**FCC CFR47 PART 22H AND 24E**
**INDUSTRY CANADA RSS-132 ISSUE 2**
**INDUSTRY CANADA RSS-133 ISSUE 5**

# CERTIFICATION TEST REPORT

**FOR**

**EBOOK READER WITH WWAN, WLAN AND USB PORTS**

**MODEL NUMBER: BNRZ100-01**

**FCC ID: XHHBNRZ100-1**

**IC: 8961A-BNRZ10001**

**REPORT NUMBER: 10U13105-3, Revision A**

**ISSUE DATE: JULY 16, 2010**

*Prepared for*

**BARNES AND NOBLE**
**400 HAMILTON AVENUE**
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NVLAP LAB CODE 200065-0

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 06/10/10 | Initial Issue | T. Chan |
| A | 07/16/10 | Removed HSUPA Section | T. Chan |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** BARNES AND NOBLE
400 HAMILTON AVENUE
PALO ALTO, CA 94301, U.S.A.

**EUT DESCRIPTION:** EBOOK READER WITH WWAN, WLAN AND USB PORTS

**MODEL:** BNRZ100-01

**SERIAL NUMBER:** 1001150000050048

**DATE TESTED:** APRIL 04-09, 2010

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| FCC PART 22 SUBPART H AND 24 SUBPART E | Pass |
| INDUSTRY CANADA RSS-132 Issue 2 and RSS-133 Issue 5 | 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:

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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, FCC CFR Part 24, RSS-132 Issue 2, 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.

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 Reader with WWAN, WiFi and USB ports device.

The radio module is manufactured by Sierra Wireless.

## 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 | 32.33 | 1710.0 | 32.50 | 1778.3 |
| 824.2 – 848.80 | EGPRS | 30.83 | 1210.6 | 29.90 | 977.2 |
| 826.4 – 846.6 | UMTS, REL99 | 27.13 | 516.4 | 25.70 | 371.5 |
| 826.4 – 846.6 | UMTS, HSDPA | 27.00 | 501.2 | 25.20 | 331.1 |

Part 24 PCS Band

| Frequency range (MHz) | Modulation | Conducted | | EIRP | |
|---|---|---|---|---|---|
| | | dBm | mW | dBm | mW |
| 1850.20 – 1909.8 | GPRS | 29.30 | 851.1 | 29.90 | 977.2 |
| 1850.20 – 1909.8 | EGPRS | 29.22 | 835.6 | 29.40 | 871.0 |
| 1852.4 – 1907.6 | UMTS, REL99 | 25.97 | 395.4 | 28.00 | 631.0 |
| 1852.4 – 1907.6 | UMTS, HSDPA | 26.32 | 428.5 | 27.70 | 588.8 |

## 5.3. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent 8969 Communications Test Set.

## 5.4. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

Based on the investigation results, 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 2

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 Z orientation for Cell band and X position for PCS band with AC/DC adapter.

## 5.5. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| AC Adapter | Made in China | BNRP5-850 | D947 | 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 | 1 | US 115V | Un-shielded | 2m | NA |
| 2 | DC | 1 | DC | Un-shielded | 1m | NA |
| 2 | RF in/out | 1 | Spectrum | Un-shielded | 1m | NA |
| 3 | RFIn/Out | 1 | Communications Test Set | Un-shielded | 1.2m | NA |
| 4 | Antenna Port | 1 | EUT | Un-shielded | 0.1m | NA |

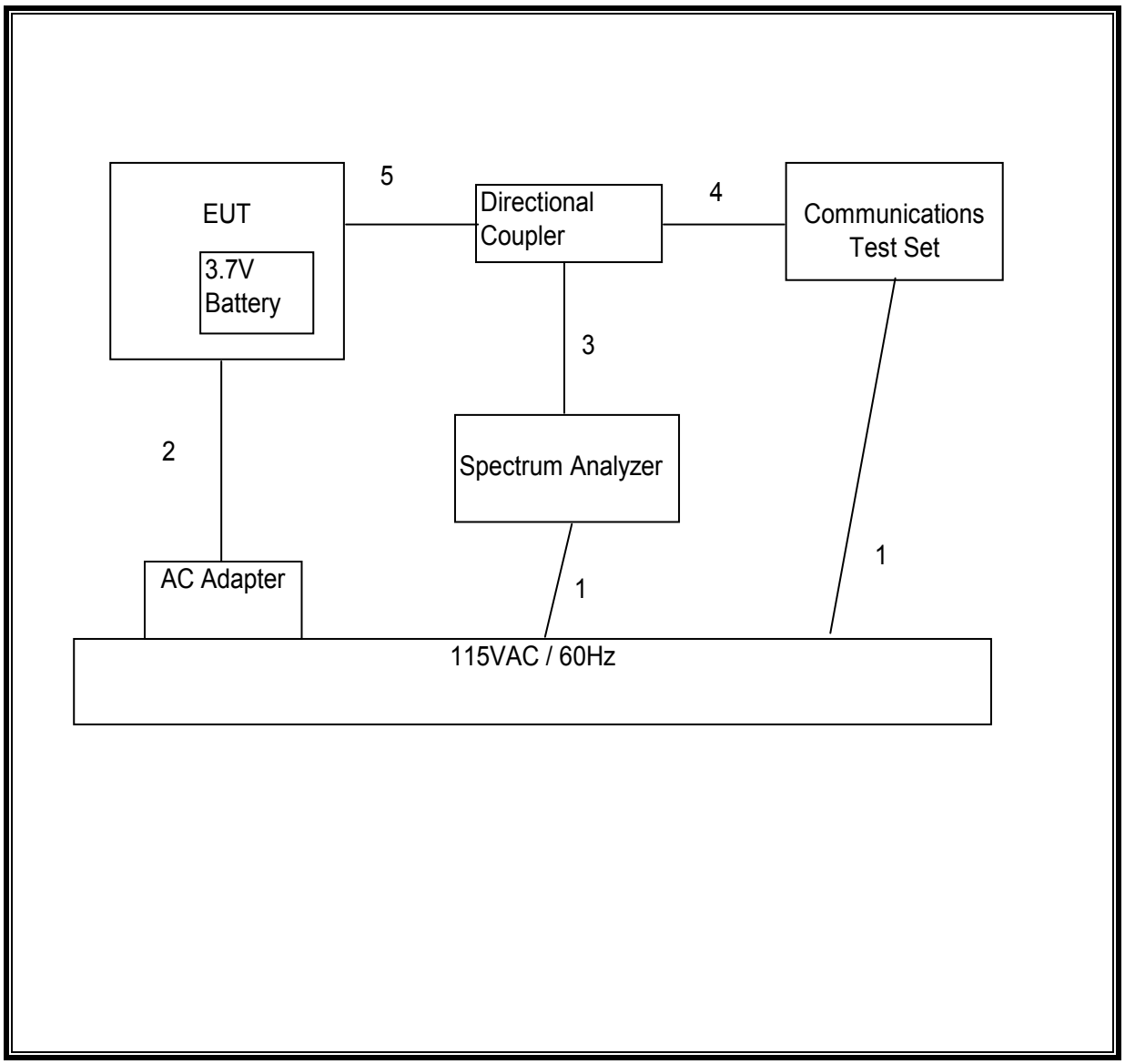
**I/O CABLES (RADIATED TEST)**

| 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 | DC | 1 | DC | Un-shielded | 1m | NA |
| 3 | RF In/Out | 1 | Horn | Un-shielded | 1.5m | NA |

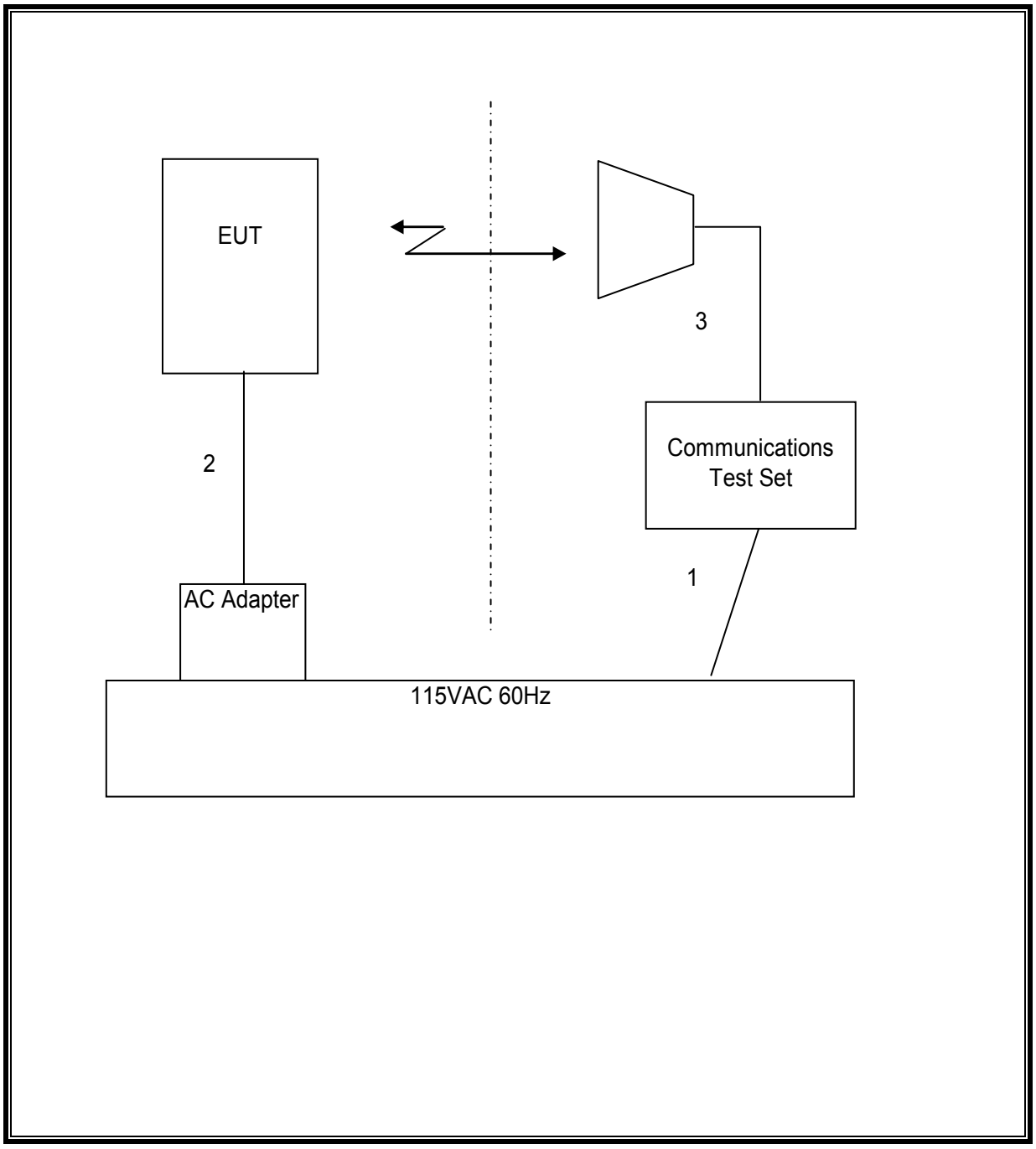
**TEST SETUP**

The EUT is a stand alone device. A link is established between the EUT and the Agilent 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** |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C01063 | 08/04/10 |
| Antenna, Bilog, 2 GHz | Sunol Sciences | JB1 | C01011 | 07/14/10 |
| Spectrum Analyzer, 26.5 GHz | Agilent / HP | E4440A | C01178 | 08/31/10 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C01063 | 08/04/10 |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C00778 | 07/06/10 |
| Temperature / Humidity Chamber | Thermotron | SE 600-10-10 | C00930 | 04/07/11 |
| Peak / Average Power Sensor | Agilent / HP | E9327A | C00964 | 01/07/12 |
| Peak Power Meter | Agilent / HP | E4416A | C00963 | 12/04/11 |
| EMI Test Receiver, 30 MHz | R & S | ESHS 20 | N02396 | 05/06/11 |
| LISN, 30 MHz | FCC | LISN-50/250-25-2 | N02625 | 11/06/10 |
| Highpass Filter, 1.5 GHz | Micro-Tronics | HPM13193 | N02688 | CNR |
| Highpass Filter, 2.7 GHz | Micro-Tronics | HPM13194 | N02686 | CNR |
| Communications Test Set | Agilent / HP | E5515C | GB46160222 | 02/27/11 |
| Directional Coupler, 4.2 GHz, 40 dB | A-R | DC7144A | C00983 | CNR |

# 7. RF POWER OUTPUT VERIFICATION

**PROCEDURE USED TO ESTABLISH TEST SIGNAL**

**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,

- 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 Communications 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

**RESULTS**

## 7.1. RF POWER OUTPUT FOR GSM MODE

**GPRS (GMSK) - Coding scheme: CS4**

| Band | Ch | Frequency | Conducted output power (dBm) | | | |
|---|---|---|---|---|---|---|
| | | | Average | | Peak | |
| | | | 1 slot | 2 slot | 1 slot | 2 slot |
| GSM850 | 128 | 824.2 | 32.15 | 31.95 | **32.33** | 32.10 |
| | 190 | 836.6 | 32.15 | 31.91 | 32.27 | 32.05 |
| | 251 | 848.8 | 32.05 | 31.80 | 32.10 | 31.85 |
| GSM1900 | 512 | 1850.2 | 28.39 | 28.22 | 28.90 | 28.76 |
| | 661 | 1880 | 28.68 | 28.51 | **29.30** | 29.07 |
| | 810 | 1909.8 | 28.76 | 28.61 | 29.25 | 29.10 |

**EGPRS (8PSK) - Coding scheme: MCS9**

| Band | Ch | Frequency | Conducted output power (dBm) | | | |
|---|---|---|---|---|---|---|
| | | | Average | | Peak | |
| | | | 1 slot | 2 slot | 1 slot | 2 slot |
| GSM850 | 128 | 824.2 | 27.26 | 27.18 | **30.83** | 30.53 |
| | 190 | 836.6 | 27.21 | 27.15 | 30.72 | 30.60 |
| | 251 | 848.8 | 27.30 | 27.17 | 30.77 | 30.54 |
| GSM1900 | 512 | 1850.2 | 25.45 | 25.40 | 29.00 | 28.93 |
| | 661 | 1880 | 25.50 | 25.28 | 29.10 | 29.05 |
| | 810 | 1909.8 | 25.70 | 25.60 | **29.22** | 29.18 |

## 7.2. RF POWER OUTPUT FOR UMTS REL99

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) 12.2kps RMC is used for this testing. Power control set to All bits up. 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 |

**REL 99**

| Band | UL Ch | DL Ch | Frequency | Conducted output power (dBm) | |
|---|---|---|---|---|---|
| | | | | Average | Peak |
| UMTS850 (Band V) | 4132 | 4357 | 826.4 | 23.04 | **27.13** |
| | 4180 | 4405 | 836.0 | 22.75 | 26.13 |
| | 4230 | 4455 | 846.0 | 22.96 | 26.39 |
| UMTS1900 (Band II) | 9262 | 9662 | 1852.4 | 22.4 | **25.97** |
| | 9400 | 9800 | 1880 | 22.19 | 25.88 |
| | 9538 | 9938 | 1907.6 | 22.56 | 25.67 |

## 7.3. RF POWER OUTPUT FOR UMTS Rel 6 HSDPA

The following Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V7.5.0 specification. All TX RMS and Peak power requirements for Power Class 3 were met according to table 5.2AA.5 and achieved through the outlined test procedure in section 5.2AA.4.2. 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 |
| | βec | - | - | - | - |
| | βc/βd | 2/15 | 12/15 | 15/8 | 15/4 |
| | βhs | 4/15 | 24/15 | 30/15 | 30/15 |
| | βed | Not Applicable | | | |
| 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 | | | |

**Result**

**REL 6 HSDPA**

| Band | Subtest | UL Ch | DL Ch | Frequency | Conducted output power (dBm) | |
|---|---|---|---|---|---|---|
| | | | | | Average | Peak |
| UMTS850 (Band V) | 1 | 4132 | 4357 | 826.4 | 23.00 | 26.60 |
| | | 4180 | 4405 | 836.0 | 22.22 | 26.41 |
| | | 4230 | 4455 | 846.0 | 22.45 | 26.41 |
| | 2* | 4132 | 4357 | 826.4 | 23.25 | **27.00** |
| | | 4180 | 4405 | 836.0 | 22.18 | 26.17 |
| | | 4230 | 4455 | 846.0 | 22.33 | 26.35 |
| | 3 | 4132 | 4357 | 826.4 | 22.85 | 26.59 |
| | | 4180 | 4405 | 836.0 | 22.20 | 26.01 |
| | | 4230 | 4455 | 846.0 | 22.35 | 26.53 |
| | 4 | 4132 | 4357 | 826.4 | 22.72 | 26.58 |
| | | 4180 | 4405 | 836.0 | 21.87 | 26.57 |
| | | 4230 | 4455 | 846.0 | 22.04 | 26.87 |
| UMTS1900 (Band II) | 1 | 9262 | 9662 | 1852.4 | 22.33 | 25.57 |
| | | 9400 | 9800 | 1880.0 | 22.30 | 26.22 |
| | | 9538 | 9938 | 1907.6 | 22.51 | 25.10 |
| | 2* | 9262 | 9662 | 1852.4 | 22.32 | **26.32** |
| | | 9400 | 9800 | 1880.0 | 22.12 | 25.28 |
| | | 9538 | 9938 | 1907.6 | 22.35 | 26.13 |
| | 3 | 9262 | 9662 | 1852.4 | 22.05 | 25.47 |
| | | 9400 | 9800 | 1880.0 | 21.90 | 25.84 |
| | | 9538 | 9938 | 1907.6 | 22.12 | 25.32 |
| | 4 | 9262 | 9662 | 1852.4 | 21.84 | 25.64 |
| | | 9400 | 9800 | 1880.0 | 21.60 | 25.70 |
| | | 9538 | 9938 | 1907.6 | 21.76 | 25.38 |

# 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 2

**RESULTS**

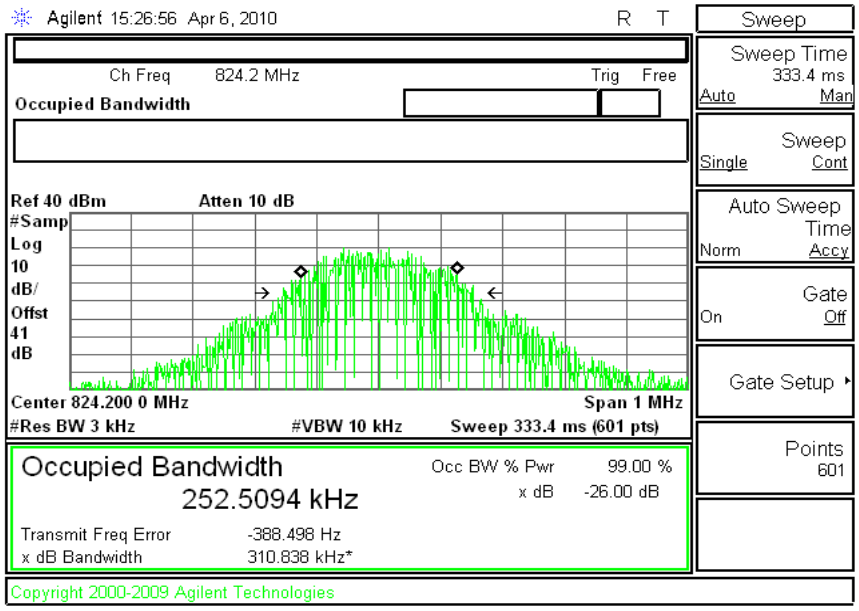
| Band | Mode | Channel | f (MHz) | 99% BW (kHz) | -26dB BW (kHz) |
|---|---|---|---|---|---|
| Cellular | GPRS | 128 | 824.2 | 252.5094 | 310.838 |
| | | 190 | 836.6 | 249.2059 | 304.738 |
| | | 251 | 848.8 | 241.8986 | 310.642 |
| | EGPRS | 128 | 824.2 | 235.5266 | 275.786 |
| | | 190 | 836.6 | 240.5685 | 291.520 |
| | | 251 | 848.8 | 244.4805 | 285.830 |
| PCS | GPRS | 512 | 1850.2 | 252.9103 | 300.585 |
| | | 661 | 1880.0 | 243.1867 | 302.784 |
| | | 810 | 1909.8 | 240.2898 | 306.488 |
| | EGPRS | 512 | 1850.2 | 248.5690 | 295.075 |
| | | 661 | 1880.0 | 246.3173 | 296.369 |
| | | 810 | 1909.8 | 242.8424 | 284.905 |

| Band | Mode | Channel | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|
| UMTS Band V | Rel 99 | 4132 | 826.4 | 4.1823 | 4.643 |
| | | 4180 | 836.6 | 4.2234 | 4.574 |
| | | 4230 | 846.6 | 4.1690 | 4.576 |
| | HSDPA Rel 6 Subtest 2 | 4132 | 826.4 | 4.1679 | 4.560 |
| | | 4180 | 836.6 | 4.2318 | 4.585 |
| | | 4230 | 846.6 | 4.1838 | 4.645 |
| UMTS Band II | Rel 99 | 9262 | 1852.4 | 4.1954 | 4.613 |
| | | 9400 | 1880.0 | 4.2214 | 4.589 |
| | | 9538 | 1907.6 | 4.2113 | 4.602 |
| | HSDPA Rel 6 Subtest 2 | 9262 | 1852.4 | 4.1655 | 4.635 |
| | | 9400 | 1880.0 | 4.2279 | 4.625 |
| | | 9538 | 1907.6 | 4.1567 | 4.596 |

