



**FCC CFR47 PART 22H AND 24E
INDUSTRY CANADA RSS-132 ISSUE 3
INDUSTRY CANADA RSS-133 ISSUE 5**

**CERTIFICATION TEST REPORT
FOR**

PHONE WITH 802.11A/B/G/N AND BLUETOOTH 2.1+EDR

MODEL NUMBER: HSTNH-F30CV

FCC ID: B94HHF30CV

IC: 3905A-HHF30CV

REPORT NUMBER: 11U13622-5, Revision A

ISSUE DATE: APRIL 27, 2011

Prepared for

**HEWLETT-PACKARD COMPANY, PALM GBU
950 MAUDE AVENUE
SUNNYVALE, CA 94085, U.S.A.**

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	04/14/2011	Initial Issue	T. Chan
A	04/27/2011	Revised IC ID	A. Zaffar

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HEWLETT-PACKARD COMPANY, PALM GBU
950 MAUDE AVENUE
SUNNYVALE, CA 94085, U.S.A

EUT DESCRIPTION: Phone with 802.11a/b/g/n and Bluetooth 2.1+EDR

MODEL: HSTNH-F30CV

SERIAL NUMBER: 5161-0101

DATE TESTED: MARCH 14 - 31 and APRIL 12, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22 SUBPART H AND 24 SUBPART E	Pass
INDUSTRY CANADA RSS-132 Issue 3 and RSS-133 Issue 5	Pass

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

Tested By:



THU CHAN
ENGINEERING MANAGER
UL CCS

CHIN PANG
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, FCC CFR Part 24, RSS-132 Issue 3, and RSS-133 Issue 5.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a phone operating on CDMA/EvDO (850/1900), GSM (850/900/1800/1900), UMTS (900, 2100) + BT 2.1 + EDR, 802.11abgn 1x1.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted and ERP / EIRP output powers as follows:

Part 22 Cellular Band

Frequency range (MHz)	Modulation	Conducted		ERP	
		dBm	mW	dBm	mW
824.7 – 848.31	1xRTT (RC1, SO55)	29.33	857.0	27.48	559.8
824.7 – 848.31	EV-DO - REV A	30.44	1106.6	29.18	827.9
824.2 – 848.8	GPRS	32.74	1879.3	33.77	2382.3
824.2 – 848.8	EGPRS	30.54	1132.4	30.41	1099.0

Part 24 PCS Band

Frequency range (MHz)	Modulation	Conducted		EIRP	
		dBm	mW	dBm	mW
1851.25 – 1908.8	1xRTT (RC1, SO55)	27.92	619.4	31.62	1452.1
1851.25 – 1908.8	EV-DO - REV A	28.08	642.7	32.56	1803.0
1850.2-1909.8	GPRS	30.29	1069.1	32.29	1694.3
1850.2-1909.9	EGPRS	29.30	851.1	30.86	1219.0

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral antenna for the 850MHz and 1900MHz bands.

5.4. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent 8960 Communication Test Set.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel for RF radiated emissions below 1GHz and AC conducted emissions are determined as the channel with the AC Power Adapter Source

Based on the investigation results, the highest peak power and enhanced data rate is the worst-case scenario for all measurements.

Worst-case modes:

- For Cellular and PCS band: 1xRTT (RC1 SO55)
- For Cellular and PCS band: CDMA2000 1xEV-DO Revision A (Rev. A)
- Cellular & PCS bands for GSM
GPRS (GMSK)
EGPRS (8PSK)

For the fundamental investigation, since the EUT is a portable device that has three orientations; therefore X, Y and Z orientations have been investigated with EUT open and closed position also with AC/DC adapter position, and the worst case was found to be at EUT open on X-position with AC/DC adapter on Cell band and Z-position on PCS band

5.6. DESCRIPTION OF TEST SETUP

I/O CABLES (RF CONDUCTED TEST)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	2m	NA
3	Directional	1	EUT	Un-shielded	1m	NA
4	Directional	1	Spectrum Analyzer	Un-shielded	1m	NA
5	RF In/Out	1	Communications Test Set	Un-shielded	NA	NA

I/O CABLES (RF RADIATED TEST)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	1m	NA
3	RF In/Out	1	Horn	Un-shielded	1.5m	NA

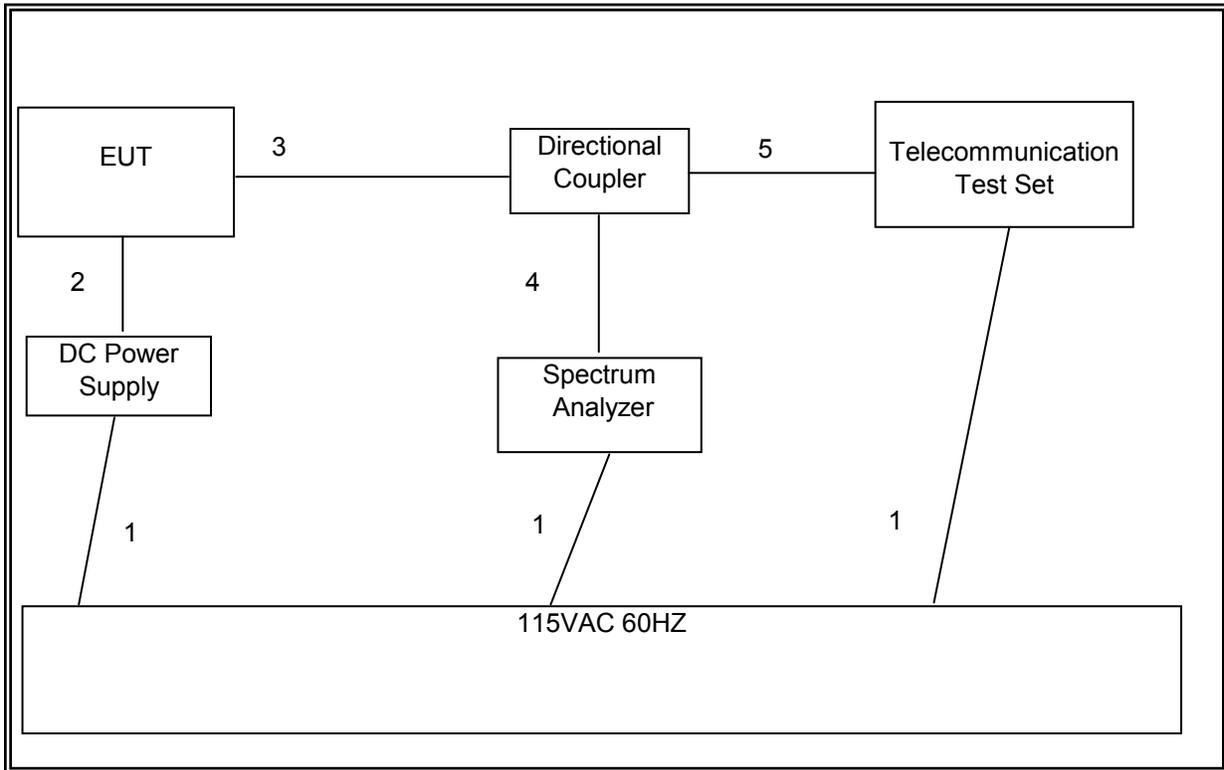
SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Foxlink Technology Ltd.	A1357	6072804	DoC
DC Power Supply	HP	E3610A	KR24104150	NA

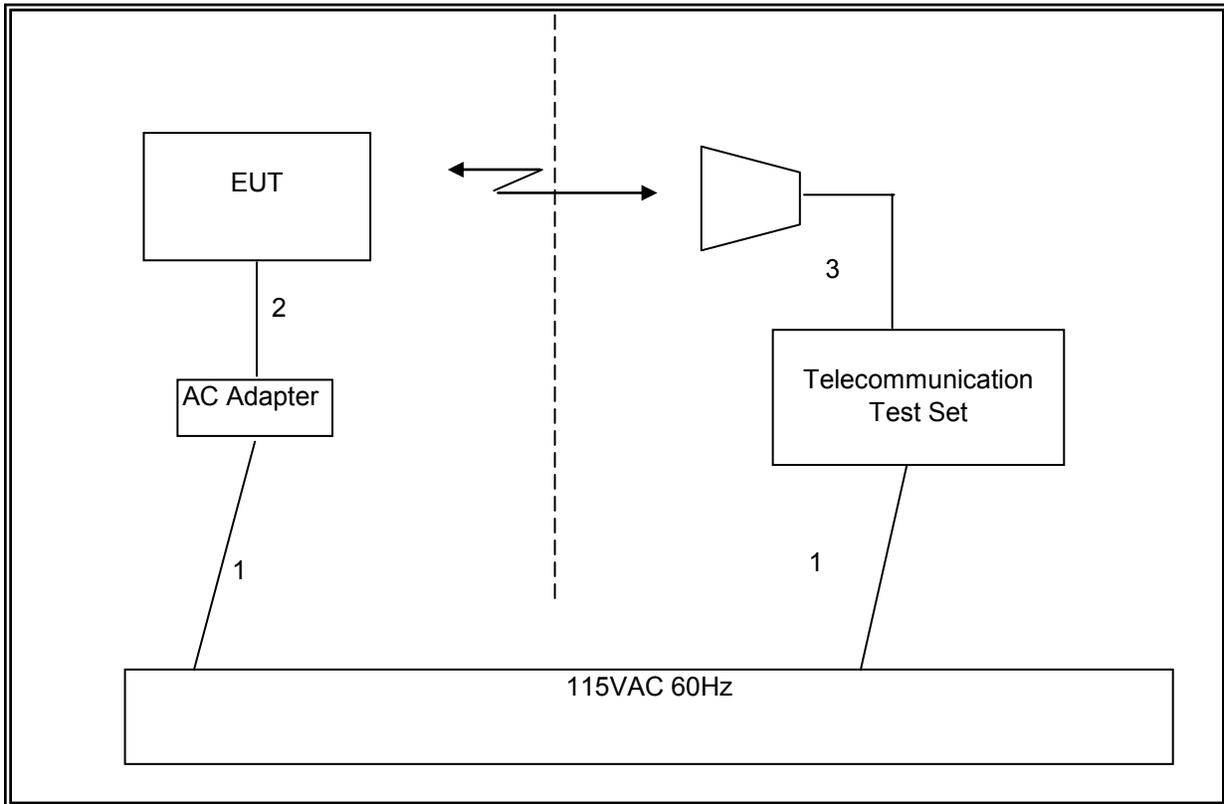
TEST SETUP

The EUT is a stand-alone device. The Wireless Communication test set exercised the EUT.

SETUP DIAGRAM FOR RF CONDUCTED TESTS



SETUP DIAGRAM FOR RF RADIATED TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01159	05/08/11
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/11
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/11
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/14/11
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/27/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/14/11
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	05/06/11
Communication Test Set	Agilent / HP	E5515C	C01086	06/17/11
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/11
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	07/11/11
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Directional Coupler, 4.2 GHz, 40 dB	A-R	DC7144A	C00983	CNR
Sleeve Dipole 1730~2030 MHz	ETS	3126-1880	C01157	10/01/11
Signal Generator, 20 GHz	Agilent / HP	83732B	C00774	07/14/12
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121C DB4	C00993	06/28/11

7. RF POWER OUTPUT VERIFICATION

Maximum output power is verified on the Low, Middle and High channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E for 1xRTT, section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rel. 0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev. A

CELL, CDMA2000, EVDO REV A

Data Rate	Peak (dBm)
128	30.38
256	30.34
512	30.30
768	30.30
1024	30.38
1536	30.36
2048	30.33
3072	30.31
4096	30.43
6144	30.42
8192	30.27
12288	30.33

PCS, CDMA2000, EVDO REV A

Data Rate	Peak (dBm)
128	27.83
256	27.62
512	27.66
768	27.53
1024	27.57
1536	27.91
2048	27.61
3072	27.86
4096	28.08
6144	28.05
8192	28.00
12288	27.97

7.1. RF POWER OUTPUT FOR 1xRTT

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
CDMA2000 Mobile Test	B.13.08, L

- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 18
> Network ID (NID) > 65535
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > Please see following table or details
- FCH Service Option (SO) Setup > Please see following table or details
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
> R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Rvs Power Ctrl > Active bits
 - Rvs Power Ctrl > All Up bits (Maximum TxPout)

RF Power Output Results for 1XRTT

RF Output Power for Cellular Band

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 1013 / 824.7 MHz	Ch. 384 / 836.52 MHz	Ch. 777 / 848.31 MHz
		Peak	Peak	Peak
RC1	2 (Loopback)	29.25	29.22	28.87
	55 (Loopback)	29.33	29.32	29.28
RC2	9 (Loopback)	29.06	28.94	28.76
	55 (Loopback)	28.55	29.03	29.13
RC3	2 (Loopback)	28.51	28.35	28.34
	55 (Loopback)	28.19	27.99	28.26
	32 (+ F-SCH)	28.43	28.40	28.15
	32 (+ SCH)	28.43	28.44	28.09
RC4	2 (Loopback)	28.50	28.27	28.36
	55 (Loopback)	28.14	27.81	28.44
	32 (+ F-SCH)	28.21	28.45	28.22
	32 (+ SCH)	28.34	28.27	28.26
RC5	9 (Loopback)	28.49	28.25	28.34
	55 (Loopback)	28.43	28.18	28.62

RF Power Output Results for 1XRTT

RF Output Power for PCS Band

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 25 / 1851.25 MHz	Ch. 600 / 1880 MHz	Ch. 1175 / 1908.75 MHz
		Peak	Peak	Peak
RC1	2 (Loopback)	27.90	27.54	27.49
	55 (Loopback)	27.92	27.88	27.69
RC2	9 (Loopback)	27.85	27.18	27.53
	55 (Loopback)	27.29	27.22	27.50
RC3	2 (Loopback)	27.16	26.55	26.68
	55 (Loopback)	26.51	26.14	26.41
	32 (+ F-SCH)	27.03	26.22	26.80
	32 (+ SCH)	26.62	26.02	27.03
RC4	2 (Loopback)	26.73	26.69	26.82
	55 (Loopback)	26.50	26.26	26.58
	32 (+ F-SCH)	26.07	26.04	26.66
	32 (+ SCH)	26.46	26.04	26.12
RC5	9 (Loopback)	26.83	26.34	26.55
	55 (Loopback)	26.63	26.21	26.60

7.2. RF POWER OUTPUT FOR CDMA2000 1xEV-DO Release 0 (Rel. 0)

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev. License</u>
1xEV-DO Terminal Test	A.09.13

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Params:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > RTAP
 - RTAP Rate > 153.6 kbps
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Params:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > FTAP (default)
 - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

RF Power Output for CDMA2000 1xEV-DO Release 0 (Rel. 0)

Cell Band

FTAP Rate	RTAP Rate	Channel	f (MHz)	Conducted power (dBm)
				Peak
307.2 kbps (2 slot, QPSK)	153.6 kbps	1013	824.70	29.18
		384	836.52	29.29
		777	848.31	29.14

PCS Band

FTAP Rate	RTAP Rate	Channel	f (MHz)	Conducted power (dBm)
				Peak
307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	27.26
		600	1880.00	26.10
		1175	1908.75	26.50

7.3. RF POWER OUTPUT FOR CDMA2000 1xEV-DO Revision A (Rev. A)

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev. License</u>
1xEV-DO Terminal Test	A.09.13

EVDO Release A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Release A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

RF Power Output Results for CDMA2000 1xEV-DO Revision A (Rev. A)

Cell Band

FETAP-Traffic Format	RETAP-Data Payload Size	Channel	f (MHz)	Conducted power (dBm)
				Peak
307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	1013	824.70	30.41
		384	836.52	30.10
		777	848.31	30.44

PCS Band

FETAP-Traffic Format	RETAP-Data Payload Size	Channel	f (MHz)	Conducted power (dBm)
				Peak
307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	28.08
		600	1880.00	26.33
		1175	1908.75	27.29

7.4. RF POWER OUTPUT FOR GSM MODE

GPRS (GMSK) - Coding scheme: CS4

Band	Ch	Frequency	Conducted output power (dBm)	
			Peak	
			1 slot	2 slot
GSM850	128	824.2	32.56	32.02
	190	836.6	32.54	31.89
	251	848.8	32.74	32.10
GSM1900	512	1850.2	30.11	30.04
	661	1880	30.29	30.23
	810	1909.8	30.20	30.12

EGPRS (8PSK) - Coding scheme: MCS9

Band	Ch	Frequency	Conducted output power (dBm)	
			Peak	
			1 slot	2 slot
GSM850	128	824.2	30.54	30.14
	190	836.6	30.19	29.97
	251	848.8	30.31	30.06
GSM1900	512	1850.2	28.99	28.94
	661	1880	29.30	29.13
	810	1909.8	29.10	29.01

8. CONDUCTED TEST RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
 IC: RSS-Gen, 4.6

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

MODES TESTED

- 1xRTT – RC1, SO55
- CDMA2000 1xEV-DO Revision A (Rev. A)
- GPRS and EGPRS

RESULTS

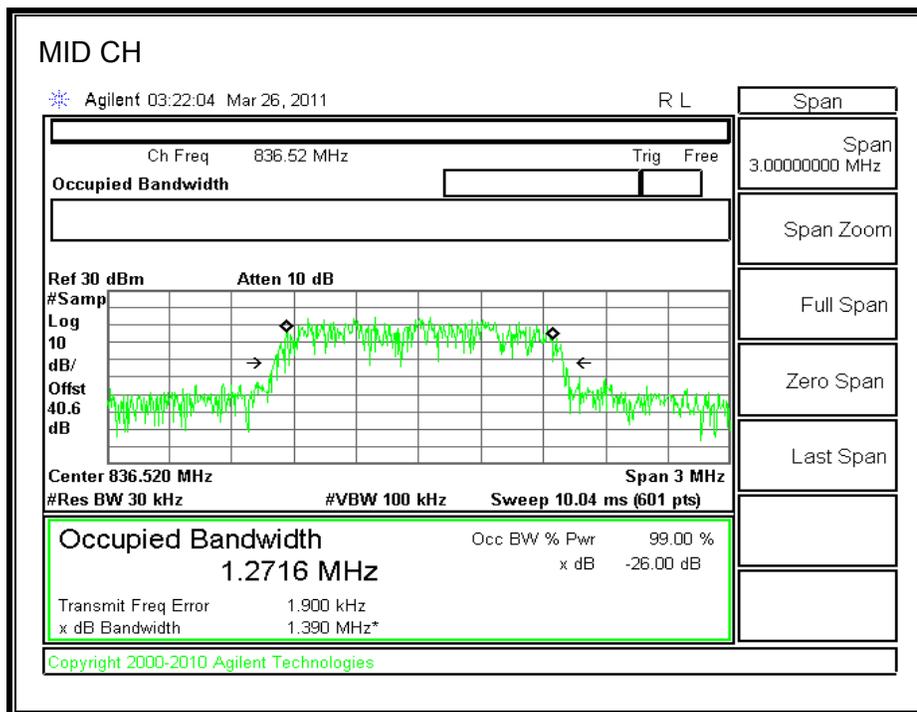
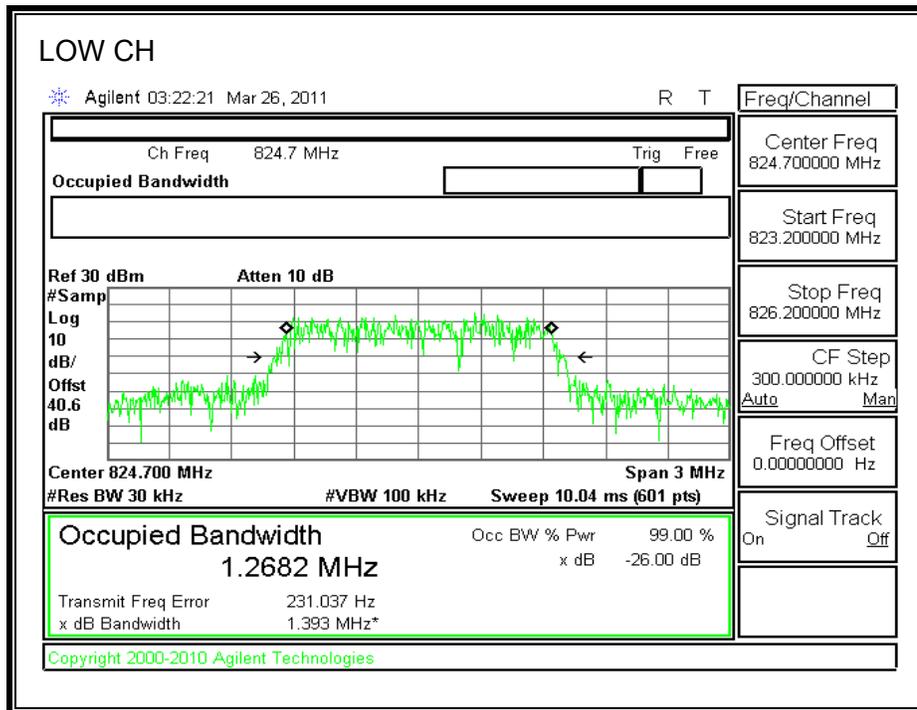
Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW MHz)
Cellular	1xRTT	1013	824.70	1.2682	1.393
		384	836.52	1.2716	1.390
		777	848.31	1.2734	1.379
	CDMA2000 1xEV-DO Revision A (Rev. A)	1013	824.70	1.2741	1.409
		384	836.52	1.2762	1.397
		777	848.31	1.2705	1.378
PCS	1xRTT	25	1851.25	1.2706	1.397
		600	1880.0	1.2670	1.385
		1175	1908.75	1.2741	1.376
	CDMA2000 1xEV-DO Revision A (Rev. A)	25	1851.25	1.2837	1.392
		600	1880.0	1.2799	1.395
		1175	1908.75	1.2769	1.402

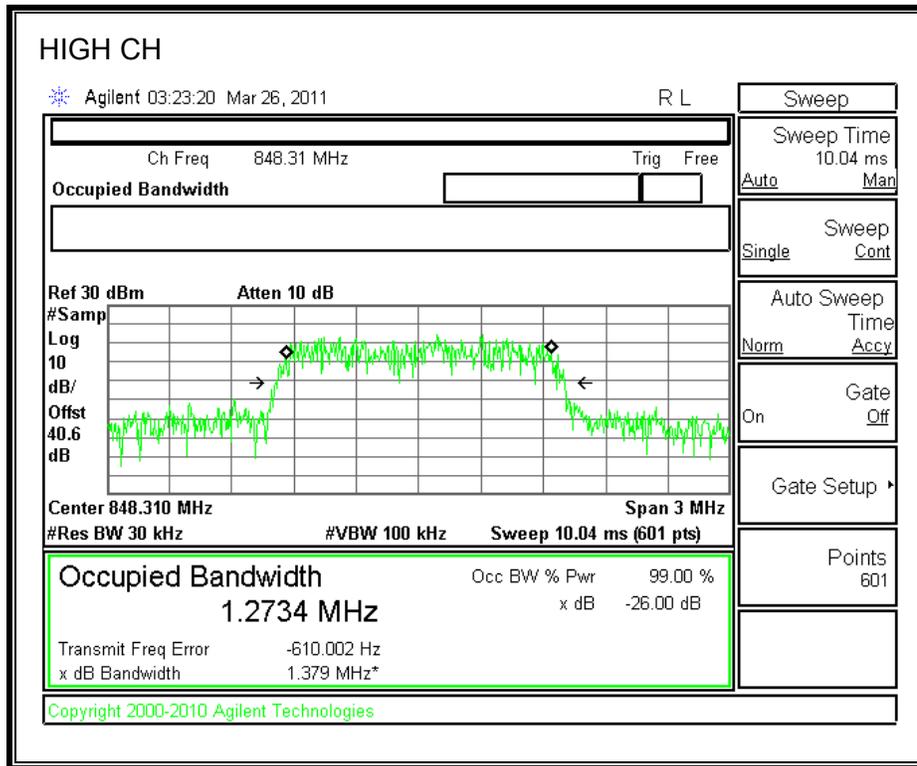
RESULTS

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
Cellular	GPRS	128	824.2	246.3605	304.026
		190	836.6	244.8844	309.338
		251	848.8	255.4250	301.513
	EGPRS	128	824.2	237.5426	295.343
		190	836.6	234.4946	287.314
		251	848.8	230.5075	297.131
PCS	GPRS	512	1850.2	243.2564	314.871
		661	1880.0	250.1815	303.625
		810	1909.8	254.1398	310.373
	EGPRS	512	1850.2	243.8439	290.735
		661	1880.0	237.5866	294.626
		810	1909.8	228.4041	281.967

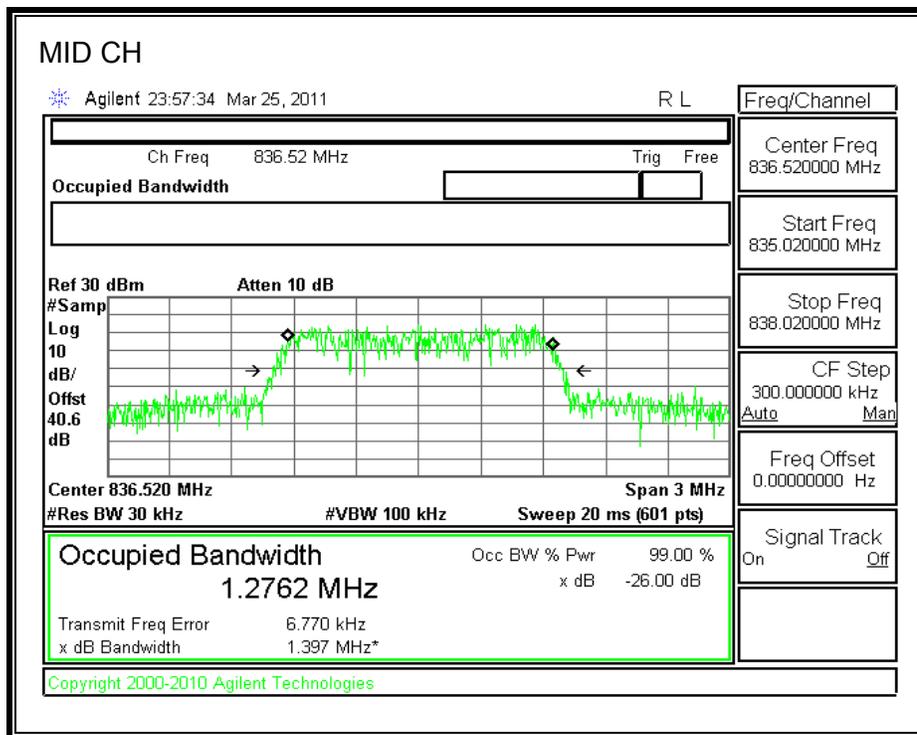
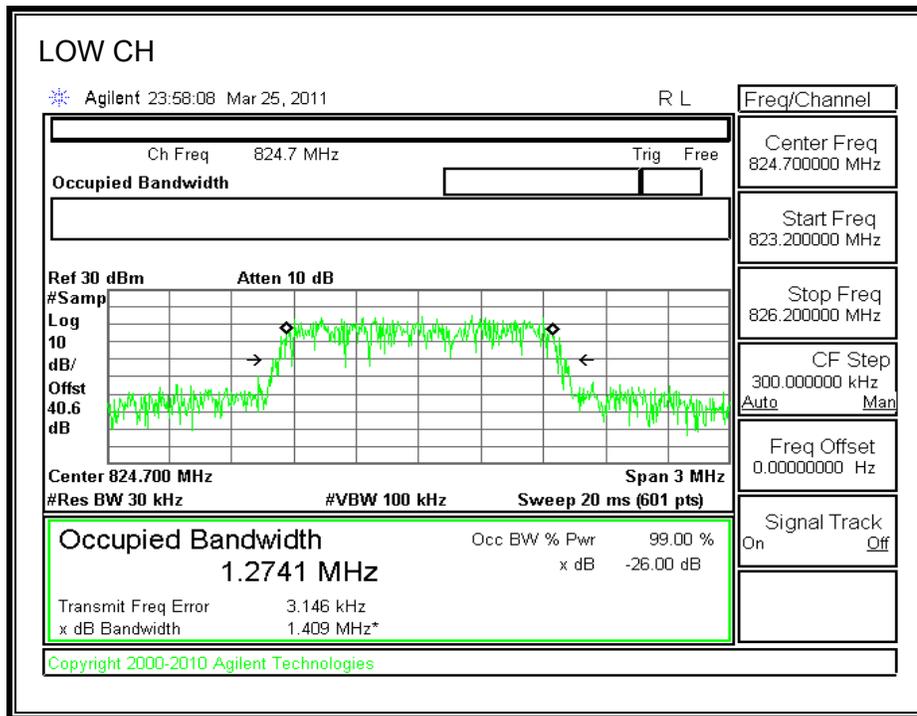
CDMA2000 1xRTT Mode (Cellular Band)

