SC480 1X-EVDO with cPAs @ 1.9 GHz CDMA BTS

TEST REPORT EXHIBIT

Index

Section A

Summary of RF Measurements

Summary of Radiated RF Measurements

Maximum Radiated RF Spur Level for SC480 EVDO @ 1.9 GHz 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)***
1175	5965.966	V	64.97	-30.26	-13	Pass

Maximum Radiated RF Spur Level for SC480 1X @ 1.9 GHz 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)***
1175	5965.966	V	70.51	-24.72	-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:
2. (dBuV/M) + 20 – 104.77 = dBm

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Summary of Conducted RF Measurements

SC480 EVDO @ 1.9 GHz CDMA BTS
FCC Part 24

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
1175	19093.611	84.00	-23.00	-13	Pass

SC480 1X @ 1.9 GHz CDMA BTS
FCC Part 24

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
1175	18679.984	83.50	-23.50	-13	Pass

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Section B

Summary of Modulation Characteristics

SC480 EVDO @ 1.9 GHz CDMA BTS

CHANNEL	TUNE FREQUENCY (MHz)	RHO Measured	RHO Specifications	PASS / FAIL
25	1931.25	.99785	> 0.970	Pass
1175	1988.75	.99867	> 0.970	Pass

SC480 1X @ 1.9 GHz CDMA BTS

CHANNEL	TUNE FREQUENCY (MHz)	RHO Measured	RHO Specifications	PASS / FAIL
25	1931.25	.98444	> 0.912	Pass
1175	1988.75	.98441	> 0.912	Pass

The BTS was configured for maximum power out of 43.00 dBm and minimum power out of -6.00 dBm depending on the configuration. The output power was set respectively to 20.0 Watts or 0.25 mWatts using an HP437B power meter. The external attenuation at 43.0 dBm, 36.5 dBm, and 26.0 dBm was 41.2 dB for channel 25 and 42.6 dB for channel 1175. The external attenuation at -6.0 dBm for core unit was 0.5 dB for channel 25 and channel 1175.

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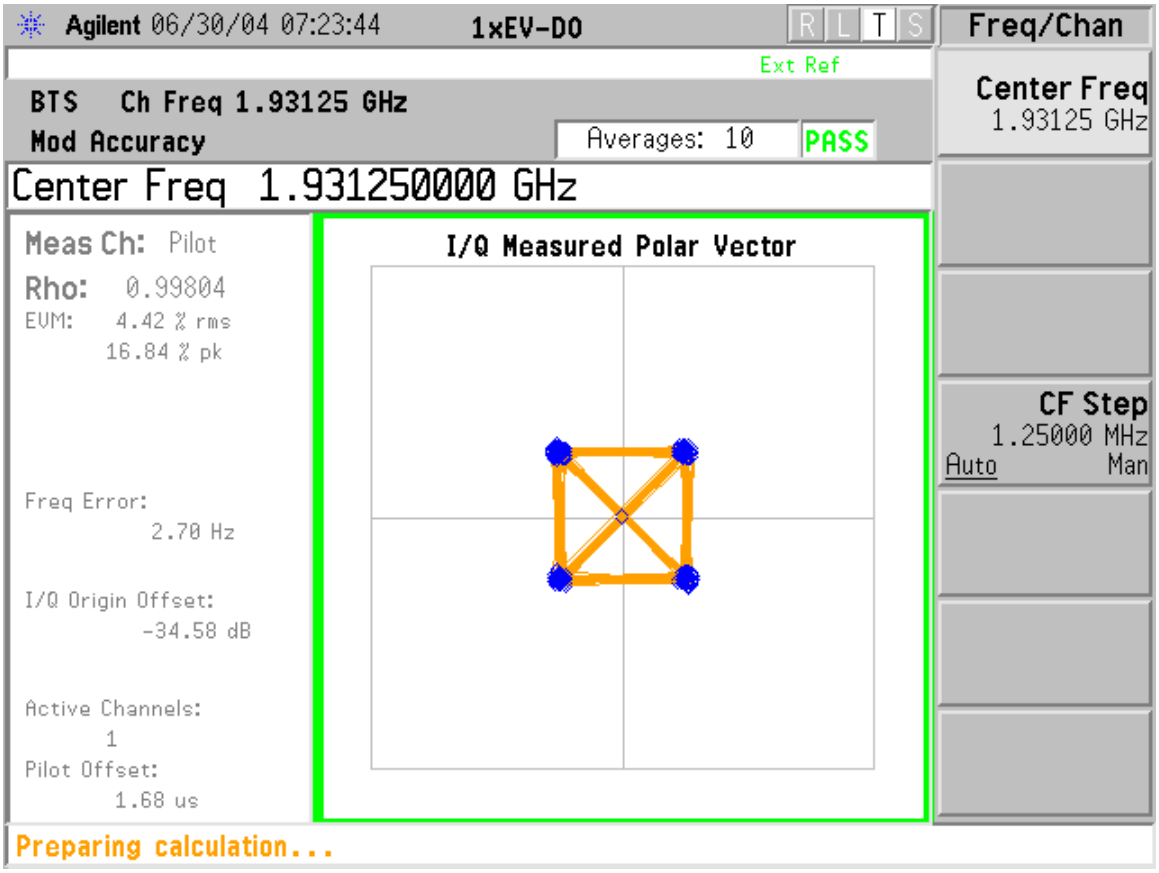
SC480 EVDO – Modulation Characteristics

