



**SC300 1X MICROCELL @ 800 MHz
CDMA BTS CDMA BTS FRAME
TEST REPORT EXHIBIT**

Index

<u>Section</u>	<u>Description</u>
A	Summary of RF Measurements
B	Modulation Characteristics
C	Spurious & Harmonic Emissions Radiated
D	Spurious & Harmonic Emissions Conducted
E	Occupied Bandwidth
F	MPE Exposure
G	Frequency Stability



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APPLICANT: MOTOROLA
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Section A

Summary of RF Measurements



Summary of Radiated RF Measurements

Worst Case Radiated RF Spur Level for SC300 1X Microcell @ 800 MHz CDMA BTS

Radiated				Substituted Power			Spec	Result
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 22/24 MAX LIMIT (dBm)	(Pass/Fail)
1013	2608.16	V	56.6	-38.628	-50.1	-44.55	-13	Pass

Notes:

1. Converting dBuV/M to dBm at 3 meters:
 $(\text{dBuV/M}) + 9.542 - 104.77 = \text{dBm}$
Converting dBuV/M to dBm at 10 meters:
 $(\text{dBuV/M}) + 20 - 104.77 = \text{dBm}$
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)).

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Summary of Conducted RF Measurements

SC300 1X Microcell @ 800 MHz CDMA BTS

FCC Part 22

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
777	7146.480	62.09	-44.91	-13	Pass

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Section B

Summary of Modulation Characteristics

SC300 1X Microcell @ 800 MHz CDMA BTS

CHANNEL	TUNE FREQUENCY (MHz)	RHO Measured	RHO Specification	PASS / FAIL
777	893.310	0.99188	> 0.912	Pass
1013	869.700	0.98510	> 0.912	Pass

The BTS was configured for maximum power out of 40.0 dBm and minimum power out of 23.0 dBm respectively. The output power was set respectively to 10.0 Watts or 200 mWatts using an HP437B power meter

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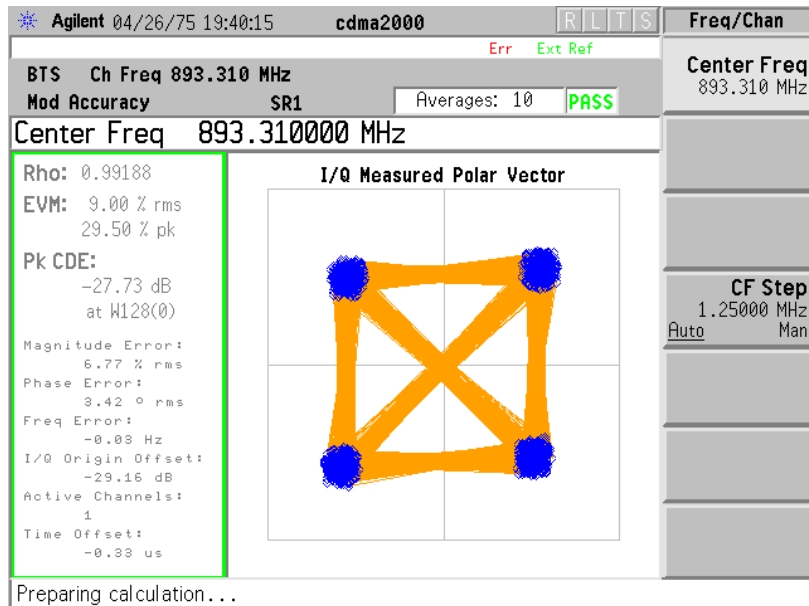
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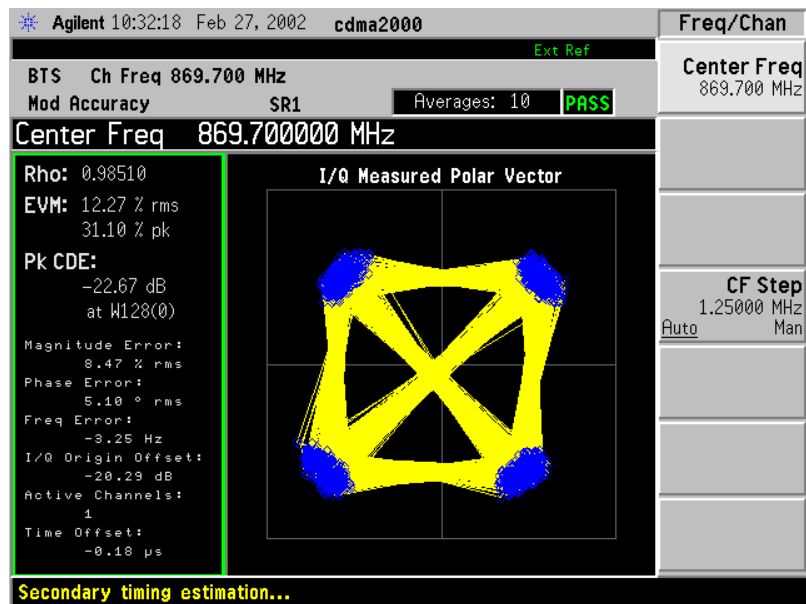


Modulation Characteristics

Maximum Power



Channel 777 High Power

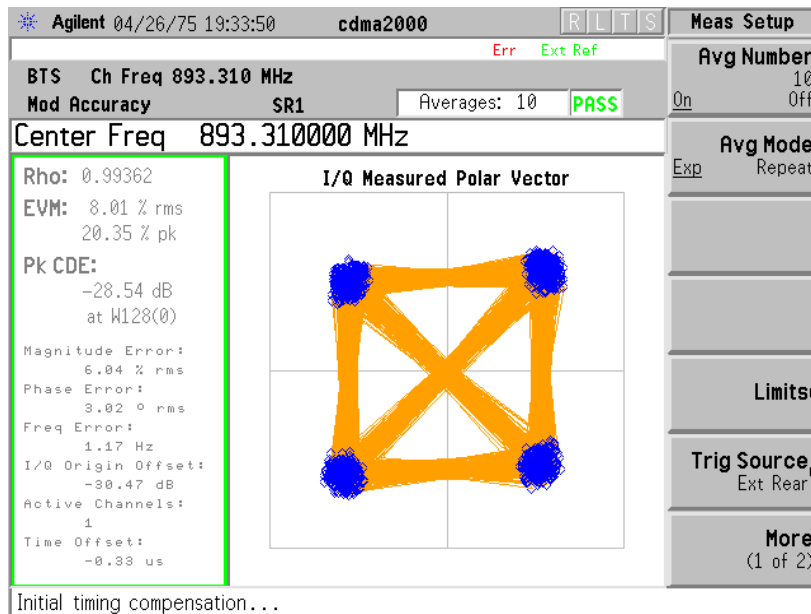


Channel 1013 High Power

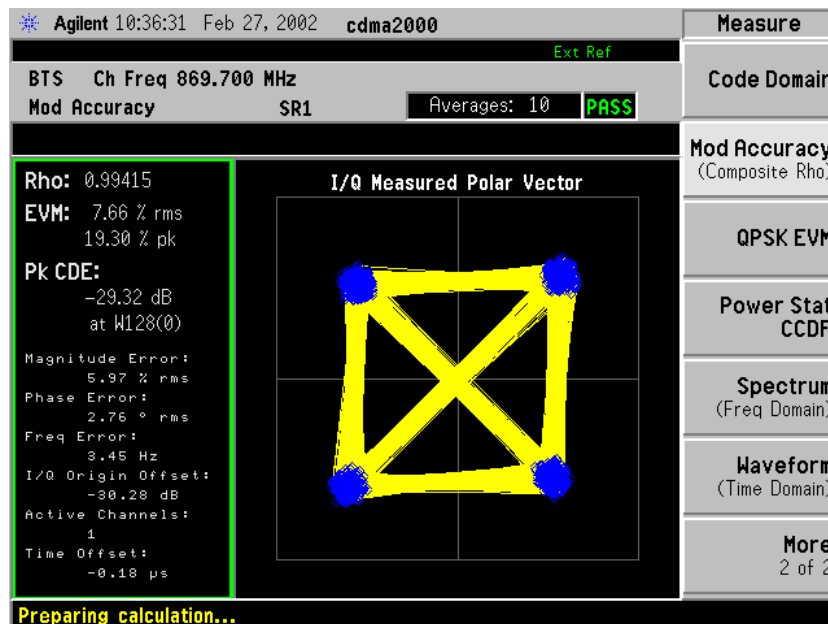


Modulation Characteristics

Minimum Power



Channel 777 Low Power



Channel 1013 Low Power



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Section C

Spurious and Harmonic Emissions Radiated



Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC300 1X Microcell @ 800 MHz CDMA BTS

Radiated				Substituted Power			Spec	Result
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 22/24 MAX LIMIT (dBm)	(Pass/Fail)
777	2678.601	H	51.8	-43.428	-52.92	-47.27	-13	Pass
777	2678.601	V	51	-44.228	-55.12	-49.47	-13	Pass
1013	3477.435	H	43.8	-51.428	-70.3	-64.35	-13	Pass
1013	2608.16	V	56.6	-38.628	-50.1	-44.55	-13	Pass

Notes:

1. Converting dBuV/M to dBm at 3 meters:
 $(\text{dBuV/M}) + 9.542 - 104.77 = \text{dBm}$
Converting dBuV/M to dBm at 10 meters:
 $(\text{dBuV/M}) + 20 - 104.77 = \text{dBm}$
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)).

