



SC4812ET 1X /EVDO @ 800 MHz CDMA BTS

TEST REPORT EXHIBIT

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FCC ID: IHET5EG1

Section A

Summary of RF Measurements

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Summary of Radiated RF Measurements

Worst Case Radiated RF Spur Level for SC4812ET 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)
1020	1744.44	H	52.14	-43.09	-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:
2. $(\text{dBuV/M}) + 20 - 104.77 = \text{dBm}$

11.19.04

Signature

Date

Francisco Avalos

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Summary of Radiated RF Measurements

Worst Case Radiated RF Spur Level for SC4812ET @ 800 MHz

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
777	1786.341	H	46.07	-49.158	-57.72	-52.67	-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
Terry Schwenk

8/13/01

Date



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Summary of Conducted RF Measurements
SC4812ET EVDO @ 800MHz CDMA BTS
FCC Part 22

CHANNEL	FREQUENCY (GHz)	SPUR LEVEL MEASURED (dBμV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
770	7.725	71.08	-35.92	-13	Pass

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Summary of Conducted RF Measurements

SC4812ET@ 800MHz

FCC Part 22

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBμV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
777	6952.559	83.83	-23.17	-13

Radiated Engineer
Terry Schwenk

8/13/01

Date



Section B

Summary of Modulation Characteristics

SC4812ET EVDO @ 800MHz CDMA BTS

CHANNEL	TUNE FREQUENCY (MHz)	RHO Measured	RHO Specifications	PASS / FAIL
1020	869.91	0.99729	> 0.970	Pass
770	893.10	0.99780	> 0.970	Pass

The BTS was configured for maximum power out of 46.00 dBm and minimum power out of 36.5 dBm respectively for EVDO configuration. The output power was set respectively to 40.0 Watts or 4.5 Watts using an HP437B power meter

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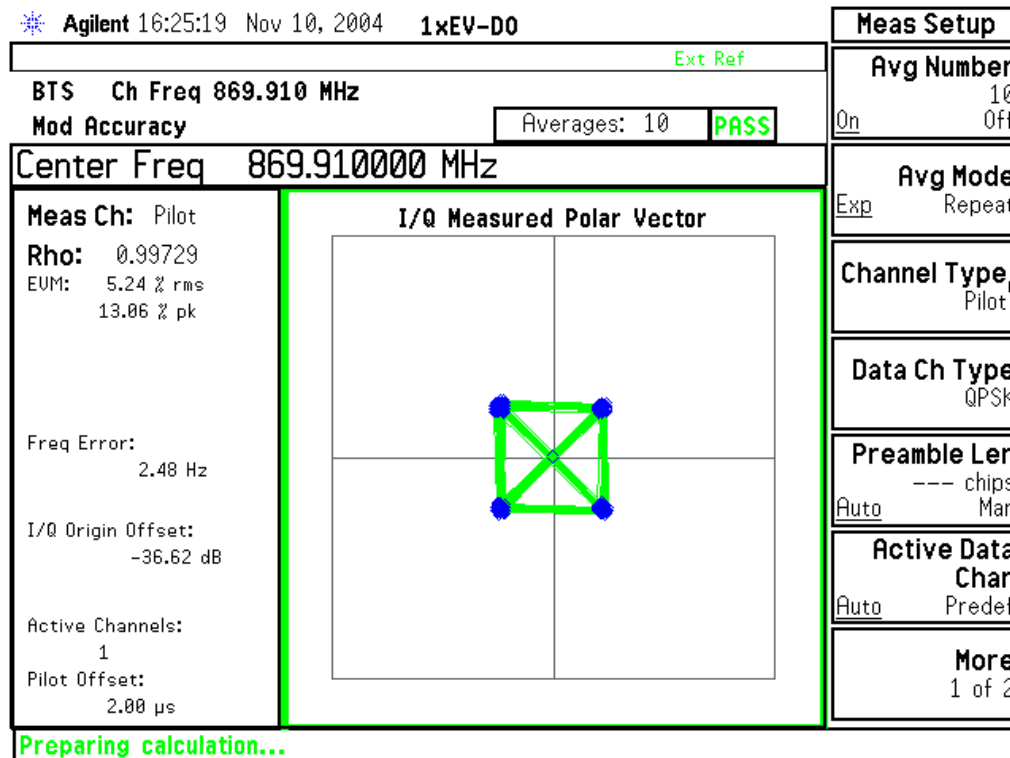
Date