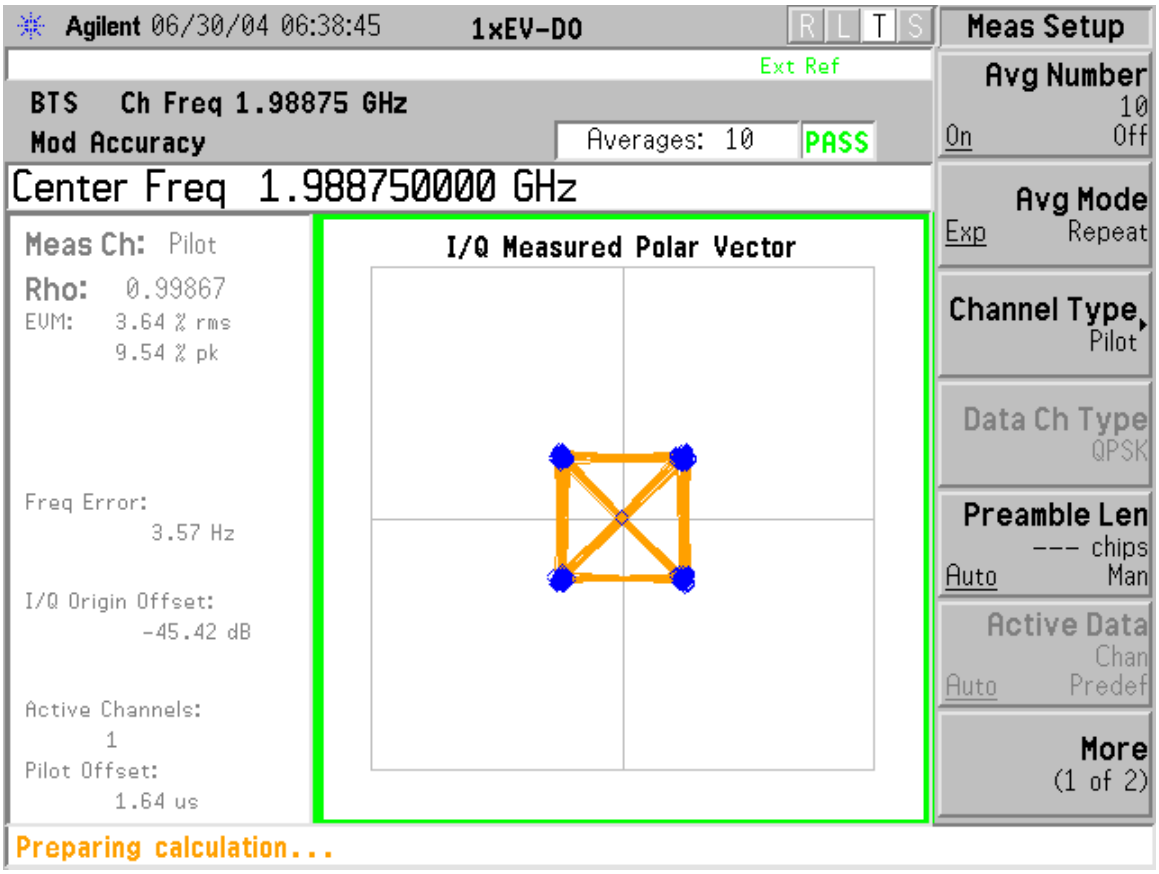
High Power with cPA – 43.00 dBm – 8PSK



Channel 25 – 1931.25 MHz

SC480 EVDO – Modulation Characteristics

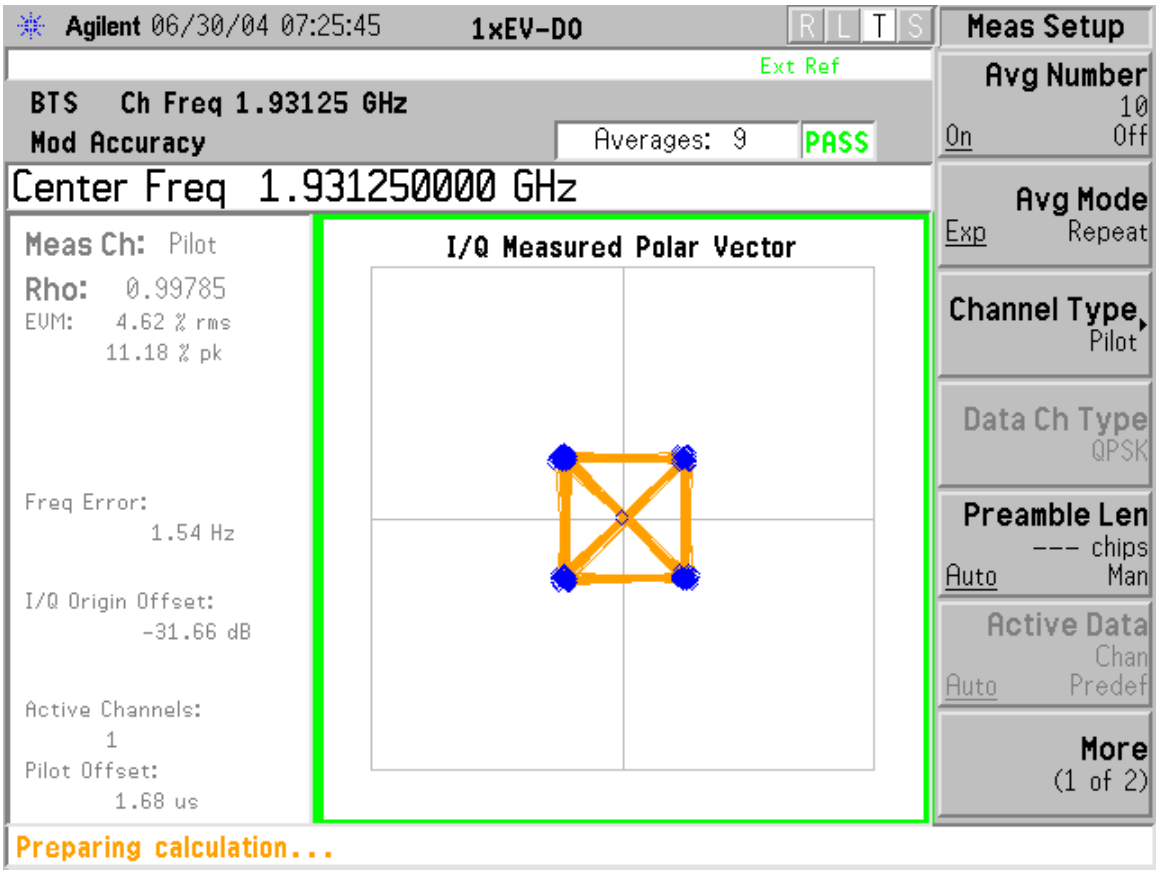
High Power with CPA – 43.00 dBm – 16QAM



Channel 1175 – 1988.75 MHz

SC480 EVDO – Modulation Characteristics

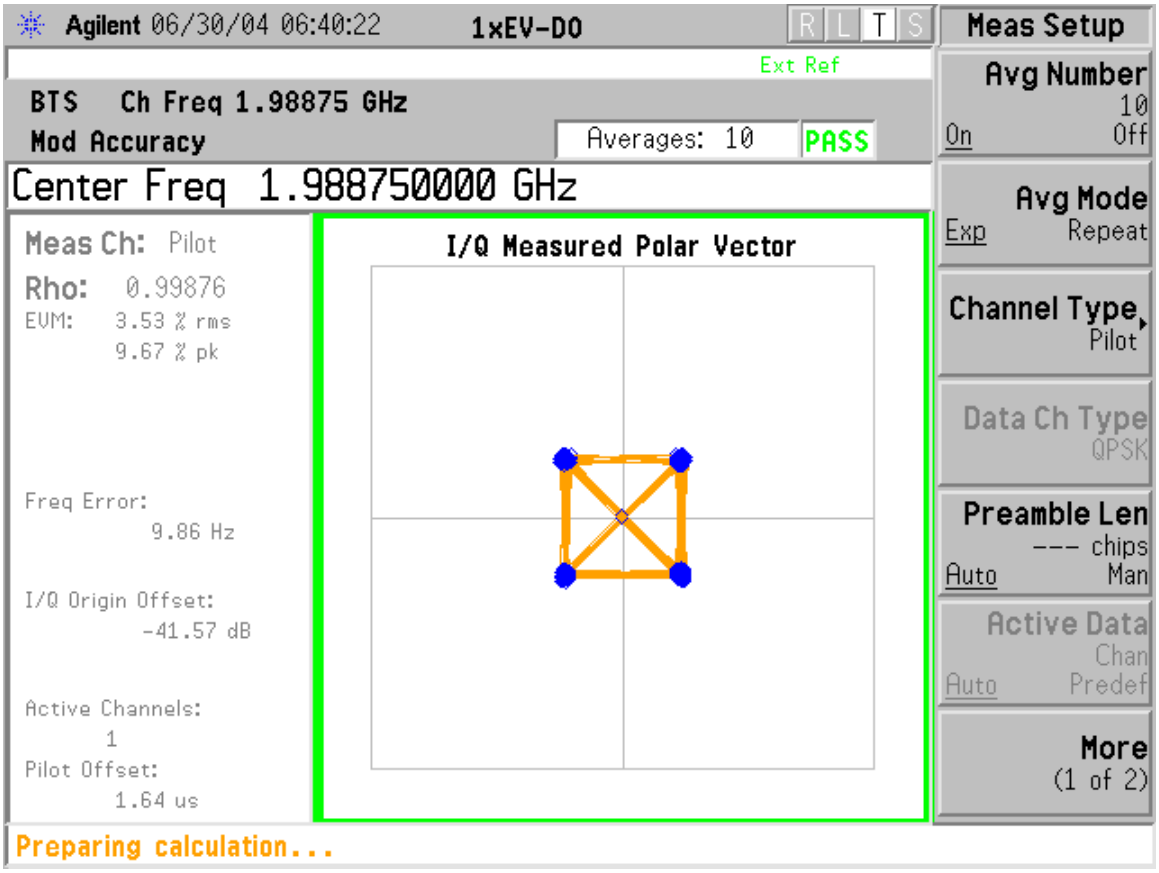
Low Power with cPA – 36.5 dBm – 8PSK



Channel 25 – 1931.25 MHz

SC480 EVDO – Modulation Characteristics

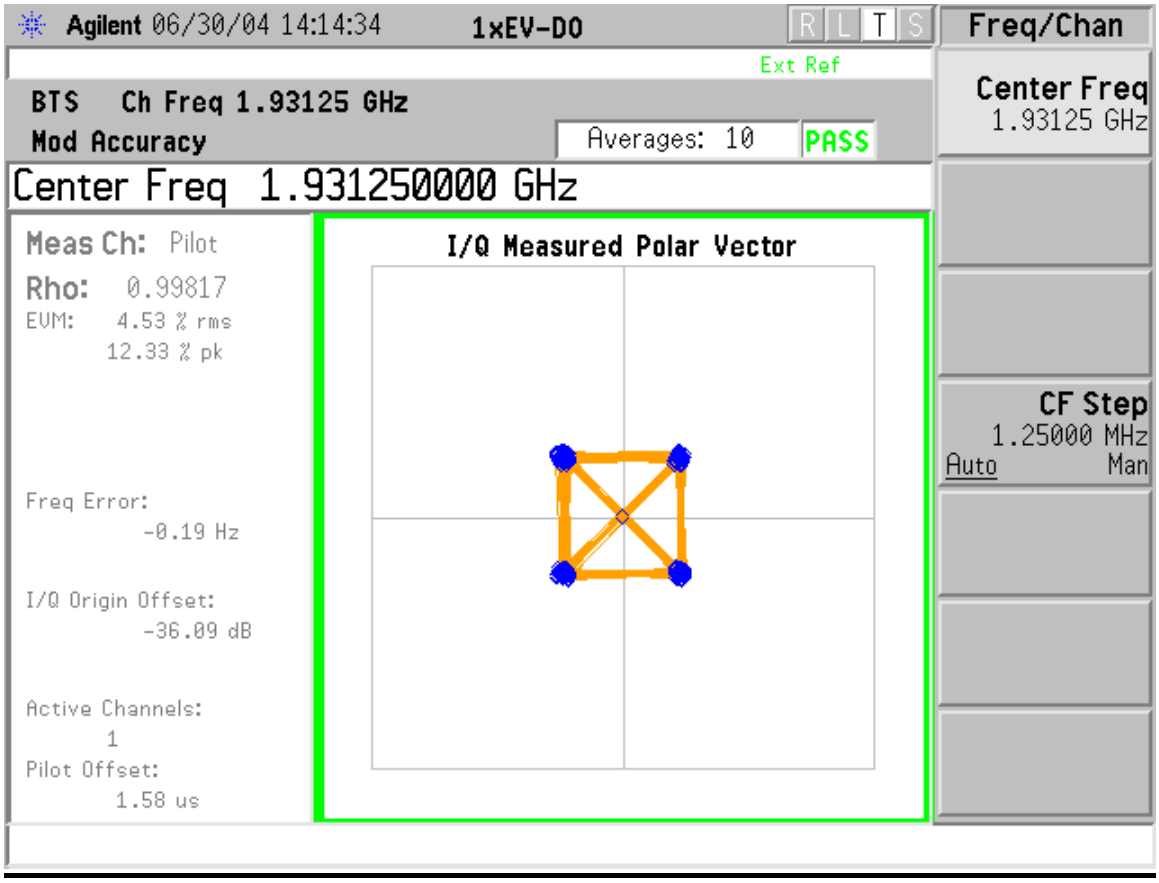
Low Power with cPA– 36.5 dBm – 16QAM



Channel 1175 – 1988.75 MHz

SC480 EVDO – Modulation Characteristics

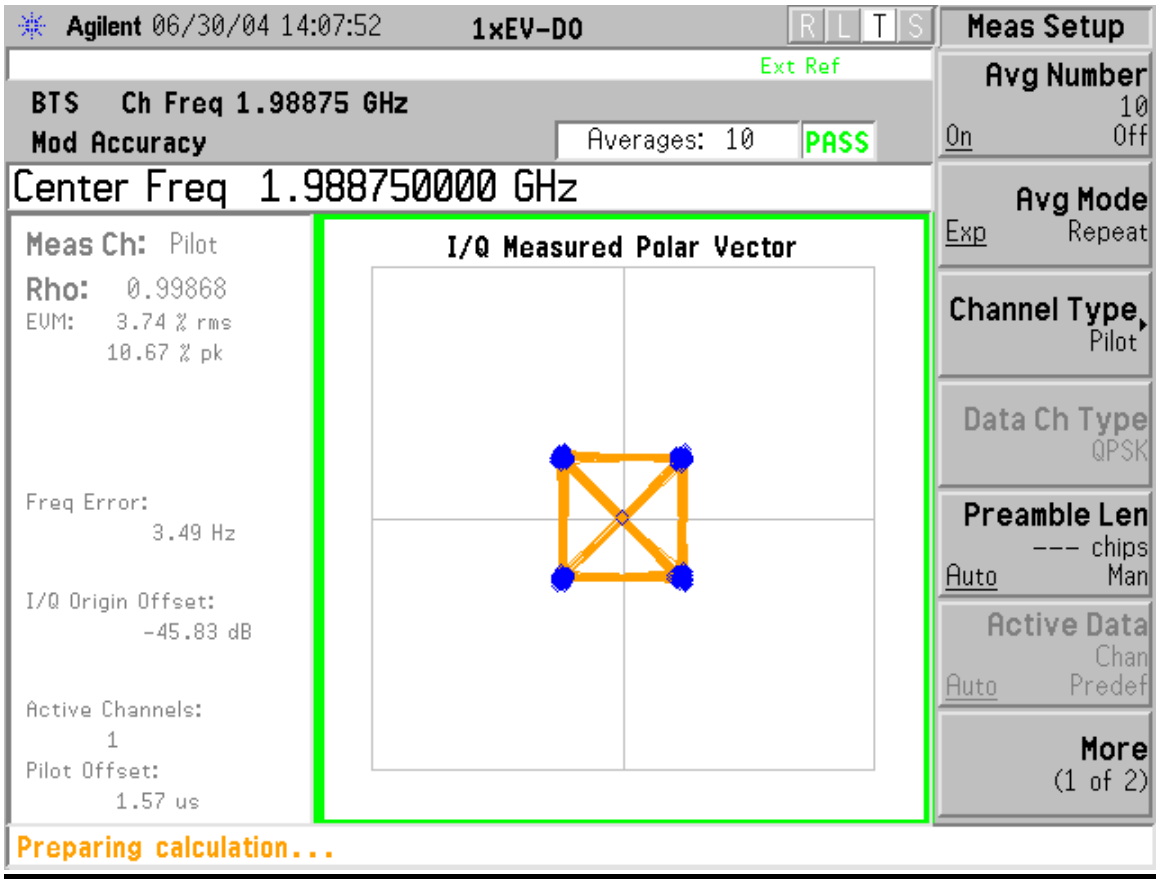
Low Power with Core – -6.0 dBm – 8PSK



Channel 25 – 1931.25 MHz

SC480 EVDO – Modulation Characteristics

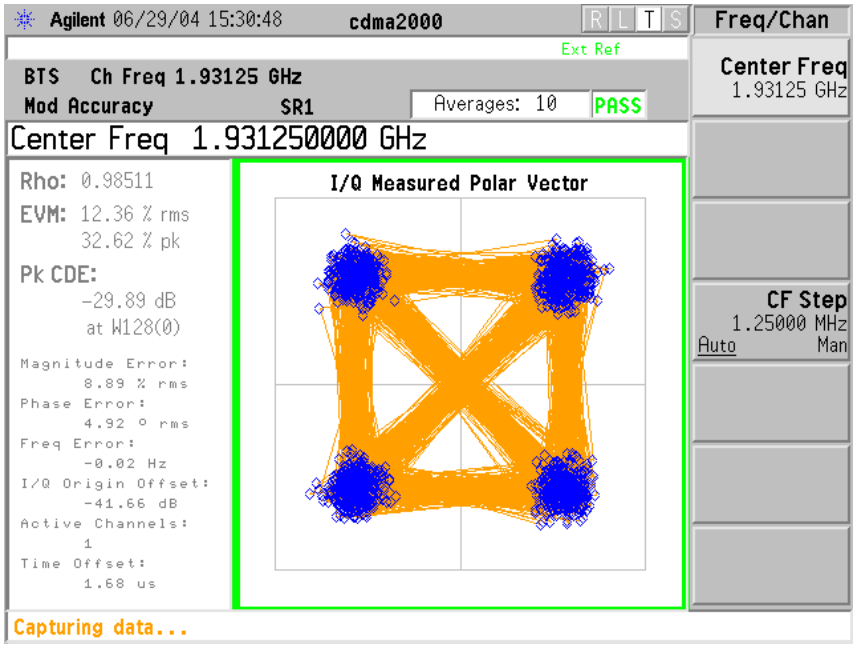
Low Power with Core – -6.0 dBm – 16QAM



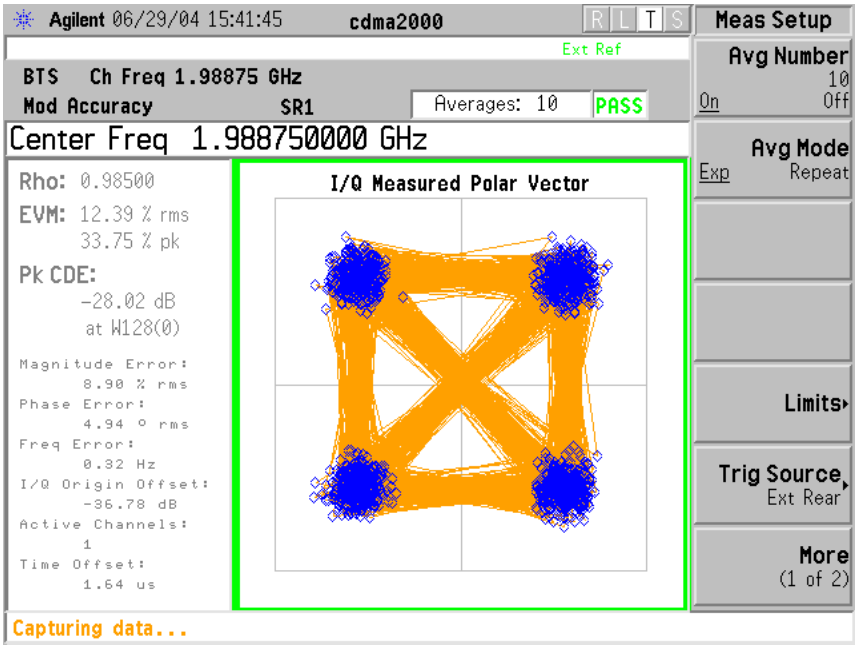
Channel 1175 – 1988.75 MHz

SC480 1X – Modulation Characteristics

High Power with cPAs– 43.00 dBm



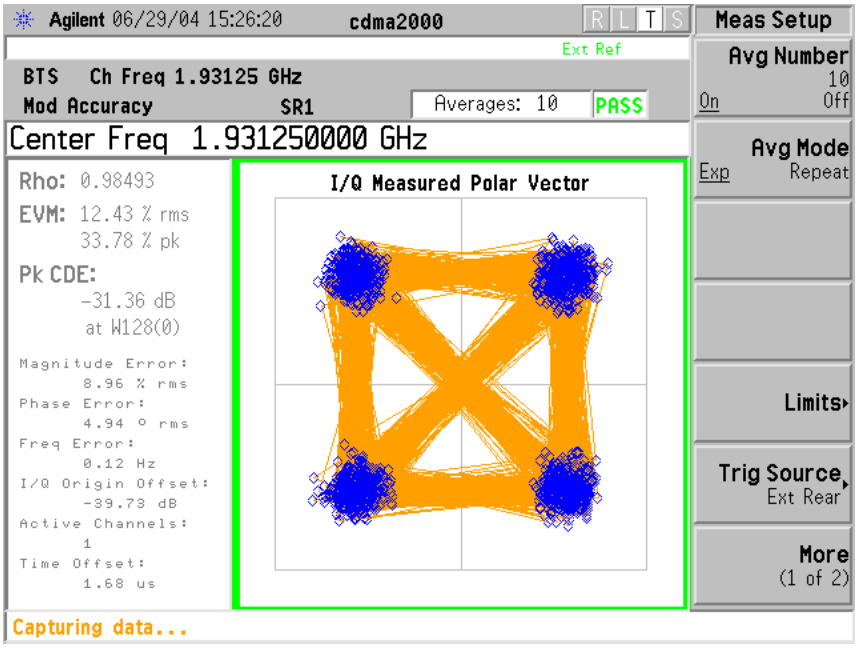
Channel 25– 1931.25 MHz



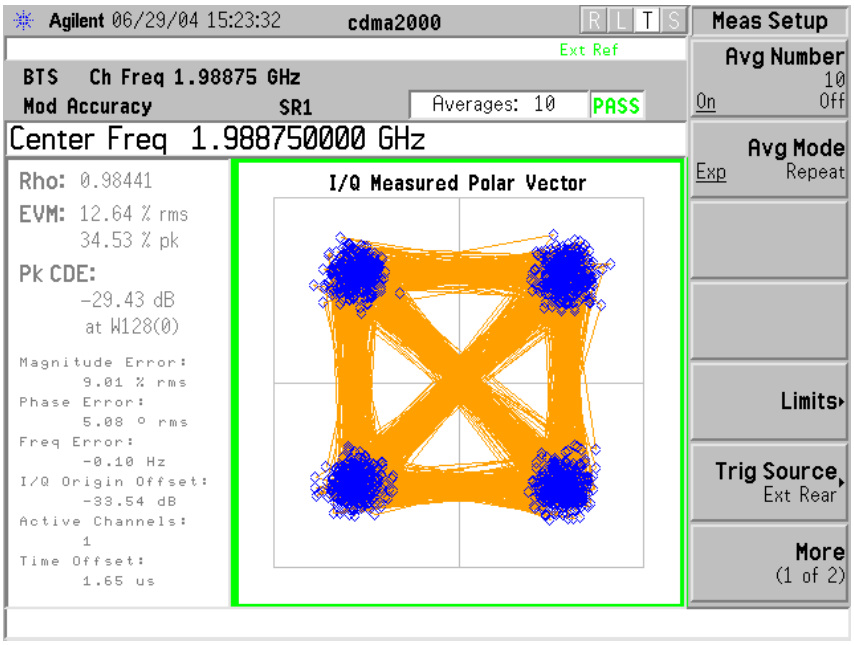
Channel 1175 – 1988.75 MHz

SC480 1X – Modulation Characteristics

Low Power with cPA – 26.0 dBm



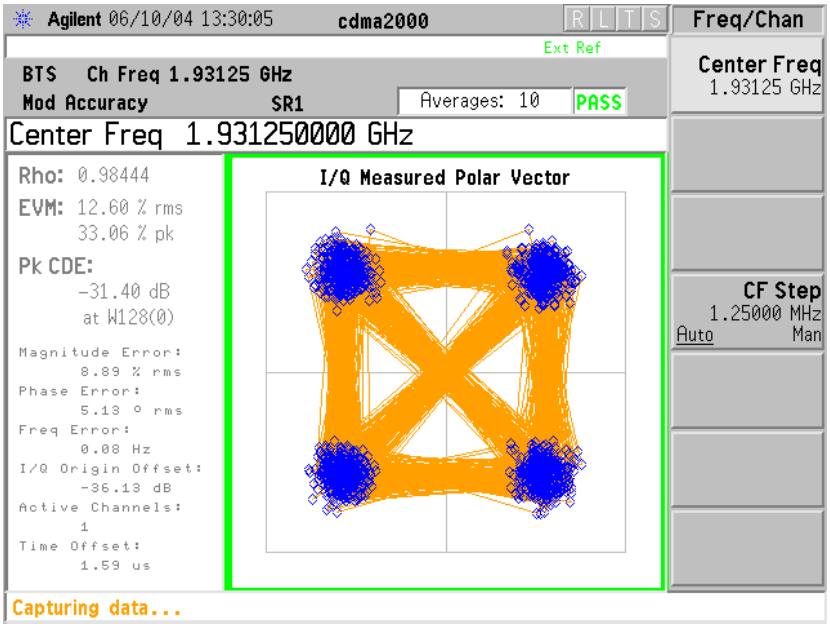
Channel 25 – 1931.25 MHz



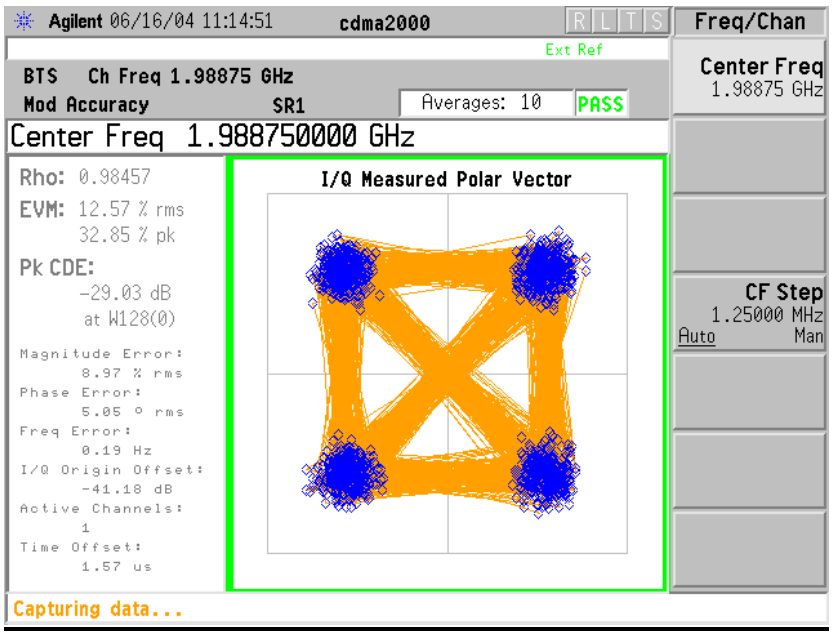
Channel 1175– 1988.75 MHz

SC480 1X – Modulation Characteristics

Low Power with Core – -6.0 dBm



Channel 25 – 1931.25 MHz



Channel 1175 – 1988.75 MHz

Section C

Spurious and Harmonic Emissions Radiated

Radiated RF Measurements

Maximum Radiated RF Spur Levels for SC480 EVDO @ 1.9 GHz 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)***
25	5793.794	V	61.49	-33.74	-13	Pass
1175	5965.966	V	64.97	-30.26	-13	Pass

