FCC CFR47 PART 22H AND 24E

CERTIFICATION TEST REPORT

FOR

EREADER, WITH WWAN, WLAN, BLUETOOTH, AND USB PORTS

MODEL NUMBER: PLR002

FCC ID: WXP-PLR002

REPORT NUMBER: 09U12883-2A

ISSUE DATE: FEB. 26, 2010

Prepared for

PLASTIC LOGIC

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Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	11/02/09	Initial Issue	T. Chan
A	02/26/2010	Update Section 7.1	T. Chan

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COMPLIANCE CERTIFICATION SERVICES FORM NO: CCSUP4031B
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	PLASTIC LOGIC 650 CASTRO STREET MOUNTAIN VIEW, CA 94041, U.S.A.
EUT DESCRIPTION:	eBook, with WWAN, WLAN, Bluetooth, and USB Ports
MODEL:	PLR002
SERIAL NUMBER:	00032641600600
DATE TESTED:	OCTOBER 15 to 29, 2009

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22 SUBPART H AND 24 SUBPART E	Pass

Compliance Certification Services, Inc. (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 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by 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 CCS By:

THU CHAN
EMC MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHIN PANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

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, and FCC CFR Part 24.

3. FACILITIES AND ACCREDITATION

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

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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 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 an eBook with WWAN, WiFi, Bluetooth and USB ports device.

5.2. MAXIMUM OUTPUT POWER

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

Part 22 Cellular Band

Frequency range (MHz)	Modulation	Conducted		ERP	
		dBm	mW	dBm	mW
824.2 – 848.80	GPRS	31.70	1479.1	27.80	602.6
824.2 – 848.80	EGPRS	28.90	776.2	24.80	302.0
826.4 – 846.6	UMTS, REL99	25.70	371.5	22.00	158.5
826.4 – 846.6	UMTS, HSDPA	25.90	389.0	22.60	182.0

Part 24 PCS Band

Frequency range (MHz)	Modulation	Conducted		EIRP	
		dBm	mW	dBm	mW
1850.20 – 1909.8	GPRS	28.30	676.1	31.30	1349.0
1850.20 – 1909.8	EGPRS	27.80	602.6	30.20	1047.1
1852.4 – 1907.6	UMTS, REL99	25.50	354.8	27.40	549.5
1852.4 – 1907.6	UMTS, HSDPA	25.70	371.5	27.40	549.5

5.3. SOFTWARE AND FIRMWARE

The EUT is linked with CMU200 Communication Test Set.

5.4. MODIFICATIONS

The change made to the board as below:

The large Capacitor designator MR-1 is a Cap-X GS-203 .20uF, 50m-Ohm, 4.5V was added to provide peak current of the 3G radio module. This change was a product design change.

5.5. WORST-CASE CONFIGURATION AND MODE

Based on the following investigation results, see Section 7. RF POWER OUTPUT VERIFCATION. The highest peak power and enhanced data rate is the worst-case scenario for all measurements.

Worst case modes:

- Cellular & PCS bands for GSM
  - GPRS (GSMK)
  - EGPRS (8PSK)
- Band V & Band II for UMTS (WCDMA)
  - Rel 99
  - Rel 6 HSDPA Subtest 3

For the fundamental investigation, since the EUT is a portable device that has three orientations; therefore X, Y and Z orientations have been investigated, also with AC/DC adapter, and the worst case was found to be at X orientation for Cell band and Y position for PCS band without AC/DC adapter.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	HP	compaq 2510p	CNF8271TJ1	DoC
AC Adapter	HP	PPP009H	F1-09073355820A	DoC

I/O CABLES (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	RF in/out	1	Spectrum	Un-shielded	0.5m	NA
3	Antenna Port	1	Directional Coupler	Un-shielded	0.1m	NA
4	RF in/out	1	Communication Test Set	Un-shielded	0.5m	NA

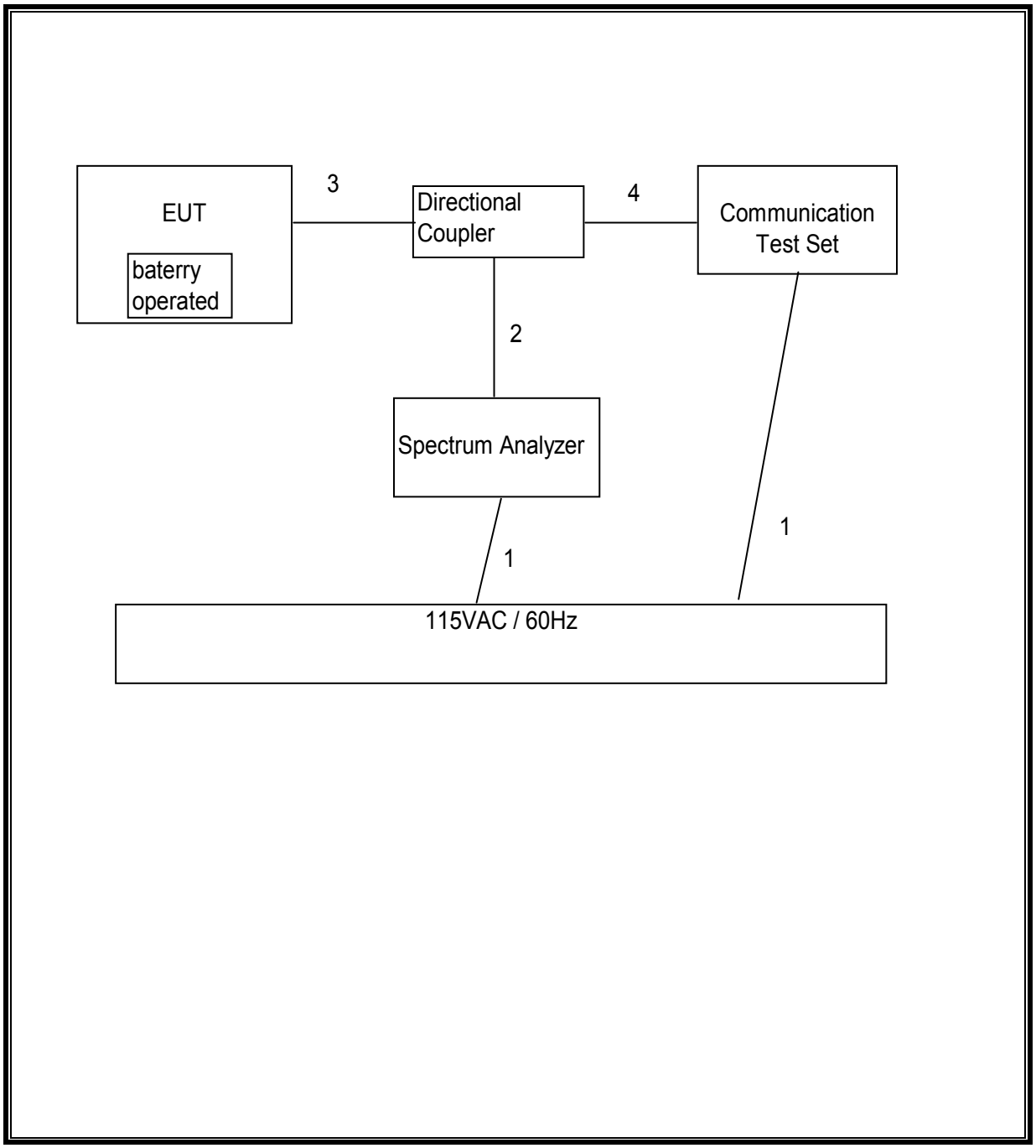
I/O CABLES (RADIATED TEST)

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	RF In/Out	1	Horn	Un-shielded	1.5m	NA

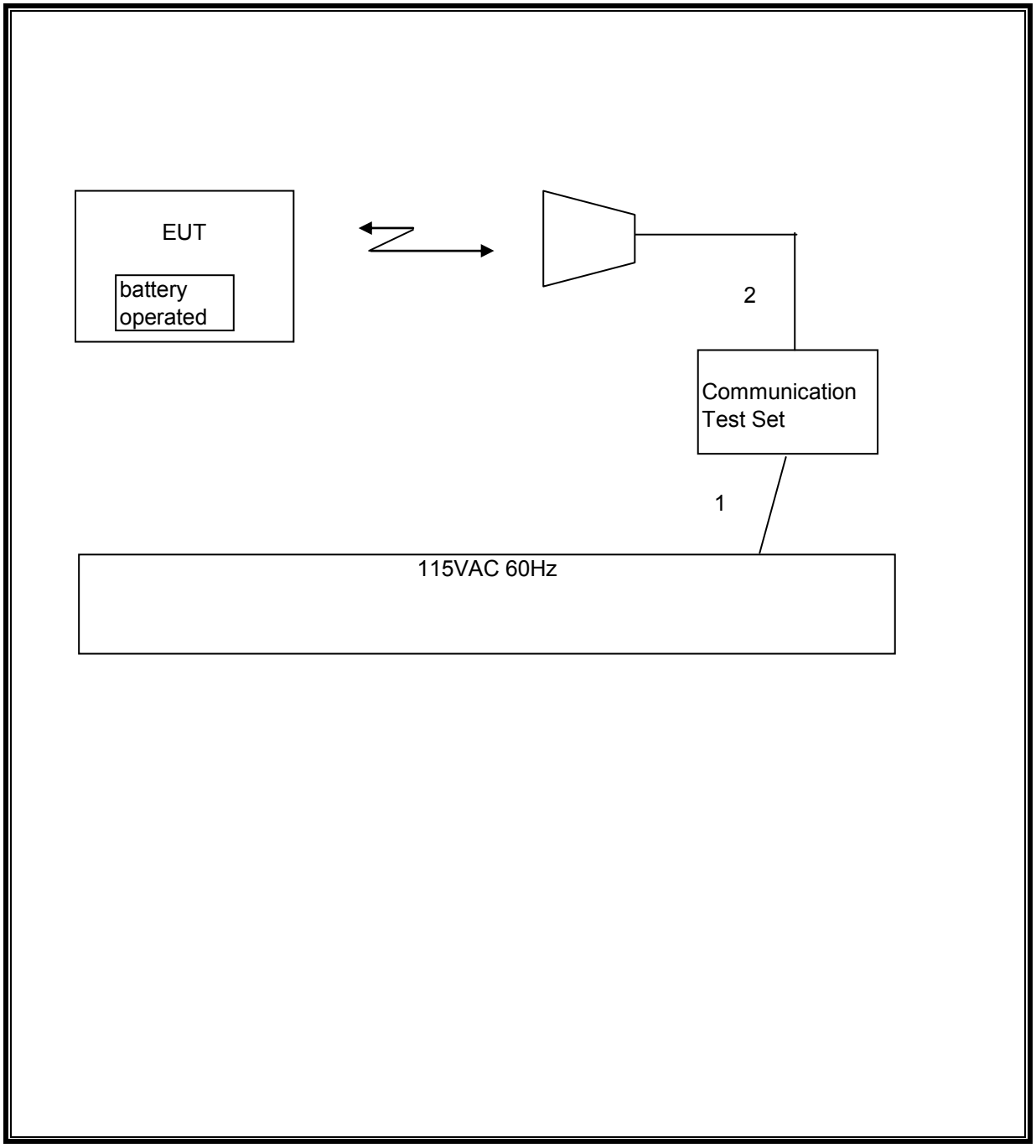
TEST SETUP

The EUT is a stand alone device. A link is established between the EUT and the CMU200 communications test set.

SETUP DIAGRAM FOR CONDUCTED TESTS



SETUP DIAGRAM FOR 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, 26.5 GHz	Agilent / HP	E4440A	C01176	08/24/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	02/04/10
Antenna, Horn, 18 GHz	EMCO	3115	C00783	01/29/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00778	12/16/09
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	01/14/10
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	04/06/10
Communication Test Set	R & S	CMU 200	C01131	02/27/11
Peak Power Meter	Boonton	4541	C01189	01/15/10
Peak Power Sensor	Boonton	57318	N/A	02/02/10
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02688	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Directional Coupler, 4.2 GHz, 40 dB	A-R	DC7144A	C00983	CNR

7. RF POWER OUTPUT VERIFICATION

PROCEDURE USED TO ESTABLISH TEST SIGNAL

GSM/EGSM Procedure

The following settings were used to configure the Radio Communication Tester, CMU200. The insertion loss of 0.5 dB was used for the PCS band and 0.3dB was used for the Cell Band. All measurements listed below are average power unless specified otherwise.

GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900

Press Connection control to choose the different menus

Press RESET > choose all to reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM+GPRS or GSM+EGPRS

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850/900

> 27 dBm for EGPRS 850/900

> 30 dBm for GPRS1800/1900

> 26 dBm for EGPRS1800/1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0> 4 dB

Slot Config > Unchanged (if already set under MS Signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3 (Default)

Network	Coding Scheme >	CS4 (GPRS) and MCS9 (EGPRS)
	Bit Stream >	2E9-1PSR Bit Pattern
AF/RF	Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input	
Connection	Press Signal On to turn on the signal and change settings	

WCDMA + HSDPA Procedure

The following settings were used to configure the Radio Communication Tester, CMU200.

- Connection
  - Dedicated Chan (CS): RMC
  - Band Select:
    - Band VI for US Cell Band
    - Band II for US PCS Band
    - Band I for 2100MHz band
- Network
  - Requested UE Data
    - Authentication: Off
    - Security: Off
    - IMEI: ON
    - RLC Reestablish: Off
- BS Signal
  - Node –B Setting
    - RF Channel Downlink
      - Band VI: 4357 / 4407 / 4458
      - Band II: 9662 / 9800 / 9938
      - Band I: 10562 / 10700 / 10838
  - Circuit Switched
    - RMC Setting
      - Reference Channel Type: 12.2Kbps
      - Test Mode: Loop Mode 1 RLC TM
      - Channel Data Source DTCH: All One
    - Signaling RAB Setting
      - SRB Cell DCH: 13.6 Kbps
  - HSDPA HS-DSCH
    - Fixed Reference Channel
      - H-Set Selection: H-Set 1 QPSK
- UE Signal
  - Analyzer Setting
    - RF Channel Uplink:
      - Band VI: 4132 / 4182 / 4233
      - Band II: 9262 / 9400 / 9538
      - Band I; 9612 / 9750 / 9888
    - UE power Control
      - Max Allowed UE Power: 25
      -

RULE PART(S)

FCC: §2.1046
IC: RSS-132, 4.4; RSS-133, 6.4

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a CMU200 Communication Test Set and configured to operate at maximum power in a call. The peak power was measured using the spectrum analyzer at three equally spaced operating frequencies for each band. The RBW was set to 300 KHz for the GSM and EDGE measurements and 5 MHz for the UMTS (WCDMA) measurements.

MODES TESTED

- GSM – GSM/GPRS (GSMK) & EGPRS (8PSK) modes.
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA and HSPA (HSDPA & HSUPA)

RESULTS

See Section 9.1 to 9.4

7.1. GSM

GPRS (GMSK) - Coding Scheme: MCS4

Band	Ch No.	f (MHz)	Conducted output power (dBm)											
			1 slot			2 slot			3 slot			4 slot		
			Avg	Frame Avg Pwr	Pk	Avg	Frame Avg Pwr	Pk	Avg	Frame Avg Pwr	Pk	Avg	Frame Avg Pwr	Pk
GPRS 850	128	824.2	31.60	22.60	31.70	28.60	22.60	28.70	26.70	22.44	26.80	25.50	22.50	25.70
	190	836.6	31.60	22.60	31.70	28.60	22.60	28.70	26.70	22.44	26.80	25.50	22.50	25.70
	251	848.8	31.60	22.60	31.70	28.60	22.60	28.70	26.70	22.44	26.80	25.50	22.50	25.70
GPRS 1900	512	1850	28.20	19.20	28.30	25.30	19.30	25.50	23.50	19.24	23.60	22.30	19.30	22.40
	661	1880	28.10	19.10	28.30	25.20	19.20	25.40	23.40	19.14	23.50	22.20	19.20	22.30
	810	1910	28.00	19.00	28.10	25.10	19.10	25.30	23.30	19.04	23.50	22.10	19.10	22.20

EGPRS (8PSK) - Coding Scheme: MCS9

Band	Ch No.	f (MHz)	Conducted output power (dBm)											
			1 slot			2 slot			3 slot			4 slot		
			Avg	Frame Avg Pwr	Pk	Avg	Frame Avg Pwr	Pk	Avg	Frame Avg Pwr	Pk	Avg	Frame Avg Pwr	Pk
EGPRS850	128	824.2	25.80	16.80	28.90	23.70	17.70	26.70	21.70	17.44	24.70	20.40	17.40	23.40
	190	836.6	25.80	16.80	28.90	23.70	17.70	26.70	21.70	17.44	24.70	20.40	17.40	23.40
	251	848.8	25.80	16.80	28.90	23.70	17.70	26.70	21.70	17.44	24.70	20.40	17.40	23.40
EGPRS1900	512	1850	24.50	15.50	27.60	22.30	16.30	25.40	20.20	15.94	23.30	19.00	16.00	22.10
	661	1880	24.70	15.70	27.80	22.60	16.60	25.80	20.60	16.34	23.80	19.30	16.30	22.50
	810	1910	24.70	15.70	27.80	22.50	16.50	25.70	20.50	16.24	23.60	19.10	16.10	22.30

GPRS/EDGE Multi-Slot Rated Power

GPRS/EDGE Multi-Slot Rated Power				
	UL 1x Slot	**UL 2x Slot**	**UL 3xSlot**	**UL 4xSlot**
Power Back-Off	0 dBm	3 dBm	4.8 dBm	6 dBm
850 MHz /GPRS Target Power	32 dBm	29 dBm	27.2 dBm	26 dBm
850 MHz / EDGE Target Power	26 dBm	23 dBm	21.2 dBm	20 dBm
1900 MHz / GPRS Target Power	29 dBm	26 dBm	24.2 dBm	23 dBm
1900 MHz / EDGE Target Power	26 dBm	23 dBm	21.2 dBm	20 dBm

7.2. UMTS RELEASE 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V7.5.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). A summary of these settings are illustrated below:

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

Results

Rel 99 (12.2kps RMC)

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	O/P Power (dBm)	
					Peak	AVG
UMTS850 (Band V)	Rel 99 12.2kps RMC	4132	4357	826.4	25.50	22.30
		4183	4408	836.6	25.70	22.60
		4233	4458	846.6	25.50	22.30
UMTS1900 (Band II)	Rel 99 12.2kps RMC	9262	9662	1852.4	24.30	21.11
		9400	9800	1880.0	25.50	22.50
		9538	9938	1907.6	24.50	22.00

7.3. UMTS HSDPA

The following 4 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	HSUPA Test	Not Applicable			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βec	-	-	-	-
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	βed	Not Applicable			
	CM (dB)	0	1	1.5	1.5
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs = βhs/βc	30/15			

Results

Rel 6 HSDPA

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	O/P Power (dBm)	
					Peak	AVG
UMTS850 (Band V)	Subtest 1	4132	4357	826.4	25.50	22.30
		4183	4408	836.6	25.60	22.50
		4233	4458	846.6	25.40	22.30
	Subtest 2	4132	4357	826.4	25.60	21.70
		4183	4408	836.6	25.60	21.90
		4233	4458	846.6	25.40	21.70
	Subtest 3	4132	4357	826.4	25.90	21.80
		4183	4408	836.6	25.80	21.90
		4233	4458	846.6	25.60	21.70
	Subtest 4	4132	4357	826.4	25.80	21.70
		4183	4408	836.6	25.70	21.90
		4233	4458	846.6	25.60	21.70
UMTS1900 (Band II)	Subtest 1	9262	9662	1852.4	24.30	21.10
		9400	9800	1880.0	25.30	22.40
		9538	9938	1907.6	24.20	21.80
	Subtest 2	9262	9662	1852.4	24.50	20.70
		9400	9800	1880.0	25.40	21.90
		9538	9938	1907.6	24.40	21.20
	Subtest 3	9262	9662	1852.4	24.80	20.70
		9400	9800	1880.0	25.70	21.90
		9538	9938	1907.6	24.80	21.25
	Subtest 4	9262	9662	1852.4	24.80	20.70
		9400	9800	1880.0	25.60	21.85
		9538	9938	1907.6	24.60	21.10

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

- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA Subtest 3

RESULTS

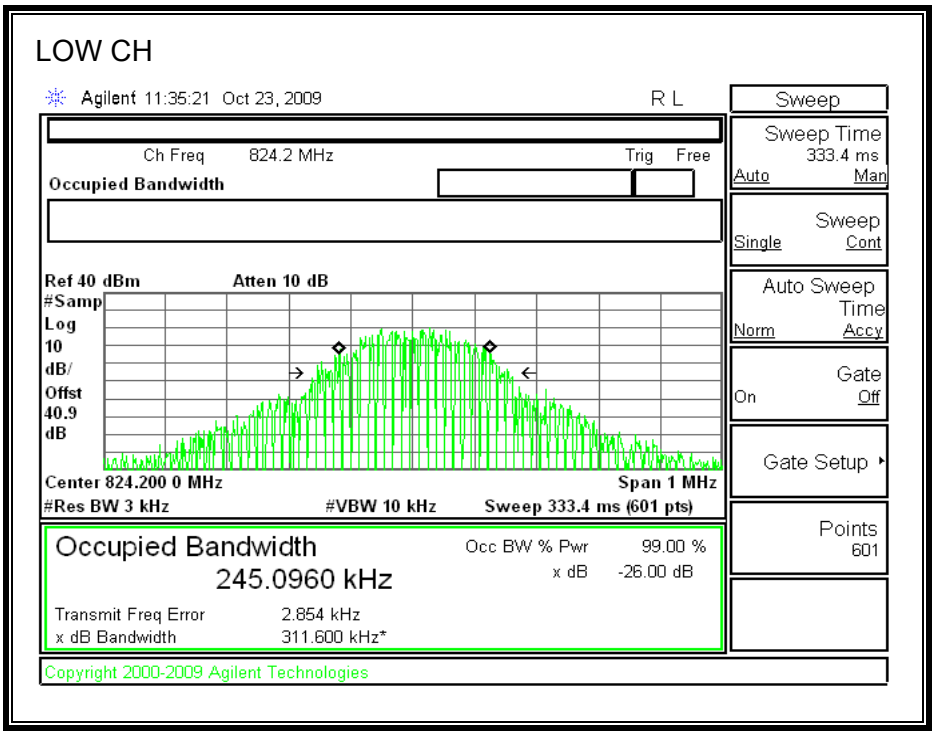
Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
Cellular	GPRS	128	824.2	245.0960	311.600
		190	836.6	252.0770	307.104
		251	848.8	246.2104	293.461
	EGPRS	128	824.2	245.7825	309.614
		190	836.6	248.7225	310.298
		251	848.8	249.8564	298.919
PCS	GPRS	512	1850.2	238.5302	304.457
		661	1880.0	238.6682	302.799
		810	1909.8	240.5732	273.705
	EGPRS	512	1850.2	239.2302	295.556
		661	1880.0	231.0982	299.857
		810	1909.8	241.2309	279.287

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
UMTS Band V	Rel 99	4132	826.4	4.1824	4.604
		4180	836.6	4.2246	4.645
		4230	846.6	4.1620	4.646
	HSDPA Rel 6 Subtest 2	4132	826.4	4.1590	4.588
		4180	836.6	4.1621	4.618
		4230	846.6	4.1689	4.607
UMTS Band II	Rel 99	9262	1852.4	4.1781	4.527
		9400	1880.0	4.1967	4.686
		9538	1907.6	4.2057	4.623
	HSDPA Rel 6 Subtest 2	9262	1852.4	4.1781	4.527
		9400	1880.0	4.1967	4.686
		9538	1907.6	4.2057	4.623

