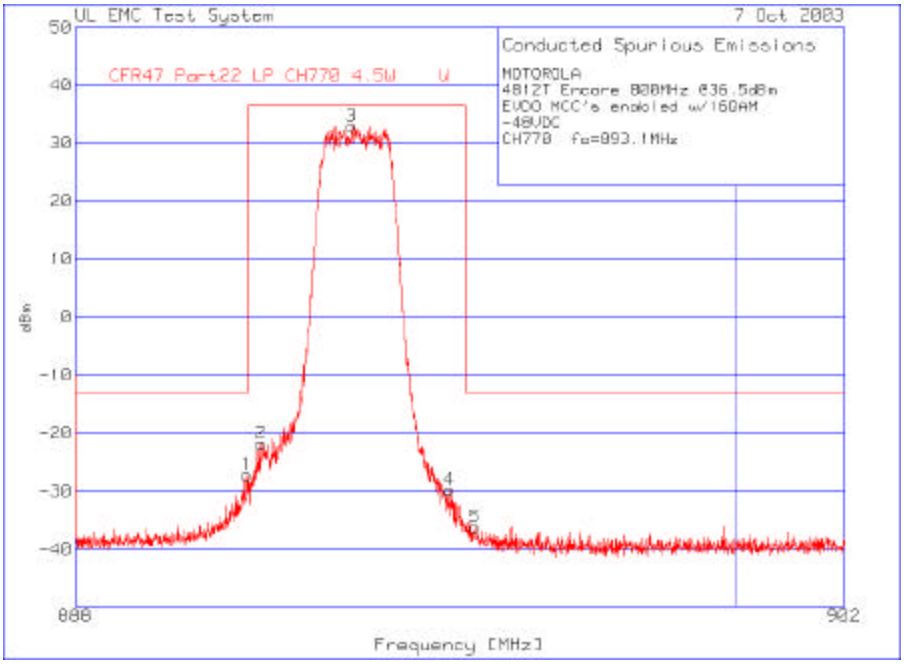
CDMA Channel 770 – 36.5 dBm – 8PSK

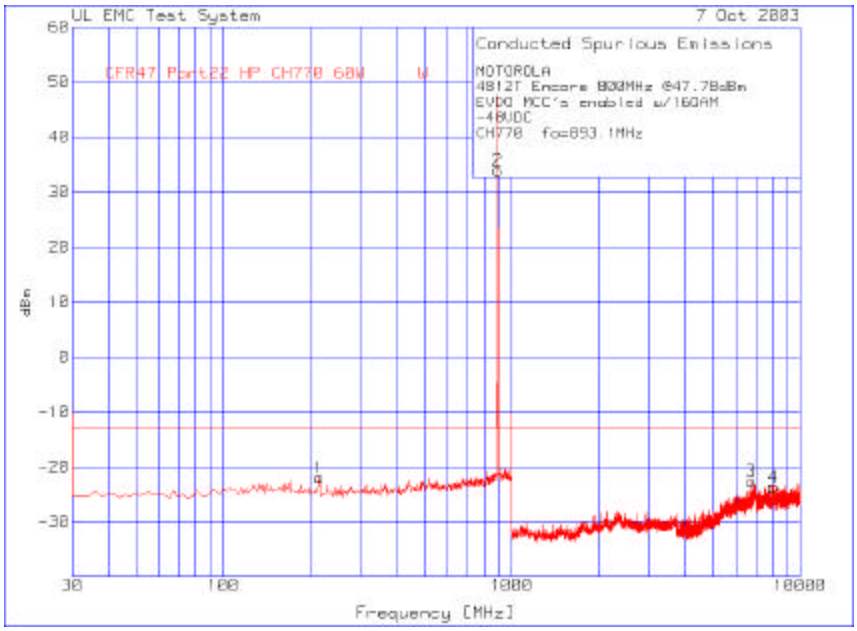




Spurious and Harmonic Emissions Conducted

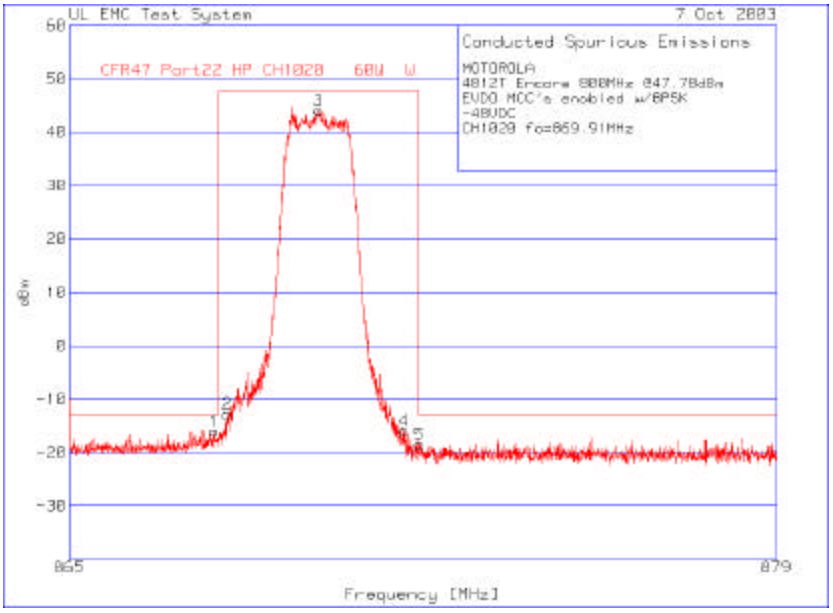
CDMA Channel 770 – 36.5 dBm – 16QAM

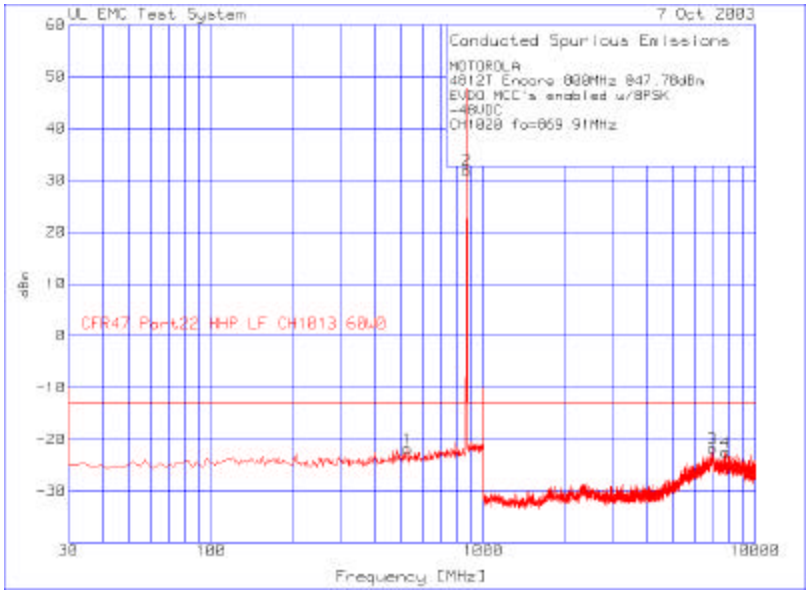




Spurious and Harmonic Emissions Conducted

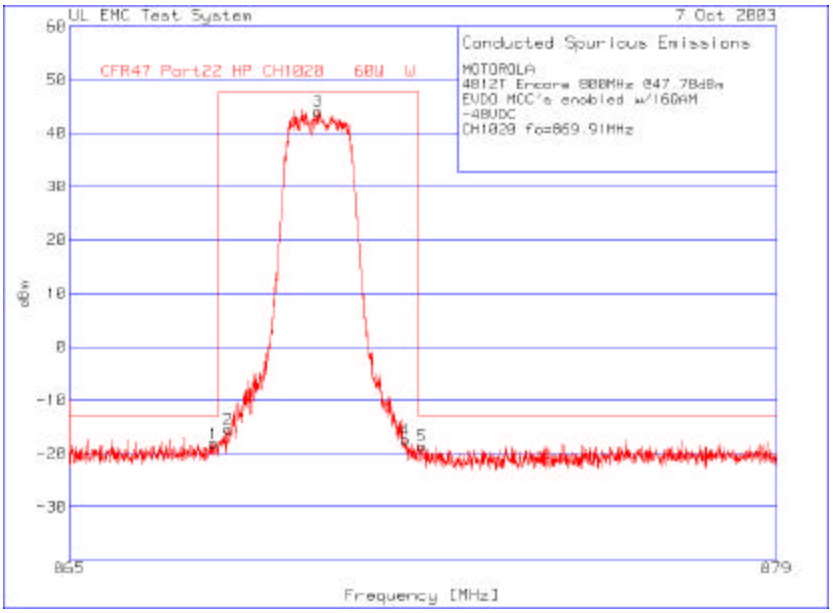