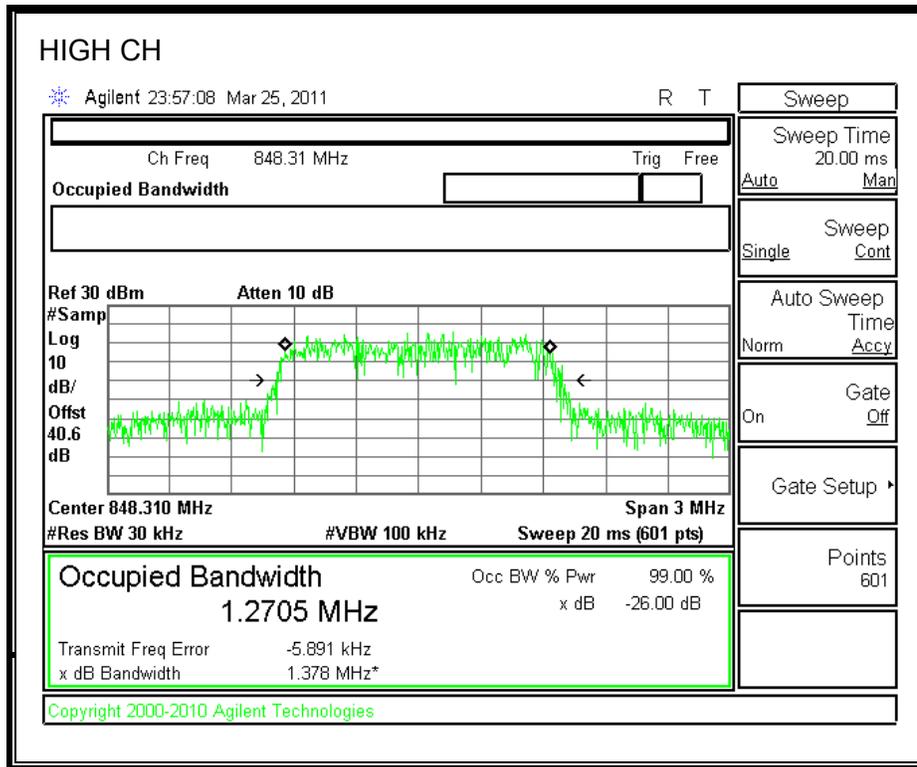
99% BANDWIDTH and 26dB





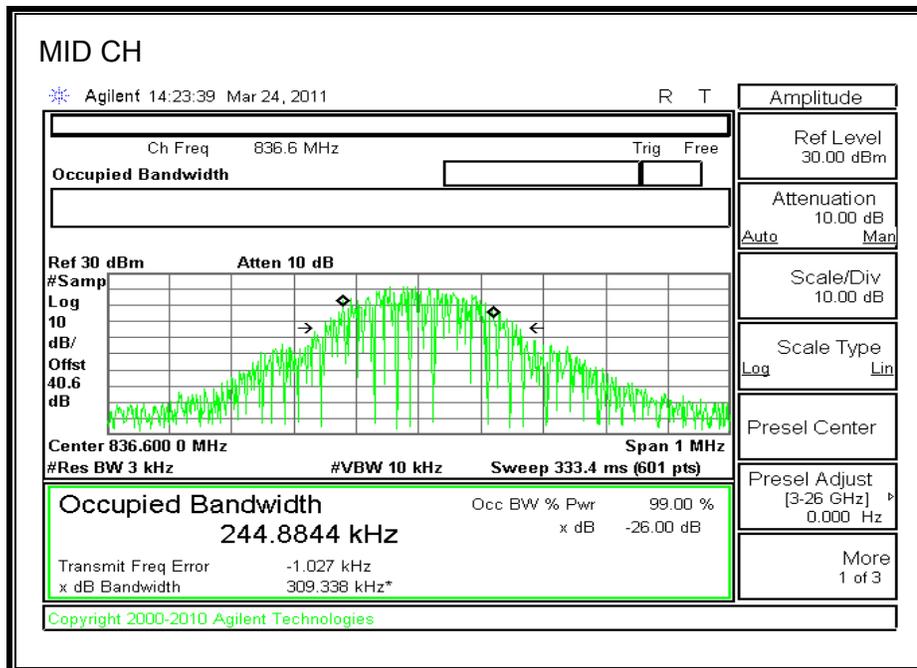
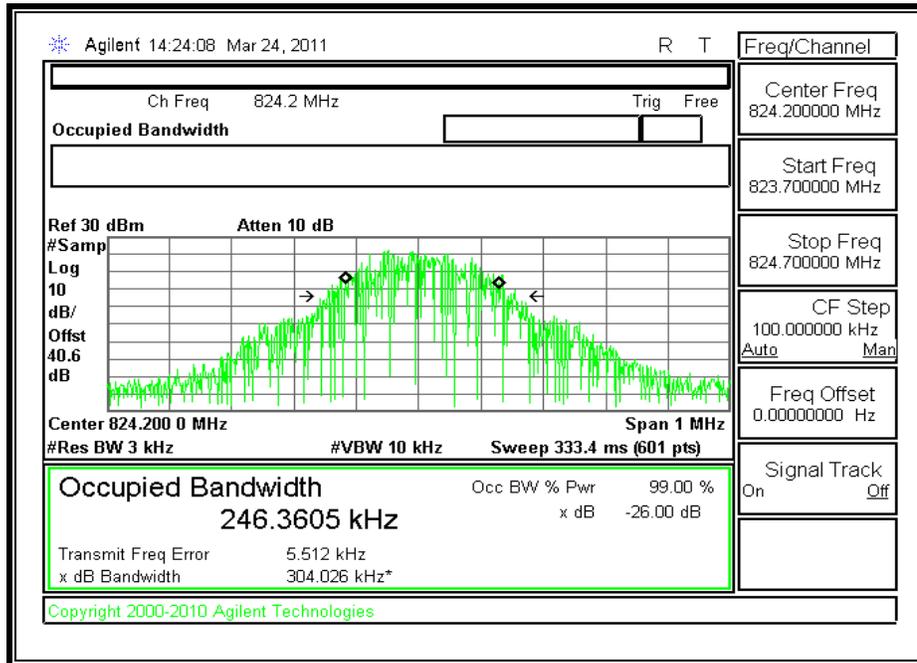
CDMA2000 1xEV-DO Revision A (Rev. A) Cellular Band

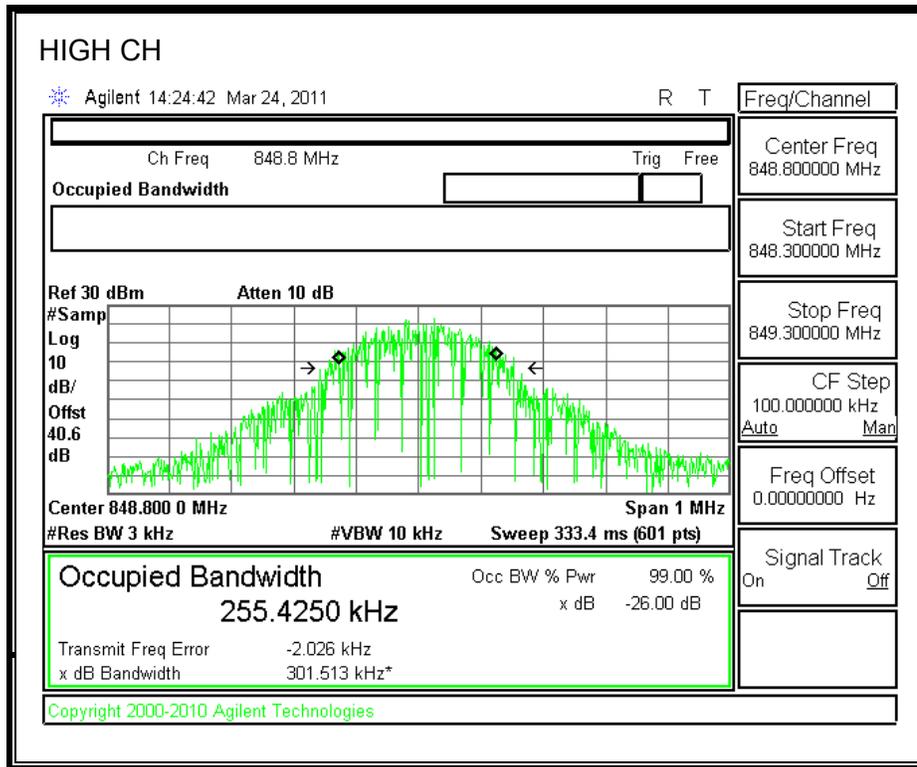




GPRS850 BAND

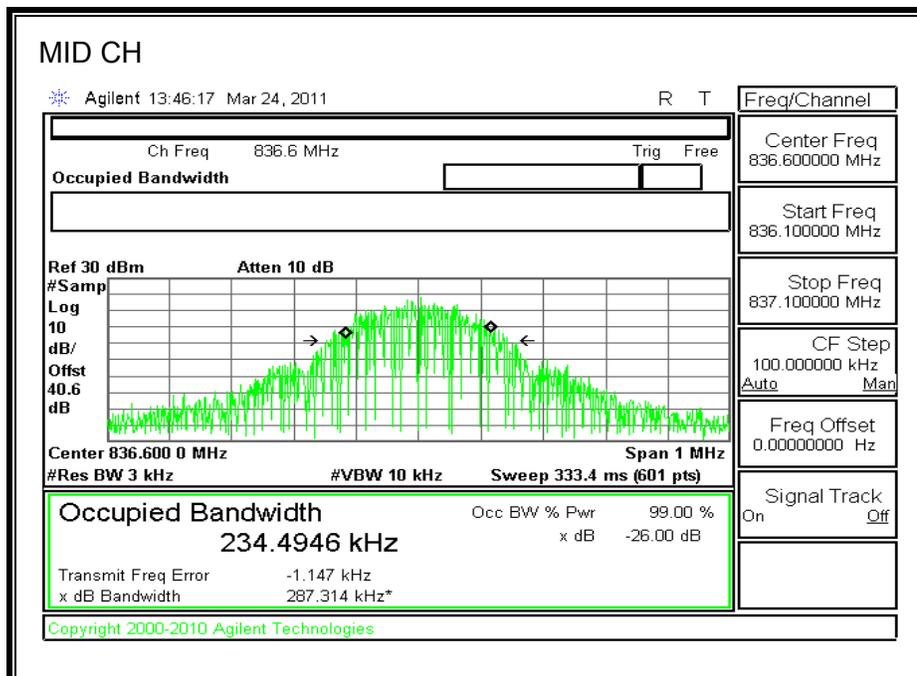
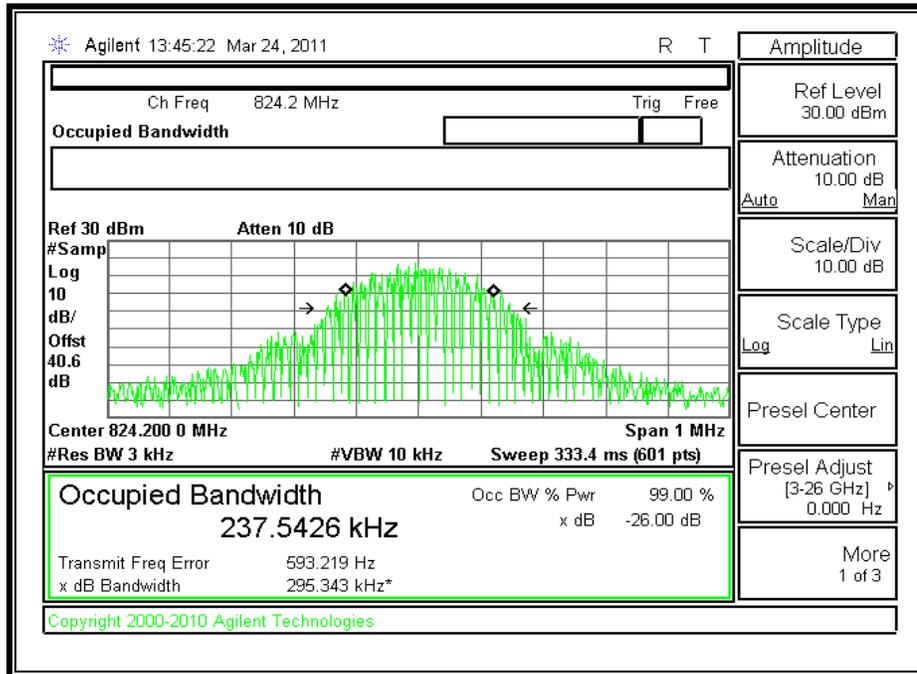
99% and 26dB Bandwidth

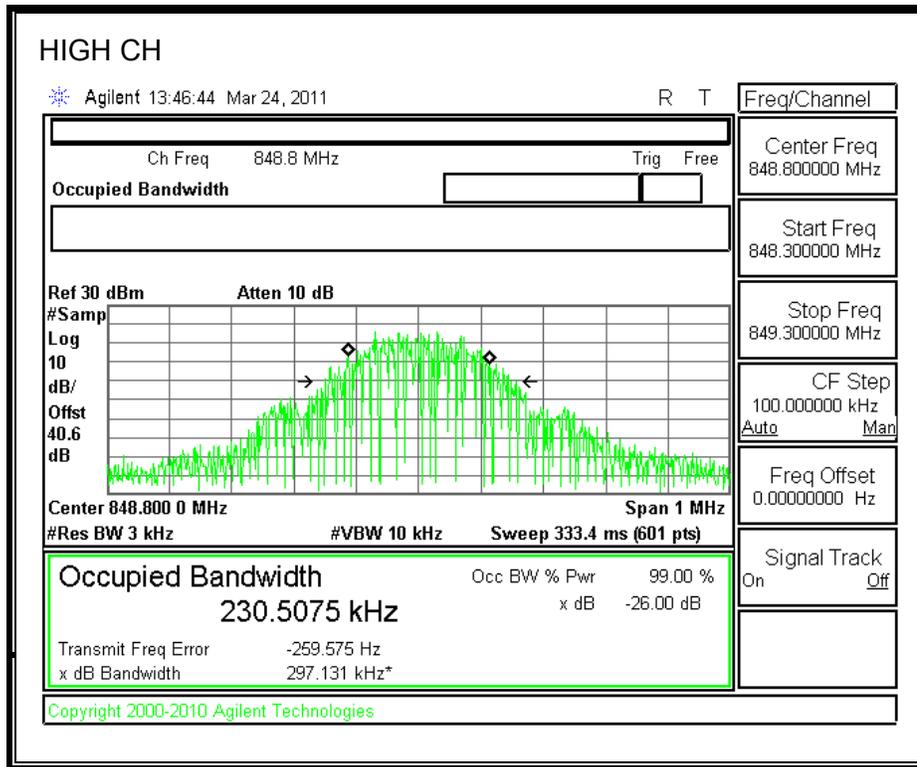




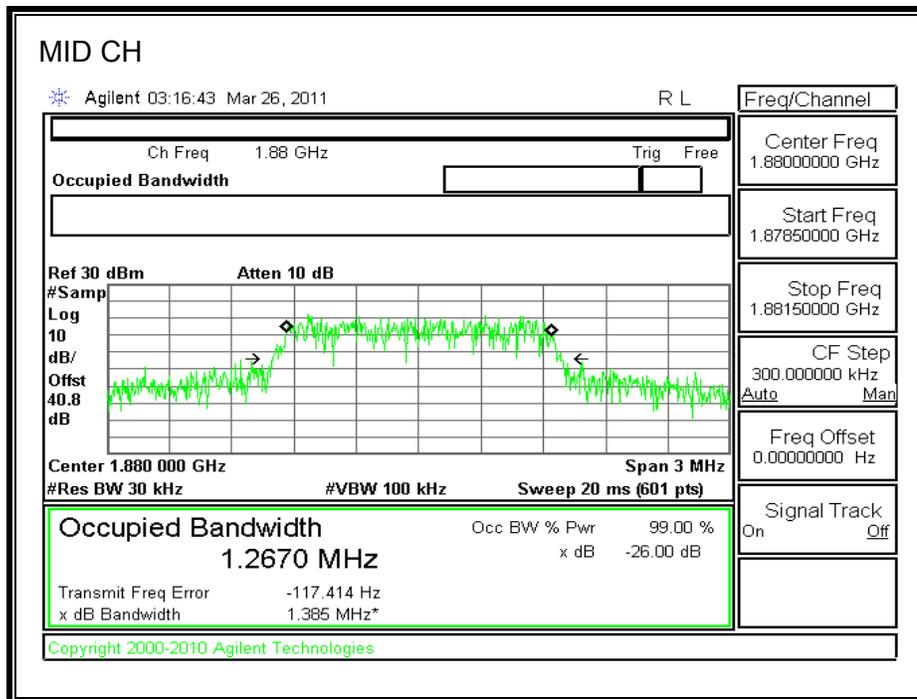
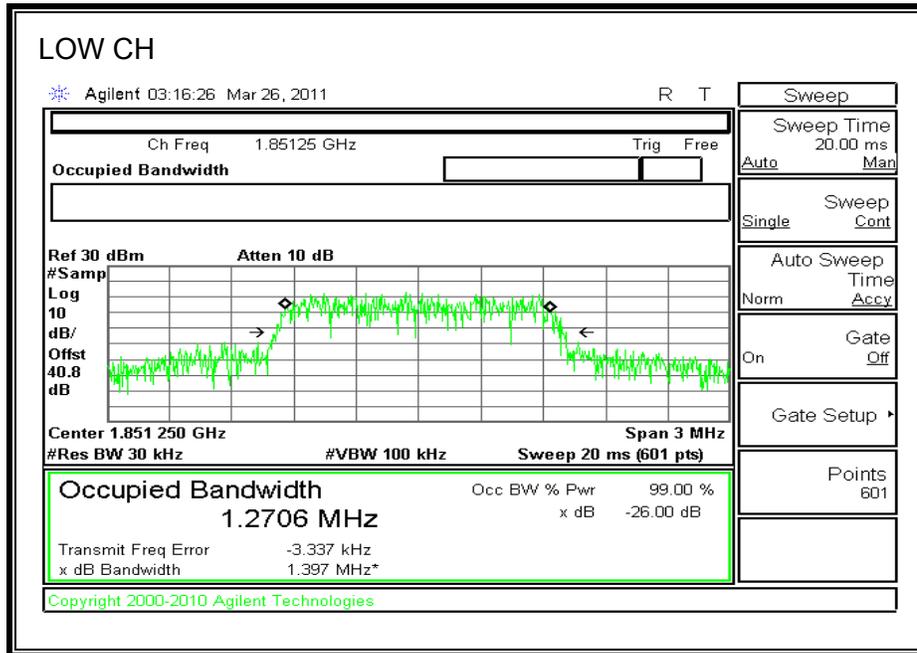
EGPRS850 BAND

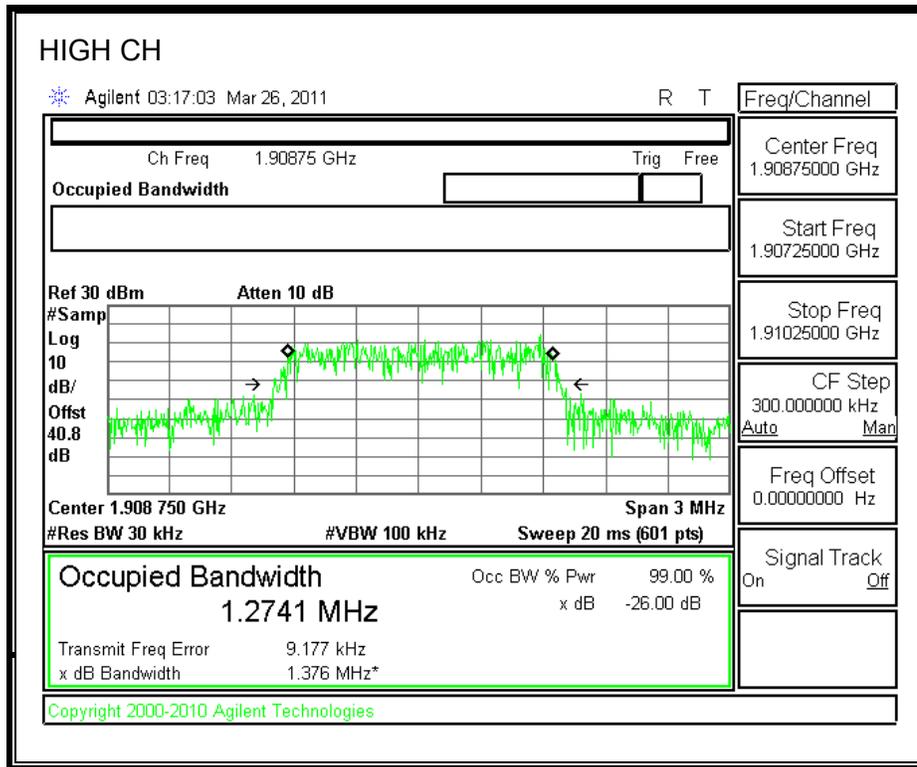
LOW CH



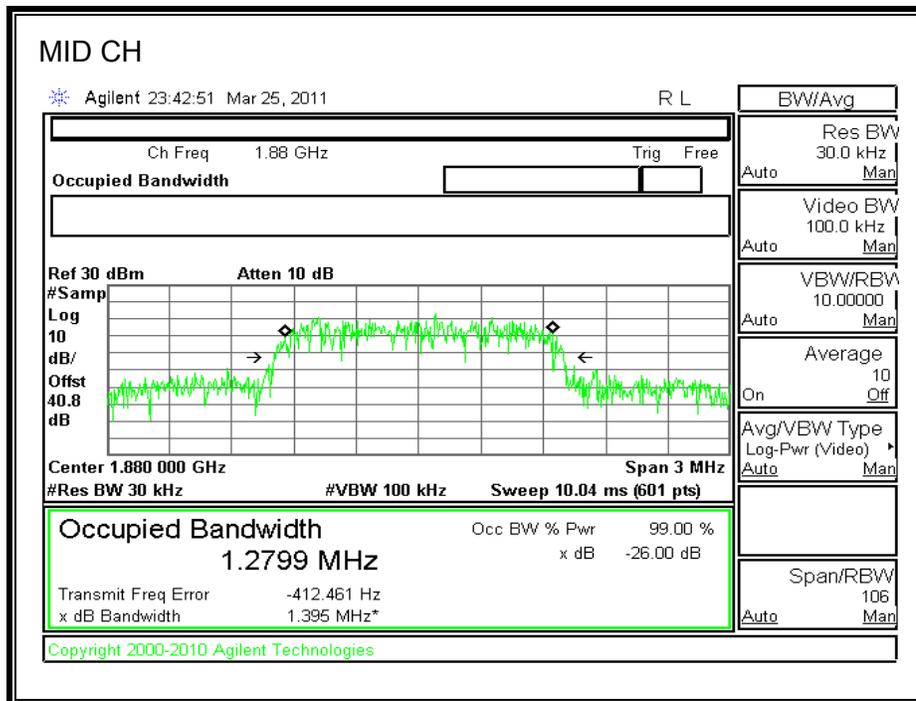
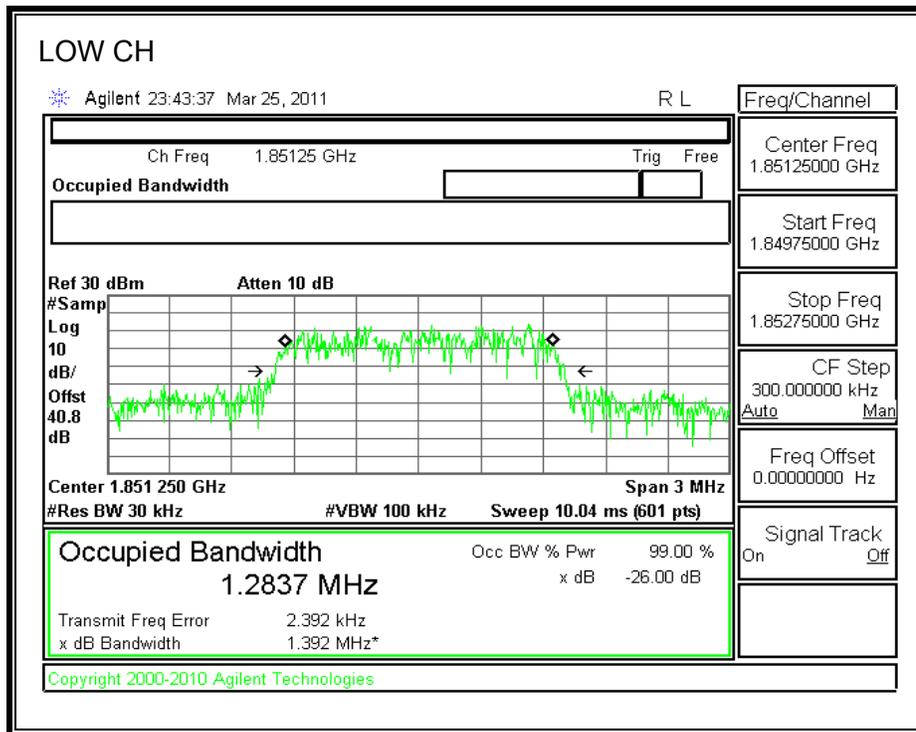


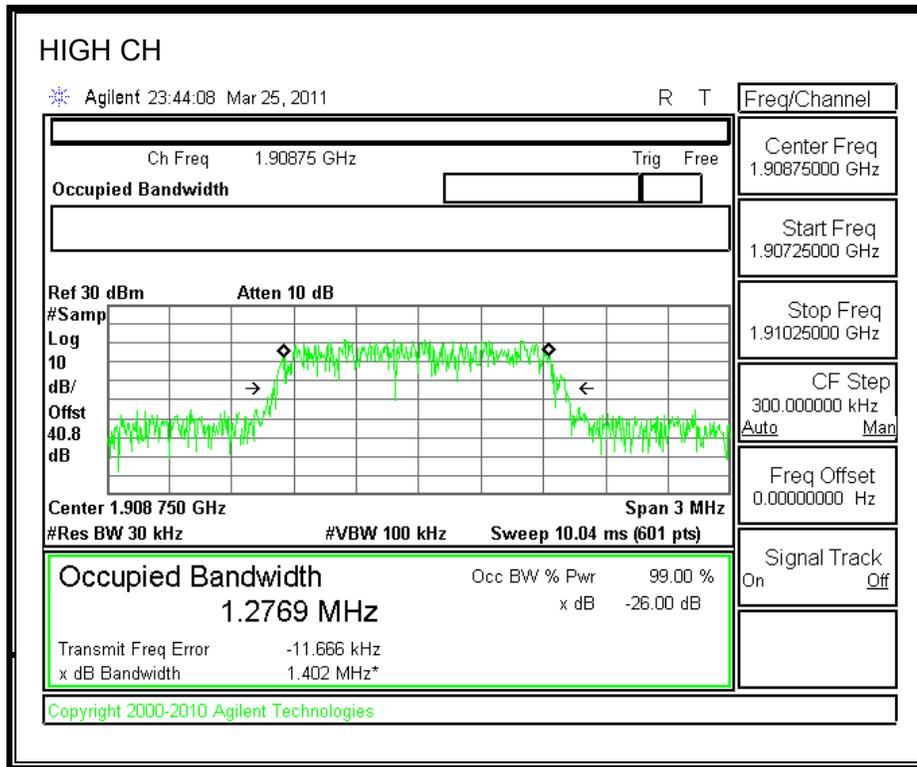
CDMA2000 1xRTT Mode (PCS Band)



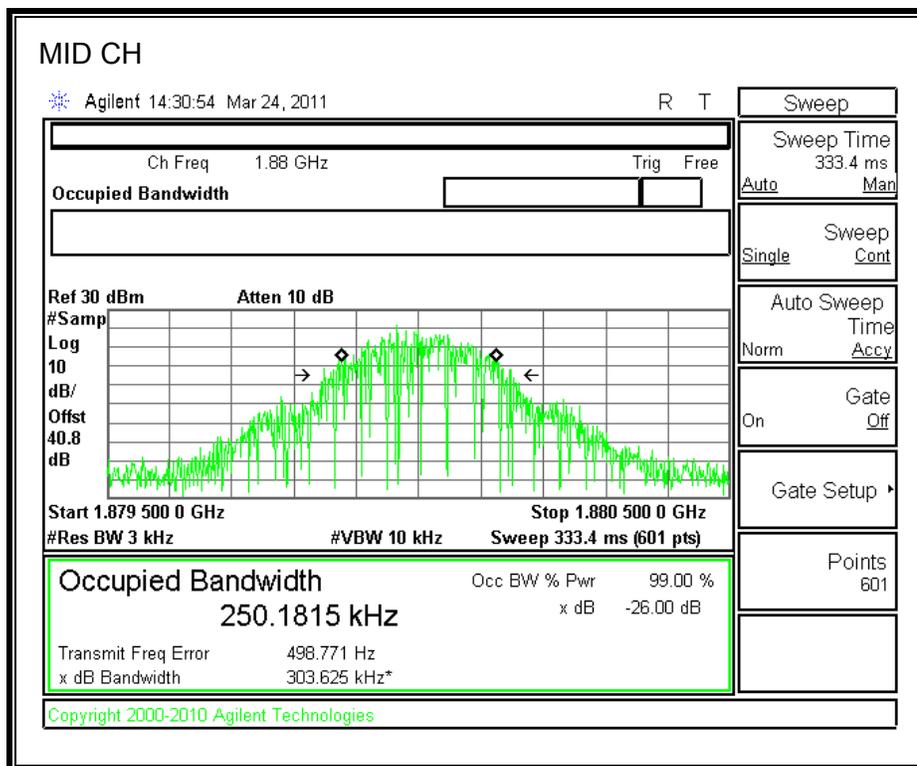
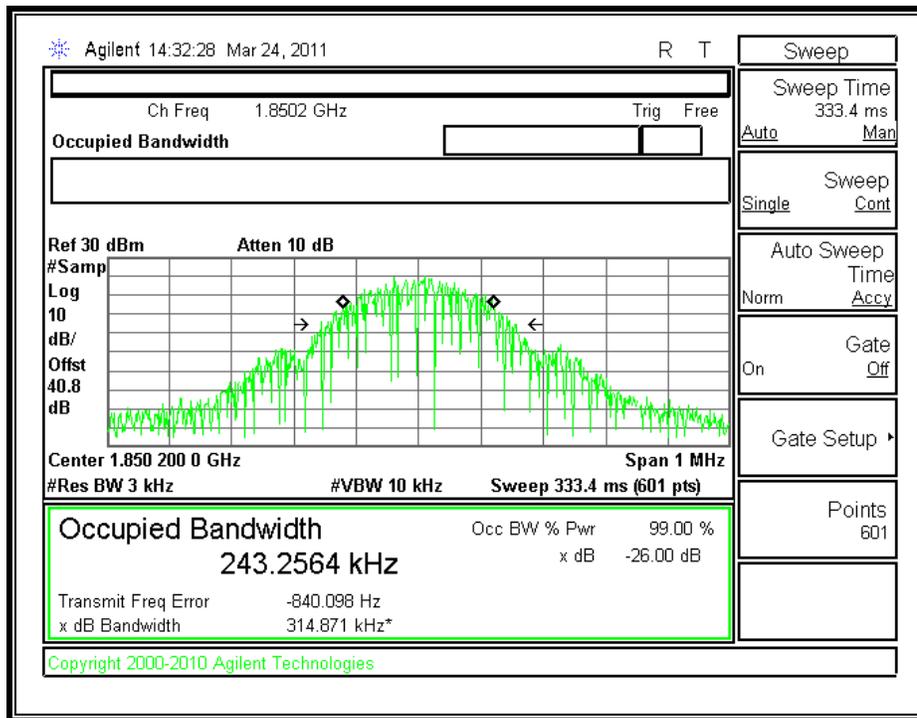


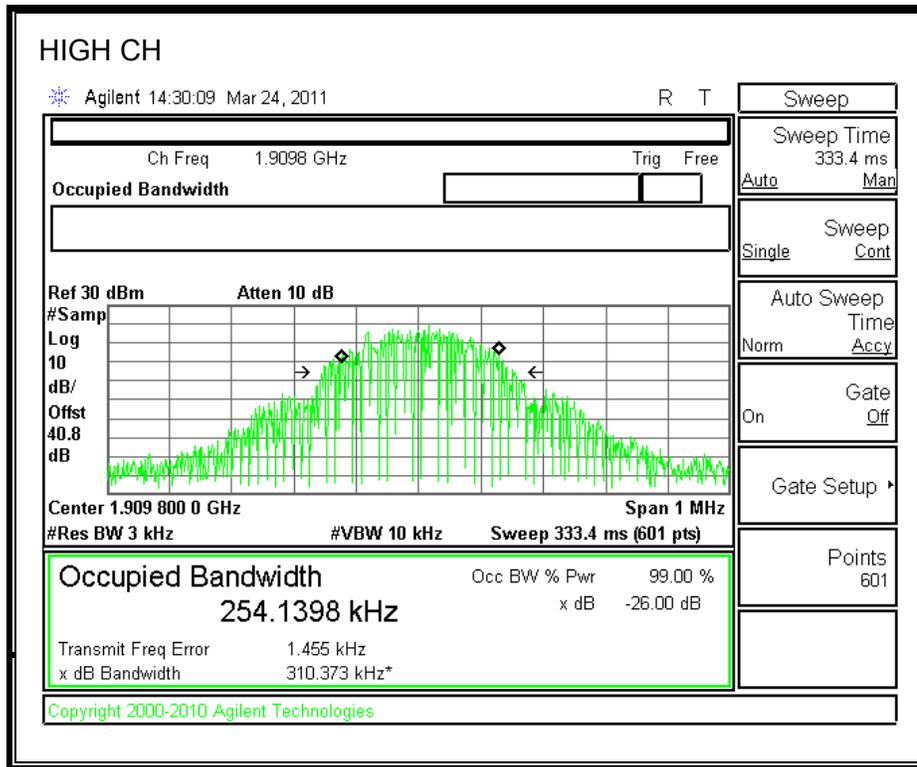
CDMA2000 1xEV-DO Revision A (Rev. A) Mode (PCS Band)