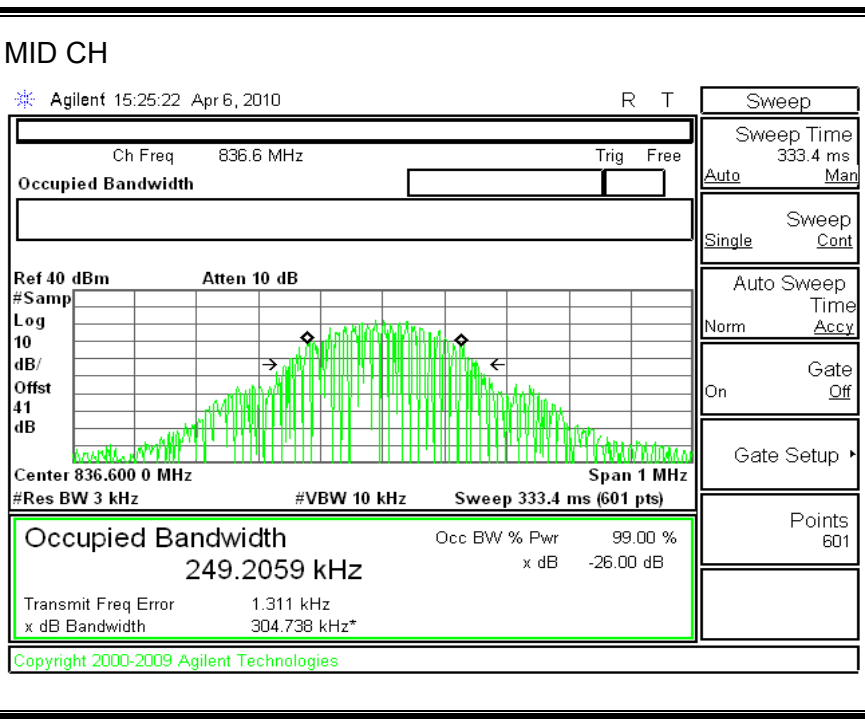
## GPRS850 BAND

### 99% and 26dB Bandwidth

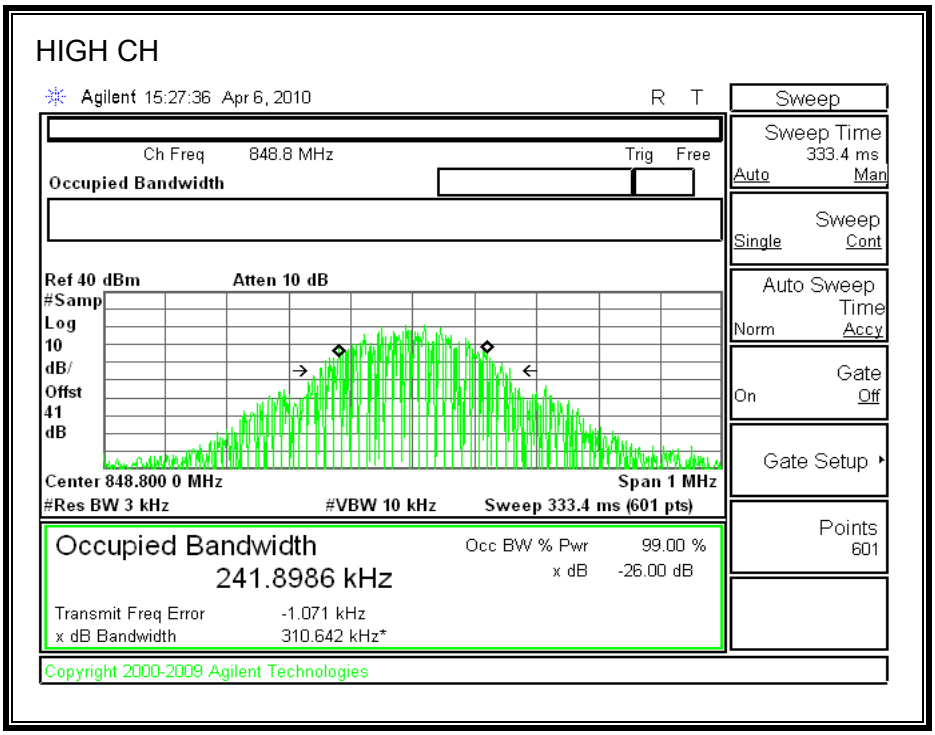
LOW CH




MID CH

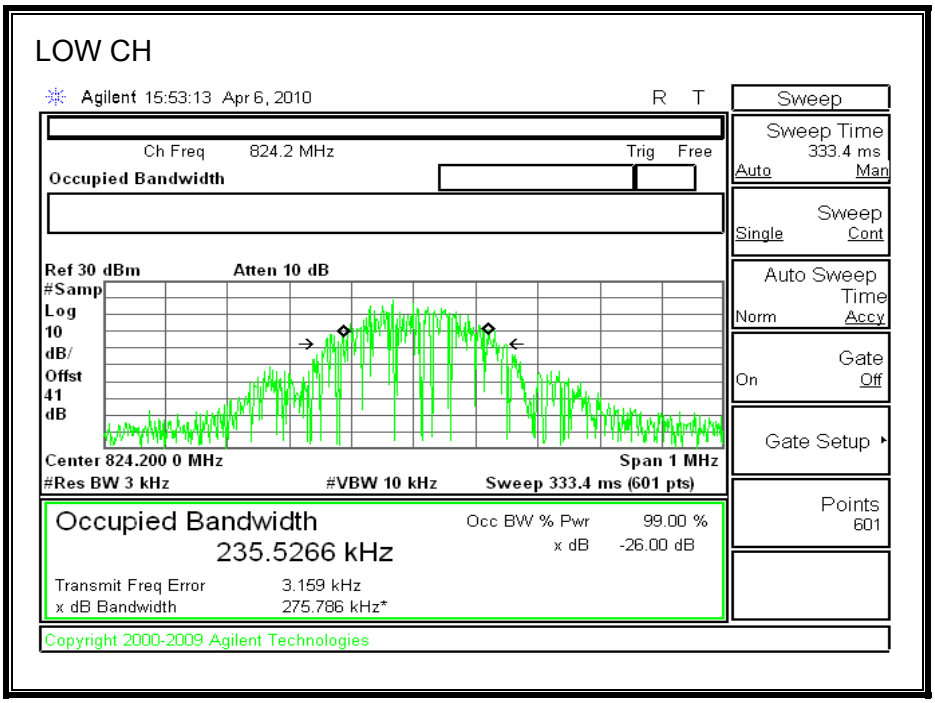


HIGH CH

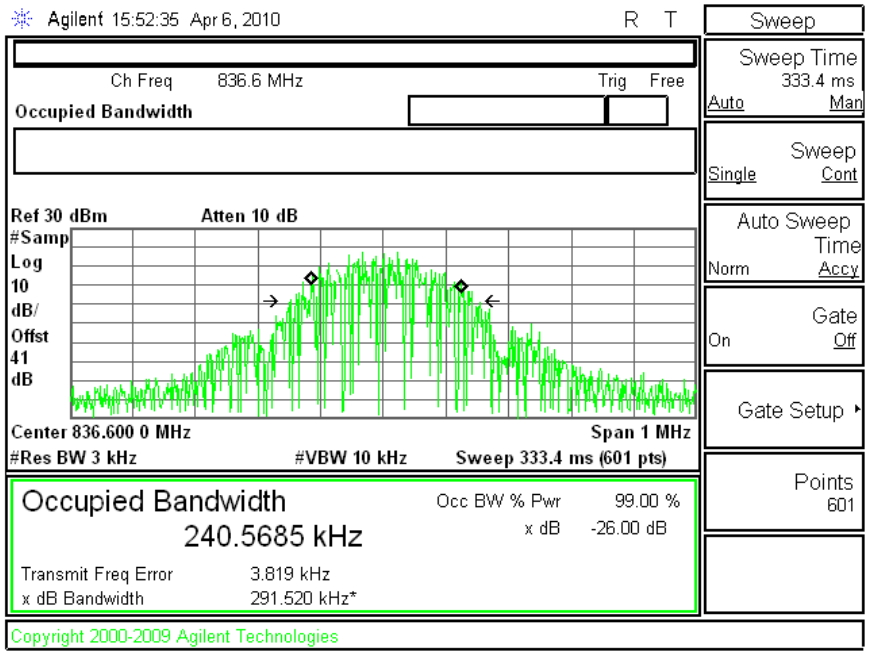



**EGPRS850 BAND**

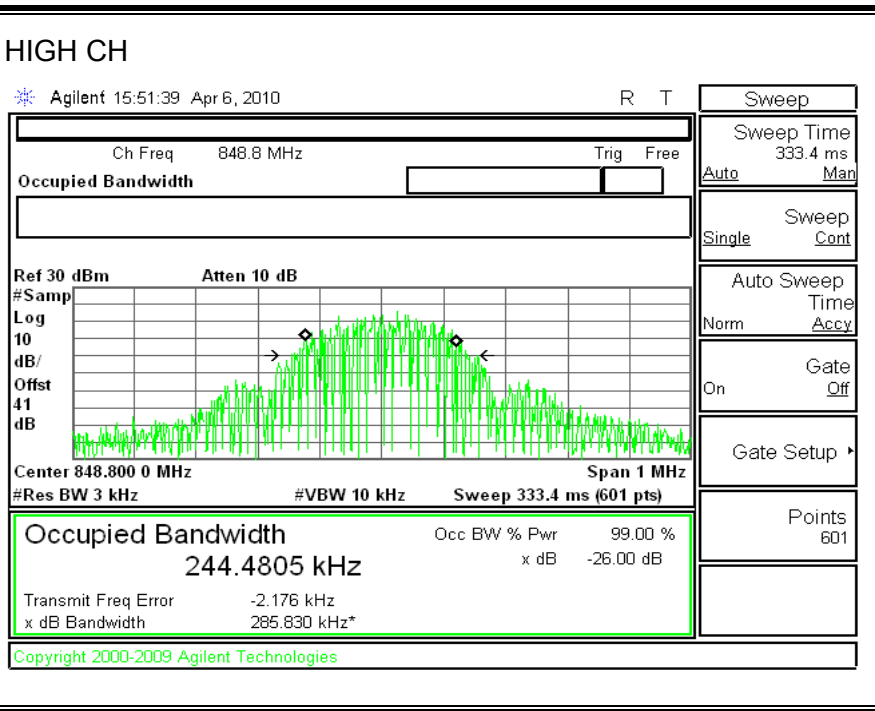
LOW CH



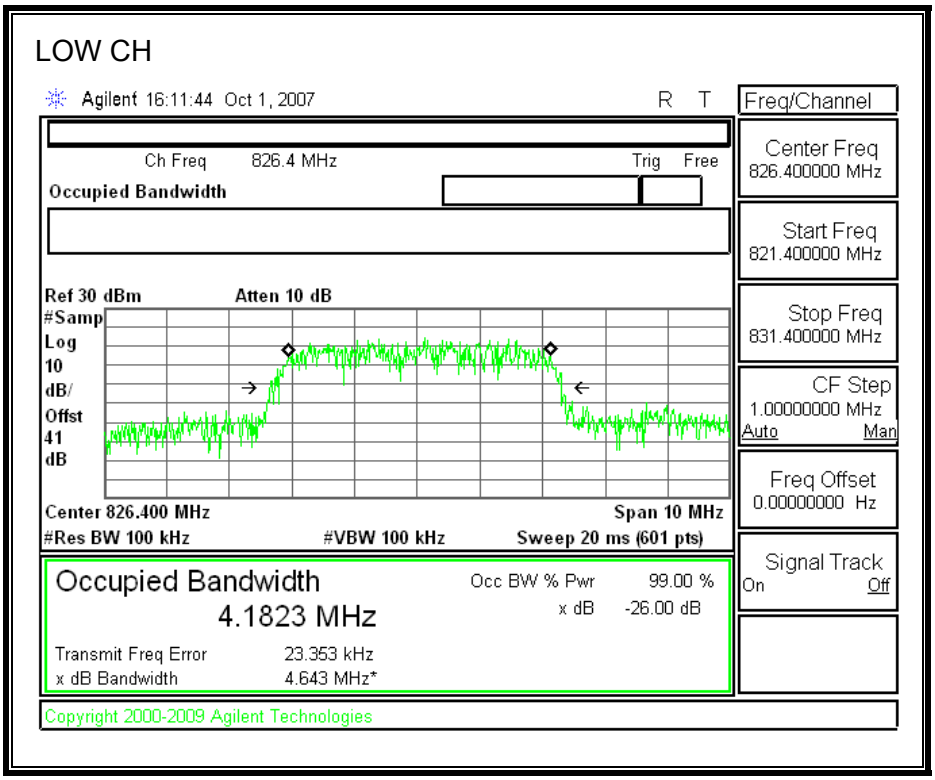
MID CH

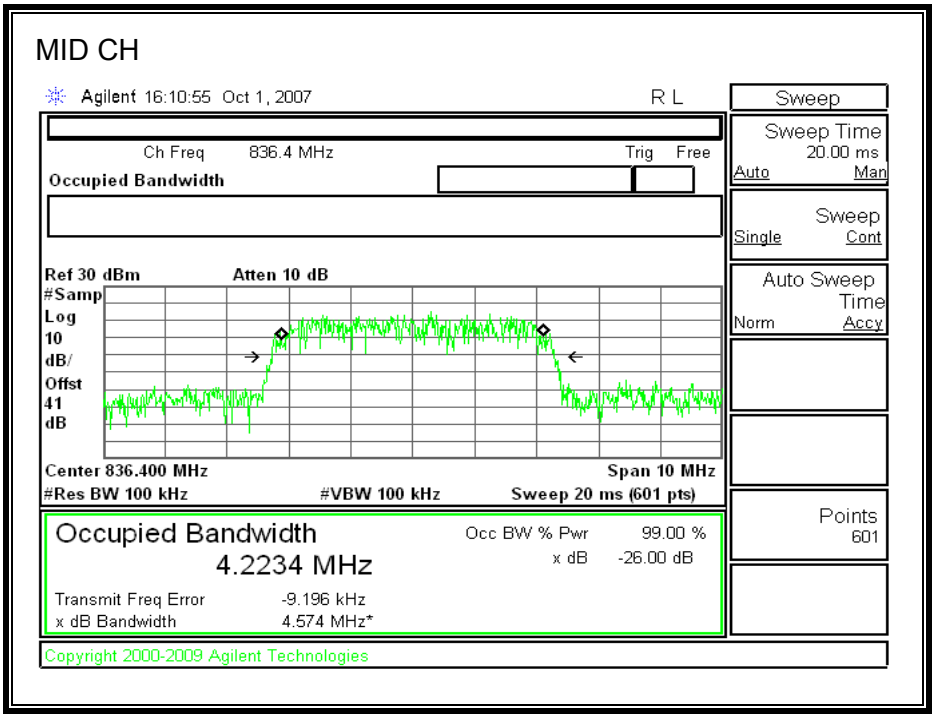


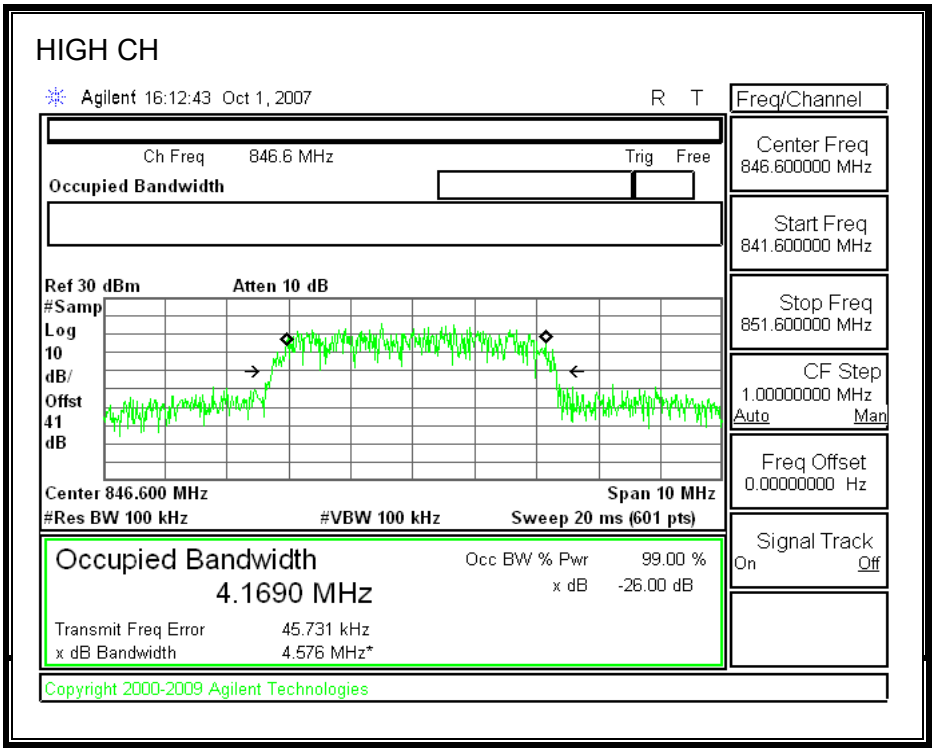

HIGH CH



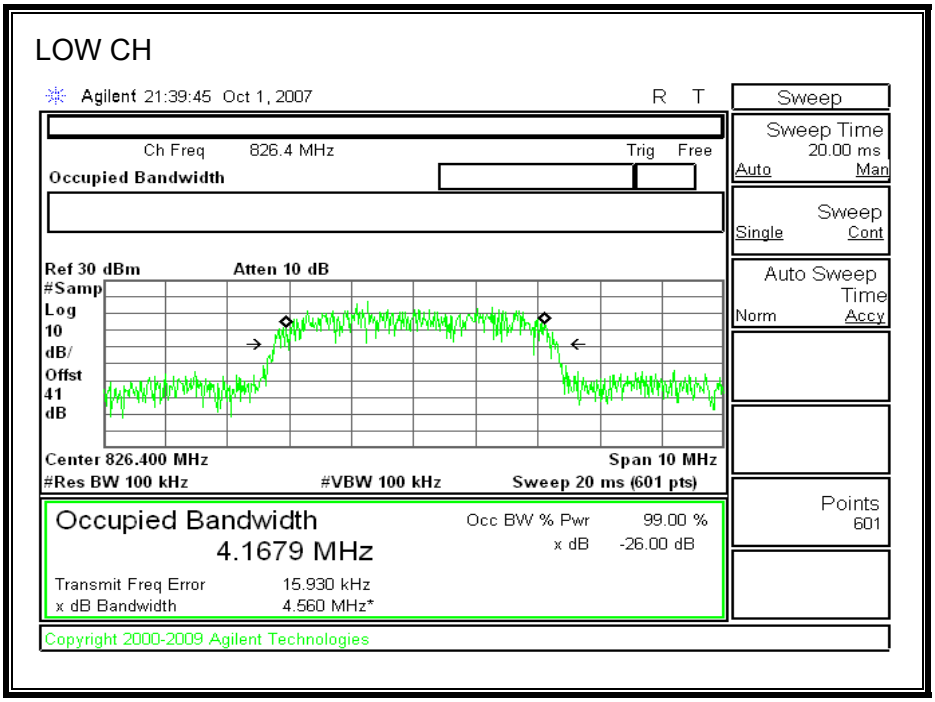
**UMTS REL99 Cellular Band**



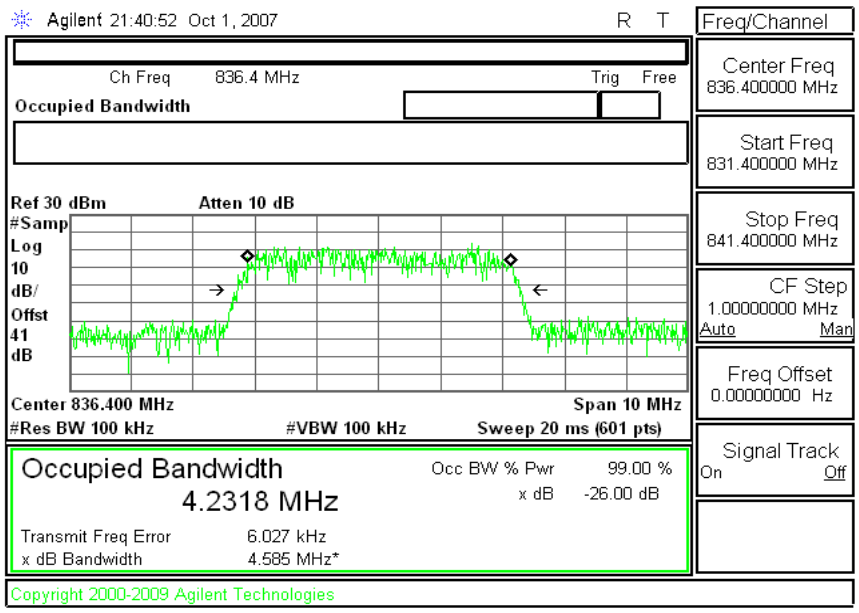





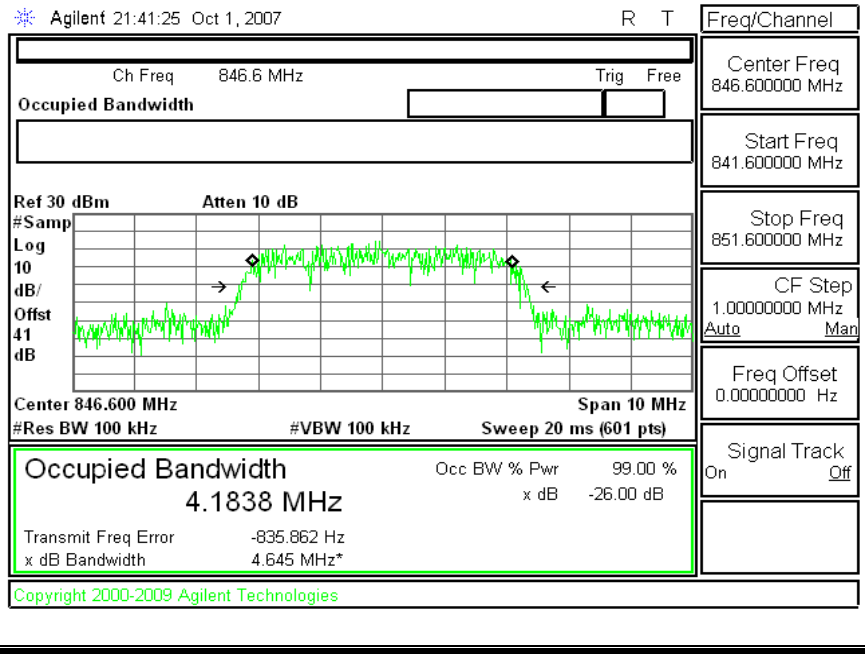

**UMTS HSDPA Cellular Band**



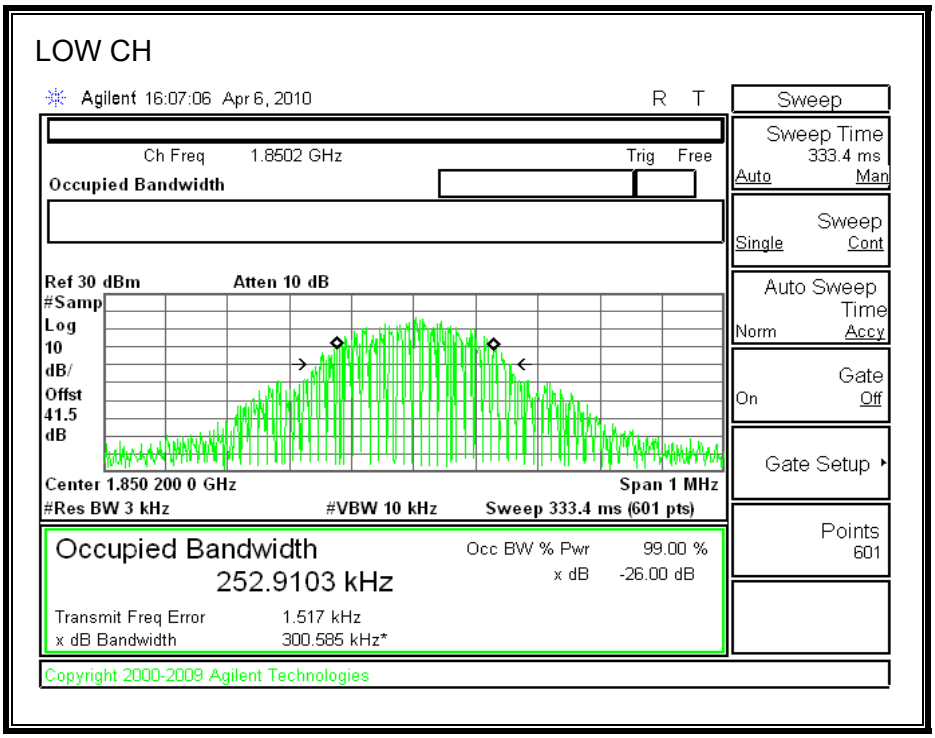
MID CH

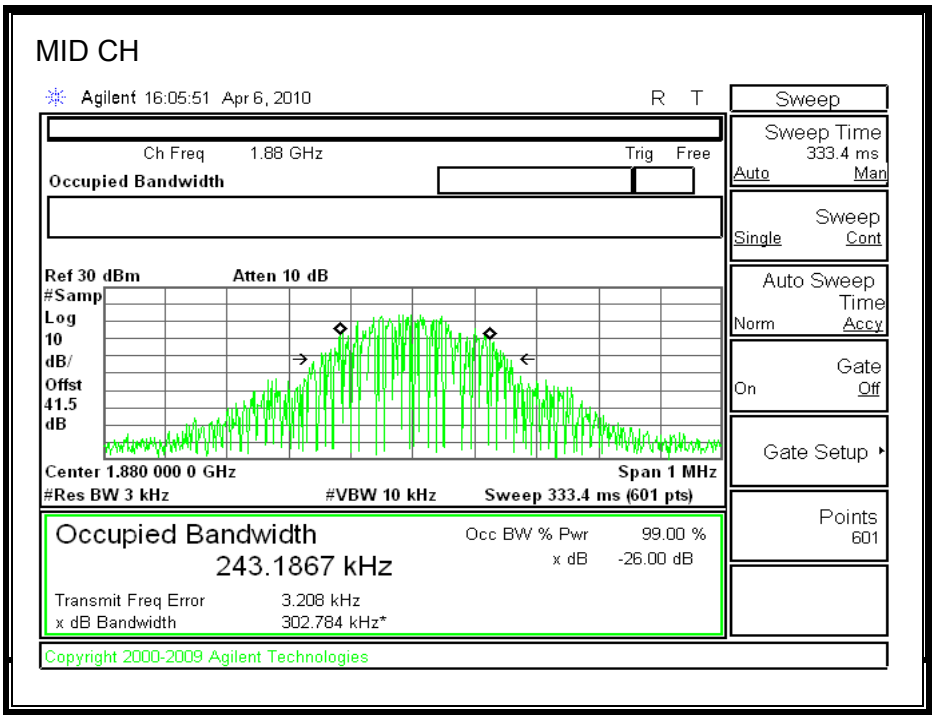


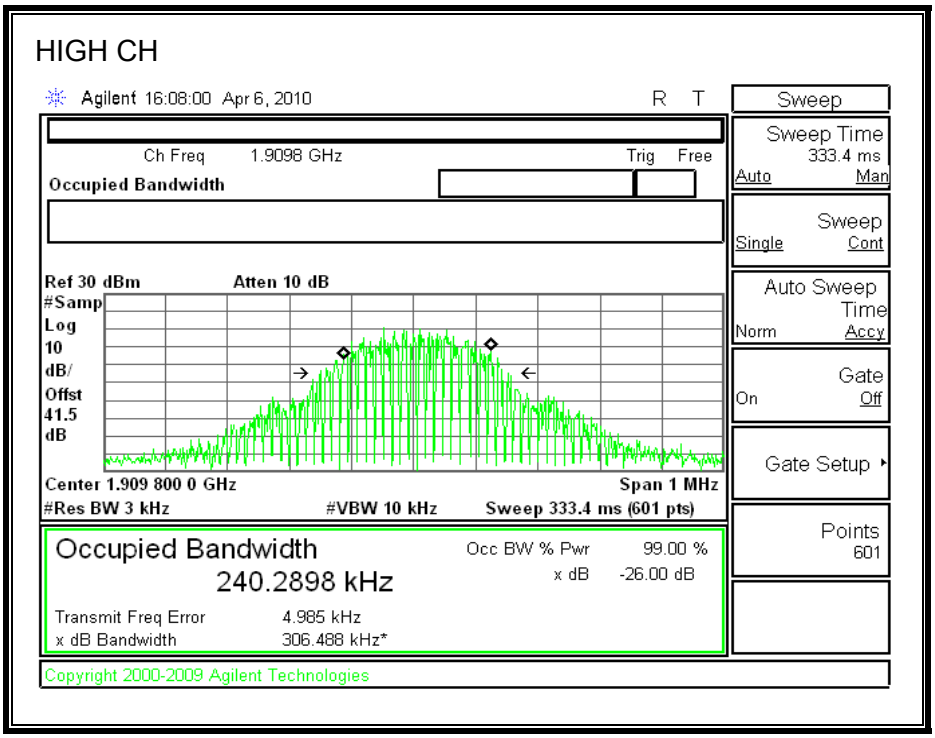

HIGH CH



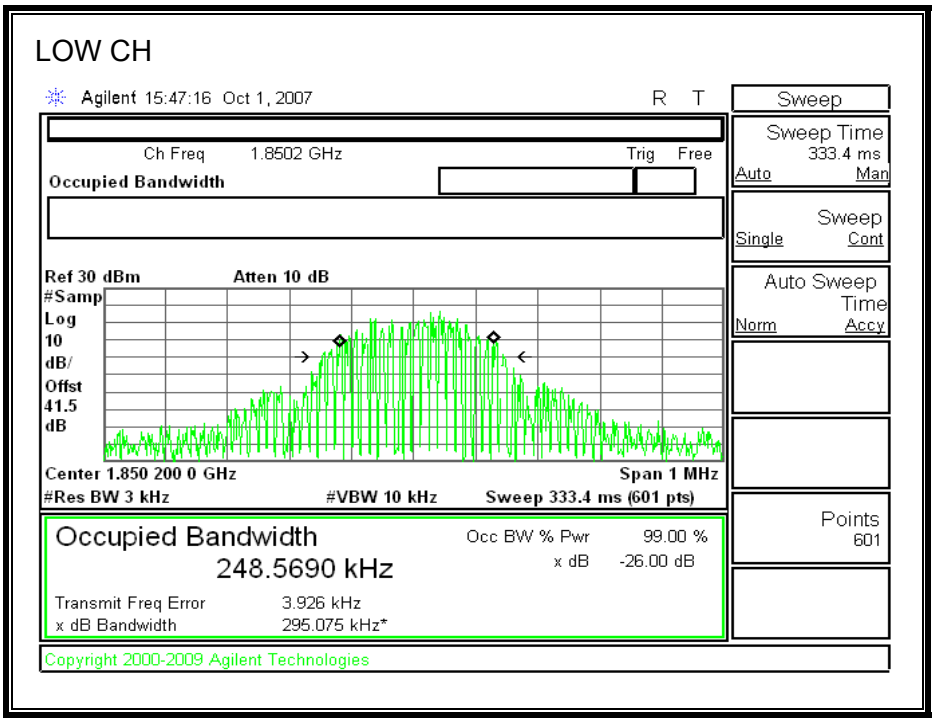
**GPRS1900 PCS Band**



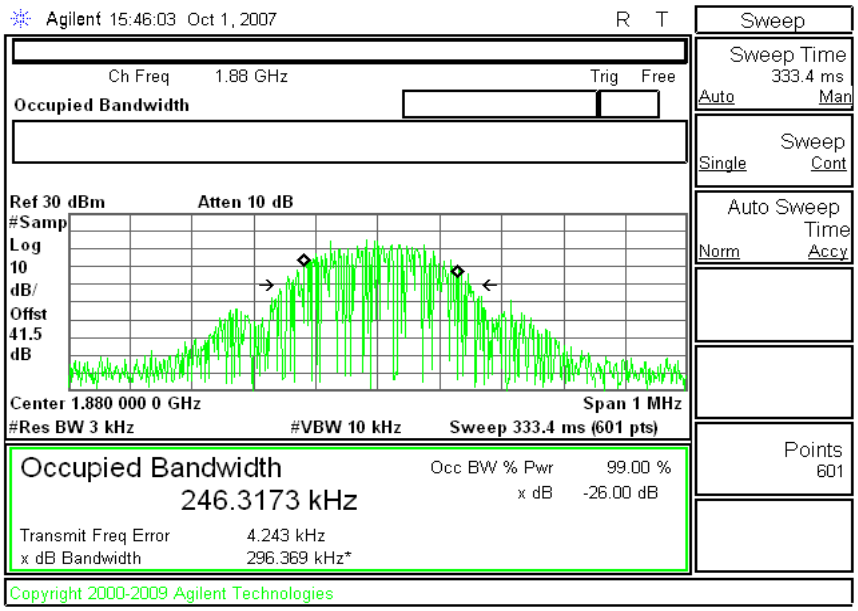





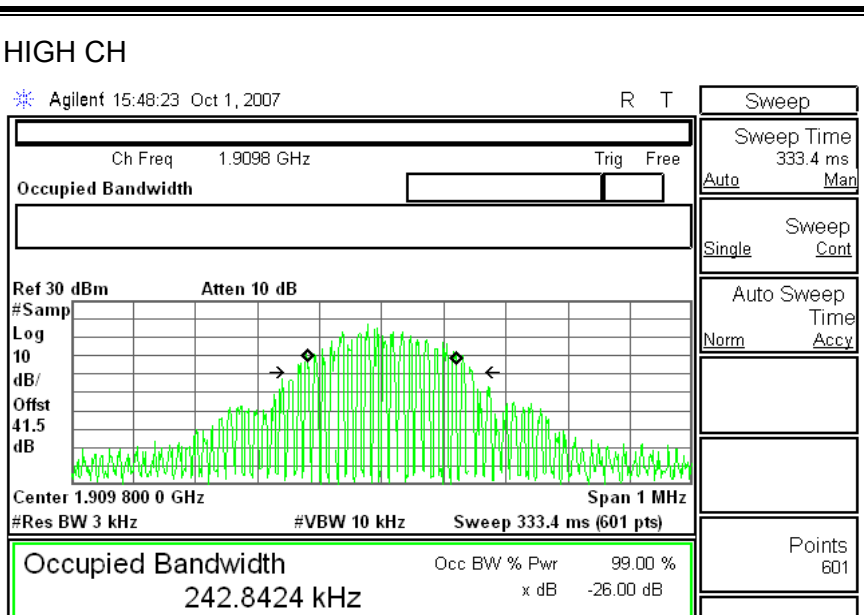

**EGPRS1900 PCS Band**



MID CH

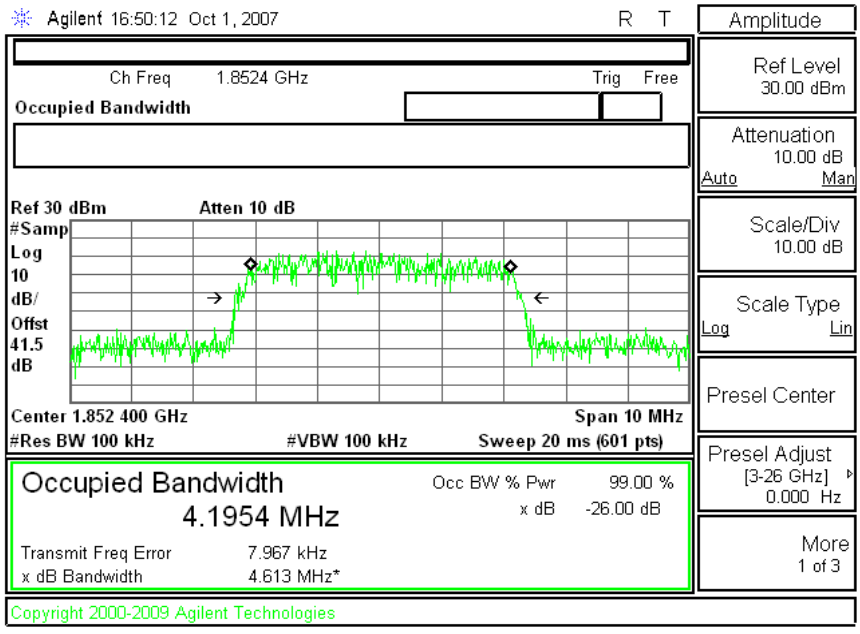



HIGH CH

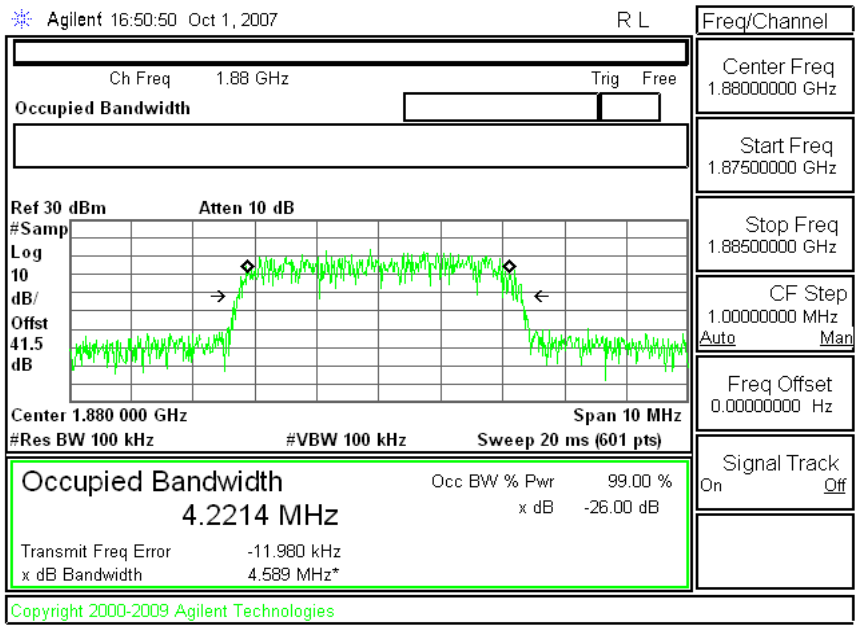


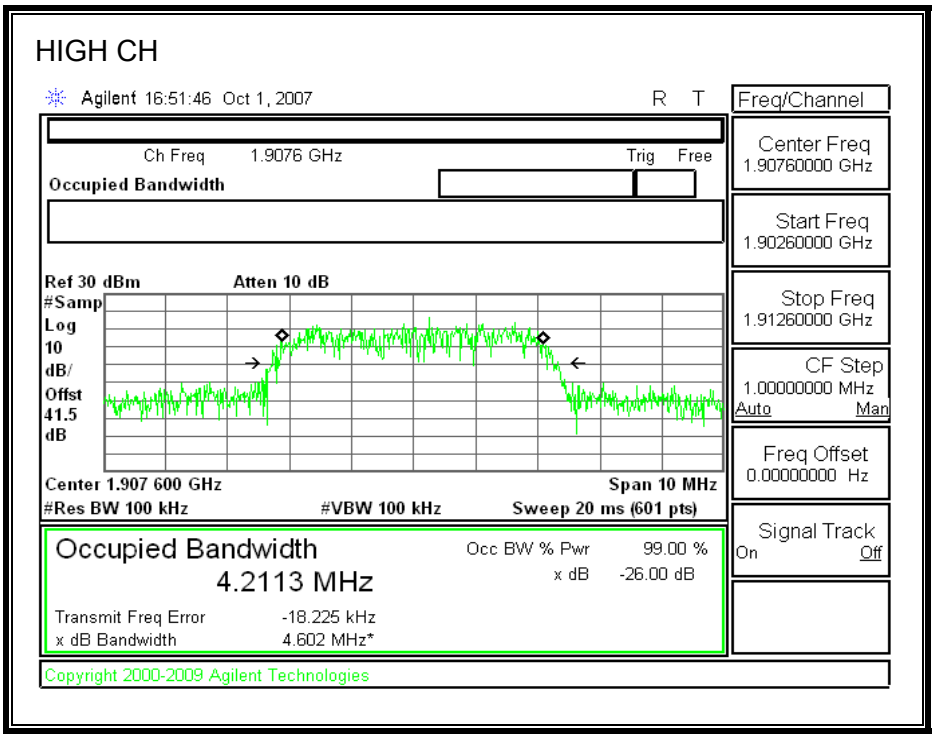
**UMTS REL99 PCS Band**

LOW CH

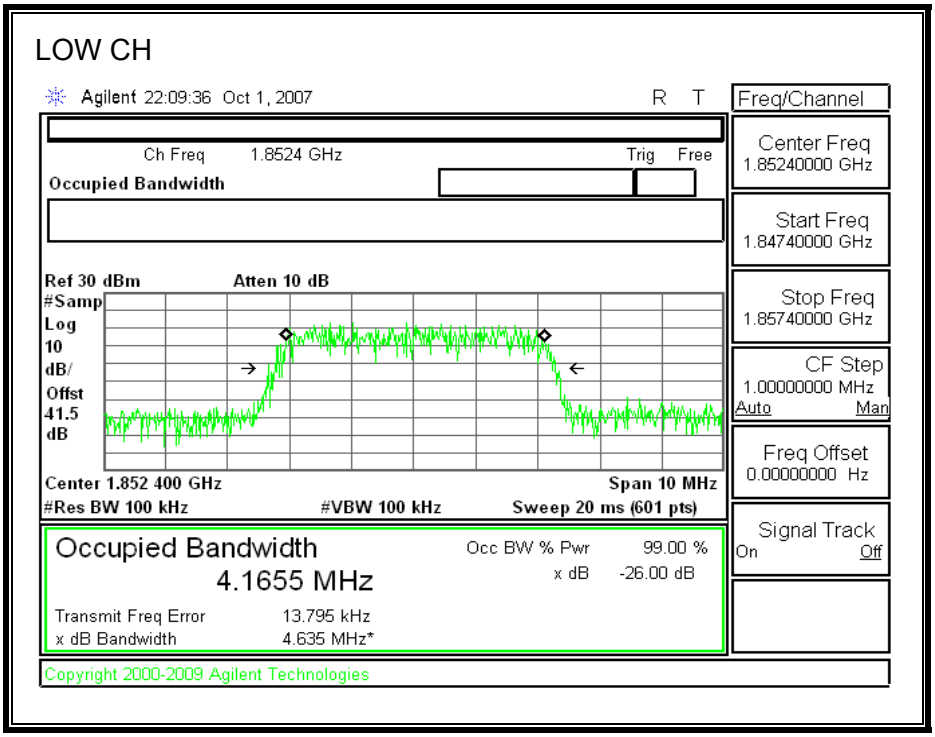



MID CH

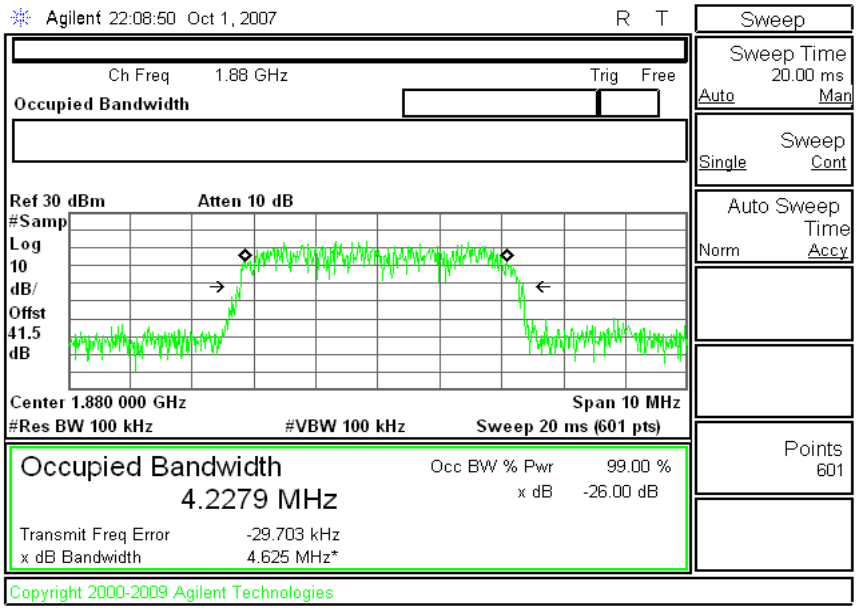




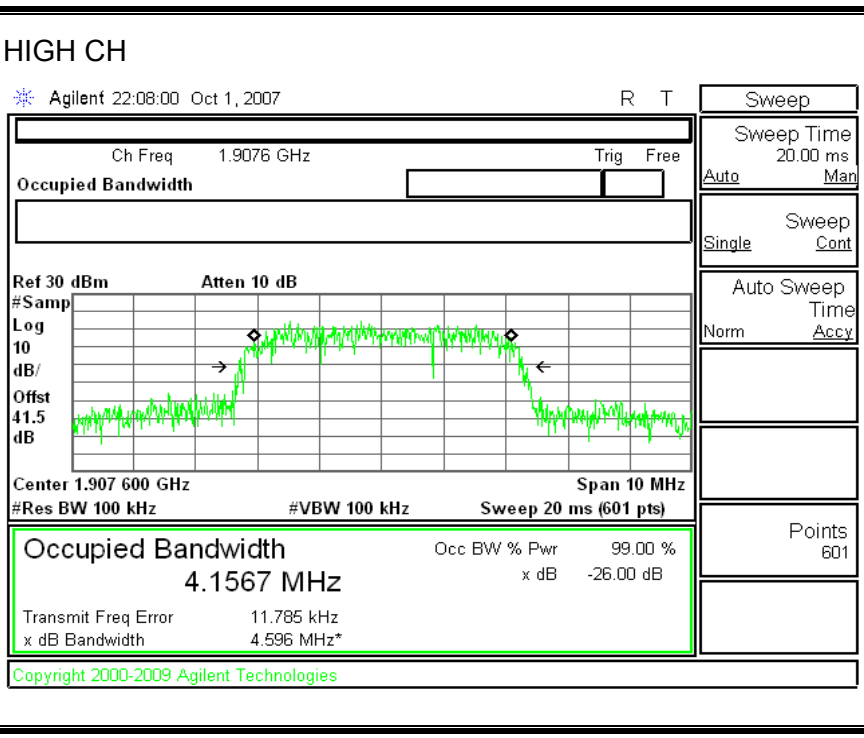

**UMTS HSDPA PCS Band**



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**

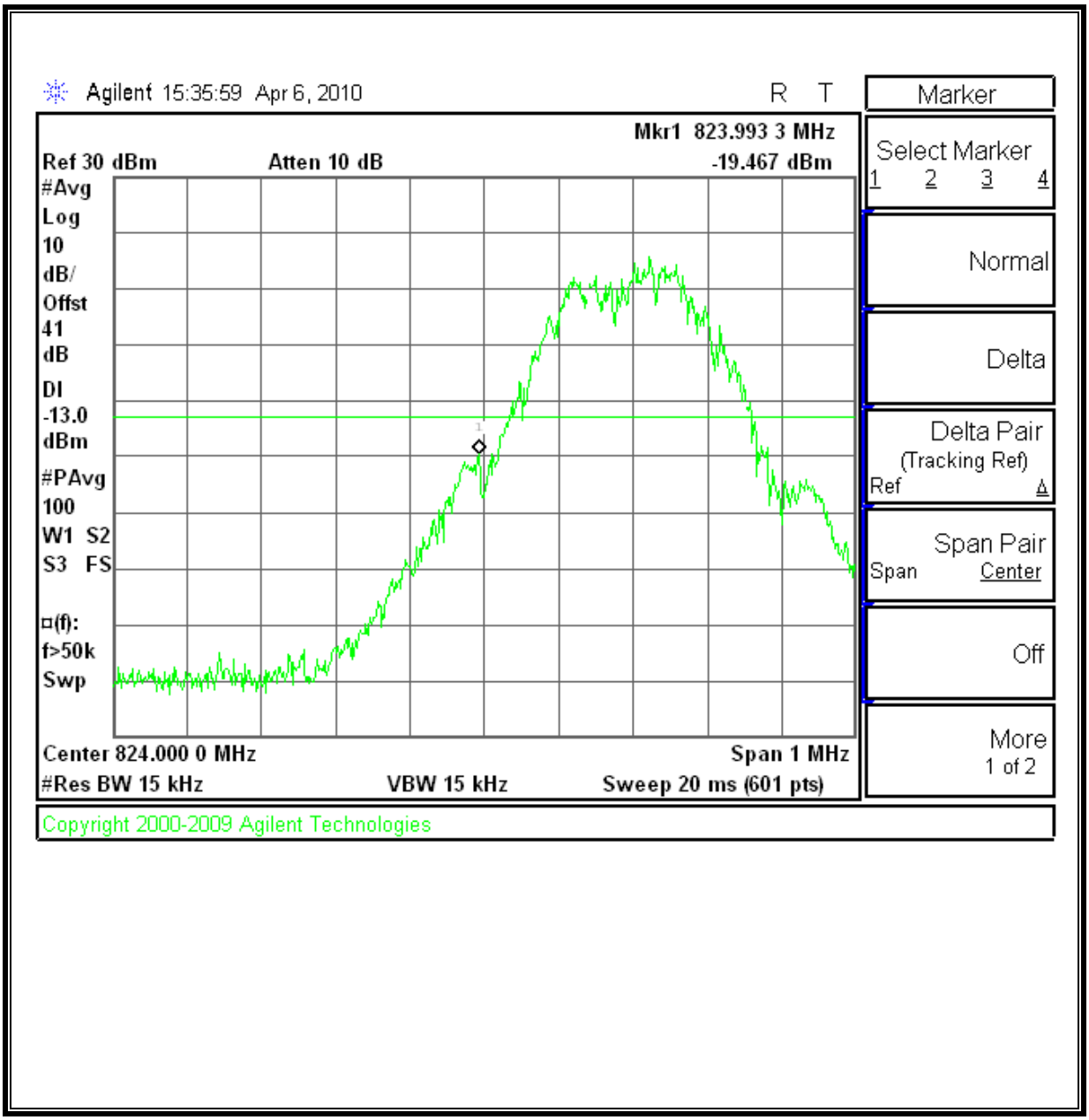
- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA Subtest 2

**RESULTS**

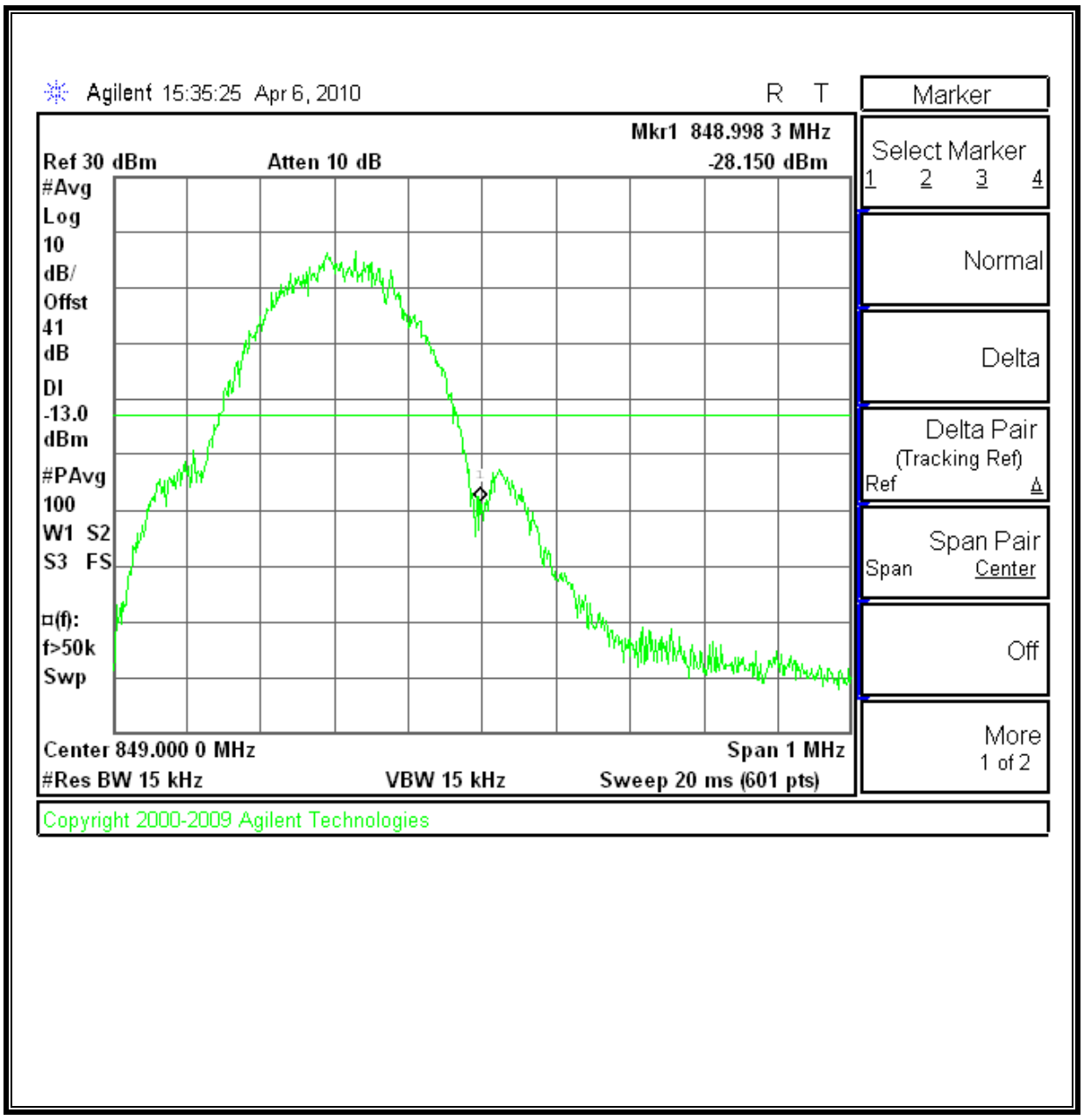
See the following pages.