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Section C

Spurious and Harmonic Emissions Conducted



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Conducted RF Measurements

SC300 1X Microcell @ 800 MHz CDMA BTS

FCC Part 24

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBmV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
1013	3478.80	53.76	-53.24	-13	Pass
777	7146.480	62.09	-44.91	-13	Pass

FCC Maximum Limit Per 47 CFR:

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

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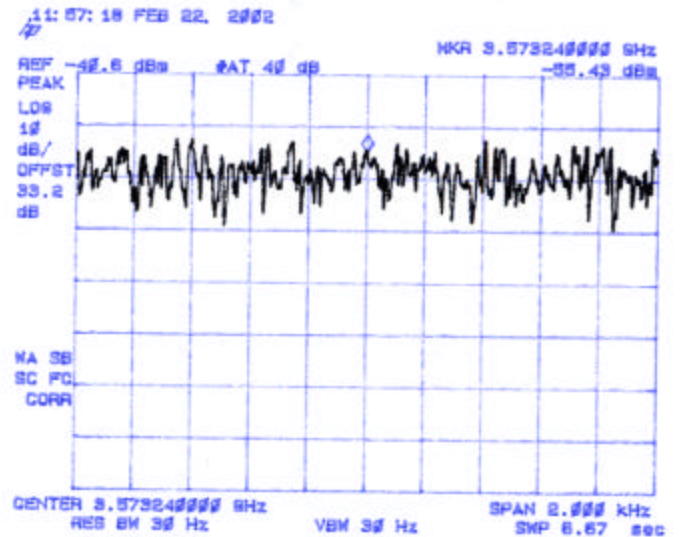
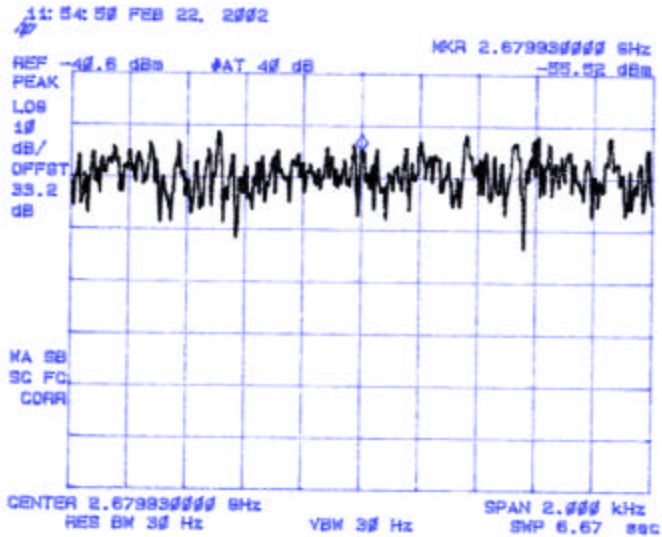
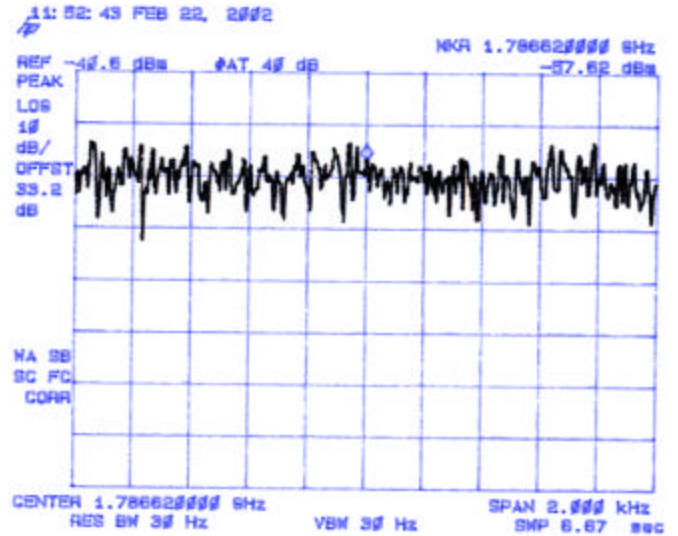
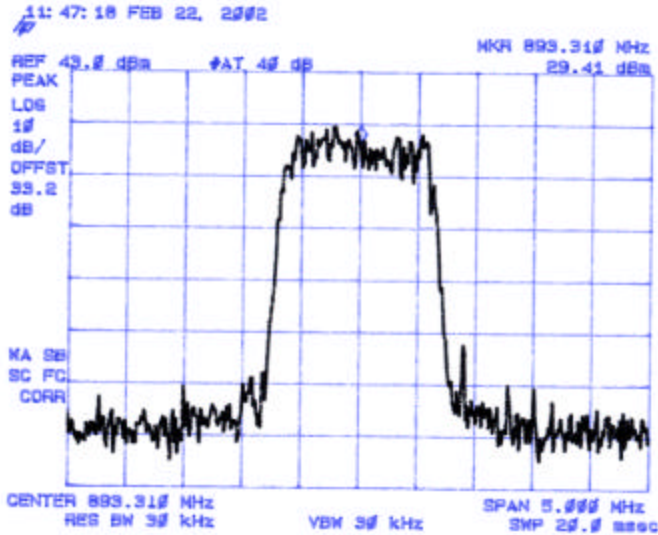


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Spurious and Harmonic Emissions Conducted CDMA Channel 777 - Maximum Power