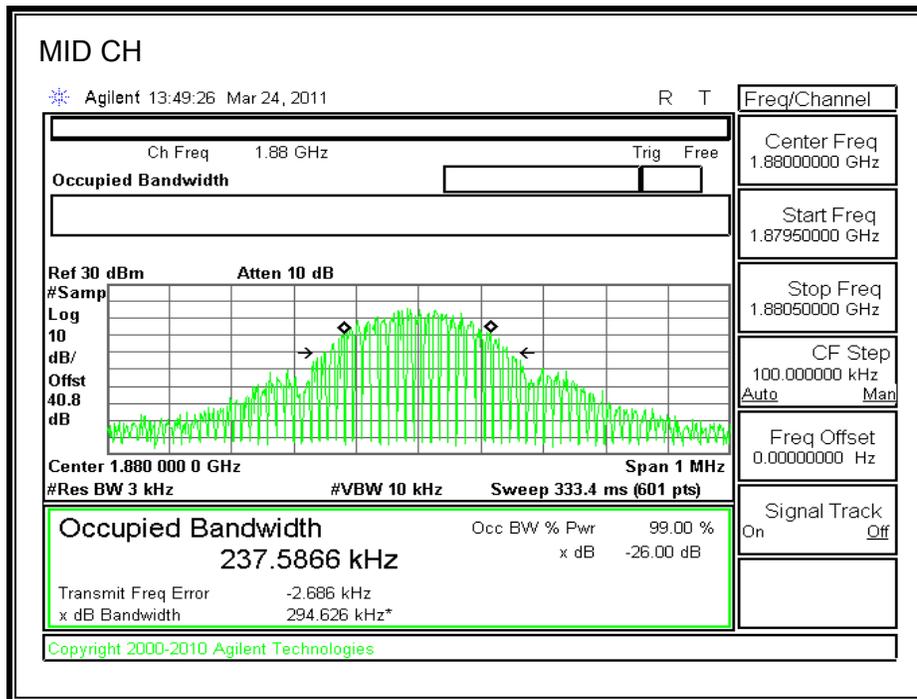
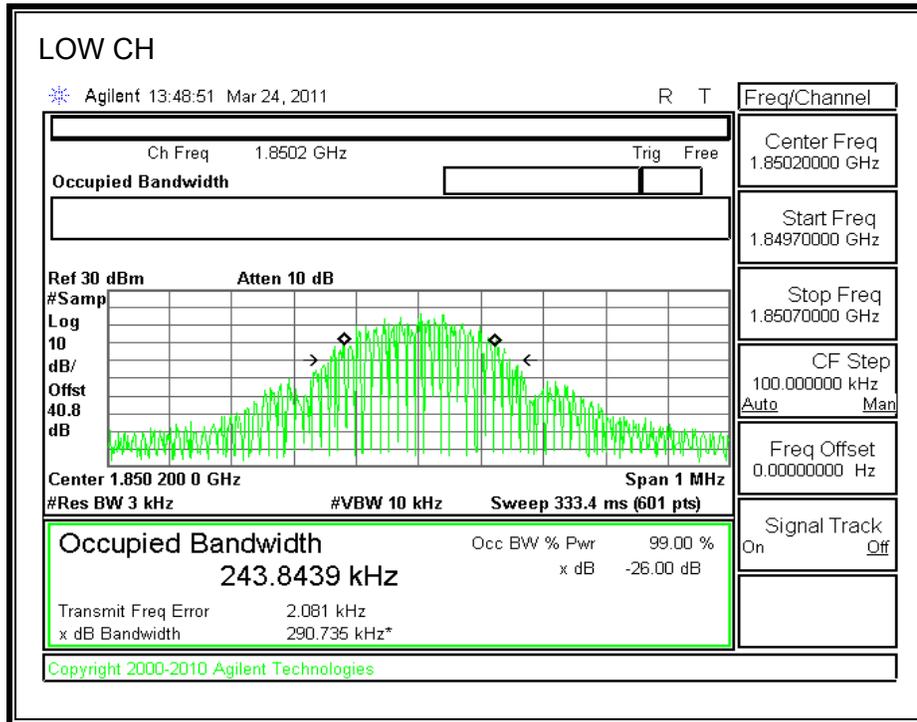


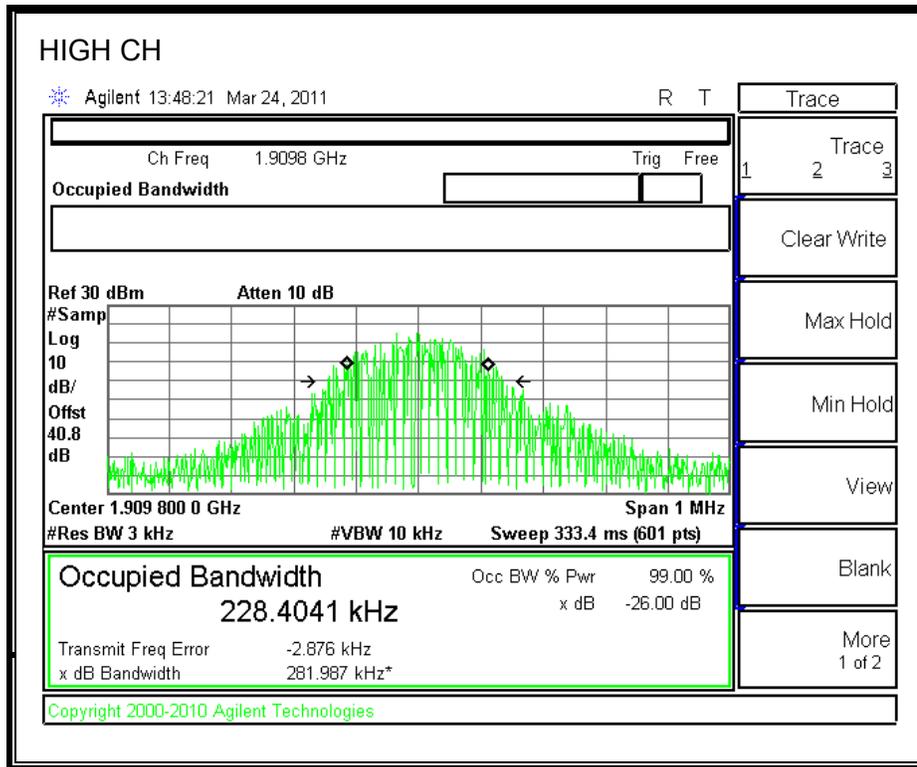
GPRS1900 PCS Band





EGPRS1900 PCS Band





8.2. BAND EDGE

RULE PART(S)

FCC: §22.359, 24.238
IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

The transmitter output was connected to a Agilent 8960 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

- Set the spectrum analyzer span to include the block edge frequency (824, 848, 1850, 1910MHz)
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

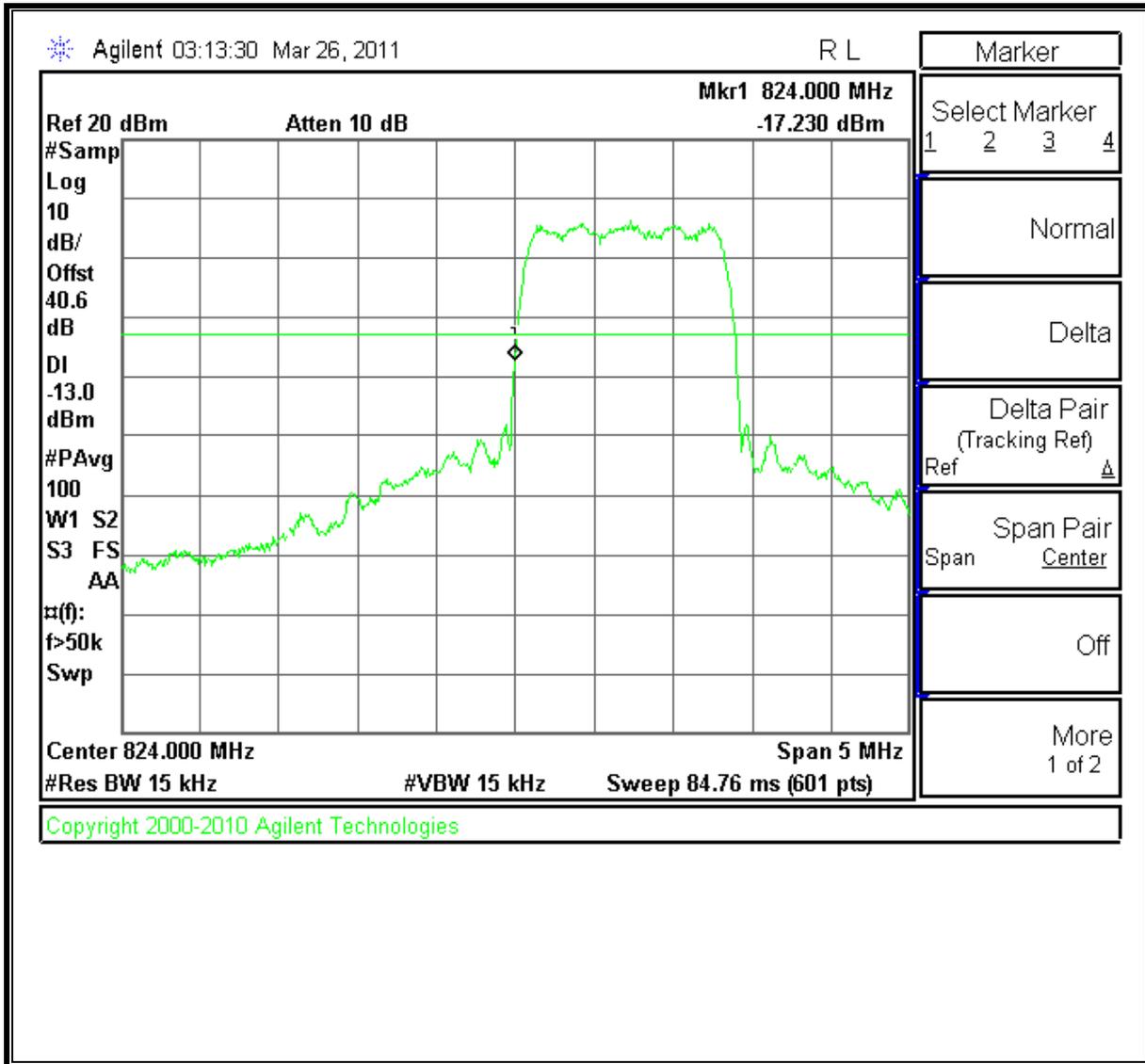
MODES TESTED

- 1xRTT – RC1 SO55
- CDMA2000 1xEV-DO Revision A (Rev. A)
- GPRS and EGPRS

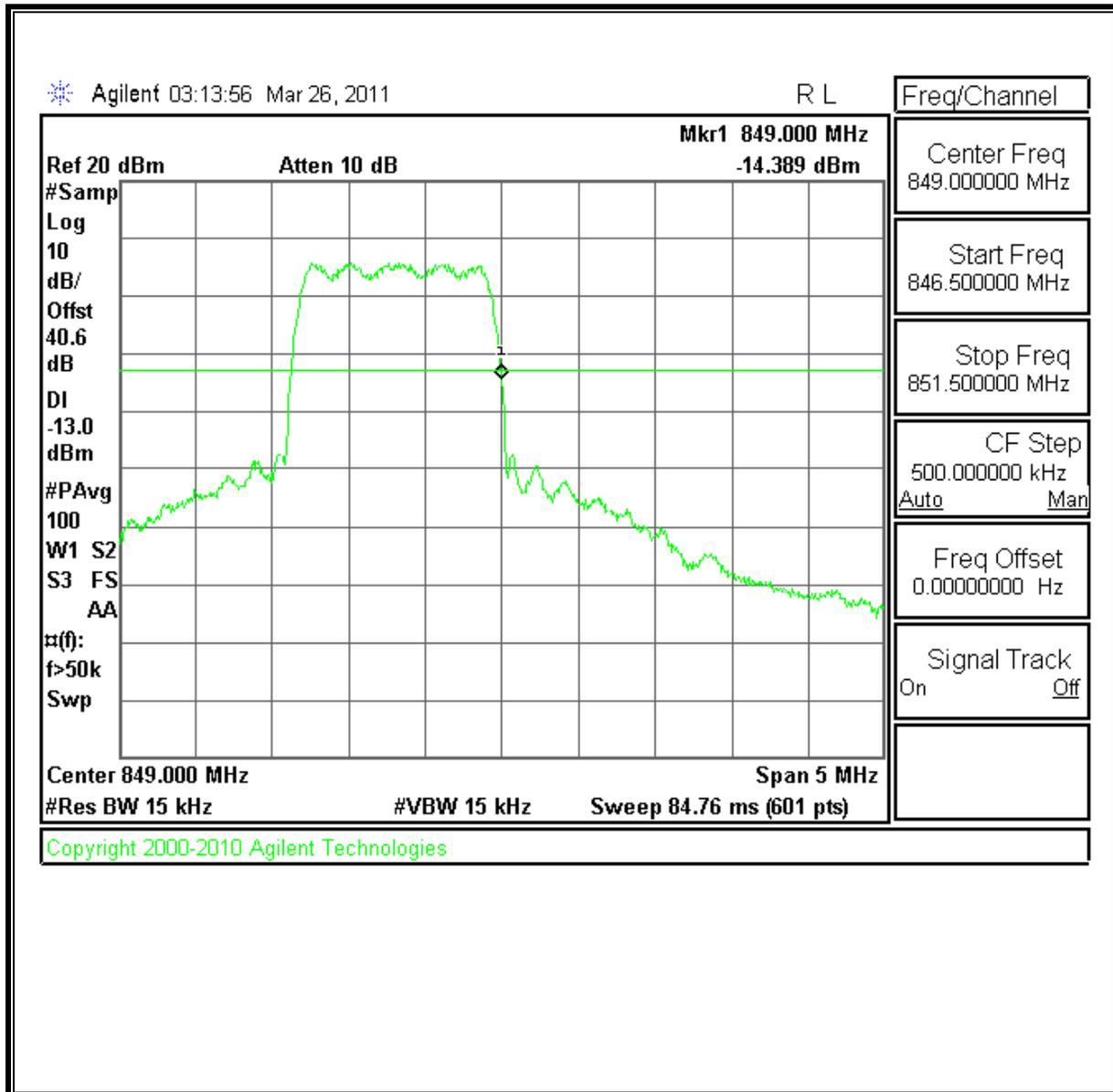
RESULTS

CDMA2000 1xRTT mode (Cellular Band)

Low Channel Band Edge

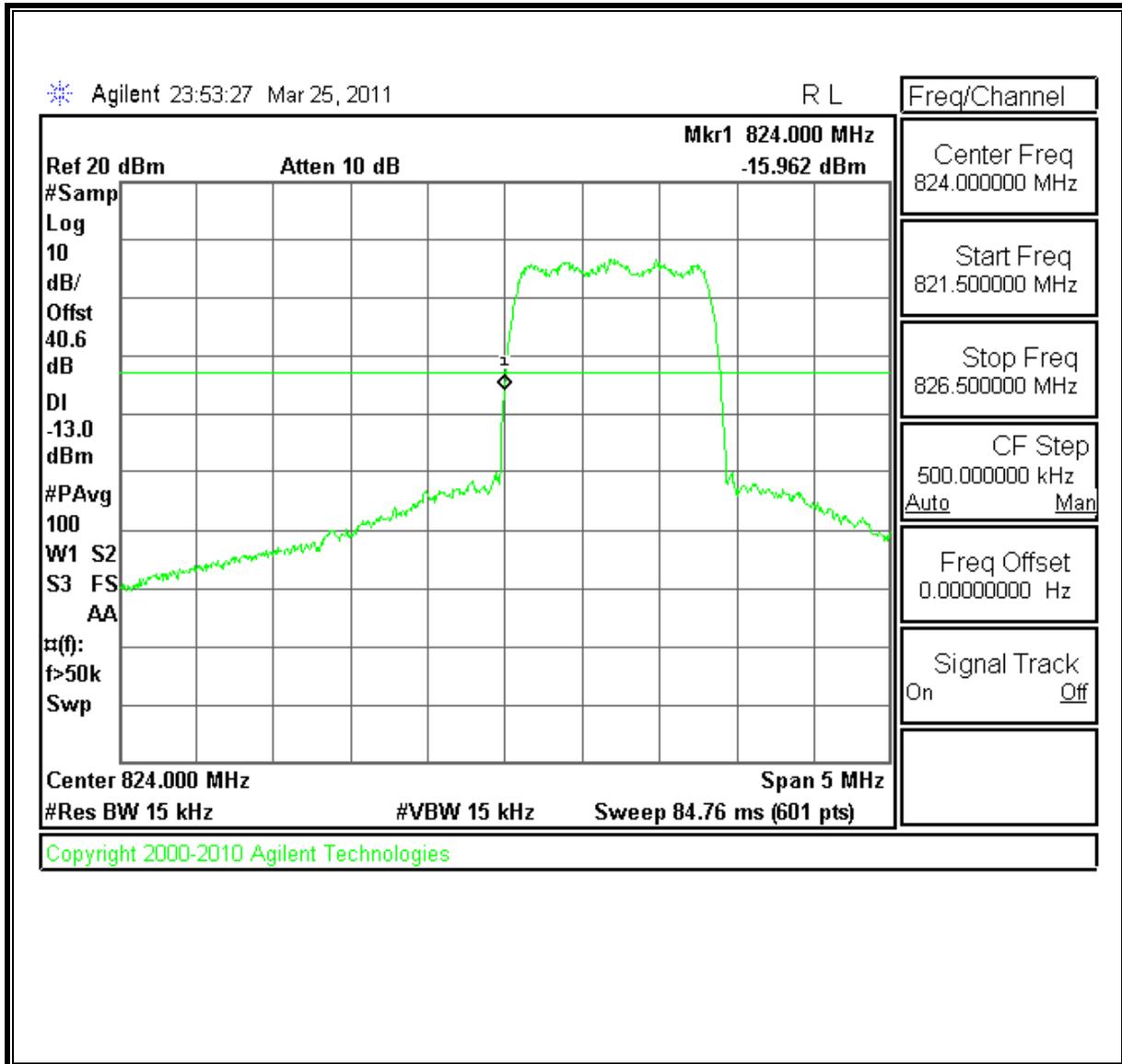


High Channel Band Edge

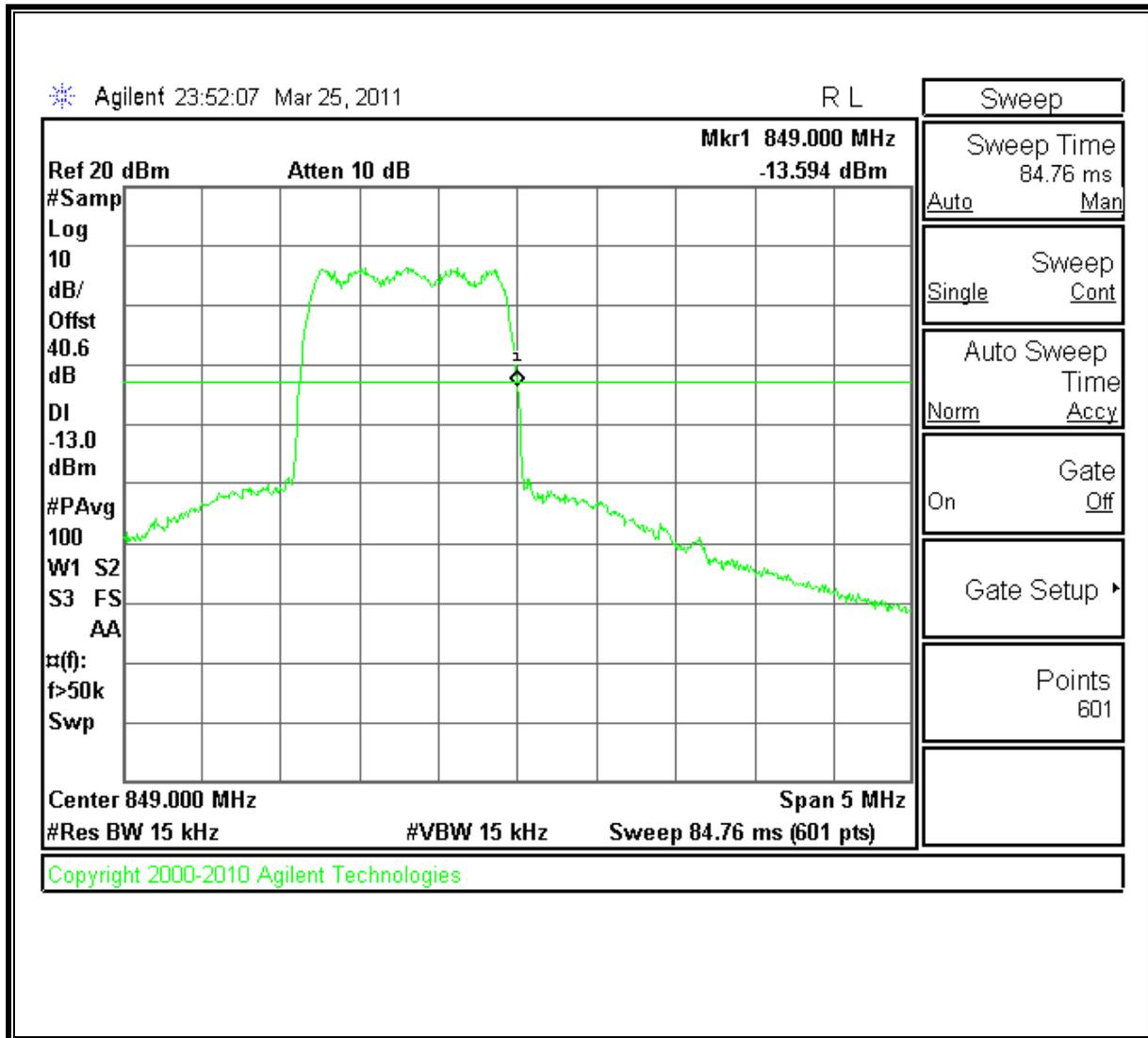


CDMA2000 1xEV-DO Revision A (Rev. A) mode (Cellular Band)

Low Channel Band Edge

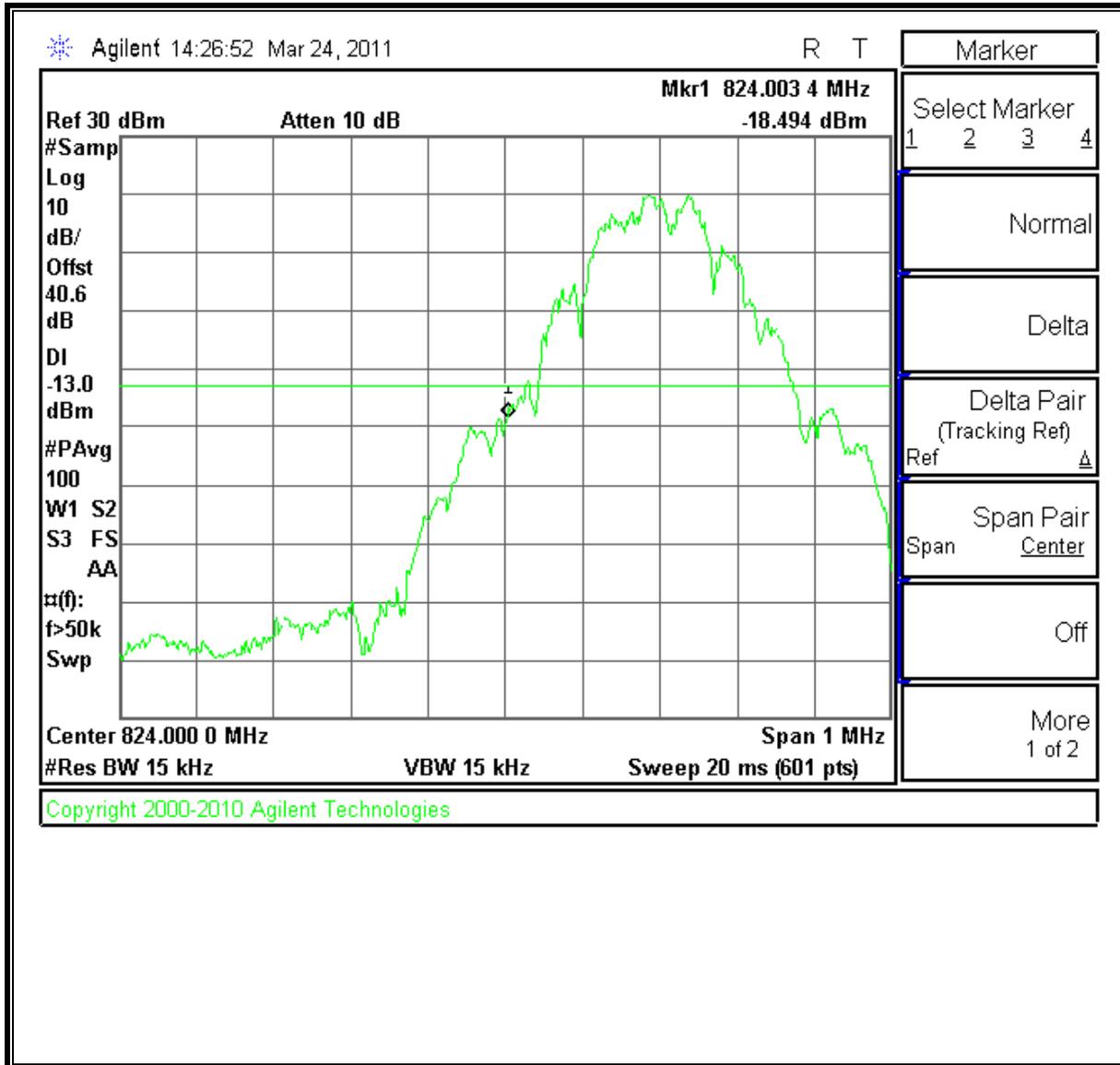


High Channel Band Edge

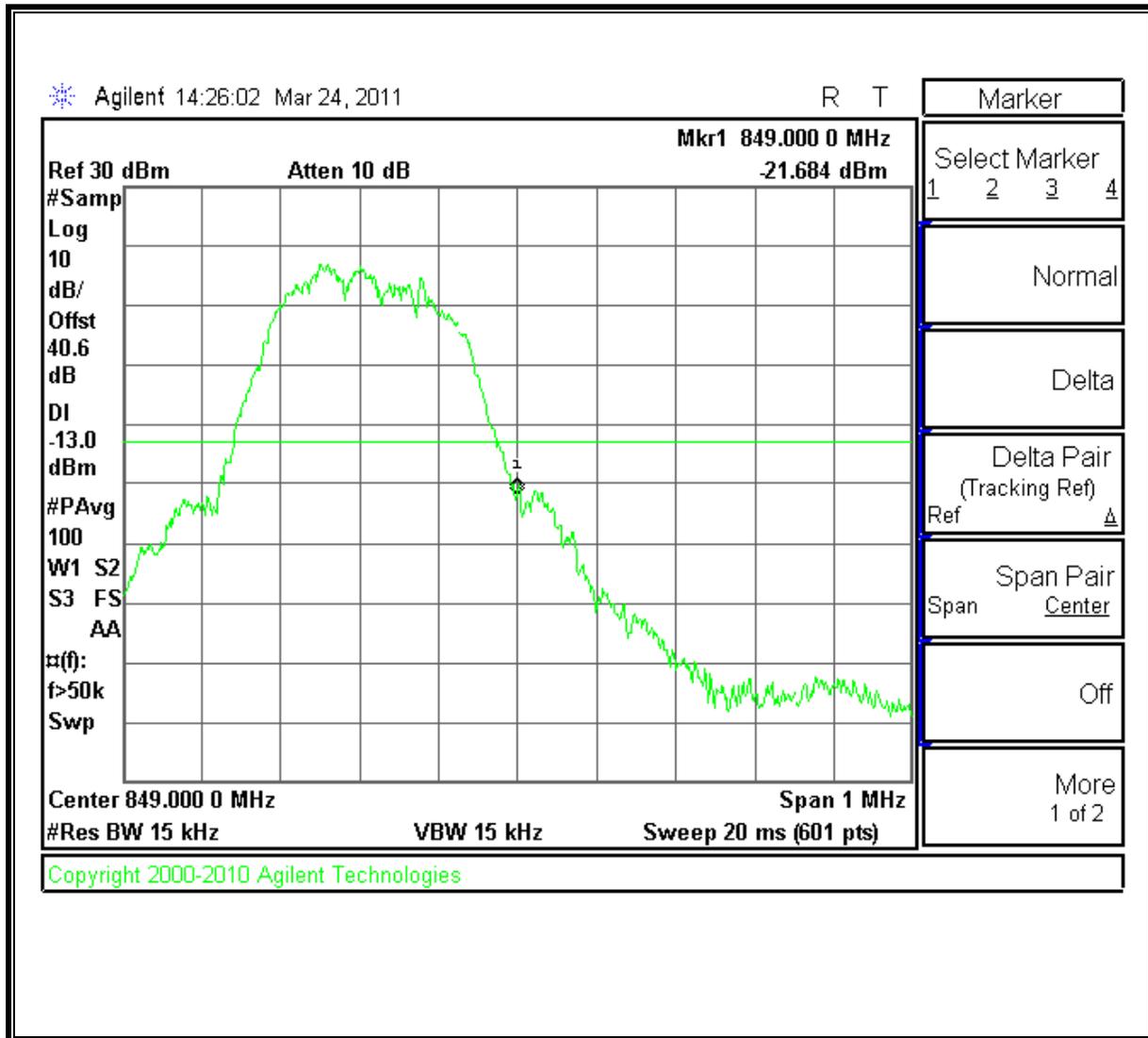


GPRS850 (Cellular Band)