## GPRS850

### Low Channel Band Edge

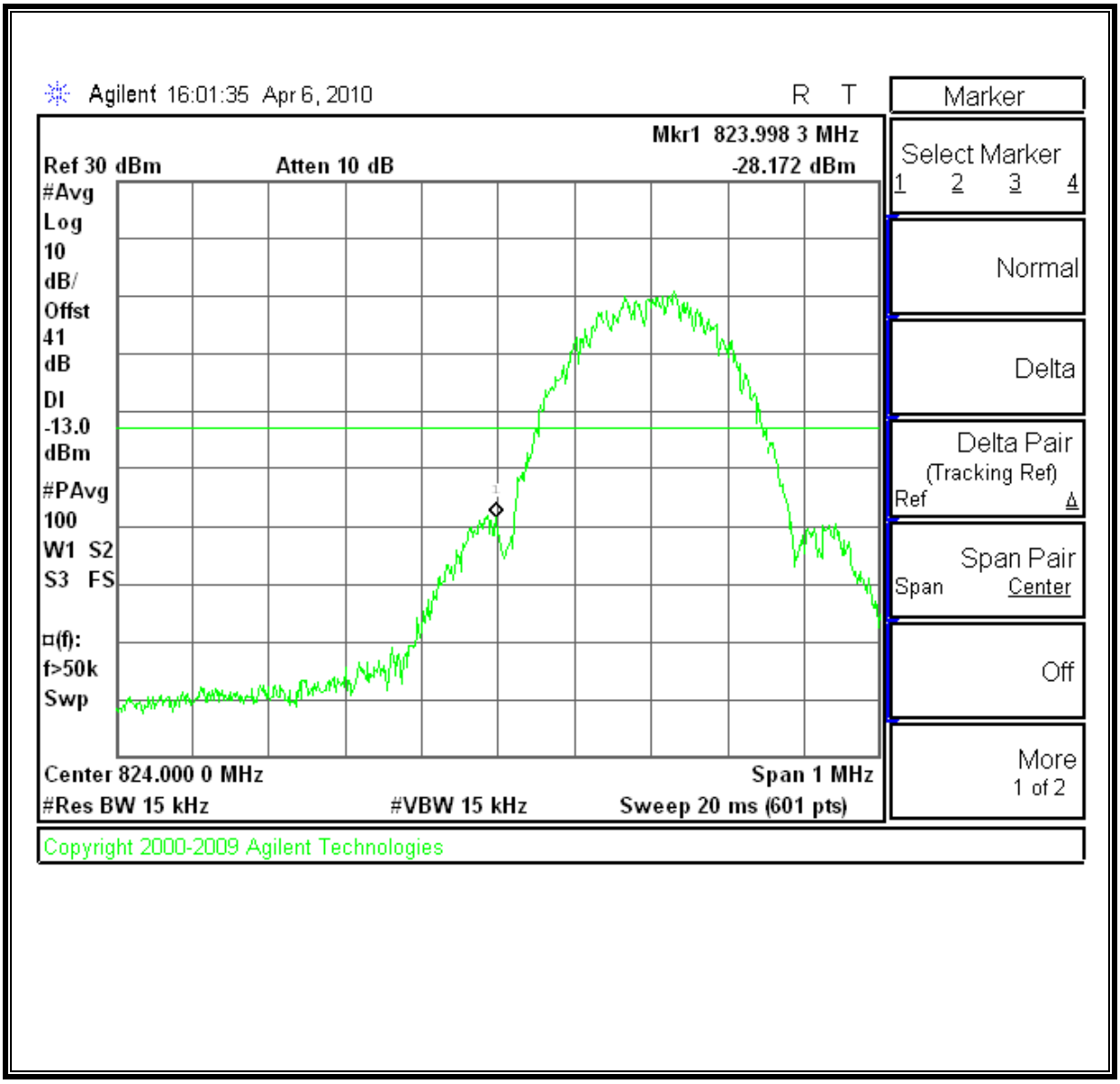


**High Channel Band Edge**

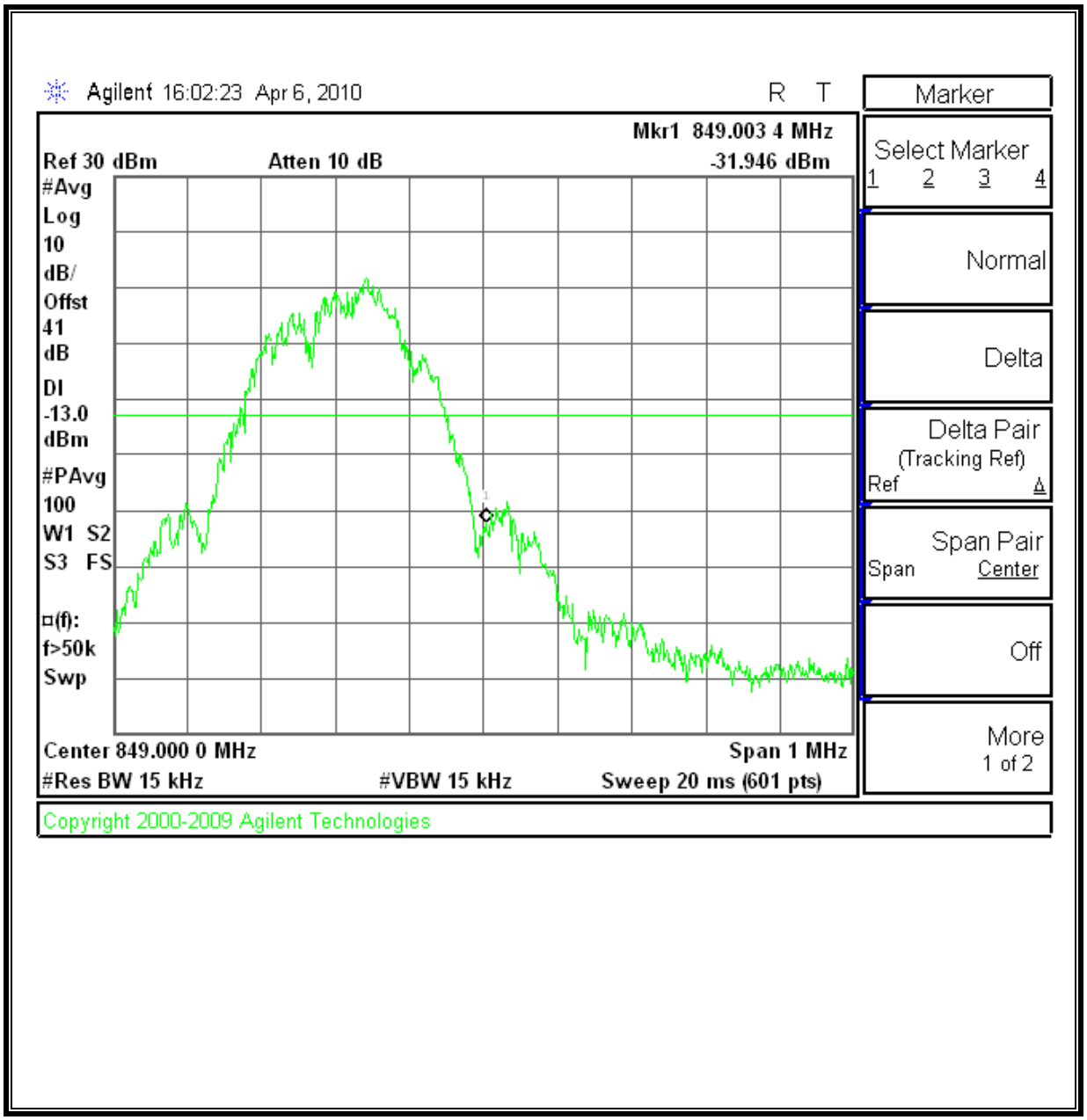


**E**GPRS850

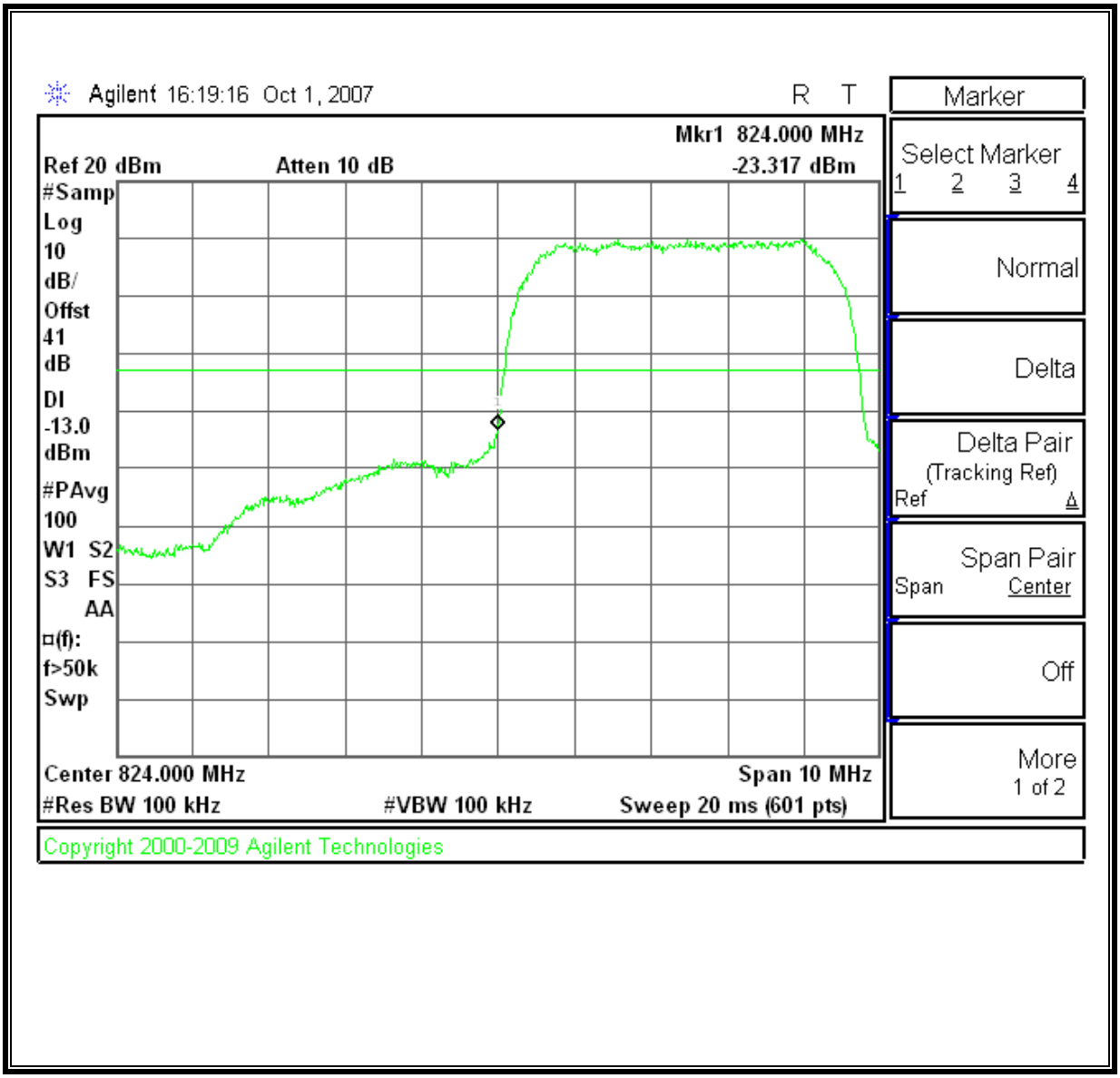
**Low Channel Band Edge**



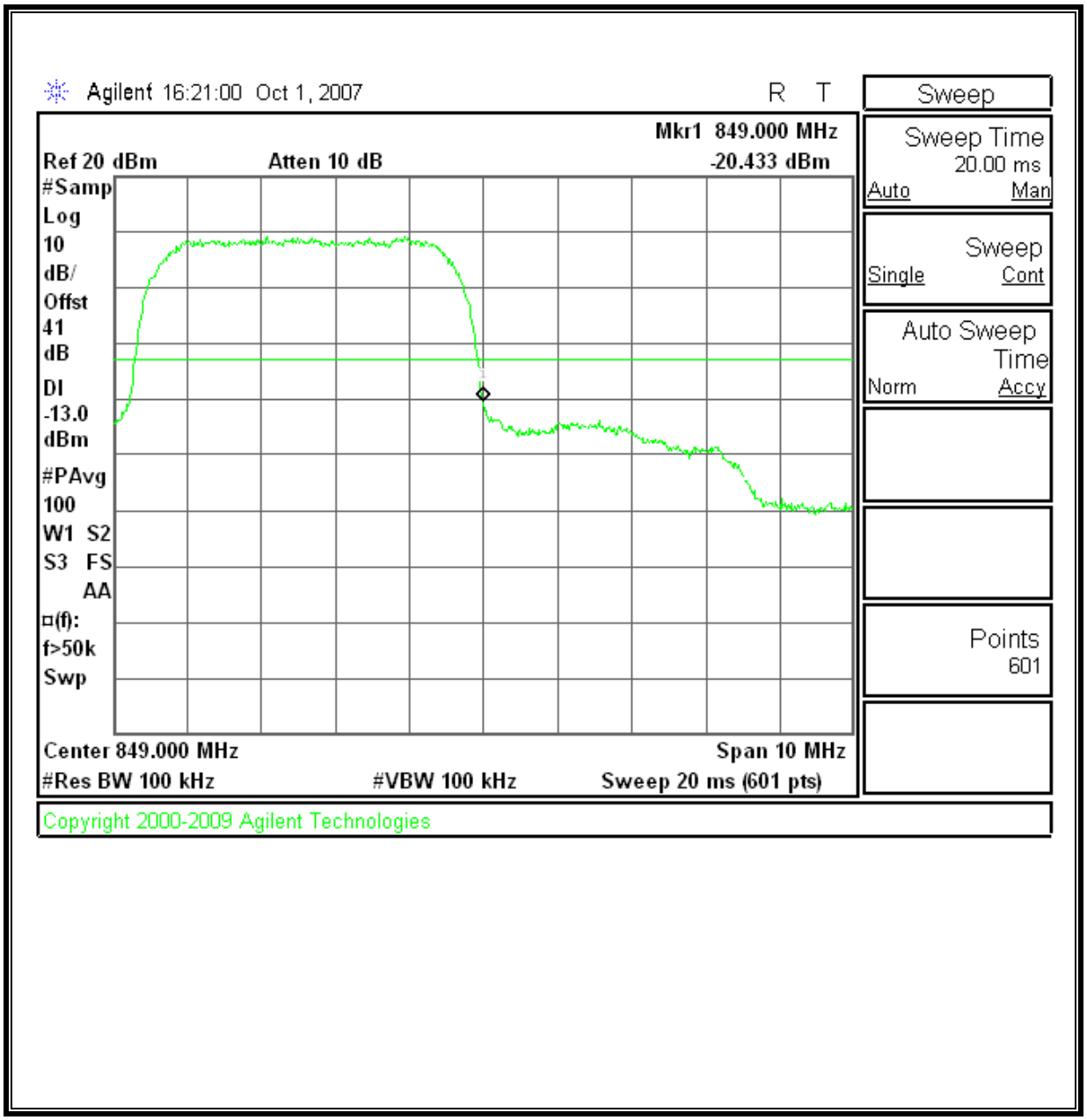
**High Channel Band Edge**



**UMTS, REL99 Low Channel Band Edge**

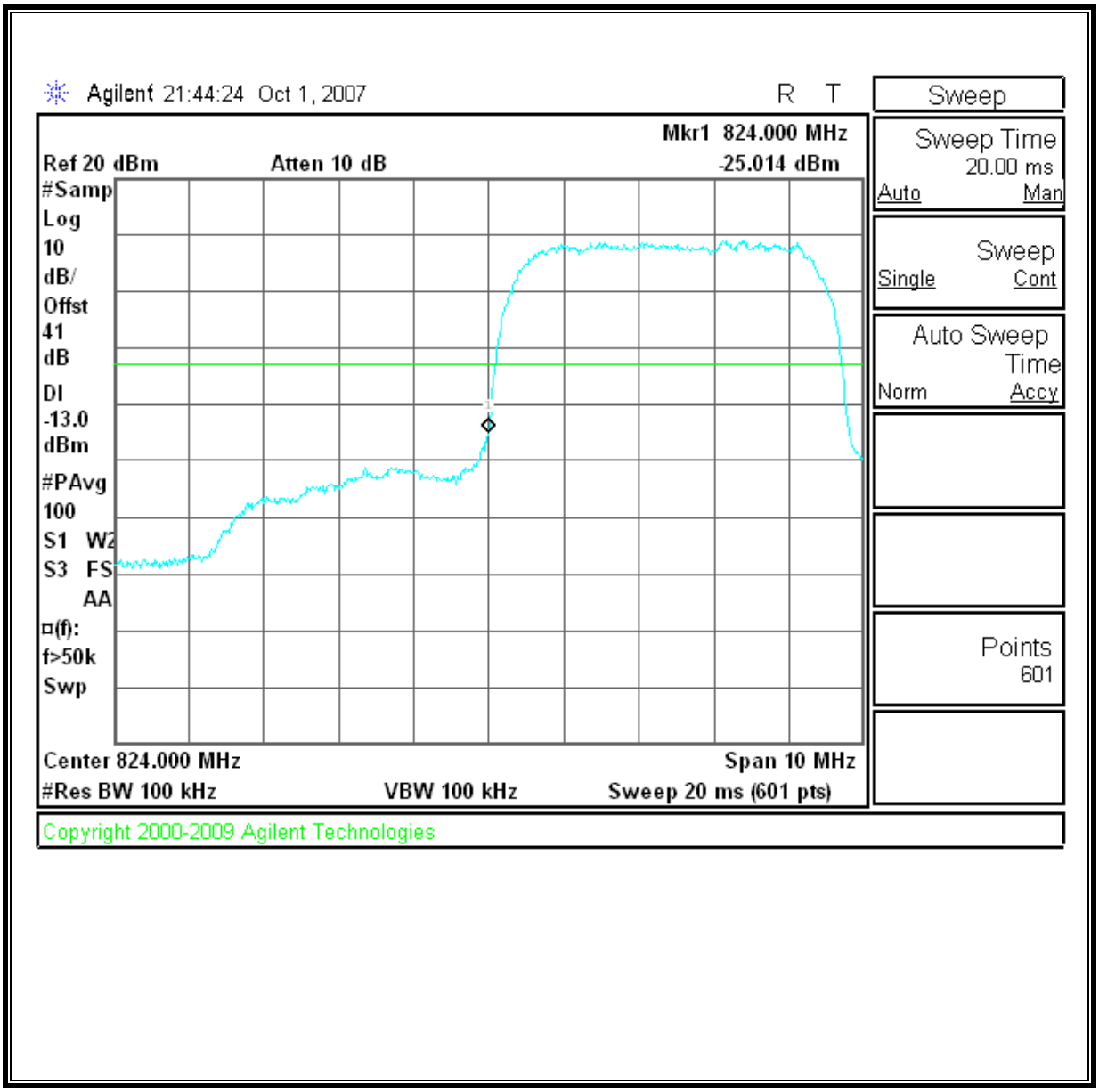


**High Channel Band Edge**

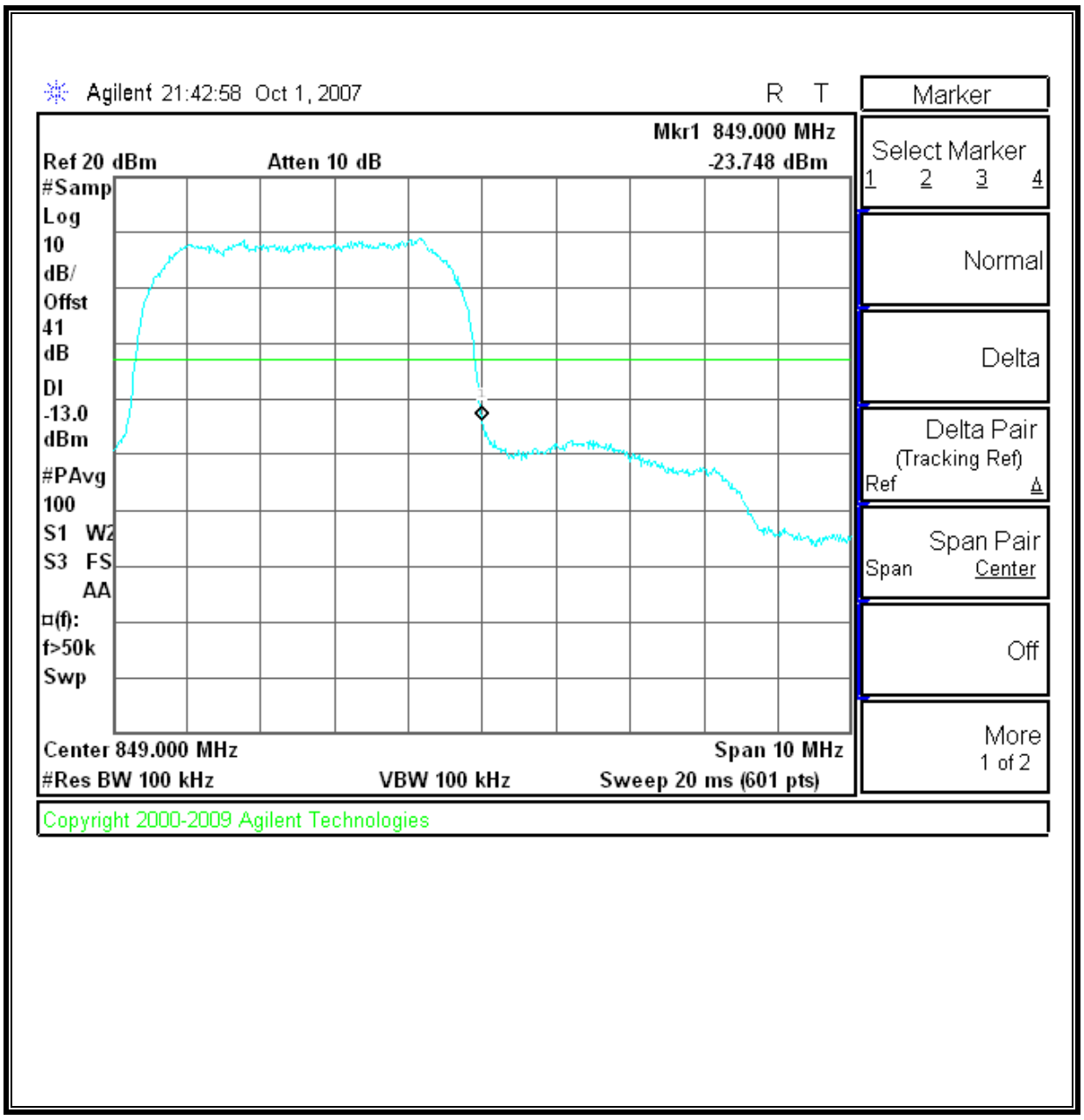


**UMTS, HSDPA CELL**

**Low Channel Band Edge**

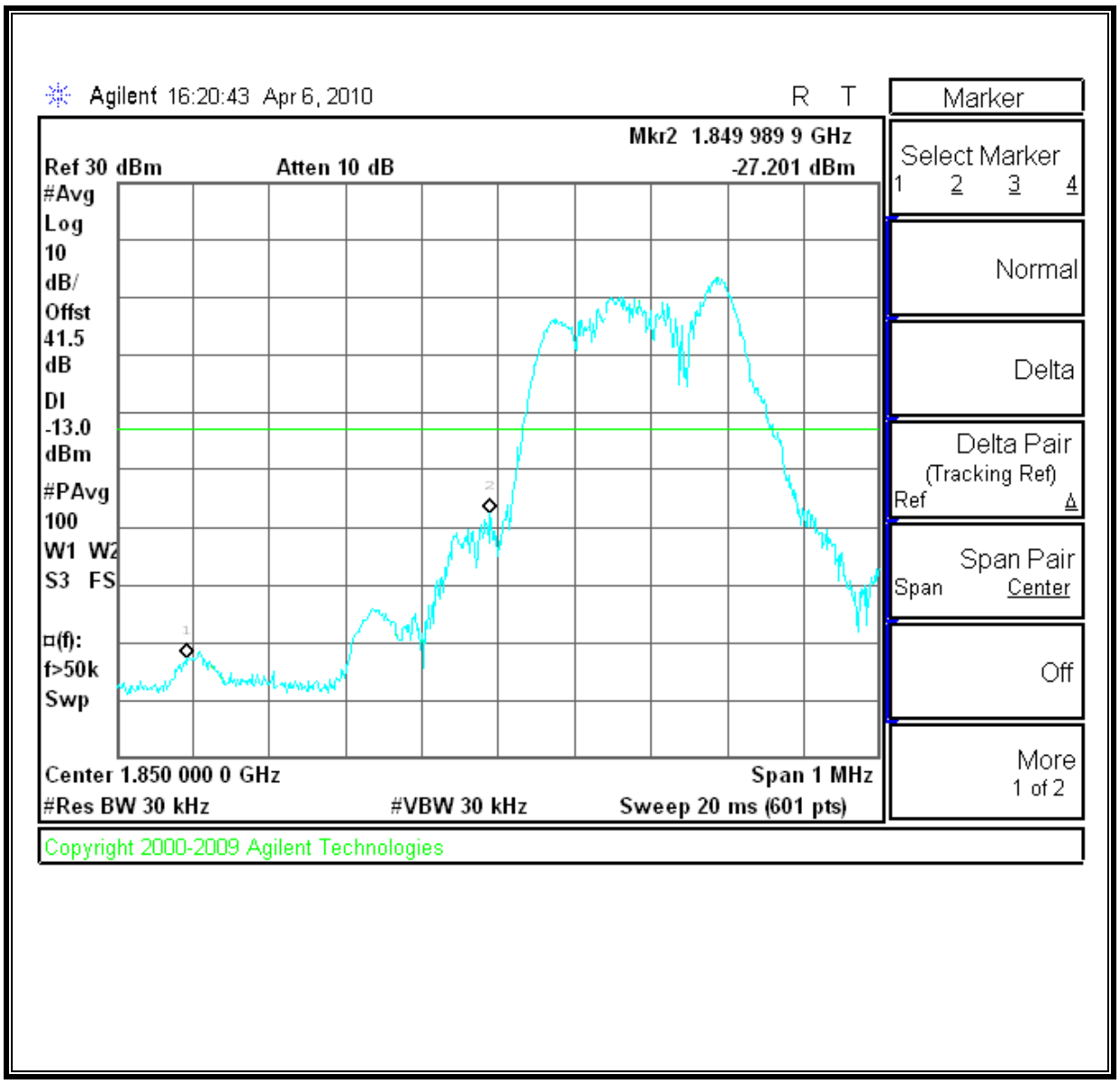


**High Channel Band Edge**

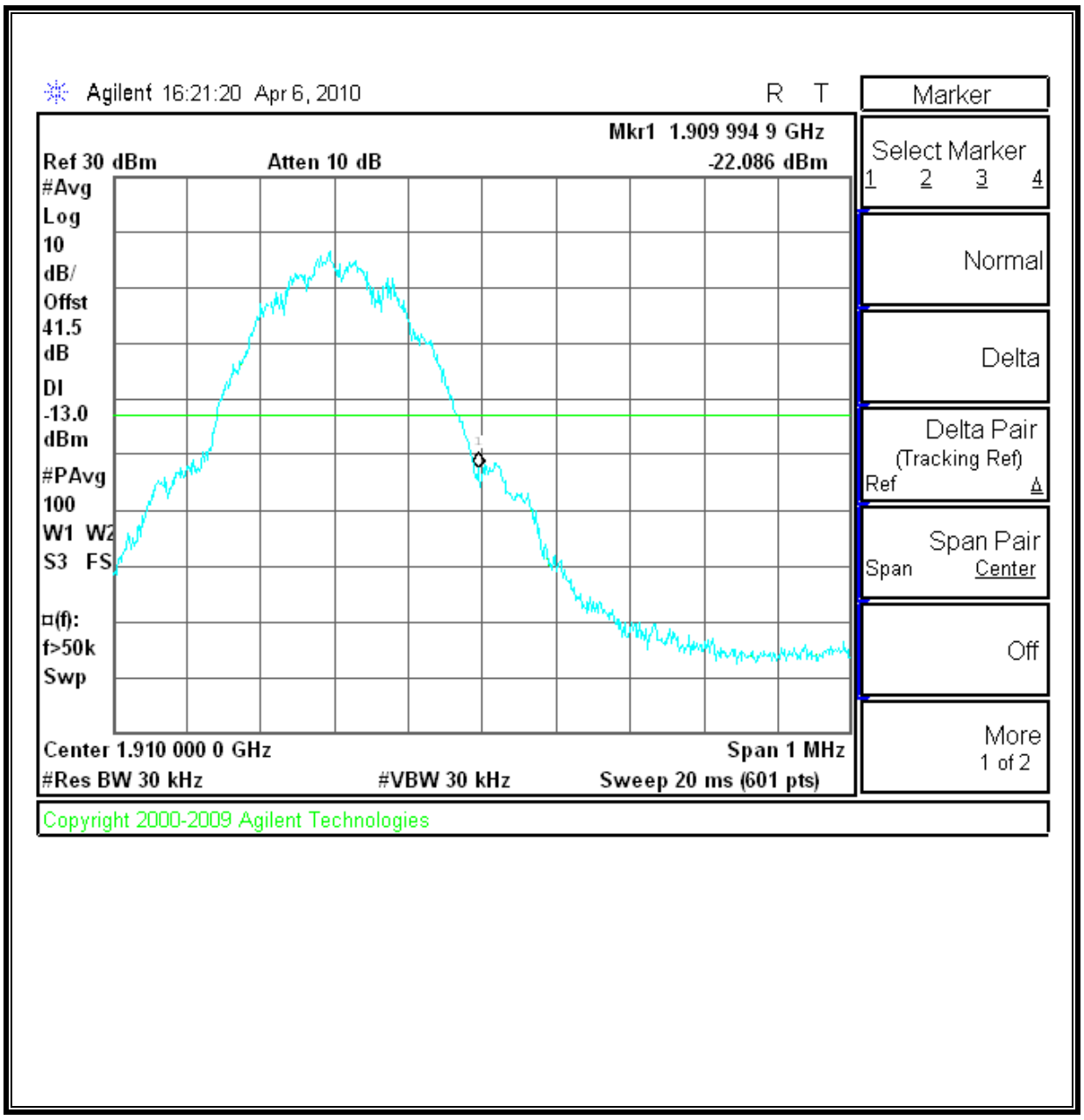


**GPRS1900**

**Low Channel Band Edge**

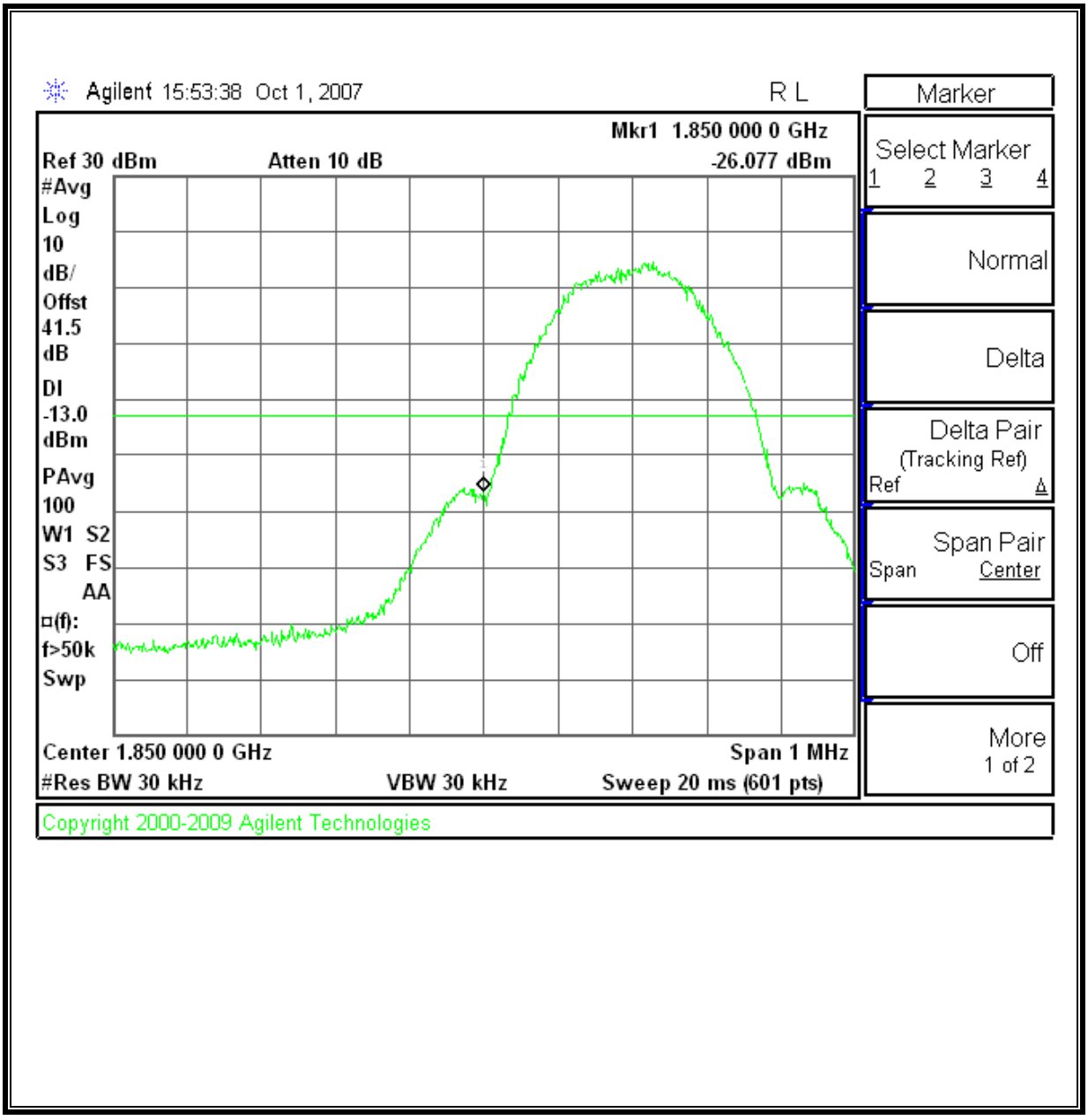


**High Channel Band Edge**

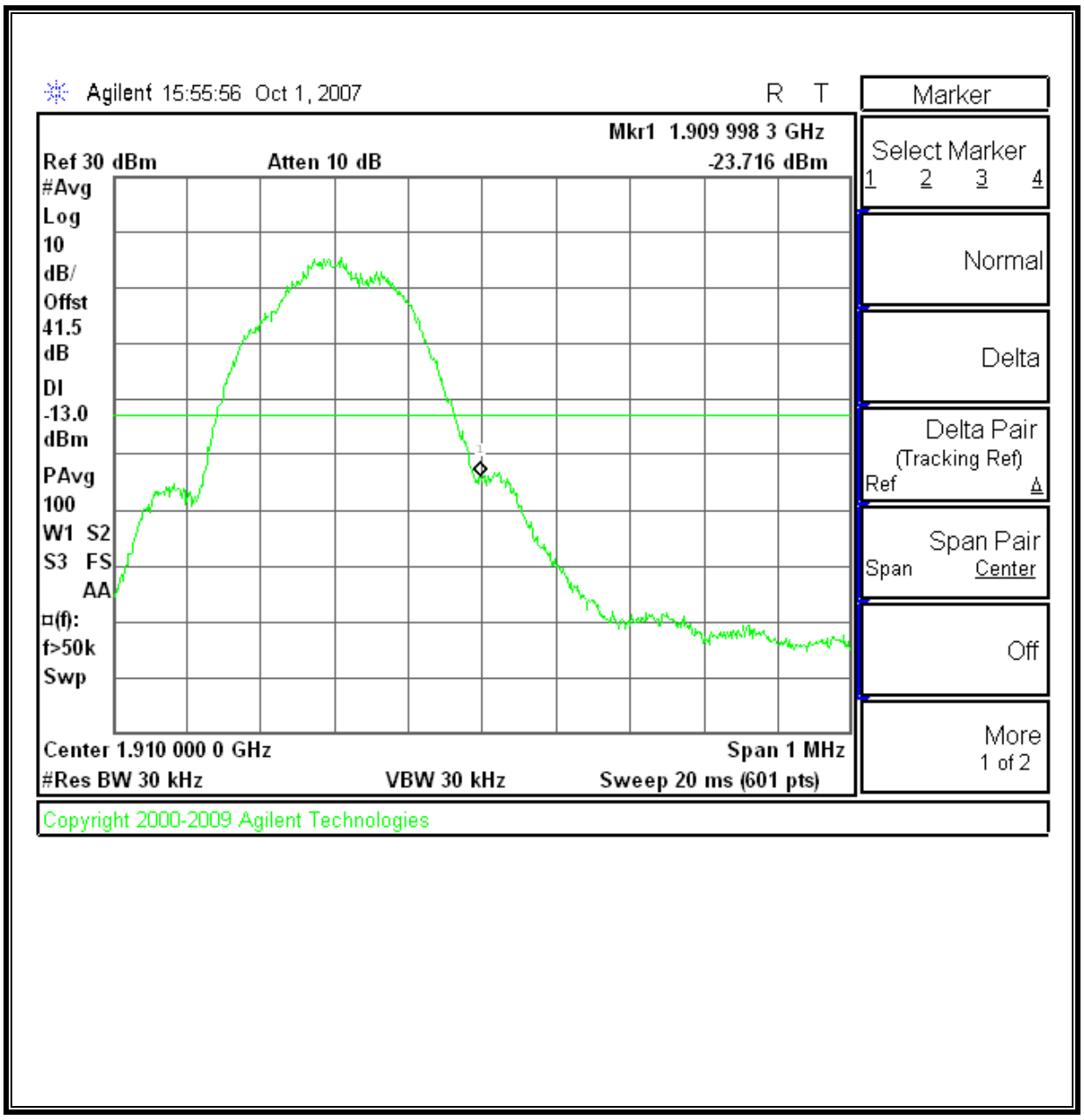


**EGPRS1900**

**Low Channel Band Edge**

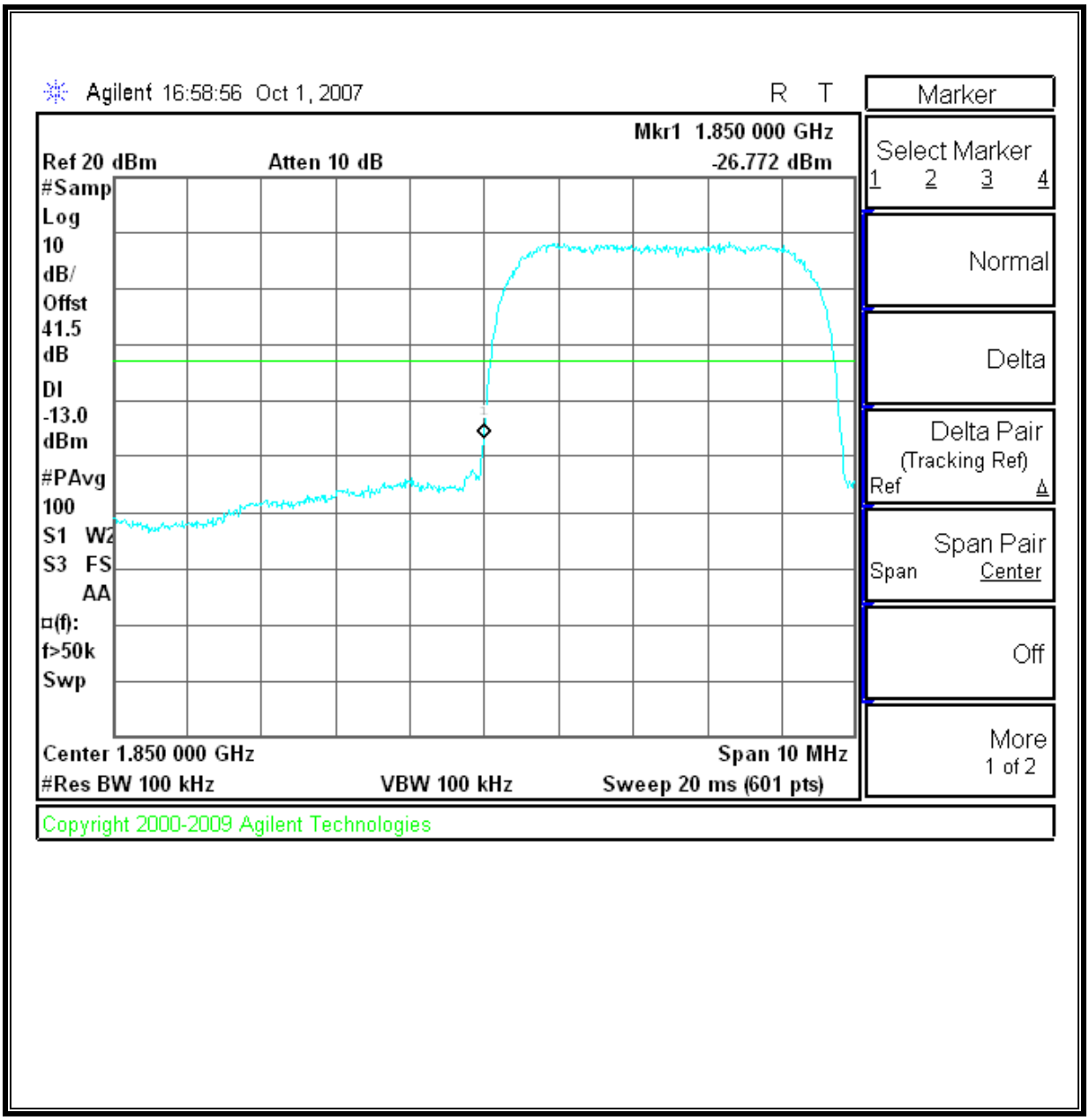


**High Channel Band Edge**

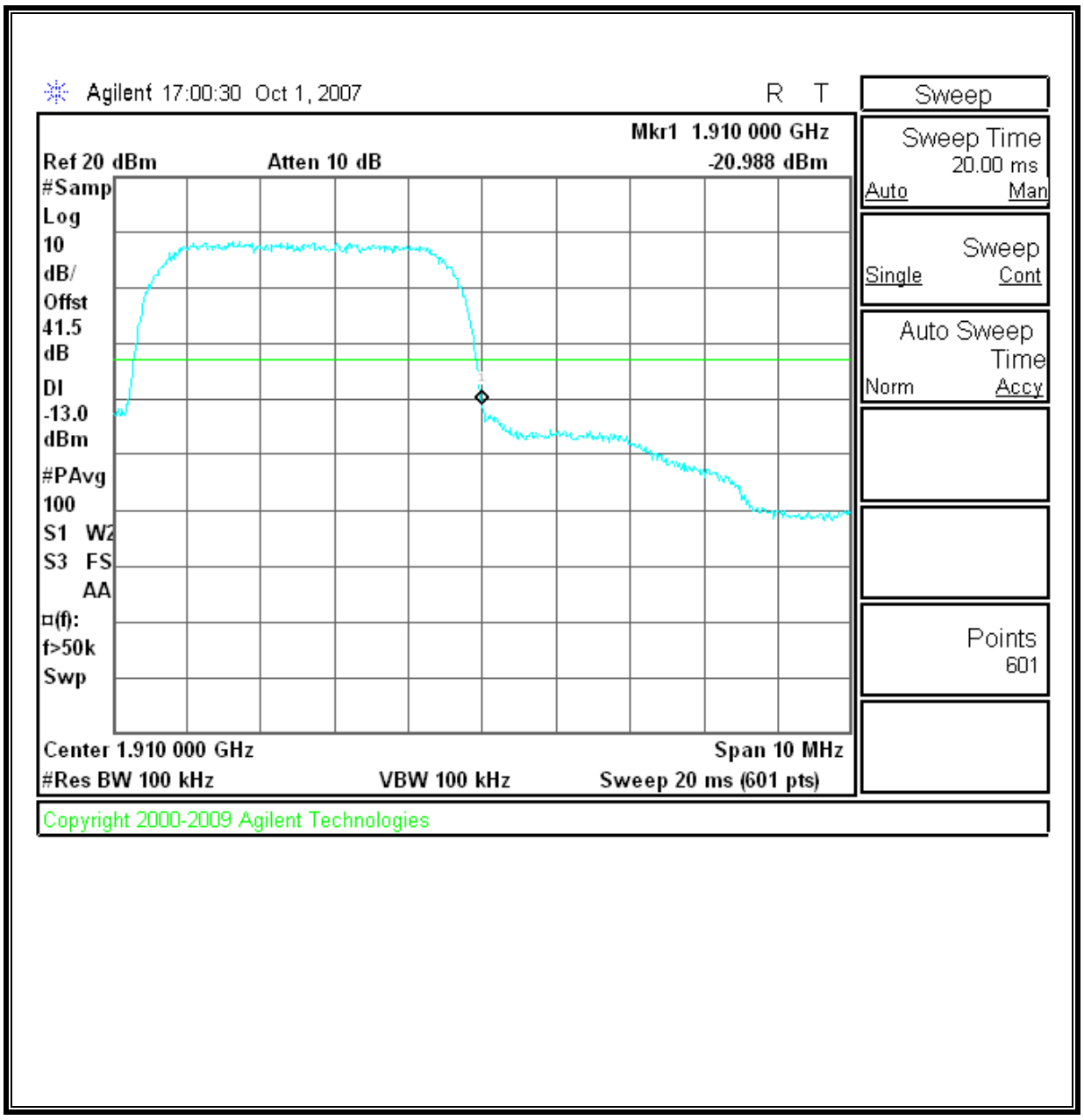


**UMTS, REL99 PCS BAND**

**Low Channel Band Edge**

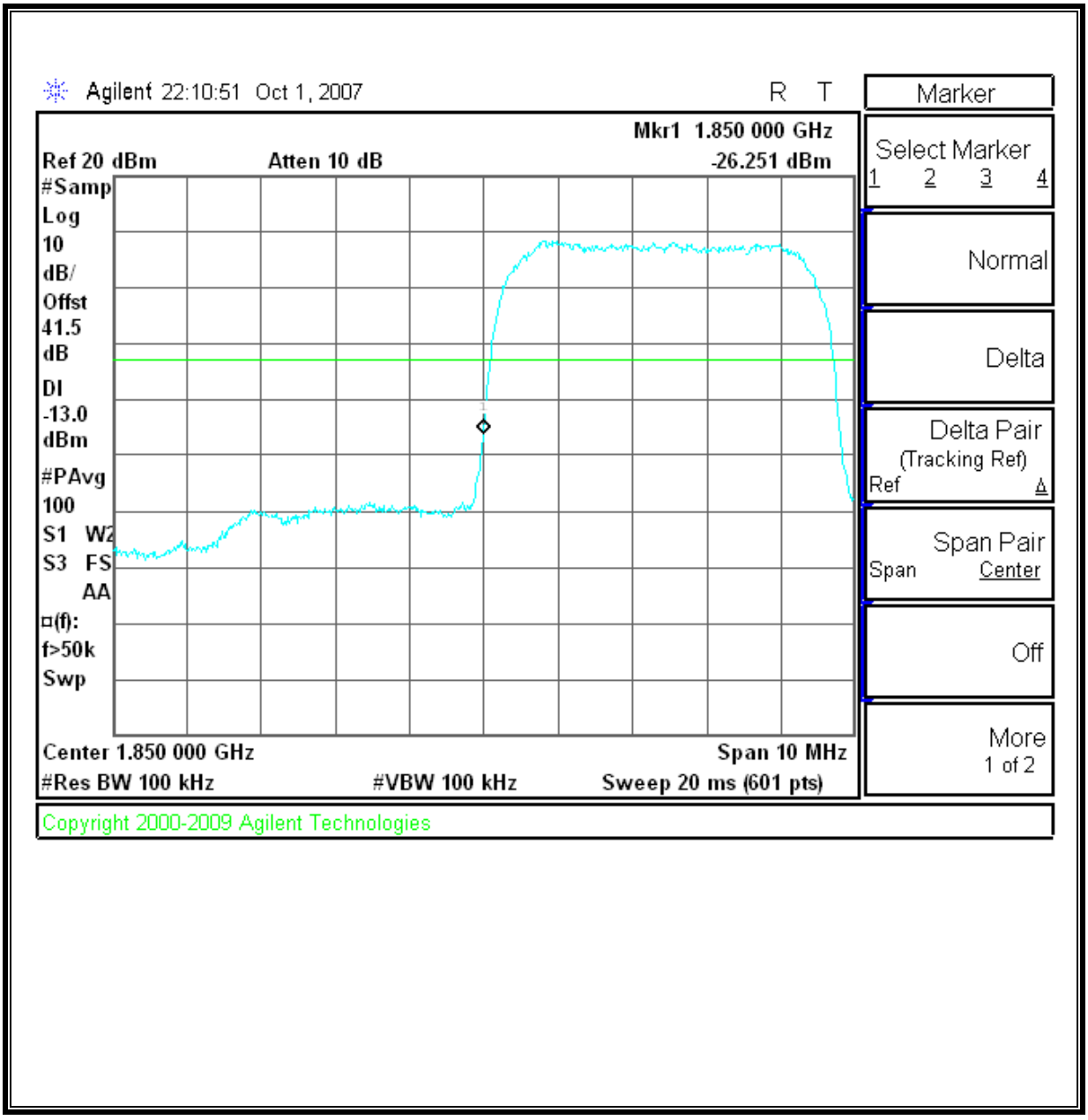


**High Channel Band Edge**

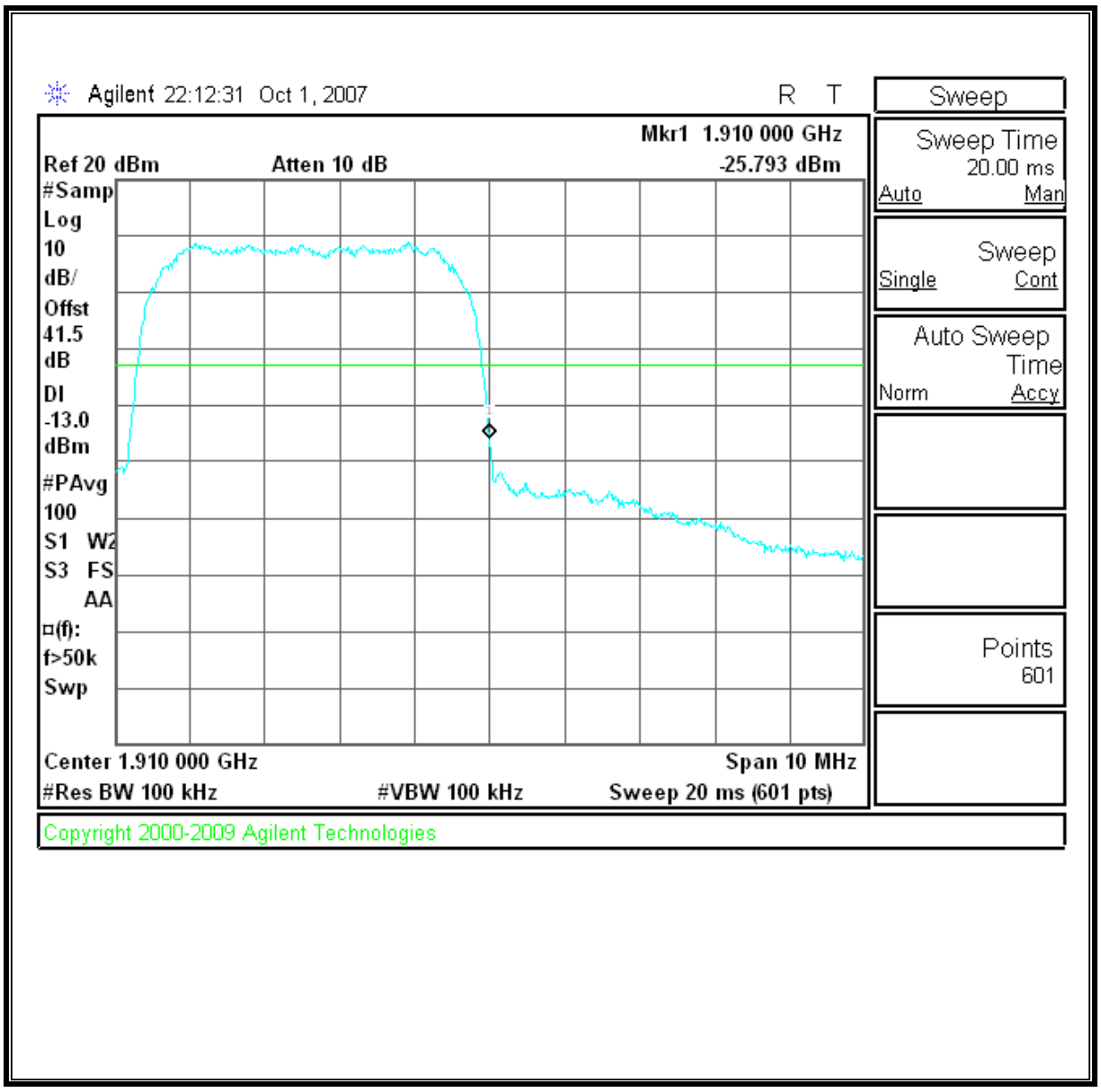


**UMTS HSDPA PCS BAND**

**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**

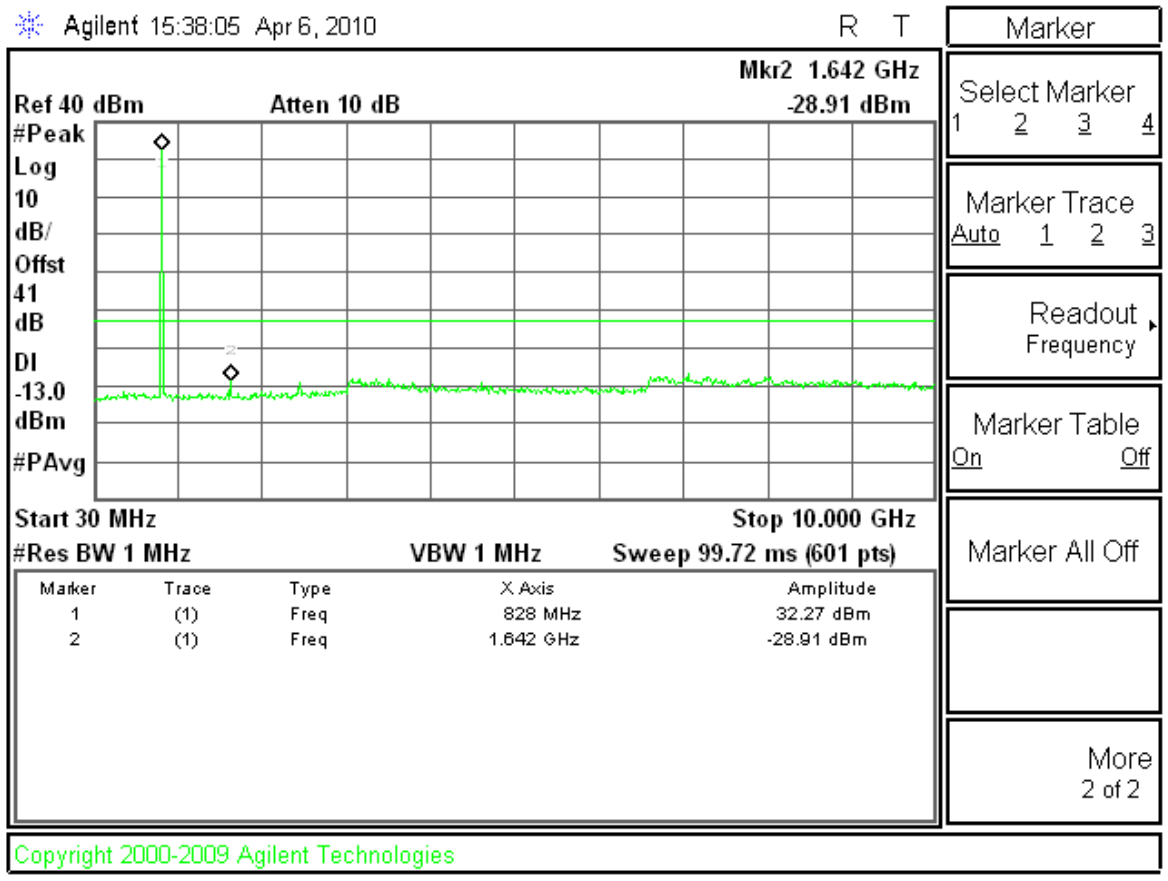
- GSM - GSM (GSMK) & EGPRS (8PSK),
- UMTS (W-CDMA) - Rel 99, Rel 6 HSDPA Subtest 2