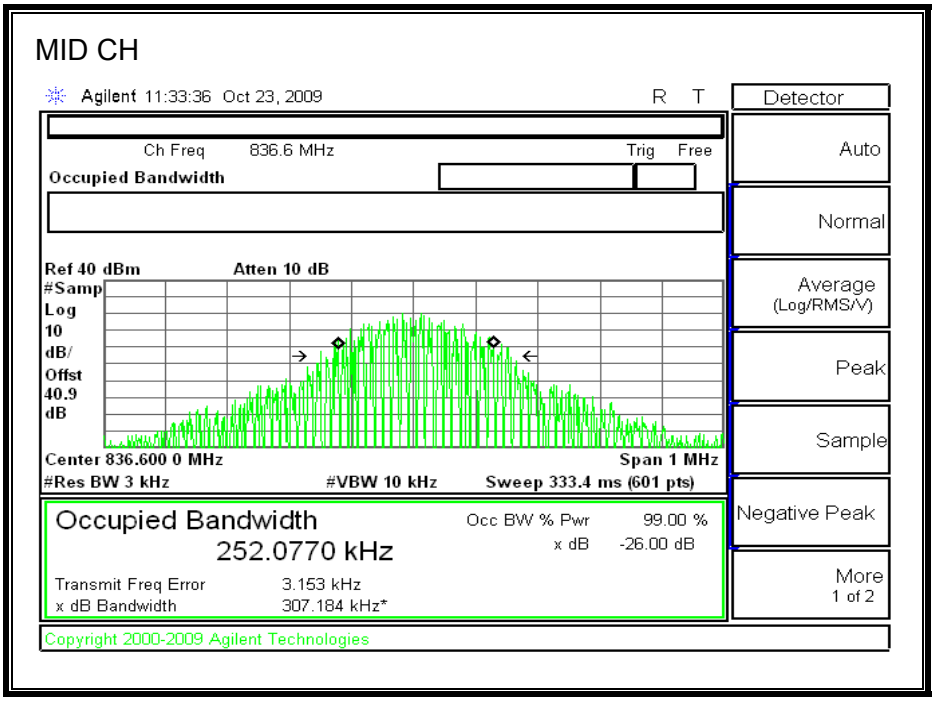
GPRS850 BAND

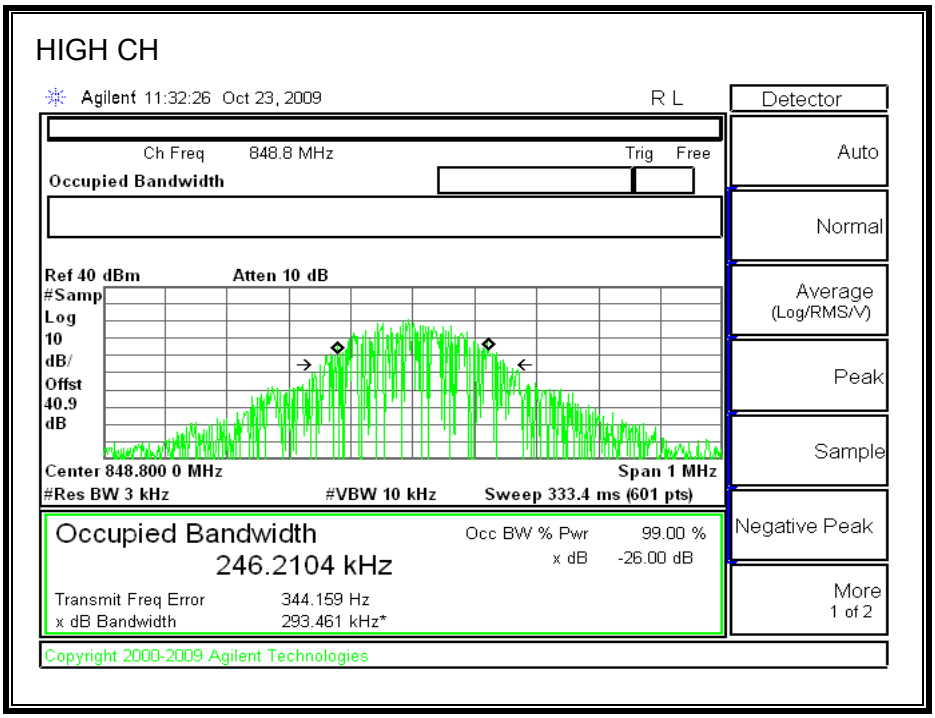
99% BANDWIDTH and 26dB

LOW CH

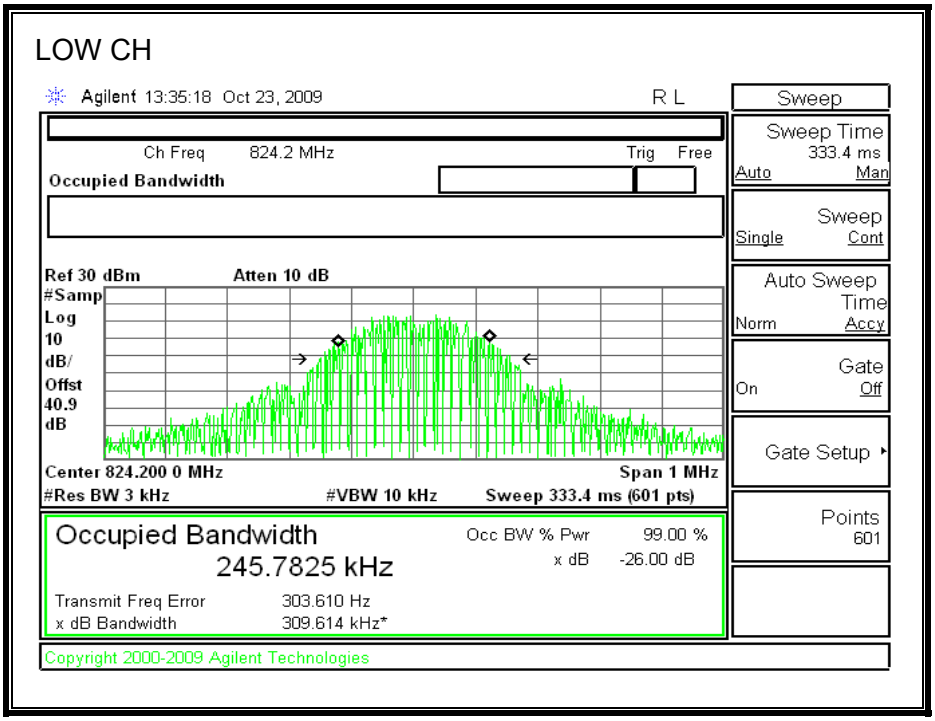


MID CH

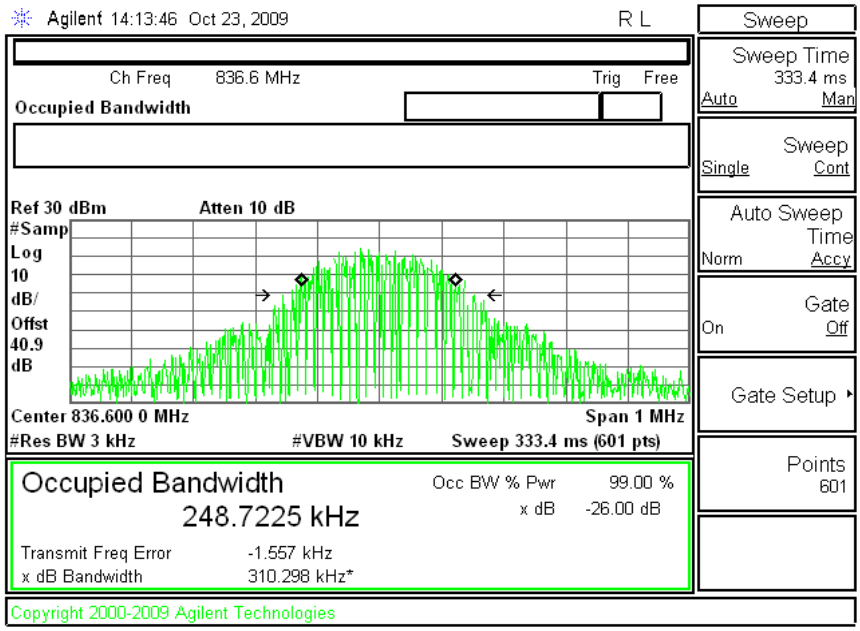




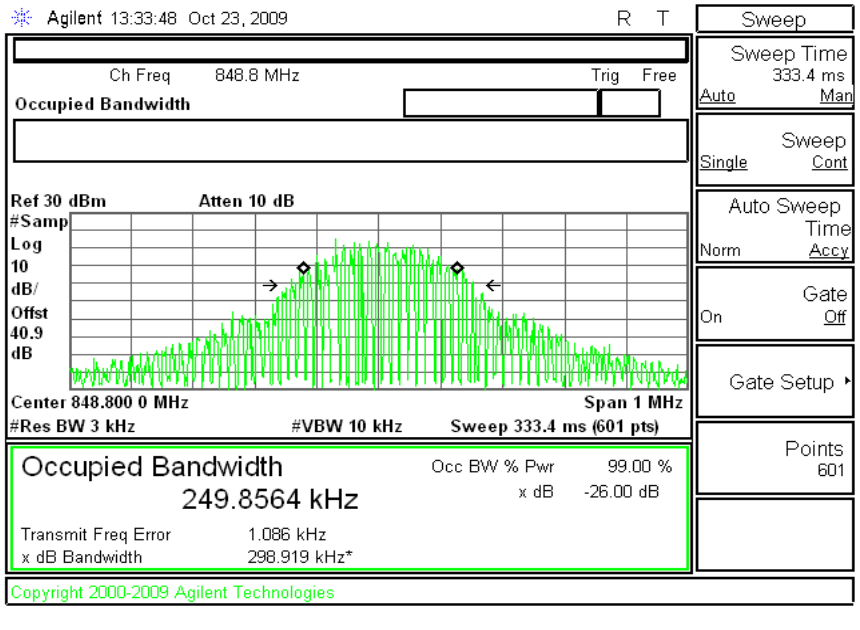
EGPRS850 BAND



MID CH

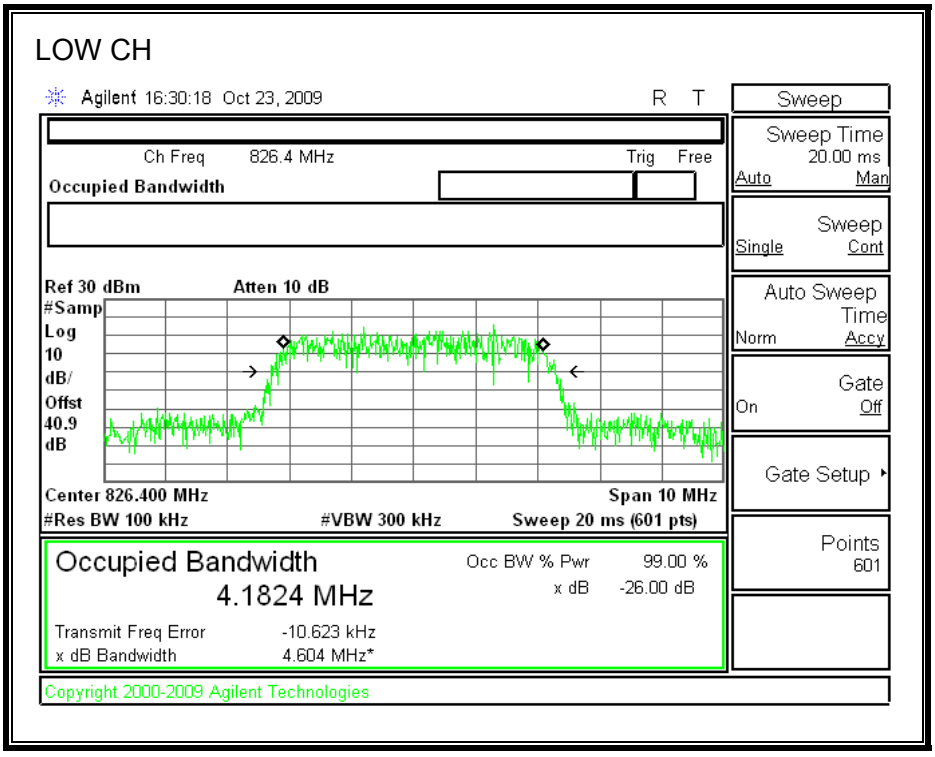


HIGH CH

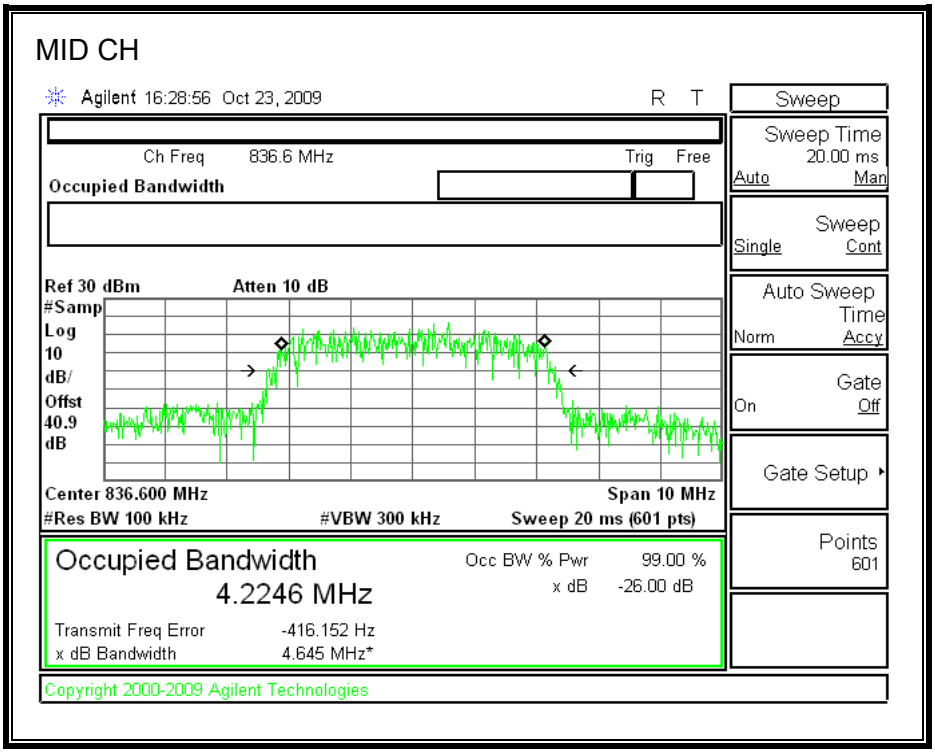


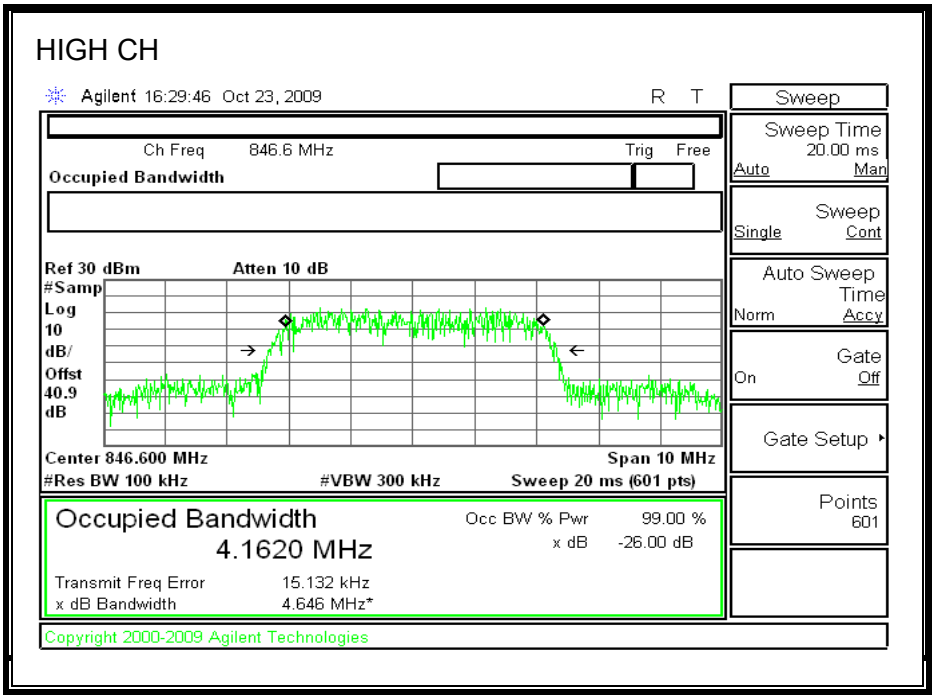
UMTS REL99 Cellular Band

LOW CH

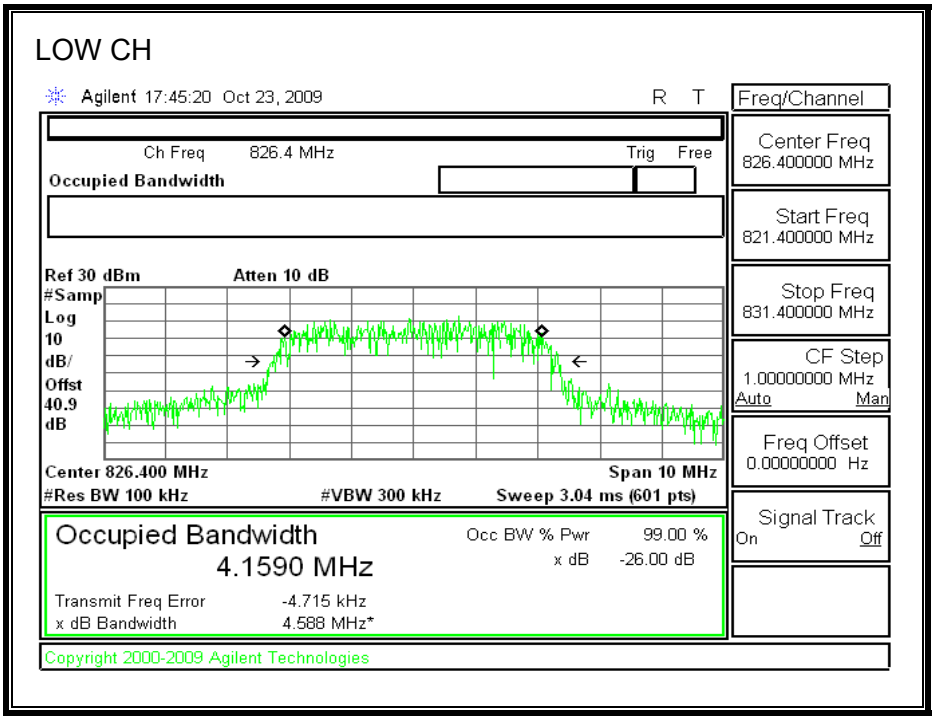


MID CH

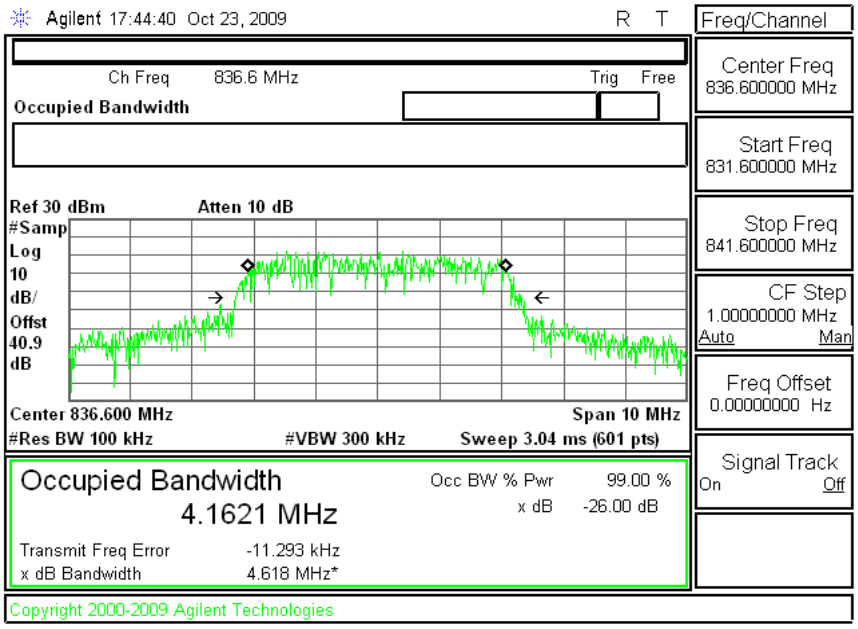




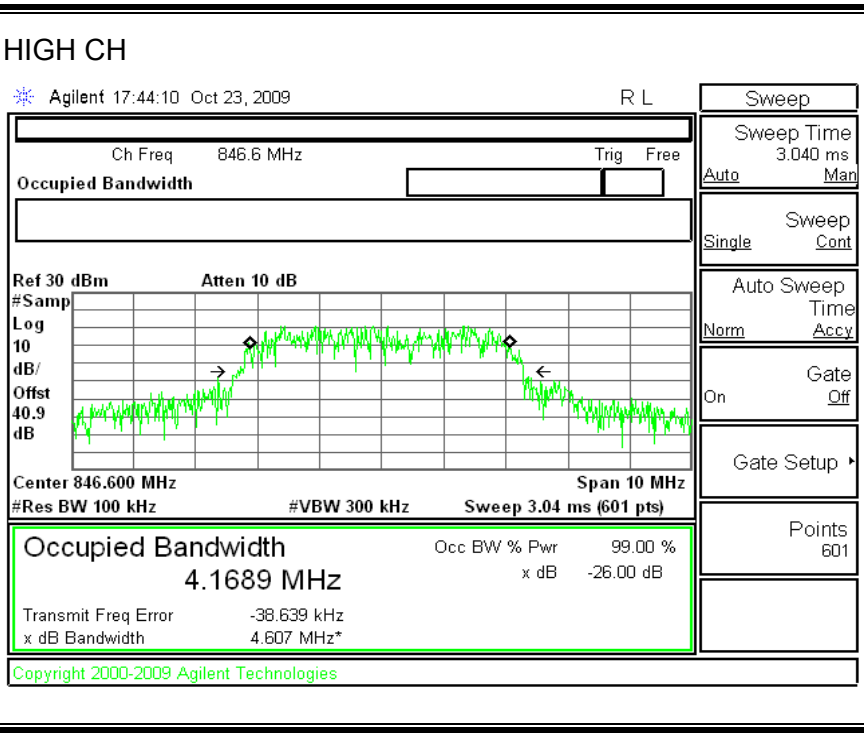
UMTS HSDPA Cellular Band



MID CH

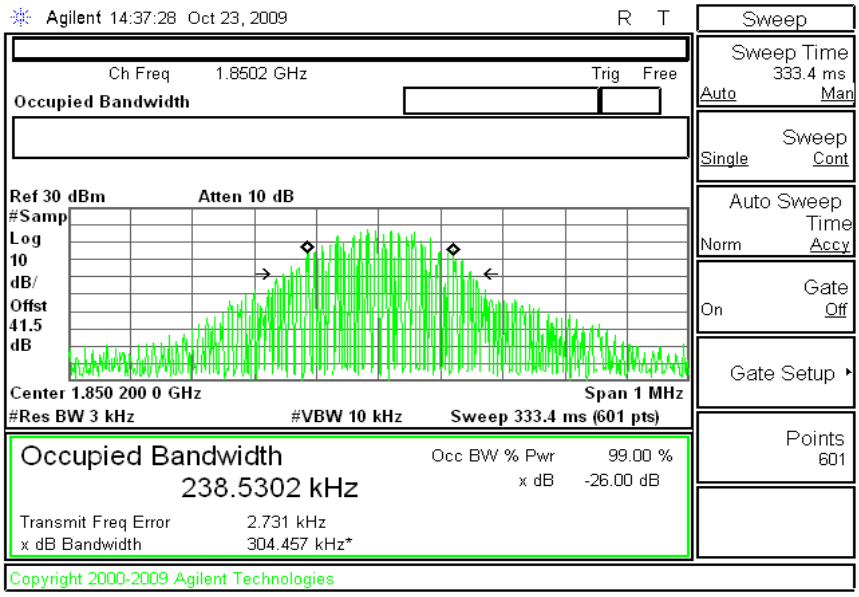


HIGH CH

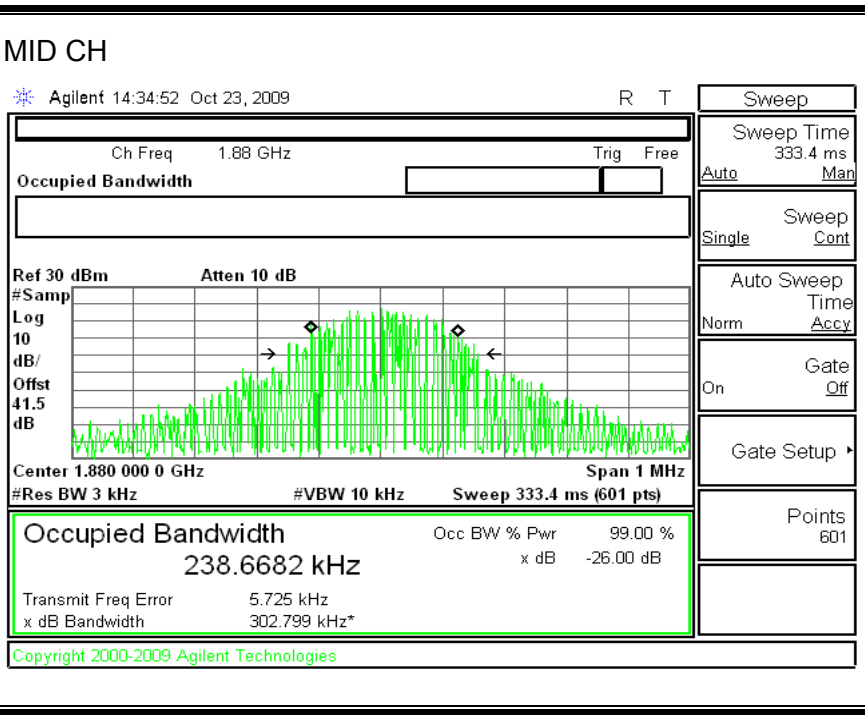


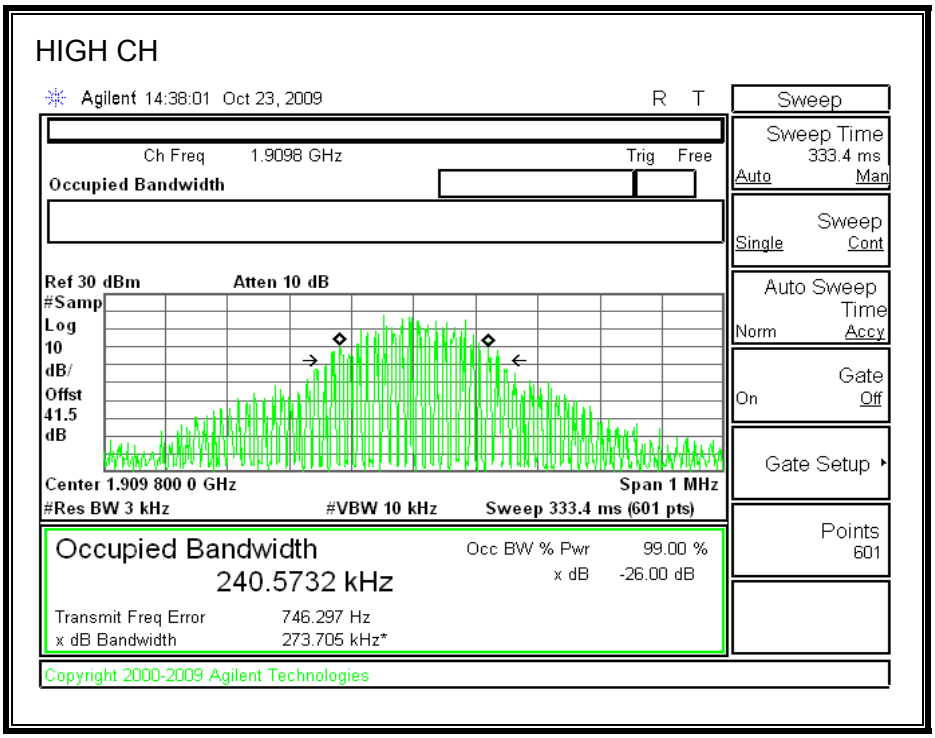