Low Channel Band Edge

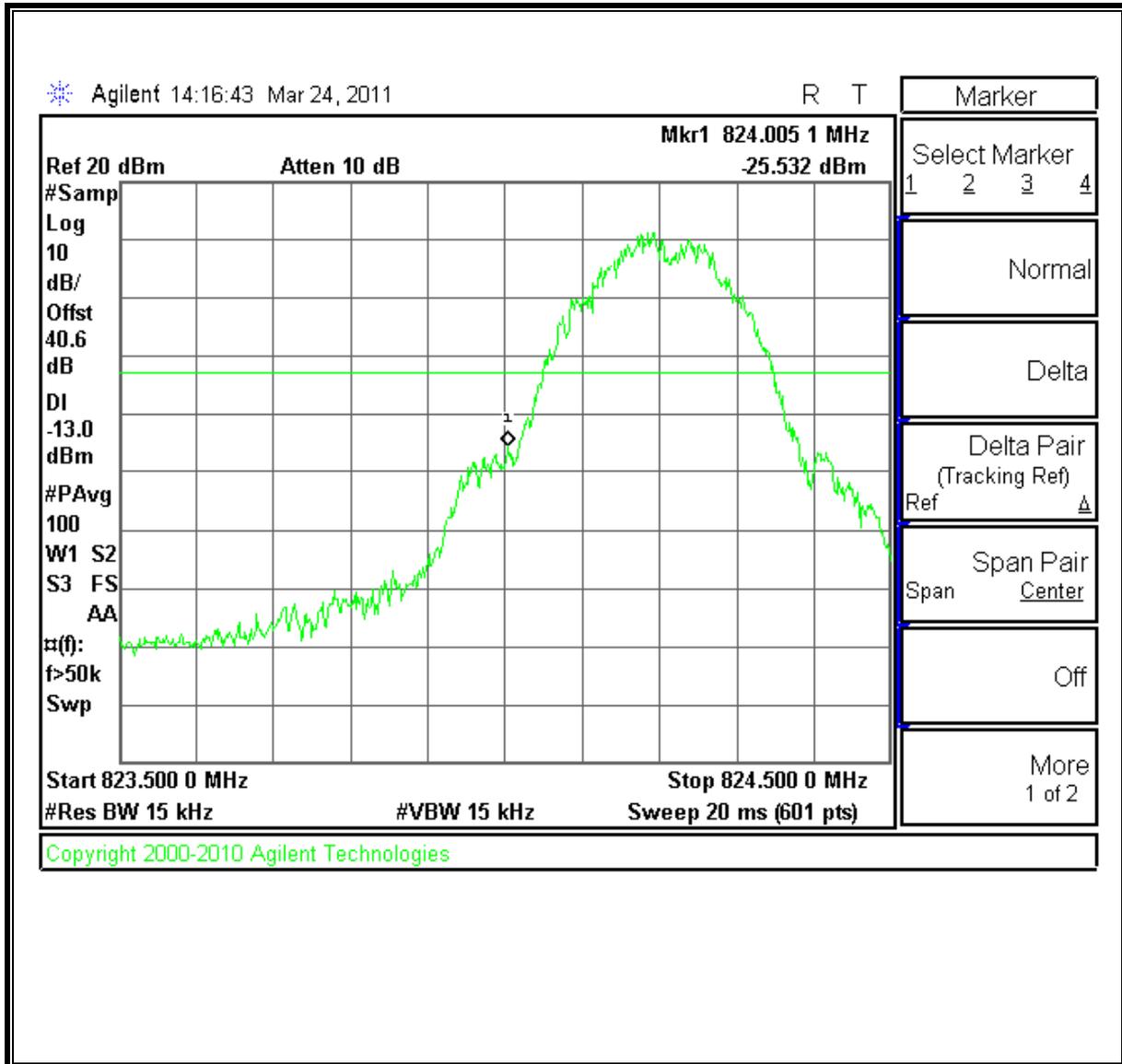


High Channel Band Edge



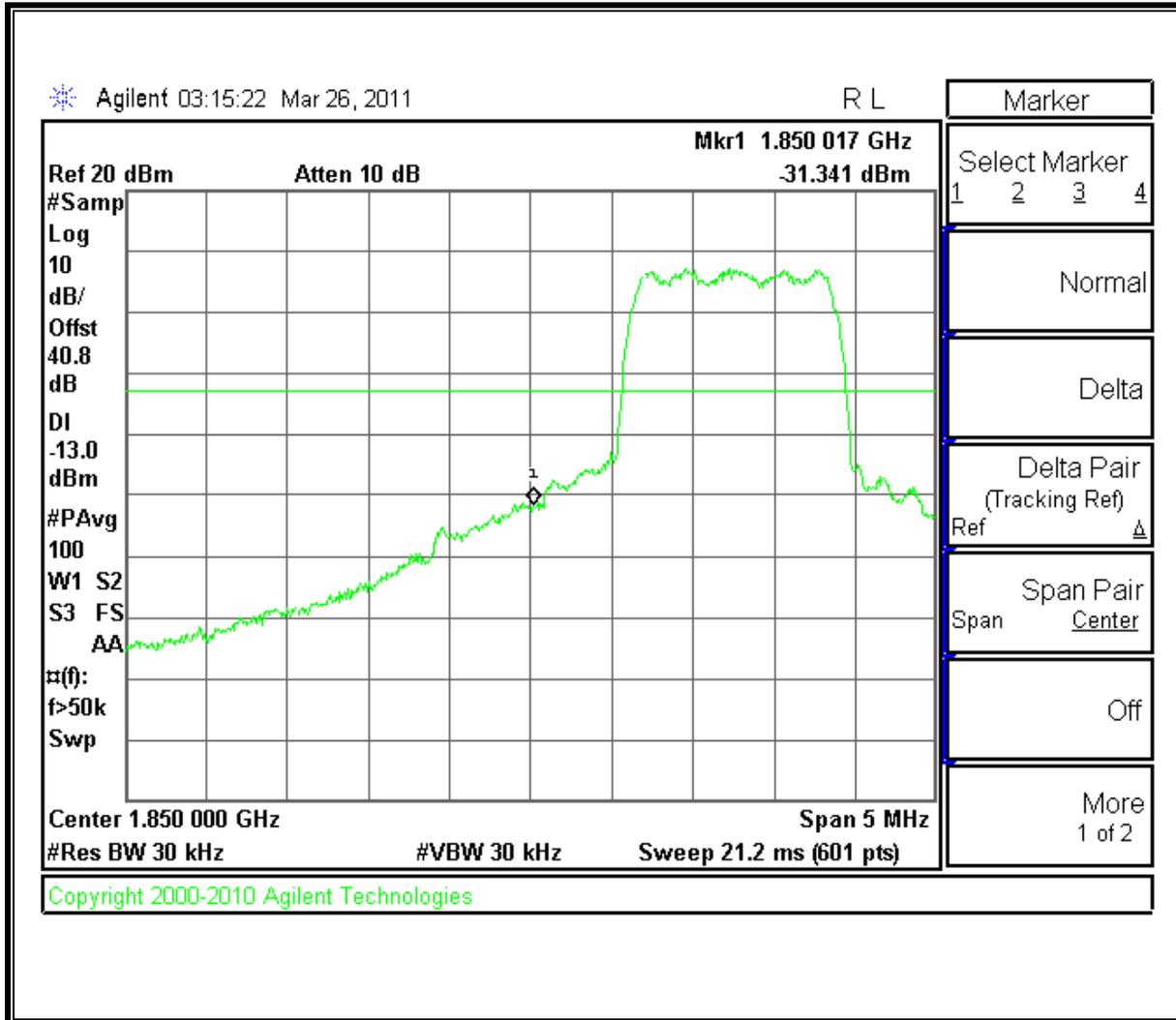
EGPRS850 (Cellular Band)

Low Channel Band Edge

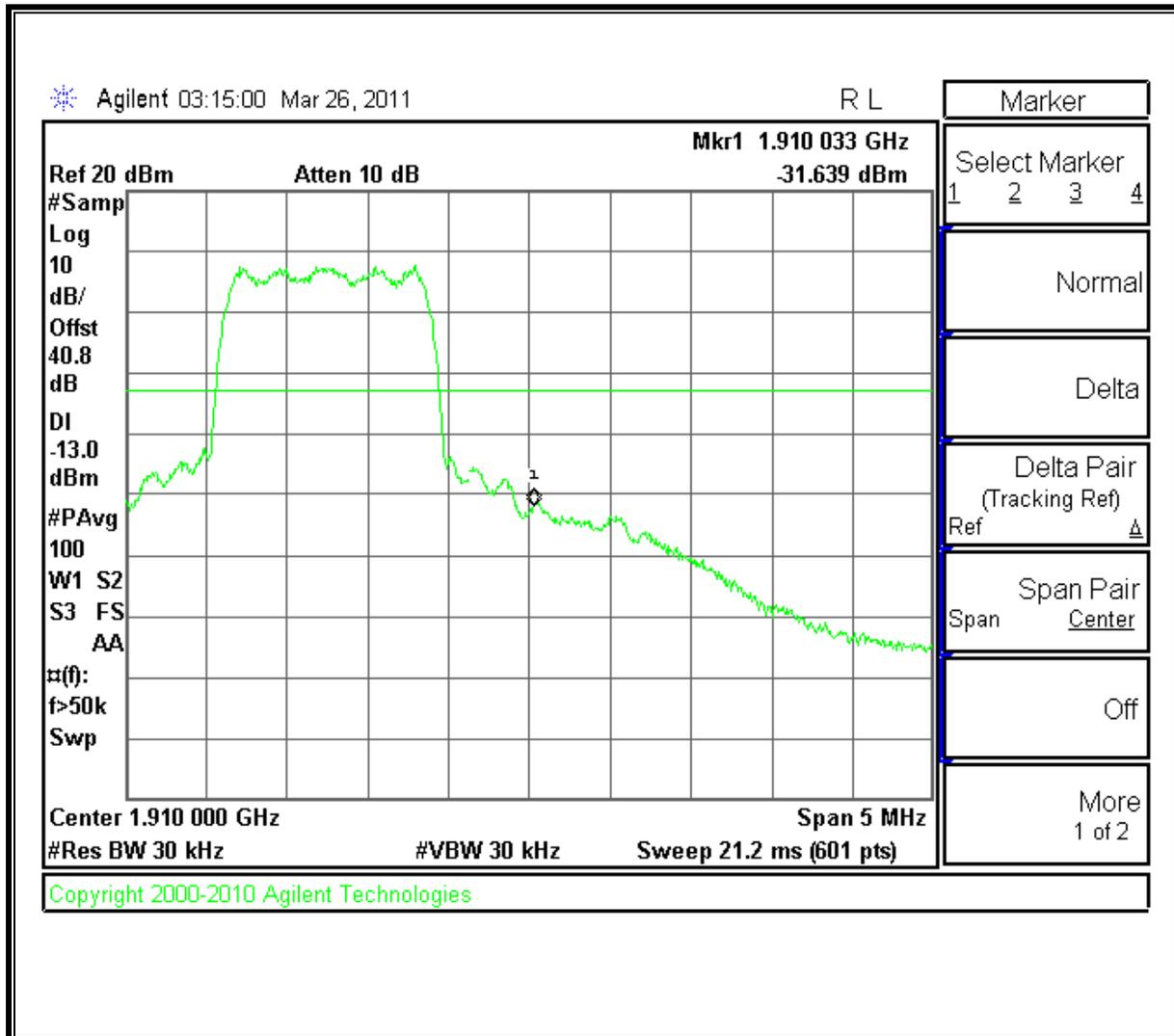


CDMA2000 1xRTT mode (PCS Band)

Low Channel Band Edge

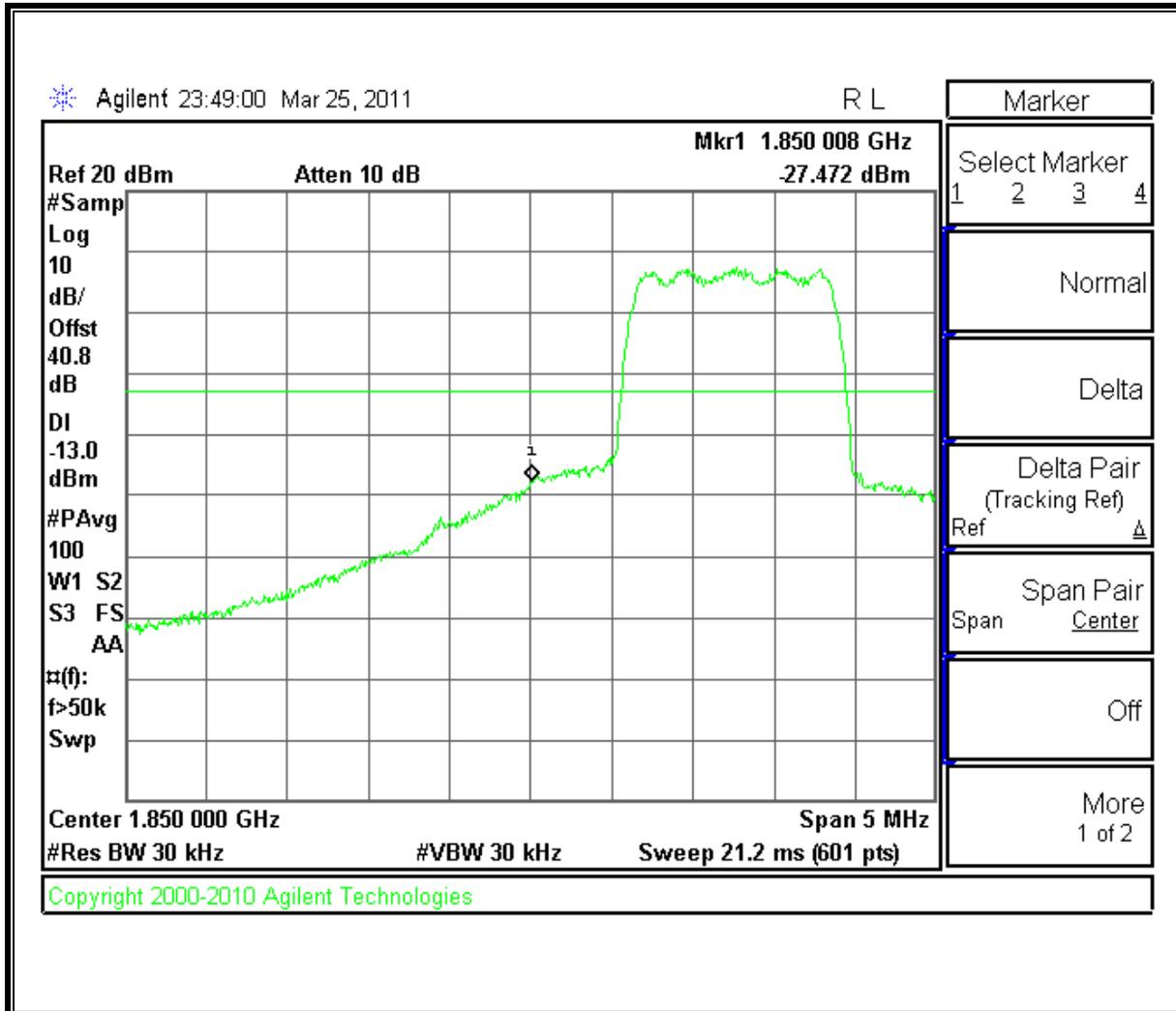


High Channel Band Edge

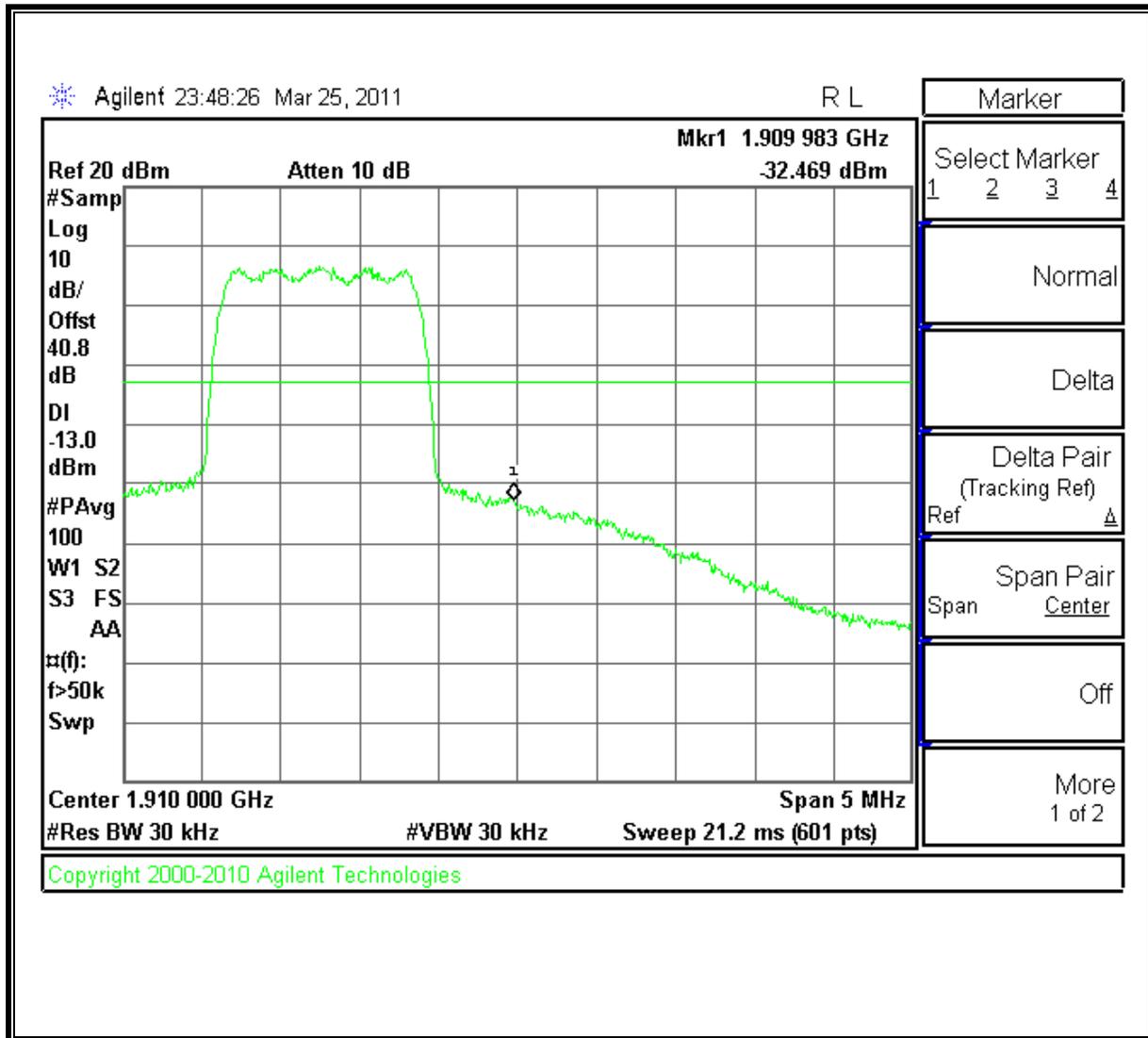


CDMA2000 1xEV-DO Revision A (Rev. A) mode (PCS Band)

Low Channel Band Edge

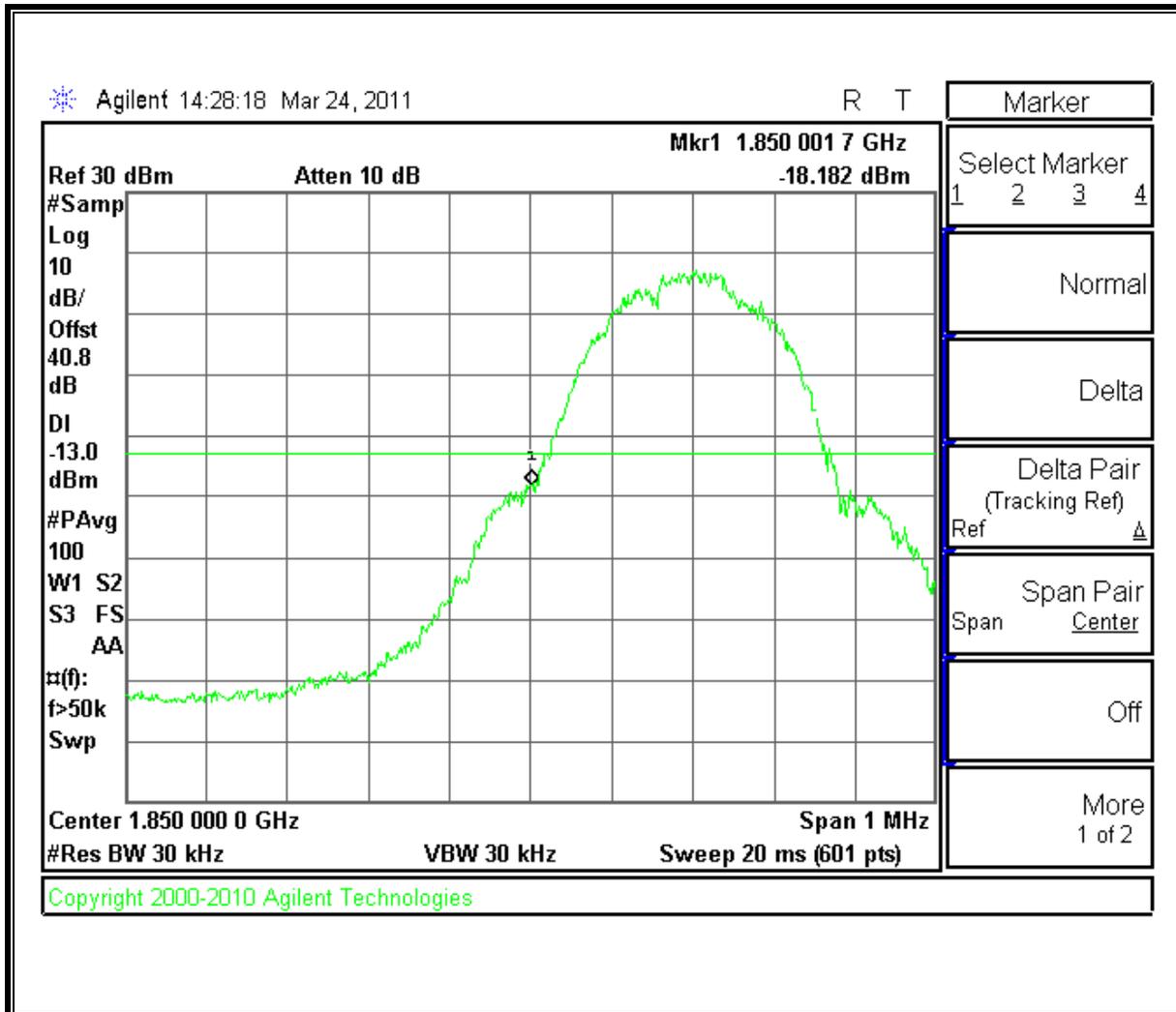


High Channel Band Edge

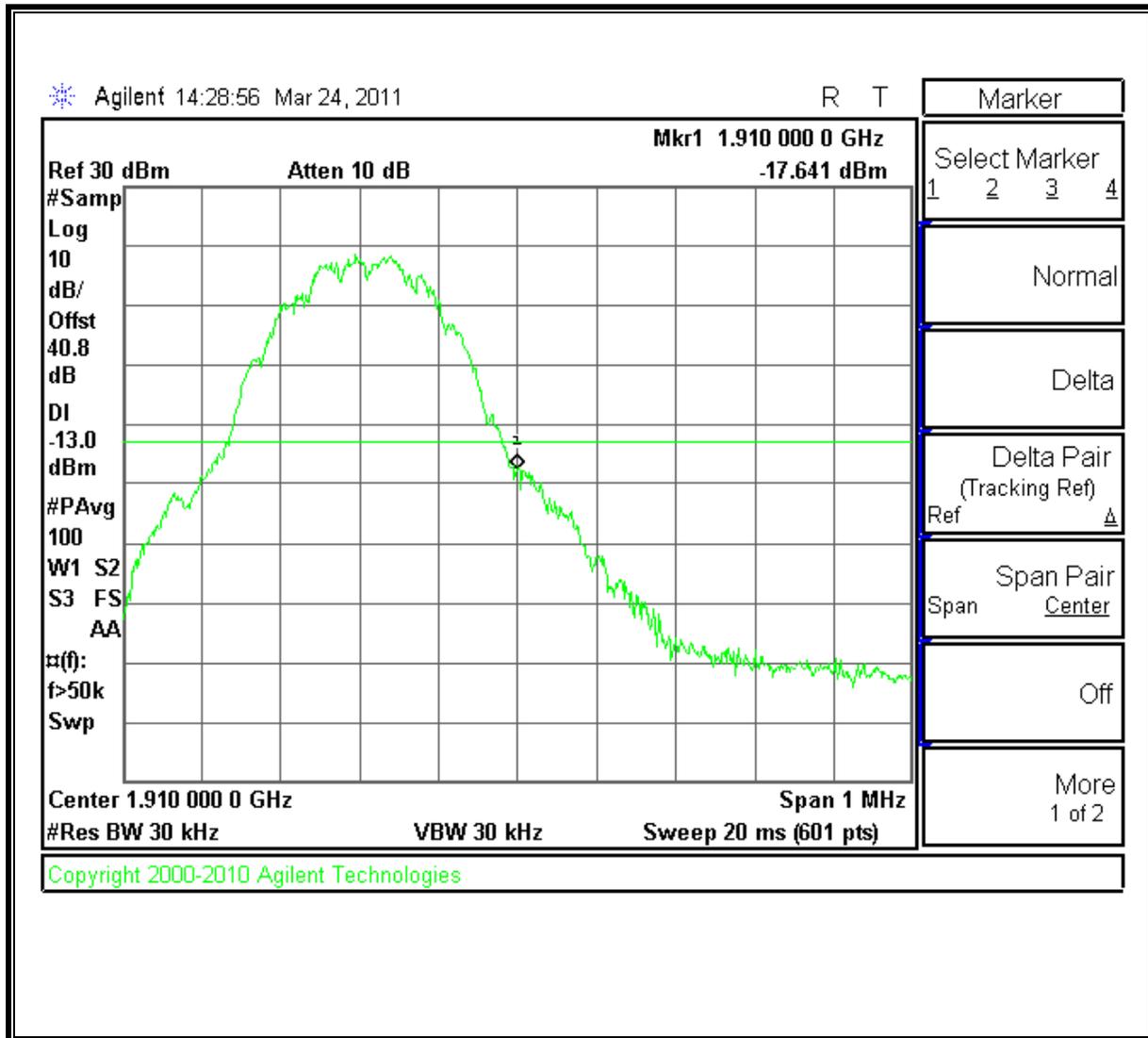


GPRS1900 (PCS Band)

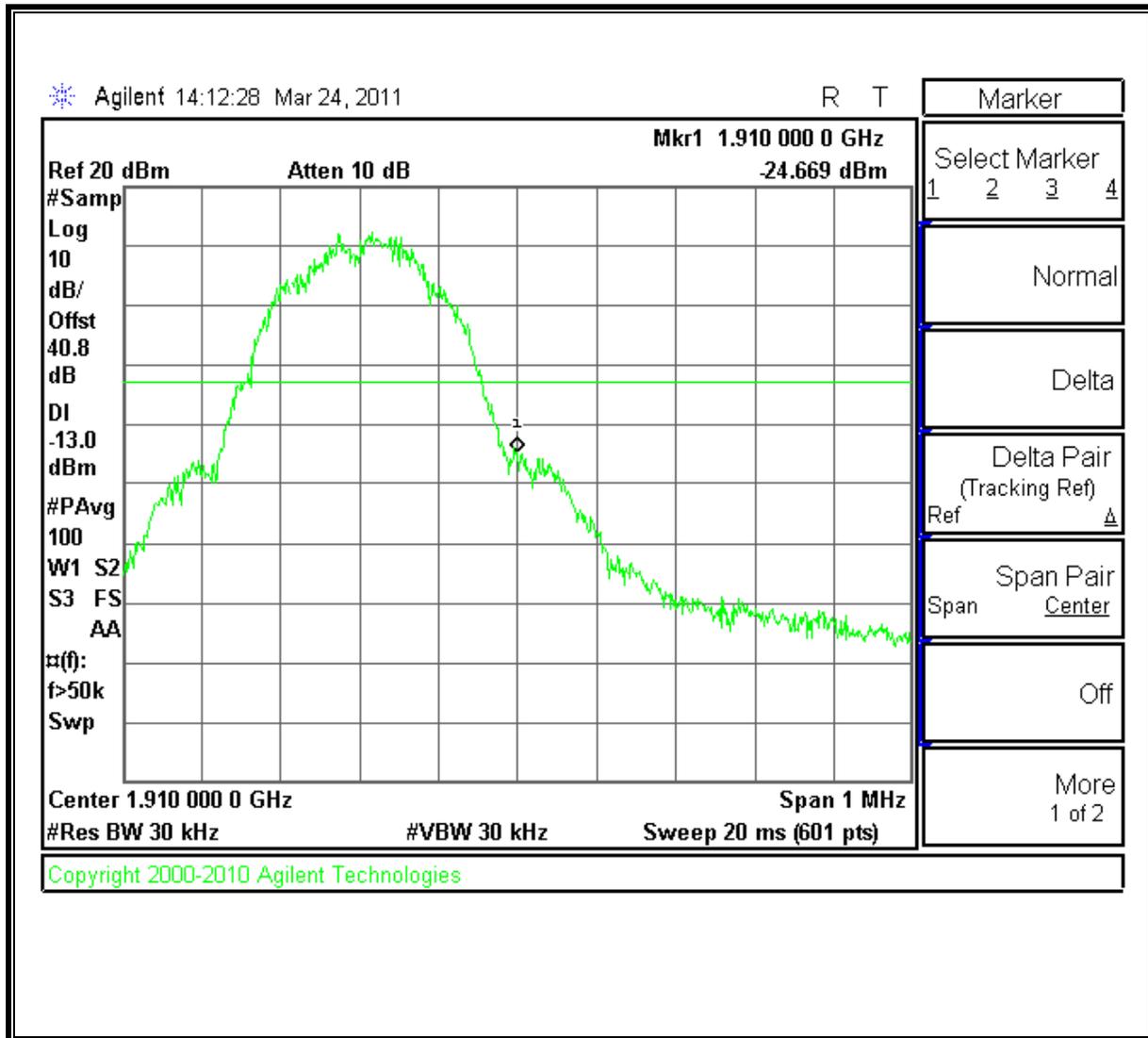
Low Channel Band Edge



High Channel Band Edge



High Channel Band Edge



8.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238
IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