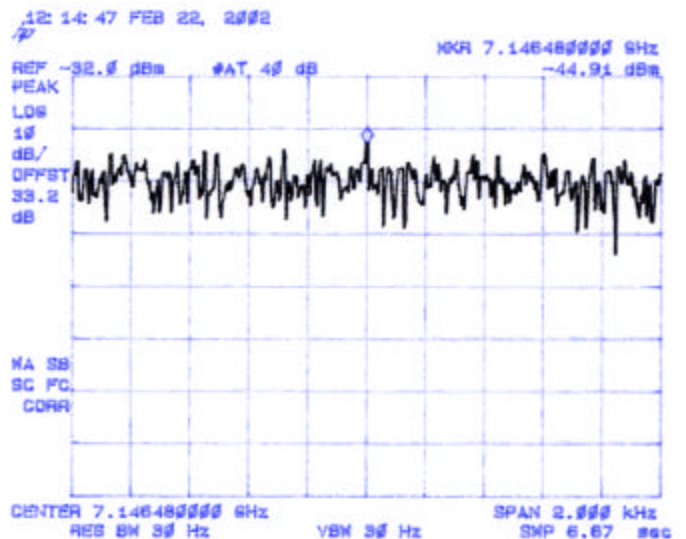
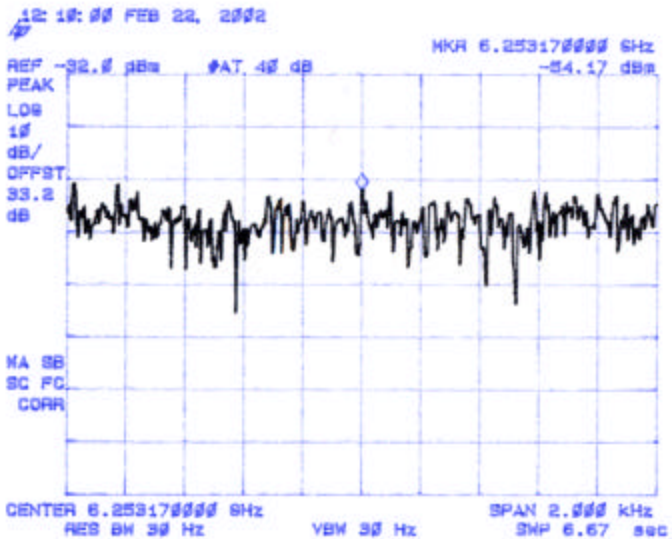
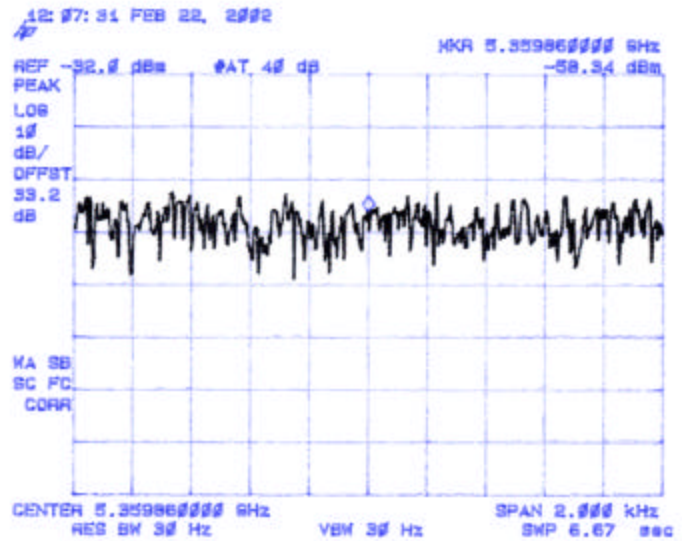
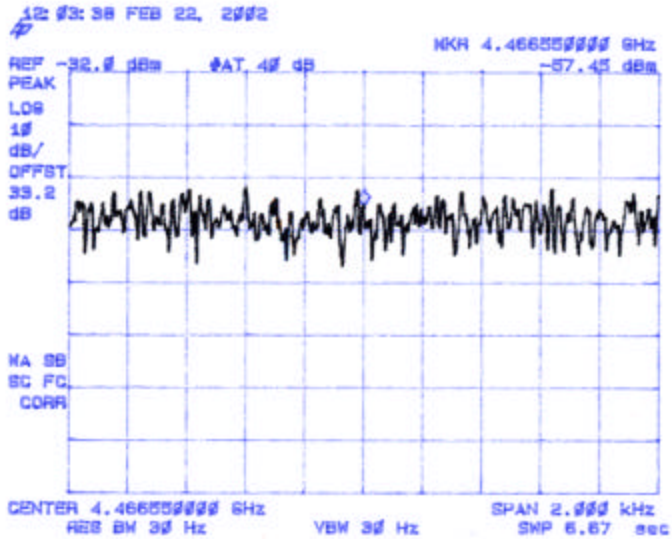


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Spurious and Harmonic Emissions Conducted CDMA Channel 777 - Maximum Power (continued)



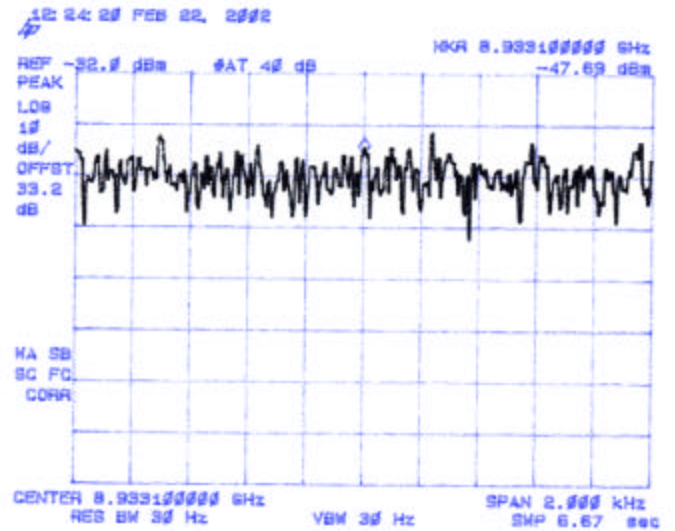
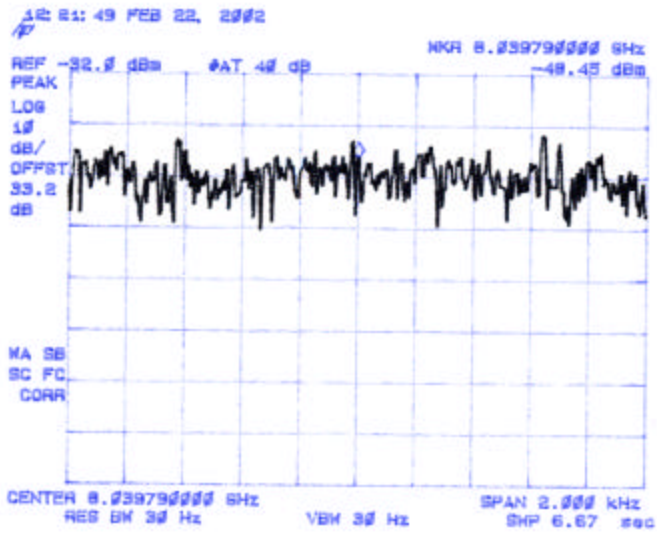


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Spurious and Harmonic Emissions Conducted
CDMA Channel 777 - Maximum Power (continued)



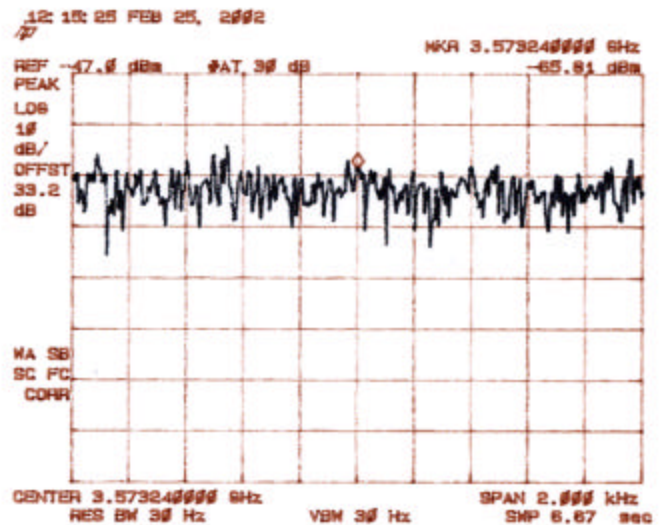
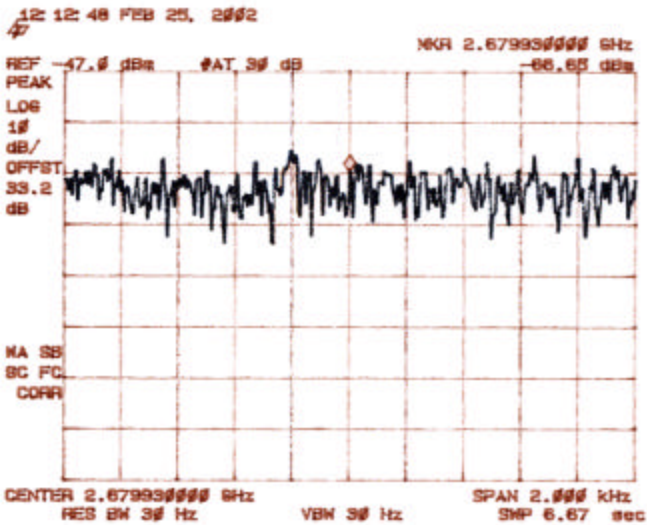
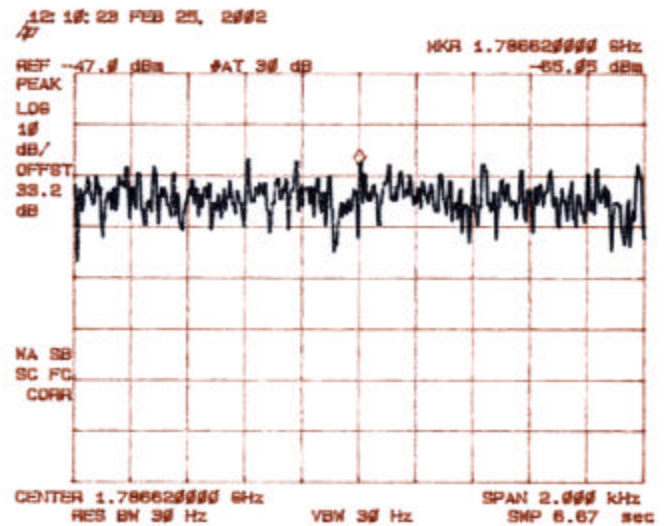
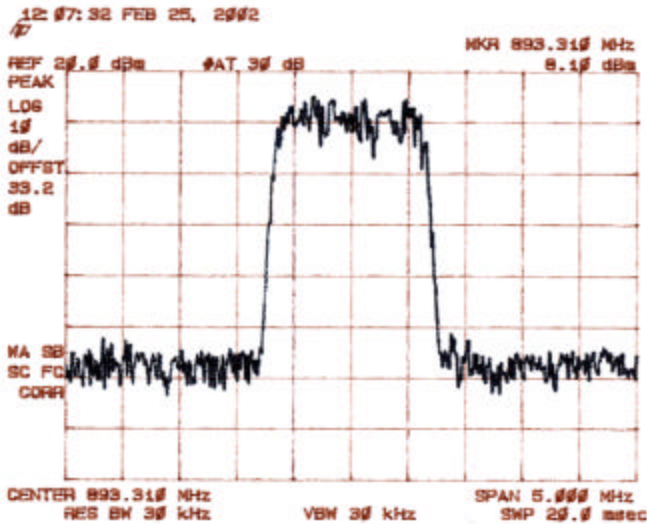