GPRS1900 PCS Band

LOW CH

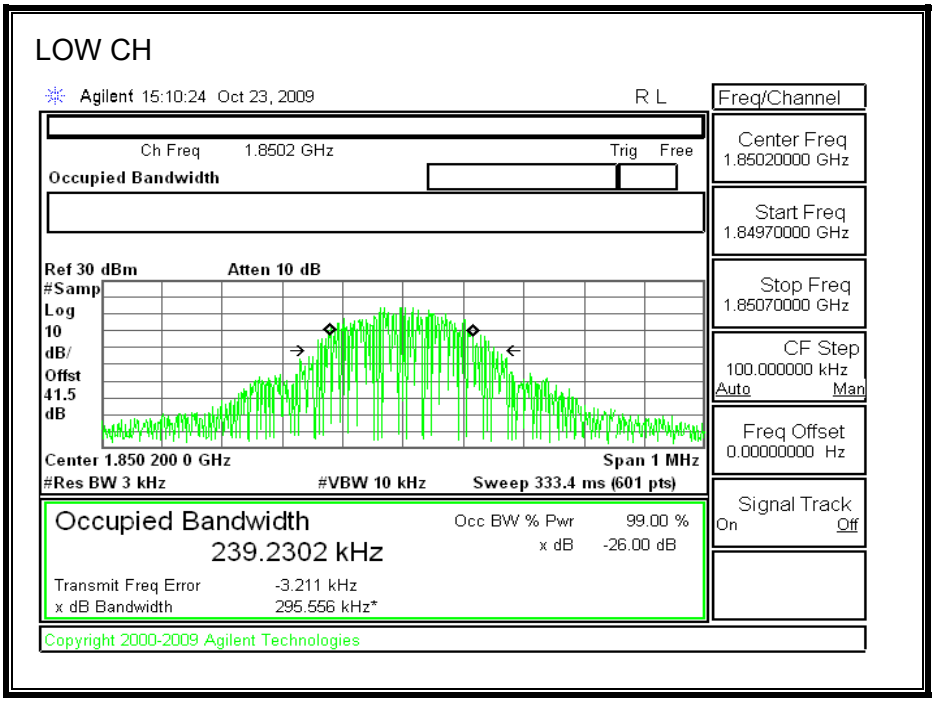


MID CH

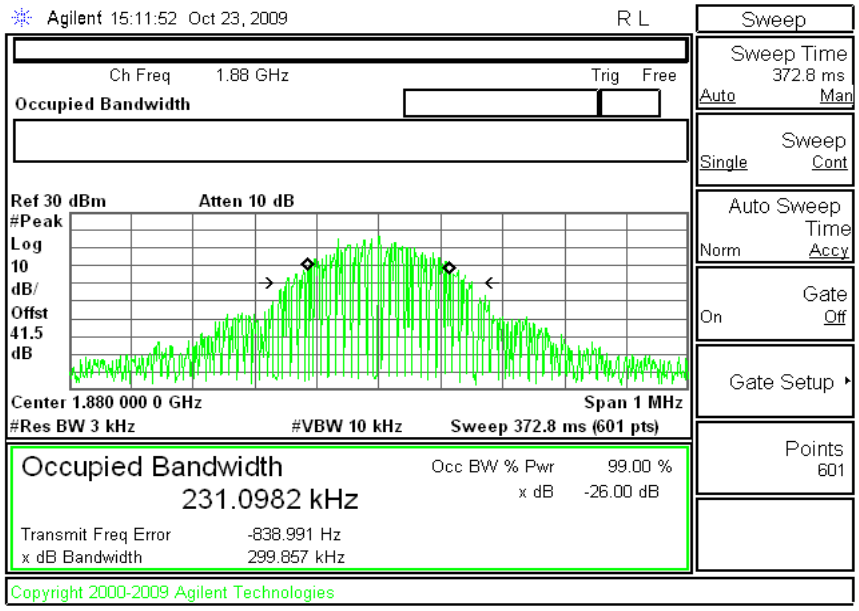




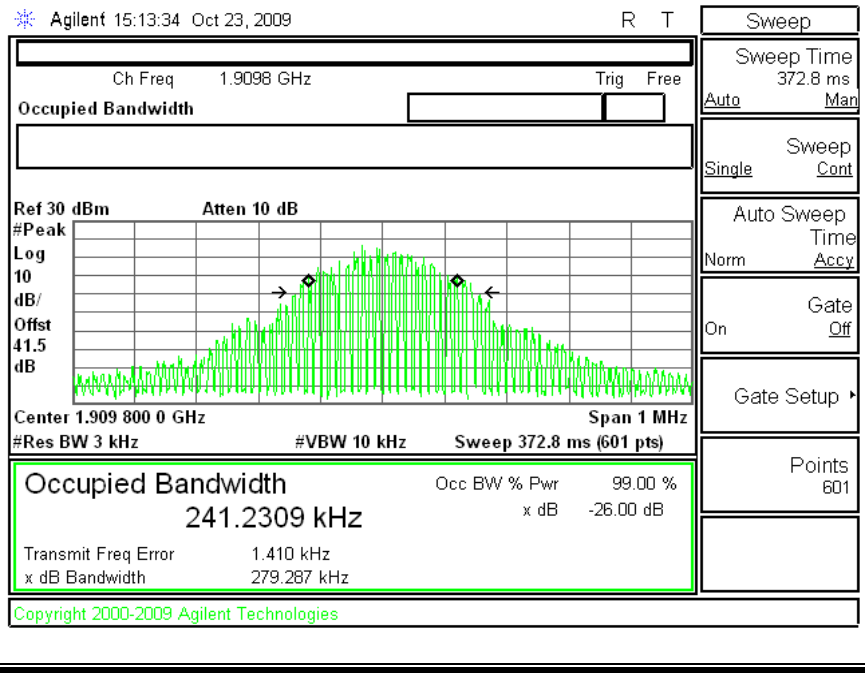
EGPRS1900 PCS Band



MID CH

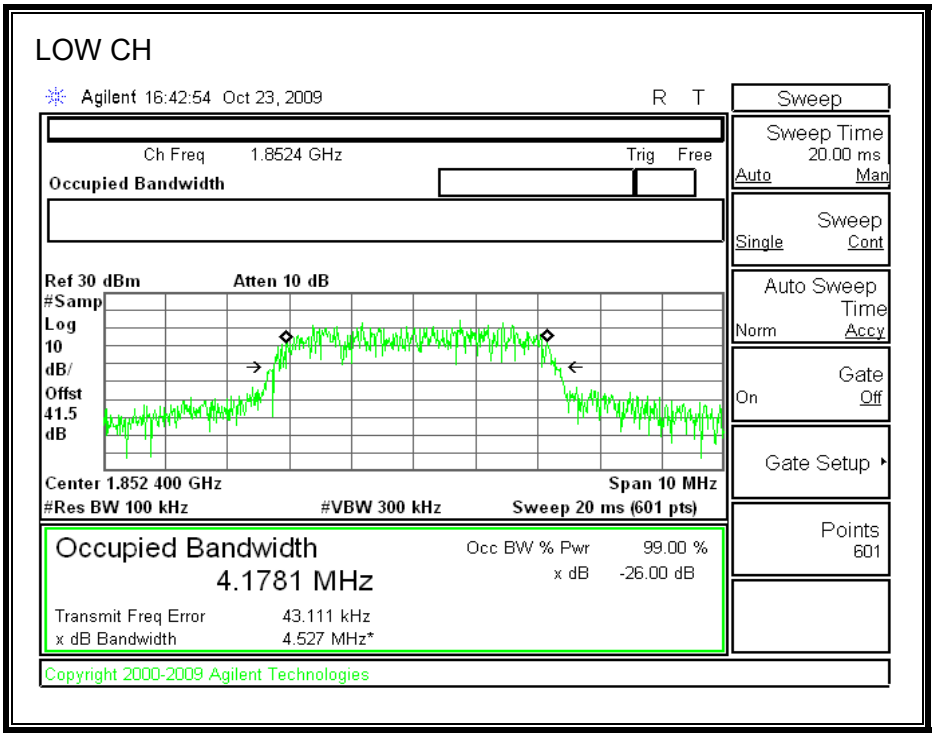


HIGH CH

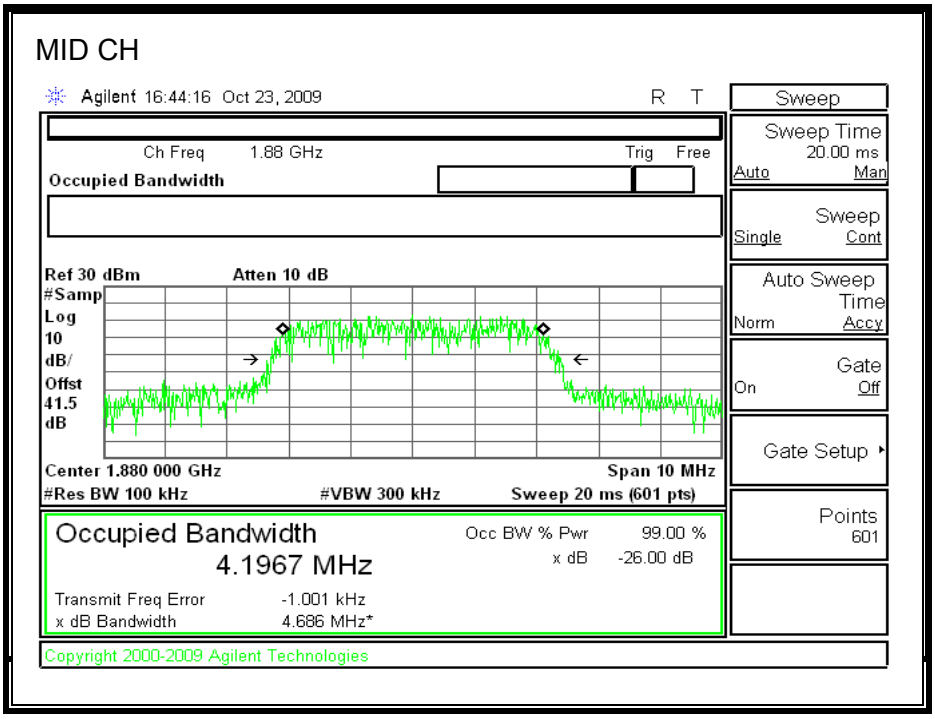


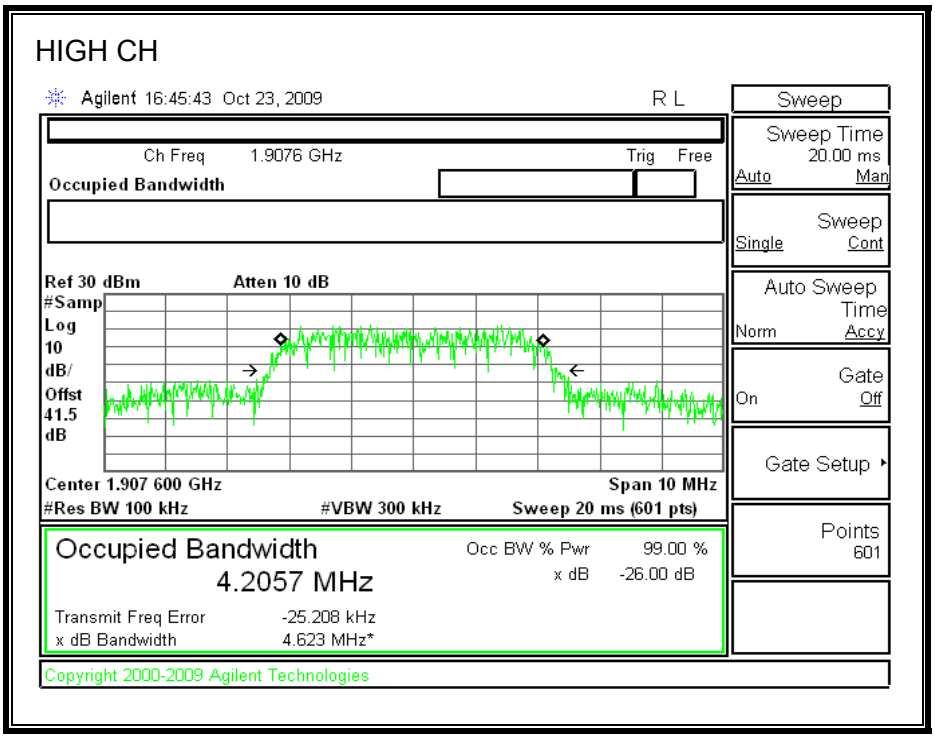
UMTS REL99 PCS Band

LOW CH

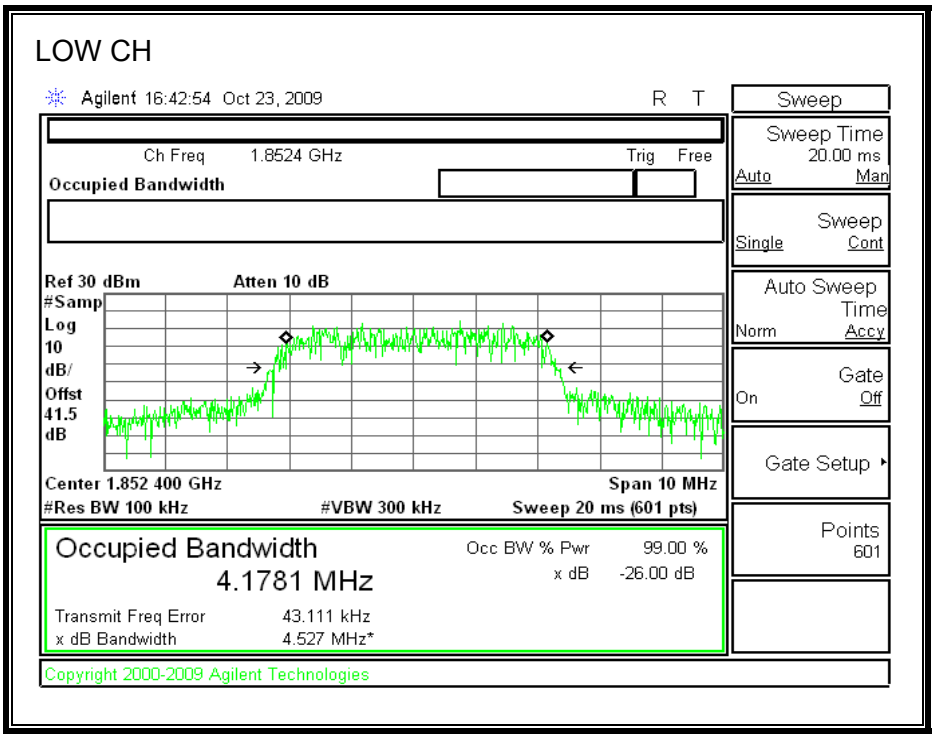


MID CH

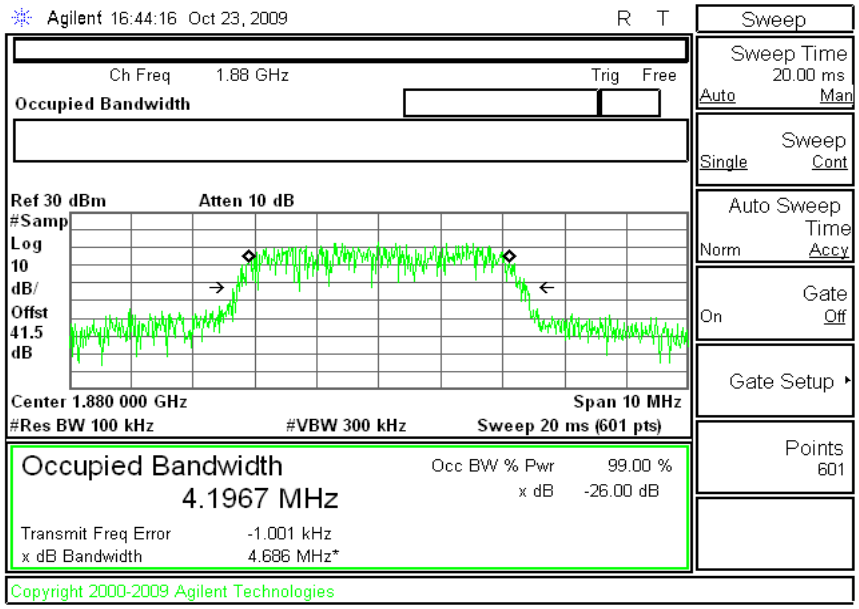




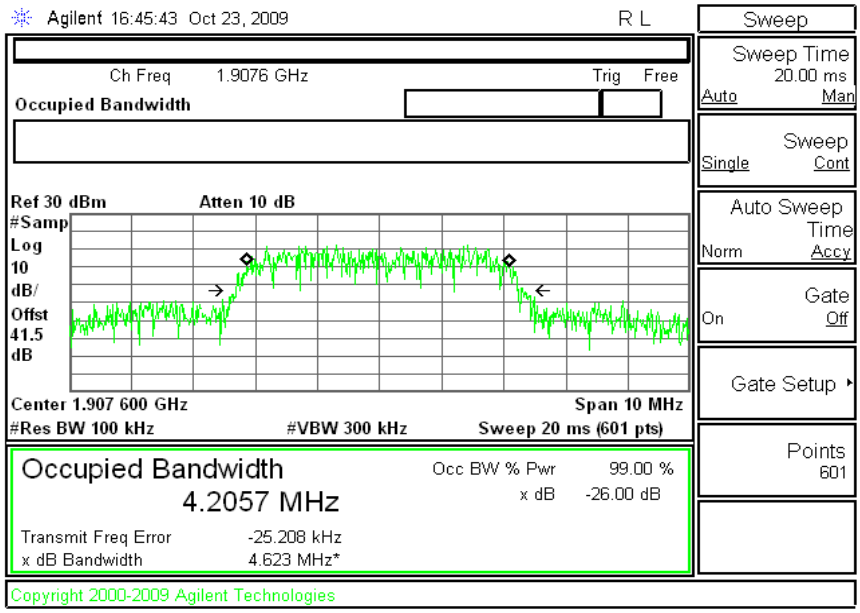
UMTS HSDPA PCS Band



MID CH



HIGH CH



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

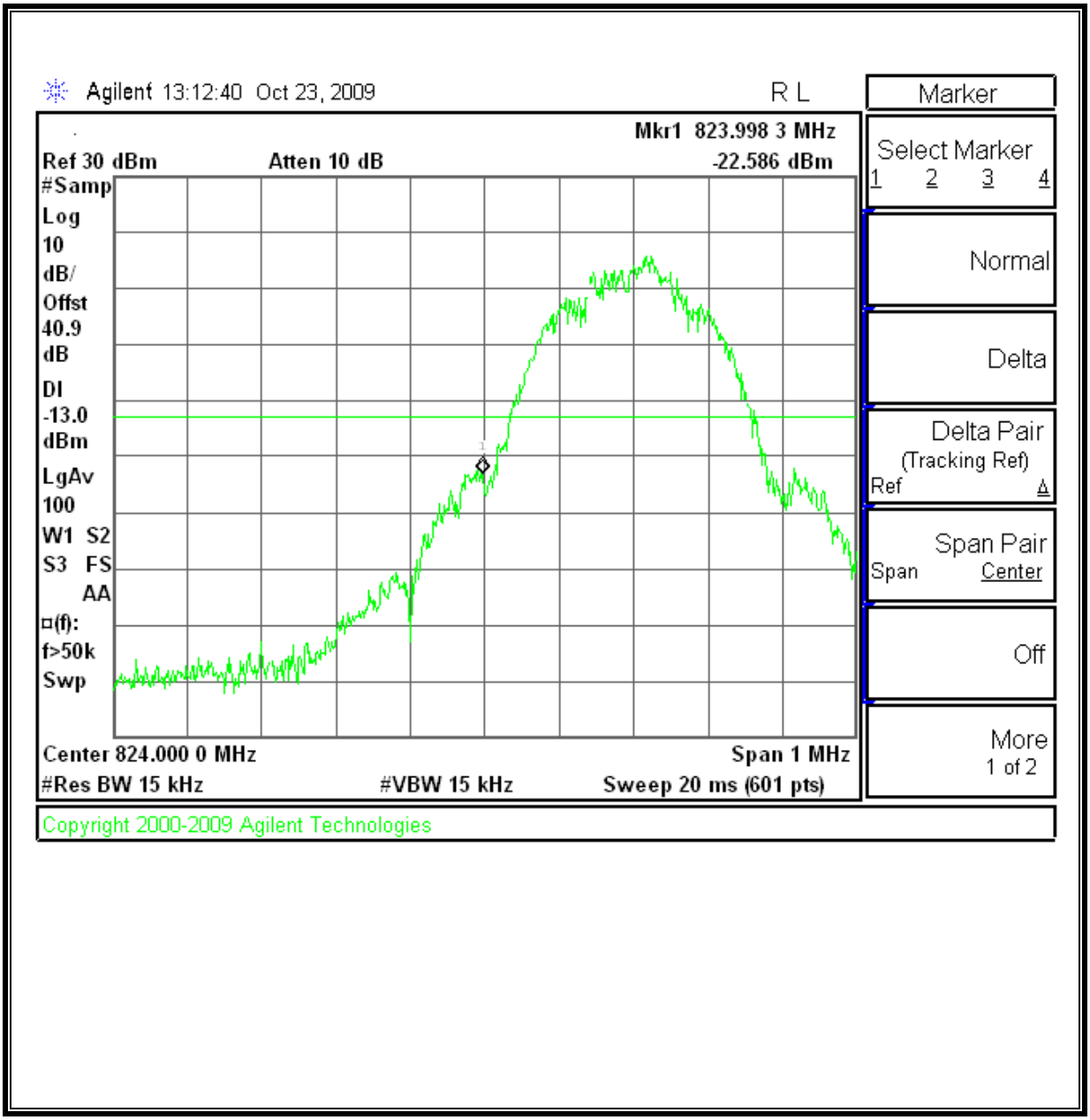
- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA Subtest 2

RESULTS

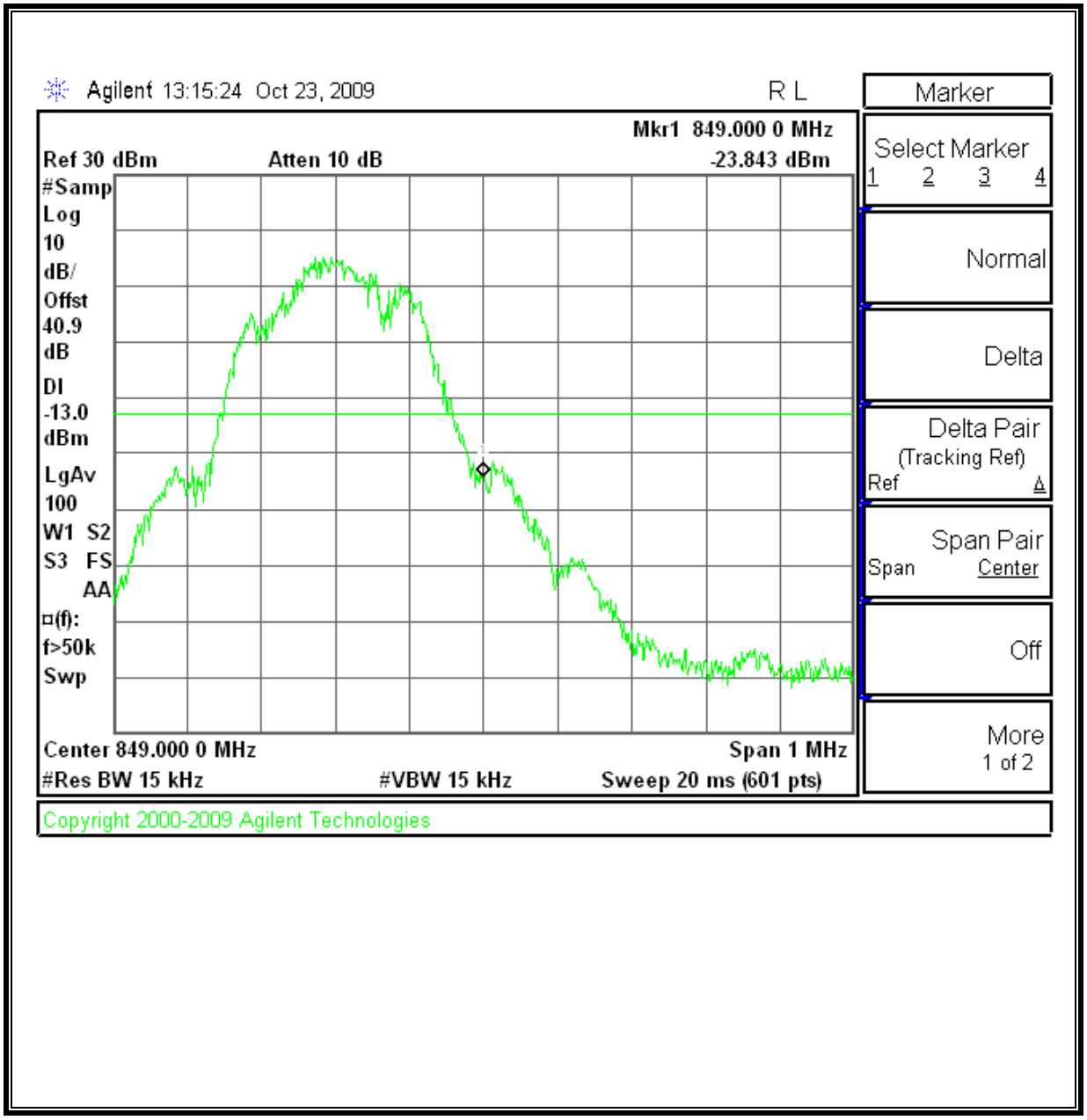
See the following pages.