**RESULTS**

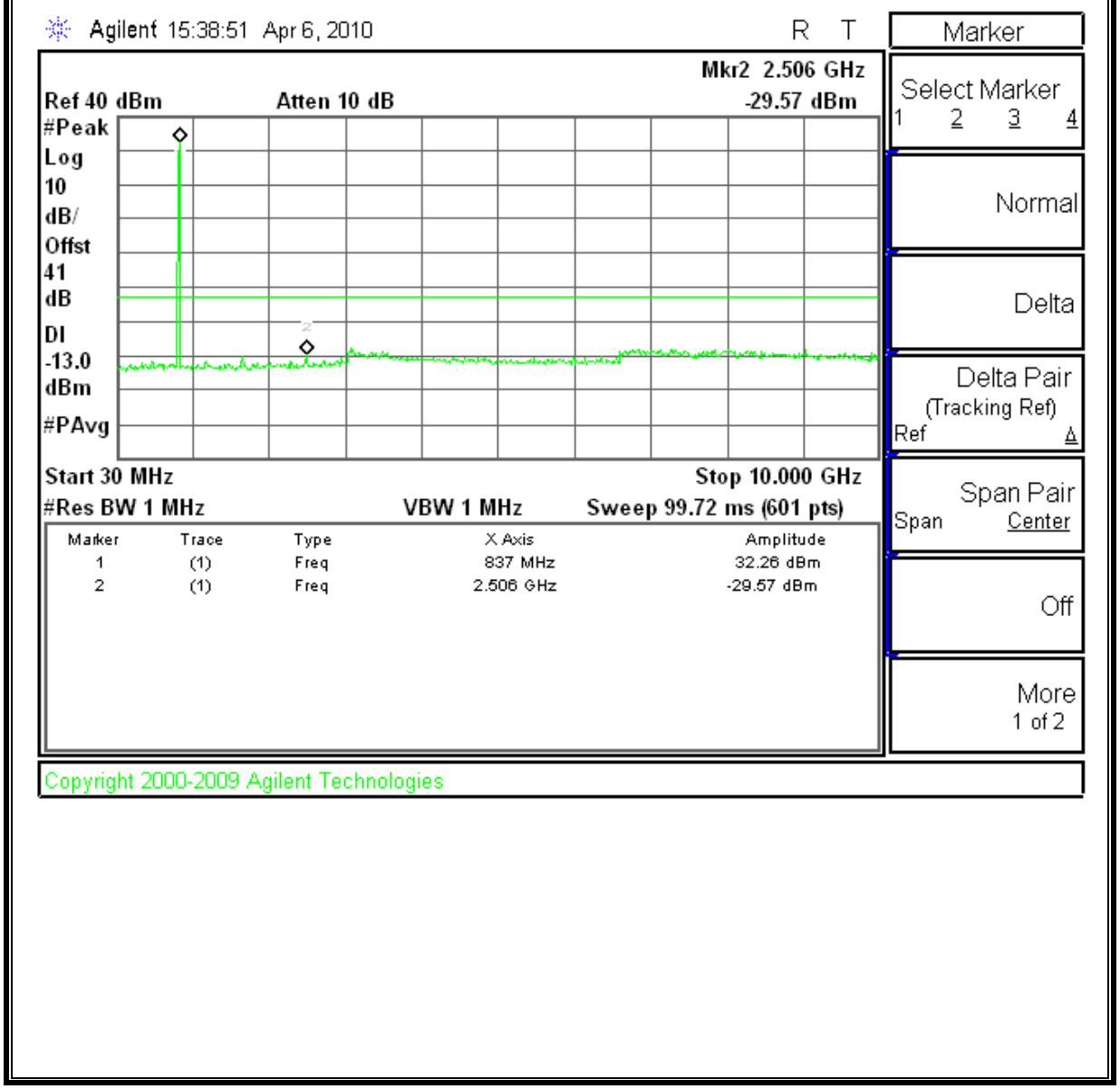
See the following pages.