CDMA Channel 1020 – 47.78 dBm – 8PSK

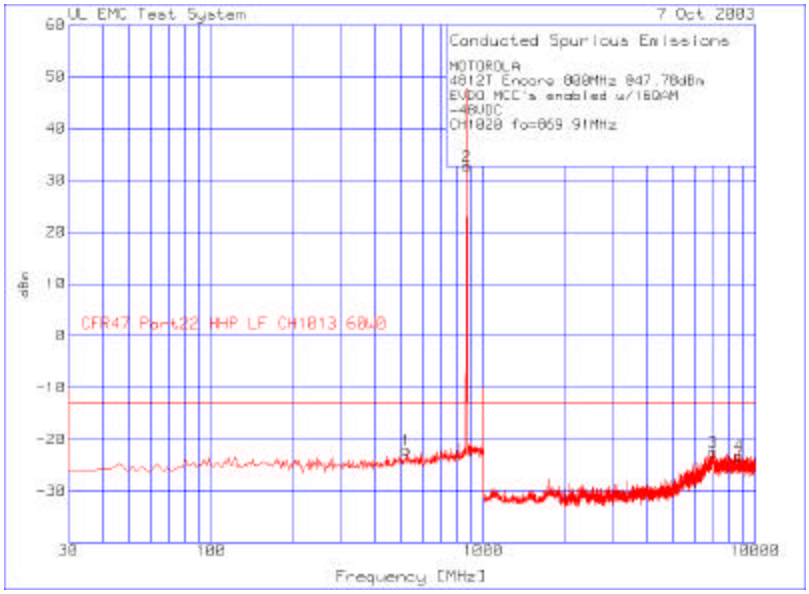




Spurious and Harmonic Emissions Conducted

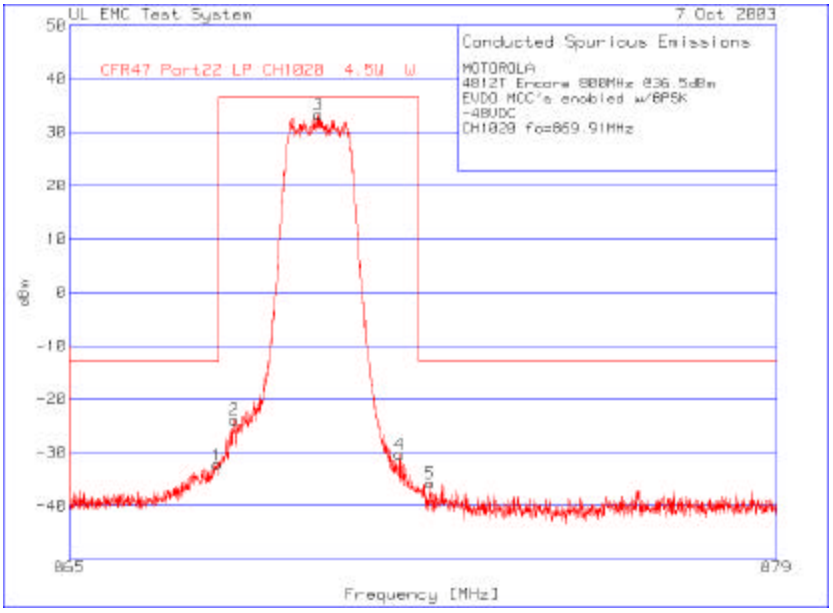
CDMA Channel 1020 – 47.78 dBm – 16QAM

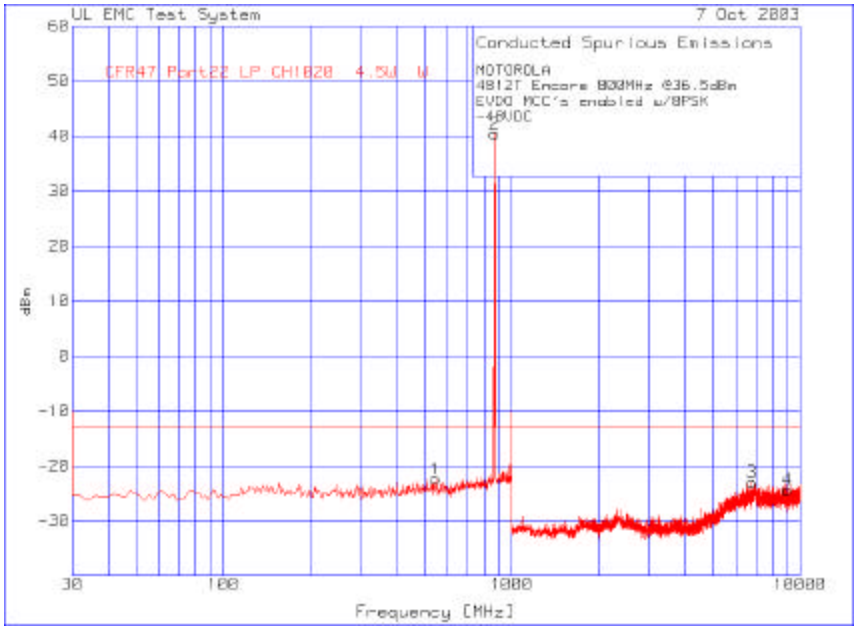




Spurious and Harmonic Emissions Conducted

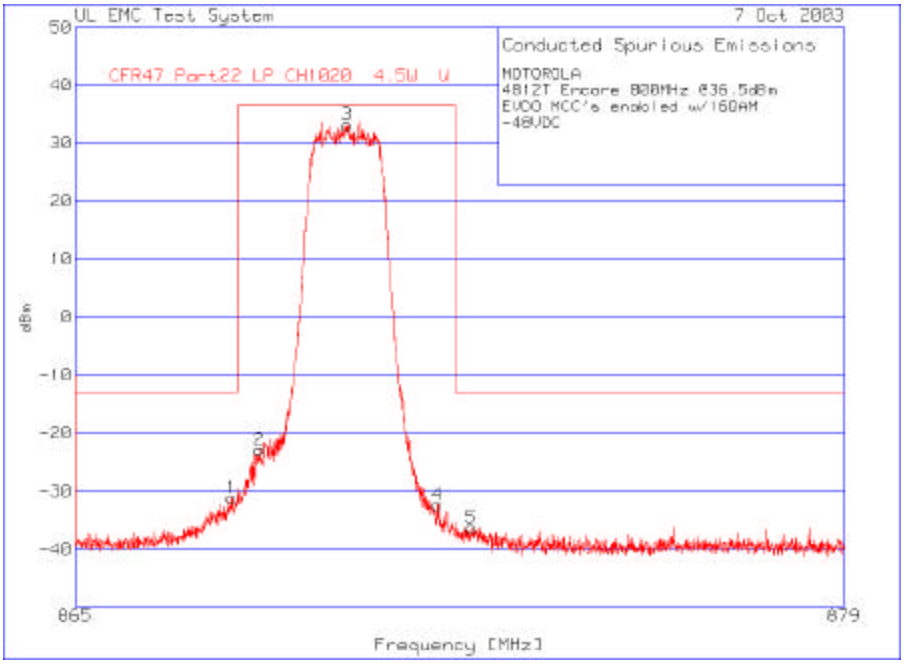
CDMA Channel 1020 – 36.5 dBm – 8PSK