Francisco Avalos



SC4812ET EVDO – Modulation Characteristics

High Power – 46.00 dBm – 8PSK

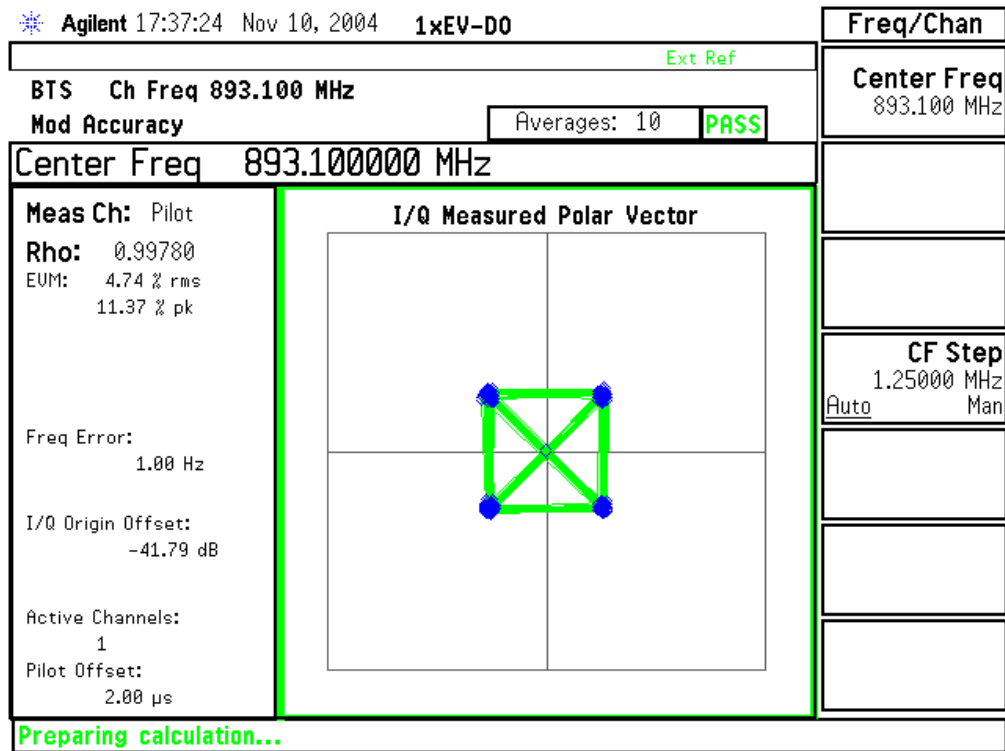


Channel 1020– 869.91 MHz



SC4812ET EVDO – Modulation Characteristics

High Power – 46.00 dBm – 16QAM

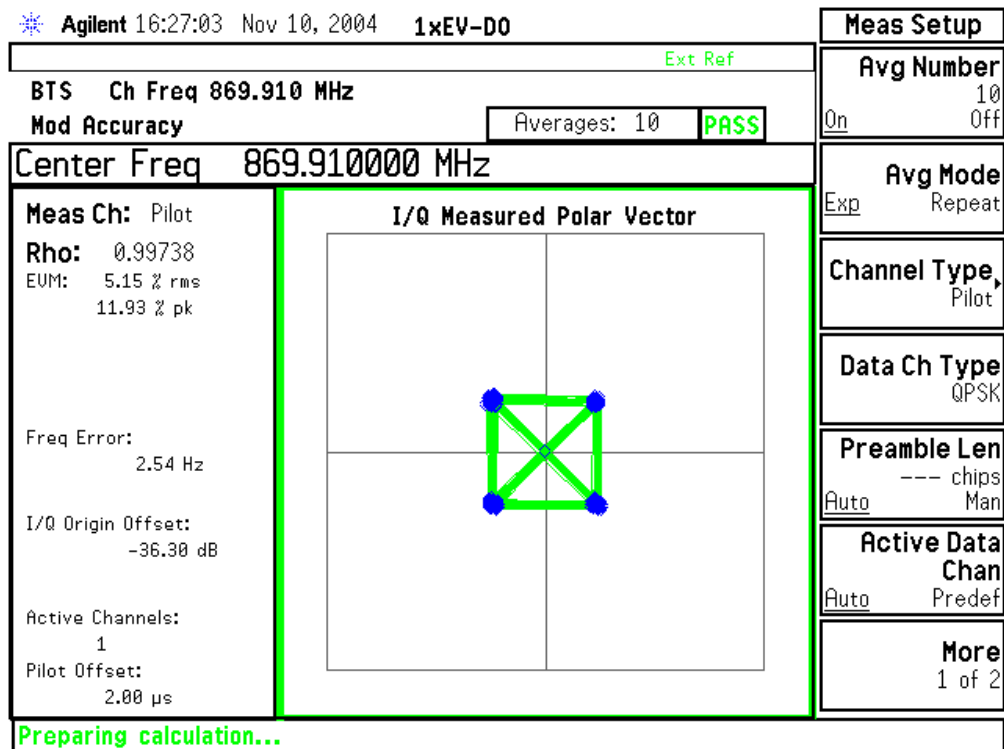


Channel 770 – 893.1 MHz



SC4812ET EVDO – Modulation Characteristics

Low Power – 36.5 dBm – 8PSK

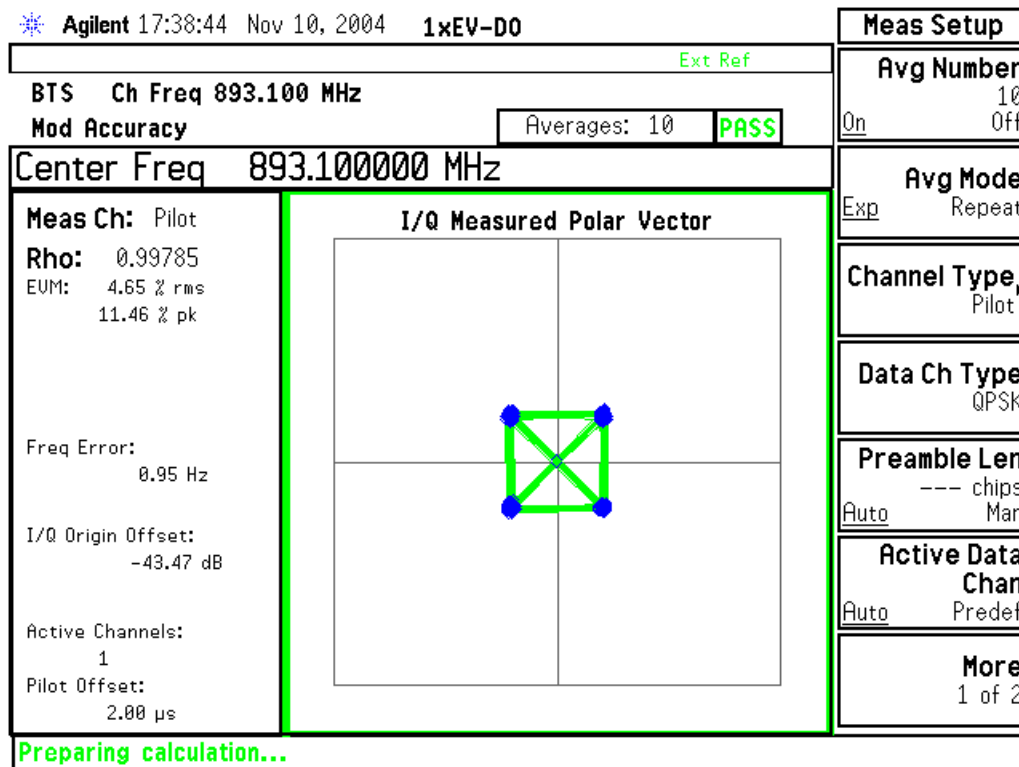


Channel 1020– 869.91 MHz



SC4812ET EVDO – Modulation Characteristics

Low Power – 36.5 dBm – 16QAM



Channel 770 – 893.1 MHz



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Summary of Modulation Characteristics

SC4812ET @800MHz worst cases

CHANNEL	TUNE FREQUENCY (MHz)	RHO measured	RHO specifications	Pass/Fail
1013	869.70	0.982	>0.912	Pass
777	893.31	0.9825	>0.912	Pass

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

Radiated Engineer
Terry Schwenk

8/13/01

Date



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MODULATION CHARACTERISTICS

Maximum Power

CDMA ANALYZER

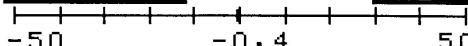
Rho

0.9825

Time Offset us

-0.01

Freq Err Hz

-50 -0.4 50

Carrier Feedthru dB