**GPRS Mode (Cellular Band)**

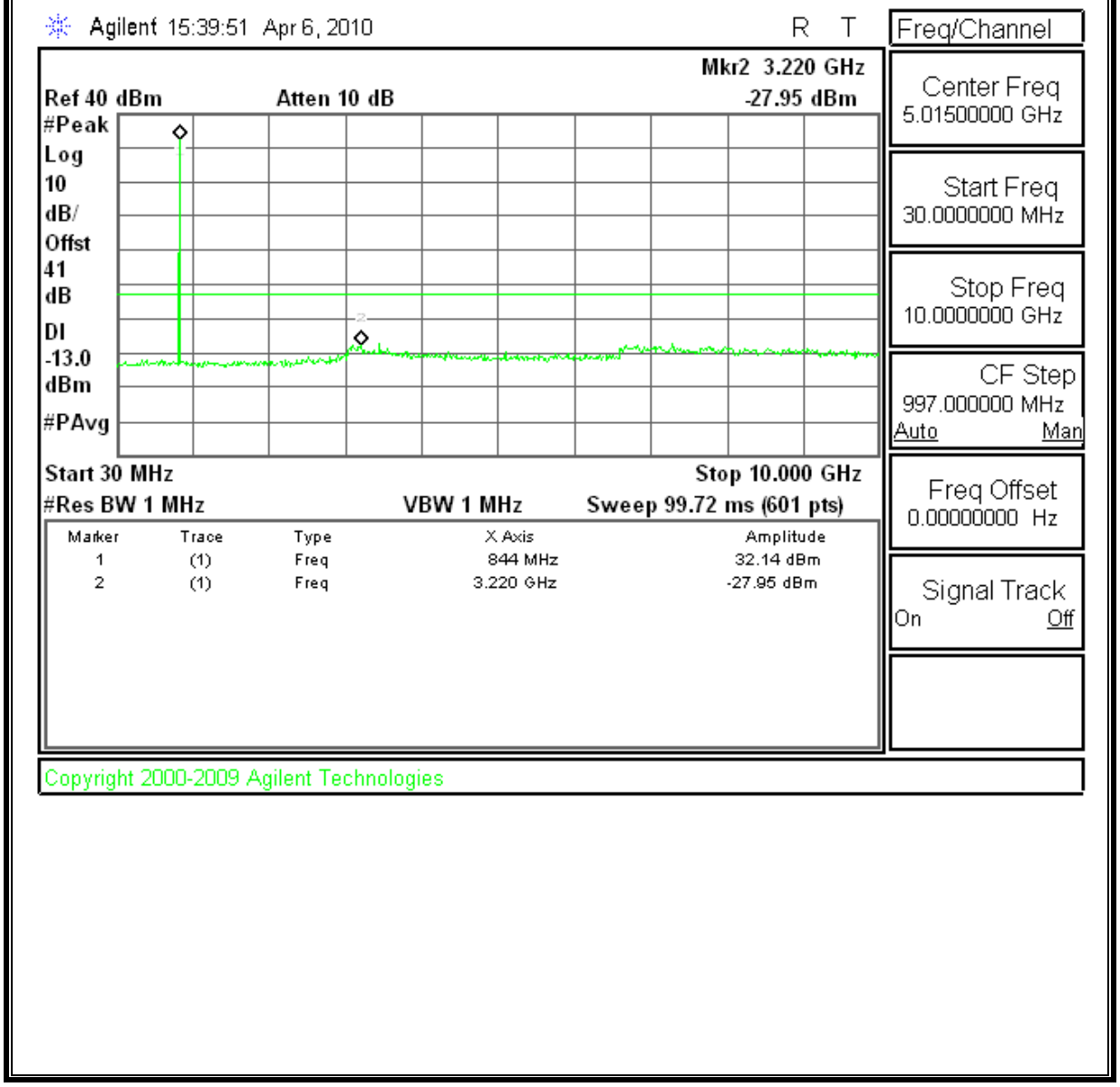
LOW CH



MID CH

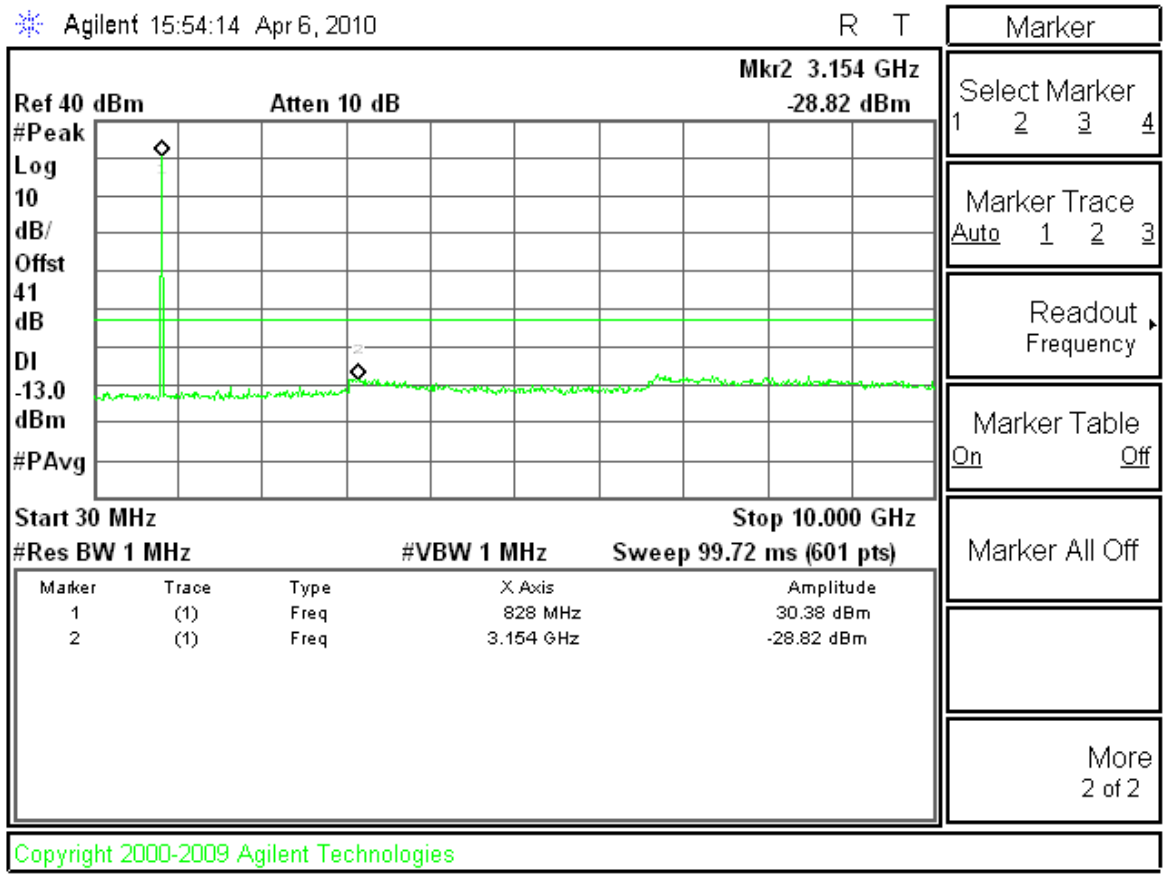


HIGH CH

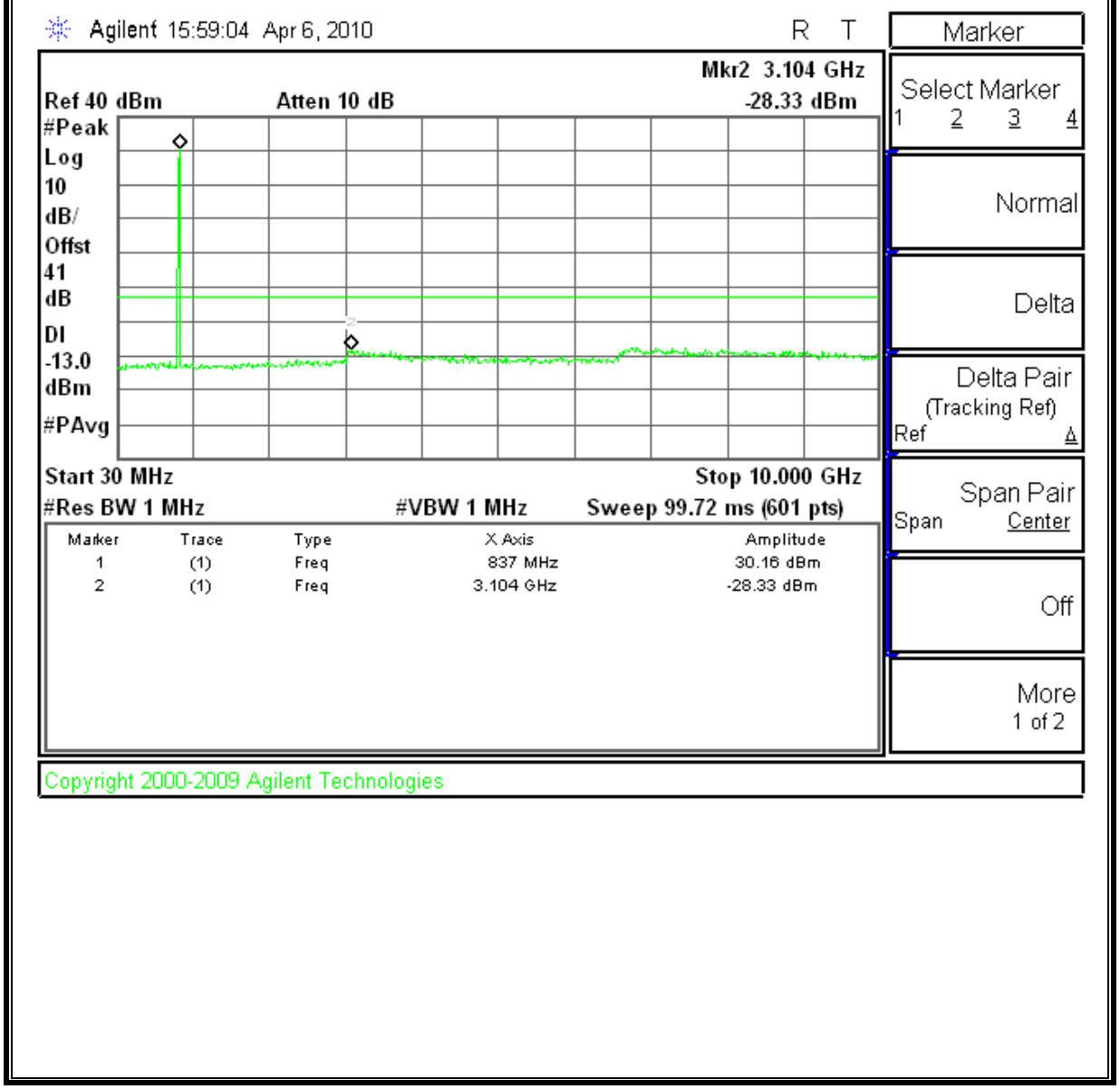


**EGPRS Mode (Cellular Band)**

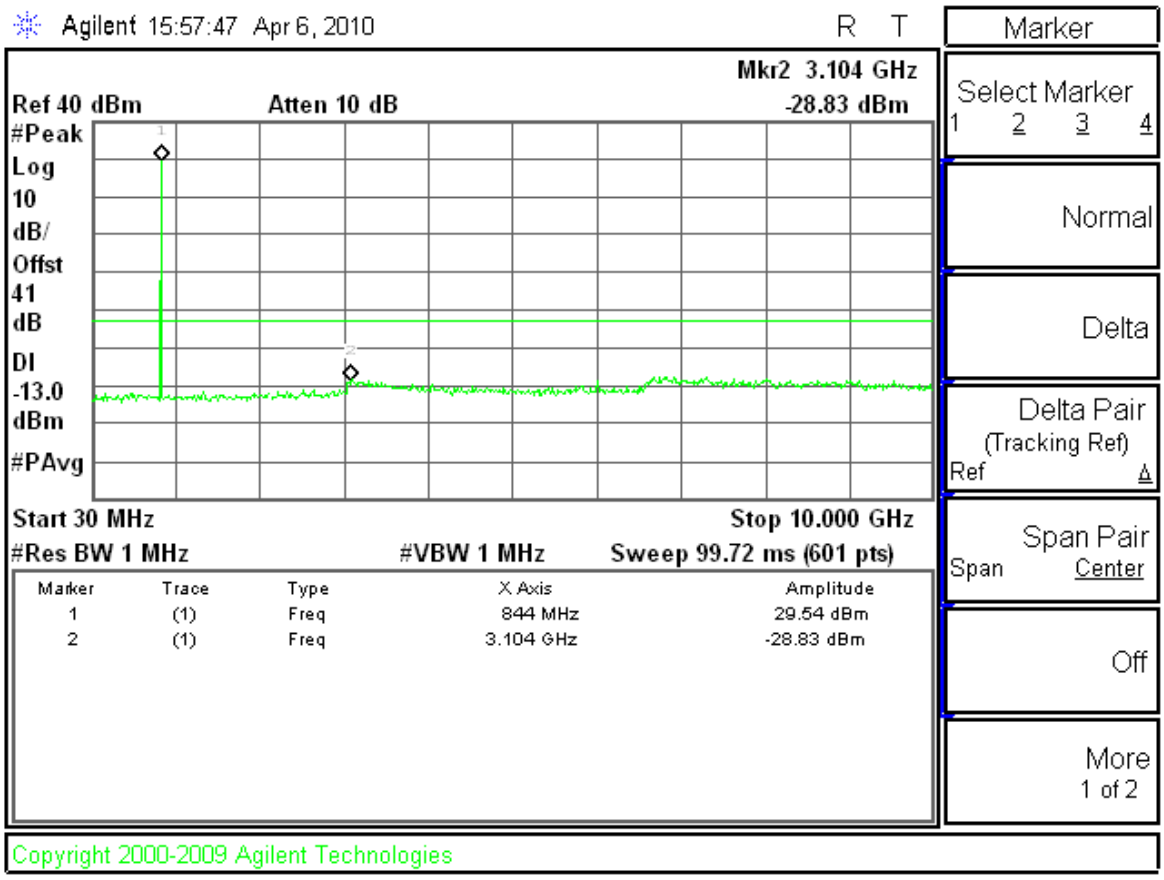
LOW CH



MID CH

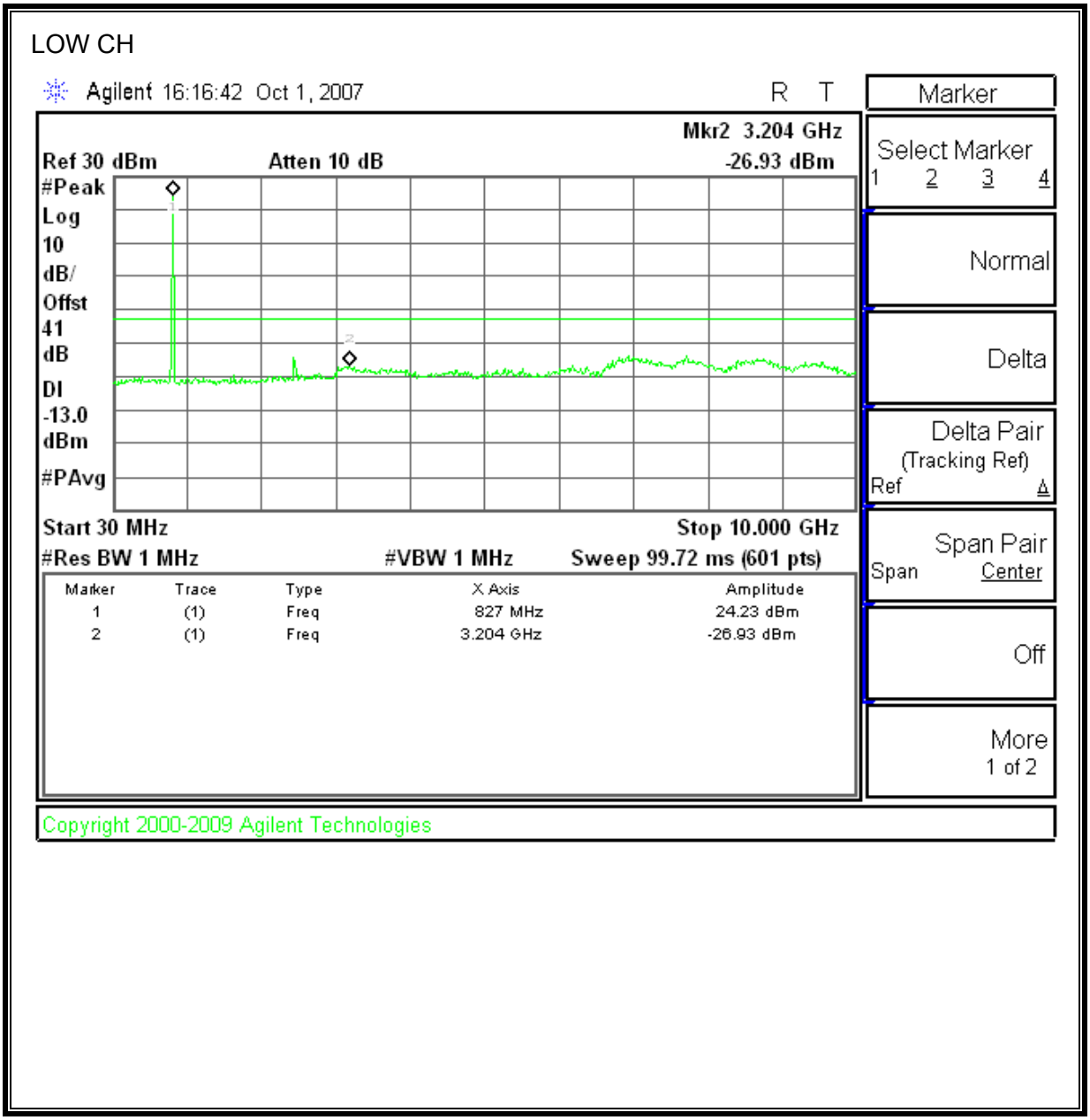


HIGH CH

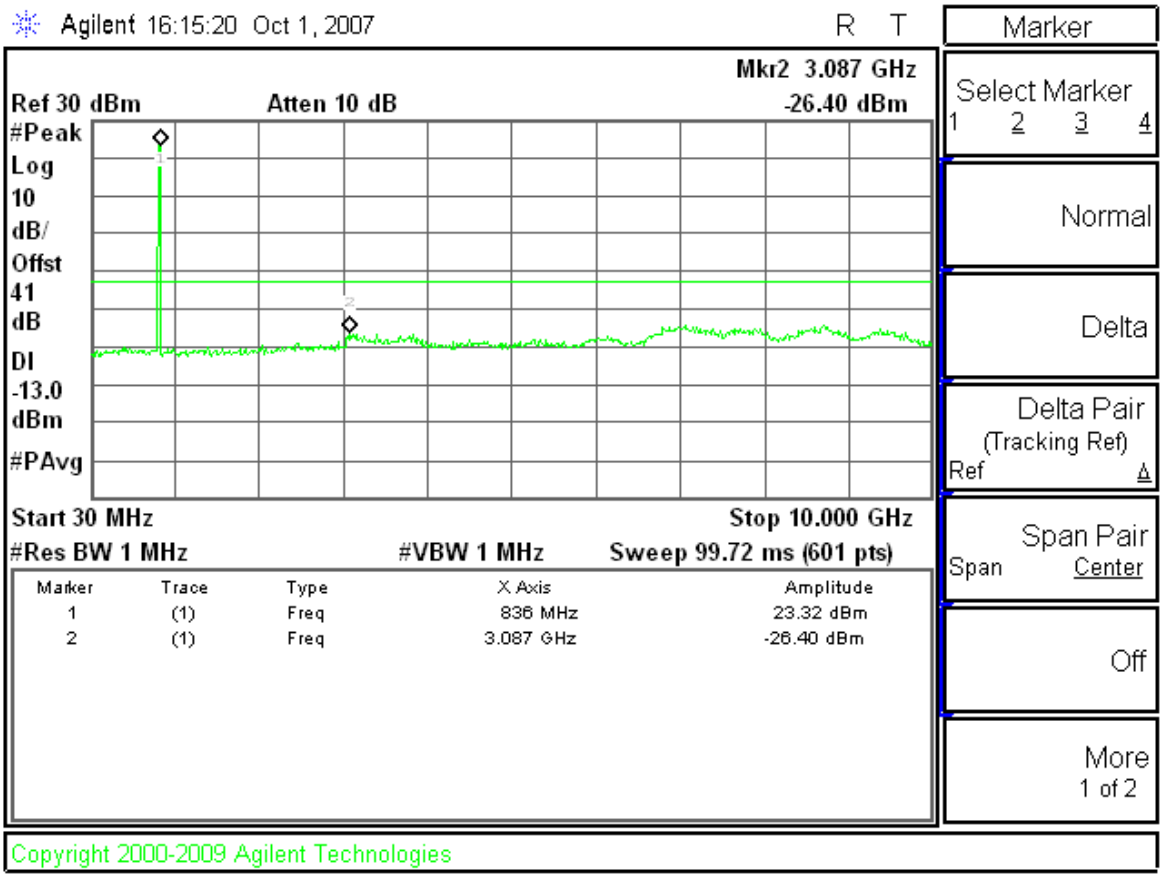


UMTS REL99 CELL BAND

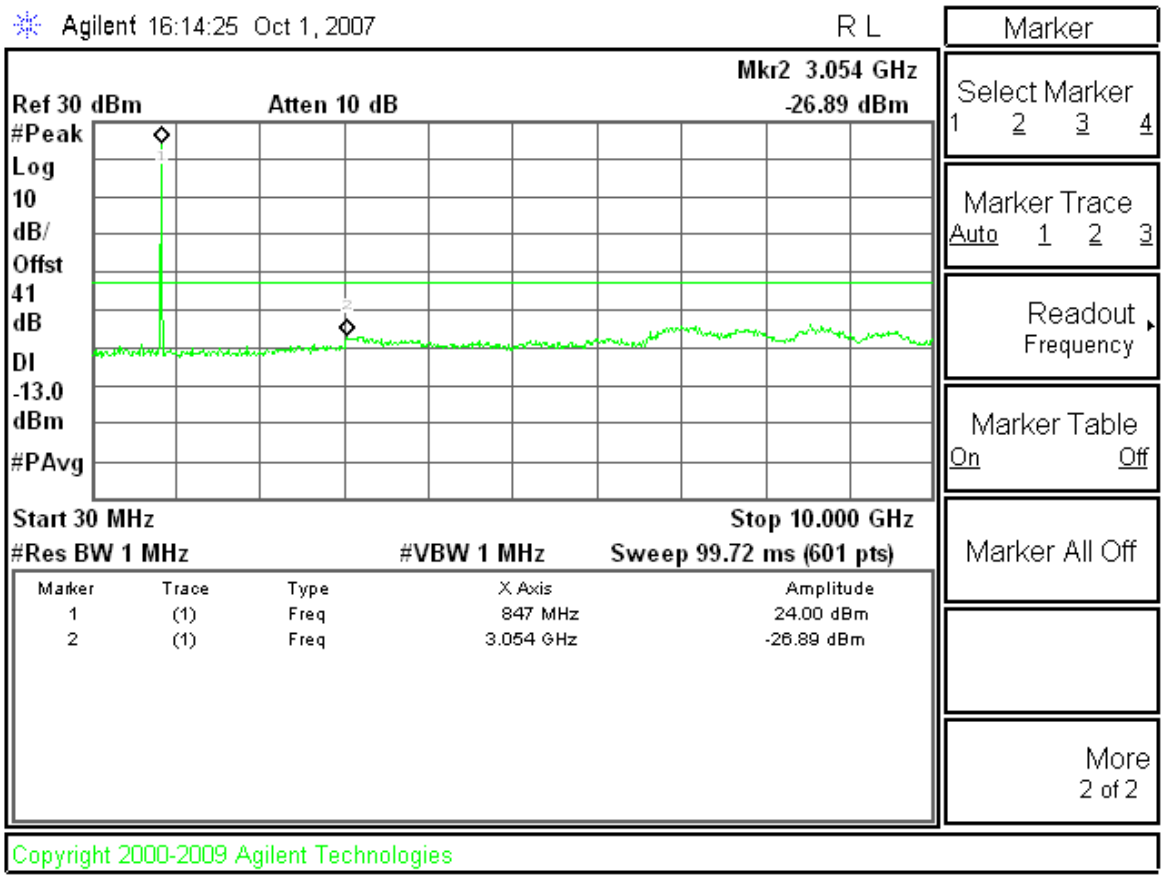
LOW CH



MID CH

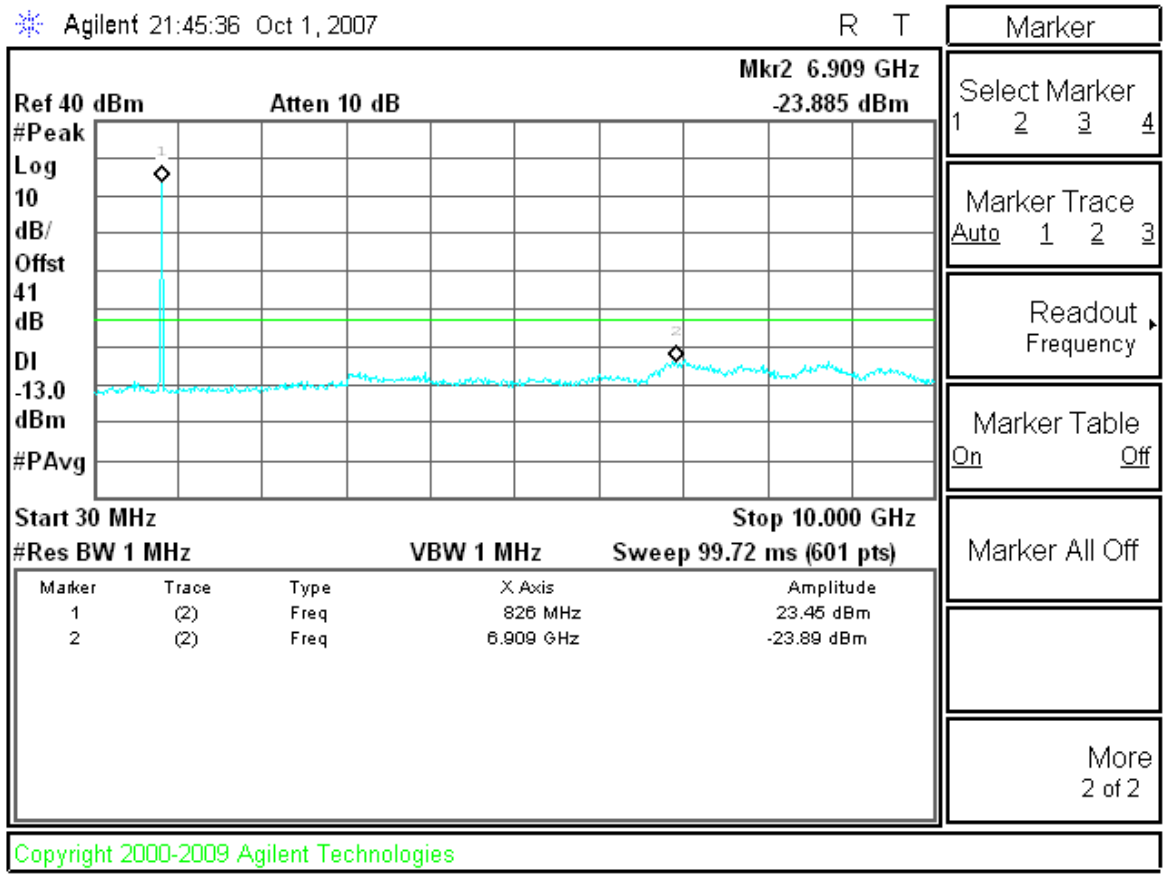


HIGH CH

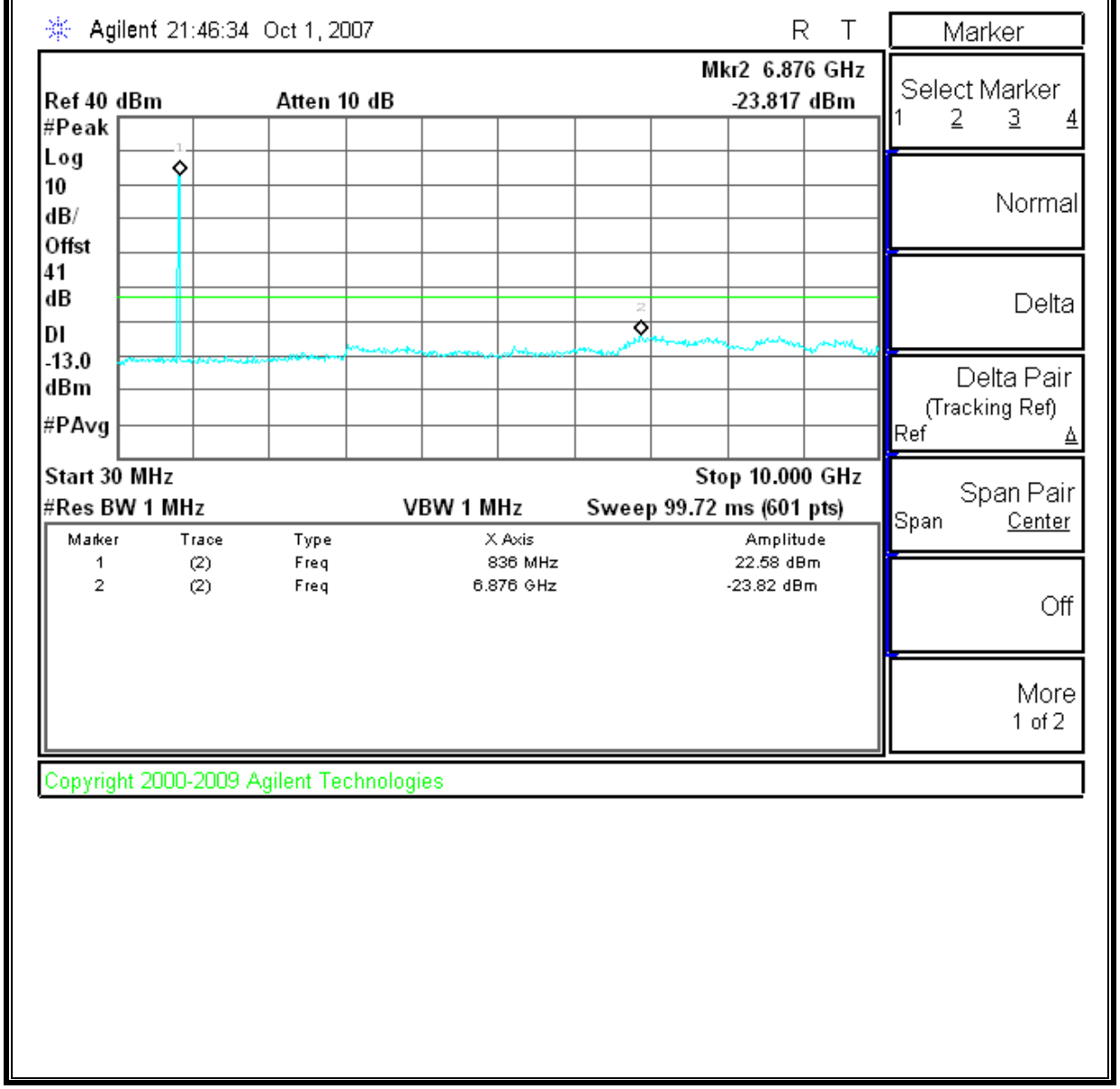