Maximum Radiated RF Spur Levels for SC480 1X @ 1.9 GHz 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)***
25	5793.794	V	62.87	-32.36	-13	Pass
1175	5965.966	V	70.51	-24.72	-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

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Signature Date

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Section C

Spurious and Harmonic Emissions Conducted

Conducted RF Measurements

SC480 EVDO @ 1.9 GHz CDMA BTS
FCC Part 24

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
25	13223.444	78.08	-28.92	-13	Pass
1175	19093.611	84.00	-23.00	-13	Pass

SC480 1X @ 1.9 GHz CDMA BTS
FCC Part 24

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
25	19242.877	82.10	-24.90	-13	Pass
1175	18679.984	83.50	-23.50	-13	Pass

FCC Maximum Limit Per 47 CFR:

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

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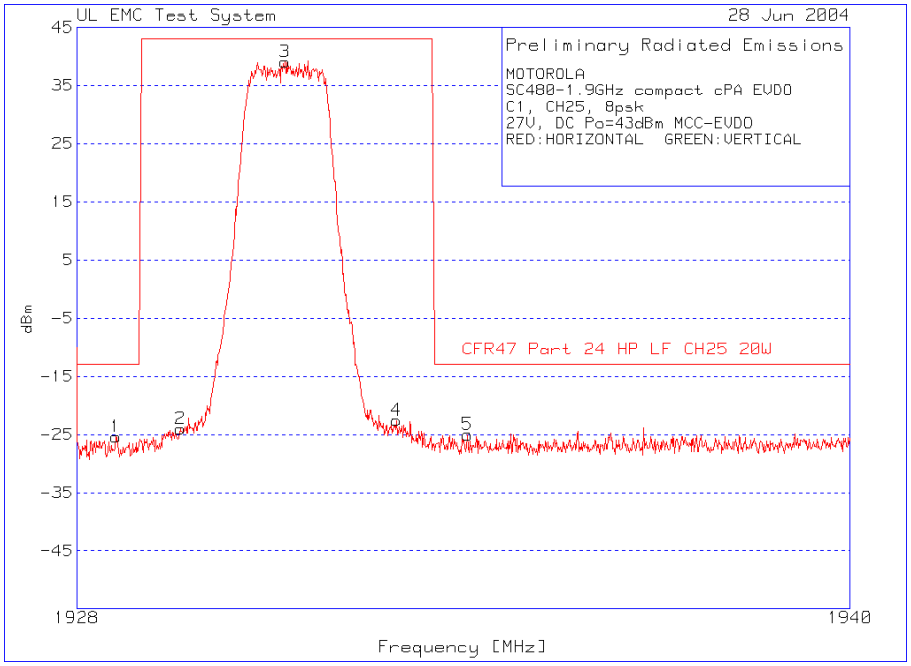
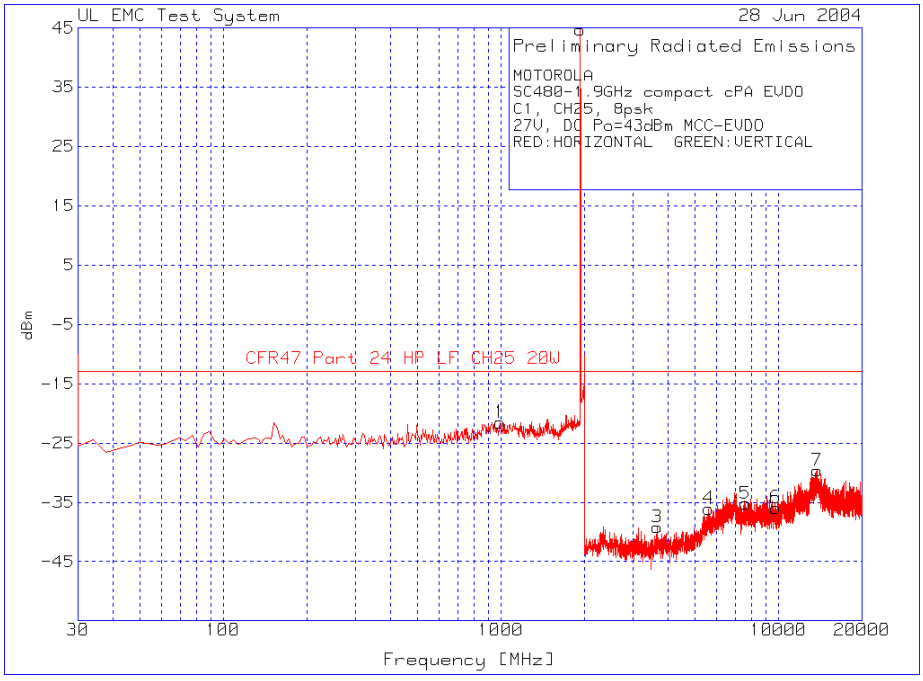
Spurious and Harmonic Emissions Conducted

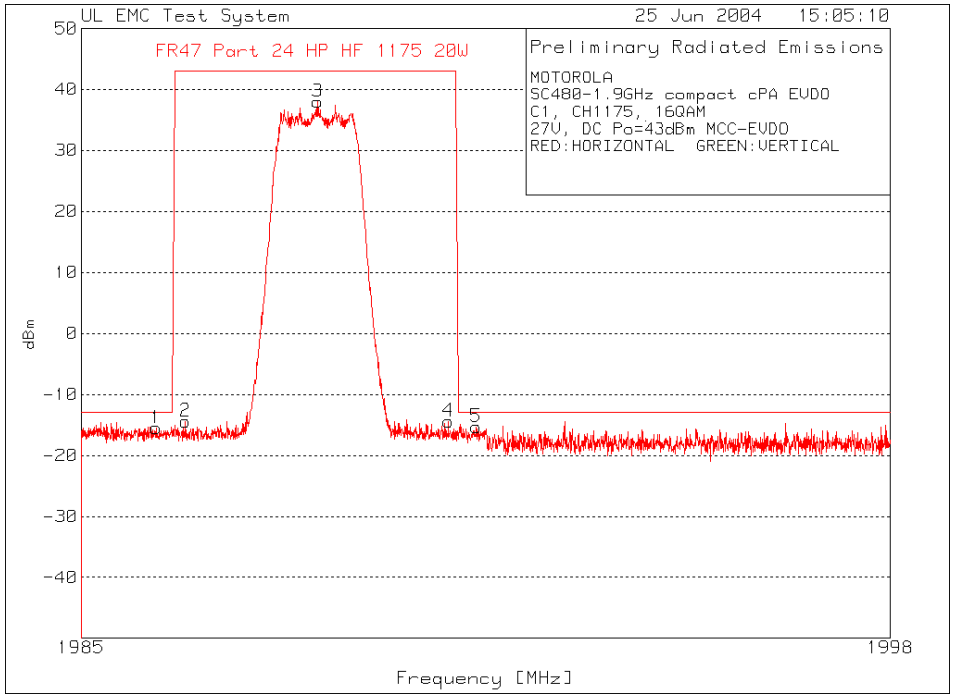
CDMA EVDO Channel 25 – 43.00 dBm – 8PSK

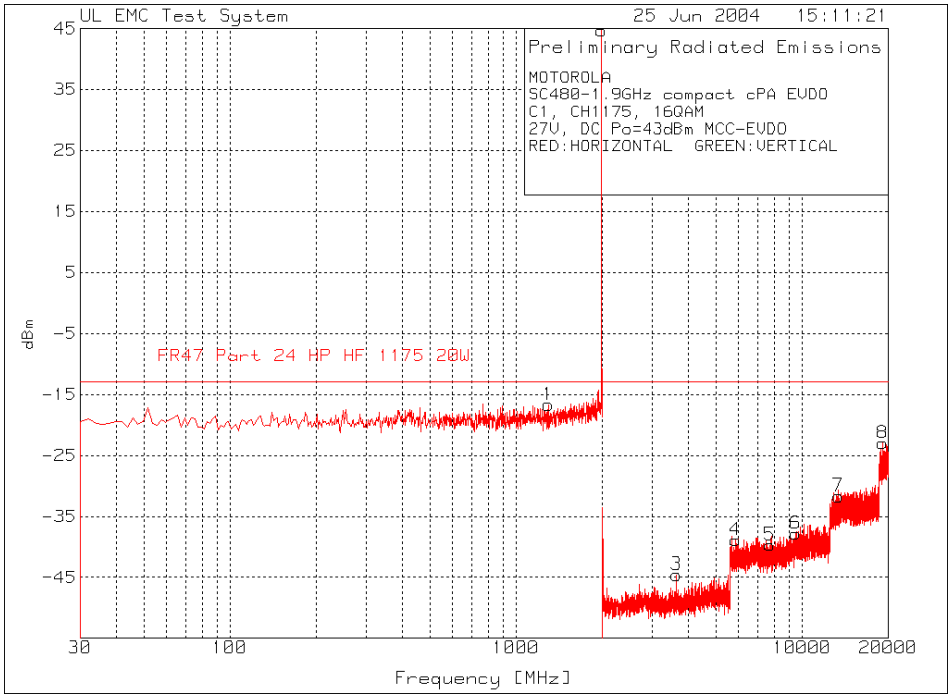




Spurious and Harmonic Emissions Conducted

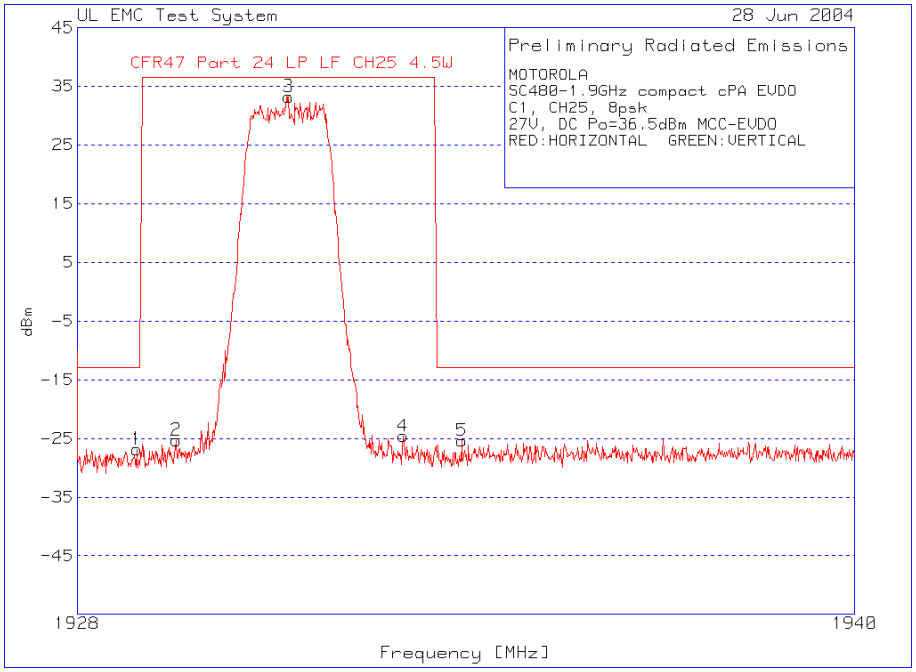
CDMA EVDO Channel 1175 – 43.00 dBm – 16QAM