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Spurious and Harmonic Emissions Conducted CDMA Channel 777 - Minimum Power

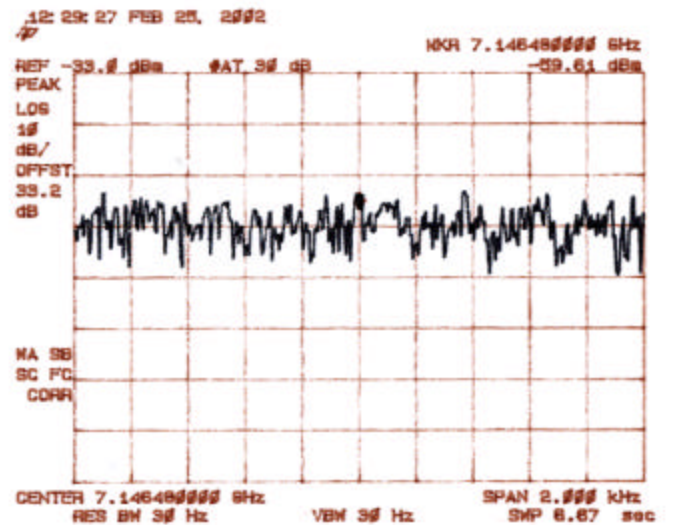
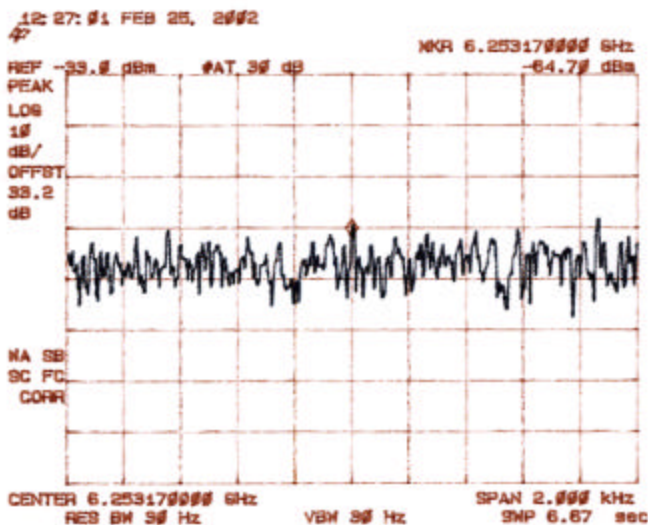
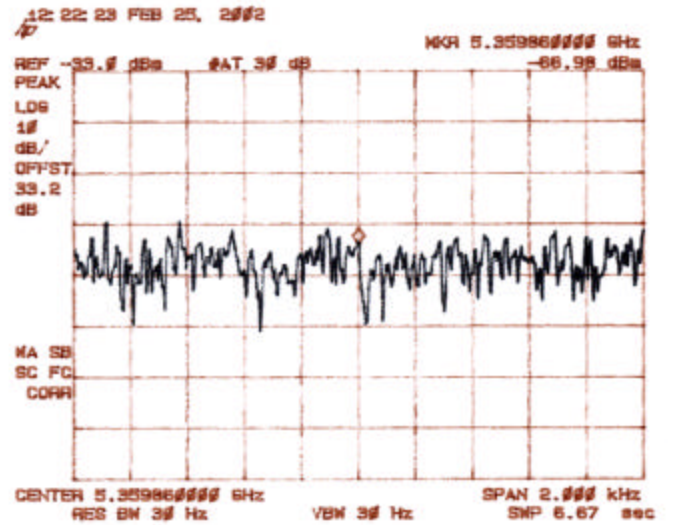
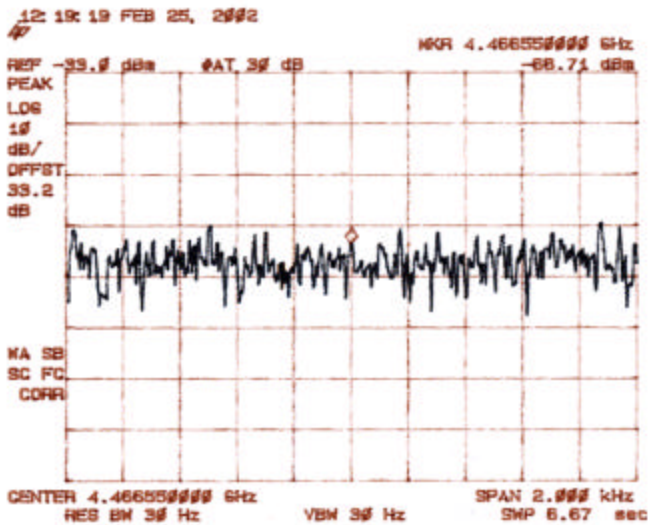




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Spurious and Harmonic Emissions Conducted
CDMA Channel 777 - Minimum Power (continued)

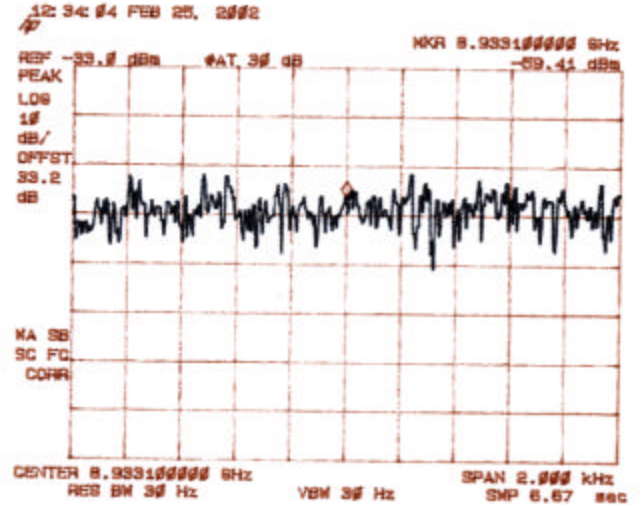
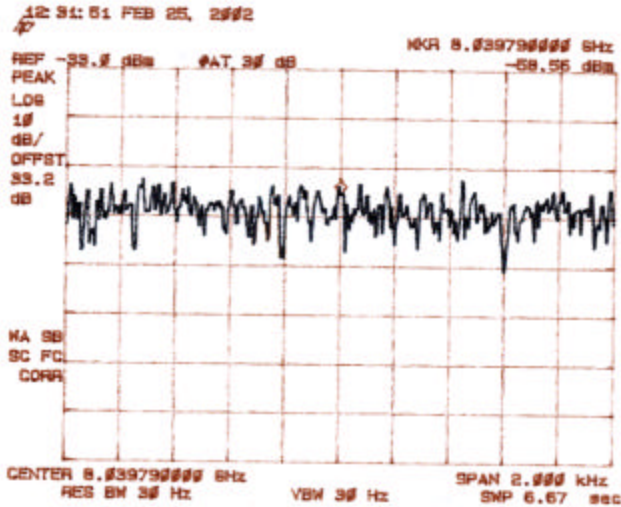