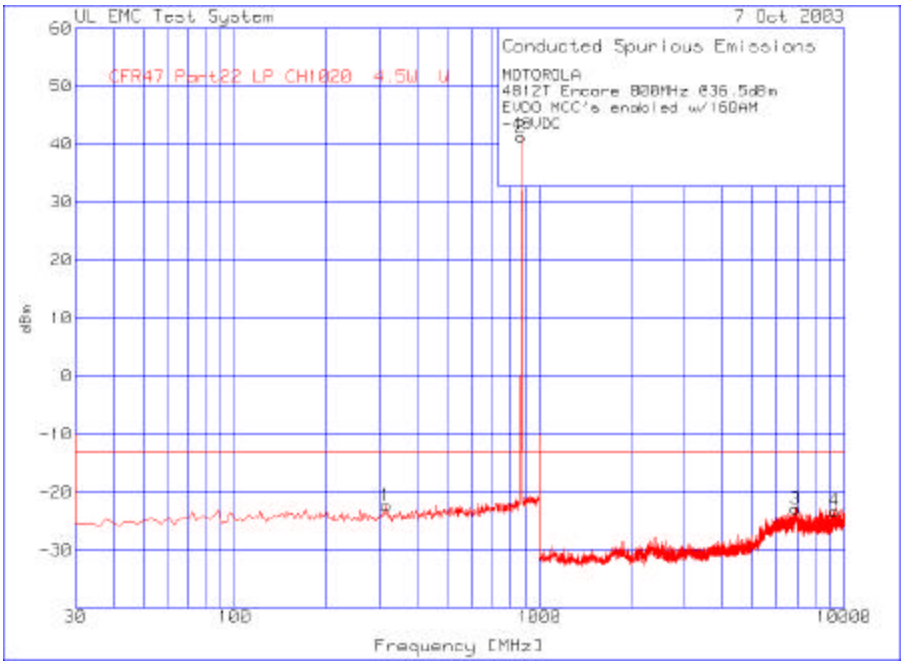




Spurious and Harmonic Emissions Conducted

CDMA Channel 1020 – 36.5 dBm – 16QAM





SECTION E

OCCUPIED BANDWIDTH

NOTE: The BTS was configured for maximum power out of 47.78 dBm and minimum power out of 36.5 dBm respectively. The max and min output power was set to 60.0 Watts or 4.5 Watts respectively using an HP437B power meter.