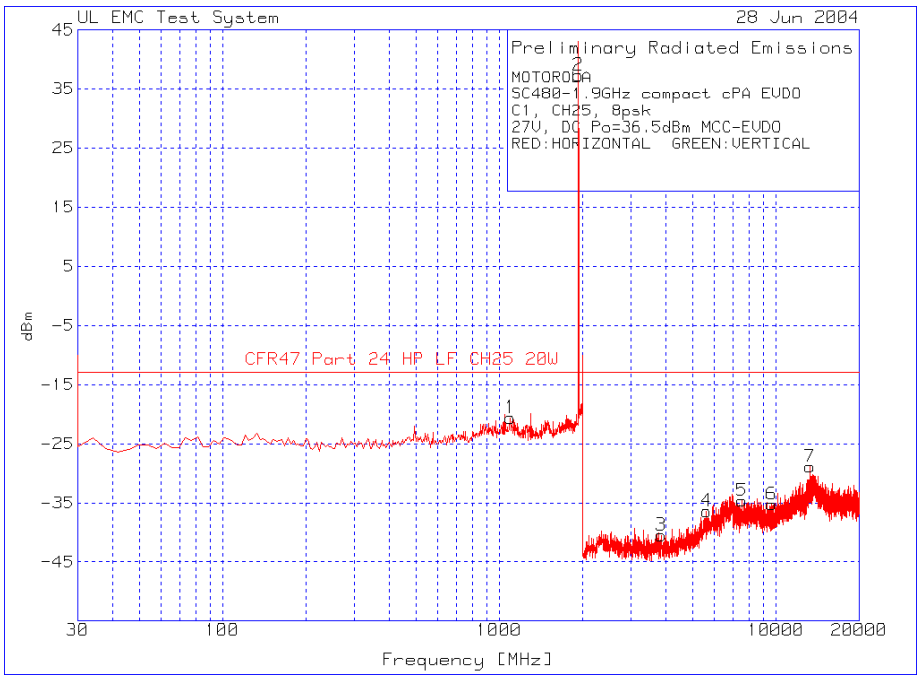




Spurious and Harmonic Emissions Conducted

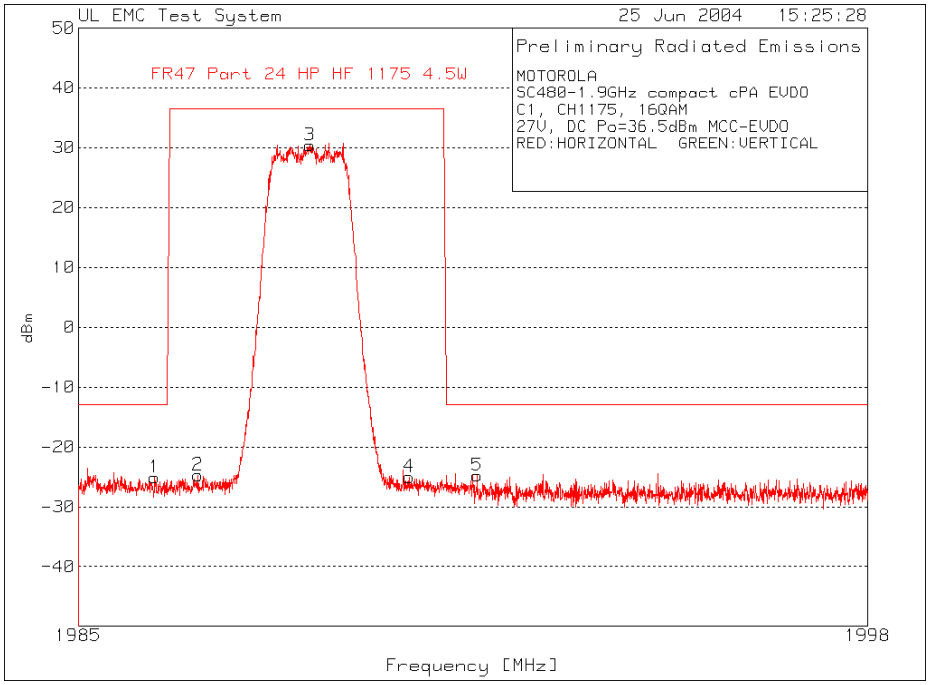
CDMA EVDO Channel 25 – 36.5 dBm – 8PSK

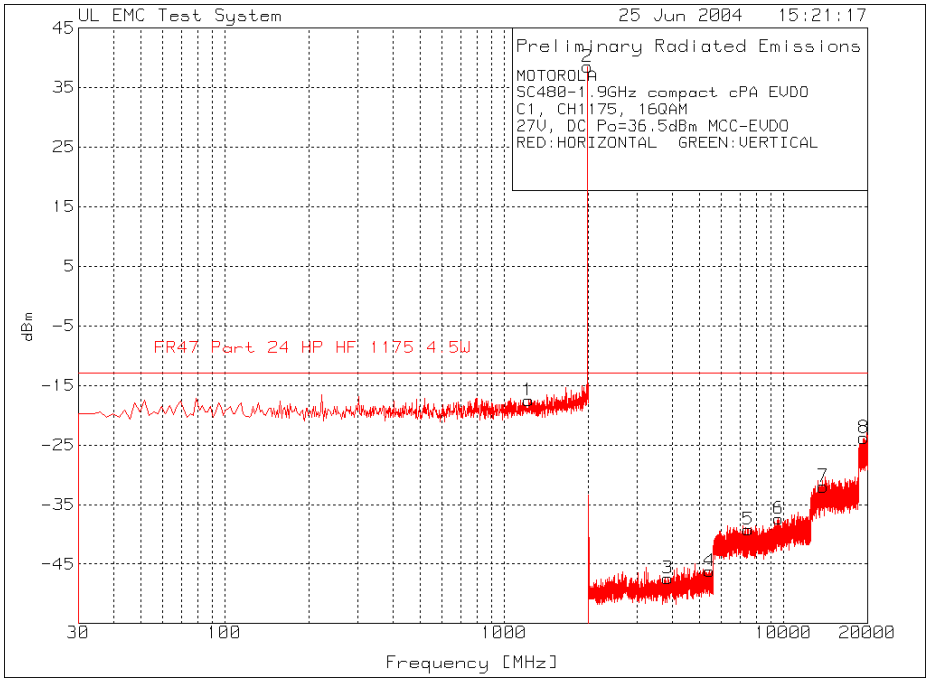




Spurious and Harmonic Emissions Conducted

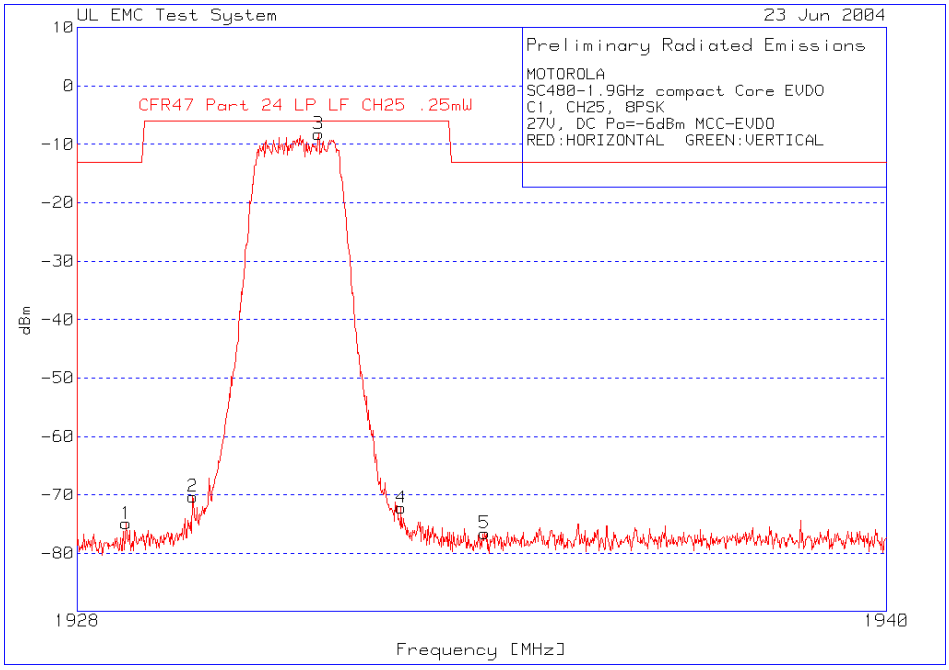
CDMA EVDO Channel 1175 – 36.5 dBm – 16QAM

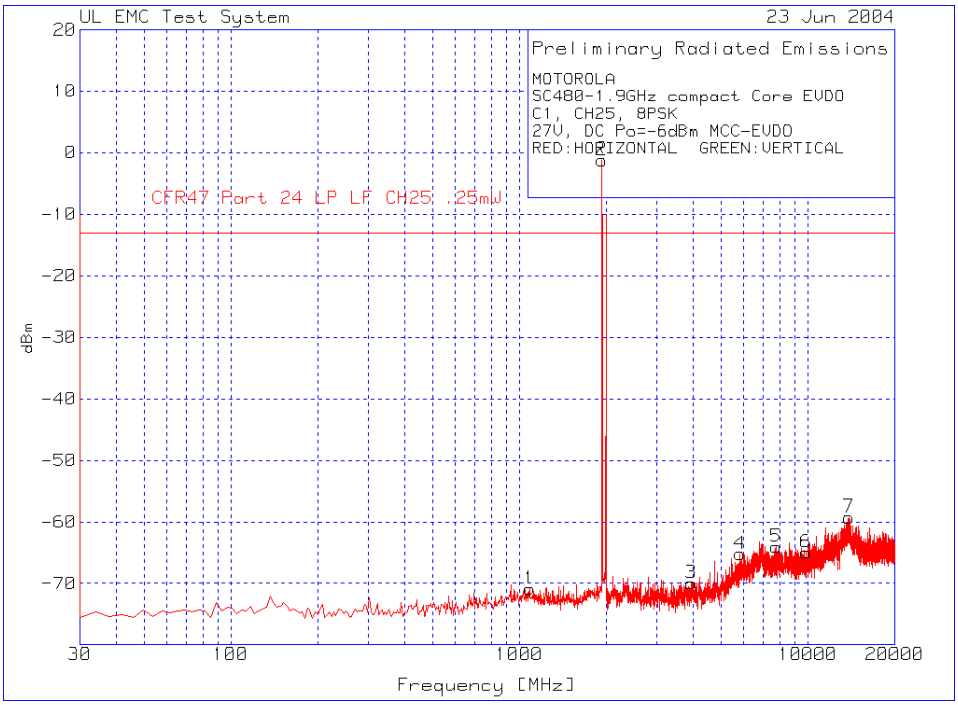




Spurious and Harmonic Emissions Conducted

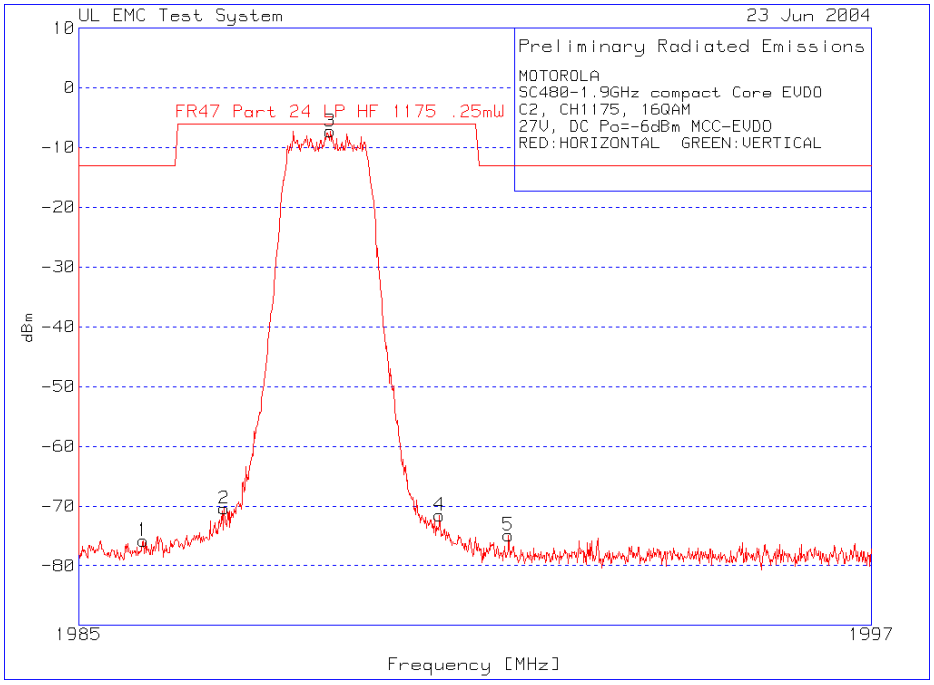
CDMA EVDO Channel 25– -6.0 dBm – 8PSK

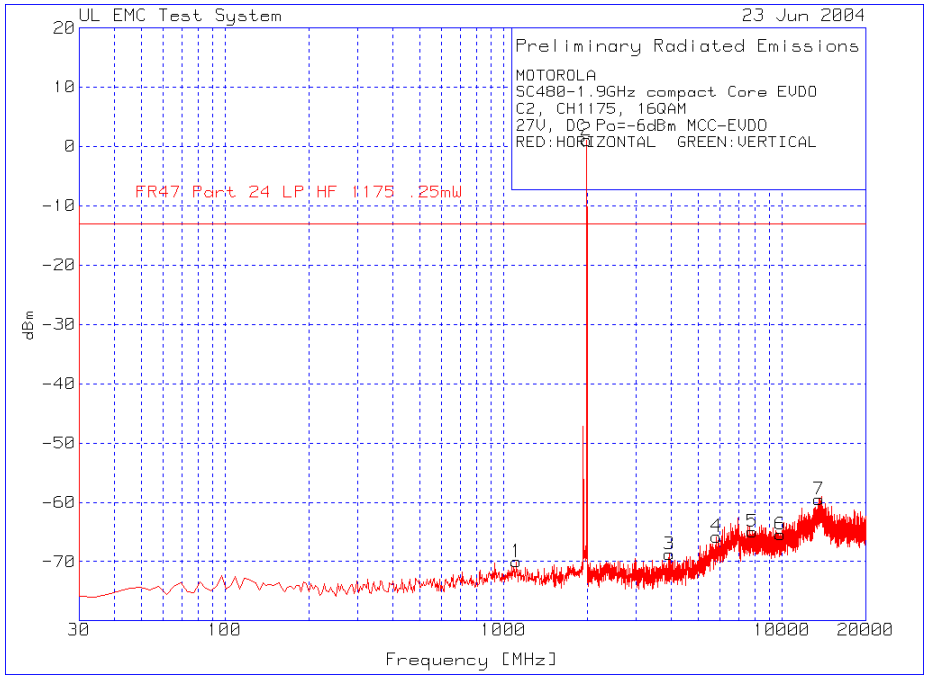




Spurious and Harmonic Emissions Conducted

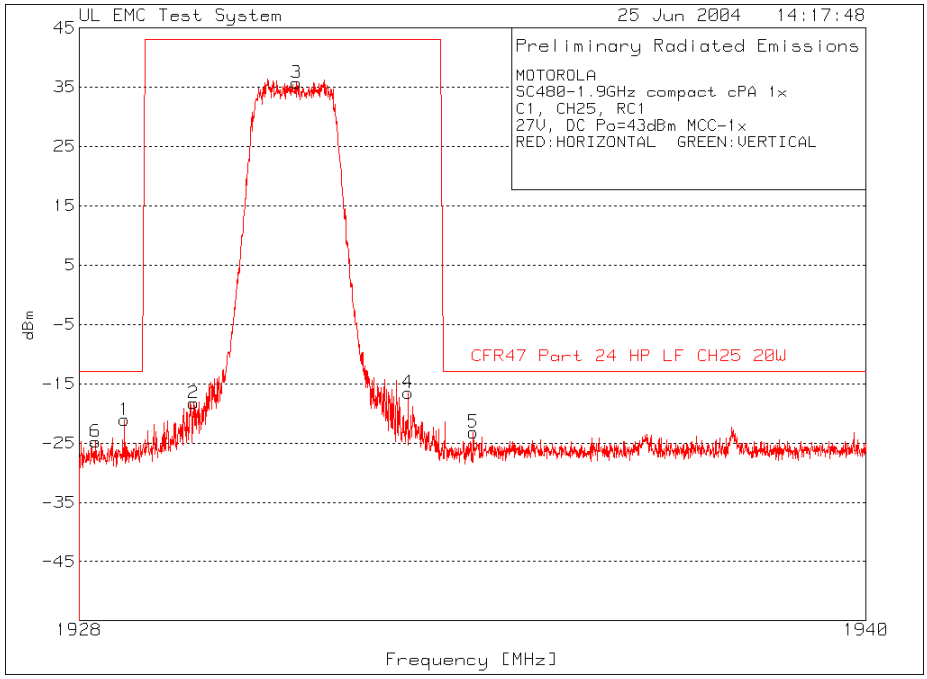
CDMA EVDO Channel 1175 – -6.0 dBm – 16QAM