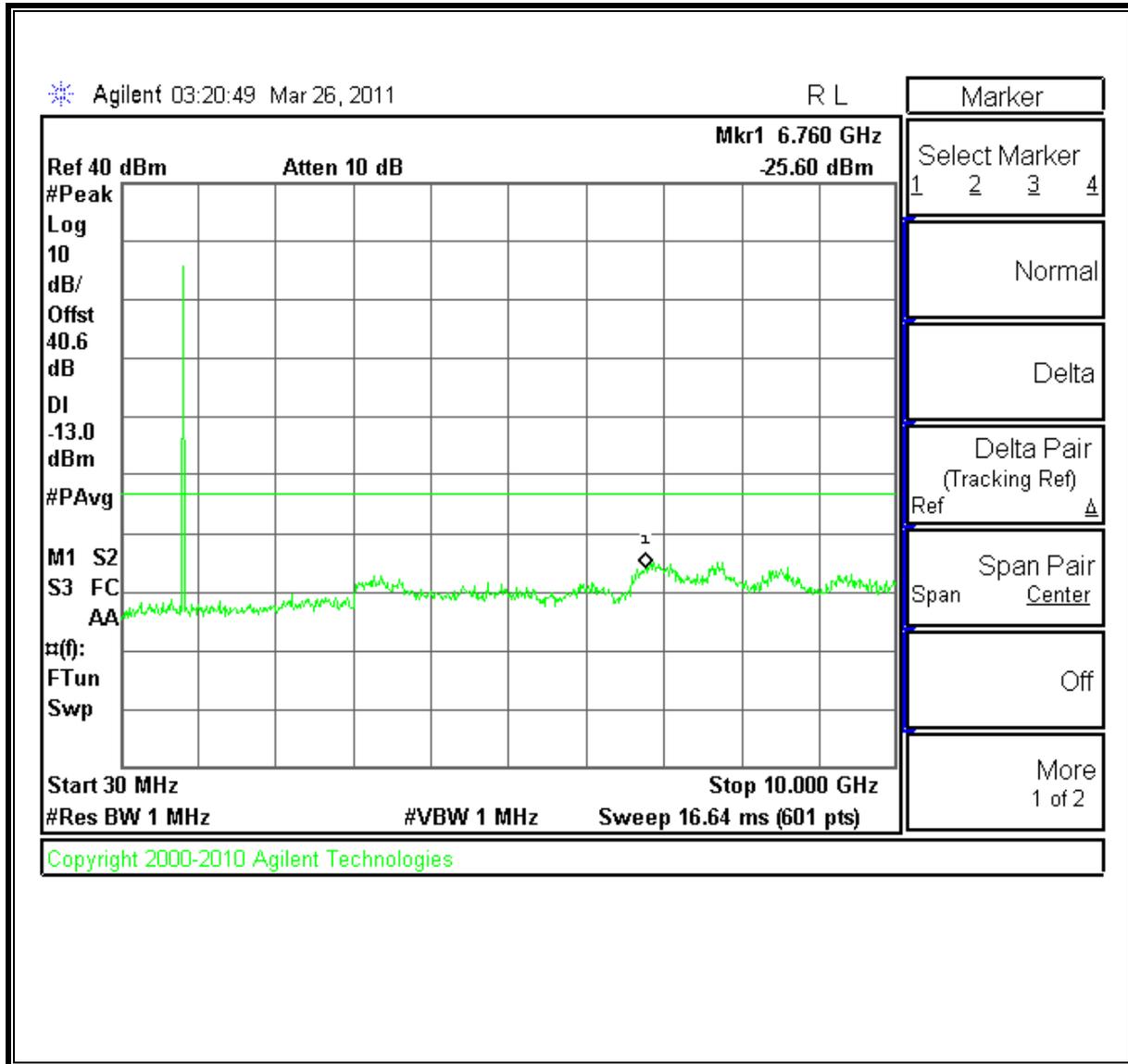
MODES TESTED

- 1xRTT – RC1, SO55
- CDMA2000 1xEV-DO Revision A (Rev. A)
- GPRS and EGPRS

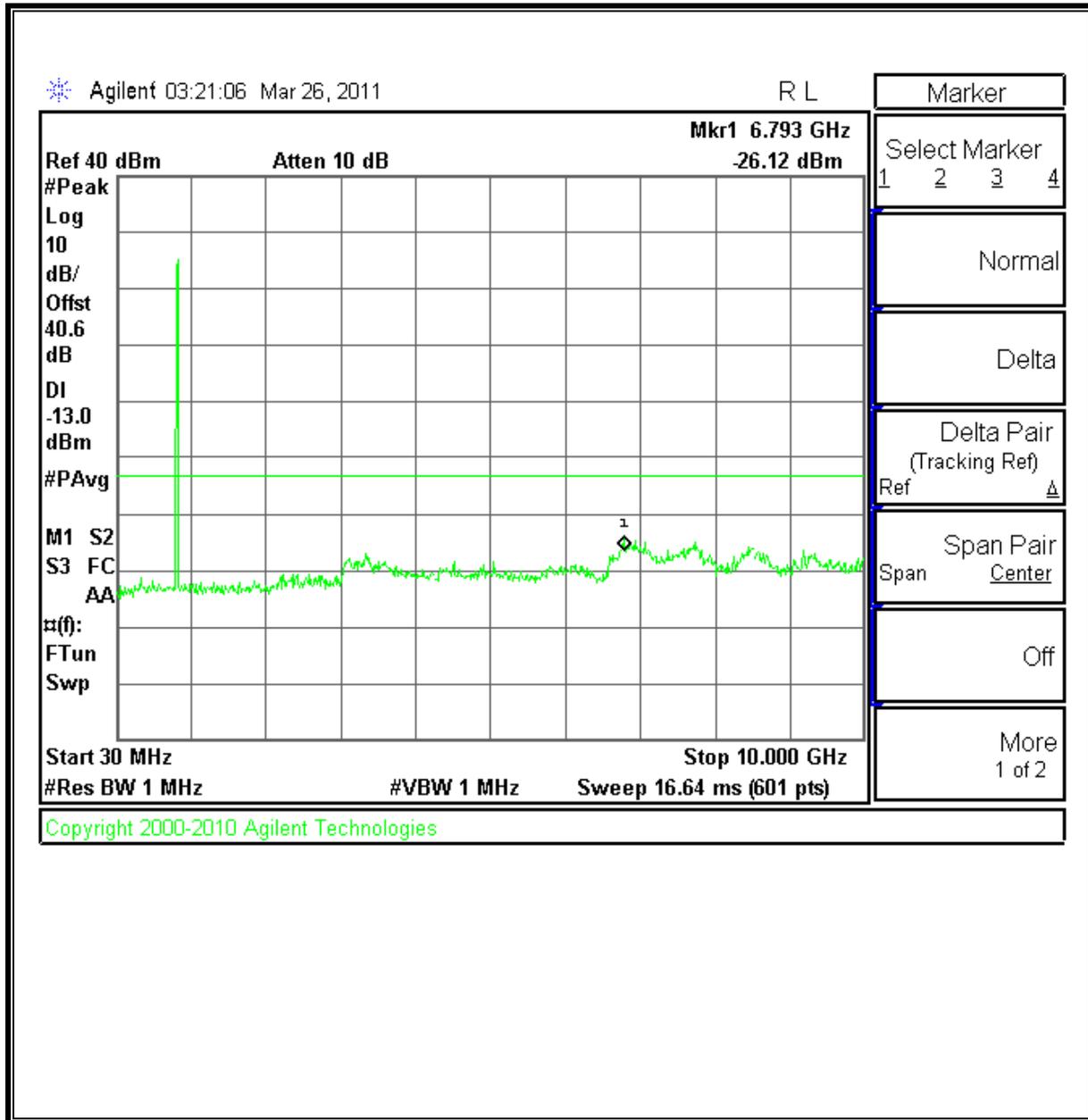
RESULTS

1xRTT Mode (Cellular Band)

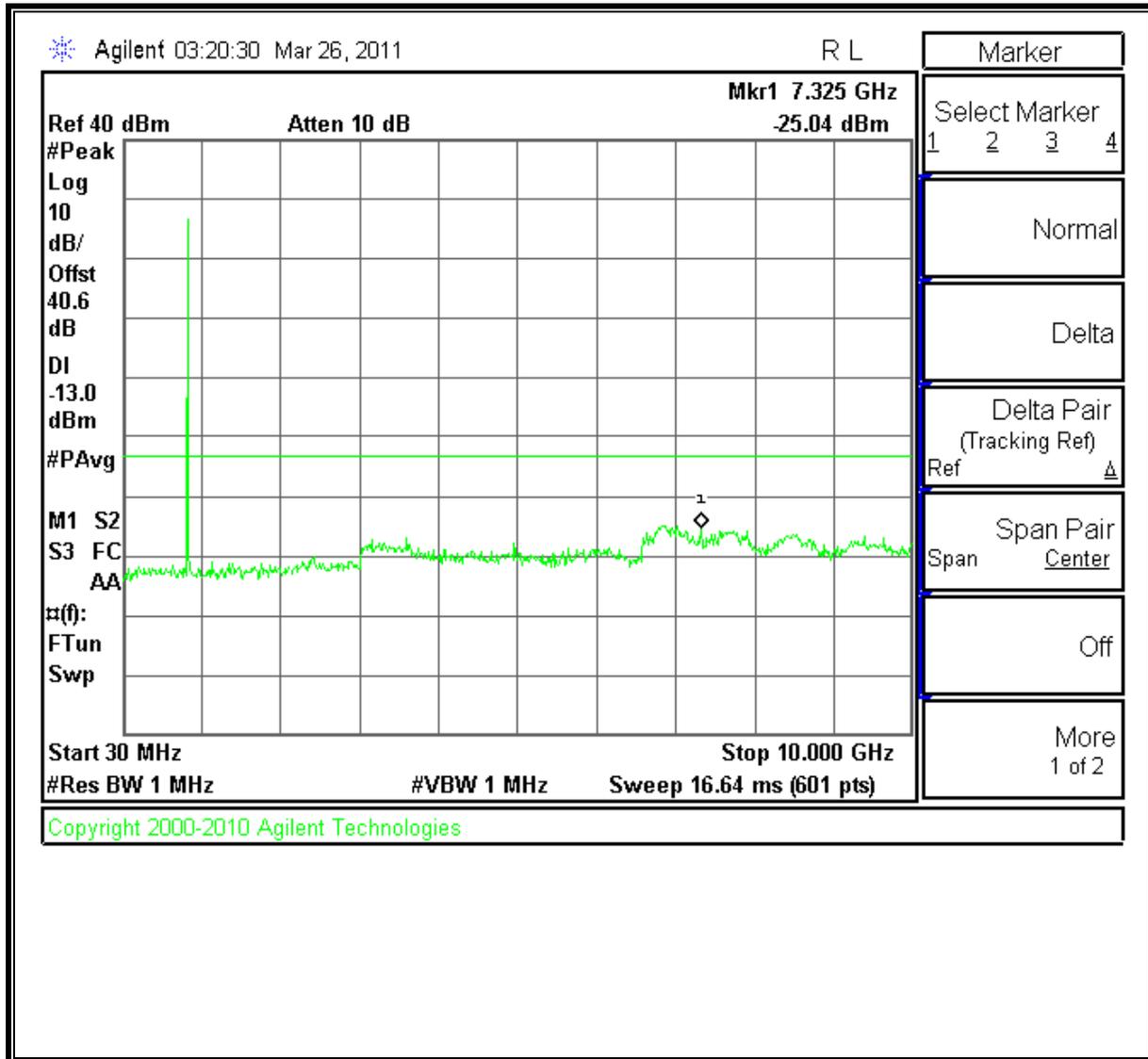
LOW CHANNEL



MID CHANNEL

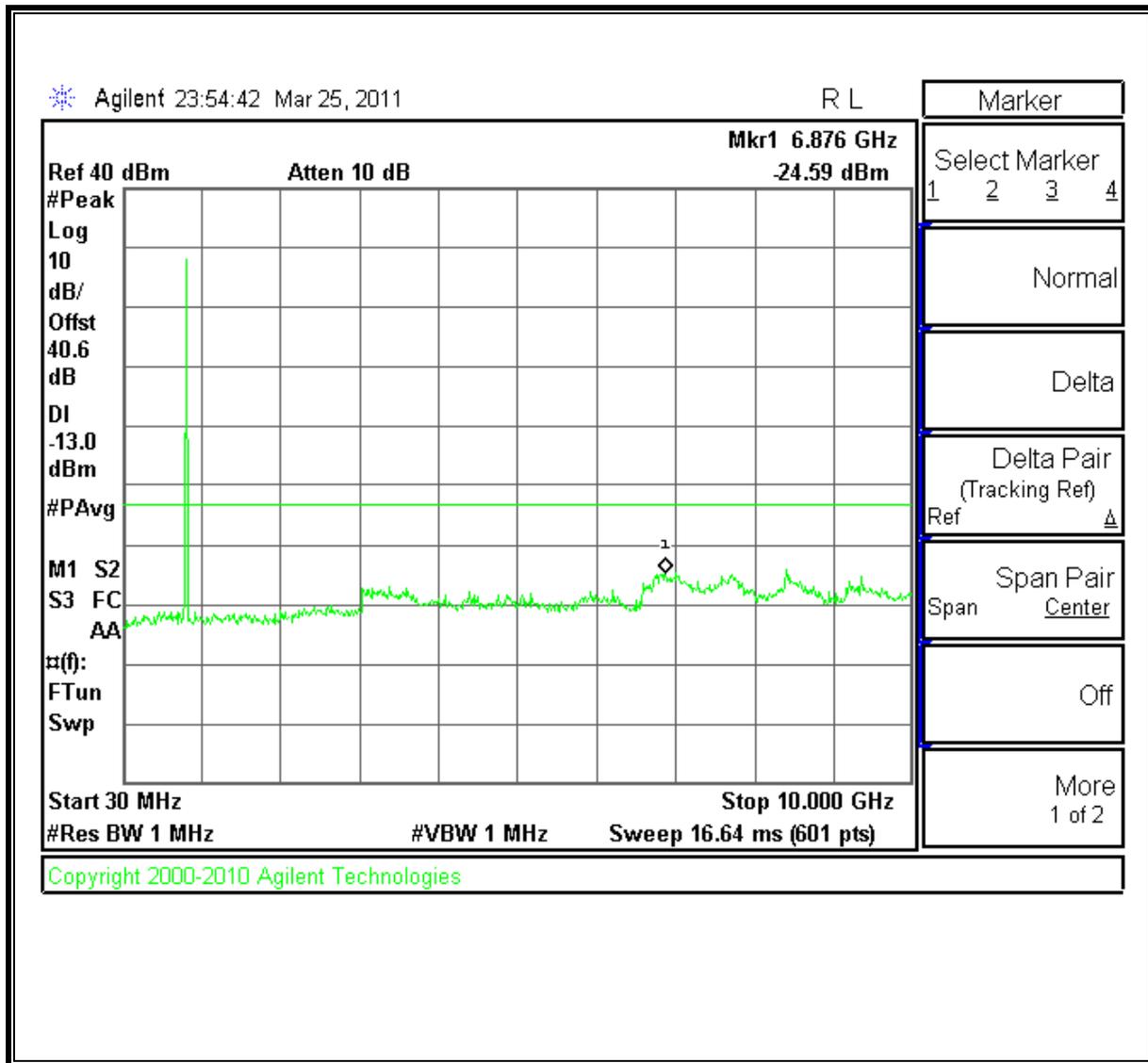


High Channel

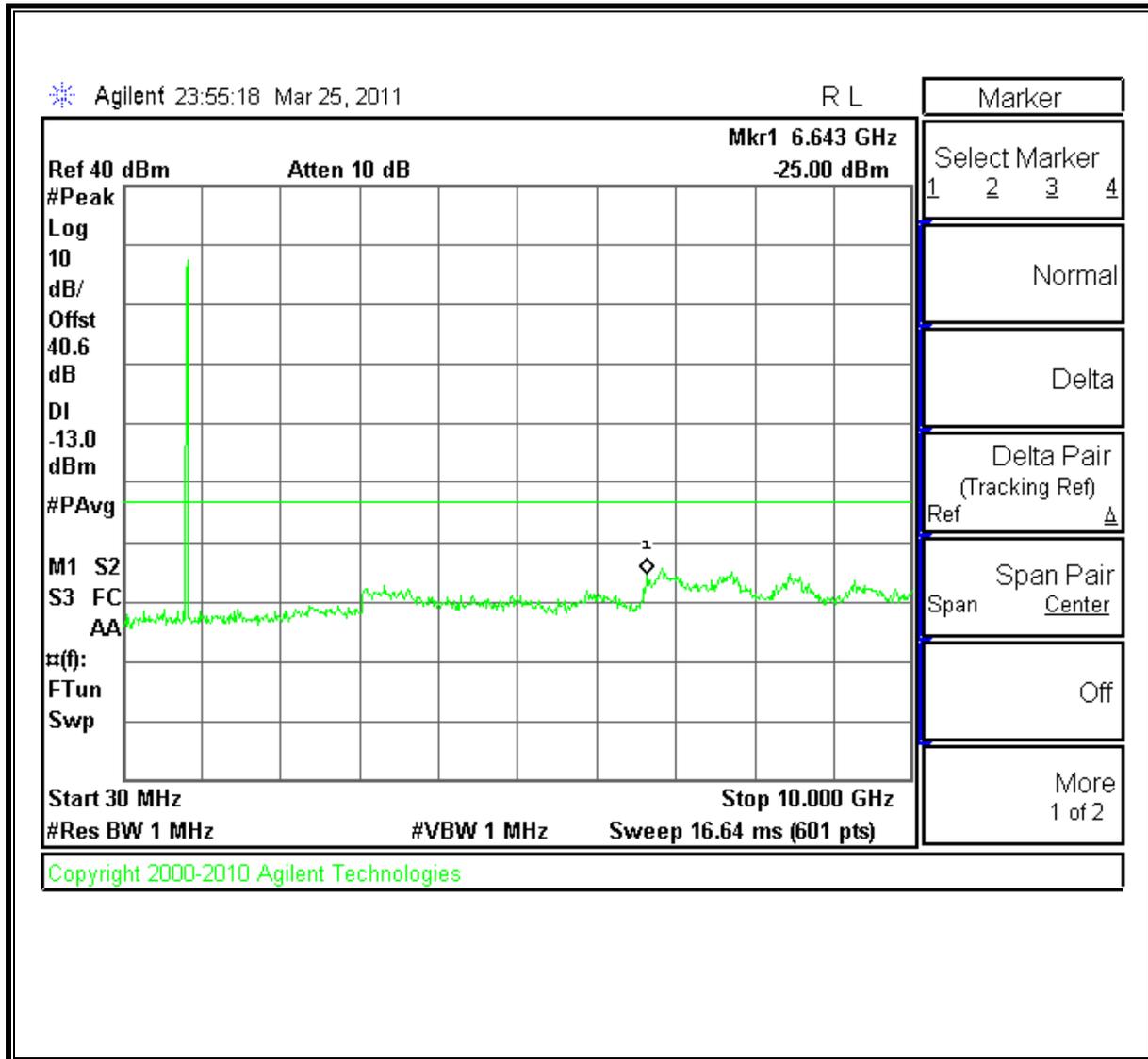


CDMA2000 1xEV-DO Revision A (Rev. A) Mode (Cellular Band)

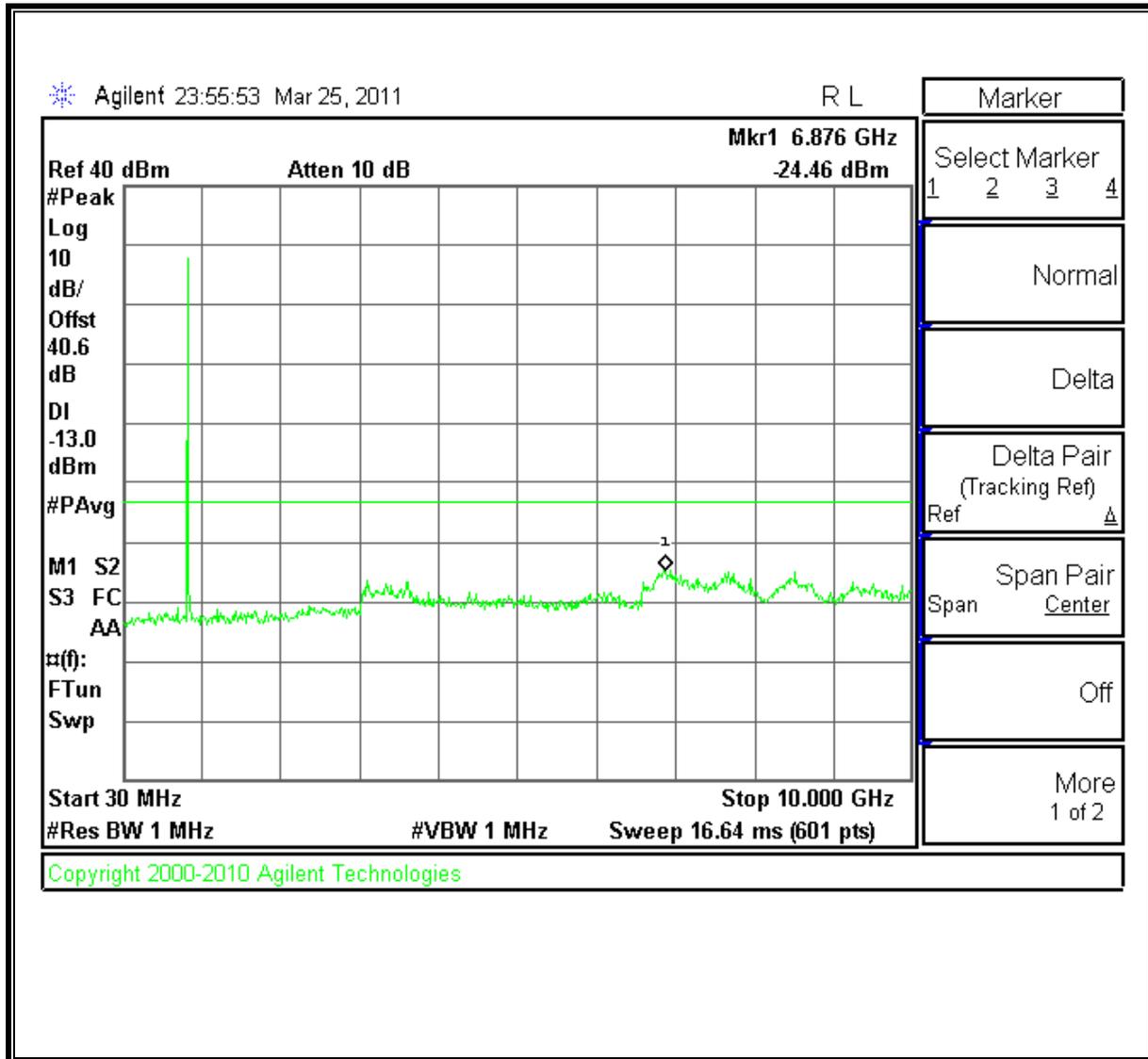
LOW CHANNEL



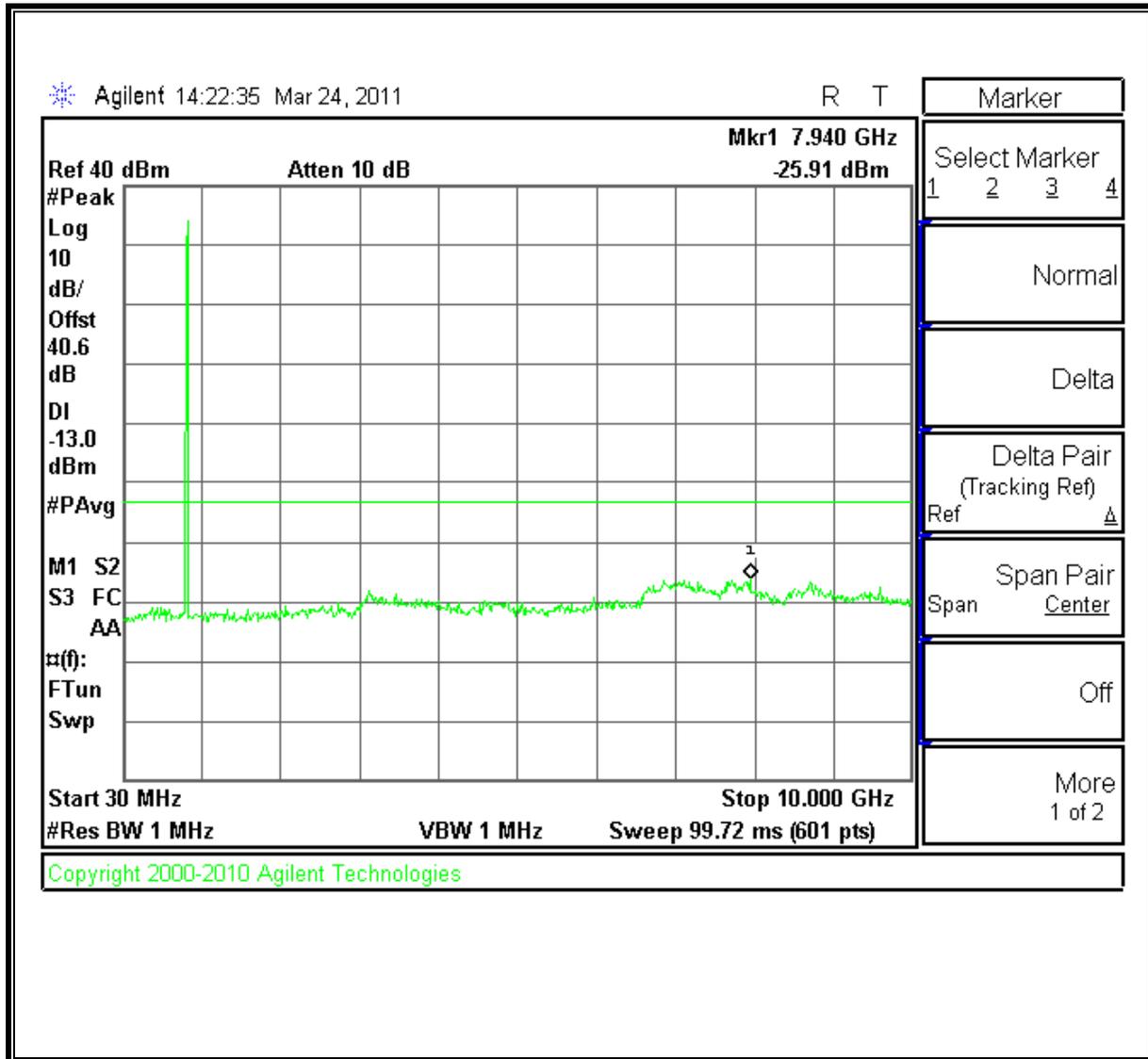
MID CHANNEL



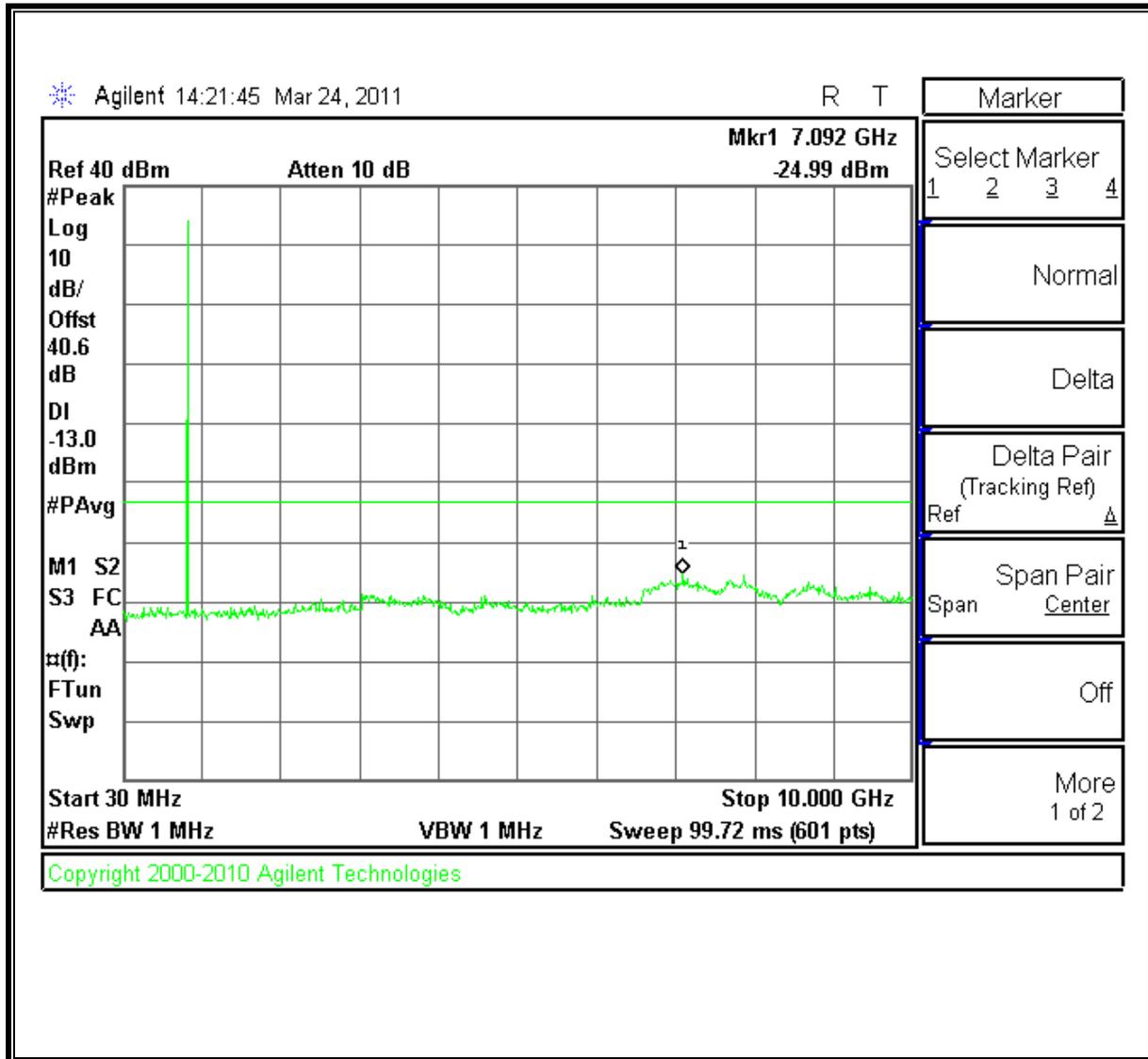
HIGH CHANNEL



MID CHANNEL

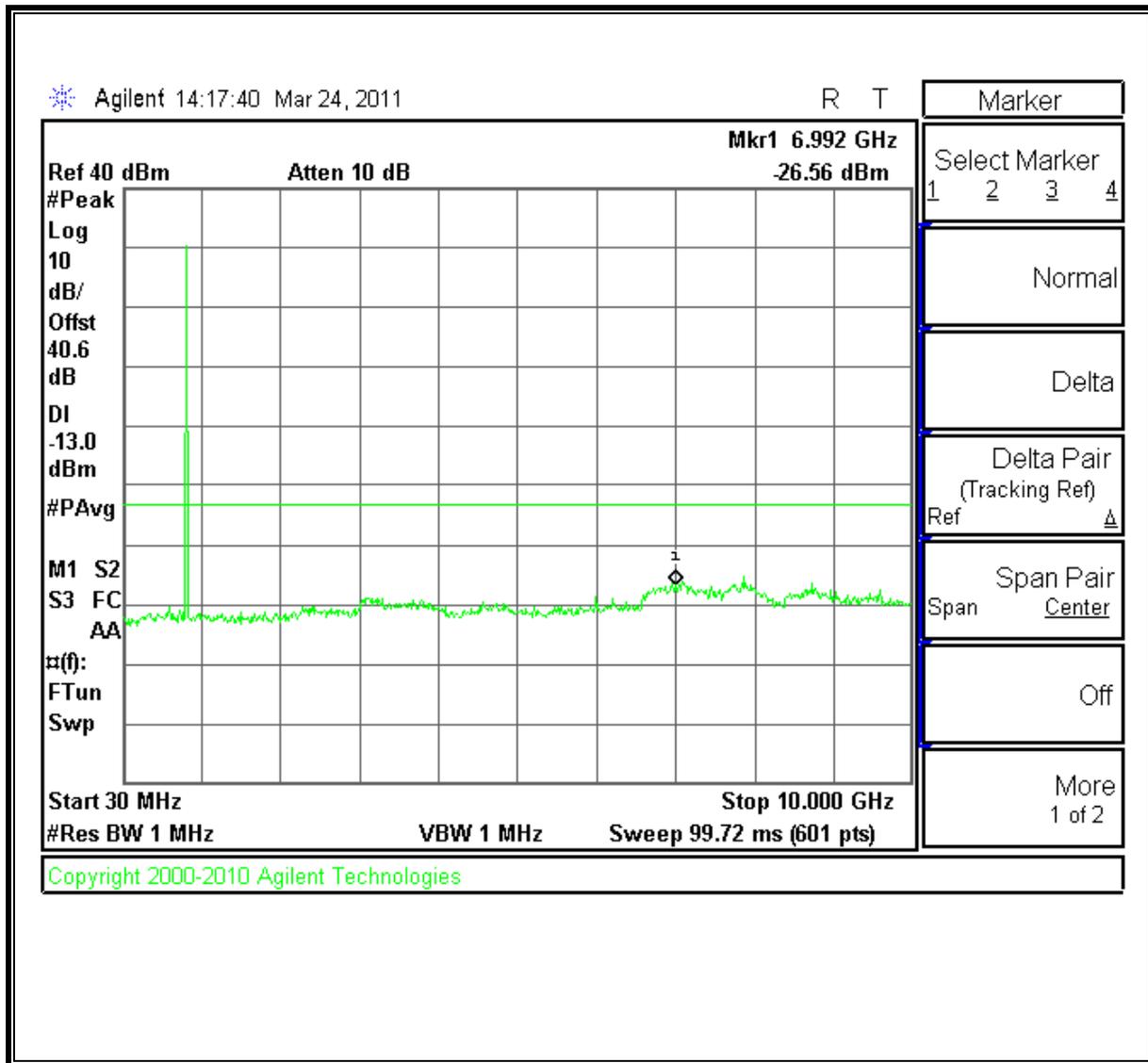


HIGH CHANNEL

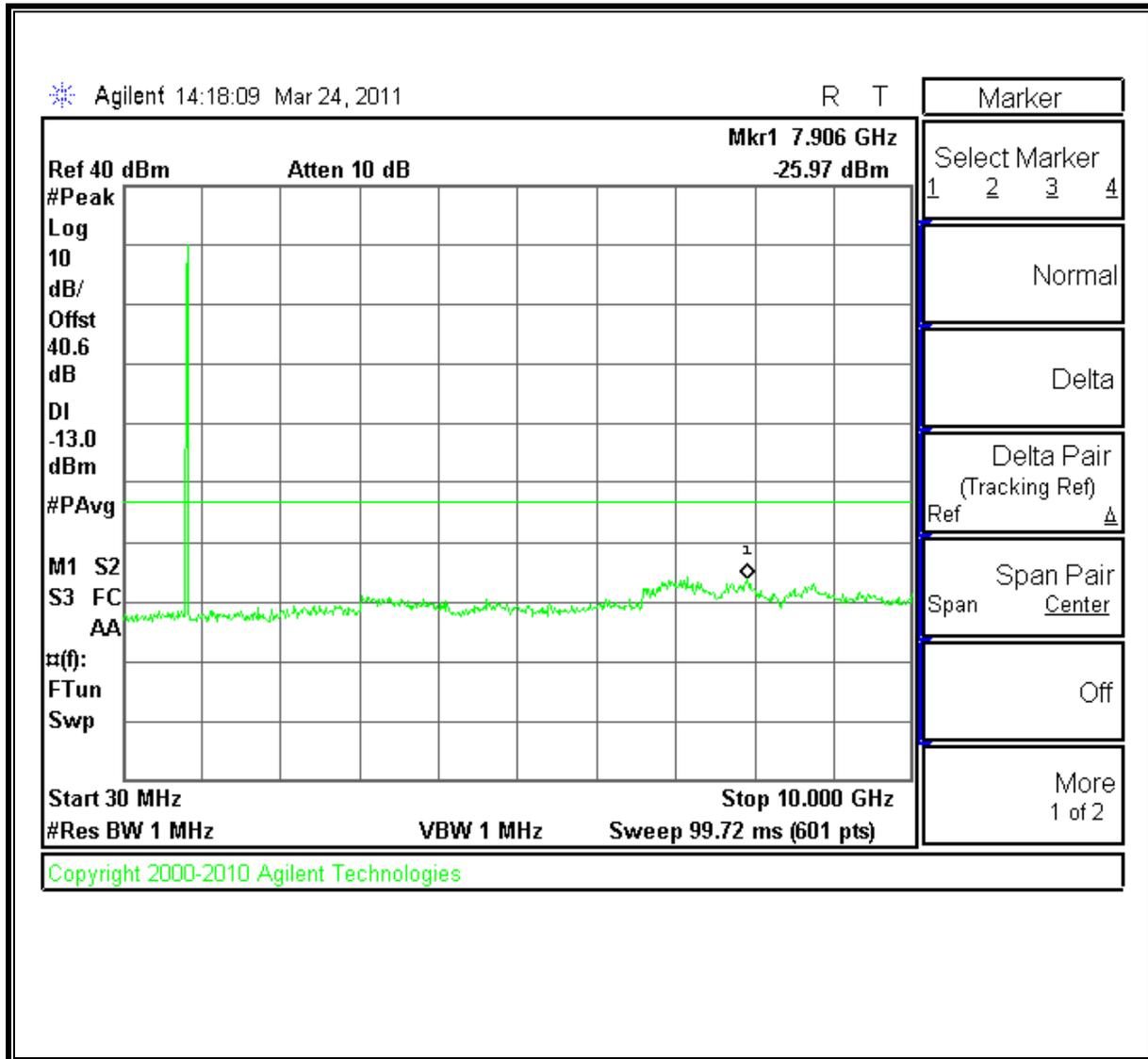


EGPRS850 (Cellular Band)