GPRS850

Low Channel Band Edge

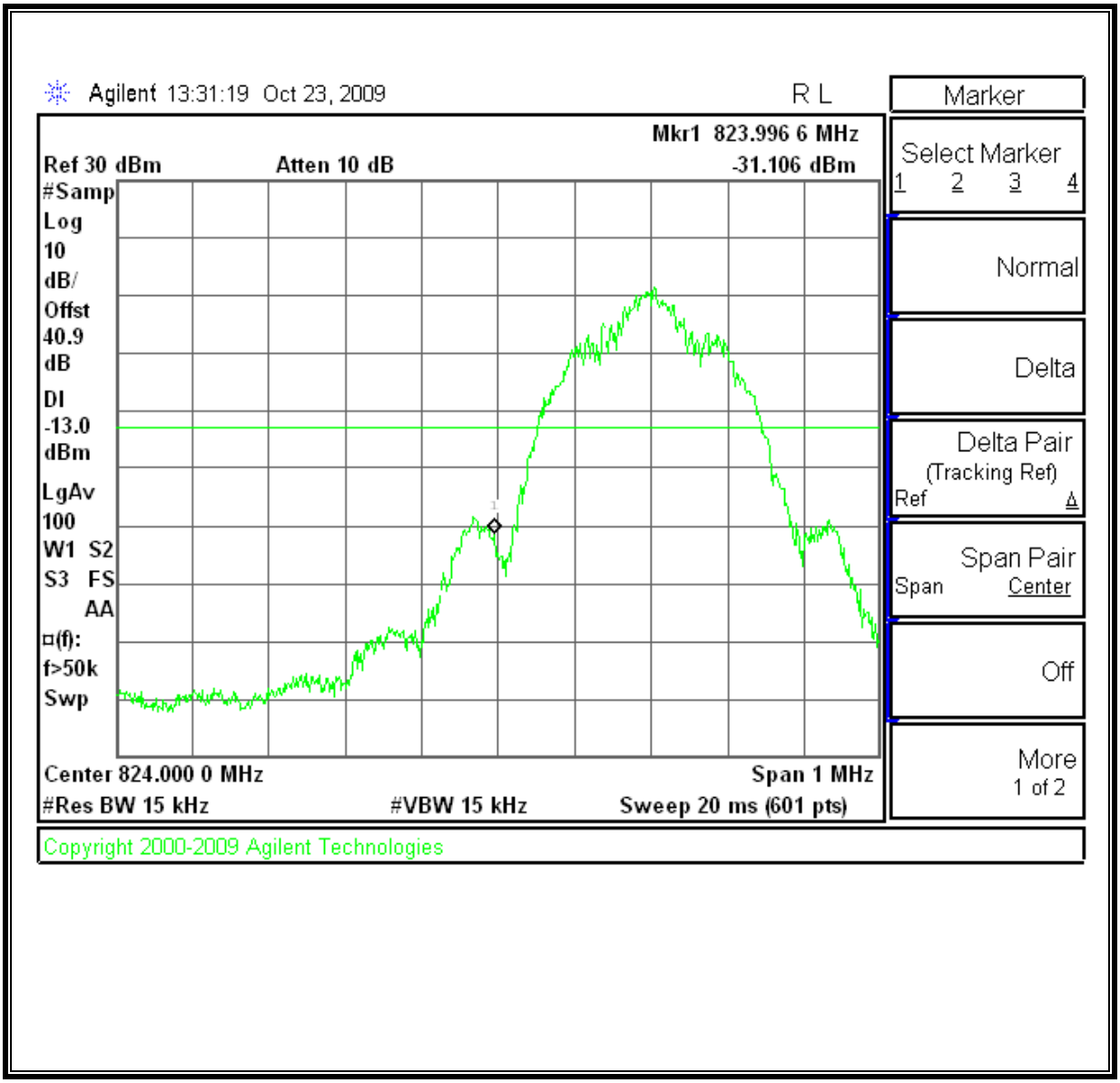


High Channel Band Edge

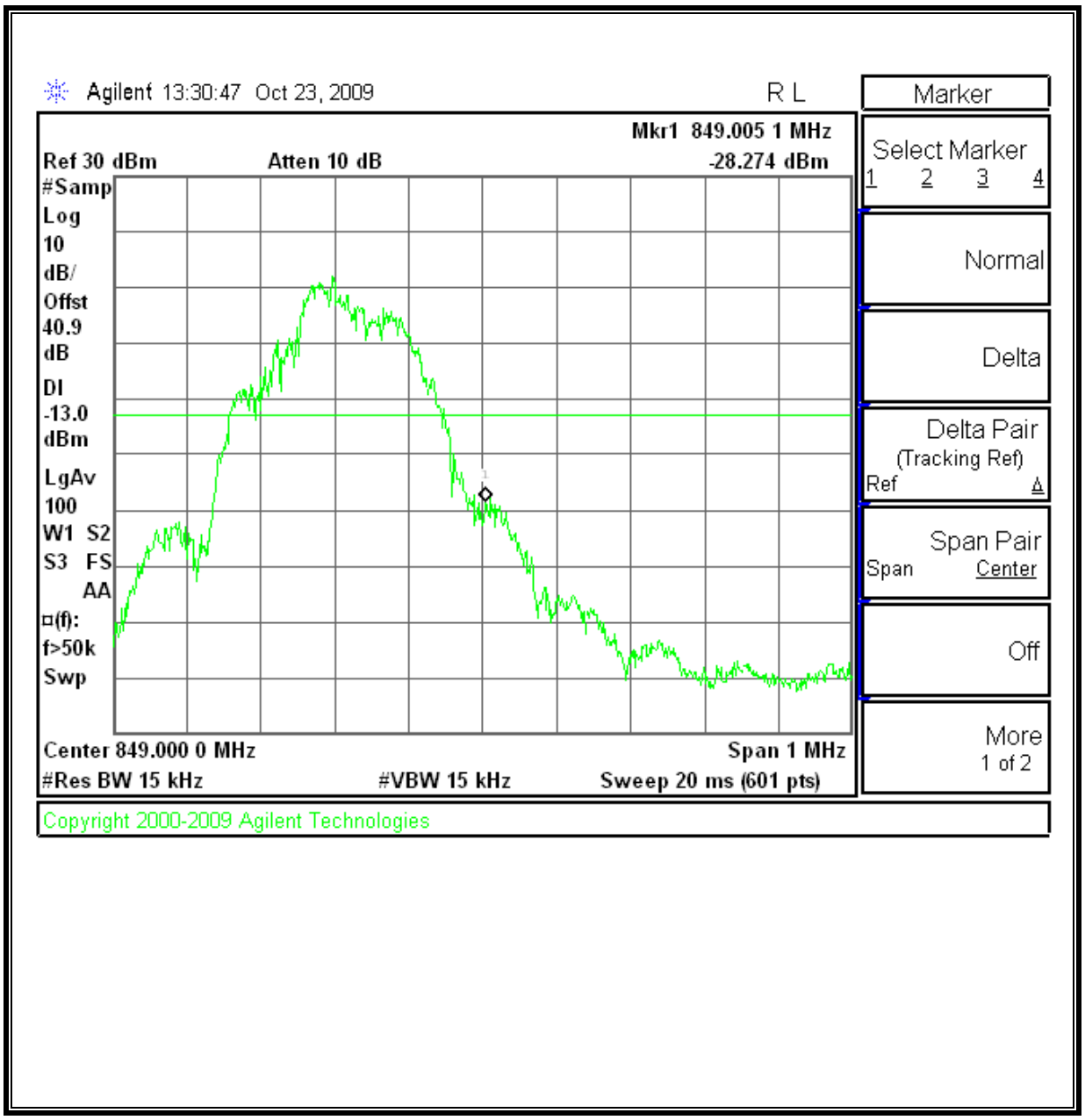


EGPRS850

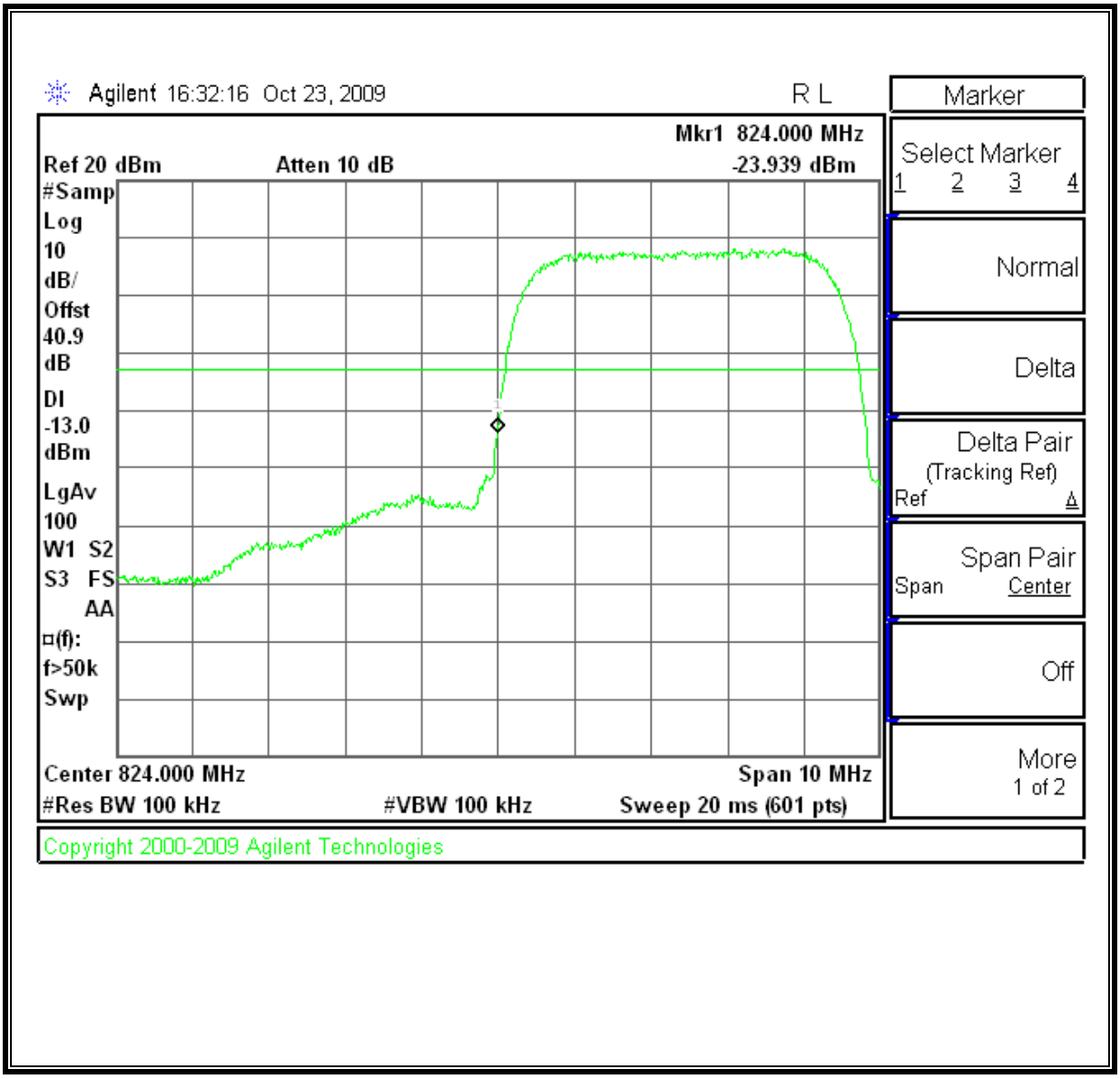
Low Channel Band Edge



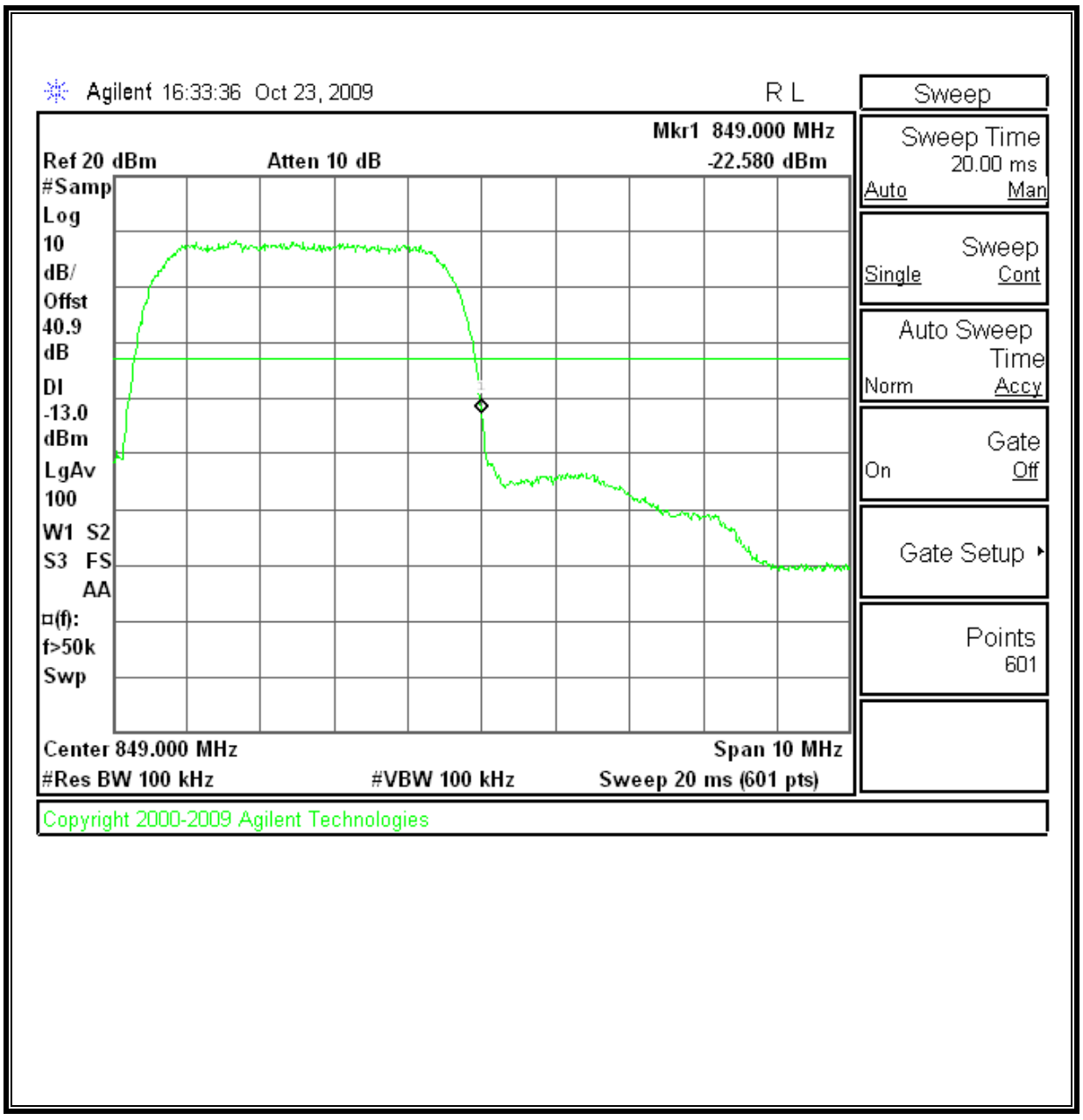
High Channel Band Edge



UMTS, REL99 Low Channel Band Edge

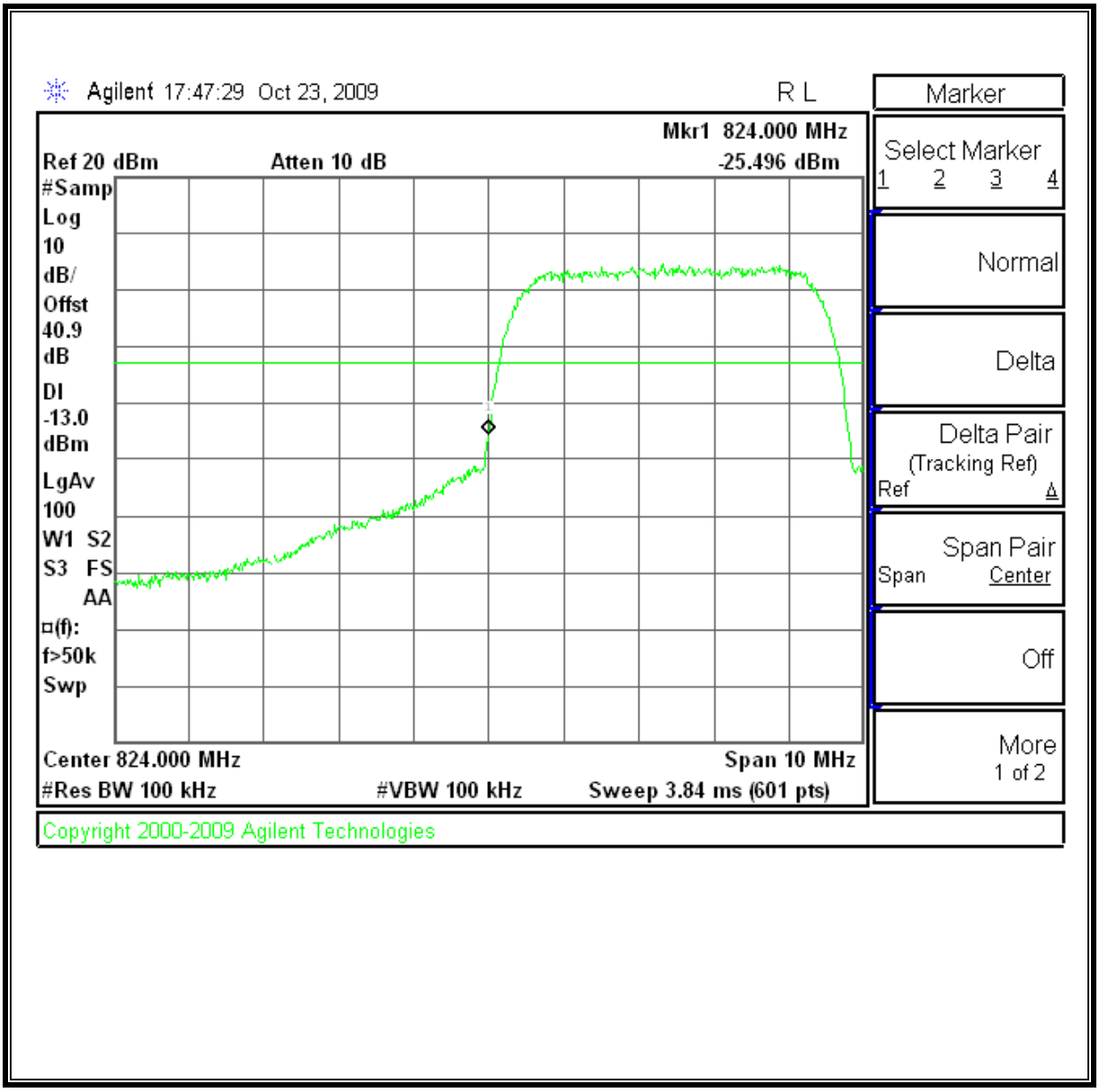


High Channel Band Edge

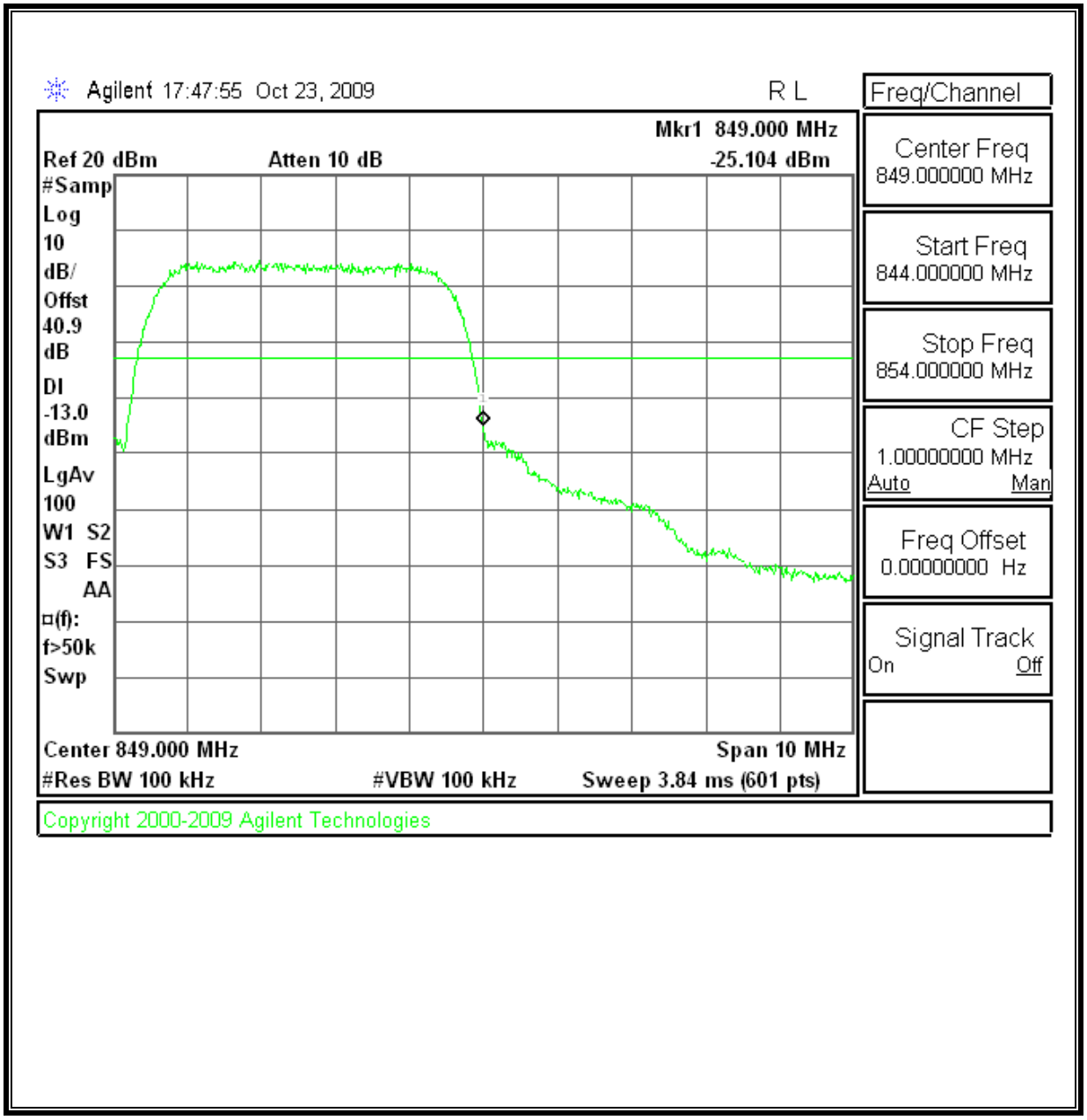


UMTS, HSDPA CELL

Low Channel Band Edge

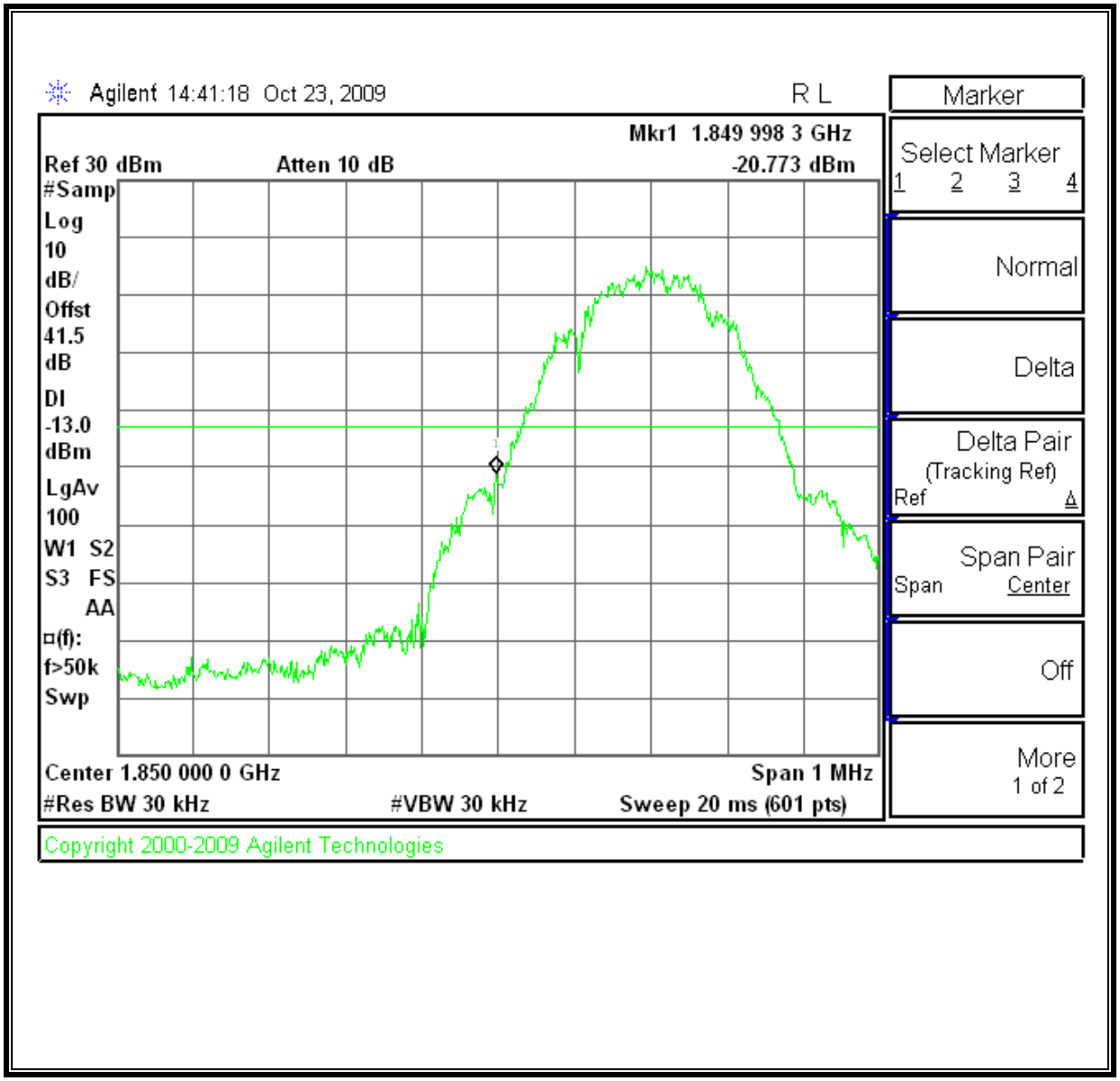


High Channel Band Edge

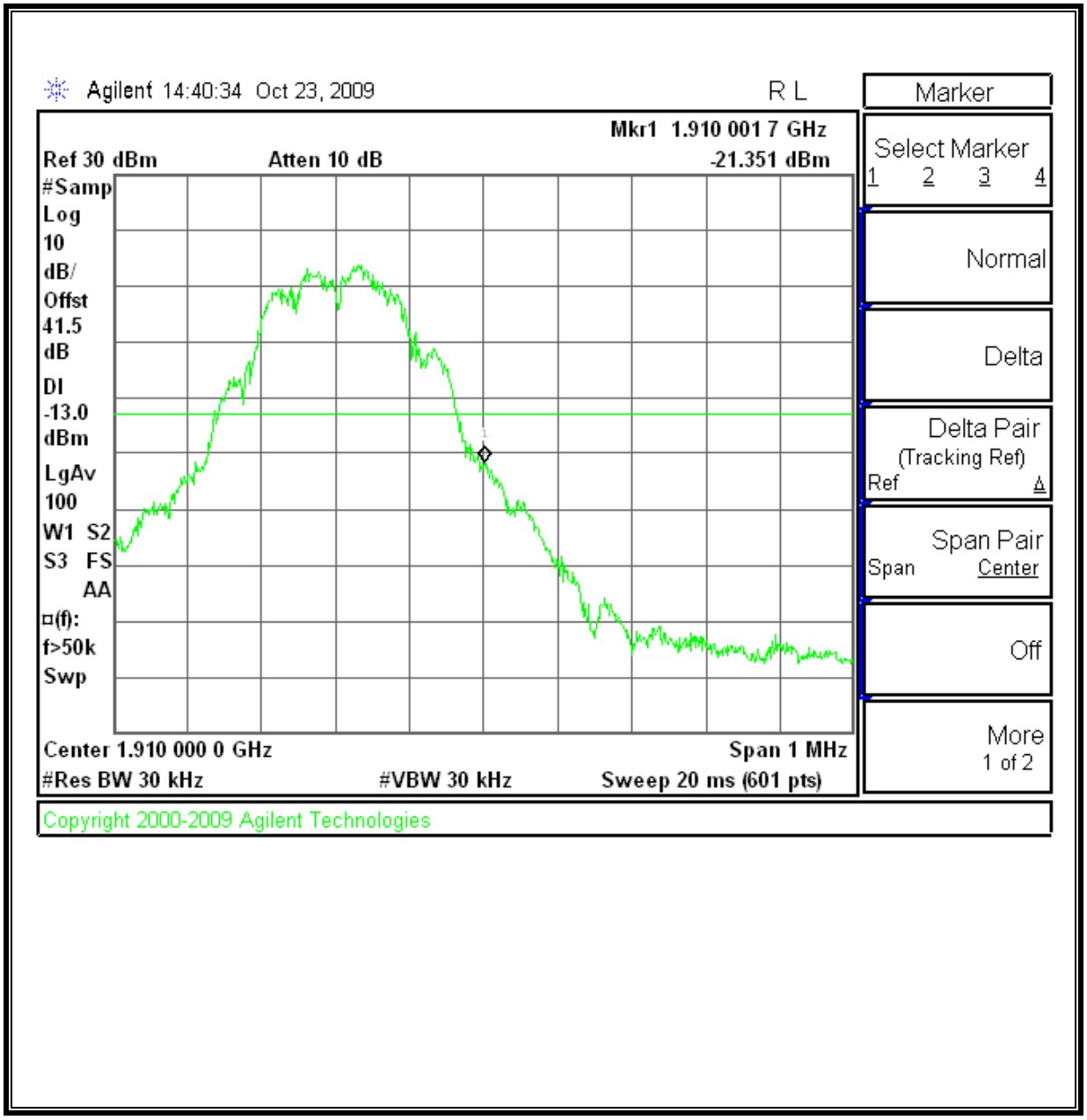


GPRS1900

Low Channel Band Edge

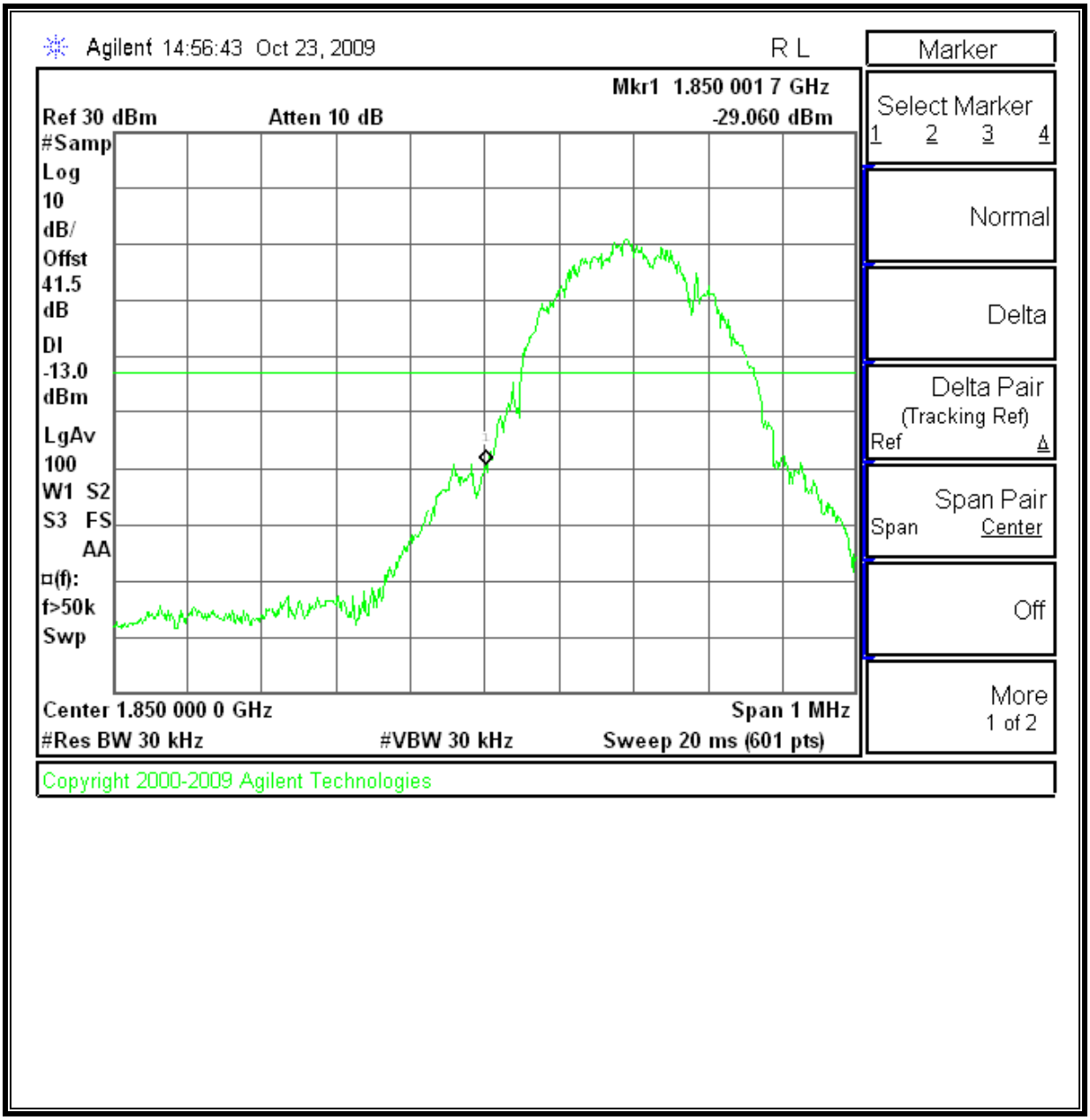


High Channel Band Edge

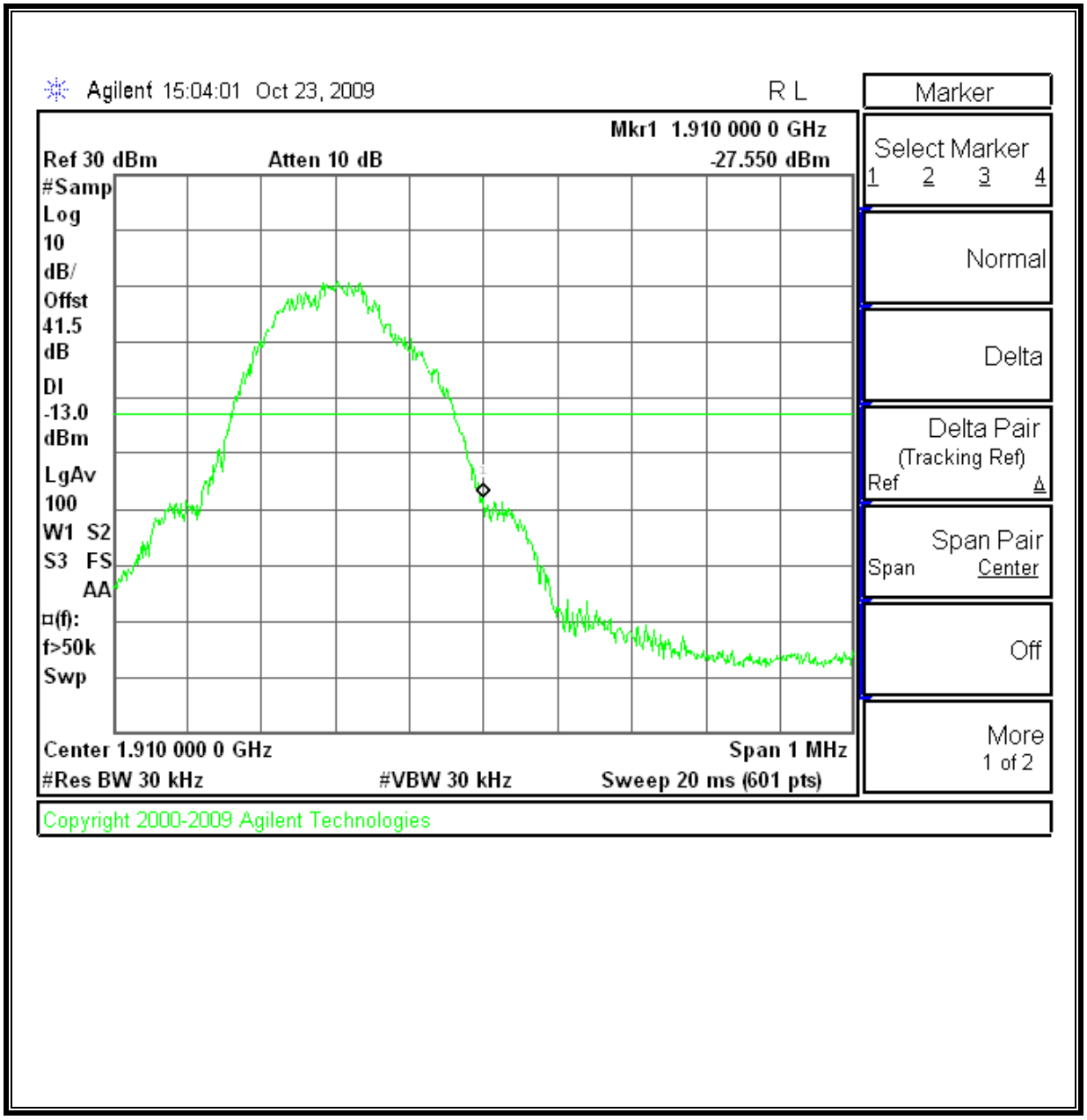


EGPRS1900

Low Channel Band Edge