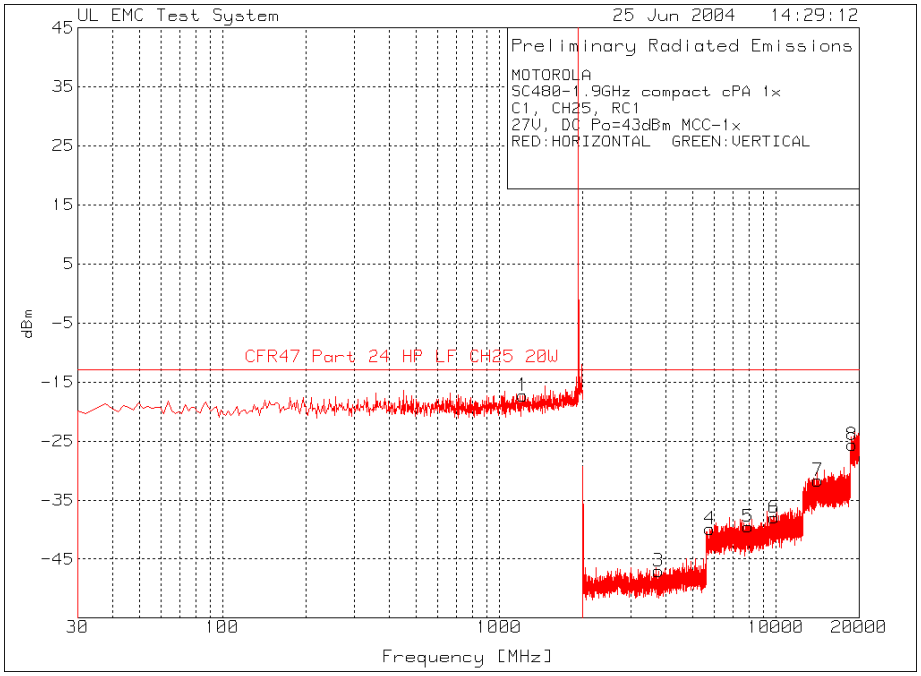




Spurious and Harmonic Emissions Conducted

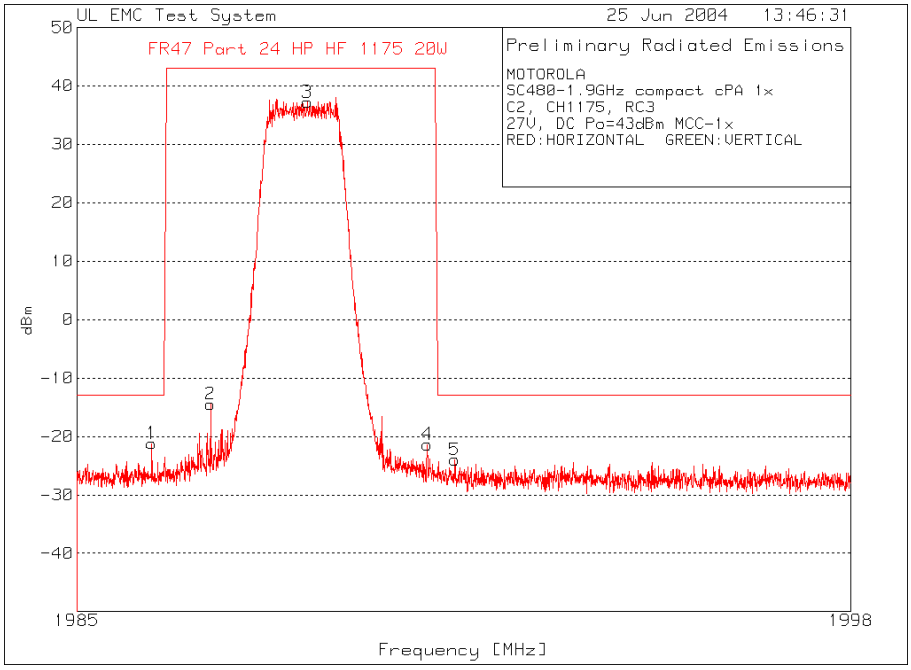
CDMA 1X Channel 25 – 43.0 dBm

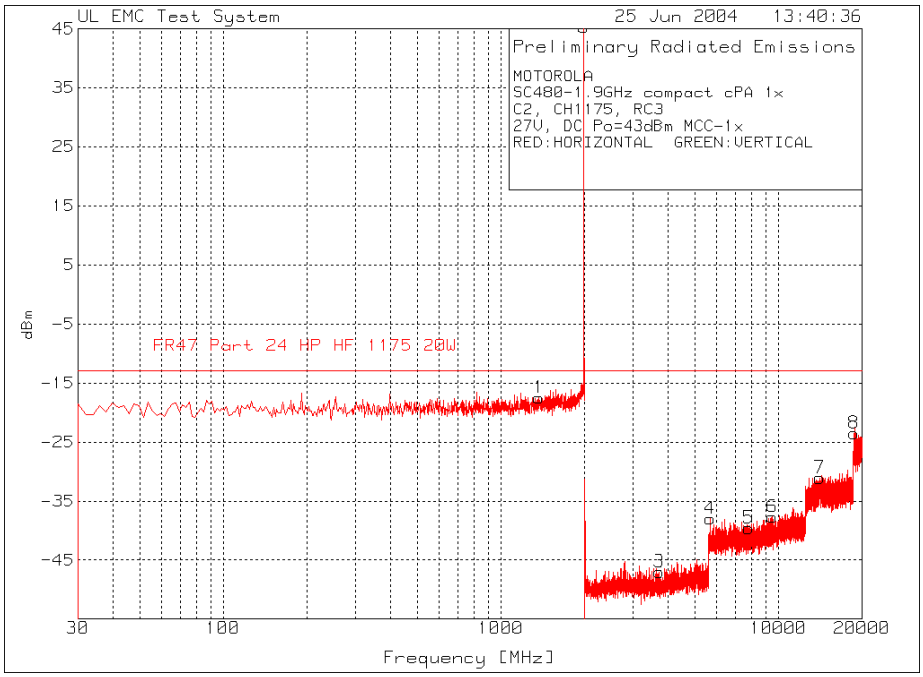




Spurious and Harmonic Emissions Conducted

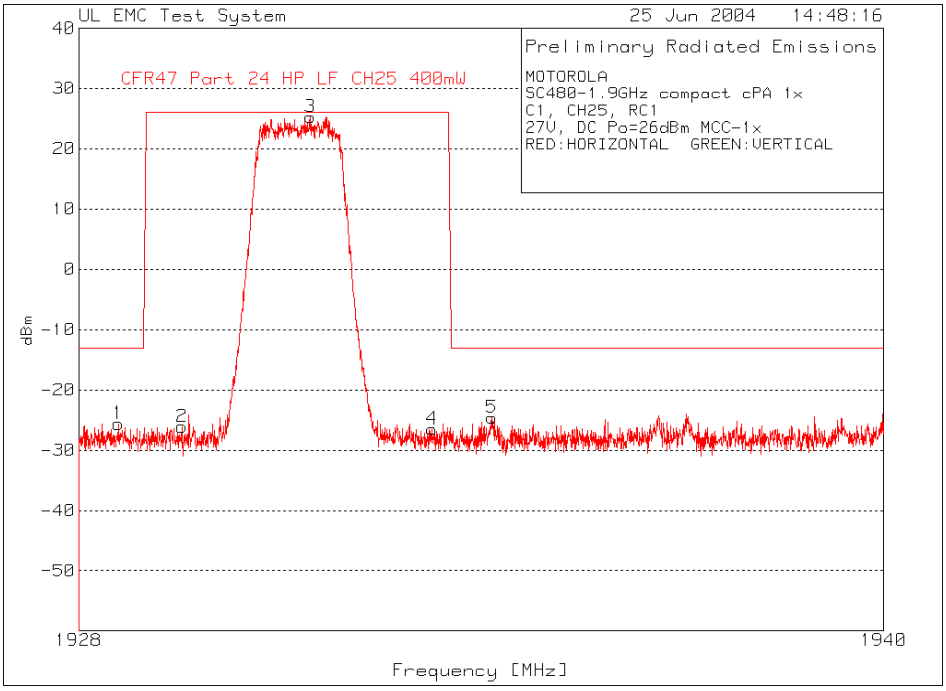
CDMA 1X Channel 1175 – 43.0 dBm

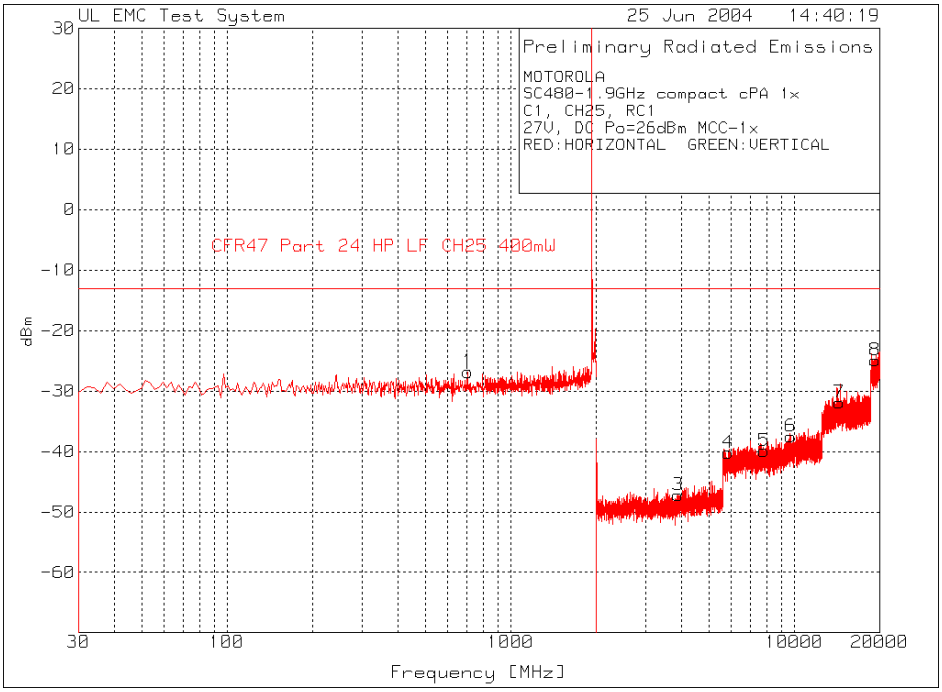




Spurious and Harmonic Emissions Conducted

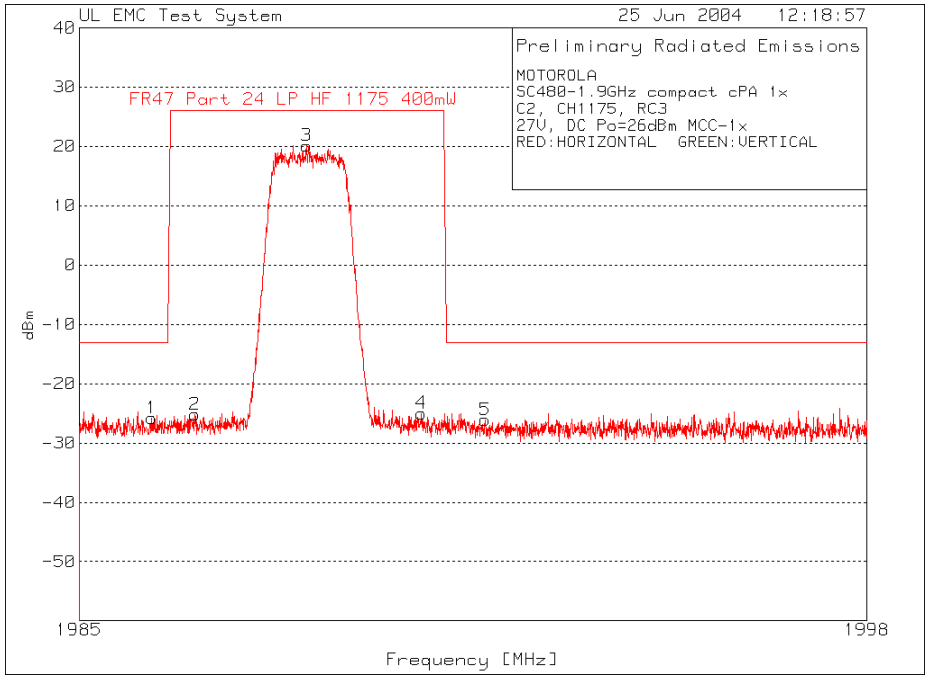
CDMA 1X Channel 25 – 26.0 dBm

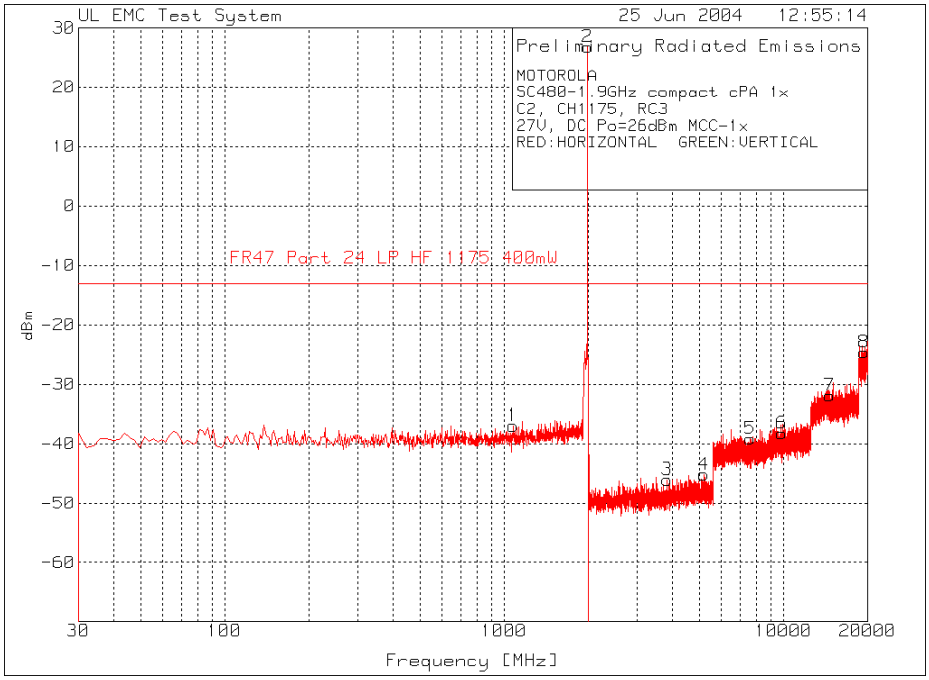




Spurious and Harmonic Emissions Conducted

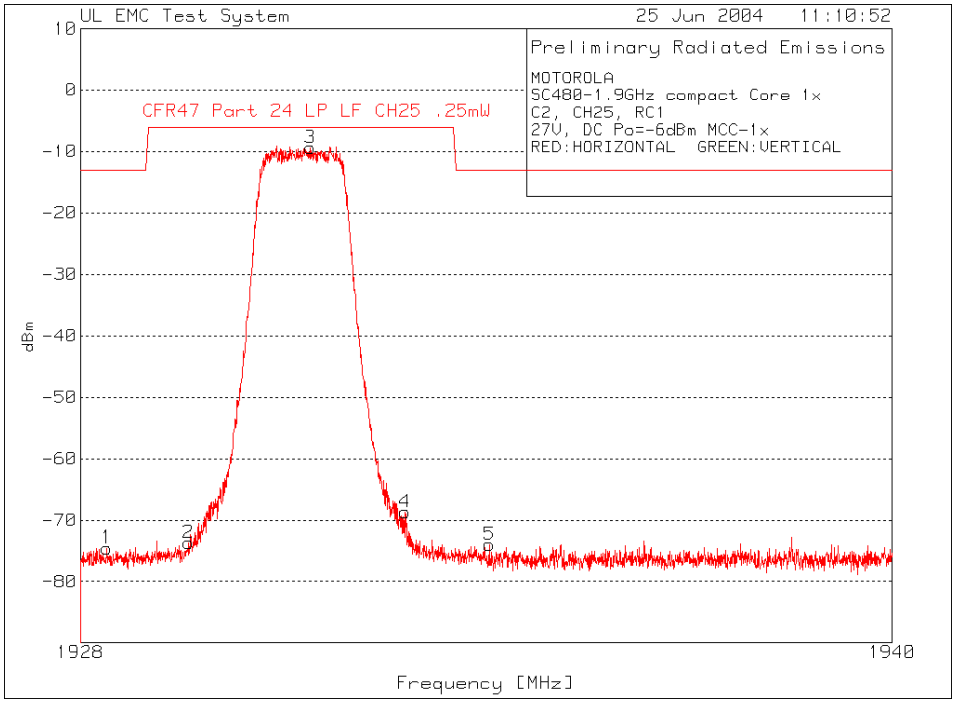
CDMA 1X Channel 1175 – 26.0 dBm

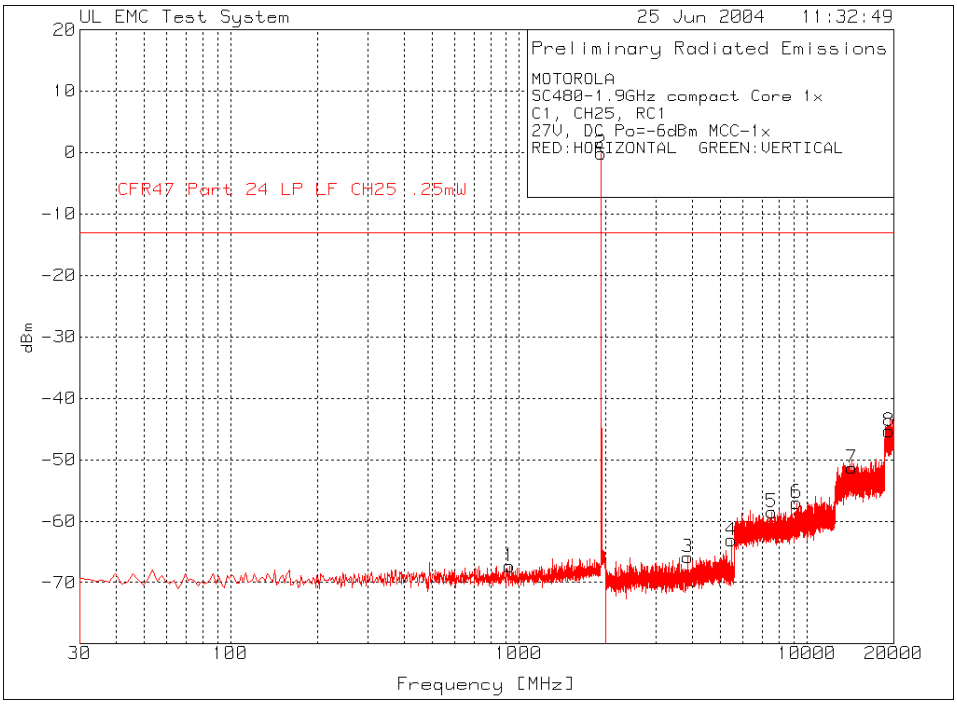




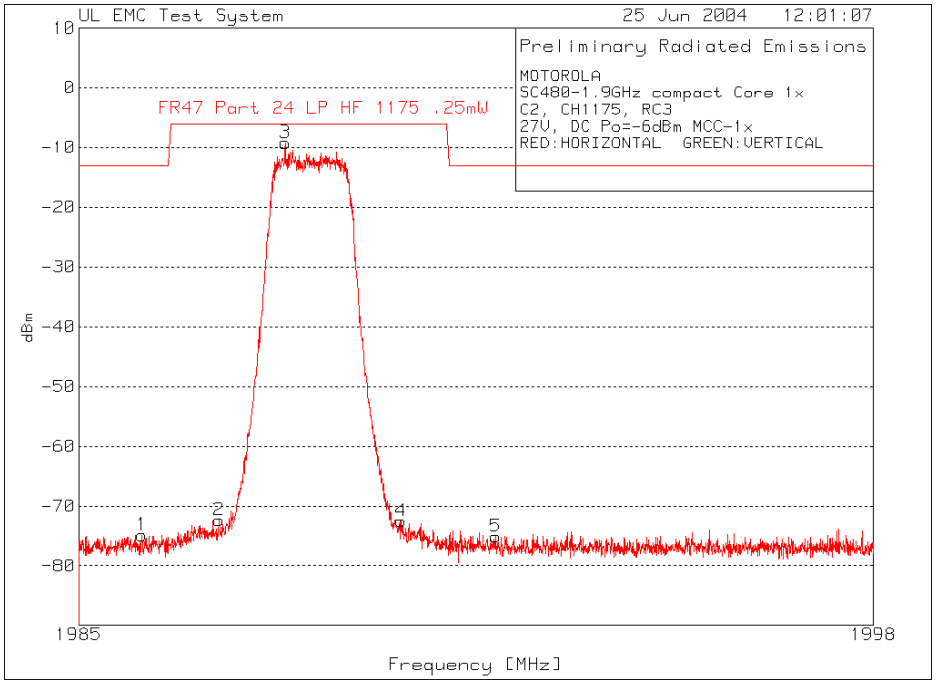
Spurious and Harmonic Emissions Conducted

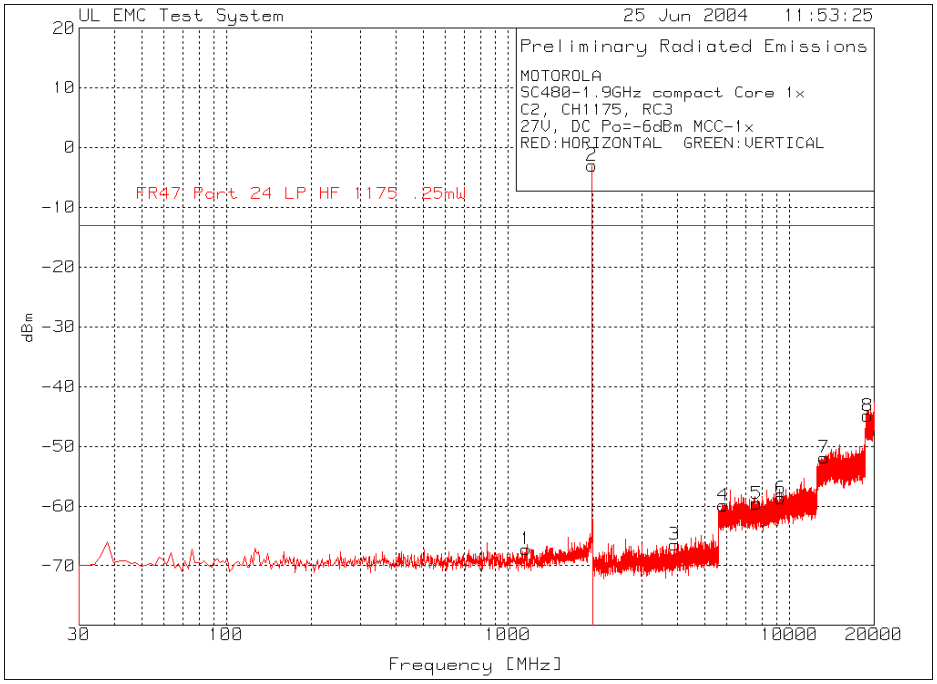
CDMA 1X Channel 25 – -6.0 dBm





Spurious and Harmonic Emissions Conducted
CDMA 1X Channel 1175 – -6.0 dBm





SECTION E
OCCUPIED BANDWIDTH