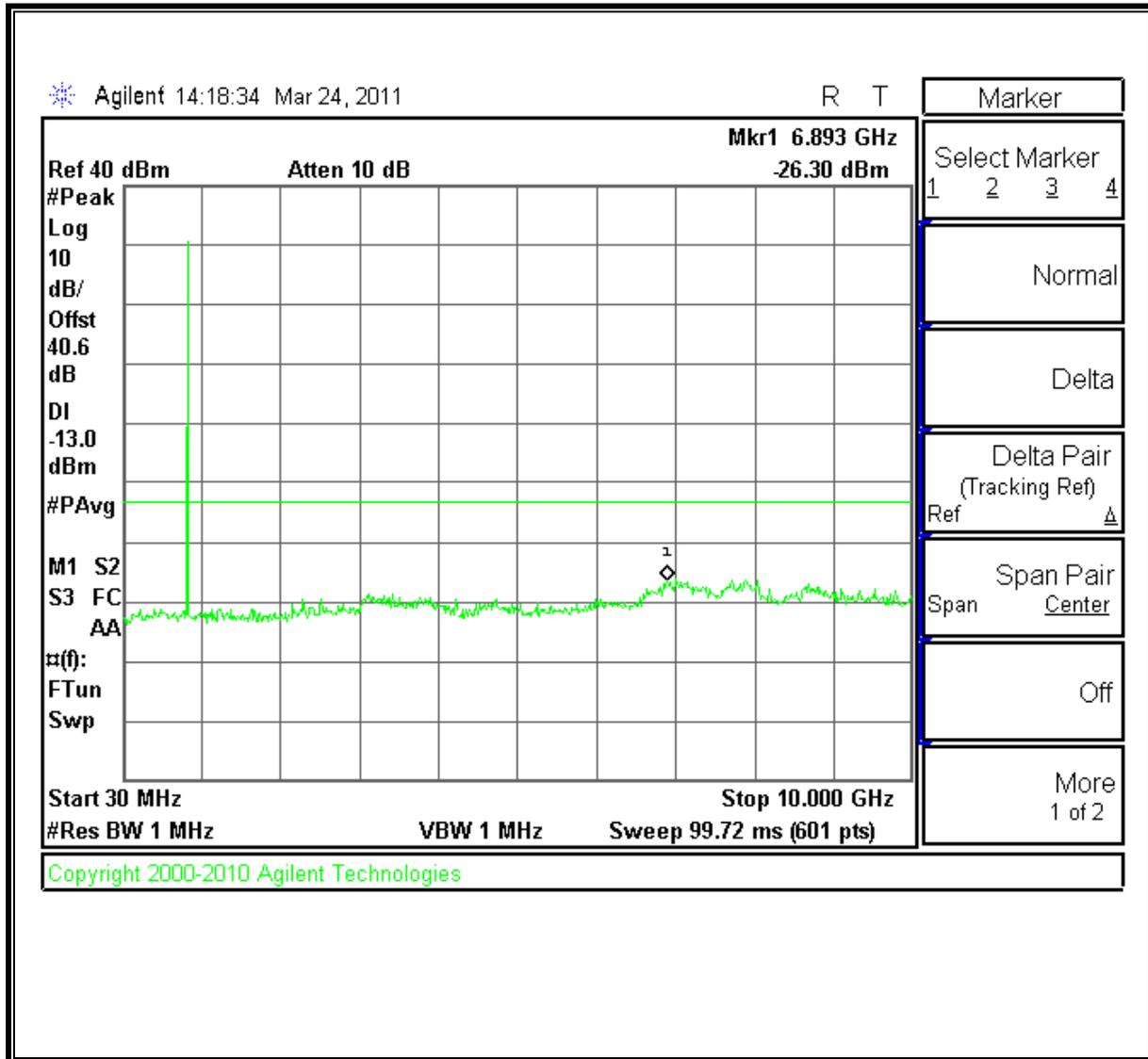
LOW CHANNEL



MID CHANNEL

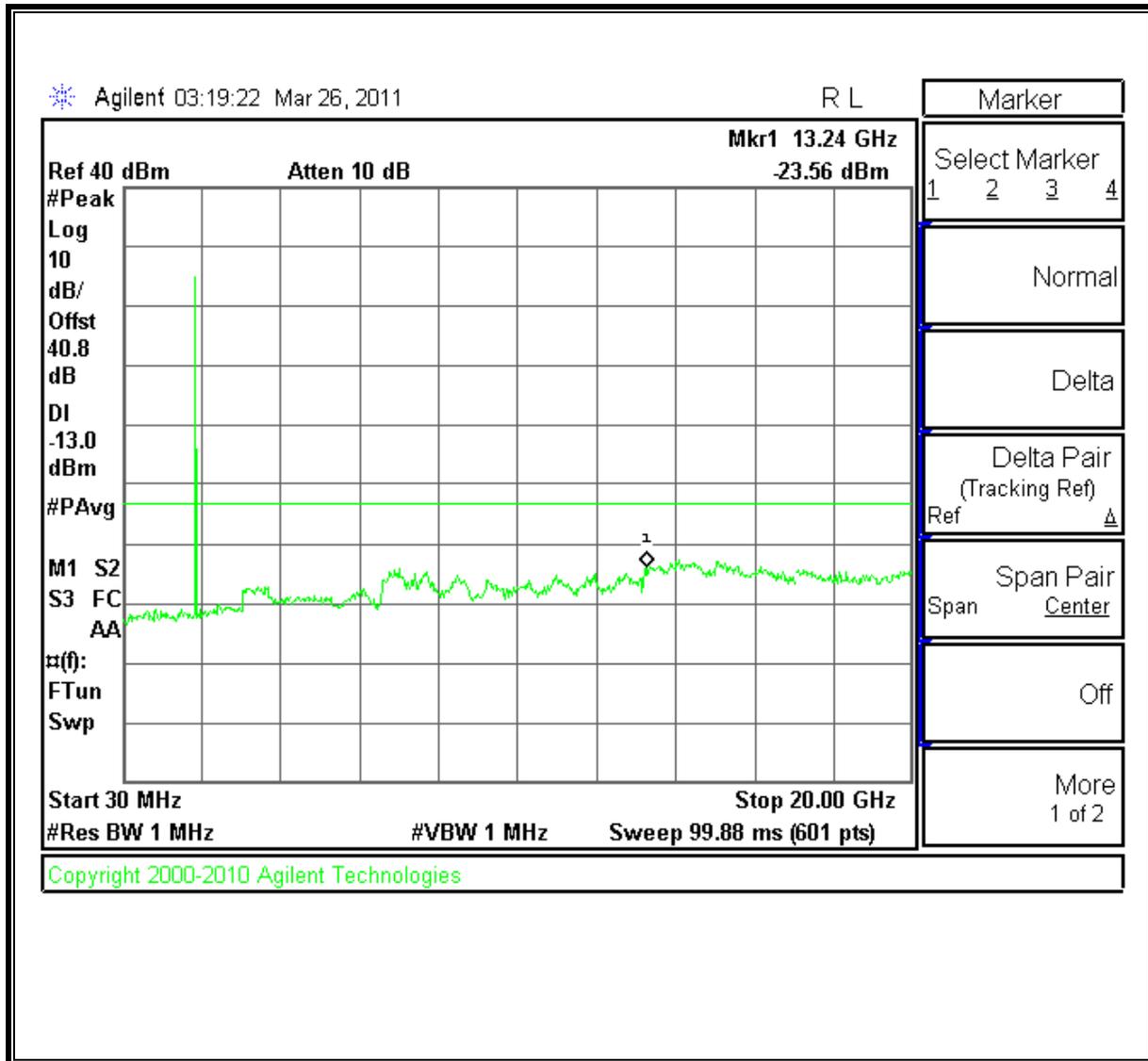


HIGH CHANNEL

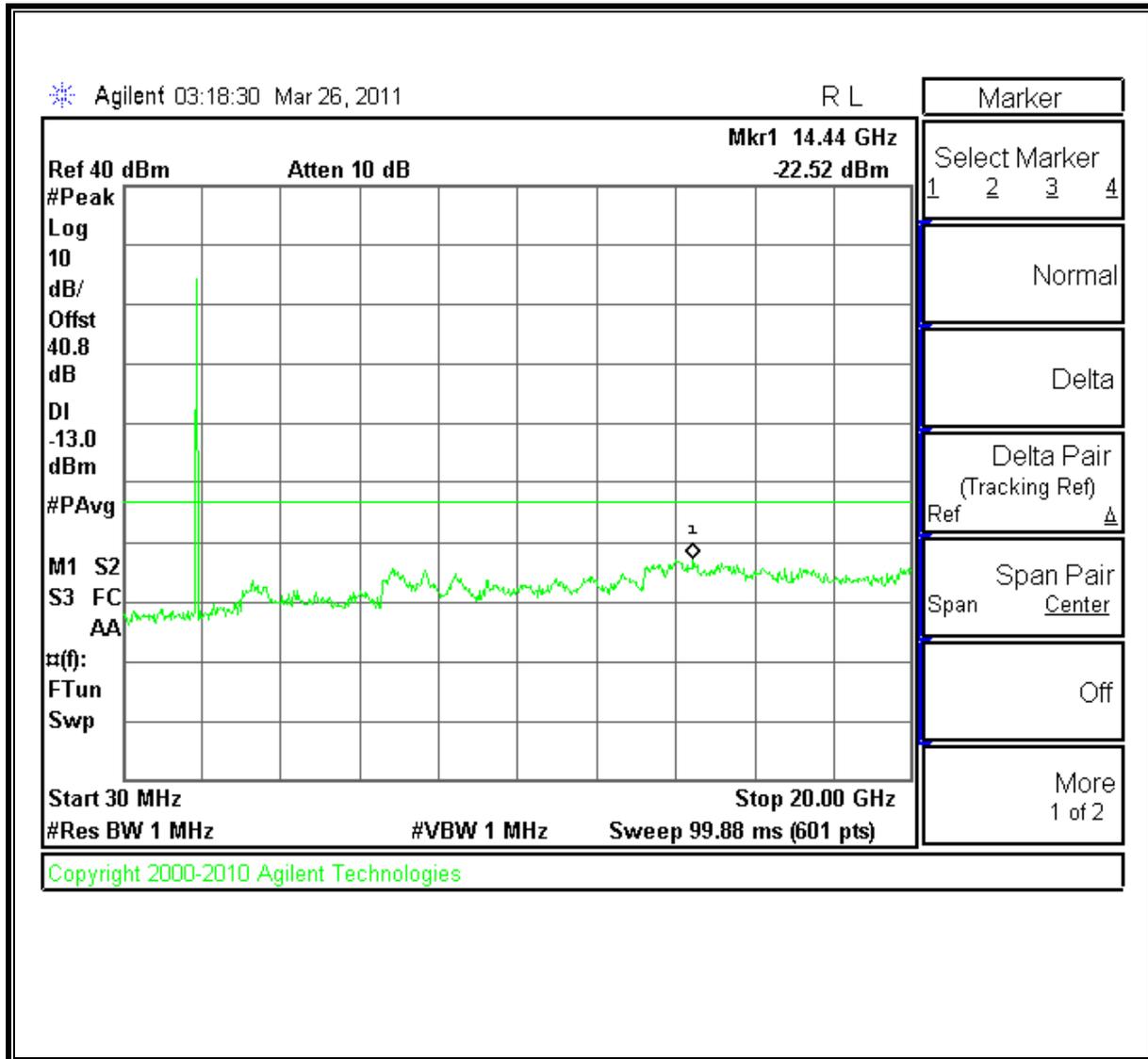


1xRTT Mode (PCS Band)

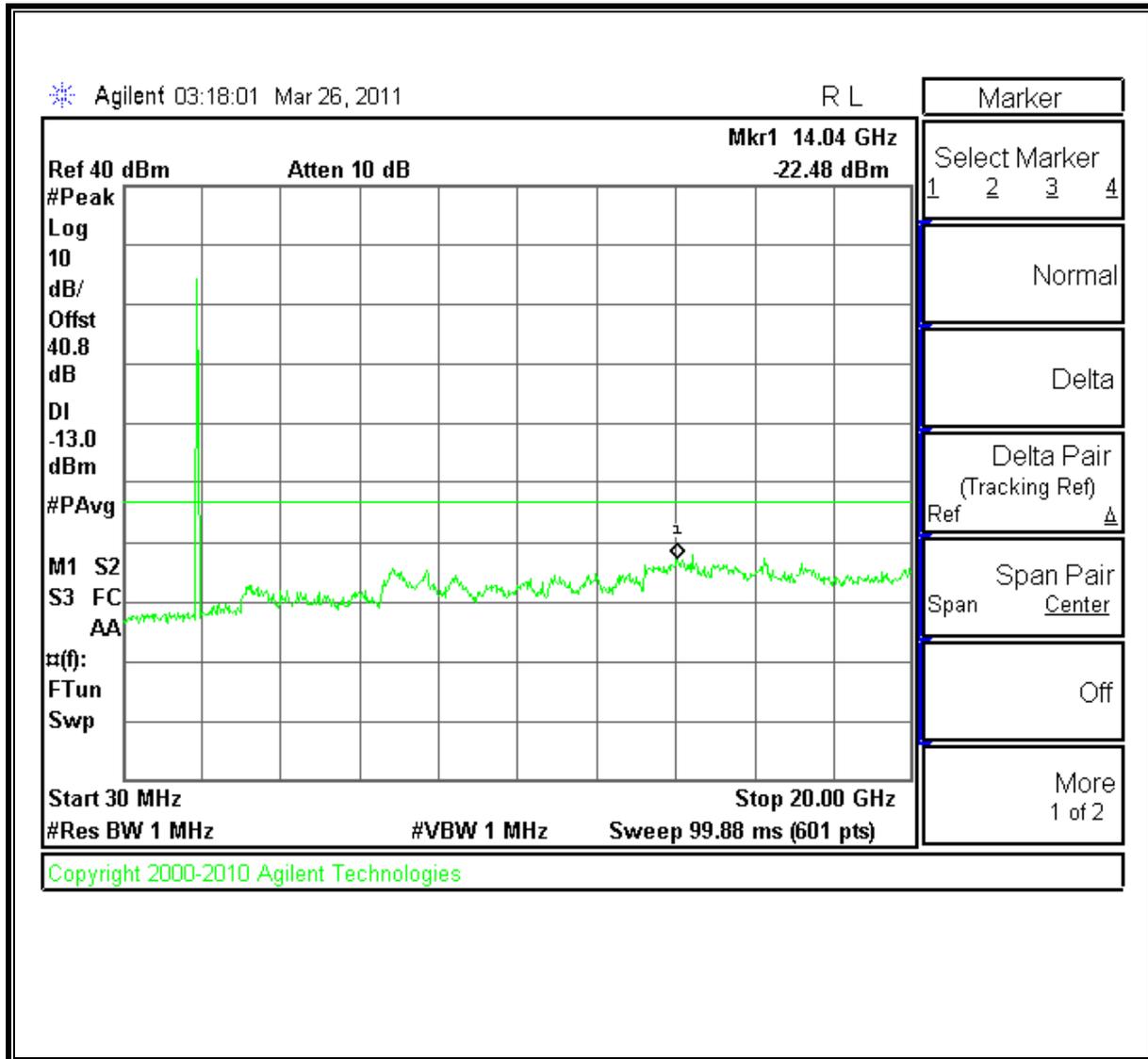
LOW CHANNEL



MID CHANNEL

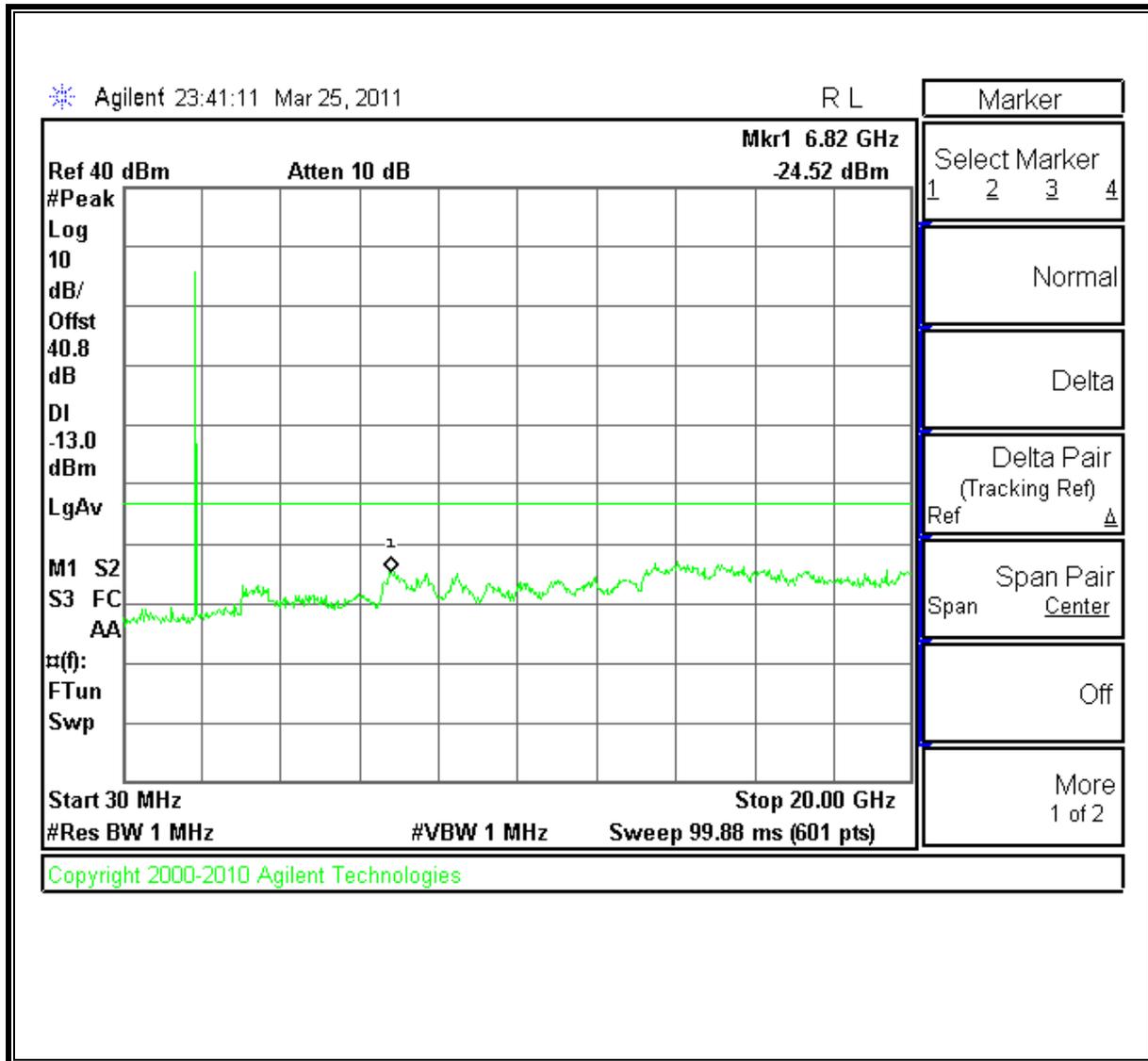


HIGH CHANNEL

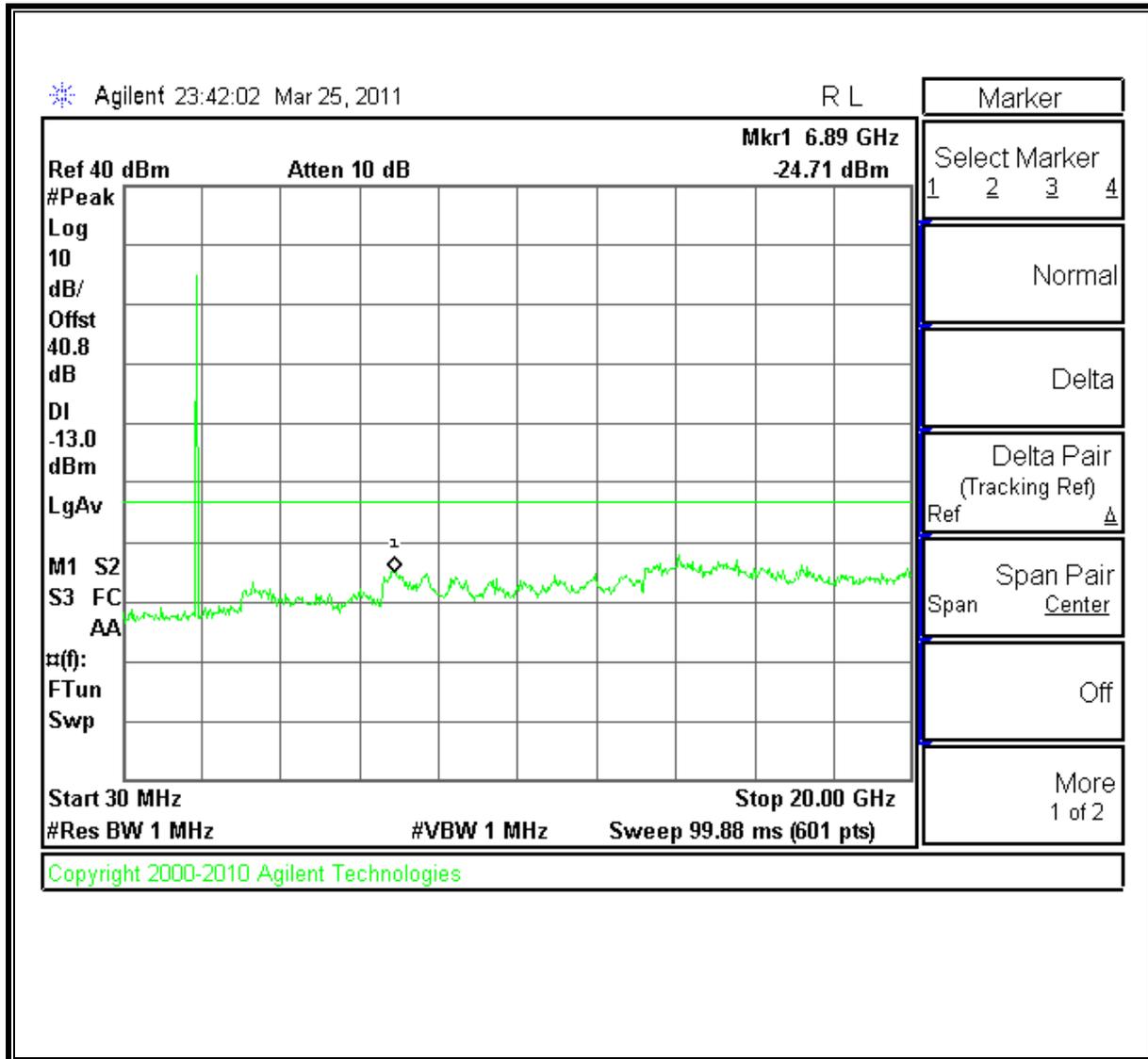


CDMA2000 1xEV-DO Revision A (Rev. A) Mode (PCS Band)