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

Power (measured in 30 kHz bandwidth) + 10 log (1.30 MHz / 30 kHz)

Example: 23.88 dBm + 16.37 dB = 40.25 dBm

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

SC4812T 1X-EVDO @ 800MHz WORST CASE OCCUPIED BANDWIDTH

CHANNEL	Power Level (dBm)	FREQUENCY (MHz)	MEASURED (MHz)	FCC LIMIT (MHz)	Pass / Fail
770	47.78	893.1	1.2741	1.30	Pass
1020	47.78	869.91	1.2724	1.30	Pass

SC4812T 1X @ 800 MHz WORST CASE OCCUPIED BANDWIDTH

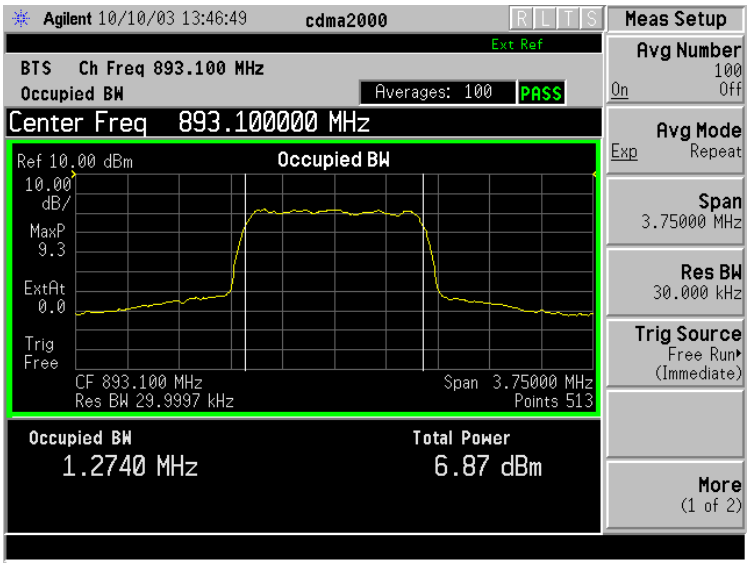
CHANNEL	Power Level (dBm)	FREQUENCY (MHz)	MEASURED (MHz)	FCC LIMIT (MHz)	Pass / Fail
777	47.78	893.31	1.277	1.30	Pass
1013	26.0	869.7	1.277	1.30	Pass