NOTE: The BTS was configured for maximum power out of 43.00 dBm and minimum power out of -6.00 dBm depending on the configuration. The output power was set respectively to 20.0 Watts or 0.25 mWatts using an HP437B power meter. The external attenuation at 43.0 dBm, 36.5 dBm, and 26.0 dBm was 41.2 dB for channel 25 and 42.6 dB for channel 1175. The external attenuation at -6.0 dBm for core unit was 0.5 dB for channel 25 and channel 1175.

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: 26.63 dBm + 16.37 dB = 43.00 dBm

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

SC480 EVDO @ 1.9 GHz SUMMARY OF OCCUPIED BANDWIDTH

CHANNEL	Power Level (dBm)	FREQUENCY (MHz)	MEASURED (MHz)	FCC LIMIT (MHz)	Pass / Fail
25	-6.0	1931.25	1.2781	1.30	Pass
1175	-6.0	1988.75	1.2745	1.30	Pass

SC480 1X @ 1.9 GHz SUMMARY OF OCCUPIED BANDWIDTH

CHANNEL	Power Level (dBm)	FREQUENCY (MHz)	MEASURED (MHz)	FCC LIMIT (MHz)	Pass / Fail
25	26.0	1931.25	1.2263	1.30	Pass
1175	-6.0	1988.75	1.2260	1.30	Pass

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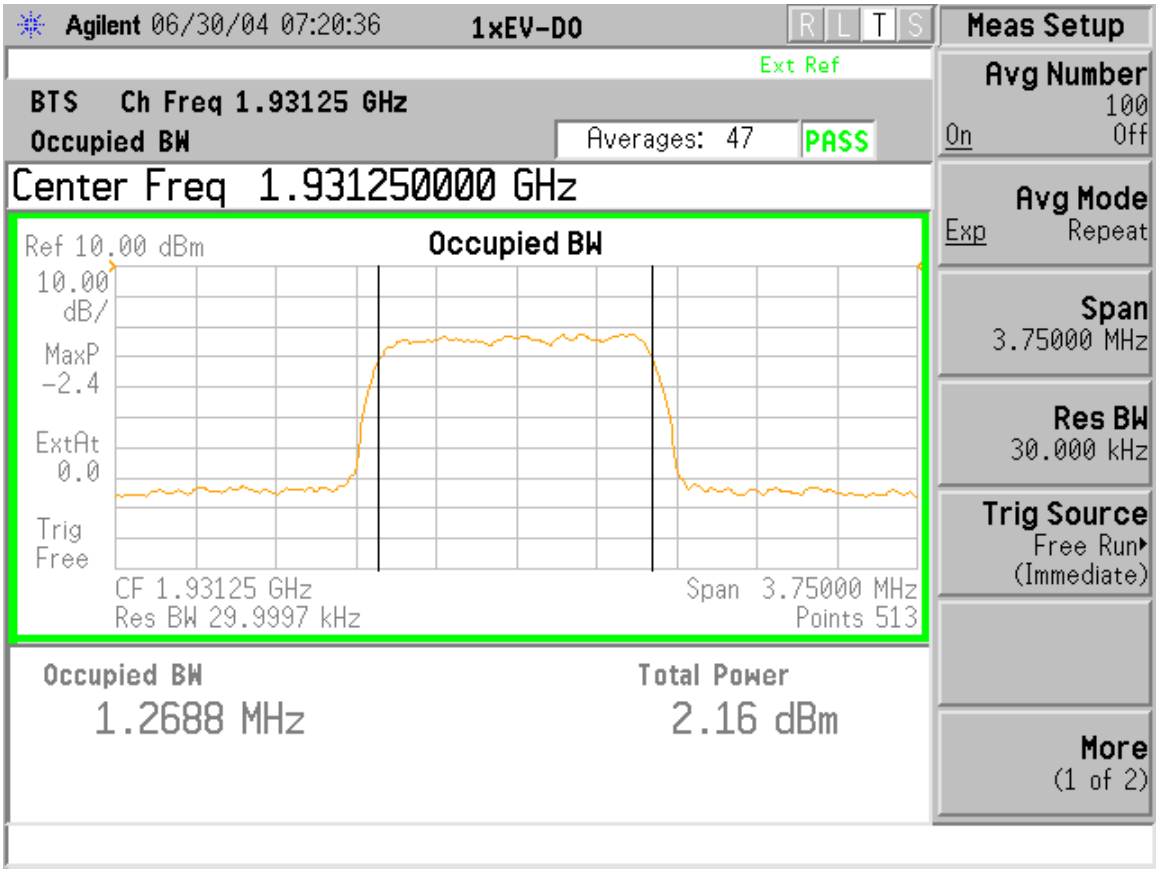
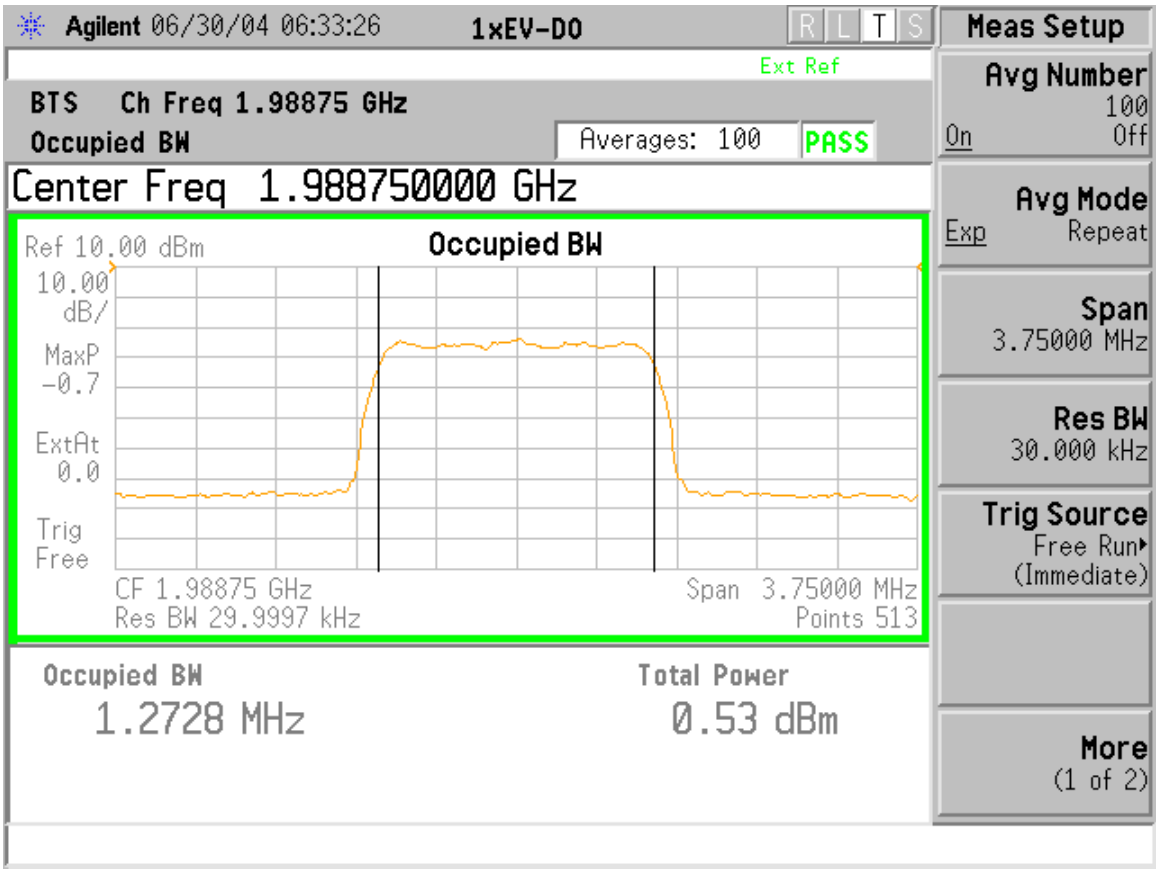
SC480 EVDO with cPA – Occupied Bandwidth – 43.00 dBm- 8PSK