-34.9

Tune Freq
893.310000
MHzInput Atten
Auto/Hold
0 dBInput Port
RF In/AntFind PN
Auto/ManualPN Offset
134Even Sec In
Enable/NotMeas Intvl
1.25
msGain
Auto/Hold
18 dBAnl Dir
Fwd/Rev
Anl Special
NormalAnalyzer
Arm Meas
Single/Cont
DisarmQual Event
80 ms
Trig Event
80 ms

SC4812ET 800MHz 3G-1X 46dBm

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E6380A Cell Site Test Set: 07/23/01 03:41:00 PM SC4812ET @ 800 MHz

CDMA BTS FRAME

CDMA ANALYZER

Rho

0.9829

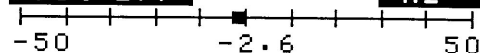
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us

Freq Err

Hz



Carrier Feedthru

dB

-39.7

Tune Freq

869.700000

MHz

Input Atten

Auto/Hold

0 dB

Input Port

RF In/Ant

Find PN

Auto/Manual

PN Offset

122

Even Sec In

Enable/Not

Meas Intvl

1.25

ms

Gain

Auto/Hold

18 dB

Anl Dir

Fwd/Rev

Anl Special

Normal

Analyzer

Arm Meas

Single/Cont

Disarm

Qual Event

80 ms

Tris Event

80 ms

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MODULATION CHARACTERISTICS

Minimum Power

CDMA ANALYZER

Rho

0.9825

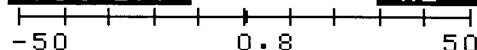
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us