Francisco J Avalos 10.29.03

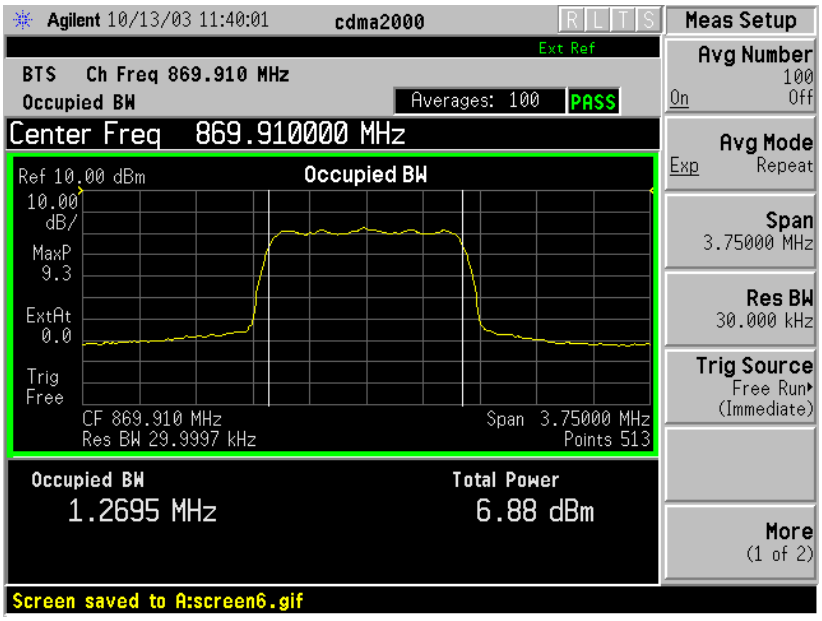
Signature Date

Francisco Avalos

SC4812T 1X-EVDO – Occupied Bandwidth – 47.78 dBm – 8PSK

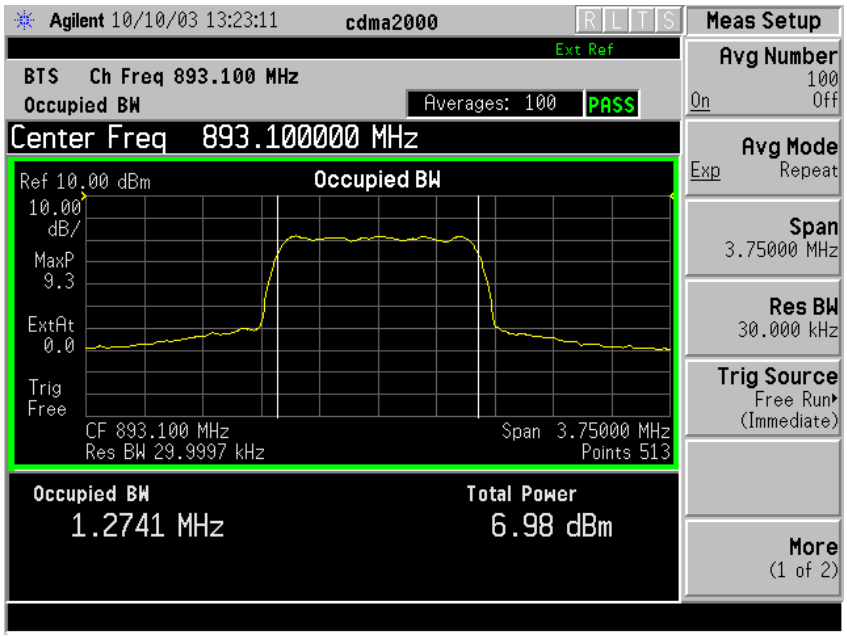


Channel 770 – 893.1 MHz

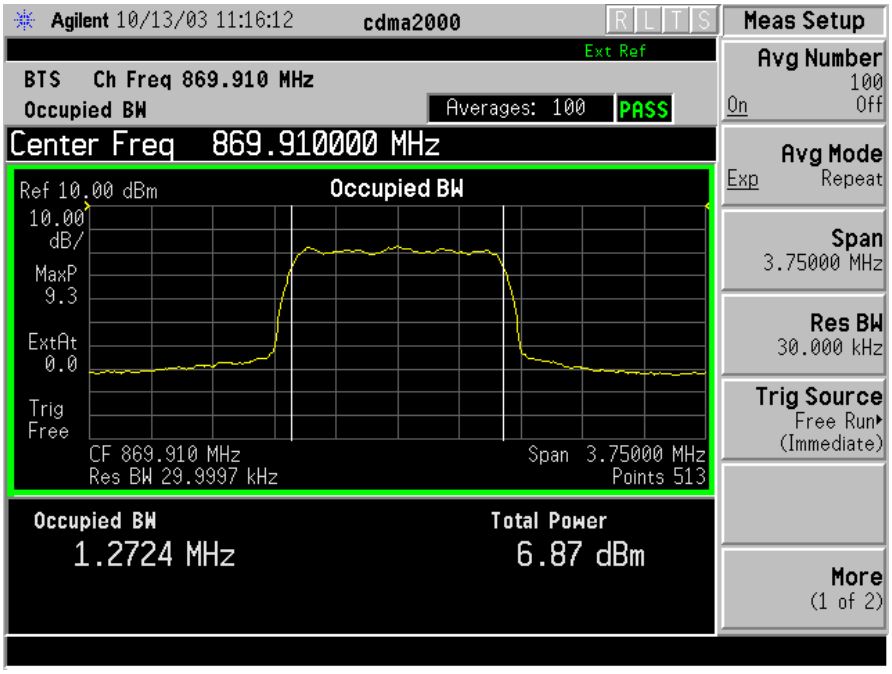


Channel 1020 – 869.91 MHz

SC4812T 1X-EVDO – Occupied Bandwidth – 47.78 dBm – 16QAM

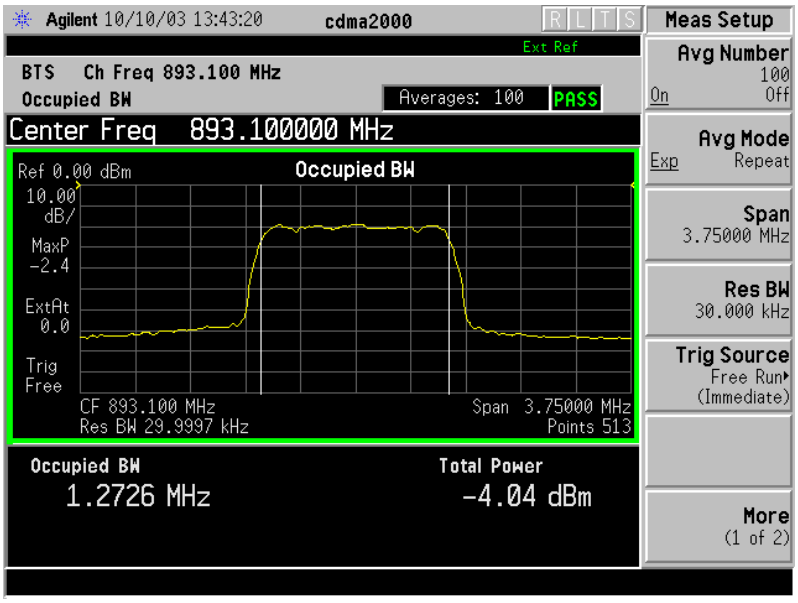


Channel 770 – 893.1 MHz

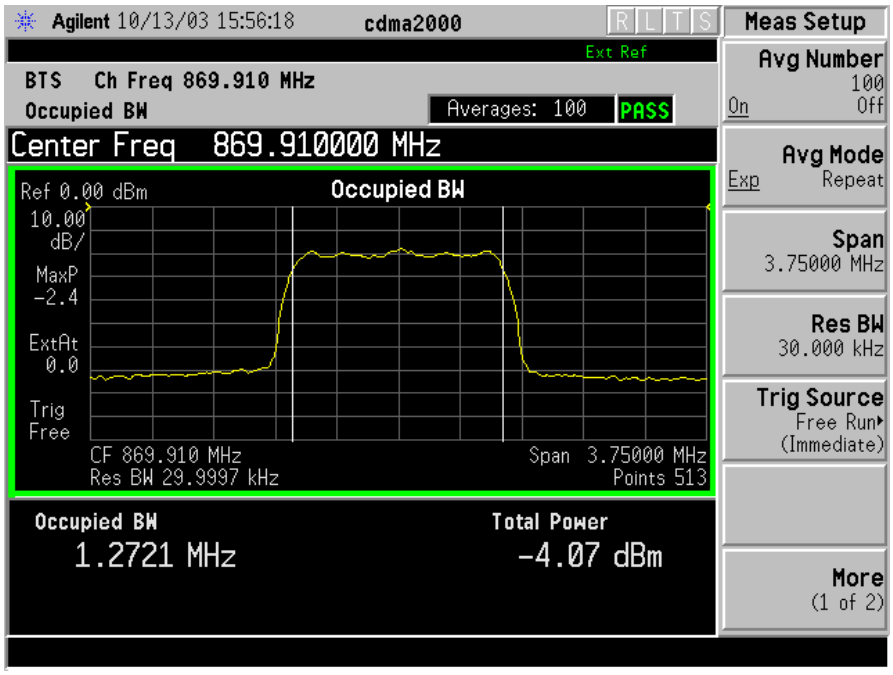


Channel 1020 – 869.91 MHz