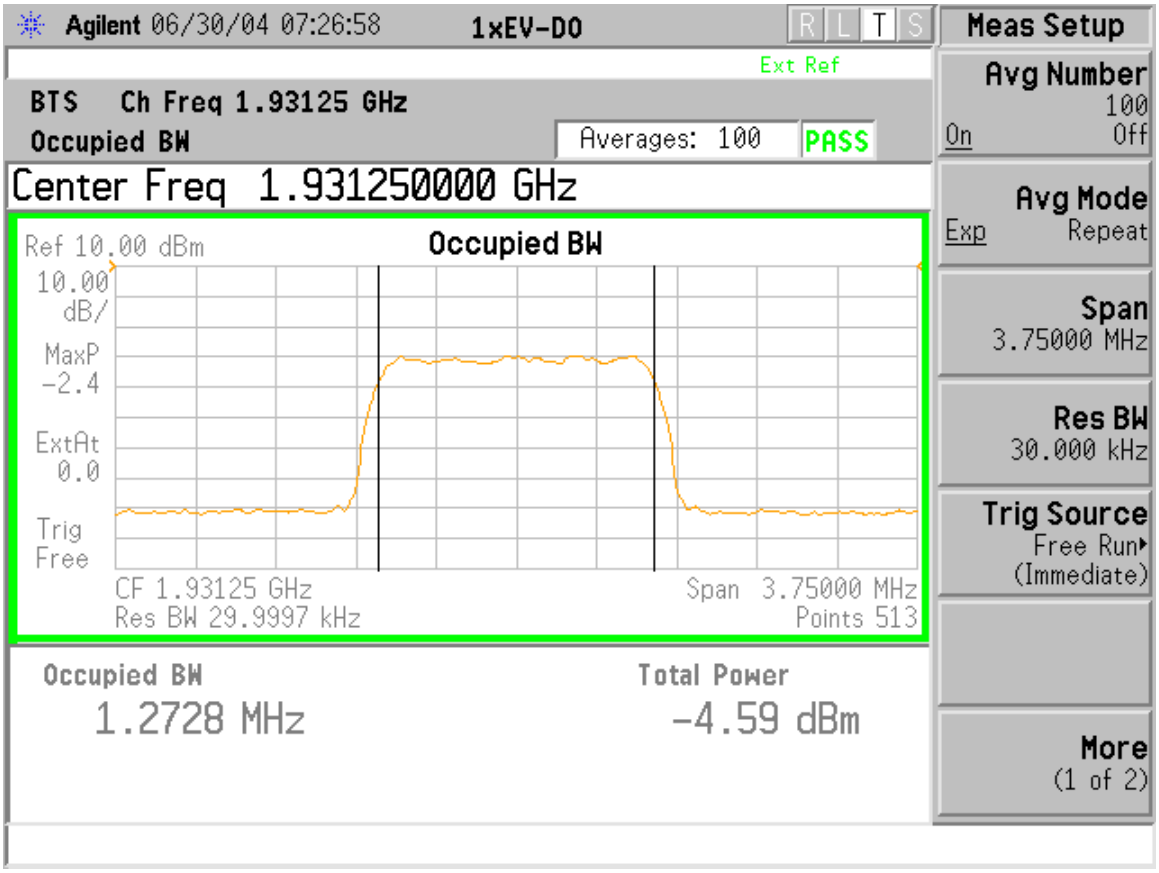
Channel 25 – 1931.25 MHz

SC480 EVDO with cPA – Occupied Bandwidth – 43.00 dBm – 16QAM



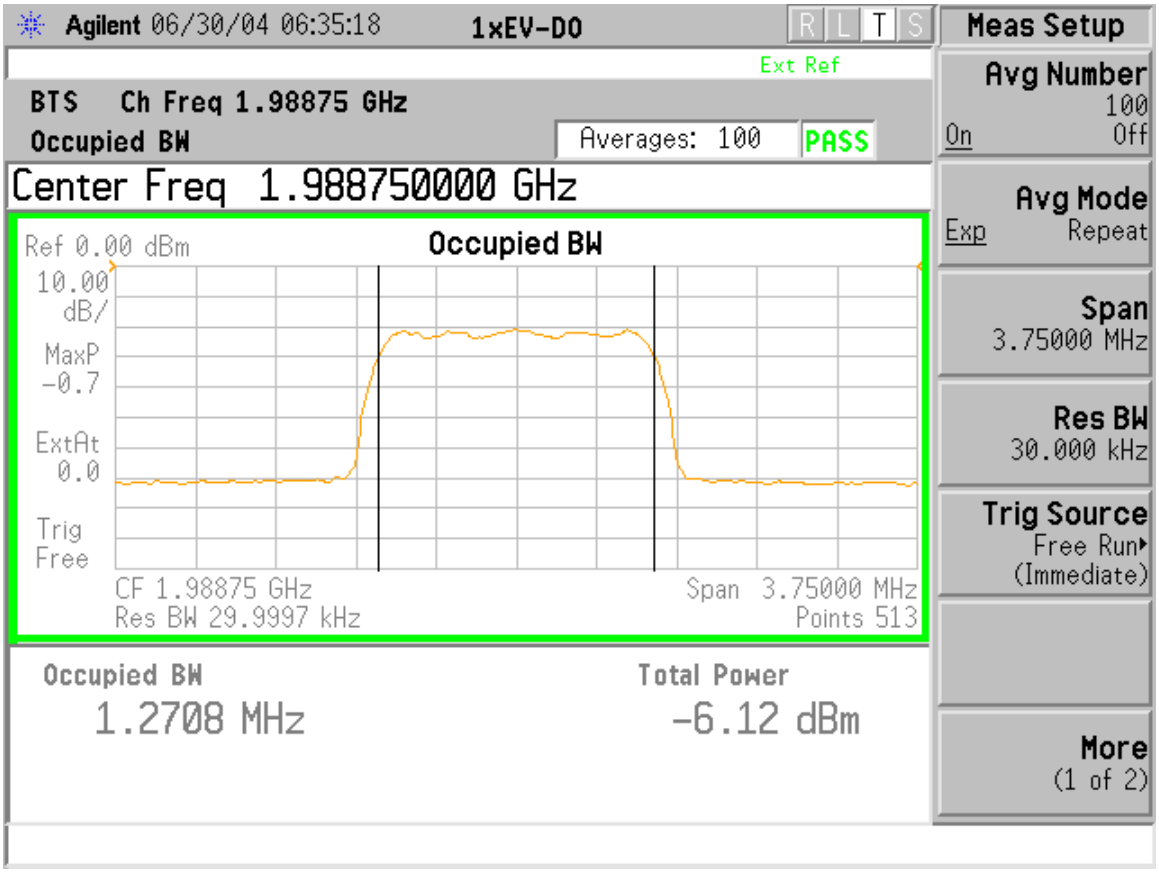
Channel 1175 – 1988.75 MHz

SC480 EVDO with cPA – Occupied Bandwidth – 36.5 dBm – 8PSK



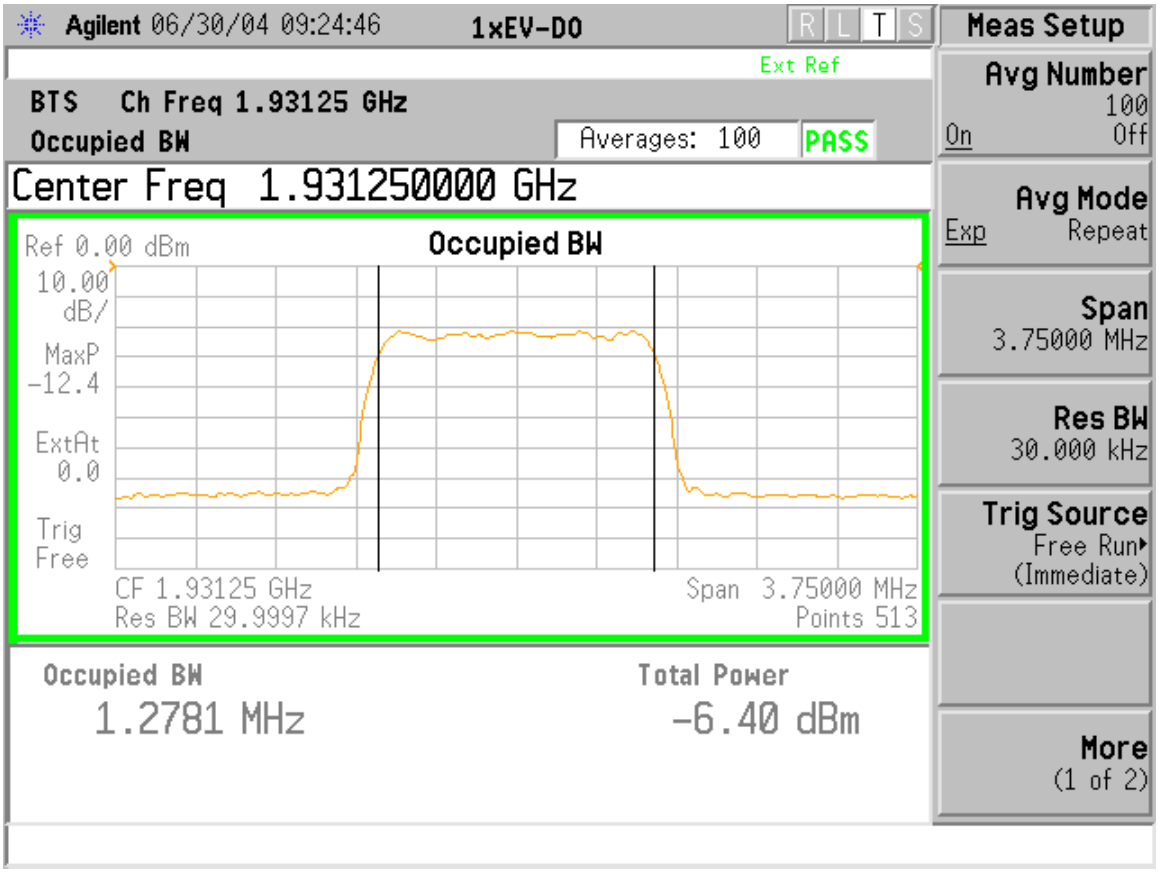
Channel 25 – 1931.25 MHz

SC480 EVDO with cPA – Occupied Bandwidth – 36.5 dBm – 16QAM



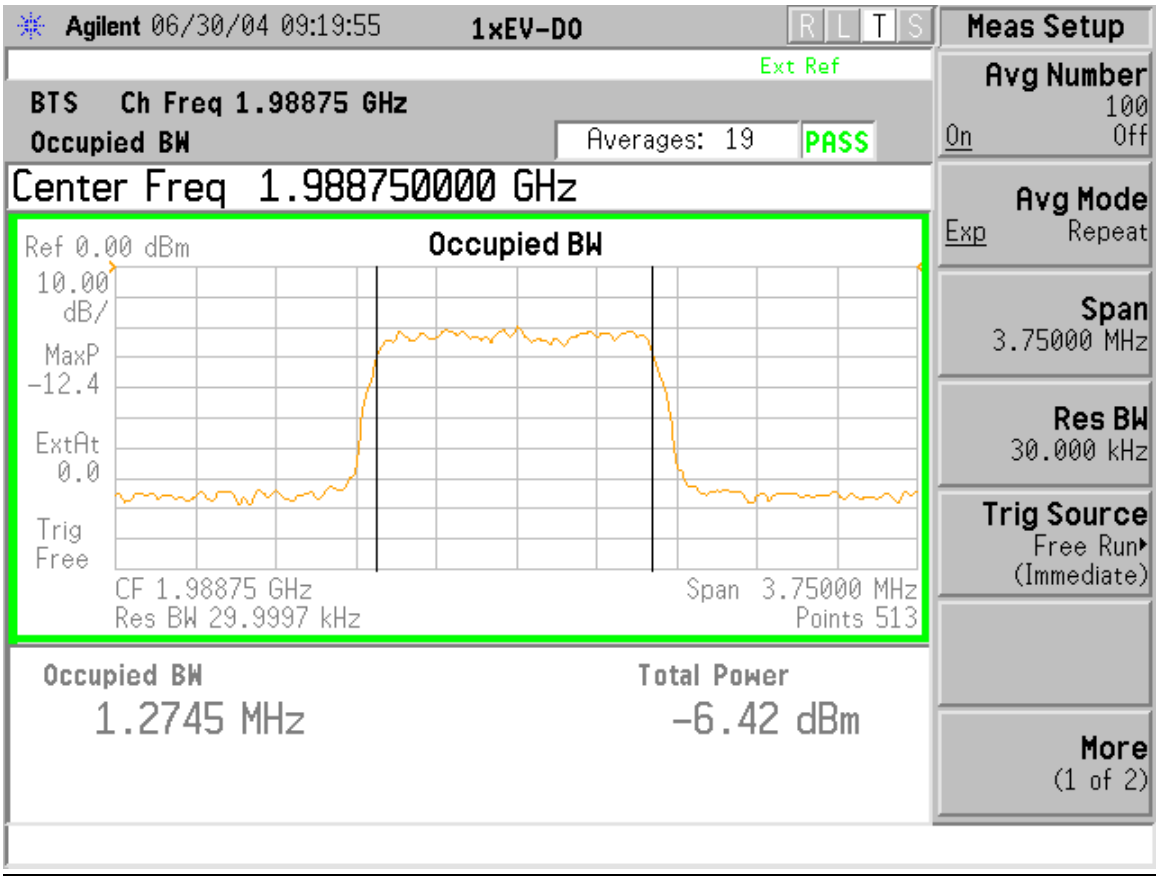
Channel 1175 – 1988.75 MHz

SC480 EVDO with Core – Occupied Bandwidth – -6.0 dBm – 8PSK



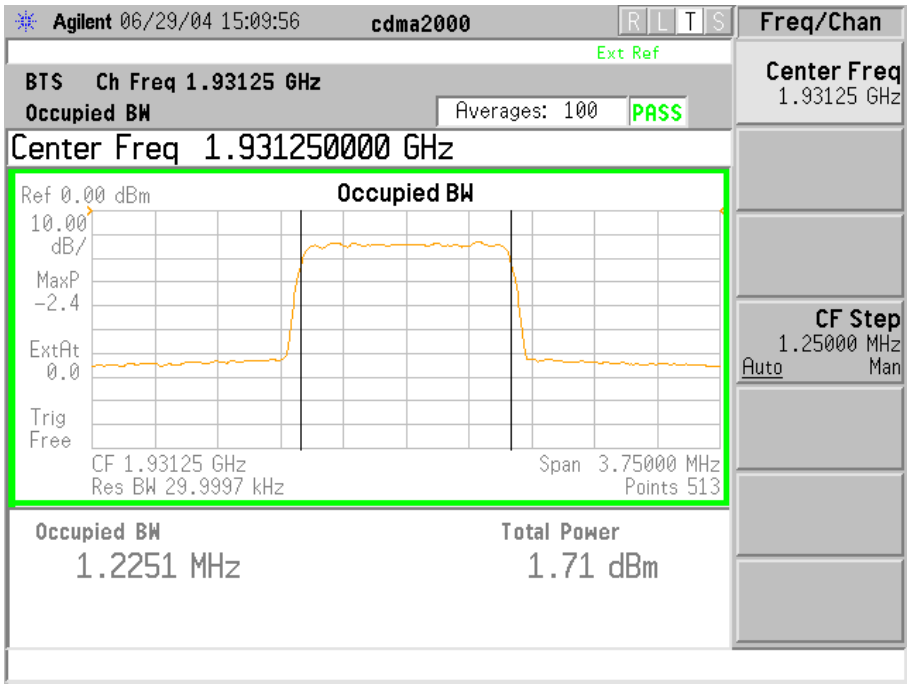
Channel 25– 1931.25 MHz

SC480 EVDO with Core – Occupied Bandwidth – -6.0 dBm – 16QAM

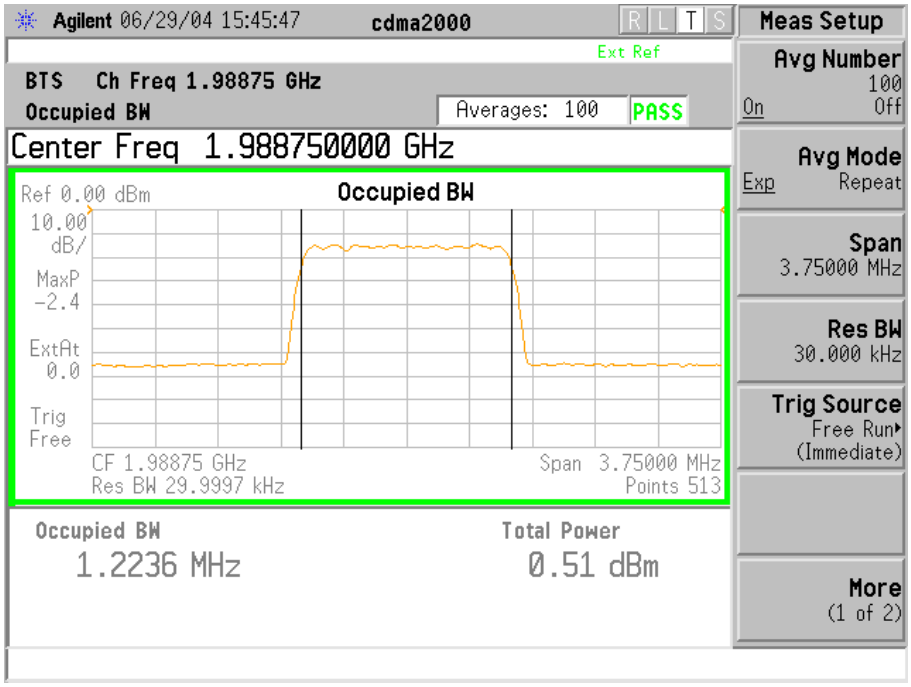


Channel 1175 – 1988.75 MHz

SC480 1X with cPA – Occupied Bandwidth – 43.00 dBm

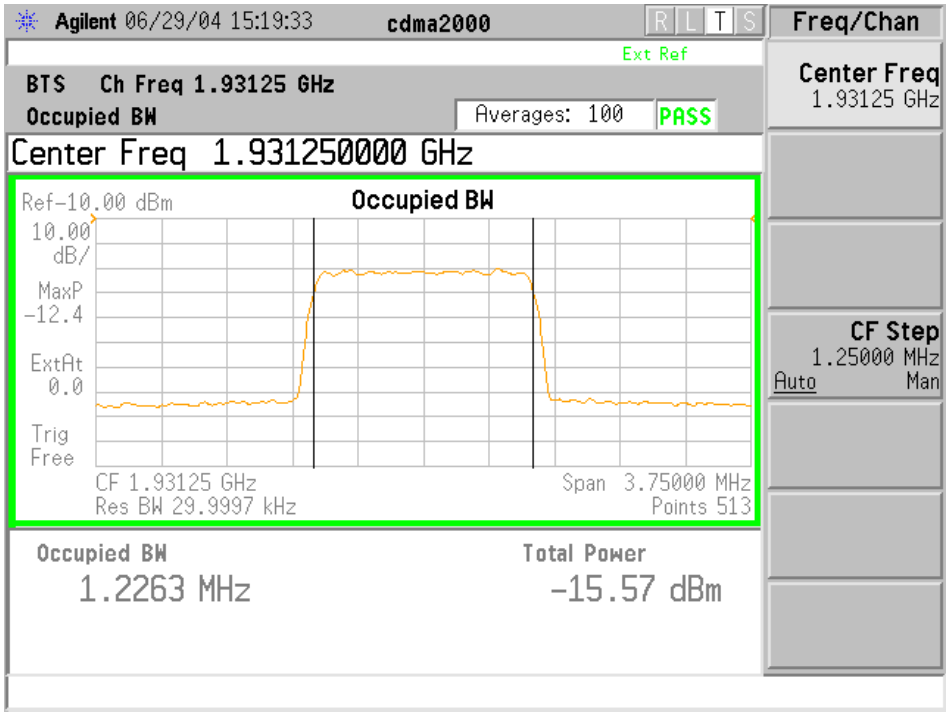


Channel 25 – 1931.25 MHz

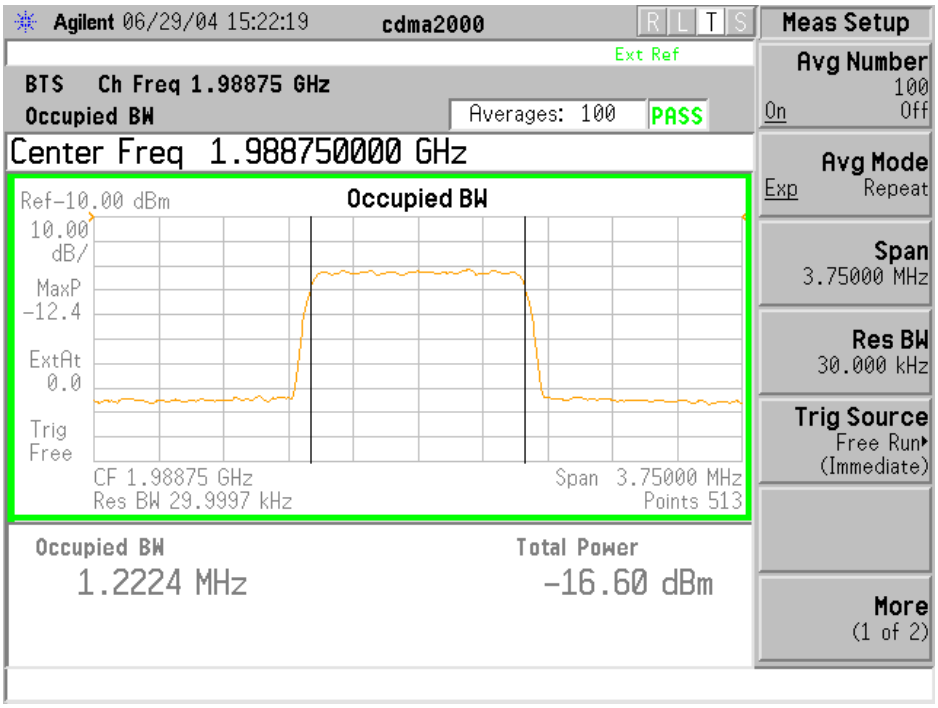


Channel 1175– 1988.75 MHz

SC480 1X with cPA – Occupied Bandwidth – 26.0 dBm

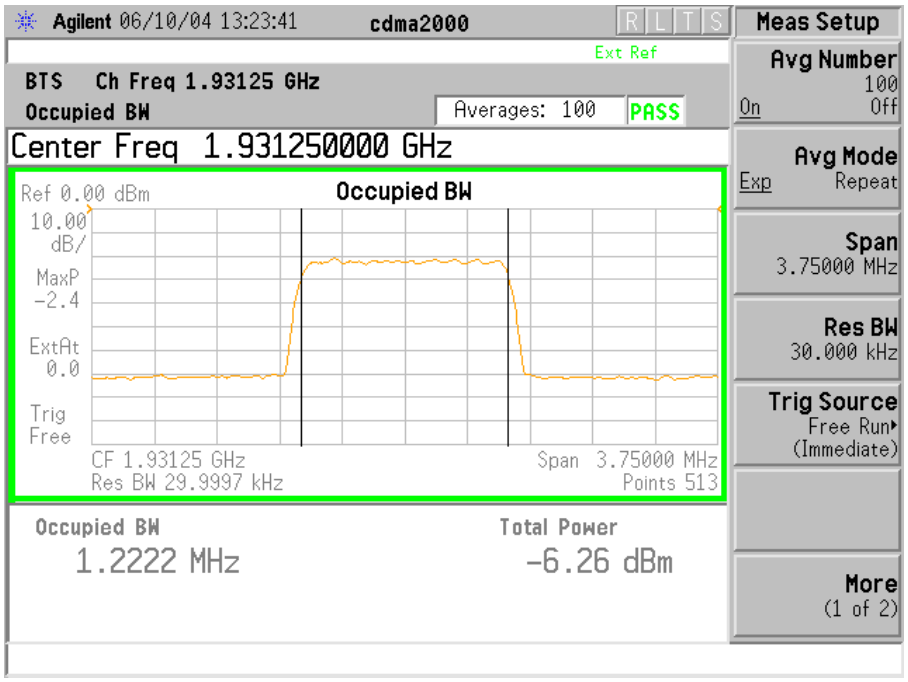


Channel 25– 1931.25 MHz

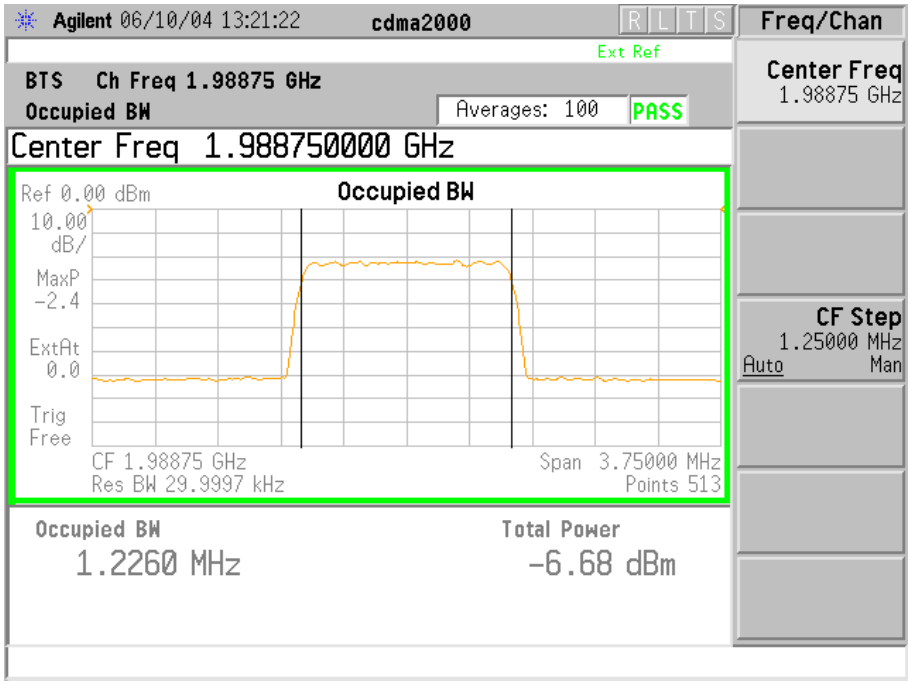


Channel 1175 – 1988.75 MHz

SC480 1X with Core – Occupied Bandwidth – -6.0 dBm



Channel 25 – 1931.25 MHz



Channel 1175 – 1988.75 MHz

Section F

Maximum Permissible Exposure (MPE)

MPE Levels for Uncontrolled Environment