-0.01

Freq Err

Hz



Carrier Feedthru

dB

-34.7

Tune Freq

893.310000

MHz

Input Atten

Auto/Hold

0 dB

Input Port

RF In/Ant

Find PN

Auto/Manual

PN Offset

134

Even Sec In

Enable/Not

Meas Intvl

1.25

ms

Gain

Auto/Hold

36 dB

Anl Dir

Fwd/Rev

Anl Special

Normal

Analyzer

Arm Meas

Single/Cont

Disarm

Qual Event

80 ms

Trie Event

80 ms

CDMA ANALYZER

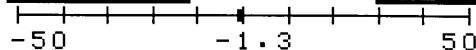
Rho

0.9820

Time Offset us

0.13

Freq Err Hz



Carrier Feedthru dB

-51.8

Tune Freq
869.700000
MHzInput Atten
Auto/Hold
0 dBInput Port
RF In/AntFind PN
Auto/ManualPN Offset
122Even Sec In
Enable/NotMeas Intvl
1.25
msGain
Auto/Hold
36 dBAnl Dir
Fwd/Rev
Anl Special
NormalAnalyzer
Arm Meas
Single/Cont
DisarmQual Event
80 ms
Tris Event
80 ms



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Section C

Spurious and Harmonic Emissions Radiated

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Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC4812ET 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)
1020	1744.44	H	52.14	-43.09	-13	Pass
770	5611.11	V	50.45	-44.78	-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:
 $(\text{dBuV/M}) + 20 - 104.77 = \text{dBm}$

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Conducted RF Measurements

SC4812ET EVDO @ 800 MHz CDMA BTS
FCC Part 22

CHANNEL	FREQUENCY (GHz)	SPUR LEVEL MEASURED (dBμV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT (dBm)	PASS / FAIL
770	7.725	71.08	-35.92	-13	Pass
1020	7.680	70.85	-36.15	-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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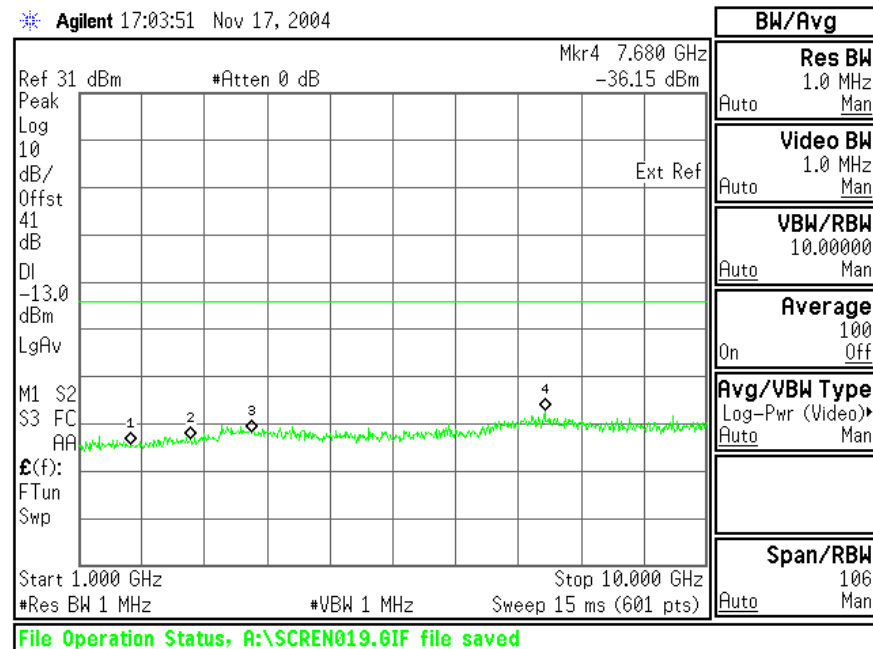
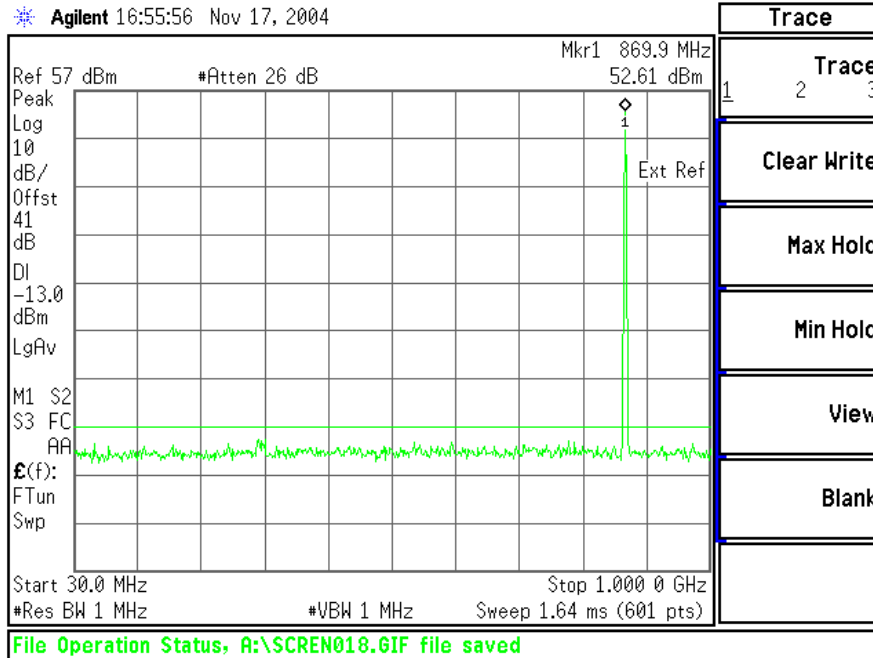
Signature