SC4812T 1X-EVDO – Occupied Bandwidth – 36.5 dBm – 8PSK

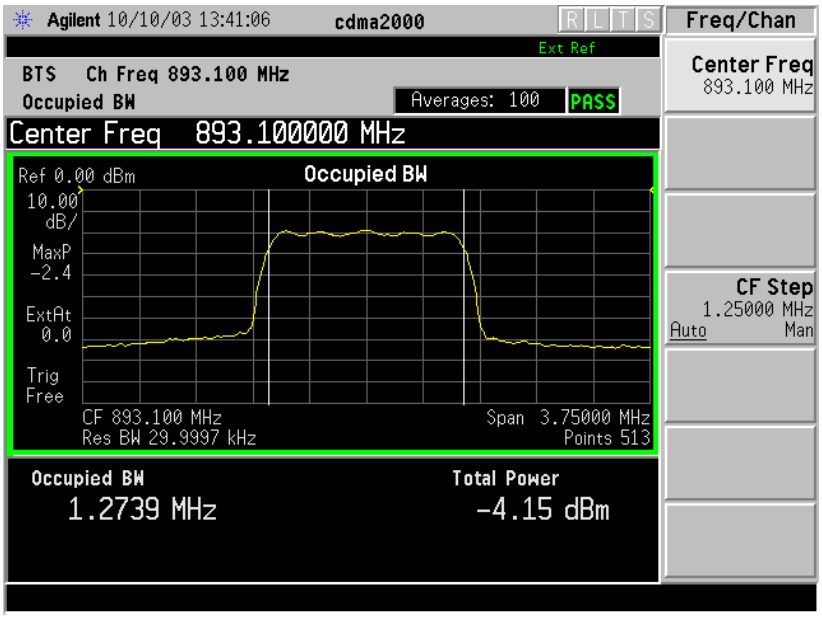


Channel 770 – 893.1 MHz

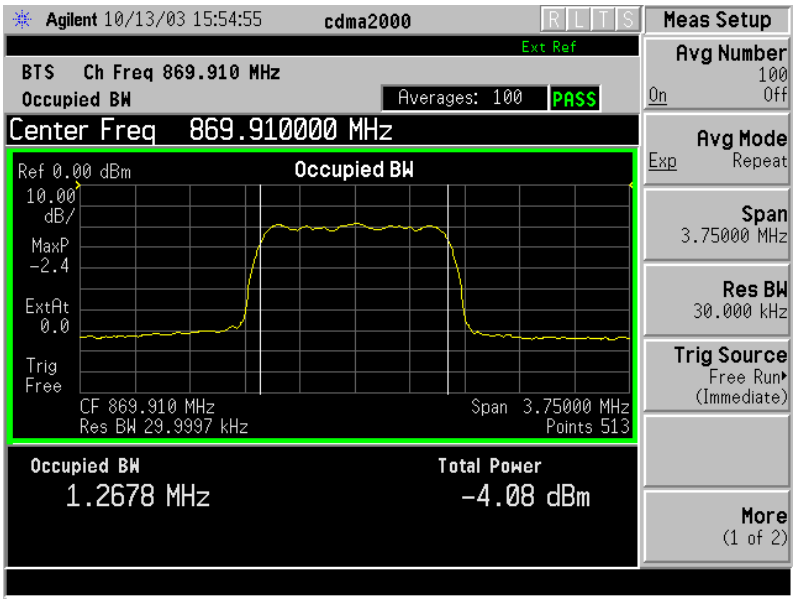


Channel 1020 – 869.91 MHz

SC4812T 1X-EVDO – Occupied Bandwidth – 36.5 dBm – 16QAM

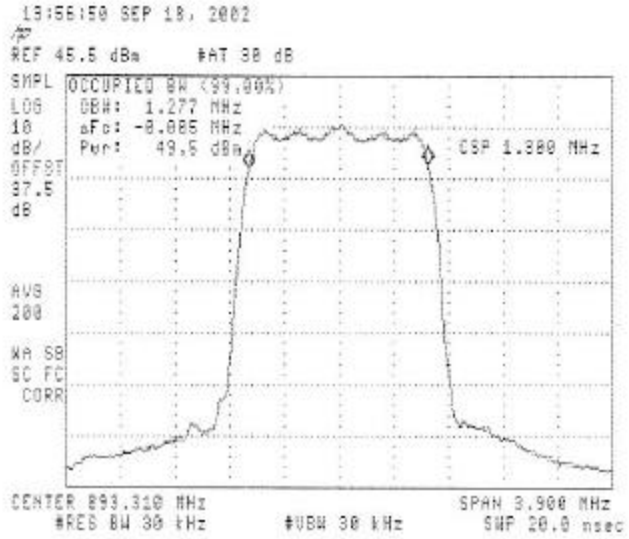


Channel 770 – 893.1 MHz

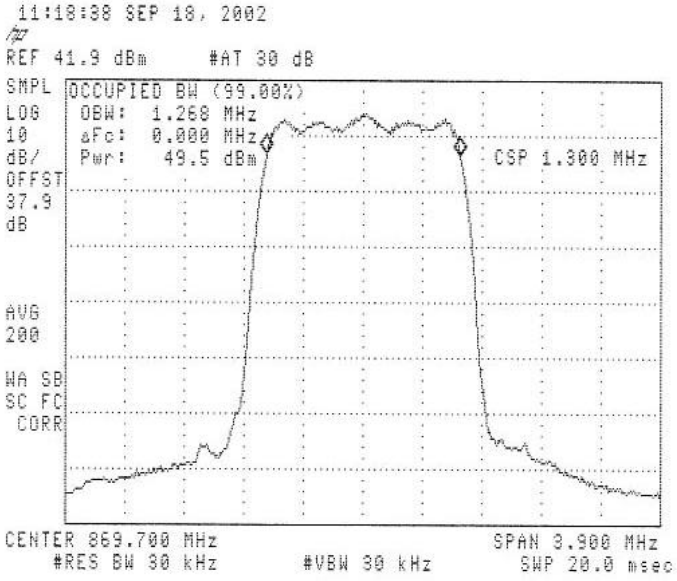


Channel 1020 – 869.91 MHz

SC4812T 1X – Occupied Bandwidth – 47.78 dBm

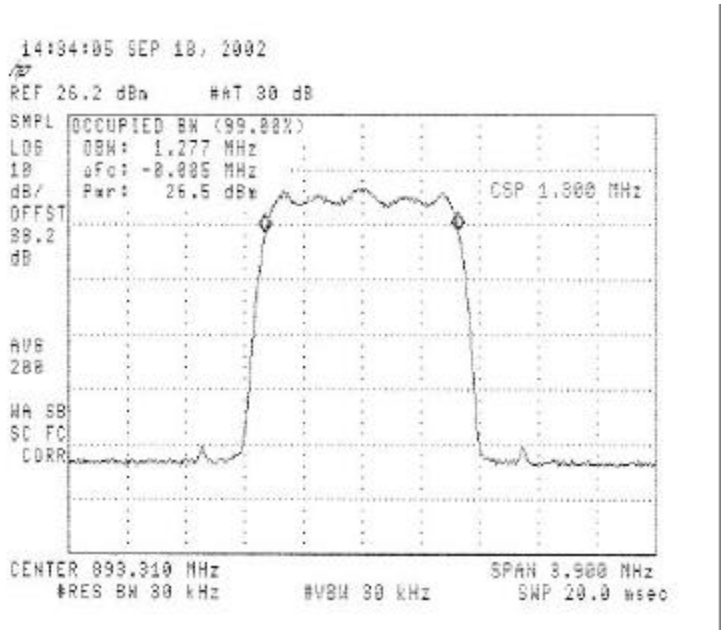


Channel 777 – 893.31 MHz