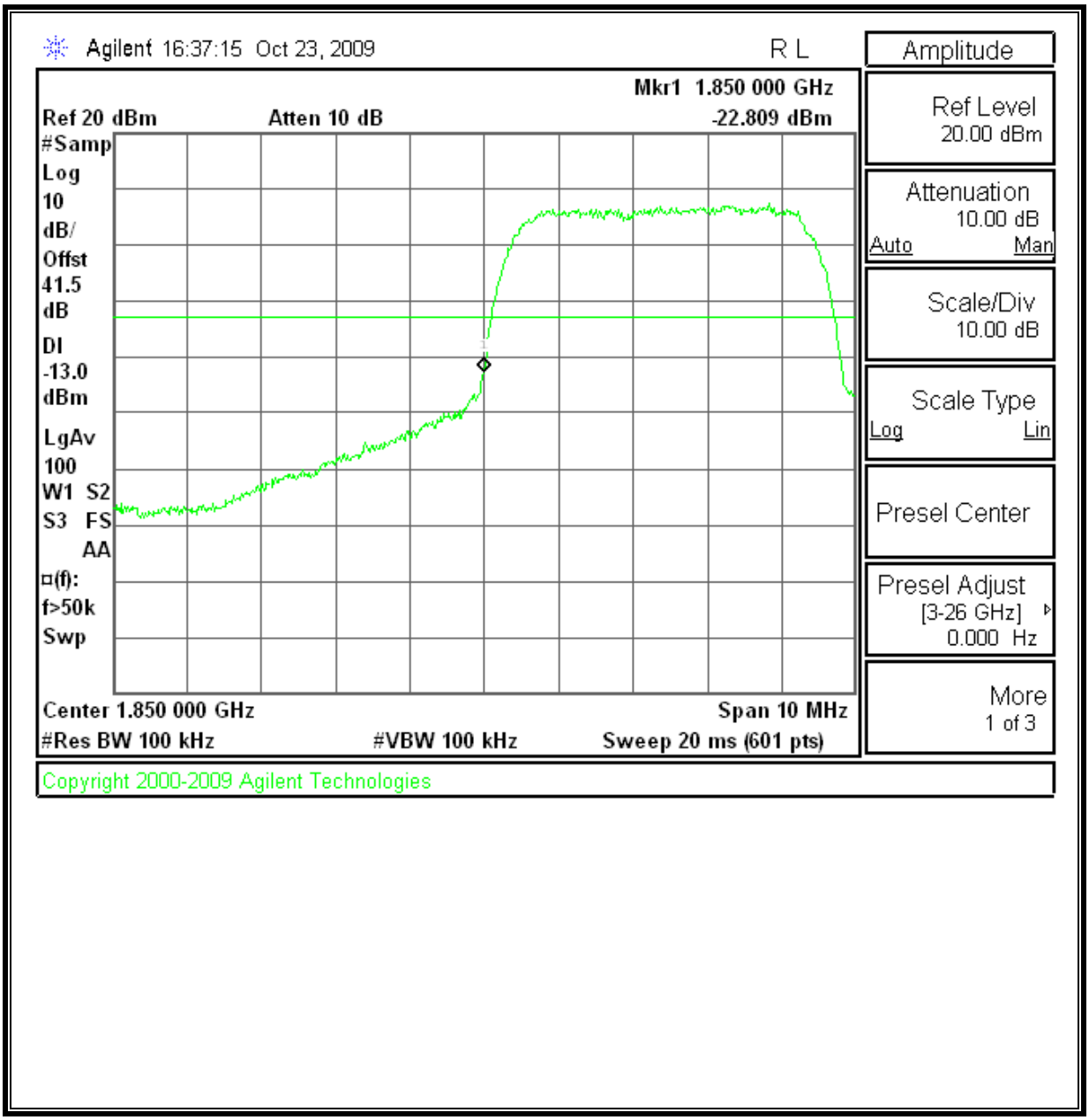


High Channel Band Edge

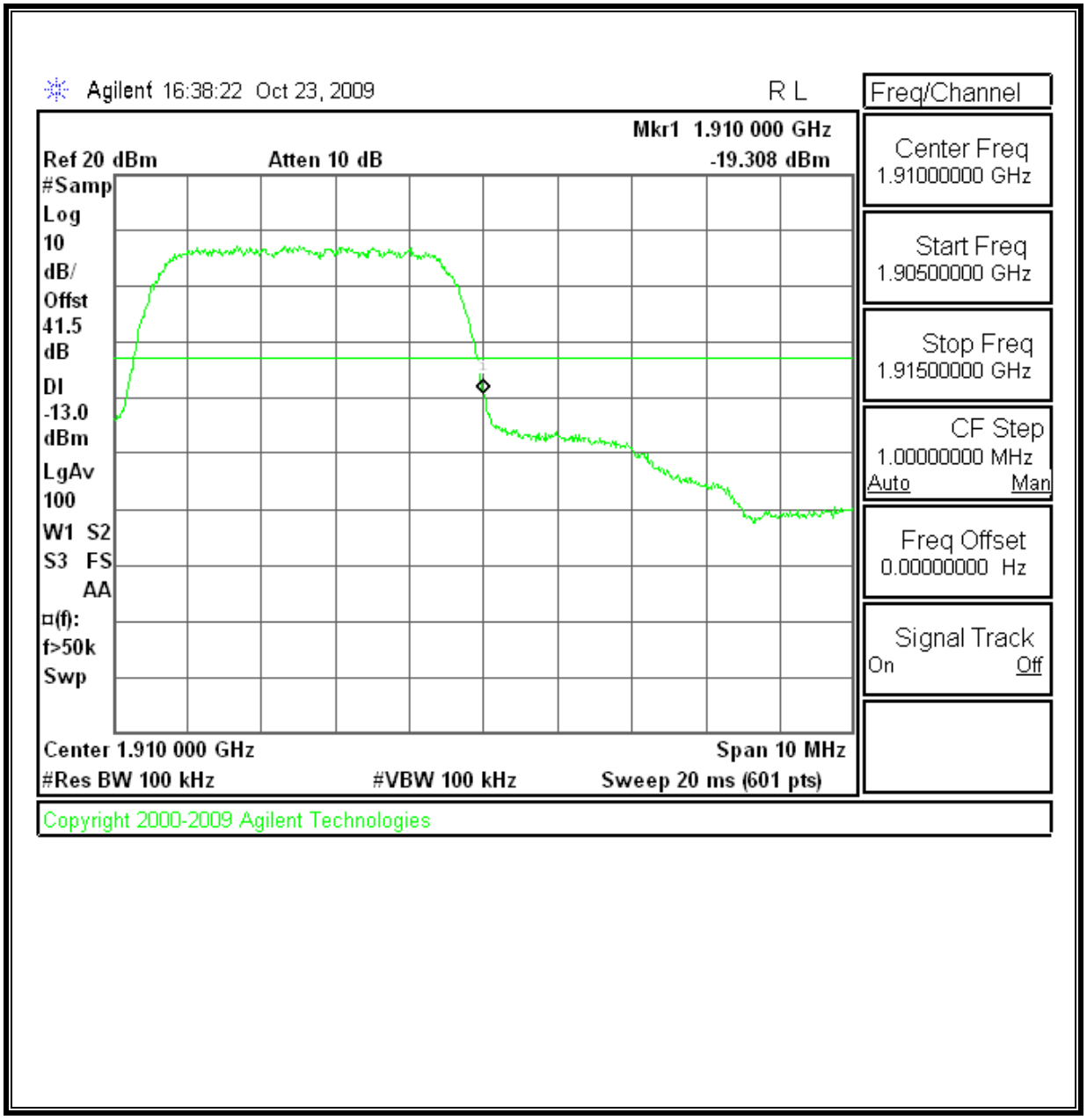


UMTS, REL99 PCS BAND

Low Channel Band Edge

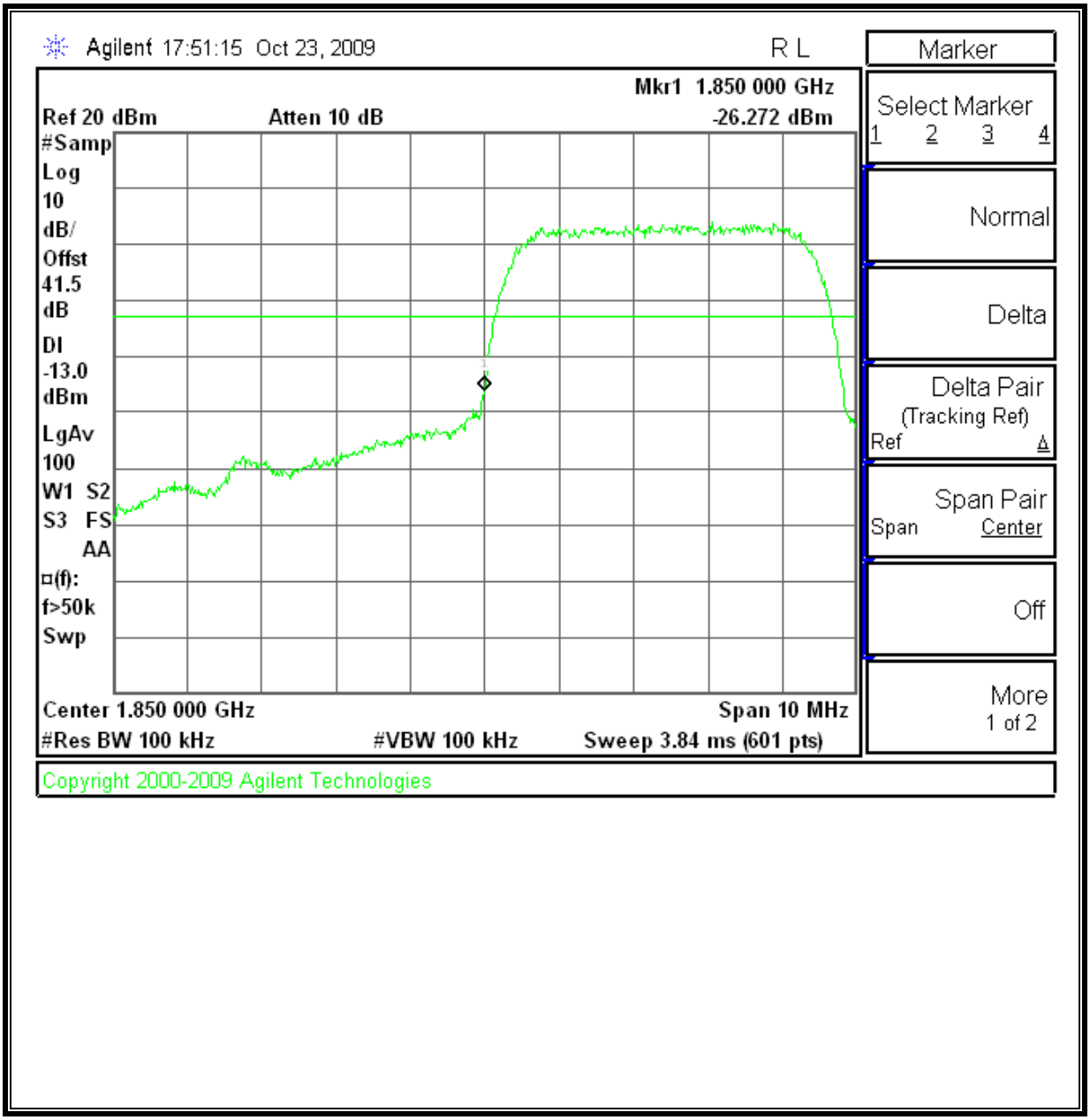


High Channel Band Edge

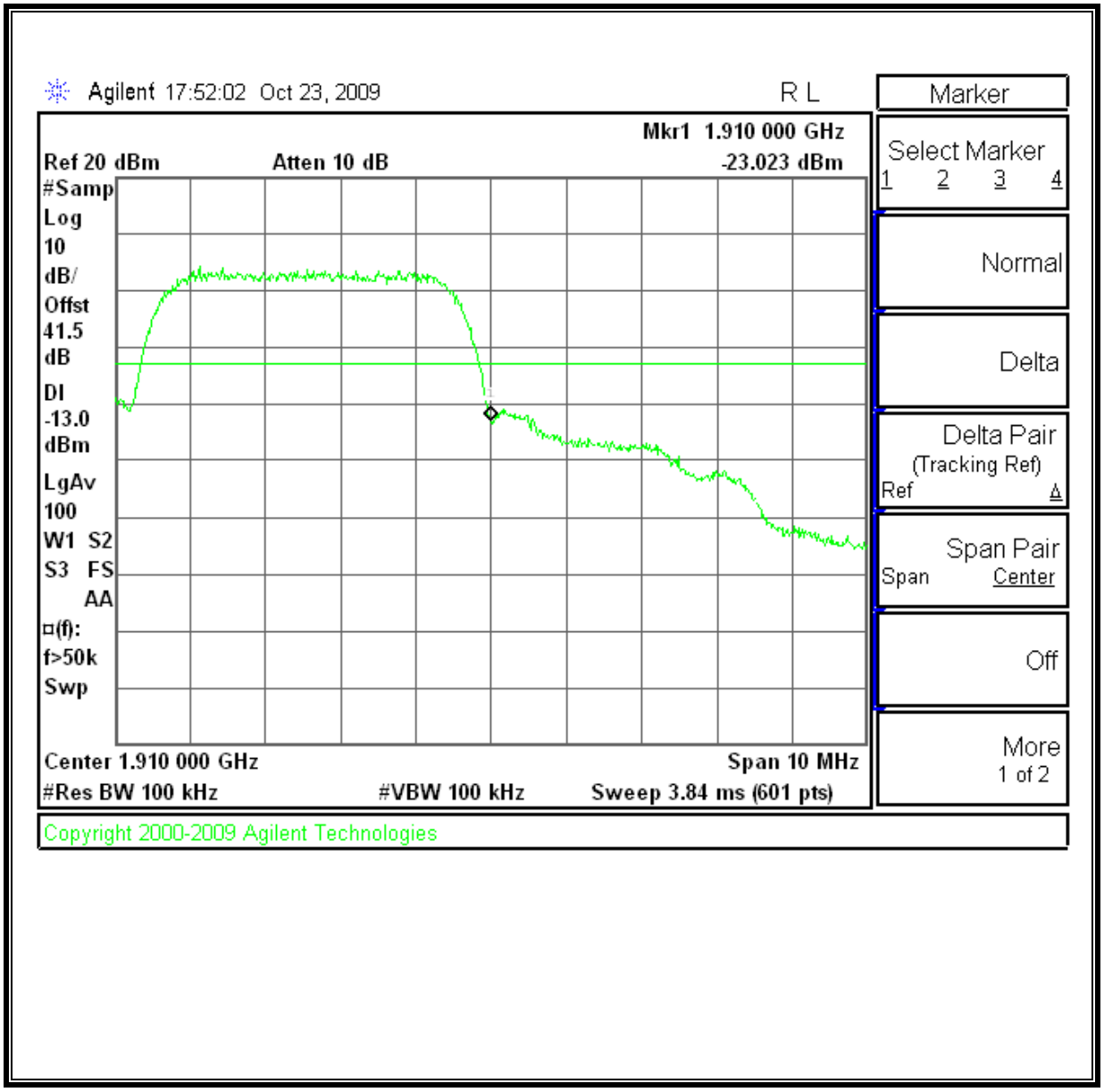


UMTS HSDPA PCS BAND

Low 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

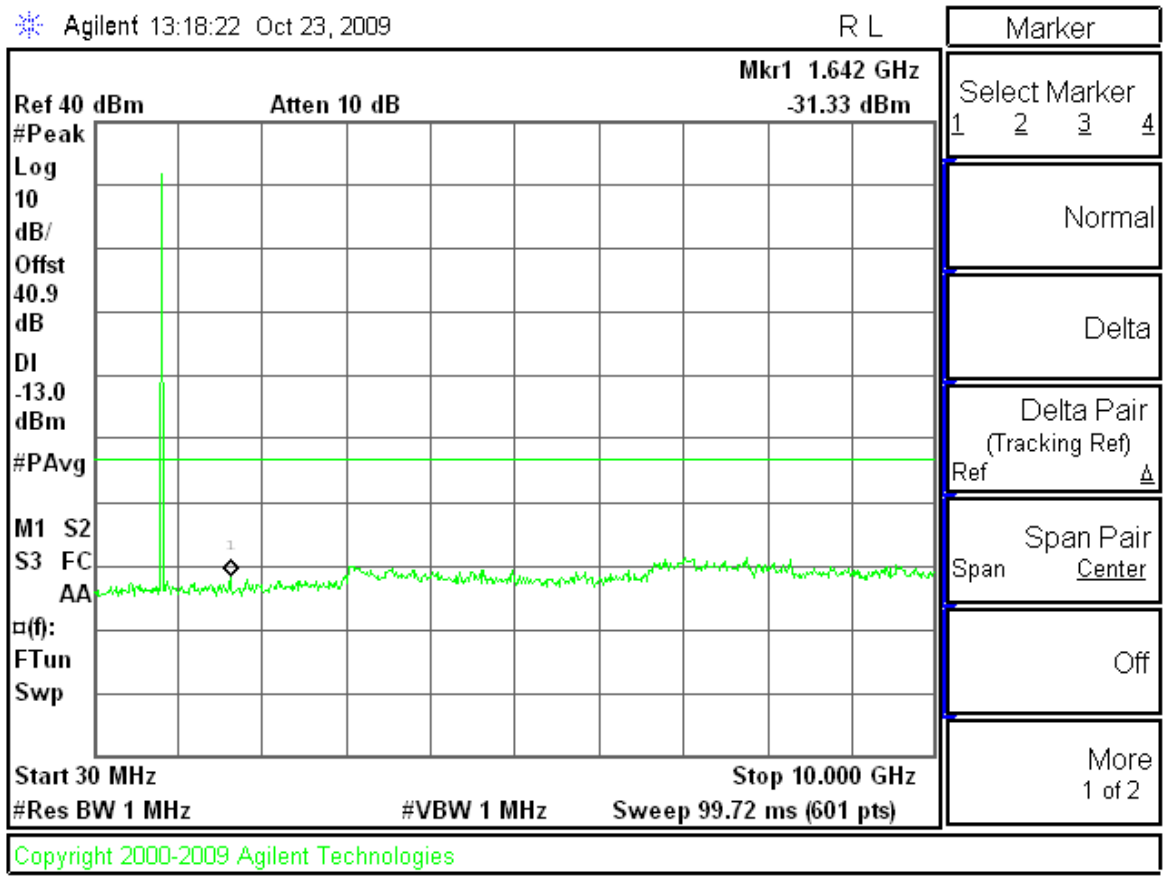
- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA Subtest 2

RESULTS

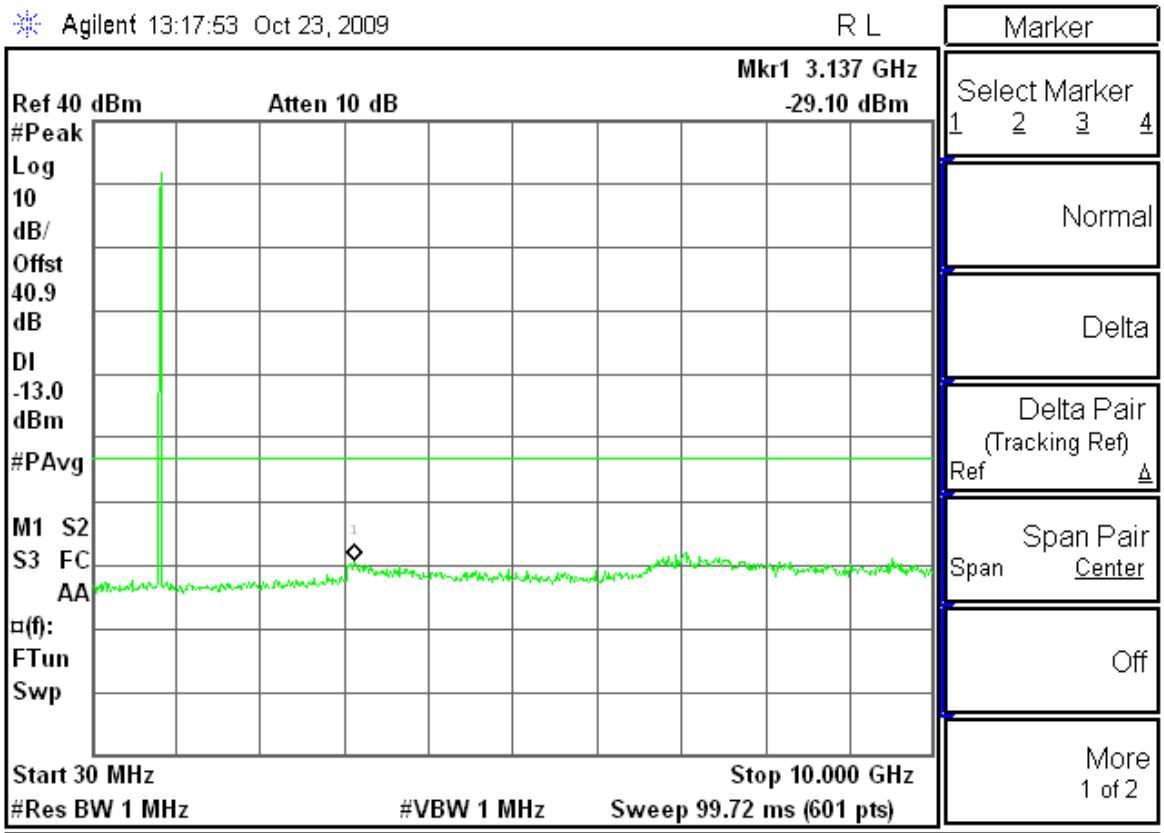
See the following pages.

GPRS Mode (Cellular Band)

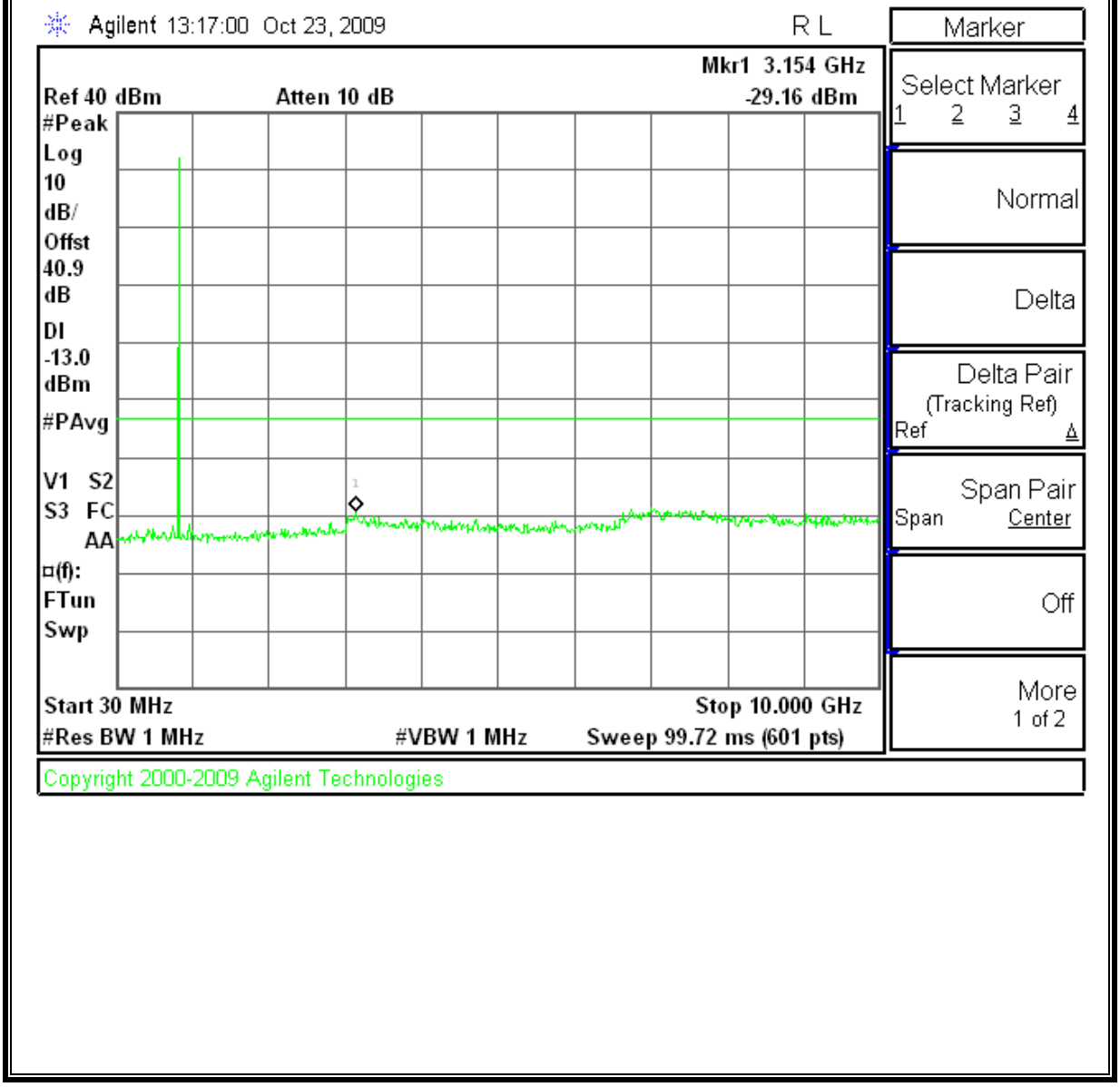
LOW CH



MID CH

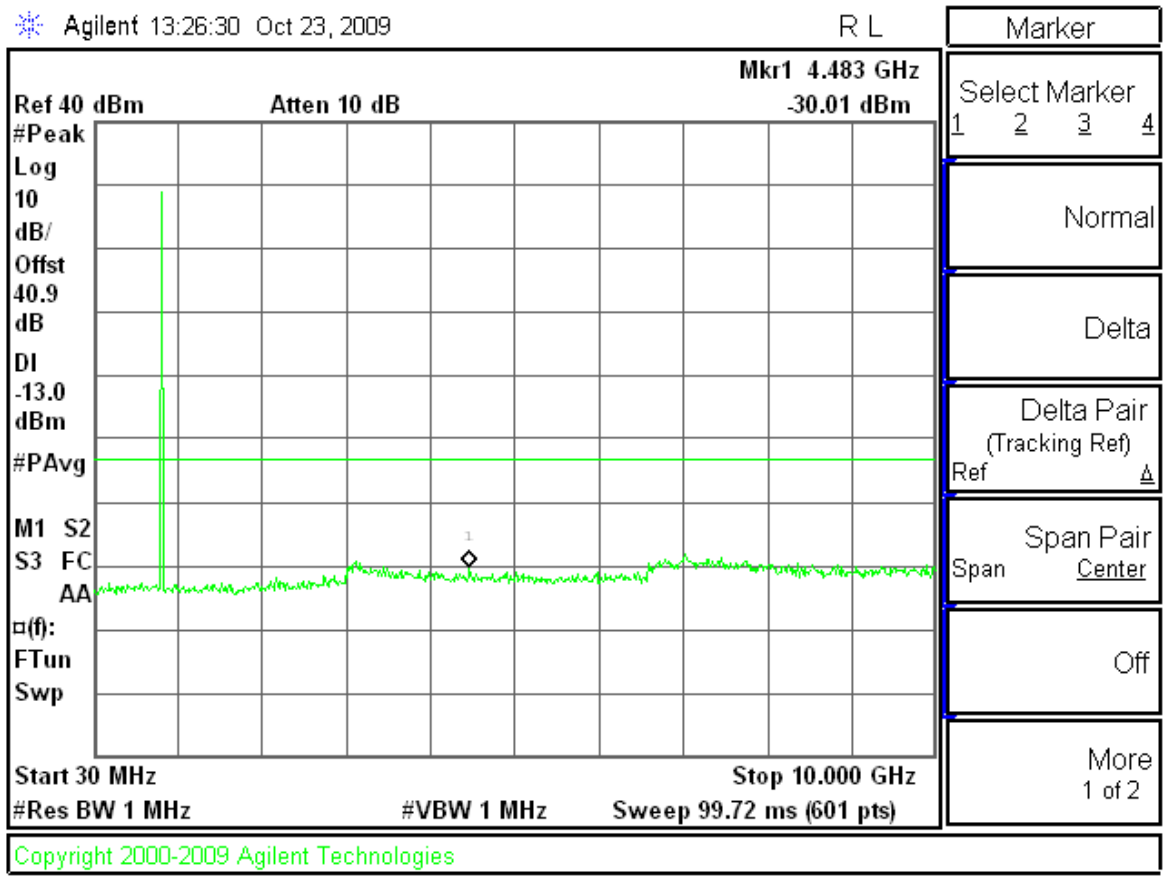


HIGH CH

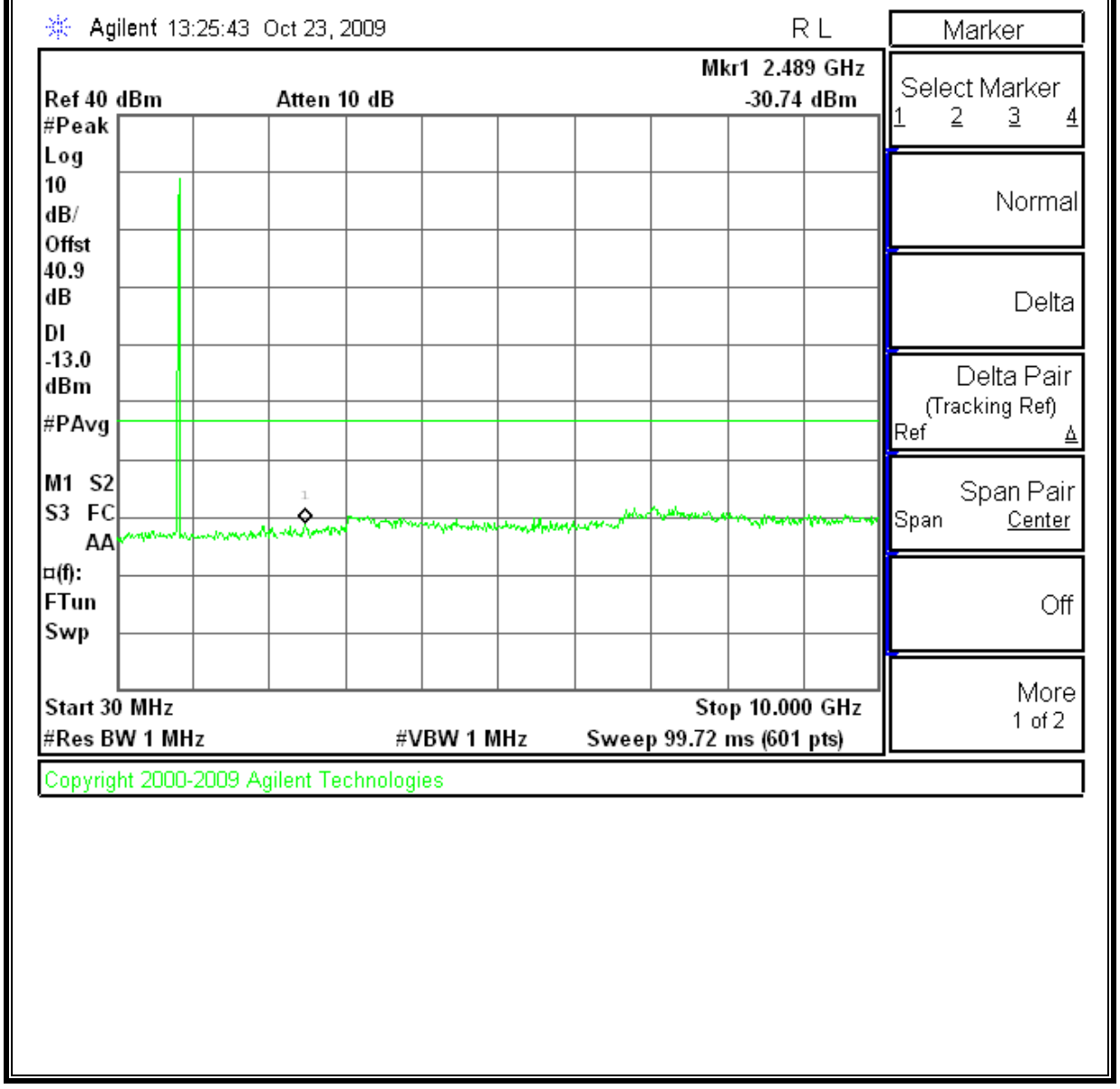


EGPRS Mode (Cellular Band)