**UMTS HSDPA Mode (Cellular Band)**

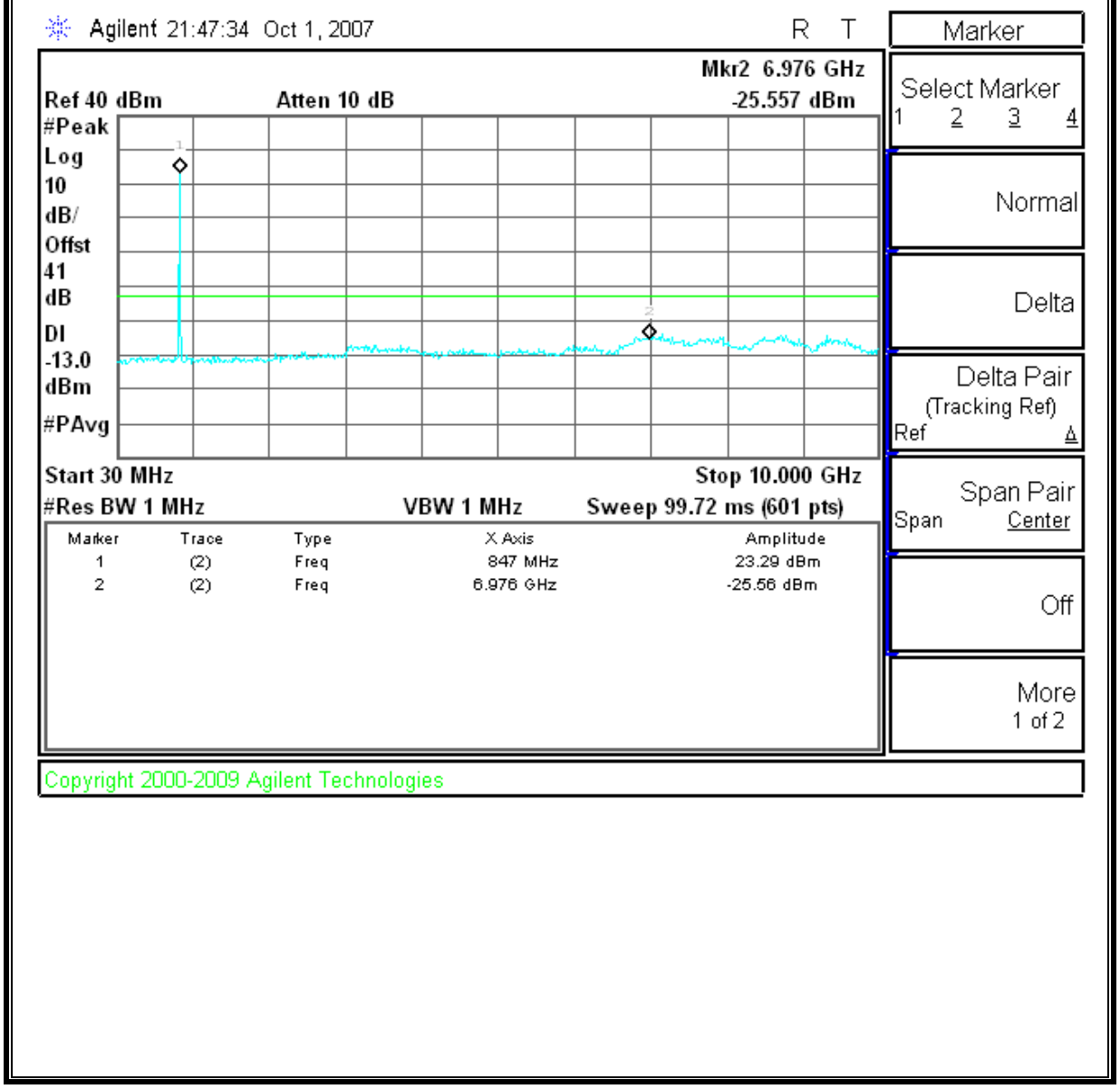
LOW CH



MID CH

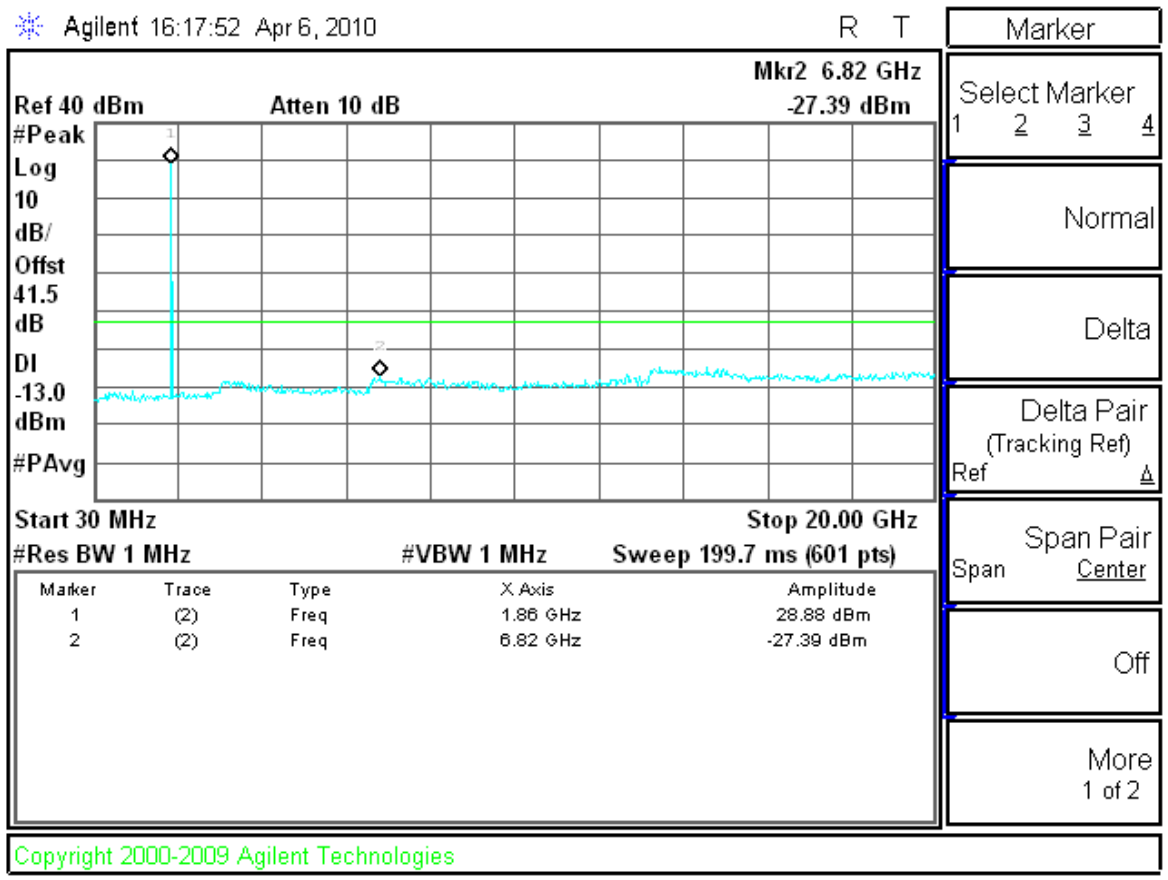


HIGH CH

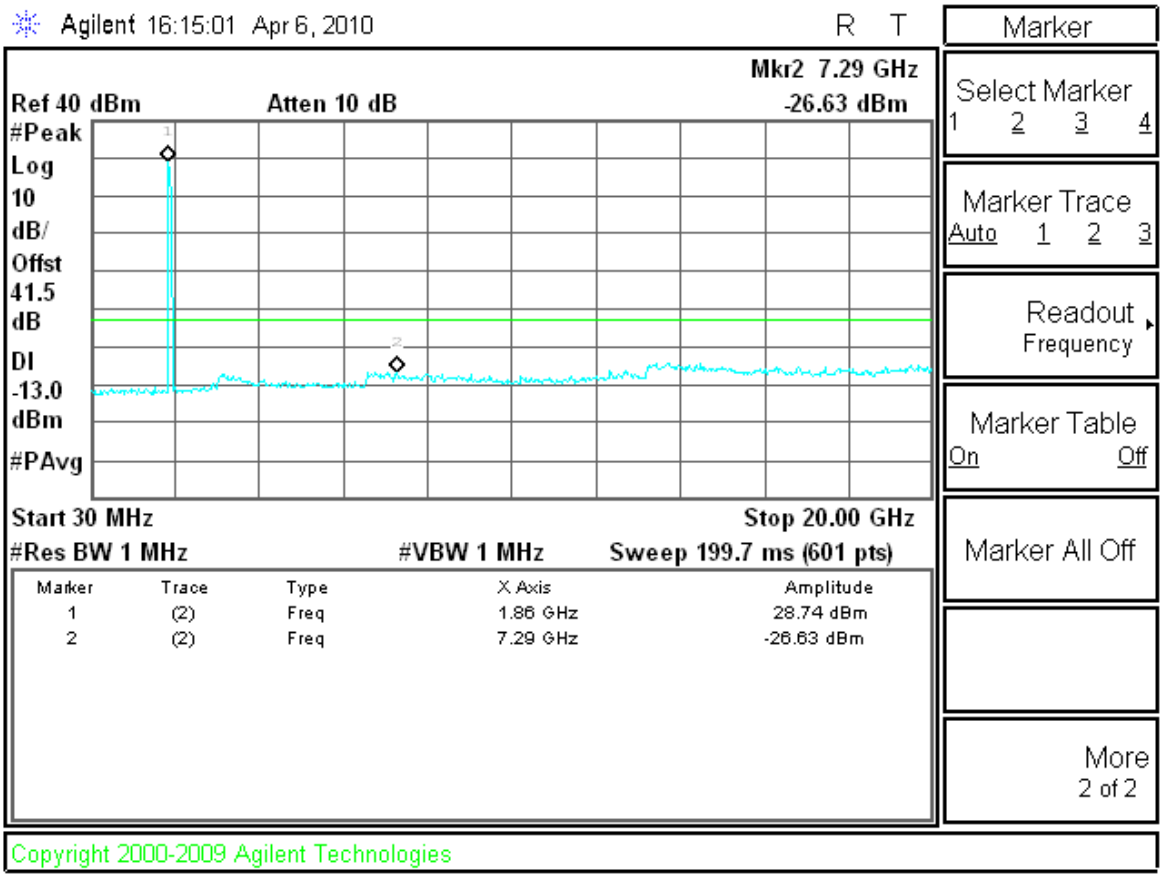


**GPRS Mode (PCS Band)**

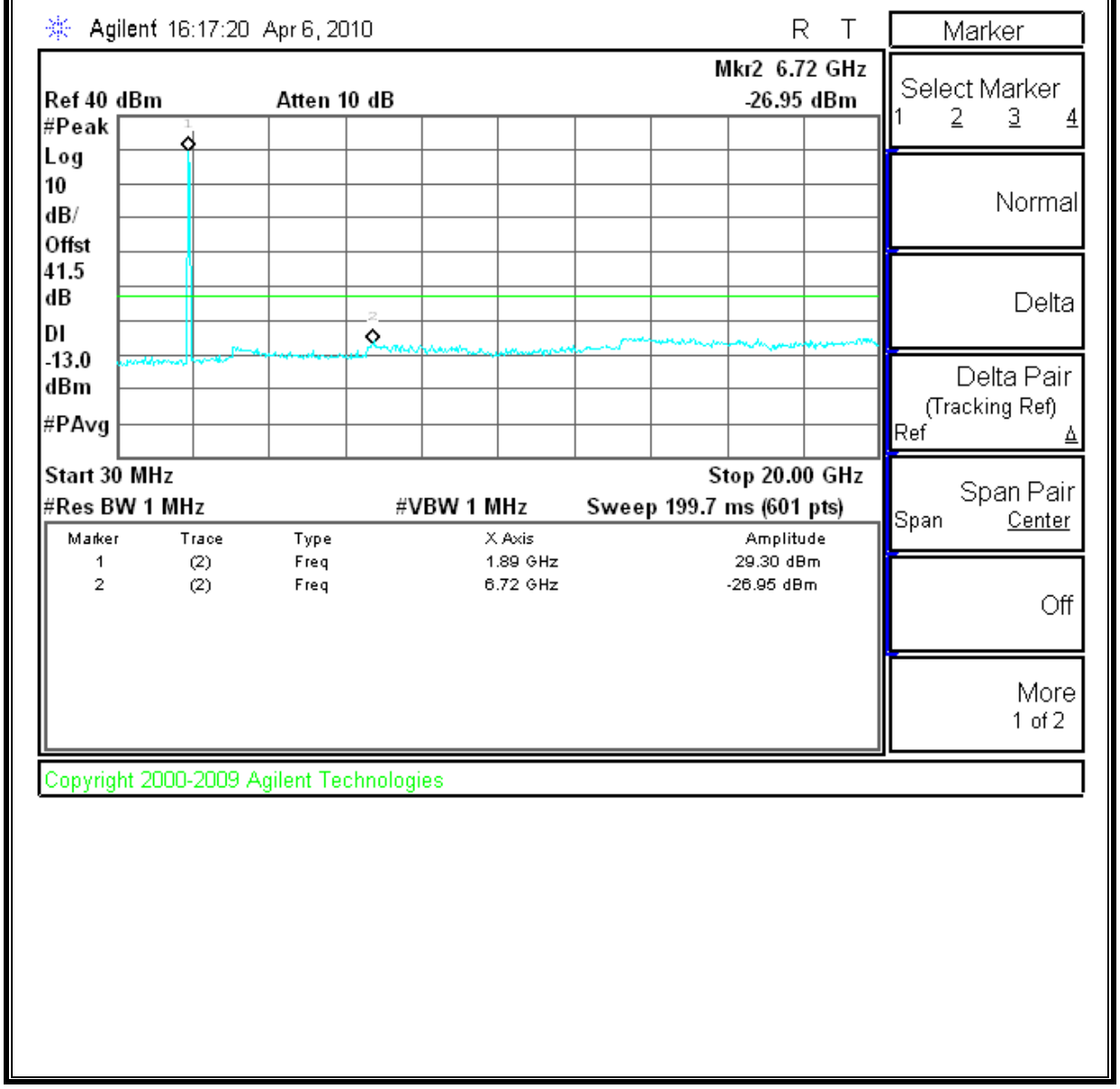
LOW CH



MID CH

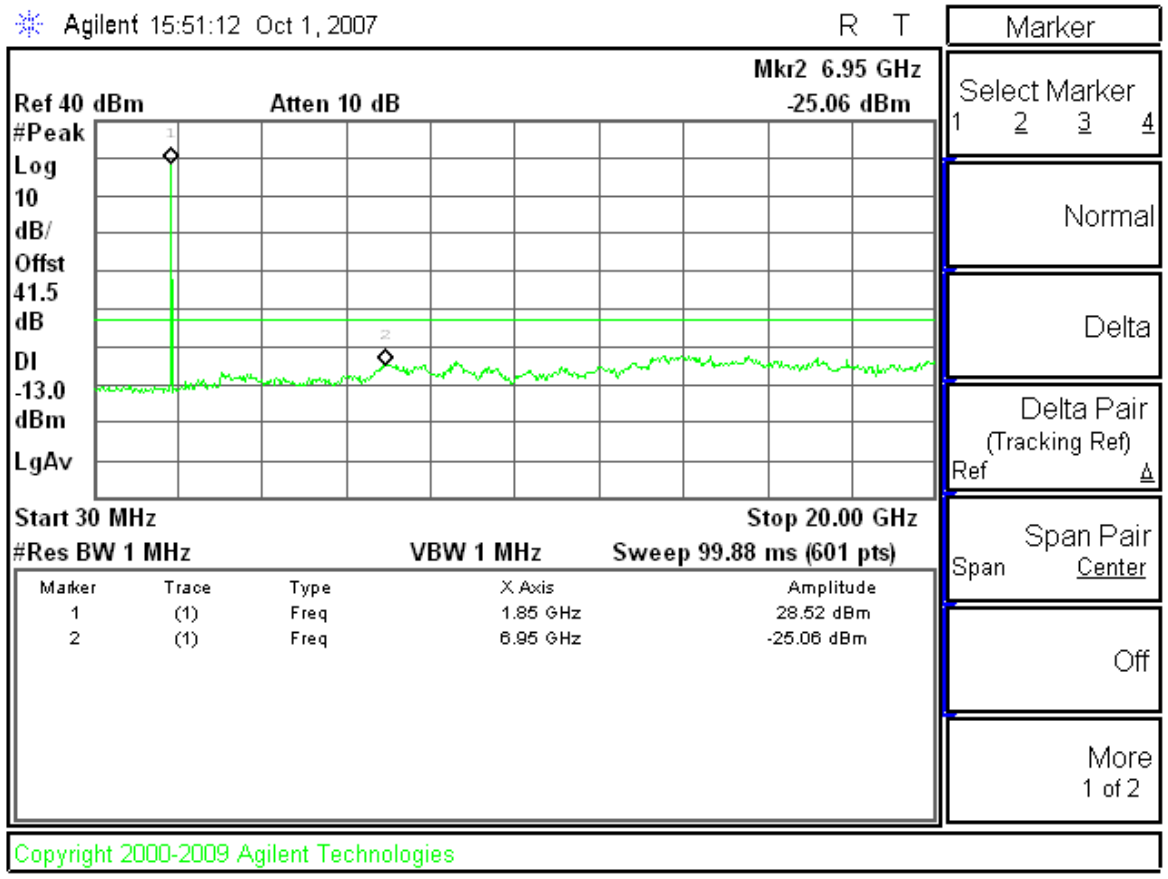


HIGH CH

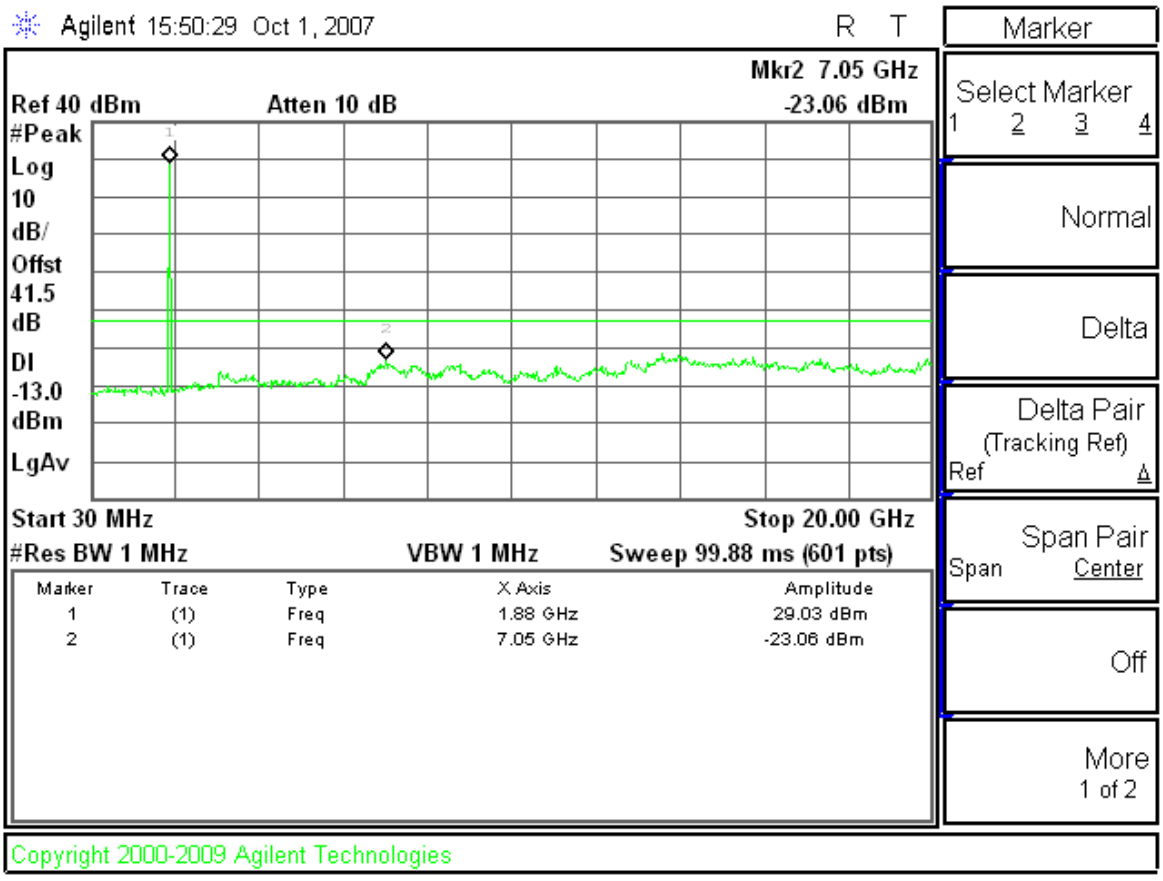


**EGPRS Mode (PCS Band)**

LOW CH



MID CH



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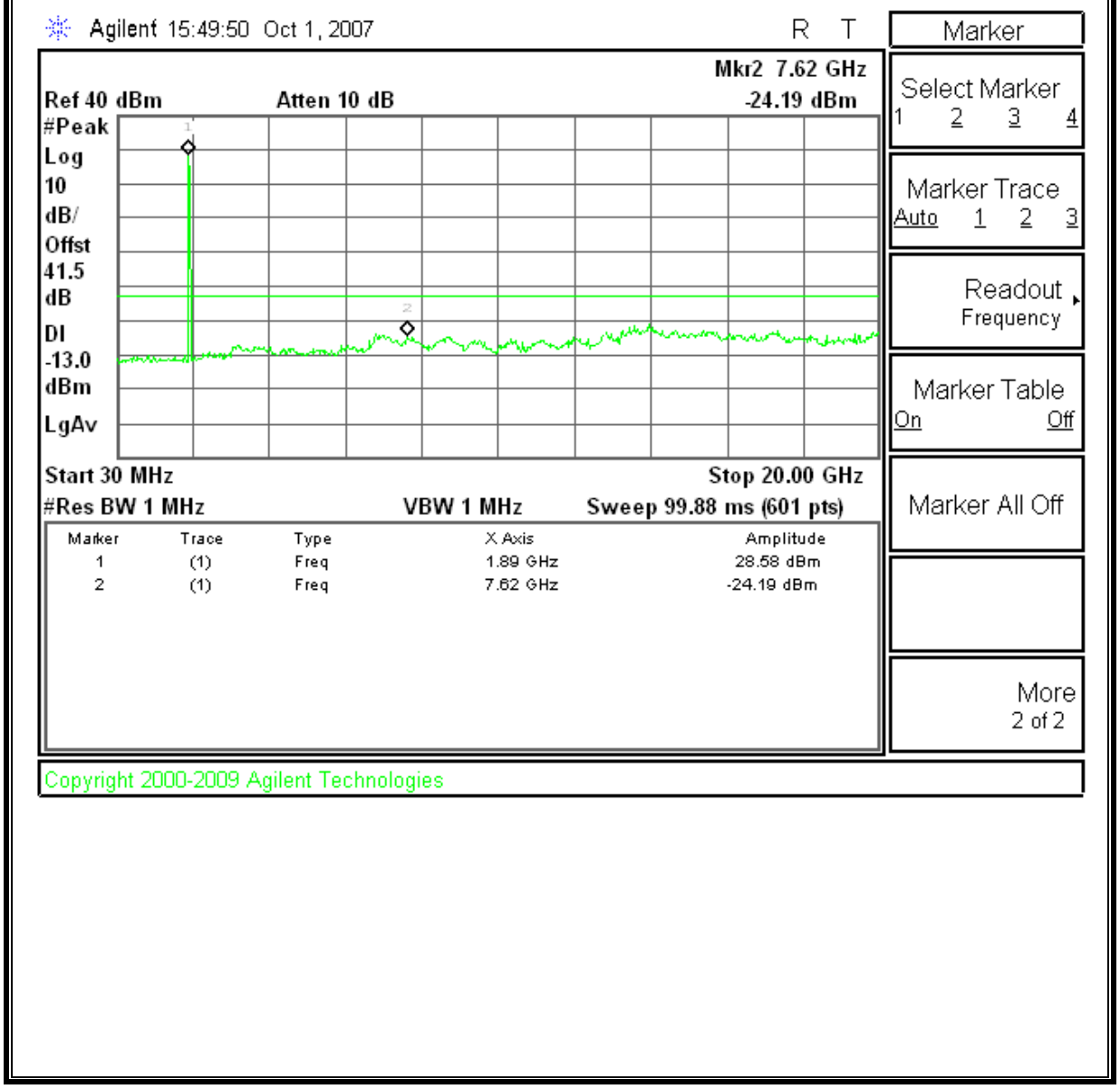
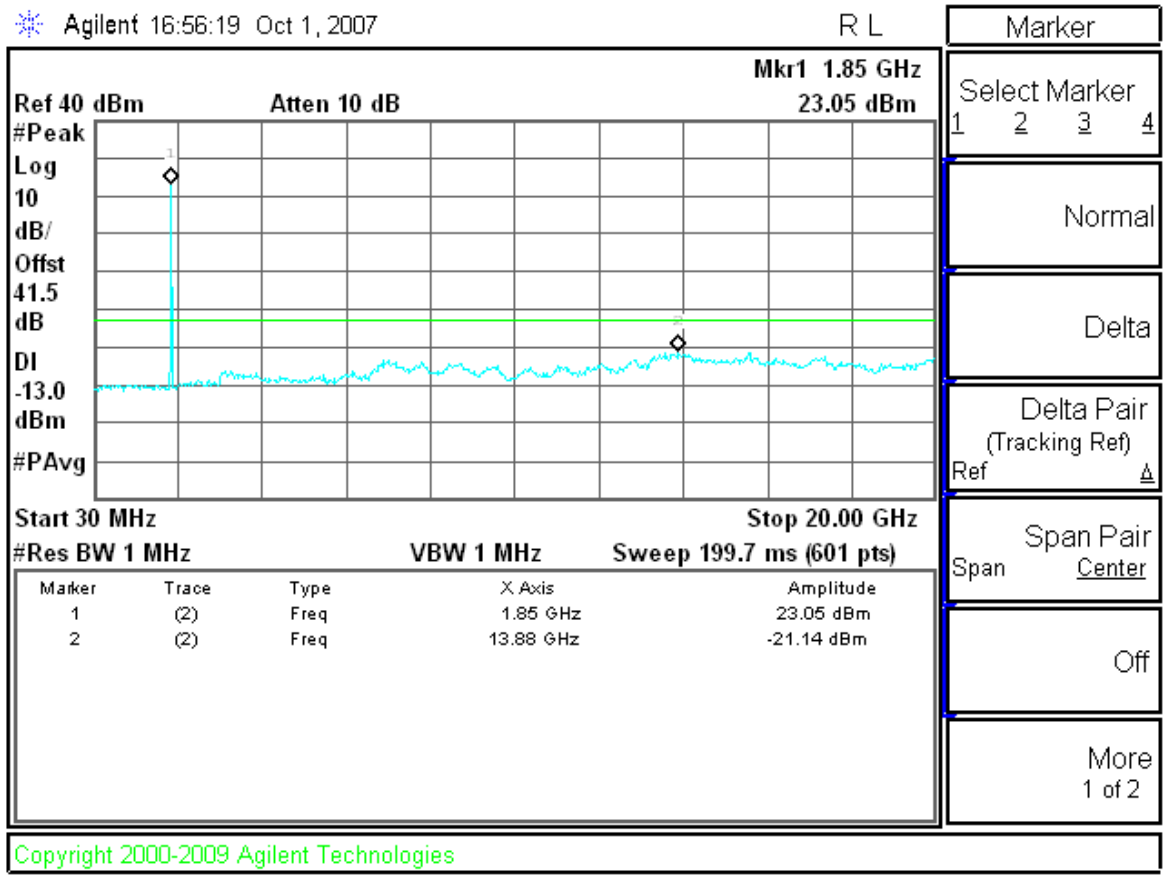
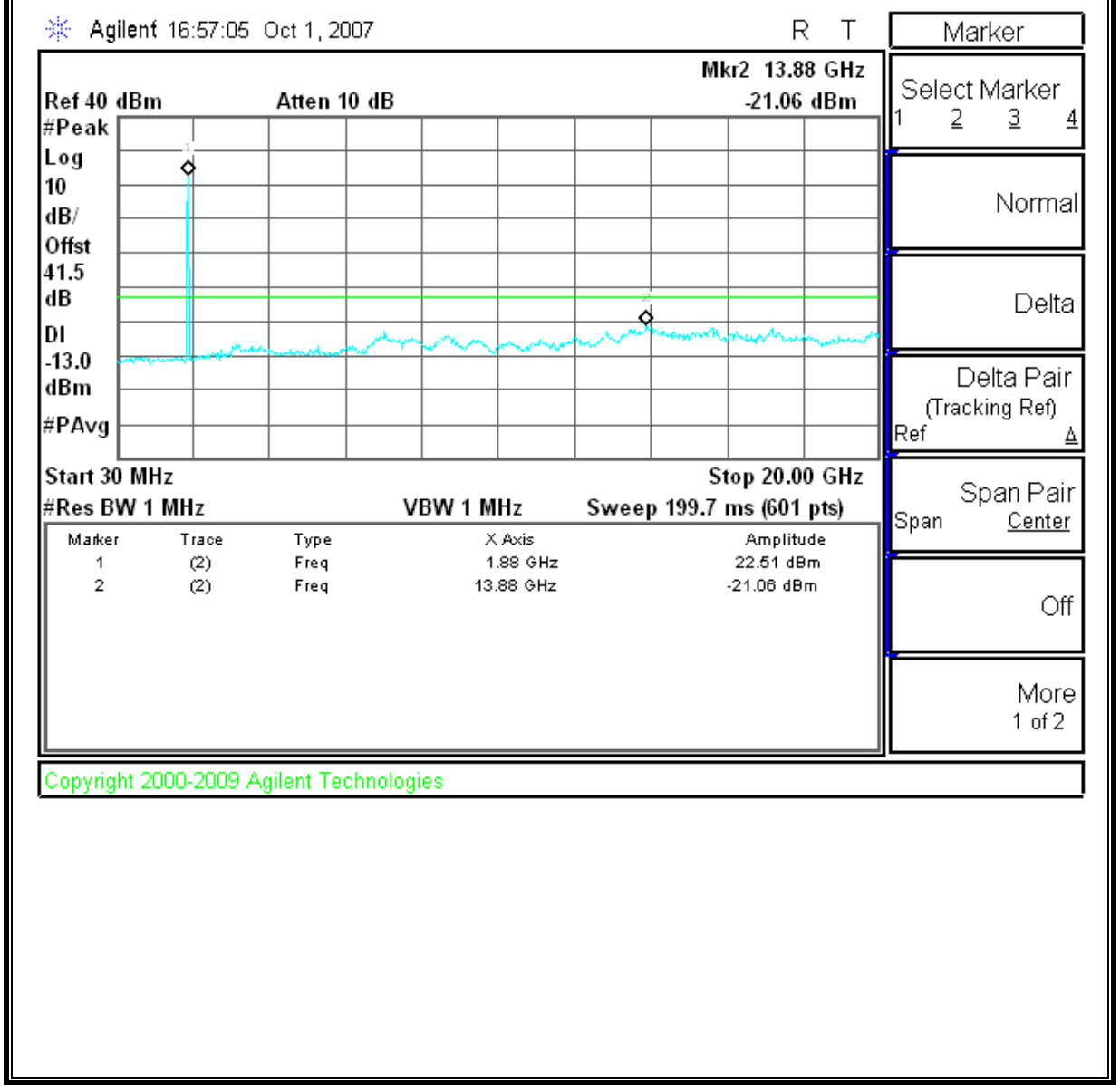