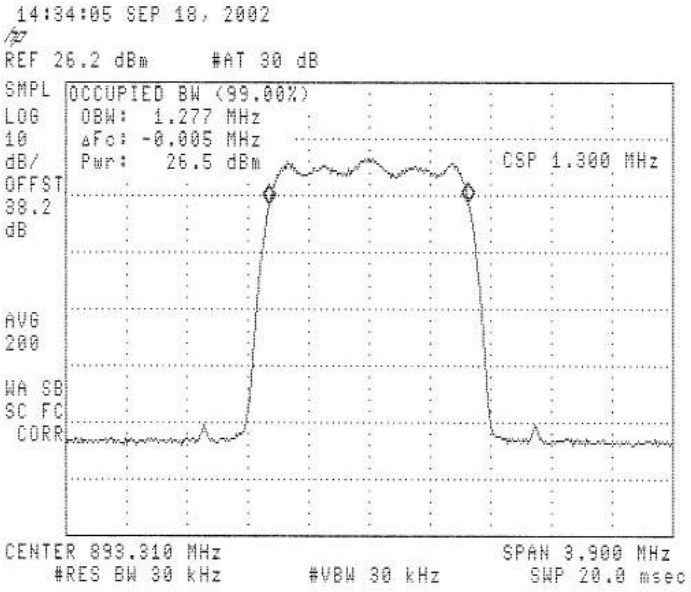


Channel 1013 – 869.7 MHz

SC4812T 1X – Occupied Bandwidth – 26.0 dBm



Channel 777 – 893.31 MHz



Channel 1013 – 869.7 MHz

SECTION F

FREQUENCY STABILITY

MODE	27V POWER	WORST CASE ? 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

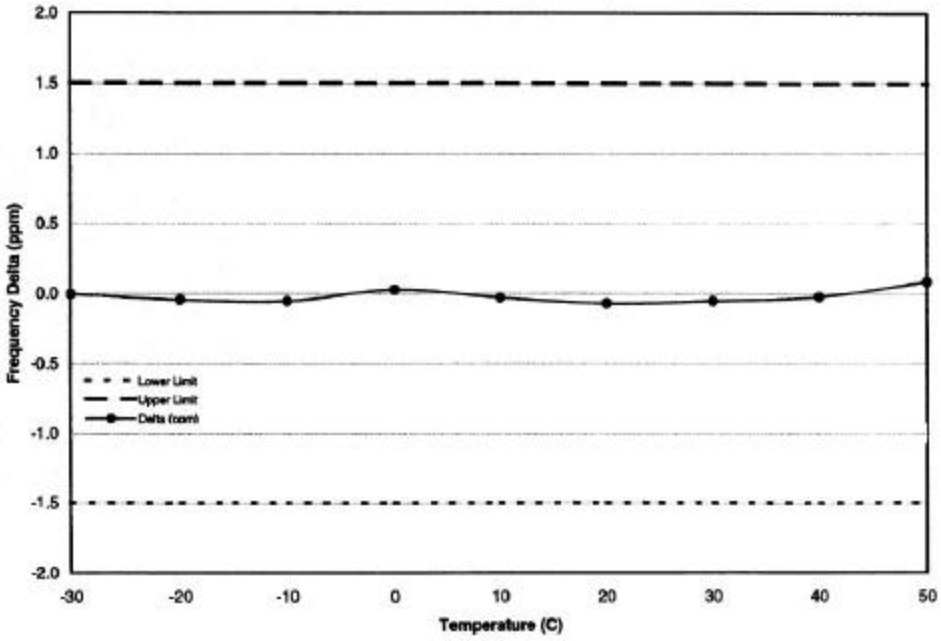
MODE	TEMPERATURE	WORST CASE ? PPM	FCC REQUIREMENT	Pass / Fail
CSM1	-30º to +50º C	<0.2	+/- 1.5 PPM MAX	Pass
CSM2	-30º to +50º C	<0.2	+/- 1.5 PPM MAX	Pass