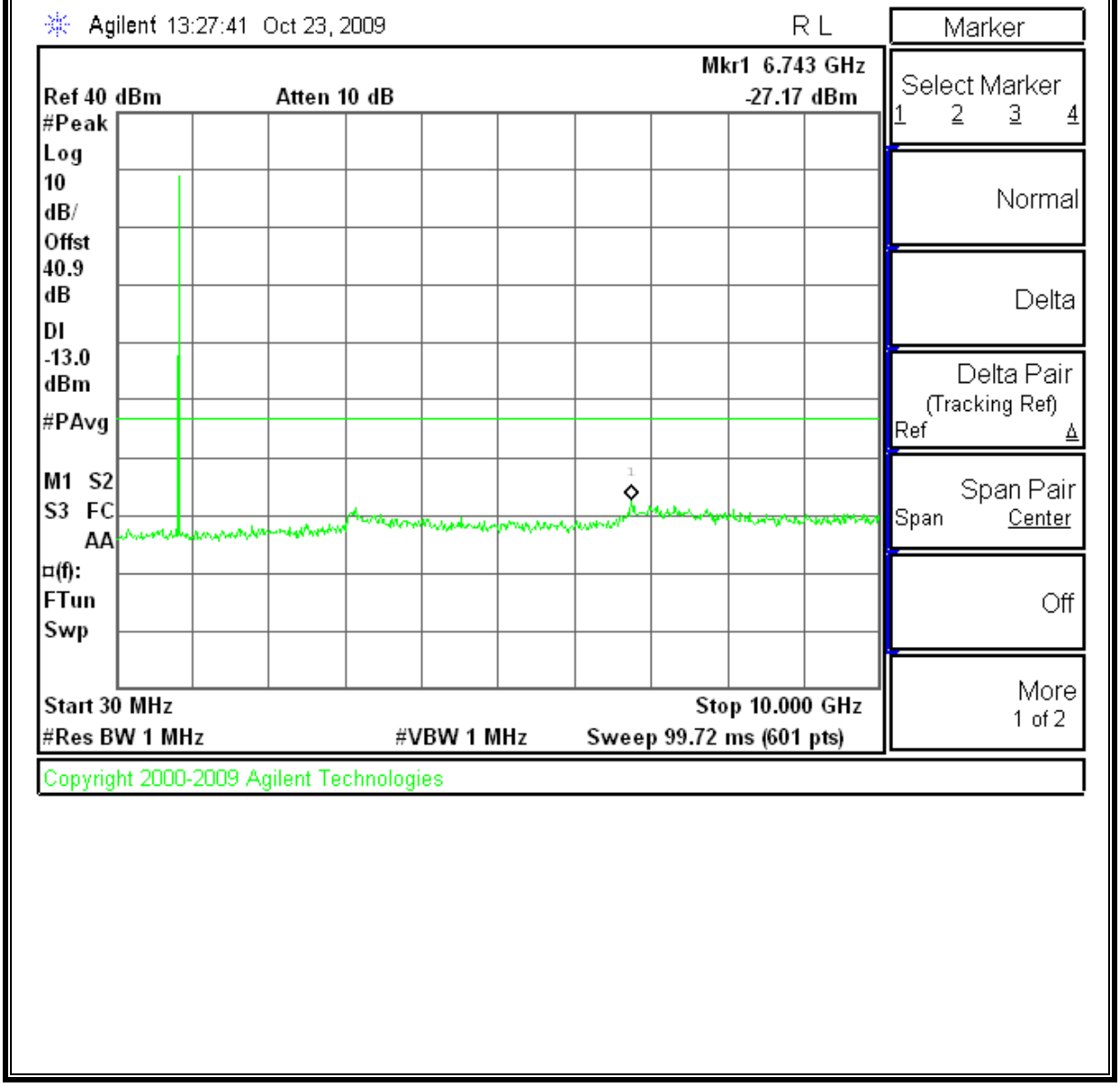
LOW CH



MID CH

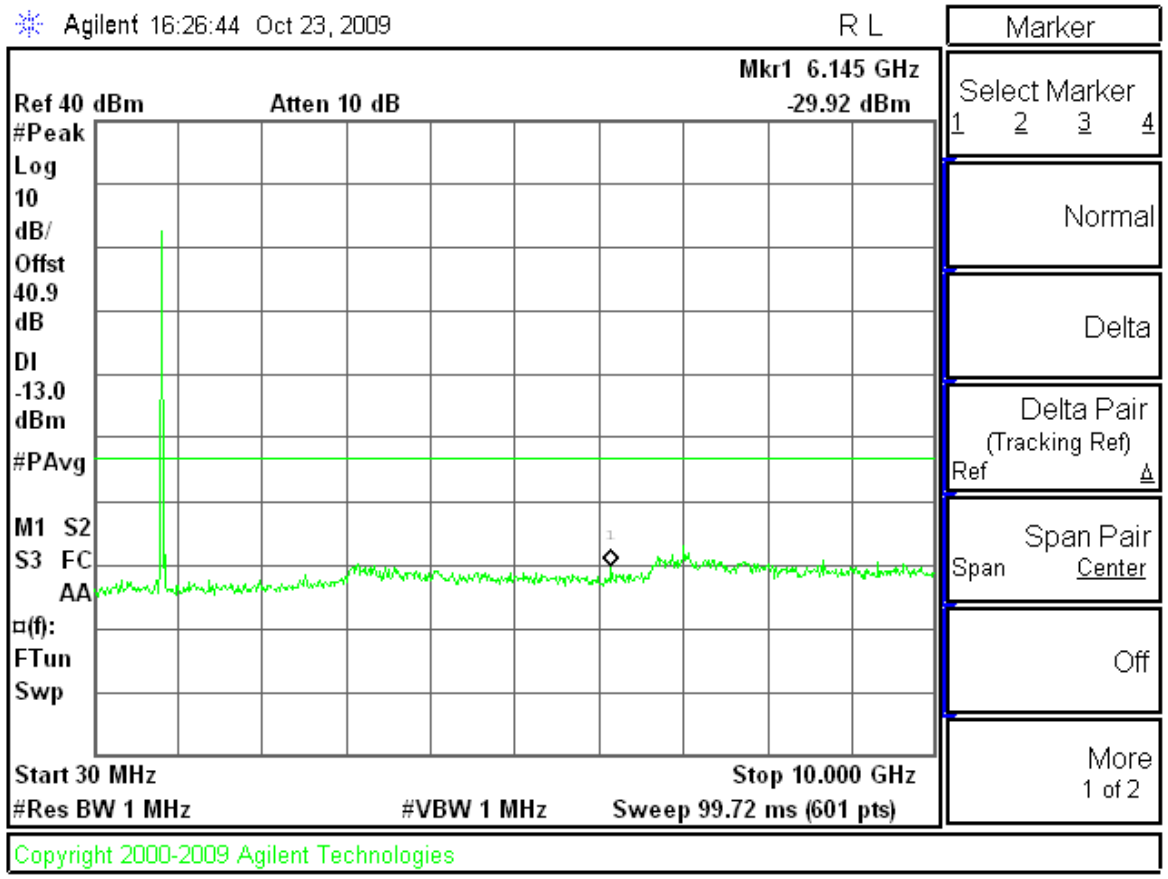


HIGH CH

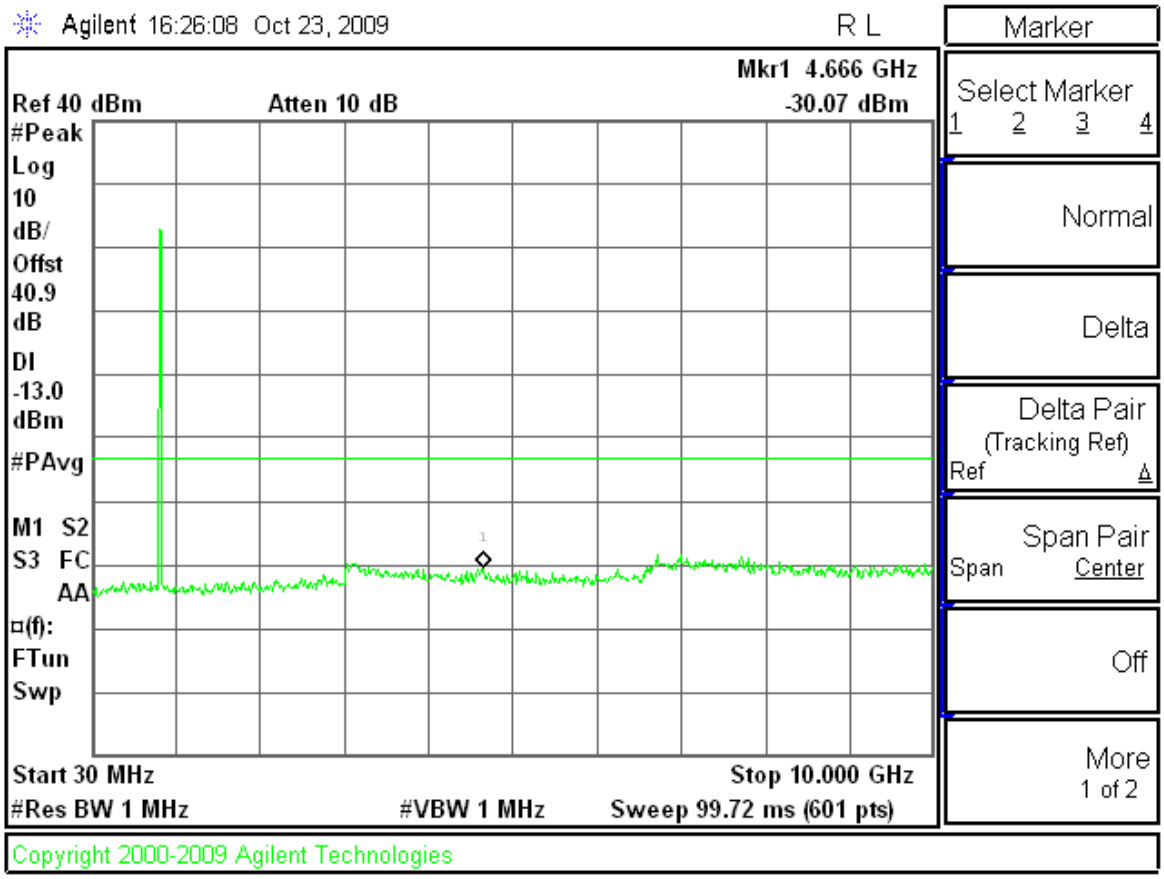


UMTS REL99 CELL BAND

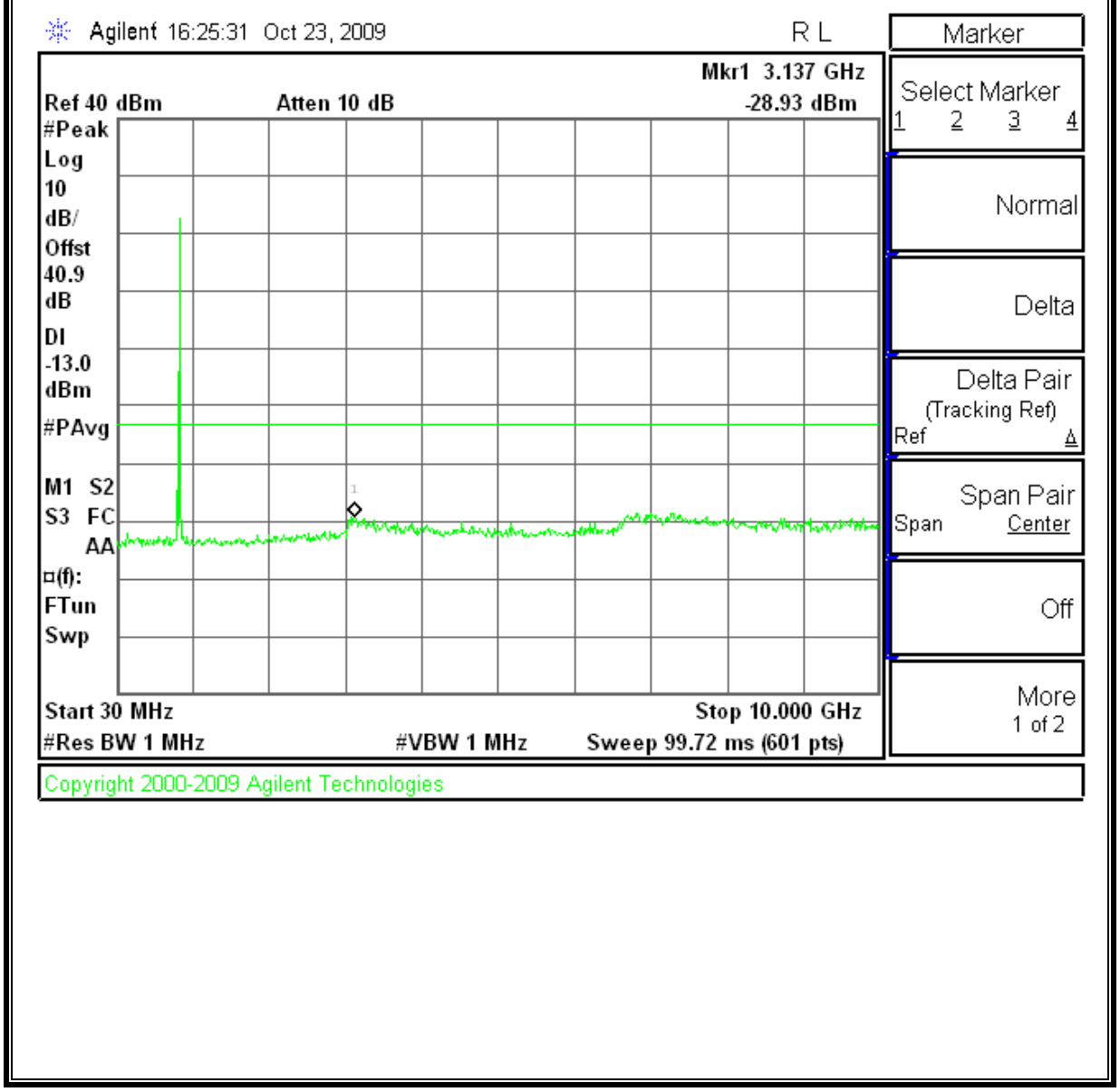
LOW CH



MID CH

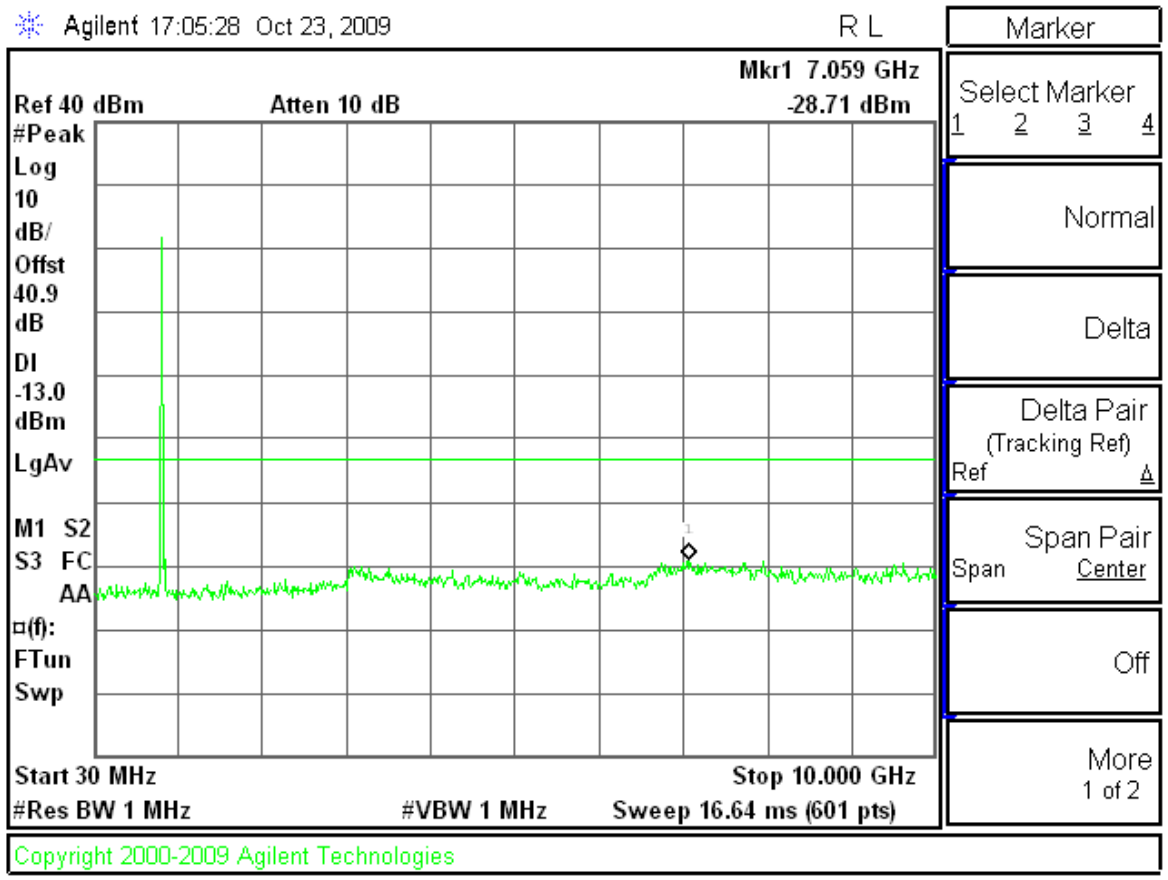


HIGH CH

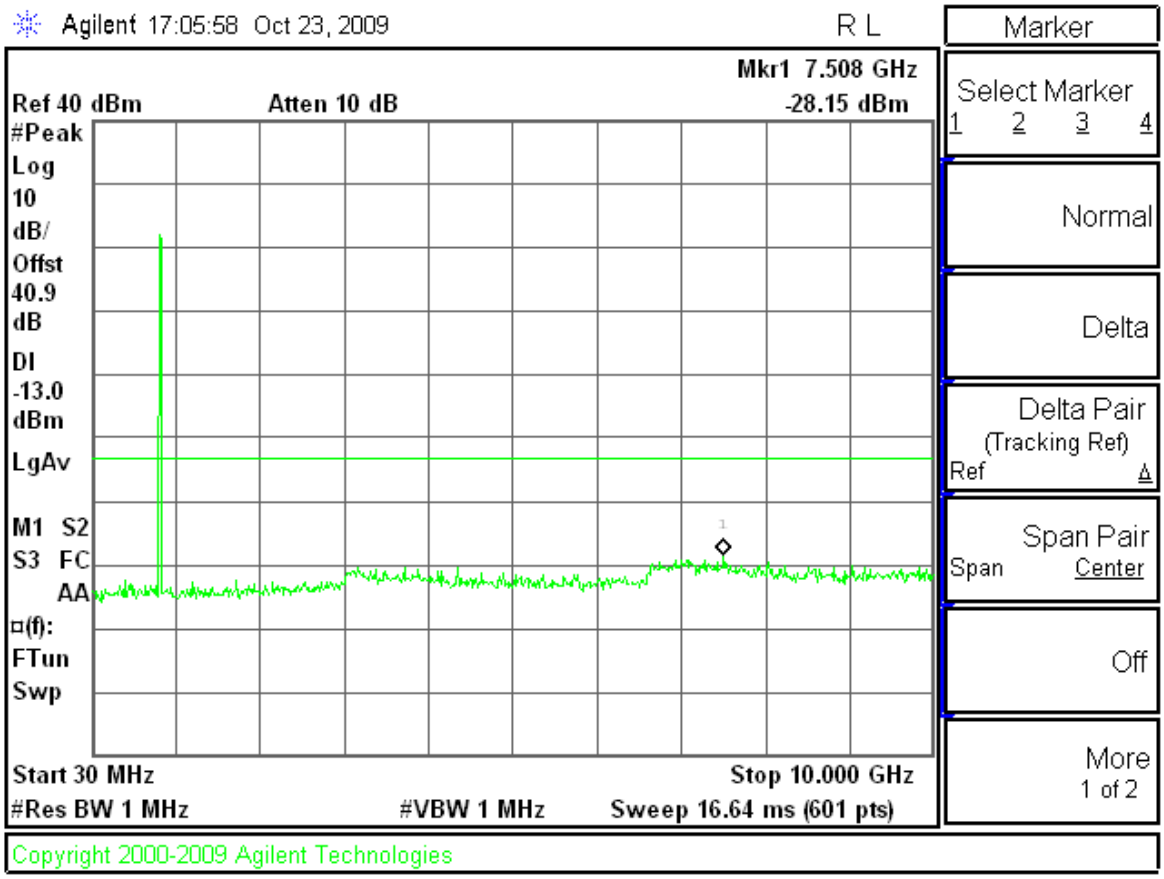


UMTS HSDPA Mode (Cellular Band)

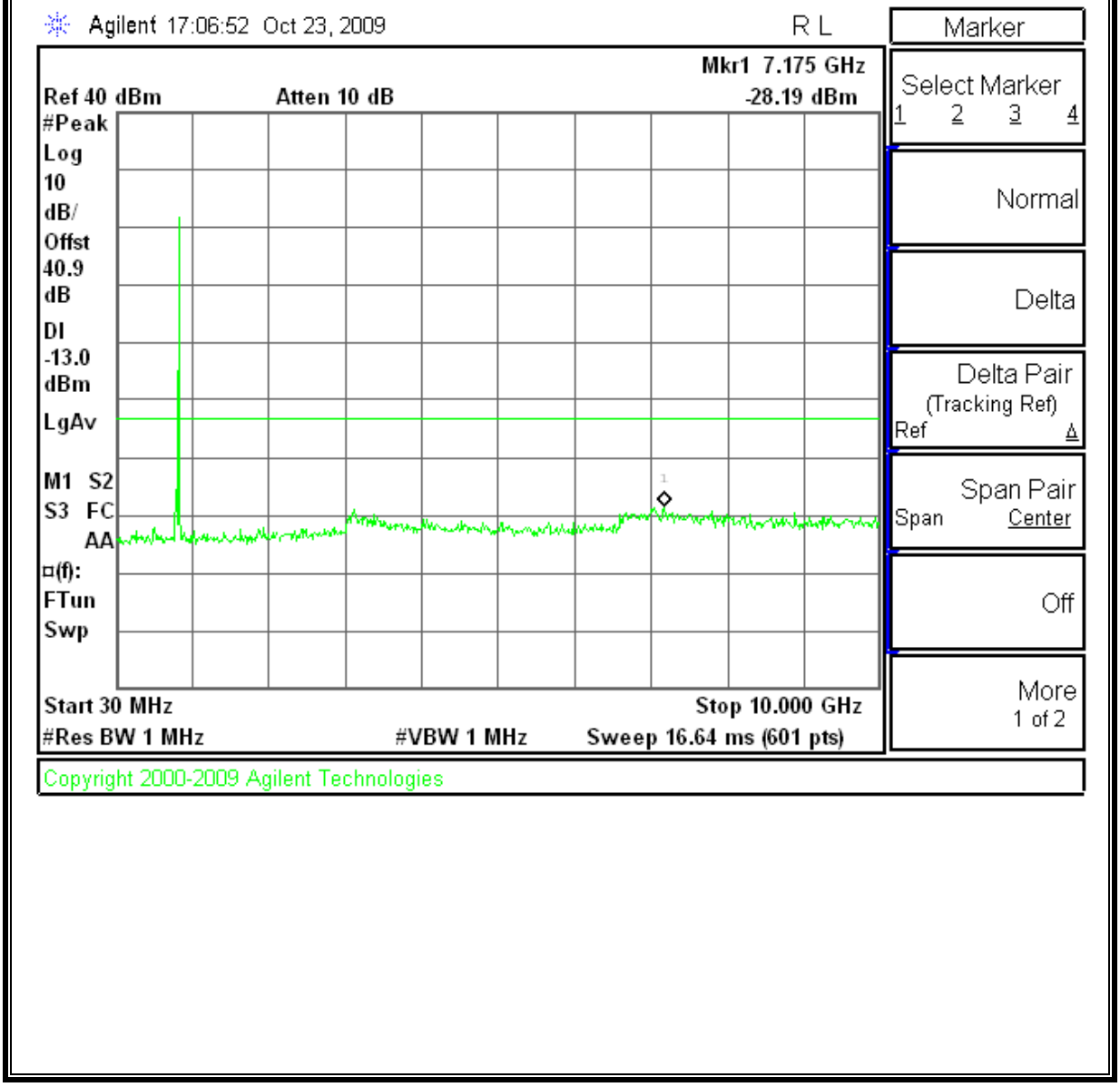
LOW CH



MID CH

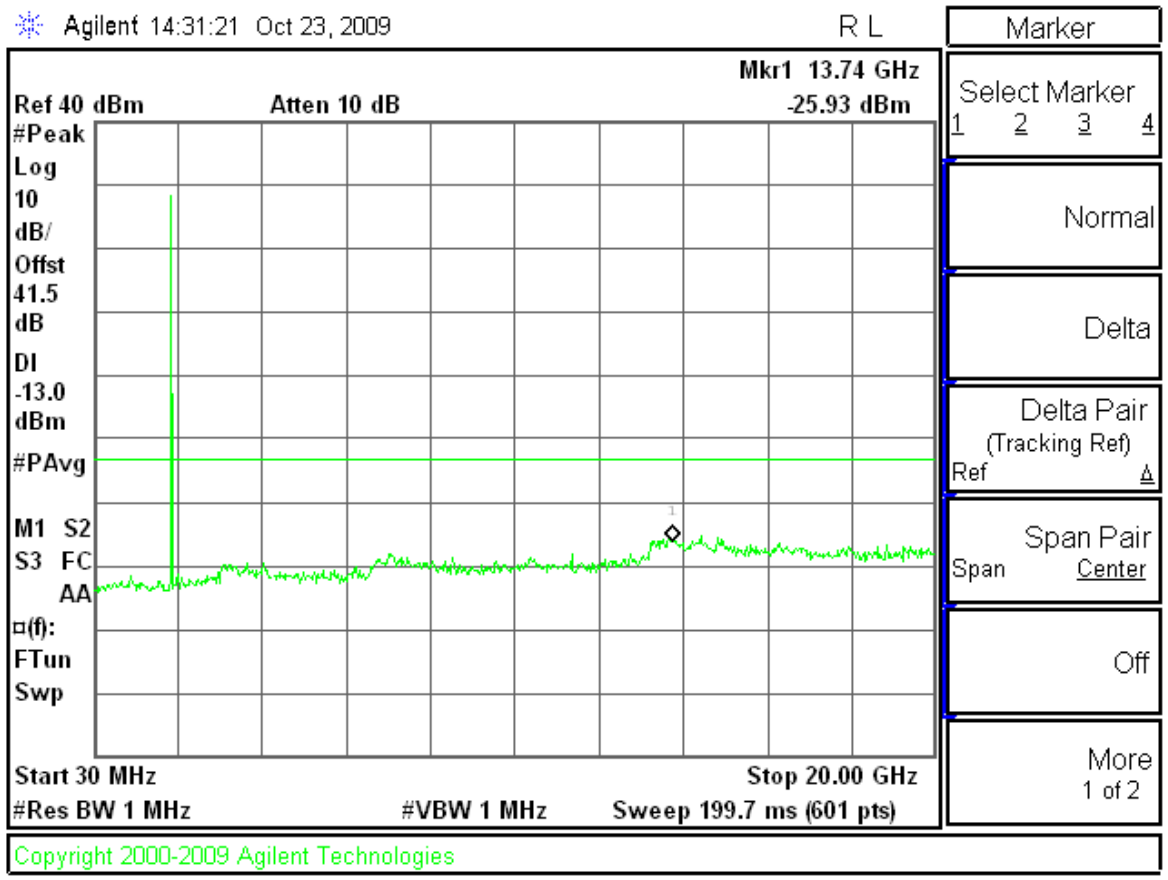


HIGH CH

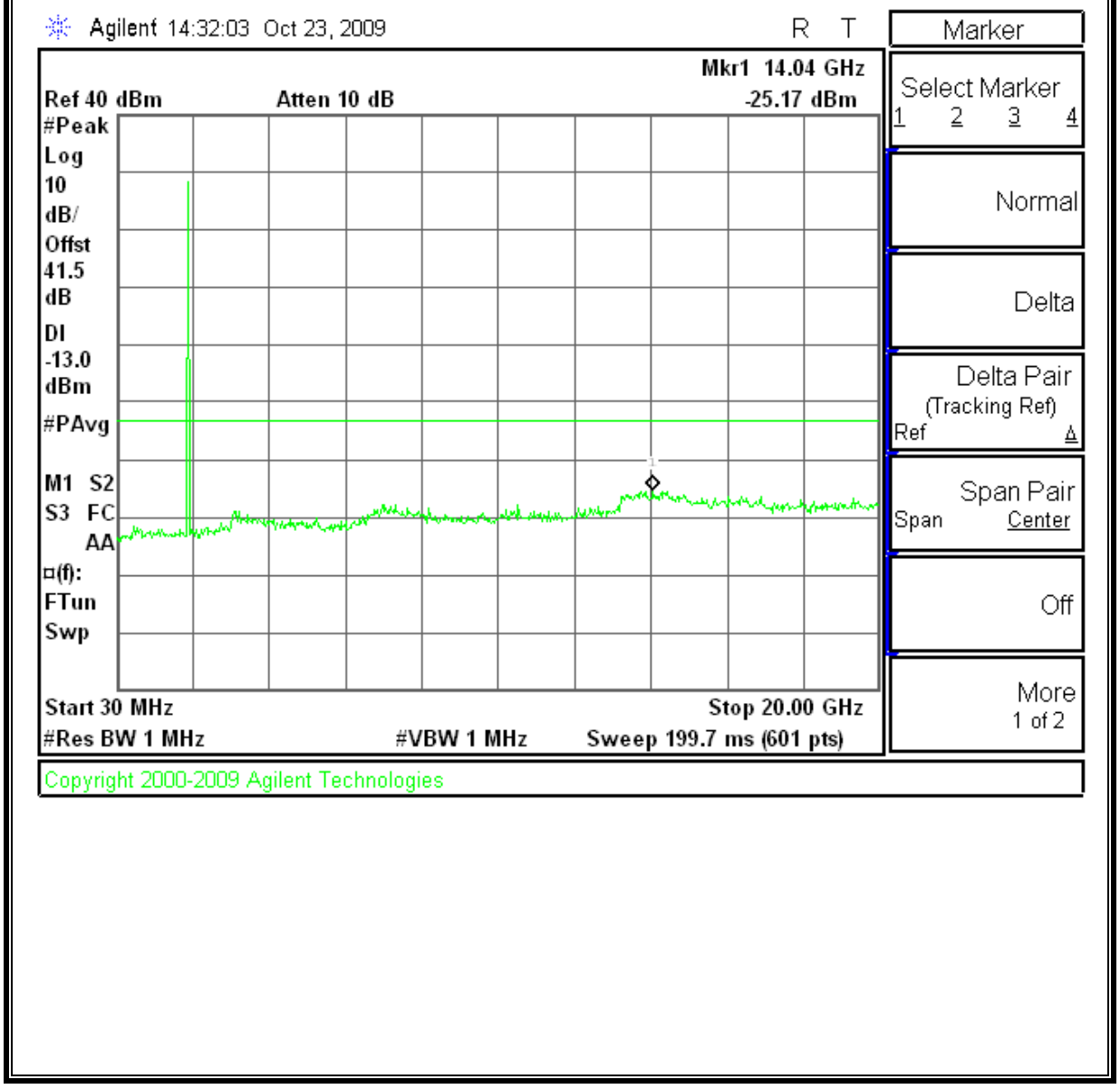


GPRS Mode (PCS Band)