UMTS REL99 PCS BAND

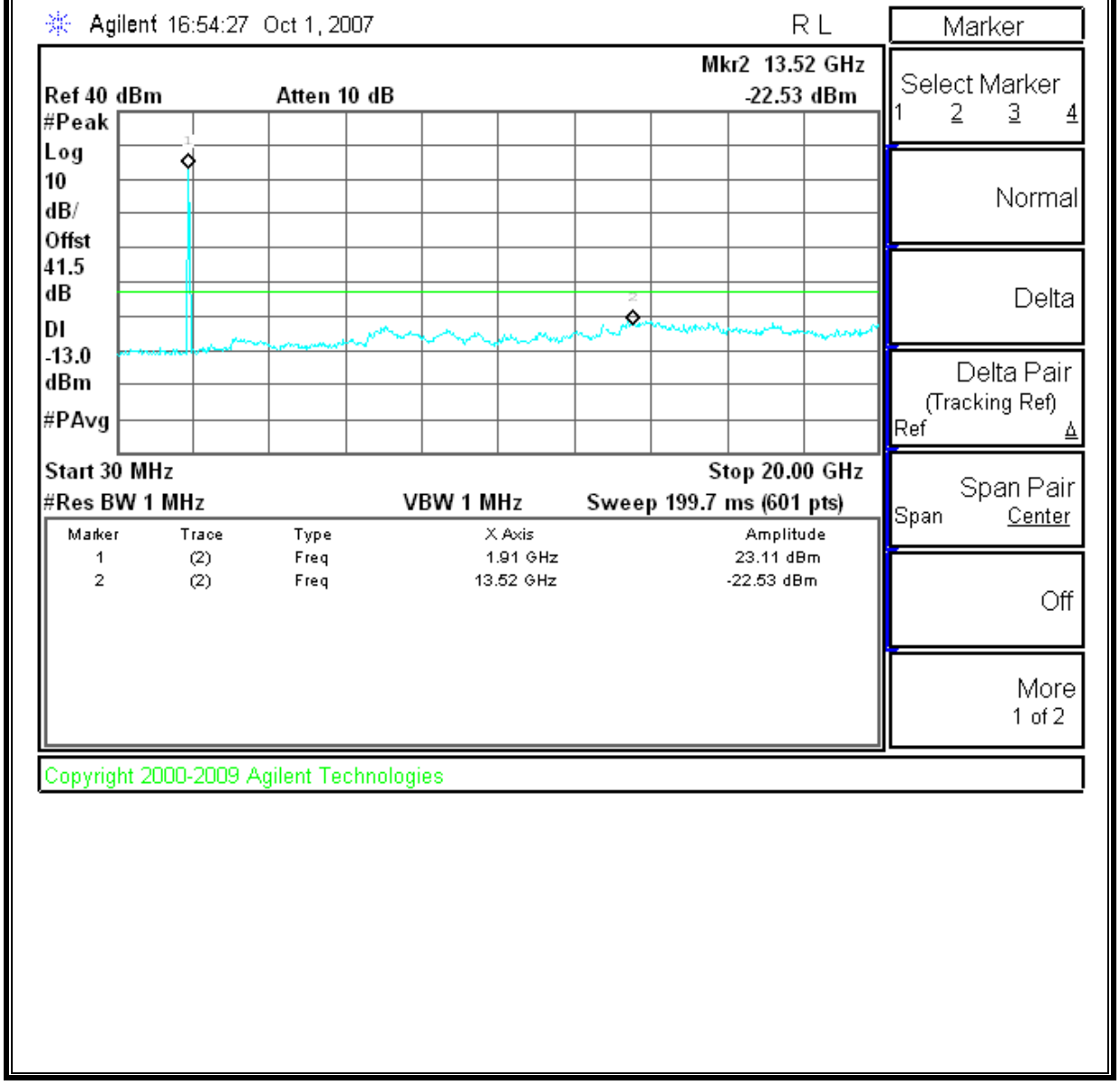
LOW CH



MID CH

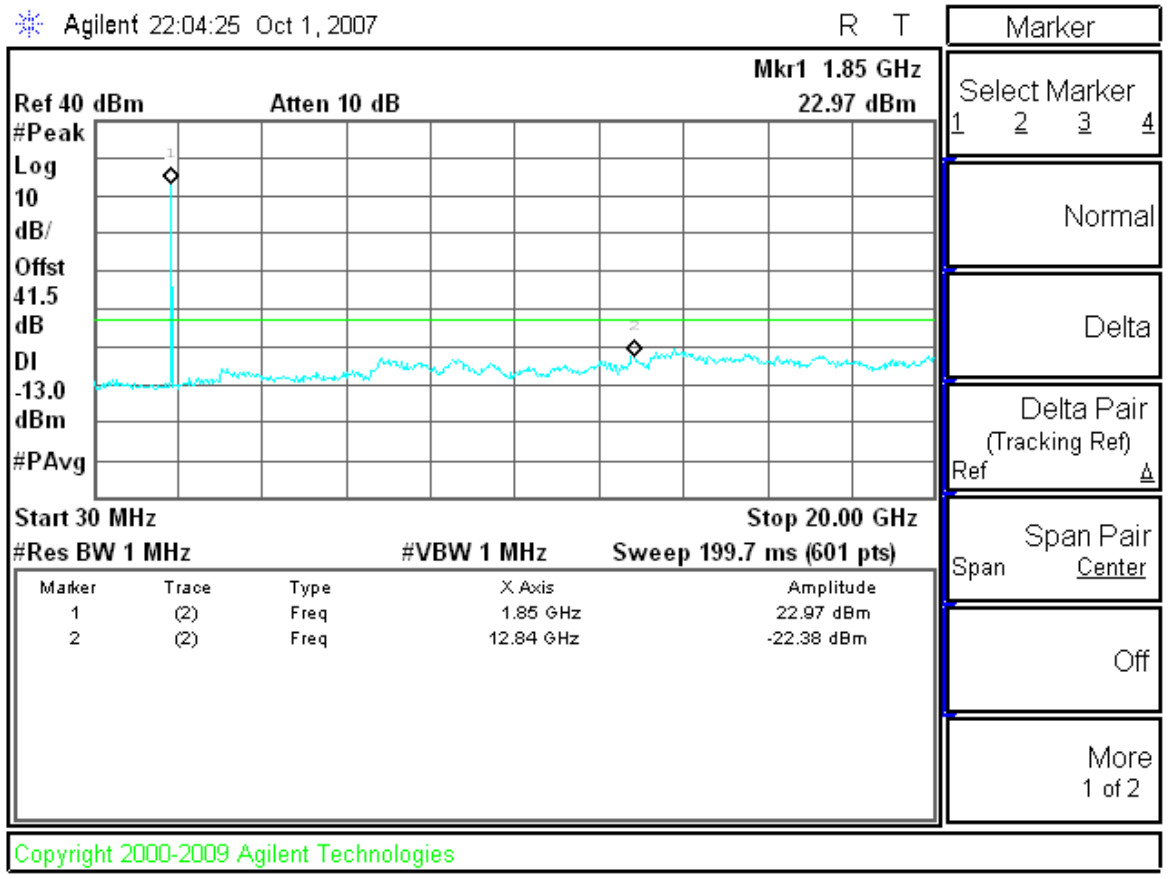


HIGH CH

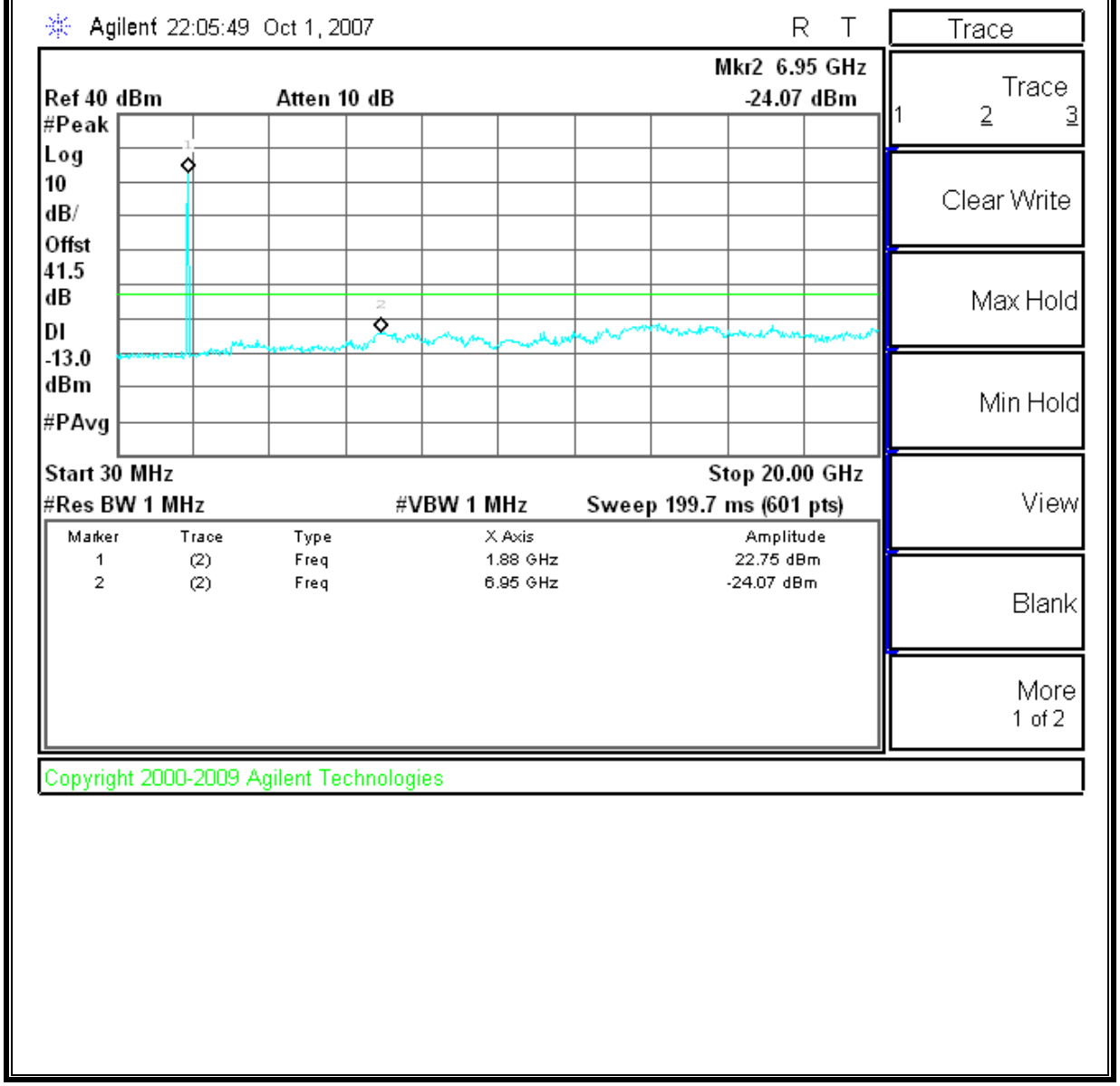


**UMTS HSDPA Mode (PCS Band)**

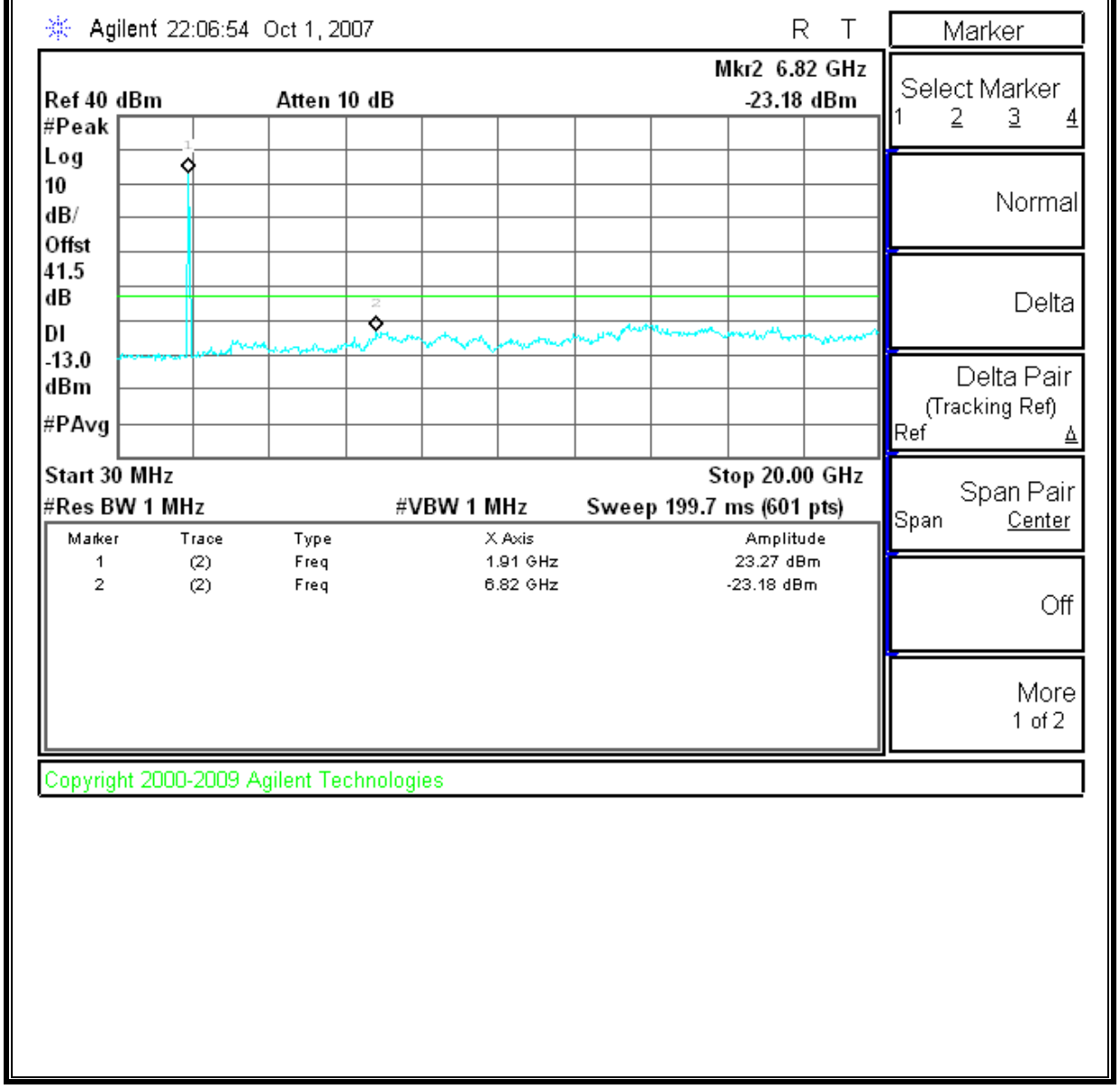
LOW CH



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 3.7 Vdc.

**Frequency Stability vs Voltage:**
The peak frequency error is recorded (worst-case). The test voltages are 3.7 to 4.26. 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 835.999979MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 2090.000 Hz | | | | |
|---|---|---|---|---|
| DC Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.70 | 50 | 835.999944 | 0.042 | 2.5 |
| 3.70 | 40 | 835.999954 | 0.030 | 2.5 |
| 3.70 | 30 | 835.999958 | 0.025 | 2.5 |
| ***3.70*** | ***20*** | ***835.999979*** | ***0*** | 2.5 |
| 3.70 | 10 | 836.000005 | -0.031 | 2.5 |
| 3.70 | 0 | 835.999956 | 0.028 | 2.5 |
| 3.70 | -10 | 835.999940 | 0.047 | 2.5 |
| 3.70 | -20 | 835.999989 | -0.012 | 2.5 |
| 3.70 | -30 | 835.999994 | -0.018 | 2.5 |

| Reference Frequency: Cellular Mid Channel 835.999979MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 2090.000 Hz | | | | |
|---|---|---|---|---|
| DC Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| ***3.40*** | ***20*** | ***835.999970*** | ***0*** | 2.5 |
| 4.26 | 20 | 835.999973 | -0.004 | 2.5 |
| 3.3 (end point voltage) | 20 | 835.999969 | 0.001 | 2.5 |

**EGPRS Mode (Cellular Band)**

| Reference Frequency: Cellular Mid Channel 836.599958MHz @ 20°C<br>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) |
| 3.70 | 50 | 836.599950 | 0.010 | 2.5 |
| 3.70 | 40 | 836.599952 | 0.007 | 2.5 |
| 3.70 | 30 | 836.599953 | 0.006 | 2.5 |
| ***3.70*** | ***20*** | ***836.599958*** | ***0*** | 2.5 |
| 3.70 | 10 | 836.599997 | -0.047 | 2.5 |
| 3.70 | 0 | 836.600001 | -0.051 | 2.5 |
| 3.70 | -10 | 836.599956 | 0.002 | 2.5 |
| 3.70 | -20 | 836.599977 | -0.023 | 2.5 |
| 3.70 | -30 | 836.600003 | -0.054 | 2.5 |

| Reference Frequency: Cellular Mid Channel 836.599958MHz @ 20°C<br>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) |
| ***3.40*** | ***20*** | ***836.599985*** | ***0*** | 2.5 |
| 4.26 | 20 | 836.599945 | 0.048 | 2.5 |
| 3.3 (end point voltage) | 20 | 836.599981 | 0.005 | 2.5 |

**UMTS Rel 99 Mode (Cellular Band)**

| Reference Frequency: Cellular Mid Channel 836.399981MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 2091.000 Hz | | | | |
|---|---|---|---|---|
| DC Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.70 | 50 | 836.400000 | -0.023 | 2.5 |
| 3.70 | 40 | 836.400001 | -0.024 | 2.5 |
| 3.70 | 30 | 836.399998 | -0.020 | 2.5 |
| ***3.70*** | ***20*** | ***836.399981*** | ***0*** | 2.5 |
| 3.70 | 10 | 836.399997 | -0.019 | 2.5 |
| 3.70 | 0 | 836.399972 | 0.011 | 2.5 |
| 3.70 | -10 | 836.399975 | 0.007 | 2.5 |
| 3.70 | -20 | 836.399984 | -0.004 | 2.5 |
| 3.70 | -30 | 836.399999 | -0.022 | 2.5 |

| Reference Frequency: Cellular Mid Channel 836.399981MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 2091.000 Hz | | | | |
|---|---|---|---|---|
| DC Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| ***3.40*** | ***20*** | ***836.399999*** | ***0*** | 2.5 |
| 4.26 | 20 | 836.400001 | -0.002 | 2.5 |
| 3.3 (end point voltage) | 20 | 836.399997 | 0.002 | 2.5 |

**GPRS Mode (PCS Band)**

| Reference Frequency: PCS Mid Channel 1879.999950MHz @ 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) |
| 3.70 | 50 | 1879.999932 | 0.010 | 2.5 |
| 3.70 | 40 | 1879.999925 | 0.013 | 2.5 |
| 3.70 | 30 | 1879.999936 | 0.007 | 2.5 |
| ***3.70*** | ***20*** | ***1879.999950*** | ***0*** | ***2.5*** |
| 3.70 | 10 | 1879.999940 | 0.005 | 2.5 |
| 3.70 | 0 | 1879.999929 | 0.011 | 2.5 |
| 3.70 | -10 | 1879.999935 | 0.008 | 2.5 |
| 3.70 | -20 | 1879.999969 | -0.010 | 2.5 |
| *3.70* | -30 | 1879.999975 | -0.013 | 2.5 |

| Reference Frequency: PCS Mid Channel 1879.999950MHz @ 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) |
| ***3.40*** | ***20*** | ***1879.999961*** | ***0*** | ***2.5*** |
| 4.26 | 20 | 1879.999967 | -0.003 | 2.5 |
| 3.3 (end point voltage) | 20 | 1879.999956 | 0.003 | 2.5 |

## EGPRS Mode (PCS Band)

| Reference Frequency: PCS Mid Channel 1879.999975MHz @ 20ºC<br>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)** |
| 3.70 | 50 | 1879.999908 | 0.036 | 2.5 |
| 3.70 | 40 | 1879.999912 | 0.034 | 2.5 |
| 3.70 | 30 | 1879.999925 | 0.027 | 2.5 |
| ***3.70*** | ***20*** | ***1879.999975*** | ***0*** | ***2.5*** |
| 3.70 | 10 | 1879.999996 | -0.011 | 2.5 |
| 3.70 | 0 | 1879.999993 | -0.010 | 2.5 |
| 3.70 | -10 | 1879.999907 | 0.036 | 2.5 |
| 3.70 | -20 | 1879.999925 | 0.027 | 2.5 |
| *3.70* | -30 | 1880.000007 | -0.017 | 2.5 |

| Reference Frequency: PCS Mid Channel 1879.999975MHz @ 20ºC<br>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)** |
| ***3.40*** | ***20*** | ***1879.999948*** | ***0*** | ***2.5*** |
| 4.26 | 20 | 1879.999956 | -0.004 | 2.5 |
| 3.30 (end point voltage) | 20 | 1879.999935 | 0.007 | 2.5 |

**UMTS Rel 99 Mode (PCS Band)**

| Reference Frequency: PCS Mid Channel 1879.999970MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 4700.000 Hz | | | | |
|---|---|---|---|---|
| DC Power Supply | Environment | Frequency Deviation Measureed with Time Elapse | | |
| (Vdc) | Temperature (°C) | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.70 | 50 | 1880.000003 | -0.018 | 2.5 |
| 3.70 | 40 | 1880.000008 | -0.020 | 2.5 |
| 3.70 | 30 | 1879.999998 | -0.015 | 2.5 |
| ***3.70*** | ***20*** | ***1879.999970*** | ***0*** | 2.5 |
| 3.70 | 10 | 1879.999964 | 0.003 | 2.5 |
| 3.70 | 0 | 1879.999960 | 0.005 | 2.5 |
| 3.70 | -10 | 1879.999956 | 0.007 | 2.5 |
| 3.70 | -20 | 1879.999958 | 0.006 | 2.5 |
| 3.70 | -30 | 1879.999965 | 0.003 | 2.5 |

| Reference Frequency: PCS Mid Channel 1879.999970MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 4700.000 Hz | | | | |
|---|---|---|---|---|
| DC Power Supply | Environment | Frequency Deviation Measureed with Time Elapse | | |
| (Vdc) | Temperature (°C) | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.40 | 20 | 1879.999958 | 0.000 | 2.5 |
| 4.26 | 20 | 1880.000001 | -0.023 | 2.5 |
| 3.3(end point voltage) | 20 | 1879.999952 | 0.003 | 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 | 32.50 | 1778.28 |
| | 190 | 836.60 | 31.40 | 1380.38 |
| | 251 | 848.80 | 31.70 | 1479.11 |
| EGPRS | 128 | 824.20 | 29.80 | 954.99 |
| | 190 | 836.60 | 29.90 | 977.24 |
| | 251 | 848.80 | 28.70 | 741.31 |

| Mode | Channel | f (MHz) | ERP | |
|---|---|---|---|---|
| | | | dBm | mW |
| Rel 99 | 4132 | 826.40 | 25.20 | 331.13 |
| | 4180 | 836.00 | 25.40 | 346.74 |
| | 4230 | 846.60 | 25.70 | 371.54 |
| HSDPA (Subtest 1) | 4132 | 826.40 | 24.90 | 309.03 |
| | 4180 | 836.60 | 25.20 | 331.13 |
| | 4230 | 846.60 | 25.00 | 316.23 |

**RESULTS for PCS Band (EIRP)**

| Mode | Channel | f (MHz) | EIRP | |
|---|---|---|---|---|
| | | | dBm | mW |
| GPRS | 512 | 1850.20 | 28.00 | 630.96 |
| | 661 | 1880.00 | 29.90 | 977.24 |
| | 810 | 1909.80 | 28.70 | 741.31 |
| EGPRS | 512 | 1850.20 | 29.20 | 831.76 |
| | 661 | 1880.00 | 29.00 | 794.33 |
| | 810 | 1909.80 | 29.40 | 870.96 |

| Mode | Channel | f (MHz) | EIRP | |
|---|---|---|---|---|
| | | | dBm | mW |
| Rel 99 | 9262 | 1852.40 | 27.30 | 537.03 |
| | 9400 | 1880.00 | 28.00 | 630.96 |
| | 9538 | 1907.60 | 27.80 | 602.56 |
| HSDPA (Subtest 1) | 9262 | 1852.40 | 27.70 | 588.84 |
| | 9400 | 1880.00 | 27.00 | 501.19 |
| | 9538 | 1907.60 | 27.60 | 575.44 |

## ERP for GPRS Mode (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

**Company:** BARNES AND NOBLE
**Project #:** 10U13105
**Date:** 4/1/2010
**Test Engineer:** MENGISTU MEKURIA
**Configuration:** EUT and AC Adapter
**Mode:** TX, GPRS CELL BAND

**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 | -2.2 | V | 34.8 | 32.5 | 38.5 | -5.9 | |
| 824.20 | -10.2 | H | 30.5 | 20.3 | 38.5 | -18.1 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 836.60 | -1.7 | V | 33.1 | 31.4 | 38.5 | -7.1 | |
| 836.60 | -8.9 | H | 31.2 | 22.3 | 38.5 | -16.1 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 848.80 | -0.5 | V | 32.1 | 31.7 | 38.5 | -6.8 | |
| 848.80 | -9.2 | H | 31.2 | 22.0 | 38.5 | -16.4 | |

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## ERP for EGPRS Mode (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

**Company:** BARNES AND NOBLE
**Project #:** 10U13105
**Date:** 4/1/2010
**Test Engineer:** MENGISTU MEKURIA
**Configuration:** EUT and AC Adapter
**Mode:** TX, EGPRS CELL BAND

**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 | -5.0 | V | 34.8 | 29.8 | 38.5 | -8.7 | |
| 824.20 | -11.5 | H | 30.5 | 19.0 | 38.5 | -19.4 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 836.60 | -3.2 | V | 33.1 | 29.9 | 38.5 | -8.5 | |
| 836.60 | -10.1 | H | 31.2 | 21.1 | 38.5 | -17.3 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 848.80 | -3.4 | V | 32.1 | 28.7 | 38.5 | -9.7 | |
| 848.80 | -11.2 | H | 31.2 | 20.0 | 38.5 | -18.5 | |

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## ERP for UMTS Rel 99 Mode (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

**Company: Barnes and Noble**
**Project #: 10U13105**
**Date: 4/2/2010**
**Test Engineer: Chin Pang**
**Configuration:EUT and AC adapter**
**Mode:TX, WCDMA850+Rel 99**

**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 | SA reading (dBm) | Ant. Pol. (H/V) | Path Loss (dBm) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | |
| 826.40 | -7.4 | V | 32.6 | 25.2 | 38.5 | -13.3 | |
| 826.40 | -13.5 | H | 30.4 | 16.9 | 38.5 | -21.6 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 836.40 | -7.3 | V | 32.7 | 25.4 | 38.5 | -13.1 | |
| 836.40 | -13.9 | H | 30.7 | 16.8 | 38.5 | -21.6 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 846.60 | -7.0 | V | 32.7 | 25.7 | 38.5 | -12.8 | |
| 846.60 | -14.3 | H | 30.7 | 16.4 | 38.5 | -22.0 | |
| | | | | | | | |

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## ERP for UMTS Rel 6 HSDPA Mode (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

**Company: Barnes and Noble**
**Project #: 10U13105**
**Date: 4/2/2010**
**Test Engineer: Chin Pang**
**Configuration:EUT and AC Adapter**
**Mode:TX, WCDMA850+HSDPA**

**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 | SA reading (dBm) | Ant. Pol. (H/V) | Path Loss (dBm) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | |
| 826.40 | -7.7 | V | 32.6 | 24.9 | 38.5 | -13.6 | |
| 826.40 | -13.7 | H | 30.4 | 16.7 | 38.5 | -21.8 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 836.40 | -7.5 | V | 32.7 | 25.2 | 38.5 | -13.3 | |
| 836.40 | -14.1 | H | 30.7 | 16.6 | 38.5 | -21.8 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 846.60 | -7.7 | V | 32.7 | 25.0 | 38.5 | -13.5 | |
| 846.60 | -14.5 | H | 30.7 | 16.2 | 38.5 | -22.2 | |
| | | | | | | | |

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## EIRP for GPRS Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company:Barnes and noble
Project #:10U13105
Date: 4/2/2010
Test Engineer: Chin Pang
Configuration:EUT and AC Adapter
Mode:TX GPRS1900

Test Equipment:
Receiving: Horn T59, 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 | -12.2 | V | 40.2 | 28.0 | 33.0 | -5.0 | |
| 1.850 | -16.5 | H | 39.5 | 23.0 | 33.0 | -10.0 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 1.880 | -10.4 | V | 40.3 | 29.9 | 33.0 | -3.2 | |
| 1.880 | -16.1 | H | 40.1 | 24.0 | 33.0 | -9.0 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 1.910 | -11.5 | V | 40.2 | 28.7 | 33.0 | -4.3 | |
| 1.910 | -16.0 | H | 40.1 | 24.1 | 33.0 | -8.9 | |

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## EIRP for EGPRS Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company:Barnes and noble
Project #:10U13105
Date: 4/2/2010
Test Engineer: Chin Pang
Configuration:EUT and AC Adapter
Mode:TX EGPRS1900