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Spurious and Harmonic Emissions Conducted
CDMA EVDO Channel 1020 – 46.00 dBm – 8PSK



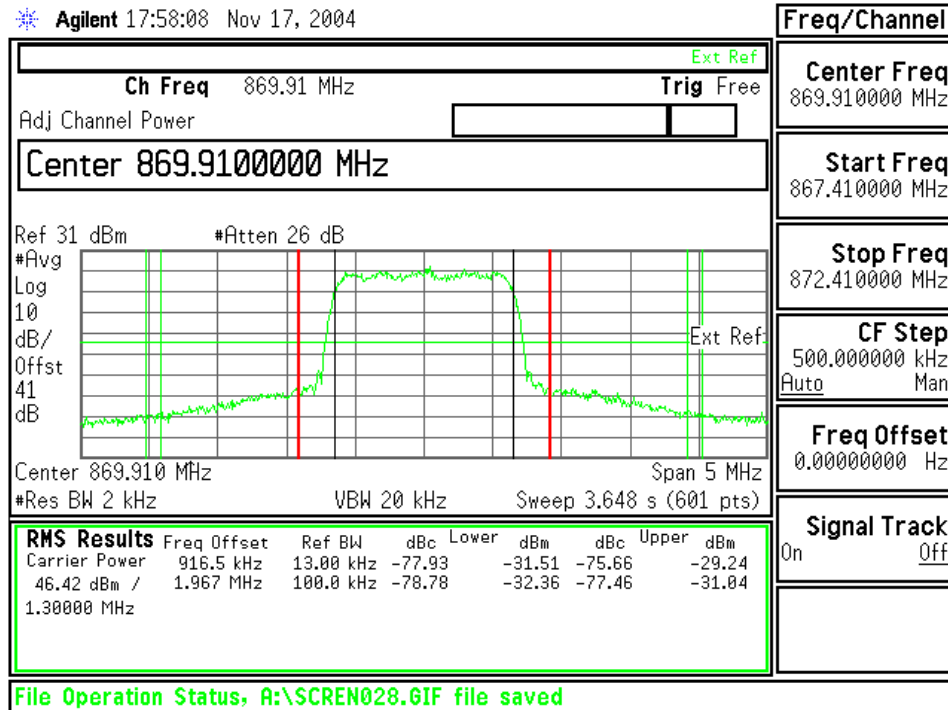


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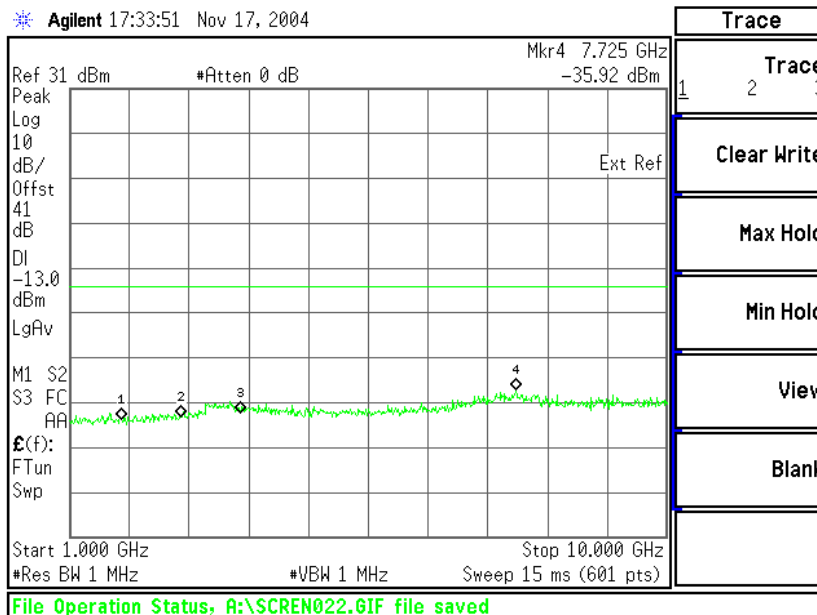
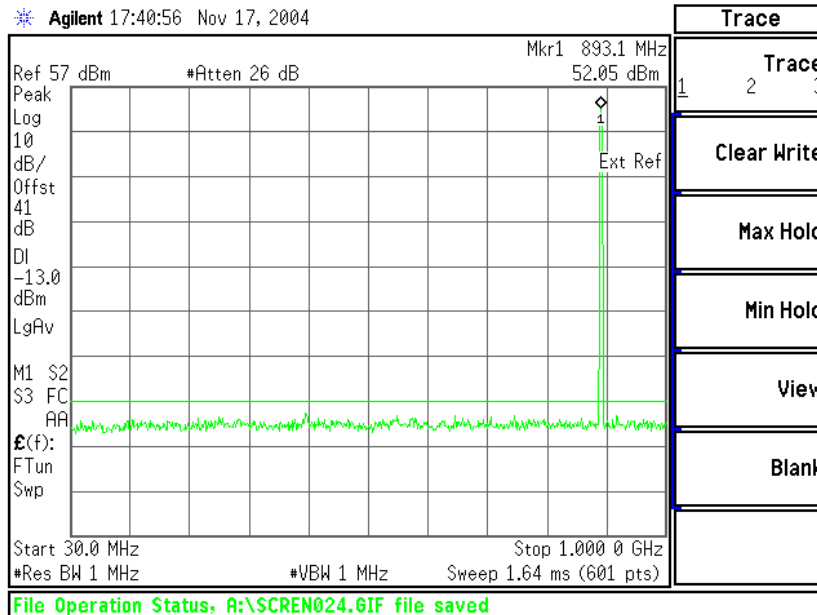
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FCC ID: IHET5EG1





Spurious and Harmonic Emissions Conducted
CDMA EVDO Channel 770 – 46.00 dBm – 16QAM