10.29.03

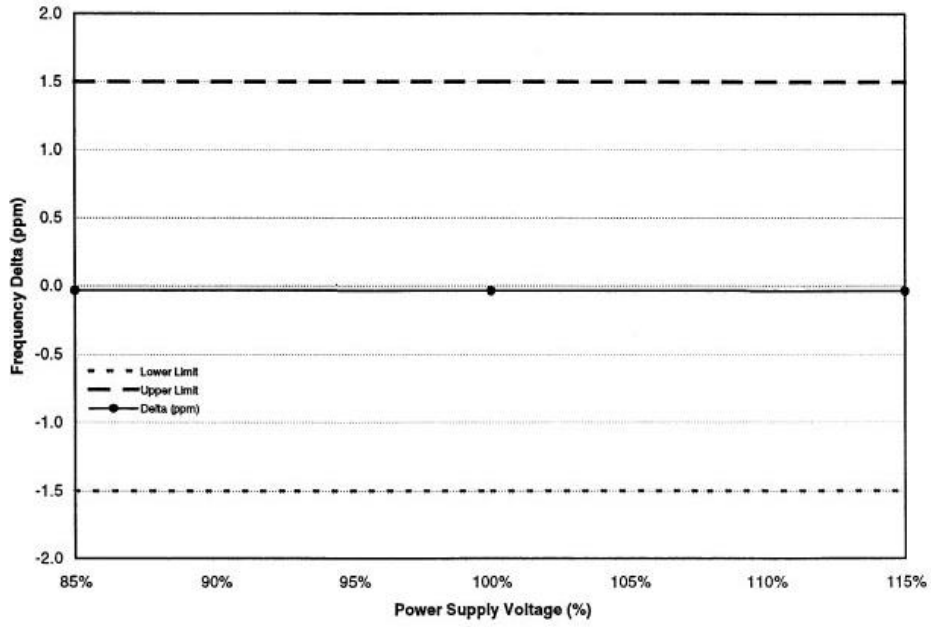
Signature Date

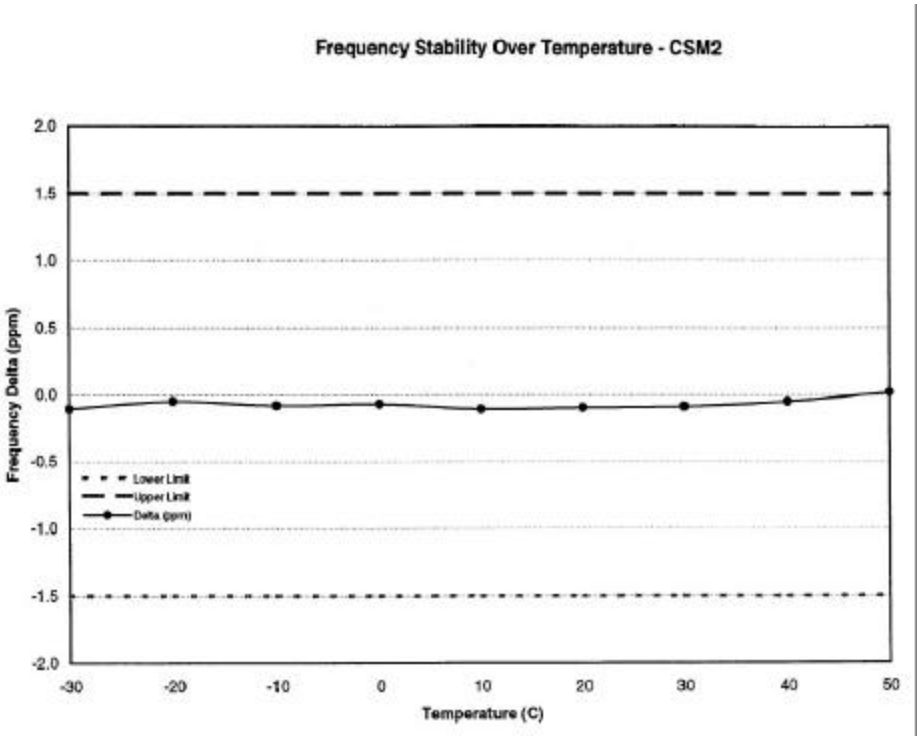
Terry Schwenk

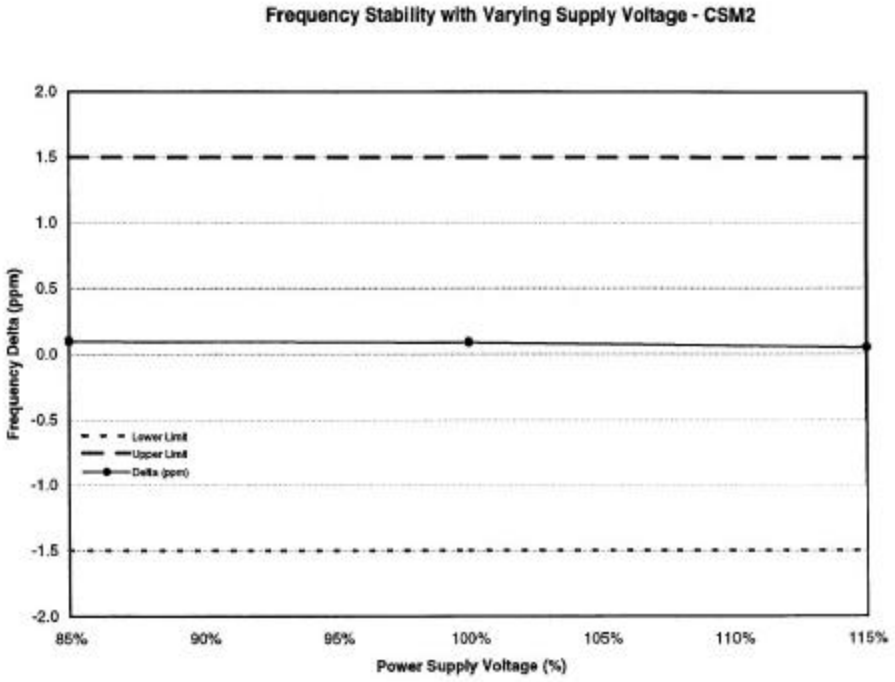
Frequency Stability Over Temperature - CSM1



Frequency Stability with Varying Supply Voltage - CSM1




Frequency Stability Over Temperature - CSM2
Frequency Delta (ppm)
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
Lower Limit
Upper Limit
Delta (ppm)
-30
-20
-10
0
10
20
30
40
50
Temperature (C)


Frequency Stability with Varying Supply Voltage - CSM2
Frequency Delta (ppm)
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
Lower Limit
Upper Limit
Delta (ppm)
85%
90%
95%
100%
105%
110%
115%
Power Supply Voltage (%)