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Spurious and Harmonic Emissions Conducted
CDMA Channel 777 - Minimum Power (continued)

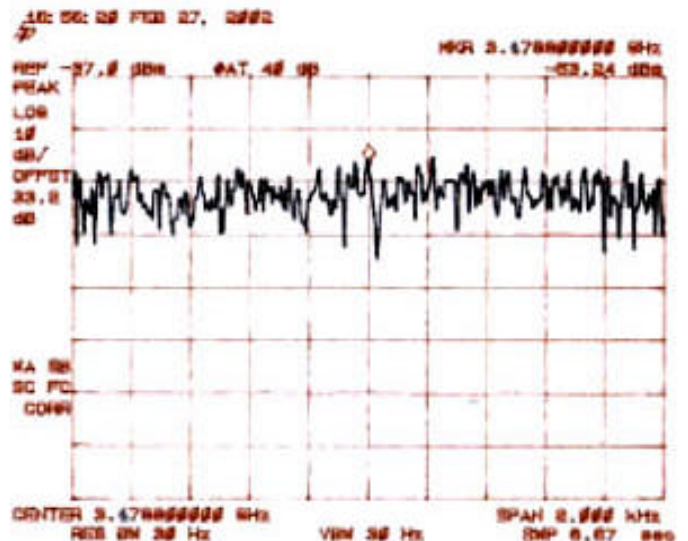
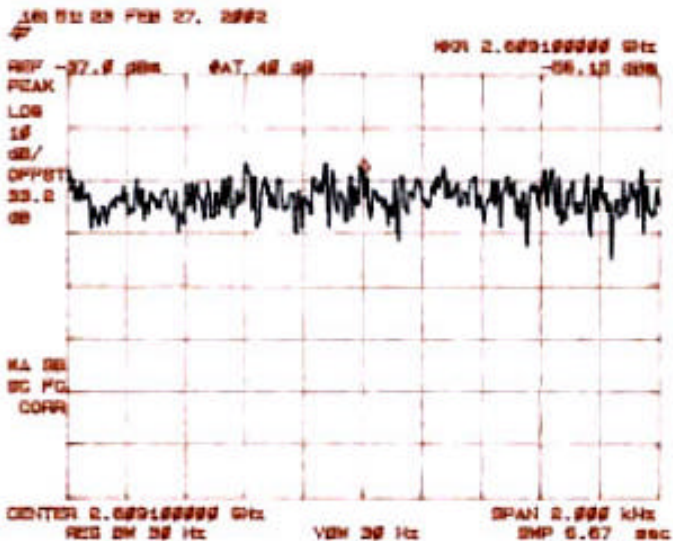
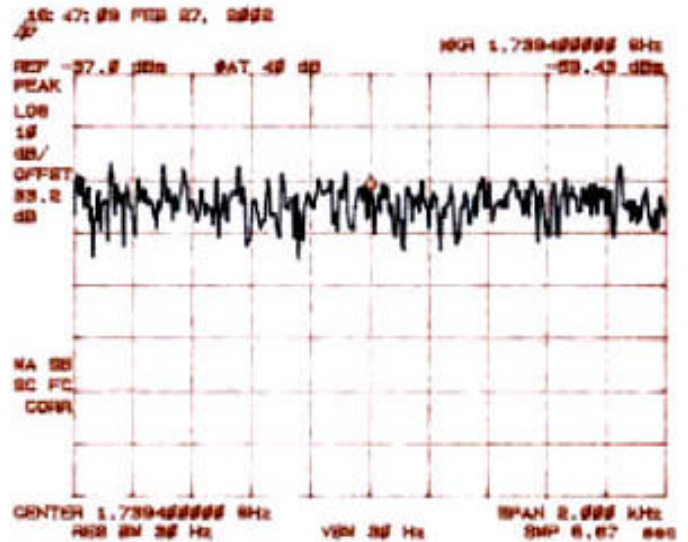
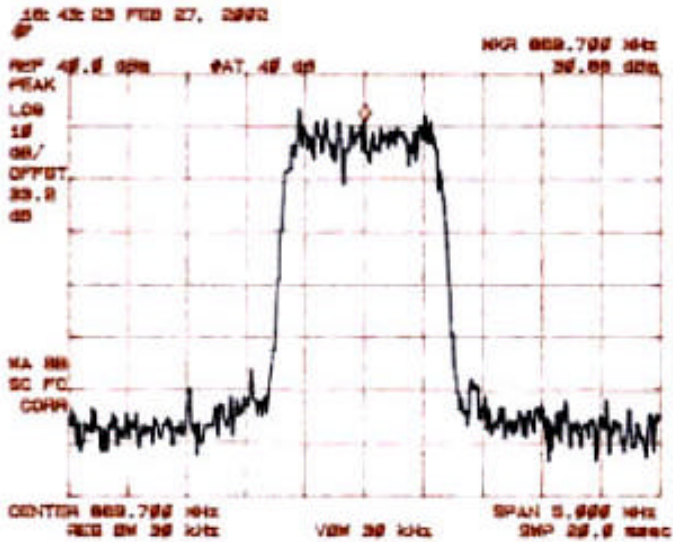




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Spurious and Harmonic Emissions Conducted
CDMA Channel 1013 - Maximum Power

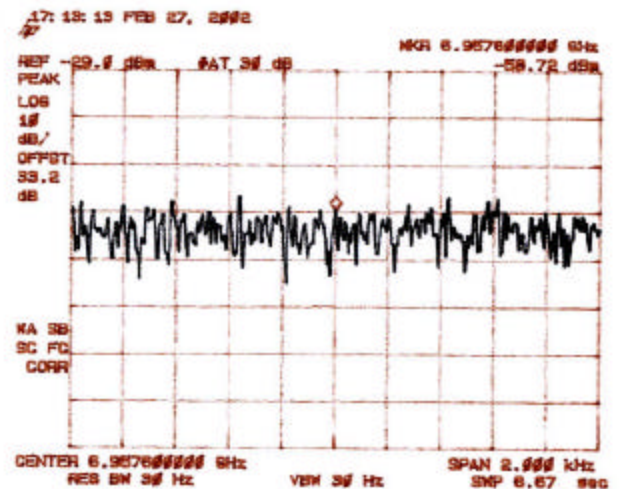
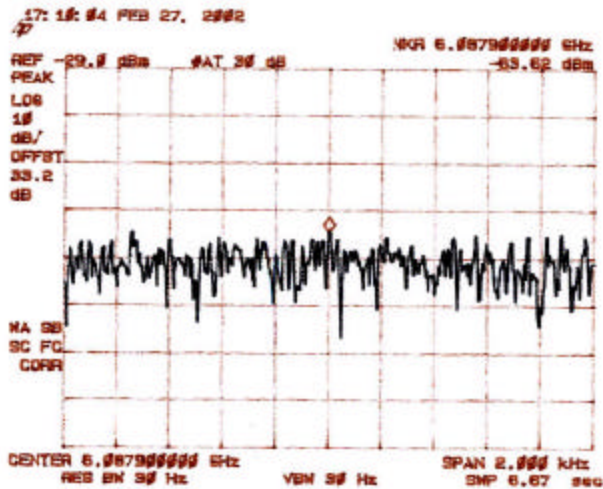
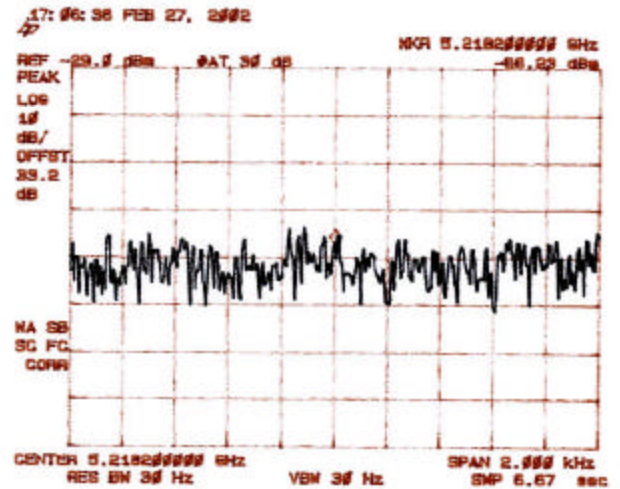
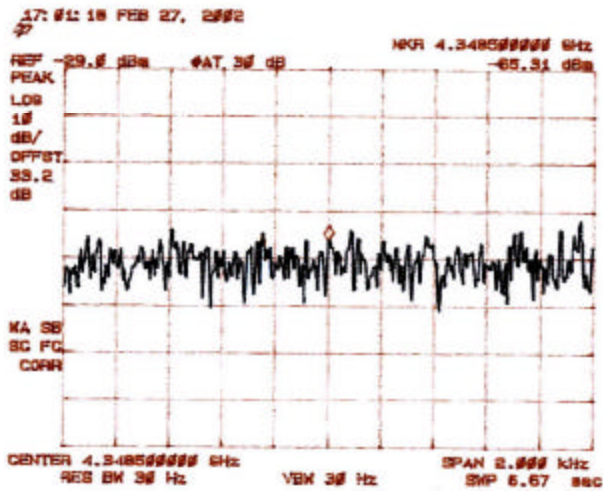