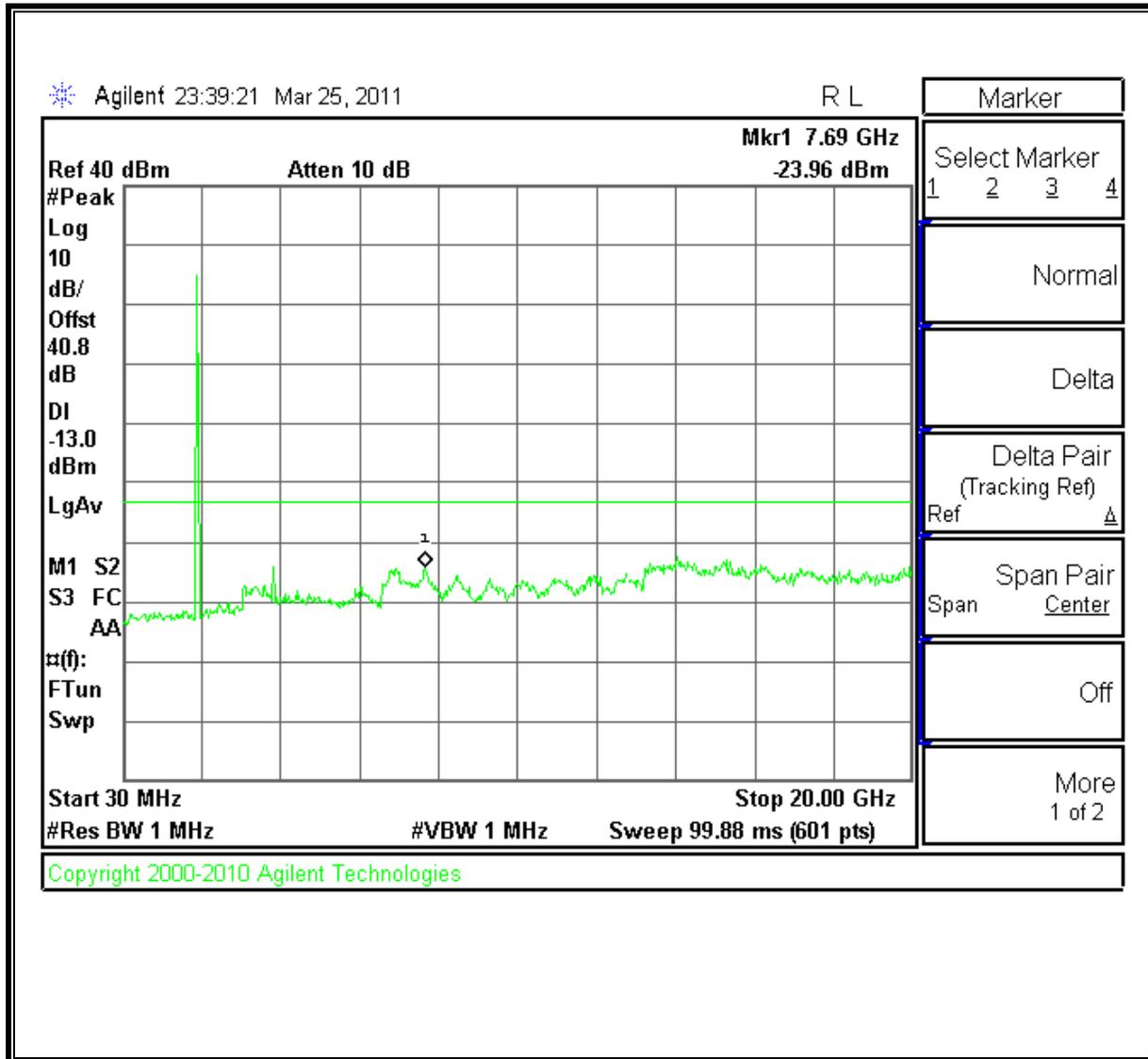
LOW CHANNEL



MID CHANNEL

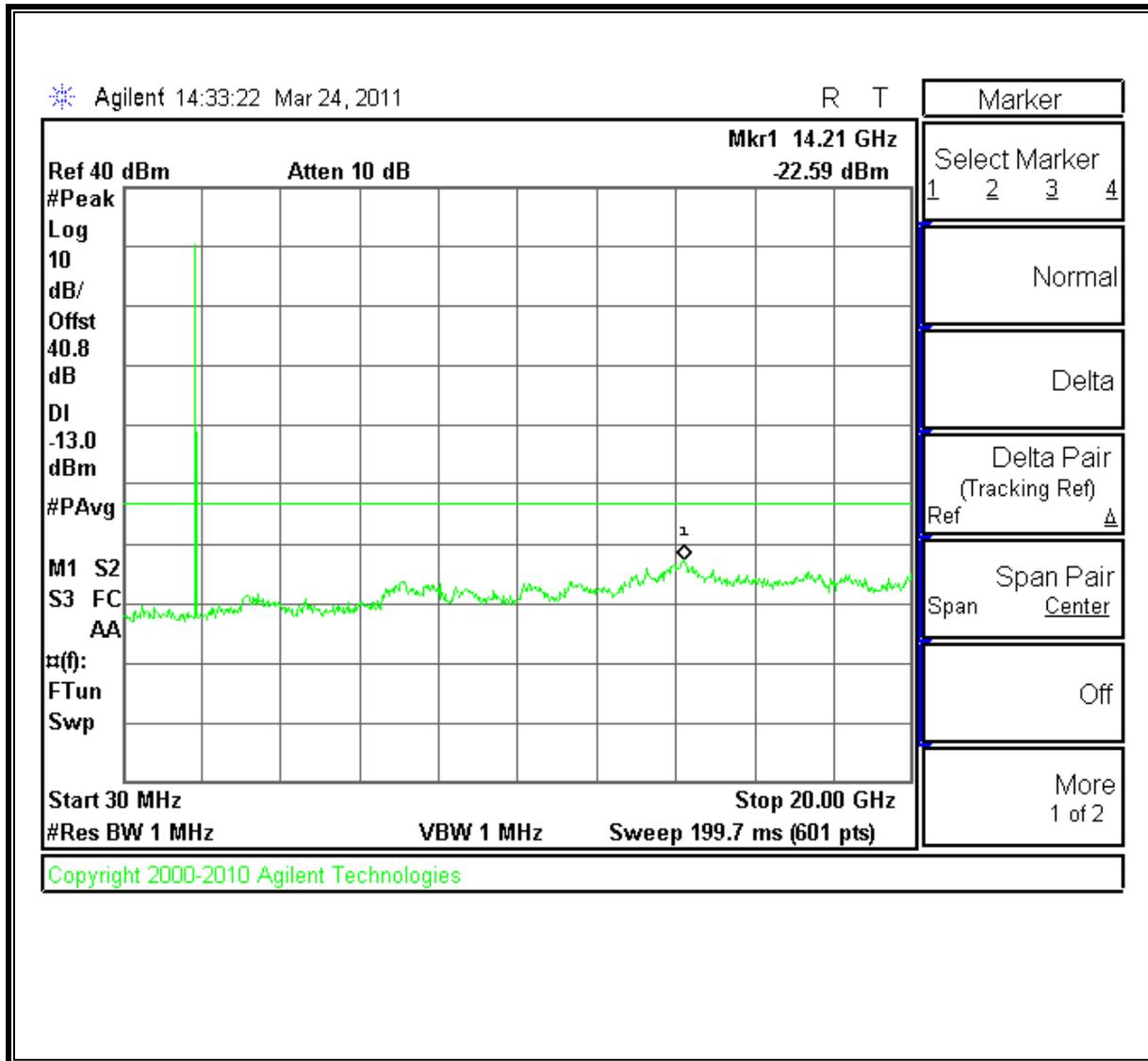


HIGH CHANNEL

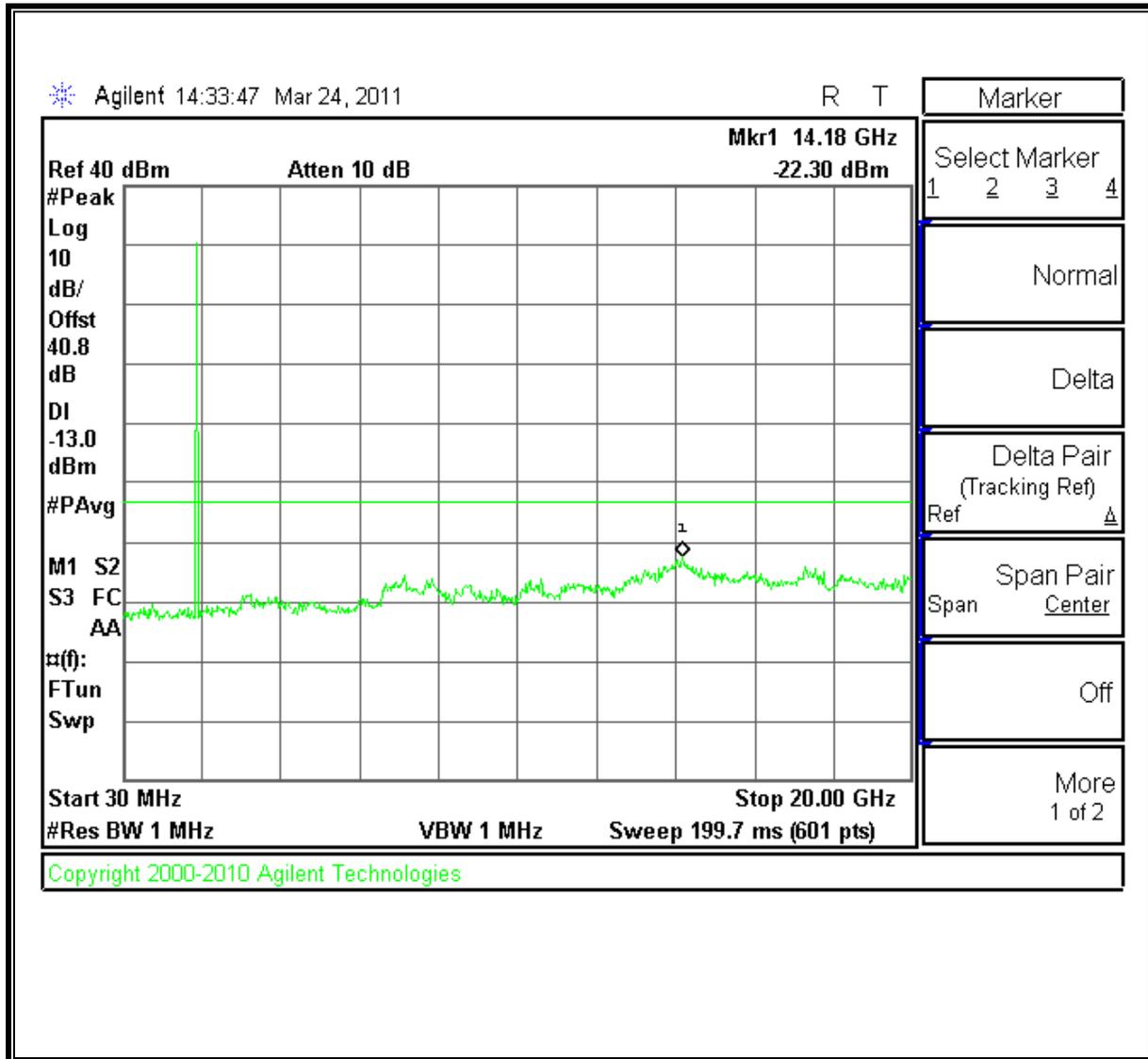


GPRS1900 (PCS Band)

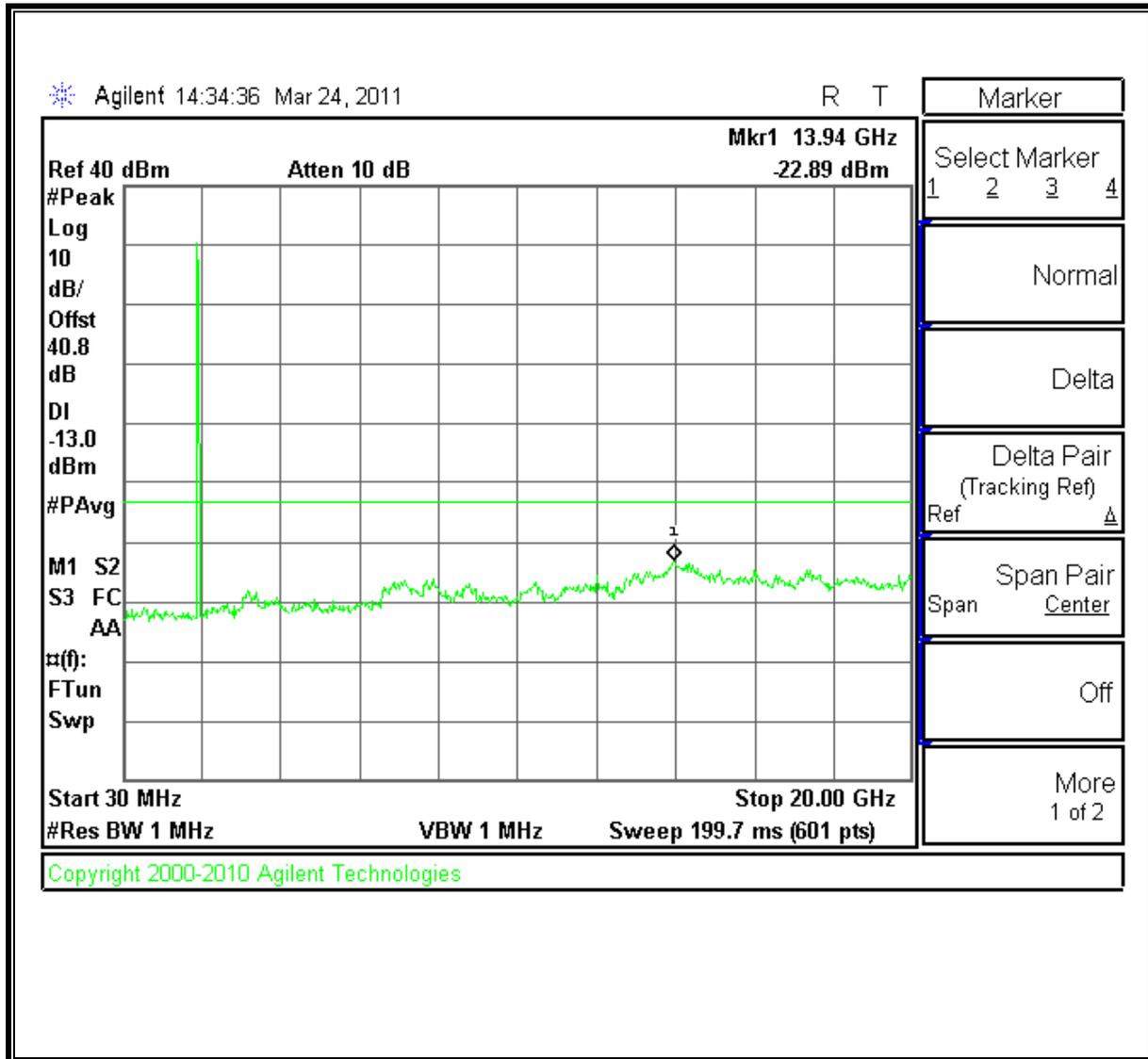
LOW CHANNEL



MID CHANNEL

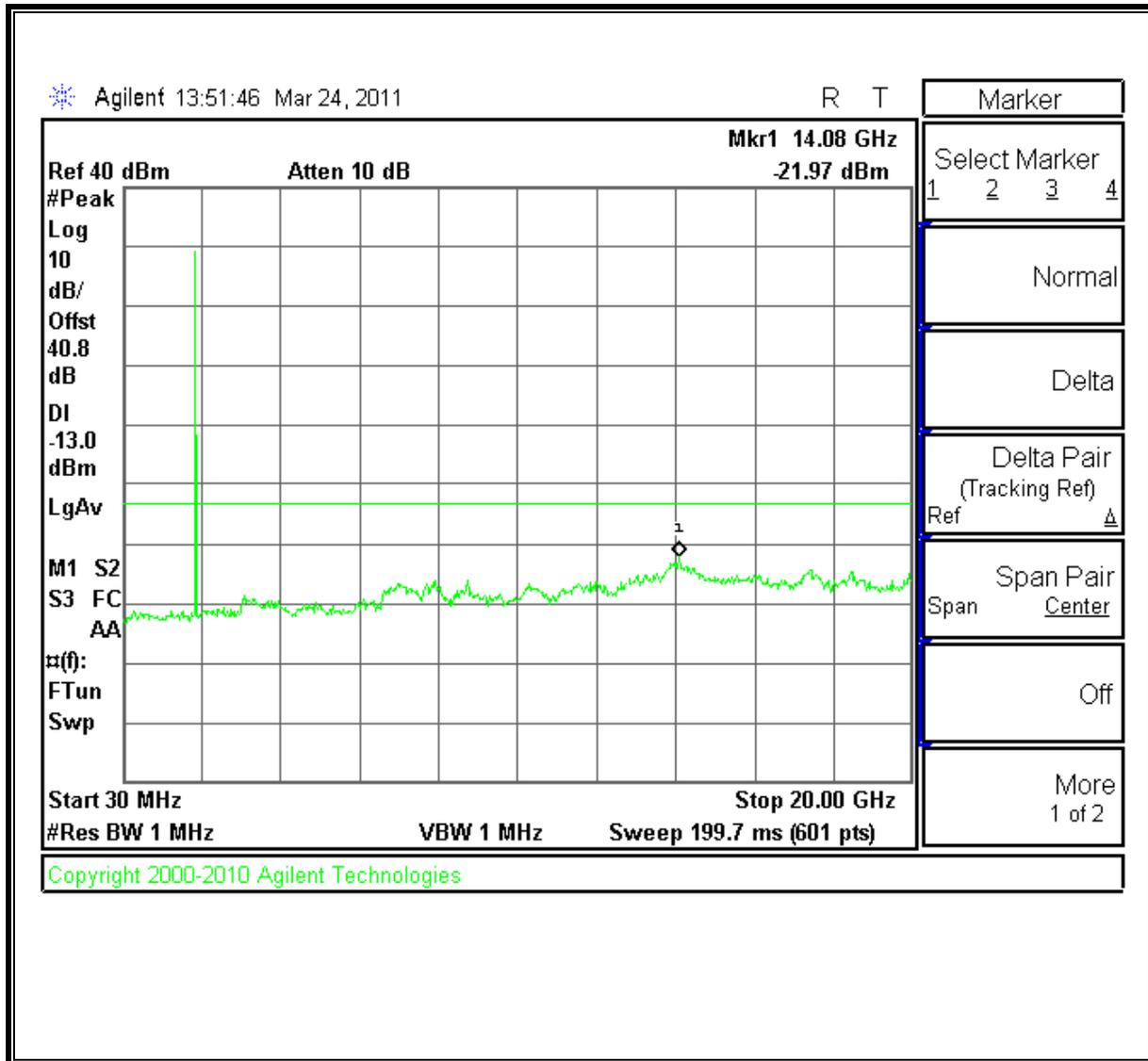


HIGH CHANNEL

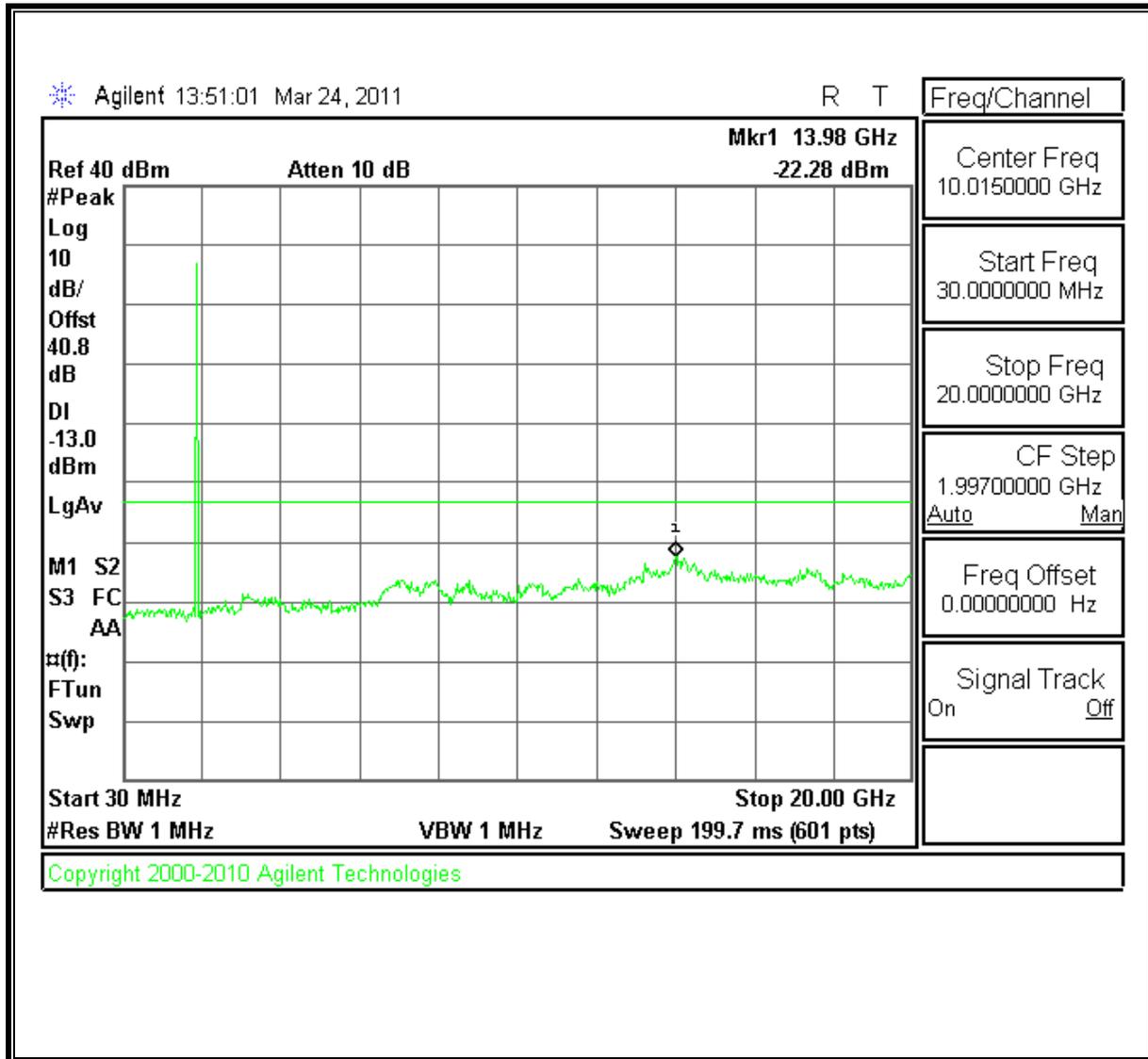


EGPRS1900 (PCS Band)

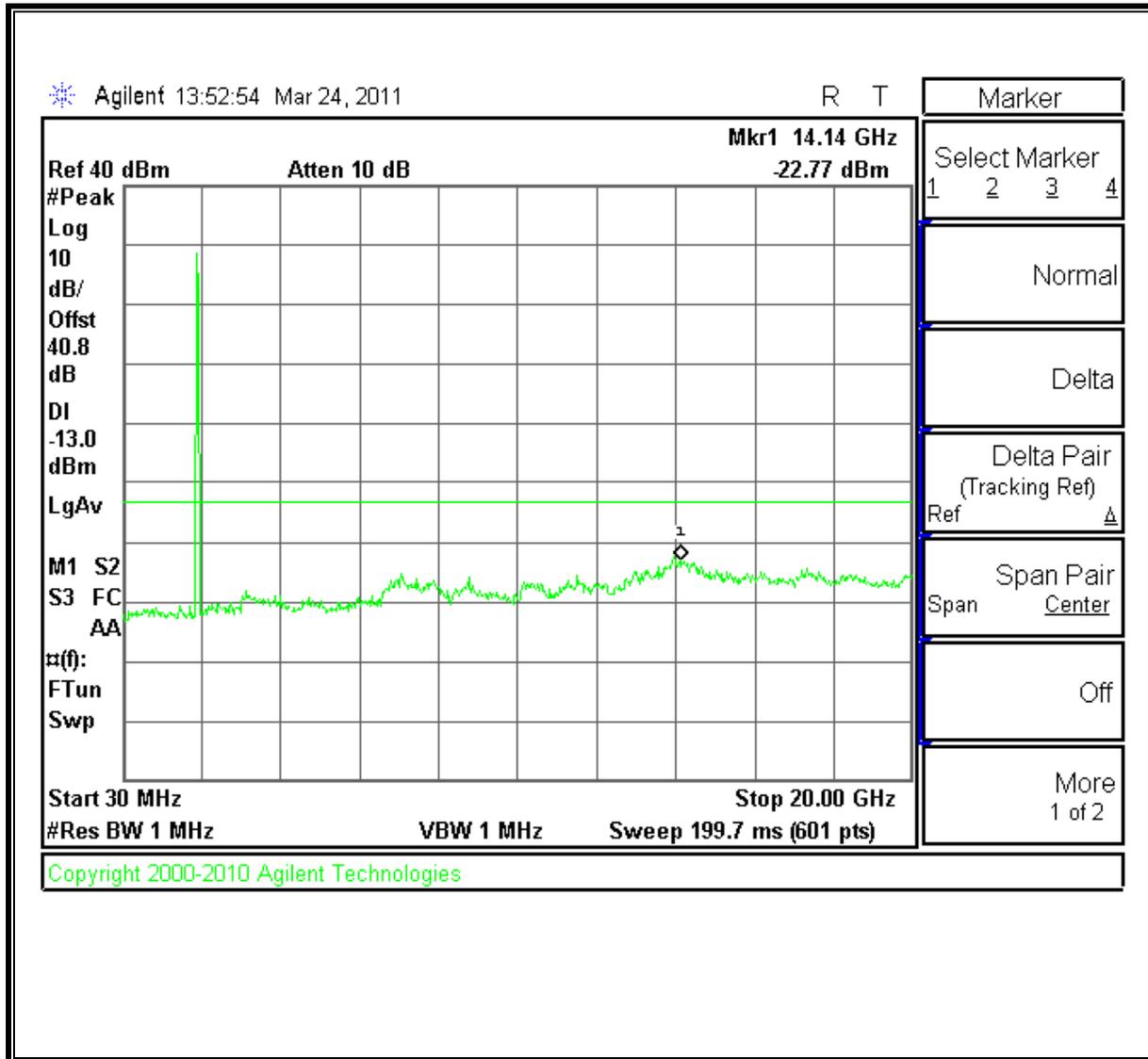
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235
IC: RSS-132, 4.3; RSS-133, 6.3

LIMITS

§22.355 & RSS-132 4.3 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

RSS-133 6.3 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Use Agilent 8960 with Frequency Error measurement capability.

- Temp. = -20° to $+50^{\circ}\text{C}$
- Voltage = 3.70 Vdc (85% - 115%)
-

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

MODES TESTED

- CDMA2000 1xEV-DO Revision A (Rev. A)
- GPRS

RESULTS

See the following pages.

CELL CDMA2000 1xEV-DO Revision A (Rev. A) – MID CHANNEL

Reference Frequency: Cellular Mid Channel 837.00MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2092.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	837.000008	-0.010	2.5
3.70	40	837.000005	-0.006	2.5
3.70	30	837.000003	-0.004	2.5
3.70	20	837.000000	0	2.5
3.70	10	837.000032	-0.038	2.5
3.70	0	837.000050	-0.060	2.5
3.70	-10	837.000020	-0.024	2.5
3.70	-20	836.999992	0.010	2.5
3.70	-30	836.999977	0.027	2.5

Reference Frequency: Cellular Mid Channel 835.837000MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2092.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
100%	20	837.000000	0	2.5
85%	20	836.999998	0.002	2.5
115%	20	837.000002	-0.002	2.5

PCS, CDMA2000 1xEV-DO Revision A (Rev. A) – MID CHANNEL

Reference Frequency: PCS Mid Channel 1879.999997MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1880.000000	-0.002	2.5
3.70	40	1879.999995	0.001	2.5
3.70	30	1879.999997	0.000	2.5
3.70	20	1879.999997	0	2.5
3.70	10	1879.999995	0.001	2.5
3.70	0	1879.999998	-0.001	2.5
3.70	-10	1880.000002	-0.003	2.5
3.70	-20	1879.999999	-0.001	2.5
3.70	-30	1879.999990	0.004	2.5

Reference Frequency: PCS Mid Channel 1879.999997MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
100%	20	1879.999997	0	2.5
85%	20	1880.000002	-0.003	2.5
115%	20	1879.999995	0.001	2.5

CELL, GSM MODULATION – MID CHANNEL

Reference Frequency: Cellular Mid Channel 837.00MHz @ 20°C				
Limit: to stay +/- 2.5 ppm = 2092.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	837.000008	-0.010	2.5
3.70	40	837.000005	-0.006	2.5
3.70	30	837.000003	-0.004	2.5
3.70	20	837.000000	0	2.5
3.70	10	837.000032	-0.038	2.5
3.70	0	837.000050	-0.060	2.5
3.70	-10	837.000020	-0.024	2.5
3.70	-20	836.999992	0.010	2.5
3.70	-30	836.999977	0.027	2.5

Reference Frequency: Cellular Mid Channel 835.837000MHz @ 20°C				
Limit: to stay +/- 2.5 ppm = 2092.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
100%	20	837.000000	0	2.5
85%	20	836.999998	0.002	2.5
115%	20	837.000002	-0.002	2.5

PCS, GSM MODULATION – MID CHANNEL

Reference Frequency: PCS Mid Channel 1880.00000MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1879.999965	0.019	2.5
3.70	40	1879.999960	0.021	2.5
3.70	30	1879.999966	0.018	2.5
3.70	20	1880.00000	0	2.5
3.70	10	1880.000020	-0.011	2.5
3.70	0	1880.000060	-0.032	2.5
3.70	-10	1880.000027	-0.014	2.5
3.70	-20	1879.999980	0.011	2.5
3.70	-30	1879.999976	0.013	2.5

Reference Frequency: PCS Mid Channel 1880.00000MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
100%	20	1880.000000	0	2.5
85%	20	1880.000000	0.000	2.5
115%	20	1879.999960	0.021	2.5

9. RADIATED TEST RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232

IC: RSS-132; 4.4, RSS-133, 6.4

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603C , RSS-132; RSS-133

MODES TESTED

- 1xRTT – RC1, SO55
- CDMA2000 1xEV-DO Revision A (Rev. A)
- GPRS and EGPRS

RESULTS for Cellular Band (ERP)

Mode	Channel	f (MHz)	ERP	
			dBm	mW
1xRTT (RC1, SO55)	1013	824.70	27.48	559.76
	384	836.52	27.26	532.11
	777	848.31	24.46	279.25
EVDO-REV A	1013	824.70	29.18	827.94
	384	836.52	28.08	642.69
	777	848.31	26.18	414.95

RESULTS for PCS Band (EIRP)

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
1xRTT (RC1, SO55)	25	1851.25	30.43	1104.08
	600	1880.00	31.62	1452.11
	1175	1908.75	29.97	993.12
EVDO-REV A	25	1851.25	32.56	1803.02
	600	1880.00	32.52	1786.49
	1175	1908.75	31.24	1330.45

RESULTS for Cellular Band (ERP)

Mode	Channel	f (MHz)	ERP	
			dBm	mW
GPRS, CELL	128	824.20	33.77	2382.32
	192	836.60	33.33	2152.78
	251	848.80	32.96	1976.97
EGPRS, CELL	128	824.20	30.41	1099.01
	192	836.60	30.21	1049.54
	251	848.80	28.76	751.62

RESULTS for PCS Band (EIRP)

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
GPRS, PCS	25	1850.20	32.29	1694.34
	600	1880.00	31.63	1455.46
	1175	1909.80	31.04	1270.57
EGPRS, PCS	25	1850.20	30.86	1218.99
	600	1880.00	30.82	1207.81
	1175	1909.80	30.67	1166.81

ERP for 1xRTT Mode (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		03/14/11						
Test Engineer:		Bart Mucha						
Configuration:		EUT with AC Adapter						
Mode:		CellBand 1xRTT						
Test Equipment:								
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.70	21.91	V	0.5	0.0	21.41	38.5	-17.0	
824.70	27.98	H	0.5	0.0	27.48	38.5	-11.0	
836.52	22.08	V	0.5	0.0	21.58	38.5	-16.9	
836.52	27.76	H	0.5	0.0	27.26	38.5	-11.2	
848.31	21.82	V	0.5	0.0	21.32	38.5	-17.1	
848.31	24.96	H	0.5	0.0	24.46	38.5	-14.0	
Rev. 1.24.7								

ERP for CDMA2000 1xEV-DO Revision A (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		03/14/11						
Test Engineer:		Bart Mucha						
Configuration:		EUT with AC Adapter						
Mode:		EVDO, Cellband, Rel A						
Test Equipment:								
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.70	25.02	V	0.5	0.0	24.52	38.5	-13.9	
824.70	29.68	H	0.5	0.0	29.18	38.5	-9.3	
836.52	24.38	V-pk	0.5	0.0	23.88	38.5	-14.6	
836.52	28.58	H-pk	0.5	0.0	28.08	38.5	-10.4	
848.31	22.83	V	0.5	0.0	22.33	38.5	-16.1	
848.31	26.68	H	0.5	0.0	26.18	38.5	-12.3	
Rev. 1.24.7								

ERP for GPRS850 (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		03-14-11						
Test Engineer:		Bart Mucha						
Configuration:		EUT with AC Adapter						
Mode:		GPRS850, CellBand						
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.20	38.48	V	11.96	1.6	28.12	38.5	-10.3	
824.20	44.13	H	11.96	1.6	33.77	38.5	-4.7	
836.6	38.4	V	11.97	1.6	27.96	38.5	-10.5	
836.6	43.7	H	11.97	1.6	33.33	38.5	-5.1	
848.80	35.85	V	11.98	1.6	25.47	38.5	-13.0	
848.80	43.34	H	11.98	1.6	32.96	38.5	-5.5	
Rev. 1.24.7								

ERP for EGPRS850 (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		03/14/11						
Test Engineer:		Bart Mucha						
Configuration:		EUT with AC Adapter						
Mode:		EGPRS850, CellBand						
Test Equipment:								
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.20	25.59	V	0.5	0.0	25.09	38.5	-13.4	
824.20	30.91	H	0.5	0.0	30.41	38.5	-8.0	
836.60	24.54	V	0.5	0.0	24.04	38.5	-14.4	
836.60	30.71	H	0.5	0.0	30.21	38.5	-8.2	
848.80	23.76	V	0.5	0.0	23.26	38.5	-15.2	
848.80	29.26	H	0.5	0.0	28.76	38.5	-9.7	
Rev. 1.24.7								

EIRP for 1xRTT Mode (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		03/15/11						
Test Engineer:		Bart Mucha						
Configuration:		EUT with AC Adapter						
Mode:		TX PCS 1xRTT						
Test Equipment:								
Receiving: Horn T59, and Camber B SMA Cables								
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.851	23.3	V	0.85	8.01	30.43	33.0	-2.6	
1.851	15.7	H	0.85	8.01	22.89	33.0	-10.1	
1.880	24.4	V	0.85	8.07	31.62	33.0	-1.4	
1.880	14.6	H	0.85	8.07	21.82	33.0	-11.2	
1.909	22.7	V	0.85	8.13	29.97	33.0	-3.0	
1.909	15.1	H	0.85	8.13	22.38	33.0	-10.6	
Rev. 1.24.7								

EIRP for CDMA2000 1xEV-DO Revision A (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		03/15/11						
Test Engineer:		Bart Mucha						
Configuration:		EUT with AC Adapter						
Mode:		TX PCS EDVO, Rev A						
Test Equipment:								
Receiving: Horn T59, and Camber B SMA Cables								
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.851	25.4	V	0.85	8.01	32.56	33.0	-0.4	
1.851	16.6	H	0.85	8.01	23.72	33.0	-9.3	
1.880	25.3	V	0.85	8.07	32.52	33.0	-0.5	
1.880	14.5	H	0.85	8.07	21.76	33.0	-11.2	
1.909	24.0	V	0.85	8.13	31.24	33.0	-1.8	
1.909	14.4	H	0.85	8.13	21.65	33.0	-11.4	
Rev. 1.24.7								