Test Equipment:
Receiving: Horn T59, 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 | -11.0 | V | 40.2 | 29.2 | 33.0 | -3.8 | |
| 1.850 | -15.2 | H | 39.5 | 24.3 | 33.0 | -8.7 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 1.880 | -11.3 | V | 40.3 | 29.0 | 33.0 | -4.1 | |
| 1.880 | -16.5 | H | 40.1 | 23.6 | 33.0 | -9.4 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 1.910 | -10.8 | V | 40.2 | 29.4 | 33.0 | -3.6 | |
| 1.910 | -13.3 | H | 40.1 | 26.8 | 33.0 | -6.2 | |

Rev. 1.24.7

## EIRP for UMTS Rel 99 Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

**Company:Barnes and noble**
**Project #:10U13105**
**Date: 4/2/2010**
**Test Engineer: Chin Pang**
**Configuration:EUT and AC Adapter**
**Mode:TX, WCDMA 1900, Rel 99**

**Test Equipment:**
**Receiving: Horn T59, 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 | -16.5 | V | 40.2 | 23.7 | 33.0 | -9.3 | |
| 1.852 | -12.2 | H | 39.5 | 27.3 | 33.0 | -5.7 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 1.880 | -17.0 | V | 40.3 | 23.3 | 33.0 | -9.8 | |
| 1.880 | -12.1 | H | 40.1 | 28.0 | 33.0 | -5.0 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 1.908 | -17.0 | V | 40.2 | 23.2 | 33.0 | -9.8 | |
| 1.908 | -12.3 | H | 40.1 | 27.8 | 33.0 | -5.2 | |

Rev. 1.24.7

## EIRP for UMTS Rel 6 HSDPA Mode (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

**Company:Barnes and noble**
**Project #:10U13105**
**Date: 4/2/2010**
**Test Engineer: Chin Pang**
**Configuration:EUT**
**Mode:TX, WCDMA 1900, HSDPA**

**Test Equipment:**
**Receiving: Horn T59, 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 | -12.5 | V | 40.2 | 27.7 | 33.0 | -5.3 | |
| 1.852 | -16.4 | H | 39.5 | 23.1 | 33.0 | -9.9 | |
| | | | | | | | |
| Mid Ch | | | | | | | |
| 1.880 | -13.3 | V | 40.3 | 27.0 | 33.0 | -6.1 | |
| 1.880 | -16.8 | H | 40.1 | 23.3 | 33.0 | -9.7 | |
| | | | | | | | |
| High Ch | | | | | | | |
| 1.908 | -12.6 | V | 40.2 | 27.6 | 33.0 | -5.4 | |
| 1.908 | -16.0 | H | 40.1 | 24.1 | 33.0 | -8.9 | |

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:** Barn& Noble
**Project #:** 10U13105
**Date:** 3/30/2010
**Test Engineer:** Thanh Nguyen
**Configuration:** EUT WITH AC/DC Adapter
**Mode:** TX, CELL GPRS MODE

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber B | T145 8449B | Filter 1 | TX 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 824.2MHz | | | | | | | | | | |
| 1.648 | -46.8 | H | 3.0 | 37.2 | 35.5 | 1.0 | -46.3 | -13.0 | -33.3 | |
| 2.473 | -46.9 | H | 3.0 | 39.8 | 35.4 | 1.0 | -43.6 | -13.0 | -30.6 | |
| 4.121 | -64.4 | H | 3.0 | 46.7 | 35.2 | 1.0 | -54.1 | -13.0 | -41.1 | |
| 1.648 | -46.2 | V | 3.0 | 36.8 | 35.5 | 1.0 | -46.1 | -13.0 | -33.1 | |
| 2.473 | -46.1 | V | 3.0 | 41.7 | 35.4 | 1.0 | -40.9 | -13.0 | -27.9 | |
| 4.121 | -58.1 | V | 3.0 | 46.1 | 35.2 | 1.0 | -48.3 | -13.0 | -35.3 | |
| | | | | | | | | | | |
| Mid Ch 836.6MHz | | | | | | | | | | |
| 1.674 | -33.6 | H | 3.0 | 37.5 | 35.5 | 1.0 | -32.8 | -13.0 | -19.8 | |
| 2.510 | -39.5 | H | 3.0 | 39.9 | 35.4 | 1.0 | -36.1 | -13.0 | -23.1 | |
| 4.184 | -64.8 | H | 3.0 | 46.8 | 35.2 | 1.0 | -54.4 | -13.0 | -41.4 | |
| 1.674 | -37.7 | V | 3.0 | 37.1 | 35.5 | 1.0 | -37.2 | -13.0 | -24.2 | |
| 2.510 | -39.1 | V | 3.0 | 41.8 | 35.4 | 1.0 | -33.8 | -13.0 | -20.8 | |
| 4.184 | -64.1 | V | 3.0 | 46.3 | 35.2 | 1.0 | -54.2 | -13.0 | -41.2 | |
| | | | | | | | | | | |
| High Ch 848.8 MHz | | | | | | | | | | |
| 1.698 | -40.5 | H | 3.0 | 37.7 | 35.5 | 1.0 | -39.5 | -13.0 | -26.5 | |
| 2.546 | -40.1 | H | 3.0 | 40.1 | 35.4 | 1.0 | -36.6 | -13.0 | -23.6 | |
| 4.255 | -59.2 | H | 3.0 | 47.0 | 35.2 | 1.0 | -48.5 | -13.0 | -35.5 | |
| 1.698 | -50.5 | V | 3.0 | 37.4 | 35.5 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 2.546 | -37.6 | V | 3.0 | 42.0 | 35.4 | 1.0 | -32.2 | -13.0 | -19.2 | |
| 4.244 | -65.8 | V | 3.0 | 46.5 | 35.2 | 1.0 | -55.7 | -13.0 | -42.7 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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: | Barn& Noble |
| Project #: | 10U13105 |
| Date: | 3/30/2010 |
| Test Engineer: | Thanh Nguyen |
| Configuration: | EUT WITH AC/DC Adapter |
| Mode: | TX, CELL EGPRS MODE |

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber B | T145 8449B | Filter 1 | TX 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 824.2MHz | | | | | | | | | | |
| 1.648 | -46.8 | H | 3.0 | 37.2 | 35.5 | 1.0 | -46.3 | -13.0 | -33.3 | |
| 2.473 | -46.9 | H | 3.0 | 39.8 | 35.4 | 1.0 | -43.6 | -13.0 | -30.6 | |
| 4.121 | -65.8 | H | 3.0 | 46.7 | 35.2 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 1.648 | -46.2 | V | 3.0 | 36.8 | 35.5 | 1.0 | -46.1 | -13.0 | -33.1 | |
| 2.473 | -46.1 | V | 3.0 | 41.7 | 35.4 | 1.0 | -40.9 | -13.0 | -27.9 | |
| 4.121 | -55.1 | V | 3.0 | 46.1 | 35.2 | 1.0 | -45.3 | -13.0 | -32.3 | |
| | | | | | | | | | | |
| Mid Ch 836.6MHz | | | | | | | | | | |
| 1.674 | -33.6 | H | 3.0 | 37.5 | 35.5 | 1.0 | -32.8 | -13.0 | -19.8 | |
| 2.510 | -39.5 | H | 3.0 | 39.9 | 35.4 | 1.0 | -36.1 | -13.0 | -23.1 | |
| 4.184 | -58.3 | H | 3.0 | 46.8 | 35.2 | 1.0 | -47.9 | -13.0 | -34.9 | |
| 1.674 | -37.7 | V | 3.0 | 37.1 | 35.5 | 1.0 | -37.2 | -13.0 | -24.2 | |
| 2.510 | -39.1 | V | 3.0 | 41.8 | 35.4 | 1.0 | -33.8 | -13.0 | -20.8 | |
| 4.184 | -62.7 | V | 3.0 | 46.3 | 35.2 | 1.0 | -52.8 | -13.0 | -39.8 | |
| | | | | | | | | | | |
| High Ch 848.8 MHz | | | | | | | | | | |
| 1.698 | -40.5 | H | 3.0 | 37.7 | 35.5 | 1.0 | -39.5 | -13.0 | -26.5 | |
| 2.546 | -40.1 | H | 3.0 | 40.1 | 35.4 | 1.0 | -36.6 | -13.0 | -23.6 | |
| 4.255 | -57.3 | H | 3.0 | 47.0 | 35.2 | 1.0 | -46.7 | -13.0 | -33.7 | |
| 1.698 | -50.5 | V | 3.0 | 37.4 | 35.5 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 2.546 | -37.6 | V | 3.0 | 42.0 | 35.4 | 1.0 | -32.2 | -13.0 | -19.2 | |
| 4.244 | -57.8 | V | 3.0 | 46.5 | 35.2 | 1.0 | -47.8 | -13.0 | -34.8 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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:Barnes and Noble
Project #:10U13105
Date:4/5/2010
Test Engineer:Chin Pang
Configuration:EUT and AC Adapter
Mode:TX, WCDMA850 Rel 99

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

| 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 | | | | | | | | | | |
| 1.65 | -52.1 | H | 3.0 | 36.6 | 38.1 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 2.48 | -58.8 | H | 3.0 | 40.0 | 37.5 | 1.0 | -55.3 | -13.0 | -42.3 | |
| 1.65 | -52.5 | V | 3.0 | 36.9 | 38.1 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 2.48 | -60.0 | V | 3.0 | 41.7 | 37.5 | 1.0 | -54.7 | -13.0 | -41.7 | |
| | | | | | | | | | | |
| Mid Ch | | | | | | | | | | |
| 1.67 | -52.4 | H | 3.0 | 36.8 | 38.1 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 2.51 | -56.4 | H | 3.0 | 40.1 | 37.5 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 1.67 | -51.8 | V | 3.0 | 37.1 | 38.1 | 1.0 | -51.8 | -13.0 | -38.8 | |
| 2.51 | -56.0 | V | 3.0 | 41.8 | 37.5 | 1.0 | -50.6 | -13.0 | -37.6 | |
| | | | | | | | | | | |
| High Ch | | | | | | | | | | |
| 1.69 | -48.5 | H | 3.0 | 37.0 | 38.1 | 1.0 | -48.6 | -13.0 | -35.6 | |
| 2.54 | -57.1 | H | 3.0 | 40.3 | 37.5 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 1.69 | -52.9 | V | 3.0 | 37.3 | 38.1 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 2.54 | -60.3 | V | 3.0 | 41.9 | 37.5 | 1.0 | -54.8 | -13.0 | -41.8 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

**UMTS HSDPA (Cellular Band)**

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:Barnes and Noble
Project #:10U13105
Date:4/5/2010
Test Engineer:Chin Pang
Configuration:EUT and AC Adapter
Mode:TX, WCDMA850 HSDPA

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

| 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 | | | | | | | | | | |
| 1.65 | -47.6 | H | 3.0 | 37.3 | 35.5 | 1.0 | -44.9 | -13.0 | -31.9 | |
| 2.48 | -61.5 | H | 3.0 | 39.8 | 35.4 | 1.0 | -56.1 | -13.0 | -43.1 | |
| 1.65 | -49.5 | V | 3.0 | 36.8 | 35.5 | 1.0 | -47.2 | -13.0 | -34.2 | |
| 2.48 | -62.0 | V | 3.0 | 41.7 | 35.4 | 1.0 | -54.7 | -13.0 | -41.7 | |
| | | | | | | | | | | |
| Mid Ch | | | | | | | | | | |
| 1.67 | -52.8 | H | 3.0 | 37.5 | 35.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 2.51 | -60.0 | H | 3.0 | 39.9 | 35.4 | 1.0 | -54.5 | -13.0 | -41.5 | |
| 1.67 | -53.1 | V | 3.0 | 37.1 | 35.5 | 1.0 | -50.5 | -13.0 | -37.5 | |
| 2.51 | -63.2 | V | 3.0 | 41.8 | 35.4 | 1.0 | -55.8 | -13.0 | -42.8 | |
| | | | | | | | | | | |
| High Ch | | | | | | | | | | |
| 1.69 | -53.0 | H | 3.0 | 37.7 | 35.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 2.54 | -61.5 | H | 3.0 | 40.1 | 35.4 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 1.69 | -53.1 | V | 3.0 | 37.4 | 35.5 | 1.0 | -50.2 | -13.0 | -37.2 | |
| 2.54 | -63.4 | V | 3.0 | 41.9 | 35.4 | 1.0 | -55.9 | -13.0 | -42.9 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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: | Barnes& Noble |
| Project # | 10U13105 |
| Date: | 3/31/2010 |
| Test Engineer: | Thanh Nguyen |
| Configuration: | EUT and AC Adapter |
| Mode: | TX, GPRS1900 |

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber B | T145 8449B | Filter 1 | TX 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 | -59.3 | H | 3.0 | 45.3 | 35.4 | 1.0 | -48.3 | -13.0 | -35.3 | |
| 5.551 | -60.6 | H | 3.0 | 50.0 | 35.4 | 1.0 | -45.0 | -13.0 | -32.0 | |
| 3.704 | -55.2 | V | 3.0 | 45.1 | 35.4 | 1.0 | -44.4 | -13.0 | -31.4 | |
| 5.551 | -57.7 | V | 3.0 | 49.2 | 35.4 | 1.0 | -42.9 | -13.0 | -29.9 | |
| | | | | | | | | | | |
| Mid Ch | | | | | | | | | | |
| 3.760 | -61.4 | H | 3.0 | 45.5 | 35.3 | 1.0 | -50.2 | -13.0 | -37.2 | |
| 5.640 | -60.3 | H | 3.0 | 50.2 | 35.4 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 3.760 | -53.6 | V | 3.0 | 45.3 | 35.3 | 1.0 | -42.7 | -13.0 | -29.7 | |
| 5.640 | -60.6 | V | 3.0 | 49.3 | 35.4 | 1.0 | -45.7 | -13.0 | -32.7 | |
| | | | | | | | | | | |
| High Ch | | | | | | | | | | |
| 3.820 | -59.8 | H | 3.0 | 45.7 | 35.3 | 1.0 | -48.4 | -13.0 | -35.4 | |
| 5.729 | -61.6 | H | 3.0 | 50.3 | 35.4 | 1.0 | -45.8 | -13.0 | -32.8 | |
| 3.820 | -51.6 | V | 3.0 | 45.4 | 35.3 | 1.0 | -40.4 | -13.0 | -27.4 | |
| 5.729 | -59.2 | V | 3.0 | 49.4 | 35.4 | 1.0 | -44.3 | -13.0 | -31.3 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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: | Barnes& Noble |
| Project #: | 10U13105 |
| Date: | 3/30/2010 |
| Test Engineer: | Thanh Nguyen |
| Configuration: | EUT and AC Adapter |
| Mode: | TX, EGPRS1900 |

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber B | T145 8449B | Filter 1 | TX 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 | -55.9 | H | 3.0 | 45.3 | 35.4 | 1.0 | -44.9 | -13.0 | -31.9 | |
| 5.551 | -56.8 | H | 3.0 | 50.0 | 35.4 | 1.0 | -41.2 | -13.0 | -28.2 | |
| 3.704 | -51.5 | V | 3.0 | 45.1 | 35.4 | 1.0 | -40.7 | -13.0 | -27.7 | |
| 5.551 | -56.6 | V | 3.0 | 49.2 | 35.4 | 1.0 | -41.8 | -13.0 | -28.8 | |
| | | | | | | | | | | |
| Mid Ch | | | | | | | | | | |
| 3.760 | -52.4 | H | 3.0 | 45.5 | 35.3 | 1.0 | -41.2 | -13.0 | -28.2 | |
| 5.640 | -60.3 | H | 3.0 | 50.2 | 35.4 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 3.760 | -52.1 | V | 3.0 | 45.3 | 35.3 | 1.0 | -41.2 | -13.0 | -28.2 | |
| 5.640 | -57.3 | V | 3.0 | 49.3 | 35.4 | 1.0 | -42.5 | -13.0 | -29.5 | |
| | | | | | | | | | | |
| High Ch | | | | | | | | | | |
| 3.820 | -58.2 | H | 3.0 | 45.7 | 35.3 | 1.0 | -46.7 | -13.0 | -33.7 | |
| 5.729 | -62.9 | H | 3.0 | 50.3 | 35.4 | 1.0 | -47.0 | -13.0 | -34.0 | |
| 3.820 | -57.9 | V | 3.0 | 45.4 | 35.3 | 1.0 | -46.8 | -13.0 | -33.8 | |
| 5.729 | -64.8 | V | 3.0 | 49.4 | 35.4 | 1.0 | -49.9 | -13.0 | -36.9 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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:Barnes and Noble
Project #:10U13105
Date:4/5/2010
Test Engineer:Chin Pang
Configuration:EUT and AC Adapter
Mode:TX, WCDMA1900 Rel 99

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber A | T144 8449B | Filter 1 | TX 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 | | | | | | | | | | |
| 3.70 | -58.8 | H | 3.0 | 45.0 | 36.8 | 1.0 | -49.6 | -13.0 | -36.6 | |
| 5.56 | -65.7 | H | 3.0 | 50.0 | 36.3 | 1.0 | -51.0 | -13.0 | -38.0 | |
| 3.70 | -62.5 | V | 3.0 | 44.9 | 36.8 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 5.56 | -66.3 | V | 3.0 | 49.3 | 36.3 | 1.0 | -52.3 | -13.0 | -39.3 | |
| | | | | | | | | | | |
| Mid Ch | | | | | | | | | | |
| 3.76 | -62.0 | H | 3.0 | 45.2 | 36.8 | 1.0 | -52.6 | -13.0 | -39.6 | |
| 5.64 | -65.0 | H | 3.0 | 50.1 | 36.3 | 1.0 | -50.2 | -13.0 | -37.2 | |
| 3.76 | -63.5 | V | 3.0 | 45.1 | 36.8 | 1.0 | -54.2 | -13.0 | -41.2 | |
| 5.64 | -67.0 | V | 3.0 | 49.4 | 36.3 | 1.0 | -52.9 | -13.0 | -39.9 | |
| | | | | | | | | | | |
| High Ch | | | | | | | | | | |
| 3.82 | -60.7 | H | 3.0 | 45.3 | 36.7 | 1.0 | -51.1 | -13.0 | -38.1 | |
| 5.72 | -66.2 | H | 3.0 | 50.2 | 36.3 | 1.0 | -51.3 | -13.0 | -38.3 | |
| 3.82 | -62.6 | V | 3.0 | 45.2 | 36.7 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 5.72 | -67.3 | V | 3.0 | 49.5 | 36.3 | 1.0 | -53.1 | -13.0 | -40.1 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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:Barnes and Noble
Project #:10U13105
Date:4/5/2010
Test Engineer:Chin Pang
Configuration:EUT and AC Adapter
Mode:TX, WCDMA1900 HSDPA

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber B | T145 8449B | Filter 1 | TX 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 | | | | | | | | | | |
| 3.70 | -60.4 | H | 3.0 | 45.3 | 35.4 | 1.0 | -49.4 | -13.0 | -36.4 | |
| 5.56 | -66.3 | H | 3.0 | 50.0 | 35.4 | 1.0 | -50.7 | -13.0 | -37.7 | |
| 3.70 | -64.0 | V | 3.0 | 45.1 | 35.4 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 5.56 | -67.0 | V | 3.0 | 49.2 | 35.4 | 1.0 | -52.2 | -13.0 | -39.2 | |
| | | | | | | | | | | |
| Mid Ch | | | | | | | | | | |
| 3.76 | -63.4 | H | 3.0 | 45.5 | 35.3 | 1.0 | -52.2 | -13.0 | -39.2 | |
| 5.64 | -65.8 | H | 3.0 | 50.2 | 35.4 | 1.0 | -50.1 | -13.0 | -37.1 | |
| 3.76 | -64.0 | V | 3.0 | 45.3 | 35.3 | 1.0 | -53.1 | -13.0 | -40.1 | |
| 5.64 | -67.1 | V | 3.0 | 49.3 | 35.4 | 1.0 | -52.2 | -13.0 | -39.2 | |
| | | | | | | | | | | |
| High Ch | | | | | | | | | | |
| 3.82 | -63.0 | H | 3.0 | 45.7 | 35.3 | 1.0 | -51.6 | -13.0 | -38.6 | |
| 5.72 | -66.5 | H | 3.0 | 50.3 | 35.4 | 1.0 | -50.6 | -13.0 | -37.6 | |
| 3.82 | -66.0 | V | 3.0 | 45.4 | 35.3 | 1.0 | -54.9 | -13.0 | -41.9 | |
| 5.72 | -66.1 | V | 3.0 | 49.4 | 35.4 | 1.0 | -51.2 | -13.0 | -38.2 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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 |

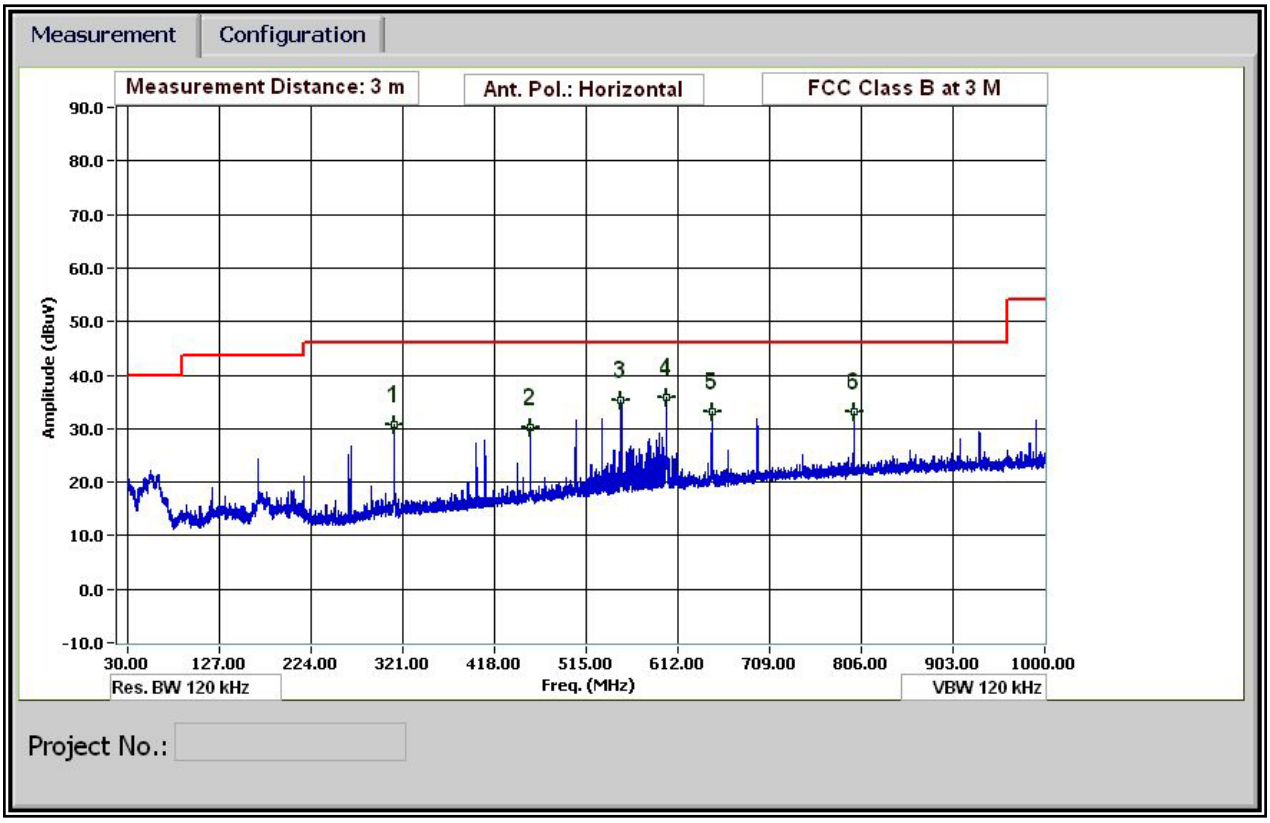
**TEST PROCEDURE**

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),

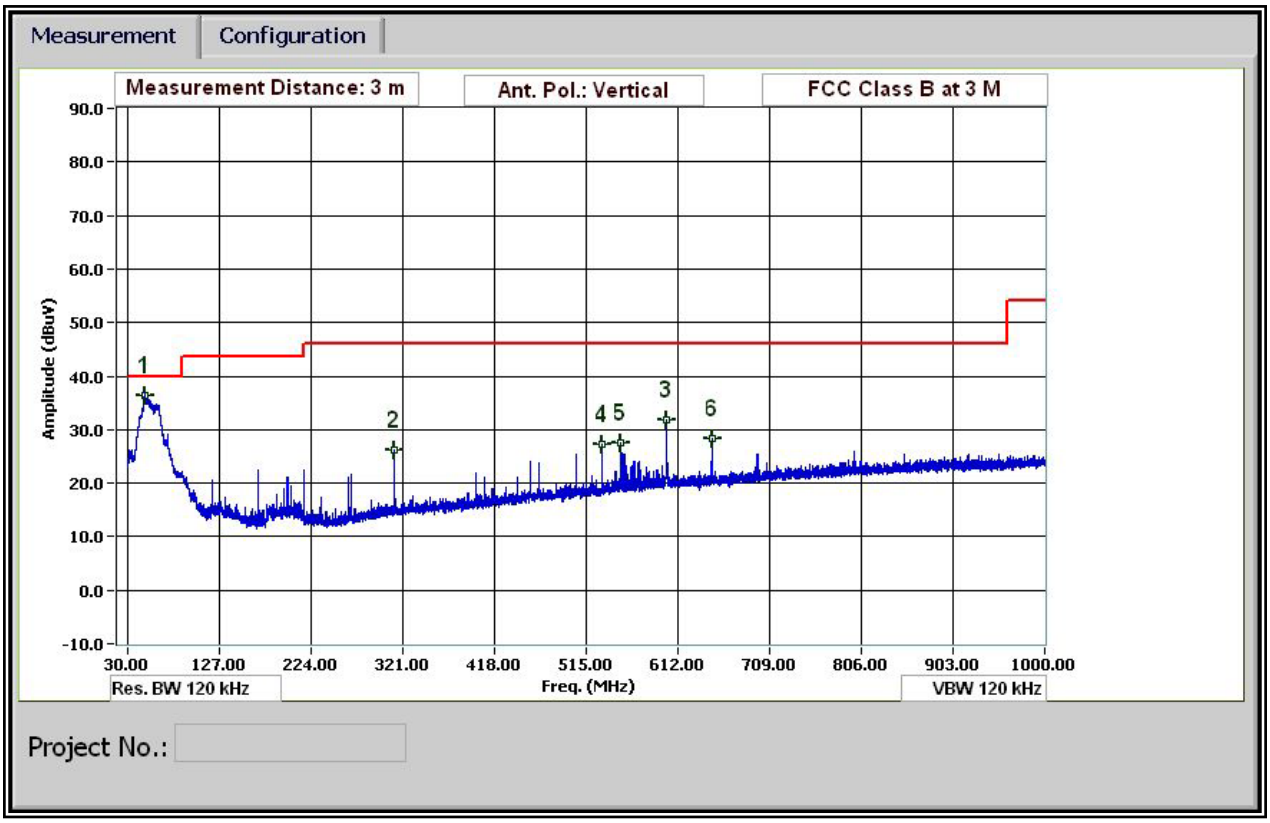
or 30 MHz, whichever is the higher, to at least 3 times the highest tunable and local oscillator frequencies.

**RESULTS**

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



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



**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**

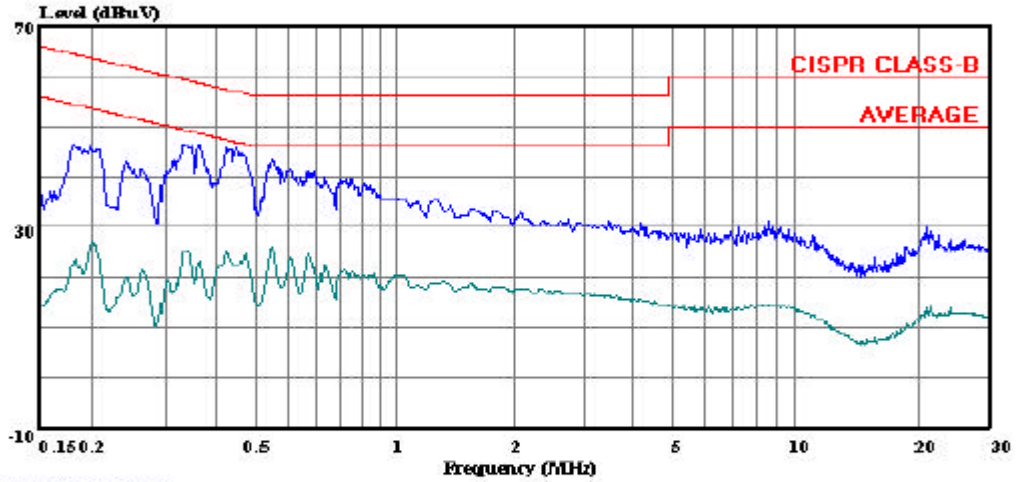
**6 WORST EMISSIONS**

| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Freq. | Reading | | | Closs | Limit | EN_B | Margin | | Remark |
| (MHz) | PK (dBuV) | QP (dBuV) | AV (dBuV) | (dB) | QP | AV | QP (dB) | AV (dB) | L1 / L2 |
| 0.43 | 45.88 | -- | 25.18 | 0.00 | 57.33 | 47.33 | -11.45 | -22.15 | L1 |
| 0.55 | 43.38 | -- | 26.10 | 0.00 | 56.00 | 46.00 | -12.62 | -19.90 | L1 |
| 1.37 | 35.43 | -- | 20.38 | 0.00 | 56.00 | 46.00 | -20.57 | -25.62 | L1 |
| 0.18 | 42.89 | -- | 27.87 | 0.00 | 64.44 | 54.44 | -21.55 | -26.57 | L2 |
| 0.36 | 43.67 | -- | 29.50 | 0.00 | 58.71 | 48.71 | -15.04 | -19.21 | L2 |
| 0.55 | 42.19 | -- | 27.12 | 0.00 | 56.00 | 46.00 | -13.81 | -18.88 | L2 |
| 6 Worst Data | | | | | | | | | |

**LINE 1 RESULTS**

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

Data#: 7 File#: LC 10U13105.EMI Date: 03-30-2010 Time: 13:49:37




(Line Conduction)

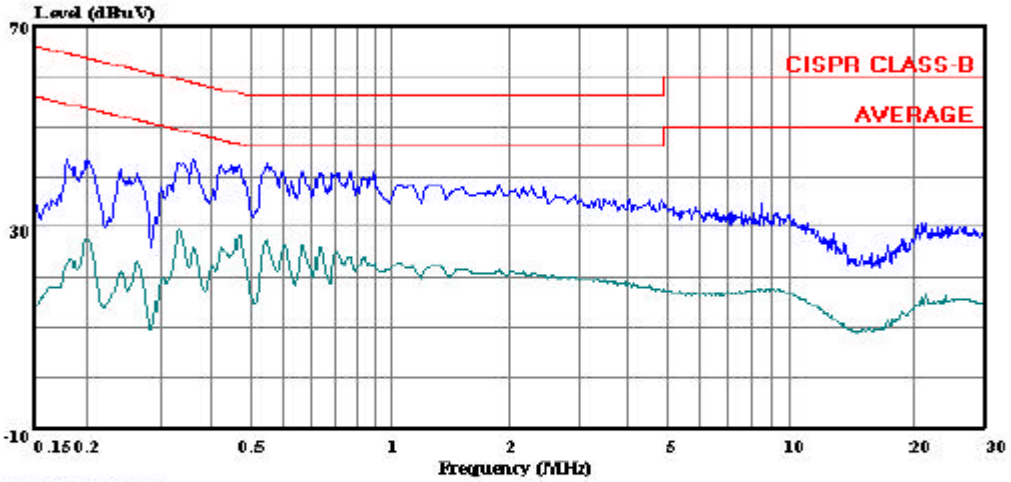
Trace: 5 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: : Thanh Nguyen
Project #: : 10U13105
Company: : Barnes & Noble
EUT Description:: eBook Reader w/WWAN. WLAN and USB Port
Configuration: : EUT only
Mode: : Tx/Rx link to Base Station
Target: : FCC Class B
Voltage: : 115VAC 60Hz
: L1: Peak(Blue); Average (Green)

**LINE 2 RESULTS**

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

Data#: 14 File#: LC 10U13105.EMI Date: 03-30-2010 Time: 14:00:20




(Line Conduction)

Trace: 12 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: : Thanh Nguyen
Project #: : 10U13105
Company: : Barnes & Noble
EUT Description:: eBook Reader w/WWAN. WLAN and USB Port
Configuration: : EUT only
Mode: : Tx/Rx link to Base Station
Target: : FCC Class B
Voltage: : 115VAC 60Hz
: L2: Peak(Blue); Average (Green)