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Spurious and Harmonic Emissions Conducted CDMA Channel 1013 - Maximum Power (continued)



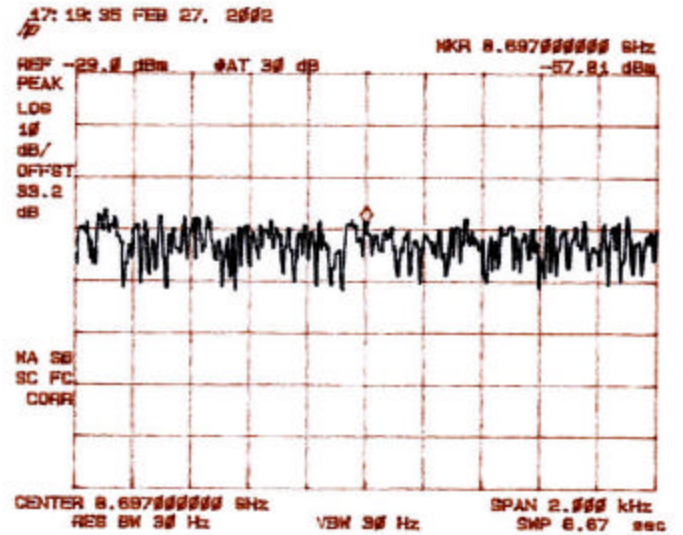
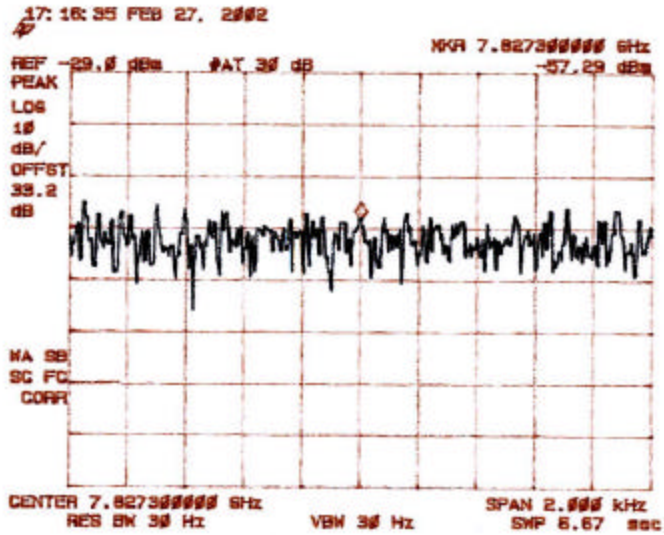


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Spurious and Harmonic Emissions Conducted
CDMA Channel 1013 - Maximum Power (continued)





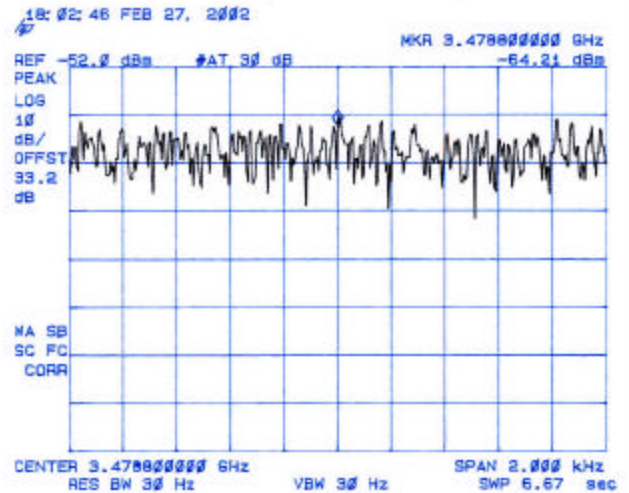
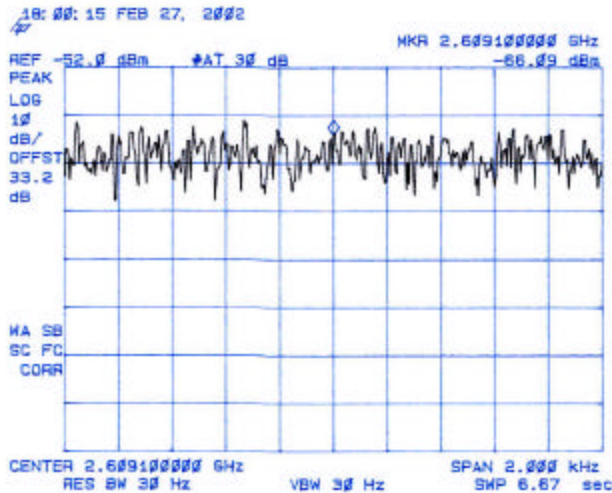
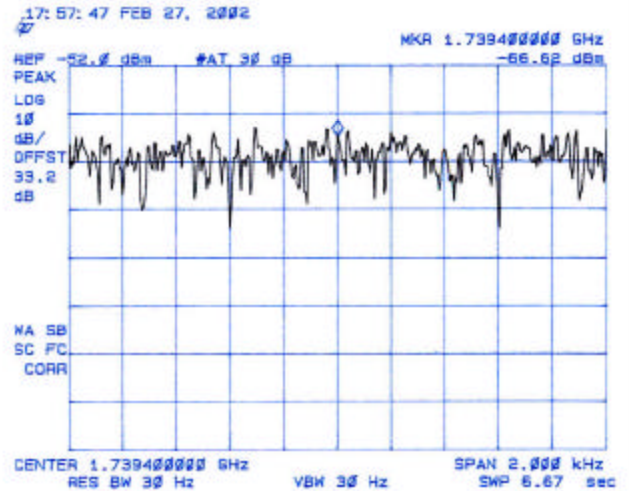
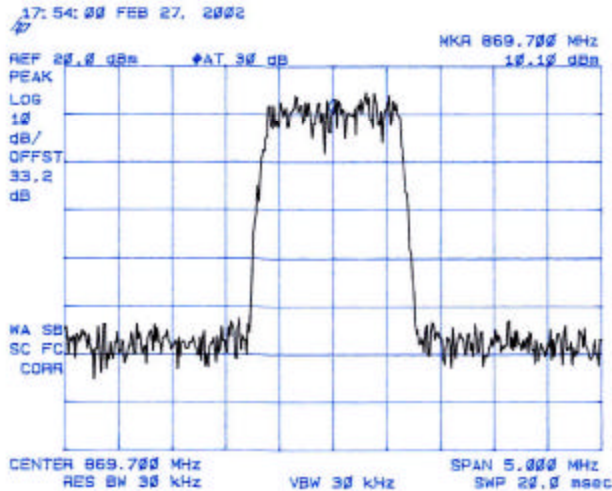
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Spurious and Harmonic Emissions Conducted