EIRP for GPRS1900

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		04-12-11						
Test Engineer:		Ekta Budhbhatti						
Configuration:		EUT (Open) with AC Adapter						
Mode:		TX GSM PCS GPRS Sample S/N: 5161-001						
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.850	43.4	V	13.10	1.98	32.29	33.0	-0.7	
1.850	34.7	H	13.10	1.98	23.58	33.0	-9.4	
Mid Ch								
1.880	42.7	V	13.11	2.04	31.63	33.0	-1.4	
1.880	33.9	H	13.10	2.04	22.81	33.0	-10.2	
High Ch								
1.910	42.2	V	13.22	2.07	31.04	33.0	-2.0	
1.910	34.4	H	13.22	2.07	23.25	33.0	-9.8	
Rev. 1.24.7								

EIRP for EGPRS1900

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		Palm						
Project #:		11U13622						
Date:		03-15-11						
Test Engineer:		Bart Mucha						
Configuration:		EUT with AC Adapter						
Mode:		TX GSM PCS EGPRS						
Test Equipment:								
Receiving: Horn T59, and Camber B SMA Cables								
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.850	23.7	V	0.85	8.01	30.86	33.0	-2.1	
1.850	16.9	H	0.85	8.01	24.06	33.0	-8.9	
Mid Ch								
1.880	23.6	V	0.85	8.07	30.82	33.0	-2.2	
1.880	16.4	H	0.85	8.07	23.66	33.0	-9.3	
High Ch								
1.910	23.4	V	0.85	8.13	30.67	33.0	-2.3	
1.910	15.6	H	0.85	8.13	22.85	33.0	-10.2	
Rev. 1.24.7								

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238
IC: RSS-132, 4.5; RSS-233, 6.5

LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

- 1xRTT – RC1, SO55
- CDMA2000 1xEV-DO Revision A (Rev. A)
- GPRS and EGPRS

RESULTS

1xRTT Mode (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services										
Company:		Palm								
Project #:		11U13622								
Date:		03-29-11								
Test Engineer:		Chin Pang								
Configuration:		EUTwith AC Adapter								
Mode:		TX, CDMA2000, 1xRTT, CELL Band								
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch. 824.7MHz										
1.649	-1.4	V	-37.3	0.8	4.3	2.2	-35.9	-13.0	-22.9	
2.474	-14.1	V	-51.6	1.0	6.2	4.0	-48.5	-13.0	-35.5	
1.649	-2.7	H	-38.6	0.8	4.3	2.2	-37.2	-13.0	-24.2	
2.474	-15.7	H	-53.1	1.0	6.2	4.0	-50.1	-13.0	-37.1	
Mid Ch. 836.52MHz										
1.673	-8.2	V	-44.1	0.8	4.4	2.3	-42.7	-13.0	-29.7	
2.510	-16.2	V	-53.7	1.0	6.3	4.1	-50.6	-13.0	-37.6	
1.673	-9.3	H	-45.3	0.8	4.4	2.3	-43.9	-13.0	-30.9	
2.510	-17.9	H	-55.4	1.0	6.3	4.1	-52.3	-13.0	-39.3	
Hi Ch. 848.31MHz										
1.697	-0.4	V	-36.4	0.8	4.5	2.3	-34.9	-13.0	-21.9	
2.545	-15.5	V	-53.2	1.0	6.4	4.2	-50.0	-13.0	-37.0	
1.697	-3.5	H	-39.5	0.8	4.5	2.3	-38.0	-13.0	-25.0	
2.545	-18.6	H	-56.2	1.0	6.4	4.2	-53.0	-13.0	-40.0	
Rev. 4.15.11										

CDMA2000 1xEV-DO Revision A (Rev. A) Mode (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services										
Company:		Palm								
Project #:		11U13622								
Date:		03-29-11								
Test Engineer:		Chin Pang								
Configuration:		EUTwith AC Adapter								
Mode:		TX, CDMA2000, EVDO Rev A, CELL Band								
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch, 824.7MHz										
1.649	-5.4	V	-41.3	0.8	4.3	2.2	-39.9	-13.0	-26.9	
2.474	-16.7	V	-54.2	1.0	6.2	4.0	-51.1	-13.0	-38.1	
1.649	-4.8	H	-40.7	0.8	4.3	2.2	-39.3	-13.0	-26.3	
2.474	-12.2	H	-49.6	1.0	6.2	4.0	-46.6	-13.0	-33.6	
Mid Ch, 836.52MHz										
1.673	-12.3	V	-48.2	0.8	4.4	2.3	-46.8	-13.0	-33.8	
2.510	-11.8	V	-49.3	1.0	6.3	4.1	-46.2	-13.0	-33.2	
1.673	-8.2	H	-44.2	0.8	4.4	2.3	-42.8	-13.0	-29.8	
2.510	-12.1	H	-49.6	1.0	6.3	4.1	-46.5	-13.0	-33.5	
Hi Ch, 848.31MHz										
1.697	-2.6	V	-38.6	0.8	4.5	2.3	-37.1	-13.0	-24.1	
2.545	-2.5	V	-40.2	1.0	6.4	4.2	-37.0	-13.0	-24.0	
1.697	-1.3	H	-37.3	0.8	4.5	2.3	-35.8	-13.0	-22.8	
2.545	-6.1	H	-43.7	1.0	6.4	4.2	-40.5	-13.0	-27.5	
Rev. 4.15.11										

GPRS850 (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services										
Company:		Palm								
Project #:		11U13622								
Date:		03-29-11								
Test Engineer:		Chin Pang								
Configuration:		EUTwith AC Adapter								
Mode:		TX, GPRS CELL Band								
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch, 824.2MHz										
1.648	-5.3	V	-43.4	0.8	4.3	2.2	-38.2	-13.0	-25.2	
2.473	-3.8	V	-43.5	1.0	6.2	4.0	-36.3	-13.0	-23.3	
3.297	-20.0	V	-61.3	1.2	7.9	5.8	-52.2	-13.0	-39.2	
1.648	-4.6	H	-42.6	0.8	4.3	2.2	-37.5	-13.0	-24.5	
2.473	2.0	H	-37.6	1.0	6.2	4.0	-30.4	-13.0	-17.4	
3.297	-18.3	H	-59.5	1.2	7.9	5.8	-50.5	-13.0	-37.5	
Mid Ch, 836.6MHz										
1.673	-5.4	V	-43.5	0.8	4.4	2.3	-38.2	-13.0	-25.2	
2.510	-6.2	V	-45.9	1.0	6.3	4.1	-38.6	-13.0	-25.6	
3.346	-17.7	V	-59.1	1.2	8.0	5.8	-49.9	-13.0	-36.9	
1.673	-2.5	H	-40.6	0.8	4.4	2.3	-35.4	-13.0	-22.4	
2.510	-0.6	H	-40.3	1.0	6.3	4.1	-33.0	-13.0	-20.0	
3.346	-19.4	H	-60.7	1.2	8.0	5.8	-51.6	-13.0	-38.6	
Hi Ch, 848.8MHz										
1.698	29.9	V	-44.2	0.8	4.5	2.3	-38.9	-13.0	-25.9	
2.546	31.9	V	-41.8	1.0	6.4	4.2	-34.5	-13.0	-21.5	
3.395	32.7	V	-61.3	1.2	8.1	5.9	-52.0	-13.0	-39.0	
1.698	29.9	H	-40.2	0.8	4.5	2.3	-34.8	-13.0	-21.8	
2.546	31.9	H	-41.7	1.0	6.4	4.2	-34.3	-13.0	-21.3	
3.395	32.7	H	-62.5	1.2	8.1	5.9	-53.2	-13.0	-40.2	
Rev. 4.15.11										

EGPRS850 (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services										
Company:		Palm								
Project #:		11U13622								
Date:		03-29-11								
Test Engineer:		Chin Pang								
Configuration:		EUTwith AC Adapter								
Mode:		TX, EGPRS CELL Band								
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch, 824.2MHz										
1.648	-13.2	V	-51.3	0.8	4.3	2.2	-46.1	-13.0	-33.1	
2.473	-6.1	V	-45.8	1.0	6.2	4.0	-38.6	-13.0	-25.6	
3.297	-21.2	V	-62.5	1.2	7.9	5.8	-53.4	-13.0	-40.4	
1.648	-7.8	H	-45.8	0.8	4.3	2.2	-40.7	-13.0	-27.7	
2.473	-9.2	H	-48.8	1.0	6.2	4.0	-41.6	-13.0	-28.6	
3.297	-21.3	H	-62.5	1.2	7.9	5.8	-53.5	-13.0	-40.5	
Mid Ch, 836.6MHz										
1.673	-10.8	V	-48.9	0.8	4.4	2.3	-43.6	-13.0	-30.6	
2.510	-11.3	V	-51.0	1.0	6.3	4.1	-43.7	-13.0	-30.7	
3.346	-20.9	V	-62.3	1.2	8.0	5.8	-53.1	-13.0	-40.1	
1.673	-9.7	H	-47.8	0.8	4.4	2.3	-42.6	-13.0	-29.6	
2.510	-10.1	H	-49.8	1.0	6.3	4.1	-42.5	-13.0	-29.5	
3.346	-22.1	H	-63.4	1.2	8.0	5.8	-54.3	-13.0	-41.3	
Hi Ch, 848.8MHz										
1.698	-12.6	V	-50.7	0.8	4.5	2.3	-45.4	-13.0	-32.4	
2.546	-4.6	V	-44.4	1.0	6.4	4.2	-37.1	-13.0	-24.1	
3.395	-20.9	V	-62.3	1.2	8.1	5.9	-53.0	-13.0	-40.0	
1.698	-8.4	H	-46.6	0.8	4.5	2.3	-41.2	-13.0	-28.2	
2.546	-6.4	H	-46.2	1.0	6.4	4.2	-38.8	-13.0	-25.8	
3.395	-21.7	H	-63.1	1.2	8.1	5.9	-53.8	-13.0	-40.8	
Rev. 4.15.11										

1xRTT Mode (PCS Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Palm							
Project #:		11U13622							
Date:		03-30-11							
Test Engineer:		Chin Pang							
Configuration:		EUT with AC Adapter							
Mode:		TX, PCS band, CDMA2000, 1xRTT							
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.25MHz									
3.703	-11.3	V	3.0	35.4	1.0	-45.6	-13.0	-32.6	
5.554	-15.4	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
3.703	-12.4	H	3.0	35.4	1.0	-46.7	-13.0	-33.7	
5.554	-15.8	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
Mid Ch, 1880.0MHz									
3.760	-10.9	V	3.0	35.3	1.0	-45.3	-13.0	-32.3	
5.640	-16.0	V	3.0	35.4	1.0	-50.4	-13.0	-37.4	
3.760	-11.1	H	3.0	35.3	1.0	-45.4	-13.0	-32.4	
5.640	-14.8	H	3.0	35.4	1.0	-49.3	-13.0	-36.3	
High Ch, 1908.8MHz									
3.818	-13.9	V	3.0	35.3	1.0	-48.2	-13.0	-35.2	
5.726	-16.3	V	3.0	35.4	1.0	-50.8	-13.0	-37.8	
3.818	-13.0	H	3.0	35.3	1.0	-47.3	-13.0	-34.3	
5.726	-15.7	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

CDMA2000 1xEV-DO Revision A (Rev. A) Mode (PCS Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Palm							
Project #:		11U13622							
Date:		03-30-11							
Test Engineer:		Chin Pang							
Configuration:		EUT with AC Adapter							
Mode:		TX, PCS band, CDMA2000, EVDO Rev A							
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.25MHz									
3.703	-10.3	V	3.0	35.4	1.0	-44.6	-13.0	-31.6	
5.554	-10.8	V	3.0	35.4	1.0	-45.2	-13.0	-32.2	
3.703	-11.7	H	3.0	35.4	1.0	-46.0	-13.0	-33.0	
5.554	-12.0	H	3.0	35.4	1.0	-46.4	-13.0	-33.4	
Mid Ch, 1880.0MHz									
3.760	-15.0	V	3.0	35.3	1.0	-49.4	-13.0	-36.4	
5.640	-12.1	V	3.0	35.4	1.0	-46.5	-13.0	-33.5	
3.760	-15.1	H	3.0	35.3	1.0	-49.4	-13.0	-36.4	
5.640	-11.3	H	3.0	35.4	1.0	-45.8	-13.0	-32.8	
High Ch, 1908.8MHz									
3.818	-4.6	V	3.0	35.3	1.0	-38.9	-13.0	-25.9	
5.726	-10.1	V	3.0	35.4	1.0	-44.6	-13.0	-31.6	
3.818	-4.6	H	3.0	35.3	1.0	-38.9	-13.0	-25.9	
5.726	-8.4	H	3.0	35.4	1.0	-42.8	-13.0	-29.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

GPRS1900 (PCS Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Palm							
Project #:		11U13622							
Date:		03-30-11							
Test Engineer:		Chin Pang							
Configuration:		EUT with AC Adapter							
Mode:		TX, GPRS1900, PCS Band							
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-19.9	V	3.0	35.4	1.0	-54.2	-13.0	-41.2	
5.551	-13.9	V	3.0	35.4	1.0	-48.3	-13.0	-35.3	
3.700	-18.1	H	3.0	35.4	1.0	-52.4	-13.0	-39.4	
5.551	-10.3	H	3.0	35.4	1.0	-44.7	-13.0	-31.7	
Mid Ch, 1880.0MHz									
3.760	-17.7	V	3.0	35.3	1.0	-52.1	-13.0	-39.1	
5.640	-8.7	V	3.0	35.4	1.0	-43.1	-13.0	-30.1	
3.760	-17.0	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.640	-9.8	H	3.0	35.4	1.0	-44.3	-13.0	-31.3	
High Ch, 1909.8MHz									
3.820	-19.2	V	3.0	35.3	1.0	-53.5	-13.0	-40.5	
5.729	-11.1	V	3.0	35.4	1.0	-45.6	-13.0	-32.6	
3.820	-17.5	H	3.0	35.3	1.0	-51.8	-13.0	-38.8	
5.729	-10.4	H	3.0	35.4	1.0	-44.8	-13.0	-31.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

EGPRS1900 (PCS Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Palm							
Project #:		11U13622							
Date:		03-30-11							
Test Engineer:		Chin Pang							
Configuration:		EUT with AC Adapter							
Mode:		TX, EGPRS1900, PCS Band							
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-19.6	V	3.0	35.4	1.0	-53.9	-13.0	-40.9	
5.551	-15.4	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
3.700	-18.5	H	3.0	35.4	1.0	-52.8	-13.0	-39.8	
5.551	-14.6	H	3.0	35.4	1.0	-49.0	-13.0	-36.0	
Mid Ch, 1880.0MHz									
3.760	-19.9	V	3.0	35.3	1.0	-54.3	-13.0	-41.3	
5.640	-14.4	V	3.0	35.4	1.0	-48.8	-13.0	-35.8	
3.760	-18.1	H	3.0	35.3	1.0	-52.4	-13.0	-39.4	
5.640	-12.5	H	3.0	35.4	1.0	-47.0	-13.0	-34.0	
High Ch, 1909.8MHz									
3.820	-19.4	V	3.0	35.3	1.0	-53.7	-13.0	-40.7	
5.729	-13.3	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
3.820	-19.3	H	3.0	35.3	1.0	-53.6	-13.0	-40.6	
5.729	-13.2	H	3.0	35.4	1.0	-47.6	-13.0	-34.6	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

9.3. RECEIVER SPURIOUS EMISSIONS

LIMIT

RSS-Gen 7.2.2

Spurious Emission Limits for Receivers:

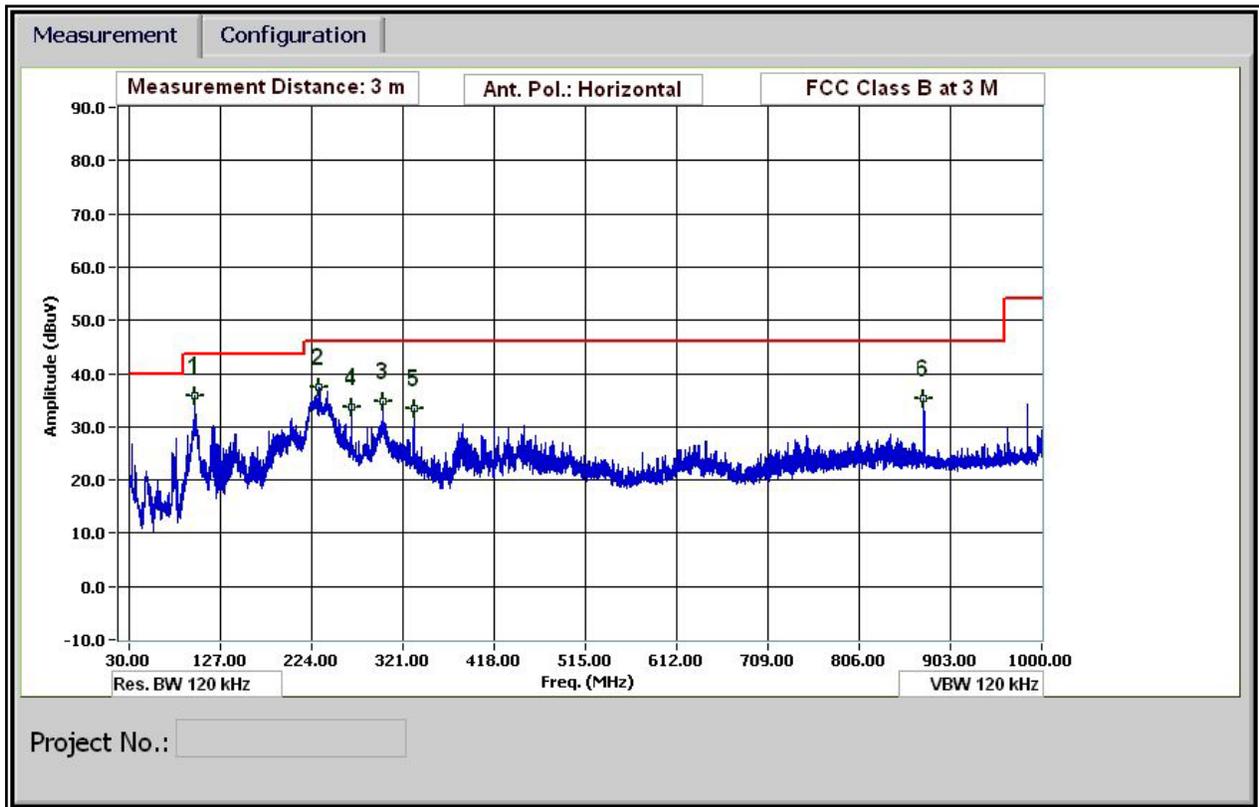
Spurious Frequency (MHz)	Field Strength (microvolts/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

TEST PROCEDURE

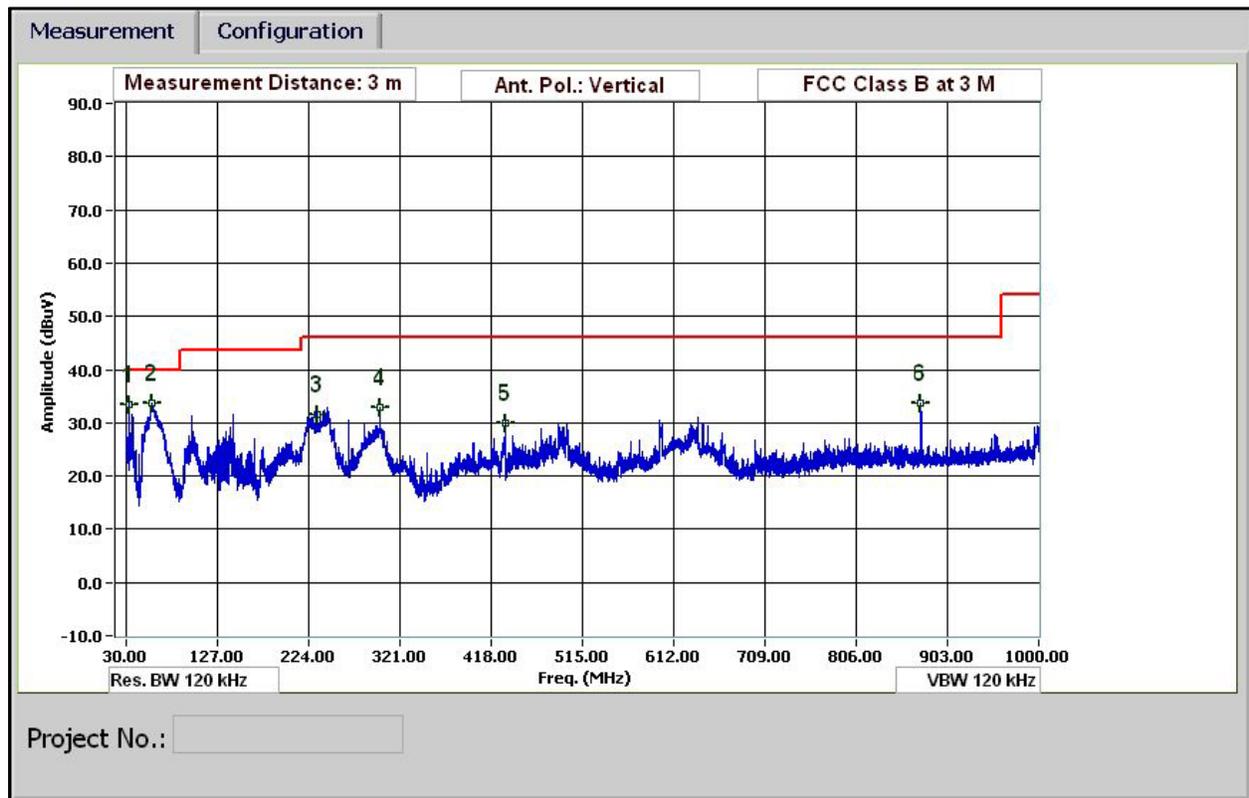
The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (local oscillator frequency, intermediate frequency or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tunable and local oscillator frequencies.

RESULTS

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



DATA

30-1000MHz Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		Chin Pang											
Date:		03-09-11											
Project #:		11U13622											
Company:		Palm											
Test Target:		FCC 15B											
Mode Oper:		Normal											
EUT Configuration:		EUT with Laptop Battery PN 157-10158-00											
f	Measurement Frequency	Amp	Preamp Gain	Margin	Margin vs. Limit								
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters										
Read	Analyzer Reading	Filter	Filter Insert Loss										
AF	Antenna Factor	Corr.	Calculated Field Strength										
CL	Cable Loss	Limit	Field Strength Limit										
f	Dist	Read	AF	CL	Amp	D Corr	Pad	Corr.	Limit	Margin	Ant. Pol	Det	Notes
MHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
100.203	3.0	54.3	10.1	0.9	29.5	0.0	0.0	35.8	43.5	-7.7	H	P	
232.328	3.0	53.0	11.9	1.4	28.8	0.0	0.0	37.4	46.0	-8.6	H	P	
266.17	3.0	48.7	12.3	1.5	28.8	0.0	0.0	33.6	46.0	-12.4	H	P	
299.411	3.0	48.6	13.3	1.6	28.8	0.0	0.0	34.7	46.0	-11.3	H	P	
332.892	3.0	46.9	13.9	1.7	29.0	0.0	0.0	33.5	46.0	-12.5	H	P	
874.955	3.0	39.6	21.4	3.0	28.7	0.0	0.0	35.2	46.0	-10.8	H	P	
33.36	3.0	43.8	18.8	0.5	29.7	0.0	0.0	33.5	40.0	-6.5	V	P	
57.721	3.0	54.8	7.9	0.7	29.6	0.0	0.0	33.7	40.0	-6.3	V	P	
232.928	3.0	47.3	11.9	1.4	28.8	0.0	0.0	31.7	46.0	-14.3	V	P	
299.291	3.0	46.8	13.3	1.6	28.8	0.0	0.0	32.9	46.0	-13.1	V	P	
432.977	3.0	41.8	15.6	2.0	29.4	0.0	0.0	30.0	46.0	-16.0	V	P	
874.955	3.0	38.1	21.4	3.0	28.7	0.0	0.0	33.8	46.0	-12.2	V	P	

Rev. 1.27.09
 Note: No other emissions were detected above the system noise floor.

SPURIOUS EMISSIONS ABOVE 1000 MHz (WORST-CASE CONFIGURATION)

Note: No emissions were detected above the system noise floor.

9.4. POWER LINE CONDUCTED EMISSION

LIMIT

RSS-Gen 7.2.2

Except when the requirements applicable to a given device state otherwise, for any licence-exempt radio communication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

Table 2 – AC Power Lines Conducted Emission Limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 [*]	56 to 46 [*]
0.5-5	56	46
5-30	60	50

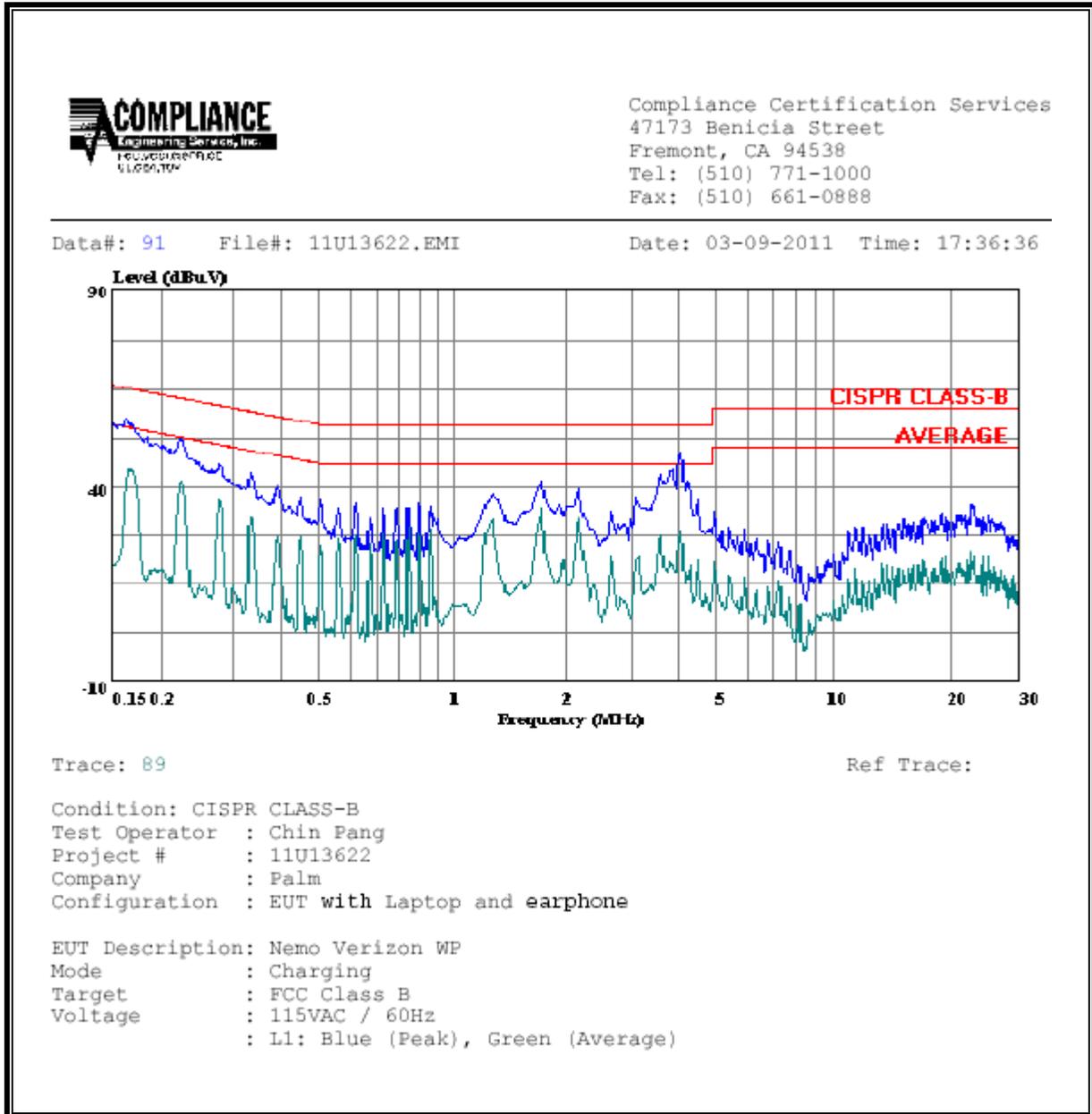
^{*} Decreases with the logarithm of the frequency.

RESULTS

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Class (dB)	Limit EN B		Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)		QP	AV	QP (dB)	AV (dB)	
0.17	57.64	--	44.73	0.00	65.21	55.21	-7.57	-10.48	L1
0.22	52.28	--	41.40	0.00	62.71	52.71	-10.43	-11.31	L1
4.14	49.05	--	28.66	0.00	56.00	46.00	-6.95	-17.34	L1
0.17	56.34	--	46.16	0.00	65.06	55.06	-8.72	-8.90	L2
0.22	50.66	--	41.21	0.00	62.71	52.71	-12.05	-11.50	L2
4.14	47.60	--	27.71	0.00	56.00	46.00	-8.40	-18.29	L2
6 Worst Data									

LINE 1 RESULTS

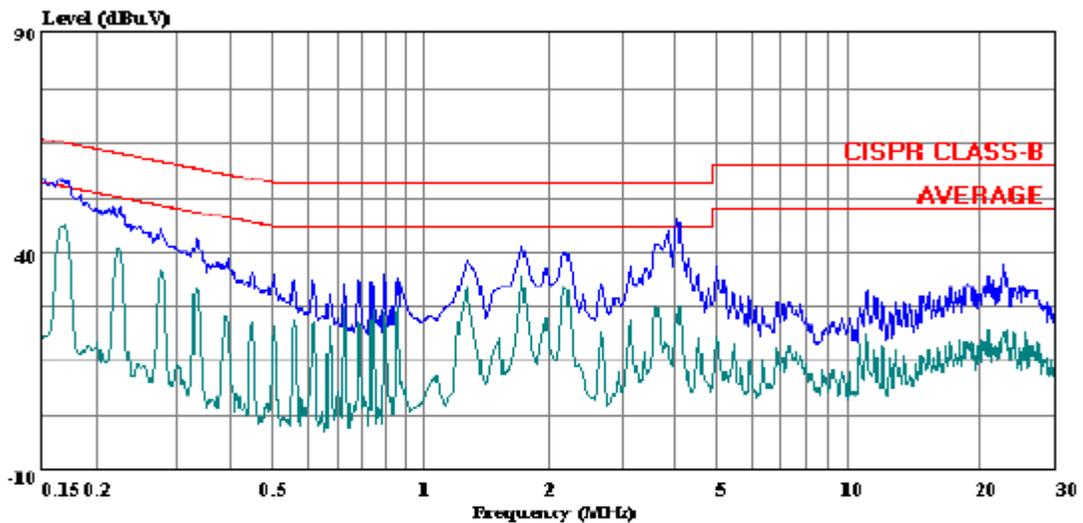


LINE 2 RESULTS



Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 98 File#: 11U13622.EMI Date: 03-09-2011 Time: 17:41:42



Trace: 96

Ref Trace:

Condition: CISPR CLASS-B
Test Operator : Chin Pang
Project # : 11U13622
Company : Palm
Configuration : EUT with Laptop and earphone

EUT Description: Nemo Verizon WP
Mode : Charging
Target : FCC Class B
Voltage : 115VAC / 60Hz
L2: Blue (Peak), Green (Average)