MPE Levels based on ANSI/IEEE C95.1-1992 and 47 CFR 1.1310, Table 1 requirements

Antenna	Antenna Gain	Uncontrolled Exposure Specification 1.00 mW/cm^2	Measured level at Specified distance	Published Uncontrolled Exposure Distance (Note 1)
DB792SM5N-KU	2.1dBi	1.00 mW/cm^2	1.00 mW/cm^2 @ cm	0.75 m
DB794SL5N-KM	5.5dBi	1.00 mW/cm^2	1.00 mW/cm^2 @ cm	0.75 m

Note 1: Warning Label will specify uncontrolled exposure boundary distance per ANSI C95.2

1900/1500 = 1.00 mW/cm^2 uncontrolled limit

Francisco J Avalos 07.02.04

Signature Date

Francisco Avalos

SECTION G

FREQUENCY STABILITY

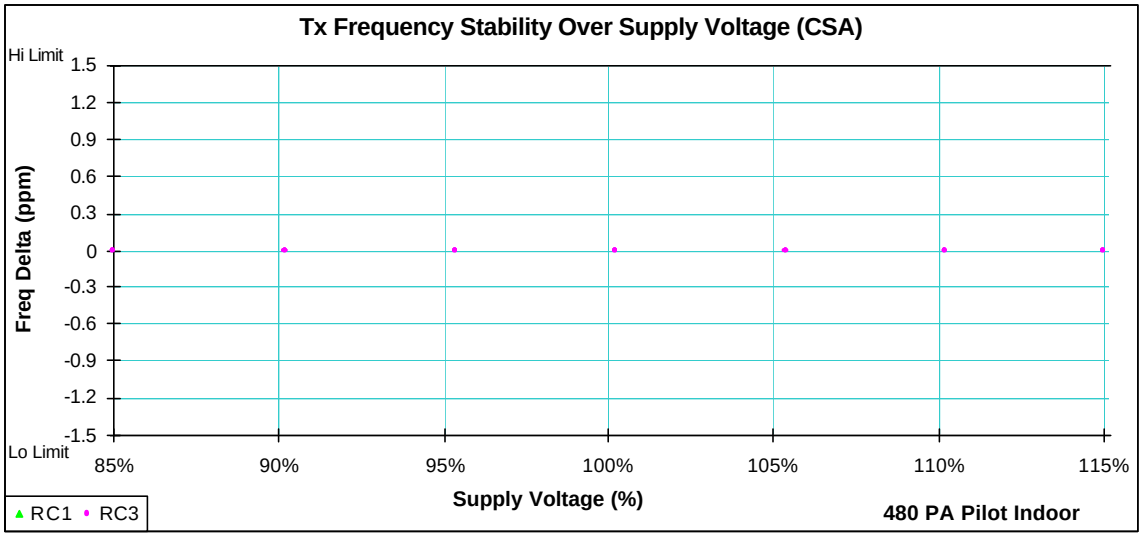
MODE	27V POWER	WORST CASE ? PPM	FCC REQUIREMENT	Pass / Fail
CSA	85-115%	<0.02	+/- 1.5 PPM MAX	Pass

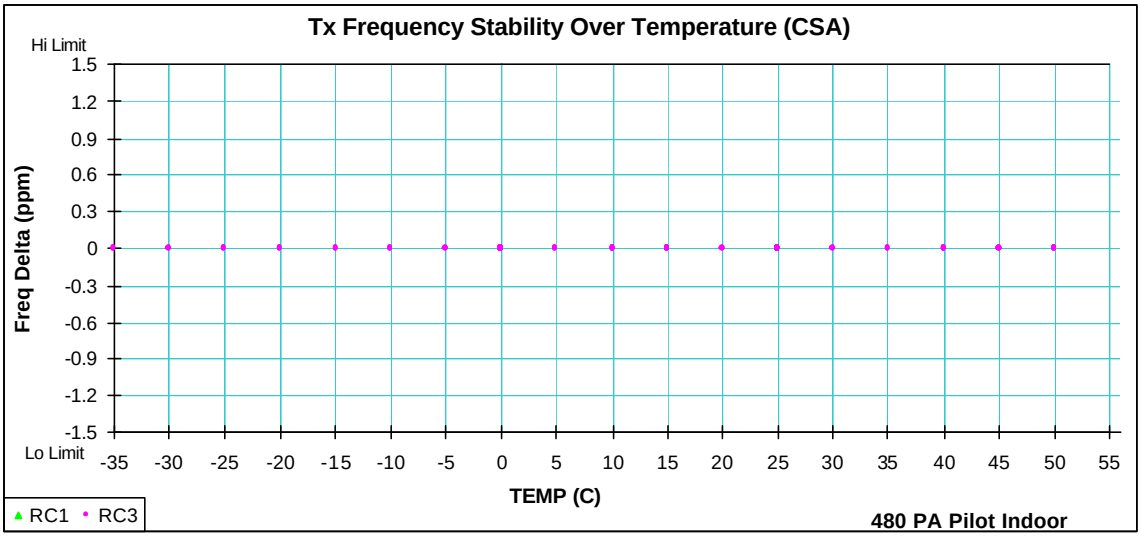
MODE	TEMPERATURE	WORST CASE ? PPM	FCC REQUIREMENT	Pass / Fail
CSA	-30º to +50º C	<0.2	+/- 1.5 PPM MAX	Pass

07.02.04

Signature Date

Terry Schwenk


Tx Frequency Stability Over Supply Voltage (CSA)
Hi Limit
Lo Limit
Freq Delta (ppm)
1.5
1.2
0.9
0.6
0.3
0
-0.3
-0.6
-0.9
-1.2
-1.5
85%
90%
95%
100%
105%
110%
115%
Supply Voltage (%)
RC1
RC3
480 PA Pilot Indoor


Tx Frequency Stability Over Temperature (CSA)
Hi Limit
Lo Limit
Freq Delta (ppm)
1.5
1.2
0.9
0.6
0.3
0
-0.3
-0.6
-0.9
-1.2
-1.5
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
45
50
55
TEMP (C)
RC1
RC3
480 PA Pilot Indoor