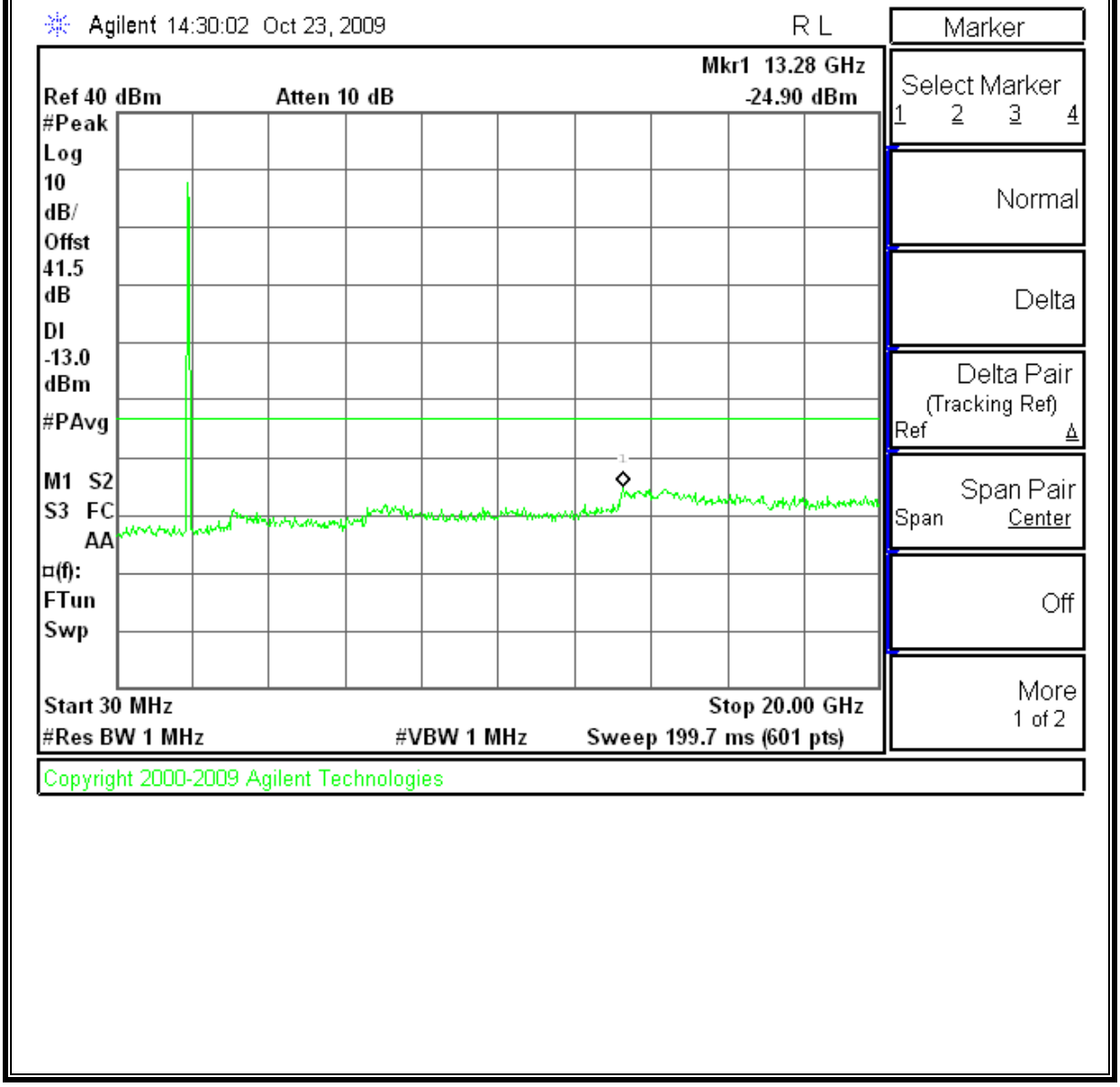
LOW CH



MID CH

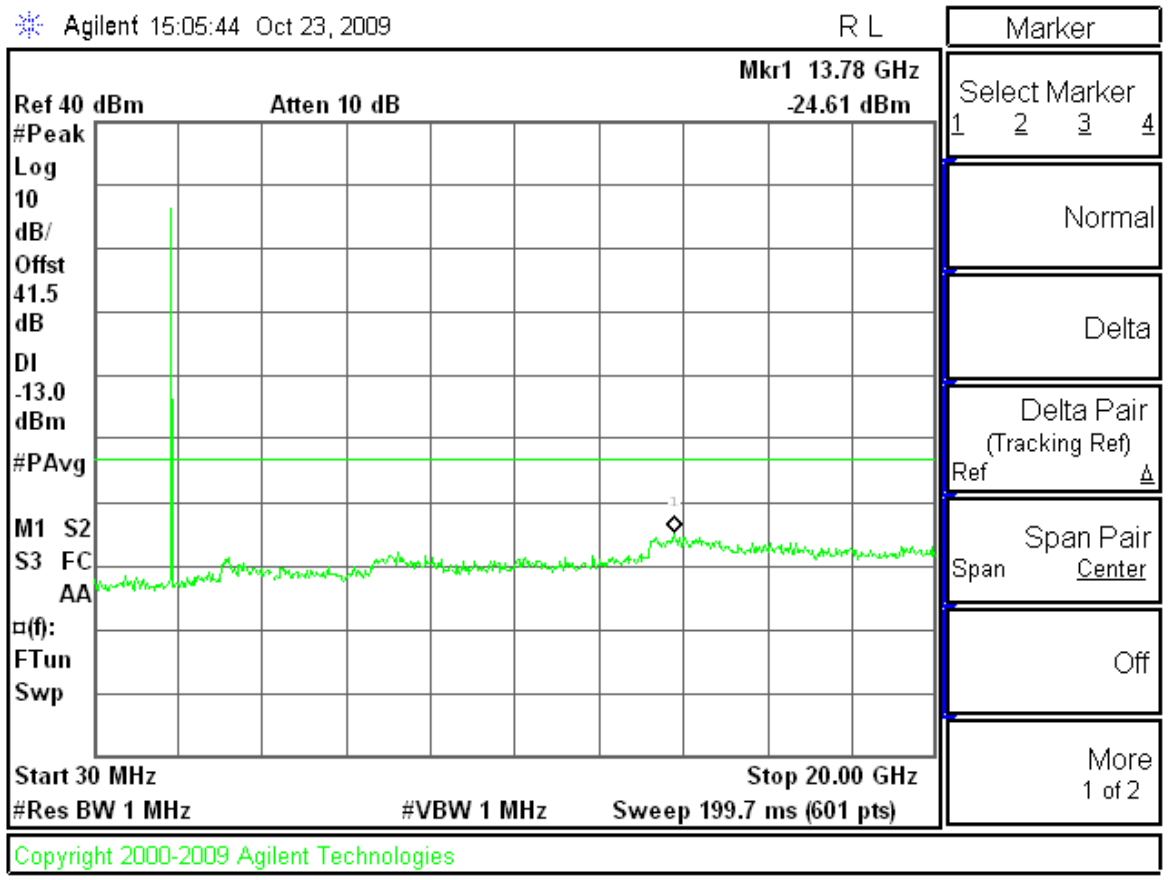


HIGH CH

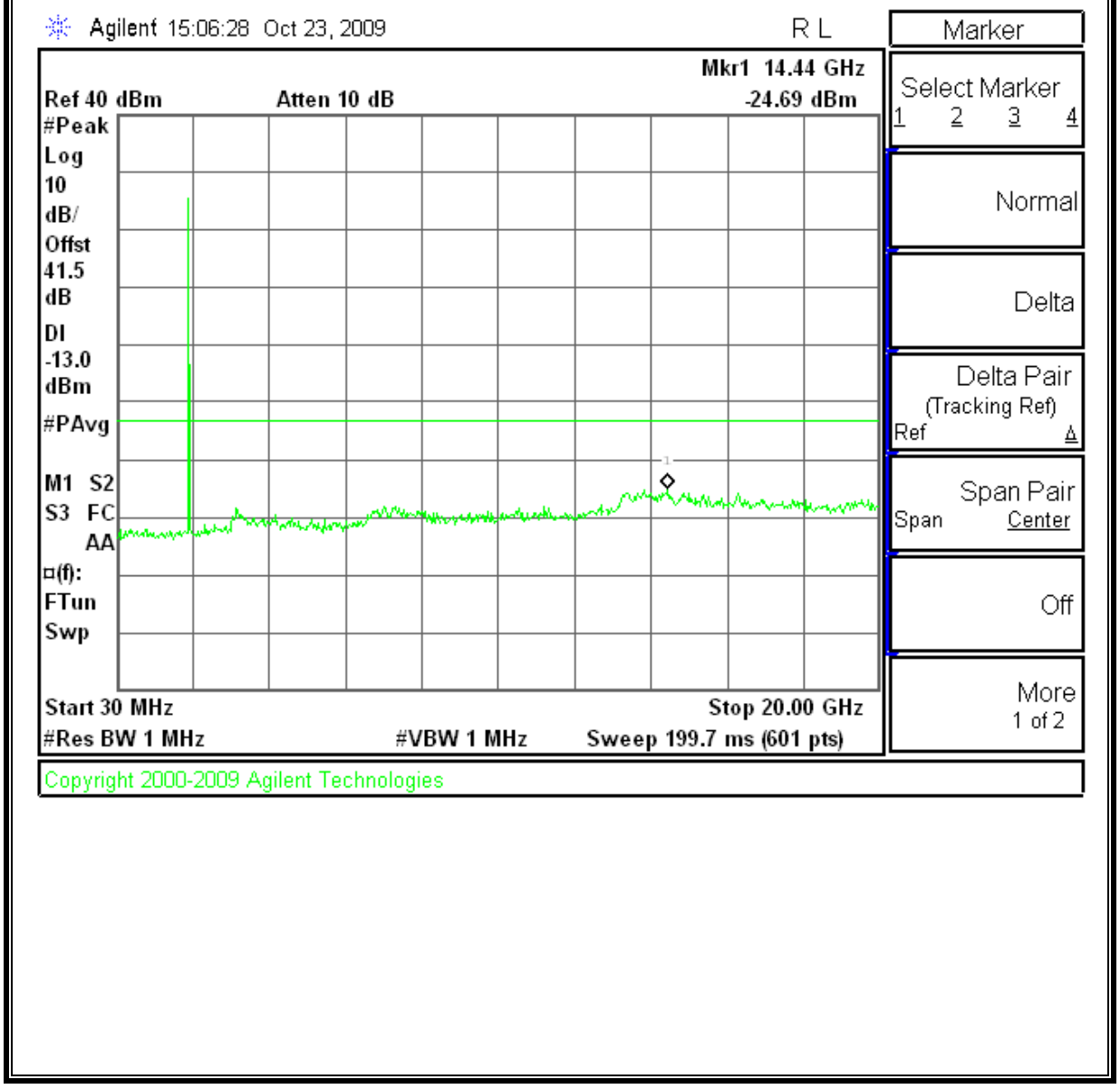


EGPRS Mode (PCS Band)

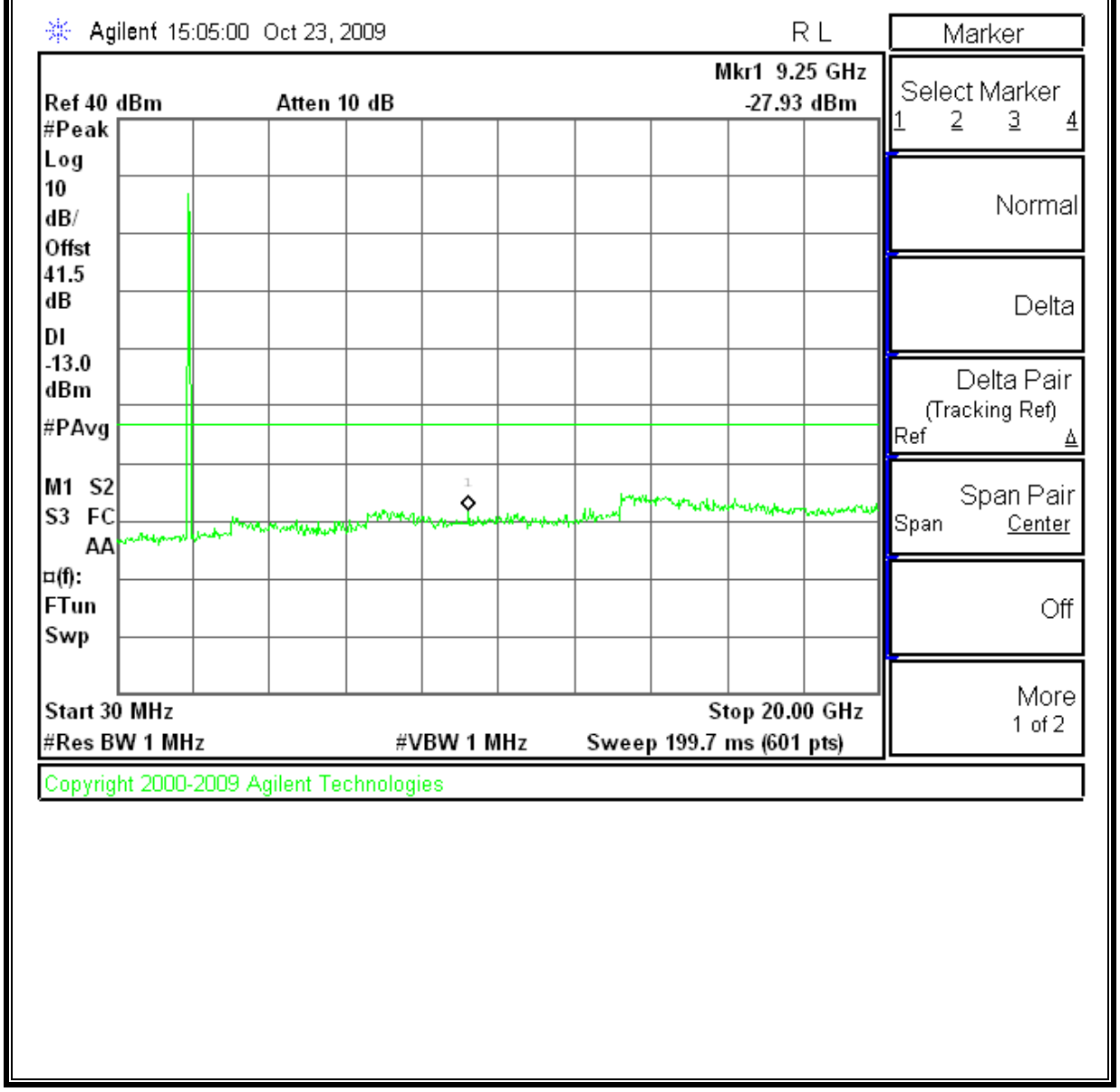
LOW CH



MID CH

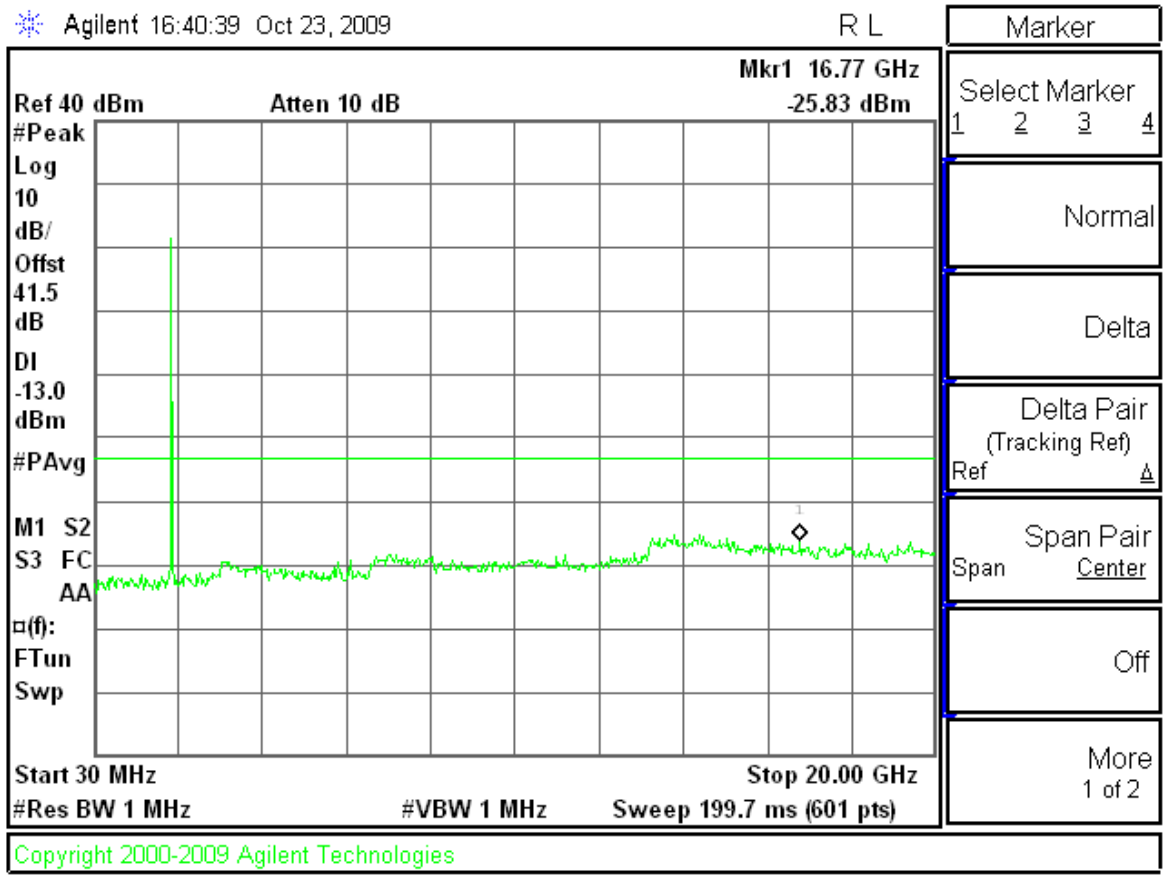


HIGH CH

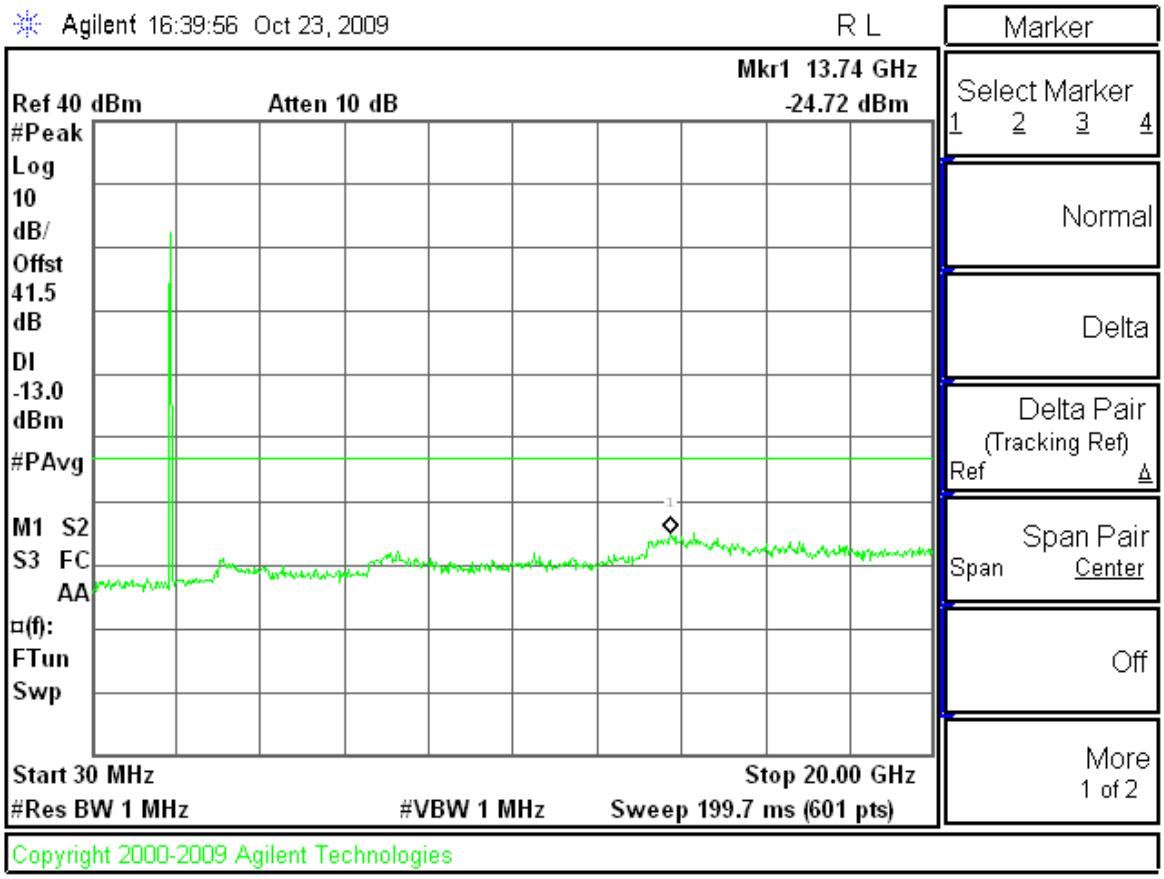


UMTS REL99 PCS BAND

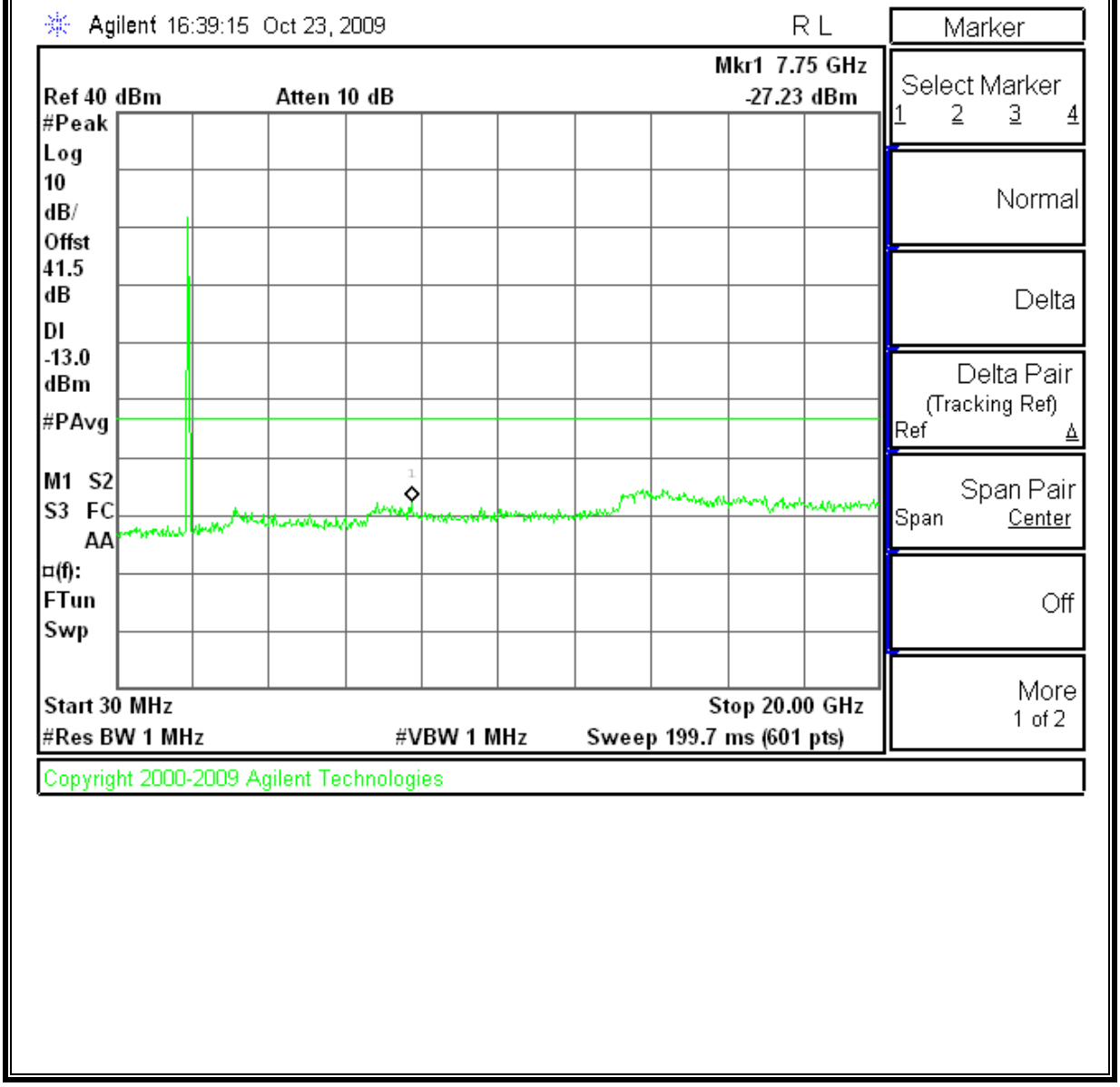
LOW CH



MID CH

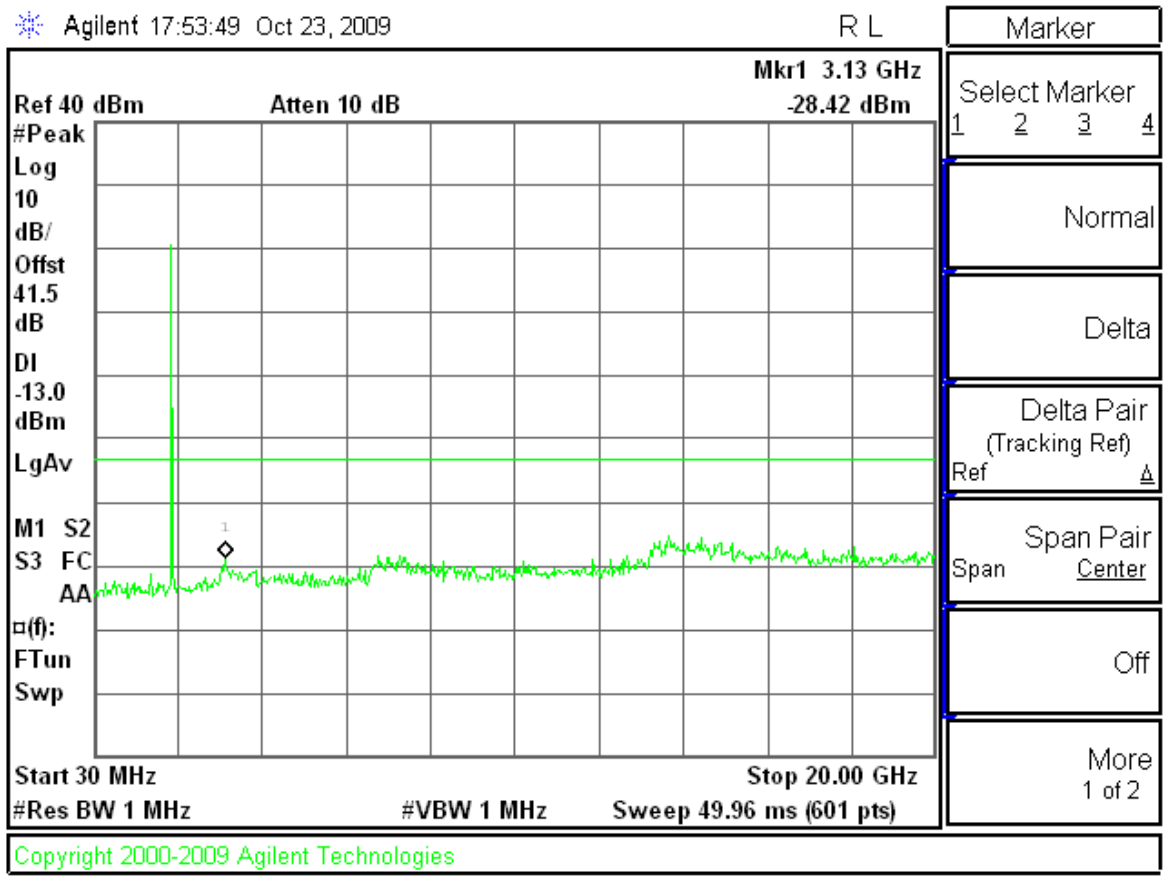


HIGH CH

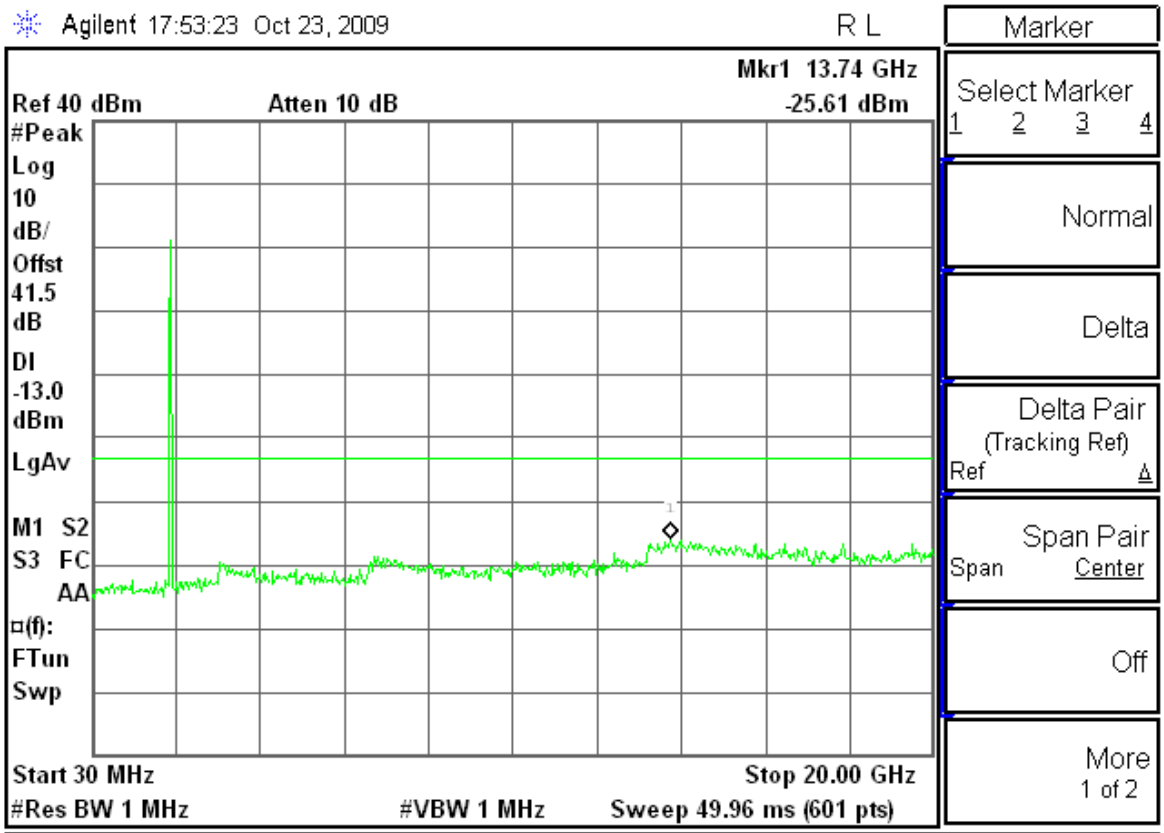


UMTS HSDPA Mode (PCS Band)

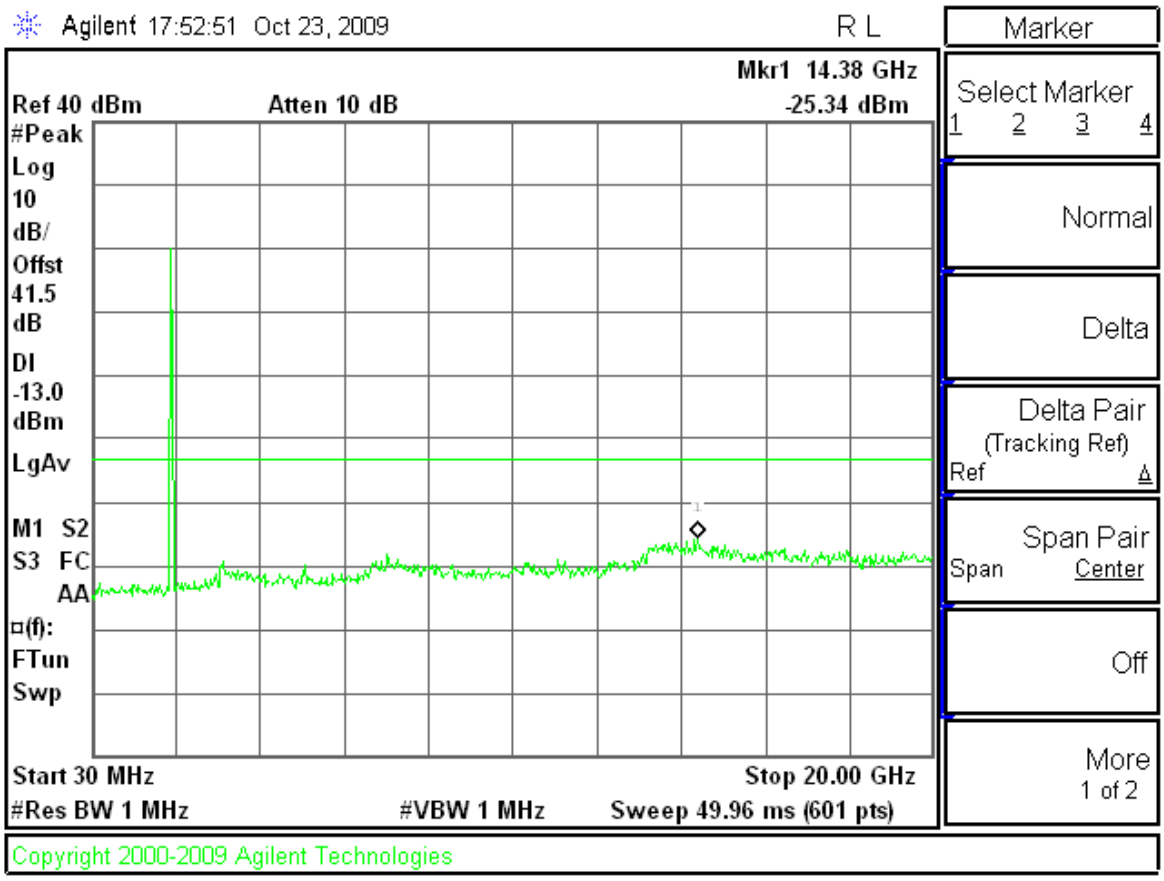
LOW CH



MID CH



HIGH CH



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

Frequency Stability vs Temperature:
The EUT is place inside a temperature chamber. The temperature is set to 20ºC 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 +50ºC is reached. Reference power supply voltage for these tests is 3.3 Vdc.

Frequency Stability vs Voltage:
The peak frequency error is recorded (worst-case). The test voltages are 3.86 to 4.4. Vdc.

MODES TESTED

- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99

RESULTS

See the following pages.