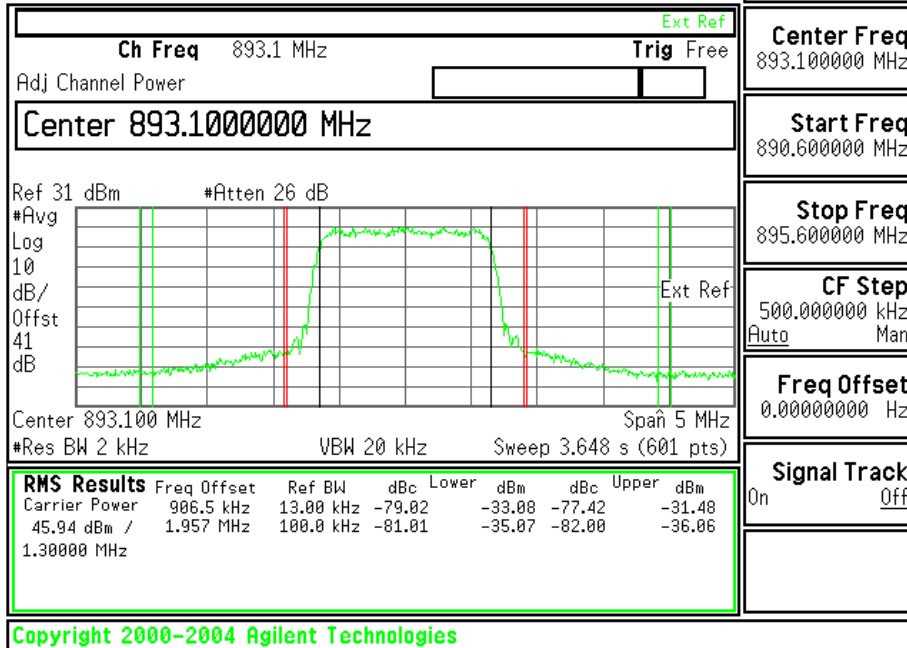
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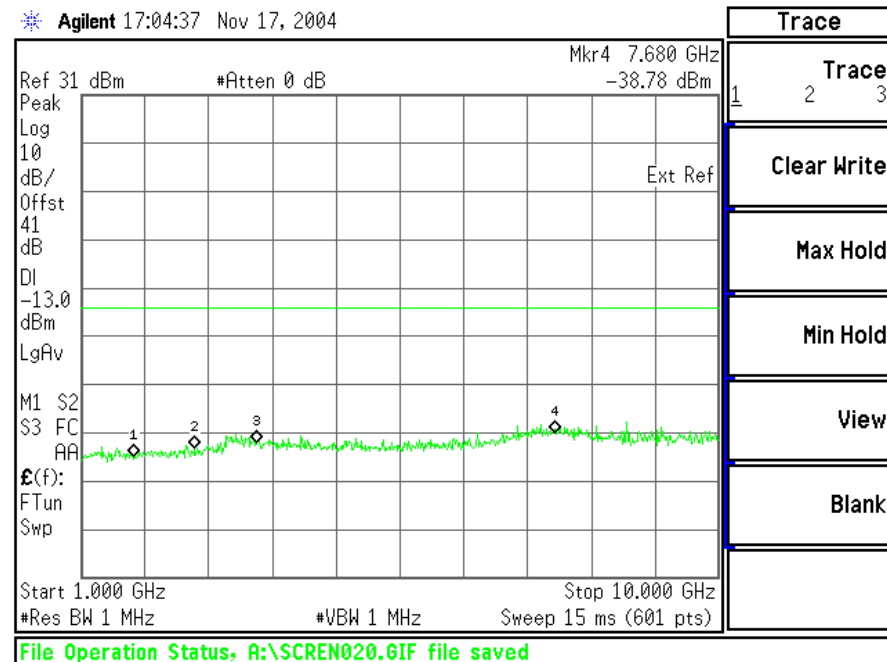
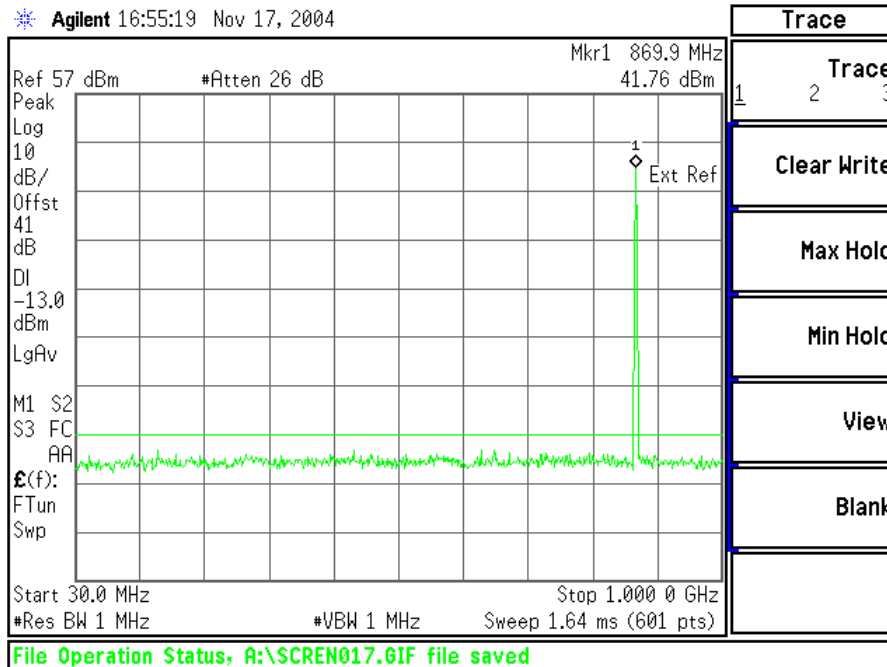
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Agilent 10:48:26 Nov 22, 2004