CDMA Channel 1013 - Minimum Power



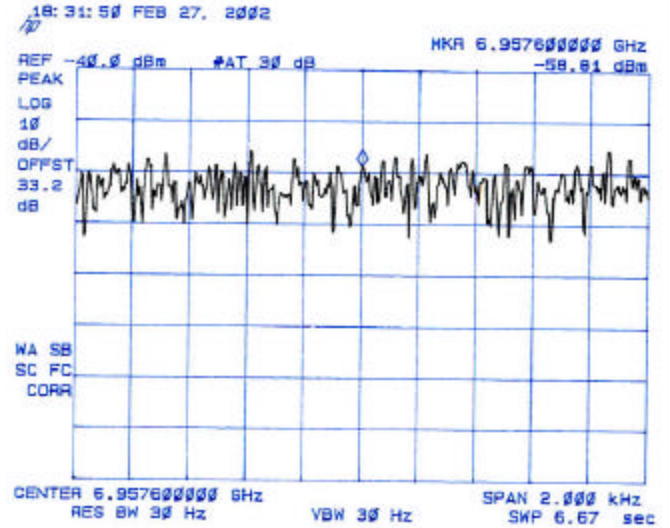
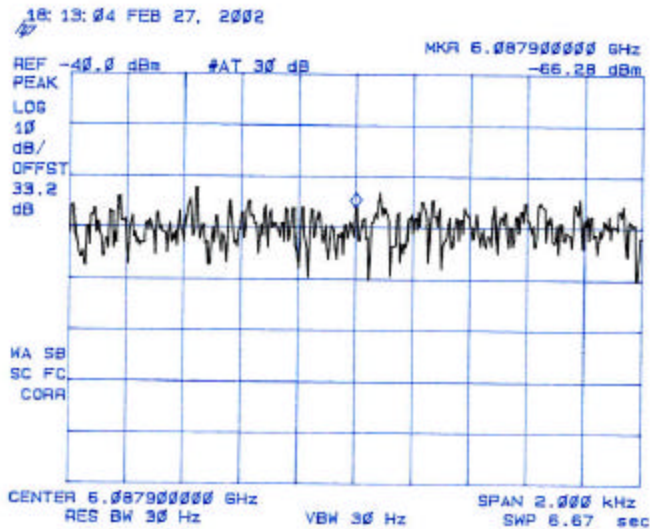
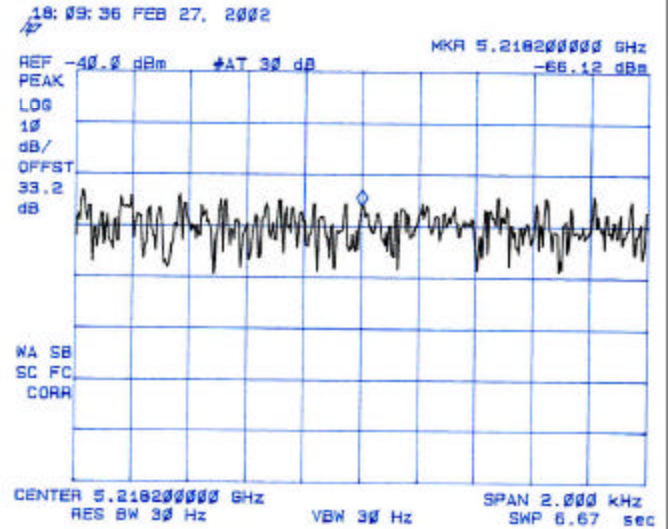
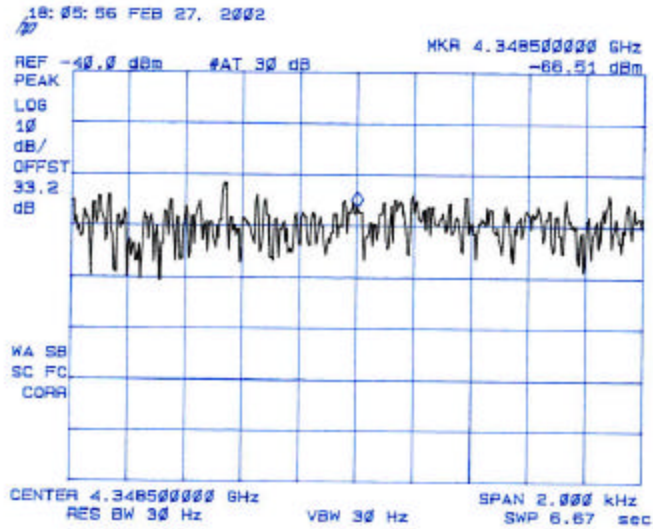


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Spurious and Harmonic Emissions Conducted CDMA Channel 1013 - Minimum Power (continued)

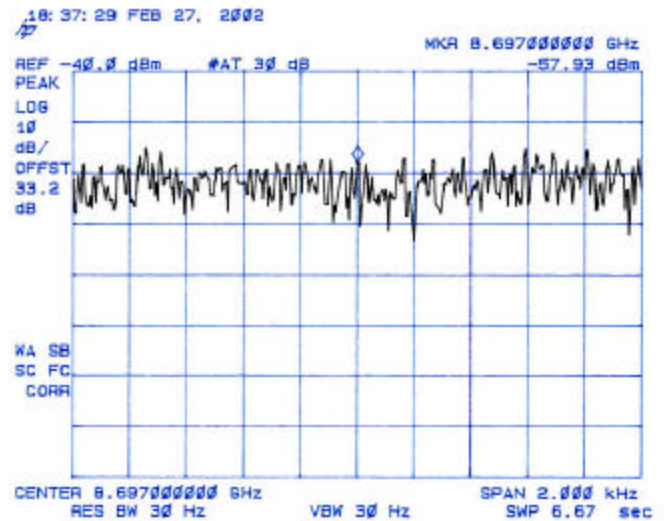
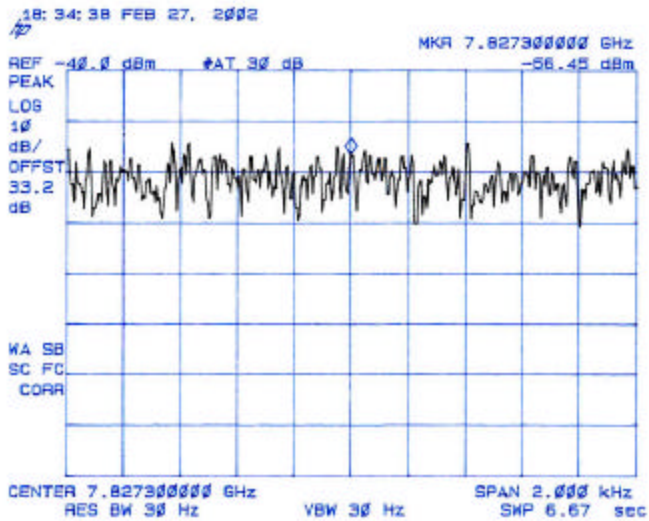




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Spurious and Harmonic Emissions Conducted
CDMA Channel 1013 - Minimum Power (continued)





SECTION E

OCCUPIED BANDWIDTH

NOTE: The BTS was configured for maximum power out of 40.0 dBm and minimum power out of 23.0 dBm respectively. The max and min output power was set to 10.0 Watts or 200 mWatts 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:

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

$$\text{Example: } 23.88 \text{ dBm} + 16.12 \text{ dB} = 40.0 \text{ dBm}$$

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
777 / MAX	893.310	1.2721	1.30	Pass
1013 / MAX	869.700	1.2718	1.30	Pass
777 / MIN	893.310	1.2728	1.30	Pass
1013 / MIN	869.700	1.2564	1.30	Pass