GPRS Mode (Cellular Band)

Reference Frequency: Cellular Mid Channel 836.600008MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.86	50	836.600007	0.001	2.5
3.86	40	836.599983	0.030	2.5
3.86	30	836.599984	0.029	2.5
3.86	***20***	***836.600008***	***0***	2.5
3.86	10	836.599992	0.019	2.5
3.86	0	836.600012	-0.005	2.5
3.86	-10	836.600022	-0.017	2.5
3.86	-20	836.600048	-0.048	2.5
3.86	-30	836.600006	0.002	2.5

Reference Frequency: Cellular Mid Channel 836.600008MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.86	***20***	***836.600008***	***0***	2.5
4.44	20	836.600021	-0.016	2.5
3.56 (end point voltage)	20	836.599924	0.100	2.5

EGPRS Mode (Cellular Band)

Reference Frequency: Cellular Mid Channel 836.600015MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.86	50	836.600014	0.001	2.5
3.86	40	836.599994	0.025	2.5
3.86	30	836.599990	0.030	2.5
3.86	***20***	***836.600015***	***0***	2.5
3.86	10	836.599988	0.032	2.5
3.86	0	836.600016	-0.001	2.5
3.86	-10	836.600032	-0.020	2.5
3.86	-20	836.600045	-0.036	2.5
3.86	-30	836.600012	0.004	2.5

Reference Frequency: Cellular Mid Channel 836.600015MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.86	***20***	***836.600015***	***0***	2.5
4.44	20	836.600015	0.000	2.5
3.56 (end point voltage)	20	836.599962	0.063	2.5

UMTS Rel 99 Mode (Cellular Band)

Reference Frequency: Cellular Mid Channel 836.599993MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.86	50	836.599989	0.005	2.5
3.86	40	836.600024	-0.037	2.5
3.86	30	836.600020	-0.032	2.5
3.86	***20***	***836.599993***	***0***	2.5
3.86	10	836.600003	-0.012	2.5
3.86	0	836.599989	0.005	2.5
3.86	-10	836.599983	0.012	2.5
3.86	-20	836.599977	0.019	2.5
3.86	-30	836.600007	-0.017	2.5

Reference Frequency: Cellular Mid Channel 836.599993MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.86	***20***	***836.599993***	***0***	2.5
4.44	20	836.600043	-0.060	2.5
3.56 (end point voltage)	20	836.599987	0.007	2.5

GPRS Mode (PCS Band)

Reference Frequency: PCS Mid Channel 1880.000018MHz @ 20ºC				
Limit: within the authorized block or +- 2.5 ppm =		4700.000	Hz	
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.86	50	1880.000017	0.001	2.5
3.86	40	1879.999996	0.012	2.5
3.86	30	1880.000006	0.006	2.5
3.86	***20***	***1880.000018***	***0***	***2.5***
3.86	10	1880.000011	0.004	2.5
3.86	0	1880.000012	0.003	2.5
3.86	-10	1880.000012	0.003	2.5
3.86	-20	1880.000013	0.003	2.5
3.86	-30	1880.000023	-0.003	2.5

Reference Frequency: PCS Mid Channel 1880.000018MHz @ 20ºC				
Limit: within the authorized block or +- 2.5 ppm =		4700.000	Hz	
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.86	***20***	***1880.000018***	***0***	***2.5***
4.44	20	1880.000086	-0.036	2.5
3.56 (end point voltage)	20	1879.999915	0.055	2.5

EGPRS Mode (PCS Band)

Reference Frequency: PCS Mid Channel 1880.000021MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse**		
		(MHz)	**Delta (ppm)**	**Limit (ppm)**
3.86	50	1880.000023	-0.001	2.5
3.86	40	1879.999934	0.046	2.5
3.86	30	1879.999961	0.032	2.5
3.86	***20***	***1880.000021***	***0***	***2.5***
3.86	10	1879.999974	0.025	2.5
3.86	0	1880.000011	0.005	2.5
3.86	-10	1880.000029	-0.004	2.5
3.86	-20	1880.000050	-0.015	2.5
3.86	-30	1880.000011	0.005	2.5

Reference Frequency: PCS Mid Channel 1880.000021MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse**		
		(MHz)	**Delta (ppm)**	**Limit (ppm)**
3.86	***20***	***1880.000021***	***0***	***2.5***
4.44	20	1880.000045	-0.013	2.5
3.56 (end point voltage)	20	1879.999946	0.040	2.5

UMTS Rel 99 Mode (PCS Band)

Reference Frequency: PCS Mid Channel 1879.999988MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.86	50	1879.999985	0.002	2.5
3.86	40	1879.999988	0.000	2.5
3.86	30	1879.999992	-0.002	2.5
3.86	***20***	***1879.999988***	***0***	2.5
3.86	10	1880.000024	-0.019	2.5
3.86	0	1880.000025	-0.020	2.5
3.86	-10	1880.000032	-0.023	2.5
3.86	-20	1880.000038	-0.027	2.5
3.86	-30	1880.000012	-0.013	2.5

Reference Frequency: PCS Mid Channel 1879.999988MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
DC Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.86	20	1879.999988	0.000	2.5
4.44	20	1880.000045	-0.030	2.5
3.56 (end point voltage)	20	1880.000056	-0.036	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) & RSS-133 § 6.4 - 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.

RSS-132 4.4, SRSP503 5.1.3 - The maximum ERP shall be 11.5 Watts for mobile stations.

TEST PROCEDURE

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

MODES TESTED

- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA Subtest 2

RESULTS for Cellular Band (ERP)

Mode	Channel	f (MHz)	ERP	
			dBm	mW
GPRS	128	824.20	27.00	501.19
	190	836.60	27.80	602.56
	251	848.80	27.30	537.03
EGPRS	128	824.20	24.10	257.04
	190	836.60	24.80	302.00
	251	848.80	24.50	281.84

Mode	Channel	f (MHz)	ERP	
			dBm	mW
Rel 99	4132	826.40	20.90	123.03
	4180	836.00	21.10	128.82
	4230	846.60	22.00	158.49
HSDPA (Subtest 2)	4132	826.40	21.40	138.04
	4180	836.60	22.20	165.96
	4230	846.60	22.60	181.97

RESULTS for PCS Band (EIRP)

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
GPRS	512	1850.20	31.20	1318.26
	661	1880.00	31.20	1318.26
	810	1909.80	31.30	1348.96
EGPRS	512	1850.20	28.10	645.65
	661	1880.00	28.30	676.08
	810	1909.80	30.20	1047.13

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
Rel 99	9262	1852.40	26.20	416.87
	9400	1880.00	27.40	549.54
	9538	1907.60	25.90	389.05
HSDPA (Subtest 2)	9262	1852.40	26.20	416.87
	9400	1880.00	27.40	549.54
	9538	1907.60	25.90	389.05

ERP for GPRS Mode (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: Plstic Logic
Project #: 09U12883
Date: 10/15/2009
Test Engineer: Chin Pang
Configuration:EUT/
Mode:GPRS850
Worst Case: X position

Test Equipment:
Receiving: Sunol T122, 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	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch							
824.20	-8.9	V	34.8	25.8	38.5	-12.6	
824.20	-3.5	H	30.5	27.0	38.5	-11.4	
Mid Ch							
836.60	-12.5	V	33.1	20.6	38.5	-17.8	
836.60	-3.4	H	31.2	27.8	38.5	-10.6	
High Ch							
848.80	-8.0	V	32.1	24.2	38.5	-14.3	
848.80	-3.9	H	31.2	27.3	38.5	-11.1	

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ERP for EGPRS Mode (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: Plastic Logic
Project #: 09U12883
Date: 10/15/2009
Test Engineer: Chin Pang
Configuration:EUT Only
Mode:EGPRS850
Worst Case: X position

Test Equipment:
Receiving: Sunol T122, 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	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch							
824.20	-11.8	V	34.8	23.0	38.5	-15.5	
824.20	-6.4	H	30.5	24.1	38.5	-14.3	
Mid Ch							
836.60	-10.7	V	33.1	22.4	38.5	-16.1	
836.60	-6.4	H	31.2	24.8	38.5	-13.7	
High Ch							
848.80	-10.2	V	32.1	21.9	38.5	-16.6	
848.80	-6.7	H	31.2	24.5	38.5	-13.9	

Rev. 1.24.7

ERP for UMTS Rel 99 Mode (Cellular Band)

ERP for UMTS Rel 6 HSDPA Mode (Cellular Band)

EIRP for GPRS Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company: Plastic Logic
Project #: 09U12883
Date: 10/15/2009
Test Engineer: Chin Pang
Configuration:EUT Only
Mode: GPRS1900
Worst Case: Y position

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch							
1.850	-11.8	V	40.4	28.6	33.0	-4.4	
1.850	-8.5	H	39.7	31.2	33.0	-1.8	
Mid Ch							
1.880	-11.1	V	39.9	28.9	33.0	-4.1	
1.880	-8.9	H	40.1	31.2	33.0	-1.8	
High Ch							
1.910	-12.9	V	39.8	27.0	33.0	-6.1	
1.910	-8.9	H	40.2	31.3	33.0	-1.8	

Rev. 1.24.7

EIRP for EGPRS Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company:Plastic Logic
Project #:09U12883
Date: 10/15/2009
Test Engineer: Chin Pang
Configuration:EUT Only
Mode: EGPRS1900
Worst Case: Y position

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch							
1.850	-12.6	V	40.4	27.8	33.0	-5.2	
1.850	-11.6	H	39.7	28.1	33.0	-4.9	
Mid Ch							
1.880	-12.0	V	39.9	27.9	33.0	-5.1	
1.880	-11.8	H	40.1	28.3	33.0	-4.7	
High Ch							
1.910	-11.5	V	39.8	28.3	33.0	-4.7	
1.910	-10.0	H	40.2	30.2	33.0	-2.9	

Rev. 1.24.7

EIRP for UMTS Rel 99 Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company: Plastic Logic
Project #: 09U12883
Date: 10/16/2009
Test Engineer: Chin Pang
Configuration:EUT Only
Mode: UMTS1900, REL 99
Worst Case: Y position

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch							
1.852	-14.9	V	40.4	25.5	33.0	-7.5	
1.852	-13.6	H	39.7	26.2	33.0	-6.9	
Mid Ch							
1.880	-13.7	V	39.9	26.2	33.0	-6.8	
1.880	-12.8	H	40.1	27.4	33.0	-5.6	
High Ch							
1.908	-15.8	V	39.8	24.0	33.0	-9.0	
1.908	-14.3	H	40.2	25.9	33.0	-7.2	

Rev. 1.24.7

EIRP for UMTS Rel 6 HSDPA Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company: Plastic Logic
Project #: 09U12883
Date: 10/16/2009
Test Engineer: Chin Pang
Configuration:EUT Only
Mode: UMTS1900, HSPDA
Worst Case: Y position

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch							
1.852	-14.3	V	40.4	26.1	33.0	-6.9	
1.852	-13.6	H	39.7	26.2	33.0	-6.8	
Mid Ch							
1.880	-14.6	V	39.9	25.3	33.0	-7.7	
1.880	-12.7	H	40.1	27.4	33.0	-5.6	
High Ch							
1.908	-15.7	V	39.8	24.1	33.0	-8.9	
1.908	-14.3	H	40.2	25.9	33.0	-7.1	

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

- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA Subtest 2

RESULTS

See the following pages.

GPRS Mode (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date: 10/20/2009
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, GPRS850

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
1.648	-44.8	H	3.0	37.2	35.5	1.0	-44.3	-13.0	-31.3	
2.473	-45.3	H	3.0	39.8	35.4	1.0	-42.0	-13.0	-29.0	
4.121	-42.4	H	3.0	46.7	35.2	1.0	-32.1	-13.0	-19.1	
1.648	-45.0	V	3.0	36.8	35.5	1.0	-44.9	-13.0	-31.9	
2.473	-46.5	V	3.0	41.7	35.4	1.0	-41.4	-13.0	-28.4	
4.121	-40.0	V	3.0	46.1	35.2	1.0	-30.2	-13.0	-17.2	
4.946	-52.5	V	3.0	48.2	35.3	1.0	-40.8	-13.0	-27.8	
Mid Ch										
1.674	-41.5	H	3.0	37.5	35.5	1.0	-40.7	-13.0	-27.7	
2.510	-47.1	H	3.0	39.9	35.4	1.0	-43.8	-13.0	-30.8	
4.184	-40.7	H	3.0	46.8	35.2	1.0	-30.3	-13.0	-17.3	
5.020	-56.0	H	3.0	48.9	35.3	1.0	-43.5	-13.0	-30.5	
1.674	-42.5	V	3.0	37.1	35.5	1.0	-42.0	-13.0	-29.0	
2.510	-48.6	V	3.0	41.8	35.4	1.0	-43.3	-13.0	-30.3	
4.184	-35.3	V	3.0	46.3	35.2	1.0	-25.4	-13.0	-12.4	
5.020	-56.0	V	3.0	48.3	35.3	1.0	-44.1	-13.0	-31.1	
9.203	-60.0	V	3.0	53.5	35.6	1.0	-43.2	-13.0	-30.2	
High Ch										
1.698	-45.0	H	3.0	37.7	35.5	1.0	-44.0	-13.0	-31.0	
2.546	-52.5	H	3.0	40.1	35.4	1.0	-48.9	-13.0	-35.9	
3.400	-50.8	H	3.0	44.3	35.5	1.0	-43.1	-13.0	-30.1	
4.255	-40.0	H	3.0	47.0	35.2	1.0	-29.4	-13.0	-16.4	
5.093	-56.4	H	3.0	49.1	35.3	1.0	-43.7	-13.0	-30.7	
1.698	-42.0	V	3.0	37.4	35.5	1.0	-41.2	-13.0	-28.2	
2.546	-50.0	V	3.0	42.0	35.4	1.0	-44.6	-13.0	-31.6	
3.400	-50.0	V	3.0	44.4	35.5	1.0	-42.2	-13.0	-29.2	
4.244	-33.0	V	3.0	46.5	35.2	1.0	-22.9	-13.0	-9.9	
5.093	-51.2	V	3.0	48.5	35.3	1.0	-39.1	-13.0	-26.1	
6.790	-46.8	V	3.0	50.6	35.7	1.0	-33.1	-13.0	-20.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

EGPRS Mode (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date: 10/20/2009
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, EGPRS850

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
1.648	-52.0	H	3.0	37.2	35.5	1.0	-51.5	-13.0	-38.5	
2.473	-50.9	H	3.0	39.8	35.4	1.0	-47.6	-13.0	-34.6	
4.121	-55.0	H	3.0	46.7	35.2	1.0	-44.7	-13.0	-31.7	
1.648	-51.0	V	3.0	36.8	35.5	1.0	-50.9	-13.0	-37.9	
2.473	-56.7	V	3.0	41.7	35.4	1.0	-51.6	-13.0	-38.6	
4.121	-53.5	V	3.0	46.1	35.2	1.0	-43.7	-13.0	-30.7	
Mid Ch										
1.674	-45.4	H	3.0	37.5	35.5	1.0	-44.6	-13.0	-31.6	
2.510	-54.0	H	3.0	39.9	35.4	1.0	-50.7	-13.0	-37.7	
4.184	-56.3	H	3.0	46.8	35.2	1.0	-45.9	-13.0	-32.9	
1.674	-44.0	V	3.0	37.1	35.5	1.0	-43.5	-13.0	-30.5	
2.510	-56.0	V	3.0	41.8	35.4	1.0	-50.7	-13.0	-37.7	
4.184	-50.0	V	3.0	46.3	35.2	1.0	-40.1	-13.0	-27.1	
High Ch										
1.698	-48.5	H	3.0	37.7	35.5	1.0	-47.5	-13.0	-34.5	
2.546	-56.8	H	3.0	40.1	35.4	1.0	-53.2	-13.0	-40.2	
4.255	-57.6	H	3.0	47.0	35.2	1.0	-47.0	-13.0	-34.0	
1.698	-50.0	V	3.0	37.4	35.5	1.0	-49.2	-13.0	-36.2	
2.546	-58.2	V	3.0	42.0	35.4	1.0	-52.8	-13.0	-39.8	
4.244	-55.0	V	3.0	46.5	35.2	1.0	-44.9	-13.0	-31.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UMTS REL 99 Mode (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date:10/16/09
Test Engineer:Chin Pang
Configuration:EUT only
Mode:TX, UMTS850, REL 99

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	Part 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
1.653	-45.6	H	3.0	36.6	38.1	1.0	-48.3	-13.0	-35.3	
2.479	-52.5	H	3.0	40.0	37.5	1.0	-51.1	-13.0	-38.1	
3.306	-42.5	H	3.0	43.9	37.1	1.0	-36.9	-13.0	-23.9	
4.132	-61.6	H	3.0	46.2	36.5	1.0	-53.1	-13.0	-40.1	
1.653	-38.5	V	3.0	36.9	38.1	1.0	-40.9	-13.0	-27.9	
2.479	-55.6	V	3.0	41.7	37.5	1.0	-52.5	-13.0	-39.5	
3.306	-50.0	V	3.0	44.0	37.1	1.0	-44.2	-13.0	-31.2	
4.132	-62.4	V	3.0	45.9	36.5	1.0	-54.1	-13.0	-41.1	
Mid Ch										
1.673	-47.8	H	3.0	36.8	38.1	1.0	-50.3	-13.0	-37.3	
2.509	-47.5	H	3.0	40.1	37.5	1.0	-46.0	-13.0	-33.0	
3.346	-44.0	H	3.0	44.0	37.1	1.0	-38.2	-13.0	-25.2	
4.182	-60.0	H	3.0	46.4	36.5	1.0	-51.3	-13.0	-38.3	
1.673	-42.1	V	3.0	37.1	38.1	1.0	-44.3	-13.0	-31.3	
2.509	-55.2	V	3.0	41.8	37.5	1.0	-52.0	-13.0	-39.0	
3.346	-50.0	V	3.0	44.1	37.1	1.0	-44.1	-13.0	-31.1	
4.182	-60.5	V	3.0	46.1	36.5	1.0	-52.1	-13.0	-39.1	
High Ch										
1.693	-52.0	H	3.0	37.0	38.1	1.0	-54.2	-13.0	-41.2	
2.540	-54.0	H	3.0	40.3	37.5	1.0	-52.3	-13.0	-39.3	
3.386	-48.5	H	3.0	44.1	37.1	1.0	-42.6	-13.0	-29.6	
4.233	-63.1	H	3.0	46.5	36.5	1.0	-54.2	-13.0	-41.2	
1.693	-48.5	V	3.0	37.3	38.1	1.0	-50.4	-13.0	-37.4	
2.540	-55.2	V	3.0	41.9	37.5	1.0	-51.9	-13.0	-38.9	
3.386	-55.7	V	3.0	44.2	37.1	1.0	-49.7	-13.0	-36.7	
4.233	-62.3	V	3.0	46.2	36.5	1.0	-53.7	-13.0	-40.7	

Rev. 03.03.09

UMTS HSDPA (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date:10/16/09
Test Engineer:Chin Pang
Configuration:EUT only
Mode:TX, UMTS850, HSDPA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	Part 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
1.653	-46.7	H	3.0	36.6	38.1	1.0	-49.4	-13.0	-36.4	
2.479	-57.0	H	3.0	40.0	37.5	1.0	-55.6	-13.0	-42.6	
3.306	-45.0	H	3.0	43.9	37.1	1.0	-39.4	-13.0	-26.4	
4.132	-62.1	H	3.0	46.2	36.5	1.0	-53.6	-13.0	-40.6	
1.653	-39.6	V	3.0	36.9	38.1	1.0	-42.0	-13.0	-29.0	
2.479	-54.8	V	3.0	41.7	37.5	1.0	-51.7	-13.0	-38.7	
3.306	-49.5	V	3.0	44.0	37.1	1.0	-43.7	-13.0	-30.7	
4.132	-62.0	V	3.0	45.9	36.5	1.0	-53.7	-13.0	-40.7	
Mid Ch										
1.673	-47.8	H	3.0	36.8	38.1	1.0	-50.3	-13.0	-37.3	
2.509	-47.5	H	3.0	40.1	37.5	1.0	-46.0	-13.0	-33.0	
3.346	-44.0	H	3.0	44.0	37.1	1.0	-38.2	-13.0	-25.2	
4.182	-60.0	H	3.0	46.4	36.5	1.0	-51.3	-13.0	-38.3	
1.673	-47.5	V	3.0	37.1	38.1	1.0	-49.7	-13.0	-36.7	
2.509	-53.2	V	3.0	41.8	37.5	1.0	-50.0	-13.0	-37.0	
3.346	-46.2	V	3.0	44.1	37.1	1.0	-40.3	-13.0	-27.3	
4.182	-61.6	V	3.0	46.1	36.5	1.0	-53.2	-13.0	-40.2	
High Ch										
1.693	-53.5	H	3.0	37.0	38.1	1.0	-55.7	-13.0	-42.7	
2.540	-54.8	H	3.0	40.3	37.5	1.0	-53.1	-13.0	-40.1	
3.386	-46.0	H	3.0	44.1	37.1	1.0	-40.1	-13.0	-27.1	
4.233	-61.8	H	3.0	46.5	36.5	1.0	-52.9	-13.0	-39.9	
1.693	-45.0	V	3.0	37.3	38.1	1.0	-46.9	-13.0	-33.9	
3.386	-53.3	V	3.0	44.2	37.1	1.0	-47.3	-13.0	-34.3	
4.233	-62.0	V	3.0	46.2	36.5	1.0	-51.3	-13.0	-38.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

GPRS Mode (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date: 10/19/2009
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, GPRS1900

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
3.704	-43.0	H	3.0	45.3	35.4	1.0	-32.0	-13.0	-19.0	
5.551	-50.5	H	3.0	50.0	35.4	1.0	-34.9	-13.0	-21.9	
7.401	-51.0	H	3.0	53.0	35.7	1.0	-32.7	-13.0	-19.7	
9.251	-55.0	H	3.0	55.1	35.6	1.0	-34.5	-13.0	-21.5	
3.704	-42.5	V	3.0	45.1	35.4	1.0	-31.7	-13.0	-18.7	
5.551	-50.0	V	3.0	49.2	35.4	1.0	-35.2	-13.0	-22.2	
7.401	-55.4	V	3.0	51.3	35.7	1.0	-38.8	-13.0	-25.8	
9.251	-63.0	V	3.0	53.6	35.6	1.0	-44.0	-13.0	-31.0	
Mid Ch										
3.760	-42.3	H	3.0	45.5	35.3	1.0	-31.1	-13.0	-18.1	
5.640	-45.0	H	3.0	50.2	35.4	1.0	-29.3	-13.0	-16.3	
7.520	-55.3	H	3.0	53.1	35.7	1.0	-36.9	-13.0	-23.9	
9.400	-57.0	H	3.0	55.2	35.6	1.0	-36.3	-13.0	-23.3	
3.760	-46.0	V	3.0	45.3	35.3	1.0	-35.1	-13.0	-22.1	
5.640	-51.0	V	3.0	49.3	35.4	1.0	-36.1	-13.0	-23.1	
7.520	-56.0	V	3.0	51.4	35.7	1.0	-39.3	-13.0	-26.3	
9.400	-60.0	V	3.0	53.7	35.6	1.0	-40.8	-13.0	-27.8	
High Ch										
3.820	-46.0	H	3.0	45.7	35.3	1.0	-34.6	-13.0	-21.6	
5.729	-46.3	H	3.0	50.3	35.4	1.0	-30.4	-13.0	-17.4	
7.639	-51.5	H	3.0	53.2	35.7	1.0	-33.0	-13.0	-20.0	
9.549	-55.3	H	3.0	55.4	35.6	1.0	-34.5	-13.0	-21.5	
3.820	-50.4	V	3.0	45.4	35.3	1.0	-39.3	-13.0	-26.3	
5.729	-52.7	V	3.0	49.4	35.4	1.0	-37.8	-13.0	-24.8	
7.639	-57.3	V	3.0	51.6	35.7	1.0	-40.4	-13.0	-27.4	
9.549	-60.0	V	3.0	53.9	35.6	1.0	-40.6	-13.0	-27.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

EGPRS Mode (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date: 10/19/2009
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, EGPRS1900

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
3.704	-45.0	H	3.0	45.3	35.4	1.0	-34.0	-13.0	-21.0	
5.551	-58.0	H	3.0	50.0	35.4	1.0	-42.4	-13.0	-29.4	
7.401	-59.1	H	3.0	53.0	35.7	1.0	-40.8	-13.0	-27.8	
9.251	-55.8	H	3.0	55.1	35.6	1.0	-35.3	-13.0	-22.3	
3.704	-45.4	V	3.0	45.1	35.4	1.0	-34.6	-13.0	-21.6	
5.551	-58.5	V	3.0	49.2	35.4	1.0	-43.7	-13.0	-30.7	
7.401	-61.2	V	3.0	51.3	35.7	1.0	-44.6	-13.0	-31.6	
9.251	-61.5	V	3.0	53.6	35.6	1.0	-42.5	-13.0	-29.5	
Mid Ch										
3.760	-44.0	H	3.0	45.5	35.3	1.0	-32.8	-13.0	-19.8	
5.640	-57.0	H	3.0	50.2	35.4	1.0	-41.3	-13.0	-28.3	
7.520	-60.0	H	3.0	53.1	35.7	1.0	-41.6	-13.0	-28.6	
9.400	-50.5	H	3.0	55.2	35.6	1.0	-29.8	-13.0	-16.8	
3.760	-47.0	V	3.0	45.3	35.3	1.0	-36.1	-13.0	-23.1	
5.640	-56.7	V	3.0	49.3	35.4	1.0	-41.8	-13.0	-28.8	
7.520	-59.6	V	3.0	51.4	35.7	1.0	-42.9	-13.0	-29.9	
9.400	-62.0	V	3.0	53.7	35.6	1.0	-42.8	-13.0	-29.8	
High Ch										
3.820	-45.5	H	3.0	45.7	35.3	1.0	-34.1	-13.0	-21.1	
5.729	-53.8	H	3.0	50.3	35.4	1.0	-37.9	-13.0	-24.9	
7.639	-61.5	H	3.0	53.2	35.7	1.0	-43.0	-13.0	-30.0	
9.549	-51.0	H	3.0	55.4	35.6	1.0	-30.2	-13.0	-17.2	
3.820	-52.3	V	3.0	45.4	35.3	1.0	-41.2	-13.0	-28.2	
5.729	-57.5	V	3.0	49.4	35.4	1.0	-42.6	-13.0	-29.6	
7.639	-60.0	V	3.0	51.6	35.7	1.0	-43.1	-13.0	-30.1	
9.549	-58.9	V	3.0	53.9	35.6	1.0	-39.5	-13.0	-26.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UMTS REL 99 Mode (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date: 10/19/2009
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, UMTS1900, REL99

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
3.705	-57.0	H	3.0	45.3	35.4	1.0	-46.0	-13.0	-33.0	
7.410	-61.0	H	3.0	53.0	35.7	1.0	-42.7	-13.0	-29.7	
9.262	-53.0	H	3.0	55.1	35.6	1.0	-32.5	-13.0	-19.5	
3.705	-61.0	V	3.0	45.1	35.4	1.0	-50.2	-13.0	-37.2	
7.410	-63.2	V	3.0	51.3	35.7	1.0	-46.6	-13.0	-33.6	
9.262	-60.0	V	3.0	53.6	35.6	1.0	-41.0	-13.0	-28.0	
Mid Ch										
3.760	-58.8	H	3.0	45.5	35.3	1.0	-47.6	-13.0	-34.6	
5.640	-62.5	H	3.0	50.2	35.4	1.0	-46.8	-13.0	-33.8	
7.520	-62.0	H	3.0	53.1	35.7	1.0	-43.6	-13.0	-30.6	
9.400	-55.0	H	3.0	55.2	35.6	1.0	-34.3	-13.0	-21.3	
3.760	-60.0	V	3.0	45.3	35.3	1.0	-49.1	-13.0	-36.1	
5.640	-64.2	V	3.0	49.3	35.4	1.0	-49.3	-13.0	-36.3	
7.520	-63.1	V	3.0	51.4	35.7	1.0	-46.4	-13.0	-33.4	
9.400	-63.0	V	3.0	53.7	35.6	1.0	-43.8	-13.0	-30.8	
High Ch										
3.815	-56.0	H	3.0	45.7	35.3	1.0	-44.6	-13.0	-31.6	
5.723	-60.0	H	3.0	50.3	35.4	1.0	-44.1	-13.0	-31.1	
9.538	-55.1	H	3.0	55.4	35.6	1.0	-34.3	-13.0	-21.3	
3.815	-59.0	V	3.0	45.4	35.3	1.0	-47.9	-13.0	-34.9	
5.723	-62.0	V	3.0	49.4	35.4	1.0	-47.1	-13.0	-34.1	
9.538	-61.8	V	3.0	53.9	35.6	1.0	-42.4	-13.0	-29.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UMTS HSDPA (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Plastic Logic
Project #:09U12883
Date: 10/19/2009
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, UMTS1900, HSDPA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch										
3.705	-58.4	H	3.0	45.3	35.4	1.0	-47.4	-13.0	-34.4	
7.410	-60.0	H	3.0	53.0	35.7	1.0	-41.7	-13.0	-28.7	
9.262	-52.6	H	3.0	55.1	35.6	1.0	-32.1	-13.0	-19.1	
3.705	-60.0	V	3.0	45.1	35.4	1.0	-49.2	-13.0	-36.2	
7.410	-62.4	V	3.0	51.3	35.7	1.0	-45.8	-13.0	-32.8	
9.262	-60.0	V	3.0	53.6	35.6	1.0	-41.0	-13.0	-28.0	
Mid Ch										
3.760	-55.0	H	3.0	45.5	35.3	1.0	-43.8	-13.0	-30.8	
5.640	-61.2	H	3.0	50.2	35.4	1.0	-45.5	-13.0	-32.5	
9.400	-54.4	H	3.0	55.2	35.6	1.0	-33.7	-13.0	-20.7	
3.760	-60.0	V	3.0	45.3	35.3	1.0	-49.1	-13.0	-36.1	
5.640	-63.3	V	3.0	49.3	35.4	1.0	-48.4	-13.0	-35.4	
9.400	-64.2	V	3.0	53.7	35.6	1.0	-45.0	-13.0	-32.0	
High Ch										
3.815	-55.4	H	3.0	45.7	35.3	1.0	-44.0	-13.0	-31.0	
5.723	-57.3	H	3.0	50.3	35.4	1.0	-41.4	-13.0	-28.4	
9.538	-55.0	H	3.0	55.4	35.6	1.0	-34.2	-13.0	-21.2	
3.815	-59.0	V	3.0	45.4	35.3	1.0	-47.9	-13.0	-34.9	
5.723	-62.5	V	3.0	49.4	35.4	1.0	-47.6	-13.0	-34.6	
9.538	-63.5	V	3.0	53.9	35.6	1.0	-44.1	-13.0	-31.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.