Spurious and Harmonic Emissions Conducted
CDMA EVDO Channel 1020 – 36.5 dBm – 8PSK





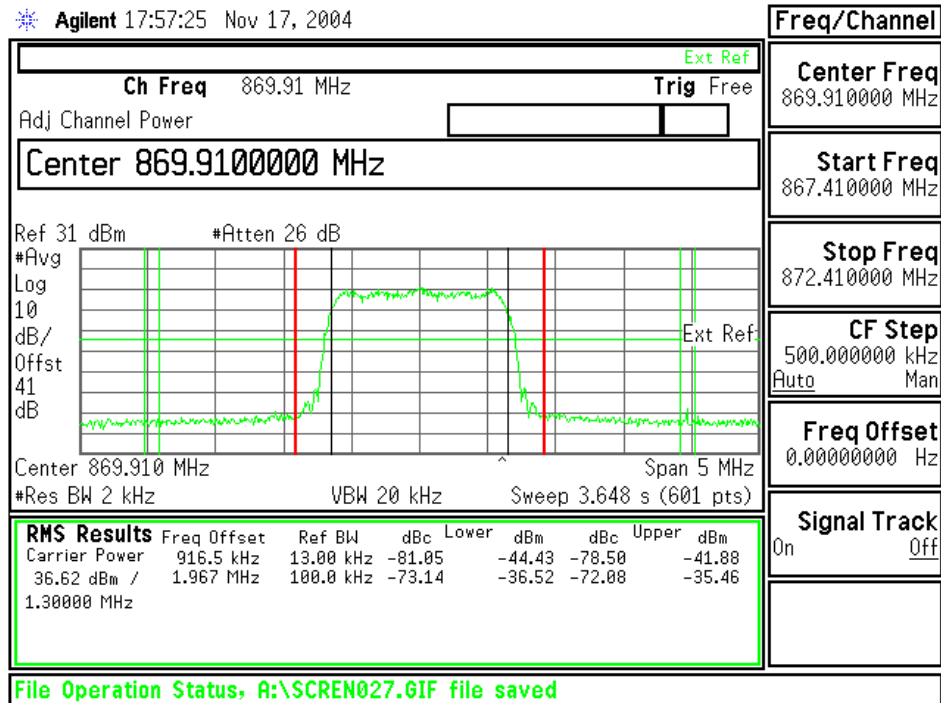
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FCC ID: IHET5EG1