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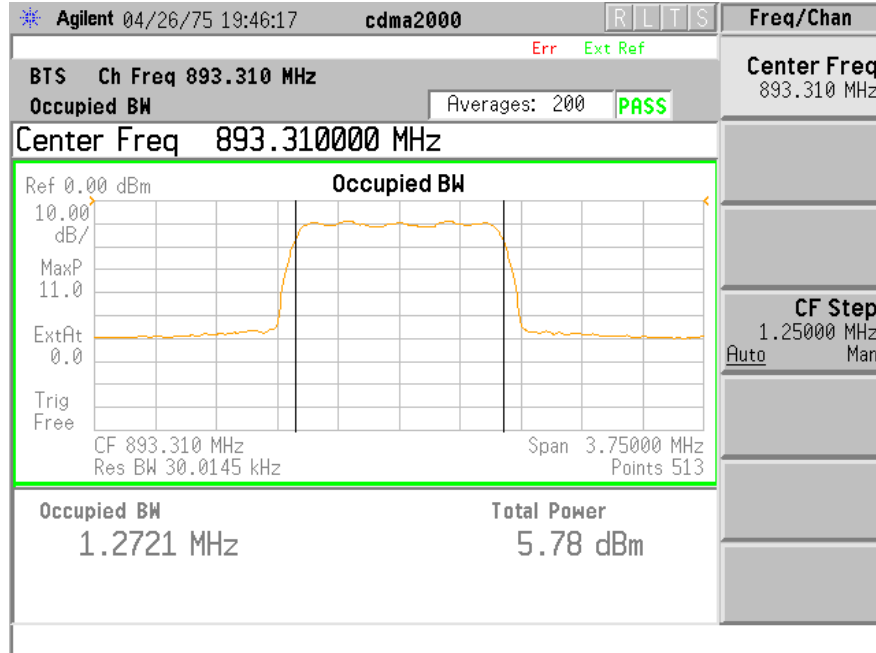
Date

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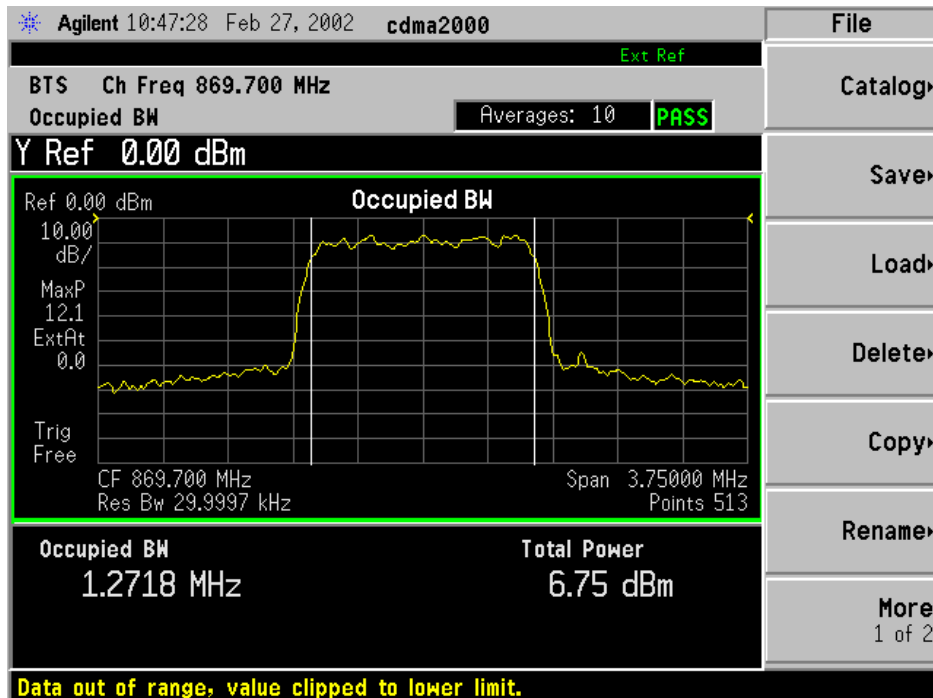


Occupied Bandwidth - Maximum Power

Channel 777

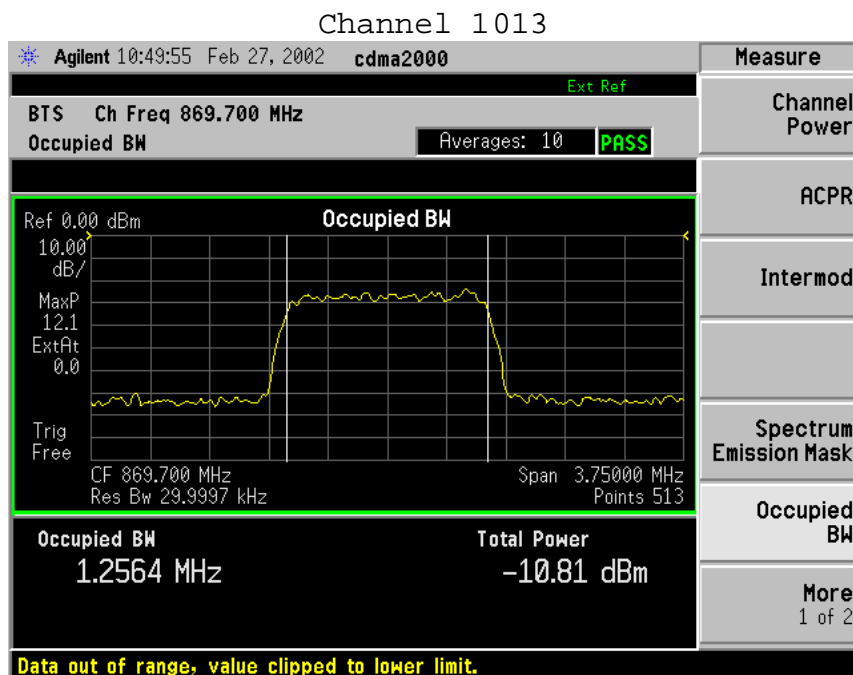
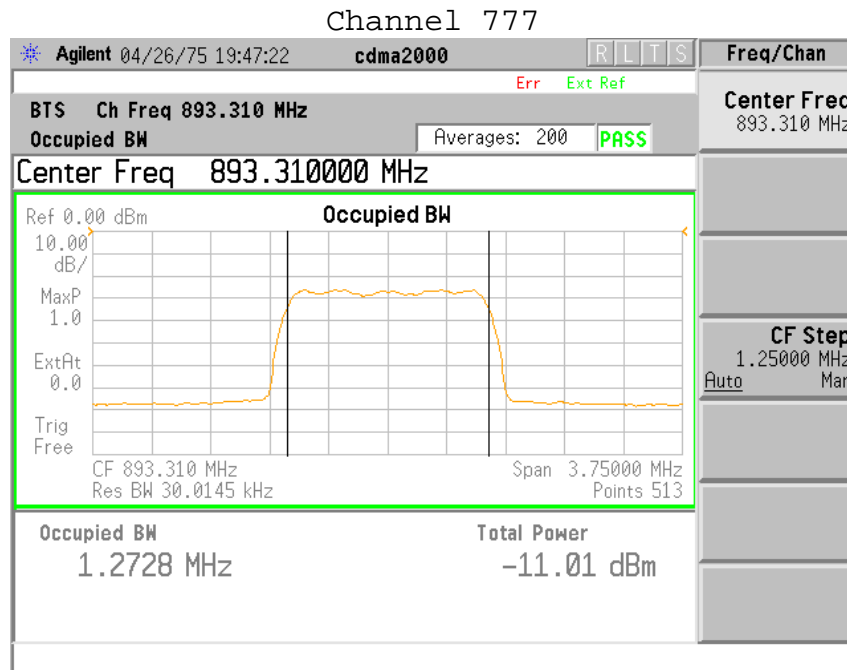


Channel 1013





Occupied Bandwidth - Minimum Power





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 0.58 mW/cm ²	Measured level at Specified distance	Published Uncontrolled Exposure Distance (Note 1)
DB786DC5N-XM	Unity	0.58 mW/cm ²	0.58 mW/cm ² @ 23 cm	1 m
DB786SD5N-XC	5.2dBd	0.58 mW/cm ²	0.58 mW/cm ² @ 80 cm	1 m

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

870/1500 = 0.58 mW/cm² uncontrolled limit

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SECTION G

FREQUENCY STABILITY

MODE	27V POWER	WORST CASE (PPM)	FCC REQUIREMENT	Pass / Fail
RFCC	85-115%	< 0.02	+/- 0.5 PPM MAX	Pass

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