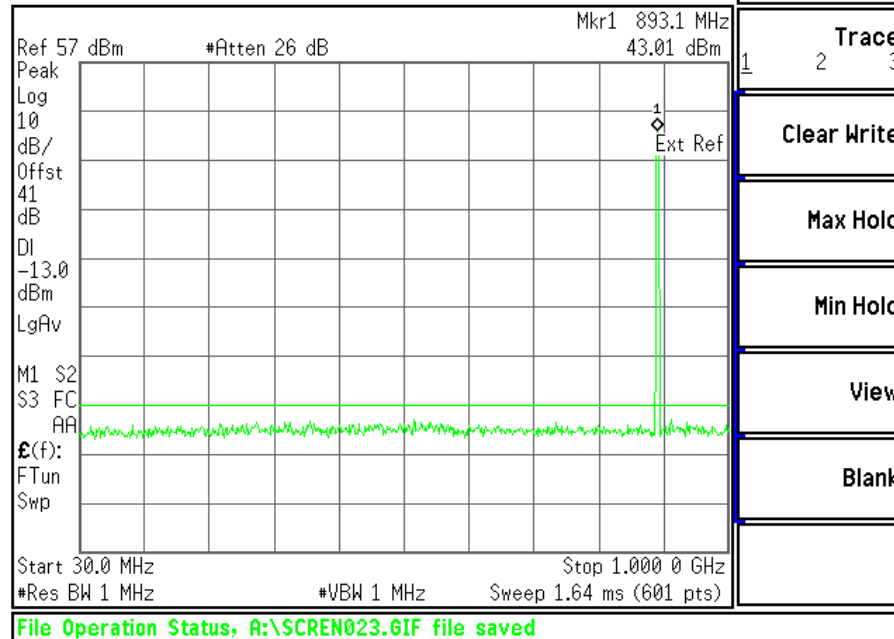
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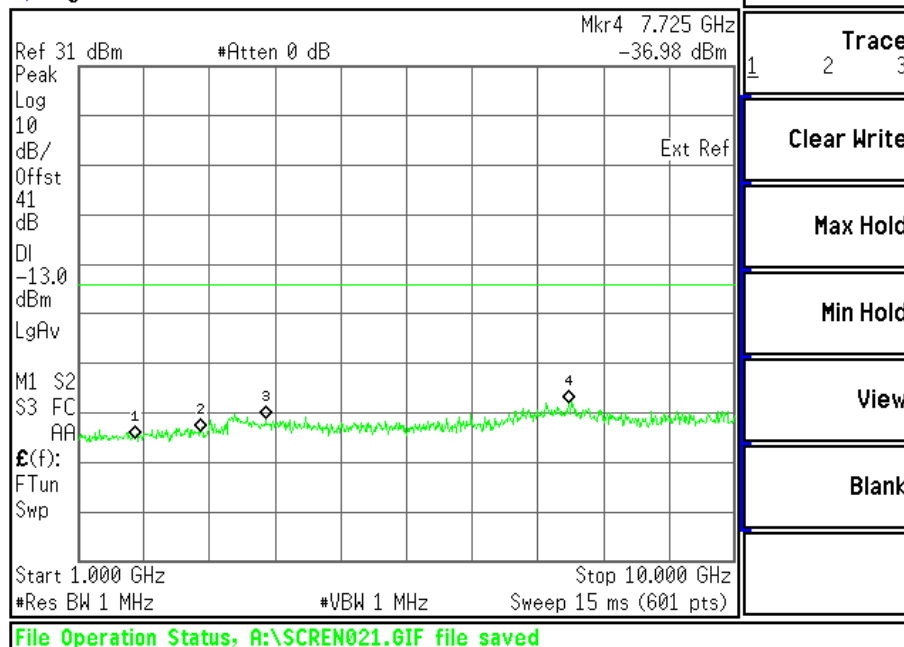


Spurious and Harmonic Emissions Conducted CDMA EVDO Channel 770 – 36.5 dBm – 16QAM

Agilent 17:39:40 Nov 17, 2004



Agilent 17:31:51 Nov 17, 2004





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